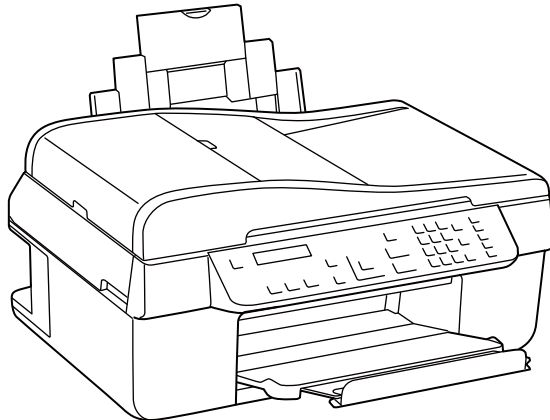
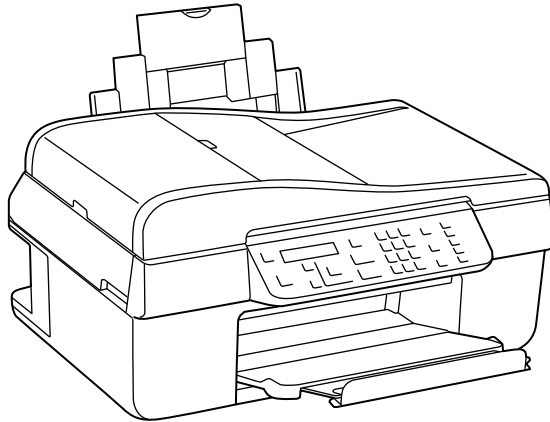


# SERVICE MANUAL



## *Color Inkjet Printer*

WorkForce 310

Epson Stylus Office TX510FN/TX515FN/BX310FN/ME OFFICE 650FN

WorkForce 520/525

Epson Stylus Office TX525FW/BX320FW

WorkForce 320

Epson Stylus Office TX320F/BX305F/TX325F/ME OFFICE 620F

WorkForce 325/323

Epson Stylus Office BX305FW

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# PRECAUTIONS

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

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

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

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

## ***DANGER***

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

## ***WARNING***

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

# About This Manual

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

## Manual Configuration

This manual consists of six chapters and Appendix.

### **CHAPTER 1.PRODUCT DESCRIPTIONS**

Provides a general overview and specifications of the product.

### **CHAPTER 2.OPERATING PRINCIPLES**

Describes the theory of electrical and mechanical operations of the product.

### **CHAPTER 3.TROUBLESHOOTING**

Describes the step-by-step procedures for the troubleshooting.

### **CHAPTER 4.DISASSEMBLY / ASSEMBLY**

Describes the step-by-step procedures for disassembling and assembling the product.

### **CHAPTER 5.ADJUSTMENT**

Provides Epson-approved methods for adjustment.

### **CHAPTER 6.MAINTENANCE**

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

### **CHAPTER 7.APPENDIX**

Provides the following additional information for reference:

- Exploded Diagram
- Parts List

### **CHAPTER 8.WorkForce 520/320/325 series**

Provides particular information on the following models:

- WorkForce 520/525, Epson Stylus Office TX525FW/BX320FW,
- WorkForce 320, Epson Stylus Office TX320F/BX305F/TX325F, ME OFFICE 620F
- WorkForce 325/323, Epson Stylus Office BX305FW

## Symbols Used in this Manual

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



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



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



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



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



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

## Revision Status

Revision	Date of Issue	Description
A	May 7, 2009	First Release
B	March 30, 2010	<p>Revised Contents</p> <p>Description about WorkForce 520/320/325 series has been added.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Preface <ul style="list-style-type: none"> <li>■ Description has been added in "<a href="#">Manual Configuration</a>" (p4).</li> </ul> </li> <li><input type="checkbox"/> Chapter 1 <ul style="list-style-type: none"> <li>■ Items have been added in Checkpoint in "<a href="#">1.1 Features</a>" (p11).</li> </ul> </li> <li><input type="checkbox"/> Chapter 2 <ul style="list-style-type: none"> <li>■ Items have been added in Checkpoint in "<a href="#">2.1 Overview</a>" (p31).</li> <li>■ Specification of WorkForce 520/320/325 series have been added in "<a href="#">2.1.2 Motors &amp; Sensors</a>" (p32).</li> <li>■ Product names have been added in "<a href="#">2.1.3 Printhead</a>" (p33).</li> </ul> </li> <li><input type="checkbox"/> Chapter 3 <ul style="list-style-type: none"> <li>■ Items have been added in Warning/Checkpoint in "<a href="#">3.1 Overview</a>" (p38).</li> <li>■ Product names have been added in "<a href="#">3.2.1 Motor and Sensor Troubleshooting</a>" (p40).</li> <li>■ Product names have been added in "<a href="#">3.3.1 Error Message List</a>" (p41).</li> <li>■ Lead section has been revised in "<a href="#">3.4 Network Troubleshooting</a>" (p67).</li> <li>■ Product names have been added in "<a href="#">3.6 Fax Function/External Connection (EXT port) Function Check</a>" (p74).</li> </ul> </li> <li><input type="checkbox"/> Chapter 4 <ul style="list-style-type: none"> <li>■ Items have been added in Checkpoint in "<a href="#">4.1 Overview</a>" (p81).</li> <li>■ Items have been added in Checkpoint in "<a href="#">4.2 Disassembly Procedures</a>" (p84).</li> <li>■ Items have been added in Checkpoint in "<a href="#">4.3.3 Scanner Unit/ADF Unit</a>" (p87).</li> <li>■ Items have been added in Checkpoint and Reassembly in "<a href="#">4.4.1 Main Board Unit</a>" (p93).</li> <li>■ Items have been added in Checkpoint and Reassembly in "<a href="#">4.4.2 Panel Unit</a>" (p96).</li> <li>■ Items have been added in Checkpoint in "<a href="#">4.5.1 Printhead</a>" (p99).</li> </ul> </li> </ul>



Revision	Date of Issue	Description
B	March 30, 2010	<input type="checkbox"/> Chapter 4 <ul style="list-style-type: none"> <li>■ Items have been added in Checkpoint in "4.5.5 Left Frame" (p105)</li> <li>■ Items have been added in Checkpoint in "4.5.6 Front Frame/Right Frame" (p106).</li> <li>■ Items have been added in the Reassembly in "4.5.11 PF Motor Assy" (p110).</li> </ul> <input type="checkbox"/> Chapter 5 <ul style="list-style-type: none"> <li>■ Items have been added in Checkpoint in "5.1.1 Servicing Adjustment Item List (TBD)" (p136).</li> <li>■ Product names have been added in "5.2.4 Bi-D Adjustment (WorkForce 310 series)" (p142).</li> <li>■ Product names have been added in "5.2.5 PF Adjustment (WorkForce 310/520 series)" (p143).</li> <li>■ Product names and MAC address label location have been added in "5.2.7 MAC Address Setting" (p145).</li> </ul> <input type="checkbox"/> Chapter 6 <ul style="list-style-type: none"> <li>■ Product names have been corrected in "6.1.2 Service Maintenance" (p148).</li> </ul> <input type="checkbox"/> Chapter 8 <ul style="list-style-type: none"> <li>■ "Chapter 8 WorkForce 520/320/325 series" (p156) has been added.</li> </ul>

# Contents

## **Chapter 1 PRODUCT DESCRIPTION**

1.1 Features .....	11
1.2 Printing Specifications .....	12
1.2.1 Basic Specifications .....	12
1.2.2 Ink Cartridge .....	12
1.2.3 Print Mode .....	13
1.2.4 Supported Paper .....	15
1.2.5 Printing Area .....	17
1.3 Scanner Specifications .....	17
1.3.1 Scanning Range .....	18
1.4 General Specifications .....	18
1.4.1 Electrical Specifications .....	18
1.4.2 Environmental Conditions .....	19
1.4.3 Durability .....	19
1.4.4 Acoustic Noise .....	19
1.4.5 Safety Approvals (Safety standards/EMI) .....	19
1.5 Interface .....	20
1.5.1 USB Interface .....	20
1.5.2 FAX Interface .....	20
1.5.3 Network Interface .....	20
1.6 Control Panel .....	21
1.6.1 Operation Buttons & LEDs .....	21
1.7 Specification for Each Function .....	22
1.7.1 Stand-alone Copy Function .....	22
1.7.1.1 Supported Paper and Copy Mode .....	22
1.7.1.2 Stand-alone Copy Menu .....	22
1.7.1.3 Relation Between Original and Copy .....	23
1.7.1.4 Copy Speed .....	23
1.7.2 Scan Function .....	24
1.7.3 FAX Function .....	24
1.7.3.1 Basic Specifications .....	24
1.7.3.2 Supported Functions .....	24
1.7.4 Maintenance/Confirm Network Settings/ Print Network Status Sheet .....	28

## **Chapter 2 OPERATING PRINCIPLES**

2.1 Overview .....	31
2.1.1 Printer Mechanism .....	31
2.1.2 Motors & Sensors .....	32
2.1.3 Printhead .....	33
2.1.4 Power-On Sequence .....	34
2.1.5 Printer Initialization .....	36

## **Chapter 3 TROUBLESHOOTING**

3.1 Overview .....	38
3.1.1 Specified Tools .....	39
3.1.2 Preliminary Checks .....	39
3.2 Troubleshooting .....	40
3.2.1 Motor and Sensor Troubleshooting .....	40
3.3 Error Indications and Fault Occurrence Causes .....	41
3.3.1 Error Message List .....	41
3.3.2 Troubleshooting by Error Message .....	43
3.3.3 Superficial Phenomenon-Based Troubleshooting .....	60
3.4 Network Troubleshooting .....	67
3.5 FAX Troubleshooting .....	68
3.5.1 FAX Log .....	68
3.5.2 Error Code/Superficial Phenomenon-Based Troubleshooting .....	72
3.6 Fax Function/External Connection (EXT port) Function Check .....	74
3.6.1 Outline .....	74
3.6.2 Fax Function and External Connection Function Check .....	74
3.6.2.1 Fax Function Check by [Method A] and External Connection Function Check .....	74
3.6.2.2 Fax Function Check by [Method B] and External Connection Function Check .....	78
3.6.2.3 Fax Function Check by [Method C] and External Connection Function Check .....	79

**Chapter 4 DISASSEMBLY/ASSEMBLY**

4.1 Overview .....	81
4.1.1 Precautions .....	81
4.1.2 Tools .....	82
4.1.3 Work Completion Check .....	82
4.2 Disassembly Procedures .....	84
4.3 Removing the Housing .....	86
4.3.1 Paper Support Assy/ASF Cover .....	86
4.3.2 Stacker Assy .....	86
4.3.3 Scanner Unit/ADF Unit .....	87
4.3.4 Upper Housing .....	90
4.3.5 Front Housing .....	92
4.4 Removing the Circuit Boards .....	93
4.4.1 Main Board Unit .....	93
4.4.2 Panel Unit .....	96
4.4.3 Power Supply Unit .....	98
4.5 Disassembling the Printer Mechanism .....	99
4.5.1 Printhead .....	99
4.5.2 CR Scale .....	101
4.5.3 Hopper .....	102
4.5.4 Removing the Printer Mechanism .....	103
4.5.5 Left Frame .....	105
4.5.6 Front Frame/Right Frame .....	106
4.5.7 Star Wheel Holder Assy .....	108
4.5.8 EJ Roller .....	108
4.5.9 PF Encoder Sensor .....	109
4.5.10 PF Scale .....	110
4.5.11 PF Motor Assy .....	110
4.5.12 CR Motor .....	112
4.5.13 Main Frame Assy .....	113
4.5.14 CR Unit .....	116
4.5.15 Upper Paper Guide .....	117
4.5.16 ASF Unit .....	117
4.5.17 Ink System Unit .....	119
4.5.18 Front Paper Guide .....	121
4.5.19 PF Roller .....	122
4.5.20 Waste Ink Pads .....	123
4.6 Disassembling the Scanner Unit .....	124
4.6.1 Separating the Scanner Unit and the ADF Unit .....	124
4.6.2 Upper Scanner Housing .....	125

4.6.3 Scanner Carriage Unit .....	126
4.6.4 Scanner Motor Unit .....	127
4.7 Disassembling the ADF Unit .....	128
4.7.1 ADF Hinge .....	128
4.7.2 ADF Cover Assy .....	129
4.7.3 ADF Paper Support Assy/ADF Document Support Assy .....	129
4.7.4 ADF Motor Unit .....	130
4.7.5 ADF Frame Assy .....	132
4.7.6 ADF Driven Roller .....	133
4.7.7 ADF PF Roller .....	133

**Chapter 5 ADJUSTMENT**

5.1 Adjustment Items and Overview .....	136
5.1.1 Servicing Adjustment Item List (TBD) .....	136
5.1.2 Required Adjustments (TBD) .....	139
5.2 Using the Adjustment Program (TBD) .....	141
5.2.1 TOP Margin Adjustment .....	141
5.2.2 First Dot Position Adjustment .....	141
5.2.3 Head Angular Adjustment .....	142
5.2.4 Bi-D Adjustment (WorkForce 310 series) .....	142
5.2.5 PF Adjustment (WorkForce 310/520 series) .....	143
5.2.6 PF Band Adjustment .....	144
5.2.7 MAC Address Setting .....	145

**Chapter 6 MAINTENANCE**

6.1 Overview .....	148
6.1.1 Cleaning .....	148
6.1.2 Service Maintenance .....	148
6.1.2.1 Printhead Cleaning .....	148
6.1.2.2 Maintenance Request error .....	148
6.1.3 Lubrication .....	149

**Chapter 7 APPENDIX**

7.1 Exploded Diagram / Parts List .....	155
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**Chapter 8 WorkForce 520/320/325 series**

8.1 Overview .....	157
8.2 OPERATING PRINCIPLES .....	158
8.2.1 Motors & Sensor (WorkForce 320/325 series) .....	158
8.2.2 Printhead (WorkForce 320/325 series) .....	158
8.2.3 Power-On Sequence .....	159
8.3 TROUBLESHOOTING .....	161
8.3.1 Connector Locations .....	161
8.3.2 Network Troubleshooting (WorkForce 520/325 series only) .....	162
8.4 DISASSEMBLY/ASSEMBLY .....	164
8.4.1 Procedural Differences between the Models .....	164
8.4.2 Disassembly Procedures .....	166
8.4.3 Removing the Housing .....	168
8.4.3.1 Scanner Unit/ADF Unit (WorkForce 520 series) .....	168
8.4.4 Removing the Circuit Boards .....	171
8.4.4.1 Main Board Unit (WorkForce 520 series) .....	171
8.4.4.2 Panel Unit (WorkForce 520 series) .....	175
8.4.5 Disassembling the Printer Mechanism .....	177
8.4.5.1 Printhead (WorkForce 520 series) .....	177
8.4.5.2 Front Frame/Right Frame .....	177
8.4.6 Differences in Disassembling/Reassembling WorkForce 320/325 series .....	180
8.4.6.1 Scanner Unit/ADF Unit (WorkForce 320/325 series) .....	180
8.4.6.2 Main Board Unit (WorkForce 320 series) .....	182
8.4.6.3 Main Board Unit (WorkForce 325 series) .....	186
8.4.6.4 Panel Unit (WorkForce 320/325 series) .....	189
8.4.6.5 Printhead (WorkForce 320/325 series) .....	189
8.5 ADJUSTMENT .....	192
8.5.1 Using the Adjustment Program .....	192
8.5.1.1 Bi-D Adjustment (WorkForce 520/320/325 series) .....	192
8.5.1.2 PF Adjustment (WorkForce 320/325 series) .....	192

CHAPTER

1

# PRODUCT DESCRIPTION

## 1.1 Features



■ **In this chapter, the product names are called as follows:**

Notation	Product name
WorkForce 310 series	WorkForce 310/Epson Stylus Office TX510FN/TX515FN/BX310FN/ME OFFICE 650FN
WorkForce 520 series	WorkForce 520/525, Epson Stylus Office TX525FW/BX320FW
WorkForce 320 series	WorkForce 320, Epson Stylus Office TX320F/BX305F/TX325F/ME OFFICE 620F
WorkForce 325 series	WorkForce 325/323, Epson Stylus Office BX305FW

- **Description in this chapter is applied to WorkForce 310 series. For information on WorkForce 520/320/325 series, see below.**
- **"Chapter 8 WorkForce 520/320/325 series" (p.156)**

WorkForce 310 series are color inkjet printers that have scanner function and FAX function with network interface.

□ **Available Functions**

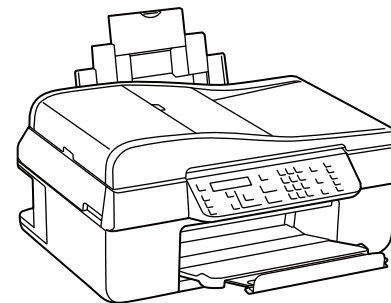
- **Printer**  
Printing from a computer or directly printing
- **Scanner**  
Scanning from a computer
- **Copy**  
Stand alone copy using the scanning and printing functions
- **FAX**  
Sending/receiving fax
- **ADF**  
Continuous scanning using an ADF
- **Network**  
Available for printing and scanning via wired network

□ **High speed & High quality**

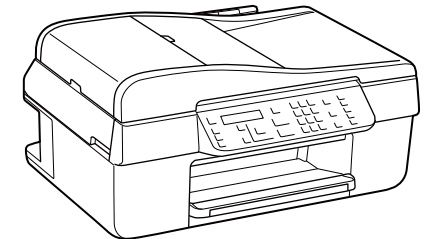
- Maximum print resolution: 5760 (H) x 1440 (V) dpi
- F3-3 Mach printhead achieves higher print speed than ever.  
(Black: 180 nozzles x 2, Color: 59 nozzles x 1 per color)
- Four independent pigment ink cartridges is installed  
(Two black ink cartridges are installed)
- Borderless printing on specified EPSON brand paper is available.

□ **Dimensions**

- Dimensions: 460 mm (W) x 411 mm (D) x 235 mm (H)  
(Paper support and stacker are closed. Rubber feet are included)
- Weight: 7.6 kg  
(Ink cartridge and power cable are excluded)



Paper Support & Stacker are opened



Paper Support & Stacker are Closed

**Figure 1-1. External View**

## 1.2 Printing Specifications

### 1.2.1 Basic Specifications

Table 1-1. Printer Specifications

Item	Specification
Print method	On-demand ink jet
Nozzle configuration	Black: 180 nozzles x 2 Color: 59 nozzles x 3 (Cyan, Magenta, Yellow)
Print direction	Bi-directional minimum distance printing, Unidirectional printing
Print resolution	Horizontal x Vertical (dpi) • 360 x 180                      • 720 x 720 • 360 x 360                    • 1440 x 720 • 360 x 720                    • 5760 x 1440
Control code	• ESC/P Raster command • ESC/P-R (RGB) command
Input buffer size	132 Kbytes
Paper feed method	Friction feed, using the ASF (Auto Sheet Feeder)
Paper path	Top feed, front out
Paper feed rates (at 25.4mm feed)	95 ms (Draft 16 ips*), 113 ms (Default 12 ips*)
PF interval	Programmable in 0.01764 mm (1/1440 inch) steps

Note\* : ips = inch per second

### 1.2.2 Ink Cartridge

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

Table 1-2. Product No. of Ink Cartridges

Color	EAI	Latin	Euro	CISMEA/ ASIA	ECC/EHK
Black	T0681 (S) T0691 (2S)	T1151 (S)	T0711H (S) T0711 (2S)	T0731HN (S) T0731N (2S)	T1191 (S) T1091 (2S)
Cyan	T0682 (2S) T0692 (3S)	T1032 (S)	T1002 (S) T0712 (3S)	T1032 (S) T0732N (3S)	T1092 (2S)
Magenta	T0683 (2S) T0693 (3S)	T1033 (S)	T1003 (S) T0713 (3S)	T1033 (S) T0733N (3S)	T1093 (2S)
Yellow	T0684 (2S) T0694 (3S)	T1034 (S)	T1004 (S) T0714 (3S)	T1034 (S) T0734N (3S)	T1094 (2S)

☐ Shelf life

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

☐ Storage Temperature

Table 1-3. Storage Temperature

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

☐ Dimension

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



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

## 1.2.3 Print Mode

**Table 1-4. Print Mode (Color)**

Media	Print Mode	Resolution (H x V dpi)	Dot Size (cps <sup>*1</sup> )	Bi-d	Micro Weave	Border- less
<ul style="list-style-type: none"> <li>• Plain paper</li> <li>• Premium Bright White Paper (EAI)</li> <li>• Premium Bright White Inkjet Paper (others)</li> </ul>	Draft1/ Draft2	360x180	Eco (400cps)	ON	OFF	N/A
	Normal2	360x360	VSD1 (320cps)	ON	OFF	N/A
	Normal3	360x360	VSD1 (320cps)	ON	ON	N/A
	Fine	360x720	VSD2 (245cps)	ON	ON	N/A
	Photo2	720x720	VSD3 (245cps)	ON	ON	N/A
<ul style="list-style-type: none"> <li>• Ultra Premium Glossy Photo Paper (EAI)</li> <li>• Ultra Glossy Photo Paper (others)</li> </ul>	Best Photo	1440x720	VSD3 (245cps)	ON	ON	OK
	Photo RPM	5760x1440	VSD3 (245cps)	ON	ON	OK
<ul style="list-style-type: none"> <li>• Premium Photo paper Glossy (EAI)</li> <li>• Premium Glossy Photo paper (others)</li> </ul>	Fine	360x720	VSD2 (245cps)	ON	ON	OK
	Photo1	720x720	VSD2 (245cps)	ON	ON	OK
	Best Photo	1440x720	VSD3 (245cps)	ON	ON	OK
	Photo RPM	5760x1440	VSD3 (245cps)	ON	ON	OK

**Table 1-4. Print Mode (Color)**

Media	Print Mode	Resolution (H x V dpi)	Dot Size (cps <sup>*1</sup> )	Bi-d	Micro Weave	Border- less
<ul style="list-style-type: none"> <li>• Photo Paper Glossy (EAI)</li> <li>• Glossy Photo Paper (others)</li> <li>• Photo Paper (others)</li> <li>• Premium Photo Paper Semi-gloss (EAI)</li> <li>• Premium Semigloss Photo Paper (others)</li> </ul>	Fine	360x720	VSD2 (245cps)	ON	ON	OK
	Photo1	720x720	VSD2 (245cps)	ON	ON	OK
	Best Photo	1440x720	VSD3 (245cps)	ON	ON	OK
<ul style="list-style-type: none"> <li>• Premium Presentation Paper Matte (EAI)</li> <li>• Matte Paper Heavy-weight (others)</li> <li>• Photo Quality Inkjet Paper<sup>*2</sup></li> </ul>	Photo1	720x720	VSD2 (245cps)	ON	ON	OK
	Best Photo	1440x720	VSD3 (245cps)	ON	ON	OK
Envelope	Normal2	360x360	VSD1 (320cps)	OFF	OFF	N/A
	Fine	360x720	VSD2 (245cps)	OFF	ON	N/A

Note \*1: cps = character per second

\*2: Not supported in EAI.



Table 1-5. Print Mode (Monochrome)

Media	Print Mode	Resolution (H x V dpi)	Dot Size (cps*)	Bi-d	Micro Weave	Border- less
<ul style="list-style-type: none"> <li>• Plain paper</li> <li>• Premium Bright White Paper (EAI)</li> <li>• Premium Bright White Inkjet Paper (others)</li> </ul>	Draft3/ Draft4	360x360	Eco (400cps)	ON	OFF	N/A
	Normal1	360x360	VSD1 (320cps)	ON	OFF	N/A
	Normal3	360x360	VSD1 (320cps)	ON	ON	N/A
	Fine	360x720	VSD2 (245cps)	ON	ON	N/A
	Photo2	720x720	VSD3 (245cps)	ON	ON	N/A
<ul style="list-style-type: none"> <li>• Premium Presentation Paper Matte (EAI)</li> <li>• Matte Paper Heavy-weight (others)</li> <li>• Photo Quality Inkjet Paper*2</li> </ul>	Photo1	720x720	VSD2 (245cps)	ON	ON	OK
	Best Photo	1440x720	VSD3 (245cps)	ON	ON	OK
Envelope	Normal1	360x360	VSD1 (320cps)	OFF	OFF	N/A
	Fine	360x720	VSD2 (245cps)	OFF	ON	N/A

Note \*1: cps = character per second

\*2: Not supported in EAI.

## 1.2.4 Supported Paper

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

**Table 1-6. Supported Paper**

Paper Name	Paper Size		Thickness (mm)	Weight	EAI		EUR		Asia	
					P*1	B*2	P*1	B*2	P*1	B*2
Plain paper	Legal	215.9 x 355.6 mm (8.5"x14")	0.08-0.11	64-90 g/m <sup>2</sup> (17-24 lb.)	Y	-	Y	-	Y	-
	Letter	215.9 x 279.4 mm (8.5"x11")			Y	-	Y	-	Y	-
	A4	210 x 297 mm (8.3"x11.7")			Y	-	Y	-	Y	-
	B5	182 x 257 mm (7.2"x10.1")			-	-	Y	-	Y	-
	A5	148 x 210 mm (5.8"x8.3")			-	-	Y	-	Y	-
	Half Letter	139.7 x 215.9 mm (5.5"x8.5")			Y	-	-	-	-	-
	A6	105 x 148 mm (4.2"x5.8")			Y	-	Y	-	Y	-
	User Defined	89 x 127- 215.9 x 1117.6 mm (3.5"x5" - 8.5"x44")			Y	-	Y	-	Y	-
Premium Inkjet Plain Paper	A4	210 x 297 mm (8.3"x11.7")	0.11	80 g/m <sup>2</sup> (21 lb.)	-	-	Y	-	Y	-
Premium Bright White Paper (EAI)	Letter	215.9 x 279.4 mm (8.5"x11")	0.11	90 g/m <sup>2</sup> (24 lb.)	Y	-	-	-	-	-
Bright White Inkjet Paper (Euro, Asia)	A4	210 x 297 mm (8.3"x11.7")	0.13	92.5 g/m <sup>2</sup> (25 lb.)	-	-	Y	-	Y	-
Ultra Premium Glossy Photo Paper (EAI) Ultra Glossy Photo Paper (Euro, Asia)	Letter	215.9 x 279.4 mm (8.5"x11")	0.30	290 g/m <sup>2</sup> (77 lb.)	Y	Y	-	-	-	-
	A4	210 x 297 mm (8.3"x11.7")			-	-	Y	Y	Y	Y
	8" x 10"	203.2 x 254 mm			Y	Y	-	-	-	-
	5" x 7"	127 x 178 mm			Y	Y	Y	Y	-	-
	4" x 6"	101.6 x 152.4 mm			Y	Y	Y	Y	Y	Y
					Y	Y	Y	Y	Y	Y
Premium Photo Paper Glossy (EAI) Premium Glossy Photo Paper (Euro, Asia)	Letter	215.9 x 279.4 mm (8.5"x11")	0.27	255 g/m <sup>2</sup> (68 lb.)	Y	Y	-	-	-	-
	A4	210 x 297 mm (8.3"x11.7")			Y	Y	Y	Y	Y	Y
	8" x 10"	203.2 x 254 mm			Y	Y	-	-	-	-
	5" x 7"	127 x 178 mm			Y	Y	Y	Y	Y	Y
	4" x 6"	101.6 x 152.4 mm			Y	Y	Y	Y	Y	Y
					Y	Y	Y	Y	Y	Y
	16:9 wide	101.6 x 180.6 mm			Y	Y	Y	Y	Y	Y

Table 1-6. Supported Paper

Paper Name	Paper Size		Thickness (mm)	Weight	EAI		EUR		Asia	
					P*1	B*2	P*1	B*2	P*1	B*2
Photo Paper Glossy (EAI) Glossy Photo Paper (Euro, Asia)	Letter	215.9 x 279.4 mm (8.5"x11")	0.25	258 g/m <sup>2</sup> (68 lb.)	Y	Y	-	-	-	-
	A4	210 x 297 mm (8.3"x11.7")			Y	Y	Y	Y	Y	Y
	5" x 7"	127 x 178 mm			-	-	Y	Y	-	-
	4" x 6"	101.6 x 152.4 mm			Y	Y	Y	Y	Y	Y
Photo Paper (Euro, Asia)	A4	210 x 297 mm (8.3"x11.7")	0.24	190 g/m <sup>2</sup> (51 lb.)	-	-	Y	Y	Y	Y
	5" x 7"	127 x 178 mm			-	-	Y	Y	-	-
	4" x 6"	101.6 x 152.4 mm			-	-	Y	Y	Y	Y
Premium Photo Paper Semi-Gloss (EAI) Premium Semigloss Photo Paper (Euro, Asia)	Letter	215.9 x 279.4 mm (8.5"x11")	0.27	250 g/m <sup>2</sup> (66 lb.)	Y	Y	-	-	-	-
	A4	210 x 297 mm (8.3"x11.7")			-	-	Y	Y	Y	Y
	4" x 6"	101.6 x 152.4 mm			Y	Y	Y	Y	Y	Y
Premium Presentation Paper Matte (EAI) Matte Paper-Heavyweight (Euro, Asia)	Letter	215.9 x 279.4 mm (8.5"x11")	0.23	167 g/m <sup>2</sup> (44 lb.)	Y	Y	-	-	-	-
	A4	210 x 297 mm (8.3"x11.7")			Y	Y	Y	Y	Y	Y
	8" x 10"	203.2 x 254 mm			Y	Y	-	-	-	-
Photo Quality Inkjet Paper	A4	210 x 297 mm (8.3"x11.7")	0.13	102 g/m <sup>2</sup> (27 lb.)	-	-	Y	-	Y	-
Envelopes	#10	104.8 x 241.3 mm (4.125"x9.5")	-	75-100 g/m <sup>2</sup> (20-27 lb.)	Y	-	Y	-	Y	-
	#DL	110 x 220 mm			-	-	Y	-	Y	-
	#C6	114 x 162 mm			-	-	Y	-	Y	-

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

\*2: "Y" in the "B" column stands for "Borderless printing is available".



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

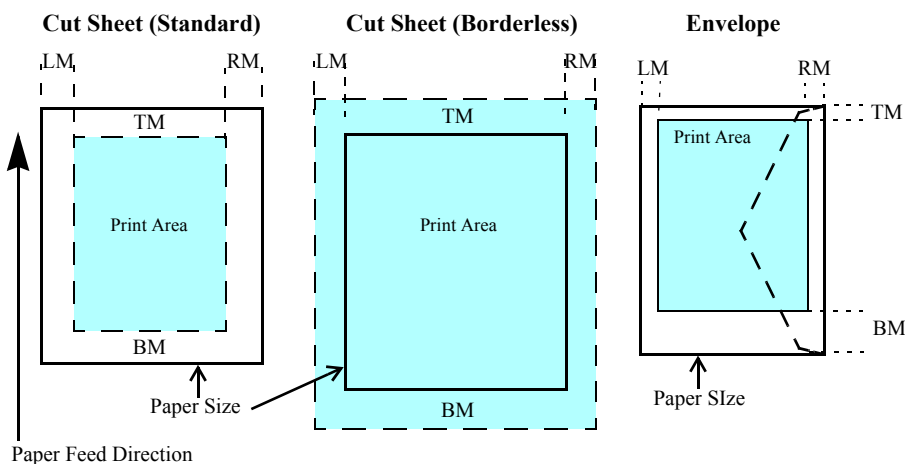
## 1.2.5 Printing Area

The printing area for this printer is shown below.

**Table 1-7. Printing Area (Margins)**

Print Mode	Paper Size	Margin			
		Left	Right	Top	Bottom
Standard print	Any size	3 mm	3 mm	3 mm	3 mm
	Envelope	5 mm	5 mm	3 mm	20 mm
Borderless print	A4/Letter to 2L/5" x 7"/16" x 9"	2.54 mm*	2.54 mm*	2.3 mm*	3.67 mm*
	4" x 6"/Legal				3.39 mm*

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



**Figure 1-2. Printing Area**

## 1.3 Scanner Specifications

**Table 1-8. Basic Specifications**

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

**Table 1-9. ADF Specifications**

Item	Specification
Document loading	Face-up
Maximum document sizes	A4 or US letter or Legal
Supported paper type	Plain paper only
Paper thickness	75 to 95 g/m <sup>2</sup>
Maximum number of documents which can be set	30 sheets (64 g/m <sup>2</sup> ) or 3mm (A4,US Letter) / 10 sheet (Legal) (TBD)
Document path	Feeds from upper tray and ejects to lower tray
Document set position	ASF side

### 1.3.1 Scanning Range

Table 1-10. Scanning Range

RL (read length)	RW (read width)	OLM (left margin)	OTM (top margin)
297 mm	216 mm	1.5 mm	1.5 mm

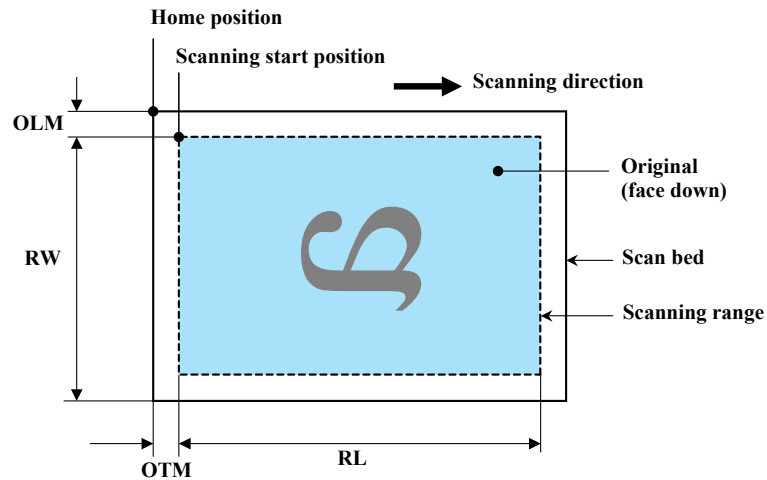


Figure 1-3. Scanning Range

## 1.4 General Specifications

### 1.4.1 Electrical Specifications

Table 1-11. Primary Power Specifications

Item		100-120 V model	220-240 V model
Rated power supply voltage		100 to 120 VAC	220 to 240 VAC
Input voltage range		90 to 132 VAC	198 to 264 VAC
Rated current (Max. rated current)		0.5 A (1.1 A)	0.25 A (0.5 A)
Rated frequency		50 to 60 Hz	
Input frequency range		49.5 to 60.5 Hz	
Energy conservation		International Energy Star Program compliant	
Power consumption	Copy (ISO/IEC24712)	Approx. 15 W	
	Ready	Approx. 6.5 W	
	Sleep mode	Approx. 3 W	
	Off	Approx. 0.2 W	Approx. 0.4 W

Note 1: When no operation is made with the control panel for more than 13 minutes, the panel goes to the sleep mode within 15 minutes.

## 1.4.2 Environmental Conditions

Table 1-12. Environmental Conditions

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

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

\*2: No condensation

\*3: Must be less than 1 month at 40°C.

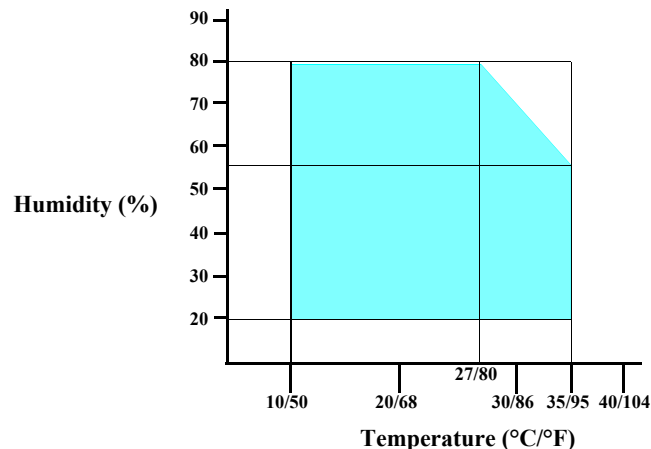


Figure 1-4. Temperature/Humidity Range

### CAUTION



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

## 1.4.3 Durability

- Total print life\*: Black 20,000 pages (3.5% duty, ECMA), Color 10,000 pages (ISO 24712), or five years whichever comes first
- Note\*: A4, Plain Paper, Default Mode
- Printhead: Six billions shots (per nozzle) or five years whichever comes first
- Scanner carriage: 30,000 cycles of carriage movement (TBD)
- Total ADF feeding: 10,000 pages (TBD)

## 1.4.4 Acoustic Noise

- 37.5 dB or less (B&W)  
37.6 dB or less (Color)  
(when printing from PC, on Premium Glossy Photo Paper, in highest quality)

## 1.4.5 Safety Approvals (Safety standards/EMI)

USA	UL60950-1 FCC Part15 Subpart B Class B
Canada	CAN/CSA-C22.2 No.60950-1 CAN/CSA-CEI/IEC CISPR 22 Class B
Mexico	NOM-019-SCFI-1998
Taiwan	CNS13438 Class B CNS14336
EU	EN60950-1 EN55022 Class B EN61000-3-2, EN61000-3-3 EN55024
Germany	EN60950-1
Russia	GOST-R (IEC60950-1, CISPR 22)
Singapore	IEC60950-1
Korea	K60950-1 KN22 Class B KN61000-4-2/-3/-4/-5/-6/-11
China	GB4943 GB9254 Class B, GB17625.1
Hong Kong	IEC60950-1
Argentina	IEC60950-1
Australia	AS/NZS CISPR22 Class B

## 1.5 Interface

The following is the specifications of the USB Interface, FAX Interface and Network Interface mounted on this printer.

### 1.5.1 USB Interface

The table below describes the specifications of the USB device port for connecting with a computer.

**Table 1-13. USB Interface Specifications**

Item	USB Device port
Compatible standards	<ul style="list-style-type: none"> <li>Universal Serial Bus Specifications Revision 2.0</li> <li>Universal Serial Bus Device Class Definition for Printing Devices Version 1.1</li> </ul>
Transfer rate	480 Mbps (High Speed)
Data format	NRZI
Compatible connector	USB Series B
Max. cable length	2 [m] or less

**Table 1-14. Device ID**

When IEEE 1284.4 is Enabled	When IEEE 1284.4 is Disabled
@EJL<SP>ID<CR><LF> MFG:EPSON; CMD:ESCPL2,BDC,D4,D4PX,ESCPRI; MDL: <i>Model Name</i> ; CLS:PRINTER; DES:EPSON<SP> <i>Model Name</i> ; CID:EpsonRGB;	@EJL<SP>ID<CR><LF> MFG:EPSON; CMD:ESCPL2,BDC,ESCPRI; MDL: <i>Model Name</i> ; CLS:PRINTER; DES:EPSON<SP> <i>Model Name</i> ; CID:EpsonRGB;

The “*Model Name*” is replaced as shown in the following table.

**Table 1-15. Model Names Indicated in the Device ID**

Destination	Model Name
North America	WorkForce 310
Asia/Pacific/Mexico	Epson Stylus Office TX510FN
Latin	Epson Stylus Office TX515FN
Euro	Epson Stylus Office BX310FN
China	Epson ME OFFICE 650FN

### 1.5.2 FAX Interface

Port Name	Connector	Description
Line port	RJ11	Connects to phone cable from modular wall jack.
EXT port	RJ11	Connects to TAM or Telephone.

### 1.5.3 Network Interface

The following interface is equipped for the Wired LAN connection. The communication mode can be selected from auto setting or fixed setting.

**Table 1-16. Wired LAN**

Item	Content
Connector	RJ-45 receptacle*: 1 port
Communication Speed	For either 10Base-T or 100Base-TX, the Full Duplex or Half Duplex can be selected.

Note\* : 10Base-T/100Base-TX Ethernet is supported. MDI/MDI-X is selected automatically.

**Table 1-17. Combination of the Wired LAN communication mode settings**

Setting of this printer	Setting of the connected device
Auto Setting	Auto Setting (AUTO)
	100BASE-TX Half Duplex
	10BASE-T Half Duplex
100BASE-TX Full Duplex	100BASE-TX Full Duplex
100BASE-TX Half Duplex	Auto Setting (AUTO)
	100BASE-TX Half Duplex
10BASE-T Full Duplex	10BASE-T Full Duplex
10BASE-T Half Duplex	Auto Setting (AUTO)
	10BASE-T Half Duplex

## 1.6 Control Panel

### 1.6.1 Operation Buttons & LEDs

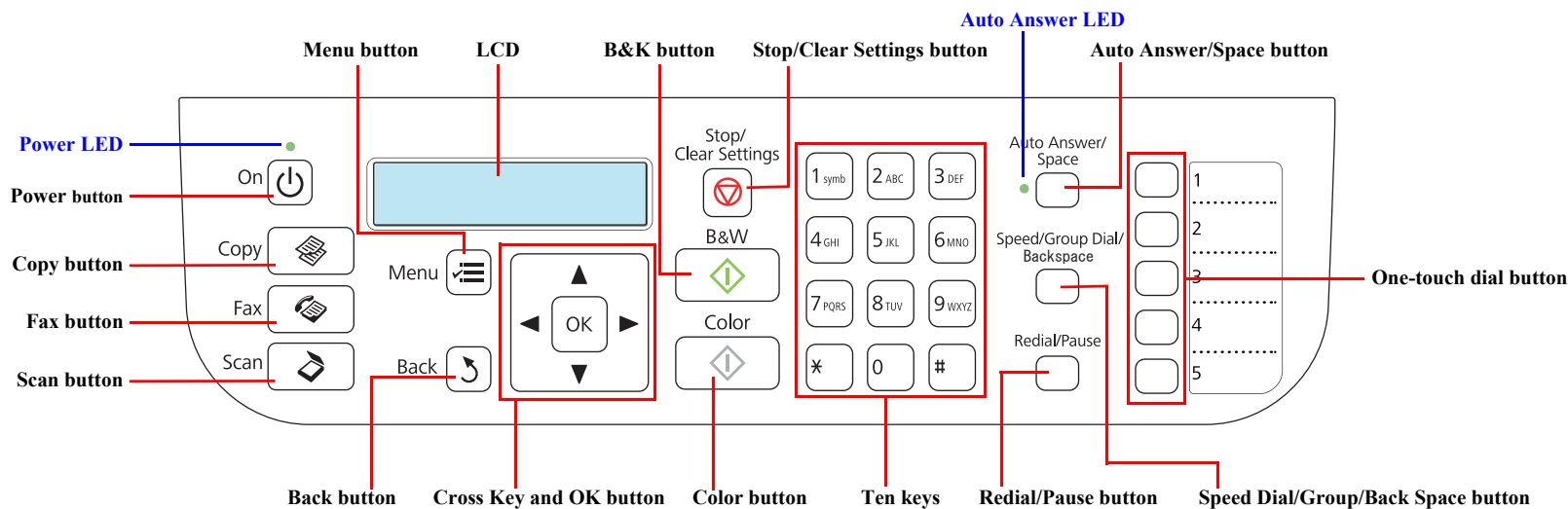


Figure 1-5. Control Panel

Table 1-18. Button Functions

Button	Function
Power	Turns the power ON/OFF.
Copy	Goes to the stand alone copy mode.
FAX	Goes to the fax mode.
Scan	Goes to the scan mode.
Menu	Displays detailed settings for each mode. Each mode has a Maintenance menu.
Cross Key (Up/Down/Left/Right)	Selects a menu items.
OK	Accepts the changed settings
Back	Returns to the previous menu.
Stop/Clear Settings	Stops copying/faxing or resets settings.
Ten keys	Enters alphameric characters.
Auto Answer/Space	<ul style="list-style-type: none"> <li>• Turns ON/OFF the auto answer settings.</li> <li>• Enters a space when entering/editing numbers/characters.</li> </ul>
Speed Dial/Back Space	<ul style="list-style-type: none"> <li>• Goes to the call-up screen for speed dials/group dials.</li> <li>• Enters a back space when entering/editing numbers/characters.</li> </ul>

Table 1-18. Button Functions

Button	Function
Redial/Pause	<ul style="list-style-type: none"> <li>• Displays last number dialed.</li> <li>• Enters a pause when entering or editing numbers.</li> </ul>
B&W	Starts copying/faxing in black and white.
Color	Starts copying/faxing in color.
One-touch dial	Displays speed dial/group dial list in Copy/Fax mode. Assigns No. 1 to 5 to each button.

Table 1-19. LED Functions

LED	Function
Power (Green)	<ul style="list-style-type: none"> <li>• Flashes while powering ON/OFF.</li> <li>• Flashes during some sequence is in progress.</li> <li>• Flashes when a fatal error occurs.</li> <li>• Lights when the status is other than above.</li> </ul>
Auto Answer (Green)	<ul style="list-style-type: none"> <li>• Lights when Auto answer is on.</li> <li>• Flashes when a fatal error occurs.</li> </ul>



## 1.7 Specification for Each Function

### 1.7.1 Stand-alone Copy Function

#### 1.7.1.1 Supported Paper and Copy Mode

Table 1-20. Supported Paper and Copy Mode

Paper Type (UI notation)	Size	Print Quality	Resolution	Dot Size	Bi-d	Micro Weave	Border- less
Plain paper	A4, Letter* <sup>1</sup>	Draft	360x180	Eco	O N	OFF	NA
		Standard	360x360	VSD1	ON	OFF	NA
		Best	720x720	VSD3	ON	ON	NA
Matte paper	A4, Letter* <sup>1</sup>	Standard	1440x720	VSD3	ON	ON	OK
Glossy	4x6, 5x7* <sup>2</sup> , A4, Letter* <sup>1</sup>	Standard	1440x720	VSD3	ON	ON	OK
Prem. Glossy	4x6, 5x7, A4, Letter* <sup>1</sup>	Standard	1440x720	VSD3	ON	ON	OK
Ultra Glossy	4x6, 5x7, A4, Letter* <sup>1</sup>	Standard	1440x720	VSD3	ON	ON	OK

Note \*1: Supported for EAI only

\*2: Borderless printing of 5x7 size is not supported for EAI.

Note : In the case of copy using ADF, only the plain paper is available.

#### 1.7.1.2 Stand-alone Copy Menu

The table below shows the stand-alone copy mode menu and their defaults of the WorkForce 310/Epson Stylus Office TX510FN/TX515FN/BX310FN/ME OFFICE 650FN.

Table 1-21. Copy Menus

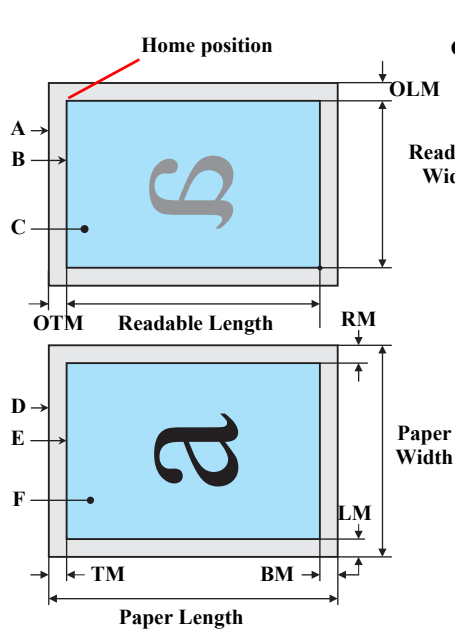
Menu		Function	Default Value
Number of copies		Sets the number of copies within the range of 1 to 99.	---
Layout		Selects from the following two layouts: <ul style="list-style-type: none"> <li>• With Border (normal layout with 3mm margins)</li> <li>• Borderless (no margins)</li> </ul>	With Border
Print setting	Paper type	Selects paper type from the options shown in <a href="#">Table 1-20</a> .	Plain Paper
	Paper size	Selects paper size from the options shown in <a href="#">Table 1-20</a> .	A4, Letter*
	Quality	Selects print quality from the options shown in <a href="#">Table 1-20</a> .	Standard
	Zoom	Selects Actual, Auto Fit Page, or Legal > Letter*. Or reduction/enlargement ratio can be specified within the range of 25% to 400%.	Actual
Density		Selects from the nine density levels of -4 to ±0 to +4.	±0
Expansion (for borderless print)		Selects the margins level (margins bleed off the edges of paper) from the Standard (100%), Mid. (50%) or Min. (0%).	Standard

Note \*: Supported only for EAI.

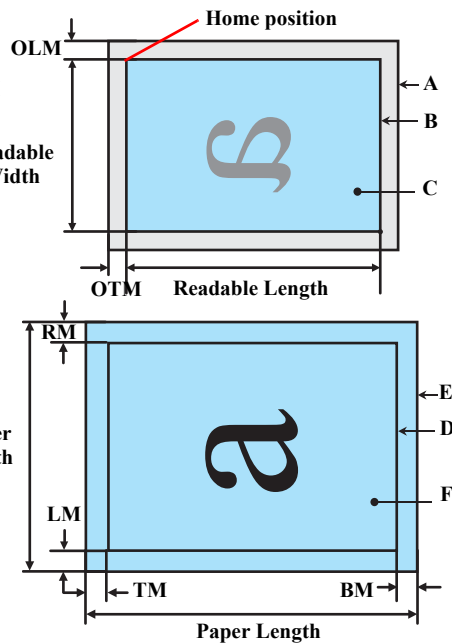
### 1.7.1.3 Relation Between Original and Copy

The scanning start position is located on the front right of the scan bed. The relations between the original placed face down and its copy are as follows.

#### ■ Standard copy



#### ■ Borderless copy



Scan / Print direction



Figure 1-6. Relation Between Original and Copy (Borderless/With Borders)

#### Original Document

A	Scan bed	---
B	Scan area	"1-10 Scanning Range" (p.18)
C	Original (face down)	---
OTM	Top margin (out of scan range)	"1-10 Scanning Range" (p.18)
OLM	Left margin (out of scan range)	"1-10 Scanning Range" (p.18)

#### Copied Document

D	Copied paper	---
E	Print area	"1-7 Printing Area (Margins)" (p.17)
F	Copy	---
LM, RM	Left margin, Right margin	"1-7 Printing Area (Margins)" (p.17)
TM, BM	Top margin, Bottom margin	

### 1.7.1.4 Copy Speed

Table 1-22. Copy Speed (not using ADF)

Copy Conditions (eMemo3, A4 size)		Copy Speed
Draft 360 x 180	Monochrome copy	38 cpm
	Color copy	12 cpm
Default 360 x 360	Monochrome copy	27 cpm
	Color copy	5 cpm

Table 1-23. Copy Speed (using ADF) (TBD)

Copy Conditions		Copy Speed	
		per copy	per five copies
Default	Monochrome copy	2.8 cpm	3.3 cpm
	Color copy	0.6 cpm	0.6 cpm
Best	Monochrome copy	1.3 cpm	1.4 cpm
	Color copy	0.1 cpm	0.1 cpm

## 1.7.2 Scan Function

The following shows the scan menu. When each menu is selected, Epson Scan installed in PC runs each function.

- Scan to PC
- Scan to PDF
- Scan to Email

After selecting one of those above, the selection menu of the connected PC appears. When connected via USB, “USB Connection” is displayed. When connected via a wired network, the PC name connected via the network is displayed (selecting “Last Used” can choose the PC connected last). Then the function is run on the selected PC.

## 1.7.3 FAX Function

The following shows the fax functions and specifications of this printer.

Note : The default settings are underlined in the following tables.

### 1.7.3.1 Basic Specifications

Table 1-24. Basic Specifications

Function	Specification
FAX type	Desktop facsimile with sending/receiving capabilities (Super G3, B&W and color scan)
Supported line	Telephone subscriber line
Modem speed	Up to 33.6kbps
Error Correction Mode	CCITU/ITU Group 3 fax with Error Correction Mode
Speed dials (Max.)	60 names & numbers
Document memory (Max.)	180 pages (ITU-T Chart No.1)
PC FAX	Support
Transmit speed	Approx. 3 seconds per page

### 1.7.3.2 Supported Functions

#### □ Scan

Function	Specification	
Resolution	Monochrome	<u>Standard</u> : 8 pixel/mm x 3.85 lines/mm
		Fine: 8 pixel/mm x 7.7 lines/mm
		Photo: 8 pixel/mm x 7.7 lines/mm (with error diffusion)
	Color*	Fine: 200 x 200 dpi
		Photo: 200 x 200 dpi
Contrast	9 levels	
Scan size	Flatbed:	Fixed to 216 mm x 297 mm
	ADF:	210 to 216 mm x 279 to 335.6 mm

Note\* : When color fax fine or photo can be selected.

## □ Print

Function	Specification
Paper size	EAI/Latin: <u>Letter</u> /A4/legal Others: A4
Paper type	Fixed to plain paper
Resolution	Standard: 360 x 360 dpi
Dot size	VSD1
Bi-directional	Available
Microweave	N/A
Borderless printing	N/A
Automatic reduction	<u>On</u> /Off
Backup fax reception and reprint	Available* <sup>1</sup>
List	Type: Last transaction (off/ <u>send error</u> /every send) Fax log (last 30 transactions)* <sup>2</sup> Speed dial list Group Dial List Power-fail report Protocol trace
	Font size: 12pt
	Language: Depends on destination
Size mismatch	Print* <sup>3</sup>
Footer	N/A

Note \*1: Volatile memory (approx. 2MB) to save FAX data is installed in this printer. When received FAX data is reprinted from menu, it will print from latest data in the memory. If the amount of memory is insufficient when receiving FAX, the oldest data will be deleted in order to save the memory for receiving FAX.

\*2: Displaying on LCD is also available in addition to printing log.

\*3: The printer stops printing after printing the first page on the current paper. The received fax images (data) can be reprinted.

## □ User Setting

Function	Specification
Volume	Buzzer: <u>On</u> /Off
Date and time	Display*: dd.mm.yyyy/mm.dd.yyyy/yyyy.mm.dd hh:mm (12h/24h)
	Backup: N/A
	Daylight time: Available
Pending job viewer	N/A (cannot reserve)
Elapsed time	Available (displays time to redial)
External memory	N/A
Language	Depends on destination
Audio monitor	Available (buzzer)

Note\* : The display format can be changed from the user interface.

## □ Dialing

Function	Specification	
Speed/Group dial	Total registration	60 (Max.)
	Characters available for registering number	1-9, 0, *, #, - (pause), space
	Total digits for registering number	64 (Max.)
	Characters available for registering name	a-z, A-Z, 1-9, 0, @, _ -&/:;, ?*()' =+#!%~, space
	Total characters for registering name	30 (Max.)
	Options	N/A
	Selection method	Press the Speed Dial/Group Dial/Back Space button to display the menu
	Function	Recalls fax numbers*1
Registration of group dial	30 (MAX)	
One-touch dial	There are 5 one-touch dial key on panel. It can install Speed/Group dial at 0-5 button.	
Group dial	N/A	
Direct dial	Total digits	64 (Max.)
Redial	Busy	Fixed to two times
	No answer	
	Buffer	Last one number
Redial interval	Fixed to one minute	
Redial attempts	Fixed to two times	
Dial mode	EMO	Tone/Pulse 10pps
	Others	Tone*2
PBX	N/A	
Dial prefix	N/A	
On-hook dialing	N/A	

Note \*1: The fax numbers can be edited from the Fax settings menu.

\*2: Basically, only tone is available, but pulse can be selected with PC support tool for some destinations. (TBD)

## □ Answering

Function	Specification	
Auto answer	On/ <u>Off</u> (with answer mode button)	
	EAI/Latin	Ring to answer: 1-9 times (The default is 4)
	SGP/TWN	Ring to answer: 2 only
	NZL	Ring to answer: 4-9 times (The default is 5)
	Other	Ring to answer: 1-9 times (The default is 5)
DRD	SGP/AUS/NZL/DNK/HKG	On/ <u>Off</u>
	Other	<u>All</u> /single/double/triple/double&triple
TAM/IF	Available	
Easy receive	N/A	
Answer prefix	N/A	
Caller ID	N/A	
FAX/TEL mode	N/A	
Remote receive/remote telephone	N/A	

## □ Transmission

Function	Specification	
Sequential broadcast	Monochrome only	
Direct transmission	Color only	
Memory transmission	Monochrome only	
Delayed memory transmission	Available	
Multi-page transmission	Total pages	100 (Max.)
	Data compression	Monochrome: MH/MR/MMR* Color: JPEG
Transmission reservation	N/A	
Fax header (Owner information)	Characters available	a-z, A-Z, 1-9, 0, @, ., - & / :, ;, ? * ( ) ' = + # ! % ~, space
	Total characters	40 (Max.)
Fax header (Own number)	Characters available	1-9, 0, +, space
	Total characters	20 (Max.)
Overseas mode	N/A	
Poll to send	N/A	

Note\* : The compression method is automatically selected depending on the receiver.

## □ Reception

Function	Specification
FAX forwarding	N/A
Block junk faxes	N/A
Block no-ID calls	N/A
Poll to receive	Available

## □ Communication

Function	Specification
ECM	<u>On</u> /Off
V.34	<u>On</u> /Off
Region	Depends on destination
JBIG	N/A

## □ Telephone

Function	Specification
External telephone	Jack: Available
	Handset: N/A
	Hook detect: Available
	Manual send: Available
	Manual receive: Available













## □ Others

Function	Specification
Power save mode	Available
Receive and print during power off	N/A
Copy during faxing	N/A
Scan during faxing	N/A
Save received data during power off	N/A
Self-diagnostic function*	Available

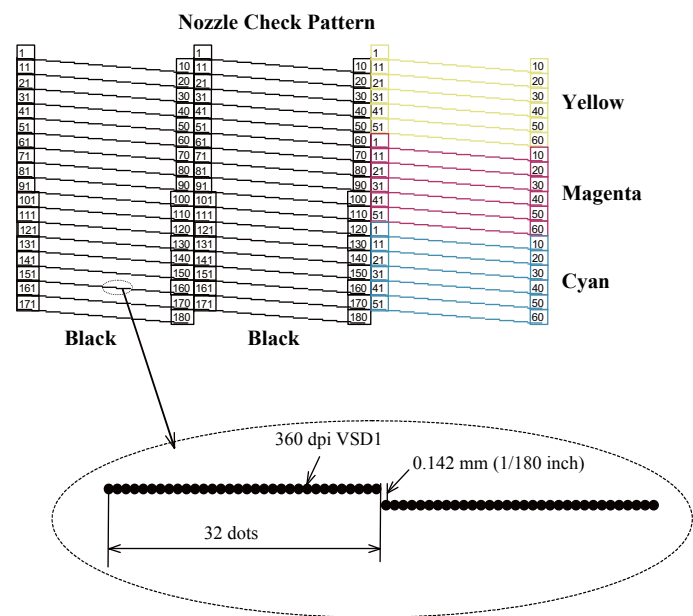
Note : By selecting the menu in FAX mode or by running the function of the FAX utility installed on your PC, you can self-diagnose the sending/receiving FAX functions. The result will be printed as a report.

## 1.7.4 Maintenance/Confirm Network Settings/ Print Network Status Sheet

The menu on each mode for WorkForce 310/Epson Stylus Office TX510FN/ TX515FN/BX310FN/ME OFFICE 650FN have “Maintenance”, “Confirm Network Settings”, and “Print Network Status Sheet”. In this menu, various settings, check and maintenance can be executed. The following explains the details.

Menu	Item	Function										
Maintenance	Ink Levels	<div>The current ink levels of each of the cartridges are displayed in bar chart consisting of three levels as below.</div> <table><tr><th>Ink level</th><td>100 to 80 %</td><td>79 to 40 %</td><td>39 to 10 %</td><td>Less than 10 %</td></tr><tr><th>LCD display</th><td></td><td></td><td></td><td></td></tr></table>	Ink level	100 to 80 %	79 to 40 %	39 to 10 %	Less than 10 %	LCD display				
	Ink level	100 to 80 %	79 to 40 %	39 to 10 %	Less than 10 %							
	LCD display											
	Nozzle Check	A nozzle check pattern to check the Printhead nozzles status is printed. A head cleaning can be run if necessary. See <a href="#">Figure 1-7</a> .										
	Head Cleaning	Runs a printhead cleaning. The cleaning cannot be made when low ink level is detected. In such case, an ink low error is displayed instead of running the cleaning.										
	Head Alignment	Adjustment to improve the bi-directional print quality. The instructions for the adjustment are displayed on the LCD.										
	Ink Cartridge Replacement	Runs the ink cartridge replacement sequence. And when an ink low or out error occurs, the user can run the replacement sequence by following the instructions displayed on the LCD.										
	Sound	Sets On/Off of Beep										
	LCD Contrast	This allows the user to adjust the brightness of the LCD. The default value for each of the four modes is “9”, and can be changed within the range of 1 to 16.										
Scroll Speed	Sets LCD’s scrolling speed											
Date/Time	Sets date and time											

Menu	Item	Function
Maintenance	Daylight Saving Time	Changes various settings of daylight time
	Country/Region	Sets country and region
	Language	Changes languages
Confirm Network Settings	Printer Name	Printer name on network
	Connection	<p>One of below from connecting condition is displayed based on the current setting.</p> <ul style="list-style-type: none"> <li>• 10BASE-T Half Duplex</li> <li>• 10BASE-T Full Duplex</li> <li>• 100BASE-TX Half Duplex</li> <li>• 100BASE-TX Full Duplex</li> <li>• Disconnected</li> </ul>
	Obtain IP Address	Current setting (Auto/Manual) for obtaining IP address
	IP Address	Current IP Address setting
	Subnet Mask	Current Subnet Mask setting
	Gateway	Current Gateway setting
	MAC Address	MAC Address for this product
Print Network Status Sheet		Prints the Current Network Settings as Network Status Sheet. See <a href="#">Figure 1-8</a> for the sample.



Note : The numbers shown in the figure are nozzle numbers. The numbers and the color names are not printed on an actual nozzle check pattern.

Figure 1-7. Nozzle Check Pattern

HHHH EPSON Status Sheet HHHH	
<General Information>	
MAC Address	XX : XX : XX : XX : XX : XX
Software	\$\$ . \$\$\$\$\$\$ \$\$ ( --- / \$\$\$\$\$\$\$\$ )
Printer Model	\$\$\$\$\$\$\$\$
Printer Name	\$\$\$\$\$\$\$\$
<Ethernet>	
Network Status	Auto ( 100BASE-TX, Full Duplex )
Port Type	Auto
<TCP/IP>	
Obtain IP Address	Manual
IP Address	XXX. XXX. XXX. XXX
Subnet Mask	XXX. XXX. XXX. XXX
Default Gateway	XXX. XXX. XXX. XXX
APIPA	Disable
Bonjour	Disable
Bonjour Name	\$\$\$\$\$\$\$\$. local.
Bonjour Printer Name	\$\$\$\$\$\$\$\$
<Vista>	
WSD	Disable
<Idle Timeout>	
LPR	XXX [sec]
Port9100	XXX [sec]
WSD-Print	XXX [sec]
WSD-Scan	XXX [sec]
HHHHHHHHHH 1/1 HHHHHHHHHHHH	

Figure 1-8. Sample of Network Status Sheet



CHAPTER

2

## OPERATING PRINCIPLES

## 2.1 Overview

CHECK  
POINT

■ In this chapter, the product names are called as follows:

Notation	Product name
WorkForce 310 series	WorkForce 310, Epson Stylus Office TX510FN/TX515FN/BX310FN/ME OFFICE 650FN
WorkForce 520 series	WorkForce 520/525, Epson Stylus Office TX525FW/BX320FW
WorkForce 320 series	WorkForce 320, Epson Stylus Office TX320F/BX305F/TX325F/ME OFFICE 620F
WorkForce 325 series	WorkForce 325/323, Epson Stylus Office BX305FW

■ Description in this chapter is applied to WorkForce 310/520/320/325 series. However, see below for the specifications of the printhead and CR Motor of WorkForce 320/325 series, and the power-on sequence of WorkForce 520/320/325 series.

- "8.2 OPERATING PRINCIPLES " (p.158)

This section describes the operating principles of the Printer Mechanism of WorkForce 310/520/320/325 series.

### 2.1.1 Printer Mechanism

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

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

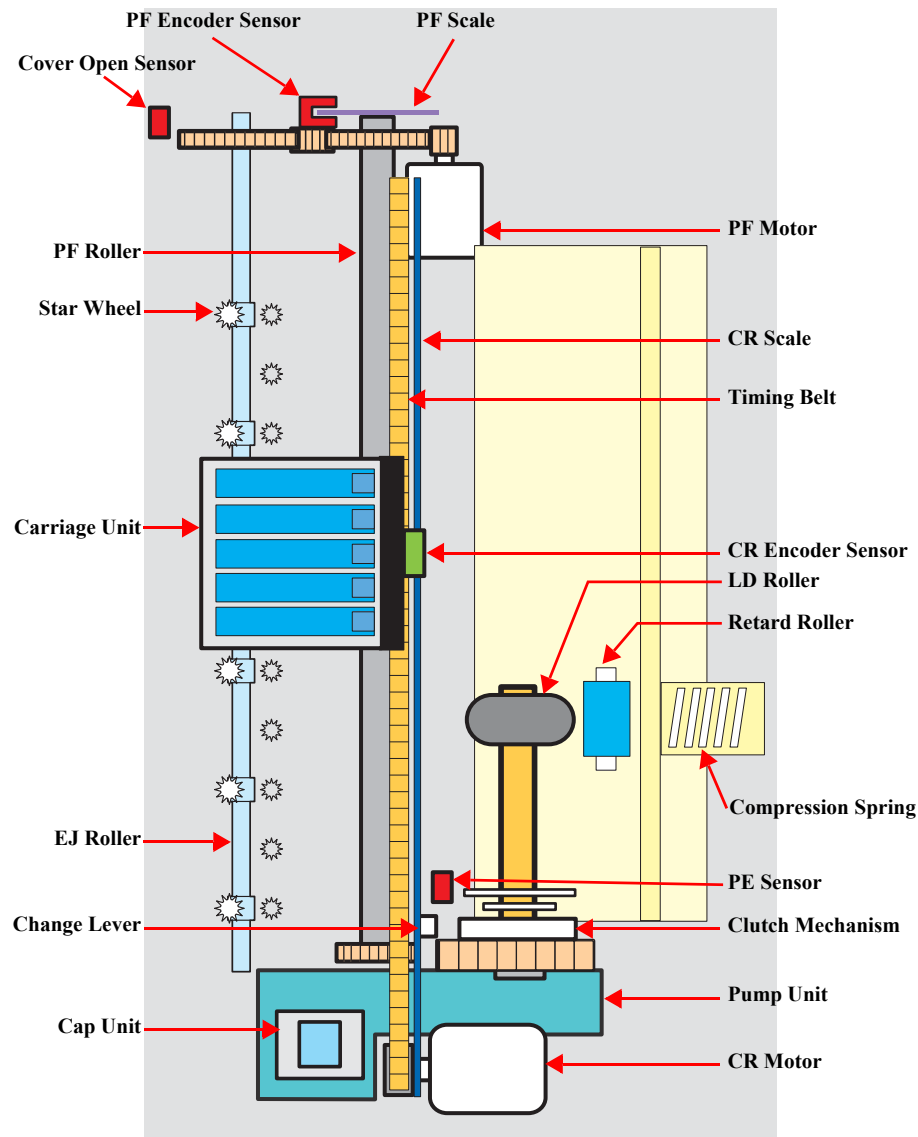


Figure 2-1. Printer Mechanism Block Diagram

## 2.1.2 Motors & Sensors

The printer mechanism of this product is equipped with the following printheads, motors and sensors.

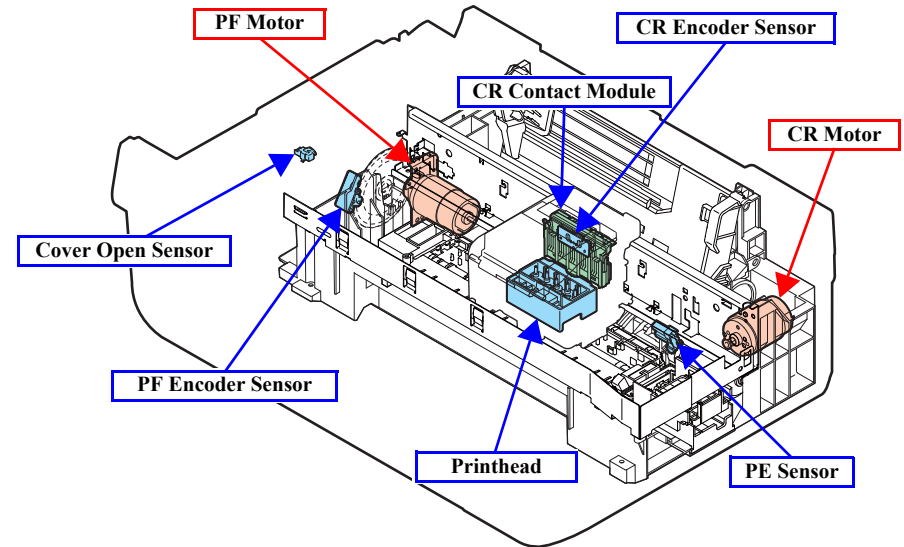
**Table 2-1. Printer Mechanism Motors & Sensors**

Name	Specification
Printhead*	F3-3 Mach Turbo2 head: Black: 180 nozzles x 2 Color: 59 nozzles x 3 (cyan, magenta, yellow)
CR Motor*	Type: DC motor Drive voltage: 42 VDC $\pm$ 5 % (DRV IC voltage) Coil resistance: 22.7 $\Omega$ $\pm$ 10 % Inductance: 15.9 mH (1 KHz) Drive method: PWM, constant-current chopping
PF Motor	Type: DC motor Drive voltage: 42 VDC $\pm$ 5 % (DRV IC voltage) Coil resistance: 21.2 $\Omega$ $\pm$ 10 % Inductance: 17.2 mH (1 KHz) Drive method: PWM, constant-current chopping
PE Sensor	Purpose: Detection of paper top and bottom edges, for control to set paper at the print start position Type: Photo interrupter
CR Contact Module	CSIC board
CR Encoder Sensor	Type: Photo interrupter Resolution: 180 pulse/inch
PF Encoder Sensor	Type: Photo interrupter Resolution: 180 pulse/inch
Cover Open Sensor	Purpose: To detect the cover's (scanner unit) open/close status Type: Mechanical contact point

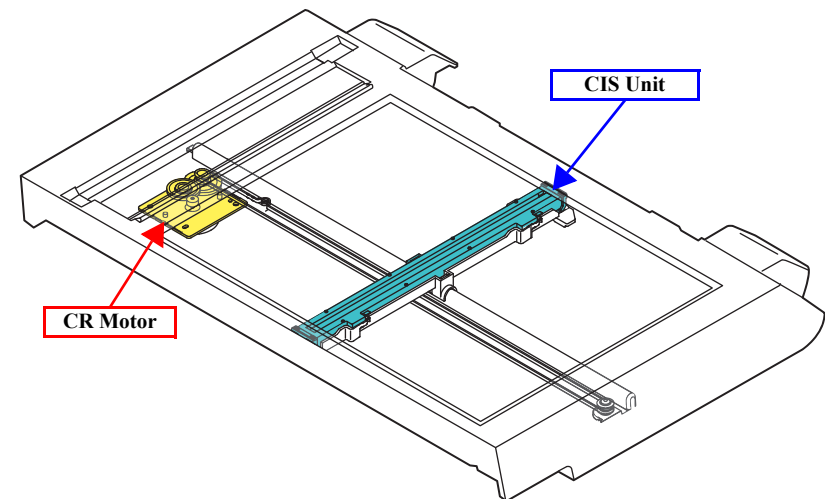
Note "\*": These specifications are applied to WorkForce 310/520 series only. For WorkForce 320/325 series, see [chapter 8 "OPERATING PRINCIPLES"](#) (p.158).

**Table 2-2. Scanner Mechanism CIS & Motor**

Name	Specification
CIS Unit	Resolution: 10200 pixel 16 bit per pixel (input), 8bit per pixel (output)
CR Motor	Type: 2-phase 96-pole PM type stepping motor Voltage: 42 VDC $\pm$ 5 % (DRV IC voltage) Coil resistance: 43 $\Omega$ $\pm$ 10 % (at 25 °C) (OKI) 38 $\Omega$ $\pm$ 10 % (at 25 °C) (MITSUMI) Inductance: 24.5 mH $\pm$ 20 % (at 1 KHz, 1 Vrms) (OKI) 23 mH $\pm$ 20 % (at 1 KHz, 1 Vrms) (MITSUMI) Drive method: Bipolar constant current control



**Figure 2-2. Motors & Sensors in Printer Mechanism**



**Figure 2-3. CIS Unit and CR Motor in Scanner Mechanism**

Table 2-3. ADF Mechanism Motors &amp; Sensors

Name	Specification	
ADF DOC (Detection of document) Sensor	Purpose:	To detect the presence of a document on the document tray
	Type:	Photo interrupter
ADF PE Sensor	Purpose:	Detection of paper top and bottom edges
	Type:	Photo interrupter
ADF Motor*	Type:	4-phase 96-pole PM type stepping motor
	Voltage:	42 VDC $\pm$ 5 % (DRV IC voltage)
	Coil resistance:	29.3 $\Omega$ $\pm$ 7 % (at 20 °C) (OKI)
	Inductance:	15 mH/phase (at 1 KHz, 1 Vrms) (OKI)
	Drive method:	Bipolar constant current chopper method

Note "\*": These specifications are applied to WorkForce 310/320 series only. For WorkForce 520/325 series, see [chapter 8 "OPERATING PRINCIPLES"](#) (p.158).

