

SERVICE MANUAL



Scanner · Printer · Copier

EPSON Stylus CX5100/5200/5300/5400



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PRECAUTIONS

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

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

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

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

DANGER

1. ALWAYS DISCONNECT THE PRODUCT FROM THE POWER SOURCE AND PERIPHERAL DEVICES PERFORMING ANY MAINTENANCE OR REPAIR PROCEDURES.
2. NO WORK SHOULD BE PERFORMED ON THE UNIT BY PERSONS UNFAMILIAR WITH BASIC SAFETY MEASURES AS DICTATED FOR ALL ELECTRONICS TECHNICIANS IN THEIR LINE OF WORK.
3. WHEN PERFORMING TESTING AS DICTATED WITHIN THIS MANUAL, DO NOT CONNECT THE UNIT TO A POWER SOURCE UNTIL INSTRUCTED TO DO SO. WHEN THE POWER SUPPLY CABLE MUST BE CONNECTED, USE EXTREME CAUTION IN WORKING ON POWER SUPPLY AND OTHER ELECTRONIC COMPONENTS.
4. WHEN DISASSEMBLING OR ASSEMBLING A PRODUCT, MAKE SURE TO WEAR GLOVES TO AVOID INJURIES FROM METAL PARTS WITH SHARP EDGES.

WARNING

1. REPAIRS ON EPSON PRODUCT SHOULD BE PERFORMED ONLY BY AN EPSON CERTIFIED REPAIR TECHNICIAN.
2. MAKE CERTAIN THAT THE SOURCE 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. DO NOT REPLACE IMPERFECTLY FUNCTIONING COMPONENTS WITH COMPONENTS WHICH ARE NOT MANUFACTURED BY EPSON. IF SECOND SOURCE IC OR OTHER COMPONENTS WHICH HAVE NOT BEEN APPROVED ARE USED, THEY COULD CAUSE DAMAGE TO THE EPSON PRODUCT, OR COULD VOID THE WARRANTY OFFERED BY EPSON.

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.

APPENDIX Provides the following additional information for reference:

- Electric circuit boards components layout
- Electrical circuit boards schematics
- Exploded diagram & Parts List

Symbols Used in this Manual

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



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



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



May indicate an operating or maintenance procedure, practice or condition that is necessary to accomplish a task efficiently. It may also provide additional information that is related to a specific subject, or comment on the results achieved through a previous action.



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



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

Revision Status

Revision	Issued Date	Description
A	August 30, 2002	First Release
B	April 9, 2003	Revision <ul style="list-style-type: none">• Table 3-1, "LCD indication," on page 19• "Adjustments by Adjustment Program":Revise the start procedure.• "Uploading Firmware" on page -72:Revise the CAUTION.• Add the exploded diagram.• Add the parts list.
C	August 4, 2003	Revision <ul style="list-style-type: none">• Add the description about Stylus CX5300/5400 in all chapters.• Delete model A940.• "Electrical specifications" on page -10• "Physical specification" on page -11• Revise "Uploading Firmware" on page -72

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CHAPTER

1

PRODUCT DESCRIPTION



1.1 Overview

This section explains overall specifications of the CX5100/5200/5300/5400 models of SPC (Scanner/Printer/Copier).

1.1.1 Features

CX5100/5200/5300/5400 have the following features.

□ Printer function

The printer function produces laser sharp quality and faster output on plain paper. DuraBrite ink creates.

- 2880 (H) x 1440 (V) dpi printing (Max resolution)
- Separated ink cartridge for each color
- Built-in auto document feeder holds 150 cut-sheets (90g/m²)
- Print head nozzle configuration

Monochrome	: 180 nozzles
Color	: 59 nozzles x 3 (Cyan, Magenta and Yellow)

□ Scanner function

The Scanner function enables PCs to acquire an image. The “Scan” button on the Operation Panel works with software running on a PC achieves the ease-of-use scanning.

- 1200 x 2400 dpi scanning (Optical resolution)
- 48 bit-in, 24 bit-out

□ Standalone Copier function

By use of the latest 4 color printer engine, high quality copying of photos is offered not just with special-purpose paper but also with regular paper. The printer also has the following characteristics.

■ Standard Copy Mode (CX5100/5200)

The mode is provided to meet general purposes of making copies with 3mm bottom margin. It provides with the widest range of Paper Size, Copy Quality and other options.

■ Wide Margin Copy Mode

The mode is provided to meet general purposes of making copies with 14mm bottom margin. It provides with the widest range of Paper Size, Copy Quality and other options.

■ Repeat Copy Mode

The mode is to create multiple copy images on one sheet of copy paper.

■ 2-up (4-up) Copy Mode

Reduces 2 pages (4 pages) of originals for printing on a single page.

1.1.2 Main difference between CX5100/5200 and CX5300/5400

The main difference is as follows.

- Case color
- Printer mechanism
 - Front Paper guide (No service parts) of CX6300/6400 is used for CX5300/5400.
- Border free print/copy
 - CX5300/5400 can perform the border free print and copy. A4/4x6/5x7 size only
- Main board
 - CX5100/5200: Flash ROM (C496MAIN) version and OTPROM version (C496MAIN-B)
 - CX5300/5400: OTPROM version (C496MAIN-B)



1.2 Common

This section explains specifications that are common for both the scanner and the printer.

1.2.1 Electrical specifications

Table1-1. AC Input

	100V model	120V model	220 - 240V model
Rated voltage (ACV)	100	120	220 - 240
Input voltage (ACV)	90 - 110	108 - 132	198 - 264
Rated current (A)	0.5	0.5	0.3
Rated frequency range (Hz)	50 - 60		
Input frequency range (Hz)	49.5 - 60.5		
Power consumption (W)	Approx. 23W (Standalone copying)		
	Approx. 6.0W (Standby)		

NOTE: The product is Energy Star compliant.

NOTE: The electric current to hold the mechanism control motors is reduced when non-operation continues for 5 minutes.

NOTE: The Scanner lamp is turned off when non-operation continues for 15 minutes.

1.2.2 Interface

- ☐ Standard : Universal Serial Bus Specifications Revision 1.1
Universal Serial Bus Device Class Definition for Printing
Devices Version 1.1
- ☐ Adaptable connector : USB Series B

1.2.3 Safety, EMC

- ☐ 100V model
 - EMC standards:
VCCI class B
Guideline for the Suppression of Harmonics in Household and General-Use Equipment
- ☐ 120V model
 - Safety standards:
UL1950
CSA22.2 No.950
 - EMC standards:
FCC part15 subpart B class B
CSA C108.8 class B
- ☐ 220-240V model
 - Safety standard:
EN 60950
 - EMC standards:
EN 55022 (CISPR Pub.22) class B
EN 55024
EN 61000-3-2
EN 61000-3-3
AS/NZS 3548 Class B

1.2.4 Environmental condition

Table1-2. Environmental condition

	Operating	Non-operating ^(*2)
Temperature ^(*1)	10 - 35°C	-20 - 60°C
Humidity (without condensation)	20 - 80%, RH	5 - 85%, RH
Resistance to shock	1 G, within 1 ms	2 G, within 2 ms
Resistance to vibration	0.15G	0.50G

NOTE: (*1): 1 month at 40 °C 120 hours at 60 °C

NOTE: (*2): With shipment container

1.2.5 Reliability

☐ Total print volume

Monochrome : 50,000 pages (A4, Letter)

Color : 20,000 pages (A4, Letter)

☐ Printhead Life

4000 million dots/nozzle

☐ Scanhead

MCBF 30,000 cycles

1.2.6 Acoustic noise

☐ Level

Approx. TBD dB (Standalone copy)
(According to ISO7779)

1.2.7 Physical specification

☐ Weight

9.0 kg

☐ Dimension

453 x 434 x 254 mm (W x D x H)

NOTE: Except for rubber feet and the projection of printer paper tray.

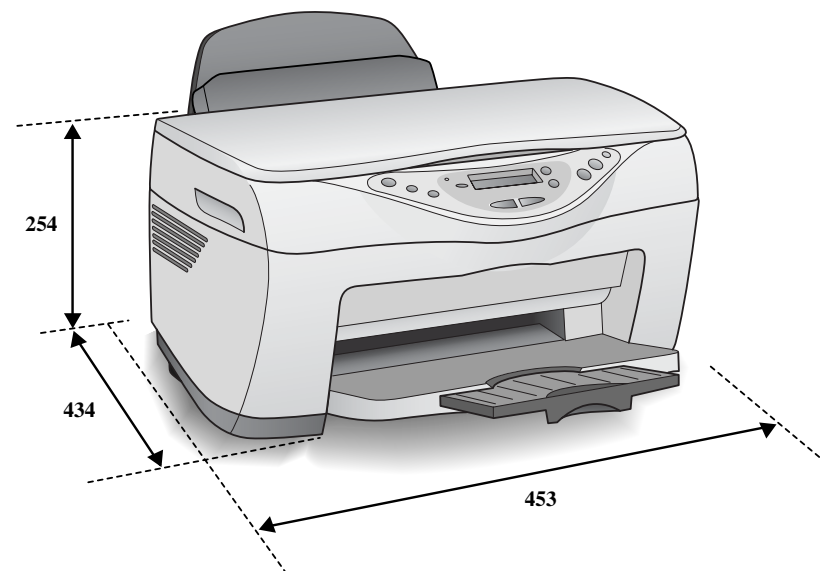


Figure 1-1. Physical specification

1.3 Ink Cartridges

1.3.1 Black Ink Cartridge

- ☐ Type
Exclusive cartridge
- ☐ Color
Black
- ☐ Print capacity
720 pages @A4 (ISO/IEC10561 Letter Pattern at 360 dpi)

1.3.2 Color Ink Cartridge

- ☐ Type
Exclusive cartridge
- ☐ Color
Magenta, Cyan and Yellow
- ☐ Print capacity
420 pages /A4 (360 dpi, 5% duty each color)



CHAPTER

2

OPERATING PRINCIPLES



2.1 Overview

This chapter explains the operating principles of the CX5100/5200/5300/5400 mechanisms and electrical circuitry.

The CX5100/5200/5300/5400 are primarily divided into the printer unit and the scanner unit. Mechanisms can also be separated by printer unit and scanner unit. Electrical circuitry is composed of Main Board circuits, PSB/PSE Board circuits, CCD Board circuits and Panel Board circuits.

2.2 Printer Unit

2.2.1 Printer Unit Mechanism

The mechanism used in the printer unit is similar to the Stylus C82.

The printer unit is composed of the Printhead for printing, the Carriage for carrying the printhead, the CR Motor for moving the carriage within the print range, the Cap Unit for preventing drying of the printhead, the PF Motor for feeding paper, the ASF Unit for paper supply using PF motor power, and the Eject Unit for ejecting printed paper.

A list of printer unit main features and an outline drawing are shown below.

- ☐ Only the ASF is newly designed.
- ☐ For throughput improvement, the special use Flashing Box utilizes 0/80 digit bi-direction.
- ☐ Paper can be supplied by 0/80 digit bi-direction. (Economy printing only.)

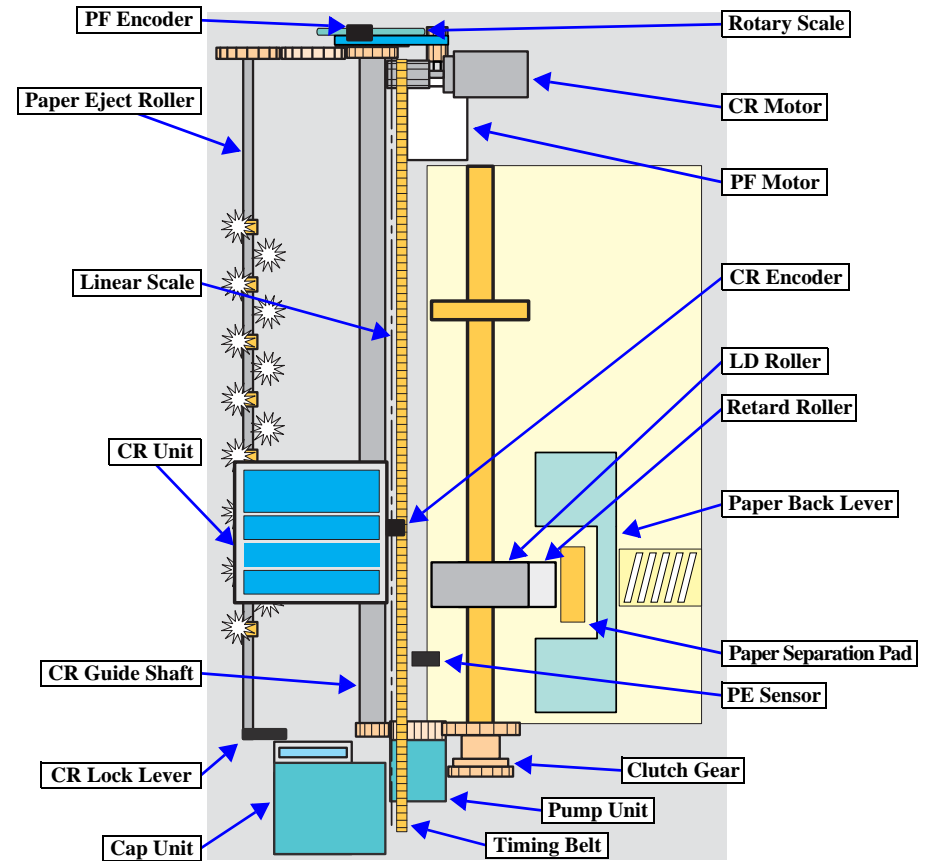


Figure 2-1. Printer Unit Mechanism Overview

2.2.1.1 Carriage Motor Specification

Table 2-1. CR motor Specification

Items	Specifications
Type	DC motor with brushes
Drive voltage	+42V \pm 5% (voltage applied to driver)
Coil resistance	27.1 Ω \pm 10% (per phase at 25 degree)
Inductance	19.8mH \pm 25% (1KH, 1VmA)
Drive method	PWM, constant-current chopping
Driver IC	A6615

2.2.1.2 Paper Feeding Motor Specification

Table 2-2. PF motor Specification

Items	Specifications
Type	DC motor with brushes
Drive voltage	+42V \pm 5% (voltage applied to driver)
Coil resistance	22.3 Ω \pm 10% (per phase at 25 degree)
Inductance	17.3mH \pm 25% (1KH, 1VmA)
Drive method	PWM
Driver IC	A6615

2.2.1.3 Paper Loading Mechanism (New ASF unit)

The ASF of this printer is newly designed. It has the following characteristics.

- ☐ Uses a Retard Roller. (Laser printers also use this roller.)
- ☐ New design of PF/ASF change mechanism. (Operating principle same as previous.)

DRIVE PROCESS

1. The motion of the PF Motor is always transmitted to the Combination Gear Ratchet 65.6 but not transmitted to the LD Roller.
2. After receiving the paper feed command, the Carriage Unit contacts the A or B ASF Trigger Lever.
3. At this point, the Change Lever extends in the direction of arrow C, locking the Clutch mechanism.
4. The motion of Combination Gear Ratchet 65.6 is transferred to Clutch Gear 1.
5. LD Roller Gear 2 rotates one time (LD Roller rotates once), and then the LD Roller is stopped by the Clutch Gear again contacting the Change Lever.

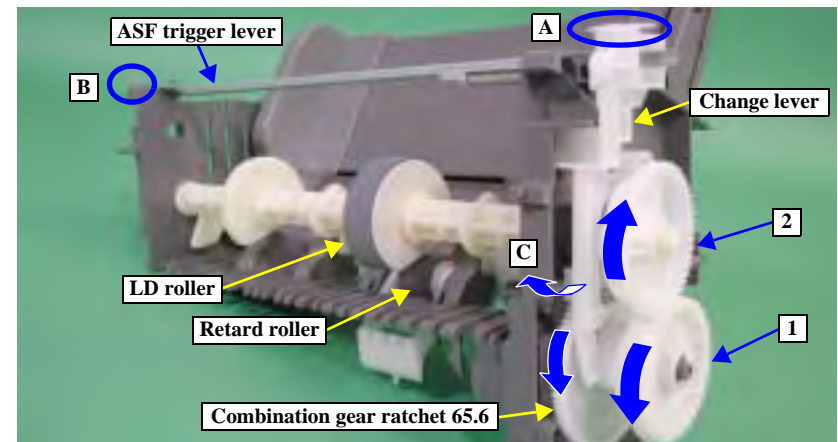


Figure 2-2. Drive Process

2.2.1.4 Ink System Mechanism

With this printer, when the PF Motor turns, power is always transmitted to the ink system.

PUMP UNIT & WIPER MECHANISM

Table 2-3. PF motor rotational direction & Ink system mechanism

Directions	Functions
Counterclockwise (*1)	<ul style="list-style-type: none"> Set wiper. Draw ink. Set CR lock lever.
Clockwise (*1)	<ul style="list-style-type: none"> Reset wiper. Release pump. Reset CR lock lever.

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

2.2.2 Scanner Unit Mechanism

The scanner unit is composed of the Scanner Carriage Unit for carrying the light source projecting light onto the document and the CCD taking in the image, the Scanner Motor and Timing Belt for moving the scanner carriage unit over the surface of the original, and the Scanner HP Sensor for detecting the position of the scanner carriage unit.

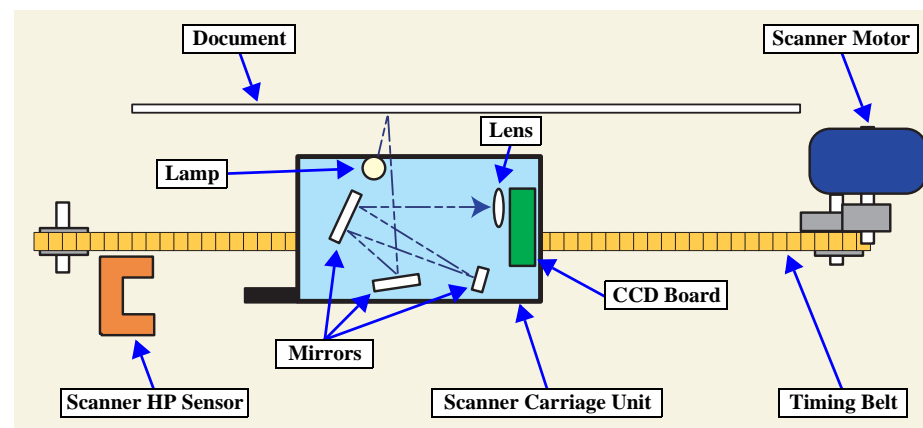


Figure 2-3. Scanner Unit Mechanism

2.2.2.1 Scanner Motor Specification

Table 2-4. Scanner Motor Specification

Items	Specifications
Type	PM type stepping motor
Drive voltage	+42VDC
Coil resistance	26Ω ±7%
Inductance	TBD mH ± TBD % (TBD KH, TBD VmA)
Drive method	PWM
Driver IC	A6615

2.2.3 Electrical Circuitry

The electric circuit C496MAIN/C496MAIN-B of the Stylus CX5100/5200 and C496MAIN-B of the Stylus CX5300/5400 consists of the following boards.

- ☐ C496 MAIN Board/C496 MAIN-B Board (main circuit board)
- ☐ C496 PSB/PSE Board (power supply circuit board)

Supplies the following voltages:

- +3.3V for logic system
- +42V for drive system
- +12V for scanner system

- ☐ CCD Board
- ☐ Panel Board

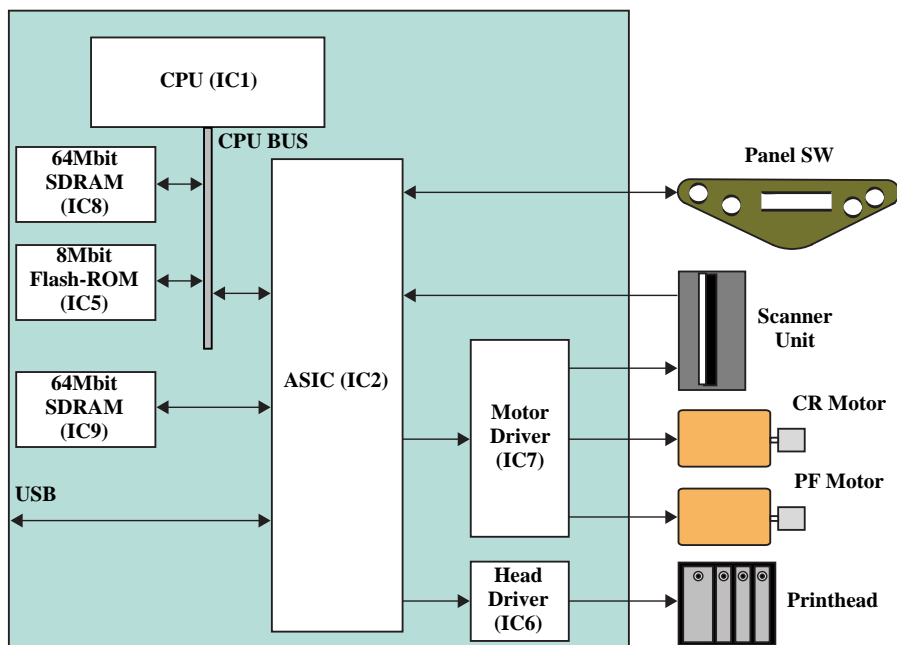


Figure 2-4. Electrical Circuitry Block Diagram

2.2.3.1 C496 Main Board

Table 2-5. C496 Main Board Major Components and Primary Functions

Main Component	Location	Function
CPU	IC1	<ul style="list-style-type: none"> Internal RAM: 10KB. Internal Flash ROM: 256KB. Control, image processing 3.3V drive
ASIC	IC2	<ul style="list-style-type: none"> Motor control Head control Panel sensor I/O control USB interface 3.3V drive
RTC	IC4	<ul style="list-style-type: none"> EEPROM Default settings, backup for all parameters Reset function Timer function
FLASH ROM(SOC ROM)	IC5	<ul style="list-style-type: none"> Firmware storage 3.3V drive
Head Driver	IC6	<ul style="list-style-type: none"> Generation of drive voltage waveform 5V drive
Motor Drive	IC7	<ul style="list-style-type: none"> Control of CR Motor, PF Motor, Scanner Motor 42V drive
CPU Local SDRAM	IC8	<ul style="list-style-type: none"> System memory 3.3V drive
ASIC Local SDRAM	IC9	<ul style="list-style-type: none"> Working memory for copy function 3.3V drive
Head Drive Transistor	Q5, Q6	<ul style="list-style-type: none"> Generation of drive voltage waveform based on IC6 control 3.3V drive

Note: IC5:SOC type OTPROM for C496MAIN-B board.

CHAPTER

3

TROUBLESHOOTING



3.1 Trouble shooting by unit level

By obeying this trouble shooting, when some trouble happens, it can be easily understood which unit has defect, according to its phenomenon. The troubles phenomenon are listed up in Table 3-1, Table 3-2. The flow chart by troubles is returned, after trouble is inferred.

Following flow chart describes main process of trouble shooting.

NOTE: Trouble shooting for motor, sensor are to be referred to page 31.

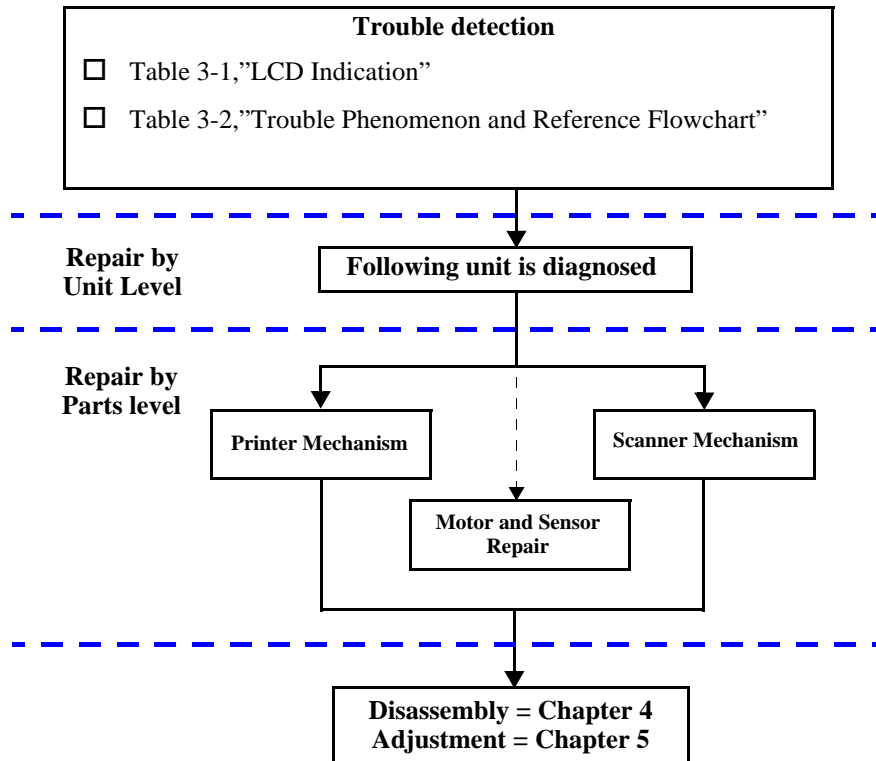


Figure 3-1. Trouble Shooting Flowchart

Table 3-1. LCD indication

Error status	LCD indication (The error title appears in LCD upper portion followed by scrolling error message in lower portion)	LED indication	
		Power	Error LED
Scanner unit open error	Scanner unit open ---> Close the scanner unit.	---	On
Paper out error	Paper out ---> Load paper in Paper tray and press the Color copy button.	---	On
Ink out error	ink out ---> <Ink out colors> Press the Color copy button to begin replacing the ink cartridge. ^(*)	---	On
Ink cartridge error	Ink cartridge error ---> Press the Color copy button to begin replacing the ink cartridge.	---	On
No ink cartridge error	No <No ink cartridge colors> ink cartridge ---> Press the Color copy button to install new ink cartridge.	---	On
Paper jam or miss feed error	Paper jam or miss feed ---> Press the Color copy button and clear the paper jam by hand if necessary.	---	On
Waste ink overflow	Printer error ---> See your documentation and call service if necessary.	---	On
Printer error	Printer error ---> See your documentation and call service if necessary.	---	On
Scanner error	Scanner error ---> See your documentation and call service if necessary.	---	On

Table 3-2. Trouble Phenomenon and Reference Flowchart

Phenomenon	Detail	Refer point
Power is on but not operating	<ul style="list-style-type: none"> LED does not turn on at all. Printer mechanism does not operate at all. Scanner mechanism does not operate at all. 	Figure 3-2
Abnormal operation panel	<ul style="list-style-type: none"> Pressing button but no reaction. 	Figure 3-3
Error is detected	<ul style="list-style-type: none"> LCD/LED panel shows error status. 	Figure 3-4
Paper feeding is not normally executed.	<ul style="list-style-type: none"> Paper feeding is not done. Paper jam happens. Paper start up position is not lined up. 	Figure 3-5
Trouble related to print	<ul style="list-style-type: none"> Print is not done. Print is abnormal (Dot is missing etc.). Print quality is bad. 	Figure 3-6
Trouble related to scanner	<ul style="list-style-type: none"> Scanner does not operate normally. 	See "3.3 Trouble Shooting related to Scanner", page 29

