# SERVICE MANUAL

Color Inkjet Printer

Epson Stylus Photo PX650/TX650/TX659
Epson Stylus Photo PX660
Epson Stylus Photo PX660 Premium
Artisan 635

EPSON
EXCEED YOUR VISION

Confidential

Notice:

PRECAUTIONS

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

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

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

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

DANGER

1. ALWAYS DISCONNECT THE PRODUCT FROM THE POWER SOURCE AND PERIPHERAL DEVICES PERFORMING ANY MAINTENANCE OR REPAIR PROCEDURES.
2. NO WORK SHOULD BE PERFORMED ON THE UNIT BY PERSONS UNFAMILIAR WITH BASIC SAFETY MEASURES AS DICTATED FOR ALL ELECTRONICS TECHNICIANS IN THEIR LINE OF WORK.
3. WHEN PERFORMING TESTING AS DICTATED WITHIN THIS MANUAL, DO NOT CONNECT THE UNIT TO A POWER SOURCE UNTIL INSTRUCTED TO DO SO. WHEN THE POWER SUPPLY CABLE MUST BE CONNECTED, USE EXTREME CAUTION IN WORKING ON POWER SUPPLY AND OTHER ELECTRONIC COMPONENTS.
4. WHEN DISASSEMBLING OR ASSEMBLING A PRODUCT, MAKE SURE TO WEAR GLOVES TO AVOID INJURIER 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 VOLTAGES IS THE SAME AS THE RATED VOLTAGE, LISTED ON THE SERIAL NUMBER/RATING PLATE. IF THE EPSON PRODUCT HAS A PRIMARY AC RATING DIFFERENT FROM AVAILABLE POWER SOURCE, DO NOT CONNECT IT TO THE POWER SOURCE.
3. ALWAYS VERIFY THAT THE EPSON PRODUCT HAS BEEN DISCONNECTED FROM THE POWER SOURCE BEFORE REMOVING OR REPLACING PRINTED CIRCUIT BOARDS AND/OR INDIVIDUAL CHIPS.
4. IN ORDER TO PROTECT SENSITIVE MICROPROCESSORS AND CIRCUITRY, USE STATIC DISCHARGE EQUIPMENT, SUCH AS ANTI-STATIC WRIST STRAPS, WHEN ACCESSING INTERNAL COMPONENTS.
5. REPLACE MALFUNCTIONING COMPONENTS ONLY WITH THOSE COMPONENTS BY THE MANUFACTURE; INTRODUCTION OF SECOND-SOURCE ICs OR OTHER NON-APPROVED COMPONENTS MAY DAMAGE THE PRODUCT AND VOID ANY APPLICABLE EPSON WARRANTY.
6. WHEN USING COMPRESSED AIR PRODUCTS; SUCH AS AIR DUSTER, FOR CLEANING DURING REPAIR AND MAINTENANCE, THE USE OF SUCH PRODUCTS CONTAINING FLAMMABLE GAS IS PROHIBITED.

About This Manual

This manual describes basic functions, theory of electrical and mechanical operations, maintenance and repair procedures of the printer. The instructions and procedures included herein are intended for the experienced repair technicians, and attention should be given to the precautions on the preceding page.

Manual Configuration

This manual consists of six chapters and Appendix.

CHAPTER 1.PRODUCT DESCRIPTIONS
> Provides a general overview and specifications of the product.

CHAPTER 2.OPERATING PRINCIPLES
> Describes the theory of electrical and mechanical operations of the product.

CHAPTER 3.TROUBLESHOOTING
> Describes the step-by-step procedures for the troubleshooting.

CHAPTER 4.DISASSEMBLY / ASSEMBLY
> Describes the step-by-step procedures for disassembling and assembling the product.

CHAPTER 5.ADJUSTMENT
> Provides Epson-approved methods for adjustment.

CHAPTER 6.MAINTENANCE
> Provides preventive maintenance procedures and the lists of Epson-approved lubricants and adhesives required for servicing the product.

CHAPTER 7 APPENDIX
> Provides the additional information for repair and maintenance.

CHAPTER 8.Epson Stylus Photo PX660/PX660 Premium/Artisan 635
> Provides particular information for Epson Stylus Photo PX660

Symbols Used in this Manual

Various symbols are used throughout this manual either to provide additional information on a specific topic or to warn of possible danger present during a procedure or an action. Be aware of all symbols when they are used, and always read NOTE, CAUTION, or WARNING messages.

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

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

CHECK POINT — 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.

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

REASSEMBLY — 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	Date of Issue	Description
A	August 5, 2009	First Release

B	July 20, 2010	Revised Contents
		☐ All chapters
		  ■ Description about Epson Stylus Photo PX660 has been added.
		☐ Chapter 1
		  ■ Checkpoint has been added in "1.1 Features *(p10)*".
		☐ Chapter 2
		  ■ Checkpoint has been added in "2.1 Overview *(p35)*".
		  ■ Made correction in "2.2 Power-On Sequence *(p38)*".
		☐ Chapter 3
		  ■ Checkpoint has been added in "3.1 Overview *(p42)*".
		  ■ Information for Epson Stylus Photo PX660 has been added in "3.3.6 Troubleshooting for Motors and Sensors *(p59)*".
		☐ Chapter 4
		  ■ Checkpoint has been added in "4.1 Overview *(p61)*".
		  ■ Checkpoint has been added in "4.1.6 Disassembly and Reassembly Procedure *(p63)*".
		  ■ Checkpoint has been added, made correction in "4.2.5 Scanner Unit *(p69)*".
		  ■ Checkpoint has been added in "4.2.6 Panel Unit *(p72)*".
		  ■ Made change in "4.2.7 M/B Cover *(p74)*".
		  ■ Made correction in "4.2.8 Waste Ink Tray Assy *(p74)*".
		  ■ Made change for checkpoint in "4.3.1 Main Board Unit *(p78)*".
		  ■ Checkpoint has been added in "4.3.2 Panel Board *(p81)*".
		  ■ Made correction in "4.4.1 Printhead *(p85)*".
		  ■ Checkpoint has been added in "4.4.3 Printer Mechanism *(p88)*".
		  ■ Checkpoint has been added in "4.4.10 CR Unit *(p98)*".
		☐ Chapter 5
		  ■ Checkpoint has been added in "5.1 Adjustment Items and Overview *(p111)*".
		  ■ Made change for "Specified Scanner for BRS/PFP Adjustment" in "5.4 Banding Reduction System (BRS) Adjustment/Paper Feed Amount Profile (PFP) Correction *(p122)*".
		☐ Chapter 6
		  ■ Checkpoint has been added in "6.1 Overview *(p131)*".
		☐ Chapter 7
		  ■ Made change in "7.1 Exploded Diagram / Parts List *(p139)*".
		☐ Chapter 8
		  ■ Information for Epson Stylus Photo PX660 has been added.

Revision Status

Revision	Date of Issue	Description

C	August 25, 2011	Revised Contents
		☐ All chapters
		   ■ Description about Epson Stylus Photo PX660 Premium/Artisan 635 has been added.
		☐ Chapter 1
		   ■ Checkpoint has been added in "1.1 Features *(p10)*".
		   ■ Made change in "1.5.2 Memory Card Slots *(p19)*"
		☐ Chapter 2
		   ■ Checkpoint has been added in "2.1 Overview *(p35)*".
		☐ Chapter 3
		   ■ Checkpoint has been added in "3.1 Overview *(p42)*".
		☐ Chapter 4
		   ■ Checkpoint has been added in "4.1 Overview *(p61)*".
		   ■ Checkpoint has been added in"4.1.6 Disassembly and Reassembly Procedure *(p63)*"
		   ■ Checkpoint has been added in"4.2.5 Scanner Unit *(p69)*"
		   ■ Checkpoint has been added in"4.2.6 Panel Unit *(p72)*"
		   ■ Checkpoint has been added in"4.4.3 Printer Mechanism *(p88)*"
		   ■ Checkpoint has been added in"4.4.10 CR Unit *(p98)*"
		☐ Chapter 5
		   ■ Checkpoint has been added in "5.1.1 Servicing Adjustment Item List *(p111)*".
		   ■ Checkpoint has been added in "5.3 PG Adjustment *(p120)*".
		   ■ Made change for "Specified Scanner for BRS/PFP Adjustment" in "5.4 Banding Reduction System (BRS) Adjustment/Paper Feed Amount Profile (PFP) Correction *(p122)*".
		   ■ Checkpoint has been added in "5.4.2.2 PFP Adjustment *(p125)*".
		☐ Chapter 6
		   ■ Checkpoint has been added in "6.1 Overview *(p131)*".
		☐ Chapter 8
		   ■ Information for Epson Stylus Photo PX660 Premium and Artisan 635 has been added.
		   ■ Checkpoint has been added in "8.2.2 Disassembly Procedures *(p144)*".
		   ■ Checkpoint has been added in "8.2.2.5 CR Unit *(p155)*".
		   ■ Checkpoint has been added in "8.3.1 Overview *(p157)*".
		   ■ "8.3.5 Overview Artisan 635 *(p163)*"has been added.
		   ■ "8.3.6 USB Interface Epson Stylus Photo PX660/PX660 Premium/Artisan 635 *(p163)*"has been added.
		   ■ "8.3.7 Memory Card Slots Epson Stylus PX660/PX660 Premium *(p164)*"has been added.
		   ■ "8.3.8 Memory Card Slots Artisan 635 *(p165)*"has been added.
		   ■ "8.3.9 Electrical Specifications *(p166)*"has been added.

CONTENTS

Chapter 5   ADJUSTMENT

Chapter 6   MAINTENANCE

Chapter 7   APPENDIX

Chapter 8   *Epson Stylus Photo PX660/PX660 Premium/Artisan 635*

PRODUCT DESCRIPTION

1.1 Features

> **CHECK POINT** ✓
>
> **Description in this chapter is applied to Epson Stylus Photo PX650/TX650/TX659. For information on Epson Stylus Photo PX660/PX660 Premium/Artisan 635, see below.**
> - **Chapter 8 "Epson Stylus Photo PX660/PX660 Premium/Artisan 635"** *(p140)*

Epson Stylus Photo PX650/TX650/TX659 are color inkjet printers equipped with scanner function. The main features are described below.

☐ Available Functions

- ■ Printer
  - • Printing from a PC
  - • Direct print on CD or DVD (label print)

- ■ Scanner
  - • Scanning from a PC
  - • Scan to Memory function
    (directly stores a scan data to a memory card inserted)

- ■ Stand-alone copy
  - • Stand-alone copy using the printer and scanner functions.

- ■ Memory card slot
  - • Direct print from a memory card
  - • Accessible from a PC as a USB memory card slot

- ■ USB host interface
  - • Direct print from an external USB storage device
  - • Direct backup of memory card data to an external USB storage device
  - • Direct print from a digital camera (PictBridge)

- ■ 2.5-inch TFD color LCD

☐ High speed & high quality

- ■ Maximum resolution: 5760 (H) x 1440 (V) dpi

- ■ High quality with 6 colors dye ink (6 independent cartridges)

- ■ High speed print with F3 Mach Turbo2 head
  (Black: 90 nozzles x 1 column, Color: 90 nozzles x 5 columns)

- ■ Borderless print on EPSON designated paper

☐ Dimensions

- ■ Dimensions: 450 mm (W) x 386 mm (D) x 195 mm (H)
  (when the ASF and the stacker are closed. includes the rubber feet)

- ■ Weight: 8.4 kg
  (excludes the ink cartridges, power supply cable and the CD-R tray)
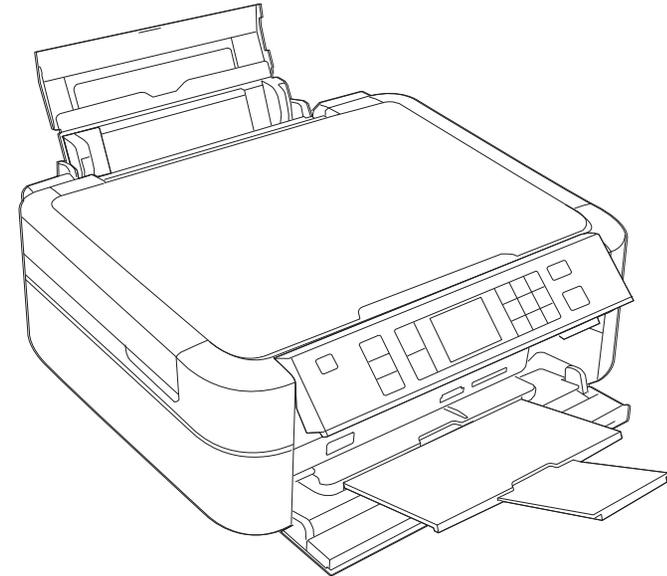
Figure 1-1. External View

1.2 Printing Specifications

1.2.1 Basic Specifications

Table 1-1. Printer Specifications

Item	Specifications
Print method	On-demand inkjet
Nozzle configuration	Black: 90 nozzles x 1 Color: 90 nozzles x 5 (cyan, magenta, yellow, light cyan, light magenta)
Print direction	Bi-directional minimum distance printing, unidirectional printing
Print resolution	Horizontal x Vertical (dpi) • 360 x 180 • 720 x 540 • 360 x 360 • 720 x 720 • 720 x 360 • 5760 x 1440
Control code	• ESC/P Raster command • ESC/P-R (RGB) command • EPSON Remote command
Input buffer size	64 Kbytes
Paper feed method	Friction feed using an ASF (Auto Sheet Feeder)
Paper path	Top feed, front out
Paper feed rate	110 msec. (at 25.4 mm feed)
PF interval	Programmable in 0.01764 mm (1/1440 inch) steps

1.2.2 Ink Cartridge

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

Table 1-2. Product No. of Ink Cartridges

Color	Europe	CISMEA, Asia
Black	T0791 (S) T0801 (2S)	T0811N (S) T0821N (2S)
Cyan	T0792 (S) T0802 (2S)	T0812N (S) T0822N (2S)
Magenta	T0793 (S) T0803 (2S)	T0813N (S) T0823N (2S)
Yellow	T0794 (S) T0804 (2S)	T0814N (S) T0824N (2S)
Light Cyan	T0795 (S) T0805 (2S)	T0815N (S) T0825N (2S)
Light Magenta	T0796 (S) T0806 (2S)	T0816N (S) T0826N (2S)

☐ **Shelf life**

Two years from production date (if unopened), six months after opening the package.

☐ **Storage Temperature**

Table 1-3. Storage Temperature

Status	Storage Temperature	Limit
When stored in individual boxes	-20ºC to 40ºC (-4ºF to 104ºF)	1 month max. at 40ºC (104ºF)
When installed in main unit	-20ºC to 40ºC (-4ºF to 104ºF)	

☐ **Dimension**

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

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

1.2.3 Print Mode

Table 1-4. Print Mode (Color)

Media	Print Mode	Resolution (H x V) dpi	Dot Size (cps*1)	Bi-d	Micro Weave	Border -less
• Plain paper • Premium Ink jet Plain Paper • Bright White Ink jet Paper	Draft 1 (Fast economy)	360 x 180	Eco (400 cps)	ON	OFF	NA
	Draft 2 (Economy)	360 x 180	Eco (400 cps)	ON	OFF	NA
	Normal	360 x 360	MC2-1 (360 cps)	ON	OFF	NA
	Photo Fine	720 x 720	MC1-1 (240 cps)	ON	ON	NA
Ultra Glossy Photo Paper	Photo*2	720 x 720 (1.5 pass)	MC1-2 (240 cps)	ON	ON	OK
	Photo*2	720 x 720 (2.0 pass)	MC2-2 (280 cps)	ON	ON	OK
	Super Photo	5760 x 1440	MC1-5 (200 cps)	ON	ON	OK
• Photo Paper • Glossy Photo Paper • Premium Glossy Photo Paper • Premium Semigloss Photo Paper	Fine	720 x 360	MC1-1 (240 cps)	ON	ON	OK
	Photo*2	720 x 720 (1.5 pass)	MC1-2 (240 cps)	ON	ON	OK
	Photo*2	720 x 720 (2.0 pass)	MC2-2 (280 cps)	ON	ON	OK
	Super Photo	5760 x 1440	MC1-5 (200 cps)	ON	ON	OK
Matte Paper Heavy-weight	Photo*2	720 x 720 (2.0 pass)	MC2-2 (280 cps)	ON	ON	OK
	Super Photo	5760 x 1440	MC1-5 (200 cps)	ON	ON	OK
Photo Quality Ink jet Paper	Photo*2	720 x 720 (2.0 pass)	MC2-2 (280 cps)	ON	ON	NA

Table 1-4. Print Mode (Color)

Media	Print Mode	Resolution (H x V) dpi	Dot Size (cps*1)	Bi-d	Micro Weave	Border -less
Envelope	Normal	360 x 360	MC2-1 (360 cps)	OFF	OFF	NA
	Photo Fine	720 x 720	MC1-1 (240 cps)	OFF	ON	NA
Iron-On Cool Peal Transfer Paper	Photo Fine	720 x 720	MC1-1 (240 cps)	OFF	ON	NA
Photo stickers	Photo*2	720 x 720 (2.0 pass)	MC2-2 (280 cps)	ON	ON	NA
CD/DVD label	Super Photo	5760 x 1440	MC1-5 (200 cps)	ON	ON	NA
High-quality CD/ DVD label	Super Photo	5760 x 1440	MC1-5 (200 cps)	ON	ON	NA

Note *1: cps = character per second

*2: Photo mode uses 1.5 pass or 2.0 pass depending on the paper size.

1.5 pass supported size: 4" x 6"

2.0 pass supported size: 16:9 wide, 5" x 7", 8" x 10", Letter, A4

Table 1-5. Print Mode (Monochrome)

Media	Print Mode	Resolution (H x V) dpi	Dot Size (cps*1)	Bi-d	Micro Weave	Border -less
• Plain paper • Premium Ink jet Plain Paper • Bright White Ink jet Paper	Draft 1 (Fast economy)	360 x 180	Eco (400 cps)	ON	OFF	NA
	Draft 2 (Economy)	360 x 180	Eco (400 cps)	ON	OFF	NA
	Normal	360 x 360	MC2-1 (360 cps)	ON	OFF	NA
	Photo Fine	720 x 720	MC1-1 (240 cps)	ON	ON	NA
Ultra Glossy Photo Paper	Photo*2	720 x 720 (1.5 pass)	MC1-2 (240 cps)	ON	ON	OK
	Photo*2	720 x 720 (2.0 pass)	MC2-2 (280 cps)	ON	ON	OK
	Super Photo	5760 x 1440	MC1-5 (200 cps)	ON	ON	OK
• Photo Paper • Glossy Photo Paper • Premium Glossy Photo Paper • Premium Semigloss Photo Paper	Fine	720 x 360	MC1-1 (240 cps)	ON	ON	OK
	Photo*2	720 x 720 (1.5 pass)	MC1-2 (240 cps)	ON	ON	OK
	Photo*2	720 x 720 (2.0 pass)	MC2-2 (280 cps)	ON	ON	OK
	Super Photo	5760 x 1440	MC1-5 (200 cps)	ON	ON	OK
Matte Paper Heavy-weight	Photo*2	720 x 720 (2.0 pass)	MC2-2 (280 cps)	ON	ON	OK
	Super Photo	5760 x 1440	MC1-5 (200 cps)	ON	ON	OK
Photo Quality Ink jet Paper	Photo*2	720 x 720 (2.0 pass)	MC2-2 (280 cps)	ON	ON	NA

Media	Print Mode	Resolution (H x V) dpi	Dot Size (cps*1)	Bi-d	Micro Weave	Border -less
Envelope	Normal	360 x 360	MC2-1 (360 cps)	OFF	OFF	NA
	Photo Fine	720 x 720	MC1-1 (240 cps)	OFF	ON	NA
Iron-On Cool Peal Transfer Paper	Photo Fine	720 x 720	MC1-1 (240 cps)	OFF	ON	NA
Photo stickers	Photo*2	720 x 720 (2.0 pass)	MC2-2 (280 cps)	ON	ON	NA
CD/DVD label	Super Photo	5760 x 1440	MC1-5 (200 cps)	ON	ON	NA
High-quality CD/ DVD label	Super Photo	5760 x 1440	MC1-5 (200 cps)	ON	ON	NA

Note *1: cps = character per second
*2: Photo mode uses 1.5 pass or 2.0 pass depending on the paper size.
    1.5 pass supported size: 4" x 6"
    2.0 pass supported size: 16:9 wide, 5" x 7", Letter, A4

1.2.4 Supported Paper

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

Table 1-6. Supported Paper

Paper Name	Paper Size		Thickness	Weight			EUR		Asia	
			mm	g/m^2	lb.	P*1	B*1	P*1	B*1	
Plain paper	Legal	215.9 x 355.6 mm (8.5" x 14")	0.08-0.11	64-90	17-24	Y	---	Y	---
	Letter	215.9 x 279.4 mm (8.5" x 11")				Y	---	Y	---
	A4	210 x 297 mm (8.3" x 11.7")				Y	---	Y	---
	B5	182 x 257 mm (7.2" x 10.1")				Y	---	Y	---
	A5	148 x 210 mm (5.8" x 8.3")				Y	---	Y	---
	A6	105 x 148 mm (4.1" x 5.8")				Y	---	Y	---
	User Defined	89 x 127- 329 x 1117.6 mm (3.56" x 5.08" - 13.16" x 44.7")				Y	---	Y	---
Premium Ink jet Plain Paper	A4	210 x 297 mm (8.3" x 11.7")	0.11	80	21	Y	---	Y	---
Bright White Ink jet Paper	A4	210 x 297 mm (8.3" x 11.7")	0.13	92.5	25	Y	---	Y	---
Ultra Glossy Photo Paper	A4	210 x 297 mm (8.3" x 11.7")	0.30	290	77	Y	Y	Y	Y
	5" x 7"	127 x 178 mm				Y	Y	---	---
	4" x 6"	101.6 x 152.4 mm				Y	Y	Y	Y
Premium Glossy Photo Paper	A4	210 x 297 mm (8.3" x 11.7")	0.27	255	68	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
	16:9 wide	102 x 181 mm (4" x 7.11")				Y	---	---	---
Glossy Photo Paper	A4	210 x 297 mm (8.3" x 11.7")	0.25	258	68	Y	Y	Y	Y
	5" x 7"	127 x 178 mm				Y	Y	---	---
	4" x 6"	101.6 x 152.4 mm				Y	Y	Y	Y
Premium Semigloss Photo Paper	A4	210 x 297 mm (8.3" x 11.7")	0.27	250	66	Y	Y	Y	Y
	4" x 6"	101.6 x 152.4 mm				Y	Y	Y	Y

Table 1-6. Supported Paper

Paper Name	Paper Size		Thickness	Weight		EUR		Asia	
			mm	g/m²	lb.	P*1	B*1	P*1	B*1
Photo Paper	A4	210 x 297 mm (8.3" x 11.7")	0.24	190	51	Y	Y	Y	Y
	5" x 7"	127 x 178 mm				Y	Y	---	---
	4" x 6"	101.6 x 152.4 mm				Y	Y	Y	Y
Matte Paper Heavy-weight	A4	210 x 297 mm (8.3" x 11.7")	0.23	167	44	Y	Y	Y	Y
Double-sided Matte Paper	A4	210 x 297 mm (8.3" x 11.7")	0.22	185	49	Y	---	Y	---
Photo Quality Ink jet Paper	A4	210 x 297 mm (8.3" x 11.7")	0.12	102	27	Y	---	Y	---
Envelopes	#10	104.8 x 241.3 mm (4.125" x 9.5")	---	75-90	20-24	Y	---	Y	---
	#DL	110 x 220 mm				Y	---	Y	---
	#C6	114 x 162 mm				Y	---	Y	---
Iron-On Cool Peal Transfer Paper	A4	210 x 297 mm (8.3" x 11.7")	0.14	130	35	Y	---	Y	---
Photo Stickers 16	A6	105 x 148 mm (4.1" x 5.8")	0.19	---	---	---	---	Y*2	---
Photo Stickers 4	A6	105 x 148 mm (4.1" x 5.8")	0.19	---	---	---	---	Y*2	---
CD/DVD CD/DVD Premium Surface	ø12 cm	ø12 cm	---	---	---	Y	---	Y	---
	ø8 cm	ø8 cm	---	---	---	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".

*2: Select settings of "Epson Matte" instead of "Photo Quality Ink jet Paper".

CAUTION ⚠
- **Make sure the paper is not wrinkled, fluffed, torn, or folded.**
- **Make sure to correct the warpage of the paper before use.**
- **When printing on an envelope, be sure the flap is folded neatly.**
- **Do not use the adhesive envelopes.**
- **Do not use double envelopes and cellophane window envelopes.**

1.2.5 Printing Area

The printing area for this printer is shown below.

Table 1-7. 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 5" x 7"	2.54 mm	2.54 mm	2.96 mm	4.02 mm
	4" x 6"			1.34 mm	2.54 mm

Note *: The margins for Borderless print are margins that bleed off the edges of paper.
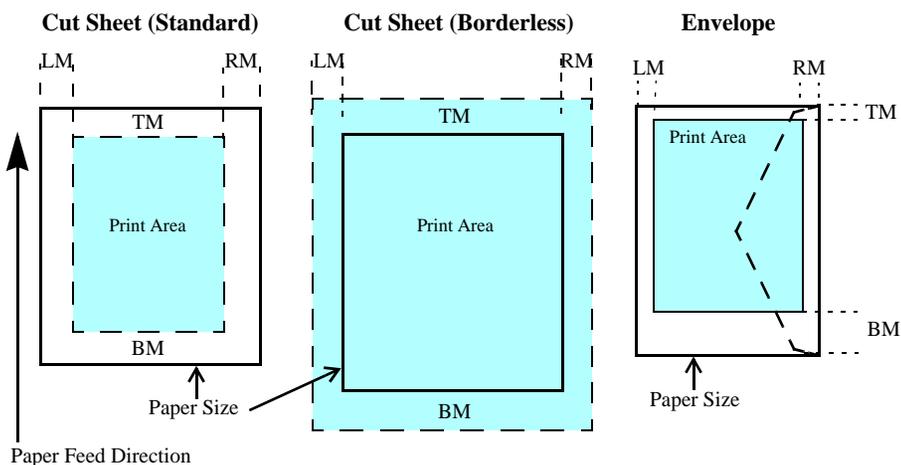
Figure 1-2. Printing Area

1.3 Scanner Specifications

Table 1-8. Basic Specifications

Item	Specification
Scanner type	Flatbed, color
Scanning method	Moving carriage, stationary document
Home position	Far left corner
Photoelectric device	CIS
Light source	LED
Maximum document size	US letter, or A4 size
Scanning range	216 x 297 mm (8.5" x 11.7")
Maximum resolution	Main scan: 1200 dpi / Sub scan: 2400 dpi
Maximum effective pixels	10,200 x 14,040 pixels (with 1200 dpi scanning)
Pixel depth	16 bit per pixel (input), 1 or 8 bit per pixel (output)

SCANNING RANGE

Table 1-9. Scanning Range

RL (read length)	RW (read width)	OLM (left margin)	OTM (top margin)
216 mm	297 mm	1.5 mm	1.5 mm
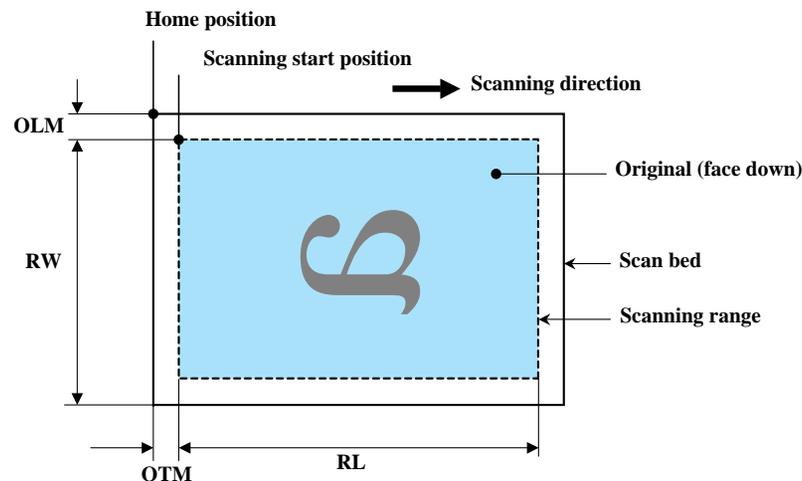
Figure 1-3. Scanning Range

1.4 General Specifications

1.4.1 Electrical Specifications

☐ **Primary power input**

Table 1-10. Primary Power Specifications

Item		100-120V model	220-240V 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		0.6 A (max. 1.2 A)	0.3 A (max. 0.6 A)
Rated frequency		50 to 60 Hz	
Input frequency range		49.5 to 60.5 Hz	
Insulation resistance		TBD V (for one minute)	
Energy conservation		International Energy Star Program compliant	
Power consumption	Stand alone copy (ISO/IEC24712 pattern)	Approx. 18 W	
	Ready	Approx. 7.0 W	
	Sleep mode	Approx. 1.3 W	Approx. 1.5 W
	Power off	Approx. 0.2 W	Approx. 0.3 W

Note : When no operation is made for more than 13 minutes, it goes to the low power mode within two minutes.

1.4.2 Environmental Conditions

Table 1-11. Environmental Conditions

Condition	Temperature[*1]	Humidity[*1,2]	Shock	Vibration
Operating	10 to 35°C (50 to 95°F)	20 to 80%	1 G (1 msec. or less)	0.15 G, 10 to 55 Hz
Storage (unpacked)	-20 to 40°C[*3] (-4°F to 104°F)	5 to 85%	2 G (2 msec. or less)	0.50 G, 10 to 55 Hz

Note *1: The combined Temperature and Humidity conditions must be within the blue-shaded range in Fig.1-4.

    *2: No condensation

    *3: Must be less than 1 month under 40°C.
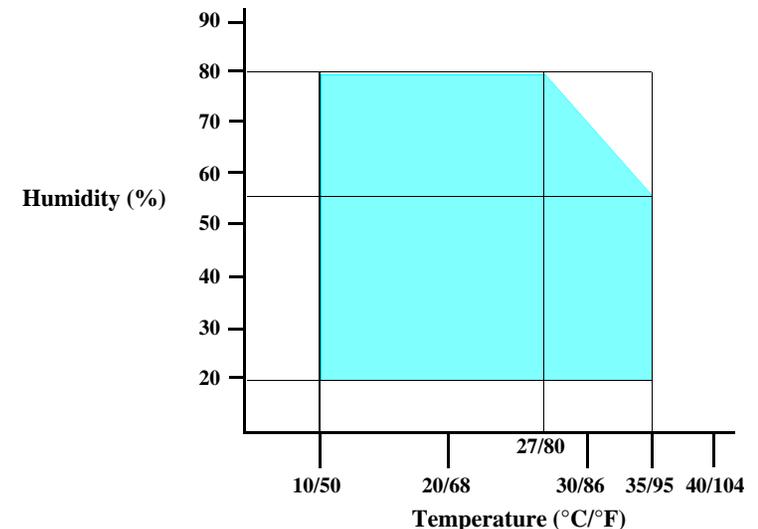
Figure 1-4. Temperature/Humidity Range

CAUTION !	■ When returning the repaired printer to the customer, make sure the Printhead is covered with the cap and the ink cartridge is installed. ■ If the Printhead is not covered with the cap when the printer is off, turn on the printer with the ink cartridge installed, make sure the Printhead is covered with the cap, and then turn the printer off.

1.4.3 Durability

Table 1-12. Durability

Item		Specification
Total print life	Black*1	16,000 pages or five years which ever comes first
	Color*2	10,000 pages or five years which ever comes first
Printhead		Six billions shots (per nozzle) or five years which ever comes first
Scanner carriage		36,000 cycles of carriage movement

Note *1: Condition: A4, 3.5% duty, ECMA pattern, Plain paper, default mode

    *2: Condition: A4, ISO24712 pattern, Plain paper, default mode

1.4.4 Acoustic Noise

36 dB (when printing from PC, on Premium Glossy Photo Paper, in the highest quality)

1.4.5 Safety Approvals (Safety standards/EMI)

EU	EN60950-1
	EN55022 Class B
	EN61000-3-2, EN61000-3-3
	EN55024
Germany	EN60950-1
Russia	GOST-R (IEC60950-1, CISPR 22)
Korea	K60950-1
	KN22 Class B
	KN61000-4-2/-3/-4/-5/-6/-11
Australia	AS/NZS CISPR22 Class B

1.5 Interfaces

The printer has USB interfaces and memory card slots of the following specifications.

1.5.1 USB Interfaces

The printer has two USB ports; USB Device port for connecting with a host device such as a computer, and USB Host port for connecting with an external device such as DSC (Digital Still Camera).

Table 1-13. USB Interface Specification

Item	USB Device Port	USB Host Port*
Standard	• Universal Serial Bus Specifications Revision 2.0 • Universal Serial Bus Device Class Definition for Printing Devices Version 1.1 • Universal Serial Bus Mass Storage Class Bulk-Only Transport Revision 1.0	• Universal Serial Bus Specifications Revision 2.0
Transfer rate	480 Mbps (High Speed)	
Data format	NRZI	
Compatible connector	USB Series B	USB Series A
Maximum cable length	2 m or less	

Note* : The following devices can be connected to the USB Host port.

    • DSC compliant with CIPA DC-001-2003 Rev.2.0 (PictBridge) Specification.

    • Devices compliant with Universal Serial Bus Mass Storage Class Bulk-Only Transport Revision 1.0, and the Subclass code is one of the followings.

    0x06 (SCSI transparent command set)

    0x05 (SFF-8070i command set)

    0x02 (SFF-8020i command set)

Table 1-14. Device ID

When IEEE 1284.4 is Enabled	When IEEE 1284.4 is Disabled
MFG:EPSON; CMD:ESCPL2,BDC,D4,D4PX,ESCPR1; MDL:*Model Name*; CLS:PRINTER; DES:EPSON<SP>*Model Name*; CID:EpsonRGB;	MFG:EPSON; CMD:ESCPL2,BDC,ESCPR1; MDL:*Model Name*; CLS:PRINTER; DES:EPSON<SP>*Model Name*; CID:EpsonRGB;

Note : The "*Model Name*" is replaced as shown below.

    Europe: Stylus Photo PX650

    Asia/Pacific/CISMEA:Stylus Photo TX650

1.5.2 Memory Card Slots

CAUTION ⚠	**If you insert a Memory Stick DUO to the Memory Card Slot without using the adapter, make sure to turn off the printer first, then remove the card using tweezers.**

Table 1-15. List of Supported Memory Card

Priority	Slot	Compatible memory card	Standard	Max. capacity*1	Remarks
1	Memory Stick/ Memory Stick PRO	Memory Stick	"MemoryStick Standard" Format Specification Ver.1.43-00 compatible	128MB	Includes versions with memory select function
		MagicGate Memory Stick	---	---	Copy protection function is not supported
		MagicGate Memory Stick Duo	---	---	An adapter should be used
		Memory Stick PRO	Memory Stick PRO Format Specifications-without security Ver.1.02-00 compatible	32GB	Copy protection function is not supported
		Memory Stick Duo	MemoryStick Duo Format Specification Ver.1.10-00 compatible	---	The Memory Stick Duo adapter should be used
		Memory Stick Pro Duo Memory Stick Pro HG Duo	MemoryStick PRO Duo Format Specification Ver.1.02-00 compatible	---	The Memory Stick Duo adapter should be used
		Memory Stick micro	Memory Stick Micro Format Specification Ver.1.02-00 compatible	---	The Memory Stick adapter for standard size should be used.
	SD/MMC	SD (Security Digital)	SD Memory Card Specifications / PART1. Physical Layer Specification Ver. 2.0 compatible	2GB	---
		miniSD/microSD			The SD adapter should be used
		SDHC		32GB	Speed Class is not supported
		miniSDHC/microSDHC			The SD adapter should be used Speed Class is not supported
		MultiMediaCard MultiMediaCard Plus MMC Mobile/MMC micro	MultiMediaCard Standard Ver. 4.2 compatible	4GB/32GB	Only MultiMediaCard Plus supports 4GB
	xD-Picture card	xD-Picture card*2	xD-Picture Card Specification Ver.1.20 compatible	2GB	Type M/H supported
2	Compact Flash	Compact Flash	CompactFlash Specification Revision 2.1 compatible	32GB	Type-I/Type-II<Storage Card only>
		Microdrive	---	---	CF+Type2 <HDD>

Note　*1 :　It is necessary to format media for capacity to exceed 2GB with FAT32.
　　　*2 :　On the xD-Picture Card specification, FAT32 Format is not provided. A printer doesn't recognized it when the xD-Picture Card is formatted with FAT32.
Note:　• Memory Stick/PRO, SD/MMC and xD-Picture Card shares the same slot.
　　　• When cards are inserted in the two slots at once, the slot which will be accessed first is determined according to the priority shown in the table.
　　　• To select a card that has been inserted in a non-active slot, first remove the card in the active slot.
　　　• In memory card direct printing mode, the image files in the active slot are valid and have assigned frame numbers. The number of images will not change if a card is inserted in another nonselected slot.
　　　• When the card inserted in the slot is accessed from the PC, only one drive is displayed at a time as a removable disk* and only the card that is in the active slot can be accessed via the removable disk. A card that has been inserted into a non-selected slot cannot be accessed. (This is for Windows. For Macintosh, the card in the active slot will be mounted on the desktop.)
　　　• Does not support 5V type of memory cards.
　　　• When a memory card is being accessed, do not touch the memory card.
　　　• For detailed information on the supported file system and formatting the memory card, refer to "1.7.2 Memory Card Direct Print Function *(p.23)"*.

1.6 Control Panel

1.6.1 Operation Buttons & LED

The following tables explain the functions of the buttons and LEDs on the control panel.

Table 1-16. Operation Buttons & LEDs

Button/LED		Function
Button	Power	Turns the power ON/OFF.
	Start	Starts printing.
	Copy	Goes to the stand alone copy mode.
	Memory Card	Goes to the memory card direct print mode.
	Specialty Print	Goes to the special mode that provides Reprint/Restore Photos and Print on CD/DVD functions.
	Stop/Clear	• Stops operation and displays the menu screen. • Stops printing and ejects paper. • Returns the print settings of the current mode to their default and displays the Top screen. (Returns to the previous screen during printing maintaining the current settings)
	Setup	Goes to the Setup mode that provides maintenance menu (head cleaning, head alignment, etc.) and various option setting menu.
	Display/Crop	• Goes to the zoom setting screen for the selected image. • Changes the image preview layout (1-up, 9-up, etc.) on the LCD.
	Menu	Goes to the print setting menu screen.
	OK	Accepts the changed settings.
	Back	Cancels the previous operation.
	Cross Key (up/down/left/right)	Selects a menu item of setting value.
	+	Sets the number of copies.
	-	
LED*	Power	Indicates the power On/Off status.
	Mode	Lights during the corresponding mode is selected.

Note * :   See Table 1-17 on page 20 for more information on the LEDs.

Table 1-17. LED Functions

Printer Status	Power LED	Mode LED
Power-on sequence	Flashing	OFF
Power-off sequence	Flashing	The current mode LED lights*
Fatal error	Flashing	All the mode LEDs flash
Standby/The panel being operated	ON	The current mode LED lights*
Printing/Scanning	Flashing	The current mode LED lights*
Printing from an external device (PC/camera)	Flashing	The current mode LED lights*
Running a head cleaning		
Running a nozzle check		
Printing head alignment pattern		
Canceling a print job		
Backup of memory card, or Scan to Memory function is in process		
Running a slide show	ON	The memory card mode LED lights
Displaying the screen-saver	ON	The current mode LED lights*
Power save mode	ON	Flashing each mode LED one by one.

Note* : In the Setup mode, the mode LED corresponds to the previous mode lights.
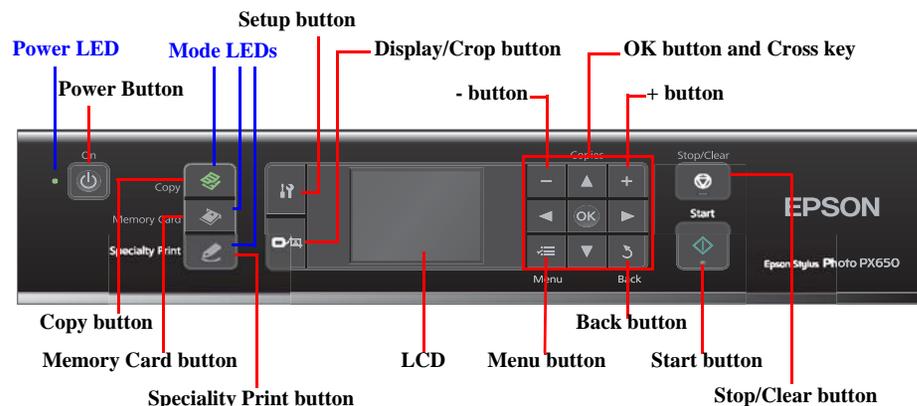
Figure 1-5. Control Panel (Europe Version as a Sample)

1.7 Specifications of Each Function

1.7.1 Stand-alone Copy Function

1.7.1.1 Copy print mode and available paper type/size and print layout

Table 1-18. Copy Print Mode & Available Paper Size by Layout

Paper Type	Quality	Resolution (H x V) dpi	Dot Size	Bi-D	Micro Weave	Available Paper Size by Print Layout					
						With Border	**Borderless**	**Repeat Auto**	**Repeat 4**	**2-up**	**CD**
Plain Paper	Draft	360 x 180	Eco	ON	OFF	A4, A5	---	---			
	Standard	360 x 360	MC2-1	ON	OFF	A4, A5	---	A4			CD/DVD
	Best	720 x 720	MC1-1	ON	ON	A4, A5	---	A4			CD/DVD
Matte	Standard	5760 x 1440	MC2-2	ON	ON	A4					---
	Best	5760 x 1440	MC1-5	ON	ON	A4					---
Photo Paper	Standard	720 x 720	MC1-2	ON	ON	10 x 15 cm (4" x 6")				---	---
			MC2-2	ON	ON	A4, 13 x 18 cm (5" x 7")				A4	---
	Best	5760 x 1440	MC1-5	ON	ON	A4, 13 x 18 cm (5" x 7"), 10 x 15 cm (4" x 6")				A4	---
Glossy	Standard	720 x 720	MC1-2	ON	ON	10 x 15 cm (4"x6")				---	---
			MC2-2	ON	ON	A4, 13 x 18 cm (5"x7")				A4	---
	Best	5760 x 1440	MC1-5	ON	ON	A4, 13 x 18 cm (5" x 7"), 10 x 15c m (4" x 6")				A4	---
Prem. Glossy	Standard	720 x 720	MC1-2	ON	ON	10 x 15 cm (4" x 6")				---	---
			MC2-2	ON	ON	A4, 13 x 18 cm (5" x 7")				A4	---
	Best	5760 x 1440	MC1-5	ON	ON	A4, 13 x 18 cm (5" x 7"), 10 x 15 cm (4" x 6")				A4	---
Ultra Glossy	Standard	720 x 720	MC1-2	ON	ON	10 x 15 cm (4" x 6")				---	---
			MC2-2	ON	ON	A4, 13 x 18 cm (5" x 7")				A4	---
	Best	5760 x 1440	MC1-5	ON	ON	A4, 13 x 18 cm (5" x 7"), 10 x 15 cm (4" x 6")				A4	---
CD/DVD	Best	5760 x 1440	MC1-5	ON	ON	---					CD/DVD

1.7.1.2 Stand-alone Copy Menu

Table 1-19. Copy Menu

Menu Item		Function
Number of copies		Sets number of copies within the range of 1 to 99.
Copy type		Selects either color or monochrome.
Document		Selects the document type from "Text", "Graphics", and "Photo".
Layout		Selects print layout from the options listed in Table 1-20.
Print Settings	Paper type	Selects paper type from the options listed in Table 1-18.
	Paper size	Selects paper size from the options listed in Table 1-18.
	Quality	Selects print quality from the options listed in Table 1-18.
	Zoom	Selects scaling factor from the preset factors listed in Table 1-21, Auto Fit Page, or specifies a desired scaling factor within the range of 25 to 400%.
	Density	Selects from the nine density levels of -4 to +/-0 to +4.
	Expansion	Selects the margins level (margins bleed off the edges of paper) from the Standard (100%), Mid. (50%) or Min. (25%).
	CD Inner-Outer	Specifies the printing range on a CD/DVD by entering outer and inner diameter of a CD/DVD. Outer: specifies within the range of 114 to 120 mm Inner: specifies within the range of 18 to 46 mm

1.7.1.3 Copy Layout & Preset Scaling Factors

Available print layout and scaling factors in the stand-alone copy mode are as follows.

Table 1-20. Copy Layout

Layout	Description
With Border	Makes a copy with 3 mm of left/right/top/bottom white margins.
Borderless	Makes a copy with no white margins.
CD/DVD Copy	Makes a copy of a CD/DVD label directly on a CD/DVD.
Repeat Copy	Makes a specified number of copies of one document on a sheet of selected sized paper.
Repeat Copy-4	Makes four copies of one document on a sheet of selected sized paper.
2-up Copy	Makes a copy of two A4 or letter sized documents on a sheet of A4 or letter sized paper.

Table 1-21. Preset Scaling Factors

Zoom Menu Items	Scaling Factor*	
	With Border	Borderless
10 x 15 cm $\rightarrow$ A4	195%	215%
A4 $\rightarrow$ 10 x 15 cm	47%	55%
13 x 18 cm $\rightarrow$ 10 x 15 cm	77%	91%
10 x 15 cm $\rightarrow$ 13 x 18 cm	115%	132%
A4 $\rightarrow$ A5	69%	74%
A5 $\rightarrow$ A4	141%	147%

Note* : A scaling factor corresponds to the selected copy layout and zoom setting is displayed on the LCD.

1.7.1.4 Copy Speed

Table 1-22. Copy Speed

Copy Conditions (e-memo3, Letter, Plain Paper)		Copy Speed
Draft 360 x 180	Monochrome copy	35 cpm
	Color copy	35 cpm
Default 720 x 360	Monochrome copy	10 cpm
	Color copy	10 cpm

1.7.2 Memory Card Direct Print Function

1.7.2.1 Memory card direct print mode and available paper type/size and print layout

Table 1-23. Memory Card Direct Print Mode & Available Paper Size by Layout

Paper Type	Quality	Resolution (H x V) dpi	Dot size	Bi-D	Micro Weave	With Border	Border-less	P.I.F. (Single/ Multi)	Upper 1/2	2-up	4-up	8-up	20-up	16-up	30-up	80-up	Photo ID
Plain Paper	Standard	360 x 360	MC2-1	ON	OFF	A4	---	A4	---	A4				---		A4	---
Plain Paper	Best	720 x 720	MC1-1	ON	ON	A4	---	A4	---	A4				---		A4	---
Matte	Standard	5760 x 1440	MC2-2	ON	ON	A4								---		A4	---
Matte	Best	5760 x 1440	MC1-5	ON	ON	A4								---		A4	---
Photo Paper	Draft	720 x 360	MC1-1	ON	ON	A4, 13 x 18 cm (5" x 7"), 10 x 15 cm (4" x 6"), 16:9wide				A4, 13 x 18 cm (5" x 7"), 10 x 15 cm (4" x 6")				---	13 x 18 cm (5" x 7")	A4	10 x 15 cm (4" x 6")
Photo Paper	Standard (MC1-2)	720 x 720	MC1-2	ON	ON	10 x 15cm (4" x 6")								---	---		10 x 15 cm (4" x 6")
Photo Paper	Standard (MC2-2)	720 x 720	MC2-2	ON	ON	A4, 13 x 18 cm (5" x 7"), 16:9wide				A4, 13 x 18 cm (5" x 7")				---	13 x 18 cm (5" x 7")	A4	---
Photo Paper	Best	5760 x 1440	MC1-5	ON	ON	A4, 13 x 18 cm (5" x 7"), 10 x 15 cm (4" x 6"), 16:9wide				A4, 13 x 18 cm (5" x 7"), 10 x 15 cm (4" x 6")				---	13 x 18 cm (5" x 7")	A4	10 x 15 cm (4" x 6")
Glossy	Draft	720 x 360	MC1-1	ON	ON	A4, 13 x 18 cm (5" x 7"), 10 x 15 cm (4" x 6")								---	13 x 18 cm (5" x 7")	A4	10 x 15 cm (4" x 6")
Glossy	Standard (MC1-2)	720 x 720	MC1-2	ON	ON	10 x 15 cm (4" x 6")								---	---		10 x 15 cm (4" x 6")
Glossy	Standard (MC2-2)	720 x 720	MC2-2	ON	ON	A4, 13 x 18 cm (5"x7")								---	13 x 18 cm (5" x 7")	A4	---
Glossy	Best	5760 x 1440	MC1-5	ON	ON	A4, 13 x 18 cm (5"x7"), 10 x 15 cm (4" x 6")								---	13 x 18 cm (5" x 7")	A4	10 x 15 cm (4" x 6")
Prem. Glossy	Draft	720 x 360	MC1-1	ON	ON	A4, 13 x 18 cm (5" x 7"), 10 x 15 cm (4" x 6"), 16:9wide				A4, 13 x 18 cm (5"x7"), 10 x 15 cm (4" x 6")				---	13 x 18 cm (5" x 7")	A4	10 x 15 cm (4" x 6")
Prem. Glossy	Standard (MC1-2)	720 x 720	MC1-2	ON	ON	10x15 cm (4" x 6")								---	---		10 x 15 cm (4" x 6")
Prem. Glossy	Standard (MC2-2)	720 x 720	MC2-2	ON	ON	A4, 13 x 18 cm (5" x 7"), 16:9wide				A4, 13 x 18 cm (5"x7")				---	13 x 18 cm (5" x 7")	A4	---
Prem. Glossy	Best	5760 x 1440	MC1-5	ON	ON	A4, 13 x 18 cm (5" x 7"), 10 x 15 cm (4" x 6"), 16:9wide				A4, 13 x 18 cm (5" x 7"), 10 x 15 cm (4" x 6")				---	13 x 18 cm (5" x 7")	A4	10 x 15 cm (4" x 6")
Ultra Glossy	Standard (MC1-2)	720 x 720	MC1-2	ON	ON	10 x 15 cm (4" x 6")								---	---		10 x 15 cm (4" x 6")
Ultra Glossy	Standard (MC2-2)	720 x 720	MC2-2	ON	ON	A4, 13 x 18 cm (5" x 7")								---	13 x 18 cm (5" x 7")	A4	---
Ultra Glossy	Best	5760 x 1440	MC1-5	ON	ON	A4, 13 x 18 cm (5" x 7"), 10 x 15 cm (4" x 6")								---	13 x 18 cm (5" x 7")	A4	10 x 15 cm (4" x 6")
Photo Sticker 16	Standard	720 x 720	MC2-2	ON	ON	---								A6	---		
Photo Stickers	Standard	720 x 720	MC2-2	ON	ON	100 x 148 mm	---			100 x 148 mm				100 x 148 mm	---		

1.7.2.2 Supported File Type and Media Type

The following describes the file system, media format, and file type supported by the memory card direct function.

Table 1-24. Supported File System, Types and Media Format

Item		Specification
File System		DCF Version 1.0 or 2.0 [1] compliant. Other than those does not ensure proper operation. File systems available with the card reader are restricted by the host's specification.
Media format	Memory card	• DCF Version 1.0 or 2.0 compliant • DOS FAT format (FAT12/FAT16/FAT32 [2]) with single partition (basic partitioned)
	CD-R	ISO9660 Level1 (Joliet) format
	DVD	ISO9660 Level1 (Joliet), or ISO9660 Level1 (Joliet) & UDF Bridge format[3]
File type	JPEG (*.JPG)	Image files conform to Exif Version 2.21. (Exif version 1.0/2.0/2.1/2.2/2.21 are supported)
	TIFF (*.TIFF)	Image files conform to Exif Version 2.21. (Exif version 1.0/2.0/2.1/2.2/2.21 are supported)
	Camera definition file (*.MRK)	Camera definition files used for DPOF mode. "\MISC\AUTOPRINT.MRK" file is valid.
	P.I.F definition file (*.USD)	Print layout definition files compliant with PRINT Image Framer Rev.2.1 specifications. Files in"/EPUDL/" directory are valid.
	P.I.F definition file (*.FD2)	Print layout definition files compliant with PRINT Image Framer Rev.3.1 [4] specifications. Files in a memory card are valid.

Note *1: For more information on the DCF specifications, see "Camera File System Standard DCF Version 2.0, JEIDA-CP-3461".
 *2: Available only when the memory card supports FAT32.
 *3: UDF-formatted DVDs are not supported.
 *4: The memory card direct print functions supports level 1 of the P.I.F.Rev.3.1.

CHECK POINT ✔

The printer does not detect any files stored under the following directories or their sub-directories.
 • Directories containing system properties or hidden properties.
 • "RECYCLED" (Windows directory for deleted files)
 • "PREVIEW" (directories of CASIO DSC for thumbnail images)
 • "SCENE" (directories of CASIO DSC for its Best Shot function)
 • "MSSONY" (directories of SONY DSC for e-mail images, voice memos, movies, or non-compressed images)
 • "DCIM\ALBUM\IMAGE" (directories of CASIO DSC for its album function)

1.7.2.3 Specifications for Handling Image Data

Table 1-25. Specifications for Handling Image Data

Item	Specification	Remarks
Image size (pixel)	• Horizontal: $80 \leq X \leq 9200$ • Vertical:　　$80 \leq Y \leq 9200$	---
Maximum number of images	Up to 999 images	When a memory card stores 1,000 or more images, the first 999 images are detected and become valid in the printer. The detecting order varies depending on the folder configuration in the card, so which images are included in the first 999 cannot be defined. However, images specified by camera definition files can be selected to be printed even when the total number of images has exceeded 999. Up to 999 camera defined image files can be specified.
Maximum number of copies	99 copies for each image. Up to 999 sheets in total.	---
Valid date and time	01/01/1980 00:00:00 to 12/31/2099 23:59:59	---
Thumbnail image data	Supports DCF Ver.1.0 or 2.0-compatible data (Exif format, 160x120 pixels)	Thumbnail images are used for the Print Index Sheet function.
File sorting	The printer sorts image files in ascending ASCII order based on their full-pathnames such as "\DCIM\100EPSON\EPSN0000.JPG", and assigns a number to each of them.	• The image number assigned by the printer may be different from that assigned by the camera. • If two or more files have the same full pathname, the sorting function may not operate properly. (existence of the same full-pathname is not allowed under DOS)

Table 1-25. Specifications for Handling Image Data

Item	Specification	Remarks
Acquisition of date and time information	The printer acquires date and time information included in image files in the order of precedence shown below. 1. Date and time information in digital camera standard format (Exif) 2. Date and time information applied on DOS-compliant file system. 3. Fixed date and time information (01/01/1980, 00:00:00)	Date and time information included in an image file is not always the shooting date and time. It changes each time the image is edited and restored. The printer acquires the latest date and time information.
Camera shooting information	The following shooting information conforms to Exif standard can be printed with the images. • Exposure time/Shutter speed (example: 1/30s) • F-measure (example: F2.8) • ISO film speed (example: ISO100)	When both an exposure time and shutter speed information exist, the exposure time is printed. No information is printed if the Exif-compliant photo data has no information.

CHECK POINT ✔

Embedded rotation tag of an image associated with a P.I.F. script
The image's rotational direction specified by a tag embedded in the image file associated with a P.IF. script is always applied when the image is printed using the stand-alone function. Therefore, if a P.I.F. file (layout file) that has not been associated with any images is specified to print an image, the printout result (the image rotational direction) may differ whether the image has been associated with another P.I.F.3 script or not.

1.7.2.4 Memory Card Direct Print Menu

Table 1-26. Memory Card Mode Menu

Menu Item	Function
View and Print Photos[*1,2]	Prints the selected images.
Print All Photos[*1,2]	Prints all images in a memory card. Specified number of copies is applied to the all images (the default is 1 copy). Specifying it for each of the images independently also can be made in the preview screen.
Print by Date[*1]	The date of the images are listed in the descending order with the number of images by date. Selecting date from the list selects the images that has the selected date information. Specified number of copies is applied to the selected images (the default is 1 copy). Specifying it for each of the images independently also can be made in the preview screen.
Print Index Sheet	**Print Index Sheet** Prints an index sheet that prints images in a memory card in thumbnailed form. The number of images to be included in the sheet can be selected from the following four options. "All image" (default), "Latest 30", "Latest 60", "Latest 90"[*4] **Make Prints from Index Sheet** Scans the index sheet, and prints images according to markings written on the sheet.
Slide Show[*3]	Starts a slide show on the LCD. Images in a memory card is displayed one by one in the order sorted by the printer. Printing one of the images can be made from the paused screen.
Scan to Memory Card	Stores an image scanned by the scanner directly into a memory card. The format in which to save the file can be selected from JPEG and PDF.

Note *1: 0 to 99 copies can be specified for each of the images. Up to 999 copies in total.
*2: The images are listed in ASCII descending order.
*3: While performing the slide show, displaying number of copies, printing from an external device or from a computer cannot be made.
*4: "Latest 60" and "Latest 90" are displayed on the LCD depending on the number of images in the memory card.

CHECK POINT ✔

Automatic Detection of Images in Media
• When a memory card is inserted;
The printer automatically searches for all images stored in the memory card and displays them on the LCD.
• When an external storage device is connected;
If the media in the connected device includes a backup folder, a folder selection screen appears. The printer automatically searches for all images in the selected folder and displays them on the LCD. When the backup file does not exist, all images in the media are searched for and displayed.

1.7.3 Backup Function

The Backup Memory Card function provided in the Setup mode allows the user to make a backup copy of a memory card on a media in an external device. Printing the backed up images directly from the external device also can be made.

1.7.3.1 Backup Function Specifications

Table 1-27. Basic Specifications

Item	Specification
Source media	A memory card conforms to the specifications described in Table 1-24, and that is inserted into the active slot.
Destination media	Supports the following media in an external device connected via the USB Host port. (See Table 1-13 ?USB Interface Specification? on page 18 for information on the available external devices) • MO: 128MB/230MB/640MB/1.3GB • CD-R: 650MB/700MB [*1,2] • DVD-R: 4.7GB[*2] • USB flash memory[*3]
Target files	All image files in the source media except the following files. • Files that have hidden attribute or system attribute. • Files of which the size is 0 (zero) byte.
Operations disabled during the backup	In order to prevent the possible corruption of data, the following operations are disabled during the backup. • Access from a computer or via a network • Automatic ejection of the destination media • ON/OFF of the printer power

Note *1: A backup on 700MB or larger size CD-R is not ensured.
   *2: The CD-R/DVD-R must be formatted as described in Table 1-24.
   *3: The printer cannot recognize USB flash memory that incorporates a hub.

CHECK POINT ✔

■ **Due to the file system restriction, a backup of a memory card that has eight or more levels deep in folder hierarchy cannot be made on an ISO9660 Level 1-formatted CD-R.**
■ **Due to the logical format of the CD/DVD, the pathname length is restricted as described below;**
  • Destination media: ISO9660: up to 255 byte
    Joliet: up to 240 byte
  • Source media: Memory card (FAT12/16/32): up to 260 byte

Table 1-28. Specifications on Writing Backup Data

Item	Specification
Folder hierarchy	A backup folder is automatically created on the destination media to save the backup data keeping the original folder hierarchy[*1] under the folder. A number (001 to 999) is assigned as the folder name.
Format	The printer automatically formats the destination media in a supported format if the media is rewritable and detected as unformatted or formatted in unsupported format.
File name	Because ISO9660 Level1 format is used to write backup data to a CD/DVD, double-byte characters are not allowed to be used for the folder or directory names. Any file or directory names that include double-byte characters are automatically changed in accordance with the rule described below. • A file name is changed to "EPSONxxx"[*2] • A directory name is changed to "EPDIRxxx"[*2] • Replaces an unsupported character in the extension with "_" (underbar)

Note *1: As a backup to CD/DVD media requires time, a folder hierarchy definition file (EPBKINF.DAT) is first created under the backup folder.
   *2: xxx stands for a 3-digit number. The number is automatically assigned from 001 in each folder of directory.

CHECK POINT ✔

The maximum number of writing times
• FAT12/16-formatted media: up to 512 times (001 to 512)
  If any files other than backup folders exist in the route directly, the max. number of writings becomes less than 512 due to the MS-DOS restriction. When more than 512 times of writing history of an inserted MO is detected, the printer handles it as a backup error (file name, to folder hierarchy error).
• CD-R: 640MB: up to 47 times
        700MB: up to 50 times
  This is because each session information must be saved.
• DVD-R: 4.7GB: up to 274 times
  This is because each session information must be saved.

☐ **Other restrictions on the backup function**

■ The printer does not have the function to write a backup data on an external media back to a memory card in order to prevent the possible corruption of data.

■ Since the printer does not have calendar function, created date and time of backup files is the date and time initially assigned or updated by a device other than the printer.

1.7.3.2 Backup Errors

If a backup operation is cancelled voluntarily or due to an error, a "Backup canceled" message appears with a hexadecimal 8-digit error code on the LCD. The following table lists the leftmost two-digit error codes that are controlled by the printer firmware. For explanations on other backup errors, see "3.2.1 Error List *(p.43)*".

Table 1-29. Backup Error FW Control Code List

Code	Meaning	Code	Meaning
0x00	No error	0xC0	No files to be backed up
0x10	Album function error	0xE7	Parameter error
0x20	Backup function error	0xE8	File open error
0xA0	Other ATAPI/SCSI command error	0xE9	Internal buffer overflow
0xA1	ModeSense command error	0xEA	CD/DVD format error
0xA2	ModeSelect command error	0xEB	Not used
0xA3	Get Disc Information command error	0xEC	Insufficient memory
0xA4	Get Track Information command error	0xED	Some data exist in the destination directory
0xA5	Synchronize Cache command error	0xEE	Not used
0xA6	CloseSession command error	0xEF	Write-protect error
0xA7	Read command error	0xF0	Read/write error
0xA8	Write command error	0xF1	Invalid file open mode
0xA9	Set Speed command error	0xF2	Seek error
0xAA	Eject command error	0xF3	Overflow of root directory
0xAB	Drive lock command error	0xF4	Overflow of file descriptor
0xAC	GetConfigration command error	0xF5	Invalid path name
0xAD	Verify command error	0xF6	No file exist
0xAE	Device error	0xF7	Medium was exchanged
0xB8	Short file name convert error	0xF8	Unformatted medium
0xB9	Unsupported device	0xF9	Device is not ready
0xBA	No medium	0xFA	Invalid device handle
0xBB	Not writable medium	0xFB	Invalid file descriptor
0xBC	Unsupported medium	0xFC	Not used
0xBD	Hierarchical directory error	0xFD	Backup initialization failed
0xBE	Path length is too long	0xFE	Acquiring memory pool failed
0xBF	File name is too long	0xFF	System error

1.7.4 Camera Direct Print Function (PictBridge)

Printing operations (selecting images to be printed, making print settings, starting/canceling printing, and monitoring print process) can be carried out from a directly connected DSC (Digital Still Camera) that conforms to the standard described below.

1.7.4.1 Available DSC

Those DSCs which are compliant with one of the following standards.

■ "CIPA DC-001-2003 Digital Photo Solutions for Imaging Devices" (DPS Version 1.0)

■ "CIPA DC-001-2003 Rev.2.0 Digital Photo Solutions for Imaging Devices" (DPS Version 1.1).

1.7.4.2 Print Settings Available from DSC

The following print settings can be made from the DSC. However, depending on the DSC, some of the settings may not be available.