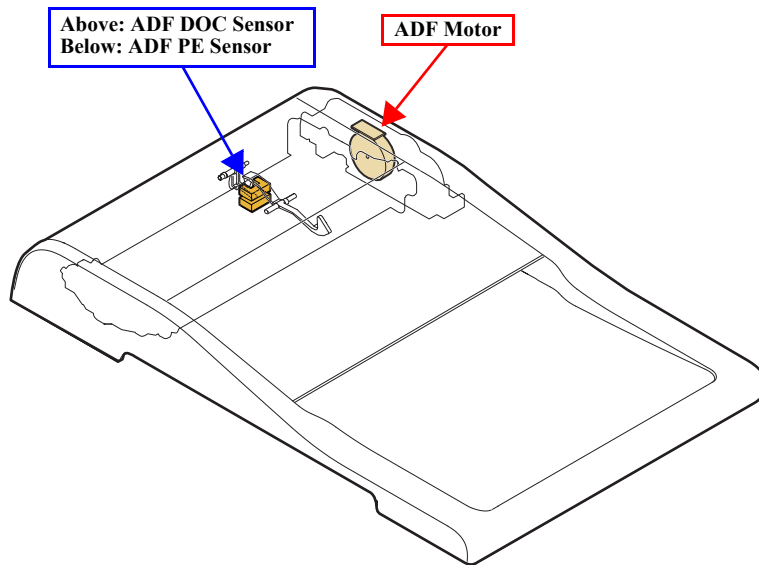


Figure 2-4. Motors &amp; Sensors in ADF Mechanism

## 2.1.3 Printhead

WorkForce 310/520 series employs the F3-3 Mach Turbo2 type printhead.

### □ Nozzle configuration

- Black: 180 nozzles x 2
- Color: 59 nozzles x 3 (cyan, magenta, yellow)

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

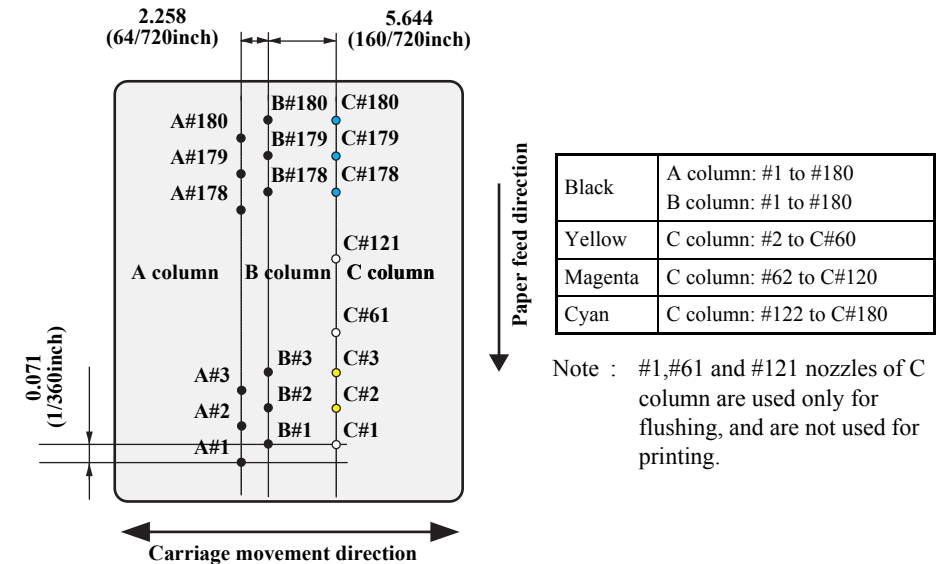


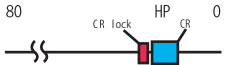


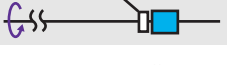



Figure 2-5. Nozzle Layout

## 2.1.4 Power-On Sequence

This section describes operations of power-on sequence with the following two conditions.

- Condition 1: Normal power-on sequence (*refer to Table 2-4*)
  - Turning on the printer after turning off the printer without a error.
  - Completing ink charge.
  - No paper on the paper path.
  - The Printhead is capped with the Cap of the Ink System.
  - The Carriage is fixed by the CR Lock.
- Condition 2: Power-on sequence after recovering from a paper jam error (*refer to Table 2-5*)
  - Turning on the printer after turning off the printer with a paper jam error.
  - There is a paper on the paper path without detecting by PE sensor.

**Table 2-4. Condition 1: Normal power-on sequence**

Operation <sup>*1</sup>	Carriage/PF roller movement and position <sup>*2</sup>
<b>1. Checking waste ink overflow</b>	
<b>2. Avoiding deadlock sequence<sup>*3</sup></b>	
2-1. The carriage moves to the 0-digit side slowly and checks if it touches the CR lock.	
2-2. The carriage slowly moves to the 80-digit side.	
2-3. The PF Motor rotates in a clockwise direction, and releases the CR lock.	
2-4. The carriage moves to the 0-digit side slowly and checks if it touches the Right Frame.	
2-5. The carriage returns to its home position.	
<b>3. Releasing the CR lock</b>	
3-1. The PF motor rotates in a clockwise direction, and releases the CR lock.	

**Table 2-4. Condition 1: Normal power-on sequence**


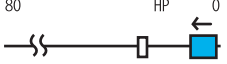
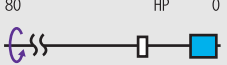



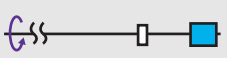
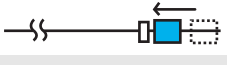
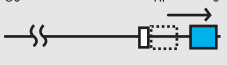
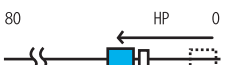




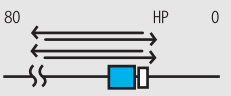
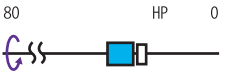
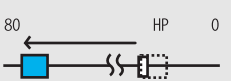
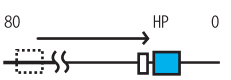
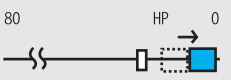
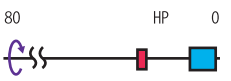

Operation <sup>*1</sup>	Carriage/PF roller movement and position <sup>*2</sup>
<b>4. Seeking the home position</b>	
4-1. The carriage moves to the 0-digit side slowly and checks if it touches the Right Frame.	
4-2. The carriage slowly moves to the CR lock set position.	
4-3. The PF motor rotates in a clockwise direction, and releases the CR lock.	
4-4. The PF motor rotates in a counterclockwise direction, and sets the CR lock.	
4-5. The carriage moves to the 80-digit side slowly and checks if it touches the CR lock.	
4-6. The carriage slowly moves to the 0-digit side to the CR lock set position.	
4-7. The PF motor rotates in a clockwise direction, and releases the CR lock.	
4-8. The carriage moves to the 80-digit side slowly and checks if it does not touch the CR lock.	
4-9. The carriage slowly moves to its original position, and home position is fixed. Afterward, the carriage position is monitored according to the signals from the CR Encoder.	
<b>5. Checking for remaining paper on the paper path and measurement of the PF Motor</b>	
5-1. The carriage slowly moves to the ASF trigger position.	
5-2. Checks if paper exists by the PE sensor <sup>*4</sup> and the PF Motor rotates in a clockwise direction for one second. (PF initialization)	
5-3. The carriage slowly moves to the 0-digit side to the ASF trigger holding position.	
5-4. The PF motor rotates in a clockwise direction for two seconds, and checks load measurement. <sup>*5</sup>	

Table 2-4. Condition 1: Normal power-on sequence

Operation <sup>*1</sup>	Carriage/PF roller movement and position <sup>*2</sup>
<b>6. Low temperature operation sequence<sup>*6</sup></b>	
6-1. The PF motor rotates in a clockwise direction, and releases the CR lock.	
6-2. The carriage moves back and forth between CR lock and the 80-digit side for two times.	
<b>7. Detecting ink cartridge and initializing ink system<sup>*7</sup></b>	
7-1. After moving the PF motor rotates in a clockwise direction to release the CR lock, rotates the PF motor again in a clockwise direction for one second, and resets the PF roller. <sup>*8</sup>	
7-2. After the carriage moves to the 80-digit side and checks the ink end sensor, detects the ink remaining.	
7-3. The carriage quickly returns to its home position.	
<b>8. CR lock setting<sup>*9</sup></b>	
8-1. The carriage slowly moves to the CR lock set position.	
8-2. The PF motor rotates in a counterclockwise direction, and sets the CR lock.	
8-3. The carriage slowly returns to its home position.	

Note \*1: The rotation direction of the PF Motor is as follows.

Clockwise direction : Paper is fed normally

Counterclockwise direction : Paper is fed backward

\*2: The condition of the CR lock is as follows.

Red : CR lock is set

White : CR lock is released

\*3: Checks if the carriage is not deadlock such as the CR lock is caught in the gap of the carriage.

\*4: Eject the paper if any.

\*5: When the paper exists, the existing measurement value is read out and PF motor does not rotate.

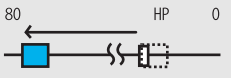
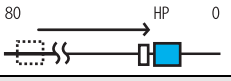
\*6: Executes when the detected temperature is under 5 °C (41°F) by the thermistor on the Printhead.

\*7: The empty sanction operation may occur depending on the situation.

\*8: When the paper is remained in the printer, the paper is forcibly ejected to rotate the PF Roller.

\*9: For enhancing throughput, the CR lock is actually set at the beginning of power-saving mode.

Table 2-5. Condition 2: Power-on sequence after recovering from a paper jam error

Operation	Carriage/PF Roller movement and position
Executes No.1 to No.5 on normal power-on sequence ( <a href="#">Table 2-4</a> ).	
<b>6. Detecting remaining paper</b>	
6-1. The carriage moves to the 80-digit side and checks if there is any paper remained. <sup>*1</sup>	
6-2. The carriage quickly returns to its home position, and displays on the LCD that the paper jam error occurs.	
When the user removes the paper and releases the paper jam error on panel operation, power-on sequence from No.1 of normal power-on sequence ( <a href="#">Table 2-4</a> ) is executed. <sup>*2</sup>	

Note \*1: The “paper exists” is detected when the carriage touches the paper. When “paper does not exist” is detected, it executes operation on or after No.6 in power-on sequence of condition 1 ([Table 2-4](#)).

\*2: When the paper jam error is not solved after repeating twice of the operation on condition 2 ([Table 2-5](#)), it becomes paper jam fatal error for third time.

## 2.1.5 Printer Initialization

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

1. Hardware initialization  
This printer is initialized when turning the printer power on, or printer recognized the cold-reset command (remote RS command).  
When printer is initialized, the following actions are performed.
  - (a) Initializes printer mechanism
  - (b) Clears input data buffer
  - (c) Clears print buffer
  - (d) Sets default values
2. Operator initialization  
Initialization when resetting the USB software, and the following are performed.
  - (a) Clears input data buffer
  - (b) Clears print buffer
  - (c) Sets default values
3. Software initialization  
The ESC@ command also initialize the printer.  
When printer is initialized, the following actions are performed.
  - (a) Clears print buffer
  - (b) Sets default values
4. IEEE 1284.4 “rs” command initialization  
The printer recognized the IEEE 1284.4 “rs” command.  
When printer is initialized, the following action is performed.
  - Initialization when an error occurs.
    - (a) Initializes printer mechanism
    - (b) Clears input data buffer
    - (c) Clears print buffer
    - (d) Sets default values
  - Initialization in normal operation
    - (a) Clears input data buffer
    - (b) Clears print buffer
    - (c) Sets default values

CHAPTER

3

## TROUBLESHOOTING



## 3.1 Overview

This chapter describes how to solve problems.

### WARNING



- To avoid electric shocks, be careful when checking the electrical circuit boards below while the power is on.

Notation	Main Board	Panel Board
WorkForce 310 series	CA49 MAIN	CA49 Panel boards
WorkForce 520 series	CA78 MAIN	CA78 Panel boards
WorkForce 320 series	CA79 MAIN	CA49 Panel boards
WorkForce 325 series	CB08 MAIN	CB08 Panel board

- Touching an FET, transistor or heat sink with one hand while touching a metal part of the mechanism with the other hand could result in an electric shock, so carefully avoid this.
- After initial filling of ink has been repeated several times, immediate moving or tilting of the printer could result in leaking of ink that has not been completely absorbed by the Waste Ink Pad. When initial filling of ink has been repeated several times, check the ink remaining in the tip of the Waste Ink Tube and the waste ink not absorbed by the Waste Ink Pad before moving the printer.

### CHECK POINT



- Disassembly and reassembly of parts is often required when identifying the causes of problems. The parts should be disassembled and re-assembled correctly while referring to **“DISASSEMBLY/ASSEMBLY” (p.80)** so that the operation and status of each check item can be correctly verified.
- Some individual part and units may require adjustment once they are removed or replaced. If removing or replacing parts which have specific instructions for adjustment included in **“DISASSEMBLY/ASSEMBLY” (p.80)**, be sure to make these adjustments after repairing the problem location.
- In this chapter, the product names are called as follows:

Notation	Product name
WorkForce 310 series	WorkForce 310, Epson Stylus Office TX510FN/TX515FN/BX310FN/ME OFFICE 650FN
WorkForce 520 series	WorkForce 520/525, Epson Stylus Office TX525FW/BX320FW
WorkForce 320 series	WorkForce 320, Epson Stylus Office TX320F/BX305F/TX325F/ME OFFICE 620F
WorkForce 325 series	WorkForce 325/323, Epson Stylus Office BX305FW

- Basically, description in this chapter is based on WorkForce 310 series, but the remedies and instructions in the checkpoints can be applied to WorkForce 520/320/325 series in the same manner.  
For WorkForce 320/325 series; however, the locations of the connectors on the Main Board and the shape of the Main Board are different. Therefore, if the description contains the connectors of the Main Board, use the number and the location of the connectors as appropriate for WorkForce 320/325 series referring below.
  - **“8.3 TROUBLESHOOTING ” (p.161)**

### 3.1.1 Specified Tools

This printer does not require any specified tools for troubleshooting.

### 3.1.2 Preliminary Checks

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

- ☐ The power supply voltage must be within the specification limits. (Measure the voltage at the wall socket.)
- ☐ The power code must be free from damage, short circuit or breakage, or miswiring in the power code.
- ☐ The printer must be grounded properly.
- ☐ The printer should not be located in a place where it can be exposed to too high or low temperature, too high or low humidity, or abrupt temperature change.
- ☐ The printer should not be located near waterworks, near humidifiers, near heaters or near flames, in a dusty atmosphere or in a place where the printer can be exposed to blast from an air conditioner.
- ☐ The printer should not be located in a place where volatile or inflammable gases are produced.
- ☐ The printer should not be located in a place where it can be exposed to direct rays of the sun.
- ☐ The printer must be placed on a strong and steady level table (without an inclination larger than five degrees).
- ☐ Any vibrating equipment must not be placed on or under the printer.
- ☐ The paper used must conform to the specification.
- ☐ There is no error in handling of the printer.
- ☐ Check the inside of the printer, and remove foreign matters if any, such as paper clips, staples, bits of paper, paper dust or toner.
- ☐ Clean the inside of the printer and the rubber rolls.

## 3.2 Troubleshooting

### 3.2.1 Motor and Sensor Troubleshooting

#### □ Motors

The resistance values for the CR motor and the PF motor are given below, however, the values cannot be used to check the motors status since they are DC motor and the resistance between the electric poles varies. Visually check the motors for abnormal operation and if it is hard to judge, replace the motor.

**Table 3-1. Motor resistance and check point**

Motor	Motor Type	Drive Voltage	Resistance
CR motor	DC motor with brush	DC 42 V ± 5 %	22.7 Ω ± 10 %* <sup>1</sup>
PF motor			28.8 Ω ± 10 %* <sup>2</sup>
Scanner motor	2-phase, 96-pole PM stepping motor		21.2 Ω ± 10 %
ADF motor	4-phase 96-pole PM stepping motor		43.0 Ω ± 10 %* <sup>5</sup>
			38.0 Ω ± 10 %* <sup>6</sup>
			29.3 Ω ± 7 % (per phase at 20°C)* <sup>3*5</sup>
			28.0 Ω ± 7 % (per phase at 25°C)* <sup>4*7</sup>

Note \*1: WokForce 310/520 series only.

\*2: WokForce 320/325 series only.

\*3: WokForce 310/320 series only.

\*4: WokForce 520/325 series only.

\*5: Manufactured by Oki Electric Industry Co., Ltd

\*6: Manufactured by MITSUMI ELECTRIC CO., LTD.

\*7: Manufactured by NMB Mechatronics Co.,Ltd.

#### □ Sensors

**Table 3-2. Sensor check point**

Sensor name	Check point	Signal level	Switch mode
PE Sensor	CN15/Pin 1 and 2	Less than 0.4 V	Off: No paper
		More than 2.4 V	On: Detect the paper
Cover Open Sensor <sup>*</sup>	CN16/Pin 1 and 2	Less than 0.4 V	Off: Cover Close
		More than 2.4 V	On: Cover Open
ADF PE Sensor	CN18/Pin 1 and 5	Less than 0.4 V	Off: Document not passing
		More than 2.4 V	On: Document passing
ADF DOC Sensor	CN18/Pin 1 and 3	Less than 0.4 V	Off: Detect the document
		More than 2.4 V	On: No document

Note \*: WokForce 310/520 series only.

## 3.3 Error Indications and Fault Occurrence Causes

### 3.3.1 Error Message List

You can handle most of the troubles with messages/instructions shown on the LCD panel.

**Table 3-3. Error Indications and Fault Occurrence Causes**

Error Name	LCD Message	STM Message	Error Cause	Reference
Fatal error (printer mechanism)	Printer error See your documentation.	Turn the printer off and delete all print jobs.	Mechanical trouble occurs.	Table 3-4. (p43)
Fatal error (Scanner)	Scanner error See your documentation.	Open the scanner unit and remove any paper from inside the printer and turn the printer back on.	Scanner error occurs.	
Fatal error (Paper jam)	Printer error Paper jammed in the printer. Turn off the printer, open the Scanner unit, and remove the paper. See your documentation.	Click the [How to] button for instructions on removing jammed paper.	Mechanical trouble occurs due to a paper jam.	
Maintenance request (Waste ink over flow)	The printer's ink pads are at the end of their service life. Please contact Epson Support.	The printer's ink pads are nearing the end of their service life. Please contact Epson support.	The waste ink counter exceeds to capacity.	Table 3-5. (p49)
Paper jam error	Paper jam Press OK. If the error does not clear, remove the paper by hand.	Click the [How to] button for instructions on removing jammed paper.	Paper stays in the paper path after paper ejection.	Table 3-6. (p49)
Ink end error	You need to replace the following ink cartridge(s): BK1* <sup>1</sup> , BK2* <sup>1</sup> , M* <sup>1</sup> , C* <sup>1</sup> , Y* <sup>1</sup> . Press OK to replace the ink cartridges.	Black: XXXX* <sup>2</sup> Color: XXXX* <sup>2</sup>	Ink is out in some I/C.	Table 3-7. (p52)
No ink cartridge error	Install ink cartridges: BK1* <sup>1</sup> , BK2* <sup>1</sup> , M* <sup>1</sup> , C* <sup>1</sup> , Y* <sup>1</sup> . Press OK to install ink cartridges.	..... Epson recommends the genuine Epson cartridges listed above. Click the [How to] button for ink cartridge replacement instructions.	No I/C is set.	
Incorrect ink cartridge	Ink cartridge not recognized: BK1* <sup>1</sup> , BK2* <sup>1</sup> , M* <sup>1</sup> , C* <sup>1</sup> , Y* <sup>1</sup> . Press OK to replace the ink cartridges.		Incorrect I/C is set.	
Ink cartridge cover open error	Ink cartridge cover is open. Lift Scanner unit and close the ink cartridge cover. Press OK.	---	Ink replacement sequence was attempted with the Ink Cartridge Cover open.	Table 3-8. (p53)
Paper out error	Paper Out Load paper and press OK.	Reload the paper, then press the OK button on the printer or click the [Continue] button if it appears on the screen. To cancel all print jobs, click the [Cancel] button if it appears on the screen.	Failure to load paper to print.	Table 3-9. (p53)

Table 3-3. Error Indications and Fault Occurrence Causes

Error Name	LCD Message	STM Message	Error Cause	Reference
Head cleaning (Ink low error)	Replace the following ink cartridge(s) before cleaning the print head. Ink low: BK1*1, BK2*1, M*1, C*1, Y*1.	Black: XXXX*2 Color: XXXX*2 ..... You may continue printing, or click the [How to] button to change the ink cartridge now.	Head cleaning was attempted in the Ink low status.	Table 3-10. (p55)
Double feed error	Multi-page feed error Remove and reload the paper, then press OK.	A page has not been printed, multiple pages have been fed into the printer at once, or the wrong paper size has been fed into the printer. Remove and reload the paper. Press the OK button if necessary.	Double feed during double sided printing.	Table 3-11. (p56)
Communication error	Communication error. Make sure the cable is connected, then try again. Press OK.	Check all connections and make sure all devices are on. If the power was turned off during printing, cancel the print job. If the error does not clear, see your printer documentation.	The printer cannot communicate with the PC properly.	Table 3-12. (p57)
Scanner unit open error*3	Close the scanner unit firmly.	Close the scanner unit.	Scanner unit was opened during printing.	Table 3-13. (p58)
ADF paper jam error	Paper jam in the Automatic Document Feeder. Remove the jammed paper. Press OK.	---	Paper jammed in the document feeder.	Table 3-14. (p59)
Network error	---	---	A network related error occurred.	"3.4 Network Troubleshooting" (p.67)
Fatal error (Fax)	Communication error See your documentation.	---	Fax error occurs.	"3.5 FAX Troubleshooting" (p.68)
FAX error	---	---	FAX error occurs.	

Note \*1: The color falling under the corresponding category is displayed.

\*2: The "XXXX" represents the part number of the Ink Cartridge.

\*3: WorkForce 310/520 series only.

### 3.3.2 Troubleshooting by Error Message

The following tables provide troubleshooting procedures. Confirm the error message indicated on the LCD, and verify it in the following list for the corresponding troubleshooting remedy. If some parts need to be replaced or repaired, make sure to follow the procedure given in Chapter 4 “DISASSEMBLY/ASSEMBLY”.

**Table 3-4. Check point for Fatal error according to each phenomenon**

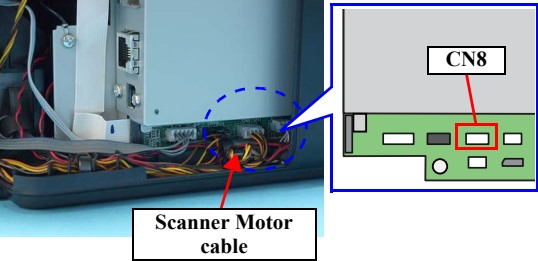
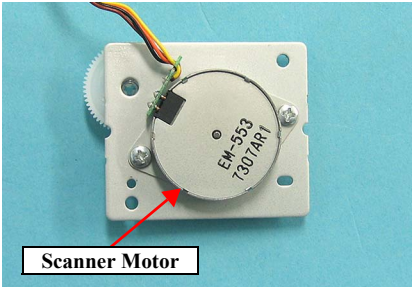
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Power on</li> <li>Anywhere</li> </ul>	The Scanner Unit does not initialize when the power is turned on.	Scanner Motor	1. Check if the Scanner Motor cable is connected to CN8 on the Main Board. 	1. Connect the Scanner Motor cable to CN8 on the Main Board.
			2. Check if the coil resistance of the Scanner Motor is about 38* <sup>1</sup> or 43* <sup>2</sup> by using the tester. ( <i>refer to Table 3-1</i> ). 	2. Replace the Scanner Motor with a new one.
			Note *1: Manufactured by MITSUMI ELECTRIC CO., LTD. *2: Manufactured by Oki Electric Industry Co., Ltd 3. Check if the Scanner Motor Connector Cable is damaged.	3. Replace the Scanner Motor with a new one.

Table 3-4. Check point for Fatal error according to each phenomenon

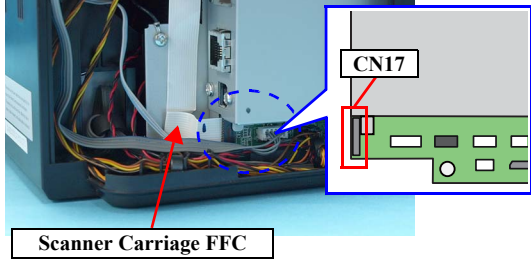
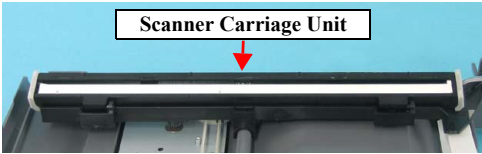
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Power on</li> <li>Anywhere</li> </ul>	The Scanner Unit does not initialize when the power is turned on.	Scanner Carriage FFC	1. Check if the Scanner Carriage FFC is connected to CN17 on the Main Board.	1. Connect the Scanner Carriage FFC to CN17 on the Main Board.
				
			2. Check if the Scanner Carriage FFC is damaged.	2. Replace the Scanner Carriage FFC with a new one.
		Scanner Carriage Unit	1. Check if the Scanner Carriage Unit is damaged.	1. Replace the Scanner Carriage Unit with a new one.
				

Table 3-4. Check point for Fatal error according to each phenomenon

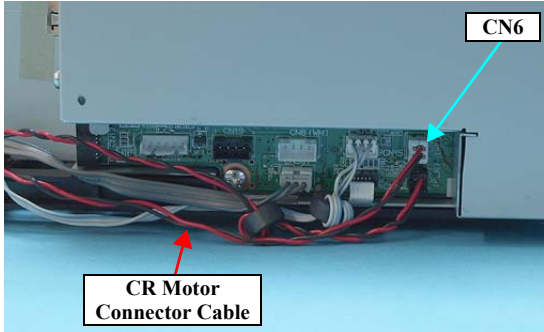
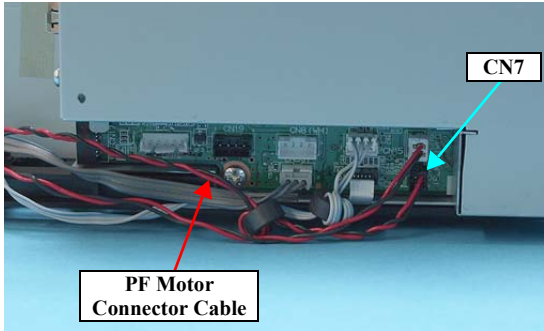
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Power on</li> <li>Anywhere</li> </ul>	When turning on the power, the CR Motor does not operate at all.	CR Motor	1. Check if the CR Motor Connector Cable is connected to CN6 on the Main Board.	1. Connect the CR Motor Connector Cable to CN6 on the Main Board.
				
			2. Check if the CR Motor Connector Cable is not damaged.	2. Replace the CR Motor with a new one.
	When turning on the power, the PF Motor does not operate at all	PF Motor	3. Check if the CR Motor operates.	3. Replace the CR Motor with a new one.
			1. Check if the PF Motor Connector Cable is connected to CN7 on the Main Board.	1. Connect the PF Motor Connector Cable to CN7 on the Main Board.
				
			2. Check if the PF Motor Connector Cable is not damaged.	2. Replace the PF Motor with a new one.
			3. Check if the PF Motor operates.	3. Replace the PF Motor with a new one.



Table 3-4. Check point for Fatal error according to each phenomenon

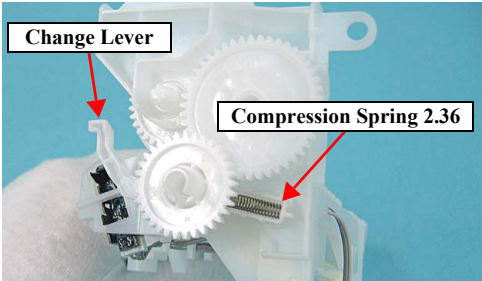
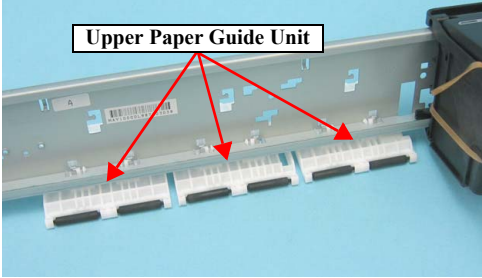
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Power on</li> <li>Anywhere</li> </ul>	When turning on the power, the Carriage Unit collides to the Change Lever located to the front side of the printer.	PF Motor	1. Check if the PF Motor Connector Cable is connected to CN7 on the Main Board.	1. Connect the PF Motor Connector Cable to CN7 on the Main Board.
			2. Check if the PF Motor Connector Cable is not damaged.	2. Replace the PF Motor with a new one.
			3. Check if the PF Motor operates.	3. Replace the PF Motor with a new one.
		ASF Unit	1. Check if the Compression Spring 2.36 does not come off in the Change Lever. 	1. Replace the ASF Unit with a new one.
	The Carriage Unit collides with the Upper Paper Guide Unit when power is turned on.	Upper Paper Guide Unit	1. Check if the Paper Guide Upper Unit is correctly assembled. 	1. Reassemble the Upper Paper Guide Unit to the Main Frame correctly.

Table 3-4. Check point for Fatal error according to each phenomenon


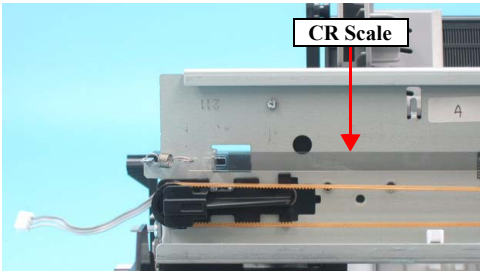
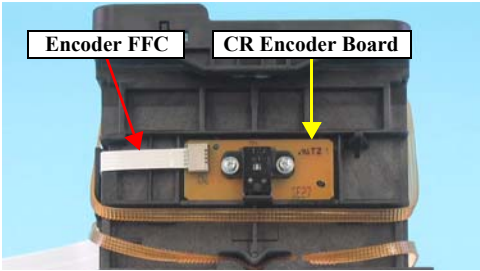
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Power on</li> <li>Anywhere</li> </ul>	When turning on the power, the Carriage Unit collides to the right side of the Main Frame.	CR Scale	1. Check if the CR Scale does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

Table 3-4. Check point for Fatal error according to each phenomenon

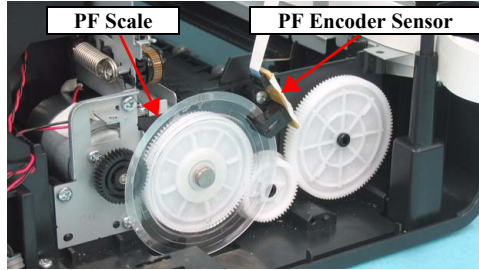
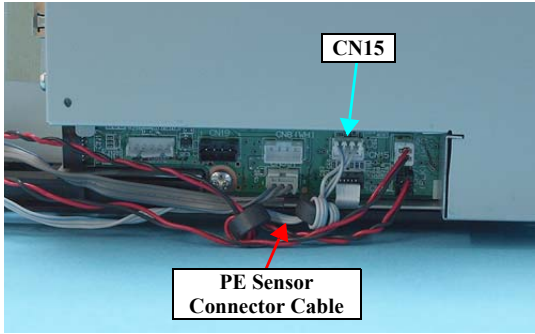
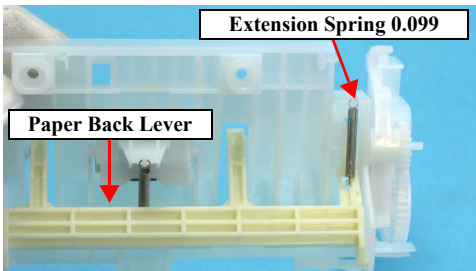
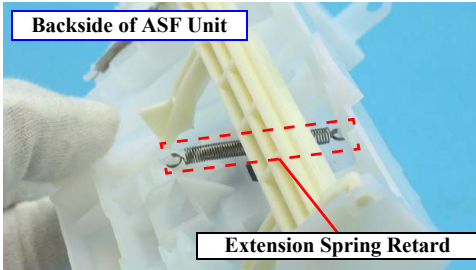
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Power on</li> <li>Anywhere</li> </ul>	The eject rollers are rotating at high speed when power is turned on. (For about 1 cycle.)	PF Scale/PF Encoder Sensor	1. Check if the PF Scale is not damaged or contaminated.	1. Replace the PF Scale with a new one.
				
<ul style="list-style-type: none"> <li>Operation</li> <li>Anywhere</li> </ul>	The Scanner Carriage Unit does not operate.	Lower Scanner Housing	2. Check if the PF Encoder Sensor is not damaged.	2. Replace the PF Encoder Sensor with a new one.
			1. Check if the grease is applied enough on the surface of the Guide Rail of the Lower Scanner Housing.	1. Apply the grease on the surface of the Guide Rail of the Lower Scanner Housing after wiping the old grease with a dry, soft cloth. (Refer to <a href="#">Chapter 6 “MAINTENANCE” (p.147)</a> )
	A paper feeding sequence failed to feed the paper, but a paper ejection sequence is performed.	ASF Unit	2. Check if the Scanner Carriage Unit is set correctly.	2. Reassemble the Scanner Carriage Unit.
			1. Check if the PE Sensor Connector Cable is connected to CN15 on the Main Board.	1. Connect the PE Sensor Connector Cable to CN15 on the Main Board.
				
			2. Check if the PE Sensor Connector Cable is not damaged.	2. Replace the ASF Unit with a new one.
			3. Check if the PE Sensor is not damaged.	3. Replace the ASF Unit with a new one.

Table 3-5. Check point for the Maintenance request according to each phenomenon

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• –</li> </ul>	An error is indicated on the STM or LCD.	Waste Ink Pads	---	1. Change the Waste Ink Pads and initialize the Waste Ink Pad Counter. (Refer to <a href="#">Chapter 5 “ADJUSTMENT” (p.135)</a> )

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

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• Outside HP</li> </ul>	A paper feeding sequence failed to feed the paper, but a paper ejection sequence is performed.	ASF Unit	1. Check if the ASF Unit is properly installed. 2. Check if the Paper Back Lever operates correctly in the paper loading sequence. 	1. Install the ASF Unit properly. 2. Set the Extension Spring 0.099 between the ASF Frame and the Paper Back Lever.
	Paper is being resent during paper feeding operation.	ASF Unit	1. Check if the Extension Spring Retard operates correctly in the paper loading sequence. 	1. Set the Extension Spring Retard between the Retard Roller Unit and the ASF Frame.

Note \* : In case that the paper jam error occurs in each operation, the jammed paper contacts the nozzle surface of the Print Head and the Print Head may be damaged.

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

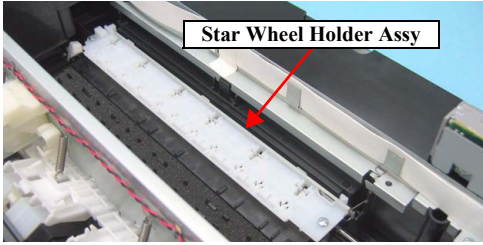
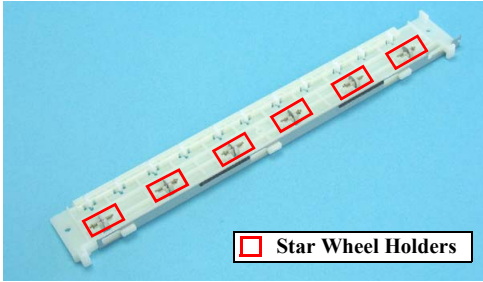
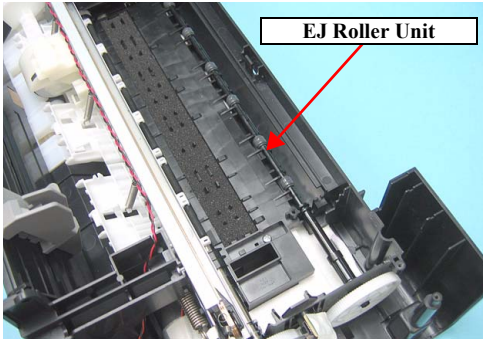
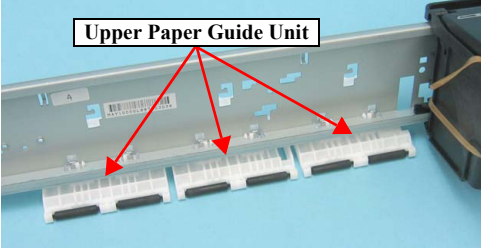
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Operation</li> <li>—</li> </ul>	The top edge of paper does not go through between the EJ Roller Unit and the Star Wheel.	Star Wheel Holder Assy*	1. Check if the Star Wheel Holder Assy is correctly assembled.	1. Reassemble the Star Wheel Holder Assy correctly.
				
		EJ Roller Unit*	2. Check if the Star Wheel Holders does not come off.	2. Reassemble the Star Wheel Holders correctly.
				
			1. Check if the EJ Roller Unit is correctly assembled.	1. Reassemble the EJ Roller Unit correctly.
				
			2. Check if the Spur Gear 51.5 is not damaged.	2. Replace the EJ Roller Unit with a new one.

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

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<div><div>• Operation</div><div>• —</div></div>	The top edge of paper is not loaded to the PF Roller Unit.	Upper Paper Guide Unit*	<div>1. Check if the Upper Paper Guide Unit is correctly assembled.</div> <div></div>	<div>1. Reassemble the Upper Paper Guide Unit to the Main Frame correctly.</div>

Note \* : In case that the paper jam error occurs in each operation, the jammed paper contacts the nozzle surface of the Print Head and the Print Head may be damaged.

Table 3-7. Check point for Ink end / No ink cartridge / Incorrect ink cartridge error according to each phenomenon

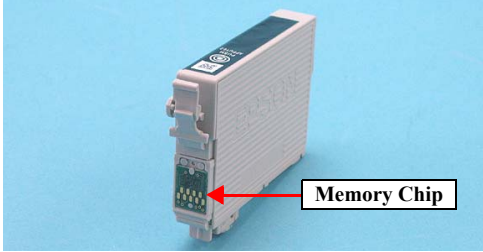
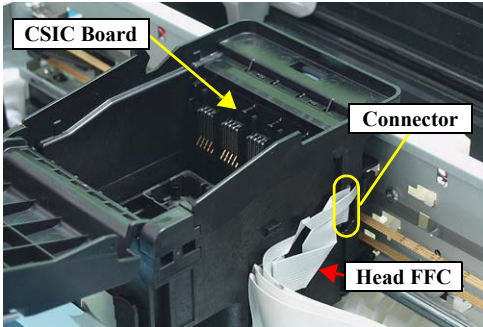
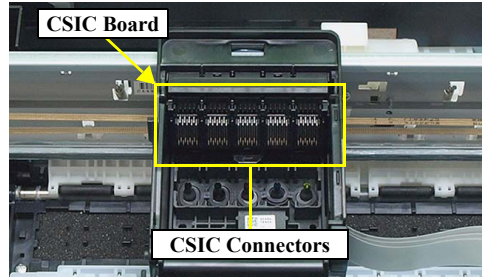
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Power on</li> <li>Inside HP</li> </ul>	After the printer detects that the carriage is at the home position, an error is displayed.	Ink Cartridge	1. Check if Ink Cartridge is properly installed. 2. Check if the Memory Chip is not disconnected or not chipped. 	1. Install the Ink Cartridge properly. 2. Replace the Ink Cartridge with a new one.
		CSIC Board	1. Check if the Head FFC is connected to connector on the CSIC Board. 	1. Connect the Head FFC to connector on the CSIC Board.
			2. Check if the CSIC Board is not damaged.	2. Replace the CSIC Board with a new one.
		CSIC Connector	3. Check if the CSIC Connector is not damaged. 	1. Replace the CSIC Board with a new one.



Table 3-8. Check point for Ink cartridge cover open error according to each phenomenon

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Operation</li> <li>—</li> </ul>	An error is indicated on the LCD.	Ink Cartridge Cover	---	1. Close the Ink Cartridge Cover.

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

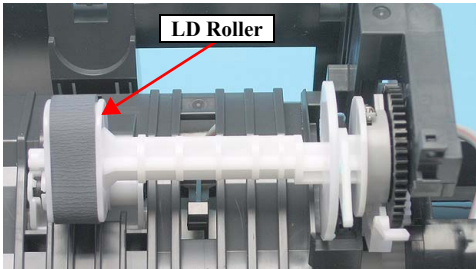
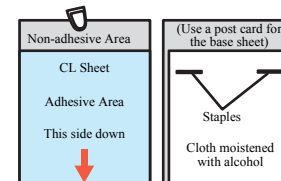
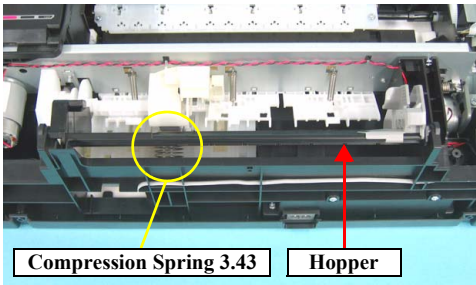
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Operation</li> <li>—</li> </ul>	The LD Roller cannot pick up paper although the LD Roller attempt to rotate correctly.	ASF Unit	1. Check if any paper dust is not adhered to the surface of the LD Roller.  	1. Set a cleaning sheet in the ASF Unit up side down. Then holding the top edge, try to load the paper from the Printer driver. The micro pearl on the LD Roller surface is removed. To remove severe smear, staple a cloth moistened with alcohol to a post card and clean the roller in the same manner.  
	The Hopper does not operate during the paper loading sequence although the LD Roller rotates to load paper from the ASF Unit.	ASF Unit	1. Check if the Hopper operates correctly in the paper loading sequence.  	1. Reassemble the Compression Spring 3.43 between the Base Frame and the Hopper.  <p>*If the problem is not solved, replace the ASF unit with new one.</p>



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


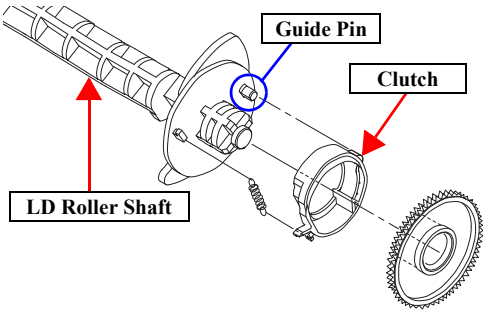
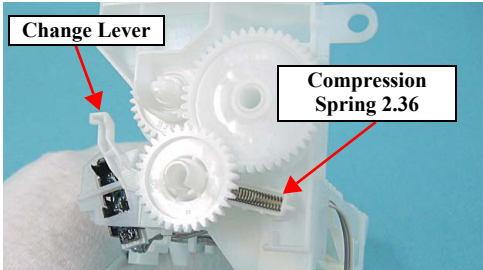
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Operation</li> <li>—</li> </ul>	The drive of the PF Motor is not transmitted to the LD Roller Shaft.	ASF Unit	1. Check if the Extension Spring 0.143 does not come off in the Clutch mechanism. 	1. Reassemble the Extension Spring 0.143 in the Clutch mechanism.
			2. Check if the positioning hole of the Clutch does not come off from the guide pin of the LD Roller Shaft. 	2. Reassemble the positioning hole of the Clutch on the guide pin of the LD Roller Shaft.
			3. Check if the Clutch tooth is not damaged.	3. Replace the ASF Unit with a new one.
			4. Check if the Clutch is not damaged.	4. Replace the ASF Unit with a new one.
			5. Check if the Compression Spring 2.36 does not come off in the Change Lever. 	5. Replace the ASF Unit with a new one.

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

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• –</li> </ul>	The LD Roller is not set to the ASF home position and paper is always loaded from the ASF Unit during the paper loading sequence.	ASF Unit	1. Check if the tip of the Change Lever is not damaged.	1. Replace the ASF Unit with a new one.

Table 3-10. Check point for Head Cleaning error (Ink low error) according to each phenomenon

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• –</li> </ul>	Head Cleaning is not carried out.	Ink Cartridge	1. Check if the ink remains in the Ink Cartridge.	1. Replace the Ink Cartridge with a new one.
			2. Check if the Ink Cartridge can be used by installing it to other printer.	2. Replace the Ink Cartridge with a new one.

Table 3-11. Check point for Double feed error according to each phenomenon

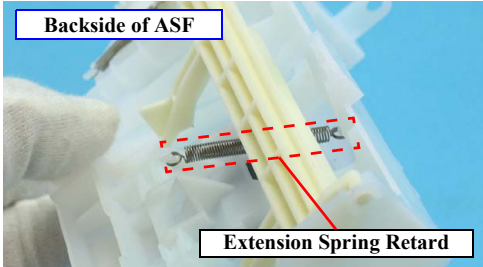
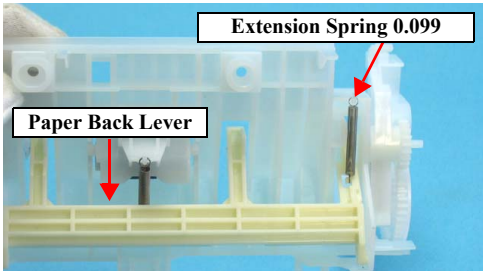
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Operation</li> <li>—</li> </ul>	After both surfaces were printed, the paper was ejected but an error is displayed.	ASF Unit	1. Check if the Extension Spring Retard operates correctly in the paper loading sequence. 	1. Set the Extension Spring Retard between the Retard Roller Unit and the ASF Frame.
			2. Check if the Paper Back Lever operates correctly in the paper loading sequence. 	2. Set the Extension Spring 0.099 between the ASF Frame and the Paper Back Lever.

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

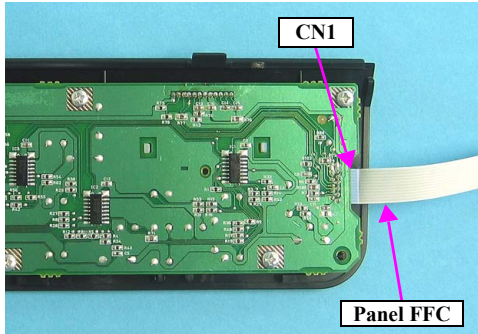
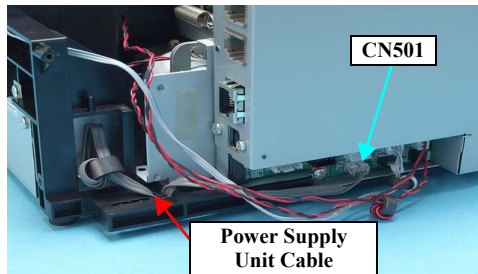
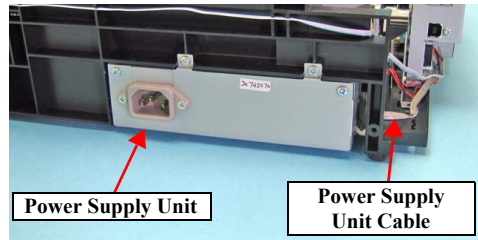
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Power on</li> <li>Anywhere</li> </ul>	When turning on the power, the printer does not operate at all.	Panel Unit	1. Check if the Panel FFC is connected to CN1 on the Panel Board.	1. Connect the Panel FFC to CN1 on the Panel Board.
				
			2. Check if the Panel FFC is not damaged.	2. Replace the Panel FFC with new one.
			3. Check if the Panel Board is not damaged.	3. Replace the Panel Board with new one.
<ul style="list-style-type: none"> <li>Power on</li> <li>Anywhere</li> </ul>	When turning on the power, the printer does not operate at all.	Power Supply Unit	1. Check if the Power Supply Unit Cable is connected to CN501 on the Main Board.	1. Connect the Power Supply Unit Cable to CN501 on the Main Board.
				
			2. Check if the Power Supply Unit Cable/Power Supply Unit is not damaged.	2. Replace the Power Supply Unit with a new one. * If the problem is not solved, replace the Main Board with new one.
				

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

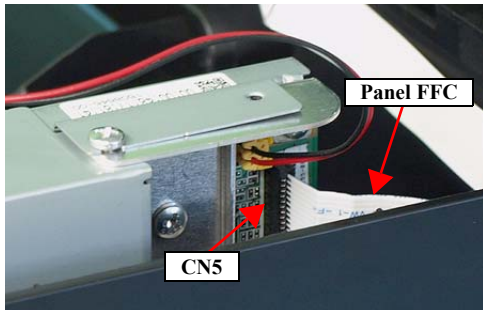
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"><li>• Power on</li><li>• —</li></ul>	When turning on the power, the power on sequence is performed correctly. But, when any printer job is sent to the printer, a communication error is indicated with STM3.	USB Cable	1. Check if the USB Cable is connected between the printer and the PC.	1. Connect the USB Cable to the printer and the PC.
		Main Board Unit	1. Check if an correct model name is stored into the address of the EEPROM on the Main Board.	1. Use the Adjustment Program to write the correct value to the EEPROM address.
			2. Check if the Panel FFC is connected to CN5 on the Main Board.	2. Connect the Panel FFC to CN5 on the Main Board.
				

Table 3-13. Check point for Scanner unit open error according to each phenomenon

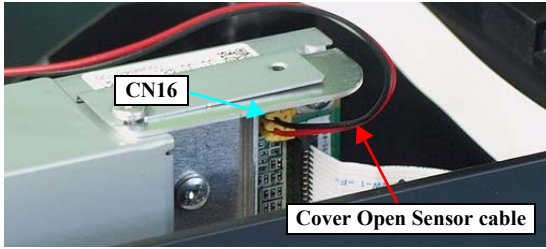
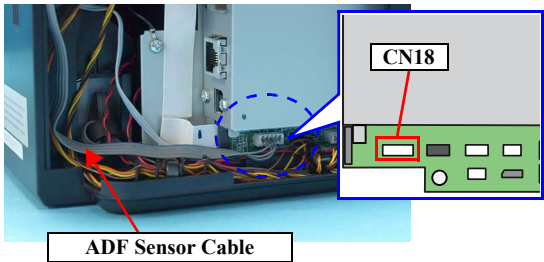
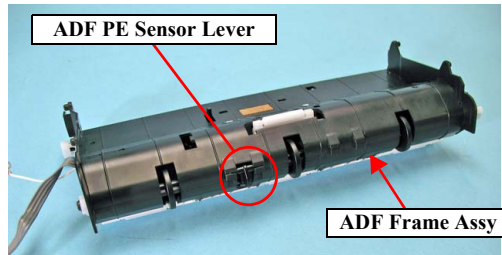
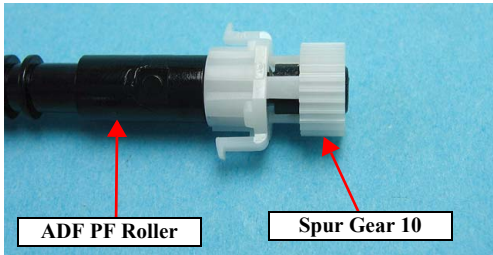
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Operation</li> <li>Anywhere</li> </ul>	The Printer Cover is closed, but the cover open error is displayed.	Cover Open Sensor	1. Is the Cover Open Sensor cable properly connected to CN16 on the Main Board?	1. Connect the Cover Open Sensor cable to CN16 on the Main Board.
				
			2. Is the Cover Open Sensor cable damaged?	2. Replace the Cover Open Sensor cable with a new one.
			3. Is the Cover Open Sensor damaged?	3. Replace the Cover Open Sensor with a new one.

Table 3-14. Check point for ADF Paper Jam error according to each phenomenon

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Power on</li> <li>—</li> </ul>	After turning on the power and the initialization process completes, an error is indicated on the LCD panel.	ADF Cover Assy	1. Check if the ADF Cover Assy is opened.	1. Close the ADF Cover Assy.
<ul style="list-style-type: none"> <li>Operation</li> <li>Before ADF PF Roller</li> </ul>	The document is fed, but the reading process does not starts, and an error is indicated.	ADF PE Sensor	1. Check if the ADF Sensor Cable is connected to CN18 on the Main Board. 	1. Connect the ADF Sensor Cable to CN18 on the Main Board.
			2. Check if the ADF Sensor Cable is damaged.	2. Replace the ADF Frame Assy with a new one.
		ADF PE Sensor Lever	1. Check if the ADF PE Sensor Lever is deformed or damaged. 	1. Replace the ADF Frame Assy with a new one.
		ADF PF Roller	1. Check if the Spur Gear 10 is correctly attached to the ADF PF Roller. 	1. Attach the Spur Gear 10 correctly.

### 3.3.3 Superficial Phenomenon-Based Troubleshooting

This section explains the fault locations of the error states (print quality and abnormal noise, ADF/Scanner's malfunctions) other than the error states in the previous section.

- Table 3-15. Check point for the error that multiple sheets of paper are always loaded without error messages (p.60)
- Table 3-16. Check point for the abnormal noise (p.61)
- Table 3-17. Check point for the defective scanned image quality (p.61)
- Table 3-18. Check point for the ADF's malfunctions (p.62)
- Table 3-19. Check point for the defective printing quality (p.62)

**Table 3-15. Check point for the error that multiple sheets of paper are always loaded without error messages**

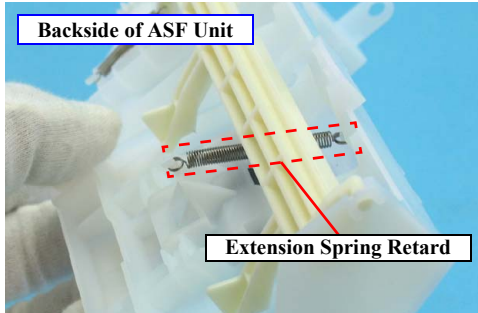
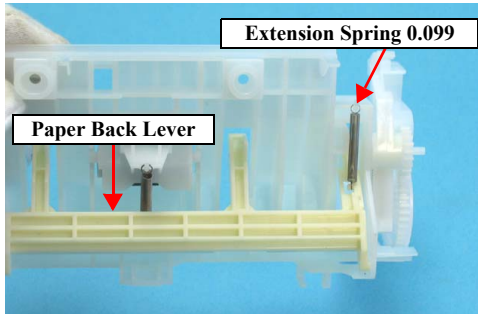
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• –</li> </ul>	<p>The LCD and STM3 are not indicating error conditions. But, multiple sheets of paper are always loaded from the ASF Unit.</p>	ASF Unit	<p>1. Check if the Extension Spring Retard operates correctly in the paper loading sequence.</p>  <p>The image shows the backside of the ASF Unit. A red dashed box highlights the Extension Spring Retard mechanism, which is a small metal spring attached to a yellow plastic lever. A label 'Backside of ASF Unit' points to the top of the unit, and another label 'Extension Spring Retard' points to the spring mechanism.</p>	<p>1. Set the Extension Spring Retard between the Retard Roller Unit and the ASF Frame.</p>
			<p>2. Check if the Paper Back Lever operates correctly in the paper loading sequence.</p>  <p>The image shows the Paper Back Lever mechanism. A red arrow points to the Paper Back Lever, which is a yellow plastic lever. Another red arrow points to the Extension Spring 0.099, which is a small metal spring attached to the lever. Labels 'Paper Back Lever' and 'Extension Spring 0.099' are present.</p>	<p>2. Set the Extension Spring 0.099 between the ASF Frame and the Paper Back Lever.</p>

Table 3-16. Check point for the abnormal noise

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Anytime</li> <li>Anywhere</li> </ul>	The abnormal noise occurs at the first power on timing and during each operation although the printing operation is performed.	Carriage Unit	1. Check if the grease on the Carriage Path is sufficient.	1. Wipe off the remaining grease on the Carriage path and lubricate it on its frame.
		ASF Unit	1. Check if the Change Lever moves smoothly.	1. Replace the ASF Unit with a new one.
	The Carriage Unit collides to the Upper Paper Guide Unit during each operation.	Upper Paper Guide Unit	1. Check if the Upper Paper Guide Unit is attached securely. (check if it interferes with the Carriage Unit)	1. Reassemble the Upper Paper Guide to the Main Frame.

Table 3-17. Check point for the defective scanned image quality

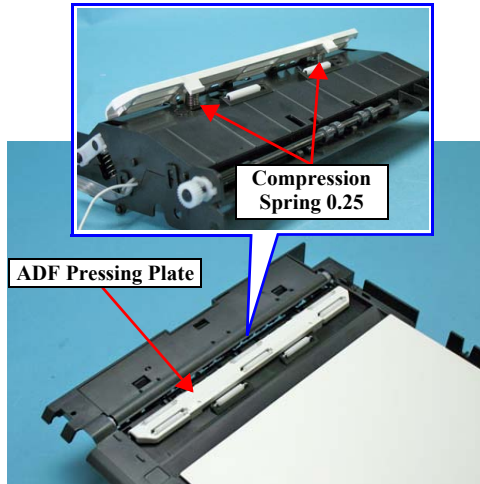
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Scanned image is not clear.</li> </ul>	There are dusts or the like on the Document Glass. (white dots appear on the scanned image)	Upper Scanner Housing	1. Check if there is any foreign material on the Document Glass.	1. Remove the foreign material from the Document Glass. (Refer to <a href="#">Chapter 6 "MAINTENANCE" (p.147).</a> )
	There are dusts or the like on the LED inside the Rod Lens Array. (vertical stripes appear on the scanned image)	Scanner Carriage Unit	1. Check if there is not foreign material on the LED.	1. Remove the foreign material from the Document Glass (blow away the dusts).
	The LED of Scanner Carriage Unit does not light up.	Scanner Carriage Unit	1. Check if the LED lights up.	1. Replace the Scanner Carriage Unit with a new one.
	The quality of the scanned image using ADF is poor.	ADF Pressing Plate	1. Check if the Compression Spring 0.25 does not come off. 	1. Install the Compression Spring 0.25 properly.



Table 3-18. Check point for the ADF's malfunctions

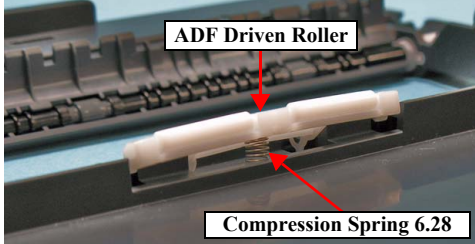
Occurrence timing document position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>At the start of scanning</li> <li>Document support</li> </ul>	The document is set on the ADF, but the scanning operation does not start.	ADF DOC Sensor	1. Check if the ADF DOC Sensor Lever is damaged.	1. Replace the ADF Frame Assy with a new one.
<ul style="list-style-type: none"> <li>At the end of scanning</li> <li>Near the Paper eject tray</li> </ul>	The paper eject operation does not complete after the scanning, and the document is not ejected completely.	ADF Driven Roller	1. Check if the Compression Spring 6.28 does not come off. 	1. Install the Compression Spring 6.28 properly.

Table 3-19. Check point for the defective printing quality

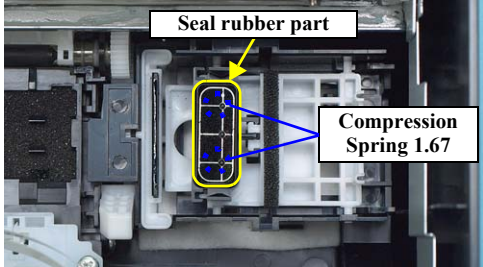
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Dot missing and mixed colors</li> </ul>	Ink is scarcely ejected to the Cap from the Printhead.	Ink System Unit (Cap Unit)	1. Check if there is not any foreign material/damage around the seal rubber part on the Cap Unit. 	1. Remove the foreign material around the seal rubber parts carefully.
			2. Check if the Compression Spring 1.67 is correctly mounted on the Cap Unit.	2. Replace the Ink System Unit with a new one.
	Ink is ejected to the Cap from the Print Head, but the printer does not recover from the error after cleaning or ink change.	Print Head	1. Check if it returns to normal by performing CL operation or replacing the Ink Cartridge.	1. Perform CL operation and the Ink Cartridge replacement specified times. If it doesn't work, change the Print Head with a new one.
			2. Check if the Print Head is not damaged.	2. Replace the Print Head with a new one.
		Cleaner Blade	1. Check if the Cleaner Blade does not have paper dust or bending.	1. Replace the Ink System Unit with a new one.
		Main Board	1. Check if the Main Board is not damaged.	1. Replace the Main Board with a new one.

Table 3-19. Check point for the defective printing quality

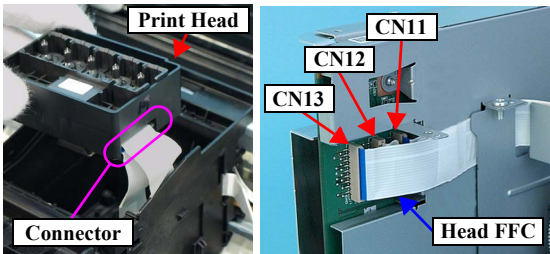
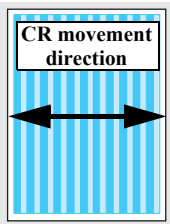
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>White streak / abnormal discharge</li> </ul>	Ink is ejected to the Cap from the Print Head, but printing is not done at all after cleaning or ink change, or abnormal discharge occurs.	Head FFC	1. Check if the Head FFC is securely connected to the Print Head Connector and the Main Board Connectors (CN11, CN12, CN13). 	1. Connect the Head FFC to the Print Head and the Main Board Connector.
			2. Check if the Head FFC is not damaged.	2. Replace the Head FFC with a new one.
		Print Head	1. Check if it returns to normal by performing CL operation or replacing the Ink Cartridge.	1. Perform CL operation and the Ink Cartridge replacement specified times. If it doesn't work, change the Print Head with a new one.
		Main Board Unit	1. Check if the Main Board is not damaged.	1. Replace the Main Board Unit with a new one.
<ul style="list-style-type: none"> <li>White streak / color unevenness occurrence</li> </ul>	Vertical banding appears against the CR movement direction. And, it looks like uneven printing. 	Adjustment	1. For printing in the Bi-D mode, check if Bi-D Adjustment has been performed properly.	1. Perform Bi-D Adjustment to correct print start timing in bi-directional printing. (Refer to <a href="#">Chapter 5 “ADJUSTMENT” (p.135).</a> )
		Print Head	1. Check if the Nozzle Check Pattern is printed properly.	2. Perform Head Cleaning and check the Nozzle Check Pattern. (Refer to <a href="#">Chapter 5 “ADJUSTMENT” (p.135).</a> ) If the problem is not solved, replace the Print Head with a new one.
		Main Frame	1. Check if there is any foreign material on the Carriage path.	1. Remove foreign material from surface of the Carriage path.
			2. Check if the Main Frame is deformed.	2. Replace the Main Frame with a new one.
			3. Check if the grease is enough on the Carriage path of the Main Frame.	3. After wiping the grease G-71 on the Carriage path with a dry, soft cloth, coat it with grease. (Refer to <a href="#">Chapter 6 “MAINTENANCE” (p.147).</a> )
	[Note] If the problem is not solved, replace the CR Motor with a new one.			

Table 3-19. Check point for the defective printing quality

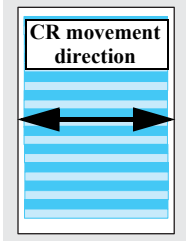
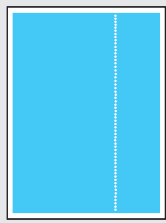
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>White streak / color unevenness occurrence</li> </ul>	<p>Micro banding appears horizontally against the CR movement direction and it appears with the same width.</p>  <p>[Note] If the problem is not solved, replace the PF Motor with a new one.</p>	Printer driver & exclusive paper	1. Check if the suitable paper is used according to the printer driver setting.	1. Use the suitable paper according to the printer driver setting.
		Print Head	1. Check if the Nozzle Check Pattern is printed correctly.	1. Perform the Head Cleaning and check the Nozzle Check Pattern. (Refer to <a href="#">Chapter 5 "ADJUSTMENT" (p.135)</a> .) If the problem is not solved, replace the Print Head with a new one.
		PF Roller Unit	1. Check if there is not any foreign material on the surface of the PF Roller Unit.	1. Clean the surface of the PF Roller Unit carefully with the soft cloth.
	<p>The Star wheel mark against the CR movement direction.</p> 	Star Wheel Holder Assy	2. Check if the PF Roller Unit is not damaged.	2. Replace the PF Roller Unit with a new one.
			1. Check if the Star Wheel Holder does not come off. 2. Check if the surface of the Star Wheel Holder Assy is flat.	1. Reassemble the Star Wheel Holder correctly. 2. Replace the Star Wheel Holder Assy with a new one.
	Printing is blurred.	Printer driver & exclusive paper	1. Check if the suitable paper is used according to the printer driver setting.	1. Use the suitable paper according to the printer driver setting.
		Print Head	1. Check if the correct Head ID is stored into the EEPROM by using the Adjustment Program.	1. Input 11-digit code of the Head ID into the EEPROM by using the Adjustment Program.

Table 3-19. Check point for the defective printing quality

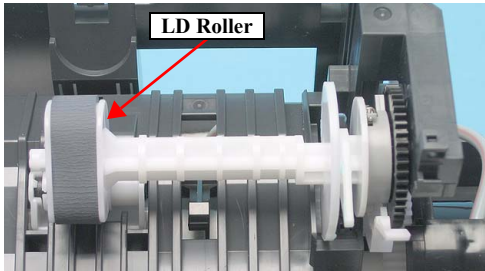
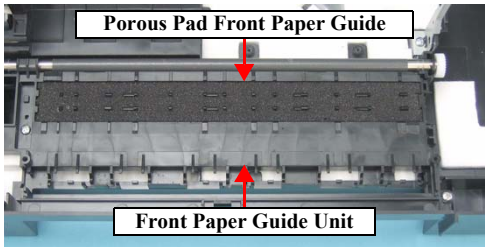
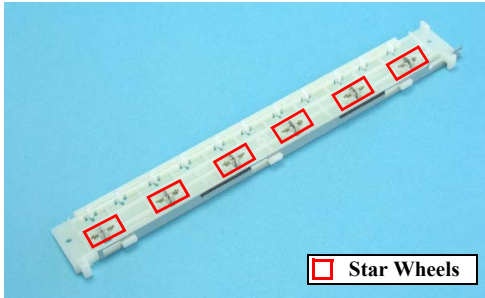
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• Print start position slip	The printing operation is correctly performed. But, the top margin is insufficient than usual one.	ASF Unit	1. Check if any paper dust is not adhered to the surface of the LD Roller. 	1. Set a cleaning sheet in the ASF up side down. Then holding the top edge, try to load the paper from the Printer driver. The micro pearl on the LD Roller surface is removed. To remove severe smear, staple a cloth moistened with alcohol to a post card and clean the roller in the same manner. As for the cleaning sheet, refer to “Check point for Paper out error according to each phenomenon” (p.53). * If the problem is not solved, replace the ASF Unit with a new one.
• Ink stain of paper	Ink stain occurs at the back, top edge or bottom edge of the print paper.	Front Paper Guide	1. Check if the Front Paper Guide Unit is free from ink stain. 	1. Clean the Front Paper Guide Unit with a soft cloth.
			2. Check if heaps of ink are not formed on Porous Pad Front Paper Guide.	2. Replace the Front Paper Guide Assy with a new one.
		EJ Roller Unit	1. Check if the EJ Roller Unit is free from ink stain.	1. Clean the EJ Roller Unit with a soft cloth.
		PF Roller Unit	1. Check if the PF Roller Unit is free from ink stain.	1. Clean the PF Roller Unit with a soft cloth.

Table 3-19. Check point for the defective printing quality

Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• Ink stain of paper	Ink sticks to other than the print area of the paper, resulting in contamination.	Print Head	1. Check if the Print Head Cover does not have the ink drop.	1. Clean the Print Head Cover carefully with a soft cloth.
		Upper Paper Guide Unit	1. Check if the Upper Paper Guide Unit is free from ink stain.	1. Clean the Upper Paper Guide Unit with a soft cloth.
		Star Wheel Holder Assy	1. Check if the Star Wheels is free from ink stain. 	1. Clean the Star Wheels with a soft cloth.

## 3.4 Network Troubleshooting

The following table describes the troubleshooting related to the Network function of the WorkForce 310 series. For Network Troubleshooting of WorkForce 520/325 series, see "8.3.2 Network Troubleshooting (WorkForce 520/325 series only)" (p.162).

### □ Troubles in Network Settings

**Table 3-20. Troubles in Network Settings**

Symptom	Check Point	Remedy
Communication with wired LAN can not be made	1. Check if the combination for the HUB and router etc. and Link Speed of the Printer is proper.	Correct the Link Speed setting properly.
	2. Check if 10Base-T Repeater HUB is used.	Try other HUBs (Switching HUB etc.).
	3. Check if setting of obtaining IP address is correct.	Correctly set IP address.
	4. When IP address is set manually, check if the IP address is duplicated with those of the other devices on the network.	Correctly set IP address.

### □ Troubles during printing and scanning from PC

**Table 3-21. Troubles during printing and scanning from PC**

Symptom	Check Point	Remedy
Print cannot be made Scan cannot be made	1. Check if the computer and the printer are properly connected to a LAN port such as a hub or router.	Correctly connect the computer and the printer to a LAN port such as a hub or router using a LAN cable.
	2. Check the network setting and connection by printing the status sheet.	Correctly set the network connection again if the network connection is not made.
	3. Check if the link lamp on the Access Point or hub connected to the printer is lighting or flashing.	<ul style="list-style-type: none"> <li>• Try using another port.</li> <li>• Replace the LAN cable.</li> </ul>
	4. Check if the setting on the printer is corresponding to the connected network settings.	Correctly configure the network settings.
	5. Check if the network setting screen is displayed on the Control Panel.	Close the screen.
EPSON Scan cannot be started	1. For EPSON Scan settings, check if IP address is set directly.	If IP address is set using the DHCP function, specify IP address by searching address.

## 3.5 FAX Troubleshooting

### 3.5.1 FAX Log

When an error related to fax occurs, it is not only indicated on the LCD but also saved as a log file. The error code is recorded in it, and according to this log the contents of the error can be confirmed

Table 3-22. FAX Log (1)

Log Name	Description	Save Destination														
Latest log (Last Transaction)	The latest communication log of sending / polling reception	Nonvolatile memory														
Communication log (Fax Log)	The following information is stored.	Nonvolatile memory														
	<table><tr><th>Item</th><th>Information</th></tr><tr><td>Communication start date / time</td><td>Year/month/day/hour/minute</td></tr><tr><td>Communication type</td><td>Sending/receiving/polling reception</td></tr><tr><td>Communication ID</td><td><b>Sending/polling reception:</b><ul style="list-style-type: none"><li>• Destination name of speed dial (first 20 characters)</li><li>• Telephone number (last 20 characters)</li><li>• Destination fax ID (20 characters)</li></ul><b>Receiving:</b><ul style="list-style-type: none"><li>• Destination fax ID (20 characters)</li></ul></td></tr><tr><td>Airtime</td><td>Hour/minute/second</td></tr><tr><td>Communication pages</td><td>0 to 100</td></tr><tr><td>Communication result</td><td><b>Common:</b> Normal/cancel/error code* <b>Sending/polling reception:</b> No dial tone detected/No fax signal detected/Busy tone detected</td></tr></table>		Item	Information	Communication start date / time	Year/month/day/hour/minute	Communication type	Sending/receiving/polling reception	Communication ID	<b>Sending/polling reception:</b> <ul style="list-style-type: none"><li>• Destination name of speed dial (first 20 characters)</li><li>• Telephone number (last 20 characters)</li><li>• Destination fax ID (20 characters)</li></ul> <b>Receiving:</b> <ul style="list-style-type: none"><li>• Destination fax ID (20 characters)</li></ul>	Airtime	Hour/minute/second	Communication pages	0 to 100	Communication result	<b>Common:</b> Normal/cancel/error code* <b>Sending/polling reception:</b> No dial tone detected/No fax signal detected/Busy tone detected
	Item		Information													
	Communication start date / time		Year/month/day/hour/minute													
	Communication type		Sending/receiving/polling reception													
	Communication ID		<b>Sending/polling reception:</b> <ul style="list-style-type: none"><li>• Destination name of speed dial (first 20 characters)</li><li>• Telephone number (last 20 characters)</li><li>• Destination fax ID (20 characters)</li></ul> <b>Receiving:</b> <ul style="list-style-type: none"><li>• Destination fax ID (20 characters)</li></ul>													
	Airtime		Hour/minute/second													
	Communication pages		0 to 100													
	Communication result		<b>Common:</b> Normal/cancel/error code* <b>Sending/polling reception:</b> No dial tone detected/No fax signal detected/Busy tone detected													
	Note * : For error codes, see <a href="#">Table 3-24. Error Code List (p.69)</a> .															
Power failure log (Fax Log)	The information stored in this log is the same as the communication log. However, since the airtime is “Unknown” in this case, the result of it is recorded as “power failure”.	Nonvolatile memory														



The communication log is not stored under the following conditions:

- When the sending operation is canceled while storing B&W image or waiting for redialing.
- In the case of a power failure during the operation of sending/polling reception including waiting status for redial, or during receive operation.
- When the receiving operation is canceled before the fax signal is detected.
- If the fax signal is not detected during receiving operation.

