SERVICE MANUAL

bizhub 20

2010.05

KONICA MINOLTA BUSINESS TECHNOLOGIES, INC. Ver. 1.0

PREFACE

This service manual contains basic information required for after-sales service of the Laser Multi-Function Center (hereinafter referred to as "the machine"). This information is vital to the service personnel to maintain the high printing quality and performance of the machine.

This service manual covers the **bizhub 20** machines.

This manual consists of the following chapters:

CHAPTER 1: SPECIFICATIONS

Provides specifications of each model, which enables you to make a comparison of the different models.

CHAPTER 2: THEORY OF OPERATION

Gives an overview of the printing mechanisms as well as the sensors, actuators, and control electronics. It aids in understanding the basic principles of operations as well as locating defects for troubleshooting.

CHAPTER 3: ERROR INDICATION AND TROUBLESHOOTING

Details of error messages and codes that the incorporated self-diagnostic function of the machine will display if any error or malfunction occurs. If any error message appears, refer to this chapter to find which parts should be checked or replaced.

The latter half of this chapter provides sample problems that could occur in the main sections of the machine and related troubleshooting procedures.

CHAPTER 4: PERIODICAL MAINTENANCE

Details of consumable parts and periodical maintenance parts. This chapter also covers procedures for disassembling and assembling periodical maintenance parts.

CHAPTER 5: DISASSEMBLY/REASSEMBLY

Details of procedures for disassembling and assembling of the machine together with related notes. The disassembly order flow provided enables you to see at a glance the quickest way to get to parts involved.

At the start of a disassembly job, you can check the disassembly order flow that guides you through a shortcut to get to the object parts.

This chapter also covers screw tightening torques and lubrication points to which the specified lubrications should be applied during assembly jobs.

CHAPTER 6: SERVICE FUNCTIONS

Describes the maintenance mode which is exclusively designed for the purpose of checking the settings and adjustments using the keys on the panel.

This chapter also covers hidden function menus, which activate settings and functions or reset the parts life.

CHAPTER 7: CIRCUIT DIAGRAMS, WIRING DIAGRAM

Provides the Circuit Diagrams and Wiring diagram for the connections of the PCBs.

APPENDIX 1: WORKER SWITCH (WSW)

APPENDIX 2: DELETION OF USER SETTING INFORMATION, etc.

Provides instructions on how to delete such as user setting information recorded in the machine.

APPENDIX 3: SCREW CATALOGUE

APPENDIX 4: REFERENCES

APPENDIX 5: GLOSSARY

Information in this manual is subject to change due to improvement or redesign of the product.

A thorough understanding of this machine, based on information in this service manual, is required for maintaining its print quality performance and for improving the practical ability to find the cause of problems.

REGULATION

For Europe and Other countries

■ Radio interference (220 to 240 volt model only)

This machine follows EN55022 (CISPR Publication 22)/Class B.

Before you use this product, make sure that you use one of the following interface cables.

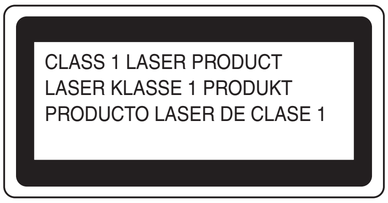
(1) A shielded parallel interface cable with twisted-pair conductors and that it is marked IEEE 1284 compliant.

(2) A USB cable.

The cable must not be more than 2 meters long.

■ IEC 60825-1 specification (220 to 240 volt model only)

This machine is a Class 1 laser product as defined in IEC 60825-1 specifications. The label shown below is attached in countries where it is needed.



CLASS 1 LASER PRODUCT
LASER KLASSE 1 PRODUKT
PRODUCTO LASER DE CLASE 1

This machine has a Class 3B laser diode which produces invisible laser radiation in the laser unit. You should not open the laser unit under any circumstances.

Caution

Use of controls or adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

For Finland and Sweden

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

Varoitus!

Laitteen käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

Varning

Om apparaten används på annat sätt än i denna Bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

Internal laser radiation

Maximum radiation power:	5 mW
Wave length:	770 - 810 nm
Laser class:	Class 3B

EU Directive 2002/96/EC and EN50419

(European Union only)

This equipment is marked with the above recycling symbol. It means that at the end of the life of the equipment you must dispose of it separately at an appropriate collection point and not place it in the normal domestic unsorted waste stream. This will benefit the environment for all. (European Union only)

For USA and Canada

■ Federal Communications Commission (FCC) Declaration of Conformity (For USA)

Responsible Party:	KONICA MINOLTA BUSINESS SOLUTIONS U.S.A., INC. 100 Williams Drive Ramsey, NJ 07446 Phone: 201-825-4000

declares, that the products

Product name:	bizhub 20

complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Important

A shielded interface cable should be used to ensure compliance with the limits for a Class B digital device. Changes or modifications not expressly approved by KONICAMINOLTA could void the user's authority to operate the equipment.

Industry Canada Compliance Statement (For Canada)

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Laser Safety (110 to 120 volt model only)

This machine is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the machine does not produce hazardous laser radiation.

Since radiation emitted inside the machine is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

FDA Regulations (110 to 120 volt model only)

The U.S. Food and Drug Administration (FDA) has implemented regulations for laser products manufactured on and after August 2, 1976. Compliance is mandatory for products marketed in the United States. The following label on the back of the machine indicates compliance with the FDA regulations and must be attached to laser products marketed in the United States.

COMPLIES WITH 21CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS
PURSUANT TO LASER NOTICE NO.50, DATED JUNE 24, 2007.

- Internal laser radiation

Maximum radiation power:	5 mW
Wave length:	770 - 810 nm
Laser class:	Class 3B

SAFETY PRECAUTIONS

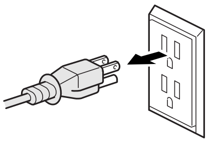
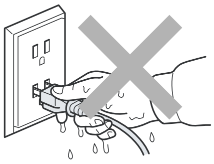
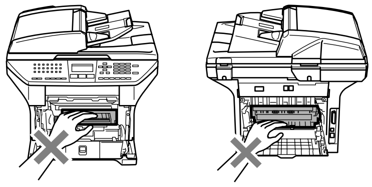
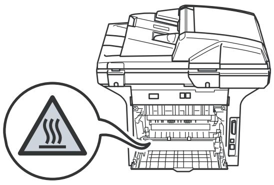
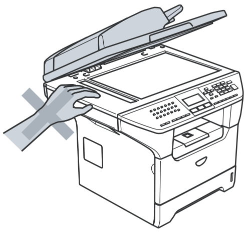
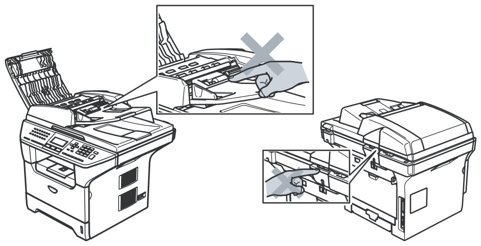
To use the machine safely

Please keep these instructions for later reference and read them before attempting any maintenance.

Note :

If there are faxes in the machine's memory, you need to print them or save them before you turn off the power and unplug the machine.

⚠ WARNING

⚠	There are high voltage electrodes inside the machine. Before you clean the inside of the machine, make sure you have unplugged the telephone line cord first and then the power cord from the AC power outlet.	
⚠	Do not handle the plug with wet hands. Doing this might cause an electrical shock.	
⚠	After you use the machine, some internal parts are extremely HOT! To prevent injuries, be careful not to put your fingers in the areas shown in the illustration.	
⚠	The fuser unit is marked with a caution label. Please do not remove or damage the label.	
⚠	To prevent injuries, be careful not to put your hands on the edge of the machine under the scanner cover.	
⚠	To prevent injuries, be careful not to put your fingers in the area shown in the illustrations.	

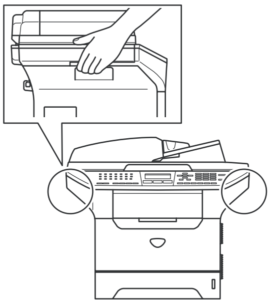
Do not use a vacuum cleaner to clean up scattered toner. Doing this might cause the toner dust to ignite inside the vacuum cleaner, potentially starting a fire. Please carefully clean the toner dust with a dry, lint-free cloth and dispose of it according to local regulations.

WARNING

DO not use any type of spray to clean inside or outside of the machine.
Doing this may cause a fire or electrical shock.

WARNING

- When you move the machine, grasp the side hand holds that are under the scanner. DO NOT carry the machine by holding it at the bottom.



- Use caution when installing or modifying telephone lines. Never touch telephone wires or jack. Never install telephone wiring during a lightning storm. Never install a telephone wall jack in a wet location.
- This product must be installed near an AC power outlet that is easily accessible. In case of an emergency, you must disconnect the power cord from the AC power outlet to shut off the power completely.
- To reduce the risk of shock or fire, use only a No. 26 AWG or larger telecommunication line cord.

CAUSION

Lightning and power surges can damage this product! We recommend that you use a quality surge protection device on the AC power line and on the telephone line, or unplug the cords during a lightning storm.

WARNING

<IMPORTANT SAFETY INSTRUCTIONS>

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to people, including the following:

1. Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or washing machine, in a wet basement or near a swimming pool.
2. Avoid using this product during an electrical storm. There may be a remote risk of electric shock from lightning.
3. Do not use this product to report a gas leak in the vicinity of the leak.
4. Use only the power cord provided with the MACHINE.

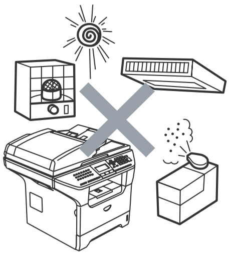
SAVE THESE INSTRUCTIONS

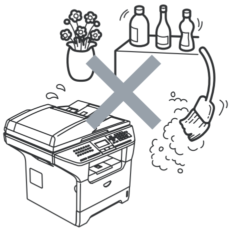
CHOOSING A LOCATION

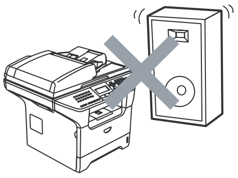
Place your machine on a flat, stable surface that is free of vibration and shocks, such as a desk.
Put the machine near a telephone wall jack and a standard, grounded AC power outlet.
Choose a location where the temperature remains between 50°F and 90.5°F (10°C and 32.5°C).

CAUSION

- Avoid placing your machine in a high-traffic area.
- Do not place the machine near heaters, air conditioners, water, chemicals, or refrigerators.
- Do not expose the machine to direct sunlight, excessive heat, moisture, or dust.
- Do not connect your machine to an AC power outlet controlled by wall switches or automatic timers.
- Disruption of power can wipe out information in the machine’s memory.
- Do not connect your machine to an AC power outlet on the same circuit as large appliances or other equipment that might disrupt the power supply.
- Avoid interference sources, such as speakers or the base units of cordless phones.







CHAPTER 1

SPECIFICATIONS

CHAPTER 1 SPECIFICATIONS

This chapter lists the specifications of each model, which enables you to make a comparison of different models.

CONTENTS

1. COMPONENTS

The equipment consists of the following major components:

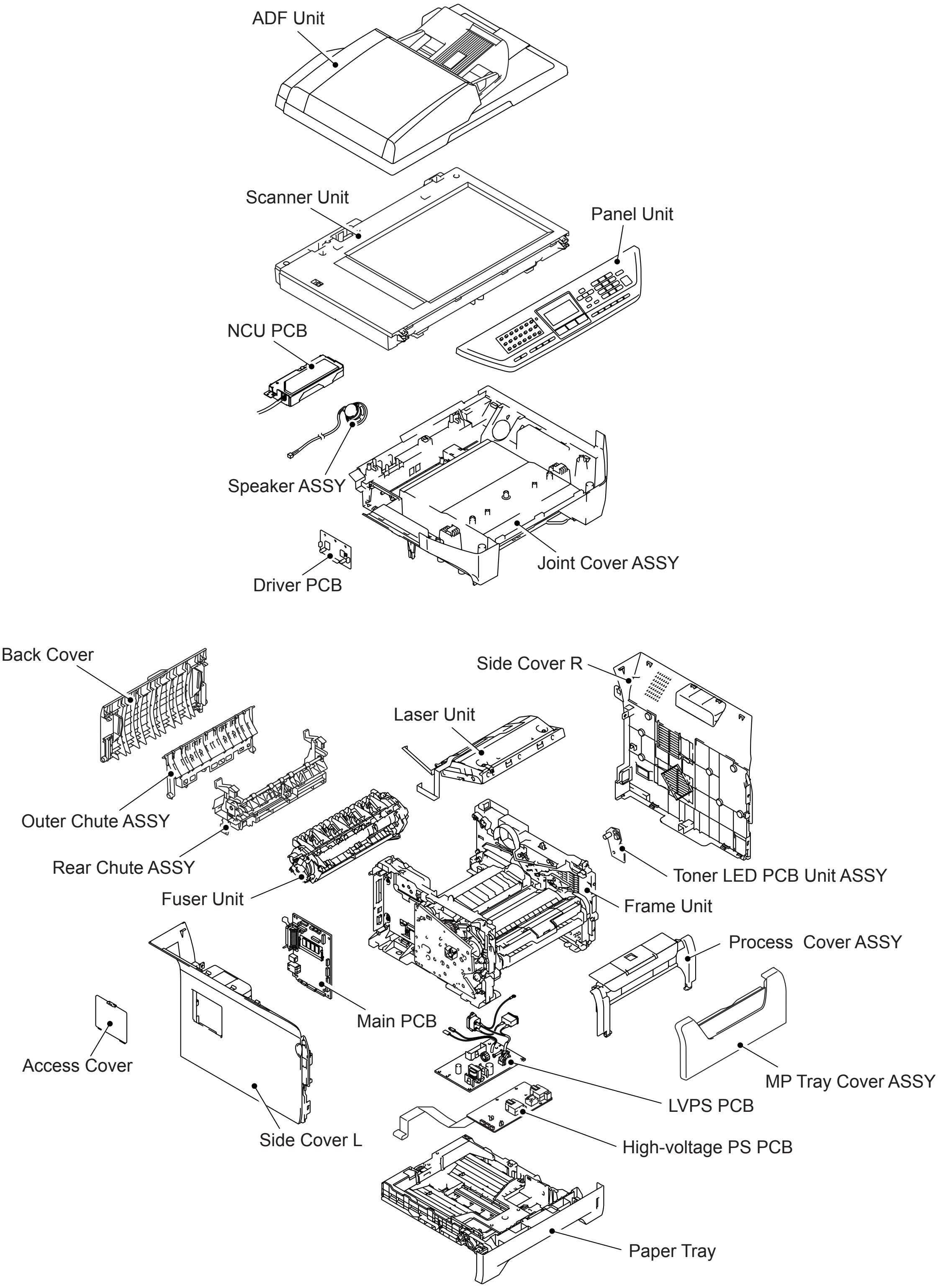


Fig. 1-1

2. SPECIFICATIONS LIST

2.1 Printing

Model		bizhub 20
Print method		Electrophotography by semiconductor laser beam scanning
Laser		Method: 1 polygon motor, 1 laser beam Wavelength: 770 nm - 810 nm Output: 5 mW (Max) Laser class: Class3 B
Resolution	1200 dpi *1, HQ1200 (2400x600dpi)	Windows® 2000/XP/ XP Professional x64 Edition, Windows Vista® , Windows® 7, Windows Server® 2003/ Windows Server® 2003 x 64 Edition, Windows Server® 2008, Mac OS® X 10.3.9 or greater
	600 x 600 dpi	Windows® 2000/XP/ XP Professional x64 Edition, Windows Vista® , Windows® 7, Windows Server® 2003/ Windows Server® 2003 x 64 Edition, Windows Server® 2008, Mac OS® X 10.3.9 or greater
Print mode		Normal printing mode Economy printing mode (Toner saving mode)
Print Speed (A4/Letter)	Standard	Up to 30/32 ppm * When loading A4 or Letter-size paper from the standard paper tray.
	Duplex	A4: Up to 13 sides per minute (6.5 sheets per minute)
		Letter: Up to 14 sides per minute (7 sheets per minute)
Warm-up time *2		From sleep mode: less than 18 seconds From power off → on: less than 35 seconds
First print time *3		Less than 8.5 seconds
Consumables	Toner cartridge	Life expectancy: 8,000 pages/cartridge * When printing A4/Letter-size paper in accordance with ISO/IEC 19752. Shelf life: 2 years without opening (6 months after opening)
	Drum unit	Life expectancy: 25,000 pages/drum unit Life expectancy will vary depending on number of continuous printing pages. * When printing A4/Letter-size paper. Shelf life: 2 years without opening (6 months after opening)
	The shelf life mentioned above is guaranteed under the normal condition as below; (Temperature) Normal condition: 0 to 40 °C * Storage condition at the temperature of 40 to 50 °C: Up to 5 days * Storage condition at the temperature of -20 to 0 °C: Up to 5 days (Humidity) Normal condition: 35 to 85 % * Storage condition at the humidity of 85 to 95 %: Up to 5 days * Storage condition at the humidity of 10 to 35 %: Up to 5 days	

*1 Using 1200 dpi setting (1200 x 1200 dpi) the print speed will be slower.

*2 The time may change if the machine is calibrating or registering itself.

*3 From Ready mode and standard paper tray.

Specifications are subject to change without notice.

2.2 Functions

<Controller>

Model		bizhub 20
CPU (clock speed)		300 MHz
Back up Clock		Yes (up to 60 hours)
Memory	Standard	64 MB
	Option	1 DIMM slot; expandable up to 576 MB
	Backup	Yes (up to 60 hours)
Interface [*1]		IEEE 1284 Parallel, Hi-Speed USB 2.0, Ethernet 10/100 BASE-TX, USB Host
Emulation		PCL6, BR-Script 3 (PostScript® 3™), IBM Pro-printer XL, Epson FX-850
Network Connectivity	Protocol	TCP/IP(10/100 BASE-TX Ethernet)
	Management tool	BRAdmin Light, Web Based Management
Resident fonts	PCL	66 scalable fonts, 12 bitmap fonts, 13 bar codes
	BR-Script 3 (PostScript® 3™)	66 scalable fonts

[*1] Windows Server® 2003 and Windows Server® 2008 are supported for netwoking printing only.
Pararell interface is not supported for Windows Vista®/Windows® 7.

<Software>

Model		bizhub 20
Printer driver	Windows®	Host-Based Driver for Windows® 2000 Professional/ XP/XP Professional x64 Edition/Windows Vista®/ Windows® 7/Windows Server® 2003/Windows Server® 2003 x64 Edition/Windows Server® 2008
		BR-Script3 (PPD file) for Windows® 2000 Professional/XP/ XP Professional x64 Edition/Windows Vista®/Windows® 7/ Windows Server® 2003/Windows Server® 2003 x64 Edition /Windows Server® 2008
	Macintosh®	Macintosh Printer Driver for Mac OS® X 10.3.9 or greater
		BR-Script 3 (PPD file for Mac OS® X 10.3.9 or greater)

<Viewer>

Model		bizhub 20
Viewer	Windows®	PaperPort 11 SE
	Macintosh®	Page Manager 7

Specifications are subject to change without notice.

<PC-Fax>

Model		bizhub 20
Windows®	Send	Yes
	Receive	Yes
Macintosh®	Send	Yes
	Receive	No

<Configuration Tool>

Model		bizhub 20
Control Center	Windows®	Yes (CC3)
	Macintosh®	Mac (CC2)
Remote Setup	Windows®	Yes
	Macintosh®	Yes

<Network Utility>

Model	bizhub 20
Windows®	BRAdmin Light, Web Base Management, Network Remote Setup
Macintosh®	BRAdmin Light, Web Base Management, Network Remote Setup

<Direct Print feature>

Model	bizhub 20
Direct Print	PDF version1.7*1, JPEG, Exif+JPEG, PRN(created by bizhub 20 printer driver), TIFF (scanned by bizhub 20), PostScript®3™ (created by BR-Script3 printer driver), XPS version 1.0.

[*1] PDF data including a JBIG2 images files, a JPEG2000 image file or transparency files are not supported.

Specifications are subject to change without notice.

<System requirements for printing function>

Computer Platform & Operating System Version		Processor Speed	Minimum RAM	Recom-mended RAM	Available Hard Disk Space
Windows®	Windows® 7	Intel® Pentium® 4 or equivalent 64-bit (Intel®64 or AMD64) supported CPU	1GB (32-bit) 2GB (64-bit)	1GB (32-bit) 2GB (64-bit)	650MB
	Windows Vista®		512MB	1GB	500MB
	Windows Server® 2003 x64 Edition	AMD Opteron™ AMD Athlon™ 64 Intel® Xeon™ with Intel® EM64T Intel® Pentium® with Intel® EM64T or equivalent	256MB	512MB	50MB
	Windows® XP Professional x64 Edition	AMDOpteron™ AMDAthlon™64 Intel® Xeon® with Intel® EM64T Intel® Pentium® 4 with Intel® EM64T or equivalent	256MB	512MB	50MB
	Windows Server® 2008 R2	64-bit (Intel® 64 or AMD64) supported CPU	512MB	2GB	50MB
	Windows Server® 2008	Intel® Pentium® 4 or equivalent 64-bit (Intel®64 or AMD64) supported CPU	512MB	2GB	50MB
	Windows Server® 2003	Intel® Pentium® III or equivalent	256MB	512MB	50MB
	Windows® XP Home Edition	Intel®Pentium® or equivalent	128MB	256MB	50MB
	Windows® XP Professional				
	Windows® 2000 Professional		64MB	256MB	50MB
Apple® Macintosh®	OS® X 10.3.9 - 10.4.3	Power PC G4/G5, Power PC G3 350MHz	128MB	256MB	80MB
	OS® X 10.4.4 or greater	Power PC G4/G5, Intel® Core™ Processor	512MB	1GB	80MB

Specifications are subject to change without notice.

2.3 Electronics and Mechanics

Model		bizhub 20
Power consumption	Copying	Average 680 W at 25 °C (77 °F)
	Ready	Average 85 W at 25 °C (77 °F)
	Sleep	Average 18 W at 25 °C
Noise level	Sound Pressure	Printing: 56 dB (A) Ready: 30 dB (A)
	Sound power	Printing: LWAd = 6.95 Bell (A) Ready: LWAd = 4.6 Bell (A)
Environment	Temperature	Operating: 10 to 32.5°C (50 to 90.5 °F) Non operating: 0 to 40°C (38 to 104 °F) Storage: -20 to 40°C (-4 to 104 °F)
	Humidity	Operating: 20 to 80 % (non condensing) Storage: 10 to 85 % (non condensing)
Dimensions (W x D x H)		531 x 451 x 475 mm (20.9 x 17.8 x 18.7 in.)
Weight Without Carton with drum unit and toner cartridge		Approx. 18.6 kg (41.0 lb)
LCD Size		22 characters x 5 lines (Full Dot) maximum message is 16 characters
LCD Back-Lit		Yes (1-color) - white

Specifications are subject to change without notice.

2.4 Network Connectivity

<Ethernet wired network>

Network node type	NC-6800h type2	
Operating system support	Windows® 2000 Professional, Windows® XP, Windows® 7, Windows® XP Professional x64 Edition, Windows Vista®, Windows Server® 2003, Windows Server® 2003 x64 Edition, Windows Server® 2008 Mac OS® X 10.3.9 or greater	
Protocol support	TCP/IP: IPv4	ARP, RARP, BOOTP, DHCP, APIPA (Auto IP), WINS/NetBIOS name resolution, DNS Resolver, mDNS, LLMNR responder, LPR/LPD, Custom Raw Port/Port9100, IPP/IPPS, FTP Client and Server, TELNET Server, HTTP/HTTPS Server, SSL/TLS, TFTP Client and Server, SMTP Client, APOP, POP before SMTP, SMTP AUTH, SNMPv1/v2c/v3, ICMP, LLTD responder, Web Services Print, CIFS Client, SNTP, LDAP, POP3/SMTP
	TCP/IP: IPv6	(Turned off as default) NDP, RA, DNS resolver, mDNS, LLMNR responder, LPR/LPD, Custom Raw Port/Port9100, IPP/IPPS, FTP Client and Server, TELNET Server, HTTP/HTTPS server, SSL/TLS, TFTP Client and Server, SMTP Client, APOP, POP before SMTP, SMTP AUTH, SNMPv1/v2c/v3, ICMPv6, LLTD responder, Web Services Print, CIFS Client, SNTP, LDAP, POP3/SMTP
Network type	10/100 BASE-TX Ethernet network	
Network printing	Windows® 7, Windows Vista®, Windows Server® 2003, Windows® XP and Windows® 2000 TCP/IP printing Mac OS® X 10.3.9 or greater printing	
Management utility	PageScope Net Care Device Manager	
	Web Based Management (Printer and print server management through web browser) recommend Microsoft Internet Explorer 6.0 (or greater), Fire fox 1.0 (or greater) for Windows Safar: 1.2 (or greater) for Macintosh	
	BRAdmin Light for Windows and Macintosh (Printer and print server management through web browser) recommend Microsoft Internet Explorer 6.0 (or greater), Fire fox 1.0 (or greater) for Windows Safar: 1.2 (or greater) for Macintosh	

Specifications are subject to change without notice.

2.5 Service Information

These are key service information to maintain the product.

Machine life: 200,000 pages or 5 years, whichever comes first

MTBF (Meantime between failure): 4,000 hours

MTTR (Meantime to repair): Average 0.5 hours

Maximum monthly volume: 30,000 pages

Periodical maintenance parts:

Parts		Approximate Life (pages)
ADF unit		50,000 or 5 years
Document Scanner unit		50,000 or 5 years
Fuser unit		100,000
Laser unit		100,000
PF kit	China	MP: 25,000 Tray 1, Tray 2: 100,000
	India	MP: 12,000 Tray 1, Tray 2: 80,000
	Others	MP: 50,000 Tray 1, Tray 2: 100,000

* As for periodical maintenance parts, refer to CHAPTER 4.

Specifications are subject to change without notice.

2.6 Paper

2.6.1 Paper handling

Model		bizhub 20
Paper Input [*1]	Standard tray	250 sheets
	Multi-purpose tray	50 sheets (Plain)/ 3 sheets (Envelope)
	Option	250 sheets
	ADF	Up to 50 sheets (Xerox4024 20lbs, environment: temp. 20-30C Humidity 50-70%)
Paper Output [*1]	Output Tray	150 sheets
	Back Output Tray	1 sheet
Duplex Print	Manual	Yes
	Automatic	Yes

[*1] Calculated with 80 g/m^2 (21 lb) paper.

Specifications are subject to change without notice.

2.6.2 Media specifications

Model		bizhub 20
Media type	Paper tray (Standard)	Plain paper, Bond paper, Recycled paper, Transparencies [*1], Thin paper
	Multi-purpose tray	Plain paper, Thick paper, Bond paper, Recycled paper, Envelope [*2], Label, Transparencies [*1], Thin paper
	Optional tray	Plain paper, Bond paper, Recycled paper, Thin paper
	Duplex	Thin Paper, Plain Paper, Recycled Paper
	ADF	Plain paper, Recycled Paper
Media weight	Paper tray (Standard/ Option)	60 to 105 g/m^2 (16 to 28 lb)
	Multi-purpose tray	60 to 163 g/m^2 (16 to 43 lb)
	Duplex	60 to 105 g/m^2 (16 to 28 lb)
	ADF	64 to 90 g/m^2 (17 to 24 lb)
Media size	Paper tray (Standard/ Option)	U.S.A: A4, Letter, B5 (ISO), A5, A5 (Long Edge), B6 (ISO), Legal[*3], Folio, A6, Executive Europe: A4, Letter, B5 (ISO), A5, A5 (Long Edge), B6 (ISO), A6, Executive
	Multi-purpose tray	Width: 69.8 to 216 mm (2.75 to 8.50 in.) Length: 116 to 406.4 mm (4.57 to 16 in.)
	Duplex	U.S.A/Canada: Letter, Legal, Folio Europe: A4
	ADF	Width: 148.0 to 215.9 mm (5.8 to 8.5 in.) Length: 148.0 to 355.6 mm (5.8 to 14 in.) [*4]

[*1] Up to 10 sheets.

[*2] Up to 3 sheets.

[*3] Legal is not available in some regions outside the USA and Canada.

[*4] Not supported Legal and Folio paper at duplex copy/fax/scan.

Specifications are subject to change without notice.

2.6.3 Type and size of paper

The machine loads paper from the installed paper tray or the multi-purpose tray. The name for the paper trays in the printer driver as follows;

The name for the paper trays	The name for the paper trays in the printer driver
Paper tray	Tray 1
Multi-purpose tray	MP tray
Optional lower tray unit	Tray 2
Duplex unit for automatic duplex printing	Duplex

Specifications are subject to change without notice.

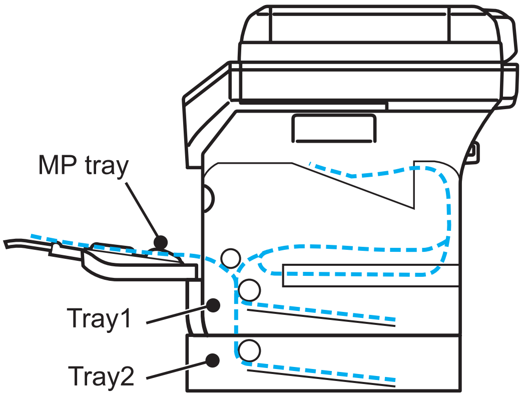


Fig. 1-2

<Media type>

	Tray 1/2	**MP Tray**	**Duplex**	**Choose the media type from the printer driver**
Plain paper 75 to 105 g/m^2 (20 to 28 lb)	Yes	Yes	Yes	**Plain paper**
Recycled paper	Yes	Yes	Yes	**Recycled paper**
Bond paper Rough paper- 60 to 161 g/m^2 (16 to 43 lb)	Yes 60 to105 g/m^2 (16 to 28 lb.)	Yes 60 to161 g/m^2 (16 to 43 lb.)	N/A	**Bond paper**
Thin paper 60 to 75 g/m^2 (16 to 20 lb)	Yes	Yes	Yes	**Thin paper**
Thick paper 105 to 163 g/m^2 (28 to 43 lb)	N/A	Yes	N/A	**Thick Paper or Thicker Paper**
Labels	N/A	Yes A4 or Letter	N/A	**Thicker Paper**
Envelopes	N/A	Yes	N/A	**Envelopes, Env. Thin, Env. Thick**

Specifications are subject to change without notice.

Memo :

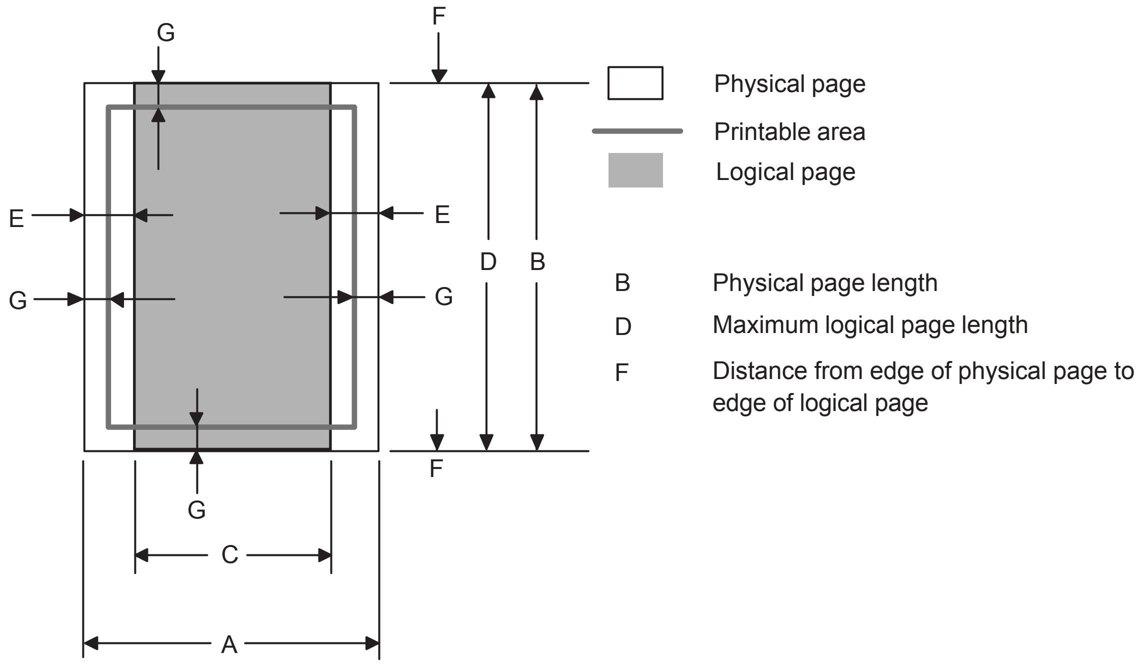
- Use paper that is made for plain-paper copying.
- Use paper that is 75 to 90 g/m^2 (20 to 24 lb).
- Use neutral paper. Do not use acidic or alkaline paper.
- Use long-grain paper.
- This machine can use recycled paper that meets DIN 19309 specifications.
- DO NOT use ink jet paper because it may cause a paper jam or damage your machine.

2.7 Printable Area

■ PCL emulation

When using PCL emulation, the edges of the paper that cannot be printed on are shown below.

Portrait



B	Physical page length
D	Maximum logical page length
F	Distance from edge of physical page to edge of logical page

Note :

- "Logical page" shows the printable area for a PCL driver.
- "Printable area" shows mechanical printable area of the machine.
- Therefore, the machine can only print within the shaded area when you use a PCL driver.

The table below shows the printable areas when printing on Portrait for each paper size.

Size	A	B	C	D	E	F	G
Letter	215.9mm 8.5" (2,550dots)	279.4mm 11.0" (3,300dots)	203.2mm 8.0" (2,400dots)	279.4mm 11.0" (3,300dots)	6.3mm 0.2" (75dots)	0mm	4.2mm 0.16" (50dots)
Legal	215.9mm 8.5" (2,550dots)	355.6mm 14.0" (4,200dots)	203.2mm 8.0" (2,400dots)	355.6mm 14.0" (4,200dots)	↑	0mm	4.2mm 0.16" (50dots)
Folio	215.9mm 8.5" (2,550dots)	330.2mm 13.0" (3,900dots)	203.2mm 8.0" (2,400dots)	330.2mm 13.0" (3,900dots)	↑	0mm	4.2mm 0.16" (50dots)
Executive	184.15mm 7.25" (2,175dots)	266.7mm 10.5" (3,150dots)	175.7mm 6.92" (2,025dots)	266.7mm 10.5" (3,150 dots)	6.3mm 0.2" (75dots)	0mm	4.2mm 0.16" (50dots)
A 4	210.0mm 8.27" (2,480dots)	297.0mm 11.69" (3,507dots)	198.0mm 7.79" (2,338dots)	297.0mm 11.69" (3,507dots)	6.0mm 0.2" (71dots)	0mm	4.2mm 0.16" (50dots)
A 5	148.5mm 5.85" (1,754dots)	210.0mm 8.27" (2,480dots)	136.5mm 5.37" (1,612dots)	210.0mm 8.27" (2,480dots)	↑	0mm	4.2mm 0.16" (50dots)
A 6	105.0mm 4.13" (1,240dots)	148.5mm 5.85" (1,754dots)	93.0mm 3.66" (1,098dots)	148.5mm 5.85" (1,754dots)	↑	0mm	4.2mm 0.16" (50dots)
B 5 (JIS)	182.0mm 7.1" (2,130dots)	257.0mm 10.11" (3,033dots)	170.0mm 6.69" (2,007dots)	257.0mm 10.11" (3,033dots)	↑	0mm	4.2mm 0.16" (50dots)
B 5 (ISO)	176.0mm 6.93" (2,078dots)	250.0mm 9.84" (2,952dots)	164.0mm 6.46" (1,936dots)	250.0mm 9.84" (2,952dots)	↑	0mm	4.2mm 0.16" (50dots)
B 6 (ISO)	125.0mm 4.92" (1,476dots)	176.0mm 6.93" (2,078dots)	164.0mm 4.44" (1,334dots)	176.0mm 6.93" (2.078dots)	↑	0mm	4.2mm 0.16" (50dots)
Envelope Monarch	98.43mm 3.875" (1,162dots)	190.5mm 7.5" (2,250dots)	85.7mm 3.37" (1,012dots)	190.5mm 7.5" (2,250dots)	6.3mm 0.2" (75dots)	0mm	4.2mm 0.16" (50dots)
Envelope Com-10	104.7mm 4.125" (1,237dots)	241.3mm 9.5" (2,850dots)	92.0mm 3.62" (1,087dots)	241.3mm 9.5" (2,850dots)	↑	0mm	4.2mm 0.16" (50dots)
Envelope DL	110.0mm 4.33" (1,299dots)	220.0mm 8.66" (2,598dots)	98.0mm 3.86" (1,157dots)	220.0mm 8.66" (2,598dots)	6.0mm 0.24" (71dots)	0mm	4.2mm 0.16" (50dots)
Envelope C5	162.0mm 6.38" (1,913dots)	229.0mm 9.01" (2,704dots)	150.0mm 5.9" (1,771dots)	229.0mm 9.01" (2,704dots)	↑	0mm	4.2mm 0.16" (50dots)
HAGAKI	100.0mm 3.94" (1,181dots)	148.0mm 5.83" (1,748dots)	88.0mm 3.46" (1,039dots)	148.0mm 5.83" (1,748dots)	6.0mm 0.24" (71dots)	0mm	4.2mm 0.16" (50dots)
A4 Long	210.0mm 8.27" (2,480dots)	405.0mm 15.94" (4,783dots)	198.0mm 7,79" (2,338dots)	405.0mm 15.94" (4,783dots)	6.0mm 0.24" (71dots)	0mm	4.2mm 0.16" (50dots)

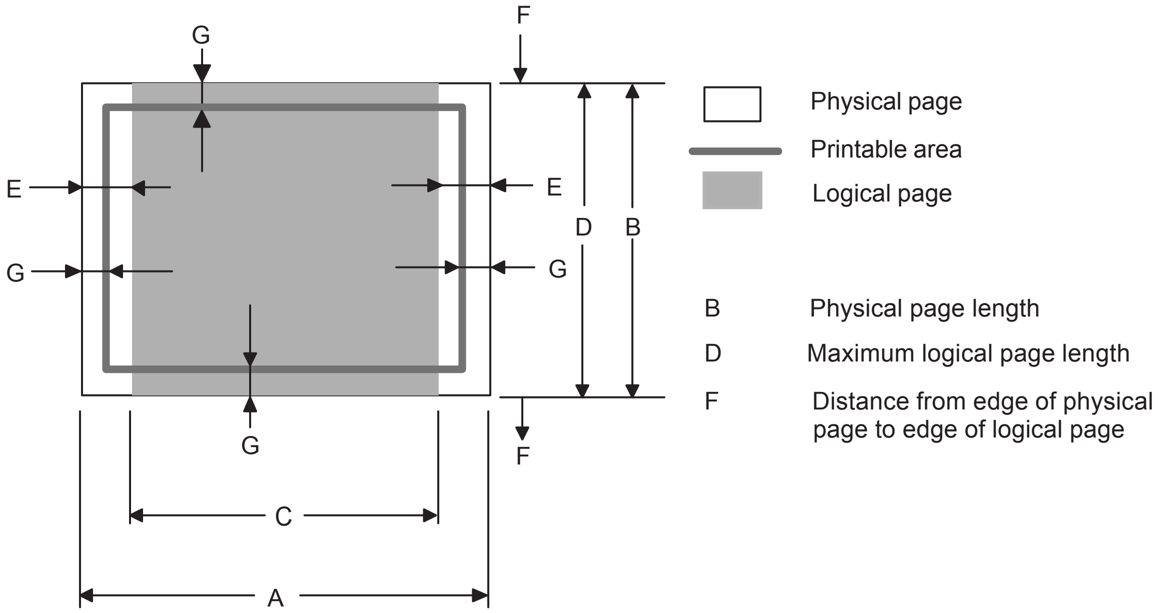
Size	A	B	C	D	E	F	G
A5 Long	210.0mm 8.27" (2,480dots)	148.5mm 5.85" (1,754dots)	198.0mm 7.79" (2,338dots)	148.5mm 5.85" (1,754dots)	6.0mm 0.2" (71dots)	0mm	4.2mm 0.16" (50dots)
DL Long Edge	220.0mm 8.66" (2,598dots)	110.0mm 4.33" (1,299dots)	207.0mm 8.17" (2,450dots)	110.0mm 4.33" (1,299dots)	6.26mm 0.25" (74dots)	0mm	4.2mm 0.16" (50dots)
3X5	76.2mm 3.00" (900dots)	127.0mm 5.00" (1,500dots)	63.5mm 2.50" (750dots)	127.0mm 5.00" (1,500dots)	6.35mm 0.25" (75dots)	0mm	4.2mm 0.16" (50dots)

Specifications are subject to change without notice.

Note :

- The paper sizes indicated here should confirm to the nominal dimensions specified by JIS except B5 (ISO), B6 (ISO).
- The dot size is based on 300dpi resolution.

Landscape


F
G
E
E
D
B
G
G
G
F
C
A
Physical page
Printable area
Logical page
B Physical page length
D Maximum logical page length
F Distance from edge of physical page to edge of logical page

Note :

- "Logical page" shows the printable area for a PCL driver.
- "Printable area" shows mechanical printable area of the machine.
- Therefore, the machine can only print within the shaded area when you use a PCL driver.

The table below shows the printable areas when printing on Landscape for each paper size.

Size	A	B	C	D	E	F	G
Letter	279.4mm 11.0" (3,300dots)	215.9mm 8.5" (2,550dots)	269.3mm 10.6" (3,180dots)	215.9mm 8.5" (2,550dots)	5.0mm 0.2" (60dots)	0mm	4.2mm 0.16" (50dots)
Legal	355.6mm 14.0" (4,200dots)	215.9mm 8.5" (2,550dots)	345.5mm 13.6" (4,080dots)	215.9mm 8.5" (2,550dots)	↑	0mm	4.2mm 0.16" (50dots)
Folio	330.2mm 13.0" (3,900 dots)	215.9mm 8.5" (2,550dots)	320.0mm 12.6" (3,780dots)	215.9mm 8.5" (2,550dots)	↑	0mm	4.2mm 0.16" (50dots)
Executive	266.7mm 10.5" (3,150dots)	184.15mm 7.25" (2,175dots)	256.6mm 10.1" (3,030dots)	184.15mm 7.25" (2,175dots)	5.0mm 0.2" (60dots)	0mm	4.2mm 0.16" (50dots)
A 4	297.0mm 11.69" (3,507dots)	210.0mm 8.27" (2,480dots)	287.0mm 11.2" (3,389dots)	210.0mm 8.27" (2,480dots)	4.8mm 0.19" (59dots)	0mm	4.2mm 0.16" (50dots)
A 5	210.0mm 8.27" (2,480dots)	148.5mm 5.85" (1,754dots)	200.0mm 7.87" (2,362dots)	148.5mm 5.85" (1,754dots)	↑	0mm	4.2mm 0.16" (50dots)
A 6	148.5mm 5.85" (1,754dots)	105.0mm 4.13" (1,240dots)	138.5mm 5.45" (1,636dots)	105.0mm 4.13" (1,240dots)	↑	0mm	4.2mm 0.16" (50dots)
B 5 (JIS)	257.0mm 10.11" (3,033dots)	182.0mm 7.1" (2,130dots)	247.0mm 9.72" (2,916dots)	182.0mm 7.1" (2,130dots)	↑	0mm	4.2mm 0.16" (50dots)
B 5 (ISO)	250.0mm 9.84" (2,952dots)	176.0mm 6.93" (2,078dots)	240.0mm 9.44" (2,834dots)	176.0mm 6.93" (2,078dots)	↑	0mm	4.2mm 0.16" (50dots)
B 6 (ISO)	176.0mm 6.93" (2,078dots)	125.0mm 4.92" (1,476dots)	166.4mm 6.55" (1,960dots)	125.0mm 4.92" (1,476dots)	↑	0mm	4.2mm 0.16" (50dots)
Envelope Monarch	190.5mm 7.5" (2,250dots)	98.43mm 3.875" (1,162dots)	180.4mm 7.1" (2,130dots)	98.43mm 3.875" (1,162dots)	5.0mm 0.20" (60dots)	0mm	4.2mm 0.16" (50dots)
Envelope Com-10	241.3mm 9.50" (2,850dots)	104.7mm 4.125" (1,237dots)	231.1mm 9.10" (2,730dots)	104.7mm 4.12" (1,237dots)	↑	0mm	4.2mm 0.16" (50dots)
Envelope DL	220mm 8.66" (2,598dots)	110mm 4.33" (1,299dots)	210.0mm 8.26" (2,480dots)	110mm 4.33" (1,299dots)	4.8mm 0.19" (59dots)	0mm	4.2mm 0.16" (50dots)
Envelope C5	229mm 9.01" (2,704dots)	162mm 6.38" (1,913dots)	219.0mm 8.62" (2,586dots)	162mm 6.38" (1,913dots)	↑	0mm	4.2mm 0.16" (50dots)
HAGAKI	148mm 5.83" (1,748dots)	100mm 3.94" (1,181dots)	138mm 5.43" (1,630dots)	100mm 3.94" (1,181dots)	4.8mm 0.19" (59dots)	0mm	4.2mm 0.16" (50dots)
A4 Long	405mm 15.94" (4,783dots)	210mm 8.27" (2,480dots)	395mm 15.55" (4,665dots)	210mm 8.27" (2,480dots)	4.8mm 0.19" (59dots)	0mm	4.2mm 0.16" (50dots)

Size	A	B	C	D	E	F	G
A5 Long	148.5mm 5.58" (1,754dots)	210.0mm 8.27" (2,480dots)	138.5mm 5.45" (1,636dots)	210.0mm 8.27" (2,480dots)	5.0mm 0.20" (60dots)	0mm	4.2mm 0.16" (50dots)
DL Long Edge	110mm 4.33" (1,299dots)	220mm 8.66" (2,598dots)	102mm 4.00" (1,199dots)	220mm 8.66" (2,598dots)	4.0mm 0.16" (50dots)	0mm	4.2mm 0.16" (50dots)
3X5	127mm 5.00" (1,500dots)	76.2mm 3.00" (900dots)	116.8mm 4.60" (1,380dots)	76.2mm 3.00" (900dots)	5.0mm 0.20" (60dots)	0mm	4.2mm 0.16" (50dots)

Specifications are subject to change without notice.

Note :

- The paper sizes indicated here should confirm to the nominal dimensions specified by JIS except B5 (ISO), B6 (ISO).
- The dot size is based on 300 dpi resolution.

2.8 Print Speeds with Various Settings

Print speed is up to 30 ppm for A4 size and 32ppm for Letter size when loading A4 or Letter size paper from the paper tray 1 in the plain paper mode.

Actual print speed varies depending on the media type or paper size as shown in the tables below;

<A4/Letter size>

Media type setting	Print speed
Plain paper, Recycled paper	A4: 30 ppm
	Letter: 32 ppm
Thin paper	A4: 30 ppm
	Letter: 32 ppm
Thick paper, Envelope, Envelope thin, Label	A4: 15 ppm
	Letter: 16 ppm
Thicker paper, Bond paper, Envelope thick	3 ppm

<Smaller size than A4 or Letter>

Media type setting	Print speed
Plain paper, Recycled paper	0 to 90 second 32 ppm, 90 second or later 15 ppm
Thin paper	30 ppm
Thick paper, Envelopes, Envelopes thin, Label, HAGAKI	0 to 9 second 16 ppm, 9 second or later 15 ppm
Thicker paper, Bond paper, Envelopes thick	3 ppm

Specifications are subject to change without notice.

Note :

- The print speed may vary according to conditions, such as paper size and paper tray.
- When a smaller size paper than A4 or Letter is printed, the temperature on both edges of the fuser unit is much higher than the temperature on the center of the unit where the paper is fed depending on the setting or model. Therefore, the print speed is slowed in order to decrease the temperature on the edges after the specified time, it is maximum print speed when you first start printing.
- The actual print speed varies depending on the paper size.

2.9 Telephone

Model	bizhub 20
Handset	No
Chain Dialing	Yes
Automatic Redial	Yes
PBX Feature	No (Europe:Yes)
Speaker Phone	No
Hold/Mute Key	No
Music on Hold	No
Handset Volume	No
Speaker Volume	Yes (3 steps + OFF)
Ring Volume	Yes (3 steps + OFF)
Beeper Volume	Yes (3 steps + OFF)
One-Touch Dial	40 (20 x 2) locations
Speed Dial	300 locations
Figures of One-Touch & Speed Dial	20 digits
Registerable Number Of Characters	15 characters
Group Dial	Yes (up to 20 groups)
Telephone Index	Yes
Caller ID	No
Call Waiting Caller ID	No
Call waiting Ready	No
Distinctive Ringing	Yes

Specifications are subject to change without notice.

2.10 Fax

Model		bizhub 20
Modem Speed		33.600 bps
ITU-T Group		Super G3
Coding Method		MH / MR / MMR / JBIG
Color FAX		No
Fax/Tel Switch		Yes
Superfine		Yes (TX & RX)
Grayscale		8 bit / 256
Contrast		Yes (Auto/Light/Dark)
Smoothing		No
Dual Access		Yes
Enhanced Remote Activate		Yes
Remote Activate		Yes
Station ID		Yes (20 digits / 20 characters)
Remote Maintenance		No
Remote Access		Yes
Fax Retrieval		Yes
Paging		Yes (U.S.A. / Canada Only)
Internet FAX (ITU T.37 simple mode)		Yes
Sending	Delayed Timer	Yes (up to 50)
	Polled Sending	Yes (EUR Secure Polling)
	Multi Transmission	No
	Multi Resolution Transmission	No
	Next-Fax Reservation	No
	Call Reservation Over Auto/ Manual TX	No
	Batch Transmission	Yes
	Quick-Scan (Memory transmission)	Approx. 2 sec./page (A4 standard)

Model		bizhub 20
Receiving	Easy Receive/ Fax Detect	Yes
	Polling Receiving	Yes
	Auto Reduction	Yes
	Duplex Fax Receive	Yes
	Out-of-Paper Reception (ITU-T Chart)	Up to 500 pages (ITU-T Test Chart, Standard Resolution, JBIG)
	Fax Rx Stamp	Yes
Memory Transmission (ITU-T Chart)		Up to 500 pages (ITU-T Test Chart, Standard Resolution, JBIG)
ECM (Error Correction Mode)		Yes
Error Re-Transmission		Yes
Broadcasting		Yes (390 locations)
Manual Broadcasting		Yes (50 locations)
Fax Forwarding		Yes
Fax Forwarding Broadcast		Yes
Duplex Fax Send		Yes
Dial Restriction		Yes

Specifications are subject to change without notice.

2.11 List/Report

Model	bizhub 20
Activity Report/Journal Report	Yes (up to 200)
Transmission Verification Report	Yes
Cover page	Yes
Help List	Yes
Call Back Message	No
Caller ID List	No
Tel Index ListNumeric/ Alphabetic	Yes/Yes
Memory Status List	Yes
System Setup (User Setting) List	Yes

Specifications are subject to change without notice.

2.12 Copy

Model		bizhub 20
First Copy Out Time (From READY mode)		Less than 10.5 sec
Multi Copy	Stack	Yes (up to 99)
	Sort	Yes
Reduction/ Enlargement (%)		25% - 400% in 1% increments
Resolution (dpi)		Maximum. 1200 (horizontal scan) x 600 (vertical scan) dpi
Auto Duplex Scanning Copy		Yes
Manual Duplex Copy		No
N in 1		Yes
Poster		No
Image Enhancement		No

Specifications are subject to change without notice.

Note :

- The copy speed may vary according to the specifications.

2.13 Document Scanner

Model		bizhub 20
Color/Mono		Color
Resolution (Optical)	Scanner Glass	Maximum 600 (horizontal scan) x 2400 (vertical scan) dpi
	ADF	Maximum 600 (horizontal scan) x 1200 (vertical scan) dpi
Resolution (Interpolated)		19,200 (horizontal scan) x 19,200 (vertical scan) dpi
Scanning Speed	Monochrome	A4: 3.03 seconds
		Letter: 2.85 seconds
	Color	A4: 5.79 seconds
		Letter: 5.44 seconds
Gray Scale		8 bit
Color Depth		24 bit
Custom Scan Profile		Yes
Duplex Scan		Yes
Scan to E-mail		Yes
Scan to Email Server*1 (I-Fax*2)		Yes
Scan to Image		Yes
Scan to OCR		Yes
Scan to File		Yes
Scan to FTP *1		Yes
Scan to USB *1		Yes
Scan to Network *1		Yes

*1 Supported file formats are PDF/Secure PDF version 1.3, JPEG, XPS version 1.0 for color and gray, TIFF for B&W scan.

*2 Internet Fax is available in Black & White only.

2.14 USB Host

Model	bizhub 20
PictBridge	No
Direct Print	Yes
Media Drive	No

Specifications are subject to change without notice.

CHAPTER 2

THEORY OF OPERATION

CHAPTER 2 THEORY OF OPERATION

This chapter gives an overview of the scanning and printing mechanisms as well as the sensors, actuators, and control electronics. It aids in understanding the basic principles of operation as well as locating defects for troubleshooting

CONTENTS

1. OVERVIEW

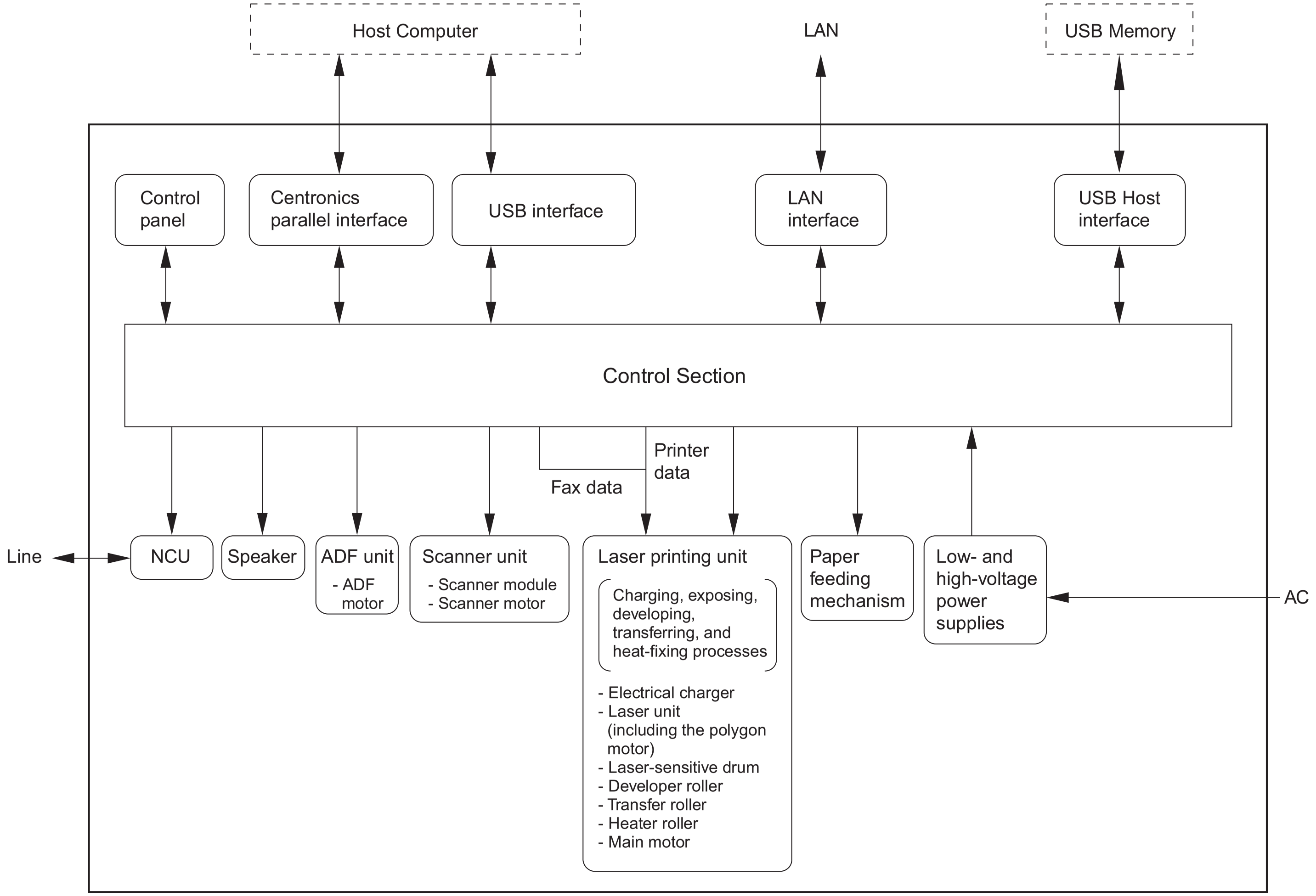


Fig. 2-1

2. ELECTRONICS

2.1 General Block Diagram

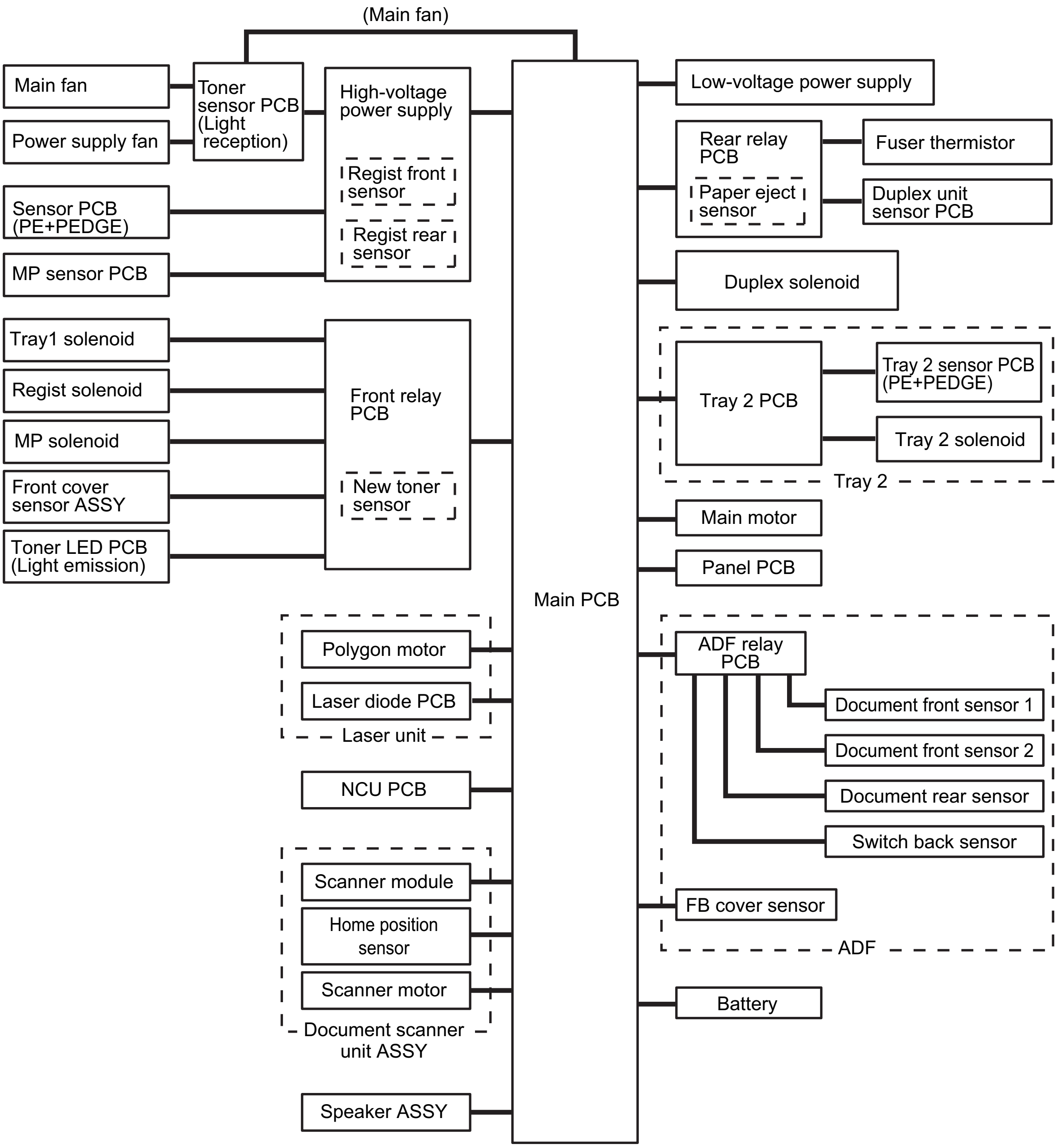


Fig. 2-2

3. MECHANICS

3.1 Cross-section Drawing

- Printer part

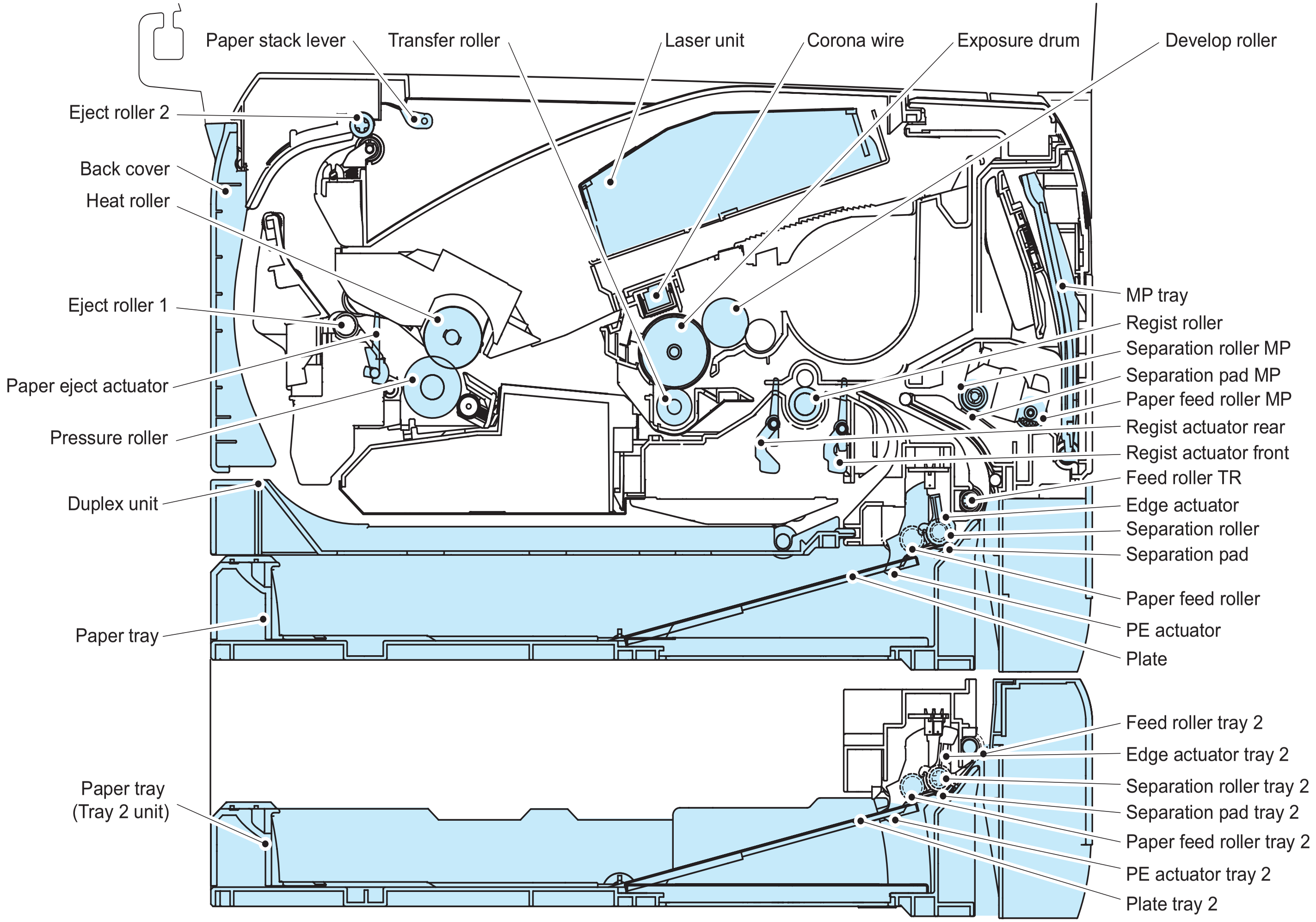


Fig. 2-3

- ADF part

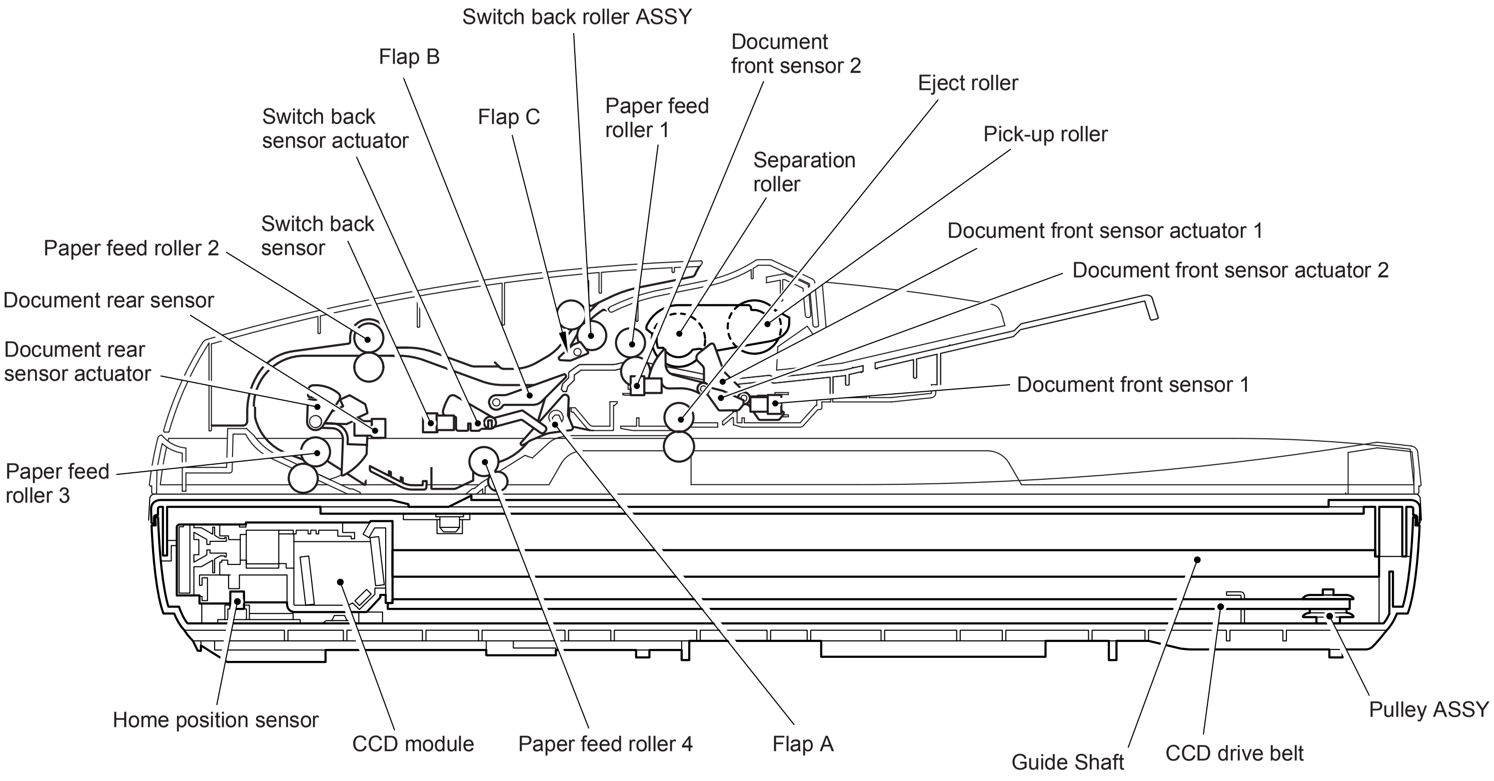


Fig. 2-4

3.2 Scanner Mechanism

This mechanism consists of the document cover, the document scanner unit (scanner cover), and the automatic document feeder (ADF).

The document scanner unit consists of a scanner top cover, CCD module and scanner base.

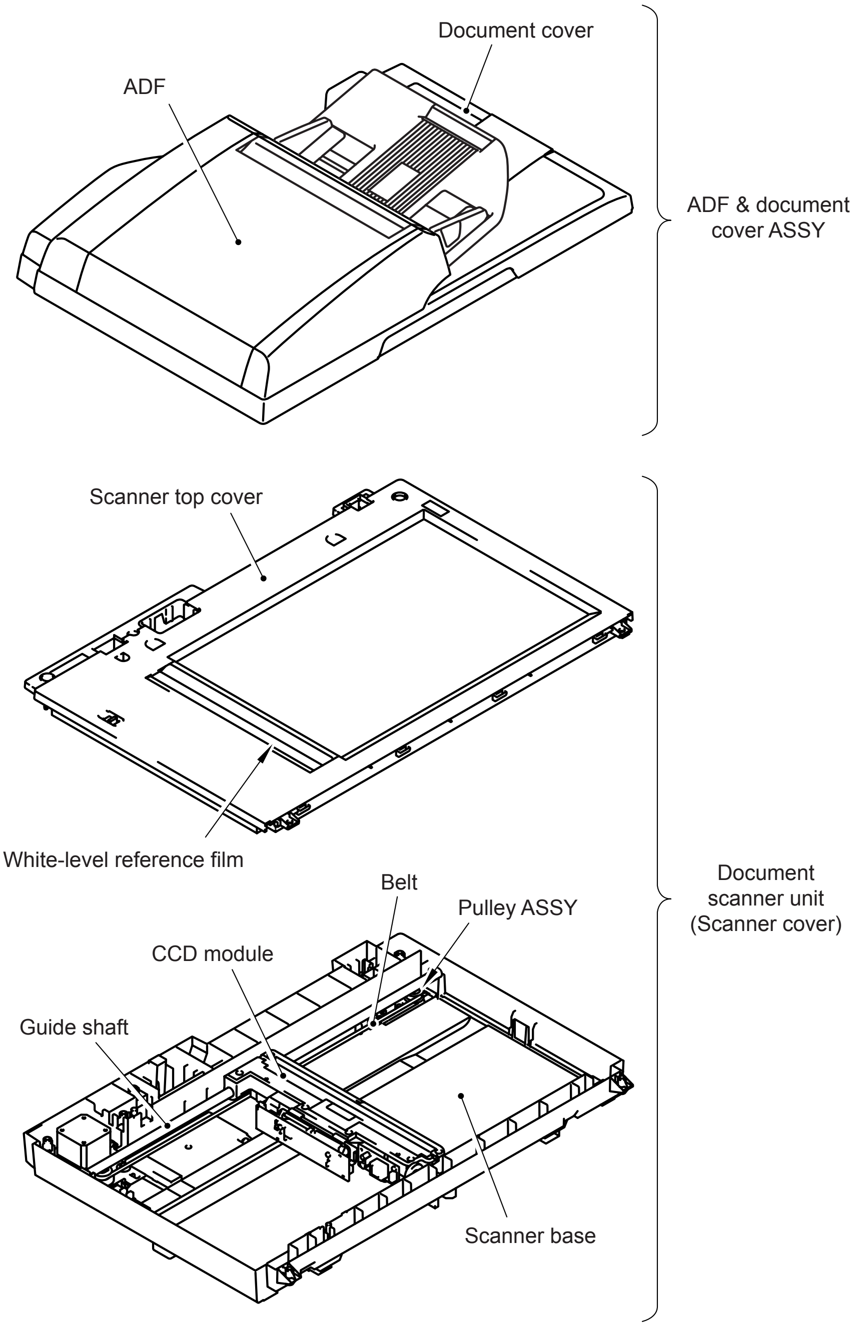

Document cover
ADF
ADF & document cover ASSY
Scanner top cover
White-level reference film
Belt
Pulley ASSY
Document scanner unit (Scanner cover)
CCD module
Guide shaft
Scanner base

Fig. 2-5

3.2.1 Document scanner unit

The document scanner unit is equipment which scans the paper using the scanner module. This machine prints the scanning data (copy) or sends data as FAX (FAX transmission).

There are two kinds of scanning method of the document scanner unit. One is operation to scan with the document scanner unit, the paper is placed on the document glass, the scanner module moves under the document glass, and it scans the paper, and the other one is operation to scan in cooperation with the ADF unit, scan the paper which has been sent over the immovable scanner module.

1. CCD unit

   The CCD unit includes the charge coupled device (CCD) sensor (Resolution of horizontal scanning: Max 600dpi, color scanning). The fluorescent lamp lights the document, and the reflection from the scanned image data is transferred to the lens by the mirror. The lens reduces the scanned data so that the image is generated on the CCD.

2. Driving of the scanner module

   The scanner module is supported by the guide shaft and assembled on the drive belt. When the scanner motor is rotated clockwise, the scanner module on the drive belt scans the document while sliding to the right hand side. In this case, the CCD unit has the capacity to scan at 2,400dpi resolution of sub scanning.

3. Scanner module home position detection (FB home position detection)

   The scanner module is configured at the FB home position to determine the scanning position of the sub scanning direction. Based on the home position, the position performing the white level compensation or the scan lock other than the scanning position is configured.

   The FB home position is detected when the scanner module intercepts the home position sensor in the left side of the inside of the document scanner unit.

4. White level compensation

   Whenever the variation of the scanner module by scanner module, the correction of the time degradation and the value of the while color scans, in order to make them not different.

   The white level compensation keeps a fixed value of the white color by scanning the white-level reference film inside the document scanner unit with the scanner module.

5. Function of scanner lock lever

   The scanner lock lever works to fix the CCD unit to protect the machine from the damage by moving CCD unit during transportation.

6. Scanning operation (The scanner module moves under the immovable document.)

   Open the document cover, place a sheet of the document (or opened book) onto the document glass, and close the document cover. Then, the machine starts scanning by the operation of the panel, and the scanner drive mechanism is started and the scanning operation is started.

   The scanner motor is rotated so that its action is transferred to the drive belt through the gear train.

   The scanner module scans the document while sliding to the right hand side.

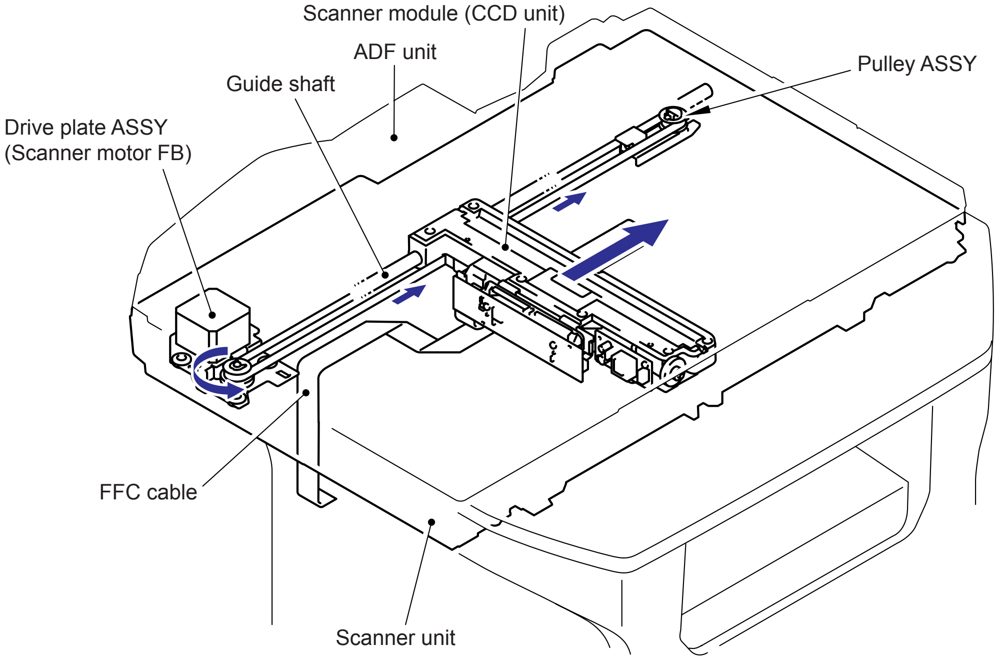


Fig. 2-6

3.2.2 ADF unit

The ADF unit is equipment which sends one document or the document for every plurality to the ADF scanning part of the document scanner unit, and performs continuation scanning. As for the ADF of this machine, the duplex scanning is also possible.

Performance of the ADF

- The number of maximum capacity: Up to 50 sheets.
- Maximum resolution: Up to 600dpi
- Maximum scanning speed:
  32 pages/minute (Letter size) (Simplex scanning)
  14 pages/minute (Letter size) (7 sheets/minute) (Duplex scanning)
- Maximum input media size (Simplex): Width 215.9mm, Length 355.6mm
- Minimum input media size (Simplex): Width 148.0mm, Length 148.0mm
- Maximum input media size (Duplex): Width 215.9mm, Length 297.0mm
- Minimum input media size (Duplex): Width 148.0mm, Length 148.0mm

1. Function of each roller
   - Pick-up roller
     Send the document from on the ADF into the ADF.
   - Separation roller
     Separate the sent document one by one.
   - Paper feed roller 1, 2, 3, 4
     Send the document.
   - Switch back roller ASSY
     When the duplex scanning, this motor is rotated by contraries, draws the sent out document to the inside of ADF again.
   - Eject roller
     Eject the document.
2. Function of each sensor
   - Document front sensor 1
     Detects whether the document is set in the ADF.
   - Document front sensor 2
     Detects whether the document is sent by the separation roller.
   - Document rear sensor
     Detect the timing of the scanning start of the document.
   - Switch back sensor
     When the duplex scanning, detect the timing of the reversing of the switch back roller by the document passed.
   - Document cover open sensor
     Detects whether the document cover is opened or not. Even if the document is set into the ADF, the machine starts scanning the document glass ignoring the ADF.

3. Function of each motor/solenoid
   - ADF motor

     Driving source of overall ADF.
   - Paper feed solenoid

     The paper feed solenoid disable pick-up roller and separation roller while the machine is taking action scanning to prevent the next document from being drawn into the ADF.
   - Switch back solenoid

     Switches the direction of rotation of the switch back roller ASSY.
   - Document eject sensor

     When the duplex scanning, detects whether the document is ejected.

4. Internal structure

   The automatic document feeder (ADF) consists of the pick-up roller, separation roller, paper feed rollers 1/2/3/4, eject roller, ADF motor, switch back sensor, document rear sensor and document front sensors 1/2.

   For further details on the sensors, see 3.6 Sensors position.

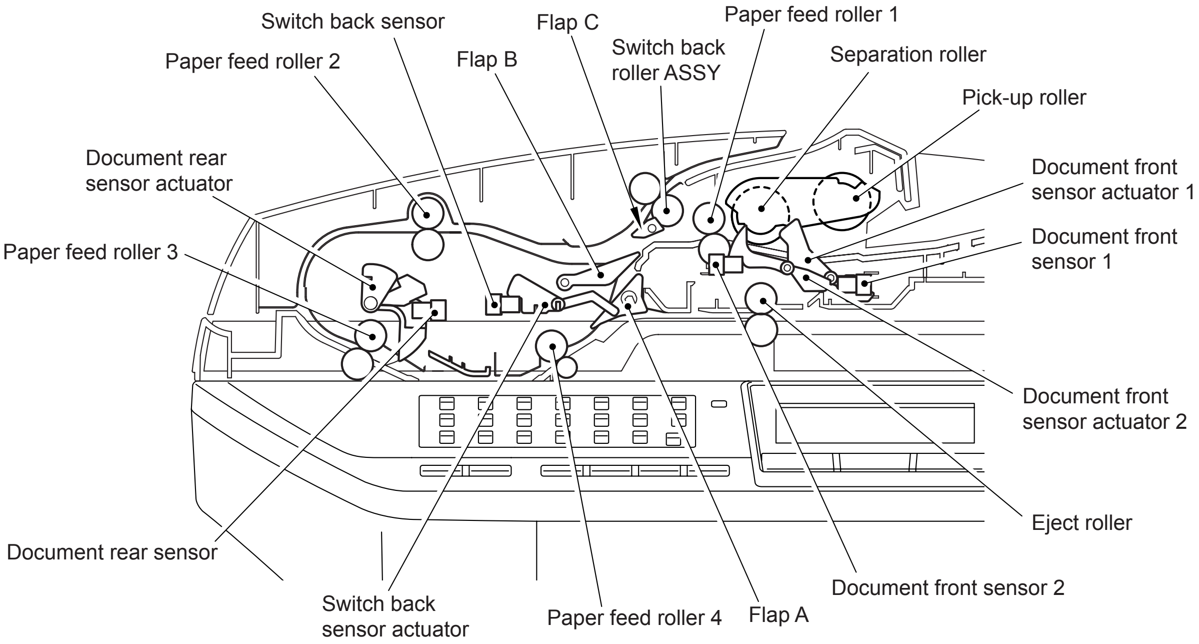


Fig. 2-7

The duplex scanning mechanism allows you to use the following two types of scanning, “ADF scanning” and “document glass scanning”. These two scanning methods are switched depending on whether the document front sensor 1 detects the document or not when starting scanning.

However, there is the case that the “document glass scanning” is given priority to over by a state of the document cover sensor (described later).

5. ADF simplex scanning (The document moves over the immovable scanner module.)
    1. (1) Set the document face up into the paper feed chute ASSY. When the machine starts simplex scanning, the ADF motor is rotated clockwise, the pick-up roller draws the document, and the separation roller and separation rubber send a sheet of the document to the ADF one by one from the top page of the stacked documents.
    2. (2) The document is passed through the paper feed rollers 1, 2 and 3, and is passed over the scanner module so that the document is scanned. Then, the document is ejected to the document cover by the eject roller.

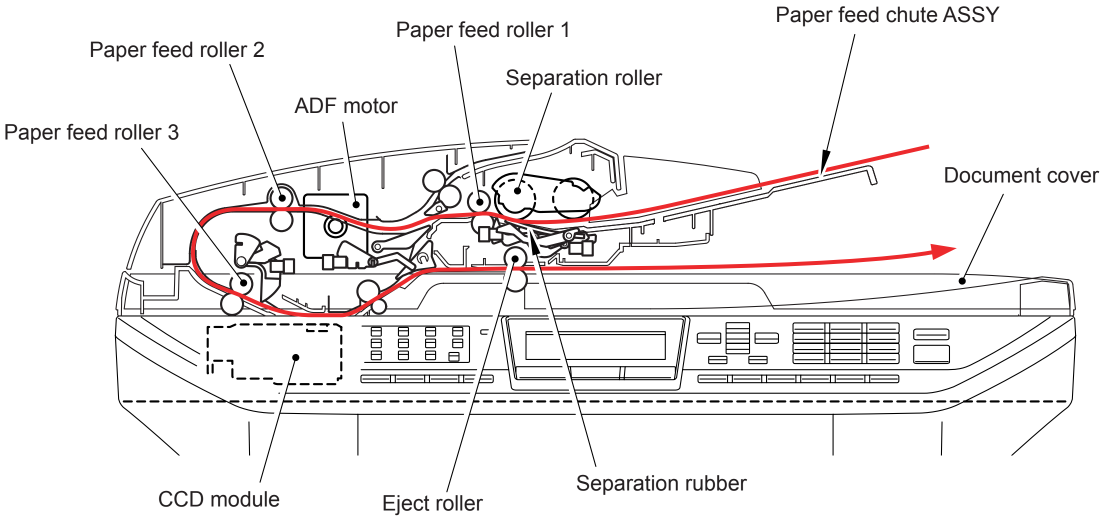


Fig. 2-8

6. ADF duplex scanning (The document moves over the immovable scanner module.)

   (1) Set the document face up into the document chute. When the machine starts duplex scanning, the ADF motor is rotated clockwise, the pick-up roller draws the document, and the separation roller and separation pad send a sheet of the document to the ADF one by one from the top page of the stacked documents.

   (2) The document is passed through the paper feed rollers 1, 2 and 3, and is passed over the CCD module so that the document is scanned. Then, the document is sent for the specified distance by the switch back roller ASSY, and the switch back roller ASSY is turned counter so that the document is drawn again.

