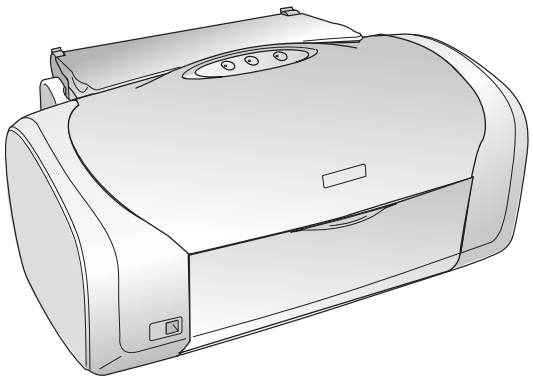
SERVICE MANUAL



Color Inkjet Printer

EPSON Stylus Photo R220/R230

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SEIJ05014

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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 INJURIER FROM METAL PARTS WITH SHARP EDGES.

WARNING

1. REPAIRS ON EPSON PRODUCT SHOULD BE PERFORMED ONLY BY AN EPSON CERTIFIED REPAIR TECHNICIAN.
2. MAKE CERTAIN THAT THE SOURCE VOLTAGES IS THE SAME AS THE RATED VOLTAGE, LISTED ON THE SERIAL NUMBER/RATING PLATE. IF THE EPSON PRODUCT HAS A PRIMARY AC RATING DIFFERENT FROM AVAILABLE POWER SOURCE, DO NOT CONNECT IT TO THE POWER SOURCE.
3. ALWAYS VERIFY THAT THE EPSON PRODUCT HAS BEEN DISCONNECTED FROM THE POWER SOURCE BEFORE REMOVING OR REPLACING PRINTED CIRCUIT BOARDS AND/OR INDIVIDUAL CHIPS.
4. IN ORDER TO PROTECT SENSITIVE MICROPROCESSORS AND CIRCUITRY, USE STATIC DISCHARGE EQUIPMENT, SUCH AS ANTI-STATIC WRIST STRAPS, WHEN ACCESSING INTERNAL COMPONENTS.
5. 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.
6. WHEN USING COMPRESSED AIR PRODUCTS; SUCH AS AIR DUSTER, FOR CLEANING DURING REPAIR AND MAINTENANCE, THE USE OF SUCH PRODUCTS CONTAINING FLAMMABLE GAS IS PROHIBITED.

About This Manual

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

Manual Configuration

This manual consists of six chapters and Appendix.

CHAPTER 1. TROUBLESHOOTING
Describes the step-by-step procedures for the troubleshooting.

CHAPTER 2. DISASSEMBLY / ASSEMBLY
Describes the step-by-step procedures for disassembling and assembling the product.

CHAPTER 3. ADJUSTMENT
Provides Epson-approved methods for adjustment.

CHAPTER 4. 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:**

- Exploded Diagrams
- Parts List
- Electrical Circuits

Symbols Used in this Manual

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

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

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

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

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

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

Revision Status

Revision	Issued Date	Description
A	August 24, 2005	First Release

CONTENTS

CHAPTER

1

TROUBLESHOOTING

1.1 Overview

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

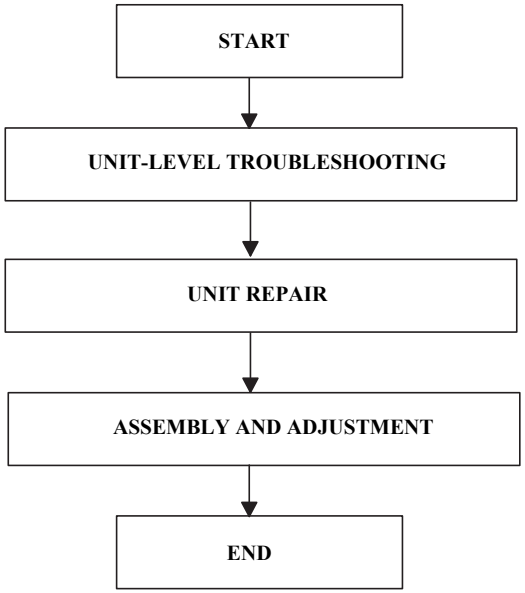


Table 1-1. Troubleshooting Flowchart

Table 1-2. Motor, Coil Resistance

Motor	Location	Check Point	Resistance
PF Motor Same as ASF/ Pump Motor	CN6	Pin1 and 3 Pin2 and 4	3.0Ω ±10% (25°C/Phase)

Since CR Motor and APG Motor are DC Motors, the resistance among the electric poles varies. Therefore, judge if it is normal or abnormal based on if there is no operation of the motor or not; the resistance values cannot be used to judge the abnormality. However, it is difficult to judge accurately, if it is not clear, replace the motor.

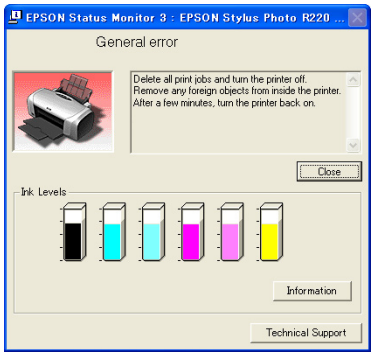
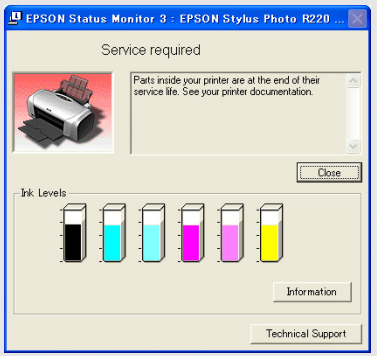
Table 1-3. Sensor Check Point

Sensor Name	Location	Check Point	Signal Level	Switch Mode
PE Sensor	CN9	Pin1 and 2	More than 2.4V	Off: No Paper
			Less than 0.4V	On: Paper
PG Sensor	CN14	Pin1 and 2	More than 2.4V	Off: Anywhere of PG
			Less than 0.4V	On: In process of switching PG
Star Wheel Sensor	CN11	Pin1 and 2	-	On: ASF Mode
			-	Off: CDR Mode
CDR Tray Sensor	CN11	Pin3 and 4	-	Off: No CDR Tray
			-	On: Detect CDR Tray

1.2 Troubleshooting with LED Indications and Status Monitor 3 Message

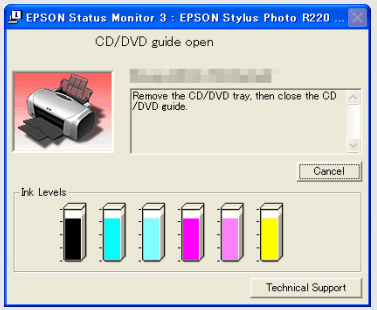
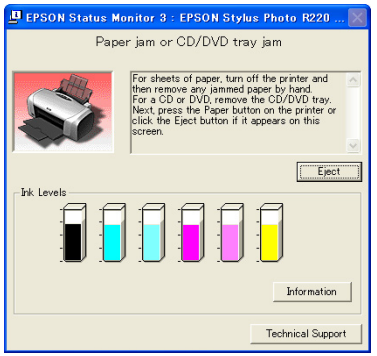
This chapter describes the LED Indications and the STM3 messages which are displayed when the printer detects an error in each operation such as power on, paper loading/feeding and ink absorption operation.

Table 1-4. LED Indications and STM3

Printer status	LED Indication			STM message	Condition of error detection
	Power	Paper	Ink		
Fatal error	OFF	Fast Blink	Fast Blink		This error is detected when; 1. Carriage Unit cannot move correctly by the external force in each operation. 2. PF Motor cannot rotate correctly.
Maintenance Request.	OFF	Alternant Blink 1	Alternant Blink 2		This error is detected when the Value of the Protection Counter A set in EEPROM reaches its limits (Variable between 20000 and 46750 points).

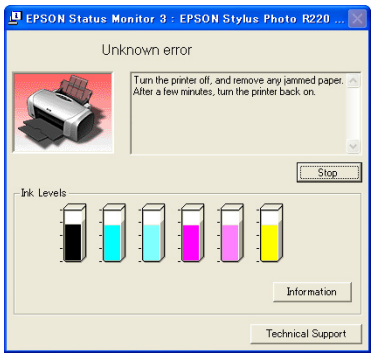
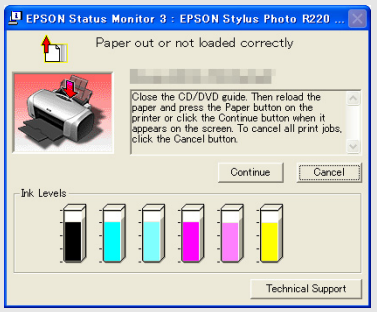
Fast Blink : 0.1sec. on + 0.1sec. off
Alternant Blink1 : 0.5sec. on + 0.5sec. off
Alternant Blink2 : 0.5sec. on + 0.5sec. off

Table 1-4. LED Indications and STM3

Printer status	LED Indication			STM message	Condition of error detection
	Power	Paper	Ink		
CD/DVD Guide Error	--	Blink 2	Fast Blink		This error is detected when; 1. Paper is present in ASF Assy. and CDR Guide Assy. is open while receiving print data. 2. CDR Guide Assy. opens while printing. 3. CDR Guide Assy. is open while receiving ASF paper feed data. 4. Attempting to replace the ink while CDR Guide Assy. is open.
Paper Jam Error (Including CD/DVD)	--	Blink	--		This error is detected when; 1. The end of paper cannot be detected by the PE Sensor in a paper loading. 2. The rear of CD/DVD cannot be detected by the Star Wheel Sensor in a CD/DVD loading.

-- : No Change of the LED Status
Blink : 0.5sec. on + 0.5sec. off
Blink 2 : 0.2sec.on + 0.2sec. off + 0.2sec. on + 0.4sec. off
Fast Blink : 0.1sec. on + 0.1sec. off

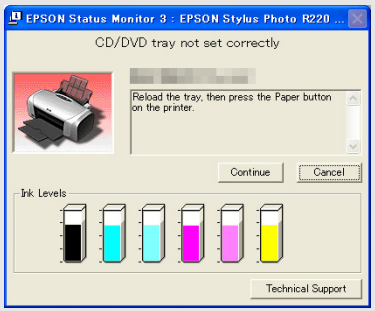
Table 1-4. LED Indications and STM3

Printer status	LED Indication			STM message	Condition of error detection
	Power	Paper	Ink		
Card Error	--	Fast Blink	--		This error is detected when feeding business card sized paper in landscape orientation.
Paper Out Error	--	ON	--		This error is detected when the top of paper cannot be detected by the PE Sensor in a paper loading.

-- : No Change of the LED Status

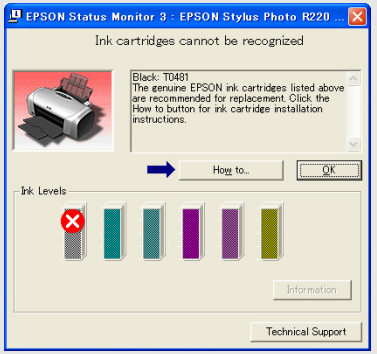
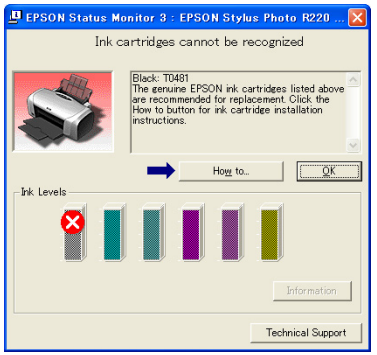
Fast Blink : 0.1sec. on + 0.1sec. off

Table 1-4. LED Indications and STM3

Printer status	LED Indication			STM message	Condition of error detection
	Power	Paper	Ink		
CD/DVD Tray Error	--	ON	--		This error is detected when the CD/DVD Tray cannot be detected after attempting to print on a CD or DVD.

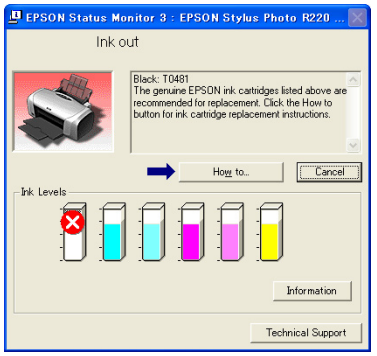
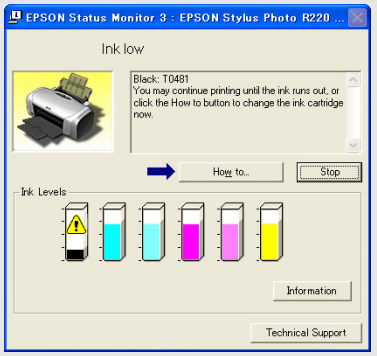
-- : No Change of the LED Status

Table 1-4. LED Indications and STM3

Printer status	LED Indication			STM message	Condition of error detection
	Power	Paper	Ink		
No Ink Cartridge	--	--	ON		This error is detected when the Ink Cartridge is not installed or not in proper position.
					This error is detected when the CSIC information data of the ink cartridge cannot be read or written normally.

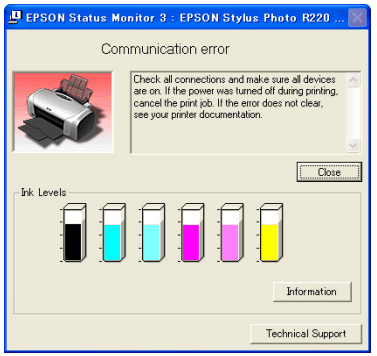
-- : No Change of the LED Status

Table 1-4. LED Indications and STM3

Printer status	LED Indication			STM message	Condition of error detection
	Power	Paper	Ink		
Ink Out Error	--	--	ON		This error is detected when; 1. The Ink Cartridge has run out of ink. 2. The Ink Cartridge is faulty. (Note) Even after Ink Out Error is detected, a small amount of ink remains in the Ink Cartridge to protect the Print Head from printing operation.
Ink Low Condition	--	--	Blink	 Note: Printing operation can be performed until it becomes ink out condition even after the error message is displayed on STM3. However, the Head Cleaning operation may not be performed due to the Ink Low Condition.	This error is detected when the ink consumption reached 90%. (Note) When the Ink Low Condition is detected, the Error Reset LED is blink. The blinking continues until the cartridge is replaced with a new one and the Carriage Unit returns to the home position.

-- : No Change of the LED Status
Blink : 0.5sec. on + 0.5sec. off

Table 1-4. LED Indications and STM3

Printer status	LED Indication			STM message	Condition of error detection
	Power	Paper	Ink		
Communication Error	--	--	--		This error is detected when the printer cannot communicate with the PC properly.

-- : No Change of the LED Status

1.3 Unit Level Troubleshooting

You can identify the troubles by using the checklist in this section after confirming the LED indication on the control panel or the error message displayed on STM3 of the PC connected to the printer. As a result, you can save the whole repair time. When finding any faulty parts, refer to Chapter 2 "DISASSEMBLY/ASSEMBLY" and replace them. The following tables describe the error conditions (LED and STM3) and their possible cause.

The following is the example of How to use the following tables.

ex.) When a fatal error occurs because the CR Motor is out of the home position at power-on. If you see the table below, you will find out three possible causes of CR Motor failure. Then troubleshoot the problem according to the "Fatal Error Check Points by Phenomenon."

(Note)
When individual part that makes up the Roller EJ Assy., the PF Motor and the Ink System Assy. is defective, replace the Printer Mechanism with a new one basically. However, if an individual part needs to be replaced urgently, execute the necessary operation by referring to Chapter 2 "DISASSEMBLY/ASSEMBLY."

Table 1-5. Status and Possible Causes of Fatal Error

Error Status	LED Indication STM3 Message	Occurrence Timing	Carriage Unit Position at Power-on	Faulty Unit/Part Name	Possible Causes	Remedy
Fatal Error	Power : OFF Paper : Fast Blink Ink : Fast Blink General error	At Power-on	C/R Off HP	CR Motor	The CR Motor Cable is disconnected.	Refer to Table 1-6
					CR Motor failure	
					The CR Motor cable is damaged.	
				PF Motor	The PF Motor Cable is disconnected.	
					PF Motor failure	
					The PF Motor Cable is damaged.	
				Paper Guide, Upper	The Paper Guide, Upper comes off.	
				Ink System	The Compression Spring, 2.36 comes off.	
			Anywhere	Main Board	Main Board failure	
				CR Scale	The CR Scale comes off.	

Table 1-6. Fatal Error Check Points by Phenomenon

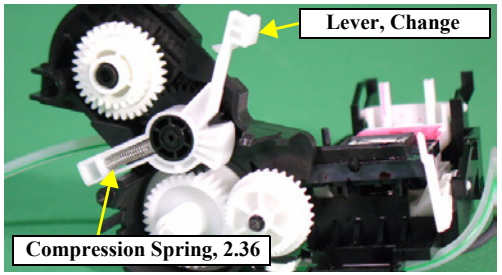
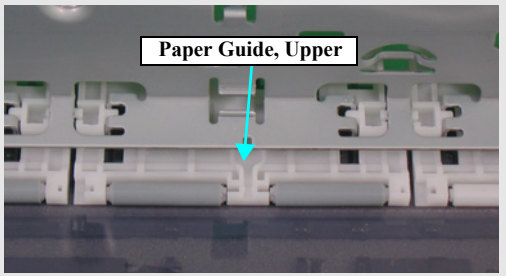
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
At Power-on C/R Off HP	CR Motor does not work at all when turning on the power.	CR Motor	1. Check if the CR Motor Cable is connected to CN5 on the Main Board. 2. Check if the CR Motor Cable is not damaged.	1. Connect the CR Motor Cable to CN5 on the Main Board. 2. Replace the CR Motor with a new one.
	The Carriage Unit strikes on the Lever, Change which is leaning forward when turning on the power.	PF Motor	1. Check if the PF Motor Cable is connected to CN6 on the Main Board. 2. Check if the resistance of the PF Motor is approximately 3.0Ω using a tester. Refer to Table 1-2. 3. Check if the PF Motor Cable is not damaged.	1. Connect the PF Motor Cable to CN6 on the Main Board. 2. Replace the PF Motor with a new one. 3. Replace the PF Motor with a new one.
		Ink System	1. Check if the Compression Spring, 2.36 of the Lever, Change has not detached. 	1. Replace the Ink System with a new one.
	The Carriage Unit hits the Paper Guide. Upper part has detached from Main Frame during power up.	Paper Guide, Upper	1. Check if the Paper Guide, Upper has not detached from the Main Frame. 	1. Reassemble the Paper Guide, Upper to the Main Frame.
At Power-on Anywhere	The Carriage Unit strikes on the right side of the Main Frame when turning on the power.	CR Scale	1. Check if the CR Scale has not detached or it properly passes through the slit of the CR Encoder Sensor Board.	1. Reassemble the CR Scale correctly. * If the problem is not solved, replace the Main Board with a new one.

Table 1-7. Status and Possible Causes of CD/DVD Guide Error

Error Status	LED Indication STM3 Message	Occurrence Timing	Carriage Unit Position at Power-on	Faulty Unit/Part Name	Possible Causes	Remedy
CD/DVD Guide Error	Power : -- Paper : Blink 2 Ink : Fast Blink CD/DVD guide open	At Power-on	At HP	Housing, Frame	Contact point of the Star Wheel Sensor is cracked.	Refer to Table 1-8
				Star Wheel Sensor	The Star Wheel Sensor is damaged.	
					The Star Wheel Sensor Cable is broken.	
				Main Board	Elements failure	

Table 1-8. CD/DVD Guide Error Check Points by Phenomenon

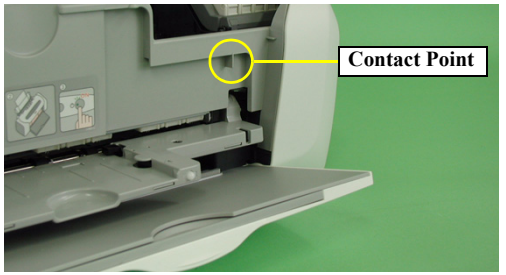
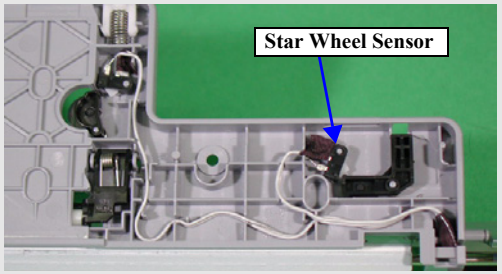
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
At Power-on At HP	An error occurs even if the CDR Guide Assy. is closed when turning on the power.	Housing, Frame	1. Check if the contact point of the Housing, Frame with the Star Wheel Sensor is not cracked. 	1. Replace the Housing, Frame with a new one.
		Star Wheel Sensor	1. Check if the Star Wheel Sensor is connected to CN14 on the Main Board.  2. Check if the Star Wheel Sensor is not damaged. 3. Check if the Star Wheel Sensor Cable is not broken.	1. Connect the Star Wheel Sensor to CN14 on the Main Board. 2. Replace the Star Wheel Sensor with a new one. 3. Replace the Star Wheel Sensor with a new one.
		Main Board	1. Check if any device on the Main Board is not damaged.	1. Replace the Main Board with a new one.

Table 1-9. Status and Possible Causes of Paper Jam Error

Error Status	LED Indication STM3 Message	Occurrence Timing	Carriage Unit Position at Power-on	Faulty Unit/Part Name	Possible Causes	Remedy
Paper Jam Error	Power : -- Paper : Blink Ink : -- Paper jam or CD/DVD tray jam	During operation	Anywhere	PF Motor	The PF Motor Cable is disconnected.	Refer to Table 1-10
					PF Motor failure	
					The PF Motor Cable is damaged.	
				ASF Assy.	The Extension Spring 0.45 comes off.	
				PE Sensor	The Torsion Spring, 0.22 for the PE Sensor Lever comes off.	
					PE Sensor failure	
					The PE Sensor Cable is disconnected.	
					The PE Sensor Cable is damaged.	
					PE Sensor Cable routing failure	
			C/R Off HP	PE Sensor	The Torsion Spring, 0.22 for the PE Sensor Lever comes off.	
					PE Sensor Cable routing failure	
			-	ASF Assy.	Torsion Spring, 6.45 comes off.	
				Frame EJ Assy.	The Star Wheel Roller comes off.	
					The Frame EJ Assy. is deformed (Lower side warpage).	
					Frame EJ Assy. assembly failure	
				Holder Shaft, Unit	The Torsion Spring, 0.22 for the PE Sensor Lever comes off.	
				Paper Guide, Front	The Porous Pad for borderless print comes off.	
				Roller EJ Assy.	The Roller EJ Assy. comes off.	
					The Spur Gear, 41.48 comes off.	
				Paper Guide, Upper	The Paper Guide, Upper comes off.	

Table 1-10. Paper Jam Error Check Points by Phenomenon

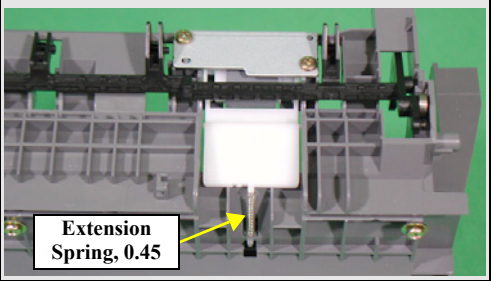
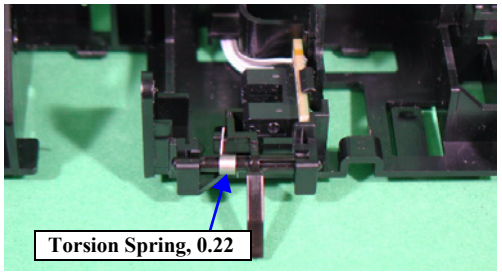
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
At power-on Anywhere	The PF Motor does not work at all.	PF Motor	1. Check if the PF Motor Connector Cable is connected to CN6 on the Main Board. 2. Check if the coil resistance of the PF Motor is approximately 3.0Ω with a tester. Refer to Table 1-2. 3. Check if the PF Motor Connector Cable is not damaged.	1. Connect the PF Motor Connector Cable to CN6 on the Main Board. 2. Replace the PF Motor with a new one. 3. Replace the PF Motor with a new one.
	Paper feeding operation is performed normally, but paper is not sent into the printer.	ASF Assy.	1. Check if the Roller, Retard Assy. operates properly while feeding paper.	1. Reassemble the Extension Spring, 0.45 located under the Roller, Retard Assy. 
		PE Sensor	1. Check if the Torsion Spring, 0.22 is not unfastened from the PE Sensor Lever.  2. Check if the PE Sensor Cable is not unfastened. 3. Check if the PE Sensor Cable is correctly mounted on the Holder, Shaft, LD Roller. 4. Check if the PE Sensor Cable is not damaged.	1. Reassemble the Torsion Spring, 0.22. 2. Connect the PE Sensor Connector to CN9 on the Main Board. 3. Route the PE Sensor Cable correctly. 4. Replace the PE Sensor with a new one.

Table 1-10. Paper Jam Error Check Points by Phenomenon

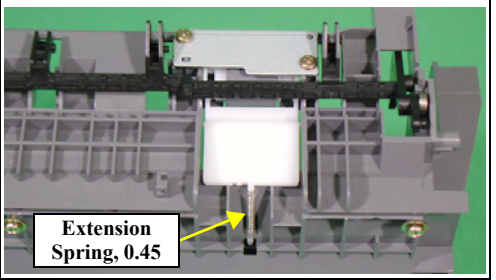
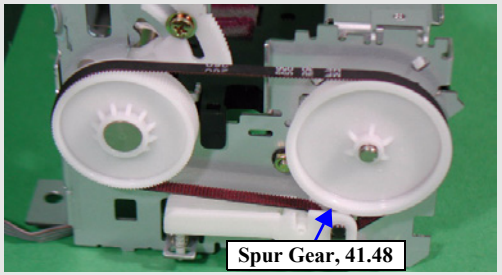
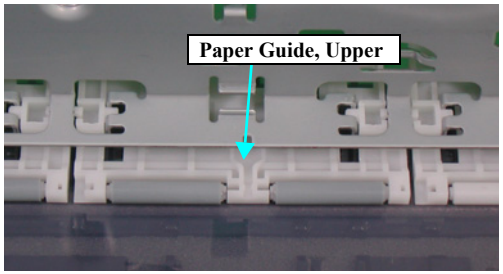
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
During operation C/R Off HP	The Carriage Unit moves to the home position properly when turning on the power. Then paper feeding operation is performed normally, but paper is not sent into the printer.	PE Sensor*	1. Check if the Torsion Spring, 0.22 for The PE Sensor Lever is not unfastened. 2. Check if the PE Sensor Cable is correctly routed on the Holder, Shaft, LD Roller.	1. Reassemble the Torsion Spring, 0.22. 2. Route the PE Sensor Cable the correctly.
During operation -	When feeding paper, the leading edge of paper is detected at proper time, but the paper is ejected without being set at the print start position. At this time, the next paper is fed to the PE Sensor Lever.	ASF Assy.	1. Check if the Roller, Retard Assy. operates properly while feeding paper.	1. Reassemble the Extension Spring, 0.45 back of the Roller, Retard Assy. 
	The leading edge of paper will not pass between the Roller EJ Assy. and the Star Wheels.	Frame EJ Assy.**	1. Check if the Star Wheels have not detached. 2. Check if the Frame EJ Assy. is correctly assembled. 3. Check if lower part of the Frame EJ Assy. is not deformed.	1. Reassemble the Star Wheel correctly. 2. Reassemble the Frame EJ Assy. correctly. 3. Replace the Frame EJ Assy. with a new one.
		Paper Guide, Front	1. Check if the porous pad of the Paper Guide, Front has not detached.	1. Remount the porous pad correctly.
		Roller EJ Assy.	1. Check if the Roller EJ Assy. is correctly assembled. 2. Check if the Spur Gear, 41.48 has not detached. 	1. Reassemble the Roller EJ Assy. correctly onto the Printer Mechanism. 2. Reattach the Spur Gear, 41.48 to the Roller EJ Assy. correctly.

Table 1-10. Paper Jam Error Check Points by Phenomenon

Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
During operation -	The leading edge of paper is not sent to the PF Roller.	Paper Guide, Upper	1. Check if the Paper Guide, Upper has not detached from the Main Frame. 	1. Reattach the Paper Guide, Upper to the Main Frame.

* The Carriage Unit can move to the home position even if the Extension Spring, 0.22 has detached or the PE Sensor is not set in the correct position. However, in the next operation, a Paper Jam Error will be detected since the PE Sensor Lever has been kept in a high signal status.

** There some cases where the jammed paper may damage the Print Head by contacting the surface of the Print Head nozzle when a Paper Jam Error occurs.

Table 1-11. Status and Possible Causes of Card Error

Error Status	LED Indication STM3 Message	Occurrence Timing	Carriage Unit Position at Power-on	Faulty Unit/Part Name	Possible Causes	Remedy
Card Error	Power : -- Paper : Fast Blink Ink : -- Unknown error	Before start to print	-	PW Sensor	The PW Sensor FFC is disconnected.	Refer to Table 1-12
					PW Sensor failure	
					The PW Sensor FFC is broken.	
				Main Board	Elements failure	

Table 1-12. Card Error Check Points by Phenomenon

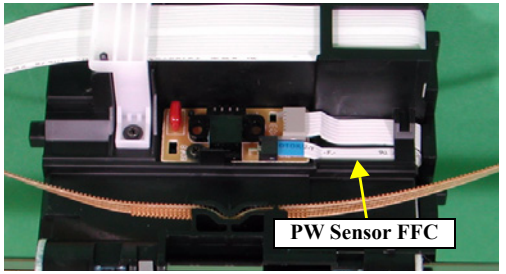
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
Before start to print -	The top edge of the business card is not fed to the PF Roller because the business card is set in landscape orientation.	PW Sensor	1. Check if the PF Sensor FFC is not disconnected.  2. Check if the PW Sensor is not damaged. 3. Check if the PW Sensor FFC is not broken.	1. Connect the PW Sensor FFC to CN2 on the CR Encoder Sensor Board. 2. Replace the PW Sensor with a new one. 3. Replace the PW Sensor with a new one.
		Main Board	1. Check if any element on the Main Board is not damaged.	1. Replace the Main Board with a new one.

Table 1-13. Status and Possible Causes of Paper Out Error

Error Status	LED Indication STM3 Message	Occurrence Timing	Carriage Unit Position at Power-on	Faulty Unit/Part Name	Possible Causes	Remedy
Paper Out Error	Power : -- Paper : ON Ink : -- Paper out or not loaded correctly.	During operation	-	ASF Assy.	The Compression Spring, 2.51 comes off.	Refer to Table 1-14
					The Extension Spring 0.45 comes off.	
				Holder, Shaft, LD Roller	The Extension Spring 0.143 comes off.	
					The projection of the Clutch is disconnected.	
					The Clutch Tooth is damaged.	
					The Clutch is damaged.	
					Frictional force of the LD Roller deteriorates.	
					The Paper Guide, Upper (HP Side) comes off.	
				PF Motor	The PF Motor Cable is disconnected.	
					PF Motor failure	
					The PF Motor Cable is damaged.	
				Ink System	The Compression Spring, 2.36 comes off.	
					The edge of the Lever, Change is damaged.	

Table 1-14. Paper Out Error Check Points by Phenomenon

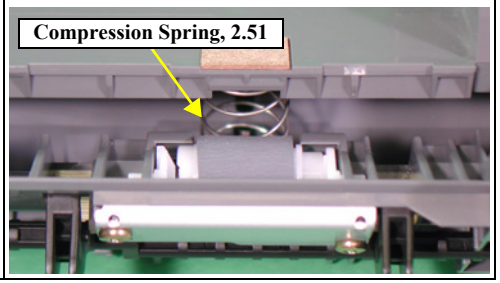
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
During operation -	THe Holder, Shaft, LD Roller rotates to feed the paper, but the Hopper does not operate.	ASF Assy.	1. Check if the Hopper works properly while feeding paper.	1. Reassemble the ASF Frame and the Compression Spring, 2.51 correctly. 

Table 1-14. Paper Out Error Check Points by Phenomenon

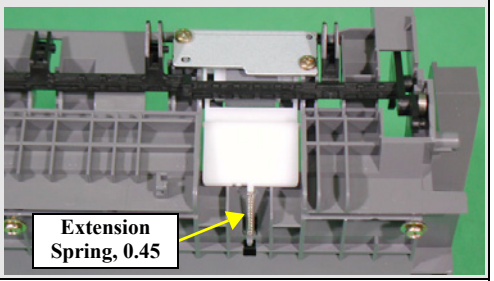
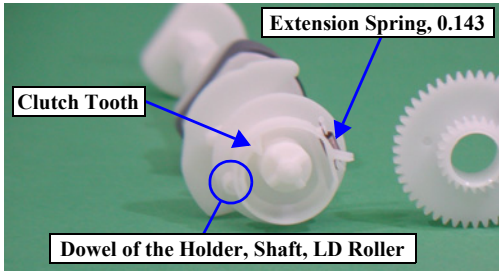
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
During operation -	When feeding paper, the leading edge of paper is detected at proper time, but the paper is ejected without being set at the print start position.	ASF Assy.	1. Check if the Roller, Retard Assy. operates properly while feeding paper.	1. Reassemble the Extension Spring, 0.45 located under the Roller, Retard Assy. 
	The PF Motor and the Spur Gear, 37.242 rotate properly, but the Holder, Shaft, LD Roller does not feed paper. (The driving of the PF Motor is not transmitted to the Holder, Shaft, LD Roller.)	Holder, Shaft, LD Roller	1. Check if the Extension Spring,0.143 in the Clutch Mechanism has not detached. 2. Check if the Clutch has not detached from the dowel of the Shaft, LD Roller. 3. Check if the Clutch Tooth is not damaged.  4. Check if the Clutch is not damaged.	1. Reassemble the Extension Spring, 0.143 in the Clutch Mechanism. 2. Reassemble the round portion of the Clutch on the dowel of the Shaft, LD Roller. 3. Replace Holder, Shaft, LD Roller with a new one. 4. Replace the Holder, Shaft, LD Roller with a new one.
		Paper Guide, Upper (Only HP side)	1. Check if the Paper Guide, Upper (only HP side) has not detached from the Main Frame.	1. Reassemble the Paper Guide, Upper to the Main Frame.

Table 1-14. Paper Out Error Check Points by Phenomenon

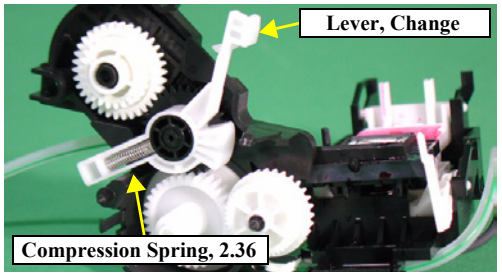
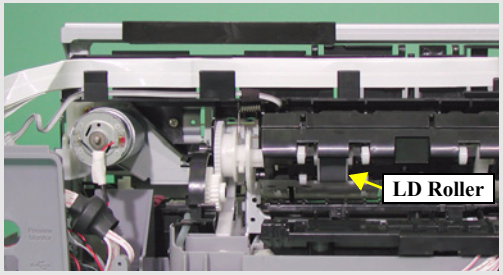
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
During operation -	The PF Motor and the Spur Gear, 37.242 rotate properly, but the Holder, Shaft, LD Roller does not feed paper. (The drive of the PF Motor is not transmitted to the Holder, Shaft, LD Roller.)	Ink System	1. Check if the Compression Spring, 2.36 of the Lever, Change has not detached.  	1. Replace the Ink System with a new one.
	The Holder, Shaft, LD Roller is not set in the ASF home position and paper is always fed from the ASF Assy.	Ink System	1. Check if the tip of the Lever, Change is not damaged.	1. Replace the Ink System with a new one.
	The Holder, Shaft, LD Roller does not feed paper during the feeding operation. The PF Motor and the Spur Gear, 37.242 also does not rotate at all.	PF Motor	1. Check if the PF Connector Cable is connected to CN6 on the Main Board. 2. Check if the coil resistance of the PF Motor is approximately 3.0Ω with a tester. Refer to Table 1-2. 3. Check if the PF Motor Connector Cable is damaged.	1. Connect the PF Motor Connector Cable to CN6 on the Main Board. 2. Replace the PF Motor with a new one. 3. Replace the PF Motor with a new one.
	The Holder, Shaft, LD Roller rotates properly, but paper is not fed.	Holder, Shaft LD Roller	1. Check if the surface of the LD Roller is contaminated with paper dust.  	1. Remove the dust by using a soft cloth moistened with alcohol. * If the problem is not solved, replace the LD Roller with a new one.