Table 3-23. FAX Log (2)

Log Name	Description	Save Destination																		
Protocol trace	The following information of the latest communication is stored.																			
	<table><tr><th>Item</th><th>Information</th></tr><tr><td>Communication start date / time</td><td>Year/month/day/hour/minute</td></tr><tr><td>Communication type</td><td>Sending/receiving/polling reception</td></tr><tr><td>Communication ID</td><td><b>Sending/polling reception:</b><ul style="list-style-type: none"><li>Destination name of speed dial (first 20 characters)</li><li>Telephone number (last 20 characters)</li><li>Destination fax ID (20 characters)</li></ul><b>Receiving:</b><ul style="list-style-type: none"><li>Destination fax ID (20 characters)</li></ul></td></tr><tr><td>Airtime</td><td>Hour/minute/second</td></tr><tr><td>Communication pages</td><td>0 to 100</td></tr><tr><td>Communication result</td><td><b>Common:</b> Normal/cancel/error code <b>Sending/polling reception:</b> No dial tone detected/No fax signal detected/Busy tone detected</td></tr><tr><td>Diagnosing code</td><td>10 bytes</td></tr><tr><td>Protocol data</td><td>The latest 43 commands/responses*<ul style="list-style-type: none"><li>Time stamp</li><li>Sending / receiving</li><li>Command /response code (See <a href="#">Table 3-25. Command/Response Code (p.70)</a>)</li><li>FCF/FIF (first 33 octets).</li></ul></td></tr></table>	Item	Information	Communication start date / time	Year/month/day/hour/minute	Communication type	Sending/receiving/polling reception	Communication ID	<b>Sending/polling reception:</b> <ul style="list-style-type: none"><li>Destination name of speed dial (first 20 characters)</li><li>Telephone number (last 20 characters)</li><li>Destination fax ID (20 characters)</li></ul> <b>Receiving:</b> <ul style="list-style-type: none"><li>Destination fax ID (20 characters)</li></ul>	Airtime	Hour/minute/second	Communication pages	0 to 100	Communication result	<b>Common:</b> Normal/cancel/error code <b>Sending/polling reception:</b> No dial tone detected/No fax signal detected/Busy tone detected	Diagnosing code	10 bytes	Protocol data	The latest 43 commands/responses* <ul style="list-style-type: none"><li>Time stamp</li><li>Sending / receiving</li><li>Command /response code (See <a href="#">Table 3-25. Command/Response Code (p.70)</a>)</li><li>FCF/FIF (first 33 octets).</li></ul>	Volatile memory
	Item	Information																		
	Communication start date / time	Year/month/day/hour/minute																		
	Communication type	Sending/receiving/polling reception																		
	Communication ID	<b>Sending/polling reception:</b> <ul style="list-style-type: none"><li>Destination name of speed dial (first 20 characters)</li><li>Telephone number (last 20 characters)</li><li>Destination fax ID (20 characters)</li></ul> <b>Receiving:</b> <ul style="list-style-type: none"><li>Destination fax ID (20 characters)</li></ul>																		
	Airtime	Hour/minute/second																		
	Communication pages	0 to 100																		
	Communication result	<b>Common:</b> Normal/cancel/error code <b>Sending/polling reception:</b> No dial tone detected/No fax signal detected/Busy tone detected																		
	Diagnosing code	10 bytes																		
Protocol data	The latest 43 commands/responses* <ul style="list-style-type: none"><li>Time stamp</li><li>Sending / receiving</li><li>Command /response code (See <a href="#">Table 3-25. Command/Response Code (p.70)</a>)</li><li>FCF/FIF (first 33 octets).</li></ul>																			
Note * : If a large amount of FIF is received, the recorded command/response may be less than 43.																				

## ❑ Error codes

Table 3-24. Error Code List

Error Code (HEX)	Phenomenon	LCD Display	Print Example
000	Successful completion (Monochrome)	Complete	OK
C000	Successful completion (Color)	Complete	OK Color
400	Communication error	Communication error	Error code
401	Communication error	Communication error	Error code
402	Communication error	Communication error	Error code
403	Communication error	Communication error	Error code
404	Communication error	Communication error	Error code
405	Communication error	Communication error	Error code
407	Communication error	Communication error	Error code
408	Communication error	Communication error	Error code
409	Communication error	Communication error	Error code
410	Communication error	Communication error	Error code
412	Communication error	Communication error	Error code
416	Communication error	Communication error	Error code
417	Communication error	Communication error	Error code
418	Communication error	Communication error	Error code
420	Fax signal was not detected during receive operation. (The call was a telephone call)	Not displayed	---
421	Communication error	Communication error	Error code
422	Communication error	Communication error	Error code
427	Communication error	Communication error	Error code
433	Communication error	Communication error	Error code
434	Communication error	Communication error	Error code
436	Communication error	Communication error	Error code
459	Communication error	Communication error	Error code
490	Communication error	Communication error	Error code
494	Communication error	Communication error	Error code
495	Communication error	Communication error	Error code
496	Communication error	Communication error	Error code
501	Communication error	Communication error	Error code
502	Communication error	Communication error	Error code
503	Communication error	Communication error	Error code
504	Communication error	Communication error	Error code

Table 3-24. Error Code List

Error Code (HEX)	Phenomenon	LCD Display	Print Example
505	Communication error	Communication error	Error code
540	Communication error	Communication error	Error code
541	Communication error	Communication error	Error code
542	Communication error	Communication error	Error code
543	Communication error	Communication error	Error code
544	Communication error	Communication error	Error code
550	Communication error	Communication error	Error code
554	Communication error	Communication error	Error code
620	Communication error	Communication error	Error code
621	Communication error	Communication error	Error code
623	Communication error	Communication error	Error code
624	Communication error	Communication error	Error code
630	A busy tone was detected after dialing	Talking (Line Busy)	Talking (Line Busy)
631	Communication error	Communication error	Error code
632	Communication error	Communication error	Error code
633	Communication error	Communication error	Error code
634	A fax signal was not detected for a given length of time after dialing	No Answer	No Answer
637	A dial tone was not detected before dialing	No Dial Tone	No Dial Tone
638	A power failure occurred during communication	Not displayed	Power Fail
700	The communication was canceled by an operation	Canceled	Canceled
706	System error	System Error	Error code
709	Communication error	Communication error	Error code
815	Communication error	Communication error	Error code
870	The image memory is full	Memory Full	Memory Full
871	The maximum number of files was exceeded	Error code	Error code
873	Communication error	Communication error	Error code
874	Communication error	Communication error	Error code
875	Communication error	Communication error	Error code
880	System error	System Error	Error code
881	System error	System Error	Error code



Table 3-24. Error Code List

Error Code (HEX)	Phenomenon	LCD Display	Print Example
882	System error	System Error	Error code
883	System error	System Error	Error code
884	System error	System Error	Error code
928	Collision (A call signal was detected when shifting to dial operation)	Not displayed	---
F0B	Communication error	Communication error	Error code
F1E	Communication error	Communication error	Error code
F20	Communication error	Communication error	Error code
F21	System error	System Error	Error code
F23	Communication error	Communication error	Error code
F24	Communication error	Communication error	Error code
F25	Communication error	Communication error	Error code
F27	System error	System Error	Error code
F28	System error	System Error	Error code
F29	Communication error	Communication error	Error code
F2A	Communication error	Communication error	Error code
F2B	No image data for reprint exists	No Image	---
F2F	System error	System Error	Error code
F3A	Communication error	Communication error	Error code
F51	System error	System Error	Error code
F57	Communication error	Communication error	Error code
F58	Communication error	Communication error	Error code
F59	System error	System Error	Error code
F60	A scanner fatal error occurs	See Table 3-4. Check point for Fatal error according to each phenomenon (p.43)	Error code
F61	A printer fatal error occurs	See Table 3-4. Check point for Fatal error according to each phenomenon (p.43)	Error code
F62	Reserved	---	Error code
F63	ADF misfeed or paper jam occurred	---	Error code
F64	The memory for printing received image is full	Error code	Error code

☐ Command/response code

Table 3-25. Command/Response Code

Command/ response code	FCF value (HEX) (LSB first: X=0)		Content
	First	Second	
DIS	80	-	Digital Identification Signal
CSI	40	-	Called Subscriber Identification
NSF	20	-	Non-Standard Facilities
DTC	81	-	Digital Transmit Command
CIG	41	-	CallInG subscriber identification
NSC	21	-	Non-Standard facilities Command
PWD	C1	-	PassWorD
SEP	A1	-	Selective Polling
Reserved (PSA)	61	-	Polled SubAddress
Reserved (CIA)	E1	-	Calling subscriber Internet Address
Reserved (ISP)	11	-	Internet Selective Polling address
DCS	82	-	Digital Command Signal
TSI	42	-	Transmitting Subscriber Identification
NSS	22	-	Non-Standard facilities Set-up
SUB	C2	-	SUBaddress
SID	A2	-	Sender IDentification
TRN	E6	-	Training
TCF	F0	-	Training Check
CTC	12	-	Continue To Correct
Reserved (TSA)	62	-	Transmitting Subscriber internet Address
Reserved (IRA)	E2	-	Internet Routing Address
CFR	84	-	ConFirmation to Receive
FTT	44	-	Failure To Train
CTR	C4	-	Response for Continue To correct
Reserved (CSA)	24	-	Called Subscriber internet Address
EOM	8E	-	End Of Message
MPS	4E	-	MultiPage Signal
EOP	2E	-	End Of Procedure
PRI-EOM	9E	-	Procedure Interrupt-End Of Message
PRI-MPS	5E	-	Procedure Interrupt-MultiPage Signal
PRI-EOP	3E	-	Procedure Interrupt-End Of Procedure
Reserved (EOS)	1E	-	End Of Selection
PPS-EOM	BE	8E	Partial Page Signal-End Of Message

Table 3-25. Command/Response Code

Command/ response code	FCF value (HEX) (LSB first: X=0)		Content
	First	Second	
PPS-MPS	BE	4E	Partial Page Signal-MultiPage Signal
PPS-EOP	BE	2E	Partial Page Signal-End Of Procedure
PPS-PRI-EOM	BE	9E	Partial Page Signal-Procedure Interrupt-End Of Message
PPS-PRI-MPS	BE	5E	Partial Page Signal-Procedure Interrupt-MultiPage Signal
PPS-PRI-EOP	BE	3E	Partial Page Signal-Procedure Interrupt-End Of Procedure
PPS-EOS	BE	1E	Partial Page Signal-End Of Selection
PPS-NULL	BE	00	Partial Page Signal-partial page boundary
EOR-EOM	CE	8E	End Of Retransmission-End Of Message
EOR-MPS	CE	4E	End Of Retransmission-MultiPage Signal
EOR-EOP	CE	2E	End Of Retransmission-End Of Procedure
EOR-PRI-EOM	CE	9E	End Of Retransmission-Procedure Interrupt-End Of Message
EOR-PRI-MPS	CE	5E	End Of Retransmission-Procedure Interrupt-MultiPage Signal
EOR-PRI-EOP	CE	3E	End Of Retransmission-Procedure Interrupt-End Of Procedure
EOR-EOS	CE	1E	End Of Retransmission-End Of Selection
EOR-NULL	CE	00	End Of Retransmission- partial page boundary
RR	6E	-	Receive Ready
MCF	8C	-	Message ConFirmation
RTP	CC	-	ReTrain Positive
RTN	4C	-	ReTrain Negative
PIP	AC	-	Procedure Interrupt Positive
PIN	2C	-	Procedure Interrupt Negative
PPR	BC	-	Partial Page Request
RNR	EC	-	Receive Not Ready
ERR	1C	-	Response for End of Retransmission
Reserved (FDM)	FC	-	File Diagnostic Message
DCN	FA	-	DisCoNnect
CRP	1A	-	Command RePeat
Reserved (FNV)	CA	-	Field Not Valid

Table 3-25. Command/Response Code

Command/ response code	FCF value (HEX) (LSB first: X=0)		Content
	First	Second	
PIX	FF	-	PIXel image
Space	Other combinations		Unknown command/response

### 3.5.2 Error Code/Superficial Phenomenon-Based Troubleshooting

This section explains the troubleshooting procedures based on the error codes and superficial phenomenon.



- When an error occurs, it may be displayed on the LCD panel with a message instead of an error code. To check the error code, print out a fax log.
- If the problem is not solved even after carrying out the remedy shown in the [Table 3-26](#), print out a protocol trace to analyze the cause of the error.

**Table 3-26. Troubleshooting based on the error code/superficial phenomenon**

Error code (LCD Message)/Phenomenon	Description	Remedy
Communication Error (The error is indicated with error code on the fax log.)	Communication error	Turn off v.34 and try again. Turn off ECM and try again. When using xDSL, check the connection from “Line” jack to the fax via the xDSL splitter. When using TAM, check the connection from “Line” jack to the TAM via the fax. Check if the telephone line makes any sounds.
Line Busy	The line is busy.	Try again later.
No answer	The other end of the line does not answer.	Check the number and dial again.
	The other end of the line answered but no answer tone is detected.	
Power fail	Power failure occurred during sending/receiving/printing/redialing.	Confirm the PS Board Connector Cable/PS Board is not damaged, and retry.
706,880-884,F21,F27-F28,F2F,F51,F59	A system error (fax circuit failure) occurs	Replace the Main board with a new one.
Memory full	Out of Memory	Ask the sender to resend the fax in several batches.
871	Maximum number of files is exceeded	
F60	A scanner fatal error occurred	See <a href="#">Table 3-4 “Check point for Fatal error according to each phenomenon” (p.43)</a>
F61	A printer fatal error occurred	
F62	Reserved	---
F63	ADF paper jam error	See <a href="#">Table 3-14 “Check point for ADF Paper Jam error according to each phenomenon” (p.59)</a>
F64	The memory for printing received image is full	Ask the sender to resend the fax in several batches.

**Table 3-26. Troubleshooting based on the error code/superficial phenomenon**

Error code (LCD Message)/Phenomenon	Description	Remedy
Cannot receive faxes	The telephone cable is not connected properly.	Connect the telephone cable properly.
	The telephone line is not working.	Verify if the phone line works by connecting to a phone to it.
	Auto answer is set to “N”.	Set to “Y”.
	DRD setting is incorrect.	Set the setting to “ALL” and try again. Should other ring patterns be selected, contact the telephone company.
	Calling signal cannot be detected.	Contact the telephone company or obtain the fax log for more analysis.
Cannot dial	The telephone cable is not connected properly.	Connect the telephone cable properly.
	The telephone line is not working.	Verify if the phone line works by connecting to a phone to it.
	Pulse/Tone dial setting error	Turn the setting to the other one and try again.
Cannot receive/send faxes in color	ECM is set to off.	Set to on and try again.
	Fax mode is set to “B&W only”.	Set to “B&W/Color”.
Cannot print all the received data when printing data stored in memory	The size of the memory is 2.0 Mbyte. If the data becomes over the set threshold, oldest data are deleted to make room for new ones.	Ask the sender to resend the data if necessary because the data deleted from the memory can not be restored.
Images run off the paper	Auto reduction is set to off.	Set auto reduction to on and reprint the data.
	Paper size setting does not match the size of the received data.	Choose the correct setting and reprint the data.
	Paper size setting does not match the size of papers in the tray.	Choose the correct setting or load correct sized papers in the tray and reprint the data.

## 3.6 Fax Function/External Connection (EXT port) Function Check

### 3.6.1 Outline

Fax function/External connection (EXT port) function must be checked in addition to usual printing/scanning function after repairing/refurbishing the defective units. The following table describes each check method. Select an applicable Fax Function check method in your repair center and implement this operation.

**Table 3-27. Fax Function/EXT port Function check**

Checked Function	Check Method	Necessary Tools	Check Point
Fax Function	Method A* <sup>1</sup> (PC FAX) (p.74)	<ul style="list-style-type: none"> <li>PC (OS: Win XP)</li> <li>Repaired/Refurbished unit (1unit)</li> <li>Telephone line simulator*<sup>1</sup> (1pcs.)</li> <li>Fax cable (2pcs.)</li> </ul>	
	Method B* <sup>1</sup> (Only simulator) (p.78)	<ul style="list-style-type: none"> <li>Guaranteed unit (e.g. WorkForce 310/520/320/325 series)</li> <li>Repaired/Refurbished unit (1unit)</li> <li>Telephone line simulator*<sup>1</sup> (1pcs.)</li> <li>Fax cable (2pcs.)</li> </ul>	<p><b>[Sender's check point]</b> Make sure that printer send fax data correctly.</p> <p><b>[Receiver's check point]</b> Make sure that printer receive fax data correctly.</p>
	Method C (PBX FAX) (p.79)	<ul style="list-style-type: none"> <li>Guaranteed unit (e.g. WorkForce 310/520/320/325 series)</li> <li>Repaired/Refurbished unit (1unit)</li> <li>PBX in your office (internal phone)</li> <li>Fax cable (2pcs.)</li> </ul>	
External Connection (EXT port) Function	--- * <sup>2</sup>	<ul style="list-style-type: none"> <li>Telephone (1pcs.)</li> <li>Fax cable (1pcs.)</li> </ul>	<ol style="list-style-type: none"> <li>1. Check if you can hear ringing tone from telephone before receiving fax. In this case, the telephone sounds ringing.</li> <li>2. Check if you can't hear dial tone from the telephone during receiving fax data. In this case, the telephone doesn't sound dial tone.</li> </ol>

Note \*<sup>1</sup>: In case of these methods, you have to use telephone line simulator for checking fax function. For your reference, web site address of the simulator is outlined below.  
(as of August 2007)

[http://www.telephonetribute.com/telco\\_line\\_simulators.html](http://www.telephonetribute.com/telco_line_simulators.html)

<http://www.skutchelectronics.com/sims.htm>

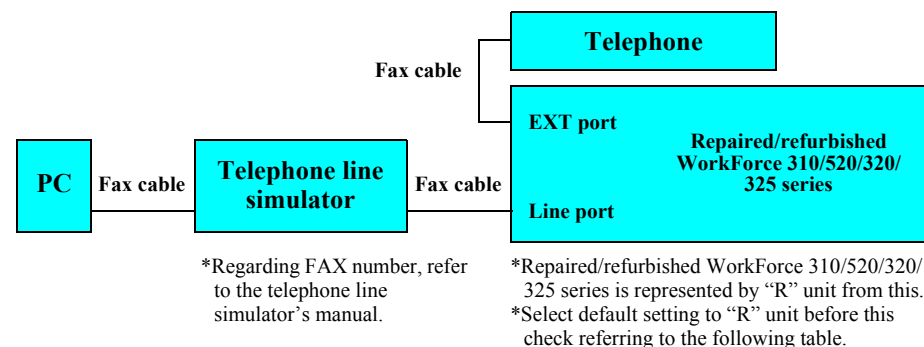
\*<sup>2</sup>: You have to check this test whether you select any check method above.

## 3.6.2 Fax Function and External Connection Function Check

The following shows the detailed check condition/procedure of each method.

### 3.6.2.1 Fax Function Check by [Method A] and External Connection Function Check

#### SETTING METHOD



**Table 3-28. Default Settings of Repaired WorkForce 310/520/320/325 series ("R")**

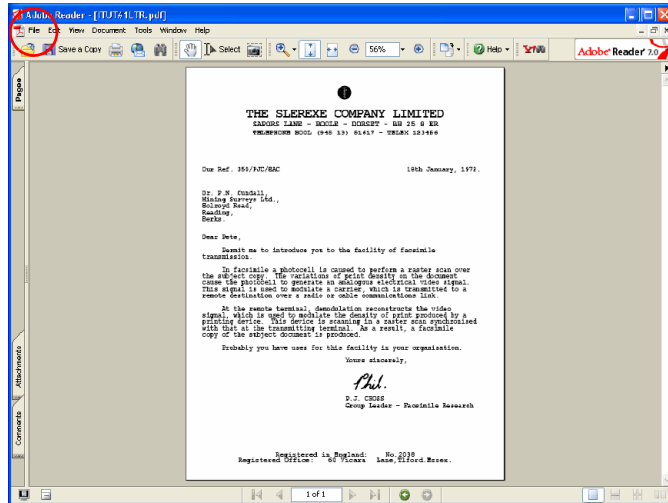
No	Function	Default Setting
1	Resolution	Standard
2	Contrast	Normal
3	Paper size	For US, Canada, Latin: "Letter" For other destinations: "A4"
4	Automatic reduction	On
5	Last transmission report	Off
6	Dial mode	Tone
7	DRD	All
8	ECM	On
9	V.34	On
10	Rings to answer	"5" *For Taiwan, Singapore: "2"

Note \*: This default setting is applied for [Condition B] and [Condition C].

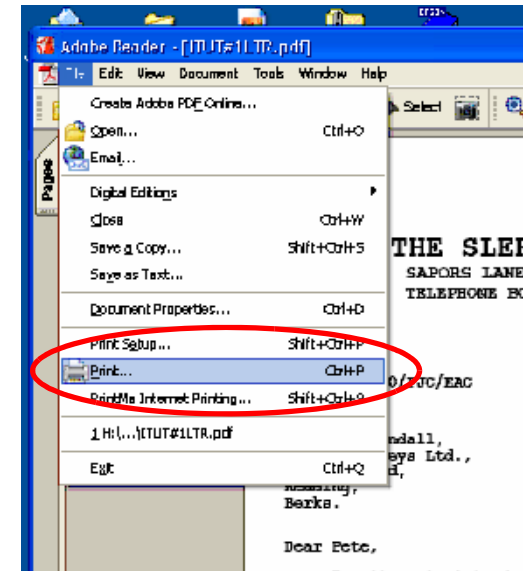
## CHECK PROCEDURE

[Sender: PC =>Receiver: "R" unit]

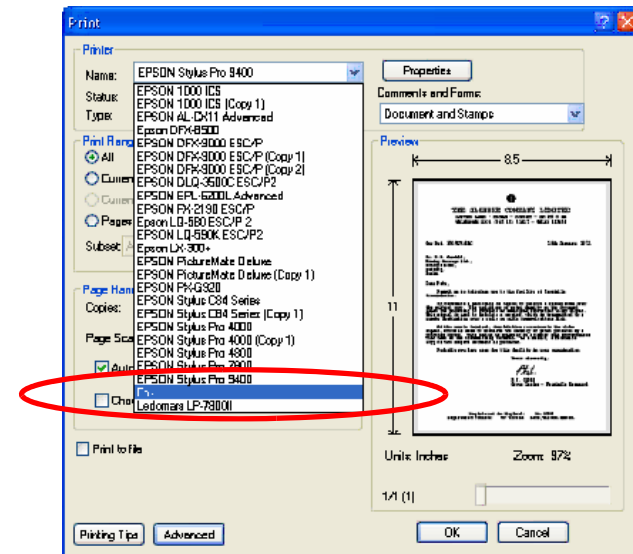
1. Install test chart (test chart name: "ITUT#1LTR.pdf") to PC.
2. Open test chart and select "File" menu.



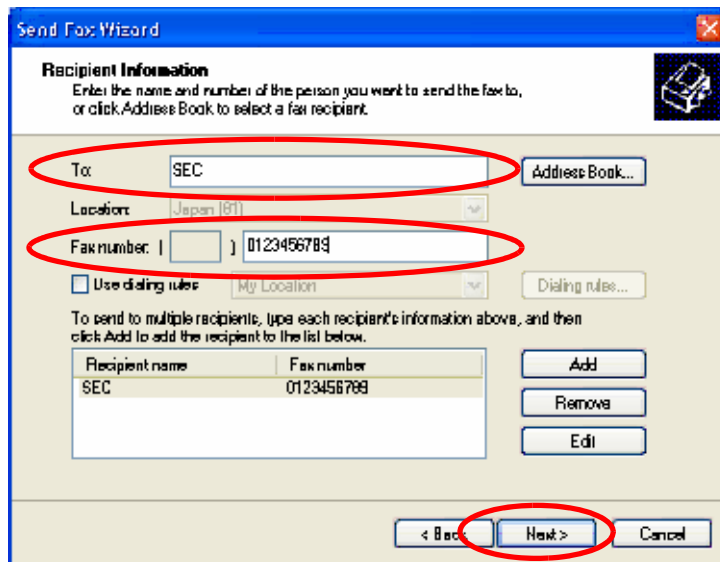
3. Select "Print.....".



4. Select "Fax" from "Printer Name".



5. Input "Receiver Name" and "Fax Number", and click "Next" button.



**Send Fax Wizard**

**Recipient Information**  
Enter the name and number of the person you want to send the fax to, or click Address Book to select a fax recipient.

To:  Address Book...

Location:

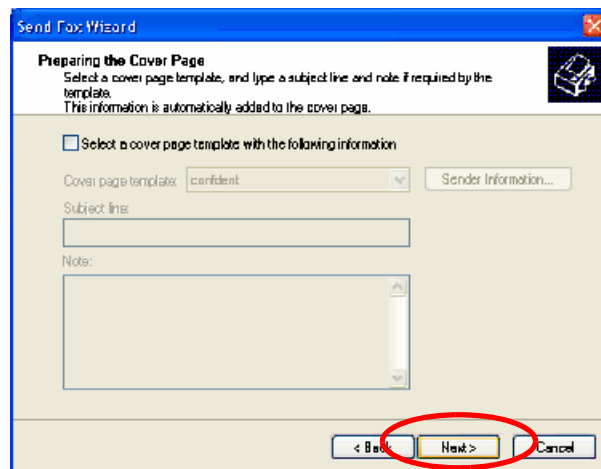
Fax number:

☐ Use dialing rules  Dialing rules...

To send to multiple recipients, type each recipient's information above, and then click Add to add the recipient to the list below.

Recipient name	Fax number
SEC	0123456789

6. Click "Next" button.



**Send Fax Wizard**

**Preparing the Cover Page**  
Select a cover page template, and type a subject line and note if required by the template. This information is automatically added to the cover page.

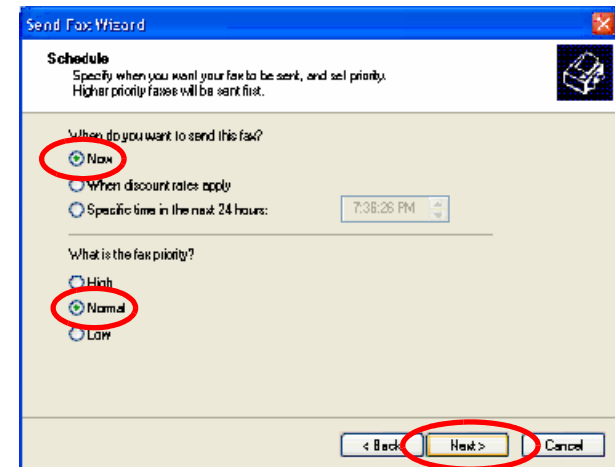
☐ Select a cover page template with the following information

Cover page template:  Sender Information...

Subject line:

Note:

7. Check as below screen, and click "Next" button.



**Send Fax Wizard**

**Schedule**  
Specify when you want your fax to be sent, and set priority. Higher priority faxes will be sent first.

When do you want to send this fax?

☒ Now

☐ When discount rates apply

☐ Specific time in the next 24 hours:

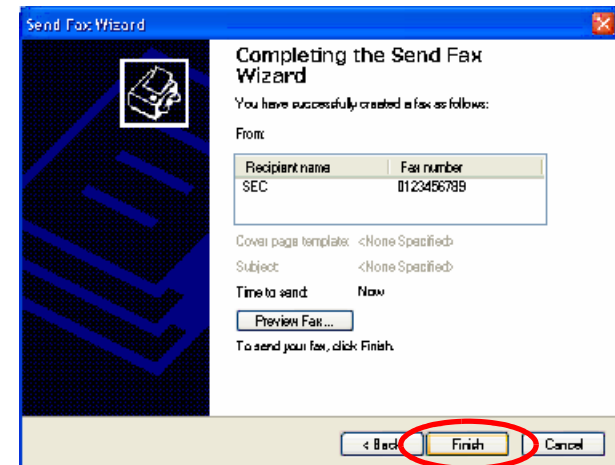
What is the fax priority?

☐ High

☒ Normal

☐ Low

8. Click "Finish" button to send fax data from PC to "R" unit.



**Send Fax Wizard**

**Completing the Send Fax Wizard**  
You have successfully created a fax as follows:

From:

Recipient name	Fax number
SEC	0123456789

Cover page template:

Subject:

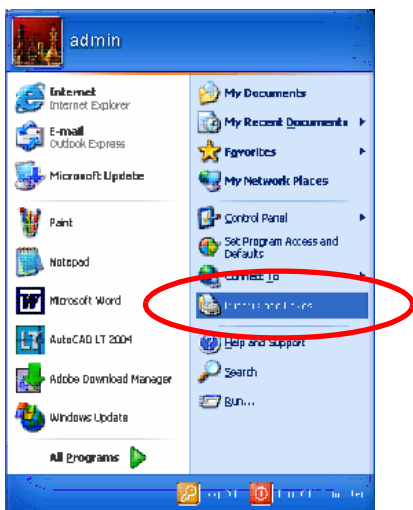
Time to send:

To send your fax, click Finish.

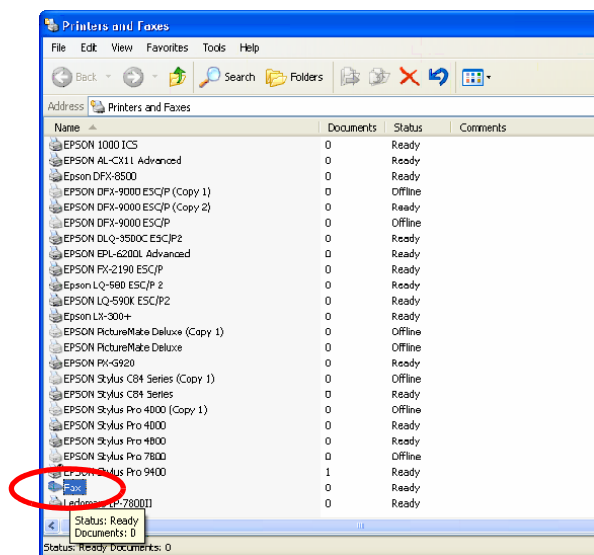
9. Confirm if telephone rings correctly during calling tone of "R" unit rings.
10. Confirm if dial tone of telephone is lost during "R" unit receives fax data without calling tone.

[Sender: "R" unit => Receiver: PC]

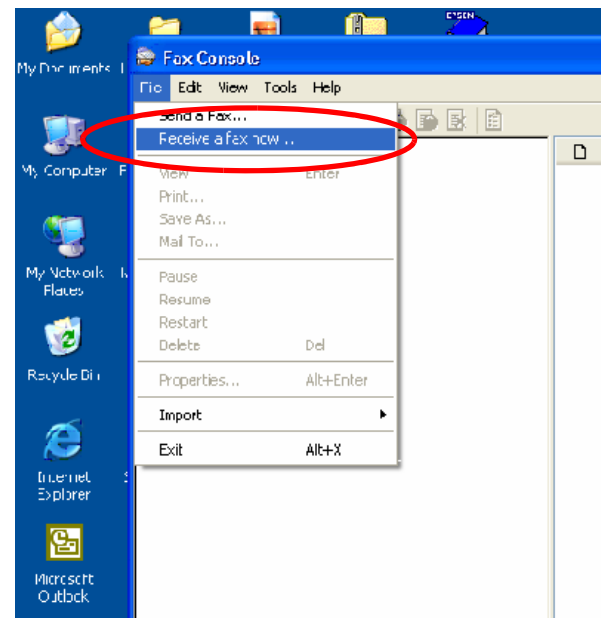
1. Select "Printer and Faxes" from Windows start menu.



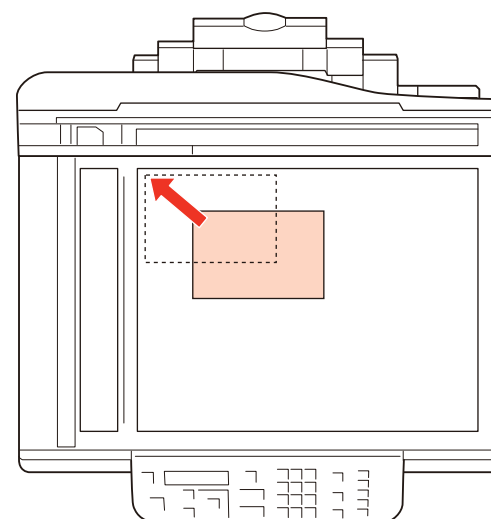
2. Select "Fax console" window.



3. Select "Receive a fax now....." from file menu.



4. Set test chart on the document glass of "R" unit.





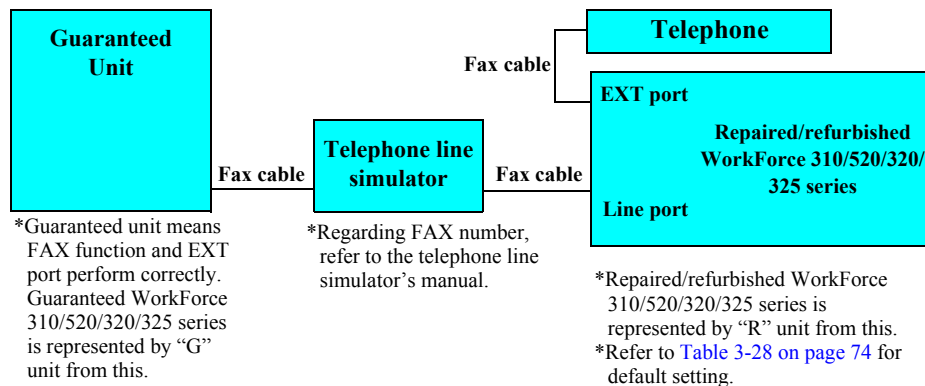
5. Enter fax mode by pushing fax button.
6. Input fax number of PC on "R" unit. (Regarding FAX number, refer to the telephone line simulator's manual.)
7. Push "Start" button in "B&W" mode.
8. Push "Back" button after being displayed as "Send another page?" on LCD panel to send fax data from "R" unit to PC.

### CHECK POINT OF "R" UNIT

Checked Function	Check Timing	Check Point
Fax Function	After sending of fax data	Make sure that "R" unit sends fax data correctly.
	After receiving of fax data	Make sure that "R" unit receives fax data correctly.
External Connection (EXT port) Function	During calling of fax (Step 9)	Check if you can hear ringing tone from telephone before receiving fax. In this case, the telephone sounds ringing.
	During receiving fax data (Step 10)	Check if you can't hear dial tone from the telephone during receiving fax data. In this case, the telephone doesn't sound dial tone.

### 3.6.2.2 Fax Function Check by [Method B] and External Connection Function Check

#### SETTING METHOD



### CHECK PROCEDURE

[Sender: "R" unit => Receiver: "G" unit]

1. Set test chart on the document glass of "R" unit.
2. Enter fax mode by pushing fax button.
3. Input fax number of "G" unit on "R" unit. (Regarding FAX number, refer to the telephone line simulator's manual.)
4. Push "Start" button in "B&W" mode.
5. Push "Back" button after being displayed as "Send another page?" on LCD panel to send fax data from "R" unit to "G" unit.

[Sender: "G" unit => Receiver: "R" unit]

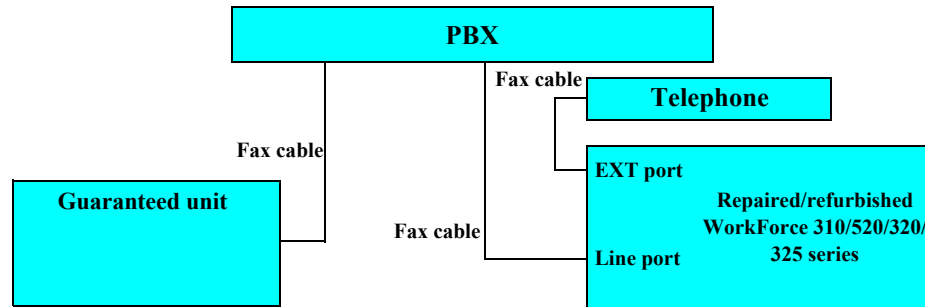
1. Set test chart on the document glass of "G" unit.
2. Enter fax mode by pushing fax button.
3. Input fax number of "R" unit on "G" unit. (Regarding FAX number, refer to the telephone line simulator's manual.)
4. Push "Start" button in "B&W" mode.
5. Push "Back" button after being displayed as "Send another page?" on LCD panel to send fax data from "G" unit to "R" unit.
6. Confirm if telephone rings correctly during calling tone of "R" unit rings.
7. Confirm if dial tone of telephone is lost during "R" unit receives fax data without calling tone.

### CHECK POINT OF "R" UNIT

Checked Function	Check Timing	Check Point
Fax Function	After sending of fax data	Make sure that "R" unit sends fax data correctly.
	After receiving of fax data	Make sure that "R" unit receives fax data correctly.
External Connection (EXT port) Function	During calling of fax (Step 6)	Check if you can hear ringing tone from telephone before receiving fax. In this case, the telephone sounds ringing.
	During receiving fax data (Step 7)	Check if you can't hear dial tone from the telephone during receiving fax data. In this case, the telephone doesn't sound dial tone.

### 3.6.2.3 Fax Function Check by [Method C] and External Connection Function Check

#### SETTING METHOD



\*Guaranteed unit means FAX function and EXT port perform correctly. Guaranteed WorkForce 310/520/320/325 series is represented by “G” unit from this.

\*Repaired/refurbished WorkForce 310/520/320/325 series is represented by “R” unit from this.

\*Refer to [Table 3-28 on page 74](#) for default setting.

#### CHECK PROCEDURE

[Sender: “R” unit => Receiver: “G” unit]

1. Set test chart on the document glass of “R” unit.
2. Enter fax mode by pushing fax button.
3. Input fax number of “G” unit on “R” unit. (Regarding FAX number, refer to the telephone line simulator’s manual.)
4. Push “Start” button in “B&W” mode.
5. Push “Back” button after being displayed as “Send another page?” on LCD panel to send fax data from “R” unit to “G” unit.

[Sender: “G” unit => Receiver: “R” unit]

1. Set test chart on the document glass of “G” unit.
2. Enter fax mode by pushing fax button.
3. Input fax number of “R” unit on “G” unit. (Regarding FAX number, refer to the telephone line simulator’s manual.)
4. Push “Start” button in “B&W” mode.
5. Push “Back” button after being displayed as “Send another page?” on LCD panel to send fax data from “G” unit to “R” unit.
6. Confirm if telephone rings correctly during calling tone of “R” unit rings.
7. Confirm if dial tone of telephone is lost during “R” unit receives fax data without calling tone.

#### CHECK POINT OF “R” UNIT

Checked Function	Check Timing	Check Point
Fax Function	After sending of fax data	Make sure that “R” unit sends fax data correctly.
	After receiving of fax data	Make sure that “R” unit receives fax data correctly.
External Connection (EXT port) Function	During calling of fax (Step 6)	Check if you can hear ringing tone from telephone before receiving fax. In this case, the telephone sounds ringing.
	During receiving fax data (Step 7)	Check if you can't hear dial tone from the telephone during receiving fax data. In this case, the telephone doesn't sound dial tone.

CHAPTER

4

# DISASSEMBLY/ASSEMBLY

## 4.1 Overview



- In this chapter, the product names are called as follows:

Notation	Product name
WorkForce 310 series	WorkForce 310, Epson Stylus Office TX510FN/TX515FN/BX310FN/ME OFFICE 650FN
WorkForce 520 series	WorkForce 520/525, Epson Stylus Office TX525FW/BX320FW
WorkForce 320 series	WorkForce 320, Epson Stylus Office TX320F/BX305F/TX325F/ME OFFICE 620F
WorkForce 325 series	WorkForce 325/323, Epson Stylus Office BX305FW

- Description of the disassembly/reassembly procedures in this chapter is for WorkForce 310 series. Description of WorkForce 520/320/325 series is in **"Chapter 8 WorkForce 520/320/325 series" (p.156)**. Therefore, when confirming the procedures for WorkForce 520/320/325 series, refer to **"8.4 DISASSEMBLY/ASSEMBLY" (p.164)**.

This chapter describes procedures for disassembling the main components of this product. Unless otherwise specified, disassembled units or components can be reassembled by reversing the disassembly procedure. Procedures which, if not strictly observed, could result in personal injury are described under the heading "WARNING". "CAUTION" signals a precaution which, if ignored, could result in damage to equipment. Important tips for procedures are described under the heading "CHECK POINT". If the assembly procedure is different from the reversed disassembly procedure, the correct procedure is described under the heading "REASSEMBLY". Any adjustments required after reassembly of components or parts are described under the heading "ADJUSTMENT REQUIRED". When you have to remove any components or parts that are not described in this chapter, refer to the exploded diagrams in the appendix.

Read the following precautions before disassembling and assembling.

### 4.1.1 Precautions

See the precautions given under the heading "WARNING" and "CAUTION" in the following columns when disassembling or assembling this product.



- Disconnect the power cable before disassembling or assembling the printer.
- If you need to work on the printer with power applied, strictly follow the instructions in this manual.
- Always wear gloves for disassembly and reassembly to protect your eyes from ink. If any ink gets in your eyes, wash your eyes with clean water and consult 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 doctor immediately.



- 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.
- Observe the specified torque when tightening screws.
- Apply lubricants as specified. (See Chapter 6 "MAINTENANCE" (p147) for details.)
- Make the specified adjustments when you disassemble the printer. (See Chapter 5 "ADJUSTMENT" (p135) for details.)
- When reassembling the Waste Ink Tube, make sure that the tip of waste ink tube is placed in the correct position, otherwise ink may leak.
- When using compressed air products; such as air duster, for cleaning during repair and maintenance, the use of such products containing flammable gas is prohibited.

## 4.1.2 Tools

Use only specified tools to avoid damaging the printer.

**Table 4-1. Tools**

Name	EPSON Tool Code*
(+) Phillips screwdriver #1	1080530
(+) Phillips screwdriver #2	---
Flathead screwdriver	---
Flathead Precision screwdriver #1	---
Tweezers	---
Longnose pliers	---
Acetate tape	1003963
Nippers	---

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

## 4.1.3 Work Completion Check

If any service is made to the printer, use the checklist shown below to confirm all works are completed properly and the printer is ready to be returned to the user.

**Table 4-2. Work Completion Check**

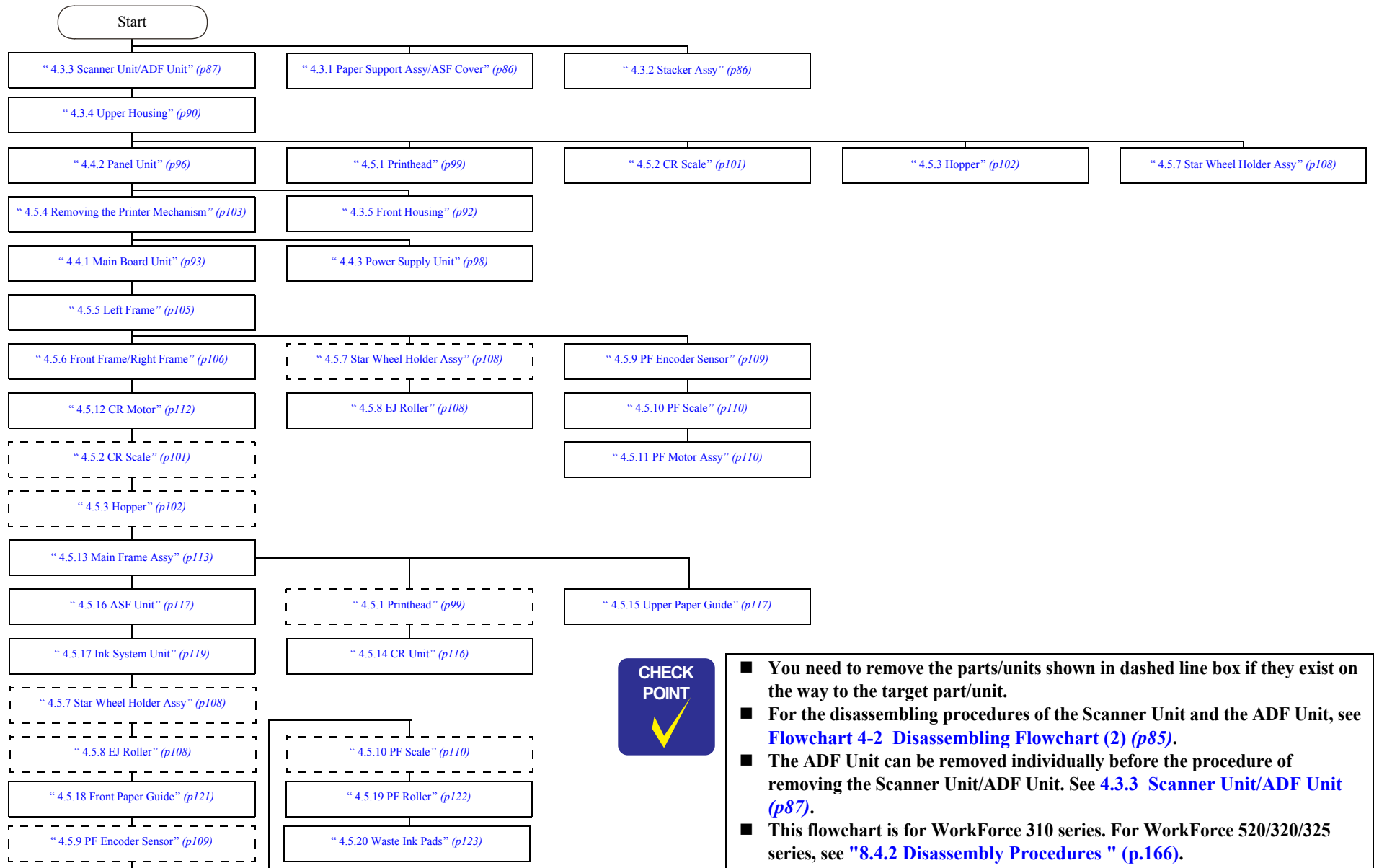
Classification	Item	Check Point	Status
Printer Unit	Self-test	Is the operation normal?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	ON-line Test	Is the printing successful?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Printhead (Nozzle check pattern print)	Is ink discharged normally from all the nozzles?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Carriage Mechanism	Does it move smoothly?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Is there any abnormal noise during its operation?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Is the CR Motor at the correct temperature? (Not too hot to touch?)	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Paper Feeding Mechanism	Is paper advanced smoothly?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		No paper jamming?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		No paper skew?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		No multiple feeding?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		No abnormal noise?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Is the paper path free of any obstructions?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Is the PF Motor at correct temperature?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Scanner unit	Mechanism	Is glass surface dirty?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Is any foreign substance mixed in the CR movement area?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	CR mechanism	Does CR operate smoothly?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Does CR operate together with scanner unit?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Does CR make abnormal noise during its operation?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	LED	Does LED turn on normally? And is white reflection test done near home position?	<input type="checkbox"/> OK / <input type="checkbox"/> NG

Table 4-2. Work Completion Check

Classification	Item	Check Point	Status
ADF	Paper Feeding Mechanism	Is paper advanced smoothly?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		No paper jamming?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		No paper skew?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		No multiple feeding?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		No abnormal noise?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Is the paper path free of any obstructions?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
ON-line Test	ON-line Test	Is the operation normal?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Copy	Copy	Is the local copy action normal?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Adjustment	Specified Adjustment	Are all the adjustment done correctly	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Lubrication	Specified Lubrication	Are all the lubrication made at the specified points?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Is the amount of lubrication correct?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Function	ROM Version	Version:	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Packing	Ink Cartridge	Are the ink cartridges installed correctly?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Waste Ink pad	Are the waste ink pads adequate to absorb?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Protective materials	Is the printer carriage placed at the capping position?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Others	Attachments, Accessories	Have all the relevant items been included in the package?	<input type="checkbox"/> OK / <input type="checkbox"/> NG

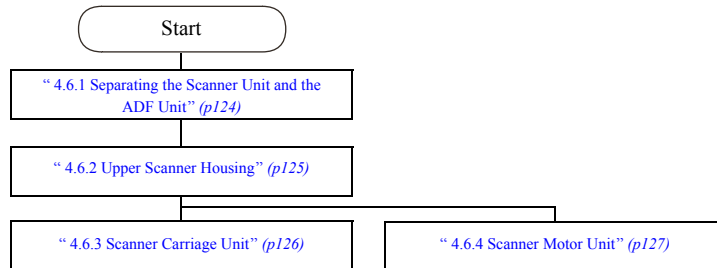
## 4.2 Disassembly Procedures

For disassembling each unit, refer to the pages in the following flowchart.

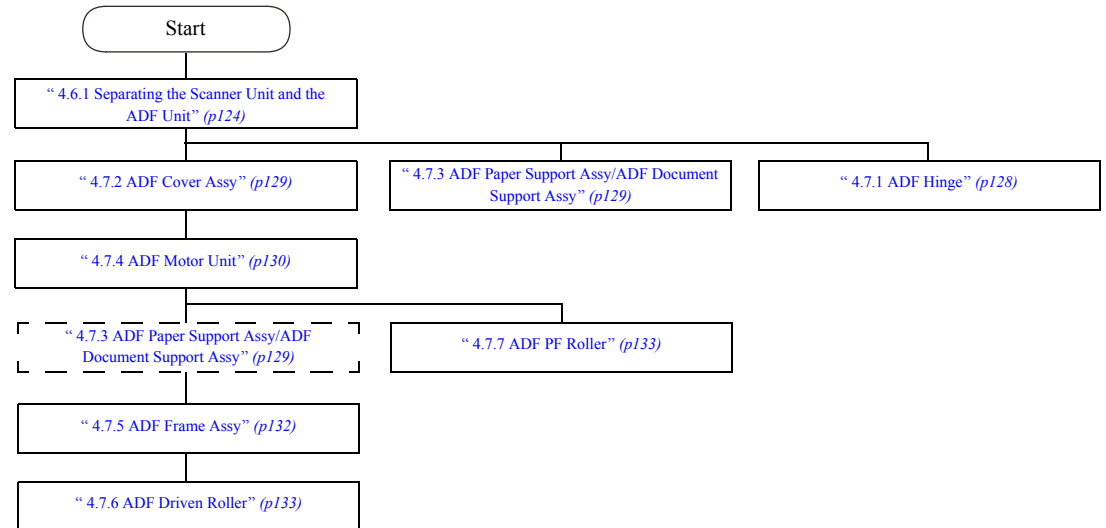


Flowchart 4-1. Disassembling Flowchart (1)

### □ Disassembling the Scanner Unit



### □ Disassembling the ADF Unit



- You need to remove the parts/units shown in dashed line box if they exist on the way to the target part/unit.
- For the disassembling procedures of the Scanner Unit and the ADF Unit, see [Flowchart 4-1 Disassembling Flowchart \(1\) \(p84\)](#).
- The ADF Unit can be removed individually before the procedure of removing the Scanner Unit/ADF Unit. See [4.3.3 Scanner Unit/ADF Unit \(p87\)](#).

Flowchart 4-2. Disassembling Flowchart (2)



## 4.3 Removing the Housing

### 4.3.1 Paper Support Assy/ASF Cover

- ☐ Parts/Components need to be removed in advance: None
- ☐ Removal procedure
  1. Release the dowels (x2) that secure the Paper Support Assy and remove it from the Upper Housing.

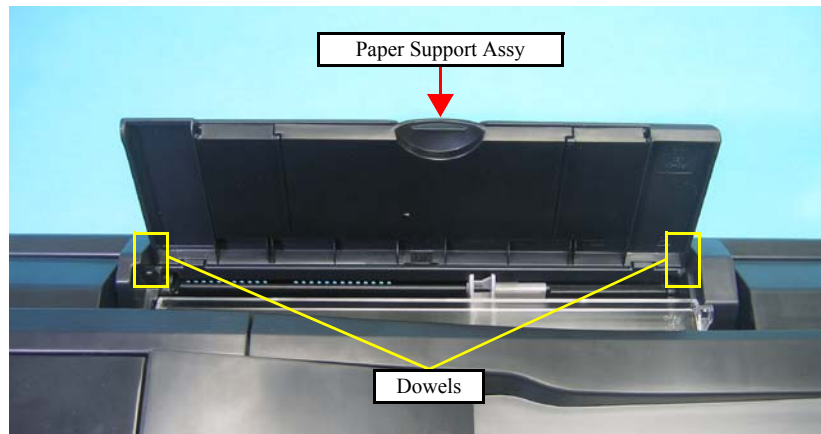


Figure 4-1. Removing the Paper Support Assy

2. Release the dowels (x2), and remove the ASF Cover.

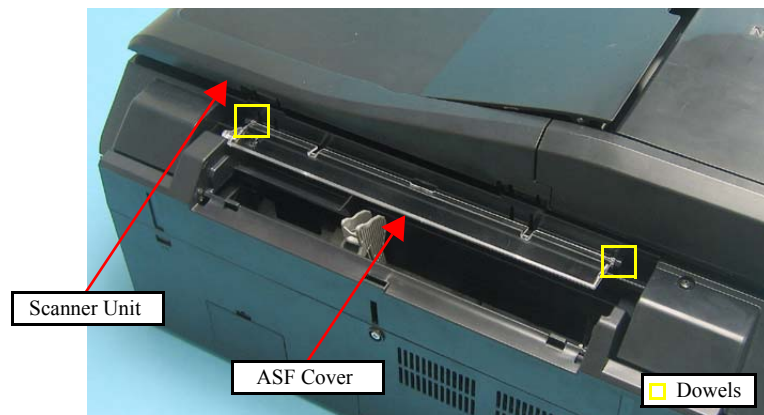


Figure 4-2. Removing the ASF Cover

### 4.3.2 Stacker Assy

- ☐ Parts/Components need to be removed in advance: None
- ☐ Removal procedure
  1. Pull out the Stacker Assy.
  2. Release the hooks (x2) of the Stacker Assy from the ribs (x2) of the Lower Housing at the bottom, and remove the Stacker Assy.

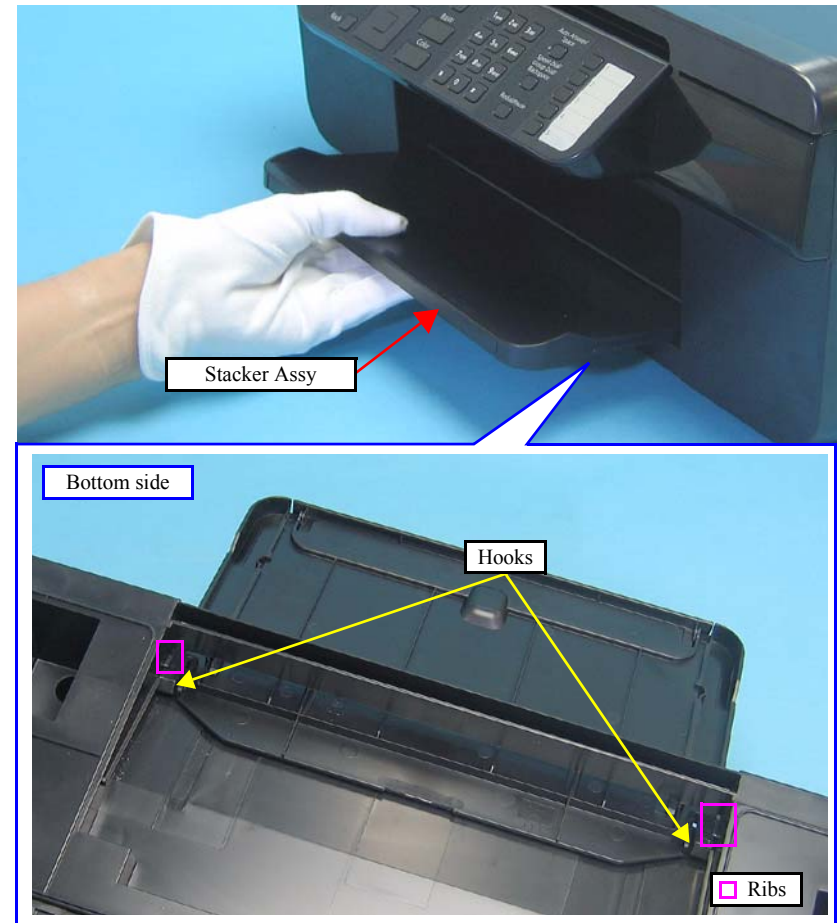


Figure 4-3. Removing the Stacker Assy

### 4.3.3 Scanner Unit/ADF Unit

#### CHECK POINT



- When removing the ADF Unit individually, follow the procedure below.
  1. Step 1 and 3 of 4.3.3 Scanner Unit/ADF Unit (p87)
  2. All the steps of 4.6.1 Separating the Scanner Unit and the ADF Unit (p124)
- Disassembly/reassembly procedures for WorkForce 520/320/325 series are basically the same as those for WorkForce 310 series, but the routing of cables differs. See below for the routing of WorkForce 520/320/325 series.
  - WorkForce 520 series  
“8.4.3.1 Scanner Unit/ADF Unit (WorkForce 520 series)” (p168)
  - WorkForce 320/325 series:  
“8.4.6.1 Scanner Unit/ADF Unit (WorkForce 320/325 series)” (p180)

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

□ Removal procedure

1. Remove the screw that secures the Interface Cover and release the hook, and then remove the Interface Cover.

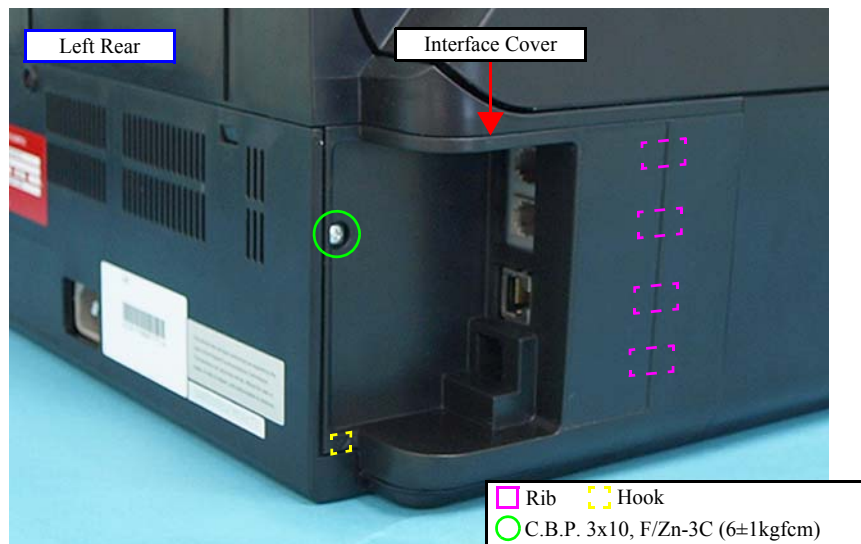


Figure 4-4. Removing the Interface Cover

2. Remove the screw that secures the grounding wire of the Scanner Unit.
3. Disconnect the Scanner Motor cable (CN8), Scanner Carriage FFC (CN17), ADF Sensor cable (CN18) and ADF Motor connector cable (CN19) from the connectors on the Main Board, and release them from the groove of the Lower Housing.
4. Peel off the Scanner Carriage FFC secured with the double-sided tape from the Left Frame.

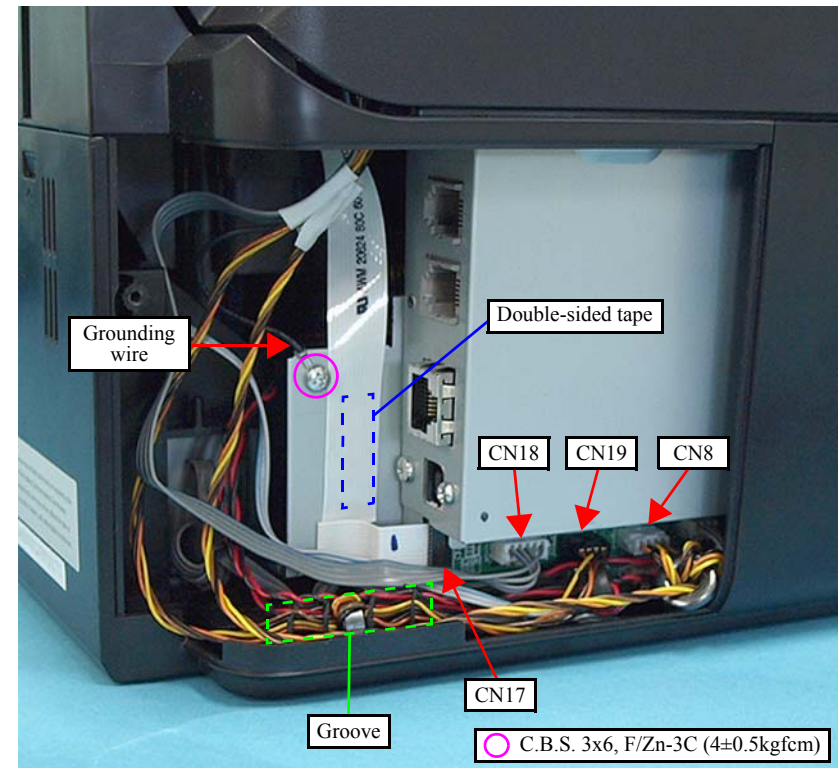


Figure 4-5. Removing the Scanner Unit/ADF Unit (1)

5. Remove the screw that secure the Scanner Unit.
6. Open the Scanner Unit.
7. Remove the Scanner Unit and the ADF Unit by pulling them out in the direction of the arrow while taking care not to hook the cables of the Scanner Unit and ADF Unit to the Upper Housing.



Figure 4-6. Removing the Scanner Unit/ADF Unit (2)



- When installing the Scanner Unit and ADF Unit, follow the procedure below.
1. Insert the dowel of the Upper Housing at the right inside of the printer to the positioning hole of the Scanner Unit.
  2. Insert the rib of the hinge into the groove of the Scanner Unit.

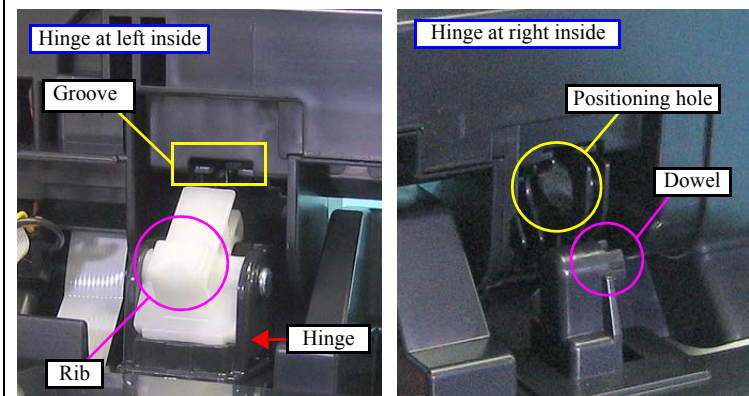


Figure 4-7. Installing the Scanner Unit/ADF Unit



**REASSEMBLY**

- Check the following points when routing the cables of the Scanner Unit and the ADF Unit.
  - Make sure to route the Scanner Motor cable through the groove of the Lower Housing.
  - Store the ferrite core of the ADF Motor cable to the Point A, and route it through the ribs (x3).

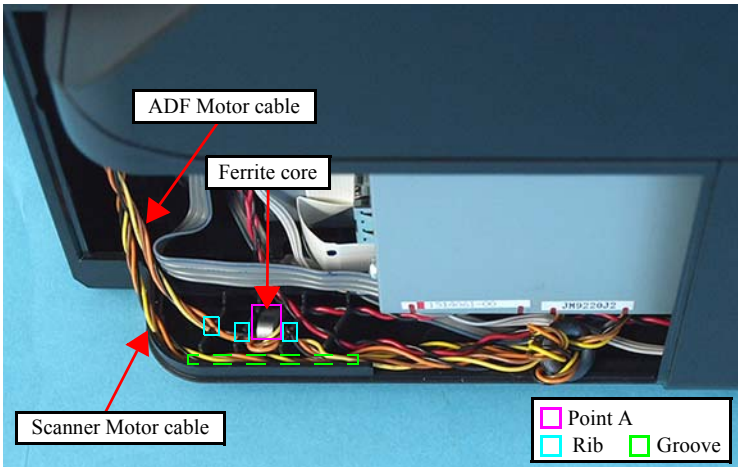


Figure 4-8. Routing the cables.

**REASSEMBLY**

- When routing the Scanner Carriage FFC, follow the steps below while referring to the [Figure 4-9](#).
  1. Fold and secure the FFC with the double-sided tape (1) as shown in the figure, and route it vertically on the Left Frame, then secure it with the double-sided tape (2).
  2. Connect the FFC to connector CN17 on the Main Board.

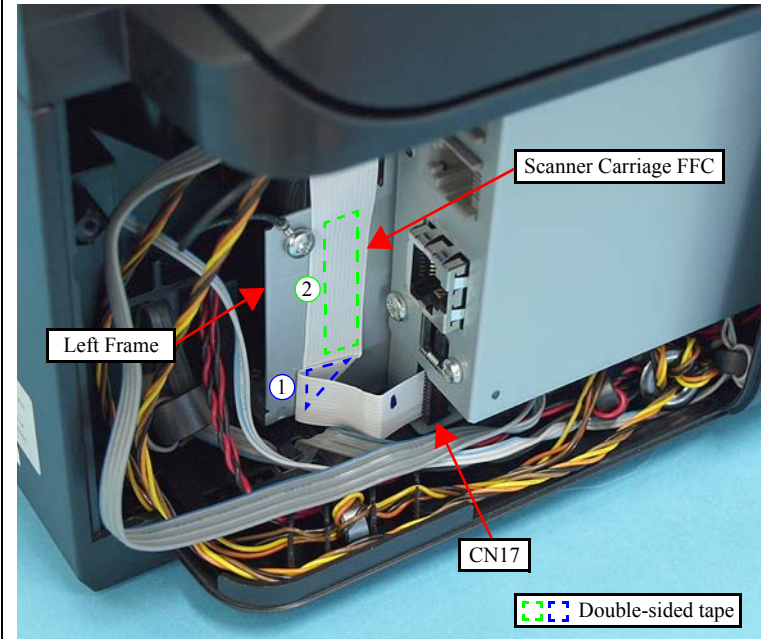


Figure 4-9. Routing the cables and FFC

### 4.3.4 Upper Housing

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)

- Removal procedure

1. Remove the screw that secure the Hinge, and remove the Hinge.



Figure 4-10. Removing the Hinge

2. Remove the screws (x5) that secure the Upper Housing.
3. Release the hooks (x2) at the rear of the Upper Housing.

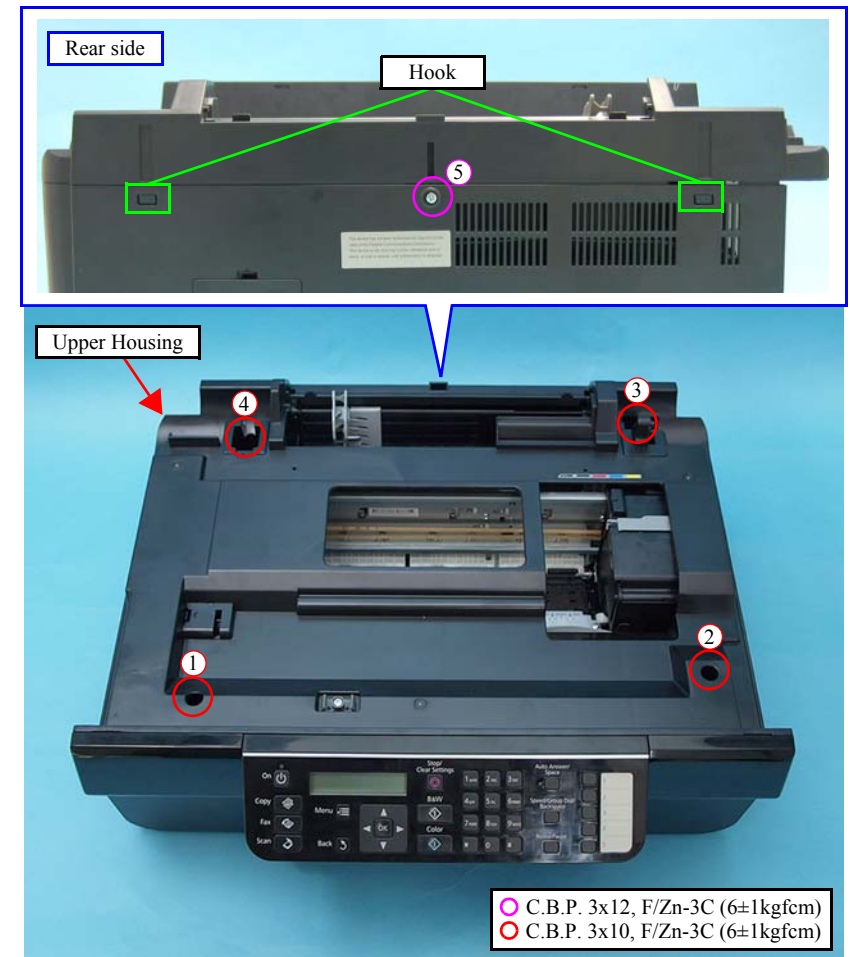
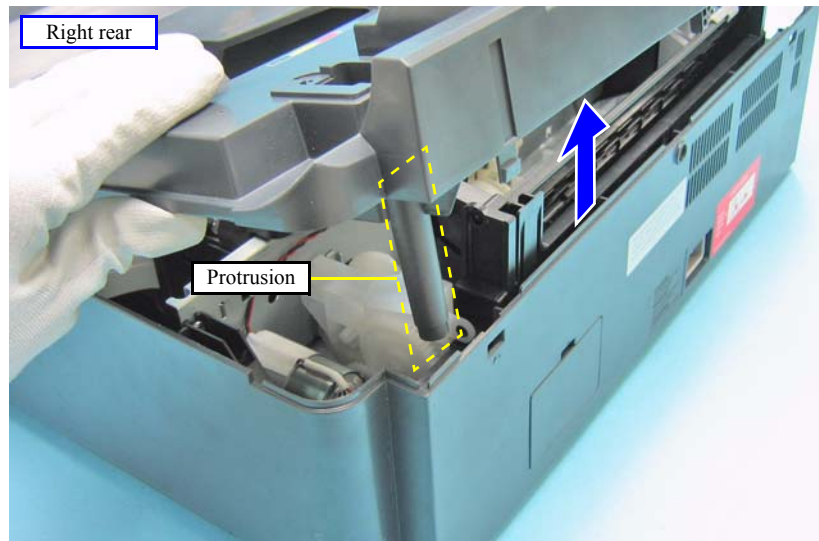


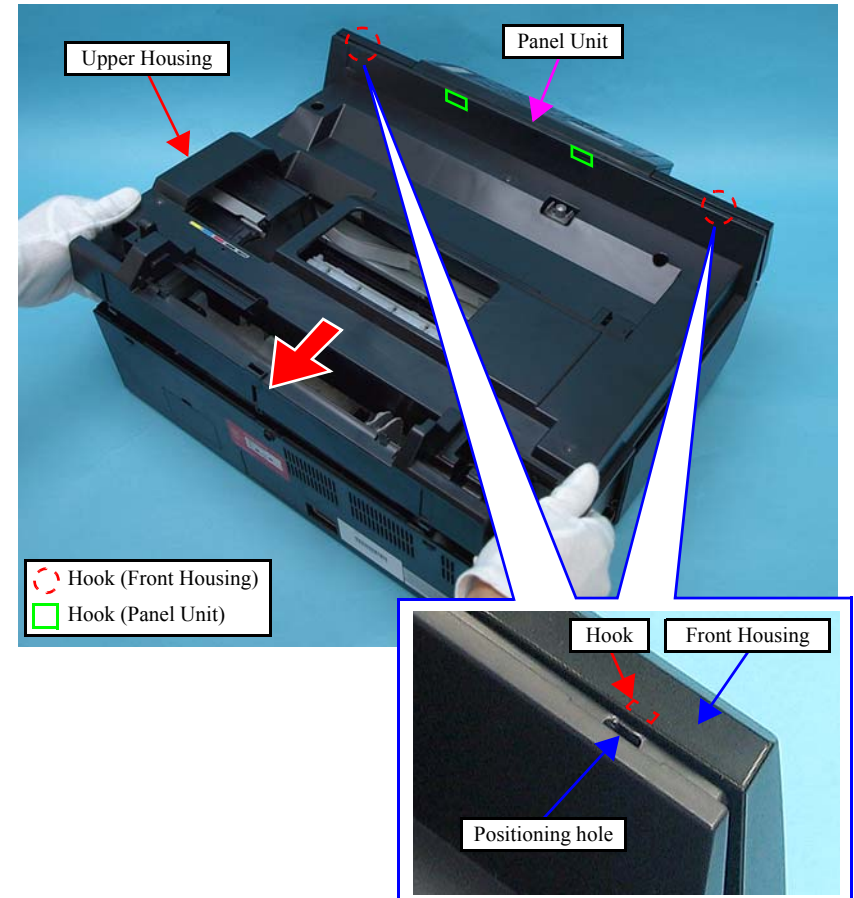
Figure 4-11. Removing the Upper Housing (1)

4. Lift the rear of the Upper Housing until its protrusion comes to the point shown in **Figure 4-12**.



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

5. Insert a flat-head screwdriver or a similar tool to the marked points (ⓧ) between the Front Housing and the Upper Housing to release the hooks (x2).
6. Pull the Upper Housing to the rear so as to release the hooks (x2) of the Panel Unit while taking care not to hit it to the Lower Housing.