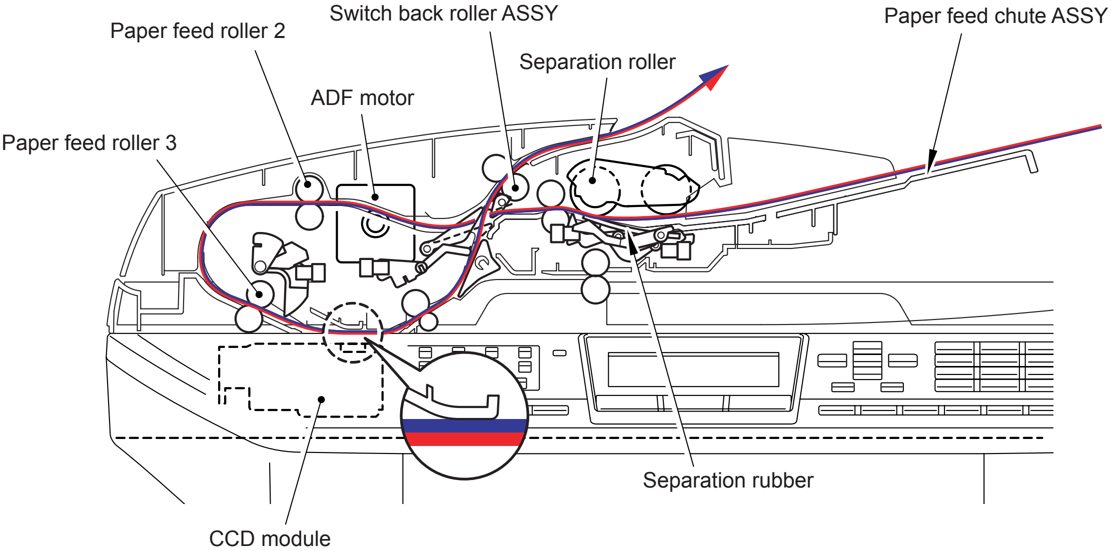


Fig. 2-9

   (3) The drawn document is attached on the flap B and sent to the paper feed rollers 2 and 3. At this time, the opposite side of the document is faced-up so that the backside of the document is scanned. The document is sent to the switch back roller ASSY again.

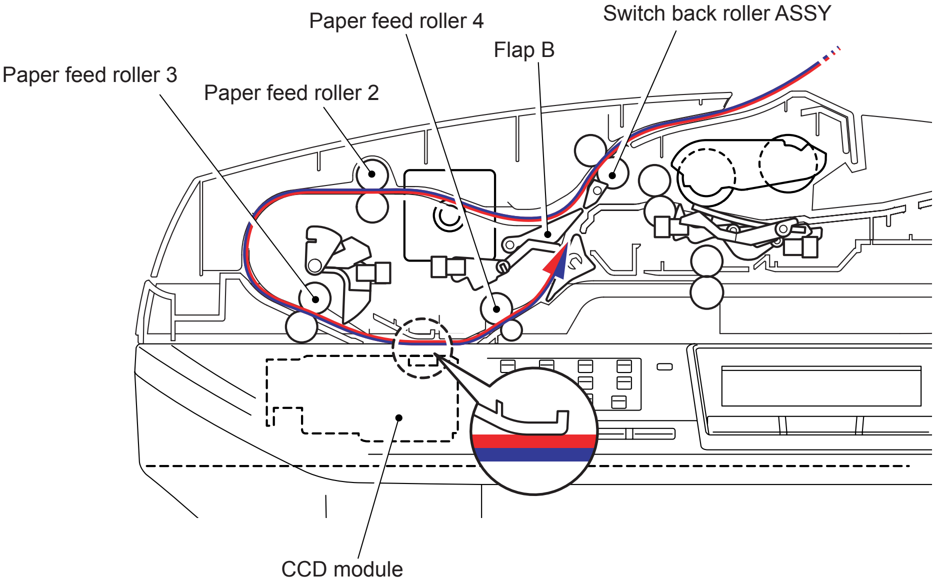


Fig. 2-10

(4) The switch back roller ASSY is turned counter again, and the document is drawn again. The document is passed through the paper feed rollers 1, 2 and 3, and ejected to the document cover by the eject roller.

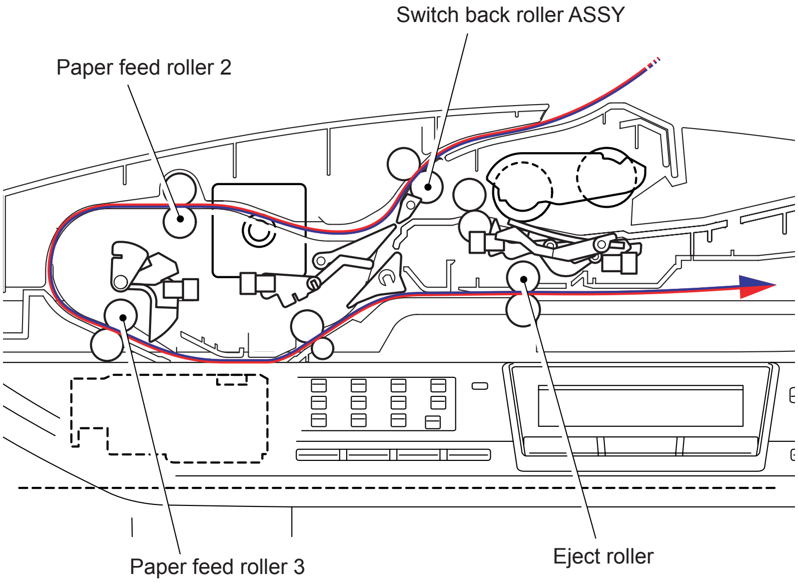


Fig. 2-11

3.3 Paper Feeding

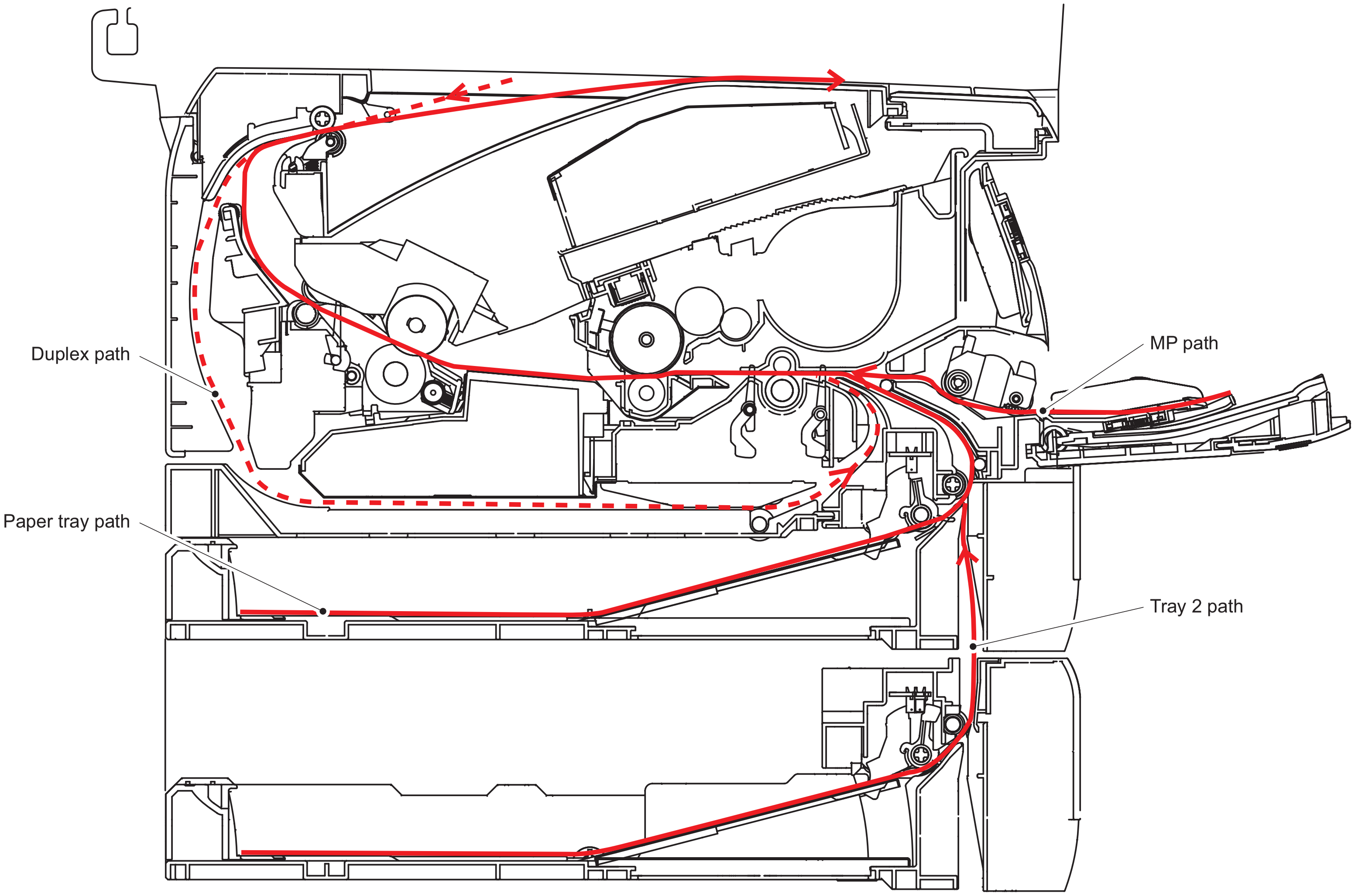


Fig. 2-12

3.3.1 Plate-up Function of the Paper Tray

The plate ASSY in the paper tray is pushed up with the motor drive and not with the spring in order to maintain the constant pressure to the feed roller and to give the paper feeding performance.

When the paper tray (Tray1 cassette) is installed to the machine, the plate is lowered.
If the main motor drives in this situation, the driving reaches the lift gear 46 through some gears. This driving also reaches the plate up plate and it pushes up on the plate ASSY.

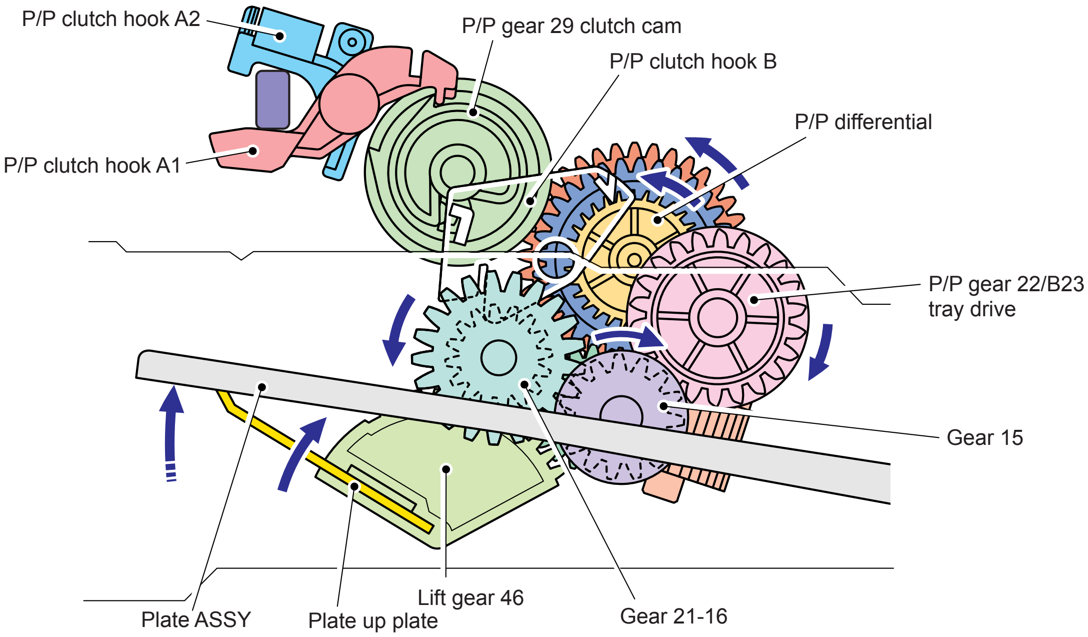


Fig. 2-13

When the feed roller is pushed up, the hook is released by the lift arm, and the rotation of the clutch gear is stopped. Then, the pressure plate is stopped to push up.

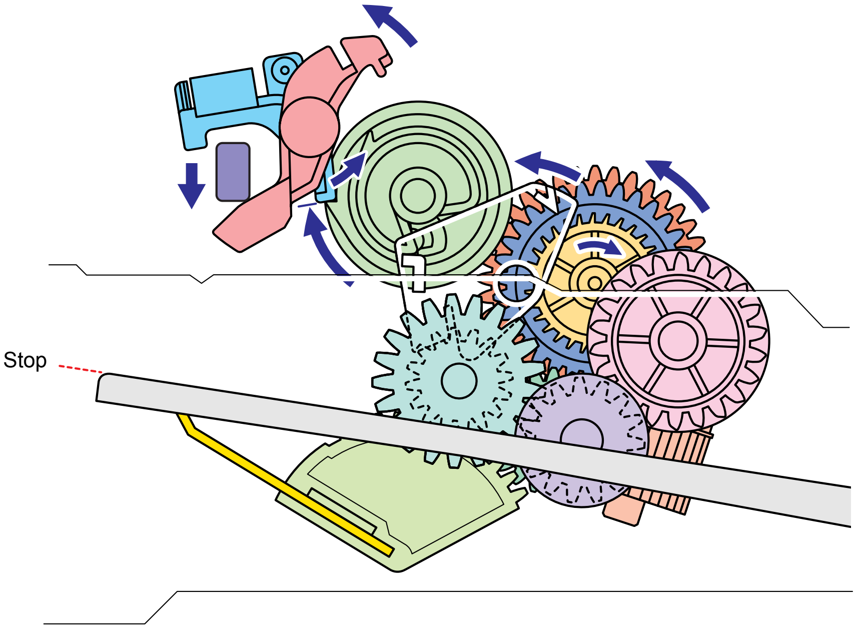


Fig. 2-14

When the tray is pulled out from the machine, the pressure plate is returned to the original position. When the tray is put into the machine, the above operation is performed from the start again.

3.3.2 Paper supply

The feed roller picks up a few sheets or one sheet of paper from the paper tray every time it is rotated and feeds it to the separation roller.

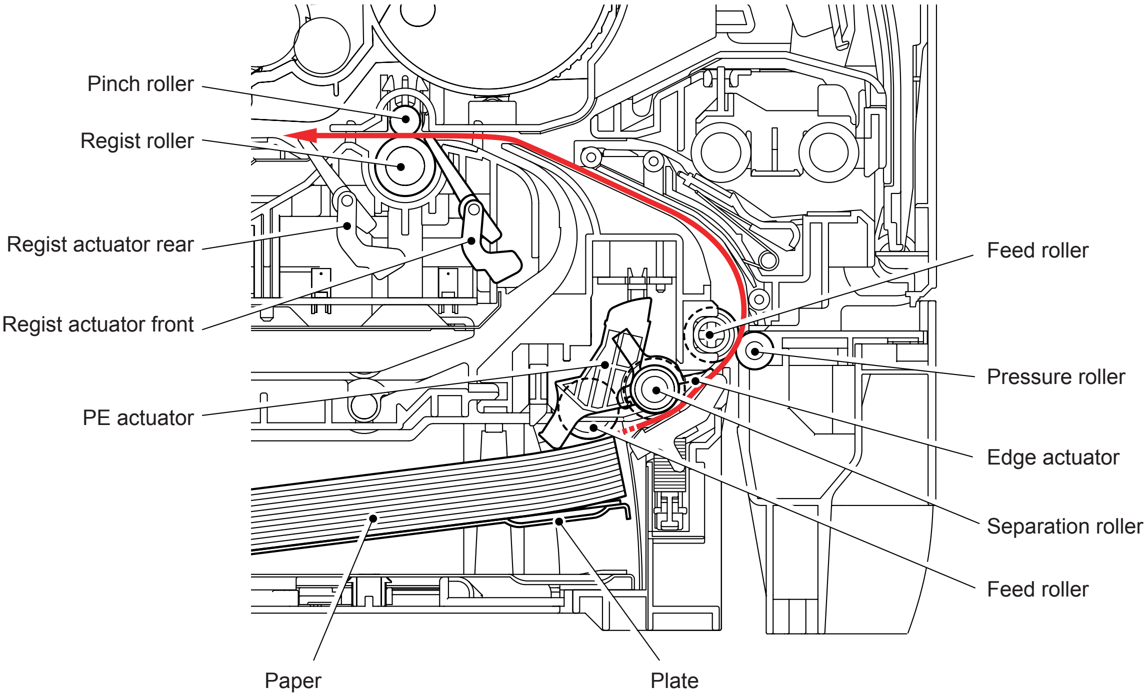


Fig. 2-15

The main motor drive power is transmitted to the gears, and the feed roller and separation roller are rotated. Then, the paper is gripped between the separation roller and separation pad and separated into individual sheets.

The paper drawn out of the paper tray pushes against the regist front actuator, and the absence of paper is detected by the actuator movement. The edge actuator detects the end of the paper fed.

3.3.3 Paper registration

After the paper top position is detected by the regist actuator front, the paper, separated into individual sheets by the separation roller, is fed further for a specified time, and the paper top position reaches the regist roller so that the paper skew is adjusted. Then, the regist solenoid is turned on, the regist roller starts turning, and the paper is fed to the transfer roller in the drum/toner ASSY.

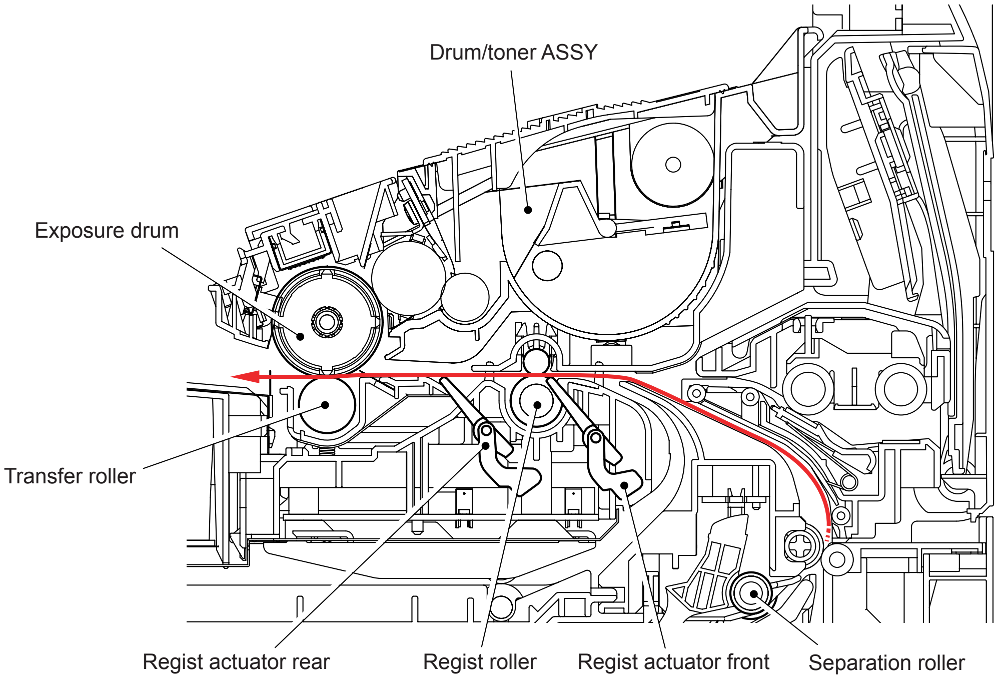


Fig. 2-16

The regist actuator rear in the path from the regist roller to the transfer roller controls the first print position on the paper. The machine starts transferring an image when a definite time passes after the paper is passed through the regist actuator rear.

3.3.4 Paper eject

After the printing image on the exposure drum is transferred onto the paper, the paper is fed to the fuser unit to fix unfixed toner onto the paper by the heat roller and the pressure roller in the fuser unit.

Afterwards, the paper is ejected from the fuser unit. The paper eject actuator detects whether the paper is ejected correctly or not.

After the paper exits from the heat roller, the paper is turned by the outer chute and ejected face down into the top output tray through the eject roller ASSY 2.

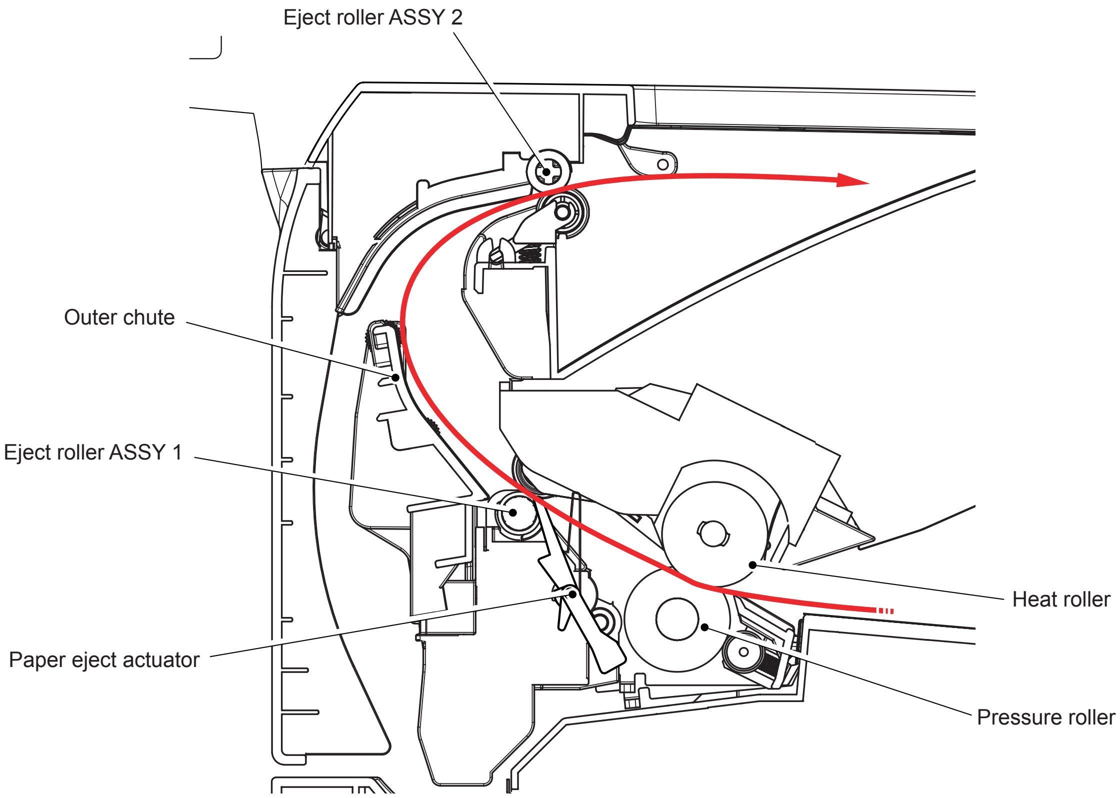


Fig. 2-17

When a paper jam occurs, the main motor rotates conversely to throw out the engagement of the gear. Consequently, the eject roller ASSY 2 is released so that the jammed paper is removed easily.

3.3.5 Duplex printing

After the paper exits from the eject roller ASSY 2 with the front of sheet printed, the eject roller ASSY 2 rotates conversely and feeds the paper to the Duplex unit, where the paper skew is adjusted.

Afterwards, the paper is ejected from the Duplex unit to the path through the regist roller and to the transfer block in the drum unit again for process of printing on the back of sheet.

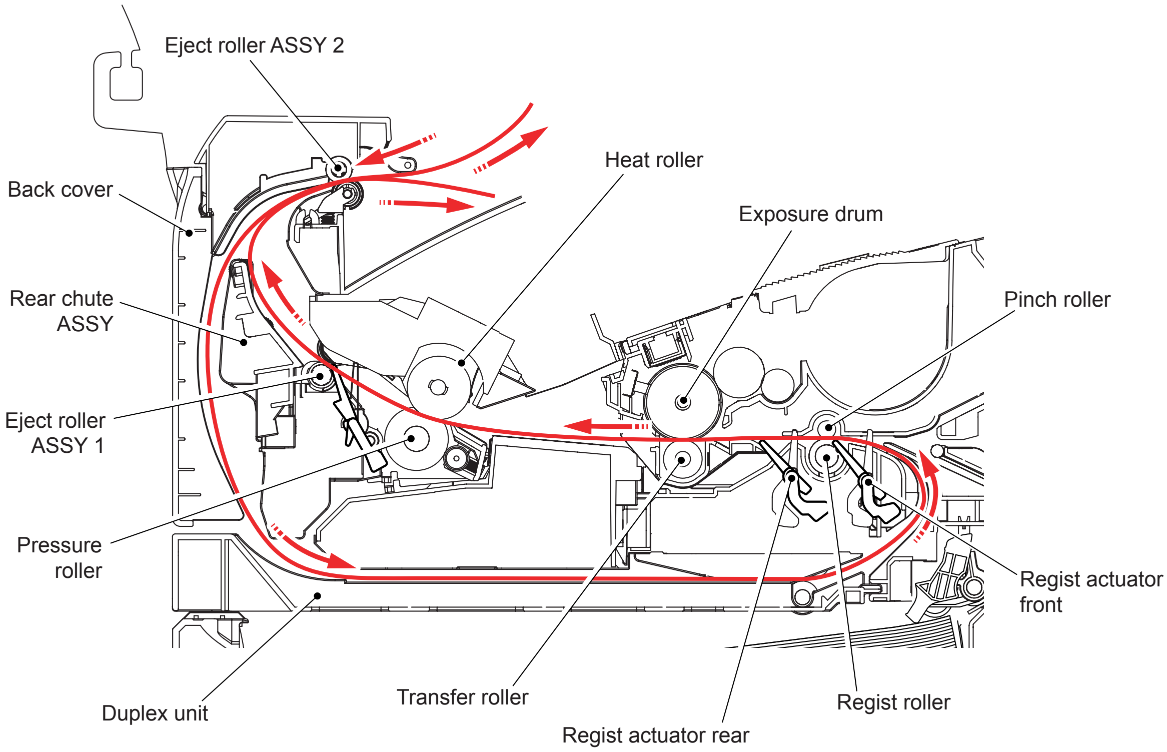


Fig. 2-18

Note :

- The duplex printing prints the 1st page after printing the 2nd page first.
  For example, when prints the four pages, prints in order to 2nd page to 1st page to 4th page to 3rd page.

3.3.6 Paper feeding from the MP tray

The separation roller MP is connected with the feed roller through the gear in the MP roller holder ASSY. When the separation roller is driven, therefore, the feed roller is also driven. At this time, the paper is drawn out of the MP tray by rotation of the paper feed roller MP contacted with the paper. The drawn paper is separated into individual sheets by the separation roller MP.

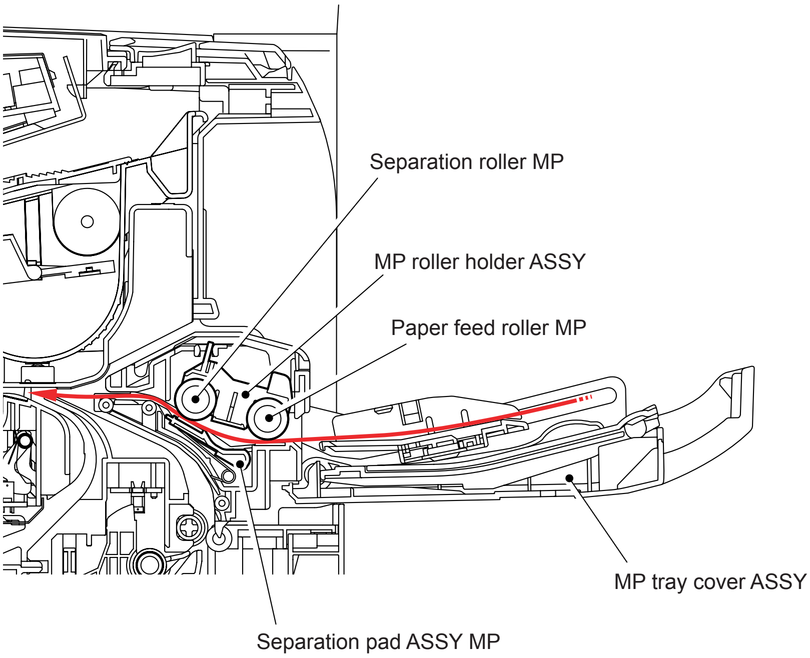


Fig. 2-19

3.3.7 Paper feeding from the tray 2

The motor drive is transmitted to the some gears to rotate the feed roller, then the paper is drawn out of the tray 2. The drawn paper is separated into individual sheet by the separation roller and the separation pad, and fed to the machine by the feed roller TR.

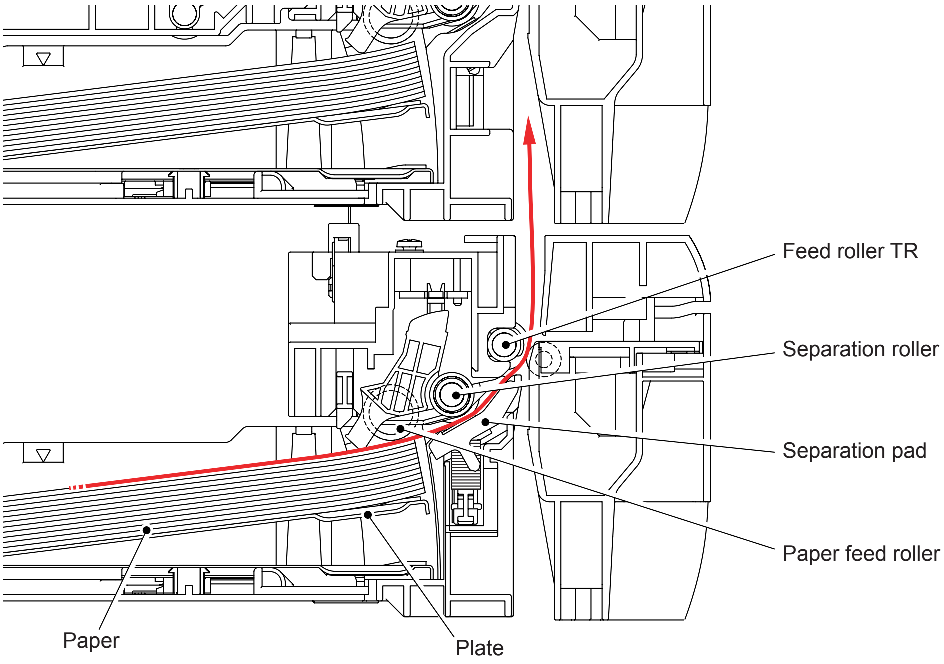


Fig. 2-20

3.4 Toner Cartridge

3.4.1 Methods for Detecting Toner Life

When the machine detects the toner life end, "**Replace Toner**" is displayed. The toner life is displayed through the following two ways. First, such indication is displayed when detection is performed by the toner sensor; second, it is displayed at the time when a cumulative rotation of the develop roller reaches its upper limit.

(1) Detection by the toner sensor

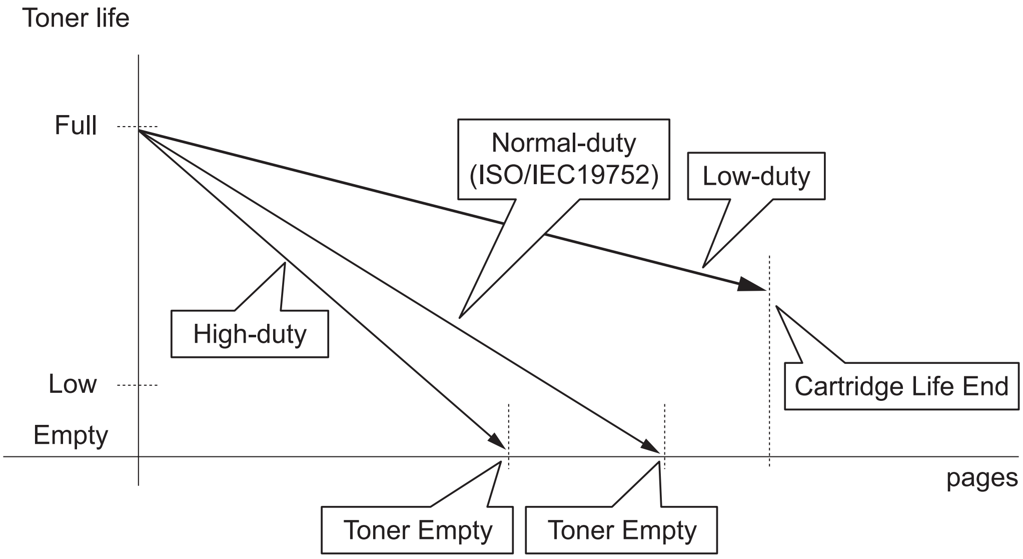
The low amount of toner remaining can be detected by checking the imperviousness to light of the toner in the cartridge by means of the transmissive photosensor.

(2) Detection by means of rotation rates of the develop roller reached its upper limit

The machine counts the accumulated number of the rotations for the develop roller.

3.4.2 Cartridge life

A new toner cartridge can print approximately 8,000 A4 or Letter size single-sided pages at normal duty (ISO/IEC19752). In the case of low-duty printing, if the number of printed pages are reached the cartridge life, "**Replace Toner**" message appears on the LCD before the toner runs out because the developer roller surface or other toner sealing is worn out due to a rotation of the rollers.



Memo :

- If reached the cartridge life end, "**Replace Toner**" message appears even if the toner is contained.

<Cartridge Life>

The toner cartridge life varies according to the average number of printing per job.

As the deterioration of toner will be less in case of printing more pages continually once time than usual, the more printing pages per job, the more printable pages of toner cartridge.

Table: The relationship between the average printing pages per job and the toner cartridge life

Average printed pages (page/job)	1	2	3	4	5	6	7	8
Cartridge Life	9,500	14,315	17,225	19,174	20,571	21,621	22,439	23,094

Increasing the number of times of power switch ON and warming operation in company with opening or closing cover will also cause the deterioration of toner, so the more frequency those operations be taken, the less pages the toner cartridge can print.

Table: The toner cartridge lives in case of pressing power switch Off/ON before printing.

Average printed pages (page/job)	1	2	3	4	5	6	7	8
Cartridge Life	5,225	8,856	11,526	13,571	15,189	16,500	17,584	18,496

3.4.3 New toner detection

This machine is equipped with the function to detect that the residual quantities of the toner are not enough by examining the degree that the toner in the cartridge blocks the light by the transmission light sensor. This function informs the user's that the toner cartridge has reached its life. However there is a description such as previous contents when the toner cartridge reaches itself the life end by the abrasion of the rollers, "the toner is life end" is displayed on the LCD and stops moving itself to promote the replacement of the new one even if the remaining amount of the toner is enough. At this time, the toner LED sensor cannot check the attachment of a new toner. There is a possibility that the image quality decrease and the toner leakage occur if the cartridge that reaches longevity is continuously used. Therefore it is necessary to remove the movement stop state when a new toner is attached to the machine. It is new toner detection mechanism to explain here to enable this distinction.

The new toner detection is performed by the following procedure.

(1) The main motor will drive gear (4) through the interconnection of other gears.

(2) When gear (4) is rotated, rib A on that gear will push against the new toner actuator; the new toner sensor will detect the actuator motion, and the machine detects that a new toner cartridge has been installed.

(3) The toner cartridge has Rib A on gear (4).
When the toner actuator is pushed once, the signal that is generated by the new toner sensor, tell the machine that a toner cartridge has been installed.

<Machine side view when a new toner cartridge is installed>

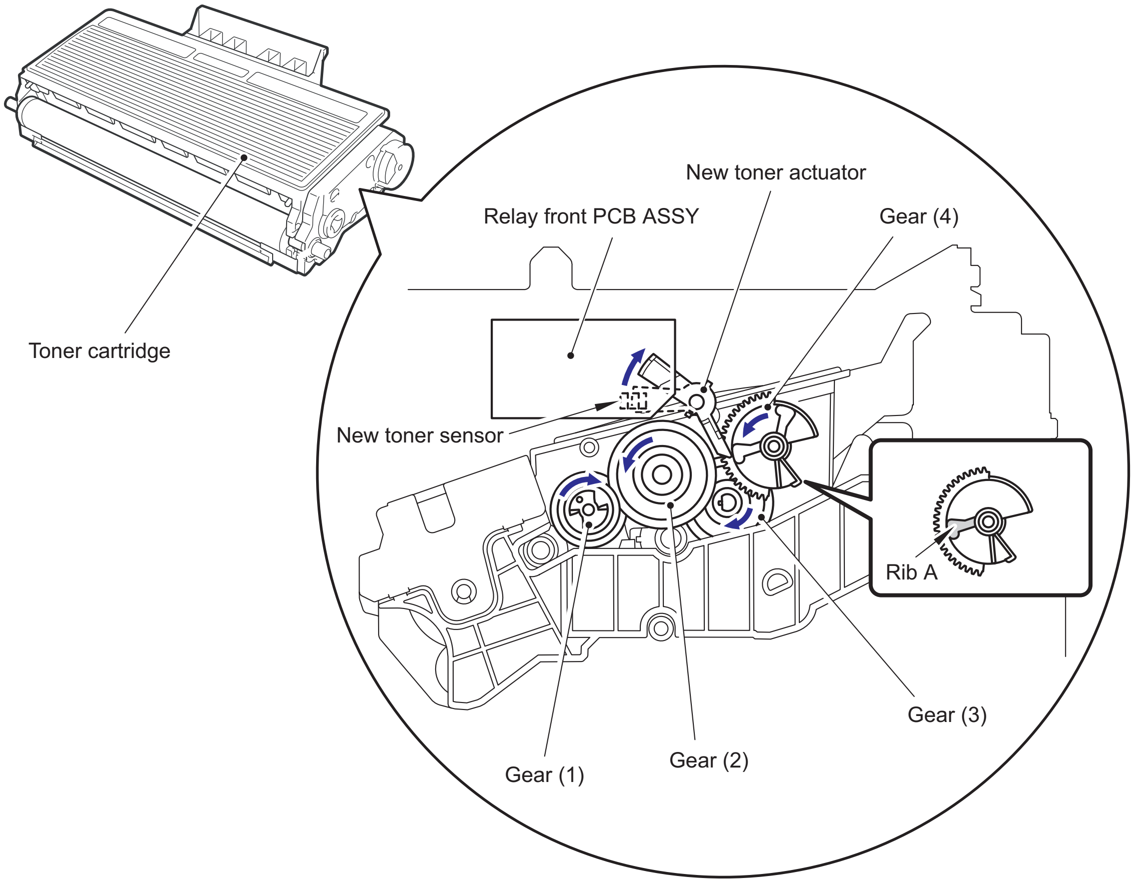
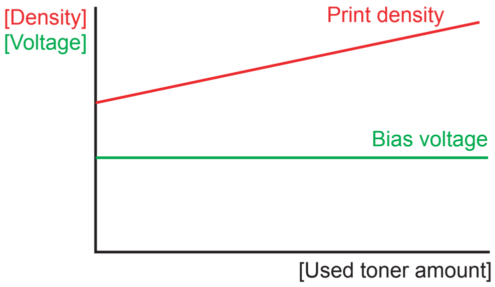
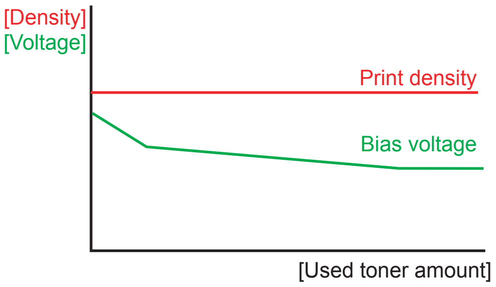


Fig. 2-21

When the new toner detection machanism detects that the toner cartridge is replaced with a new one, the developing bias voltage is initialized at the same time.

The toner used for the machine has a property that print density is light first and gradually darker in the course of usage. The developing bias controls the toner property so that the print density is constant from first to last.


Toner property


Actual control

To obtain a print result of a constant density all the time, the machine counts the number of print pages immediately after the toner cartridge is replaced and changes the bias voltage according to the accumulated number of prints with the toner cartridge.

The bias voltage is changed with the steps described below:

(1) When the new toner sensor detects that the toner cartridge is replaced with a new (full) one, the developing bias is set to 400V (initialized).

(2) After that, the bias voltage is stepped down according to the number of prints. Ultimately, the bias voltage is approximately 300V.

<When a new toner cartridge is inserted after "Replace Toner" is displayed>

Corresponding counter, Setting value	Operation
Counter of toner cartridge changes	+1
Page counter for toner cartridge	Reset (0)
Coverage for toner cartridge	Reset (0)
Developing bias voltage	Reset (Initial setting)

<When a toner cartridge in use is inserted after "Replace Toner" is displayed by toner sensor detection [*1]>

A count value before changes is continuously indicated as a number of the rotation for the develop roller. Irrespective of the amount of toner, printing becomes disabled when the number of the rotation for the develop roller reaches the upper limit.

Corresponding counter, Setting value	Operation
Counter of toner cartridge changes	No count up
Page counter for toner cartridge	Continued
Coverage for toner cartridge	Continued
Developing bias voltage	Reset (Initial setting)[*2]

[*1] Excluding a toner cartridge in use in which there is a little toner remained.

[*2] The developing bias voltage is reset to the initial setting once when a toner cartridge in use is inserted.

Note :

- The discrimination between new and secondhand toner cartridges refers to the new toner detection to be heretofore described.

3.5 Print

3.5.1 Basic Principle

The printing process consists broadly of 5 processes: electrification, exposure, development, transfer and fusing.

1. Charging: The surface of an exposure drum is electrically charged.
2. Exposure: A printed image is formed on the surface of the drum by applying laser beam.
3. Development: Toner is adhered to the surface of the drum.
4. Transfer: The toner on the surface of the exposure drum is transferred to paper.
5. Fusing: The transferred toner is fused into place on the paper.

After these processes, the image is printed on the paper.

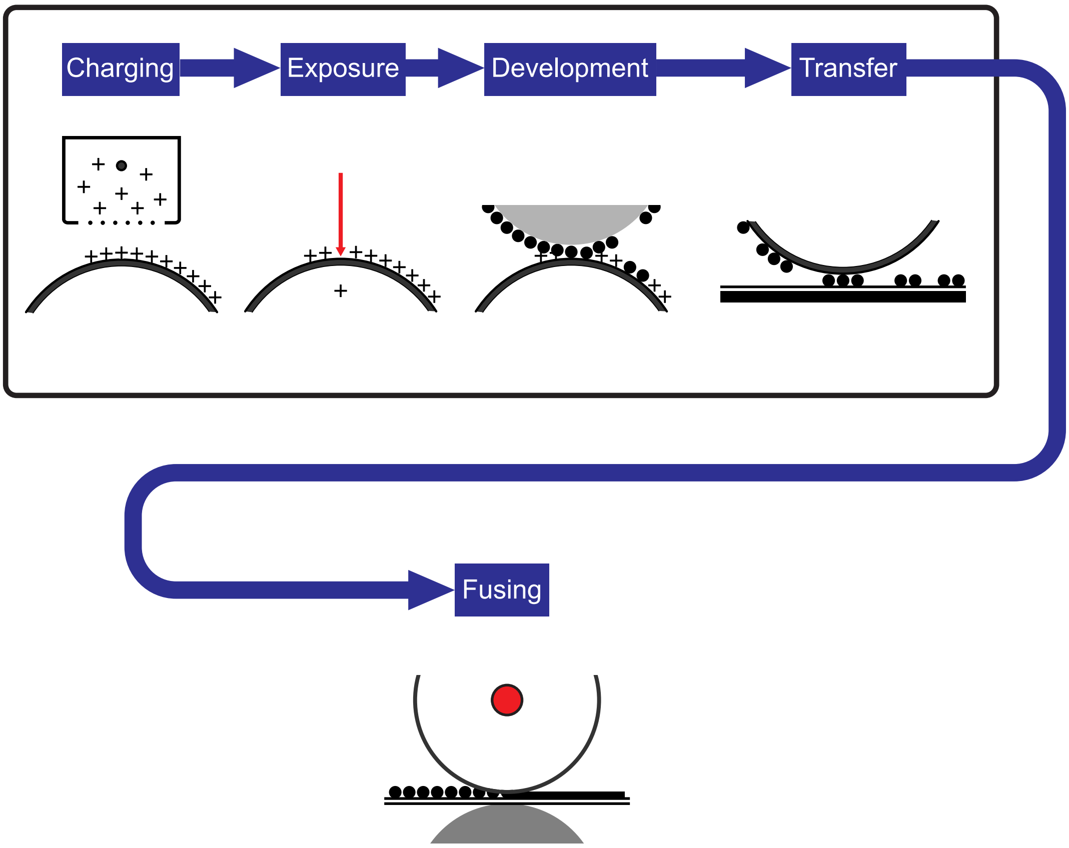


Fig. 2-22

3.5.2 Print Process

(1) Charging

The flow of the ion charge is controlled by constant voltage of the grid 850 V to ensure it is distributed evenly on the drum surface. In order to coat toner on the exposure drum, the drum needs to be evenly electrified. Ions are produced by supplying high-voltage power to the corona wire.

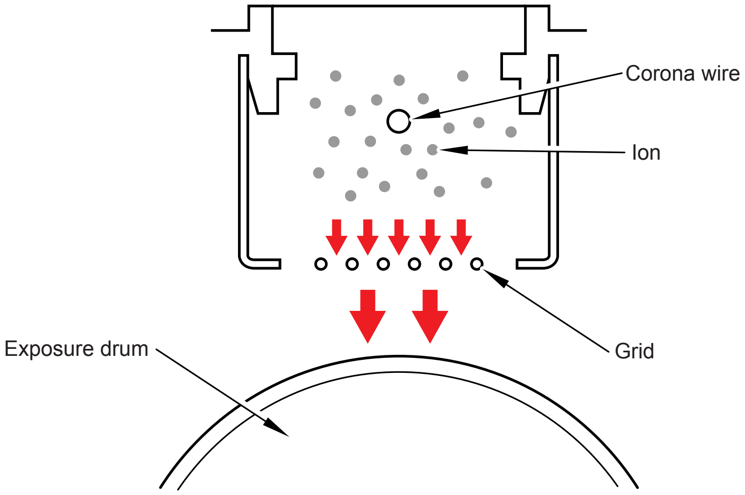


Fig. 2-23

Memo :

- The level of ozone expelled from the machine is less than 3.0 mg/h therefore not harmful to the human body. Applicable safety standards have been complied.

(2) Exposure

The laser beam radiated from a laser diode inside the laser unit is concentrated into a constant width by a slit in the CO lens cell and then reflected by a polygon mirror rotating at high speed. The evenly charged exposure drum is irradiated with reflected light and exposed. Surface potential is lowered by such exposure and a printed image is formed.

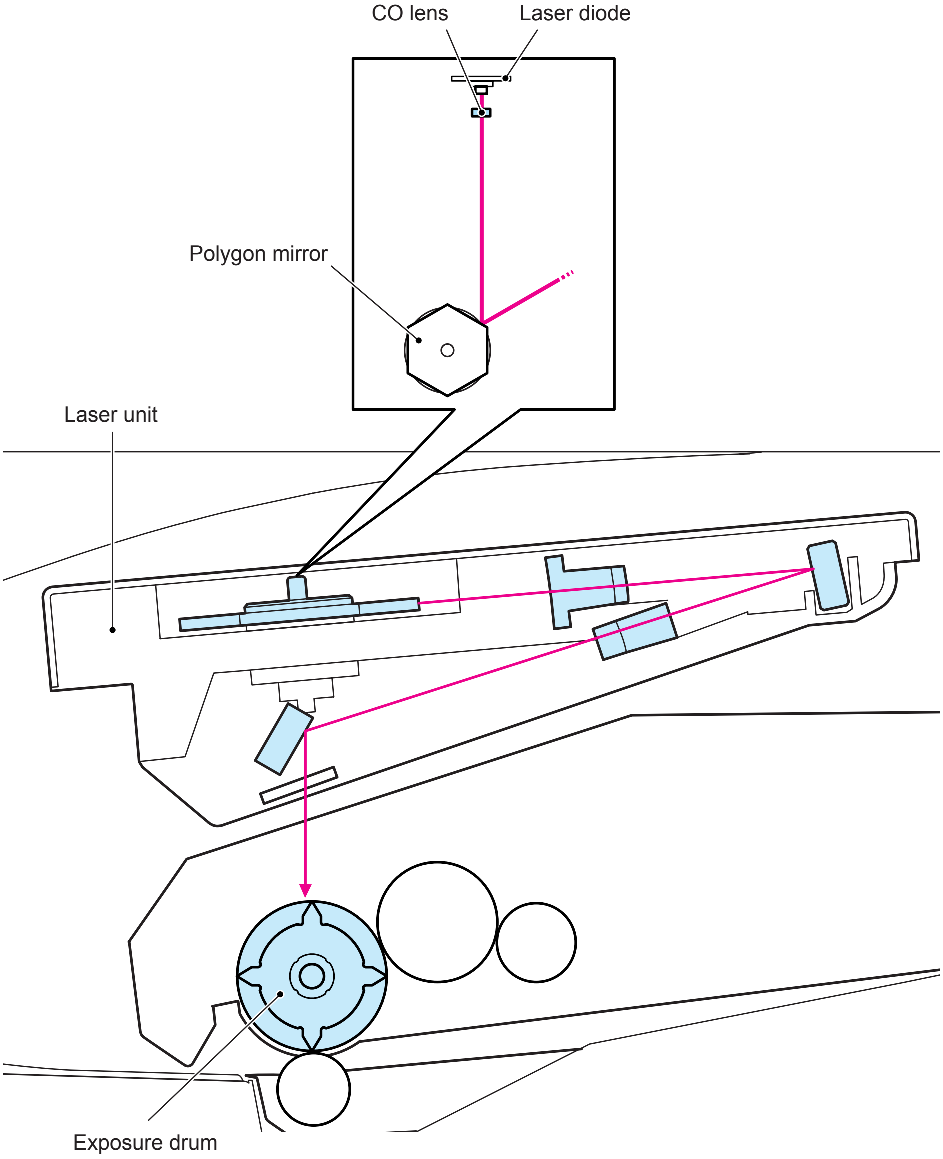


Fig. 2-24

(3) Development

Toner is attracted to a printed-image area on the exposure drum where surface potential is lowered due to exposure.

By controlling developing bias voltage supplied to the develop roller, the amount of toner taken to the drum is adjusted to keep printing density constant.

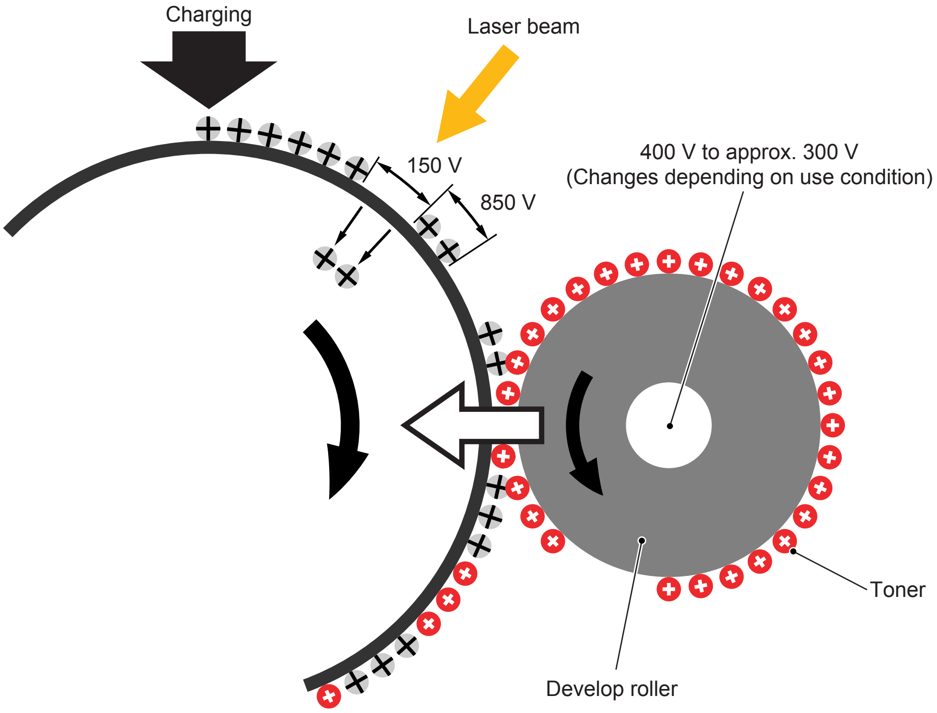


Fig. Ref. 2-25

<Flow up of toner to the development process>

Toner adheres to the charged develop roller. Such adhered toner is adjusted to an even thickness, and is attracted to an exposed area on the exposure drum.

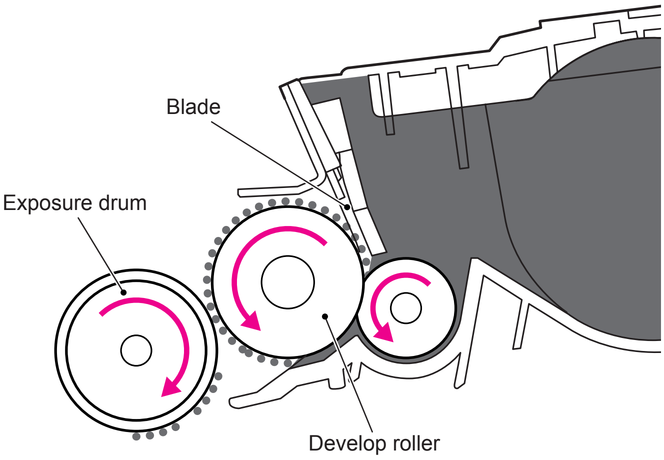


Fig. 2-26

(4) Transfer

By applying a minus charge to the transfer roller, the toner adhered to the exposure drum is transferred to paper.

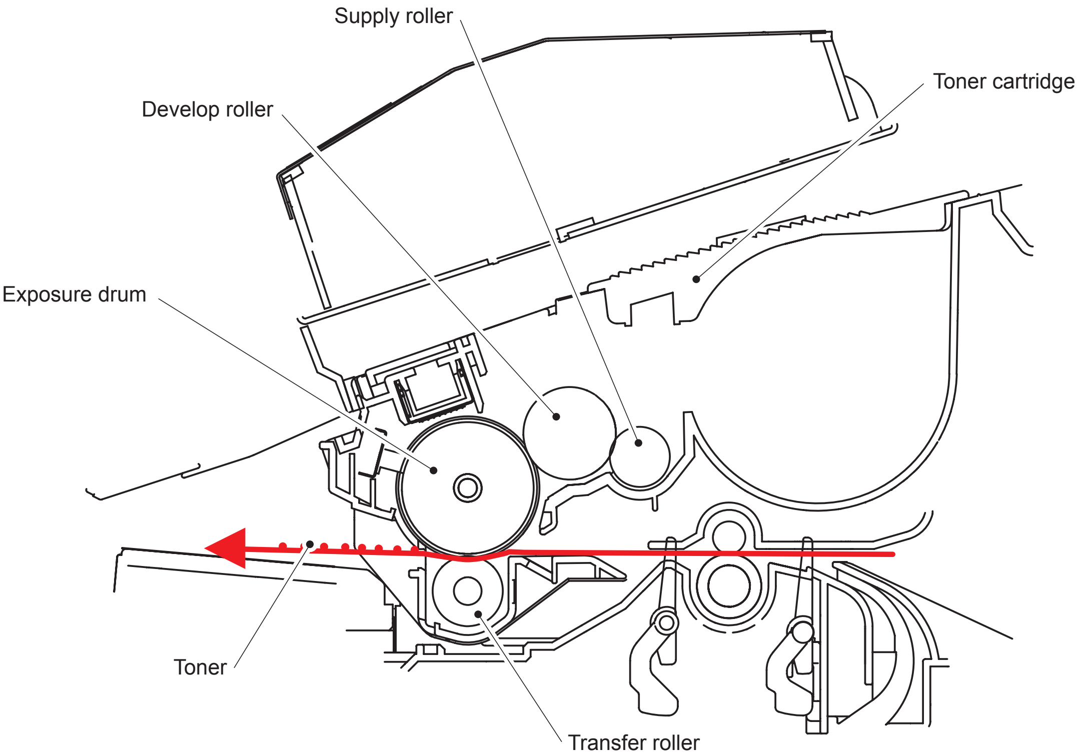


Fig. 2-27

Memo :

- Control of transfer bias
  The transfer bias applied in the transfer roller is adjusted according to types and sizes of paper so as to keep excellent image quality.

(5) Fusing

The toner transferred on paper passes between the heat roller and the pressure roller in the fuser unit, being fused by heat and pressure. The thermistor detects surface temperature of the heat roller and turns ON/OFF the halogen heater lamp. The temperature is kept constant.

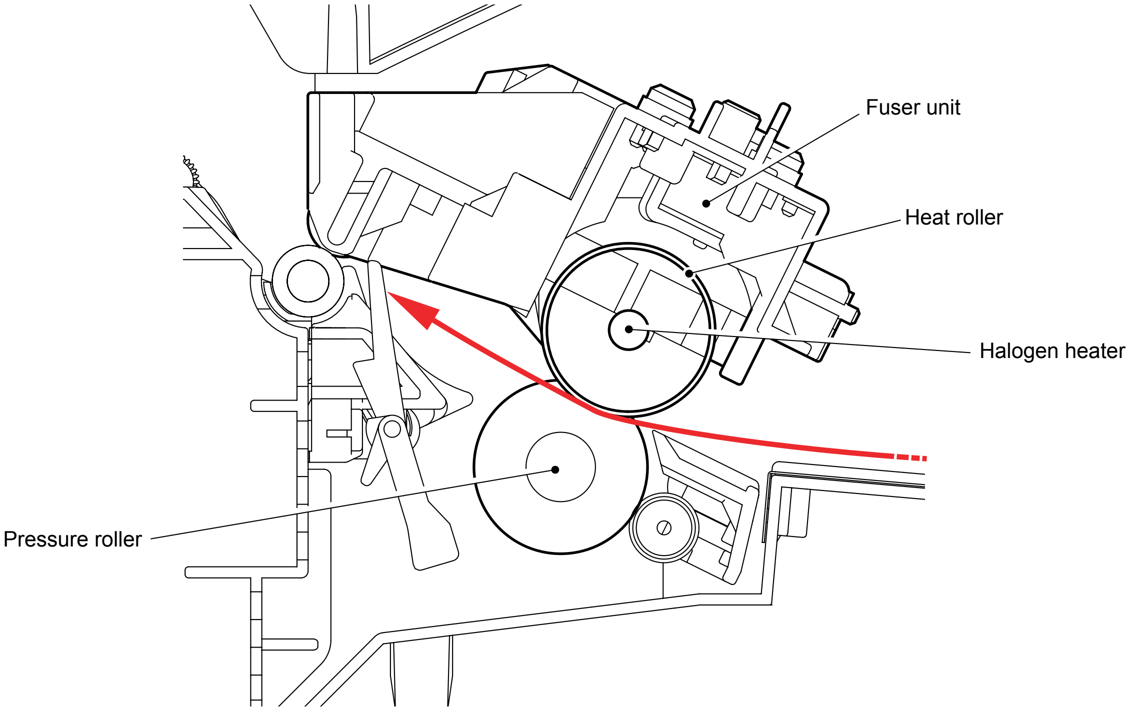


Fig. 2-28

Memo :

- Control of fusing temperature
  The fuser unit adjusts such temperature according to types and sizes of paper so as to keep excellent image quality.

3.6 Sensors position

Sensor name	Type	Located on	Function
Regist front sensor	Photo sensor	High-voltage PS PCB	Detect the paper top position or absence of paper.
Regist rear sensor	Photo sensor	High-voltage PS PCB	Control the first print position on the paper.
Paper eject sensor	Photo sensor	Relay rear PCB	Detect whether the paper is ejected.
New toner sensor	Photo sensor	Relay front PCB	Detect whether a new toner cartridge is installed. Detect a new toner cartridge type.
Toner LED PCB (Light emission)	Photo sensor	Frame R	Detect whether the toner cartridge which contains enough toner.
Toner sensor PCB (Light reception)	Photo sensor	Frame L	
Front cover sensor	Mechanical switch	Frame L	Detect the opening and closing of the front cover.
PE sensor	Photo sensor	PE EG sensor ASSY	Detect the absence of the paper in each paper tray.
Edge sensor	Photo sensor	PE EG sensor ASSY	Detect the absence of each paper tray. Detect the absence of the paper tray.
MP PE sensor	Photo sensor	MP PE sensor ASSY	Detect the absence of the paper in the MP tray.
Duplex tray sensor	Mechanical switch	Relay rear PCB	Detect the opening and closing of the back cover. Detect the absence of the Duplex unit.
Document front sensor 1	Photo sensor	ADF	Detect the absence of the paper in the ADF unit.
Document front sensor 2	Photo sensor	ADF	Detect whether the paper is drawn.
Document rear sensor	Photo sensor	ADF	Detect the length of the paper.
Switch back sensor	Photo sensor	ADF	When the duplex printing, detect the timing of reversing of the paper.
Document cover sensor	Photo sensor	ADF	Detect the opening and closing of the document cover.
Home position sensor	Photo sensor	Scanner unit ASSY	Detect the if the scanner unit ASSY is in the home position of the CCD unit.

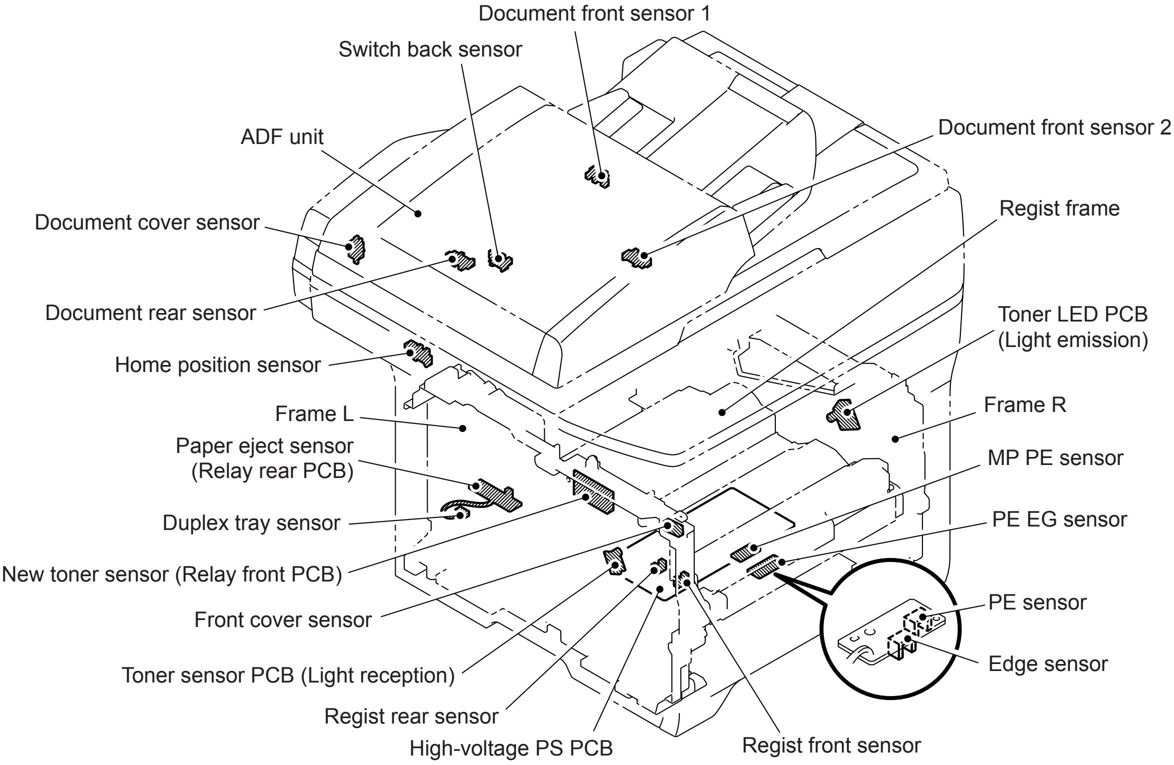

Document front sensor 1
Switch back sensor
ADF unit
Document front sensor 2
Document cover sensor
Regist frame
Document rear sensor
Toner LED PCB
(Light emission)
Home position sensor
Frame L
Frame R
Paper eject sensor
(Relay rear PCB)
MP PE sensor
Duplex tray sensor
PE EG sensor
New toner sensor (Relay front PCB)
PE sensor
Front cover sensor
Edge sensor
Toner sensor PCB (Light reception)
Regist rear sensor
High-voltage PS PCB
Regist front sensor

Fig. 2-29

CHAPTER 3

ERROR INDICATION AND TROUBLESHOOTING

CHAPTER 3 ERROR INDICATION AND TROUBLESHOOTING

This chapter details error messages and codes that the incorporated self-diagnostic functions display if any error or malfunction occurs. If any error message appears, refer to this chapter to find which components should be checked or replaced.

The latter half of this chapter provides sample problems that could occur in the main sections of the machine and related troubleshooting procedures. This will help service personnel pinpoint and repair defective components.

CONTENTS

1. INTRODUCTION

Troubleshooting is the countermeasure procedures that the service personnel should follow if an error or malfunction occurs with the machine. It is impossible to anticipate all of the possible troubles which may occur in future and determine the troubleshooting procedures, so this chapter covers some sample troubles. However, those samples will help the service personnel pinpoint and repair other defective elements.

1.1 Precautions

Be sure to observe and follow all the precautions to prevent any secondary problems from happening during troubleshooting.

(1) Always turn off the power and unplug the power cable before removing any covers or PCBs, adjusting the machine and so on. If you need to take voltage measurements with the power switched on, take the greatest of care not to receive an electric shock.

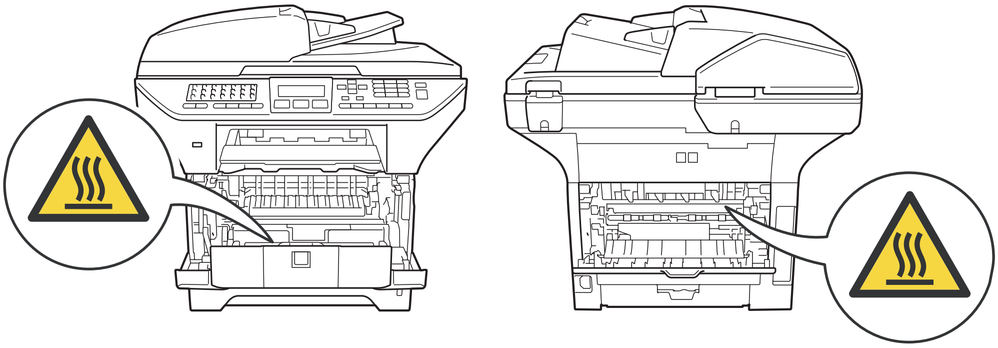
(2) When connecting or disconnecting cable connectors, make sure that you hold the connector body and not the cables.

(3) Electronic devices are sensitive to static build up; make sure that you touch a metal portion of the machine to discharge yourself before accessing the PCBs.
Handle PCBs with care when repairing them.

(4) Follow the warning by all means.

warning

The fuser unit becomes extremely hot during operation. Wait until it has cooled down sufficiently before replacing consumable items. DO NOT remove or damage the caution label located on or around the fuser.



(5) Verify again that the repaired portion works properly.

1.2 Part names

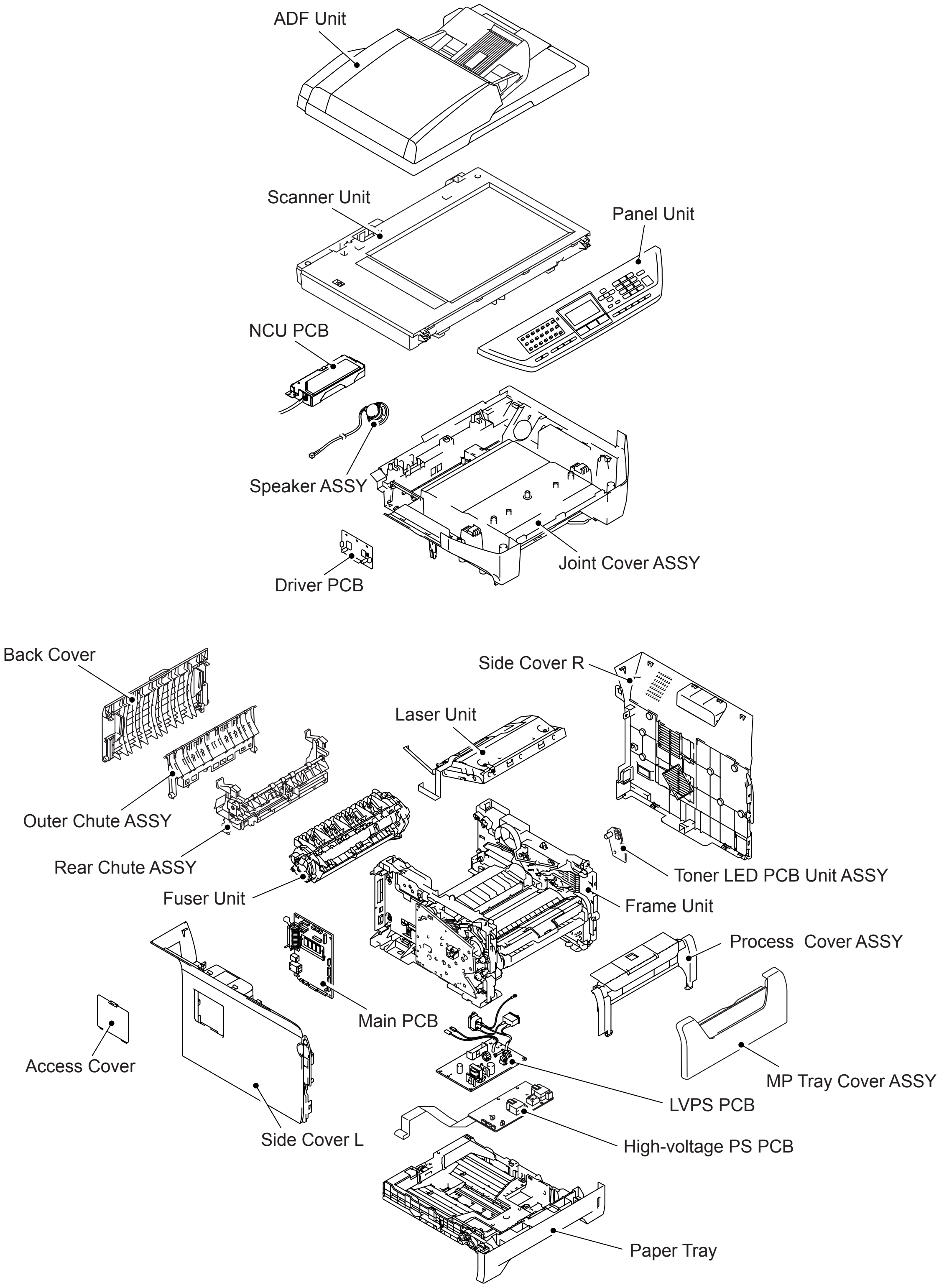


Fig. 3-1

1.3 Initial Check

Check the following items before attempting to repair the machine.

■ Operating Environment

(1) Put your machine on a flat, stable surface such as a desk that is free of vibration and shocks.

(2) Use the machine in a well-ventilated room; use the machine within the following ranges of temperature and humidity: temperature between 10°C and 32.5°C (50°F to 90.5°F), and the relative humidity is maintained between 20% and 80%.

(3) The machine is not exposed to direct sunlight, excessive heat, moisture, or dust.

■ Power Supply

(1) The AC input power supply described on the rating plate of the machine should be within ±10% of the rated voltage.

(2) The AC input power supply is within the regulated value.

(3) The cables and harnesses are connected correctly.

(4) The fuses are not blown.

■ Paper

(1) A recommended type of paper is being used.
(Refer to "2.6.2 Media specifications" in Chapter 1.)

(2) The paper is not damp.

(3) The paper is not short-grained paper or acid paper.

■ Consumable Parts

(1) The drum unit (including the toner cartridge) is installed correctly.

■ Others

(1) Condensation

When the machine is moved from a cold place into a warm room, condensation may occur inside the machine, causing various problems as listed below.

- Condensation on the optical surfaces such as the scanner window, lenses, the reflection mirror and the protection glass may cause the print image to be light.
- If the exposure drum is cold, the electrical resistance of the photosensitive layer is increased, making it impossible to obtain the correct contrast when printing.
- Condensation on the charge unit may cause corona charge leakage.
- Condensation on the plate and separation pad may cause paper feed failures.

If condensation has occurred, activate the Drum condensation countermeasure mode.
("5.3 Drum condensation countermeasure mode" in Chapter 6.)

If the drum unit is unpacked soon after it is moved from a cold place to a warm room, condensation may occur inside the unit which may cause incorrect images. Instruct the end user to allow the unit to come to room temperature before unpacking it. This will take one or two hours.

(2) Cleaning

Use a soft dry cloth.

warning

DO NOT use flammable substances such as alcohol, benzine, thinner or any type of spray to clean the inside or outside of the machine. Doing this may cause a fire or electrical shock.

2. DISTINGUISH ERROR CAUSE

2.1 ERROR INDICATION

To help the user or the service personnel promptly locate the cause of a problem (if any), the facsimile equipment incorporates the self-diagnostic functions which display error messages for machine errors and communications errors.

For the communications errors, the machine also prints out the transmission verification report and the communications list.

2.1.1 Error messages appearing on the LCD

Error Message	Type of Error	Action	Refer to
Access Error	The device is removed from the USB direct interface while the data is processing.	Press **Stop/Exit**. Reinsert the device and try to print with Direct Print.	—
BT call sign (U.K. only)	The BT call sign is on.	Set BT call sign to off.	—
Cartridge Error	The toner cartridge is not installed properly.	Pull out the drum unit, take out the toner cartridge, and put it back into the drum unit again.	3-35
Comm.Error	Poor telephone line quality caused a communication error.	Send the fax again or connect the machine to another telephone line.	3-65
Connection Fail	You tried to poll a fax machine that is not in Polled Waiting mode.	Send the fax again.	—
Cooling Down Wait for a while	The temperature of the drum unit or toner cartridge is too hot. The machine will pause its current print job and go into cooling down mode. During the cooling down mode, you will hear the cooling fan running while the LCD shows Cooling Down, and Wait for a while.	Make sure that you can hear the fan in the machine spinning and that the exhaust outlet is not blocked by something. If the fan is spinning, remove any obstacles that surround the exhaust outlet, and then leave the machine turned on but do not use it for several minutes.	3-20
Cover is Open	The front cover is not closed completely.	Close the front cover of the machine.	3-28
Cover is Open	The fuser cover is not closed completely or paper was jammed in the back of the machine when you turned on the power.	Close the fuser cover of the machine. Make sure paper is not jammed inside the back of the machine, and then close the fuser cover.	3-16
Cover is Open	The ADF cover is not closed completely.	Close the ADF cover of the machine.	3-29
Disconnected	The other person or other person's fax machine stopped the call.	Try to send or receive again.	3-73

Error Message	Type of Error	Action	Refer to
Document Jam	The document was not inserted or fed properly, or the document scanned from the ADF was too long.	Remove the jammed paper from the ADF.	3-29
DR Mode in Use	The machine is set to Distinctive Ring mode. You cannot change the Receive Mode from Manual to another mode.	Set Distinctive Ring to Off.	—
Drum Error	The corona wire on the drum unit needs to be cleaned.	Clean the corona wire on the drum unit.	3-21 3-23
	The drum unit has reached the end of its life.	Replace the drum unit.	
Duplex Disabled	The duplex tray is not installed properly.	Remove the duplex tray and install it again.	3-16
Fuser Error	The temperature of fuser unit does not rise at a specified temperature within specified time.	Do one of the following: Turn the power switch off, wait a few seconds, and then turn it on again. Leave the machine for 15 minutes with the power on.	3-17 3-19 3-20 3-21 3-38
	The fuser unit is too hot.		
Init Unable XX	The machine has a mechanical problem.	Perform processing with the error code.	—
Jam Duplex	The paper is jammed in the duplex tray.	Remove the jammed paper from the duplex tray.	3-16
Jam Rear	The paper is jammed in the back of the machine.	Remove the jammed paper from the back of the machine.	3-24
Jam Inside	The paper is jammed inside the machine.	Remove the jammed paper from the inside of the machine.	3-25
Jam MP Tray	The paper is jammed in the MP tray of the machine.	Remove the jammed paper from the MP tray.	3-26
Jam Tray 1 Jam Tray 2	The paper is jammed in the paper tray of the machine.	Remove the jammed paper from the tray 1 or 2.	3-26
No Paper	The machine is out of paper or paper is not properly loaded in the paper tray.	Do one of the following: Refill the paper in the paper tray or MP tray. Remove the paper and load it again.	3-28
No Response/ Busy	The number you dialed does not answer or is busy.	Verify the number and try again.	3-73 3-74
No Toner	The toner cartridge or the drum unit and toner cartridge assembly is not installed properly.	Re-install the toner cartridge or the drum unit and toner cartridge assembly.	3-14
No Tray	The paper tray is not completely closed.	Close the paper tray properly.	3-24

Error Message	Type of Error	Action	Refer to
Not Registered	You tried to access a One Touch or Speed Dial number that is not programmed.	Set up the One Touch or Speed Dial number.	3-74
Out of Memory	The machine's memory is full.	**Fax sending or copy operation in progress** Do one of the following: Press **Start** to send or copy the scanned pages. Press **Stop/Exit** and wait until the other operations in progress finish, and then try again. Clear the data from the memory. **Print operation in process** Do one of the following: Reduce print resolution. Clear the faxes from the memory.	3-26
Print Unable XX	The machine has a mechanical problem.	Perform processing with the error code.	3-12 3-13 3-18 3-19 3-20 3-21 3-37 3-38
Protected Device	The protect switch of the USB Flash memory drive is on.	Turn off the protect switch of the USB Flash memory drive.	3-36
Rename the File	There is already a file on the USB Flash memory drive with the same name as the file you are trying to save.	Change the file name of the file on the USB Flash memory drive or the file you are trying to save.	—
Replace Parts Drum or Replace Drum	The drum unit is the end of its life.	Replace the drum unit.	3-14
	The drum unit counter was not reset when a new drum was installed.	1) Open the front cover, and then press **Clear/Back**. 2) Press 1 to reset.	
Replace Parts Fuser Unit or Replace Fuser	It is time to replace the fuser unit.	Replace the fuser unit.	3-15
Replace Parts Laser Unit or Replace Laser	It is time to replace the laser unit.	Replace the laser unit.	3-15
Replace Parts PF Kit MP or Replace PF Kit MP	It is time to replace the paper feeding kit for the MP tray.	Replace the PF Kit MP.	3-14
Replace Parts PF Kit 1 or Replace PF Kit 1	It is time to replace the paper feeding kit for Tray 1.	Replace the PF Kit 1.	3-15

Error Message	Type of Error	Action	Refer to
Replace Parts PF Kit 2 or Replace PF Kit 2	It is time to replace the paper feeding kit for Tray 2.	Replace the PF Kit 2.	3-15
Replace Toner	The toner cartridge is used up and printing is not possible.	Replace the toner cartridge with a new one.	3-17
Scan Unable XX	The machine has a mechanical problem.	Perform processing with the error code.	—
	Document is too long for duplex scanning.	Press **Stop/Exit**. Use the suitable size of paper for duplex scanning.	
Scanner Locked	The scanner lock is locked.	Open the document cover, and then release the scanner lock lever. Press **Stop/Exit**.	3-32
Size mismatch	The paper in the tray is not the correct size.	Load the correct size of paper in the tray and set the “Paper Size”.	3-23
Toner Low	If the LCD shows Toner Low, you can still print; however, the machine is telling you that the toner cartridge is near the end of its life.	Order a new toner cartridge now.	3-17
Too Many Files	There are too many files stored on the USB Flash memory drive.	Reduce the number of files stored on the USB Flash memory drive.	—
Too Many Trays	More than one optional tray is installed.	The maximum number of optional trays is one. Remove any additional trays.	—
Unusable Device	An incompatible or broken device has been connected to the USB direct interface.	Remove the USB Flash memory drive from the USB direct interface.	3-36 3-40

3. ERROR CODES

This machine includes a self-diagnosis function. If the machine does not work normally it judges that an error has occurred, and indicates the corresponding error message on the LCD, which in turn helps the end user to quickly find out the problem.

3.1 Error Indication

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
1E	The drum unit reached its life and requires replacement.	3-12	59	Fuser unit failure (Detect fuser failure at start-up)	3-17
1F	Two or more optional trays are installed	3-12	63	Toner life end	3-17
24	Internal temperature sensor failure	3-12	67	Toner low	3-17
35	EEPROM of main PCB failure	3-13	68	Temperature rise when heater is off	3-18
36	HVPS PCB during standby failure	3-13	69	Mis-connect center thermistor connector	3-18
3B	Main PCB RAM failure	3-13	6A	Fuser temperature does not reach 60°C within the specified time (center thermistor)	3-19
3C	EEPROM writing error (Not applicable)	3-13	6B	Fuser temperature does not reach 100°C within the specified time (center thermistor)	3-19
3D	EEPROM reading error (Not applicable)	3-13	6C	Fuser temperature exceeds its higher limit (center thermistor)	3-19
3E	EEPROM bus error (Not applicable)	3-13	6D	Fuser temperature exceeds its lower limit (center thermistor)	3-19
44	No toner cartridge	3-14	6E	Fuser temperature does not rise (center thermistor)	3-19
50	The drum unit reached its life and requires replacement.	3-14	6F	Hardware detects extremely high temperature of the center or side thermistors	3-19
51	The paper feed kit MP reached its life and requires replacement.	3-14	70	Fuser motor error	3-20
52	The paper feed kit T1 reached its life and requires replacement.	3-15	71	Laser unit polygon motor failure	3-20
53	The paper feed kit T2 reached its life and requires replacement.	3-15	72	Laser beam emission failure	3-20
54	The fuser unit reached its life and requires replacement.	3-15	75	Sensor of the inside temperature for detection detected higher than normal temperature	3-20
55	The laser unit reached its life and requires replacement.	3-15	76	Rapid temperature rising failure (center thermistor)	3-21
56	Back cover is opened	3-16	78	Rapid temperature falling failure (center thermistor)	3-21
57	Paper jam (Duplex tray)	3-16	7A	No detection of main motor synchronous signal	3-21
58	Fuser unit failure	3-17	7D	Dirt on corona wire (detect discharge error)	3-21

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
7F	Fax paper setting mismatch (The setting paper becomes besides the A4/Letter/Legal/ Folio) (Not applicable)	3-23	AD	DMA transfer error	3-31
80	Fax paper size is incorrect (The paper is smaller 10mm than the letter size (11inch) in Fax List/ Report)	3-23	AE	Document scanner home position sensor is not turned on.	3-31
83	Failure of discharge detection (Printing becomes unable until the drum is replaced with a new one.) (Discharge detection becomes unable until the drum counter reaches the double of the drum life.)	3-23	AF	Document scanner home position sensor is not turned off.	3-32
84	Paper jam	3-24	B0	Document scanner unit FFC detection error	3-32
85	Tray 1 is not installed into the machine	3-24	B1	Dark level offset data level error for scanning	3-33
86	Tray 2 is not installed into the machine	3-24	B2	Gain control data level error for scanning	3-33
88	Paper jam inside the machine	3-25	B7	A/D converter standard voltage failure; at High side	3-33
89	Incorrect paper size in duplex printing	3-25	B8	A/D converter standard voltage failure; at Low side	3-33
8A	Paper jam in Tray 1	3-26	B9	Scanning light adjustment error is detected	3-34
8B	Paper jam in Tray 2	3-26	BB	White level data error	3-34
8C	Paper jam in MP Tray	3-26	BD	Black level data error	3-34
8D	Paper jam near eject tray	3-27	BF	ADF duplex scanning cannot be implemented due to too long document	3-34
99	Specified paper size is not supported for duplex printing (Duplex)	3-27	C0	New toner detection lever failure	3-35
9F	Paper empty	3-28	C7	Insufficient DIMM Memory	3-35
A1	Front cover opened	3-28	C8	Secure print data full	3-35
A2	During scanning, 90 cm or longer of a document is detected	3-29	C9	DIMM error	3-36
A3	Document rear sensor is not turned on when feeding the document	3-29	CA	Excess current to USB device that is front side of the machine	3-36
A4	ADF cover opened	3-29	CD	Drum unit is not installed into the machine	3-36
A5	Fax scanning error (Warning) (First time)	3-30	D1	Modem initialization failed	3-37
A6	Fax scanning error (Error) (Second time)	3-30	DD	Fuser error other than 58, 59, 68, 69, 6A, 6B, 6C, 6D, 6E, 6F, 76, 78, DE and E2 are occurred	3-37
A7	Scanning color parameter file failure	3-30	DE	Central temperature of heat roller detected the temperature that was lower than 60°C)	3-37
A8	Scanning color parameter matching error	3-30	E0	Program error	3-37

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
E1	Main PCB failure	3-38	EF	LVPS PCB failure	3-39
E2	Central temperature of heat roller exceeds 280°C	3-38	F8	Battery connection error	3-39
E6	EEPROM error	3-38	F9	EEPROM customizing code error	3-39
EB	The data reading error for E2PROM	3-38	FF	Excess current to USB HOST PCB error	3-40
EC	Fuser fan failure	3-39			

3.2 Error Code Cause and Remedy

These errors are recoverable by following the message indicated on the LCD or following the items indicated in User Check.

■ Error code 1E

```
Drum End Soon
```

The drum unit reached its life and requires replacement.