Table 1-15. Status and Possible Causes of CD/DVD Tray Error

Error Status	LED Indication STM3 Message	Occurrence Timing	Carriage Unit Position at Power-on	Faulty Unit/Part Name	Possible Causes	Remedy
CD/DVD Tray Error	Power : -- Paper : ON Ink : -- CD/DVD tray not set correctly	Printing CDR/DVDR	-	CDR Tray	Contact point of the CDR Tray Sensor is cracked.	Refer to Table 1-16
				CDR Sensor	The CDR Tray Sensor is damaged.	
					The CDR Tray Sensor Cable is broken.	
				Main Board	Elements failure	

Table 1-16. CD/DVD Tray Error Check Points by Phenomenon

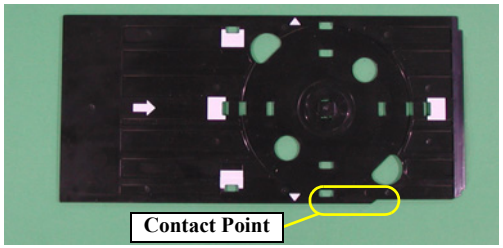
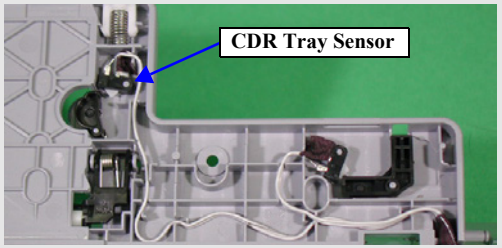
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
When printing CDR/DVDR -	An error occurs even though the CDR Tray is set when printing CDR/DVDR.	CDR Tray	1. Check if the contact point of the CDR Tray of the CDR Tray Sensor is not cracked.  	1. Replace the CDR Tray with a new one.
		CDR Tray Sensor	1. Check if the CDR Tray Sensor is connected to CN11 on the Main Board.  2. Check if the CDR Tray Sensor is not damaged. 3. Check if the CDR Tray Sensor Connector Cable is not cut off.	1. Connect the CDR Tray Sensor to CN11 on the Main Board. 2. Replace the CDR Tray Sensor with a new one. 3. Replace the CDR Tray Sensor with a new one.
		Main Board	1. Check if any device on the Main Board is not damaged.	1. Replace the Main Board with a new one.

Table 1-17. Status and Possible Causes of Communication Error

Error Status	LED Indication STM3 Message	Occurrence Timing	Carriage Unit Position at Power-on	Faulty Unit/Part Name	Possible Causes	Remedy
Communication Error	Power : -- Paper : -- Ink : -- Communication error	At Power-on	Anywhere	Main Board	Main Board failure	Refer to Table 1-17
				Power Supply Board	The Power Supply Board Cable is disconnected.	
					The Power Supply Board Cable is damaged.	
					Power Supply Board failure	
		During operation	-	Main Board	The data for a specific address of EEPROM is improperly written.	
				USB Cable	The USB Cable does not support bidirectional communication.	
				Printer Driver	A proper Printer Driver is not installed on the PC.	

Table 1-18. Communication Error Check Points by Phenomenon

Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
At power-on Anywhere	When turning on the power, the printer does not operate at all.	Power Supply Board	1. Check if the Power Supply Board Cable is connected to CN2 on the Main Board. 2. Check if the Power Supply Board Cable is not damaged.	1. Connect the Power Supply Board cable to CN2 on the Main Board. 2. Replace the Power Supply Board with a new one. * If the problem still occurs, replace the Main Board.
During operation	When turning on the power, the initialization is performed correctly. However, a Communication Error is displayed on STM3 when a print job is set to the printer.	Main Board	1. Check if the correct model name is written in EEPROM on the Main Board.	1. Correct the Market Setting stored on the EEPROM using the Adjustment Program.
		USB Cable	1. Check if the USB Cable is connected properly between the printer and the PC.	1. Connect the printer and the PC with a USB Cable correctly.
		Printer Driver	1. Check if the Stylus Photo R220/R230 Printer Driver is used for the print job.	1. Install the Stylus Photo R220/R230 Printer Driver on the PC.

Table 1-19. Status and Possible Causes of No Ink Cartridge Error.

Error Status	LED Indication STM3 Message	Occurrence Timing	Carriage Unit Position at Power-on	Faulty Unit/Part Name	Possible Causes	Remedy
No Ink Cartridge is installed.	Power : -- Paper : -- Ink : ON Ink cartridges cannot be recognized	At Power-on	At HP	Ink Cartridges	The bundled Ink Cartridge is faulty.	Refer to Table 1-20
				Main Board	Invalid data is written to the specific address on the EEPROM.	
			Anywhere	Ink Cartridges	Two or more Ink Cartridges are faulty.	
					Forged Ink Cartridges	
				Ink Cartridges	The Ink Cartridge is empty.	
					The Ink Cartridge is faulty.	

* The Ink LED stays on while the Carriage Unit is at the home position.
The LED blinks while the Carriage Unit at the position for replacing the Ink Cartridge.

Table 1-20. Check Points for No Ink Cartridge Error

Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
At power-on At HP	The printer does not perform the Initial Ink Charge and the error is displayed on LED and STM3.	Ink Cartridge	1. Check if the Ink Cartridge is normal by installing it in another printer.	1. Replace the Ink Cartridge with a new one.
		Main Board	1. Check if the correct data has been written in the address 5B<H> of EEPROM on the Main Board. (We cannot check it with Adjustment Program of Stylus Photo R220/R230.)	1. Correct the Market Setting stored on the EEPROM using the Adjustment Program.
At power-on Anywhere	The printer does not perform the Ink Replacement Cleaning and the error is displayed on LED and STM3.	Ink Cartridge	1. Check if the Ink Cartridge is normal by installing it in another printer.	1. Replace the Ink Cartridge with a new one.
	The printer does not perform any print operation and the error is displayed on LED and STM3.	Ink Cartridge	1. Check if ink still remains in the Ink Cartridge. 2. Check if the Ink Cartridge is normal by installing it in another printer.	1. Replace the Ink Cartridge with a new one. 2. Replace the Ink Cartridge with a new one.

Table 1-21. Multi-feed Occurs without LED/STM3 Error Notifications

Error Status	LED Indication STM3 Message	Occurrence Timing	Carriage Unit Position at Power-on	Faulty Unit/Part Name	Possible Causes	Remedy
More than one paper is fed constantly.	Power : -- Paper : -- Ink : -- -	During operation	-	ASF Assy.	The Extension Spring 0.45 comes off.	Refer to Table 1-22

Table 1-22. Check Points for Multi-feed without LED/STM3's Error Notifications

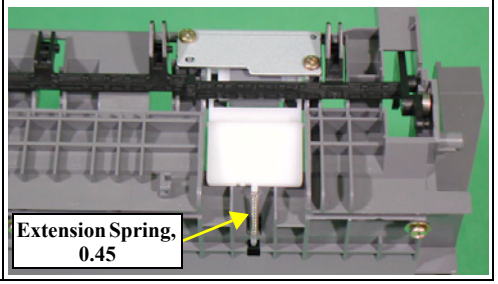
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
During operation -	The printer always feeds more than one sheet of paper at a time without LED/ STM3's error notifications.	ASF Assy.	1. Check if the Roller, Retard Assy. works correctly while feeding paper.	1. Reassemble the Extension Spring, 0.45 on the back of the Roller, Retard Assy. 

Table 1-23. Status and Possible Causes for Abnormal Sound

Error Status	LED Indication STM3 Message	Occurrence Timing	Carriage Unit Position at Power-on	Faulty Unit/Part Name	Possible Causes	Remedy
Abnormal Sound	Power : -- Paper : -- Ink : -- -	Any time	Anywhere	Carriage Unit	Lubrication is insufficient.	Refer to Table 1-24
				Frame EJ Assy.	Frame EJ Assy. is deformed (Upper side warpage).	
				Paper Guide, Upper	The Paper Guide, Upper comes off.	
				Ink System	The Lever, Change operation failure.	

Table 1-24. Check Points for Abnormal Sound

Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
Any time Anywhere	Abnormal sound is heard in spite of the normal print operation at the first power on or some other time.	Carriage Unit	1. Check if there is enough grease on the CR Guide Shaft.	1. Wipe the remaining grease off the CR Guide Shaft and reapply some grease.
		Ink System	1. Check if the Lever, Change moves smoothly.	1. Replace the Ink System with a new one.
	The bottom of the Carriage Unit touches the surface of the Front Frame.	Frame EJ Assy.	1. Check if the Frame EJ Assy. is not warping upward.	1. Replace the Frame EJ Assy. with a new one.
	The Carriage Unit strikes on the Paper Guide, Upper while the Carriage Unit is working.	Paper Guide, Upper	1. Check if the Paper Guide, Upper part has not detached from the Main Frame.	1. Reassemble the Paper Guide, Upper to the Main Frame.

Table 1-25. Status and Possible Causes of Print Quality Problems

Error Status	LED Indication STM3 Message	Occurrence Timing	Phenomenon	Faulty Unit/Part Name	Possible Causes	Remedy
Defective Print Quality	During operation	-	Dot missing No printing Alignment failure Mixing-up the different types of inks	Ink System	Adherents on the Sealing Rubber. Or the Sealing Rubber is damaged.	Refer to Table 1-26
					The Compression Spring, 2.53 under the cap comes off.	
					The Pump Tubes are disconnected from the bottom of the Cap.	
					The Extension Spring, 0.788 for the Slider Cap comes off.	
					The Extension Spring, 0.441 for the Slider Lock Lever comes off.	
					The Slider Lever is damaged.	
				Ink Cartridges	Remaining ink in the cartridge is low.	
				Main Board	Main Board failure	
				Print Head	Adherents are on the Print Head.	
					The Print Head is faulty.	
					The Head FFC is damaged.	
			Vertical bands	CR Motor	Accuracy of the CR Motor deteriorates.	
				Carriage Unit	the CR Guide Shaft is dirty or damaged.	
					Lubrication is insufficient.	
					The Fixed Spring, CR Guide Shaft comes off.	
				Frame EJ Assy.	The Frame EJ Assy. is deformed (Lower or Upper side warpage).	
				Print Head	Nozzle pitches become misaligned.	

Table 1-25. Status and Possible Causes of Print Quality Problems

Error Status	LED Indication STM3 Message	Occurrence Timing	Phenomenon	Faulty Unit/Part Name	Possible Causes	Remedy
Defective Print Quality	During operation	-	Horizontal bands	Paper Guide, Front	The Porous Pad for borderless print comes off.	Refer to Table 1-26
				PF Motor	Accuracy of the PF Motor deteriorates.	
				PF Roller Assy.	Adherents are on the PF Roller Assy.	
					The PF Roller is damaged.	
					The Spur Gear, 37.242 is damaged.	
				Printer Driver	The Printer Driver is improperly installed.	
				Print Head	Nozzle pitches become misaligned.	
			Traces of the Star Wheel Roller	Frame EJ Assy.	The Frame EJ Assy. is deformed (Lower side warpage).	
					The Star Wheel Roller comes off.	
				Roller EJ Assy.	The Roller EJ Assy. comes off.	
			Insufficient top margin	Holder, Shaft, LD Roller	Frictional force of the LD Roller deteriorates.	
			Ink smudges	Printer Driver	The Printer Driver is improperly installed.	
				Print Head	Incorrect Head ID is input.	
			Ink stain	Frame EJ Assy.	Ink stain on the Frame EJ Assy.	
					Frame EJ Assy. is deformed (Upper side warpage).	
				Paper Guide, Front	Ink stain on the Paper Guide, Front.	
					The Porous Pad for borderless print comes off.	
				Roller EJ Assy.	Ink stain on the Paper Eject Roller.	
				Paper Guide, Upper	Ink stain on the Paper Guide, Upper.	
				PF Roller	Ink stain on the PF Roller.	
				Ink System	Ink stain on the surface of the Print Head.	
				Print Head	Ink stain on the Cover, Print Head.	
			Creases in paper	ASF Assy.	The Hopper Pad is attached on the improper position.	

Table 1-26. Check Points for Print Quality Problems

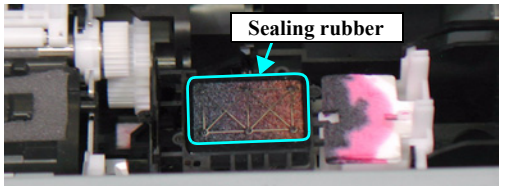
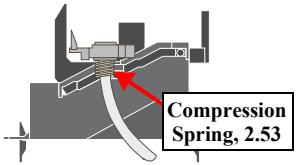
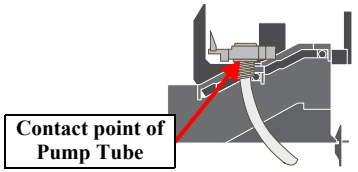
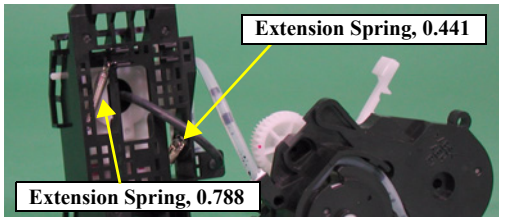
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
During operation -	[Phenomenon 1] When the printer is performing the Cleaning task, the ink is not drained into the Waste Ink Pad in spite of the correct function of the Pump Unit. The ink is not absorbed from the Print Head to the Cap at all. [Phenomenon 2] When the printer is performing the Cleaning task, the ink is drained into the Waste Ink Pad. (This indicates that both of the Pump Unit and the Cap Unit are working correctly.) However, missing dots is not solved at certain nozzles even performing the Cleaning several times. [Phenomenon 3] When the printer is performing the Cleaning task, the ink is drained into the Waste Ink Pad. (This indicates that both of the Pump Unit and the Cap Unit work correctly.) However, the wiping function is not executed correctly and some different colors of ink mix together. [Phenomenon 4] When the printer is performing the Cleaning task, the ink is drained into the Waste Ink Pad.However, some missing dots occurs in some nozzles while printing. [Phenomenon 5] When the printer is performing the Cleaning task, the ink is drained into the Waste Ink Pad. However, missing dot occurs and the points where it occurs varies in every movement of the Cleaning.	Ink System	1. Check if there is not any foreign matter on the sealing rubber on the Cap Unit.  2. Check if the sealing rubber on the Cap Unit is not damaged. 3. Check if the Compression Spring, 2.53 is properly attached in the Cap Unit.  4. Check if the Pump Tube is properly connected to the bottom of the Cap Unit.  5. Check if the Extension Spring, 0.788 has not detached from the Slider Cap. 6. Check if the Extension Spring, 0.441 has not detached from the Slider Cap.  	1. Remove the foreign matter from the sealing rubber. 2. Replace the Ink System with a new one. 3. Replace the Ink System with a new one. 4. Replace the Ink System with a new one. 5. Reassemble the Extension Spring, 0.788 correctly. 6. Reassemble the Extension Spring, 0.441 correctly.

Table 1-26. Check Points for Print Quality Problems

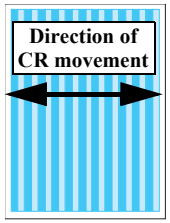
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
During operation -	[Phenomenon 6] When the Cleaning is working, the ink is drained into the Waste Ink Pad. However, some missing dots and out of alignment occur in all nozzles while printing. They are not solved even executing the Cleaning several times. * If the problem is not solved, replace the Main Board with a new one.	Ink System	7. Check if the Slider Lock Lever is not damaged.	7. Replace the Ink System with a new one.
		Ink Cartridge	1. Check if ink still remains in Ink Cartridge	1. Replace the Ink Cartridge with a new one.
		Print Head	1. Check if there is not any foreign matter on the nozzle surface of the Print Head. 2. Check if the Head FFC is connected to CN7 and CN8 on the Main Board, or to the board on the Print Head. 3. Check if the Head FFC is not damaged. 4. Print and check if the Nozzle Check Pattern is printed properly.	1. Perform the wiping operation. Replace the Wiper when the Wiper is deformed or contaminated awfully. 2. Securely connect the Head FFC to the Main Board or the board on the Print Head. 3. Replace the Head FFC with a new one. 4. Perform Head Cleaning and check the Nozzle Check Pattern. * If the problem is not solved, replace the Print Head with a new one.
	Vertical bands (perpendicular to the Carriage Unit movement) appear getting uneven print density.  (Note) If the problem is not solved, replace the CR Motor with a new one.	Carriage Unit	1. Check if there is no foreign matter on the surface of the CR Guide Shaft. 2. Check if there is no damage on the surface of the CR Guide Shaft. 3. Check if there is enough grease on the surface of the CR Guide Shaft. 4. Check if the CR Guide Shaft is properly connected to the Main Frame with the fixing spring of the CR Guide Shaft.	1. Remove the foreign matter on the CR Guide Shaft. 2. Replace the CR Guide Shaft with a new one. 3. Wipe the surface of the CR Guide Shaft with a dry soft cloth, and then apply G-63 to it. Refer to "Lubrication" in Chapter4. 4. Reassemble the CR Guide Shaft correctly.

Table 1-26. Check Points for Print Quality Problems

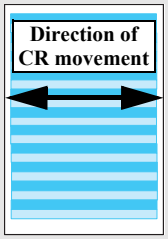
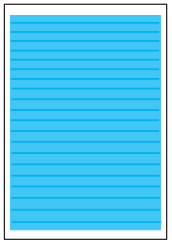
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
During operation -	Vertical bands (perpendicular to the Carriage Unit movement) appear getting uneven print density.	Frame EJ Assy.	1. Check if the surface of the Frame EJ Assy. is precisely horizontal.	1. Replace the Frame EJ Assy. with a new one.
		Print Head	1. Print and check if the Nozzle Check Pattern is printed properly.	1. Perform the Head Cleaning, then check the Nozzle Check Pattern. * If the problem is not solved, replace the Print Head with a new one.
	Horizontal bands (horizontally to the Carriage Unit movement) appear.  (Note) If the problem is not solved, replace the PF Motor with a new one.	PF Roller	1. Check if there is not any foreign matter on the surface of the PF Roller. 2. Check if the PF Roller is not damaged 3. Check if the Spur Gear, 37.242 is not damaged or broken.	1. Clean the surface of the PF Roller. 2. Replace the Printer Mechanism with a new one. 3. Replace the Printer Mechanism with a new one.
		Printer Driver and Special Paper	1. Check if appropriate paper is used in accordance with the Printer Driver settings.	1. Use the appropriate type of paper in accordance with the Printer Driver.
		Print Head	1. Check if the Print Head prints correctly with the Nozzle Check Pattern.	1. Perform the Head Cleaning, then check the Nozzle Check Pattern. * If the problem is not solved, replace the Print Head with a new one.
	Horizontal narrow bands (horizontally to the Carriage Unit movement) appear.  These bands appear when the print paths overlap each other.	Paper Guide, Front	1. Check if the porous pad in front of the Paper Guide, Front has not detached.	1. Reattach the porous pad.

Table 1-26. Check Points for Print Quality Problems

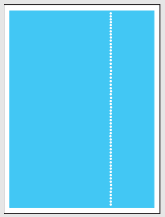
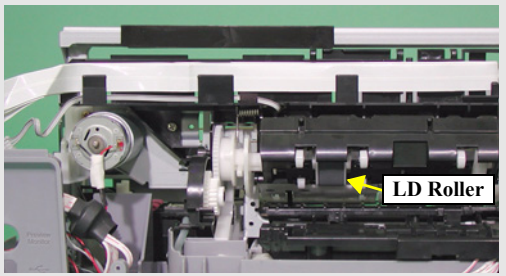
Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
During operation -	One or more than one traces of the Star Wheels appear in a direction perpendicular to the Carriage Unit movement. 	Frame EJ Assy.	1. Check if the Star Wheels have not detached. 2. Check if the surface of the Frame EJ Assy. is mounted horizontally.	1. Reassemble the Star Wheels correctly. 2. Replace the Frame EJ Assy. with a new one.
		Roller EJ Assy.	1. Check if the Roller EJ Assy. has not detached from the Printer Mechanism.	1. Reassemble the Roller EJ Assy. correctly.
	Normal printing task is performed; however, the top margin is less than usual.	Holder, Shaft, LD Roller	1. Check if any paper dust has not adhered to the surface of the LD Roller. 	1. Remove the dust by using a soft cloth moistened with alcohol. * If the problem is not solved, replace the Holder, Shaft, LD Roller with a new one.
	The print is light and thin.	Printer Driver and Special Paper	1. Check if appropriate paper is used in accordance with the Printer Driver settings.	1. Use the appropriate type of paper in accordance with the Printer Driver settings.
		Print Head	1. Check if the correct Head ID has been input in EEPROM by using the Adjustment Program.	1. Input a correct 15-digit Head ID in the EEPROM using the Adjustment Program.

Table 1-26. Check Points for Print Quality Problems

Occurrence Timing Position of CR	Phenomenon Detail	Faulty Part/ Part Name	Check Point	Remedy
During operation -	The paper is stained with the ink.	Frame EJ Assy.	1. Check if there is any ink adhesion on the Frame EJ Assy.	1. Clean the ink adhesion on the Frame EJ Assy. with a soft cloth.
			1. Check if the Frame EJ Assy. has not warped upward.	1. Replace the Frame EJ Assy. with a new one.
		Paper Guide, Front	1. Check if there is any ink adhesion on the Paper Guide, Front. 2. Check if the porous pad of the Paper Guide, Front has not detached.	1. Clean the ink adhesion on the Paper Guide, Front with a soft cloth. 2. Reattach the porous pad.
		Roller EJ Assy.	1. Check if there is any ink adhesion on the Roller EJ Assy.	1. Clean the ink adhesion on the Roller EJ Assy. with a soft cloth.
		Paper Guide, Upper	1. Check if there is any ink adhesion on the Paper Guide, Upper.	1. Clean the ink adhesion on the Paper Guide, Upper with a soft cloth.
		PF Roller	1. Check if there is any ink adhesion on the PF Roller.	1. Clean the ink adhesion on the PF Roller with a soft cloth.
		Ink System	1. Check if the wiping operation has been performed correctly.	1. Replace the Ink System with a new one.
		Print Head	1. Check if there is any ink adhesion on the Print Head Cover.	1. Clean the ink adhesion on the Print Head Cover with a soft cloth.
	The upper edge of the paper gets creased.	ASF Assy.	1. Check if the Hopper Pad is stuck to the Hopper correctly.	1. Replace the ASF Assy. with a new one.

CHAPTER

2

DISASSEMBLY / ASSEMBLY

2.1 Overview

This chapter describes the procedure for disassembling and reassembling the main components of the Stylus Photo R220/R230. Unless otherwise specified, disassembled units or components can be reassembled by reversing the disassembly procedure.
Procedures which, if not strictly observed, could result in personal injury are described under the heading “WARNING”.
“CAUTION” signals a precaution which, if ignored, could result in damage to equipment.
Important tips for procedures are described under the heading “CHECK POINT”.
If the assembly procedure is different from the reversed disassembly procedure the correct procedure is described under the heading “REASSEMBLY.”
Any adjustments required after reassembly of components or parts are described under the heading “ADJUSTMENT REQUIRED”.
When you have to remove any parts or components that are not described in this chapter, refer to the exploded diagram in the Appendix.
Read the next section “Precautions” fully before starting disassembly.

2.1.1 Precautions

Before starting the disassembly or reassembly of the product, read the following precautions given under the headings WARNING and CAUTION.

- **Disconnect the power cable before disassembling or assembling the printer.**
- **If you need to work on the printer with power applied, strictly follow the instructions in this manual.**
- **Wear protective goggles to protect your eyes from ink. If ink gets in your eye, flush the eye with fresh water and see a doctor immediately.**
- **Always wear gloves for disassembly and reassembly to avoid injury from sharp metal edges.**
- **To protect sensitive microprocessors and circuitry, use static discharge equipment, such as anti-static wrist straps, when accessing internal components.**
- **Never touch the ink or wasted ink with bare hands. If ink comes into contact with your skin, wash it off with soap and water immediately. If you have a skin irritation, consult a physician.**
- **When reassembling the waste ink pads and tray, always make sure that the waste ink tube is fitted correctly in the specified place. Fitting the ink tube in other than the specified position can cause ink leakage.**

- **When transporting the printer after installing the ink cartridge, pack the printer for transportation without removing the ink cartridge and be sure to secure the Ink Cartridge to the printer cover with tape tightly to keep it from moving.**
- **Use only recommended tools for disassembling, assembling or adjusting the printer. (Refer to Table 2-1 "Tool List".)**
- **Observe the specified torque when tightening screws.**
- **Use the specified lubricants and adhesives. (Refer to Chapter 4 for details.)**
- **Make the specified adjustments when you disassemble the printer. (Refer to Chapter 3 for details.)**
- **When using compressed air products; such as air duster, for cleaning during repair and maintenance, the use of such products containing flammable gas is prohibited.**

2.1.2 Recommended Tools

Use only specified tools to avoid damaging the printer.

Table 2-1. Tools

Tool Name	Supplier	Code
Phillips Screw Driver (No. 0)	EPSON	1080531
Phillips Screw Driver (No. 1)	EPSON	1080530
Phillips Screw Driver (No. 2)	EPSON	1080532
Tweezers	EPSON	1080561
Acetate Tape	EPSON	1003963
Hexagonal Box driver (5.5mm)	EPSON	1080584

2.1.3 Pre-Shipment Checks

When returning this product to the user after completing printer repair, check that the work is complete using the following table.

Table 2-2. Service Completion Pre-Shipment Check List

Classification	Item	Check Point	Status
Main Unit	Self-test	Is the operation normal?	☐ Checked ☐ Not necessary
	On-line Test	Is the printing successful?	☐ Checked ☐ Not necessary
	Print Head	Is ink discharged normally from all the nozzles?	☐ Checked ☐ Not necessary
	Carriage Mechanism	Does it move smoothly?	☐ Checked ☐ Not necessary
		Is there any abnormal noise during its operation?	☐ Checked ☐ Not necessary
		Is there any dirt or foreign objects on the CR Guide Shaft?	☐ Checked ☐ Not necessary
		Is the CR Motor at the correct temperature? (Not too heated?)	☐ Checked ☐ Not necessary
	Paper Feeding Mechanism	• Is paper fed smoothly? • No paper jamming? • No paper skew? • No multiple feeding? • No abnormal noise?	☐ Checked ☐ Not necessary
		Is the PF Motor at correct temperature?	☐ Checked ☐ Not necessary
		Is the paper path free of any obstructions?	☐ Checked ☐ Not necessary
Adjustment	Specified Adjustment	Are all the adjustment done correctly?	☐ Checked ☐ Not necessary
Lubrication	Specified Lubrication	Are all the lubrication made at the specified points?	☐ Checked ☐ Not necessary
		Is the amount of lubrication correct?	☐ Checked ☐ Not necessary
Function	ROM Version	Is it the latest version? Version:	☐ Checked ☐ Not necessary
Packing	Ink Cartridge	Are the ink cartridges installed correctly?	☐ Checked ☐ Not necessary
	Protective Materials	Have all relevant protective materials been attached to the printer?	☐ Checked ☐ Not necessary
Others	Attachments, Accessories	Have all of the accessories been included in the package?	☐ Checked ☐ Not necessary

Table 2-2. Service Completion Pre-Shipment Check List

2.2 Caution regarding assembling/disassembling the printer mechanism, and how to ensure the quality of reassembled product

For the existing Low End models, it is basically forbidden to remove the Lower Housing from the Printer Mechanism. This is because the strength of the Main Frame is not strong enough, therefore, the Main Frame may be deformed when removing/reinstalling it from/to the Lower Housing.
For that reason, when replacing the Ink System or the PF Motor, it is recommended to replace not only the Lower Housing but also the Printer Mechanism.

For this printer, it is necessary that the Lower Housing be removed from the Printer Mechanism when replacing the Waste ink Pads or the Ink System Unit.
Therefore, this chapter specifies the disassembly/assembly of the Printer Mechanism which the Lower Housing has been taken out in order to secure the quality of the repaired items.

☐ Cautions for disassembly/assembly of the Printer Mechanism

1. the Printer Mechanism with the Lower Housing
    - Do not hold the Guide Plate, CR ⇒ Deforming of the Main Frame and the Guide Plate, CR may give some bad influence to PG or printing.
    - Do not touch the CR Guide Shaft and the surface of the head nozzle.
    - Note that the screws that secure the Main Board is M4, not M6. If you use M6 screw mistakenly, it will interfere with the Carriage.
    - Be careful not to let the damper of the CDR come off as it is secured by the Lower Housing.
2. the Printer Mechanism without the Lower Housing
    - Make sure the exact attaching position in all X, Y and Z directions. See the Ensuring the attaching position in X, Y and Z directions.
    - Be sure to remove the Frame Support before removing the PF Roller Unit, Roller EJ, and the Front Paper Guide.
    - Be sure to confirm that The Waste Ink Tube is correctly installed.
    - Be sure to route the cables of the Guide and Tray Sensor correctly.
    - The APG gear must be engaged properly.

■ Ensuring the attaching position in X, Y and Z directions.

Installing each part or component of the Printer Mechanism accurately can be made by determining the positions of them in relation to the Lower Housing.

[When Servicing]
Check that there is no gap between the Main Frame and the Lower Housing.

[Reference]
In order to ensure the accuracy of installation positions, it is necessary to make sure the positions in X, Y and Z directions.

[X-axis direction]

- Check if the Main Frame is correctly set to the groove of the Lower Housing.
- Check if there is no gap between the Main Frame and the Lower Housing.

[Y-axis direction]

- Check if the slot of the Main Frame is correctly attached to the projection of the Lower Housing.

[Z-axis direction]

- Check if there is no gap between the Main Frame and the Lower Housing.
- Check if correctly secured with the tabs (2 on the left, 1 on the right, 1 on the right front) of the Printer Mechanism.

■ Maintaining the perpendicularity of the Guide Rail (The Guide Rail is secured by the Ink Cartridge Holder and the Print Head).

Deformation of the Guide Plate, CR may cause the defective print/operation.

[When Servicing]
Specify the correct raising position for the Main Frame so that it will not be deformed.

■ Installing the ASF Unit, the Main Board and the Paper Guide, Upper

Forces exerted on the Main Frame when installing the three components may deform the frame resulting in a malfunction of the printer or print quality problem.

[When Servicing]
Hold the opposite side of the components securely, when installing them.

3. CDR Guide Assy.

■ Maintaining the levelness of the CDR Guide Assy.

Deformation of the CDR Guide Assy. may cause the defective print.

[When Servicing]
Disassemble/assemble carefully the CDR Guide Assy.

☐ Ensuring the quality of reassembled products

It can be judged that the quality of the reassembled products is ensured if the printing test with the Adjustment program is successful.

2.3 Disassembly

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

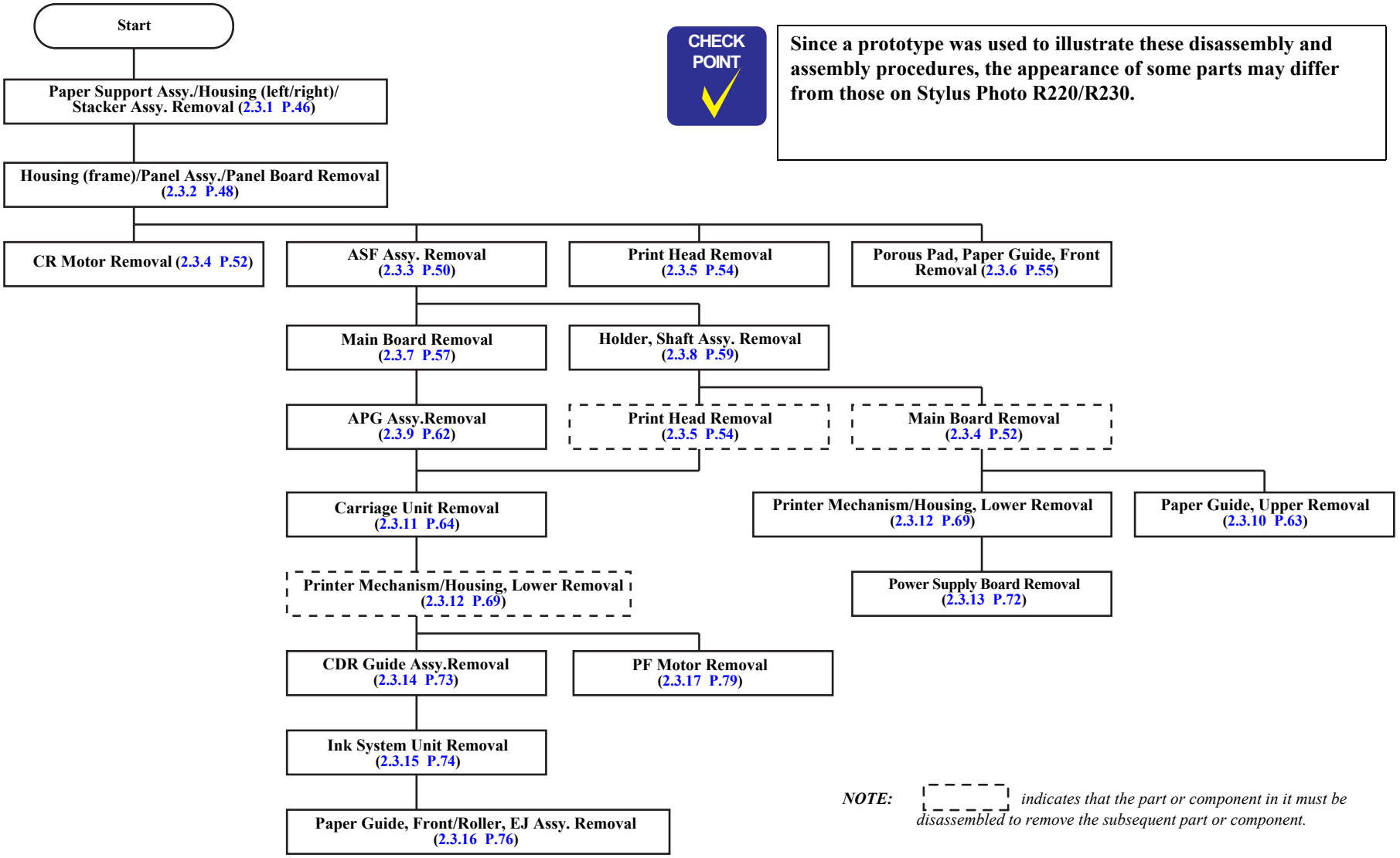


Figure 2-1. Disassembly Flowchart

2.3.1 Paper Support Assy./Housing (left/right)/Stacker Assy. removal

☐ **External View**

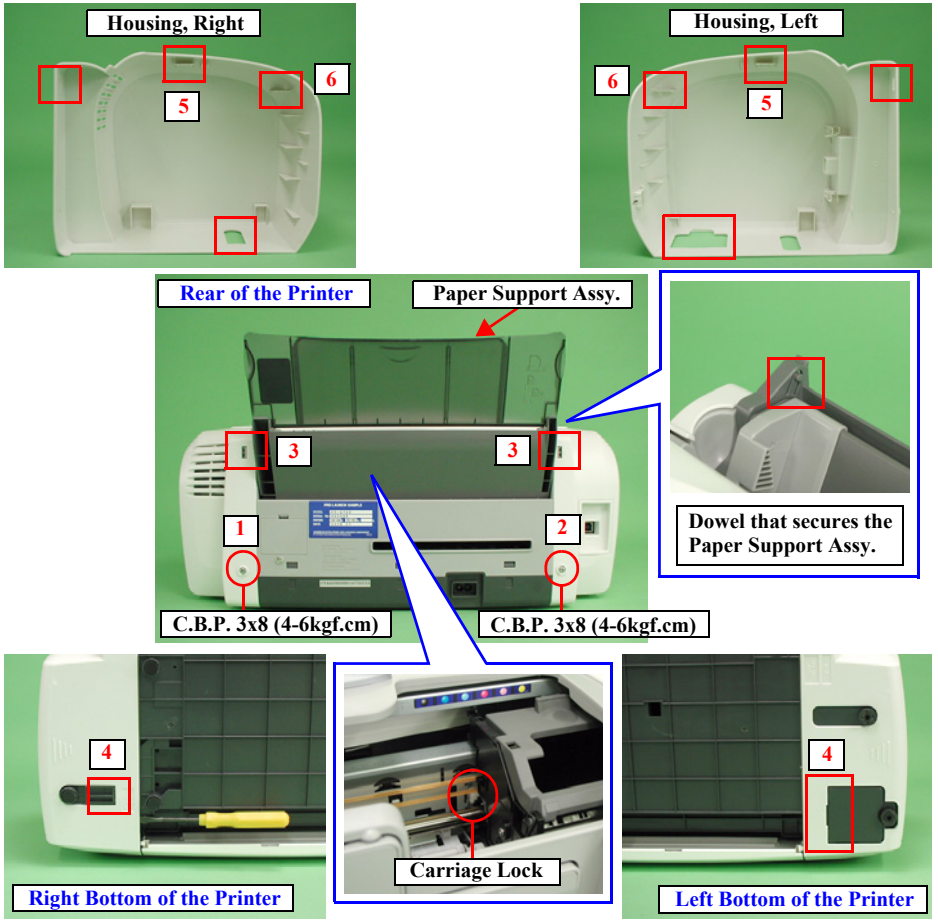


Figure 2-2. Paper Support Assy./Housing (left/right) removal

☐ **Parts/Units which should be removed before removing the Paper Support Assy./Housing (left/right)/Stacker Assy.**

None

☐ **Disassembly Procedure**

■ **Paper Support Assy. Removal**

1. Release the two dowels that secure the Paper Support Assy. to the Frame ASF and remove the assy.

■ **Housing (left/right) Removal**

1. Remove the two screws (1, 2) that secure the Housing (left/right).
2. Release the left and right tabs (3) by pushing them toward the front side of the printer with a flat-blade screwdriver or similar tool.
3. Release right tab (4) by inserting a flat-blade screwdriver between the Housing, Lower and the Housing, Right. (Release the left tab (4) by pulling the bottom of the Housing, Left downward.)
4. Unlock the Carriage Lock with tweezers or similar tool, and move the Carriage Unit to the center.
5. Insert your hand inside the Housing (left/right) to release the tabs (5, 6).