Table 1-30. Print Settings Available from DSC

Item	Specification
How to specify images	Single Sheet/Multiple Sheet/DPOF specified/XHTML-Print
Paper type	Plain Paper/Prem. Glossy
Paper size	10 x 15 cm (4" x 6"), 13 x 18 cm (5" x 7"), A4, 16:9 wide, CD/DVD
Layout	Borderless, With Border, 2-up, 4-up, 8-up, 20-up, Index
Date	On/Off
Quality	Draft/Standard/Best
Auto Correct	On/Off
Fit to Frame	On/Off
Print Image Framer	Not available
Control of printer	The following operations are available; Getting the printer status, starting a print job or canceling it immediately or after printing the current page is finished.

1.7.4.3 General Operation Procedure

> **CHECK POINT** ✔
>
> **Before connecting the DSC, check that the printer is in the following status.**
> - No print job from a computer is processed or performed.
> - Direct print from a memory card is not processed or performed.
> - Stand alone copy using the scanner function is not operating.
> - Backup of a memory card is not proceeded.
> - No error is occurring such as paper out error or ink out error.

The DSC direct print procedure differs depending on the DSC specifications.The following explains common procedure.

1. Setting on the printer
   Before connecting a DSC with a USB cable, make the print settings such as paper type/size, layout setting on the printer. This may not be required for some DSCs.

2. Setting on the DSC
   Make the following settings on the DSC before connecting it to the printer. Some DSCs may require to first connect to the printer for making the settings.

   - When printing multiple images, specify images and number of copies using the DPOF and Multiple Sheet menus. The menus may not be available on some DSCs.
   - When printing a single image, specify an image and the number of copies. Specifying the number of copies may not be available on some DSCs.
   - Select the paper type/size, layout, and make the Fit to Frame setting if necessary. These settings may not be available on some DSCs.

3. Starting to print
   When the print settings on both the printer and the DSC is completed, follow the procedure below to start printing.

   1. Connect the printer and the DSC with a USB cable. Using a USB cable included in the DSC package is recommended.
   2. Operate the DSC to start printing.
   3. Printing is carried out according to the settings made on the DSC. When some print settings have not been made on the DSC, the corresponding settings made on the printer are applied.

1.7.4.4 Operating Specifications during Connecting DSC

Table 1-31. Operations during Connecting DSC

Operation	Specifications
Connecting DSC (print start)	When a DSC is connected as described in "1.7.4.3 General Operation Procedure *(p.28)*" Step 3-(1), PictBridge logo is displayed on the LCD.
Canceling printing	A print job can be canceled from the DSC. The [Stop/Clear] button on the control panel also cancels the print job.
After printing is completed	When performing memory card direct print after printing from a DSC, the USB cable connecting the DSC must be disconnected from the printer in advance.
Exclusion control	Print settings made on both the DSC and the printer can become impossible settings for the printer due to unsupported combination of paper type, paper size and layout. In such case, the settings made on the DSC are maintained and any print setting items that are not specified by the DSC are changed in accordance with the DSC settings. When the paper type is changed, changed to Prem. Glossy, when the paper size is changed, changed to 4" x 6" size, and when the layout is changed, changed to Borderless layout.

1.7.5 Specialty Print Functions

1.7.5.1 Specialty print functions and available paper type/size and print layout

Paper Type	Quality	Resolution (H x V) dpi	Dot size	Bi-D	Micro Weave	Reprint/Restore Photos Borderless	With Border	CD Print 1-up	4-up	8-up	12-up	CD Jacket Jewel Upper	Jewel Index
Plain Paper	Standard	360 x 360	MC2-1	ON	OFF	---		---				A4	
	Best	720 x 720	MC1-1	ON	ON			CD/DVD					
Matte	Standard	5760 x 1440	MC2-2	ON	ON	A4		---				A4	
	Best	5760 x 1440	MC1-5	ON	ON	---							
Photo Paper	Draft	720 x 360	MC1-1	ON	ON	---		---				A4	
	Standard	720 x 720	MC1-2	ON	ON	10 x 15 cm (4" x 6")						---	
			MC2-2	ON	ON	A4, 13 x 18 cm (5" x 7")						A4	
	Best	5760 x 1440	MC1-5	ON	ON	---							
Glossy	Draft	720 x 360	MC1-1	ON	ON	---		---				A4	
	Standard	720 x 720	MC1-2	ON	ON	10 x 15 cm (4" x 6")						---	
			MC2-2	ON	ON	A4, 13 x 18 cm (5" x 7")						A4	
	Best	5760 x 1440	MC1-5	ON	ON	---							
Prem. Glossy	Draft	720 x 360	MC1-1	ON	ON	---		---				A4	
	Standard	720 x 720	MC1-2	ON	ON	10 x 15 cm (4" x 6")						---	
			MC2-2	ON	ON	A4, 13 x 18 cm (5" x 7")						A4	
	Best	5760 x 1440	MC1-5	ON	ON	---							
Ultra Glossy	Standard	720 x 720	MC1-2	ON	ON	10 x 15 cm (4" x 6")		---				---	
			MC2-2	ON	ON	A4, 13 x 18 cm (5" x 7")						A4	
	Best	5760 x 1440	MC1-5	ON	ON	---							
CD/DVD	Best	5760 x 1440	MC1-5	ON	ON	---		CD/DVD				---	

1.7.5.2 Specialty Print Mode
The following explains each of the functions provided in the Specialty Print mode.

1.7.5.2.1 Print on CD/DVD Function
This function allows the user to print an image in a memory card directly on a CD/DVD. Printing a CD jacket on A4 or letter size paper is also provided.

1.7.5.2.2 Reprint/Restore Photos Function
This function allows the user to copy their silver halide film-based pictures. The printer scans the pictures automatically detecting them as silver halide film-based picture, and makes a copy of them. The following explains the specifications of the function.

- Available picture size: 30 x 40 mm to 127 x 178 mm (5" x 7")

- Lay the pictures on the glass face down. The number of pictures available at one time is as follows:

  • 4" x 6" or smaller: up to 2 pictures
  • 5" x 7":   up to 1 picture

- The spaces required between the pictures:

  • 5 mm or more space from the right and front edges of the document glass.
  • 5 mm or more space between pictures.

- The pictures must not be tilted.
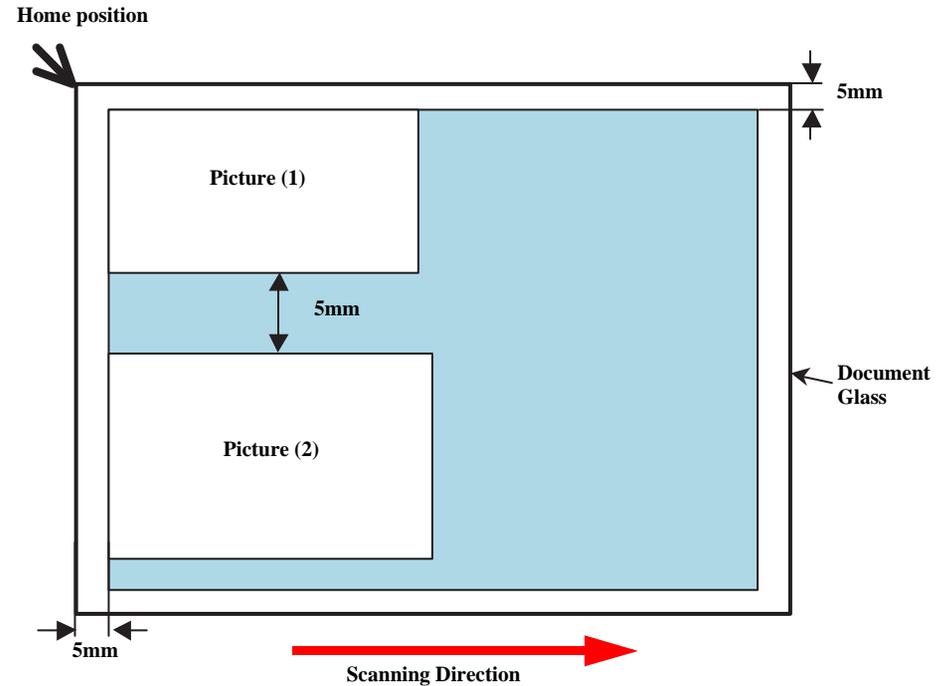
**Figure 1-6. Laying Silver Halide Pictures**

1.7.6 Setup Mode

The Setup mode provides maintenance menus and various configuration setting menus. The following explains about the menu functions.

1.7.6.1 Maintenance Menu

Table 1-32. Maintenance Menu Functions

Item	Function
Nozzle Check	A nozzle check pattern to check the Printhead nozzles status is printed. A head cleaning can be run if necessary. Figure 1-7 shows the nozzle check pattern printed by the printer.
Head Cleaning	Runs a printhead cleaning. The cleaning cannot be made when low ink level is detected. In such case, an ink low error is displayed instead of running the cleaning.
Head Alignment	An adjustment to ensure the bi-directional print quality. Follow the instructions displayed on the LCD to carry out the adjustment. The default value for each of the four modes is "5", and can be changed within the range of 1 to 9.
Change Ink Cartridge	Runs an ink cartridge replacement sequence. The sequence also can be run from the Ink Levels menu or by following the instructions on the LCD when an ink-related error occurs.
Thick Paper	Setting to "On" widens the platen gap to reduce friction between the printhead and thick paper. The setting is applied until the printer power is turned off, and returns to the default (Off) at the next power-on. • Off: normal platen gap is applied. • On: the wider platen gap is applied.
Language	Changes languages.
Screen Saver Settings	By setting to the "Memory Card Data", the printer automatically runs a slide show using images in a memory card as a screen saver when no control panel operation has been made for 180 seconds in standby mode. If no memory card is inserted, or when this is set to "Off", the LCD display does not change.
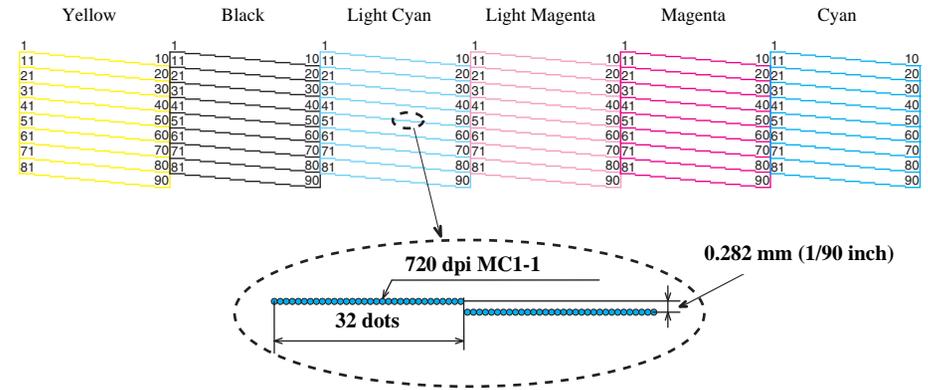
Note : The numbers shown in the figure are nozzle numbers. The numbers and the color names are not printed on an actual nozzle check pattern.

Figure 1-7. Nozzle Check Pattern

> **CAUTION**
> - If the printer power is turned Off during printing the adjustment pattern or entering the adjustment value, the pattern print is canceled, and the values return to the default.
> - While the adjustment is carried out, the printer does not goes into the panel power save mode.

> **CHECK POINT**
> - If a paper out error occurs, load a paper and press the Start button to cancel the error state.
> - If a paper jam error occurs, press the Start button to eject the paper. If the paper is ejected normally, the printer recovers from the error and prints the adjustment pattern.

1.7.6.2 Ink Levels

The current ink levels of each of the cartridges are displayed in bar chart by the rules described below. After displaying the ink levels, the next operation to change the ink cartridge can be performed with "Change Cartridge".

- The bar chart is displayed in the order of yellow, black, light cyan, light magenta, magenta, and cyan from the left.
- When initial ink charge is completed, or after replacing the cartridge, the ink level becomes 100% (full).
- The ink level is indicated in increment of 1%. Lower than 1% is rounded down.
- When the ink level becomes lower than 10%, "!" icon appears to notify the user of the ink low status.

1.7.6.3 PictBridge Setup

The print settings to be used for the camera direct print (PictBridge) can be specified. When print settings (paper type, paper size, layout, quality, auto correct) are specified from the DSC, the DSC settings are applied and the settings made here are ignored. For more details, see "1.7.4 Camera Direct Print Function (PictBridge) *(p.28)"*.

1.7.6.4 CD/Sticker Print Position

The printing range when printing on a CD/DVD or a sticker can be adjusted.

1.7.6.5 Backup Memory Card

This menu allows the user to make a backup copy of a memory card on media in an external device. The "Folder Select" displays a folder selection screen to select the target folder in an external media to be printed.
The "Folder Select" menu item is disabled (grayout) in the following cases.

- When any external device is not connected

- When no image files is detected in the inserted memory card.

See "1.7.3 Backup Function *(p.26)"* for more information on the backup function.

1.7.6.6 Restore Default Settings

This menu allows to restore the default settings of the panel settings.

1.7.6.7 Bluetooth Settings

Bluetooth communication settings can be configured. This menu is enabled only when the optional Bluetooth unit is connected.

Table 1-33. Bluetooth Settings Sub Menus

Item	Explanation
BT PIN Code Set	Sets the passkey to request to an external device when accepting the communication request from the device. The setting range is 0000 to 9999.
BT Printer ID Set	Sets the printer ID to be identified in the Bluetooth communication when multiple same models exist. Enter a one-digit number (1 to 9, 0) to be appended as a suffix to the printer name. The change does not take effect until the printer is rebooted.
BT Mode	Selects the BT communication mode from the following three options. • Discoverable Allows an external device to search for the printer and the connection can be established. No authentication or passkey request is made by the printer. • Not Discoverable Does not allow an external device to search for the printer but the connection can be established. No authentication or passkey request is made by the printer. • Pairing Allows an external device to search for the printer and the connection can be established. The printer requests a passkey to the device. Once the connection is established, the printer remembers the device (only one device can be remembered), and does not request a passkey for the second or later access of the device.
BT Encryption	When this is set to "On", the Bluetooth communication data is encrypted and the printer requests device authentication.
BT Device Address	The physical address (unique value) of the Bluetooth module is displayed. The address is displayed in hexadecimal 12-digit numbers (xx-xx-xx-xx-xx-xx).

OPERATING PRINCIPLES

2.1 Overview

CHECK POINT ✔	**Description in this chapter is applied to Epson Stylus Photo PX650/ TX650/TX659/PX660/PX660 Premiun/Artisan 635.**

This section describes the operating principles of the printer mechanism of Epson Stylus Photo PX650/TX650/TX659/PX660/PX660 Premiun/Artisan 635.

2.1.1 Printer Mechanism

The printer mechanism of this product consists of the printhead, carriage mechanism, paper loading mechanism, paper feed mechanism, and the ink system.

As the conventional models, this product is equipped with two DC motors; one is used to drive the paper loading and paper feed mechanisms, and also the pump mechanism that includes the carriage lock mechanism. The other one is used to drive the carriage mechanism. Paper is fed from the rear at the ASF unit with the LD roller and Retard roller, and ejected to the front at the tray.
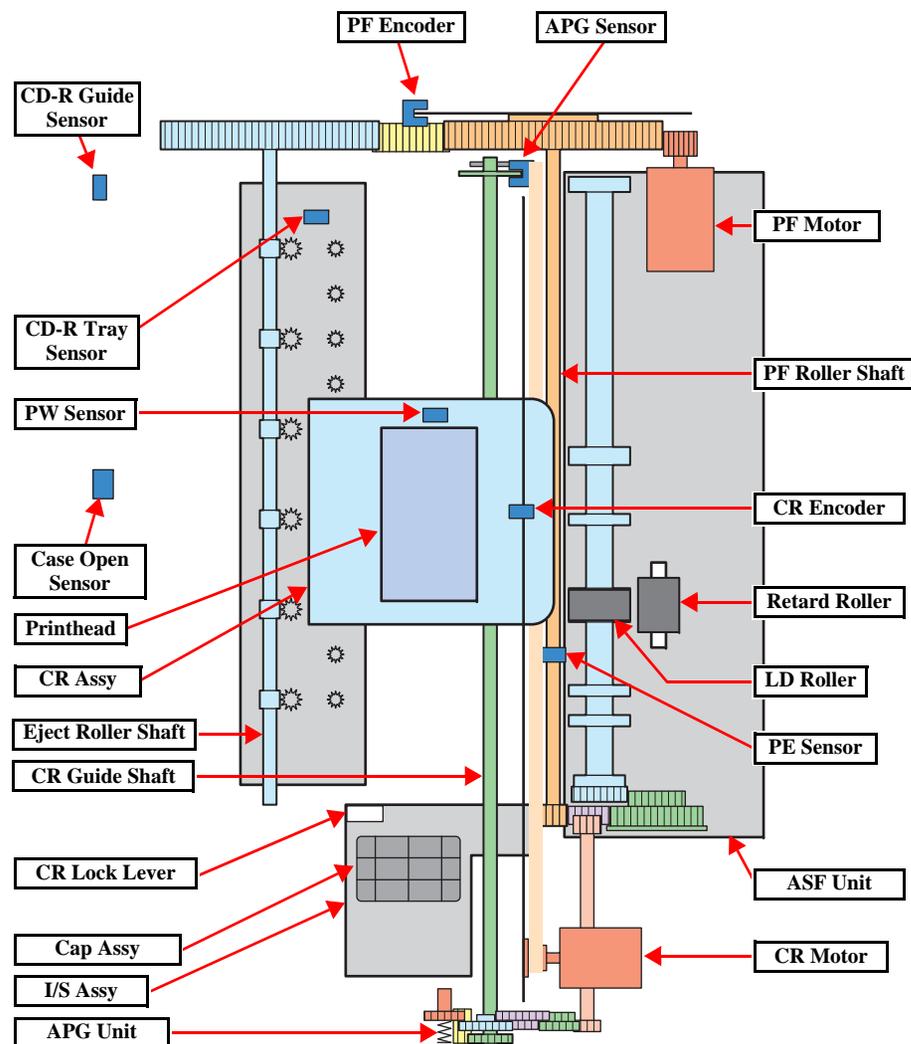

Figure 2-1. Schematic Printer Mechanism

2.1.2 Motors and Sensors

Epson Stylus Photo PX650/TX650/TX659/PX660/PX660 Premiun/Artisan 635 are equipped with the following printhead, motors and sensors.

Table 2-1. Motors and Sensors (Printer Mechanism)

No.	Name	Function
1	Printhead	F3-MACH Turbo 2 head (6 colors x 90 nozzles)
2	CR Motor	Type: DC motor Voltage: 42V DC ± 5% (voltage applied to the driver) Characteristics: Armature resistance : 22.7 Ω ± 10% Inductance : 17.5 mH ± 25% Drive system: PWM constant-current chopping system
3	PF Motor	Type: DC motor Voltage: 42V DC ± 5% (voltage applied to the driver) Characteristics: Armature resistance : 21.2 Ω ± 10% Inductance : 17.2 mH (1kHz) Drive system: PWM system
4	PE Sensor	Function: Detection of the paper tail end, Paper leading edge positioning control Detection method: Transmissive-type photo-interrupter
5	CR Contact Module	Ink cartridge detection (CSIC)
6	CR Encoder	Type: Transmissive-type photo-interrupter Resolution: 180 pulse/inch
7	PF Encoder	Type: Transmissive-type photo-interrupter Resolution: 180 pulse/inch

8	PW Sensor	Function • Paper left and right edge
		                          (before and during printing)
		                          • Paper top edge (before printing)
		                          • Paper bottom edge (during printing)
		                          • CD-R top, bottom, right and left edges
		                          (before printing)
		Detection method: Reflective photosensor

9	APG Sensor	Function: APG position detection Detection method: Transmissive-type photo-interrupter
10	CD-R Guide Sensor	Function: CD-R Guide up/down detection Detection method: Mechanical contact detector
11	CD-R Tray Sensor	Function: CD-R Tray presence detection Detection method: Mechanical contact detector
12	Case Open Sensor	Function: Scanner Unit open/close detection Detection method: Mechanical contact detector
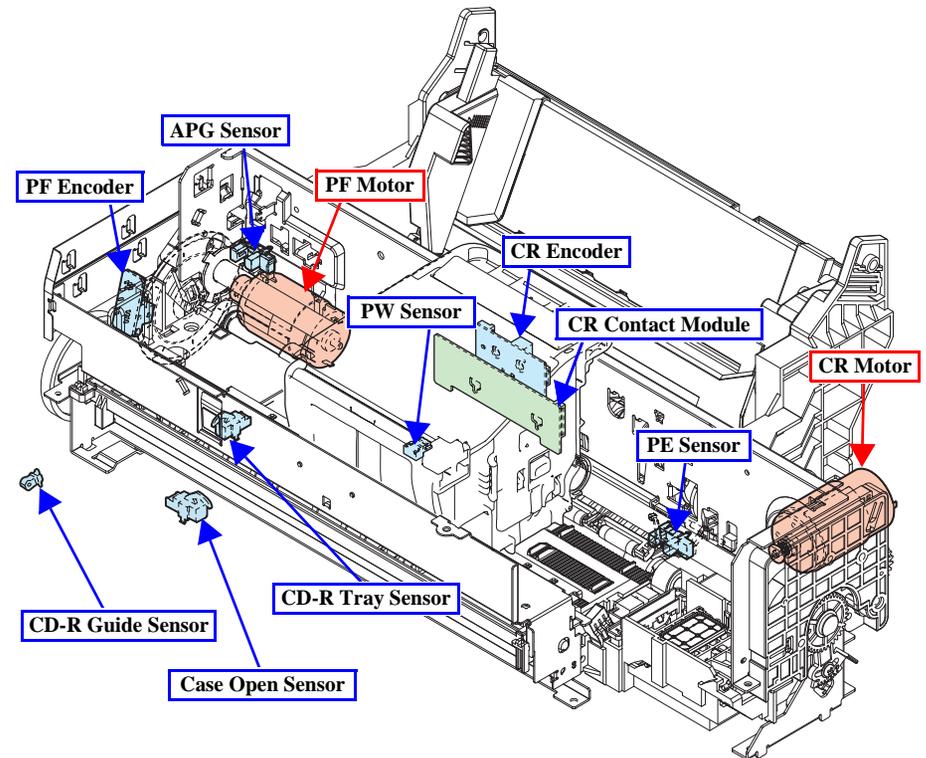
Figure 2-2. Motors and Sensors (Printer Mechanism)

Table 2-2. Scanner Mechanism CIS & Motor

| No.	Name	Function
1	CIS Unit	Resolution: 10,200 pixel 16 bit per pixel (input), 8 bit per pixel (output)
2	CR Motor	Type: DC motor Voltage: 42V DC ± 5% (voltage applied to the driver) Drive system: VrefPWM input constant-current chopping
3	Encoder sensor	Type: Linear encoder Resolution 180 pulse/inch
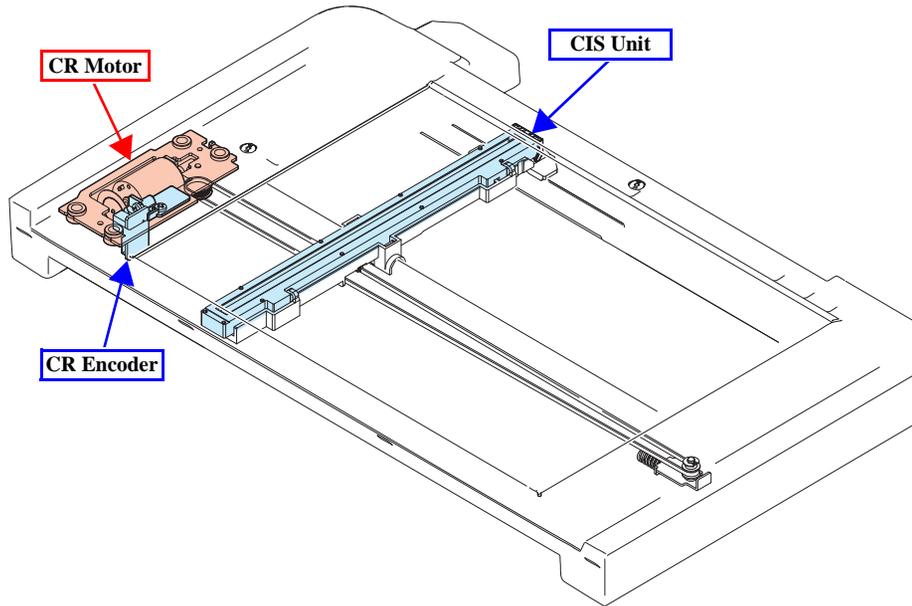
Figure 2-3. Motors and Sensors (Scanner Unit)

2.1.3 Printhead

F3 Mach Turbo2 head type printhead is employed, which produces variable sized dot and economy dot. The printhead configuration is as follows.

☐   Nozzle configuration

■   Black: 90 nozzles x 1

■   Color: 90 nozzles x 5 (yellow, light magenta, light cyan, cyan, magenta)

The nozzle layout as seen from behind the printhead is shown below.
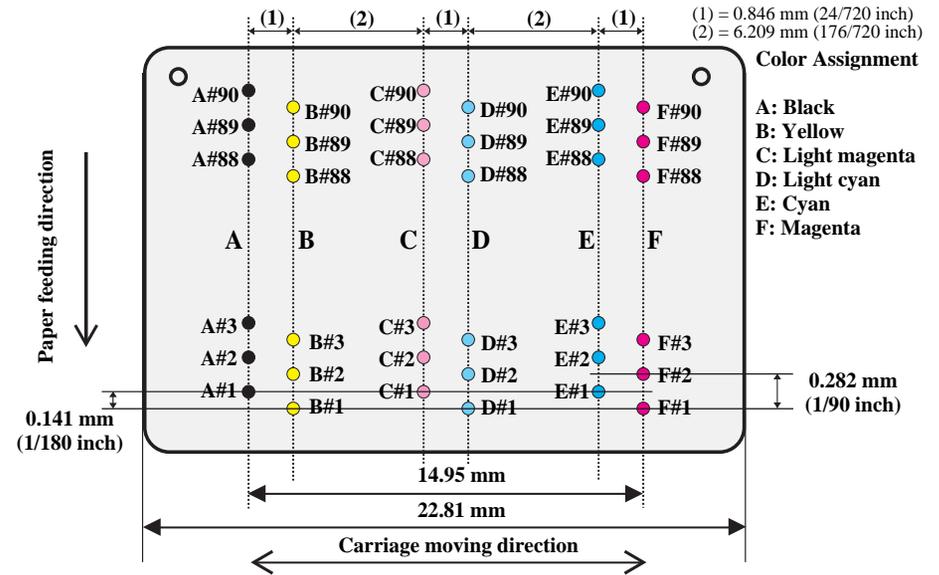

Figure 2-4. Nozzle Layout.

2.2 Power-On Sequence

This section describes the power-on sequences.

☐ Condition

- ■ Completing ink charge.
- ■ No CDR Tray and no paper on the paper path.
- ■ The stacker is not set on the CDR printing position.
- ■ The Printhead is capped with the Cap of the Ink System.
- ■ The Carriage is locked by the CR lock.

Table 2-3. Operation of the power-on sequence

Operation[*1]	Carriage/PF roller movement and position[*2]	PG[*3]
1. Checking waste ink overflow 1-1.Reads out the protection counter value to check waste ink overflow.		Any position
2. Avoiding deadlock sequence[*4] 2-1.The carriage moves to the 0-digit side slowly and confirms it touches the Right Frame.		↓
2-2.The carriage slightly moves to the 80-digit side.		↓
2-3.The PF Motor rotates clockwise and releases the CR lock.		↓
2-4.The carriage moves to the 0-digit side slowly and confirms it touches the Right Frame.		↓
2-5.The carriage returns to its home position.		↓
3. CDR Tray sensor check 3-1.Checks with the CDR Tray sensor if the CDR Tray is not set.		↓
3-2.The PF Motor rotates clockwise to eject the CDR Tray.		↓
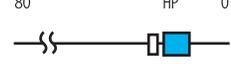
Table 2-3. Operation of the power-on sequence

Operation[*1]	Carriage/PF roller movement and position[*2]	PG[*3]
4. Releasing the CR lock 4-1.The PF Motor rotates clockwise and releases the CR lock.		Any position
5. Seeking the home position 5-1.The carriage slowly moves to the 80-digit side.		↓
5-2.The carriage moves to the 0-digit side slowly and confirms it touches the Right Frame.		↓
5-3.The carriage slowly moves to the CR lock set position.		↓
5-4.The PF motor rotates clockwise and releases the CR lock.		↓
5-5.The PF motor rotates counterclockwise and sets the CR lock.		↓
5-6.The carriage moves to the 80-digit side slowly and confirms it touches the CR lock.		↓
5-7.The carriage slowly moves to the 0-digit side to the CR lock set position.		↓
5-8.The PF motor rotates clockwise and releases the CR lock.		↓
5-9.The carriage moves to the 80-digit side slowly and confirms it does not touch the CR lock.		↓
5-10.The carriage slowly moves to its original position, and home position is fixed. Afterward, the carriage position is monitored according to the signals from the CR Encoder.		↓
6. Resetting APG 6-1.The carriage slowly moves to the Right Frame and stops there.		↓
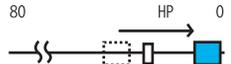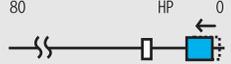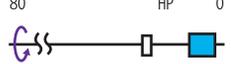
Table 2-3. Operation of the power-on sequence

Operation[*1]	Carriage/PF roller movement and position[*2]	PG[*3]
6-2. The PF Motor rotates clockwise while monitoring the PG sensor.		Any position
6-3. After the PG sensor switched from Off to On, the PF Motor rotates clockwise by the specified step until it detects the PG-- (APG home position).		↓
6-4. After detecting the APG home position, the carriage slightly moves to the 80-digit side.		↓
6-5. After the PF Motor rotates counterclockwise, it rotates clockwise to confirm the PG sensor is set to On-state.		PG--
6-6. The carriage slowly returns to its home position.		↓
7. Setting the APG to PG++		
7-1. The carriage slowly moves to the Right Frame and stops there.		↓
7-2. The PF Motor rotates clockwise and sets to PG++.		PG++
7-3. The carriage slowly returns to its home position.		↓
8. PF initialization		
8-1. Checks if paper exists by the PE sensor[*5] and the PF Motor rotates clockwise for one second.		↓
9. PF Motor measurement		
9-1. The PF motor rotates clockwise for four seconds, and performs a load measurement.[*6]		↓
10. Low temperature operation sequence[*7]		
10-1. The PF Motor rotates clockwise, and releases the CR lock.		↓
10-2. The carriage moves back and forth between CR lock and the 80-digit side for two times.		↓
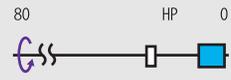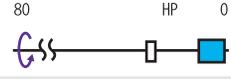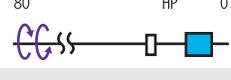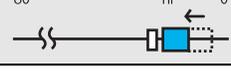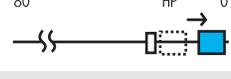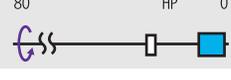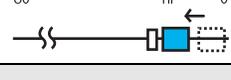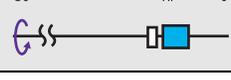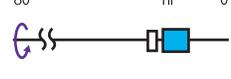
Operation[*1]	Carriage/PF roller movement and position[*2]	PG[*3]
11. Setting the APG to PG--		
11-1. The carriage slowly moves to the Right Frame and stops there.		PG++
11-2. The PF Motor rotates clockwise and sets to PG--.		PG--
11-3. The carriage slowly returns to its home position.		↓
12. CR measurement and PW sensor initialization		↓
12-1. The carriage slowly moves to the 80-digit side.		↓
12-2. The carriage performs a load measurement while moving to the VH Check position, and records the detected voltage of the PW sensor at the specified three positions, then stops.		↓
12-3. The carriage detects the voltage of the PW sensor at the carriage stop position (the black area at the Paper Guide Front).		↓
12-4. The carriage performs a load measurement while moving to the 0-digit side, and stops.		↓
12-5. The carriage performs a load measurement while moving to the VH Check position, and records the detected voltage of the PW sensor at the specified three positions, then stops.		↓
12-6. The carriage detects the voltage of the PW sensor at the carriage stop position (the black area at the Paper Guide Front).		↓
12-7. The carriage performs a load measurement while moving to the 0-digit side, and stops.		↓
13. Detecting ink cartridge and initializing ink system[*8]		
13-1. The PF Motor rotates clockwise for one second, and resets the PF Roller.[*9]		↓
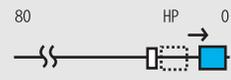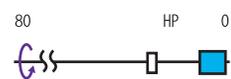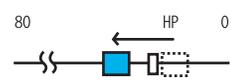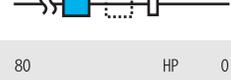
(Continue to the next page)

Table 2-3. Operation of the power-on sequence

Operation[*1]	Carriage/PF roller movement and position[*2]	PG[*3]
13-2. The carriage slowly moves to the 0-digit side.		PG--
13-3. The carriage moves to the 80-digit side to check the ink end sensor. The ink remaining is detected after completing the check.		↓
13-4. The carriage slowly returns to its home position.		↓
14. CR lock setting 14-1. The carriage slowly moves to the CR lock set position.		↓
14-2. The PF Motor rotates counterclockwise, and sets the CR lock.		↓
14-3. The carriage slowly returns to its home position.		↓

Note　*1： The rotation direction of the PF Motor is as follows.
　　　　　　Clockwise:　　　　Paper is fed normally
　　　　　　Counterclockwise: Paper is fed backward
　　　*2： The condition of the CR lock is as follows.
　　　　　　Red:　　CR lock is set
　　　　　　White:　CR lock is released
　　　*3： Indicates the PG position. "Any position" means that the PG position is not recognized because APG is not reset yet.
　　　*4： Checks if the carriage is not deadlock such as the CR lock is caught in the gap of the carriage.
　　　*5： Eject the paper if any.
　　　*6： When paper exists, the existing measurement value saved in EEPROM is read out; therefore, the PF Motor does not rotate.
　　　*7： Executes when the detected temperature is under 5 ºC (41ºF) by the thermistor on the Printhead.
　　　*8： The empty suction operation may occur depending on the situation.
　　　*9： If paper remains in the printer, the PF Roller rotates by steps enough to eject the paper forcibly.

2.3 Printer Initialization

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

1. Hardware 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
    Initialization when resetting the USB software, and the following are performed.
    (a) Clears input data buffer
    (b) Clears print buffer
    (c) 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. IEEE 1284.4 "rs" command initialization
    The printer recognized the IEEE 1284.4 "rs" command.
    When printer is initialized, the following action is performed.

    ■ Initialization when an error occurs.

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

    ■ Initialization in normal operation

        (a) Clears input data buffer
        (b) Clears print buffer
        (c) Sets default values

TROUBLESHOOTING

3.1 Overview

CHECK POINT

> **Description in this chapter is applied to Epson Stylus Photo PX650/ TX650/TX659/PX660/PX660 Premium/Artisan 635.**

With Epson Stylus Photo PX650/TX650/TX659/PX660/PX660 Premium/Artisan 635, almost all troubles can be coped with by following the instructions given on "EPSON Status Monitor 3" (when connected to the PC) or on the LCD.

Once an error occurs, the "EPSON Status Monitor 3" will appear as a pop-up window on the screen of the host PC. It will show details of how to cope with the trouble. In almost all cases, the user can recover the unit from the error, provided that the user follows the instructions indicated on the pop-up window.

In addition, the User's Manual for Epson Stylus Photo PX650/TX650/TX659/PX660/ PX660 Premium/Artisan 635 describes detailed steps to be taken for recovery from typical errors.

3.1.1 Specified Tools

Epson Stylus Photo PX650/TX650/TX659/PX660/PX660 Premium/Artisan 635 does not require any specified tools for troubleshooting.

3.1.2 Preliminary Checks

Before starting troubleshooting, be sure to verify that the following conditions are all met:

- The power supply voltage must be within the specification limits. (Measure the voltage at the wall outlet.)
- The POWER CORD must be free from damage, short circuit or breakage, or miswiring in the POWER CORD.
- The Unit must be grounded properly.
- The Unit should not be located in a place where it can be exposed to too high or low temperature, too high or low humidity, or abrupt temperature change.
- The Unit should not be located near waterworks, near humidifiers, near heaters or near flames, in a dusty atmosphere or in a place where the Unit can be exposed to blast from an air conditioner.
- The Unit should not be located in a place where volatile or inflammable gases are produced.

- The Unit should not be located in a place where it can be exposed to direct rays of the sun.
- The Unit must be placed on a strong and steady level table (without an inclination larger than 5 degrees).
- There must be no vibration generating source placed in contact with this Unit.
- The paper used must conform to the specification.
- There must be no error in handling of the Unit.
- Check the inside of the Unit, and remove foreign matters, if any, such as paper clips, staples, bits of paper, paper dust or toner.
- Clean the inside of the Unit and the rubber rolls.

3.1.3 Procedure for Troubleshooting

Perform troubleshooting according to the flowchart shown below.
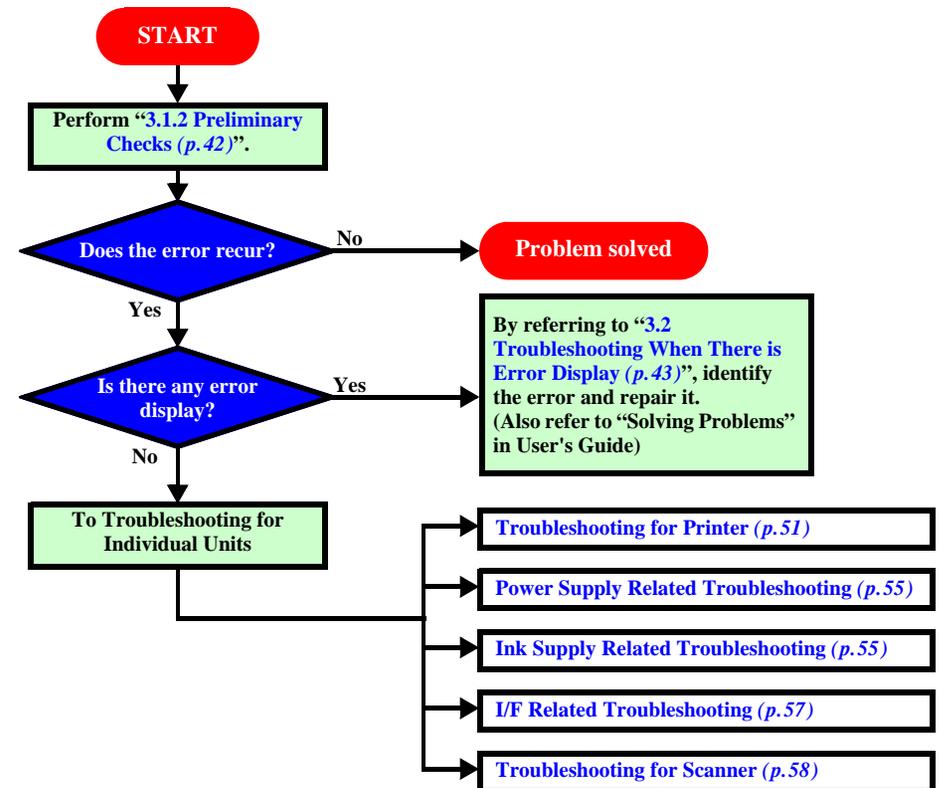
Flowchart 3-1. Procedure for Troubleshooting

3.2 Troubleshooting When There is Error Display

CHECK
POINT

The messages displayed on the LCD that are listed in the "Error List" above and "Warning List *(p.44)*" on the next page and subsequent pages are given only for information. In other words, they are not exactly the same as the messages actually displayed.

3.2.1 Error List

Table 3-1. Error List

Error Name	Displayed Message	Occurrence Condition	Recovery Procedure
Printer FATAL Error	A printer error has occurred. Turn off the printer, then press On button to turn on. See your documentation.	An irrecoverable error has occurred.	Turn off the power. See "3.2.3 FATAL Error" *(p.47)*
Maintenance Error	The printer's ink pads are at the end of their service life. Please contact Epson Support.	The printer requires maintenance due to waste liquid overflow.	Replace the waste ink pads. See "6.1.1 Maintenance Error" *(p.131)*
Paper jam Error	Paper jam. Load paper and press Start. If the error does not clear, repeat the procedure.	A sheet was loaded in a wrong orientation and caused a jam.	Follow the displayed message until the sheet loaded in a wrong orientation is ejected.
	Paper jam. Open the scanner unit and remove the paper.	The paper jam has occurred.	Turn off the power, and remove the paper or the tray.
	CD/DVD error. Press the Start button. If the error does not clear, remove the media by hand.	The CD/DVD tray is jammed.	
Message related to Ink (1)	Cannot recognize ink cartridges. Make sure the ink cartridges are installed correctly.	The ink cartridges have not been inserted or defective ink cartridges have been inserted.	Install the normal ink cartridges correctly and press the OK button.
Message related to Ink (2)	Ink cartridge cover is open. Open the scanner unit and close the ink cartridge cover.	Ink cartridges were replaced with new ones with the ink cartridge cover open.	Close the ink cartridge cover and press the OK button.
Message related to Ink (3)	Ink cartridges cannot be recognized.	The ink cartridge had not been inserted at an initial filling or the ink cartridge error occurred.	Install the normal ink cartridges filled with ink correctly and press the OK button.
Message related to Ink (4)	Cannot recognize ink cartridges.		
Message related to Ink (5)	Press the OK button to replace ink cartridges.	Ink end.	
Paper Empty Error	Paper out. Load paper and press the Start button.	There is no paper in the sheet feeder.	Press the Start button to feed paper correctly.
CD/DVD Tray Error	The CD/DVD tray is set incorrectly. Set the CD/DVD tray correctly, then press the Start button.	The CD/DVD tray is set incorrectly.	Set the CD/DVD Tray correctly and press the Start button.
Multi-page Feed Error	Multi-page feed error. Remove and reload the paper, then press the Start button.	Multi-page feed error has occurred.	Re-set paper and press the Start button to feed paper correctly.

Table 3-1. Error List (continued)

Error Name	Displayed Message	Occurrence Condition	Recovery Procedure
Scanner Fatal Error	A scanner error has occurred. See your documentation.	An error has occurred in the scanner mechanism.	Turn off the power. See "3.3.5 Troubleshooting for Scanner" (p.58)
Scanner Open Error	Close the scanner unit.	The scanner unit is opened during stand-alone printing, copying, or printing from an external device.	Close the scanner unit.

3.2.2 Warning List

Table 3-2. Warning List

Warning Name	Displayed Message	Occurrence Condition	Recovery Procedure
Waste fluid is near end	The printer's ink pads are nearing the end of their service life. Contact Epson Support.	The waste ink pads have already absorbed waste ink nearly to its full capacity.	Replace the waste ink pads. See "6.1.1 Maintenance Error" (p.131)
Set the CD-R/DVD tray (Set correctly)	The CD/DVD tray is set incorrectly. Set the CD/DVD tray correctly, then press the Start button.	At start of printing, the printer has not recognized the CD-R/DVD tray correctly.	Set the CD-R/DVD tray correctly, and press the Start button.
CD/DVD guide warning (Close error)	The front tray is in the wrong position. Push down the tray lever to set the front tray to the CD/DVD position.	The printing data for CD/DVD printing has been sent from the printer driver but the Stacker Assy is on the ASF position.	Push the lever down to change the Stacker Assy to CDR position.
CD/DVD guide close error			
Position of CD/DVD guide (Re-set)	The front tray is in the CD/DVD position. Raise the tray lever to set the front tray to the paper position.	The printing data for normal printing has been sent from the printer driver but the Stacker Assy is on the CDR position.	Push the lever up to change the Stacker Assy to ASF position.
BT File size error	The document is too large to print with Bluetooth.	Data size is too big.	Change or check the transmitted data.
BT Designation error	The document is too complex to print with Bluetooth.	Data quantity exceeded the range where it can be processed.	
BT structure error	Data error. The document cannot be printed.	There is an error in the contents of data.	
A part of the reference object is broken (BT-MIME)	Data Error. The document may not be printed correctly.	While XHTML-Print data could be decoded, a part or all of the reference object had a MIME encode error and could not be obtained. The following two problems are considered depending on the type of the un-obtained reference object. • For an image, an area where that image is to be printed becomes blank. • For a CSS (style sheet) file, the background color, basic character size or the like cannot be the same as specified by the sending side.	
BT communications error	Bluetooth print adapter not recognized. Please remove and reinstall the adapter.	An error has occurred in communication with the BT adapter.	Remove the BT adapter. Press the OK button to clear the message.

Table 3-2. Warning List (continued)

Warning Name	Displayed Message	Occurrence Condition	Recovery Procedure
External device installment	Cannot recognize the device.	An unsupported device has been installed.	Remove the device.
Card insertion	Cannot recognize the memory card or disk.	Memory card recognition failed.	Remove the memory card.
Screen translation and print executions connecting DSC	A camera is connected. Disconnect the camera and try again.	Entering a menu screen for use of memory cards or starting to print was attempted with a DSC connected.	Disconnect the camera.
Index sheet scan error (no index sheet)	There is no index sheet or it is not positioned correctly. Check it and try again.	An index sheet was not set.	Set the index sheet and press the OK button.
Index sheet scan error (incorrect image selection marking)	Photos are not selected or the ovals are marked incorrectly. Please correct and try again.	The image selection marking on the index sheet is not correct.	Correct image selection and press the OK button.
Index sheet scan error (incorrect paper selection marking)	The paper type is not selected or ovals are marked incorrectly. Please correct and try again.	The paper selection marking on the index sheet is not correct.	Correct paper selection and press the OK button.
Index sheet scan error (Discrepancy between index sheet and card)	The contents of the memory card have changed. Print a new index sheet and try again.	After index sheet printing, a different memory card was inserted or images were added or deleted.	Restore the same memory card condition as it was when the index sheet was printed or print a new index sheet.
Select photos in CD label print.	The number of photos selected exceeds the maximum for the current layout.	More than the specified number of photos have been selected.	Select not more than the specified number of photos.
Select the number of copy.	Only 1 copy can be selected.	More than one copy has been selected.	Select only one copy.
Photo recognize Error	No photos could be recognized. Make sure photos are positioned correctly. See your manual.	The photo could not be recognized.	Set the photo and try again.
Scan to memory error (no card)	No memory card or disk inserted. Save canceled.	Execution of scanning to a memory card function was attempted with no memory card inserted.	Insert a memory card.
Scan to memory error (insufficient card capacity)	There is not enough free space on the memory card or disk. Save canceled.	The memory card capacity is insufficient.	Insert a memory card that has a sufficient capacity.
Scan to memory error (card write-protect)	The memory card or disk is write-protected. Operation canceled.	As the memory card is write-protected, it is not possible to save data.	Insert a memory card not write-protected.
Scan to memory error (folder not created)	Cannot create a folder on the memory card or disk. Operation canceled.	A folder could not be created on the memory card.	Check the data on the memory card.
Scan to memory error (card removed)	The memory card or disk was removed. Operation canceled.	Data saving was not executed, since the memory card had been removed.	Insert a memory card.
Scan to memory error (save error)	An error occurred while saving. Save canceled.	Data saving was not achieved for some reason.	Check the source data or media.

Table 3-2. Warning List (continued)

Warning Name	Displayed Message	Occurrence Condition	Recovery Procedure
Format check (backup)	Cannot recognize the memory card or disk. Do you want to format it?	The media for backup cannot be recognized.	Execute or cancel formatting.
Format check (scan)		The memory card cannot be recognized.	
Format Warning (Format error) (scan)	A problem occurred while formatting. Formatting canceled.	An error has occurred in formatting the card. Or you pulled out the media while formatting it.	Press the OK button and check the media.
Format Warning (card write-protect) (scan)	The memory card or disk is write-protected. Operation canceled.	As the memory card was write-protected, formatting failed.	Insert a memory card not write-protected and try again.
Format Warning (card removed) (scan)	The memory card or disk was removed. Format canceled.	The media is removed when formatting is to be started.	Insert media and try again.
Head Cleaning	Replace ink cartridge before cleaning print head.	Head cleaning was attempted in the Ink Low state.	Cancel the head cleaning, or replace the ink cartridges.
Backup error (no external connection)	External device is not connected or media is not inserted. Backup canceled.	The external device was not connected when backup was started.	Connect the external device.
Backup error (insufficient external media capacity)	Insufficient space on the backup device. Cannot back up files.	The capacity of the media on which the backup data is to be saved is insufficient.	Insert media that has sufficient free space.
Backup error (insufficient memory card capacity)			
Backup error (no card)	No memory card in slot. Backup canceled.	No backup source exists.	Insert the memory card.
Backup error (File name and Folder levels Error)	Backup canceled. File name is too long or there are too many folder levels.	The file name is too long, or the source has eight or more levels in folder hierarchy.	Check the file name and the folder hierarchy.
Backup error	Backup Error. Error Code FFFFFFFF*	An error has occurred at the external device.	Check the external device.
In adjustment of borderless expansion value	You can change the amount of image expansion, but a white border may appear around your photo.	This message is always displayed during adjustment of the Borderless Expansion Value.	Accept it.

Note *:   The actual messages are displayed as error codes corresponding to the cause of the error. See "1.7.3.2 Backup Errors" *(p.27)*

3.2.3 FATAL Error

CHECK POINT ✔	**The EEPROM stores the error code of the latest fatal error. The latest fatal error can be identified using the adjustment program.**

Table 3-3. Fatal Errors

Category	Error Code	Error	Cause	Remedy
DC error (CR motor)	01H	CR PID speed over error	An error occurred in the CR motor operating sequence	□ Checking the operation of the CR Unit: Move the CR Unit by hand, and check to see if it moves smoothly. □ Making the following adjustments: ♦ Bi-D Adjustment ♦ PF Adjustment ♦ PW Adjustment □ Checking the following parts and replacing the defective one ♦ Checking the head FFC (CN10/11/12) for disconnection or breakage ♦ Checking the lead wires of the CR Motor (CN14) for disconnection or breakage ♦ Checking the CR Encoder FFC (CN16) for disconnection or breakage ♦ Checking the printer frame for adhesion of dirt or insufficient lubrication *(p. 135)* ♦ Checking the CR Guide Shaft for adhesion of dirt or insufficient lubrication *(p. 134)* ♦ Checking the Linear Scale for adhesion of dirt or damage *(p. 87)* ♦ Checking the CR Encoder for adhesion of dirt or damage *(p. 36)* ♦ Checking the PW Sensor for adhesion of dirt or damage *(p. 36)* ♦ Checking the CR Belt for damage or improper tension *(p. 96)* ♦ Checking the CR Motor and replacing it if necessary *(p. 96)* ♦ Main Board *(p. 78)* ♦ Power Supply Board *(p. 83)*
	02H	CR load positioning lock error		
	08H	CR PID reverse rotation detection error		
	0AH	CR load positioning accumulation moving distance error		
	0BH	CR load positioning speed over error		
	0CH	CR PID lock error		
	0DH	CR PID aveTi max error		

Table 3-3. Fatal Errors (continued)

Category	Error Code	Error	Cause	Remedy

DC error (PF motor)	FBH	PF acceleration lock error	An error occurred in the PF motor operating sequence	□ Checking the PF mechanism by visual inspection:
				  Check the PF mechanism for paper jam or adhesion of foreign matters by visual inspection.
				□ Checking the operation of the PF mechanism:
				  Operate the PF mechanism by hand, and check to see if it operates smoothly.
				□ Making the following adjustments:
				  ◆Bi-D Adjustment
				  ◆PF Adjustment
				  ◆PW Adjustment
				□ Checking the following parts and replace the defective one:
				  ◆Checking the PF Encoder FFC (CN8) for disconnection or breakage
				  ◆Checking the lead wires of the PF Motor (CN13) for disconnection or breakage
				  ◆Checking the PF scale for adhesion of dirt or damage *(p. 90)*
				  ◆Checking the PF encoder for adhesion of dirt or damage *(p. 90)*
				  ◆Checking the Upper Paper Guides for improper installation *(p. 102)*
				  ◆Checking the PF Motor and replacing it if necessary *(p. 91)*
				  ◆Main Board *(p. 78)*
				  ◆Power Supply Board *(p. 83)*

	FEH	PF speed over error		
	FCH			
	FAH	Measurement value error in PF Duty limiting control		
	EFH	Position error in PF BS control		
	F0H	DTY_max error in PF BS control		

APG motor	70H	APG error (normal drive error)	An error occurred in the APG operating sequence	□ Checking the installation of the APG Sensor:
				  position of the sensor and connection of the connector (CN7)
				□ Checking the drive of the APG Unit:
				  ◆Installation of the composite gear of the ASF Unit - APG Unit
				  ◆Standalone operation of the APG Unit
				  ◆Reinstallation of the APG Unit (phase)
				□ Checking the following parts and replace the defective one:
				  ◆APG Unit *(p. 95)*
				  ◆ASF Unit *(p. 93)*
				  ◆APG Sensor *(p. 36)*
				  ◆PG Left Cam *(p. 98)*
				  ◆Main Board *(p. 78)*
				  ◆Power Supply Board *(p. 83)*

	71H	APG home seek error		
	72H	Error in APG drive by factory command		

Motor drive time error	D1H	CR (PID) drive time-out	The motor kept operating for more than the specified time.	□ Checking the mechanism and operation:
				  Check the mechanism and operation of the motor in question.
				□ Checking the connection of the connectors and routing of the lead wires
				□ Checking the motor in question and the following parts and replacing the defective part:
				  ◆Main Board *(p. 78)*
				  ◆Power Supply Board *(p. 83)*

	D2H	CR (load positioning) drive time-out		
	D3H	PF (PID) drive time-out		
	D4H	PF (BS) drive time-out		

Table 3-3. Fatal Errors (continued)

Category	Error Code	Error	Cause	Remedy
Factory command error	30H	Error by EEPROM verify command	---	☐ Checking the following parts and replace the defective one: ♦ Main Board *(p. 78)* ♦ Power Supply Board *(p. 83)*
Head system error	40H	Transistor ambient temperature abnormal	The thermistor on the printhead detected abnormal temperature.	☐ Checking the following parts and replace the defective one: ♦ Printhead *(p. 85)* ♦ Main Board *(p. 78)* ♦ Power Supply Board *(p. 83)* ♦ Replace the Head FFC
	41H	Error in X-Hot detection before printing		
	42H	Error in X-Hot detection after flushing		
	43H	Head ambient temperature abnormal		
Sequence error	50H	Home seek error	An error occurred in the carriage operating sequence.	See Remedy for DC error (CR motor)
	51H	CR unlocking error		
	52H	CR locking error		
	53H	Paper detect error before initial charge completion		
	56H	Obstructed sequence error at ink cartridge replacement		
Sensor error	60H	PW detection error (Hi check error)	PW detector trouble	☐ Checking the PW Sensor *(p. 36)*: ♦ Checking the PW Sensor for adhesion of dirt and dust ♦ Checking the connection of the FFC ☐ Making the following adjustments: ♦ PW Adjustment ☐ Checking the following parts and replace the defective one: ♦ Head FFC ♦ CR Unit *(p. 98)* ♦ Main Board *(p. 78)* ♦ Power Supply Board *(p. 83)*
	61H	PW detection error (Low check error)		
	62H	Tray detection (CDR detector 2) error	Sensor trouble	☐ Checking the operation of the actuator and the connection of the connector. ☐ Checking the following parts and replace the defective one: ♦ PE Sensor *(p. 104)* ♦ PW Sensor *(p. 36)* ♦ CD-R Tray Sensor *(p. 36)* ♦ Main Board *(p. 78)* ♦ Power Supply Board *(p. 83)*
	63H	Paper detection error		

Table 3-3. Fatal Errors (continued)

Category	Error Code	Error	Cause	Remedy
Maintenance error	A0H	Waste ink overflow	Life expiration of maintenance parts	☐ Replace all the maintenance parts, and clear the maintenance counter. (Refer to "6.1.1 Maintenance Error" *(p.131)*.)
Abnormal operation	88H	Inserted tray error during cleaning	An error occurred during cleaning	☐ Pulling out the CDR Tray ☐ Checking the CDR Tray Sensor *(p.36)*: ♦Checking the CDR Tray Sensor for adhesion of dirt or dust ♦Checking the connection of the connector of the CDR Tray Sensor ☐ Checking the connection of the FFC ☐ Checking the following parts and replace the defective one: ♦CDR Tray Sensor *(p.36)* ♦CDR Tray
	89H	Obstruction detection error during cleaning		☐ Checking the operation of the CR Unit: Move the CR Unit by hand, and check to see if it moves smoothly. ☐ Checking the following parts and replacing the defective one: ♦Checking the lead wires of the CR Motor (CN14) for disconnection or breakage ♦Checking the CR Encoder FFC (CN16) for disconnection or breakage ♦Checking the printer frame for adhesion of dirt or insufficient lubrication *(p.135)* ♦Checking the CR Guide Shaft for adhesion of dirt or insufficient lubrication *(p.134)* ♦Checking the Linear Scale for adhesion of dirt or damage *(p.87)* ♦Checking the CR Encoder for adhesion of dirt or damage *(p.36)* ♦Checking the CR Belt for damage or improper tension *(p.96)* ♦Checking the CR Motor and replacing it if necessary *(p.96)* ♦Main Board *(p.78)*

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3.3 Troubleshooting When There is No Error Display

3.3.1 Troubleshooting for Printer

This section describes repair/service of the Printer Mechanism. Listed below are various problems which may occur, observations of such problems, check point and remedies.

☐ **Faulty paper loading**

Table 3-4. Diagnostics when feeder is abnormal

Condition	Cause	Check Point	Remedy
Paper is not loaded.	LD Roller and Retard Roller dirty or worn	Check to see if no Micro Pearl or oily substance is adhering to the paper loading roller.	**Clean the rollers using a cleaning sheet.** 1. Set a cleaning sheet upside down in the ASF Unit. 2. Start paper feed with the panel button. 3. Repeat steps above several times. **To remove oils from rollers, staple a cloth dampened with alcohol to a postcard and follow the steps below.** 1. Set the postcard in the tray with the alcohol dampened cloth side facing the LD Roller (or Retard Roller). 2. Start paper feed while firmly holding the upper edge of the card. 3. Repeat the paper feed operation several times to clean the surface of the LD Roller (or Retard Roller). If these steps do not correct the problem, replace both the LD Roller and Retard Roller.
	Operation of paper loading mechanism is abnormal	Check to see if there is no abnormality in the paper loading mechanism.	Remove the dust and dirt, if any.
	PE Sensor/PE Lever not operating properly	Check to see if the PE Sensor connector has not been disconnected from the sensor or Main Board.	Connect the PE Sensor connectors to the sensor and Main Board CN6 properly.
		Check to see if the torsion spring has been set on the PE Lever properly.	Install the torsion spring on the PE Lever properly.
		Check for damaged PE Sensor.	Replace the PE Sensor.
Several sheets of paper are fed at the same time	Retard Roller operation is abnormal	Check to see if the tension spring on the Retard Roller is disengaged.	Install the tension spring properly.
		Check to see if the Retard Roller is out of position.	Install the Retard Roller properly.

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☐ **Faulty paper ejection**

Table 3-5. Diagnostics when paper ejection is abnormal

Condition	Cause	Check Point	Remedy
Paper is jammed on the way of paper ejection.	Faulty PF-related operation	Turn the PF Roller, and check to see if the paper is transferred to the Paper Eject Rollers properly.	Engage the PF-related gears properly.
	PF deterioration offset counter	Check the PF deterioration offset counter and the number of printed sheets using the adjustment program.	Initialize the PF deterioration offset counter and write the maximum value.
	Faulty operation of Paper Eject Roller	Check to see if the Paper Eject Roller rotates correctly.	Properly engage the gears driving the Paper Eject Roller.

☐ **Faulty carriage operation**

Table 3-6. Diagnostics when carriage action is abnormal

Condition	Cause	Check Point	Remedy
Abnormal carriage operation during printing	Carriage does not move smoothly.	Check to see if there is an obstacle in carriage route.	Remove the obstacle.
		Operate the carriage by hand and check to see if carriage moves smoothly.	Clean the CR guide shaft and lubricate.
		Check tension of the timing belt.	Replace the compression spring of the Driven Pulley Holder.
		Move the carriage to the right end and left end fully and check to see if the length of the Head FFC is proper and the carriage moves smoothly.	Remove the Head FFC once and reinstall it properly.

❑ **Printer stops during initialization**

Table 3-7. Diagnostics when printer stops during format

Condition	Cause	Check Point	Remedy
Printer error is indicated.	Paper Eject Frame not installed properly	Check to see if the hook securing the Paper Eject Frame has been engaged.	Install the Paper Eject Frame properly.
	CR Motor not operating properly	Check for disconnected CR Motor connector.	Check the connector (CN14) of the CR Motor.
		Check to see if the CR Motor coil resistance is as specified.	Replace the CR Motor.
	PF Motor not operating properly	Check for the disconnected PF Motor connector.	Check the connector (CN13) of the PF Motor.
		Check to see if the PF Motor coil resistance is as specified.	Replace the PF Motor.
	Linear Scale not operating properly	Check to see if the Linear Scale is through the CR Encoder.	Enable the Linear Scale to pass through the CR Encoder.
		Check for dirt on the Linear Scale.	Completely clean the Linear Scale.
		Check for the damaged Linear Scale.	Replace the Linear Scale.
	CR Encoder not operating properly	Check to see if the Encoder FFC is connected to the CR Encoder Board.	Connect the Encoder FFC to the CR Encoder Board.
		Check for paper bits and dust adhering to the CR Encoder.	Remove paper bits and dust adhering to the CR Encoder.
		Check for the damaged Encoder FFC.	Replace the Encoder FFC (CR Unit).
		Check for the damaged CR Encoder.	Replace the CR Unit.
	Rotary Scale not operating properly	Check to see if the Rotary Scale is not through the PF Encoder.	Enable the Rotary Scale to pass through the PF Encoder.
		Check for dirt on the Rotary Scale.	Completely clean the Rotary Scale.
		Check for the damaged Rotary Scale.	Replace the Rotary Scale.
	PF Encoder not operating properly	Check to see if the Encoder FFC is connected to the PF Encoder Board.	Connect the Encoder FFC to the PF Encoder Board.
		Check for paper bits and dust adhering to the PF Encoder.	Remove paper bits and dust adhering to the PF Encoder.
		Check for the damaged Encoder FFC.	Replace the Encoder FFC.
		Check for the damaged PF Encoder.	Replace the PF Encoder.
	Head FFC not operating properly	Check for the disconnected Head FFC.	Firmly connect the Head FFC to the Main Board CN10 - 12 and to the Printhead.
		Check for the damaged Head FFC.	Replace the Head FFC.
	Head Hot Error	Check to see if ink is emitted from all nozzles.	If condition does not improve after cleaning, replace the Printhead.