**Figure 4-13. Removing the Upper Housing (3)**

7. Lift the Upper Housing a little to disconnect the connector (CN16) of the Cover Open Sensor Cable from the Main Board, then remove the Upper Housing.

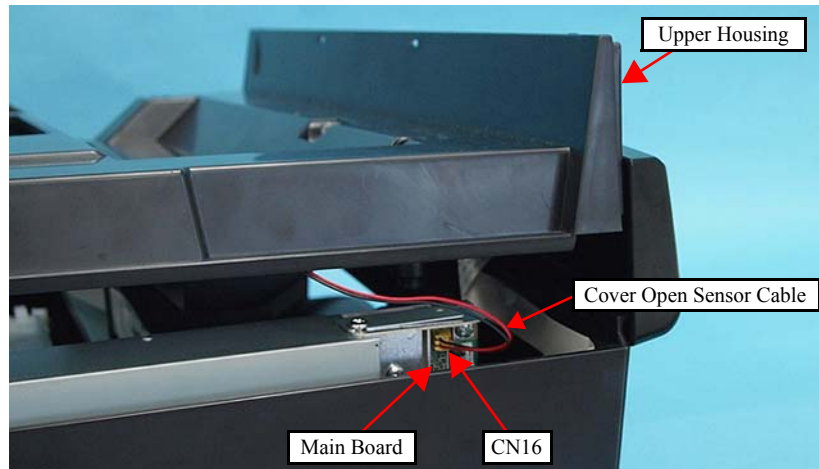


Figure 4-14. Removing the Upper Housing (4)

#### REASSEMBLY



- When installing the Upper Housing, tighten the screws in the order given in [Figure 4-11](#).
- When replacing the Upper Housing, make sure to attach the Cartridge Position Label aligning it with the area (slightly hollowed area) shown in the figure below.

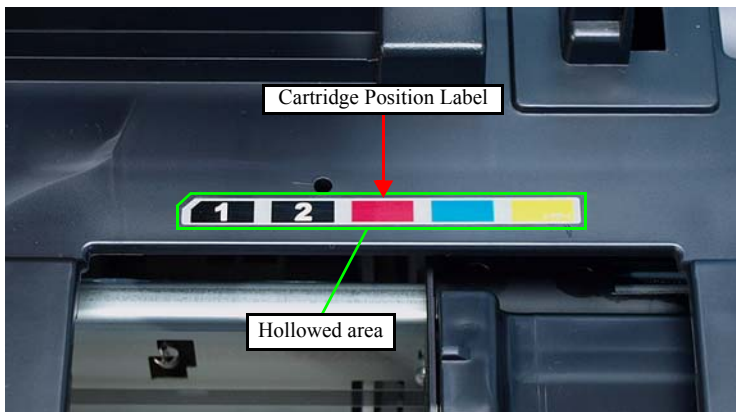


Figure 4-15. Installing the Upper Housing

### 4.3.5 Front Housing

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit ([p87](#))/Upper Housing ([p90](#))/Panel Unit ([p96](#))
- Removal procedure
  1. Release the dowels (x2) on both left and right sides and remove the screws (x3), then remove the Front Housing by sliding it in the direction of the arrow.

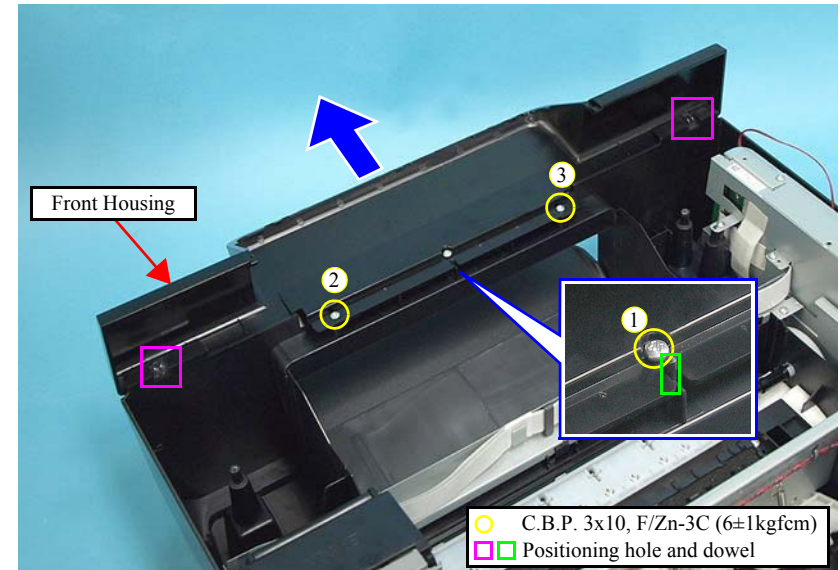


Figure 4-16. Removing the Front Housing

#### REASSEMBLY



- Tighten the screws in the order given in [Figure 4-16](#).
- Make sure to match the positioning holes and dowels (x3).



## 4.4 Removing the Circuit Boards

### 4.4.1 Main Board Unit

#### CHECK POINT



See the following because the disassembling/reassembling procedures of the Main Board Unit for WorkForce 520/320/325 series differ from those of WorkForce 310 series.

- WorkForce 520 series:  
“8.4.4.1 Main Board Unit (WorkForce 520 series)” (p171)
- WorkForce 320 series:  
“8.4.6.2 Main Board Unit (WorkForce 320 series)” (p182)
- WorkForce 325 series:  
“8.4.6.3 Main Board Unit (WorkForce 325 series)” (p186)

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)

- Removal procedure

1. Disconnect the following connectors (x4) and FFC from the Main Board.

CN No.	Cable	CN No.	Cable
CN6	CR Motor cable	CN15	PE Sensor cable
CN7	PF Motor cable	CN501	Power Supply Unit cable
CN14	PF Encoder FFC		

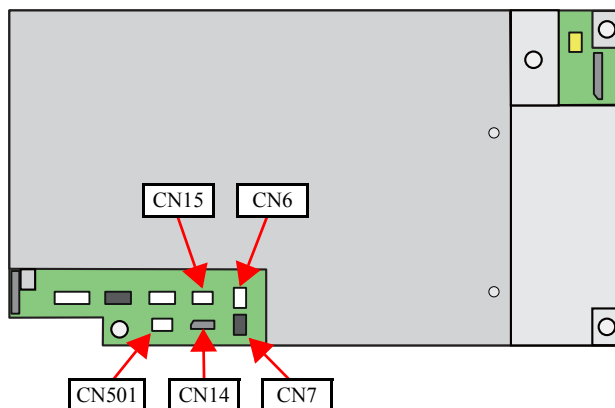


Figure 4-17. Connector Layout of the Main Board Unit

2. Disconnect the Head FFC (x3) from the connector of the Main Board.
3. Remove the screws (x2) that secure the Main Board Unit, and remove the Main Board Unit.

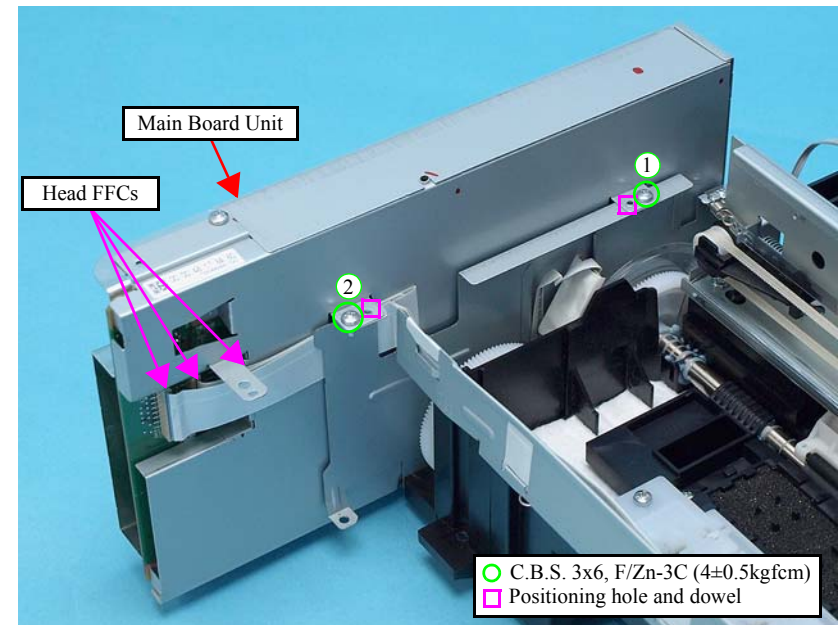


Figure 4-18. Removing the Main Board Unit



**REASSEMBLY**

- When installing the Main Board Unit, make sure to engage its cutout (x2) with the hooks (x2) of the Left Frame.

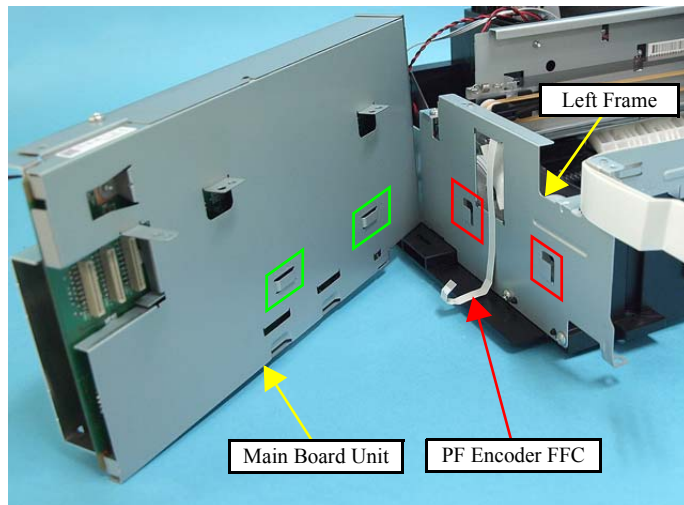


Figure 4-19. Installing the Main Board Unit

- When installing the Main Board Unit, make sure to route the PF Encoder FFC under the Main Board Unit.

**REASSEMBLY**

- When reassembling the Main Board Unit, make sure to match the positioning holes (x2) to the dowel (x2) of the Left Frame as shown in Figure 4-18.
- When installing the Main Board Unit, tighten the screws in the order given in Figure 4-18.
- When routing the Head FFCs, follow the steps below.
  1. Route the Head FFCs through the space between the Left Frame and the MB Lower Shield Plate.
  2. Connect the Head FFC (x3) to the connectors (CN11, CN12, CN13) on the Main Board.

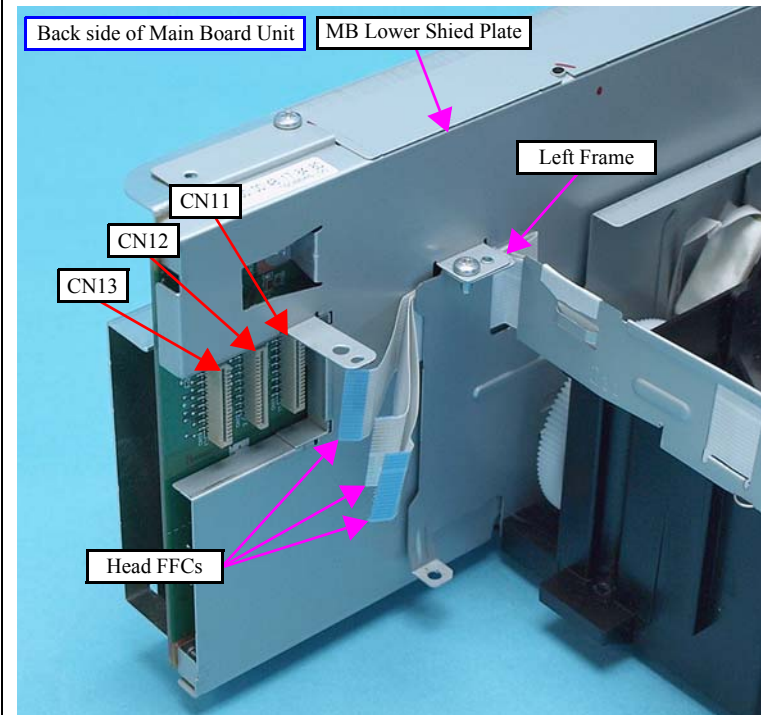


Figure 4-20. Routing the Head FFCs

□ Disassembling the Main Board Unit

1. Remove the screws (x4) and remove the MB Upper Shield Plate.

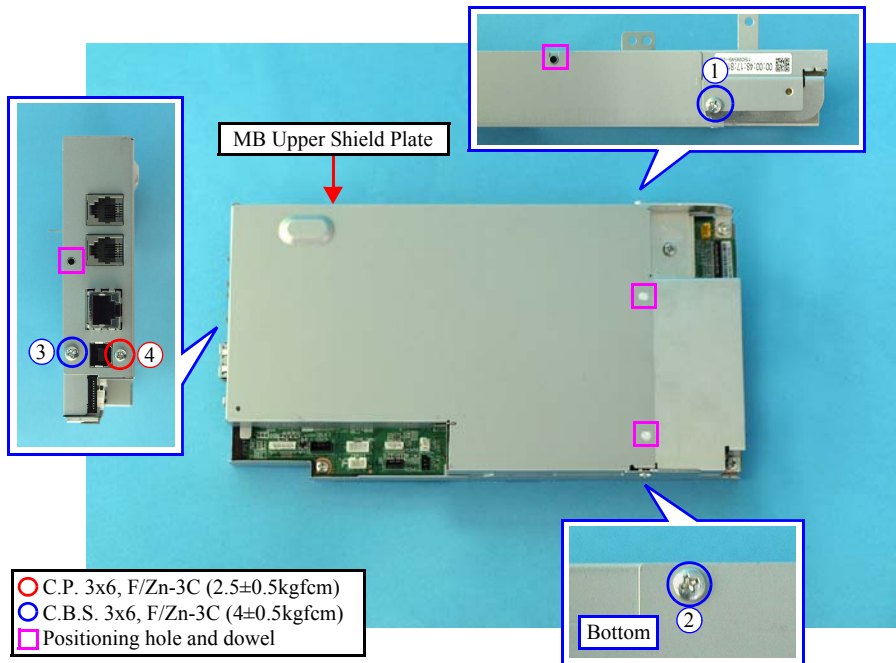


Figure 4-21. Removing the MB Upper Shield Plate

2. Remove the screws (x6), and remove the Main Board and MB Upper Rear Shield Plate from the MB Lower Shield Plate.

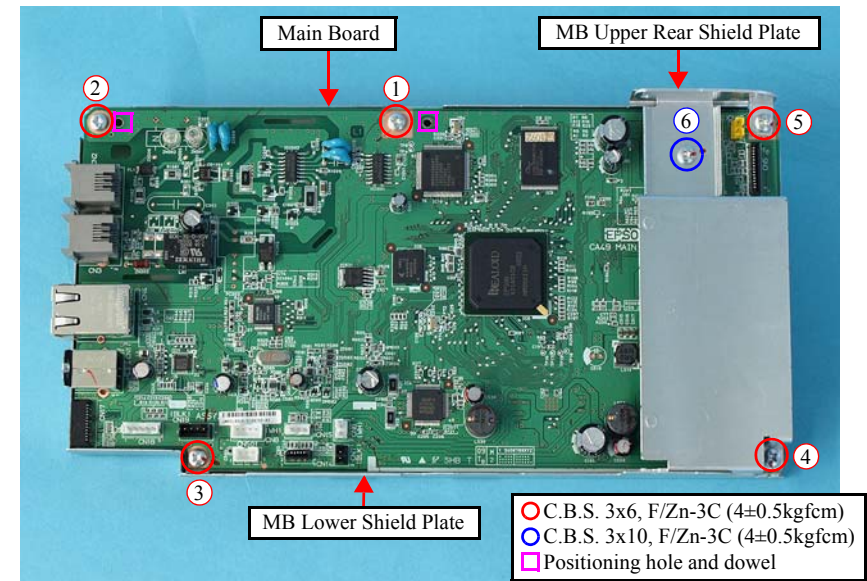


Figure 4-22. Removing the Main Board



- When installing the Main Board to the MB Lower Shield Plate, make sure to match the positioning holes to the dowels (x2) as shown in [Figure 4-22](#).
- When reassembling the Main Board Unit, make sure to match the positioning holes (x4) to the dowel (x4) as shown in [Figure 4-21](#).
- When installing the MB Upper Shield Plate, tighten the screws in the order given in [Figure 4-21](#).
- When installing the Main Board, tighten the screws in the order given in [Figure 4-22](#).
- If the EEPROM data cannot be read out from the old Main Board when replacing the Main Board, the MAC Address is required to be set. In this case, attach the new label “Label, MAC Address (Parts code: 1508645)” on the position as shown in [Figure 4-23](#) and execute the “[5.2.7 MAC Address Setting](#)” (p145).



Figure 4-23. Position to attach the MAC Address Label

## 4.4.2 Panel Unit



See the following because the disassembling/reassembling procedures of the Panel Unit for WorkForce 520/320/325 series differ from those of WorkForce 310 series.

- WorkForce 520 series:  
“[8.4.4.2 Panel Unit \(WorkForce 520 series\)](#)” (p175)
- WorkForce 320/325 series:  
“[8.4.6.4 Panel Unit \(WorkForce 320/325 series\)](#)” (p189)

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)/Upper Housing (p90)
- Removal procedure
  1. Peel off the Panel FFC secured with a double-sided tape from the Lower Housing.
  2. Disconnect the Panel FFC from connector CN5 on the Main Board.

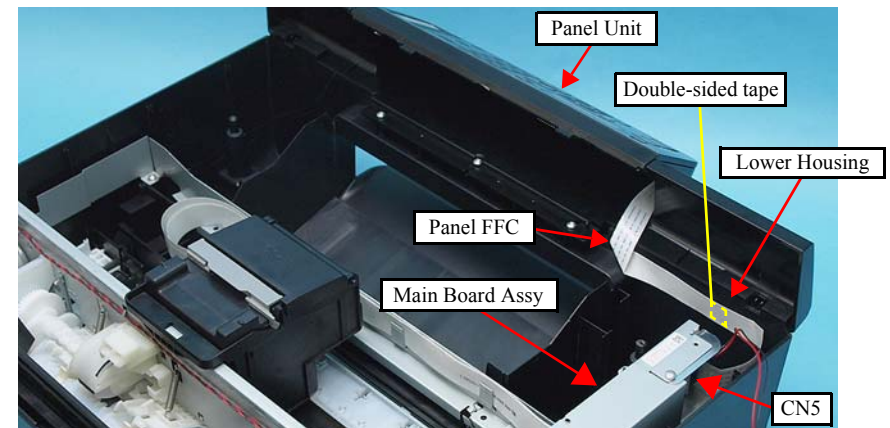


Figure 4-24. Disconnecting the Panel FFC



3. Lift the front of the Panel Unit, and release the tabs ○ (x2) at the upper side, and detach the Panel Unit by sliding it in the direction of the arrow.

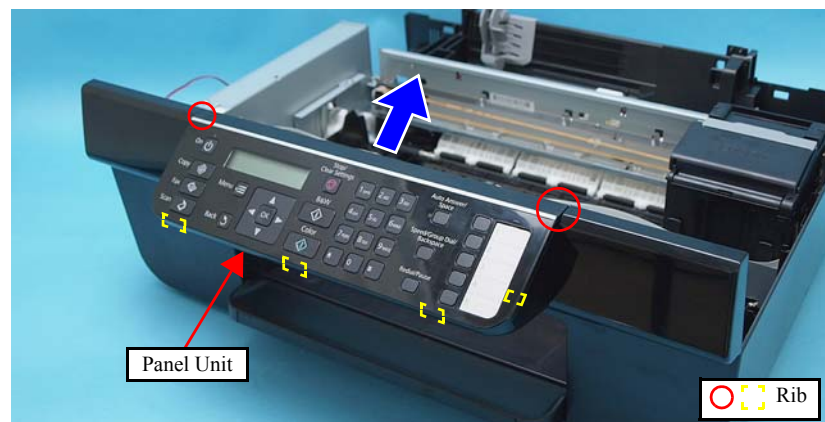


Figure 4-25. Removing the Panel Unit (1)

4. Disconnect the Panel FFC from connector CN1 on the Panel Board.
5. Remove the screws (x7), and remove the Panel Board from the Panel Unit.

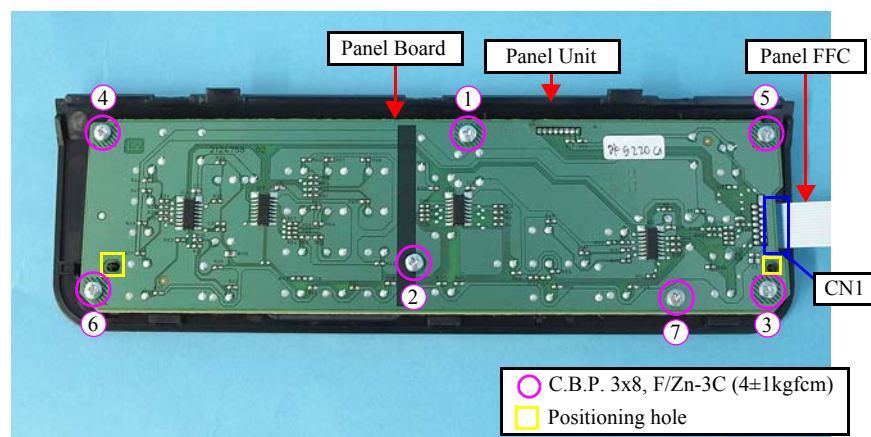


Figure 4-26. Removing the Panel Unit (2)

6. Remove the switch buttons (x6) from the Panel Cover.
7. Peel off the Cover LCD secured with a double-sided tape from the Panel Cover.

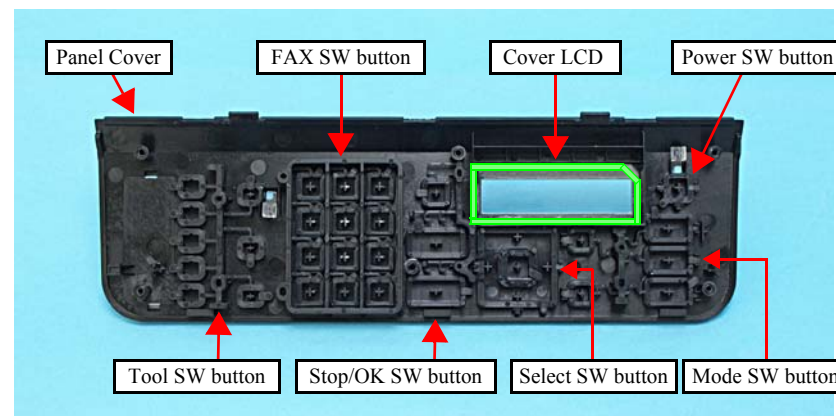


Figure 4-27. Removing the SW Buttons



- When installing the Cover LCD, align the angle of diagonal cut with upper right side and install it.
- When installing the Panel Board, make sure to match the positioning holes (x2) with their positioning pins of the Panel Cover as shown in Figure 4-26.
- When installing the Panel Board, tighten the screws in the order given in Figure 4-26.
- When installing the Panel Unit to the Front Housing, make sure to match the ribs ○ (x2) of the upper side and the ribs □ (x4) of the lower side of the Panel Unit with the dowels of the Lower Housing as shown in Figure 4-25.
- When connecting the Panel FFC, make sure the following before connection. (See Figure 8-16.)
  - The protection for the terminal is not peeled.
  - The terminal is not damaged or bent.

### 4.4.3 Power Supply Unit

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)

- Removal procedure

1. Disconnect the connector of the Power Supply Unit (CN501) on the Main Board.
2. Release the Power Supply Unit Cable from the hook of the Base Frame.

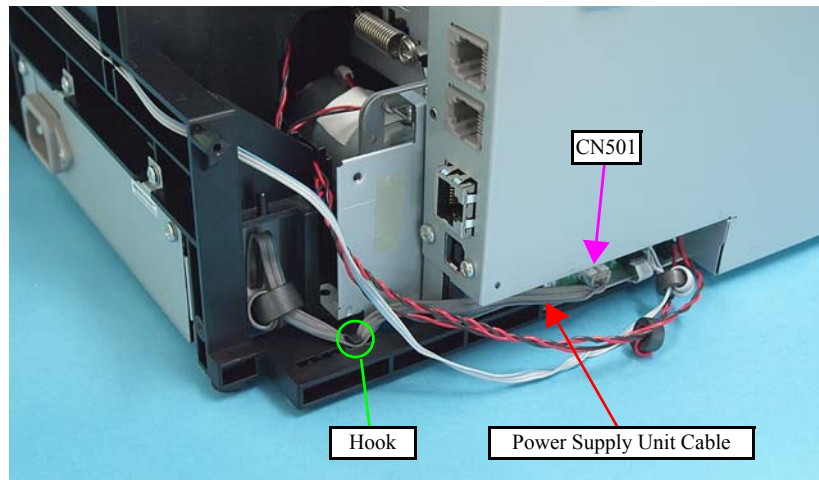


Figure 4-28. Removing the Power Supply Unit (1)

3. Remove the screws (x2) that secure the Power Supply Unit.
4. Lift the Base Frame a little, and remove the Power Supply Unit.

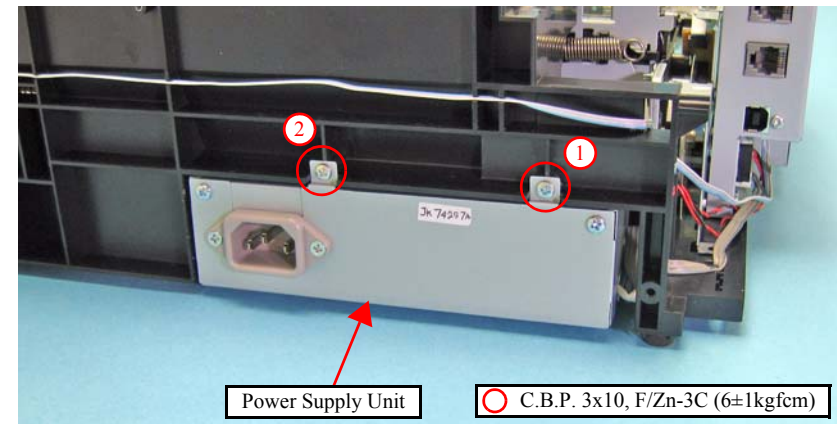


Figure 4-29. Removing the Power Supply Unit (2)



- Insert the tabs (x2) of the Power Supply Unit into the holes on the Base Frame.

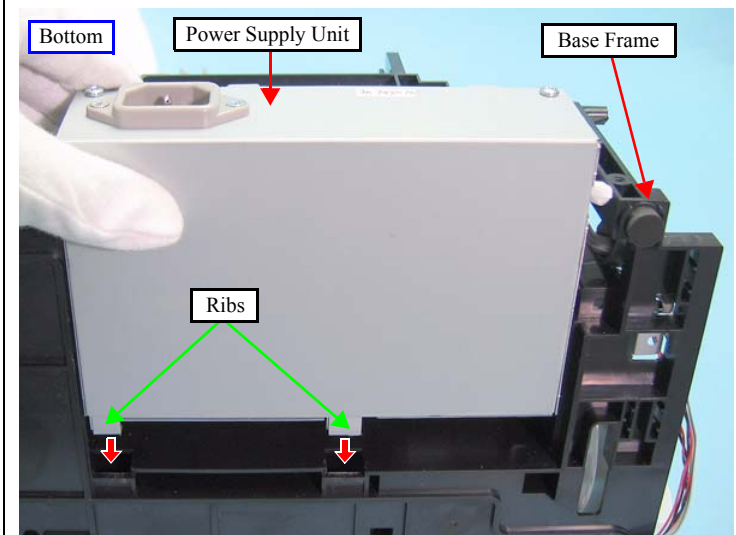


Figure 4-30. Installing the Power Supply Unit



- Tighten the screws in the order given in [Figure 4-29](#).
- Secure the Power Supply Unit Cable with the hook of the Base Frame as shown in the figure below.
- Put the ferrite core of the Power Supply Unit cable into the hole of the Base Frame.

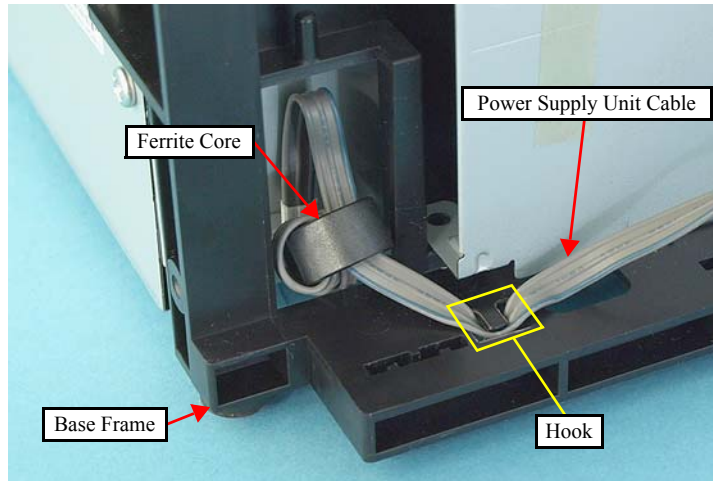


Figure 4-31. Routing the Power Supply Unit Cable

## 4.5 Disassembling the Printer Mechanism

### 4.5.1 Printhead



See the following because the disassembling/reassembling procedures of the Printhead for WorkForce 320/325 series differ from those of WorkForce 310/520 series.

- WorkForce 320/325 series:  
[“8.4.6.5 Printhead \(WorkForce 320/325 series\)” \(p189\)](#)

- ☐ Parts/Components need to be removed in advance  
 Scanner Unit/ADF Unit ([p87](#))/Upper Housing ([p90](#))
- ☐ Removal procedure
  1. Rotate the Spur Gear 51.5 to unlock the carriage, and move the CR Unit to the center.

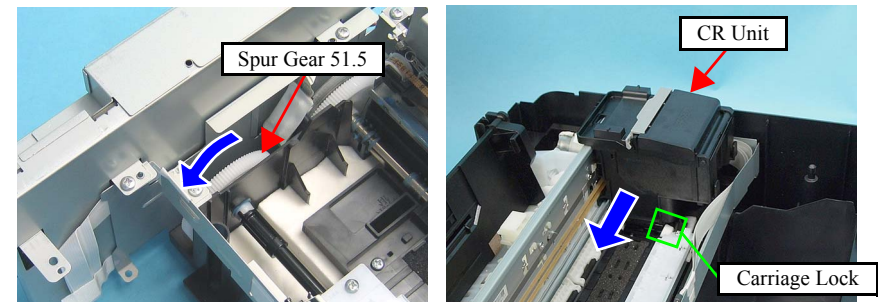


Figure 4-32. Unlocking the Carriage and Moving the CR Unit



2. Open the Cartridge Cover and remove all the ink cartridges from the CR Unit.
3. Release the hook (x1) of the Head Cable Cover with a flathead precision screwdriver, and remove the Head Cable Cover while sliding it downward (in the direction of the arrow).

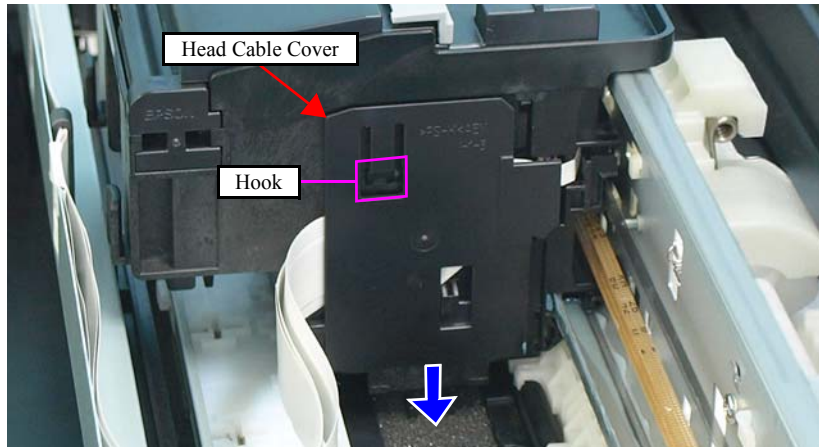


Figure 4-33. Removing Printhead (1)

4. Disconnect the Head FFC (x1) that is connected to the CSIC Board.
5. Release the tabs (x2) that secure the Holder Board Assy. using a needle or a similar tool, and remove the Holder Board Assy. upward (in the direction of the arrow).

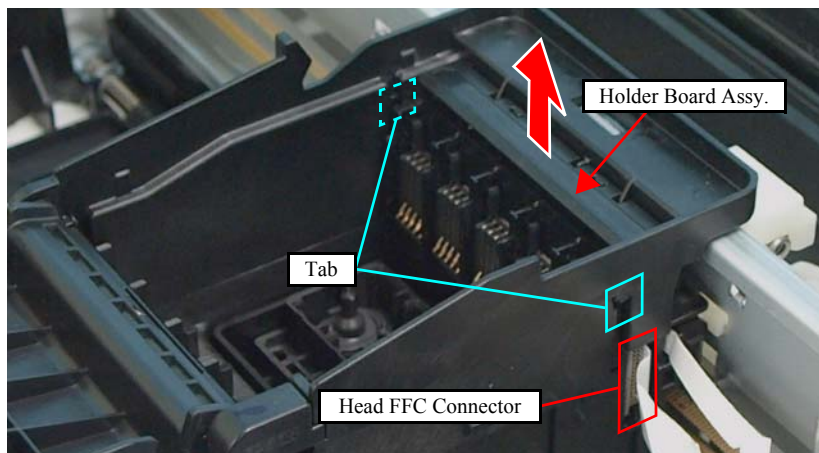


Figure 4-34. Removing Printhead (2)



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

6. Remove the screws (x3) that secure the Printhead, and lift up the Printhead with a longnose pliers.

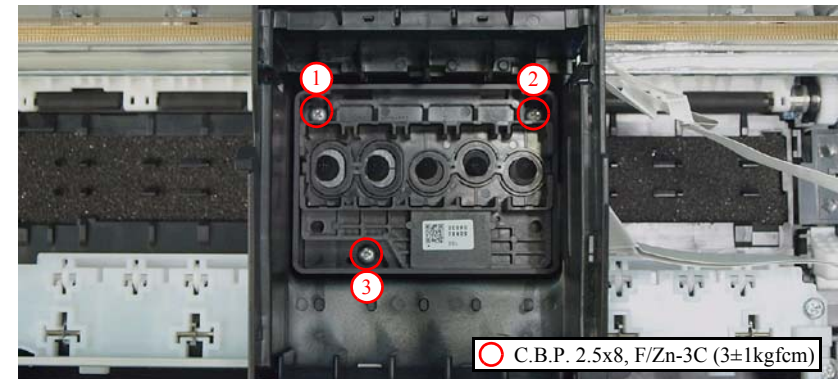


Figure 4-35. Removing Printhead (3)

7. Disconnect the Head FFC from the connectors (x2) of the Printhead, and remove the Printhead.

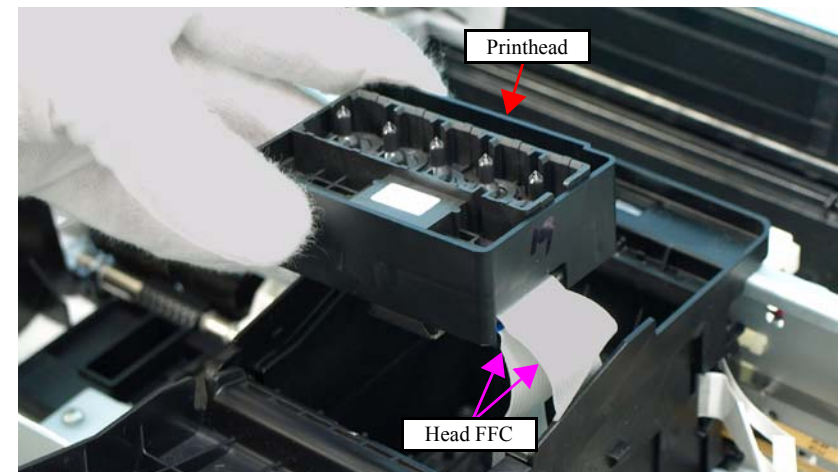


Figure 4-36. Removing Printhead (4)



- Tighten the screws in the order given in [Figure 4-35](#).
- Insert the Holder Board Assy vertically into the CR Unit so as not to put the Holder Board Assy on the rib of the Printhead.



Whenever the Printhead is removed/replaced, the required adjustments must be carried out.

- [Chapter 5 “ADJUSTMENT” \(p.135\)](#)

## 4.5.2 CR Scale

- ☐ Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit ([p87](#))/Upper Housing ([p90](#))
- ☐ Removal procedure



Pay attention to the following instructions:

- Do not touch the CR Scale with bare hands.
- Do not damage the CR Scale.
- Do not stretch Extension Spring 1.41 too much.

1. Release the right end of the CR Scale from the hook.
2. Pull out the CR Scale through the slit of the CR Encoder Sensor.

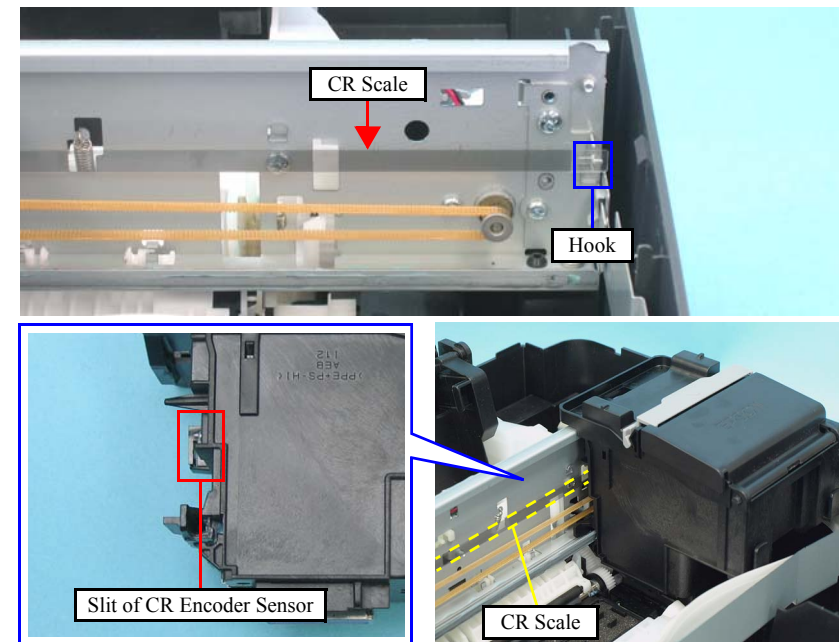


Figure 4-37. Removing the CR Scale (1)



3. Release the Extension Spring 1.41 from the hook of the Main Frame.
4. Rotate the CR Scale 90 degrees as shown in the figure and remove the scale from the Main Frame.

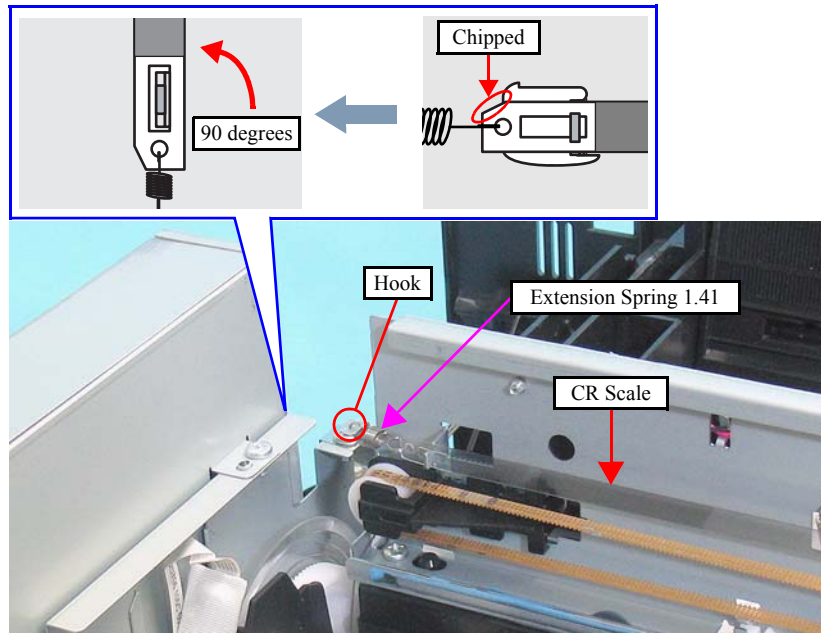


Figure 4-38. Removing the CR Scale (2)



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

- Chipped part of the CR Scale must face upward.
- CR scale should be passed through the slit of the CR Encoder Sensor.
- Make sure that the Extension Spring 1.41 is not be twisted, and then attach its end to the hook of the Main Frame.

### 4.5.3 Hopper

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)/Upper Housing (p90)
- Removal procedure
  1. Release the dowel A of the Hopper.
  2. Release the dowel B of the Hopper, and remove the Hopper together with the Compression Spring 3.43.

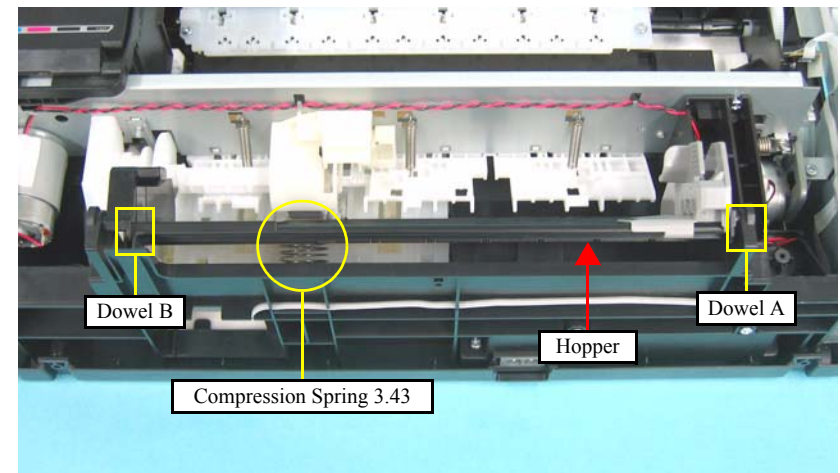


Figure 4-39. Removing the Hopper

**REASSEMBLY**

When installing the Hopper, be sure to engage the rib of the Hopper with the guide groove of the Base Frame.

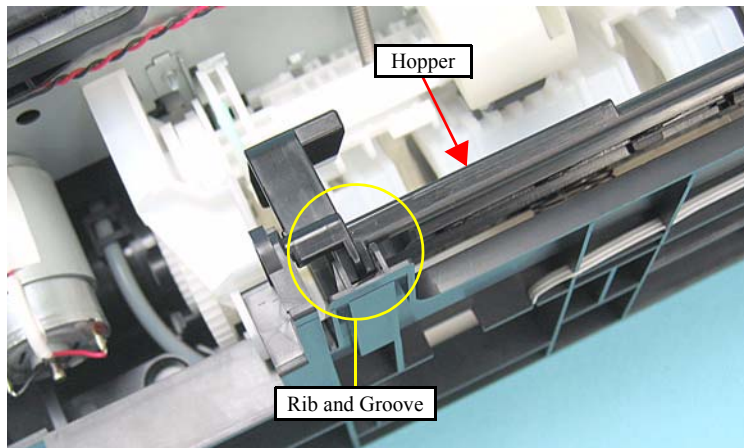


Figure 4-40. Installing the Hopper

**ADJUSTMENT  
REQUIRED**

Whenever the Hopper is removed/replaced, the required adjustments must be carried out.

- [Chapter 5 “ADJUSTMENT” \(p.135\)](#)

## 4.5.4 Removing the Printer Mechanism

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit ([p87](#))/Upper Housing ([p90](#))/Panel Unit ([p96](#))
- Removal procedure
  1. Release the hook that secures the Rear Cover with tweezers, and remove the Rear Cover.

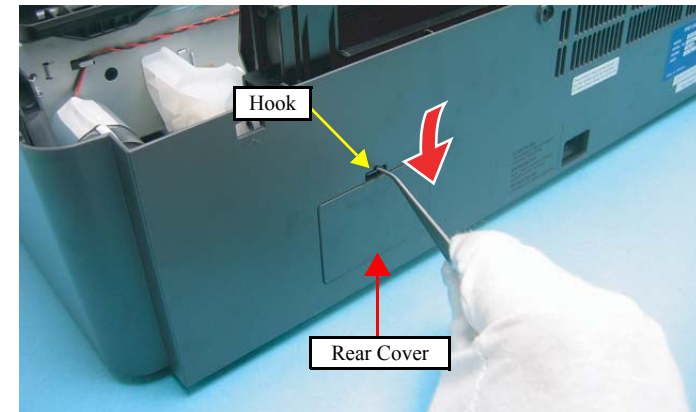


Figure 4-41. Removing the Rear Cover

**CAUTION**

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

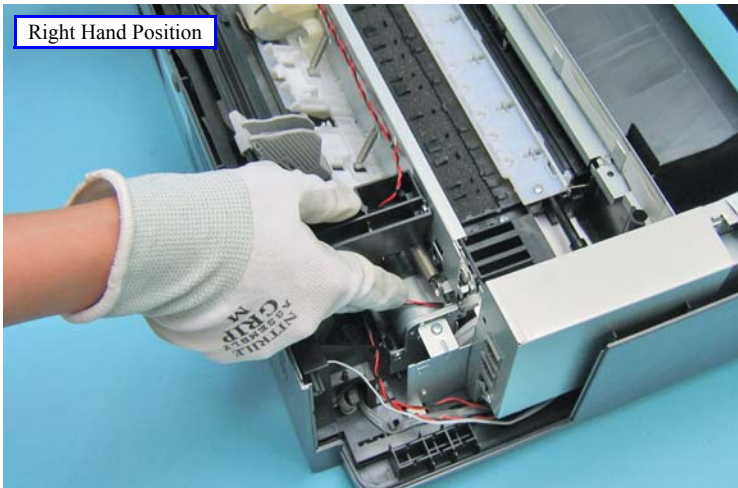


Figure 4-42. Printer Mechanism Handling Precaution

2. Release the CR Motor cable and PF Motor cable from the ribs (x4) of the Lower Housing.
3. Remove the screws (x4) that secure the Printer Mechanism, and remove the Printer Mechanism by lifting it.

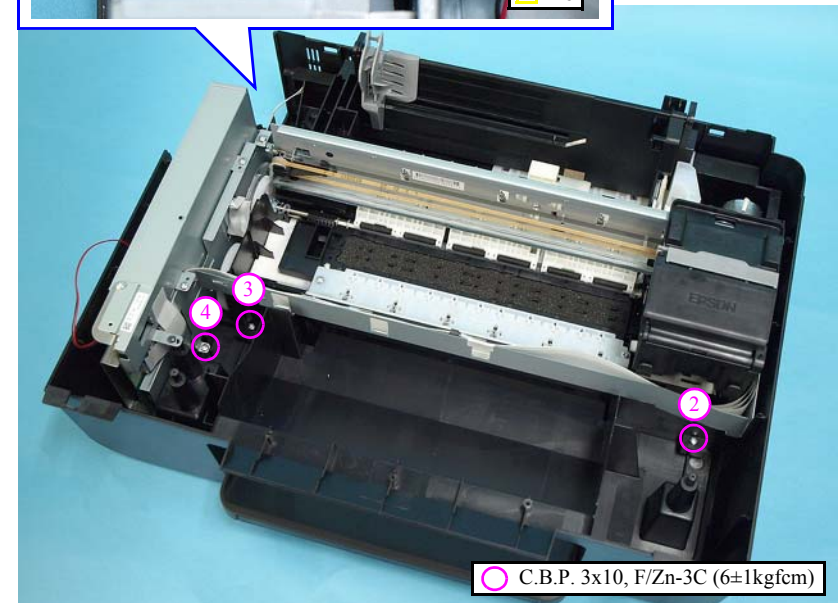
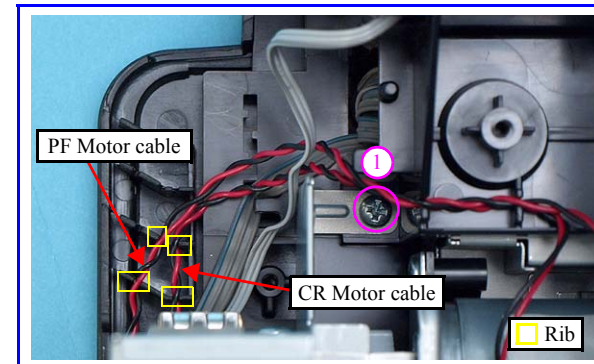


Figure 4-43. Removing the Printer Mechanism

**REASSEMBLY**

Tighten the screws in the order given in [Figure 4-43](#).



### 4.5.5 Left Frame

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)

#### CHECK POINT



There is no the Left Frame for WorkForce 325 series.

- Removal procedure

1. Peel off the double sided tape that secures the PF Encoder FFC to the Left Frame.
2. Remove the screws (x2), and remove the grounding plate.
3. Remove the screws (x3) that secure the Left Frame, and remove the Left Frame.

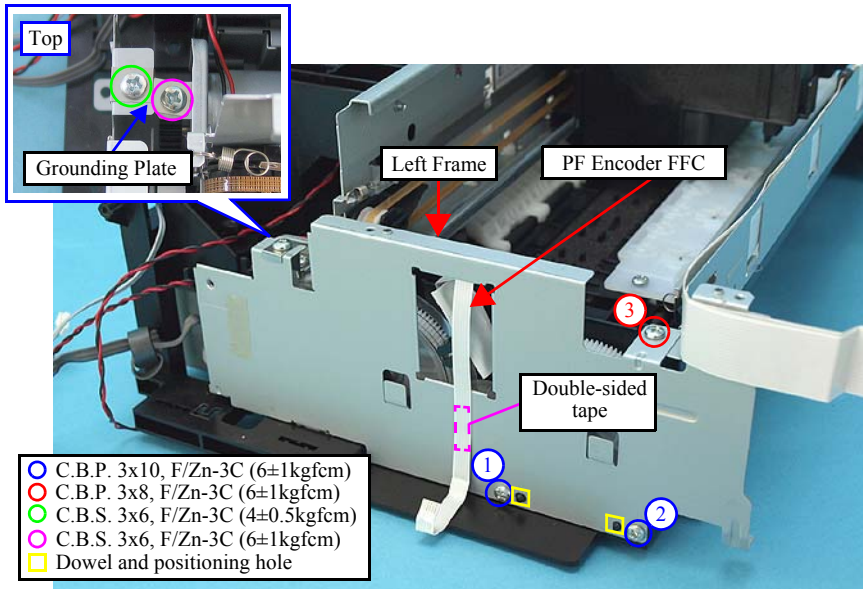


Figure 4-44. Removing the Left Frame



- When installing the Left Frame, take care of the following.
- Make sure to route the PF Encoder FFC through the hole of the Left Frame, and secure it with a double-sided tape as shown in Figure. 4-44.
  - Make sure to match the dowels of the Base Frame and the positioning holes of the Left Frame as shown in Figure. 4-44.
- When installing the Left Frame, tighten the screws in the order given in Figure. 4-44.

## 4.5.6 Front Frame/Right Frame

### CHECK POINT



See the following because the disassembling/reassembling procedures of the Front Frame/Right Frame for WorkForce 520/320/325 series differ from those of WorkForce 310 series.

- WorkForce 520/320/325 series:  
“8.4.5.2 Front Frame/Right Frame” (p177)

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)/Left Frame (p105)

- Removal procedure

1. Remove the acetate tapes (x2) that secure the Head FFC to the Front Frame.
2. Peel off the double-sided tape that secures the ferrite core to the Front Frame.
3. Release the Head FFC from the hooks (x3) of the Front Frame.
4. Remove the Grounding Spring from the Front Frame.

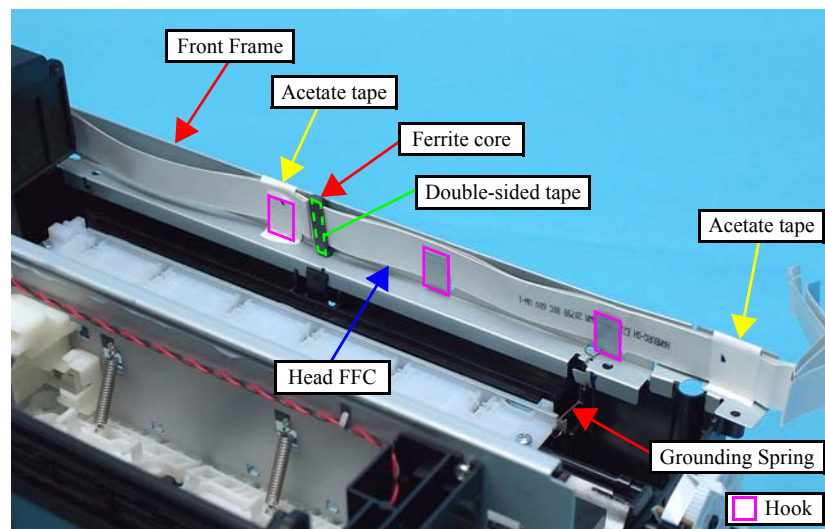


Figure 4-45. Removing the Front Frame/Right Frame (1)

5. Remove the screw (x1) that secures the Front Frame and the Right Frame together.
6. Release the dowel (x1) and the hook (x1) that secure the Right Frame, and remove the Right Frame.

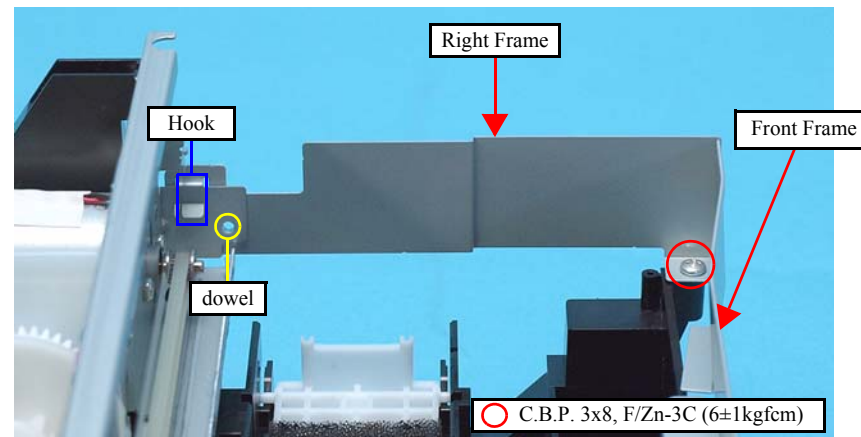


Figure 4-46. Removing the Front Frame/Right Frame (2)

### CAUTION



Be careful not to get injured with the sharp edges of the Front Frame.

7. Release the hook (x1), and remove the Front Frame.

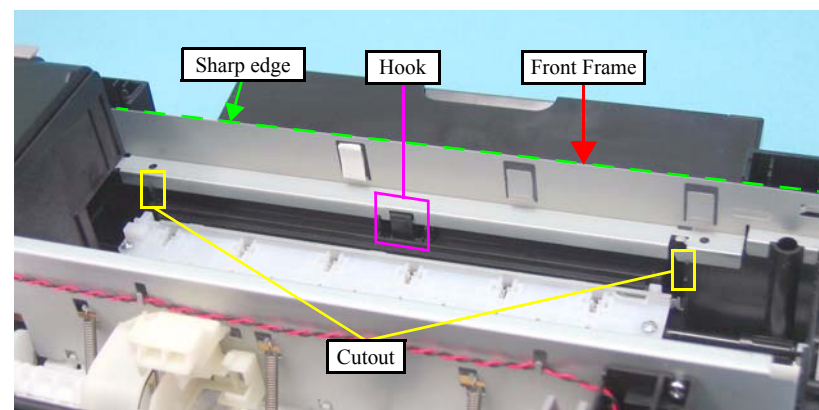


Figure 4-47. Removing the Front Frame/Right Frame (3)

**REASSEMBLY**

- When replacing the Front Frame, route the Head FFC in the order given below.

1. Insert the fold of the Head FFC to the hook of the Front Frame.
2. Secure the FFC to the Front Frame with the acetate tape shown in [Figure 4-48](#).
3. Align the ferrite core with the line mark shown below, and secure it to the Front Frame with the double-sided tape.

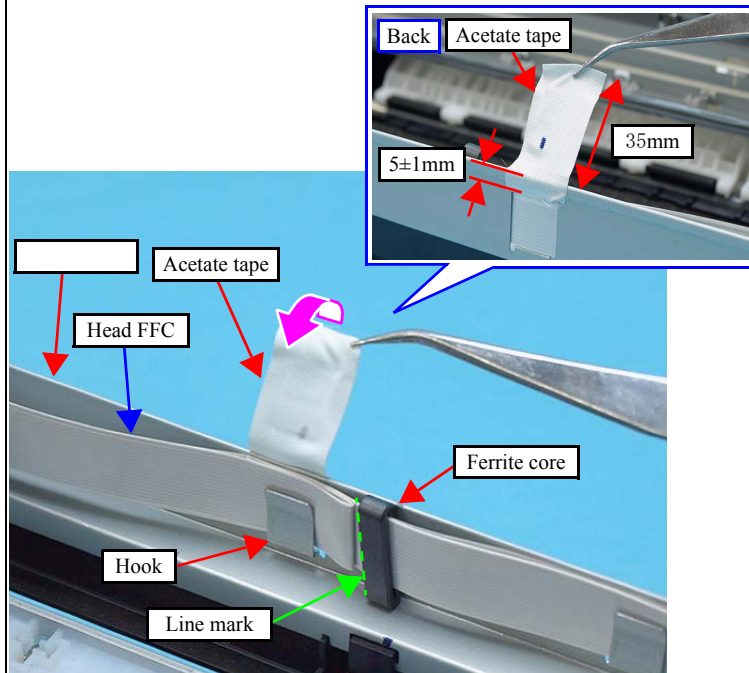


Figure 4-48. Acetate tape position

**REASSEMBLY**

4. Secure the Head FFCs (x3) to the Front Frame with the acetate tape (x1) as shown in the figure below.

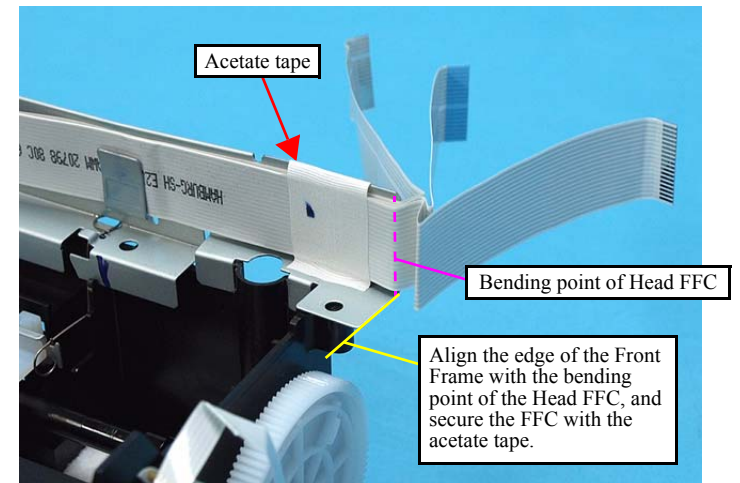


Figure 4-49. Acetate tape position



### 4.5.7 Star Wheel Holder Assy

- ❑ Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)/Upper Housing (p90)
- ❑ Removal procedure
  1. Remove the Grounding Spring from the Star Wheel Holder Assy.
  2. Remove the screws (x2) that secure the Star Wheel Holder Assy, and remove the Star Wheel Holder Assy.

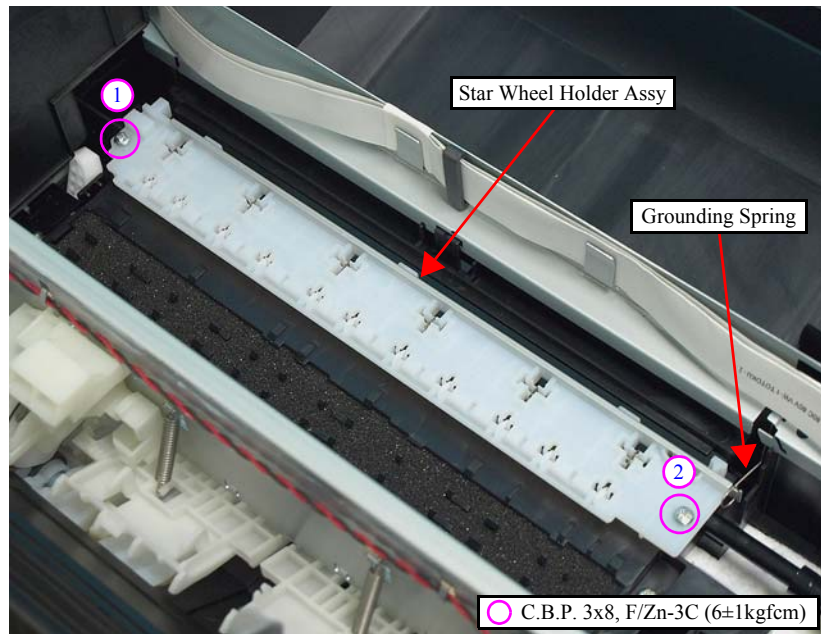


Figure 4-50. Removing the Star Wheel Holder Assy

REASSEMBLY



Tighten the screws in the order given in Figure 4-50.

### 4.5.8 EJ Roller

- ❑ Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)/Left Frame (p105)/Star Wheel Holder Assy (p108)
- ❑ Removal procedure

CHECK  
POINT



The Spur Gear 51.5 cannot be reused after it is removed. Whenever the gear is removed, make sure to attach a new one.

1. Insert a flathead precision screwdriver between the Spur Gear 51.5 and the EJ Roller, and remove the Spur Gear 51.5 by pushing it in the direction of the arrow.

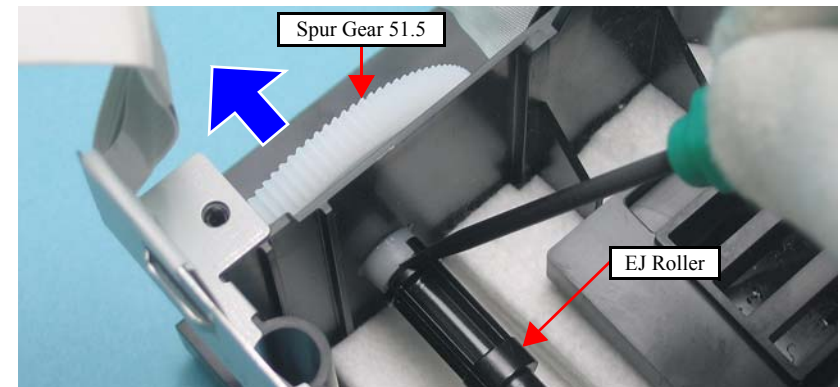


Figure 4-51. Removing the EJ Roller (1)

2. Remove the EJ Roller while pushing the tab on the right side of the Base Frame in the direction of the arrow.

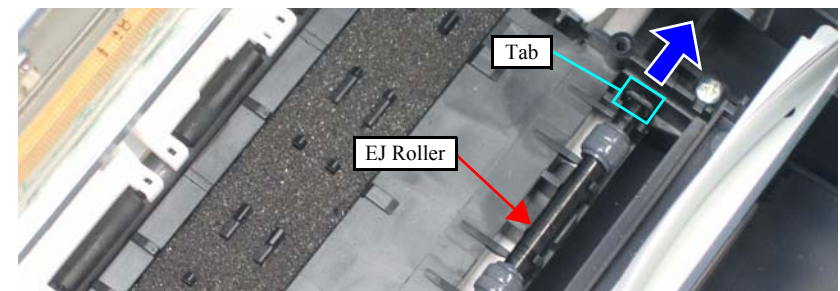


Figure 4-52. Removing the EJ Roller (2)



- When installing the EJ Roller, pay attention to the following instructions.
  - Make sure that the rubber part of the EJ Roller does not contact with the hook of the Front Paper Guide.
  - Be cautious not to touch the rubber part of the EJ Roller.
  - Be sure to align the rib (x1) of the Front Paper Guide with the slit on the EJ Roller.

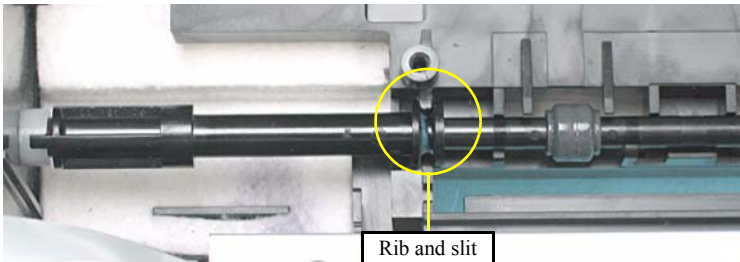


Figure 4-53. Installing the EJ Roller

- When installing the Spur Gear 51.5, be sure to align the concave section of it with the convex section of the EJ Roller.

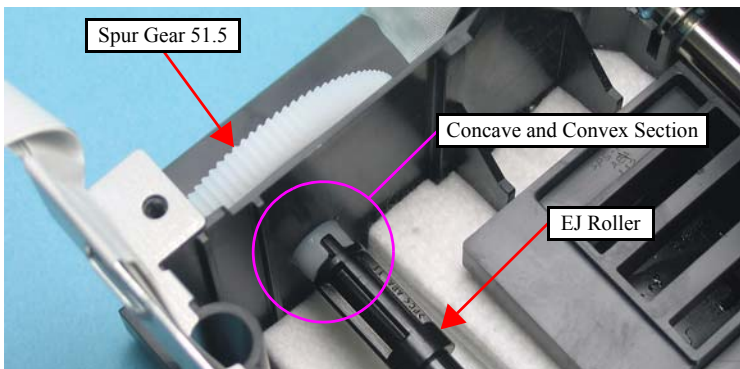


Figure 4-54. Installing the Spur Gear 51.5



- Whenever the EJ Roller is removed/replaced, the required adjustments must be carried out.
  - Chapter 5 “ADJUSTMENT” (p.135)
- After replacing the EJ roller, be sure to perform the required lubrication.
  - Chapter 6 “MAINTENANCE” (p.147)

## 4.5.9 PF Encoder Sensor

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)/Left Frame (p105)
- Removal procedure
  1. Peel off the acetate tape (x1) from the PF Encoder Sensor.
  2. Release the PF Encoder FFC from the connector (x1) of the PF Encoder Sensor.
  3. Remove the screw (x1) that secures the PF Encoder Sensor, and remove the PF Encoder Sensor.

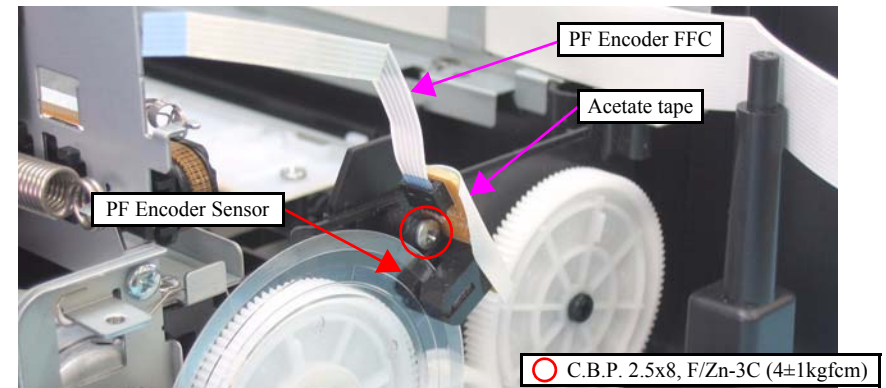


Figure 4-55. Removing the PF Encoder Sensor



When installing the PF Encoder Sensor, be sure to attach the acetate tape (x1) referring to the figure below.

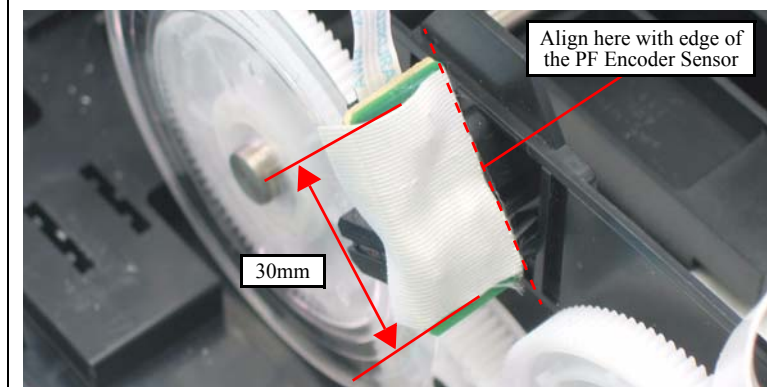


Figure 4-56. Acetate tape position



### 4.5.10 PF Scale

- ☐ Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)/Left Frame (p105)/PF Encoder Sensor (p109)

- ☐ Removal procedure

#### CAUTION



Pay attention to the following instructions.

- Do not touch the PF Scale with bare hand.
- Do not damage the PF Scale.