3.1.1 Power is on but Printer / Scanner does not operate at all.

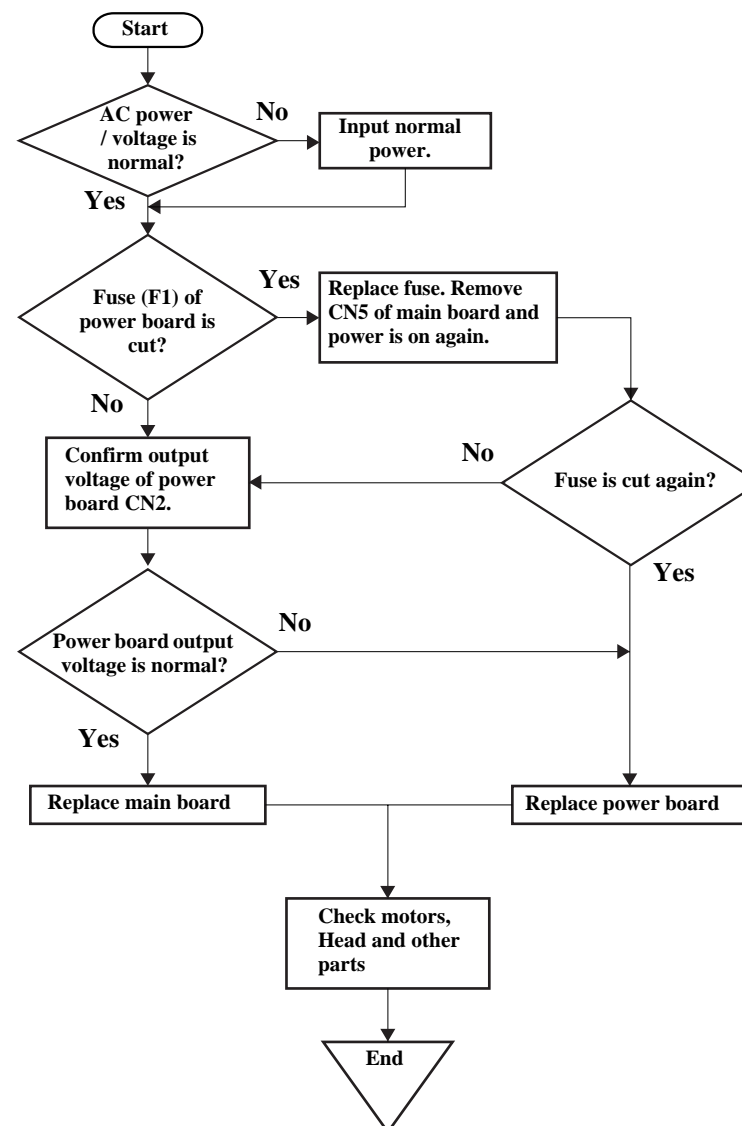


Figure 3-2. Flowchart1

3.1.2 Operation Panel abnormality

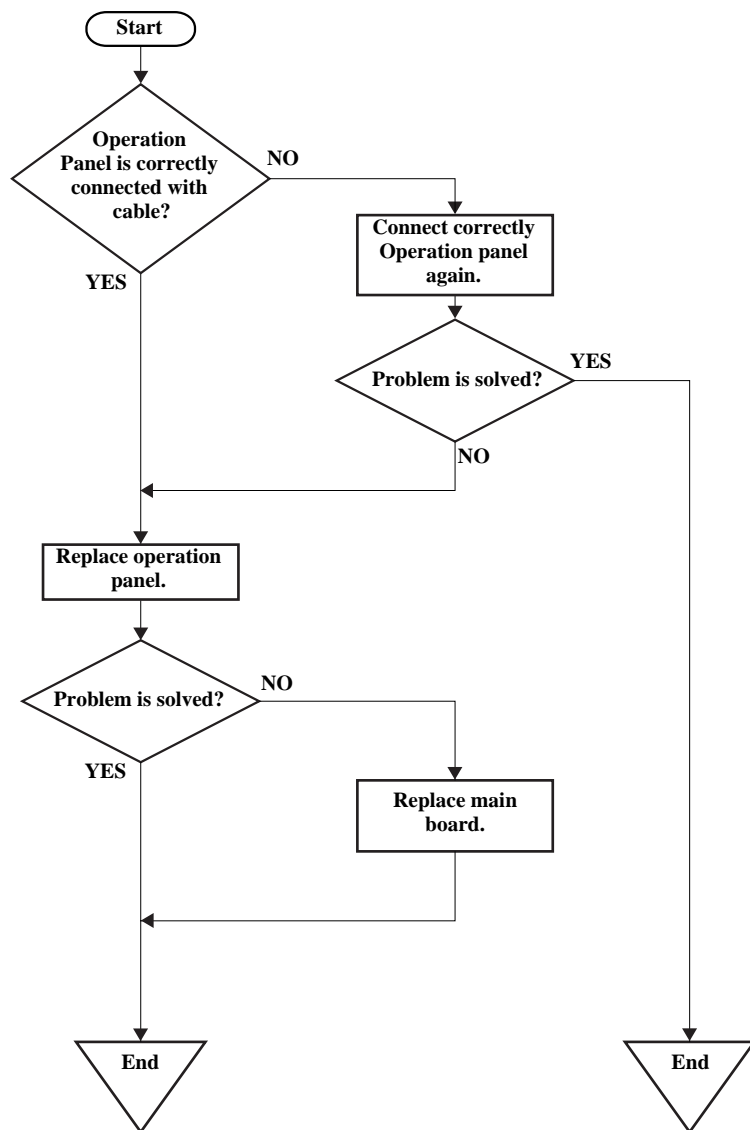


Figure 3-3. Flowchart2

3.1.3 Paper feeding is not normally implemented

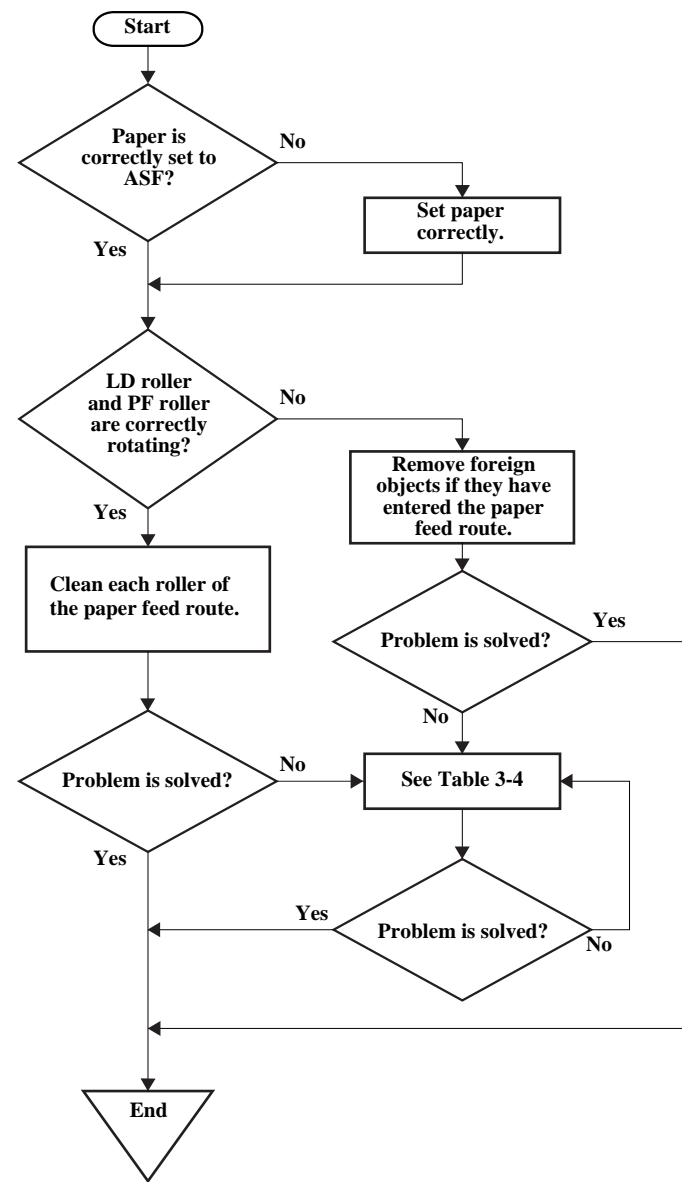


Figure 3-4. Flowchart3

3.1.4 Error is detected

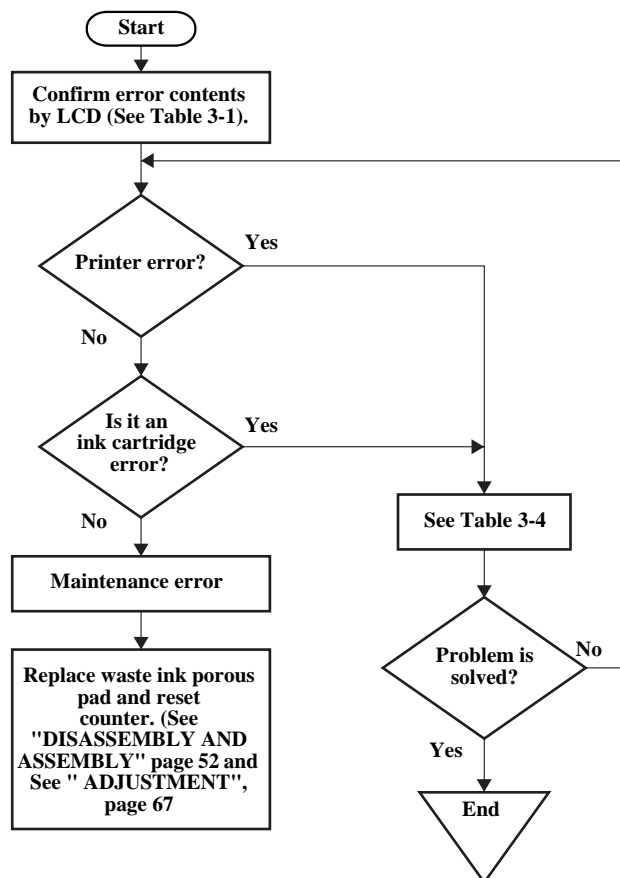


Figure 3-5. Flowchart4

3.1.5 Trouble related to Print

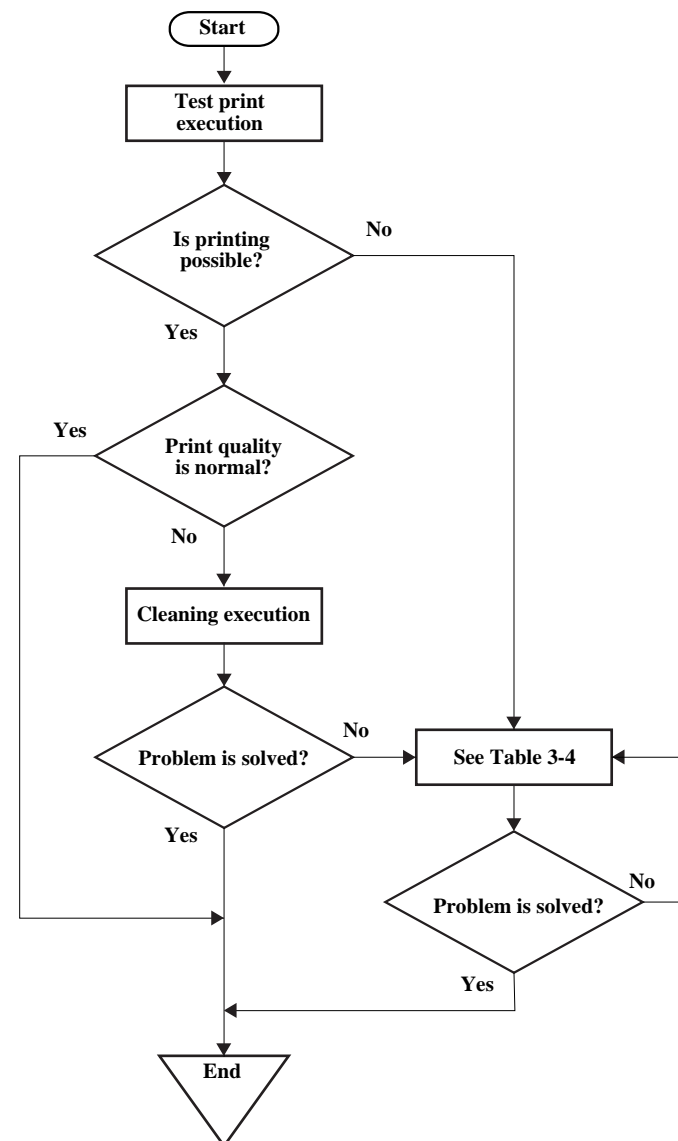


Figure 3-6. Flowchart5

3.2 Trouble Shooting related to Printer

This section describes repair /service of Printer Mechanism. This part shows various problems which possibly happen, its phenomenon, check point and resolution method. Select applicable phenomenon from following tables and check parts function shown in Check Point.

Table 3-3. Printer Unit Errors

Error	Cause	Corrective Action
Paper out	<ol style="list-style-type: none"> 1. No paper in ASF tray. 2. Paper was fed into printer while not aligned to right edge guide. 3. Paper stops before reaching PE sensor. Or paper is not being fed. 4. ASF is not properly assembled. 	<ol style="list-style-type: none"> 1. Set paper in tray. 2. When paper has stopped midway through route, turning power off and back on will eject the paper. If paper is not ejected, use the panel switch to eject paper. 3. Clean LD Roller and Retard Roller. 4. Align phase of Clutch Gear, Paper Back Cam and Paper Back Support Lever inside ASF.
Ink low / Ink out	<ol style="list-style-type: none"> 1. Little ink is left in ink cartridge. 2. Ink consumption has reached 100%. 	<ol style="list-style-type: none"> 1. Prepare a new ink cartridge for installation. 2. Replace ink cartridge.
Ink cartridge error	<ol style="list-style-type: none"> 1. Ink cartridge CSIC data cannot be read or written. 2. CSIC Board or electrode inside Carriage Unit contacting the CSIC Board has failed. 	<ol style="list-style-type: none"> 1. Replace ink cartridge. 2. Replace Carriage Unit.
No Ink cartridge	<ol style="list-style-type: none"> 1. Ink cartridge not yet installed, or out of place. 	<ol style="list-style-type: none"> 1. Properly install ink cartridge.
Paper jam	<ol style="list-style-type: none"> 1. During paper feed, paper remaining near PE Sensor cannot be ejected. 2. Platen gap is not properly adjusted. 	<ol style="list-style-type: none"> 1. Press the B/W or color copy button and remove the paper. Or open the printer cover and remove the paper by hand. 2. Adjust platen gap properly. (See " ADJUSTMENT", page 67)

Table 3-3. Printer Unit Errors

Error	Cause	Corrective Action
Maintenance error	<ol style="list-style-type: none"> 1. Total ink discharge quantity has exceeded set value due to cleaning or flushing. 	<ol style="list-style-type: none"> 1. After replacing Waste Ink Pad, reset the protection counter. (See "Disassembly/Assembly", page 52 and See " ADJUSTMENT", page 67)
Fatal error	<ol style="list-style-type: none"> 1. Carriage will not operate properly by external force. 2. PF Motor does not move by prescribed amount during PF Motor operation. 3. Head Hot Error has been generated. 	<ol style="list-style-type: none"> 1. Check the following parts and replace if failed: <ul style="list-style-type: none"> • CR Motor • Linear Scale • CR Encoder 2. Check the following parts and replace if failed: <ul style="list-style-type: none"> • PF Motor • Rotary Scale • PF Encoder 3. Replace Printhead.



- When paper has become jammed, pull it out from the Stacker side. At that time, if the paper will not come out easily, do not pull on it with strong force. Doing so can dislodge the upper guide.
- When a paper jam has occurred at ASF, remove the paper a little at a time rather than by a single motion. Strong force can damage the mechanism.



Table 3-4. Printer Mechanism Repair

Problem	Condition	Cause	Check Point	Corrective Action
Paper feed abnormal	Paper does not feed	LD Roller and Retard Roller are worn	1. Check for adherence of micropearl or oils on surfaces of LD Roller and Retard Roller.	1. Use a cleaning sheet to clean LD Roller and Retard Roller. (1) Set cleaning sheet inverted inside the ASF Unit. (2) Start paper feed with 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 surface of the alcohol dampened cloth in the tray facing the LD Roller (or Retard Roller). (2) Start paper feed while firmly holding upper edge of card stock. (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.
		ASF Unit operation is abnormal	1. Check that the Paper Back Cam, Clutch Gear and Paper Back Support Lever at the right side of the ASF Unit are not out of phase. 2. Check that Compression Spring 2.9 has not disconnected from the Hopper.	1. Align phase of Paper Back Cam, Clutch Gear and Paper Back Support Lever. 2. Install Compression Spring 2.9 properly.
		PE Sensor/PE Lever not operating properly	1. Check that the PE Sensor connector has not disconnected from sensor or Main Board. 2. Check that Torsion Spring 0.28 is properly connected to PE Lever. 3. Check for damaged PE Sensor.	1. Connect the PE Sensor connector to sensor and Main Board CN4. 2. Connect Torsion Spring 0.28 and PE Lever properly. 3. Replace PE Sensor.
	Several sheets of paper are fed at the same time	Retard Roller operation is abnormal	1. Check that Extension Spring 2.25 pulling on the Retard Roller has not become disconnected. 2. Check for disconnected Retard Roller.	1. Connect Extension Spring 2.25 properly. 2. Install Retard Roller properly.
Paper eject abnormal	Paper jams during eject	Change Lever not operating properly	1. Check that Extension Spring 1.47 pulling on the Change Lever has not become disconnected.	1. Connect Extension Spring 1.47 properly.
		Paper Eject Roller not operating properly	1. Check that Paper Eject Roller is rotating properly.	1. Properly align teeth of gears driving the Paper Eject Roller.

Table 3-4. Printer Mechanism Repair

Problem	Condition	Cause	Check Point	Corrective Action
Printer stops during initialization or during printing	Ink Out Error is displayed	Ink has been cut off	1. Check for ink remaining in the ink cartridge.	1. Replace ink cartridge.
	No Ink Cartridge Error is displayed	Ink cartridge is not installed	1. Check that the ink cartridge is completely installed in the Carriage Unit. 2. Check that the ink cartridge is not floating up out of place. 3. Check for broken hooks at front/back of ink cartridge.	1. Install the ink cartridge completely. 2. Install the ink cartridge properly. 3. Replace ink cartridge.
	Ink Cartridge Error is displayed	The ink cartridge is damaged	1. Check for disconnected CSIC Board. 2. Check for missing tip of CSIC Board.	1. Replace ink cartridge. 2. Replace ink cartridge.
Carriage operation abnormal	Carriage operation is abnormal during printing	Carriage movement is not smooth	1. Check for an obstacle in the Carriage route. 2. Check for smooth Carriage movement when moved by hand. 3. Check Timing Belt tension.	1. Remove the obstacle. 2. Clean CR Guide Shaft. Lubricate parts. 3. Replace Compression Spring 26.46 of Driven Pulley Holder.
Printer stops during initialization	Printer Error is displayed	Paper Eject Frame not installed properly	1. Check that the hook securing the Paper Eject Frame has not become disconnected.	1. Install Paper Eject Frame properly.
		CR Motor not operating properly	1. Check for disconnected CR Motor connector. 2. Check that CR Motor coil resistance is as specified.	1. Connect CR Motor connector to Main Board CN14. 2. Replace CR Motor.
		PF Motor not operating properly	1. Check for disconnected PF Motor connector. 2. Check that PF Motor coil resistance is as specified.	1. Connect PF Motor connector to Main Board CN13. 2. Replace PF Motor.
		Linear Scale not operating properly	1. Check that the Linear Scale is traveling between the CR Encoder. 2. Check for dirt on Linear Scale. 3. Check for damaged Linear Scale.	1. Enable Linear Scale to pass between CR Encoder. 2. Completely clean dirt from Linear Scale. 3. Replace Linear Scale.
		CR Encoder not operating properly	1. Check that Encoder FFC is connected to CR Encoder Board. 2. Check for paper bits and dust attached to CR Encoder. 3. Check for damaged Encoder FFC. 4. Check for damaged CR Encoder.	1. Connect Encoder FFC to CR Encoder Board. 2. Remove paper bits and dust attached to CR Encoder. 3. Replace Encoder FFC. 4. Replace Carriage Unit.

Table 3-4. Printer Mechanism Repair

Problem	Condition	Cause	Check Point	Corrective Action
Printer stops during initialization	Printer Error is displayed	Rotary Scale not operating properly	1. Check that the Rotary Scale is traveling between the PF Encoder. 2. Check for dirt on Rotary Scale. 3. Check for damaged Rotary Scale.	1. Enable Rotary Scale to pass between PF Encoder. 2. Completely clean dirt from Rotary Scale. 3. Replace Rotary Scale.
		PF Encoder not operating properly	1. Check that Encoder FFC is connected to PF Encoder Board. 2. Check for paper bits and dust attached to PF Encoder. 3. Check for damaged Encoder FFC. 4. Check for damaged PF Encoder.	1. Connect Encoder FFC to PF Encoder Board. 2. Remove paper bits and dust attached to PF Encoder. 3. Replace Encoder FFC. 4. Replace PF Encoder.
		Head FFC not operating properly	1. Check for disconnected Head FFC. 2. Check for damaged Head FFC.	1. Firmly connect Head FFC to Main Board CN8 and CN9 and to Printhead. 2. Replace Head FFC.
		Head Hot Error generated	1. Check that ink is emitted from all nozzles.	1. Replace Printhead.
Cannot print normally	Carriage moves properly but printing is not normal	Ink Cartridge not operating properly	1. Install a new ink cartridge and test printing.	1. Replace ink cartridge.
		Head FFC not connected properly	1. Check that Head FFC is firmly connected to Main Board CN8 and CN9.	1. Connect Head FFC firmly.
		Cleaner Blade not operating properly	1. Check for debris attached to Cleaner Blade.	1. Clean or replace the Cleaner Blade.
		FFC internal component connections have deteriorated	1. Use a tester to check the Head FFC.	1. Replace Head FFC.
		Printhead not operating properly	1. Alternate cleaning and test printing several times.	1. If condition does not improve after cleaning, replace Printhead.

Table 3-4. Printer Mechanism Repair

Problem	Condition	Cause	Check Point	Corrective Action
Printing is abnormal	Improper printing occurs only with a specific dot	Printhead surface is dirty (dot is missing)	1. Alternate cleaning and test printing several times.	1. Clean Printhead surface with a cotton swab.
		Capping absorbent material is touching Printhead surface	1. Check for deformed or damaged capping absorbent material.	1. Replace Ink System Unit.
		Head FFC not operating properly	1. Check for damaged Head FFC.	1. Replace Head FFC.
		Printhead not operating properly	1. Alternate cleaning and nozzle check several times.	1. If condition does not improve after cleaning, replace Printhead.
	Dot is sometimes missing	Printhead surface is dirty (dot is missing)	1. Alternate cleaning and nozzle check several times.	1. Clean Printhead surface with a cotton swab.
		Ink Cartridge not operating properly	1. Install a new ink cartridge and perform nozzle check.	1. Replace ink cartridge.
		Head FFC internal component connections have deteriorated	1. Use a tester to check the FFC.	1. Replace Head FFC.
		Printhead not operating properly	1. Repeat cleaning several times, then perform nozzle check.	1. If condition does not improve after cleaning, replace Printhead.
	A black spot or dot is printed	Head FFC is not connected	1. Check that FFC is firmly connected to each board and Carriage Unit.	1. Connect FFC firmly.
		Printhead not operating properly	1. Check connection of Head FFC to Printhead.	1. If there is no problem with Head FFC to Printhead connection, replace Printhead.
	Vertical lines do not stand up straight	Bi-D is not adjusted	1. Check that Bi-D adjustment has been done properly.	1. Perform Bi-D adjustment. (See " ADJUSTMENT", page 67)

Table 3-4. Printer Mechanism Repair

Problem	Condition	Cause	Check Point	Corrective Action
Printing is abnormal	White line appears in output data	Dirt has become attached to CR Guide Shaft	1. Check for dirt attached to surface of CR Guide Shaft.	1. Clean surface of CR Guide Shaft with soft dry cloth.
		PF Roller not operating properly	1. Check for dirt on PF Roller. 2. Check for damaged PF Roller.	1. Carefully clean surface of PF Roller with soft brush. 2. Replace PF Roller.
		Ink Cartridge not operating properly	1. Install a new ink cartridge and test printing.	1. Replace ink cartridge.
		Carriage Slide not moving properly	1. Check that sufficient grease remains on carriage slide parts at back of main frame.	1. Clean main frame carriage slide parts then lubricate with specified quantify of G-26. (See "MAINTENANCE", page 79)
		Platen Gap not set properly	1. Check that platen gap adjustment has been done properly.	1. Adjust platen gap. (See " ADJUSTMENT", page 67)
		Gear is damaged	1. Check for abnormality in gears between pump mechanism and ASF mechanism.	1. Replace damaged parts.
		Dot jet direction is angled due to dirt on Printhead surface	1. Alternate cleaning and test printing several times. 2. Check for debris on Cleaner Blade.	1. Clean with cotton swab. 2. Clean or replace Cleaner Blade.
		Printhead not operating properly	1. Repeat cleaning several times, then perform test print.	1. Replace Printhead.
		CR Guide Shaft not operating properly	1. Check that CR Guide Shaft is firmly installed in specified position. 2. Check for damage on surface of CR Guide Shaft.	1. Reassemble CR Guide Shaft. 2. Replace CR Guide Shaft.
Ink not absorbed or waste ink abnormal	Ink is not flowing from Printhead to Cap or from Cap to Ink Tube	Pump tube is closed	1. Visually check tube.	1. Replace Ink System Unit
		Cap is dirty or damaged.	1. Check for foreign object attached to Cap or damaged Cap.	1. Remove foreign object in Cap with cotton swab. If Cap is damaged, replace Ink System Unit.
		Tube is disconnected from Cap lower section	1. Visually check for disconnection of tube from Cap lower section.	1. Connect tube properly.
		Tube slide up not functioning properly	1. Check for installation of 2 compression springs on tube assembly.	1. Replace Ink System Unit



3.3 Trouble Shooting related to Scanner

This section describes repair / service for Scanner mechanism. Trouble Shooting is divided by unit level based on superficial phenomenon when trouble happens. Referring to Table 3-6, find out each phenomenon and check according to referring list.

Table 3-5. Scanner part error for user level

Error	Cause	Corrective Action
Scanner unit open	1. Scanner cover is open.	1. Close scanner unit.
Command error	1. Undefined command detected.	1. Receive a defined command or turn on power again.
Scanner fatal error	1. Power was turned on with Scanner Lock not cancelled. 2. Lamp has gone out.	1. Cancel Carriage Lock and turn on power again. 2. Replace Scanner Carriage Unit.

Table 3-6. Trouble phenomenon and reference table

Phenomenon	Trouble contents	Reference table
Machine does not operate even though power is on.	Machine does not initialize.	Table 3-7
“Fatal Error” is generated. Because the declared error was generated, recovery cannot occur by turning on power again.	Fluorescent lamp does not light.	Table 3-8
	Carriage Unit operates but error is displayed.	Table 3-9
	Carriage Unit does not operate.	Table 3-10
Image is not scanned in cleanly.	Image does not scan cleanly.	Table 3-11
“Communications Error” is generated. The declared error is generated and “Communications Error” is generated when communication with the host is attempted again.	USB interface error.	Table 3-12

Table 3-7. Scanner part does not operate initialization.

Cause	Check Point	Resolution method
Connector is removed.	1. Check all connectors for disconnection. 2. Check Main Board for damage.	1. Connect any disconnected connectors. 2. Replace Main Board.

Table 3-8. Fluorescent Lamp Does Not Light

Cause	Check Point	Resolution method
Scanner FFC is disconnected.	1. Check for disconnection of FFC from Scanner Carriage or Main Board CN1.	1. Connect FFC to Scanner Carriage and Main Board CN1.
CCD Module connector is disconnected.	---	1. Replace Scanner Carriage.
Fluorescent Lamp is not firmly connected to connector on Inverter Board.	---	1. Replace Scanner Carriage.
Lamp has failed.	1. Check whether lamp will light.	1. Replace Scanner Carriage.
Inverter Board has failed.	---	1. Replace Scanner Carriage.
Main Board has failed.	1. Check Main Board for damage.	1. Replace Main Board.

Table 3-9. Carriage Unit Operates But Error Is Displayed

Cause	Check Point	Resolution method
Scanner HP Sensor has failed.	1. Check for failure of Scanner HP Sensor.	1. Replace Scanner HP Sensor.
Main Board has failed.	1. Check Main Board for damage.	1. Replace Main Board.

Table 3-10. Carriage Unit Does Not Operate

Cause	Check Point	Resolution method
Scanner Motor connector is disconnected.	1. Check for disconnection of Scanner Motor connector from Main Board CN10.	1. Connect Scanner Motor connector to Main Board CN10.
Carriage transfer mechanism not operating properly.	1. Check that grease is properly applied.	1. Apply grease to specified areas. (See "MAINTENANCE", page 78)
	1. Check that Carriage Unit moves smoothly with Scanner Motor disconnected.	1. Check Carriage transfer mechanism. Replace appropriate parts or disassemble and reassemble.
Scanner Motor not operating properly.	1. Disconnect Scanner Motor connector CN10 and use a tester to check coil resistance between motor Pins 1-2 or between Pins 3-4. (See Table 3-13, page 31)	1. Replace Scanner Motor.
Main Board has failed.	1. Check Main Board for damage.	1. Replace Main Board.

Table 3-11. Image Does Not Scan Cleanly

Cause	Check Point	Resolution method
Originals glass is dirty.	1. Check for dirt or smudges on originals glass.	1. Clean originals glass. (See "MAINTENANCE", page 77)
Mirror in Carriage Unit is dirty.	---	1. Replace Scanner Carriage Unit.
CCD Module has failed.	---	1. Replace Scanner Carriage Unit.
Main Board has failed.	1. Check Main Board for damage.	1. Replace Main Board.



Table 3-12. USB Interface Error

Cause	Check Point	Resolution method
Host PC does not officially support Windows 98.	1. Is "Universal Serial Bus Controller" activated in Windows "My Computer" → "Properties" → "Device Manager"?	1. Replace host.
Printer driver is not installed properly.	1. Is driver mistakenly installed in "Other Devices" in Windows "My Computer" → "Properties" → "Device Manager"?	1. Delete the driver and reinstall according to operation manual instructions.
USB Cable has failed.	1. Does USB cable operate properly after being replaced?	1. Replace USB cable.
Main Board has failed.	1. Check for damaged Main Board.	1. Replace Main Board.

3.4 Motor and Sensor trouble Shooting

Table 3-13. Motor resistance and check point

Type	Motor name	Location	Check Point	Resistance
Printer	CR motor	CN13 (Main board)	Pins 1 & 2	27.1 $\Omega \pm 10\%$
	PF motor	CN14 (Main board)	Pins 1 & 2	22.3 $\Omega \pm 25\%$
Scanner	Scanner motor	CN10 (Main board)	Pins 1 & 2 Pins 3 & 4	26 $\Omega \pm 7\%$

Table 3-14. Sensor Check

Type	Sensor name	Location	Signal level	Sensor status
Printer	PE sensor	CN4 Pins 1 & 2 Pins 1 & 3	Off :less than 0.7V	Paper out
			On :2.4V and over	Paper in
Scanner	Scanner carriage HP sensor	CN2 Pins 1 & 3 Pins 2 & 3	Off :less than 0.7V	Outside HP range
			On :2.4V and over	Within HP range

CHAPTER

4

DISASSEMBLY AND ASSEMBLY

4.1 Overview

This chapter explains steps used for disassembly/assembly of the printer. For steps that are not described here, it is possible to assemble the disassembled unit and components by reversing the disassembly steps.

- **Warning**
Explanations of conditions that could result in injury or death if caution is neglected are presented after the “**WARNING**” symbol.
- **Caution**
Explanations of cautionary items that need attention prior to a disassembly/assembly step are presented after the “**CAUTION**” symbol.
- **Check point**
Hints related to disassembly steps are presented after the “**CHECK POINT**” symbol.
- **Reassembly**
When reassembly steps differ from simply reversing disassembly steps, those steps are presented after the “**REASSEMBLY**” symbol.
- **Adjustment**
When an adjustment is required following disassembly/assembly, that information is presented after the “**ADJUSTMENT**” symbol.

See the Disassembly/Assembly Chart in the Appendix when it is necessary to disassemble units and components not covered in this chapter.

Be sure to read the following cautions before starting.

4.1.1 Precautions

Before engaging in disassembly/assembly of the printer, be sure to read the following “Warnings” and “Cautions.”



- Before engaging in disassembly/assembly of the printer, be sure to unplug the power cable. However, if application of power cannot be avoided because operations such as voltage measurements are needed, follow the steps described in this manual while exercising caution to avoid electric shock.
- Wear protective goggles to guard eyes from ink. If ink does get into the eyes, wash eyes with clean water and get a medical examination.
- To prevent injury accidents, wear gloves while performing disassembly/assembly.
- If ink gets onto the skin, wash with soap and water. If the skin becomes inflamed, get a medical examination.
- To protect the microprocessor and circuits, use a static electricity discharge device such as a wrist strap when touching internal components, and perform operations carefully.
- To prevent powder combustion explosion and fire of consumable material components, absolutely do not bring them near flames or throw them into a fire.
- If developing fluid or oil adheres to skin or clothing, after removing as much substance as possible with a dry cloth, wash with water.
- When assembling, be sure to confirm that the ink tube is properly set in position. If it is not properly set, it could result in an ink leak.



- Avant de commencer, assurez vous que l'imprimante soit éteinte et que le cordon d'alimentation soit débranché.
- Veillez à jeter les piles usagées selon le règlement local.



- Only use recommended tools for disassembly, assembly and adjustment.
- Maintain specified torque when tightening screws.
- Use specified lubricating oil and adhesives.
- When disassembling the printer, perform specified adjustments.

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4.1.2 Specified Tools

To avoid damaging the printer, use only specified tools.

Table 4-1. Specified Tools

Name	Supplier	Parts No.
Phillips Screw Driver (No.1)	EPSON	1080530
Phillips Screw Driver (No.2)	EPSON	1080532
Tweezers	EPSON	1080561
Acetate Tape	EPSON	1003963
Box Driver (5.5mm diagonal)	EPSON	1080584
M3 Wrench (5.5mm)	EPSON	-
Round-nosed pliers	EPSON	-
Tension gauge (2000cN)	EPSON	1213123
Sonic Tension Meter	EPSON	1231678

4.1.3 Service Dispatch Standard

If the printer is to be returned to the user when printer repairs are complete, perform a final check by following the checklist in Table 4-2.

Table 4-2. Check List

Classification	Part	Check item	Check column
Printer unit	Self test	Operation is normal?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	On line test	Print is normally done?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Printhead (nozzle check pattern print)	Ink gets out normally from all the nozzles?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	CR mechanism	CR smoothly operates?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		CR makes abnormal sound during its operation?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Paper loading mechanism	Paper is smoothly loaded?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Paper jam does not happen?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Paper does not warp during paper loading?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Multiple papers are not fed?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Abnormal sound is not heard during paper loading?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		There is no alien substance at paper route?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Scanner unit	Mechanism	Glass surface is not dirty?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Alien substance is not mixed in the CR movement area?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	CR mechanism	CR smoothly operates?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		CR operates together with scanner unit?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		CR makes abnormal sound during its operation?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Lamp	Lamp normally turns on and white reflection test is done near home position?	<input type="checkbox"/> OK / <input type="checkbox"/> NG

Table 4-2. Check List

Classification	Part	Check item	Check column
On line test	On line test	Operation is normal?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Copy	Copy	Local copy is normal?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Adjustment	Designated adjustment items	Adjustment condition is suitable?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Lubrication	Designated lubrication items	Lubrication is done at designated place?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Lubrication volume is suitable?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Function	Firmware version	The newest version	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Dispatch packing	Ink cartridge	Ink cartridge is normally installed?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Waste Ink Pads	Remained life of waste ink pads are sufficient?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Protection during distribution	Printer CR is in the cap position?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Scanner CR is locked?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Others	Attached goods	All of attached goods from users are packed?	<input type="checkbox"/> OK / <input type="checkbox"/> NG

4.2 Disassembly

The following describes steps for separating the Scanner Unit and Printer Unit of the machine. The flowchart below shows disassembly steps.

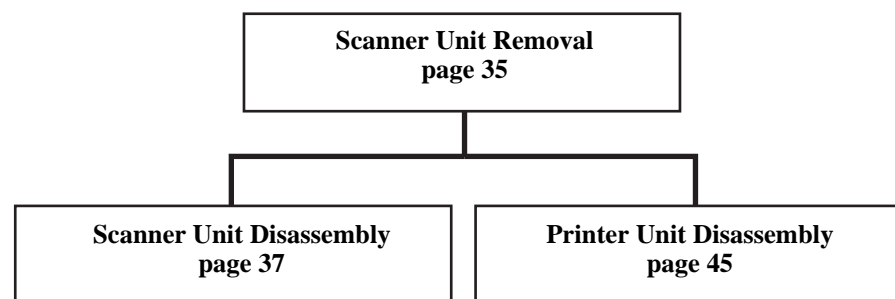


Figure 4-1. Flowchart 1

4.2.1 Scanner Unit Removal

1. Remove 1 screw (C.B.P 3x8) securing the FFC cover.

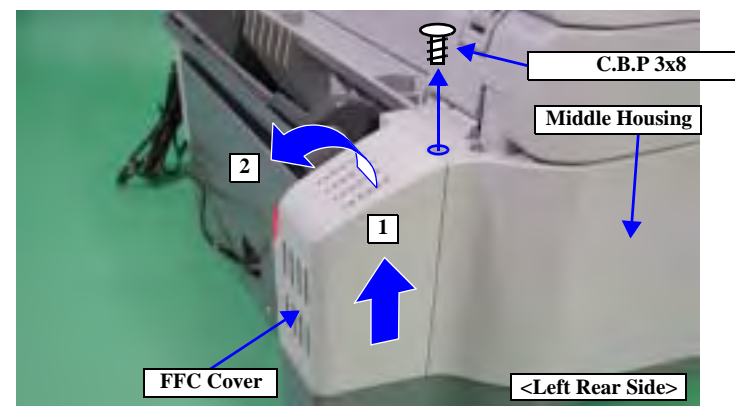


Figure 4-2. Scanner Unit Removal 1

NOTE: Screw tightening torque: 0.59 +/- 0.1 Nm

2. Follow the order shown in Figure 4-2 to remove the FFC Cover from the Middle Housing.

3. Pulling of the tab of Pressing Plate,FFC from the pin of main PCB shield cover, remove the plate.

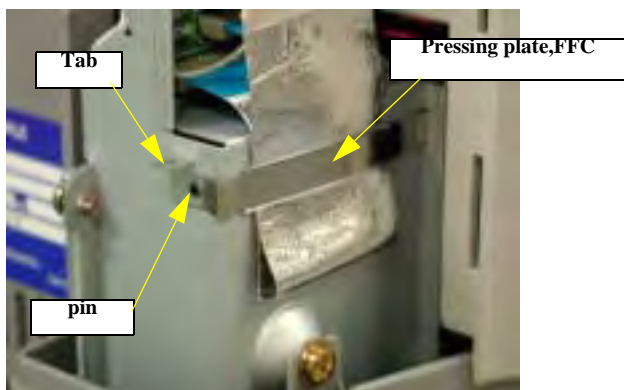


Figure 4-3. Pressing Plate,FFC

4. Removing one screw (C.B.S. 3x6) fixing the grounding cable, and remove the cable.

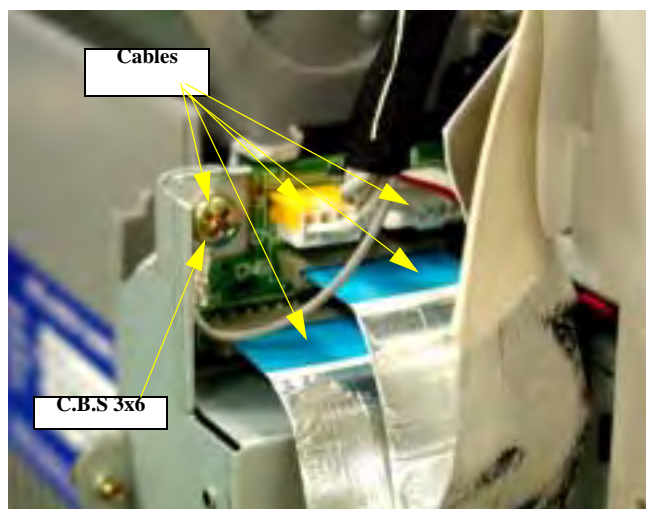


Figure 4-4. Scanner Unit Removal 2

NOTE: Screw tightening torque: 0.49 +/- 0.1 Nm

5. Remove 4 cables from the main board.
6. Remove 2 screws (C.B.P. 3x8) securing the Scanner Unit.

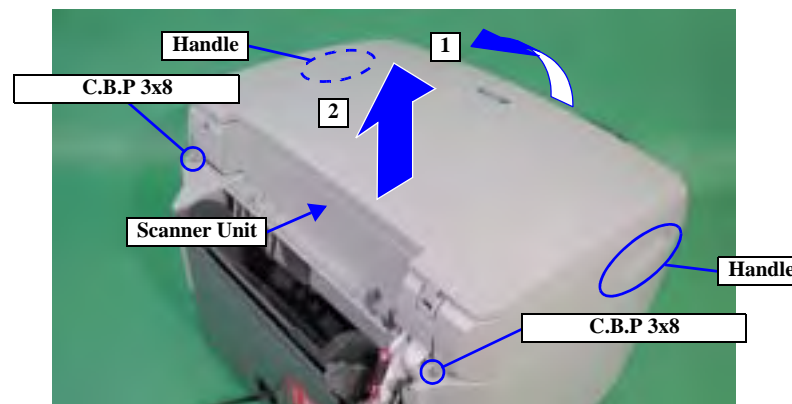


Figure 4-5. Scanner Unit Removal 3

NOTE: Screw tightening torque: 0.61 +/- 0.1 Nm

7. Grasp the machine by the left and right handles, then follow the order shown in Figure 4-5 to remove the scanner Unit from the Printer Unit.



