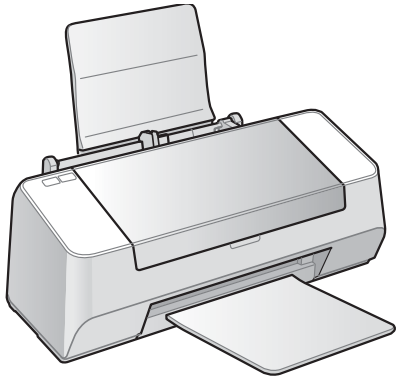
SERVICE MANUAL



Color Inkjet Printer

Epson Stylus C58/C59
Epson ME 2
Epson Stylus C79/D78
Epson Stylus C90/C91/C92/D92
Epson Stylus T20/T20E/T23/T26/S20
Epson Stylus T10/T11
Epson ME 30
Epson Stylus T21/T24/T27/S21

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EXCEED YOUR VISION

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SEIJ06-003

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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 INJURY FROM METAL PARTS WITH SHARP EDGES.

WARNING

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

About This Manual

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

Manual Configuration

This manual consists of six chapters and Appendix.

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

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

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

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

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

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

APPENDIX Provides the following additional information for reference:
• Exploded Diagram

Symbols Used in this Manual

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

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

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

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

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

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

Revision Status

Revision	Date of Issue	Description
A	August 7, 2006	First Release
B	December 1, 2006	[Chapter 4] • "4.3.1 Upper Housing (p38)" Note when replacing the Base Frame is added to the reassembly procedure. [Chapter 7] • "7.1 Exploded Diagram / Parts List (p85)" are updated.
C	May 1, 2007	[All chapters] • The model name; EPSON Stylus C90/C91/C92/D92 are added. [Chapter 1] • "1.2.3 Ink Cartridge (p14)" is updated. [Chapter 2] • " The Capping mechanism covers the printhead with the cap to prevent the nozzle from increasing viscosity when the printer is in stand-by state or when the printer is off. (p25)" is updated. [Chapter 4] • "4.5.6 Ink System removal (p51)" Caution during inserting the Ink Tube into the connector is added. • "4.5.8 EJ Frame Assy/EJ Roller (p54)" Reassembly procedure of the Grounding Spring, Frame is added. [Chapter 5] • "5.2.1 Head angular adjustment (p75)" Print samples made by the adjustment program for Stylus C90/C91/C92/D92 is added. [Chapter 6] • "6.1.3 Lubrication (p81)" Lubrication point for Stylus C90/C91/C92/D92 is added. [Chapter 7] • "7.1 Exploded Diagram / Parts List (p85)" Exploded Diagrams for Stylus C90/C91/C92/D92 are added. • "7.3 Circuit Diagrams (p96)" Circuit diagram of Stylus C90/C91/C92/D92; C683 Main is added.

Revision	Date of Issue	Description
D	May 16, 2008	[All chapters] The model name; Stylus T20/T20E/T23/T26/S20/T10/T11/Me 30 are added. [Chapter 1] • "1.1 Features (p10)" is updated. • "1.2.1 Paper Support (p12)" is updated. • "1.2.3 Ink Cartridge (p14)" is updated. • "1.3.1 USB Interface (p16)" is updated. [Chapter 2] • 2.3 Electrical Circuit Operating Principles is deleted. [Chapter 4] • "4.1.6 Procedural Differences between the Models (p35)" is updated. • "4.2 Disassembly Procedures (p37)" is updated. • "4.5.5 CR Unit/Timing Belt (p48)" Reassembly procedure of the Installing Head FFC is added. [Chapter 7] • Exploded Diagram / Parts List is changed to reference to SPI. • Circuit Diagrams is deleted.
E	May 7, 2009	[All chapters] The model name; Epson Stylus T21/T24/T27/S21 are added. [Chapter 1] • "1.1 Features (p10)" is updated. • " Print speed & printable width (p11)" is updated. • "1.2.1 Paper Support (p12)" is updated. • "1.2.2 Printable Area Size and Margins (p13)" is updated. • "1.2.3 Ink Cartridge (p14)" is updated. • "1.2.4 Black Ink Save Mode (p15)" is updated. • "1.3.1 USB Interface (p16)" is updated. • "1.4.1 Electrical Specifications (p17)" is updated. • "1.4.2 Acoustic Noise (p17)" is updated. • "1.4.3 Safety Approvals (p17)" is updated. • "1.4.5 Environmental Performance (p18)" is revised. • "1.4.6 Durability (p18)" is revised. [Chapter 2] • "2.3 Power-On Sequence (p26)" is added.

Contents

Chapter 5 ADJUSTMENT

Chapter 6 MAINTENANCE

Chapter 7 APPENDIX

CHAPTER

1

PRODUCT DESCRIPTION

1.1 Features

Main features of Epson Stylus C58/C59/ME 2 and Epson Stylus C79/D78/C90/ C91/C92/D92/T20/T20E/T23/T26/S20/T10/T11/Epson ME 30/T21/T24/T27/S21

- ☐ High quality color printing
  - ■ Maximum print resolution: 5760 (H) x 1440 (V) dpi
  - ■ 4-color printing (Yellow, Magenta, Cyan, and Black)
  - ■ Separate ink cartridges for each color
- ☐ Build-in ASF (Auto Sheet Feeder)
  - ■ Holds 80 cut sheets (24 lb, 90 g/m^2)
  - ■ Holds 20 special media (EPSON Premium Glossy Photo Paper, L (3R) size)
- ☐ USB 1.1 compatible
- ☐ Windows/Macintosh supported
- ☐ Borderless printing

The difference between the Epson Stylus C58/C59/ME 2, Epson Stylus C79/D78/ C90/C91/C92/D92/T20/T20E/T23/T26/S20/T10/T11/ME 30/T21/T24/T27/S21

The main difference is the ink type as shown in the table below.

Table 1-1. Difference between the Models

Model	Ink Type
Epson Stylus C58/C59/ME 2	Dye-based ink which has a good distinction of color
Epson Stylus C79/D78/C90/ C91/C92/D92/T20/T20E/T23/ T26/S20/T10/T11/ME 30/T21/ T24/T27/S21	Pigment-based ink that provides the water, light and ozone resistant

Dimension

- ■ With the output tray and paper support closed
  Width: 435 mm (17.1 inches)
  Depth: 219 mm (8.6 inches)
  Height: 165 mm (6.5 inches)
- ■ Maximum dimension
  Width: 435 mm (17.1 inches)
  Depth: 418 mm (16.5 inches)
  Height: 289 mm (11.4 inches)
- ■ Weight
  2.8 kg (6.2 lb) without ink cartridges

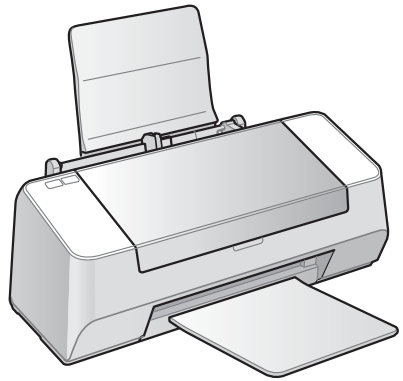


Figure 1-1. External View

1.2 Printer Specifications

Table 1-2. Printer Specifications

Item	Specification
Print method	On-demand ink jet
Nozzle configuration	Black: 90 nozzles Color: 87 nozzles (29 each cartridge: cyan, magenta, yellow)
Print direction	Bidirectional with logic seeking
Print resolution	Horizontal x Vertical (dpi) • 360 x 120 • 720 x 720 • 360 x 360 • 1440 x 720 • 360 x 720 • 5760 x 1440
Control code	• ESC/P2 expanded raster graphics code • EPSON Remote command
Internal font	Character code: ASCII 20H to 7FH Font: Bit map LQ font EPSON Courier
Input buffer size	32 Kbytes
Paper feed method	Friction feed with ASF (Auto Sheet Feeder)
Paper path	Sheet feeder, top entry
Paper feed rates (TBD)	• High quality mode, 10.16-mm (0.4") feed TBD mm/sec (TBD inch/sec) • High speed mode, continuous feed TBD mm/sec (TBD inch/sec)

PRINT SPEED & PRINTABLE WIDTH

Table 1-3. Character Mode

Character Pitch	Printable Columns	CR Speed
10 CPI (Pica)	80	419 mm/s (165 CPS*)

Note * : CPS: Characters per second

Table 1-4. Graphics Mode

Horizontal Resolution	Printable Area	Max. Dot Count	Dot Size		CR Speed
			Epson Stylus C58/ C59/ME 2	Epson Stylus C79/ D78/C90/C91/C92/ D92/T20/T20E/ T23/T26/S20/T10/ T11/ME 30/T21/ T24/T27/S21	
360 dpi	209.8 mm (8.26")	2976	Eco	Eco	723.9 mm/s (360 CP)S
			VSD1	VSD1	419.1 mm/x (165 CPS)
			---	VSD2' (Color)	609.6 mm/s (240 CPS)
720 dpi	209.8 mm (8.26")	5952	VSD2	VSD2	
			---	VSD2' (Black)	
			VSD3	---	
			---	VSD3' (Color)	
1440 dpi	209.8 mm (8.26")	11904	VSD3	VSD3	
			---	VSD3' (Black)	
5760 dpi	209.8 mm (8.26")	23808	VSD3	VSD3	

1.2.1 Paper Support

Following table shows the paper type and sizes supported by the printer. Supported paper type and sizes vary depending on the markets.

Table 1-5. Paper Support

Item		Paper Size	Thickness (mm)	Weight
Plain paper Recycled paper		Letter Legal Half Letter A4 A5 A6 B5 User defined	0.08-0.11	64-90 g/m^2 (17-24 lb.)
Envelope (Bond paper, Air mail, PPC)		No.10 DL C6	N/A	45-75g/m^2 (12-20 lb.)
EPSON special paper	Premium Ink Jet Plain Paper	A4	0.11	80 g/m^2 (21 lb.)
	Premium Bright White Paper	A4*7 Letter*5	0.11	90 g/m^2 (24 lb.)
	Bright White Ink Jet Paper	A4	0.13	92.5 g/m^2 (25 lb.)
	Premium Photo Paper Glossy (EAI) Premium Glossy Photo Paper (Other)	Letter*3 A4*1 8" x 10"*3 5" x 7"*1 4" x 6"*1 16:9 wide*1 L (3R)*1*4	0.27	255 g/m^2 (68 lb.)
	Premium Photo Paper Semi-Gloss (EAI) Premium Semigloss Photo Paper (Other)	Letter*3 A4*1 4" x 6"*1	0.27	250 g/m^2 (66 lb.)
	Premium Presentation Paper Matte (EAI) Matte Paper-Heavyweight (Other)	Letter*3 A4*1 8" x 10"*2*6	0.23	167 g/m^2 (45 lb.)
EPSON special paper	Presentation Paper Matte (EAI) Photo Quality Inkjet Paper (Other)	A4*2	0.12	102 g/m^2 (27 lb.)
	Photo Paper Glossy (EAI) Glossy Photo Paper (EUR, Asia)	Letter*3 A4*1 5" x 7"*1 4" x 6"*1	0.25	258 g/m^2 (68 lb.)
	Ultra Premium Photo Paper Glossy (EAI) Ultra Glossy Photo Paper (Other)	Letter*3 A4*3 8" x 10"*3 5" x 7"*1 4" x 6"*1 L (3R)*1*4	0.30	290 g/m^2 (77 lb.)
	Photo Paper (Others)	A4*6 5" x 7"*6 4" x 6"*6	0.24	190 g/m^2 (51 lb.)

Note 1: For paper width and length, see Table 1-6, "Paper Width and Length," on page 13.

Note *1: Borderless printing supported.

*2: Supported only by Epson Stylus T20/T20E/T23/T26/S20/T10/T11/ME30.

*3: Borderless printing is supported only by Epson Stylus T20/T20E/T23/T26/S20/T10/T11/ME30/T21/T24/T27/S21.

*4: Not supported by Epson Stylus T20/T20E/T23/T26/S20/T10/T11/ME30/T21/T24/T27/S21.

*5: Supported only by Epson Stylus T21/T24/T27/S21.

*6: Borderless printing supported only for Epson Stylus T21/T24/T27/S21.

*7: Supported only by Epson Stylus T20/T20E/T23/T26/S20/T10/T11/ME30.

- **Make sure that the paper is not wrinkled, fluffed, torn, or folded.**
- **The curve of paper must be 5 mm or below.**
- **When printing onto an envelope, be sure that the flap is on the long edge and is folded.**
- **Do not use the adhesive envelopes.**
- **Do not use double envelopes and cellophane window envelopes.**

PAPER WIDTH AND LENGTH

Table 1-6. Paper Width and Length

	Paper Size	Width	Length
Cut sheet	A4	210 mm (8.3")	297 mm (11.7")
	A5	148 mm (5.8")	210 mm (8.3")
	A6	148 mm (5.8")	210 mm (8.3")
	B5	182 mm (7.2")	257 mm (10.1")
	Letter	215.9 mm (8.5")	279.4 mm (11")
	Legal	215.9 mm (8.5")	355.6 mm (14")
	Half Letter	139.7 mm (5.5")	215.9 mm (8.5")
	8" x 10"	203.2 mm	254 mm
	5" x 7"	127 mm	178 mm
	4" x 7.11"	101.6 mm	180.6 mm
	4" x 6"	101.6 mm	152.4 mm
	L (3R)	89 mm (3.5")	127 mm (5")
	User defined	50.8-329 mm (2-12.6")	127-1117.6 mm (5-44")
Envelope	No.10	104.8 mm (4.125")	241.3 mm (9.5")
	DL	110 mm	220 mm
	C6	114 mm	162 mm

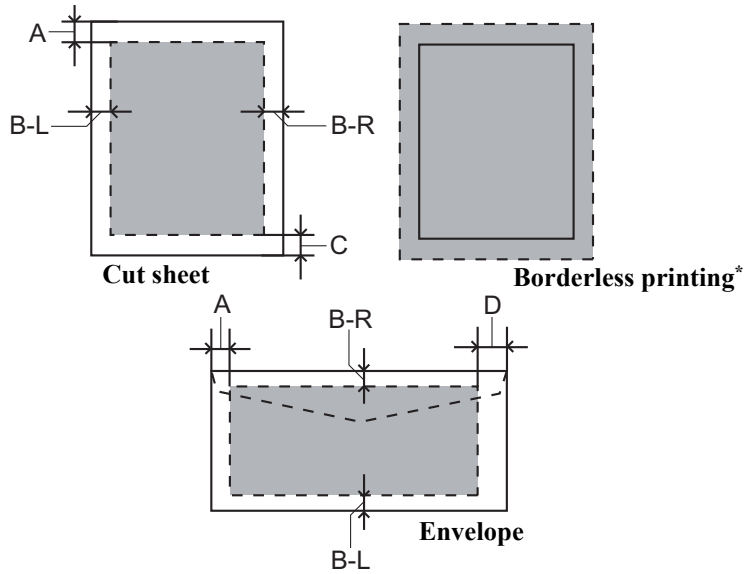
1.2.2 Printable Area Size and Margins

Refer to the table and figure below for the printable area size and margins.

Table 1-7. Guaranteed Print Area

		A	B-L	B-R	C	D
C58/C59/ME 2/C79/D78/C90/C91/C92/D92/T20/T20E/T23/T26/S20/T10/T11/ME 30	Any size/ Envelope	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	12.5 mm (4.92")	20 mm (7.87")
T21/T24/T27/S21	Any size	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	-
	Envelope	3 mm (0.12")	5 mm (0.2")	5 mm (0.2")	-	20 mm (7.87")

Note : This is minimum margin.



Note * : Borderless printing is carried out by enlarging the image size wider than the paper size as shown in the figure. The image width protruding from the paper size is shown below.

Table 1-8. Borderless Printing

Paper Size	Top	Bottom	Left/Right
A4, Letter, 8" x 10", 5" x 7", 4" x 7.11"	2.96 mm (0.12")	4.02 mm (0.16")	2.54 mm (0.1")
4" x 6", L (3R)	2.82 mm (0.11")	3.60 mm (0.14")	2.54 mm (0.1")

1.2.3 Ink Cartridge

☐ Type/color: EPSON-brand special ink cartridges

Table 1-9. Epson Stylus C58/C59/ME 2

Color	ECC	Pacific, Asia (Other)
Black	T0761	T0751
Cyan	T0762	T0752
Magenta	T0763	T0753
Yellow	T0764	T0754

Table 1-10. Epson Stylus C79/D78

Color	Latin, Asia, Pacific	Europe
Black	T0731	T0711
Cyan	T0732	T0712
Magenta	T0733	T0713
Yellow	T0734	T0714

Table 1-11. Epson Stylus C90/C91/C92/D92

Color	Latin	Asia	Europe	CISMEA
Black	T0731 T0901	T0731 T0911*	T0711	T0921
Cyan	T0732	T0732 T0912*	T0712	T0922
Magenta	T0733	T0733 T0913*	T0713	T0923
Yellow	T0734	T0734 T0914*	T0714	T0924

Note *: Except EHK.

Table 1-12. Epson Stylus T20/T20E/T23/T26/S20/T21/T24/T27/S21

Color	Latin 1	Latin 2	CISMEA	Euro	Asia
Black	T0731N T0901N	T1161 T1171	T0921N	T0711 T0891	T0731N T0911N
Cyan	T0732N		T0922N	T0712 T0892	T0732N T0912N
Magenta	T0733N		T0923N	T0713 T0893	T0733N T0913N
Yellow	T0734N		T0924N	T0714 T0894	T0734N T0914N

Table 1-13. Epson Stylus T10/T11

Color	ESP/EKL
Black	T0731N, T0911N
Cyan	T0732N, T0912N
Magenta	T0733N, T0913N
Yellow	T0734N, T0914N

Table 1-14. Epson ME 30

Color	ECC
Black	T1091
Cyan	T1092
Magenta	T1093
Yellow	T1094

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

☐ Storage Temperature

Table 1-15. Storage Temperature

Situation	Storage Temperature	Limit
When stored in individual boxes	-30 °C to 40 °C (-22°F to 104°F)	1 month max. at 40 °C (104°F)
When installed in main unit	-20 °C to 40 °C (-4°F to 104°F)	

☐ Dimension

- Epson Stylus C58/C59/ME 2

  12.7 mm (W) x 43 mm (D) x 47 mm (H)

- Epson Stylus C79/D78/C90/C91/C92/D92/T20/T20E/T23/T26/S20/T10/T11/ME30/T21/T24/T27/S21

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

CAUTION

- **The ink cartridge cannot be refilled.**
- **The ink cartridge that passes the expiration date should not be used.**
- **The ink in the ink cartridge freezes at -16 °C (3.2 °F). Ink thaws and is usable after approximately three hours at 25 °C (77°F).**

1.2.4 Black Ink Save Mode

Black ink save mode allows you to print images with color ink only when the remaining amount of black ink is low. This mode can be selected when the remaining amount of color ink is sufficient since black areas of the images are printed with a mixture of other colors.

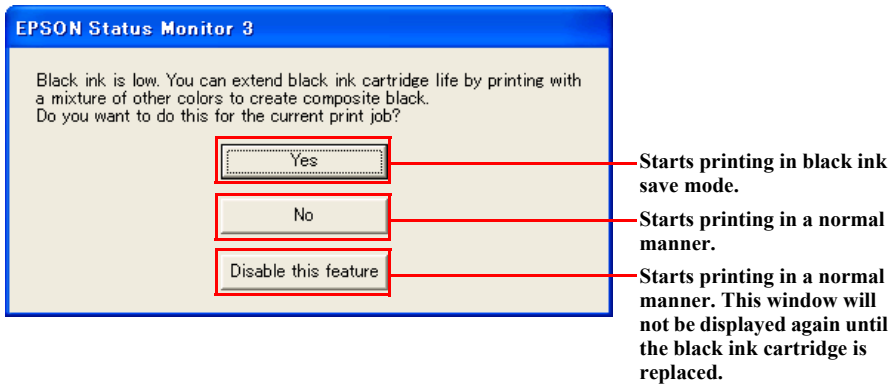
☐ Supported OS: Windows 98, ME, 2000, XP, XP x64, Vista
Macintosh OS X 10.3.9, 10.4.x, 10.5.x

NOTE: Windows Vista and Macintosh OS are for Epson Stylus T21/T24/T27/S21 only.

☐ Printing mode: Plain Paper & Text Mode (360 dpi)

☐ Operating procedure

1. User carries out printing from an application.
2. The printer driver checks both the printing mode and the amount of remaining ink, and displays the specific window if the conditions described below are all met.
   - Selected printing mode supports black ink save mode.
   - Remaining amount of black ink is less than 5%, or the status of the black ink is "ink low".
   - Remaining amount of all the color ink is more than 10%, or the status of all the color ink is NOT "ink low".



Flowchart 1-1. Black Ink Save Mode

1.3 Interface

Epson Stylus C58/C59/ME 2 and Epson Stylus C79/D78/C90/C91/C92/D92/T20/T20E/T23/T26/S20/T10/T11/Epson ME 30/T21/T24/T27/S21 provide an USB interface.

1.3.1 USB Interface

- Standard: Based on Universal Serial Bus Specifications Revision 1.1, Universal Serial Bus Device Class Definition for Printing Devices Version 1.1
- Descriptors: Based on Design Specification for USB Device Requests and USB Descriptors for EPSON USB Printer
- Product ID: 0005h
- Transfer rate: 12 Mbps (Full Speed Device)
- Cable length: Under 2 meters (6.6 feet)
- Device ID

Table 1-16. 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; MDL:***Model Name***; CLS:PRINTER; DES:EPSON[SP] ***Model Name***; [FF]	@EJL[SP]ID[CR][LF] MFG:EPSON; CMD:ESCPL2,BDC; MDL:***Model Name***; CLS:PRINTER; DES:EPSON[SP] ***Model Name*** [FF]

NOTE: "Model Name" represents each model name. (TBD)

1.4 General Specifications

1.4.1 Electrical Specifications

☐ Primary power input

Table 1-17. Primary power input

		100-120 V model	220-240 V model
Rated power supply voltage (ACV)		100 to 120	220 to 240
Input voltage range (ACV)		90 to 132	198 to 264
Rated current (A)	C58/C59/ME 2/C79/ D78/C90/C91/C92/D92/ T20/T20E/T23/T26/S20/ T10/T11/ME 30	0.4 (max. 0.7)	0.2 (max. 0.4)
	T21/T24/T27/S21	0.4 (max. 0.8)	
Rated frequency (Hz)		50 to 60	
Input frequency range (Hz)		49.5 to 60.5	
Power consumption (W)		11 (ISO10561 Letter Pattern)	
		2.5 (Sleep mode)	3.0 (Sleep mode)
		0.2 (Power off mode)	0.4 (Power off mode)

Note 1: This product complies with the "Energy Star" standards.

2: If the printer is not operated for more than five minutes, the standby function reduces the current to the motor to conserve power.

☐ Dielectric strength

- AC1000 Vrms for 1 min. or AC1200 Vrms for 1 sec. (100-120V version)
- AC1500 Vrms for one min. (220-240V version)

1.4.2 Acoustic Noise

Table 1-18. Acoustic Noise

Model	Noise level*
Epson Stylus C58/C59/ME 2/C79/D78/C90/C91/C92/D92/ T20/T20E/T23/T26/S20/T10/T11/ME 30	Approx. 44 dB
Epson Stylus T21/T24/T27/S21	Approx. 47 dB

Note *: According to ISO7779

1.4.3 Safety Approvals

Table 1-19. Safety Approvals

	100-120 V version	220-240 V version
Safety standards	UL60950	EN 60950
	CSA C22.2 No.60950	GOST-R (IEC60950, CISPR22)*
	NOM-019-SCFI-1998*	K60950-1*
	CNS14336 (IEC60950)*	IEC60950-1*
EMI	FCC part15 subpart B class B	EN 55022(CISPR Pub.22) class B
	CSA C108.8 Class B	AS/NZS CISPR22 class B
	CNS13438 Class B*	KN22 Class B* KN61000-4-2/-3/-4/-5/-6/-11*

Note *: Only Epson Stylus T21/T24/T27/S21

1.4.4 CE Marking

☐ 220-240V version

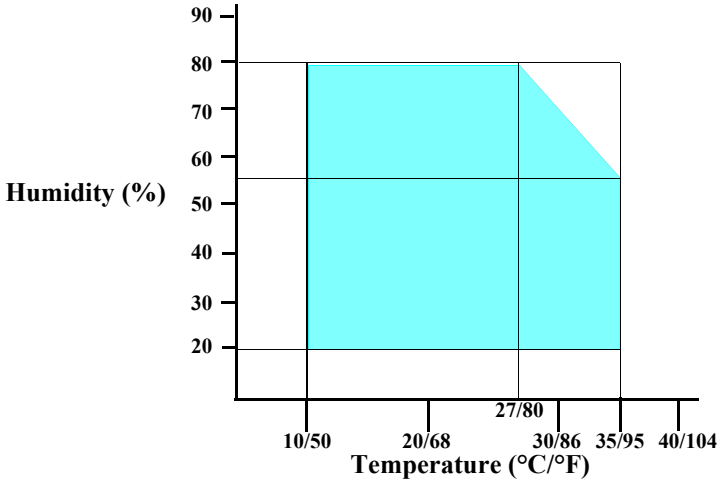
- Low voltage directive 73/23/EEC: EN60950
- EMC directive 89/336/EEC: EN5502 Class B, EN61000-3-2, EN61000-3-3, EN55024

1.4.5 Environmental Performance

Table 1-20. Environmental Performance

Condition	Temperature	Humidity*2	Impact	Vibration
Operating	10 to 35°C (50 to 95°F)*3*4	20 to 80%*4	1G, 1 x 10^{-3} seconds	0.15G
Not operating*1	-20 to 40°C (-4°F to 140°F)	5 to 85%	2G, 2 x 10^{-3} seconds	0.50G

Note *1: After opening package
*2: No condensation
*3: One month at 40°C (104°F)
*4: Under the following conditions:



1.4.6 Durability

- Total print life: 10,000 pages (A4, Letter) or three years (whichever comes first)
- Printhead life: Seven billion shots (per nozzle) or five years (whichever comes first)

1.5 Control Panel

1.5.1 Buttons

The control panel contains following two buttons (non-lock type), which are used to set and execute some operations. The functions of each button are described in the table below.

Table 1-21. Operations

Button	Function
Power	Turns on or off this unit.
Maintenance	☐ When Paper out occurred ■ Loads paper.
	☐ When Paper jam occurred ■ Ejects paper.
	☐ When Double feed occurred ■ Clears the error and resumes the printing.
	☐ When Ink end or No ink cartridge occurred ■ Moves the carriage to ink-check position.
	☐ When the carriage is in the ink-check position ■ Moves the carriage slightly to check the adjacent ink cartridge.
	☐ When the carriage is in "Ink low" or "Ink out" position ■ Moves the carriage to the replacement position.
	☐ During printing ■ Cancels the current print job.
	☐ When pressed for three seconds ■ Cleans the printhead.
Power + Maintenance*	☐ When the printer is turning on ■ Print a nozzle check pattern.
	☐ When the printer is on ■ Shuts down the printer.