1. Peel of the PF Scale that is secured with the double-sided tape (x1) from the Spur Gear 46.5.

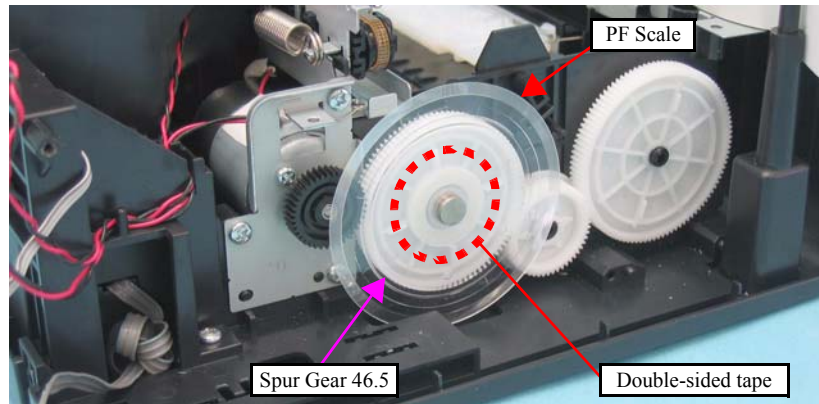


Figure 4-57. Removing the PF Scale

### 4.5.11 PF Motor Assy

- ☐ Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)/Left Frame (p105)/PF Encoder Sensor (p109)/PF Scale (p110)

- ☐ Removal procedure

1. Release the PF Motor Assy connector cable from the notches (x2) of the Base Frame.

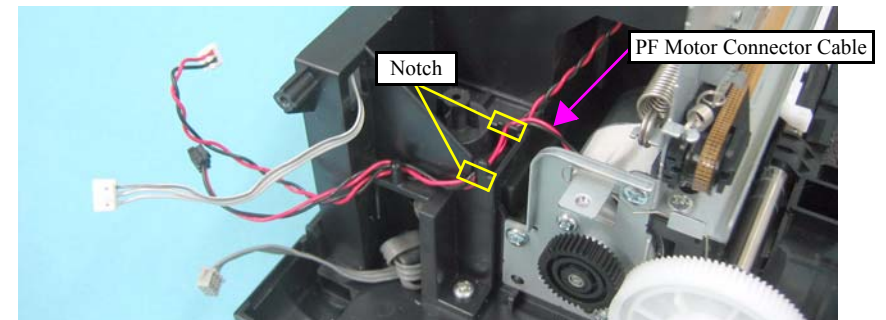


Figure 4-58. Removing the PF Motor Assy (1)

2. Remove the Grounding Spring from the PF Motor Assy.
3. Remove the screws (x3) that secure the PF Motor Assy, and remove it.

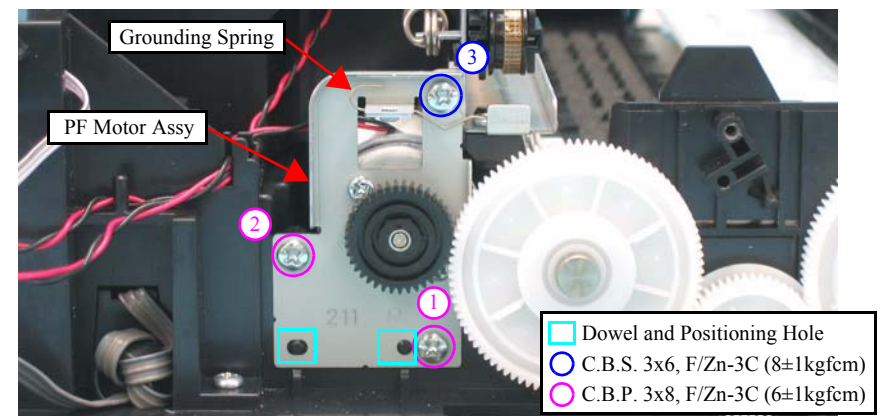


Figure 4-59. Removing the PF Motor Assy (2)

**REASSEMBLY**

- When installing the PF Motor Assy, pay attention to the following instructions.
  - Do not damage the PF Scale.
  - Insert the dowels (x2) on the Base Frame into the positioning holes (x2) of the PF Motor Assy as shown in [Figure 4-59](#).
  - Route the PF Motor Connector Cable as shown in the figure below.

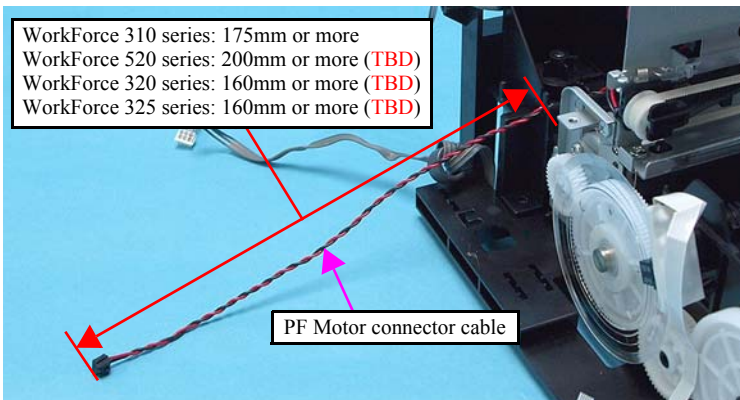


Figure 4-60. Routing the PF Motor Connector Cable

- Tighten the screws in the order given in [Figure 4-59](#).

**REASSEMBLY**

- Follow the steps below to install the Grounding Spring.
  1. Attach the larger U-shaped end of the Grounding Spring to the PF Roller.

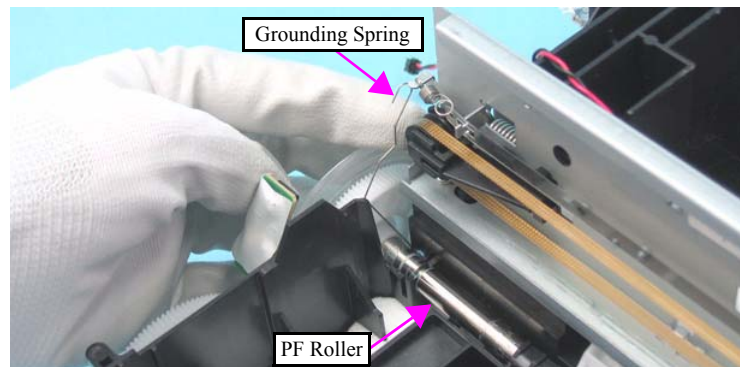


Figure 4-61. Installing the Grounding Spring (1)

2. Pass the Grounding Spring along the inner side of the hook of the Main Frame.
3. Ground the smaller U-shaped end of the Grounding Spring with the undersurface of the frame for PF Motor.

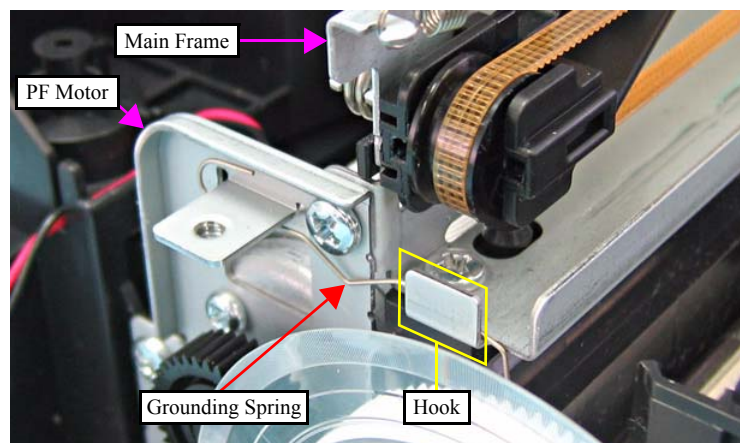


Figure 4-62. Installing the Grounding Spring (2)

## 4.5.12 CR Motor

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)/Left Frame (p105)/Front Frame/Right Frame (p106)

- Removal procedure

1. Turn the Spur Gear 51.5 to release the Carriage Lock, and move the CR Unit to the center.  
(Refer to 4.5.1 Printhead Step1 (p99))

### CAUTION

Be careful not to damage the CR Motor cable when releasing the cable from the hooks of the Main Frame.

2. Release the CR Motor cable from the notches (x3) of the Base Frame and the hooks (x3) of the Main Frame, and then pull out the cable through the hole of the Base Frame.

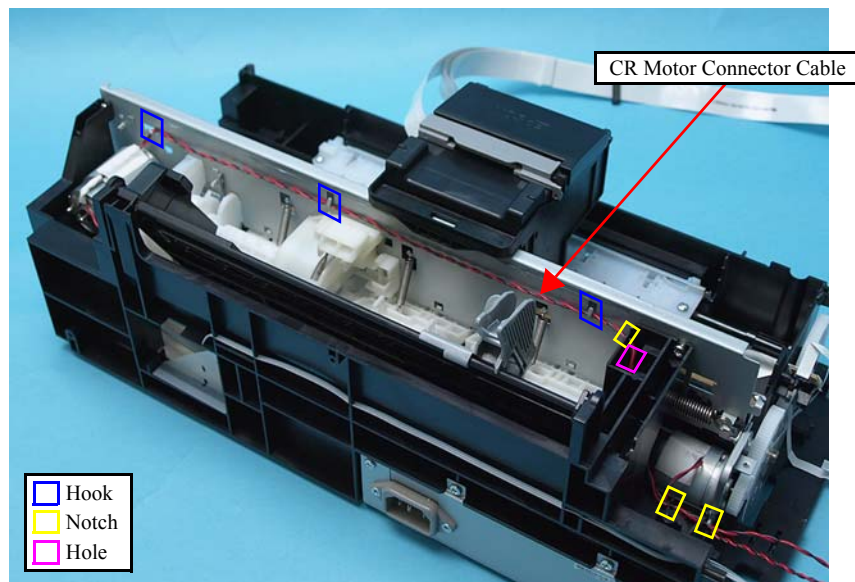


Figure 4-63. Removing the CR Motor (1)

### CAUTION

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

3. Loosen the tension of the Timing Belt by pressing the Driven Pulley Holder in the direction of the arrow as shown in the figure, and release the Timing Belt from the pinion gear of the CR Motor.

### CAUTION

Do not damage the pinion gear of the CR Motor.

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

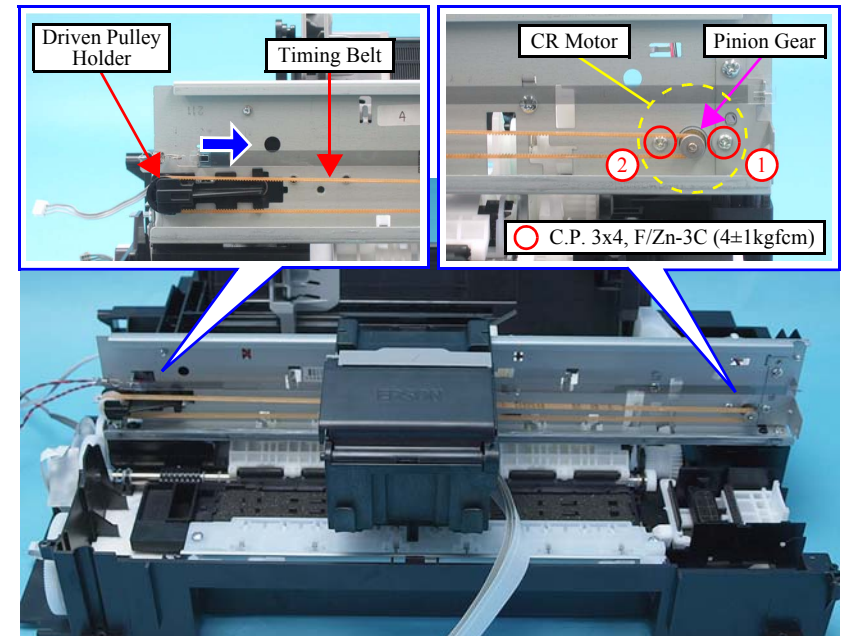


Figure 4-64. Removing the CR Motor (2)





- Be sure to install the CR Motor so that the groove on it faces downward.

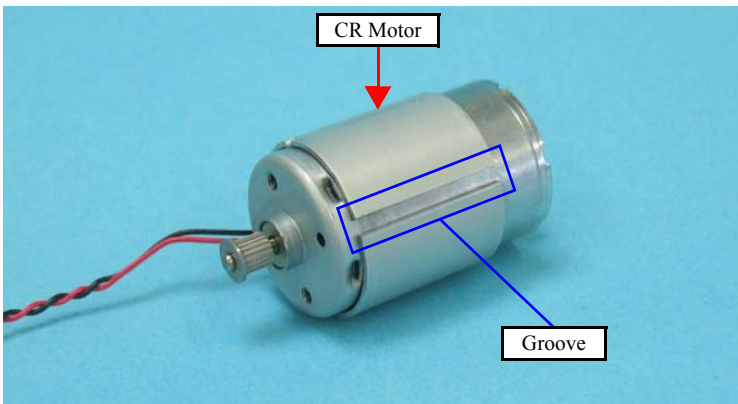


Figure 4-65. CR Motor

- Tighten the screws in the order given in [Figure 4-64](#).
- Make sure that there is no gap between the CR Motor and the Main Frame.



- Whenever the CR Motor is removed/replaced, the required lubrication must be carried out.
  - [Chapter 6 “MAINTENANCE” \(p.147\)](#)

### 4.5.13 Main Frame Assy

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit ([p87](#))/Upper Housing ([p90](#))/Panel Unit ([p96](#))/Printer Mechanism ([p103](#))/Main Board Unit ([p93](#))/Left Frame ([p105](#))/Front Frame/Right Frame ([p106](#))/CR Motor ([p112](#))/CR Scale ([p101](#))/Hopper ([p102](#))

#### CHECK POINT



Main Frame Assy consists of the following parts.

- Main Frame
- CR Unit
- Printhead
- Upper Paper Guide

- Removal procedure

1. Remove the Grounding Spring from the PF Motor.  
(Refer to [4.5.11 PF Motor Assy Step2 \(p110\)](#))
2. Release one end of the Extension Spring from the hook of the Main Frame with longnose pliers, and then remove the spring together with the Driven Pulley Holder.

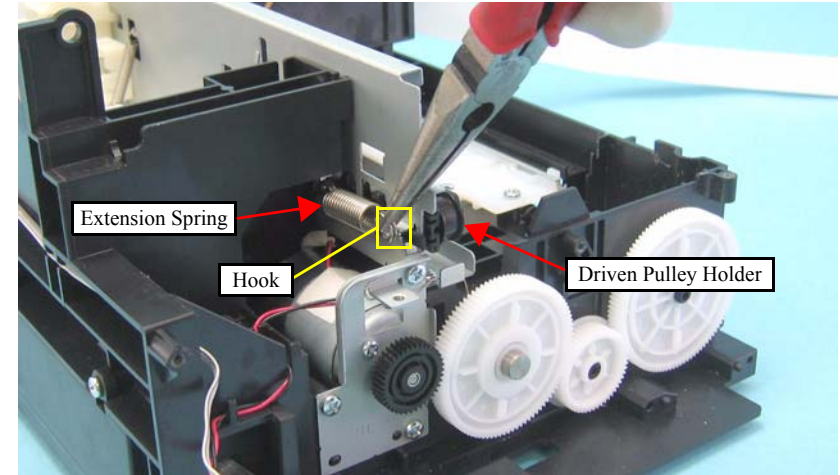
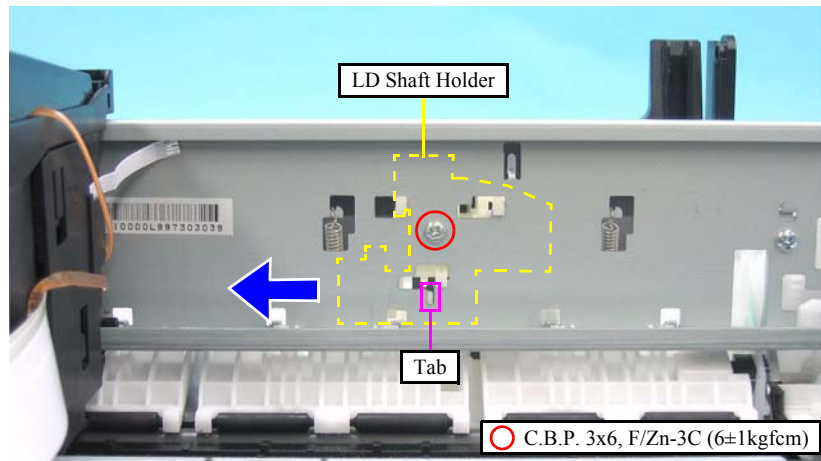


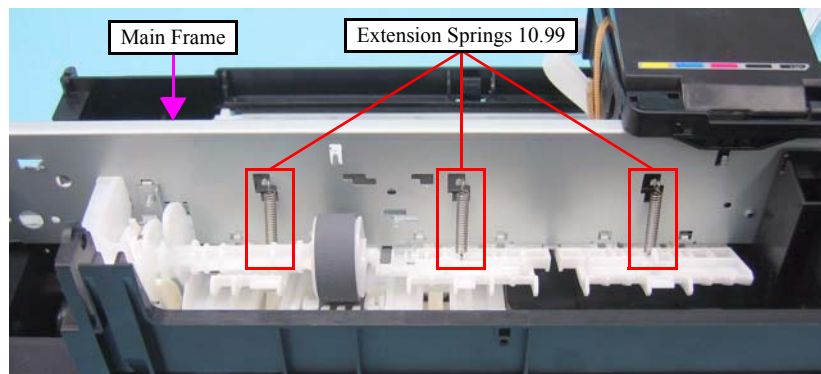
Figure 4-66. Removing the Extension Spring and Driven Pulley Holder

3. Move the CR Unit to the left side of the printer.
4. Remove the screw (x1) that secures the LD Shaft Holder.
5. Move the LD Shaft Holder in the direction of the arrow while holding down its tab with a flathead precision screwdriver, and remove the LD Shaft Holder.



**Figure 4-67. Removing the LD Shaft Holder**

6. Remove the Extension Springs 10.99 (x3) from each hook of the Main Frame and the Upper Paper Guide.



**Figure 4-68. Removing the Upper Paper Guide (1)**

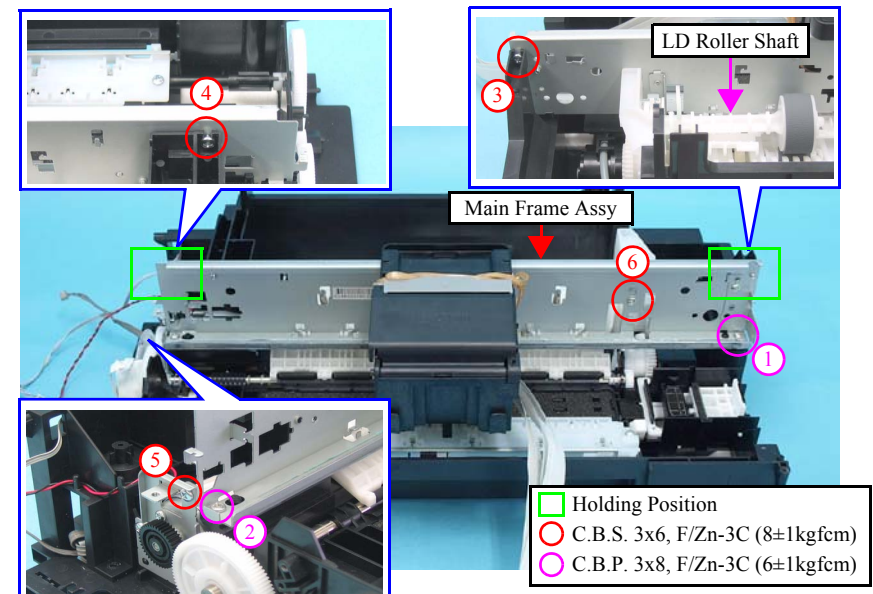


When laying the Main Frame Assy, make sure to put it as shown in the figure below. Do not lay it with the rollers of the Upper Paper Guide facing downward, or the rollers or the nozzle surface may get damaged.



**Figure 4-69. Precaution on Handling Main Frame Assy**

7. Remove the screws (x6) that secure the Main Frame, and remove it while avoiding the LD Roller Shaft so as not to hit the Upper Paper Guide.



**Figure 4-70. Removing the Main Frame Assy**

**REASSEMBLY**

- When installing the Main Frame Assy, pay attention to the following instructions.
  1. Put the right part of the Upper Paper Guide under the LD Roller Shaft as shown in the figure below.
  2. Align the hook (x1) of the Frame Support with the positioning hole (x1) of the Main Frame.
  3. Align the hook (x1) of the ASF Unit with the positioning hole (x1) of the Main Frame.
  4. Align the dowels (x2) of the Base Frame with the positioning holes (x2) of the Main Frame.

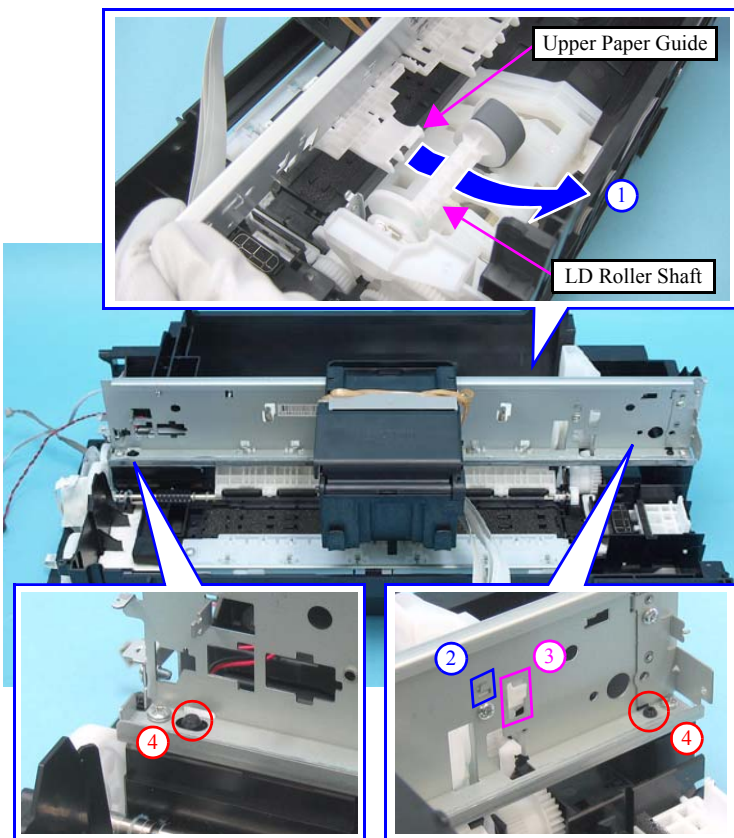


Figure 4-71. Main Frame Assy

**REASSEMBLY**

- When installing the Main Frame, tighten the screws in the order given in [Figure 4-70](#).
- Follow the steps below to install the Extension Spring 10.99 to the Upper Paper Guide.
  1. Attach the one end of the Extension Spring 10.99 to the hook of the Upper Paper Guide.
  2. Attach the other end of the Extension Spring 10.99 to the hook of the Main Frame with longnose pliers.

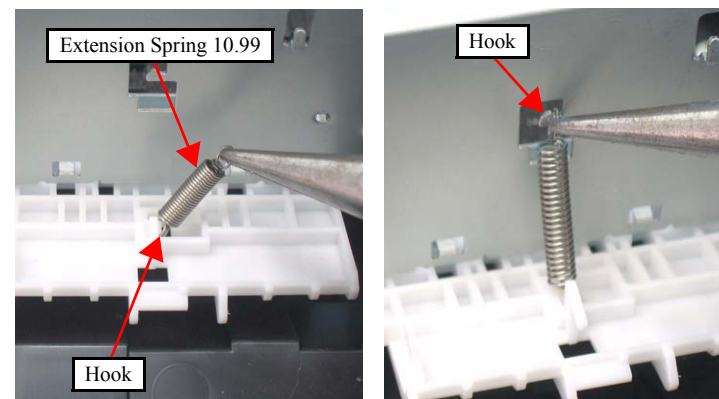


Figure 4-72. Installing the Extension Spring 10.99

- Be sure to install the Grounding Spring referring to [Figure 4-61](#) and [Figure 4-62](#).

**ADJUSTMENT  
REQUIRED**

- Whenever the Main Frame is removed/replaced, the required adjustments must be carried out.
  - [Chapter 5 “ADJUSTMENT” \(p.135\)](#)
- After replacing the Main Frame, be sure to perform the specified lubrication.
  - [Chapter 6 “MAINTENANCE” \(p.147\)](#)



## 4.5.14 CR Unit

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)/Left Frame (p105)/Front Frame/Right Frame (p106)/CR Motor (p112)/CR Scale (p101)/Hopper (p102)/Main Frame Assy (p113)/Printhead (p99)

- Removal procedure

1. Remove the screw (x1) that secures the CR Scale Holder, and remove the CR Scale Holder.
2. Move the CR Unit in the direction of the arrow to remove the CR Unit.

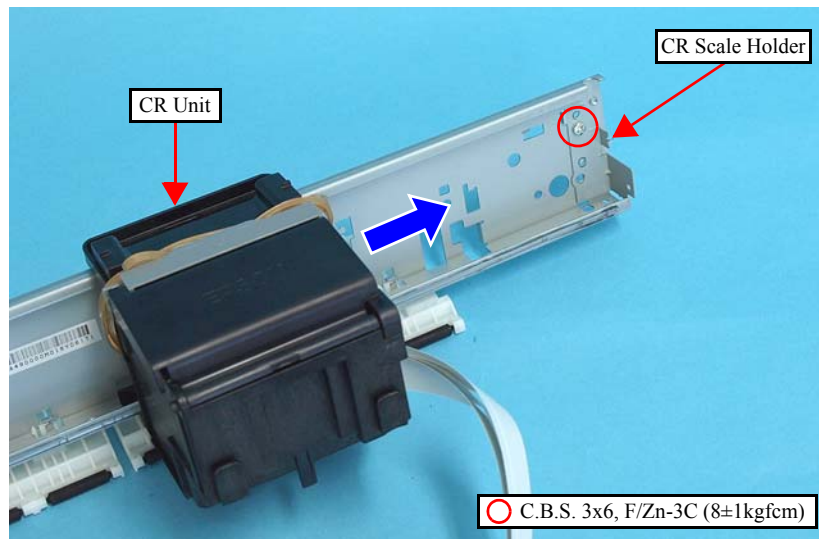


Figure 4-73. Removing the CR Unit (1)

3. Release the Timing Belt from the groove of the CR Unit.

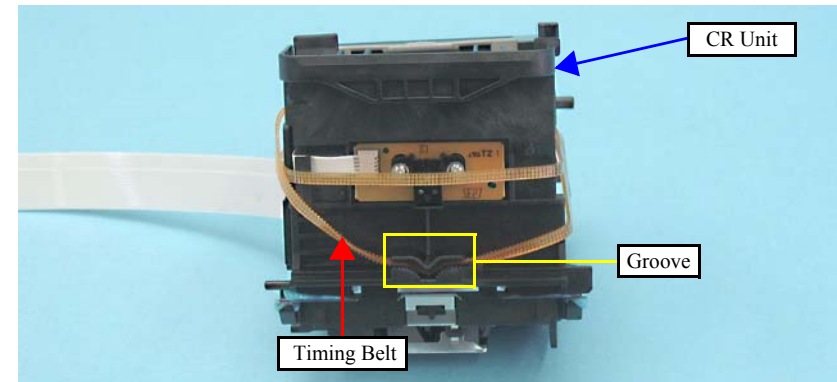


Figure 4-74. Removing the CR Unit (2)



- Put the part of the Timing Belt toothed on its both sides into the groove of the CR Unit.

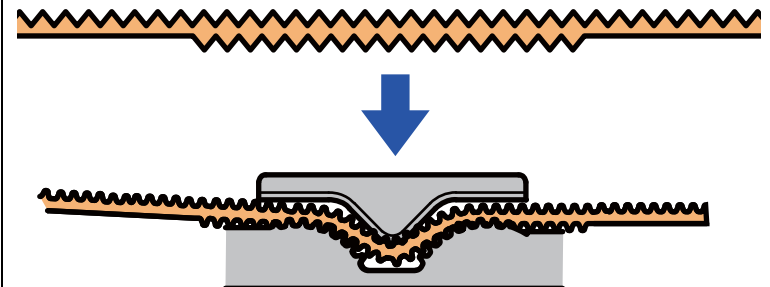


Figure 4-75. Installing the Timing Belt



- Whenever the CR Unit is removed/replaced, the required adjustments must be carried out.
  - Chapter 5 “ADJUSTMENT” (p.135)
- After replacing the CR Unit, be sure to perform the required lubrication.
  - Chapter 6 “MAINTENANCE” (p.147)

### 4.5.15 Upper Paper Guide

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)/Left Frame (p105)/Front Frame/Right Frame (p106)/CR Motor (p112)/CR Scale (p101)/Hopper (p102)/Main Frame Assy (p113)
- Removal procedure
  1. Release the hooks (x6), and remove the Upper Paper Guide.

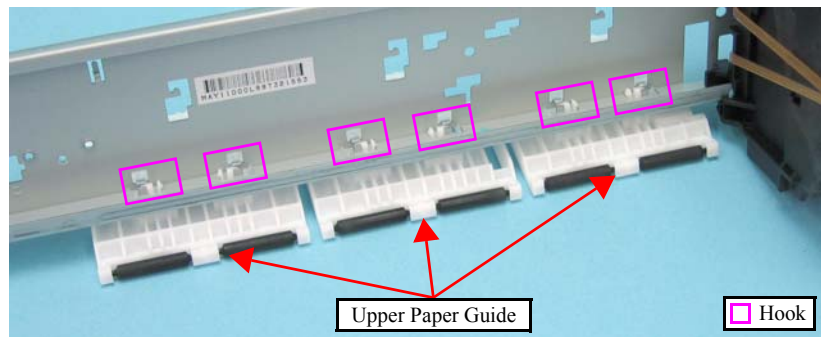


Figure 4-76. Removing the Upper Paper Guide (1)



When installing the Upper Paper Guide, insert the legs (x2) of the antistatic cloth into the holes (x2) of Upper Paper Guide as shown in the figure below.

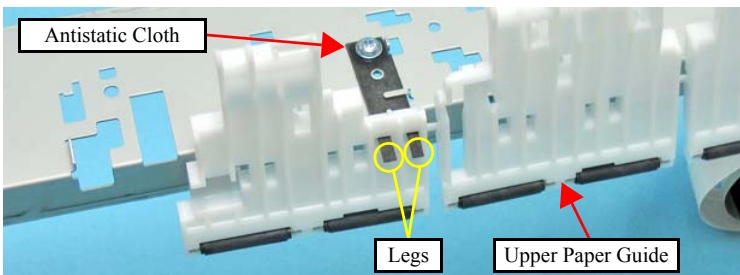


Figure 4-77. Installing the Upper Paper Guide



Whenever the Upper Paper Guide is removed/replaced, the required adjustments must be carried out.

- Chapter 5 “ADJUSTMENT” (p.135)

### 4.5.16 ASF Unit

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)/Left Frame (p105)/Front Frame/Right Frame (p106)/CR Motor (p112)/CR Scale (p101)/Hopper (p102)/Main Frame Assy (p113)
- Removal procedure
  1. Release the PE Sensor cable from the notches (x6) of the Base Frame and pull out the cable from the hole (x1).

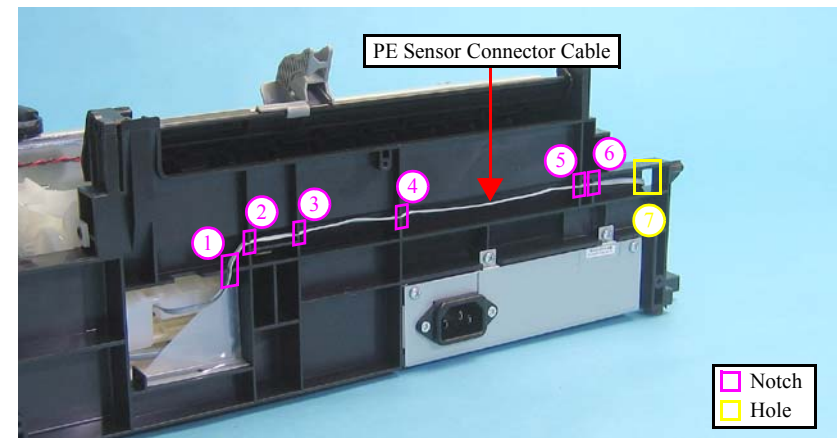


Figure 4-78. Releasing the PE Sensor Connector Cable



When performing the following steps, be cautious not to get injured with the sharp edges of the Frame Support.

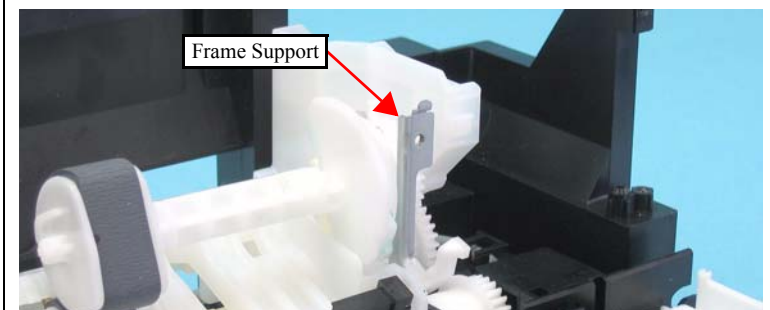


Figure 4-79. Sharp Edges of the Frame Support



2. Remove the screws (x2) that secure the ASF Unit.

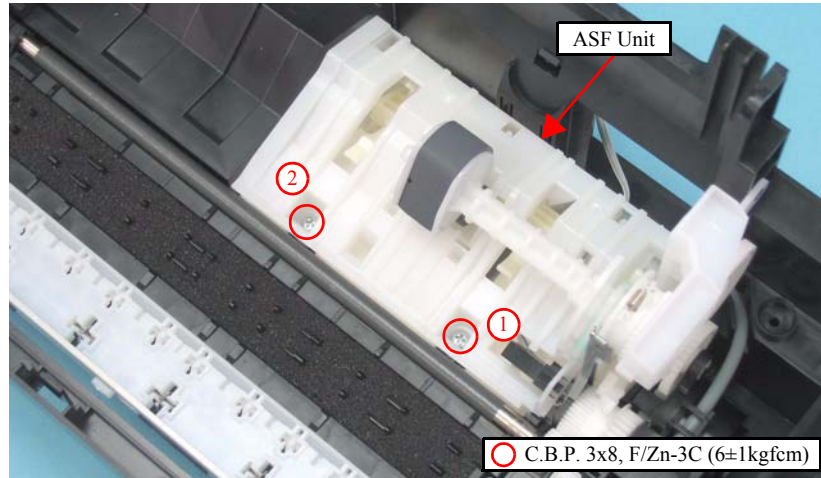


Figure 4-80. Removing the ASF Unit (1)

3. Release the dowel (x1) and dowels (x2) of the Base Frame and the shaft (x1) of the ASF Unit, then remove the ASF Unit.

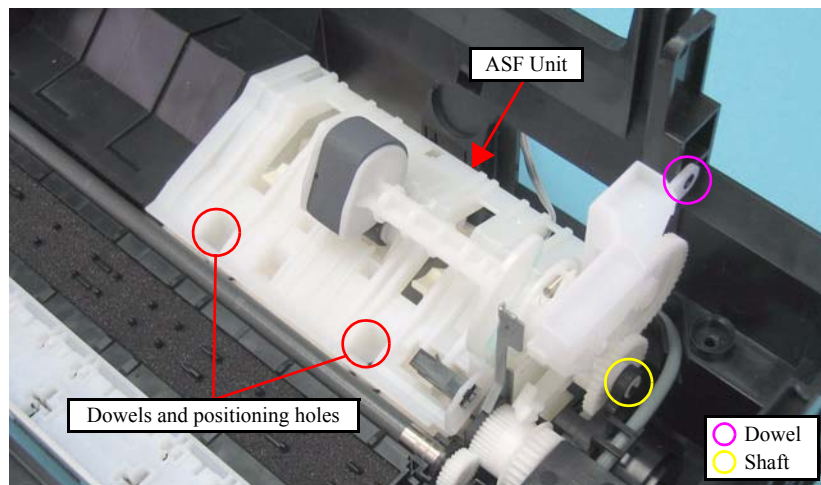


Figure 4-81. Removing the ASF Unit (2)



- When installing the ASF Unit, be sure to align the dowels (x2) of the Base Frame with the positioning holes (x2) of the ASF Unit as shown in [Figure 4-81](#).
- Tighten the screws in the order given in [Figure 4-80](#).
- When routing the PE Sensor cable, pay attention to the following instructions.
  - Route the cable in the order given in [Figure 4-78](#).
  - Make sure to attach the cable with the blue line facing toward the Base Frame.

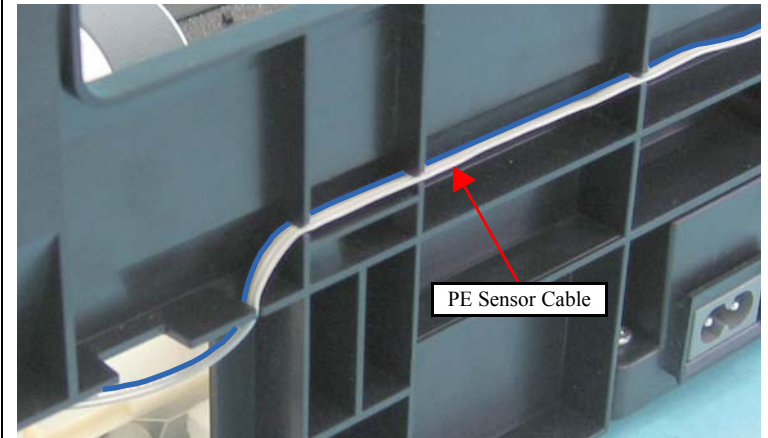


Figure 4-82. Routing PE Sensor Cable

- Check that the cable is tightly routed and there is no slack in it.



Whenever the ASF Unit is removed/replaced, the required adjustments must be carried out.

- [Chapter 5 “ADJUSTMENT” \(p.135\)](#)

## 4.5.17 Ink System Unit

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)/Left Frame (p105)/Front Frame/Right Frame (p106)/CR Motor (p112)/CR Scale (p101)/Hopper (p102)/Main Frame Assy (p113)/ASF Unit (p117)

- Removal procedure

### CAUTION



When disassembling/assembling the Ink System Unit, pay attention to the following instructions.

- Be cautious not to get injured with the sharp edges of the Frame Support.

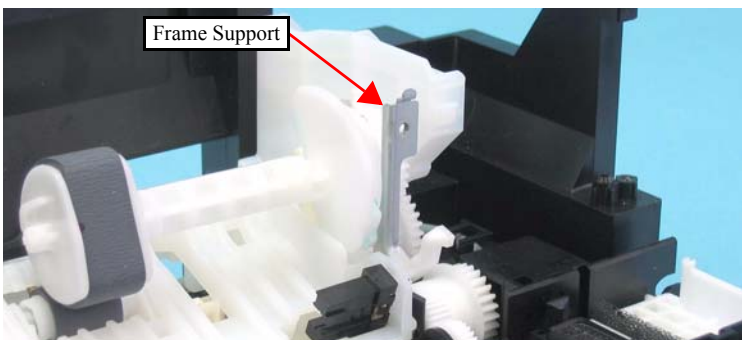


Figure 4-83. Sharp Edges of Frame Support

- Do not touch or damage the Sealing Rubber or the Head Cleaner.
- Mark the connecting point before removing the Ink Tube.

1. Detach the Waste Ink Tube together with the Tube Stopper from the Waste Ink Cover.
2. Detach the Waste Ink Tube from the groove of the Base Frame.

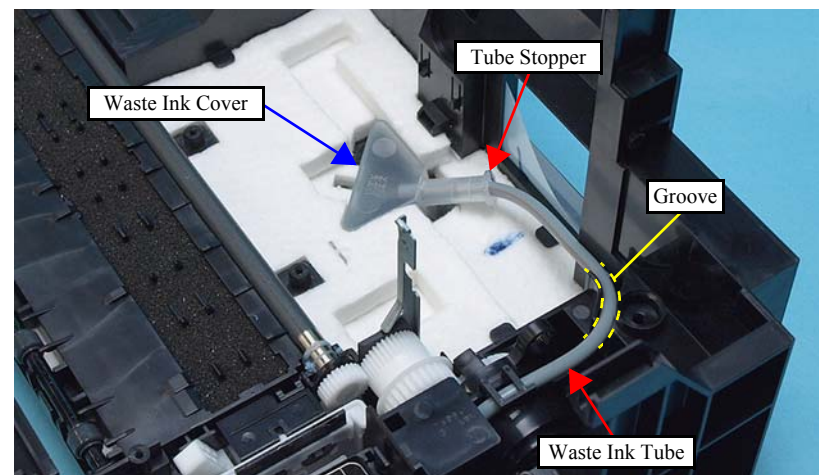


Figure 4-84. Detaching Waste Ink Tube

3. Remove the screw (x1) that secures the Ink System Unit.
4. Slide the Ink System Unit in the direction of the arrow while releasing the hook with a flathead precision screwdriver or a similar tool, and remove the Ink System Unit.

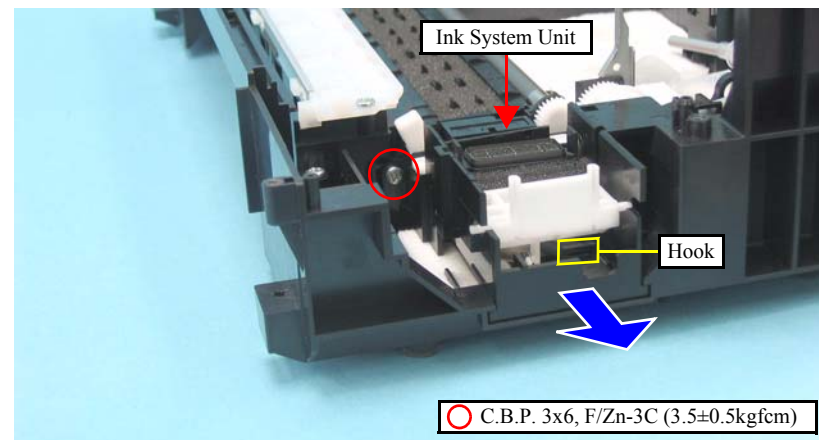


Figure 4-85. Removing the Ink System Unit

**REASSEMBLY**

- If the Carriage lock lever comes off, reassemble it following the steps below.
  1. Attach the one end of the Extension Spring 0.8 to the hook of the Carriage Lock Lever.
  2. Attach the other end of the Extension Spring 0.8 to the Ink System Unit.
  3. Insert the dowel (x1) of the Carriage Lock Lever into the hole (x1) of the Ink System Unit.

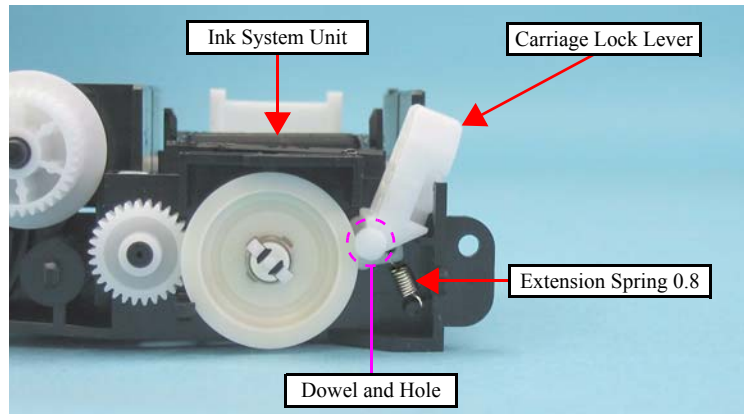


Figure 4-86. Installing the Carriage Lock Lever

**REASSEMBLY**

- When installing the Ink System Unit, pay attention to the following instructions.
  - Align the dowels (x3) of the Ink System Unit with the positioning holes (x3) of the Base Frame.

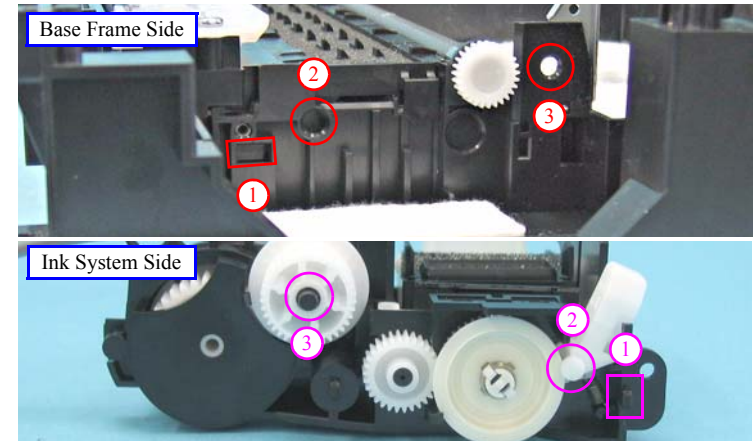


Figure 4-87. Installing the Ink System Unit (1)

- Align the ribs (x2) of the Ink System Unit with the grooves (x2) of the Base Frame.

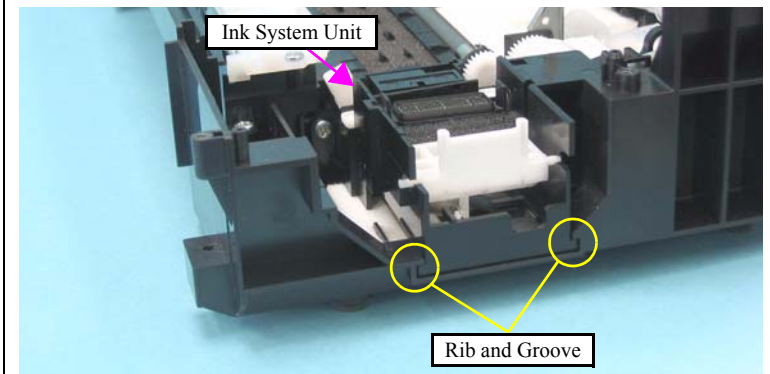


Figure 4-88. Installing the Ink System Unit (2)





- Route the Waste Ink Tube through the groove of the Base Frame so that the line of the Waste Ink Tube faces to the Ink System Unit side.

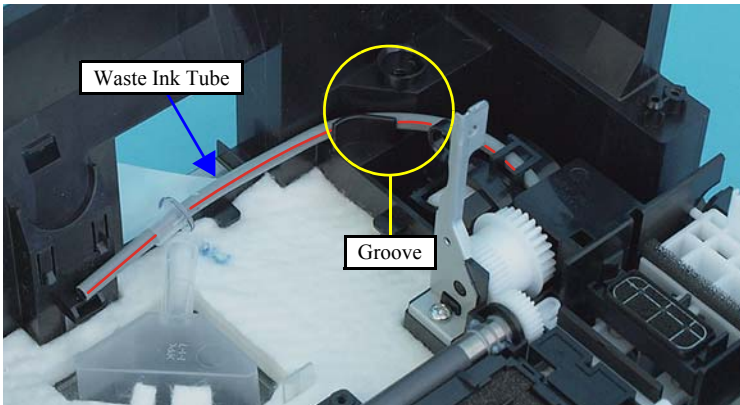


Figure 4-89. Routing the Waste Ink Tube

- Attach the Tube Stopper to the Waste Ink Tube as shown in the figure below, and insert them into the Waste Ink Cover.

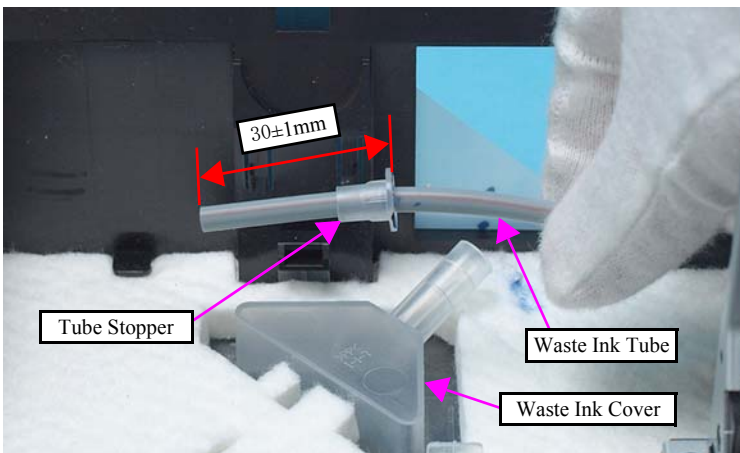


Figure 4-90. Installing the Waste Ink Tube

- When inserting the Waste Ink Tube into the Waste Ink Cover, make sure that there is no gap between the Tube Stopper and Waste Ink Cover.

## 4.5.18 Front Paper Guide

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)/Left Frame (p105)/Front Frame/Right Frame (p106)/CR Motor (p112)/CR Scale (p101)/Hopper (p102)/Main Frame Assy (p113)/ASF Unit (p117)/Ink System Unit (p119)/Star Wheel Holder Assy (p108)/EJ Roller (p108)

- Removal procedure



When removing the Front Paper Guide, be cautious not to damage the ribs on the upper surface of the Front Paper Guide.

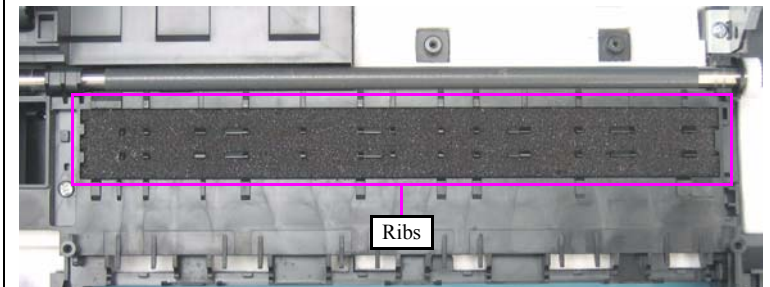


Figure 4-91. Ribs of the Front Paper Guide

1. Remove the screws (x2) that secure the Front Paper Guide.

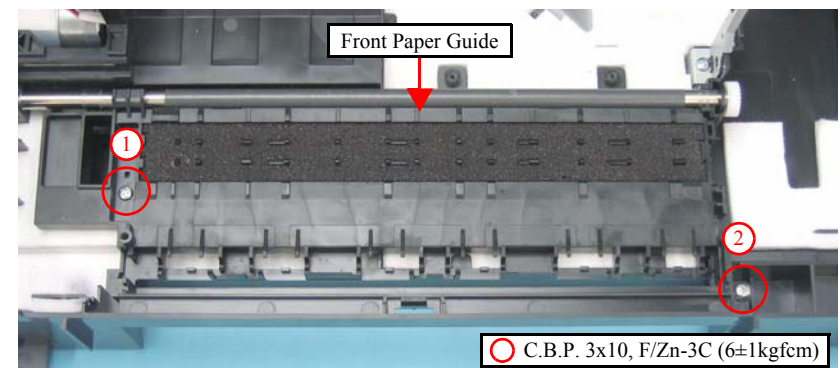


Figure 4-92. Removing the Front Paper Guide (1)

2. Release the hook (x1) of the Front Paper Guide, and remove the Front Paper Guide.

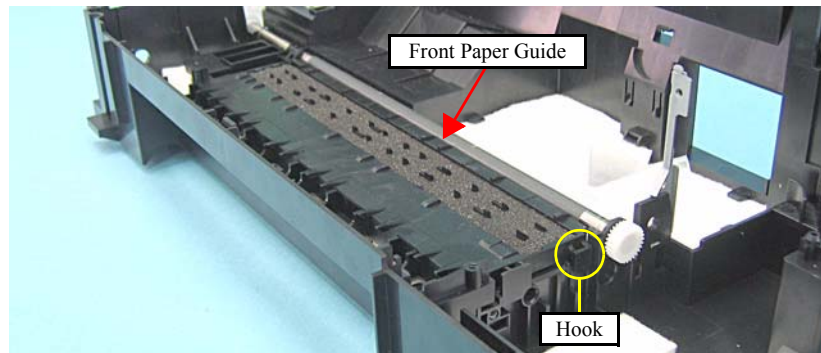


Figure 4-93. Removing the Front Paper Guide (2)

#### REASSEMBLY



- When installing the Front Paper Guide, be cautious not to damage the PF Roller.
- Make sure that the leg of the Pad Front Paper Guide is set in the correct position and confirm it is not caught between the Front Paper Guide and the Base Frame as shown in the figure below.

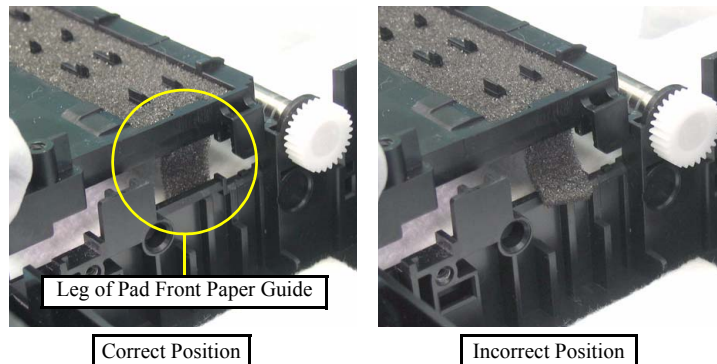


Figure 4-94. Installing the Front Paper Guide

- Tighten the screws in the order given in [Figure 4-92](#).

#### ADJUSTMENT REQUIRED



- Whenever the Front Paper Guide is removed/replaced, the required adjustments must be carried out.
  - [Chapter 5 “ADJUSTMENT” \(p.135\)](#)
- After replacing the Front Paper Guide, be sure to perform the required lubrication.
  - [Chapter 6 “MAINTENANCE” \(p.147\)](#)

## 4.5.19 PF Roller

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit ([p87](#))/Upper Housing ([p90](#))/Panel Unit ([p96](#))/Printer Mechanism ([p103](#))/Main Board Unit ([p93](#))/Left Frame ([p105](#))/Front Frame/Right Frame ([p106](#))/CR Motor ([p112](#))/CR Scale ([p101](#))/Hopper ([p102](#))/Main Frame Assy ([p113](#))/ASF Unit ([p117](#))/Ink System Unit ([p119](#))/Star Wheel Holder Assy ([p108](#))/EJ Roller ([p108](#))/Front Paper Guide ([p121](#))/PF Encoder Sensor ([p109](#))/PF Scale ([p110](#))

- Removal procedures

#### CAUTION



When removing the PF Roller, be cautious not to touch or damage the coated surface of the PF Roller.

1. Remove the Spur Gear 13.5 from the PF Roller with a flathead precision screwdriver or a similar tool.

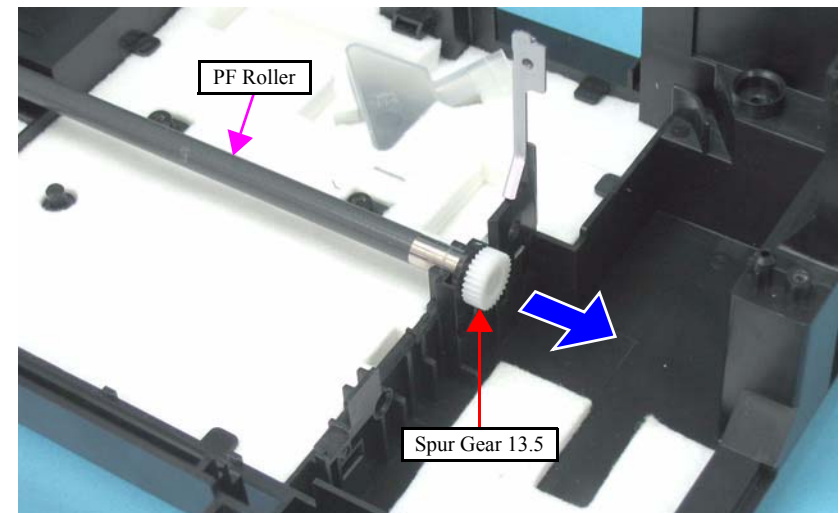


Figure 4-95. Removing the PF Roller (1)

2. Release the PF Roller from the cutout of the Base Frame (Step 2-1), and remove the PF Roller (Step 2-2).

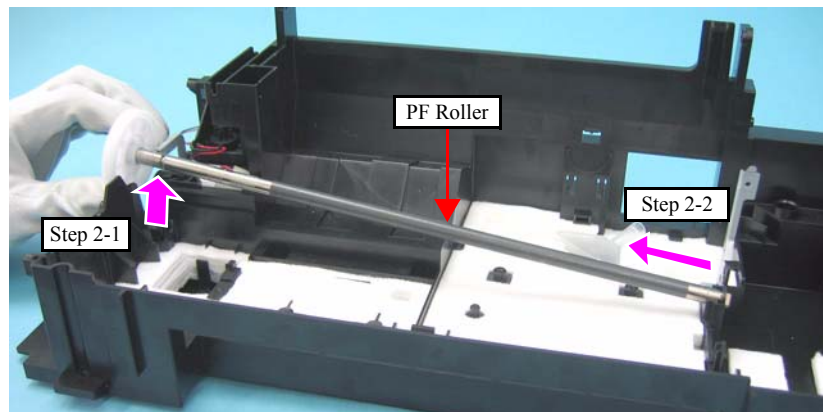


Figure 4-96. Removing the PF Roller (2)

ADJUSTMENT  
REQUIRED



- Whenever the PF Roller is removed/replaced, the required adjustments must be carried out.
  - Chapter 5 “ADJUSTMENT” (p.135)
- After replacing the Front Paper Guide, be sure to perform the required lubrication.
  - Chapter 6 “MAINTENANCE” (p.147)

## 4.5.20 Waste Ink Pads

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p96)/Printer Mechanism (p103)/Main Board Unit (p93)/Left Frame (p105)/Front Frame/Right Frame (p106)/CR Motor (p112)/CR Scale (p101)/Hopper (p102)/Main Frame Assy (p113)/ASF Unit (p117)/Ink System Unit (p119)/Star Wheel Holder Assy (p108)/EJ Roller (p108)/Front Paper Guide (p121)/PF Encoder Sensor (p109)/PF Scale (p110)/PF Roller (p122)

- Removal procedure

1. Remove the Waste Ink Pads (x6) from the sections indicated with A to C of the Base Frame.

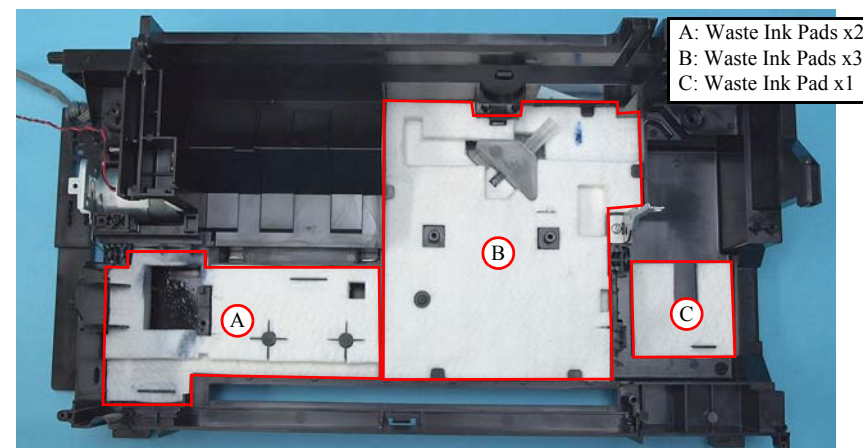


Figure 4-97. Removing the Waste Ink Pads

2. Remove the Waste Ink Cover and the Diffusion Sheet.

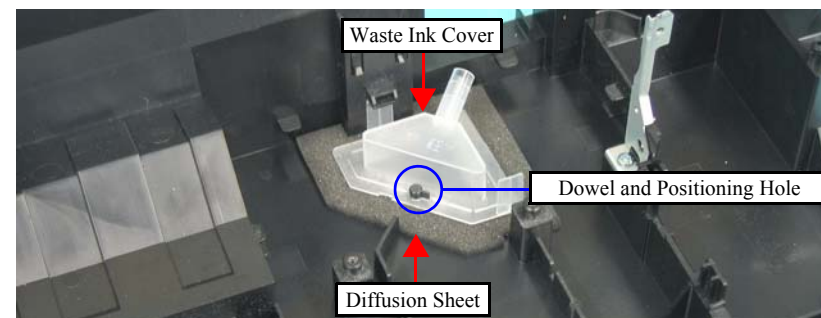


Figure 4-98. Removing the Waste Ink Cover and Diffusion Sheet





- When installing the Diffusion Sheet, Waste Ink Cover, and the Waste Ink Pads (x3) on section B, attach them in the order given in the figure below.

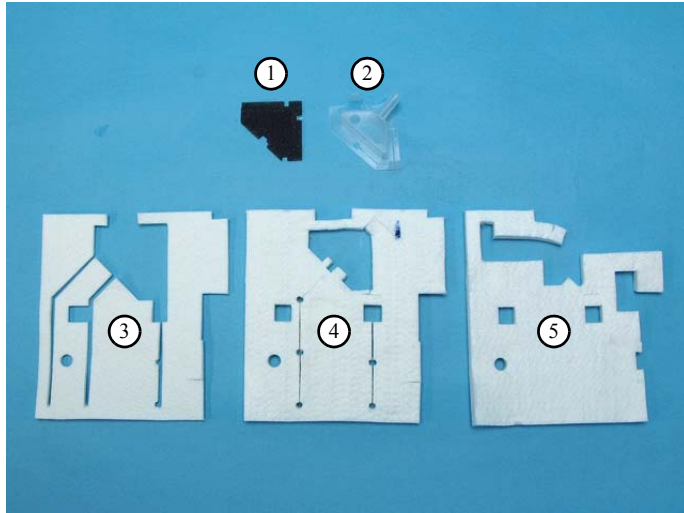


Figure 4-99. Installing the Waste Ink Pads

- When installing the Waste Ink Cover, be sure to align the dowel (x1) of the Base Frame with the positioning hole (x1) of the Waste Ink Cover as shown in [Figure 4-98](#). Make sure to confirm the cover is properly secured on the Diffusion Sheet without any gap.



Whenever the Waste Ink Pads is removed/replaced, the required adjustments must be carried out.

- [Chapter 5 “ADJUSTMENT” \(p.135\)](#)

## 4.6 Disassembling the Scanner Unit

### 4.6.1 Separating the Scanner Unit and the ADF Unit

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit ([p87](#))
- Removal procedure
  1. Release the dowels (x2), and remove the ASF Cover. While lifting the ADF Unit, release the hooks (x2) of the Scanner Unit that secure the ADF Hinges (x2) with a flathead precision screwdriver.

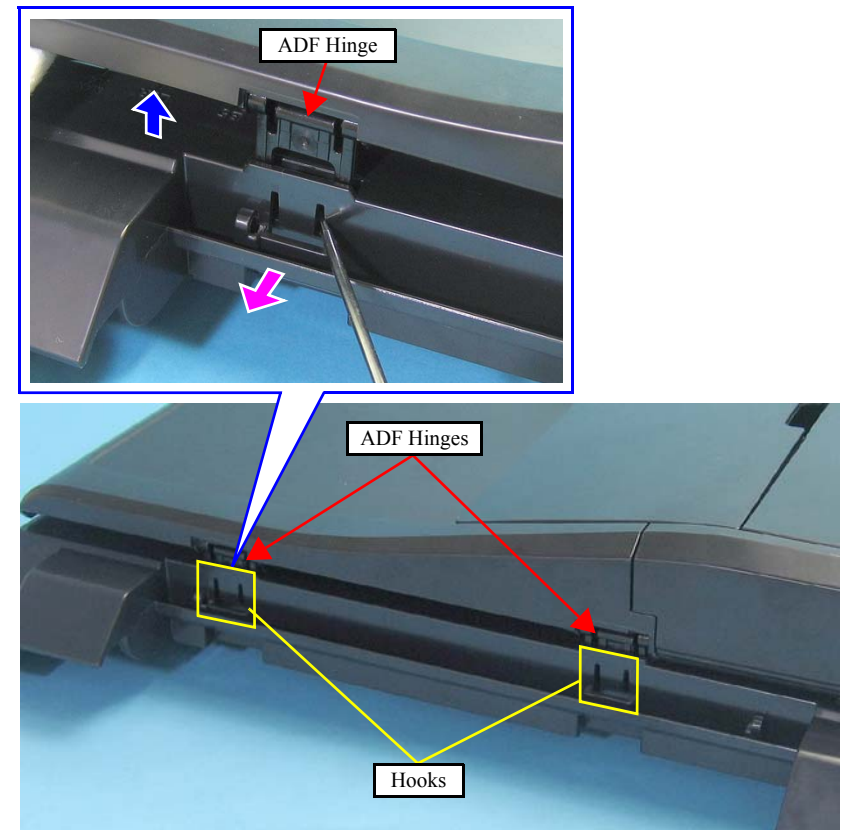


Figure 4-100. Removing the ADF Unit (1)

2. Lift the rear of the ADF Unit, and release the hook of the ADF Cable Cover from the hole of the Scanner Unit.
3. Pull out the cables of the ADF Unit through the hole of the Scanner Unit, and remove the ADF Unit.

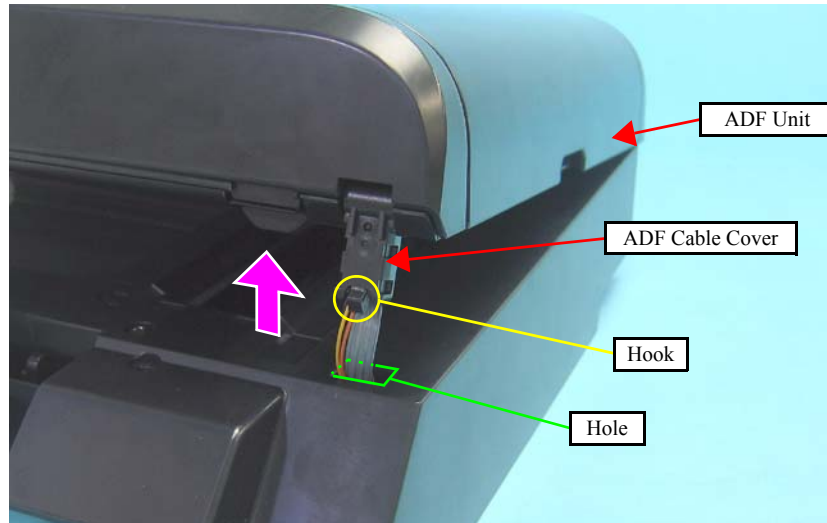


Figure 4-101. Removing the ADF Unit (2)

## 4.6.2 Upper Scanner Housing

- ☐ Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)
- ☐ Removal procedure

### CAUTION



- Following work should be performed in a room where there is a little dust. A clean room or a clean bench would be preferable.
- Do not scratch the Rod Lens Array when removing the CIS Assy.

1. Remove the screws (x7) that secure the Upper Scanner Housing.



Figure 4-102. Removing the Upper Scanner Housing (1)



2. Release the hooks (x3) of the front top of the Upper Scanner Housing, and remove the Upper Scanner Housing.

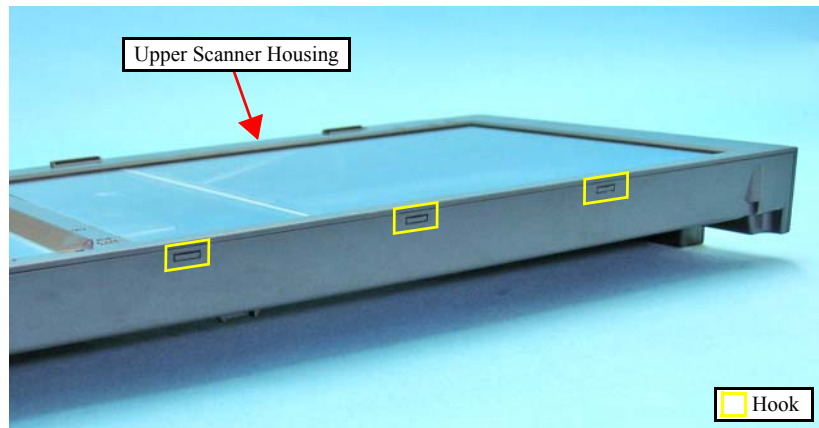


Figure 4-103. Removing the Upper Scanner Housing (2)



When installing the Upper Scanner Housing, make sure to set the grounding wire to the place as shown in the figure below.

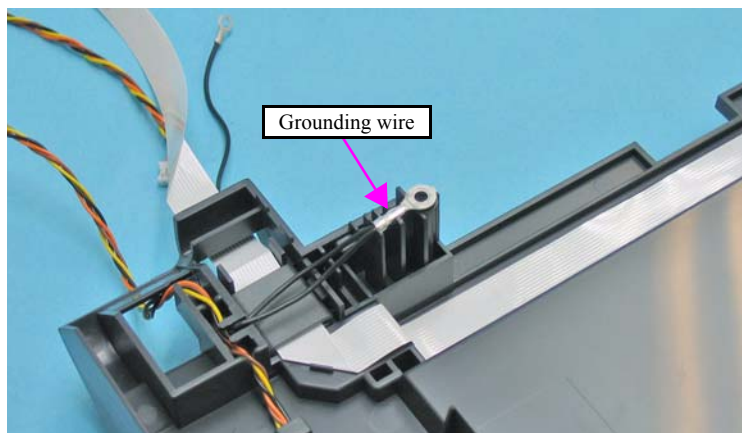


Figure 4-104. Setting position of the grounding wire

### 4.6.3 Scanner Carriage Unit

- ☐ Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)/Upper Scanner Housing (p125)
- ☐ Removal procedure



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

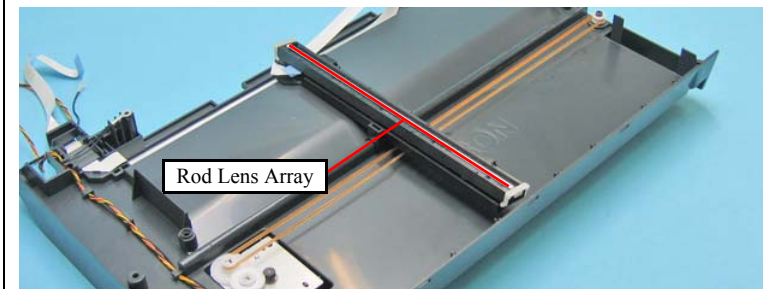


Figure 4-105. Handling the Scanner Carriage Unit

1. Move the Scanner Carriage Unit to the center.

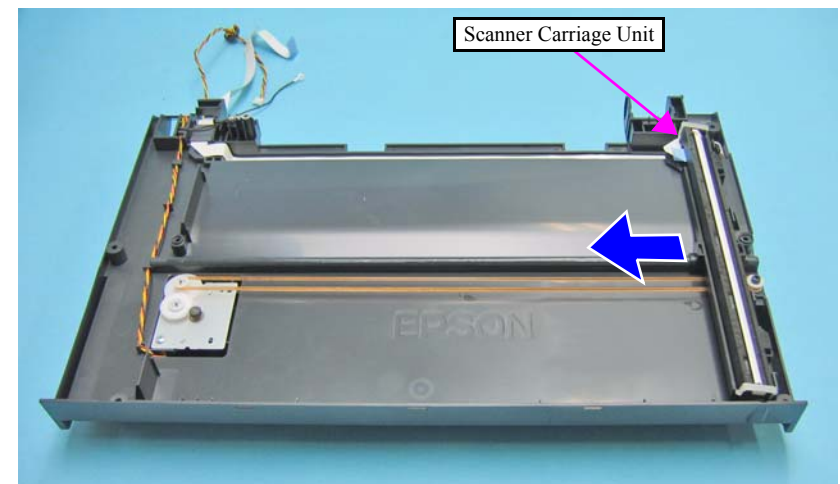


Figure 4-106. Moving the Scanner Carriage Unit

**CAUTION**

Take extra care not to contaminate the Scanner Timing Belt with grease on the rail of the Lower Scanner Housing.

2. Release the Driven Pulley from the Lower Scanner Housing, and release the Scanner Timing Belt from the Combination Gear 25.9, 9.0553 and the Driven Pulley.

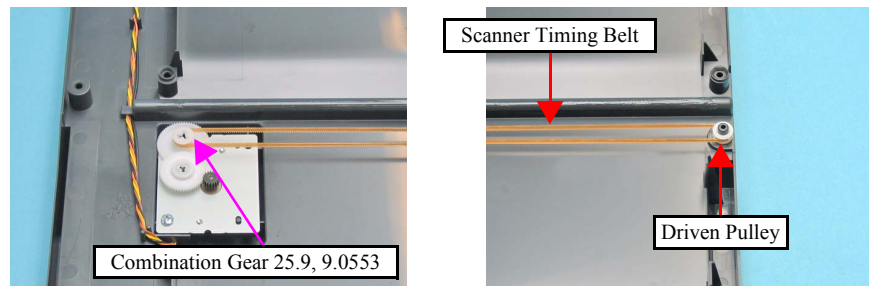


Figure 4-107. Removing the Scanner Carriage Unit (1)

**CAUTION**

Be careful not to damage the Scanner Carriage FFC that is secured with the double-sided tape.