When installing the Scanner Unit, be careful not to damage the cable when placing it onto the Printer Unit.



When installing the Scanner Unit onto the Printer Unit, insert the wide FFC into B of the Ferrite Core as shown in Figure 4-6.

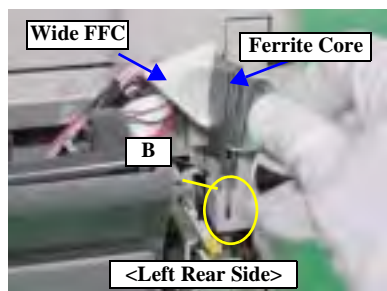


Figure 4-6. FFC Installation

4.3 Scanner Unit Disassembly

This section describes disassembly steps for the Scanner Unit. The Scanner Unit Disassembly Step Flowchart is shown below.

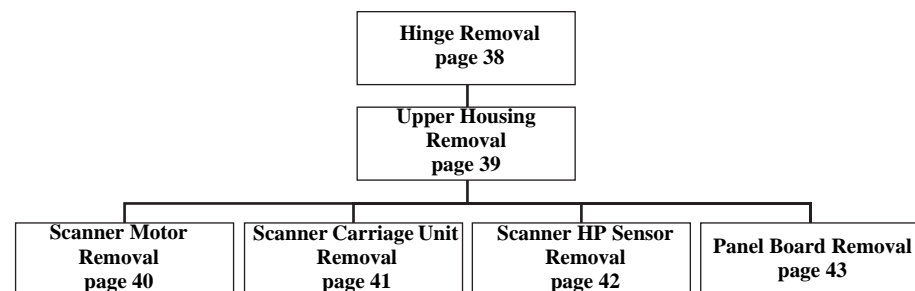


Figure 4-7. Flowchart 2



Perform disassembly/assembly of the Scanner Unit in a place free from debris and dust. If possible, performance of operations in a clean room or on a clean bench is preferred.

4.3.1 Hinge Removal

1. Remove the Scanner Unit. (See Section 4.2.1)
2. Follow the order shown in Figure 4-8 to remove the Originals Cover from the Scanner Unit.

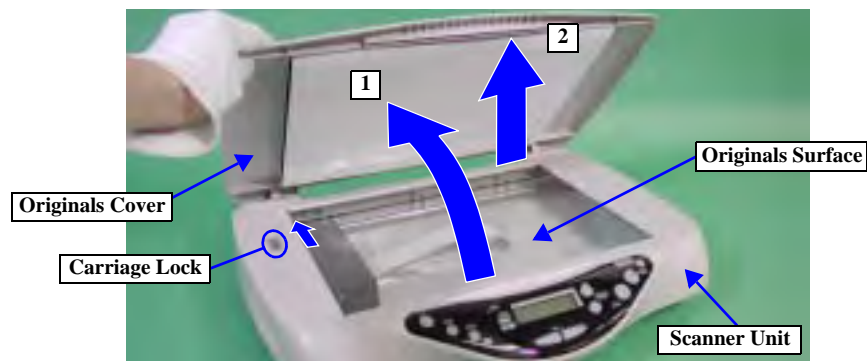


Figure 4-8. Hinge Removal 1

3. Release the Carriage Lock.
4. Remove 4 screws (C.B.P 3x8: 2, C.F.P 3x8: 2) securing the Hinge, then remove the Hinge from the Scanner Unit.

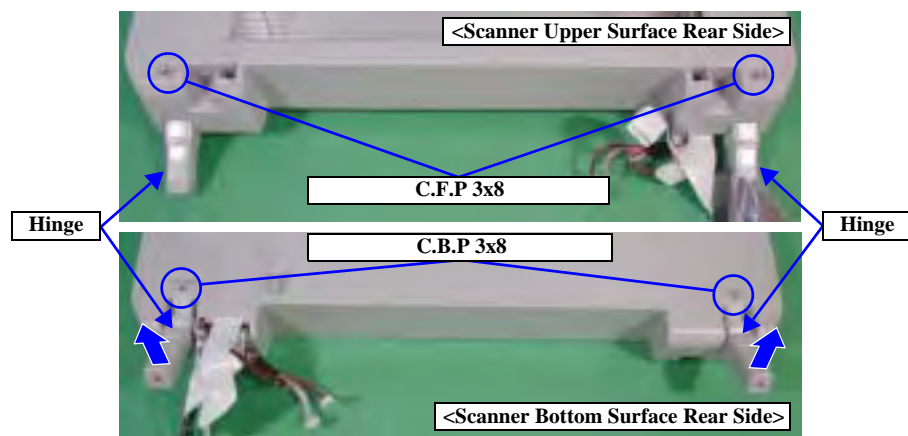


Figure 4-9. Hinge Removal 2

CAUTION



When removing the Hinge, do not spread marks or dirt on the surface of the originals cover. (See Figure 4-8)

NOTE: C.F.P. 3x8 screw tightening torque: 0.61 +/- 0.1 Nm

4.3.2 Upper Housing Removal

1. Remove Hinge. (See Section 4.3.1)
2. Remove 3 screws (TBD) securing the Upper Housing.

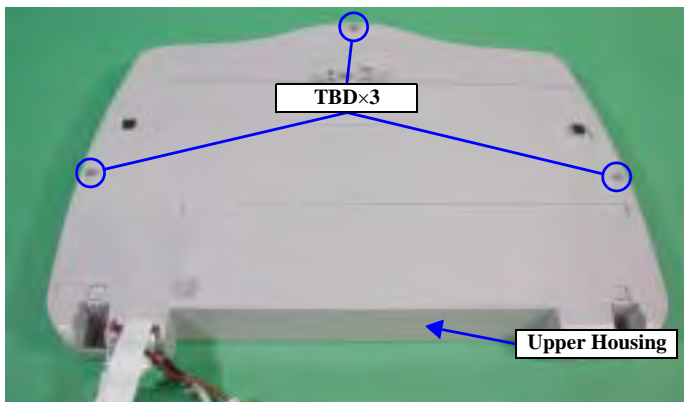


Figure 4-10. Upper Housing Removal 1

3. Follow the order shown in Figure 4-11 and use a common screwdriver to release hooks securing the Upper Housing and Lower Housing in 2 places.
4. Lift the Lower Housing from the hook locations.

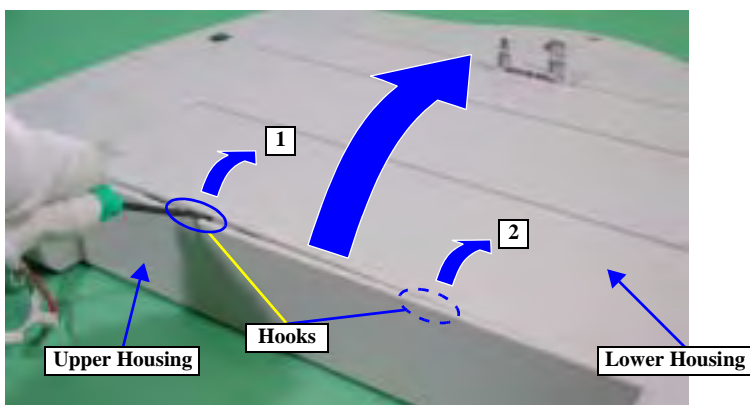


Figure 4-11. Upper Housing Removal 2

5. Remove the panel FFC from the Panel Board, then remove the Upper Housing.

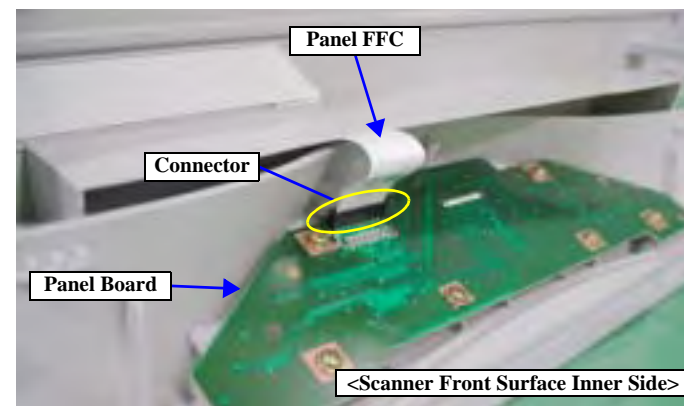


Figure 4-12. Upper Housing Removal 3

CAUTION



When removing the Upper Housing, perform the operation in a clean environment so that debris and dust will not fall inside the scanner. Use of a clean bench is preferred.

4.3.3 Scanner Motor Removal

1. Remove the Upper Housing. (See Section 4.3.2)
2. Peel off the acetate tape and release the Scanner Motor Cable.
3. Pull the Scanner Motor Cable in the direction of arrow A from the slot in the Lower Housing, then release it from the channel.

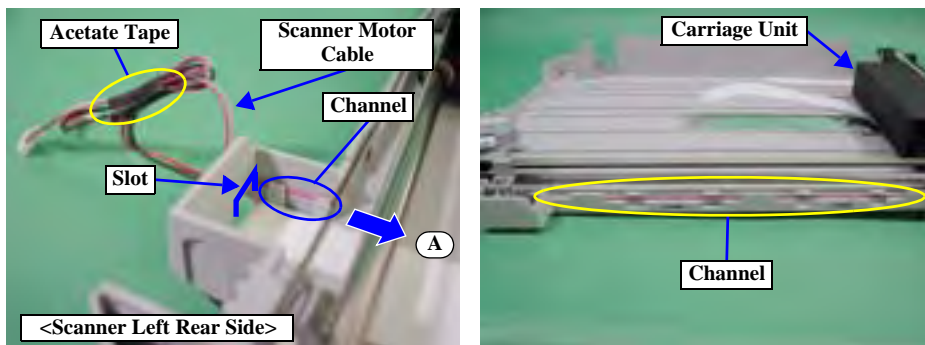


Figure 4-13. Scanner Motor Removal 1

4. Push in the Driven Pulley Securing Plate with a common screwdriver, loosen the tension of the Timing Belt, and then remove the Timing Belt from the Driven Pulley.

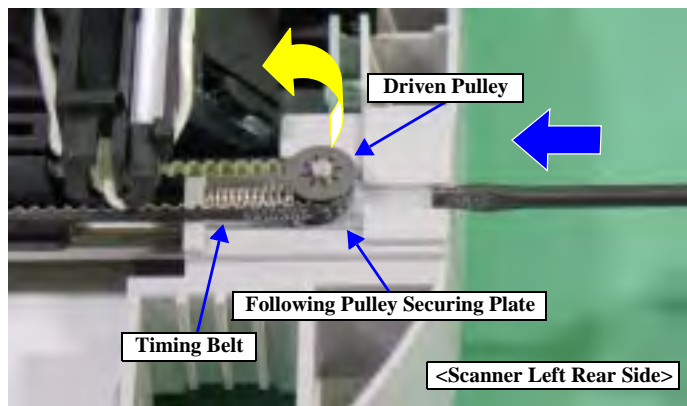


Figure 4-14. Scanner Motor Removal 2

5. Remove 3 screws (TBD) securing the Scanner Motor.
6. Lift the Scanner Motor, remove the Timing Belt from the Transmission Gear, and then remove the Scanner Motor.

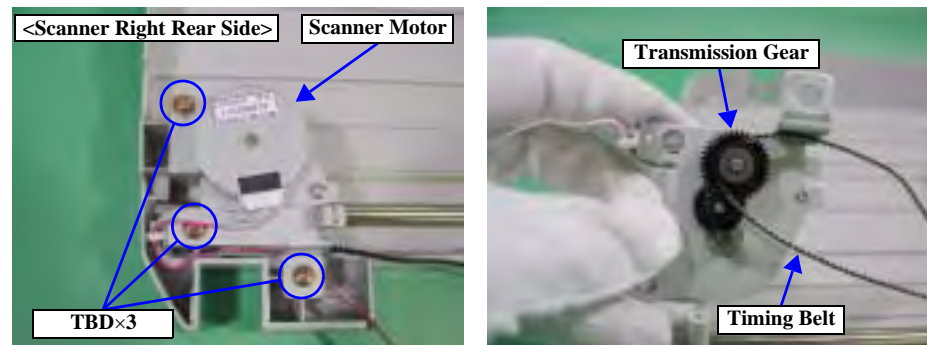


Figure 4-15. Scanner Motor Removal 3

CAUTION



When installing the Scanner Motor, install it so that the Scanner Motor Cable does not lay along the channel of the Lower Housing, because movement of the Carriage Unit could cause the Scanner Motor Cable to become entwined.

4.3.4 Scanner Carriage Unit Removal

1. Remove the Upper Housing. (See Section 4.3.2)
2. Remove the Timing Belt from the securing point on the Scanner Carriage Unit.

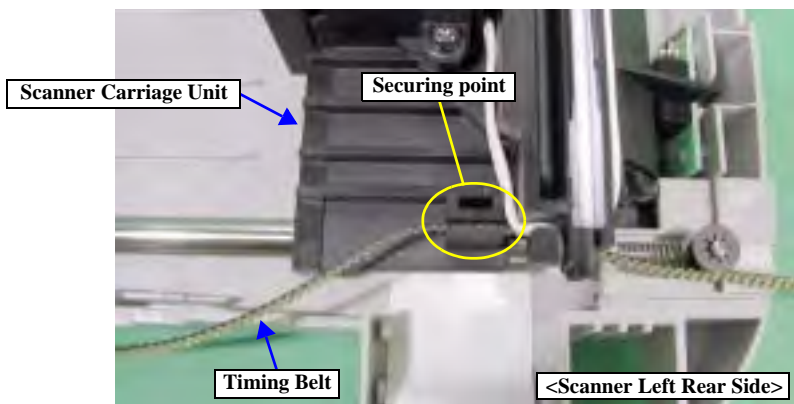


Figure 4-16. Scanner Carriage Unit Removal 1

3. Follow the order shown in Figure 4-17 to remove the Scanner Guide Shaft from the Lower Housing and Scanner Carriage Unit.

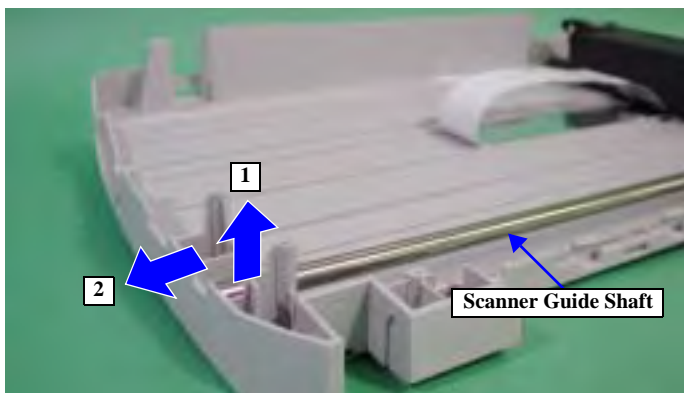


Figure 4-17. Scanner Carriage Unit Removal 2

CAUTION



When installing the Scanner Guide Shaft, be careful not to damage the Scanner Guide Shaft and the gear on the rear side of the Scanner Motor. (See Figure 4-15)

4. Remove the Ferrite Core from the FFC in the direction of arrow A.
5. Shift the Scanner Carriage Unit in the direction of arrow B, then push the FFC into the interior of the Lower Housing.

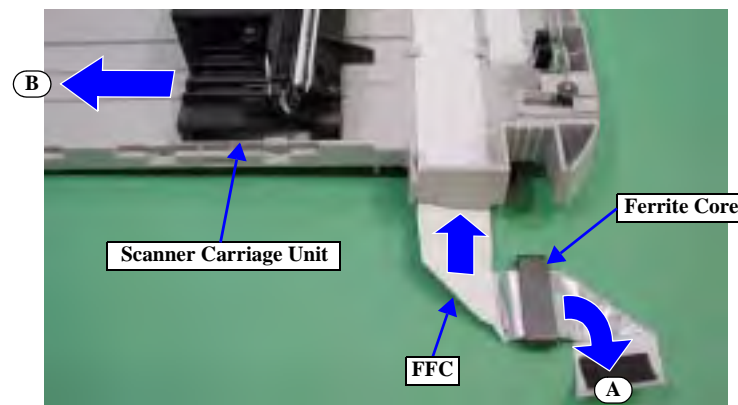


Figure 4-18. Scanner Carriage Unit Removal 3

6. While peeling from the Lower Housing the double-sided tape in 3 places on the backside of the FFC, release the FFC from hooks in 6 places and remove the Scanner Carriage Unit.

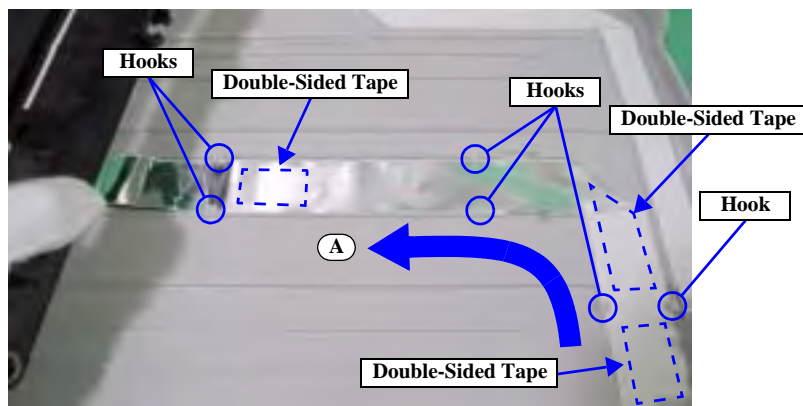


Figure 4-19. Scanner Carriage Unit Removal 4

CAUTION



When removing or installing the Scanner Carriage, be careful not to damage the FFC.

4.3.5 Scanner HP Sensor Removal

1. Remove the Upper Housing. (See Section 4.3.2)
2. Peel off acetate tape and release Scanner HP Sensor Cable.
3. Peel the Cable Sheet from Lower Housing in the direction of arrow A.

CAUTION



The Cable Sheet can easily break, so be careful when peeling it off.

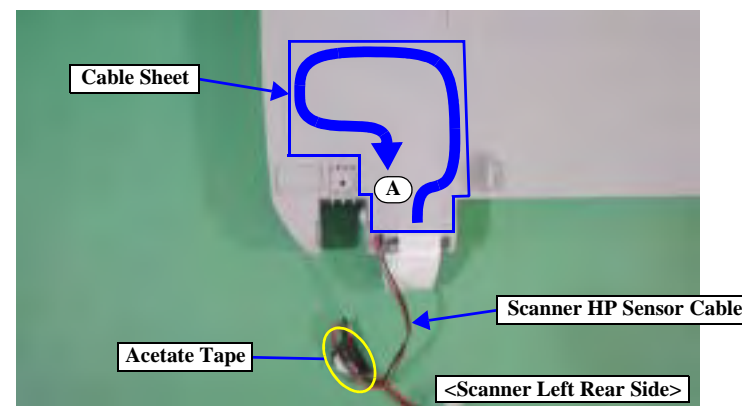


Figure 4-20. Scanner HP Sensor 1

4. Remove 1 screw (TBD) securing the Scanner HP Sensor.
5. Release the Scanner HP Sensor from hooks at 2 places, then remove it from the Lower Housing.

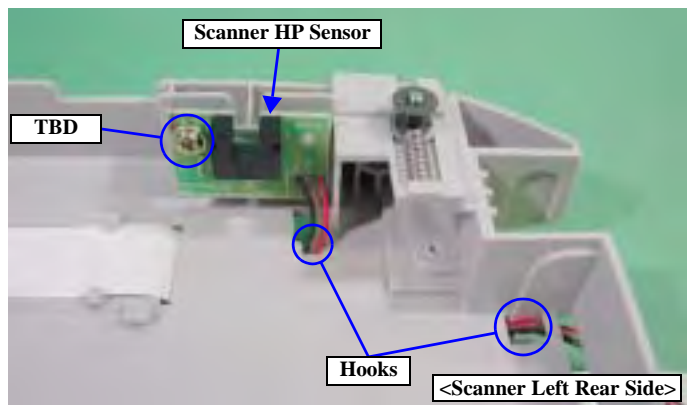


Figure 4-21. Scanner HP Sensor Removal 2



When installing the Scanner HP Sensor, secure the cable with hooks at 2 places and install the cable along the channel. When attaching the Cable Sheet, do not allow non-adhered spots or bulges.

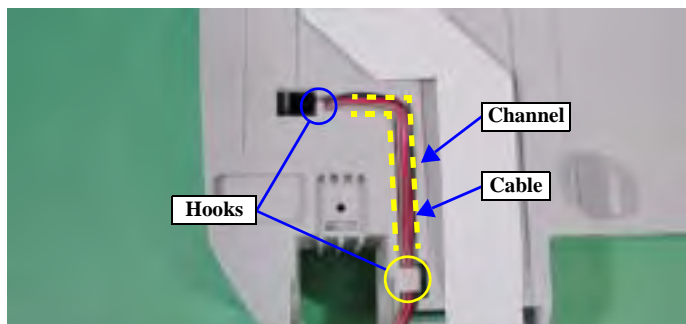


Figure 4-22. Scanner HP Sensor Installation

4.3.6 Panel Board Removal

1. Remove the Upper Housing. (See Section 4.3.2)
2. Remove 7 screws (TBD) securing the Panel Board, then remove the Panel Board.

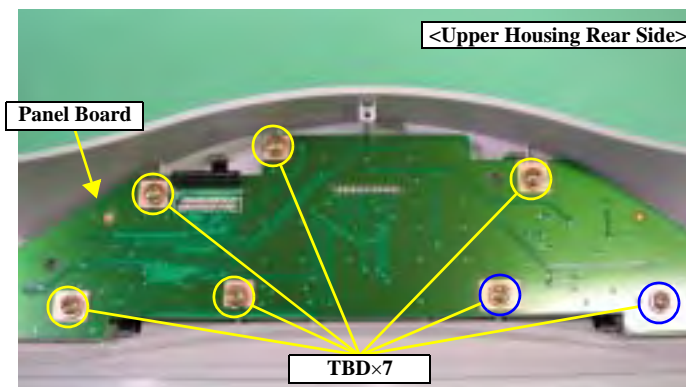


Figure 4-23. Panel Board Removal 1

3. Remove 3 Rubber Switches.

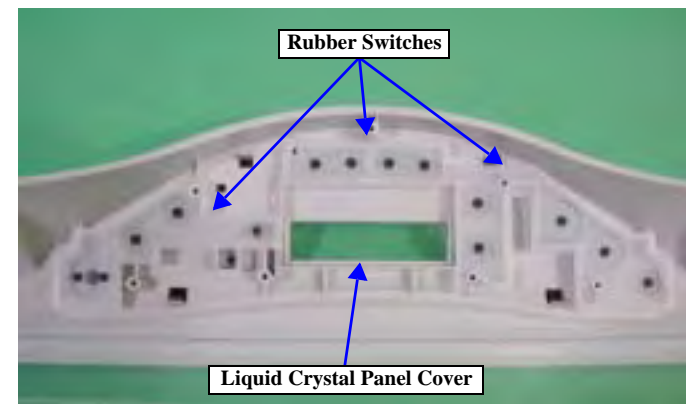


Figure 4-24. Panel Board Removal 2

CAUTION

- When removing the Panel Board, be careful not to allow debris or dust to get between the Liquid Crystal Panel and the Liquid Crystal Panel Cover.
(See Figure 4-24 concerning Liquid Crystal Panel Cover)

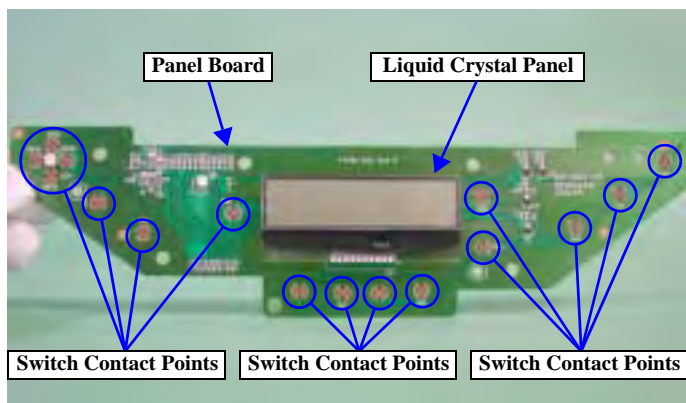


Figure 4-25. Panel Board Handling

- To avoid degrading conductivity of switch contact points, do not touch Panel Board switch contact points with bare hands.
(See Figure 4-25)

4.4 Printer Unit Disassembly

This section describes disassembly steps for the Printer Unit. The Printer Unit Disassembly Step Flowchart is shown below.

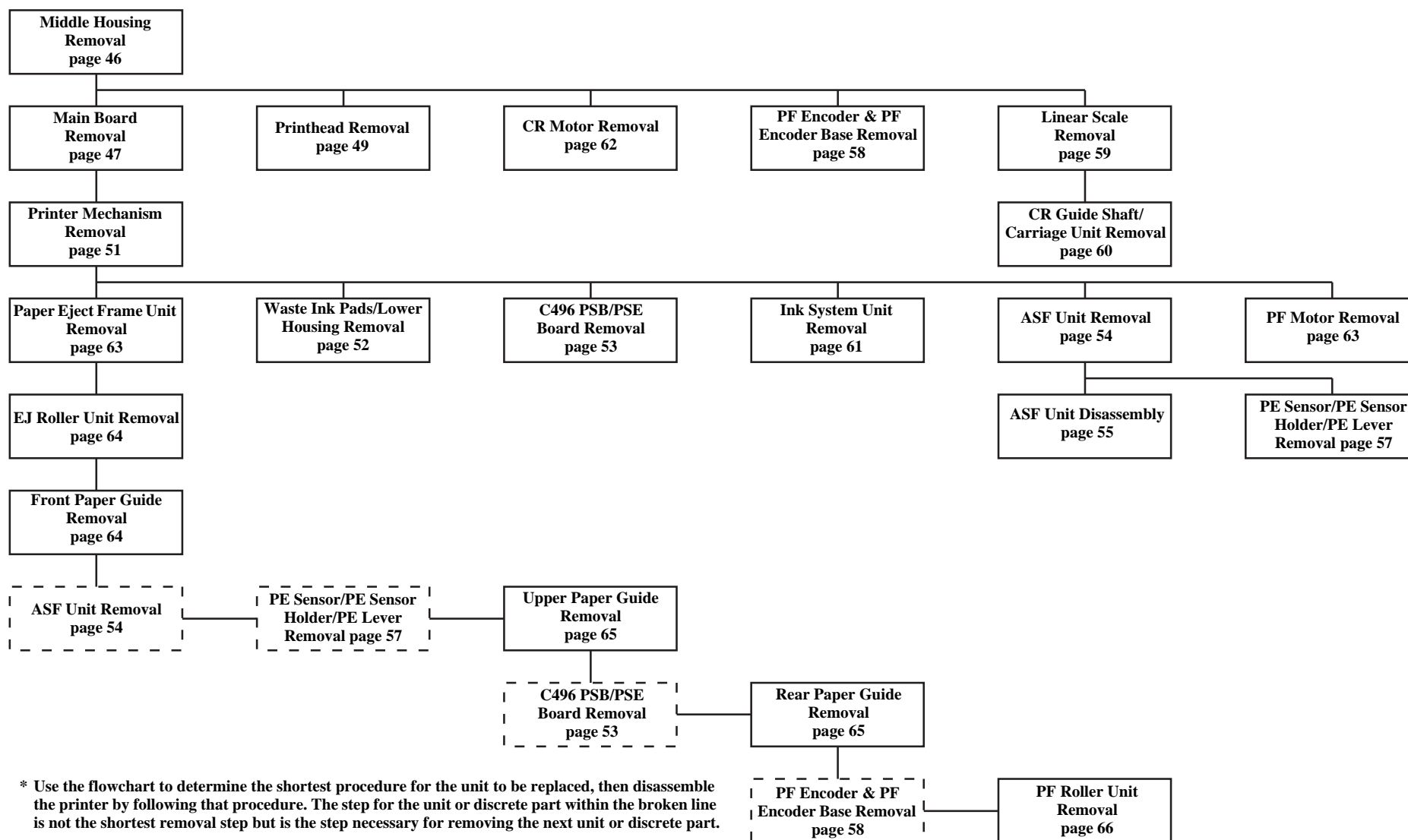


Figure 4-26. Flowchart 3

4.4.1 Middle Housing Removal

1. Remove the Scanner Unit. (See Section 4.2.1)
2. Open Stacker.
3. Remove 3 screws (C.B.P 3x10) securing Front Housing.

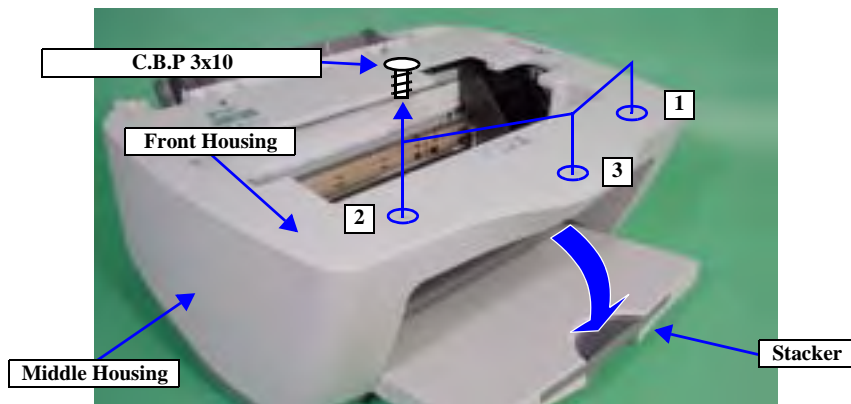


Figure 4-27. Front Housing Removal 1

NOTE: Screw tightening torque: 0.59 +/- 0.1 Nm

4. Follow the order shown in Figure 4-28 to release hooks at 4 places and remove the Front Housing from the Middle Housing.

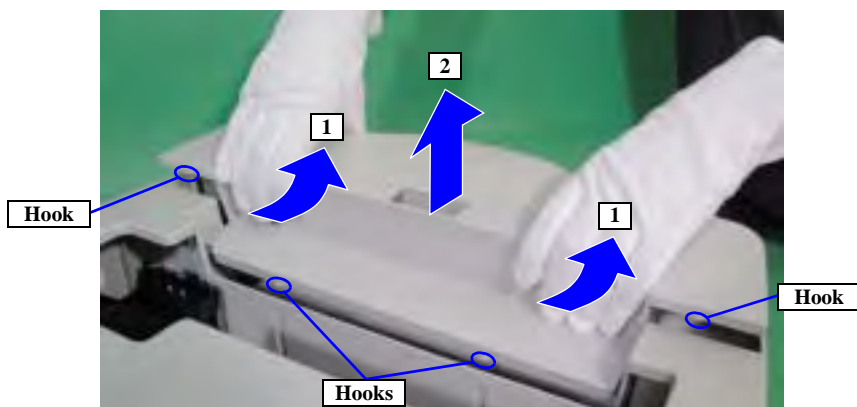


Figure 4-28. Front Housing Removal 2

5. Remove 4 screws (C.B.P 3x10) securing the Middle Housing.

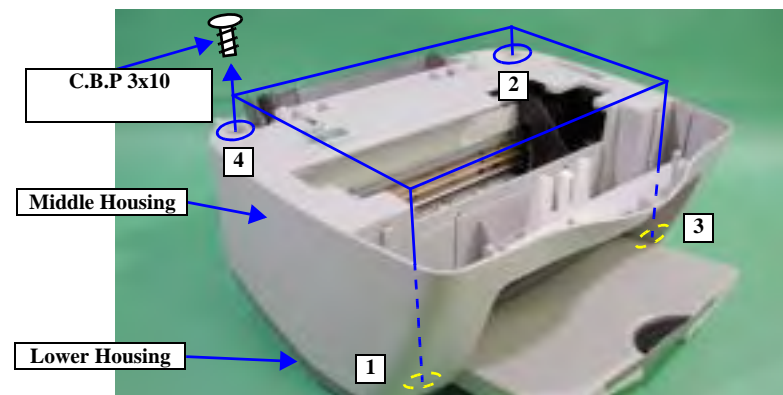


Figure 4-29. Middle Housing Removal 1

NOTE: Screw tightening torque: 0.59 +/- 0.1 Nm



- When installing the Front Housing, the screws should be installed in the order shown in Figure 4-27.
- When installing the Middle Housing, the screws should be installed in the order shown in Figure 4-29.