Note *: Hold down [Maintenance] first and press [Power]. Keep the buttons pressed for over seven seconds.

1.5.2 Indicators

The control panel contains following two LED to indicate some status.

Table 1-22. Indicators

LED	Function
Power [Green]	Lights while the printer is turned on.
Maintenance [Red]	Lights: Paper out, Paper jam, Double feed, No ink cartridge, Ink end, Incorrect ink cartridge Flashes: Ink low

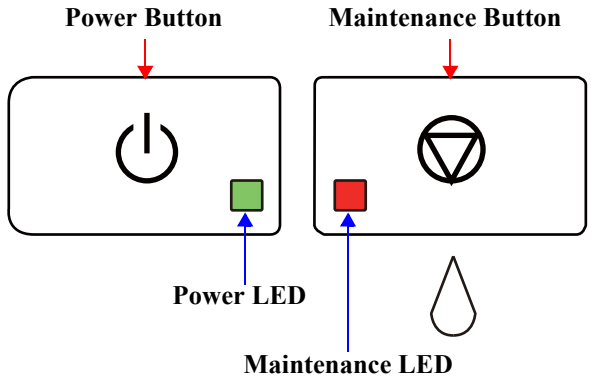


Figure 1-2. Control Panel

1.5.3 Errors and Panel Status

Followings are the errors that occur on the printer:

- ☐ Fatal error: Carriage control error.
- ☐ Maintenance request: Waste ink pads need to be replaced.
- ☐ Ink end: Ink has run out.
- ☐ No ink cartridge: Ink cartridge(s) is not installed.
- ☐ Incorrect ink cartridge: Non-genuine ink cartridge(s) is installed.
- ☐ Paper jam: Paper remains in the paper path.
- ☐ Paper out: Failed to load papers.
- ☐ Double feed: Two or more papers have been fed during duplex printing.
- ☐ Ink low (warning): Ink is running low.

Table 1-23. Errors and Panel Status

Printer Status	Indicators		Priority
	Power LED	Maintenance LED	
Turning the power off	Flashes fast	Off	1
Fatal error	Off	Flashes fast	2
Maintenance request	Flashes alternately		3
Paper jam	---	On	4
Paper out	---	On	4
Double feed	---	On	4
Ink cartridge replacement	Flashes	---	5
Ink sequence	Flashes	---	6
Incorrect ink cartridge	---	On	7
No ink cartridge/Ink end	---	On	7
Data processing	Flashes	---	8
Ink low	---	Flashes	9
Turning the power on	On	---	10

Note 1: "---": no change

2: When multiple errors occur at the same time, the one with higher priority will be indicated.

1.5.4 Printer Initialization

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

1. Power-on initialization
   This printer is initialized when turning the printer power on, or printer recognized the cold-reset command (remote RS command).
   When printer is initialized, the following actions are performed.
   (a) Initializes printer mechanism
   (b) Clears input data buffer
   (c) Clears print buffer
   (d) Sets default values

2. Operator initialization
   This printer is initialized when turning the printer power on again within 10 seconds from last power off, or printer recognized the -INIT signal (negative pulse) of parallel interface.
   When printer is initialized, the following actions are performed.
   (a) Cap the printer head
   (b) Eject a paper
   (c) Clears input data buffer
   (d) Clears print buffer
   (e) Sets default values

3. Software initialization
   The ESC@ command also initialize the printer.
   When printer is initialized, the following actions are performed.
   (a) Clears print buffer
   (b) Sets default values

4. Power-on initialization except I/F
   The printer recognized the IEEE 1284.4 "rs" command.
   When printer is initialized, the following action is performed.
   (a) Initializes printer mechanism
   (b) Clears input data buffer
   (c) Clears print buffer
   (d) Sets default values except I/F

CHAPTER

2

OPERATING PRINCIPLES

2.1 Overview

This section describes the operating principles of the printer mechanism and electrical circuit boards. The printer mechanism does not differ between the Epson Stylus C58/C59/ME2 and Epson Stylus C79/D78/C90/C91/C92/D92/T20/T20E/T23/T26/S20/T10/T11/Me 30/T21/T24/T27/S21.

2.2 Printer Mechanism

Printer mechanism of Epson Stylus C58/C59/ME 2 and Epson Stylus C79/D78/C90/C91/C92/D92/T20/T20E/T23/T26/S20/T10/T11/ME 30/T21/T24/T27/S21 consists of printhead, carriage mechanism, paper loading/feeding mechanism, and ink system.
As in the case of conventional models, Epson Stylus C58/C59/ME 2 and Epson Stylus C79/D78/C90/C91/C92/D92/T20/T20E/T23/T26/S20/T10/T11/ME 30/T21/T24/T27/S21 has two motors; one is a stepping motor for paper loading/feeding mechanism, and the other is a DC motor for carriage mechanism.
Papers are fed from the backside and ejected from the front side of the printer.
Paper feeding mechanism feeds papers using the LD roller and the retard roller.

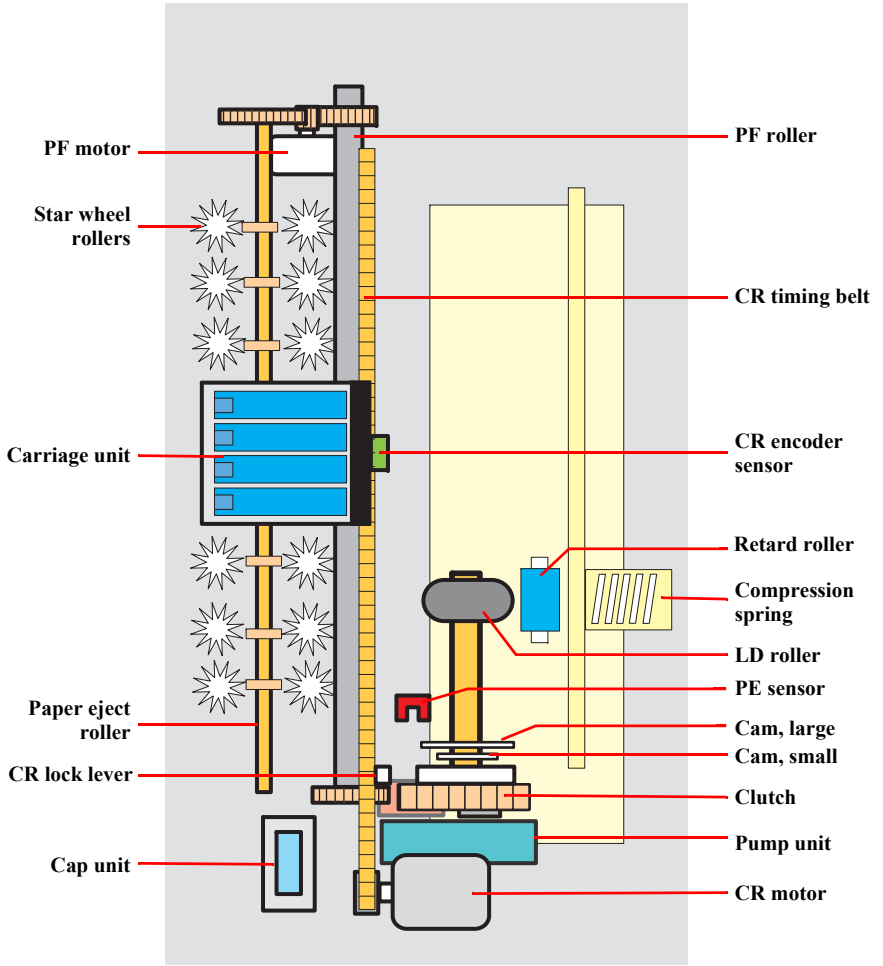


Figure 2-1. Printer Mechanism Outline

2.2.1 Printhead Specifications

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

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

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

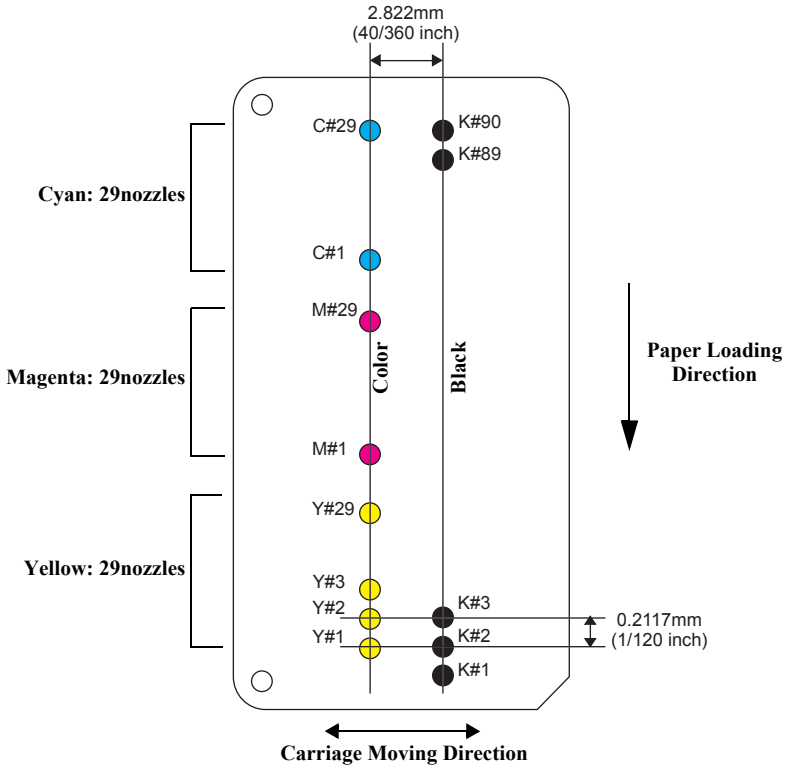


Figure 2-2. Nozzle Rear View

2.2.2 Carriage Mechanism

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

2.2.2.1 CR Motor Specifications

Table 2-1. CR Motor Specifications

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

2.2.3 Paper Feeding Mechanism

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

CR lock lever and clutch mechanism play an important role in paper loading mechanism. Refer to 2.2.3.2 Drive Process (p24) for details.

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

Table 2-2. PF Motor Specification

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

2.2.3.2 Drive Process

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

2.2.4 Ink System Mechanism

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

2.2.4.1 Pump Unit Mechanism

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

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

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

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

2.2.4.2 Capping Mechanism

The Capping mechanism covers the printhead with the cap to prevent the nozzle from increasing viscosity when the printer is in stand-by state or when the printer is off.

2.3 Power-On Sequence

This section describes the power-on sequences.

☐ Condition: Normal power-on sequence

- Completing ink charge.
- No paper on the paper path.
- The Printhead is capped with the Cap of the Ink System.
- The Carriage is locked by the CR Lock.

Table 2-4. Normal power-on sequence

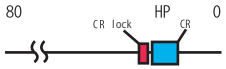
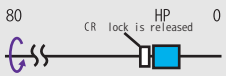
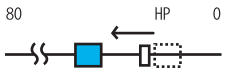
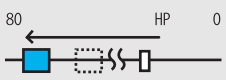
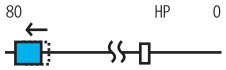
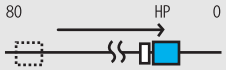
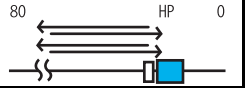
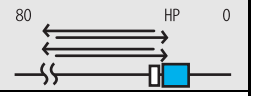
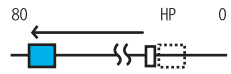
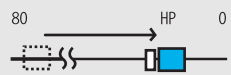
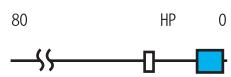
Operation*1	Carriage/PF roller movement and position*2
1. Checking waste ink overflow	
2. Seeking the home position 2-1.The carriage moves to the 80-digit side slowly and confirms it touches the CR lock.	
2-2.The carriage moves to the 0-digit side slowly to leave from the CR lock.	
2-3.Checks if paper does not exist with the PE sensor and the PF Motor rotates clockwise for two seconds to release the CR lock.	
2-4.The carriage moves to the 80-digit side slowly and confirms that the CR lock is released.	
2-5.The carriage quickly moves to the 80-digit side by the Left Frame.	
2-6.After the carriage continuously moves to the 80-digit side slowly and confirms it touches the Left Frame, sets the distance from the home position to the Left Frame as the theoretical value.	
2-7.The carriage quickly moves to the 0-digit side and slows down as it gets to its home position, and stops there.	
3. Low temperature operation sequence*3 3-1.The carriage moves back and forth between its home position and the 80-digit side for two times.	

Table 2-4. Normal power-on sequence

Operation*1	Carriage/PF roller movement and position*2
4. CR measurement 4-1.The carriage moves back and forth between its home position and the 80-digit side for two times.	
5. Detecting ink cartridge and initializing ink system*4 5-1.The carriage moves to the 80-digit side for IES detection.	
5-2.The carriage returns to its home position.	
5-3.The carriage slowly moves to the CR lock set position.	
5-4.The PF motor rotates counterclockwise and sets the CR lock.	
5-5.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 conditions of the CR lock are as follows.
Red: CR lock is set
White: CR lock is released

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

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

CHAPTER

3

TROUBLESHOOTING

3.1 Overview

This chapter describes how to solve problems.

- **Be careful to avoid electric shocks when checking the electrical circuit boards (C664 MAIN, PSE and B circuit boards) while the power is turned on.**
- **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.**

- **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 (p31) 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 (p31), be sure to make these adjustments after repairing the problem location.**

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 electrical outlet.)
- ☐ The power cable must be free from damage, short circuit, or breakage, and must not be miswired.
- ☐ 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 present.
- ☐ The printer should not be located in a place where it can be exposed to direct sunlight.
- ☐ The printer must be located in a well-ventilated place.
- ☐ The printer must be placed on a strong and steady level table (without an inclination larger than five degrees).
- ☐ Be sure to use papers that conform to the specifications.
- ☐ There should be no errors 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 rollers.

3.2 Troubleshooting With LED Error Indications

LED error display, cause, and remedy are explained here.

Table 3-1. Troubleshooting With LED Error Indications

Error	LED status		Cause	Remedy
	Power	Maintenance		
Ink end/ No ink cartridge/ Incorrect ink cartridge	---	On	• Ink inside Bk, Y, M, C cartridges has run out. • Ink cartridge(s) is not installed. • Non-genuine ink cartridge(s) is installed.	• Check the ink cartridge(s) and reinstall it correctly. • Replace the ink cartridge(s) with a genuine one.
Paper Out	---	On	• Paper loading operation is executed when there is no paper. • Papers stopped before the PE Sensor or could not be fed. • Papers are fed without being placed against the right edge guide. • Connector of the PE sensor is disconnected.	1. If there is no paper on the paper tray, load papers. 2. If the paper has stopped halfway, remove the paper, check if the paper is not bent, fan the paper, and load it against the edge guide. 3. Press the [Maintenance] button to release the error.
Double feed error	---	On	• When performing duplex printing, blank paper is ejected. • The printer detected that the paper is too long upon ejection.	1. Remove the blank paper, or check the paper size. 2. Press the [Maintenance] button to eject the paper and release the error.
Paper jam	---	On	Even though paper feeding operation is carried out for predetermined times, leading edge or back-end of the paper could not be detected.	1. Press the [Maintenance] button on the panel. 2. If paper jam occurred again after pressing the button, open the printer cover and remove all the papers inside the printer *and papers set on the hopper*. 3. Making sure there is no paper inside the printer, load paper on the hopper and press [Maintenance].
Maintenance request (Waste ink overflow)	Flashes alternately		As a result of cleaning and flushing, total emission of ink has exceeded the specific level.	Replace the waste ink pad, and reset the waste ink counter using the adjustment program. Refer to Chapter 5 "ADJUSTMENT" *(p.69)* for details.
Fatal error	Off	Flashes fast	• Home position of the carriage could not be detected. • Abnormal external pressure is applied to the printer when the power is on. • Carriage movement is interfered during printing.	1. Turn the power off, wait for a few seconds, and turn the power back on again. 2. If the fatal error still appears, turn the power off, remove the papers on the hopper, and check the following: • Open the printer cover, check the ink cartridges, and reinstall them correctly. • Check is there is no foreign material or papers inside the printer. If there is any, remove them. 3. Turn the printer power on.

Note : "---": no change.

3.3 Troubleshooting for Motors and Sensors

☐ Motor

Table 3-2. Motor Resistance and Check Points

Motor name	Type	Location	Check point	Resistance
CR motor	Motor with DC brush	CN5	Pin 1 & 2	28.8 Ω ± 10%
PF motor	4-phase, 200-pole HB stepping motor	CN6	Pin 1 & 3 Pin 2 & 4	4.3 Ω + 8%/-12%(20°C)

☐ Sensor

Table 3-3. Sensor Check

Sensor name	Detecting system	Location	Signal level	Sensor status
PE sensor	Transmission photo interrupter	CN7 pin 1 & 2	2.6 V or more	Paper loaded
			0.4 V or less	No paper

CHAPTER 1

4

DISASSEMBLY/ASSEMBLY

4.1 Overview

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

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

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

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

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

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

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

4.1.1 Precautions

See the precautions given under the handling "WARNING" and "CAUTION" in the following columns when disassembling or assembling Epson Stylus C58/C59/ME 2 and Epson Stylus C79/D78/C90/C91/C92/D92/T20/T20E/T23/T26/S20/T10/T11/ME 30/T21/T24/T27/S21.

- **Disconnect the power cable before disassembling or assembling the printer. If you need to work on the printer with power applied, strictly follow the instructions in this manual.**
- **Always wear gloves for disassembly and reassembly to avoid injury from sharp metal edges.**
- **To protect sensitive microprocessors and circuitry, use static discharge equipment, such as anti-static wrist straps, when accessing internal components.**

- **Make sure that there is enough work space for disassembly/ reassembly.**
- **Use only recommended tools for disassembling, assembling or adjusting the printer.**
- **Observe the specified torque when tightening screws.**
- **Apply lubricants as specified.**
  (See "6.1.3 Lubrication *(p. 81)*" for details.)
- **Since a prototype was used to illustrate these disassembly and reassembly procedures, the appearance of some parts may differ from those on actual product. The procedures themselves, however, are accurate for the retail model.**
- **When using compressed air products; such as air duster, for cleaning during repair and maintenance, the use of such products containing flammable gas is prohibited.**

4.1.2 Tools

Use only specified tools to avoid damaging the printer.

Table 4-1. Tools

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

4.1.3 Screws

Screws used on Epson Stylus C58/C59/ME 2 and Epson Stylus C79/D78/C90/C91/C92/D92/T20/T20E/T23/T26/S20/T10/T11/ME 30/T21/T24/T27/S21 are shown below.

Table 4-2. Screws

No.	Image	Name	Type
1		C.B.S. 3 x 6	C.B.S-TITE SCREW
2		C.B.S. 3 x 8	C.B.S-TITE SCREW
5		C.B.P. 2.5 x 8	C.B.P-TITE SCREW
6		C.B.P. 3 x 6	C.B.P-TITE SCREW

Table 4-2. Screws

No.	Image	Name	Type
7		C.B.P. 3 x 8	C.B.P-TITE SCREW
9		C.P. 3 x 4	C.P. SCREW

4.1.4 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 4-3. Work Completion Check

Classification	Item	Check Point	Status
Main Unit	Self-test	Is the operation normal?	Checked Not necessary
	ON-line Test	Is the printing successful	Checked Not necessary
	Printhead	Is ink discharged normally from all the nozzles?	Checked Not necessary
	Carriage Mechanism	Does it move smoothly?	Checked Not necessary
		Is there any abnormal noise during its operation?	Checked Not necessary
		Is the CR Motor at the correct temperature? (Not too hot to touch?)	Checked Not necessary
	Paper Feeding MEchanism	Is paper advanced smoothly? No paper jamming? No paper skew? No multiple feeding? No abnormal noise?	Checked Not necessary
		Is the PF Motor at correct temperature?	Checked Not necessary
		Is the paper path free of any obstructions?	Checked Not necessary
Adjustment	Specified Adjustment	Are all the adjustment done correctly?	Checked Not necessary
Lubrication	Specified Lubrication	Are all the lubrication made at the specified points?	Checked Not necessary
		Is the amount of lubrication correct?	Checked Not necessary
Function	ROM Version	Version:	Checked Not necessary
Packing	Ink Cartridge	Are the ink cartridges installed correctly?	Checked Not necessary
	Protective materials	Have all relevant protective materials been attached to the printer?	Checked Not necessary
Others	Attachments, Accessories	Have all the relevant items been included in the package?	Checked Not necessary

4.1.5 Caution After Repair

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

HOW TO SECURE THE CR UNIT BEFORE PACKING

(1) Move the CR Unit to the Home position.

(2) Lock the Carriage Lock toward the front of the printer with a flathead screwdriver. (See **4.5.2 Printhead *(p43)***)

(3) Move the CR Unit to the center slightly until it comes in contact with the Carriage Lock.

(4) Attach the center portion (①) of a strong tape to the Cartridge Cover located on the carriage.

(5) Attach the right portion (②) of the strong tape to the Upper Housing.

(6) Attach the left portion (③) of the strong tape to the left side of the carriage.

(7) Check to see that the CR Unit can move slightly between the Home position and the Carriage Lock position. Then bring the CR unit back into contact with the Carriage Lock, and pack the printer.

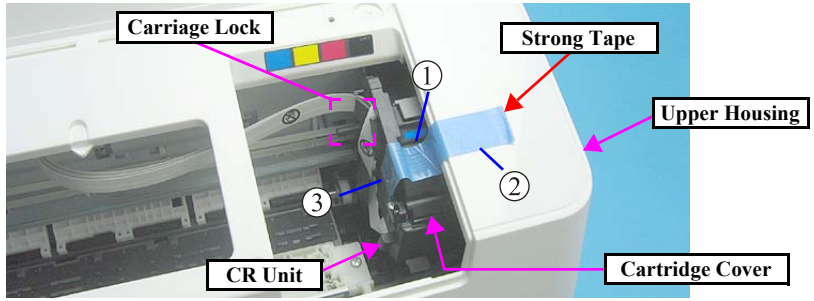


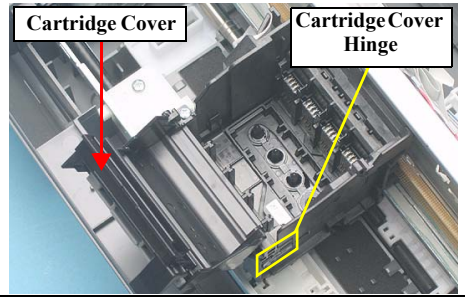
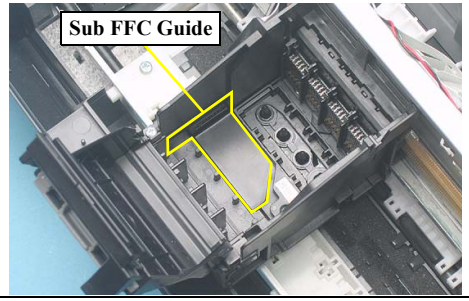
Figure 4-1. Securing CR Unit

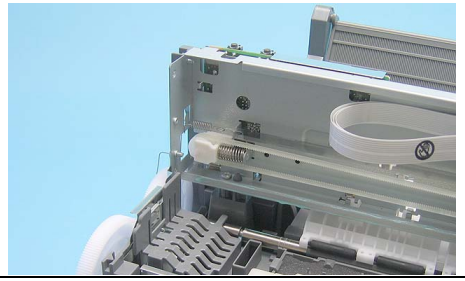
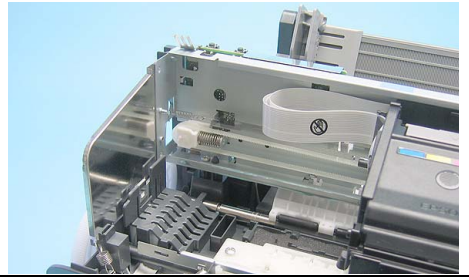
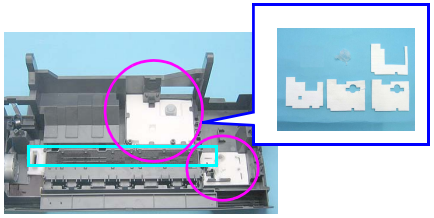
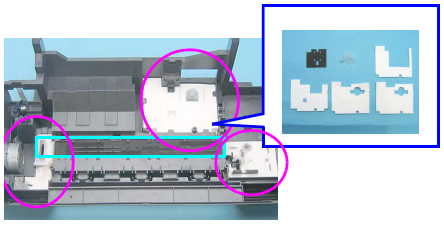
4.1.6 Procedural Differences between the Models

Some parts installed on Epson Stylus C58/C59/ME 2, Epson Stylus C79/D78/C90/C91/C92/D92 and Epson Stylus T20/T20E/T23/T26/S20/T10/T11/ME 30/T21/T24/T27/S21 differ from each other as described in the table below, and for that, there are some procedural differences between the models. See the respective pages for details.

CHECK POINT

Since Epson Stylus C79/D78/C90/C91/C92/D92 model was used to make this manual, the appearance of some parts may differ from those on other model. The procedures are the same for both models unless otherwise noted except for the one described in the table below.

Item	Description		Products*1			Reference Page
			A	B	C	
Printhead	You need to cut off the Cartridge Cover Hinge and remove the Cartridge Cover to take out the Printhead.		✓	--	--	see **4.6.1 Printhead** ***(p64)***
	You need to remove the Sub FFC Guide to take out the Printhead.		--	✓	✓	see **4.5.2 Printhead** ***(p43)***

Item	Description		Products*1			Reference Page
			A	B	C	
Shield Plates	Shield Plate L is small.		✓	--	✓	see **4.5.8 EJ Frame Assy/EJ Roller** ***(p54)***
	Shield Plate L is large.		--	✓	--	see **4.5.9 Main Frame** ***(p56)***
Waste Ink Pad	7 parts		✓	--	--	see **4.6.2 Waste Ink Pads** ***(p67)***
	9 parts		--	✓	✓	see **4.5.11 Waste Ink Pads** ***(p61)***

Note *1: "A": Epson Stylus C58/C59/ME 2
"B": Epson Stylus C79/D78/C90/C91/C92/D92
"C": Epson Stylus T20/T20E/T23/T26/S20/T10/T11/ME 30/T21/T24/T27/S21

4.2 Disassembly Procedures

This section explains the procedures for disassembling the product.
Unless otherwise stated, reassembly should be carried out in the reverse order of the disassembly procedure.
For detailed engagement relations among main components, refer to the exploded diagrams in the Appendix.

CHECK POINT

Procedures partially different from model to model are described in "Check Point" and "Reassembly".