☐ **External View**

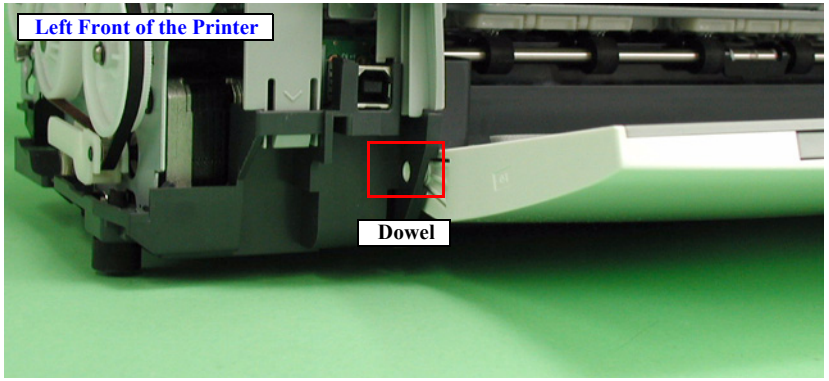


Figure 2-3. Stacker Assy. Removal

■ **Stacker Assy. Removal**

1. Release the left dowel that secures the Stacker Assy. to the Housing, Lower with a flat-blade screwdriver or similar tool, and remove the Stacker Assy. toward the front side of the printer.

CAUTION

☐ **When removing the Paper Support Assy./Housing (left/right)/ Stacker Assy.**

- **Be careful not to damage the tabs when releasing them with a flat-blade screwdriver or your hand to remove the Housing (left/right) or the Paper Support Assy.**
- **Do not tilt the printer more than necessary as ink may leak.**

REASSEMBLY

☐ **When reinstalling the Paper Support Assy./Housing (left/right)/ Stacker Assy.**

- **Make sure that there is no gap between the Housing, Frame and the Housing (left/right).**
- **Make sure that the right side of the Stacker Assy. is correctly installed to the damper of the Housing, Lower.**
- **First secure the Housing, Right with a screw and then secure the Housing, Left with a screw.**
- **Make sure that the Paper Support Assy. is correctly installed to the dowel of the ASF Assy.**

2.3.2 Housing, Frame/Panel/Panel Board Removal

☐ **External View**

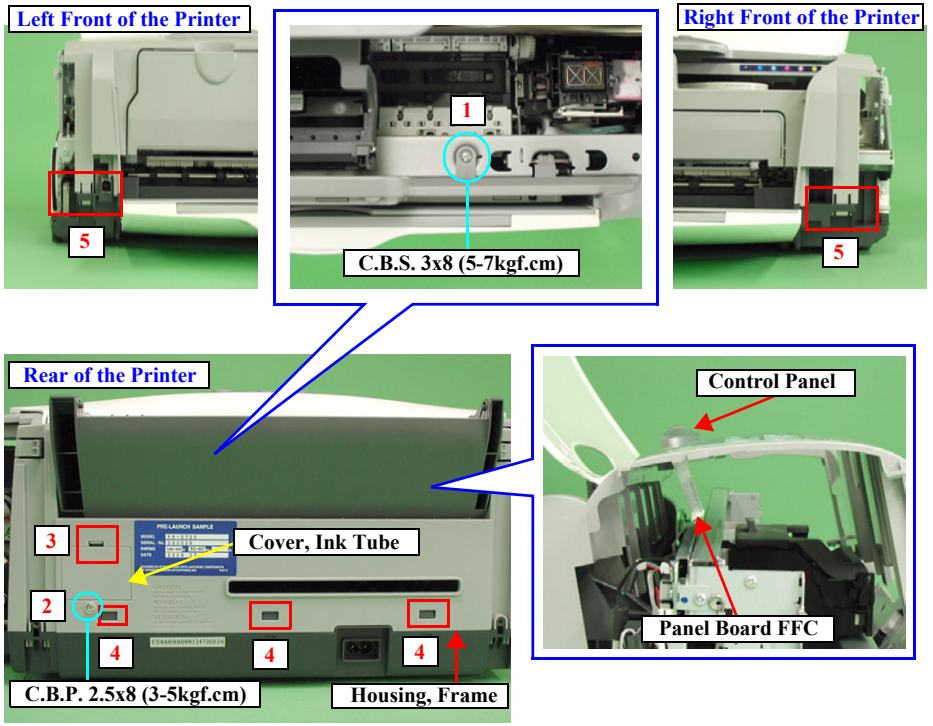


Figure 2-4. Housing, Frame Removal

☐ **Parts/Units which should be removed before removing the Housing, Frame/ Panel/Panel Board.**

Paper Support Assy./Housing (left/right)

☐ **Disassembly Procedure**

■ **Housing, Frame Removal**

1. Remove the screw (1) that secures the Housing, Frame to the Printer Mechanism.
2. Remove the screw (2) that secures Cover, Ink Tube to the Housing, Frame and then Release the tab (3) to remove the Cover, Ink Tube.
3. Release the three tabs (4) that secure the backside of the Housing, Frame with a flat-blade screwdriver or similar tool.
4. Release the left and right tabs (5) that secure the front side of the Housing, Frame.
5. Lift the Housing, Frame to disconnect the connector cable of the Panel Board FFC from the Panel Board.
6. Remove the Housing, Frame upward.

■ **Panel Removal**

1. Release the left and right tabs that secure the Panel to the Housing, Frame and remove the Panel.

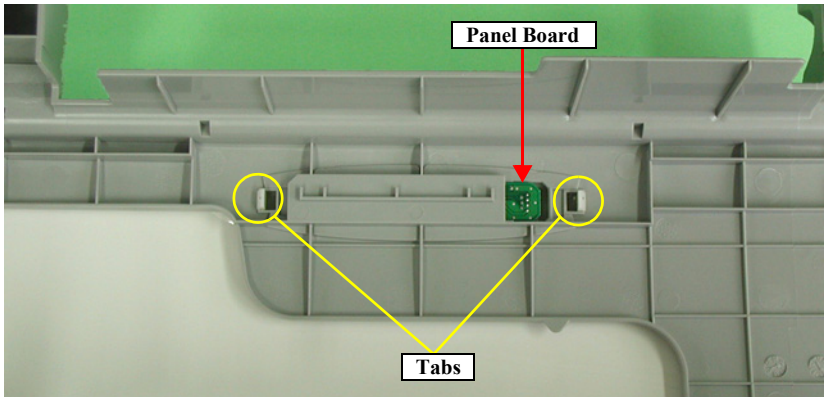


Figure 2-5. Panel Removal

■ **Panel Board Removal**

1. Remove the Panel Board lifting upward.

REASSEMBLY

☐ **When reinstalling the Housing, Frame**

■ **First connect the Panel Board FFC to CN4 connector on the Main Board. Then install the Housing, Frame and then install the Panel Board and the Control Panel.**

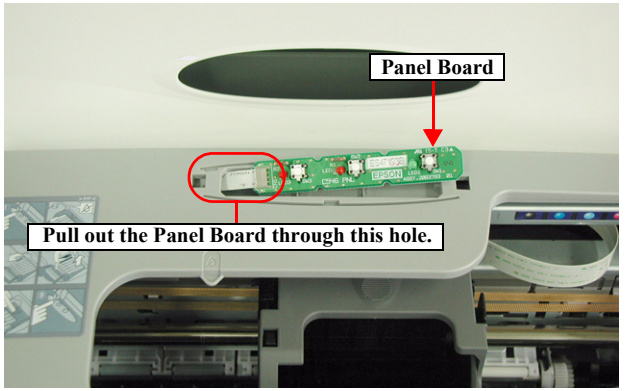


Figure 2-6. Panel Board Reinstallation

■ **Make sure that there is no clearance between the Housing, Frame and the Housing, Lower.**

2.3.3 ASF Assy. Removal

☐ **External View**

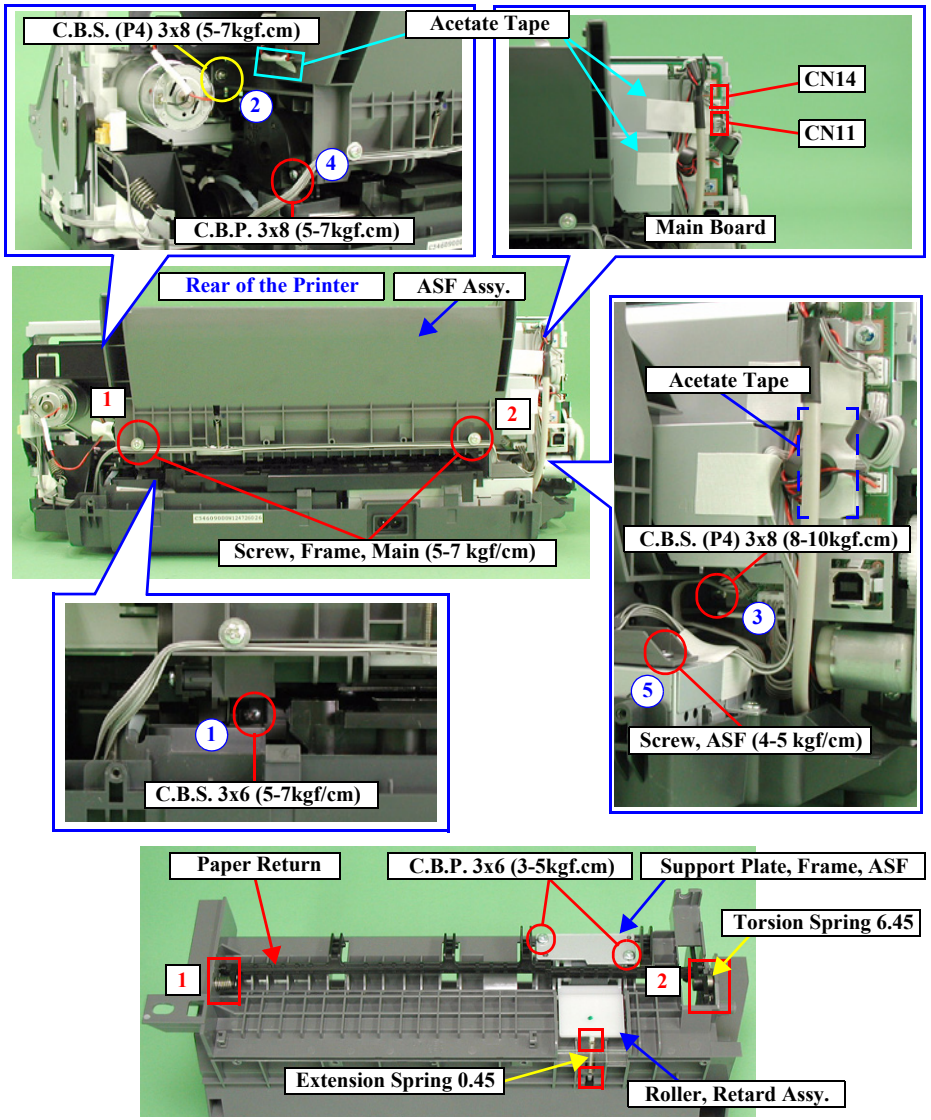


Figure 2-7. ASF Assy. Removal

☐ **Parts/Units which should be removed before removing ASF Assy.**

Paper Support Assy./Housing (left/right)/Housing, Frame

☐ **Disassembly Procedure**

1. Disconnect the connector cables of the PG Sensor and the Sensor, CDR Assy. from CN14 and CN11 connectors on the Main Board.
2. Remove the four piece of acetate tape from the Main Board and Release the connector cables.
3. Remove five screws that secure the ASF Assy.
4. Loose the two screws (Screw, Frame, Main) which secure the connector cables of the PG Sensor and the Sensor, CDR Assy., and release them.
5. Remove the ASF Assy. toward the rear of the printer.
6. Release the left and right tabs by inflecting the Paper Return Lever. Release the tabs in order of (1) and (2).
7. Remove two screws that secure the Support Plate, Frame, ASF Assy.
8. Release the Extension Spring 0.45 from the two tabs and remove the Roller, Retard Assy.

REASSEMBLY

☐ When reassembling the ASF Assy.

- ■ Make sure that Extension Spring is hooked on the Frame, ASF and the Roller, Retard Assy.
- ■ Make sure that Torsion Spring, 6.45 is correctly installed on the Paper Return Lever and the Frame, ASF.

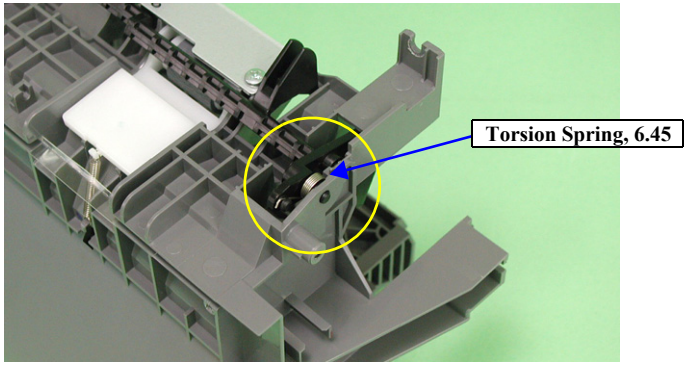


Figure 2-8. Torsion Springs, 6.45 installation

- ■ Make sure that the Paper Return Lever and the Roller, Retard Assy. move smoothly.
- ■ Do not touch the cork on the Roller, Retard Assy. and the Hopper.
- ■ First secure the Support Plate, Frame, ASF, Right with a screw and then secure the Support Plate, Frame, ASF, Left with a screw.

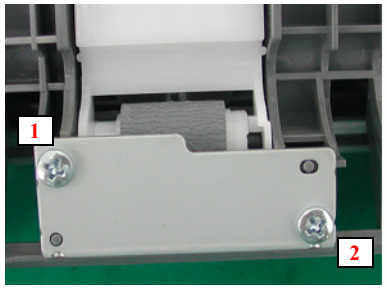


Figure 2-9. Support Plate, Frame, ASF installation

REASSEMBLY

☐ When reinstalling the ASF Assy. on the Frame, Main

- ■ Make sure that Compression Spring, 2.51 is correctly installed on the Hopper.

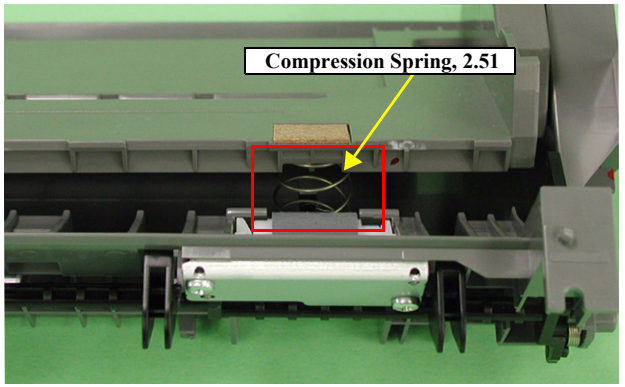


Figure 2-10. Torsion Springs, 2.51 installation

- ■ Make sure that the Hopper moves smoothly.
- ■ Make sure that there is no clearance between the ASF Assy. and the Frame, Main.
- ■ Secure the ASF Assy. with five screws following the order of Figure2-7.

☐ PG Sensor/Sensor, CDR Assy. Connector Cables reinstallation

- ■ Secure the Connector Cables of the PG Sensor and Sensor, CDR Assy. to the ASF Assy. with two screws following the order shown in Figure2-7.

ADJUSTMENT REQUIRED

☐ When having replaced ASF Assy., apply G-46 grease to the specified points in adequate dose.
(Refer to Chapter 4 “MAINTENANCE”)

☐ When having replaced or removed ASF Assy., perform the following adjustment.
(Refer to Chapter 3 “ADJUSTMENT”)

1. First dot Adjustment

2.3.4 CR Motor Removal

☐ **External View**

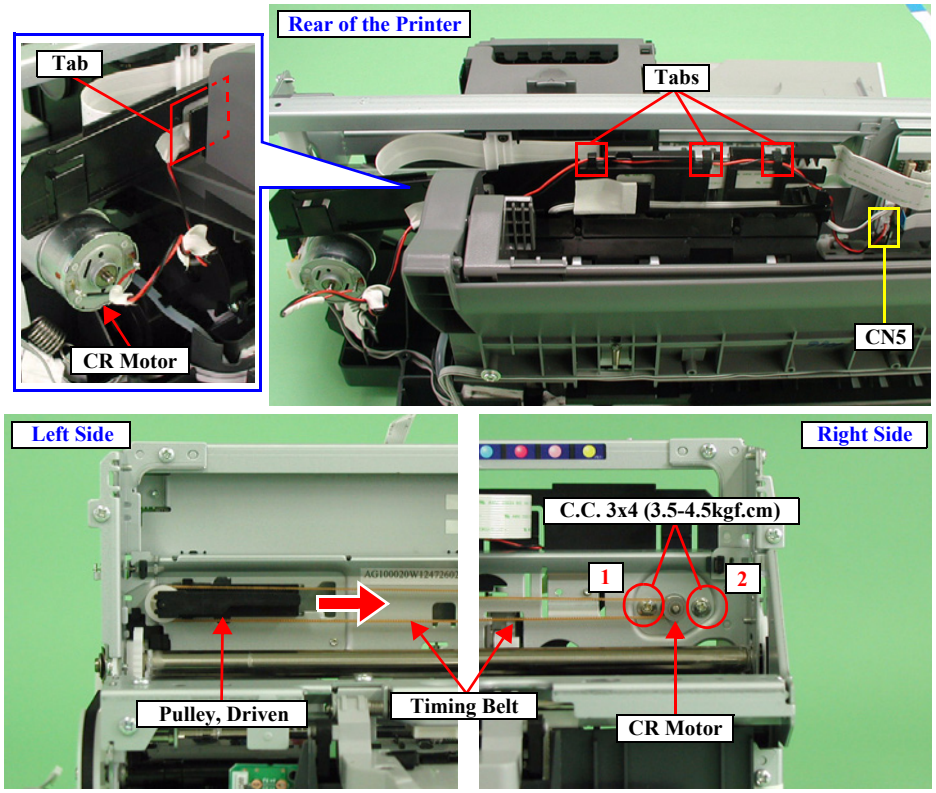


Figure 2-11. CR Motor Removal

☐ **Parts/Units which should be removed before removing "CR Motor".**

Paper Support Assy./Housing (left/right)/Housing, Frame

☐ **Disassembly Procedure**

1. Disconnect the CR Motor connector cable from CN5 on the Main Board.
2. Release the CR Motor connector cable from the tabs of the Holder, Shaft Assy.
3. Slide the Pulley, Driven in the direction of the arrow to reduce the tension of the Timing Belt, then release the belt from the Pinion of the CR Motor.
4. Remove the two screws that secure the CR Motor and remove it.

CAUTION

☐ **Be careful not to damage the Pinion Gear when removing the CR Motor.**

REASSEMBLY

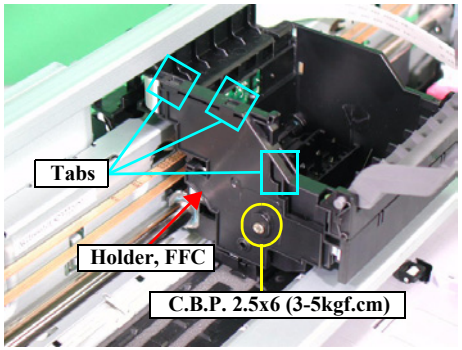
☐ **When reinstalling the CR Motor on the Frame, Main**

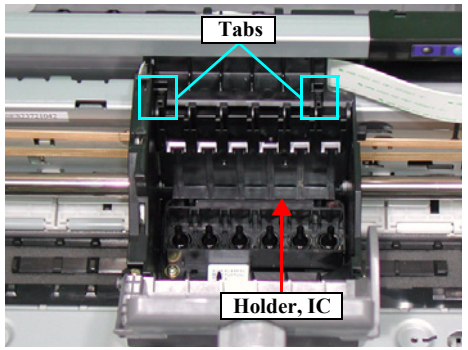
- **Be careful not to damage the Pinion Gear with the Frame, Main.**
- **Make sure that the CR Motor connector cable is connected to CN5 on the Main Board connector.**
- **Make sure that the CR Motor connector cable is properly secured by the tab of the Holder, Shaft Assy.**
- **Tighten the two screws to secure the CR Motor in the order shown in Figure2-11.**
- **Make sure that there is no clearance between the CR Motor and the Frame, Main.**
- **Make sure that the lot No. printed side of the CR Motor faces upward.**

- **When having removed the Timing Belt or replace it with a new one, perform the following adjustments in the order given orders. (Refer to Chapter 3 "ADJUSTMENT")**
  1. **First dot Adjustment**
  2. **PW Sensor Adjustment**
  3. **Head Angular Adjustment**
  4. **Bi-D Adjustment**
  5. **CR Motor Deviation Correction (When Replaced)**

2.3.5 Print Head Removal

☐ **External View**





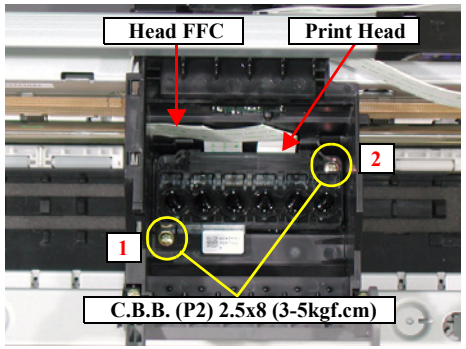


Figure 2-12. Print Head Removal

☐ **Parts/Units which should be removed before removing Print Head.**

Paper Support Assy./Housing (left/right)/Housing, Frame

☐ **Disassembly Procedure**

1. Remove the Ink Cartridges from the Carriage Unit.
2. Remove the screw which secures the Holder, FFC to the Carriage Unit with a No.1 screwdriver. Then slightly lift the Holder, FFC to release three tabs and remove the Holder, FFC by sliding it downward.
3. Release the two tabs that secure the Holder, IC to the Carriage Unit, and remove it upward.
4. Remove the two screws that secure the Print Head with a No.1 screwdriver.
5. Slightly lift the Print Head to disconnect the Head FFC from it and remove the Print Head.

CAUTION

☐ **Do not touch and/or damage the nozzle surface of the Print Head when handling it.**

REASSEMBLY

☐ **When reinstalling the Print Head,**

- **Do not touch and/or damage the nozzle surface of the Print Head.**
- **Make sure that the Head FFC is correctly connected to the connector of the Print Head.**
- **Make sure that the Print Head is correctly set to the Carriage Unit.**
- **Secure the Print Head with two screws following the order of Figure2-12.**

ADJUSTMENT REQUIRED

☐ **When having removed the Print Head or replace it with a new one, perform the following adjustments in order given below. Refer to Chapter 3 "ADJUSTMENT")**

1. **Ink Charge (When replaced)**
2. **Head ID Input (When Replaced)**
3. **PG Adjustment**
4. **First dot Adjustment**
5. **PW Sensor Adjustment**
6. **Head Angular Adjustment**
7. **Bi-D Adjustment**

2.3.6 Porous Pad, Paper Guide, Front Removal

☐ **External View**

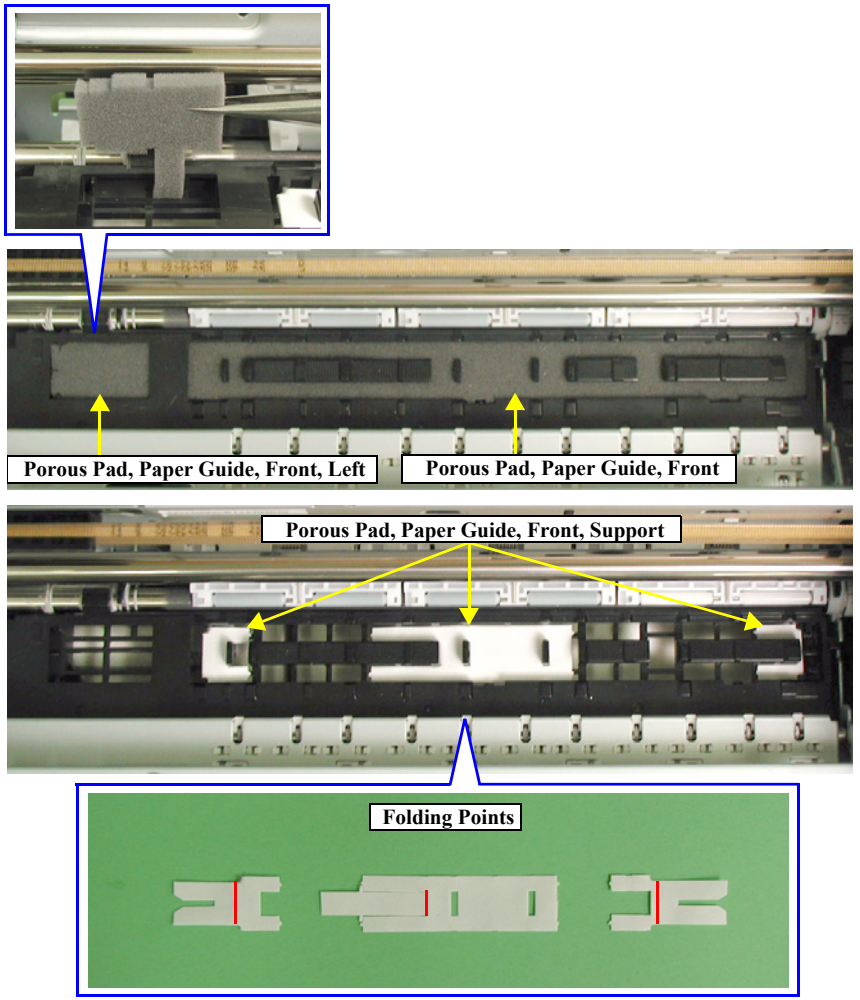


Figure 2-13. Porous Pad, Paper Guide, Front Removal

☐ **Parts/Units which should be removed before removing the Porous Pad, Paper Guide, Front.**

Paper Support Assy./Housing (left/right)/Housing, Frame

☐ **Disassembly Procedure**

Removing the following three types of the Porous Pads from the Paper Guide, Front with the tweezers.

- Porous Pad, Paper Guide, Front
- Porous Pad, Paper Guide, Front, Support
- Porous Pad, Paper Guide, Front, Left

CAUTION

☐ **The Porous Pad, Paper Guide, Front is secured with adhesive. Remove the pad carefully and slowly not to tear it and leave remnants of it on the Paper Guide, Front.**

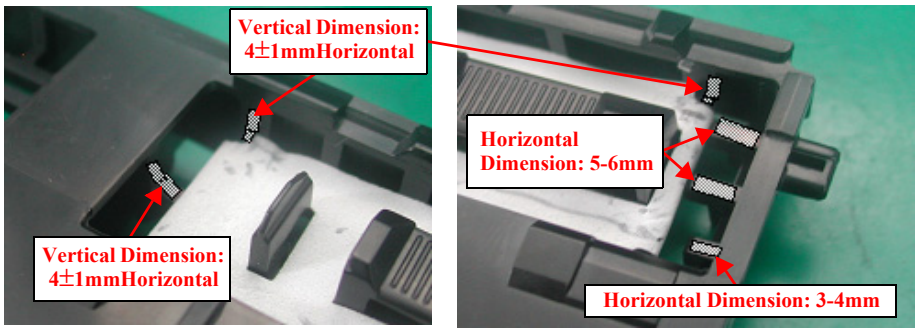


Figure 2-14. Gluing point of the Porous Pad, Paper Guide, Front

REASSEMBLY

- ☐ When reinstalling the Porous Pad, Paper Guide, Front/ the Porous Pad, Paper Guide, Front, Support
  - ■ Fold perpendicularly the left and right sides of the Porous Pad, Paper Guide, Front, Support at the marks and install it to the Paper Guide, Front. Make sure to put the slit onto the rib on the side of the Paper Guide, Front and keep the pad flat on the guide.
  - ■ Apply Three Bond 1401 to the six points shown in Figure2-14.
  - ■ Install the Porous Pad, Paper Guide, Front in piles. Put it under the rib and check if it is securely fit. Adjust the clearance between the Porous Pad, Paper Guide, Front and the Paper Guide, Front to approximately 0.5-1.0mm.
- ☐ When reinstalling the Porous Pad, Paper Guide, Front, Support,
  - ■ Attach the Porous Pad, Paper Guide, Front, Support by inserting its feet into the holes of the Paper Guide, Front shown in Figure2-13, then put the three portion of the pad support under the rib and check if it is securely fit.

CAUTION

- ☐ Be careful not to damage the Porous Pad, Paper Guide, Front, Support.
- ☐ Do not apply too much adhesive. Do not contaminate the Porous Pad, Paper Guide, Front, Support with the adhesive.
- ☐ Install the Porous Pad, Paper Guide, Front immediately after applying the adhesive.
- ☐ Make sure that the three Porous Pads are fitting on the guide surface securely.

2.3.7 Main Board Assy. Removal

☐ **External View**

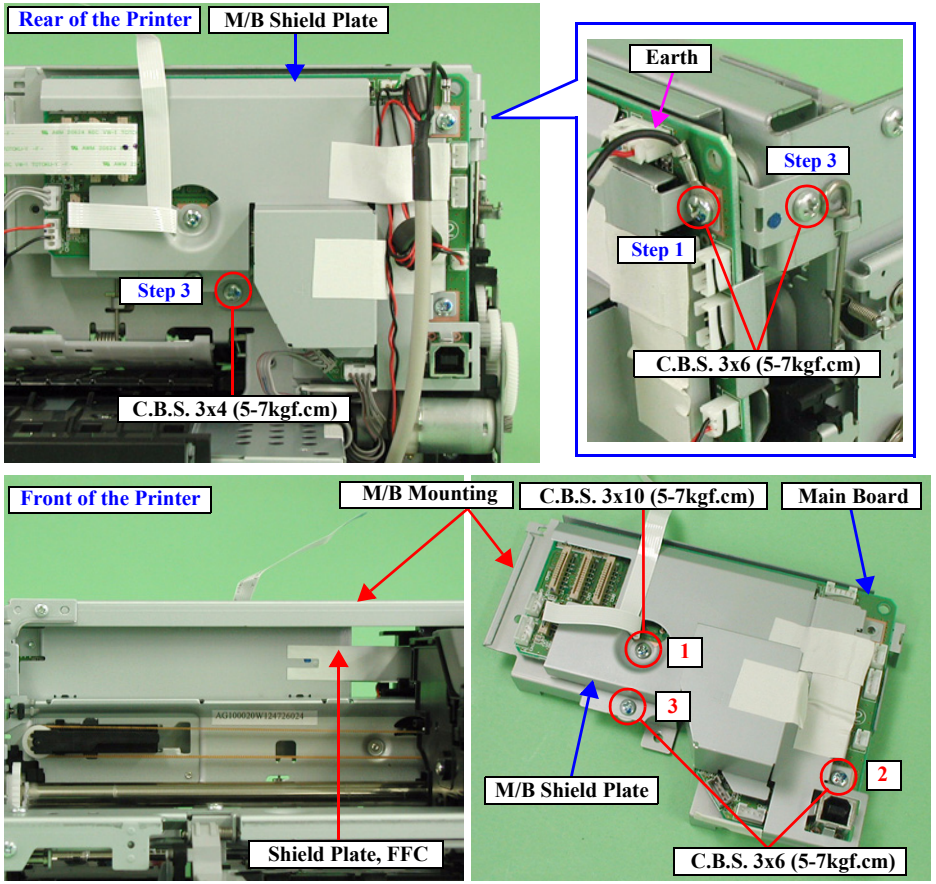


Figure 2-15. Main Board Assy. Removal

☐ **Parts/Units which should be removed before removing Main Board Assy.**

Paper Support Assy./Housing (left/right)/Housing, Frame/ASF Assy.

☐ **Disassembly Procedure**

1. Remove the screw that secures the Earth and release the Earth.
2. Disconnect the all connector cables from the Main Board and remove the Acetate Tapes from the Main Board.

   CN2 : Power Supply cable
   CN6 : PF Motor cable
   CN13 : APG Motor cable
   CN10 : Interface Board cable
   CN7 : Print Head FFC
   CN8 : Print Head FFC
   CN15 : CSIC/CR Encoder /PW Sensor FFC
   CN5 : CR Motor cable
   CN9 : PE Sensor cable
3. Remove the two screws that secure the Main Board Assy., and remove it.
4. Remove the Shield Plate, FFC from the M/B Mounting Plate.
5. Remove the three screws that secure M/B Shield Plate, and remove the M/B Shield Plate and the Main Board from the M/B Mounting Plate.