<User Check>

- Replace the drum unit with a new one.

■ Error code 1F

```
Too Many Trays
```

Two or more optional trays are installed.

<User Check>

- Install one optional tray. (Only one optional tray is supported.)

Step	Cause	Remedy
1	Connector: 54702-1219 failure	Replace the connector: 54702-1219.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 24

```
Print Unable 24
Turn the power off and then back on again.
```

Internal temperature sensor failure

Step	Cause	Remedy
1	Harness connection failure of internal temperature sensor	Check the harness connection of the internal temperature sensor and reconnect it.
2	Internal temperature sensor failure	Replace the internal temperature sensor.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 35

```
Print Unable 35
Turn the power off and then back on again.
```

EEPROM of main PCB failure

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code 36

```
Print Unable 36
Turn the power off and then back on again.
```

HVPS PCB during standby failure

Step	Cause	Remedy
1	HVPS PCB unit failure	Replace the HVPS PCB unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 3B

```
Print Unable 3B
Turn the power off and then back on again.
```

Main PCB RAM failure

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code 3C

```
Print Unable 3C
Turn the power off and then back on again.
```

EEPROM writing error (Not applicable)

Error code 3D

```
Print Unable 3D
Turn the power off and then back on again.
```

EEPROM reading error (Not applicable)

Error code 3E

```
Print Unable 3E
Turn the power off and then back on again.
```

EEPROM bus error (Not applicable)

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code 44

```
No Toner
Open the Front Cover, then install Toner Cartridge.
```

No toner cartridge

<User Check>

- Install a new toner cartridge.

Step	Cause	Remedy
1	Dirt on electrodes on toner cartridge and machine body	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3)
2	HVPS PCB unit failure	Replace the HVPS PCB unit.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 50

```
Replace Parts
Drum
```

The drum unit reached its life and requires replacement.

<User Check>

- Replace the drum unit with a new one.

■ Error code 51

```
Replace Parts
PF Kit MP
```

The paper feed kit MP reached its life and requires replacement.

<User Check>

- Replace the paper feed kit MP with a new one.

Step	Cause	Remedy
1	Replacement time of the paper feed kit MP	Replace the paper feed kit MP.

■ Error code 52

```
Replace Parts
PF Kit 1
```

The paper feed kit tray 1 reached its life and requires replacement.

<User Check>

- Replace the paper feed kit tray 1 with a new one.

Step	Cause	Remedy
1	Replacement time of the paper feed kit tray 1	Replace the paper feed kit tray 1.

■ Error code 53

```
Replace Parts
PF Kit 2
```

The paper feed kit tray 2 reached its life and requires replacement.

<User Check>

- Replace the paper feed kit tray 2 with a new one.

Step	Cause	Remedy
1	Replacement time of the paper feed kit tray 2	Replace the paper feed kit tray 2.

■ Error code 54

```
Replace Parts
Fuser Unit
```

The fuser unit reached its life and requires replacement.

<User Check>

- Replace the fuser unit with a new one.

Step	Cause	Remedy
1	Replacement time of the fuser unit	Replace the fuser unit.

■ Error code 55

```
Replace Parts
Laser Unit
```

The laser unit reached its life and requires replacement.

Step	Cause	Remedy
1	Replacement time of the laser unit	Replace the laser unit.

■ Error code 56

```
Cover is Open
Close the Fuser Cover which can be found behind the Back Cover up
the machine.
```

Back cover is open

<User Check>

- Close the back cover.
- Install the Duplex unit.

Step	Cause	Remedy
1	Harness connection failure of relay rear PCB ASSY.	Check the harness connection of the relay rear PCB ASSY and reconnect it.
2	Relay rear PCB ASSY failure	Replace the relay rear PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 57

```
Jam Duplex
Pull out the Duplex Tray at the back of the machine and remove the
jammed paper.
```

Paper jam (Duplex tray)

Step	Cause	Remedy
1	Duplex feed ASSY failure	Replace the Duplex feed ASSY.
2	Main PCB failure	Replace the main PCB ASSY.
3	Plate gear damaged	Replace the main frame L unit.

■ Error code 58

```
Fuser Error
Turn the power off, then on again. Leave the machine for 15 min.
```

Fuser unit failure

Error code 59

```
Self-Diagnostic
Will Automatically Restart within 15 minutes.
```

Fuser unit failure (Detect fuser failure at start-up)

<User Check>

- Turn off the power switch, and turn on the power switch again 15 minutes later.

❗ This operation will melt the fuser unit if the heater is hot.
Leave the machine for 15 minutes and perform it after cooling down sufficiently.

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 63

```
Replace Toner
Open the Top Cover, replace Toner Cartridge.
```

Toner life end

<User Check>

- Replace the toner cartridge with a new one.

Step	Cause	Remedy
1	Relay front PCB ASSY failure	Replace the relay front PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 67

```
Toner Low
```

Toner of the toner cartridge is low

<User Check>

- Prepare the toner cartridge with a new one.

Step	Cause	Remedy
1	Toner sensor PCB ASSY failure	Replace the toner sensor PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 68

```
Print Unable 68
Turn the power off and then back on again.
```

Temperature rise when heater is off

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 69

```
Print Unable 69
Turn the power off and then back on again.
```

Mis-connect center thermistor connector

Step	Cause	Remedy
1	Harness connection failure of fuser unit.	Check the harness connection of fuser unit and reconnect it.
2	Harness connection failure of relay rear PCB ASSY.	Check the harness connection of the relay rear PCB ASSY and reconnect it.
3	Fuser unit failure	Replace the fuser unit
4	Main PCB failure	Replace the main PCB ASSY.

■ Error code 6A

```
Print Unable 6A
Turn the power off and then back on again.
```

Fuser temperature does not reach 60°C within the specified time (center thermistor)

Error code 6B

```
Print Unable 6B
Turn the power off and then back on again.
```

Fuser temperature does not reach 100°C within the specified time (center thermistor)

Error code 6C

```
Print Unable 6C
Turn the power off and then back on again.
```

Fuser temperature exceeds its higher limit (center thermistor)

Error code 6D

```
Print Unable 6D
Turn the power off and then back on again.
```

Fuser temperature exceeds its lower limit (center thermistor)

Error code 6E

```
Print Unable 6E
Turn the power off and then back on again.
```

Fuser temperature does not rise (center thermistor)

Error code 6F

```
Print Unable 6F
Turn the power off and then back on again.
```

Hardware detects extremely high temperature of the center or side thermistors

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 70

```
Print Unable 70
Turn the power off and then back on again.
```

Fuser motor error

Step	Cause	Remedy
1	Motor failure	Replace the main motor.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 71

```
Print Unable 71
Turn the power off and then back on again.
```

Laser unit polygon motor failure

Error code 72

```
Print Unable 72
Turn the power off and then back on again.
```

Laser beam emission failure

Step	Cause	Remedy
1	Laser unit failure	Replace the laser unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 75

```
Cooling Down
Wait for a while
```

Sensor of the inside temperature for detection detected higher than normal temperature

<User Check>

- Lower the inside temperature.

Step	Cause	Remedy
1	Thermistor ASSY failure	Replace the laser scanner unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 76

```
Print Unable 76
Turn the power off and then back on again.
```

Rapid temperature rising failure (center thermistor)

Error code 78

```
Print Unable 78
Turn the power off and then back on again.
```

Rapid temperature falling failure (center thermistor)

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 7A

```
Print Unable 7A
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

No detection of main motor synchronous signal

Step	Cause	Remedy
1	Motor failure	Replace the main motor.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 7D

```
Drum Error
Open the Front Cover and slide the blue tab across the Drum Unit
several times.
```

Dirt on corona wire (detect discharge error)

<User Check>

- Clean the corona wire in the drum unit.
- Replace the drum unit with a new one.

Step	Cause	Remedy
1	Dirt or dust on drum unit electrodes	Clean the electrodes of the main body and the drum unit. (Refer to Fig. 3-2)
2	Charge HVPS PCB failure	Replace the charge HVPS PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Electrodes location of the toner/drum unit

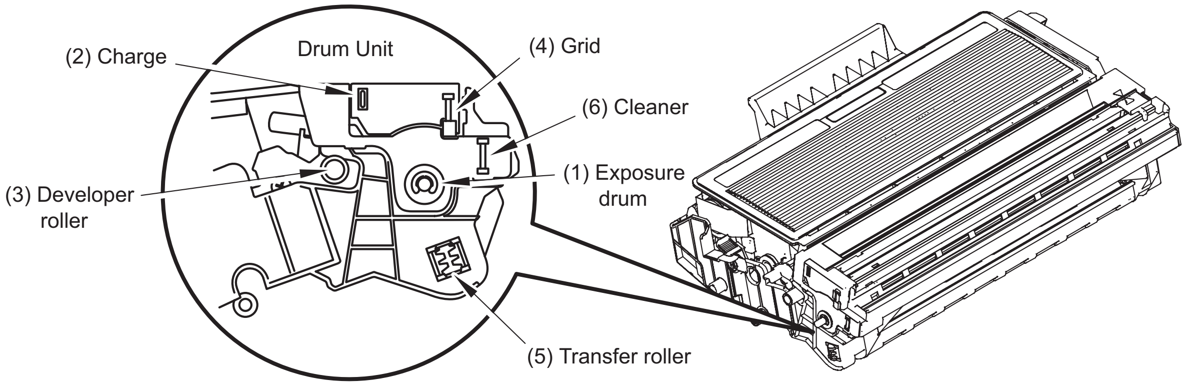


Fig. 3-2

■ Electrodes location of the machine

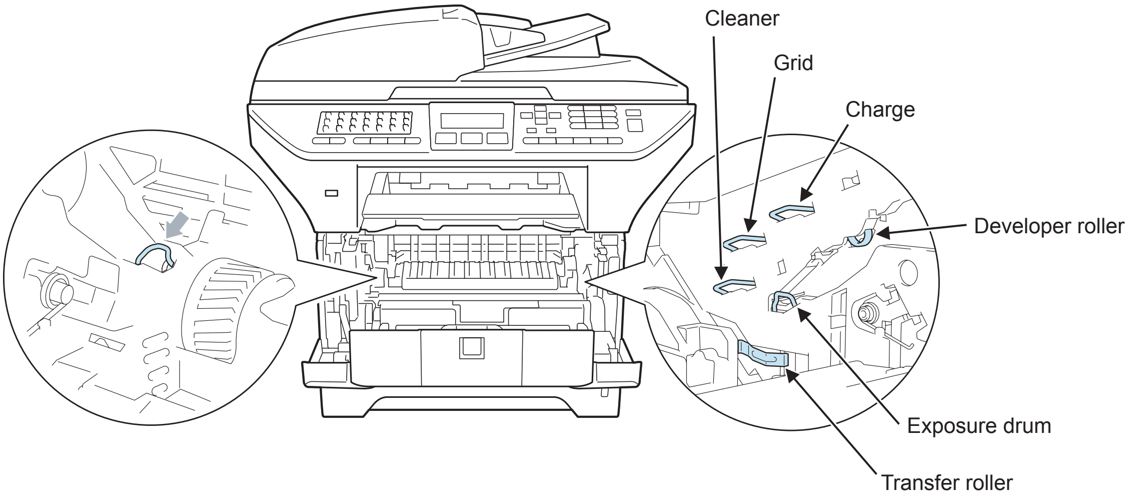


Fig. 3-3

<How to clean the electrodes>

Turn off the power switch. Unplug the machine from the AC power outlet, and leave the machine for a few minutes. Then, wipe the electrodes above carefully with a dry lint-free cloth. Be careful not to change the shapes of the electrodes.

■ Error code 7F

```
Size mismatch
Fax received. Set correct paper size in menu.
```

Fax paper setting mismatch (The setting paper is besides the A4/Letter/Legal/Folio)

Error code 80

```
Size mismatch
Reload correct paper, then press Start.
```

Fax paper size is incorrect
(The paper is smaller 10mm than the letter size (11inch) in Fax List/Report)

NOTE :

- The print is prohibited because there is a fear that the part of the received fax image is lost by a form with small size.

<User Check>

- Set the defined size paper.

Step	Cause	Remedy
1	Registration front actuator 2 catching on some position	Correct catching of the registration front actuator 2.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 83

```
Drum Error
Open the Front Cover, replace the Drum Unit. Refer to the User's
Guide for instructions.
```

Failure of discharge detection
(Printing becomes unable until the drum is replaced with a new one.)

<User Check>

- Replace the drum unit.

* The double counter value of the life is raised after the occurrence of the error 50 (The drum unit reached its life). Then the discharge is produced by the dirt of the corona wire, and the error 83 appears by detecting the dirt of the electrification current of the HVPS PCB.
When the error 83 is appeared, the performance of the drum unit cannot be maintained. Stop use of the drum so that the printing quality deteriorates.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code 84

```
Jam Rear
Open the Back Cover and remove the jammed paper, then press Start.
```

Paper jam in the back cover

<User Check>

- Check if the paper is jammed around the opened back cover. If jammed, remove it.

Step	Cause	Remedy
1	Harness connection failure of relay rear PCB ASSY.	Check the harness connection of the relay rear PCB ASSY and reconnect it.
2	Eject actuator catching on some position	Correct catching of the eject actuator.
3	Paper eject sensor PCB failure	Check the sensor performance following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6. If any problem occurs, replace the relay rear PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ Error code 85

```
No Tray
A Tray is not detected, install Tray 1.
```

Tray 1 is not installed into the machine

Error code 86

```
No Tray
A Tray is not detected, install Tray 2.
```

Tray 2 is not installed into the machine

<User Check>

- Check if the applicable tray is installed into the machine.
- Check if the paper is jammed in the applicable tray.

Step	Cause	Remedy
1	Tray 1 PE/edge sensor PCB/ Tray 2 PE/edge sensor PCB failure	Check the sensor performance following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6. If any problem occurs, replace the Tray 1 PE/edge sensor PCB failure/Tray 2 PE/edge sensor PCB.
2	Harness connection failure of Tray 1 PE/edge sensor PCB/ Tray 2 PE/edge sensor PCB.	Check the harness connection of the Tray 1 PE/edge sensor PCB/Tray 2 PE/edge sensor PCB. and reconnect it.
3	Main PCB failure	Replace the main PCB ASSY.
4	Connector 55533-1219 failure (only Tray 2)	Replace the connector 55533-1219.

■ Error code 88

```
Jam Inside
Open the Front Cover, pull out the Drum Unit completely and remove
the jammed paper.
```

Paper jam inside the machine

<User Check>

- Check if the paper is jammed around the removed drum unit. If jammed, remove it.

Step	Cause	Remedy
1	Harness connection failure of high voltage power supply PCB ASSY.	Check the harness connection of the high voltage power supply PCB ASSY and reconnect it.
2	Registration rear actuator catching on some position	Correct catching of the registration rear actuator.
3	Registration rear sensor failure	Check the sensor performance following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6. If any problem occurs, replace the high voltage power supply PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ Error code 89

```
Check Paper size
Reload correct paper.
```

Incorrect paper size in duplex printing

<User Check>

- Use the A4 size or letter size paper.

Step	Cause	Remedy
1	Registration rear sensor failure	Check the sensor performance following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6. If any problem occurs, replace the high voltage power supply PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 8A

```
Jam Tray 1
Remove the jammed paper from Tray 1.
```

Paper jam (Tray 1)

Error code 8B

```
Jam Tray 2
Remove the jammed paper from Tray 2.
```

Paper jam (Tray 2)

Error code 8C

```
Jam MP Tray
Remove the jammed paper from Multi Purpose Tray and press Start.
```

Paper jam (MP tray)

<User Check>

- Check if the paper is jammed in the appropriate tray. If jammed, remove it.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.

Step	Cause	Remedy
1	Dirt on edge sensor	Clean the edge sensor.
2	Harness connection failure of high voltage power supply PCB ASSY	Check the harness connection of the high voltage power supply PCB ASSY in the appropriate tray, and reconnect it.
3	Paper feeding kit worn out (MP/ Tray 1/ Tray 2)	Replace the paper feeding kit of the appropriate tray.
4	Registration front sensor failure	procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6. If any problem occurs, replace the high voltage power supply PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code 8D

```
Cover is Open
Make sure there is no paper jammed inside the machine and close
the Back Cover, then press Start.
```

Paper jam near eject tray

<User Check>

- Check if the paper is jammed in the back cover. If jammed, remove it.

Step	Cause	Remedy
1	Duplex sensor failure	Check the sensor performance following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6. If any problem occurs, replace the relay rear PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 99

```
Size mismatch DX
Press Job Cancel. Specify the correct paper and load the same
size paper as the Printer driver setting.
```

Specified paper size is not supported for duplex printing (Duplex)

<User Check>

- Remove the jammed paper, and use the A4 size or letter size paper, and load the same size paper as the printer driver setting.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code 9F

```
No Paper
Reload paper, then press Start.
```

Paper empty

<User Check>

- Replenish the paper in the paper tray.

Step	Cause	Remedy
1	Dirt on PE sensor	Clean the PE sensor.
2	Harness connection failure of PE EG sensor PCB ASSY.	Check the harness connection of the PE EG sensor PCB ASSY and reconnect it.
3	PE actuator catching on some position	Correct catching of the PE actuator.
4	PE sensor failure	Check the sensor performance following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6. If any problem occurs, replace the PE PG sensor PCB ASSY.
5	HVPS PCB unit failure	Replace the HVPS PCB unit.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code A1

```
Cover is Open
Close the Front Cover.
```

Front cover open

<User Check>

- Close the front cover perfectly.

Step	Cause	Remedy
1	Harness connection failure of front cover sensor ASSY	Check the harness connection of the front cover sensor ASSY and reconnect it.
2	Part pressing the front cover sensor ASSY is broken, which is provided at the left side of the front cover inside.	Replace the front door main or front door unit ASSY.
3	Front cover sensor failure	Check the sensor performance following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6. If any problem occurs, replace the front cover sensor ASSY.
4	Relay front PCB failure	Replace the relay front PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code A2

```
Document Jam
Clear the scanner jam, then press the Stop Key.
```

During scanning, 90 cm or longer of a document is detected

<User Check>

- Check if the document is jammed in the ADF. If it is jammed, remove it.

Step	Cause	Remedy
1	Document rear actuator catching on some position.	Correct catching of the document rear actuator.
2	Document rear sensor failure	Replace the document rear sensor.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code A3

```
Document Jam
Clear the scanner jam, then press the Stop Key.
```

Document rear sensor is not turned on when feeding the document

<User Check>

- Check if the document is jammed in the ADF. If it is jammed, remove it.

Step	Cause	Remedy
1	Document rear actuator catching on some position.	Correct catching of the document rear actuator.
2	Document rear sensor failure	Replace the document rear sensor.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code A4

```
Cover is Open
Close the ADF cover.
```

ADF cover opened

<User Check>

- Close the ADF cover.

Step	Cause	Remedy
1	ADF cover open sensor arm catching on some position.	Correct catching of the ADF cover open sensor.
2	ADF cover is changed in shape or cracked.	Replace the ADF cover.
3	ADF cover open sensor failure	Replace the ADF cover open sensor.
4	ADF relay PCB failure	Replace the ADF relay PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code A5

```
Scan Unable A5
Remove the original document. Turn the power off, then on again.
```

Fax scanning error (Warning: Document scanner unit malfunction of first time)

Step	Cause	Remedy
1	Scanning failure	Turn the power switch off and on. Then, try scanning again.

■ Error code A6

```
Scan Unable A6
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Fax scanning error (Error: Document scanner unit malfunction after second times)

Step	Cause	Remedy
1	Document scanner unit failure	Replace the CCD module.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code A7

```
Scan Unable A7
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Scanning color parameter file failure

Error code A8

```
Scan Unable A8
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Scanning color parameter matching error

Step	Cause	Remedy
1	Scanner module failure	Replace the CCD module.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code AD

```
Scan Unable AD
Remove the original document. Turn the power off, then on again.
```

DMA transfer error

Step	Cause	Remedy
1	Scanner module failure	Replace the CCD module.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code AE

```
Scan Unable AE
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Document Scanner home position sensor is not turned on.

<User Check>

- Check that the scanner lock lever is unlocked.

Step	Cause	Remedy
1	Home position sensor harness not connected correctly	Reconnect the home position sensor harness.
2	Drive PCB failure	Replace the drive PCB.
3	Belt broken	Replace the belt.
4	Home position sensor failure	Replace the home position sensor.
5	Scanner motor failure	Replace the scanner motor.
6	Tab of CCD module broken	Replace the CCD module.
7	Main PCB failure	Replace the main PCB ASSY.

■ Error code AF

```
Scanner Locked
Open the Document Cover and release Scanner lock lever. Press Stop
key.
```

Document Scanner home position sensor is not turned off.

<User Check>

- Check that the scanner lock lever is unlocked.

Step	Cause	Remedy
1	Home position sensor harness not connected correctly	Reconnect the home position sensor harness.
2	Drive PCB failure	Replace the drive PCB.
3	Belt broken	Replace the belt.
4	Home position sensor failure	Replace the home position sensor.
5	Scanner motor failure	Replace the scanner motor.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code B0

```
Scanner Error
```

FFC for scanner module is not connected correctly or failure of the document scanner unit.
* This error is indicated on the LCD in the maintenance mode.

Step	Cause	Remedy
1	Harness for scanner module not connected correctly.	Reconnect the harness for the CCD unit correctly.
2	Scanner harness broken	Replace the FFC cable ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code B1

```
Scanner Error
```

Dark level offset data level error for scanning
* This error is indicated on the LCD in the maintenance mode.

Error code B2

```
Scanner Error
```

Gain control data level error for scanning
* This error is indicated on the LCD in the maintenance mode.

Error code B7

```
Scanner Error
```

A/D converter standard voltage failure; at High side
* This error is indicated on the LCD in the maintenance mode.

Error code B8

```
Scanner Error
```

A/D converter standard voltage failure; at Low side
* This error is indicated on the LCD in the maintenance mode.

Step	Cause	Remedy
1	CCD unit failure	Replace the CCD module.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code B9

```
Scanner Error
```

Scanning light adjustment error.
* This error is indicated on the LCD in the maintenance mode.

Error code BB

```
Scanner Error
```

White level data error

* This error is indicated on the LCD in the maintenance mode.

Error code BD

```
Scanner Error
```

Black level data error

* This error is indicated on the LCD in the maintenance mode.

Step	Cause	Remedy
1	Scanner module failure	Replace the CCD module.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code BF

```
Scan Unable BF
Document is too long for duplex scanning. Press Stop key.
```

ADF duplex scanning cannot be implemented due to too long document

<User Check>

- Use the document of the specified size. (A4 or Letter)

Step	Cause	Remedy
1	Document front actuator 2 not operating smoothly or catching in some position.	Correct smooth operation and that there is no catching of the document front actuator 2.
2	Document front sensor 2 failure	Replace the document front sensor 2.

■ Error code C0

```
Cartridge Error
Put the Toner Cartridge back in.
```

New toner detection failure

<User Check>

- Install the toner cartridges into the machine properly.

Step	Cause	Remedy
1	Power off or front cover opened while detecting a new toner cartridge	Reset the developing bias voltage and develop roller counter. (Refer to "5.2 Develop Roller / Developing Bias Voltage Counter Reset Function" in Chapter 6.)
2	New toner sensor failure	Replace the relay front PCB.

■ Error code C7

```
Out of  Memory
Press Job Cancel.
```

Run out of memory for data expansion of PC printer

<User Check>

- Replace DIMM with the high capacity DIMM.
- Reduce the resolution.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code C8

```
Out of  Memory
Secure Print Data is full. Press Cancel and delete the previously
stored data.
```

Secure print data full

<User Check>

- Delete the stored data.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code C9

```
DIMM Error
Make sure that the DIMM is inserted correctly.
```

The failed DIMM is installed, or the DIMM is not installed correctly.

<User Check>

- Install the DIMM correctly.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code CA

```
Unusable Device
Remove the Device. Turn the power off and back on again.
```

Excess current to USB device

<User Check>

- Remove the USB device from the USB direct interface and turn the power off. Turn it on again after a while.
- Replace the USB device with another one.

Step	Cause	Remedy
1	Harness connection failure of USB host relay PCB ASSY	Check the harness connection of the USB host relay PCB ASSY and reconnect it.
2	USB host relay PCB failure	Replace the USB host relay PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code CD

```
No Drum Unit
Install the Drum Unit.
```

Drum unit is not installed into the machine

<User Check>

- Check if the drum unit is installed into the machine.

Step	Cause	Remedy
1	Dirt on electrodes on drum unit and machine body	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3)
2	HVPS PCB unit failure	Replace the HVPS PCB unit.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code D1

```
Machine Error D1
```

Modem initialization failed

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code DD

```
Fuser Error
Turn the power off, then on again. Leave the machine for 15min.
```

Fuser error other than 58, 59, 68, 69, 6A, 6B, 6C, 6D, 6E, 6F, 76, 78, DE and E2 are occurred.

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Main PCB failure	Replace the main PCB ASSY.
3	LVPS PCB failure	Replace the LVPS PCB ASSY.

■ Error code DE

```
Fuser Error
Turn the power off, then on again. Leave the machine for 15min.
```

Central temperature of heat roller detected the temperature that was lower than 60°C

Step	Cause	Remedy
1	Relay rear PCB ASSY connection failure	Reconnect the relay rear PCB ASSY connector correctly.
2	Fuser unit failure	Replace the fuser unit.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code E0

```
Print Unable E0
Turn the power off and then back on again.
```

Program error

Step	Cause	Remedy
1	Program failure	Reinstall the latest firmware.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code E1

```
Print Unable E1
Turn the power off and then back on again.
```

Main PCB failure

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code E2

```
Fuser Error
Turn the power off, then on again. Leave the machine for 15 min.
```

Central temperature of heat roller exceeds 280°C

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code E6

```
Init Unable E6
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

EEPROM error

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code EB

```
Print Unable EB
Turn the power off and then back on again.
```

The data reading error for E2PROM.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code EC

```
Print Unable EC
See Troubleshooting and routine maintenance chapter in User's
Guide.
```

Fuser fan failure

Step	Cause	Remedy
1	Main fan failure	Replace the main fan ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code EF

```
Print Unable EF
Turn the power off and then back on again.
```

LVPS PCB failure

<User Check>

- Turn the power off. Turn it on again after a while.

Step	Cause	Remedy
1	LVPS PCB failure	Replace the LVPS PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code F8

```
Print Unable F8
```

Battery connection error

Step	Cause	Remedy
1	Battery harness connection failure	Reconnect the battery harness.
2	Main PCB failure	Replace the main PCB ASSY.
3	Battery failure	Replace the battery.

■ Error code F9

```
Machine Error F9
```

EEPROM customizing code error

Step	Cause	Remedy
1	Turn the power off, when the Maintenance mode 74 “PARAMETER INIT” is in progress.	Implement the Maintenance mode 74 again.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code FF

```
Unusable Device
Remove the Device. Turn the power off and back on again.
```

Excess current to USB HOST PCB ASSY error

Step	Cause	Remedy
1	USB HOST PCB failure	Replace the USB HOST PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

4. PAPER FEEDING PROBLEMS

Problems related to paper feeding are end user recoverable if following the User Check items. If the same problem occurs again, follow each procedure in the order of the number described in the Step column in the tables below.

4.1 No Feeding

Step	Cause	Check	Result	Remedy
1	Dirt on PE sensor	Is there paper powder in the PE sensor?	Yes	Clean the PE sensnor.
2	Edge actuator catching on some position	Does the edge actuator move smoothly?	No	Re-assembly the edge actuator.
3	Roller holder ASSY catching on some position	Does the roller holder ASSY move smoothly?	Yes	Re-assembly the roller holder ASSY.
4	Separation pad or roller holder ASSY failure	Is the surface of the separation pad or the pickup roller dirty or worn out?	Yes	1) Clean the surface of the separation pad or pickup roller. 2) Replace the separation pad or pickup roller.
5	Pressure plate gear damage	Is the pressure plate gear damaged?	Yes	Replace the paper tray.
6	Tray 1 solenoid failure	Does the tray 1 solenoid work correctly?	No	Replace the tray 1 solenoid.
7	Tray 1 solenoid pathway of the high-voltage power supply PCB broken or registration front sensor failure	Is the problem solved after replacing the high-voltage power supply PCB ASSY?	Yes	Replace the high-voltage power supply PCB ASSY.
8	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
9	Main motor failure	Is the problem solved after replacing the main motor ASSY?	Yes	Replace the main motor ASSY.

4.2 Double Feeding

Step	Cause	Check	Result	Remedy
1	Separation pad or roller holder ASSY failure	Is the surface of the separation pad worn out?	Yes	Replace the PF kit.

4.3 Paper Jam

■ Paper jam in the paper tray and front cover

Step	Cause	Check	Result	Remedy
1	Dirt on edge sensor	Is there paper powder in the edge sensor?	Yes	Clean the edge sensor.
2	Registration front actuator/edge actuator catching on some position	Does the registration front actuator/edge actuator move smoothly?	No	Re-assemble the registration front actuator/ edge actuator.
3	Registration front sensor PCB (registration front actuator/edge actuator failure)	Does the registration front sensor move smoothly? (Check it following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6)	No	Replace the registration front sensor PCB ASSY.
4	Registration solenoid failure	Is the problem solved after replacing the registration solenoid?	Yes	Replace the registration solenoid.
5	Toner LED PCB failure	Is the problem solved after replacing the toner LED PCB ASSY?	Yes	Replace the toner LED PCB ASSY.
6	High-voltage power supply PCB failure	Is the problem solved after replacing the High-voltage power supply PCB ASSY?	Yes	Replace the High-voltage power supply PCB ASSY.
7	Main PCB failure	Is the problem solved after replacing the Main PCB ASSY?	Yes	Replace the Main PCB ASSY.

■ Paper jam in the back cover and paper eject section

Step	Cause	Check	Result	Remedy
1	Foreign object around fuser unit	Is there a foreign object around the fuser unit?	Yes	Remove the foreign object.
2	Paper eject actuator failure	Does the paper eject actuator move smoothly? Is it damaged?	No	Replace the paper eject actuator.
3	Fuser cover ASSY loose	Is the fuser cover ASSY fitted correctly?	No	Fit the fuser cover ASSY correctly.
4	Outer chute ASSY loose	Is the outer chute ASSY fitted correctly?	No	Fit the outer chute ASSY fitted correctly.
5	Eject roller 1 malfunction	Is the eject roller 1 of the rear chute ASSY attached to the pinch roller properly?	No	Replace the rear chute ASSY.
6	Paper eject sensor failure	Is the problem solved after replacing the relay rear PCB?	Yes	Replace the relay rear PCB ASSY.
7	Main PCB failure	Is the problem solved after replacing the Main PCB ASSY?	Yes	Replace the Main PCB ASSY.

■ Paper jam in the tray 2

Step	Cause	Check	Result	Remedy
1	Tray 2 edge actuator catching on some position	Does the tray 2 edge actuator move smoothly?	No	Re-assemble the tray 2 edge actuator.
2	Tray 2 sensor PCB ASSY failure	Is the problem solved after replacing the tray 2 sensor PCB ASSY?	Yes	Replace the tray 2 sensor PCB ASSY.
3	Tray 2 solenoid failure	Is the problem solved after replacing the tray 2 solenoid?	Yes	Replace the tray 2 solenoid.

■ Paper jam in the Duplex unit section

Step	Cause	Check	Result	Remedy
1	Duplex unit failure	Is the problem solved after replacing the Duplex unit?	Yes	Replace the Duplex unit.

4.4 Dirt on Paper

<User Check>

- Check if the paper is loaded into the paper tray correctly.
- Turn over the stack of paper in the paper tray, or try rotating the paper 180° in the paper tray.

Step	Cause	Check	Result	Remedy
1	Fuser unit dirty	Is there dirt around the entrance of the fuser unit?	Yes	Clean the entrance of the fuser unit.
		Is the pressure roller ASSY dirty?	Yes	Clean the pressure roller ASSY.

4.5 Wrinkles or creases

<User Check>

- Check if the paper is loaded into the paper tray correctly.
- Turn over the stack of paper in the paper tray, or try rotating the paper 180° in the paper tray.

Step	Cause	Check	Result	Remedy
1	Fuser unit dirty	Is there dirt around the entrance of the fuser unit?	Yes	Clean the entrance of the fuser unit.
2	Fuser unit failure	Is the problem solved if new fuser unit is replaced?	Yes	Replace the fuser unit.

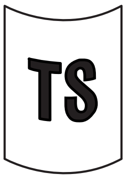
4.6 Waves in the paper / folds in the paper at the eject roller 2

<User Check>

- Check that the problem is solved if new paper is used.

Step	Cause	Check	Result	Remedy
1	Foreign object around eject roller 2	Is there a foreign object around the eject roller 2?	Yes	Remove the foreign object.
2	Eject roller 2 failure	Is the problem solved after replacing the new eject roller 2?	Yes	Replace the Joint cover ASSY.

4.7 Curl in the paper



The curl in the left figure.

<User Check>

- Change the paper.

Step	Cause	Check	Result	Remedy
1	Mismatch the setting the paper and the eject roller 1	Is the problem solved by changing the position of the anti-curl lever?	Yes	Change the position of the anti-curl lever.

Slide the tab 2 to the right while pushing up the tab 1 to the direction of the arrow.

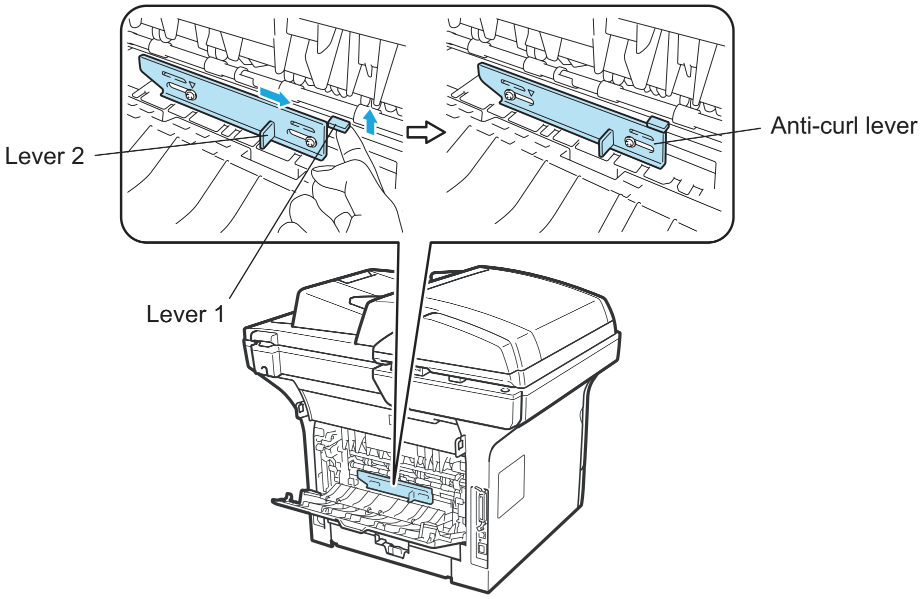


Fig. 3-4

4.8 Prints only single side of the paper when duplex-printing

<User Check>

- Use the paper only for A4 or letter size.

5. TROUBLESHOOTING FOR PRINT IMAGE DEFECT FROM PC/USB/FAX RECEPTION

5.1 Image Defect Examples

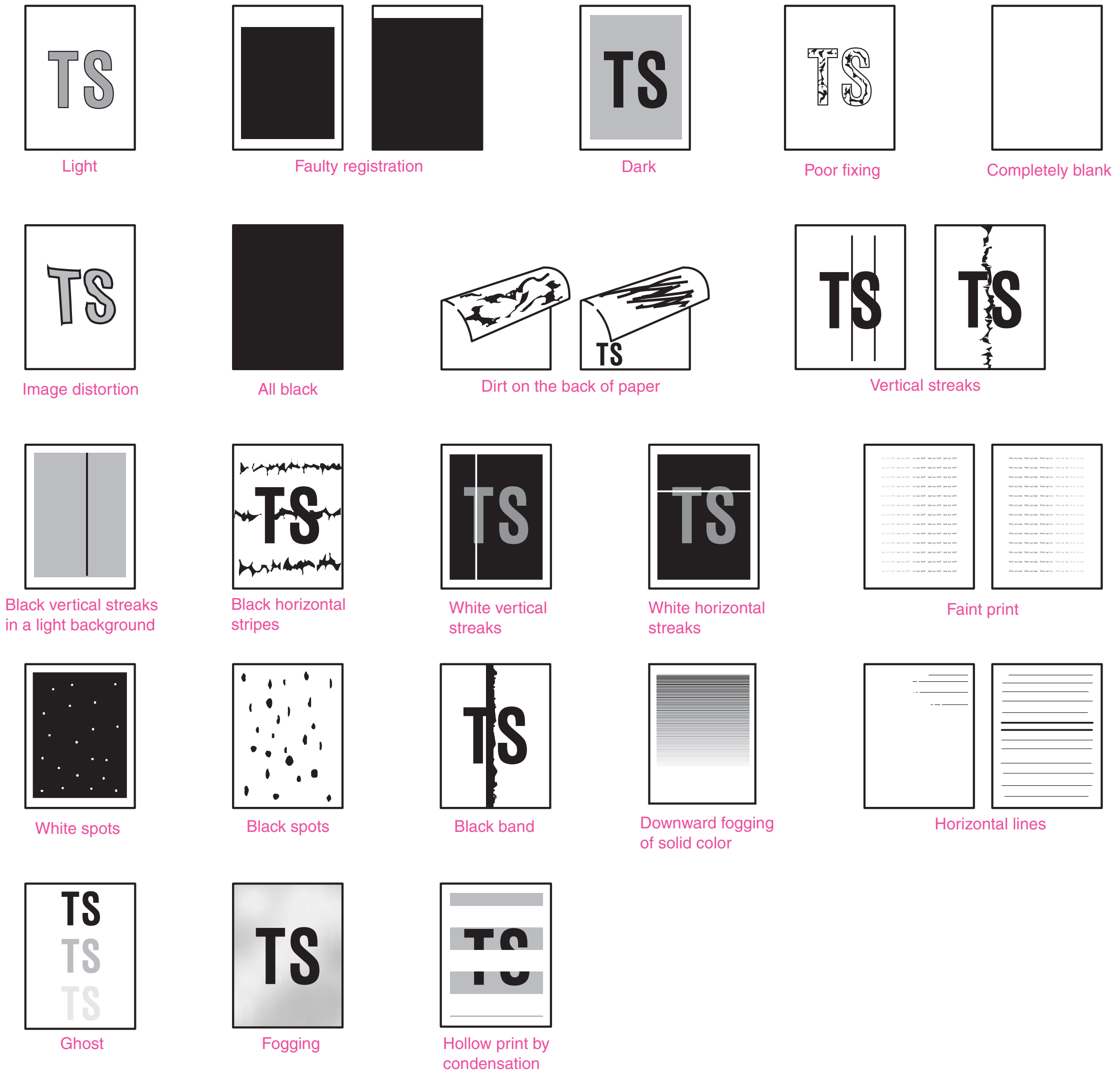


Fig. 3-5

5.2 The pitch which appears in the image caused by failure of a roller.

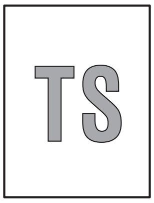
Image defects which appear periodically may be caused by failure of a roller. Specify the cause referring to the pitch which appears in the image as shown in the table below.

No.	Parts name	The pitch which appears in the image caused by failure of a roller.
1	Develop roller	42.5 mm
2	Exposure drum	94.2 mm
3	Heat roller in the fuser unit	78.5 mm
4	Pressure roller ASSY in the fuser unit	78.5 mm
5	Registration roller	44.0 mm
6	Transfer roller	48.2 mm

5.3 Troubleshooting for image Defect

Image defect related problems are end user recoverable if following the User Check items. If the same problem occurs, follow each procedure in the order of the number described in the Step column in the tables below.

■ Light



<User Check>

- Check the machine's environment. Low temperature and low humidity conditions can cause this problem.
- If the whole page is light, toner save mode may be on.
- Replace the toner cartridge or drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Dirt on exposure drum electrode	Are the electrodes of the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)
2	Dirt on scanner windows of the laser unit	Is the scanner windows of the laser unit dirty?	Yes	Wipe the dirt off with a soft, clean, lint free cloth. (Refer to Fig. 3-6.)
3	Toner sensor failure	After replacing the toner cartridge with a new one, does the same problem occur even after printing several pages?	No	Replace the toner cartridge.
4		Does the machine start printing even after removing the toner cartridge from the drum unit?	Yes	Clean the toner sensor. (receiving light side / emitting light side) Check the harness connection of the toner LED PCB ASSY. (luminescence side) Replace the toner sensor PCB ASSY or toner LED PCB ASSY.
5	Between the HVPS PCB/Main PCB connection failure	Is the harness of the HVPS PCB ASSY and main PCB ASSY connected correctly?	Yes	Reconnect the harness of the HVPS PCB ASSY and main PCB ASSY.
6	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
7	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
8	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.

<Location of the leser beam window>

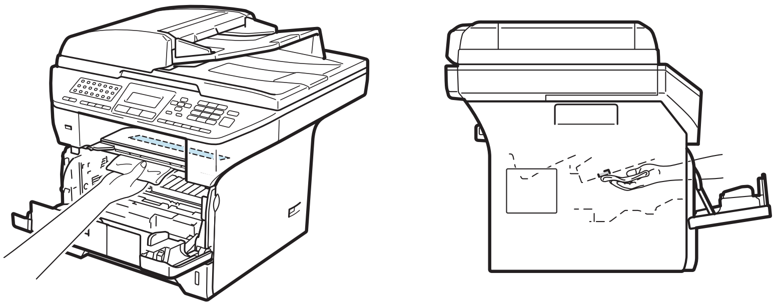
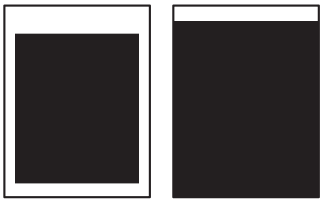


Fig. 3-6

■ Faulty registration

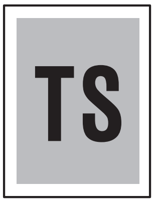


<User Check>

- Check that the appropriate media type is selected in the printer driver.

Step	Cause	Check	Result	Remedy
1	Registration rear actuator catching on some position	Does the registration rear actuator move smoothly?	No	Re-assemble the registration rear actuator.
2	Drum unit failure	Is the rotation torque of the drum unit heavy?	Yes	Replace the drum unit.

■ Dark

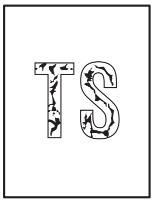


<User Check>

- Check the machine's environment. High temperature and high humidity conditions can cause this problem.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	Drum unit electrode dirty	Is the electrode of the drum unit dirty?	Yes	Clean the electrode.
2	Drum unit failure	Is the problem solved after replacing the drum unit?	Yes	Replace the drum unit.
3	Developing bias malfunciton	Is the problem solved after reseting the developer roller counter?	Yes	Reset the developer roller counter.
4	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
5	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Poor fixing

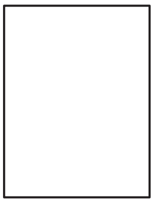


<User Check>

- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	Low pressure of pressure roller in the fuser unit	Is the problem solved by changing the position of the anti-curl lever?	Yes	Change the position of the anti-curl lever.
2	Fuser unit failure	Is the problem solved after replacing the fuser unit?	Yes	Replace the fuser unit.
3	Toner sensor failure	Is the "Toner life End" message indicated on the LCD after replacing the current toner cartridge with an empty one?	No	Replace the toner sensor.
4	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
5	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
6	Low-voltage power supply PCB failure	Is the problem solved after replacing the LVPS PCB unit?	Yes	Replace the LVPS PCB unit.

■ Completely blank

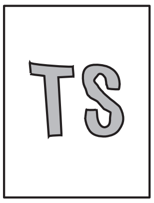


<User Check>

- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	Developing bias voltage conduction failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)
2	Scanner harness of the laser unit connection failure	Is the scanner harness of the laser unit connected securely?	No	Reconnect the scanner harness of the laser unit.
3	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.
4	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
5	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Image distortion

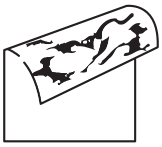


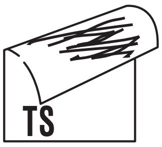
Step	Cause	Check	Result	Remedy
1	Laser unit not assembled correctly	Is the laser unit assembled into the machine securely? (Check if there is no gap.)	No	Assemble the laser unit correctly and secure the screw.
2	Incorrect radiation angle of scanner diode of laser unit. Scanner motor rotation failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.
3	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ All black

Step	Cause	Check	Result	Remedy
1	Corona wire failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)
2		Is the corona wire damaged?	Yes	Replace the drum unit.
3	Scanner harness of the laser unit connection failure	Is the scanner harness of the laser unit connected securely?	No	Reconnect the scanner harness of the laser unit.
4	FG harness ASSY connection failure	Is the FG harness ASSY between the laser unit and main PCB ASSY connected securely?	No	Reconnect the FG harness ASSY between the laser unit and main PCB ASSY securely.
5	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
6	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
7	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.

Dirt on the back of paper



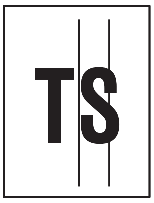


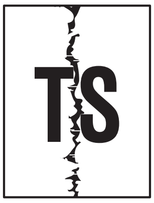
<User Check>

- This problem may disappear after printing approximately 10 pages of completely blank sheets.

Step	Cause	Check	Result	Remedy
1	Scratch and Dirt on the fuser unit	Is the pressure roller ASSY dirty? Is any other area in the machine dirty?	Yes	Print approximate 10 pages.
			No	Replace the fuser unit.
2	Scratch and Dirt in the paper feed system	Is the paper feed system dirty?	Yes	Wipe dirt off.

Vertical streaks





<User Check>

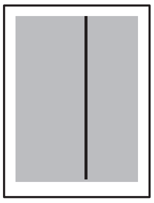
- This problem may occur with noise which is caused by dirt on the corona wire in the drum unit. In this case, clean the corona wire with the wire cleaner.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	Scratch and Dirt in the paper feed system	Is the paper feed system dirty?	Yes	Wipe dirt off.
2	Scratch and Dirt on the exposure drum	Are there scratch and dirt on the surface of the exposure drum?	Yes	Replace the drum unit.
3	Scratch and Dirt on the heat roller	Are there scratch and dirt on the surface of the heat roller?	Yes	Replace the fuser unit.

CAUTION :

- If the machine prints the same pattern, especially including vertical streaks, continuously, black vertical streaks may appear on the paper since the electrostatic performance of the exposure drum is decreased temporally.

Black vertical streaks in a light background

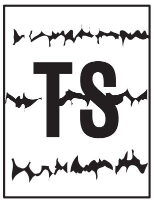


<User Check>

- Clean the inside of the machine and the corona wire in the drum unit.
- Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	Drum unit failure	Is the problem solved after replacing the drum unit?	Yes	Replace the drum unit.

■ Black horizontal stripes



<User Check>

- Clean the inside of the machine and the corona wire in the drum unit.
- Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Dirt on the charged electrode	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)
2	Paper tray ground terminal provided in the machine body	Is the paper tray ground terminal bent, which is provided in the machine body? (Refer to Fig. 3-7.)	Yes	Correct bending of paper tray ground terminal.
3	Toner attached on the develop roller	Are the horizontal stripes at 42.5 mm (develop roller circumference) intervals?	Yes	This problem will disappear by printing approximate 10 pages. If the same problem occurs, replace the toner cartridge.
4	Scratch and Dirt on the exposure drum	Are the horizontal stripes at 94.2 mm (exposure drum circumference) intervals?	Yes	Replace the drum unit.
5	Scratch and Dirt on the heat roller	Are the horizontal stripes at 78.5 mm (heat roller circumference) intervals?	Yes	Replace the fuser unit.
6	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
7	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

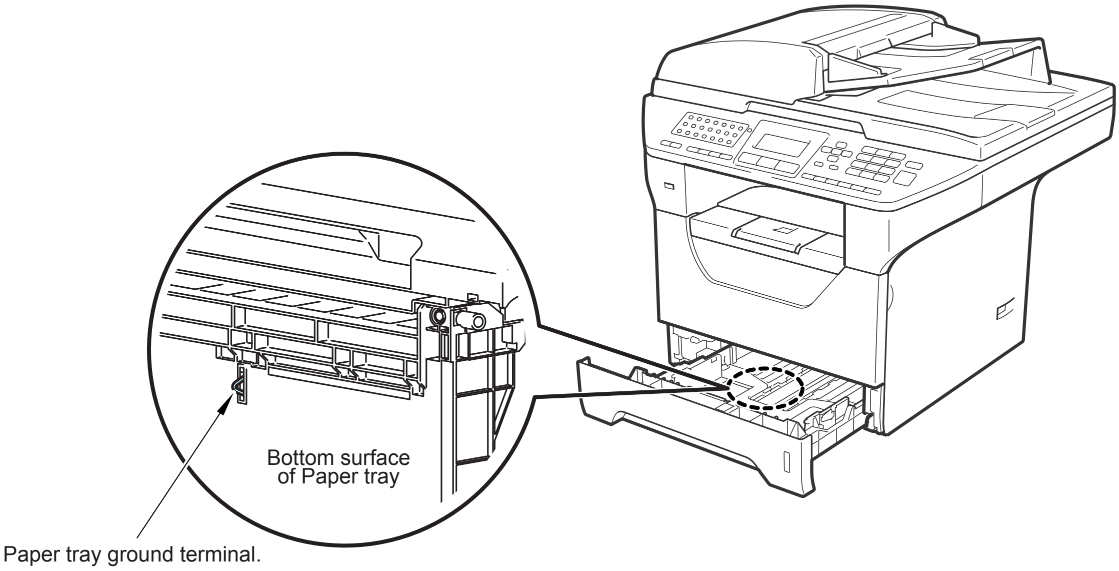
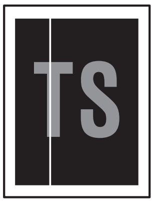


Fig. 3-7

White vertical streaks

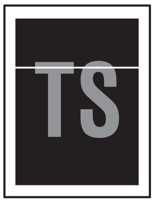


<User Check>

- Clean the scanner windows of the laser unit with a soft lint-free cloth. (Refer to Fig. 3-6.)
- Replace the toner cartridge with a new one.
- Check the machine's environment. High temperature and high humidity conditions can cause this problem.
- Damp (wet) paper might be used. Try to change to freshly unpacked paper.
- Check if there is no dust in the gap between the toner cartridge and drum frame.

Step	Cause	Check	Result	Remedy
1	Condensation	Has condensation occurred inside the machine?	Yes	Try to print several pages or activate the Drum condensation countermeasure mode. ("5.3 Drum condensation countermeasure mode" in Chapter 6.)
2	Transfer failure	Is the transfer roller scratched?	Yes	Replace the drum unit.
3	Scanner windows of laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.

White horizontal streaks

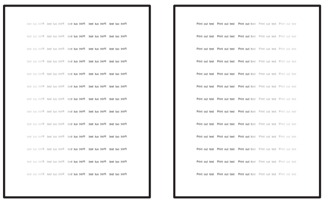


<User Check>

- Check that the appropriate media type is selected in the printer driver.
- The problem may disappear by itself. Try printing multiple pages to clear this problem especially if the machine has not been used for a long time.
- The drum unit may be damaged. Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Toner cartridge electrode contact failure	Are the electrodes on the toner cartridge and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)
2	Drum unit electrode contact failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)

■ Faint print

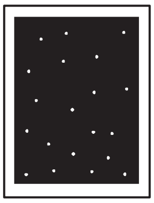


<User Check>

- Check that the machine is installed on a level surface.
- Replace the toner cartridge with a new one.
- Clean the scanner windows of the toner unit with a soft cloth. (Refer to Fig. 3-6.)
- The drum unit may be damaged. Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
2	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.
3	Toner empty sensor failure	Is the "Toner Life End" message indicated on the LCD after replacing the current toner cartridge with a new one?	No	Replace the toner sensor PCB ASSY.

■ White spots



<User Check>

- Toner may be empty. Replace the toner cartridge with a new one.
- If the problem is not solved after printing a few pages, the drum unit may have glue from label stock on the exposure drum surface. Refer to the next page, and wipe it off gently with a cotton swab.
- The drum unit may be damaged. Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Toner attached on the develop roller	Are the white spots at 42.5 mm (develop roller circumference) intervals?	Yes	This problem will disappear by printing approximate 10 pages. If the same problem occurs, replace the toner cartridge.
2	Drum unit connection failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)
3	Scratch and Dirt on the exposure drum	Are the white spots at 94.2 mm (exposure drum circumference) intervals?	Yes	Replace the drum unit.
4	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
5	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

<Clean the drum unit as follows>

If you have print quality problems, clean the drum unit as follows:

(1) Put the print sample in front of the drum unit, and find the exact position of the poor print.

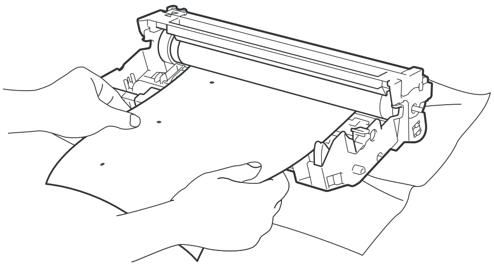


Fig. 3-8

(2) Turn the drum unit gear to the direction of the arrow of the figure by hand while looking at the surface of the exposure drum.

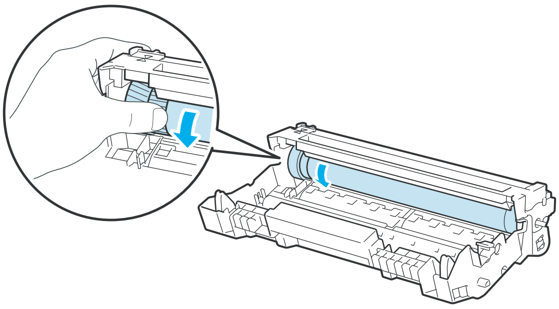


Fig. 3-9

(3) When you have found the mark on the drum that matches the print sample, wipe the surface of the exposure drum with a dry cotton swab until the dust or glue on the surface comes off.

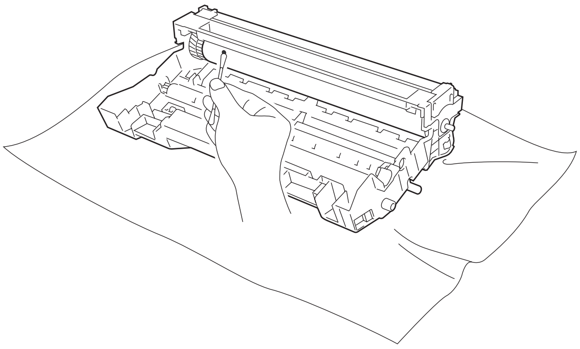
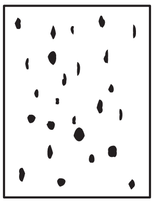


Fig. 3-10

CAUTION :

- DO NOT clean the surface of the photosensitive drum with a sharp object.

Black spots

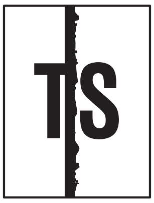


<User Check>

- Damp (wet) paper might be used. Try to change to freshly unpacked paper.
- Toner may be empty. Replace the toner cartridge with a new one.
- If the problem is not solved after printing a few pages, the drum unit may have glue from label stock on the exposure drum surface. Refer to the previous page, and wipe it off gently with a cotton swab.
- The drum unit may be damaged. Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Toner attached on the develop roller	Are the black spots at 42.5 mm (develop roller circumference) intervals?	Yes	This problem will disappear by printing approximate 10 pages. If the same problem occurs, replace the toner cartridge.
2	Dirt on the exposure drum	Are the black spots at 94.2 mm (exposure drum circumference) intervals?	Yes	Clean the exposure drum with the drum cleaning kit.
3	Drum unit connection failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes (Refer to Fig. 3-2, Fig. 3-3.)
4	Scratch and Dirt on the exposure drum	Does not the black spots disappear by cleaning (procedure 2)?	No	Replace the drum unit.
5	Scratch and Dirt on the heat roller	Are the black spots at 78.5 mm (heat roller circumference) intervals?	Yes	Replace the fuser unit.
6	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
7	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

Black band



<User Check>

- Clean the inside of the machine and the corona wire in the drum unit. If the same problem occurs after cleaning, replace the drum unit with a new one.
- The paper tray ground terminal provided in the machine body may be dirty. Clean the contact with a dry cloth.

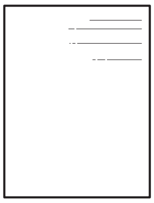
■ Downward fogging of solid color

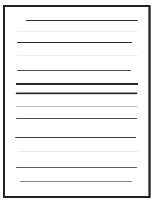
<User Check>

- Toner may be empty. Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
2	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Horizontal lines



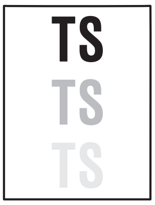


<User Check>

- The paper tray ground terminal provided in the machine body may be dirty. Clean the contact with a dry cloth.

Step	Cause	Check	Result	Remedy
1	Dirt on charged electrode	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)
2	Paper tray ground terminal provided in machine body	Is the paper tray ground terminal bent, which is provided in the machine body?	Yes	Correct bending of paper tray ground terminal.
3	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.

Ghost

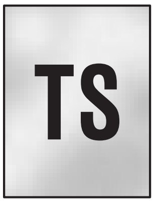


<User Check>

- Check the machine's environment, conditions such as high or low humidity may cause this situation to occur.
- Check that the appropriate media type or size is selected in the printer driver.
- Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
2	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

Fogging



<User Check>

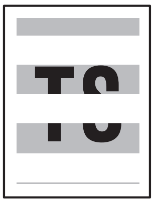
- Replace the toner cartridge with a new one.
- Replace the drum unit with a new one.
- Do not use acid paper.
- Check if there is dust or paper powder in the machine.

Step	Cause	Check	Result	Remedy
1	Toner sensor failure (Machine body)	Is the toner sensor performed normally by following the procedure in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6.	No	Replace the toner sensor PCB unit ASSY and the toner LED PCB ASSY.
2	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
3	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

CAUTION :

- This problem often occurs when the drum unit or toner cartridge is nearly at the end of life.

■ Hollow print by condensation



<User Check>

- Turn the power on and leave the machine for a few minutes.

Step	Cause	Check	Result	Remedy
1	Condensation of drum unit by high humidity environment	Is the problem solved after setting the drum condensation countermeasure mode to ON?	Yes	Drum condensation countermeasure mode is set to ON. (Refer to "5.3 Drum condensation countermeasure mode" in Chapter 6)

6. SOFTWARE SETTING PROBLEMS

The machine may not print the data correctly if there are incorrect software settings.

<User Check>

- Check that the parallel cable, USB cable and the network cable is not damaged or broken.
- Check that the correct machine is selected if you have an interface switching device.
- Check the descriptions on the software setting in the user's guide.
- Try resetting the factory settings. (Refer to Users guide.)

Step	Cause	Check

7. NETWORK PROBLEMS

<User Check>

- Check the descriptions in the network user's guide.
- Try resetting the factory settings.

Step	Cause	Check	Result	Remedy
1	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

8. TROUBLESHOOTING OF THE COMMUNICATIONS ERRORS

If a communications error occurs, the facsimile equipment

(1) Gives the alarm (intermittent bleep) for approximately four seconds.

(2) Indicates the appropriate error message on the LCD.

(3) Prints the transmission report during fax transmission.

■ Definition of error codes on the communications list

(1) Calling

Code 1	Code 2	Causes
10	08	Wrong number called.
11	01	No dial tone detected before start of dialing.
11	02	Busy tone detected before dialing.
11	03	2nd dial tone not detected.
11	05	No loop current detected. *
11	06	Busy tone detected after dialing or called.
11	07	No response from the remote station in sending.
11	10	Unobtainable tone detected after dialing.
17	07	No response from the calling station in receiving.

* Available set Germany in EEPROM Customizing (Function Code 74) only.

(2) Command reception

Code 1	Code 2	Causes
20	01	Unable to detect a flag field.
20	02	Carrier was OFF for 200 ms or longer.
20	03	Abort detected (“1” in succession for 7 bits or more).
20	04	Overrun detected.
20	05	A frame for 3 seconds or more received.
20	06	CRC error in answerback.
20	07	Echo command received.
20	08	Invalid command received.
20	09	Command ignored once for document setting or for dumping-out at turn-around transmission.
20	0A	T5 time-out error
20	0B	CRP received.
20	0C	EOR and NULL received.

(3) Communication code compatibility [checking the NSF and DIS]

Code 1	Code 2	Causes
32	01	Remote terminal only with V.29 capability in 2400 or 4800 bps transmission.
32	02	Remote terminal not ready for polling.
32	10	Remote terminal not equipped with password function or its password switch OFF.
32	11	Remote terminal not equipped with or not ready for confidential mailbox function.
32	12	Remote terminal not equipped with or not ready for relay broadcasting function.
32	13	No confidential mail in the remote terminal.
32	14	The available memory space of the remote terminal is less than that required for reception of the confidential or relay broad-casting instruction.
32	18	Remote terminal not equipped with color function.

(4) Instructions received from the remote terminal [checking the NSC, DTC, NSS, and DCS]

Code 1	Code 2	Causes
40	02	Illegal coding system requested.
40	03	Illegal recording width requested.
40	05	ECM requested although not allowed.
40	06	Polled while not ready.
40	07	No document to send when polled.
40	10	Nation code or manufacturer code not correct.
40	13	Polled by any other manufacturers' terminal while waiting for secure polling.
40	17	Invalid resolution selected.
40	20	Invalid full color mode selected.

(5) Command reception [checking the NSF and DIS after transmission of NSS and DCS]

Code 1	Code 2	Causes
50	01	Vertical resolution capability changed after compensation of background color.

(6) ID checking

Code 1	Code 2	Causes
63	01	Password plus “lower 4 digits of telephone number” not coincident.
63	02	Password not correct.
63	03	Polling ID not correct.

(7) DCN reception

Code 1	Code 2	Causes
74		DCN received.

(8) TCF transmission/reception

Code 1	Code 2	Causes
80	01	Fallback impossible.

(9) Signal isolation

Code 1	Code 2	Causes
90	01	Unable to detect video signals and commands within 6 seconds after CFR is transmitted.
90	02	Received PPS containing invalid page count or block count.

(10) Video signal reception

Code 1	Code 2	Causes
A0	03	Error correction sequence not terminated even at the final transmission speed for fallback.
A0	11	Receive buffer empty. (5-second time-out)
A0	12	Receive buffer full during operation except receiving into memory.
A0	13	Decoding error continued on 500 lines or more.
A0	14	Decoding error continued for 10 seconds or more.
A0	15	Time-out: 13 seconds or more for one-line transmission.
A0	16	RTC not found or carrier OFF detected for 6 seconds.
A0	17	RTC found but no command detected for 60 seconds or more.
A0	19	No video data to be sent
A8	01	RTN, PIN, or ERR received at the calling terminal. *
A9	01	RTN, PIN, or ERR received at the called terminal. *
AA	18	Receive buffer full during receiving into memory.

* Available set Germany in EEPROM Customizing (Function Code 74) only.

(11) General communications-related

Code 1	Code 2	Causes
B0	02	Unable to receive the next-page data.
B0	03	Unable to receive polling even during turn-around transmission due to call reservation.
B0	04	PC interface error.
BF	01	Communication canceled by pressing the **Stop/Exit** button before establishment of FAX communication*.
BF	02	Communication canceled by pressing the **Stop/Exit** button after establishment of FAX communication*.
BF	03	Transmission canceled due to a scanning error caused by no document or document feed problem in ADF scanning in real time transmission.

* Establishment of FAX communication:
FAX communication is established when the calling station receives a DIS (reception capability) signal from the called station and the called station receives a NSS or DCS (communications test) signal from the calling station.

(12) Transmission in V. 34 mode

Code 1	Code 2	Causes
C0	01	No common modulation mode or failed to poll.
C0	02	Unable to detect JM.
C0	03	Unable to detect CM.
C0	04	Unable to detect CJ.
C0	10	Cannot finish V. 34 negotiation or training.
C0	11	Modem error is detected during V. 34 negotiation or training. (For modem error details, refer to the table given on the next page.)
C0	20	Modem error is detected during sending of commands. (For modem error details, refer to the table given on the next page.)
C0	21	Modem error is detected during receiving of commands. (For modem error details, refer to the table given on the next page.)
C0	22	Control channel connection time-out.
C0	30	Modem error is detected during sending of video signals. (For modem error details, refer to the table given on the next page.)
C0	31	Modem error is detected during receiving of video signals. (For modem error details, refer to the table given on the next page.)

(13) Maintenance mode

Code 1	Code 2	Causes
E0	01	Failed to detect 1300 Hz signal in burn-in operation.
E0	02	Failed to detect PB signals in burn-in operation.

(14) Machine error

Code 1	Code 2	Causes
FF	XX	Machine error (For XX, refer to "2.1 ERROR INDICATION")

9. TROUBLESHOOTING OF THE CONTROL PANEL

■ Nothing is displayed on the LCD.

<User Check>

- Verify if the power switch is turned off.

Step	Possible cause	Check	Result	Remedy
1	Connection between main PCB and control panel PCB	Are the main PCB and control panel PCB connected properly?	No	Reconnect the connector properly.
2	Connection between main PCB and LVPS PCB unit	Are the main PCB and LVPS PCB unit connected properly?	No	Reconnect the connector properly.
3	LCD	Is the problem solved after replacing the LCD?	Yes	Replace the LCD.
4	Control panel PCB	Is the problem solved after replacing the control panel PCB?	Yes	Replace the control panel PCB.
5	LVPS PCB unit	Is the problem solved after replacing the LVPS PCB unit?	Yes	Replace the LVPS PCB unit.
6	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ The control panel does not work.

<User Check>

- Check whether the function lock is not set.

Step	Possible cause	Check	Result	Remedy
1	Key sticking	Is there a key on the control panel stuck?	Yes	Clean up the panel cover, or remove the burrs from panel cover and panel keys.
2	Connection between main PCB and control panel PCB	Are the main PCB and control panel PCB connected properly?	No	Reconnect the connector properly.
3	Rubber Key	Is the problem solved after replacing the rubber key?	Yes	Replace the rubber Key.
4	Control panel PCB	Is the problem solved after replacing the control panel PCB?	Yes	Replace the control panel PCB.
5	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

10. TROUBLESHOOTING OF FAX FUNCTIONS

■ Can not send FAX.

<User Check>

- Verify that the telephone cord is securely inserted into the right socket.

Step	Possible cause	Check	Result	Remedy
1	Dialing mode Setting	Does a dialing signal (PB or DP) come out normally in each mode? (Use telephone line emulator.)	Yes	Check the dialing mode setting at customer's again. Check the telephone line cord between machine and socket.
2	Connection between main PCB and NCU PCB	Are the main PCB and NCU PCB connected properly?	No	Reconnect the connector properly.
3	Connection between main PCB and control panel PCB	Are the main PCB and control panel PCB connected properly?	No	Reconnect the connector properly.
4	Contact of rubber key	Does the rubber key work correctly?	No	Replace the rubber Key.
5	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
6	Control panel PCB	Is the problem solved after replacing the control panel PCB?	Yes	Replace the control panel PCB.
7	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Speed dialing and One-touch dialing can't be used.

Step	Possible cause	Check	Result	Remedy
1	Dialing mode Setting	Does a dialing signal (PB or DP) come out normally in each mode? (Use telephone line emulator.)	Yes	Check the dialing mode setting at customer's again. Check the telephone line cord between machine and socket.
2	Connection between main PCB and NCU PCB	Are the main PCB and NCU PCB connected properly?	No	Reconnect the connector properly.
3	Connection between main PCB and control panel PCB	Are the main PCB and control panel PCB connected properly?	No	Reconnect the connector properly.
4	Contact of rubber key	Is the problem solved after replacing the rubber key?	Yes	Replace the rubber Key.
5	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
6	Control panel PCB	Is the problem solved after replacing the control panel PCB?	Yes	Replace the control panel PCB.
7	Speed dialing keys or one-touch dialing keys	Can a fax transmission be made using the numeric keys?	Yes	Replace the main PCB ASSY.

■ Can not receive FAX.

<User Check>

- Verify that the telephone cord is securely inserted into the right socket.

Step	Possible cause	Check	Result	Remedy
1	Receive mode setting	Is the receive mode set to automatic receive mode?	No	Set the receive mode to automatic receive mode.
2	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
3	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ No bell ring.

Step	Possible cause	Check	Result	Remedy
1	Ring delay	Ring delay is set to “0”.	Yes	Change the ring delay settings to another value.
2	Ring volume	Ring volume is set to “OFF”.	Yes	Change the ring volume setting to another value.
3	Connection between main PCB and NCU PCB	Are the main PCB and NCU PCB connected properly?	No	Reconnect the connector properly.
4	Speaker	Is the problem solved after replacing the speaker?	Yes	Replace the Speaker.
5	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
6	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Speaker is silent during on-hook dialing.

Step	Possible cause	Check	Result	Remedy
1	Connection between main PCB and speaker	Are the main PCB and speaker connected properly?	No	Reconnect the connector properly.
2	Connection between main PCB and NCU PCB	Are the main PCB and NCU PCB connected properly?	No	Reconnect the connector properly.
3	Connection between main PCB and control panel PCB	Are the main PCB and control panel PCB connected properly?	No	Reconnect the connector properly.
4	Speaker	Is the problem solved after replacing the speaker?	Yes	Replace the Speaker.
5	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
6	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Dialing function does not switch between "tone" and "pulse".

Step	Possible cause	Check	Result	Remedy
1	Connection between main PCB and NCU PCB	Are the main PCB and NCU PCB connected properly?	No	Reconnect the connector properly.
2	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
3	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

11. DOCUMENT FEEDING PROBLEMS

Problems related to document feeding are end user recoverable if following the User Check items. If the same problem occurs again, follow each procedure in the order of the number described in the Step column in the tables below.

11.1 No Feeding

<User Check>

- Check if the document is inserted correctly to the depths.
- Check whether the document is 50 or less sheets.
- Check if the ADF cover is closed.

Step	Cause	Check	Result	Remedy
1	Document front actuator 1 catching on some position	Does the document front actuator 1 move smoothly?	No	Re-assembly the document front actuator 1.
2	Document front sensor 1 harness connection failure	Is the harness of the document front sensor 1 connected securely?	No	Reconnected the harness of the document front sensor 1.
3	ADF motor harness connection failure	Is the harness of the ADF motor connected securely?	No	Reconnected the harness of the ADF motor.
4	Document front sensor 1 malfunction	Does the document front sensor 1 move smoothly? (Check it following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6)	No	Replace the document front sensor 1.
5	Feed roller holder ASSY failure	Though the ADF motor rotates, does the supply roller rotate?	Yes	Replace the feed roller holder ASSY.
6	ADF relay PCB failure	Is the problem solved after replacing the ADF relay PCB?	Yes	Replace the ADF relay PCB.
7	Driver PCB failure	Is the problem solved after replacing the driver PCB?	Yes	Replace the driver PCB.
8	ADF motor failure	Is the problem solved after replacing the ADF motor?	Yes	Replace the ADF motor.
9	Main PCB failure	Is the problem solved after replacing the main PCB?	Yes	Replace the main PCB.

11.2 Double Feeding

<User Check>

- Check whether the document does not use the paper which is thinner than the specification.

Step	Cause	Check	Result	Remedy
1	Feed roller holder ASSY failure	Is the surface of the separation roller worn out?	Yes	Replace the feed roller holder ASSY.
2	Separation rubber is abrasion	Is the surface of the separation rubber worn out?	Yes	Replace the separation rubber.

11.3 Paper Jam

■ Paper jam in the ADF cover

<User Check>

- Check if the document is jammed in the insertion part.

Step	Cause	Check	Result	Remedy
1	Foreign object around ADF cover inside	Is there a foreign object around the ADF cover inside?	Yes	Remove the foreign object.
2	Document front actuator 2 catching on some position	Does the document front actuator 2 move smoothly?	No	Re-assembly the document front actuator 2.
3	Document front sensor 2 malfunction	Does the document front sensor 2 move smoothly? (Check it following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6)	No	Replace the document front sensor 2.

■ Paper jam in the ADF

<User Check>

- Check whether length does not use paper equal to or less than 148 mm.

Step	Cause	Check	Result	Remedy
1	Foreign object inside ADF	Is there a foreign object inside ADF?	Yes	Remove the foreign object.
2	Document rear actuator catching on some position	Does the document rear actuator move smoothly?	No	Re-assembly the document rear actuator.
3	Flap A catching on some position	Does the flap A move smoothly?	No	Re-assembly the flap A.
4	Flap B catching on some position	Does the flap B move smoothly?	No	Re-assembly the flap B.
5	LF4/2 film catching on some position	Does the LF4 film move smoothly?	No	Replace the LF4 film.
6	Document rear sensor malfunction	Does the document rear sensor move smoothly? (Check it following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6)	No	Replace the document rear sensor.
7	Feed roller failure	Does the feed roller move smoothly? Is it damaged?	No	Replace the feed roller.

■ Paper jam in the paper eject section

Step	Cause	Check	Result	Remedy
1	Foreign object around paper eject	Is there a foreign object around paper eject?	Yes	Remove the foreign object.
2	Pinch roller malfunction	Is the pinch roller of the eject roller attached to the eject roller?	No	Re-assembly the pinch roller.
3	Eject roller failure	Does the eject roller move smoothly? Is it damaged?	No	Replace the eject roller.

■ Paper jam at the duplex scanning

<User Check>

- Use the A4 or Letter size.
- Use the document without warpage.
- Use the document which is not so too thin. (thickness of paper)

Step	Cause	Check	Result	Remedy
1	Foreign object inside ADF	Is there a foreign object inside ADF?	Yes	Remove the foreign object.
2	Switch back sensor actuator catching on some position	Does the switch back sensor actuator move smoothly?	No	Re-assembly the switch back sensor actuator.
3	Each flap catching on some position	Does the each flap move smoothly?	No	Re-assembly the flap.
4	Switch back sensor malfunction	Does the switch back sensor move smoothly? (Check it following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 6)	No	Replace the switch back sensor.
5	Flap A failure	Does the flap A move smoothly? Is it damaged?	No	Replace the flap A.
6	Switch back solenoid ASSY failure	Does the switch back solenoid ASSY move smoothly?	No	Replace the switch back solenoid ASSY.
7	Switch back roller failure	Does the switch back roller move smoothly? Is it damaged?	No	Replace the switch back roller.

11.4 Wrinkles

<User Check>

- Check if the document is loaded into the ADF correctly.
- Check whether the document guide matches the document size.
- Check whether the document does not curl.

Step	Cause	Check	Result	Remedy
1	Feed roller positioning section failure	Is each feed roller attached correctly section? (Check the feed roller position in Page 5-61)	No	Re-assembly each feed roller to the correctly section.

12. SCANNING IMAGE DEFECT TROUBLESHOOTING

12.1 Image Defect Examples

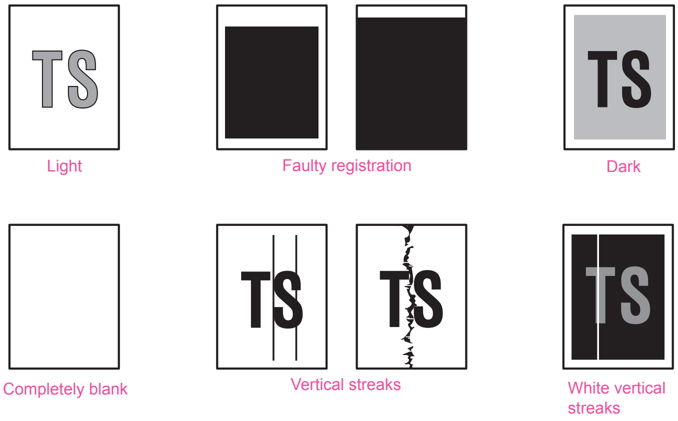
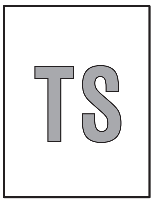


Fig. 3-11

12.2 Troubleshooting Image Defect

Image defect related problems are end user recoverable if following the User Check items. If the same problem occurs, follow each procedure in the order of the number described in the Step column in the tables below.

■ Light on the page

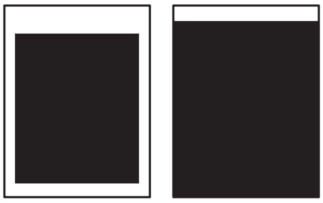


<User Check>

- Check whether the setting of the contrast does not become light.
- Clean the document glass.

Step	Cause	Check	Result	Remedy
1	White level data malfunction	Is the problem solved by performing the acquisition of white level data. (Function code 55)	Yes	Perform the acquisition of white level data. (Function code 55)
2	Scanner module failure	Is the problem solved by replacing the CCD unit.	Yes	Replace the CCD module.
3	Main PCB failure	Is the problem solved by replacing the main PCB.	Yes	Replace the main PCB.

■ Faulty registration



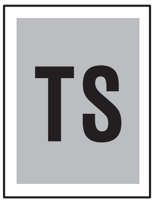
1. ADF

Step	Cause	Check	Result	Remedy
1	Document rear actuator catching on some position	Does the document rear actuator move smoothly?	No	Re-assembly the document rear actuator.
2	Fine adjustment of scan start position misalignment	Is the problem solved by performing the fine adjustment of scan start position. (Function code 54)	Yes	Perform the fine adjustment of scan start position. (Function code 54)

2. Document table

Step	Cause	Check	Result	Remedy
1	Fine adjustment of scan start position misalignment	Is the problem solved by performing the fine adjustment of scan start position. (Function code 54)	Yes	Perform the fine adjustment of scan start position. (Function code 54)
2	Scanner module failure	Is the problem solved by replacing the CCD unit.	Yes	Replace the CCD module.

■ Dark

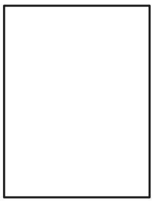


<User Check>

- Check whether the setting of the contrast does not become dark.

Step	Cause	Check	Result	Remedy
1	White level data malfunction	Is the problem solved by performing the acquisition of white level data. (Function code 55)	Yes	Perform the acquisition of white level data. (Function code 55)
2	Scanner module failure	Is the problem solved by replacing the CCD unit.	Yes	Replace the CCD module.
3	Main PCB failure	Is the problem solved by replacing the main PCB.	Yes	Replace the main PCB.

■ Completely blank



Step	Cause	Check	Result	Remedy
1	White level data malfunction	Is the problem solved by performing the acquisition of white level data. (Function code 55)	Yes	Perform the acquisition of white level data. (Function code 55)
2	Scanner module failure	Is the problem solved by replacing the CCD unit.	Yes	Replace the CCD module.
3	Main PCB failure	Is the problem solved by replacing the main PCB.	Yes	Replace the main PCB.

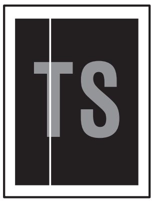
■ Vertical streaks

<User Check>

- Check if the ADF glass or document glass is not stained.

Step	Cause	Check	Result	Remedy
1	Scanner module failure	Is the problem solved by replacing the CCD unit.	Yes	Replace the CCD module.
2	ADF or document glass failure	Is the problem solved by replacing the scanner top cover ASSY.	Yes	Replace the top cover ASSY.

■ White vertical streaks



<User Check>

- Check if the ADF glass or document glass is not stained.

Step	Cause	Check	Result	Remedy
1	Scanner module failure	Is the problem solved by replacing the CCD unit.	Yes	Replace the CCD module.
2	ADF or document glass failure	Is the problem solved by replacing the scanner top cover ASSY.	Yes	Replace the top cover ASSY.

13. OTHERS PROBLEMS

■ The machine is not turned on, or the LCD indication does not appear.

Step	Cause	Check	Result	Remedy
1	Harness connection failure of LCD panel PCB	Is the harness of the LCD panel PCB ASSY connected correctly?	No	Reconnect the LCD panel PCB ASSY harness.
2	LCD panel PCB failure	Is the problem solved after replacing the LCD panel PCB ASSY?	Yes	Replace the LCD panel PCB ASSY.
3	LCD panel failure	Is the problem solved after replacing the LCD panel ASSY?	Yes	Replace the LCD panel ASSY.
4	Low-voltage power supply failure	Is the problem solved after replacing the LVPS PCB unit?	Yes	Replace the LVPS PCB unit.
5	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ The fan does not work.

(Verify the position of each fan referring to "4.19 Operational Check of Fans (Function code 78)" in Chapter 6.)

Step	Cause	Check	Result	Remedy
1	Harness connection failure of the appropriate fan	Is the harness of the appropriate fan connected correctly?	No	Reconnect the harness of the appropriate fan correctly.
2	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace the charge HVPS PCB ASSY. Replace the fuser unit fan (FU) and air intake fan (AIR).
3	Low-voltage power supply failure	Is the problem solved after replacing the LVPS PCB unit?	Yes	Replace the LVPS PCB unit. Replace the LVPS fan (PS).
4	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Pickup function of paper tray does not work.

Step	Cause	Remedy
1	Lift arm catching on some position	Re-assemble the lift arm.
2	Pickup roller holder ASSY catching on some position	Re-assemble the pickup roller holder ASSY catching on some position.
3	Roller holder ASSY failure	Replace the roller holder ASSY.
4	Main motor failure	Replace the main motor.
5	Pressure plate drive cam failure	Replace the frame L.
6	Main PCB ASSY failure	Replace the main PCB ASSY.

■ The new toner is not detected.

Step	Cause	Remedy
1	New toner actuator not operating smoothly or catching.	Make sure correct movement of the new toner actuator.
2	New toner actuator damaged	Replace the drum unit.
3	Main PCB failure	Replace the main PCB ASSY.
4	Toner sensor (TE/NEW) failure	Replace the relay front PCB ASSY (TE/NEW).

■ Printing from Macintosh applications fails.

<User Check>

- Check that the printer driver which, is supplied with the product, is installed in Library/Printers, and that the print queue is created.
- Check the connecting end on the printer browser. It must be matched with the connecting end which is actually connected.

Step	Possible cause	Check	Result	Remedy
1	Failure inside the machine	Does the machine print test pattern? (Check it following the procedure described in "4.5 Test Pattern 1 (Function code 09)" in Chapter 6.)	No	Identify the error type, and then refer to the specified section of this chapter.
2	Breakage of main PCB	Does the machine make a print using a correct PC and a USB cable?	No	Replace the main PCB ASSY.

■ USB direct printing does not work.

Step	Cause	Remedy
1	USB host PCB failure	Replace the USB host PCB.
2	Main PCB failure	Replace the main PCB ASSY.

CHAPTER 4

PERIODICAL MAINTENANCE

CHAPTER 4 PERIODICAL MAINTENANCE

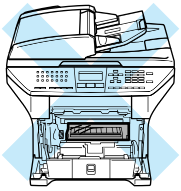
CONTENTS

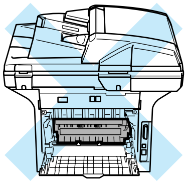
1. PERIODICAL MAINTENANCE PARTS

To avoid creating secondary problems by mishandling, follow the warnings below during maintenance work.

WARNING

- Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the machine.
- When opening the front cover or back cover to access any parts inside the machine, never touch the shaded parts shown in the following figures.
- DO NOT use flammable substances such as alcohol, benzine, thinner or any type of spray to clean the inside or outside of the machine. Doing this may cause a fire or electrical shock.





1.1 Periodical Maintenance Parts

Periodical maintenance parts are the parts to be replaced periodically to maintain product quality. These parts would affect the product quality greatly if they lost their function even if they do not appear to be damaged or there is no change in their appearance.

The periodical maintenance parts listed below should be replaced at the service center referring to the service life.

Parts Name	LCD	Qty	Approximate Life [*1] (number of prints)	Replacement Procedure
Fuser Unit	REPLACE PARTS FUSER UNIT	1	100,000 pages	See subscription 1.2.1, Chapter 4
Laser Unit	REPLACE PARTS LASER UNIT	1	100,000 pages	
PF kit for Tray 1 [*3]	REPLACE PARTS PF KIT1	1	100,000 pages	See subscription 1.2.2, Chapter 4
PF kit for Tray 2 [*3]	REPLACE PARTS PF KIT2	1	100,000 pages	
MP PF tray [*2]	REPLACE PARTS PF KIT MP	1	Except for China/ India: 50,000 pages	See subscription 1.2.3, Chapter 4
			China: 25,000 pages	
			India: 12,000 pages	

To reset the count of each periodical maintenance parts, refer to "5.1 Resetting the Periodical Maintenance Parts Life" in Chapter6.

[*1] At 5% print coverage (A4 or Letter size). The actual number of printed pages will vary depending on the print jobs and paper you use. The number is calculated when simplex printed the normal business document (ISO/IEC19752) on the A4 size.

[*2] Paper feeding kit MP means the MP roller holder ASSY and the separation pad ASSY MP.

[*3] Paper feeding kit for Tray 1 and Tray 2 means the roller holder ASSY, the separation pad ASSY and the separation pad spring. Tray 1 and Tray 2 are the same kit.