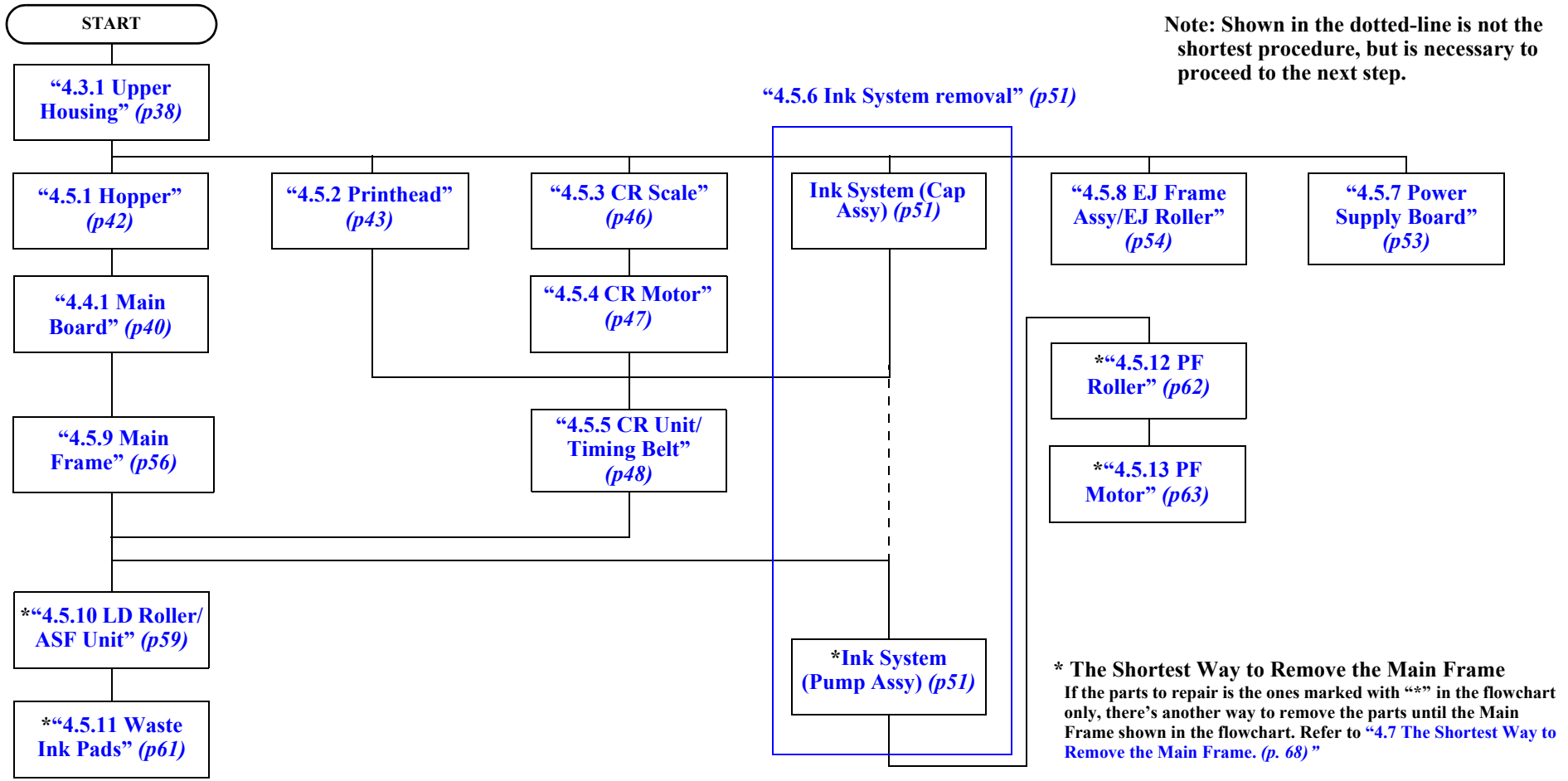


Figure 4-2. Disassembling Flowchart

4.3 Removing Housing

4.3.1 Upper Housing

☐ **Part/Unit that should be removed before removing Upper Housing**
None

☐ **Removal Procedure**

CAUTION

When releasing the tabs on the sides, be careful not to scratch the surface with a screwdriver. The coating is fragile and can be easily damaged.

1. Remove the screws (x2) on the back of the printer.
2. While releasing the tab (x1) on the back, release the tabs (x2) on both sides of the printer with a flathead screwdriver.

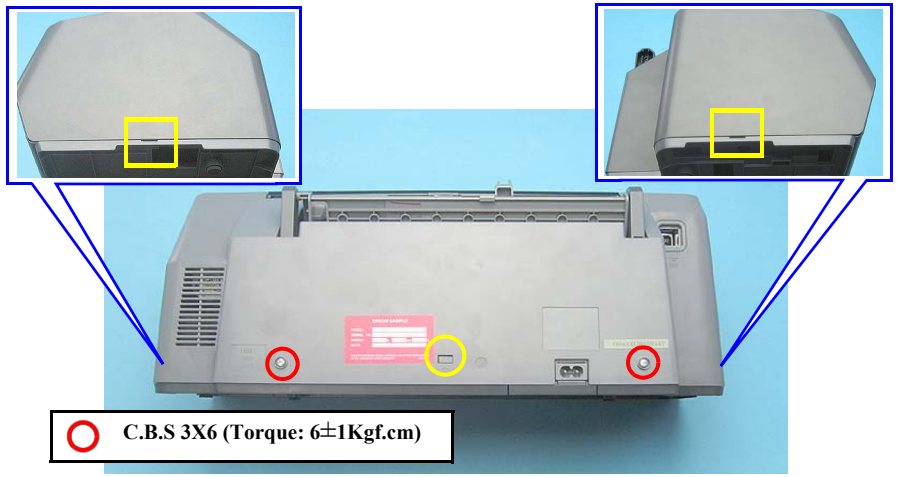


Figure 4-3. Removing Upper Housing (1)

3. Push the marked area (◎)to release the tabs (x2, □) on the front side of the printer (Arrows ①).
4. Push the dotted area (◎) from inside as shown in the figure ② to release the tab (x1, □) in the middle.

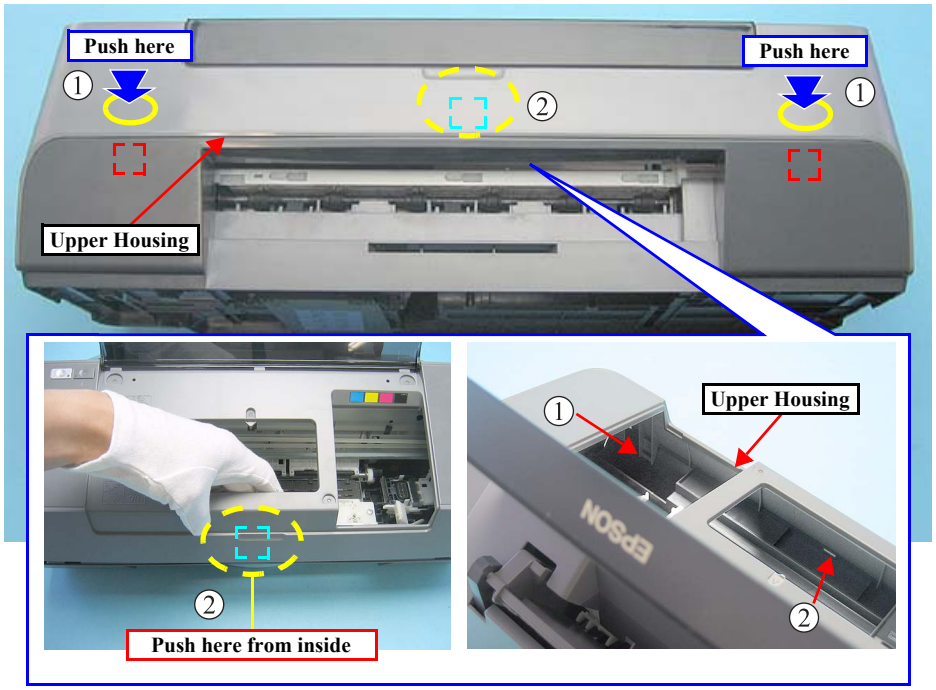


Figure 4-4. Removing Upper Housing (2)

5. Remove the Upper Housing taking care not to scratch the Hopper with the tabs.

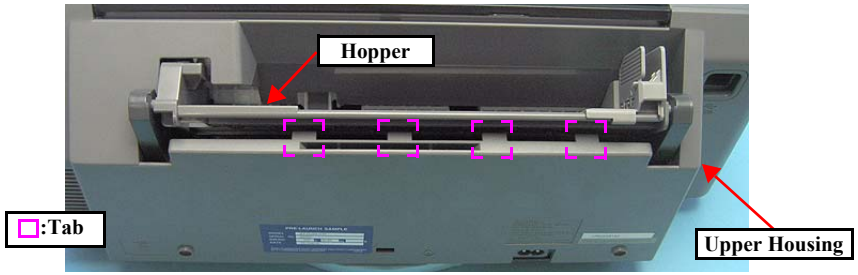


Figure 4-5. Removing Upper Housing (3)

REASSEMBLY

■ The Ink Position Label is not included in the Upper Housing. When installing the Upper Housing, order the label separately and attach the Ink Position Label to the place shown below.

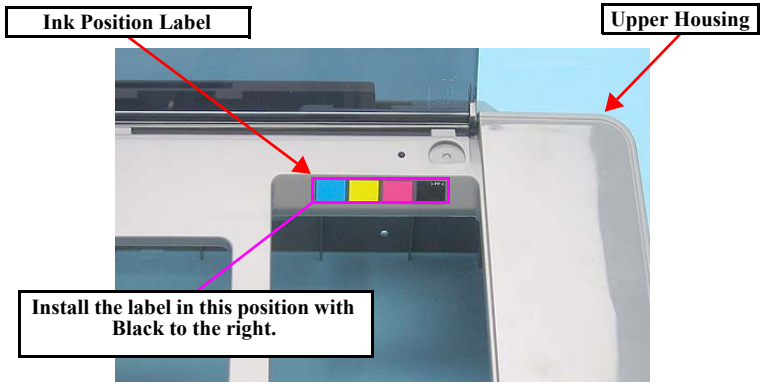


Figure 4-6. Installing Ink Position Label

■ In Epson Stylus C79/D78/C90/C91/C92/D92's case:

- When reassembling the Upper Housing, be sure to check there is no ink on the Shield Plate Upper. If there is some ink stein on it, be sure to wipe it out before reassembling.
- When installing the Upper Housing, be sure to check the GND Plate M/B comes in contact with the Shield Plate Upper.

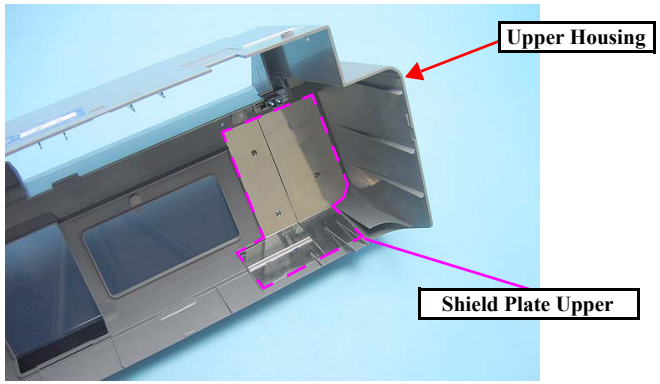


Figure 4-7. Shield Plate Upper

REASSEMBLY

If removing and reassembling the Shield Plate Front for some reasons, be sure to follow the steps below.

■ Removing Shield Plate Front

1. Peel off the acetate tape and remove the grounding spring 1,2.
2. Bend the four protrusions of each of the two holes outwardly with a flat-head precision driver or the like and remove the Shield Plate Front.

NOTE. After removing, be sure to straighten the protrusions of the holes to restore their original state.

■ Reassembling Shield Plate Front

1. Insert the two holes of the plate over the dowels on the base frame as far as they will go.
2. Install the grounding spring 1, 2 and attach a 20 x 18 mm piece of acetate tape positioning it as described/shown below.

- Leaving a space of 5mm from the edge (A), attach the right 6-7mm-width portion of the tape to the Shield Plate Front. Fold the tape along the edge (B), and wrap the acute edge of the plate. Be careful not to let the tape run over the frame edge.

NOTE 1. After reassembling, make sure the plate is kept in absolute contact with the frame.

NOTE 2. When replacing the Base Frame, remove the Shield Plate Front from the current Base Frame and reinstall it to a new one as the Base Frame supplied as an ASP does not include the part.

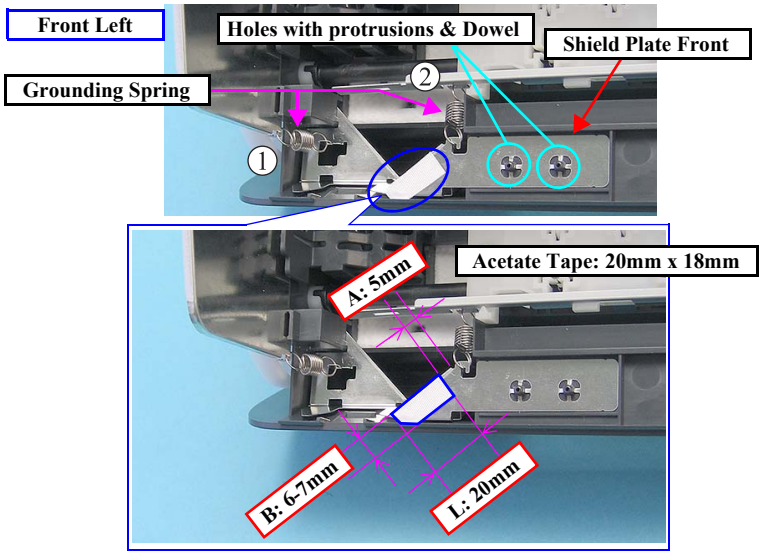


Figure 4-8. Removing and reassembling Shield Plate Front

4.4 Removing Board

4.4.1 Main Board

☐ **Part/Unit that should be removed before removing Main Board**

Upper Housing /Hopper

☐ **Removal Procedure**

1. Peel off the acetate tapes (x2) from the Main Frame.
2. Disconnect the following connector cables (x4) and FFCs (x2) from the connectors on the Main Board Assy.
   - CN1: Head FFC
   - CN3: Head FFC (Backside)
   - CN5: PE Detector Connector Cable
   - CN6: PF Motor Connector Cable
   - CN7: CR Motor Connector Cable
   - CN8: Power Supply Board Connector Cable
3. Remove the screws (x4), and remove the GND Plate M/B and the Main Board Assy.

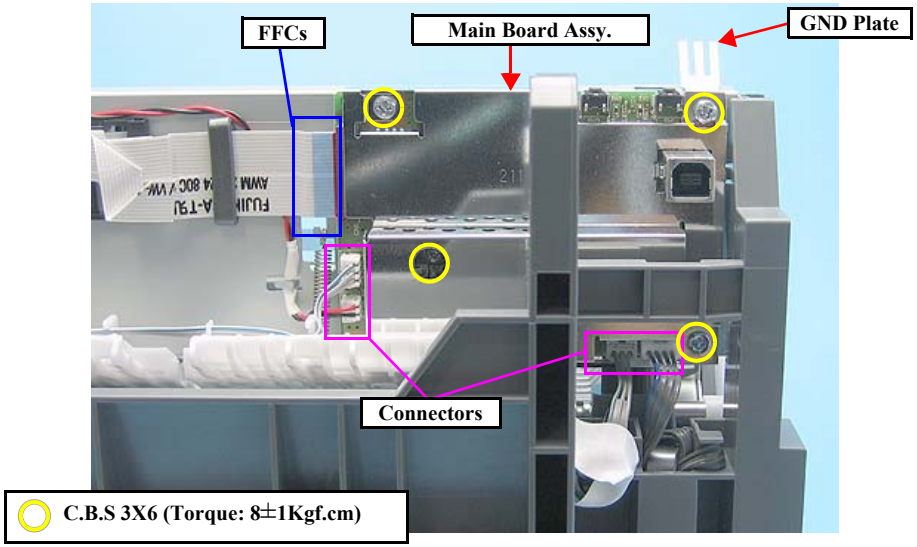


Figure 4-9. Removing Main Board (1)

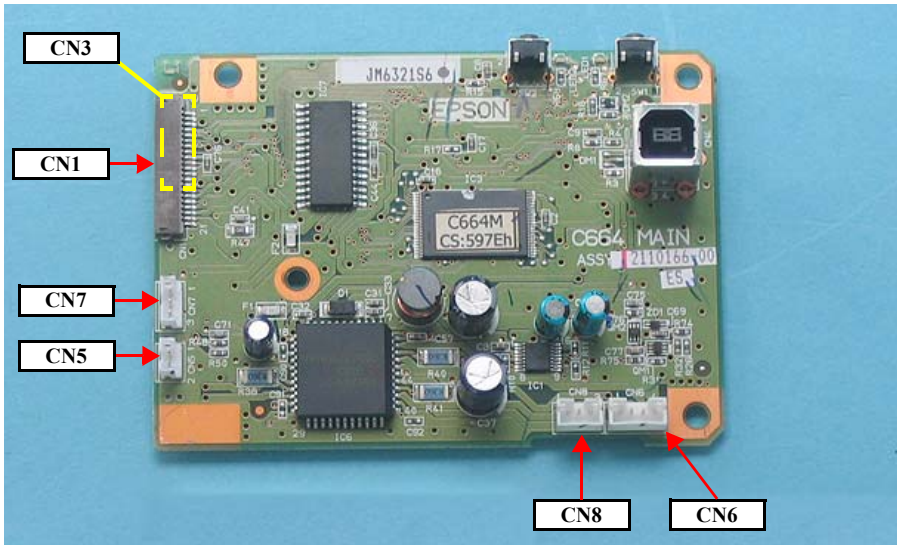


Figure 4-10. Connector Layout of Main Board

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

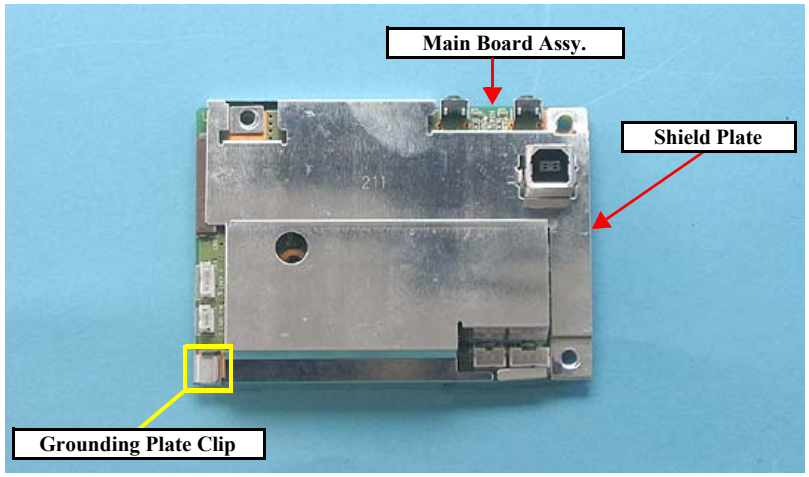


Figure 4-11. Removing Main Board (2)

ADJUSTMENT REQUIRED

After replacing the Main Board, perform the following adjustment. (Refer to Chapter 5 "ADJUSTMENT")

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

Note *: (EEPROM Copy NG)

4.5 Disassembling Printer Mechanism

4.5.1 Hopper

☐ **Part/Unit that should be removed before removing Hopper**

Upper Housing

☐ **Removal Procedure**

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

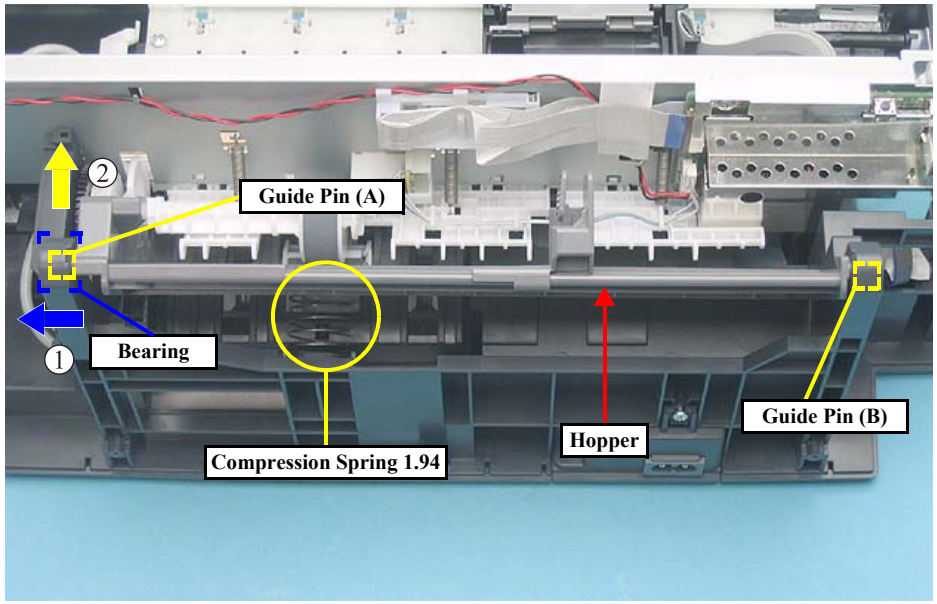


Figure 4-12. Removing Hopper and Compression Spring 1.94

REASSEMBLY

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

1. **Unlock the Carriage Lock. (See "4.5.2 Printhead" *(p43)*)**
2. **Move the CR Unit to the center of the printer.**
3. **Adjust the position of LD Roller turning the EJ Roller clockwise.**

- **LD Roller position: the flat part facing inward.**
- **Paper Back Lever position: inner most.**

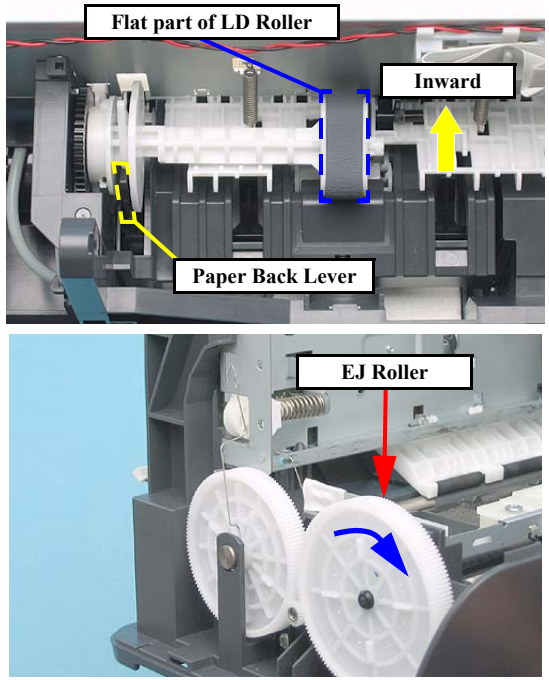


Figure 4-13. Installing Hopper and Compression Spring 1.94

ADJUSTMENT REQUIRED

After replacing the Hopper, perform the following adjustment. (Refer to Chapter 5 "ADJUSTMENT")

1. **"TOP Margin Adjustment"**
2. **"PF Band Adjustment"**

4.5.2 Printhead

CHECK POINT

The removal procedures differ depending on the model.
For Epson Stylus C58/C59/ME 2, see "4.6.1 Printhead" *(p64)*.