☐ **Faulty print**

Table 3-8. Diagnostics when printing is abnormal

Condition	Cause	Check Point	Remedy
Improper printing occurs only with specific dots	Printhead surface is dirty (Dot missing)	Alternate cleaning and test printing several times.	Clean the Printhead surface with a cotton swab.
	Capping absorbent material is in contact with Printhead surface	Check for the deformed or damaged capping absorbent material.	Replace the Ink System Assy.
	Head FFC not operating properly	Check for the damaged Head FFC.	Replace the Head FFC.
	Printhead not operating properly	Alternate cleaning and nozzle check several times.	If condition does not improve after cleaning, replace the Printhead.
Dot missing sometimes occurs	Printhead surface is dirty (Dot missing)	Alternate cleaning and nozzle check several times.	Clean the Printhead surface with a cotton swab.
	Ink Cartridge not operating properly	Install a new ink cartridge and perform nozzle check.	Replace the ink cartridge.
	Faulty connection inside the Head FFC	Use a circuit tester to check the FFC.	Replace the Head FFC.
	Printhead not operating properly	Repeat cleaning several times, and then perform nozzle check.	If condition does not improve after cleaning, replace the Printhead.
Print is not as intended	Head FFC is not connected	Check to see if the FFC is firmly connected to each board and CR Unit.	Connect the FFC firmly.
	Printhead not operating properly	Check connection of Head FFC to Printhead.	If there is no problem with the Head FFC to Printhead connection, replace the Printhead.
Vertical lines are not in alignment	Bi-D adjustment is not made	Check to see if Bi-D adjustment has been done properly.	Perform Bi-D adjustment.
White lines appear in output data	Dirt is adhering to CR Guide Shaft	Check for dirt adhering to surface of the CR Guide Shaft.	Clean the surface of the CR Guide Shaft with a soft dry cloth.
	PF Roller not operating properly	Check for dirt on the PF Roller.	Carefully clean the surface of the PF Roller with a soft brush.
		Check for the damaged PF Roller.	Replace the PF Roller.
	Ink Cartridge not operating properly	Install a new ink cartridge and test printing.	Replace the ink cartridge.
	Carriage Slide not moving properly	Check to see if sufficient grease is remaining on carriage slide parts at back of main frame.	Clean the main frame carriage slide parts and lubricate with a specified quantify of G-71.*(p.135)*
	Platen Gap not set properly	Check to see if platen gap adjustment has been done properly.	Adjust platen gap. *(p.120)*
	Gear is damaged	Check for abnormality in gears between PF mechanism and ASF mechanism.	Replace the damaged parts.
	Dot jet direction is angled due to dirt on Printhead surface	Alternate cleaning and test printing several times.	Clean with a cotton swab.
		Check for dust and dirt on the Cleaner Blade.	Clean or replace the Cleaner Blade.
	Printhead not operating properly	Repeat cleaning several times, and then perform test print.	Replace the Printhead.
	CR Guide Shaft not operating properly	Check to see if the CR Guide Shaft is firmly installed in specified position.	Reassemble the CR Guide Shaft.
		Check for damage to surface of the CR Guide Shaft.	Replace the CR Guide Shaft.

3.3.2 Power Supply Related Troubleshooting

If the printer does not operate at all (LED does not light up) even with the power turned ON, refer to the following table and perform troubleshooting.

Table 3-9. Power Supply Related Troubleshooting

Cause	Check Point	Remedy
Defective power cord	Connect the normal power cord.	Replace the power cord.
Abnormal AC power voltage	Check the AC power voltage.	Supply the normal power.
Faulty connection of the connector	Check the connection between the Power Supply Board - Main Board (CN3).	Correct the connection.
Fuse blown	Check the fuse (F1) on the Power Supply Board.	Replace the Power Supply Board with a new one.
Abnormal output voltage of Power Supply Board	Check the output voltage of the Power Supply Board.	When the output voltage is normal: Replace the Main Board with a new one. When the output voltage is abnormal: Replace the Power Supply Board with a new one.

3.3.3 Ink Supply Related Troubleshooting

☐ **Printer stops during initialization or printing.**

Table 3-10. Troubleshooting for Printer Stop During Initialization or Printing

Condition	Cause	Check Point	Remedy
Ink End error is displayed.	Ink is out.	Check to see if ink is remaining in all the ink cartridges.	Replace the ink cartridge.
No Ink Cartridge error is displayed.	Not all the ink cartridges have been installed.	Check to see if all the ink cartridges have been installed in the I/C holders.	Install all the ink cartridges.
		Check to see if no ink cartridge is in a raised position.	Install the ink cartridge properly.
		The front or back hook of an ink cartridge is broken.	Replace the ink cartridge.
Ink Cartridge Trouble error is displayed.	Ink cartridge is damaged.	Check to see if the CSIC Board is not dislocated.	Replace the ink cartridge.
		Check to see if no chip on the CSIC Board is chipping.	Replace the ink cartridge.

☐ **Printing is not carried out correctly**

Table 3-11. Diagnostics when printing is erratic

Condition	Cause	Check Point	Remedy
Carriage moves correctly but printing is not normal.	Ink Cartridge not operating properly	Install a new ink cartridge and test printing.	Replace the ink cartridge.
	FFC not connected properly	Check the FFC connection between each CSIC Board - Main Board.	Connect the FFC firmly.
	Cleaner Blade not operating properly	Check for debris adhering to the Cleaner Blade.	Clean or replace the Cleaner Blade.
	FFC internal disconnection	Check each FFC with a circuit tester.	Replace the FFC.
	Faulty Printhead	Alternate cleaning and test printing several times.	When the condition is not improved even after cleaning, replace the Printhead with a new one.
	Ink leakage or clogging with ink	Check to see if there is ink leakage from the Printhead.	Install the ink cartridges properly. If this does not improve the condition, replace the ink cartridges and the Printhead.

☐ **Waste ink is not discharged properly**

Table 3-12. Troubleshooting for Faulty Ink Supply or Faulty Waste Ink Discharge

Condition	Cause	Check Point	Remedy
Ink is not flowing from Printhead to Cap or from Cap to Ink Tube	Pump tube collapsed	Visually check the tube.	Replace the Ink System Assy
	Cap is dirty or damaged.	Check for foreign object adhering to the Cap or damaged Cap.	Remove foreign object from the Cap with a cotton swab. If the Cap is damaged, replace the Ink System Assy.
	Tube is disconnected from Cap bottom	Visually check for disconnection of the tube from Cap bottom.	Connect the tube properly.
	Cap does not slide up properly	Check for installation of compression spring on the tube assembly.	Replace the Ink System Assy with a new one.
	Tube between the Waste Ink Tray Assy - I/S Assy collapsed	Check the tube connection on the bottom of the Waste Ink Tray Assy and the tube route under the tray.	Connect the tube of the Waste Ink Tray Assy properly, and route the tube properly.

3.3.4 I/F Related Troubleshooting

This section describes the troubleshooting for the USB I/F and Memory Card Slot.

□ **USB I/F error**

Table 3-13. USB I/F Error

Cause	Check Point	Remedy
Host PC does not support Windows 98 essentially.	On Windows, open "My computer" →"Property"→"Device manager". "Universal serial bus controller" is effective?	Remove the USB driver, and install it again.
Printer driver is not installed correctly.	On Windows, open "My computer" →"Property"→"Device manager". Printer driver is installed in "Other devices" by mistake?	Delete the driver and install it again according to operation manual.
Defective USB cable	Operation is normal if USB cable is replaced?	Replace the USB cable.
Poor contact	Check to see if there is no adhesion of foreign matters in the USB interface connector.	Remove the foreign matters, and clean the contact.
Defective main board	Check to see if the main board is not damaged.	Replace the main board.

□ **Troubleshooting for Memory Card Slot**

Table 3-14. Troubleshooting for Memory Card

Cause	Check Point	Remedy
Driver has not been installed correctly.	Check to see if a memory card is recognized in the single Assy mode.	Temporarily remove the driver, and then install it again.
Data has been destroyed.	Data on card may be destroyed due to static electricity.	Check to see if card data is read by a PC. If not, format the card.
A memory card other than those specified is used.	Check the card to see if it is one of the specified cards.	Use a specified memory card.
Memory card is faulty.	Check to see if another Memory card can be recognized.	Use a new memory card.
Poor contact.	Check to see if foreign matters are not adhering to memory card or slot.	Remove the foreign matters, and clean the contact.
Firmware has abnormality.	---	Update firmware.
Electric noise, etc. has been generated.	Check to see if the FFC is connected correctly and the Ferrite Core is positioned in place inside the printer.	After the confirmation, if they have no abnormality, replace the main board.
Defective main board	Check to see if the main board is not damaged.	Replace the main board.

3.3.5 Troubleshooting for Scanner

This section describes repair/service for the Scanner mechanism. In troubleshooting, first identify the trouble at the Assy level based on the observation.
According to the observation as described in Table 3-16, perform the necessary checking by referring to the appropriate table.

☐ **Scanner Errors at User Level**

Table 3-15. Scanner Errors at User Level

Error	Cause	Remedy
Scanner error	• Defective CIS unit • Defective scanner motor • The scanner carriage is interfering with any other part.	• Replace the scanner CR Unit. • Remove the obstacle.
Command error	Undefined command is detected.	When correct command is received, error status is cancelled. Turn the power off once and then turn it on again.
Scanner open	Scanner cover is open.	Close the cover.

☐ **Observation of Trouble and Reference for Remedy**

Table 3-16. Observation of Trouble and Reference for Remedy

Observation	Description of Trouble	Reference for Remedy
Even with power turned on, the machine does not operate.	The machine does not operate for initialization.	Table 3-17
"Fatal error" occurred. Indication error occurs and it is not cleared even after power is turned off once and then turned on again.	CR unit does not operate.	Table 3-18
	CR unit operates but error is indicated.	Table 3-19
	The LED does not light up.	Table 3-20
Picture is not read clearly.	Picture is not read clearly.	Table 3-21
"Communication error". Indication error occurs and when communication with the host is tried again, "Communication error" recurs.	USB interface error	Table 3-13

☐ **Scanner does not operate for initialization**

Table 3-17. Scanner does not operate for initialization

Cause	Check Point	Yes/No	Remedy
Connector is disconnected.	Check each connector for disconnection. Is there any connector disconnected?	Yes	Connect the disconnected connector.
		No	Replace the main board.

☐ **Carriage unit does not operate**

Table 3-18. Carriage unit does not operate

Cause	Check Point	Yes/No	Remedy
Connector on the Main Board is disconnected	☐ Is any of the connectors (CN17, 19 and 20) on the Main Board disconnected?	Yes	Connect the connector.
Faulty carriage moving mechanism	☐ Grease is applied properly?	No	Apply grease at designated point
	1. Does CR motor operate when power is turned ON with upper case of Scanner removed? 2. Does CR unit move with CR motor removed?	No	Check the carriage moving mechanism, replace the relevant parts or remove and reinstall them.
Faulty CR motor	☐ Disconnect the connector (CN17) of the CR Motor from the Main Board, and check continuity between pin 1 and pin 2 on the motor side, using a circuit tester.	No	Replace the CR motor.
Defective main board	---	---	Replace the main board.

❑ **Carriage operates but error indicated**

Table 3-19. Carriage operates but error indicated

Cause	Check Point	Yes/No	Remedy
Upper case of scanner is removed.	Upper case of scanner is removed?	Yes	Install the upper case.
Defective main board	---	---	Replace the main board

❑ **LED does not light up**

Table 3-20. LED does not light up

Cause	Check Point	Yes/No	Remedy
Connector on the Main Board is disconnected	Connector CN19 on main board is disconnected?	Yes	Connect the connector CN19 on the main board.
Defective CIS Unit	Does the lamp light up when the CIS Unit is replaced?	Yes	Replace the CIS Unit.
Defective main board	---	---	Replace the main board

❑ **Picture cannot be read clearly**

Table 3-21. Picture cannot be read clearly

Cause	Check Point	Yes/No	Remedy
Soiled document table	Is the document table (glass) free from dirt and wiping mark?	No	Clean the document table.
Defective CIS Unit	---	---	Replace the CIS Unit.
Defective main board	---	---	Replace the main board

3.3.6 Troubleshooting for Motors and Sensors

❑ **Motor**

Table 3-22. Motor Resistance and Check Points

Motor Name	Location	Check Point	Resistance
CR motor	CN14 (White)	Pin 1 & 2	22.7 Ω ± 10%
PF motor	CN13 (Black)	Pin 1 & 2	21.2 Ω ± 10%
CR motor (Scanner Unit)	CN17 (White)	Pin 1 & 2	TBD

❑ **Sensor**

Table 3-23. Sensor Check

Sensor Name	Location		Signal Level	Sensor Status
	Epson Stylus Photo PX650/TX650/TX659	Epson Stylus Photo PX660		
PE sensor (3.3V DC ±5%)	CN6 Pin 1 & 3		2.4V or over	Paper absent
			Less than 0.4V	Paper present
APG sensor (3.3V DC ±5%)	CN7 Pin 1 & 3		2.4V or over	PG position
			Less than 0.4V	Out of PG position
CD-R Guide sensor (3.3V DC ±5%)	CN4 Pin 1 & 2	CN4 Pin 1 & 2	Open: 2.4V or over	CD-R Guide down
			Close: Less than 0.4V	CD-R Guide up
CD-R Tray sensor (3.3V DC ±5%)	CN4 Pin 3 & 4	CN9 Pin 1 & 2	Open: 2.4V or over	CD-R Tray present
			Close: Less than 0.4V	CD-R Tray absent
Case Open Sensor (3.3V DC ±5%)	CN5 Pin 1 & 2		Open: 2.4V or over	Scanner Unit open
			Close: Less than 0.4V	Scanner Unit closed

Note :   Refer to "2.1.2 Motors and Sensors" *(p. 36)* for the locations of the motors and sensors.

DISASSEMBLY AND ASSEMBLY

4.1 Overview

CHECK POINT ✔	**Description in this chapter is applied to Epson Stylus Photo PX650/TX650/TX659 but some of it can also be applied to Epson Stylus Photo PX660/PX660 Premium/Artisan 635. For Epson Stylus Photo PX660/PX660 Premium/Artisan 635, see below first and follow the instructions.**
	■ **"8.2 Disassembly/assembly "** *(p.142)*

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.

4.1.1 Precautions

See the precautions given under the heading "WARNING" and "CAUTION" in the following column when disassembling or assembling the product. Things, if not strictly observed, that could result in injury or loss of life are described under the heading "Warning". Precautions for any disassembly or assembly procedures are described under the heading "CAUTION". Chips for disassembling procedures are described under the heading "CHECK POINT". If the assembling procedure is different from the reversed procedure of the disassembling, the procedure is described under the heading "REASSEMBLY". Any adjustments required after disassembling the units are described under the heading "ADJUSTMENT REQUIRED". When you have to remove any units or parts that are not described in this chapter, refer to the exploded diagrams in the appendix. Read precautions described in the next section before starting.

WARNING ⚡	■ **Disconnect the power cable before disassembling or assembling the printer.**
	■ **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.**

CAUTION !	■ **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.**
	■ **Use only recommended tools for disassembling, assembling or adjusting the Epson Stylus Photo PX650/TX650/TX659/PX660/PX660 Premium/Artisan 635.**
	■ **Observe the specified torque when tightening screws.**
	■ **Make the specified adjustments when you disassemble the Epson Stylus Photo PX650/TX650/TX659/PX660/PX660 Premium/Artisan 635.**
	■ **Use the special package for transportation.**
	■ **Prior to disassembly and reassembly, remove the accessories, such as memory cards.**
	■ **When removing or installing exterior parts, take great care that no coated surface is scratched and no coating is peeled off.**

4.1.2 Tools

Use only specified tools to avoid damaging the Epson Stylus Photo PX650/TX650/TX659/PX660/PX660 Premium/Artisan 635.

Table 4-1. Tools

Name	Tool Code
Phillips precision screwdriver	1080530
Phillips precision screwdriver	1080532
Tweezers	1080561

Note : All of the tools listed above are commercially available. EPSON provides the tools listed with EPSON tool code.

4.1.3 Preparation before Disassembly

Make the following preparations before disassembling the Epson Stylus Photo PX650/TX650/TX659/PX660/PX660 Premium/Artisan 635:

☐ When the Main Board is to be replaced, make a copy of the EEPROM data.

☐ When the CR Unit is to be moved out of its home position, locate it at a position other than the home position before starting disassembly by turning the power ON and turning it OFF timely. (See 4.1.5 How to Unlock the Carriage *(p.62)*)

☐ As soon as the repaired product has been returned to the user, there may be a case a maintenance call occurs because of the expiration of the life of a service part. Avoid such a case, if possible, as follows: Check the maintenance counter for

regularly replaced parts before disassembly. If the life of any part is found almost expired, communicate with the user to that effect. If the user's consent is obtained, replace also the relevant service parts with new ones.

4.1.4 Making a Special Tool for CSIC Board

The CSIC board (refer to *p. 85*) can be easily removed by using a special tool. The method for making the tool is described below.

1. Prepare a handle part of a clip, or a similar metal wire piece.
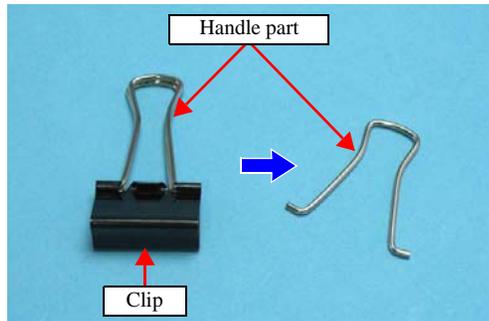
Figure 4-1. Making Special Tool for CSIC Board (1)

2. Bend the metal wire as shown below.
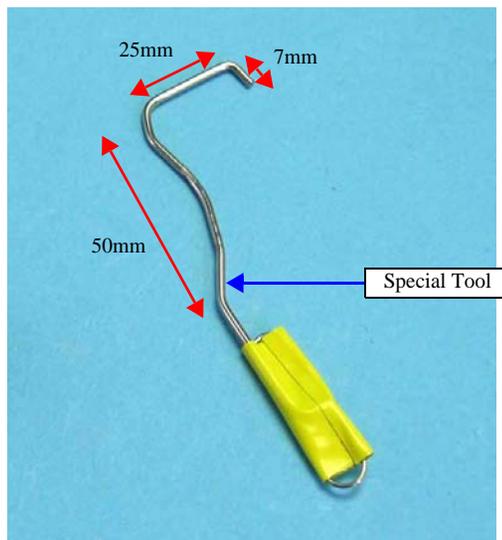
Figure 4-2. Making Special Tool for CSIC Board (2)

4.1.5 How to Unlock the Carriage

□ Some of the disassembling operations require unlocking the carriage. In those cases, carry out any of the following operations to unlock the carriage and move the carriage to other than its home position.

CAUTION !	Be extremely careful not to damage the EJ Roller gear. Extra care must be taken to avoid injury from sharp metal edges.

■ Turn the power off forcibly by disconnecting the power cable when the CR Unit becomes unlocked and moves away from the home position.

■ Until the carriage is unlocked, turn the EJ Roller gear on the left side of the printer in the direction of the arrow as shown in Fig. 4-3.

Figure 4-3. How to Unlock the Carriage

4.1.6 Disassembly and Reassembly Procedure

The flowchart below shows step-by-step disassembly procedure for Epson Stylus Photo PX650/TX650/TX659. When disassembling each component, refer to the page indicated for the relevant component.

CHECK POINT ✓

- You need to remove the parts/units shown in dashed line box if they exist on the way to the target part/unit.
- The color and shape of the printer illustrated in this manual may differ from the final product.
- See **"8.2.2 Disassembly Procedures"** *(p.144)* for the flowchart of Epson Stylus Photo PX660/PX660 Premium/Artisan 635.

START

4.2.4 Upper Housing/ Scanner Cable Cover *(p.66)*
4.2.1 Paper Support Assy *(p.64)*
4.2.2 Stacker Cover *(p.64)*
4.2.3 Document Cover/ ASF Cover *(p.65)*

4.2.5 Scanner Unit *(p.69)*
4.2.8 Waste Ink Tray Assy *(p.74)*
4.2.6 Panel Unit *(p.72)*

4.2.6 Panel Unit *(p.72)*
4.5.1 Scanner Housing *(p.106)*
4.4.1 Printhead *(p.85)*
4.2.7 M/B Cover *(p.74)*
4.3.2 Panel Board *(p.81)*

4.2.7 M/B Cover *(p.74)*
4.5.2 CIS Unit *(p.107)*
4.5.3 CR Motor Unit *(p.108)*
4.3.1 Main Board Unit *(p.78)*

4.3.1 Main Board Unit *(p.78)*[*1]

4.2.8 Waste Ink Tray Assy *(p.74)*

4.2.9 Middle Housing *(p.75)*

4.4.3 Printer Mechanism *(p.88)*[*2]
4.4.2 Linear Scale *(p.87)*
4.4.4 PF Encoder/PF Scale *(p.90)*

4.4.8 APG Unit *(p.95)*
4.4.6 Ink System Unit *(p.92)*
4.4.4 PF Encoder/PF Scale *(p.90)*
4.4.9 CR Motor *(p.96)*
4.4.11 Paper Eject Frame Assy *(p.100)*
4.4.14 Waste Ink Pads *(p.105)*
4.3.3 Power Supply Board *(p.83)*

4.4.2 Linear Scale *(p.87)*
4.4.7 ASF Unit *(p.93)*
4.4.5 PF Motor *(p.91)*

4.4.4 PF Encoder/PF Scale *(p.90)*
4.4.12 Upper Paper Guides *(p.102)*

4.4.10 CR Unit *(p.98)*
4.4.12 Upper Paper Guides *(p.102)*

4.4.6 Ink System Unit *(p.92)*
4.4.11 Paper Eject Frame Assy *(p.100)*

4.4.7 ASF Unit *(p.93)*
4.4.13 Front Paper Guide Assy *(p.104)*

NOTE *1:* When replacing the Middle Housing, the attached Main Board Unit must be removed from the Middle Housing, however, when only removing the Middle Housing to disassemble the parts mentioned after it in this flowchart, you do not need to remove the attached Main Board Unit from the Middle Housing.

   2: When replacing the Printer Mechanism, the following parts should be replaced other than the housings.

   - Printhead *(p.85)*
   - PF Encoder/PF Scale *(p.90)*
   - Head FFC Assy *(p.98)*

Flowchart 4-1. Disassembly Procedure

4.2 Removal of Exterior Parts

4.2.1 Paper Support Assy

☐ Parts/Components need to be removed in advance: None

☐ Removal procedure

1. Open the Paper Support Assy.
2. Push the bushing of the ASF Unit (left side) in the direction of the arrow to release the dowel of the Paper Support Assy, and then remove the Paper Support Assy with disengaging the Edge Guides.
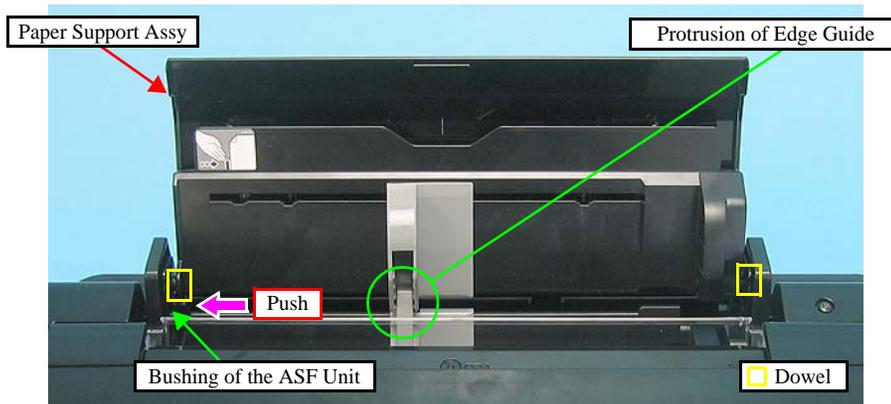
Figure 4-4. Removing the Paper Support Assy

REASSEMBLY

When assembling the Paper Support Assy, align the hole with the protrusion of the Edge Guide on the left end, and engage the dowels of the Paper Support Assy in the order shown below.
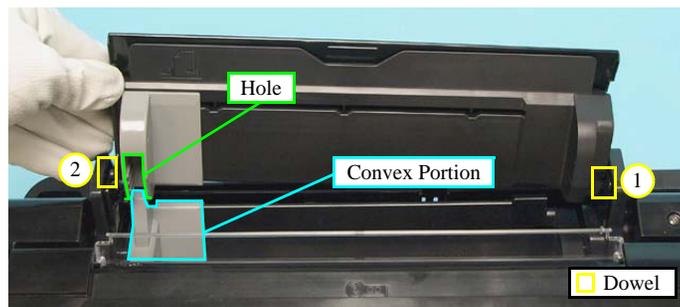
Figure 4-5. Installing the Paper Support Assy

4.2.2 Stacker Cover

☐ Parts/Components need to be removed in advance: None

☐ Removal procedure

1. Pull the Stacker Cover forward to open it.
2. Release the dowels (x2) that secure the Stacker Cover, and remove the Stacker Cover from the Lower Housing.

Figure 4-6. Removing the Stacker Cover

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4.2.3 Document Cover/ASF Cover

☐ Parts/Components need to be removed in advance: None

☐ Removal procedure

■ Document Cover

1. Open the Paper Support Assy

2. Lift the hinge part of the Document Cover slightly and release the hooks (x2), and remove the Document Cover.

Figure 4-7. Removing the Document Cover

■ ASF Cover

1. Open the Paper Support Assy

2. Release the both guide pins of the ASF Cover from the holes of the Scanner Unit, and remove the ASF Cover.
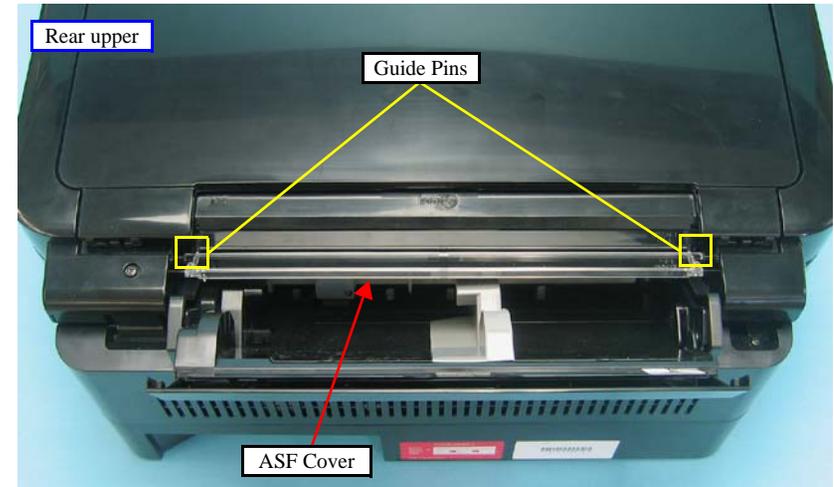
Figure 4-8. Removing the ASF Cover

4.2.4 Upper Housing/Scanner Cable Cover

CHECK POINT ✔

> The Scanner Unit cannot be opened enough to use a general screwdriver for removing the screws that secure the Upper Housing; therefore, this section describes removing the Scanner Unit before removing the Upper Housing.
> The screws that secure the Upper Housing can be removed with a L-shaped screwdriver, a stubby driver or a similar tool without removing the Scanner Unit, in that case, you can skip the step 3 to 5 *(p.67)*.

L-shaped screwdriver | Stubby driver

Figure 4-9. L-shaped Screwdriver and Stubby Driver

☐ Parts/Components need to be removed in advance: None

☐ Removal procedure

1. Open the Scanner Unit.

2. Release the hook of the Scanner Cable Cover and remove it in the direction of the arrow.

Left inside

Scanner Unit

Middle Housing

Scanner Cable Cover

☐ Rib
☐ Hook
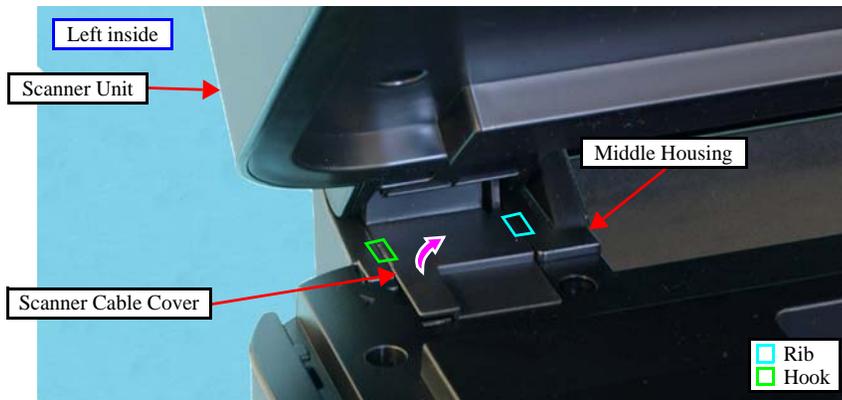
Figure 4-10. Removing the Scanner Cable Cover

3. Close the Scanner Unit and remove the screws (x2) of the hinge part.

Rear upper

1

2

○ C.B.P. 3x10 (6±1 Kgfcm)

Figure 4-11. Removing the Upper Housing (1)

CAUTION

!

When removing the Scanner Unit from the printer, be careful not to damage the cables of the Scanner Unit connected to the printer.

4. Pull out the hinge of the Scanner Unit on the left side.

5. While keeping the Scanner Unit open at 45 degrees, push it in the direction of the arrow as shown in Fig. 4-12 to remove the Scanner Unit from the right hinge.
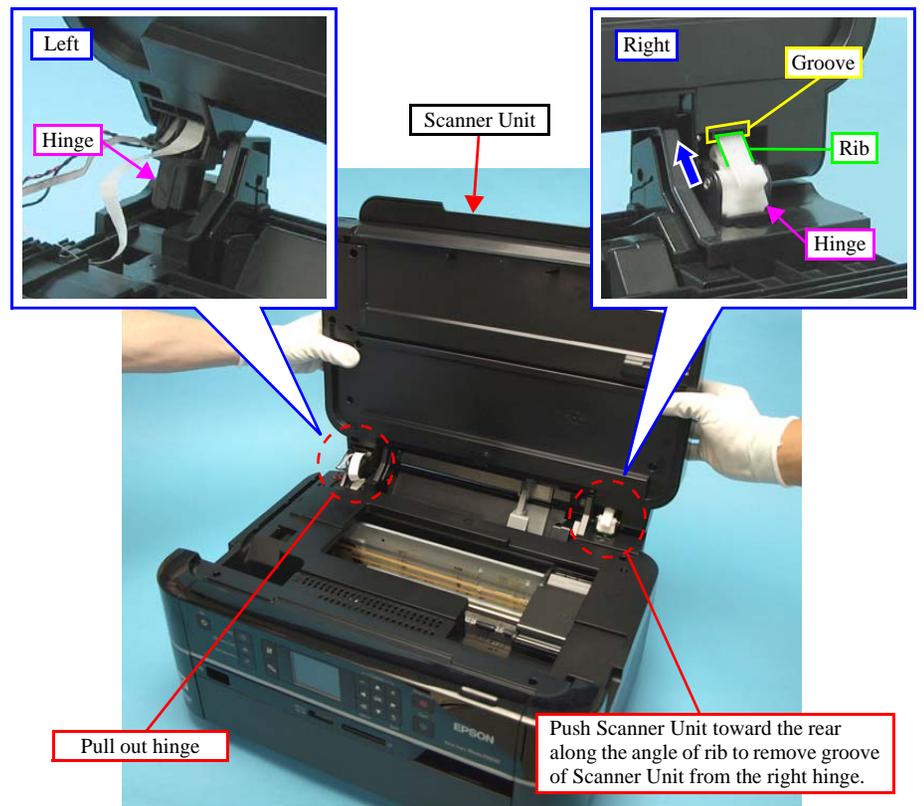

Figure 4-12. Removing the Upper Housing (2)

6. While holding the Scanner Unit, remove the screws (x7) that secure the Upper Housing.
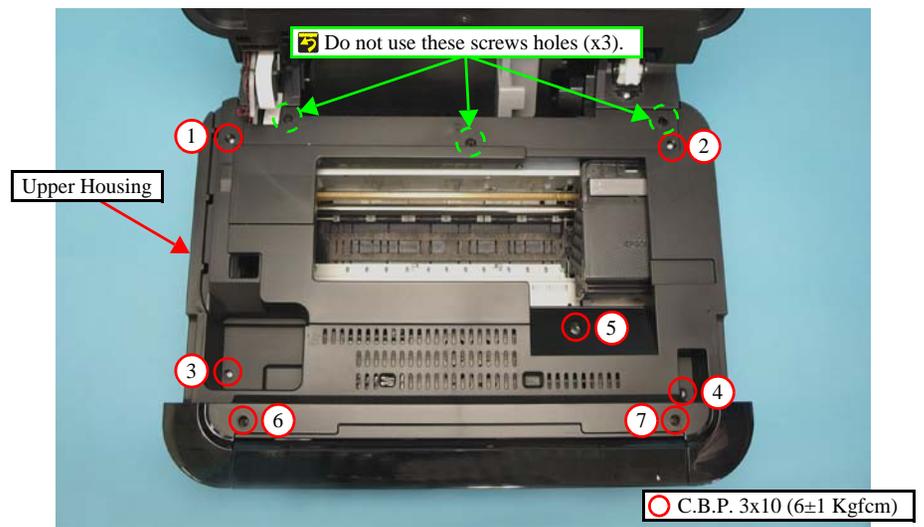
Figure 4-13. Removing the Upper Housing (3)

7. Put the Scanner Unit on the Upper Housing.

8. Pull the Panel Unit forward, and release the hooks (x2) on the both sides under the Panel Unit.
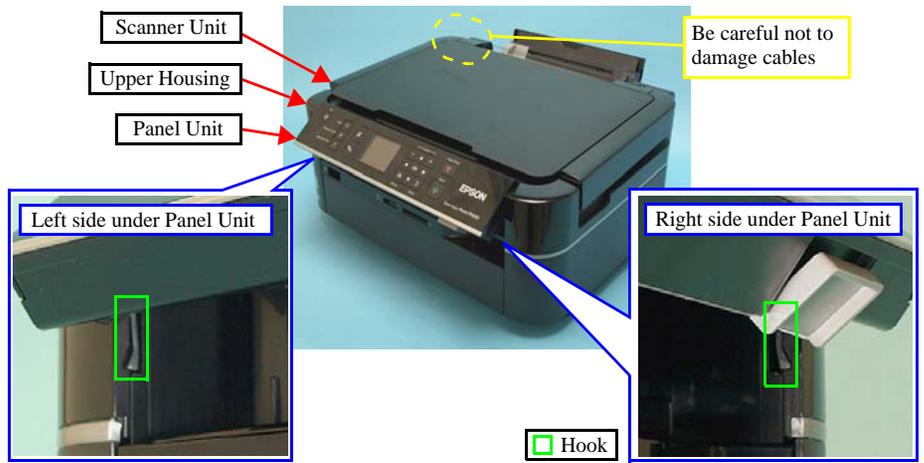
Figure 4-14. Removing the Upper Housing (4)

9. Lift and hold the Scanner Unit, and remove the Upper Housing.
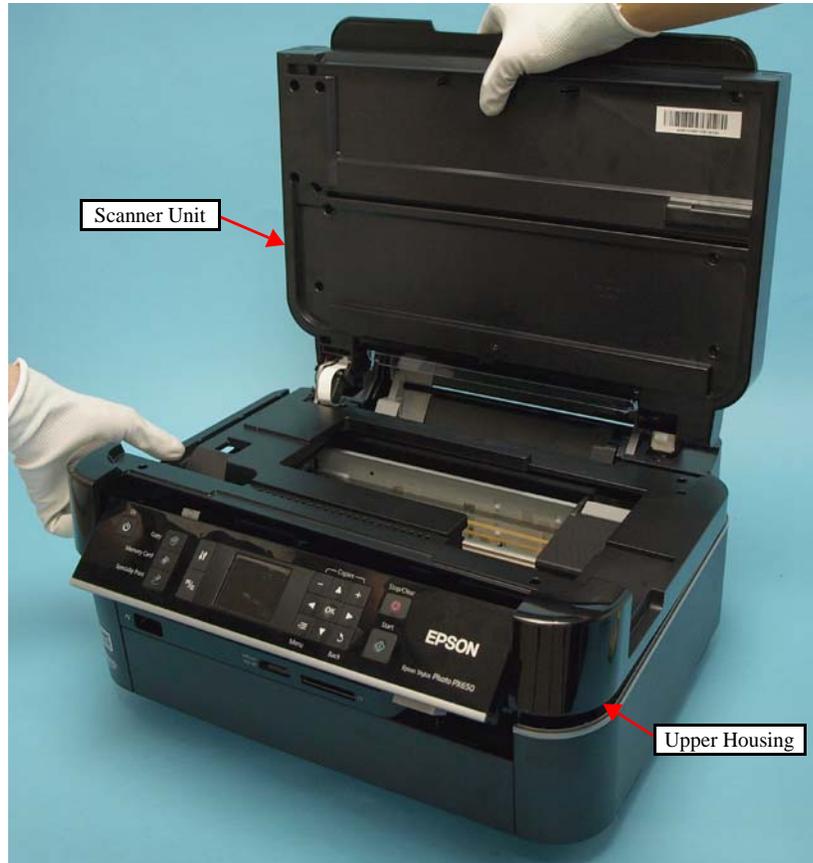
Figure 4-15. Removing the Upper Housing (5)

■ **If a Mall comes off when installing the Upper Housing, align the grooves of the Mall with the ribs of the Upper Housing and the Middle Housing.**
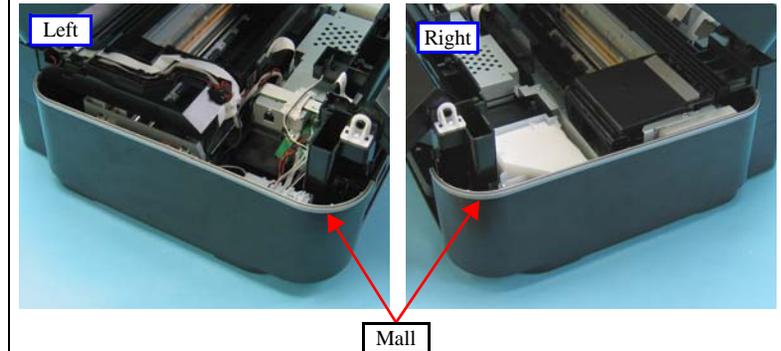
Figure 4-16. Installing the Upper Housing

■ **When installing the Upper Housing, do not use the screw holes (x3) on the rear side as shown in Fig. 4-13.**

■ **When installing the Upper Housing, tighten the screws in the order given in Fig. 4-13.**

■ **When installing the Scanner Unit to the printer, tighten the screws in the order given in Fig. 4-11.**

■ **When attaching the Scanner Cable Cover, insert the rib of the Scanner Cable Cover to the hole of the Middle Housing, and secure it with the hook.** *(See Figure 4-10.)*

4.2.5 Scanner Unit

CHECK POINT ✔

The disassembly/reassembly procedures for Epson Stylus Photo PX660/PX660 Premium/Artisan 635 differ from those for Epson Stylus Photo PX650/TX650/TX659. See **"8.2.2.1 Scanner Unit"** *(p.145)* for the procedures.

CAUTION !

■ **The Scanner Unit is not secured to the printer when removing the Upper Housing using a general screwdriver. However, when removing the Upper Housing using the tools specified in the check point in *p.66*, the Scanner Unit is secured to the printer; therefore, make sure to follow the check point in the steps and remove the screws that secure the Scanner Unit and the hinges.**

■ **It is difficult to remove/attach the cables with holding the Scanner Unit; therefore, the following explains the procedure while engaging the hinges without securing them by screws as shown below. Be careful for handing them, since the hinge sections may break easily when opening/closing the Scanner Unit.**

Left | Hinge | Hole

Insert left hinge to hole of Middle Housing.

Right | Groove | Rib | Hinge

Engage groove of Scanner Unit with rib of the right hinge.

Scanner Unit

Be careful not to break hinge sections if these are not secured with screws.

Figure 4-17. Scanner Unit

☐ Parts/Components need to be removed in advance

    Upper Housing

☐ Removal procedure

1. Install the Scanner Unit to the printer as instructed in Fig. 4-17.

2. Disconnect the Scanner FFC (CN19), the Scanner CR Motor Cable (CN17) and the Scanner CR Encoder Cable (CN20) from the connector on the Main Board.

3. Remove the screw that secure the grounding wire.

Top of Main Board | Scanner CR Motor Cable | Scanner FFC | Scanner CR Encoder Cable | Grounding wire | CN 20 | CN 17 | CN 19 | ○ C.B.P. 3x10 (6±1 Kgfcm)
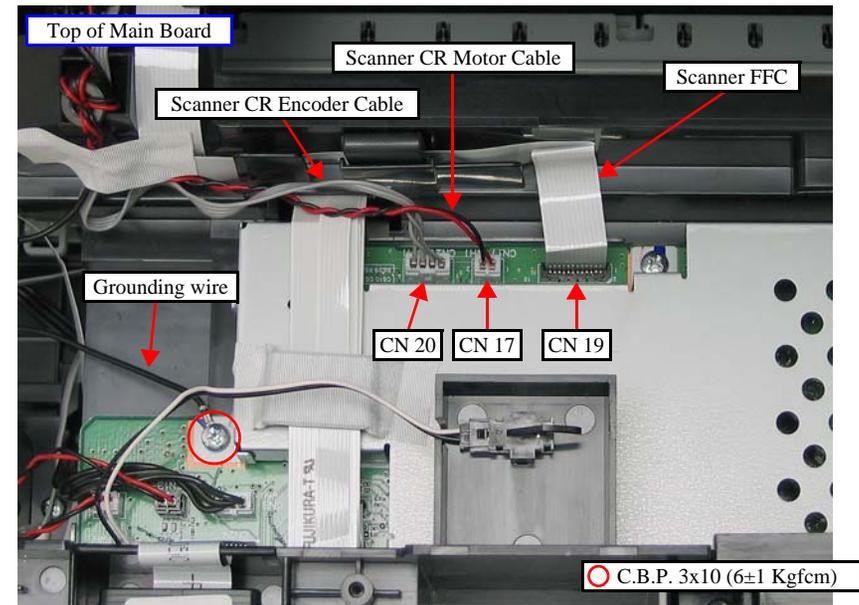
Figure 4-18. Removing the Scanner Unit (1)

4. Peel off the acetate tape, and release the all cables and FFCs of the Scanner Unit from the grooves and ribs of the Middle Housing.

5. Pull out the Scanner FFC from the Ferrite Core A.

Put ferrite core of Scanner CR Motor Cable in groove here.

Ferrite Core A

Acetate tape

Groove and Rib
Double-sided tape
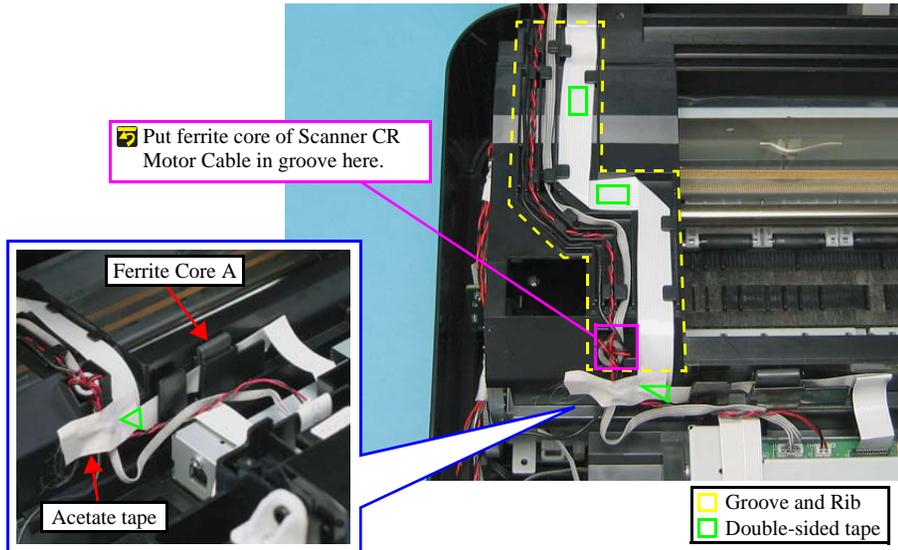
Figure 4-19. Removing the Scanner Unit (2)

CHECK POINT ✓

If you remove the Upper Housing using the L-shaped screwdriver, the stubby driver or a similar tool *(p. 66)*, the Scanner Unit is secured with the screws. Make sure to remove the screws (x2) that secure the Scanner Unit before taking the following steps. *(See Figure 4-11.)*

6. Pull out the hinge of the Scanner Unit on the left side.

7. While keeping the Scanner Unit open at 45 degrees, push it in the direction of the arrow as shown in Fig. 4-20 to remove the Scanner Unit from the right hinge.

Left

Hinge

Hole

Scanner Unit

Right

Groove

Rib

Hinge
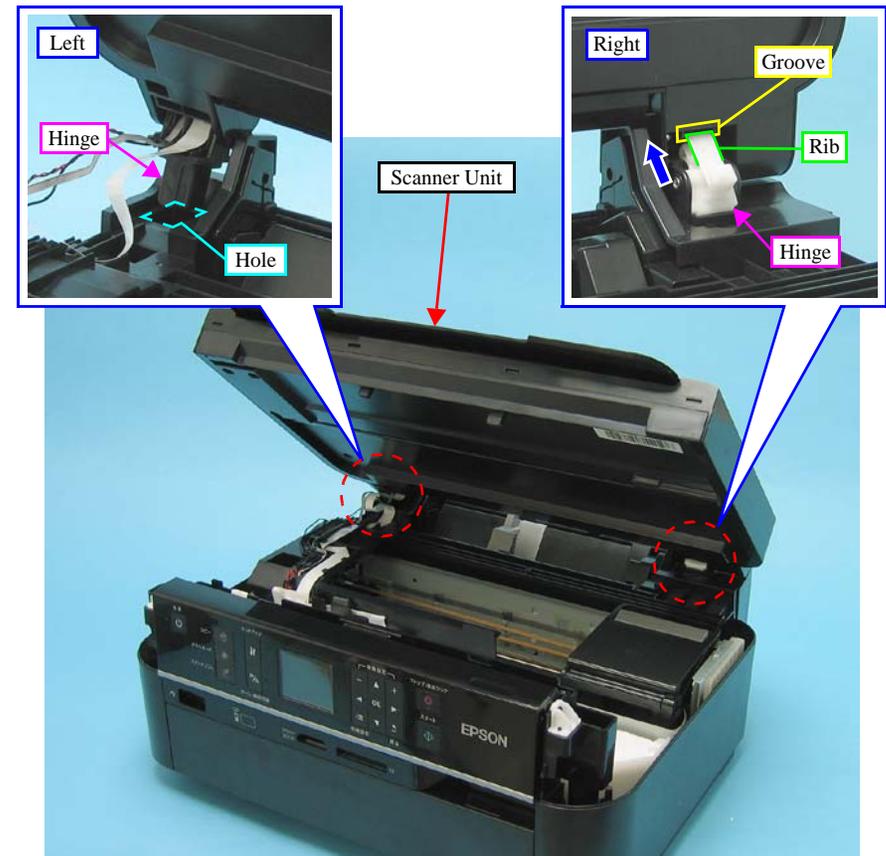
Figure 4-20. Removing the Scanner Unit (3)

REASSEMBLY ■ When installing the Scanner Unit, route the following cables through the grooves and ribs of the Middle Housing, and secure the FFC with double-sided tape.

Cable/FFC	Groove	Number of Rib	Number of double-sided tape
Scanner FFC	A	5	2
Scanner CR Encoder Cable	B	5	---
Scanner CR Motor Cable	C	5	---
Grounding wire	D	7	---

REASSEMBLY
■ After routing the cables, put the ferrite core of the Scanner CR Motor cable in the groove of the Middle Housing. *(See Figure 4-19.)*
■ After routing the cables, secure them with acetate tape and double-sided tape as shown in **Fig. 4-19**.
■ After routing the cables from the Main Board side, insert the slack cables and FFCs into the hole on the Middle Housing. *(See Figure 4-21.)*

Rear left

Insert slack cables and FFCs into hole

Groove B
Groove C
Groove D
Groove A

□ Groove
□ Rib
□ Double-sided tape

Figure 4-21. Routing the Cables

4.2.6 Panel Unit

 CHECK POINT ✓ | **The disassembly/reassembly procedures for Epson Stylus Photo PX660/PX660 Premium/Artisan 635 differ from those for Epson Stylus Photo PX650/TX650/TX659. See "8.2.2.2 Panel Unit" (p.148) for the procedures.**

☐ Parts/Components need to be removed in advance

Upper Housing

☐ Removal procedure

 CAUTION ! | **Be careful not to disconnect the Panel FFC from the connector on the Panel Board.**

1. Disconnect the Panel FFC (CN24) from the connector on the Main Board and peel off the Panel FFC from the M/B Cover.
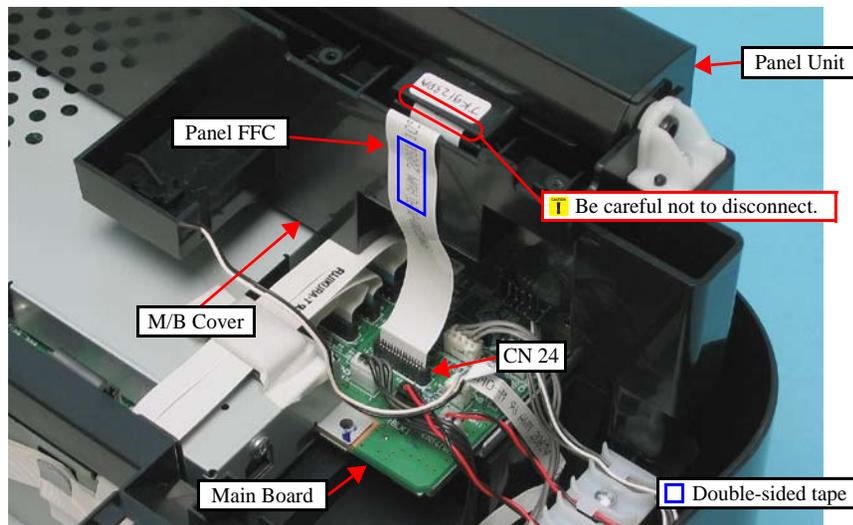
Figure 4-22. Removing the Panel Unit (1)

2. Remove the screws (x2) that secure the Panel Gear.

3. Remove the screws (x1 each) that secure the Panel Hinges (x2), and remove the Panel Unit from the M/B Cover.

○ C.B.P. 3x10 (6±1 Kgfcm)　　□ Positioning hole and dowel
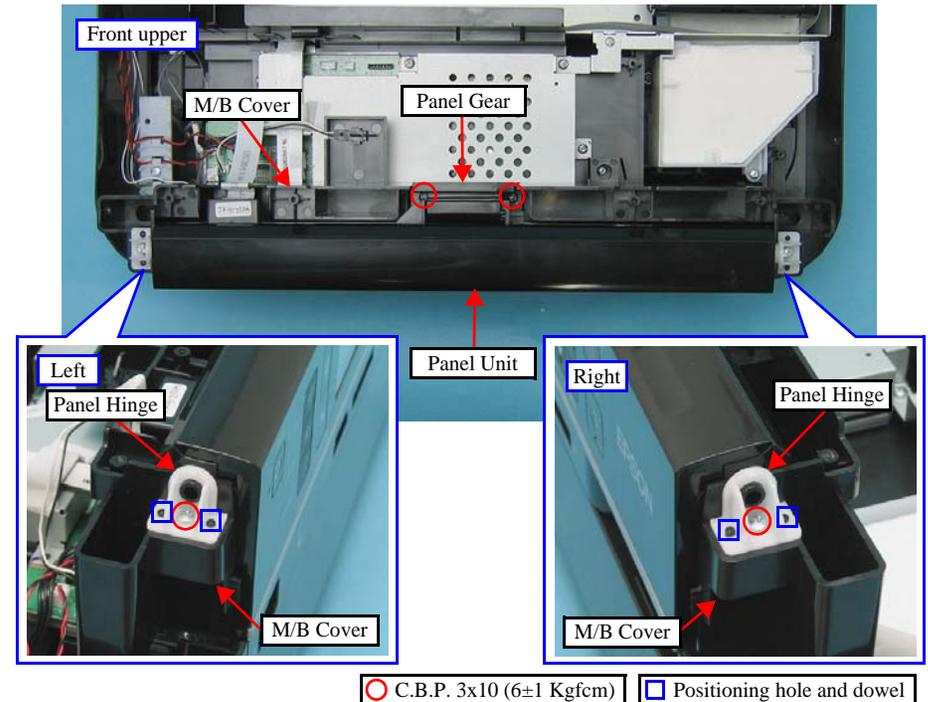
Figure 4-23. Removing the Panel Unit (2)

REASSEMBLY

■ **When attaching the Panel Gear to the Panel Unit, align the protrusion of the Panel Unit with the groove of the Panel Gear.**

Rear of Panel Unit

Panel Unit

Panel Gear

Protrusion and groove
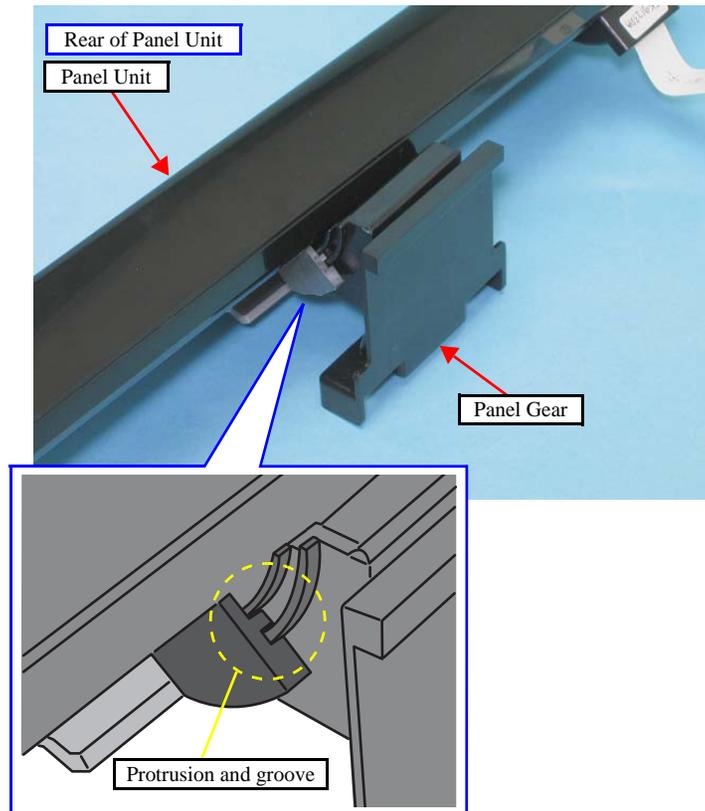
Figure 4-24. Installing the Panel Unit (1)

REASSEMBLY

■ **When installing the Panel Unit, make sure to engage the point A and B of the Panel Gear with the M/B Cover properly as shown below.**
  - **Point A:** Insert the ribs (x3) of the Panel Gear to the grooves (x3) of the M/B Cover.
  - **Point B:** Insert the small box of the Panel Gear to the hole of the M/B Cover.

Rear of point A

Panel Unit   M/B Cover

Panel Gear

Point A

Point B

Panel Gear

Panel Gear

Rib
Groove
Small box
Hole
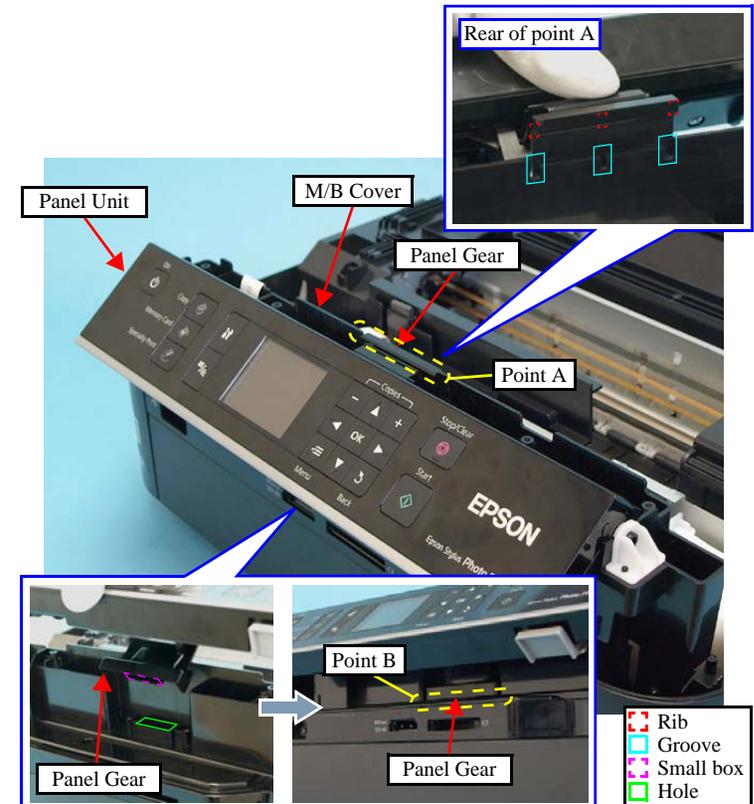
Figure 4-25. Installing the Panel Unit (2)

■ **When installing the Pane Unit, align the positioning holes (x2 each) of the Panel Hinges with the dowels (x2 each) of the M/B Covers.** *(See Figure 4-23.)*

■ **Make sure that the Panel Unit moves smoothly after installing the Panel Unit.**

4.2.7 M/B Cover

☐ Parts/Components need to be removed in advance

Upper Housing / Panel Unit

☐ Removal procedure

1. Release the Cover Open Sensor Cable from the hook of the M/B Cover, and disconnect the Cover Open Sensor Cable (CN5) from the connector on the Main Board.
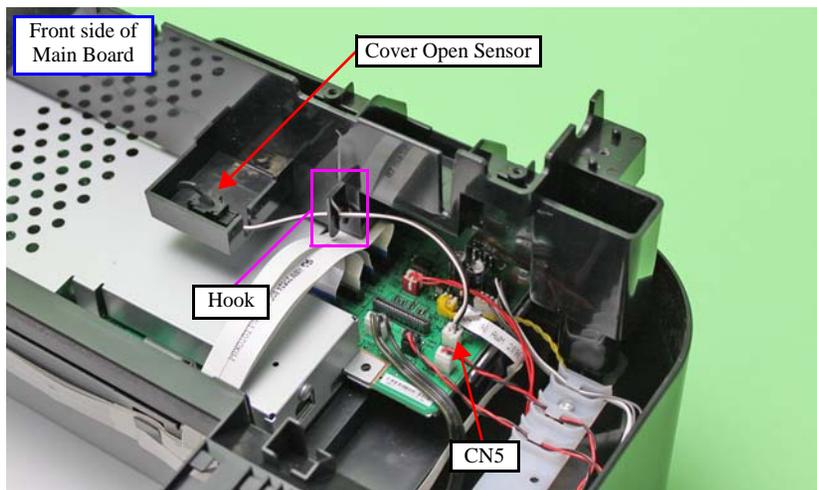
Figure 4-26. Removing the M/B Cover (1)

2. Remove the screws (x4) that secure the M/B Cover, and remove the M/B Cover from the Middle Housing.
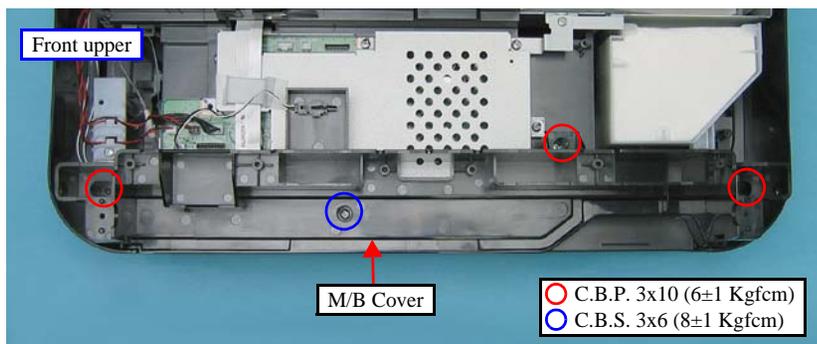
Figure 4-27. Removing the M/B Cover (2)

4.2.8 Waste Ink Tray Assy

☐ Parts/Components need to be removed in advance

Upper Housing

☐ Removal procedure

⚠ CAUTION	**When removing the Waste Ink Tray Assy, take extra care not to contaminate the surrounding objects with waste ink.**

1. Unlock the Carriage and move the Carriage Unit to the center of the printer. (See "4.1.5 How to Unlock the Carriage" *(p.62)*)

2. Remove the screws (x2) that secure the EMI Frame, and remove the EMI Frame.

3. Remove the screws (x2) that secure the Waste Ink Tray Assy, and lift the Waste Ink Tray Assy.

4. Pull out the Waste Ink Tube from the Waste Ink Tray Assy, and remove the Waste Ink Tray Assy.
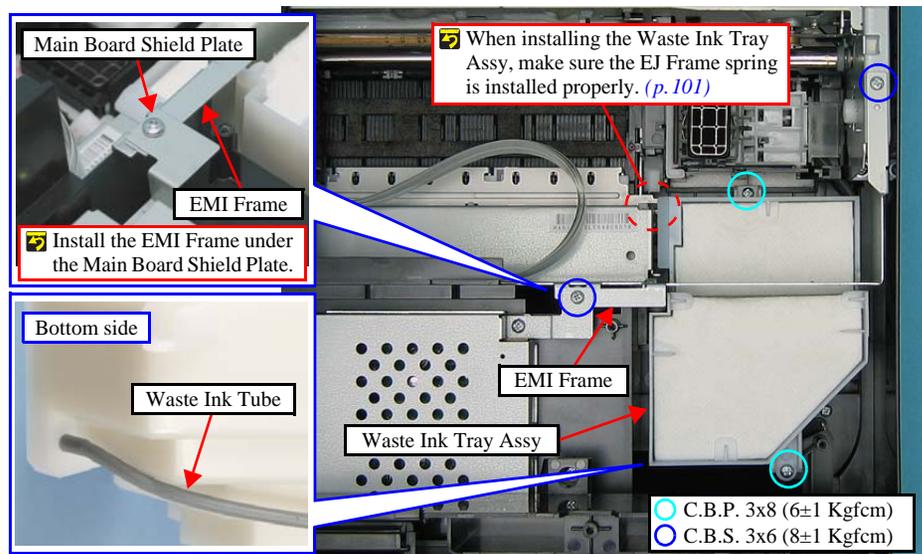
Figure 4-28. Removing the Waste Ink Tray Assy

REASSEMBLY

When connecting the Waste Ink Tube, be careful of the following:

■ **Do not press the Waste Ink Tube when installing the Waste Ink Tray Assy. Otherwise, the ink may leak.**

■ **Route the Waste Ink Tube with red line facing up through the rib of the Lower Housing without any twisting.**

Route the tube with red line facing up

Rib
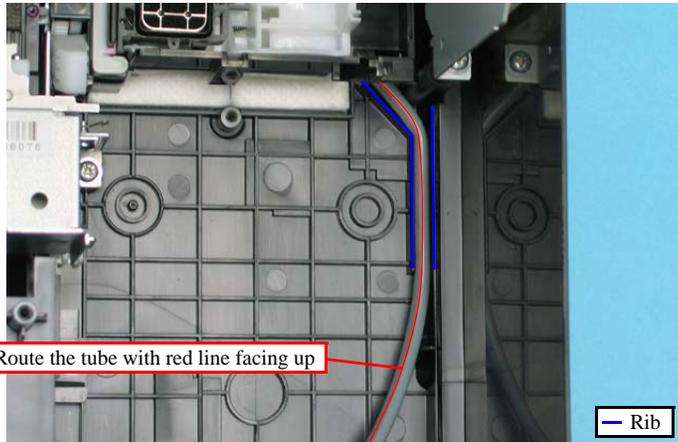
Figure 4-29. Routing the Waste Ink Tube

■ **Wipe the ink off the joint area of the tube, if any. With ink left adhering to the joint area, the tube cannot be connected firmly and may come off easily.**

ADJUSTMENT REQUIRED

After removing/replacing the Waste Ink Tray Assy, make the specified adjustments. (See **Chapter 5 "ADJUSTMENT".**)

4.2.9 Middle Housing

CHECK POINT

If you do not intend to replace the Middle Housing, you can remove the Middle Housing together with the Main Board Unit and the Card Slot Cover.