Note :

- Always turn off the power switch of the machine and unplug the power cord from the power outlet before replacing the periodical maintenance parts.
- If the Fuser Unit is replaced after errors related to the Fuser Unit occur, it is necessary to leave the machine power ON for 15 minutes after part replacement. This will make the machine to be released from errors.
- After disconnecting flat cables, check that each cable is not damaged at its end or short-circuited.
- When connecting flat cables, do not insert them at an angle. After insertion, check that the cables are not at an angle.

1.2 Procedures to Replace Periodical Maintenance Parts

1.2.1 Fuser unit and laser unit

<Uninstalling Procedure>

Check that the following before entering the procedures.

- Make sure that the AC cord is disconnected from the machine.
- Make sure that the Drum/toner ASSY is removed.
- Make sure that the Duplex feed ASSY is removed.
- Make sure that the Paper tray is removed from the machine.

(1) Open the Back cover.

(2) Remove the Arms of the Back cover from the Pins.

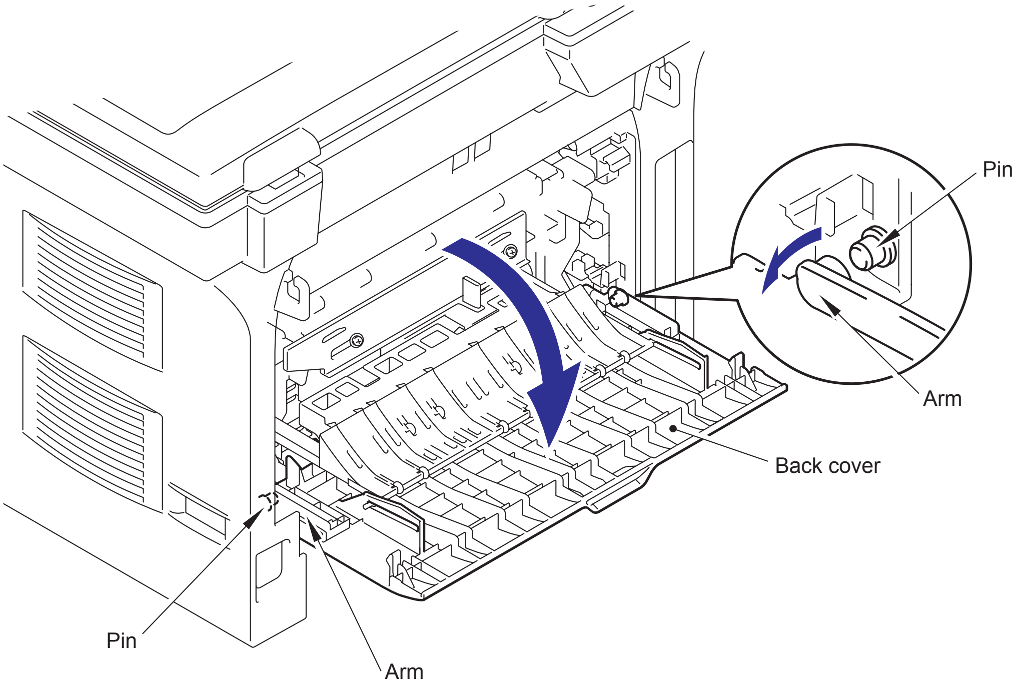


Fig. 4-1

(3) Remove the Pins of the Outer chute ASSY from the Back cover.

(4) Remove the Back cover.

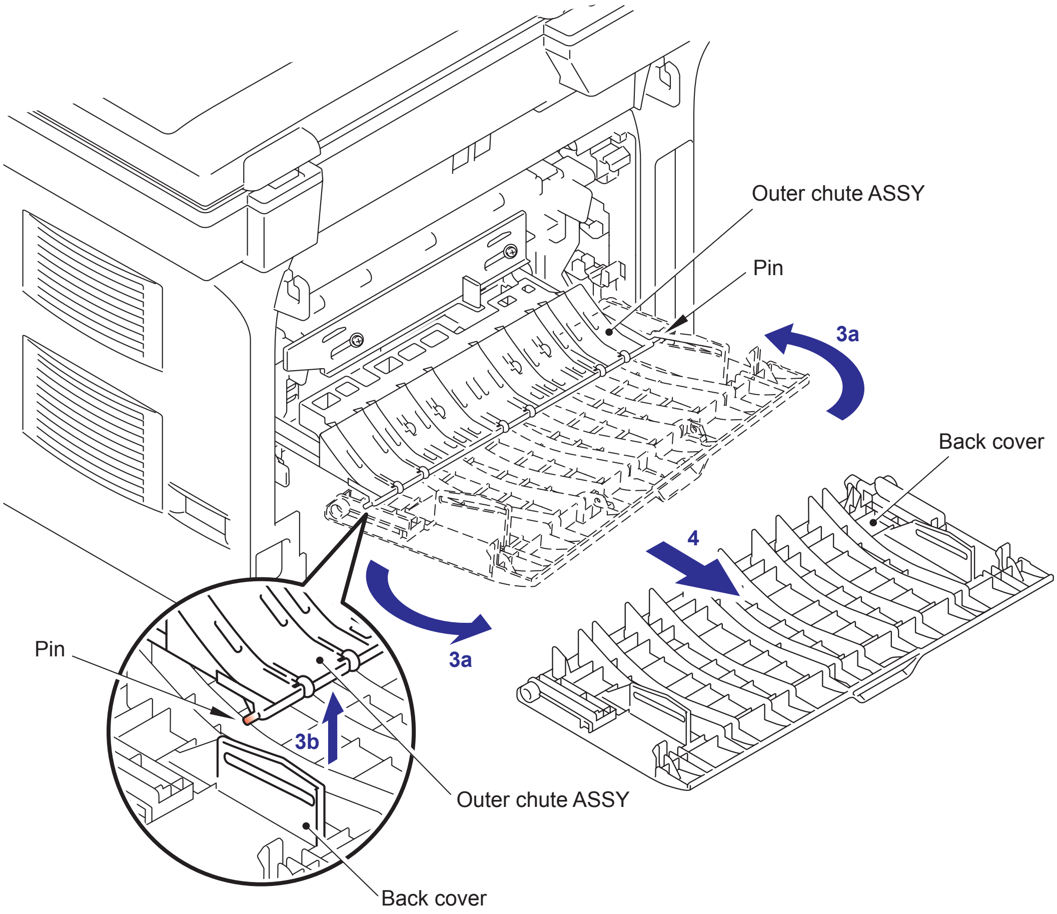


Fig. 4-2

(5) Hold the Knobs on the Rear chute ASSY and pull down this to your side.

(6) Remove the Arms of the Rear chute ASSY from the Pins.

(7) Remove the Rear chute ASSY.

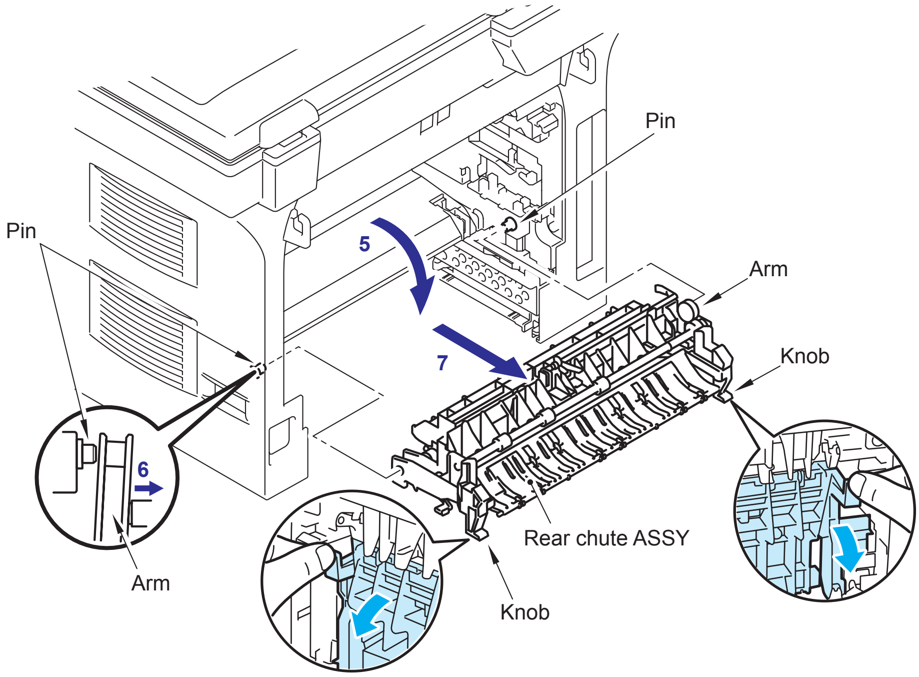


Fig. 4-3

(8) Remove the pan B M4x20 Taptite screw. Release the Hooks in the order of 8a, 8b and 8c. Remove the FU harness cover 1.

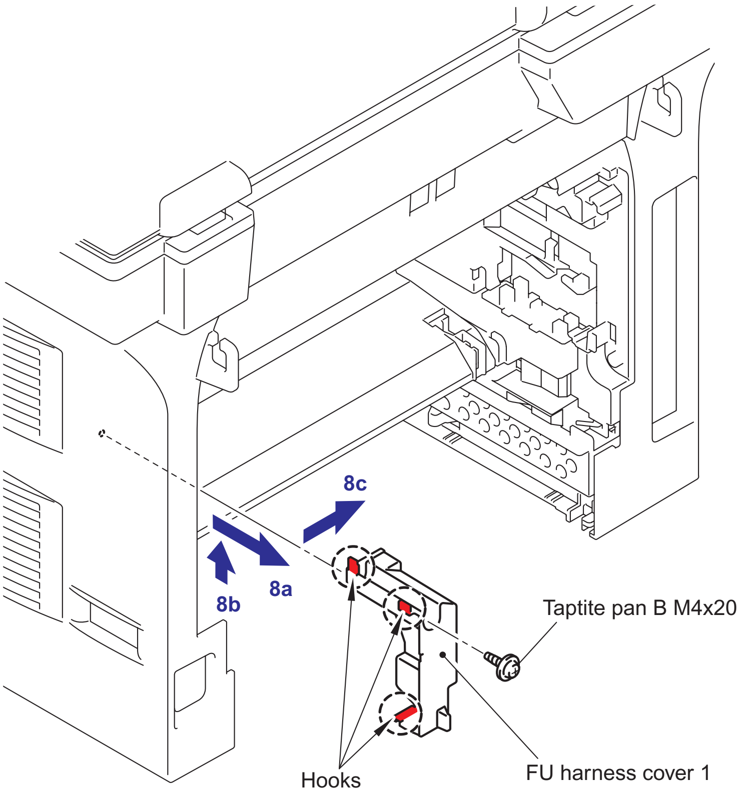


Fig. 4-4

(9) Disconnect the connector of the Heater terminal while pressing the Hook of the connector of the Fuser unit.

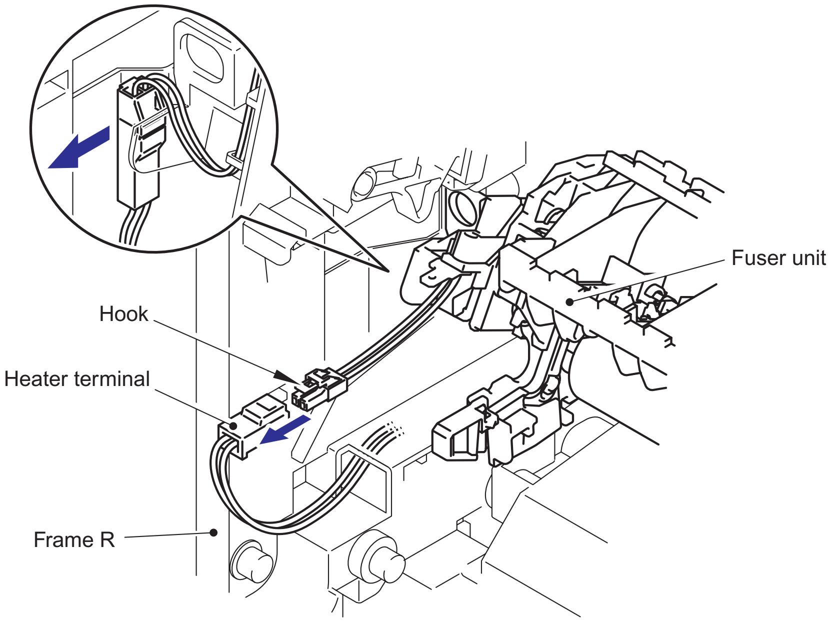


Fig. 4-5

(10) Pull the FU harness cover 2 to the direction of 10a while pressing the Hook and pull out the FU harness cover 2 from the back of the machine.

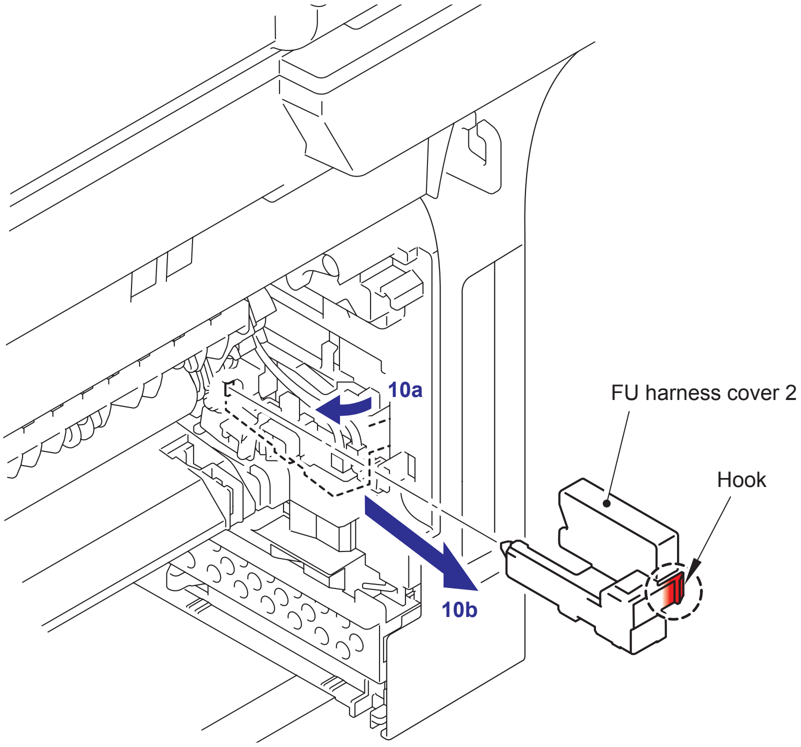


Fig. 4-6

(11) Disconnect the connectors of the Thermistor ASSY M and Thermistor ASSY S from the Relay rear PCB ASSY, and remove the harnesses of these thermistors.

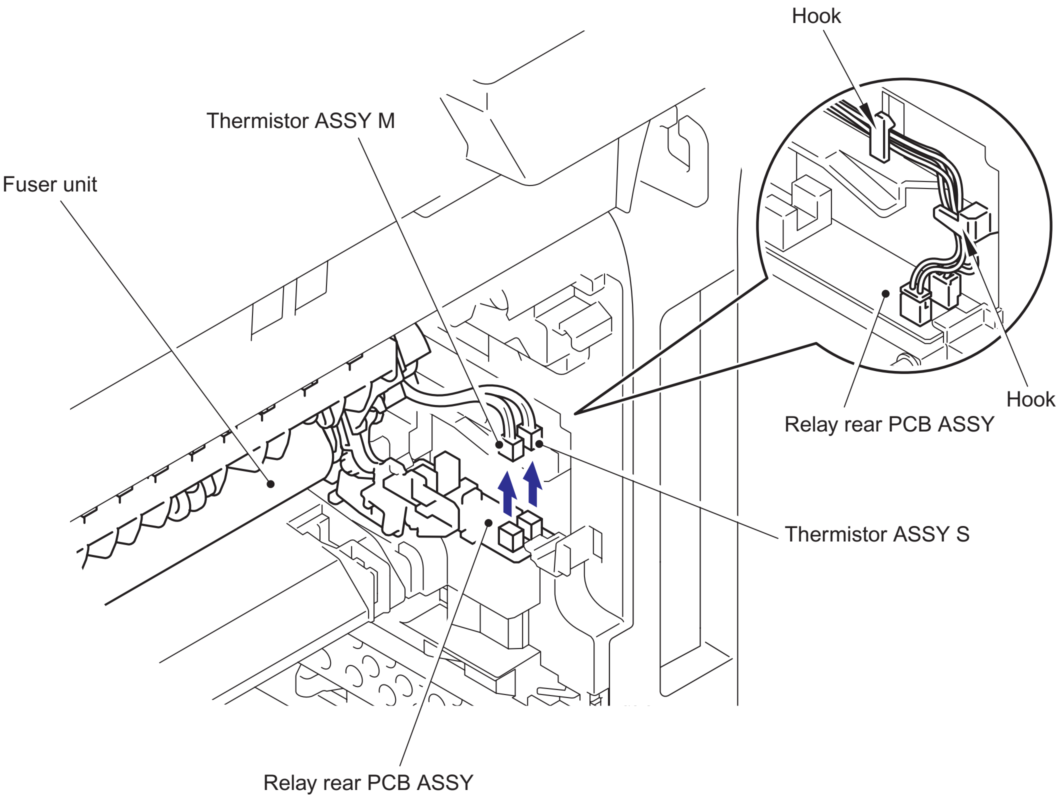


Fig. 4-7

(12) Remove the pan B M4x20 Taptite screw to remove the Fuser unit.

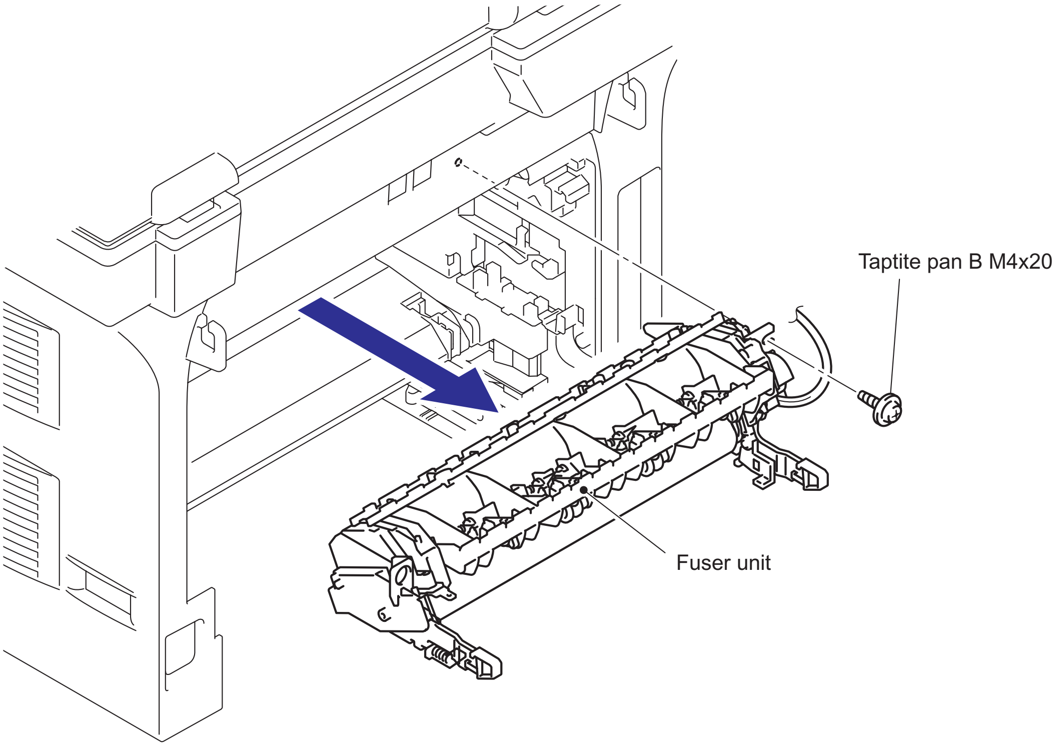


Fig. 4-8

(13) Open the Front cover, remove the two bind B M4x12 Taptite screws, and then remove the Side cover L by releasing the Hooks in the order of 13a to 13d.

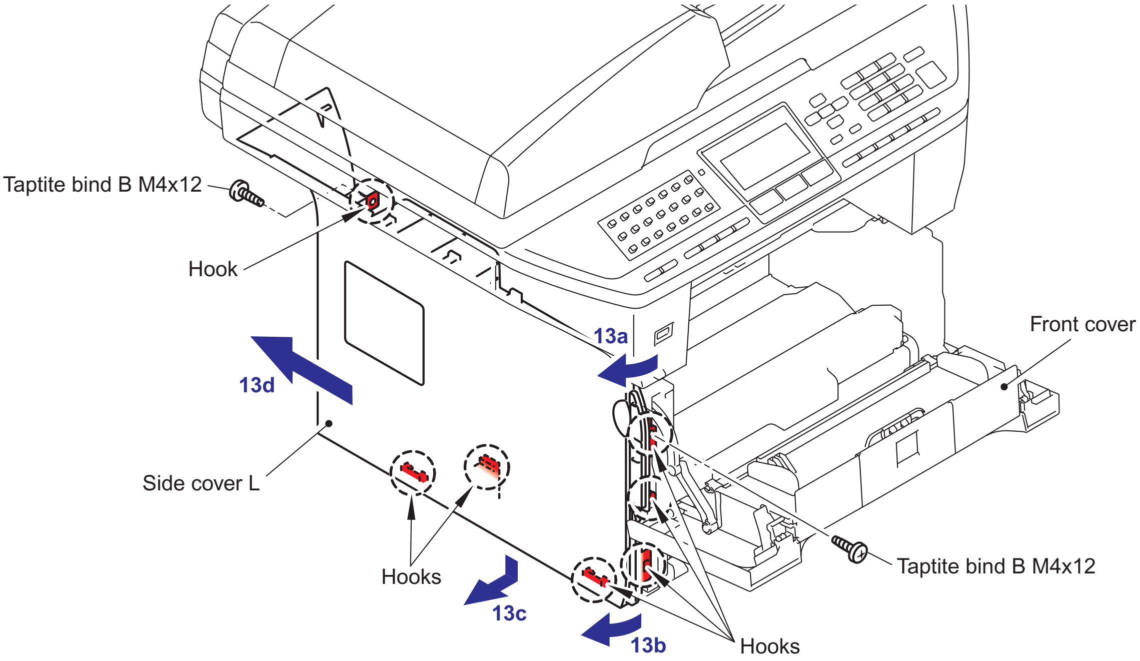


Fig. 4-9

(14) Remove the four cup S M3x6 SR Taptite screws to remove the Shield cover ASSY and the two FG harnesses.

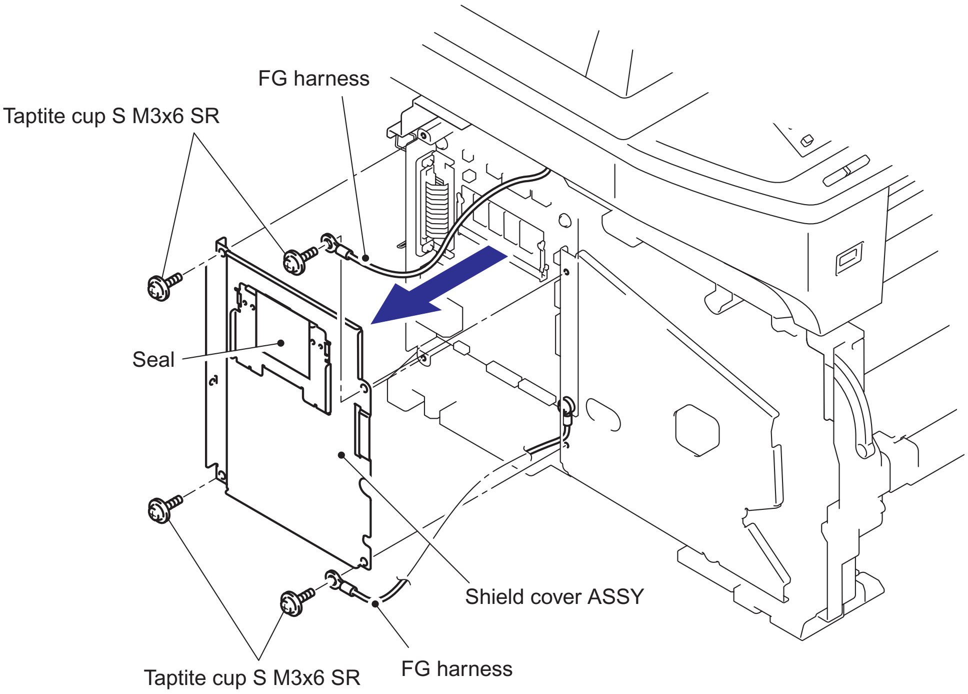


Fig. 4-10

(15) Remove the two bind B M4x12 Taptite screws, and release the Hooks by following direction from 15a to 15d, then remove the Side cover R.

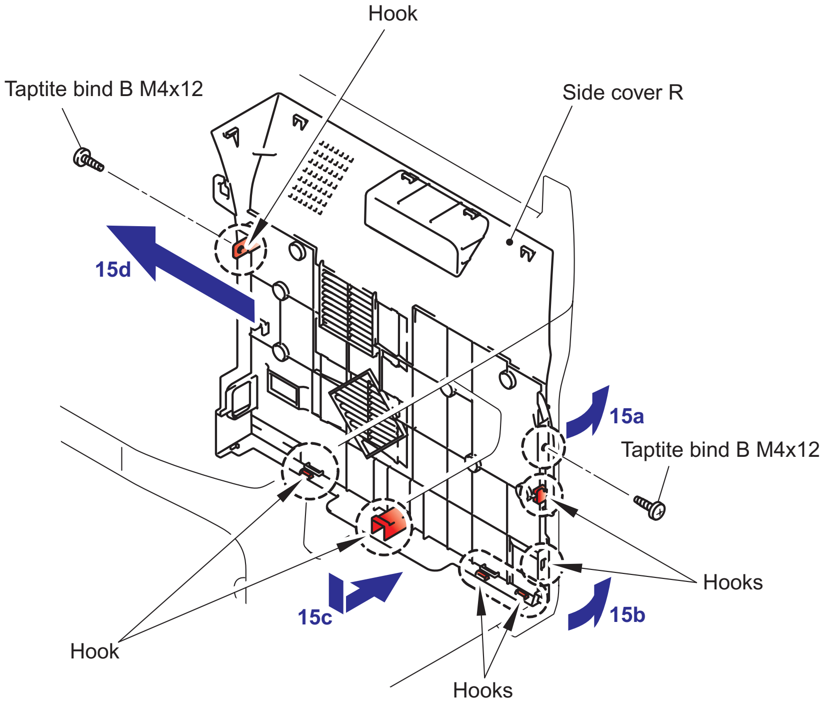


Fig. 4-11

(16) Remove the cup S M3x6 Taptite screw, remove the ADF FG harness and FB FG harness.

(17) Disconnect the Connector from the Driver PCB.

(18) Disconnect the two Connectors from the Main PCB.

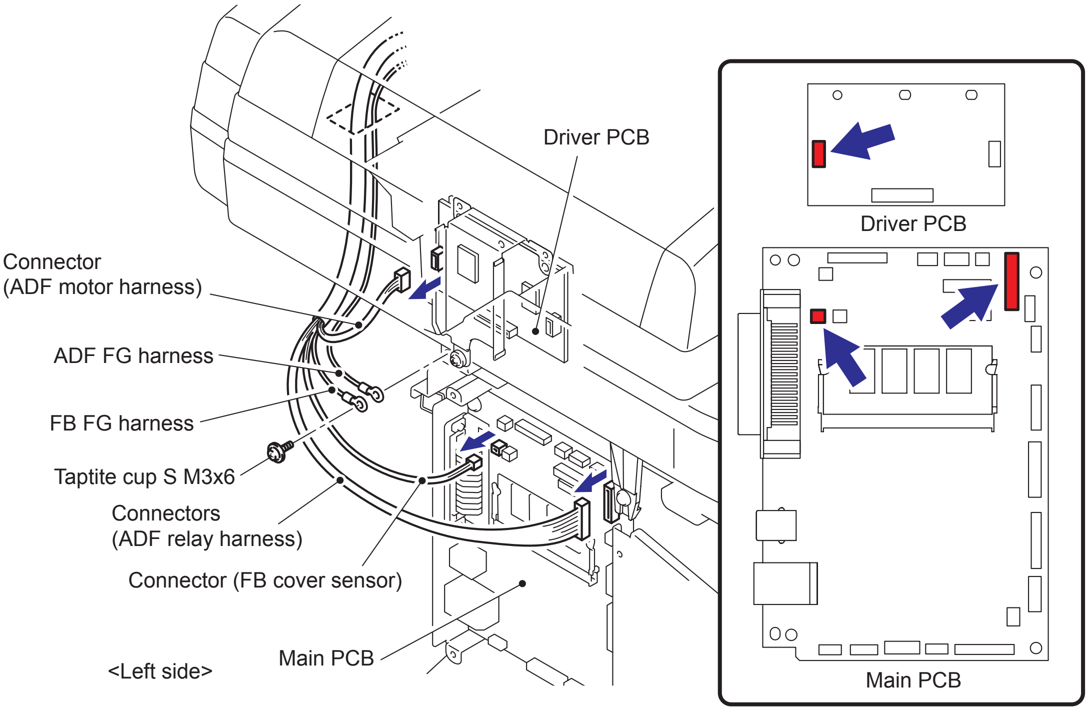


Fig. 4-12

(19) Disconnect the connector of the Scanner motor harness from the Driver PCB.

(20) Disconnect the connectors of the Home Position sensor harness and FFC cable from the Main PCB.

Note :

- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.

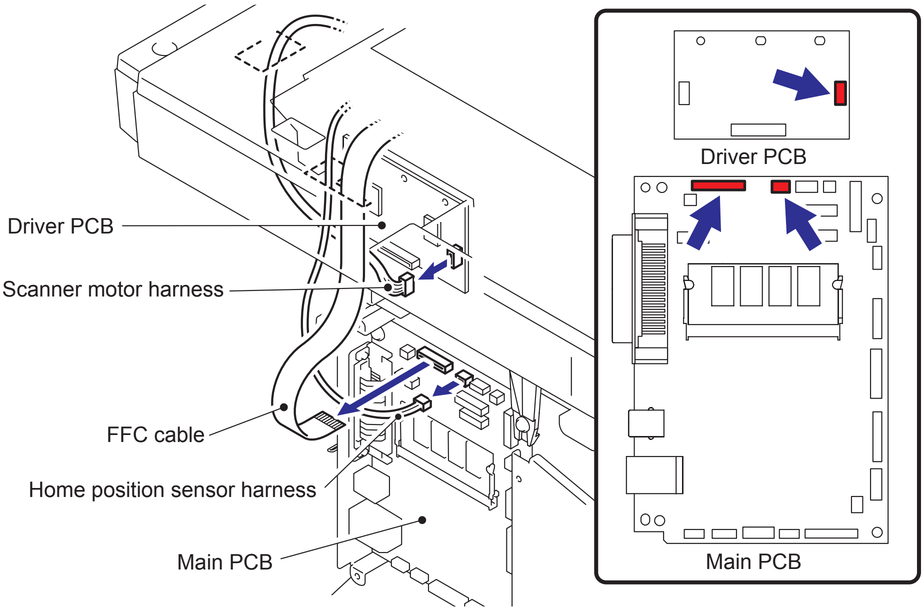


Fig. 4-13

(21) Disconnect the six connectors of the each harness from the Main PCB.

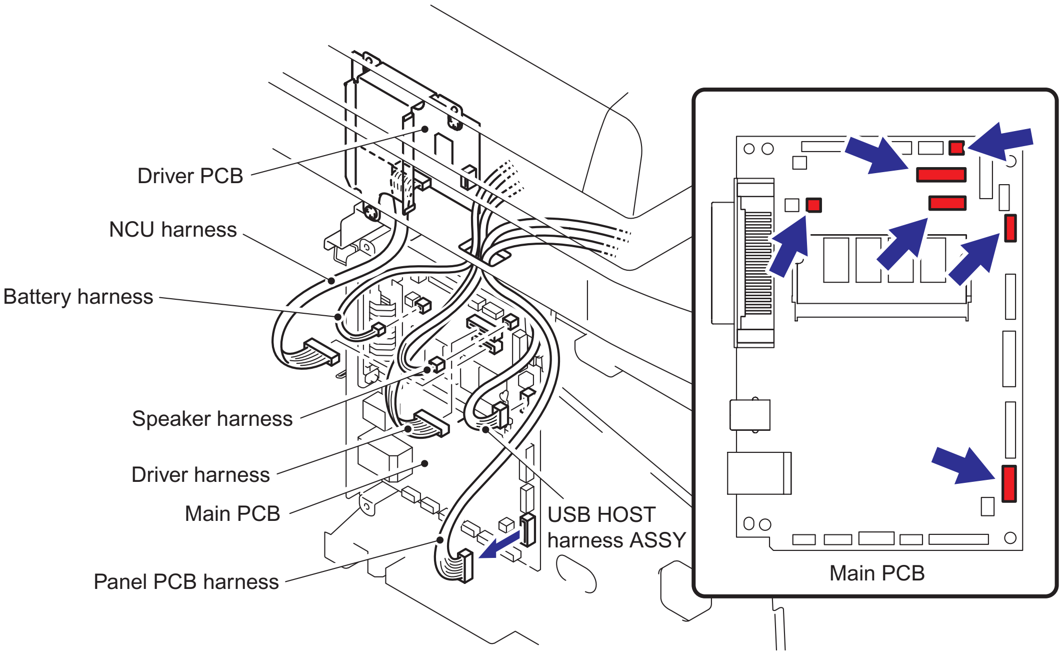


Fig. 4-14

(22) Remove the two bind B M4x12 Taptite screws, and then remove the Document scanner.

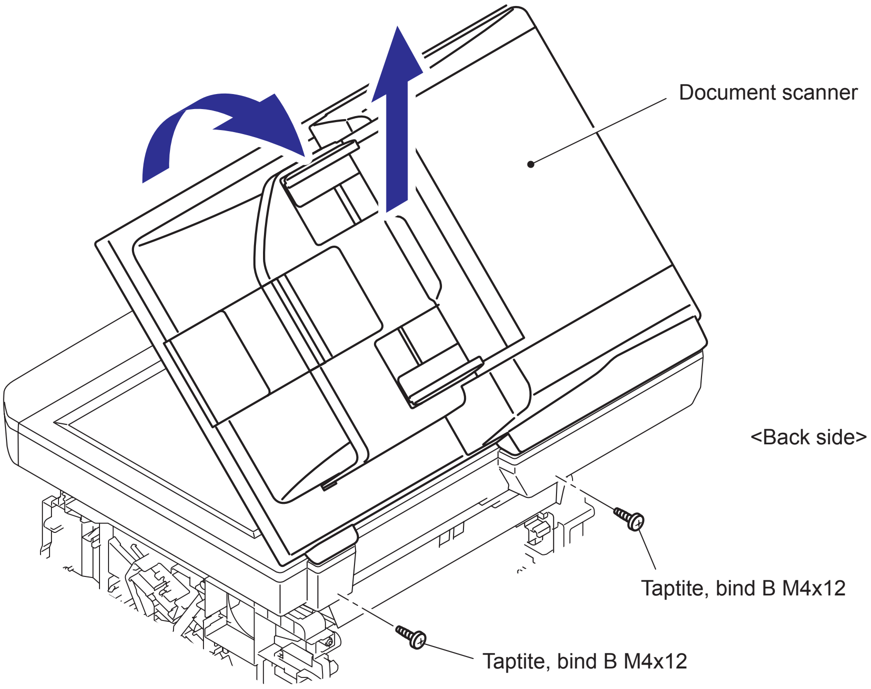


Fig. 4-15

(23) Remove the two cup B M4x20 Taptite screws. Lift up the rear of the Scanner unit slightly and remove the Scanner unit.

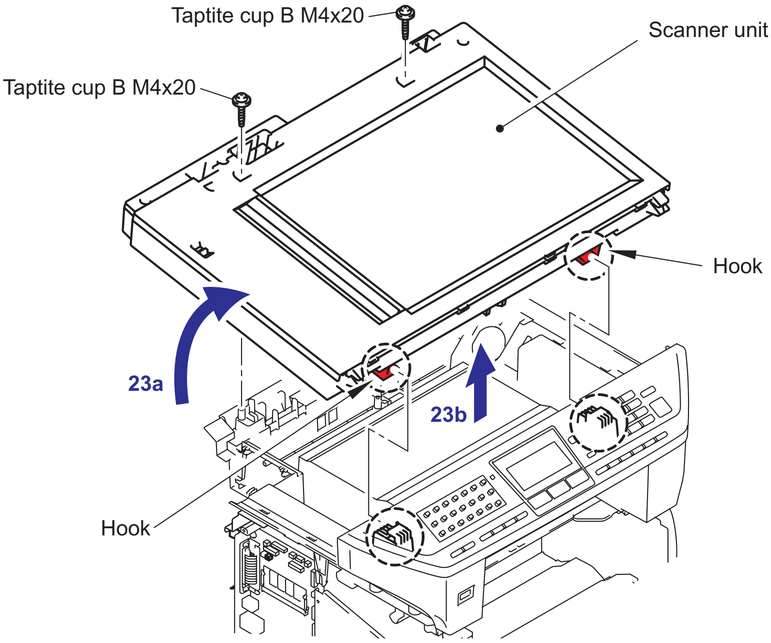


Fig. 4-16

(24) Remove the cup S M3x6 SR Taptite screw, and remove the Screw pan (S/P washer) M3.5x6 of the NCU FG harness ASSY.

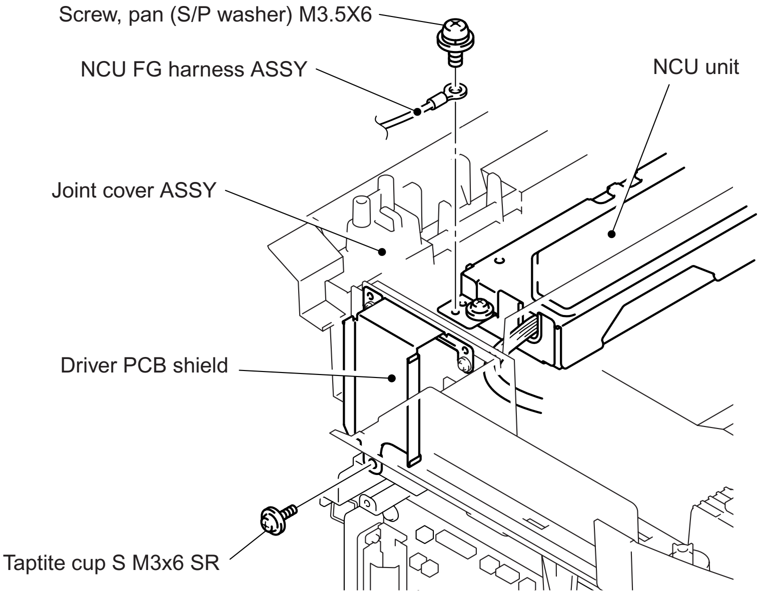


Fig. 4-17

(25) Remove the four bind B M4x12 Taptite screws from the Joint cover.

(26) Release all Hooks of the Joint cover and lift up the front side of the Joint cover.

(27) Pull out the Joint cover's Bosses to the front side.

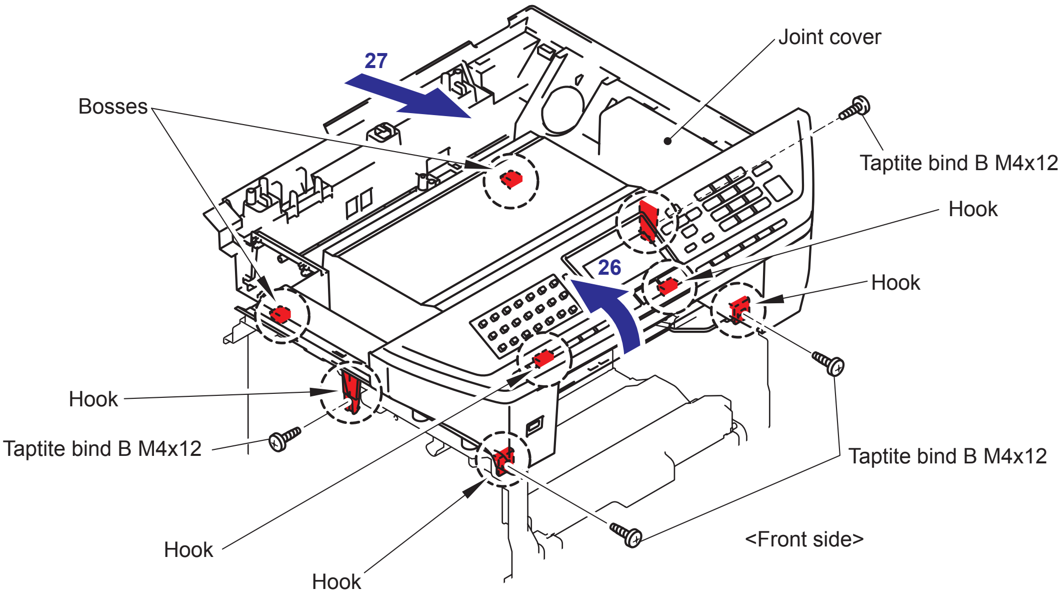


Fig. 4-18

(28) Slide the Sub duct to the direction of 28b while pressing the Hook to the direction of 28a and remove the Sub duct from the Air duct.

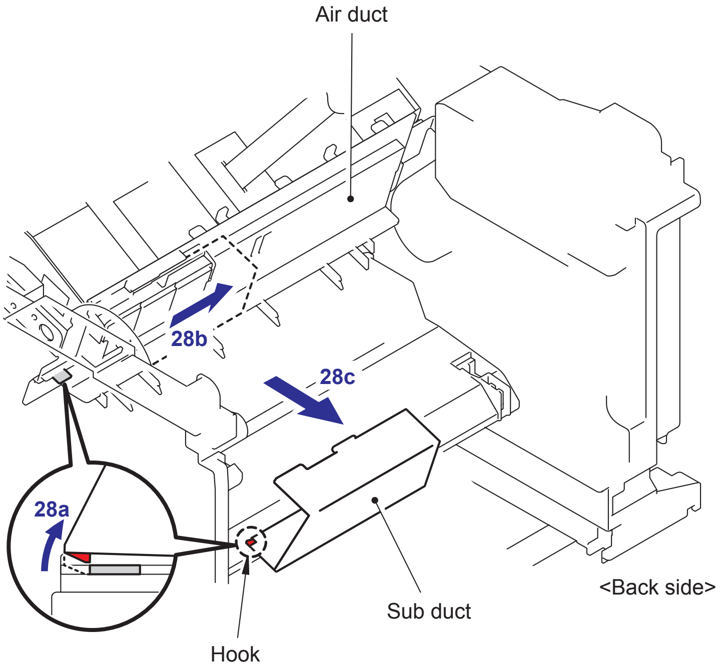


Fig. 4-19

(29) Remove the Filter from the Air duct.

Note :

- The filter is dirt. Be careful when disassembling or assembling it.

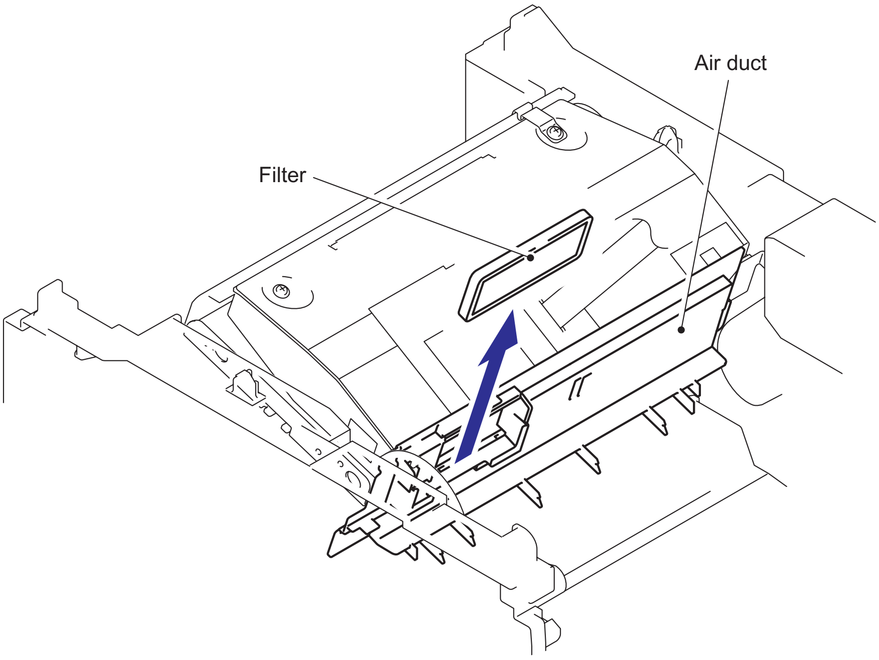


Fig. 4-20

(30) Remove the Hook of the Air duct from the frame. Slide the Air duct to the direction of 30b and remove the Air duct.

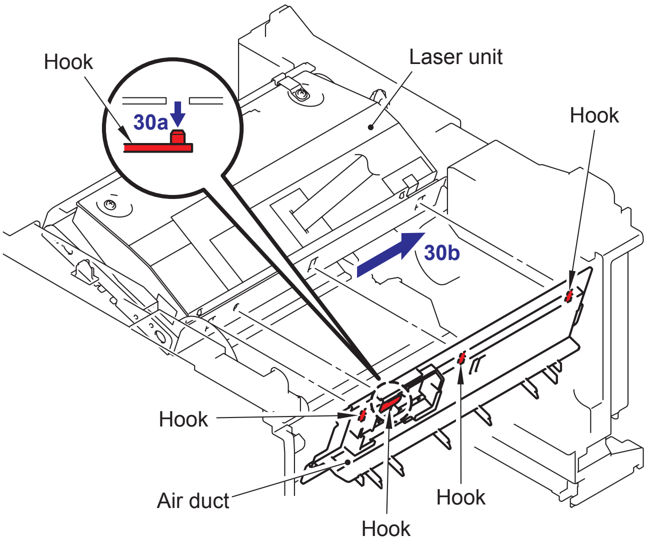


Fig. 4-21

(31) Remove the two Flat cables from the Main PCB.

> **Note :**
>
> - After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.

(32) Remove the six cup S M3x6 Taptite screws.

(33) Remove the Protective film from the Flat cable.

(34) Pull out the two Flat cables from the Core.

(35) Remove the Laser unit.

> **Note :**
>
> - Be careful not to lose the Protective film attached on the flat cable.
> - Do not touch the Laser scanner window directly.

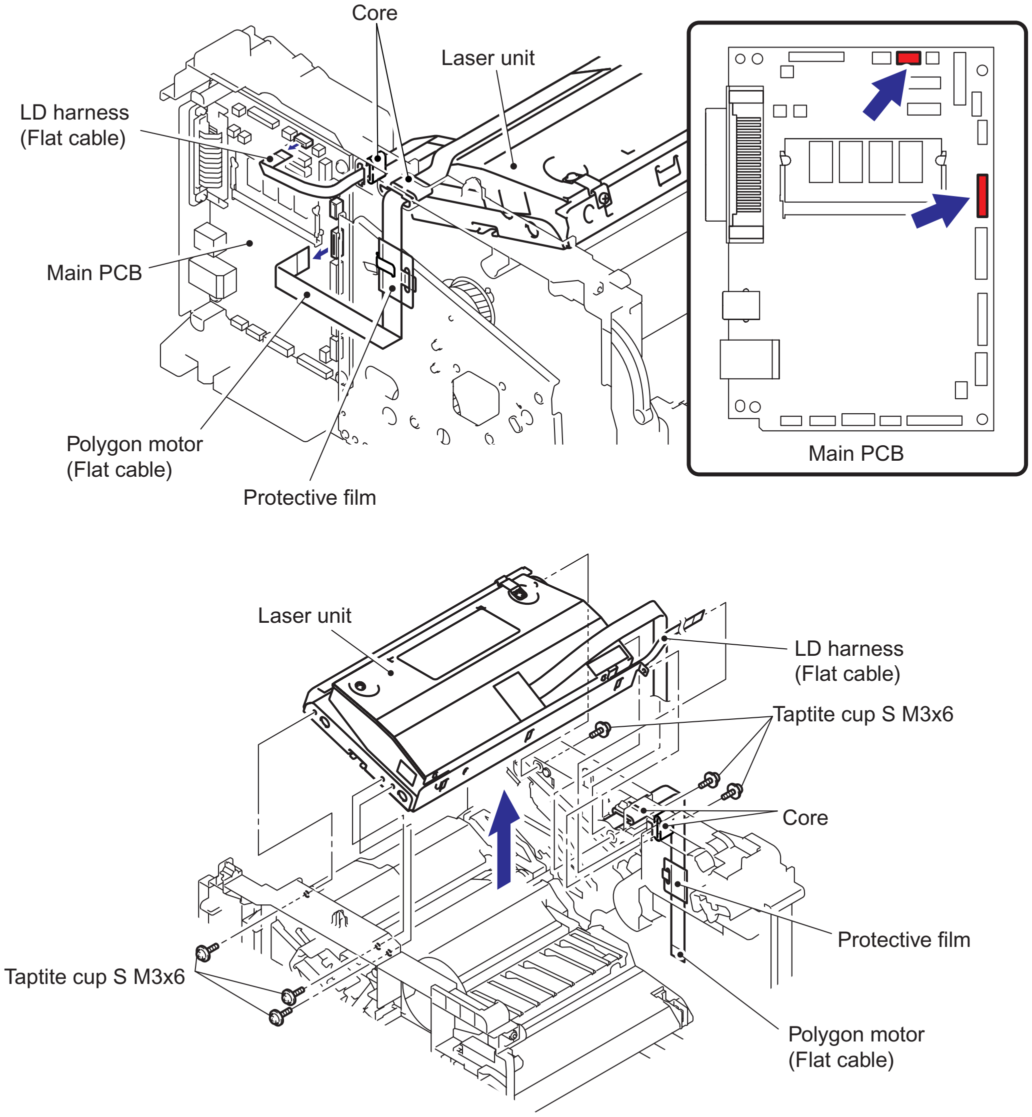


Fig. 4-22

< Installing Procedure >

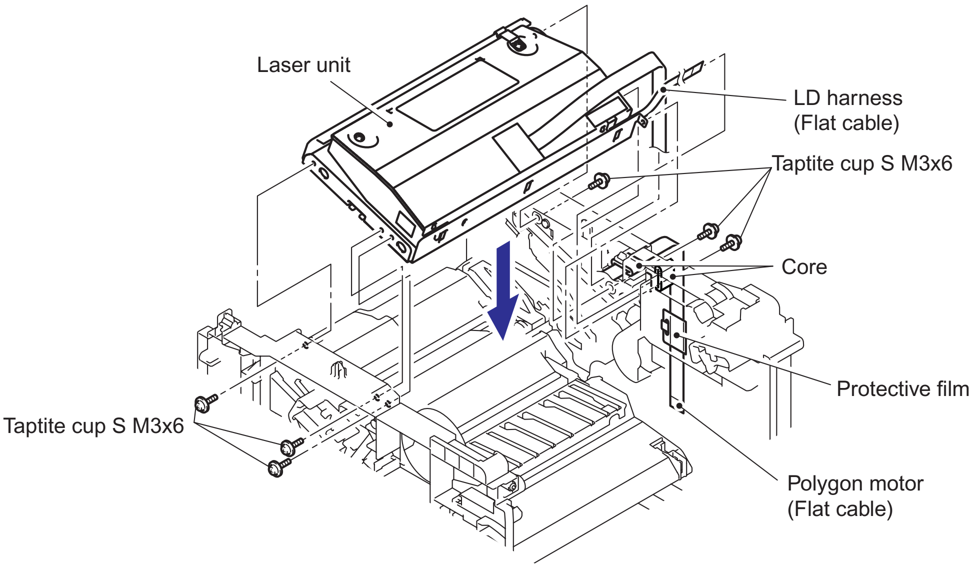
(1) Secure the Laser unit with the six cup S M3x6 Taptite screws.

(2) Put the Flat cable (LD harness connector) through the Core.

(3) Put the Flat cable (Polygon motor connector) through the Core and Protective film. (Refer to "7. HARNESS ROUTING" in Chapter 5.)

(4) Connect the two Flat cables to the Main PCB.

> **Note :**
> - When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.



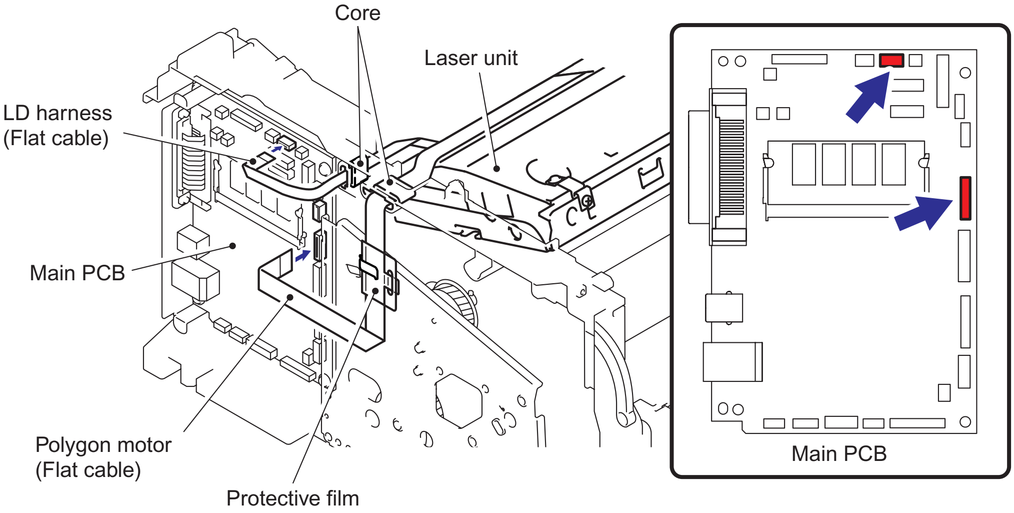


Fig. 4-23

(5) Install the Air duct into the Laser unit.

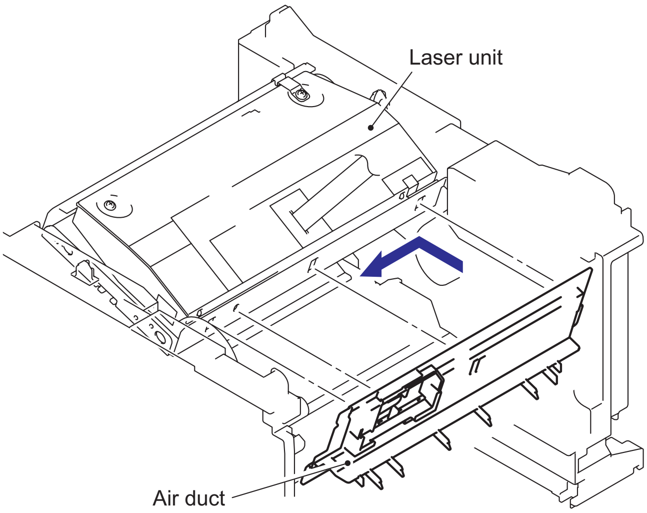


Fig. 4-24

(6) Install the Filter into the Air duct.

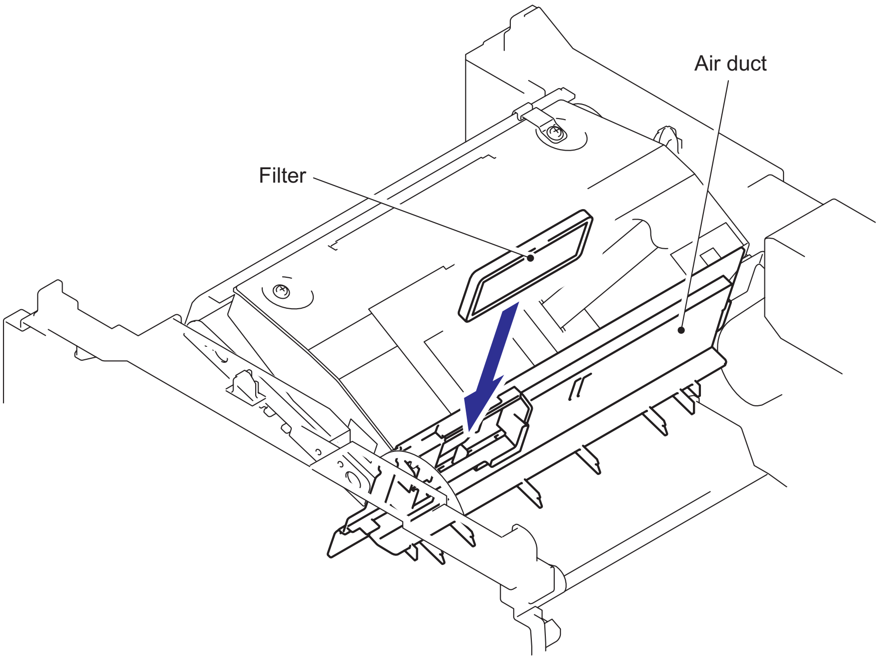


Fig. 4-25

(7) Install the Sub duct into the Air duct.

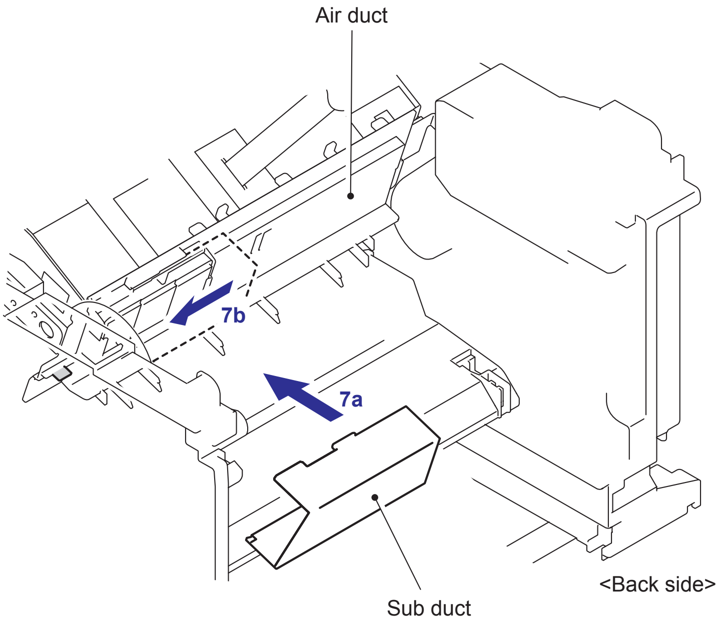


Fig. 4-26

(8) Insert the bosses of the Joint cover and hook on the cover, then secure the Joint cover with the four bind B M4x12 Taptite screws.

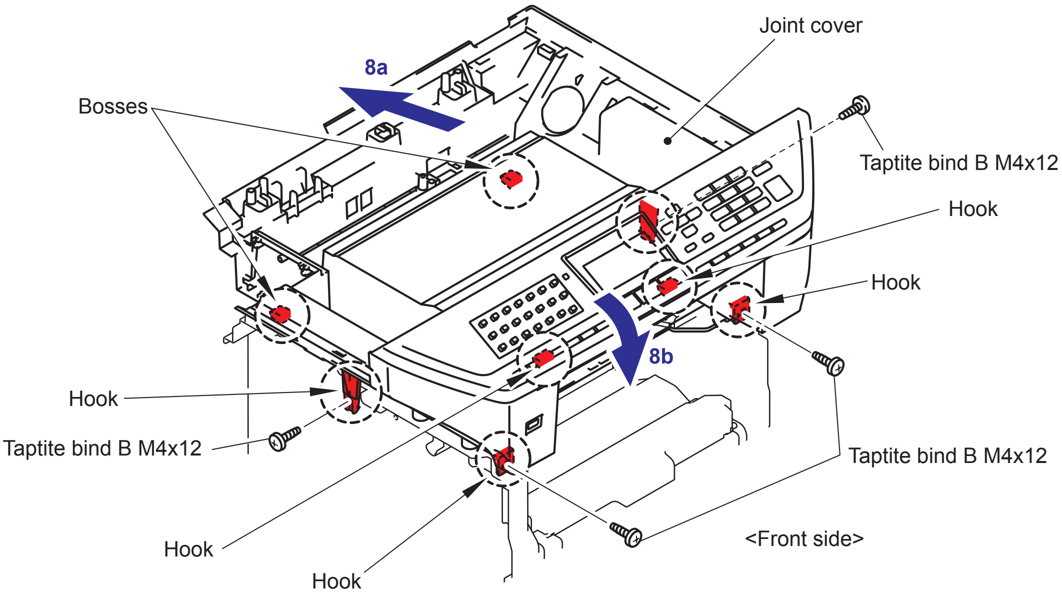


Fig. 4-27

(9) Secure the Screw pan (S/P washer) M3.5x6 of the NCU FG harness ASSY.

(10) Secure the cup S M3x6 SR Taptite screw.

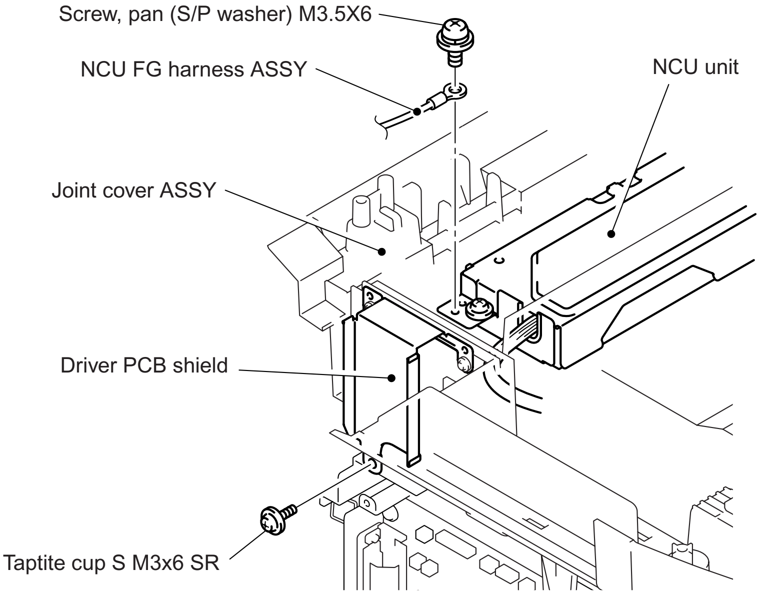


Fig. 4-28

(11) Catch the Hooks of the Scanner unit into the Joint cover and secure the Scanner unit with the two cup B M4x20 Taptite screws.

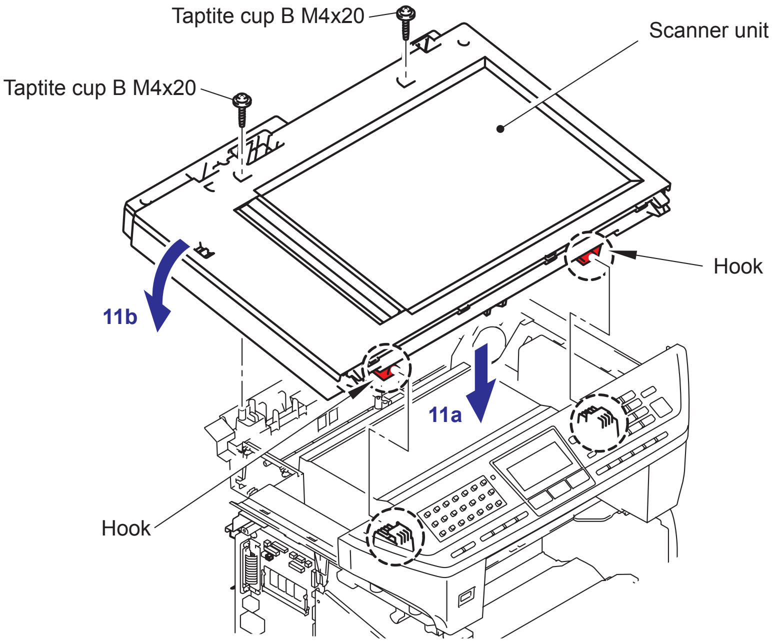


Fig. 4-29

(12) Secure the Document scanner with the two bind B M4x12 Taptite screws.

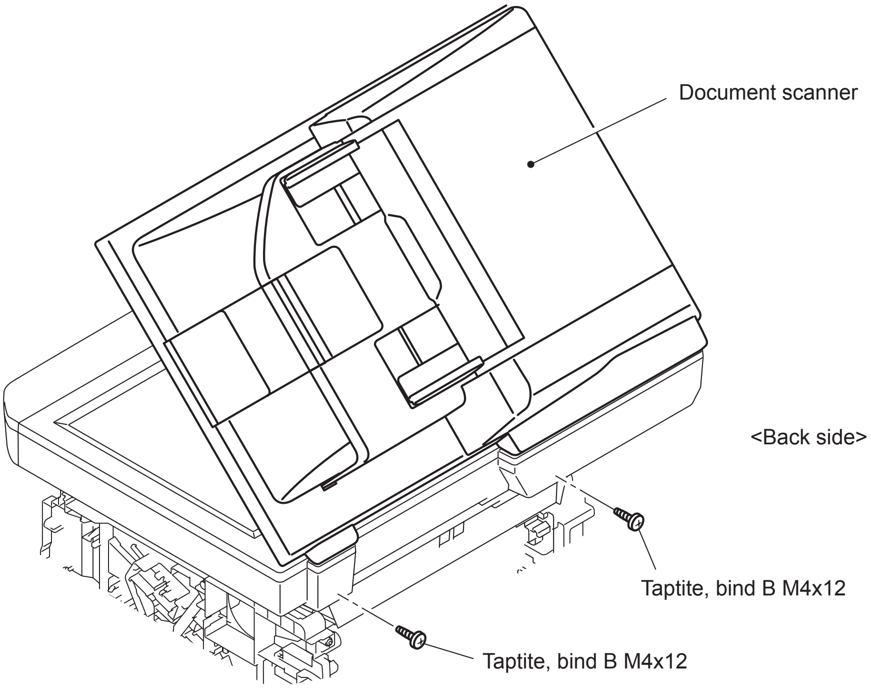


Fig. 4-30

(13) Connect the two Connectors into the Main PCB.

(14) Connect the Connector into Driver PCB.

(15) Secure the ADF FG harness and FB FG harness with the cup S M3x6 Taptite screw.

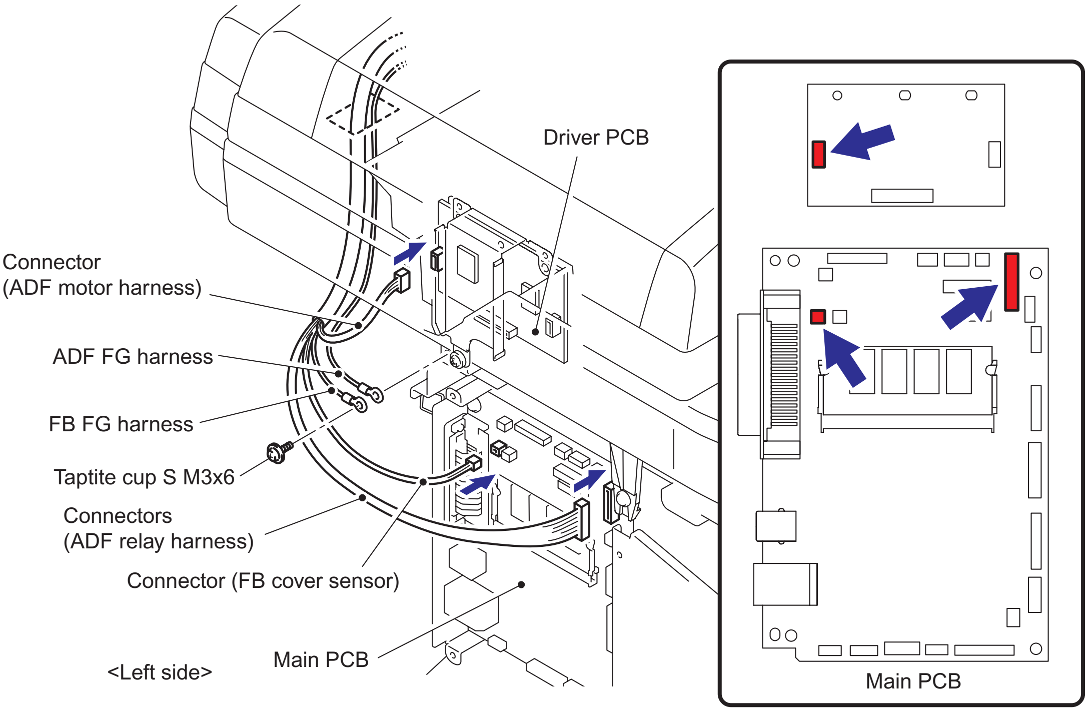


Fig. 4-31

(16) Connect the connectors of the Home Position sensor harness and FFC cable into the Main PCB.

Note :

- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.

(17) Connect the connector of the Scanner motor harness into the Driver PCB.

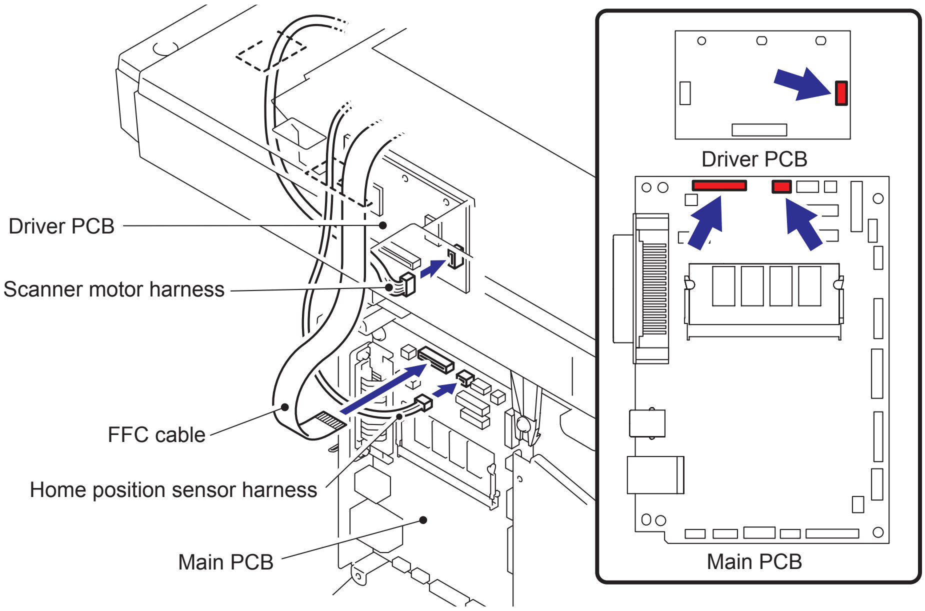


Fig. 4-32

(18) Connect the six connectors of the each harness into the Main PCB.

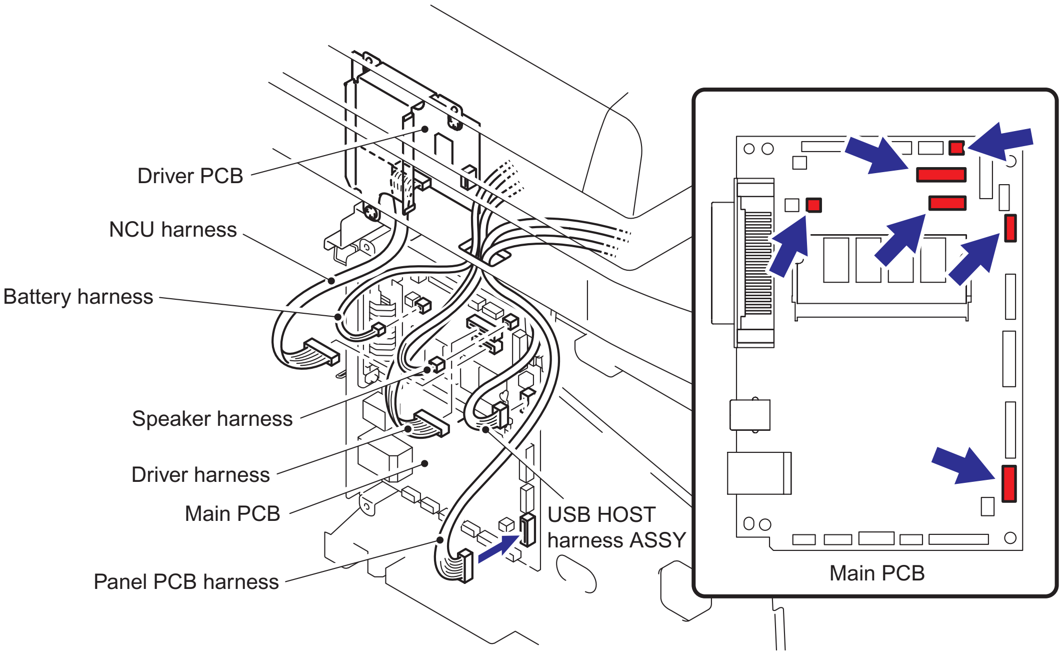


Fig. 4-33

(19) Catch the Hooks in the order of the arrows and secure the Side cover R with the two bind B M4x12 Taptite screws.

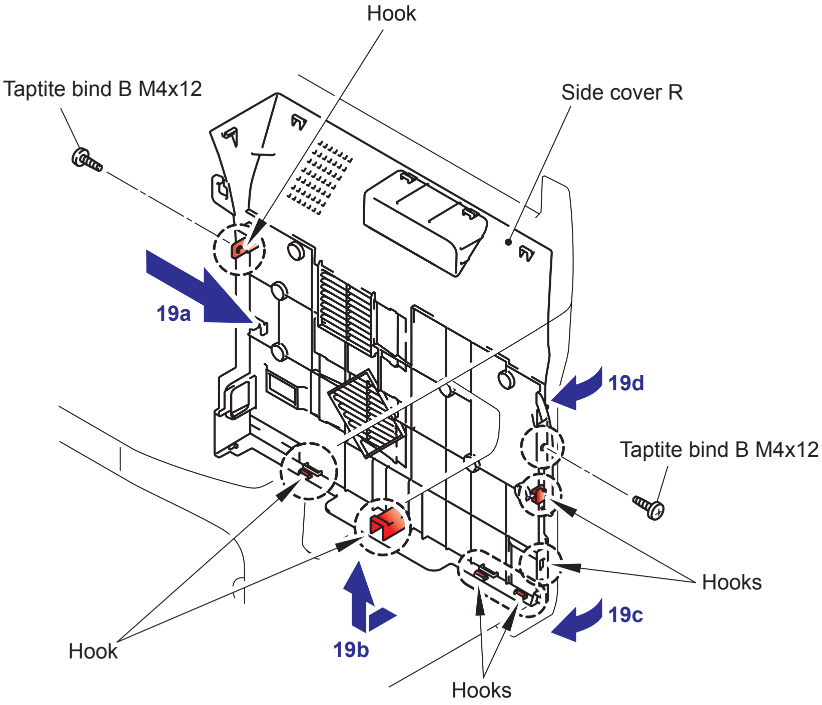


Fig. 4-34

(20) Secure the Shield cover ASSY and two FG harnesses with the four cup S M3x6 SR Taptite screws.

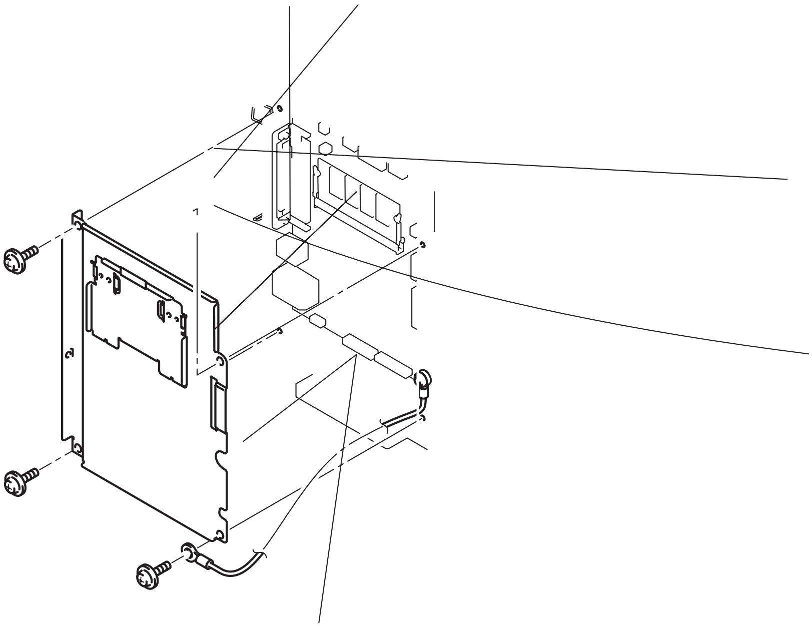


Fig. 4-35

(21) Catch the Hooks in the order of the arrows and secure the Side cover L with the two bind B M4x12 Taptite screws.

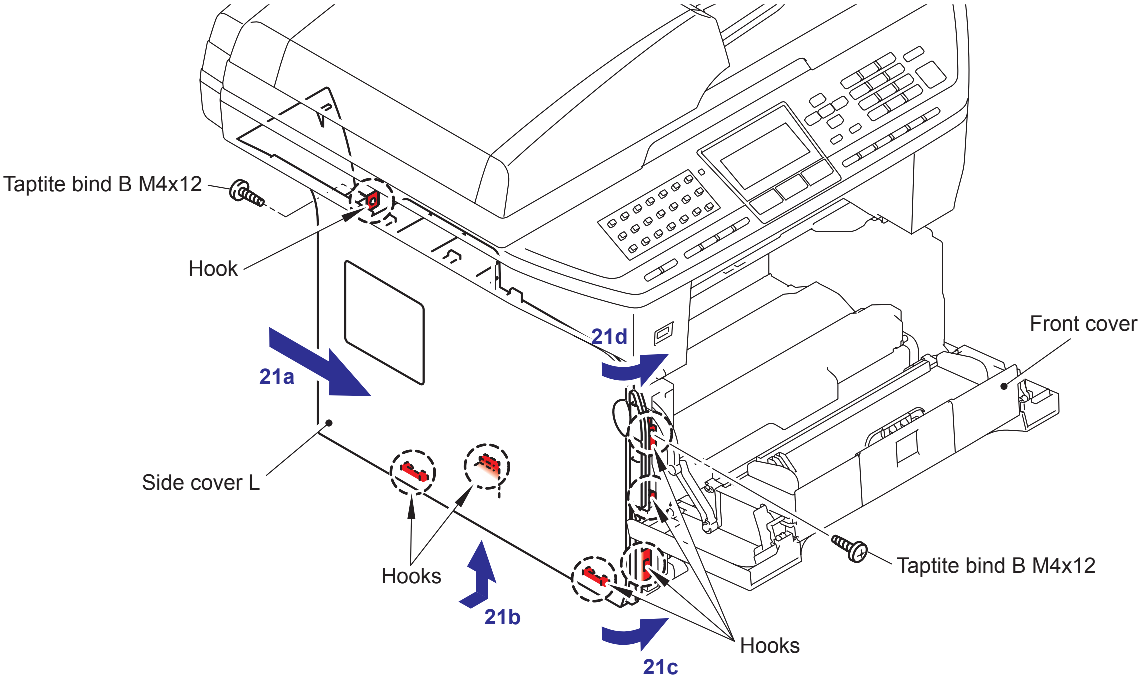
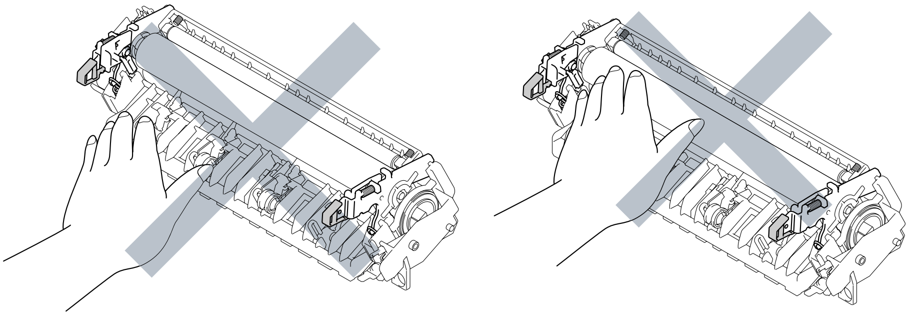


Fig. 4-36

Precautions before installing the fuser unit

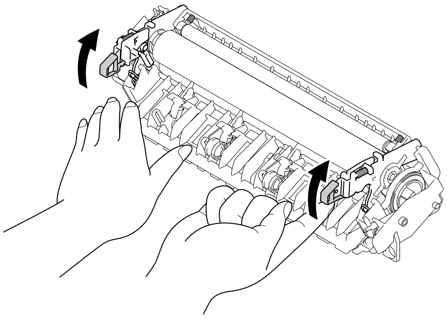
CAUTION

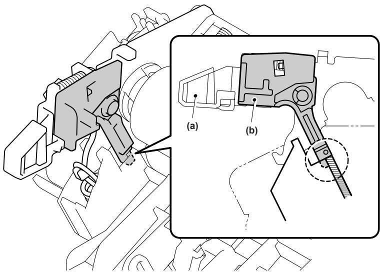
- DO NOT subject the fuser unit to strong physical shocks or vibrations.
- DO NOT touch the rollers and the electrodes to prevent damage to the fuser unit In the following figures.



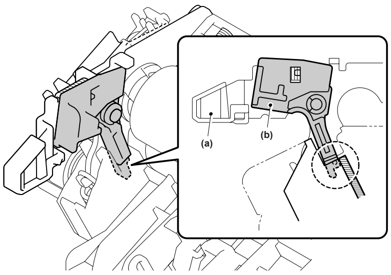
- To prevent the deformation of the pressure roller, the fuser unit spare part is shipped with its pressure roller at low nip pressure. Before installing the fuser unit, turn back the levers to the normal position by following instructions below.

  (1) Put the fuser unit on a flat, horizontal surface. Pull up each of the black tab (a) on the right side and left side.





  (2) Make sure that the black lever (b) is in the position in the illustration below.



(22) Secure the Fuser unit with the pan B M4x20 Taptite screw.

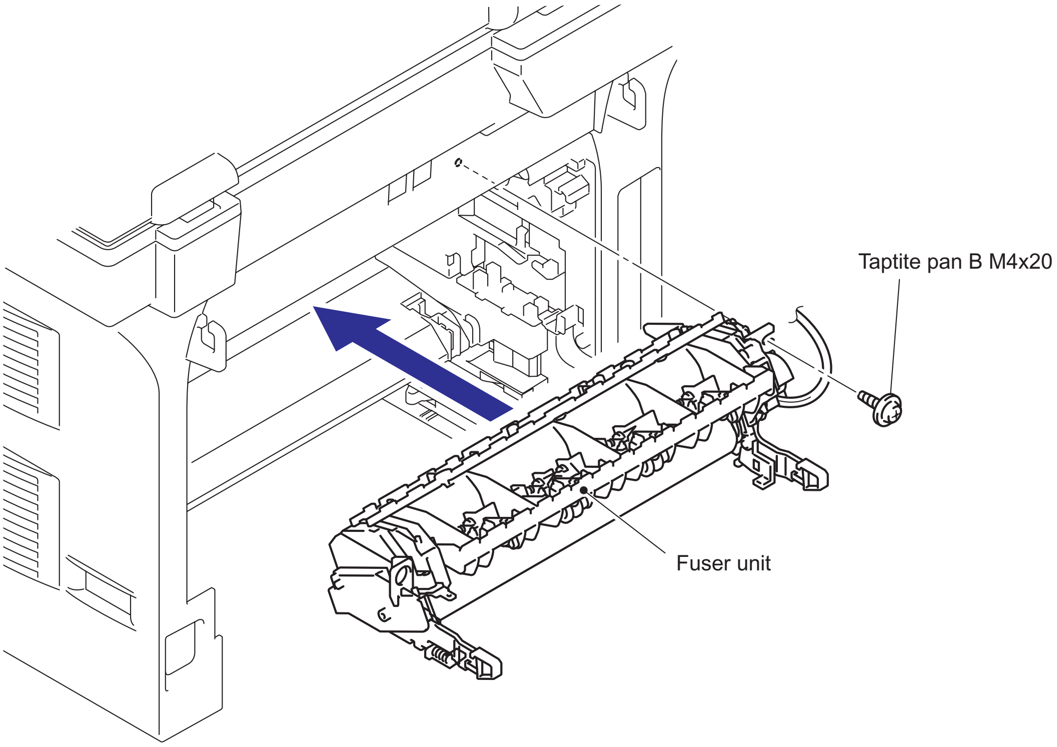


Fig. 4-37

(23) Connect the connectors of the Thermistor ASSY M and Thermistor ASSY S onto the Relay rear PCB ASSY.