3. Remove the Ferrite Core from the hooks (x2) of the Lower Scanner Housing.
4. Peel off the Scanner Carriage FFC from the Lower Scanner Housing and remove the Scanner Carriage Unit.

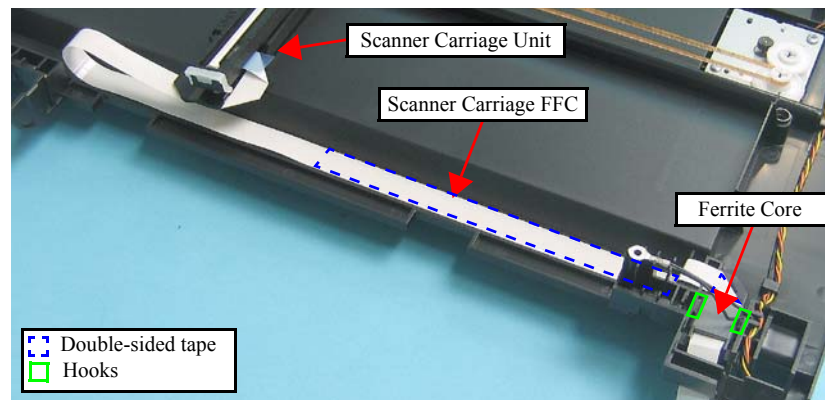


Figure 4-108. Removing the Scanner Carriage Unit (2)

## 4.6.4 Scanner Motor Unit

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)/Upper Scanner Housing (p125)

- Removal procedure

1. Move the Scanner Carriage Unit to the center.  
(Refer to 4.6.3 Scanner Carriage Unit Step1 (p126))
2. Release the Driven Pulley from the Lower Scanner Housing, and release the Scanner Timing Belt from the Combination Gear 25.9, 9.0553 and the Driven Pulley.  
(Refer to 4.6.3 Scanner Carriage Unit Step2 (p127))
3. Pull out the Scanner Motor cable and the grounding wire through the opening of the Lower Scanner Housing, and release the Scanner Motor cable from the five hooks of the Lower Scanner Housing.
4. Remove the two screws that secure the Scanner Motor Unit and remove the Scanner Motor Unit.

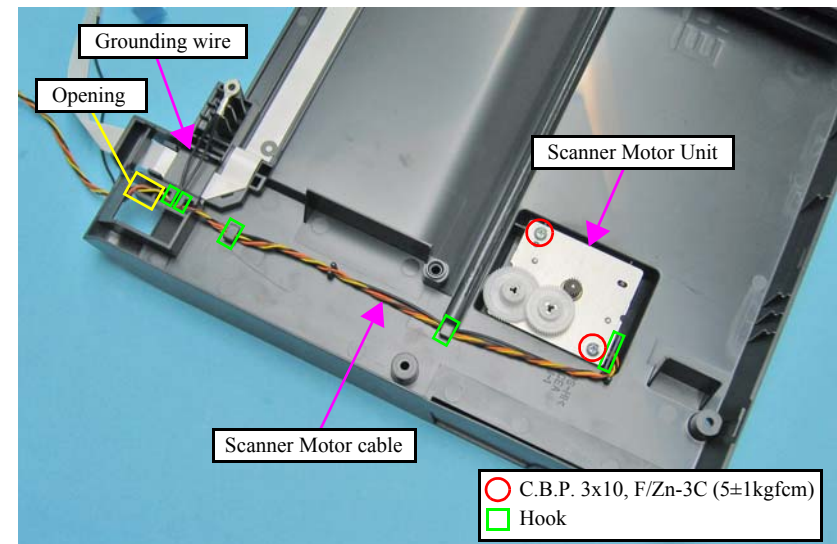


Figure 4-109. Removing the Scanner Motor Unit (1)

5. Remove the screw that secures the grounding wire to the Scanner Motor Unit, and remove the grounding wire.

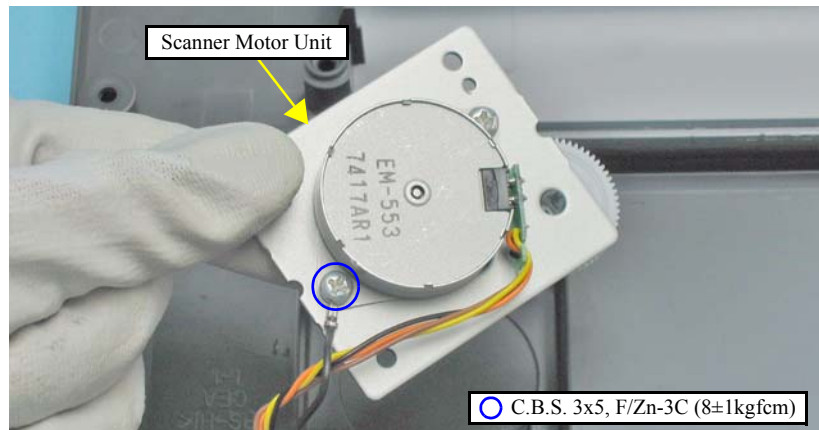


Figure 4-110. Removing the Scanner Motor Unit (2)



When installing the Scanner Motor Unit, route the grounding wire referring to the figure below.

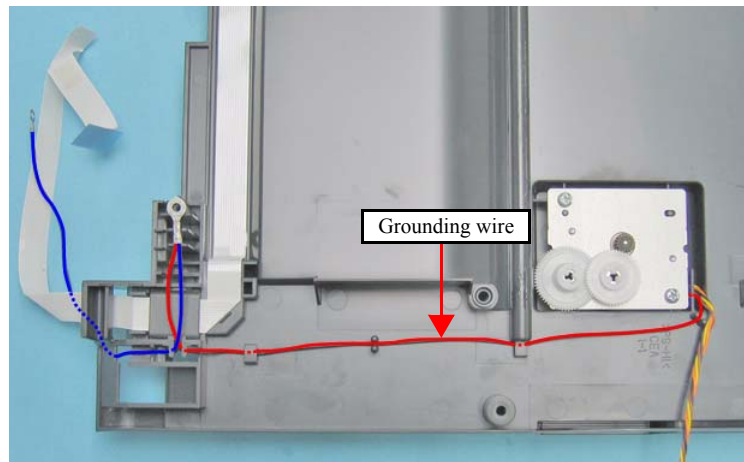


Figure 4-111. Routing the grounding wire

## 4.7 Disassembling the ADF Unit

### 4.7.1 ADF Hinge

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)
- Removal procedure
  1. Release the dowels (x2 each) that secure the ADF Hinges, and remove the ADF Hinges from the ADF Base.

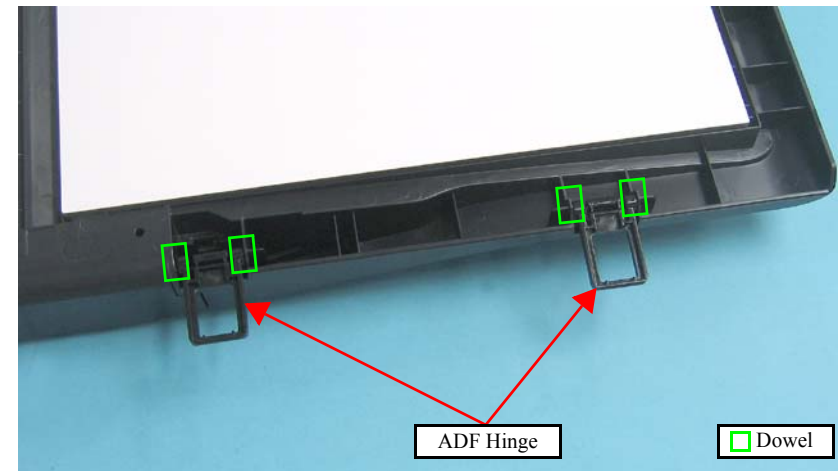


Figure 4-112. Removing the ADF Hinges

### 4.7.2 ADF Cover Assy

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)

- Removal procedure

1. Open the ADF Cover Assy.
2. Release the dowels (x2) that secure the ADF Cover Assy, and remove the ADF Cover Assy.

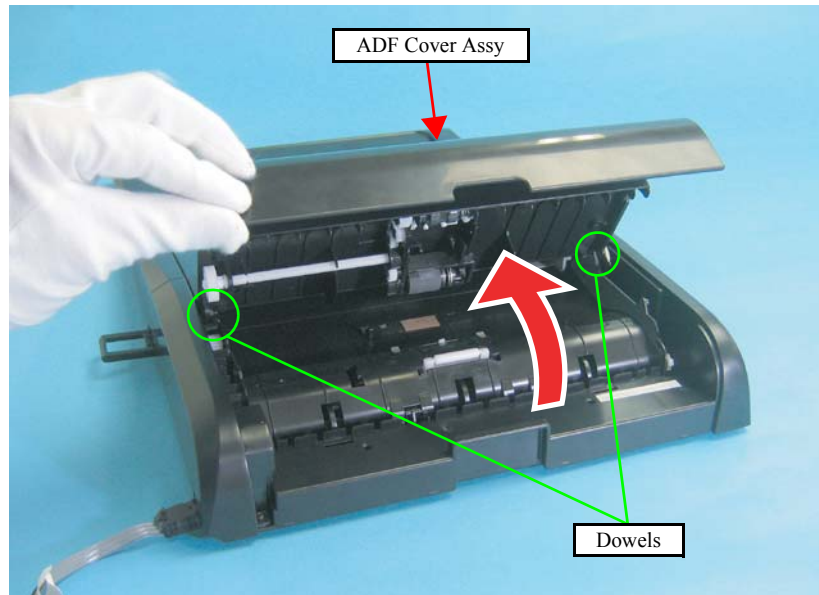


Figure 4-113. Removing the ADF Cover Assy

### 4.7.3 ADF Paper Support Assy/ADF Document Support Assy

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)

- Removal procedure

1. Release the dowels (x2) that secure the ADF Document Support Assy, and remove the ADF Document Support Assy.
2. Release the dowels (x2) that secure the ADF Paper Support Assy, and remove the ADF Paper Support Assy.

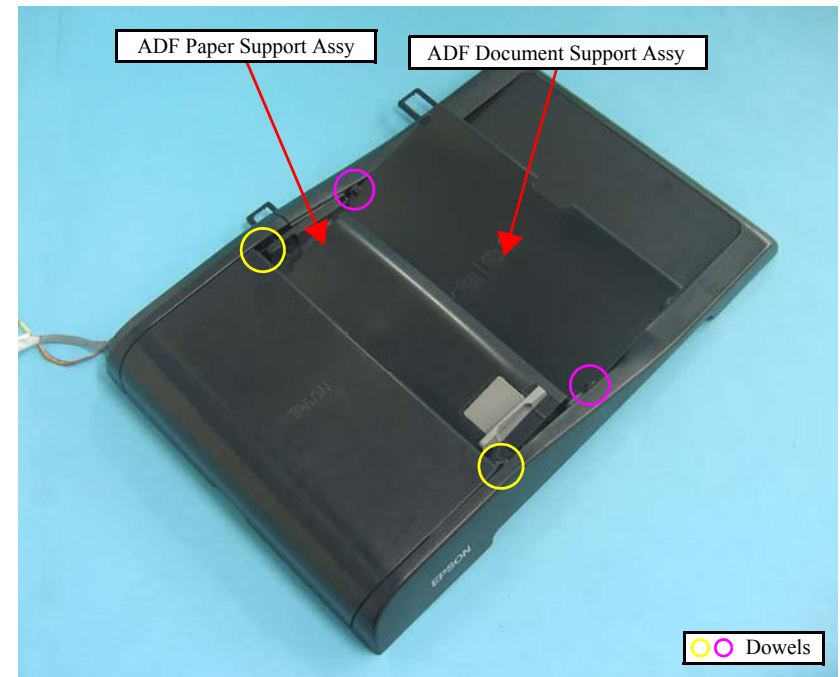


Figure 4-114. Removing the ADF Paper Support Assy



## 4.7.4 ADF Motor Unit

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/ADF Cover Assy (p129)

- Removal procedure

1. Remove the ADF Rear Cover as follows.
  - 1-1. While pressing the hook that secures the ADF Rear Cover, release the ADF Rear Cover from the dowel in the direction of the arrow.
  - 1-2. Release the hook that secures the ADF Rear Cover, and remove the ADF Rear Cover while pulling out its tab.

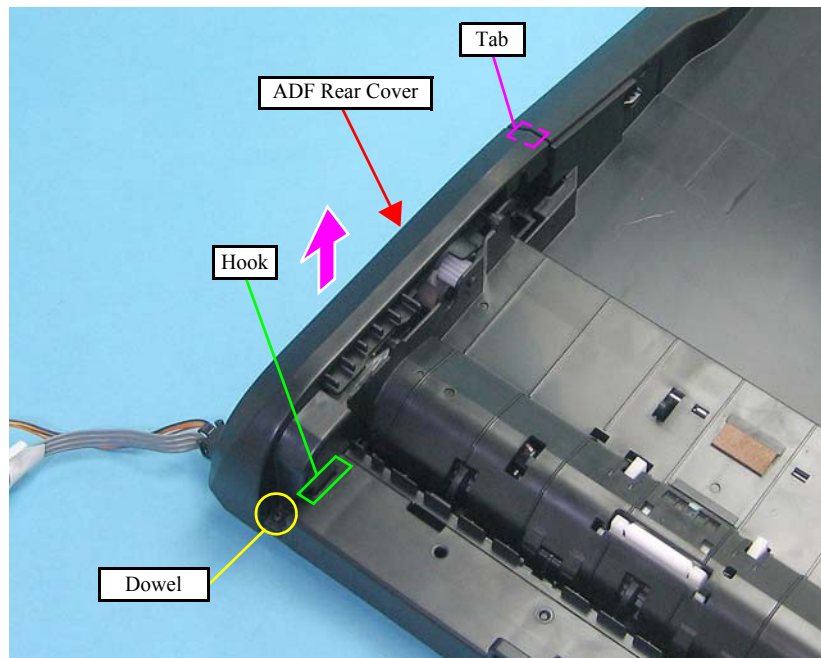


Figure 4-115. Removing the ADF Rear Cover

2. Release the hooks (x4) of the ADF Cable Cover and open the ADF Cable Cover, then release the cables.
3. Peel off the acetate tape that binds the ADF Motor cable and the ADF Sensor cable.

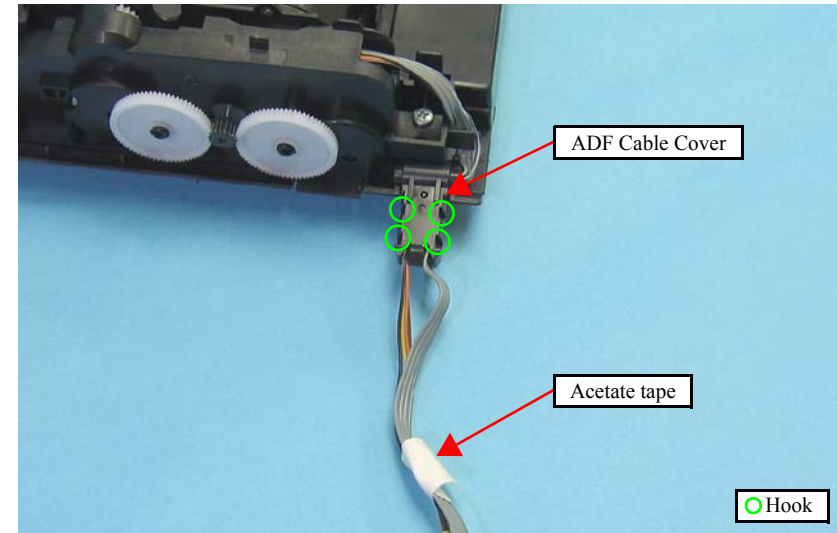


Figure 4-116. Releasing the cables

4. Remove the screws (x2) that secure the ADF Motor Unit.
5. Release the dowels (x2) of the ADF Base and the shaft of the ADF Motor Unit, and detach the ADF Motor Unit.

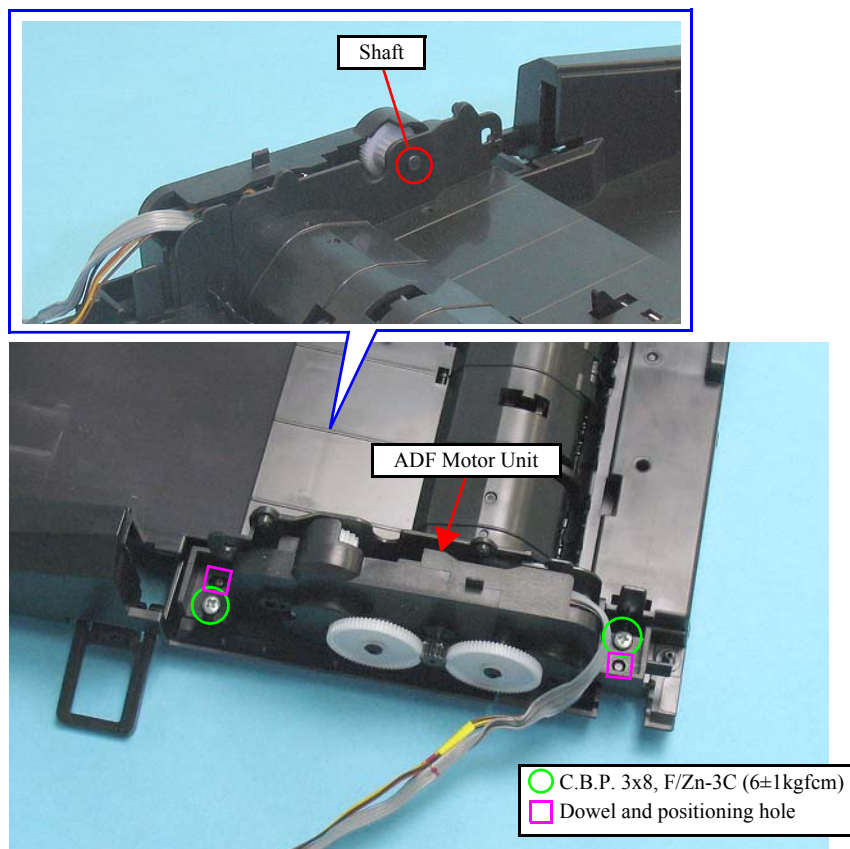


Figure 4-117. Removing the ADF Motor Unit (1)

6. Remove the screw that secures the grounding wire to the ADF Motor Unit, and remove the ADF Motor Unit.

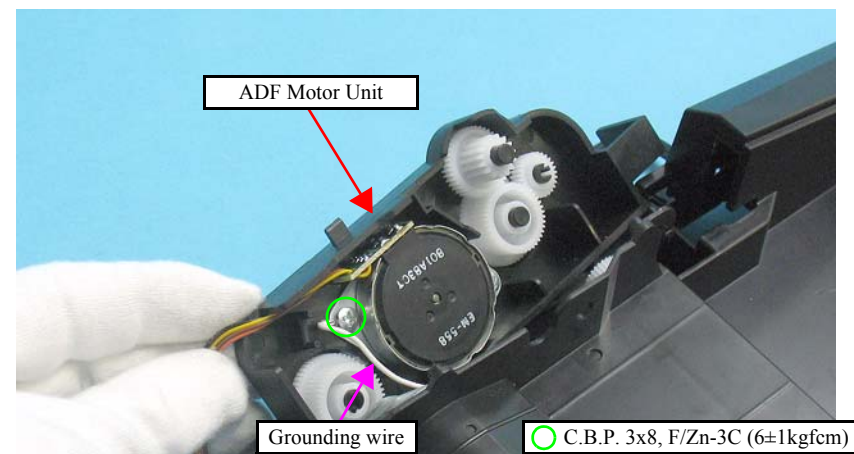


Figure 4-118. Removing the ADF Motor Unit (2)



- When installing the ADF Motor Unit, route the cable as shown in the figure below.

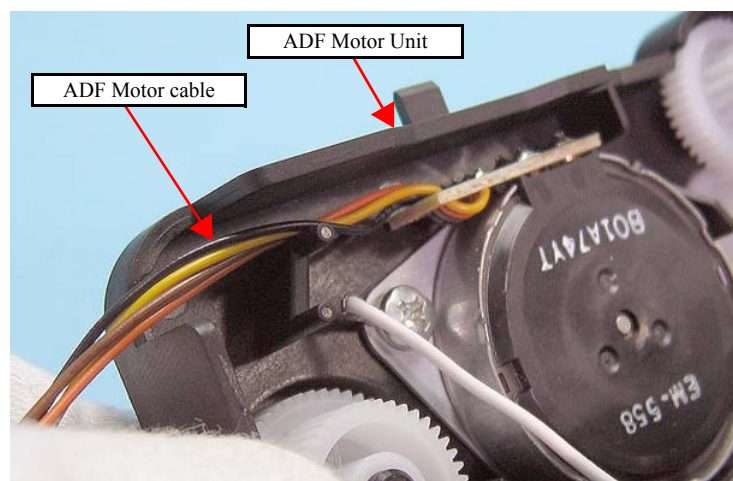


Figure 4-119. Routing the cable



- When installing the ADF Rear Cover, insert the tab of the ADF Rear Cover into the opening of the ADF Base as shown in the figure below.

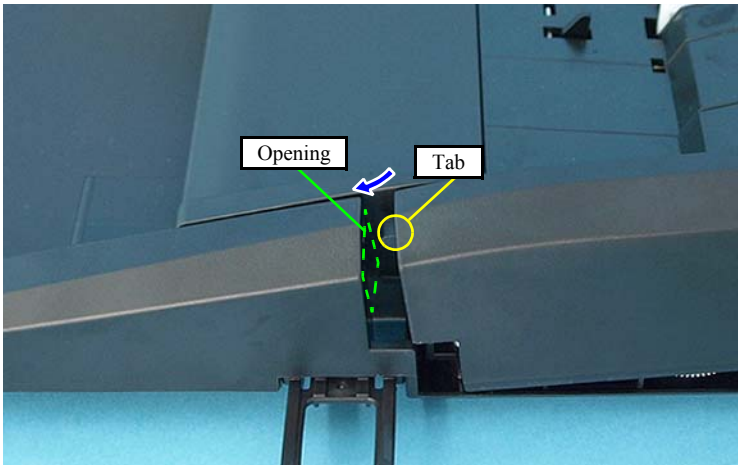


Figure 4-120. Installing the ADF Rear Cover

- When setting the cables into the ADF Cable Cover, route them as shown in the figure below.

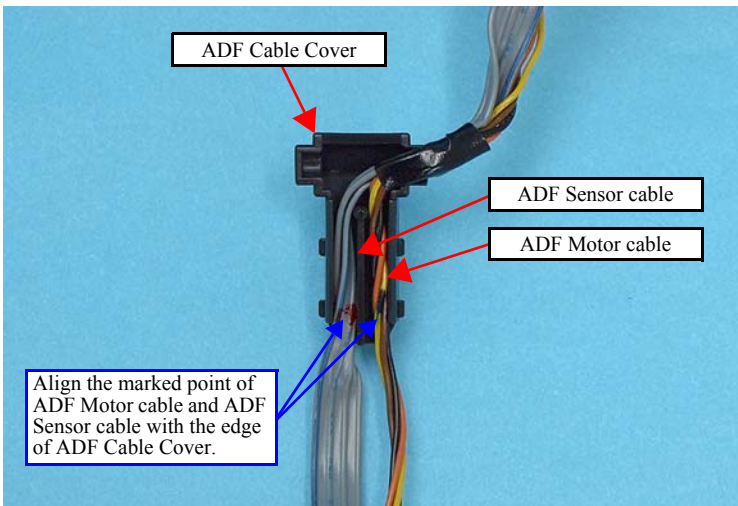


Figure 4-121. Routing the cables in the ADF Cable Cover

## 4.7.5 ADF Frame Assy

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)/ADF Cover Assy (p129)/ADF Paper Support Assy (p129)/ADF Motor Unit (p130)
- Removal procedure
  1. Remove the screws (x2) that secure the ADF Frame Assy.
  2. Release the dowel of the ADF Base and the dowels (x2) of the ADF Frame Assy, and remove the ADF Frame Assy.

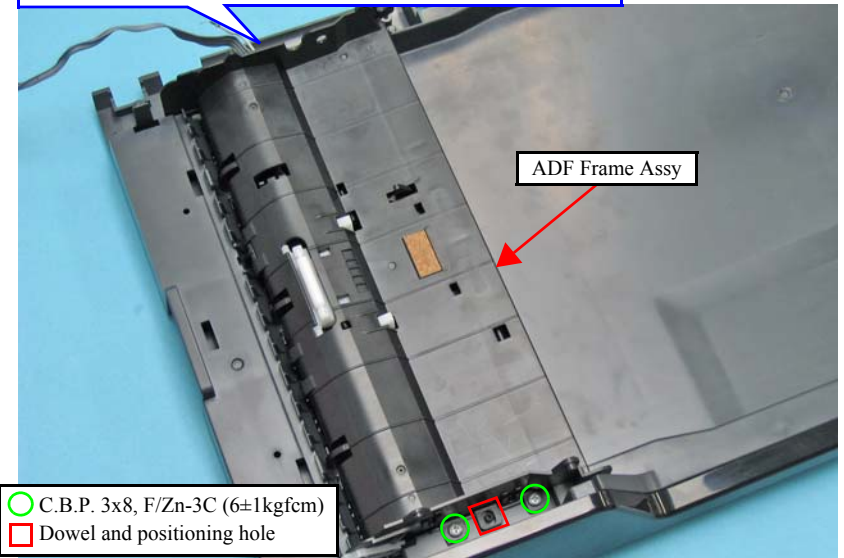
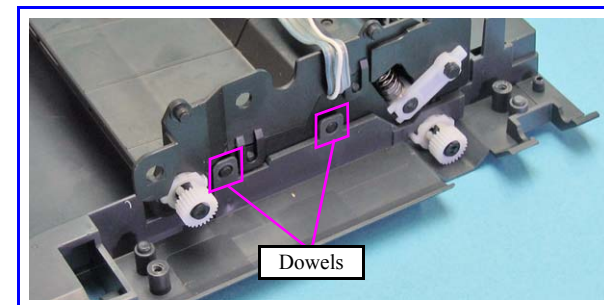


Figure 4-122. Removing the ADF Frame Assy



### 4.7.6 ADF Driven Roller

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/ADF Cover Assy (p129)/ADF Motor Unit (p130)/ADF Frame Assy (p132)

- Removal procedure

- Release the dowels (x2), and remove the ADF Driven Roller and the compression spring.

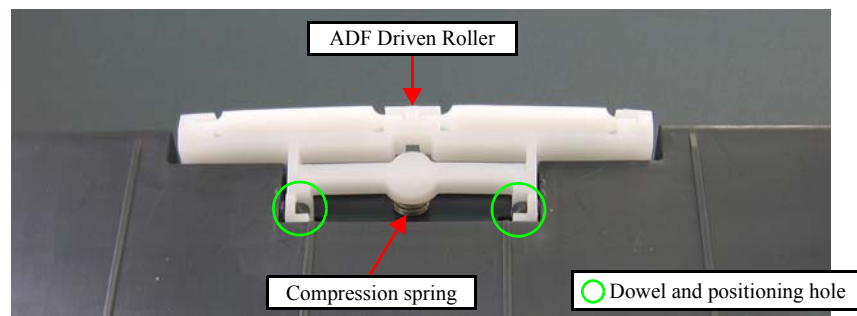


Figure 4-123. Removing the ADF Driven Roller



When installing the ADF Driven Roller, confirm the following.

- Secure the compression spring to the ADF Driven Roller and the dowels (x2) of the ADF Base as shown in the figure below.
- Insert the ribs of the ADF Driven Roller into the positioning holes (x2) of the ADF Base.

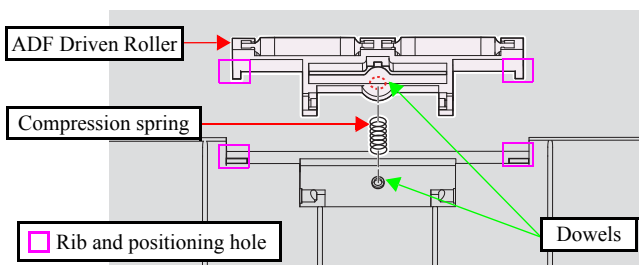


Figure 4-124. Installing the ADF Driven Roller



After replacing the ADF Driven Roller, be sure to perform the required lubrication.

- Chapter 6 “MAINTENANCE” (p.147)

### 4.7.7 ADF PF Roller

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/ADF Cover Assy (p129)/ADF Motor Unit (p130)

- Removal procedure

- Release the hooks (x3), and remove the ADF Lower Cover.

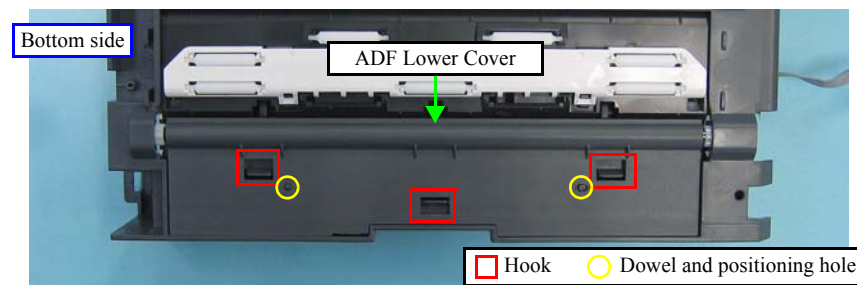


Figure 4-125. Removing the ADF PF Roller (1)

- Release the hooks (x2) of the bush (left) at the bottom of the ADF Unit.
- Release the hooks (x2) of the bush (right), and remove the ADF PF Roller in the direction of the arrow.

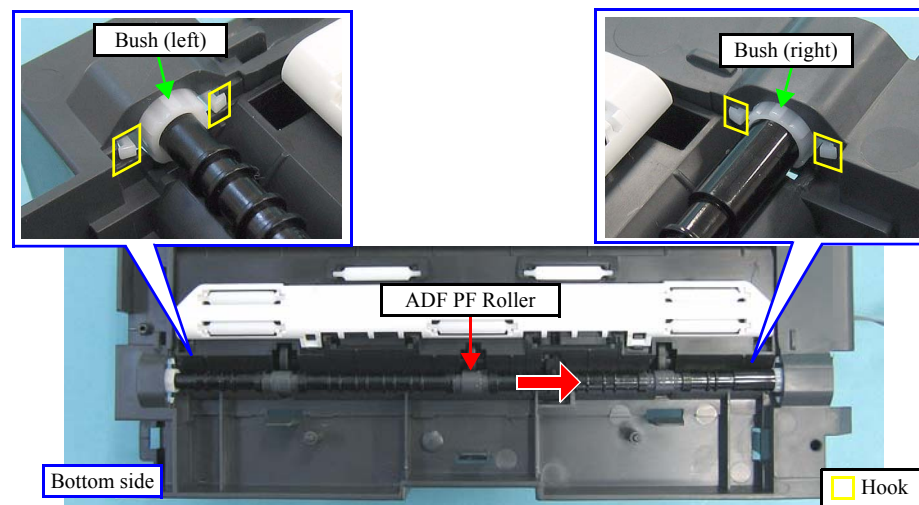


Figure 4-126. Removing the ADF PF Roller (2)



4. Release the hooks (x2) of the bush (right), and remove the Spur Gear 10 and the bush from the ADF PF Roller.

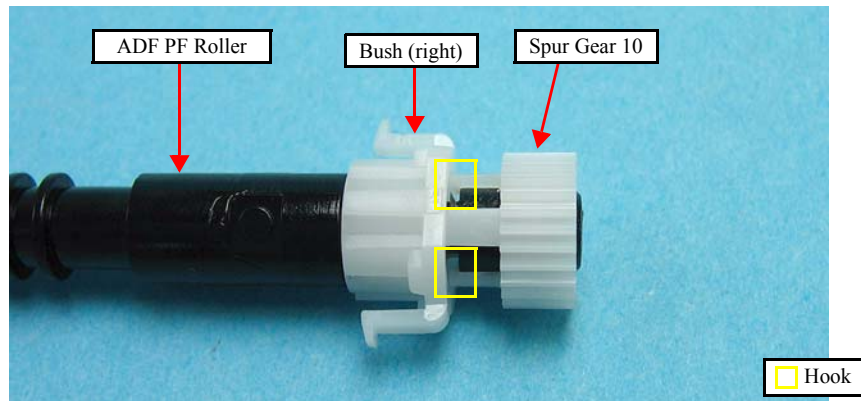


Figure 4-127. Removing the ADF PF Roller (3)



- When installing the ADF PF Roller, follow the steps below.
  1. Attach the bush (left) to the ADF Base, and secure it with the hooks. (See [Figure. 4-126.](#))
  2. Insert the ADF PF Roller into the ADF Base, and secure it to the bush (left). (See [Figure. 4-126.](#))
  3. Attach the bush (right) over the ADF PF Roller, and secure the bush to the ADF Base with the hooks. (See [Figure. 4-126.](#))
  4. Attach the Spur Gear 10 to the ADF PF Roller, and secure the hooks of the Spur Gear 10 to the groove of the ADF PF Roller. (See [Figure. 4-127.](#))
- When installing the ADF Lower Cover, match the positioning holes and the dowels (x2) as shown in [Figure. 4-125.](#)



After replacing the ADF PF Roller, be sure to perform the required lubrication.

- [Chapter 6 “MAINTENANCE” \(p.147\)](#)

CHAPTER

5

## ADJUSTMENT

## 5.1 Adjustment Items and Overview

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

### 5.1.1 Servicing Adjustment Item List (TBD)

The adjustment items of this product are as follows.



- In this chapter, the product names are called as follows:

Notation	Product name
WorkForce 310 series	WorkForce 310, Epson Stylus Office TX510FN/TX515FN/BX310FN/ME OFFICE 650FN
WorkForce 520 series	WorkForce 520/525, Epson Stylus Office TX525FW/BX320FW
WorkForce 320 series	WorkForce 320, Epson Stylus Office TX320F/BX305F/TX325F/ME OFFICE 620F
WorkForce 325 series	WorkForce 325/323, Epson Stylus Office BX305FW

- Description in this chapter is applied to WorkForce 310/520/320/325 series. However, the adjustment patterns of Bi-D Adjustment and PF Adjustment differ between models. Therefore, see below for the differences.
  - "8.5 ADJUSTMENT " (p.192)

Table 5-1. Adjustment Items

Adjustment Item	Purpose	Method Outline	Tool
EEPROM data copy	When the main board needs to be replaced, use this to copy adjustment values stored on the old main board to the new board. If this copy is completed successfully, all the other adjustments required after replacing the main board are no longer be necessary.	Readout the EEPROM data from the main board before removing it. Then replace the board with a new one, and load the EEPROM data to the new board.	• Adjustment Program
Initial setting	This must be carried out after replacing the main board to apply settings for the target market.	Select the target market. The selected market settings are automatically written to the main board.	• Adjustment Program
USB ID input	This sets a USB ID of the printer. A computer identifies the printer by the ID when multiple same models are connected via a USB hub.	Enter the product serial number of the printer. The ID is automatically generated and written to the main board.	• Adjustment Program
Head ID input	This must be carried out after replacing the Printhead in order to enter the new Printhead ID (Head ID) that reduces variation between Printheads.	Enter the ID printed on the Head QR code label attached on the Printhead. The correction values are automatically written to the main board.	• Adjustment Program
MAC address read/write	When the Main board needs to be replaced, use this menu to write necessary information onto the new board.	See " 5.2.7 MAC Address Setting (p.145)" for the detailed procedure.	• Adjustment Program
TOP margin adjustment	This corrects top margin of printout.	A top margin adjustment pattern is printed. Examine the lines printed near the top edge of the printout, and enter the value for the line that is exactly 3 mm away from the top edge.	• Adjustment Program • Ruler

Table 5-1. Adjustment Items

Adjustment Item	Purpose	Method Outline	Tool
First dot position adjustment	This corrects left margin of printout. The print start position in the carriage moving direction is corrected by software.	A first dot adjustment pattern is printed. Examine the lines printed near the left edge of the printout and enter the value for the line that is exactly 5 mm away from the left edge.	<ul style="list-style-type: none"> <li>• Adjustment Program</li> <li>• Ruler</li> </ul>
Head angular adjustment	This must be carried out after replacing the Printhead in order to correct tilt of the Printhead by software.	A head angular adjustment pattern is printed. Examine the printed lines and enter the value for the most straight lines.	<ul style="list-style-type: none"> <li>• Adjustment Program</li> </ul>
Bi-D adjustment	This corrects print start timing in bi-directional printing to improve the print quality.	A Bi-D adjustment pattern is printed. Black and color patterns are printed for each of the five dot sizes (ECO, VSD1, VSD2, VSD3, VSD4). So, there are 10 groups. Examine the patterns and enter the value for the pattern with no gap and overlap for each mode.	<ul style="list-style-type: none"> <li>• Adjustment Program</li> </ul>
Initialize PF deterioration offset	This resets the counter to maintain paper feed accuracy which decreases due to paper dust.	Reset the counter to its default.	<ul style="list-style-type: none"> <li>• Adjustment Program</li> </ul>
Disenable PF deterioration offset	When reading the counter value from the old main board is impossible in the case of replacing the board, use this to set the counter to its maximum value.	Set the counter to its maximum value (10000).	<ul style="list-style-type: none"> <li>• Adjustment Program</li> </ul>
CR motor heat protection control	This must be carried out for efficient heat control of the CR motor. Electrical variation of the motor and the power supply board are measured to acquire correction values for them.	Select the parts that you replaced. The correction values are automatically written to the main board.	<ul style="list-style-type: none"> <li>• Adjustment Program</li> </ul>
PF motor heat protection control	This must be carried out for efficient heat control of the PF motor. Electrical variation of the motor and the power supply board are measured to acquire correction values for them.	Select the parts that you replaced. The correction values are automatically written to the main board.	<ul style="list-style-type: none"> <li>• Adjustment Program</li> </ul>
PF adjustment	This corrects variations in paper feed accuracy when using the Microweave to achieve higher print quality.	A PF adjustment pattern is printed. Examine the printout patterns and enter the value for the best pattern to register the correction value to the printer. (Carry out the procedure for each color.)	<ul style="list-style-type: none"> <li>• Adjustment Program</li> </ul>
PF band adjustment	This corrects variations in paper feed accuracy in the band print mode to achieve higher print quality.	A PF band adjustment pattern is printed. Examine the printout patterns and enter the value for the best pattern to register the correction value to the printer.	<ul style="list-style-type: none"> <li>• Adjustment Program</li> </ul>

Table 5-2. Maintenance Items

Maintenance Item	Purpose	Method Outline	Tool
Waste ink pad counter	The printer causes a maintenance error when the waste ink pad counter reaches its maximum. Use this to reset the counter after replacing the Waste Ink Pad. If you find the counter is close to the maximum during servicing, carry out the pad replacement and the counter reset to avoid the printer returned from the user due to the maintenance error.	After replacing the Waste Ink Pad, reset the counter to its default.	<ul style="list-style-type: none"> <li>• Adjustment Program</li> </ul>
Ink charge	This must be carried out after replacing the Printhead in order to fill ink inside the new Printhead. The Printhead becomes ready for print.	Filling ink inside the Printhead is automatically performed. Print a nozzle check pattern to check if all nozzles are firing ink properly.	<ul style="list-style-type: none"> <li>• Adjustment Program</li> </ul>

Table 5-3. Additional Functions

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

## 5.1.2 Required Adjustments (TBD)

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

**Table 5-4. Required Adjustment List**

Priority		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Adjustment Item	Part Name	EEPROM data copy	Initial setting	USB ID input	Waste ink pad counter	MAC address setting	Ink charge	Head ID input	Top margin adjustment	First dot position adjustment	Head angular adjustment	Bi-D adjustment	Initialize PF deterioration offset/ Disable PF deterioration offset	CR motor heat protection control	PF motor heat protection control	PF adjustment	PF band adjustment
Main board unit	Remove	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Replace (Read OK)	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Replace (Read NG)	---	O	O	O Replace the pad	O	---	O	O	O	O	O	O Input max. value (10000)	O	O	O	O
Printhead	Remove	---	---	---	---	---	---	---	O	O	O	O	---	---	---	O	O
	Replace	---	---	---	---	---	O	O	O	O	O	O	---	---	---	O	O
Power Supply unit	Remove	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Replace	---	---	---	---	---	---	---	---	---	---	---	---	O	O	---	---
Hopper	Remove	---	---	---	---	---	---	---	O	O	---	---	---	---	---	---	---
	Replace	---	---	---	---	---	---	---	O	O	---	---	---	---	---	---	---
CR motor	Remove	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Replace	---	---	---	---	---	---	---	---	---	---	---	---	O	---	---	---
EJ roller	Remove	---	---	---	---	---	---	---	---	---	---	O	---	---	---	O	O
	Replace	---	---	---	---	---	---	---	---	---	---	O	---	---	---	O	O
PF motor	Remove	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Replace	---	---	---	---	---	---	---	---	---	---	---	---	---	O	---	---
Main frame	Remove	---	---	---	---	---	---	---	---	---	O	O	---	---	---	---	---
	Replace	---	---	---	---	---	---	---	---	---	O	O	---	O	---	---	---



Table 5-4. Required Adjustment List

Priority		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Part Name	Adjustment Item	EEPROM data copy	Initial setting	USB ID input	Waste ink pad counter	MAC address setting	Ink charge	Head ID input	Top margin adjustment	First dot position adjustment	Head angular adjustment	Bi-D adjustment	Initialize PF deterioration offset/ Disenable PF deterioration offset	CR motor heat protection control	PF motor heat protection control	PF adjustment	PF band adjustment
ASF unit	Remove	---	---	---	---	---	---	---	O	O	---	---	---	---	---	O	O
	Replace	---	---	---	---	---	---	---	O	O	---	---	---	---	---	O	O
CR unit	Remove	---	---	---	---	---	---	---	O	O	O	O	---	---	---	O	O
	Replace	---	---	---	---	---	---	---	O	O	O	O	---	---	---	O	O
Upper paper guide	Remove	---	---	---	---	---	---	---	O	---	---	---	---	---	---	O	O
	Replace	---	---	---	---	---	---	---	O	---	---	---	O Reset to 0	---	---	O	O
Front paper guide unit	Remove	---	---	---	---	---	---	---	O*	---	O	O	---	---	---	O	O
	Replace	---	---	---	---	---	---	---	O*	---	O	O	---	---	---	O	O
PF roller	Remove	---	---	---	---	---	---	---	O*	---	---	---	---	---	---	O	O
	Replace	---	---	---	---	---	---	---	O*	---	---	---	---	---	---	O	O
Waste ink pad	Remove	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Replace	---	---	---	O	---	---	---	---	---	---	---	---	---	---	---	---

**CAUTION**

- When the EEPROM data copy is impossible with the main board that needs to be replaced, the Waste Ink Pad must be replaced after replacing the main board with a new one.
- After all required adjustments are completed, use the “Final check pattern print” function to print all adjustment patterns for final check. If you find a problem with the printout patterns, carry out the adjustment again.
- When using a new main board for replacing the Printer Mechanism, the Initial setting must have been made to the main board.

Note : <Meaning of the marks in the table>

“O” indicates that the adjustment must be carried out. “O\*” indicates that the adjustment is recommended. “---” indicates that the adjustment is not required. If you have removed or replaced multiple parts, make sure to check the required adjustments for the all parts. And when multiple adjustments must be carried out, be sure to carry out them in the order given in the “Priority” row.

## 5.2 Using the Adjustment Program (TBD)

This section describes how to judge the adjustment patterns printed by the Adjustment Program. For information on how to operate the Adjustment Program, see the instructions displayed by the Adjustment Program.

### 5.2.1 TOP Margin Adjustment

The following pattern is printed.

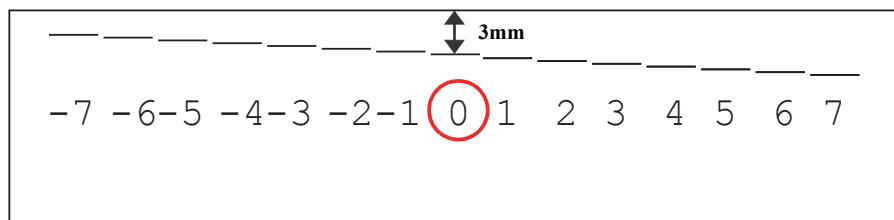


Figure 5-1. Top Margin Adjustment Printout Pattern

#### How to Judge

Measure the length from the top edge of the paper to the printed line. Enter the value for the line that is exactly 3 mm away from the top edge.

### 5.2.2 First Dot Position Adjustment

The following pattern is printed.

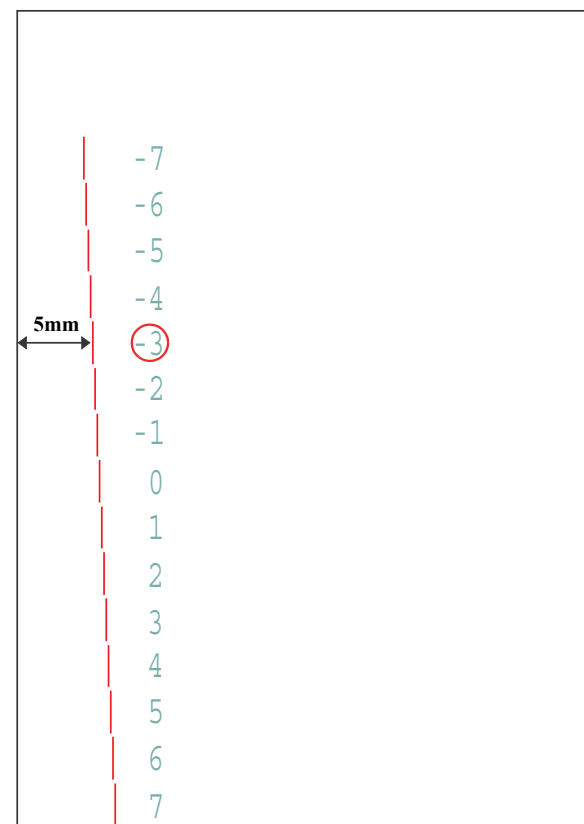


Figure 5-2. First Dot Position Adjustment Printout Pattern

#### How to judge

Measure the length from the left edge of the paper to the printed line. Enter the value for the line that is exactly 5 mm away from the left edge.

### 5.2.3 Head Angular Adjustment

The following pattern is printed. The lines below “1 to 80” are printed while the carriage moves from the home to the other side, and lines below “80 to 1” are printed while the carriage returns to the home.

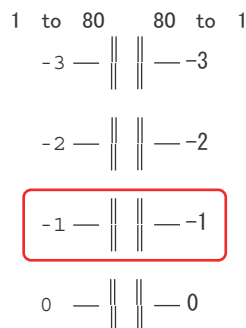


Figure 5-3. Head Angular Adjustment Printout Pattern (1)

#### How to Judge

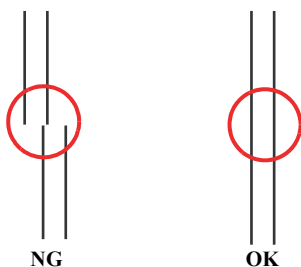
Examine the printout patterns and enter the value (-4 to 4) for the most straight lines.

#### Additional information

When “4” or “-4” is the most straight lines, it indicates that the Printhead is not installed correctly. Reassemble the Printhead and carry out this adjustment again.



#### Example for judgement



### 5.2.4 Bi-D Adjustment (WorkForce 310 series)

The following pattern is printed for each of the five print mode (five dot size modes).



Figure 5-4. Bi-D Adjustment Printout Pattern

#### How to Judge

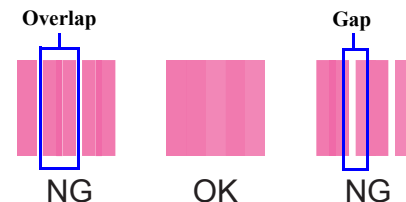
Examine the printout patterns for each of the five modes, and enter the value for the pattern with no gap and overlap for each mode.

#### Additional Information

If no OK pattern is printed, enter the value for the best one, and print the adjustment pattern again.



#### Example for judgement



## 5.2.5 PF Adjustment (WorkForce 310/520 series)

### □ PF- for standard print area

The following pattern is printed.

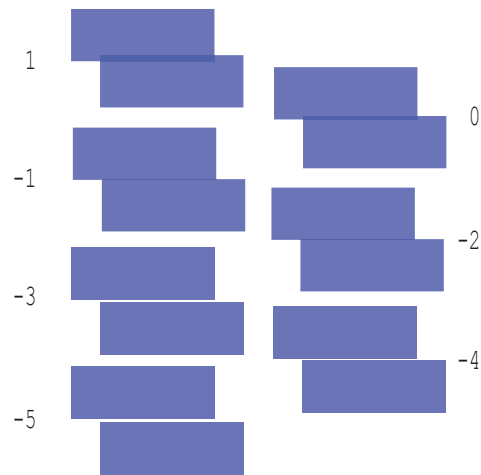


Figure 5-5. PF (standard print area) Adjustment Printout Pattern

#### How to Judge

Examine the printout patterns and enter the value for the pattern with no overlap and gap between the two rectangles.

#### Additional Information

When overlap and gap are observed in the all patterns, enter the value for the best one, and print the adjustment pattern again.



#### Example for judgement

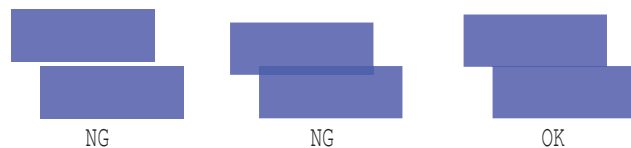


Figure 5-6. PF Adjustment

### □ PF- for bottom margin area

The following pattern is printed.

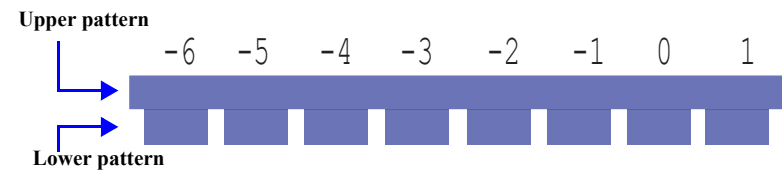


Figure 5-7. PF (bottom margin area) Adjustment Printout Pattern

#### How to Judge

Examine the printout patterns, and enter the value for the pattern with no overlap and gap between the upper and lower ones.

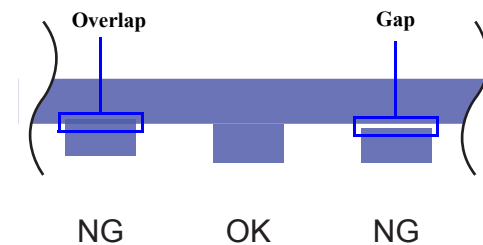
#### Additional Information

When overlap and gap are observed in the all patterns, enter the value for the best one, and print the adjustment pattern again.

CHECK  
POINT

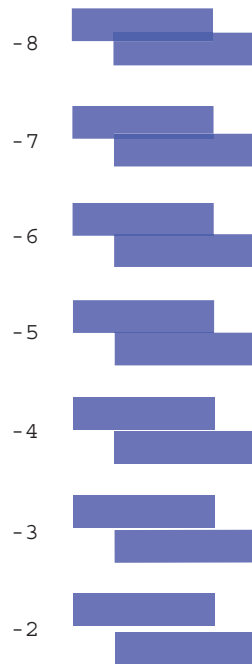


#### Example for judgement



## 5.2.6 PF Band Adjustment

The following pattern is printed.



**Figure 5-8. PF Band Adjustment Printout Pattern**

### How to Judge

Examine the printout patterns and enter the value for the pattern with no overlap and gap between the two rectangles.

### Additional Information

When overlap and gap are observed in the all patterns, enter the value for the best one, and print the adjustment pattern again.



#### Example for judgement



## 5.2.7 MAC Address Setting

### □ Overview

WorkForce 310/520/325 series have a network function and stores there MAC address (Media Access Control Address) in the EEPROM on the Main Board. The Main Board supplied as an ASP does not come with the MAC address written on it, therefore, you are required to set the MAC address to the new Main Board after replacement. The following explains the procedure.

#### CAUTION

- When the data of EEPROM on the old Main Board can be read out, this adjustment is not required.
- To avoid a conflict of MAC address on a network, make sure to correctly follow the MAC address setting flowchart given on the right.
- The user should be notified of the change of MAC address because of the following reasons.
  - If the user has set the printer's MAC address on a router, the repaired printer with a new MAC address cannot be connected to the network.
  - The default printer name on a network consists of "EPSON" and the last six digits of the MAC address. Therefore, the printer name becomes different from the previous one.

### □ Preparation

When replacing the Main Board, make sure to note down the MAC address written on a label on the MB Upper Shield Plate. If the address is not readable due to contamination or any other cause, attach a new MAC address label (part code: 1508645) and note down the new address.

See the following for description about the label position.

- For WorkForce 310 series:  
“4.4.1 Main Board Unit (p.93)”
- For WorkForce 520 series:  
“8.4.4.1 Main Board Unit (WorkForce 520 series) (p.171)”
- For WorkForce 325 series:  
“8.4.6.3 Main Board Unit (WorkForce 325 series) (p.186)”



You are required to enter the last six digits of the MAC address (xx:yy:zz) on the Adjustment Program.

MAC address example: **00:00:48:xx:yy:zz**

(“xx, yy, zz” represents a value unique to each printer)

### □ Setting flowchart

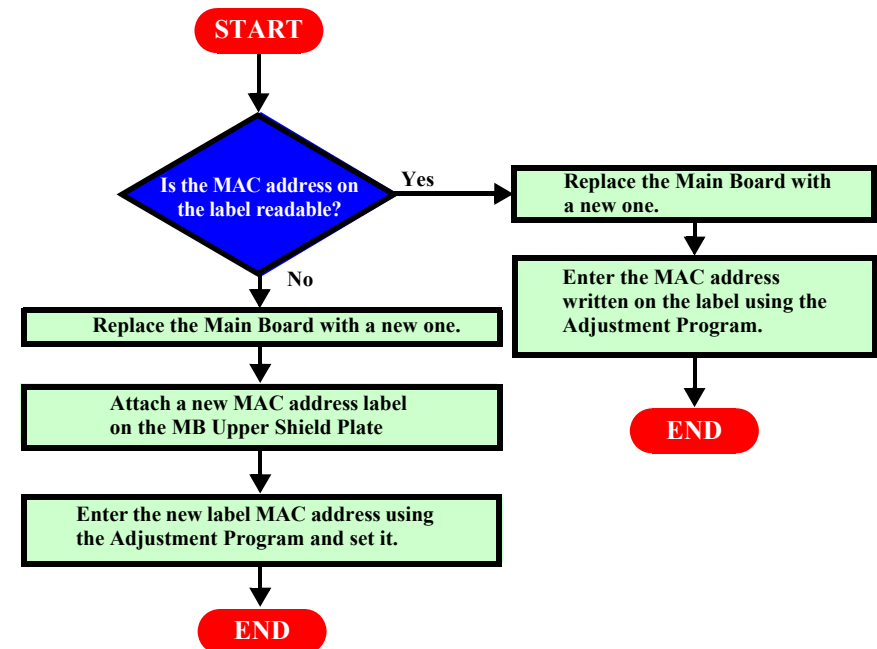


Figure 5-9. MAC Address Setting Flowchart



□ Setting procedure

**CAUTION**



The MAC address required on the Adjustment Program is written on the MAC address label on the MB Upper Shield Plate. Make sure to correctly enter the address.

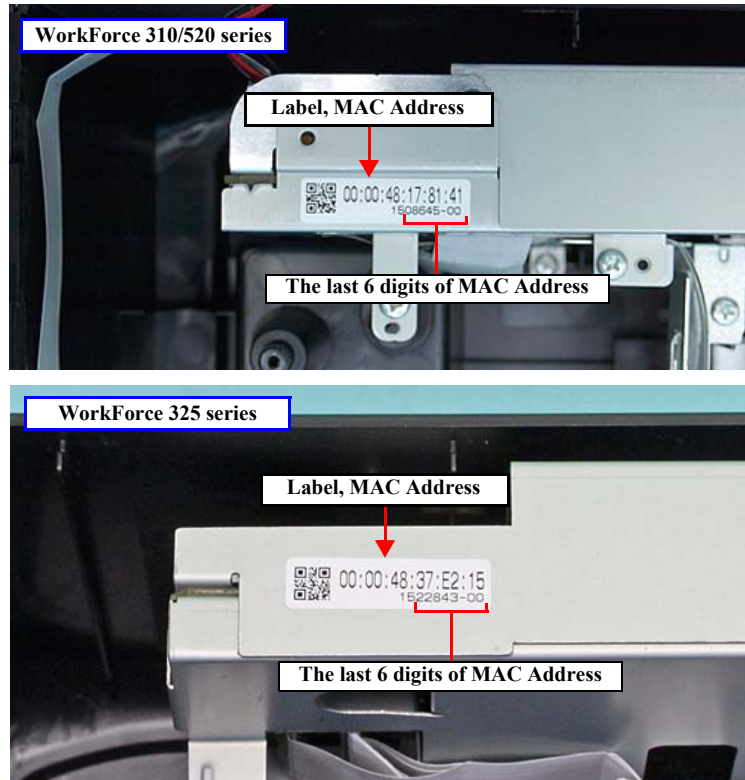


Figure 5-10. MAC Address Label

5. Select the network status sheet print menu on the printer's control panel, and print the sheet. Check the MAC address printed on the sheet to see if it is correct.

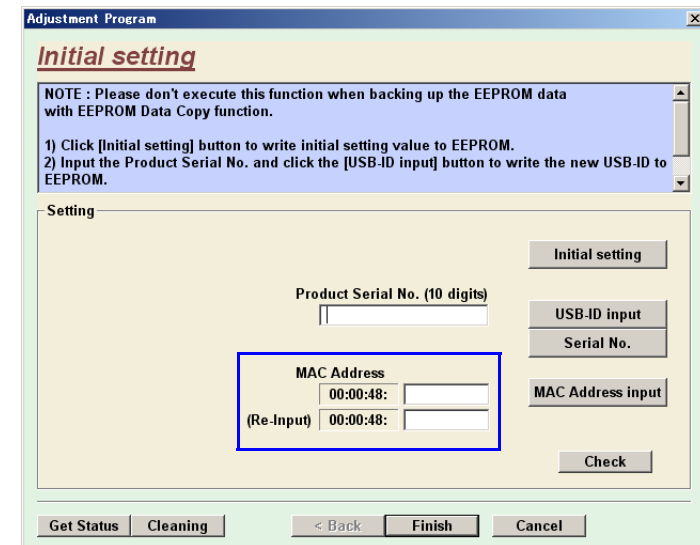


Figure 5-11. MAC Address Setting Screen

1. Connect the printer and a computer using a USB cable.
2. Start the Adjustment Program.
3. Select the "Initial Setting" from the menu. The initial setting screen appears.
4. Enter the last six digits of MAC address into the MAC address entry field, and click the MAC Address input button.  
(Enter the address again into the second entry field to confirm it.)

CHAPTER

6

MAINTENANCE

## 6.1 Overview

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

### 6.1.1 Cleaning

This printer has no mechanical components which require regular cleaning except the Printhead. Therefore, when returning the printer to the user, check the following parts and perform appropriate cleaning if stain is noticeable.

#### CAUTION



- **Never use chemical solvents, such as thinner, benzine, and acetone to clean the exterior parts of the printer like the Housing. These chemicals may deform or deteriorate the components of the printer.**
- **Be careful not to damage any components when you clean inside the printer.**
- **Do not scratch the coated surface of the PF roller. Use a soft brush to wipe off any dusts.**
- **Use a soft cloth moistened with alcohol to remove the 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.**

- **Exterior parts**  
Use a clean soft cloth moistened with water, and wipe off any dirt. If the exterior parts are stained by the ink, use a cloth moistened with neutral detergent to wipe it off.
- **Inside the printer**  
Use a vacuum cleaner to remove any paper dust.
- **LD Roller**  
When paper loading function does not operate because friction of the LD roller is lowered by any paper dust, use a soft cloth moistened with alcohol to remove the paper dust.

### 6.1.2 Service Maintenance

If any abnormal print (dot missing, white line, etc.) has occurred or the printer indicates the “Maintenance request error” (This error is displayed as “Service Required” in the STM3), take the following actions to clear the error.

#### 6.1.2.1 Printhead Cleaning

When dot missing or banding phenomenon has occurred, you need to perform the printhead cleaning operation\* by using the printhead cleaning function. This function can be performed by the control panel operation, the printer driver utility and the Adjustment program.

\* : This product has three modes for manual cleaning, and even during printing, the appropriate cleaning mode is automatically selected and performed according to various conditions. Therefore the ink consumption amount for manual cleaning varies depending on each mode.

#### 6.1.2.2 Maintenance Request error

Ink is used for the Printhead cleaning or cap flushing operation as well as the printing operation. When the ink is used for the Print Head cleaning or flushing operation, the ink is drained via the pump to the Waste ink pads. The amount of the waste ink is stored as the waste ink counter into the EEPROM on the Main Board. Due to this, when the waste ink counter has reached the limit of the absorbing capability of the Waste ink pads, the Maintenance call error is indicated on Status monitor 3. However, the limit value of the waste ink counter varies according to the usage.

#### CHECK POINT



**Refer to following chapter about indication of the maintenance request error.**

**Chapter 3 TROUBLESHOOTING (p.37)**

When the maintenance request error has occurred, replace the waste ink pad with new one and clear the waste ink counter stored into the EEPROM. If the waste ink counter is closed to its limit, we recommend to replace the Waste ink pad with new one. This is because the Maintenance request error will may occur after returning the repaired product to the customer.

### 6.1.3 Lubrication

The type and amount of the grease used to lubricate the printer parts are determined based on the results of the internal evaluations. Therefore, be sure to apply the specified type and amount of the grease to the specified part of the printer mechanism on the following occasion.