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Main Board Unit / Waste Ink Tray Assy

☐ Removal procedure

1. Remove the screw that secure the hinge, and remove the hinge from the Middle Housing.

Rear right

Hinge

⭕ C.B.P. 3x10 (6±1 Kgfcm)
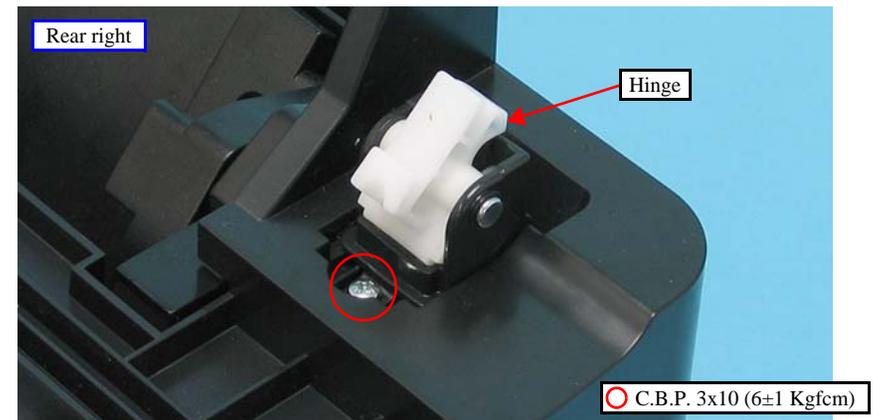
Figure 4-30. Removing the Hinge

2. Remove the screws (x2) that secure the Card Slot Cover, and remove the Card Slot Cover.
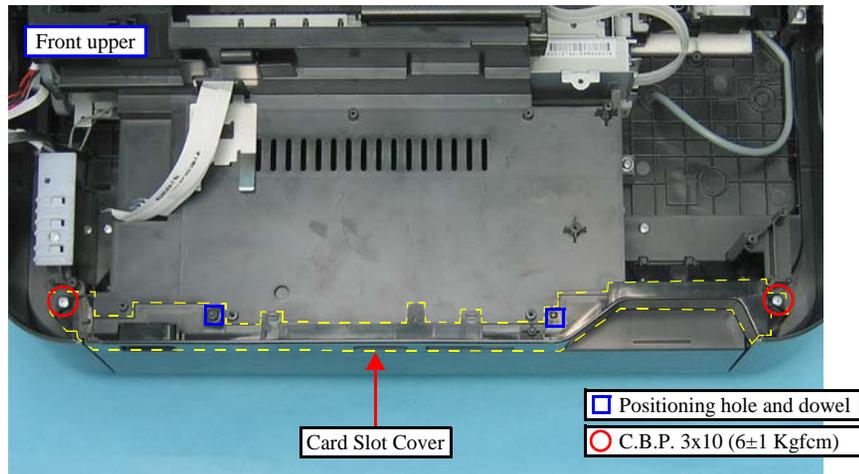
Figure 4-31. Removing the Card Slot Cover

CAUTION !	When removing the Middle Housing, it may touch and damage the cables, the PF Encoder, the PF Scale *(p. 90)* or the APG Unit *(p. 95)*. Be careful not to let the Middle Housing interfere with these parts when removing the Middle Housing.

3. Remove the screws (x5) that secure the Middle Housing.

4. Push outward on the left and right sides of the Middle Housing to widen it, and remove the Middle Housing while avoiding the PF Encoder, PF Scale and APG Unit.
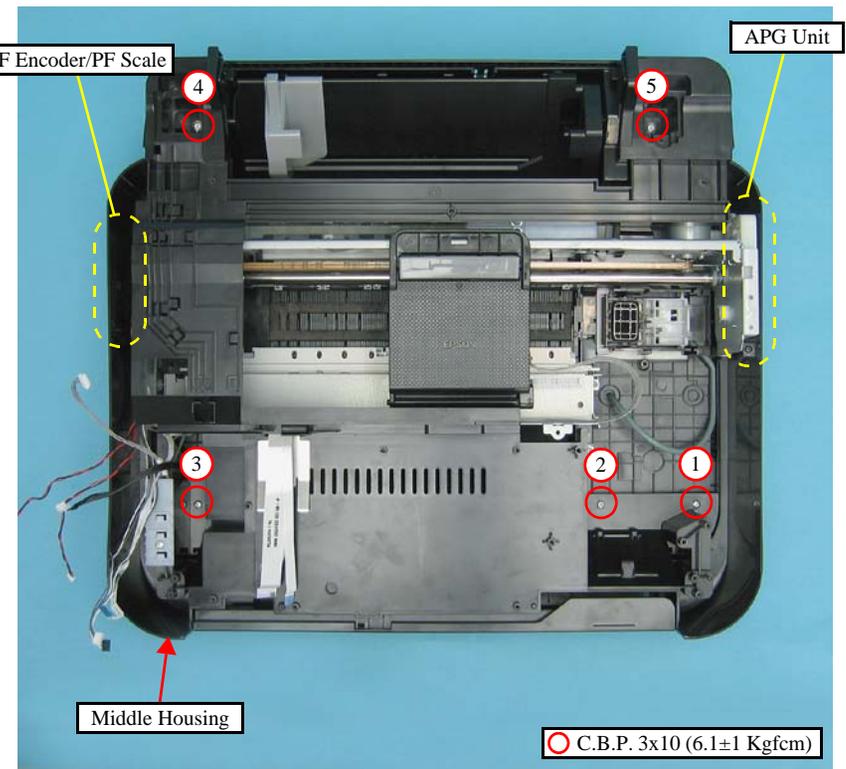
Figure 4-32. Removing the Middle Housing

■ **When installing the Middle Housing, pull out the Head FFC from the point A and other cables from the point B. Be careful not to damage the cables by letting them get caught.**

Point A

Point B
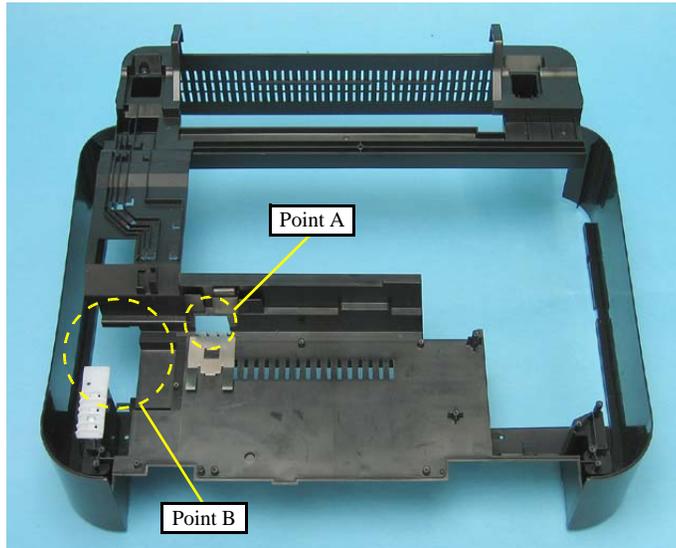
Figure 4-33. Installing the Middle Housing (1)

■ **When installing the Middle Housing, route the Head FFC between the Front Frame and the Middle Housing.**

Head FFC
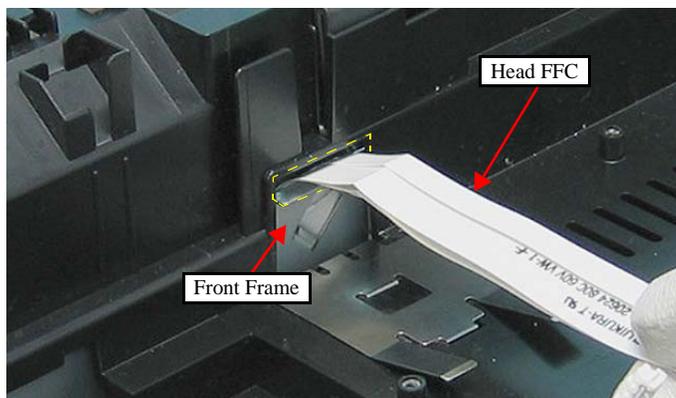
Front Frame

Figure 4-34. Installing the Middle Housing (2)

■ **When installing the Middle Housing, align the hooks (x2) of the Front Frame Ground Plate with the hole of the Middle Housing, and then slide it in the direction of the arrow to secure the hooks. Make sure that the Front Frame Ground Plate surely comes in contact with the Front Frame.**

Front Frame

Front Frame Ground Plate

Align hooks (x2) with hole of Middle Housing, slide it in the direction of the arrow to secure.

In contact with the Front Frame

☐ Hook
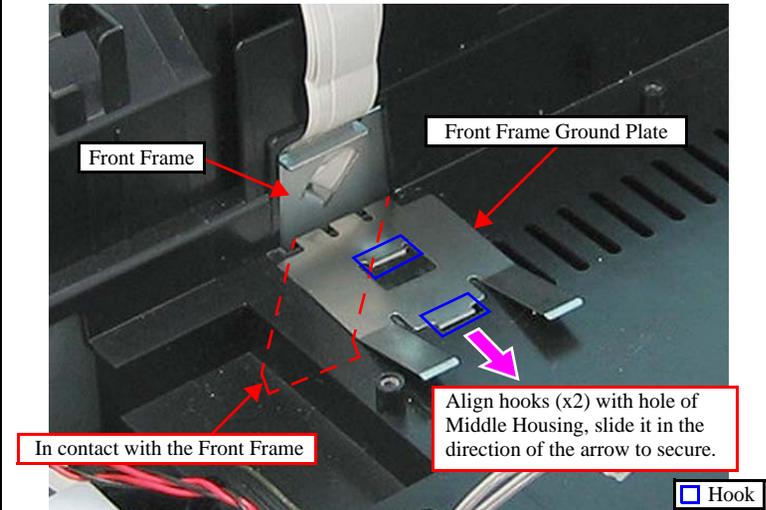
Figure 4-35. Installing the Middle Housing (3)

■ **Tighten the screws in the order given in Fig. 4-32.**
■ **When installing the Card Slot Cover, align the positioning holes of the Card Slot Cover with the dowels of the Middle Housing. (See Figure 4-31.)**
■ **For routing the cables, see *Figure 4-39(p.79).***

4.3 Removing the Circuit Boards

4.3.1 Main Board Unit

CHECK POINT ✔	■ **The disassembly/reassembly procedures for Epson Stylus Photo PX660/PX660 Premium/Artisan 635 differ from those for Epson Stylus Photo PX650/TX650/TX659. See "8.2.2.3 Main Board Unit" (p.150) for the procedures.** ■ **When removing or installing the Main Board Unit, the Middle Housing may bend by applying the force using the screwdriver, and it may cause of stress whitening around the screw holes and positioning holes of the Card Slot Cover.** **To prevent this from happening, insert the Ink Cartridges (x2) under the Middle Housing with bottom side up as shown below, and remove or install the Main Board Unit while supporting the Middle Housing with the cartridges.**

Do not insert cartridge too deep.

Support Middle Housing with the bottom of Ink Cartridge.

Stacker Assy

Card Slot Cover

Supporting point

Stacker Lever

Ink Cartridge

Dowel

1. Press down the Stacker Lever to make the Stacker Assy to the CDR position. (See *Figure 4-62(p.89)*.)
2. Insert the Ink Cartridges (x2) with the bottoms side up under the spaces outside the dowels (x2) on the Middle Housing.
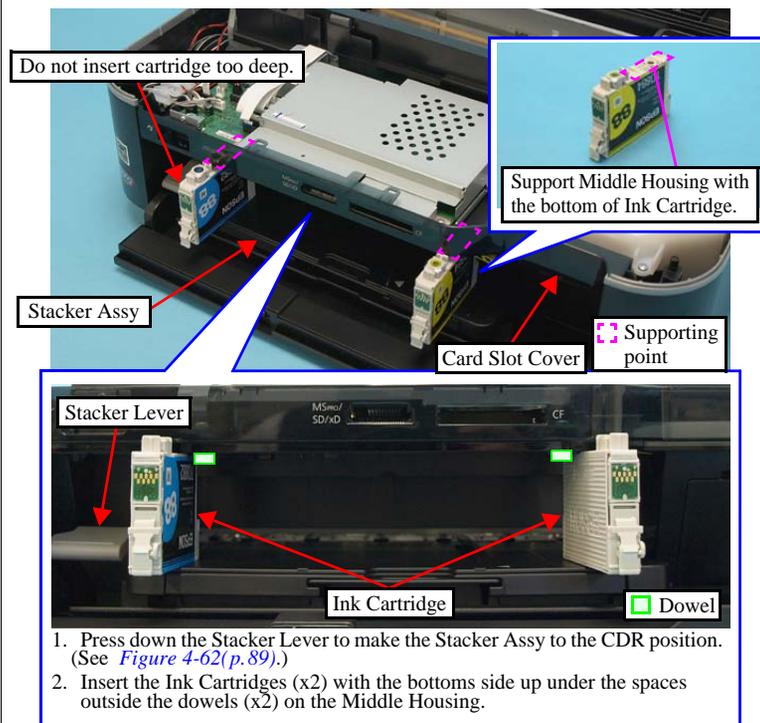
Figure 4-36. Supporting the Middle Housing

☐ Parts/Components need to be removed in advance

Upper Housing / Panel Unit / M/B Cover

☐ Removal procedure

1. Disconnect the following cables from the connector on the Main Board.

CN No.	Cable/FFC	Connector Color	Number of pins	CN No.	Cable/FFC	Connector Color	Number of pins
CN3	Power Supply Unit cable	White	3	CN14	CR Motor cable	White	2
CN4	CDR Sensor cable	White	4	CN10	Head FFC	---	13
CN6	PE Sensor cable	White	3	CN11	Head FFC	---	13
CN7	APG Sensor cable	Black	3	CN12	Head FFC	---	9
CN8	PF Encoder FFC	---	5	CN15	Head FFC	---	13
CN13	PF Motor cable	Black	2	CN16	Head FFC	---	6
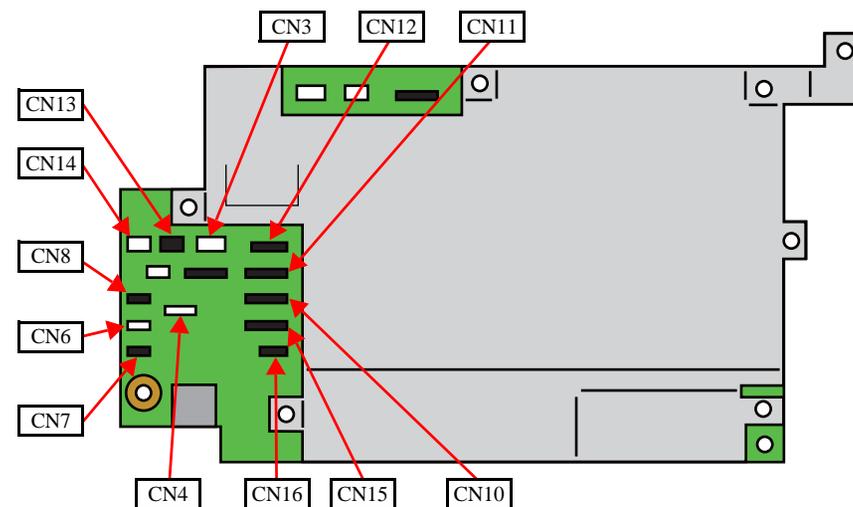
Figure 4-37. Removing the Main Board Unit (1)

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2. Pull out the Head FFC from the ferrite core.

3. Peel off the acetate tape and remove the ferrite core.

4. Remove the screws (x6) that secure the Main Board Unit.

5. Lift the rear side of the Main Board Unit, and remove it while avoiding from the rib of the Card Slot Cover.
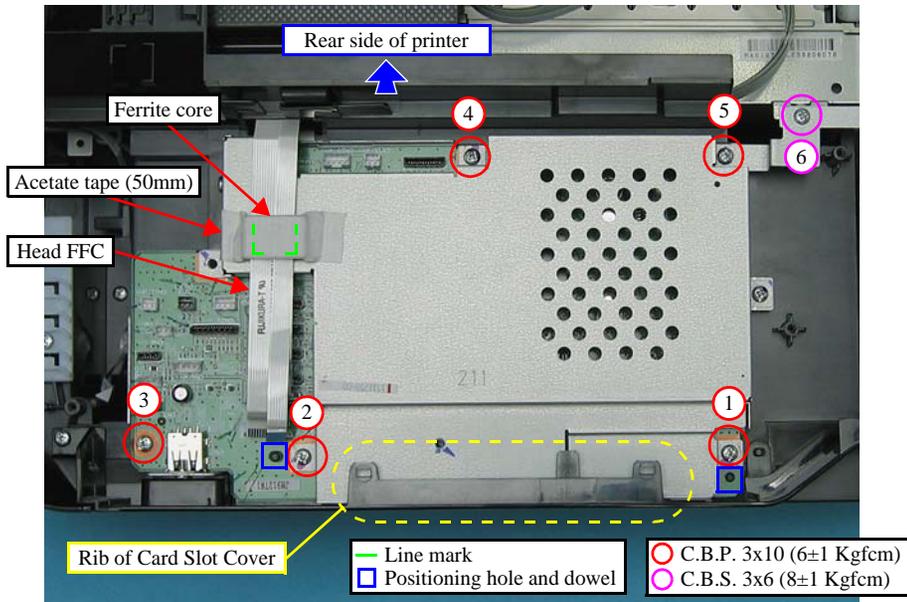
Figure 4-38. Removing the Main Board Unit (2)

REASSEMBLY

■ When installing the Main Board Unit, align the positioning holes (x2) of the Main Board Unit with the dowels (x2) of the Card Slot Cover. *(See Figure 4-38.)*

■ When installing the Main Board Unit, put the Head FFC through the ferrite core, align the ferrite core with the line mark of the Shield Plate M/B Upper and secure it with acetate tape. *(See Figure 4-38.)*

■ Tighten the screws in the order given in **Fig. 4-38**.

REASSEMBLY

■ **See the following for routing the cables to the Main Board Unit.**

Cable/FFC	Hook/Rib	Double-sided tape	CN No.
Power Supply Unit cable	Rib A	---	CN3
CDR Sensor cable	Rib B	---	CN4
PF Motor cable	Hook A	---	CN13
CR Motor cable	Hook B	---	CN14
PE Sensor cable	Hook C	---	CN6
APG Sensor cable	Hook C	---	CN7
PF Encoder FFC	---	x2	CN8
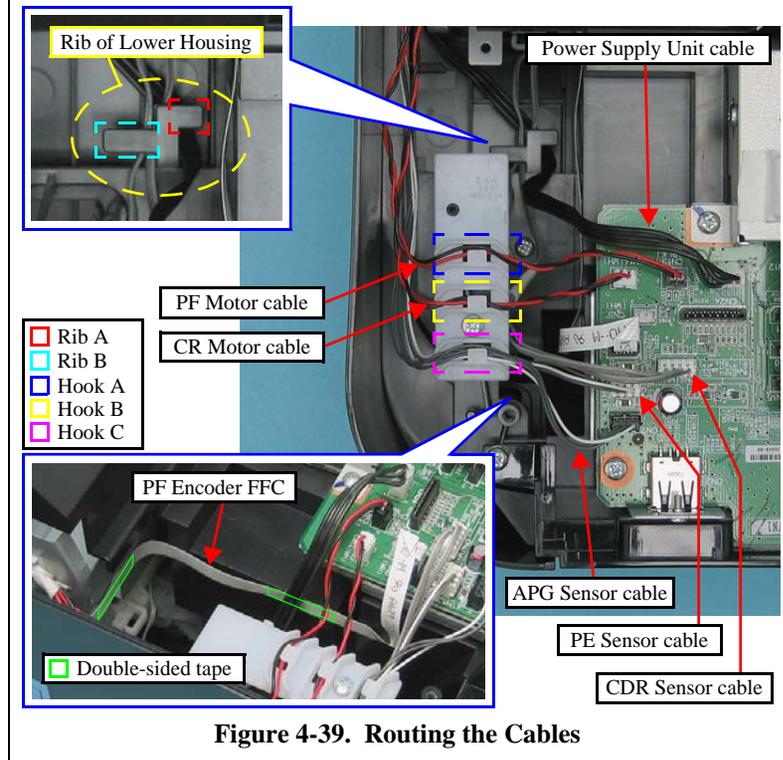
Figure 4-39. Routing the Cables

Confidential

☐ Disassembling the Main Board

1. Remove the screws (x2) that secure the Shield Plate M/B Upper, and remove the Shield Plate M/B Upper.

Shield Plate M/B Upper

| ○ | C.B.S. 3x6 (8.5±0.5 Kgfcm) |
| ○ | C.B. 3x6 (4±1 Kgfcm) |
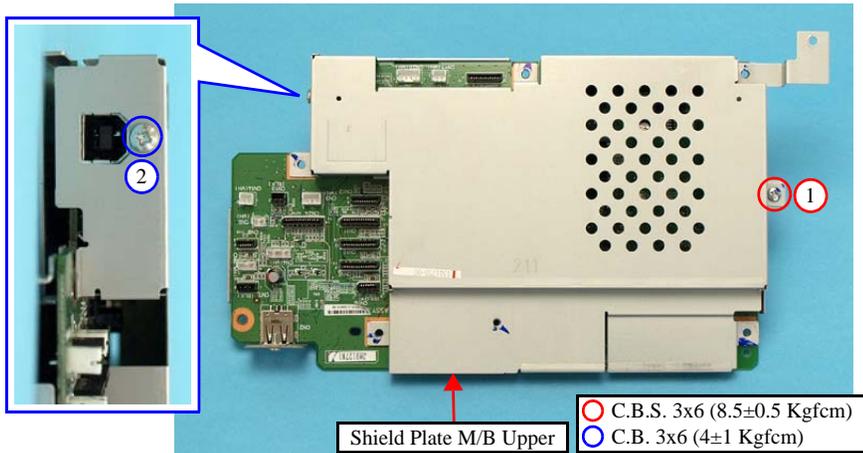
Figure 4-40. Removing the Main Board (1)

2. Remove the screws (x2) that secure the Main Board, and remove the Main Board from the Shield Plate M/B Lower.

Main Board

Shield Plate M/B Lower

| ○ | C.B.S. 3x12 (8.5±0.5 Kgfcm) |
| ○ | C.B. 2.5x6 (4±1 Kgfcm) |
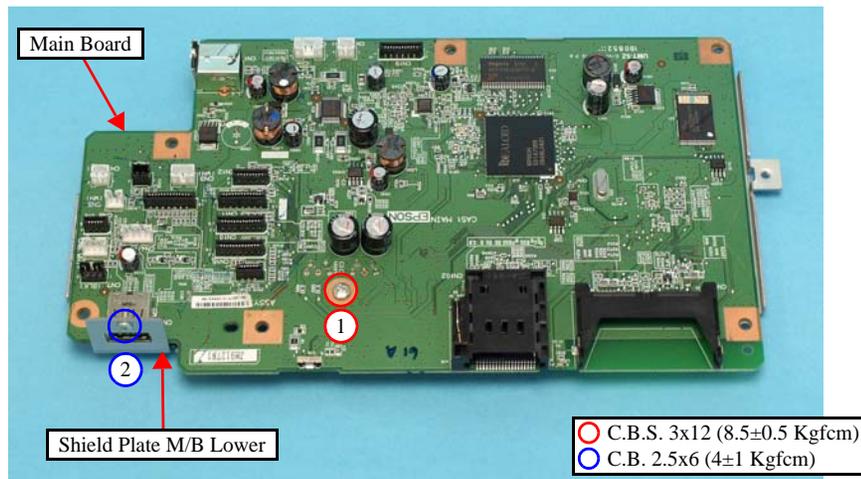
Figure 4-41. Removing the Main Board (2)

REASSEMBLY

- ■ When installing the Main Board to the Shield Plate M/B Lower, tighten the screw in the order given in Fig. 4-41.
- ■ When installing the Shield Plate M/B Upper, tighten the screw in the order given in Fig. 4-40.

ADJUSTMENT REQUIRED

After removing/replacing the Main Board Unit, make the specified adjustments. (See Chapter 5 "ADJUSTMENT".)

4.3.2 Panel Board

> **CHECK POINT** ✔
>
> This section applies to Epson Stylus Photo PX650/TX650/TX659 only. For Epson Stylus Photo PX660/PX660 Premium/Artisan 635, do not disassemble the Panel Unit any further than described in **"8.2.2.2 Panel Unit"** *(p.148)*. Because the touch panel may not function correctly due to the change in their reassembling state if the Panel Board is removed from the Panel Upper Housing.

☐ Parts/Components need to be removed in advance

Upper Housing / Panel Unit

☐ Removal procedure

1. Disengage the protrusion of the Panel Unit from the groove of the Pane Gear, and remove the Panel Gear.
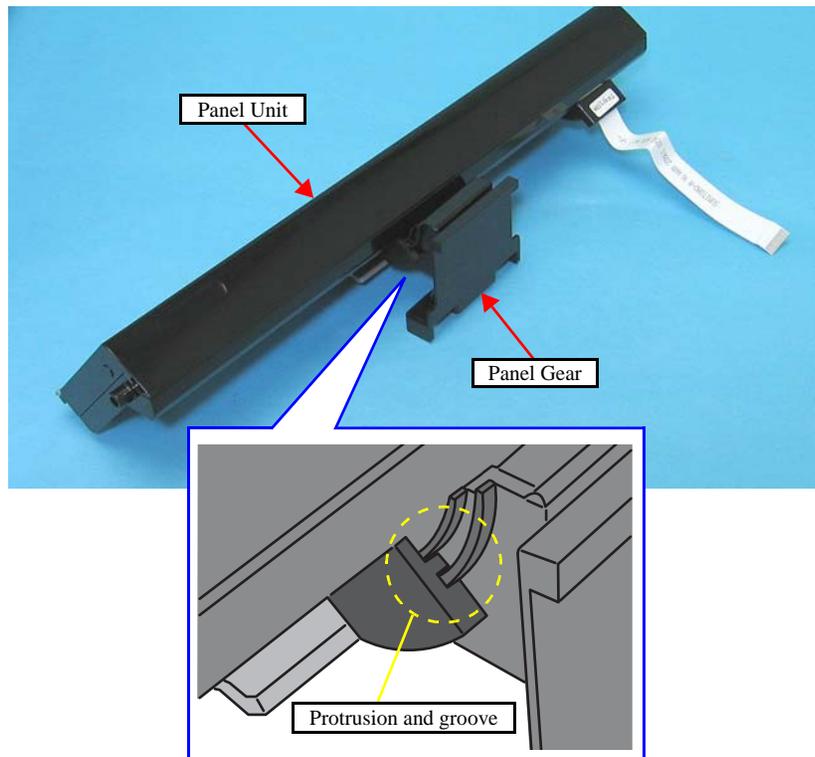
Figure 4-42. Removing the Panel Board (1)

2. Remove the torsion spring from the hooks of the Panel Unit and the Panel Lever.

3. Disengage the shaft of the Panel Lever from the bushing of the Panel Unit, and remove the Panel Lever.
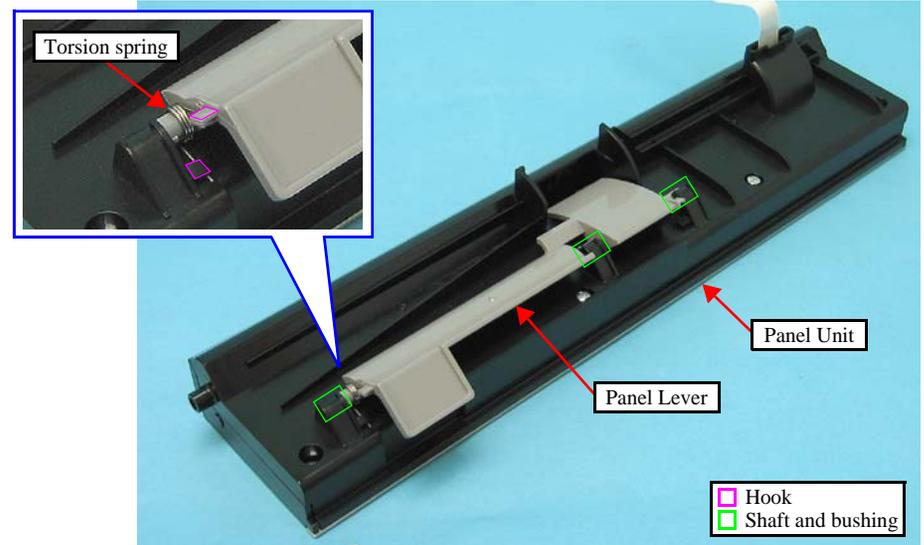
Figure 4-43. Removing the Panel Board (2)

4. Remove the screws (x4) that secure the Panel Housing Lower.

5. Release the hooks (x5) on the upper side of the Panel Unit, and remove the Panel Housing Lower from the Panel Unit while pulling out the Panel FFC from the hole of the Panel Housing Lower.
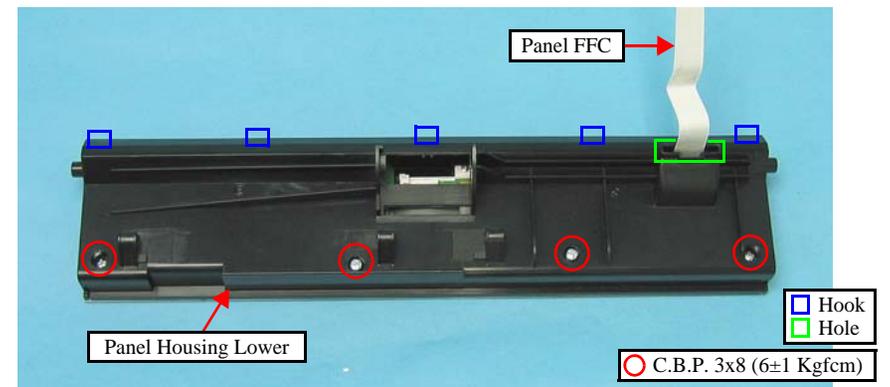
Figure 4-44. Removing the Panel Board (3)

6. Disconnect the Panel FFC (CN1) from the connector on the Panel Board.

7. Disconnect the LCD FFC (CN2) from the connector on the LCD Unit.

8. Remove the screws (x6) that secure the Panel Board, and remove the Panel Board from the Panel Upper Housing.
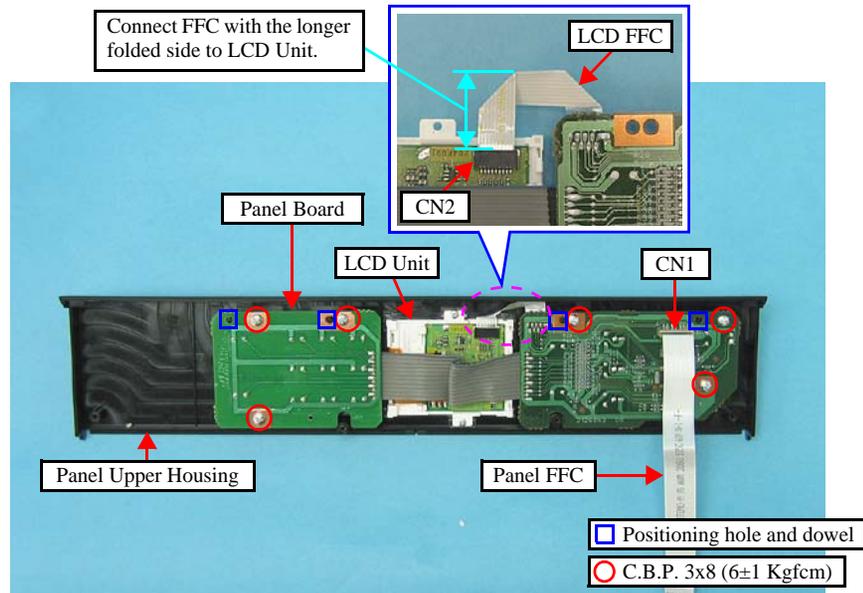
Figure 4-45. Removing the Panel Board (4)

9. Remove the screws (x2) that secure the LCD Unit, and remove the LCD Unit from the Panel Upper Housing.
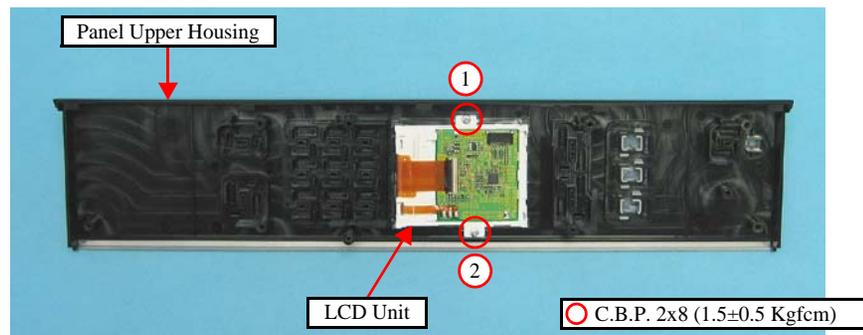
Figure 4-46. Removing the Panel Board (5)

10. Remove the following buttons from the Panel Upper Housing.

No.	Button	No.	Button	No.	Button
1	PS Button	7	Minus Button	13	Plus Button
2	Copy Button	8	Left Button	14	Right Button
3	Memory Card Button	9	Setting Button	15	Back Button
4	Fun Print Button	10	Up Button	16	Stop Button
5	Set Up Button	11	OK Button	17	Start Button
6	Zoom Button	12	Low Button		
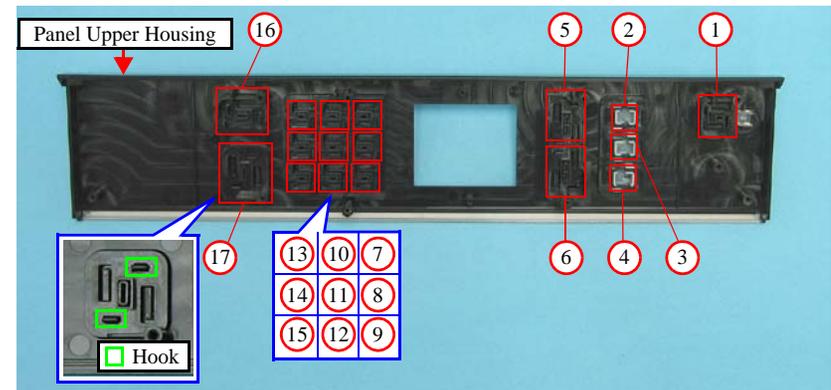
Figure 4-47. Removing the Panel Board (6)

REASSEMBLY

- When attaching the buttons, insert the hooks (x2 each) of the buttons from the front of the Panel Upper Housing, and secure them properly. *(See Figure 4-47.)*
- Tighten the screws in the order given in **Fig. 4-46**.
- When installing the Panel Board, align the positioning holes (x4) of the Panel Board with the dowels (x4) of the Panel Upper Housing. *(See Figure 4-45.)*
- When connecting the LCD FFC, connect the longer folded side to the LCD Unit as shown in **Fig. 4-45**.

4.3.3 Power Supply Board

□ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing / Printer Mechanism

□ Removal procedure

1. Remove the screw that secure the P/S Assy, and remove the P/S Assy from the Lower Housing.

P/S Assy

⚡ Pull out the connector from here.

◯ C.B.P. 3x10 (6±1 Kgfcm)
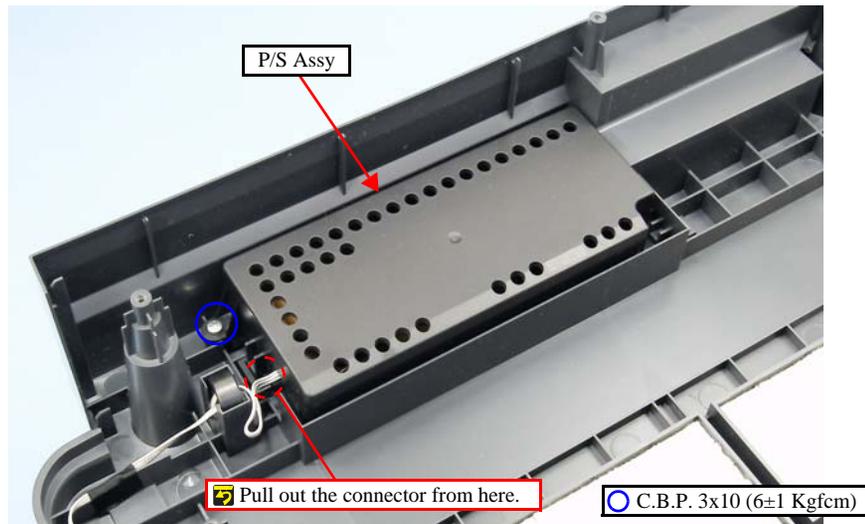
Figure 4-48. Removing the P/S Assy

2. Remove the screw, and remove the P/S Cover.

P/S Cover

◯ C.B.P. 3x10 (6±1 Kgfcm)
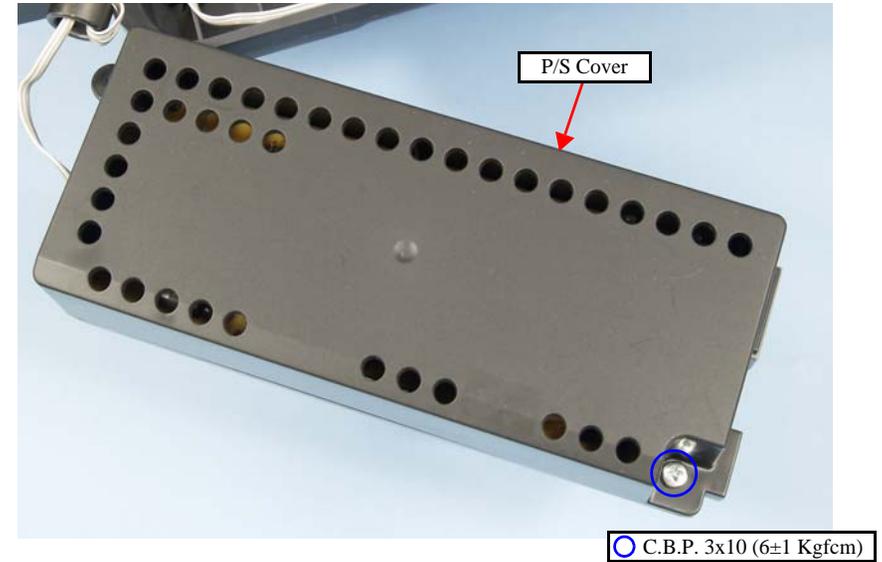
Figure 4-49. Removing the Power Supply Board (1)

3. Remove the Power Supply Board.

Power Supply Board

⚡ Route the P/S Connector Cable on the rib.
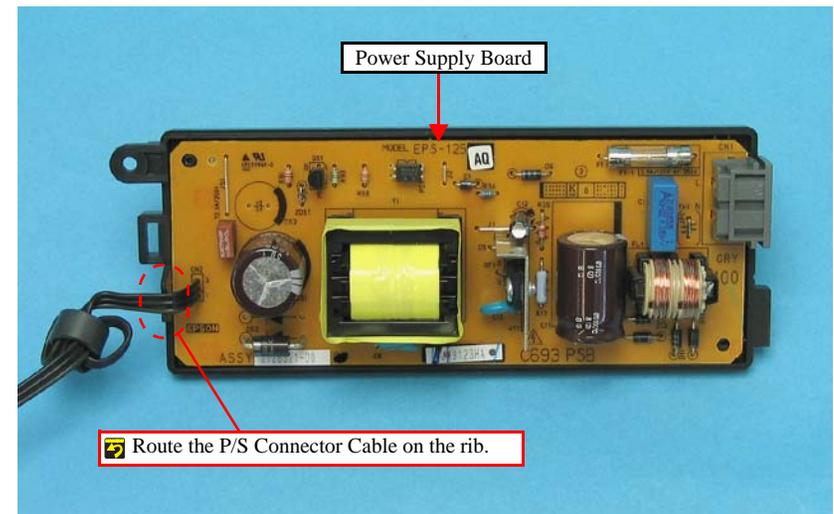
Figure 4-50. Removing the Power Supply Board (2)

REASSEMBLY

■ **When installing the Power Supply Board, route the P/S Connector Cable on the ribs of the P/S Assy as shown in Fig. 4-50.**

■ **When installing the P/S Assy, put the ferrite core of the P/S Connector Cable in the groove of the Lower Housing, and route the P/S Connector Cable through the ribs (x3) of the Lower Housing.**

Left side

Ferrite core

P/S Connector Cable

□ Rib
□ Groove
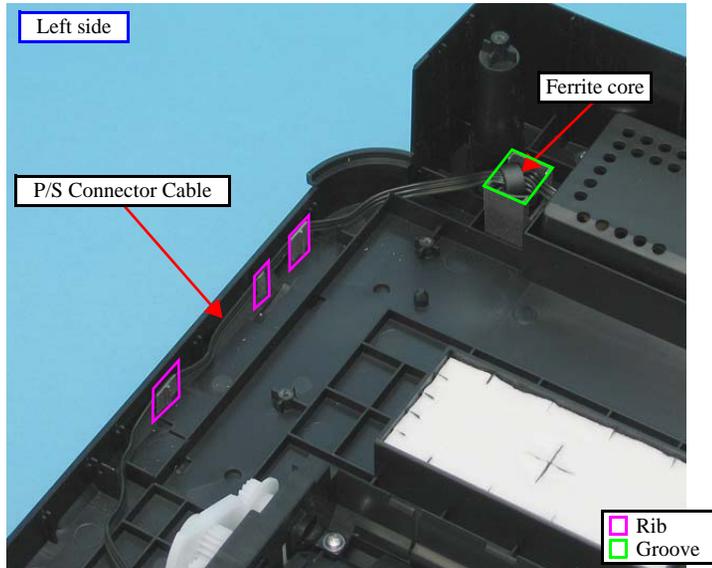
Figure 4-51. Installing the P/S Assy

ADJUSTMENT REQUIRED

After removing/replacing the Power Supply Board, make the specified adjustments. (See Chapter 5 "ADJUSTMENT".)

4.4 Disassembling the Printer Mechanism

4.4.1 Printhead

CAUTION !	■ **When removing the Head Cable Cover and the Head FFC Cover, do not use tools with sharp ends as the FFC may get damaged.** ■ **Be careful not to damage the FFCs and cables when disengaging the hook of the CSIC Connector Holder Assy.** ■ **Handle the CSIC Connector Holder Assy carefully; especially take care not to touch it with your bare hand or not to bend it.**

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit

☐ Removal procedure

1. Unlock the Carriage.
(See "4.1.5 How to Unlock the Carriage" *(p.62)*.)

2. Move the Carriage Unit to the center and open the Cartridge Cover, and then take out the all ink cartridges.

3. Release the hook of the Head Cable Cover on the right side of the Carriage Unit, and remove the Head Cable Cover by sliding it downward.

Right side of Carriage Unit

Head Cable Cover
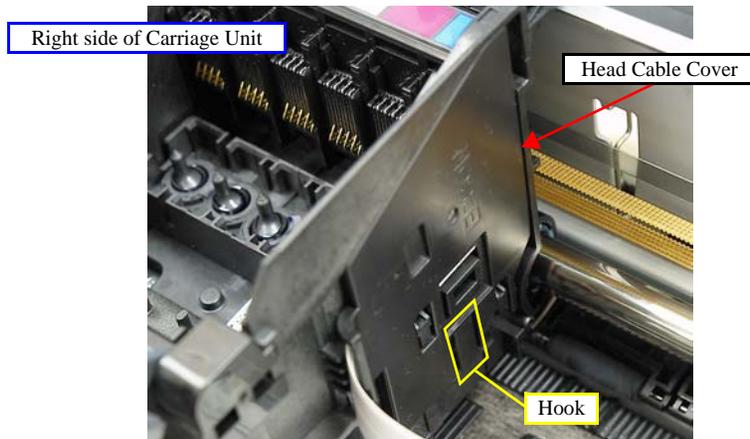
Hook

Figure 4-52. Removing the Head Cable Cover

4. Release the hook of the Head FFC Cover with the flathead screwdriver or a similar tool, and pull the Head FFC Cover upward to remove it.

Right inside of Carriage Unit

Head FFC Cover

Hook

T Pay attention to the FFC
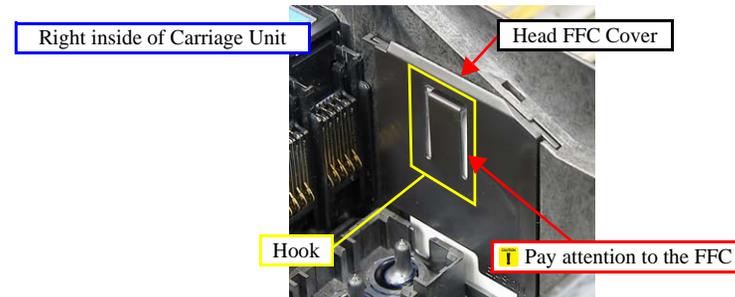
Figure 4-53. Removing the Head FFC Cover

5. Disconnect the FFC from the CSIC Connector Holder Assy.

6. Release the hooks (x2) of the CSIC Connector Holder Assy on the rear left/right of the Carriage Unit with the special tools (see *p.62*), and remove the CSIC Connector Holder Assy upward.

Removal direction

CSIC Connector Holder Assy

Release the FFC

T Pay attention to the contacts

Rear side   Hooks

Special tool

Special tool

T Pay attention to the cables

Front HP side

T Pay attention to the FFC

Front PF side
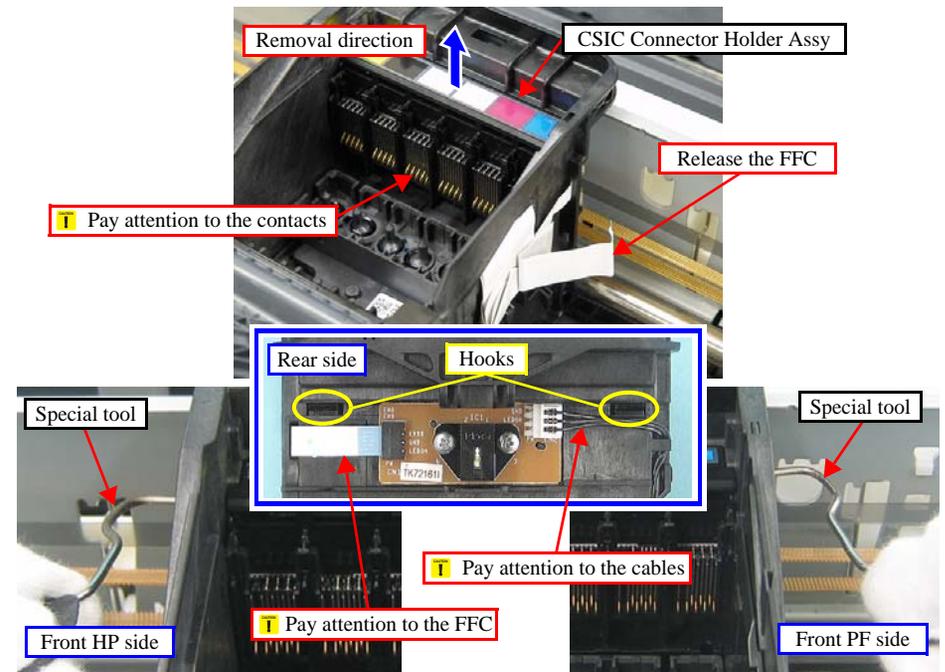
Figure 4-54. Removing the CSIC Connector Holder Assy

7.   Remove the screws (x3) that secure the Printhead, and lift the Printhead upward.
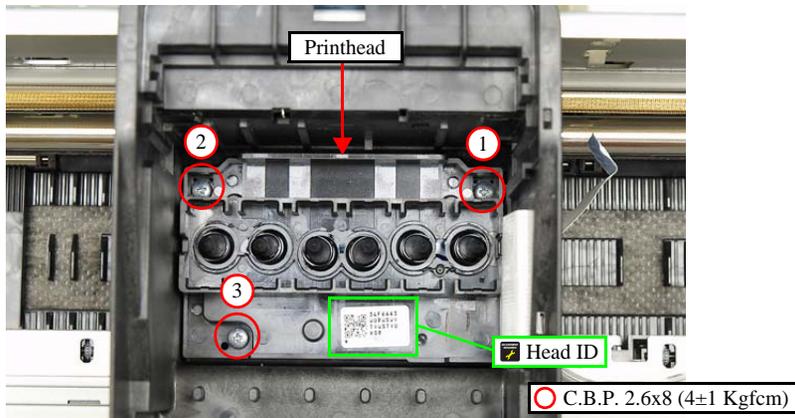
Figure 4-55. Removing the Printhead

8.   Disconnect the Head FFCs (x2) from the connectors (x2) on the rear of the Printhead, and remove the Printhead.
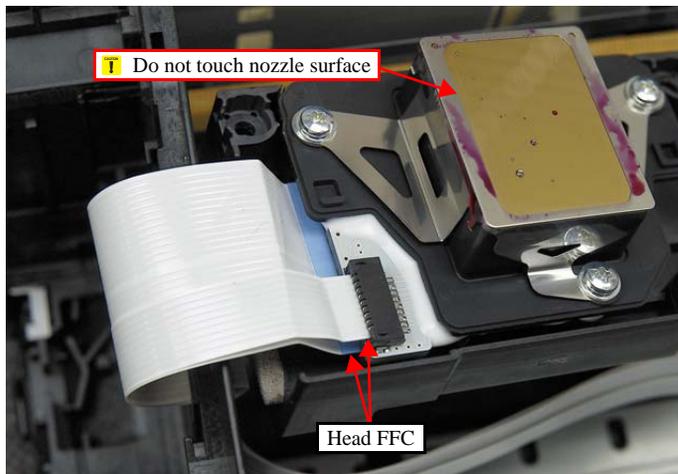
Figure 4-56. Releasing the Head FFCs

REASSEMBLY

- ■   **Make sure that the FFC is connected properly.**
- ■   **Tighten the screws in the order given in Fig. 4-55.**
- ■   **Install the Head FFC Cover and Head Cable Cover as shown below.**
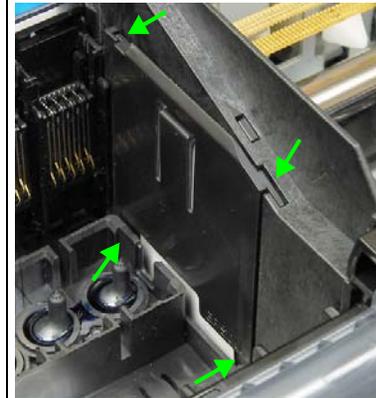
Head FFC Cover
The bottom protrusions (x2) and the top sliding sections (x2) must be in alignment.
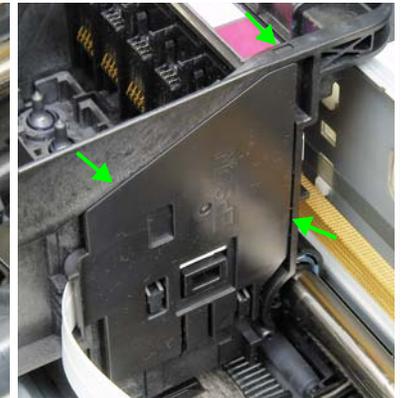
Head Cable Cover
Engage the protrusion in the rear with the carriage first and then insert the top protrusions (x2) to the hole of the carriage.

ADJUSTMENT REQUIRED

- ■   **For replacing the Printhead, note down the head ID before installing the Printhead.**
- ■   **After removing/replacing the Printhead, make the specified adjustments. (See Chapter 5 "ADJUSTMENT".)**

4.4.2 Linear Scale

> **CAUTION** ⚠
>
> ■ When you hold the Linear Scale, hold its ends or two points of the top and bottom surfaces with your hands; do not touch the reading surface.
>
> ■ Take care that the reading surface is not soiled or scratched. Especially when putting the Linear Scale through the CR Encoder during reassembly work, take great care that grease of the CR Guide Shafts does not adhere to the reading surface.

About 25mm   About 45mm

Hold here   Hold here

Hold here   Hold here
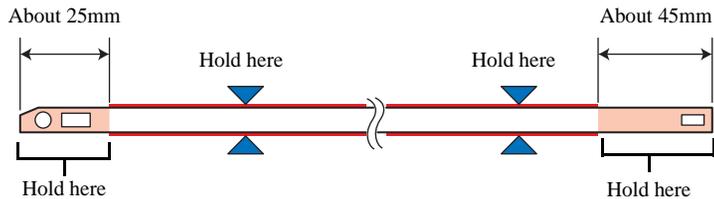
> **CHECK POINT** ✔
>
> If you need to move the Carriage Unit, unlock the Carriage in advance.
> (See **4.1.5 How to Unlock the Carriage** *(p.62)*.)

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing

☐ Removal procedure

1. Remove the spring from the left frame of the printer.

2. Release the Linear Scale from the hook at the right frame of the printer.

3. Pull out the Linear Scale from the CR Encoder of the CR Unit.

4. Turn the Linear Scale upward by 90 degrees and release it from the left hook.

Step 1. Remove the spring

Step 2. Release it from the hook

CR Unit

Step 3. Pull it out from CR Encoder

Step 4. Turn it by 90 degrees and release it
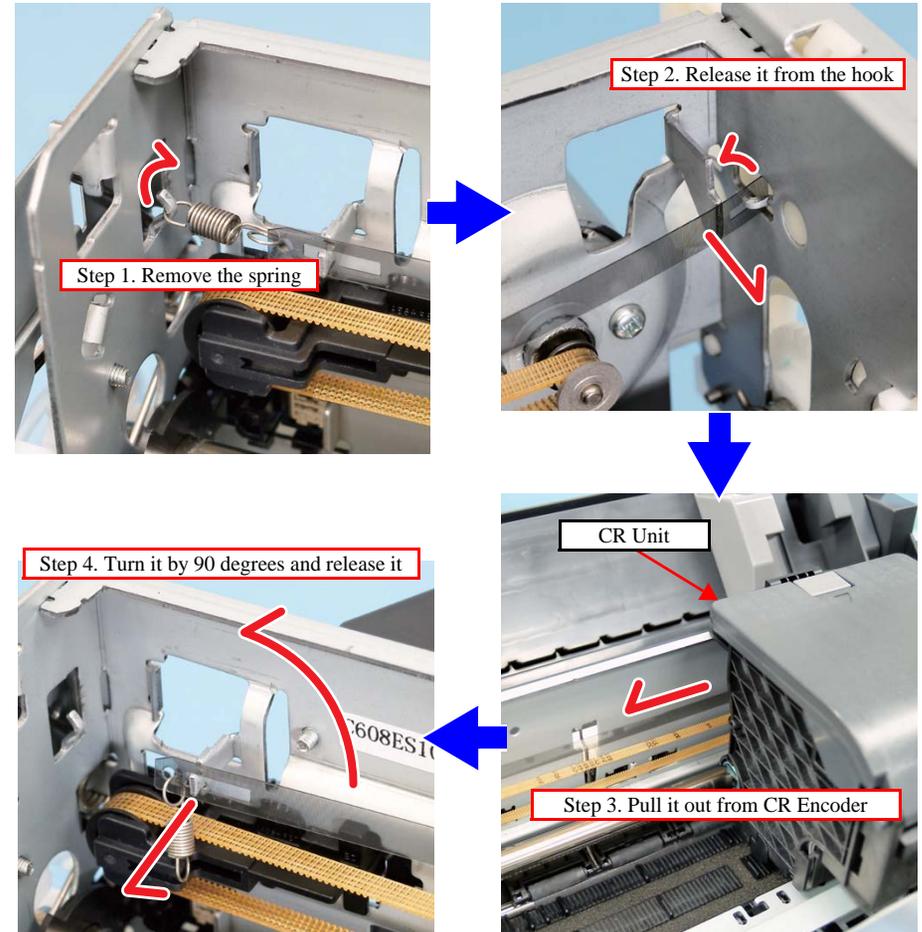
Figure 4-57. Removing the Linear Scale

> **REASSEMBLY** ↩
>
> **Install the Linear Scale with the cutting portion upward.**
>
> Cutting Portion
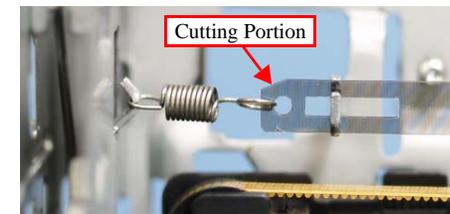
4.4.3 Printer Mechanism

CHECK POINT ✔️

| The disassembly/reassembly procedures for Epson Stylus Photo **PX660/PX660 Premium/Artisan 635** differ from those for Epson Stylus Photo **PX650/TX650/TX659**. See **"8.2.2.4 Printer Mechanism"** *(p.153)* for the procedures. |

CAUTION ⚠️

■ **When lifting the Printer Mechanism, be sure to hold the positions specified in the figure below to prevent the Main Frame from being deformed.**


Handling Precaution
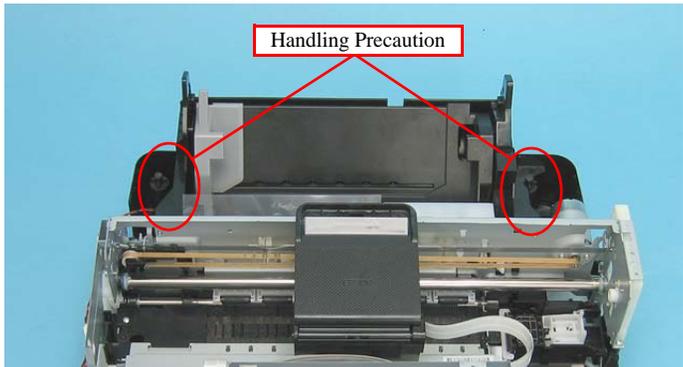
Figure 4-58. Printer Mechanism Handling Precaution

■ **The PF Scale comes in contact with the floor if the Printer Mechanism Assy is turned counterclockwise by about 15 degrees. In such a case, the PF Scale may be damaged. Take great care not to damage the PF Scale when handling the removed Printer Mechanism Assy. (Alternatively, *remove the PF Encoder/PF Scale. (p.90)*)**

Printer Mechanism

About 15°

⚠️ Do not tilt more than 15 degrees, or drag it while tilting.

□ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing

□ Removal procedure

1. Peel off the acetate tape that secure the ferrite core of the CR Motor Cable, and pull out the ferrite core from the groove of the Lower Housing.