☐ **When reinstalling the Main Board Assy.,**

- **Make sure that all connector cables (CN2, CN6, CN13, CN10, CN7, CN8, CN15, CN5, CN9) are correctly connected.**
- **Tighten the three screws to secure the M/B Shield Plate in the order shown in Figure2-15.**

☐ **When having replaced the Main Board, perform the following operations and adjustments.**
(Refer to Chapter 3 "ADJUSTMENT")

- **When possible to read data from the old board, copy the EEPROM data after replacing the old board with a new one.**

■ **When impossible to read data from the old board, perform the following adjustments in order shown below after replacing the old board with a new one.**

1. **Replace Waste Ink Pads with a new one. (To rewrite Protection Counter)**
2. **Market Setting**
3. **USB ID Input**
4. **Protection Counter Input**
5. **Head ID Input**
6. **First dot Adjustment**
7. **PW Sensor Adjustment**
8. **Head Angular Adjustment**
9. **Bi-D Adjustment**
10. **CR Motor Deviation Correction**

2.3.8 Holder, Shaft Assy./LD Roller Removal

☐ **External View**

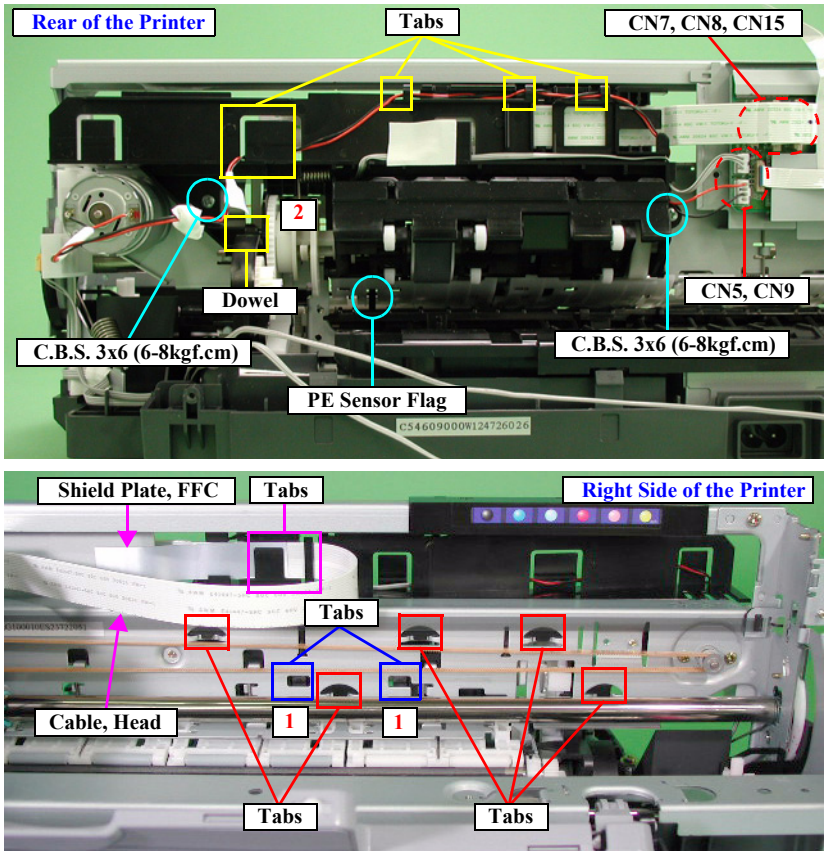


Figure 2-16. Holder, Shaft Assy. Removal (1)

☐ **Parts/Units which should be removed before removing the Holder, Shaft Assy. and LD Roller.**

Paper Support Assy./Housing (left/right)/Housing, Frame/ASF Assy.

☐ **Disassembly Procedure**

■ **Holder, Shaft Assy. Removal**

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

   CN5: CR Motor cable
   CN9: PE Sensor cable
   CN7: Print Head FFC
   CN8: Print Head FFC
   CN15: CSIC/CR Encoder /PW Sensor FFC

2. Release the CR Motor connector cable from the tabs of the Holder, Shaft Assy.
3. Remove the two screws that secure the Holder, Shaft Assy. to the Frame, Main.
4. Remove the Shield Plate, FFC from the Frame, Main. Then Release the Cable, Head from the two tabs of the Holder, Shaft Assy., and pull out it together with the Shield Plate, FFC frontward of the printer.

CAUTION

☐ **Do not reuse the Shield Plate, FFC once you peel it off.**

☐ **Be Careful not to damage the Cable, Head when handling it.**

5. There are seven tabs and one dowel that secure the Holder, Shaft Assy. First release the two tabs (1). And slightly lift the Holder, Shaft Assy. releasing the dowel (2), then release the other five tabs.
6. Slide the Holder, Shaft Assy. rightward viewed from the rear of the printer, remove the upper side of the assy. toward you and then remove it obliquely upward.

CAUTION

☐ **When removing the Holder, Shaft Assy.,**

■ **The PE Sensor comes in contact with the Front Paper Guide when removing the Holder, Shaft Assy. Be careful not to damage the sensor.**

☐ **External View**

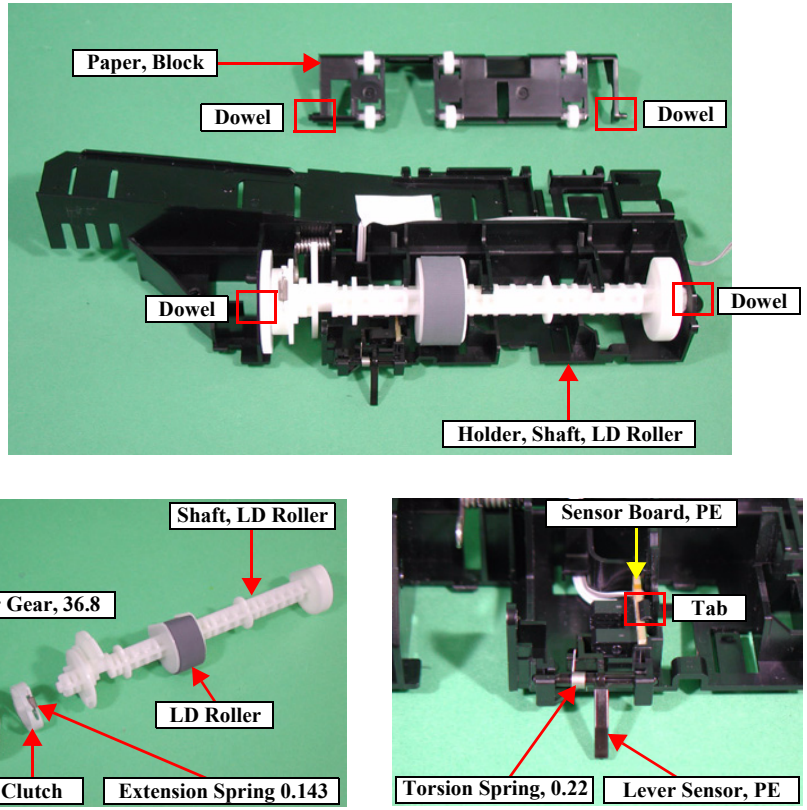


Figure 2-17. Holder, Shaft Assy. Removal (2)

■ **LD Roller Removal**

1. Release the two dowels that secure the Paper, Block to the Holder, Shaft Assy., and remove it.
2. Remove the Shaft, LD Roller and the Clutch from the Holder, Shaft, LD Roller.
3. Remove the LD Roller.

REASSEMBLY

☐ **When reinstalling the LD Roller to the Shaft, LD Roller,**

- **Do not touch the LD Roller with bare hands.**
- **Make sure to match the direction (ΔMark) indicated on the Shaft, LD Roller and the direction (Δ Mark) indicated on the back side of the LD Roller.**

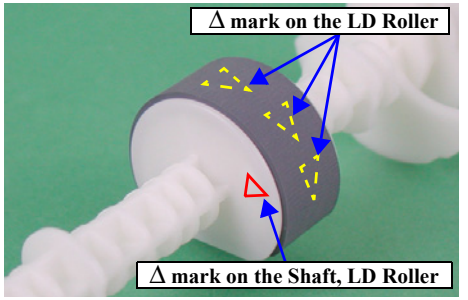


Figure 2-18. Reinstalling the LD Roller

☐ **When reinstalling the Clutch to the Shaft, LD Roller,**

- **Make sure to put the dowel of the Shaft, LD Roller into the hole of the Clutch.**
- **Make sure that the Extension Spring, 0.143 is securely set to the tabs of the Clutch and the Shaft, LD Roller.**
- **Do not set the Extension Spring in twisted form.**
- **Make sure that the Clutch rotates properly.**

REASSEMBLY

☐ When reinstalling the Shaft, LD Roller to the Holder, Shaft, LD Roller

- ■ Do not touch the LD Roller with bare hands.
- ■ Make sure that the leg of the Torsion Spring, 137.7 is located between the two cams of the Shaft, LD Roller as shown in Figure2-19.

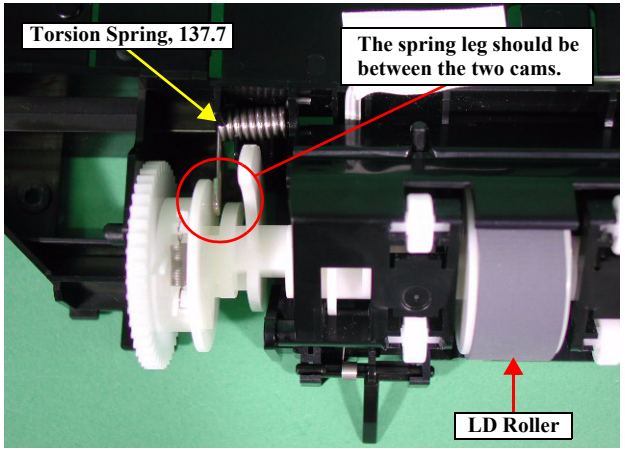


Figure 2-19. Position of Torsion Spring, 137.7

☐ When reinstalling the Holder, Shaft Assy. on the Frame, Main,

- ■ Check if seven tabs and a dowel of the Holder, Shaft Assy. are correctly secured.
- ■ Check if the connector cables of the PE Sensor, the CR Motor, and the Cable, Head are installed at the correct positions of the Holder, Shaft Assy.
- ■ Check if the connector cables of the PE Sensor, CR Motor, and the Cable, Head are connected to CN5, CN9, CN7, CN8, and CN15 on the Main Board connector.
- ■ Do not touch the LD Roller with bare hands.

REASSEMBLY

- ■ Do not damage the teeth of the Spur Gear, 36.8 and the Combination Gear, 27.2, 19.2.

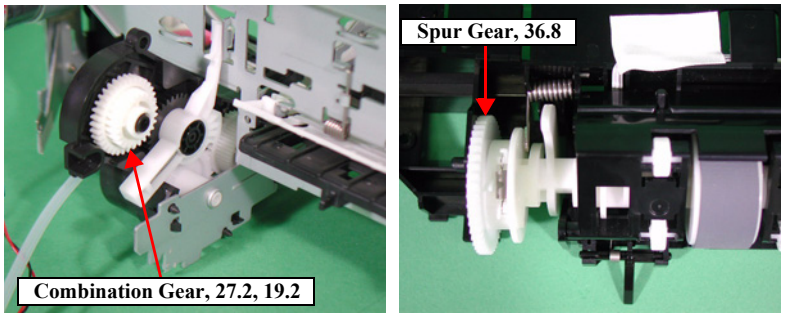


Figure 2-20. Spur Gear, 36.8 and Combination Gear, 27.2, 19.2

- ■ Tighten the two screws to secure the Holder, Shaft Assy. in the order shown in Figure2-21.

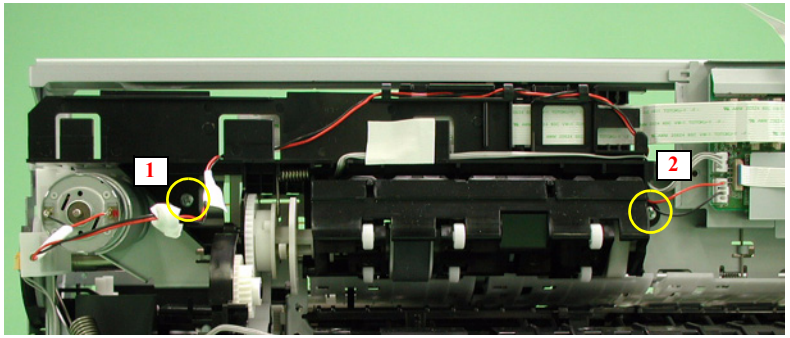


Figure 2-21. Holder, Shaft Assy. Reinstallation

ADJUSTMENT REQUIRED

☐ When having replaced the Shaft, LD Roller, apply G-46 grease to the specified points in adequate dose.
(Refer to Chapter 4 “MAINTENANCE”)

2.3.9 APG Assy. Removal

☐ **External View**

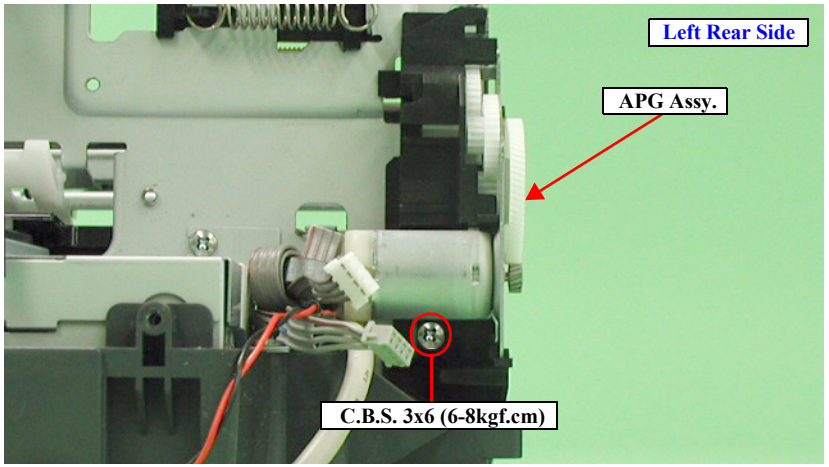


Figure 2-22. APG Assy. Removal

☐ **Parts/Units which should be removed before removing APG Assy.**

Paper Support Assy./Housing (left/right)/Housing, Frame/ASF Assy./Main Board Assy.

☐ **Disassembly Procedure**

1. Remove the screw that secures the APG Assy. to the Frame, Main, and remove the assy. avoiding contact with the Frame, Main.

REASSEMBLY

☐ **When reinstalling the APG Assy.**

- **Make sure that the two tabs and the two dowels are securely installed to the Frame, Main.**
- **Check if the part indicated in Figure2-23 is inserted in the slits of the Frame, Main.**

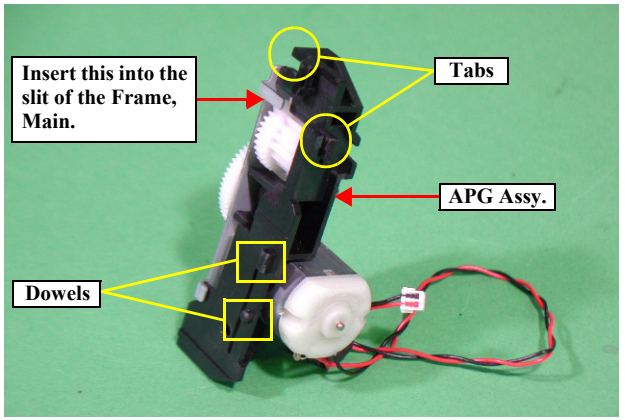


Figure 2-23. APG Assy. Installation

2.3.10 Paper Guide, Upper Removal

☐ **External View**

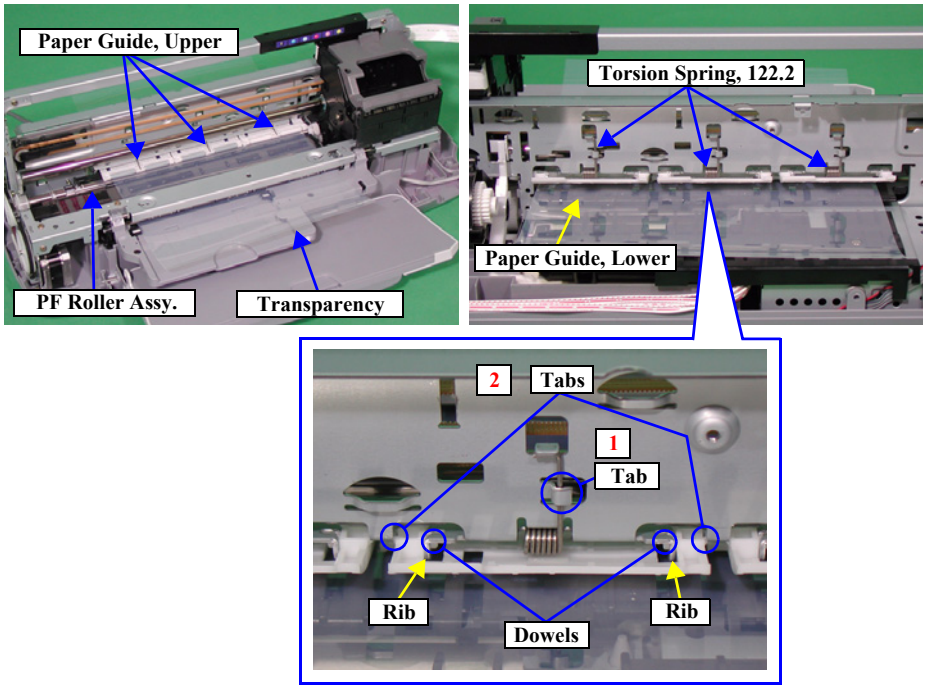


Figure 2-24. Paper Guide, Upper Removal

☐ **Parts/Units which should be removed before removing the Paper Guide, Upper.**

Paper Support Assy./Housing (left/right)/Housing, Frame/ASF Assy./ Holder, Shaft Assy./Main Board Assy.

☐ **Disassembly Procedure**

CAUTION

☐ **Make sure to cover the surface of the PF Roller Assy. with a transparent sheet when removing and reinstalling the Paper Guide, Upper.**

1. Release the three Torsion Springs, 122.2 from each tab of the Frame, Main and remove it.
2. Release the two tabs that secure the Paper Guide, Upper to the Frame, Main to upward. Then, release the two dowels while slightly holding up the Paper Guide, Upper.
3. While holding down the Paper Guide, Lower covered with a transparent sheet, remove the Paper Guide, Upper rearward of the printer avoiding the two ribs on the Frame, Main.

REASSEMBLY

☐ **When reinstalling the Paper Guide, Upper on the Frame, Main,**

■ **Make sure that the two dowels of the Paper Guide, Upper is installed on the Frame, Main, and that the Torsion Springs 122.2 are correctly placed on the Paper Guide, Upper and the Frame, Main.**

2.3.11 Carriage Unit Removal

☐ **External View**

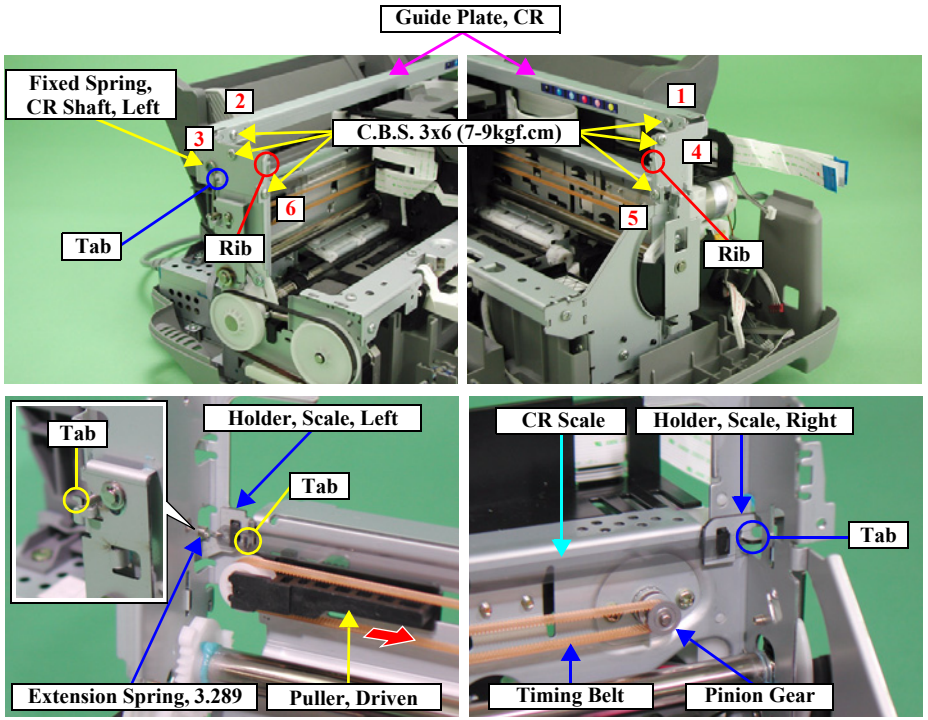


Figure 2-25. Carriage Unit Removal (1)

☐ **Parts/Units which should be removed before removing Carriage Unit.**

Paper Support Assy./Housing (left/right)/Housing, Frame/ASF Assy./ Holder, Shaft Assy./Main Board Assy./APG Assy./Print Head

☐ **Disassembly Procedure**

1. Release the Fixed Spring, CR Shaft, Left from the tab of the Frame, Main and remove it.
2. Remove six screws that secure the Guide Plate, CR.
3. Release the two ribs that secure the Guide Plate, CR, and remove the Guide Plate, CR avoiding the tab which was securing the Fixed Spring, CR Shaft, Left.
4. Remove the right side of the CR scale from the tab of the Holder, Scale Right.
5. Pull out the CR Scale leftward from the rear of the Carriage Unit. Then, remove the CR scale and the Extension Spring, 3.289 from the left tabs of the Holder, Scale, Left in that order.
6. Remove the Extension Spring, 3.289 from the CR Scale.
7. Loosen the tension of Timing Belt by pushing Pulley, Driven to the right. Then, remove the Timing Belt from Pinion Gear of CR Motor first, and next from the Pulley, Driven.

☐ **External View**

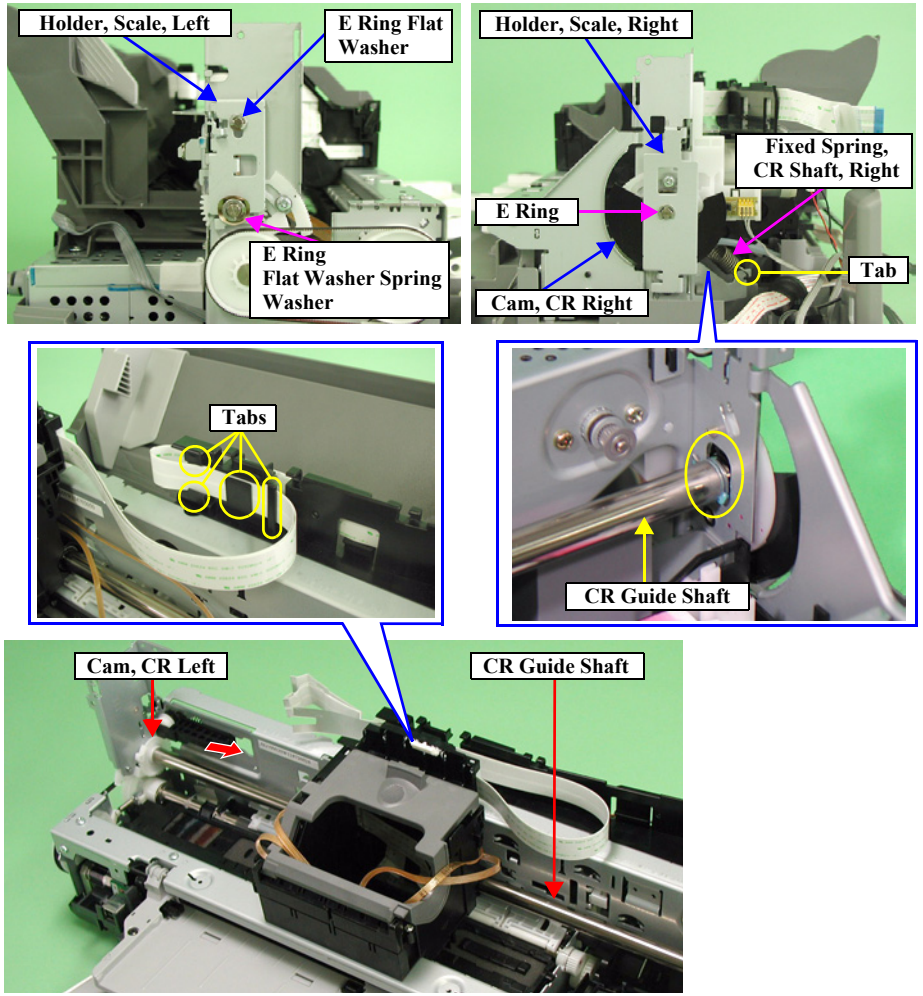
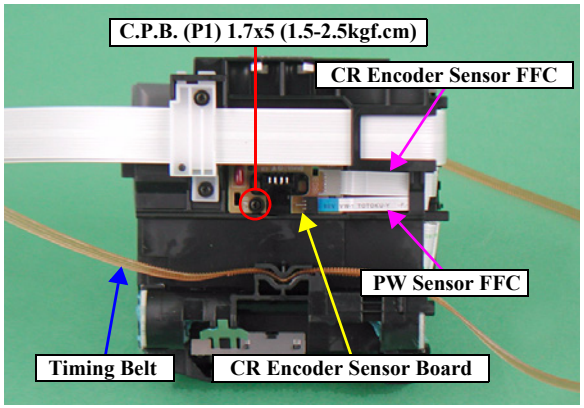
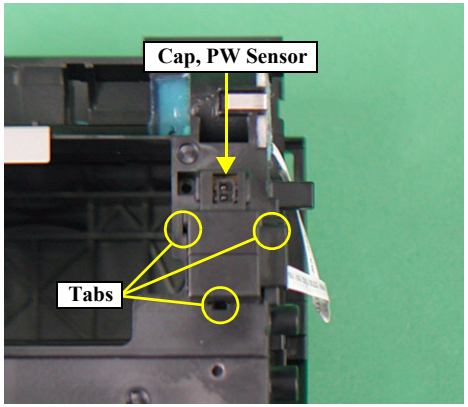


Figure 2-26. Carriage Unit Removal (2)

8. Remove the E Ring, the Holder, Scale Right and the Cam, CR Right from the right side of the CR Guide Shaft.
9. Remove the Fixed Spring, CR Shaft, Right from the tab of the Frame, Main. Then, remove the Fixed Spring, CR Shaft, Right from the CR Guide Shaft.
10. Remove the E ring and the Flat Washer that secure the Holder, Scale Left.
11. Remove the E Ring, the Flat Washer and the Spring Washer from the left side of the CR Guide Shaft. Then, remove the Holder, Scale Left.
12. Release the Cable, Head from the 4 tabs of the Holder, Shaft Assy.
13. Slide the CR Guide Shaft to the right and pull it out from the Cam, CR Left. Then, remove the Carriage Unit and the CR Guide Shaft together.
14. Pull the CR Guide Shaft out of the Carriage Unit.

☐ **External View**





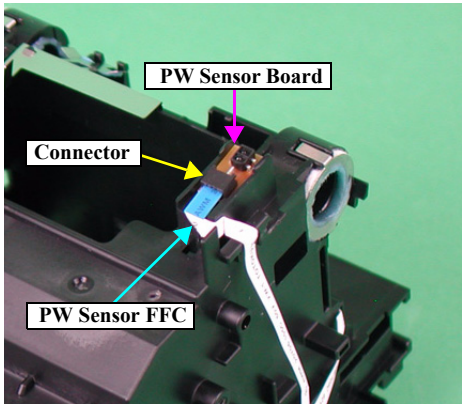


Figure 2-27. Carriage Unit Removal (2)

■ **CR Encoder Sensor Board Removal**

1. Remove the screw which secures the CR Encoder Sensor Board to the Carriage Unit with a No.0 screwdriver. Disconnect the CR Encoder FFC and the PW Sensor FFC from the connector of the CR Encoder Sensor Board. Then, remove the CR Encoder Sensor Board.

■ **PW Sensor Board Removal**

1. Release the three tabs which secure the Cap, PW Sensor and remove it.

CAUTION

☐ **Be careful not to damage the PW Sensor Board since it will be non-secured state when removing the Cap, PW Sensor.**

2. Disconnect the PW Sensor FFC from the connector of PW Sensor Board. Then, remove the PW Sensor Board.

REASSEMBLY

- ☐ When reinstalling the CR Encoder Sensor Board on the Carriage Unit
  - ■ Check if the CR Encoder Sensor Board is correctly secured.
  - ■ Check if the CR Encoder Sensor FFC and the PW Sensor FFC are correctly connected.
- ☐ When reinstalling the PW Sensor Board on the Carriage Unit
  - ■ Check if the PW Sensor FFC is correctly connected.
  - ■ Check if the PW Sensor Board is correctly secured by the PW Sensor.
- ☐ When reinstalling the Holder, Scale (Left/Right) on the Frame, Main
  - ■ Check if the Slider, Holder, Scale is set.

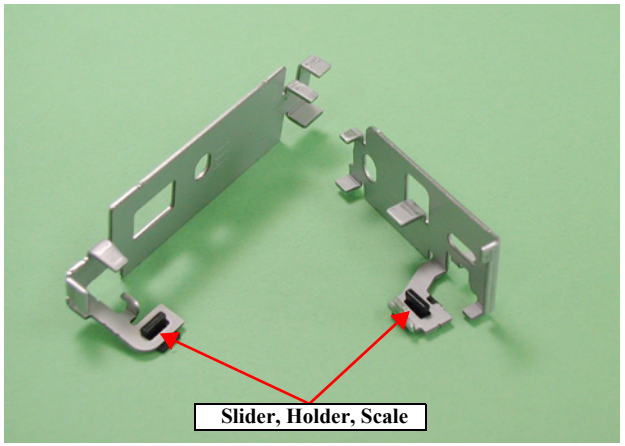


Figure 2-28. Slider, Holder, Scale Reinstallation

REASSEMBLY

- ☐ When reinstalling the Carriage Unit
  - ■ Check if the Timing Belt is correctly set to the installing groove of the Carriage Unit.
  - ■ Do not contaminate the Timing Belt with grease.
  - ■ Check if the Grounding Plate, Head is correctly installed to the correct position on the Carriage Unit.

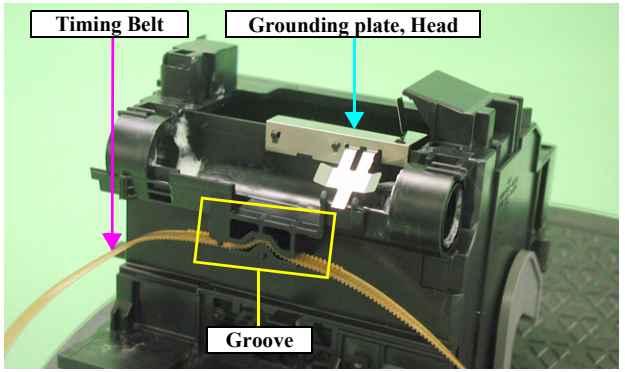


Figure 2-29. Installation Position of the Grounding Plate, Head

- ■ Do not touch the lubrication points of the Frame, Main.
- ■ Do not damage and contaminate the CR Guide Shaft.

REASSEMBLY

☐ When reinstalling the CR Scale to the Printer Mechanism

■ Make sure that the Extension Spring, 3.289 is not twisted.

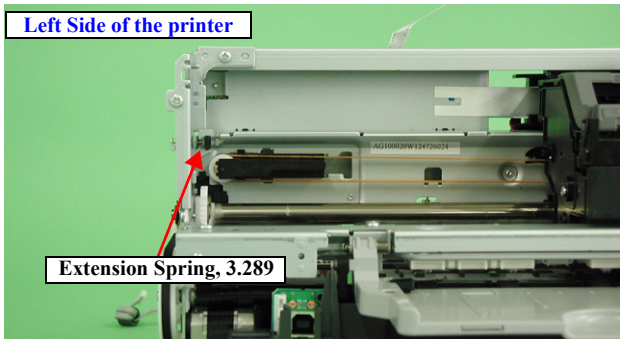


Figure 2-30. Extension Spring, 3.289

■ Make sure to install the CR Scale so that it runs through the gap of CR Encoder Sensor.

■ Make sure to install the CR Scale with the cut-part on the left edge facing upward.

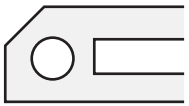


Figure 2-31. CR Scale Reinstallation

☐ When reinstalling the Guide Plate, CR to the Frame, Main

■ Tighten the six screws to secure the Guide Plate, CR in order shown in Figure2-25.

ADJUSTMENT REQUIRED

☐ When replacing the following parts or components with a new ones, apply specified grease in its adequate dose. (Refer to Chapter 4 “MAINTENANCE”)

■ Cam, CR, Left/Right

■ CR Guide Shaft

■ Holder, Scale, Left/Right

■ Pulley, Driven Assy.

☐ When having removed the Carriage Unit or CR Guide Shaft, or replace them with a new one, perform the following adjustments in orders shown below. (Refer to Chapter 3 “ADJUSTMENT”)

1. PG Adjustment
2. First dot Adjustment
3. PW Sensor Adjustment
4. Head Angular Adjustment (for the Carriage Unit)
5. Bi-D Adjustment
6. CR Motor Deviation Correction (When Replaced)

2.3.12 Printer Mechanism/Housing, Lower Removal

☐ **External View**

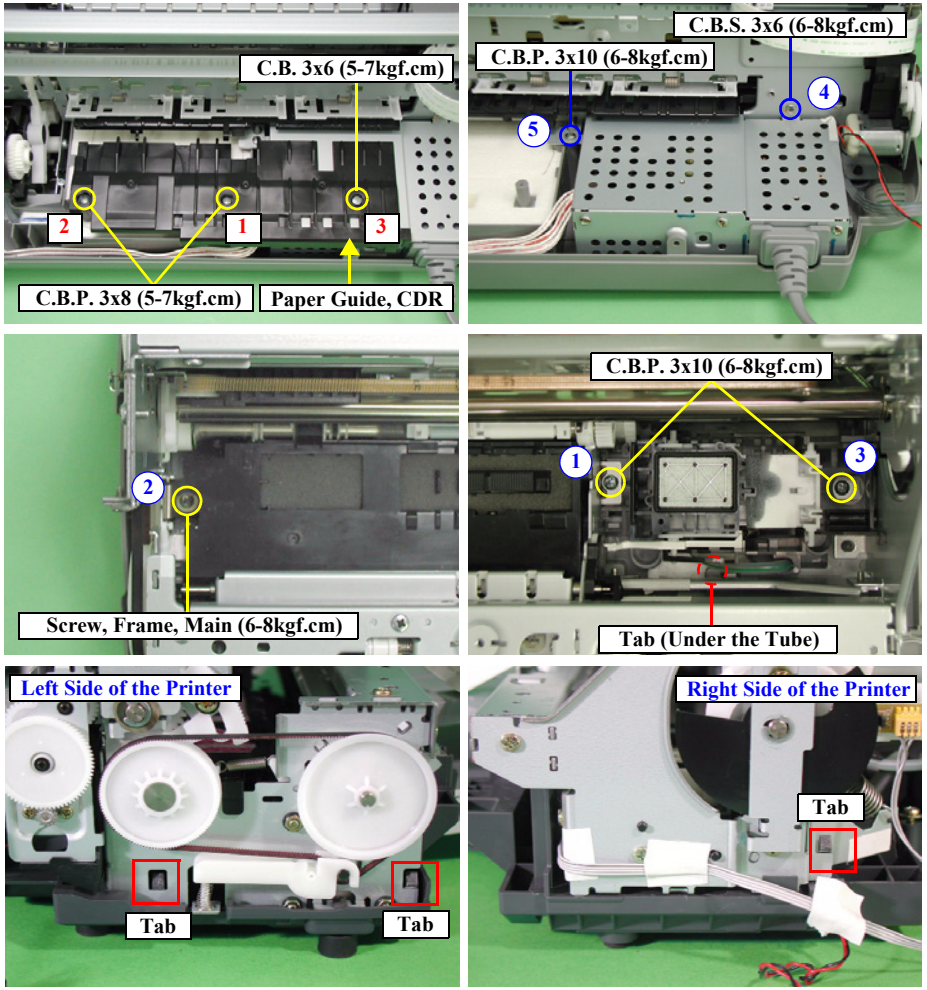


Figure 2-32. Printer Mechanism/Housing, Lower Removal

☐ **Parts/Units which should be removed before removing the Printer Mechanism/Housing, Lower.**

Paper Support Assy./Housing (left/right)/Housing, Frame/ASF Assy./ Holder, Shaft Assy./Main Board Assy.