☐ **Part/Unit that should be removed before removing Printhead**

Upper Housing

☐ **Removal Procedure**

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

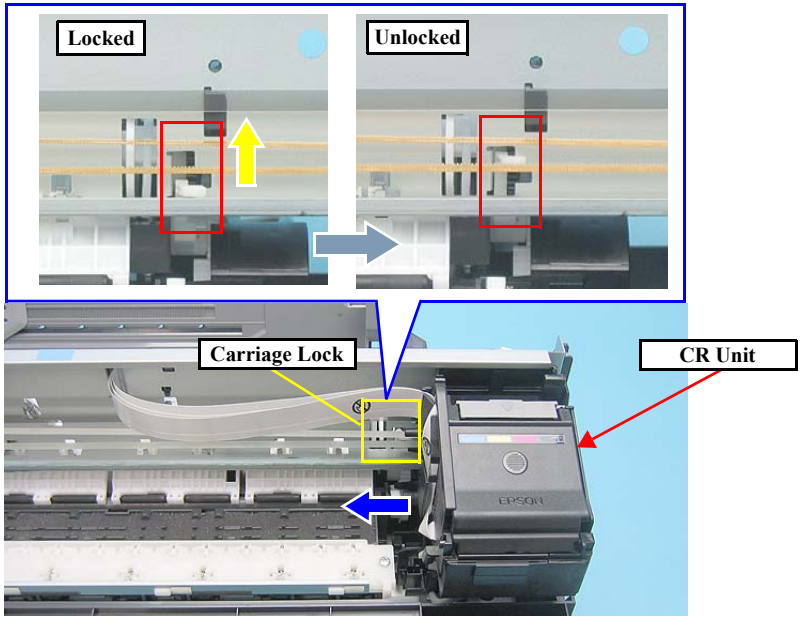


Figure 4-14. Unlocking Carriage Lock and Moving CR Unit to the Center

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

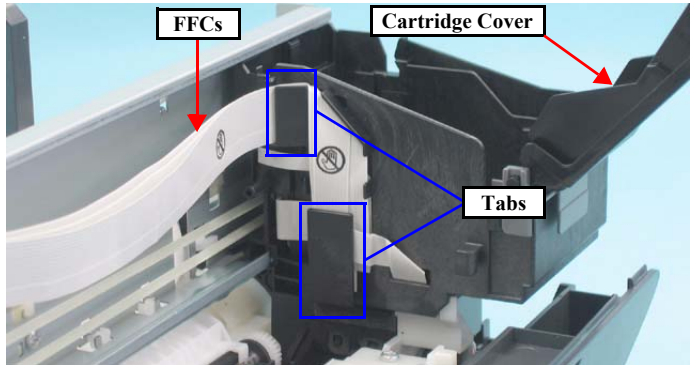


Figure 4-15. Releasing FFCs

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

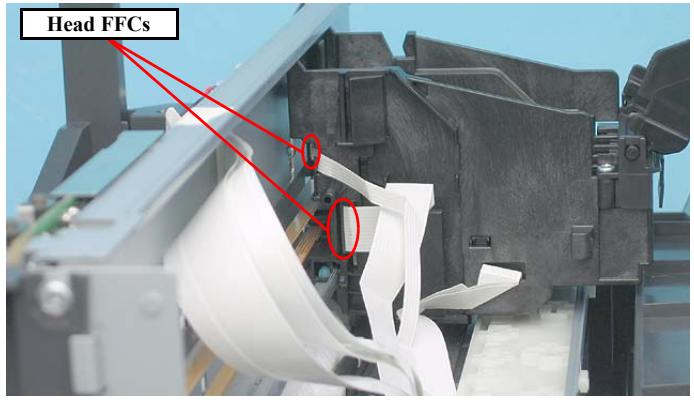


Figure 4-16. Disconnecting Head FFCs

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

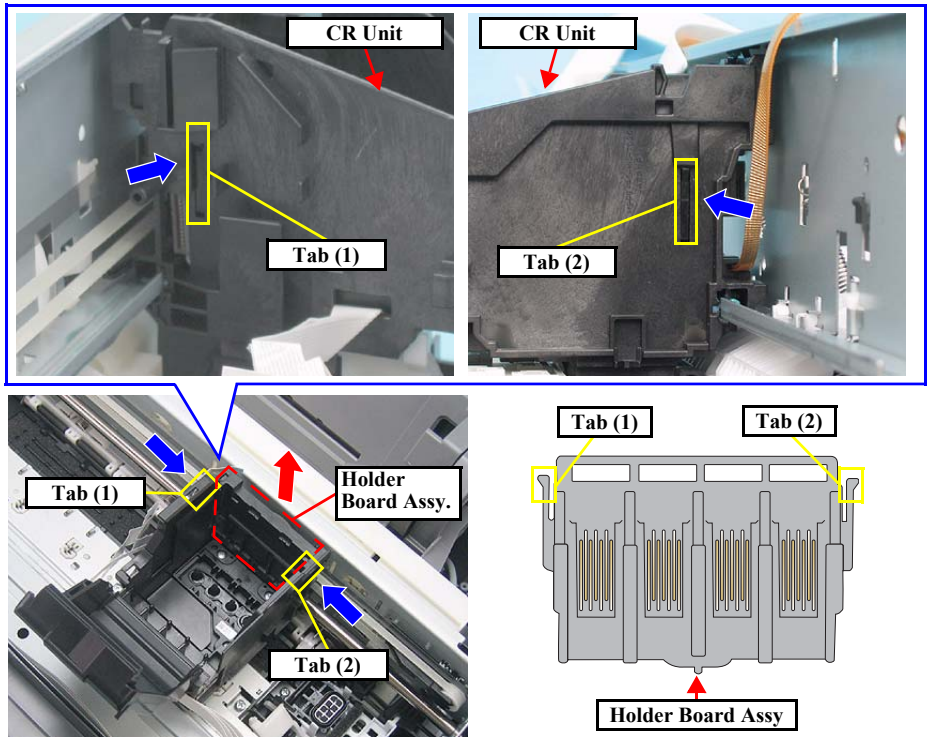


Figure 4-17. Removing Holder Board Assy

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

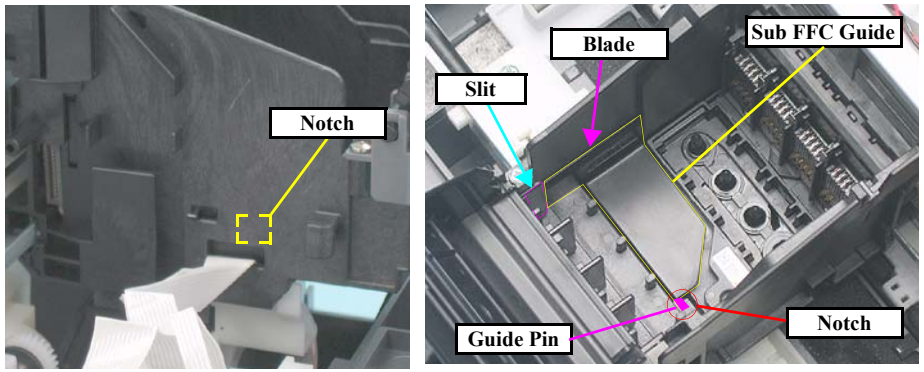


Figure 4-18. Removing Sub FFC Guide

CAUTION

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

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

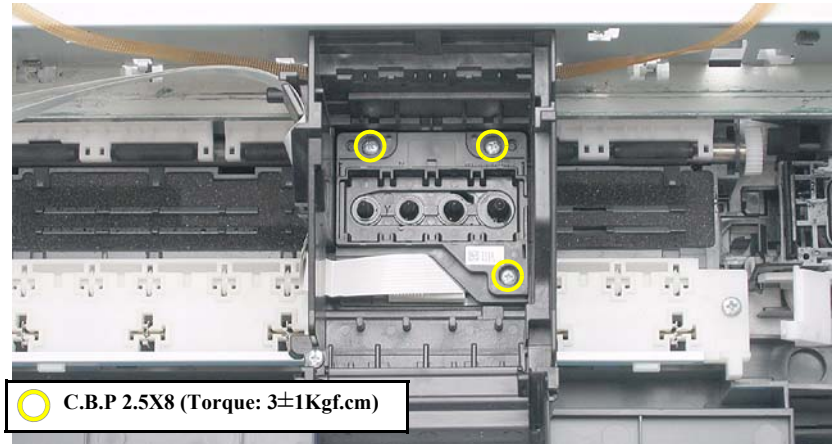


Figure 4-19. Removing Printhead (1)

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

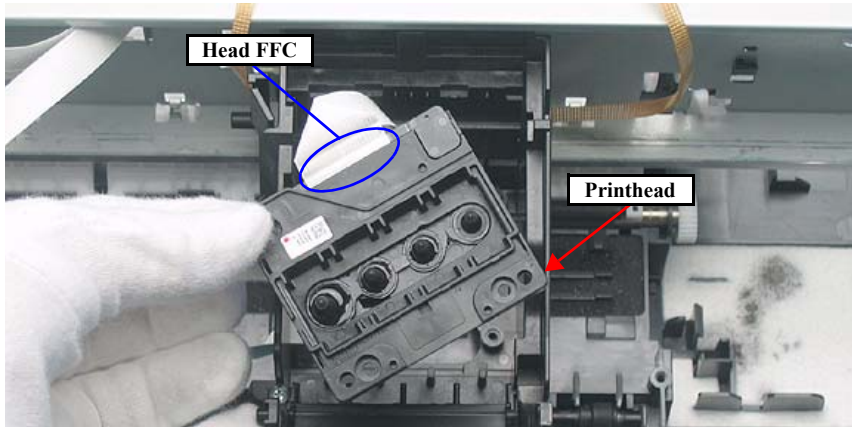


Figure 4-20. Removing Printhead (2)

REASSEMBLY

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

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

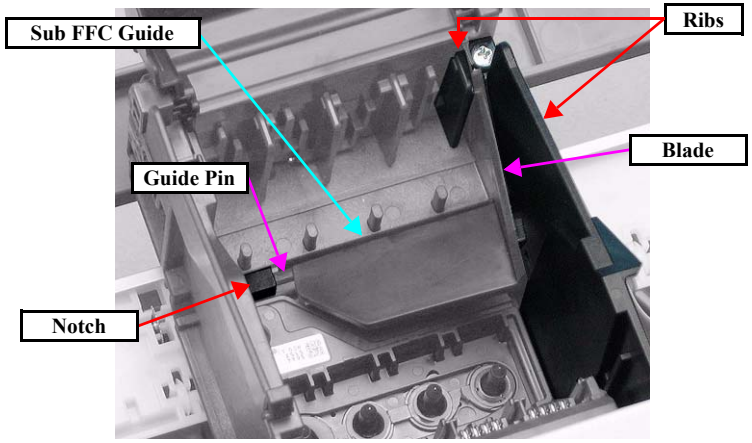


Figure 4-21. Installing Sub FFC Guide

REASSEMBLY

- **When installing the Holder Board Assy, make sure to check if the assy is properly installed in the right position. The assy is likely to be installed in the wrong position.**
- **There's no need to remove the Cartridge Cover, when replacing the Print Head of the Epson Stylus C79/D78. But if the replacement is required for some reasons, refer to "4.6.1 Printhead" *(p64)* for the replacement procedures.**
- **The Ink Position Label is not included in the Cartridge Cover. When replacing the Cartridge Cover, order the label separately and attach the Ink Position Label to the place shown below.**

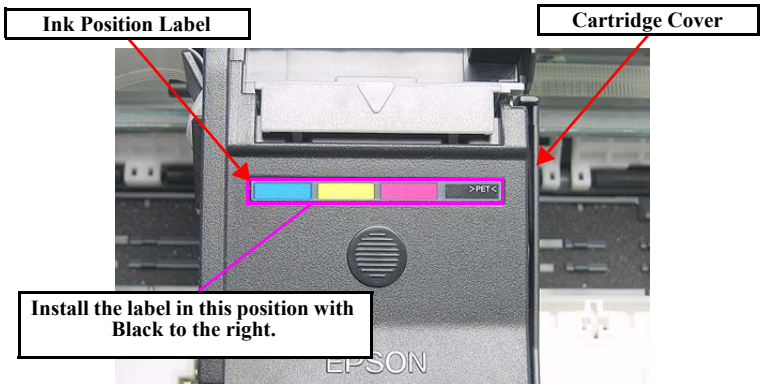


Figure 4-22. Installing Ink Position Label

ADJUSTMENT REQUIRED

After removing/replacing the Printhead, perform the adjustment in the following order. (Refer to Chapter 5 "ADJUSTMENT")

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

4.5.3 CR Scale

CAUTION

Pay attention to the following instructions:

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

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

Upper Housing

☐ **Removal Procedure**

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

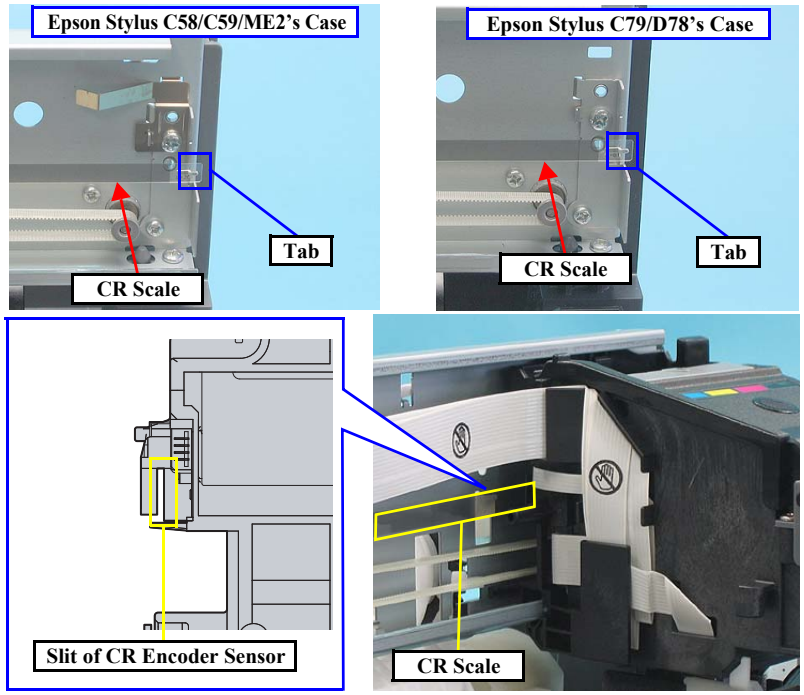


Figure 4-23. Removing CR Scale (1)

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

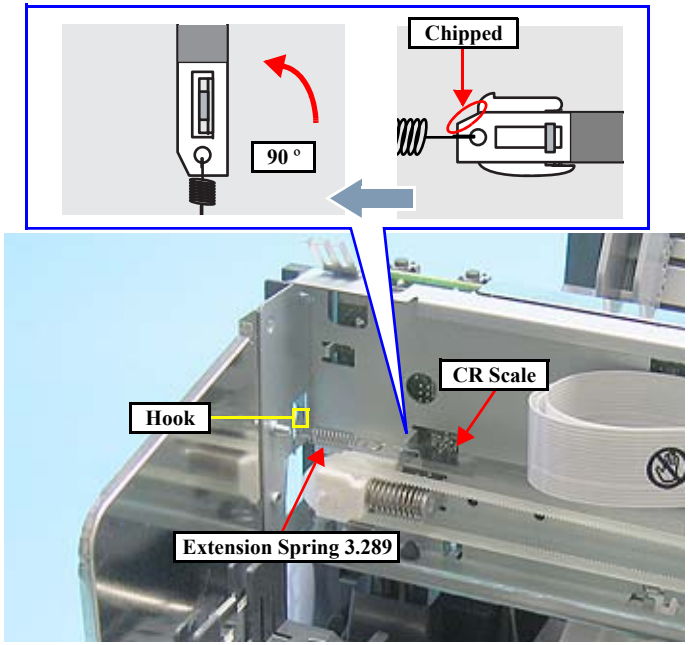


Figure 4-24. Removing CR Scale (3)

REASSEMBLY

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

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

4.5.4 CR Motor

☐ **Part/Unit that should be removed before removing CR Motor**

Upper Housing /Hopper /CR Scale

☐ **Removal Procedure**

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

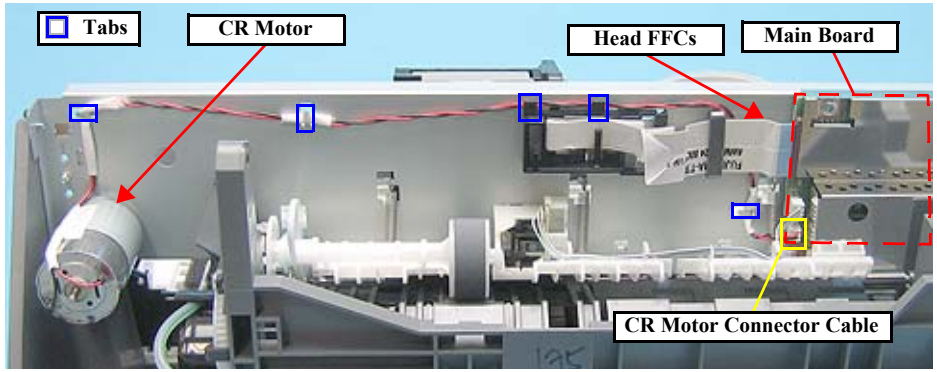


Figure 4-25. Disconnecting CR Motor Connector Cable

CAUTION

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

3. Loosen the tension of the Timing Belt by pressing the Driven Pulley Holder in the direction of the arrow as shown in the figure, and release the Timing Belt from the pinion gear of the CR Motor.
4. Remove the screws (x2), and remove the CR Motor from the Main Frame.

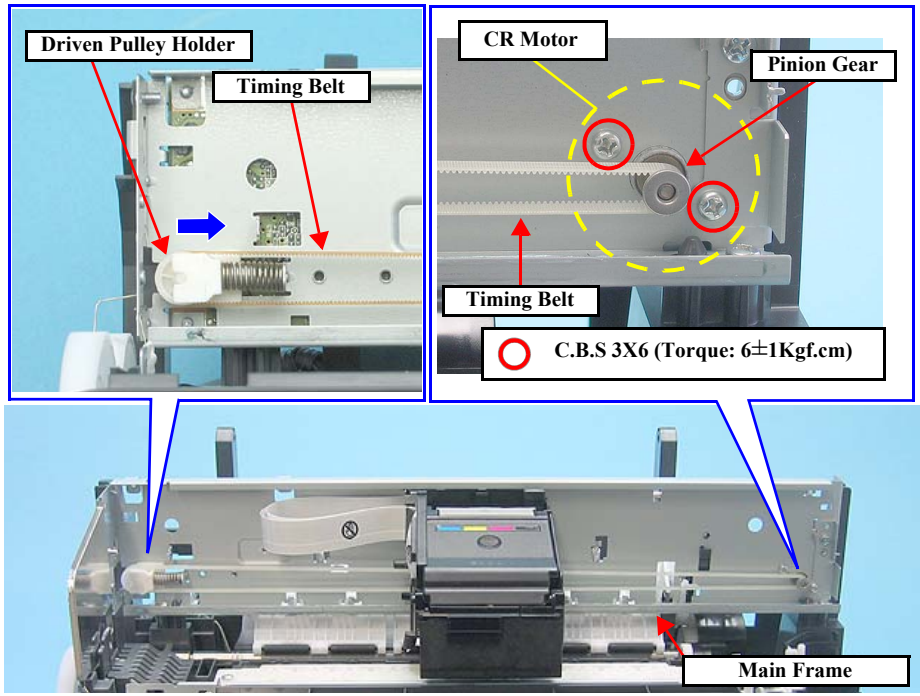


Figure 4-26. Releasing Timing Belt and Removing CR Motor

ADJUSTMENT REQUIRED

After replacing the CR Motor, perform the following adjustment. (Refer to Chapter 5 "ADJUSTMENT")

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

4.5.5 CR Unit/Timing Belt

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

Upper Housing /Hopper /Print Head /Ink System (Cap Assy)/CR Scale/CR Motor

CAUTION

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

☐ **Removal Procedure**

■ CR Unit Removal

1. Remove the screw (x1), and remove the CR Scale Holder.

• In the case of Epson Stylus C58/C59/ME2
Remove the screw (x1), and remove the CR Scale Holder and the CR Unit Stopper.

2. Remove the CR Unit by sliding it in the direction of the arrow.

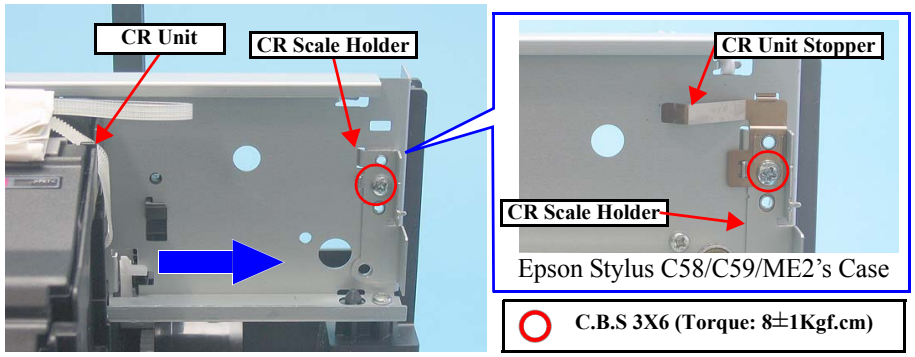


Figure 4-27. Removing CR Scale Holder

■ Timing Belt Removal

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

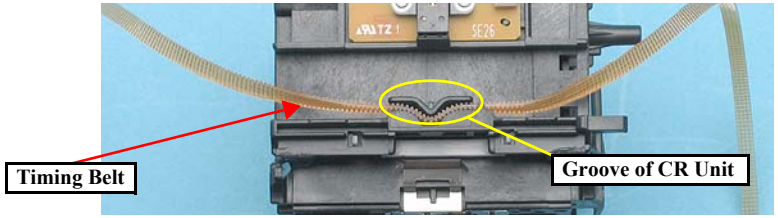


Figure 4-28. Removing Timing Belt

REASSEMBLY

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

■ **Routing the Head FFC differs from model to model, therefore make sure to refer to the routing procedure of corresponding model.**

- **Epson Stylus C79/D78/C90/C91/C92/D92:** *p48*
- **Epson Stylus C58/C59/ME 2:** *p49*
- **Epson Stylus T20/T20E/T23/T26/S20/T10/T11/ME 30/T21/T24/T27/S21:** *p50*

■ **Epson Stylus C79/D78/C90/C91/C92/D92's Case**

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

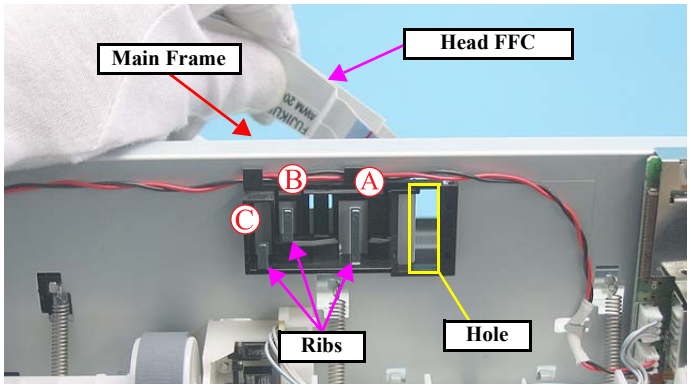


Figure 4-29. Installing Head FFC (1)

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

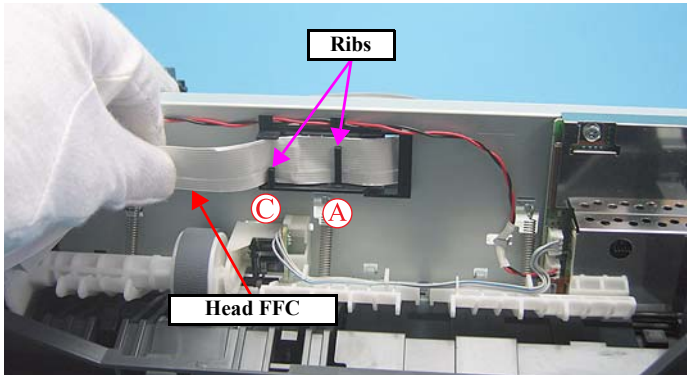


Figure 4-30. Installing Head FFC (2)

>>To be continued to the next page.

REASSEMBLY

>> From the previous page.

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

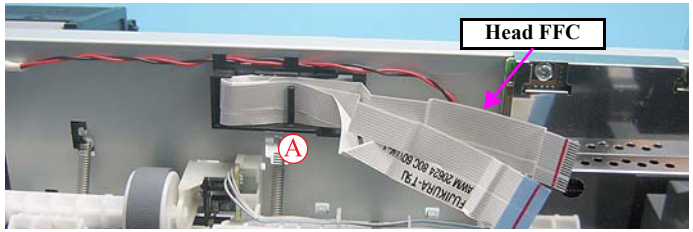


Figure 4-31. Installing Head FFC (3)

4. **Connect the Head FFC to CN1, CN3 of the Main Board.** (see "4.4.1 Main Board" *(p.40)*)
5. **Arrange FFC1 on top of FFC2.**
6. **Secure the Head FFC with a Strong tape by the following standard.**

- **Size: 60mm (L) x 18mm (W)**
- **The tape must be attached vertically to the Head FFC.**
- **The lower end of the tape must be 1-2 mm below the upper side of the hook hole as shown in the figure.**

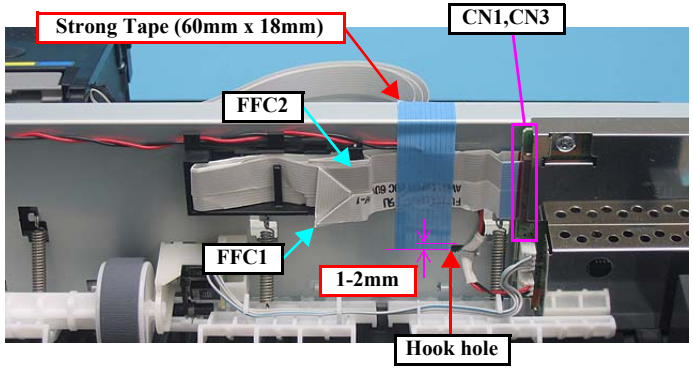


Figure 4-32. Installing Head FFC (4)

REASSEMBLY

■ **Epson Stylus C58/C59/ME 2's Case**

1. **Put the Head FFC through the Hole of the Main Frame.** (see Figure 4-29 *(p.48)*)
2. **Secure the Head FFC with Rib A, and B.** (see Figure 4-29 *(p.48)*)
3. **Fold back the Head FFC and secure it with Rib A again.** (see Figure 4-31 *(p.49)*)
4. **Put the Head FFC through the Ferrite Core with double sided tape behind.**
5. **Connect the Head FFC to CN1, CN3 of the Main Board.** (see "4.4.1 Main Board" *(p.40)*)
6. **Secure the Ferrite Core to the Main Frame with double sided tape by the following standard.**

- **The top end of the Ferrite Core must be 1mm above the horizontal marking on the Main Frame.**

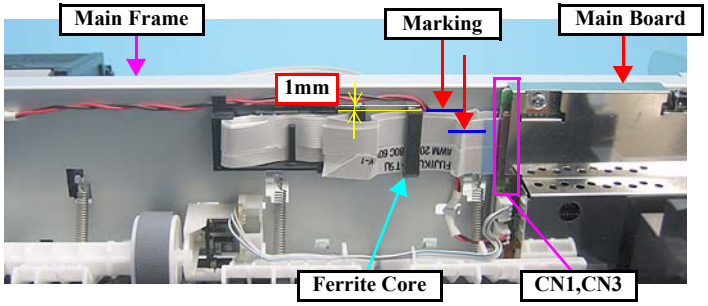


Figure 4-33. Installing Head FFC (5)

>>To be continued to the next page.

REASSEMBLY

>> From the previous page.

■ **Epson Stylus T20/T20E/T23/T26/S20/T10/T11/ME 30/T21/T24/T27/S21's Case**

1. **Put the Head FFC through the Hole of the Main Frame. (see Figure 4-29 *(p.48)*)**
2. **Secure it with Rib A, then fold it back. (see Figure 4-29 *(p.48)*)**
3. **Put the FFC1 and FFC2 through the Ferrite Core.**
4. **Connect the Head FFC to CN1, CN3 of the Main Board. (see "4.4.1 Main Board" *(p.40)*)**
5. **Secure the FFC and the Ferrite Core with strong tape (60mm) according to the standard given below.**

- **Align the top of the Ferrite Core in parallel with the marking shown below.**
- **The tape must be attached vertically to the Head FFC.**
- **The lower end of the tape must be 3-4 mm below the upper side of the hook hole as shown in the figure.**

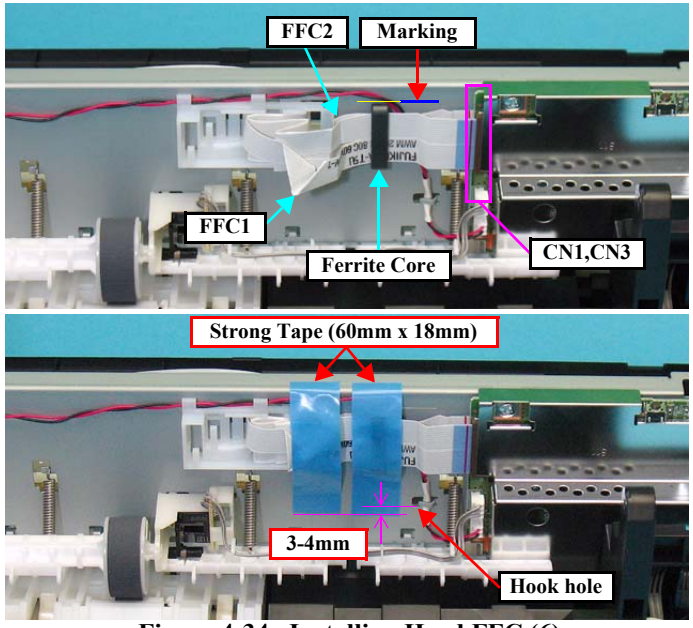


Figure 4-34. Installing Head FFC (6)

4.5.6 Ink System removal

☐ **Part/Unit that should be removed before removing Ink System**

Upper Housing

CAUTION

- **Do not touch or damage the Sealing Rubber or the Head Cleaner when performing the following work.**
- **Mark the connection location before removing the Ink Tube.**
- **When removing the Ink System, follow the procedure below.**

1. **Detach the Cap Assy.**
2. **Detach the Dump Assy.**
3. **Remove the whole Ink System.**

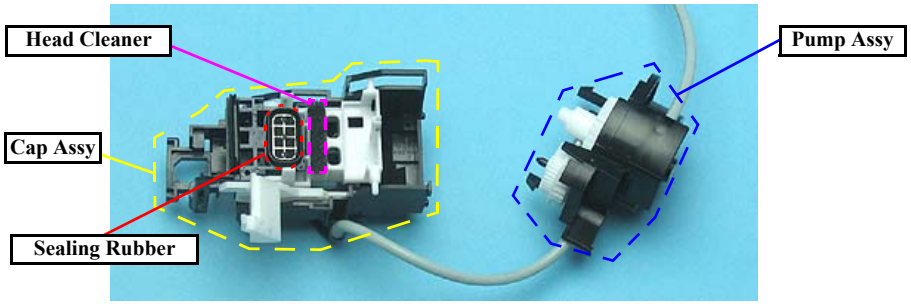


Figure 4-35. Component Formation of Ink System

☐ **Removal procedure**

■ Ink System (Cap Assy)

1. Release the tabs (x2) that secure the Cap Assy, and detach the Cap Assy.

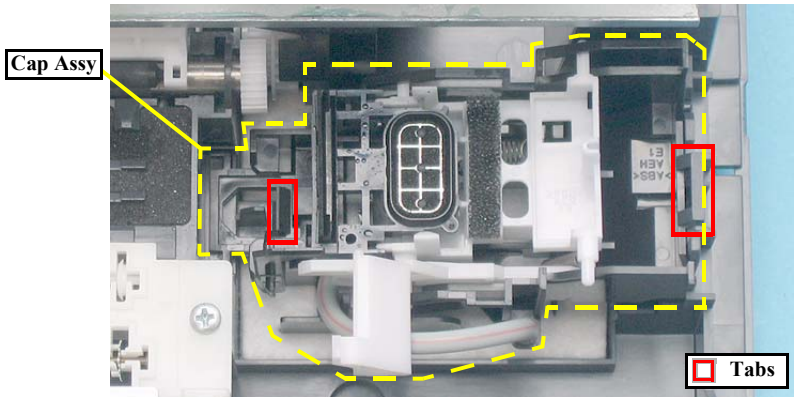


Figure 4-36. Removing Ink System (1)

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

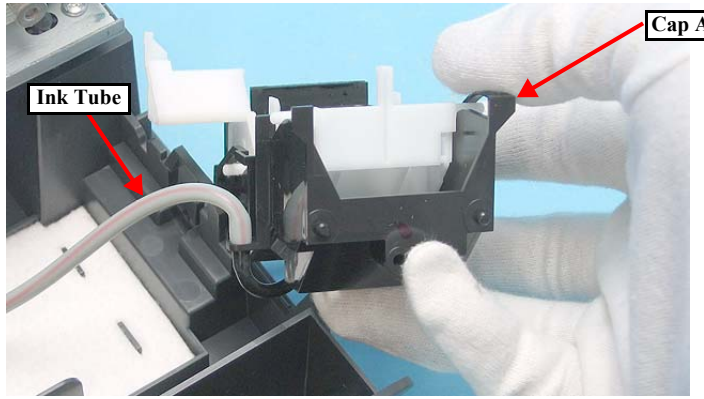


Figure 4-37. Removing Ink System (1)

■ Ink System (Pump Assy)

1. Remove the Main Board *(p40)*
2. Remove the Printhead *(p43)*
3. Remove the Ink System (Cap Assy) *(p51)*
4. Remove the CR Scale *(p46)*
5. Remove the CR Motor *(p47)*
6. Remove the CR Unit/Timing Belt *(p48)*
7. Remove the Main Frame *(p56)*
8. Insert a flathead screwdriver between the tab (1) and the rib, and release the tab (1) while pushing it in the direction of the arrow ①.
9. Release the tab (2) in the direction of the arrow ②.