Rear right side

CR Motor cable

Ferrite core

Groove
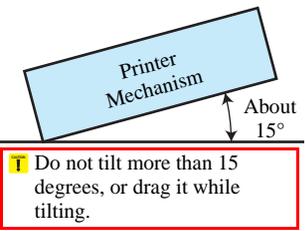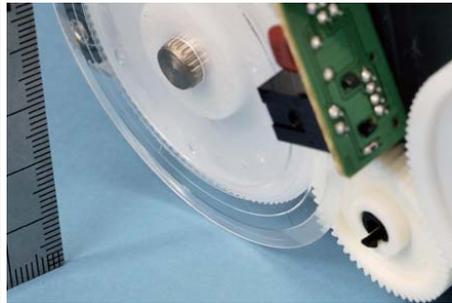
Acetate tape
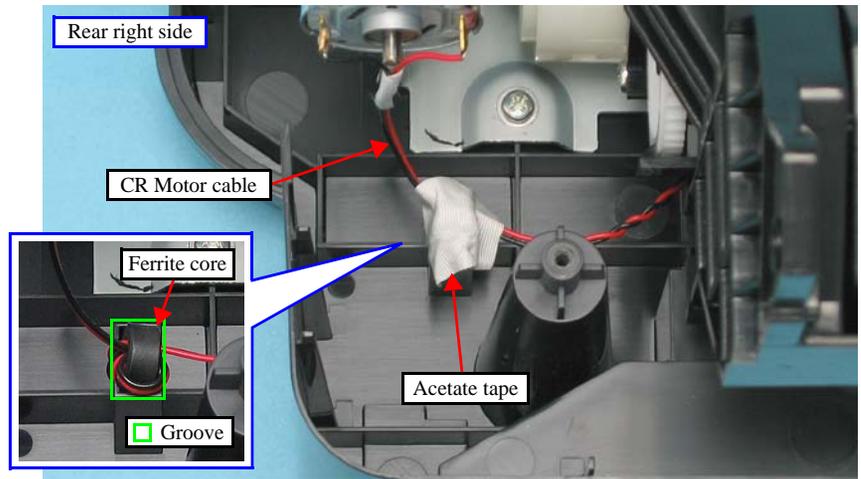
Figure 4-59. Removing the Printer Mechanism (1)

2. Disconnect the Relay Connector of the CDR Guide Sensor cable.

Front left side

CDR Guide Sensor cable

Relay Connector
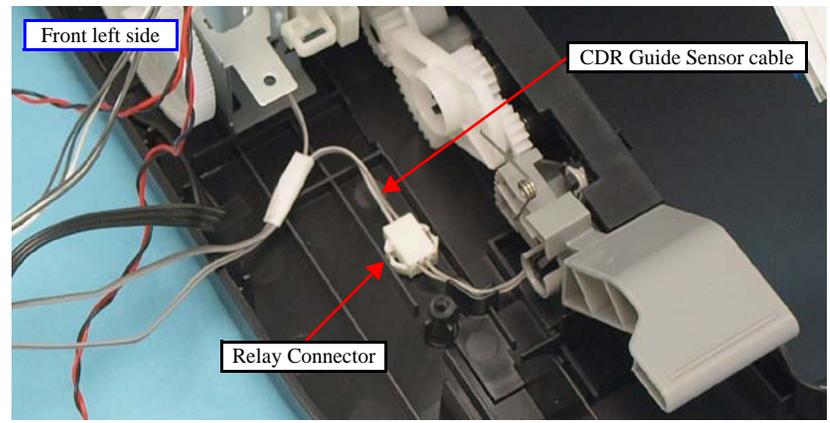
Figure 4-60. Removing the Printer Mechanism (2)

3. Remove the screws (x6) that secure the Printer Mechanism and lift the Printer Mechanism upward to remove it.


○ C.B.P.(P2). 3x8 (6.1±1 Kgfcm)
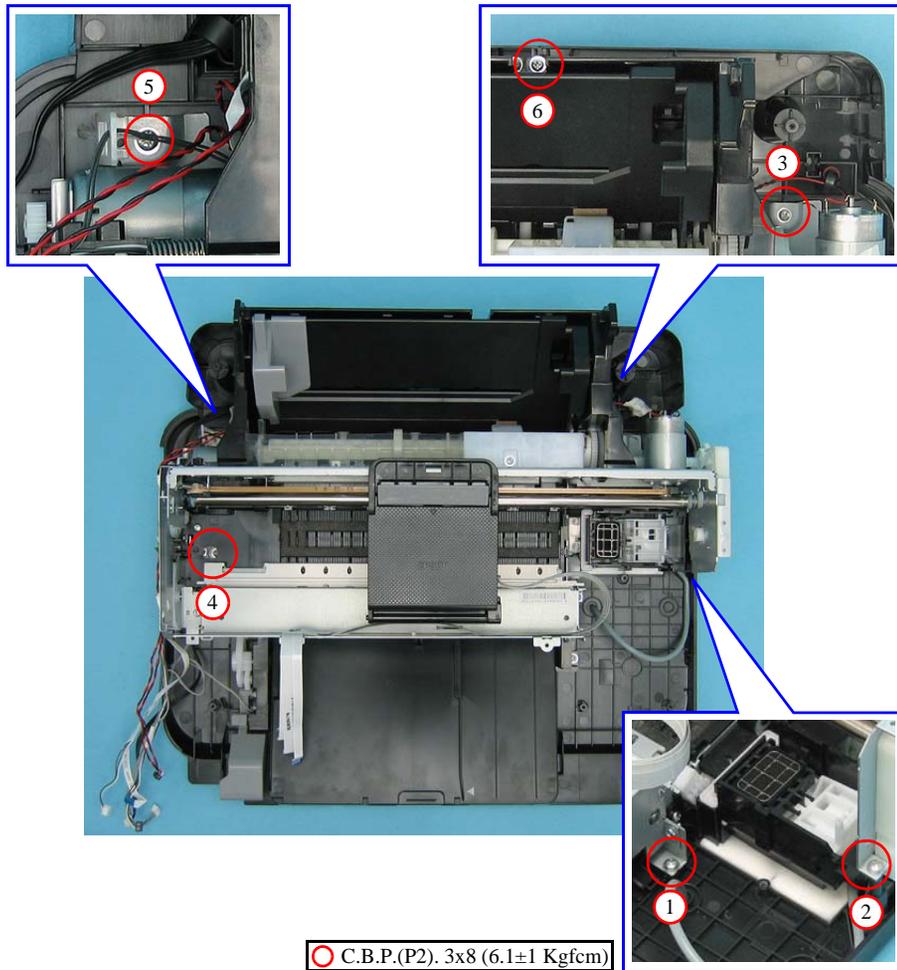
Figure 4-61. Removing the Printer Mechanism (3)

■ **Before installing the Printer Mechanism, make sure that the Stacker Assy operates properly with the switching of the Stacker Lever. If it does not operate properly, check the phases of the Stacker Lever on the left side of the Lower Housing, the Combination Gear 14.4,45.6, and the Link Stacker, and install them to be aligned correctly.**
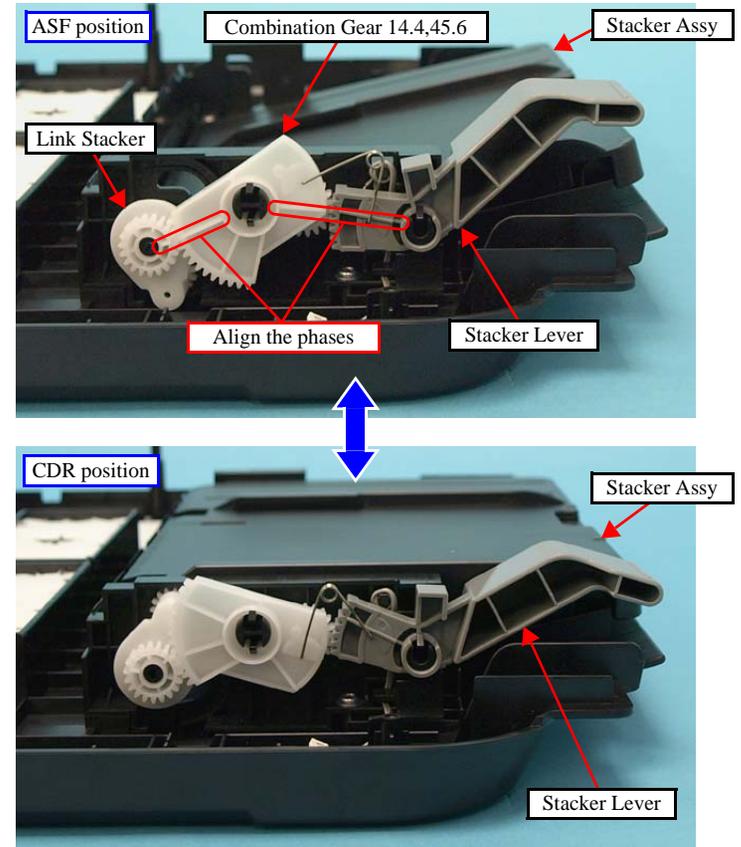
Figure 4-62. Phase Adjustment of the Stacker Assy

■ When installing the Printer Mechanism, put the ferrite core of the CR Motor Cable in the groove of the Lower Housing, and secure it with acetate tape. *(See Figure 4-59.)*

■ Tighten the screws in the order given in **Fig. 4-61**.

ADJUSTMENT REQUIRED	■ **After removing/replacing the Printer Mechanism, make the specified adjustments. (See Chapter 5 "ADJUSTMENT".)** ■ **After replacing the Printer Mechanism, be sure to perform the required lubrication. (See Chapter 6 "MAINTENANCE".)**

4.4.4 PF Encoder/PF Scale

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing

☐ Removal procedure

CAUTION !	Handle the PF Scale with care not to scratch or contaminate it. Do not touch it with your bare hand.

1. Disconnect the FFC of the PF Encoder, remove the screw, and remove the PF Encoder.

2. Peel off the double-sided tape that secure the PF Scale, and remove the PF Scale.
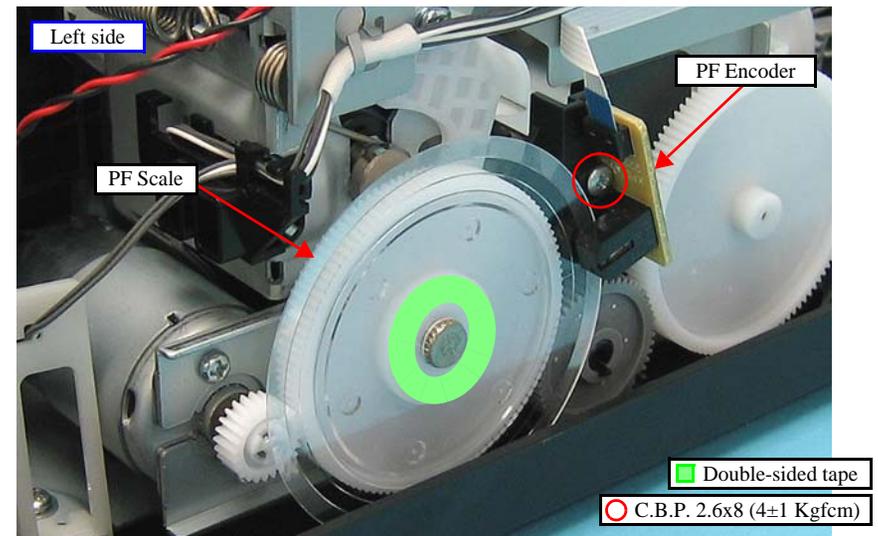
Figure 4-63. Removing the PF Encoder/PF Scale

REASSEMBLY	When installing the PF Encoder, confirm that the reading area does not come in contact with the PF Scale.

4.4.5 PF Motor

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy /
Middle Housing / Printer Mechanism / PF Encoder / PF Scale

☐ Removal procedure

1. Peel off the acetate tape that secure the ferrite core of the PF Motor Cable.

2. Release the PF Motor Cable and the CR Motor Cable from the hooks (x2) of the
Cable Holder Frame and the hook of the ASF Unit.

3. Remove the Harness Holder.
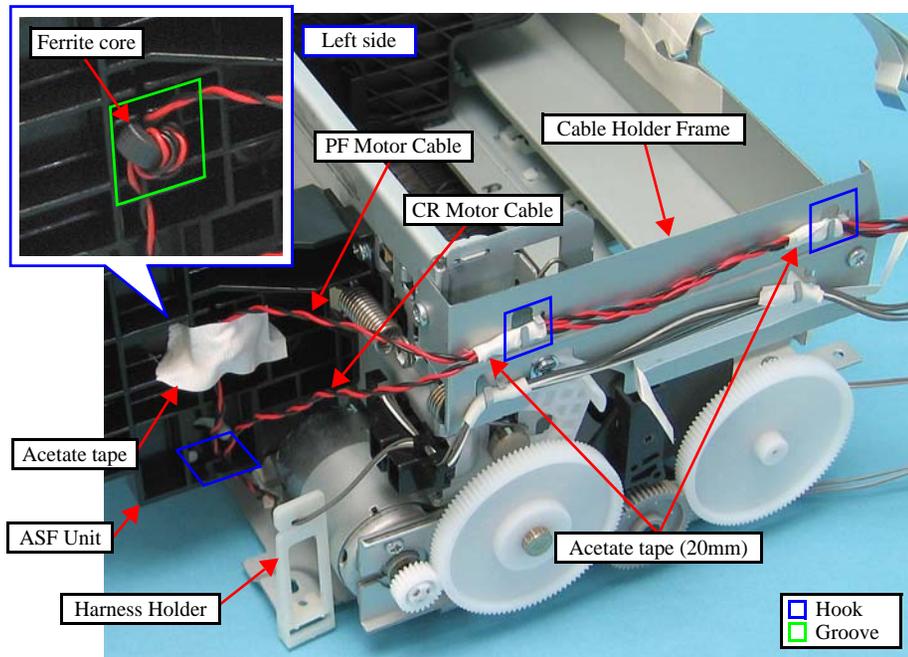
Figure 4-64. Removing the PF Motor (1)

4. Remove the screws (x2) that secure the PF Motor, and remove the PF Motor.
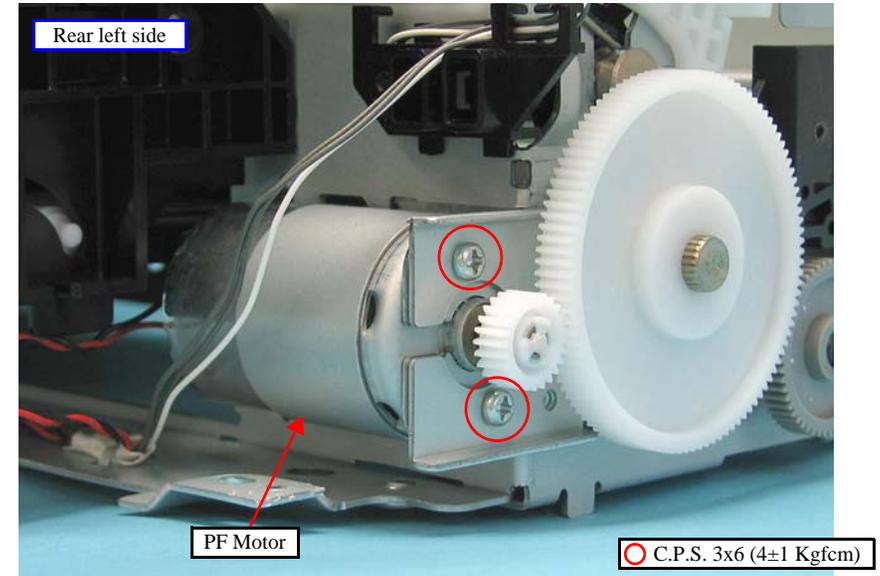

Figure 4-65. Removing the PF Motor (2)

■ **When installing the PF Motor, make sure to set it with the black wire up.**
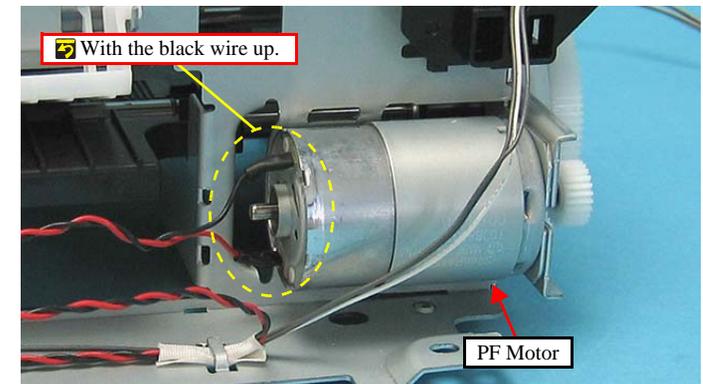
Figure 4-66. PF Motor

REASSEMBLY

■ **Wrap acetate tape (x2) around the PF Motor Cable and the CR Motor Cable as shown below to secure them.**

Acetate Tape (20mm)   CR Motor Cable

280±2mm

Connector   Main Board side

90±2mm

255±2mm
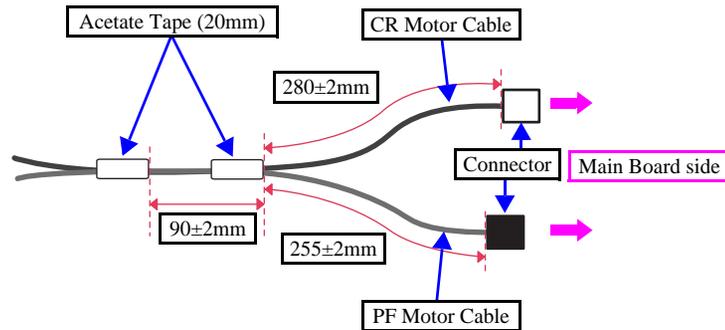
PF Motor Cable

Figure 4-67. PF Motor Cable/CR Motor Cable

■ **When installing the PF Motor, secure the cables and the ferrite core as the following.** *(See Figure 4-64.)*

• **Route the PF Motor Cable and the CR Motor Cable through the hooks (x2) of the Cable Holder Frame and the hook of the ASF Unit.**

• **Put the ferrite core of the PF Motor Cable in the groove of the ASF Unit, and secure it with acetate tape.**

ADJUSTMENT REQUIRED

**After removing/replacing the PF Motor, make the specified adjustments. (See Chapter 5 "ADJUSTMENT".)**

4.4.6 Ink System Unit

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing / Printer Mechanism

☐ Removal procedure

CAUTION
!

■ **Take extra care not to contaminate the surrounding objects with ink. In addition, when removing the Waste Ink Tube, take care not to spill ink.**

■ **Do not touch the head cleaner (wiper) with your bare hand, and make sure that it is free from grease. Touching with your bare hand or adhering grease can cause nozzle clogging.**

1. Remove the screws (x2) that secure the Ink System Unit, and remove the Ink System Unit.

Ink System Unit

Do not remove

Remove the lower one
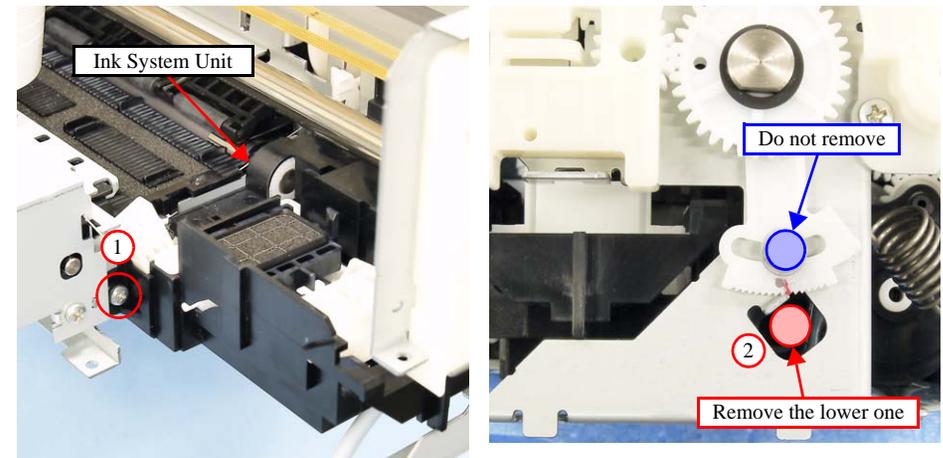
◯ C.P.S. 3x6 (8±1 Kgfcm)

Figure 4-68. Removing the Ink System Unit

REASSEMBLY

■ **When installing the Ink System Unit, route the Waste Ink Tube through the groove on the bottom of the Ink System.**

Bottom

Groove
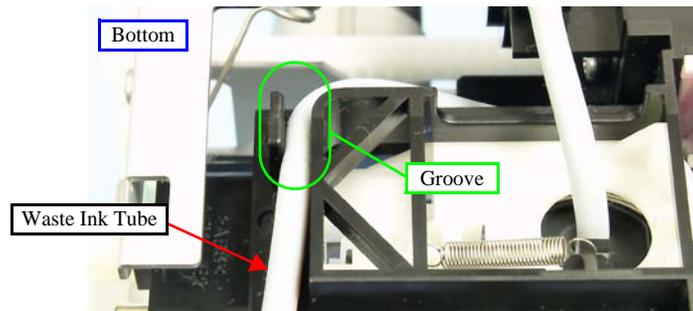
Waste Ink Tube

Figure 4-69. Routing the Waste Ink Tube

■ **When connecting the Waste Ink Tube to the Waste Ink Tray Assy, wipe the ink off the joint area of the tube, if any. With ink left adhering to the joint area, the tube cannot be connected firmly and may come off easily.**

■ **When installing the Ink System, insert the shafts (x5) of the Ink System surely to the positioning holes (x5) of the frame.**

Bottom

Rear right side

○ Positioning hole and shaft
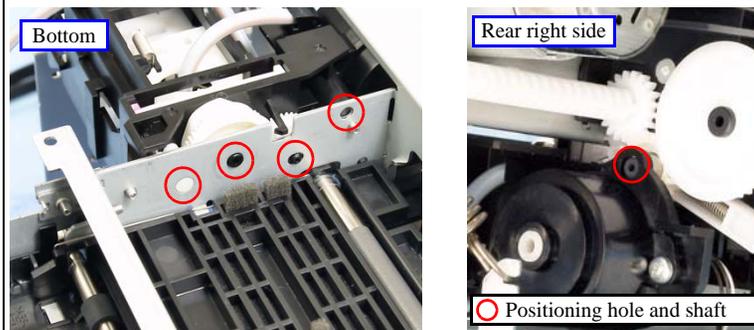
Figure 4-70. Installing the Ink System Unit

■ **Tighten the screws in the order given in Fig. 4-68.**

ADJUSTMENT REQUIRED

After replacing the Ink System Unit, be sure to perform the required lubrication. (See Chapter 6 "MAINTENANCE".)

4.4.7 ASF Unit

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing / Printer Mechanism / Ink System Unit

☐ Removal procedure

1. Release the PF Motor Cable and the CR Motor Cable from the hook of the ASF Unit on the left side. *(See Figure 4-64.)*

2. Remove the screw that secure the LD Roller Guide.

3. While being careful not to damage the Linear Scale, push the right and left protrusions, lift the LD Roller Guide and release the hooks (x5), and remove the LD Roller Guide.

LD Roller Guide

Linear Scale

Push the protrusions

☐ Hook

○ C.B.S. 3x6 (8±1 Kgfcm)
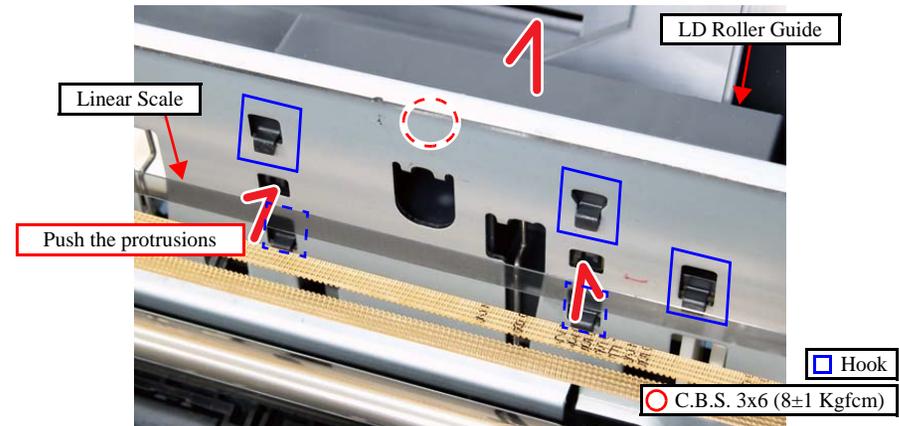
Figure 4-71. Removing the ASF Unit (1)

4. Remove the right and left screws (x2) that secure the ASF Unit.


C.B.S.(P4). 3x6 (8±1 Kgfcm)
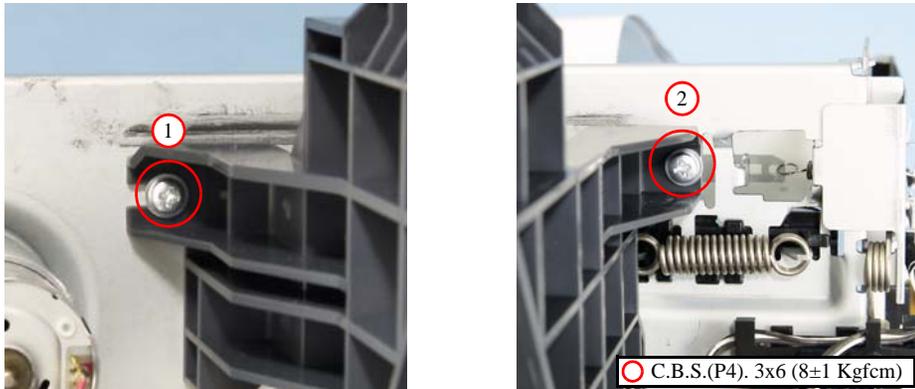
Figure 4-72. Removing the ASF Unit (2)

5. On the front side, release the right and left hooks (x2) that secure the ASF Unit and the tip of the Change Lever from the printer frame.

6. Remove the Composite Gear (10, 15.2), and remove the ASF Unit.

Front left
Front right
Tip of Change Lever
Right side
Composite Gear (10, 15.2)
Gear engagement
☐ Hook
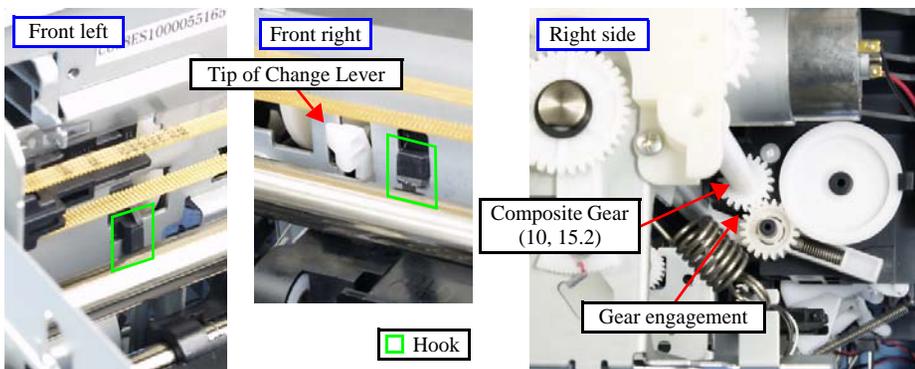
Figure 4-73. Removing the ASF Unit (3)

REASSEMBLY
- ■ When installing the ASF Unit, make sure that the composite gear, the chip of Change Lever and the hooks (x2) are engaged properly. *(See Figure 4-73.)*
- ■ Tighten the screws in the order given in **Fig. 4-72**.
- ■ Install the LD Roller aligning the arrow on the LD Roller with the arrow on the blade of the shaft. Make sure the LD Roller is securely attached without any gap or misalignment.


LD Roller
Align the arrows
ASF Unit
Blade
LD Roller Shaft
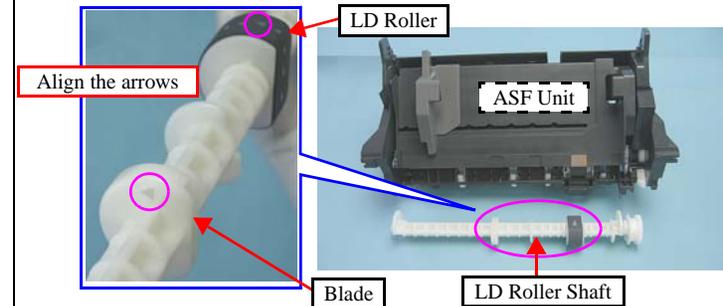
Figure 4-74. Installing the LD Roller

ADJUSTMENT REQUIRED
- ■ After removing/replacing the ASF Unit, make the specified adjustments. (See Chapter 5 "ADJUSTMENT".)
- ■ After replacing the ASF Unit, be sure to perform the required lubrication. (See Chapter 6 "MAINTENANCE".)

4.4.8 APG Unit

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing / Printer Mechanism

☐ Removal procedure

1. Remove the screws (x2) that secure the APG Unit, and remove the APG Unit.

2. Remove the Composite Gear (10, 15.5).
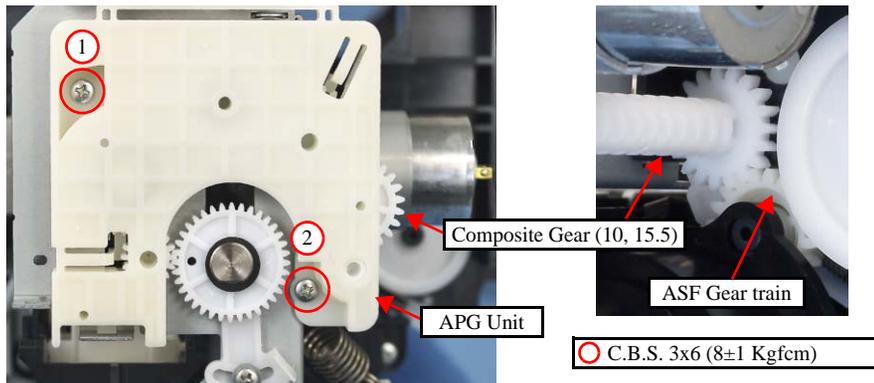
Figure 4-75. Removing the APG Unit

■ **The gear layout on the rear of the APG Unit is shown below. If the gears comes off when removing the APG Unit, attach them referring to below layout.**
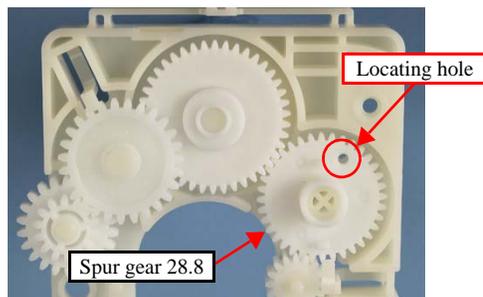
Figure 4-76. Gear Layout of the APG Unit

■ **When installing the APG Unit, follow the procedure below.**
1. **Install the Composite Gear (10, 15.5).**
2. **Put a pin (ø2mm) or the like through the locating hole of the Right PG Cam on the CR Guide Shaft to the printer frame.**
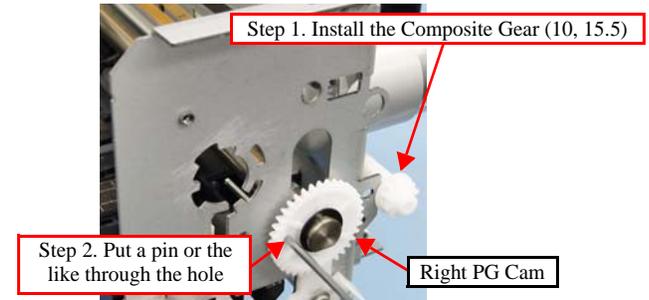
Figure 4-77. Installing the APG Unit (1)

3. **Put a pin or the like through the locating hole of the APG Unit to the Spur Gear 28.8.**
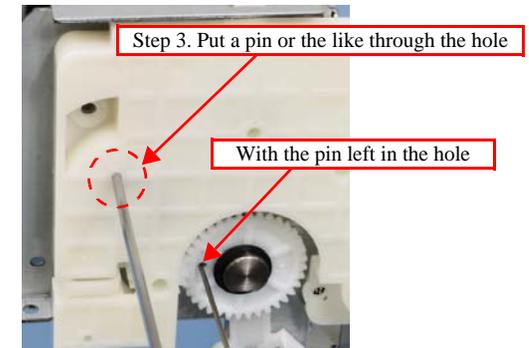
Figure 4-78. Installing the APG Unit (2)

(Continued to the next page.)

REASSEMBLY

4. With the pins left inserted in the holes as shown in **Fig. 4-78**, align and insert the dowels (x6) of the APG Unit to the positioning holes (x6) of the Main Frame.

Step 4. Check engagement of the dowels

Pin

Pin

□ Positioning hole and dowel
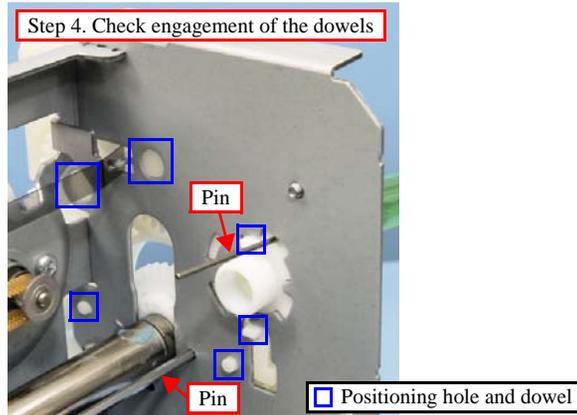
Figure 4-79. Installing the APG Unit (3)

5. Install the Composite Gear (10, 15.5) properly to the APG Unit.

Step 5. Install the Composite Gear (10, 15.5)
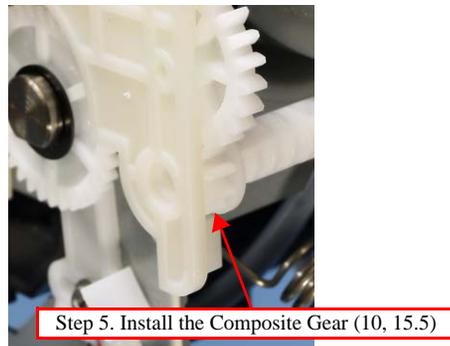
Figure 4-80. Installing the APG Unit (4)

6. Tighten the screws (x2) in the order given in **Fig. 4-75** to install the APG Unit.

ADJUSTMENT REQUIRED

After replacing the APG Unit, be sure to perform the required lubrication. (See **Chapter 6 "MAINTENANCE".**)

4.4.9 CR Motor

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing / Printer Mechanism

☐ Removal procedure

1. At the rear of the printer, detach the CR Motor Cable from the frame.

Rear side

Acetate tape (18 x 20 mm)

CR Motor Unit

□ Hook
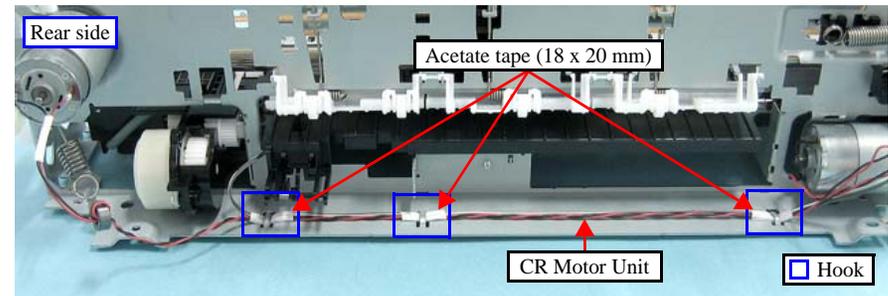
Figure 4-81. Removing the CR Motor (1)

2. At the rear of the printer, remove the tension spring of the Driven Pulley Assy.

3. Remove the Driven Pulley from the Main Frame.

Driven Pulley Assy

Tension spring
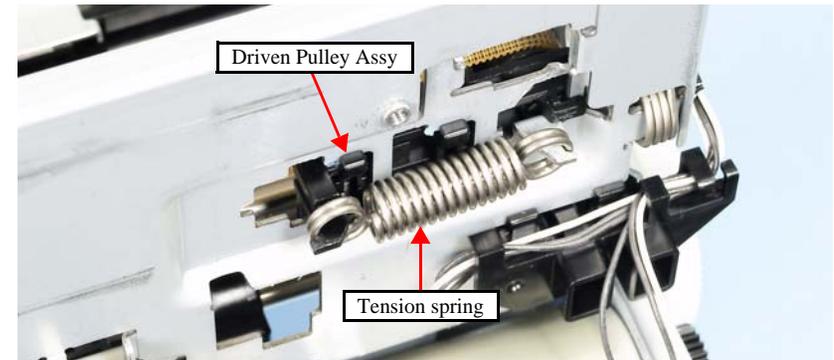
Figure 4-82. Removing the CR Motor (2)

CAUTION

!

Take extra care not to contaminate the Timing Belt with grease. The belt deteriorates faster if grease adheres to it.

4. Remove the Timing Belt from the pinion gear of the CR Motor.
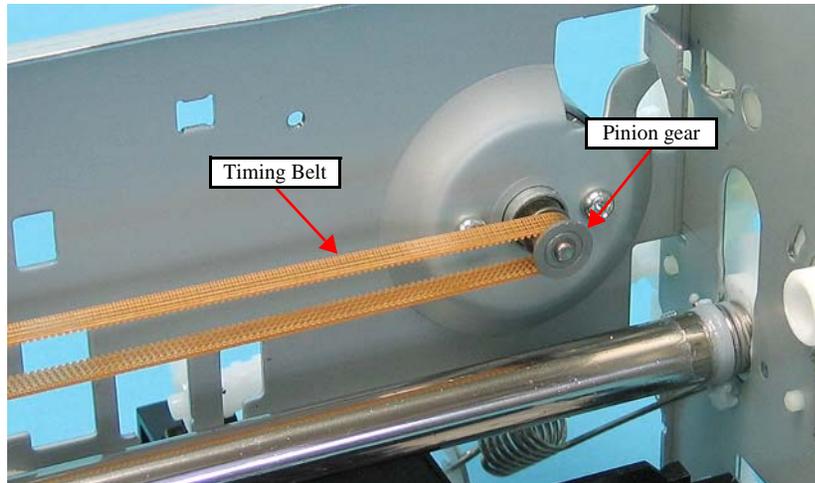
Figure 4-83. Removing the CR Motor (3)

5. Remove the screws (x2), and remove the CR Motor.
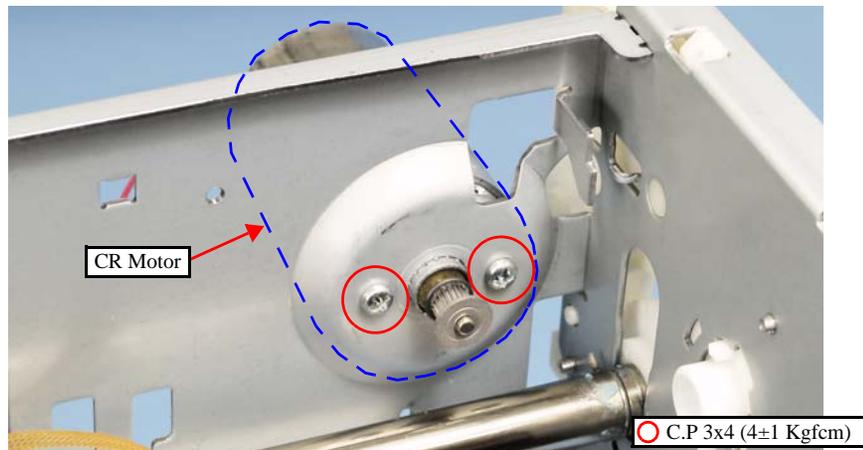
Figure 4-84. Removing the CR Motor (4)

REASSEMBLY

■ **Install the CR Motor with its printed area facing upward.**

Figure 4-85. Installing the CR Motor

■ **Install the Timing Belt with the tooth side facing inside and make sure that it is not twisted.**
■ **When the CR Motor has been replaced with a new one, wind acetate tape (18x20 mm, x3) around the CR Motor Cable as shown.** *(See Figure 4-81.)*

ADJUSTMENT REQUIRED

■ **After removing/replacing the CR Motor, make the specified adjustments. (See Chapter 5 "ADJUSTMENT".)**
■ **After replacing the CR Motor, be sure to perform the required lubrication. (See Chapter 6 "MAINTENANCE".)**

4.4.10 CR Unit

CHECK POINT ✔ **The disassembly/reassembly procedures for Epson Stylus Photo PX660/PX660 Premium/Artisan 635 differ from those for Epson Stylus Photo PX650/TX650/TX659. See "8.2.2.5 CR Unit" (p.155) for the procedures.**

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing / Printer Mechanism / Linear Scale / PF Scale / PF Encoder / APG Unit

☐ Removal procedure

1. Remove the Driven Pulley from the Main Frame. *(See Figure 4-82.)*

2. Peel off the acetate tape, and release the Head FFC from the Front Frame.
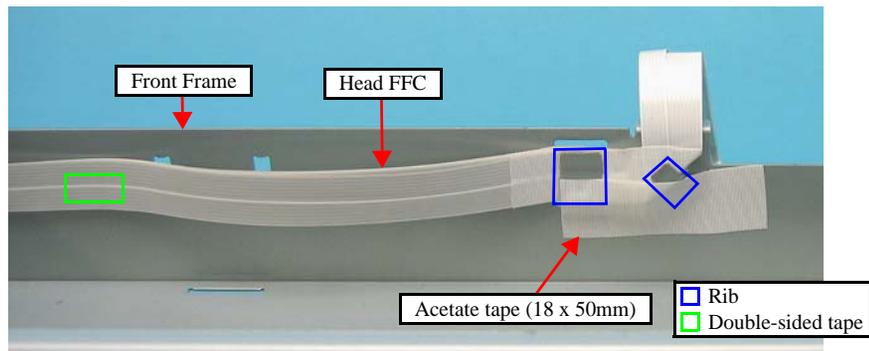
Figure 4-86. Removing the CR Unit (1)

3. Remove the screw that secure the Cable Holder Frame, and remove the Cable Holder Frame.
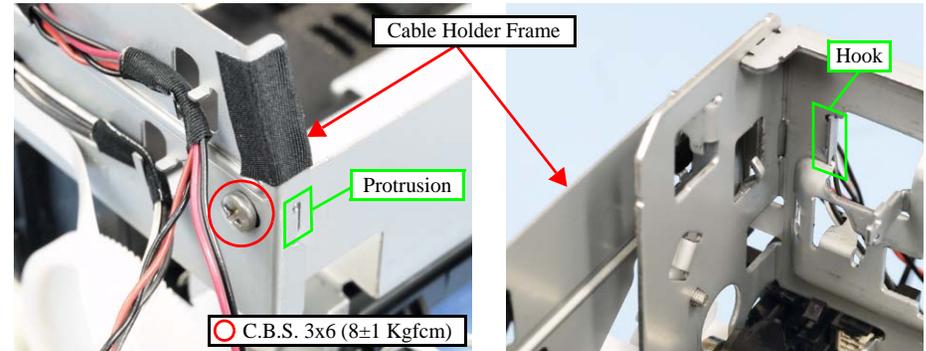
Figure 4-87. Removing the CR Unit (2)

4. At the left side of the printer, remove the spring, and mark the contact point on the Parallelism Bush with the frame. Then loosen the screw, and turn the Parallelism Bush toward the front.
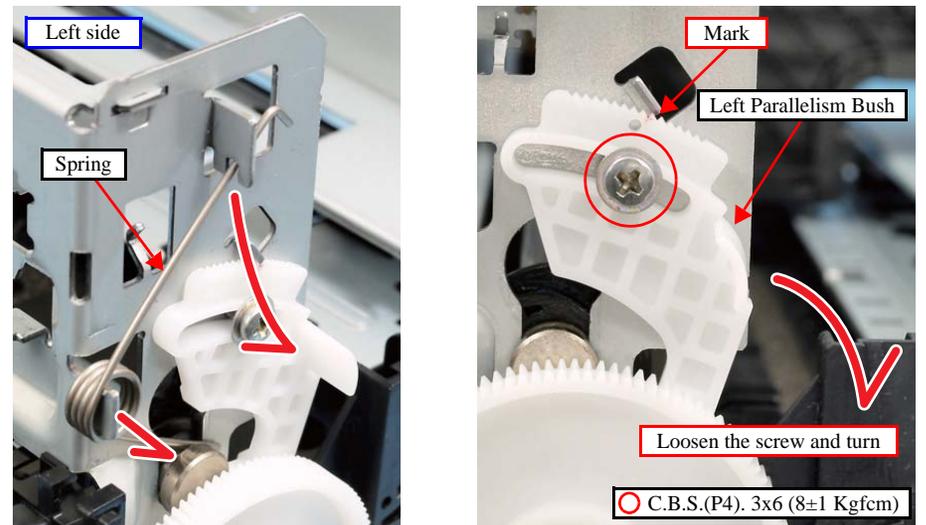
**Figure 4-88. Removing the CR Unit (3)**

5. At the right side of the printer, remove the spring, the washer, and the Right PG Cam.
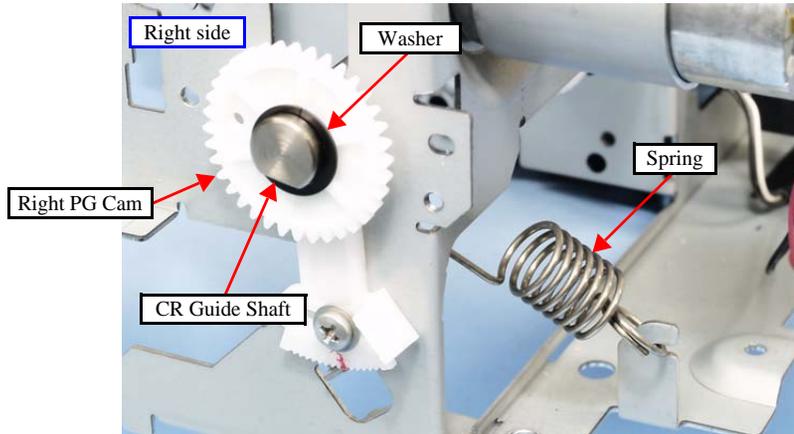
Figure 4-89. Removing the CR Unit (4)

6. Remove the CR Unit together with the CR Guide Shaft from the left side of the printer frame.

Lift the left shaft slightly and shift it to the right to release it from the frame, and remove the CR Unit together with the shaft.
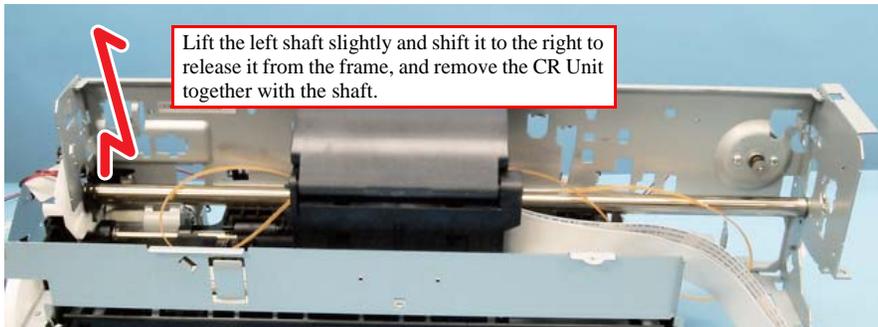
Figure 4-90. Removing the CR Unit (5)

CHECK POINT ✓

To remove the Cartridge Cover, it is necessary to remove the Cartridge Cover Hinge. However, there is no way to release the hook. Therefore, insert a slotted screwdriver as shown below and break the hook. (At installation, replace it with a new one.)
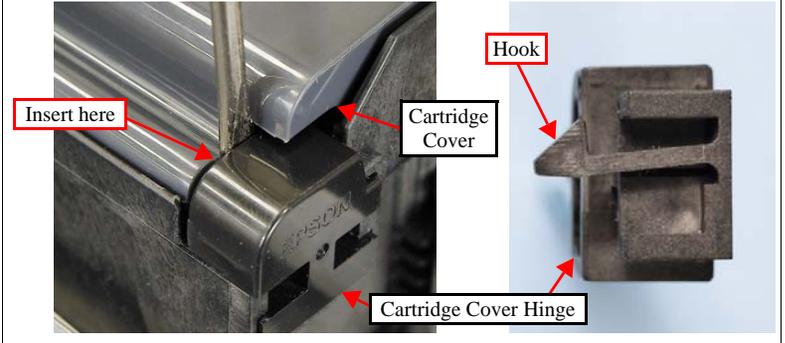
REASSEMBLY

■ After installing the Cable Holder Frame, confirm the engagement of the protrusion, and then tighten the screw. *(See Figure 4-87.)*

■ When installing the CR Unit, route the Head FFC through the ribs (x2) of the Front Frame, and secure it with acetate tape and double-sided tape. *(See Figure 4-86.)*

■ After installing the Head FFC as shown, move the carriage several times and confirm that the FFC is free from too much tension or slack. *(See Figure 4-86.)*

■ Install the Timing Belt on the carriage properly that the toothed areas on the inside and outside of the belt as shown below.
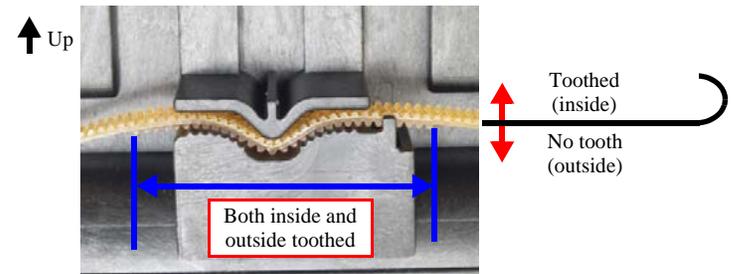
Figure 4-91. Installing the CR unit (1)

REASSEMBLY

■ **Install the PG Left Cam by mating the D cut surfaces and with the cam positioned outside so that it does not come in contact with sensing area of the APG Sensor**

Must not touch the sensing area

PG Left Cam

With the cam positioned outside

APG Sensor
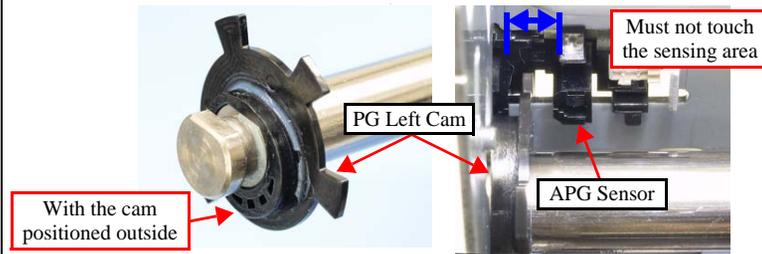
Figure 4-92. Installing the CR unit (2)

■ **Install the CR Unit so that the guide is engaged with the frame.**

Rear

Carriage guide
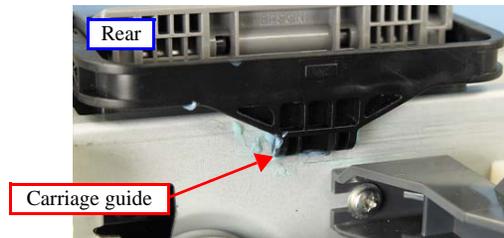
Figure 4-93. Installing the CR unit (3)

■ **When installing the Cable Holder Frame, make sure that it is positioned correctly in the front and back direction. (*Fig. 4-87*)**

ADJUSTMENT REQUIRED

■ **After removing/replacing the CR Unit, make the specified adjustments. (See Chapter 5 "ADJUSTMENT".)**
■ **After replacing the CR Unit, be sure to perform the required lubrication. (See Chapter 6 "MAINTENANCE".)**

4.4.11 Paper Eject Frame Assy

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing / Printer Mechanism

☐ Removal procedure

1. Release the Head FFC from the Front Frame. *(See Figure 4-86.)*

2. Remove the screw that secure the Cable Holder Frame to the Front Frame. *(See Figure 4-87.)*

3. Remove the screws (x2) that secure the Front Frame, and remove the Front Frame.

Front Frame

☐ Protrusion
○ C.B.S. 3x6 (8±1 Kgfcm)
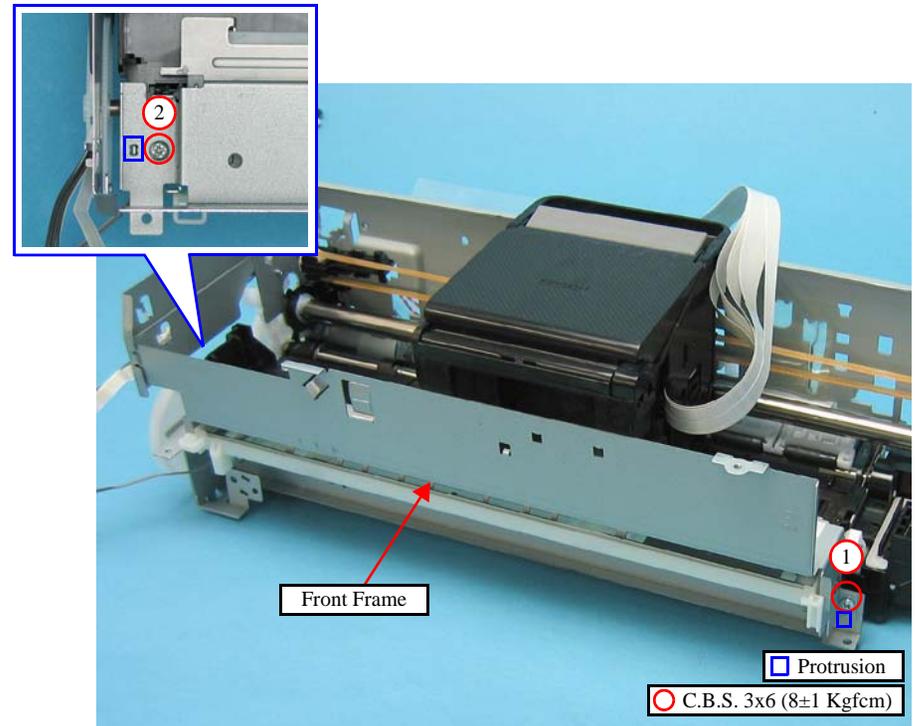
Figure 4-94. Removing the Paper Eject Frame Assy (1)

4. Remove the Paper Eject Frame Assy from the printer.
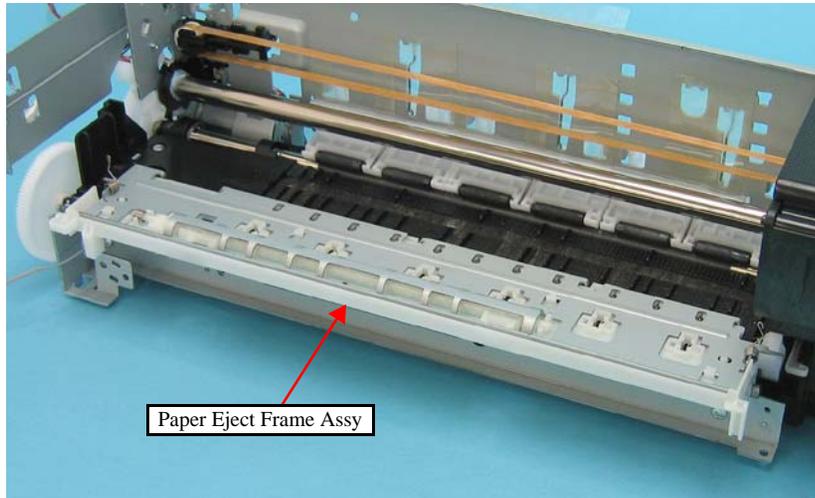
Figure 4-95. Removing the Paper Eject Frame Assy (2)

■ **Align the shaft holders (left and right) on the bottom of the Eject Frame with the EJ Roller Shaft.**
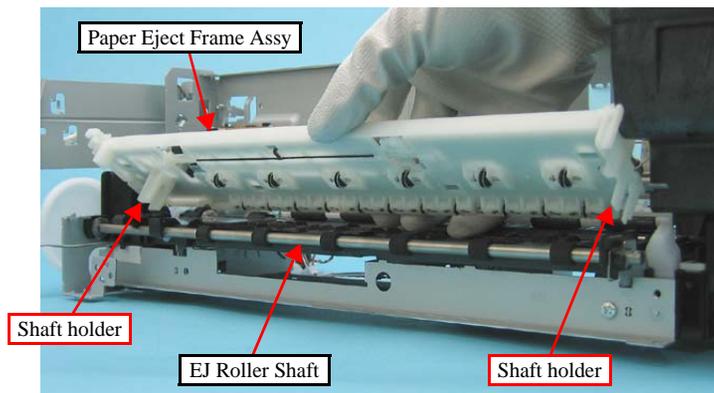
Figure 4-96. Installing the Paper Eject Frame Assy (1)

■ **When installing the EJ Frame Assy, make sure that the Left/Right EJ Frame Springs are attached as shown in Fig. 4-97. Carefully handle the EJ Frame Assy as the springs come off easily.**
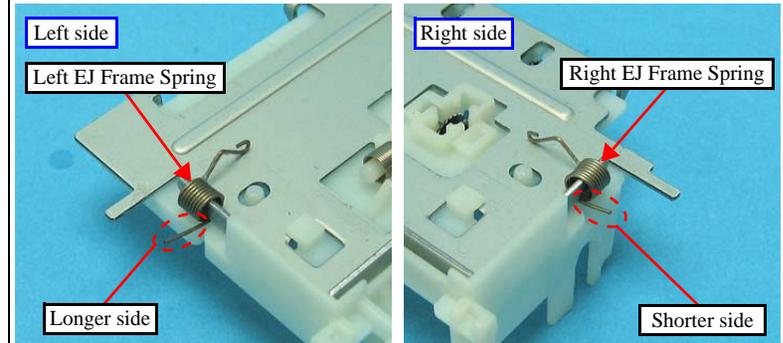
Figure 4-97. Installing the Paper Eject Frame Assy (2)

■ **When installing the Front Frame, screw it after securing the foot of the two EJ Frame Springs to the slits as shown in the figure. Carefully handle the EJ Frame as the springs come off easily.**
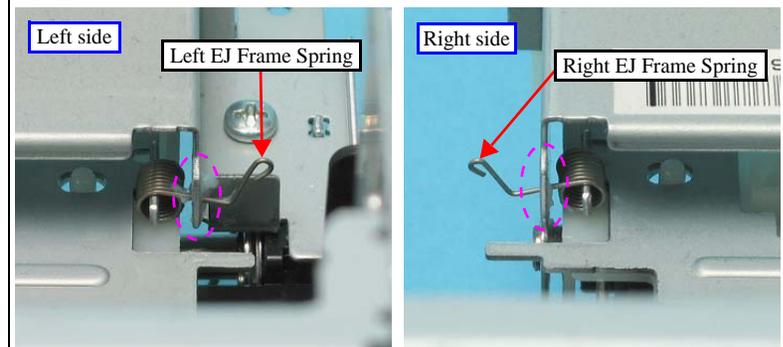
Figure 4-98. Installing the Paper Eject Frame Assy (3)

REASSEMBLY

- After installing the Front Frame, confirm the engagement of the protrusions (x2), and then tighten the screws (x2) in the specified order. *(See Figure 4-94.)*
- After installing the Cable Holder Frame, confirm the engagement of the protrusion, and then tighten the screw. *(See Figure 4-87.)*
- After installing the Head FFC as shown, move the carriage several times and confirm that the FFC is free too much tension or slack. *(See Figure 4-86.)*

ADJUSTMENT REQUIRED

- After removing/replacing the Paper Eject Frame Assy, make the specified adjustments. (See **Chapter 5 "ADJUSTMENT".**)
- After replacing the Paper Eject Frame Assy, be sure to perform the required lubrication. (See **Chapter 6 "MAINTENANCE".**)

4.4.12 Upper Paper Guides

CHECK POINT ✔

The Upper Paper Guides are connected as a single unit with thin fragile bridges as shown with arrows below. However, these parts are not to be placed on the shaft holders of the printer frame. Therefore, it is not necessary to replace the Upper Paper Guides even if the bridges are broken.

Thin   Thin

CAUTION !
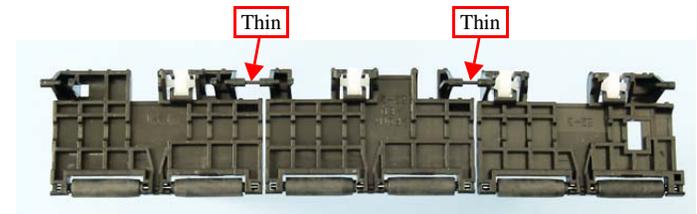
- Do not touch any of the rollers as it can adversely affect the print quality.
- If the rollers come off when removing the Upper Paper Guides, install the rollers in the proper direction as shown below.
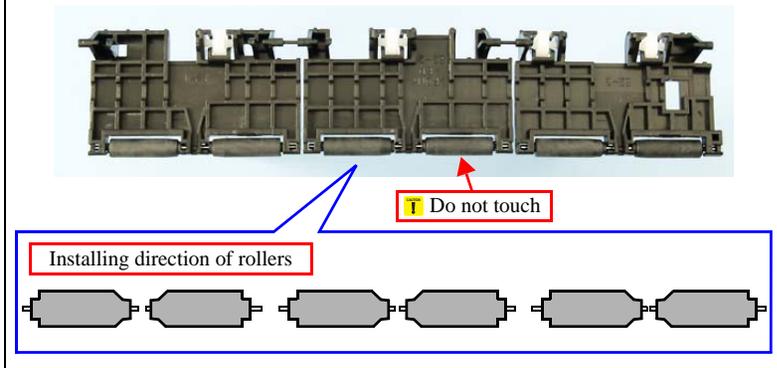
Do not touch

Installing direction of rollers

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing / Printer Mechanism / Ink System Unit / ASF Unit

☐ Removal procedure

1. Remove torsion springs (x3) at the rear of the printer.
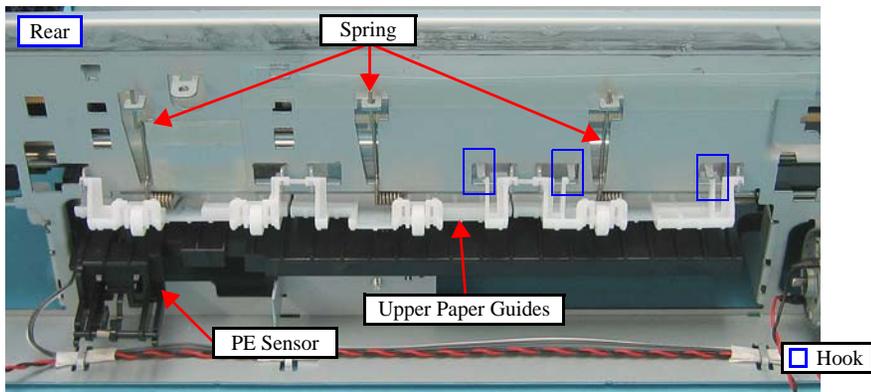
Figure 4-99. Removing the Upper Paper Guides (1)

CAUTION !	The mist sheet A and B may be deformed or damaged when once removed. If these are deformed or damaged, replace them with a new one.

2. Peel off the mist sheet A and mist sheet B with a tweezer or a similar tool.
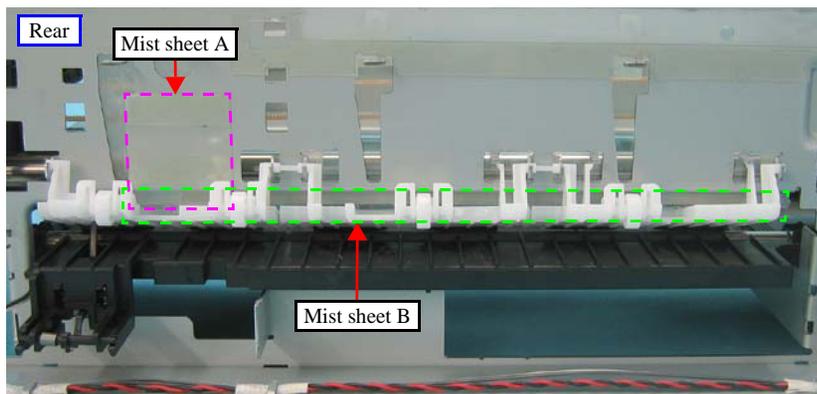
Figure 4-100. Removing the Upper Paper Guides (2)

CAUTION !	When removing the Upper Paper Guides, put down the actuator of the PE Sensor toward the front to avoid damaging it.

3. Release the hooks (x3), release the Upper Paper Guides from the shaft holders of the printer frame, lower the actuator of the PE Sensor, and remove the Upper Paper Guides. *(See Figure 4-99.)*
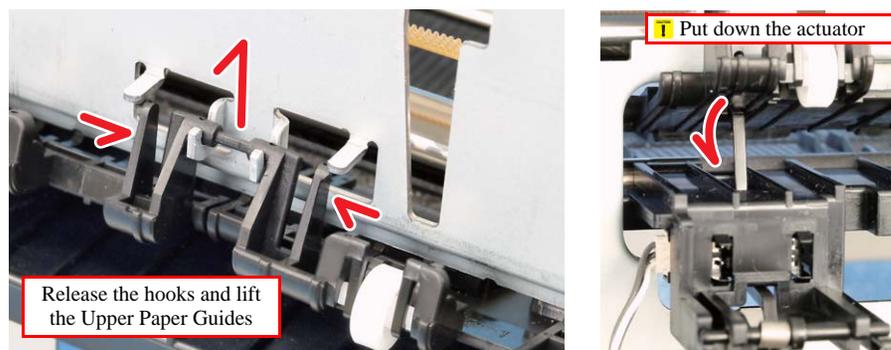
Figure 4-101. Removing the Upper Paper Guides (3)

REASSEMBLY	Install the springs properly, while paying attention to the tip position of each spring.
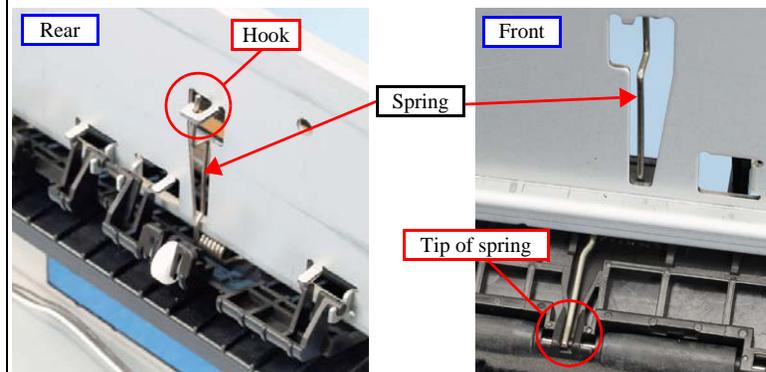
Figure 4-102. Installing the Upper Paper Guides

ADJUSTMENT REQUIRED	After removing/replacing the Upper Paper Guides, make the specified adjustments. (See Chapter 5 "ADJUSTMENT".)

4.4.13 Front Paper Guide Assy

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing / Printer Mechanism / Linear Scale / PF Scale / PF Encoder / Ink System Unit / ASF Unit / APG Unit / CR Unit / Paper Eject Frame Assy / Upper Paper Guides

☐ Removal procedure

CAUTION !	Do not touch any of the rubber rollers of the Paper Eject Roller Assy or coated surface of the PF Roller Assy as it can adversely affect the print quality.