☐ **Disassembly Procedure**

1. Remove the three screws that secure the Paper Guide, CDR.
2. Remove the five screws that secure the Printer Mechanism to the Housing, Lower.
3. Release the four tabs that secure the Printer Mechanism to the Housing, Lower and remove the Printer Mechanism upward.

CAUTION

- ☐ Be careful not to leak and drip ink from the end of the Ink Tube (Waste Ink Pads side) when lifting the Printer Mechanism.
- ☐ Be sure to hold the specified positions to lift the Printer Mechanism, or the Frame, Main can be deformed.

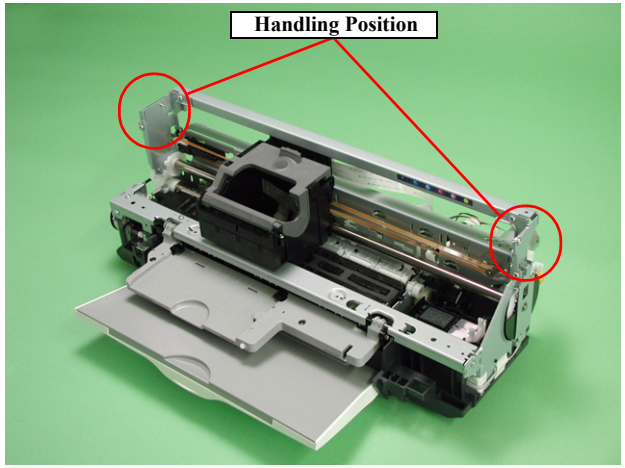


Figure 2-33. Handling Position of Printer Mechanism

REASSEMBLY

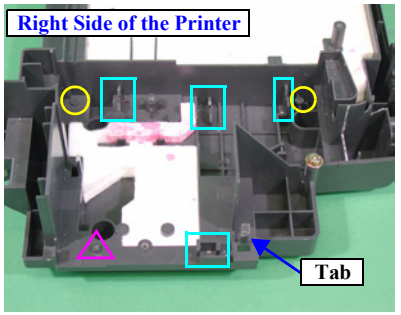
- ☐ When reinstalling the Printer Mechanism to the Housing Lower
  - ■ For this printer, positioning the parts or components of the Printer Mechanism must be made in relation to the Housing, Lower.
    In order to ensure the accuracy for installation, it is necessary to manage the reference position for the Frame Main installation in X,Y and Z direction as shown in Figure2-24 below. If every part is set correctly, the Printer Mechanism can be secured with the three tabs.

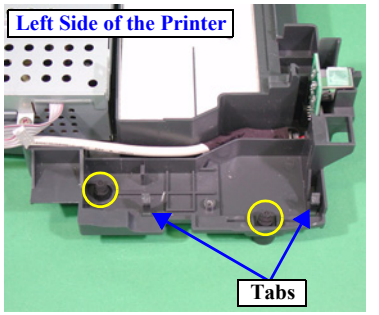
    X-axis Direction
    - Make sure that the Frame, Main is correctly installed to the groove of the Housing, Lower.
    - Make sure that there is no gap between the Frame, Main and the Housing, Lower.

    Y-axis Direction

    Make sure that the notch of the Frame, Main is correctly secured to the projection of the Housing, Lower.

    Z-axis Direction
    - Make sure that there is no gap between the Frame, Main and the Housing, Lower.
    - Make sure that the left side of the Printer Mechanism is correctly secured by two tabs.





X-axis : □ (4points)
Y-axis : △ (1points)
Z-axis : ○ (4points)

Figure 2-34. Reference Position for Frame, Main Installation

REASSEMBLY

- Make sure that the six Waste Ink Pads are correctly set to the rib and dowel of the Housing, Lower.

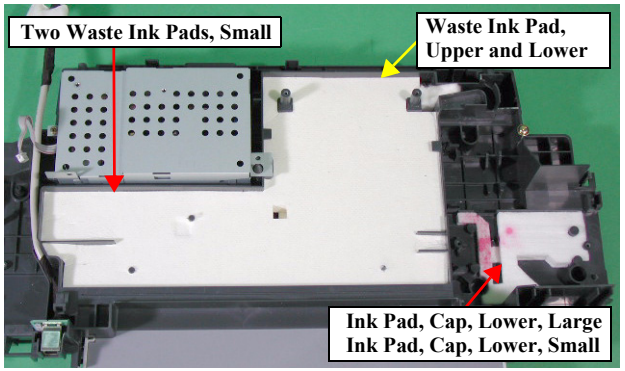


Figure 2-35. Waste Ink Pads

- Tighten the five screws to secure the Printer Mechanism in the order shown in Figure2-32.
- Tighten the five screws to secure the Paper Guide, CDR in the order shown in Figure2-32.
- Check if the Waste Ink Tube is secured in the groove of the Housing, Lower. Then make sure that the line mark on the tube is facing to the left, and also that it is not twisted.

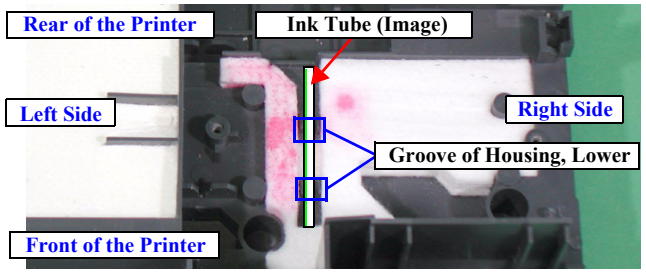


Figure 2-36. Installation Position for the Ink Tube

- Make sure that the Waste Ink Tube is not squashed or pressed.
- Check if the Cap Assy. moves smoothly.

REASSEMBLY

- Be careful not to drop and damage the Lever, Change and the Combination Gear, 27.2, 19.2.

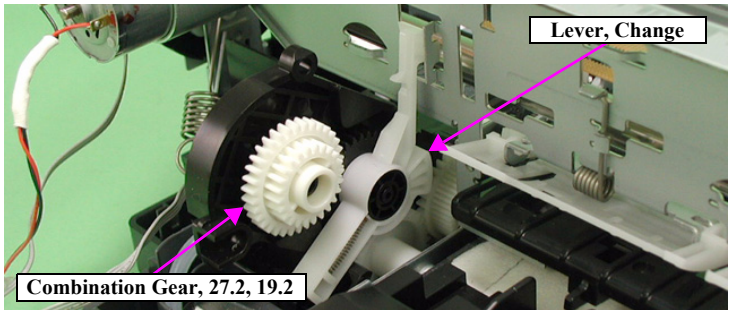


Figure 2-37. Lever, Change and Combination Gear, 27.2, 19.2

WARNING

- ☐ When installing the Printer Mechanism to the Housing, Lower, run the Waste Ink tube downward of the tab as shown in Figure2-38 and securely set in the groove of the Housing, Lower. Then, make sure that the Waste Ink Pads, Upper, Support is fitted securely without lifting above the tube upper surface. Also, the Waste Ink Pad, Upper, Support has to be installed along the border line as shown in Figure2-38. Incorrect installation of the Waste Ink Tube may cause the ink leakage.

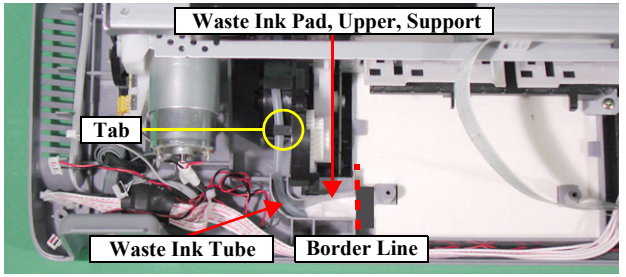


Figure 2-38. Waste Ink Tube Installation

ADJUSTMENT REQUIRED

- ☐ When having replaced the Waste Ink Pads with a new ones, perform the following adjustment.
(Refer to Chapter 3 “ADJUSTMENT”)

1. Protection Counter reset

2.3.13 Power Supply Board Removal

☐ **External View**

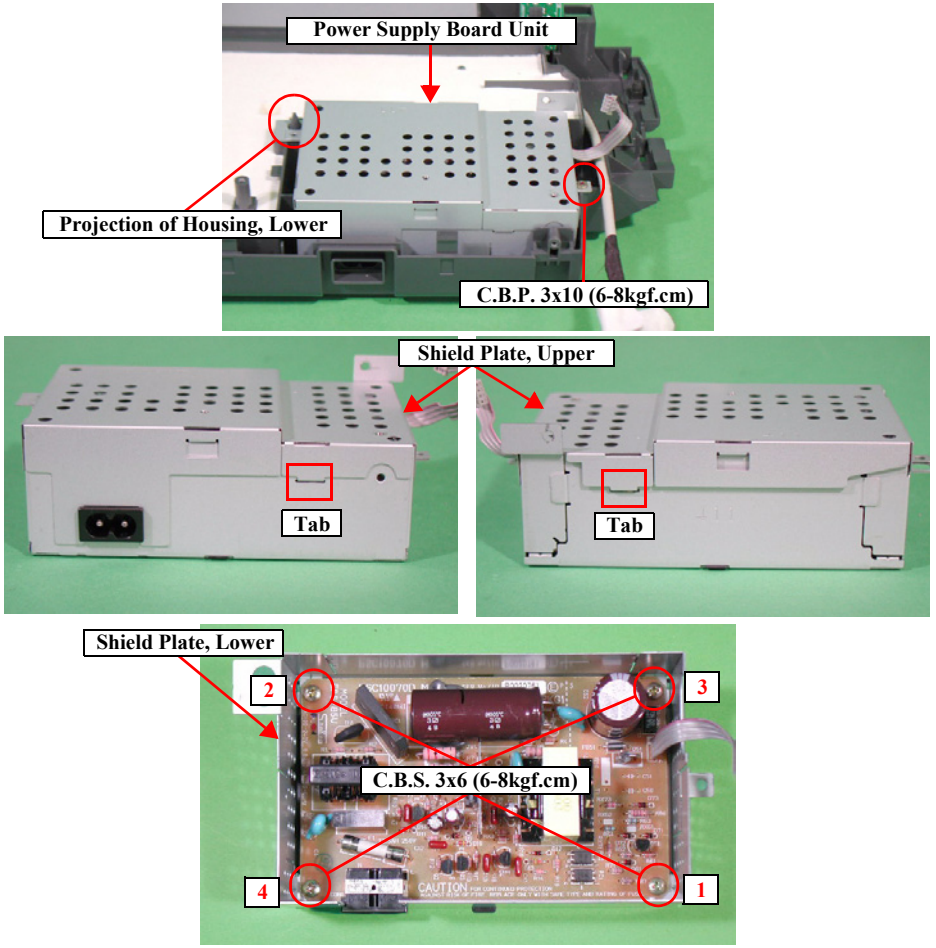


Figure 2-39. Power Supply Board Removal

☐ **Parts/Units which should be removed before removing the Power Supply Board.**

Paper Support Assy./Housing (left/right)/Housing, Frame/ASF Assy./Holder, Shaft Assy./Main Board Assy./Printer Mechanism

☐ **Disassembly Procedure**

1. Remove the screw that secures the Power Supply Board Unit to the Housing, Lower and remove it.
2. Release the two tabs which secure the Shield Plate, Upper first, and remove it sliding upward.
3. Remove the four screws that secure the Power Supply Board and then remove the Power Supply Board from the Shield Plate, Lower.

REASSEMBLY

☐ **When reinstalling the Power Supply Board to the Shield Plate, Lower**

- ■ **Check if the Power Supply Board is correctly installed.**
- ■ **Tighten the four screws secure the Power Supply Board in the order shown in Figure2-39.**

☐ **When reinstalling the Shield Plate, Upper to the Shield Plate, Lower**

- ■ **Check if the Power connector Cable is in between both shield plates.**
- ■ **Check if the Shield Plate, Upper is correctly installed.**

☐ **When reinstalling the Power Supply Board Unit to the Housing, Lower**

- ■ **Check if the Power Supply Board Unit is set to the projection of the Housing, Lower.**
- ■ **Check if the Power connector Cable is connected to CN2 connector on the Main Board.**

ADJUSTMENT REQUIRED

☐ **When having removed the Timing Belt or replaced it with a new one, perform the following adjustment.**
(Refer to Chapter 3 "ADJUSTMENT")

1. **CR Motor Deviation Correction (When Replaced)**

2.3.14 CDR Guide Assy. Removal

☐ **External View**

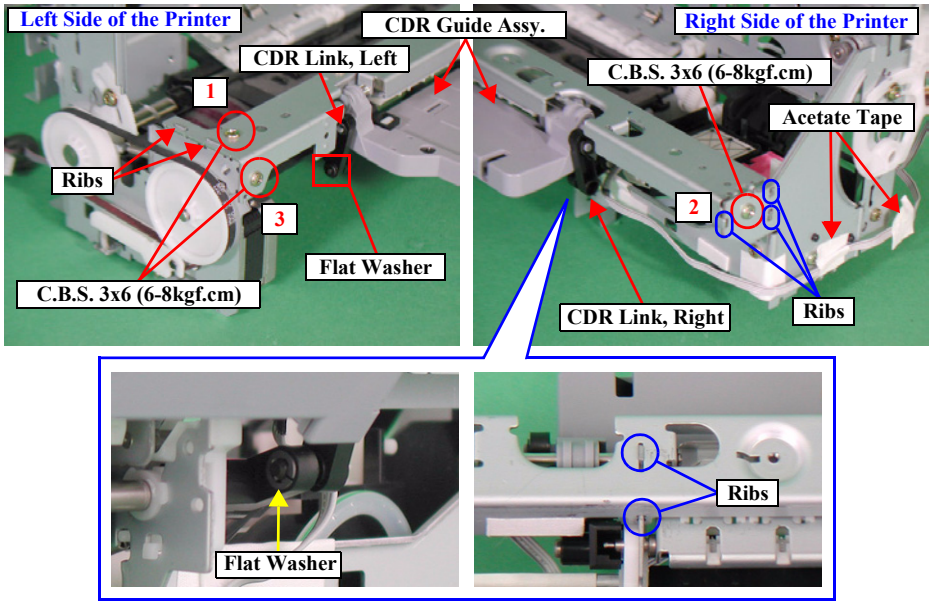


Figure 2-40. CDR Guide Assy. Removal

☐ **Parts/Units which should be removed before removing CDR Guide Assy.**

Paper Support Assy./Housing (left/right)/Housing, Frame/ASF Assy./ Holder, Shaft Assy./Main Board Assy./APG Assy./Print Head/Carriage Unit/ Printer Mechanism

☐ **Disassembly Procedure**

1. Remove the three screws that secure the CDR Guide Assy. to the Frame, Main.
2. Remove the left and right Flat Washer which secure the CDR Link (left/right) with tweezers.
3. Remove the CDR Link (left/right) from the CDR Guide Assy.
4. Remove the two Pieces of acetate tape which secure the connector cable of the CDR Sensor to the Frame, Main.
5. Remove the CDR Guide Assy. first from the right edge of it while releasing the seven ribs that secure the CDR Guide Assy. to the Frame, Main.

☐ **When reinstalling the CDR Guide Assy. to the Frame, Main**

- **Install the CDR Assy. in the order of left edge, right edge and middle.**
- **Check if six ribs are correctly installed.**
- **Check if the CDR Link (Left/Right) are correctly installed to the CDR Guide Assy.**
- **Check if the connector cable of CDR Sensor is not interfering with the CDR Link, Right.**
- **Check if Frame, EJ Assy. works with the CDR Guide Assy. and moves smoothly.**
- **Tighten the three screws to secure the CDR Guide Assy. in the order shown in Figure2-40.**

2.3.15 Ink System Unit Removal

☐ **External View**

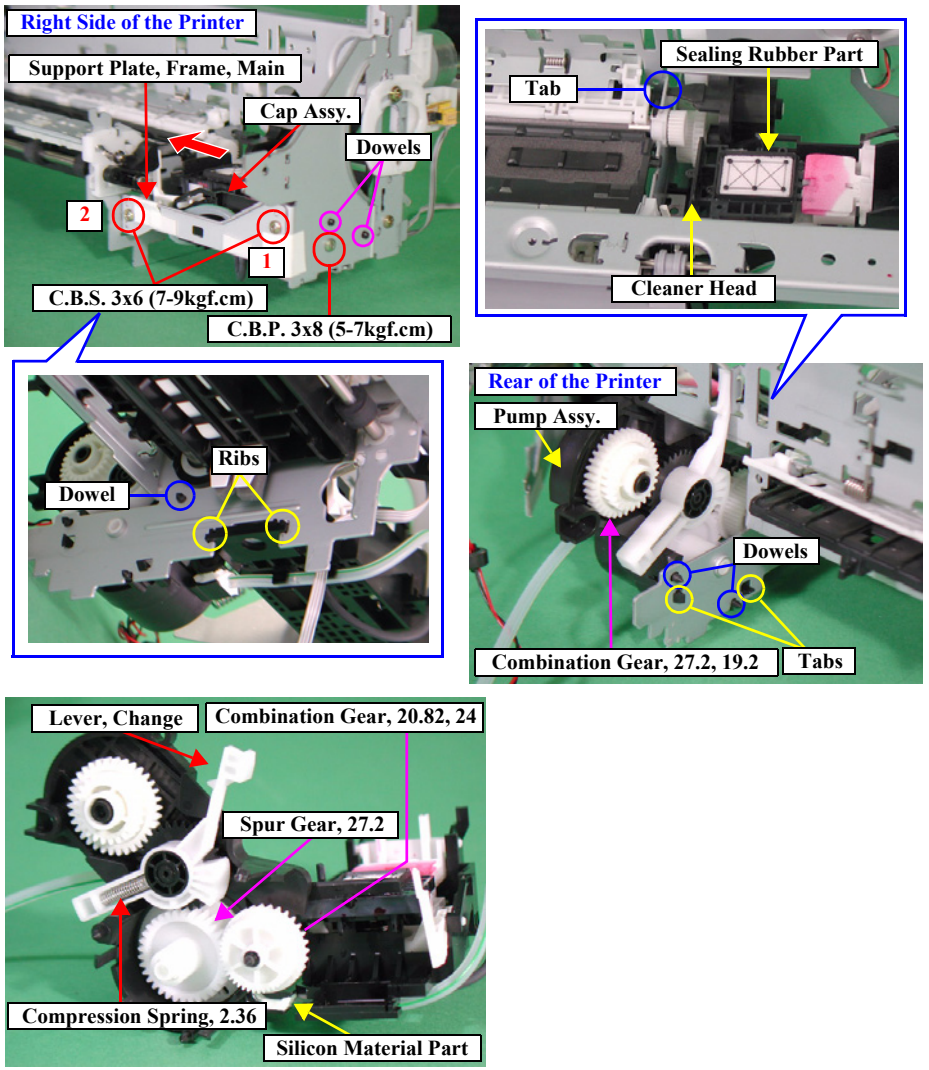


Figure 2-41. Ink System Unit Removal

☐ **Parts/Units which should be removed before removing the Ink System Unit**

Paper Support Assy./Housing (left/right)/Housing, Frame/ASF Assy./ Holder, Shaft Assy./Main Board Assy./APG Assy./Print Head/Carriage Unit/ Printer Mechanism/CDR Guide Assy.

☐ **Disassembly Procedure**

1. Remove the two screws that secure the Support Plate, Frame, Main and remove it.
2. Remove the screws that secures the Cap Assy. to the Frame, Main.
3. Release two dowels sliding the Cap Assy. inward.

CAUTION

☐ **Do not remove the Ink Tube that is connected to the Cap Assy. and the Pump Assy.**

☐ **The Ink Tube cannot be removed from the Pump Assy. since it is secured with silicon material for the following reasons.**

- **To Prevent the Pump Assy. from the ink leakage.**
- **To keep the length of the ink tube extended from the Pump Frame.**

4. First release the three tabs and three dowels which secure the Pump Assy. to the Frame, Main. Then remove the Pump Assy. together with the Cap Assy. while holding the Lever, Change and the gears with your finger not to drop them.

REASSEMBLY

☐ When reinstalling the Ink System Unit

- ■ Make sure that the Ink Tube is correctly connected to the point of the Frame, Cap shown in Figure2-42.

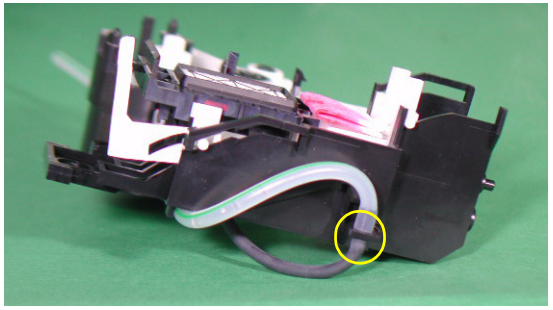


Figure 2-42. Connecting Point of the Ink Tube.

- ■ Do not touch the Sealing Rubber Part and the Cleaner Head.
- ■ Check if the line mark of the Ink Tube is not twisted.
- ■ Check if the Cap Assy. moves smoothly.
- ■ Check if all of the gears are correctly set on the shaft of the Pump Frame, and check if they move smoothly.
- ■ Check if the Compression Spring, 2.36 is correctly set to the Lever, Change.
- ■ Make sure that the Ink Tube is not squashed or pressed.

REASSEMBLY

- ■ Install the Ink Tube to the two grooves at the bottom surface of the Cap Frame.

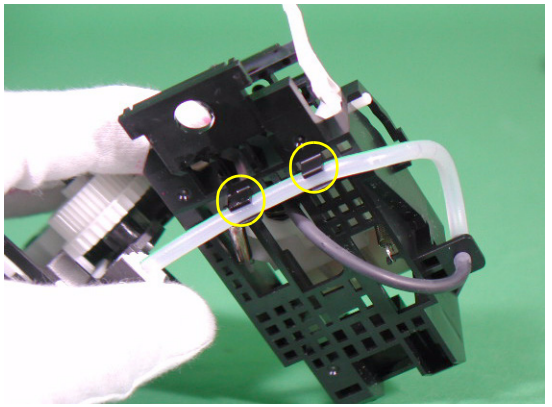


Figure 2-43. Installation Position of the Ink Tube

☐ When reinstalling the Ink System Unit to the Frame, Main

- ■ Check if the Pump Assy. is correctly secured.
- ■ Be careful not to drop and damage the Lever, Change, the Combination Gear, 27.2, 19.2, the Spur Gear, 27.2, the Combination Gear, 20.82, 24.

☐ When reinstalling the Support Plate, Frame, Main

- ■ Tighten the two screws to secure the Support Plate, Main in the order shown in Figure2-41.

2.3.16 Paper Guide, Front/Roller EJ Assy. Removal

☐ **External View**

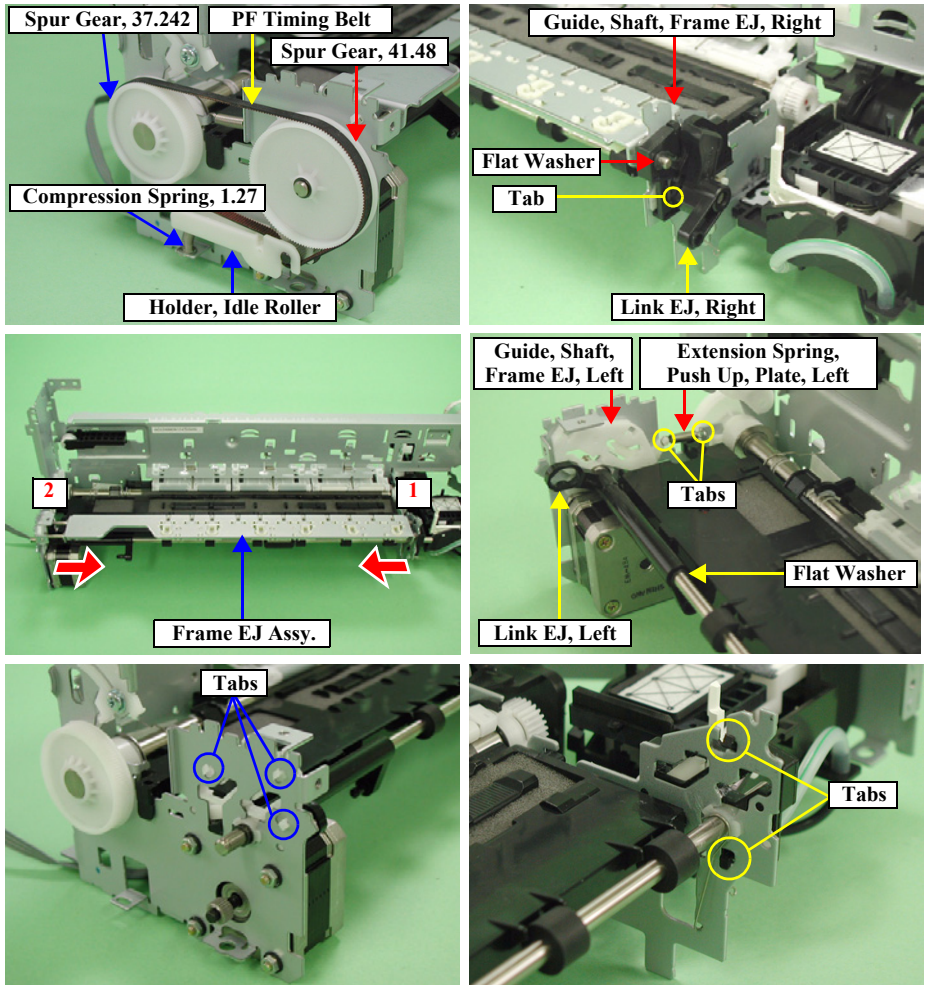


Figure 2-44. Paper Guide, Front/Roller EJ Assy. Removal (1)

☐ **Parts/Units which should be removed before removing the Paper Guide, Front/Roller EJ Assy.**

Paper Support Assy./Housing (left/right)/Housing, Frame/ASF Assy./ Holder, Shaft Assy./Main Board Assy./APG Assy./Print Head/Carriage Unit/ Printer Mechanism/CDR Guide Assy./Ink System Unit

☐ **Disassembly Procedure**

1. Release the tab of the Link EJ, Right from the groove of the Guide, Shaft, Frame EJ, Right and remove the Link EJ, Right.
2. Remove the Flat Washer which secures the right side of the Frame EJ Assy.
3. Remove the PF Timing Belt and the Flat Washer from the Spur Gear, 37.242, then remove the Spur Gear 41.48.
4. Remove the Compression Spring, 1.27 and the Holder, Idle Roller together with the PF Timing Belt.
5. First slide the Frame EJ Assy. toward the left, and then Slide the Frame EJ Assy. toward the right and remove it as shown in **Figure2-44**.

CAUTION

☐ **When removing the Frame EJ Assy., be careful not to damage or transform the Star Wheels of the Frame EJ Assy.**

6. Remove the Flat Washer which secures the Link EJ, Left, and then slide the Link EJ, Left slightly to the right side.
7. Remove the Extension Spring, Push Up, Plate, Left from the both tabs of the Guide, Shaft, Frame EJ, Left and the Frame, Main.
8. Release the tabs which secure the Guide, Shaft, Frame EJ (left/right) and remove the Guide, Shaft, Frame EJ (left/right).

☐ **External View**

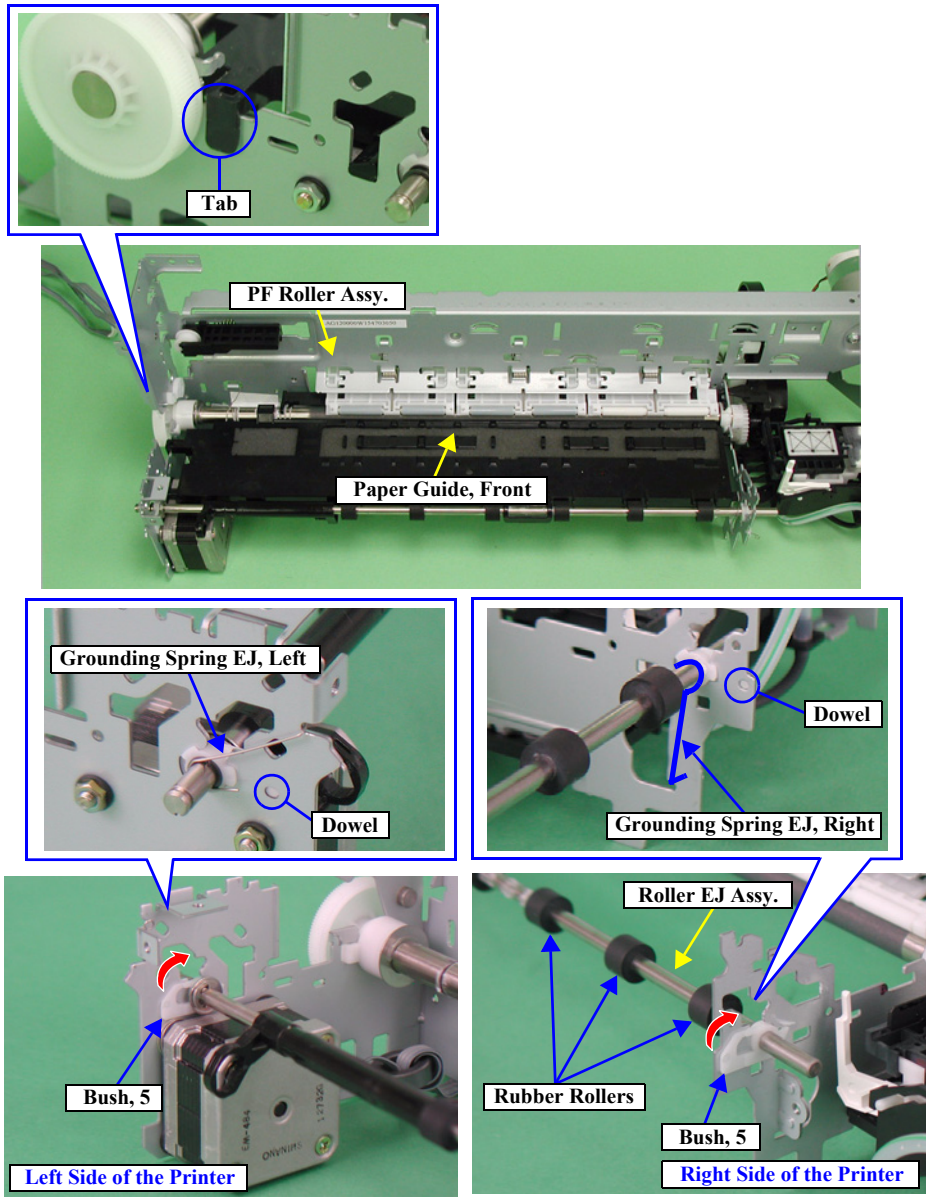


Figure 2-45. Paper Guide, Front/Roller EJ Assy. Removal (2)

9. Release the tab which secures the Paper Guide, Front to the Frame, Main and remove it.

CAUTION

☐ **When Not replacing the Porous Pad, Paper Guide, Front and the Porous Pad, Paper Guide, Front Support, be careful not to touch or bend them shown in Figure2-46**

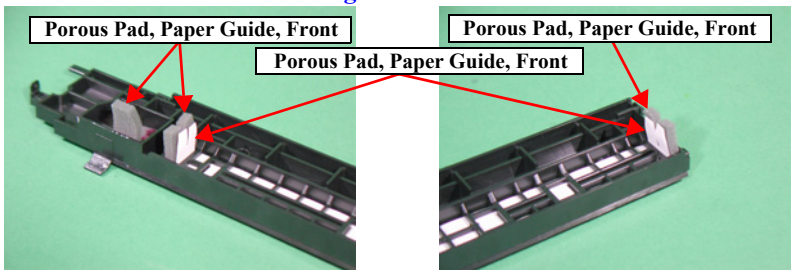


Figure 2-46. Porous Pad, Paper Guide, Front and Porous Pad, Paper Guide, Front, Support

10. Remove the Grounding Spring EJ (left/right) from the Roller EJ Assy.
11. Release the dowels of both left and right Bushing,5 which secure the Roller EJ Assy., then turn them in the direction of the arrow.
12. Slide the right Bushing 5 to the right side and remove it. Then pull out the Roller EJ Assy. through the left side of the Frame, Main, and remove it from the right of the Frame, Main.

CAUTION

☐ **Do not damage the rubber rollers when removing the Roller EJ Assy.**

REASSEMBLY

- ☐ When installing the Paper Guide, Front to the Frame, Main
  - ■ Be careful not to damage the surface of the Roller PF Assy.
  - ■ Be careful not to damage the rib of the Paper Guide, Front or the Porous Pad, Paper Guide, Front.
  - ■ Check if the dowels and the tab of the Paper Guide, Front are correctly secured to the Frame, Main.

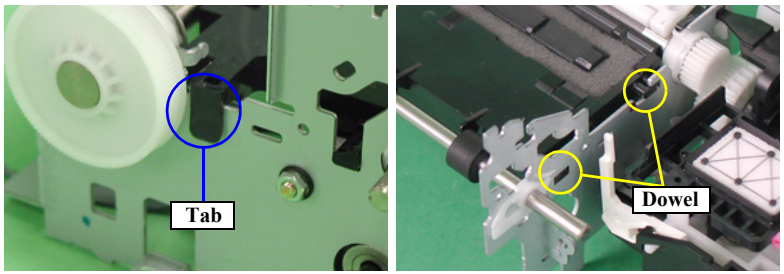


Figure 2-47. Paper Guide, Front Installation

  - ■ Make sure that there is no gap between the Paper Guide, Front and the Frame, Main.
  - ■ Be careful not to fold down the Porous Pad, Paper Guide, Front and the Porous Pad, Paper Guide, Front, Support.
  - ■ If any ink leaks on the rib of the Paper Guide, Front, clean it with a cotton swab. (At this time, be careful not to touch the Waste Ink Pads of the Paper Guide, Front with the cotton swab.)
- ☐ When reinstalling the Roller EJ Assy. to the Frame, Main
  - ■ Do not damage its Rubber Rollers.
  - ■ Check if the left and right Bushing, 5 are correctly secured.
  - ■ Check if the Grounding Spring EJ (left/right) are correctly attached to the both ends of the Roller EJ Assy.
  - ■ When installing the PF Timing Belt, do not damage the teeth of the Spur Gear, 37.242 and the Spur Gear, 41.48.
  - ■ Make sure that the Roller EJ Assy. moves smoothly.