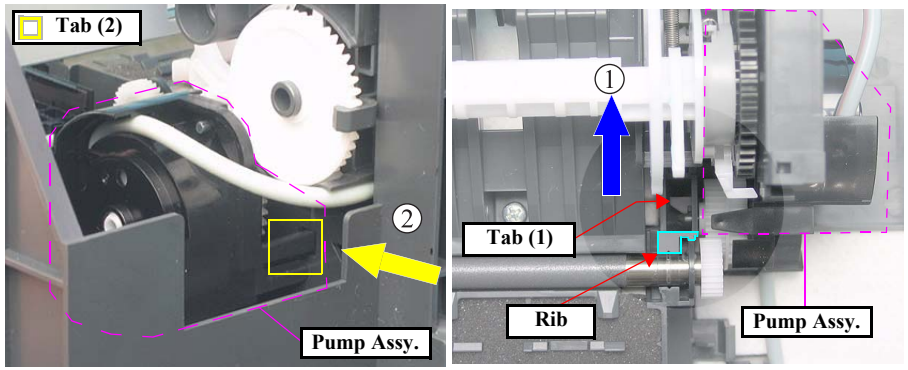


Figure 4-38. Removing Ink System (2)

10. Pull out the Ink Tube and the Tube Stopper (Figure 4-43) from the connector of the Waste Ink Pads, and draw out the tube from the hole of the Frame Base.
11. Remove the pump system.

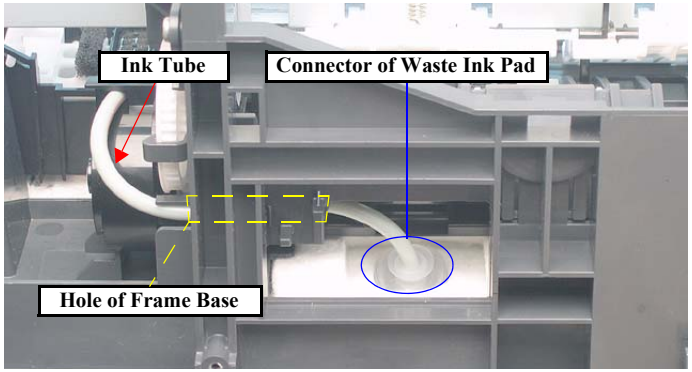


Figure 4-39. Removing Ink System (3)

REASSEMBLY

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

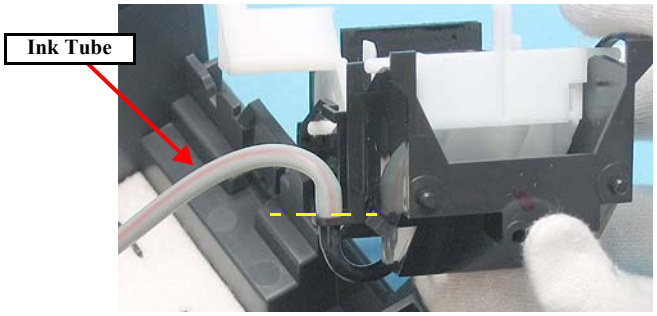


Figure 4-40. Installing Ink Tube

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

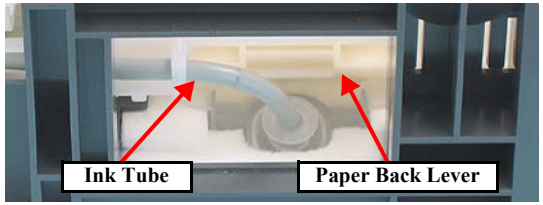


Figure 4-41. Paper Back Lever behind Ink Tube

REASSEMBLY

- **When installing the Cap Assy, follow the steps described below.**

1. **Arrange the tube between the ribs as shown in the figure below.**
2. **Place the Cap Assy and match the tabs (x2) and lock them.** (Figure 4-34)
3. **Attach the Ink Tube.** (Figure 4-38)

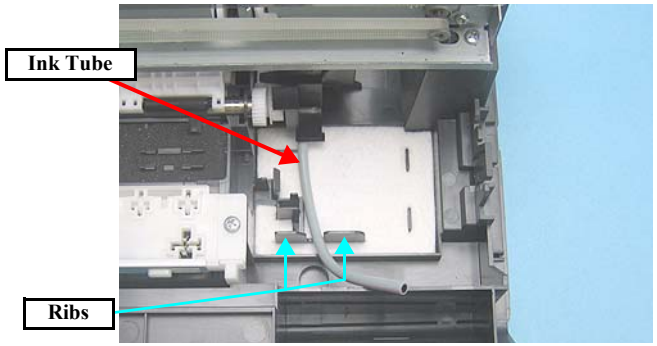


Figure 4-42. Installing Ink System

- **When installing the Pump Assy, follow the steps described below.**

1. **Match the tabs (x2) of the Pump Assy with the positioning holes (x2) of the Frame Base.** (Figure 4-36)
2. **Insert the Ink Tube into the hole of the Frame Base, and insert the tube into the connector.**
3. **Arrange the tube with the Tube Stopper as shown in the figure.**
4. **Attach the Ink Tube into the hole of the connector of Waste Ink Pad.**

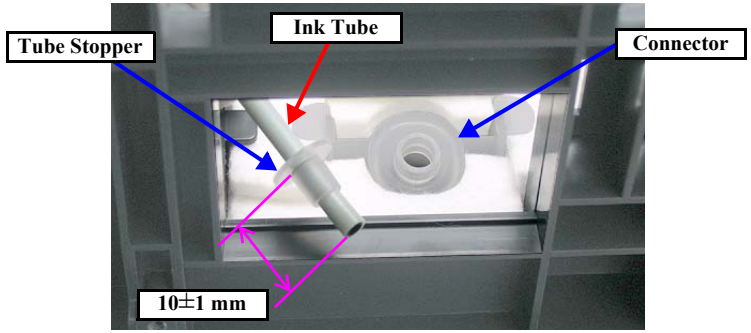


Figure 4-43. Installing Ink Tube(2)

4.5.7 Power Supply Board

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

Upper Housing

☐ **Removal procedure**

1. Peel off the acetate tape from the Frame Base.
2. Disconnect the connector cable from the connector (CN8) of the Main Board.

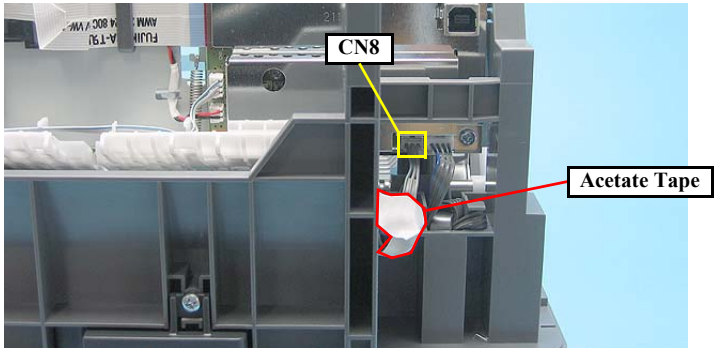


Figure 4-44. Removing Power Supply Board (1)

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

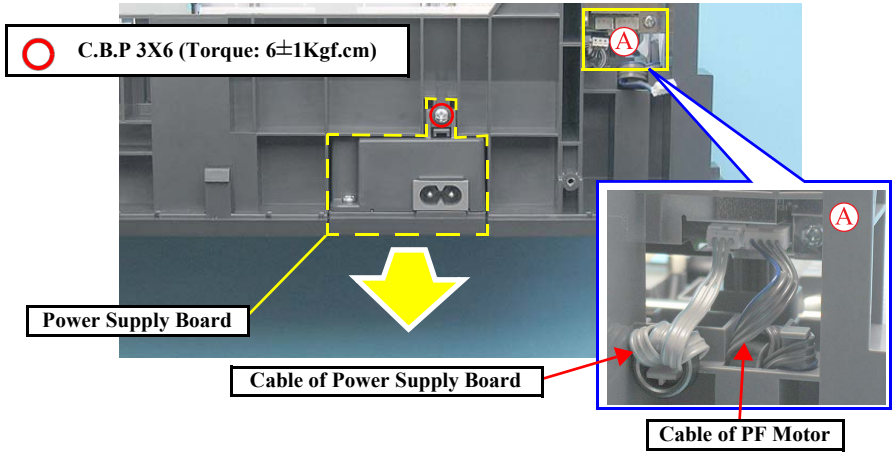


Figure 4-45. Removing Power Supply Board (2)

CAUTION

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

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

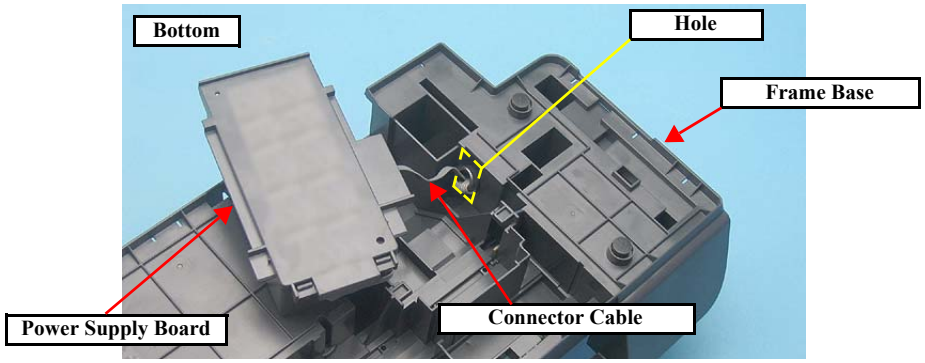


Figure 4-46. Removing Power Supply Board (3)

REASSEMBLY

When installing the Power Supply Board, arrange the cable into the slit ①, ② and place the ferrite core into the hook in the area Ⓐ of Figure 4-45 *(p.53)*.

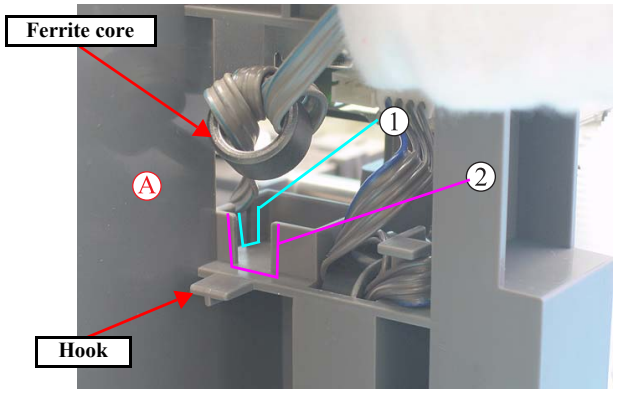


Figure 4-47. Installing Power Supply Board

4.5.8 EJ Frame Assy/EJ Roller

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

Upper Housing

CHECK POINT

- **When installing Spur Gear, 59. 6 and the EJ Roller, be sure to install new ones. These parts cannot be reused.**
- **Before starting the removal procedure, the preparing procedure is needed.**
  - ☐ **In the case of Epson Stylus C79/D78/C90/C91/C92/D92**

    Remove the Grounding Spring (See Figure 4-53 *(p.56)*) from the EJ Frame Assy.
  - ☐ **In the case of Epson Stylus C58/C59/ME2/T20/T20E/T23/T26/S20/T10/T11/ME 30/T21/T24/T27/S21**

    Remove the screw (x1), and release the hooks and remove the Shield Plate L.

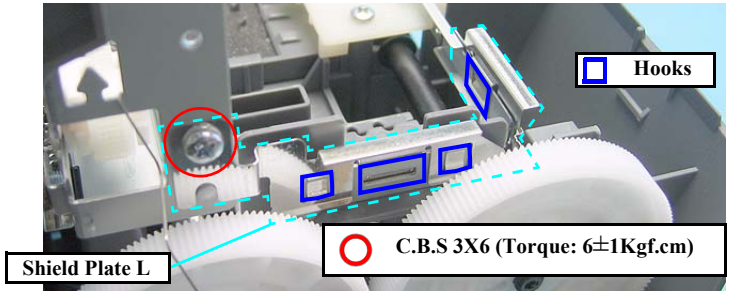


Figure 4-48. Epson Stylus C58/C59/ME2's Preparation for removal

☐ **Removal procedure**

■ EJ Frame Assy removal

1. Remove the screws (x2) and remove the EJ Frame Assy.

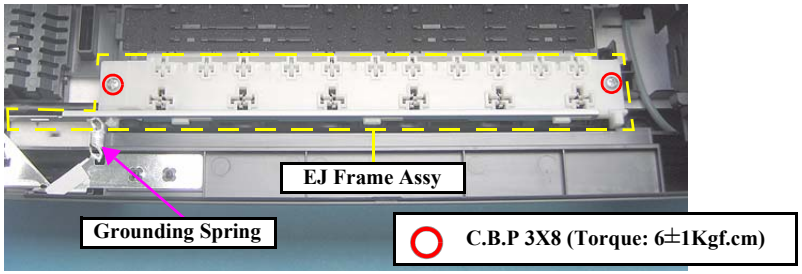


Figure 4-49. Removing EJ Frame Assy.

■ EJ Roller Removal

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

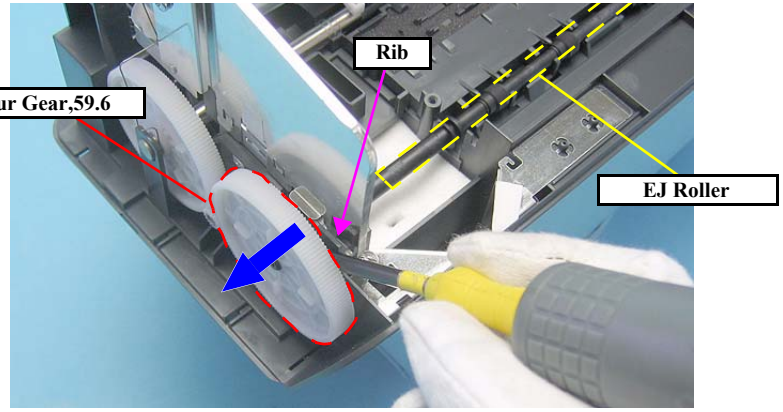


Figure 4-50. Removing EJ Roller (1)

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

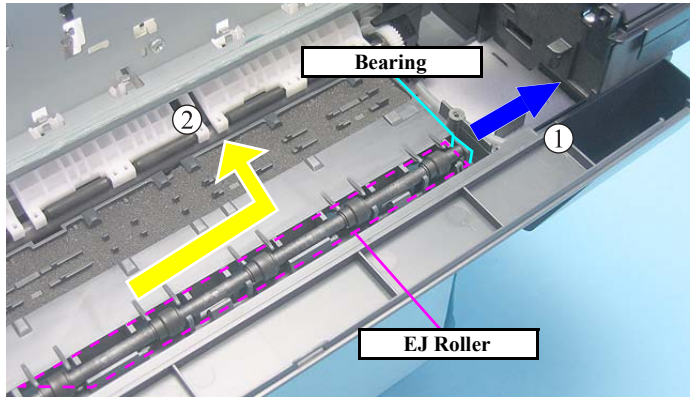


Figure 4-51. Removing EJ Roller (2)

REASSEMBLY

Follow the procedure below to install the Grounding Spring (Grounding Spring, Frame) of Epson Stylus C90/C91/C92/D92. (The spring is different in shape from that of other models.)

1. Hook the end of the Grounding Spring, Frame to the EJ Frame Assy.
2. Hook the bend of the Grounding Spring, Frame to the Shield Plate, Front.
3. Pulling the Grounding Spring, Frame leftward, hook its the other end to the Shield Plate L.

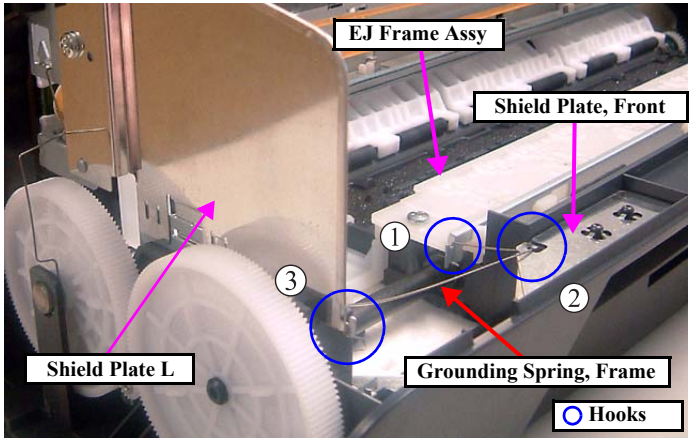


Figure 4-52. Installing Grounding Spring, Frame

ADJUSTMENT REQUIRED

- After replacing the EJ Roller, perform the following adjustment. (Refer to Chapter 5 "ADJUSTMENT")

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

- Whenever the EJ Frame Assy or EJ Roller is replaced, apply G71 and G74 grease referring to Figure 6-9 *(p.82)* and Figure 6-10 *(p.83)* in Chapter 6.

4.5.9 Main Frame

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

Upper Housing /Hopper /Main Board /Print Head /CR Scale /CR Motor /CR Unit / Timing Belt

☐ **Removal procedure**

CAUTION

Exercise care to avoid injuring with the sharp edges around the Shield Plate L shown in the figure below.

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

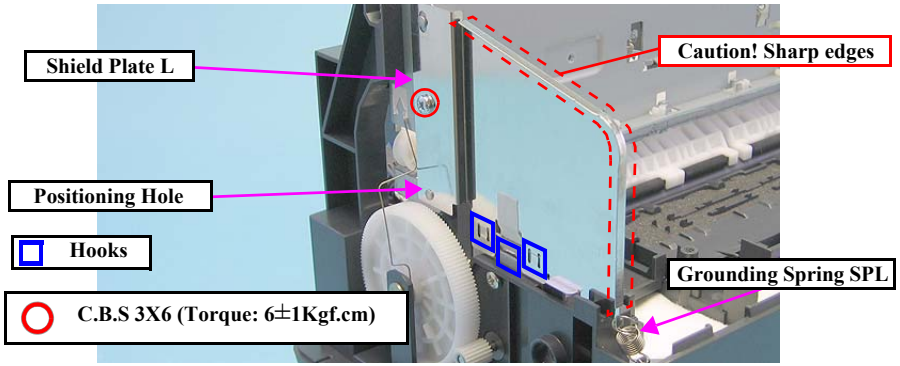


Figure 4-53. Removing Shield Plate L

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

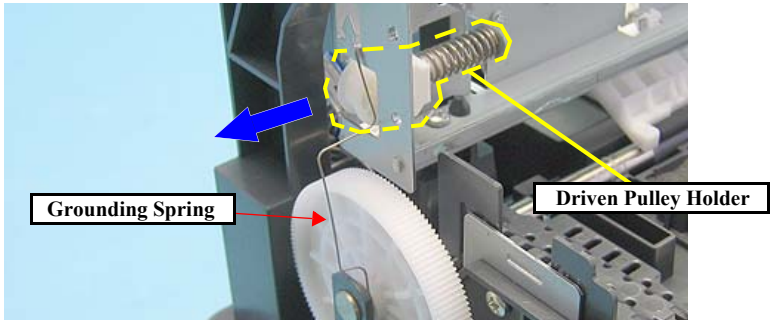


Figure 4-54. Removing Grounding Spring and Driven Pulley Holder

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

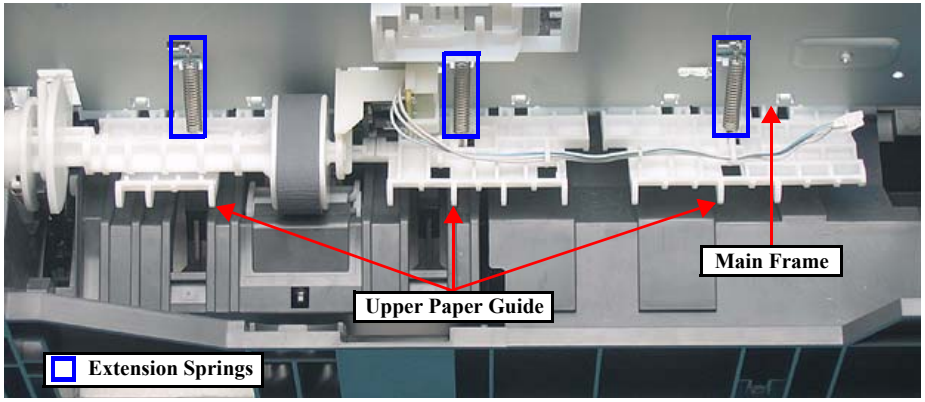


Figure 4-55. Removing Extension Springs

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

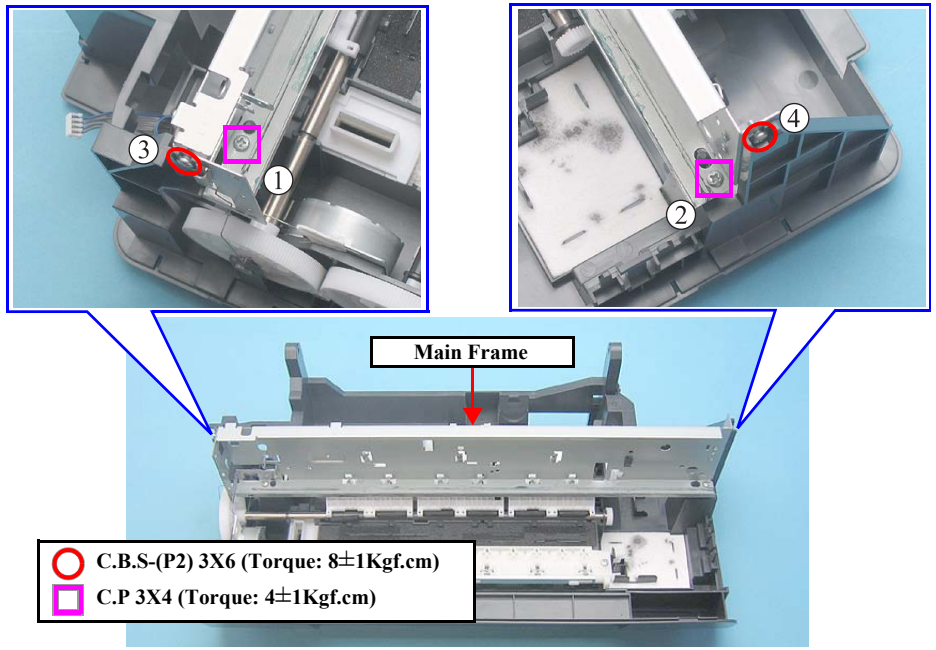


Figure 4-56. Removing Main Frame (1)

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

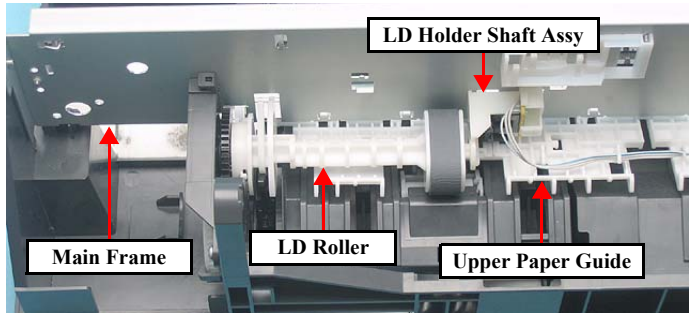


Figure 4-57. Removing Main Frame (2)