1. Remove the Left Parallelism Bush from the Left Frame.

2. In the left area of the printer, remove the screw that secure the Front Paper Guide Assy.

3. Disconnect the connector of the PE Sensor at the rear of the printer.
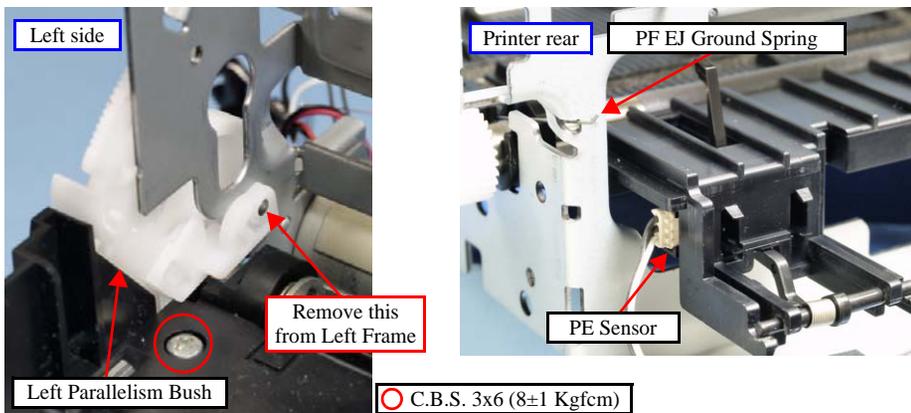
Figure 4-103. Removing the Front Paper Guide Assy (1)

4. Pull out the PF EJ Ground Spring frontward.
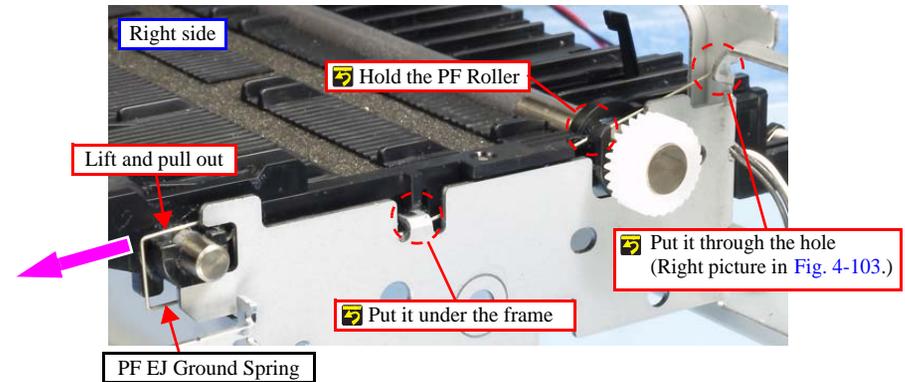
Figure 4-104. Removing the Front Paper Guide Assy (2)

5. Lift the left side of the Front Paper Guide Assy slightly to release the engagement with the frame, pull the Front Paper Guide Assy frontward, and then release the engagement at the right side and remove the Front Paper Guide Assy.
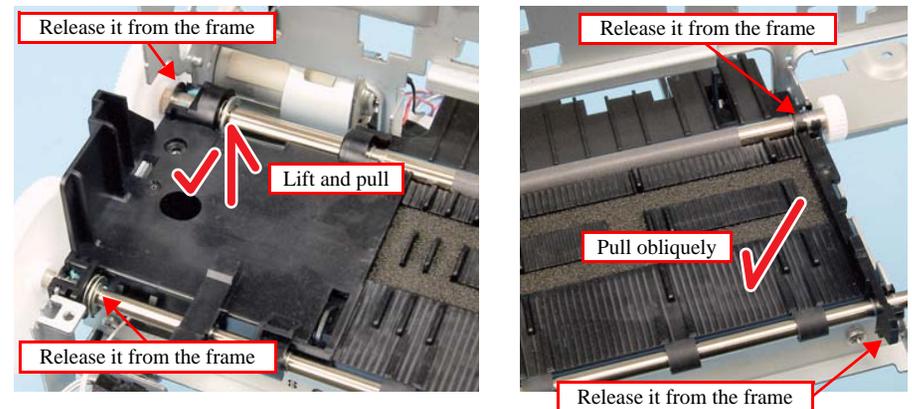
Figure 4-105. Removing the Front Paper Guide Assy (3)

REASSEMBLY ■ **Route the cable of the CD-R Sensor as shown below.**

Printer front bottom left

Pull out the cable here
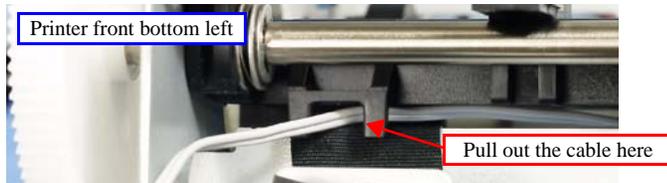
Figure 4-106. Installing the Front Paper Guide Assy (1)

■ **See Fig. 4-104 and install the PF EJ Ground Spring.**
■ **Make sure the four tips of the Front Paper Guide Pad are placed on the Waste Ink Pad.**

Bottom Side

Waste Ink Pad Position

☐ Tip of Front Paper Guide Pad

Tip   Tip
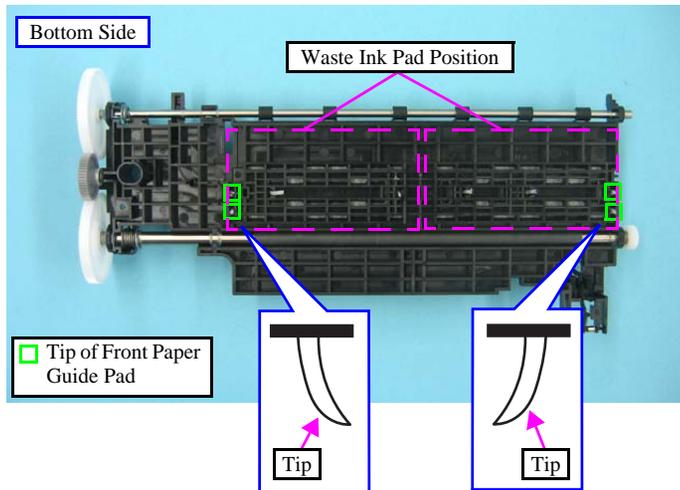
Figure 4-107. Installing the Front Paper Guide Assy (2)

ADJUSTMENT REQUIRED
■ **After removing/replacing the Front Paper Guide Assy, make the specified adjustments. (See Chapter 5 "ADJUSTMENT".)**
■ **After replacing the Front Paper Guide Assy, be sure to perform the required lubrication. (See Chapter 6 "MAINTENANCE".)**

4.4.14 Waste Ink Pads

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing / Printer Mechanism

☐ Removal procedure

CAUTION ! | **When removing the Waste Ink Pads, take extra care not to contaminate the surrounding objects with waste ink.**

1. Remove Waste Ink Pads (x3) from the Lower Housing.
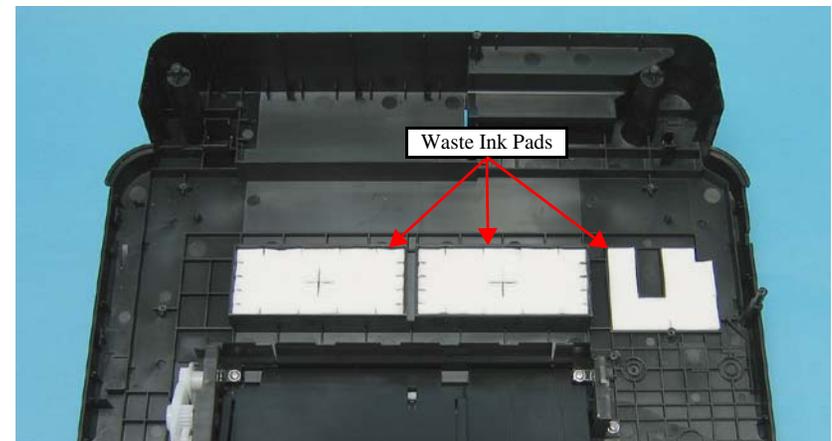
Waste Ink Pads

Figure 4-108. Removing the Waste Ink Pads

REASSEMBLY | **Place the Waste Ink Pads (x2) by pushing them along the cut portions to the full and make sure that they are free from floating.**

ADJUSTMENT REQUIRED | **After removing/replacing the Waste Ink Pads, make the specified adjustments. (See Chapter 5 "ADJUSTMENT".)**

4.5 Disassembly of Scanner Unit

4.5.1 Scanner Housing

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit

☐ Removal procedure

CAUTION !	■ **Once the Scanner Housing is removed, there is a possibility that dust and dirt may enter the inside of the scanner body. Perform disassembly and assembly of the Scanner Unit in a clean room or on a clean bench to keep away from dust and dirt.** ■ **Perform disassembly and assembly with care not to damage the document table (glass). It may require considerable time to clean if dirt sticks to the inside of the document table.** ■ **Take care in handling the Lower Housing. Because grease is applied to the CR guide area of the Lower Housing, do not touch any parts with a greasy hand or part.** ■ **Take care not to contaminate or scratch the Encoder Scale or the lens of the CIS Unit.**
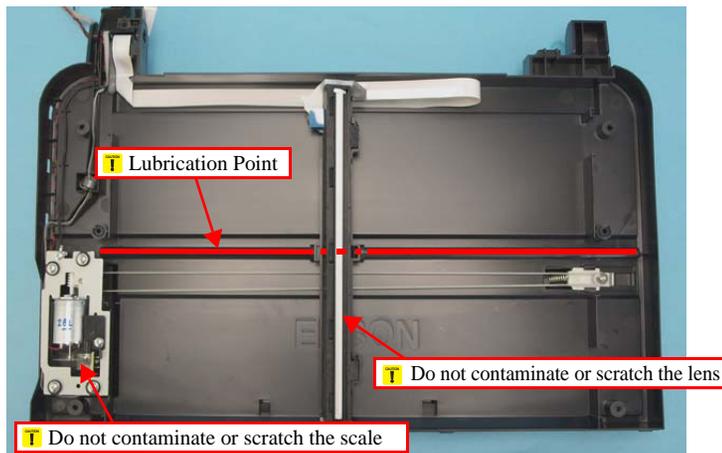
Figure 4-109. Scanner Unit

1. Remove the screws (x7) on the bottom of the Scanner Unit.

2. Remove the Scanner Housing, the hinge area in the rear of the Scanner Unit first.

Remove the hinge side first

☐ Hook

○ C.B.P. 2.5x10 (5±1 Kgfcm9)
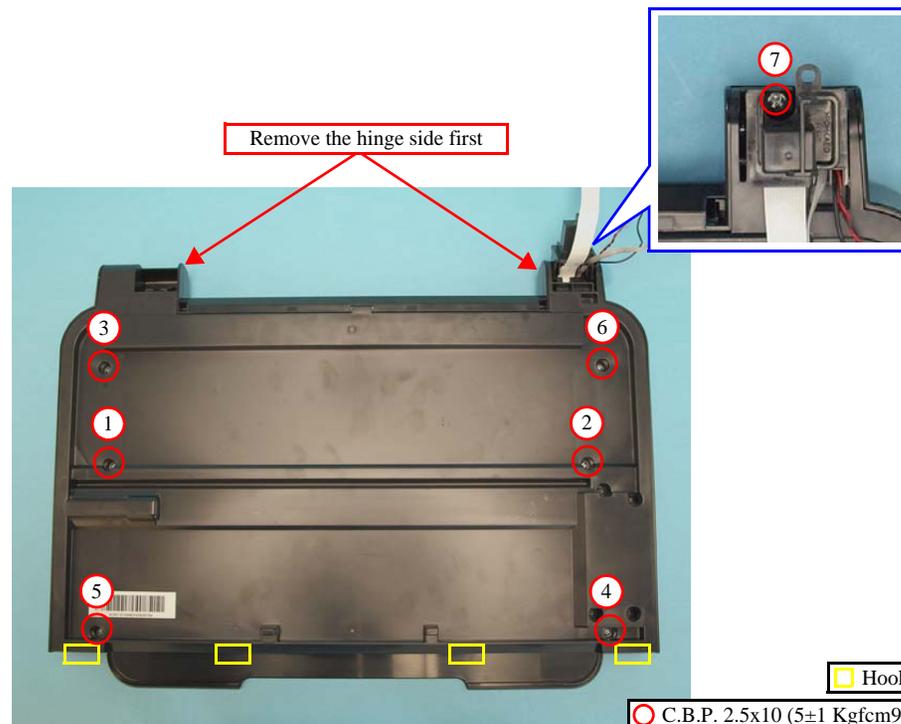
Figure 4-110. Removing the Scanner Housing

REASSEMBLY	■ **When installing the Scanner Housing, engage the hooks (x4) in the front properly first and then engage the hinge area in the rear.** *(See Figure 4-110.)* ■ **Tighten the screws in the order given in** **Fig. 4-110.**

ADJUSTMENT REQUIRED	**When the CR Unit is removed in subsequent work or for some other reason, the scanner origin can be shifted from the correct position; therefore, adjust the origin location after re-installation. Refer to** **"5.5 Scanner Original Adjustment"** *(p.127)***.**

4.5.2 CIS Unit

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Scanner Housing

☐ Removal procedure

CAUTION ⚠!	Take care in handling the Lower Housing because grease is applied to the CR guide area of the Lower Housing. Do not touch any parts with a greasy hand or part.

1. Disconnect the FFC from the connector of the CIS unit.

2. Turn the CIS Unit by 90 degrees upward, and remove the CIS Unit from the right and left shaft holes of the carriage.
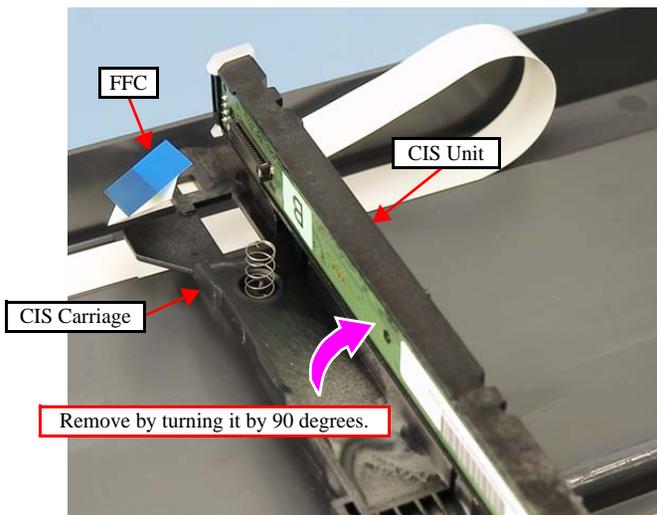
Figure 4-111. Removing the CIS Unit

■ **When replacing the CIS Unit, check the sticker on the Bottom Board, and use the spacers (x2) of the same letter (A - C) as the marking on the sticker, placing them at the right and left positions.**

Install the spacers (x2) of the same letter (A - C) as the marking on the sticker, placing them at the right and left positions.
- A: Spacer, CIS, A17 (black)
- B: Spacer, CIS, B19 (white)
- C: Spacer, CIS, C21 (gray)
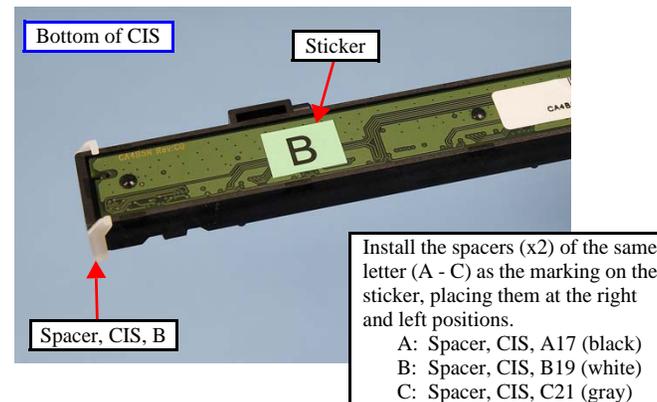
Figure 4-112. Installing the CIS Unit (1)

■ **When installing the Timing Belt, align the side that has teeth of the Timing Belt with the tooth of the CIS Unit, then secure them with the Belt Clamp.**
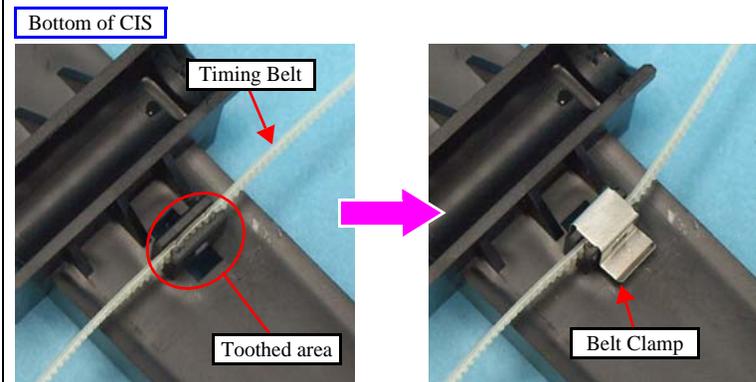
Installing the CIS Unit (2)

REASSEMBLY

When installing the CIS Unit, align the leg of the CIS Spring with the notch of the spring hole, and then turn the spring to attach it.

CIS Spring
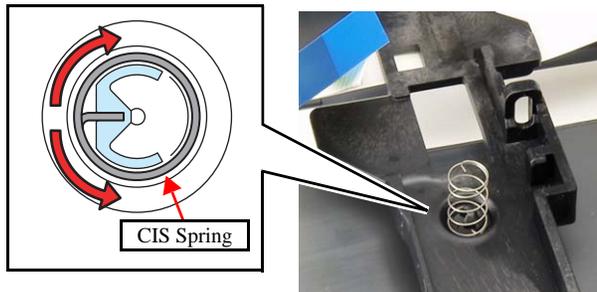
Figure 4-113. Installing the CIS Unit (3)

ADJUSTMENT REQUIRED

After replacing the CIS Unit, be sure to perform the required lubrication. (See Chapter 6 "MAINTENANCE".)

4.5.3 CR Motor Unit

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Scanner Housing

☐ Removal procedure

CAUTION !

Take care in handling the Lower Housing because grease is applied to the CR guide area of the Lower Housing.
Do not touch any parts with a greasy hand or part.
(Especially take great care in handling the Encoder Scale.)

1. Move the Driven Pulley in the direction of the arrow, and remove the Timing Belt.

Timing Belt   Driven Pulley
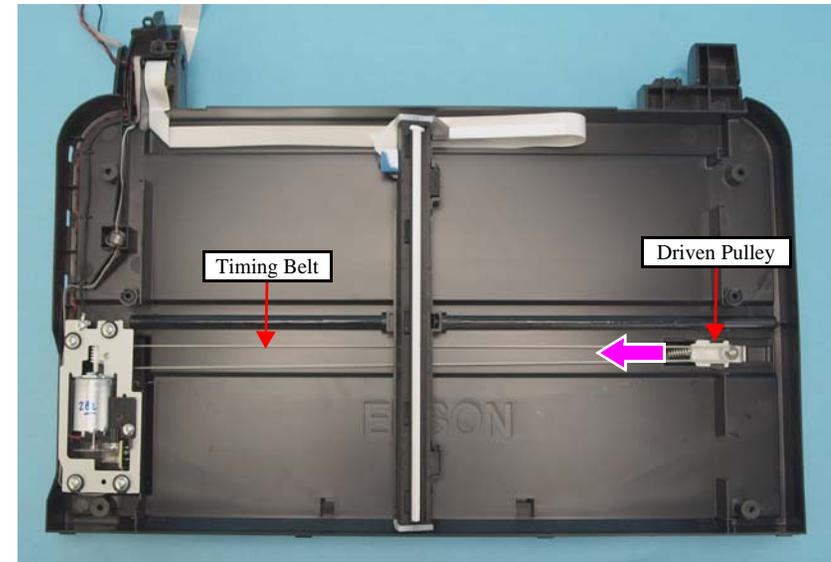
Figure 4-114. Removing the CR Motor Unit (1)

2. Remove the screw that secure the grounding wire.

3. Disconnect the CR Encoder cable, the CR Motor Unit cable and the grounding wire from the Lower Housing.

CR Encoder cable

Grounding wire

□ Rib
□ Groove

CR Motor cable

○ C.B.(P2) 3x6 (5±1 Kgfcm)
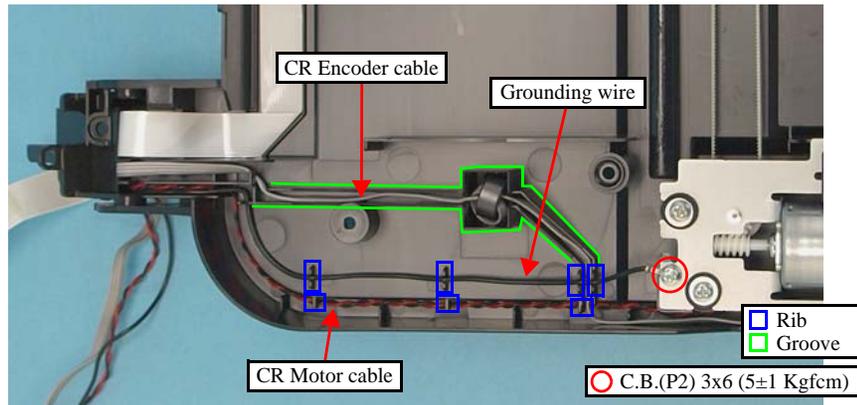
Figure 4-115. Removing the CR Motor Unit (2)

CAUTION

!

Do not remove or loosen the screw marked "X" in **Fig. 4-116** because it causes the misalignment of the encoder. If the encoder is not in the correct position, the unit must be replaced with a new one.

4. Remove the screws (x4) that secure the CR Motor Unit, and remove the CR Motor Unit.

⚠ Do not remove or loosen

✕

CR Motor Unit

⚠ Grease is applied here.

○ C.B.P 3x8 (5±1 Kgfcm)
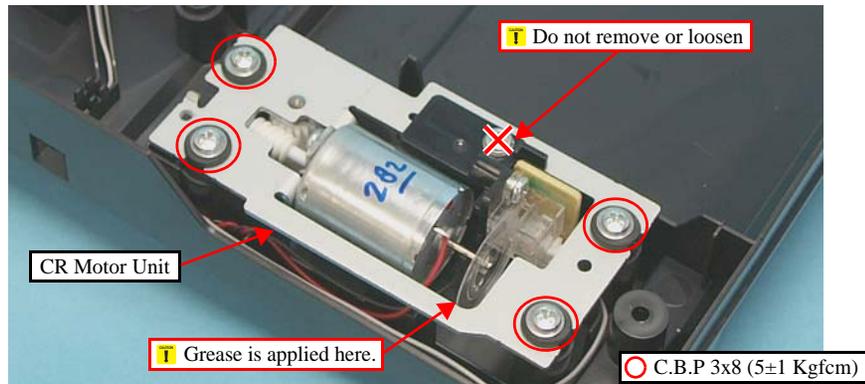
Figure 4-116. Removing the CR Motor Unit (3)

REASSEMBLY

■ **When installing the CR Motor Unit on the Lower Housing, push it adequately so that the insulators are compressed to such thickness as shown below.**

Push the unit until the thickness of the insulator A becomes smaller than that of the insulator B, and tighten the screw.

A<B

A

B
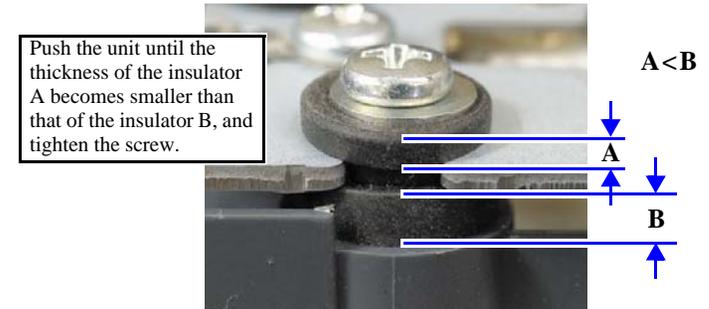
Figure 4-117. Installing the CR Motor Unit

■ **When removing the CR Motor Unit, route the cables as below.** *(See Figure 4-115.)*

- **CR Encoder cable:** Route through the groove of the Lower Housing.
- **CR Motor Unit cable:** Route through the ribs (x3) of the Lower Housing.
- **Grounding wire:** Route through the ribs (x4) of the Lower Housing.

ADJUSTMENT

5.1 Adjustment Items and Overview

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

5.1.1 Servicing Adjustment Item List

The adjustment items of this product are as follows.

CHECK POINT ✓

- **For information on how to carry out the adjustments and media required for the adjustments, see the instructions displayed by the Adjustment Program.**
- **Description in this chapter is applied to Epson Stylus Photo PX650/TX650/TX659 but most of it can also be applied to Epson Stylus Photo PX660/PX660 Premium/Artisan 635. For Epson Stylus Photo PX660/PX660 Premium/Artisan 635, see below first and follow the instructions.**
  - **"8.3 Adjustment"** *(p.157)*

Table 5-1. Adjustment Items

Adjustment Item	Purpose	Method Outline	Tool
PG Adjustment	Install the Head Nozzle surface parallel to the printing surface and set the gap between the paper and the Head Nozzle surface to the specified value.	Mechanical adjustment using the thickness gauges. Make a proper adjustment according to the result whether the manually-moved carriage (printhead) runs over or hits against the gauges placed on the platen.	• Thickness Gauge 1.15 mm, 1.3 mm
EEPROM data copy	When the main board needs to be replaced, use this to copy adjustment values stored on the old main board to the new board. If this copy is completed successfully, all the other adjustments required after replacing the main board are no longer be necessary.	Readout the EEPROM data from the main board before removing it. Then replace the board with a new one, and load the EEPROM data to the new board.	• Adjustment Program
Initial setting	This must be carried out after replacing the main board to apply settings for the target market.	Select the target market. The selected market settings are automatically written to the main board.	• Adjustment Program
Head ID Input	This must be carried out after replacing the printhead in order to enter the new printhead ID (Head ID) that reduces variation between printheads.	Enter the ID printed on the Head QR code label attached on the printhead. The correction values are automatically written to the main board.	• Adjustment Program
USB ID Input	Sets a USB ID of the printer. A computer identifies the printer by the ID when multiple same models are connected via a USB hub.	Enter the product serial number of the printer. The ID is automatically generated and written to the main board.	• Adjustment Program
Initialize PF Deterioration Offset	Resets the counter to maintain paper feed accuracy which decreases due to paper dust.	Reset the counter to its default.	• Adjustment Program
Disenable PF Deterioration Offset	When reading the counter value from the old main board is impossible in the case of replacing the board, use this to set the counter to its maximum value.	Set the counter to its maximum value (3000).	• Adjustment Program
TOP Margin Adjustment	This corrects top margin of printout.	A top margin adjustment pattern is printed. Examine the lines printed near the top edge of the printout, and enter the value for the line that is exactly 3 mm away from the top edge.	• Adjustment Program • Ruler
Head angular adjustment	This must be carried out after replacing the printhead in order to correct tilt of the printhead by software.	A head angular adjustment pattern is printed. Examine the printed lines and enter the value for the most straight lines.	• Adjustment Program

Table 5-1. Adjustment Items

Adjustment Item	Purpose	Method Outline	Tool
Bi-D adjustment	Corrects print start timing in bi-directional printing to improve the print quality.	A Bi-D adjustment pattern is printed. Examine the patterns and enter the value for the pattern with no gap and overlap for each mode.	• Adjustment Program
First dot position adjustment	Corrects left margin of printout. The print start position in the carriage moving direction is corrected by software.	A first dot adjustment pattern is printed. Examine the lines printed near the left edge of the printout and enter the value for the line that is exactly 5 mm away from the left edge.	• Adjustment Program • Ruler
PW adjustment	This adjustment is made to correct the mounting position of the PW Sensor on a software basis to adjust the detection position and Nozzle position dispersion.	A PW adjustment pattern is printed. Examine the printout patterns and enter the value for the line that is exactly 5 mm away from the paper edge for each of the left, right, top and bottom.	
PF adjustment	Corrects variations in paper feed accuracy when using the Microweave to achieve higher print quality.	A PF adjustment pattern is printed. Examine the printout patterns and select the value for the best pattern. The correction value is registered.	• Adjustment Program
BRS adjustment	This adjustment is made to ensure both high print quality (less banding) and high print speed in the target print mode by carrying out 1-path printing correcting ink drop amount for each raster mode.	Print the adjustment pattern to be scanned by a specified scanner. According to the scanned result, a correction value is automatically calculated and stored into the serial flash ROM on the main board. The correction value is applied when printing in the corresponding mode. For more details, see "5.4 Banding Reduction System (BRS) Adjustment/Paper Feed Amount Profile (PFP) Correction *(p.122)*	• Adjustment Program • Specified Scanner • PFP base scale
PFP adjustment	This adjustment is made to ensure both high print quality and high print speed in the target print mode by measuring the paper feed errors at various points and calculating a correction value for each of the points.	Print the adjustment pattern to be scanned by a specified scanner. According to the scanned result, a correction value is automatically calculated and stored into the serial flash ROM on the main board. The correction value is applied when printing in the corresponding mode. For more details, see "5.4 Banding Reduction System (BRS) Adjustment/Paper Feed Amount Profile (PFP) Correction *(p.122)*	• Adjustment Program • Specified Scanner • PFP base scale
CR motor heat protection control	This must be carried out for efficient heat control of the CR motor. Electrical variation of the motor and the power supply board are measured to acquire correction values for them.	Select the parts that you replaced. The correction values are automatically written to the main board.	• Adjustment Program

Table 5-2. Maintenance Items

Maintenance Item	Purpose	Method Outline	Tool
Head cleaning	This function is used to execute cleaning efficiently when ink is not delivered from the head properly, e.g. dot missing.	The head cleaning is performed automatically. After the cleaning, print a nozzle check pattern to check if all nozzles are firing ink properly.	• Adjustment Program
Waste ink pad counter	The printer causes a maintenance error when the waste ink pad counter reaches its maximum. Use this to reset the counter after replacing the Waste Ink Pad. If you find the counter is close to the maximum during servicing, carry out the pad replacement and the counter reset to avoid the printer returned from the user due to the maintenance error.	After replacing the Waste Ink Pad, reset the counter to its default.	• Adjustment Program
Ink charge	This must be carried out after replacing the printhead in order to fill ink inside the new printhead. The printhead becomes ready for print.	Filling ink inside the printhead is automatically performed. Print a nozzle check pattern to check if all nozzles are firing ink properly.	• Adjustment Program

Table 5-3. Additional Functions

Additional Functions		Purpose	Method Outline	Tool
Final check pattern print	A4 size	Use this to check if the all adjustments have been properly made.	The all adjustment patterns are printed automatically.	• Adjustment Program
	US Letter size			
EEPROM dump		Use this to readout the EEPROM data for analysis.	The all EEPROM data is automatically readout and stored as a file.	• Adjustment Program
Printer information check	Manual CL counter	Use this to readout information on the printer operations.	The printer information is automatically readout.	• Adjustment Program
	I/C exchange CL counter			
	Timer CL counter			
	Print pass counter			

5.1.2 Required Adjustments

The table below lists the required adjustments depending upon the parts being repaired or replaced. Find the part(s) you removed or replaced, and check which adjustment(s) must be carried out.

Note :   <Meaning of the marks in the table>

"O" indicates that the adjustment must be carried out. "O*" indicates that the adjustment is recommended. "---" indicates that the adjustment is not required.

If you have removed or replaced multiple parts, make sure to check the required adjustments for the all parts. And when multiple adjustments must be carried out, be sure to carry out them in the order given in the "Priority" row.

Table 5-4. Adjustment Items

Priority		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Part Name / Adjustment Item		PG adjustment	EEPROM data copy	Initial setting	USB ID input	Head ID input	Waste ink pad counter	Ink charge	Initialize PF deterioration offset	Disenable PF deterioration offset	Top margin adjustment	Head angular adjustment	Bi-D adjustment	First dot position adjustment	PW adjustment	PF adjustment	BRS adjustment	PFP adjustment	CR motor heat protection control
ASF Unit	Remove	--	--	--	--	--	--	--	--	--	O	--	--	O	--	O	--	O	--
	Replace	--	--	--	--	--	--	--	--	--	O	--	--	O	--	O		O	--
CR Motor	Remove	--	--	--	--	--	--	--	--	--	--	--	O*	--	--	--	--	--	--
	Replace	--	--	--	--	--	--	--	--	--	--	--	O*	--	--	--	--	--	O
Upper Paper Guide	Remove	--	--	--	--	--	--	--	--	--	O	--	--	--	--	O	O	O	--
	Replace	--	--	--	--	--	--	--	--	--	O	--	--	--	--	O	O	O	--
Printhead	Remove	O	--	--	--	--	--	--	--	--	O	O	O	O	O	O	O	O	--
	Replace	O	--	--	--	O	--	O	--	--	O	O	O	O	O	O	O	O	--
Main Board Unit	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Replace (Read OK)	--	O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	O
	Replace (Read NG)	--	--	O	O	O	O (Ink Pads must be replaced)	--	--	O	O	O	O	O	O	O	O	O	O
Power Supply Board	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Replace	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	O

Table 5-4. Adjustment Items

Priority		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Part Name	Adjustment Item	PG adjustment	EEPROM data copy	Initial setting	USB ID input	Head ID input	Waste ink pad counter	Ink charge	Initialize PF deterioration offset	Disenable PF deterioration offset	Top margin adjustment	Head angular adjustment	Bi-D adjustment	First dot position adjustment	PW adjustment	PF adjustment	BRS adjustment	PFP adjustment	CR motor heat protection control
Front Paper Guide Assy (including PF Shaft)	Remove	O	--	--	--	--	--	--	--	--	O	O	O	O	O	O	O	O	--
	Replace	O	--	--	--	--	--	--	--	O	O	O	O	O	O	O	O	O	--
PF Motor	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Replace	--	--	--	--	--	--	--	--	O	--	--	--	--	--	--	--	--	--
Waste Ink Tray Assy	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Replace	--	--	--	--	--	O (Waste Ink Tray)	--	--	--	--	--	--	--	--	--	--	--	--
Waste Ink Pad	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Replace	--	--	--	--	--	O (Waste Ink pad)	--	--	--	--	--	--	--	--	--	--	--	--
CR Unit	Remove	O	--	--	--	--	--	--	--	--	O	O	O	O	O	O	O	O	O
	Replace	O	--	--	--	--	--	--	--	--	O	O	O	O	O	O	O	O	O
Paper Eject Frame Assy	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	O	O	O	--
	Replace	--	--	--	--	--	--	--	--	--	--	--	--	--	--	O	O	O	--
Printer Mechanism	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Replace	O	--	--	--	--	--	--	O	--	O	O	O	O	O	O	O	O	O

5.2 Adjustment by Using Adjustment Program

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 Top Margin Adjustment

Patterns are printed as shown below.

[Judging Standard]

The distance from a paper top edge to a line is:
- 4 mm or more: Choose the "-" from a combobox.
- 2 mm or less: Choose the "+" from a combobox.
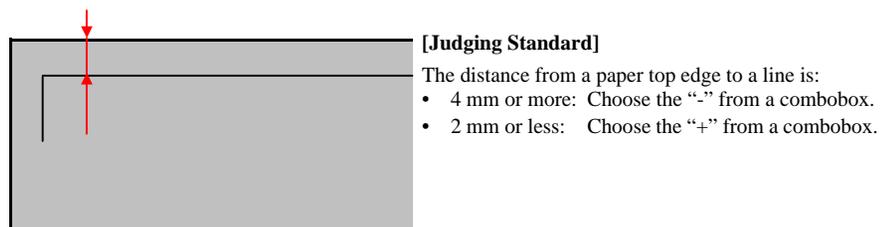
Figure 5-1. Top Margin Adjustment Pattern

How to Judge

Measure the distance from the top edge of the paper to the printed line, and enter any one of the "-", "0", "+" according to the judging standard.

5.2.2 Head angular adjustment

Two patterns are printed as shown below.

☐ Band pattern

The following pattern is printed. The lines below "0 >> 80" are printed while the carriage moves from the home to the other side, and lines below "80 >> 0" are printed while the carriage returns to the home.
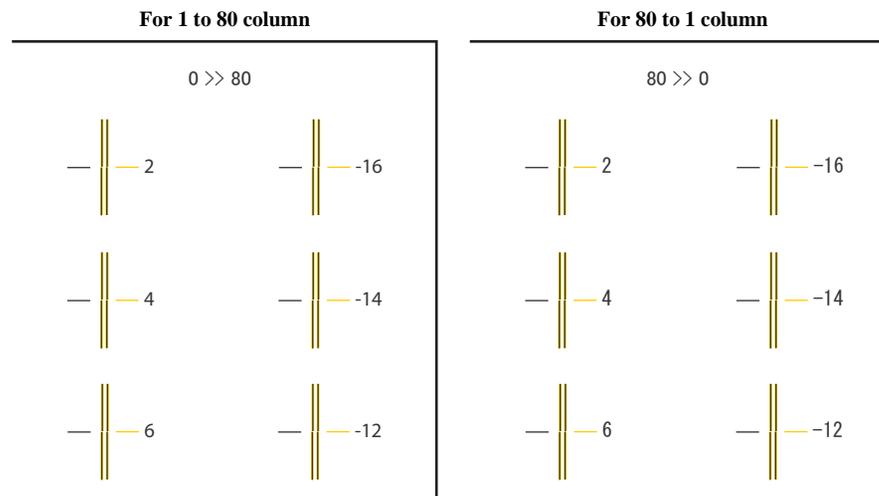
Figure 5-2. Head Angular Adjustment (Band) Pattern

How to Judge

Examine the printout patterns and enter the value (-16 to 16) for the most straight lines.

Additional information

When "16" or "-16" is the most straight lines, it indicates that the printhead is not installed correctly. Reassemble the printhead and carry out this adjustment again.

CHECK POINT ✔

Example for judgement

NG   OK
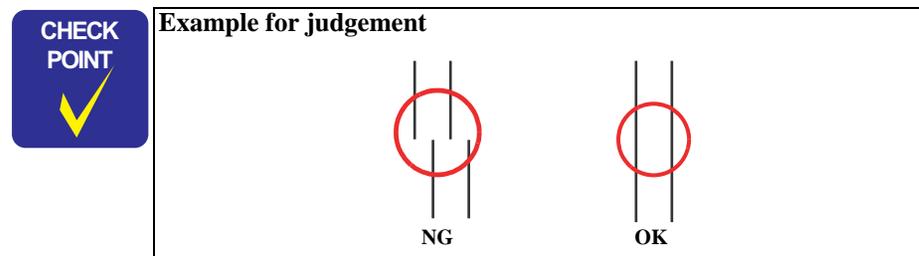
☐   Microweave Pattern
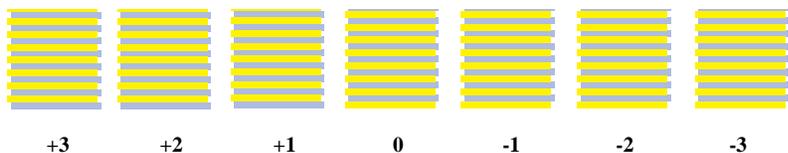
Figure 5-3. Head Angular Adjustment (Microweave) Pattern

How to Judge

Examine the printout +3 to -3 patterns and select the value for the group of which the gaps between the 2 color bars are the smallest.

Additional information

If no appropriate pattern is found, reassemble/replace the Printhead.

5.2.3 Bi-D Adjustment

The pattern shown below is printed for each of the 7 print modes.
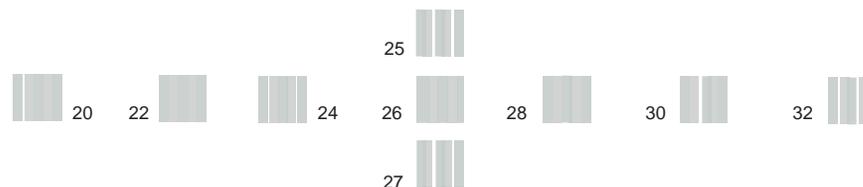
Figure 5-4. Bi-D Adjustment Pattern

How to Judge

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

Additional information

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

5.2.4 PW Adjustment/First Dot Position Adjustment

Patterns are printed as shown below.

Figure 5-5. PW/First Dot Position Adjustment Pattern

□   PW adjustment

How to Judge

Enter the value for the line that is exactly 5 mm away from the paper edge for each of the left, right, top and bottom.

Example: In the left figure, enter "0" (top), "0" (right), "5" (bottom) and "-3" (left).

□   First dot position adjustment

How to Judge

Enter the value for the point where the PW adjustment pattern line and the First dot position adjustment pattern line overlap on the left of the paper.

Example: In the left figure, enter "2" since the lines overlap at "2" position.

5.2.5 PF Adjustment

□ PF-Standard Area

Patterns are printed as shown below.
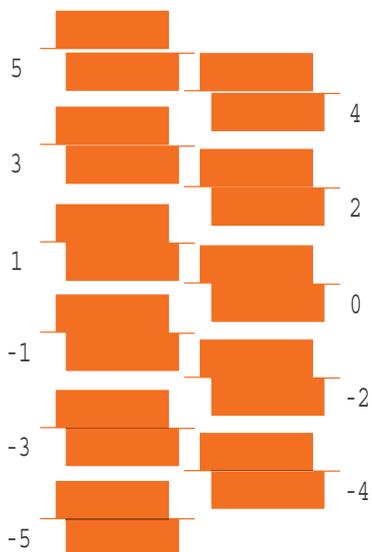
Figure 5-6. PF Adjustment (Standard Area) Pattern

How to Judge

Enter the value for the group that has no gap or overlap between the upper and the lower patterns.
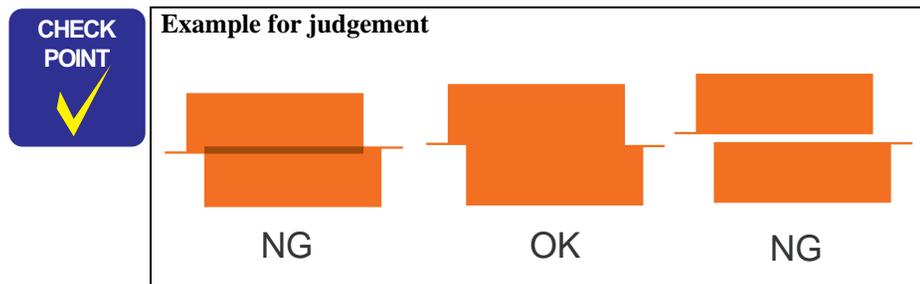
□ PF-Bottom Edge Area

Patterns are printed as shown below.
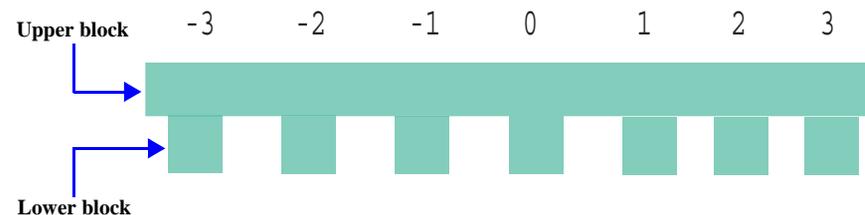
Figure 5-7. PF Adjustment (Bottom Edge) Pattern

How to Judge

Enter the value for the one that has no gap or overlap between the upper block and the lower block.

Example: In the above figure, "0" should be selected.

Additional information

In case that all patterns have gap or overlap, select the value for the pattern which has the least gap or overlap, and print the pattern again.
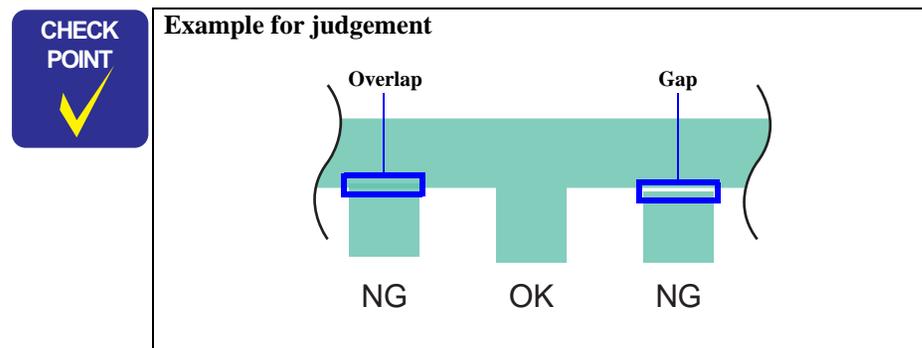
5.3 PG Adjustment

Described below is the platen gap (PG) adjustment.

☐ Purpose:
Adjust the distance between the head surface and the Front Paper Guide Assy (platen) properly and adjust the parallelism on the 0-digit side and on the 80-digit side to ensure reliable print quality.
Once the CR Unit and/or Adjustment Bushes have been removed or whenever necessary for any other reason, make this adjustment to correct the deviation of the platen gap.

Table 5-5. PG Positions

Position	PG Size (mm)	Application for Printing (selected from PG flag list for normal/head rubbing)	Sequence Application
PG- <APG Home>	1.2	EPSON special thick paper PGPP, Postcards, Matte, etc.	Cleaning CR measurement, VH detection CR home position seek
PG typ. <Mechanical default>	1.7	Plain paper EPSON special thin paper, SF, etc. Rubbing with PG1.2 is avoided	
PG+	2.35	Envelopes Rubbing with PG1.2 and 1.7 is avoided	
PG++	4.2	CD-R printing	At ink replacement

☐ Things to be used

■ Thickness gauge: 1.15 mm (x2)
                                  1.3 mm (x2)

■ Phillips screwdriver

CAUTION

■ The thickness gauge to be used must be free from dust and dirt and from deformation. Be sure to clean it before use.
■ Take care that the Printhead is not soiled or scratched.
■ To ensure high accuracy of adjustment, install new ink cartridges in the carriage, and move the carriage right and left by pulling the belt without holding the carriage.

CHECK POINT

■ Make this adjustment after installing the mechanism unit in the Lower Housing. (Install the Linear Scale after adjustment.) Refer to **"4.4.3 Printer Mechanism"** *(p.88)*
■ With Epson Stylus Photo PX650/TX650/TX659/PX660, four stages of PG setting are available by means of the APG Mechanism. However, make this adjustment with the mechanism in the minimum PG position (PG-: 1.2 mm). (Refer to **"4.4.8 APG Unit"** *(p.95)* and below.)

Locating hole

Locating hole
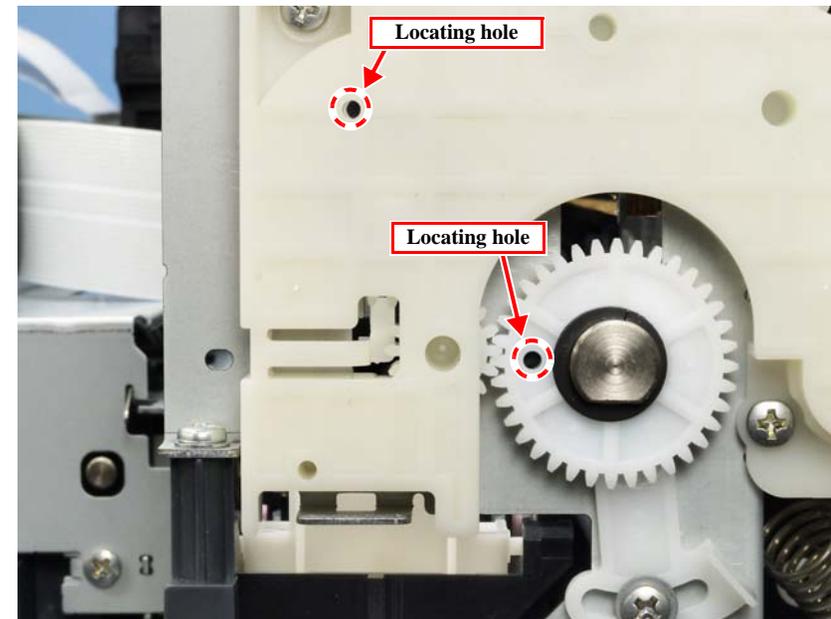
Figure 5-8. PG Position at PG Adjustment

□   Adjustment procedure

■   Specified PG value: 1.2 ± 0.1 mm

1.   Install new ink cartridges in the carriage.

2.   Remove the Cable Holder Frame. *(See Figure 4-87.)*

3.   Check that the APG Unit and the carriage are in the PG-position. *(See Figure 5-8.)*

4.   Move the carriage to the center of the platen, and place 1.15 mm thickness gauge on the left aligning its left edge with the second rib of the Front Paper Guide. And place another 1.15 mm thickness gauge on the right aligning its right edge with the rightmost rib of the Front Paper Guide. *(See Figure 5-9.)*

NOTE: The thickness gauge must not be set over the leftmost rib on the Front Paper Guide.

5.   Pull the Timing Belt to move the carriage to the left end.

6.   If the carriage comes in contact with the gauge, adjust the Left Parallelism Bush to raise the carriage to a position where the Printhead does not come in contact with gauge.

7.   Pull the Timing Belt to move the carriage to the right end.

8.   If the carriage comes in contact with the gauge, adjust the Right Parallelism Bush to raise the carriage to a position where the Printhead does not come in contact with gauge.

9.   Move the carriage to the middle area of the platen, and place 1.3 mm thickness gauges at the left and right ends of the platen.

10. Pull the Timing Belt to move the carriage to the left end.

11. If the carriage does not come in contact with the gauge, make the adjustment again.

12. Pull the Timing Belt to move the carriage to the right end.

13. If the carriage does not come in contact with the gauge, make the adjustment again.

14. Mark the indicated graduation position of the right and left Parallelism Bush, and tighten the screws.
    (Screw tightening torque: 0.8±0.1 N•m)

CAUTION !	The Printhead must come in contact with the 1.3 mm thickness gauges but must not come in contact with the 1.15 mm thickness gauges.
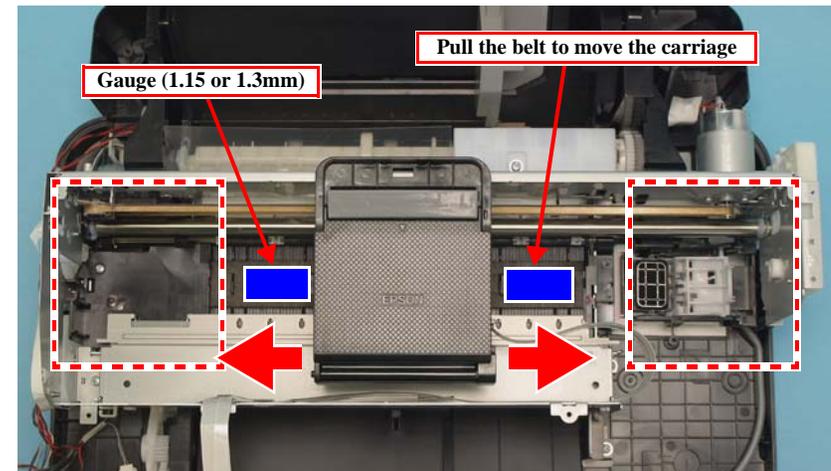
Figure 5-9. PG Adjustment (1)
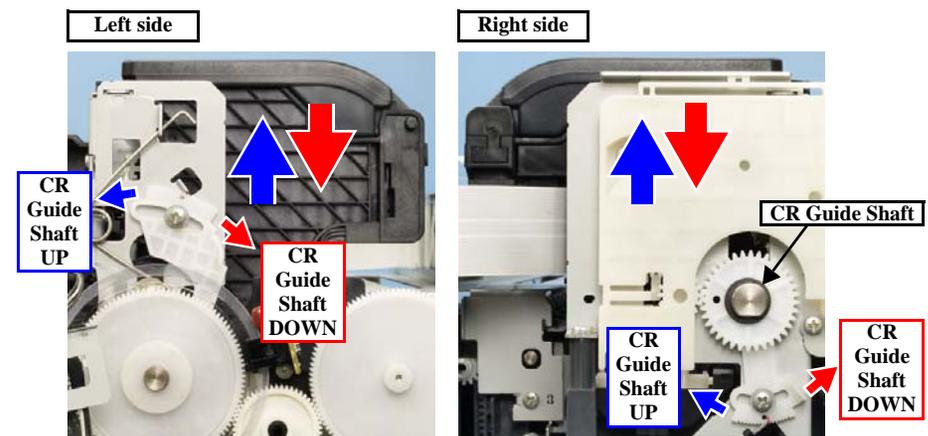
Figure 5-10. PG Adjustment (2)

5.4 Banding Reduction System (BRS) Adjustment/ Paper Feed Amount Profile (PFP) Correction

5.4.1 Overview

This section explains how to carry out BRS/PFP adjustments.

CHECK POINT ✔	To calculate the correction value by scanning the printed pattern for BRS/PFP adjustment, be sure to prepare a specified scanner beforehand. Before scanning, confirm that the document table is free from any dirt or stain.

☐ Tools and paper required to perform the adjustment

Table 5-6. Tools and Paper for BRS/PFP Adjustment

	Tools/Paper	Product Code
Common	PFP Base scale	1453980
BRS	Matte Paper-Heavyweight (A4)	---
PFP	Premium Glossy Photo Paper (4 x 6)	---

☐ Specified Scanner to perform the adjustment

CAUTION !	■ **Install the driver of the scanner to the PC in advance.** ■ **As the profile required for the adjustment is not prepared for scanners other than the ones specified in the following table, BRS/PFP Adjustment can not be carried out by the other scanners.**

The scanners that can be used for scanning the pattern in BRS/PFP adjustment is shown in Table 5-7. When starting up the adjustment program, select the scanner to use.
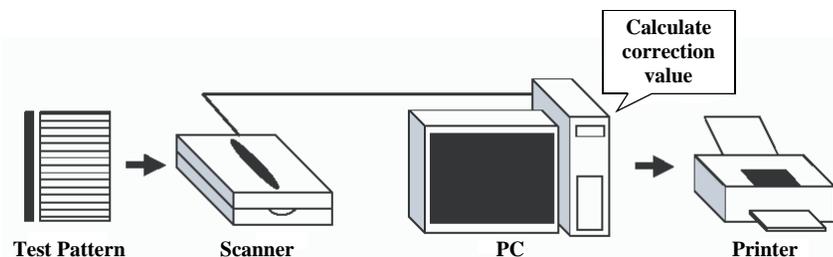
Figure 5-11. System Configuration

Table 5-7. Specified Scanner for BRS/PFP Adjustment

Model Name	Sensor type	Epson Stylus Photo PX650/ TX650/ TX659	Epson Stylus Photo PX660/ PX660 Premium	Artisan 635
Epson Perfection 4990 Photo	CCD	O	O	O
Epson Perfection V700 Photo	CCD	O	O	O
Epson Stylus Photo RX560/RX580/RX590*	CIS	O	---	O
Epson Stylus Photo RX585/RX595/RX610/RX615*	CIS	O	---	O
Epson Stylus Photo RX680/RX685/RX690*	CIS	O	---	O
Artisan 800/Epson Stylus Photo PX800FW/TX800FW*	CIS	O	---	O
Artisan 700/Epson Stylus Photo PX700W/TX700W*	CIS	O	---	O
Epson Stylus Photo PX650/TX650/TX659*	CIS	O	O	O
Artisan 810/Epson Stylus Photo PX810FW/TX810FW*	CIS	O	O	O
Artisan 710/Epson Stylus Photo PX710W/TX710W*	CIS	O	O	O
Epson Stylus Photo PX660/PX660 Premium*	CIS	---	O	O
Artisan 835/Epson Stylus Photo PX820FWD/TX820FWD*	CIS	---	O	O
Artisan 725/Epson Stylus Photo PX720WD/TX720WD*	CIS	---	O	O
Epson WorkForce 630/635/Epsn Stylus Office TX620FWD/ BX625FWD/ME OFFICE 960FWD*	CIS	---	---	O
Epson Stylus NX625/TX650WD/SX525WD/Office BX525WD/ WorkForce 625/ME OFFICE 900WD/WorkForce BX525WD/ WorkForce625/ME OFFICE 900WD*	CIS	---	---	O
Epson Artisan837/Epson Stylus Photo PX830FWD*	CIS	---	---	O
Epson Artisan 730/Stylus Photo PX730WD/TX730WD*	CIS	---	---	O
Epson Artisan635*	CIS	---	---	O

Note *: Use the internal scanner.

CHECK POINT ✔	Depending on the sensor type of the scanner to use for the adjustment, drying time required after the BRS adjustment pattern has been printed differs. For PFP adjustment pattern/PFP check pattern, drying time is not required. ■ **For "CCD" sensor:** **Printed pattern can be scanned straight away. (Drying time of about 2 minutes is recommended.)** ■ **For "CIS" sensor:** **Printed pattern needs to be dried more than 5 minutes.**

☐   Adjustment Flow

| CHECK POINT ✓ | **When performing PFP adjustment only without BRS adjustment, start adjustment from step (2) in *Fig 5-12* .** |

Carry out the adjustment following the adjustment flow below.

START

Printing the BRS Adjustment Pattern

Scanning the BRS Adjustment Pattern

Error? — NG

OK

Printing the PFP Adjustment Pattern ← (2)

Scanning the PFP Adjustment Pattern

Error? — NG

OK

Printing the PFP Check Pattern ← (1)

Judging the Check Pattern — NG → (1) (2) (3)*

OK

END

(3)

Judge it is mechanism's failure. Remove it to locate the defective part and replace, then reassemble it.
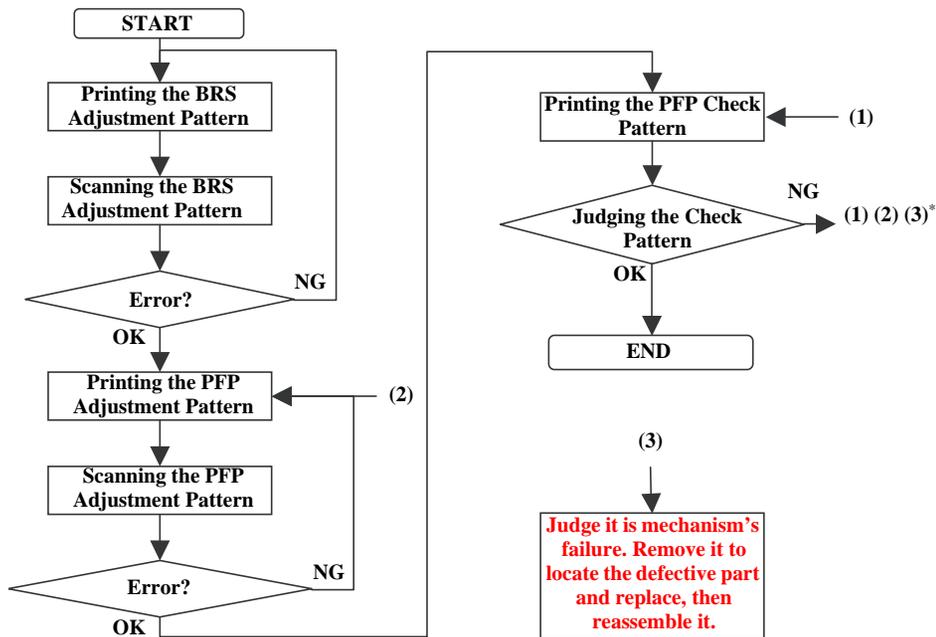
Figure 5-12. BRS/PFP Adjustment Flow

Note*:   When a PFP pattern is judged as NG, repeat the steps as described below.
First time NG: retry from (1) step
Second time NG: retry from (2) step
Third time NG: perform (3) step

| CHECK POINT ✓ | **When an error is displayed in the Adjustment program, check the points below, then carry out the adjustment again. If an error occurs even after checking the points below, change the scanner with a different one and carry out the adjustment again.** |

1.   **Check that the printer that printed the pattern and the printer to register the adjustment value is the same.**
2.   **Check that the printed pattern is placed on the document table of the scanner correctly.**
3.   **Check that there is no gap between the PFP Base Scale and the pattern printed sheet.**
4.   **Check that the scanner glass surface and the PFP Base Scale is free from any dirt or dust.**

Confidential

5.4.2 Adjustment Procedure

5.4.2.1 BRS (Banding Reduction System) Adjustment

☐ Printing the BRS Adjustment Pattern

1. Load A4 size Matte Paper-Heavyweight on the paper support.

2. Select [BRS Adjustment] in the adjustment program.

3. Click the [Print] button on the "1. Print Test Pattern" column to print the adjustment pattern.

4. Let the printed pattern dry for more than 5 minutes if using CIS sensor type scanner.
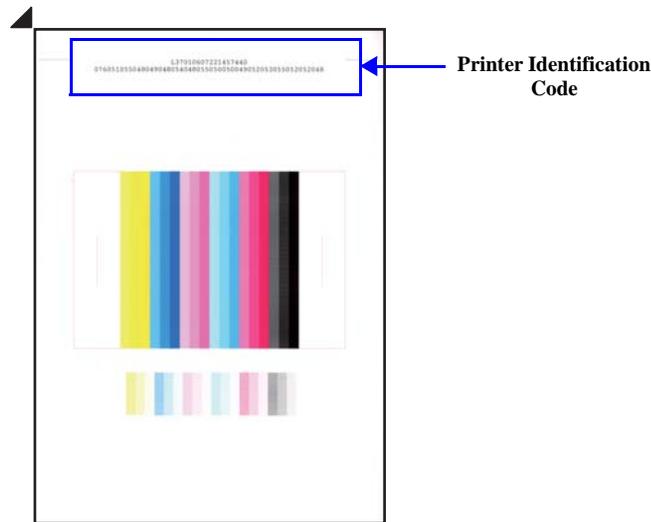
Figure 5-13. BRS Test Pattern

CHECK POINT ✔	■ In the Adjustment program, the identification code is used to distinguish whether the printer that printed the pattern and the printer to register the adjustment value is the same. ■ Make sure to let the printed pattern dry for more than 5 minutes if using CIS sensor type scanner. When using CCD sensor type scanner, the printed pattern does not need to be dried before scanning. Refer to **"Table 5-7. Specified Scanner for BRS/PFP Adjustment"** *(p.122)*

☐ Scanning the BRS Adjustment Pattern

5. Set the printed pattern and the PFP Base Scale on the document table and click the [Scan] button on the "3. Scan Test Pattern" column.

6. According to the scanned result, BRS calibration values are automatically calculated and are written to the serial flash ROM. If an error occurs, check that the document table glass and the scale is clean, and the scale/adjustment pattern is not tilted, then repeat from step 5.