6. Lift the Middle Housing straight upwards and remove it from the Lower Housing.



When installing the Middle Housing, align the positions of the Cover Open Lever and Light Conduction Tube in 3 places at the Middle Housing rear side. If the position happens to slip during installation, the hooks of the Light Conduction Tube that secure the Cover Open Lever could become overloaded and be damaged. Use care with installation.

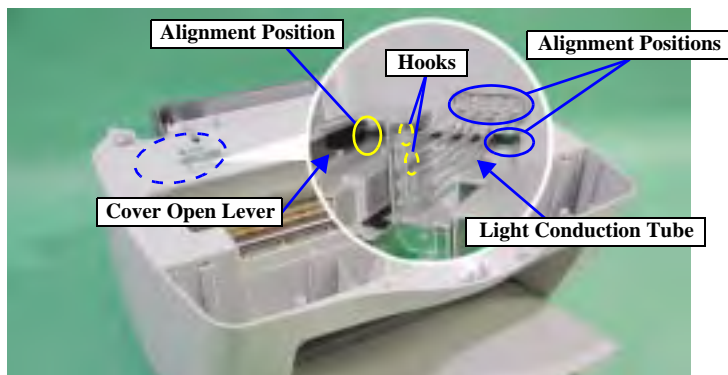


Figure 4-30. Middle Housing Installation

4.4.2 Main Board Removal

1. Remove Middle Housing. (See Section 4.4.1)
2. Remove all cables from C496 Main Board, then peel acetate tape from C496 Main Board at 1 place.
3. Remove 1 screw (C.B.P 3x6) securing the Light Conduction Tube, then remove the Light Conduction Tube along with the Cover Open Lever.

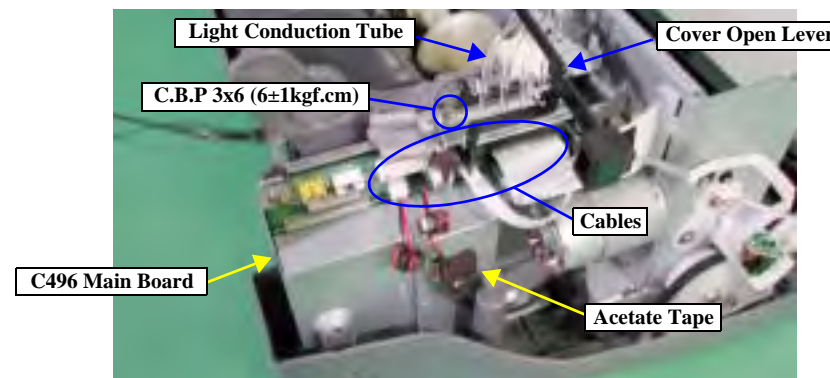


Figure 4-31. C496 Main Board Removal 1

NOTE: C.B.P 3x6 screw tightening torque: 0.59 +/- 0.1 Nm

4. Remove 3 screws (C.B.P 3x8, C.B.S 3x6, C.B.S 3x8) securing the C496 Main Board.
5. Follow the order shown in Figure 4-32 to remove the C496 Main Board from the Printer Mechanism.

NOTE: C.B.S 3x6 screw tightening torque: 0.39 +/- 0.1 Nm

NOTE: C.B.P 3x8 screw tightening torque: 0.59 +/- 0.1 Nm

NOTE: C.B.S 3x8 screw tightening torque: 0.78 +/- 0.1 Nm

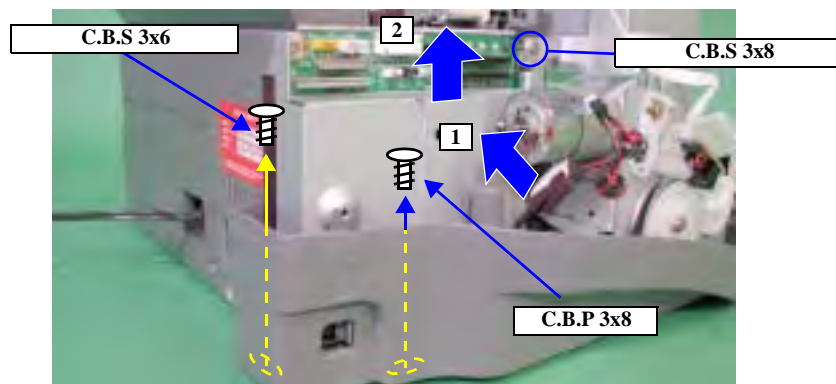


Figure 4-32. Main Board Removal 2



- The CN5 cable on the C496 Main Board has a specified installation direction. The pin connected to the blue line of the cable should be inserted into the Pin 1 side of the connector.

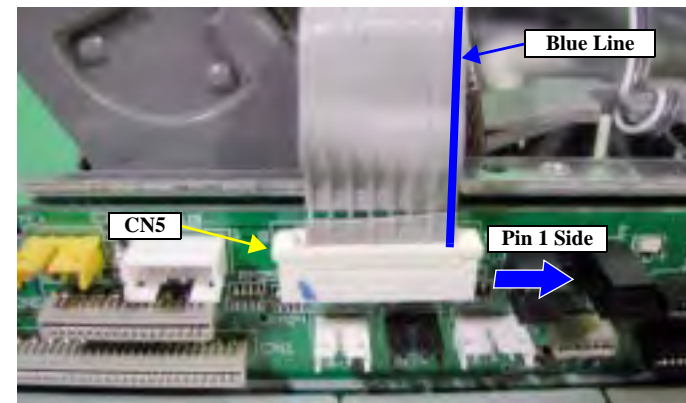


Figure 4-33. CN5 Connection Direction

- When C496 Main Board has been replaced by a service part, the installation screw holes do not have threads, as shown below. When installing C496 Main Board to the Printer Mechanism, metal chips that are formed in the process can become a source for shorting the printer. For this reason, use a brush to clean 2 places in the order shown below and remove the metal chips. (Removal of Printer Mechanism from Lower Housing. See Section 4.4.4)

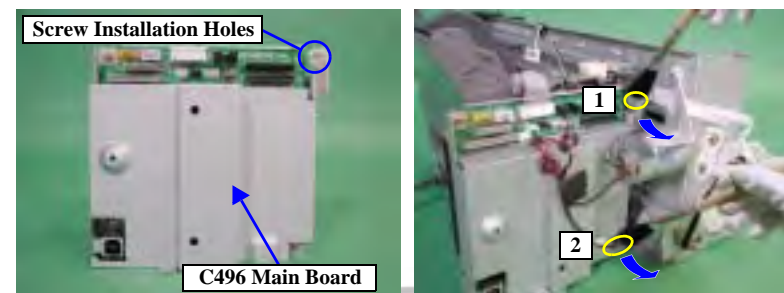


Figure 4-34. Metal Chips Removal



When replacing the Main Board, also perform the following part replacements and adjustments.

Part Replacements: Waste Ink Pads

Adjustments:

- Firmware Upload
- EEPROM initialization
- Head ID input
- Bi-D adjustment
- PF adjustment
- USB ID input
- Top Margin Adjustment
- CR motor drive dispersion measurement sequence

When EEPROM content can be read out from the Main Board, use the following procedure to back up just the adjustment values. By writing the data to the Main Board after replacement, repair time can be shortened.

- Backup Operation

See Chapter 5 “Adjustment” for details.

4.4.3 Printhead Removal

1. Remove Middle Housing. (See Section 4.4.1)
2. Use a pair of tweezers to push and lift one side of the Spring Cartridge at a time from the 2 slots of the Carriage Unit, then remove the Spring Cartridge from the Carriage Unit.

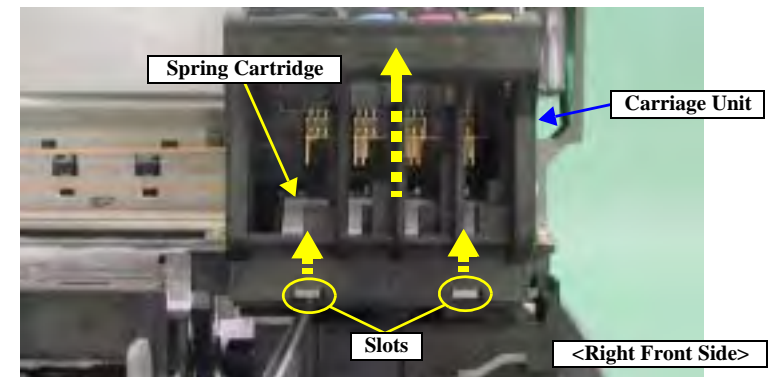


Figure 4-35. Printhead Removal 1

3. Remove 2 screws (C.B.P (P4) 3x10) holding the Fastener Head, then remove the Fastener Head in the direction of arrow A.

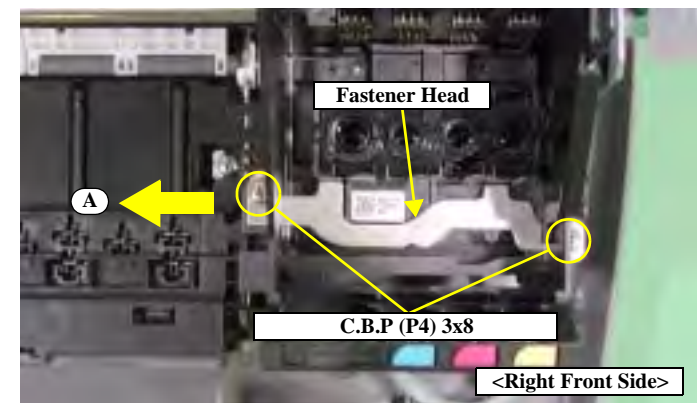


Figure 4-36. Printhead Removal 2

NOTE: Screw tightening torque: 0.59 +/- 0.1 Nm

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4. Push Carriage Lock Lever forward, then shift Carriage Unit to the left side.
5. Follow the order shown in Figure 4-37 below to release 4 hooks, then remove Cable Head Holder from Carriage Unit in upward direction.

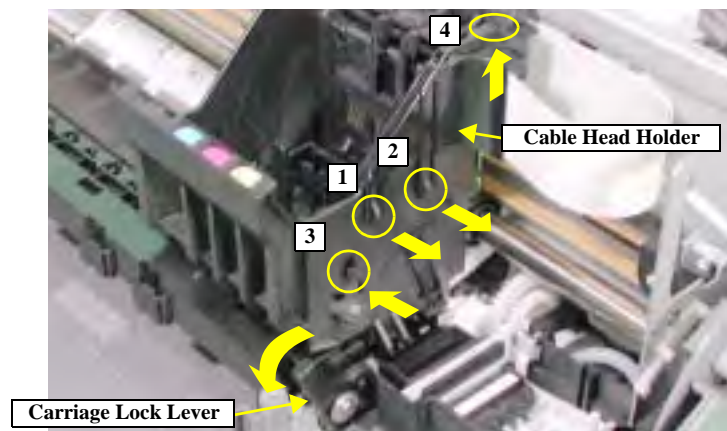


Figure 4-37. Printhead Removal 3

6. While avoiding 2 hooks, follow the order shown in Figure 4-38 to remove the Printhead from the Carriage Unit.

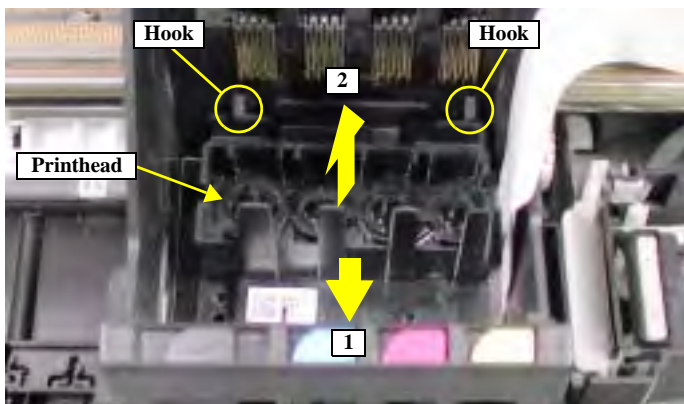


Figure 4-38. Printhead Removal 4

7. Remove 2 FFCs from the Printhead.

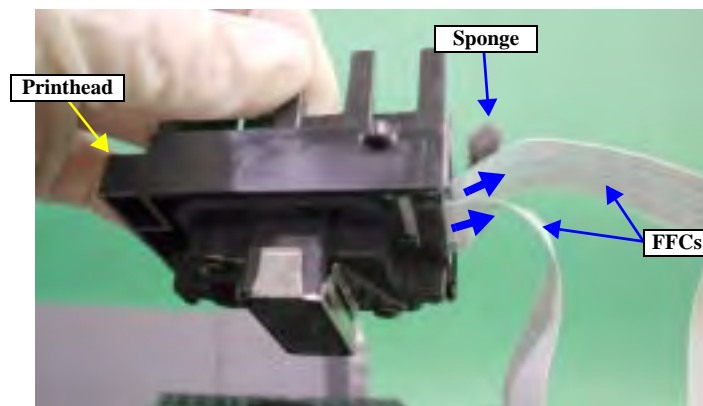


Figure 4-39. Printhead Removal 5

CAUTION

When the FFC has been replaced, be sure to attach sponge as shown in Figure 4-39. Because double-sided tape is attached to FFC service parts, simply installing sponge is sufficient.

**ADJUSTMENT
REQUIRED**

When removing or replacing the Printhead, perform the following adjustments.

When Printhead is removed:

- Head Cleaning
- Head Angle Adjustment

When Printhead is replaced:

- Ink charge
- Head ID input
- Head Angle Adjustment
- Bi-D adjustment
- PF adjustment

See Chapter 5 "Adjustment" for details.

4.4.4 Printer Mechanism Removal

1. Remove the Main Board. (See Section 4.4.2)
2. Remove 4 screws (C.B.P 4x12 : 3, C.B.P 4x12 : 1) holding Printer Mechanism.

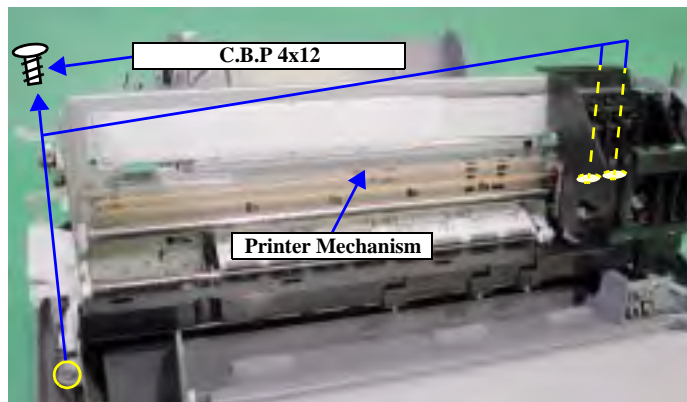


Figure 4-40. Printer Mechanism Removal 1

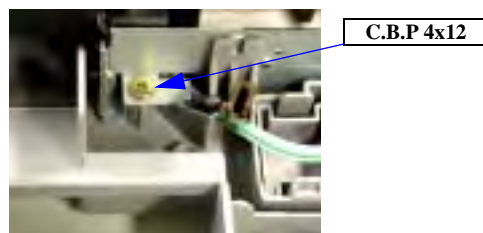


Figure 4-41. Printer Mechanism Removal 1-2

NOTE: Screw tightening torque: 0.61 +/- 0.1 Nm

3. Remove 2 screws (C.B.P 3x8) securing the Power Cable Cover.
4. Follow the order shown in Figure 4-42 to remove the Power Cable Cover from the Lower Housing.

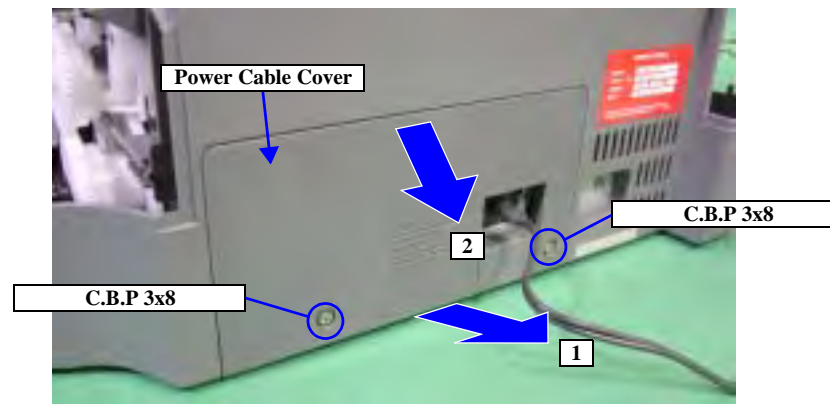


Figure 4-42. Printer Mechanism Removal 2

NOTE: Screw tightening torque: 0.59 +/- 0.1 Nm

5. While pressing inward both edges of Ink Tube Retainer, remove the Ink Tube in direction of arrow A and release it from hook 1.
6. While releasing hook 2 in the direction of arrow B, lift the Printer Mechanism and remove it from the Lower Housing.

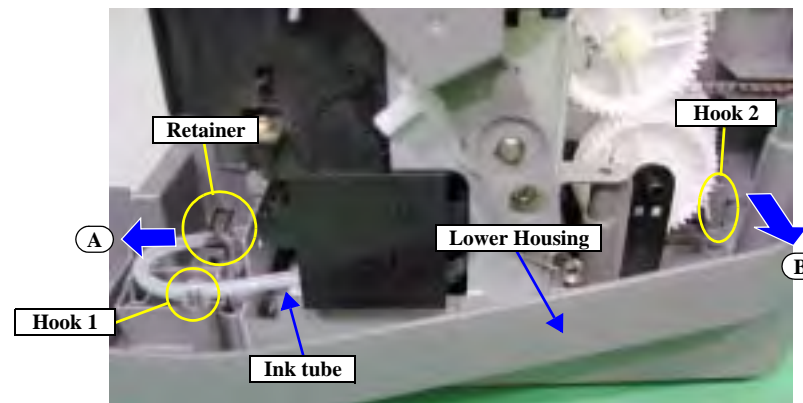


Figure 4-43. Printer Mechanism Removal 3



Make sure the tip of the waste ink tube is located at correct position when reassembling the waste ink tube. Otherwise it will cause ink leakage.



After replacing the Printer Mechanism, perform the following adjustment.

■ PG adjustment

See Chapter 5 “Adjustment” for details.

4.4.5 Waste Ink Pads/Lower Housing Removal

1. Remove Printer Mechanism. (See Section 4.4.4)
2. Remove Waste Ink Pads from Lower Housing.

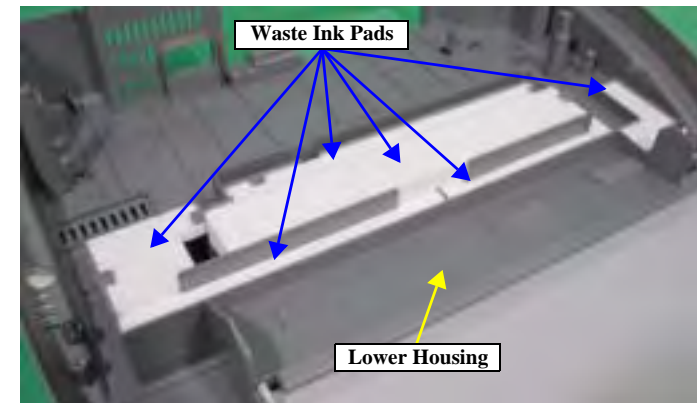


Figure 4-44. Waste Ink Pads/Lower Housing Removal



Install the Discharge Ink Tube by passing it through Waste Ink Pad H and along the channel in the Lower Housing as shown in Figure 4-45. Ink may leak if the Discharge Ink Tube is not installed in the specified position.

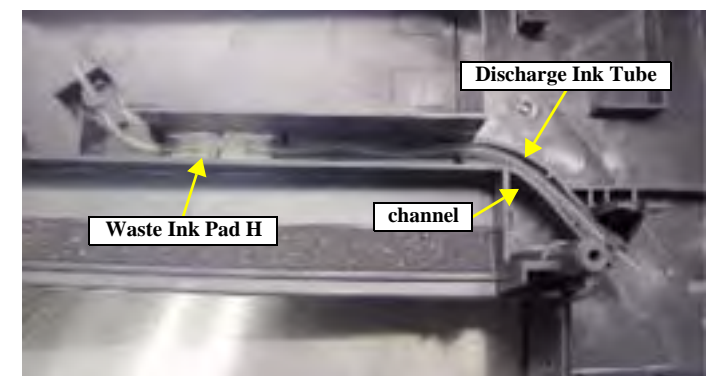


Figure 4-45. Discharge Ink Tube Route



After replacing the Waste Ink Pads, perform the following adjustment.

- Protection Counter Clear
See Chapter 5 “Adjustment” for details.

4.4.6 C496 PSB/PSE Board Removal

1. Remove Printer Mechanism. (See Section 4.4.4)
2. Remove 2 screws (C.B.S 3x6) securing the C496 PSB/PSE Board, then remove the C496 PSB/PSE Board from the Printer Mechanism.

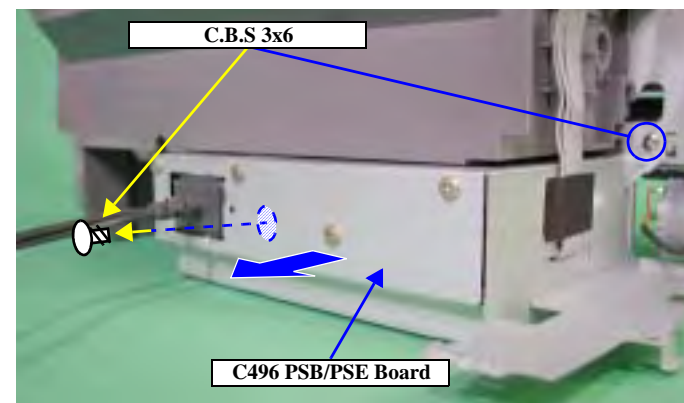


Figure 4-46. C496 PSB/PSE Board Removal

NOTE: Screw tightening torque: 0.78 +/- 0.1 Nm



After replacing the C496 PSB/PSE Board, perform the following adjustment.

- CR motor drive dispersion measurement sequence
See Chapter 5 “Adjustment” for details.

4.4.7 ASF Unit Removal

1. Remove Printer Mechanism. (See Section 4.4.4)
2. Unfasten CN4 cable from the wrapped location, then remove the CN4 cable by pulling it through the slot in the ASF Unit.
3. Remove 2 screws (C.B.S (P4) 3x8) holding the ASF Unit.

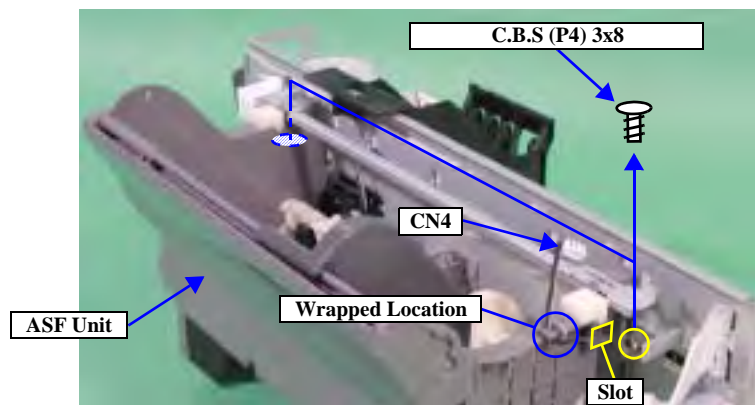


Figure 4-47. ASF Unit Removal 1

NOTE: Screw tightening torque: 0.78 +/- 0.1 Nm

4. Remove 1 screw (C.B.S 3x6) holding the LD Roller Cover and then shift LD Roller Cover in direction of arrow A.

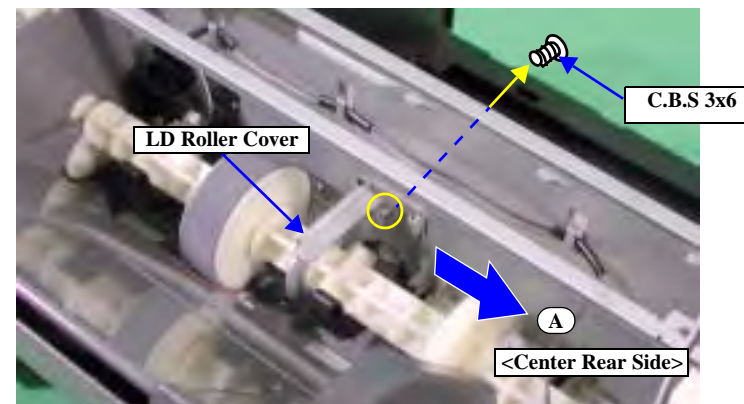


Figure 4-48. ASF Unit Removal 2

NOTE: Screw tightening torque: 0.78 +/- 0.1 Nm

5. Release the union location between Pump Frame and ASF Unit.



Be careful because pulling strongly on Pump Frame can cause it to break.

6. Push Head Cable Cover with pair of tweezers, shift it to the right and temporarily release its hold.
7. Allow ASF Unit to rotate in direction of arrow A, then remove ASF Unit together with LD Roller Cover from Printer Mechanism.

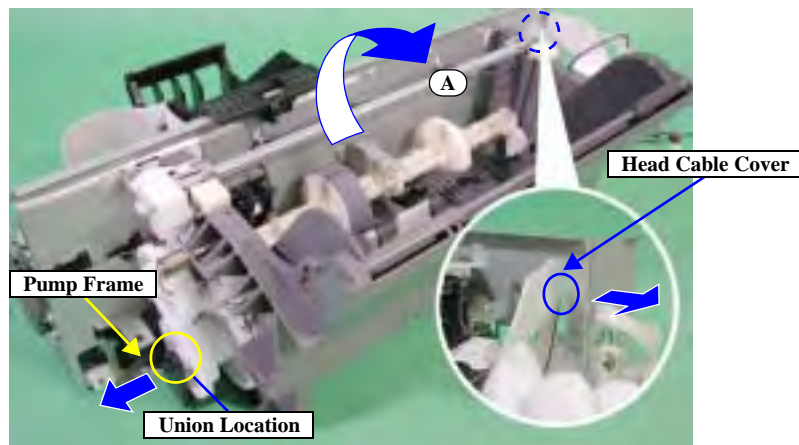


Figure 4-49. ASF Unit Removal 3



When installing ASF Unit, be sure to install it while PSB/PSE Board is not installed. If this procedure is ignored, the Pump Frame may interfere with the ASF Unit and result in damage.

4.4.8 ASF Unit Disassembly

1. Remove ASF Unit. (See Section 4.4.7)
2. After releasing the hook holding the Paper Back Cam, let the control of Torsion Spring move in the direction of arrow A, then remove the Paper Back Cam from the ASF Unit.
3. Follow the order shown in Figure 4-50 to remove the following from the ASF Unit: (1) Clutch Gear and Clutch. (2) Extension Spring 1.47. (3) Change Lever. (4) Combination Gear Ratchet 65.6.



- If Clutch Gear and Clutch are not removed with a pair of tweezers as described in Step 3, it is possible that the Extension Spring 0.143 inside could be lost.
- When removing Extension Spring 1.47, be careful not to lose it.

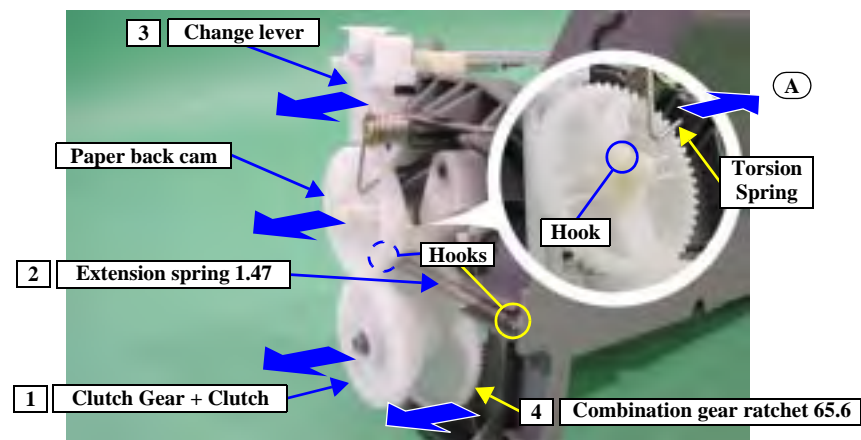


Figure 4-50. ASF Unit Disassembly 1

4. Release Extension Spring 1.67 from hooks on ASF Frame and ASF Trigger Lever, then remove spring.



When removing Extension Spring 1.67, be careful not to lose it.



5. Follow the order shown in Figure 4-51 to remove ASF Trigger Lever from ASF Frame.

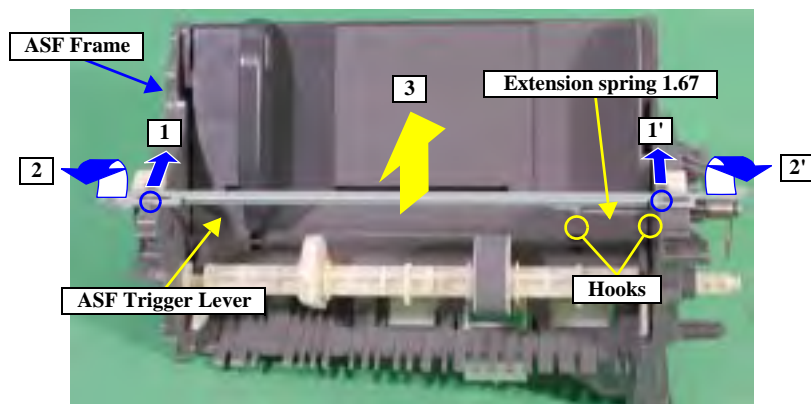


Figure 4-51. ASF Unit Disassembly 2

6. Follow the order shown in Figure 4-52 and use a common screwdriver to release the Hopper (left side) from where it is secured to the ASF Frame, then remove the Hopper from the ASF Frame.

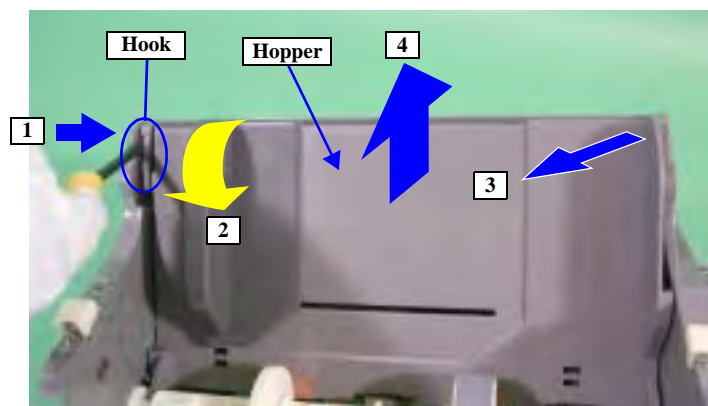


Figure 4-52. ASF Unit Disassembly 3

7. Allow the Compression Spring 2.9 to rotate to the left from the ASF Frame, then remove it.
8. While spreading the left side surface of the ASF Frame toward the outside, follow the order shown in Figure 4-53 to remove LD Roller Shaft.

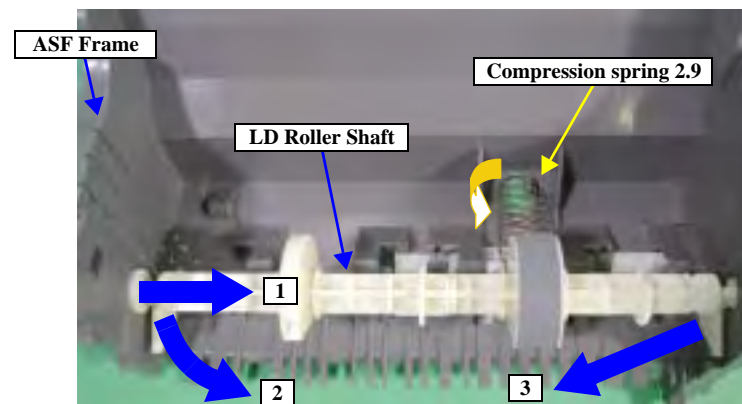


Figure 4-53. ASF Unit Disassembly 4

9. Release Extension Spring 2.25 from hooks on ASF Frame and Retard Roller Holder, then remove spring.
10. Pull the protrusion of the Retard Roller Holder fastened to the ASF Frame away from the ASF Frame in the direction of the arrow for one side and then the other. Then remove Retard Roller along with Retard Roller Holder.