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

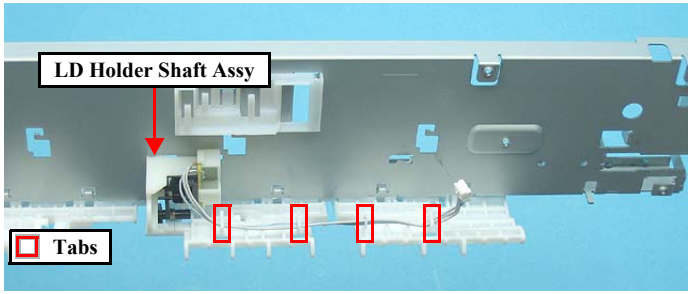


Figure 4-58. Disconnecting Cable

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

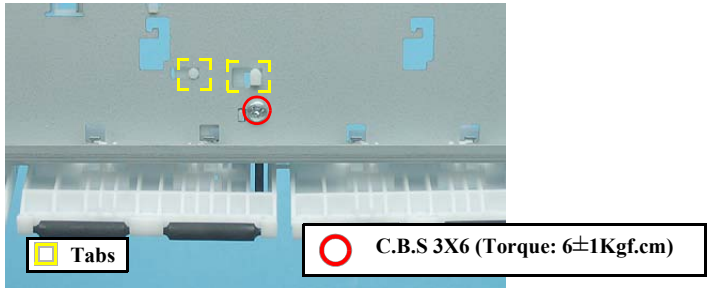


Figure 4-59. Removing LD Shaft Holder Assy

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

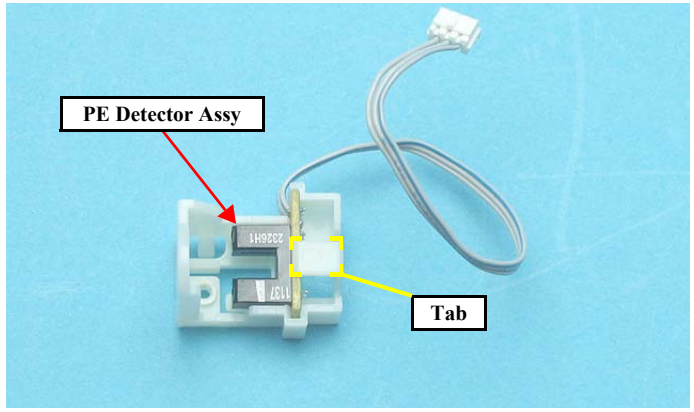


Figure 4-60. Removing PE Detector Assy

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

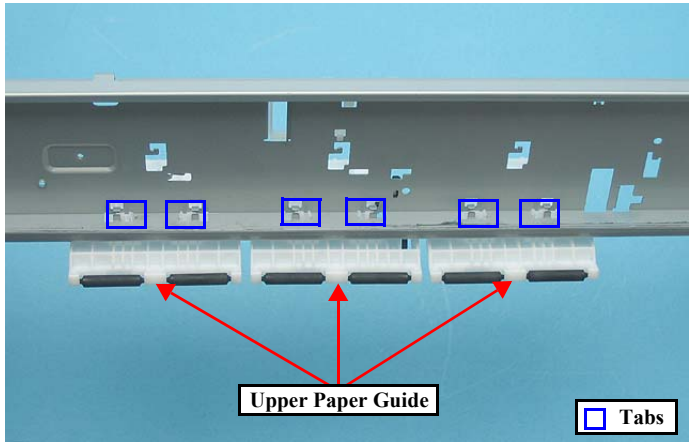


Figure 4-61. Removing Upper Paper Guide

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

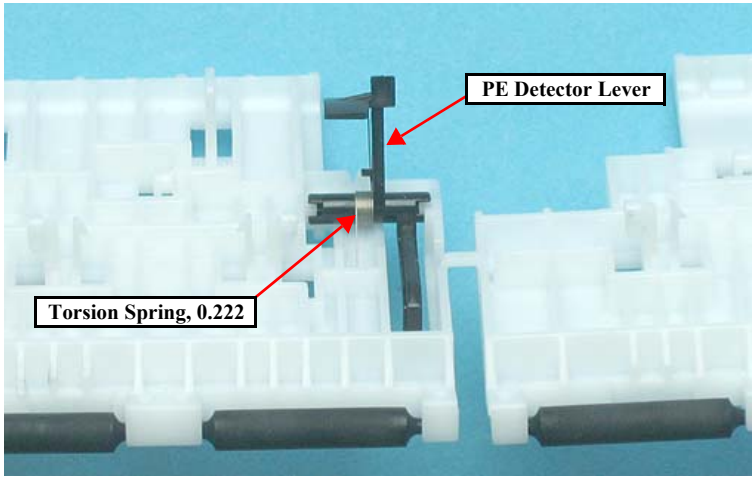
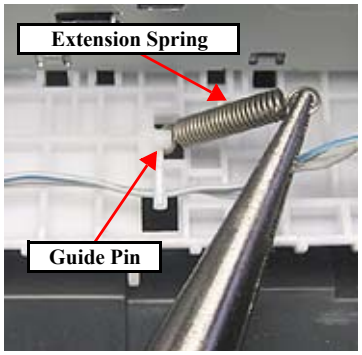


Figure 4-62. Removing PE Detector and Torsion Spring, 0.222

REASSEMBLY

- **When installing the Extension Springs, follow the steps below.**
  1. Attach one end of the Extension Spring to the guide pin of the Upper Paper Guide.
  2. Attach the other end of the Extension Spring to the hook of the Main Frame with the longnose pliers.



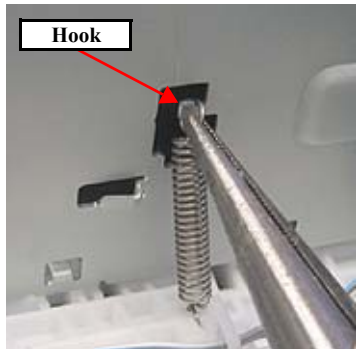


Figure 4-63. Installing Extension Springs

REASSEMBLY

- **When securing the Main Frame to the Frame Base with screws, be sure to perform the tightening in the order of the numbers indicated in Figure 4-56 *(p.56)*.**
- **When installing the Shield Plate L, be cautious not to damage the Spur Gears of the PF Roller and the EJ Roller.**
- **Install the Grounding Spring attaching the ends to the parts as shown in the figure below.**

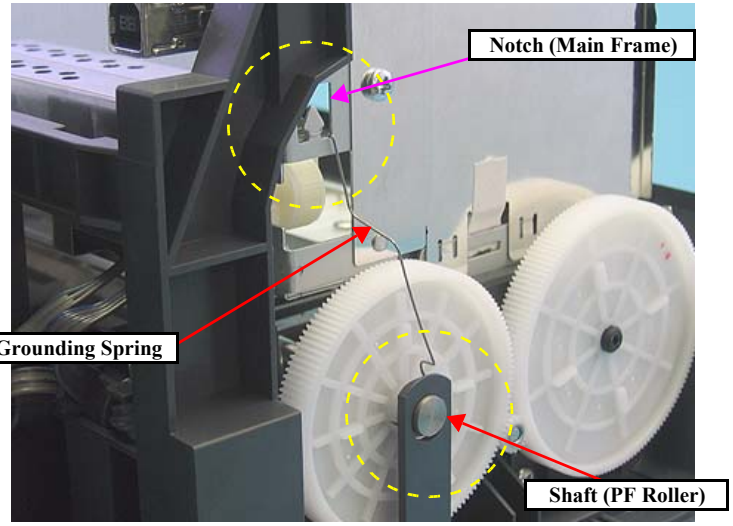


Figure 4-64. Installing Grounding Spring

ADJUSTMENT REQUIRED

- **After replacing the Waste Ink Pads, perform the following adjustment. (Refer to Chapter 5 "ADJUSTMENT")**

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

- **Whenever the Main Frame is replaced, apply G71 grease referring to Figure 6-12 *(p.83)* and Figure 6-13 *(p.83)* in Chapter 6.**

4.5.10 LD Roller/ASF Unit

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

Upper Housing /Hopper /Main Board /Main Frame /EJ Frame Assy. /
Print Head /CR Scale/CR Motor/CR Unit/Timing Belt/Ink System

☐ **Removal procedure**

■ Preparation for LD Roller Removal

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

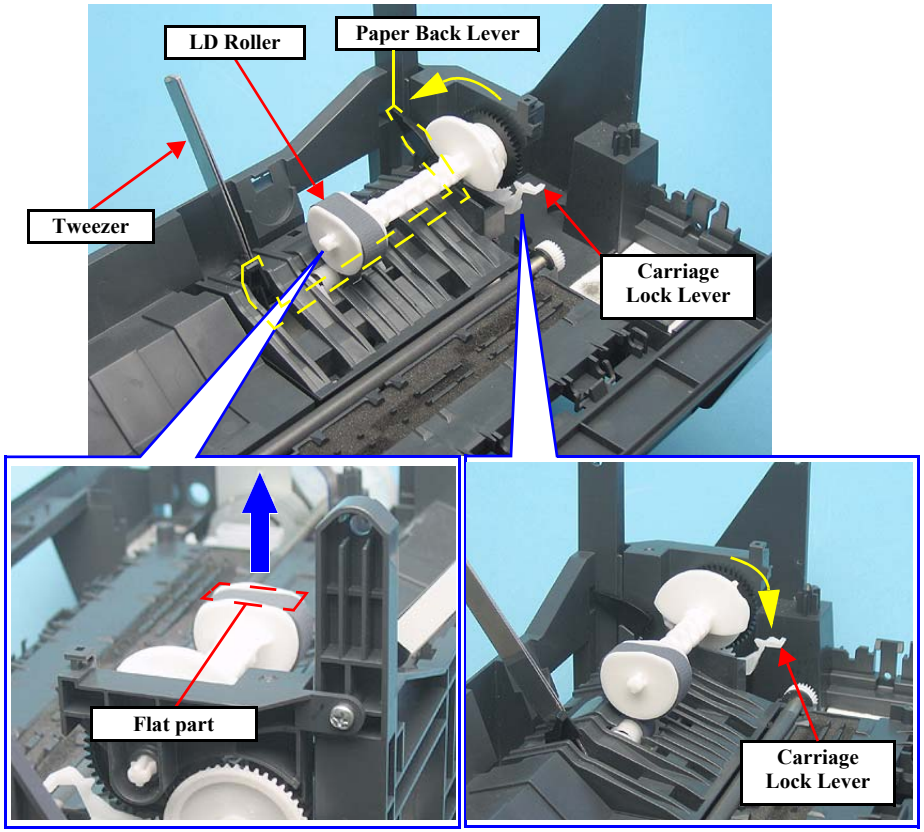


Figure 4-65. Preparation (1)

■ LD Roller Removal

CAUTION

Be cautious of the following points.
- **Do not touch the LD Roller with bare hands.**
- **Do not touch the roller of ASF Unit with bare hands.**

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

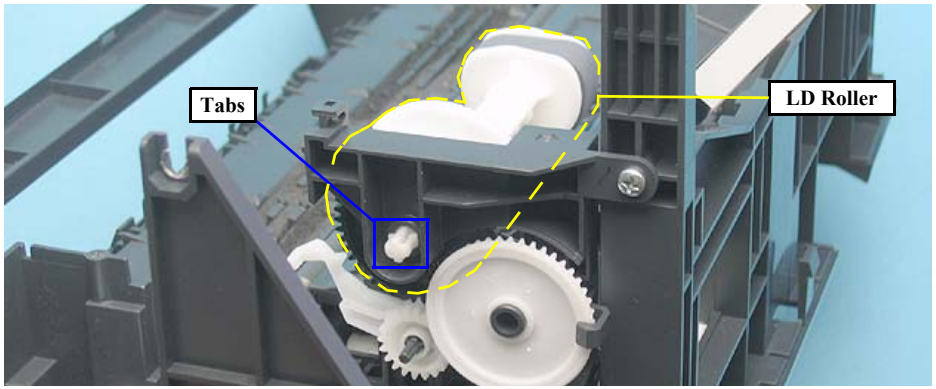


Figure 4-66. Removing LD Roller (1)

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

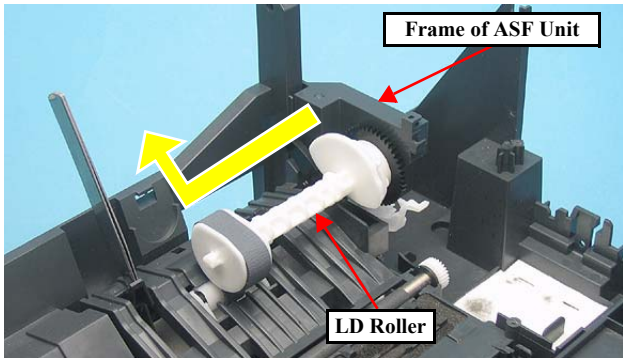


Figure 4-67. Removing LD Roller (2)

■ ASF Unit Removal

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

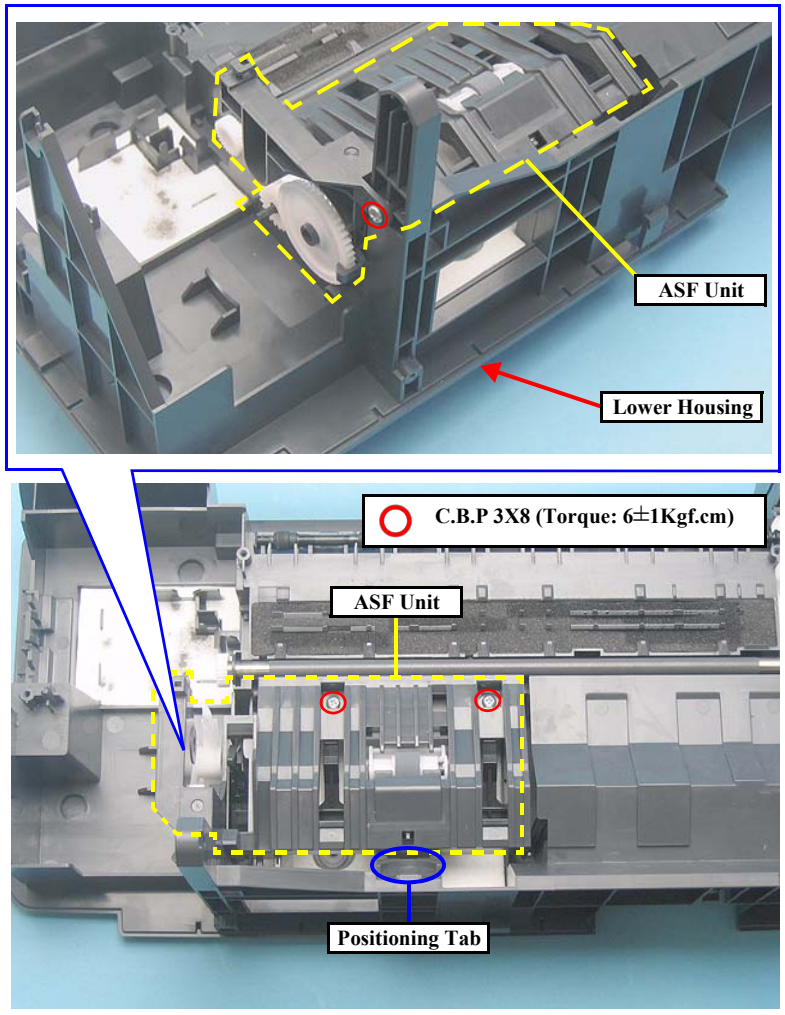


Figure 4-68. Removing ASF Unit

REASSEMBLY

■ **Assemble the LD Roller as shown below.**

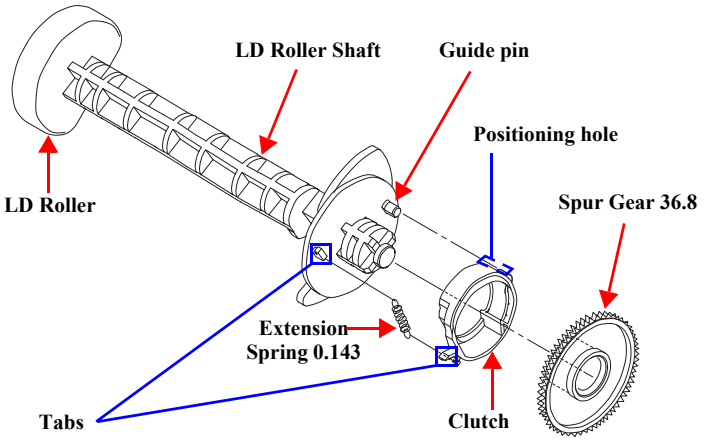


Figure 4-69. Assembling LD Roller (1)

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

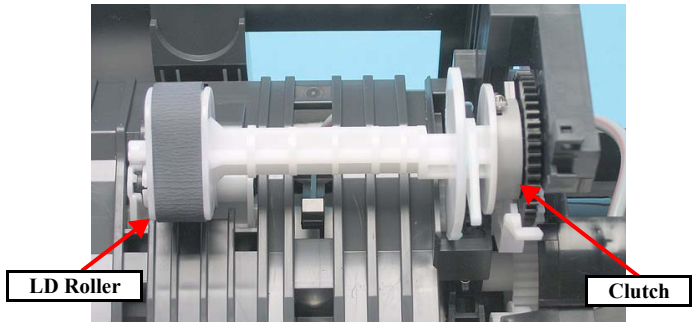


Figure 4-70. Assembling LD Roller (2)

ADJUSTMENT REQUIRED

■ **Whenever the LD Roller is replaced, apply G71 grease referring to Figure 6-4 *(p.81)* and Figure 6-5 *(p.81)* in Chapter 6.**

4.5.11 Waste Ink Pads

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

Upper Housing /Hopper /Main Board /Main Frame /EJ Frame Assy. /
Print Head /CR Scale/CR Motor/CR Unit/Timing Belt/Ink System/Power Supply Board/EJ Roller/ASF Unit

☐ **Removal procedure**

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

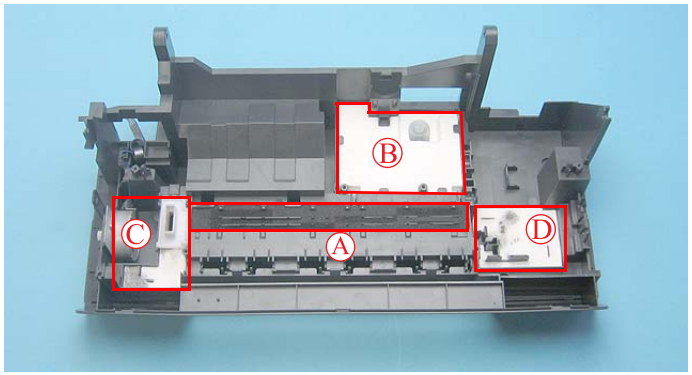


Figure 4-71. Removing Waste Ink Pads

CAUTION

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

REASSEMBLY

- **When installing the Waste Ink Pads, be sure to insert ribs and tabs of the Frame Base into the slots and notches of the pads.**
- **When installing ② in the section Ⓑ *(refer to Figure 4-72)*, be sure to match the positioning tabs and press ② until it clicks to secure it in the right position.**

REASSEMBLY

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

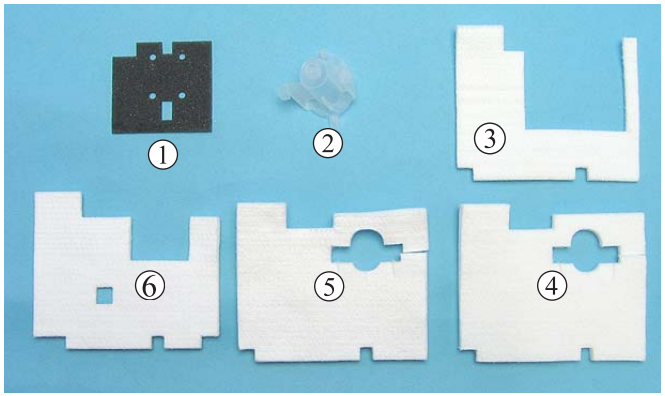


Figure 4-72. Installing Waste Ink Pads (1)

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

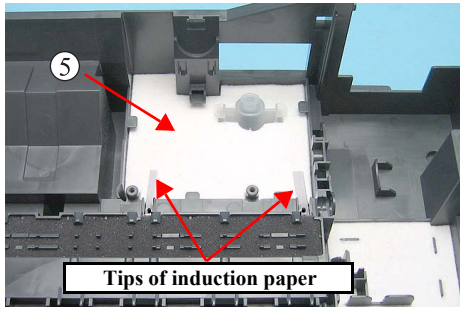


Figure 4-73. Installing Waste Ink Pads (2)

ADJUSTMENT REQUIRED

- **After replacing the Waste Ink Pads, perform the following adjustment. (Refer to Chapter 5 "ADJUSTMENT")**

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

4.5.12 PF Roller

CAUTION

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

☐ **Part/Unit that should be removed before removing PF Roller**

Upper Housing /Hopper /Main Board /Main Frame /EJ Frame Assy. /
Print Head /CR Scale/CR Motor/CR Unit/Timing Belt/Ink System

☐ **Removal procedure**

1. Remove the FB Cover.

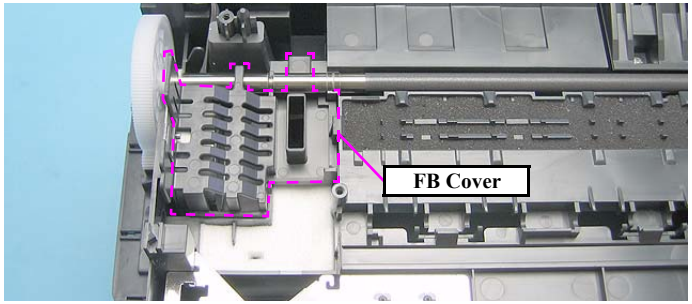


Figure 4-74. Removing PF Roller (1)

CAUTION

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

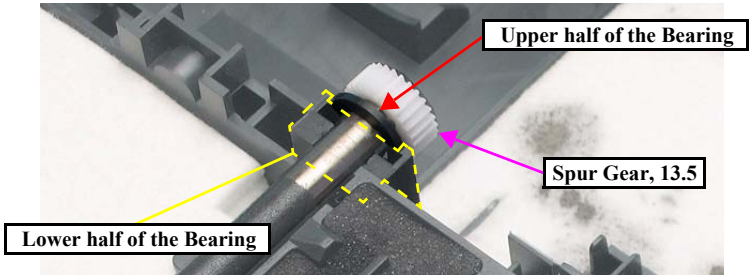


Figure 4-75. Removing Spur Gear, 13.5

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

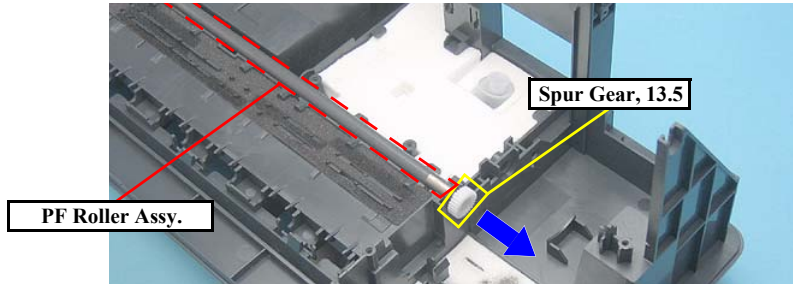


Figure 4-76. Removing PF Roller (2)

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

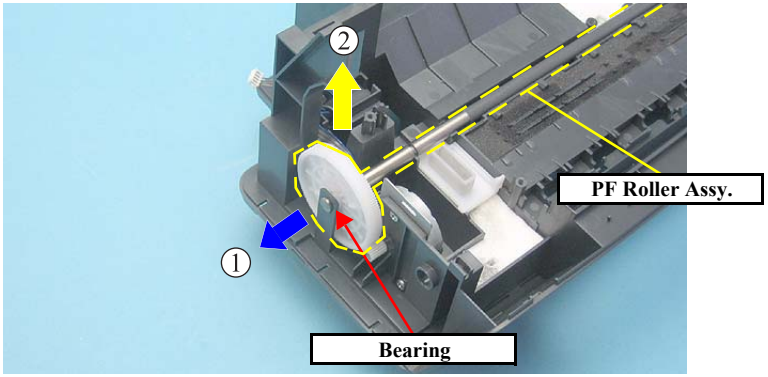


Figure 4-77. Removing PF Roller (3)

ADJUSTMENT REQUIRED

- **Whenever the PF Roller is replaced, apply G71 grease referring to Figure 6-6 *(p.82)*, Figure 6-7 *(p.82)* and Figure 6-8 *(p.82)* in Chapter 6.**

4.5.13 PF Motor

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

☐ Upper Housing /Hopper /Main Board /Main Frame /EJ Frame Assy. /
Print Head /CR Scale /CR Motor /CR Unit /Timing Belt /EJ Roller /PF Roller

☐ **Removal procedure**

1. Detach the ferrite core from the Main Frame.

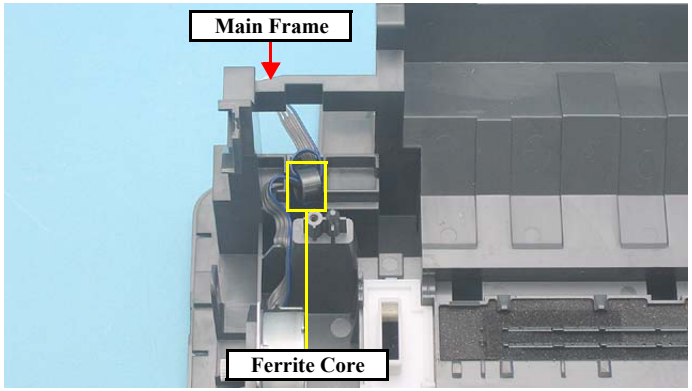


Figure 4-78. Removing PF Motor (1)

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

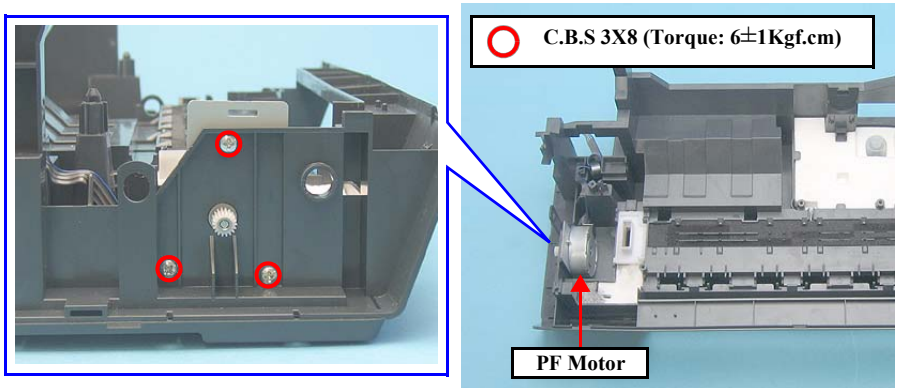


Figure 4-79. Removing PF Motor (2)

REASSEMBLY

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

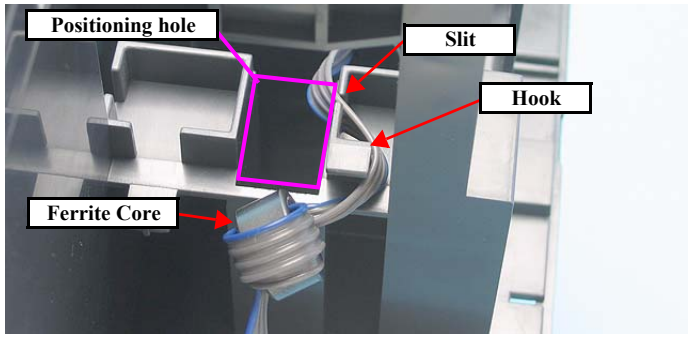


Figure 4-80. Installing the PF Motor

4.6 Procedure Specific to Epson Stylus C58/C59/ ME 2

4.6.1 Printhead

☐ **Part/Unit that should be removed before removing Printhead**

Upper Housing /Hopper

☐ **Removal Procedure**

■ Printhead Removal

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

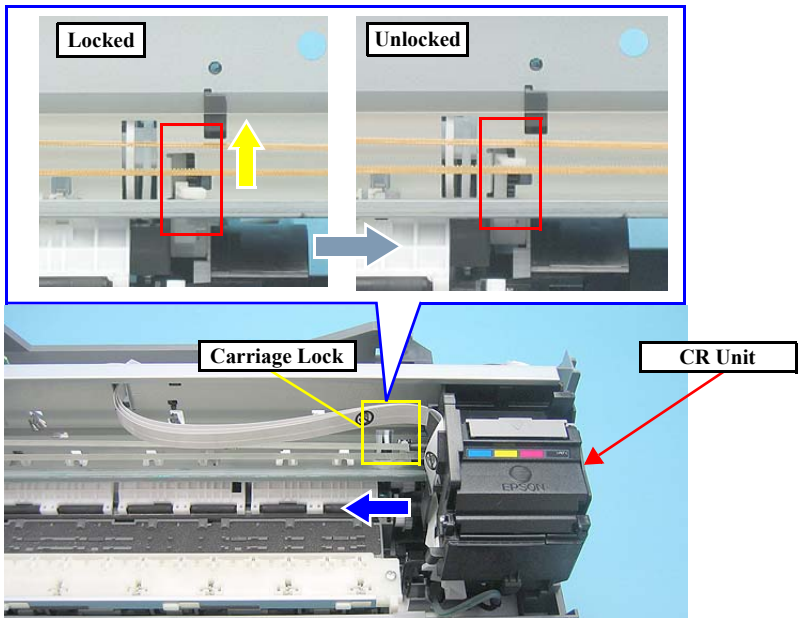


Figure 4-81. Releasing Carriage Lock

2. Open the Cartridge Cover and remove all the Ink Cartridges from the Carriage Unit.

CHECK POINT

The Cartridge Cover Hinge cannot be reused.