ADJUSTMENT REQUIRED

- ☐ When having replaced the Roller EJ Assy., apply G-26 grease to the specified points in adequate dose.
- ☐ When having removed the Paper Guide, Front/Roller EJ Assy. or replaced it with a new one, perform the following adjustments in order shown below. (Refer to Chapter 3 “ADJUSTMENT”)
  1. First Dot Adjustment
  2. PW Sensor Adjustment
  3. Head Angular Adjustment
  4. Bi-D Adjustment

2.3.17 PF Motor Removal

☐ **External View**

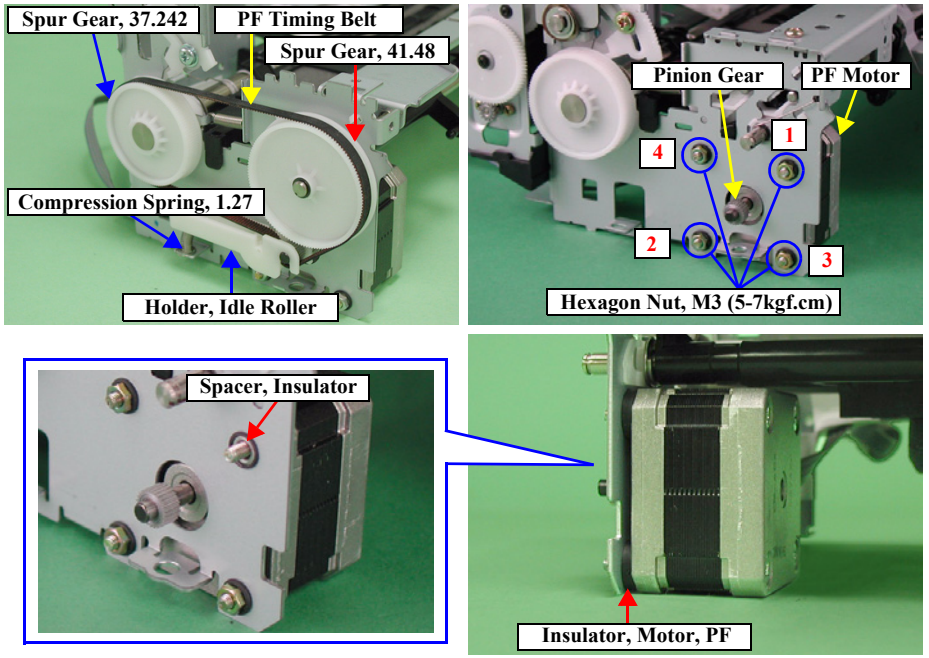


Figure 2-48. PF Motor Removal

☐ **Parts/Units which should be removed before removing the PF Motor.**

Paper Support Assy./Housing (left/right)/Housing, Frame/ASF Assy./ Holder, Shaft Assy./Main Board Assy./APG Assy./Print Head/ Carriage Unit/Printer Mechanism

☐ **Disassembly Procedure**

1. Release the PF Timing Belt from the Spur Gear, 37.242 and remove the Flat Washer. Then pull out the Spur Gear, 41.48 to the left side of the printer and remove it.
2. Remove the Compression Spring, 1.27 and the Holder, Idle Roller together with the PF Timing Belt.
3. Remove the four nuts that secure the PF Motor and remove it.

CAUTION

☐ **Remove the PF Motor from the Frame, Main.**

- **Be careful not to damage the Pinion Gear of the PF Motor.**
- **Be careful not to lose the PF Motor Grounding Spring.**

REASSEMBLY

☐ **When reinstalling the PF Motor on the Frame, Main,**

- **Do not damage the Pinion Gear of the PF Motor with the Frame, Main.**
- **Make sure that the connector cable of the PF Motor is placed to the correct position on the Housing, Lower before putting the Printer Mechanism on the Housing, Lower.**

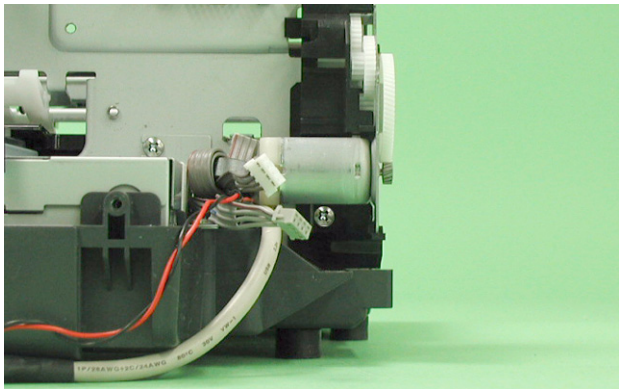


Figure 2-49. Cable connector of the PF Motor

REASSEMBLY

- Make sure that the PF Motor connector cable is connected to CN6 on the Main Board connector.
- Tighten the four nuts to secure the PF Motor in the order shown in Figure2-48.
- Make sure that there is no gap between the Insulator Spacer, insulator, the PF Motor Insulator and the Frame, Main.
- Make sure to install the Grounding Spring to the position as shown in Figure2-50.
- Make sure to install the PF Motor to the Frame, Main with the side shown in Figure2-50 facing the frame.

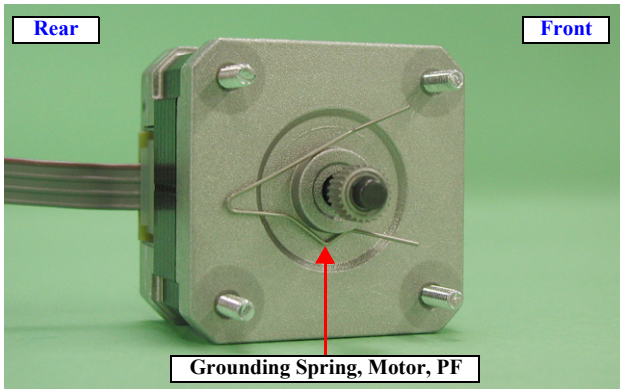


Figure 2-50. Grounding Spring Installation

CHAPTER

3

ADJUSTMENT

3.1 Adjustment Items and Overview

This chapter describes adjustments to be made after the disassembly/reassembly of this product.

3.1.1 Servicing Adjustment Item List

The adjustment items of this product are as follows. For details of the adjustment items, refer to the detailed procedures and sketches of the adjustment items.

Table 3-1. Adjustment Items

	Function Item	Purpose	Method Outline	Tool	Used Media
Main Adjustment items	Market Setting	At the time of Main Board replacement, this adjustment is made to write the board common information on a destination basis.	Select and execute this function in the exclusive servicing program to save the following data into the EEPROM. Market ID, CSIC Printer ID, D4 Setting (USB, Parallel), First Dot Adjustment fixed value.	Exclusive servicing program	Non-target
	USB ID Input	This adjustment is made to allow the PC to recognize the connected printers individually when multiple printers of the same model are connected and used with the PC via a USB hub.	Select this function in the exclusive servicing program and enter the serial numbers of the printers. The correction value is saved to the specific EEPROM address on the Main Board.	Exclusive servicing program	Non-target
	Head ID Input	At the time of Print Head replacement, this adjustment is made to correct head manufacturing variations and eliminate the individual differences of print quality.	Enter the ID of the Head QR code label applied to the Print Head into the exclusive servicing program to save it to the EEPROM on the Main Board. (Supplement: Read the QR code label from left to right on the top row and from top to bottom in due order.)	Exclusive servicing program	Non-target
	Head Angular Adjustment	This adjustment is made to correct the error in the Print Head mounting position (angle of the Print Head to the paper surface) to keep the nozzle intervals uniform in the CR main scanning direction.	Select this function in the exclusive servicing program and print the adjustment pattern. Check the displacement amount of the pattern and adjust it. Print the exclusive pattern again and adjust the displacement amount.	Exclusive servicing program	Photo Quality Ink Jet Paper (A4)
	Bi-D Adjustment	This adjustment is made to correct the print timing in the go and return paths in bi-directional printing.	Select this function in the exclusive servicing program and print the adjustment patterns to check the displacement amounts of the patterns. Select/enter the pattern number that has the smallest displacement amount in the program. Print the exclusive patterns again and adjust the displacement amount. The correction value is saved into the EEPROM.	Exclusive servicing program	Plain paper (A4)
	PW Sensor Adjustment	This adjustment is made to correct the mounting position of the PW Sensor on a software basis to minimize the paper detection error caused by the variations of the mounting position.	Select this function in the exclusive servicing program and print the adjustment patterns. Select the pattern number 5mm away from each edge, and enter that number in the program. The correction value is saved to the specific EEPROM address on the Main Board.	Exclusive servicing program	Photo Paper / Glossy Photo Paper (A4)

Table 3-1. Adjustment Items

	Function Item	Purpose	Method Outline	Tool	Used Media
Main Adjustment items	First Dot Adjustment	This adjustment is made to correct the First Dot Position in the CR main scanning direction.	Select and execute this function in the exclusive servicing program. Enter the correction value in the program using the rule position of the print pattern as a reference. The correction value is saved to the specific EEPROM address on the Main Board.	Exclusive servicing program	Plain paper (A4)
	CR Motor Deviation Correction	When the Main Board, CR Motor or PSB/PSE Board is replaced individually, this adjustment is made to write the maximum offset to prevent the occurrence of damage to the motor at the time of CR Motor heat generation. However, when the CR Guide Shaft is replaced together with the above part, this adjustment is made to measure the manufacturing variations of the CR Motor and PSB/PSE Board, utilize the motor capability to the maximum for motor heat generation control, and prevent the motor from being damaged by CR Motor heat generation.	Select and execute this function in the exclusive servicing program to save the offset into the EEPROM.	Exclusive servicing program	Non-target

Table 3-2. Maintenance Functions

	Function Item	Purpose	Adjustment Outline	Tool	Used Media
Maintenance items	Head Cleaning	This function is used to execute Cleaning efficiently when ink is not delivered from the Head properly, e.g. dot missing or skewed injection. This function is used together with the Nozzle Check Pattern to confirm the Cleaning effects.	Select this function in the exclusive servicing program, and execute Cleaning 3 (CL 3).	Exclusive servicing program	Non-target
	Ink Charge	This function is used to drain the Shipping Liquid in the ASP Print Head flow path and simultaneously fill ink in the head flow path to make all nozzles printable and stabilize the ink in the Print Head.	Select this function in the exclusive servicing program, and execute the ink sucking operation equivalent to the Initial Charge.	Exclusive servicing program	Non-target

Table 3-3. Maintenance Functions

	Function Item	Purpose	Adjustment Outline	Tool	Used Media
Maintenance items	Protection Counter	This function is used after repair to read the Waste Ink Counter, and if the value is close to the predetermined near-end value or end value, to recommend Pad replacement to the user in order to prevent the repaired printer from being returned again for repair in a short time. The reset function is used to reset the Waste Ink Counter from the exclusive program after Waste Ink Pad replacement.	Select this function in the exclusive servicing program, read/display the current data from the specific EEPROM address on the Main Board, and check whether the current counter value is close to the upper limit or not. For the reset function, select this function in the exclusive servicing program after Waste Ink Pad replacement, and reset the corresponding data at the specific address in the EEPROM on the Main Board.	Exclusive servicing program	Non-target
	EEPROM Data Copy	This function is used to read the above necessary information from the EEPROM of the faulty Main Board using the D4 function to reduce the auxiliary adjustment items at the time of Board replacement.	Select this function in the exclusive servicing program, and read the data from the faulty board. After that, replace the Main Board and then write the read data to a new board.	Exclusive servicing program	Non-target

Table 3-4. Check Pattern Printing

	Function Item	Purpose	Adjustment Outline	Tool	Used Media
Check pattern items	A4 Normal Paper Print	This pattern is used to check whether all adjustment results are normal.	Select this function in the exclusive servicing program, print the print patterns, and check the adjustment result in each pattern.	Exclusive servicing program	Plain paper (A4)
	A4 Photo Quality Ink Jet Paper Print	This pattern is used to check whether all adjustment results are normal.	Select this function in the exclusive servicing program, print the print patterns, and check the adjustment result in each pattern.	Exclusive servicing program	Photo Quality Ink Jet Paper (A4)
	A4 Photo Paper/ Glossy Photo Paper Print	This pattern is used to check whether all adjustment results are normal.	Select this function in the exclusive servicing program, print the print patterns, and check the adjustment result in each pattern.	Exclusive servicing program	Glossy Photo Paper (A4)
	CD-R Print	Check if the center position of CDR is correct.	This pattern is used to make a simple print check at the EPSON service company.	Exclusive servicing program	Sheet, CD, Dummy
	Nozzle Check Pattern Print	This pattern is used to check simply whether all nozzles deliver ink or not.	This pattern is used to make a simple print check at the EPSON service company.	Exclusive servicing program	Plain paper (A4)

Table 3-5. Appendix

	Function Item	Purpose	Adjustment Outline	Tool	Used Media
Appendix items	Save All EEPROM Data	This function is used to analyze defective products.	Save the data of all EEPROM addresses.	Exclusive servicing program	Non-target
	APG Check	This function is used to check if APG Assy. works properly.	Select this function in the exclusive servicing program, and check the CR Guide Shaft movement.	Exclusive servicing program	Non-target

3.1.2 Replacement Part-Based Adjustment Priorities

The following table shows the adjustment items and their order for the replacement parts.

Note: "Required" in this table indicates the adjustment items that must be implemented when the corresponding parts/units have been removed or replaced. "Recommended", on the other hand, indicates those which are recommended the adjustment after removing or replacing them. "-" means the adjustment is not needed.
When having removed or replaced more than one part/unit, refer to the items that correspond to the parts/units.

Table 3-6. Adjustment Item

Performance Priority	1	2	3	4	5	6	7	8	9	10	11	12
	EEPROM Data Copy	Market Setting	USB ID Input	Protection Counter	Ink Charge	Head ID Input	PG Adjustment	First dot Adjustment	PW Sensor Adjustment	Head Angular Adjustment	Bi-d Adjustment	CR Motor Deviation Correction
ASF Unit Removal	-	-	-	-	-	-	-	Required	-	-	-	-
ASF Unit Replacement	-	-	-	-	-	-	-	Required	-	-	-	-
CR Motor Removal	-	-	-	-	-	-	-	Required	Required	Recommended	Required	-
CR Motor Replacement	-	-	-	-	-	-	-	Required	Required	Recommended	Required	Required
Paper Guide, Upper Removal	-	-	-	-	-	-	-	-	-	-	-	-
Paper Guide, Upper Replacement	-	-	-	-	-	-	-	-	-	-	-	-
Front Frame Removal	-	-	-	-	-	-	-	-	-	-	-	-
Front Frame Replacement	-	-	-	-	-	-	-	-	-	-	-	-
Carriage Unit Removal	-	-	-	-	-	-	Required	Required	Required	Recommended	Required	-
Carriage Unit Replacement	-	-	-	-	-	-	Required	Required	Required	Recommended	Required	-
Print Head Removal	-	-	-	-	-	-	Required	Required	Required	Required	Required	-
Print Head Replacement	-	-	-	-	Required	Required	Required	Required	Required	Required	Required	-
Main Board Removal	-	-	-	-	-	-	-	-	-	-	-	-
Main Board Replacement (Read OK)	Required	-	-	-	-	-	-	-	-	-	-	-
Main Board Replacement (Read NG)	-	Required	Required	Required (Replacing Waste Ink Pads)	-	Required	-	Required	Required	Required	Required	Required
Holder Shaft Assy. Removal	-	-	-	-	-	-	-	-	-	-	-	-
Holder Shaft Assy. Replacement	-	-	-	-	-	-	-	-	-	-	-	-
CR Guide Shaft Removal	-	-	-	-	-	-	Required	Required	Required	-	Required	-
CR Guide Shaft Replacement	-	-	-	-	-	-	Required	Required	Required	-	Required	Required

Performance Priority	1	2	3	4	5	6	7	8	9	10	11	12
	EEPROM Data Copy	Market Setting	USB ID Input	Waste Ink Pad Counter	Ink Charge	Head ID Input	PG Adjustment	First dot Adjustment	PW Sensor Adjustment	Head Angular Adjustment	Bi-d Adjustment	CR Motor Deviation Correction
Roller EJ Assy. Removal	-	-	-	-	-	-	-	-	-	-	-	-
Roller EJ Assy. Replacement	-	-	-	-	-	-	-	-	-	-	-	-
Power Supply Board Removal	-	-	-	-	-	-	-	-	-	-	-	-
Power Supply Board Replacement	-	-	-	-	-	-	-	-	-	-	-	Required
Paper Guide, Front Removal	-	-	-	-	-	-	-	Recommended	Recommended	Recommended	Required	-
Paper Guide, Front Replacement	-	-	-	-	-	-	-	Recommended	Recommended	Recommended	Required	-
PF Motor Removal	-	-	-	-	-	-	-	-	-	-	-	-
PF Motor Replacement	-	-	-	-	-	-	-	-	-	-	-	-
Waste Ink Pads Removal	-	-	-	-	-	-	-	-	-	-	-	-
Waste Ink Pads Replacement	-	-	-	Required	-	-	-	-	-	-	-	-
PW Sensor Removal	-	-	-	-	-	-	-	-	Required	-	-	-
PW Sensor Replacement	-	-	-	-	-	-	-	-	Required	-	-	-
Printer Mechanism Removal *1)	-	-	-	-	-	-	Recommended	-	-	-	-	-
Printer Mechanism Replacement *1)	-	-	-	-	-	-	Recommended	-	-	-	-	-
Ink System Removal	-	-	-	-	-	-	-	-	-	-	-	-
Ink System Replacement	-	-	-	-	-	-	-	-	-	-	-	-

*1)The adjustment has been completed at the unit level of ASP supply.
However, since the Main Board, the Print Head and the ASF are supplied separately, refer to the each item that corresponds to the part/unit.

3.2 Adjustment by using adjustment program

The procedures of the adjustment items will be explained here. The intended item is as follows.

- ☐ Market Setting
- ☐ USB ID Input
- ☐ Head ID Input
- ☐ Head Angular Adjustment
- ☐ Bi-d Adjustment
- ☐ PW Sensor Adjustment
- ☐ First Dot Adjustment
- ☐ CR Motor Deviation Correction
- ☐ A4 Normal Paper Print
- ☐ A4 Photo Quality Inkjet Paper Print
- ☐ A4 Glossy Photo Paper Print

3.2.1 Market Setting

[Adjustment Procedure]

1. Select the Market Setting in the Adjustment Program.
2. Click the [OK] button to write the specific data into EEPROM.
3. Click the [Check] button to check market and model name.

3.2.2 USB ID Input

[Adjustment Procedure]

1. Select USB ID in the Adjustment Program.
2. Enter the 10-digits serial number from the label applied to the back side of the Housing Frame.

3.2.3 Head ID Input

[Adjustment Procedure]

1. Select the Head ID of the Adjustment Program.
2. Enter the 15-digits code of the Head ID label applied to the Print Head. Enter the Head ID from left to right on the top row and from top to bottom in due order.

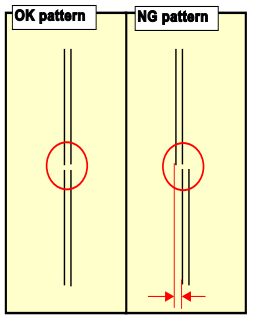
3.2.4 Head Angular Adjustment

[Adjustment Procedure]

1. Select Head Angular Adjustment in the Adjustment Program.
2. Click the [Print] button to print Head Angular Adjustment Pattern.
3. Select the pattern value of the group of the most neatly aligned.
4. Click the [input] button and write the adjustment value.
   (Note: The range of the adjustment value is -3 to 3.)

[Treatment procedure for NG product]

1. Replace the Print Head with new one again.
2. Print the check pattern, and examine the printed pattern.
3. If the pattern is NG level, confirm the installation condition of removed parts during disassembly.
4. Perform Step2 again.



[Judging Standard]
- The upper and lower line should be neatly aligned.
[Reference: Standard value in manufactory]
- Standard: ± 50µm

Figure 3-1. Head Angular Printing Pattern

3.2.5 Bi-d Adjustment

[Adjustment Procedure]

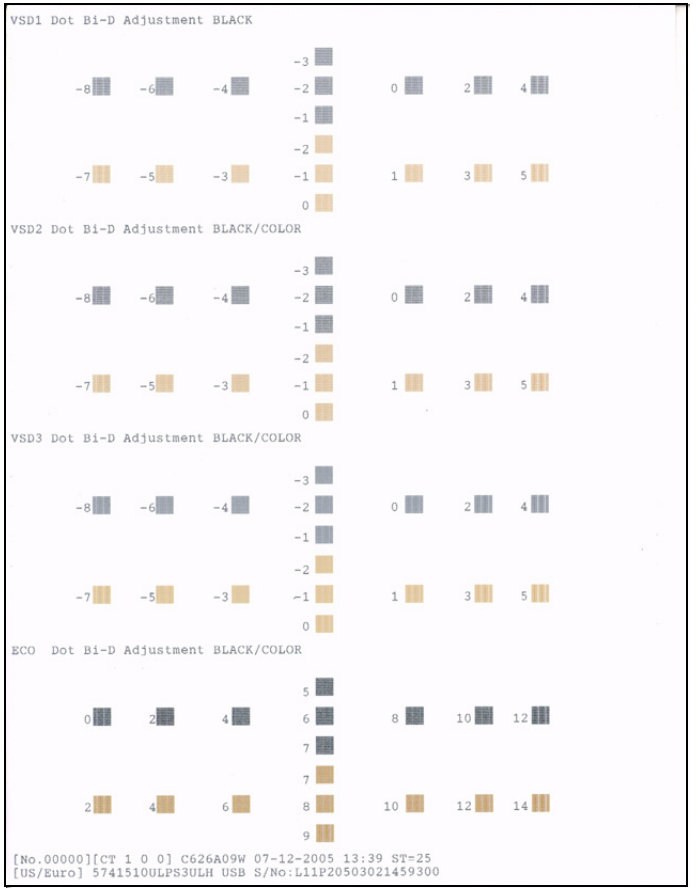
1. Select Bi-D Adjustment in the Adjustment Program.
2. Click the [Print] button to print Bi-D Adjustment Pattern.
3. After selecting the pattern that has the smallest misalignment in each variable dot, click the [Go to input page] button in the Adjustment Program.
4. Click the [Input] button to write the adjustment value.
5. Click the [Go to print page] button.

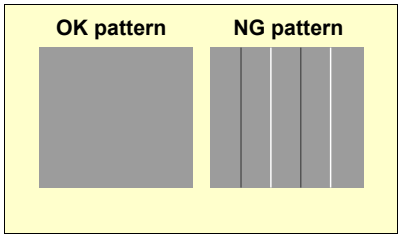
[Treatment procedure for NG product]

1. Replace the Print Head with new one again.
2. Print the check pattern, and examine the printed pattern.
3. If the result is NG level, confirm the installation condition of removed parts during disassembly.
4. Perform Step2 again.

CHECK POINT

For Bi-D Adjustment, the Adjustment Program automatically sets the PG (-) adjustment value based on the PG (Typ) adjustment value.





[Judging Standard]
- NO vertical lines in the block pattern.

Figure 3-2. Bi-D Adjustment Pattern

3.2.6 PW Sensor Adjustment

[Adjustment Procedure]

1. Select PW Sensor Adjustment in the Adjustment Program.
2. Click the [Print] button to print PW Sensor Adjustment Pattern.
3. Select the number of the pattern 5mm away from each edge.
4. Click the [Input] button to write the adjustment value.

[Treatment procedure for NG product]

1. Replace the PW sensor with new one again.
2. Print the check pattern, and examine the printed pattern.
3. If the result is NG level, confirm the installation condition of removed parts during disassembly.
4. Perform Step2 again.

[Judging Standard]
- Top / Bottom: 3.7 to 6.0mm
- Right / Left : 4.0 to 5.5mm

Figure 3-3. PW Sensor Adjustment Pattern

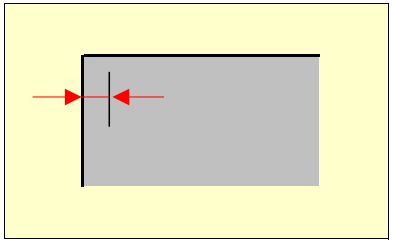
3.2.7 First Dot Adjustment

[Adjustment Procedure]

1. Select First Dot Adjustment in the Adjustment Program.
2. Click the [Print] button to print First Dot Adjustment Pattern.
3. The printed line shows the current left and right margin. Input a positive or negative integer to extend or reduce the margin. The increment per integer is 0.0176 mm.
4. Click the [input] button to write the adjustment value.

[Treatment procedure for NG product]

1. Replace the repaired (replaced) part with new one.
2. Print the check pattern, and check the adjustment result.
3. If the result is NG level, confirm the installation condition of removed parts during disassembly.



[Judging Standard]
- Standard: 3 ± 1.0mm away from left edge.

Figure 3-4. First Dot Adjustment

3.2.8 CR Motor Deviation Correction

[Adjustment Procedure]

1. Select CR Motor Deviation Correction in the Adjustment Program.
2. Check each box of the replaced parts/units checklist and then click the [OK] button.

3.2.9 A4 Normal Paper Print

[Adjustment Procedure]

1. Select A4 Normal Paper Print in the Adjustment Program.
2. Click the [Print] button to print A4 Normal Paper Print Pattern.
3. Check the adjustment result in each pattern.

3.2.10 A4 Photo Quality Inkjet Paper Print

[Adjustment Procedure]

1. Select A4 Photo Quality Inkjet Paper Print in the Adjustment Program.
2. Click the [Print] button to print A4 Photo Quality Inkjet Paper Print Pattern.
3. Check the adjustment result in each pattern.

3.2.11 A4 Glossy Photo Paper print

1. Select A4 Photo Paper/ Glossy Photo Paper print in the Adjustment Program.
2. Click the [Print] button to print A4 Photo Paper/ Glossy Photo Paper print Pattern.
3. Check the adjustment result in each pattern.

3.3 Adjustment Except Adjustment Program

This section explains the adjustments other than those made by the Adjustment Program.

3.3.1 PG Adjustment

[Purpose]

This adjustment is required when removing or replacing the following parts/units in order to secure the specified space between the print-side of the Print Head and the paper.

- ☐ Carriage Unit
- ☐ CR Guide Shaft
- ☐ Bushing, Parallel Adjust, Left (Right)
  (Including when having moved the position of the Bushing Parallel Adjust, Left (Right))

[Adjustment Procedure]

1. Make both sides of the two Thickness Gauge (1.15mm and 1.31mm) clean by wiping with Bemcot with a little alcohol.
2. To make the PG position negative (-), turn the gear of the APG Assy. and match the flag center of the Cam, CR, Right with the PG Sensor.

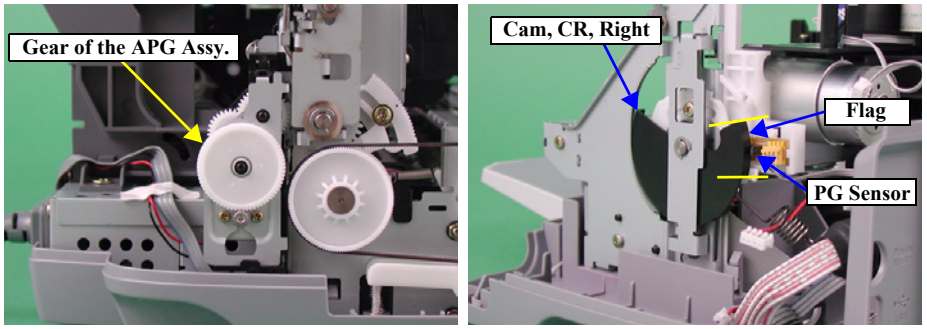


Figure 3-5. Setting PG Position

3. Match the 0 position (Hole point of gear) of the Bushing, Parallel Adjust, Left (Right) with the rib of the Main Frame.

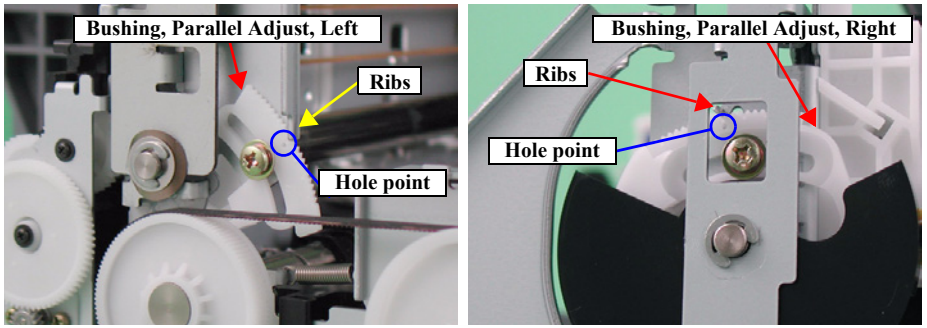


Figure 3-6. Setting the Bushing, Parallel Adjust

4. Move the Carriage Unit to the centre of the printer and remove the Lever, Cartridge. Then, set the PG-Adjustment Dummy Cartridge or new one.

5. Move the Carriage Unit to the left edge of the printer, then set the Thickness Gauge (1.15mm) on the three left ribs of the Paper Guide, Front.

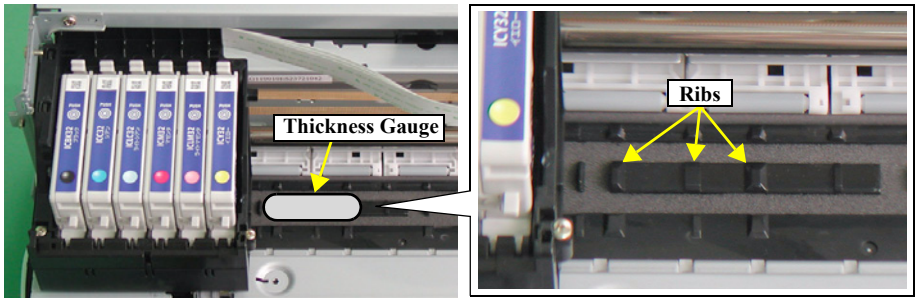


Figure 3-7. Setting the Thickness Gauge

6. Implement PG Adjustment on the left according to the flowchart in the Figure 3-8.

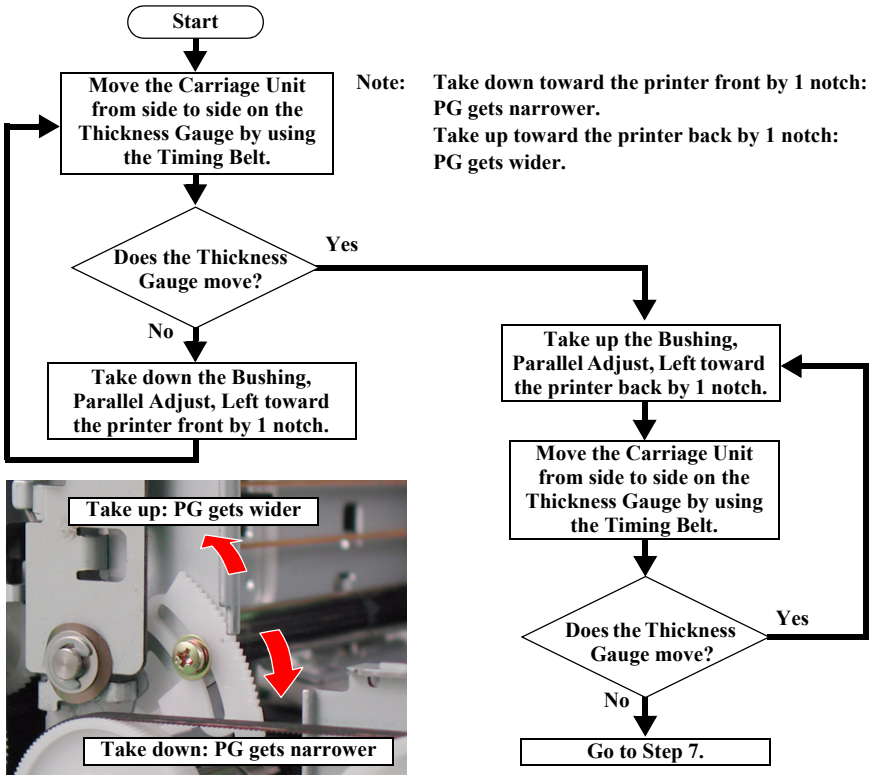


Figure 3-8. PG Adjustment (Left Side)

7. Remove the Thickness Gauge and move the Carriage Unit to the right edge. Then, set the Thickness Gauge on the three right ribs of the Paper Guide, Front.

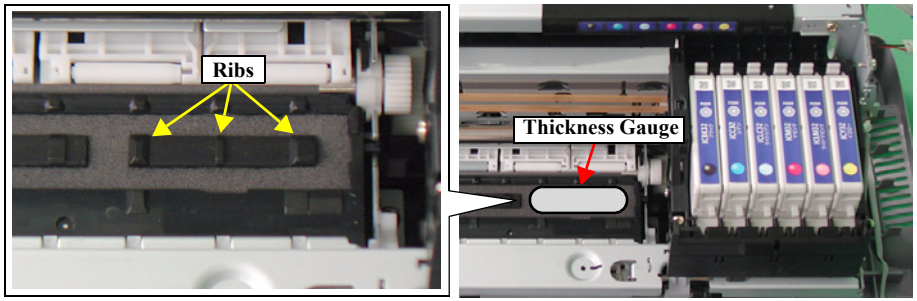


Figure 3-9. Setting the Thickness Gauge

8. Implement PG Adjustment on the right according to the flowchart in the Figure 3-10.

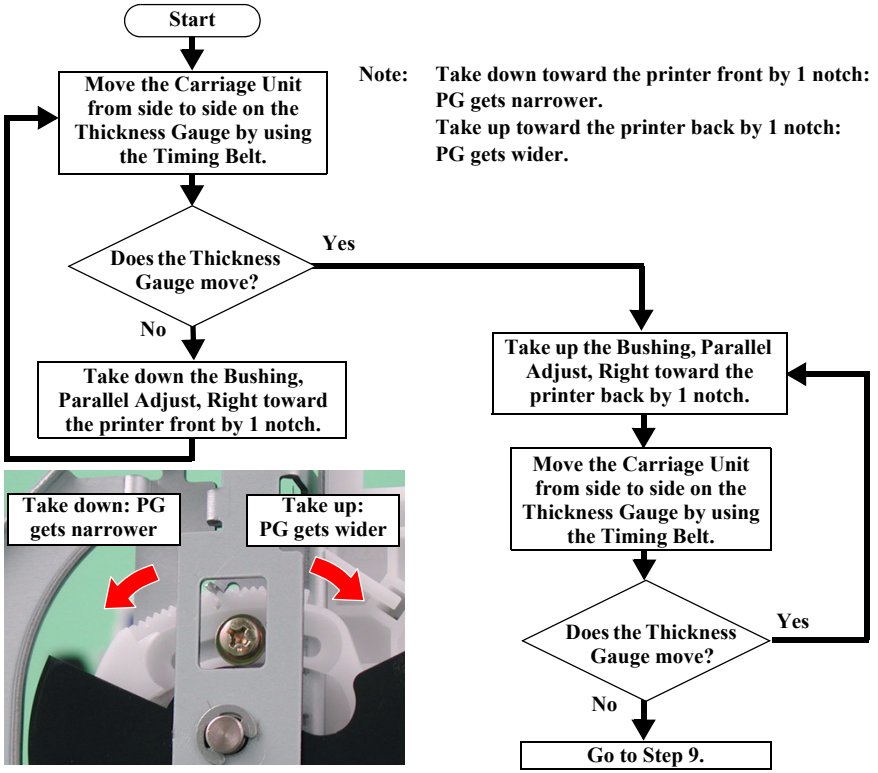


Figure 3-10. PG Adjustment (Right Side)

9. After finishing PG Adjustment on the right, move the Carriage Unit to the left edge of the printer again, then check PG according to the flowchart in the Figure 3-11.