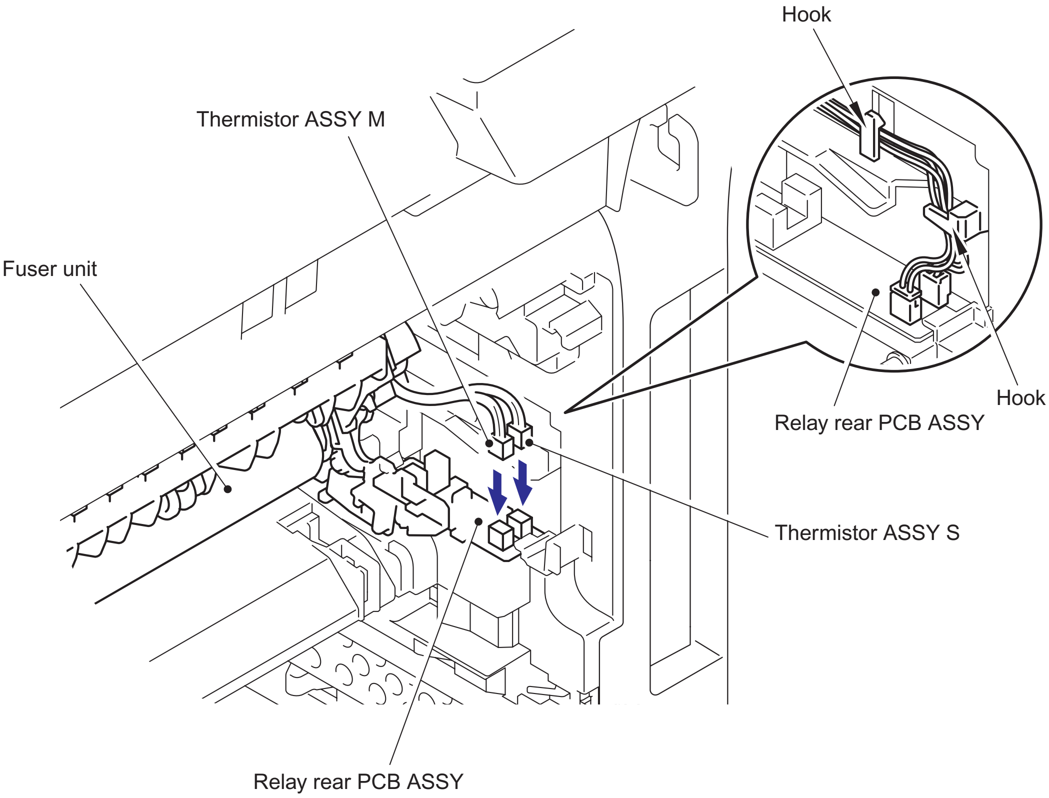


Fig. 4-38

(24) Install the FU harness cover 2.

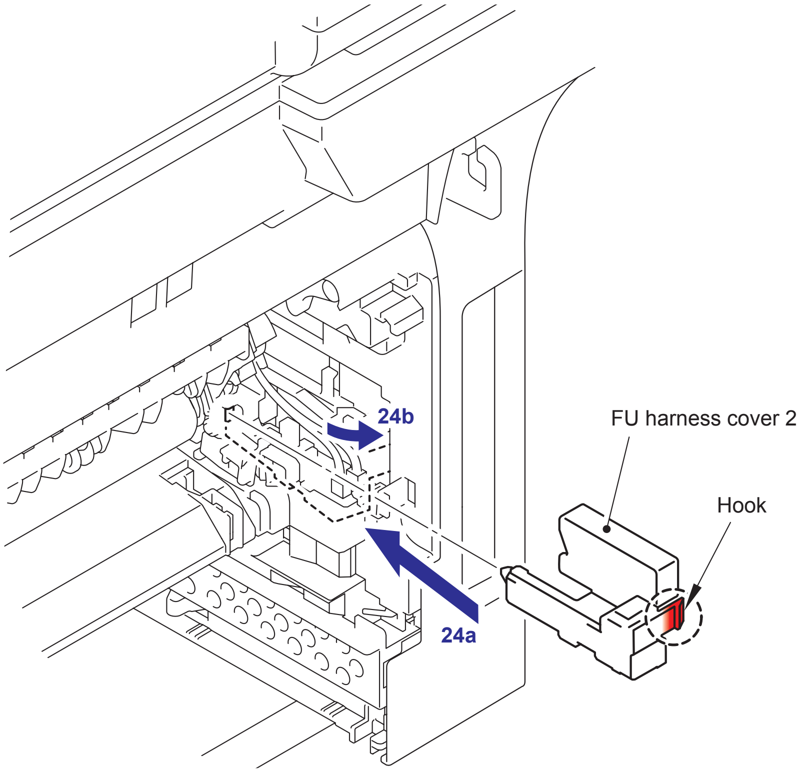


Fig. 4-39

(25) Install the connector of the Heater Terminal to the connector to the Fuser unit.

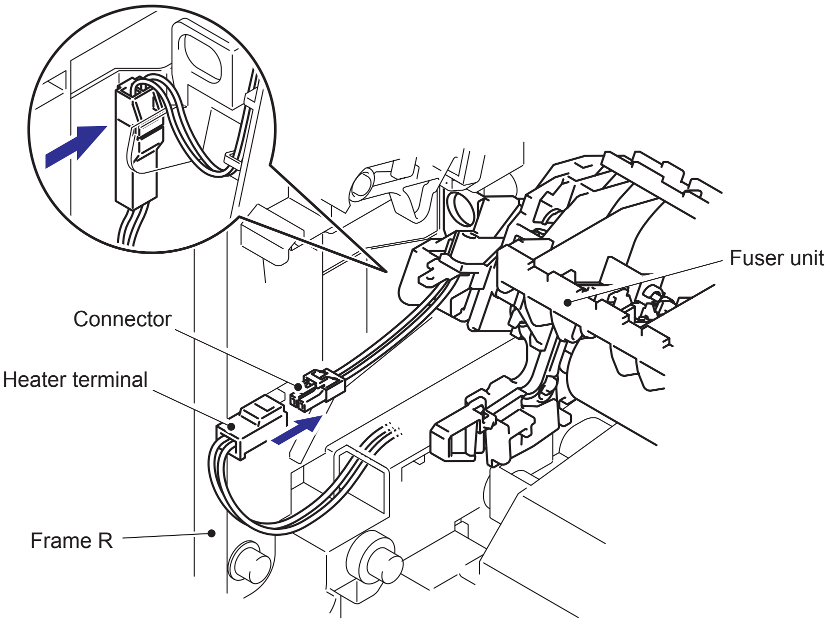


Fig. 4-40

(26) Secure the FU harness cover 1 with the pan B M4x20 Taptite screw.

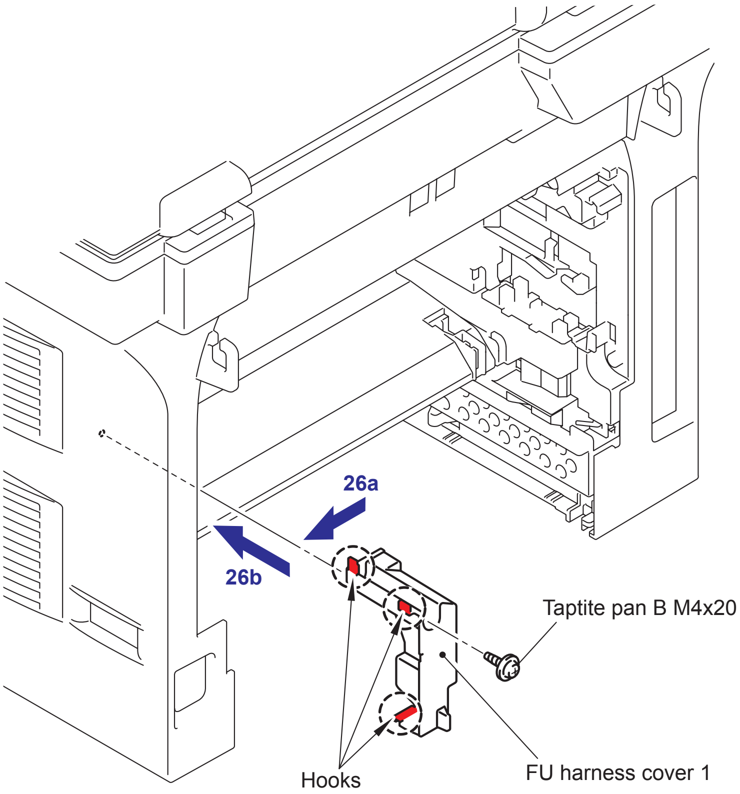


Fig. 4-41

Note :

- Do not sandwich the harness of the heater terminal by the FU harness cover 1.

(27) Catch the Arm of the Rear chute ASSY onto the Pin of the machine body and install the Rear chute ASSY.

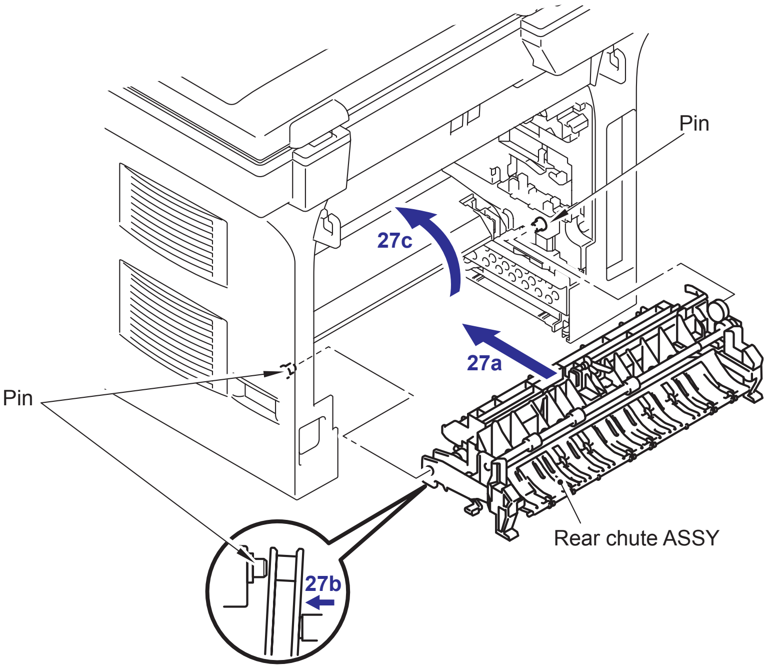


Fig. 4-42

(28) Catch the Pins of the Outer chute ASSY onto the Back cover.

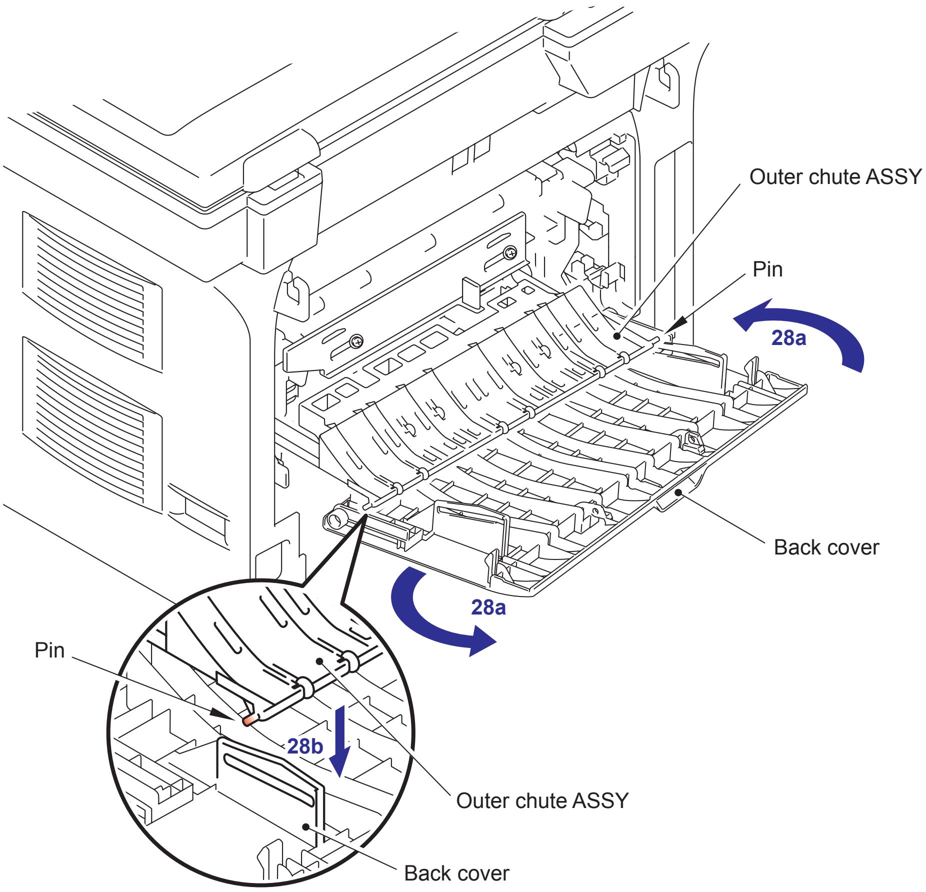


Fig. 4-43

(29) Catch the Arm of the Back cover onto the Pin of the machine body and install the Back cover, and close the Back cover.

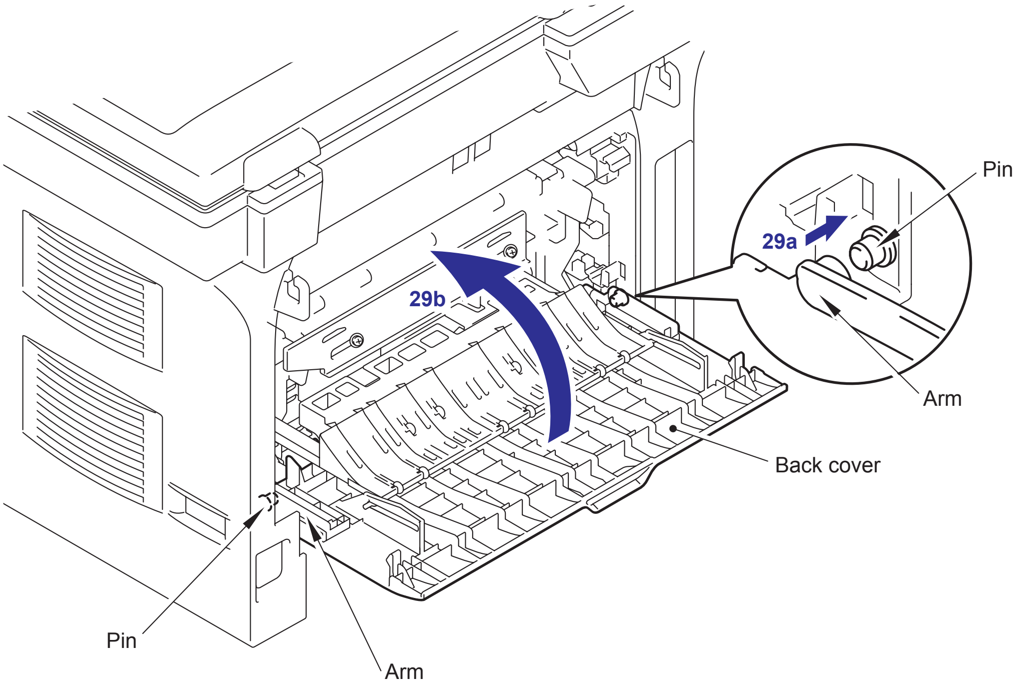


Fig. 4-44

Set the following parts after assembling.

- Set the Duplex feed ASSY.
- Install the Drum/toner ASSY into the machine.
- Set the Paper tray to the machine.
- Reset the count of the Fuser unit and Laser unit after part replacement.
  (Refer to "5.1 Resetting the Periodical Maintenance Parts Life" in Chapter6.)

1.2.2 Paper feeding kit for tray 1, 2

< Uninstalling Procedure >

Check that the following before entering the procedures.

- Make sure that the AC cord is disconnected from the machine.
- Make sure that the Paper tray is removed from the machine.
- Make sure that the Drum/toner ASSY is removed.
- Make sure that the Duplex feed ASSY is removed.

(1) Pull up the back side of the Separation pad ASSY.

(2) Push the Hooks provided on both sides of the Separation pad ASSY inwards.

(3) Pull up the Separation pad ASSY.

(4) Remove the Separation pad spring.

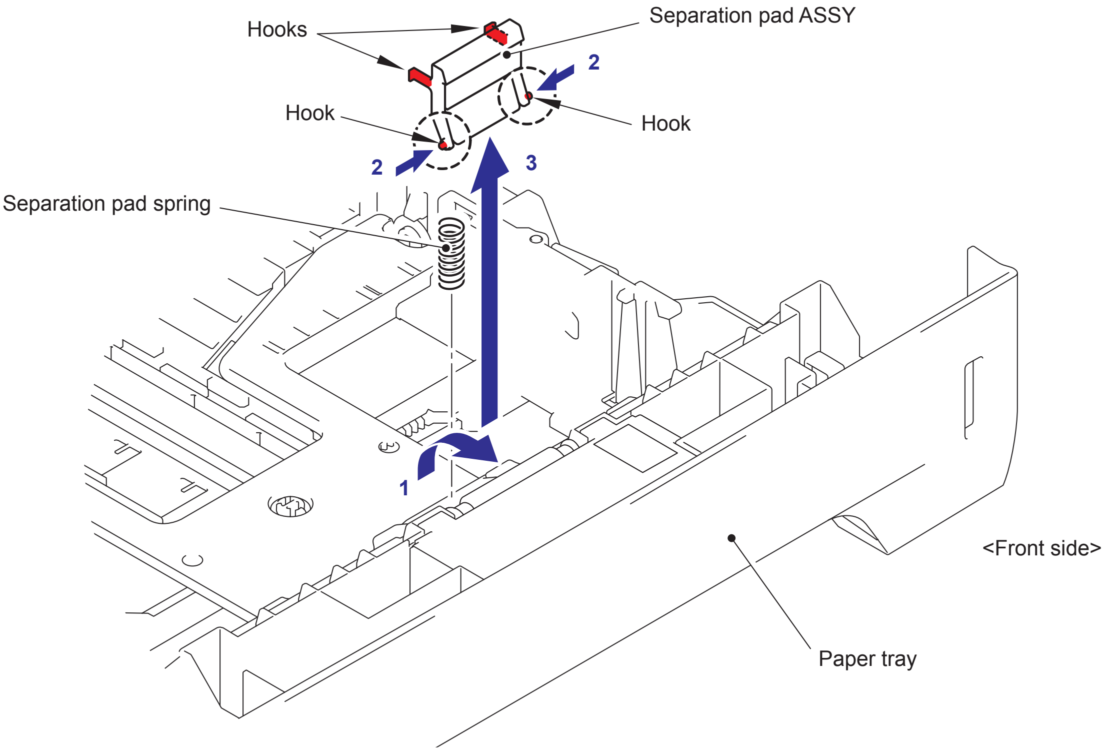


Fig. 4-45

(5) Turn the machine upside down.

Note :

- Pull out and put into the paper tray so that the Roller holder ASSY is lowered.
- If the Roller holder ASSY is remained up, it cannot be removed.

(6) Push the Lift arm to the direction of the arrow 6a and pull out the pin of the Roller holder ASSY. Then, turn the Roller holder ASSY to the direction of the arrow 6b.

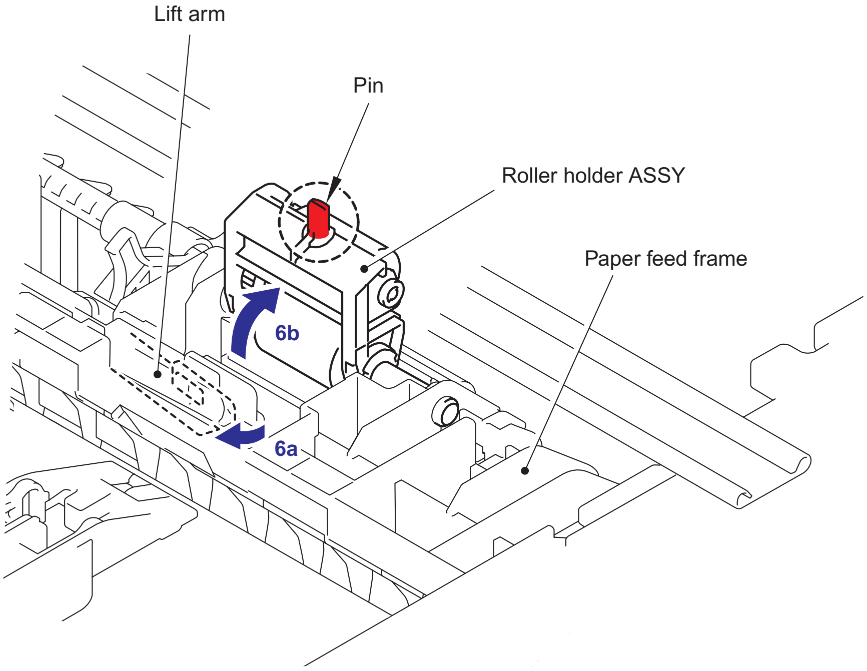


Fig. 4-46

(7) Slide the Roller holder ASSY to the direction of the arrow 7a. Then, lift up the gear side of the Roller holder ASSY to the direction of the arrow 7b and pull it out to the direction of the arrow 7c to remove.

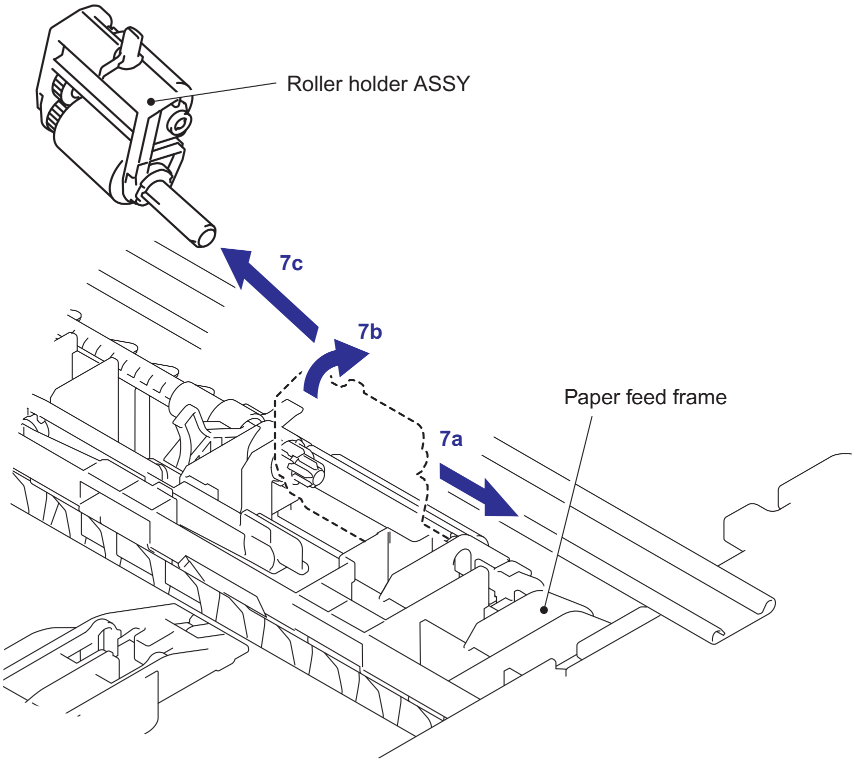


Fig. 4-47

< Installing Procedure >

(1) Install the Roller holder ASSY.

Note :

- When assembling the roller holder ASSY, align the section "A" on the shaft of the roller holder ASSY with the hole on the paper feed frame.

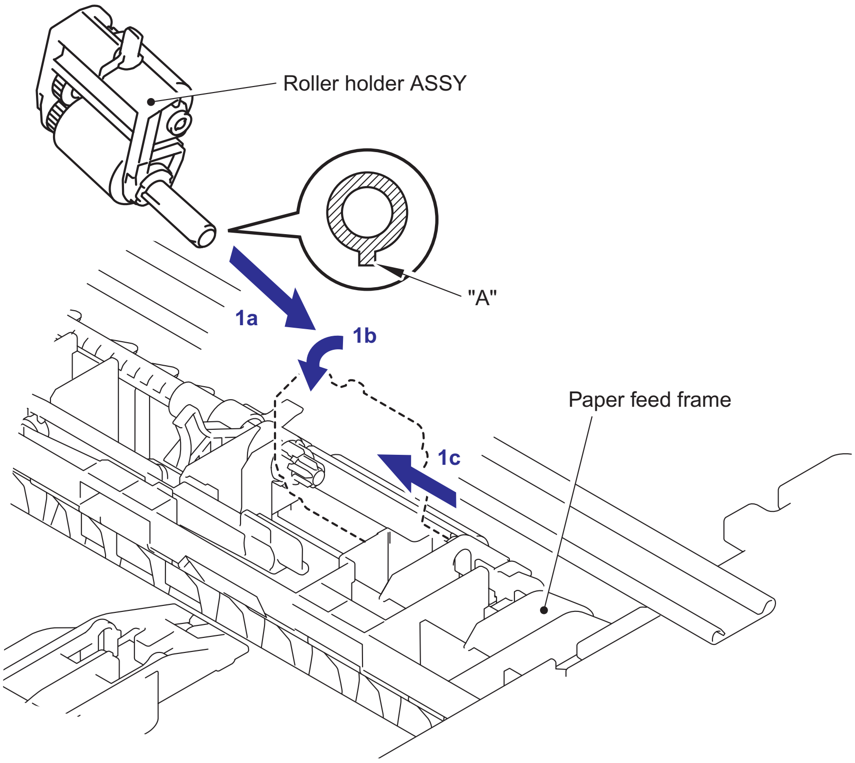


Fig. 4-48

(2) Assemble the Lift arm onto the Pin of the Roller holder ASSY.

(3) Place the machine on its base.

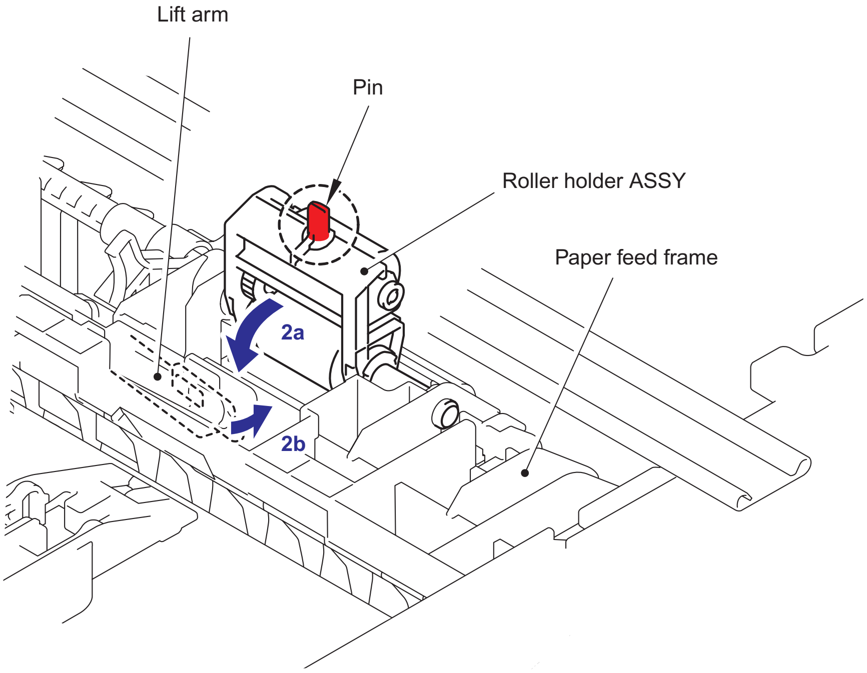


Fig. 4-49

(4) Install the Duplex feed ASSY, and install the Drum/toner ASSY.

(5) Set the Separation pad spring.

(6) Put the Hooks of the Separation pad ASSY into the Paper tray, and turn the Separation pad ASSY to the direction of the arrow 6c to catch the Hooks into the Paper tray.

Note :

- Check that the Separation pad spring is assembled correctly.

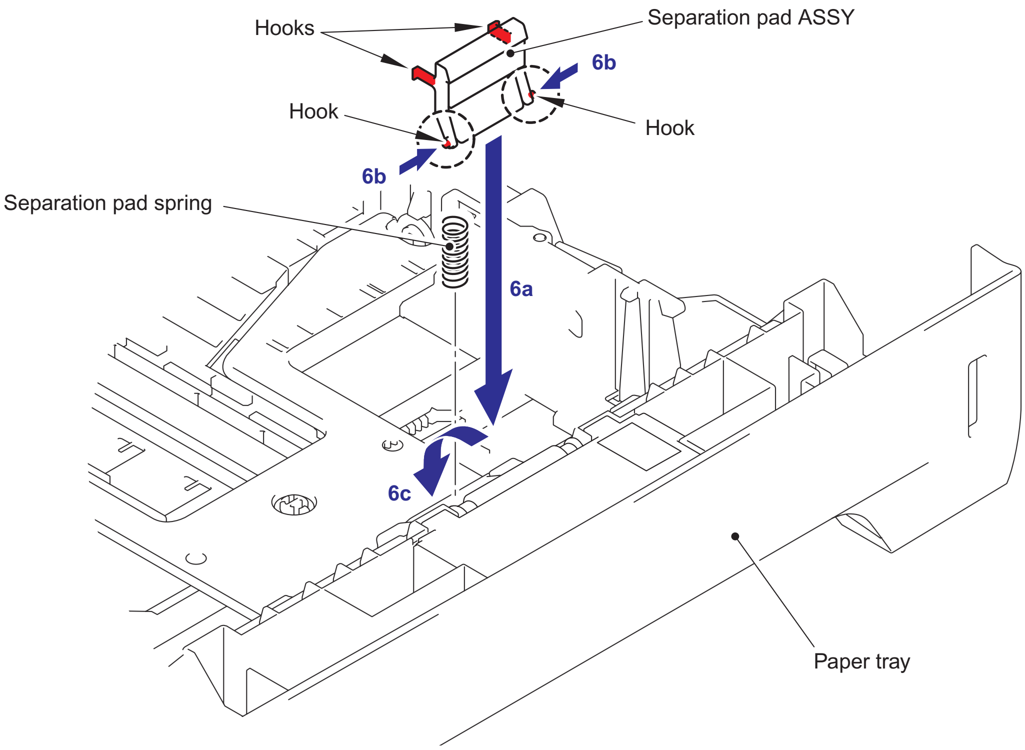


Fig. 4-50

(7) Put the Paper tray into the machine.

* Reset the count of the PF Kit after part replacement.
(Refer to "5.1 Resetting the Periodical Maintenance Parts Life" in Chapter6.)

eed frar

(2) Remove the Holder bearing MP.

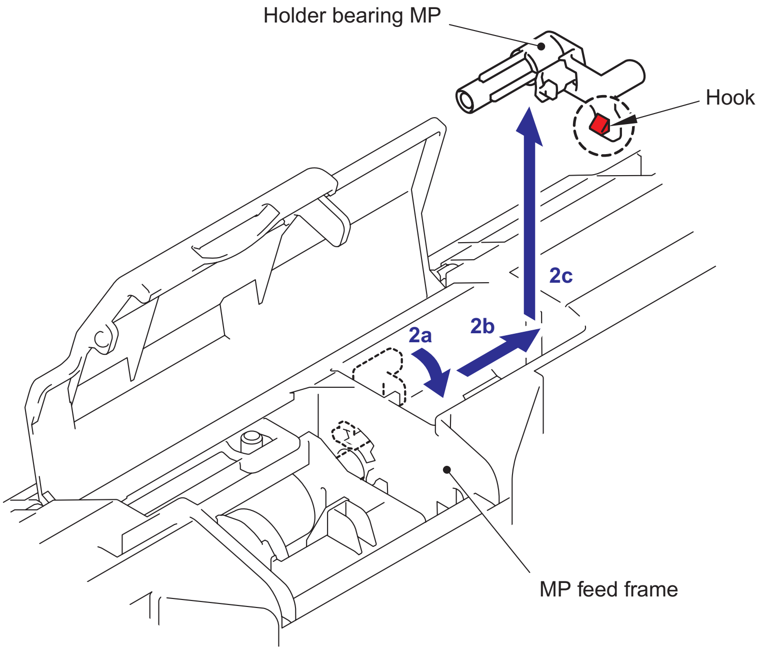


Fig. 4-52

(3) Lift up the Lift arm MP to release it from the Pin of the MP roller holder ASSY.

(4) Slide the MP roller holder ASSY to the direction of the arrow 4a and put it up to remove.

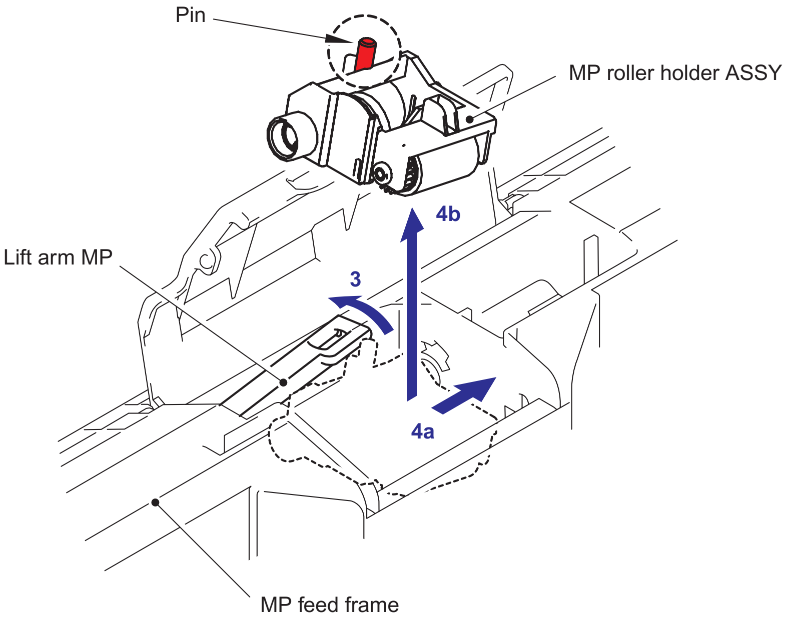


Fig. 4-53

(5) Turn the back side of the Separation pad ASSY MP to the direction of the arrow 5a and put it up to remove.

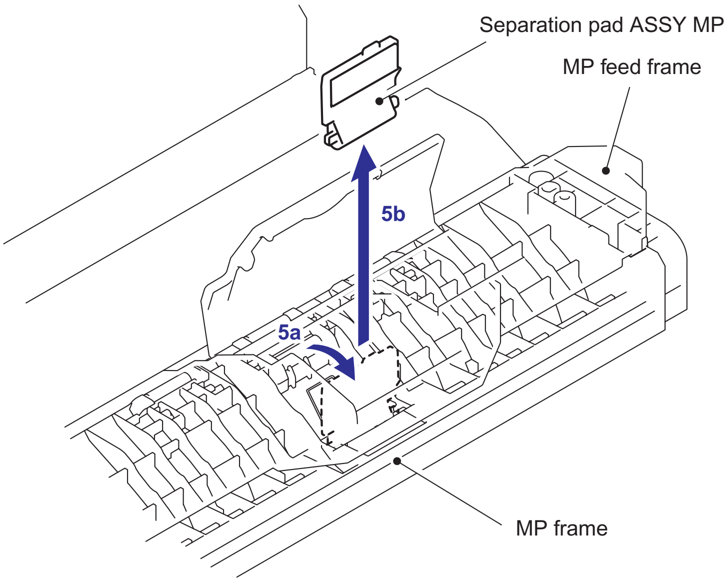


Fig. 4-54

< Installing Procedure >

(1) Put the Hook of the Separation pad ASSY MP into the MP feed frame and pull down the Separation pad ASSY MP to the direction of the arrow 1b until it is locked.

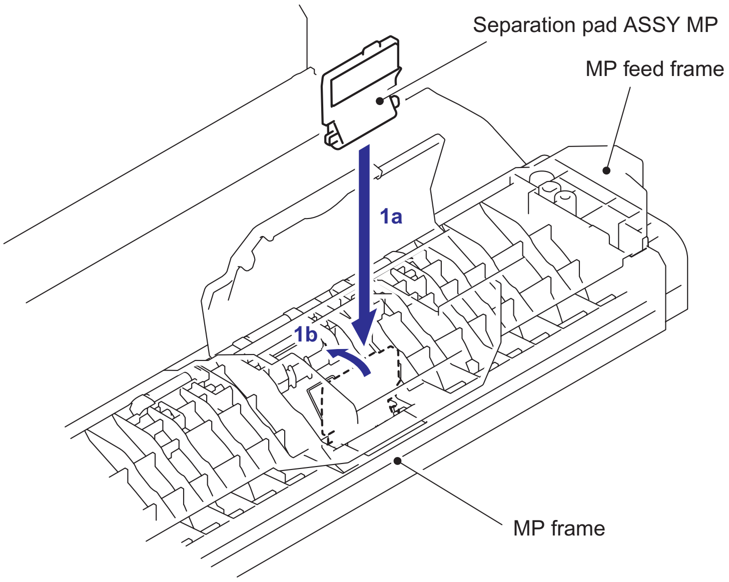


Fig. 4-55

(2) Lift up the Lift arm MP and put the MP roller holder ASSY into the MP feed frame. Put the Pin of the MP roller holder ASSY into the hole of the Lift arm MP.

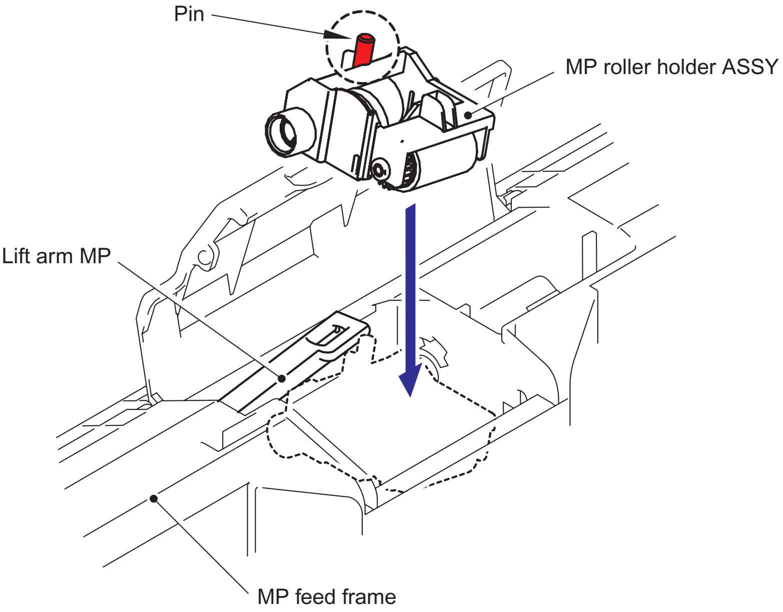


Fig. 4-56

(3) Put the Holder bearing MP into the MP feed frame and turn the Holder bearing MP to the direction of the arrow 3c to lock.

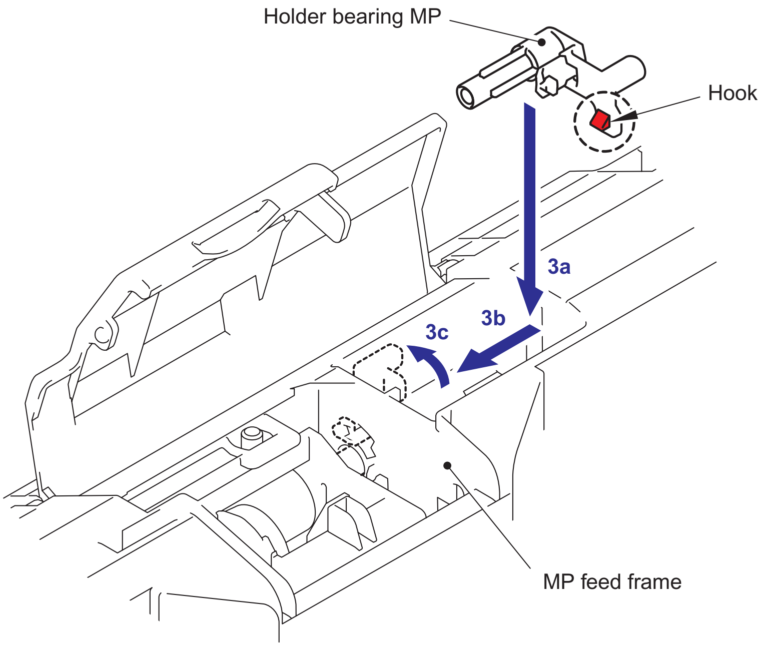


Fig. 4-57

(4) Close the MP feed frame cover.

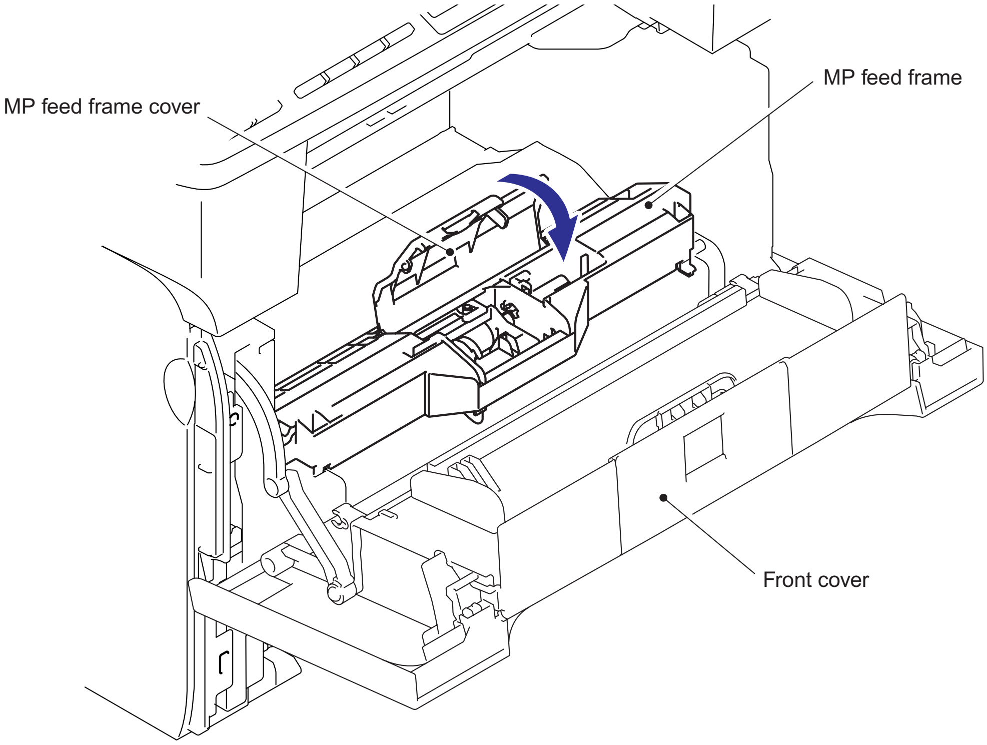


Fig. 4-58

(5) Install the Drum/toner ASSY into the machine.

(6) Close the Front cover.

* Reset the count of the PF Kit MP after part replacement.
(Refer to "5.1 Resetting the Periodical Maintenance Parts Life" in Chapter6.)

CHAPTER 5

DISASSEMBLY/REASSEMBLY

CHAPTER 5 DISASSEMBLY/REASSEMBLY

This chapter details procedures for disassembling and reassembling the machine together with related notes. The disassembly order flow provided enables you to see at a glance the quickest way to get to component(s) involved.

At the start of a disassembly job, you check the disassembly order flow that guides you through a shortcut to the object components.

This chapter also covers screw tightening torques and lubrication points to which the specified lubricants should be applied during reassembly jobs.

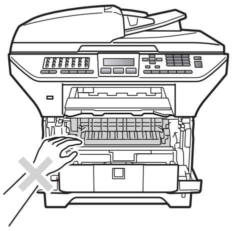
CONTENTS

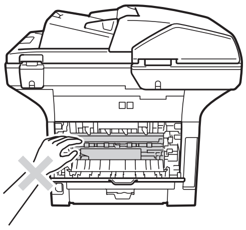
1. SAFETY PRECAUTIONS

To avoid creating secondary problems by mishandling, follow the warnings and precautions below during maintenance work.

WARNING

- Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the machine.
- When opening the front cover or back cover to access any parts inside the machine, never touch the shaded parts shown in the following figures.
- DO NOT use flammable substances such as alcohol, benzine, thinner or any type of spray to clean the inside or outside of the machine. Doing this may cause a fire or electrical shock.





- Be careful not to lose screws, washers, or other parts removed.
- Be sure to apply grease to the gears and applicable positions specified in this chapter.
- When using soldering irons or other heat-generating tools, take care not to accidentally damage parts such as wires, PCBs and covers.
- Static electricity charged in your body may damage electronic parts. When transporting PCBs, be sure to wrap them in conductive sheets.
- When replacing the PCB and all the other related parts, put on a grounding wrist band and perform the job on a static mat. Also take care not to touch the conductor sections on the flat cables or on the wire harness.
- When connecting or disconnecting cable connectors, hold the connector body, not the cables. If the connector has a lock, release the connector lock first to release it.
- After a repair, check not only the repaired portion but also all connectors. Also check that other related portions are functioning properly before operational checks.
- After disconnecting flat cables, check that each cable is not damaged at its end or short-circuited.
- When connecting flat cables, do not insert them at an angle. After insertion, check that the cables are not at an angle.

2. TRANSFERRING RECEIVED FAX DATA

When the machine at the user site requires to be repaired, unplugging the power cord from the wall socket for sending the machine for repair will lose received FAX data if unprinted and left in the machine.

To prevent such data loss, the service personnel should instruct end users (e.g., by telephone) to transfer data to another facsimile machine using the procedure below.

Note:

- The number of files that can be transferred at a time is 99. To transfer 100 files or more, carry out the following procedure more than one time.

■ Operating Procedure

(1) Connect the machine to be repaired (that has received data in the memory) to the telephone line.

(2) Switch the machine on.

(3) Press the [**Menu**], [**Start**], [**Menu**] and [▲] buttons in this order.

The "MAINTENANCE 06" appears on the LCD.

(4) Call up the "MAINTENANCE 53" using the [▲] and [▼] buttons and press the [**OK**] button.

The "FAX TRANSFER" appears on the LCD.

(5) To check the number of received files, press the [**1**] key.

The "1.NO. OF JOBS" appears on the LCD.

Press the [**OK**] button, and the number of received files appears, just as "NO. OF. JOBS: 10."

Press the [**Stop/Exit**] button, and the “FAX TRANSFER” appears on the LCD.

(6) To transfer the activity report only, press the [**2**] key.

The "2.ACTIVITY" appears.

To transfer received files together with the activity report, press the [**3**] key.

The "3.DOCUMENTS" appears. Note that if there is no received file, the "NO DOCUMENTS" appears.

To transfer the communication list for the latest communication, press the [**4**] key.

The "4.COM.LIST (NEW)" appears.

To transfer the communication list for last three errors, press the [**5**] key.

The "5.COM.LIST (ERR3)" appears.

(7) With the "2.ACTIVITY," "3.DOCUMENTS," "4.COM.LIST (NEW)," or "5.COM.LIST (ERR3)" being displayed, press the [**OK**] button.

The "ENTER NO. &SET" appears.

(8) Enter the telephone number of the receiver machine and press the [**OK**] button again.

Note:

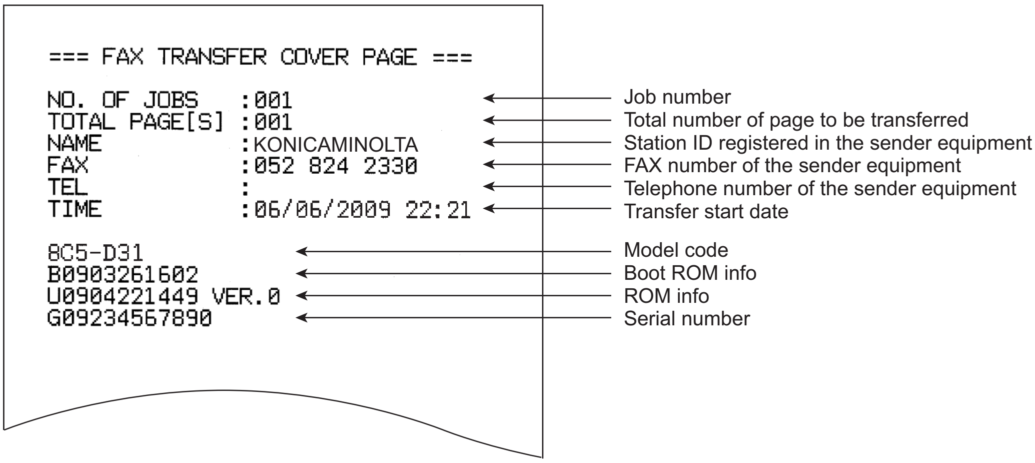
- Be sure to type the telephone number with the numerical keys. No one-touch dialing is allowed in this procedure.

The machine displays the "ACCEPTED" for approx. two seconds and starts dialing to transfer data.

The machine automatically returns to the stand by state.

No station ID will be attached. A cover page and end page as shown on the next page will be automatically attached, instead.

Cover page sample



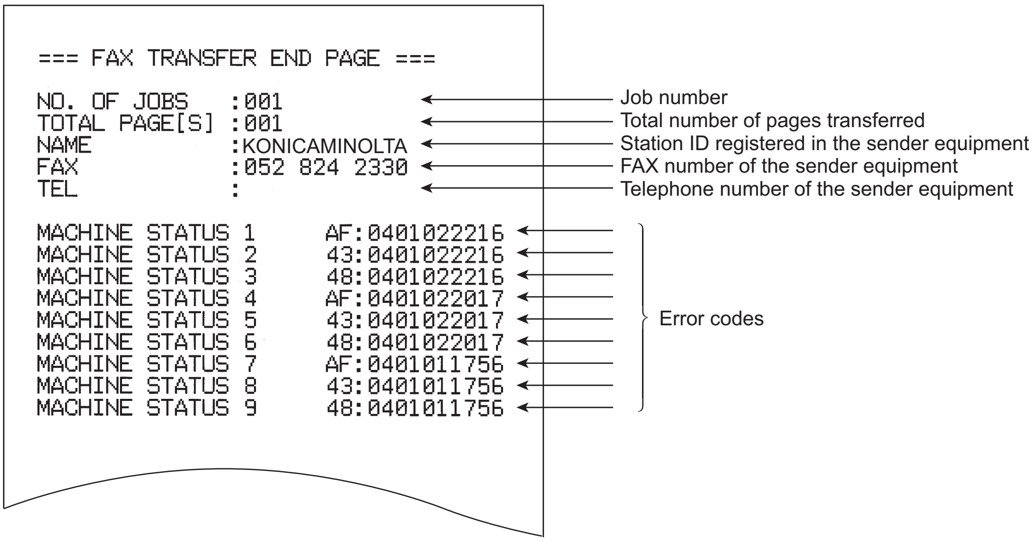
```
=== FAX TRANSFER COVER PAGE ===

NO. OF JOBS   :001
TOTAL PAGE[S] :001
NAME          :KONICAMINOLTA
FAX           :052 824 2330
TEL           :
TIME          :06/06/2009 22:21

8C5-D31
B0903261602
U0904221449 VER.0
G09234567890
```

Job number
Total number of page to be transferred
Station ID registered in the sender equipment
FAX number of the sender equipment
Telephone number of the sender equipment
Transfer start date
Model code
Boot ROM info
ROM info
Serial number

End page sample



```
=== FAX TRANSFER END PAGE ===

NO. OF JOBS   :001
TOTAL PAGE[S] :001
NAME          :KONICAMINOLTA
FAX           :052 824 2330
TEL           :

MACHINE STATUS 1      AF:0401022216
MACHINE STATUS 2      43:0401022216
MACHINE STATUS 3      48:0401022216
MACHINE STATUS 4      AF:0401022017
MACHINE STATUS 5      43:0401022017
MACHINE STATUS 6      48:0401022017
MACHINE STATUS 7      AF:0401011756
MACHINE STATUS 8      43:0401011756
MACHINE STATUS 9      48:0401011756
```

Job number
Total number of pages transferred
Station ID registered in the sender equipment
FAX number of the sender equipment
Telephone number of the sender equipment
Error codes

3. SCREW TORQUE LIST

Location of screw	Screw type	Q'ty	Tightening torque N m (kgf · cm)
FU harness cover 1	Taptite pan B M4x20	1	0.7±0.1 (7±1)
Fuser unit	Taptite pan B M4x20	1	0.7±0.1 (7±1)
Process cover stopper	Taptite cup B M4x10	1	0.5±0.1 (5±1)
Emblem cover	Taptite bind B M3x10	2	0.5±0.1 (5±1)
Side cover L	Taptite bind B M4x12	2	0.7±0.1 (7±1)
Shield cover ASSY (FG harness)	Taptite cup S M3x6 SR	4	0.75±0.1 (7.5±1)
ADF FG harness	Taptite cup S M3x6	1	0.7±0.05 (7±0.5)
Hinge base R	Taptite cup B M3x10	2	0.8±0.1 (8±1)
Hinge ASSY L	Taptite cup B M3x10	2	0.5±0.1 (5±1)
	Taptite cup S M3x12	1	0.7±0.1 (7±1)
ADF side cover F	Taptite cup B M3x10	1	0.5±0.1 (5±1)
	Taptite cup S M3x8	1	0.5±0.1 (5±1)
ADF side cover R	Taptite cup B M3x10	1	0.5±0.1 (5±1)
	Taptite cup S M3x8	1	0.7±0.05 (7±0.5)
ADF chute ASSY	Taptite cup B M3x10	5	0.5±0.1 (5±1)
SX Chute	Taptite cup S M3x8	2	0.5±0.1 (5±1)
Exit chute cover ASSY	Taptite cup B M3x10	4	0.5±0.1 (5±1)
ADF motor	Screw, pan (S/P washer) M3X6	2	0.7±0.1 (7±1)
Motor frame ASSY	Taptite cup S M3x8	3	0.7±0.05 (7±0.5)
Switch back solenoid ASSY	Taptite cup S M3x8	1	0.7±0.05 (7±0.5)
PF solenoid ASSY	Taptite cup S M3x8	1	0.7±0.05 (7±0.5)
ADF relay PCB	Taptite cup S M3x8	1	0.7±0.05 (7±0.5)
Paper feed plate	Taptite cup S M3x8	2	0.7±0.05 (7±0.5)
Paper feed chute ASSY	Taptite cup S M3x8	2	0.7±0.05 (7±0.5)
Separation rubber	Taptite B M3x6	1	0.4±0.05 (4±0.5)
Drive frame sub ASSY DX	Taptite cup B M3x10	3	0.5±0.1 (5±1)
Front frame	Taptite cup B M3x10	3	0.5±0.1 (5±1)
Upper main chute ASSY	Taptite cup B M3x10	4	0.5±0.1 (5±1)
Rear sensor cover	Taptite cup B M3x10	2	0.5±0.1 (5±1)
LF spring	Taptite cup B M3x10	2	0.5±0.1 (5±1)
Document scanner unit	Taptite cup B M4x20	2	0.8±0.1 (8±1)
Scanner top cover ASSY	Taptite cup B M4x12	6	0.8±0.1 (8±1)
Lock lever B	Taptite B M3x6	1	0.4±0.05 (4±0.5)
Lock lever A	Taptite B M3x6	2	0.4±0.05 (4±0.5)
FB FG harness	Taptite cup S M3x6	1	0.8±0.1 (8±1)
Drive plate ASSY	Taptite B M3x8	4	0.5±0.1 (5±1)

Location of screw	Screw type	Q'ty	Tightening torque N m (kgf · cm)
Scanner motor FB	Screw, pan (S/P washer) M3X6	2	0.7±0.1 (7±1)
Pulley ASSY	Taptite B M3x6	2	0.4±0.05 (4±0.5)
Panel unit ASSY	Taptite cup B M4x12	4	0.7±0.1 (7±1)
Panel cover generic	Taptite cup B M3x10	4	0.5±0.1 (5±1)
NCU FG harness ASSY	Screw, pan (S/P washer) M3.5X7.5 SR	2	0.4±0.05 (4±0.5)
NCU shield plate	Taptite bind B M4x12	2	0.8±0.1 (8±1)
NCU shield cover	Screw, pan (S/P washer) M3.5X6	1	0.4±0.05 (4±0.5)
NCU PCB ASSY	Taptite cup S M3x6	2	0.5±0.05 (5±0.5)
Speaker hold spring	Taptite bind B M4x12	1	0.8±0.1 (8±1)
Driver PCB shield	Taptite cup B M3x8	2	0.4±0.05 (4±0.5)
	Taptite cup S M3x6 SR	1	0.75±0.1 (7.5±1)
USB HOST FG harness ASSY	Taptite bind B M4x12	1	0.8±0.1 (8±1)
USB PCB holder	Taptite bind B M4x12	1	0.8±0.1 (8±1)
USB HOST PCB	Taptite cup S M3x6 SR	1	0.9±0.1 (9±1)
Side cover R	Taptite bind B M4x12	2	0.7±0.1 (7±1)
Joint cover ASSY	Taptite bind B M4x12	4	0.8±0.1 (8±1)
Main PCB	Taptite cup S M3x6 SR	4	0.75±0.1 (7.5±1)
	Screw pan M3x6	2	0.5±0.1 (5±1)
Gear plate calking ASSY	Taptite bind B M4x12	8	0.9±0.05 (9±0.5)
	Taptite cup S M3x6 SR	1	0.7±0.1 (7±1)
Main motor ASSY	Taptite cup S M3x6	4	0.7±0.1 (7±1)
Plate	Taptite bind B M4x12	2	0.8±0.1 (8±1)
Main shield plate ASSY	Taptite bind B M4x12	3	0.9±0.1 (9±1)
	Taptite cup S M3x6	1	0.7±0.1 (7±1)
MP solenoid ASSY	Taptite bind B M3x10	1	0.5±0.05 (5±0.5)
Spring	Taptite cup B M3x8	1	0.4±0.1 (4±1)
Tray 1 solenoid ASSY	Taptite bind B M3x10	1	0.5±0.05 (5±0.5)
Register solenoid ASSY	Taptite bind B M3x10	1	0.5±0.05 (5±0.5)
Ejector solenoid	Taptite bind B M3x10	1	0.5±0.1 (5±1)
New toner actuator	Taptite cup B M2x6	1	0.13±0.03 (1.3±0.3)
Laser scanner unit	Taptite cup S M3x6	5	0.7±0.1 (7±1)
Base plate LV	Taptite bind B M4x12	5	0.8±0.1 (8±1)
NCU FG harness	Screw, pan (S/P washer) M3.5X7.5 SR	1	0.5±0.05 (5±0.5)
LV insulation sheet	Taptite bind B M4x12	1	0.8±0.1 (8±1)
SW holder ASSY	Taptite bind B M4x12	1	0.8±0.1 (8±1)
Safety louver	Taptite bind B M3x10	1	0.5±0.1 (5±1)

Location of screw	Screw type	Q'ty	Tightening torque N m (kgf · cm)
Base plate HV	Taptite bind B M4x12	4	0.8±0.1 (8±1)
HV insulation sheet	Taptite bind B M4x12	1	0.8±0.1 (8±1)
High-voltage PS PCB ASSY	Taptite bind B M4x12	1	0.8±0.1 (8±1)
Toner LED PCB unit ASSY	Taptite pan B M3x8	1	0.5±0.1 (5±1)
Frame L	Taptite bind B M4x12	4	0.8±0.1 (8±1)
(Under bar)	Taptite bind B M4x12	2	0.7±0.1 (7±1)
MP feed frame	Taptite bind B M3x8	2	0.5±0.1 (5±1)
MP PE sensor ASSY	Taptite bind B M3x8	1	0.5±0.1 (5±1)
Feed frame	Taptite bind B M4x12	2	0.7±0.1 (7±1)
PE EG sensor ASSY	Taptite bind B M3x8	1	0.5±0.1 (5±1)

4. LUBRICATION

The kind of the lubricating oil (Maker name)	Lubrication point	Quantity of lubrication
BG-MU (Kanto Kasei)	Dev gear 37R joint drive Main motor ASSY Drum gear 82R	2mm dia. ball BG2
EM-D110 (Dow Corning)	Separation pad ASSY	2mm dia. ball EM2

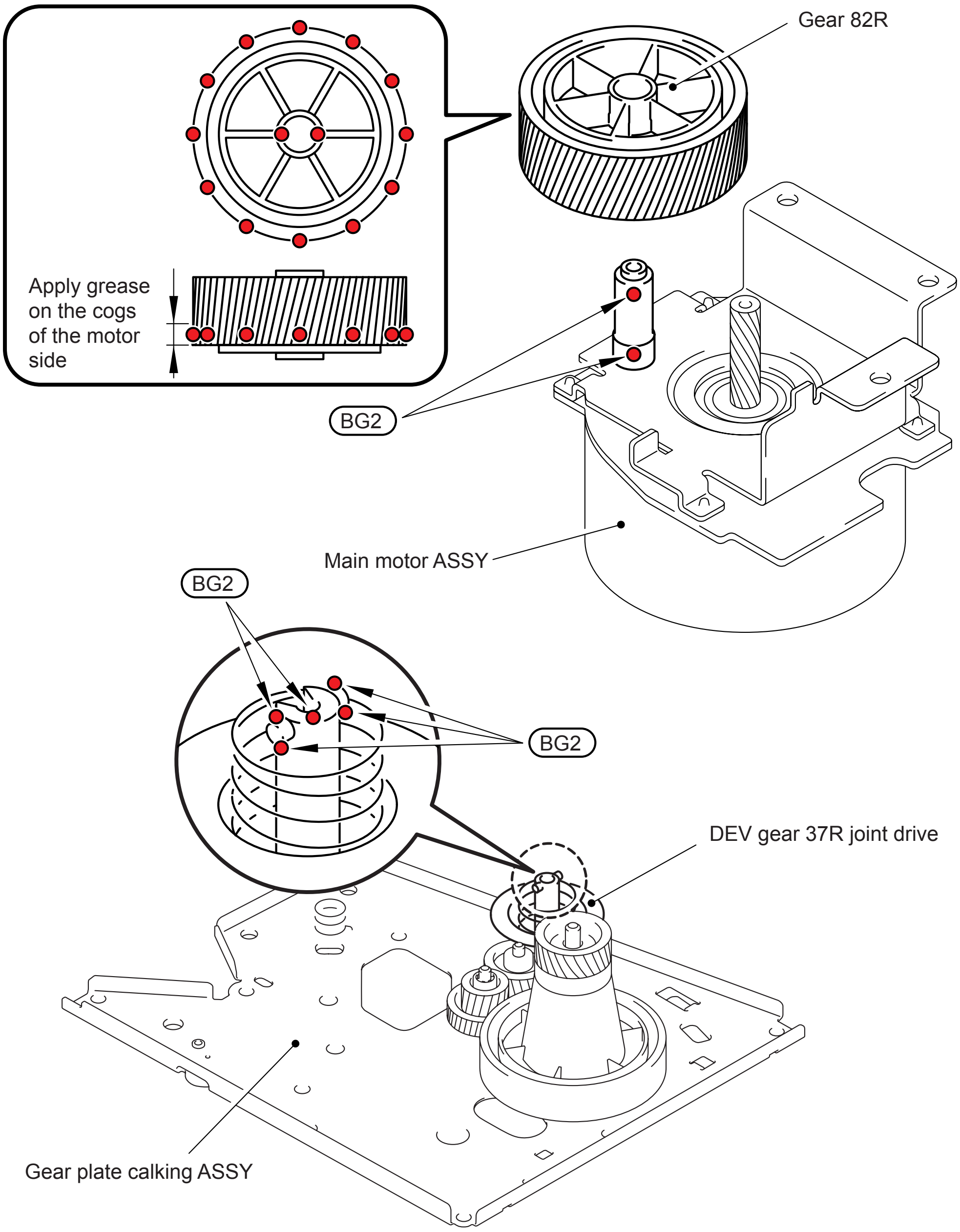


Fig. 5-1

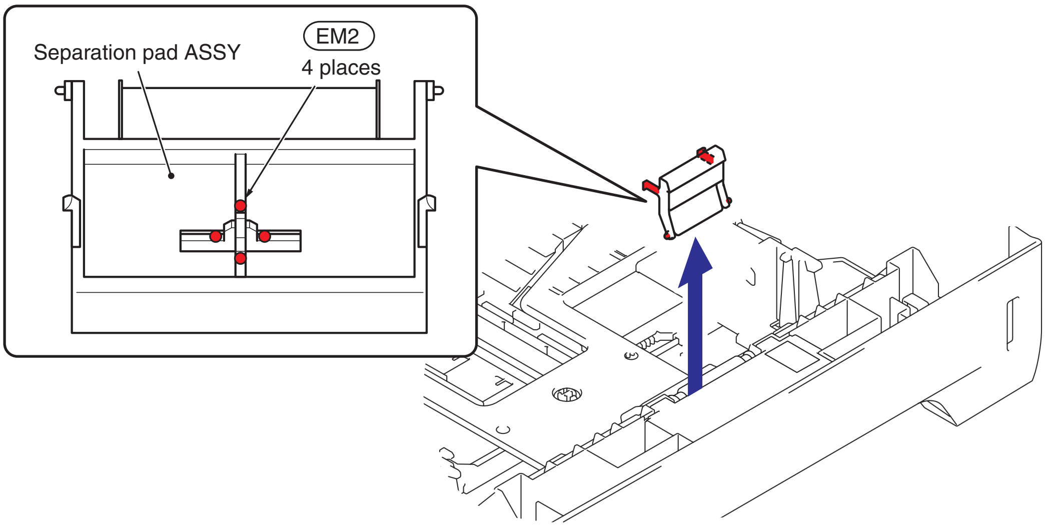
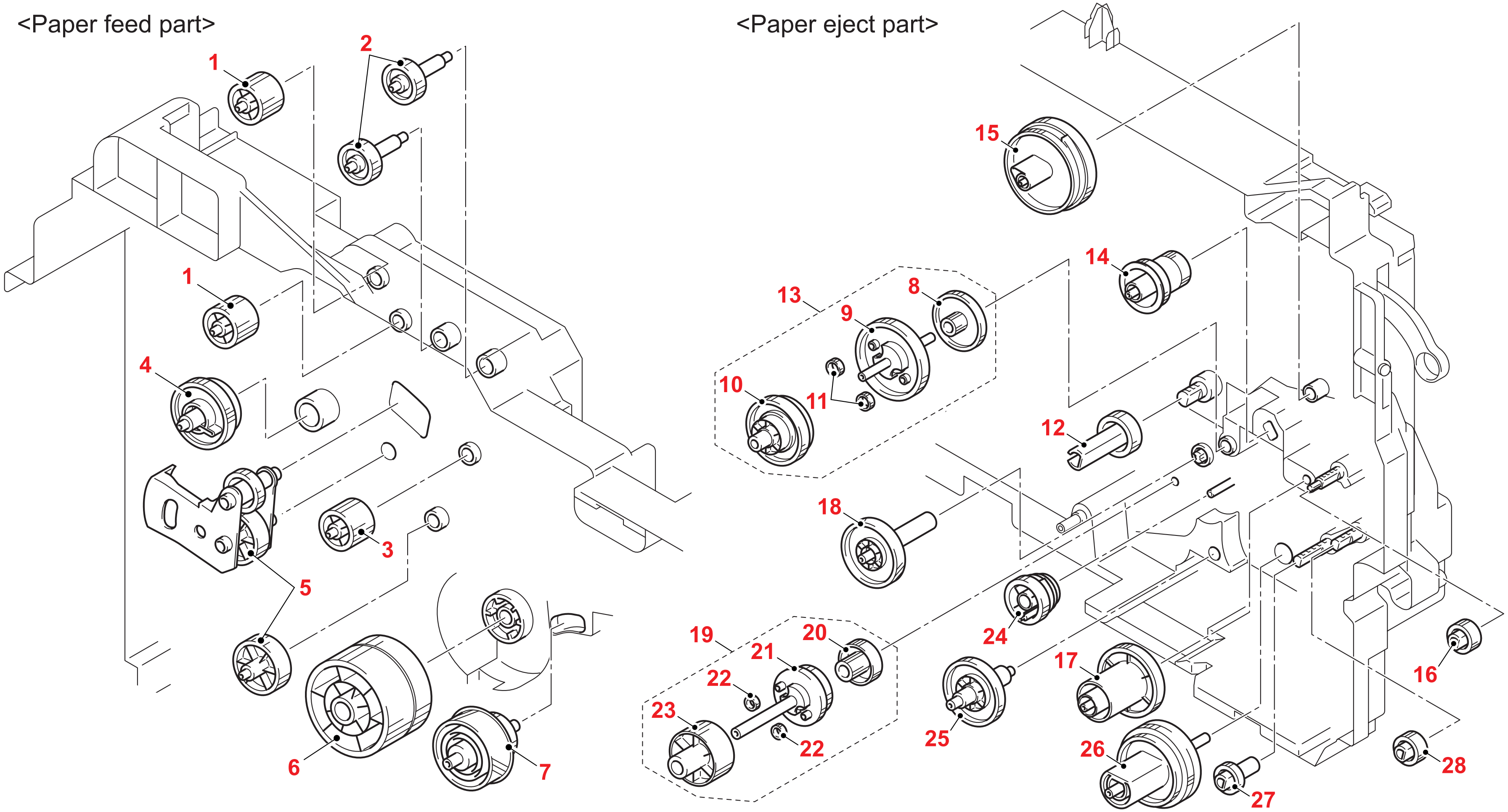


Fig. 5-2

6. GEAR LAYOUT DRAWING

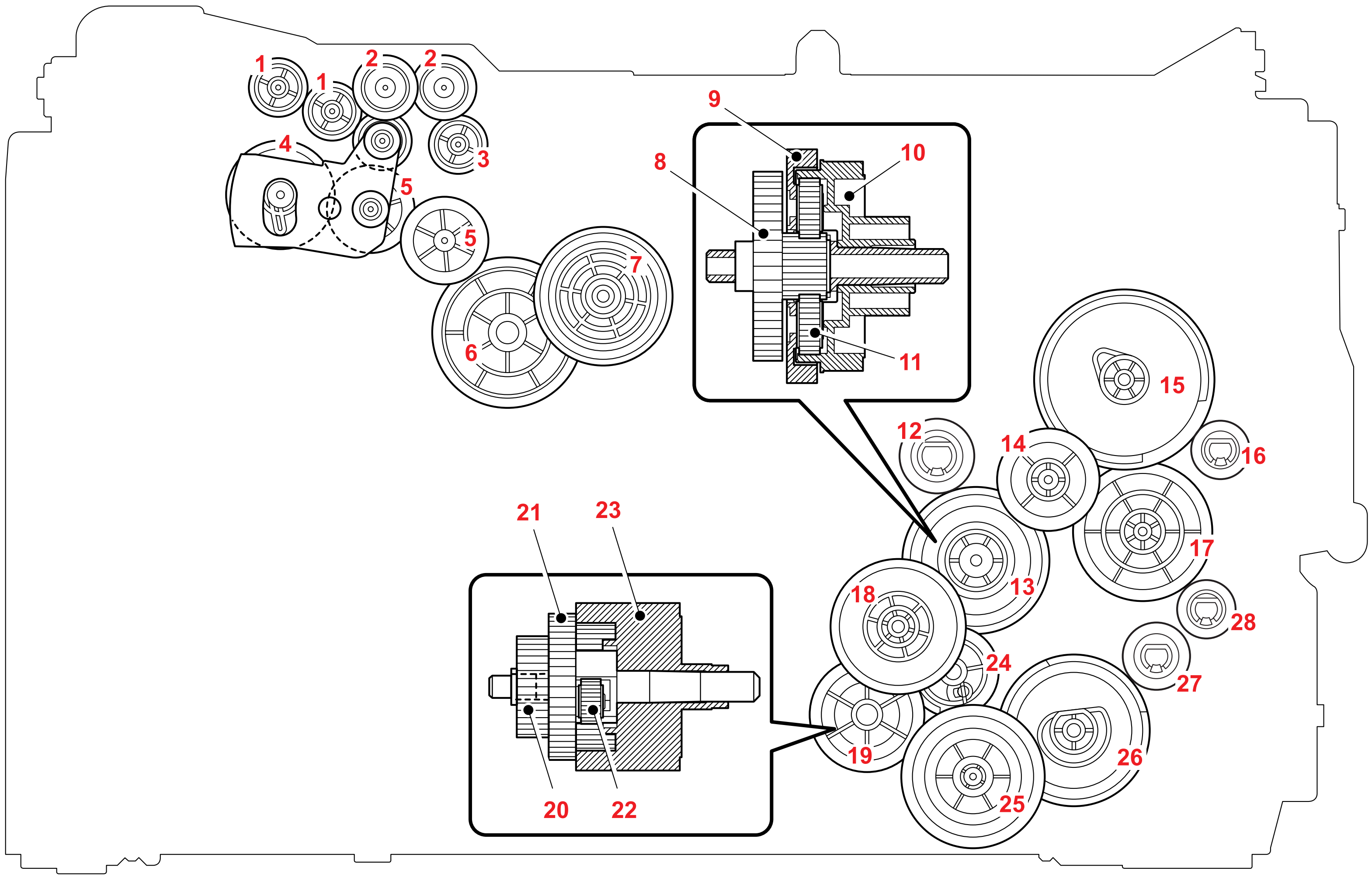
■ Development view


<Paper feed part>

<Paper eject part>

Refer to Gear name of 5-11.

■ Front view



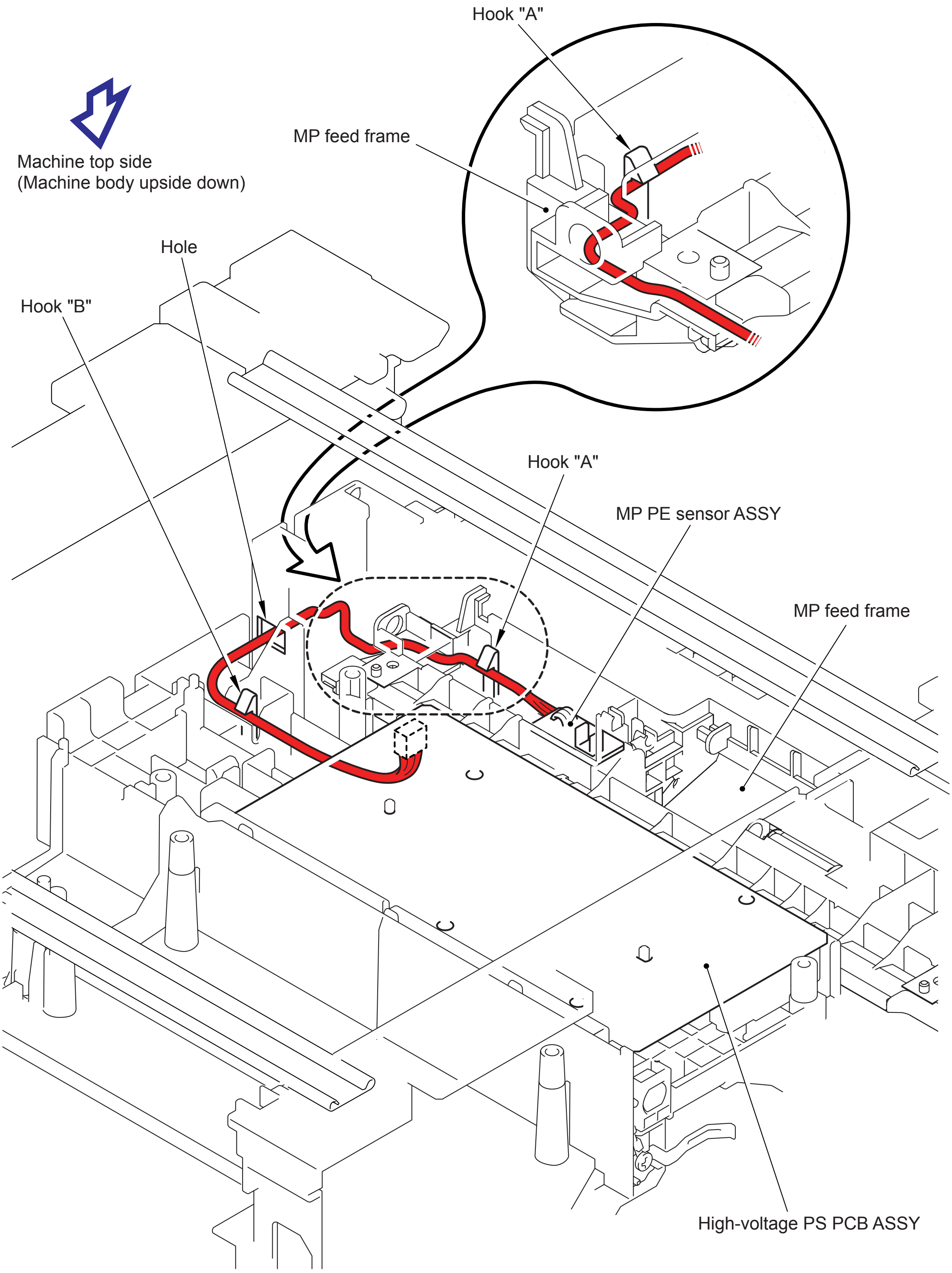
Refer to Gear name of 5-11.