3. Follow the steps below to remove the Cartridge Cover Hinge.
   (1) Cut off the part of the Cartridge Cover Hinge with a nipper as indicated in the figure.
   (2) Remove the upper part of the Cartridge Cover Hinge.
   (3) Release the tab and remove the lower part of the Cartridge Cover Hinge.

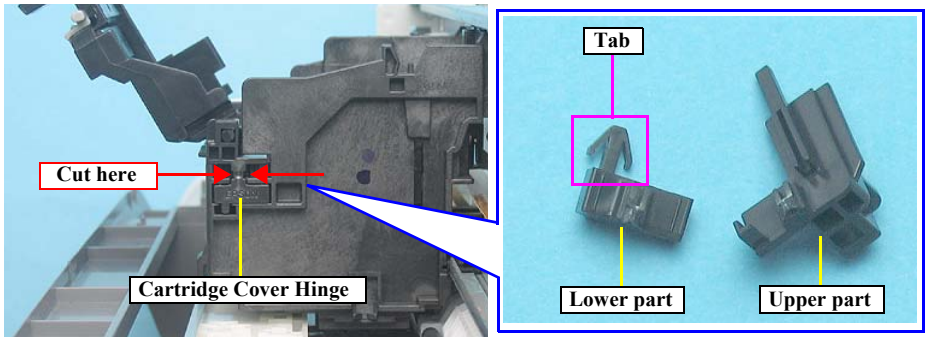


Figure 4-82. Removing Cartridge Cover Hinge

4. Remove the Cartridge Cover.
5. Remove the screw, and remove the Sub FFC Guide while releasing the tab.

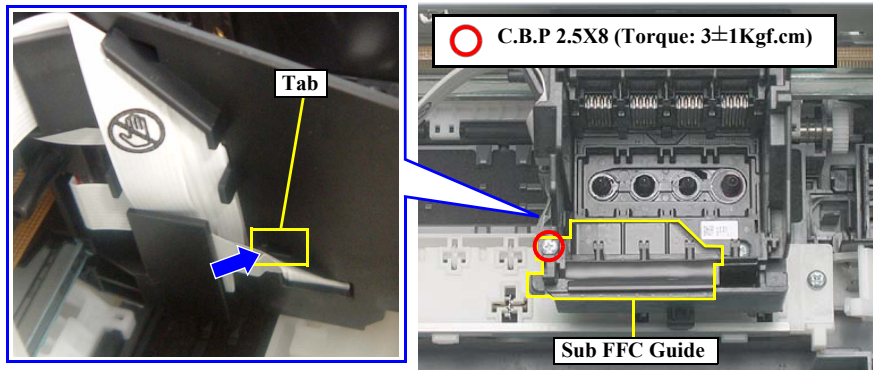


Figure 4-83. Removing Sub FFC Guide

6. Release the FFC from the tabs.

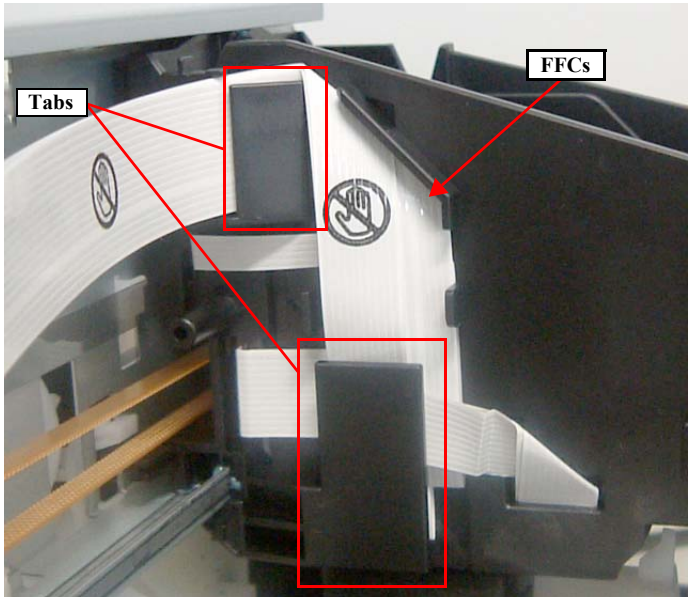


Figure 4-84. Releasing FFCs from Tabs

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

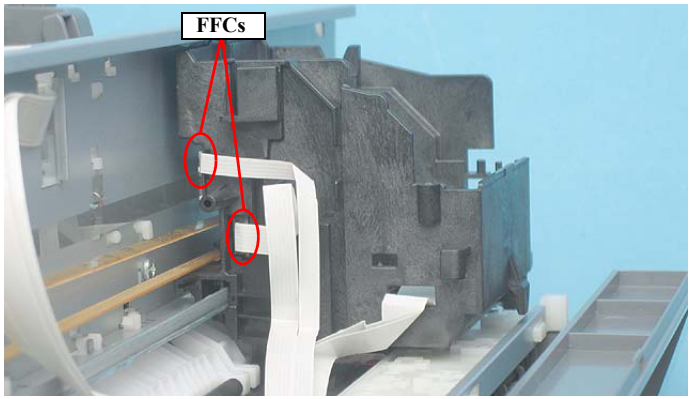


Figure 4-85. Disconnecting Head FFCs

8. Release the tabs (x2) that secure the Holder Board Assy, and remove the Holder Board Assy upward.

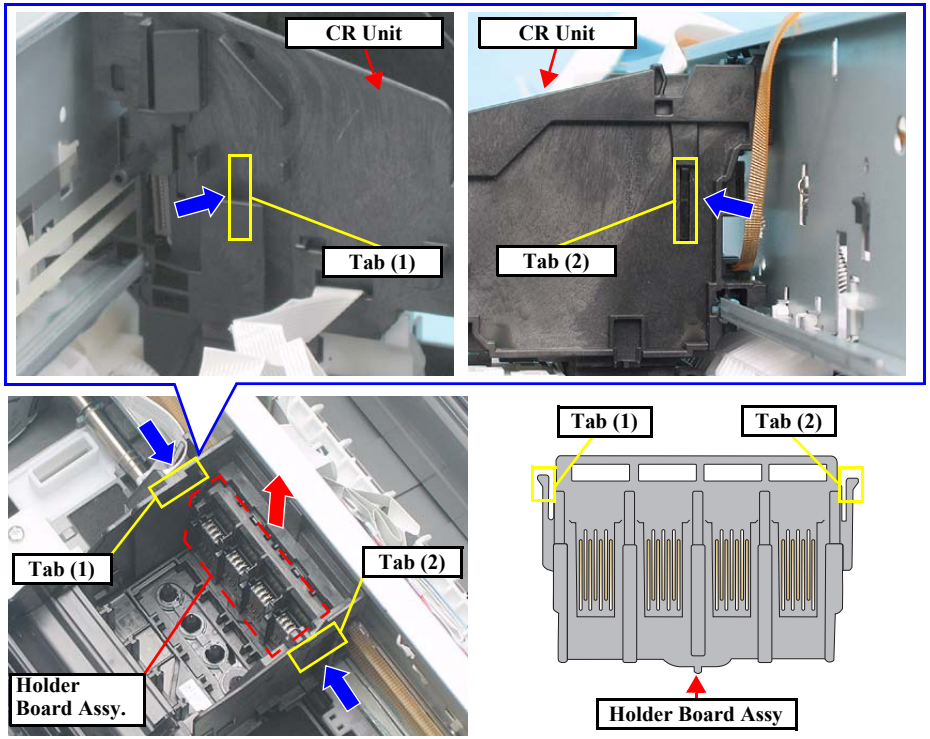


Figure 4-86. Removing Holder Board Assy

CAUTION

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

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

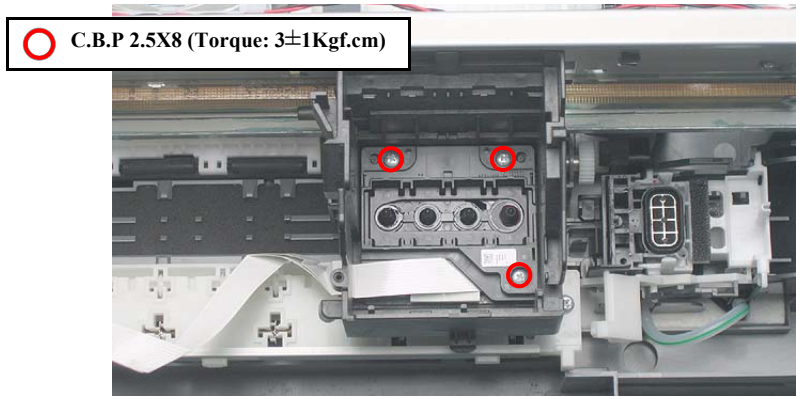


Figure 4-87. Removing Printhead (1)

10. Disconnect the Head FFC (x1) from the connector (x1) on the Printhead, and remove the Printhead.

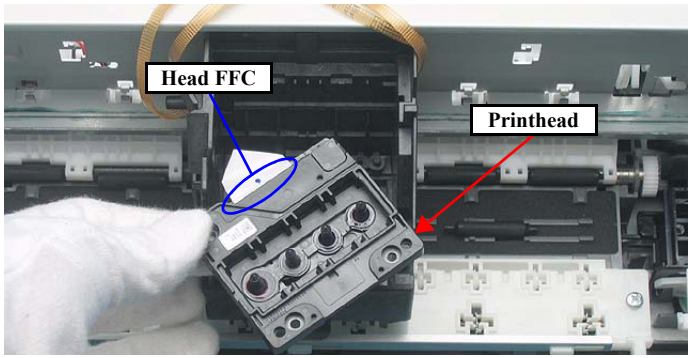


Figure 4-88. Removing Printhead (2)

REASSEMBLY

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

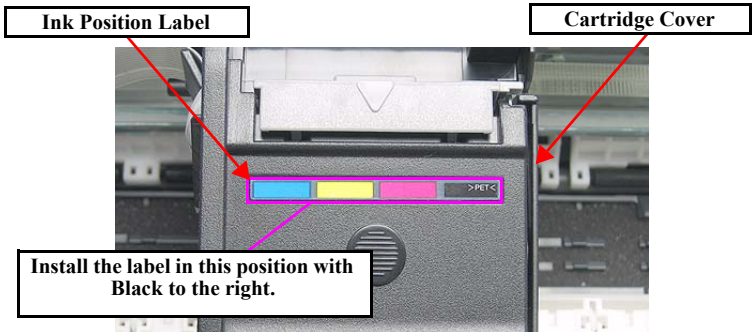


Figure 4-89. Installing Ink Position Label

ADJUSTMENT REQUIRED

After removing/replacing the Printhead, perform the adjustment in the following order. (Refer to Chapter 5 "ADJUSTMENT")

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

4.6.2 Waste Ink Pads

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

Upper Housing /Hopper /Main Board /Main Frame /EJ Frame Assy. /
Print Head /CR Scale/CR Motor/CR Unit/Timing Belt/Ink System/Power Supply Board/EJ Roller/ASF Unit

☐ **Removal procedure**

1. Remove the Waste Ink Pads (x7) from the sections indicated with Ⓐ to Ⓒ of the Frame Base.

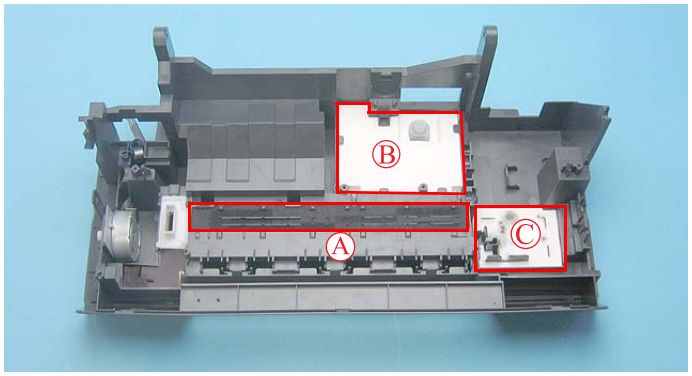


Figure 4-90. Removing Waste Ink Pads

CAUTION

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

REASSEMBLY

- **When installing the Waste Ink Pads, be sure to insert ribs and tabs of the Frame Base into the slots and notches of the pads.**
- **When installing ① in the section Ⓑ *(refer to Figure 4-91)*, be sure to match the positioning tabs and press ① until it clicks to secure it in the right position.**

REASSEMBLY

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

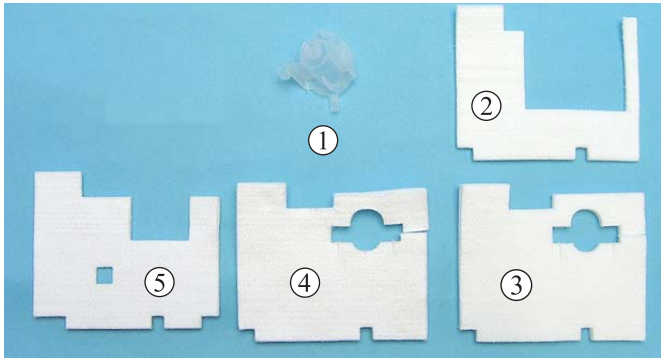


Figure 4-91. Installing Waste Ink Pads (1)

- **When installing the Waste Ink Pads on the section (B), make sure to insert the tips of induction paper between the ④ and ⑤ pads.**

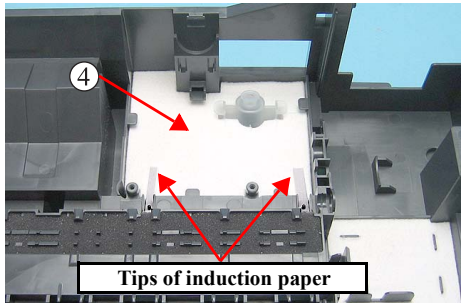


Figure 4-92. Installing Waste Ink Pads (2)

ADJUSTMENT REQUIRED

- **After replacing the Waste Ink Pads, perform the following adjustment. (Refer to Chapter 5 "ADJUSTMENT")**

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

4.7 The Shortest Way to Remove the Main Frame.

If the parts to repair is only the parts after the Main Frame is removed, there's another way to remove the Main Frame together with other parts. (See the following list of "Target Parts of this removal" or the parts marked with "*" in Figure 4-2, "Disassembling Flowchart" *(p.37)*)

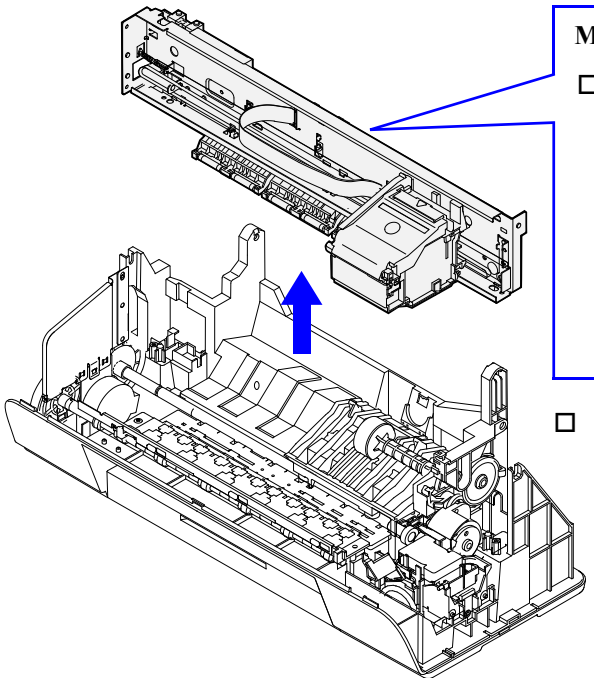


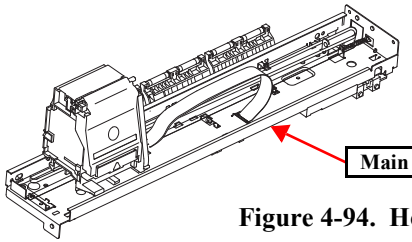
Figure 4-93. Removing Main Frame with Other Parts

☐ **Removal procedure**

1. Remove the "4.3.1 Upper Housing" *(p.38)*.
2. Remove the "4.5.1 Hopper" *(p.42)*.
3. Disconnect the connector cables of P/S ASSY and PF Motor from CN6, CN8 of the Main Board. (See "4.4.1 Main Board" *(p.40)*)
4. Remove the "4.5.4 CR Motor" *(p.47)*.
5. Remove the screw from the Shield Plate L. (The plate is not to be removed. In Epson Stylus C79/D78's case, see Step1 in "4.5.9 Main Frame" *(p.56)*. In Epson Stylus C58/C59/ME2's case, see Check Point in "4.5.8 EJ Frame Assy/ EJ Roller" *(p.54)*)
6. Follow the same steps from Step 2 in "4.5.9 Main Frame" *(p.56)* to Step 6.
7. Remove the Main Frame together with other parts.

CAUTION

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



Place the Main Frame with the back side facing down as shown in the figure.

Figure 4-94. How to place the Main Frame

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

REASSEMBLY

■ **When reassembling the Main Frame, basically follow the removal steps backward. But in some points listed below, be sure to refer to the reassembly instructions.**

- **Be careful not to bend or damage the Shield Plate L when placing the Main Frame on the Frame Base in Step 5.**
- **Be careful not to damage the Carriage Lock Lever when placing the Main Frame on the Frame Base in Step 5. (See Preparation for LD Roller Removal *(p59)*)**
- **See "Installing Extension Springs" *(p.58)* and "Installing Grounding Spring" *(p.58)* in Step 5**

ADJUSTMENT REQUIRED

■ **After removing the Main Frame in this removal, perform the required adjustment. (Refer to Chapter 5 "ADJUSTMENT")**

■ **When the Main Frame is reassembled, perform the required lubrication. (Refer to Chapter 6 "MAINTENANCE")**

CHAPTER

5

ADJUSTMENT

5.1 Adjustment Items and Overview

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

5.1.1 Servicing Adjustment Item List

The adjustment items of this product are as follows.

Table 5-1. Adjustment Items

	Function Item	Purpose	Method Outline	Tool	Used Media
Adjustment Items	EEPROM data copy	This function is used to read the necessary data from the EEPROM of the faulty Main Board and write them to the new Main Board in order to reduce the auxiliary adjustment items at the time of Board replacement.	With the old Board installed, use the adjustment program to read out and memorize the EEPROM data, and after exchanging with the new Board, load the memorized data.	• Adjustment Program	--
	Destination settings	At the time of Main Board replacement, this adjustment is made to write the Board common information on a destination basis.	Use the adjustment program to write the Board information on a destination basis to the Main Board.	• Adjustment Program	--
	USB-ID Input	To enable recognition of each printer on the PC side, when several same model printers are connected to the PC via the USB hub.	Enter the serial number to the adjustment program. Operate the function for the adjustment program to automatically create an unique ID from the serial number, and it is registered to the Printer.	• Adjustment Program	--
	Head ID Input	At the time of Printhead replacement, this adjustment is made to register the head manufacturing variations correction ID to the printer.	Use the adjustment program to input the Head QR Code label ID stuck on the Printhead. (Supplement: Read the QR code label from left to right on the top row and then from top to bottom in due order.)	• Adjustment Program	--
	TOP Margin Adjustment	Adjust to make the Top Margin the value you wish.	Use the adjustment program, to print the Top margin adjustment pattern, measure the distance from Paper top edge to the TOP line, and adjust so that it becomes within 3 ± 1mm.	• Adjustment Program • Rule	A4 (Plain paper)

Table 5-1. Adjustment Items

	Function Item	Purpose	Method Outline	Tool	Used Media
Adjustment Items	Head angular adjustment	Adjust the vertical/horizontal tilt that occur when installing the Head, by the software.	Use the adjustment program to print the adjustment pattern and adjust to meet the standard.	• Adjustment Program	A4 (Plain paper)
	Bi-D adjustment	This adjustment is made to correct the print timing in the go and return paths in bi-directional printing.	Use the adjustment program to print out the adjustment pattern, and enter the adjustment value of the printed pattern with no black/white streaks in the block. Adjustment items are, each dot sizes (ECO/VSD1/VSD2/ VSD3) x Colors (Black/Color), total of 8 types.	• Adjustment Program	A4 (Plain paper)
	First dot adjustment	Correct the print timing by the software to make the start printing position of the main scan direction to the value you wish.	Use the adjustment program to print the adjustment pattern and enter the adjustment value of printed position 5mm from the left edge.	• Adjustment Program • Rule	A4 (Glossy paper)
	PF Band adjustment	This adjustment is made to correct the variations of Mechanism, or the paper feeding accuracy.	Use the adjustment program to print out the adjustment pattern, evaluate the pattern based on the criteria, and register the appropriate adjustment value to the printer.	• Adjustment Program	A4 (Plain paper)
	CR heat protection control	Assuming production variation of the CR Motor and the PS Board, operate this to use the motor capacity to the maximum when the CR Motor generates heat.	Select the replaced parts in the adjustment program, then operate this adjustment to automatically write the appropriate adjustment value.	• Adjustment Program	--

Table 5-2. Maintenance Items

	Function Item	Purpose	Method Outline	Tool	Used Media
Maintenance Items	Head Cleaning	This function is used to execute Cleaning efficiently when ink is not delivered from the Head properly, e.g. dot missing.	Use the adjustment program to execute Cleaning, then execute nozzle check printing.	• Adjustment Program	A4 / Letter (Plain Paper)
	Ink charge	When replacing the Head, this function is used to fill ink in the flow path of the Head in the ASP to make all nozzles printable and stabilize the ink in the Printhead.	Use the adjustment program to execute ink charge, then execute nozzle check printing.	• Adjustment Program	A4 / Letter (Plain Paper)
	Waste ink pad counter read out/ Initialization	Initialize the Waste ink pad counter for replaced parts after maintenance error occurred. Also, when counter full is close, pad exchange/counter initialization may be executed to prevent re-fixing.	After exchanging the Waste ink pad, initialize the counter by the adjustment program.	• Adjustment Program	--

Table 5-3. Additional Functions

Function Item			Purpose	Method Outline	Tool	Used Media
Additional Functions	Print check pattern	Plain Paper	This printing is executed to check whether all adjustment results are normal.	Select and execute the functions by the adjustment program.	• Adjustment Program	A4 / Letter (Plain paper)
		Photo Quality Ink Jet Paper				A4 / Letter (Photo Quality Ink Jet Paper)
	EEPROM data readout		Read the EEPROM data for analysis.	Select this function in the exclusive servicing program, and save all data of the EEPROM into a file.	• Adjustment Program	
	Read printer information	Waste Ink counter	Read the printer operation information.	Select and execute the functions by the adjustment program.	• Adjustment Program	--
		Manual CL counter				
		I/C exchange CL counter				
		Timer CL counter				

5.1.2 Replacement Part Adjustment Items

The following table indicates the adjustment items for replacement parts.

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

Table 5-4. Adjustment Items

Priority		1	2	3	4	5	6	7	8	9	10	11	12
Replaced parts \ Adjustment item		EEPROM data copy	Destination setting	USB ID input	Waste ink pad counter	Ink charge	Head ID input	TOP margin adjustment	First dot adjustment	Head Angular adjustment	Bi-D adjustment	PF band adjustment	CR heat protection control
Hopper	Removal	--	--	--	--	--	--	Required	--	--	--	Required	--
	Replacement	--	--	--	--	--	--	Required	--	--	--	Required	--
Main Frame	Removal	--	--	--	--	--	--	Required	Required	Required	Required	Required	--
	Replacement	--	--	--	--	--	--	Required	Required	Required	Required	Required	Required
Main Board	Removal	--	--	--	--	--	--	--	--	--	--	--	--
	Replacement	Required	--	--	--	--	--	--	--	--	--	--	--
	Replacement (EEPROM Copy NG)	--	Required	Required	Ink Pads must be replaced	--	Required	Required	Required	Required	Required	Required	Required
LD roller/ASF unit	Removal	--	--	--	--	--	--	Required	--	Required	Required	Required	--
	Replacement	--	--	--	--	--	--	Required	--	Required	Required	Required	Required
Wasted ink Pads	Removal	--	--	--	--	Required	--	Required	--	Required	Required	Required	--
	Replacement	--	--	--	Required	Required	--	Required	--	Required	Required	Required	--
Printhead	Removal	--	--	--	--	--	--	Required	Required	Required	Required	Required	--
	Replacement	--	--	--	--	Required	Required	Required	Required	Required	Required	Required	--
CR Motor	Removal	--	--	--	--	--	--	--	Required	Required	Required	--	--
	Replacement	--	--	--	--	--	--	--	Required	Required	Required	--	Required
CR unit/Timing Belt	Removal	--	--	--	--	--	--	Required	Required	Required	Required	Required	--
	Replacement	--	--	--	--	--	--	Required	Required	Required	Required	Required	Required
Ink System (Pump)	Removal	--	--	--	--	Required	--	Required	Required	Required	Required	Required	--
	Replacement	--	--	--	--	Required	--	Required	Required	Required	Required	Required	--
EJ Roller	Removal	--	--	--	--	--	--	--	--	Required	Required	Required	--
	Replacement	--	--	--	--	--	--	--	--	Required	Required	--	--

Table 5-4. Adjustment Items

Priority		1	2	3	4	5	6	7	8	9	10	11	12
Replaced parts \ Adjustment item		EEPROM data copy	Destination setting	USB ID input	Waste ink pad counter	Ink charge	Head ID input	TOP margin adjustment	First dot adjustment	Head Angular adjustment	Bi-D adjustment	PF band adjustment	CR heat protection control
PF Roller	Removal	--	--	--	--	--	--	Required	Required	Required	Required	Required	--
	Replacement	--	--	--	--	--	--	Required	Required	Required	Required	Required	--
PF Motor	Removal	--	--	--	--	--	--	Required	Required	Required	Required	Required	--
	Replacement	--	--	--	--	--	--	Required	Required	Required	Required	Required	--
Power Supply Board	Removal	--	--	--	--	--	--	--	--	--	--	--	--
	Replacement	--	--	--	--	--	--	--	--	--	--	--	Required
EJ Frame Assy	Removal	--	--	--	--	--	--	Required	--	Required	Required	Required	--
	Replacement	--	--	--	--	--	--	Required	--	Required	Required	Required	--

5.2 Adjustment by Using Adjustment Program

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

5.2.1 Head angular adjustment

FOR EPSON STYLUS C58/C59/ME2 AND EPSON STYLUS C79/D78

Patterns are printed as shown below.