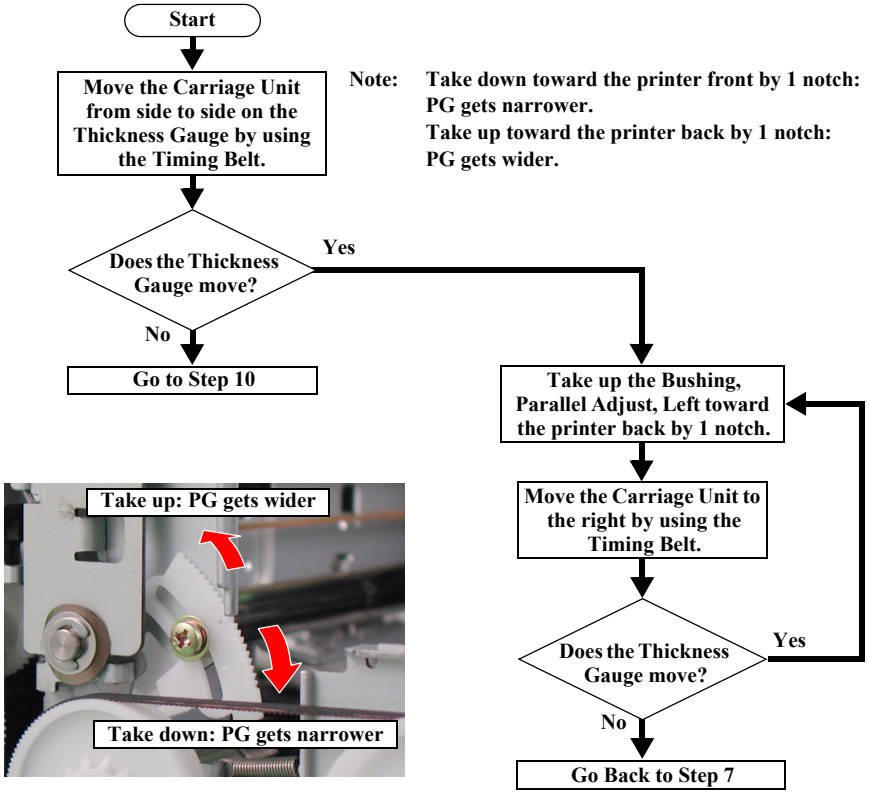


Figure 3-11. PG Checking (1)

10. Move the Carriage Unit back to the left edge of the printer, then set the Thickness Gauge (1.31mm) on the three ribs of the Paper Guide, Front in the same way as the Figure 3-7.

11. Check PGs on both the left and right according to the flowchart in the Figure 3-12.

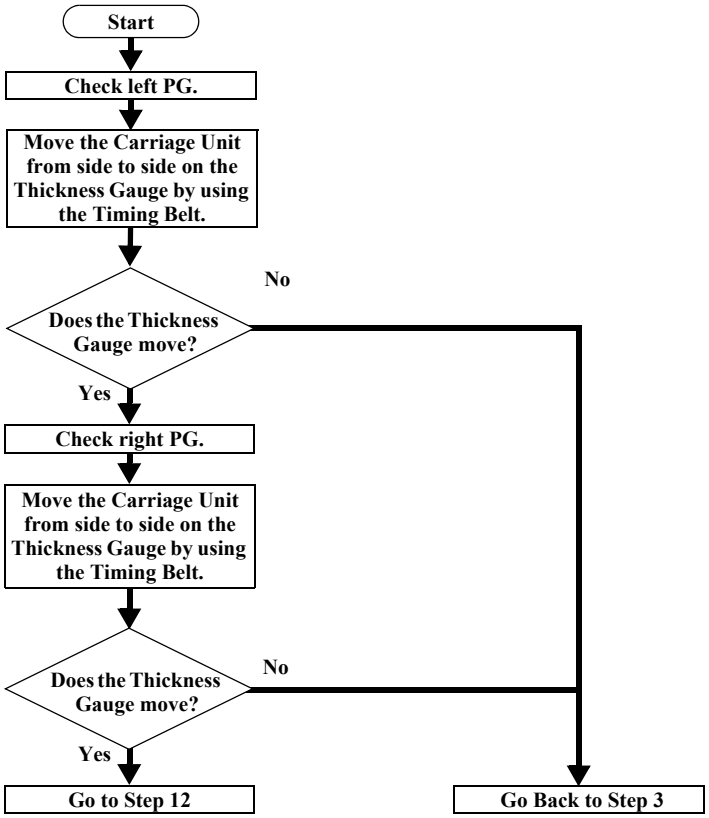


Figure 3-12. PG Checking (2)

12. After finishing the adjustment, secure the Bushing, Parallel Adjust, Left (Right) with screws.

13. After securing, check PGs on both the left and right again according to the flowchart in the Figure 3-12.

CHAPTER

4

MAINTENANCE

4.1 Overview

This section provides information to maintain the printer in its optimum condition.

4.1.1 Cleaning

This printer has no mechanical components which require regular cleaning except the Print Head. Therefore, when serving the printer that has been sent for repair, check the following parts and perform appropriate cleaning if stain is noticeable.

CAUTION

- **Never use chemical solvents, such as thinner, benzine, and acetone to clean the exterior parts of the printer like the housing. These chemicals may deform the components of the printer or deteriorate the quality of the printer.**
- **Be careful not to damage any components when you clean inside the printer.**
- **Do not scratch the surface of the PF Roller. Use a soft brush to wipe off dust. Use a soft cloth moistened with dilute alcohol to remove ink stain.**
- **When using compressed air products; such as air duster, for cleaning during repair and maintenance, the use of such products containing flammable gas is prohibited.**

☐ Housing

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

☐ Inside the printer

Use a vacuum cleaner to remove any paper dust.

☐ LD Roller

When the paper loading function does not operate because friction of the LD Roller has gone down due to paper dust, remove the dust by using a soft cloth moistened with alcohol.

4.1.2 Service Maintenance

If print irregularity (missing dot, white line, etc.) or a maintenance request error (indicated as "Service Required" by the Status Monitor) has occurred, take the following actions to clear the error.

☐ Head Cleaning

If dot missing or banding phenomenon has occurred, use the Print Head Cleaning function and perform the Print Head cleaning operation.* This function can be performed by operating the control panel, the print driver utility and the Adjustment Program.

When performing the cleaning sequence by operating the Control Panel, first make sure that the printer is in stand-by status. (The LED of power supply is lighting.) Then, press the [Ink] button for more than three seconds. The printer will start a cleaning sequence.

When selecting the manual cleaning by the printer driver utility, the most appropriate cleaning mode will be selected.

The following is an operation process of the printer head cleaning by the Printer Driver Utility.
Refer to Chapter 3 "ADJUSTMENT" for the operation of the Adjustment Program.

* This product has three modes for Manual Cleaning, and even it is in operation, it automatically selects the best cleaning mode in accordance with the various conditions of the printer. Therefore, the consumption of the ink by the manual cleaning will vary depending on the selected mode.

1. Select EPSON Status Monitor 3 in the Printer Driver Utility. Then make sure that the printer connected to Status Monitor 3 is on standby status. If it is on standby, the following will be displayed.

Figure 4-1. Display for Status Monitor 3

2. Select Head Cleaning in the Printer Driver Utility and execute the printer Head Cleaning. After the cleaning, choose "Nozzle Check" and print the Nozzle Check Pattern.

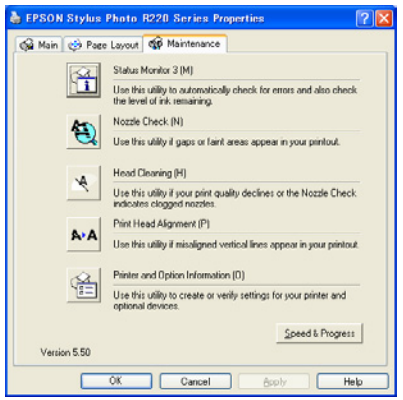


Figure 4-2. Head Cleaning Functions of the Print Driver Utility

☐ Maintenance Request Error

Ink is used for operations such as Head Cleaning as well as printing. In that case, the ink is drained into the Waste Ink Pad and its amount is counted in the Waste Ink Counter set in the EEPROM on the control board. When the preset value is reached (Waste Ink Counter = Protection Counter A = variable between 20000 and 46750), The Waste Ink Counter detects that the Waste Ink Pad has reached its predetermined limit. The Maintenance Request Error will be displayed on Status Monitor 3 as shown below.

Figure 4-3. Maintenance Request Error Display on Status Monitor 3

If this error occurs, replace the Waste Ink Pad and reset the Waste Ink Counter stored in the EEPROM. Resetting of the Waste Ink Counter can be done only from the Adjustment Program since this product does not have the reset function for the Waste Ink Counter through the operation Panel Switch. Refer to Chapter 3 "ADJUSTMENT" for the reset procedure.
During repair service, the Waste Ink Counter must be checked according to the firmware version, the Main Board checker program version and the Nozzle Check Pattern of the Nozzle Check Pattern Print. If the Waste Ink Counter is close to its limit, we recommend to replace the Waste Ink Pad since another "Maintenance Request Error" might occur after returning the repaired product to the user.

4.1.3 Lubrication

The lubrication used for each components of Stylus Photo R220/R230 has been specified on based on the evaluation carried out by Epson. Therefore, when repairing or carrying out the maintenance work, make sure to apply the specified amount of lubricant to the specified places.

- ☐ When wiping off the grease during the cleaning
- ☐ If necessary when performing assembly/disassembly of the printer

CAUTION

- ■ **Never use oil or grease other than those specified in this manual. Use of different types of oil or grease may damage the components or affect the printer functions.**
- ■ **Never apply a larger amount of oil or grease than specified in this manual.**

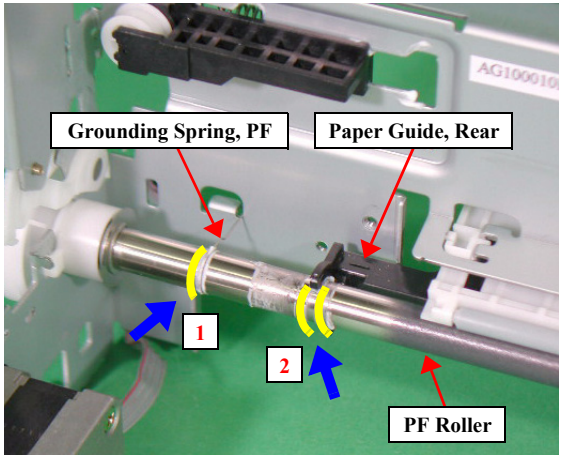
Table 4-1. Oil Applied to Stylus Photo R220/R230

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

CAUTION

- ■ **When using G-64, it is recommended to use a flux dispenser (1049533) together.**

- ☐ Refer to the following figures for the lubrication points.

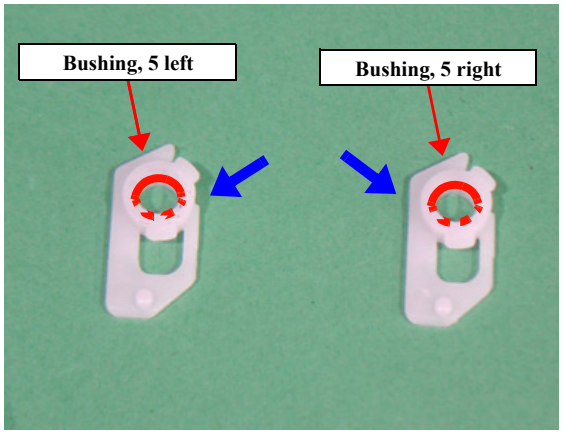


<Lubrication Point>
1. Contact point between the Grounding Spring, PF and the PF Roller
2. Surface of contact point between the PF Roller and the Paper Guide, Rear

<Lubrication Type>
1. G-26
2. G-26

<Lubrication Amount>
1. Half periphery of the Roller, PF
2. 4mm x 2 points

<Remarks>
Use a syringe to apply it.

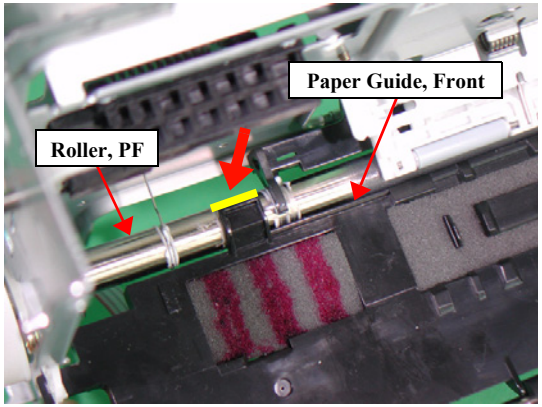


<Lubrication Point>
Inside surface of the Bushing, 5 (Roller EJ Assy.)

<Lubrication Type>
G-26

<Lubrication Amount>
Adequate dose

<Remarks>
Use a cotton-tipped swab to apply it.



<Lubrication Point>

Rear of contact point between the PF Roller and tab of the Paper Guide, Front

<Lubrication Type>

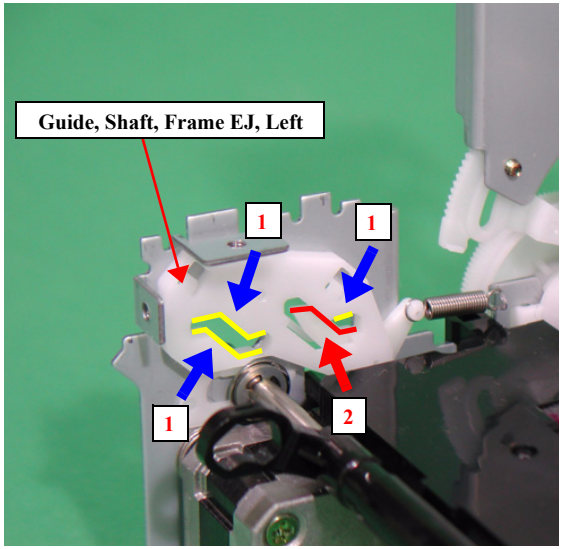
G-26

<Lubrication Amount>

10mm

<Remarks>

Use a syringe to apply it.



<Lubrication Point>

1. Contact point between the shaft of the Frame EJ and inside the Guide, Shaft, Frame EJ Left
2. Contact point between shaft of the Frame, EJ and upper surface of the Push Up Plate, Frame EJ, Left

<Lubrication Type>

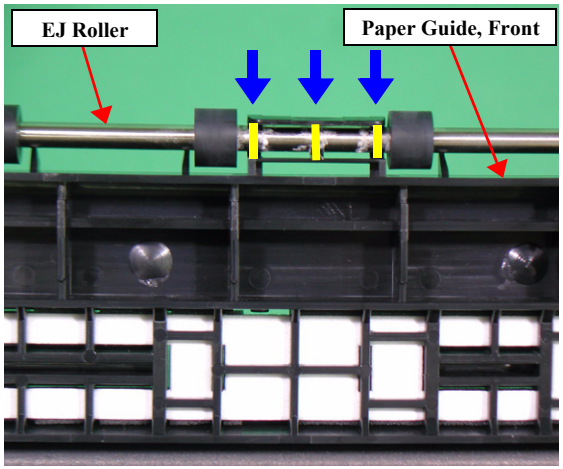
1. G-26
2. G-26

<Lubrication Amount>

1. 3 points (Adequate dose)
1. 1 point (Adequate dose)

<Remarks>

Use a brush to apply it



<Lubrication Point>

Bottom of contact point between the EJ Roller and tab of the Paper Guide, Front

<Lubrication Type>

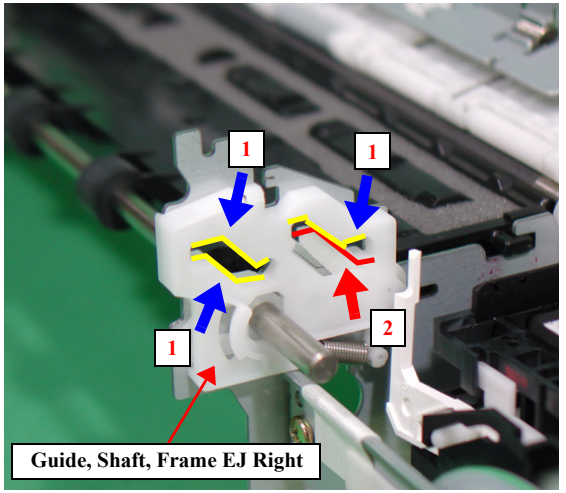
G-26

<Lubrication Amount>

3 points (Adequate dose)

<Remarks>

Use a cotton-tipped swab to apply it.



<Lubrication Point>

1. Contact point between shaft of the Frame EJ and inside the Guide, Shaft, Frame EJ Right
2. Contact point between shaft of the Frame EJ and upper surface of the Push Up Plate Frame EJ Right

<Lubrication Type>

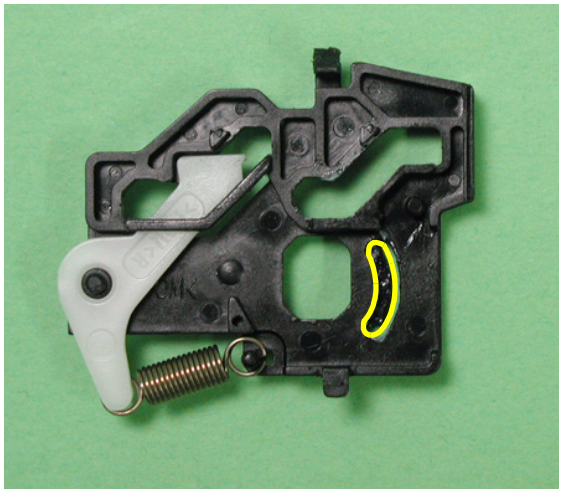
1. G-26
2. G-26

<Lubrication Amount>

1. 3 points (Adequate dose)
2. 1 point (Adequate dose)

<Remarks>

Use a brush to apply it.



<Lubrication Point>

Contact point between the Guide Shaft, Frame EJ, Right and the Paper Guide, Front

<Lubrication Type>

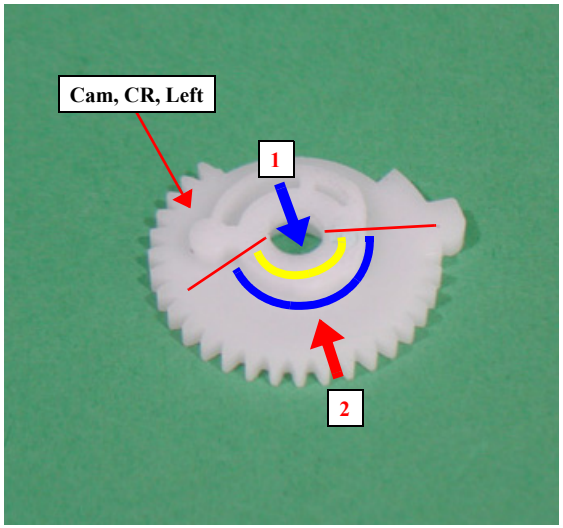
G-26

<Lubrication Amount>

Adequate dose

<Remarks>

Use a brush to apply it.



<Lubrication Point>

1. Surface of contact point between upper side of the Cam, CR, Left and the Main Frame
2. Surface of contact point between periphery surface of the Cam, CR, Left and the Bushing, Parallel Adjust, Left

<Lubrication Type>

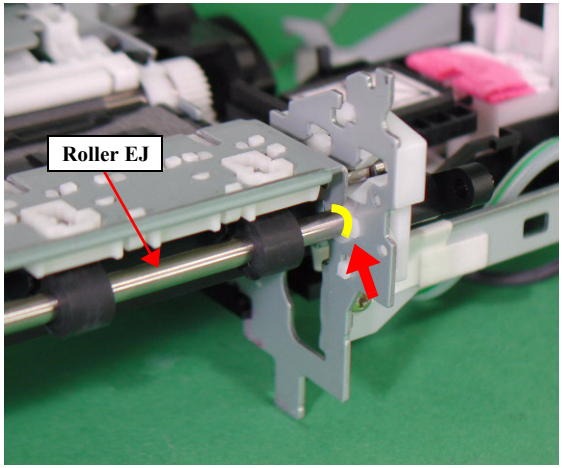
1. G-63
2. G-63

<Lubrication Amount>

1. Half periphery
2. Half periphery

<Remarks>

Use a brush to apply it



<Lubrication Point>

Contact point between the Roller EJ and the Ground Spring, EJ Right

<Lubrication Type>

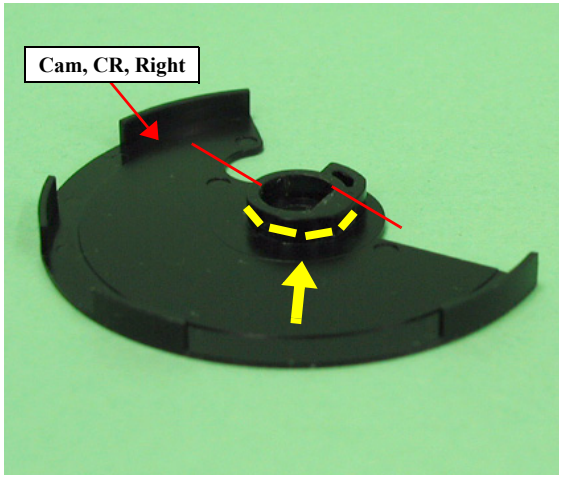
G-26

<Lubrication Amount>

Adequate dose

<Remarks>

Use a brush to apply it.



<Lubrication Point>

Periphery surface Inside of the Cam, CR, Right

<Lubrication Type>

G-63

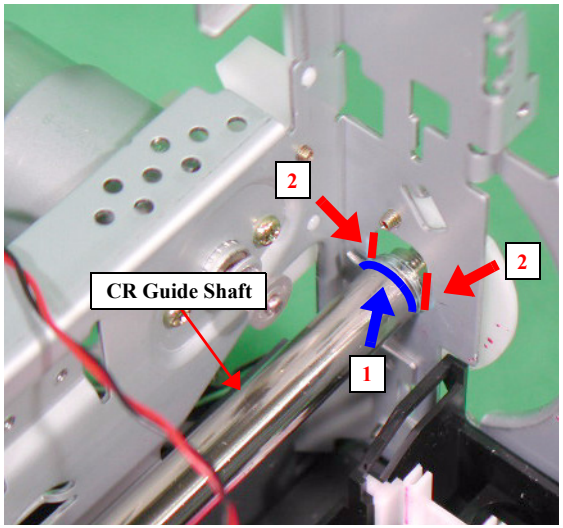
<Lubrication Amount>

4 points

Adequate dose

<Remarks>

- Use a brush to apply it.
- Do not apply it outside the boundary in the figure.



<Lubrication Point>

1. Groove on the right side of the CR Guide Shaft (The Groove is for the Fixed Spring, Shaft CR, Right)
2. Contact point between right side of the CR Guide Shaft and the Main Frame

<Lubrication Type>

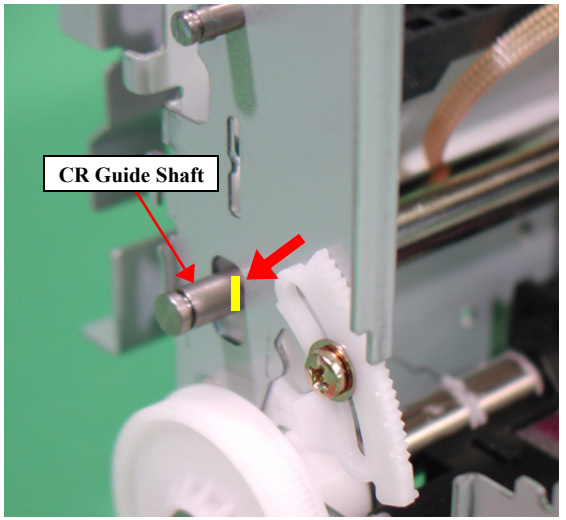
1. G-63
2. G-63

<Lubrication Amount>

1. Half periphery
2. 3mm x 2 points

<Remarks>

Use a syringe to apply it.



<Lubrication Point>

Contact point between left side of the CR Guide Shaft and the Fixed Spring, Shaft CR, Left

<Lubrication Type>

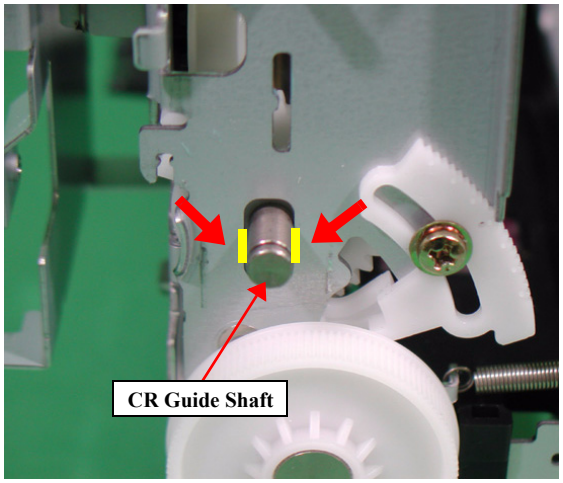
G-63

<Lubrication Amount>

3mm

<Remarks>

Use a syringe to apply it.



<Lubrication Point>

Contact point between left side of the CR Guide Shaft and the Main Frame

<Lubrication Type>

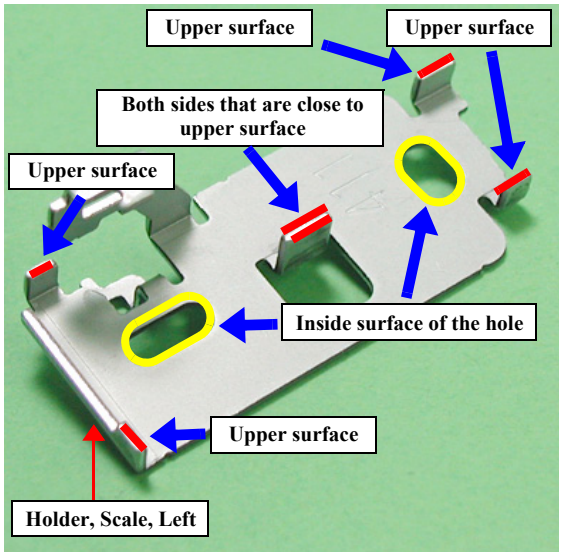
G-63

<Lubrication Amount>

3mm x 2 points

<Remarks>

Use a syringe to apply it.



<Lubrication Point>

Specified points on the Holder, Scale, Left in the left figure

<Lubrication Type>

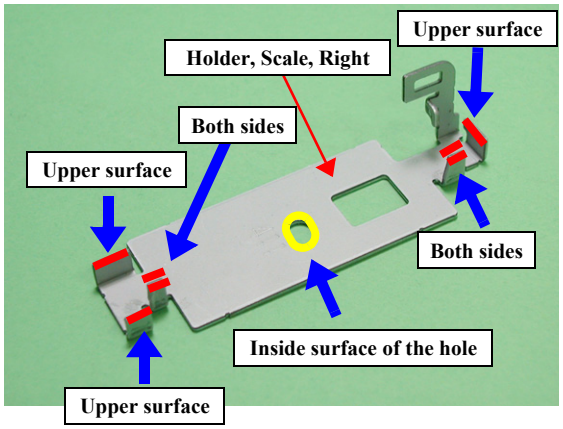
G-63

<Lubrication Amount>

8 points (Adequate dose)

<Remarks>

Use a brush to apply it.

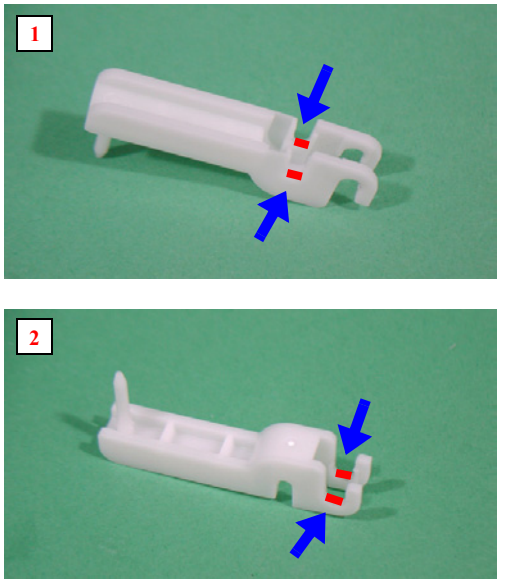


<Lubrication Point>
Specified points on the Holder, Scale, Right in the left figure

<Lubrication Type>
G-63

<Lubrication Amount>
8 points (Adequate dose)

<Remarks>
Use a brush to apply it.

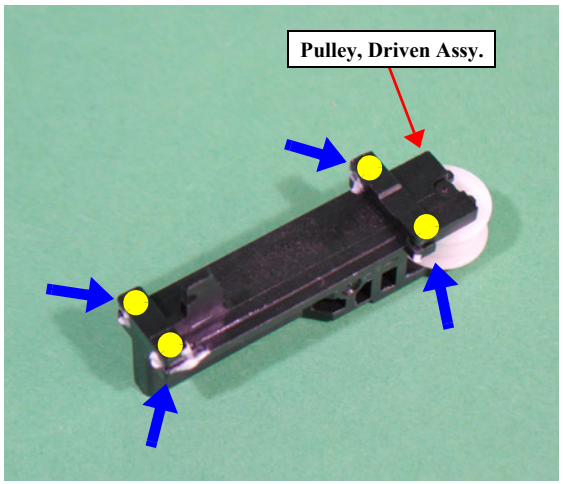


<Lubrication Point>
1. Upper surface of curving area of the Holder, Idle Roller
2. Lower surface of curving area of the Holder, Idle Roller

<Lubrication Type>
1. G-26
2. G-26

<Lubrication Amount>
1. 2 points (Adequate dose)
2. 2 points (Adequate dose)

<Remarks>
Use a brush to apply it.

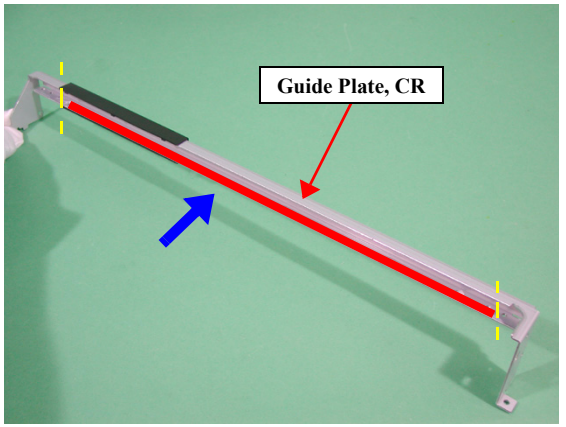


<Lubrication Point>
The Pulley, Driven Assy.

<Lubrication Type>
G-26

<Lubrication Amount>
1mm x 4 points

<Remarks>
Use a syringe to apply it.

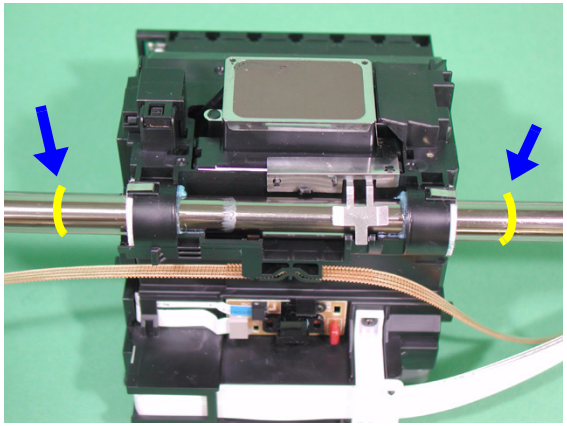


<Lubrication Point>
Inside surface of the Guide Plate, CR

<Lubrication Type>
G-26

<Lubrication Amount>
Home position side:
To the edge of 'Cover, Guide Plate, CR'.
Anti-home side:
To about 40mm from the edge.

<Remarks>
Use a syringe to apply it.

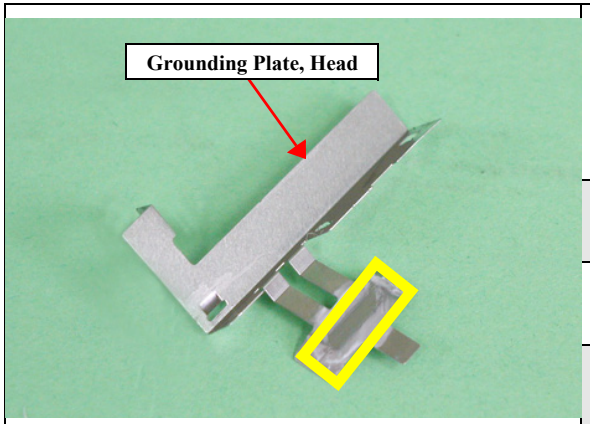


<Lubrication Point>
On the CR Guide Shaft outer the bearings of the Carriage

<Lubrication Type>
G-63

<Lubrication Amount>
120mg-160mg x 2 points

<Remarks>
1. Use a syringe to apply it.
2. Apply grease while rotating the CR Guide Shaft.

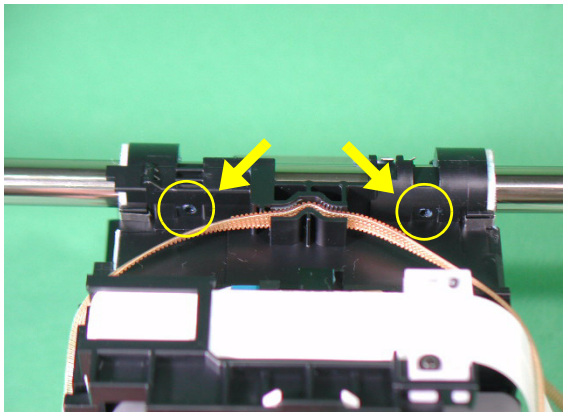


<Lubrication Point>
Contact Point between the Grounding Plate, Head and the CR Guide Shaft

<Lubrication Type>
G-46

<Lubrication Amount>
Adequate dose

<Remarks>
Use a cotton-tipped swab to apply it.

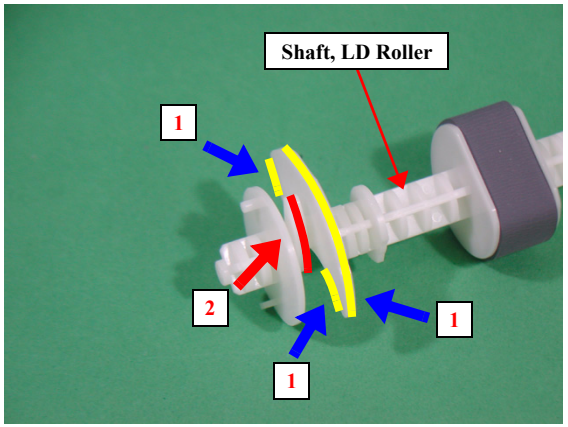


<Lubrication Point>
Holes inside the Carriage

<Lubrication Type>
G-63

<Lubrication Amount>
150mg-210mg x 2 points

<Remarks>
Use a syringe to apply it.

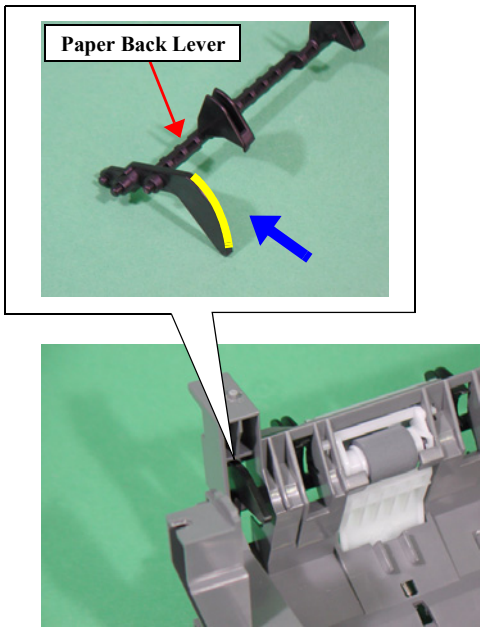


<Lubrication Point>
1. Cam of the Shaft, LD Roller shown in the left figure
2. Contact point between cam of the Shaft, LD Roller and the Paper Back Lever

<Lubrication Type>
1. G-46
2. G-46

<Lubrication Amount>
Adequate dose

<Remarks>
Use a flux dispenser to apply it.