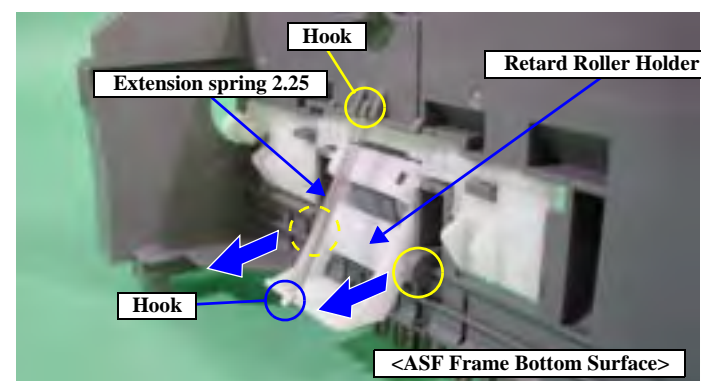


Figure 4-54. ASF Unit Disassembly 5



ASF Unit Assembly Points

1. Set Clutch Spring (when assembling Clutch and Clutch Gear)
2. Position Paper Back Support Lever (when setting the Paper Back Cam to LD Roller Shaft at first step)
3. Align phase (when inserting Paper Back Cam into LD Roller Shaft at last step)

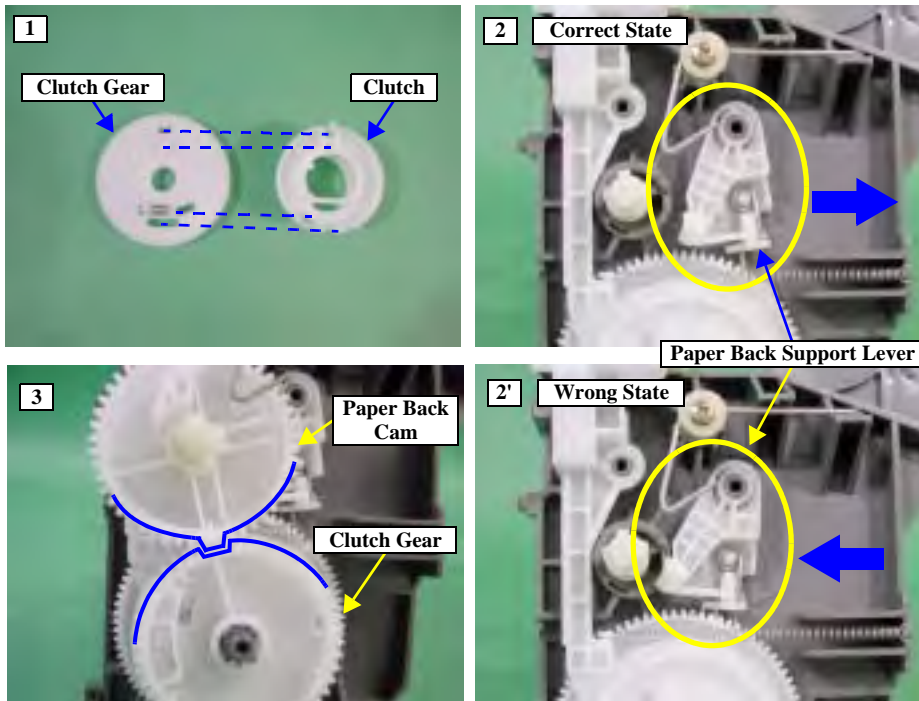


Figure 4-55. Assembly Points

4.4.9 PE Sensor/PE Sensor Holder/PE Lever Removal

1. Remove ASF Unit. (See Section 4.4.7)
2. Disconnect connector from PE Sensor.
3. While lifting PE Sensor Holder upwards, use a suitable tool to release 4 hooks holding the PE Sensor Holder starting from the upper direction of the printer by following the order shown in Figure 4-56. Then remove the PE Sensor and PE Lever along with the PE Sensor Holder.

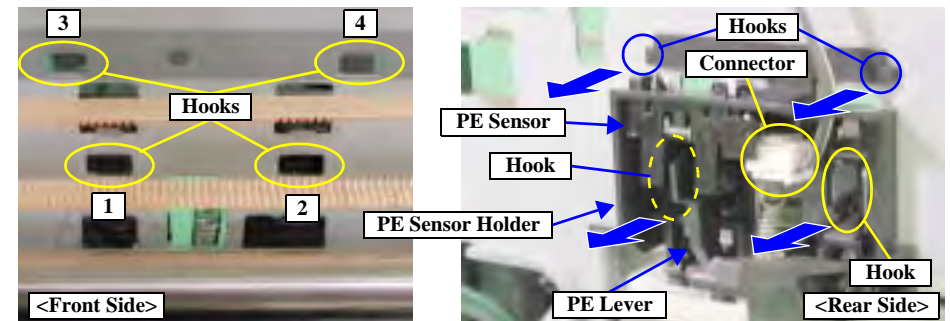


Figure 4-56. PE Sensor/PE Sensor Holder/PE Lever Removal 1

4. Release 3 hooks fastening the PE Sensor to the PE Sensor Holder, then remove PE Sensor from the PE Sensor Holder.
5. Follow the order shown in Figure 4-57 to remove the PE Lever along with the Torsion Spring 0.28.

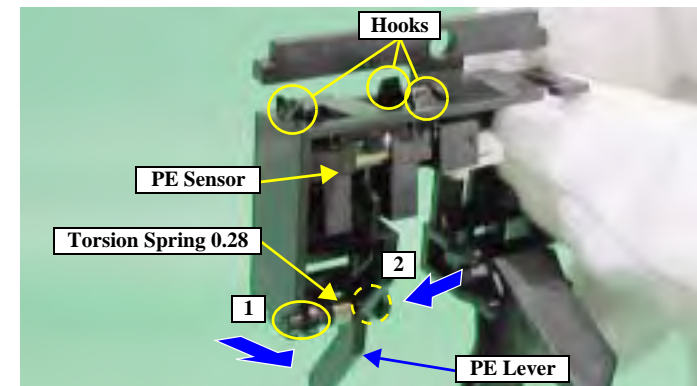


Figure 4-57. PE Sensor/PE Sensor Holder/PE Lever Removal 2



Condition of PE Lever and Torsion Spring 0.28 after installation.

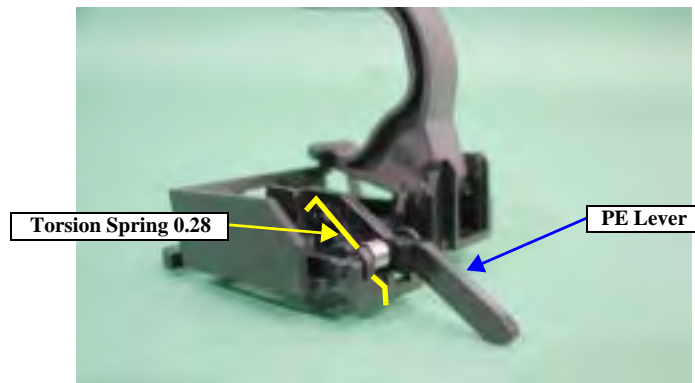


Figure 4-58. Condition of PE Lever after installation.

4.4.10 PF Encoder & PF Encoder Base Removal

1. Remove Middle Housing. (See Section 4.4.1)
2. Disconnect FFC from connector on PF Encoder Board.
3. Release 4 hooks holding PF Encoder Base, then remove PF Encoder Base along with PF Encoder from Printer Mechanism.

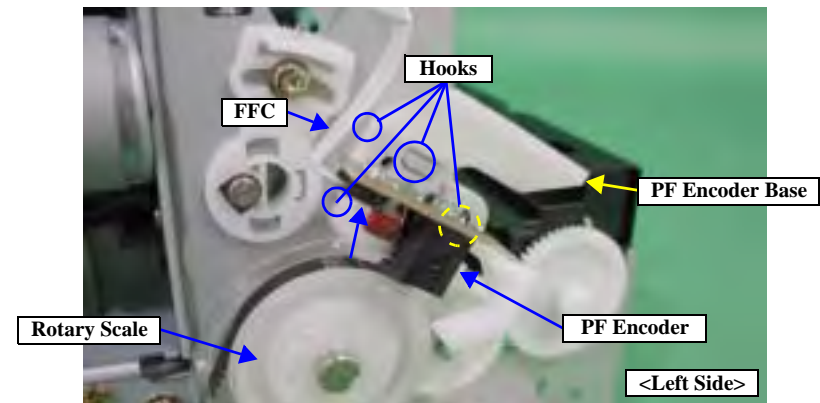


Figure 4-59. PF Encoder & PF Encoder Base Removal

CAUTION



- There are 2 types of the Rotary Scale, the Film type that has been available since first mass production and a new Plastic type. Needed information about details and repair are given below.

1. In the America, the Film type Rotary Scale available since first mass production has been introduced for patent considerations. In another development, an all new Plastic type Rotary Scales have been introduced.
2. Concerning functioning, because the Film type and Plastic type are completely interchangeable, PF Roller Unit and Printer Mechanism service parts are continuing with the Film type regardless of the developments.



CAUTION

- After patent concerns are settled in America, both new products and service parts (PF Roller Unit and Printer Mechanism) will use the new Plastic type.
- Points that should be considered for repair are shown in Table 4-3 with relationships between Rotary Scale type and PF Encoder Base type.

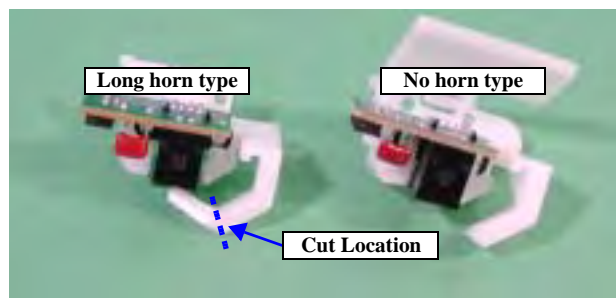
Table 4-3. Rotary Scale and PF Encoder Base Relationships

Type of PF Encoder Base \ Type of Rotary Scale	Long horn type (1108620)	No horn type (1214696)
Film type	Yes	No (*1)
Plastic type	Yes (*2)	Yes

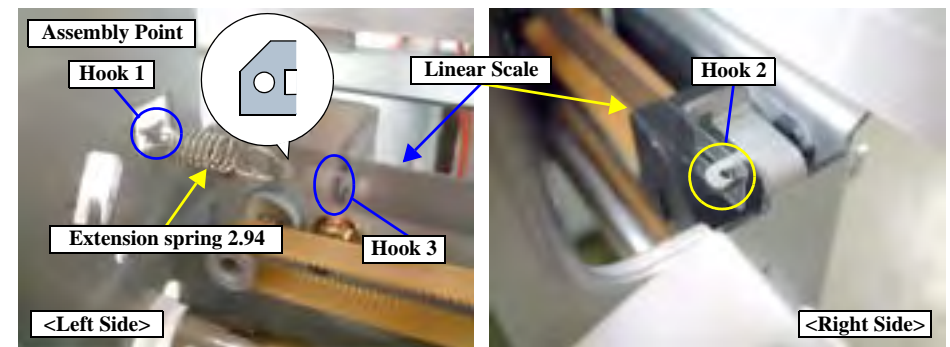
“Yes” means exchangeability between PF Encoder Base and Rotary Scale. “No” means not exchangeability between these parts.

(*1): In this case, use the Long Horn Type for the PF Encoder Base.

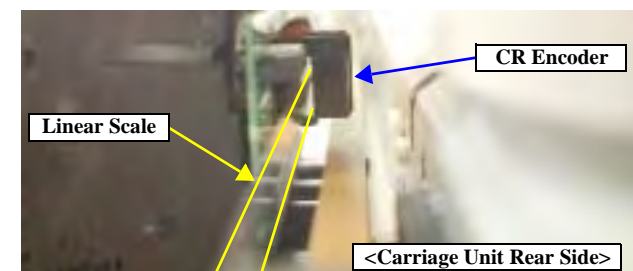
(*2): In this case, because the horn becomes an obstacle, it is necessary to cut off the horn. After consulting the Figure 4-60 to confirm the correct location for cutting the horn of the PF Encoder Base, use nippers to cut off the horn.

**Figure 4-60. PF Encoder Base Cut Location****4.4.11 Linear Scale Removal**

- Remove Middle Housing. (See Section 4.4.1)
- Release Extension Spring 2.94 from Printer Mechanism hook 1.
- Release right edge of Linear Scale from Printer Mechanism hook 2.
- Remove Linear Scale by pulling it to the left side from back of Carriage Unit.
- Allow Linear Scale to rotate 90°, release it from Printer Mechanism hook 3, then remove the Linear Scale along with Extension Spring 2.94 from the Printer Mechanism.

**Figure 4-61. Linear Scale Removal****Linear Scale Assembly Point**

- Pass the Linear Scale through the CR Encoder on the rear side of the Carriage Unit.

**Figure 4-62. Linear Scale Position**

4.4.12 CR Guide Shaft/Carriage Unit Removal

1. Remove Linear Scale. (See Section 4.4.11)
2. Use a common screwdriver to release Extension Spring 26.46 from hooks on Pulley Driven Holder and Printer Mechanism, then remove spring.
3. Shift Pulley Driven Holder in direction of arrow A, then remove it in direction of arrow B.

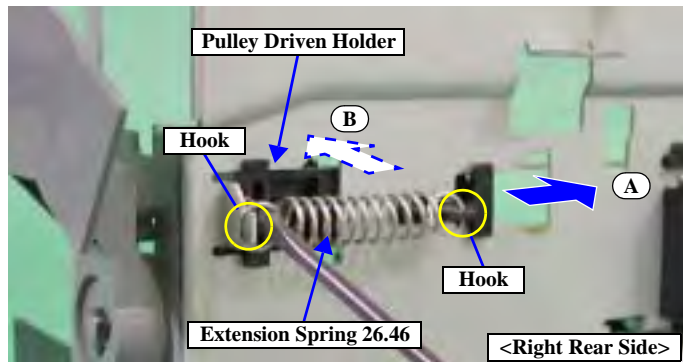


Figure 4-63. CR Guide Shaft/Carriage Unit Removal 1

4. Follow order shown in Figure 4-64 (lower right photo) to remove these items from the Printer Mechanism: (1) Spacer. (2) PG Lever. (2') Torsion Spring 67.78. (3) Leaf Spring. (4) 1 Screw (C.B.S (P4) 3x6). (5) Bushing.
5. Follow order shown in Figure 4-64 (lower left photo) to remove these items from the Printer Mechanism: (6) Spacer. (7) 1 Screw (C.B.S (P4) 3x6). (8) Bushing.



The Bushings at both sides of the Printer Mechanism can be released from their attachment by allowing the printer to rotate rearward.

6. Remove CR Guide Shaft from Printer Mechanism in direction of arrow C while taking care not to damage slots in Printer Mechanism.
7. Allow Carriage Unit to rotate in direction of arrow D and remove Carriage Unit from Printer Mechanism.

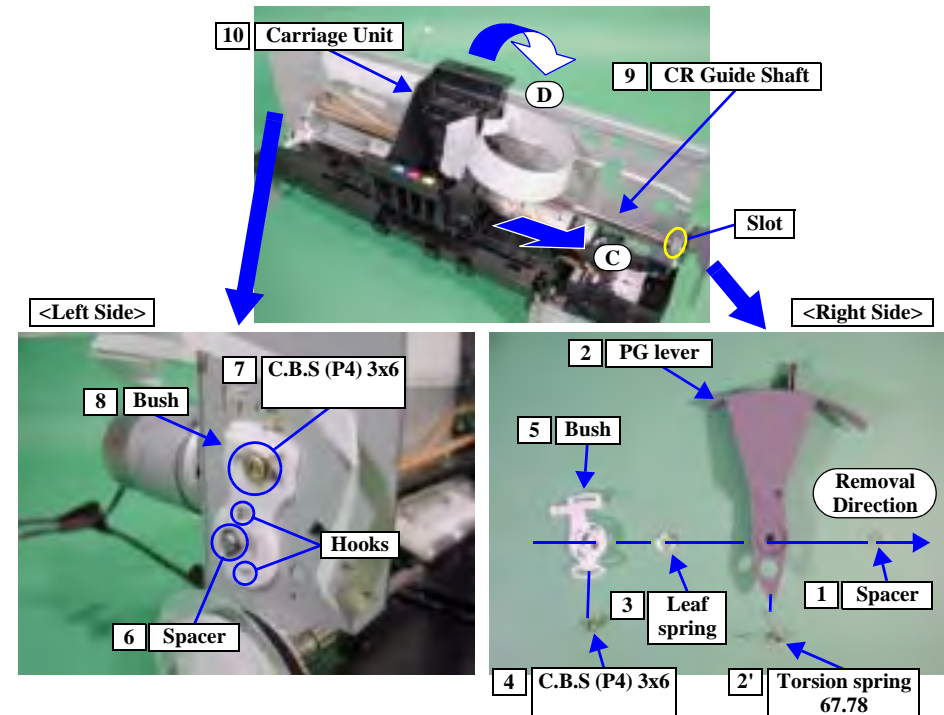


Figure 4-64. CR Guide Shaft/Carriage Unit Removal 2

NOTE: Screw tightening torque: 0.59 +/- 0.1 Nm

8. Disconnect FFC from connector on Relay Board of Carriage Unit, then remove Carriage Unit.

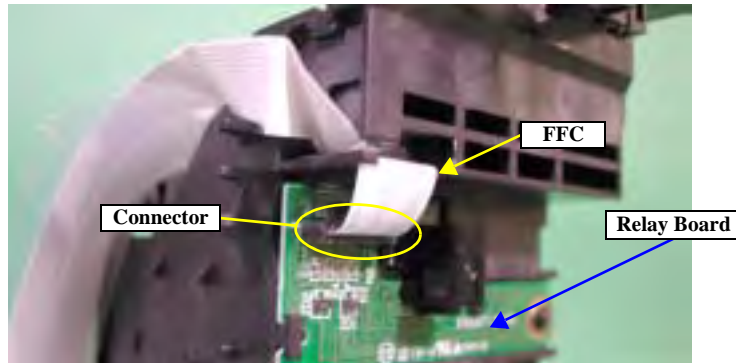


Figure 4-65. CR Guide Shaft/Carriage Unit Removal 3

CAUTION



Be careful when installing the Bushings at each side of the Printer Mechanism because the Left Bushing and Right Bushing have different shapes. (See Figure 4-64)

REASSEMBLY



■ Leaf Spring Installation

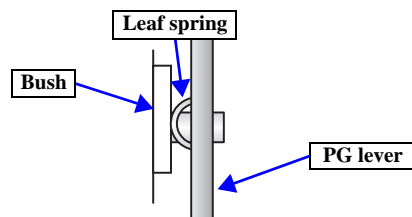


Figure 4-66. Leaf Spring Installation

**ADJUSTMENT
REQUIRED**



When removing or replacing the CR Guide Shaft/Carriage Unit, perform the following adjustments.

- PG adjustment
- CR motor drive dispersion measurement sequence
- Top Margin Adjustment

See Chapter 5 “Adjustment” for details.

4.4.13 Ink System Unit Removal

1. Remove Printer Mechanism. (See Section 4.4.4)
2. Remove (1) screw (C.B.S 3x8), then remove (2) screw (C.B.S 3x5) holding the Ink System Frame, then remove the Ink System Frame from the Printer Mechanism.
3. Remove (3) screws (C.B.S 3x8), then remove (4) screw (C.B.S 3x6) holding the Ink System Frame from the Printer Mechanism.

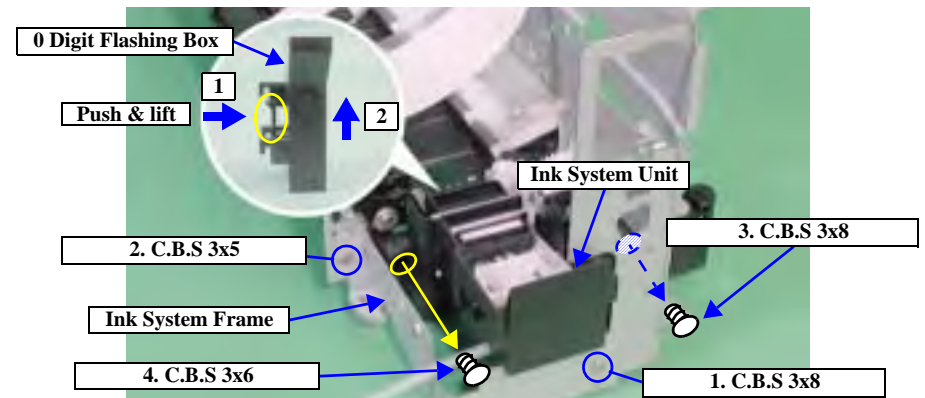


Figure 4-67. Ink System Unit Removal

NOTE: C.B.S 3x8 screw tightening torque: 0.78 +/- 0.1 Nm

NOTE: C.B.S 3x6 screw tightening torque: 0.78 +/- 0.1 Nm

NOTE: C.B.S 3x5 screw tightening torque: 0.78 +/- 0.1 Nm

4. When ASF Unit is installed, release union location of Pump Frame and ASF Unit. (See Section 4.4.7 Step 4)
5. Remove Ink System Unit from the Printer Mechanism.
6. Follow the order shown in Figure 4-67 to remove the 0 Digit Flashing Box from the Printer Mechanism.



CAUTION

Use a pair of tweezers to replace the Cleaner Blade. While doing this, do not touch the Printhead with the tweezers. In addition, do not touch the Printhead with bare hands.

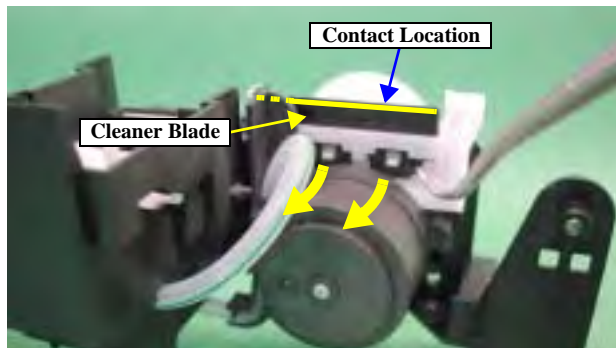


Figure 4-68. Cleaner Blade Handling

4.4.14 CR Motor Removal

1. Remove Middle Housing. (See Section 4.4.1)
2. Disconnect CN14 connector from C496 Main Board.
3. Remove 1 screw (C.C 3x4) holding CR Motor, then remove CR Motor.

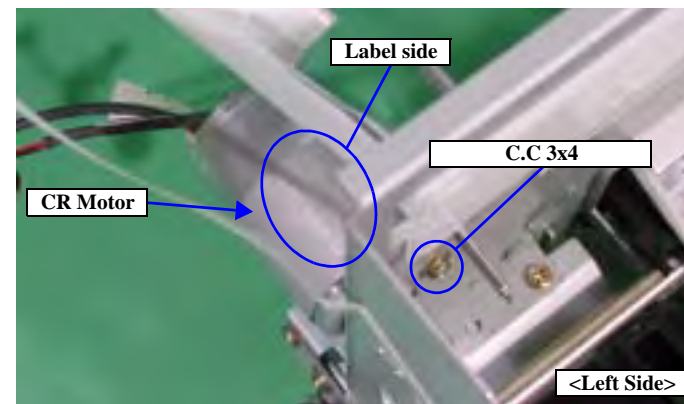


Figure 4-69. CR Motor Removal

NOTE: C.B.S 3x4 screw tightening torque: 0.39 +/- 0.05 Nm

REASSEMBLY

When installing CR Motor, install it with the label of the motor facing upwards.

**ADJUSTMENT
REQUIRED**

After replacing the CR Motor, perform the following adjustment.

- Bi-D adjustment
 - CR motor drive dispersion measurement sequence
- See Chapter 5 “Adjustment” for details.



4.4.15 PF Motor Removal

1. Remove Printer Mechanism. (See Section 4.4.4)
2. Disconnect CN13 connector from C496 Main Board.
3. Remove 2 screws (C.C 3x4) holding PF Motor, then remove PF Motor.

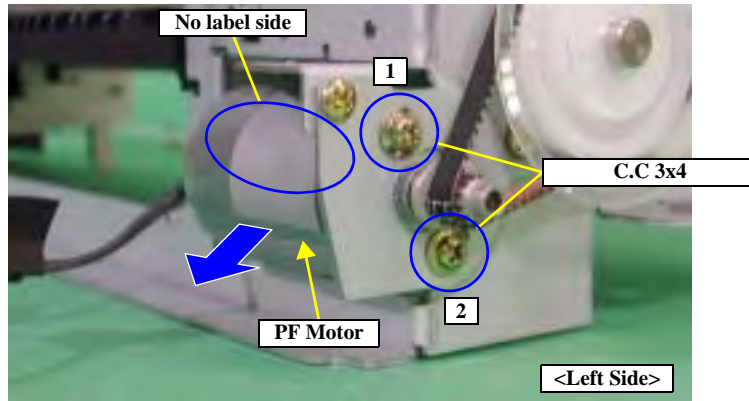


Figure 4-70. PF Motor Removal

NOTE: Screw tightening torque: 0.29 +/- 0.1 Nm



- **Installation of screws holding PF Motor**
 1. Follow order shown in upper diagram to set screws temporarily.
 2. Pull PF Motor in direction shown by arrow in upper diagram, then while maintaining tension on the Timing Belt completely fasten the PF Motor. (Completely tighten.)
- When installing the PF Motor, the label of the PF Motor should not be visible from the rear side of the Printer Mechanism. If the label is visible, rotate it 180° and reinstall it.



When removing or replacing the PF Motor, perform the following adjustments.

- PF belt tension adjustment
- PF adjustment

See Chapter 5 “Adjustment” for details.

4.4.16 Paper Eject Frame Unit Removal

1. Remove Printer Mechanism. (See Section 4.4.4)
2. While releasing the hooks at each side (2 hooks) holding the Paper Eject Frame Unit, let it rotate in the direction of arrow A, then remove it upwards.

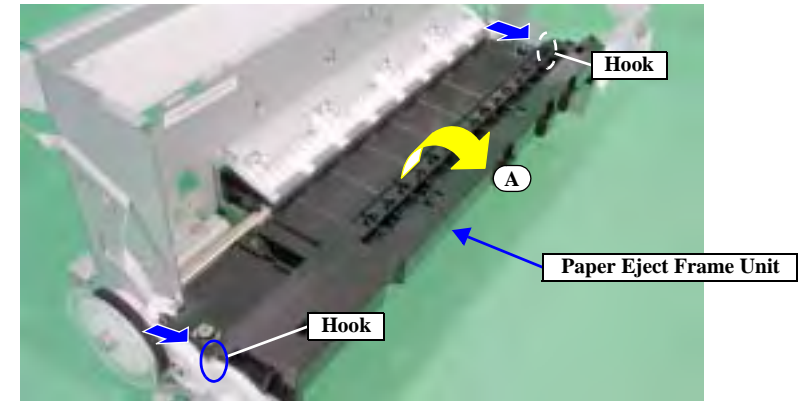


Figure 4-71. Paper Eject Frame Unit Removal

4.4.17 EJ Roller Unit Removal

1. Remove Paper Eject Frame Unit. (See Section 4.4.16)
2. Remove Grounding Wire from Printer Mechanism.
3. Release hook for Bushing 5 located at each side of EJ Roller Unit, then let Bushing 5 rotate 90° upwards.
4. Remove EJ Roller Unit along with 3 Holders in upwards direction.

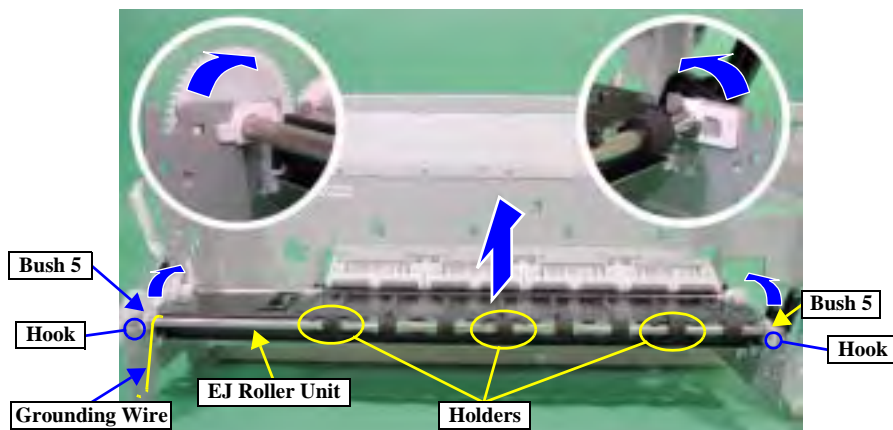


Figure 4-72. EJ Roller Shaft unit Removal



- When installing EJ Roller Unit, be careful about the direction of the CR Lock.

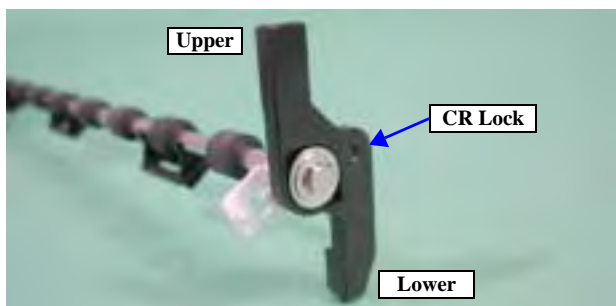


Figure 4-73. CR Lock Direction

4.4.18 Front Paper Guide Removal

1. Remove EJ Roller Unit. (See Section 4.4.17)
2. Remove 2 screws (C.B.S 3x6) holding Front Paper Guide.
3. Remove Front Paper Guide upwards while being careful that the Front Paper Guide hook at the left side does not touch Spur Gear 28.8.

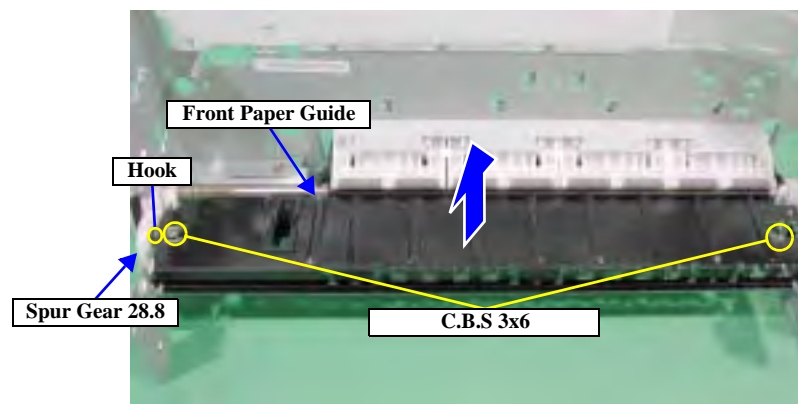


Figure 4-74. Front Paper Guide Removal

NOTE: Screw tightening torque: 0.78 +/- 0.1 Nm



- When installing Front Paper Guide, be careful not to damage Spur Gear 28.8.

4.4.19 Upper Paper Guide Removal

1. Remove Front Paper Guide and PE Sensor Holder. (See Section 4.4.18 and 4.4.9)
2. Release 2 hooks holding each Extension Spring 4.07, then remove Extension Spring 4.07 (4 springs).
3. Follow order shown in Figure 4-75 to remove Paper Guide from Printer Mechanism.

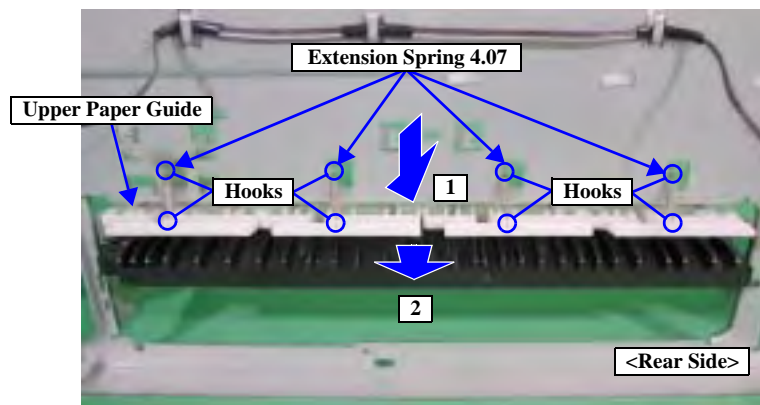


Figure 4-75. Upper Paper Guide Removal

4.4.20 Rear Paper Guide Removal

1. Remove Upper Paper Guide and C496 PSB/PSE Board. (See Section 4.4.19 and 4.4.6)
2. Release Rear Paper Guide from right side hook, then shift Rear Paper Guide in direction of arrow A.
3. direction of arrow A.
4. Release 2 hooks fastening Rear Paper Guide to PF Roller Unit, then remove Rear Paper Guide by pushing it in direction of arrow B.

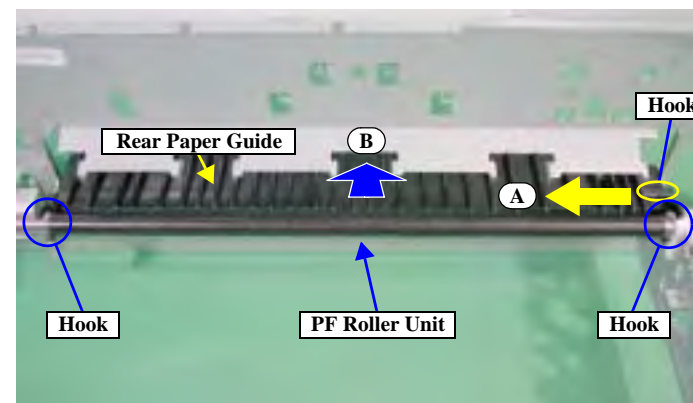


Figure 4-76. Rear Paper Guide Removal



When installing Rear Paper Guide, if hooks are not completely fastened, the ASF Unit cannot be properly set.