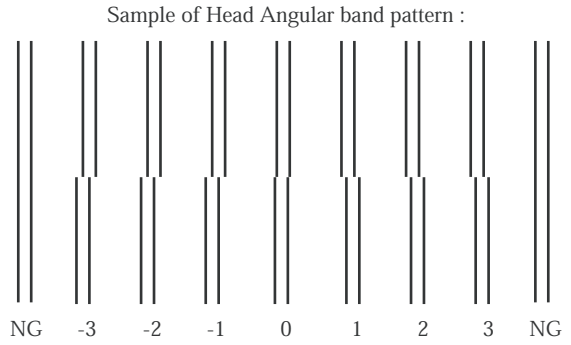


Figure 5-1. Head angular adjustment Pattern Printing

[Judgment method]

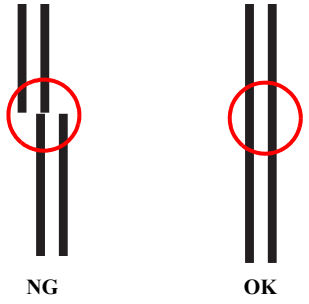
Find the pattern with least vertical displacement between -3 and 3, and enter the value of that pattern.

[Corrective action]

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

CHECK POINT

The diagram below shows the OK and NG patterns.



FOR EPSON STYLUS C90/C91/C92/D92/T20/T20E/T23/T26/S20/T10/ T11/ME 30/T21/T24/T27/S21

Patterns are printed as shown below.

Figure 5-2. Head angular adjustment Pattern Printing

[Judgment method]

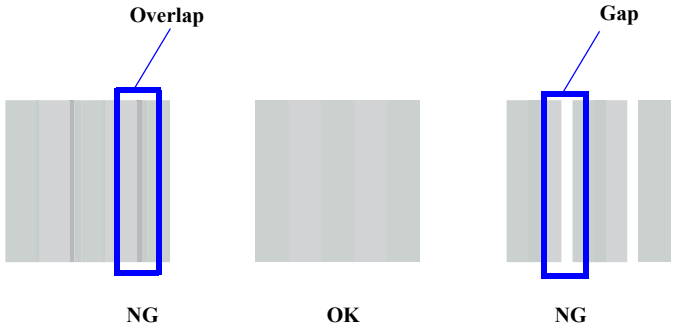
Find the pattern with no gaps or overleaps of the left and right pattern, and enter the value of that pattern.

[Corrective action]

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

CHECK POINT

The diagram below shows the OK and NG patterns.



5.2.2 Top Margin Adjustment

Patterns are printed as shown below.

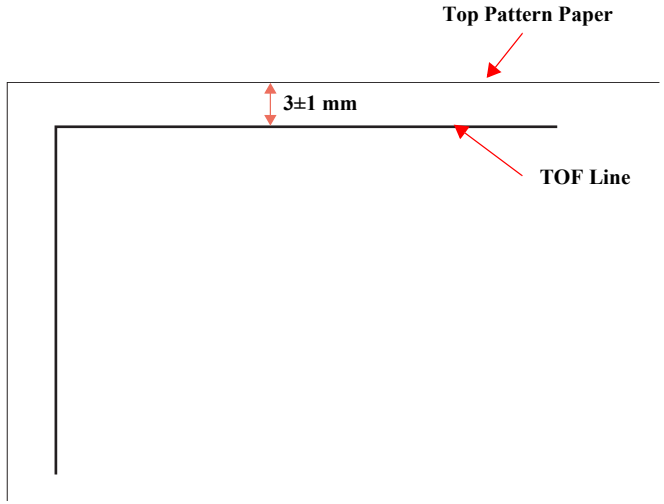


Figure 5-3. Top Margin adjustment Pattern Printing

[Judgment method]

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

[Corrective action]

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

5.2.3 Bi-D Adjustment

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

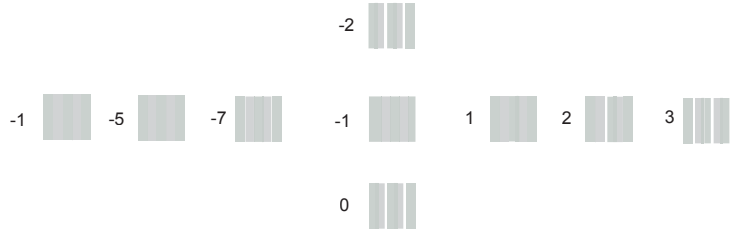


Figure 5-4. Bi-D adjustment Pattern Printing

[Judgment method]

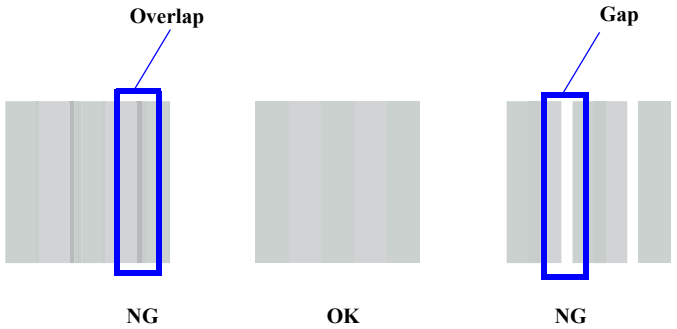
Find the pattern with no gaps or overleaps of the left and right pattern, and enter the value of that pattern.

[Corrective action]

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

CHECK POINT

The diagram below shows the OK and NG patterns.



5.2.4 First Dot Adjustment

Patterns are printed as shown below.

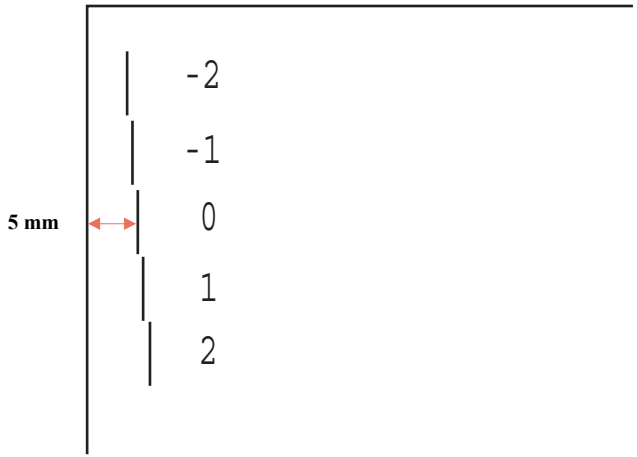


Figure 5-5. Left Right margin adjustment Pattern Printing

[Judgment method]

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

[Corrective action]

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

5.2.5 PF Band Adjustment

Patterns are printed as shown below.

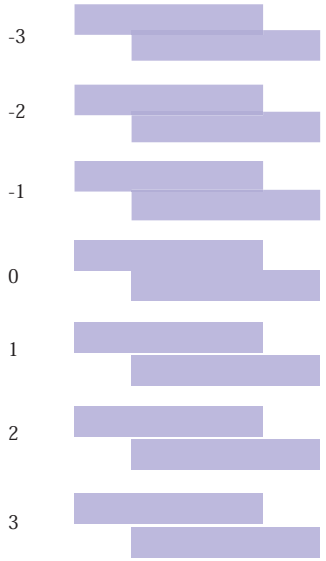


Figure 5-6. PF Band Adjustment Pattern

[Judgment method]

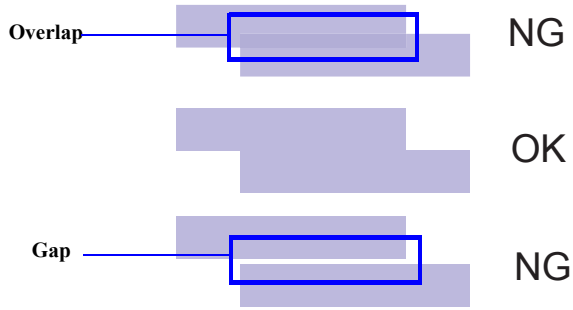
Select the pattern with no gap or overleap.

[Corrective action]

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

CHECK POINT

The diagram below shows the OK and NG patterns.



CHAPTERY

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 soft brush to wipe off any dusts. Use a soft cloth moistened with alcohol to remove the ink stain.**
- **Do not use cleaning sheet included in the media for normal usage. It may damage the coated surface of PF roller.**
  If the adhesive surface of the cleaning sheet is set to the LD roller shaft side and used to clean the LD roller surface, it is no problem.
- **When using compressed air products; such as air duster, for cleaning during repair and maintenance, the use of such products containing flammable gas is prohibited.**

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

☐ Inside the printer
Use a vacuum cleaner to remove any paper dust.

☐ LD Roller
When paper loading function does not operate because friction of the LD roller is lowered by any paper dust, set the adhesive side up of the cleaning sheet (included in the media) to remove any paper dust. Repeat loading the cleaning sheet several times.

6.1.2 Service Maintenance

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

☐ Printhead cleaning
When dot missing or banding phenomenon has occurred, you need to perform the printhead cleaning operation*1 by using the printhead cleaning function. This function can be performed by the control panel operation, the printer driver utility and the Adjustment program.
In case that the cleaning sequence is performed by the control panel operation, confirm that the printer is in stand-by state (the Power LED is lighting), and hold down the Error reset button on the control panel for more than 3 seconds. Then, the printer starts the cleaning sequence (the Power LED blinks during this sequence).
In case that you select and perform the manual cleaning by the printer driver utility, the most appropriate cleaning mode is selected. The following is the process to perform the printhead cleaning from the printer driver utility.
As for the operation of the Adjustment program, refer to
Chapter 5 “ADJUSTMENT” *(p.69)*.

*1: Epson Stylus C58/C59/ME 2 and Epson Stylus C79/D78/C90/C91/C92/D92/T20/T20E/T23/T26/S20/T10/T11/ME 30/T21/T24/T27/S21 have four modes for manual cleaning, and even during printing, the appropriate cleaning mode is automatically selected and performed according to various conditions. Therefore the ink consumption amount for manual cleaning varies depending on each mode.

1. Select the “EPSON Status Monitor 3” in the printer driver utility, and make sure that the printer is in stand-by state by using the Status monitor 3. If the printer is in stand-by state, the following figure is indicated on the monitor.

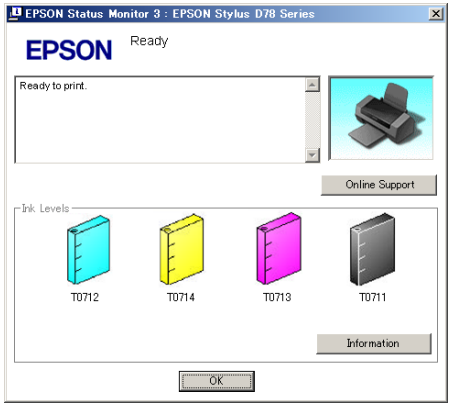


Figure 6-1. Status monitor 3 indication

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

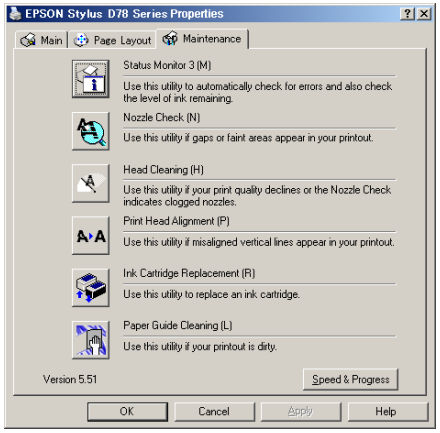


Figure 6-2. Head cleaning function in the printer driver utility

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

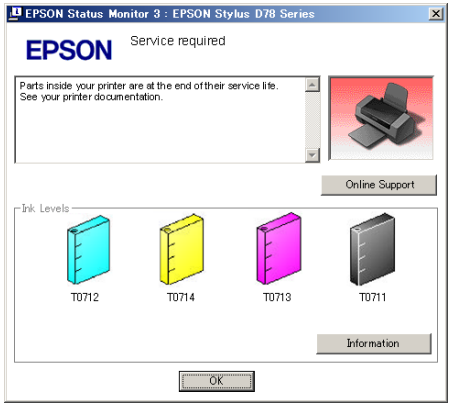


Figure 6-3. Maintenance error indication in STM3

In this case, replace to new Waste drain ink pad and clear the waste ink counter stored into the EEPROM. The waste ink counter can be reset only from the Adjustment program because this printer dose not have the waste ink counter reset function by the control panel SW. As for the procedure, refer to **Chapter 5 “ADJUSTMENT” *(p.69)***. In your repair activity, check the waste ink counter along with the firmware version, Main board checker program version and nozzle check pattern on the nozzle check pattern printing. If the waste ink counter is closed to its limit, recommend that the Waste drain ink pad will be replaced with new one. This is because the “Maintenance request error” will may occur after returning the repaired product to the customer.

6.1.3 Lubrication

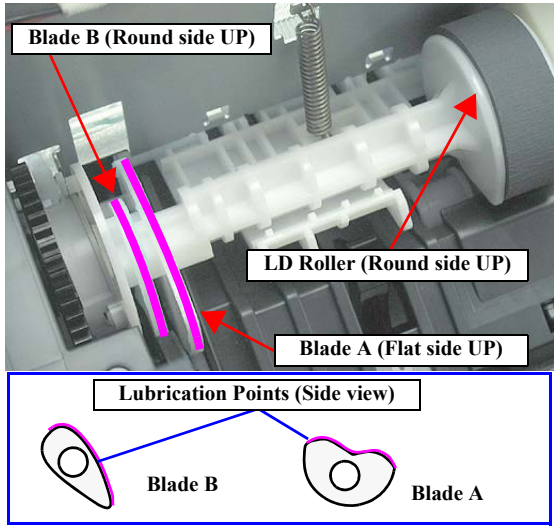
The characteristics of the grease have great affects on the mechanical function and durability, especially does the characteristics about temperature environment. The type and amount of the grease used to lubricate the printer parts are determined based on the results of the internal evaluations. Therefore, be sure to apply the specified type and amount of the grease to the specified part of the printer mechanism during servicing.

CAUTION

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

Type	Name	EPSON code	Supplier
Grease	G-71	1304682	EPSON
Grease	G-58	1432035	EPSON
Grease	G-74	1409257	EPSON

☐ Refer to the following figures for the lubrication points.



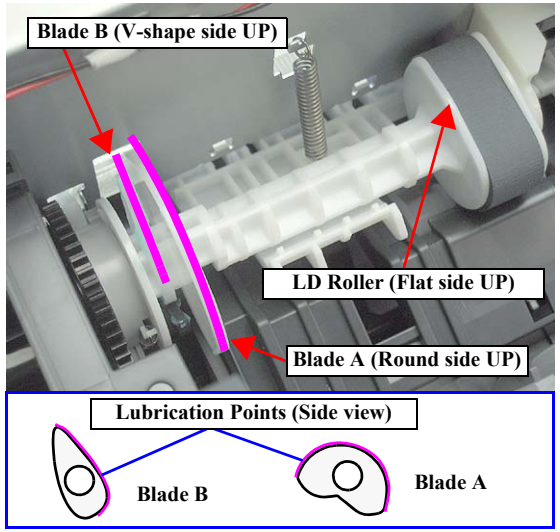
<Lubrication Point>
Blade A, Blade B of LD Roller

<Lubrication Type>
G-71

<Lubrication Amount>
ϕ1mm x along edges (L)

<Remarks>
Use an injector to apply G-71.
- G-71 must not be adhered to other parts.
- Rub off excess G-71 with a cotton bud if necessary.

Figure 6-4. Lubrication on LD Roller (1)



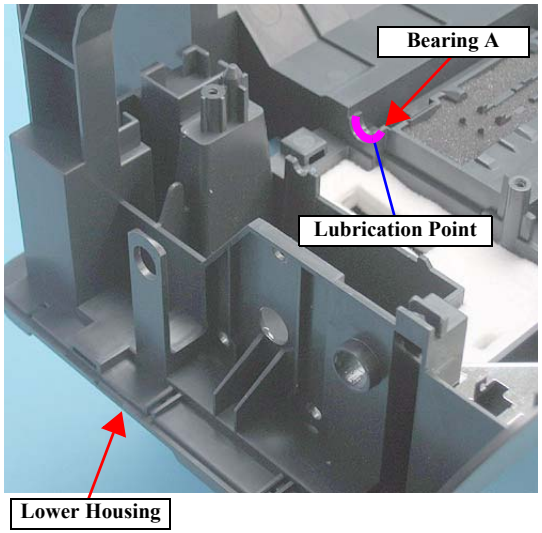
<Lubrication Point>
Blade A, Blade B of LD Roller

<Lubrication Type>
G-71

<Lubrication Amount>
ϕ1mm x along edges (L)

<Remarks>
Use an injector to apply G-71.
- G-71 must not be adhered to other parts.
- Rub off excess G-71 with a cotton bud if necessary.

Figure 6-5. Lubrication on LD Roller (2)



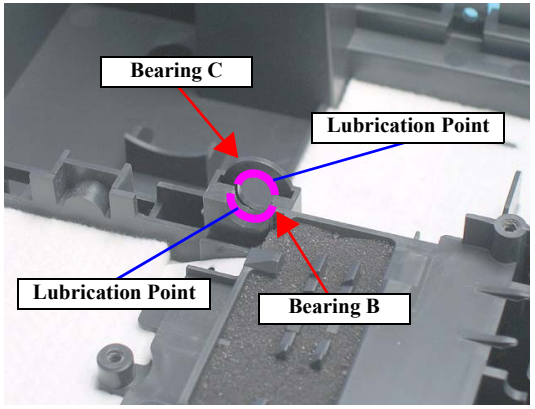
<Lubrication Point>
Bearing A of Lower Housing (for PF Roller)

<Lubrication Type>
G-71

<Lubrication Amount>
ϕ1 mm x along inner edge (L)

<Remarks>
Use an injector to apply G-71.
- G-71 must not be adhered to other parts.
- Rub off excess G-71 with a cotton bud if necessary.

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



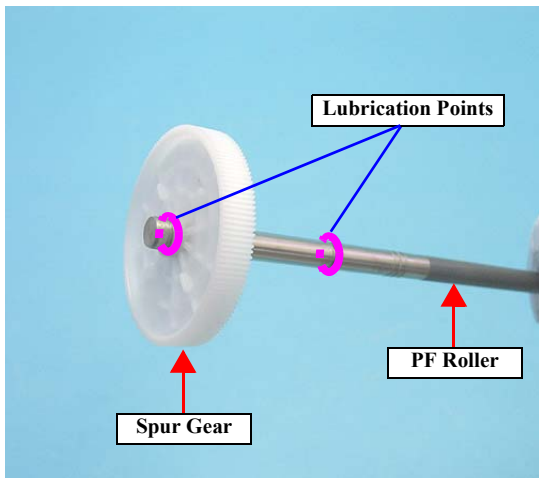
<Lubrication Point>
Bearing B, C of Lower Housing (for PF Roller)

<Lubrication Type>
G-71

<Lubrication Amount>
ϕ1 mm x along inner edges (L)

<Remarks>
Use an injector to apply G-71.
- G-71 must not be adhered to other parts.
- Rub off excess G-71 with a cotton bud if necessary.

Figure 6-7. Lubrication on PF Roller Bearing (2)



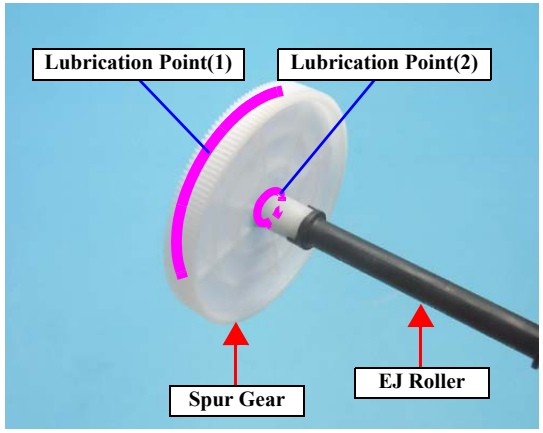
<Lubrication Point>
Shaft and Groove of PF Roller

<Lubrication Type>
G-71

<Lubrication Point>
ϕ1 mm x around shaft x 2

<Remarks>
Use an injector to apply G-71.
- G-71 must not be adhered to other parts.
- Rub off excess G-71 with a cotton bud if necessary.

Figure 6-8. Lubrication on PF Roller



<Lubrication Point>
(1) Teeth of Spur Gear of EJ Roller*
(2) Shaft of Spur Gear of EJ Roller

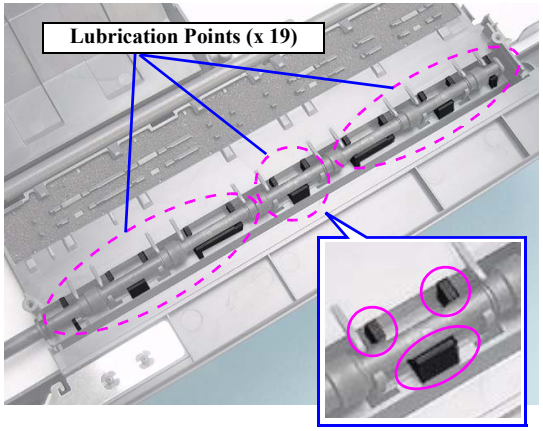
<Lubrication Type>
(1) G-58*
(2) G-71

<Lubrication Amount>
(1) ϕ1 mm x 60 mm*
(2) ϕ1 mm x around shaft

<Remarks>
Use an injector to apply G-58* and G-71.
- G-71 must not be adhered to other parts.
- Rub off excess G-71 with a cotton bud if necessary.

Figure 6-9. Lubrication on EJ Roller (1)

Note *: Epson Stylus C90/C91/C92/D92 Only.



<Lubrication Point>
Bearings (x19) below the hooks of Lower Housing (for EJ Roller)

<Lubrication Type>
G-74

<Lubrication Point>
0.04g/position

<Remarks>
Use a flux dispenser to apply G-74
- G-74 must not be adhered to other parts.
- Rotate EJ Roller when lubricate it with G-74.

Figure 6-10. Lubrication on EJ Roller (2)

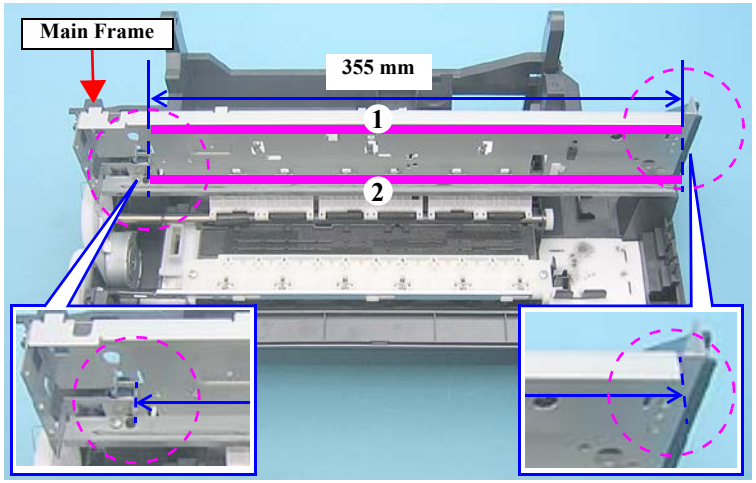
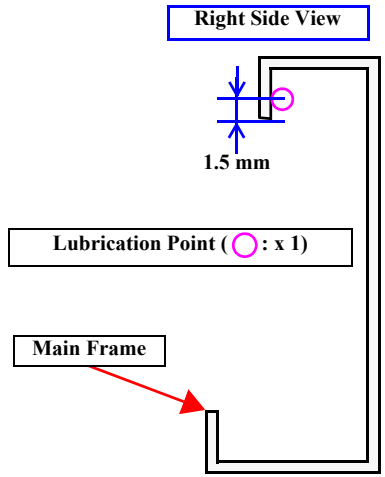


Figure 6-11. Lubrication on Main Frame

There is one lubrication point in the area indicated with 1. See *Figure 6-12*

There are four lubrication point in the area indicated with 2. See *Figure 6-13*



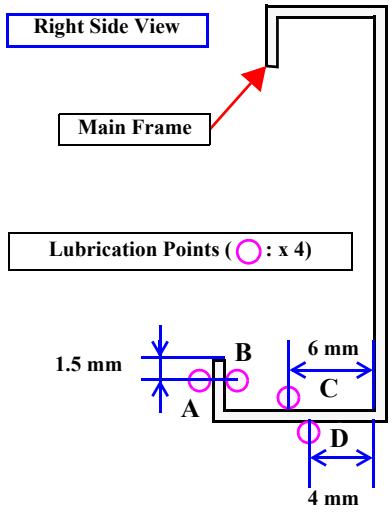
<Lubrication Point>
Upper rib (x 1)
Area 1 in *Figure 6-11*

<Lubrication Point>
G-71

<Lubrication Amount>
ϕ 1 mm x 355 mm along upper rib
(See *Figure 6-11*)

<Remarks>
Use an injector to apply G-71.
- G-71 must not be adhered to other parts.
- Rub off excess G-71 with a cotton bud if necessary.

Figure 6-12. Lubrication on Main Frame (1)



<Lubrication Point>
Lower rib (x 4: Point A - Point D)
Area 2 in *Figure 6-11*

<Lubrication Point>
G-71

<Lubrication Amount>
ϕ 1 mm x 355 mm along lower rib
(See *Figure 6-11*)

<Remarks>
Use an injector to apply G-71.
- G-71 must not be adhered to other parts.
- Rub off excess G-71 with a cotton bud if necessary.

Figure 6-13. Lubrication on Main Frame (2)

CHAPTER

7

APPENDIX

7.1 Exploded Diagram / Parts List

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