■ Gear name

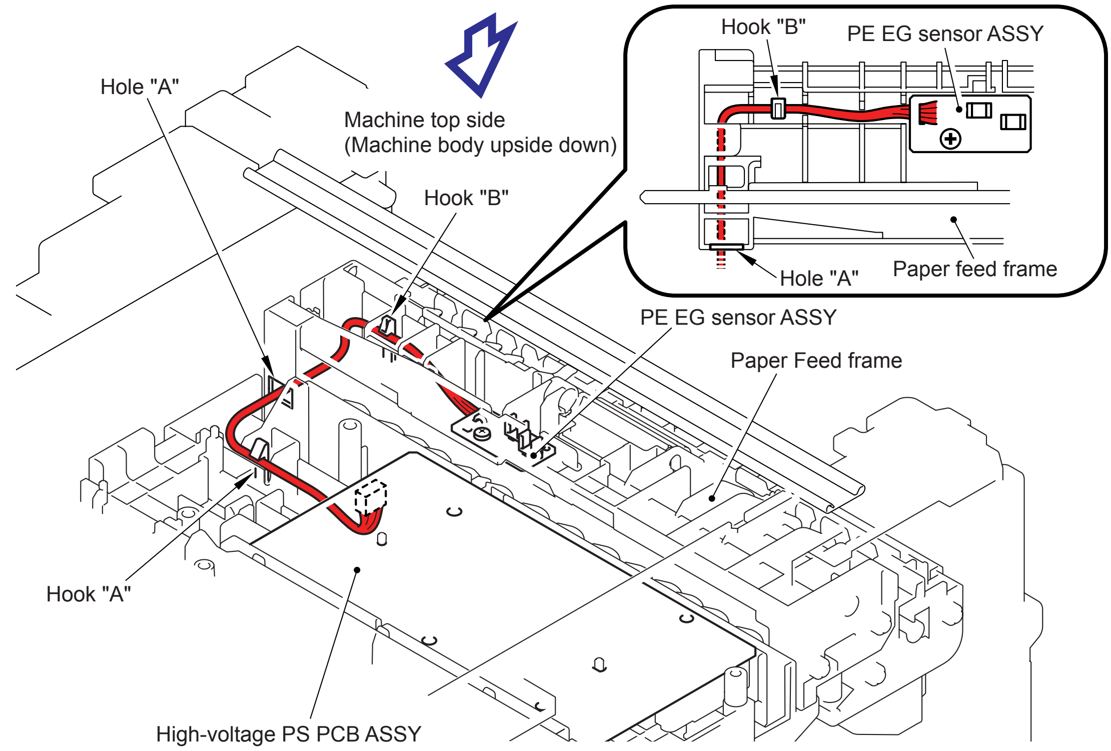
1	-	EJECTOR GEAR 16	15	-	MP GEAR 55/60 SECTOR
2	-	IDLE GEAR 16B	16	A32P PP17 ##	GEAR 17 (white)
3	-	EJECTOR GEAR 16	17	-	FEEDER GEAR 48
4	-	EJECT GEAR 28 SECTOR	18	-	DX GEAR 27/68 L
5	-	EJECTOR GEAR 22	19	-	P/P DIFFERENTIAL
6	A32P PP0U ##	FUSER GEAR 39R H/R DRIVE	20	-	P/P GEAR 17 CENTER
7	-	FUSER GEAR 17/63R PENDULUM	21	-	P/P GEAR 32CARRIER
8	-	REGISTER GEAR 21 CENTER	22	-	P/P GEAR 15 PLANETARY
9	-	REGISTER GEAR 48 CARRIER	23	-	P/P GEAR 147/37 INTERNAL
10	-	REGISTER GEAR 159/43 INTERNAL	24	-	P/P GEAR 29 CLUTCH CAM
11	-	REGISTOR GEAR 19 PLANETARY	25	-	T1 GEAR 31/47
12	-	GEAR 23	26	-	T1 GEAR 50/45 SECTOR
13	-	REGISTER DIFFERENTIAL	27	A32P PP16 ##	GEAR 20
14	-	FEEDER GEAR 21/31 PENDULUM	28	-	GEAR 17 (black)

7. HARNESS ROUTING

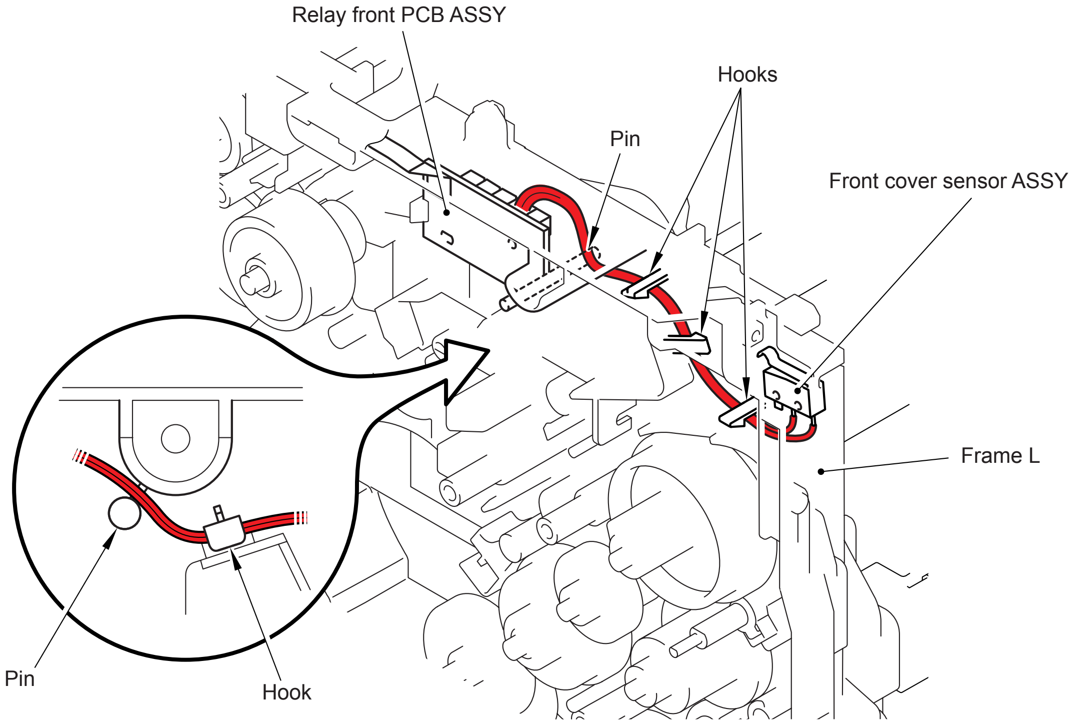
1	MP PE sensor ASSY



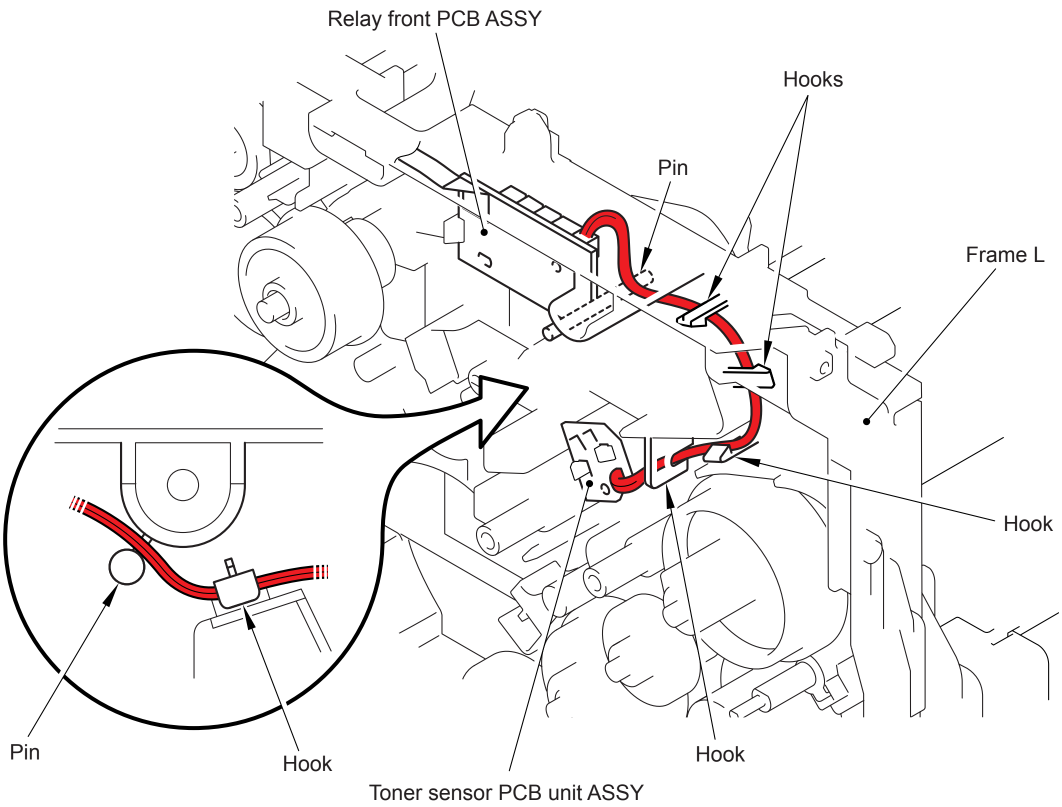
2 PE EG sensor ASSY



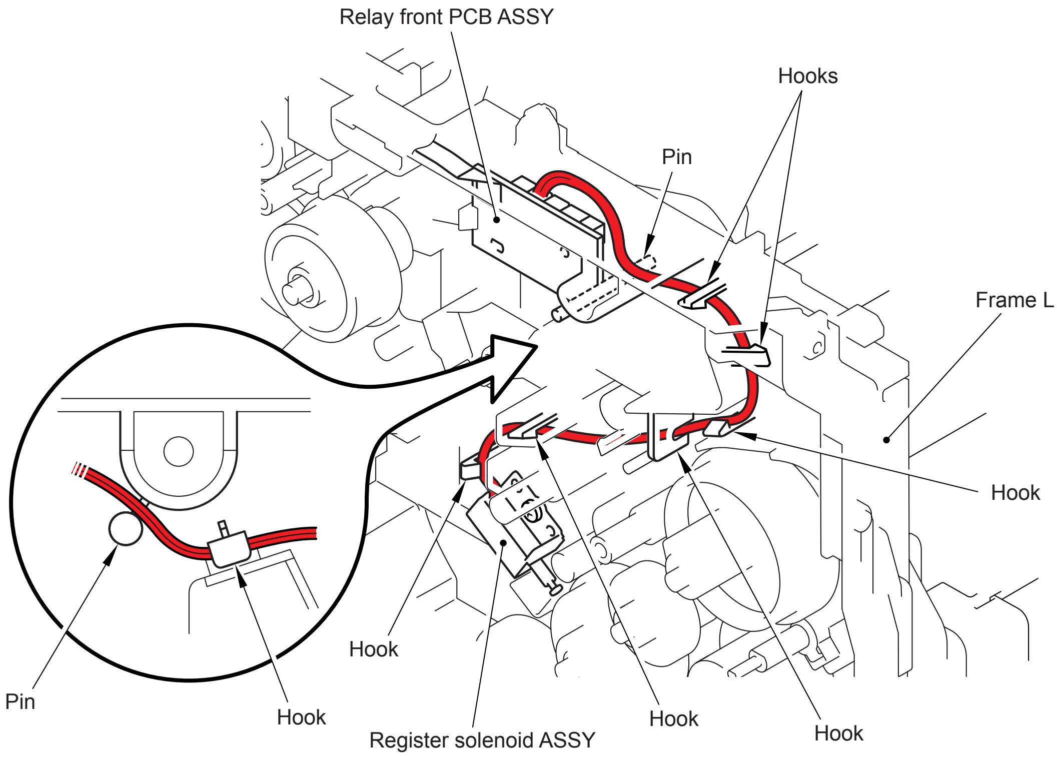
3 Front Cover Sensor ASSY



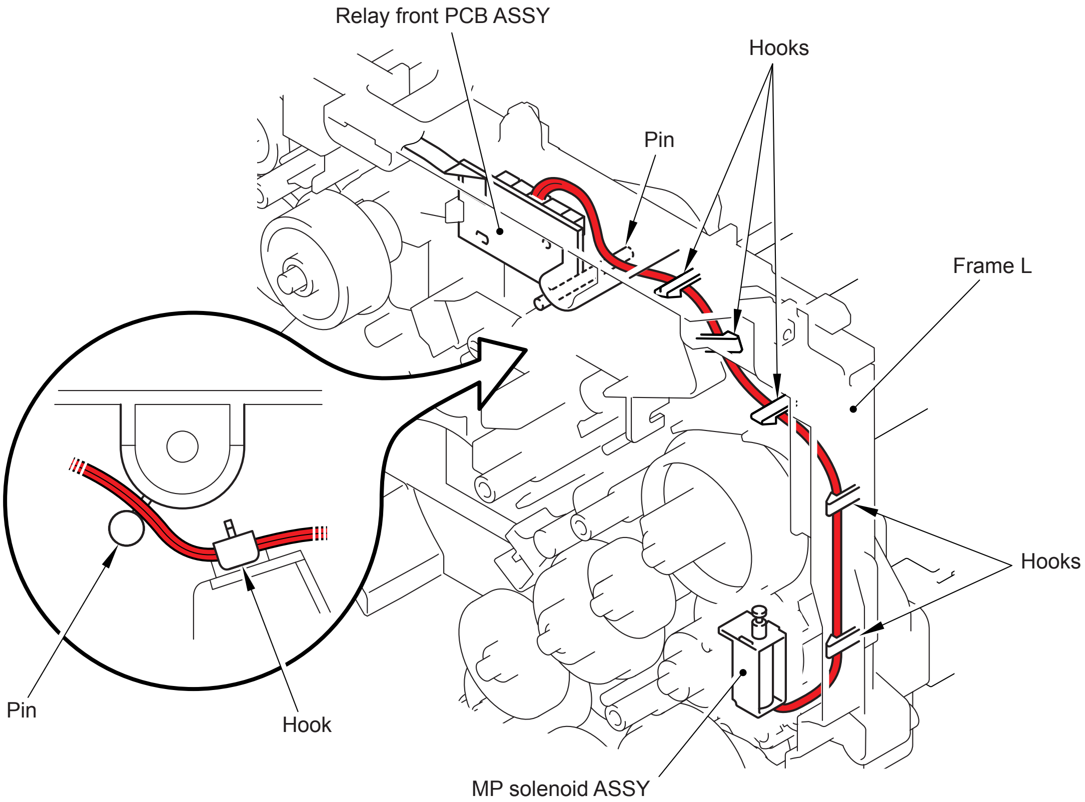
4 Toner sensor PCB ASSY



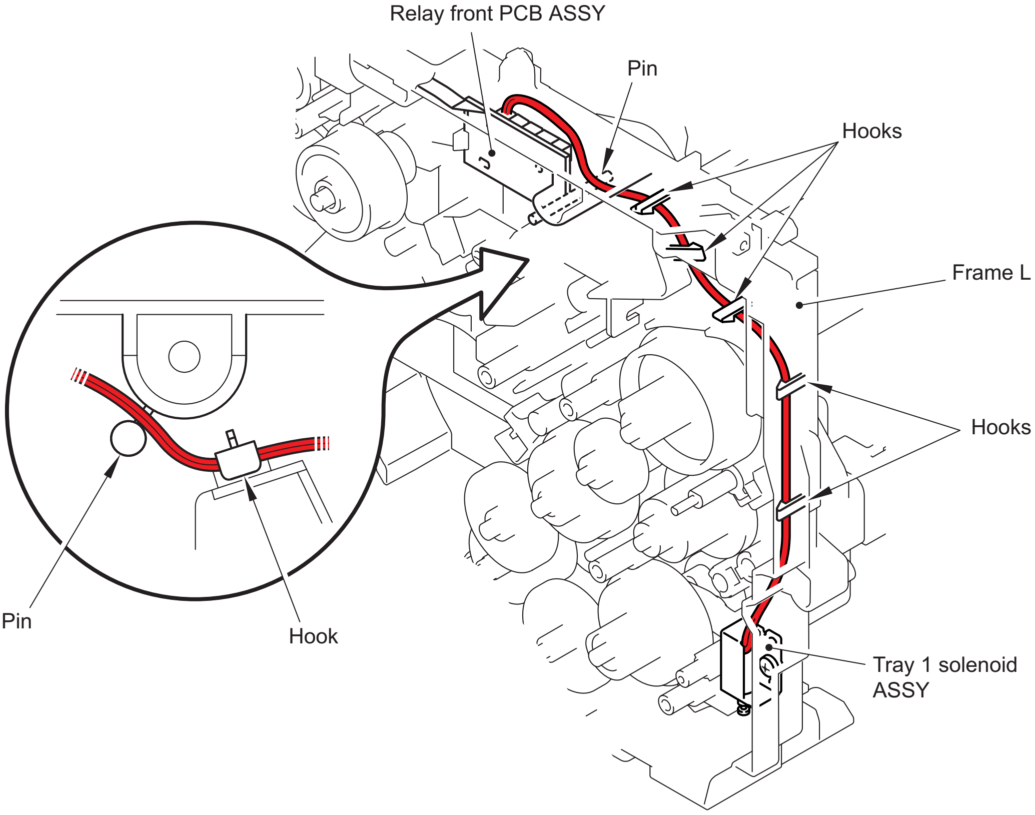
5 Regist solenoid ASSY



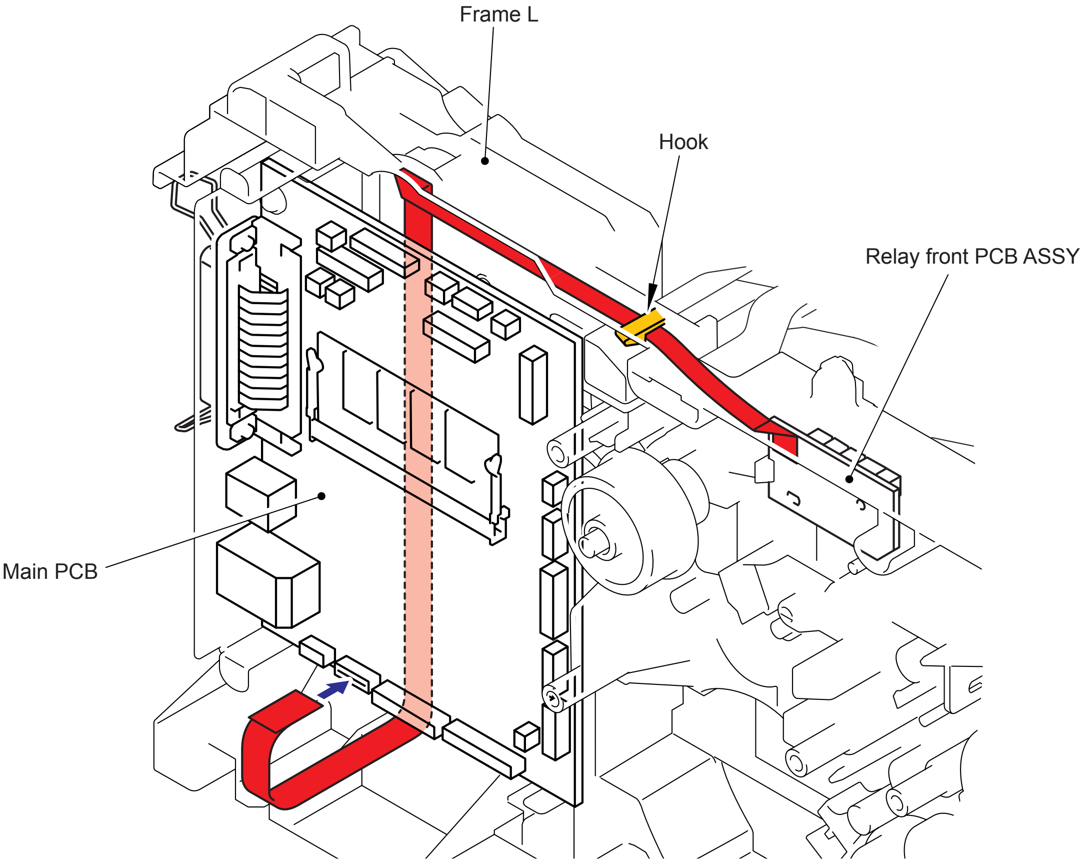
6 MP solenoid ASSY



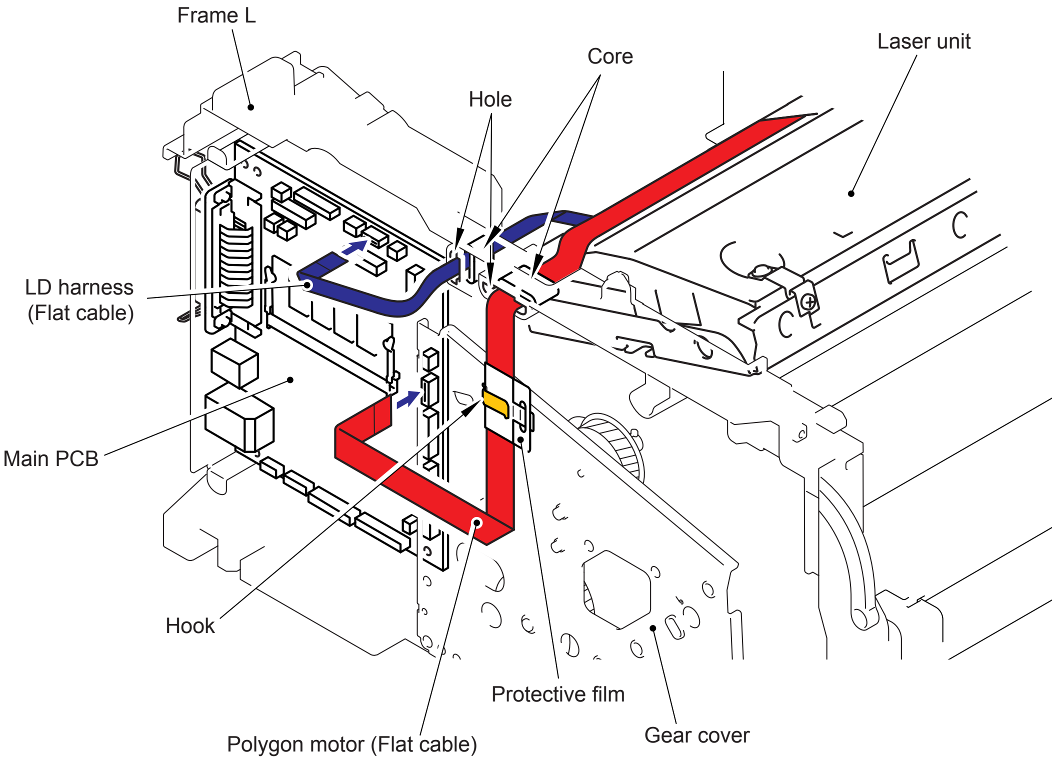
7 Tray 1 solenoid ASSY



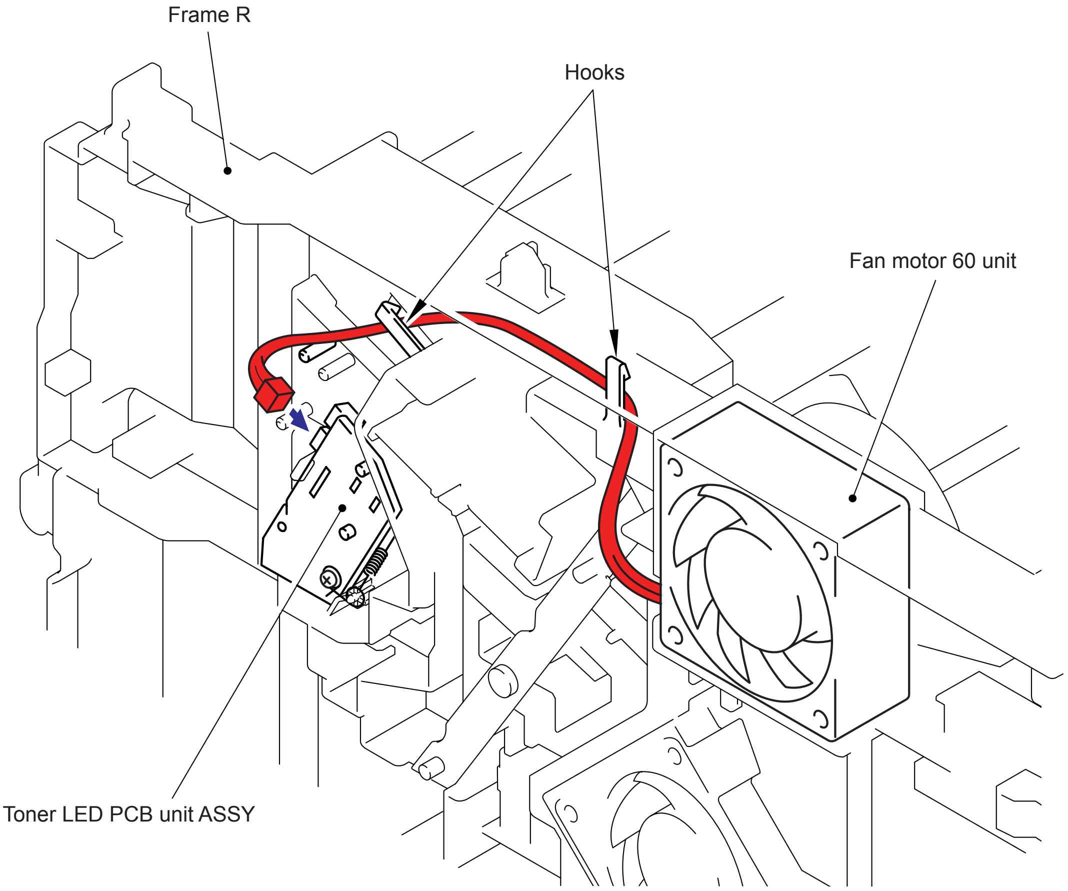
8 Relay front PCB ASSY



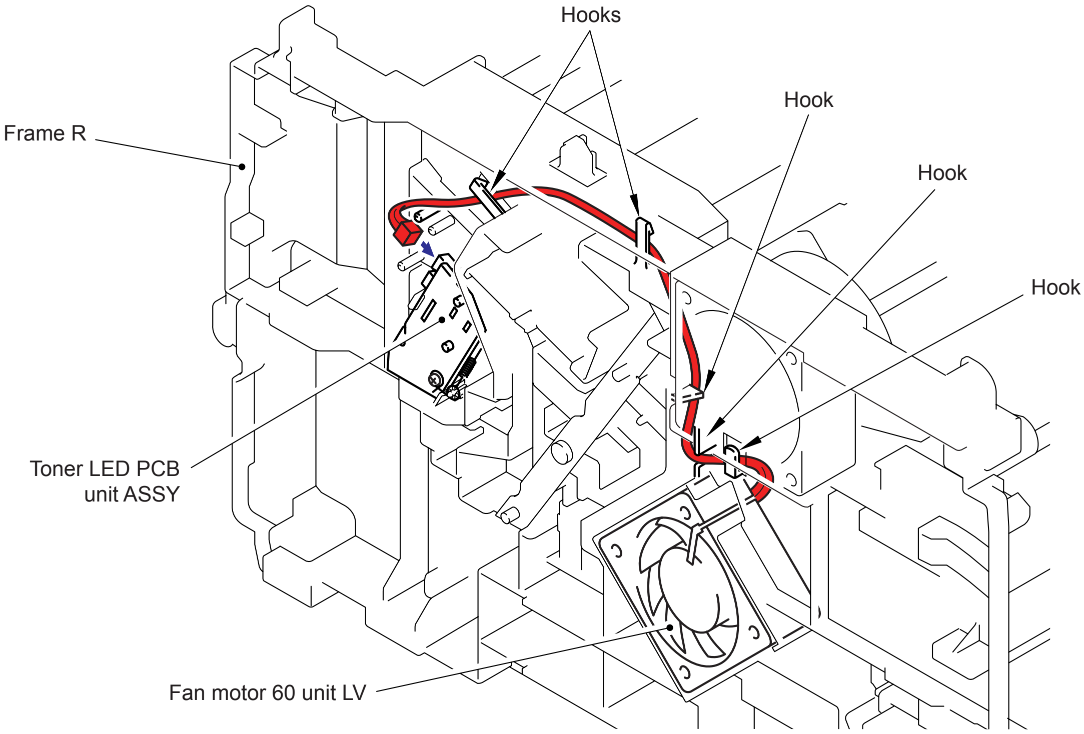
9 Laser unit



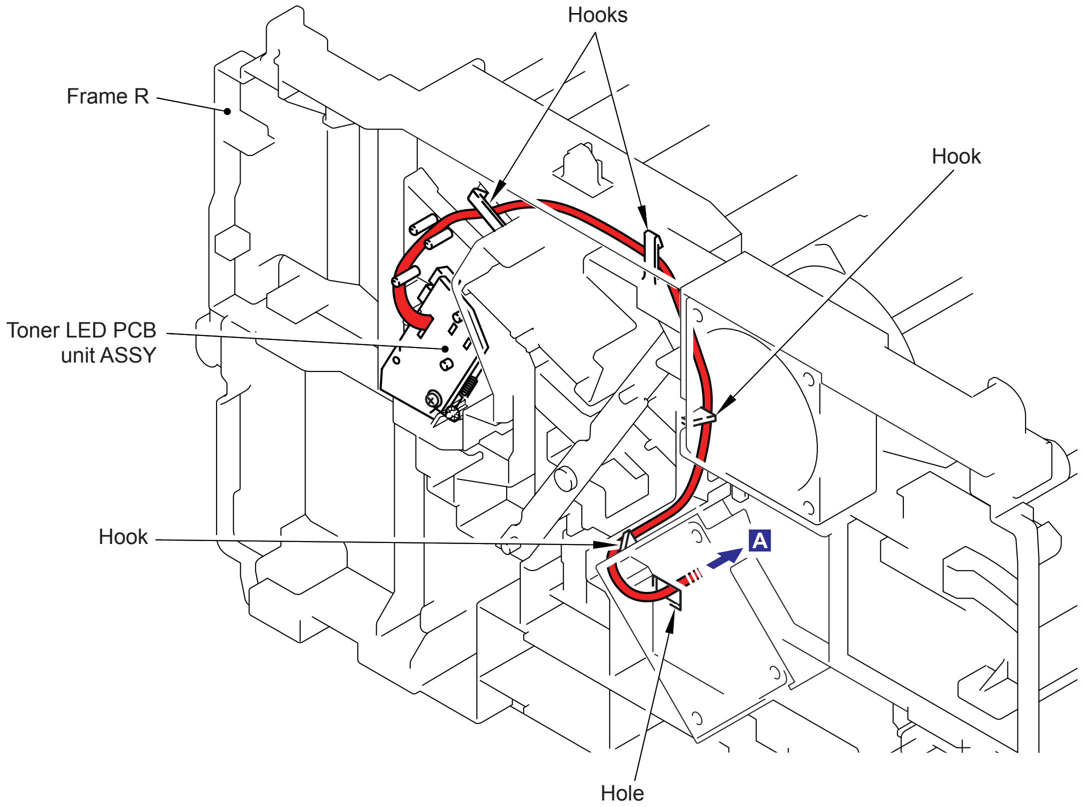
10 Fan motor 60 unit

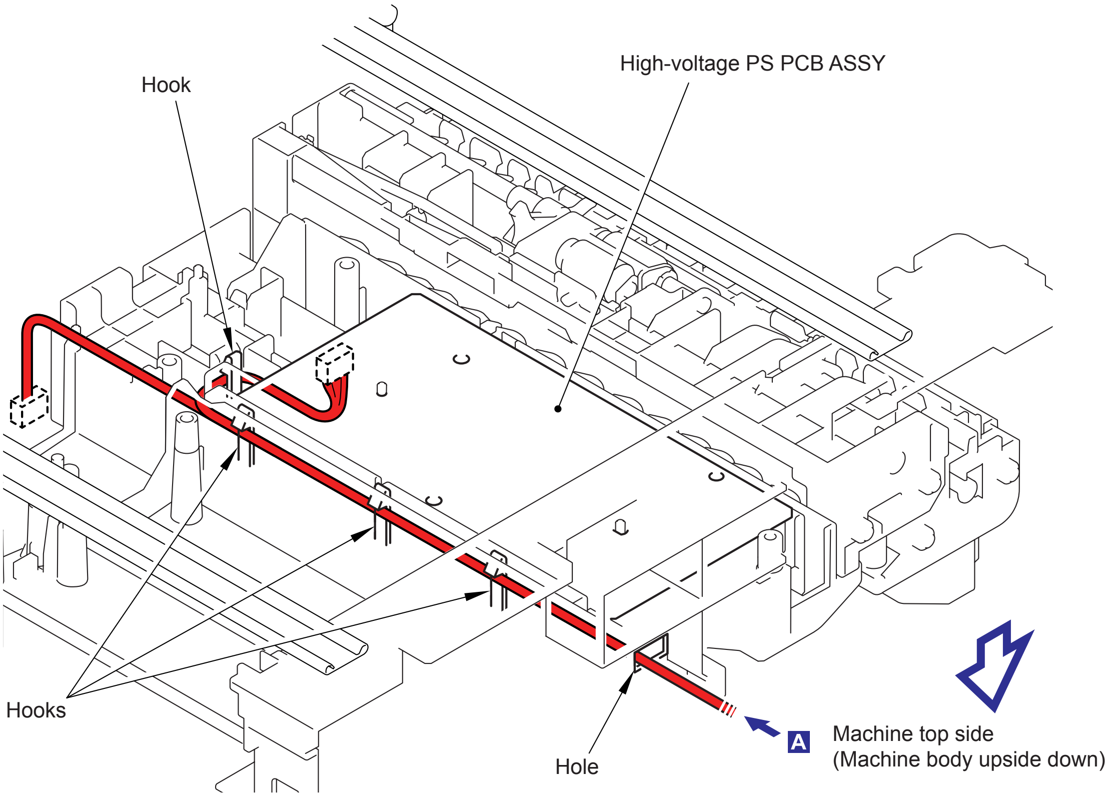


11 Fan motor 60 unit LV

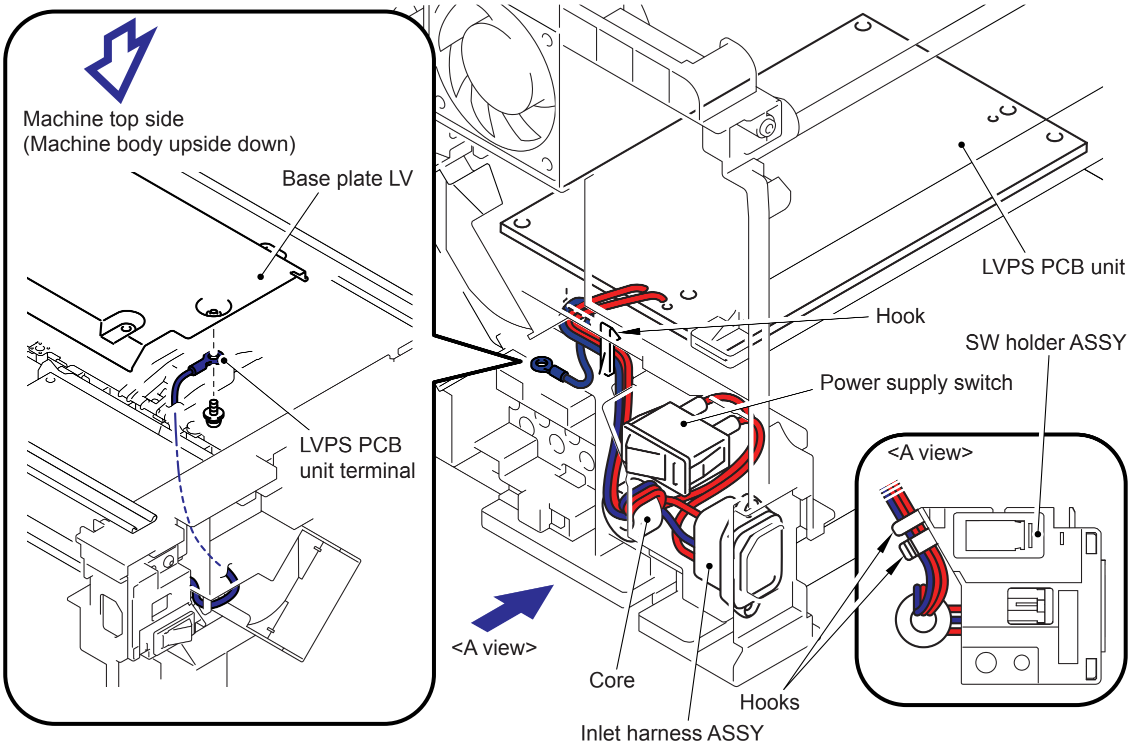


12 Toner LED PCB unit ASSY

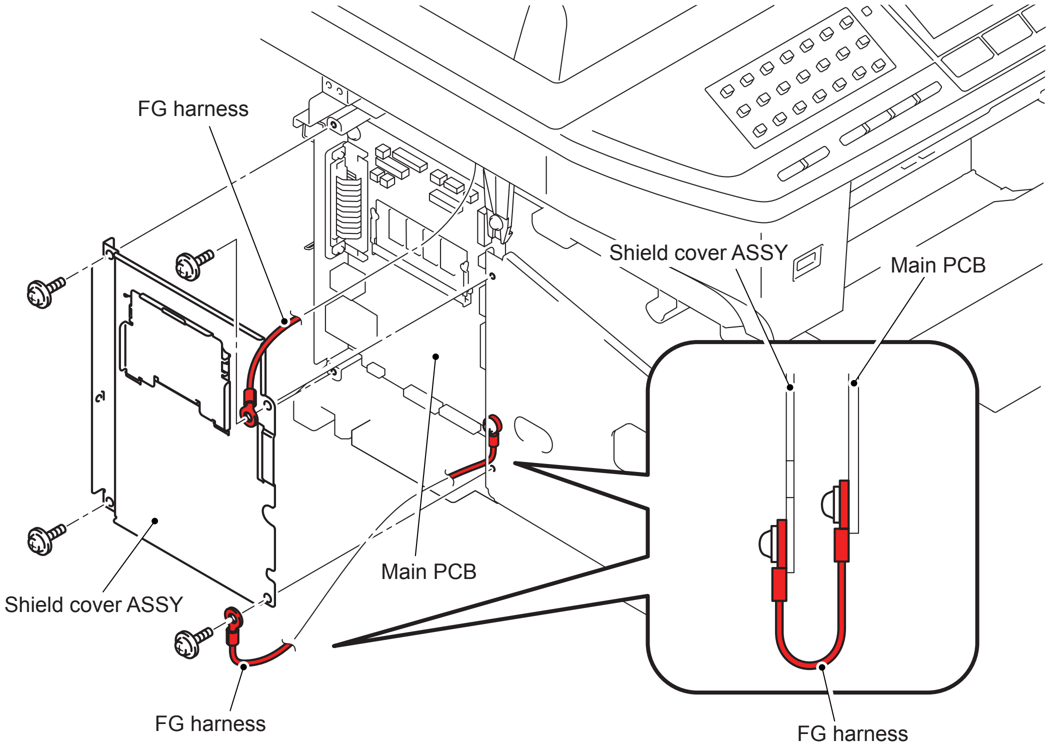




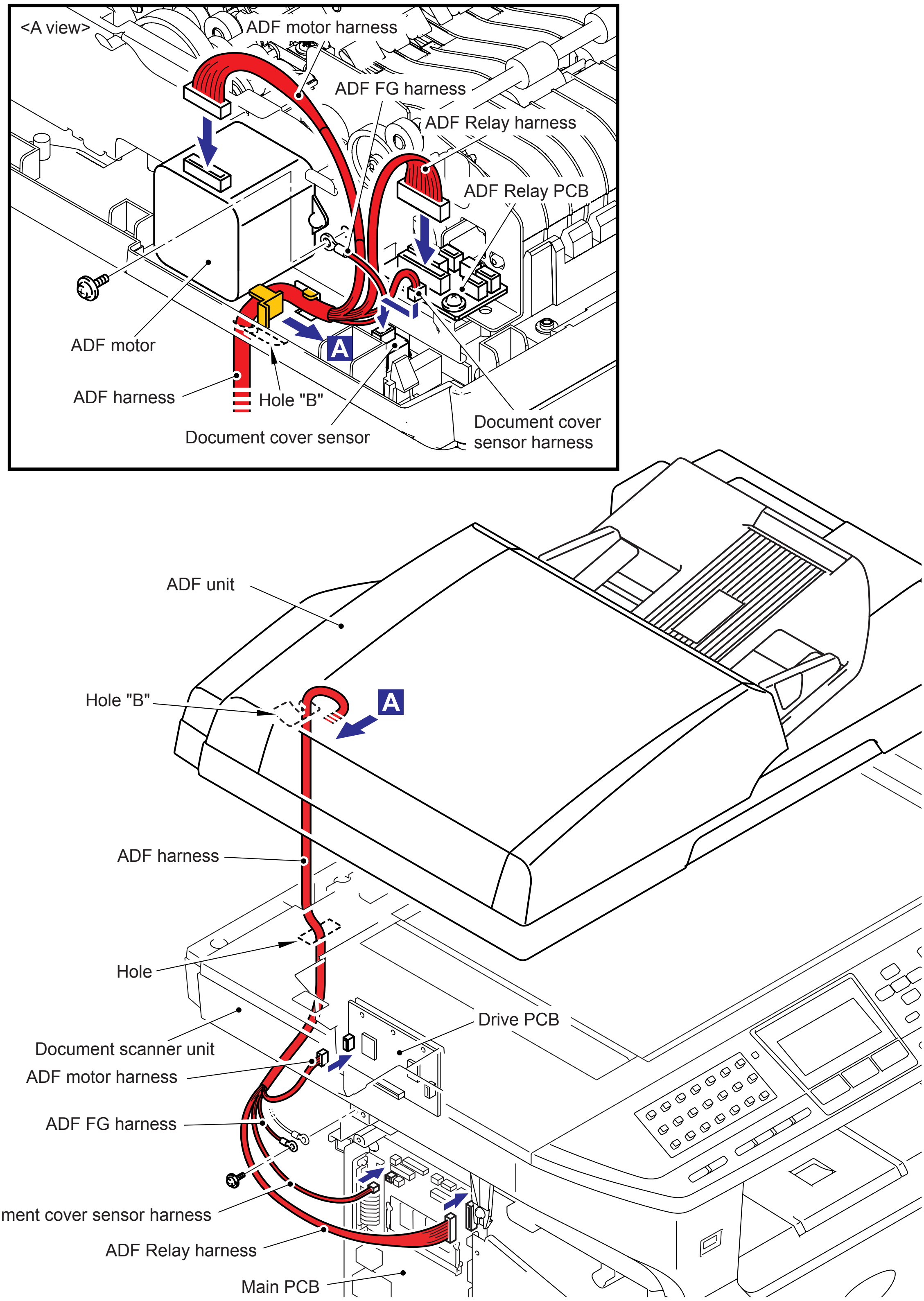
13 LVPS PCB unit



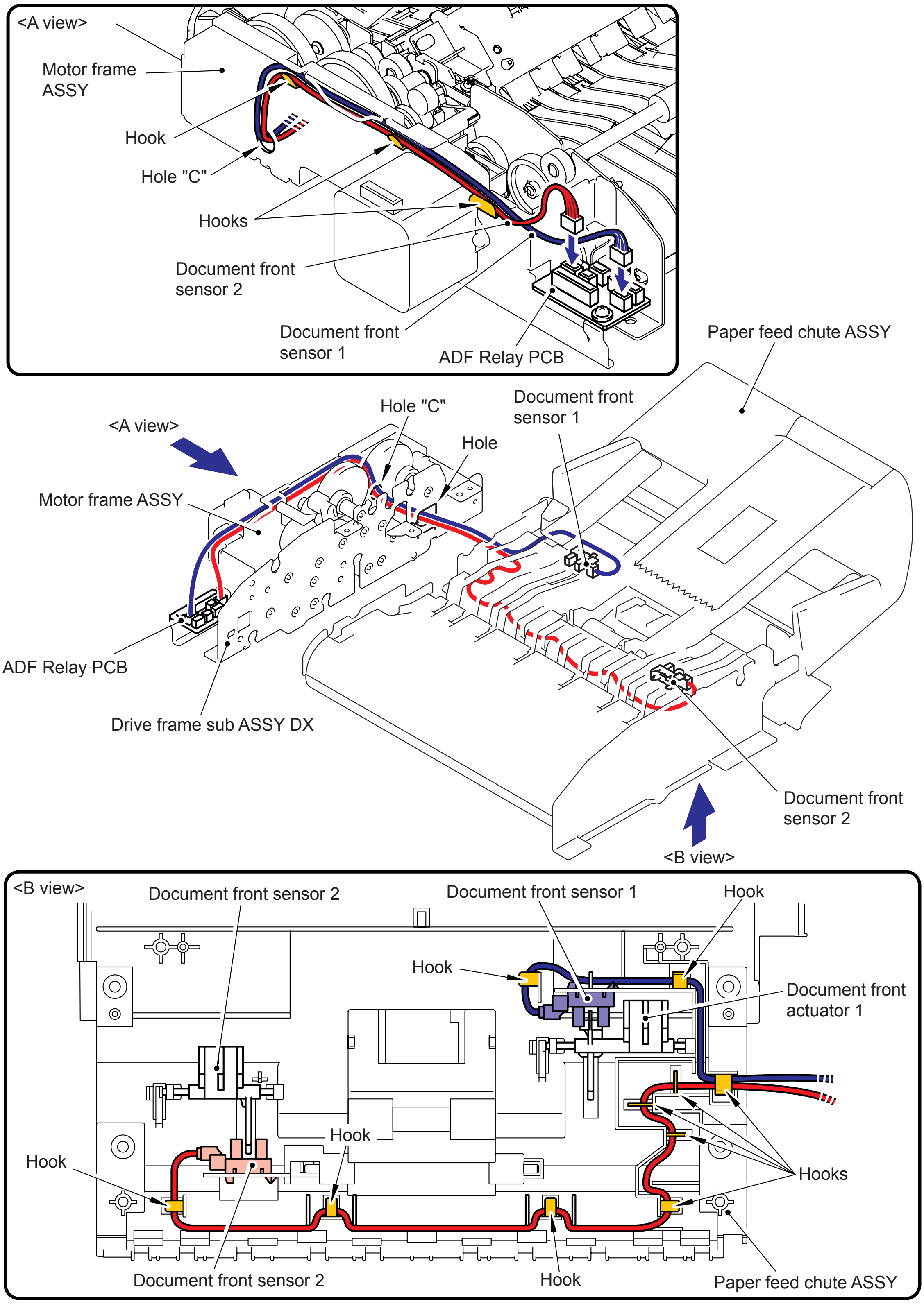
14 FG harness



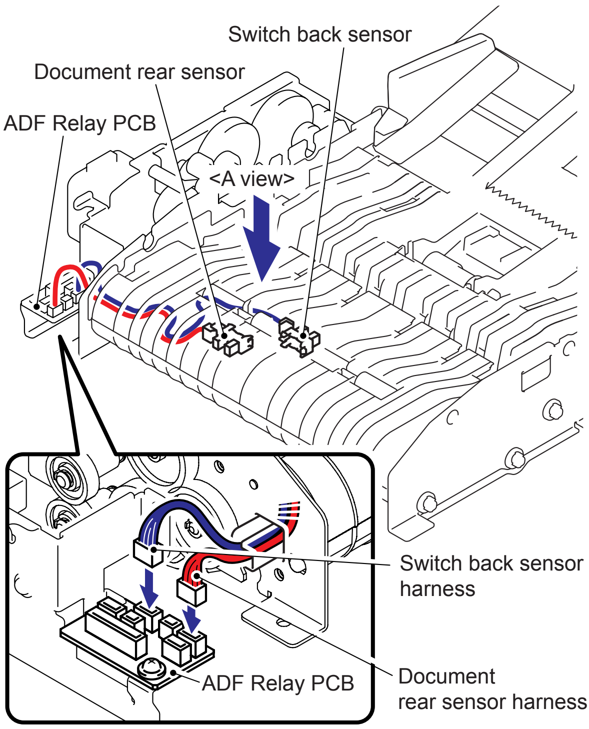
15 ADF unit

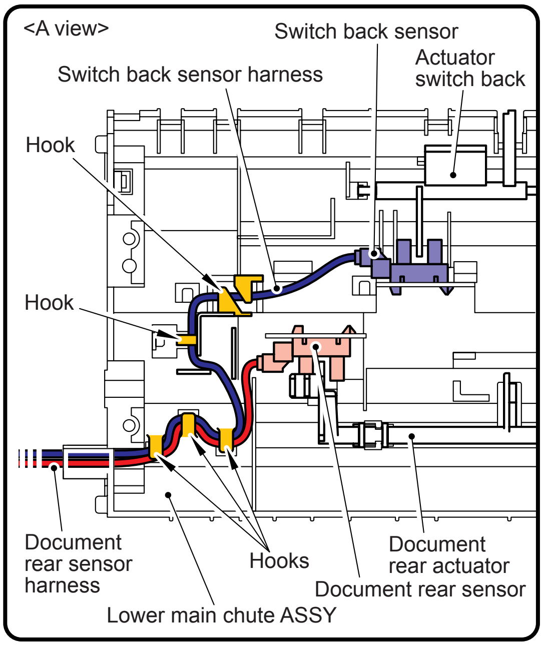

<A view>
ADF motor harness
ADF FG harness
ADF Relay harness
ADF Relay PCB
ADF motor
A
ADF harness
Hole "B"
Document cover sensor
Document cover
sensor harness
ADF unit
Hole "B"
A
ADF harness
Hole
Drive PCB
Document scanner unit
ADF motor harness
ADF FG harness
Document cover sensor harness
ADF Relay harness
Main PCB

16 ADF unit (Document front sensor 1, Document front sensor 2)

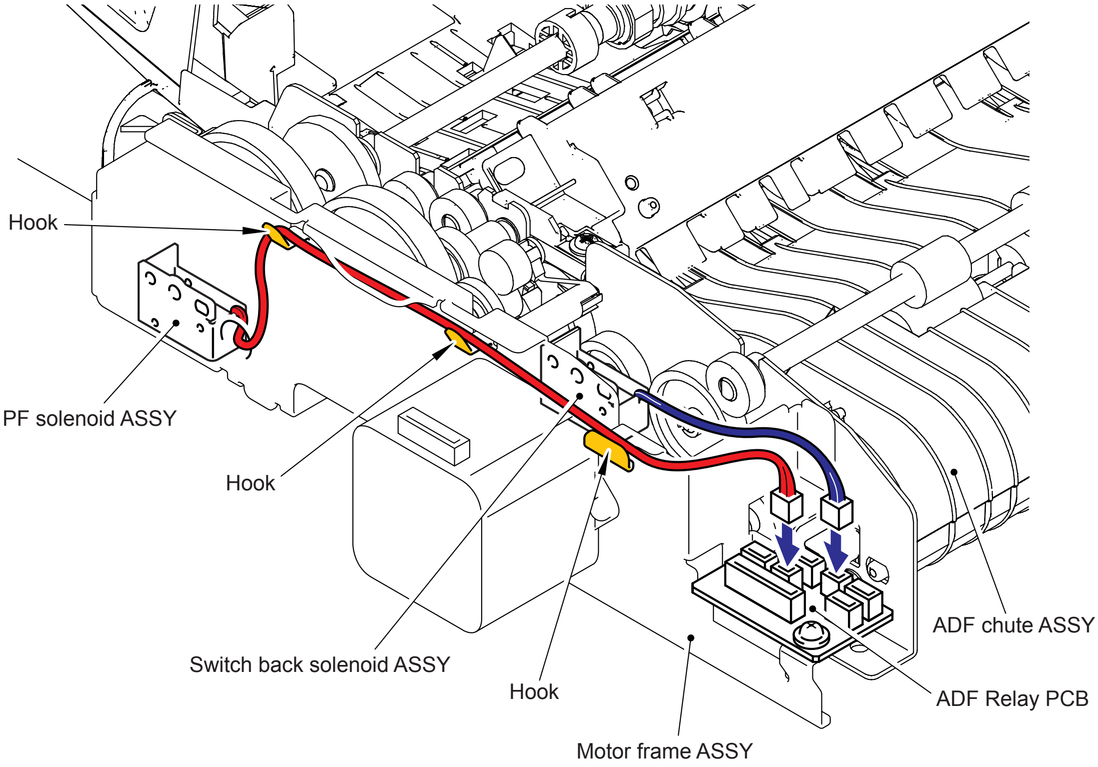


17 ADF unit (Document rear sensor, Switch back sensor)

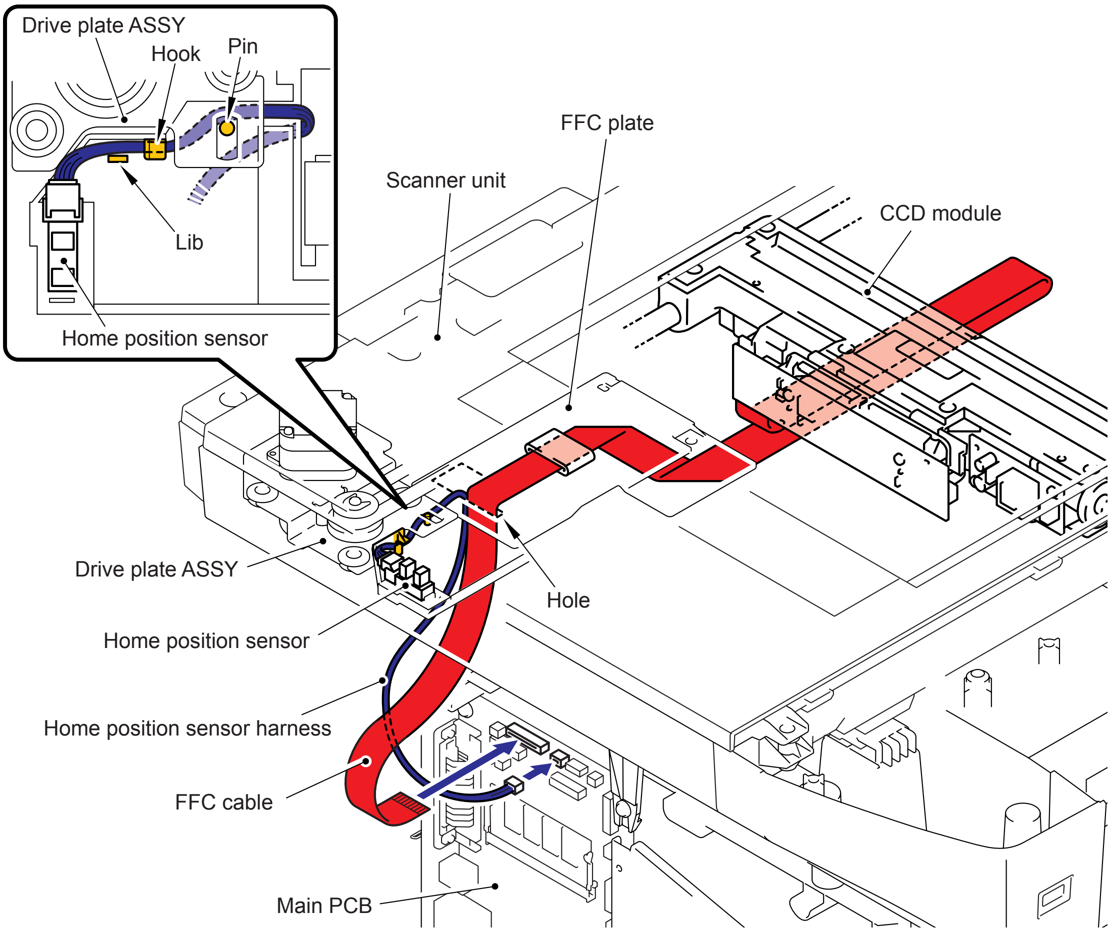




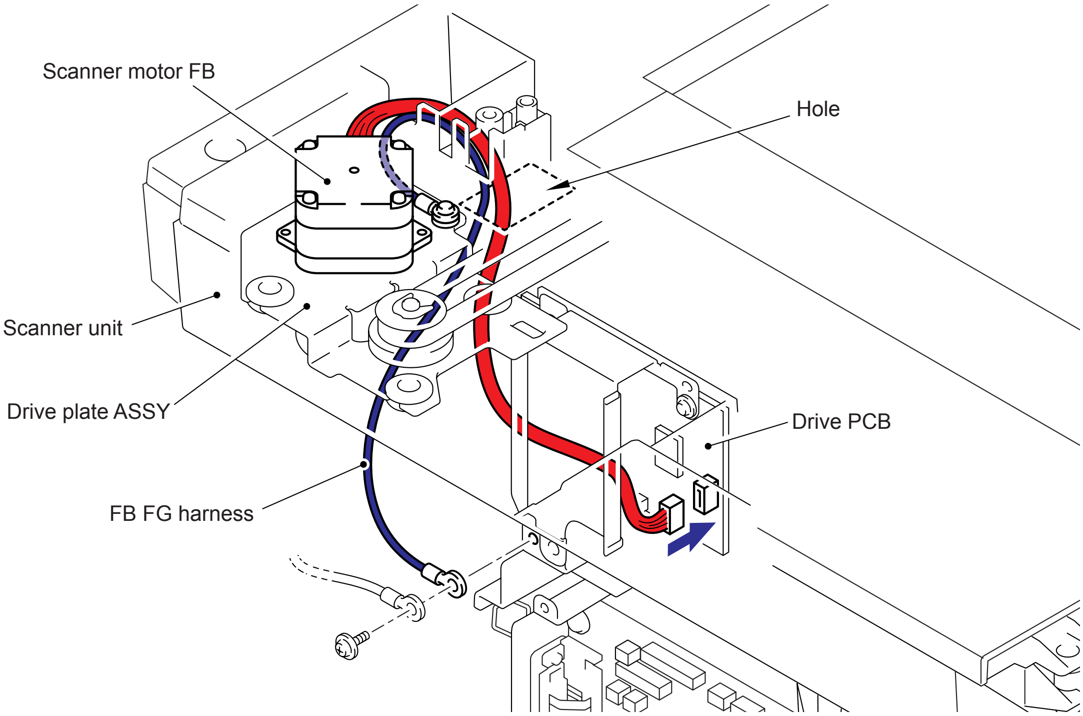
18 ADF unit (Switch back solenoid ASSY, PF solenoid ASSY)



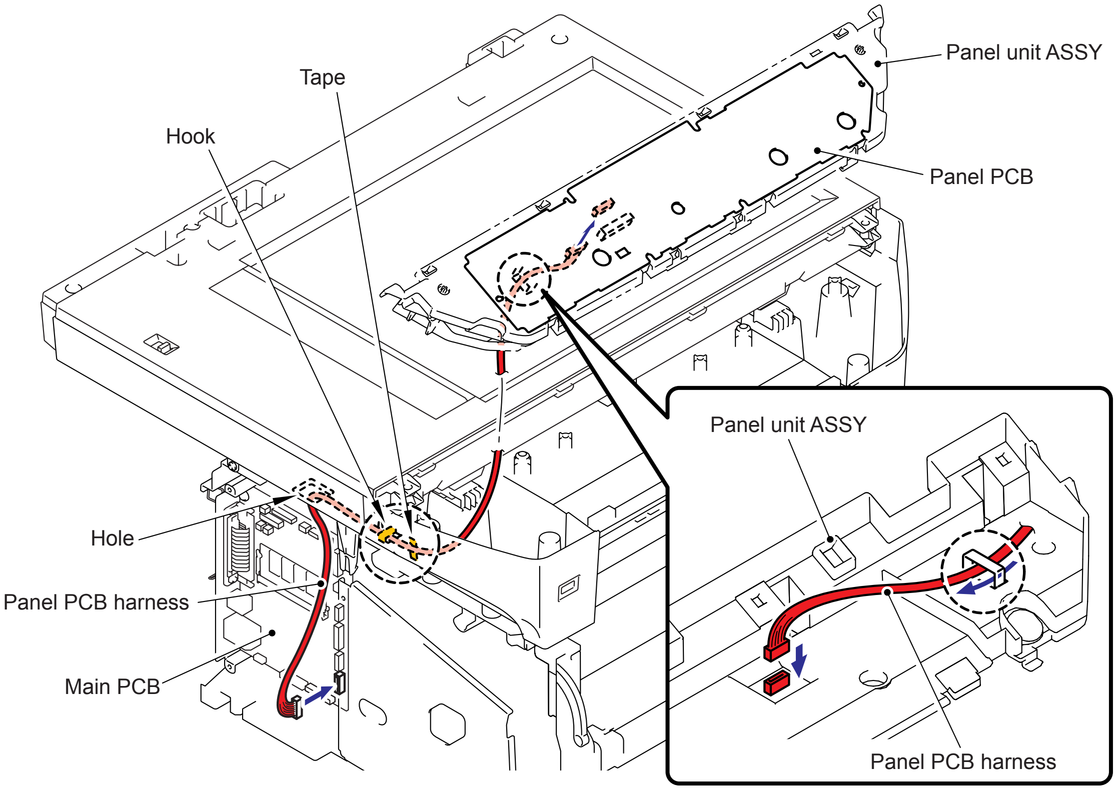
19 Document scanner unit (CCD module, Home position sensor)



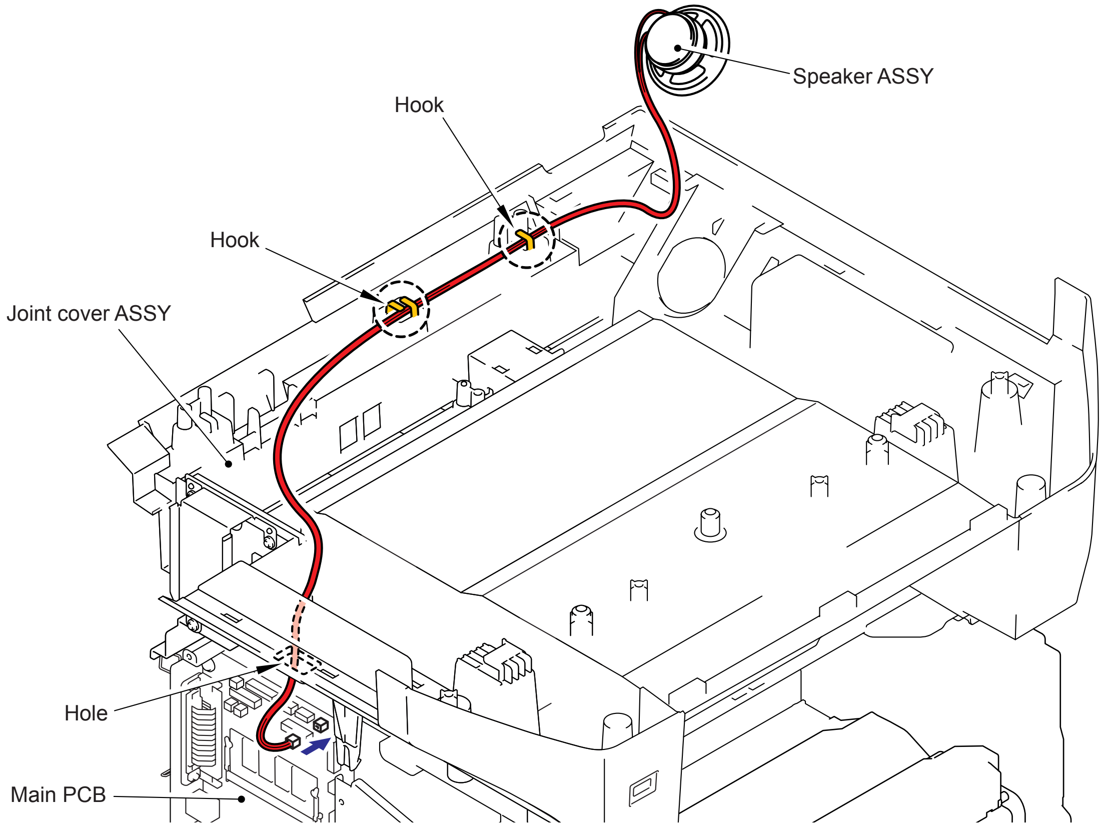
20 Document scanner unit (Scanner motor, FB FG harness)



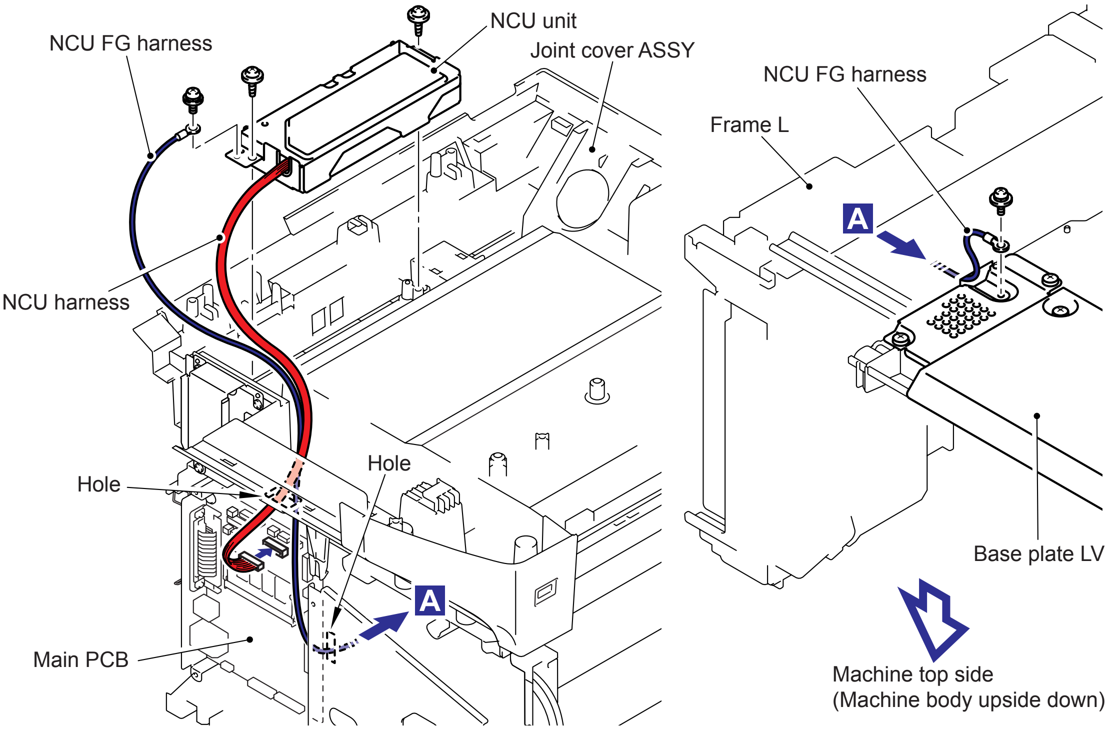
21 Panel unit



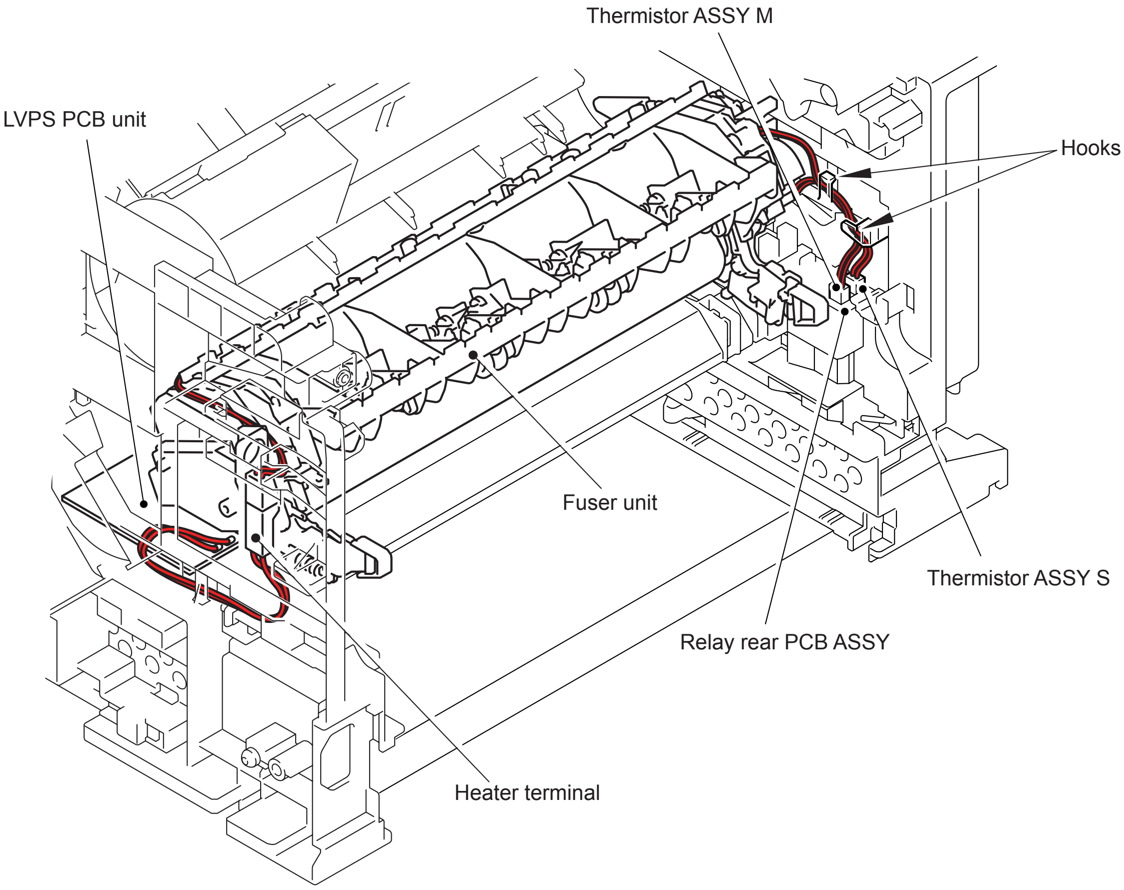
22 Speaker ASSY



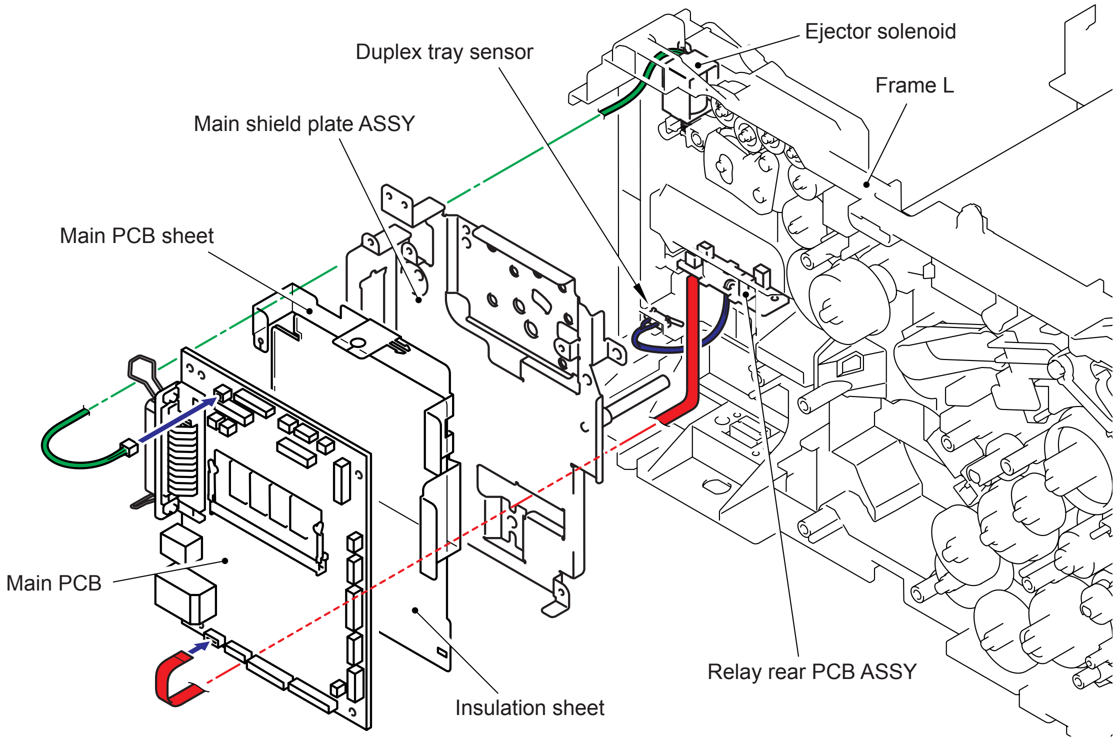
23 NCU unit



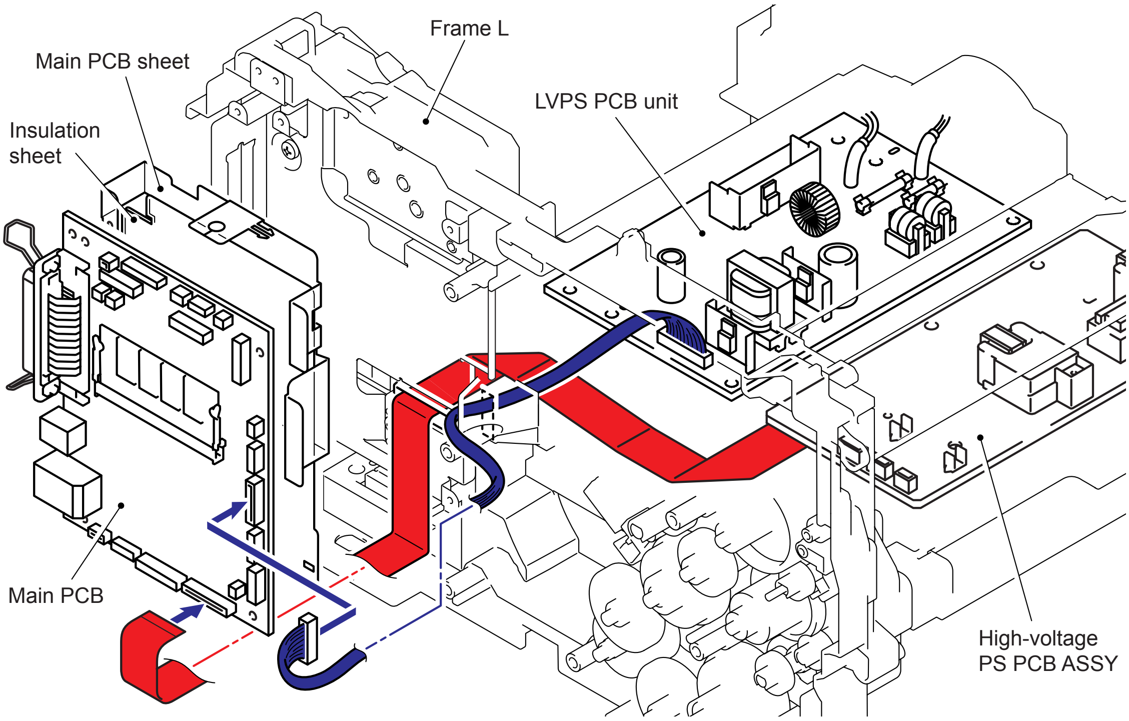
24 Fuser unit



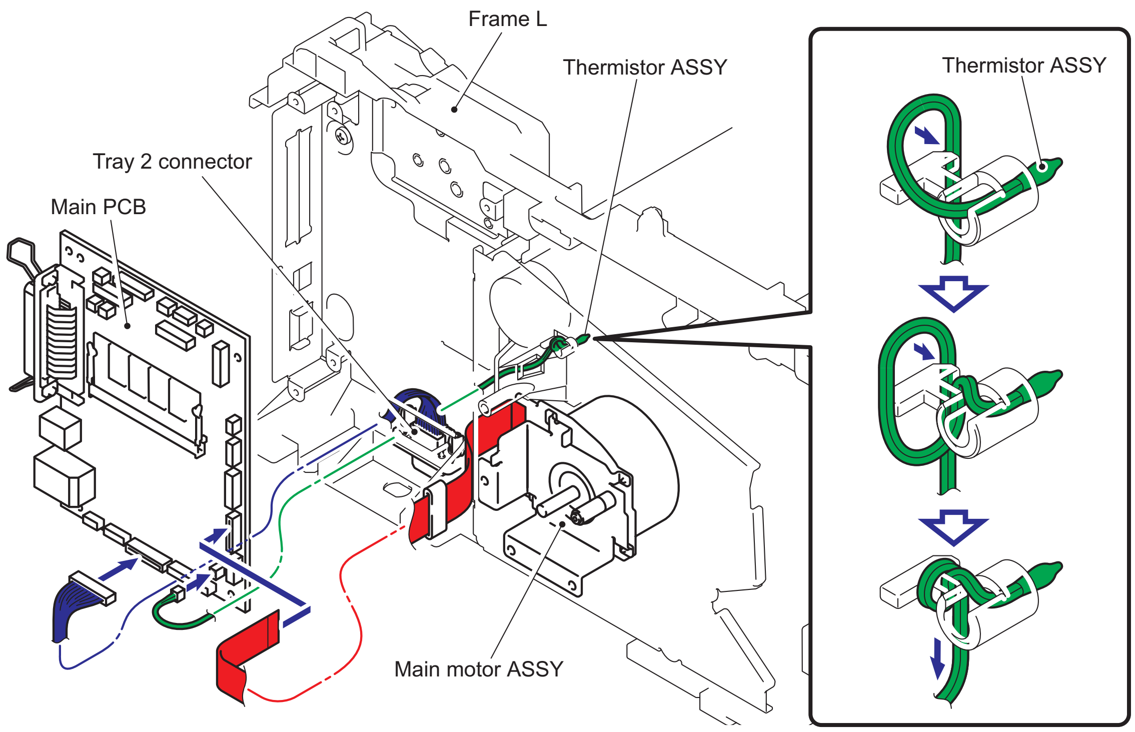
25 Relay rear PCB ASSY, Ejector solenoid



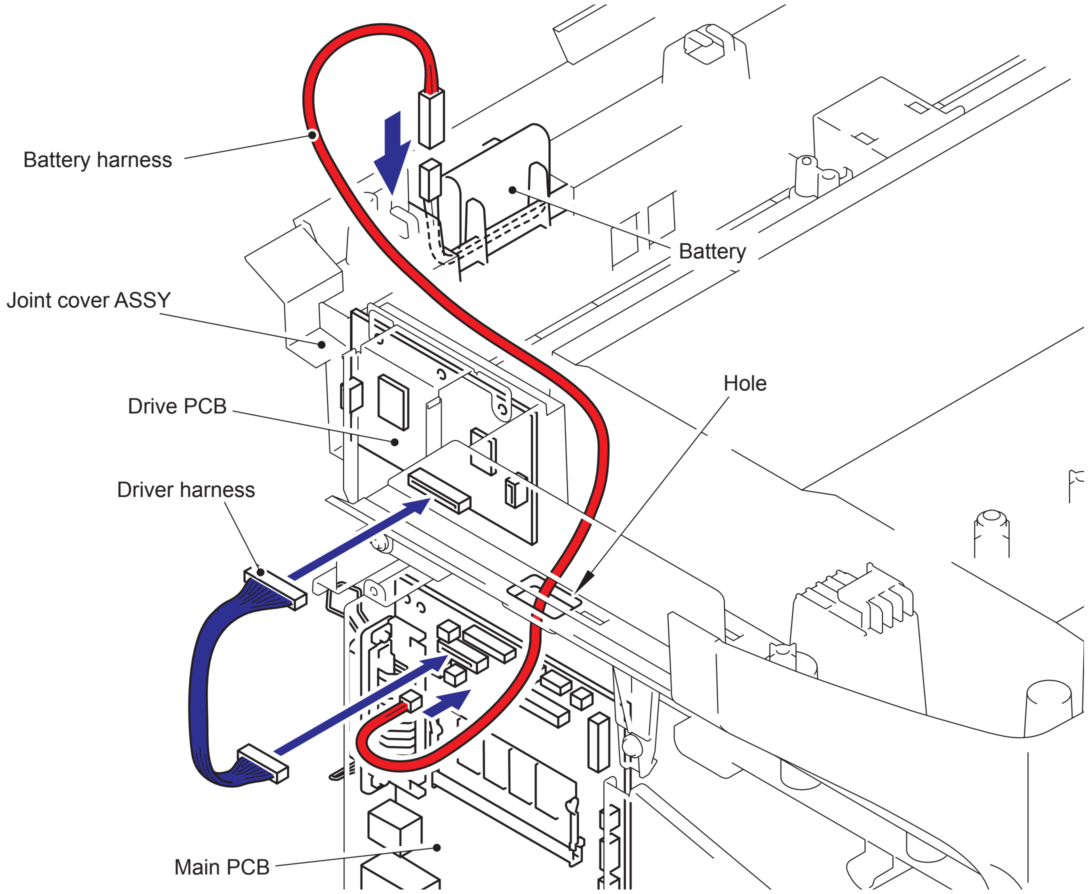
26 LVPS PCB unit, High-voltage PS PCB ASSY



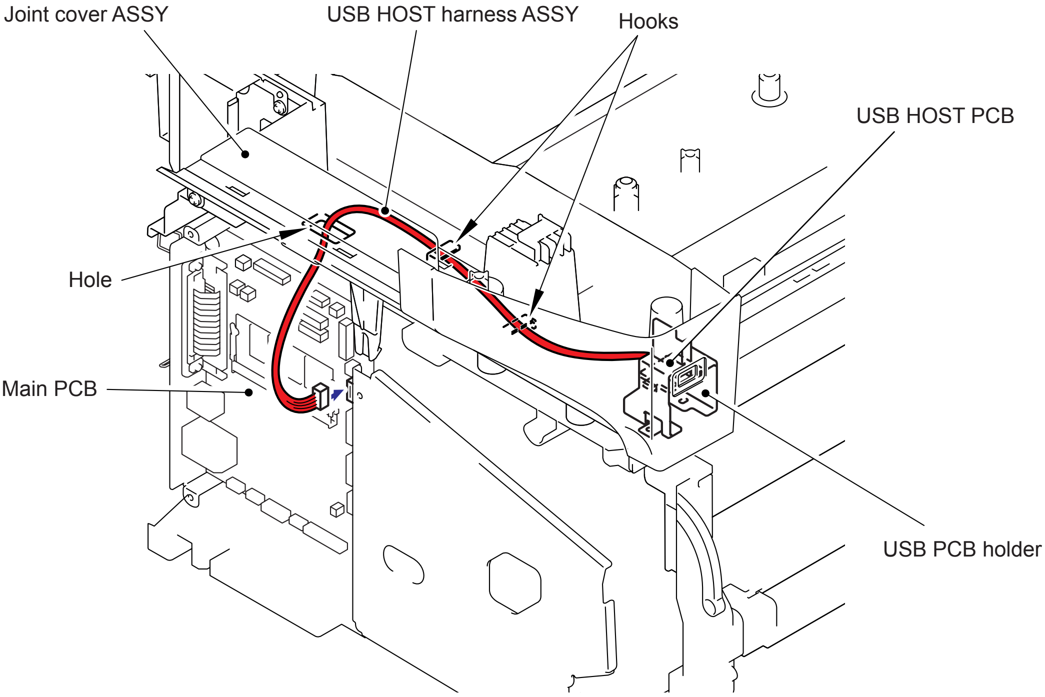
27 Main motor ASSY, Thermistor ASSY, tray 2 connector



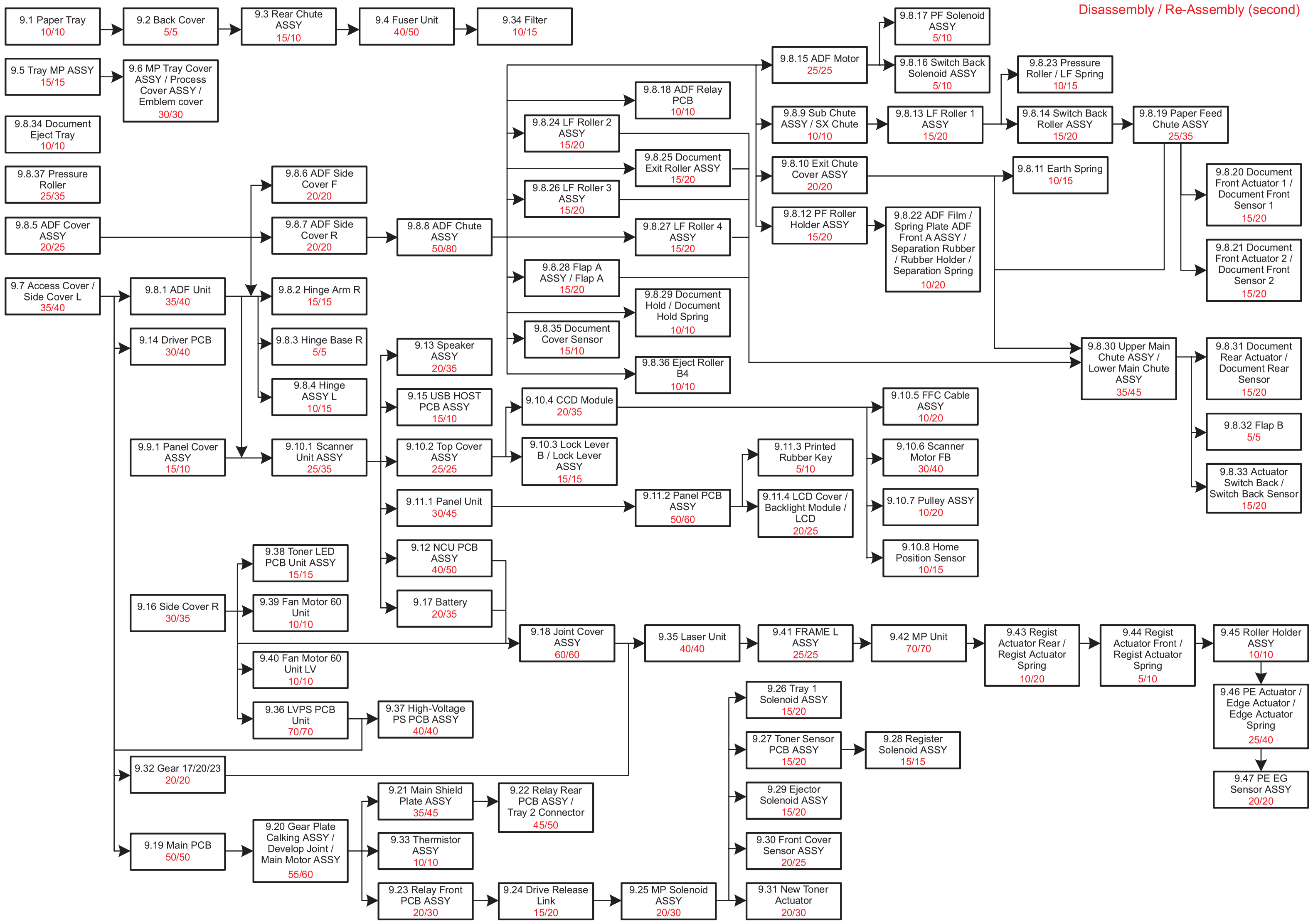
28 Driver PCB, Battery



29 USB HOST PCB



8. DISASSEMBLY FLOW CHART


Disassembly / Re-Assembly (second)
9.1 Paper Tray 10/10
9.2 Back Cover 5/5
9.3 Rear Chute ASSY 15/10
9.4 Fuser Unit 40/50
9.34 Filter 10/15
9.5 Tray MP ASSY 15/15
9.6 MP Tray Cover ASSY / Process Cover ASSY / Emblem cover 30/30
9.8.34 Document Eject Tray 10/10
9.8.37 Pressure Roller 25/35
9.8.5 ADF Cover ASSY 20/25
9.7 Access Cover / Side Cover L 35/40
9.8.1 ADF Unit 35/40
9.14 Driver PCB 30/40
9.9.1 Panel Cover ASSY 15/10
9.16 Side Cover R 30/35
9.32 Gear 17/20/23 20/20
9.19 Main PCB 50/50
9.8.6 ADF Side Cover F 20/20
9.8.7 ADF Side Cover R 20/20
9.8.2 Hinge Arm R 15/15
9.8.3 Hinge Base R 5/5
9.8.4 Hinge ASSY L 10/15
9.10.1 Scanner Unit ASSY 25/35
9.38 Toner LED PCB Unit ASSY 15/15
9.39 Fan Motor 60 Unit 10/10
9.40 Fan Motor 60 Unit LV 10/10
9.36 LVPS PCB Unit 70/70
9.37 High-Voltage PS PCB ASSY 40/40
9.20 Gear Plate Calking ASSY / Develop Joint / Main Motor ASSY 55/60
9.8.8 ADF Chute ASSY 50/80
9.13 Speaker ASSY 20/35
9.15 USB HOST PCB ASSY 15/10
9.10.2 Top Cover ASSY 25/25
9.11.1 Panel Unit 30/45
9.12 NCU PCB ASSY 40/50
9.17 Battery 20/35
9.21 Main Shield Plate ASSY 35/45
9.22 Relay Rear PCB ASSY / Tray 2 Connector 45/50
9.33 Thermistor ASSY 10/10
9.23 Relay Front PCB ASSY 20/30
9.24 Drive Release Link 15/20
9.25 MP Solenoid ASSY 20/30
9.8.18 ADF Relay PCB 10/10
9.8.24 LF Roller 2 ASSY 15/20
9.8.25 Document Exit Roller ASSY 15/20
9.8.26 LF Roller 3 ASSY 15/20
9.8.27 LF Roller 4 ASSY 15/20
9.8.28 Flap A ASSY / Flap A 15/20
9.8.29 Document Hold / Document Hold Spring 10/10
9.8.35 Document Cover Sensor 15/10
9.8.36 Eject Roller B4 10/10
9.10.4 CCD Module 20/35
9.10.3 Lock Lever B / Lock Lever ASSY 15/15
9.11.2 Panel PCB ASSY 50/60
9.18 Joint Cover ASSY 60/60
9.35 Laser Unit 40/40
9.8.15 ADF Motor 25/25
9.8.9 Sub Chute ASSY / SX Chute 10/10
9.8.10 Exit Chute Cover ASSY 20/20
9.8.12 PF Roller Holder ASSY 15/20
9.11.3 Printed Rubber Key 5/10
9.11.4 LCD Cover / Backlight Module / LCD 20/25
9.41 FRAME L ASSY 25/25
9.26 Tray 1 Solenoid ASSY 15/20
9.27 Toner Sensor PCB ASSY 15/20
9.29 Ejector Solenoid ASSY 15/20
9.30 Front Cover Sensor ASSY 20/25
9.31 New Toner Actuator 20/30
9.8.17 PF Solenoid ASSY 5/10
9.8.16 Switch Back Solenoid ASSY 5/10
9.8.13 LF Roller 1 ASSY 15/20
9.8.22 ADF Film / Spring Plate ADF Front A ASSY / Separation Rubber / Rubber Holder / Separation Spring 10/20
9.10.5 FFC Cable ASSY 10/20
9.10.6 Scanner Motor FB 30/40
9.10.7 Pulley ASSY 10/20
9.10.8 Home Position Sensor 10/15
9.42 MP Unit 70/70
9.28 Register Solenoid ASSY 15/15
9.8.23 Pressure Roller / LF Spring 10/15
9.8.14 Switch Back Roller ASSY 15/20
9.8.11 Earth Spring 10/15
9.43 Regist Actuator Rear / Regist Actuator Spring 10/20
9.8.19 Paper Feed Chute ASSY 25/35
9.8.30 Upper Main Chute ASSY / Lower Main Chute ASSY 35/45
9.44 Regist Actuator Front / Regist Actuator Spring 5/10
9.8.20 Document Front Actuator 1 / Document Front Sensor 1 15/20
9.8.21 Document Front Actuator 2 / Document Front Sensor 2 15/20
9.8.31 Document Rear Actuator / Document Rear Sensor 15/20
9.8.32 Flap B 5/5
9.8.33 Actuator Switch Back / Switch Back Sensor 15/20
9.45 Roller Holder ASSY 10/10
9.46 PE Actuator / Edge Actuator / Edge Actuator Spring 25/40
9.47 PE EG Sensor ASSY 20/20

9. DISASSEMBLY PROCEDURE

■ Preparation

Prior to proceeding with the disassembly procedure,

(1) Unplug
  - the AC cord,
  - the USB cable, if connected,
  - the LAN cable, if connected.

(2) Remove
  - the Paper tray,
  - the Toner cartridge and Drum unit,
  - the Duplex unit.