- ☐ Any parts required the lubrication are replaced.
- ☐ The printer is disassembled/assembled. (If necessary)

**CAUTION**


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

Table 6-1. Specified Lubricant

Type	Name	EPSON Code	Supplier
Grease	G-45	1033657	EPSON
Grease	G-71	1304682	EPSON
Grease	G-74	1409257	EPSON
Grease	G-26	1080614	EPSON

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

	<p>&lt;Lubrication Point&gt;</p> <ol style="list-style-type: none"> <li>1. Shaft hole of the Driven Pulley</li> <li>2. Two contact points between the Driven Pulley Holder and the Driven Pulley Shaft</li> <li>3. Contact points (x9) with the Main Frame.</li> </ol>	
	<p>&lt;Lubrication Type&gt;</p> <p>G-71</p>	
		<p>&lt;Lubrication Amount&gt;</p> <p>φ 1 mm x 1 mm</p> <p>&lt;Remarks&gt;</p> <p>Use an injector to apply G-71.</p>

Figure 6-1. Lubrication on Driven Pulley

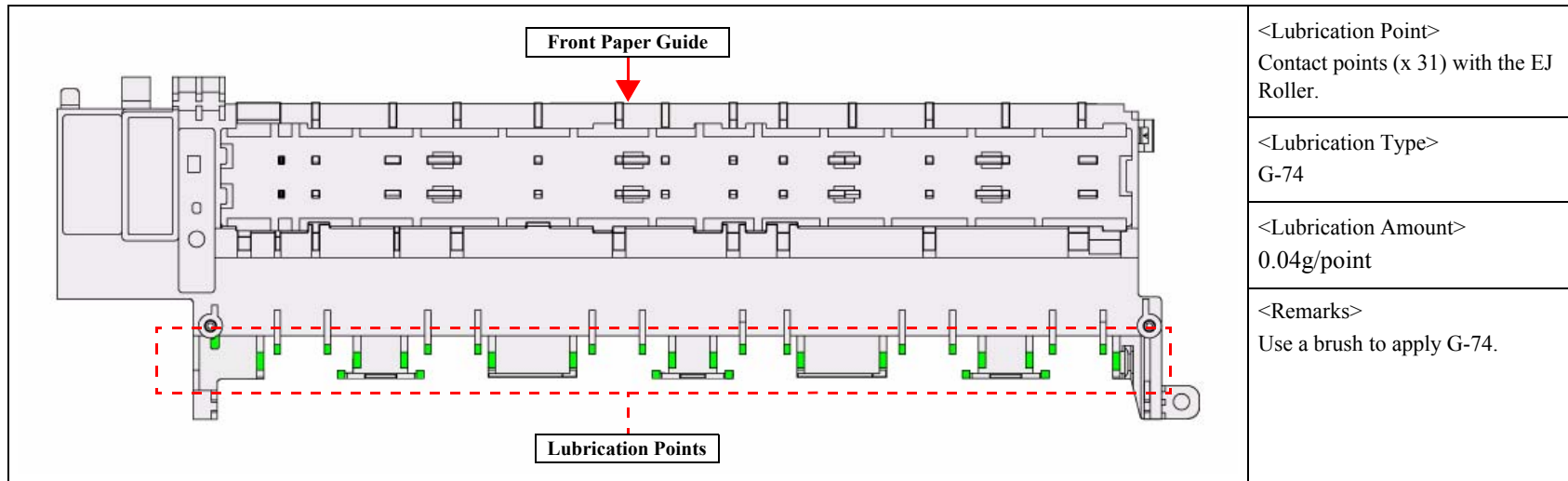


Figure 6-2. Lubrication on Front Paper Guide (1)

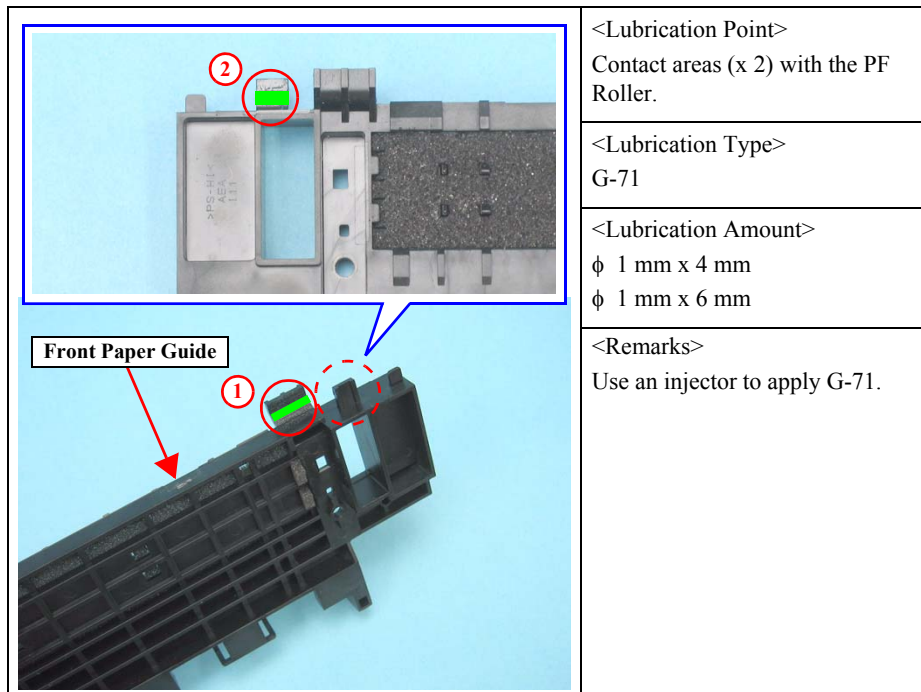


Figure 6-3. Lubrication on Front Paper Guide (2)

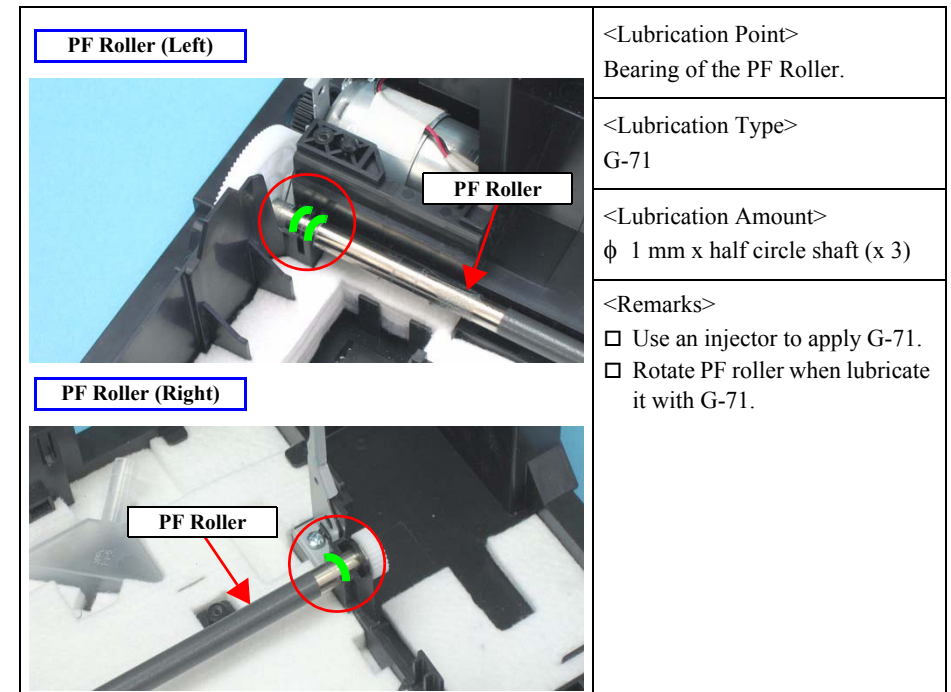


Figure 6-4. Lubrication on PF Roller

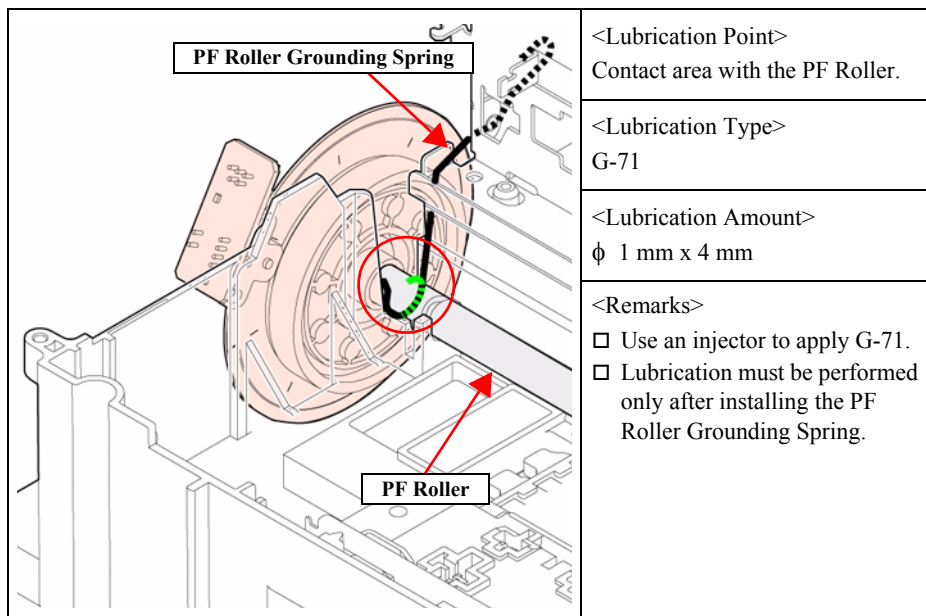


Figure 6-5. Lubrication on PF Roller Grounding Spring

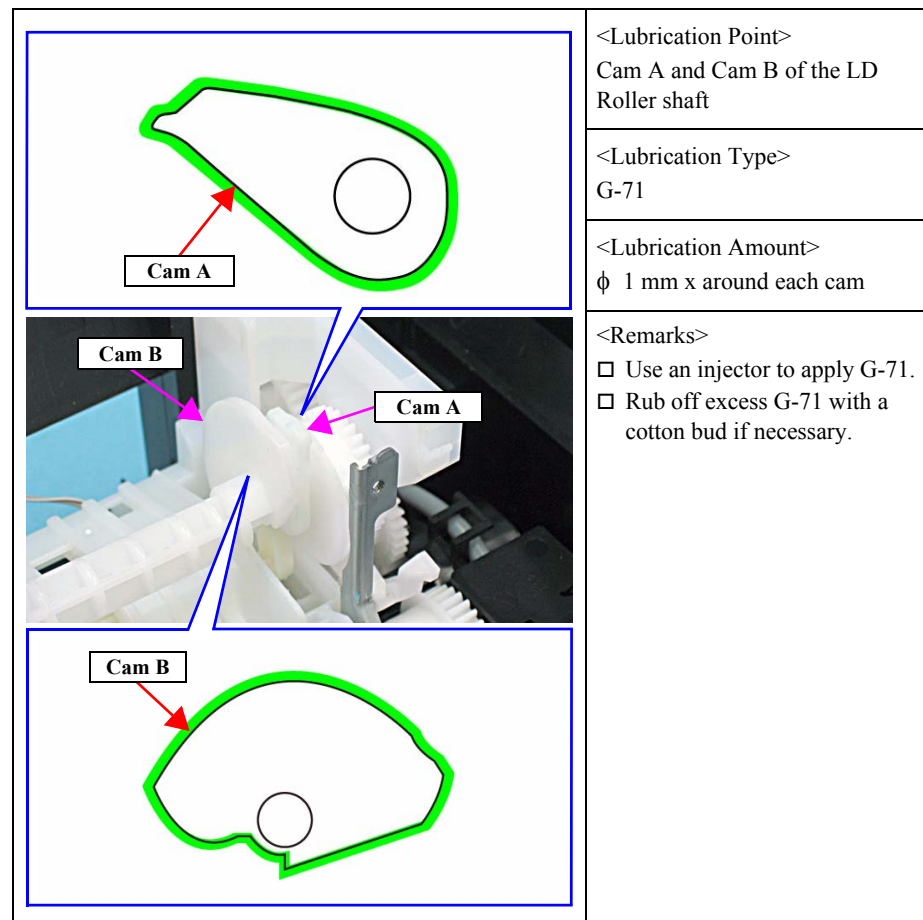


Figure 6-6. Lubrication on LD Roller Shaft



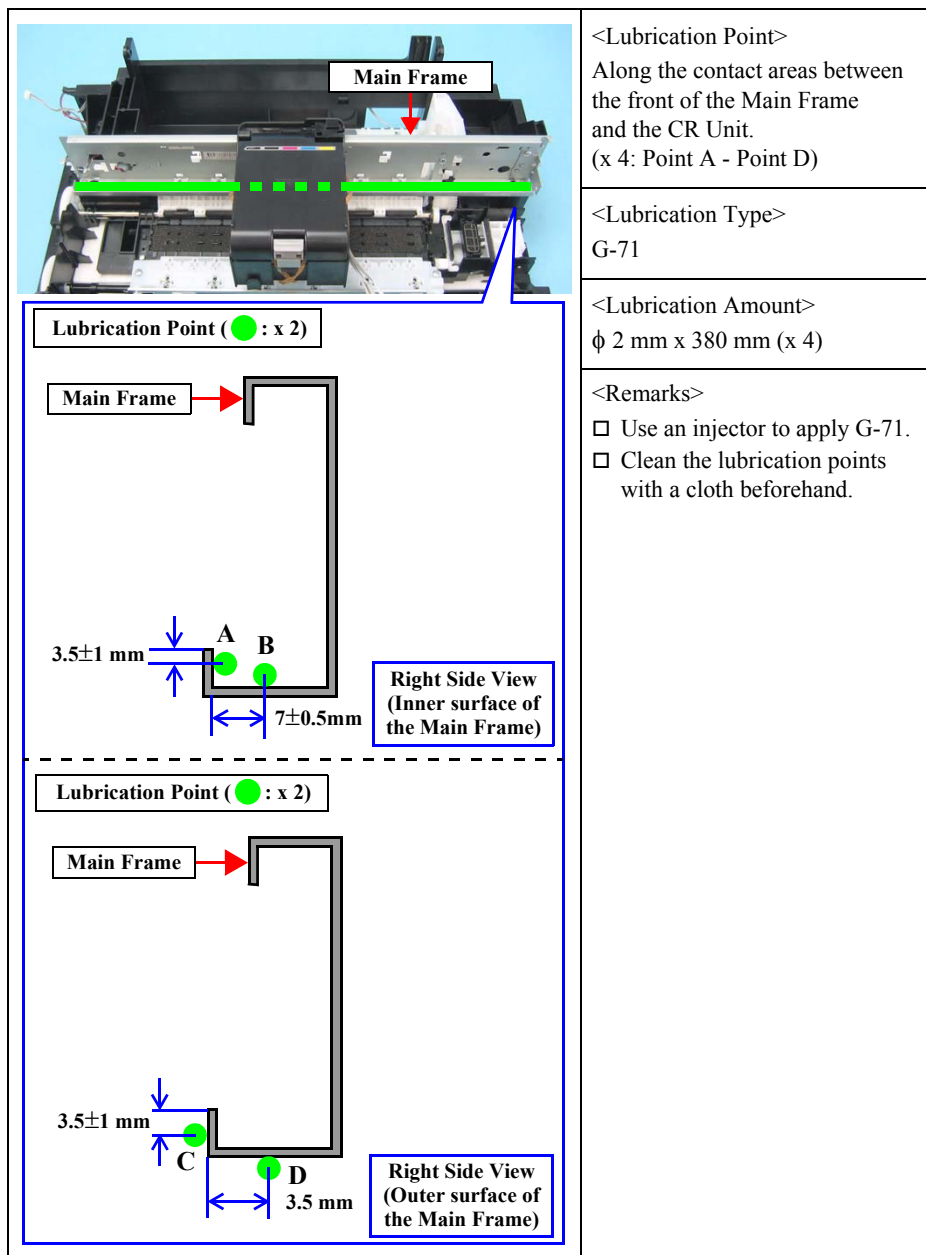


Figure 6-7. Lubrication on Main Frame (1)

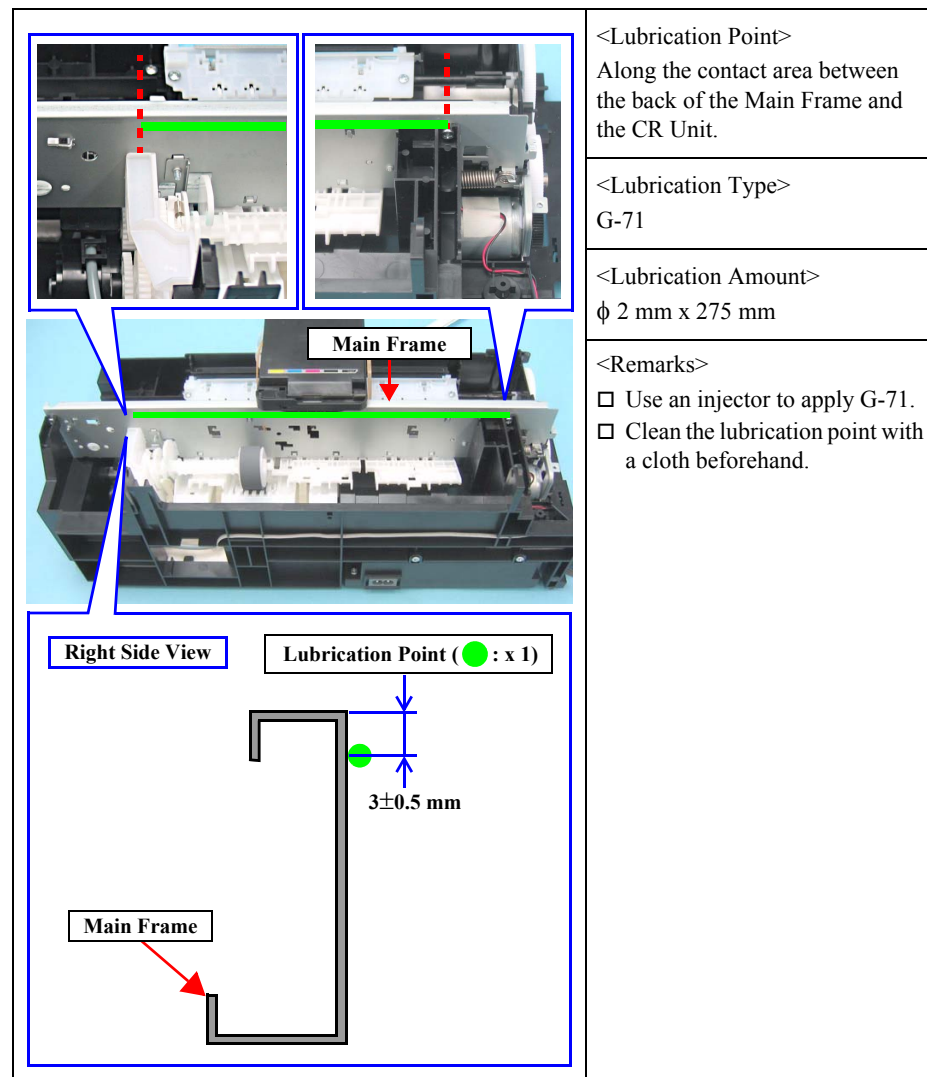


Figure 6-8. Lubrication on Main Frame (2)

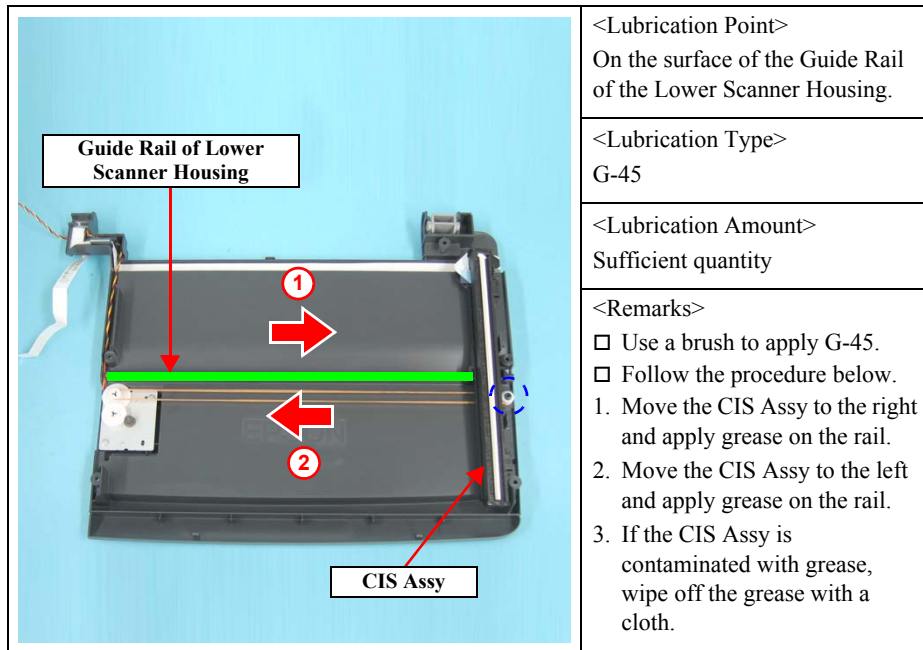


Figure 6-9. Lubrication on the Guide Rail of the Lower Scanner Housing

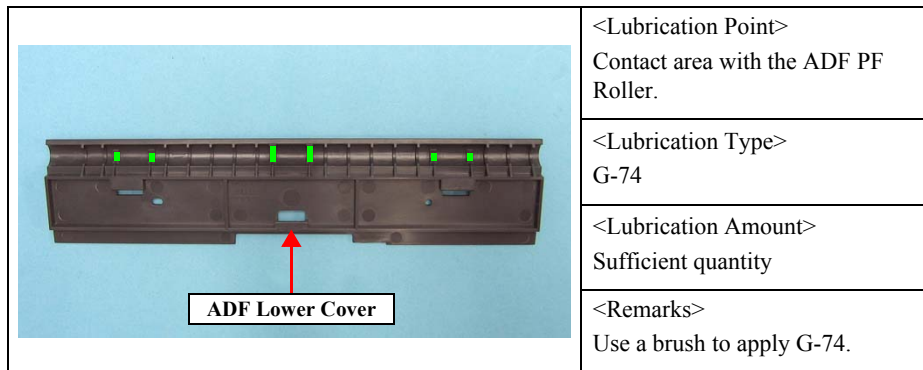


Figure 6-10. Lubrication on ADF Lower Cover

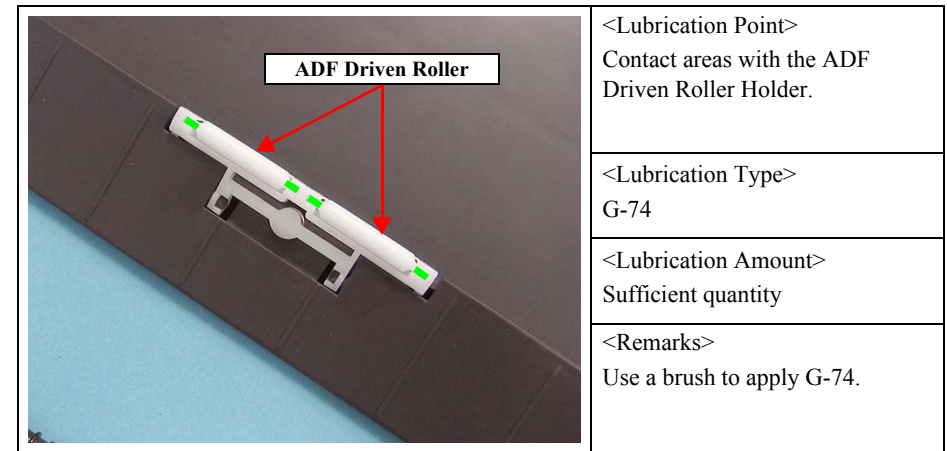


Figure 6-11. Lubrication on ADF Driven Roller

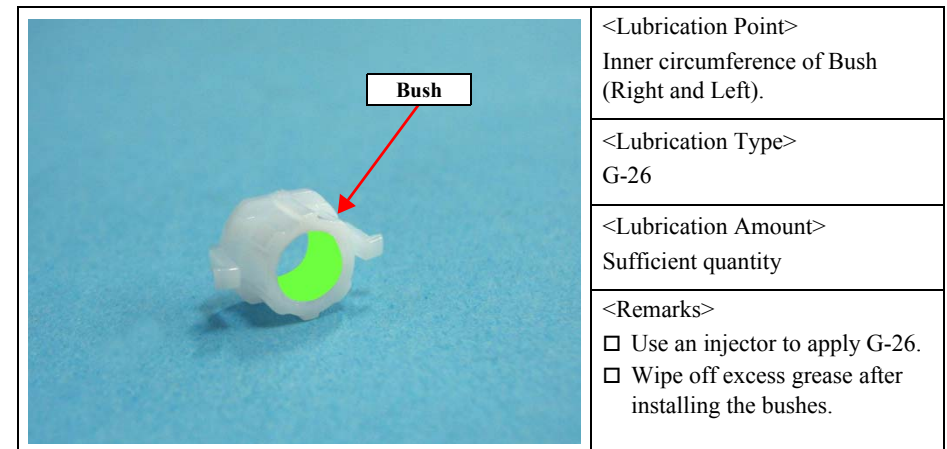


Figure 6-12. Lubrication on Bush (Right and Left)

CHAPTER

7

APPENDIX

CHAPTER

7

**WorkForce520/320/325 series**

## 7.1 Overview



In this chapter, the product names are called as follows:

Notation	Product name
WorkForce 310 series	WorkForce 310, Epson Stylus Office TX510FN/TX515FN/BX310FN/ME OFFICE 650FN
WorkForce 520 series	WorkForce 520/525, Epson Stylus Office TX525FW/BX320FW
WorkForce 320 series	WorkForce 320, Epson Stylus Office TX320F/BX305F/TX325F/ME OFFICE 620F
WorkForce 325 series	WorkForce 325/323, Epson Stylus Office BX305FW

This chapter describes particular information on WorkForce 520/320/325 series.

WorkForce 310 series and WorkForce 520/320/325 series use similar mechanisms, and some of them are common to each other. Therefore, this chapter provides only the differences.

Follow instruction below to get the information for WorkForce 520/320/325 series.

☐ Feature and specification for WorkForce 520/320/325 series

WorkForce 520/320/325 series is a color inkjet printer with the scanner function and fax function. The wireless network function is also mounted in WorkForce 520/325 series.

For the details, see “Comparison Table (TBD)”.

☐ Operation principles for WorkForce 520/320/325 series

- The specifications of the printhead and the CR Motor of WorkForce 320/325 series differ from those of WorkForce 310 series.
- The specifications of the ADF Motor and the power-on sequence of WorkForce 520/320/325 series differ from those of WorkForce 310 series.
- For the details, see “7.2 OPERATING PRINCIPLES” (p.158). For other information, see Chapter 2 “OPERATING PRINCIPLES” (p.30).

☐ Troubleshooting for WorkForce 520/320/325 series

Differences from WorkForce 310 series in content of Chapter 3 “TROUBLESHOOTING” (p.37) are the connector locations/numbers and the troubleshooting for networking. For the details, see “7.3 TROUBLESHOOTING” (p.161).

☐ Disassembly/reassembly procedures for WorkForce 520/320/325 series

See description in “7.4 DISASSEMBLY/ASSEMBLY” (p.164) because the procedures differ between some parts on each model.

☐ Required adjustment for WorkForce 520/320/325 series

Required adjustments are common to WorkForce 310 series and WorkForce 520/320/325 series. However, adjustment patterns of PF Adjustment and Bi-D Adjustment for WorkForce 520/320/325 series differ from those for WorkForce 310 series. For the details, see “7.5 ADJUSTMENT” (p.192). For other information, see Chapter 5 “ADJUSTMENT” (p.135).

☐ Maintenance information for WorkForce 520/320/325 series

See Chapter 6 “MAINTENANCE” (p.147).

## 7.2 OPERATING PRINCIPLES

This section describes only the items listed below. For other information, see [Chapter 2 “OPERATING PRINCIPLES” \(p.30\)](#) because the structures of WorkForce 520/320/325 series and WorkForce 310 series are basically the same.

- Specifications of the printhead, CR Motor and ADF Motor of WorkForce 520/320/325 series
  - Specifications of the printhead and the CR Motor of WorkForce 320/325 series differ from those of WorkForce 310 series.
  - The specifications of the ADF Motor of WorkForce 520/325 series differs from those of WorkForce 310 series.
- Power-on sequence for WorkForce 520/320/325 series

### 7.2.1 Motors & Sensor (WorkForce 320/325 series)

**Table 7-1. Printer Mechanism Motors & Sensors (WorkForce 320/325 series)**

Name	Specification
Printhead	D2-chips Turbo2 head: Black: 90 nozzles x 1 Color: 29 nozzles x 3 (cyan, magenta, yellow)
CR Motor	Type: DC motor Drive voltage: 42 VDC $\pm$ 5 % (DRV IC voltage) Coil resistance: 28.8 $\Omega$ $\pm$ 10 % Inductance: 20.1 mH (1 KHz) Drive method: PWM, constant-current chopping

**Table 7-2. ADF Mechanism Motors (WorkForce 520/325 series)**

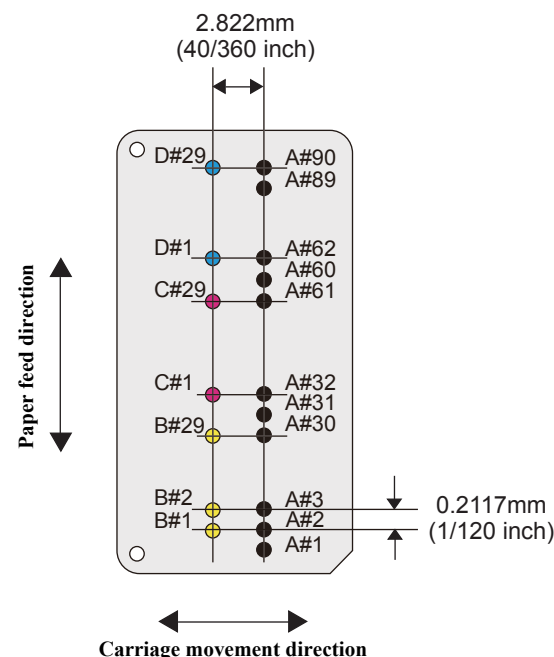
Name	Specification
ADF Motor	Type: 4-phase 96-pole PM type stepping motor Voltage: 42 VDC $\pm$ 5 % (DRV IC voltage) Coil resistance: 28.0 $\Omega$ $\pm$ 7 % (at 25 °C)(NMB) Inductance: --- (NMB) Drive method: Bipolar constant current chopper method

### 7.2.2 Printhead (WorkForce 320/325 series)

WorkForce 320/325 series employs the D2 Chips Turbo2 type printhead.

- Nozzle configuration
  - Black: 90 nozzles x 1
  - Color: 29 nozzles x 3 (cyan, magenta, yellow)

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



**Figure 7-1. Nozzle Layout (WorkForce 320/325 series)**

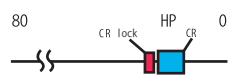



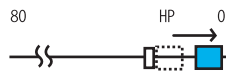
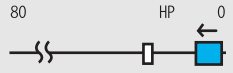


## 7.2.3 Power-On Sequence

This section describes the power-on sequences in two conditions. The sequences for WorkForce 520/320/325 series are same.

- Condition 1: Normal power-on sequence (*refer to Table 7-3*)
  - Turning on the printer after turning it off without an error.
  - Completing ink charge.
  - No paper on the paper path.
  - The Printhead is capped with the Cap of the Ink System.
  - The Carriage is fixed by the CR Lock.
- Condition 2: Power-on sequence after recovering from a paper jam error (*refer to Table 7-4*)
  - Turning on the printer after turning it off with a paper jam error.
  - There still remains paper on the paper path out of the detecting area of the PE sensor.

**Table 7-3. Condition 1: Normal power-on sequence**

Operation <sup>*1</sup>	Carriage/PF roller movement and position <sup>*2</sup>
<b>1. Checking waste ink overflow</b>	
<b>2. Avoiding deadlock sequence<sup>*3</sup></b>	
2-1. The carriage moves to the 0-digit side slowly and confirms it touches the CR lock.	
2-2. The carriage slightly moves to the 80-digit side slowly.	
<b>3. Releasing the CR lock</b>	
3-1. The PF motor rotates clockwise, and releases the CR lock.	
<b>4. Seeking the home position</b>	
4-1. The carriage moves to the 0-digit side slowly and confirms it touches the Right Frame.	
4-2. The carriage slowly moves to the CR lock set position.	

**Table 7-3. Condition 1: Normal power-on sequence**


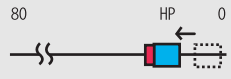

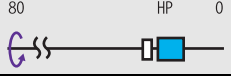
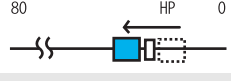
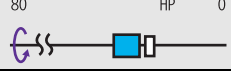
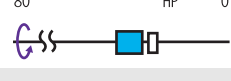
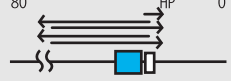
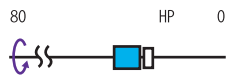
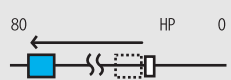
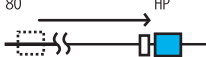
Operation <sup>*1</sup>	Carriage/PF roller movement and position <sup>*2</sup>
4-3. The PF motor rotates counterclockwise, and sets the CR lock.	
4-4. The carriage moves to the 80-digit side slowly and confirms it touches the CR lock.	
4-5. The carriage slowly moves to the 0-digit side to the home position.	
4-6. The PF motor rotates clockwise, and releases the CR lock. Afterward, the carriage position is monitored according to the signals from the CR Encoder.	
<b>5. Checking for remaining paper on the paper path</b>	
5-1. The carriage slowly moves to the ASF trigger position.	
5-2. Checks if paper exists with the PE sensor <sup>*4</sup> and the PF Motor rotates clockwise for one second. (PF initialization)	
<b>6. Low temperature operation sequence<sup>*5</sup></b>	
6-1. The PF motor rotates clockwise, and releases the CR lock.	
6-2. The carriage moves back and forth between the CR lock and the 80-digit side for two times.	
<b>7. Detecting ink cartridge and initializing ink system<sup>*6</sup></b>	
7-1. Rotates the PF motor again clockwise for one second, and resets the PF roller. <sup>*7</sup>	
7-2. After the carriage moves to the 80-digit side and checks the ink end sensor, detects the ink remaining. Simultaneously, the PF motor rotates clockwise for half seconds in order to perform the load measurement. <sup>*8</sup>	

Table 7-3. Condition 1: Normal power-on sequence

Operation <sup>*1</sup>	Carriage/PF roller movement and position <sup>*2</sup>
7-3.The carriage returns to its home position. Simultaneously, the PF motor rotates clockwise for two seconds in order to perform the load measurement. <sup>*8*9</sup>	

Note \*1: The rotation directions of the PF Motor are as follows.

- Clockwise : Paper is fed normally
- Counterclockwise : Paper is fed backward

\*2: The conditions of the CR lock are as follows.

- Red : CR lock is set
- White : CR lock is released

\*3: Confirms the carriage is not deadlocked such as the CR lock is caught in the gap of the carriage.

\*4: Eject paper if any.

\*5: Executed when the detected temperature is under 5 °C (41 °F) by the thermistor on the Printhead.

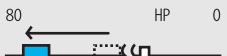
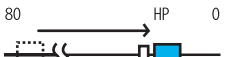
\*6: The empty suction operation may occur depending on situations.

\*7: When paper remains in the printer, rotates the PF Roller until the paper is forcibly ejected.

\*8: When paper exists, the existing measurement value is read out, so the PF motor does not rotate.

\*9: After performing the load measurement, the CR lock standby flag set. The CR lock is actually set at the beginning of power-saving mode for enhancing throughput.

Table 7-4. Condition 2: Power-on sequence after recovering from a paper jam error

Operation	Carriage/PF Roller movement and position
Executes No.1 to No.5 on the normal power-on sequence (Table 7-3).	
<b>6. Detecting remaining paper</b>	
6-1.The carriage moves to the 80-digit side and confirms there is no paper. <sup>*1</sup>	
6-2.The carriage quickly returns to its home position, and displays on the LCD that the paper jam error occurs.	
When the user removes the paper and releases the paper jam error by panel operation, the normal power-on sequence from No.1 (Table 7-3) is executed again. <sup>*2</sup>	

Note \*1: “Paper exists” is detected when the carriage touches the paper. When “paper does not exist” is detected, the power-on sequence of condition 1 (Table 7-3) is executed from No.6.

\*2: If the paper jam error cannot be solved after repeating the power-on sequence on condition 2 (Table 7-4) twice, the printer turns into the paper jam fatal error for the third time.

## 7.3 TROUBLESHOOTING

This section describes only the items listed below. For other information, see [Chapter 3 “TROUBLESHOOTING” \(p.37\)](#) because the structures of WorkForce 520/320/325 series and WorkForce 310 series are basically the same.

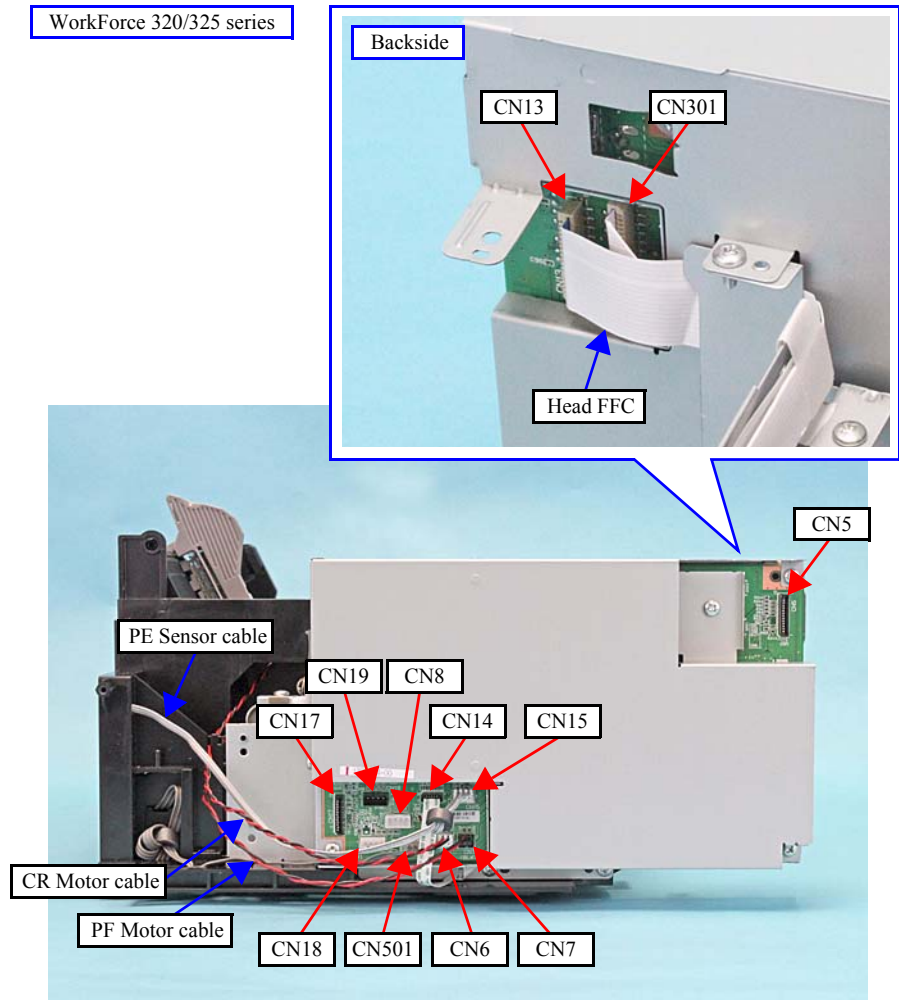
- The number and/or the location of the connectors on the Main Board of WorkForce 520/320/325 series
- The troubleshooting for networking of WorkForce 520/325 series

### 7.3.1 Connector Locations

If the description in [Chapter 3 “TROUBLESHOOTING” \(p.37\)](#) contains the connectors of the Main Board, use the number of the connectors as appropriate for your model referring to the table below.

**Table 7-5. Connector Numbers**

Cable	WorkForce 310 series	WorkForce 520 series	WorkForce 320 series	WorkForce 325 series
Wireless LAN cable	CN3	CN20	---	CN2
Panel FFC	CN5	CN5	CN5	CN5
CR Motor cable	CN6	CN6	CN6	CN6
PF Motor cable	CN7	CN7	CN7	CN7
Scanner Motor cable	CN8	CN8	CN8	CN8
Head FFC	CN11	CN11	CN301	CN301
Head FFC	CN12	CN12		
Head FFC	CN13	CN13	CN13	CN13
PF Encoder FFC	CN14	CN14	CN14	CN14
PE Sensor cable	CN15	CN15	CN15	CN15
Cover Open Sensor cable	CN16	CN16	---	---
Scanner Carriage FFC	CN17	CN17	CN17	CN17
ADF Sensor cable	CN18	CN18	CN18	CN18
ADF Motor cable	CN19	CN19	CN19	CN19
Power Supply Unit cable	CN501	CN501	CN501	CN501



**Figure 7-2. Connector Locations (WorkForce 320/325 series)**

### 7.3.2 Network Troubleshooting (WorkForce 520/325 series only)

This section describes troubleshooting for the network function of WorkForce 520/325 series. For troubleshooting of WorkForce 325 series; however, skip the description on the wired LAN because WorkForce 325 series supports the Wireless LAN only.

#### □ Troubles in Network Settings

**Table 7-6. Troubles in Network Settings**

Symptom	Check Point	Remedy
Connection with Access Point/ Detection of Access Point can not be made (Wireless LAN)	1. Check if Access Point is ready for the connection.	Check if the connection can be made from the other devices.
	2. Check if Access Point is too far from the printer or blocked by obstruction.	Move Access Point closer to the printer or clear off the obstruction.
	3. Check if Access Point has any limitation for the access.	Check Access Point and change the setting for the access by setting the MAC Address or IP Address, etc. of the printer.
	4. Check if Access Point setting is made for non-display of the SSID (Network).	Input the SSID from the Control Panel.
	5. Check if WEP key or setting for the password is correct.	Check the WEP key and the password in a case-sensitive manner.
Communication with wired LAN can not be made	1. Check if the Wireless LAN Setting on the Control Panel is "Disable".	Change the Wireless LAN Setting into "Disable", because Wireless LAN and Wired LAN can not be used at the same time.
	2. Check if the combination for the HUB and router etc. and Link Speed of the Printer is proper.	Correct the Link Speed setting properly.
	3. Check if 10Base-T Repeater HUB is used.	Try other HUBs (Switching HUB etc.).

#### □ Troubles in installing a software

**Table 7-7. Troubles in Installing a Software**

Symptom	Check Point	Remedy
"Can not connect to internet thru LAN" is displayed.	1. In Wireless LAN's case, check if the network connection between the PC and Access Point is made.	Correctly connect the computer and the Access Point.
	2. In Wired LAN's case, check if the computer and the printer are properly connected to a LAN port such as a hub or a router.	Correctly connect the computer and the printer to a LAN port such as a hub or router using a LAN cable.
	3. Check the status of network settings/connection by printing the network status sheet.	Correctly set the network connection again if the network connection is not made.
	4. Check if the link lamp on the Access Point or hub connected to the printer is lighting or flashing.	<ul style="list-style-type: none"> <li>• Try using another port.</li> <li>• Replace the LAN cable.</li> <li>• Configure Wireless LAN setting correctly.</li> </ul>
	5. Check if IP address is correctly set.	Correctly set IP address.
	6. For the setting of the Windows Firewall or commercially available security software, check if the installed network access is set to "Shut down" or "Block" etc.	Set the Windows Firewall or commercially available software as the exceptional application. *If the problem is not solved when using the commercially available security software, restart it once.

- ☐ Troubles during printing and scanning from PC

**Table 7-8. Troubles during printing and scanning from PC**

Symptom	Check Point	Remedy
Print cannot be made Scan cannot be made	1. In Wireless LAN's case, check if the network connection between the PC and Access Point is made.	Correctly connect the computer and the Access Point.
	2. In Wired LAN's case, check if the computer and the printer are properly connected to a LAN port such as a hub or router.	Correctly connect the computer and the printer to a LAN port such as a hub or router using a LAN cable.
	3. Check the status of network settings/connection by printing the network status sheet.	Correctly set the network connection again if the network connection is not made.
	4. Check if the link lamp on the Access Point or hub connected to the printer is lighting or flashing.	<ul style="list-style-type: none"> <li>• Try using another port.</li> <li>• Replace the LAN cable.</li> <li>• Configure Wireless LAN setting correctly.</li> </ul>
	5. Check if the network settings are correctly configured?	Correctly configure the network settings.
	6. Check if the network setting screen is displayed on the Control Panel.	Close the screen.
EPSON Scan cannot be started	1. For EPSON Scan settings, check if IP address is set directly.	If IP address is set using the DHCP function, specify IP address by searching address.

## 7.4 DISASSEMBLY/ASSEMBLY

This section describes the disassembling procedures for the components of WorkForce 520/320/325 series. WorkForce 520/320/325 series and WorkForce 310 series use similar mechanisms, and some of them are common to each other. Therefore, this section provides the details of the differences. See “4.1 Overview” (p.81) for the Precautions, the tools, and the Work Completion Check for disassembly/reassembly.

### 7.4.1 Procedural Differences between the Models

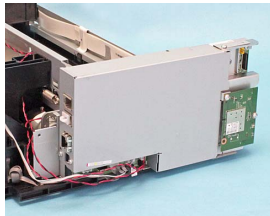
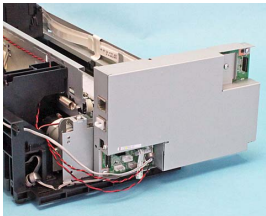
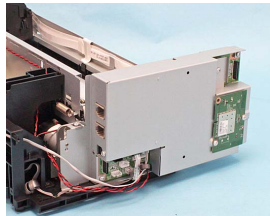
As for some parts/components; however, the procedures differ between each model. Refer to the following table to confirm the differences and the reference.

Table 7-9. Differences between Models

Item	Difference	WorkForce 520 series	WorkForce 320 series	WorkForce 325 series	Reference
Scanner Unit/ ADF Unit	Routing inside the Interface Cover differs.				<ul style="list-style-type: none"> <li>■ <b>WorkForce 520 series</b> “7.4.3.1 Scanner Unit/ADF Unit (WorkForce 520 series)” (p.168)</li> <li>■ <b>WorkForce 320/325 series</b> “7.4.6.1 Scanner Unit/ADF Unit (WorkForce 320/325 series)” (p.180)</li> </ul>
Panel Unit	Disassembling/ reassembling procedures (The shape of the Panel units differs.)				<ul style="list-style-type: none"> <li>■ <b>WorkForce 520 series</b> “7.4.4.2 Panel Unit (WorkForce 520 series)” (p.175)</li> <li>■ <b>WorkForce 320/325 series</b> “7.4.6.4 Panel Unit (WorkForce 320/325 series)” (p.189)</li> </ul>
Printhead	Disassembling/ reassembling procedures (The Printheads differ.)				<ul style="list-style-type: none"> <li>■ <b>WorkForce 520 series</b> “7.4.5.1 Printhead (WorkForce 520 series)” (p.177)</li> <li>■ <b>WorkForce 320/325 series</b> “7.4.6.5 Printhead (WorkForce 320/325 series)” (p.189)</li> </ul>

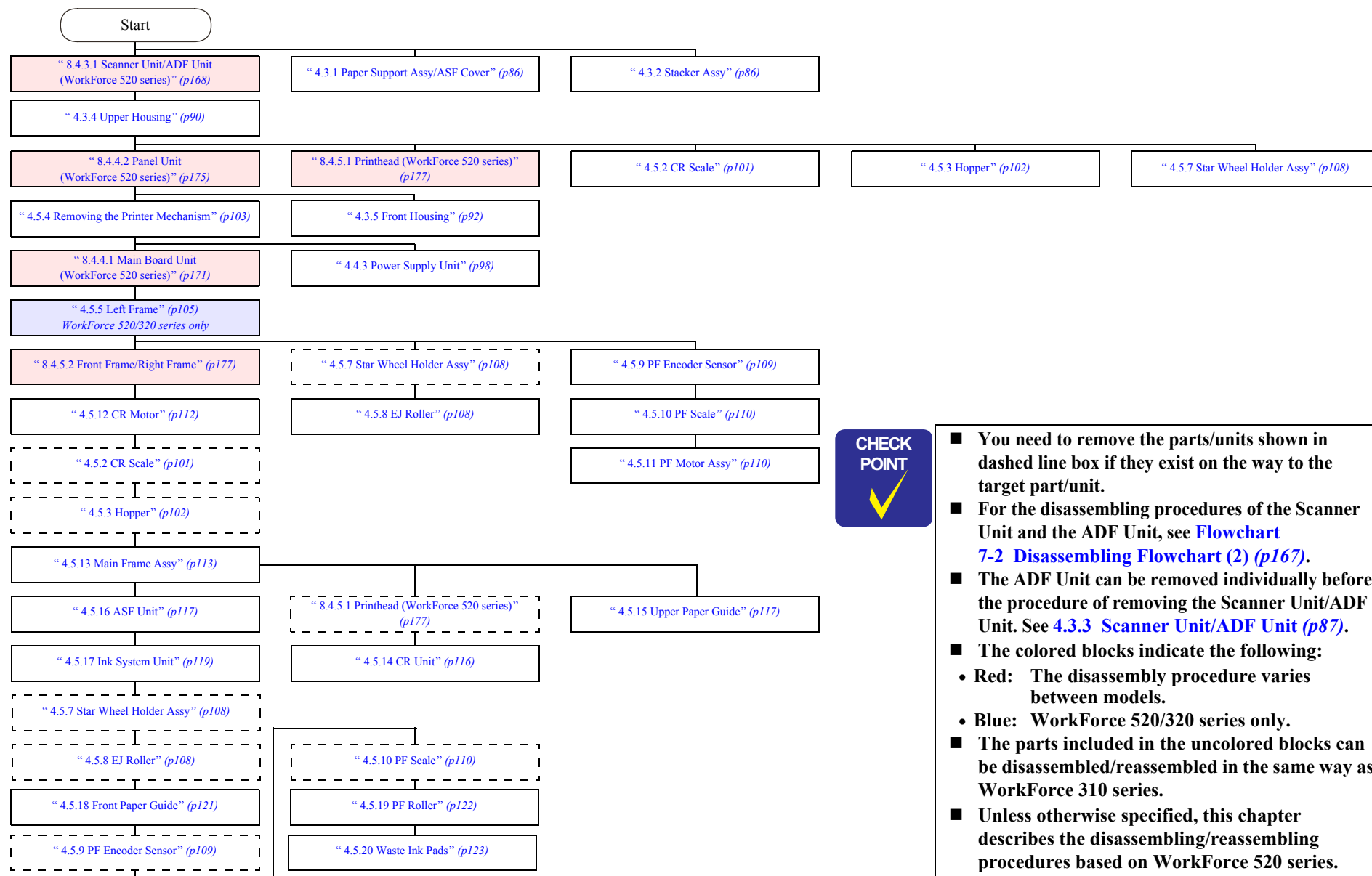


Table 7-9. Differences between Models

Item	Difference	WorkForce 520 series	WorkForce 320 series	WorkForce 325 series	Reference
Main Board Unit	Disassembling/ reassembling procedures (The shape and the connector locations differ.)				<ul style="list-style-type: none"> <li>■ <b>WorkForce 520 series</b> “7.4.4.1 Main Board Unit (WorkForce 520 series)” (p.171)</li> <li>■ <b>WorkForce 320 series</b> “7.4.6.2 Main Board Unit (WorkForce 320 series)” (p.182)</li> <li>■ <b>WorkForce 325 series</b> “7.4.6.3 Main Board Unit (WorkForce 325 series)” (p.186)</li> </ul>
Wireless LAN Board	Existence of Wireless LAN Board	Yes	No	Yes	<ul style="list-style-type: none"> <li>■ <b>WorkForce 520 series</b> “7.4.4.1 Main Board Unit (WorkForce 520 series)” (p.171)</li> <li>■ <b>WorkForce 325 series</b> “7.4.6.3 Main Board Unit (WorkForce 325 series)” (p.186)</li> </ul>
Left Frame	Existence of Left Frame.	Yes	Yes	No	“4.5.5 Left Frame” (p.105)
Cover Open Sensor	Existence of Cover Open Sensor	Yes	No		“4.3.4 Upper Housing” (p.90)

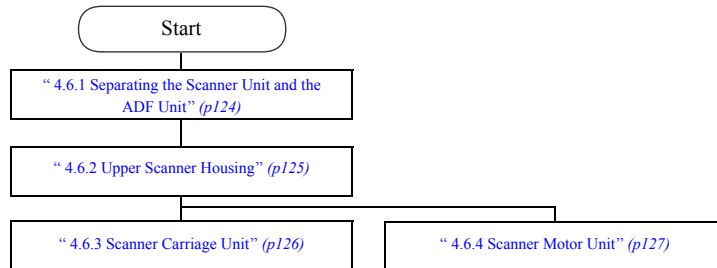
## 7.4.2 Disassembly Procedures

For disassembling each unit, refer to the pages in the following flowchart.

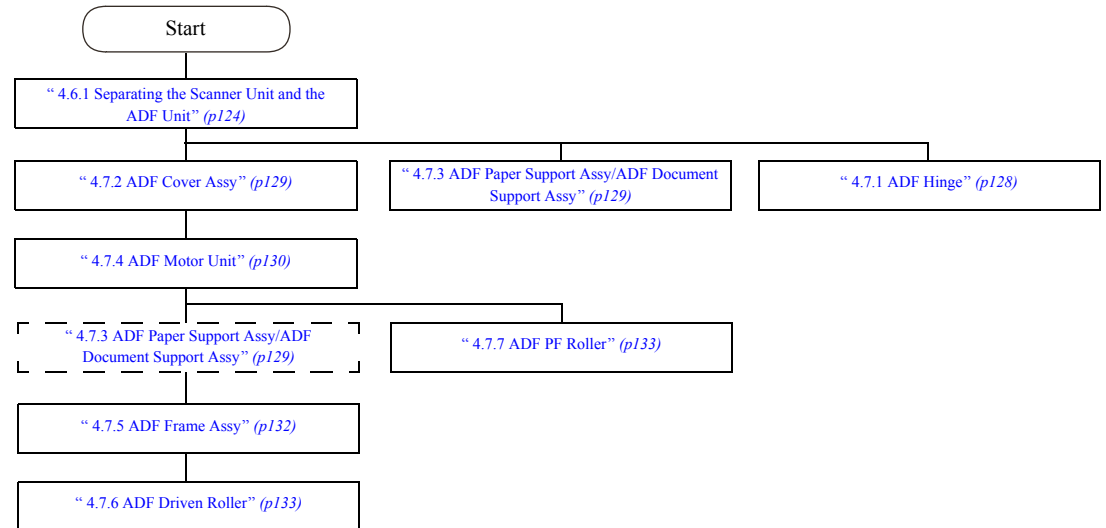


Flowchart 7-1. Disassembling Flowchart (1)

### □ Disassembling the Scanner Unit



### □ Disassembling the ADF Unit



#### CHECK POINT



- You need to remove the parts/units shown in dashed line box if they exist on the way to the target part/unit.
- For the disassembling procedures of the Scanner Unit and the ADF Unit, see [Flowchart 7-1 Disassembling Flowchart \(1\) \(p166\)](#).
- The ADF Unit can be removed individually before the procedure of removing the Scanner Unit/ADF Unit. See [4.3.3 Scanner Unit/ADF Unit \(p87\)](#).

Flowchart 7-2. Disassembling Flowchart (2)

## 7.4.3 Removing the Housing

### 7.4.3.1 Scanner Unit/ADF Unit (WorkForce 520)

#### CHECK POINT



The disassembly/reassembly procedures of the Scanner Unit/ADF Unit for WorkForce 520 series are the same as those for WorkForce 310 series. Therefore, see “4.3.3 Scanner Unit/ADF Unit” (p87).

Only the routing for WorkForce 520/320/325 series is described in this chapter. The routing for WorkForce 520 series is described here. For the routing for WorkForce 320/325 series, see “7.4.6.1 Scanner Unit/ADF Unit (WorkForce 320/325 series)” (p180).

#### ROUTING INSIDE THE INTERFACE COVER (WORKFORCE 520 SERIES)

#### WARNING



To protect sensitive microprocessors and circuitry, use static discharge equipment, such as anti-static wrist straps, when accessing internal components.

#### CAUTION



- When routing the cables around the Interface Cover, make sure to route them as follows, and connect them firmly confirming the directions of the connectors.
- When routing the cables, confirm the ferrite core of the Power Supply Unit cable is secured firmly in the hole of the frame. (See Figure 4-31.)

1. Route the CR Motor cable through the three ribs on the Lower Housing.
2. Route the PF Motor cable through the three ribs on the Lower Housing.

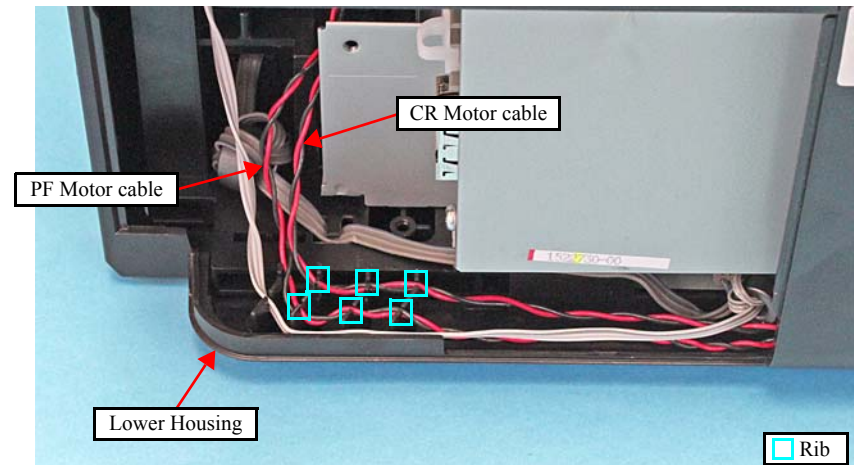


Figure 7-3. Routing around the Interface Cover (WorkForce 520 series) (1)

3. Route the PE Sensor cable through the rib and the slit on the Lower Housing.

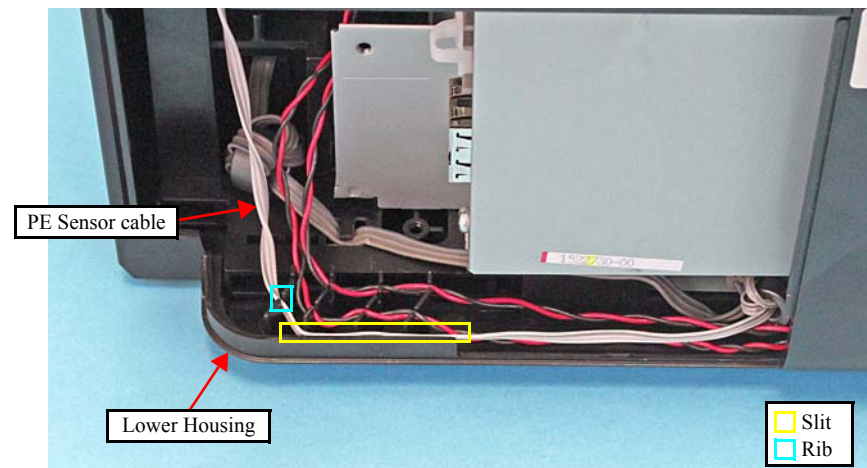


Figure 7-4. Routing around the Interface Cover (WorkForce 520 series) (2)

**CAUTION**

When routing the Scanner Carriage FFC, make sure to secure it perpendicular to the Left Frame without any slant.

4. Secure the Scanner Carriage FFC with double-sided tape (x1) to the Left Frame, and connect the FFC to the connector (CN17) on the Main Board.

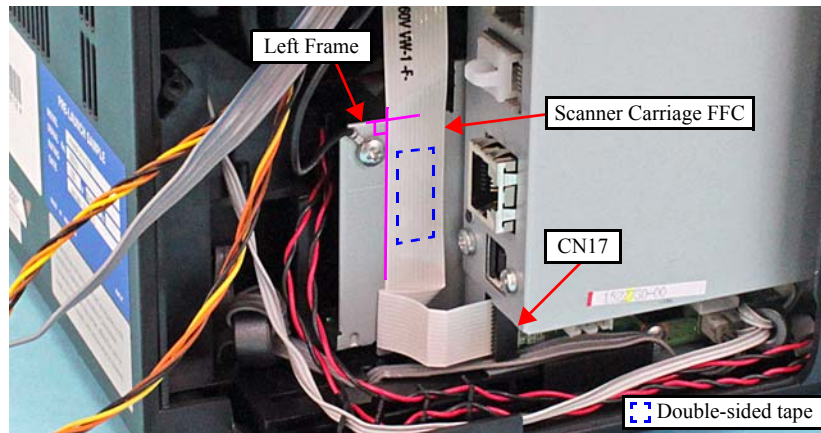


Figure 7-5. Routing around the Interface Cover (WorkForce 520 series) (3)

5. Connect the following cables to the connectors on the Main Board.
  - Scanner Motor cable (CN8)
  - ADF Sensor cable (CN18)
  - ADF Motor connector cable (CN19)

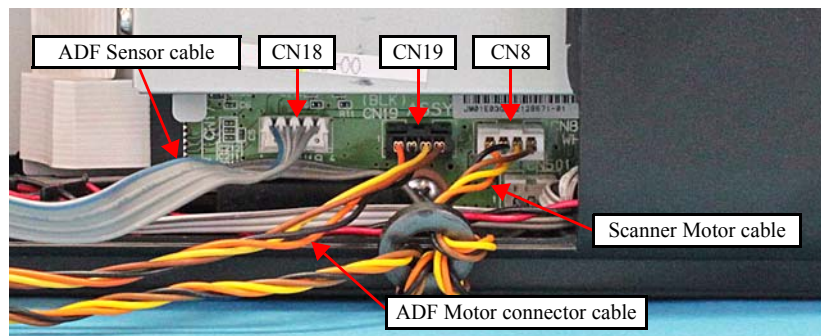


Figure 7-6. Routing around the Interface Cover (WorkForce 520 series) (4)

**CAUTION**

When routing the Scanner Motor cable, make sure not to let it get outside the Lower Housing.

6. Using plastic tweezers, route the Scanner Motor cable through the slit on the Lower Housing.

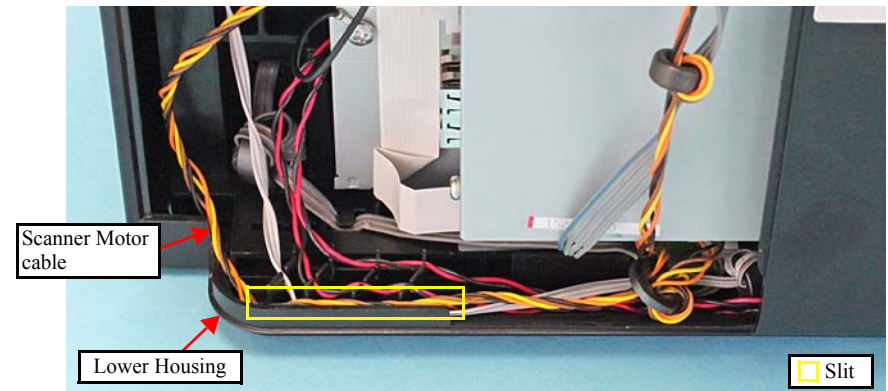


Figure 7-7. Routing around the Interface Cover (WorkForce 520 series) (5)

7. Bend the ADF Motor connector cable and place the ferrite core of the ADF Motor connector cable in front the bent point as shown in the figure.

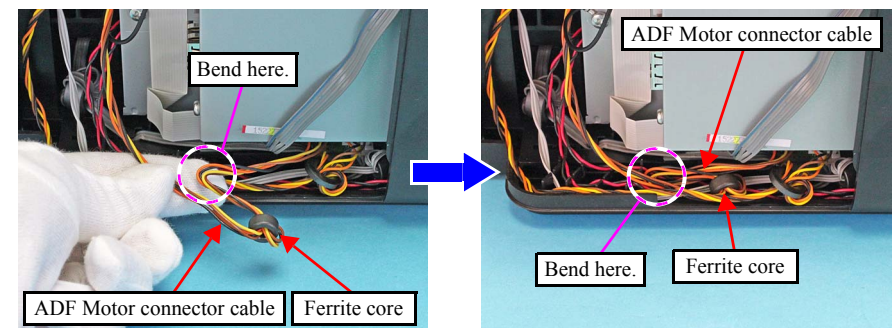


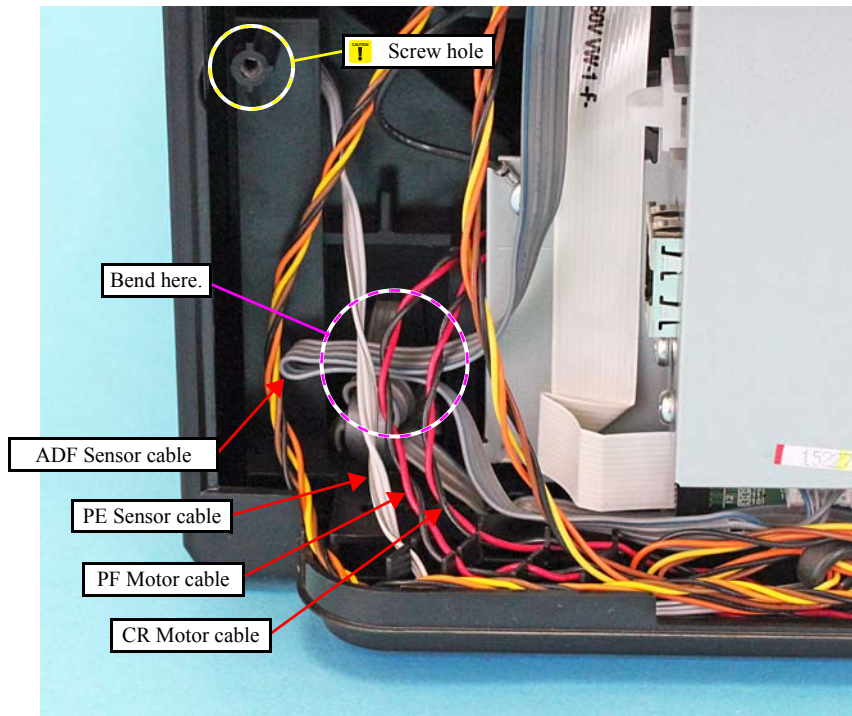
Figure 7-8. Routing around the Interface Cover (WorkForce 520 series) (6)



**CAUTION**

**Make sure not to let the cables come over the screw hole on the Base Frame.**

8. Bend the ADF Sensor cable, and place the bent point inside the following cables.
  - CR Motor cable
  - PF Motor cable
  - PE Sensor cable



**Figure 7-9. Routing around the Interface Cover (WorkForce 520 series) (7)**



## 7.4.4 Removing the Circuit Boards

### 7.4.4.1 Main Board Unit (WorkForce 520)

#### CHECK POINT



See the following because the disassembling/reassembling procedures of the Main Board Unit for WorkForce 320/325 series differ from those of WorkForce 520 series.

- WorkForce 320 series:  
“7.4.6.2 Main Board Unit (WorkForce 320 series)” (p182)
- WorkForce 325 series:  
“7.4.6.3 Main Board Unit (WorkForce 325 series)” (p186)

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p175)/Printer Mechanism (p103)

- Removal procedure

1. Perform *Step 1* to *Step 3* of “4.4.1 Main Board Unit” (p93).

#### REASSEMBLY



For the routing around the Main Board, see “Routing around the Main Board (WorkForce 520 series)” (p173).

- Disassembling the Main Board Unit

1. Remove the Main Board Unit. (p171)
2. Remove the screws (x2) that secure the Wireless LAN Board.
3. Disconnect the Wireless LAN cable from the connector (CN20), and remove the Wireless LAN Board.

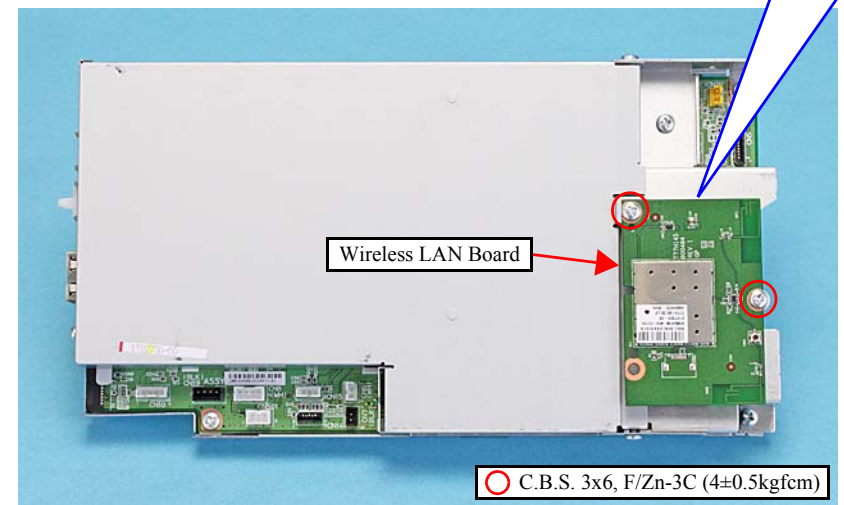
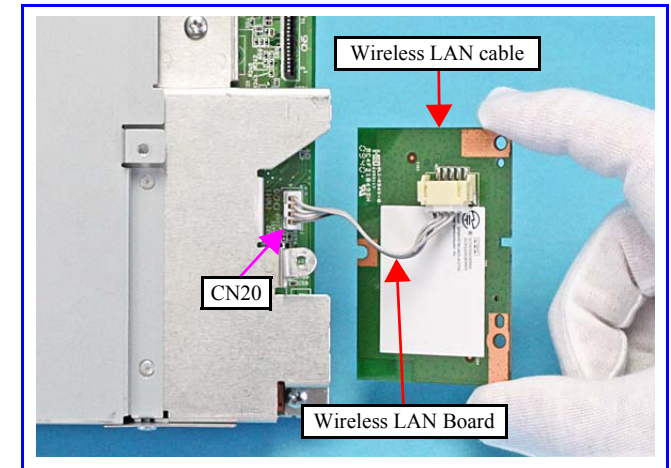


Figure 7-10. Removing the Wireless LAN Board

4. Remove the screws (x4) and remove the MB Upper Shield Plate.

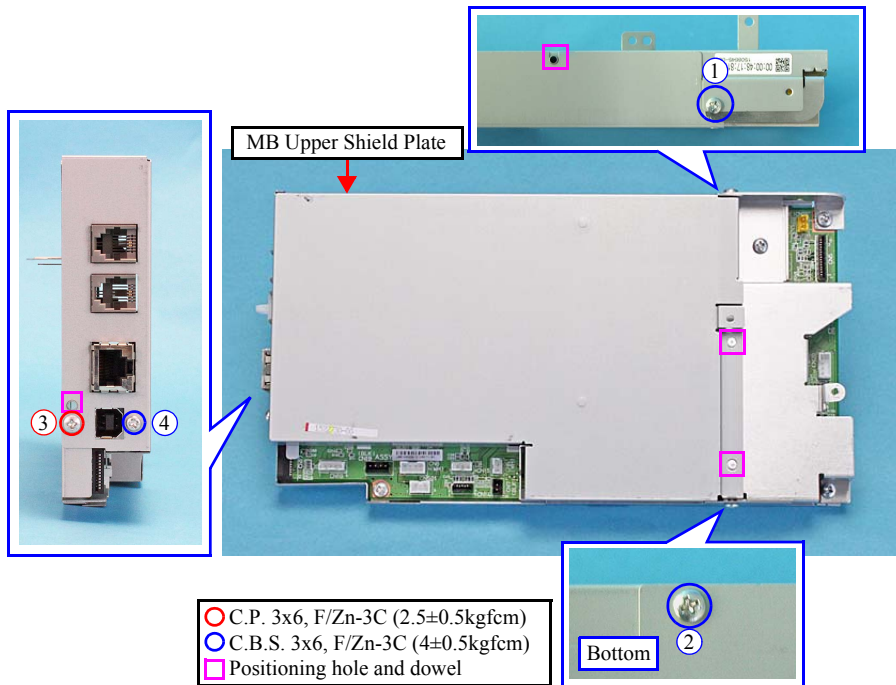


Figure 7-11. Removing the MB Upper Shield Plate

5. Remove the screws (x6), and remove the Main Board and MB Upper Rear Shield Plate.

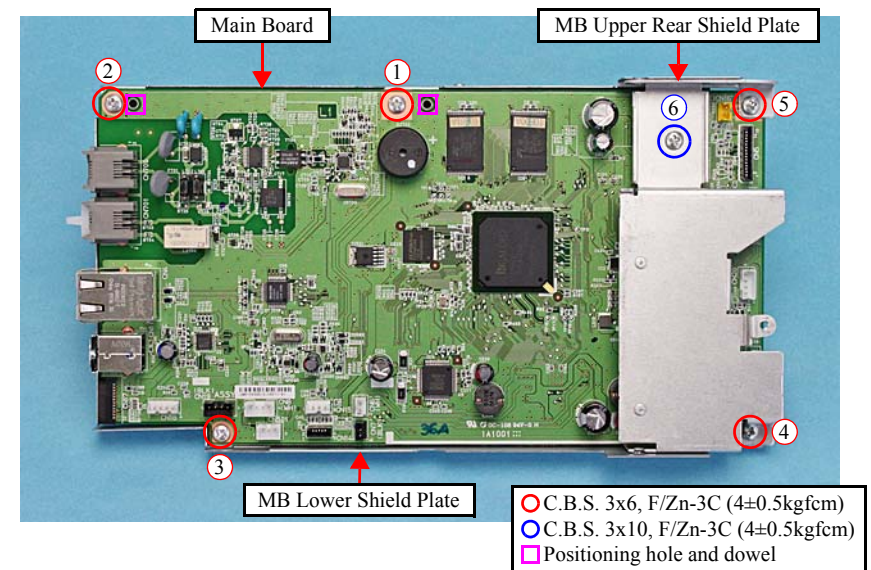


Figure 7-12. Removing the Main Board



- When installing the Main Board to the MB Lower Shield Plate, make sure to match the positioning holes (x4) to the dowels (x2) as shown in [Figure 7-12](#).
- When installing the Main Board, tighten the screws in the order given in [Figure 7-12](#).
- When reassembling the Main Board Unit, make sure to match the positioning holes (x4) to the dowels (x4) as shown in [Figure 7-11](#).
- When installing the MB Upper Shield Plate, tighten the screws in the order given in [Figure 7-11](#).
- If the EEPROM data cannot be read out from the old Main Board when replacing the Main Board, the MAC Address is required to be set. In this case, attach the new label “Label, MAC Address (Parts code: **TBD**)” on the position as shown in [Figure 7-13](#) and execute the “[5.2.7 MAC Address Setting](#)” ([p145](#)).



Figure 7-13. Position to attach the MAC Address Label

## ROUTING AROUND THE MAIN BOARD (WORKFORCE 520 SERIES)



To protect sensitive microprocessors and circuitry, use static discharge equipment, such as anti-static wrist straps, when accessing internal components.



When routing the cables around the Main Board, make sure to route them as follows, and connect them firmly confirming the directions of the connectors without any slant.

The following describes the routing around the left rear side and the left front side of the Main Board.

### □ Left rear side

1. Connect the PF Encoder FFC to the connector (CN14) on the Main Board.
2. Connect the Power Supply Unit Cable to the connector (CN501) on the Main Board.
3. Route the Power Supply Unit Cable through the hook on the Base Frame and through the gap under the connector (CN17) on the Main Board.

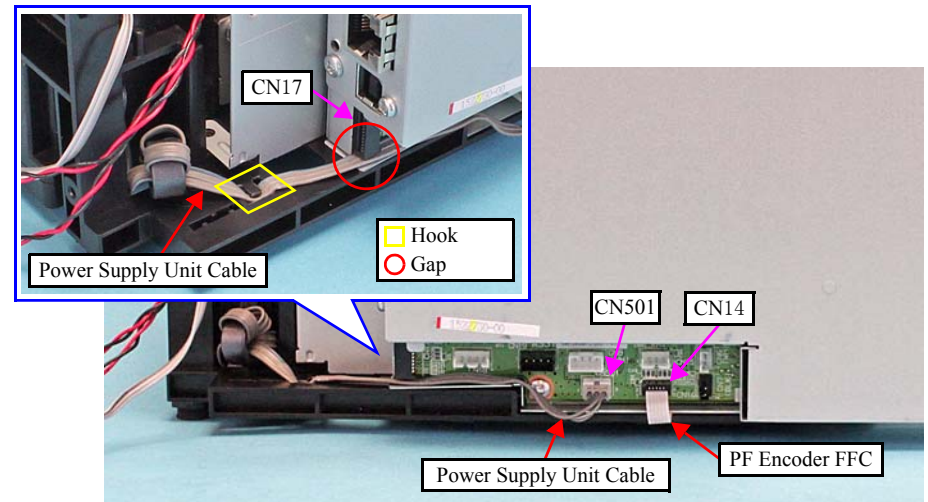


Figure 7-14. Routing around the Main Board (on the left rear) (WorkForce 520 series) (1)

4. Connect the CR Motor cable to the connector (CN6) on the Main Board.
5. Connect the PF Motor cable to the connector (CN7) on the Main Board.
6. Connect the PE Sensor cable to the connector (CN15) on the Main Board.

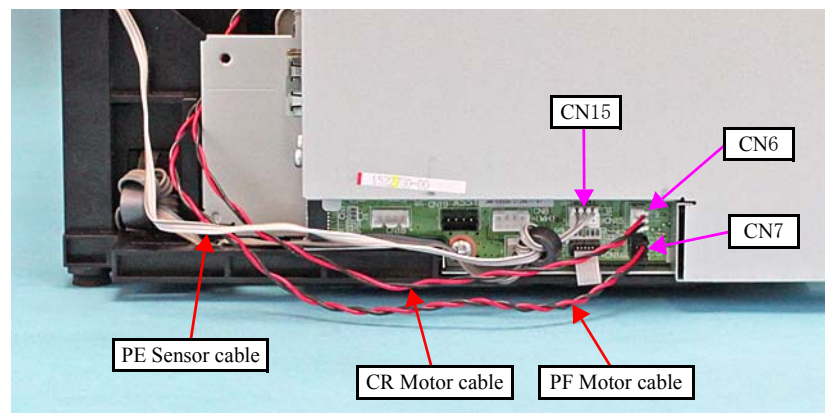


Figure 7-15. Routing around the Main Board (on the left rear) (WorkForce 520 series) (2)

□ Left front side

CHECK  
POINT



- Confirm the protection for the terminal of the Panel FFC is not peeled.
- Confirm the terminal of the Panel FFC is not damaged or bent.

1. Connect the Panel FFC to the connector (CN5) on the Main Board.
2. Connect the Cover Open Sensor Cable to the connector (CN16) on the Main Board.

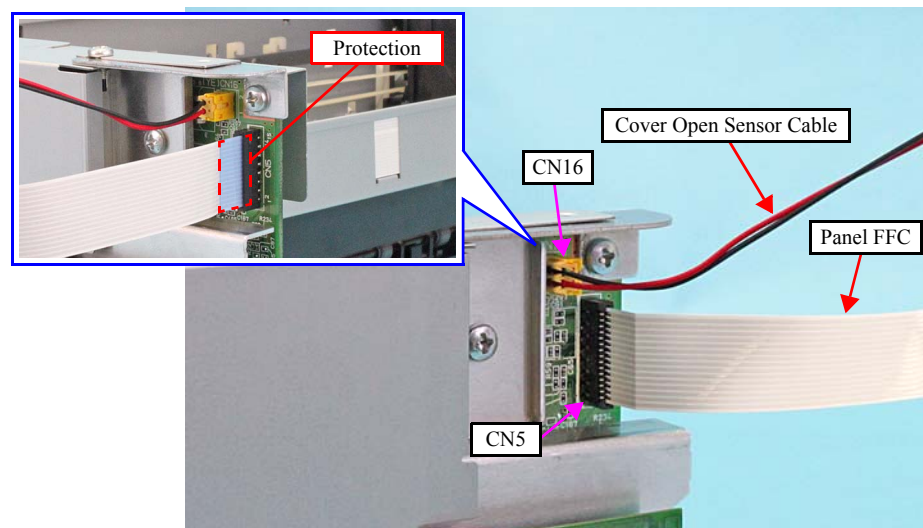


Figure 7-16. Routing around the Main Board (on the left rear) (WorkForce 520 series)



### 7.4.4.2 Panel Unit (WorkForce 520 series)

CHECK  
POINT



See the following because the disassembling/reassembling procedures of the Panel Unit for WorkForce 320/325 series differ from those of WorkForce 520 series.

- WorkForce 320/325 series:  
“7.4.6.4 Panel Unit (WorkForce 320/325 series)” (p189)

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)

- Removal procedure

1. Perform [Step 1](#) to [Step 4](#) of “4.4.2 Panel Unit” (p96).
2. Remove the screws (x7) that secure the Panel Board.
3. Remove the Panel Board while avoiding the ribs (x2) on the Panel Board.