CHAPTER

5

ADJUSTMENT



5.1 Overview

This section describes all adjustment procedures for Stylus CX5100/5200/5300/5400.

5.1.1 Conditions for Each Adjustment

The Stylus CX5100/5200/5300/5400 adjustment program is Epson's first use of a sequential program for performing mechanical/electrical adjustments in an established order. The program will use an interactive method to guide you through suitable adjustments that correspond to repairs that have actually been made. This chapter only lists the adjustment conditions.



- The adjustment program only operates with PCs running Win98/ME.
- When performing ink charge for a cartridge currently in use (same as initial ink charge), an ink out error may be generated during the operation. If this occurs, replace the ink cartridge and try the operation again.
- There are mainly two functions on the Stylus CX5100/5200/5300/5400 adjustment program. One is the sequential adjustment mode depending on your repaired/removed parts, and another one is the particular adjustment mode for the old hand at repair or, if you've already decided a specific adjustment option. Basically, Epson recommend you to adopt sequential adjustment mode anytime.

Table 5-1. Adjustment Program Supported Functions

Category	Items	Conditions	Purpose
Adjustment	Back up operation	Try in stages before changing the circuit board.	If the results can be read out, easy repairs may be possible without performing many adjustments.
	EEPROM initialization	Performed after circuit board replacement regardless of result from Backup try described above.	This operation allows the firmware to recognize differences between Japanese made parts and foreign made parts and optimizes the ID check performed between the main circuit board and the ink cartridge.
	Head ID input	Performed after printhead and main board replacement.	If this is not performed, the printing will become unstable and result in poor operation such as continuous generation of Head Hot Error (Fatal Error indicator).
	Head angular adjustment	Performed after printhead removal/replacement.	If this slips, vertical lines will zigzag and letters will slope like italics.
	Bi-D adjustment	Performed after printhead, main board and CR motor replacement. (Not necessary if only main board was replaced and Backup was successful.)	When bi-directional printing is being performed, the targeted ink impact position is adjusted for alignment regardless of the direction of CR motion. (User adjustment possible with Utility on the Driver.)
	PF adjustment	Performed after printhead, main board and PF motor replacement. (Not necessary if only main board was replaced and Backup was successful.)	Sliding will occur if PF motor revolution speed becomes high during high speed printing. Correcting this at PF motor control reduction table eliminates sliding even during high speed printing, preventing appearance of white lines. (User adjustment possible with Utility on Driver.)
	PF belt tension adjustment	Performed after PF motor removal/replacement.	<ul style="list-style-type: none"> To reduce the load on the PF Motor. To ensure precision of paper feeding.

Table 5-1. Adjustment Program Supported Functions

Category	Items	Conditions	Purpose
Adjustment (Cont.)	USB ID input	Performed after main board replacement. (Not necessary if only main board was replaced and Backup was successful.)	A unique ID is created by inputting the printer's serial number into the USB ID. This prevents conflicts with ID of other connected USB devices.
	1 st dot position adjustment	Performed after main board replacement or CR/CR Guide Shaft removal (or mechanical disassembly in those areas).	Confirms and adjusts suitable position for first printing at top of paper.
	CR motor drive dispersion	1. CR motor heat control correction max value registered in EEPROM after CR motor, PS board and Main board replacement. (Not necessary if only main board was replaced and Backup was successful.) 2. Suitable heat control correction value for starting CR motor drive dispersion sequence registered after CR guide shaft removal/replacement.	Calculated by converting the mechanism load from current flowing to CR motor. By precisely calculating CR motor heat timing based on this data and registering it in EEPROM, safeguard operation timing is optimized for continuous operation of CR. To prevent motor coil burn damage, adjustment is necessary after corresponding part replacement.
	PG Adjustment	1. Performed after mechanism replacement. 2. Performed after carriage or carriage guide shaft removal/replacement.	Ensures correct distance between head surface and paper guide and adjusts parallelism at 0 character side and 80 character side to stabilize print quality.
Check pattern printing	A4 normal paper printing	1. Used for first operation check with recycled parts. 2. Used to switch to adjustment for checking correct printing after ink charging following printhead replacement. 3. Used for print check after completed repairs.	This function checks printing in each print mode and confirms absence of printing problems. Check points for each print pattern are explained in the adjustment program.
Maintenance	Head cleaning	Dot missing generated - 1	Always starts strongest cleaning cycle from among cleaning types supported by Stylus CX5100/5200/5300/5400 1. Used to perform cleaning when dot missing occurs with A4 normal paper printing during adjustment or after ink charge. 2. Use during recovery of main functions when recycled parts generate simple instance of dot missing.
	Ink charge	Dot missing generated - 2	Used for recovery of ink absorption at same level of initial ink charge for dot missing not recoverable by head cleaning described above.
	Ink charge for Jig	Supplies ink from special ink pack without using ink cartridge and performs adjustment.	Ink is absorbed from a specialized ink pack at the factory through a special schedule ink supply jig. Used when performing continuous adjustments. Suitable for full-service repair centers.
Maintenance (Cont.)	Refurbishment	Used when performing refurbishment operation.	Used to fill the printhead with special shipping fluid at the factory through a special schedule shipping fluid substitution jig. This function is necessary for performance of refurbishment (new part recycling) at full-service repair centers.
	Protection counter	Clears counter value to 0 when a maintenance error is generated or replacing the waste fluid pad.	Same as left.
Appendix	EEPROM Data	Used when analyzing.	Same as left.

5.2 Adjustment

This section explains belt tension adjustment using the special acoustic measurement instrument during adjustment procedures.

5.2.1 PF Belt Tension Adjustment

5.2.1.1 Purpose

This adjustment is necessary for the reasons explained below.

- ❑ When the tension is not correct, the tension between the PF Motor Pinion and the Timing Belt decreases and can result in occurrence of free spinning of the parts (a fatal error).
- ❑ If tension is too tight, the mechanism load increases (PF Motor driving load) and in the worst case can result in disruption due to overheating of the coil in the PF Motor. (During tasks such as heavy duty printing.)
- ❑ Accuracy of paper feeding cannot be ensured when tension is not correct and can result in jamming.

5.2.1.2 Adjustment Method

Adjustment can be accomplished by following the steps in the sequential program, but the steps are also shown below.

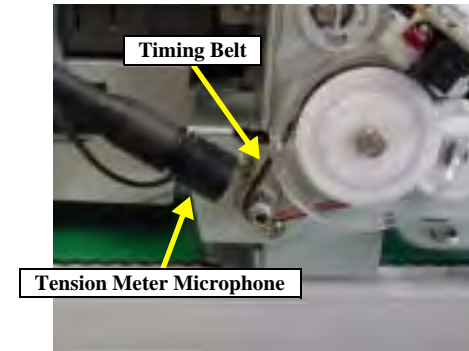


Figure 5-1. PF Belt Tension Adjustment

1. Secure the mechanism of the PF Motor and fasten the Timing Belt between the PF Roller Unit and the PF Motor Pinion.
2. Press the POWER button. (No. 0 or No. 1 will appear in the LCD.)
3. Select the channel for making further settings by pressing the SELECT button for a number from No. 0 ~ No. 9. (Not selecting a number continues default values without a problem.)
4. Press the WEIGHT button. The default value will appear, but entering a number with the keyboard ten-key pad will display a value such as "1.3g/m".
5. Press the WIDTH button. The default value will appear, but entering a number with the keyboard ten-key pad will display a value such as "5.0mm".
6. Press the SPAN button. The default value will appear, but entering a number with the keyboard ten-key pad will display a value such as "35mm".
7. The microphone surface will approach the center of belt tension as near as possible. (See Figure 5-1)

NOTE: Use the tip of a pair of tweezers for the timing belt plucking operation of the above steps, but be careful that the plucked belt does not make contact with the microphone.

8. Press the MEASURE button. ("----" will appear in the LCD.)



9. Grasp the Timing Belt with the tip of a pair of tweezers and pull the belt downwards to pluck it. (See Figure 5-1, "PF Belt Tension Adjustment") The "----" straight line in the LCD will change as though impacting a wave, a high-pitched beep will notify of the measurement results and an "N" will appear in the LCD. Regardless of the force used to pluck the Timing Belt, the instrument is able to measure by accurately picking up the acoustic tone, and the results are displayed in "N" units (Newton).
10. Repeat Steps 8 ~ 9, delicately shifting the variable part of the PF Motor installation position to adjust the tension until it comes within the range of the standard value.

NOTE: Standard Value is 9~14N.

CAUTION



- If plucking the belt has no effect and the LCD does not change at all, try plucking the belt again after waiting 2 ~ 3 seconds.
- Ensure a quiet environment when taking the measurement so that the microphone will not be prevented from accurately measuring due to picking up surrounding noise.
- If measurement results widely differ, there is a high probability that some of the measurements are not being picked up accurately, so pluck the belt again with tweezers and record the value for the approximate results of 2 measurements. Displayed values are highly reliable, with an error factor of 1/100 ~ 5/100.

5.3 Adjustments by Adjustment Program

This machinery is adjusted by using specialized adjust program. Adjusted revision figure is written into EEPROM of Main Board.

This program absorbs disparities of each printer mechanism characteristic in order to maintain uniform print quality. When specified parts or units are removed or replaced, it is necessary to write in proper correction values by using this adjustment program.

5.3.1 Adjustment Program Installation

1. Insert floppy disc in which Adjustment Program is saved to floppy disc drive.
2. Open floppy disc and copy Adjustment program on desk top.
3. Run the program.

CAUTION



- Confirm whether USB Driver is in PC before installing this program.
- This program is exclusive for windows98/ME. This does not operate for DOS, Windows 3.x, Windows 95 or NT.
- Do not start program before connecting USB cable to CX5100/5200/5300/5400.



5.4 Uploading Firmware

CX5100/5200 firmware is stored in the flash ROM on the C496 Main Board. Re-installation of firmware is performed by uploading from a PC, without requiring disassembly of the printer. Steps for uploading firmware are explained in this section. As, the firmware is stored in OTPROM on C496MAIN-B board, which is on the socket of the main board, you can replace it.

CAUTION



- The PC used for firmware installation should be running Windows 98/98SE in order to support the USB interface.
- Install TWAIN “EPSON Colorio Copy FB and EFlash3 onto the PC.
- PC is required only the twain “EPSON Colorio Copy FB”, and we have revised it as ver. 1.04 “C496C07W.exe”. Then, we can use it with TWAIN 5 for Stylus CX3100/3200, CX5100/5200 and Dream Combo N6100. So you may not uninstall another TWAIN 5 for Stylus CX3100/3200, CX5100/5200 and Dream Combo N6100.
- The EFlash 3 Ver. 1.04 “C496C07W.exe” is for CX5100/5200 only.

1. Connect CX5100/5200 and the PC with a USB cable.
2. Turn on power for CX5100/5200 and the PC.
3. Start EFlash3 by double-clicking EFlash3.exe.



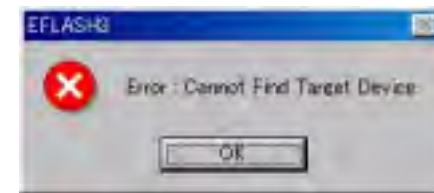
Figure 5-2. EFlash3 Startup Screen

4. Continue the program by pressing the “Next >” button, and the window shown in Figure 5-3 will be displayed.

CAUTION



If the error message shown below appears, the underlined machine name of *.inf file located in the same folder with the upload program will be changed to the machine name that will actually receive the upload.



strTarget2=EPSON Stylus CX5100

or

strTarget2=EPSON Stylus CX5200

- If errors continue after performing the step above, try changing the PC.

5. Search for the firmware by pressing the button marked “>>”.

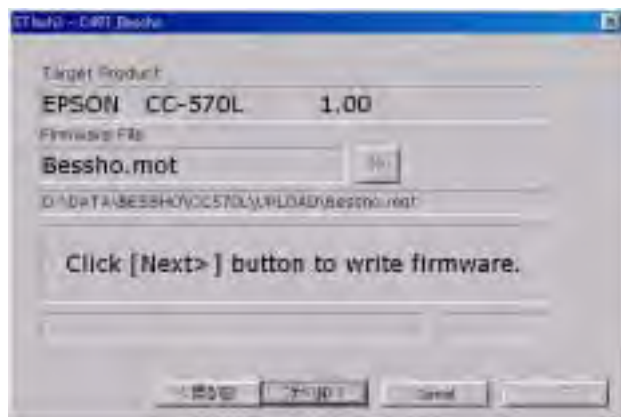


Figure 5-3. Firmware Search

6. If the menu shown below appears, select the target file and press “Open”.

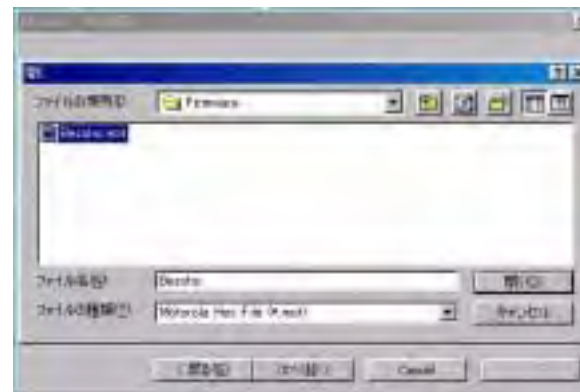


Figure 5-4. Selecting the File

7. Pressing the EFlash3 “Next >” button will start transfer of the firmware.

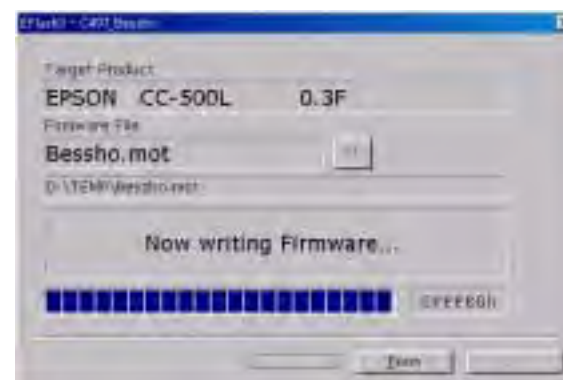


Figure 5-5. Starting Firmware Transfer

CAUTION



The firmware is in Motorola format. (It will have a *.MOT file extension.)
If the file has a different file extension, change it to the .MOT extension.

8. After successful completion of firmware transfer, the content shown below will appear in the EFlash3 window. The CX5100/5200 will be automatically turned off. The next time power is turned on, the CX5100/5200 will operate with the new firmware.

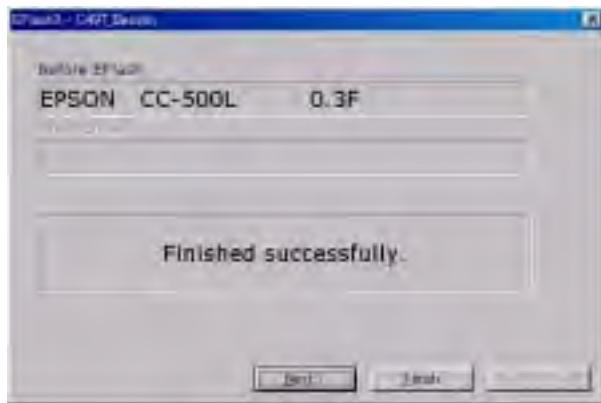


Figure 5-6. Upload Completed

5.4.1 Modify the product name

As, the CX5200 are as standard models in the EFlash3 Ver1.04, we must modify it on the CX5100. The procedure is as follows.

1. Run the EFlash3 by double clicking EFlash3.exe icon. The main menu is appeared as follows.



Figure 5-7. Main menu

2. Push "About" button. The special window is appeared as follows.



Figure 5-8. Special menu

CAUTION



If the PC is running with Windows 98 Second Edition, writing to ROM from the OS will be limited to 10 instances. In this case, decompress all the files in the compressed file "Retry_tool" RMDEV.exe and delete the old file by executing the newly formed execution file RMDEV.exe.

3. Click light button on the mouse. The password menu is appeared as follows.



Figure 5-9. Password menu

4. Input “flash” as password, then the setting menu is appeared as follows.

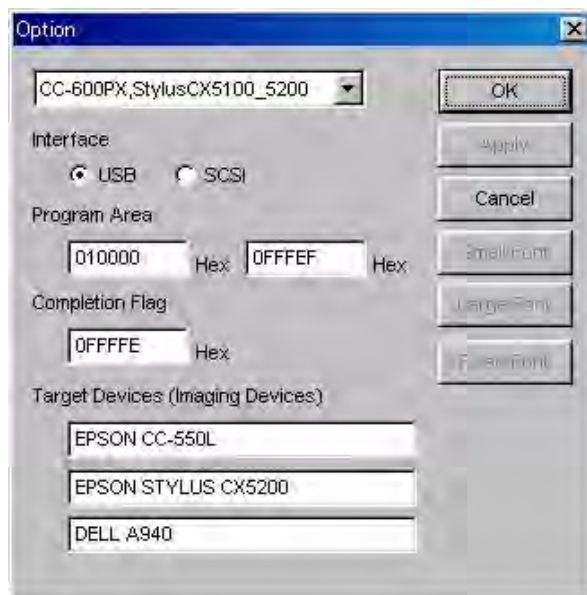


Figure 5-10. Setting menu

5. If you will install the new firmware for CX5100, you should change from Target Device “EPSON STYLUS CX5200” on the second line from the bottom to “EPSON STYLUS CX5100” only. Then, push “OK” button, the special window is appeared again.

NOTE: Do not change the another value, ex. Program Area, Completion Flag, etc.

6. Click the left button of mouse, then the main menu will be appeared.
7. After that, you may push “N” button to continue the firmware uploading following the service manual.

CHAPTER

6

MAINTENANCE



6.1 Overview

This section describes maintenance to maintain function and performance of this product.

6.1.1 Cleaning

Clean the unit when dirt is conspicuous. In particular, a dirty document glass plate will have a direct affect when acquiring image quality, so completely remove marks on the glass and keep it clean.

CAUTION

- **Never use chemical solvents, such as thinner, benzine as they may deform or deteriorate plastic and rubber products.**
- **Be careful not to damage any components when you clean inside the printer.**
- **Do not scratch the surface of PF roller assembly. Use soft brush to wipe off any dusts. Use a soft cloth moistened with alcohol to remove the ink stain.**
- **Do not habitually use the cleaning sheets included with the media. Habitual use can cause removal of the PF Roller coating. There is no problem when the adhesive side of the cleaning sheet is faced toward the ASF LD Roller for cleaning of the ASF LD Roller.**

☐ Exterior parts

Use a clean soft cloth moistened with water and wipe off any dirt. If the exterior parts are stained with ink, use a cloth moistened with neutral detergent to wipe it off.

☐ Inside the printer

Use a vacuum cleaner to remove any paper dust.

☐ Document glass

Remove dust or any paper with a clean dry cloth. In case dirt is serious or alien substance is stick, wipe it off with a cloth moistened with neutral detergent. In case Stain is remained, wipe again with a dry clean cloth.

☐ ASF Roller

For cleaning of rollers inside the ASF Unit using the adhesive surface of the cleaning sheets, set the cleaning sheet in place and then put your hand on the sheet to help push it inwards while pressing the color copy button or the monochrome copy button. Because the printer has two types of rollers (LD Roller and Retard Roller), perform cleaning a second time after reversing the orientation of the adhesive surface.

6.1.2 Lubrication

6.1.2.1 Scanner Lubrication Point (TBD)

In case of replacing Scanner CR Unit parts or operation sound of carriage shift is remarkably big, lubrication is necessary. Following tables show designated grease and lubrication point.

Table 6-1. Grease Applied to the Stylus CX5100/5200

Type	Name	EPSON Code	Supplier
Grease	G-45	1033657	EPSON

Table 6-2. Lubrication Point

Fig No.	Lubrication place	Lubrication amount
6-1	Scanner Carriage Guide Shaft	TBD

CAUTION



If Lubrication exceeds designated volume, mechanism may be damaged or function may be harmed. Accordingly designated volume to be kept for lubrication.

Figure 6-1. Scanner Unit Lubrication Point (TBD)

6.1.2.2 Printer Unit Service Maintenance

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

□ Head Cleaning

The printer has a built-in head cleaning function, which is activated by operating the operation panel. Confirm that the printer is in stand-by state (The power indicator is not blinking).

Execute "head Cleaning" with operation panel menu button and the printer starts cleaning sequence.

□ Maintenance Error

Ink is used for the operation such as cleaning as well as printing. Therefore, the printer waste certain amount of ink and drains it into waste ink pad, while counting the amount of the waste ink.

Once the amount of the waste ink reaches the predetermined limit, the printer indicates "Fatal Error" (LED: blink) and the waste ink pad should be replaced.

- Overflow Counter (Protection Counter A) count up ≥ 44436
- Timing for replacing the Waste Ink pad

When the total amount of the waste ink reaches the predetermined limit, the printer indicates "Fatal Error" (LED: blink). Also, During repair servicing, Confirm firmware version, select code page, nozzle check pattern together with overflow counter.

If the ink counter value is close to its upper limit, notify your customer and recommend that the waste ink pad is to be replaced. (if the waste ink pad is not replaced at that time, there is the possibility that "Maintenance Error" will occur just after the printer is retuned to the customer.)

Once you have the confirmation from the customer, replace the waste ink pad.

■ Replacement procedure

Refer to "4.4.5 Waste Ink Pads/Lower Housing Removal" on page 52.

■ Treatment after the Replacement

Reset the Overflow counter (Protection counter A). Power on printer and enter into special menu (ordinary operation) and execute waste ink counter reset or implement counter clear by adjust program.

6.1.2.3 Printer Lubrication Point

Type and suitable volume of grease lubricated to Printer is decided base on factory evaluation. Accordingly, definitely use suitable volume of designated grease to designated point for repair and maintenance of products. Designated grease and usage point are shown as below.



- Never use grease except for designated one, as others must badly affect and damage machinery life/function of the product.
- As suitable volume is also designated based on evaluation result, avoid applying undesigned volume.
- When applying G-46 without changing any parts, use the Flux Dispenser (1049533) to apply one coat to specified areas. Because it is necessary to apply G-46 when replacing old parts with new parts, soak the parts in G-46 as shown in the photograph on page 82.

Table 6-3. Grease Applied to the Stylus CX5100/5200

Type	Name	EPSON Code	Supplier
Grease	G-26	1080614	EPSON
	G-46	1039172	
	G-63	1218320	

Table 6-4. Lubrication Points

Fig No.	Lubrication Point/Type	Remarks
6-2	<p><Lubrication Point></p> <ul style="list-style-type: none"> • Driven Roller x 8 <p><Lubrication Type></p> <ul style="list-style-type: none"> • G-46 <p><Lubrication Amount></p> <ul style="list-style-type: none"> • Soak in basin containing G-46 and remove immediately. 	<ul style="list-style-type: none"> • Joint use of Flux Dispenser is recommended.



Table 6-4. Lubrication Points

Fig No.	Lubrication Point/Type	Remarks
6-3	<Lubrication Point> (No.1) <ul style="list-style-type: none"> Paper Back Lever shaft socket (2 places) <Lubrication Type> <ul style="list-style-type: none"> G-26 <Lubrication Amount> <ul style="list-style-type: none"> Shaft socket entire length 	<ul style="list-style-type: none"> Use a brush to apply it.
	<Lubrication Point> (No.2) <ul style="list-style-type: none"> Paper Back Lever left end <Lubrication Type> <ul style="list-style-type: none"> G-46 <Lubrication Amount> <ul style="list-style-type: none"> Soak in basin containing G-46 and remove immediately. 	<ul style="list-style-type: none"> Joint use of Flux Dispenser is recommended.
6-4	<Lubrication Point> <ul style="list-style-type: none"> Paper Back Support Lever <Lubrication Type> <ul style="list-style-type: none"> G-46 <Lubrication Amount> <ul style="list-style-type: none"> Soak in basin containing G-46 and remove immediately. 	<ul style="list-style-type: none"> Joint use of Flux Dispenser is recommended.
6-5	<Lubrication Point> <ul style="list-style-type: none"> LD Roller Shaft left/right ends <Lubrication Type> <ul style="list-style-type: none"> G-46 <Lubrication Amount> <ul style="list-style-type: none"> Soak in basin containing G-46 and remove immediately. 	<ul style="list-style-type: none"> Joint use of Flux Dispenser is recommended.

Table 6-4. Lubrication Points

Fig No.	Lubrication Point/Type	Remarks
6-6	<Lubrication Point> <ul style="list-style-type: none"> Combination Gear Ratchet 65.6 & Spur Gear 48 <Lubrication Type> <ul style="list-style-type: none"> G-46 <Lubrication Amount> <ul style="list-style-type: none"> Soak in basin containing G-46 and remove immediately. 	<ul style="list-style-type: none"> Joint use of Flux Dispenser is recommended.
6-7	<Lubrication Point> <ul style="list-style-type: none"> The right end of PF Roller unit on metal surface a circle. <Lubrication Type> <ul style="list-style-type: none"> G-26 <Lubrication Amount> <ul style="list-style-type: none"> φ1 x 3mm 	<ul style="list-style-type: none"> Do not attach the grease to the paper path. Be carefully not lubricate on coated surface. Do not touch coated surface of PF Roller. Use a brush to apply it.
6-8	<Lubrication Point> <ul style="list-style-type: none"> Carriage Unit Shaft Socket <Lubrication Type> <ul style="list-style-type: none"> G-63 <Lubrication Amount> <ul style="list-style-type: none"> Shaft Socket Inner Side 	<ul style="list-style-type: none"> Use a brush to apply it.
6-9	<Lubrication Point> <ul style="list-style-type: none"> Pulley Driven Holder <Lubrication Type> <ul style="list-style-type: none"> G-26 <Lubrication Amount> <ul style="list-style-type: none"> φ1 x 2mm x 4points 	<ul style="list-style-type: none"> Use a brush to apply it.

Table 6-4. Lubrication Points

Fig No.	Lubrication Point/Type	Remarks
6-10	<p><Lubrication Point></p> <ul style="list-style-type: none"> • Main Frame Upper Part back side (Between Change Lever and Main Board Unit) <p><Lubrication Type></p> <ul style="list-style-type: none"> • G-26 <p><Lubrication Amount></p> <ul style="list-style-type: none"> • $\phi 1$ x entire length 	<ul style="list-style-type: none"> • Use a brush to apply it.
6-11	<p><Lubrication Point></p> <ul style="list-style-type: none"> • Joint between ASF Trigger Lever and ASF Frame <p><Lubrication Type></p> <ul style="list-style-type: none"> • G-26 <p><Lubrication Amount></p> <ul style="list-style-type: none"> • Protrusion surface area 	<ul style="list-style-type: none"> • Use a injector to apply it.
6-12	<p><Lubrication Point></p> <ul style="list-style-type: none"> • ASF Trigger Lever Right End <p><Lubrication Type></p> <ul style="list-style-type: none"> • G-26 <p><Lubrication Amount></p> <ul style="list-style-type: none"> • Corner surface area 	<ul style="list-style-type: none"> • Use a brush to apply it.

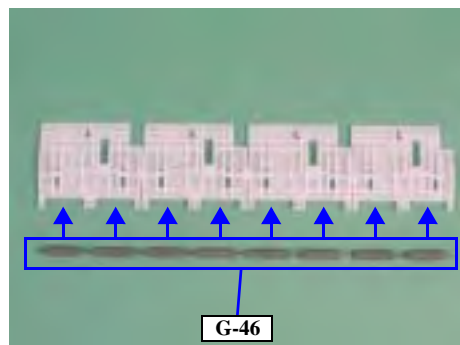


Figure 6-2. Driven Roller

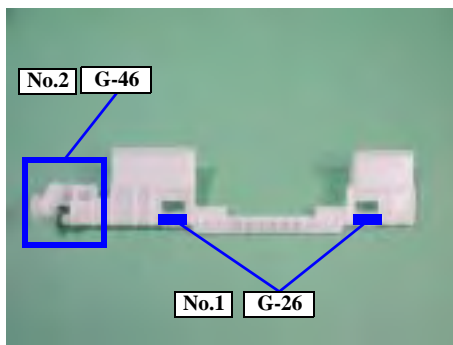


Figure 6-3. Paper Back Lever

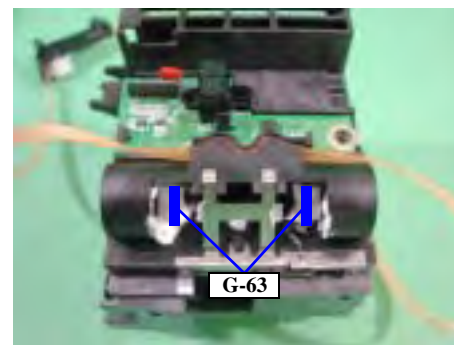


Figure 6-8. Carriage Unit

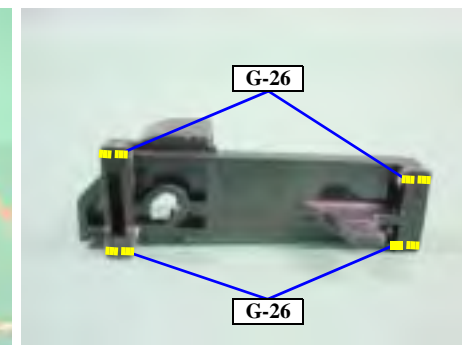


Figure 6-9. Pulley Driven Holder

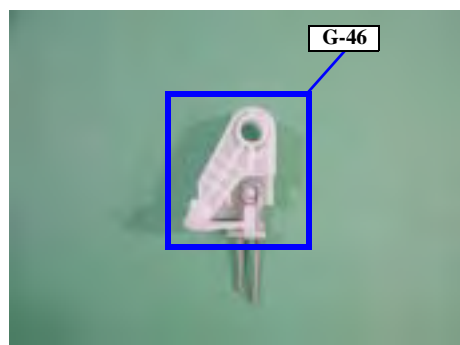


Figure 6-4. Paper Back Support Lever

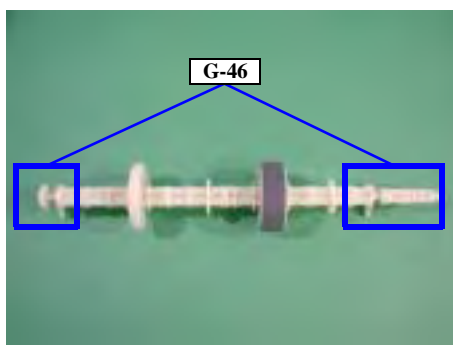


Figure 6-5. LD Roller Shaft

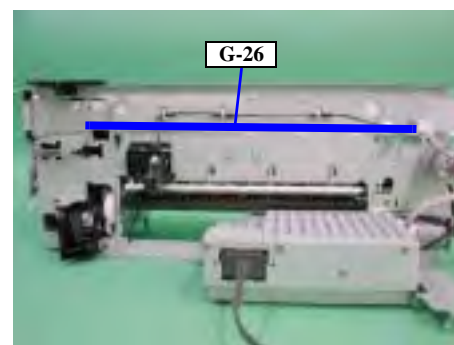


Figure 6-10. Main Frame

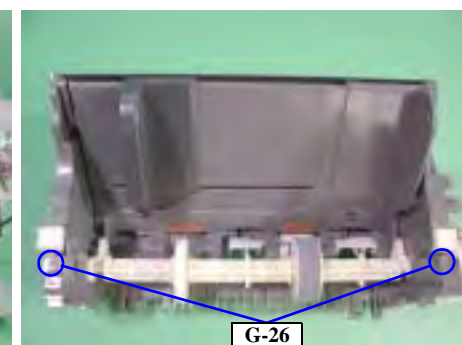


Figure 6-11. ASF Unit

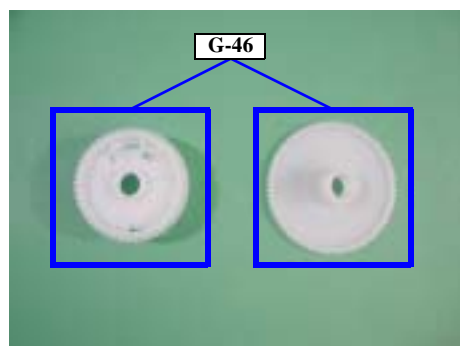


Figure 6-6. Clutch Gear

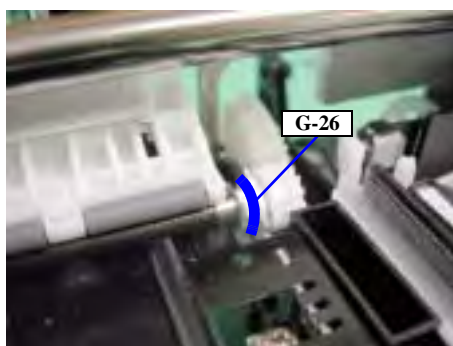


Figure 6-7. PF Roller

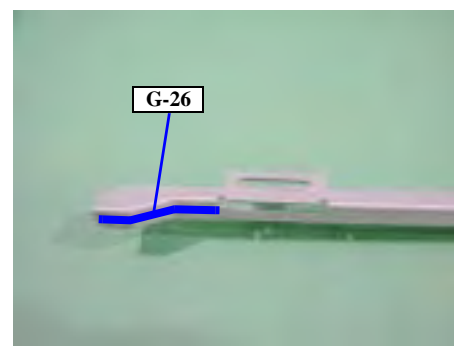


Figure 6-12. ASF Trigger Lever

CHAPTER

7

APPENDIX



7.1 Connector Connections

7.1.1 Connector Arrangement

The diagram below shows connection relationships for Stylus CX5100/5200/5300/5400 circuit board connectors.