⚠ CAUTION	Be careful of the following when setting the PFP Base Scale, and the adjustment pattern on the scanner. ■ Place the scale on the document glass aligning the scale corner with the scanner origin position. ■ Place the pattern-printed sheet along the scale as shown in the figure below. Make sure to place it parallel to the scale, with no gaps.
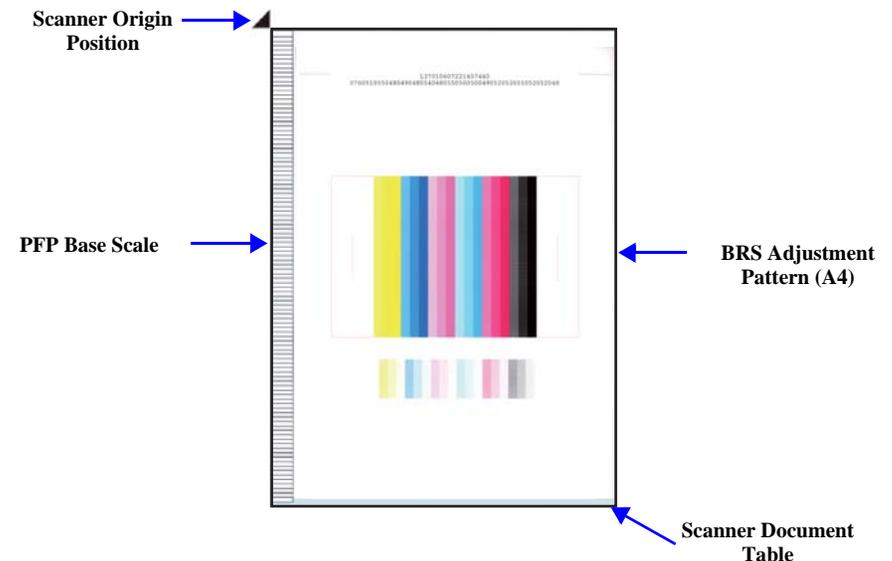
Figure 5-14. PFP Base Scale and BRS Adjustment Pattern Position (Viewed from the document glass of the scanner)

5.4.2.2 PFP Adjustment

☐ Printing the PFP Adjustment Pattern

1. Load 4 x 6 Premium Glossy Photo Paper on the paper support.

2. Select [PFP Adjustment] in the adjustment program.

3. Click the [Print] button on the "1. Print Test Pattern" column to print the adjustment pattern.
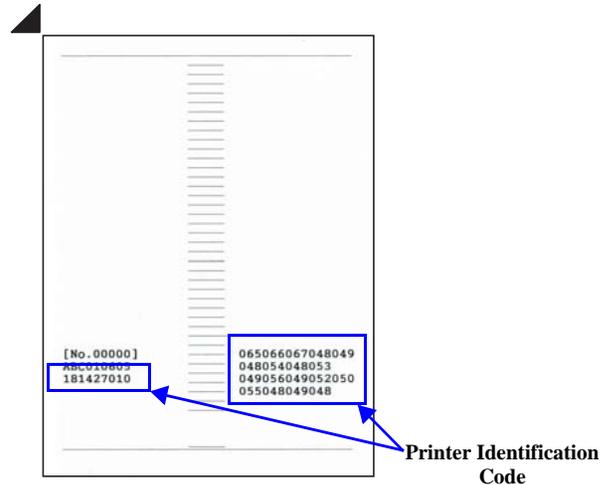
Figure 5-15. PFP Test Pattern

CHECK POINT

In the Adjustment program, the identification code is used to distinguish whether the printer that printed the pattern and the printer to register the adjustment value is the same.

☐ Scanning the PFP Adjustment Pattern

4. Set the PFP Base Scale and the PFP test pattern on the document table and click the [Scan] button on the "3. Scan Test Pattern" column.

5. According to the scanned result, PFP calibration values are automatically calculated and are written to the serial flash ROM. If an error occurs, check that the document table glass and the scale is clean, and the scale/adjustment pattern is not tilted, then repeat from step 4.

CAUTION

Be careful of the following when setting the PFP Base Scale and the adjustment pattern on the scanner.
- **Place the scale on the document glass aligning the scale corner with the scanner origin position.**
- **Place the pattern-printed sheet along the scale as shown in the figure below. Make sure to place it parallel to the scale, with no gaps.**
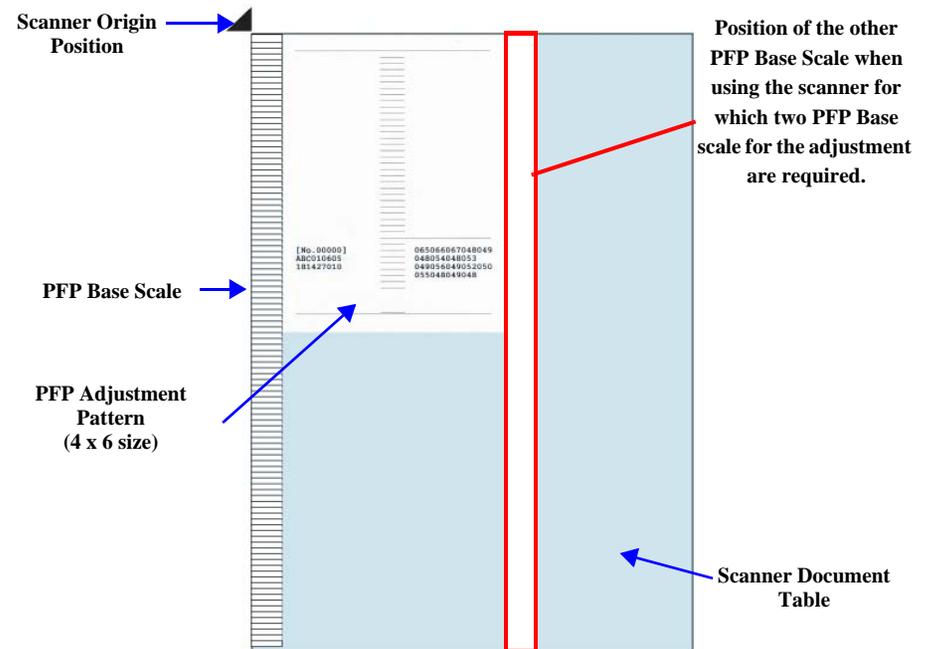
Figure 5-16. PFP Base Scale and PFP Adjustment Pattern Position (When viewed from the document glass of the scanner)

Confidential

☐ Printing the PFP Check Pattern

6. Set 4 x 6 Premium Glossy Photo Paper on the paper support and click the [Print] Button on the "4. Print Check Pattern" column.

[No.00000]

Normal Area Check Pattern

Bottom Edge Area Check Pattern
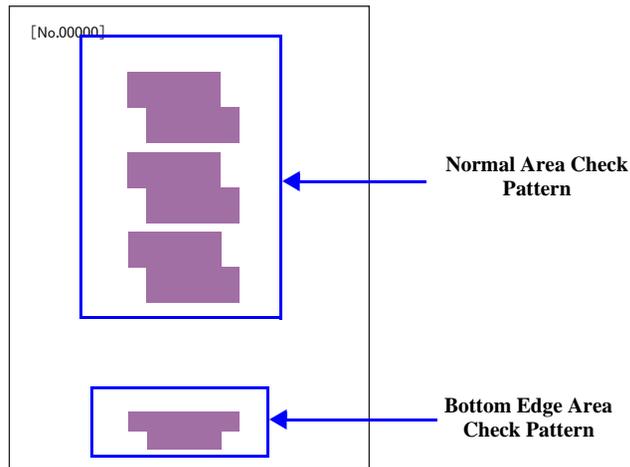
Figure 5-17. PFP Check Pattern

☐ Judging the Check Pattern

7. Referring to *Fig. 5-18* check that there is no white or overlapped bands in all the check patterns. If any bands are found, carry out the steps below.

1. Re-print the check pattern to see if the bands appear again.

2. When bands appear in Step 1, try the PFP adjustment again from the beginning.

3. When bands appear even after the re- adjustment in step 2, determine that it is the mechanism failure and carry out check/reassemble of the parts that was removed/replaced.

Normal Area Check Pattern		Bottom Edge Area Check Pattern

OK
no bands

NG
white band

NG
overlapped band
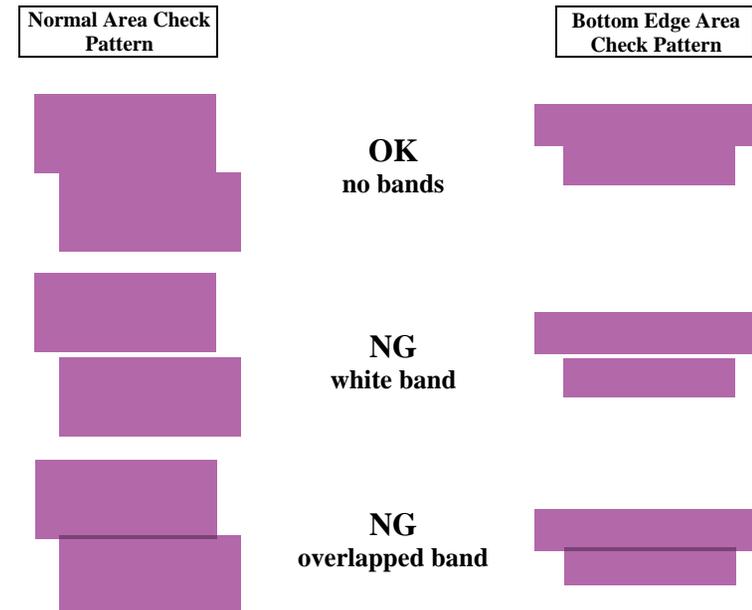
Figure 5-18. PFP Check Pattern Judging Standard

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5.5 Scanner Original Adjustment

☐ Parts to be removed and replaced

■ Replacement of Scanner Housing, Upper

■ Replacement of Scanner Unit

CAUTION !	■ **This adjustment requires the FT (Function Test) program and the exclusive adjustment jig.** ■ **If the setting of the printer differs from the one mentioned in the following procedure, this adjustment can not be completed correctly. In that case, the edge of the Scanner Housing, Upper may be read in during scanning or copying.**

CHECK POINT ✔	■ **Download and install the Original Adjustment program from TechExchange.** ■ **Before the adjustment is performed, connect the printer to the computer with the adjustment program installed with the USB cable.**

☐ Adjustment procedure

1. Turn the printer ON.

2. Run "FT.exe".

Figure 5-19. Original Adjustment (1)

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

Original Adjustment Jig
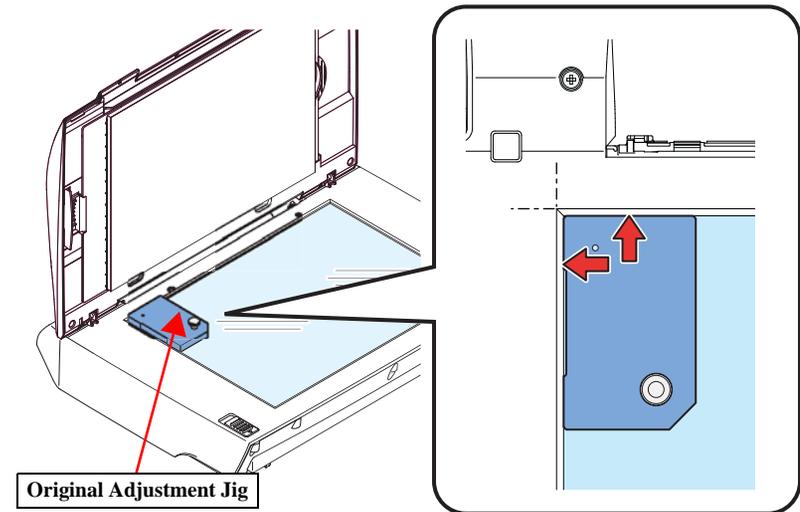
Figure 5-20. Original Adjustment Jig Setting Position

4. Select "C693" in the "Select Parameter Set" window, and click [OK].
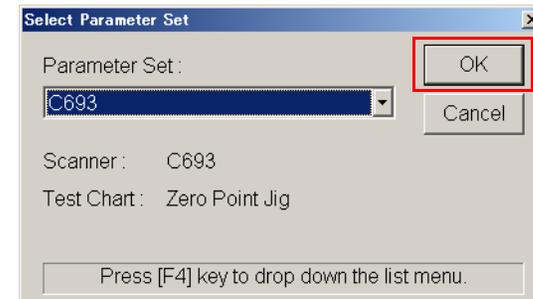
Figure 5-21. Original Adjustment (2)

5. Click the "SGL" icon in the "EPSON Scanner Function Test - WriteZero for serviceQ" window.
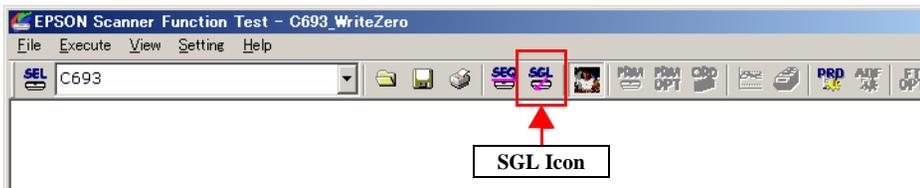
Figure 5-22. Original Adjustment (3)

6. Enter the product number in the "Single Test" window, select "Write Zero Correction Value", and press the [Execute] button.
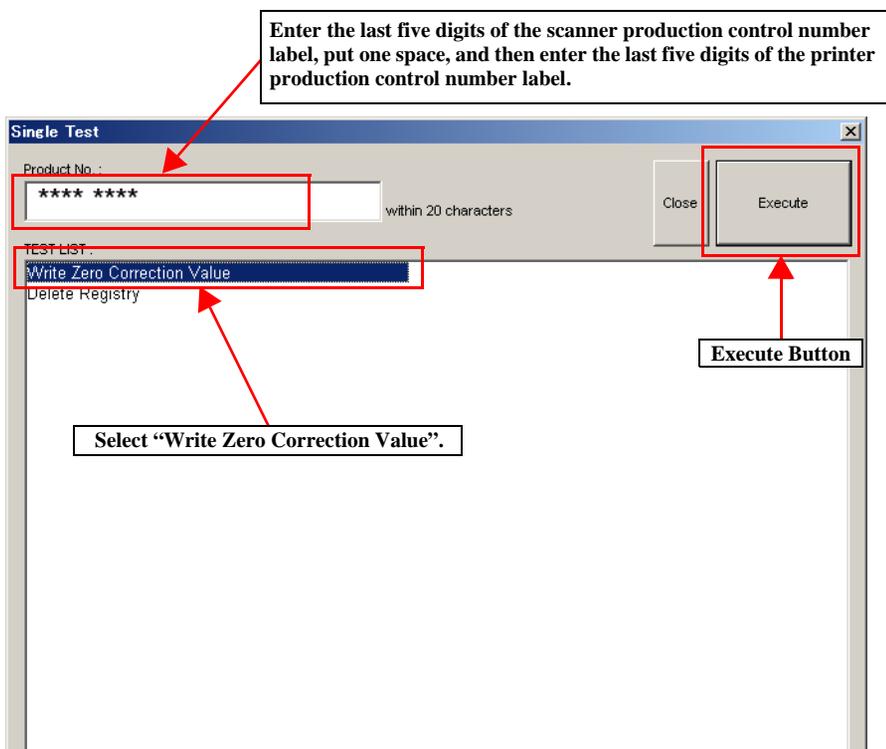
Figure 5-23. Original Adjustment (4)

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

<Window displayed when the adjustment is completed successfully>
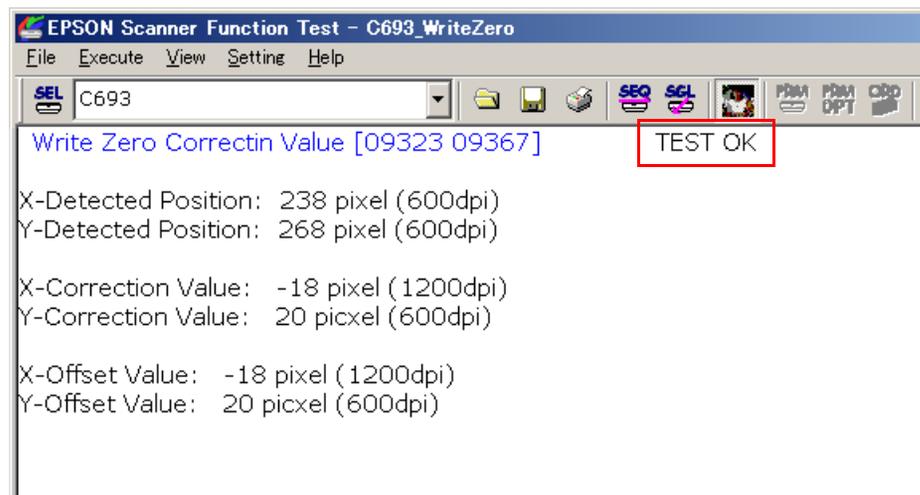
Figure 5-24. Window displayed when the adjustment is completed successfully (1)
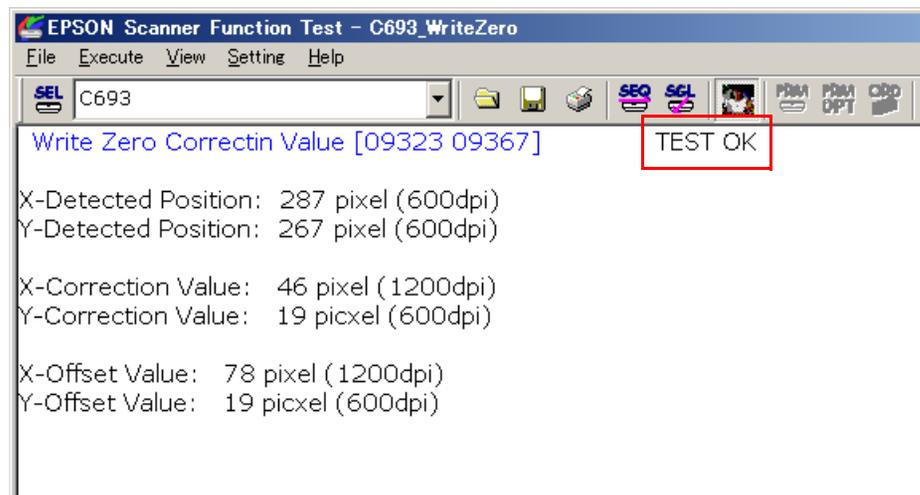
Figure 5-25. Window displayed when the adjustment is completed successfully (2)

<Window displayed when the adjustment has failed>
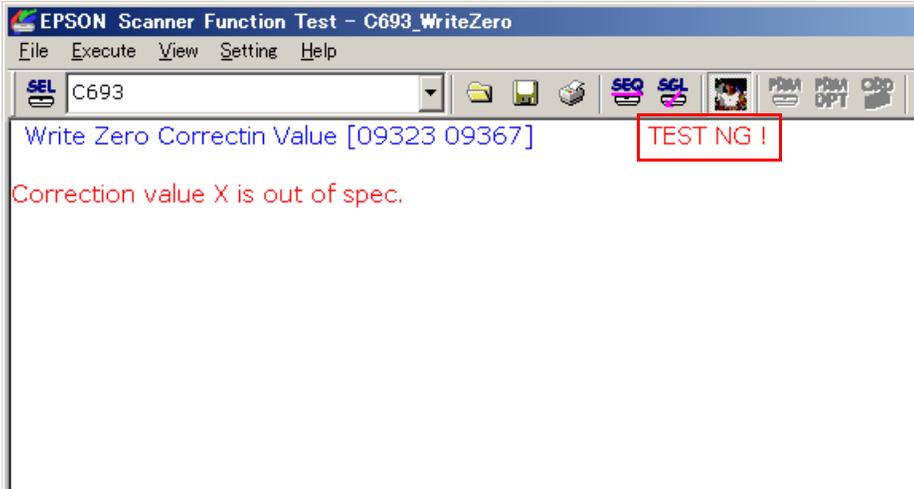
Figure 5-26. Window displayed when the adjustment has failed

If the adjustment cannot be completed successfully, check whether the parts are correctly installed or not. If there is a problem, perform the part replacement once again.

MAINTENANCE

6.1 Overview

CHECK POINT ✓	**Description in this chapter is applied to Epson Stylus Photo PX650/ TX650/TX659/PX660/PX660 Premium/Artisan 635.**

This section describes maintenance work to maintain the functions and performance of Epson Stylus Photo PX650/TX650/TX659/PX660/ PX660 Premium/Artisan 635.

CAUTION !	**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.**

6.1.1 Maintenance Error

Once a maintenance error has occurred, replace all the maintenance parts listed below, and clear the counter.

Table 6-1. Parts to be Replaced at Maintenance Error

Part Name	Location	Refer to for Disassembly/ Assembly
Waste Ink Tray Assy	In front of carriage home position	p.74
Waste Ink Pads (x2)	Under the platen (on the Lower Case Assy)	p.105

CHECK POINT ✓	■ **In maintenance work, check the value of the overflow counter. If the value of the counter is close to its upper limit, notify the user and recommend that the waste ink pads are to be replaced. (If the waste ink pads are not replaced at that time, there is a possibility that "Maintenance Error" can occur just after the printer is returned to the customer.)** ■ **After replacement, reset the overflow counter (protection counter) by the adjustment program.**

6.1.2 Cleaning

CAUTION !	**For cleaning, do not use such a solvent as thinner.**

Table 6-2. Cleaning

Part to be Cleaned	Cleaning Method
Exterior parts	Wipe with a cloth soaked into water once and squeezed strongly.
Rubber rollers	Wipe the rollers with a cloth that is soaked with alcohol diluted with pure water.
LCD surface	Blow off the dust with a blower.
Scanner document table (Glass side)	Wipe with a clean dry cloth. If heavily contaminated, wipe off with a cloth dipped in a small amount of mild detergent. If any contamination remains, wipe off again with a dry cloth.

6.1.3 Lubrication

The types and amount of grease to be applied have been determined based on the evaluation at factory. Accordingly, definitely use a suitable volume of designated grease to the designated points for repair and maintenance of the product. Designated types of grease and application points are as shown below.

CAUTION ⚠	■ **Never use any grease other than those specified, since such grease can affect adversely the mechanical life and functions of this product or result in damage to this equipment.** ■ **As the suitable volume is also designated based on evaluation result, avoid applying any undesignated volume.** ■ **Do not lubricate any part other than those specified. Take care that no grease adheres to any paper transport parts, such as the rollers or the Printhead, as it can adversely affect the print quality.**

❑ Specified lubricant, etc.

Table 6-3. Specified Lubricant, etc.

Type	Name	EPSON code	Supplier
Grease	G-71	1304682	EPSON
	G-74	1409257	
	G-45	1033657	

LUBRICATION OF FRONT FRAME

Lubrication Points	Sliding surface and spring catch area on the front frame (2 points each: right and left)	**Left side of front frame**	**Right side of front frame**
Type	G-71		
Amount of Application	ø 1 x 3 mm x 2 ø 1 x 7 mm x 2		
Applying Tool	Injector		
Precautions	Make sure that the Paper Eject Frame Assy moves up and down smoothly.		
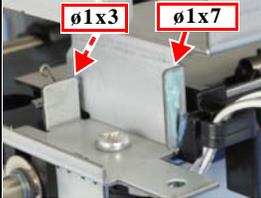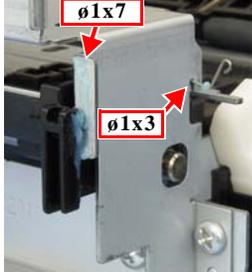
LUBRICATION OF FRONT PAPER GUIDE ASSY

Lubrication Points	PF Roller Shaft and the shaft holders (2 points: right and left)	**Left side of PF Roller Shaft**	**Right side of PF Roller Shaft**
Type	G-71		
Amount of Application	ø 1 x 3 mm		
Applying Tool	Injector		
Precautions	Make sure that the coated surface of the PF Roller Shaft is free from grease.		
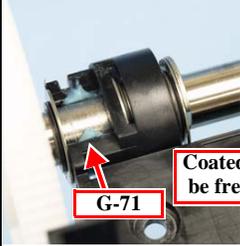
Lubrication Points	Paper Eject Roller Shaft and shaft holders (2 points: right and left)
Type	G-71
Amount of Application	ø 1 x 3 mm
Applying Tool	Injector
Precautions	Make sure that the rubber rollers on the Paper Eject Roller Shaft are free from grease.

Left side of Paper Eject Roller Shaft   **Right side of Paper Eject Roller Shaft**

Rubber rollers must be free from grease

G-71   G-71

LUBRICATION OF PAPER EJECT FRAME ASSY

Lubrication Points	Right and left Paper Eject Frame Assy shaft holders (On the back side of the Paper Eject Frame Assy: 9 mm from the end point)
Type	G-71
Amount of Application	ø 2 x 2 mm x 2 (Inside of the right shaft holder) ø 2 x 2 mm x 2 (Inside of the left shaft holder)
Applying Tool	Injector
Precautions	---
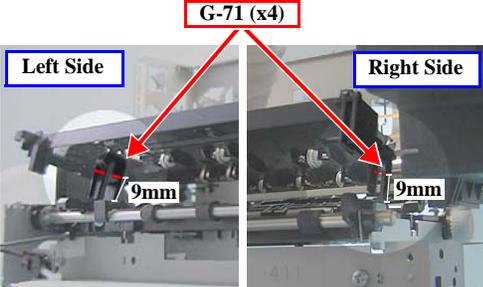
G-71 (x4)

Left Side	Right Side

9mm   9mm

LUBRICATION OF DRIVEN PULLEY

Lubrication Points	Surfaces which come in contact with the printer frame (4 points)
Type	G-71
Amount of Application	ø 1 x 2 mm
Applying Tool	Injector
Precautions	---
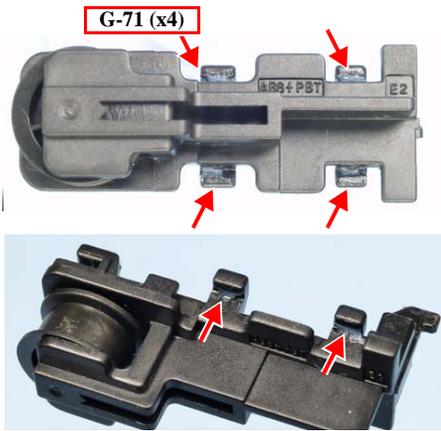
G-71 (x4)

Lubrication Points	Surfaces which come in contact with the Driven Pulley shaft (2 points)
Type	G-71
Amount of Application	ø 1 x 1 mm
Applying Tool	Injector
Precautions	---

G-71   G-71

LUBRICATION OF CR UNIT AND CR GUIDE SHAFT

Lubrication Points	CR Guide Shaft and CR Unit	
Type	G-71	
Amount of Application	Area A: 210±20 mg (x2) Area B: 210±20 mg (x2)	
Applying Tool	Injector	
Precautions	Make sure that the belt and any parts other than those specified are free from grease.	

Area B: Apply 210 ± 20 mg of G-21 to the CR Guide Shaft in its middle area.

Area A   **Area A**

Area A: Inject 210 ± 20 mg of G-71 into the hole

LUBRICATION AT INSTALLATION OF CR UNIT

Lubrication Points	Right and Left PG Cams (Cam Contour)	**Left side of printer frame**	**Right side of printer frame**
Type	G-71		
Amount of Application	ø 1 x One round		
Applying Tool	Injector	G-71	G-71
Precautions	---		

Lubrication Points	CR Guide Shaft (Grooves for pressure springs)	**Left side of printer frame**	**Right side of printer frame**
Type	G-71		
Amount of Application	(1) ø 1 x 5 mm (x2) (2) ø 1 x 10 mm (x1) (3) ø 1 x 15 mm (x1)		
Applying Tool	Injector	G-71	G-71
Precautions	---		

LUBRICATION OF APG UNIT

Lubrication Points	Upper part of the shaft holders (5 points)	
Type	G-71	
Amount of Application	ø 3 x One round (x5)	
Applying Tool	Injector	
Precautions	Disassemble the APG Unit and apply grease before installing the APG Unit.	G-71

Shaft holder
2mm
Lubrication point

Lubrication Points	Around the Spur gear 28.8	
Type	G-71	
Amount of Application	ø 3 x One round	
Applying Tool	Injector	
Precautions	Apply grease before installing the APG Unit.	G-71

LUBRICATION OF PRINTER MECHANISM ASSY

Lubrication Points	Surfaces which come in contact with the carriage (rear of printer frame)	
Type	G-71	
Amount of Application	ø 5 mm: Top ø 10 mm: Bottom	
Applying Tool	Injector	
Precautions	Move the CR Unit to the center and apply grease to the top and bottom surfaces of the right and left areas.	

LUBRICATION OF LD ROLLER SHAFT

Lubrication Points	V-shaped grooves of the LD Roller Shaft (2 points: right and left)	
Type	G-71	
Amount of Application	ø 1 x 1 mm (x4)	
Applying Tool	Injector	
Precautions	---	

LUBRICATION AT INSTALLATION OF I/S ASSY

Lubrication Points	Printer frame: Surface which comes in contact with the Clutch Gear	
Type	G-71	
Amount of Application	One round	
Applying Tool	Injector	
Precautions	---	

LUBRICATION OF ASF UNIT

Described below are the lubrication points of the ASF Unit for the case where the LD Roller Shaft is locked and those for the case where the Hopper has been released.

☐   When LD Roller Shaft is locked

Lubrication Points	LD Roller Assy
Type	G-71
Amount of Application	Left side of the LD Roller Shaft: ø1 x 5 mm Vicinity of the LD Roller: On the rib (x4) Right side of the LD Roller Shaft: ø1 x 5 (x2) ø1 x 10
Applying Tool	Injector
Precautions	When LD Roller Shaft is locked

Left side of LD Roller Shaft

Vicinity of LD Roller

Right side of LD Roller Shaft

☐   When Hopper has been released

Lubrication Points	LD Roller Assy
Type	G-71
Amount of Application	Left side of the LD Roller Shaft: ø1 x 20 mm Vicinity of the LD Roller: On the rib (x4) Right side of the LD Roller Shaft: ø1 x 10 (x2)
Applying Tool	Injector
Precautions	When Hopper has been released

Left side of LD Roller Shaft

Vicinity of LD Roller

Right side of LD Roller Shaft
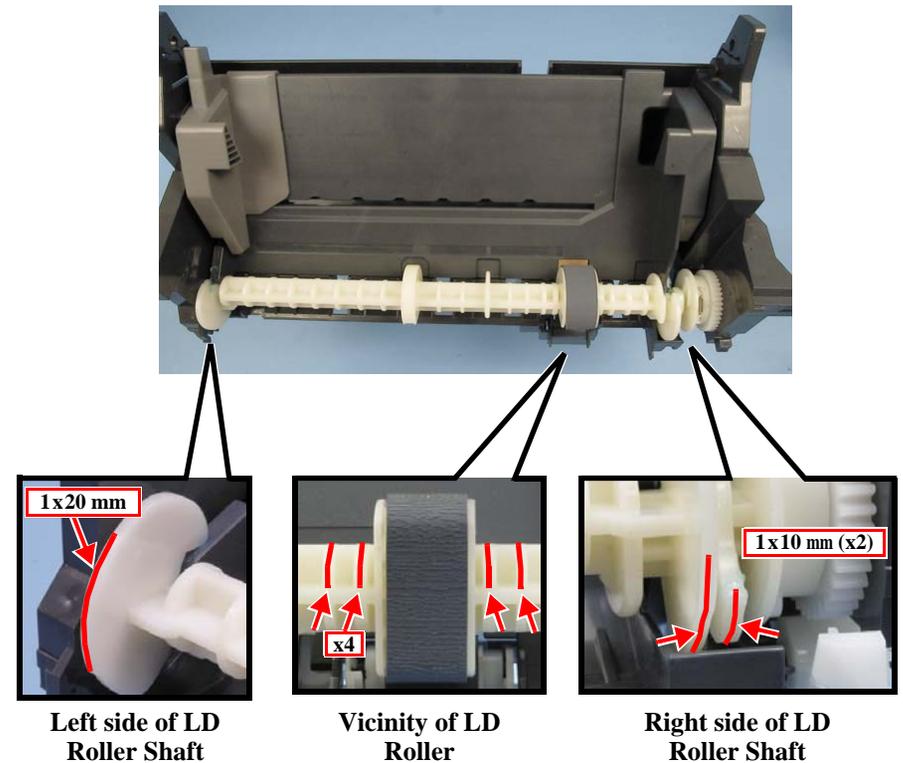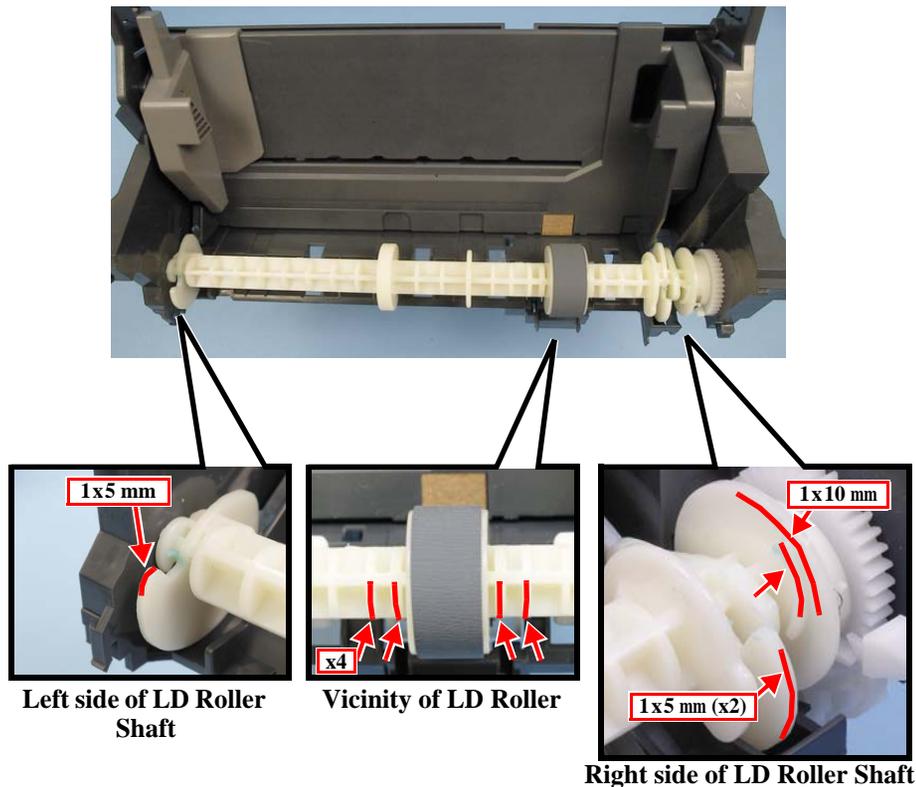
LUBRICATION OF SCANNER UNIT

Lubrication Points	CR CIS
Type	G-74
Amount of Application	---
Applying Tool	---
Precautions	Apply grease at three points shown.
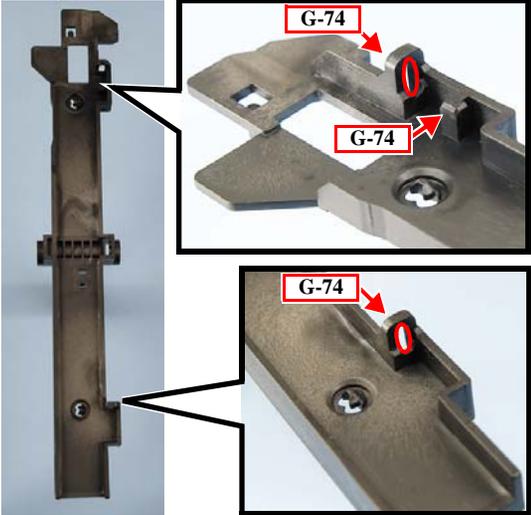
Lubrication Points	CR shaft of Housing Lower
Type	G-45
Amount of Application	---
Applying Tool	Injector and brush
Precautions	After applying grease at a point shown, spread it with a brush evenly over the whole shaft.
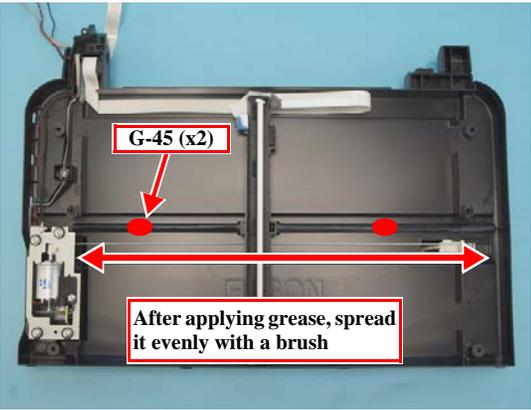
After applying grease, spread it evenly with a brush

APPENDIX

7.1 Exploded Diagram / Parts List

This manual does not provide exploded diagrams or parts list for Epson Stylus Photo PX650/TX650/TX659/PX660/PX660 Premium/Artisan 635.

For the information, see SPI (Service Parts Information).

Epson Stylus Photo PX660/PX660 Premium/Artisan 635

8.1 Overview

Epson Stylus Photo PX660/PX660 Premium/Artisan 635 and Epson Stylus Photo PX650/TX650/TX659 use similar mechanisms, and basically common to each other. Therefore, most of the information in prior chapters can apply to Epson Stylus Photo PX660/PX660 Premium/Artisan 635. This chapter describes particular information only on Epson Stylus Photo PX660/PX660 Premium/Artisan 635.

Follow the instructions below to get the information on Epson Stylus Photo PX660/PX660 Premium/Artisan 635.

INSTRUCTIONS FOR EPSON STYLUS PHOTO PX660/PX660 PREMIUM/ARTISAN 635

☐ Features and specifications for Epson Stylus Photo PX660/PX660 Premium/Artisan 635

Epson Stylus Photo PX660/PX660 Premium/Artisan 635 employs an capacitive touch panel. The product specifications are the same as those of Epson Stylus Photo PX650/TX650/TX659 except for some. For their features and specifications, see "Comparison Table (TBD)".

☐ Operation principles for Epson Stylus Photo PX660/PX660 Premium/Artisan 635

The operation principles are the same as those of Epson Stylus Photo PX650/TX650/TX659, therefore, see Chapter 2 "OPERATING PRINCIPLES" *(p34)*.

☐ Troubleshooting for Epson Stylus Photo PX660/PX660 Premium/Artisan 635

The troubleshooting is the same as those of Epson Stylus Photo PX650/TX650/TX659, therefore, see Chapter 3 "TROUBLESHOOTING" *(p41)*.

☐ Disassembly/reassembly procedures for Epson Stylus Photo PX660/PX660 Premium/Artisan 635

See description in "8.2 Disassembly/assembly" *(p.142)* for disassembling/assembling because the procedures for some parts differ between models.

☐ Required adjustments for Epson Stylus Photo PX660/PX660 Premium/Artisan 635

See description in "8.3 Adjustment" *(p.157)* and make the specified adjustments because some adjustments/inspections for Epson Stylus Photo PX660/PX660 Premium/Artisan 635 differ from those of Epson Stylus Photo PX650/TX650/TX659.

☐ Maintenance information for Epson Stylus Photo PX660/PX660 Premium/Artisan 635

The maintenance information is the same as those of Epson Stylus Photo PX650/TX650/TX659, therefore, see Chapter 6 "MAINTENANCE" *(p130)*.

☐ Exploded diagram and parts list for Epson Stylus Photo PX660/PX660 Premium/Artisan 635

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

8.2 Disassembly/assembly

8.2.1 Procedural Differences between the Models

The disassembly/reassembly procedures for some parts of Epson Stylus Photo PX650/TX650/TX659 and Epson Stylus Photo PX660/PX660 Premium/Artisan 635 are different. For the parts other than those mentioned in the following table, you can take the same procedures for disassembling/assembling Epson Stylus Photo PX660/PX660 Premium/Artisan 635 as those for Epson Stylus Photo PX650/TX650/TX659.

When disassembling or assembling, check the following table and "4.1 Overview" *(p.61)*, and confirm "8.2.2 Disassembly Procedures" *(p.144)* to see the appropriate disassembling/assembling procedures.

Table 8-1. Procedure Differences

Parts name	Differences	Reference page
Scanner Unit	The procedure is different because the attachment positions of the grounding wire and use of a ferrite core differ.	☐ Epson Stylus Photo PX650/TX650/TX659 ■ "4.2.5 Scanner Unit" *(p.69)* ☐ Epson Stylus Photo PX660/PX660 Premium/Artisan 635 ■ "8.2.2.1 Scanner Unit" *(p.145)*
Panel Unit	The procedure is different because the capacitive touch panel is employed Epson Stylus Photo PX660/PX660 Premium/Artisan 635. Epson Stylus Photo PX650/TX650/TX659 — Panel Unit Epson Stylus Photo PX660/ — Panel Unit	☐ Epson Stylus Photo PX650/TX650/TX659 ■ "4.2.6 Panel Unit" *(p.72)* ☐ Epson Stylus Photo PX660/PX660 Premium/Artisan 635 ■ "8.2.2.2 Panel Unit" *(p.148)*
Main Board Unit	The procedure is different because the attachment positions of the grounding wire, connector numbers and positions differ.	☐ Epson Stylus Photo PX650/TX650/TX659 ■ "4.3.1 Main Board Unit" *(p.78)* ☐ Epson Stylus Photo PX660/PX660 Premium/Artisan 635 ■ "8.2.2.3 Main Board Unit" *(p.150)*
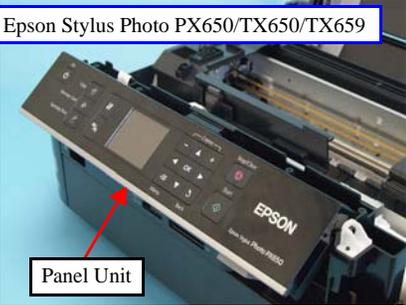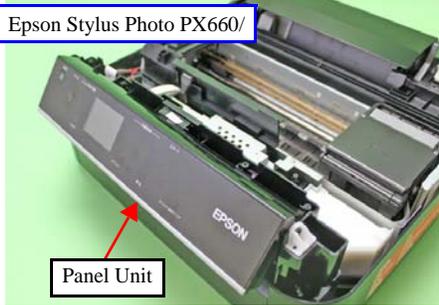
Table 8-1. Procedure Differences

Parts name	Differences	Reference page

Printer Mechanism	The procedure is different because the CDR Guide Sensor cable and CDR Tray Sensor cable differ.	☐ Epson Stylus Photo PX650/TX650/TX659
		  ■ "4.4.3 Printer Mechanism" *(p.88)*
		☐ Epson Stylus Photo PX660/PX660 Premium/Artisan 635
		  ■ "8.2.2.4 Printer Mechanism" *(p.153)*

CR Unit	Routing of the Head FFC is different because the shape of the Front Frame differs.	☐ Epson Stylus Photo PX650/TX650/TX659
		  ■ "4.4.10 CR Unit" *(p.98)*
		☐ Epson Stylus Photo PX660/PX660 Premium/Artisan 635
		  ■ "8.2.2.5 CR Unit" *(p.155)*

8.2.2 Disassembly Procedures

The flowchart below shows step-by-step disassembly procedure for Epson Stylus Photo PX660/PX660 Premium/Artisan 635. When disassembling each component, refer to the page indicated for the relevant component.

CHECK POINT ✓
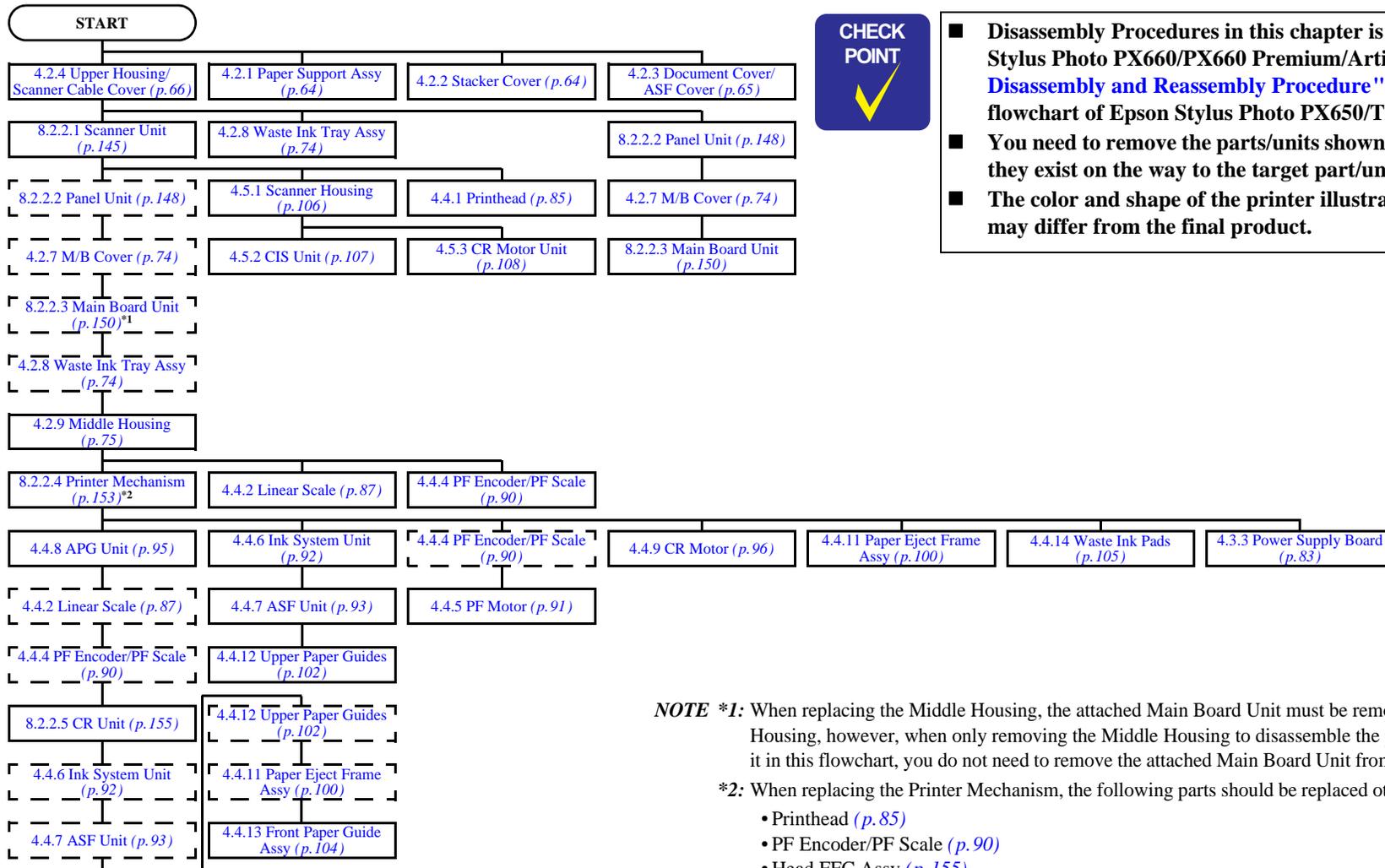
- Disassembly Procedures in this chapter is applied to Epson Stylus Photo PX660/PX660 Premium/Artisan 635. See **"4.1.6 Disassembly and Reassembly Procedure"** *(p.63)* for the flowchart of Epson Stylus Photo PX650/TX650/TX659.
- You need to remove the parts/units shown in dashed line box if they exist on the way to the target part/unit.
- The color and shape of the printer illustrated in this manual may differ from the final product.

```
START
 │
 ├─ 4.2.4 Upper Housing/Scanner Cable Cover (p.66) ── 4.2.1 Paper Support Assy (p.64) ── 4.2.2 Stacker Cover (p.64) ── 4.2.3 Document Cover/ASF Cover (p.65)
 │
 ├─ 8.2.2.1 Scanner Unit (p.145) ── 4.2.8 Waste Ink Tray Assy (p.74) ──────────── 8.2.2.2 Panel Unit (p.148)
 │
 ├─ [8.2.2.2 Panel Unit (p.148)] ── 4.5.1 Scanner Housing (p.106) ── 4.4.1 Printhead (p.85) ── 4.2.7 M/B Cover (p.74)
 │
 ├─ [4.2.7 M/B Cover (p.74)] ── 4.5.2 CIS Unit (p.107) ── 4.5.3 CR Motor Unit (p.108) ── 8.2.2.3 Main Board Unit (p.150)
 │
 ├─ [8.2.2.3 Main Board Unit (p.150)*1]
 │
 ├─ [4.2.8 Waste Ink Tray Assy (p.74)]
 │
 ├─ 4.2.9 Middle Housing (p.75)
 │
 ├─ 8.2.2.4 Printer Mechanism (p.153)*2 ── 4.4.2 Linear Scale (p.87) ── 4.4.4 PF Encoder/PF Scale (p.90)
 │
 ├─ 4.4.8 APG Unit (p.95) ── 4.4.6 Ink System Unit (p.92) ── [4.4.4 PF Encoder/PF Scale (p.90)] ── 4.4.9 CR Motor (p.96) ── 4.4.11 Paper Eject Frame Assy (p.100) ── 4.4.14 Waste Ink Pads (p.105) ── 4.3.3 Power Supply Board (p.83)
 │
 ├─ [4.4.2 Linear Scale (p.87)] ── 4.4.7 ASF Unit (p.93) ── 4.4.5 PF Motor (p.91)
 │
 ├─ [4.4.4 PF Encoder/PF Scale (p.90)] ── 4.4.12 Upper Paper Guides (p.102)
 │
 ├─ 8.2.2.5 CR Unit (p.155) ── [4.4.12 Upper Paper Guides (p.102)]
 │
 ├─ [4.4.6 Ink System Unit (p.92)] ── [4.4.11 Paper Eject Frame Assy (p.100)]
 │
 └─ [4.4.7 ASF Unit (p.93)] ── 4.4.13 Front Paper Guide Assy (p.104)
```

*NOTE *1:* When replacing the Middle Housing, the attached Main Board Unit must be removed from the Middle Housing, however, when only removing the Middle Housing to disassemble the parts mentioned after it in this flowchart, you do not need to remove the attached Main Board Unit from the Middle Housing.

2: When replacing the Printer Mechanism, the following parts should be replaced other than the housings.
- Printhead *(p.85)*
- PF Encoder/PF Scale *(p.90)*
- Head FFC Assy *(p.155)*

Flowchart 8-1. Disassembly Procedure

8.2.2.1 Scanner Unit

CHECK POINT ✓

This section describes the disassembly/reassembly procedures of the Scanner Unit for Epson Stylus Photo PX660/PX660 Premium/Artisan 635.

CAUTION !

- **The Scanner Unit is not secured to the printer when removing the Upper Housing using a general screwdriver. However, when removing the Upper Housing using the tools specified in the check point in *p.66*, the Scanner Unit is secured to the printer; therefore, make sure to follow the check point in the steps and remove the screws that secure the Scanner Unit and the hinges.**
- **It is difficult to remove/attach the cables with holding the Scanner Unit; therefore, the following explains the procedure while engaging the hinges without securing them by screws as shown below. Be careful for handing them, since the hinge sections may break easily when opening/closing the Scanner Unit.**

Left
Hinge
Hole
Insert left hinge to hole of Middle Housing.

Right
Groove
Rib
Hinge
Engage groove of Scanner Unit with rib of the right hinge.

Scanner Unit

Be careful not to break hinge sections if these are not secured with screws.

Figure 8-1. Scanner Unit

☐ Parts/Components need to be removed in advance

Upper Housing

☐ Removal procedure

1. Install the Scanner Unit to the printer as instructed in Fig. 8-1.

2. Disconnect the Scanner FFC (CN19), the Scanner CR Motor Cable (CN17) and the Scanner CR Encoder Cable (CN20) from the connector on the Main Board.

3. Remove the screw that secure the grounding wire.

Top of Main Board
Scanner CR Motor Cable
Scanner CR Encoder Cable
Scanner FFC
Grounding wire
CN 20   CN 17   CN 19
○ C.B.P. 3x10 (6±1 Kgfcm)
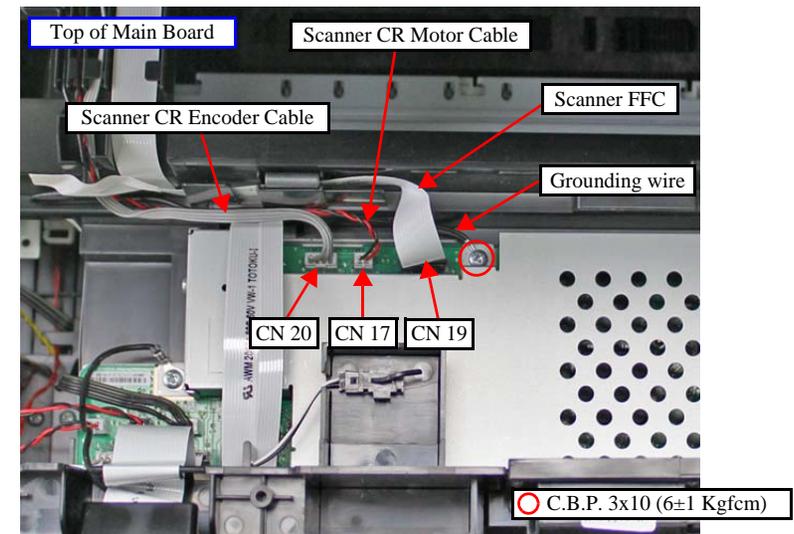
Figure 8-2. Removing the Scanner Unit (1)

4. Peel off the acetate tape, and release the all cables and FFCs of the Scanner Unit from the grooves and ribs of the Middle Housing.

5. Pull out the Scanner FFC from the Ferrite Core A.
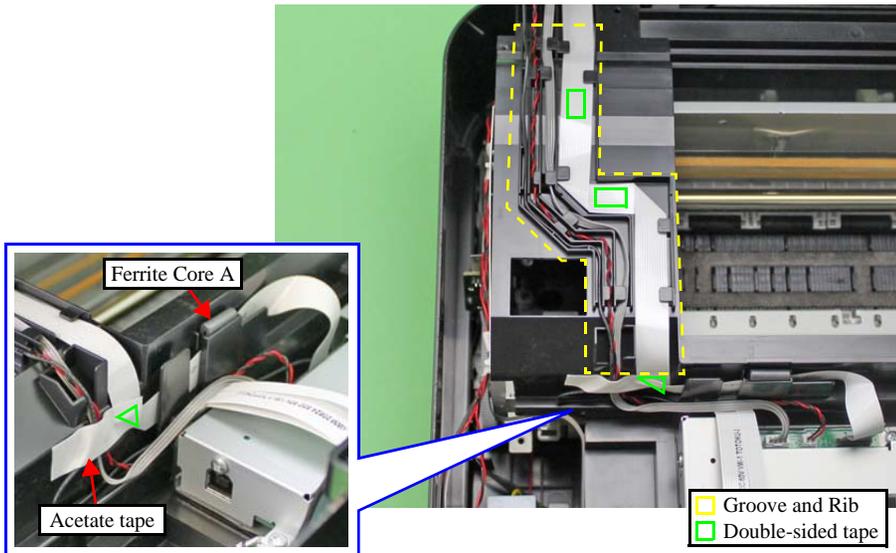
Figure 8-3. Removing the Scanner Unit (2)

CHECK POINT ✔ **If you remove the Upper Housing using the L-shaped screwdriver, the stubby driver or a similar tool** *(p. 66)***, the Scanner Unit is secured with the screws. Make sure to remove the screws (x2) that secure the Scanner Unit before taking the following steps. (See Figure 4-11.)**

6. Pull out the hinge of the Scanner Unit on the left side.

7. While keeping the Scanner Unit open at 45 degrees, push it in the direction of the arrow as shown in Fig. 8-4 to remove the Scanner Unit from the right hinge.
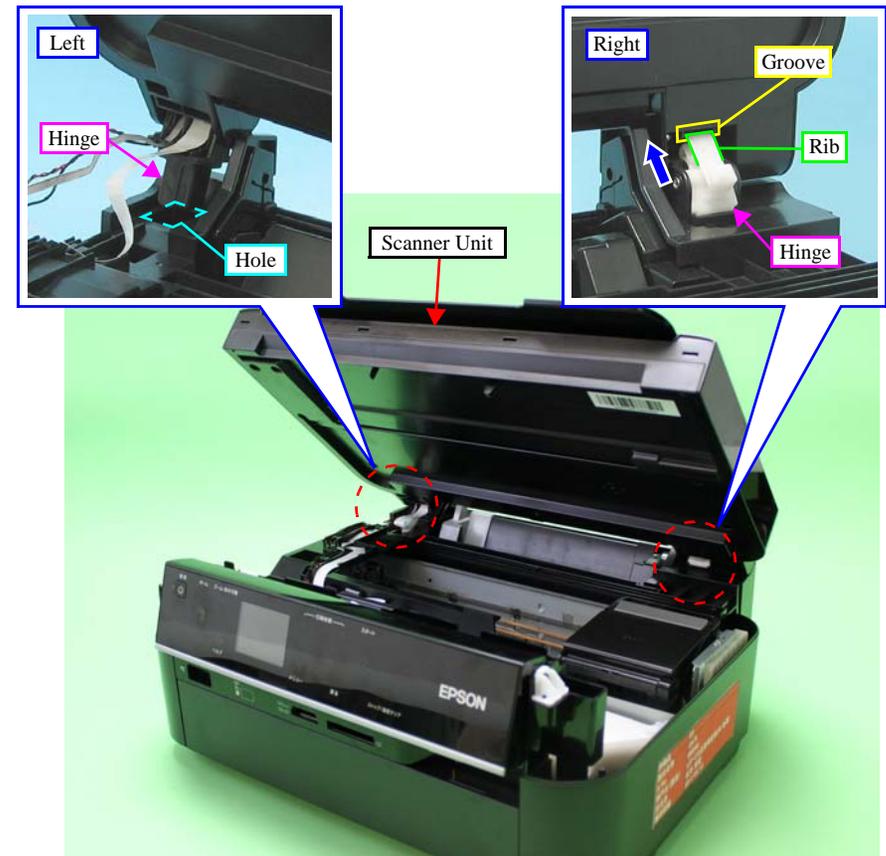
Figure 8-4. Removing the Scanner Unit (3)

■ When installing the Scanner Unit, route the following cables through the grooves and ribs of the Middle Housing, and secure the FFC with double-sided tape.

Cable/FFC	Groove	Number of Rib	Number of double-sided tape
Scanner FFC	A	5	3
Scanner CR Encoder Cable	B	5	---
Scanner CR Motor Cable	C	5	---
Grounding wire	D	7	---

■ After routing the cables, put the ferrite core of the Scanner CR Motor cable in the groove of the Middle Housing. (See Figure 8-3.)

■ After routing the cables, secure them with acetate tape and double-sided tape as shown in Fig. 8-3.

■ After routing the cables from the Main Board side, insert the slack cables and FFCs into the hole on the Middle Housing. (See Figure 8-5.)

Rear left

Insert slack cables and FFCs into hole

Groove B
Groove C
Groove D
Groove A

☐ Groove
☐ Rib
☐ Double-sided tape

Figure 8-5. Routing the Cables

8.2.2.2 Panel Unit

CHECK POINT ✓	■ **This section describes the disassembly/reassembly procedures of the Panel Unit for Epson Stylus Photo PX660/PX660 Premium/Artisan 635.** ■ **Do not disassemble the Panel Unit any further than described in this section. Because the touch panel may not function correctly due to the change in their reassembling state if the Panel Board is removed from the Panel Upper Housing.**

☐ Parts/Components need to be removed in advance

Upper Housing

☐ Removal procedure

1. Disconnect the Panel FFC (CN24) from the connector on the Main Board and peel off the Panel FFC from the M/B Cover.

2. Remove the screw that secures the grounding wire.
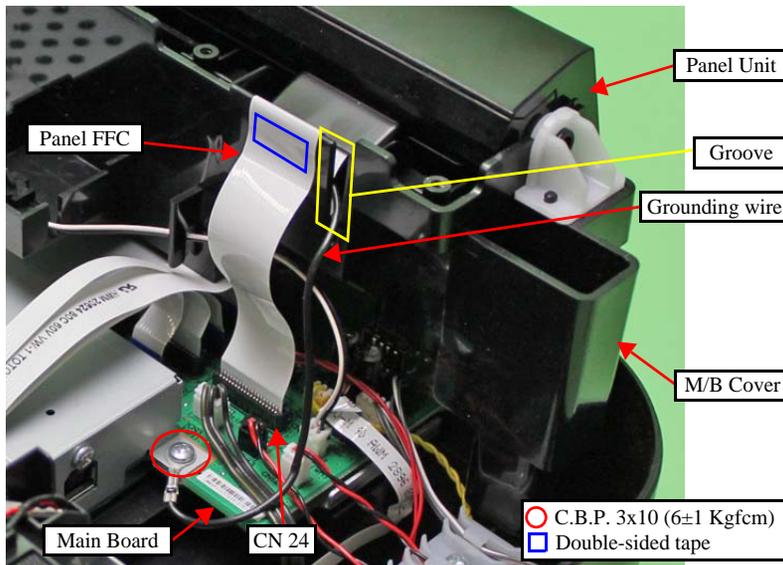
Figure 8-6. Removing the Panel Unit (1)

3. Remove the screws (x2) that secure the Panel Gear.

4. Remove the screws (x1 each) that secure the Panel Hinges (x2), and remove the Panel Unit and the Panel Hinges (x2) from the M/B Cover.
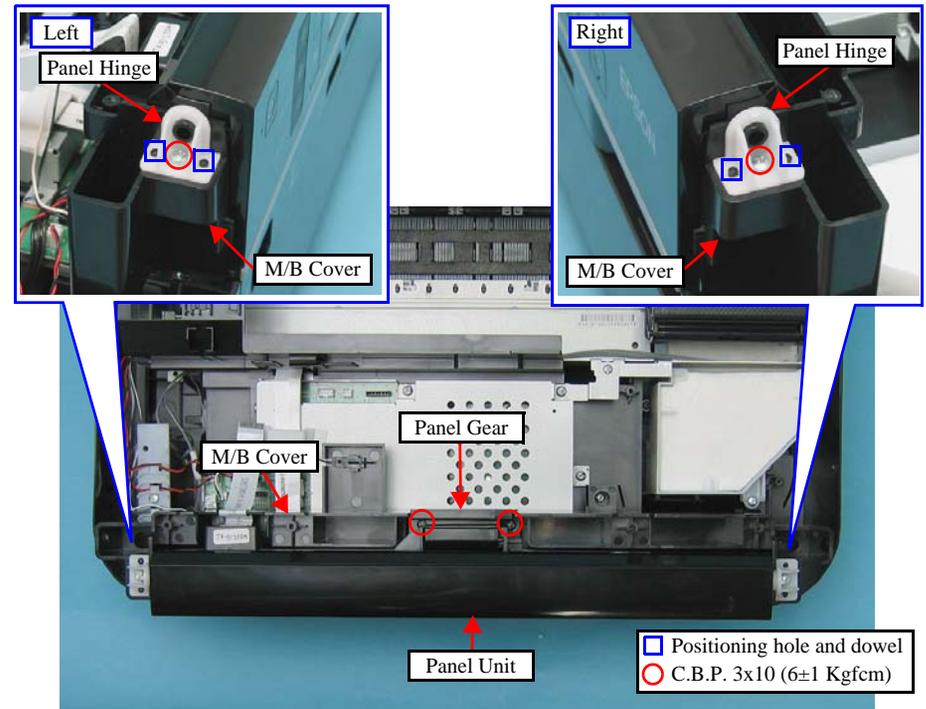
Figure 8-7. Removing the Panel Unit (2)

5. Peel off the Panel Sheet with the tweezers or the like.
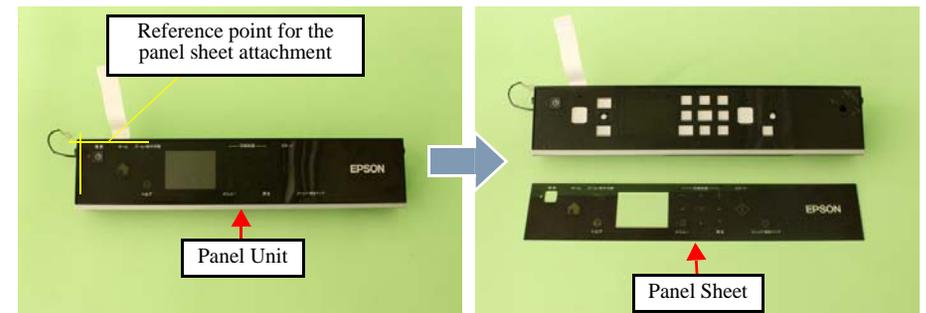
Figure 8-8. Removing the Panel Sheet

REASSEMBLY

- When attaching the Panel Gear to the Panel Unit, align the protrusion of the Panel Unit with the groove of the Panel Gear.