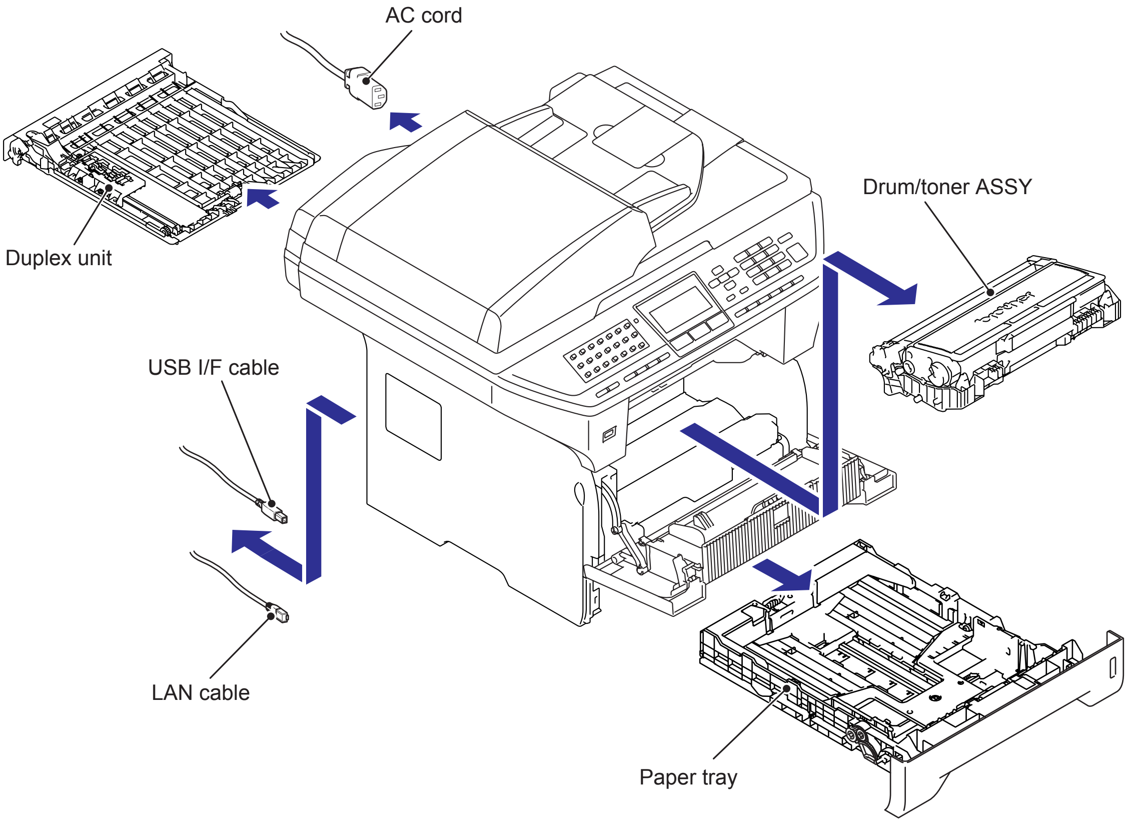


Fig. 5-4

9.1 Paper Tray

(1) Pull up the back side of the Separation pad ASSY.

(2) Push the Hooks provided on both sides of the Separation pad ASSY inwards.

(3) Pull up the Separation pad ASSY.

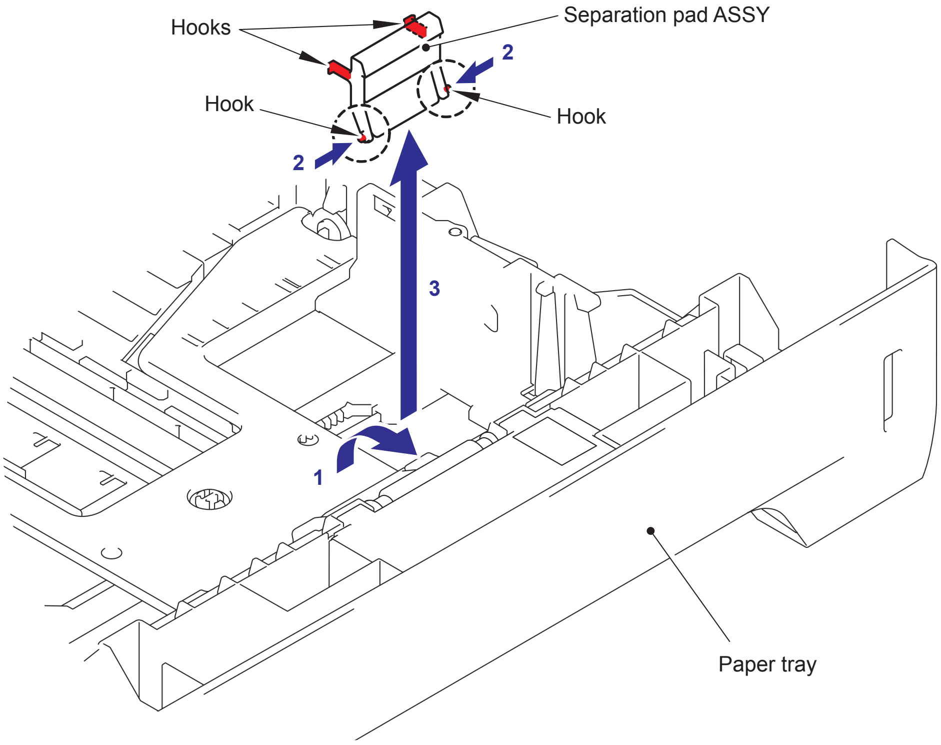


Fig. 5-5

(4) Remove the Separation pad spring.

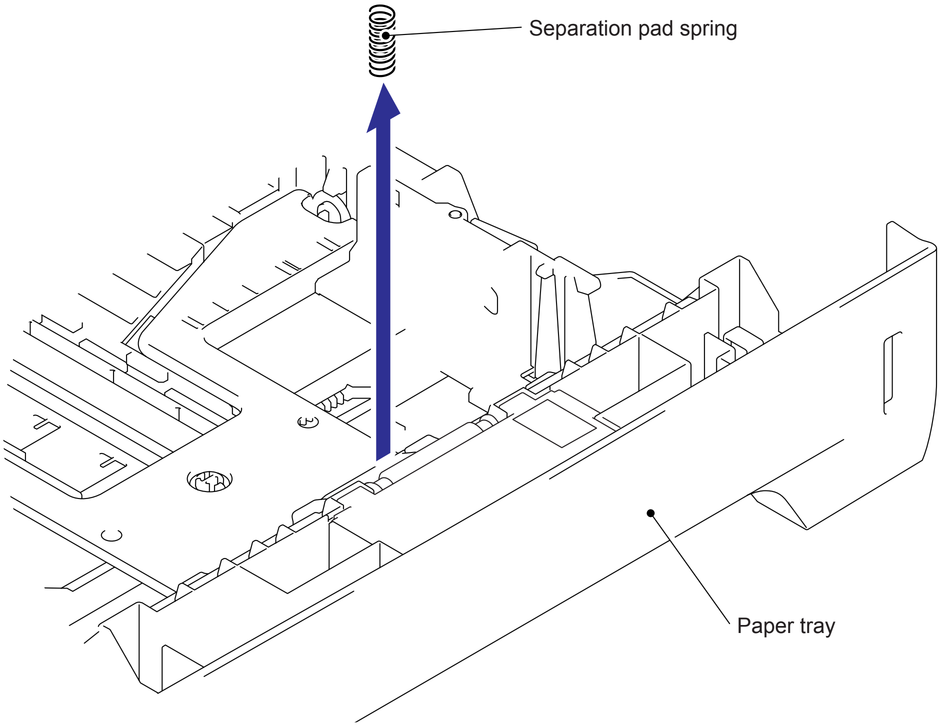


Fig. 5-6

(5) Push the hook of the lift gear 46 while pushing up the plate up plate, and remove the Lift gear 46.

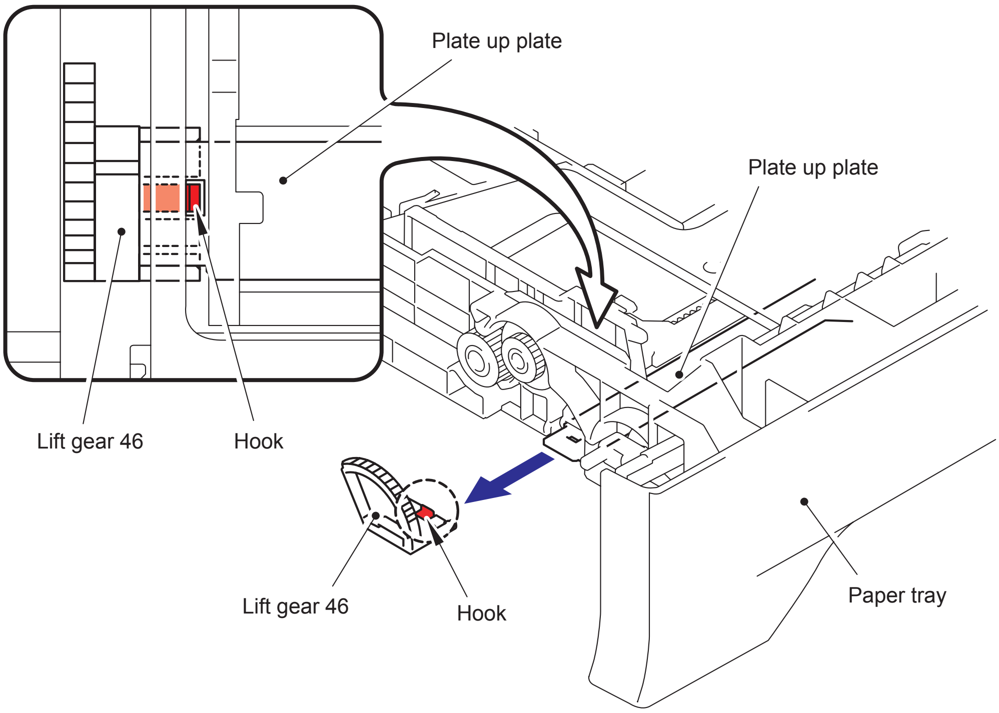


Fig. 5-7

(6) Remove the Gear 21-16.

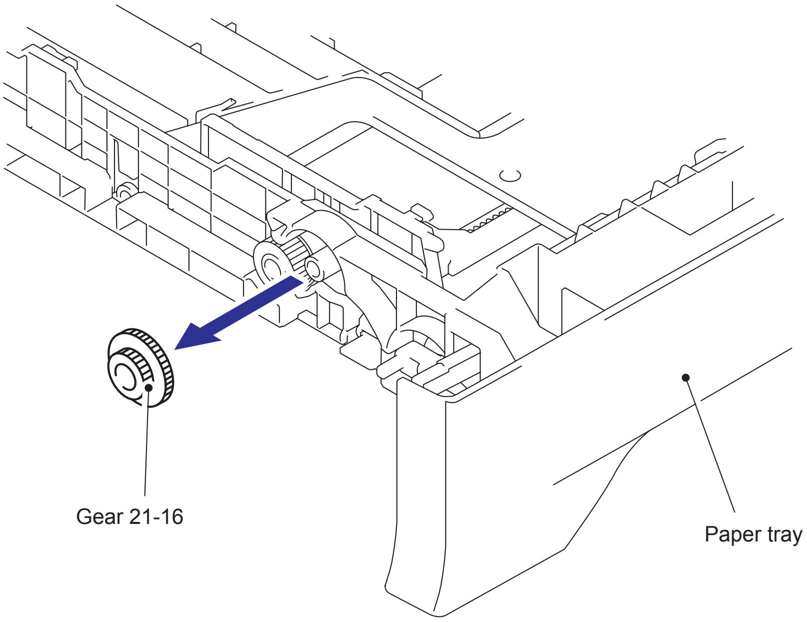


Fig. 5-8

(7) Remove the Gear 15.

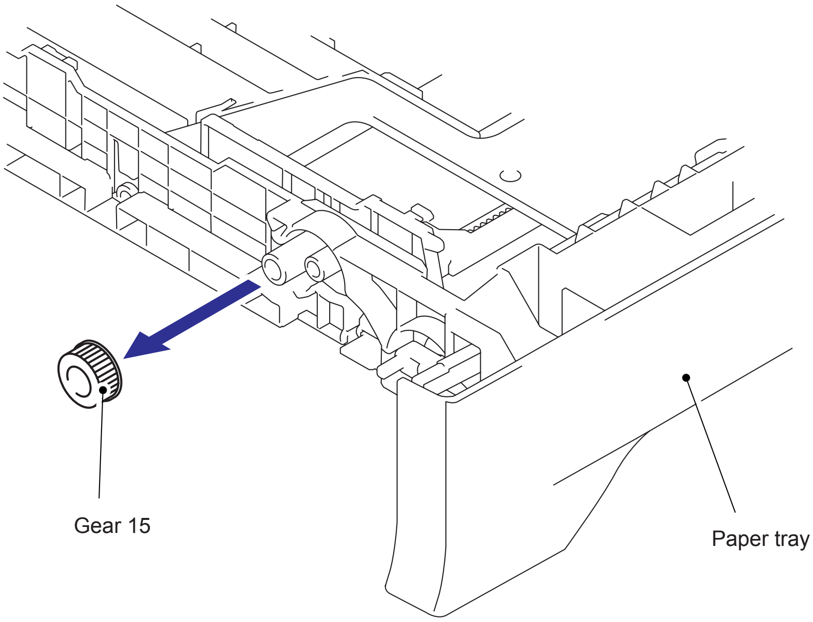


Fig. 5-9

9.2 Back Cover

(1) Open the Back cover.

(2) Remove the Arm of the Back cover from the Pin.

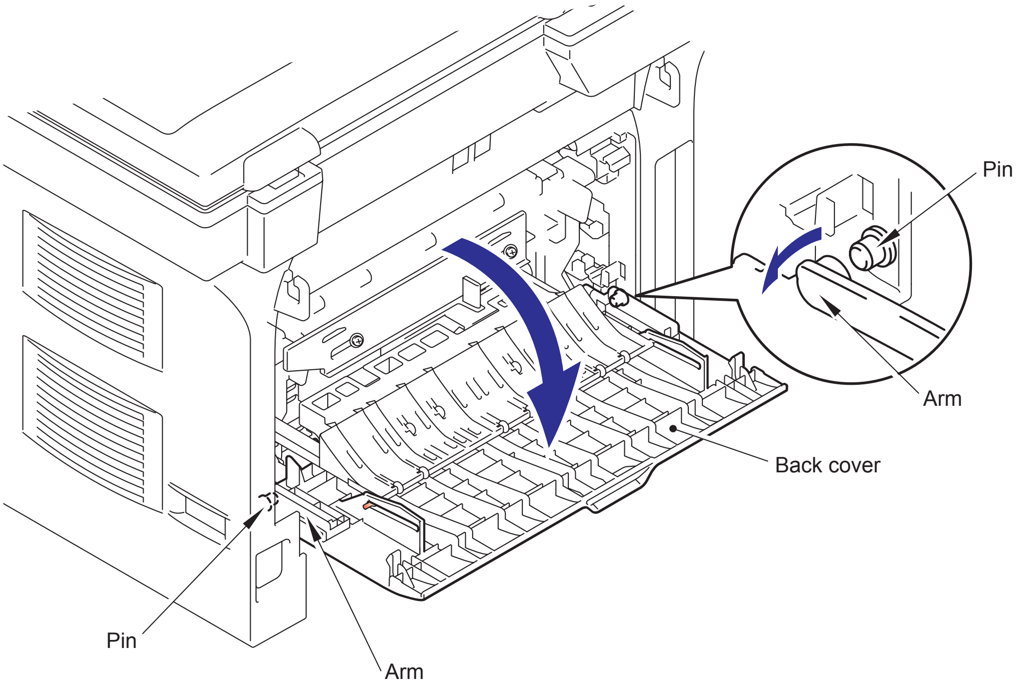


Fig. 5-10

(3) Remove the Pins of the Outer chute ASSY from the Back cover.

(4) Remove the Back cover.

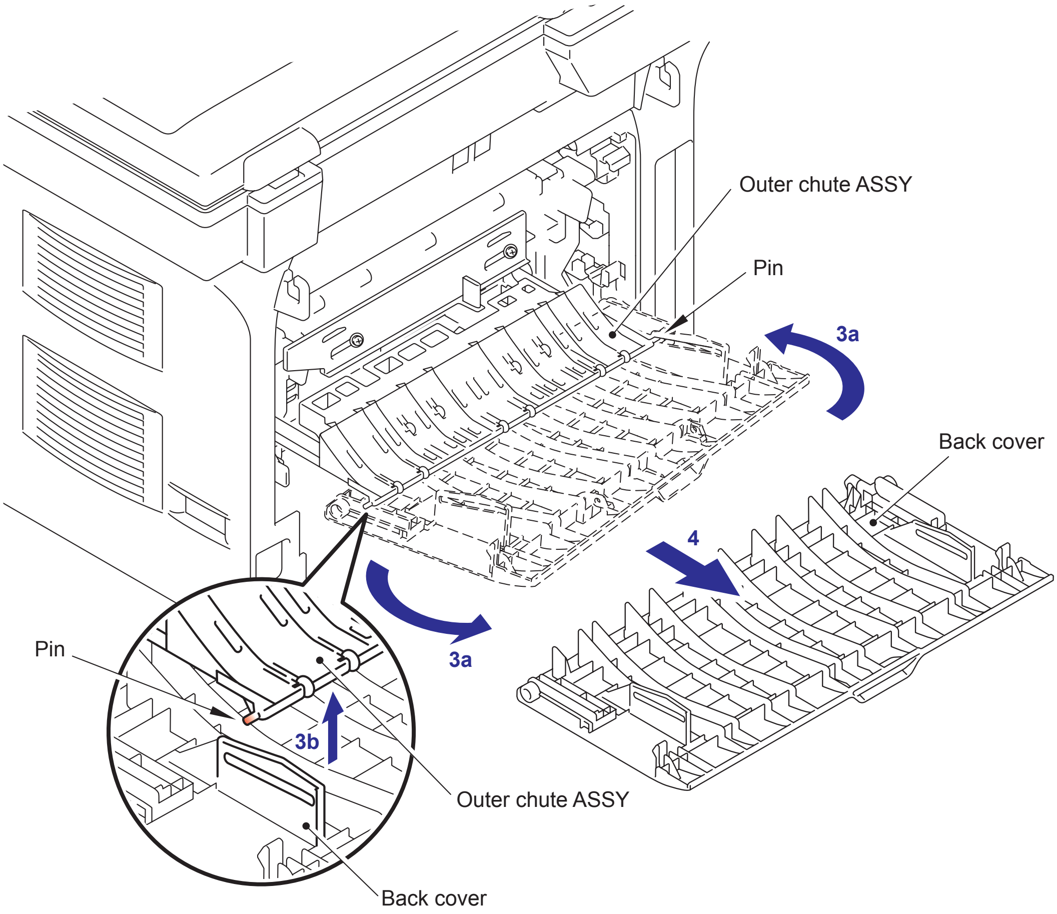


Fig. 5-11

9.3 Rear Chute ASSY

(1) Hold the Knobs on the Rear chute ASSY and pull down this to your side.

(2) Remove the Arms of the Rear chute ASSY from the Pins.

(3) Remove the Rear chute ASSY.

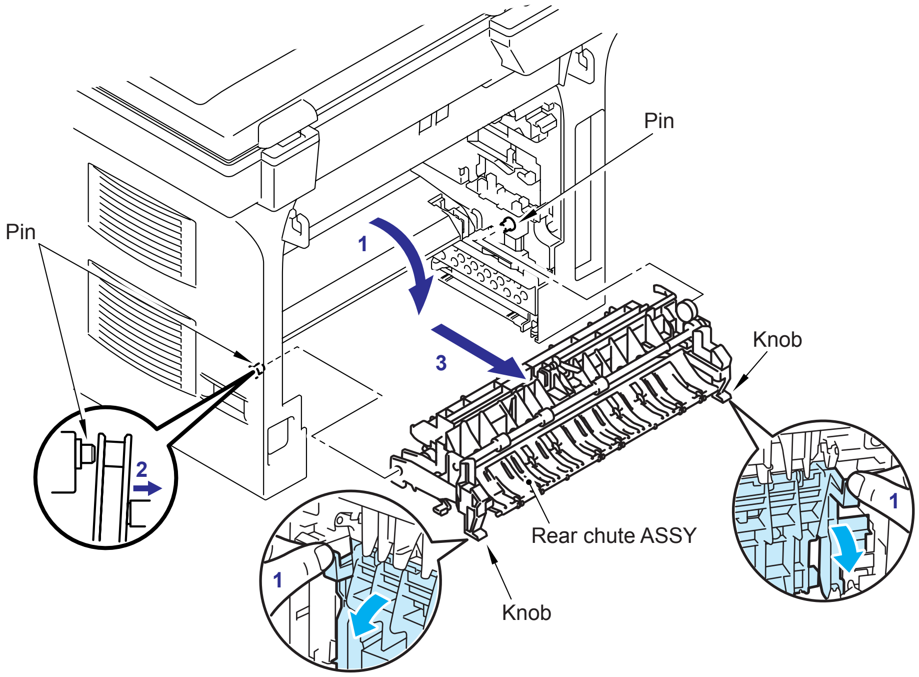


Fig. 5-12

(4) Remove the Arm of the Outer chute from the Pin of the Rear chute, and remove the Outer chute.

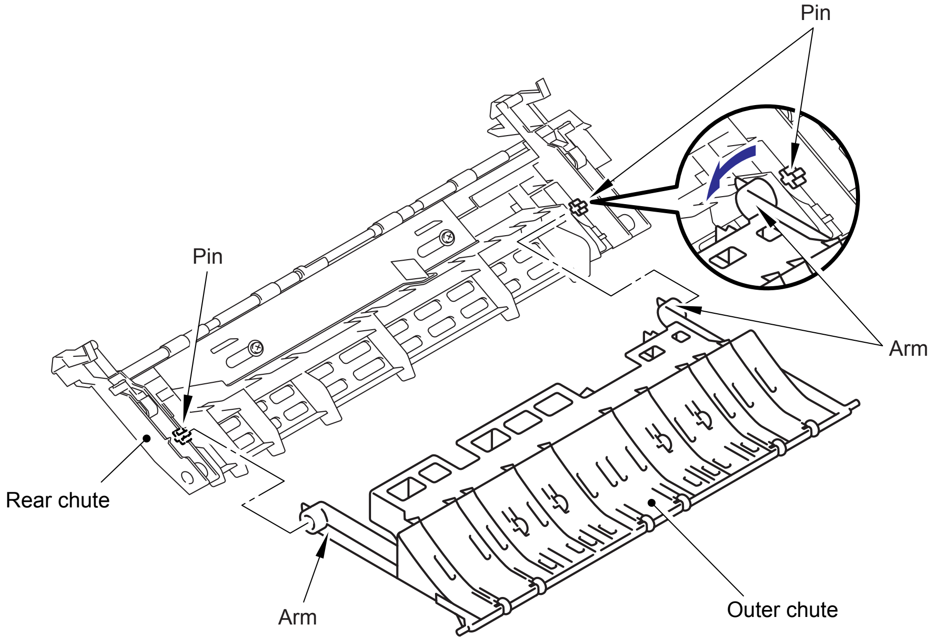


Fig. 5-13

(5) Push the Hook of the Rear chute (indicated by the arrow 5a), and move the Eject actuator to the direction of 5b.

(6) Lift up the Eject actuator to remove.

(7) Remove the Eject actuator spring.

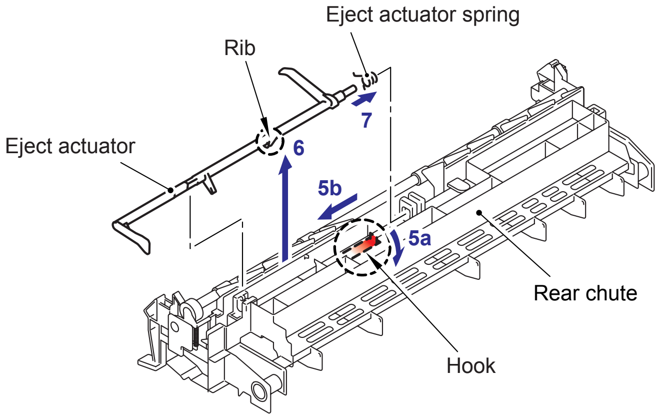


Fig. 5-14

Assembling Note:

- When assembling the Eject actuator spring, ensure that its direction is correct referring to the figure below.

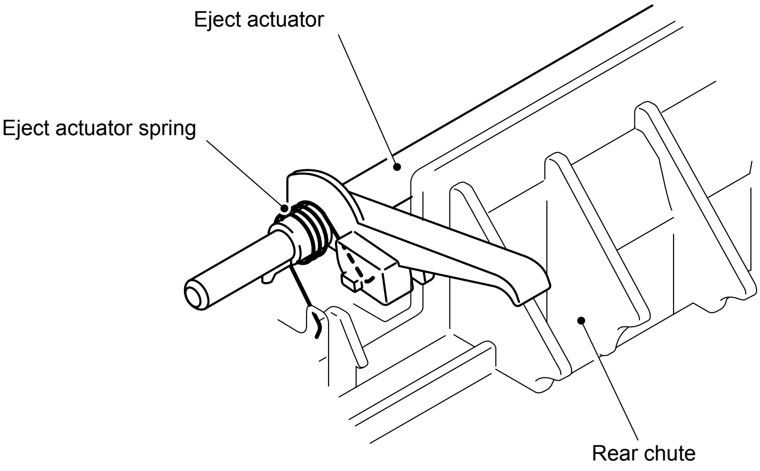


Fig. 5-15

9.4 Fuser Unit

(1) Remove the pan B M4x20 Taptite screw. Release the Hooks in the order of 1a, 1b and 1c. Remove the FU harness cover 1.

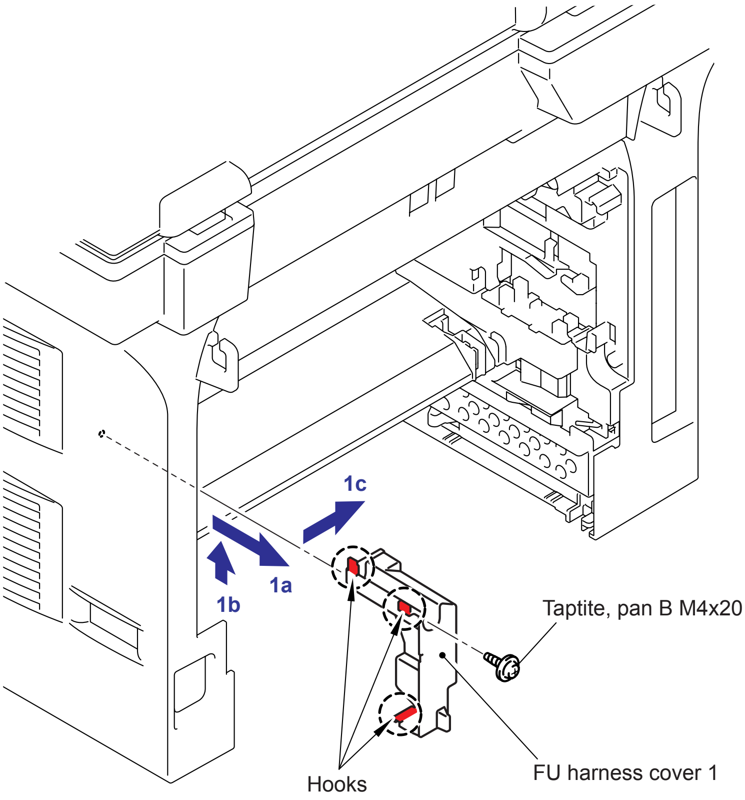


Fig. 5-16

(2) Disconnect the connector of the Heater terminal while pressing the Hook of the connector of the Fuser unit.

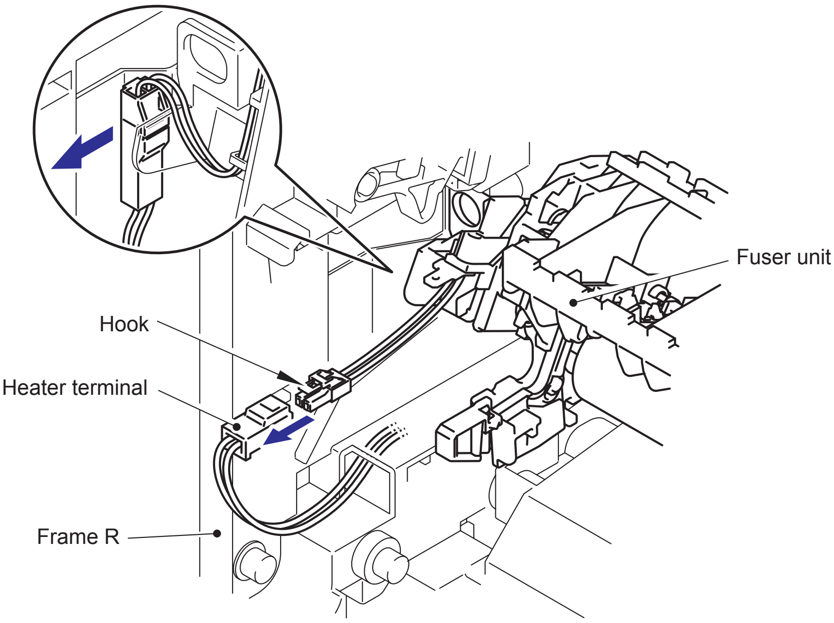


Fig. 5-17

(3) Pull the FU harness cover 2 to the direction of 3a while pressing the hook and pull out the FU harness cover 2 at the back.

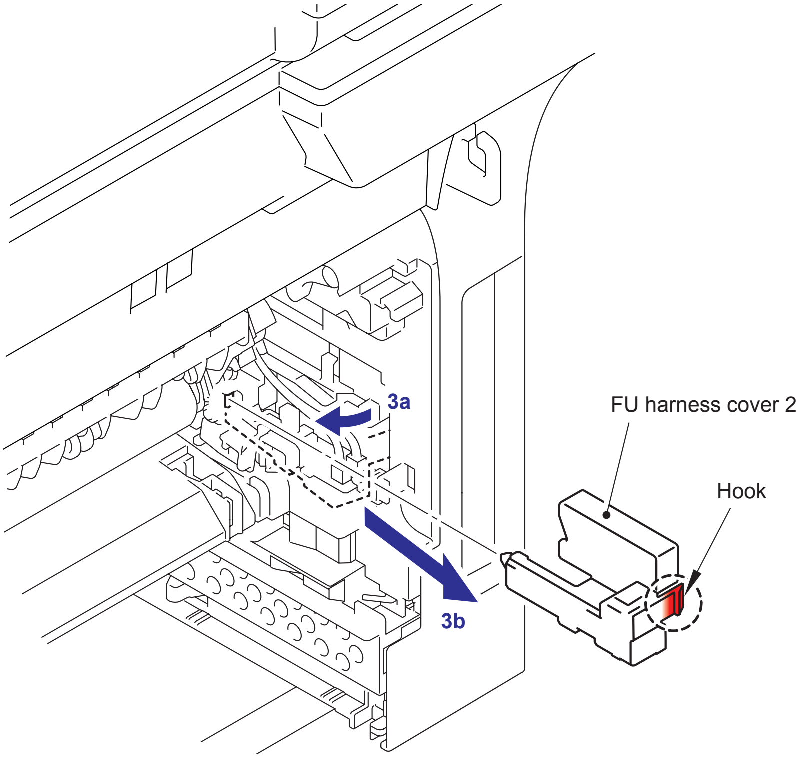


Fig. 5-18

(4) Disconnect the connectors of the Thermistor ASSY M and Thermistor ASSY S from the Relay rear PCB ASSY, and remove the harnesses of these thermistors.

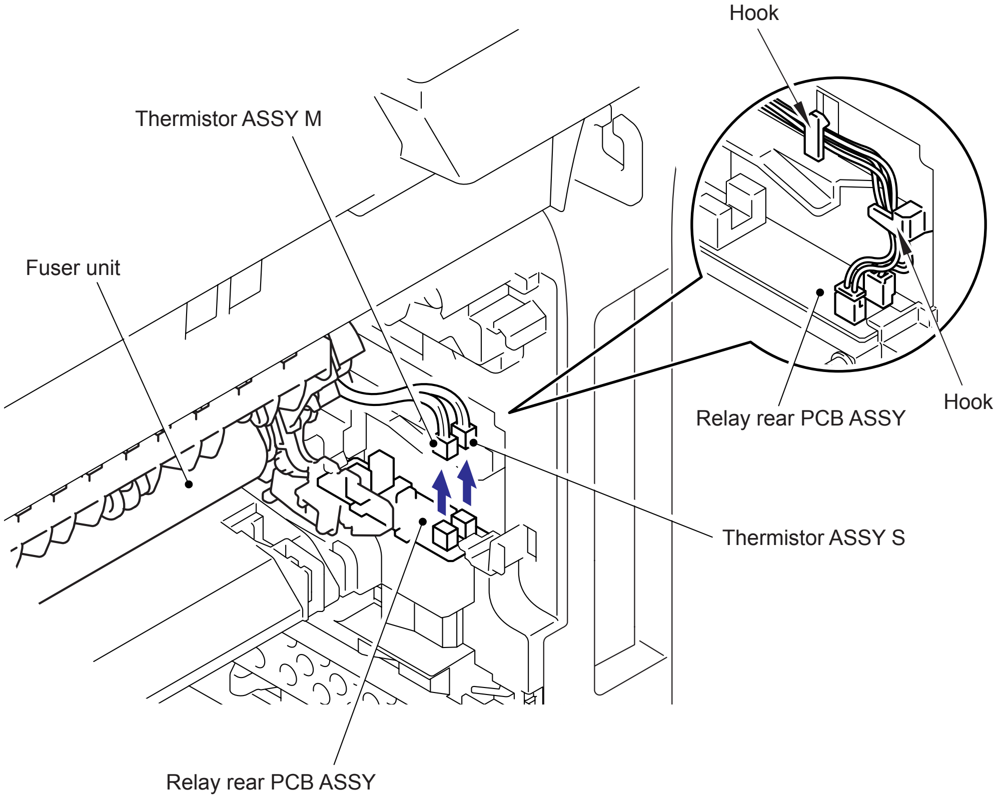
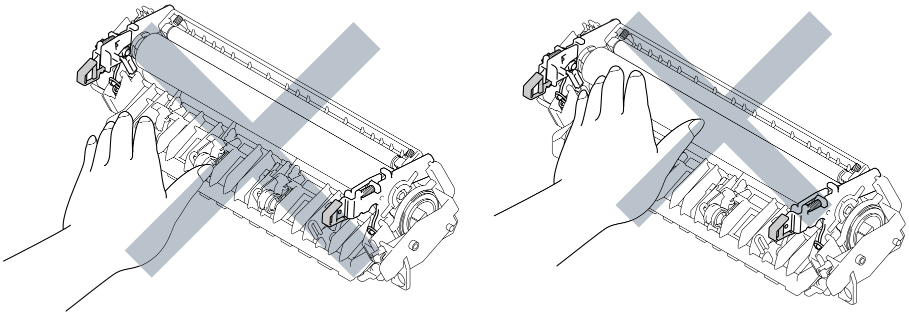


Fig. 5-19

CAUTION

- DO NOT subject the fuser unit to strong physical shocks or vibrations.
- DO NOT touch the rollers and the electrodes to prevent damage to the fuser unit In the following figures.



(5) Remove the pan B M4x20 Taptite screw, and then remove Fuser unit.

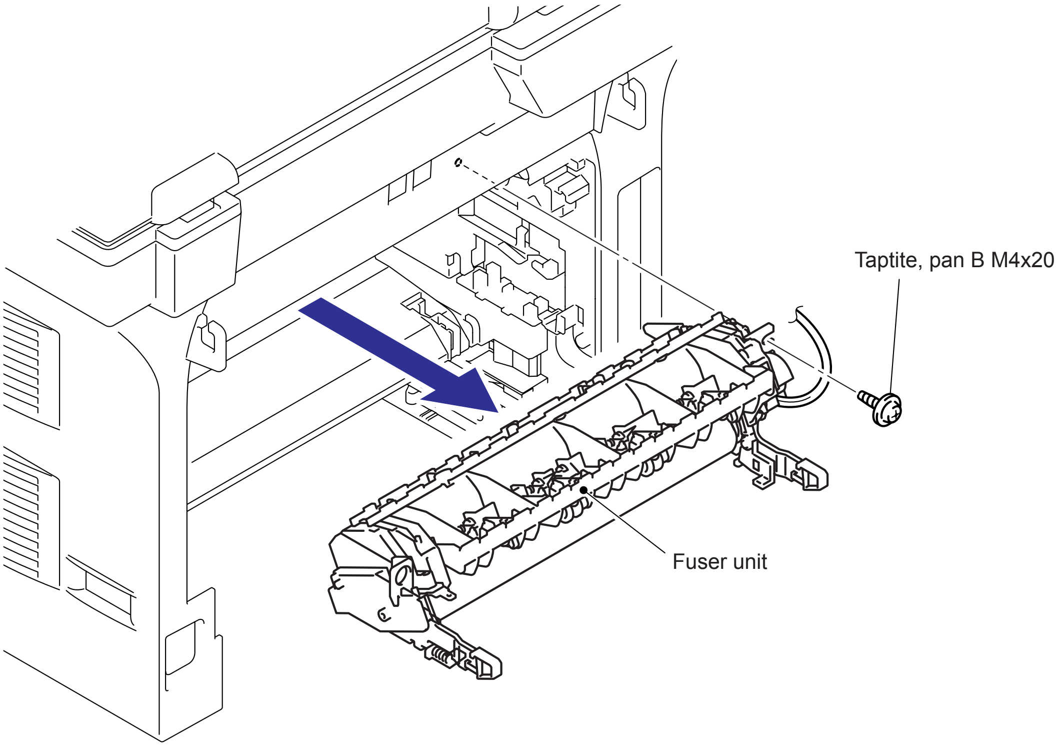


Fig. 5-20

Assembling Note:

- To prevent the deformation of the pressure roller, the fuser unit spare part is shipped with its pressure roller at low nip pressure. Before installing the fuser unit, turn back the levers to the normal position by following instructions below.

(1) Put the fuser unit on a flat, horizontal surface. Pull up each of the black tab (a) on the right side and left side.

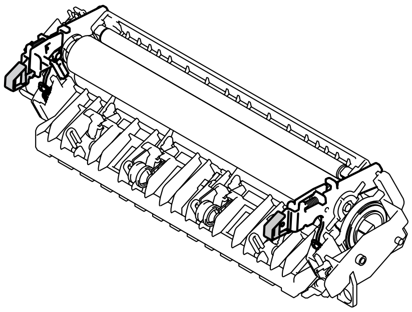


Fig. 5-21

(2) Make sure that the black lever (b) is in the position in the illustration below.

Fig. 5-22

9.5 Tray MP ASSY

(1) Open the MP tray cover ASSY.

(2) Release the Pins of the Tray MP ASSY from the MP tray cover ASSY.

(3) Remove the Tray MP ASSY.

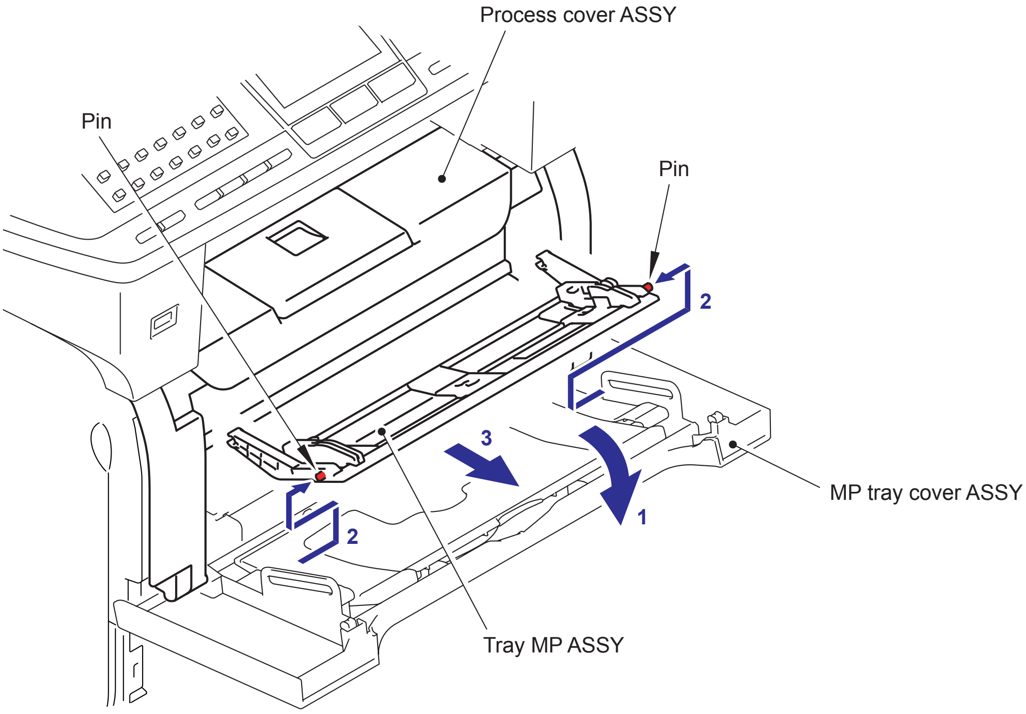


Fig. 5-23

9.6 MP Tray Cover ASSY / Process Cover ASSY / Emblem cover

(1) Push the front cover release button.

(2) Open Process cover ASSY.

(3) Release the Hook to remove the Process cover stopper.

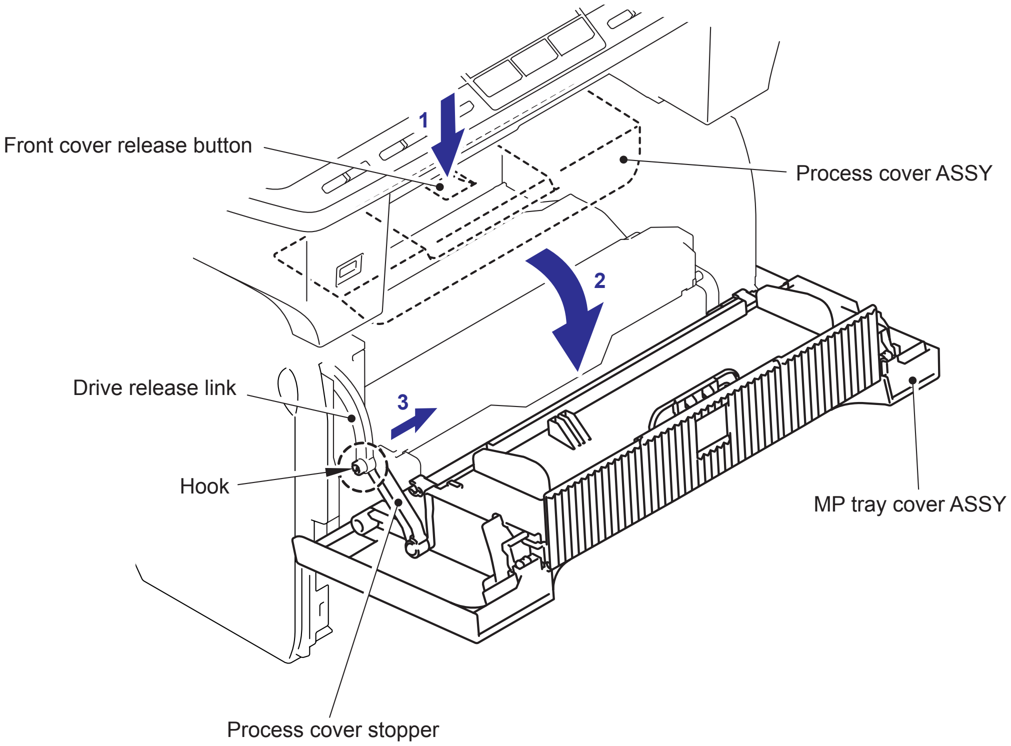


Fig. 5-24

(4) Remove the MP tray cover ASSY and the Process cover ASSY to the direction of 4a and 4b to release the Pins, and remove them.

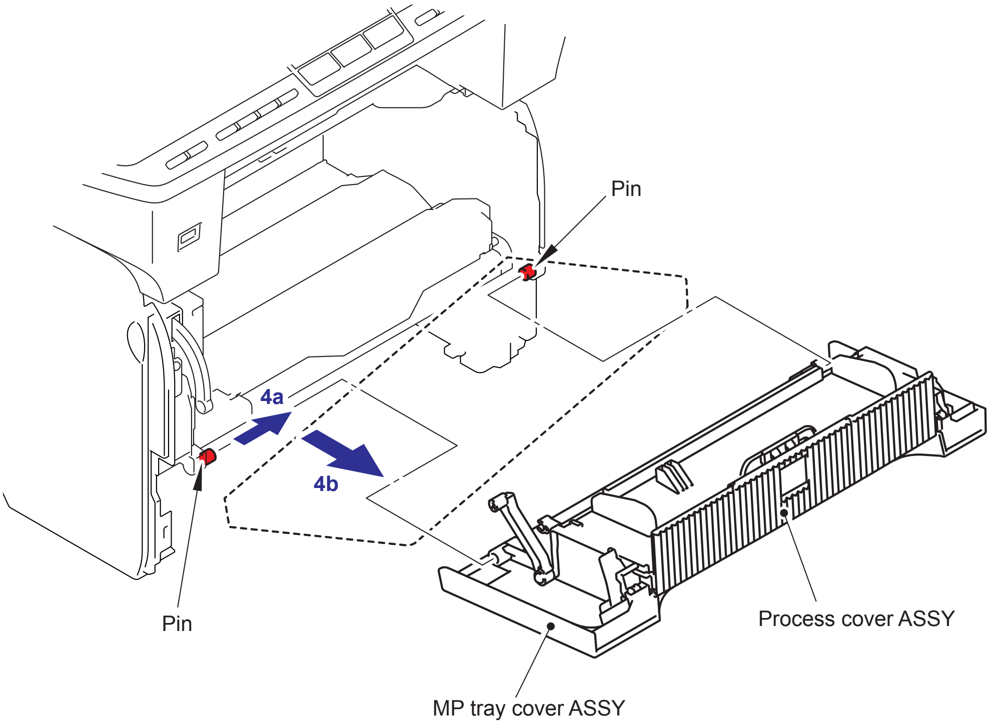


Fig. 5-25

(5) Pull the Arm outwards and remove the Process cover ASSY from the MP tray cover ASSY.

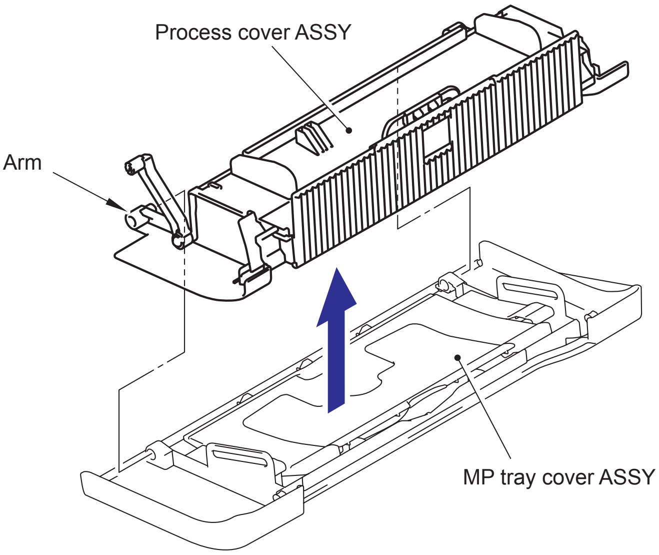


Fig. 5-26

(6) Remove the cup B M4x10 Taptite screw, and then remove the Process cover stopper.

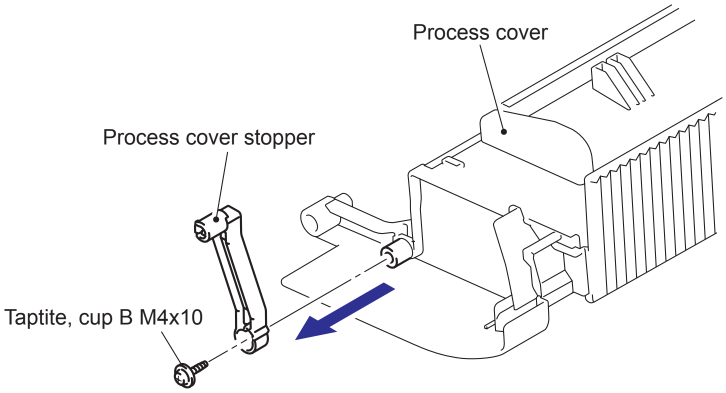


Fig. 5-27

(7) Remove the Support flap 1 from the Process cover.

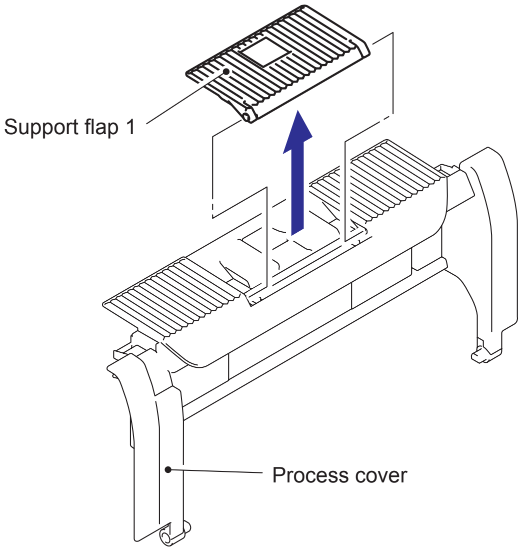


Fig. 5-28

(8) Remove the Hook of the right side, and then remove the MP tray extention from the MP tray cover ASSY.

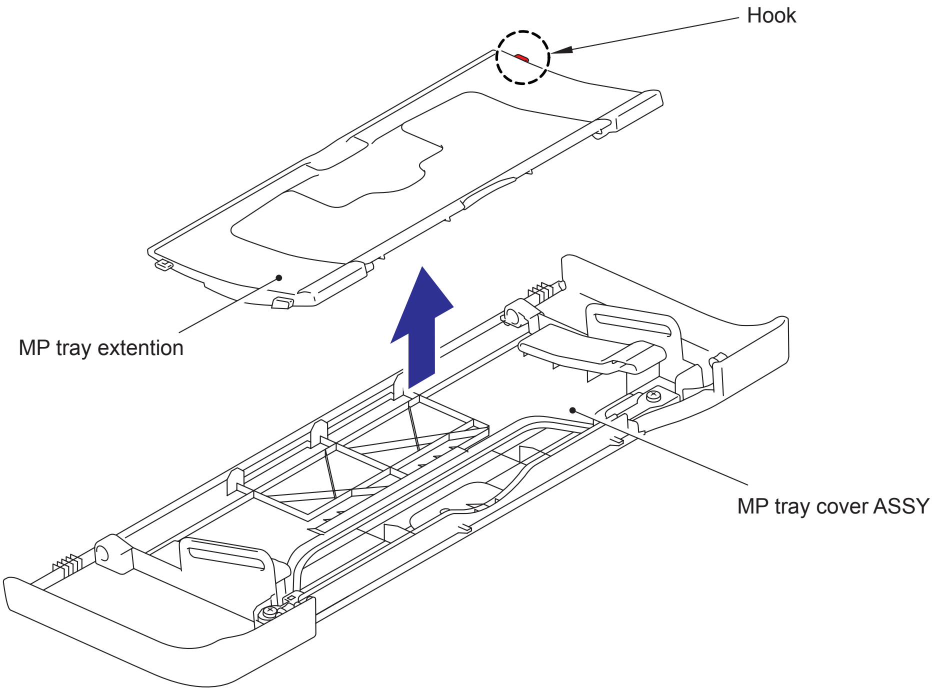


Fig. 5-29

(9) Remove the two bind B M3x10 Taptite screws, and then remove the Emblem cover from the MP tray cover.

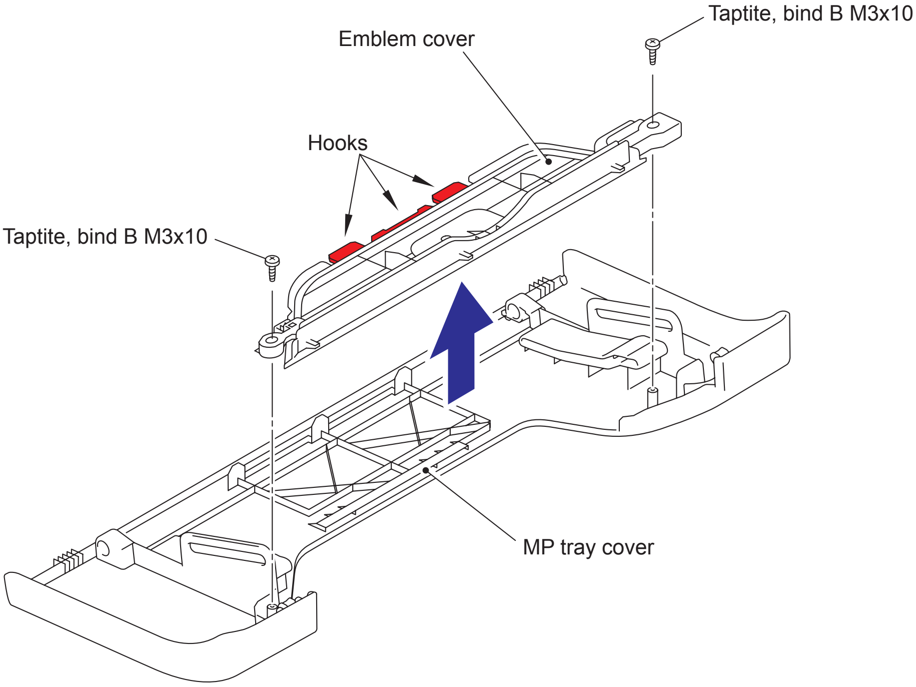


Fig. 5-30

9.7 Access Cover / Side Cover L

(1) Remove the Access cover.

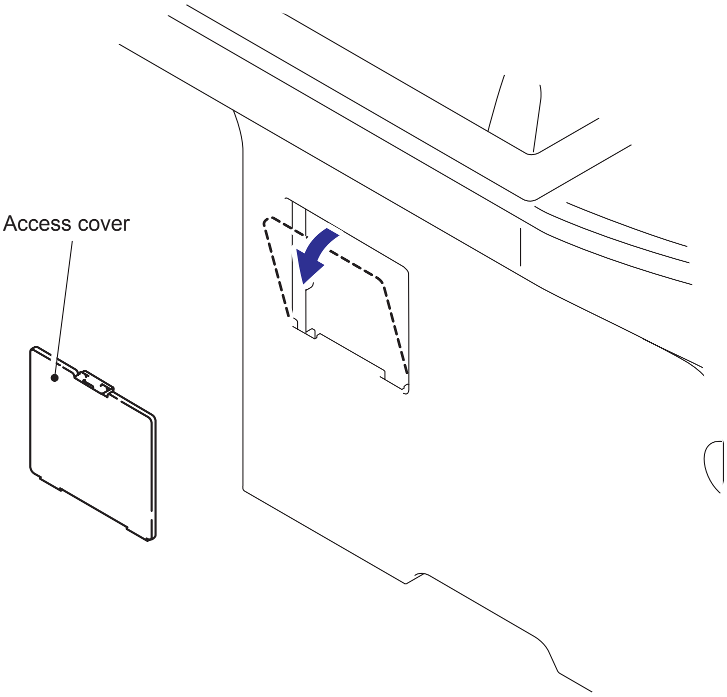


Fig. 5-31

(2) Remove the two bind B M4x12 Taptite screws, and then remove the Side cover L by releasing the Hooks from 2a to 2d.

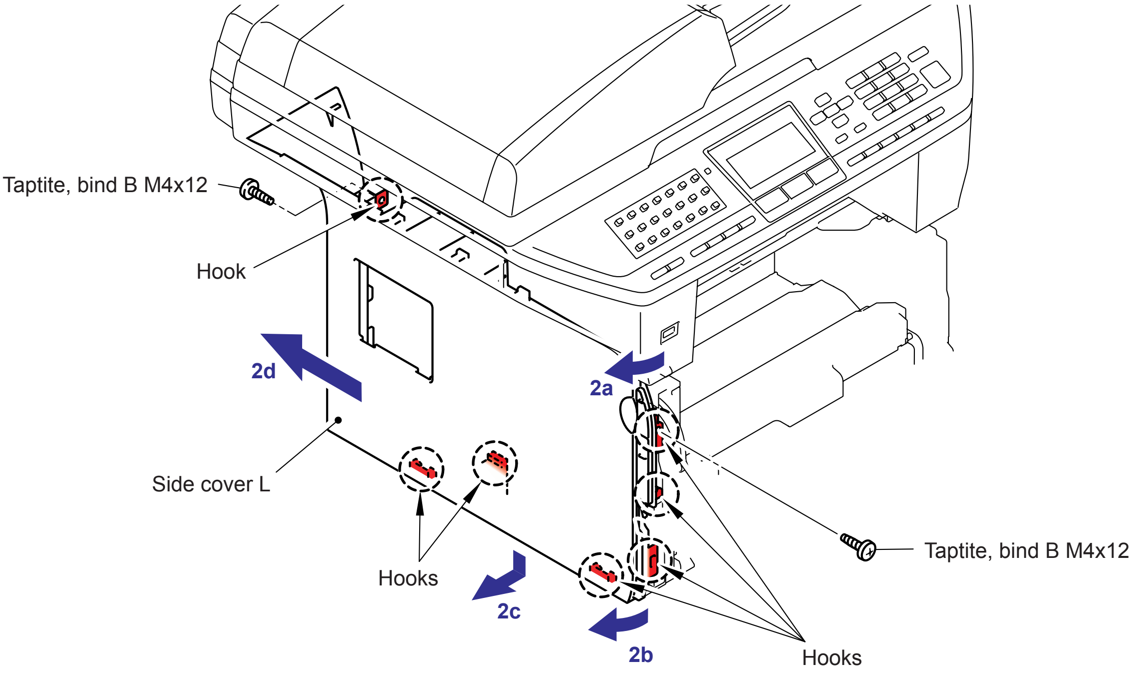


Fig. 5-32

9.8 ADF Unit

9.8.1 ADF Unit

(1) Remove the four cup S M3x6 SR Taptite screws, remove the two FG harnesses and then remove the Shield cover ASSY.

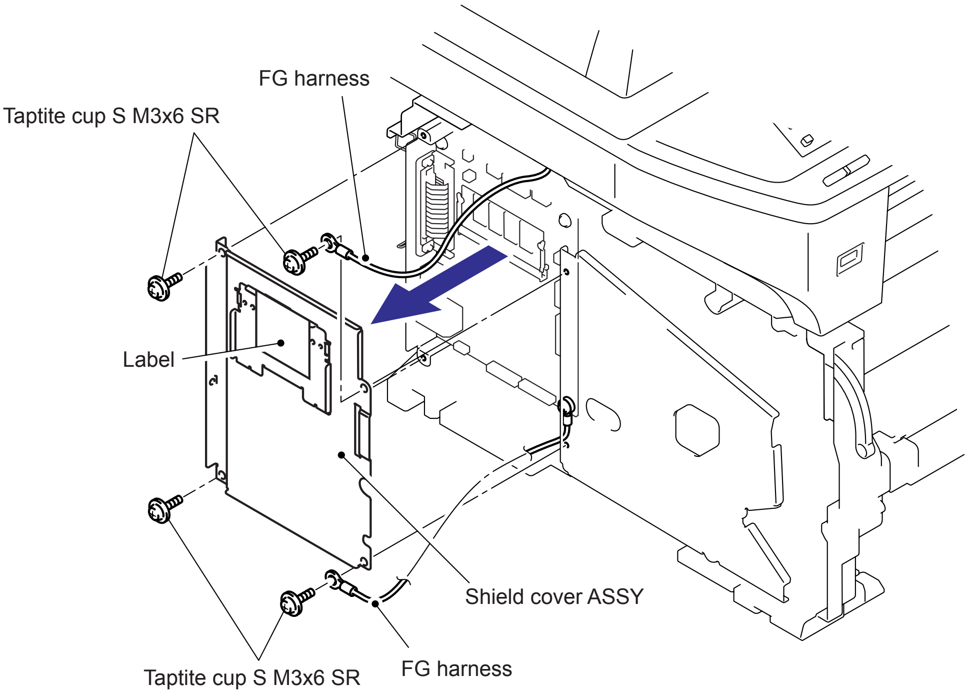


Fig. 5-33

(2) Remove the cup S M3x6 Taptite screw, remove the ADF FG harness and FB FG harness.

(3) Disconnect the Connector from the Driver PCB.

(4) Disconnect the two Connectors from the Main PCB.

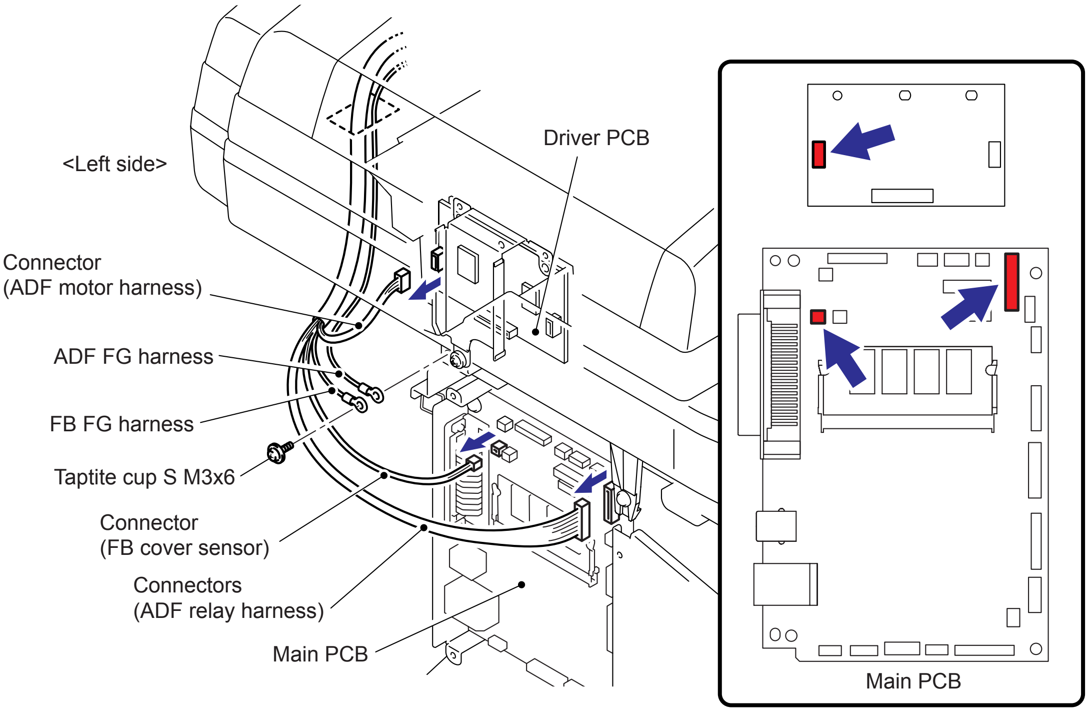


Fig. 5-34

(5) Remove the two bind B M4x12 Taptite screws, and then remove the Document cover LGL.

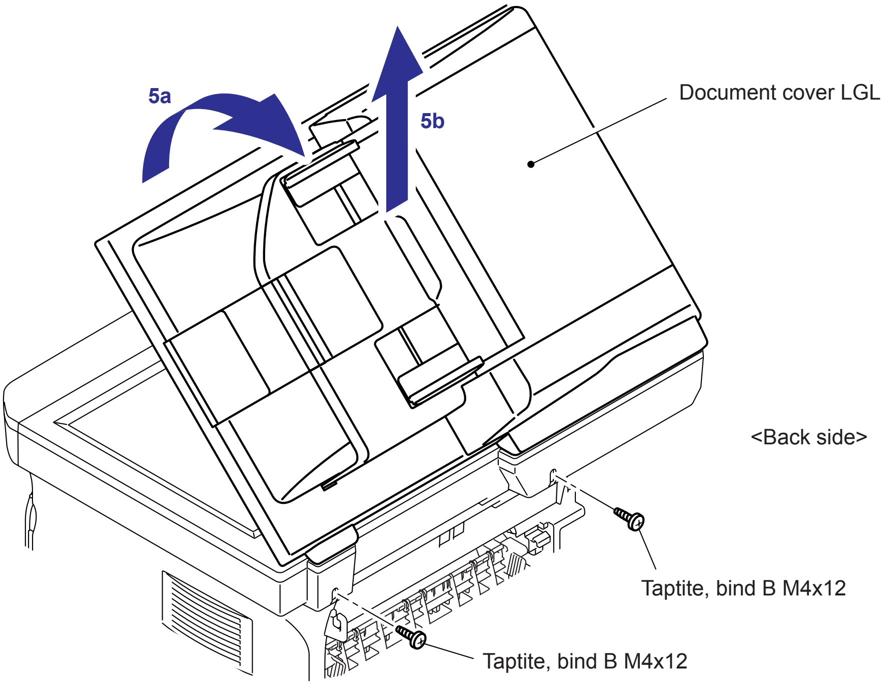


Fig. 5-35

9.8.2 Hinge Arm R

(1) Turn the Document cover LGL upside down.
Remove the Hinge arm R from the Hinge base R.

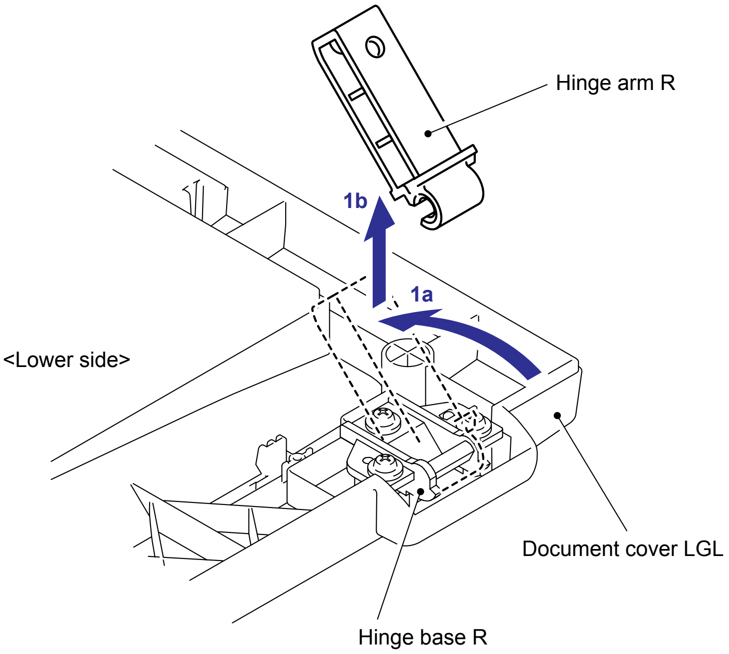


Fig. 5-36

9.8.3 Hinge Base R

(1) Remove the three cup B M3x10 Taptite screws, and then remove the Hinge base R.

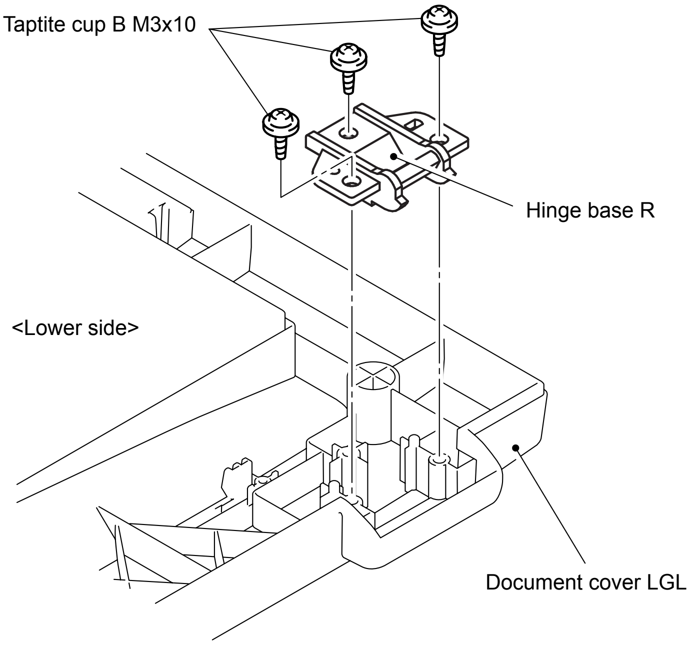


Fig. 5-37

9.8.4 Hinge ASSY L

(1) Remove the two cup B M3x10 Taptite screws and the cup S M3x12 Taptite screw, and then remove the Hinge ASSY L.

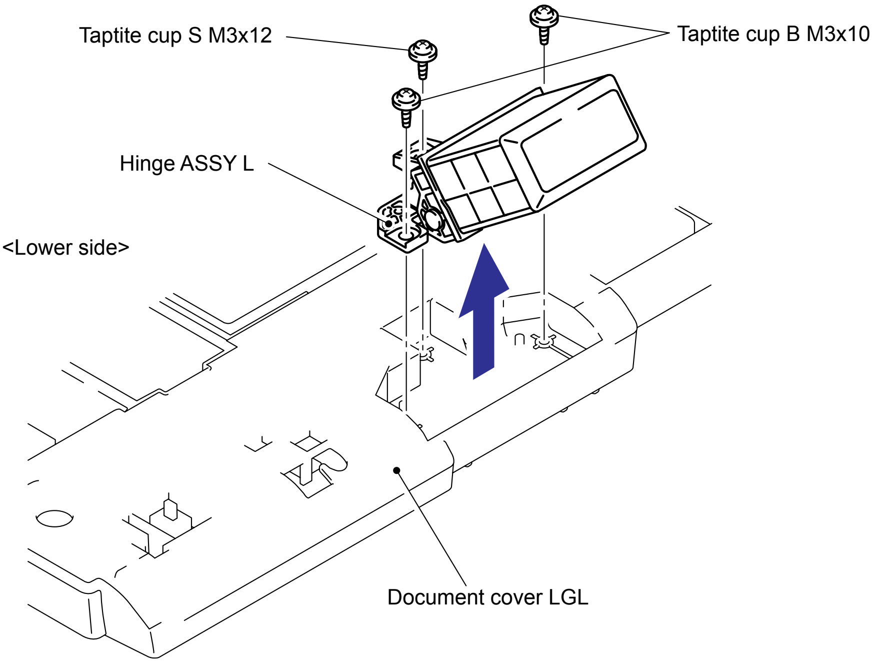


Fig. 5-38

9.8.5 ADF Cover ASSY

(1) Turn the Document cover right way up. Remove the ADF cover ASSY from the ADF unit.

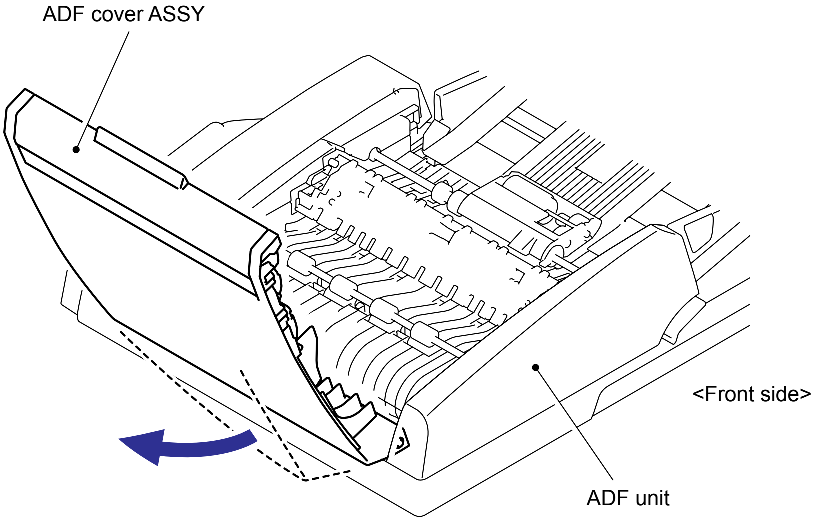


Fig. 5-39

9.8.6 ADF Side Cover F

(1) Push the Hook from underneath the ADF unit to release the Latch, and remove the cup S M3x8 Taptite screw and cup B M3x10 Taptite screw from the ADF Side cover F.

(2) Remove the ADF side cover F from the ADF unit.

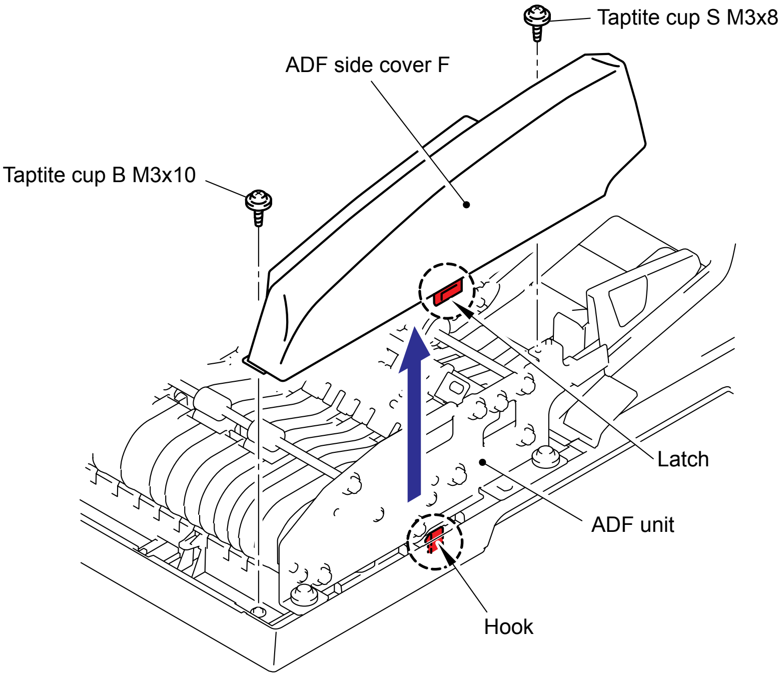


Fig. 5-40

9.8.7 ADF Side Cover R

(1) Remove the cup B M3x10 Taptite screw.

(2) Release the Hook from underneath the ADF unit, and remove the ADF side cover R from the ADF unit.

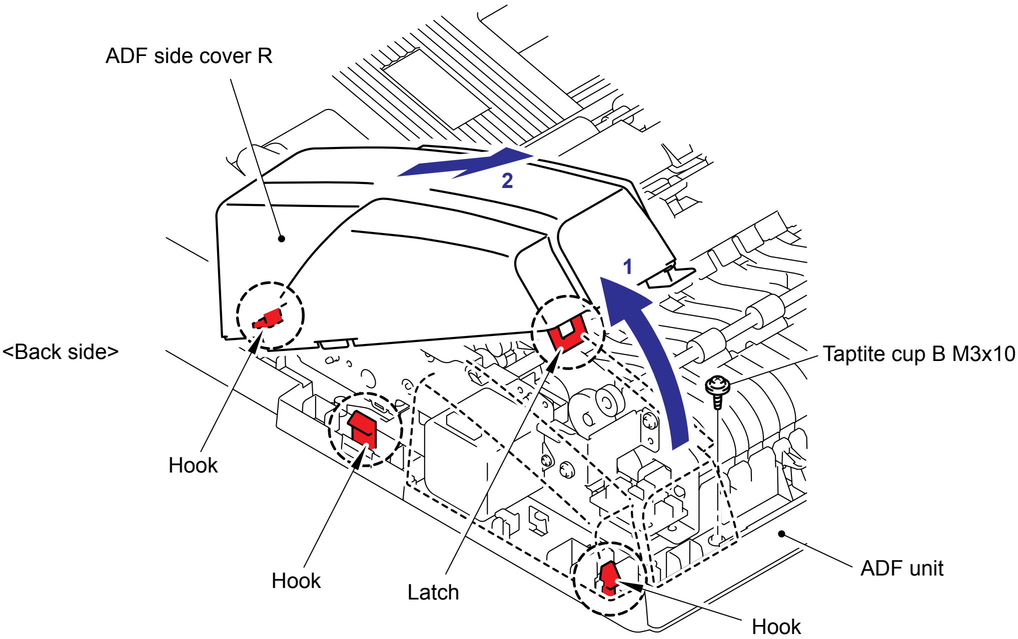


Fig. 5-41

9.8.8 ADF Chute ASSY

(1) Disconnect the 7 connectors from the ADF relay PCB.

(2) Disconnect the connector of the ADF motor harness from the ADF motor.

(3) Remove the cup S M3x8 Taptite screw and ADF FG harness.

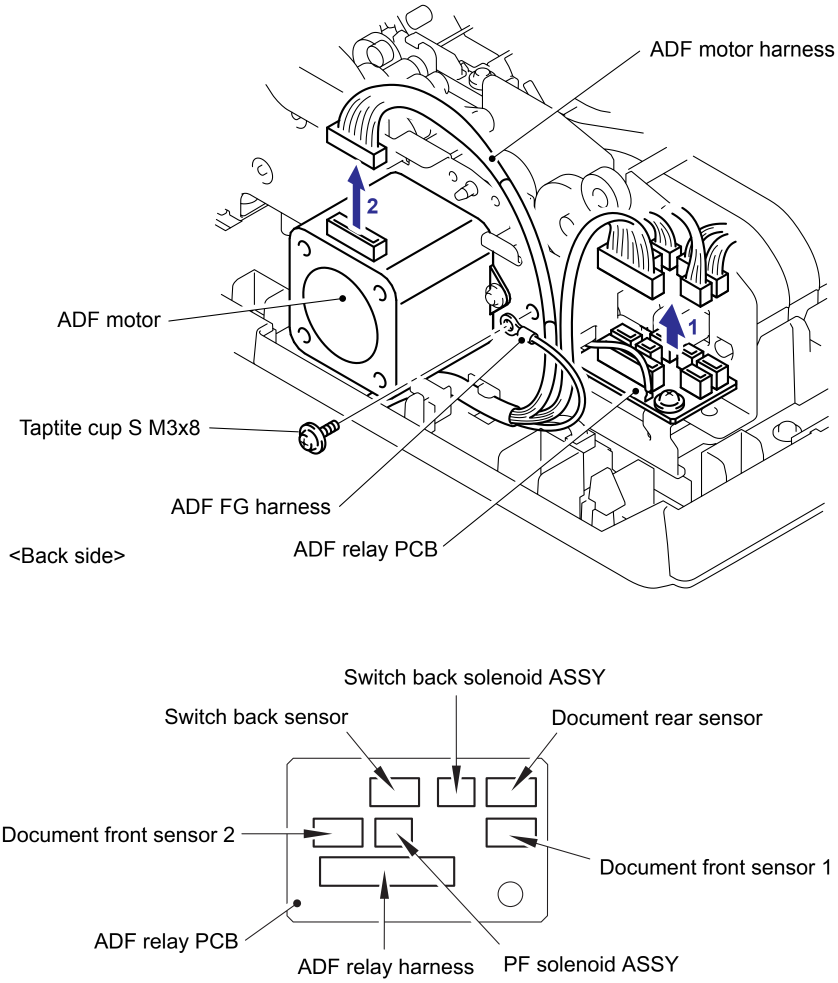


Fig. 5-42

(4) Turn the Document cover LGL upside down and remove the cup B M3x10 Taptite screw.

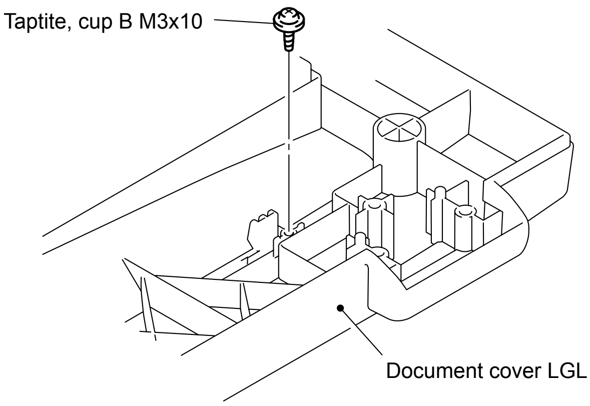


Fig. 5-43

(5) Turn the Document cover LGL the correct way up and remove the four cup B M3x10 Taptite screws from the ADF chute ASSY.

(6) Release the hook to remove the ADF chute ASSY from the Document cover LGL.

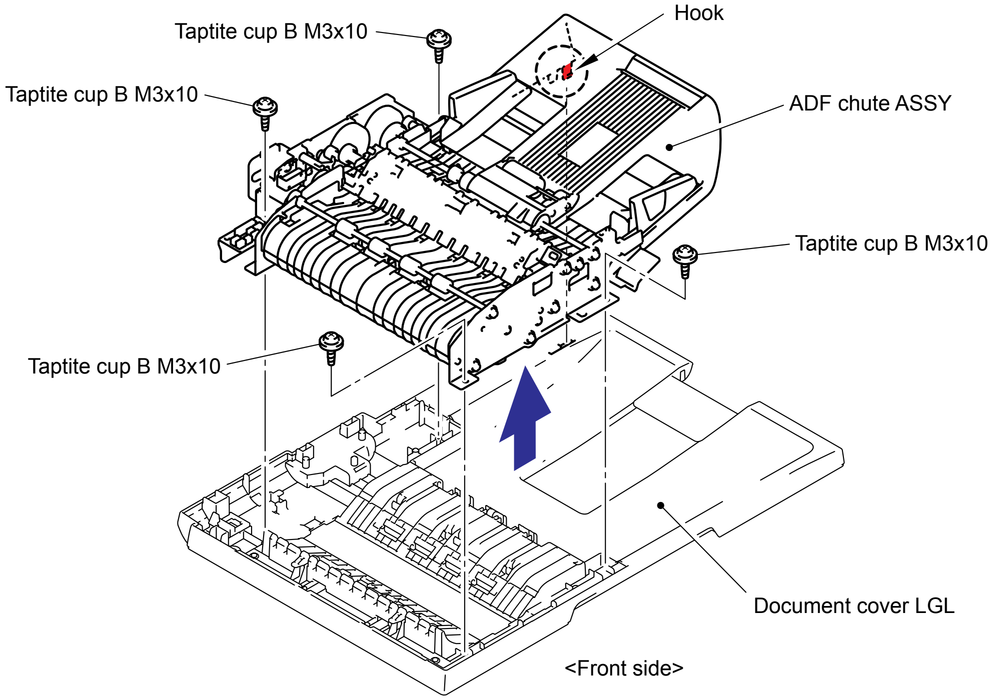


Fig. 5-44

(7) Turn the ADF chute ASSY upside down and remove the four LF4 films.

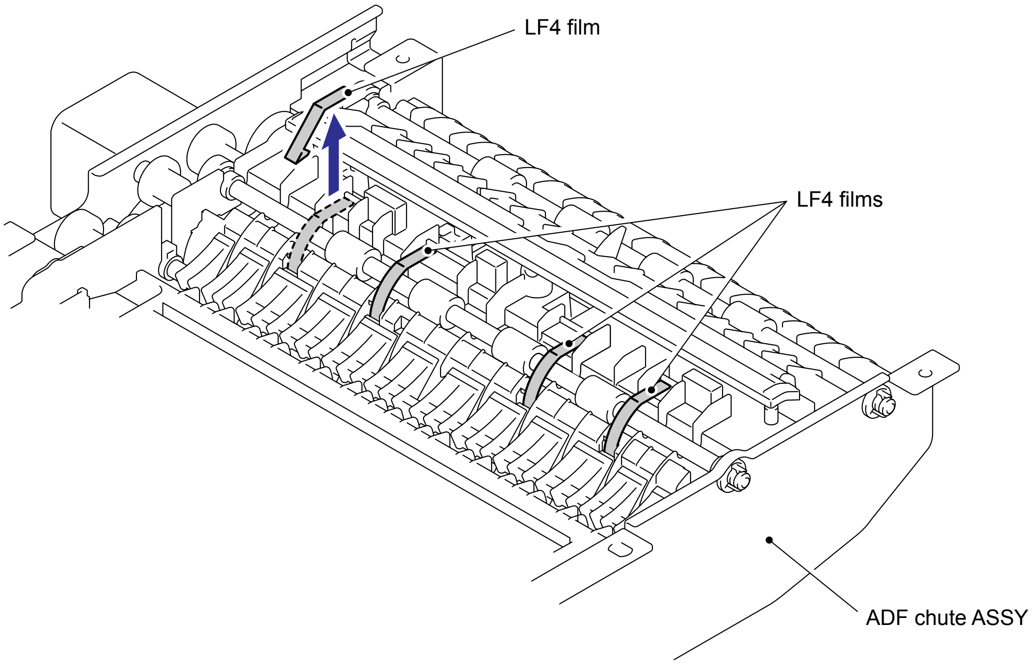


Fig. 5-45

9.8.9 Sub Chute ASSY / SX Chute

(1) Remove the two cup S M3x8 Taptite screws.

(2) Remove the Sub chute ASSY or SX chute from the ADF chute ASSY.