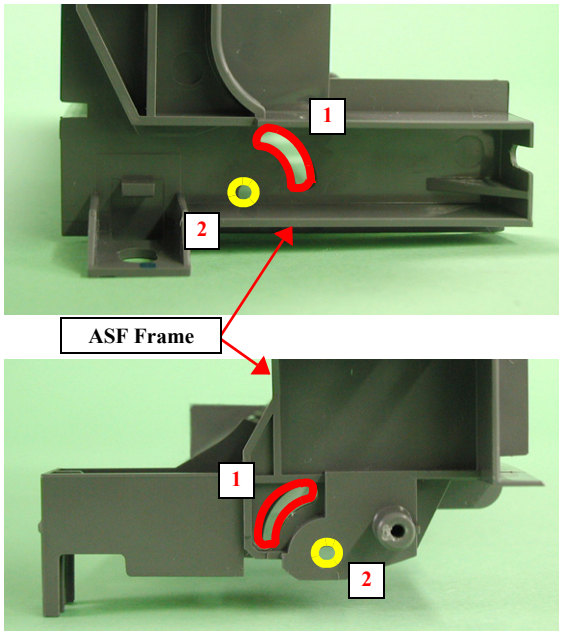


<Lubrication Point>
Specified section on the Paper Back Lever set in the ASF Assy. in the left figure

<Lubrication Type>
G-46

<Lubrication Amount>
Adequate dose

<Remarks>
Use a flux dispenser.

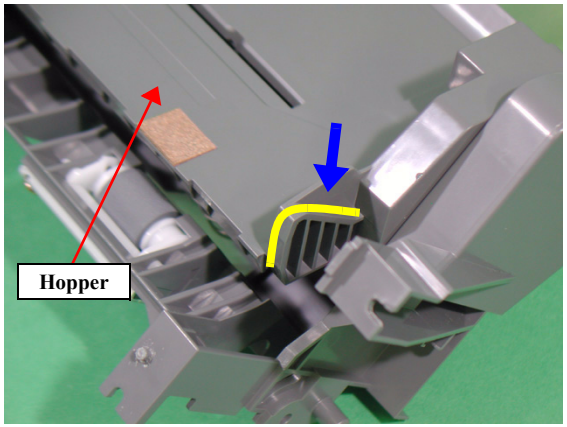


<Lubrication Point>
1. Specified section on the ASF Frame in the left figure
2. The contact points between the ASF Frame and the dowels of the Paper Back Lever

<Lubrication Type>
1. G-46
2. G-46

<Lubrication Amount>
Adequate dose

<Remarks>
Use a flux dispenser

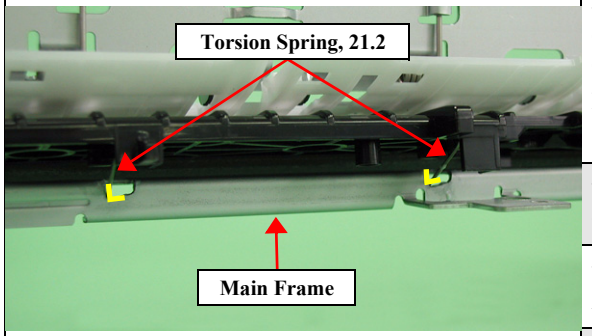


<Lubrication Point>
Specified section on the right side of the Hopper in the left figure

<Lubrication Type>
G-46

<Lubrication Amount>
Adequate dose

<Remarks>
Use a flux dispenser to apply it.
Be careful for over lubrication.



<Lubrication Point>
The contact points between the Torsion Spring, 21.2 and the Main Frame

<Lubrication Type>
G-26

<Lubrication Amount>
Adequate dose

<Remarks>
Use a brush to apply it.

CHAPTER

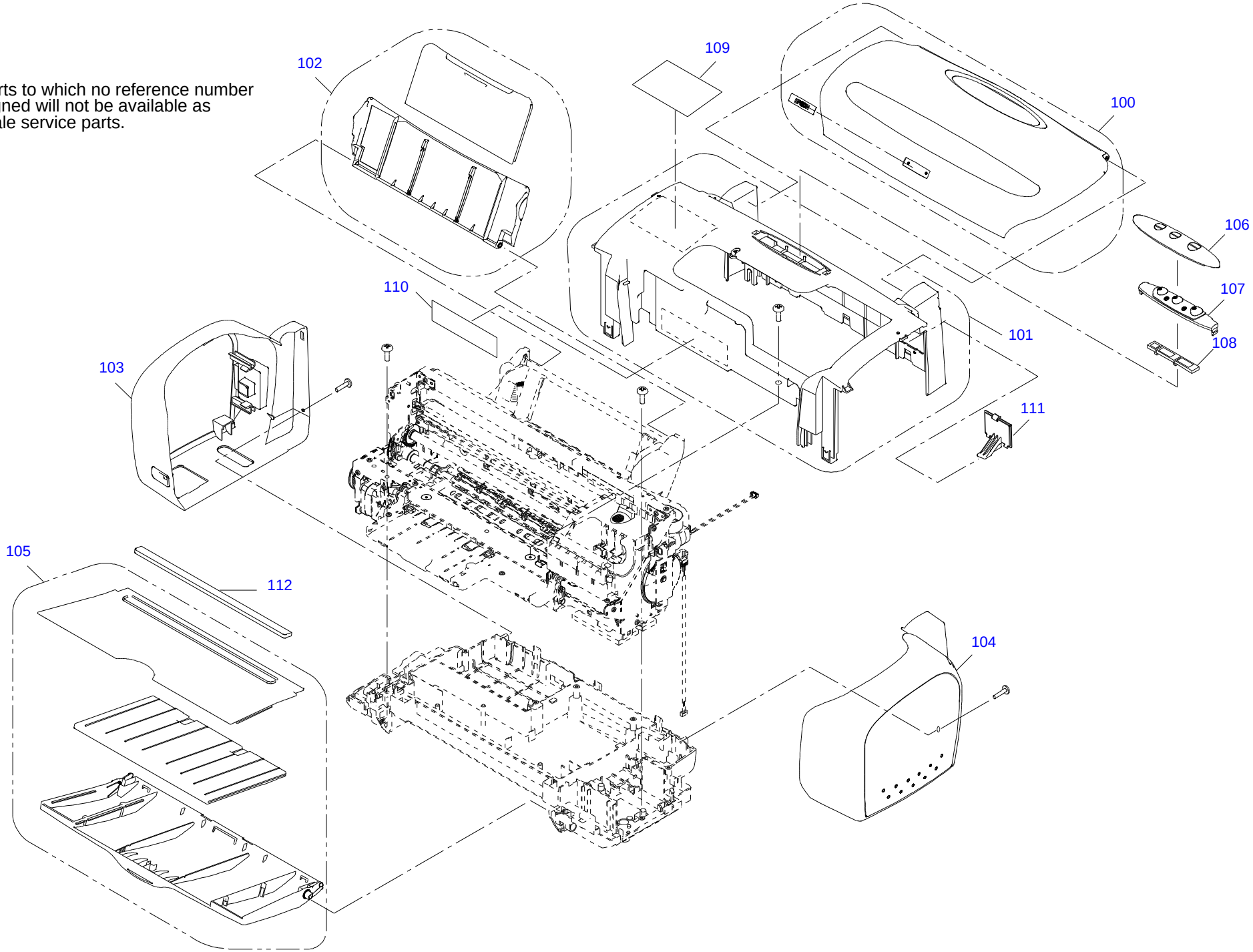
5

APPENDIX

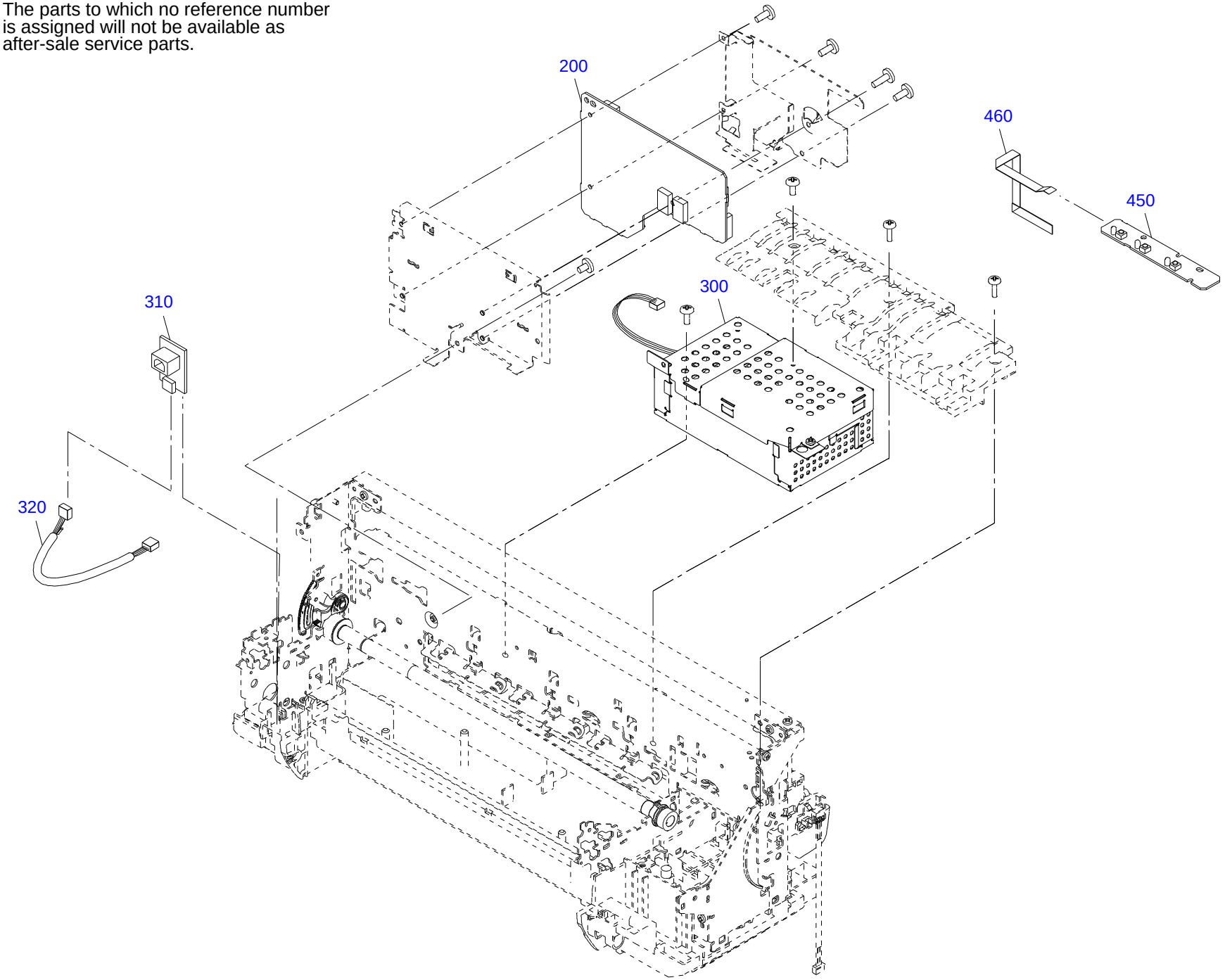
5.1 Exploded Diagrams

The exploded diagrams are shown at the following pages.

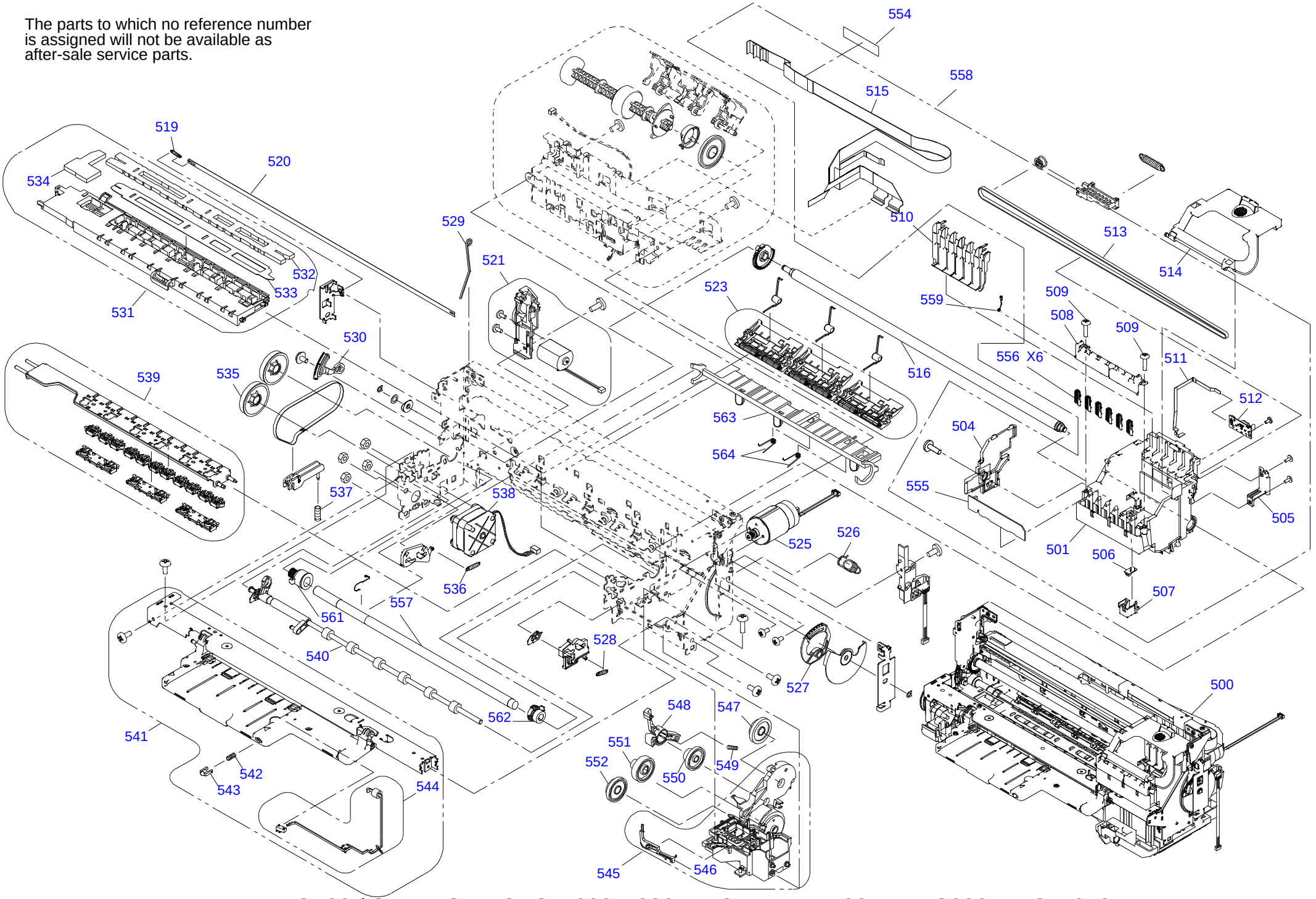
The parts to which no reference number is assigned will not be available as after-sale service parts.



The parts to which no reference number is assigned will not be available as after-sale service parts.



The parts to which no reference number is assigned will not be available as after-sale service parts.



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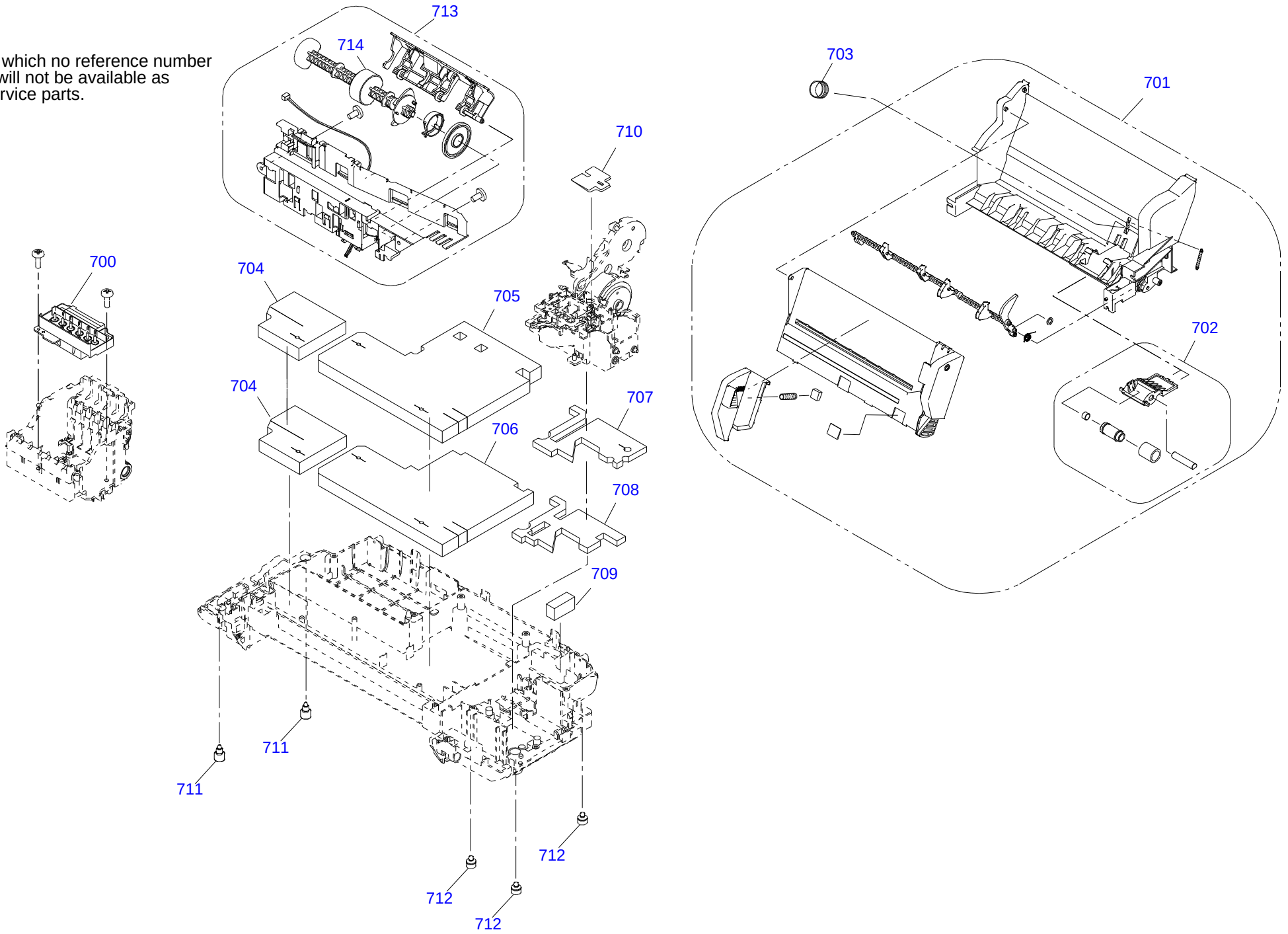
The parts to which no reference number is assigned will not be available as after-sale service parts.



5.2 Parts List

☐ Parts list for EPSON Stylus Photo R220/R230

Code	Parts Name
1	SHEET CDR ASSY.;D
2	POWER CABLE
NON FIG	I/C WITHOUT INDIVIDUAL BOX B,WST,AS,4CD01C
NON FIG	I/C WITHOUT INDIVIDUAL BOX C,WST,AS,4CD01C
NON FIG	I/C WITHOUT INDIVIDUAL BOX M,WST,AS,4CD01C
NON FIG	I/C WITHOUT INDIVIDUAL BOX Y,WST,AS,4CD01C
NON FIG	I/C WITHOUT INDIVIDUAL BOX LC,WST,AS,4CD01C
NON FIG	I/C WITHOUT INDIVIDUAL BOX LM,WST,AS,4CD01C
NON FIG	SOFTWARE CD,EAI-LATIN
100	COVER,PRINTER,ASSY;R220
101	HOUSING,FRAME;C;EDG
102	PAPER SUPPORT ASSY.,C546,ASP
103	HOUSING LEFT ASSY.;C626
104	HOUSING,RIGHT;EBM
105	STACKER ASSY.;C626
106	PANEL,BUTTON;C;EDG
107	BUTTON,SW;B;EDG2
108	GUIDE,BUTTON,SW
109	LABEL,CAUTION
110	LABEL,CAUTION,CD-R
111	COVER,INK TUBE;EDG
112	STOPPER,PAPER STACKER;B
200	BOARD ASSY.,MAIN
300	POWER SUPPLY ASSY.,C546,ASP
310	BOARD ASSY.,INTERFACE
320	HARNESS
450	BOARD ASSY.,PANEL
460	CABLE,PANEL
500	PRINTER MECHANISM(ASP)
501	CARRIAGE
504	HOLDER,FFC
505	HOLDER,FFC;B
506	BOARD ASSY.,DETECTOR,PW
507	CAP,DETECTOR,PW
508	GUIDE,IC
509	C.B.P-TITE SCREW,2.5X8,F/ZN-3C
510	HOLDER,I/C
511	HARNESS,PW
512	BOARD ASSY.,ENCORDER
513	TIMING BELT;E
514	LEVER,CARTRIDGE
515	CABLE,HEAD
516	SHAFT,CR,GUIDE
519	EXTENSION SPRING,3.289
520	SCALE,CR
521	APG ASSY.;C626
523	PAPER GUIDE UPPER SET ASSY.
525	MOTOR ASSY.,CR
526	FIXED SPRING,CR SHAFT,RIGHT
527	BUSHING,PARALLEL ADJUST,RIGHT;B
528	EXTENSION SPRING,PUSH UP PLATE,R
529	FIXED SPRING,CR SHAFT,LEFT
530	BUSHING,PARALLEL ADJUST,LEFT;B
531	PAPER GUIDE FRONT ASSY.,ASP
532	POROUS PAD,PAPER GUIDE,FRONT;B

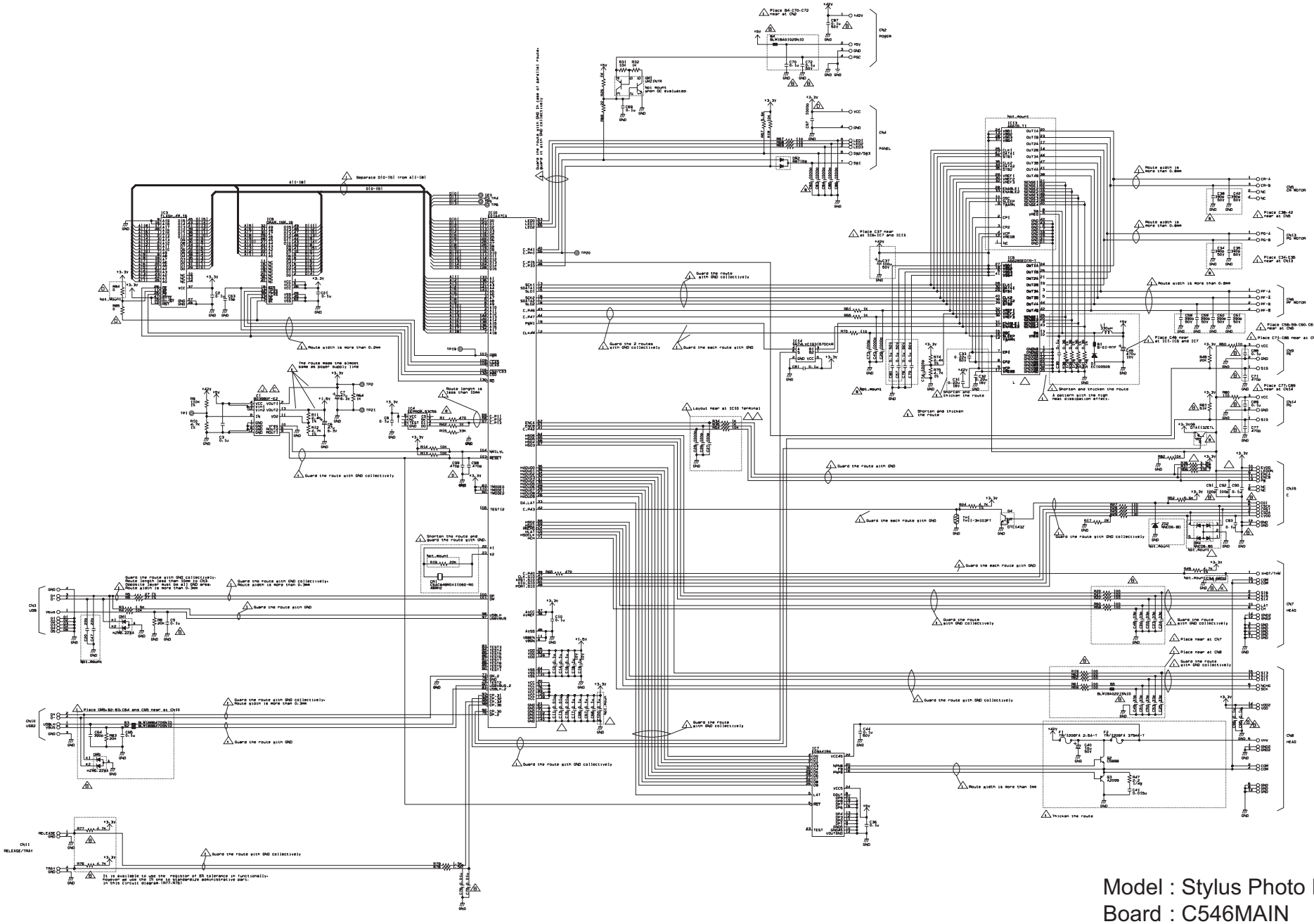
Code	Parts Name
533	POROUS PAD,PAPER GUIDE,FRONT,SUPPORT;B
534	POROUS PAD,PAPER GUIDE,FRONT,LEFT;B
535	SPUR GEAR,41.38
536	EXTENSION SPRING,PUSH UP PLATE,L
537	COMPRESSION SPRING,1.27
538	MOTOR ASSY.,PF;B
539	FRAME EJ,ASSY.,ASP
540	ROLLER EJ ASSY.
541	CDR,GUIDE,FRAME ASSY.;H,C546,ASP
542	COMPRESSION SPRING,5.1
543	LOCK,STACKER
544	SENSOR ASSY.,CDR
545	INK SYSTEM ASSY.;B
546	LEVER,LOCK,SLIDER
547	COMBINATION GEAR,27.2,19.2
548	LEVER,CHANGE
549	COMPRESSION SPRING,2.36
550	SPUR GEAR,25.6
551	SPUR GEAR,27.2”
552	COMBINATION GEAR,20.82,24
554	SHIELD PLATE,FFC
555	BOARD ASSY.,CSIC
556	CONNECTER,CSIC
557	ROLLER,PF
558	CARRIAGE ASSY.,ASP
559	TORSION SPRING,LEVER,CARTRIDGE
561	BUSHING,ROLLER,PF,LEFT
562	BUSHING,ROLLER,PF,RIGHT
563	PAPER GUIDE,REAR

Code	Parts Name
564	TORSION SPRING,21.2
700	PRINT HEAD
701	ASF ASSY.;G
702	ROLLER,RETARD,ASSY.
703	COMPRESSION SPRING,2.51
704	POROUS PAD,INK EJECT,SMALL;B
705	POROUS PAD,INK EJECT,UPPER;B
706	POROUS PAD,INK EJECT,LOWER;B
707	POROUS PAD,CAP,LOWER,LARGE
708	POROUS PAD,CAP,LOWER,SMALL
709	POROUS PAD,INK EJECT,UPPER,SUPPORT;B
710	POROUS PAD,SLIDER,CAP,D6
711	INSULATOR,FRAME,MAIN
712	FOOT
713	HOLDER SHAFT ASSY.;B,ASP
714	ROLLER,LD;B

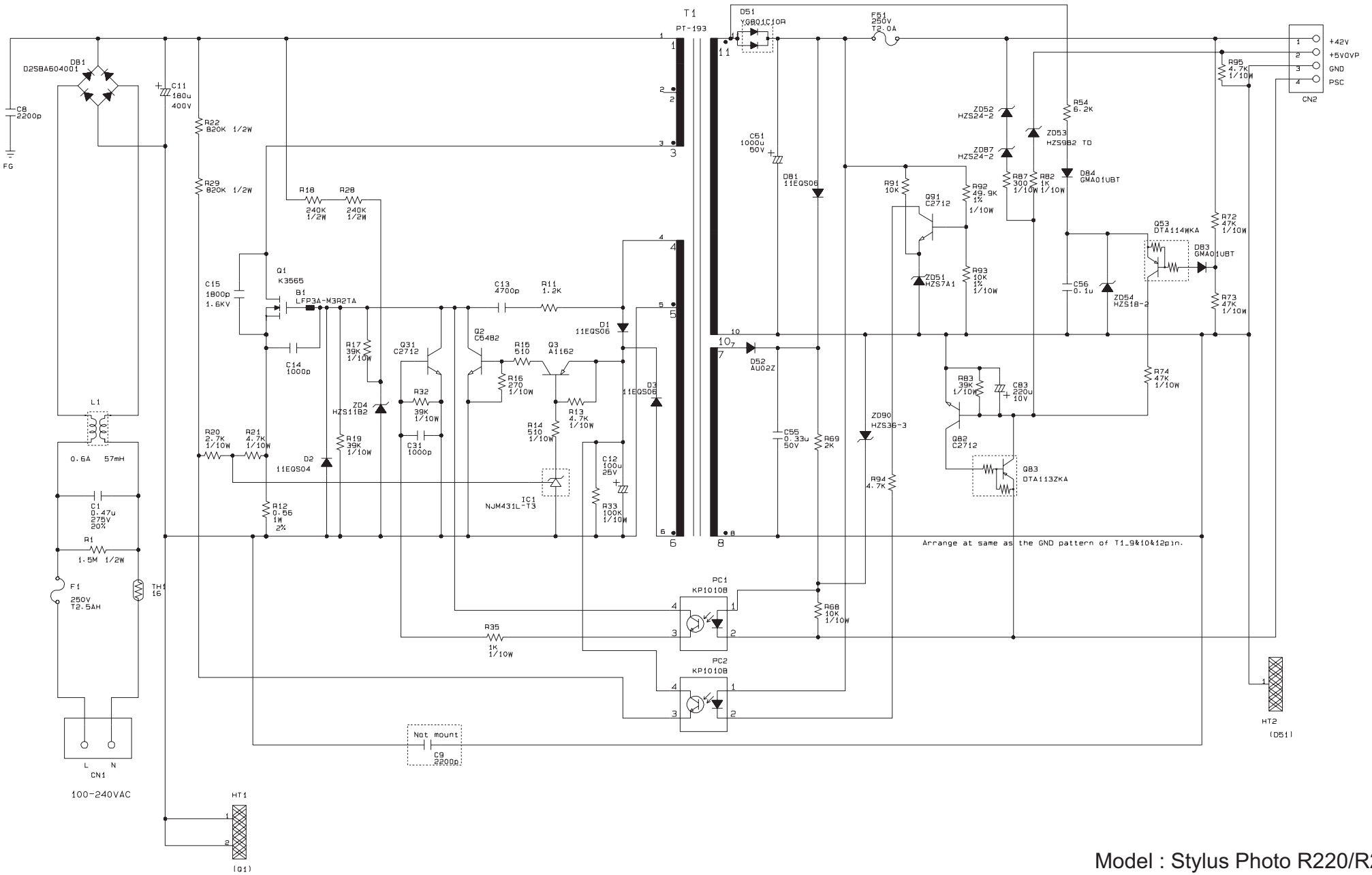
5.3 Electrical Circuits

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

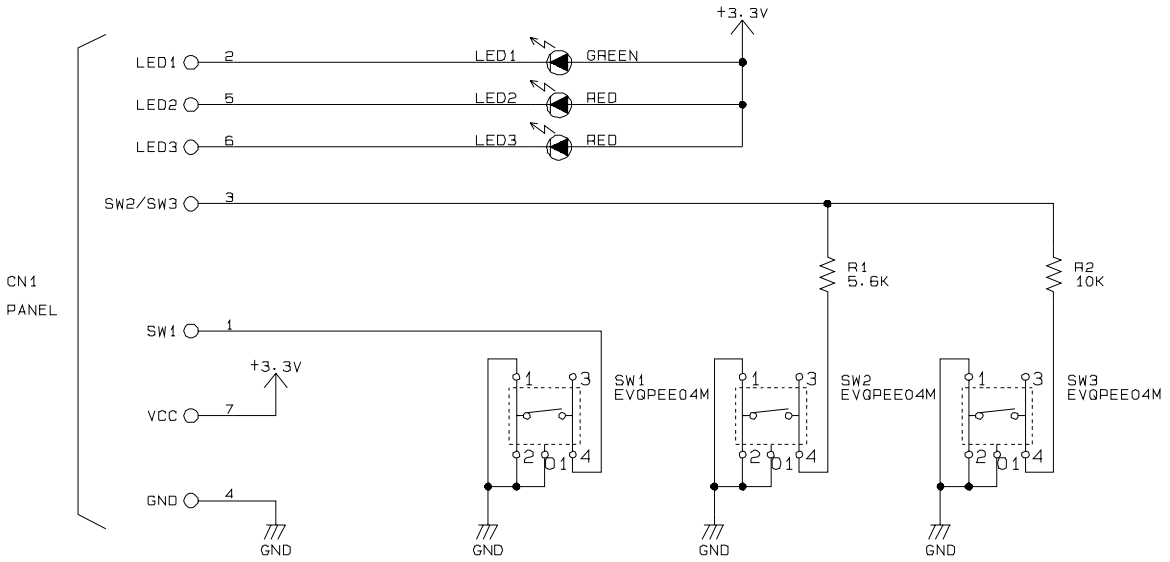
- Main Board (C546 MAIN)
- Power Board (C528 PSH)
- Panel Board (C546PNL)
- IF Board (C546IF)



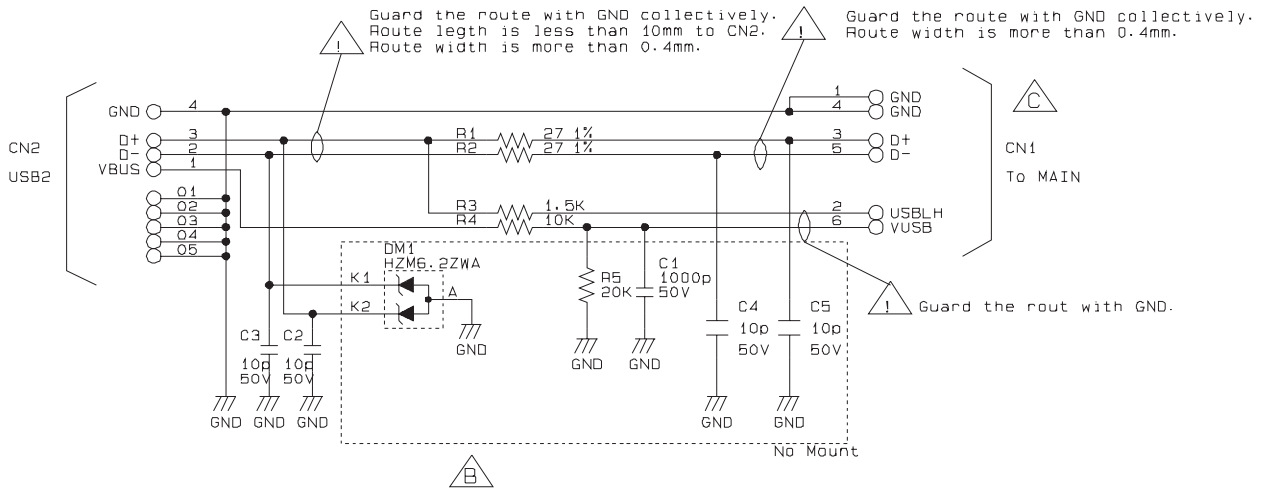
Model : Stylus Photo R220/R230
Board : C546MAIN
Rev. : L
Sheet : 1/1



Model : Stylus Photo R220/R230
Board : C528PSH
Rev. : A
Sheet : 1/1



Model: Stylus Photo R220/R230
Board: C546PNL
Rev. : A
Sheet: 1/1



Model : Stylus Photo R220/R230
Board : C546IF
Rev. : C
Sheet : 1/1