Rear of Panel Unit

Panel Unit

Panel Gear

Protrusion and groove
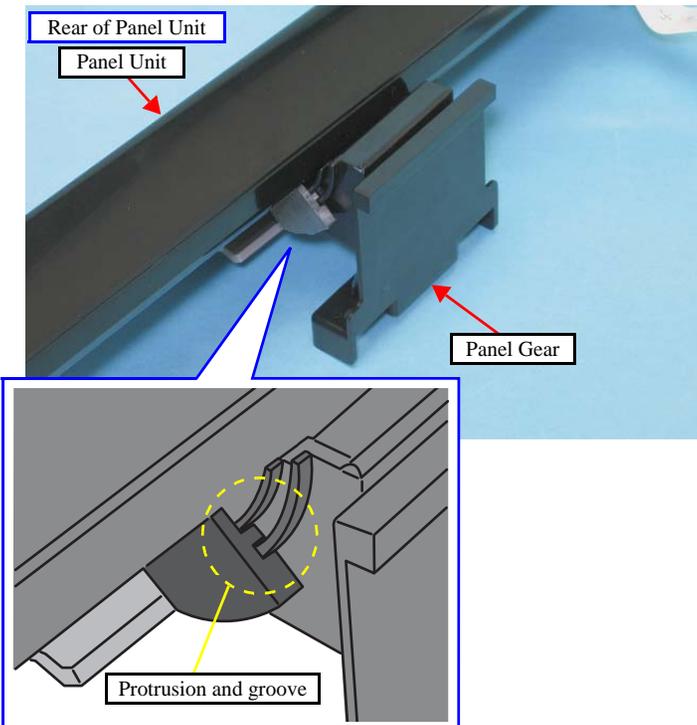
Figure 8-9. Installing the Panel Unit (1)

- When installing the Pane Unit, align the positioning holes (x2 each) of the Panel Hinges with the dowels (x2 each) of the M/B Covers. (See Figure 8-7.)
- Make sure that the Panel Unit moves smoothly after installing the Panel Unit.
- Make sure of the following when attaching the Panel Sheet.
  - Before attaching the Panel Sheet, wipe off the adhesive left on the Panel Unit surface thoroughly with a soft cloth moistened with diluted alcohol.
  - Taking the top left corner of the Panel Sheet as the reference point, align the top edge with the top rib of the Panel Unit and put the left edge against the rib, then attach the Panel Sheet without any lifting. (See Figure 8-8.)

REASSEMBLY

- Route the grounding wire through the groove of the M/B Cover as shown in Fig. 8-6 and secure it to the Main Board with the screw.
- When installing the Panel Unit, make sure to engage the point A and B of the Panel Gear with the M/B Cover properly as shown below.
  - Point A: Insert the ribs (x3) of the Panel Gear to the grooves (x3) of the M/B Cover.
  - Point B: Insert the small box of the Panel Gear to the hole of the M/B Cover.

Rear of point A

Panel Unit   M/B Cover

Panel Gear

Point A

Point B

Panel Gear

Panel Gear

☐ Rib
☐ Groove
☐ Small box
☐ Hole
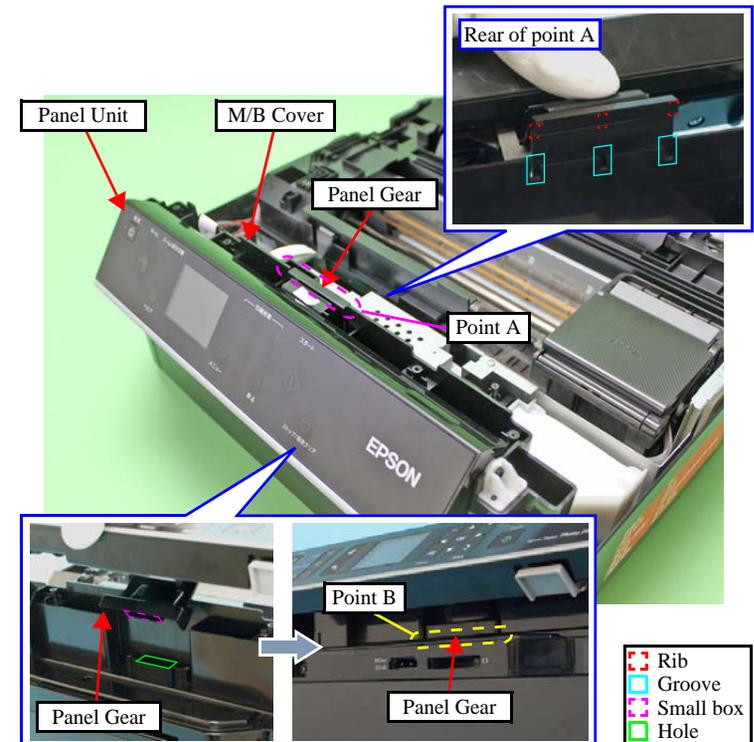
Figure 8-10. Installing the Panel Unit (2)

ADJUSTMENT REQUIRED

After removing/replacing the Panel Unit, make the specified adjustments. (See "8.3 Adjustment" (p.157).)

8.2.2.3 Main Board Unit

CHECK POINT ✓

- This section describes the disassembly/reassembly procedures of the Main Board Unit for Epson Stylus Photo PX660/PX660 Premium/Artisan 635.
- When removing or installing the Main Board Unit, the Middle Housing may bend by applying the force using the screwdriver, and it may cause of stress whitening around the screw holes and positioning holes of the Card Slot Cover.
  To prevent this from happening, insert the Ink Cartridges (x2) under the Middle Housing with bottom side up as shown below, and remove or install the Main Board Unit while supporting the Middle Housing with the cartridges.

Do not insert cartridge too deep.

Support Middle Housing with the bottom of Ink

Stacker Assy

Card Slot Cover

Supporting point

Stacker Lever

Ink Cartridge
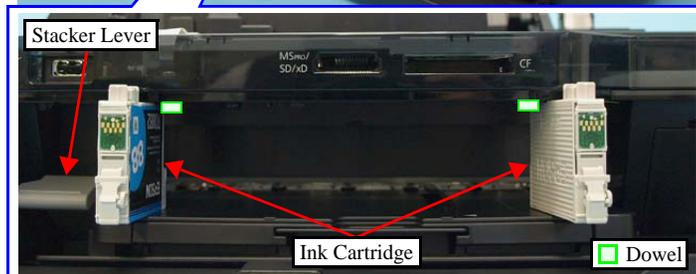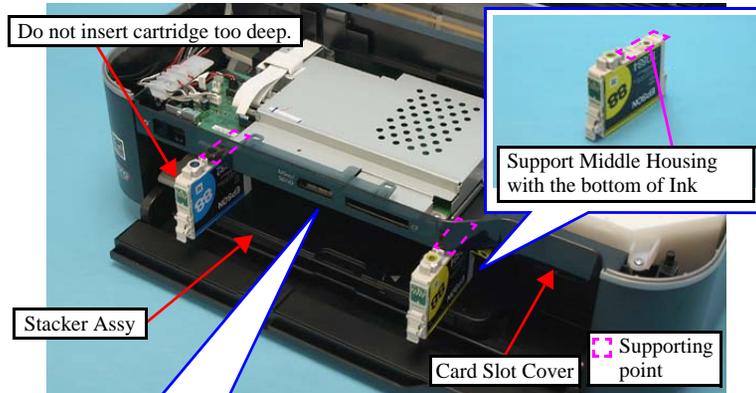
Dowel

1. Press down the Stacker Lever to make the Stacker Assy to the CDR position. (See Figure 8-20(p.154).)
2. Insert the Ink Cartridges (x2) with the bottoms side up under the spaces outside the dowels (x2) on the Middle Housing.

Figure 8-11. Supporting the Middle Housing

☐ Parts/Components need to be removed in advance

Upper Housing / Panel Unit / M/B Cover

☐ Removal procedure

1. Disconnect the following cables from the connector on the Main Board.

CN No.	Cable/FFC	Connector Color	Number of pins	CN No.	Cable/FFC	Connector Color	Number of pins
CN3	Power Supply Unit cable	White	3	CN14	CR Motor cable	White	2
CN4	CDR Guide Sensor cable	White	2	CN10	Head FFC	---	13
CN6	PE Sensor cable	White	3	CN11	Head FFC	---	13
CN7	APG Sensor cable	Black	3	CN12	Head FFC	---	9
CN8	PF Encoder FFC	---	5	CN15	Head FFC	---	13
CN9	CDR Tray Sensor cable	White	2	CN16	Head FFC	---	6
CN13	PF Motor cable	Black	2				

CN3   CN12   CN11

CN13

CN14

CN8

CN6

CN7

CN4   CN9   CN16   CN15   CN10
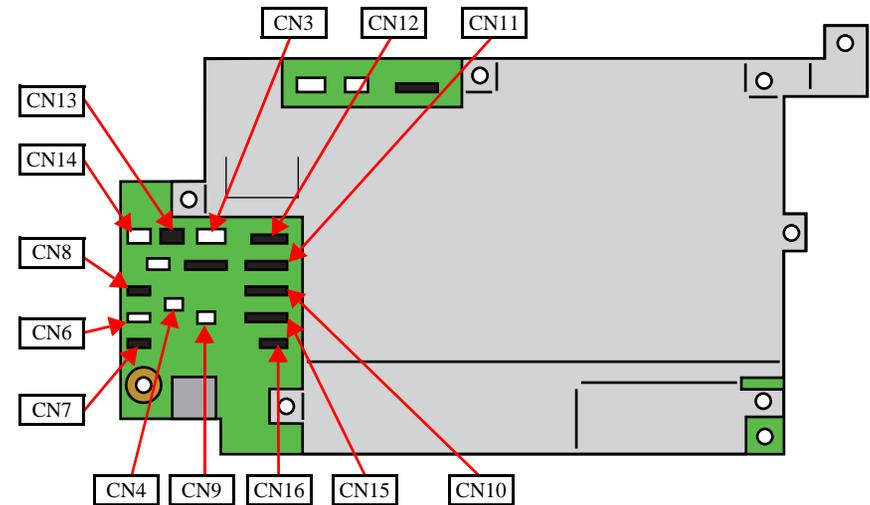
Figure 8-12. Removing the Main Board Unit (1)

2.   Remove the screws (x5) that secure the Main Board Unit.

3.   Lift the rear side of the Main Board Unit, and remove it while avoiding from the rib of the Card Slot Cover.
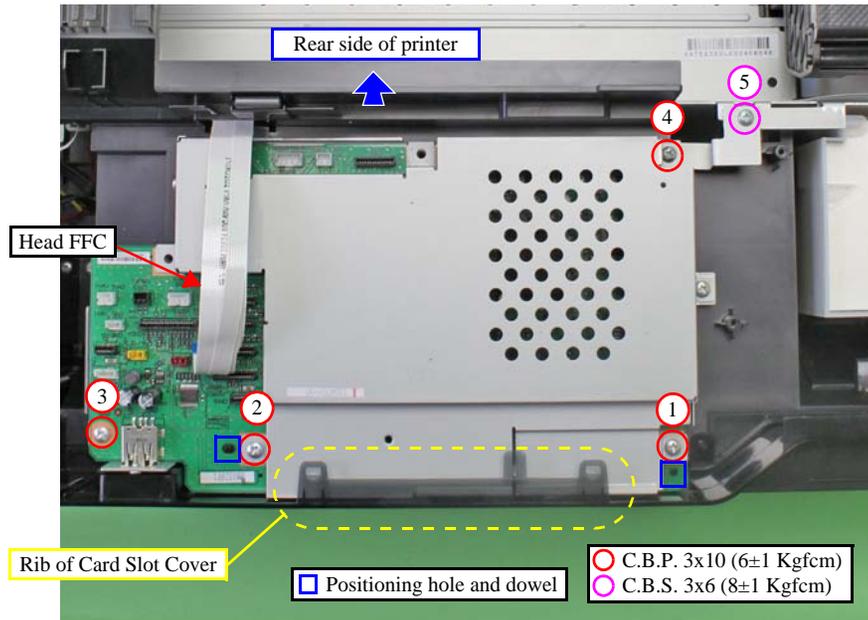
Figure 8-13. Removing the Main Board Unit (2)

REASSEMBLY

■   **When installing the Main Board Unit, align the positioning holes (x2) of the Main Board Unit with the dowels (x2) of the Card Slot Cover. (See Figure 8-13.)**
■   **Tighten the screws in the order given in Fig. 8-13.**

REASSEMBLY

■   **See the following for routing the cables to the Main Board Unit.**

Cable/FFC	Hook/Rib	Double-sided tape	CN No.
Power Supply Unit cable	Rib A	---	CN3
CDR Guide Sensor cable	Rib B	---	CN4
CDR Tray Sensor cable	Rib B	---	CN9
PF Motor cable	Hook A	---	CN13
CR Motor cable	Hook B	---	CN14
PE Sensor cable	Hook C	---	CN6
APG Sensor cable	Hook C	---	CN7
PF Encoder FFC	---	x2	CN8
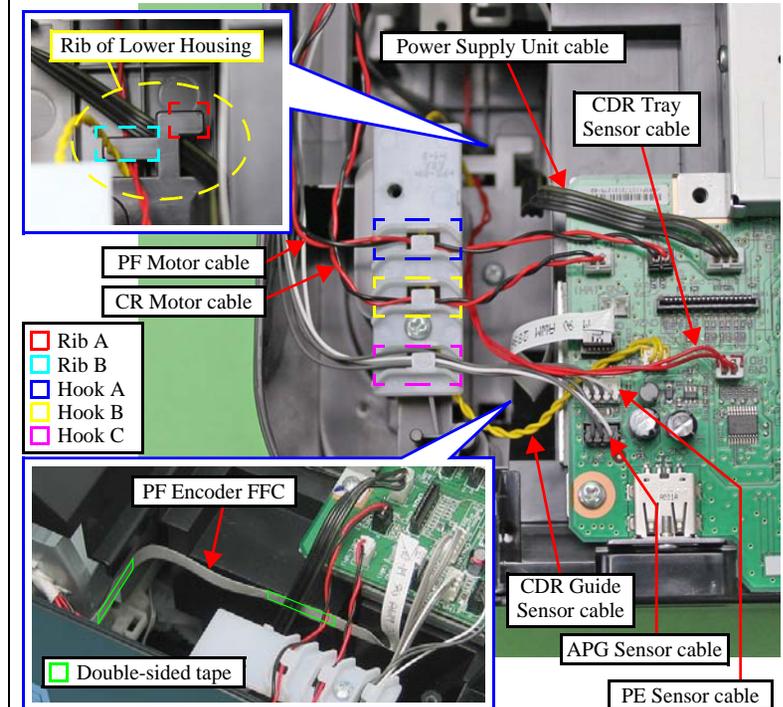
Figure 8-14. Routing the Cables

☐   Disassembling the Main Board

1. Remove the screws (x2) that secure the Shield Plate M/B Upper, and remove the Shield Plate M/B Upper.

| ⭕ C.B.S. 3x6 (8.5±0.5 Kgfcm) |
| 🔵 C.B. 3x6 (4±1 Kgfcm) |

Shield Plate M/B Upper
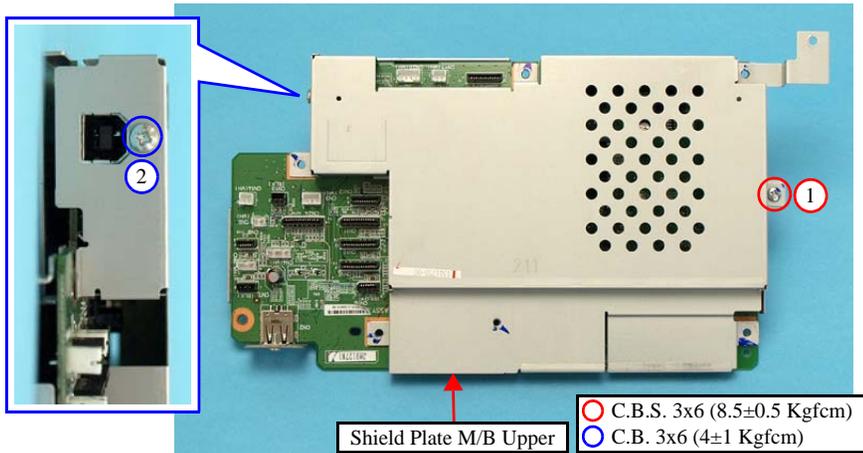
Figure 8-15. Removing the Main Board (1)

2. Remove the screws (x2) that secure the Main Board, and remove the Main Board from the Shield Plate M/B Lower.

Main Board

Shield Plate M/B Lower

| ⭕ C.B.S. 3x12 (8.5±0.5 Kgfcm) |
| 🔵 C.B. 2.5x6 (4±1 Kgfcm) |
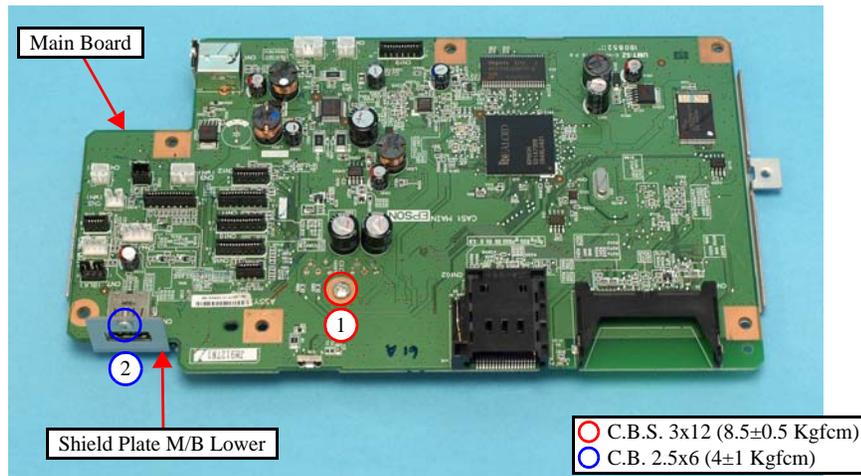
Figure 8-16. Removing the Main Board (2)

REASSEMBLY
- ■ When installing the Main Board to the Shield Plate M/B Lower, tighten the screw in the order given in **Fig. 8-16**.
- ■ When installing the Shield Plate M/B Upper, tighten the screw in the order given in **Fig. 8-15**.

ADJUSTMENT REQUIRED
After removing/replacing the Main Board Unit, make the specified adjustments. (See **"8.3 Adjustment"** *(p.157)*.)

8.2.2.4 Printer Mechanism

CHECK POINT ✔

This section describes the disassembly/reassembly procedures of the Printer Mechanism for Epson Stylus Photo PX660/PX660 Premium/Artisan 635.

CAUTION !

■ When lifting the Printer Mechanism, be sure to hold the positions specified in the figure below to prevent the Main Frame from being deformed.

Handling Precaution
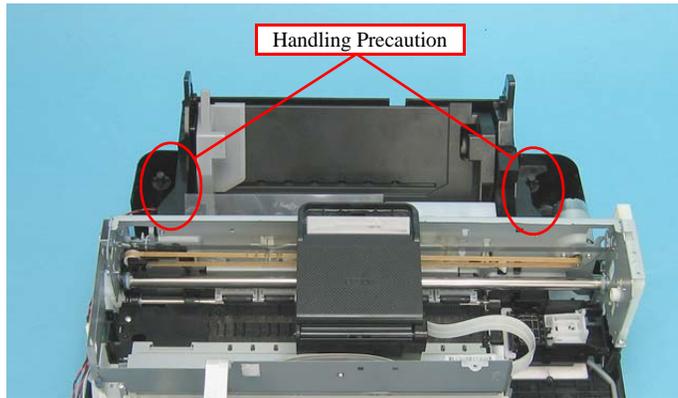
Figure 8-17. Printer Mechanism Handling Precaution

■ The PF Scale comes in contact with the floor if the Printer Mechanism Assy is turned counterclockwise by about 15 degrees. In such a case, the PF Scale may be damaged. Take great care not to damage the PF Scale when handling the removed Printer Mechanism Assy. (Alternatively, **remove the PF Encoder/PF Scale.** *(p.90)*)

Printer Mechanism

About 15°

T Do not tilt more than 15 degrees, or drag it while tilting.

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing

☐ Removal procedure

1. Peel off the acetate tape that secure the ferrite core of the CR Motor Cable, and pull out the ferrite core from the groove of the Lower Housing.

Rear right side

CR Motor cable

Ferrite core

Groove
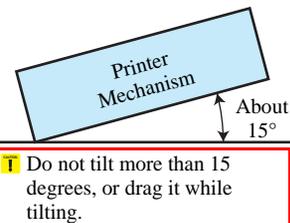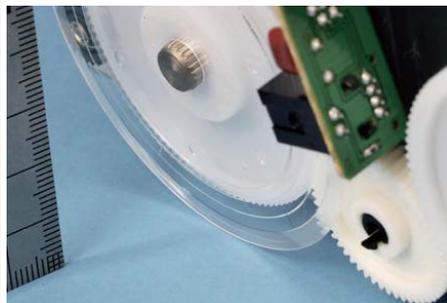
Acetate tape
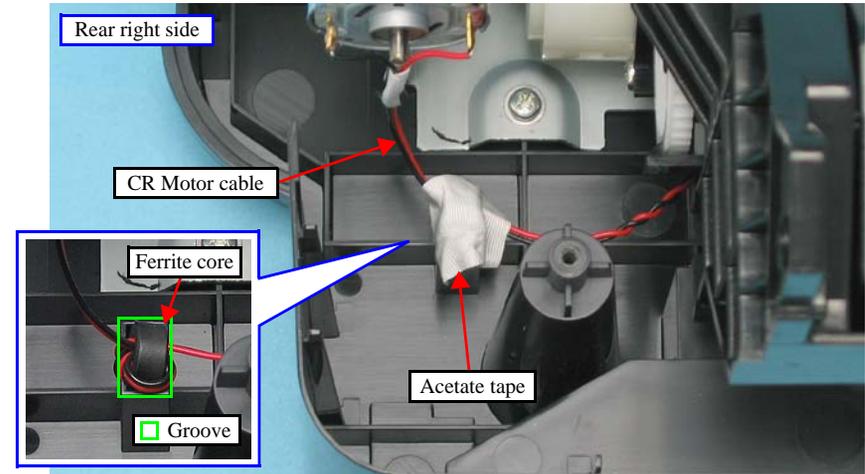
Figure 8-18. Removing the Printer Mechanism (1)

2. Remove the screws (x6) that secure the Printer Mechanism and lift the Printer Mechanism upward to remove it.
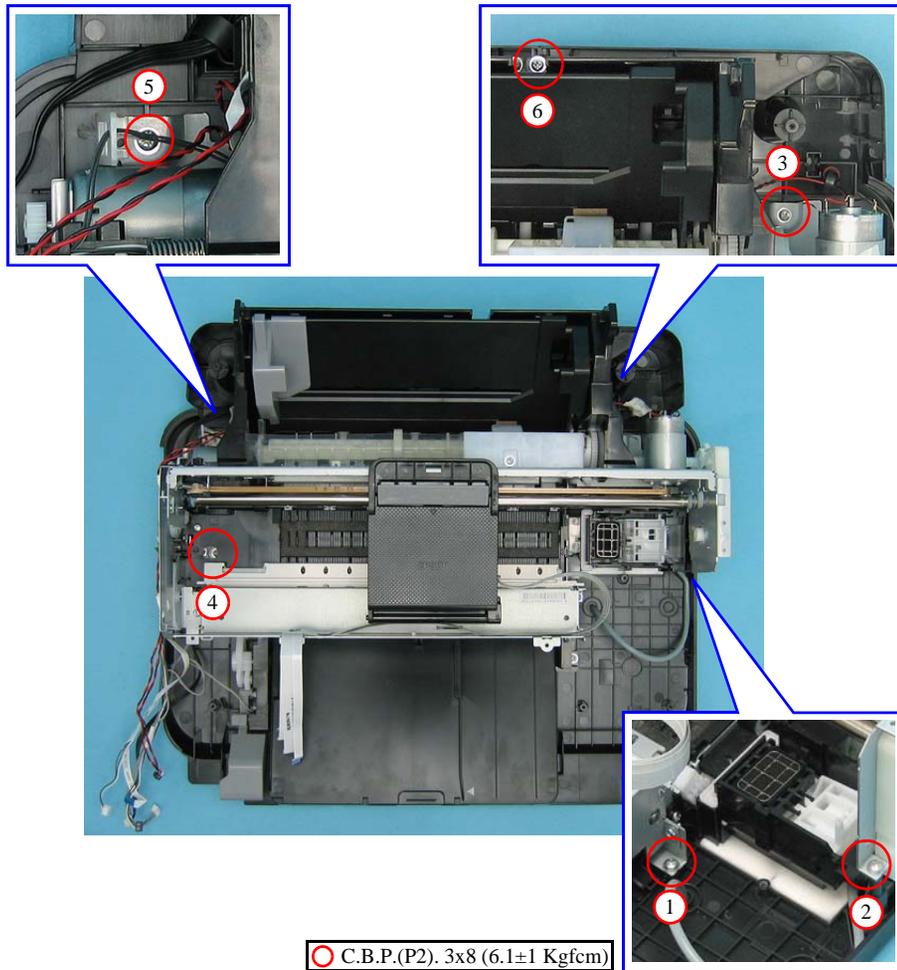
Figure 8-19. Removing the Printer Mechanism (3)

○ C.B.P.(P2). 3x8 (6.1±1 Kgfcm)

REASSEMBLY
- When installing the Printer Mechanism, put the ferrite core of the CR Motor Cable in the groove of the Lower Housing, and secure it with acetate tape. **(See Figure 8-18.)**
- Tighten the screws in the order given in **Fig. 8-19**.

REASSEMBLY
- Before installing the Printer Mechanism, make sure that the Stacker Assy operates properly with the switching of the Stacker Lever. If it does not operate properly, check the phases of the Stacker Lever on the left side of the Lower Housing, the Combination Gear 14.4,45.6, and the Link Stacker, and install them to be aligned correctly.
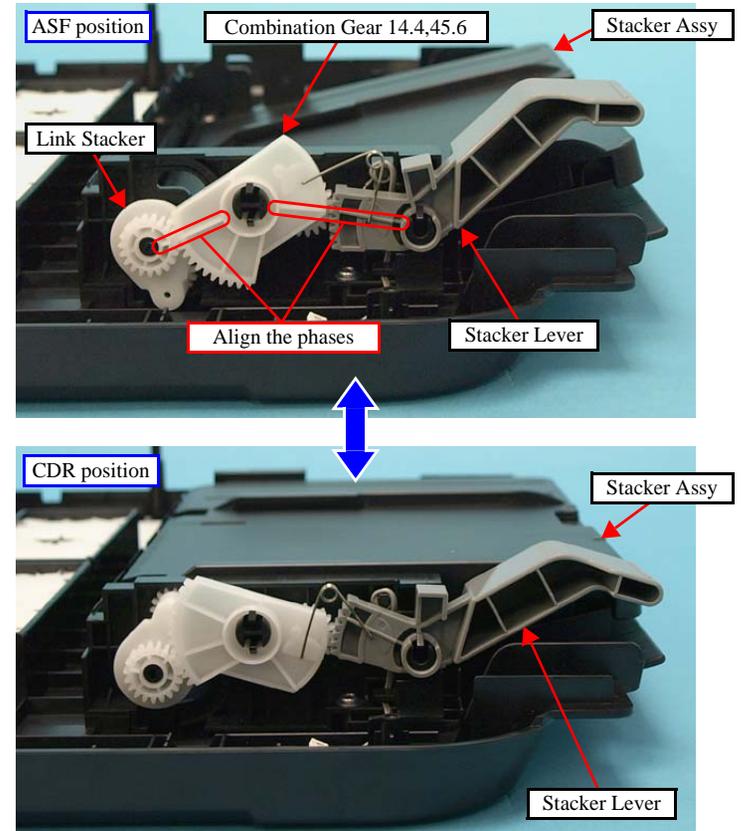
Figure 8-20. Phase Adjustment of the Stacker Assy

ADJUSTMENT REQUIRED
- After removing/replacing the Printer Mechanism, make the specified adjustments. (See **"8.3 Adjustment"** (*p.157*).)
- After replacing the Printer Mechanism, be sure to perform the required lubrication. (See **Chapter 6 "MAINTENANCE".**)

8.2.2.5 CR Unit

| CHECK POINT ✔ | This section describes the disassembly/reassembly procedures of the CR Unit for Epson Stylus Photo PX660/PX660 Premium/Artisan 635. |

☐ Parts/Components need to be removed in advance

Upper Housing / Scanner Unit / Panel Unit / M/B Cover / Waste Ink Tray Assy / Middle Housing / Printer Mechanism / Linear Scale / PF Scale / PF Encoder / APG Unit

☐ Removal procedure

1. Remove the Driven Pulley from the Main Frame. (See Figure 4-82.)

2. Peel off the acetate tape, and release the Head FFC from the Front Frame.
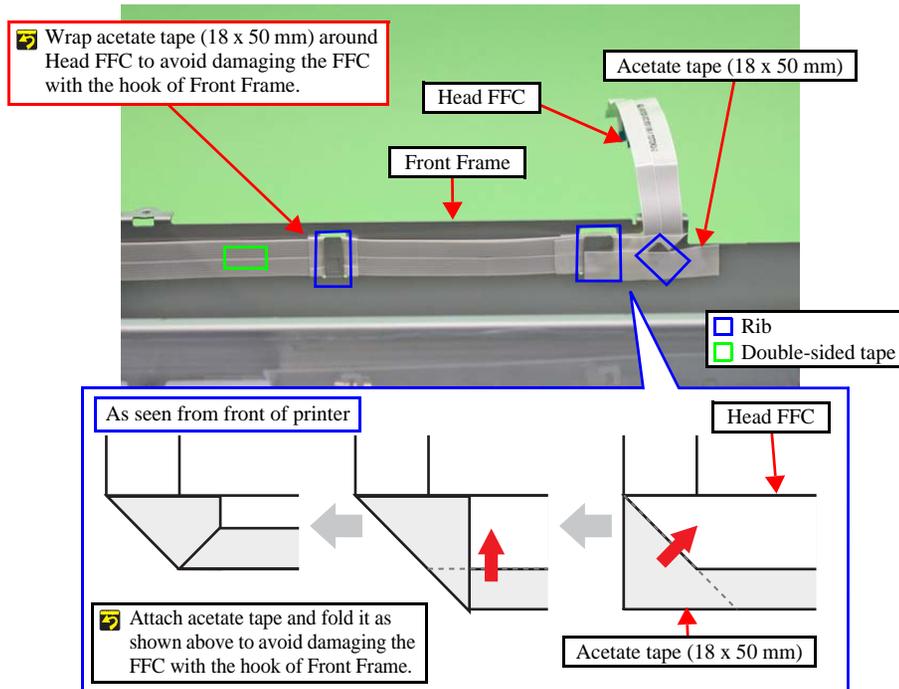
Figure 8-21. Removing the CR Unit (1)

3. Remove the screw that secure the Cable Holder Frame, and remove the Cable Holder Frame.
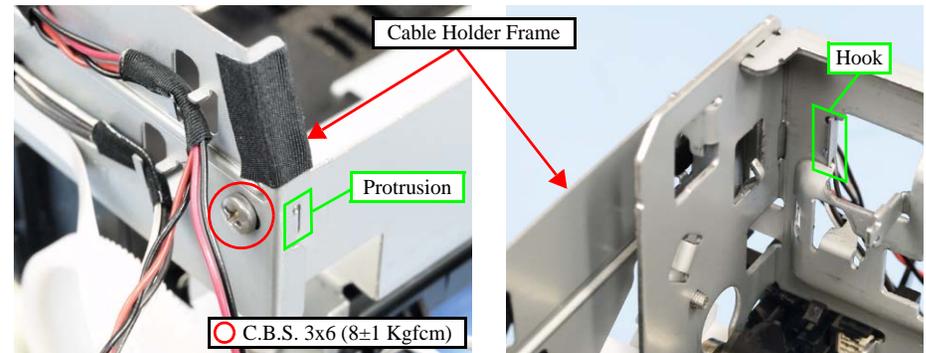
Figure 8-22. Removing the CR Unit (2)

4. At the left side of the printer, remove the spring, and mark the contact point on the Parallelism Bush with the frame. Then loosen the screw, and turn the Parallelism Bush toward the front.
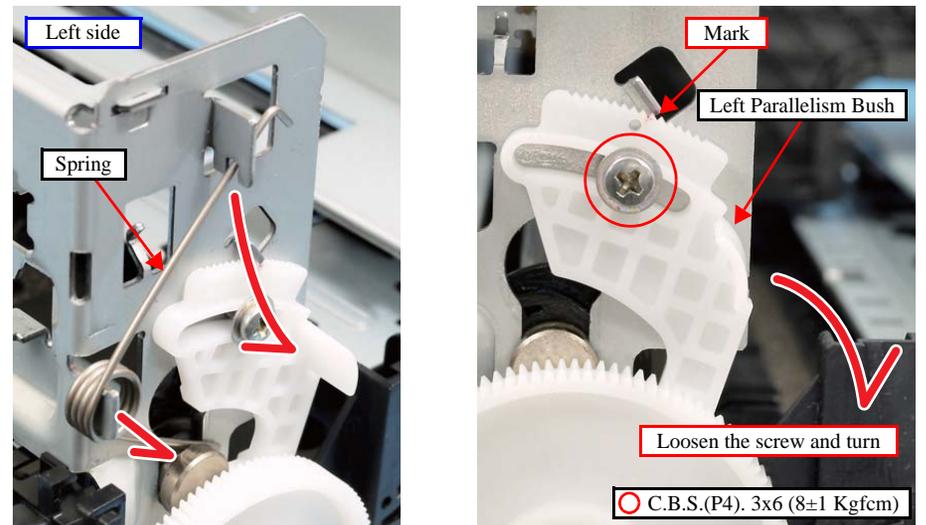
Figure 8-23. Removing the CR Unit (3)

5. At the right side of the printer, remove the spring, the washer, and the Right PG Cam.
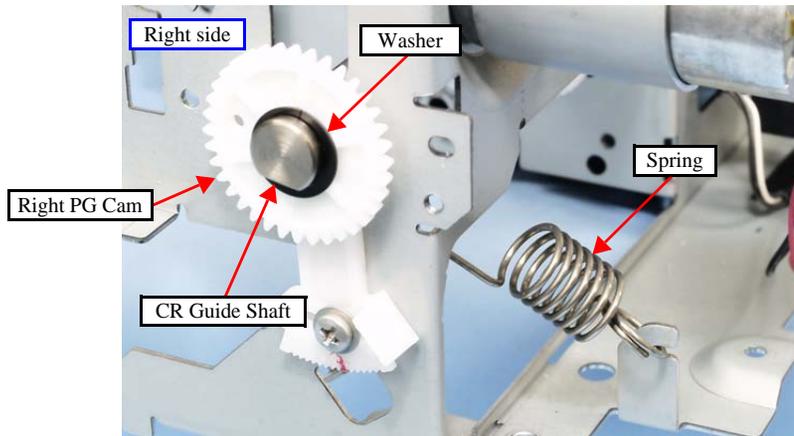
Figure 8-24. Removing the CR Unit (4)

6. Remove the CR Unit together with the CR Guide Shaft from the left side of the printer frame.
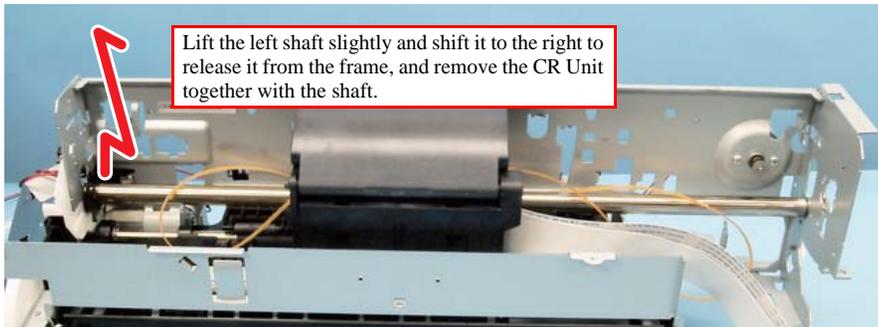
Figure 8-25. Removing the CR Unit (5)

CHECK POINT ✔

To remove the Cartridge Cover, it is necessary to remove the Cartridge Cover Hinge. However, there is no way to release the hook. Therefore, insert a slotted screwdriver as shown below and break the hook. (At installation, replace it with a new one.)

REASSEMBLY ↩
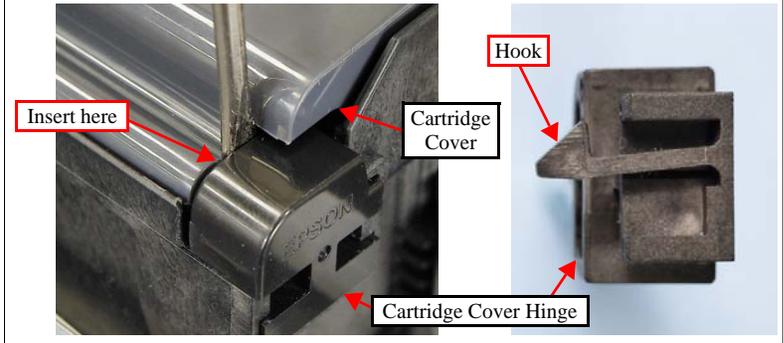
- After installing the Cable Holder Frame, confirm the engagement of the protrusion, and then tighten the screw. **(See Figure 8-22.)**
- When installing the CR Unit, route the Head FFC through the ribs (x3) of the Front Frame, and secure it with acetate tape and double-sided tape. **(See Figure 8-21.)**
- After installing the Head FFC as shown, move the carriage several times and confirm that the FFC is free from too much tension or slack. **(See Figure 8-21.)**
- Install the Timing Belt on the carriage properly that the toothed areas on the inside and outside of the belt as shown below.
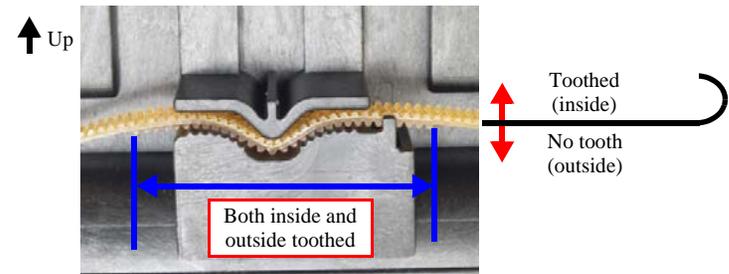
Figure 8-26. Installing the CR unit (1)

Confidential

REASSEMBLY

■ **Install the PG Left Cam by mating the D cut surfaces and with the cam positioned outside so that it does not come in contact with sensing area of the APG Sensor**
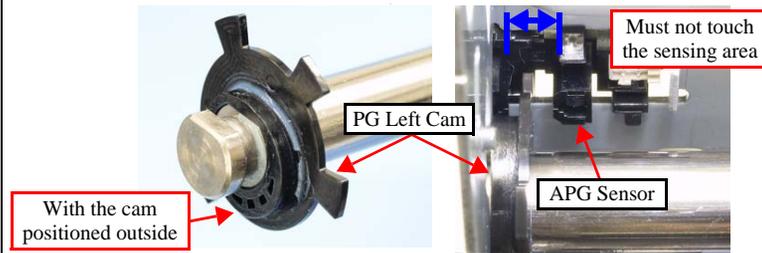
Figure 8-27. Installing the CR unit (2)

■ **Install the CR Unit so that the guide is engaged with the frame.**
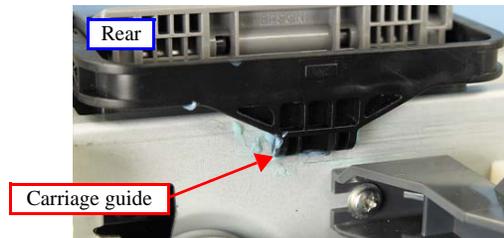
Figure 8-28. Installing the CR unit (3)

■ **When installing the Cable Holder Frame, make sure that it is positioned correctly in the front and back direction. (Fig. 8-22)**

■ **Before routing the Head FFC along the Front Frame, wrap acetate tape on the two positions as shown in Fig. 8-21 to avoid damaging the FFC with the hooks of the Front Frame.**

■ **When routing the Head FFC, secure the FFC with acetate tape as shown in Fig. 8-21.**

ADJUSTMENT REQUIRED

■ **After removing/replacing the CR Unit, make the specified adjustments. (See "8.3 Adjustment" (p.157).)**

■ **After replacing the CR Unit, be sure to perform the required lubrication. (See Chapter 6 "MAINTENANCE".)**

8.3 Adjustment

8.3.1 Overview

The required adjustments after disassembling and assembling Epson Stylus Photo PX660/PX660 Premium/Artisan 635 are basically the same as those for Epson Stylus Photo PX650/TX650/TX659, but some of them are different. Check the following and make the specified adjustments.

CHECK POINT ✔ | **"Touch Panel Calibration"** *(p160)* **and "Touch Panel Operation Check"** *(p160)* **are also necessary for Epson Stylus Photo PX660/PX660 Premium/Artisan 635 in addition to the adjustments for Epson Stylus Photo PX650/TX650/TX659.**

8.3.2 Required Adjustments

The table below lists the required adjustments depending upon the parts being repaired or replaced. Find the part(s) you removed or replaced, and check which adjustment(s) must be carried out.

Note : <Meaning of the marks in the table>
"O" indicates that the adjustment must be carried out. "O*" indicates that the adjustment is recommended. "---" indicates that the adjustment is not required.
If you have removed or replaced multiple parts, make sure to check the required adjustments for the all parts. And when multiple adjustments must be carried out, be sure to carry out them in the order given in the "Priority" row.

> **CHECK POINT** ✓ See **Chapter 5 "ADJUSTMENT"** for the adjustments other than **" 8.3.3 Touch Panel Calibration** *(p160)"* and **" 8.3.4 Touch Panel Operation Check** *(p160)"*.

Table 8-2. Adjustment Items

Priority		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Part Name	Adjustment Item	PG adjustment	Touch Panel calibration	Touch Panel operation check	EEPROM data copy	Initial setting	USB ID input	Head ID input	Waste ink pad counter	Ink charge	Initialize PF deterioration offset	Disenable PF deterioration offset	Top margin adjustment	Head angular adjustment	Bi-D adjustment	First dot position adjustment	PW adjustment	PF/EJ adjustment	BRS adjustment	PFP adjustment	CR motor heat protection control
Panel Unit	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Panel Unit	Replace	--	O	O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ASF Unit	Remove	--	--	--	--	--	--	--	--	--	--	--	O	--	--	O	--	O	--	O	--
ASF Unit	Replace	--	--	--	--	--	--	--	--	--	--	--	O	--	--	O	--	O	--	O	--
CR Motor	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	O*	--	--	--	--	--	--
CR Motor	Replace	--	--	--	--	--	--	--	--	--	--	--	--	--	O*	--	--	--	--	--	O
Upper Paper Guide	Remove	--	--	--	--	--	--	--	--	--	--	--	O	--	--	--	--	O	O	O	--
Upper Paper Guide	Replace	--	--	--	--	--	--	--	--	--	--	--	O	--	--	--	--	O	O	O	--
Printhead	Remove	O	--	--	--	--	--	--	--	--	--	--	O	O	O	O	O	O	O	O	--
Printhead	Replace	O	--	--	--	--	--	O	--	O	--	--	O	O	O	O	O	O	O	O	--
Main Board Unit	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Main Board Unit	Replace (Read OK)	--	--	--	O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	O
Main Board Unit	Replace (Read NG)	--	O	O	--	O	O	O	O (Ink Pads must be replaced)	--	--	--	O	O	O	O	O	O	O	O	O

Table 8-2. Adjustment Items

Priority		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Part Name	Adjustment Item	PG adjustment	Touch Panel calibration	Touch Panel operation check	EEPROM data copy	Initial setting	USB ID input	Head ID input	Waste ink pad counter	Ink charge	Initialize PF deterioration offset	Disenable PF deterioration offset	Top margin adjustment	Head angular adjustment	Bi-D adjustment	First dot position adjustment	PW adjustment	PF/EJ adjustment	BRS adjustment	PFP adjustment	CR motor heat protection control
Power Supply Board	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Replace	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	O
Front Paper Guide Assy (including PF Shaft)	Remove	O	--	--	--	--	--	--	--	--	--	--	O	O	O	O	O	O	O	O	--
	Replace	O	--	--	--	--	--	--	--	--	--	O	O	O	O	O	O	O	O	O	--
PF Motor	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Replace	--	--	--	--	--	--	--	--	--	--	O	--	--	--	--	--	--	--	--	--
Waste Ink Tray Assy	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Replace	--	--	--	--	--	--	--	O (Waste Ink Tray)	--	--	--	--	--	--	--	--	--	--	--	--
Waste Ink Pad	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Replace	--	--	--	--	--	--	--	O (Waste Ink pad)	--	--	--	--	--	--	--	--	--	--	--	--
CR Unit	Remove	O	--	--	--	--	--	--	--	--	--	--	O	O	O	O	O	O	O	O	O
	Replace	O	--	--	--	--	--	--	--	--	--	--	O	O	O	O	O	O	O	O	O
Paper Eject Frame Assy	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	O	O	O	--
	Replace	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	O	O	O	--
Printer Mechanism	Remove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Replace	O	--	--	--	--	--	--	--	--	O	--	O	O	O	O	O	O	O	O	O

8.3.3 Touch Panel Calibration

☐ Purpose

To calibrate the capacitive touch panel of Epson Stylus Photo PX660/PX660 Premium/Artisan 635 to function correctly, and to write the calibrated value to the EEPROM on the Main Board.

☐ Calibration procedure

1. Connect the printer to the computer in which the Adjustment Program is installed using a USB cable and turn the printer on, then start the Adjustment Program.

2. Select "Touch Panel Calibration" from the menu of the Adjustment Program to display the adjustment screen.

> **CAUTION**
>
> **!**
>
> **Do not touch the Panel Unit when performing the "Touch Panel Calibration", or the Panel Unit will not be calibrated correctly.**

3. Press the "Perform" button on the displayed screen. The calibration and writing the calibrated value to the EEPROM on the Main Board will be executed automatically.

4. After writing the calibrated value is complete, perform "Touch Panel Operation Check (p160)". If an error occurs, make sure nothing is touching the touch panel, and then perform the calibration again. If the error recurs, replace the Panel Unit.

8.3.4 Touch Panel Operation Check

☐ Purpose

To confirm that the capacitive touch panel of Epson Stylus Photo PX660/PX660 Premium/Artisan 635 functions correctly.

> **CHECK POINT** ✓
>
> ■ **To perform touch panel operation check, it is necessary to start the printer in the special inspection mode.**
>
> ■ **When starting Epson Stylus Photo PX660/PX660 Premium/Artisan 635 in the special inspection mode, take the necessary procedure (*p.161*) within 30 seconds after turning the power off. If 30 seconds or more pass after turning the power off, turn it on once again, then turn it back off and take the necessary procedure within 30 seconds to start the printer in the special inspection mode.**
>
> ■ **Press the Power button to exit from the special inspection mode. The following screen appears when the Power button is pressed, and the power turns off if the button is pressed again.**

Initial Charge Flag check

Initial Charge Flag: OFF

Push [Power] button
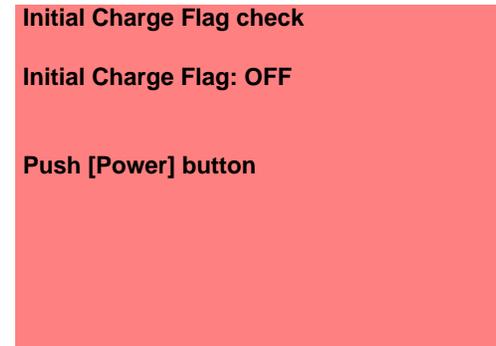
Figure 8-29. Power Off Screen in the Special Inspection Mode

> ■ **If one of the modes in the menu (Fig. 8-31) is selected and entered by pressing the OK button, you cannot go back to the screen (Fig. 8-31) again. To return to the screen (Fig. 8-31), turn the power off once, and start the printer in the special inspection mode once again.**

☐ Operation check procedure

1. Press the Power button to turn on Epson Stylus Photo PX660/PX660 Premium/ Artisan 635.

2. After the printer turns on normally, turn the power off once.

3. Within 30 seconds after turning the power off and the LCD screen goes off, press and keep pressing the sections shown below (1), then press the Power button for more than one second (2) to start Epson Stylus Photo PX660/PX660 Premium/ Artisan 635 in the special inspection mode.


(1) Keep pressing these

(2) Press this for more than one sec.
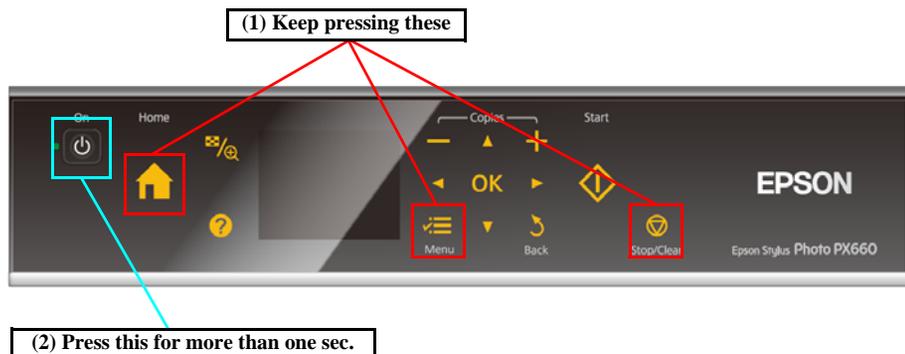
Figure 8-30. Starting the Special Inspection Mode

CHECK POINT

When turning the printer on in the special inspection mode, the following screen appears on the LCD.

```
Inspection Mode
    Run: OK / Select: [UP] [DOWN]
1. Mechanism Inspection
2. Special Inspection
3. Development Mode
4. Normal Mode
```
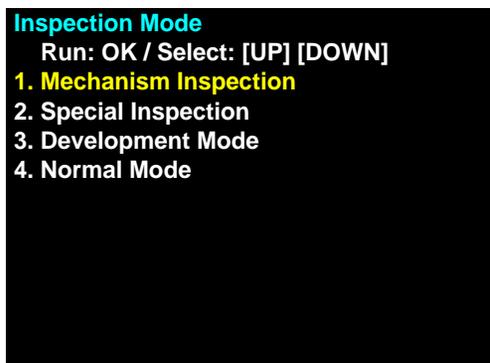
Figure 8-31. Start-up Screen in the Special Inspection Mode

4. Select "Special Inspection" and press [OK].

```
Inspection Mode
    Run: OK / Select: [UP] [DOWN]
1. Mechanism Inspection
2. Special Inspection
3. Development Mode
4. Normal Mode
```
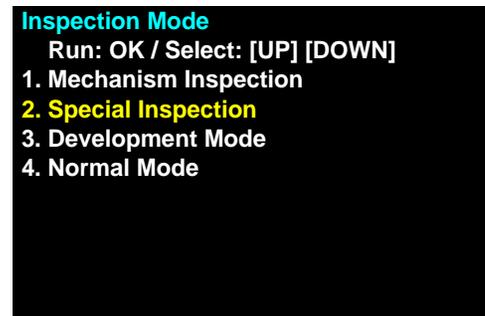
Figure 8-32. Touch Panel Operation Check (1)

5. Select "Panel Key Test & LED Test" and press [OK].

```
Special Inspection Mode

1. Inspection ALL
2. CSIC & IES Check
3. Panel Key Test
4. LCD/RGB & LED Test
5. Rom Ver. Check
6. USB Host Test
7. Sensor Check
    Run: OK / Select: [UP] [DOWN]
```
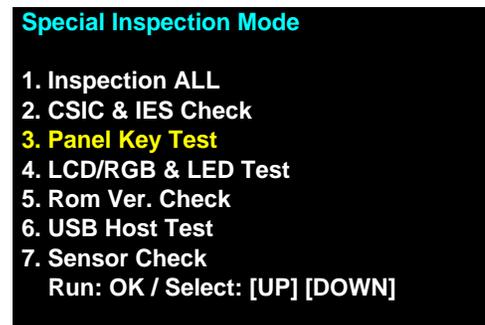
Figure 8-33. Touch Panel Operation Check (2)

CAUTION

Once the Touch Panel Operation Check starts, you cannot goes back to the menu screen of the special inspection mode (**Fig. 8-33**) until all the inspections are complete.

6. When the following screen appears, follow the instruction on the screen and press the icons as instructed.

Panel Key Test

Next Button: [STOP]

> Follow the instruction and press the icons on the touch panel as instructed.
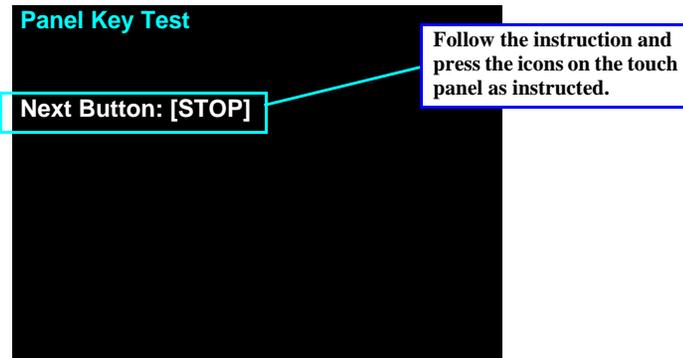
| Instruction on LCD	Icon	Instruction on LCD	Icon	Instruction on LCD	Icon
STOP	⊘	Up	▲	Menu	✓☰
PrintPhoto	◇	OK	OK	Display	▣/⊕
+	✚	Down	▼	Help	？
Right	▶	-	▬	Home	⌂
Back	↺	Left	◀		

Figure 8-34. Touch Panel Operation Check (3)

7. When the operation check by pressing all icons are complete, the following screen appears.

Panel Key Test

Finished !
**Check LED lighting**

Push [Back] Button.
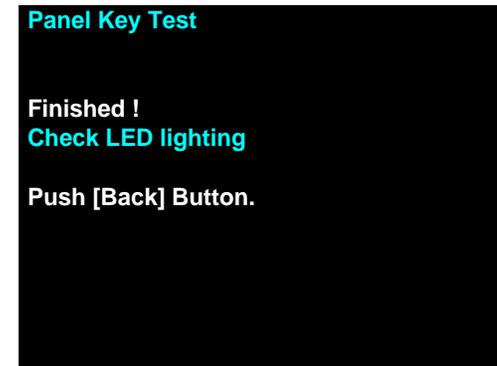
Figure 8-35. Touch Panel Operation Check (4)

8. Press [Back] to return to the menu screen (Fig. 8-33), and turn off the Epson Stylus Photo PX660/PX660 Premium/Artisan 635.

8.3.5 Overview Artisan 635

Epson Stylus Photo PX650/TX650/TX659/PX660 and Epson Stylus Photo PX660 Premium/Artisan 635 use similar mechanism, and basically common to each other. Therefore, most of the information in prior chapters can apply to Epson Stylus Photo PX660 Premium/Artisan 635 .

This chapter describes particular information only on Epson Stylus Photo PX660/PX660 Premium/Artisan 635.

1.Exterior Color

Table 8-3.

EPSON Stylus Photo PX660 EPSON Stylus Photo PX660 Premium	Artisan 635
Black	Next Black(Bluish black)

2.Panel Color is changed as shown figure below.

1.Housing,Panel,Upper

2.Mask-Sheet,Panel

3.Housing,Upper,SC

4.Housing,Upper

3. New AS Parts

Table 8-4. New AS Parts

Part Code	Part Name	Block ID
1550095	HOUSING,UPPER;B	CASE
1551409	SHEET,PANEL;C	CASE
1550699	PANEL ASSY.,IEI;CB44	CASE
1550692	MAIN BORD ASSY,EHC.,CB44;IEI	ELEC
2140477	SCANNER UNIT.,IEI;CB44,ASP	MECH
1550696	HOUSING UPPER,SC ASSY.;CB44	MECH

8.3.6 USB Interface Epson Stylus Photo PX660/PX660 Premium/Artisan 635

Table 8-5. Device ID

	IEEE 1284.4 is enabled	IEEE 1284.4 is disabled
EPSON Stylus Photo PX660 EPSON Stylus photo PX660 Premium	@EJL<SP>ID<CR><LF> MFG:EPSON; CMD:ESCPL2,BDC,D4,D4PX,ESCPR2; MDL:Epson Stylus Photo PX660; CLS:PRINTER; DES:EPSON<SP>Epson Stylus Photo PX660; CID:EpsonRGB;	@EJL<SP>ID<CR><LF> MFG:EPSON; CMD:ESCPL2,BDC,ESCPR2; MDL:Epson Stylus Photo PX660; CLS:PRINTER; DES:EPSON<SP>Epson Stylus Photo PX660; CID:EpsonRGB;

	IEEE 1284.4 is enabled	IEEE 1284.4 is disabled
Artisan635	@EJL<SP>ID<CR><LF> MFG:EPSON; CMD:ESCPL2,BDC,D4,D4PX,ESCPR2; MDL:Artisan630; CLS:PRINTER; DES:EPSON<SP>Artisan630; CID:EpsonRGB;	@EJL<SP>ID<CR><LF> MFG:EPSON; CMD:ESCPL2,BDC,ESCPR2; MDL:Artisan630; CLS:PRINTER; DES:EPSON<SP>Artisan630; CID:EpsonRGB;

8.3.7 Memory Card Slots Epson Stylus PX660/PX660 Premium

CAUTION

!

If you insert a Memory Stick DUO to the Memory Card Slot without using the adapter, make sure to turn off the printer first, then remove the card using tweezers.

Table 8-6. List of Supported Memory Card

Priority	Slot	Compatible memory card	Standard	Max. capacity*1	Remarks
1	Memory Stick/ Memory Stick PRO	Memory Stick	"MemoryStick Standard" Format Specification Ver.1.43-00 compatible	128MB	Includes versions with memory select function
		MagicGate Memory Stick	---	---	Copy protection function is not supported
		MagicGate Memory Stick Duo	---	---	An adapter should be used
		Memory Stick PRO	Memory Stick PRO Format Specifications-without security Ver.1.02-00 compatible	32GB	Copy protection function is not supported
		Memory Stick Duo	MemoryStick Duo Format Specification Ver.1.10-00 compatible	---	The Memory Stick Duo adapter should be used
		Memory Stick Pro Duo Memory Stick Pro HG Duo	MemoryStick PRO Duo Format Specification Ver.1.02-00 compatible	---	The Memory Stick Duo adapter should be used
		Memory Stick micro	Memory Stick Micro Format Specification Ver.1.02-00 compatible	---	The Memory Stick adapter for standard size should be used.
	SD/MMC	SD Memory Card	SD Memory Card Specifications / PART1. Physical Layer Specification Ver. 3.0 compatible	2GB	---
		miniSD Card/microSD Card			The SD adapter should be used
		SDHC		32GB	Speed Class is not supported
		miniSDHC microSDHC			With miniSD Card size. With microSD Card Adapter for SD Memory card size.
		MultiMediaCard	MultiMediaCard Standard Ver. 4.2 compatible	2GB	Maximum capacity described to manual: 32GB 32BGB is written on a manual though the confirmed operation is 2GB(4GB).Because for almost the same standerd as SDHC.
		MultiMediaCard Plus		4GB	
		MMC Mobile<RS-MMC> MMC micro		---	With Adapter for Muiti Media Card size.
	xD-Picture card	xD-Picture card	xD-Picture Card Specification Ver.1.20 compatible	2GB	Type M/M+/H supported
2	CF Type II	Compact Flash	CF+ and CompactFlash Specification Revision 4.1 compatible	32GB	Storage card only
		Microdrive	---	6GB	Type-I/Type-II/CF+Type2 <HDD>

Note: • Please refer to the "1.5.2 Memory Card Slots" (p.19)

8.3.8 Memory Card Slots Artisan 635

> **CAUTION**
>
> **!**
>
> **If you insert a Memory Stick DUO to the Memory Card Slot without using the adapter, make sure to turn off the printer first, then remove the card using tweezers.**

Table 8-7. List of Supported Memory Card

Priority	Slot	Compatible memory card	Standard	Max. capacity*1	Remarks
1	Memory Stick/ Memory Stick PRO	Memory Stick	"MemoryStick Standard" Format Specifications Ver.1.43-00 compatible	128MB	Includes versions with memory select function
		MagicGate Memory Stick	---	---	Copy protection function is not supported
		MagicGate Memory Stick Duo	---	---	An adapter should be used
		Memory Stick PRO	Memory Stick PRO Format Specifications-without security Ver.1.02-00 compatible	32GB	Copy protection function is not supported
		Memory Stick Duo	MemoryStick Duo Format Specification Ver.1.10-00 compatible	---	The Memory Stick Duo adapter should be used
		Memory Stick Pro Duo Memory Stick Pro HG Duo	MemoryStick PRO Duo Format Specification Ver.1.02-00 compatible	---	The Memory Stick Duo adapter should be used
		Memory Stick micro	Memory Stick Micro Format Specification Ver.1.02-00 compatible	---	The Memory Stick adapter for standard size should be used.
	SD/MMC	SD Memory card	SD Memory Card Specifications / PART1. Physical Layer Specification Ver. 3.0 compatible	2GB	---
		miniSD Card/microSD Card			The SD adapter should be used
		SDHC		32GB	Speed Class is not supported
		miniSDHC/microSDHC			The SD adapter should be used Speed Class is not supported
		SDXC Memory Card		---	
		Mini SDXC			With miniSD Card Adapter
		Micro SDXC			With microSD Card Adapter for SD Memory Card size
		MultiMediaCard	MultiMediaCard Standard Ver. 4.2 compatible	2GB	Maximum capacity described to manual: 32GB 32BGB is written on a manual though the confirmed operation is 2GB(4GB).Because for almost the same standerd as SDHC.
		MultiMediaCard Plus		4GB	
		MMC Mobile/MMC micro		---	With Adapter for Multi Media Card size
	xD-Picture card	xD-Picture card	xD-Picture Card Card Specification Ver.1.20 compatible	2GB	Type M/M+/H supported
2	CF Type II	Compact Flash	CF+ and CompactFlash Specification Revision 4.1 compatible	32GB	Storage card only
		Microdrive	---	---	Type-I/Type-II/CF+Type2 <HDD>

Note: • Please refer to the .

8.3.9 Electrical Specifications

```
CHECK
POINT
  ✓
```
Description in this chapter is applied to Epson Stylus Photo PX660/ PX660 Premium/Artisan 635. For information on Epson Stylus Photo PX650/TX650/TX659, see below.

■ **" 1.4.1 Electrical Specifications** *(p17)***"**

❑ **Primary power input**

Table 8-8. Primary Power Specifications

Item		100-120V model	220-240V 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		0.6 A (max. 1.0 A)	0.3 A (max. 0.5A)
Rated frequency		50 to 60 Hz	
Input frequency range		49.5 to 60.5 Hz	
Energy conservation		International Energy Star Program compliant	
Power consumption	Stand alone copy (ISO/IEC24712 pattern)	Approx. 14 W	
	Ready	Approx. 6.5 W	
	Sleep mode	Approx. 1.4 W	Approx. 1.6 W
	Power off	Approx. 0.2 W	Approx. 0.4 W

Note : When no operation is made for more than 13 minutes, it goes to the low power mode within two minutes.