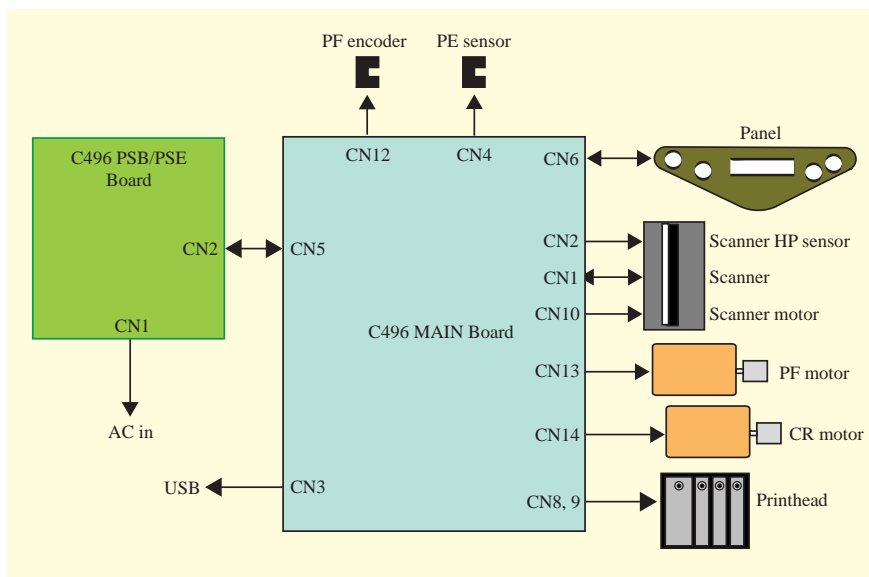


Figure 7-1. Connection Relationships of Circuit Board Connectors

7.1.2 EEPROM Address Map

Address	Explanation	Settings	Default settings	Factory settings
00H	Ink flag1	Bit7: Reserved Bit6: Reserved Bit5: In Manual CL Bit4: Initial fill required Bit3: Head Hot Bit2: Ink cleaning seq. Bit1: Reserved Bit0: Reserved	00H	10H
01H	Ink flag2	Bit7: CSIC chg. seq. required Flag1 Bit6: CSIC chg. seq. required Flag2 Bit5: 1 st Ink Cartridge-B Bit4: 1 st Ink Cartridge-Y Bit3: 1 st Ink Cartridge-M Bit2: 1 st Ink Cartridge-C Bit1: Reserved Bit0: Reserved	00H	00H
02H	CL Time	Low Byte High Byte	00H	00H ^(*2)
03H			00H	00H ^(*2)
04H	Current Time	Low Byte High Byte	00H	00H
05H			00H	00H
06H	Accumulated printing time	Low Byte High Byte	00H	00H
07H			00H	00H
08H	Fatal Error Code		00H	00H
09H	CSIC ink end factor		00H	-
0AH	Ink counter A0	Low Byte High Byte	00H	00H
0BH			00H	00H ^(*3)
0CH	Ink counter R0	Low Byte High Byte	00H	00H ^(*3)
0DH			00H	00H ^(*3)
0EH	Ink counter R80	Low Byte High Byte	00H	00H ^(*3)
0FH			00H	00H ^(*3)

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Address	Explanation	Settings	Default settings	Factory settings
10H 13H	Ink counter Cb	Low Byte High Byte	00H 00H	00H 00H
14H 17H	Ink counter Cy	Low Byte High Byte	00H 00H	00H 00H
18H 1BH	Ink counter Cm	Low Byte High Byte	00H 00H	00H 00H
1CH 1FH	Ink counter Cc	Low Byte High Byte	00H 00H	00H 00H
20H 23H	Reserved for Ink counter Clm		00H 00H	00H 00H
24H 27H	Reserved for Ink counter Clc		00H 00H	00H 00H
28H	CL2 Counter KK		03H	03H
29H	Total Timer CL Counter		00H	00H
2AH	PF position adjustment for BK	-4 <= n <= +4	00H	(*1)
2BH	PF position adjustment for YMC	-4 <= n <= +8	00H	(*1)
2CH	CR Duty		00H	00H
2DH	PF Duty		00H	00H
2EH	D4 mode I/F	Bit7: Reserved Bit6: Reserved Bit5: Reserved Bit4: Reserved Bit3: D4 mode USB (*a) Bit2: Bit1: Reserved Bit0:	04H	04H

Address	Explanation	Settings	Default settings	Factory settings
2FH	Interface setting	Bit7: Interface selection(*b) Bit6: Bit5: Interface Time-out 0: 10 seconds 1: 30 seconds Bit4: ECP mode 0: Off 1: On Bit3: IEEE1284 mode 0: On 1: Off Bit2: Compatibility speed 0: Fast 1: Slow Bit1: ECP speed 0: Fast 1: Slow Bit0: Reserved	00H	00H
30H	Bi-D Adjustment for Eco-BK	-60 <= n <= +60 (Units 1/1440inch)	00H	(*1)
31H	Bi-D Adjustment for Eco-CL	-60 <= n <= +60 (Units 1/1440inch)	00H	(*1)
32H	Bi-D Adjustment for VSD1-BK	-60 <= n <= +60 (Units 1/1440inch)	00H	(*1)
33H	Reserved		00H	00H
34H	Bi-D Adjustment for VSD2-BK	-60 <= n <= +60 (Units 1/1440inch)	00H	(*1)
35H	Bi-D Adjustment for VSD2-CL	-60 <= n <= +60 (Units 1/1440inch)	00H	(*1)
36H	Bi-D Adjustment for VSD3-BK	-60 <= n <= +60 (Units 1/1440inch)	00H	(*1)
37H	Bi-D Adjustment for VSD3-CL	-60 <= n <= +60 (Units 1/1440inch)	00H	(*1)
38H	Bi-D Adjustment for VSD4-BK	-60 <= n <= +60 (Units 1/1440inch)	00H	00H
39H	Bi-D Adjustment for VSD4-CL	-60 <= n <= +60 (Units 1/1440inch)	00H	00H

Address	Explanation	Settings	Default settings	Factory settings
3AH	CSIC1 Ink Name1		00H	00H
3BH	CSIC2 Ink Name1		00H	00H
3CH	CSIC3 Ink Name1		00H	00H
3DH	CSIC4 Ink Name1		00H	00H
3EH	Reserved		00H	00H
3FH	Reserved		00H	00H
40H	Head Rank ID for Vh 1L		00H	(*1)
41H	Head Rank ID for Vh 2L		00H	(*1)
42H	Head Rank ID for Vh 2S		00H	(*1)
43H	Head Rank ID for Vh 3L		00H	(*1)
44H	Head Rank ID for Vh 3S		00H	(*1)
45H	Head Rank ID for Vh 4L		00H	(*1)
46H 4EH	Reserved for Head Rank ID		00H 00H	00H 00H
4FH	TG Maker		00H	(*1)
50H	Measurement data (CR Hi Byte)		00H	00H
51H	Measurement data (CR Lo Byte)		00H	00H
52H	Measurement data (PF 30)		00H	00H
53H	Measurement data (PF 08)		00H	00H
54H	Measurement data (CR factory)		00H	00H
55H	CR Trigger offset 80-column side	-128 <= n <= +127 (Units 1/180inch)	00H	(*1)
56H	CR Trigger offset Home position side	-128 <= n <= +127 (Units 1/180inch)	00H	(*1)
57H	1 st Dot Position Adjustment	-60 <= n <= +60 (Units 1/1440inch)	00H	(*1)
58H	Reserved		00H	00H

Address	Explanation	Settings	Default settings	Factory settings
59H	Printer For CSIC	2AH: Japan AAH: World (Euro, US, Asia)	00H	(*4)
5AH 6BH	USB ID		00H 00H	(*1)
6CH	Market ID	00H: World (Euro, US) 01H: Japan 02H: Custom 03H: Asia	00H	(*4)
6DH	Wait Time before printing start	0 <= n <= 127 (Units 10m sec)	00H	00H
6DH 7EH	Reserved		00H 00H	00H 00H
7FH	EEPROM Revision No.		41H	-
80H	Paper Size	T.B.D.	00H	(*1)
81H	Paper Unit	0: Metric 1: US	00H	(*1)
82H	Bottom Margin	0: 14mm 1: 3mm	00H	00H
83H	Language	0: English 1: Japanese 2: French 3: Italian 4: German 5: Spanish 6: Portuguese 7: Dutch	00H	(*1)
84H	Menu Type	0: World (Euro) 1: Japan 2: Custom 2: Asia 4: US	00H	(*1)
85H	Reserved for Panel		00H	00H
86H	Reserved for Panel		00H	00H
87H	Reserved for Panel		00H	00H
88H	Attention for I/C with no guaranty	0: Display 1: Non-Display	00H	00H
89H	Identifier of factory testing	0: Ordinary use 1: Factory testing	00H	00H
8AH	Reserved		00H	00H
8BH	Reserved		00H	00H



Address	Explanation	Settings	Default settings	Factory settings
8CH	Reserved		00H	00H
8DH	Reserved		00H	00H
8EH	Reserved		00H	00H
8FH	Reserved		00H	00H
90H	Paper Size (User Setting)	T.B.D.	00H	(*1)
91H	Paper Unit (User Setting)	0: Metric 1: US	00H	(*1)
92H	Bottom Margin (User Setting)	0: 14mm 1: 3mm	00H	00H
93H	Copy Mode (User Setting)	T.B.D.	00H	00H
94H	Copies (User Setting)	Min. 1 - Max. 99	00H	00H
95H	Quality (User Setting)	T.B.D.	00H	00H
96H	Zoom (Low Byte) (User Setting)	Min. 25 - Max. 400	64H	64H
97H	Zoom (High Byte) (User Setting)		00H	00H
98H	Lighter / Darker (User Setting)	Lighter - FEH, FFH, 00H, 01H, 02H -- Darker	00H	00H
99H 9FH	Reserved for Panel		00H 00H	00H 00H
A0H	Scanner Internal Mode	T.B.D.	00H	00H
A1H A7H	Reserved for Scanner		00H 00H	00H 00H
A8H DFH	Reserved		00H 00H	00H 00H
90H FFH	Model Name		00H 00H	-

(*a): D4mode setting
(EEPROM 2EH) USB

Bit3	Bit2	D4 mode
0	0	Auto
0	1	On
1	0	Off
1	1	N/A

(*b): Interface selection
(EEPROM 2FH, Bit7, 6)

Bit7	Bit6	I/F mode
0	0	Auto
0	1	USB
1	0	N/A
1	1	N/A

NOTE: (*1): Set at factory according to adjustment while manufacturing, serial number or its market.

NOTE: (*2): Initialize by executing "Init EEPROM" menu.

NOTE: (*3): Initialize by executing "Rst Ink OFC" menu.

NOTE: (*4): Same as the setting

"CL time" will be also cleared with 0 by "Initialize timer IC" production command.

7.2 Component Layout (TBD)

The component layouts of this product are as follows.

- ☐ C496MAIN board (TBD)
- ☐ C496MAIN-B board (TBD)
- ☐ C496PSB board
- ☐ C496PSE board

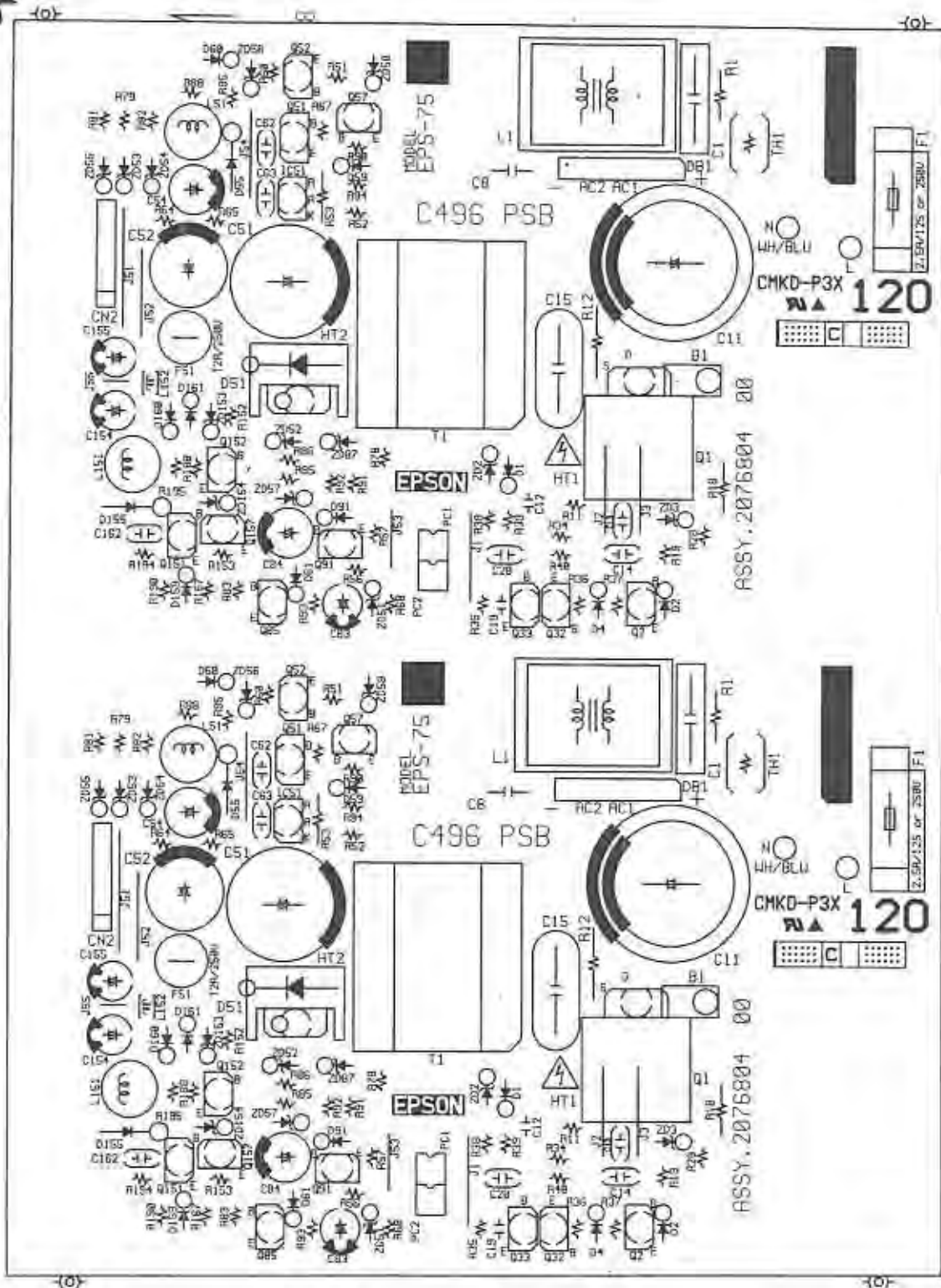
C496MAIN board (TBD)



C496MAIN-B board (TBD)



W/S: 223183-0F

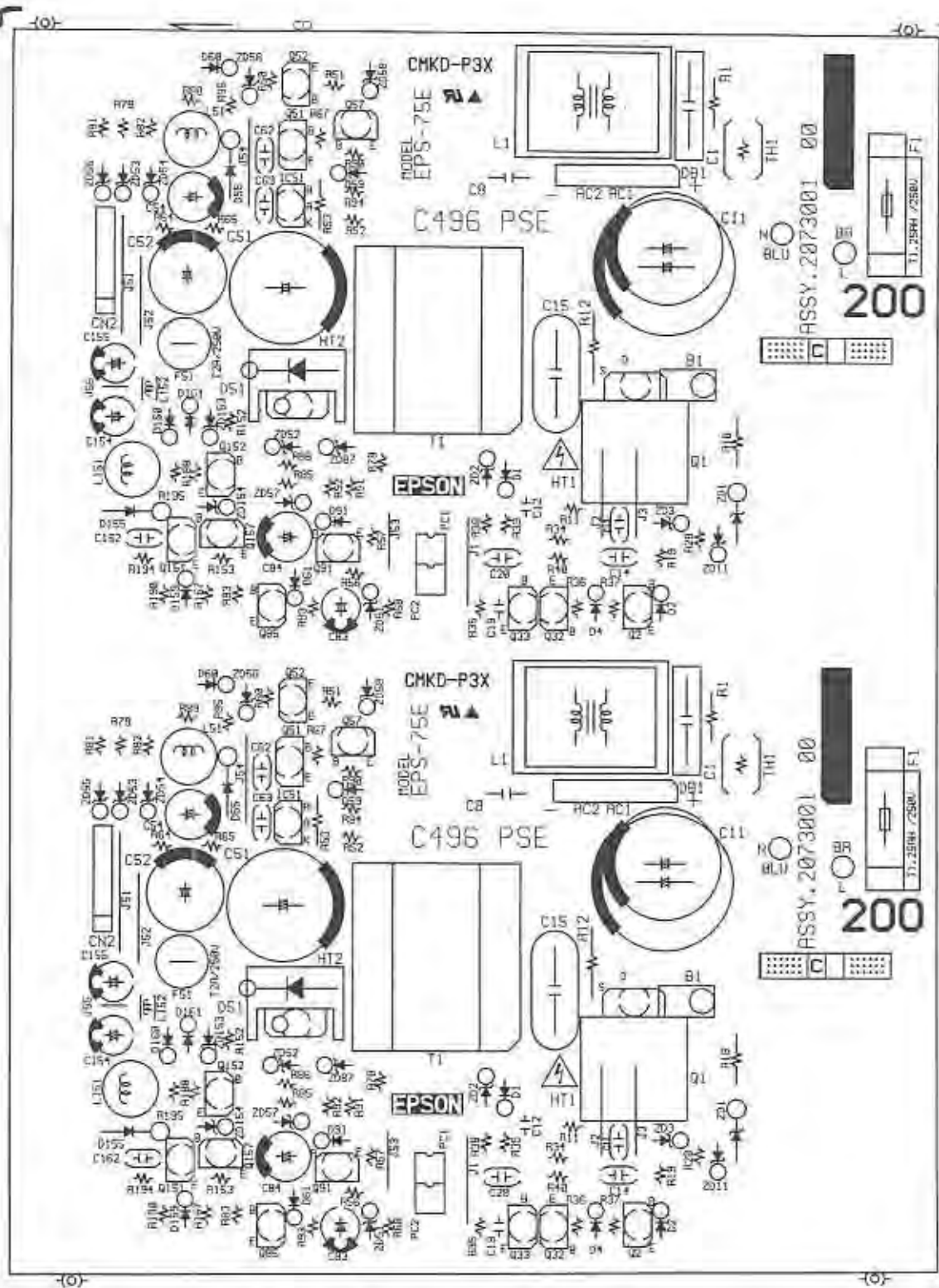


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NO: 223180-04



NOVALUX

207300200

(B)

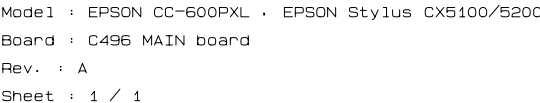
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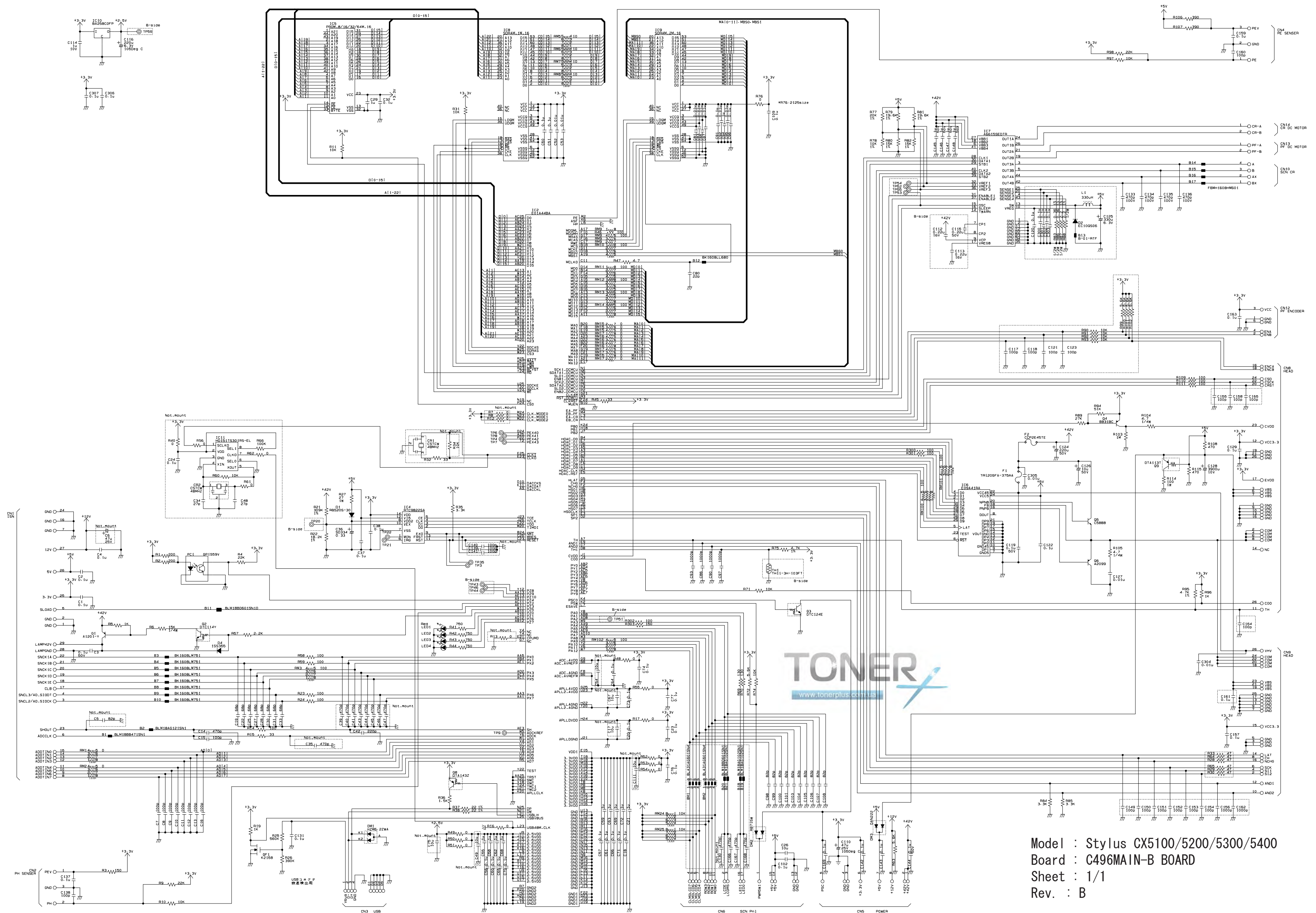
7.3 Circuit Figure

Circuit Figure of each board for this printer are shown in the following pages.

- ☐ C496 Main Board
- ☐ C496 Main-B Board
- ☐ C496 PSB Board
- ☐ C496 PSE Board



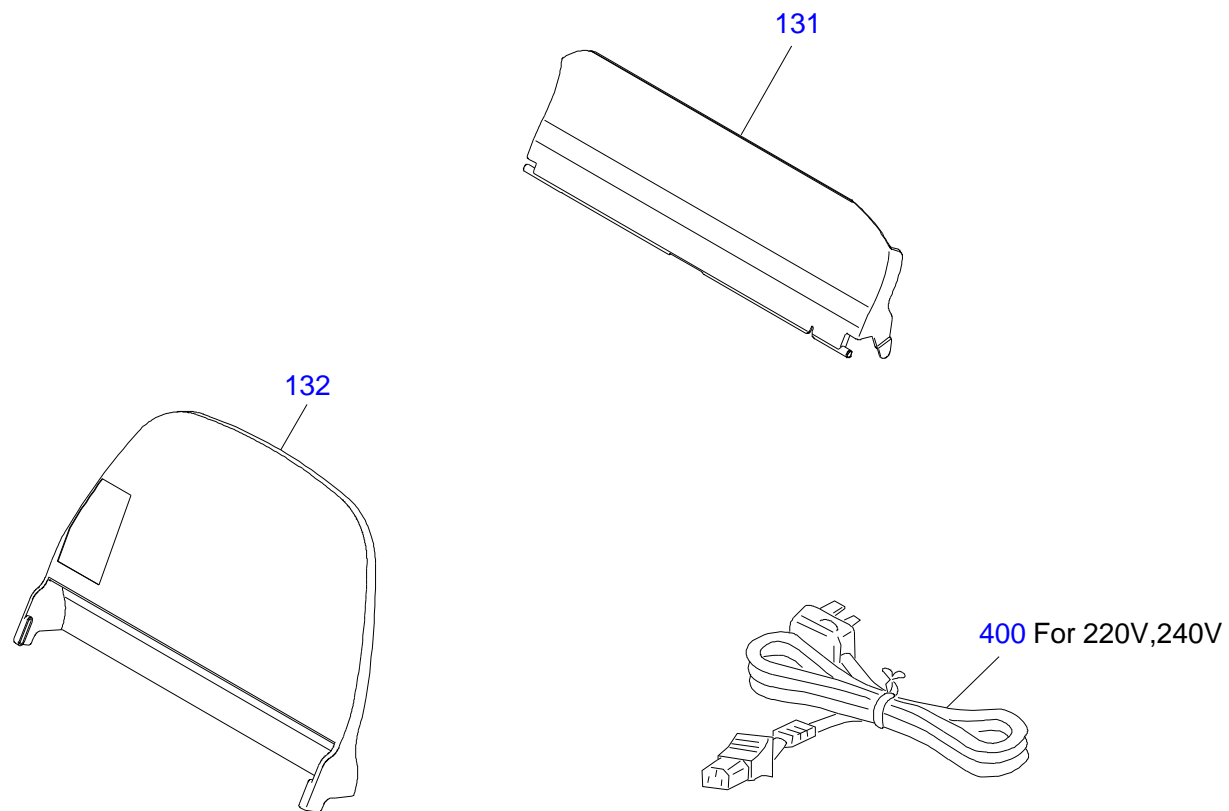


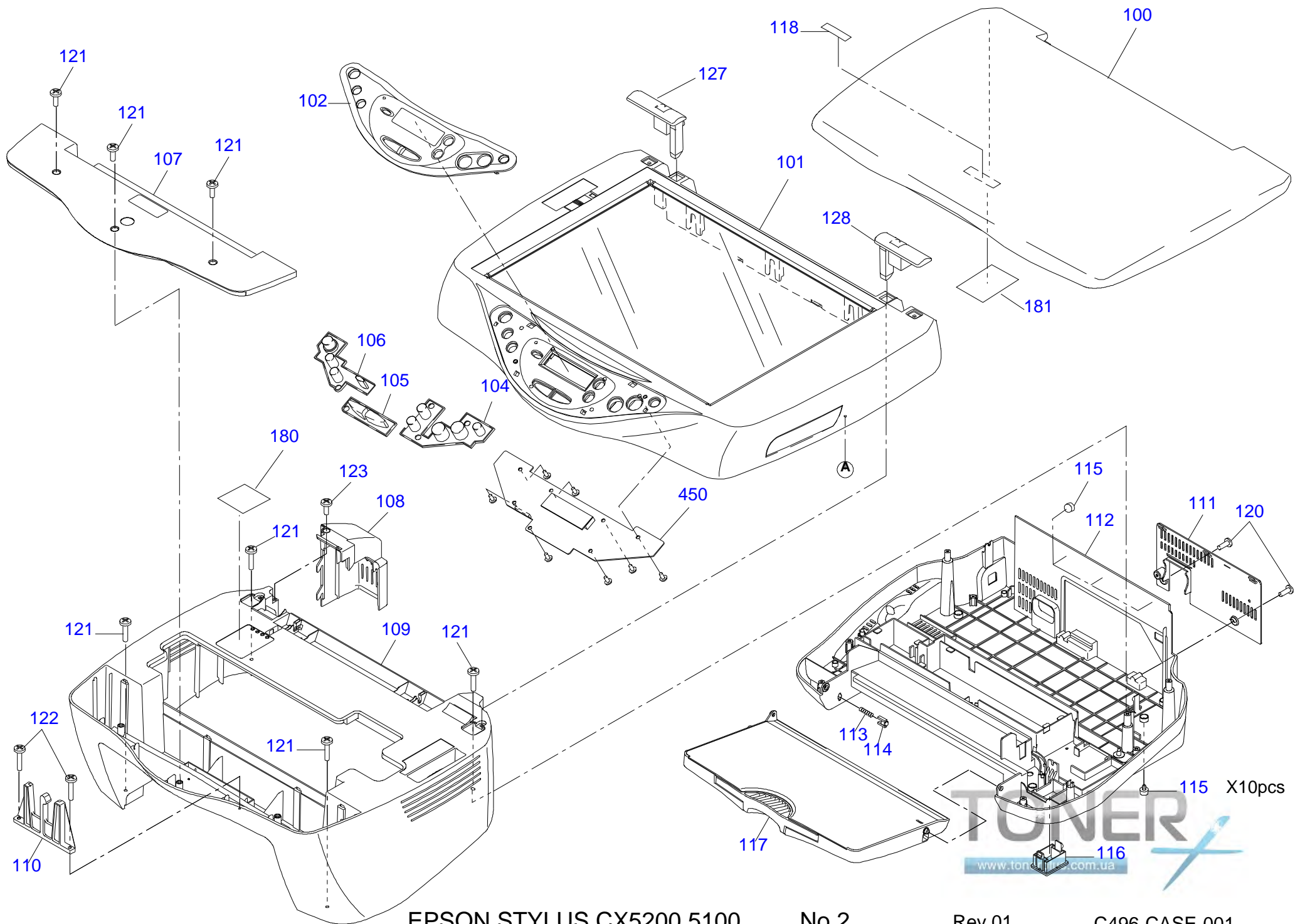


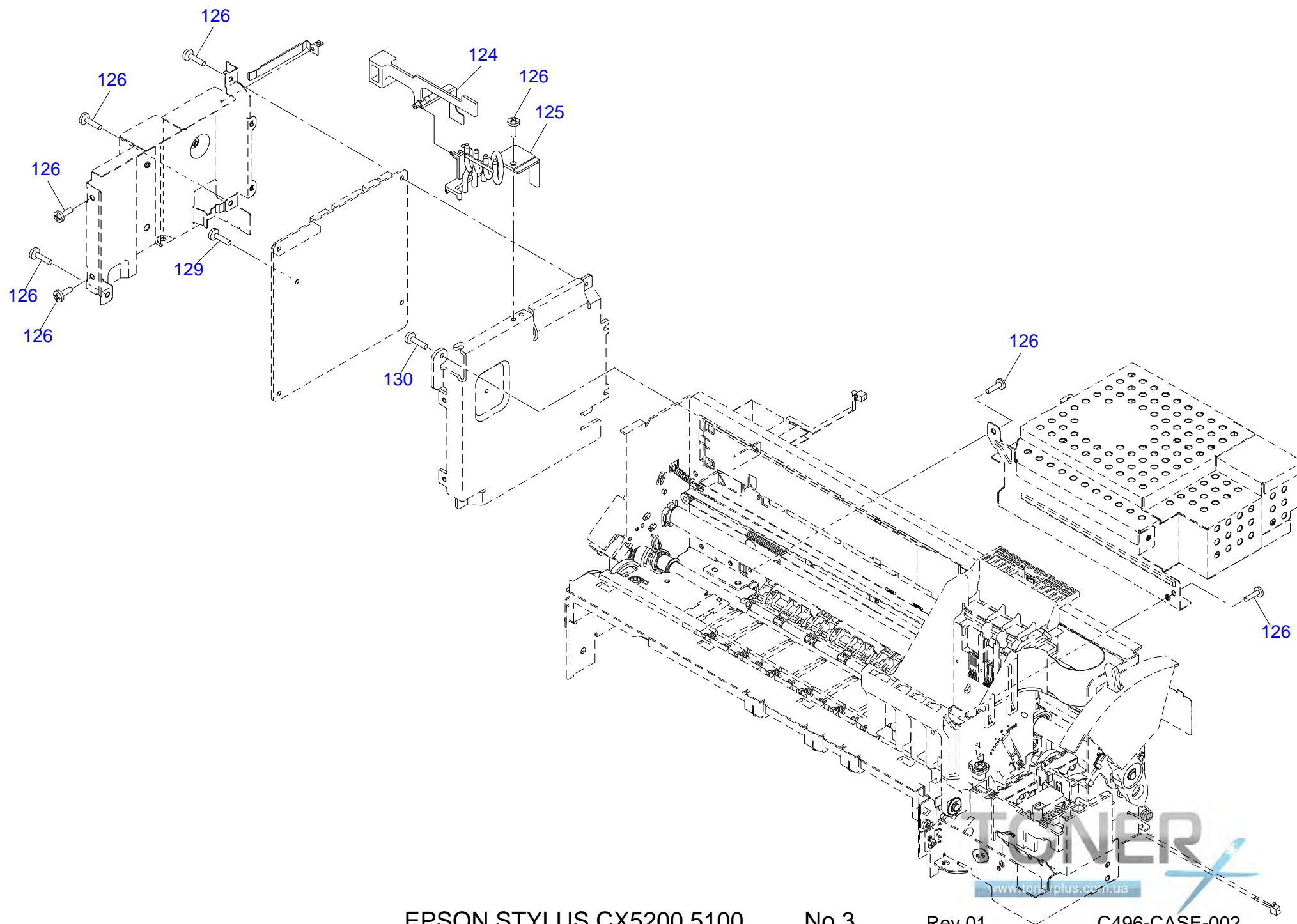
7.4 Exploded Diagrams

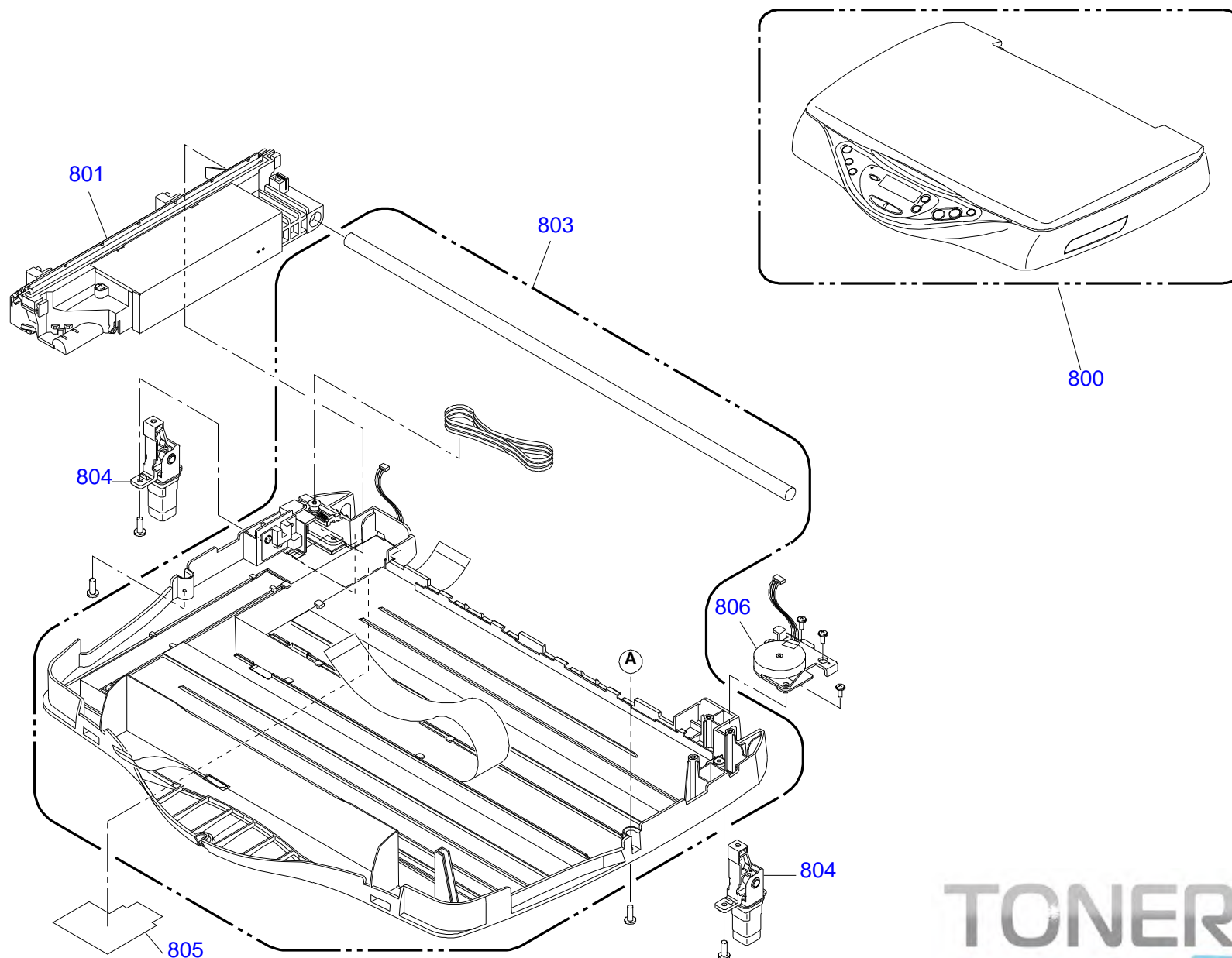
The exploded diagrams of this product are shown in the following pages.