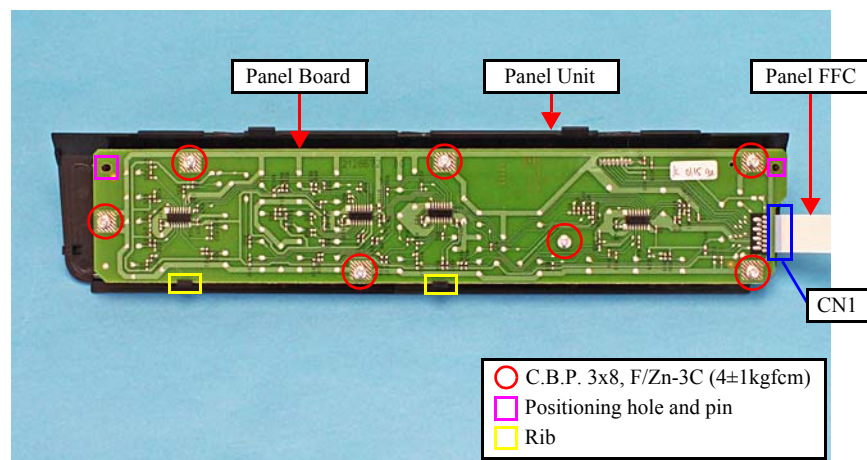


Figure 7-17. Removing the Panel Unit

4. Remove the buttons (x22) and the LED Lenses (x2).

Table 7-10. Button/Lens

No.	Button	No.	Button	No.	Button/Lens
1	1 button	9	9 button	17	Menu button
2	2 button	10	0 button	18	Select button
3	3 button	11	* button	19	Scan button
4	4 button	12	# button	20	Fax button
5	5 button	13	Auto button	21	Copy button
6	6 button	14	BS button	22	Power button
7	7 button	15	Dial button	23	Power Lens
8	8 button	16	Speed Dial button	24	WiFi Lens

5. Peel off the Cover LCD secured with a double-sided tape from the Panel Cover.

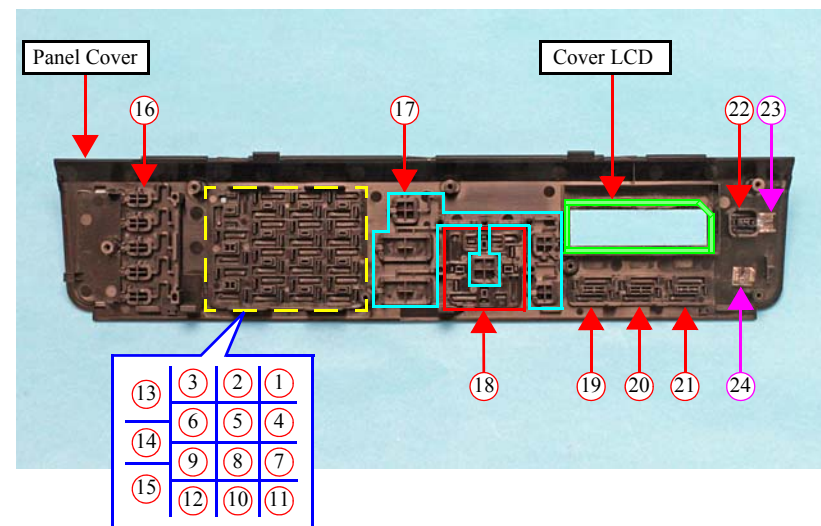




Figure 7-18. Removing the SW Buttons



- When installing the Cover LCD, align the angle of diagonal cut with upper right side and install it.
- When installing the Panel Board, secure it within the ribs (x2) on the Panel Unit as shown in [Figure. 7-17](#).
- When installing the Panel Board, make sure to match the positioning holes (x2) with their positioning pins of the Panel Cover as shown in [Figure. 7-17](#).
- When installing the Panel Unit to the Front Housing, make sure to match the ribs  (x2) of the upper side and the ribs  (x4) of the lower side of the Panel Unit with the dowels of the Lower Housing as shown in [Figure. 4-25](#).



## 7.4.5 Disassembling the Printer Mechanism

### 7.4.5.1 Printhead (WorkForce 520 series)

#### CHECK POINT



See the following because the disassembling/reassembling procedures of the Printhead for WorkForce 320/325 series differ from those of WorkForce 520 series.

- WorkForce 320/325 series:  
“7.4.6.5 Printhead (WorkForce 320/325 series)” (p189)

See the following, because the disassembly/reassembly procedure for WorkForce 520 series is the same as that of WorkForce 310 series.

- “4.5.1 Printhead” (p99)

### 7.4.5.2 Front Frame/Right Frame

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p175)/Printer Mechanism (p103)/Main Board Unit (p171)/Left Frame (p105)

- Removal procedure

1. Remove the acetate tapes (x3) that secure the Head FFC to the Front Frame.
2. Peel off the double-sided tape that secures the ferrite core to the Front Frame.
3. Release the Head FFC from the hooks (x3) of the Front Frame.
4. Remove the Grounding Spring from the Front Frame.

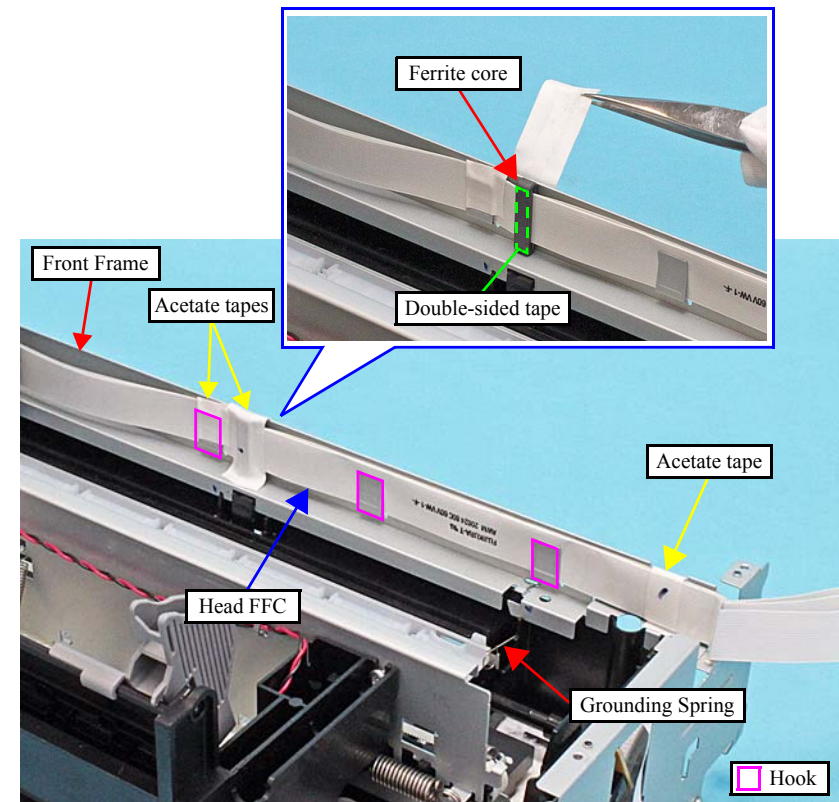


Figure 7-19. Removing the Front Frame/Right Frame (1)

5. Remove the screw (x1) that secures the Front Frame and the Right Frame together.
6. Release the dowel (x1) and the hook (x1) that secure the Right Frame, and remove the Right Frame.

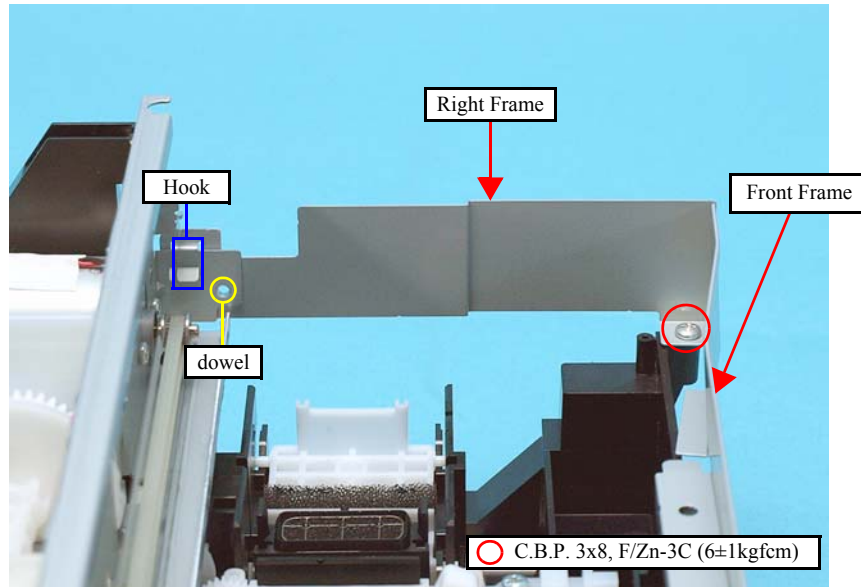


Figure 7-20. Removing the Front Frame/Right Frame (2)



Be careful not to get injured with the sharp edges of the Front Frame.

7. Release the hook (x1), and remove the Front Frame.

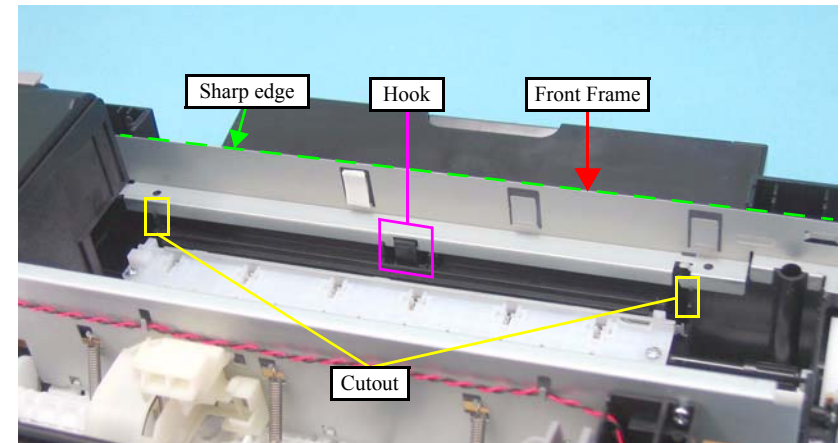


Figure 7-21. Removing the Front Frame/Right Frame (3)

## REASSEMBLY



- When replacing the Front Frame, route the Head FFC in the order given below.
  1. Align the ferrite core with the line mark shown in [Figure 7-23](#), then secure it to the Front Frame with double-sided tape.
  2. Secure the hook and the Head FFC with acetate tape A.

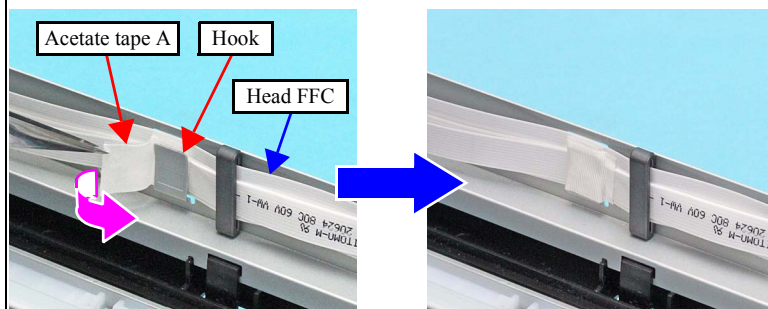


Figure 7-22. Acetate tape position

3. Secure the ferrite core with acetate tape B.

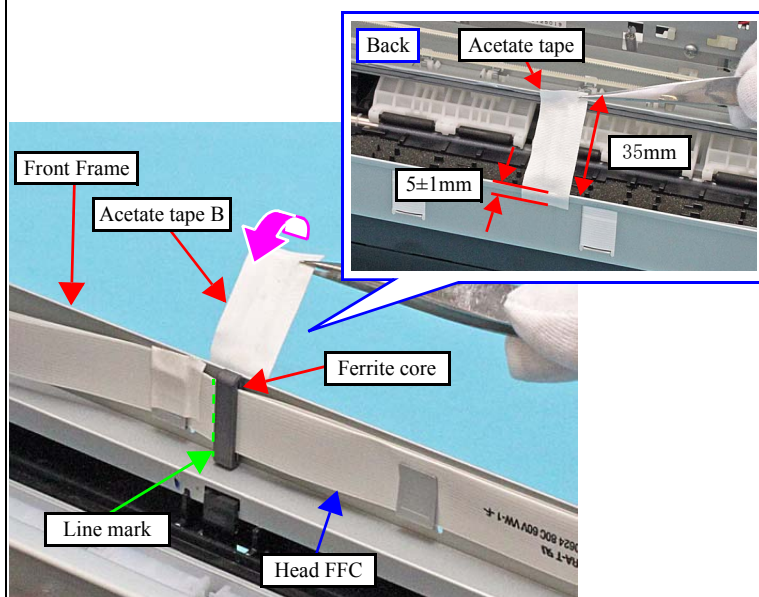


Figure 7-23. Acetate tape position

## REASSEMBLY



4. Secure the FFC with acetate tape C.

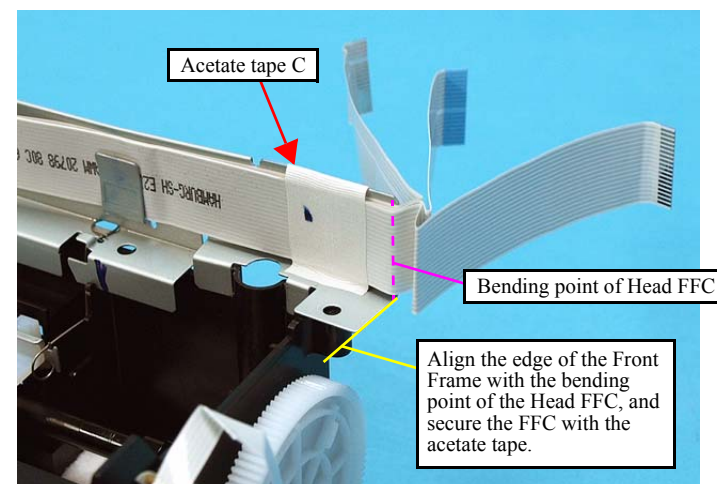


Figure 7-24. Acetate tape position

## 7.4.6 Differences in Disassembling/Reassembling WorkForce 320/325 series

### 7.4.6.1 Scanner Unit/ADF Unit (WorkForce 320/325)

#### CHECK POINT



The disassembly/reassembly procedures of the Scanner Unit/ADF Unit for WorkForce 320/325 series are the same as those for WorkForce 310 series. Therefore, see “4.3.3 Scanner Unit/ADF Unit” (p87).

Only the routing for WorkForce 520/320/325 series is described in this chapter.

The routing for WorkForce 320/325 series is described here. For the routing for WorkForce 520 series, see “7.4.3.1 Scanner Unit/ADF Unit (WorkForce 520 series)” (p168).

### ROUTING INSIDE THE INTERFACE COVER (WORKFORCE 320/325 SERIES)

#### WARNING



To protect sensitive microprocessors and circuitry, use static discharge equipment, such as anti-static wrist straps, when accessing internal components.

#### CAUTION



- When routing the cables around the Interface Cover, make sure to route them as follows, and connect them firmly confirming the directions of the connectors.
- When routing the cables, confirm the ferrite core of the Power Supply Unit cable is secured firmly in the hole of the frame. (See Figure 4-31.)
- When routing the Scanner Carriage FFC, make sure to secure it perpendicular without any slant.

1. Secure the Scanner Carriage FFC with double-sided tape (x1) to the Frame, and connect the FFC to the connector (CN17) on the Main Board.

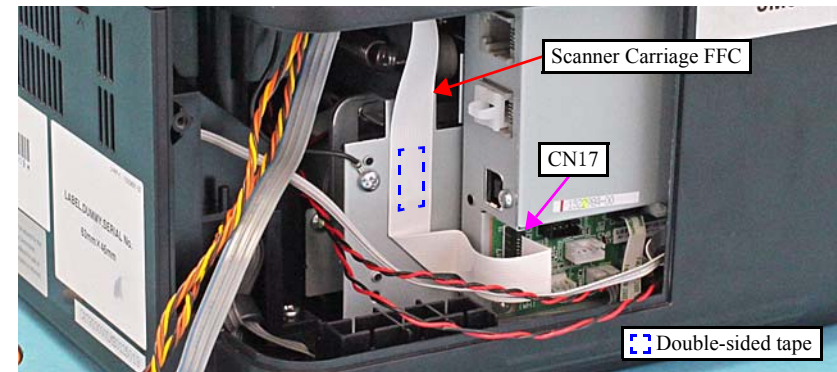


Figure 7-25. Routing around the Interface Cover (WorkForce 320/325 series) (1)

#### CAUTION



When connecting the following cables, route them under the CR Motor cable, PF Motor cable, and PE Sensor cable.

- Scanner Motor cable
- ADF Sensor cable
- ADF Motor cable

2. Connect the Scanner Motor cable to the connector (CN8) on the Main Board.
3. Connect the ADF Sensor cable to the connector (CN18) on the Main Board.
4. Connect the ADF Motor cable to the connector (CN19) on the Main Board.

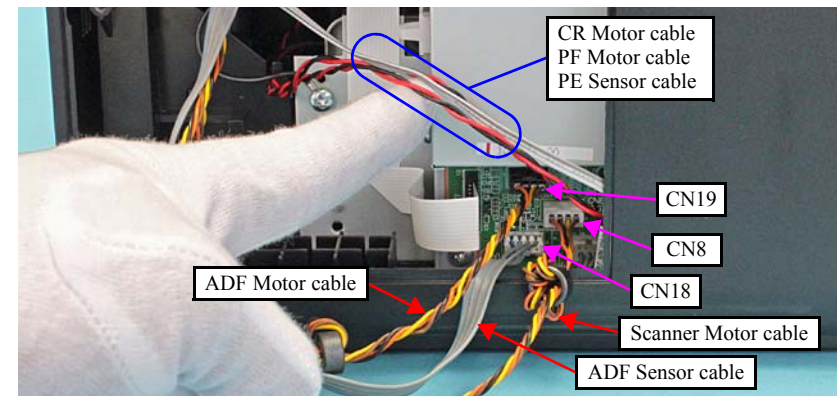


Figure 7-26. Routing around the Interface Cover (WorkForce 320/325 series) (2)



**CAUTION**

When routing the ADF Sensor cable and Scanner Motor cable, make sure not to let them out of the slit on the Lower Housing.

5. Route the ADF Sensor cable and Scanner Motor cable through the slit on the Lower Housing.

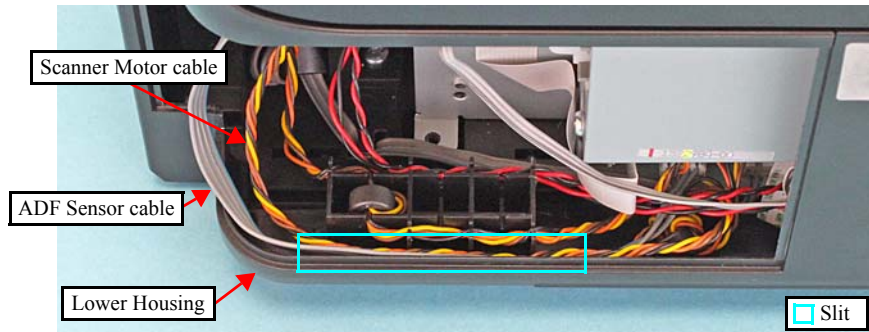


Figure 7-27. Routing around the Interface Cover (WorkForce 320/325 series) (3)

**CAUTION**

When routing the CR Motor cable and PF Motor cable, make sure not to let them out of the ribs on the Lower Housing.

7. Route the CR Motor cable and PF Motor cable through the three ribs on the Lower Housing.

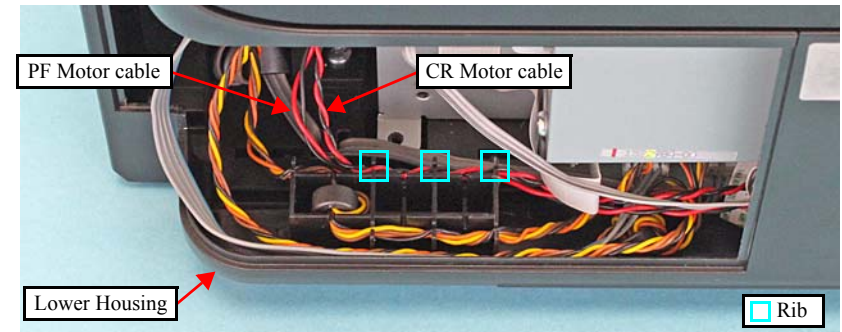


Figure 7-29. Routing around the Interface Cover (WorkForce 320/325 series) (5)

**CAUTION**

When routing the ADF Motor cable, make sure not to let it out of the ribs on the Lower Housing.

6. Route the ADF Motor cable through the six ribs on the Lower Housing.

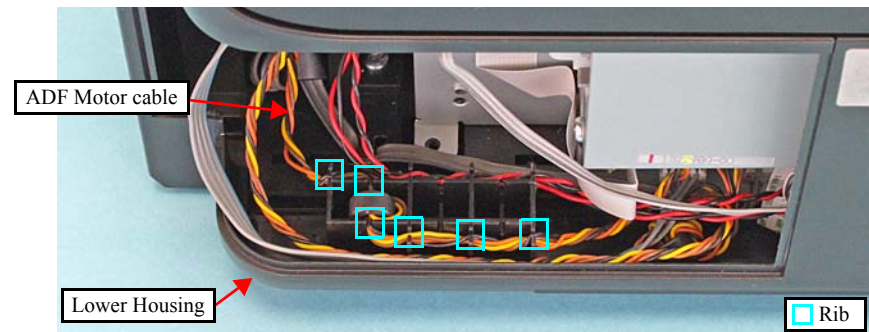


Figure 7-28. Routing around the Interface Cover (WorkForce 320/325 series) (4)

### 7.4.6.2 Main Board Unit (WorkForce 320 series)

#### CHECK POINT



See the following because the disassembling/reassembling procedures of the Main Board Unit for WorkForce 520/325 series differ from those of WorkForce 320 series.

- WorkForce 520 series:  
“7.4.4.1 Main Board Unit (WorkForce 520 series)” (p171)
- WorkForce 325 series:  
“7.4.6.3 Main Board Unit (WorkForce 325 series)” (p186)

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p189)/Printer Mechanism (p103)

- Removal procedure

1. Disconnect the following connectors (x4) and FFC from the Main Board.

CN No.	Cable	CN No.	Cable
CN6	CR Motor cable	CN15	PE Sensor cable
CN7	PF Motor cable	CN501	Power Supply Unit cable
CN14	PF Encoder FFC		

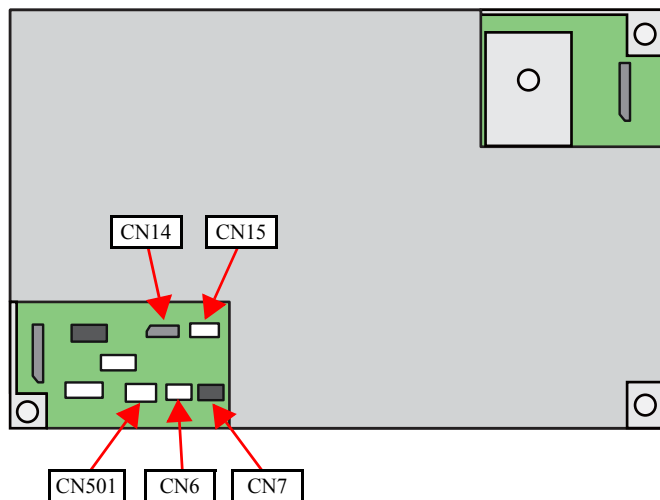


Figure 7-30. Connector Layout of the Main Board Unit

2. Disconnect the Head FFC (x2) from the connector of the Main Board.
3. Remove the screws (x2) that secure the Main Board Unit, and remove the Main Board Unit.

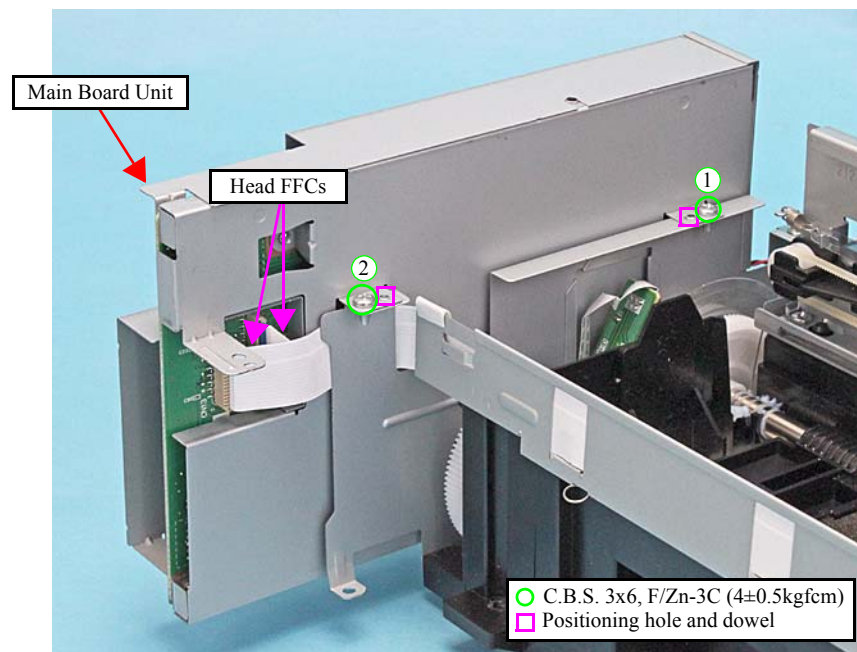


Figure 7-31. Removing the Main Board Unit



**REASSEMBLY**

- When installing the Main Board Unit, make sure to engage its cutout (x2) with the hooks (x2) of the Left Frame.

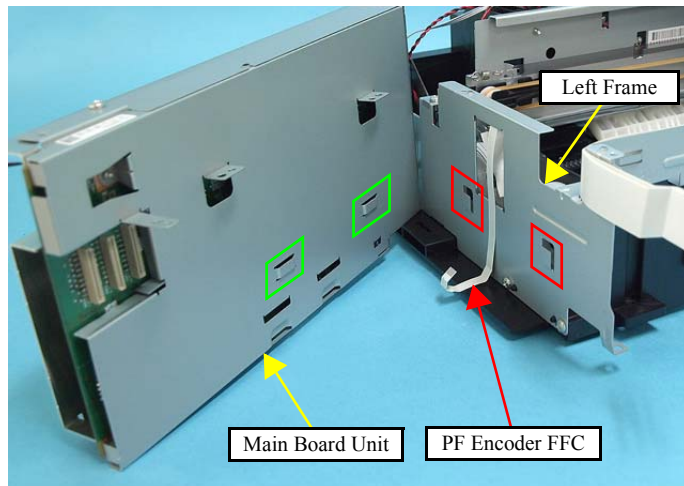


Figure 7-32. Installing the Main Board Unit

- When installing the Main Board Unit, make sure to route the PF Encoder FFC under the Main Board Unit.

**REASSEMBLY**

- When reassembling the Main Board Unit, make sure to match the positioning holes (x2) to the dowel (x2) of the Left Frame as shown in [Figure 7-31](#).
- When installing the Main Board Unit, tighten the screws in the order given in [Figure 7-31](#).
- For the routing around the Main Board, see “[Routing around the Main Board \(WorkForce 320/325 series\)](#)” (p185).
- When routing the Head FFCs, follow the steps below.
  1. Route the Head FFCs through the space between the Left Frame and the MB Lower Shield Plate.
  2. Connect the Head FFC (x2) to the connectors (CN13, CN301) on the Main Board.

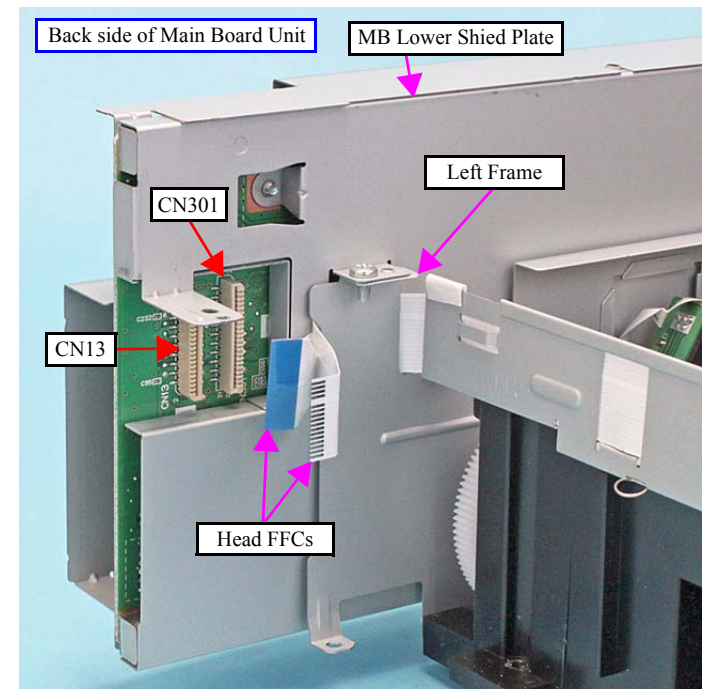


Figure 7-33. Routing the Head FFCs

□ Disassembling the Main Board Unit

1. Remove the Main Board Unit. (p182)
2. Remove the screws (x5) and remove the MB Upper Shield Plate.

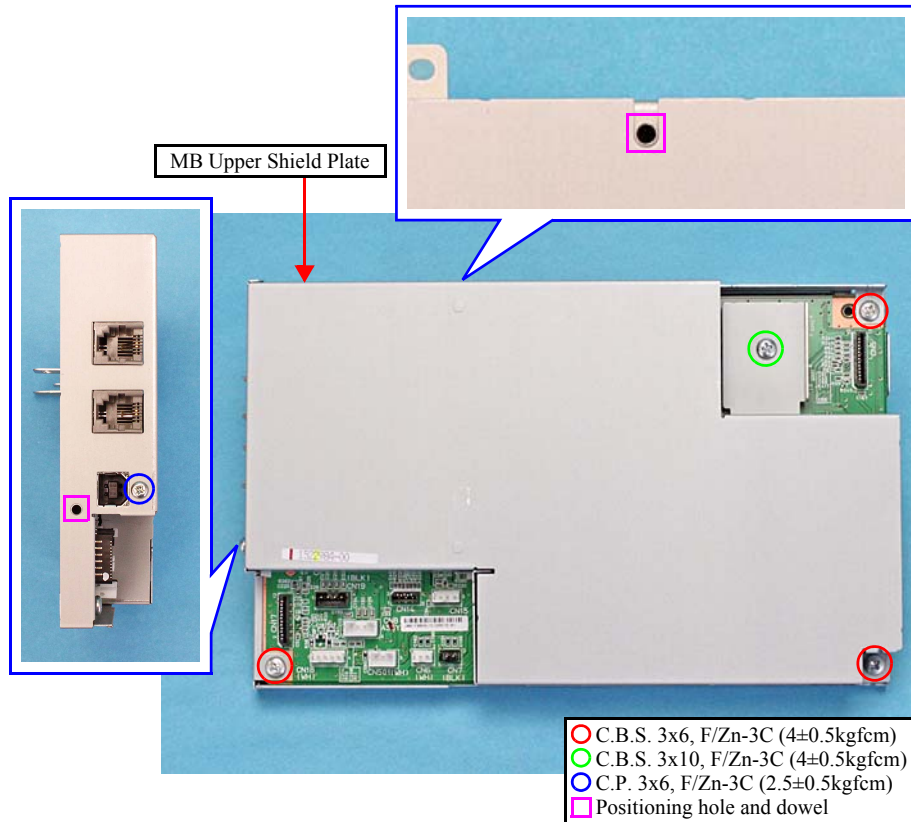


Figure 7-34. Removing the MB Upper Shield Plate

3. Remove the screws (x2), and remove the Main Board from the MB Lower Shield Plate.

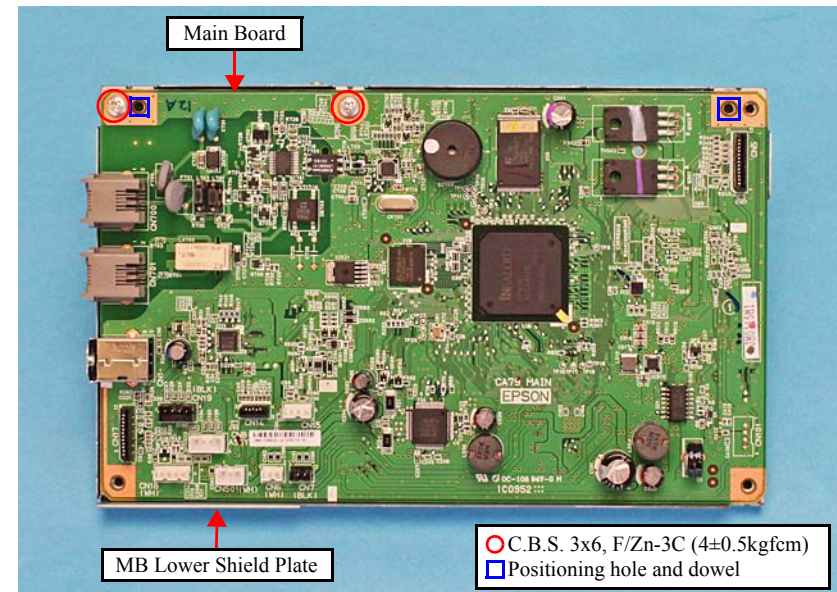


Figure 7-35. Removing the Main Board



- When installing the Main Board to the MB Lower Shield Plate, make sure to match the positioning holes (x2) to the dowels (x2) as shown in [Figure 7-35](#).
- When reassembling the Main Board Unit, make sure to match the positioning holes (x2) to the dowels (x2) as shown in [Figure 7-34](#).

## ROUTING AROUND THE MAIN BOARD (WORKFORCE 320/325 SERIES)

### WARNING



To protect sensitive microprocessors and circuitry, use static discharge equipment, such as anti-static wrist straps, when accessing internal components.

### CAUTION



When routing the cables around the Main Board, make sure to route them as follows, and connect them firmly confirming the directions of the connectors without any slant.

1. Connect the PF Encoder FFC to the connector (CN14) on the Main Board.
2. Connect the Power Supply Unit Cable to the connector (CN501) on the Main Board.
3. Route the Power Supply Unit Cable through the hook on the Base Frame and under the screw A on the Main Board Unit.

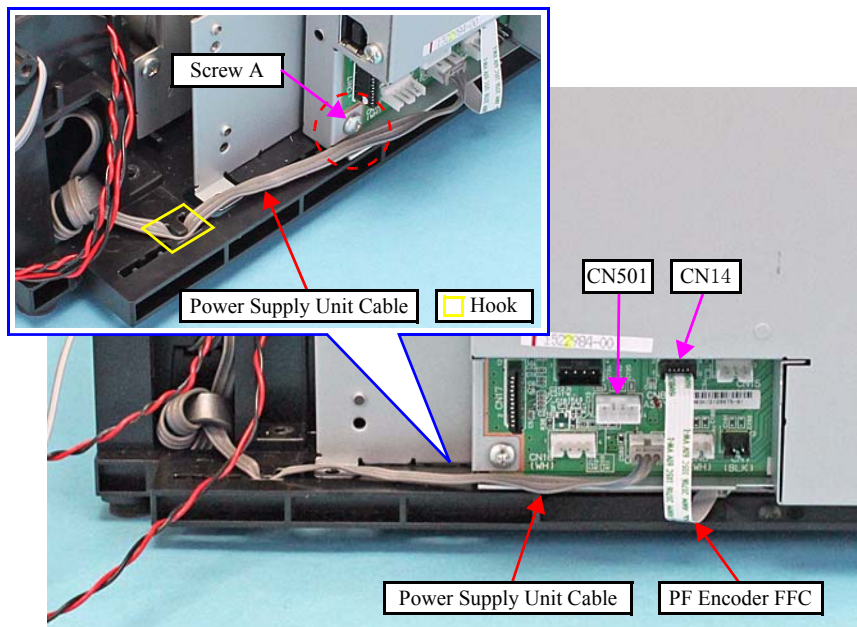


Figure 7-36. Routing around the Main Board (WorkForce 320/325 series) (1)

4. Route the CR Motor cable and PF Motor cable through the two ribs on the Base Frame.
5. Connect the CR Motor cable to the connector (CN6) on the Main Board.
6. Connect the PF Motor cable to the connector (CN7) on the Main Board.
7. Connect the PE Sensor cable to the connector (CN15) on the Main Board.

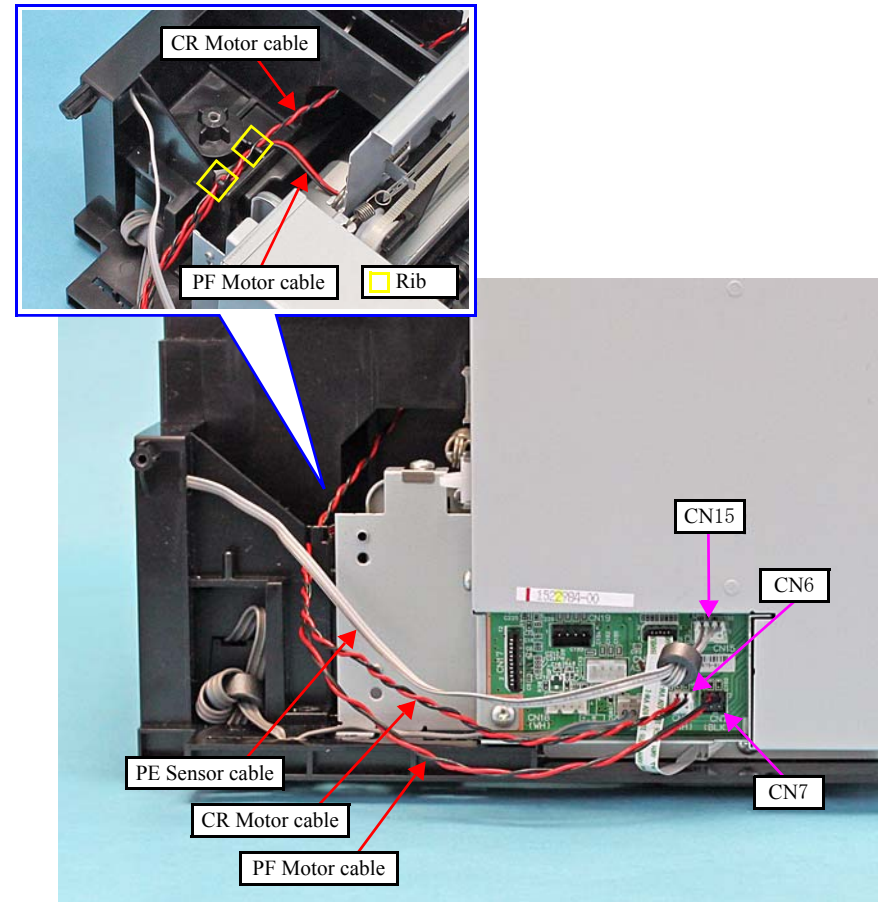


Figure 7-37. Routing around the Main Board (WorkForce 320/325 series) (2)



### 7.4.6.3 Main Board Unit (WorkForce 325 series)

CHECK  
POINT



See the following because the disassembling/reassembling procedures of the Main Board Unit for WorkForce 520/320 series differ from those of WorkForce 325 series.

- WorkForce 520 series:  
“7.4.4.1 Main Board Unit (WorkForce 520 series)” (p171)
- WorkForce 320 series:  
“7.4.6.2 Main Board Unit (WorkForce 320 series)” (p182)

- Parts/Components need to be removed in advance

Scanner Unit/ADF Unit (p87)/Upper Housing (p90)/Panel Unit (p189)/Printer Mechanism (p103)

- Removal procedure

1. Disconnect the following connectors (x4) and FFCs (x3) from the Main Board.

CN No.	Cable	CN No.	Cable
CN6	CR Motor cable	CN15	PE Sensor cable
CN7	PF Motor cable	CN301	Head FFC
CN13	Head FFC	CN501	Power Supply Unit cable
CN14	PF Encoder FFC		

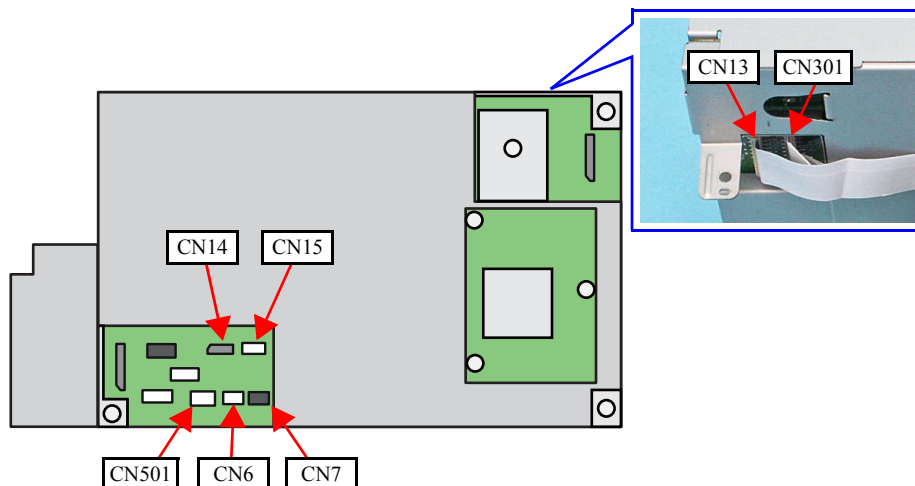


Figure 7-38. Connector Layout of the Main Board Unit

2. Remove the screws (x2), and remove the grounding plate.
3. Remove the screws (x3) that secures the Main Board Unit, and remove the Main Board Unit.
4. Disconnect the PF Encoder FFC from the PF Encoder Board.

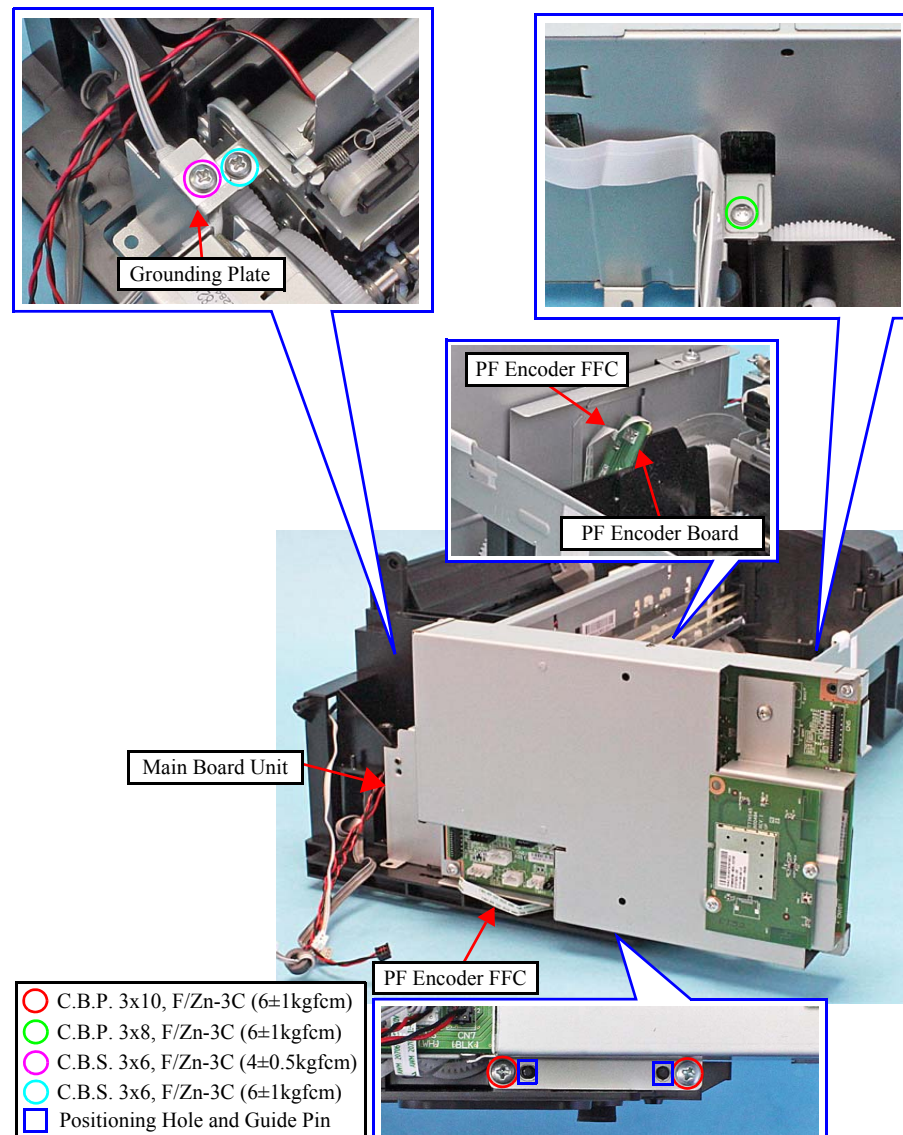


Figure 7-39. Removing the Main Board Unit



- Before installing the Main Board Unit, make sure to align the PF Encoder FFC with the line mark on the MB Lower Shield Plate and secure it to the MB Lower Shield Plate with double-sided tape, and then secure the folded part of the PF Encoder FFC with acetate tape.

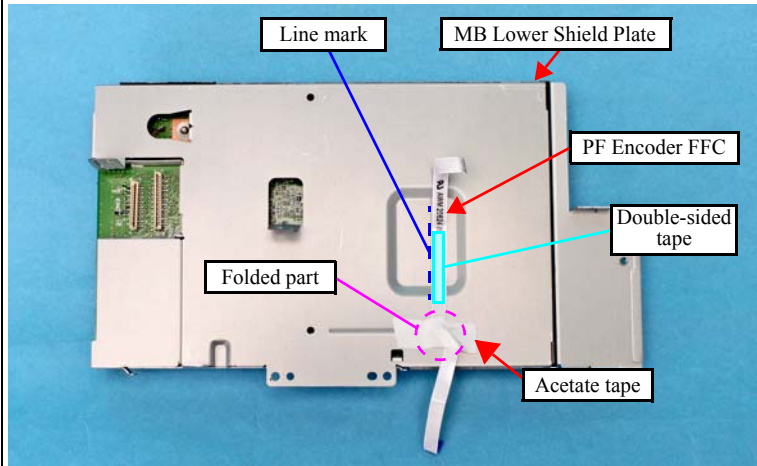


Figure 7-40. PF Encoder FFC

- When installing the Main Board Unit, align the guide pins (x2) of the Base Frame with their positioning holes (x2) of the Main Board Unit as shown in [Figure 7-39](#).
- When installing the Main Board Unit, make sure to route the PF Encoder FFC under the Main Board Unit.

#### □ Disassembling the Main Board Unit

1. Remove the Main Board Unit. ([p186](#))
2. Remove the screws (x2) that secure the Wireless LAN Board.
3. Disconnect the Wireless LAN cable from the connector (CN 2), and remove the Wireless LAN Board.

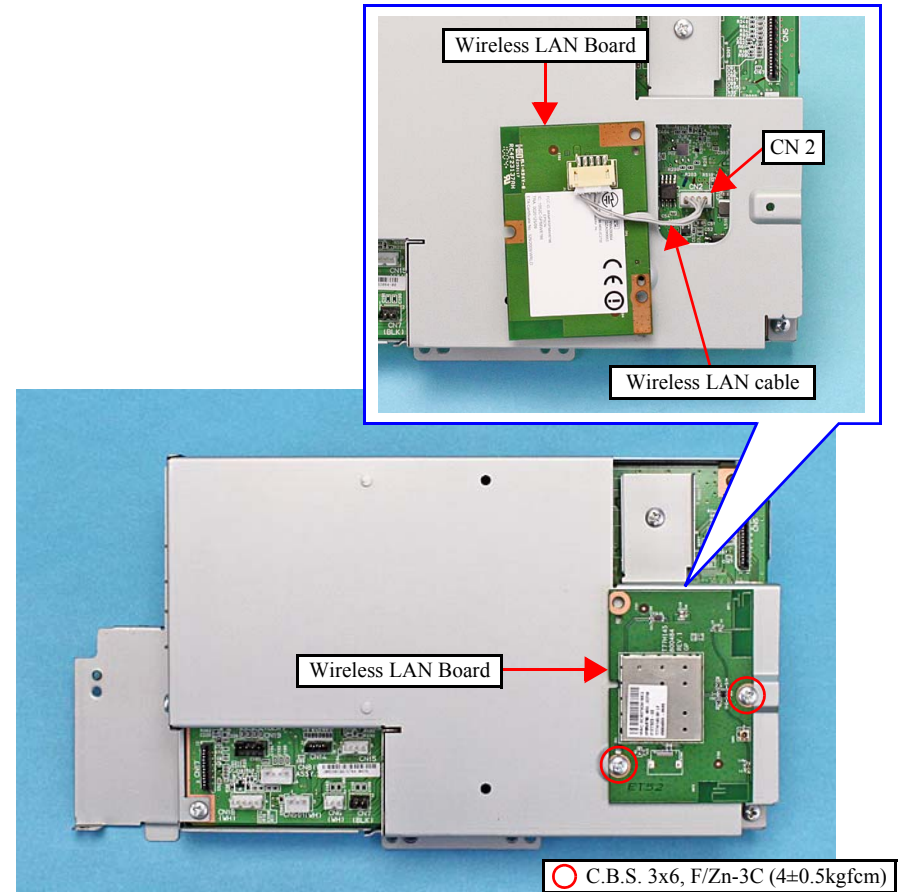


Figure 7-41. Removing the Wireless LAN Board (WorkForce 325 series)

4. Remove the screws (x5) and remove the MB Upper Shield Plate.

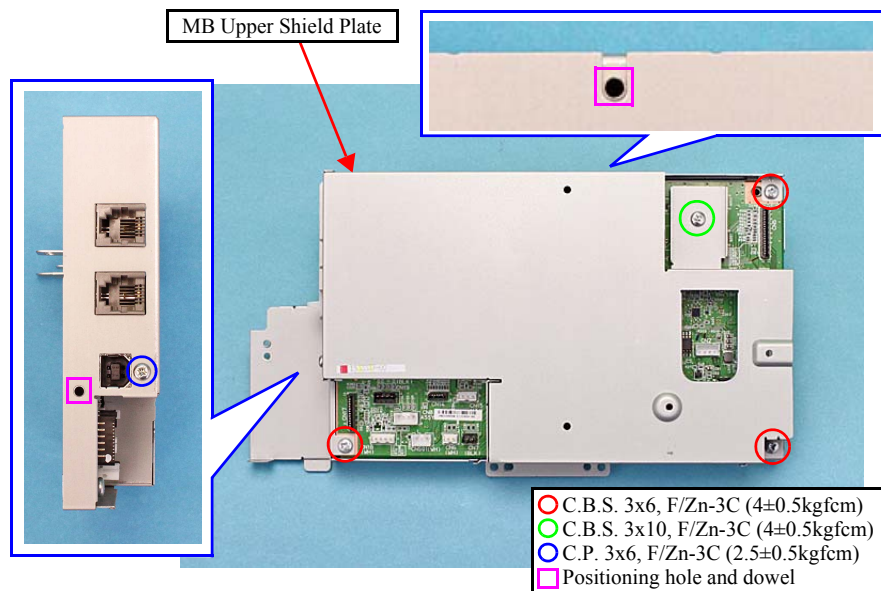


Figure 7-42. Removing the MB Upper Shield Plate

5. Remove the screws (x2), and remove the Main Board from the MB Lower Shield Plate.

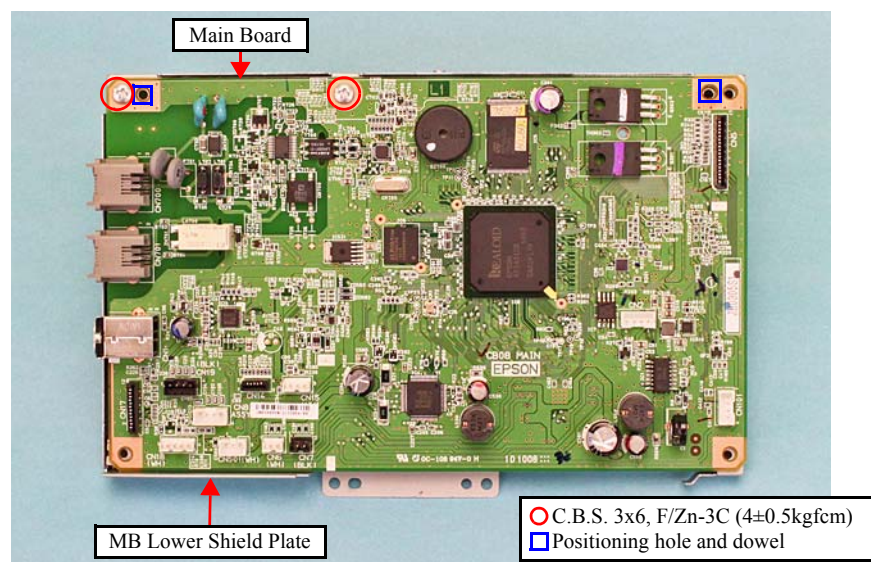


Figure 7-43. Removing the Main Board



- When installing the Main Board to the MB Lower Shield Plate, make sure to match the positioning holes (x2) to the dowels (x2) as shown in [Figure. 7-43](#).
- When reassembling the Main Board Unit, make sure to match the positioning holes (x2) to the dowels (x2) as shown in [Figure. 7-42](#).
- If the EEPROM data cannot be read out from the old Main Board when replacing the Main Board, the MAC Address is required to be set. In this case, attach the new label “Label, MAC Address (Parts code: **TBD**)” on the position as shown in [Figure. 7-44](#) and execute the “[5.2.7 MAC Address Setting](#)” ([p145](#)).



Figure 7-44. Position to attach the MAC Address Label

- For the routing around the Main Board, see “[Routing around the Main Board \(WorkForce 320/325 series\)](#)” ([p185](#)).



## 7.4.6.4 Panel Unit (WorkForce 320/325 series)

CHECK  
POINT

See the following because the disassembling/reassembling procedures of the Panel Unit for WorkForce 520 series differ from those of WorkForce 320/325 series.

- WorkForce 520 series:  
“4.4.4.2 Panel Unit (WorkForce 520 series)” (p175)

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)/Upper Housing (p90)
- Removal procedure
  1. Perform [Step 1](#) to [Step 5](#) of “4.4.2 Panel Unit” (p96).
  2. Remove the buttons (x6) and the Panel Lenses (x2) from the Panel Cover.
  3. Peel off the Cover LCD secured with a double-sided tape from the Panel Cover.

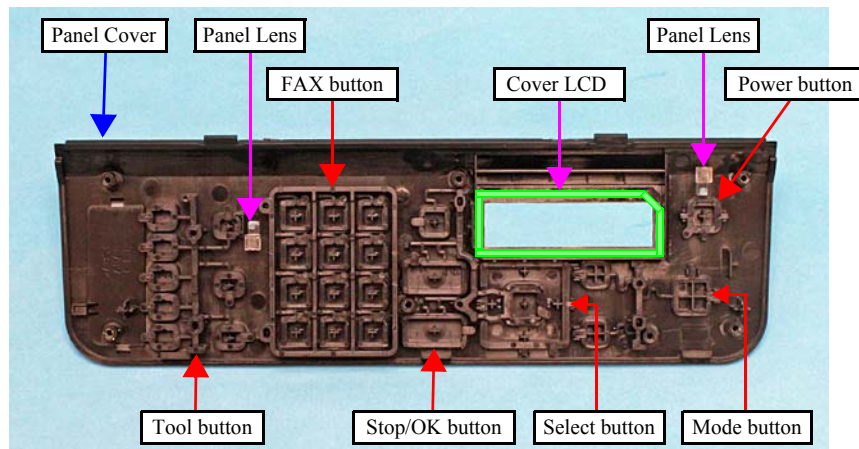


Figure 7-45. Removing the SW Buttons

## REASSEMBLY



- When installing the Cover LCD, align the angle of diagonal cut with upper right side and install it.
- When installing the Panel Board, make sure to match the positioning holes (x2) with their positioning pins of the Panel Cover as shown in [Figure. 4-26](#).
- When installing the Panel Board, tighten the screws in the order given in [Figure. 4-26](#).
- When installing the Panel Unit to the Front Housing, make sure to match the ribs ○ (x2) of the upper side and the ribs □ (x4) of the lower side of the Panel Unit with the dowels of the Lower Housing as shown in [Figure. 4-25](#).

## 7.4.6.5 Printhead (WorkForce 320/325 series)

CHECK  
POINT

See the following because the disassembling/reassembling procedures of the Printhead for WorkForce 520 series differ from those of WorkForce 320/325 series.

- WorkForce 520 series:  
“4.5.1 Printhead” (p99)

- Parts/Components need to be removed in advance  
Scanner Unit/ADF Unit (p87)/Upper Housing (p90)
- Removal procedure
  1. Rotate the Spur Gear 51.5 to unlock the carriage, and move the CR Unit to the center.

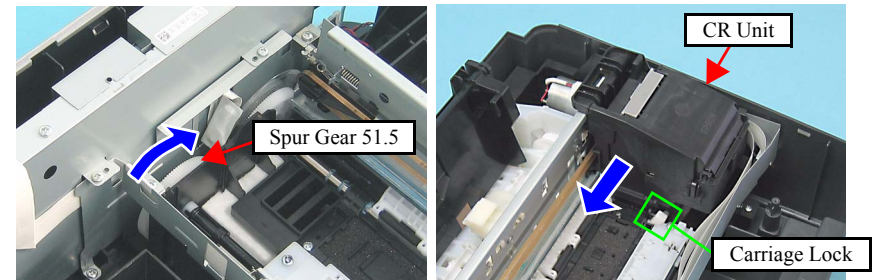


Figure 7-46. Unlocking the Carriage and Moving the CR Unit

2. Open the Cartridge Cover and remove all the ink cartridges from the CR Unit.

CHECK  
POINT

The Cartridge Cover Hinge must be broken to be removed since the hinge is permanently-set. When replacing the Printhead, make sure to replace the Cartridge Cover Hinge with a new one.

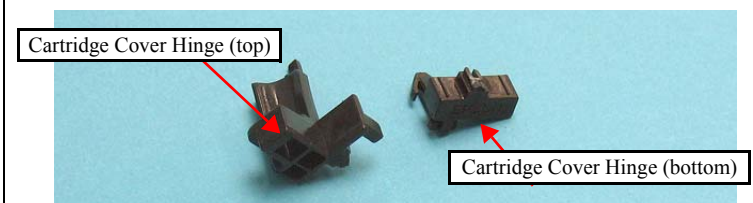
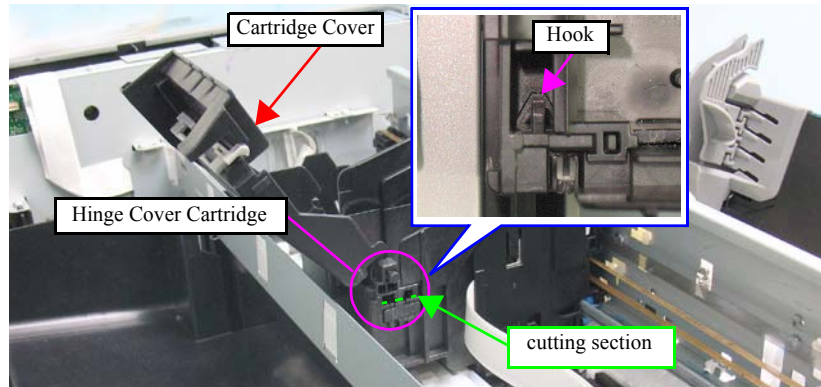




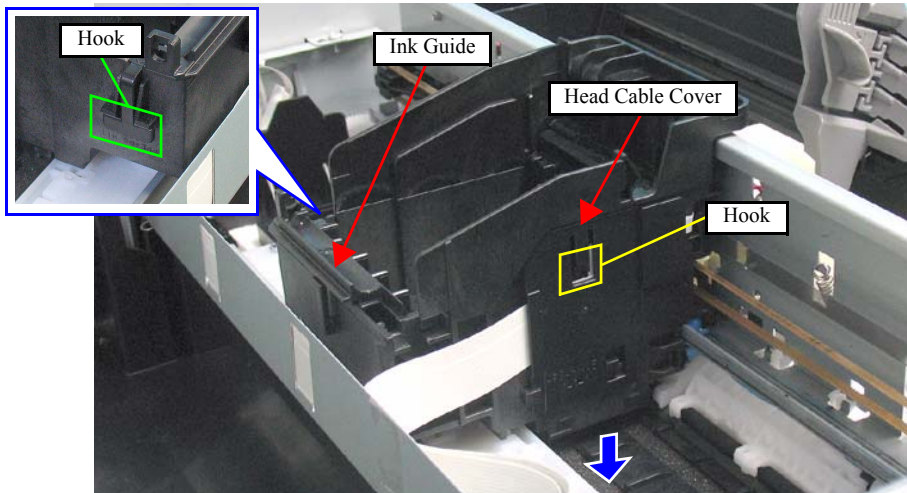
Figure 7-47. Cartridge Cover Hinge

3. Cut the Cartridge Cover Hinge with a nipper, and remove the upper half of it and Hinge Cover Cartridge.
4. Release the hooks of the lower half of the Cartridge Cover Hinge with tweezers, and remove the lower half of it. (See [Figure 7-47](#))



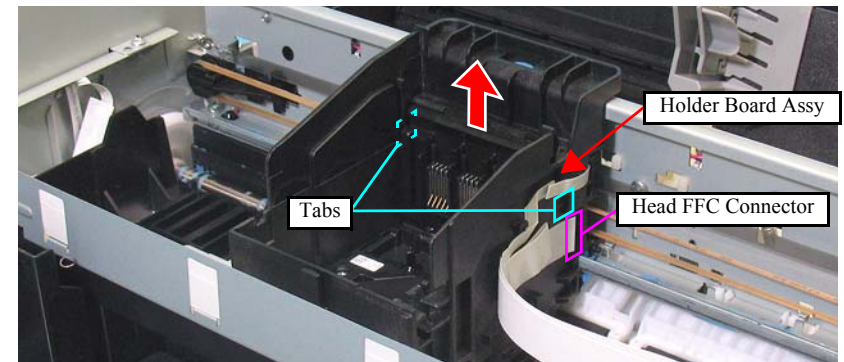
**Figure 7-48. Removing the Cartridge Cover**

5. Release the hook  (x1) of the Head Cable Cover with a flathead precision screwdriver, and remove the Head Cable Cover downward.
6. Release the hook  (x1) securing the Ink Guide and remove the Ink Guide.



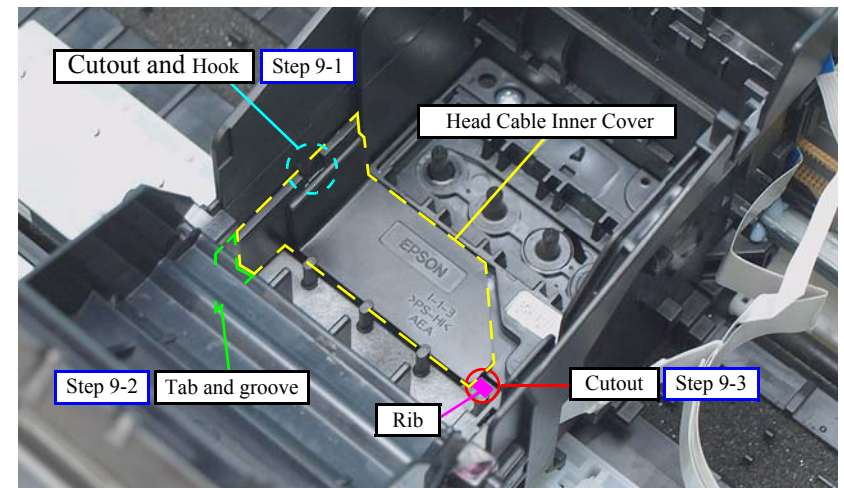
**Figure 7-49. Removing the Head Cable Cover**

7. Disconnect the Head FFC (x1) that is connected to the CSIC Board.
8. Release the tabs (x2) securing the Holder Board Assy with a flathead screwdriver or the like, and remove the Holder Board Assy upward.



**Figure 7-50. Removing the Holder Board Assy**

9. Remove the Head Cable Inner Cover according to the following procedure.
  - 9-1. Release the cutout (x1) of the Head Cable Inner Cover from the hook (x1) of the CR Unit.
  - 9-2. Release the tab (x1) of the Head Cable Inner Cover from the groove (x1) of the CR Unit.
  - 9-3. Release the rib of the Head Cable Inner Cover from the cutout of the CR Unit.



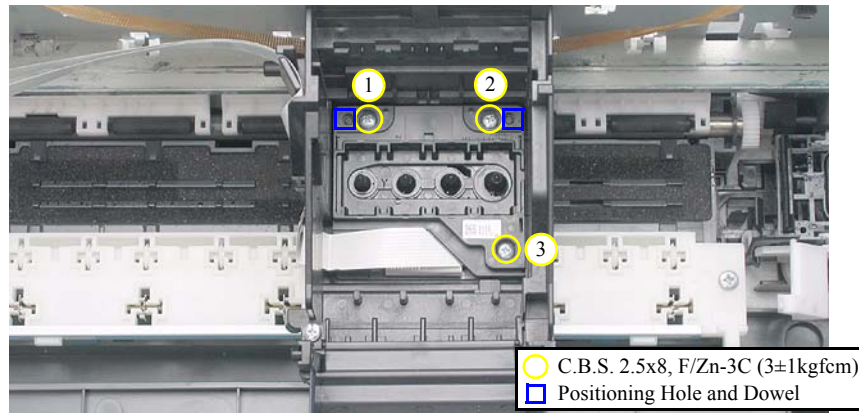
**Figure 7-51. Removing the Sub FFC Guide**



**CAUTION**

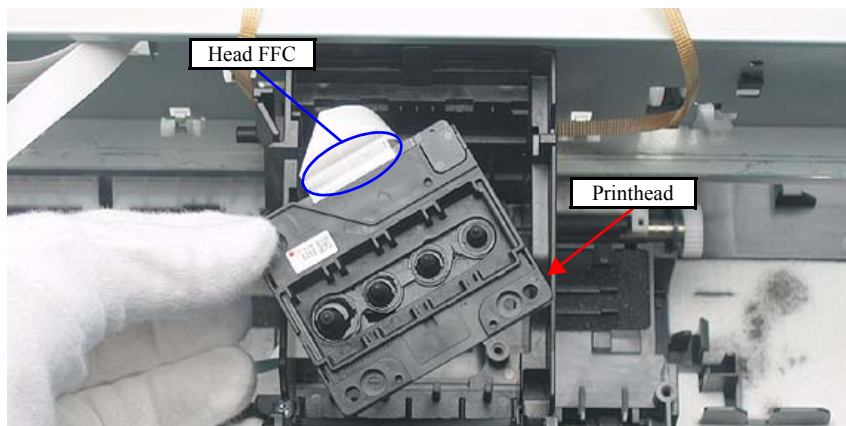
Do not touch or damage the nozzles or the ink supply needles of the Printhead.

10. Remove the screws (x3) that secure the Printhead, and lift the Printhead with longnose pliers.



**Figure 7-52. Removing the Printhead (1)**

11. Disconnect the Head FFC from the connectors (x2) of the Printhead, and remove the Printhead.



**Figure 7-53. Removing the Printhead (2)**

**REASSEMBLY**

- When installing the Printhead, attach it while aligning the positioning holes (x2) on the Printhead and dowels (x2) on the CR Unit.
- Tighten the screws in the order given in [Figure 7-52](#).
- Insert the Holder Board Assy vertically into the CR Unit so as not to put the Holder Board Assy on the rib of the Printhead.

**ADJUSTMENT REQUIRED**

Whenever the Printhead is removed/replaced, the required adjustments must be carried out.

- [Chapter 5 “ADJUSTMENT” \(p.135\)](#)

## 7.5 ADJUSTMENT

The adjustment patterns of Bi-D Adjustment and PF Adjustment for WorkForce 520/320/325 series differ. This section describes the adjustment patterns different from the others only. For other adjustments, see [Chapter 5 “ADJUSTMENT” \(p.135\)](#).

### 7.5.1 Using the Adjustment Program

#### 7.5.1.1 Bi-D Adjustment (WorkForce 520/320/325 series)

The following pattern is printed for each of the four print mode (four dot size modes).

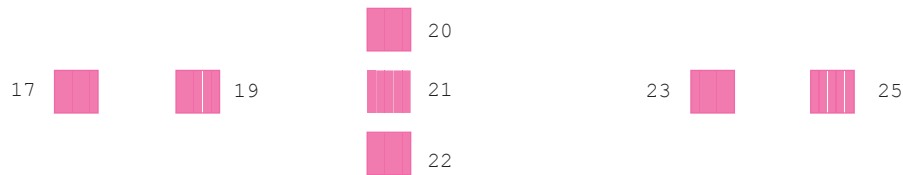


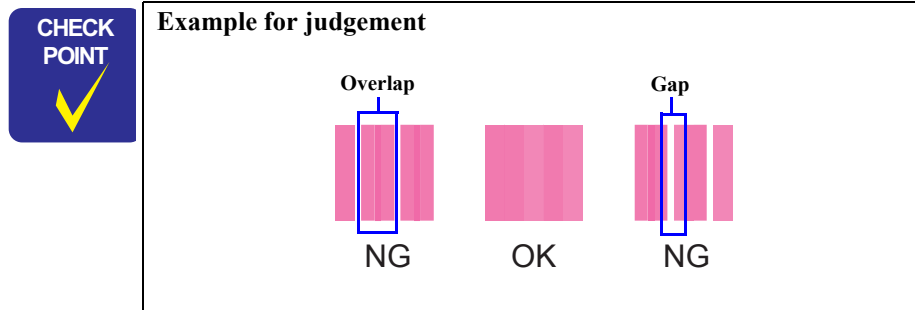
Figure 7-54. Bi-D Adjustment Printout Pattern

#### How to Judge

Examine the printout patterns for each of the four modes, and enter the value for the pattern with no gap and overlap for each mode.

#### Additional Information

If no OK pattern is printed, enter the value for the best one, and print the adjustment pattern again.



#### 7.5.1.2 PF Adjustment (WorkForce 320/325 series)

□ PF- for standard print area

The following pattern is printed.

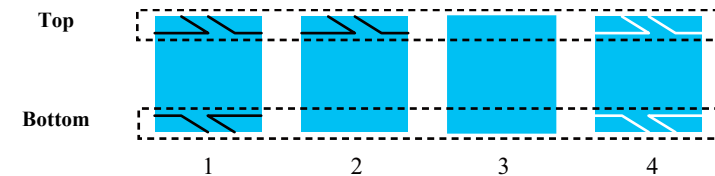


Figure 7-55. PF (standard print area) Adjustment Printout Pattern

#### How to Judge

1. Examine the printed patches from the left to the right, and select a value for the patch with least white oblique lines on its upper (top) area. If two or more patches are found as the best patch, be sure to select a value for the left most one.

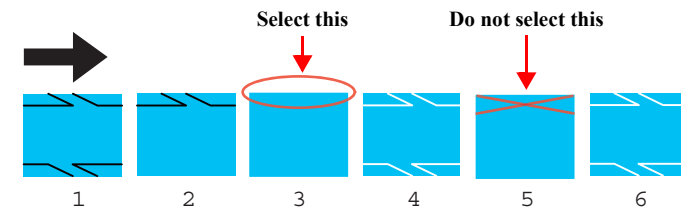


Figure 7-56. PF Adjustment (1)

2. Examine the printed patches from the right to the left, and select a value for the patch with least white lines on its lower (bottom) area. If two or more patches are found as the best patch, be sure to select a value for the right most one. If it is difficult to judge, compare the most likely patch with the one on the left.

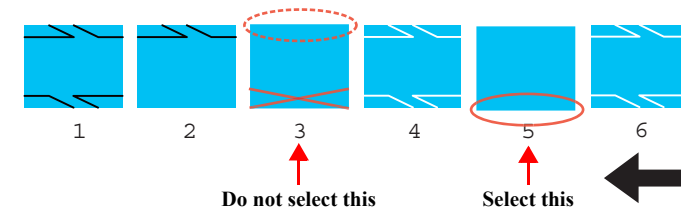
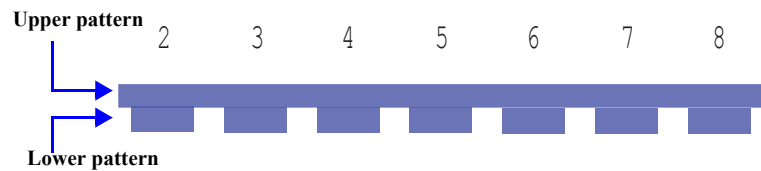


Figure 7-57. PF Adjustment (2)

3. Input the selected value for each of the top and bottom in the program, and print a PF adjustment check pattern.

- ☐ PF- for bottom margin area

The following pattern is printed.



**Figure 7-58. PF (bottom margin area) Adjustment Printout Pattern**

### How to Judge

Examine the printout patterns, and enter the value for the pattern with no overlap and gap between the upper and lower ones.

### Additional Information

When overlap and gap are observed in the all patterns, enter the value for the best one, and print the adjustment pattern again.