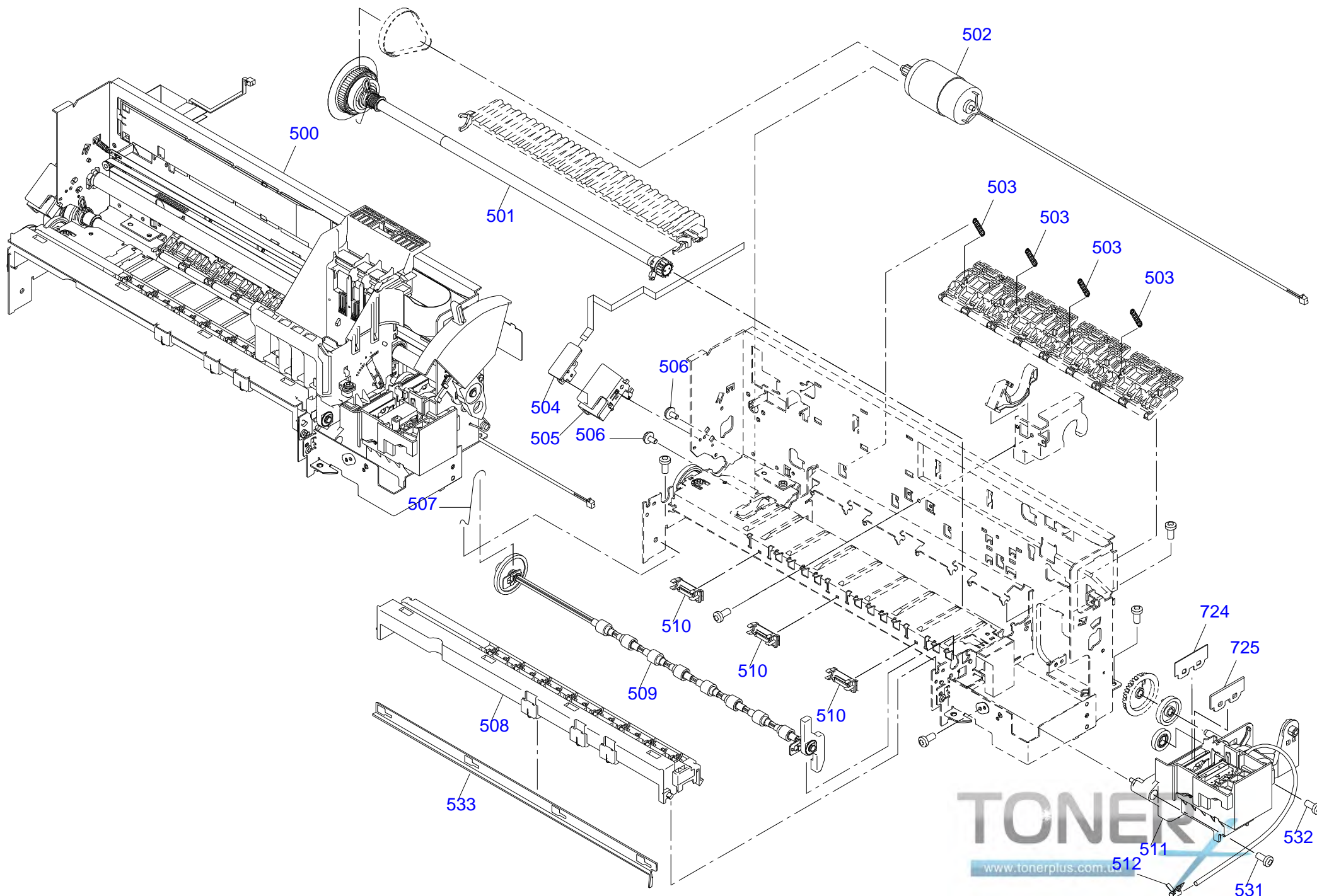


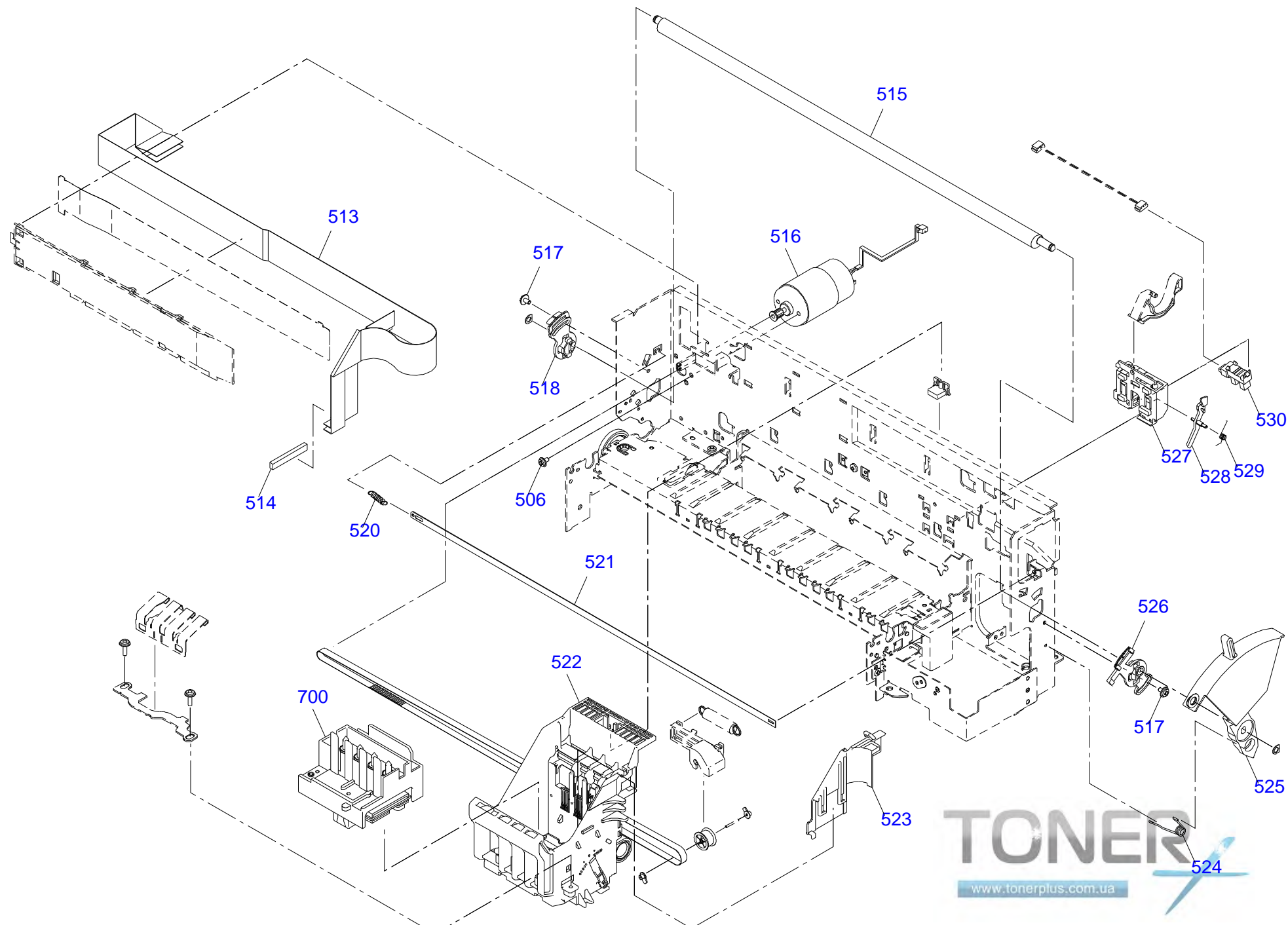


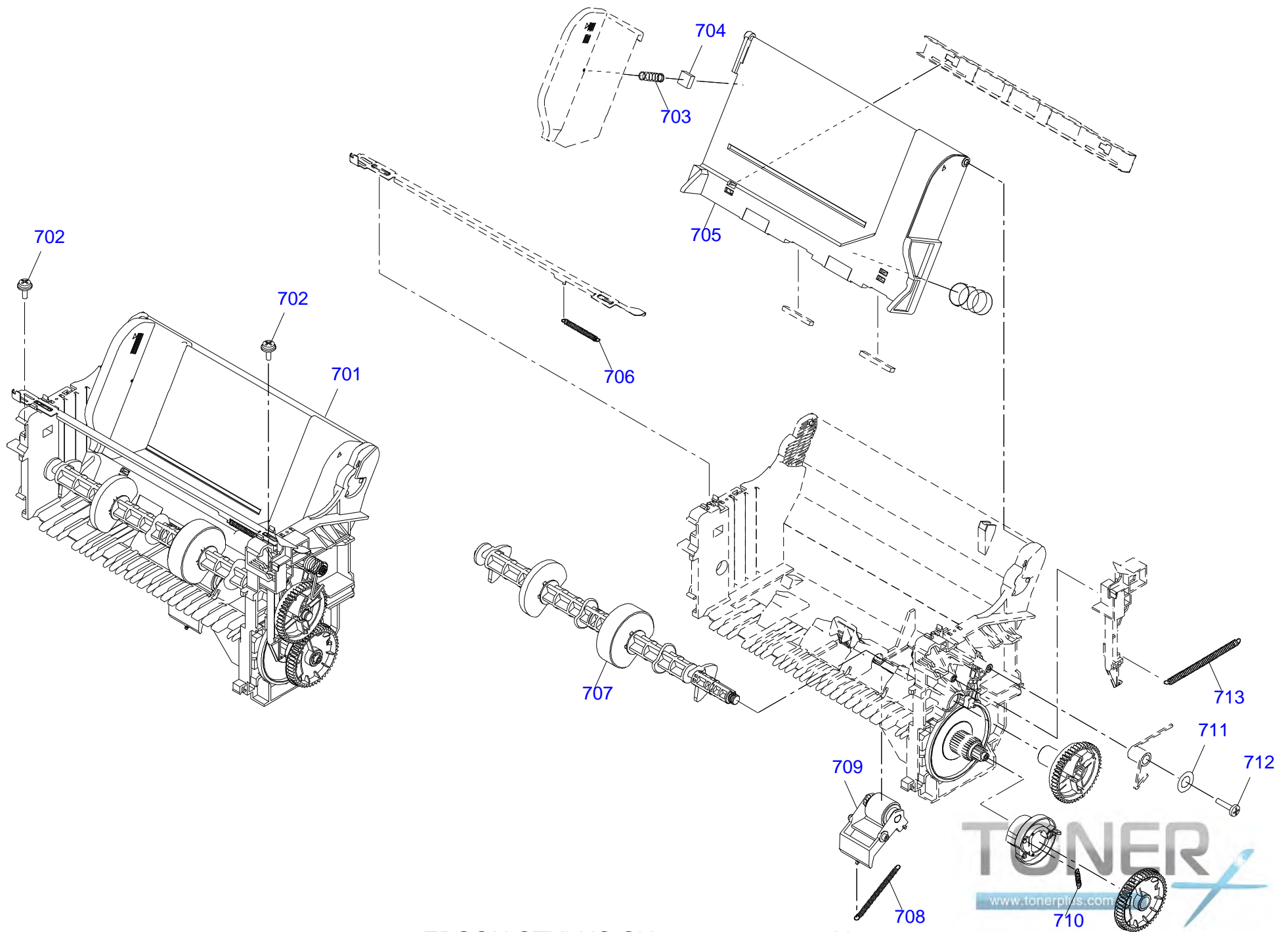












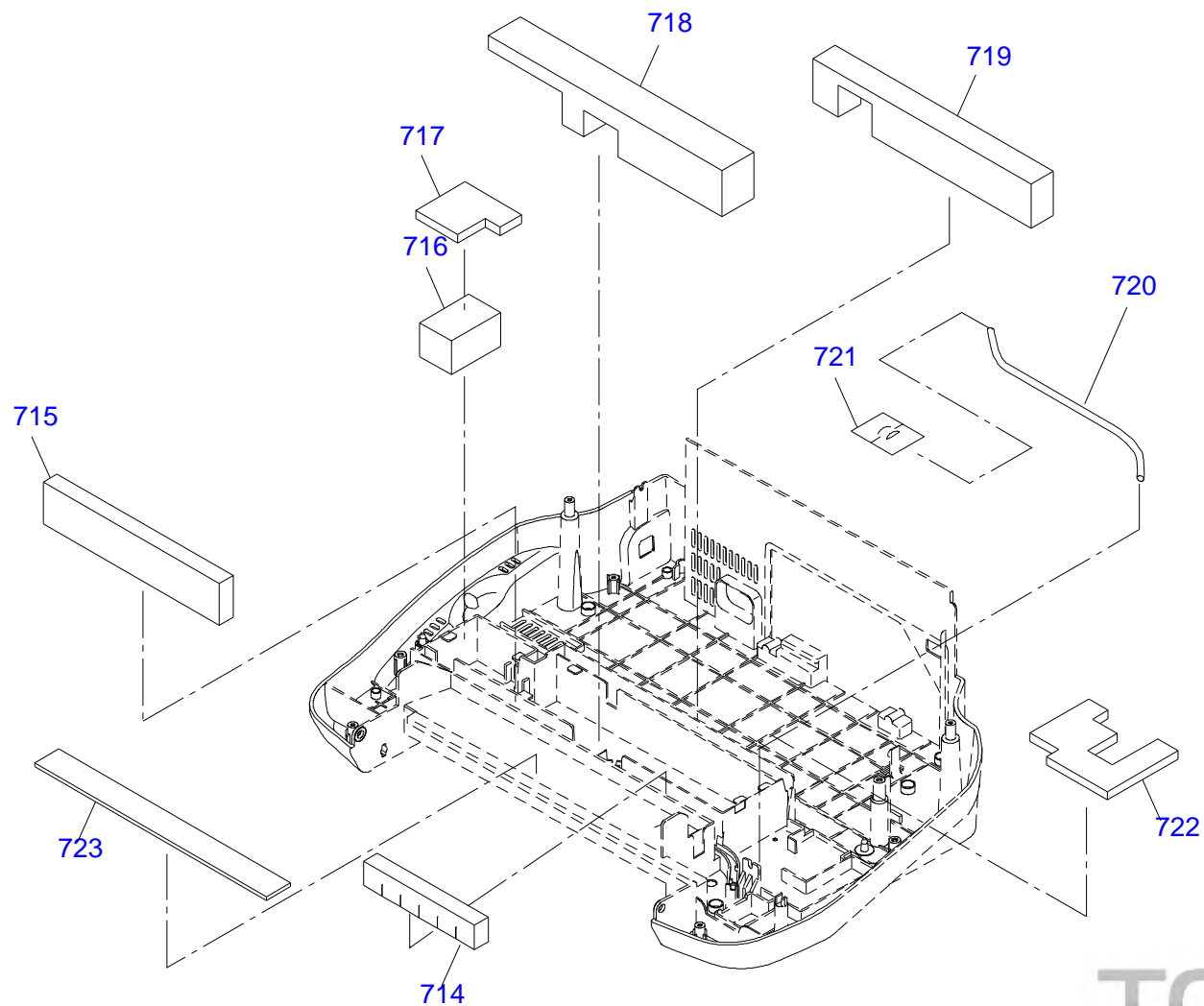
EPSON STYLUS CX5200,5100

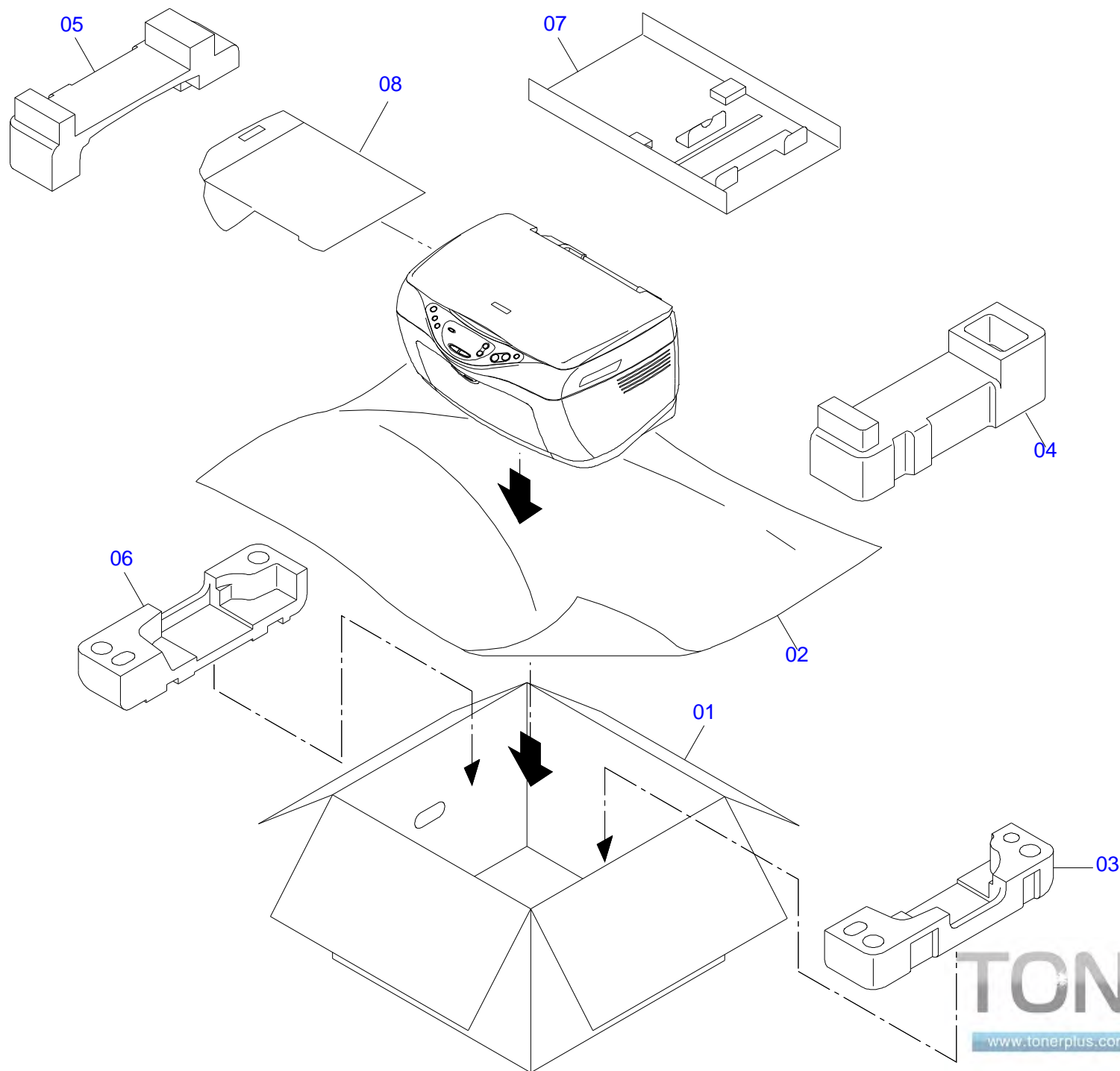
No.8

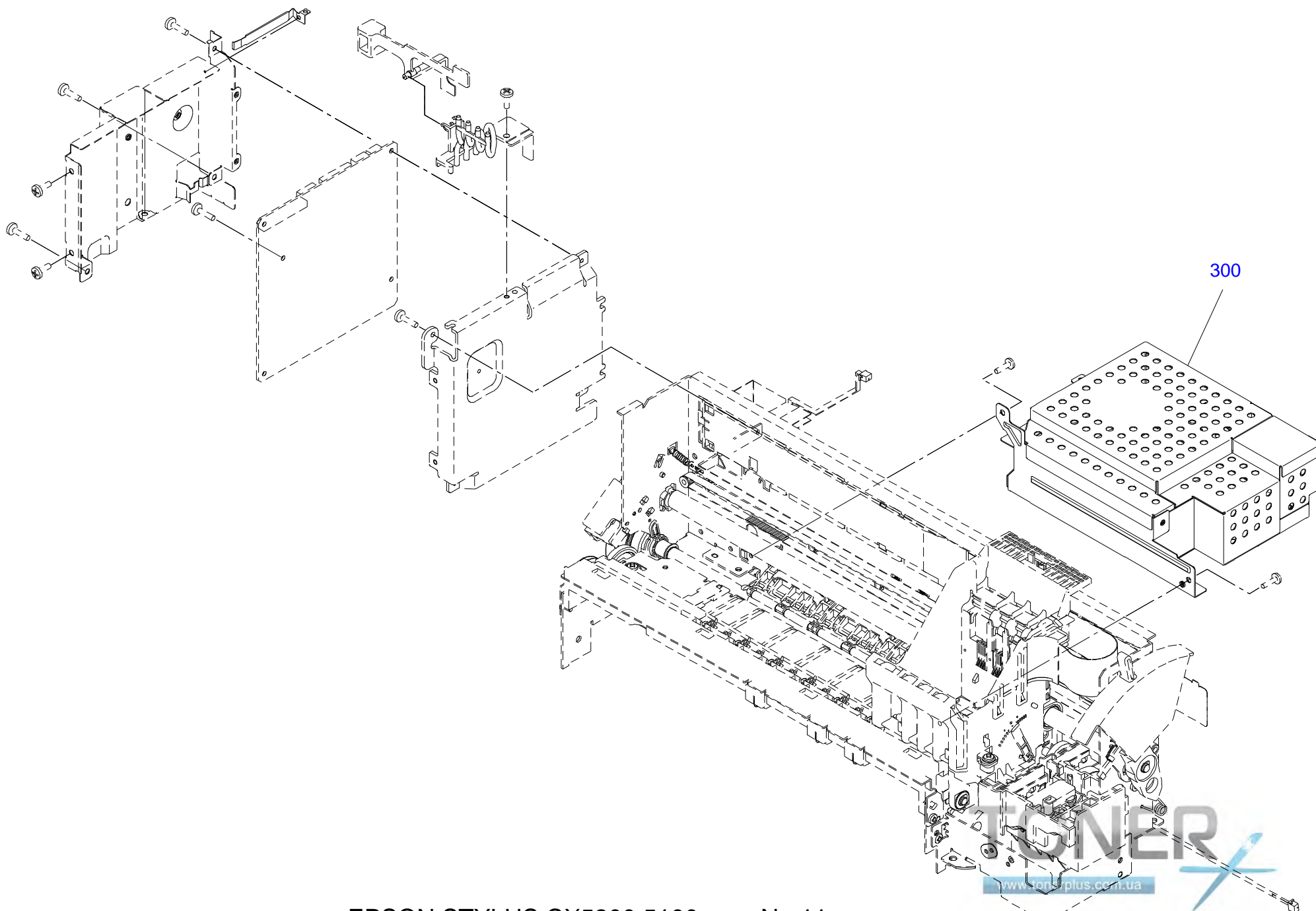
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7.5 Parts reference list of Stylus CX5100/5200

Table 7-1. Parts reference list

Ref. Number	Parts Name	Quantity
131	"COVER,ENTRANCE;EFS"	1
132	PAPER SUPPORT;ECG	1
400	"AC CABLE,AS31303SI-A"	1
NON FIG	"BUNDLE PACK,018,ABROAD"	1
NON FIG	"I/C WITHOUT INDIVIDUAL BOX,C,OVERSEAS,AS,4CA83C"	1
NON FIG	"I/C WITHOUT INDIVIDUAL BOX,M,OVERSEAS,AS,4CA83C"	1
NON FIG	"I/C WITHOUT INDIVIDUAL BOX,Y,OVERSEAS,AS,4CA83C"	1
NON FIG	"I/C WITHOUT INDIVIDUAL BOX,B,OVERSEAS,AS,4C784B"	1
NON FIG	"HARNESS,USB 2.0"	1
NON FIG	"SOFTWARE CD-ROM,E"	1
100	"BOOK COVER ASSY., 6611;EUW"	1
101	"UPPER CASE ASSY.,6611"	1
102	"COVER,PANEL"	1
104	"PANEL BUTTOM,R(RUBBER)6611"	1
105	"PANEL BUTTOM,M(RUBBER)6611"	1
106	"PANEL BUTTOM,L(RUBBER)6611"	1
107	"COVER,MIDDLE;ECG"	1
108	"COVER,FFC;ECG"	1
109	"HOUSING,MIDDLE;CX5100"	1

Ref. Number	Parts Name	Quantity
110	"LOCK,SCANNER"	1
111	"COVER,INK TUBE;EDG2"	1
112	"HOUSING,LOWER;EDG2"	1
113	"COMPRESSION SPRING,6.0"	1
114	"LOCK,STACKER"	1
115	FOOT	13
116	"COVER,LOWER;EDG2"	1
117	"STACKER ASSY,ASP"	1
118	"LOGO PLATE,10X40;G"	1
120	"C.B.P-TITE SCREW,3X8,F/ZN"	2
121	"C.B.P-TITE,3X10,F/ZN"	7
122	"C.B.P-TITE SCREW,3X16,F/ZN"	2
123	C.B.S. SCREW	1
124	LEVER OPEN;B	1
125	OPTICAL TUBE	1
126	C.B.S. SCREW(B300204211)	8
127	"HINGE DOCUMENT,L,6611"	1
128	"HINGE DOCUMENT,R,6611"	1
129	C.B.S. SCREW(B300204411)	1
130	C.B.S. SCREW(B300204311)	1
180	"LABEL,INK MARK"	1
181	"LABEL,HEAD CLEANING;B"	1
450	PANEL BOARD 6611	1
200	"BOARD ASSY.,MAIN"	1
500	PRINTER MECHANISM(ASP)	1
501	"ROLLER,PF ASSY.,ASP"	1
502	"MOTOR ASSY.,PF ASP"	1

Ref.Number	Parts Name	Quantity
503	"EXTENTION SPRING,4.07"	4
504	"BOARD ASSY.,ENCODER,PF"	1
505	"MOUNTING PLATE,BOARD ASSY.,ENCODER"	1
505	"MOUNTING PLATE,BOARD ASSY.,ENCORDER;B"	1
506	CUP SCREW(B040302311)	1
506	CUP SCREW(B040302311)	2
507	"GROUNDING WIRE,EJ"	1
508	"EJ ASSY.,ASP"	1
509	"ROLLER,EJ ASSY.,ASP"	1
510	"HOLDER,ROLLER ASSY.,EJ"	3
511	"INK SYSTEM ASSY.,ASP"	1
512	"CLAMP,TUBE"	1
513	"CABLE,HEAD"	1
514	"POROUS PAD,CABLE,HEAD"	1
515	"SHAFT,CR,GUIDE"	1
516	"MOTOR ASSY.,CR ASP"	1
517	"C.B.S-TITE(P4),3X6,F/ZN"	2
518	"BUSHING,PARALLER ADJUST,LEFT"	1
520	"EXTENSION SPRING,2.94"	1
521	"SCALE,CR"	1
522	"CARRIAGE ASSY.,ASP"	1
523	"HOLDER,HEAD,CABLE"	1
524	"TORSION SPRING,67.87"	1
525	"LEVER,PG"	1
526	"BUSHING,PARALLER ADJUST,RIGHT"	1

Ref.Number	Parts Name	Quantity
527	"HOLDER,DETECTOR,PE"	1
528	"LEVER,DETECTOR,PE"	1
529	"TORSION SPRING,0.28"	1
530	"DETECTOR,HP;F"	1
531	C.B.S. SCREW(B300204211)	1
532	C.B.S. SCREW(B300204311)	1
533	"SUPPORT PLATE,HOLDER, STAR WHEEL"	1
700	PRINT HEAD	1
701	"ASF UNIT,ASP"	1
702	"C.B.P-TITE SCREW,3X6,F/ZN"	2
703	"COMPRESSION SPRING,5.61"	1
704	"FOOT,B"	1
705	"HOPPER ASSY,ASP"	1
706	"EXTENTION SPRING,1.19"	1
707	"ROLLER,LD ASSY.,ASP"	1
708	"EXTENTION SPRING,2.25"	1
709	"RETARD ASSY.,ASP"	1
710	"EXTENSION SPRING,0.143"	1
711	"P.W.,3.1X0.5X12,F/ ZN(B100165911)"	1
712	"C.B.P-TITE SCREW,3X8,F/ZN"	1
713	"EXTENTION SPRING,0.99"	1
714	"PORUS PAD,INK EJECT;D"	1
715	"PORUS PAD,INK EJECT;C"	1
716	"PORUS PAD,INK EJECT;F"	1
717	"PORUS PAD,INK EJECT;G"	1
718	"PORUS PAD,INK EJECT;E"	1

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Ref.Number	Parts Name	Quantity
719	"PORUS PAD,INK EJECT;B"	1
720	"TUBE,INK EJECT"	1
721	"POROUS PAD,INK EJECT;H"	1
722	"PORUS PAD,INK EJECT"	1
723	"STOPPER,PAPER,STACKER"	1
724	"CLEANER,HEAD;B,ASP"	1
725	"CLEANER,HEAD,ASP"	1
800	SCANNER UNIT 6611;EUW	1
801	CCD MODULE 6611	1
803	"LOW CASE ASSY.,6611"	1
804	HINGE ASSY.	2
805	"CABLE COVER,PET"	1
806	"MOTOR SET ASSY.,6611"	1
1	INDIVIDUAL CARTON BOX FOR PACIFIC	1
2	"PLASTIC SHEET,1300X1300X0.04T"	1
3	"PAD,SPC,RB"	1
4	"PAD,SPC,RU"	1
5	"PAD,SPC,LU"	1
6	"PAD,SPC,LB"	1
7	"PAD,ACCESSORY"	1
8	"SHEET,CR LOCK"	1
300	"P/S BOARD ASSY.220,ASP"	1
NON FIG	"I PACK,PIC006KGP"	1
NON FIG	INK SUPPLY TOOL	1
NON FIG	S46 EXCHANGE TOOL	1

Ref.Number	Parts Name	Quantity
NON FIG	GREASE G-63	1
NON FIG	"SHIPPING CLEANING LIQUID,CR02,18KG"	1