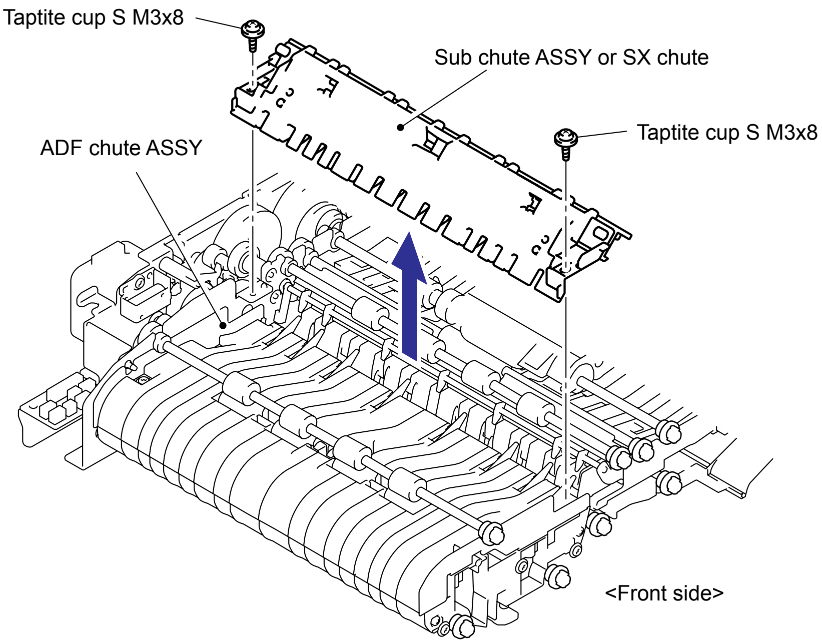


Fig. 5-46

9.8.10 Exit Chute Cover ASSY

(1) Turn the ADF chute ASSY upside down and remove the four cup B M3x10 Taptite screws.

(2) Remove the Exit chute cover ASSY from the ADF chute ASSY.

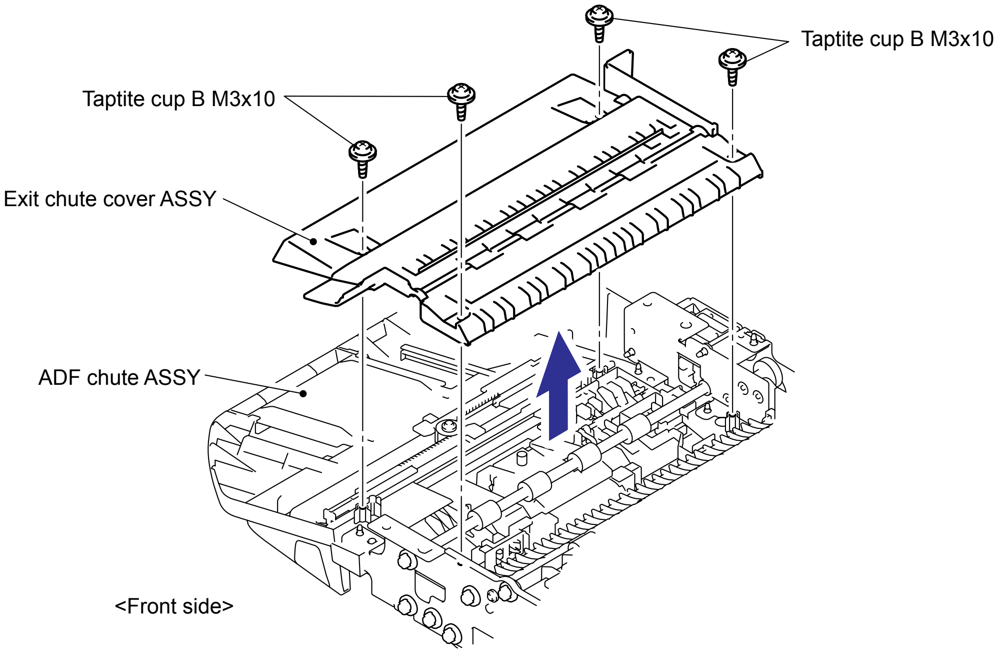


Fig. 5-47

9.8.11 Earth Spring

(1) Turn the Exit chute cover ASSY upside down. Remove the Earth spring from the Exit chute cover ASSY.

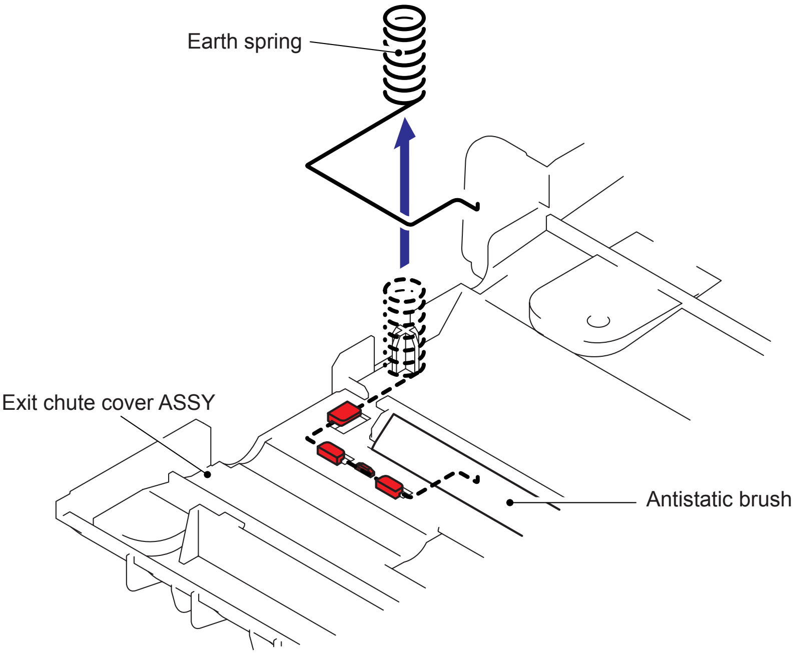


Fig. 5-48

Assembling Note:

- When assembling the Earth spring, ensure that the end of the Earth spring is attached onto the Antistatic brush as shown in the figure below.

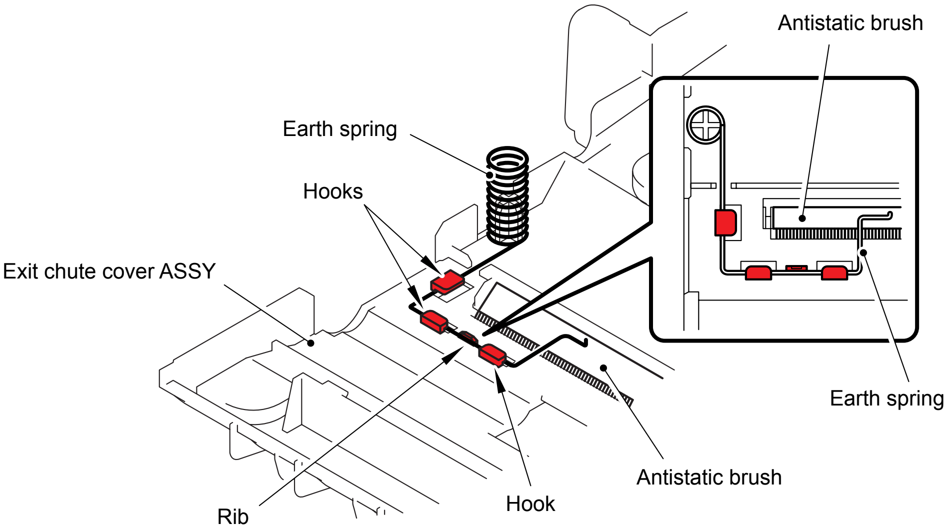


Fig. 5-49

9.8.12 PF Roller Holder ASSY

(1) Turn the ADF chute ASSY upside down. Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.

(2) Remove the Bushing from the ADF chute ASSY, and remove the PF roller holder ASSY from the ADF chute ASSY.

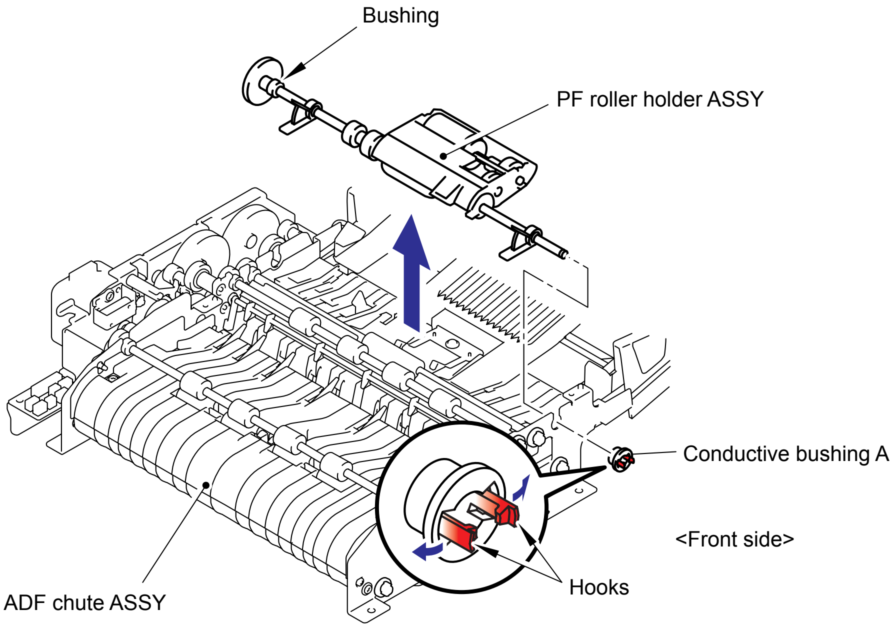


Fig. 5-50

9.8.13 LF Roller 1 ASSY

(1) Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.

(2) Release the Lock lever and then remove the Bushing from the ADF chute ASSY, and remove the LF roller 1 ASSY from the ADF chute ASSY.

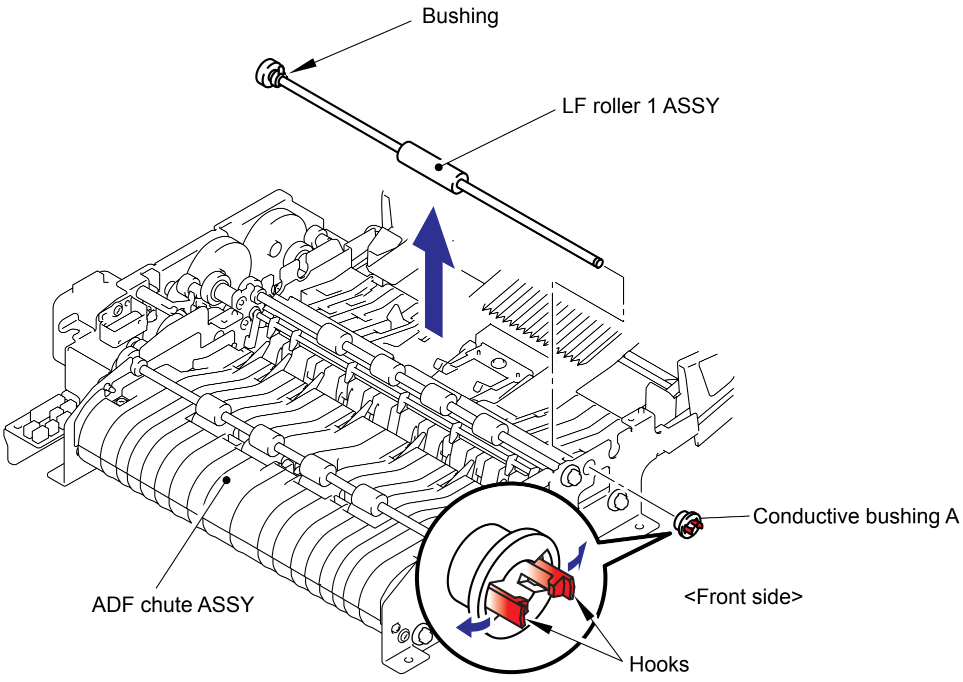


Fig. 5-51

Assembling Note:

- When assembling the LF roller 1 ASSY, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

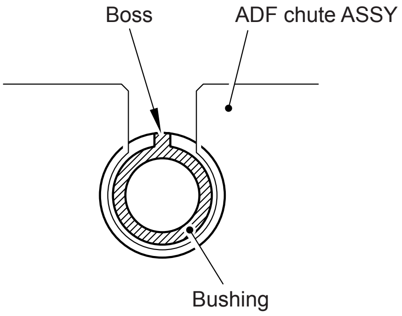


Fig. 5-52

9.8.14 Switch Back Roller ASSY

(1) Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.

(2) Remove the Bushing from the ADF chute ASSY, and remove the Switch back roller ASSY from the ADF chute ASSY.

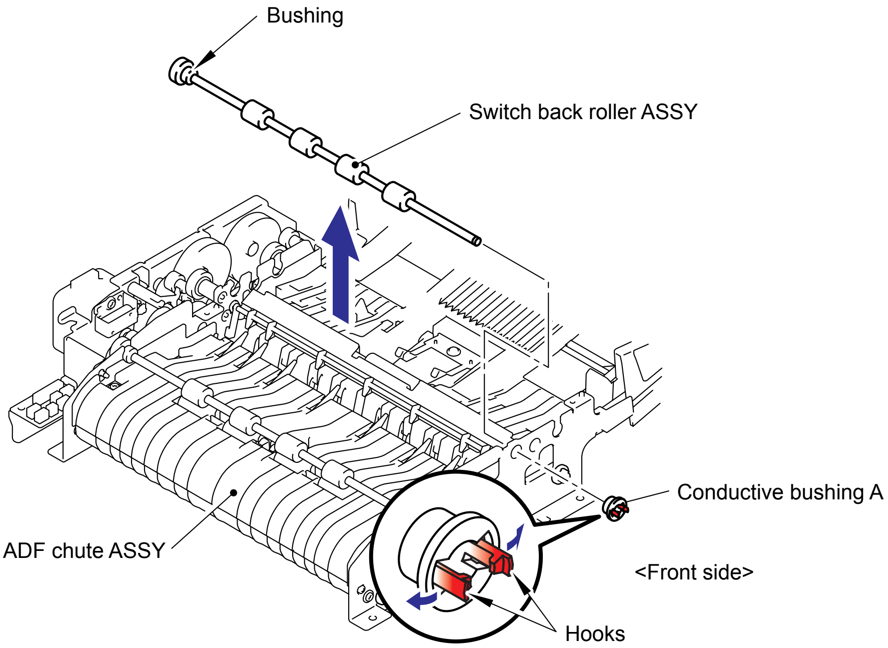


Fig. 5-53

Assembling Note:

- When assembling the Switch back roller ASSY, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

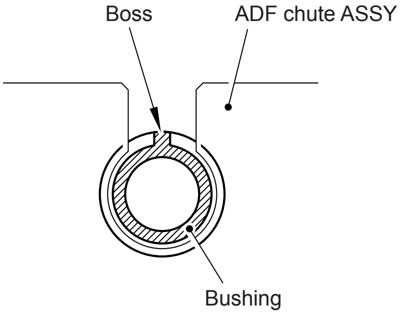


Fig. 5-54

- When assembling each of the Switch back roller ASSY, LF roller 2/3/4 ASSYs and Exit roller ASSY, make sure to assemble it onto the correct position.
  Identify each roller by four shades of the rollers.

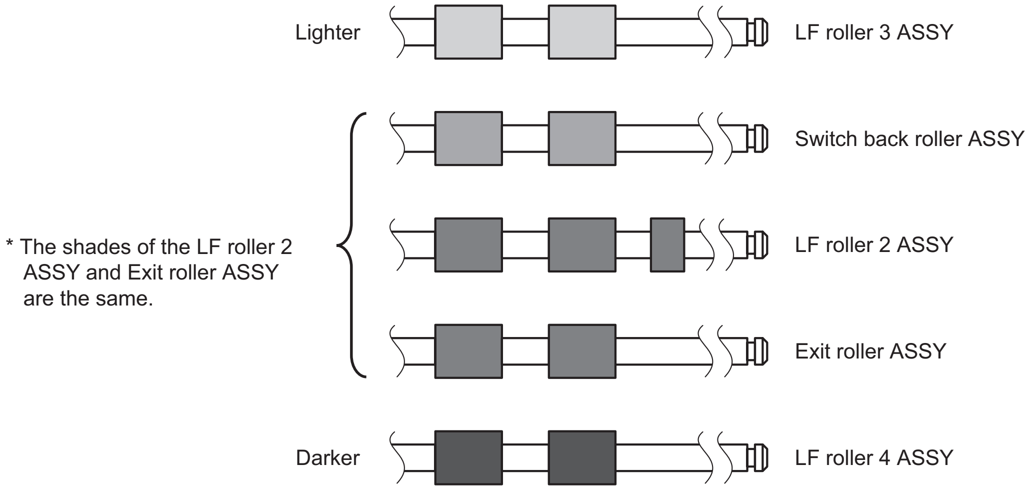


Fig. 5-55

* It is recommended to mark each of the roller ASSYs when disassembling them. Failure to assemble each roller ASSY onto the correct position may cause paper jam or stretching image.

9.8.15 ADF Motor

(1) Remove the two screw pan (S/P washer) M3x6, and then remove the ADF motor.

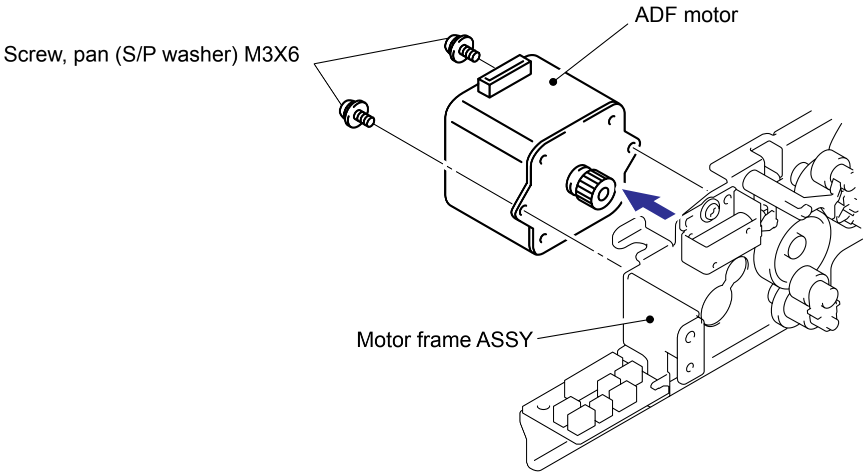


Fig. 5-56

(2) Remove the three cup S M3x8 Taptite screws, and then remove the Motor frame ASSY.

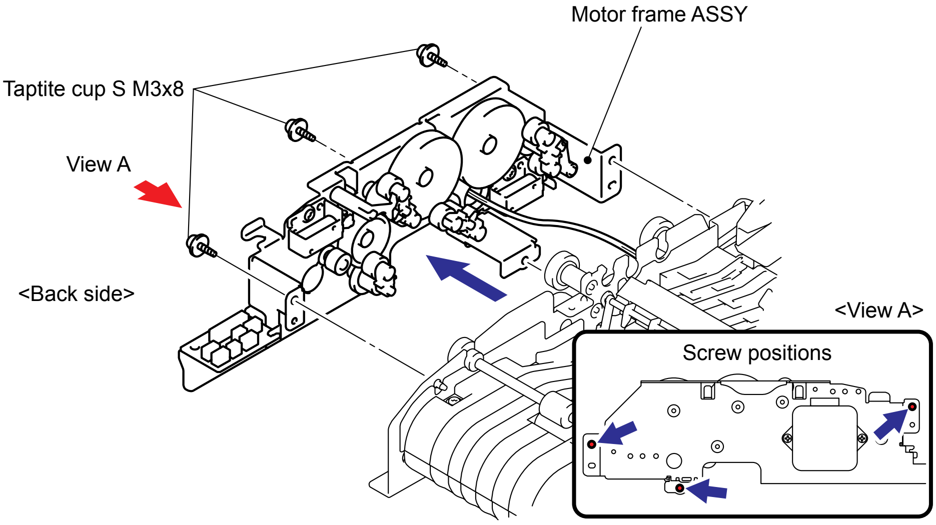


Fig. 5-57

Assembling Note:

- When assembling the Motor frame ASSY, ensure that the gears (indicated with gray) are placed in the positions as shown in the figure below.

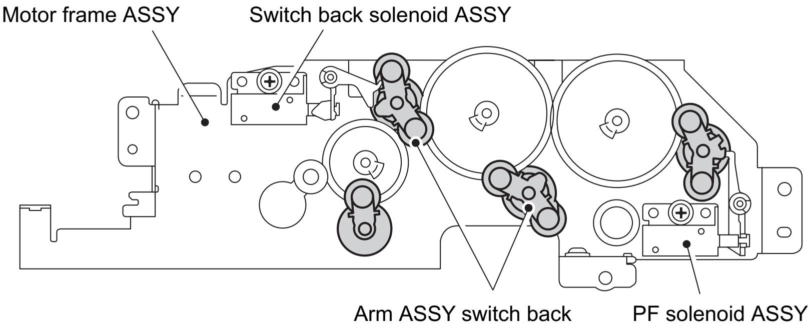


Fig. 5-58

9.8.16 Switch Back Solenoid ASSY

(1) Remove the cup S M3x8 Taptite screw.

(2) Remove the Switch back solenoid ASSY.

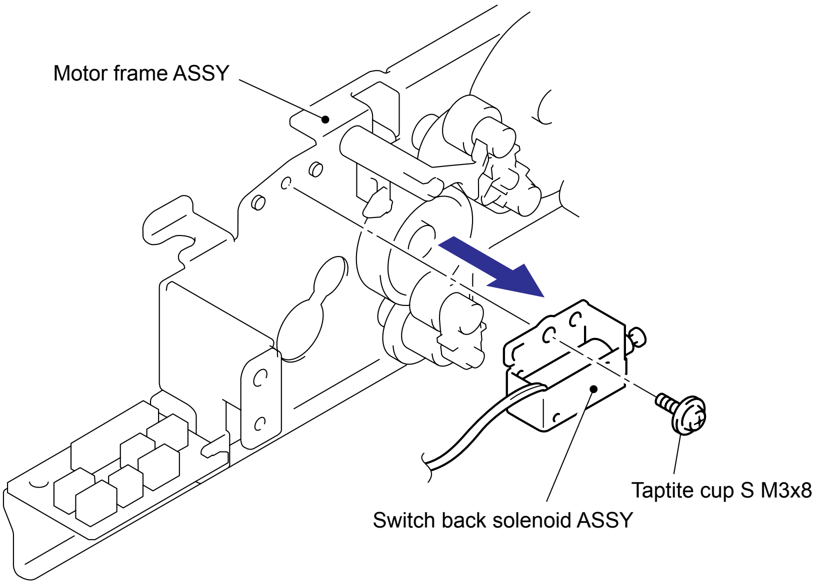


Fig. 5-59

9.8.17 PF Solenoid ASSY

(1) Remove the cup S M3x8 Taptite screw.

(2) Remove the PF solenoid ASSY.

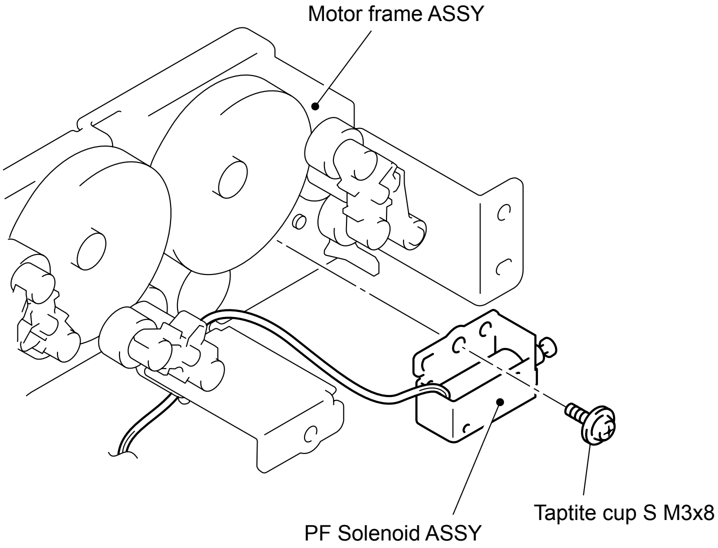


Fig. 5-60

9.8.18 ADF Relay PCB

(1) Remove the cup S M3x8 Taptite screw.

(2) Remove the ADF relay PCB.

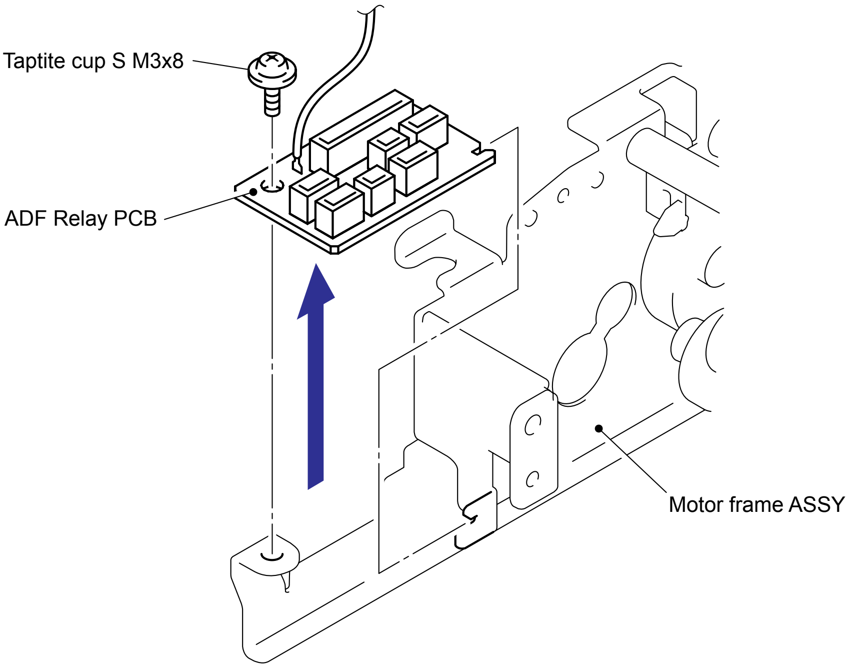


Fig. 5-61

9.8.19 Paper Feed Chute ASSY

(1) Remove the two cup S M3x8 Taptite screws.

(2) Remove the Paper feed plate.

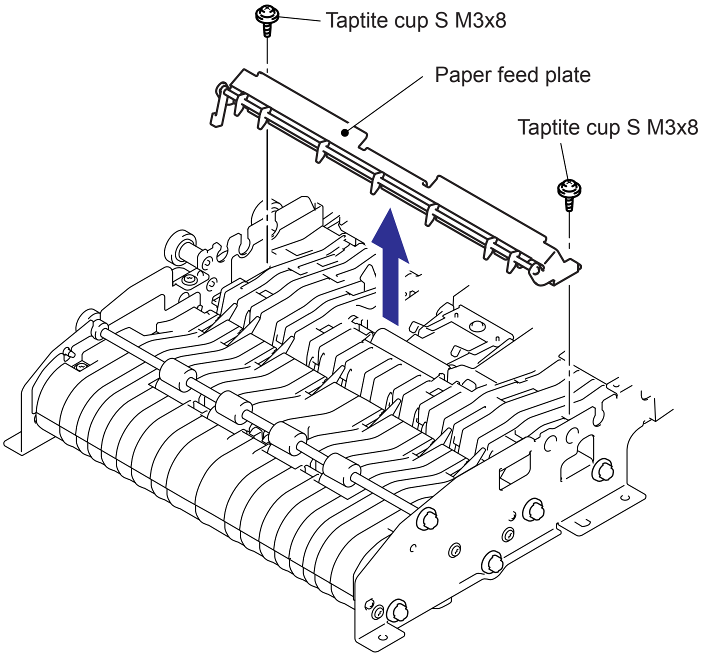


Fig. 5-62

(3) Remove the two cup S M3x8 Taptite screws.

(4) Remove the Paper feed chute ASSY.

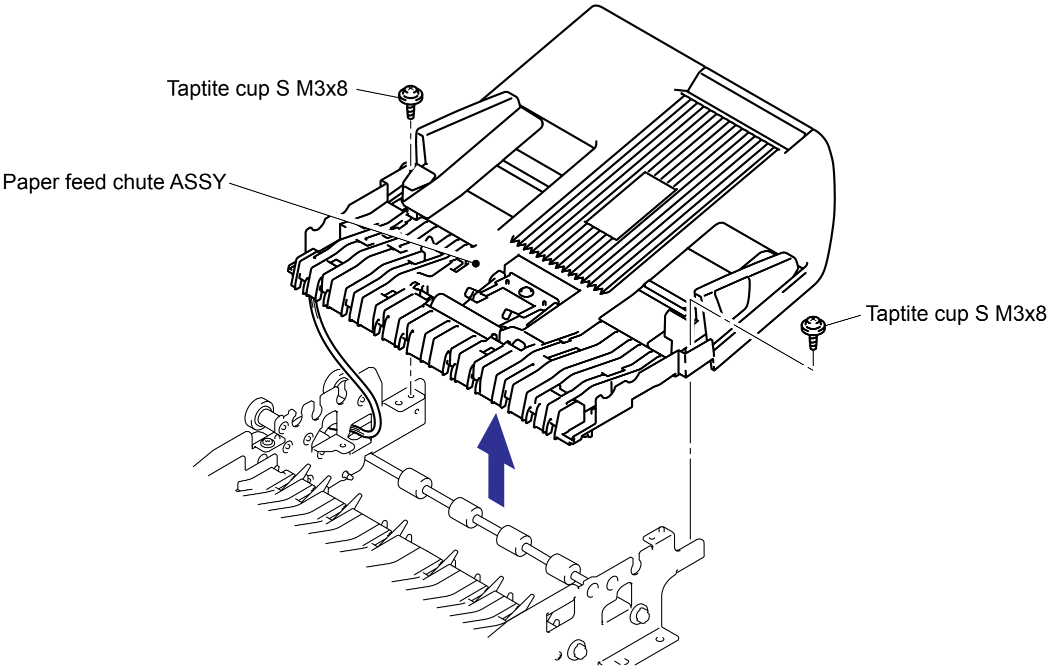


Fig. 5-63

9.8.20 Document Front Actuator 1 / Document Front Sensor 1

(1) Turn the Paper feed chute ASSY upside down. Release the Hooks of the Document front sensor 1 to remove the Document front sensor 1 from the Paper feed chute ASSY.

(2) Disconnect the Connector from the Document front sensor 1.

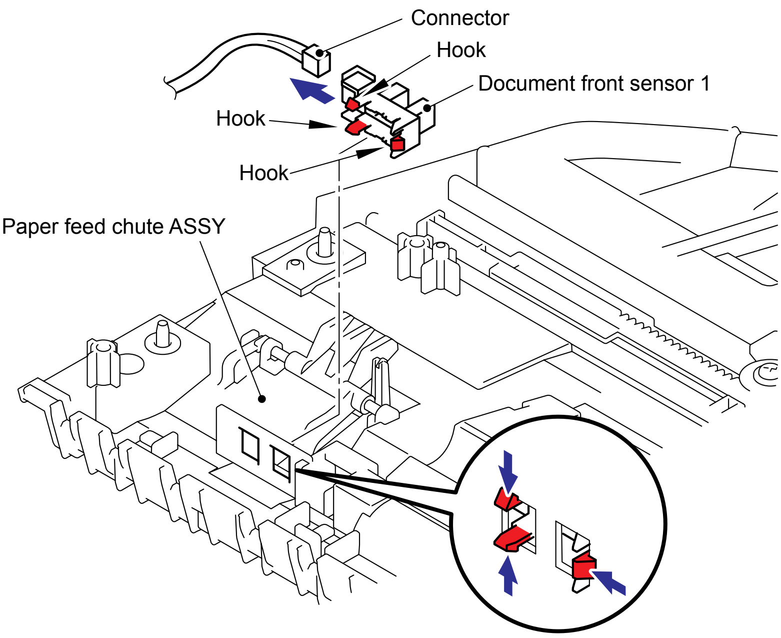


Fig. 5-64

(3) Push down the Stopper, slide the Document front actuator 1 to the stopper side and pull up the Document front actuator 1 to remove.

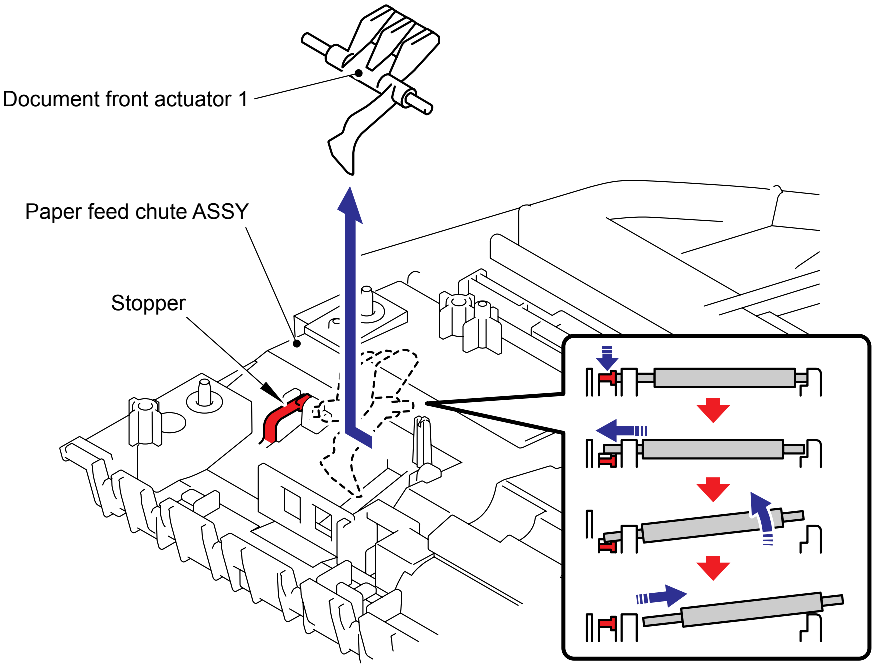


Fig. 5-65

9.8.21 Document Front Actuator 2 / Document Front Sensor 2

(1) Release the Hooks of the Document front sensor 2 to remove the Document front sensor 2 from the Paper feed chute ASSY.

(2) Disconnect the Connector from the Document front sensor 2.

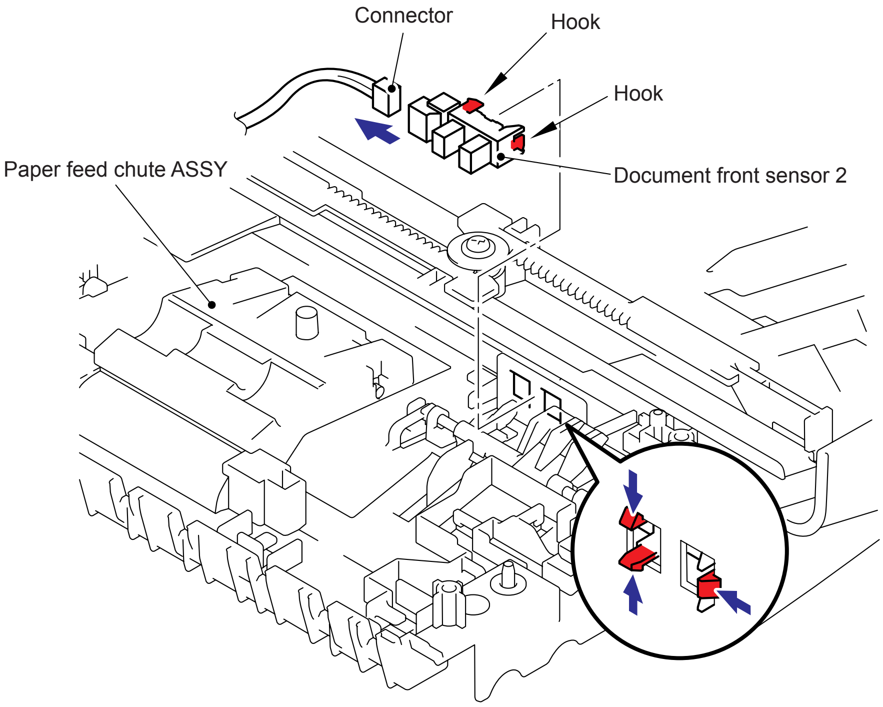


Fig. 5-66

(3) Push down the Stopper, slide the Document front actuator 2 to the stopper side and pull up the Document front actuator 2 to remove.

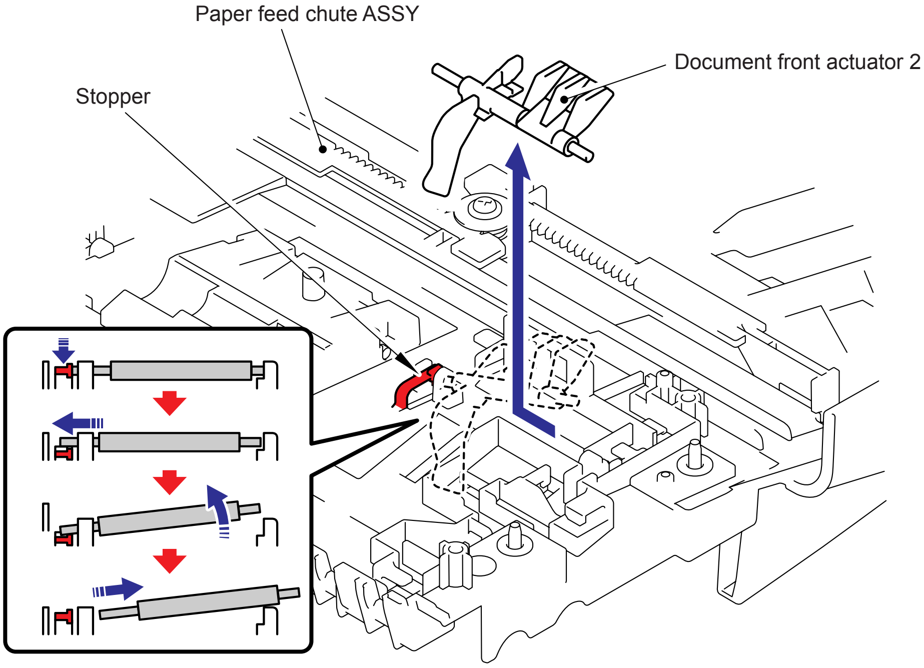


Fig. 5-67

9.8.22 ADF Film / Spring Plate ADF Front A ASSY / Separation Rubber / Rubber Holder / Separation Spring

(1) Remove the ADF film.

(2) Remove the B M3x6 Taptite screw, and then remove the Spring plate ADF front A ASSY.

(3) Remove the Separation rubber.

(4) Remove the Rubber holder.

(5) Remove the Separation spring.

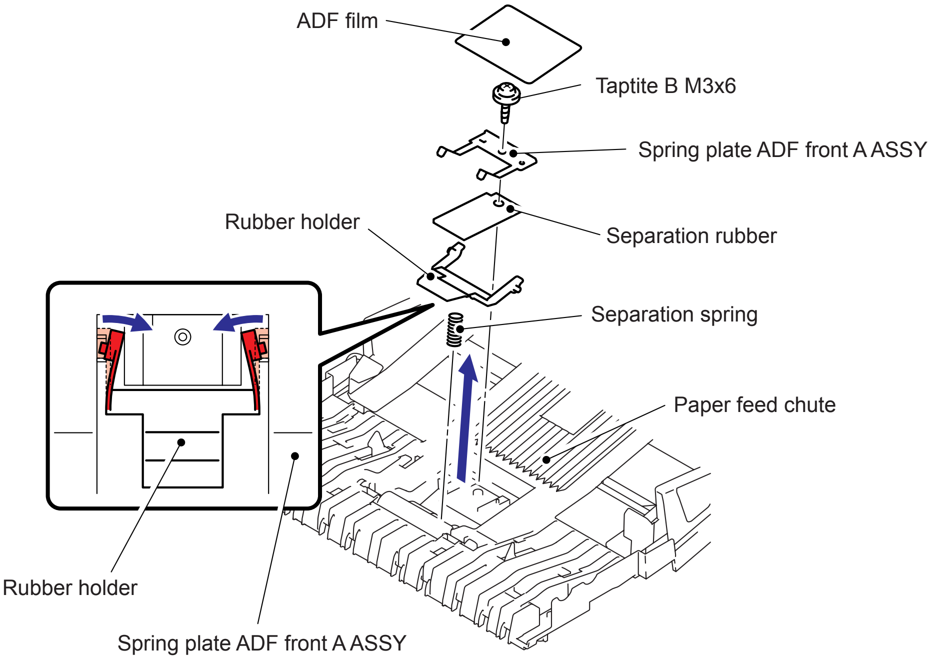


Fig. 5-68

9.8.23 Pressure Roller / LF Spring

(1) Push the Hook to the direction of the arrow (1a) as shown in the figure below while holding the Pressure roller, and remove the Pressure roller shaft from the hook.

(2) Pull the Pressure roller shaft out of the Pressure roller.

(3) Remove the two LF springs.

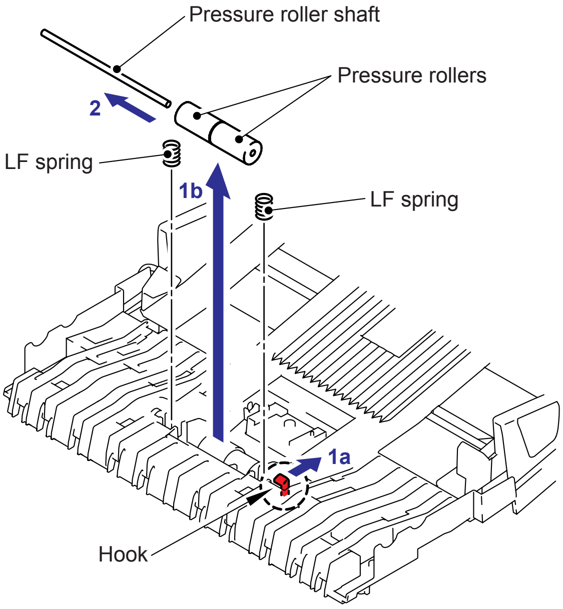


Fig. 5-69

9.8.24 LF Roller 2 ASSY

(1) Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.

(2) Remove the Bushing from the ADF chute ASSY, and remove the LF roller 2 ASSY from the ADF chute ASSY.

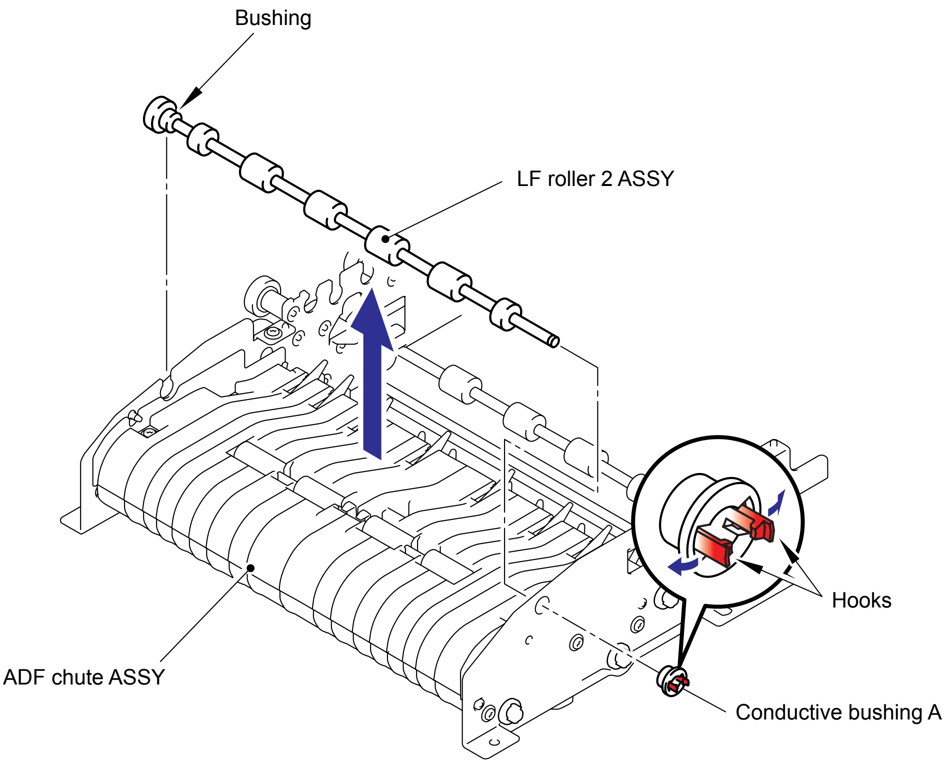


Fig. 5-70

Assembling Note:

- When assembling the LF roller 2 ASSY, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

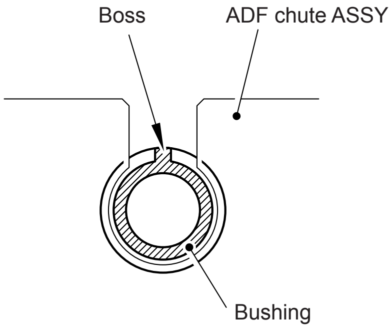


Fig. 5-71

9.8.25 Document Exit Roller ASSY

(1) Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.

(2) Remove the Bushing from the ADF chute ASSY, and remove the Document exit roller ASSY from the ADF chute ASSY.

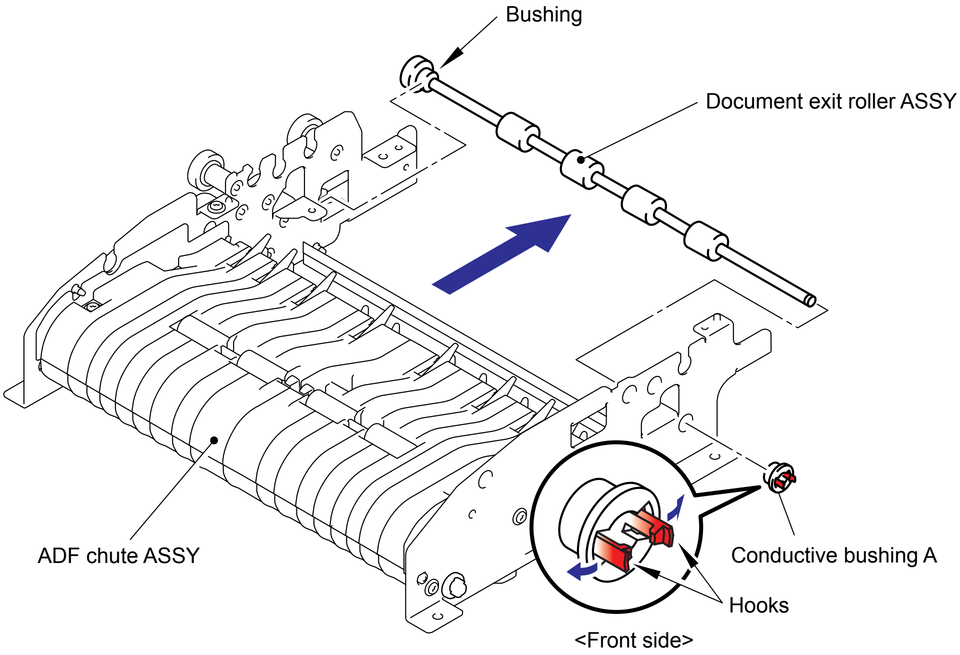


Fig. 5-72

Assembling Note:

- When assembling the Document exit roller ASSY, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

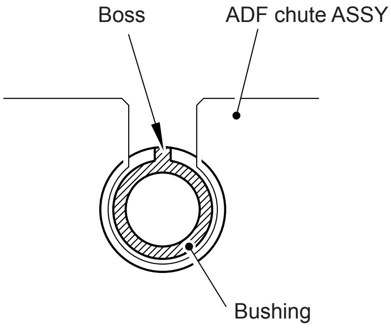


Fig. 5-73

9.8.26 LF Roller 3 ASSY

(1) Turn the ADF chute ASSY upside down. Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.

(2) Remove the Bushing from the ADF chute ASSY, and remove the LF roller 3 ASSY from the ADF chute ASSY.

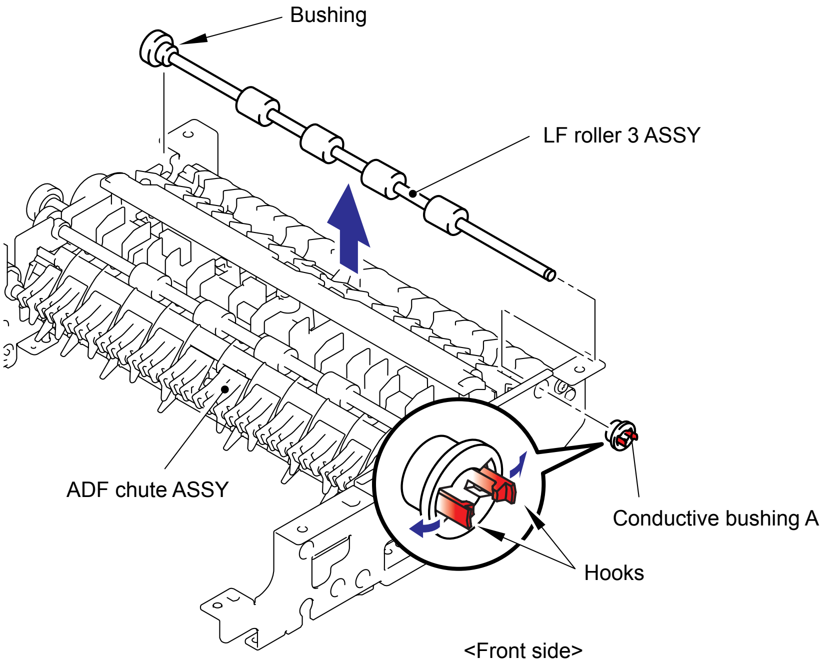


Fig. 5-74

Assembling Note:

- When assembling the LF roller 3 ASSY, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

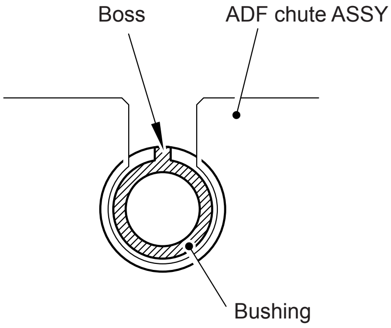


Fig. 5-75

9.8.27 LF Roller 4 ASSY

(1) Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.

(2) Remove the Bushing from the ADF chute ASSY, and remove the LF roller 4 ASSY from the ADF chute ASSY.

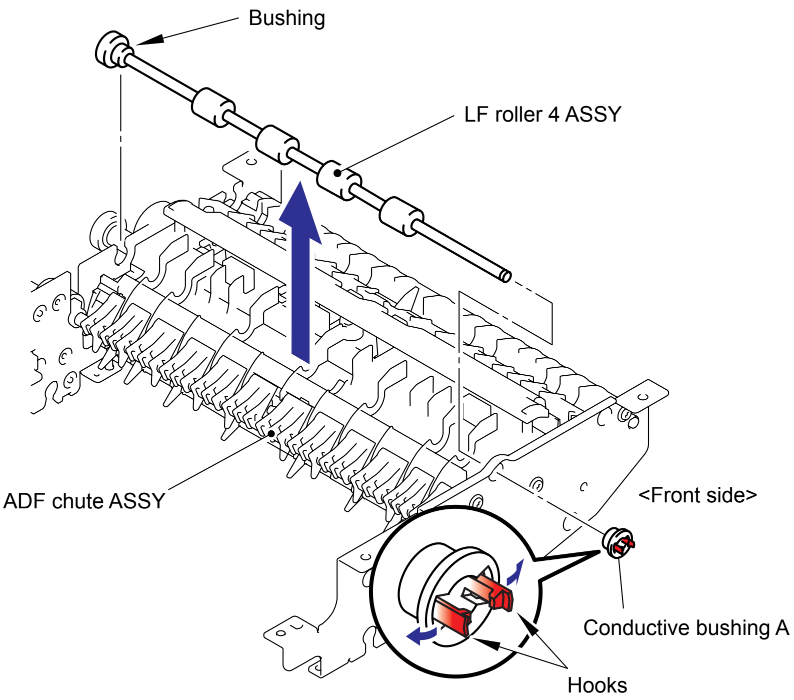


Fig. 5-76

Assembling Note:

- When assembling the LF roller 4 ASSY, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

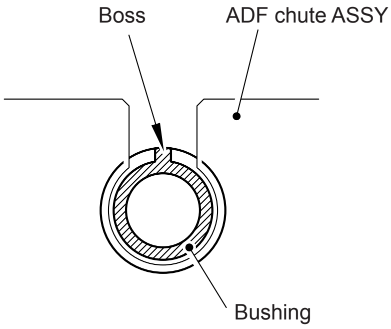


Fig. 5-77

9.8.28 Flap A ASSY / Flap A

(1) Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.

(2) Remove the Bushing from the ADF chute ASSY, and remove the Flap A ASSY or Flap A from the ADF chute ASSY.

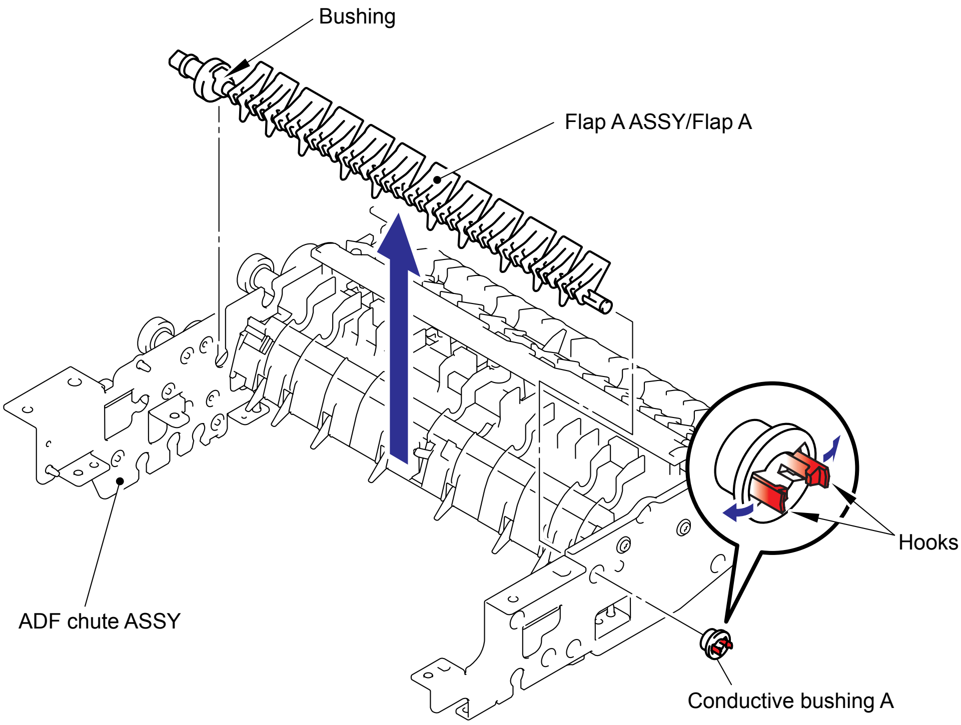


Fig. 5-78

Assembling Note:

- When assembling the Flap A ASSY or Flap A, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

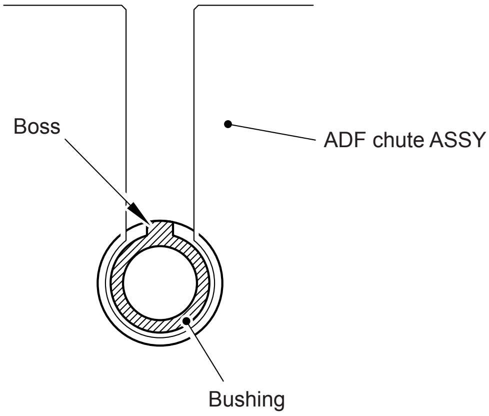


Fig. 5-79

9.8.29 Document Hold / Document Hold Spring

(1) Push the Hooks to the direction of the arrows as shown in the figure below to remove the Document hold.

(2) Remove the Document hold spring gently to prevent it from jumping.

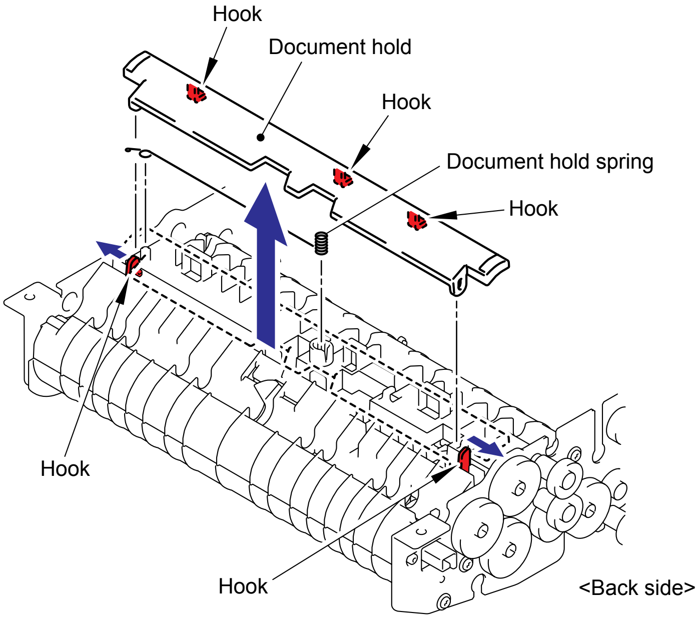


Fig. 5-80

9.8.30 Upper Main Chute ASSY / Lower Main Chute ASSY

(1) Turn the ADF chute ASSY upside down. Remove the three cup B M3x10 Taptite screws.

(2) Remove the Drive frame sub ASSY DX.

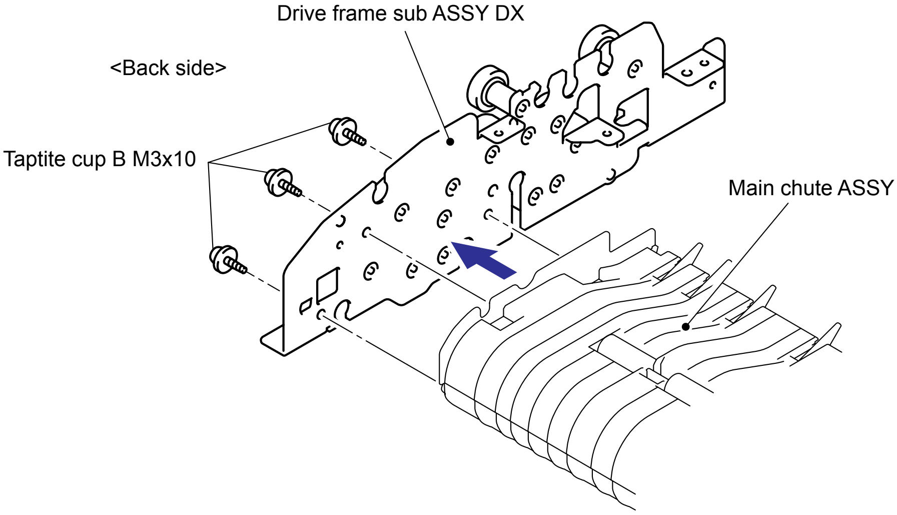


Fig. 5-81

(3) Remove the three cup B M3x10 Taptite screws.

(4) Remove the Front frame.

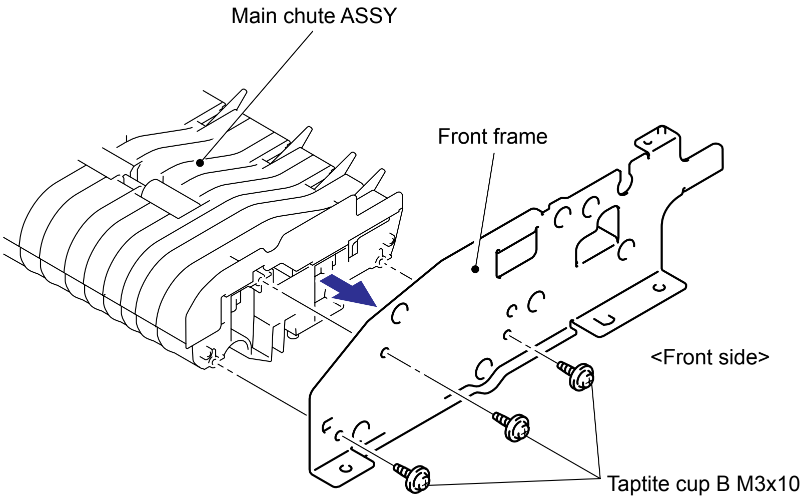


Fig. 5-82

(5) Remove the four cup B M3x10 Taptite screws.

(6) Remove the Upper main chute ASSY from the Lower main chute ASSY.

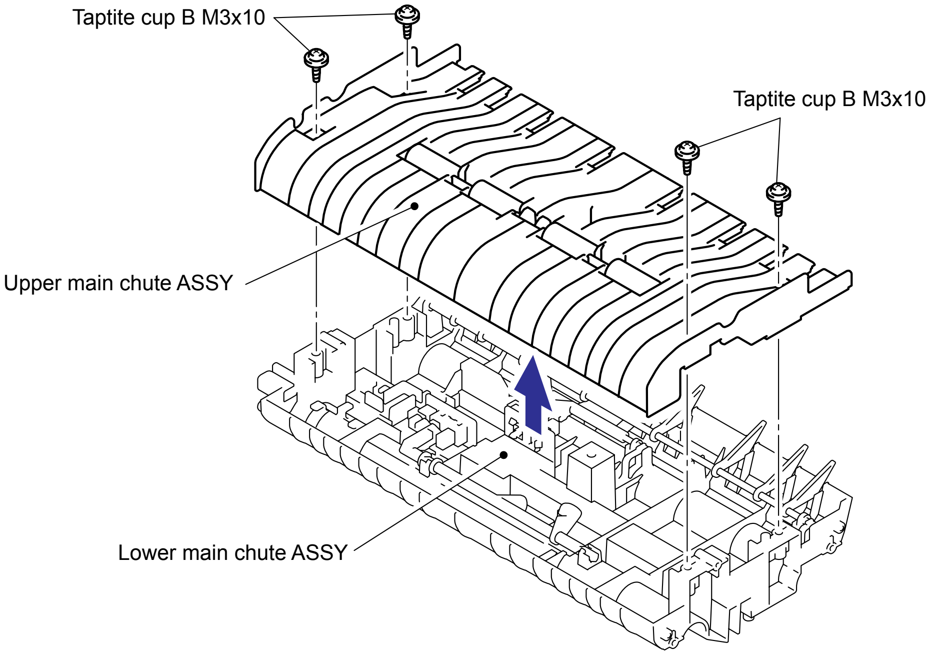


Fig. 5-83

9.8.31 Document Rear Actuator / Document Rear Sensor

(1) Turn the Document rear actuator to the direction of the arrow 1a and pull it out to the direction of the arrow 1b.

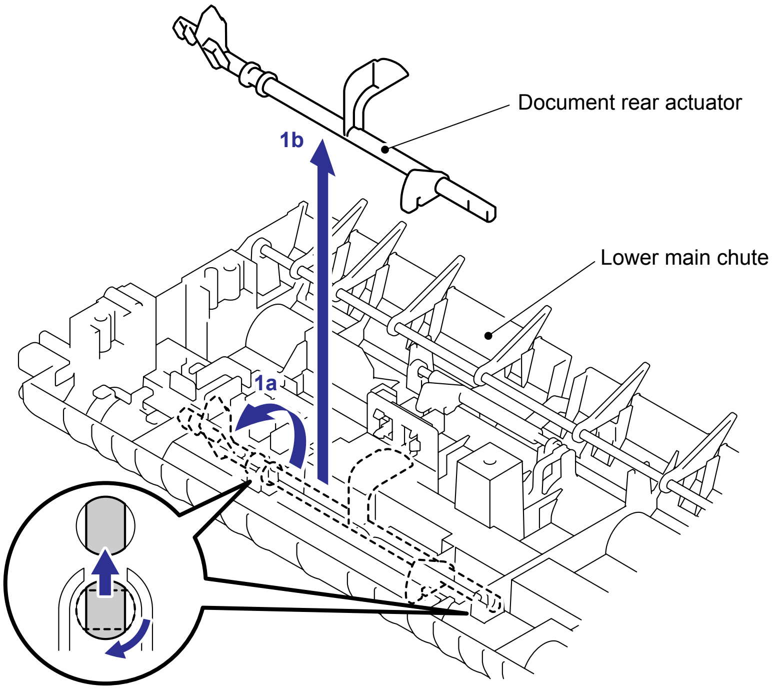


Fig. 5-84

(2) Release the Hooks of the Document rear sensor to remove the Document rear sensor from the Lower main chute.

(3) Disconnect the Connector from the Document rear sensor.

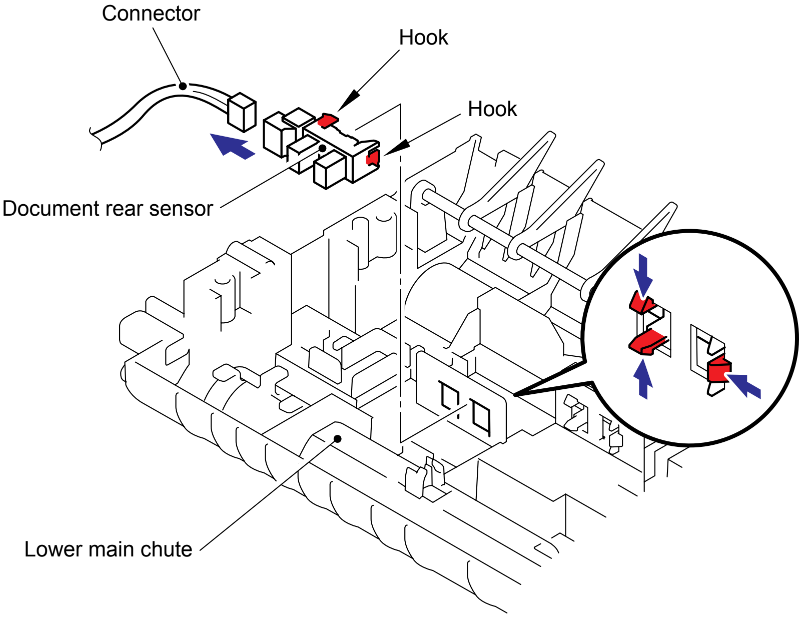


Fig. 5-85

9.8.32 Flap B

(1) Remove the Flap B from the Lower main chute.

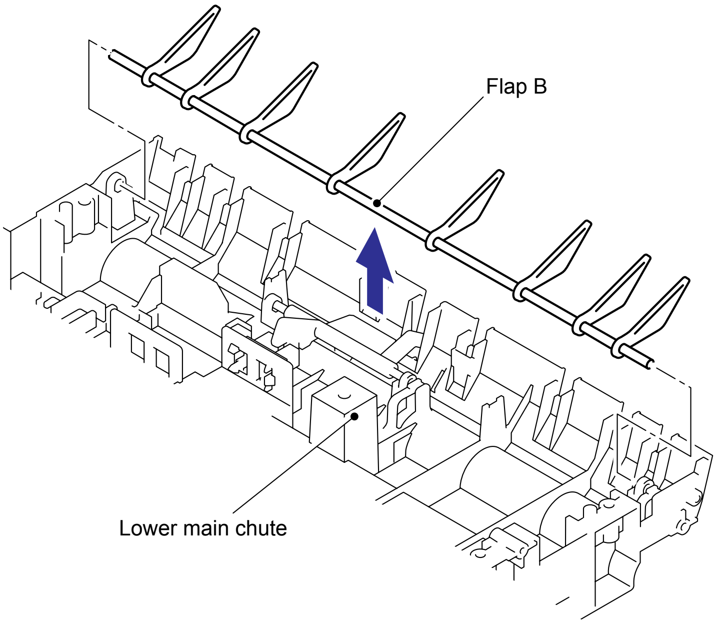


Fig. 5-86

9.8.33 Actuator Switch Back / Switch Back Sensor

(1) Push down the Stopper, slide the Actuator switch back to the stopper side and pull up the Actuator switch back to remove.

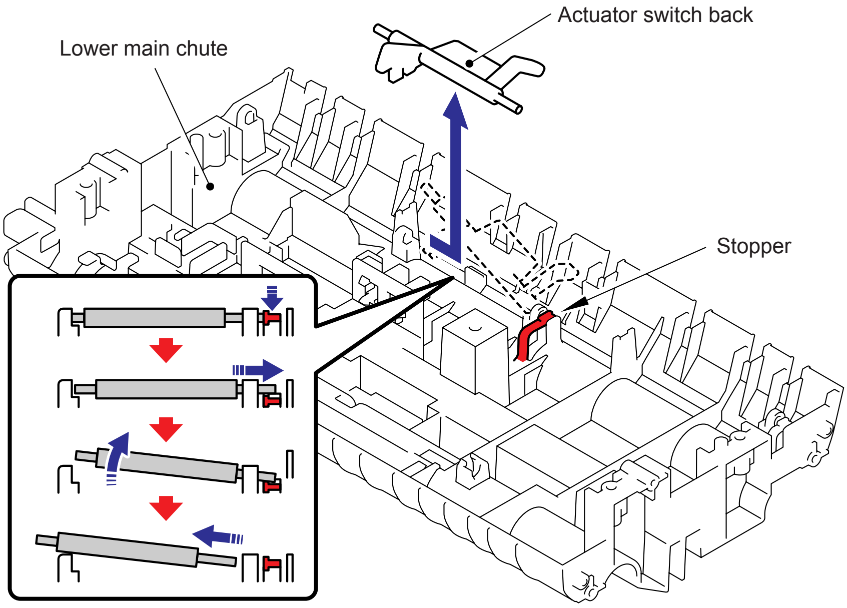


Fig. 5-87

(2) Release the Hooks of the Switch back sensor to remove the Switch back sensor from the Lower main chute.

(3) Disconnect the Connector from the Switch back sensor.

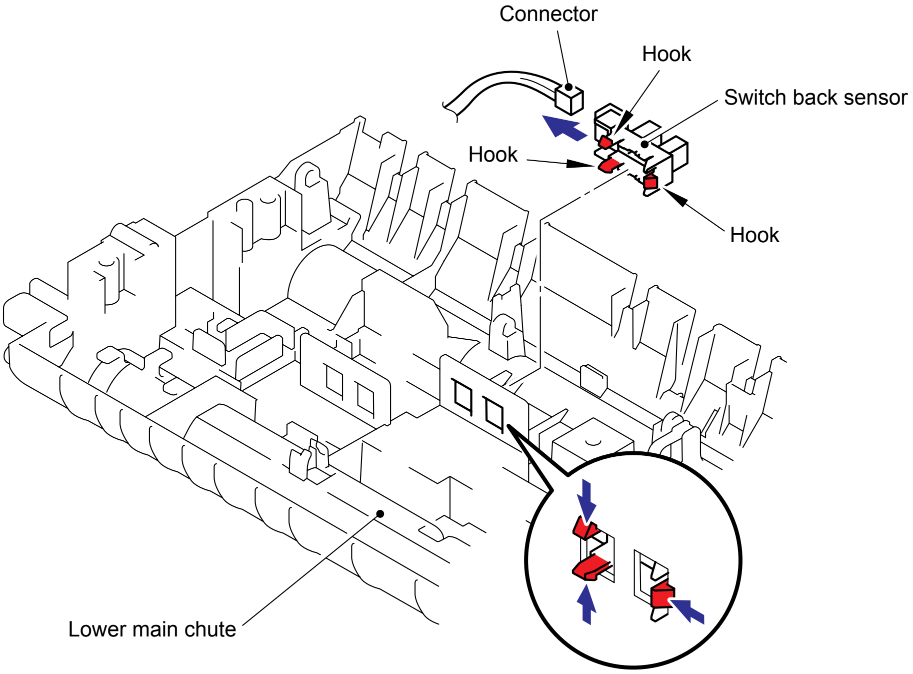


Fig. 5-88

9.8.34 Document Eject Tray

(1) Remove the ADF document output support flap from the Document cover.

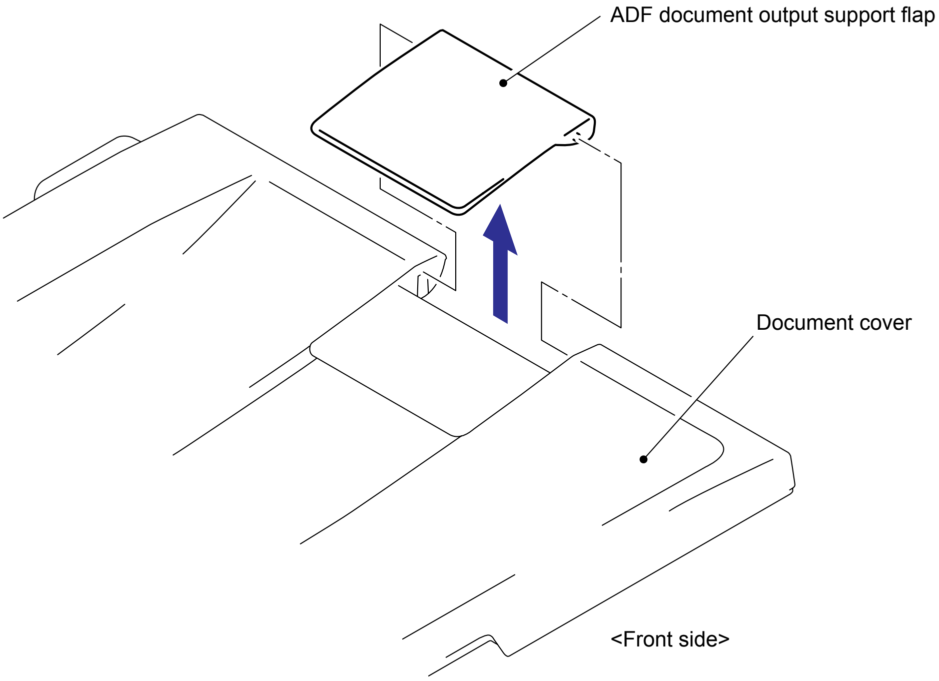


Fig. 5-89

9.8.35 Document Cover Sensor

(1) Disconnect the Connector from the Document cover sensor.

(2) Pull the Document cover sensor downwards to remove it from the Document cover while pressing the Hook of the Document cover sensor.

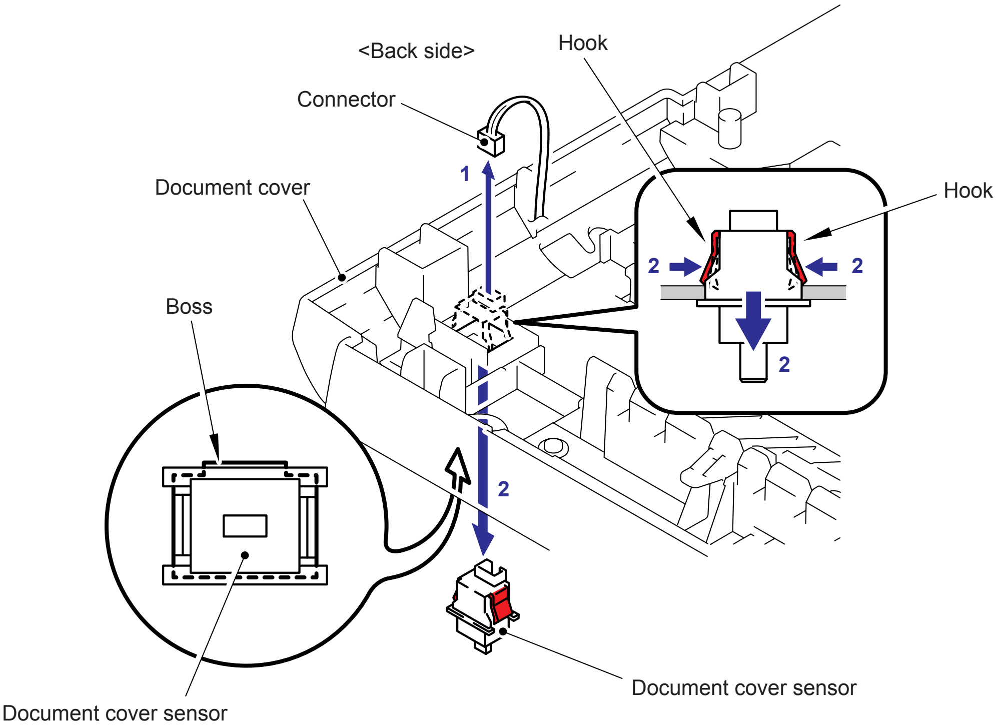


Fig. 5-90

9.8.36 Eject Roller B4

(1) Remove the four Eject rollers B4 and two Pressure roller shaft S from the Document cover.

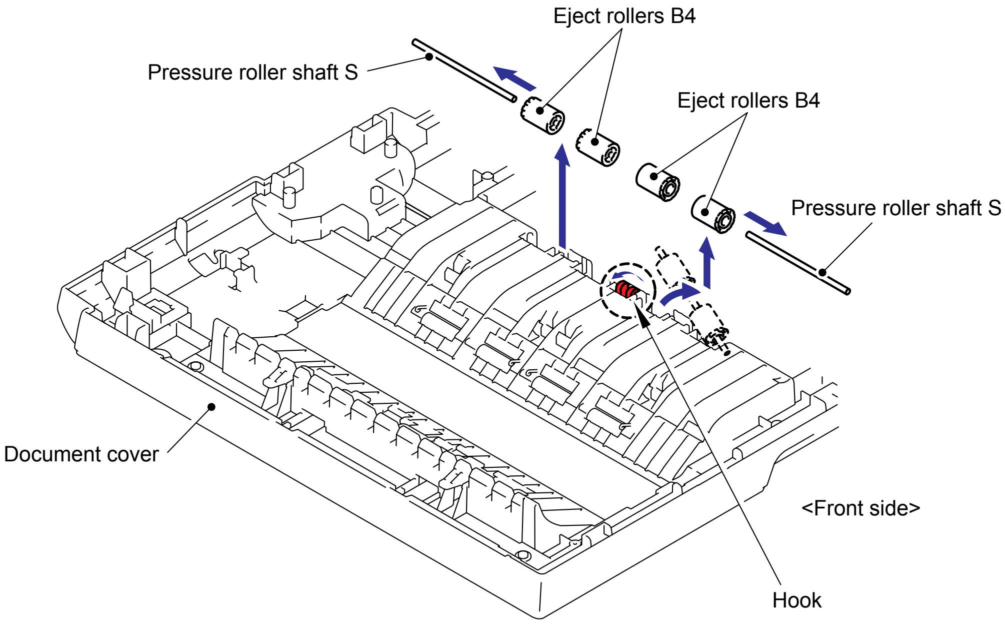


Fig. 5-91

Assembling Note:

- When assembling the Eject rollers B4, ensure that the direction of each roller is correct as shown in the figure above.

9.8.37 Pressure Roller

(1) Turn the Document cover upside down. Remove the two cup B M3x10 Taptite screws.

(2) Remove the Rear sensor cover from the Document cover.

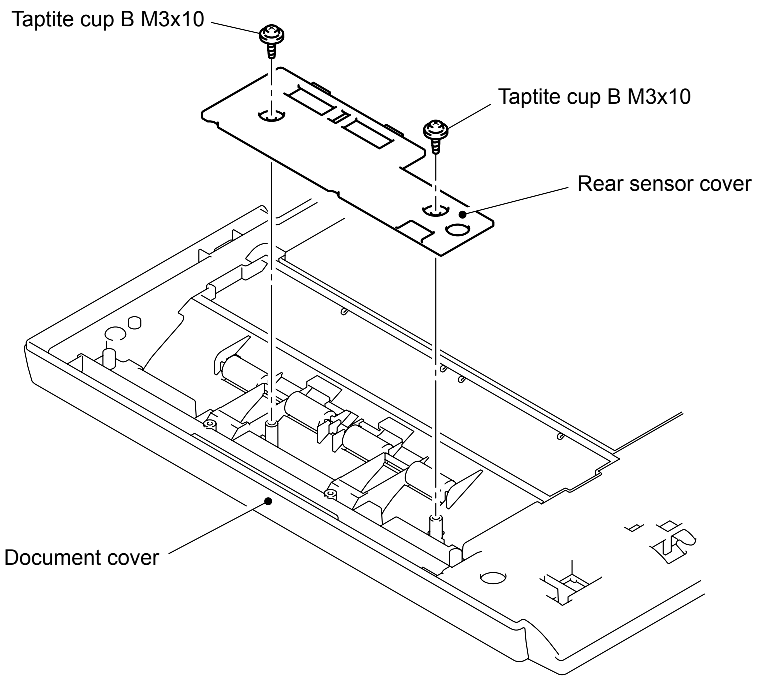


Fig. 5-92

(3) Remove the two cup B M3x10 Taptite screws, and then remove the two LF springs, four Pressure rollers and two Pressure roller shafts S.

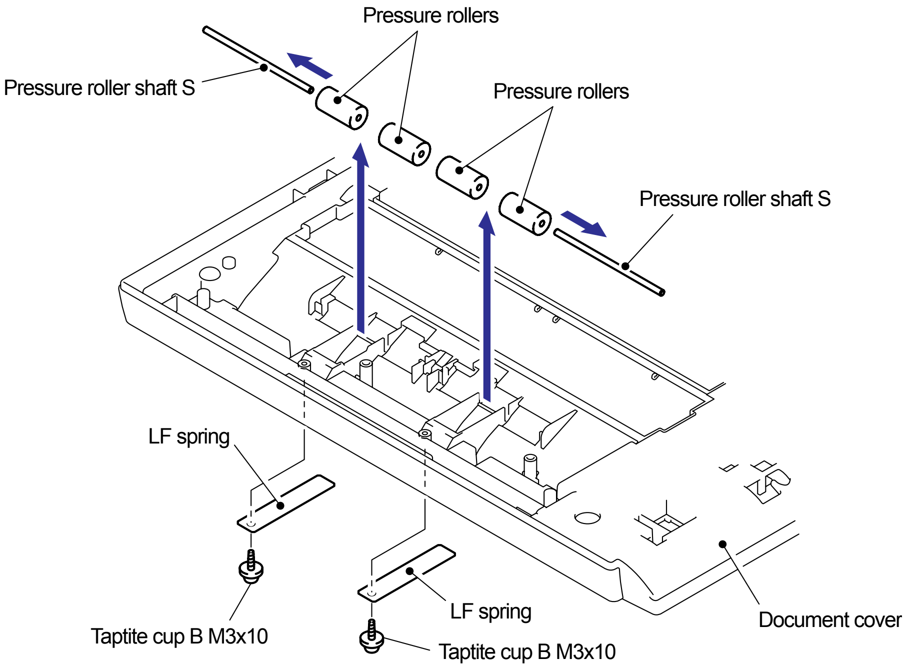


Fig. 5-93

9.9 Panel Cover ASSY

9.9.1 Panel Cover ASSY

(1) Remove the Panel cover ASSY.

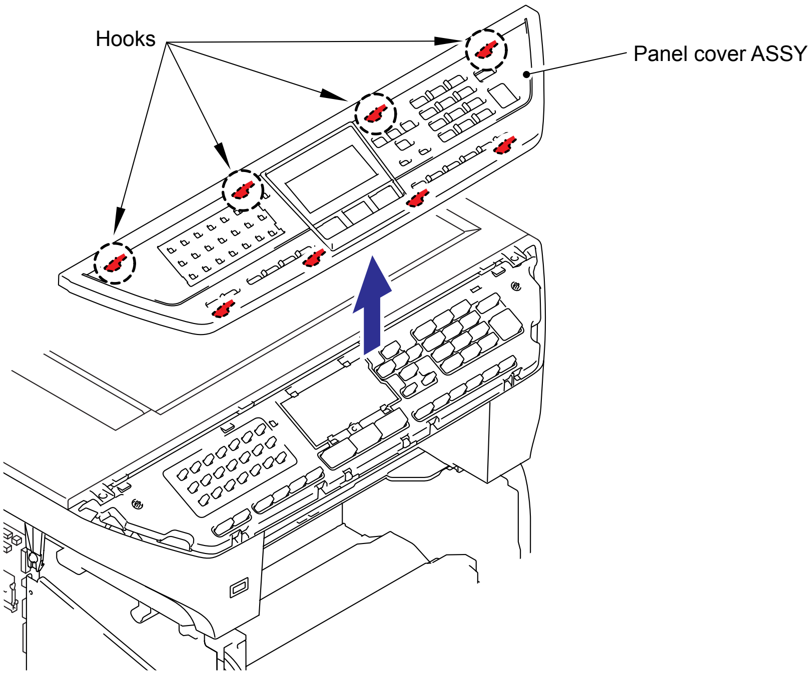


Fig. 5-94

9.10 Scanner Unit ASSY

9.10.1 Scanner Unit ASSY

(1) Disconnect the connector of the Scanner motor harness from the Driver PCB.

(2) Disconnect the connector of the Home position sensor harness and FFC cable from the Main PCB.

> **Note:**
>
> - After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.
> - When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.

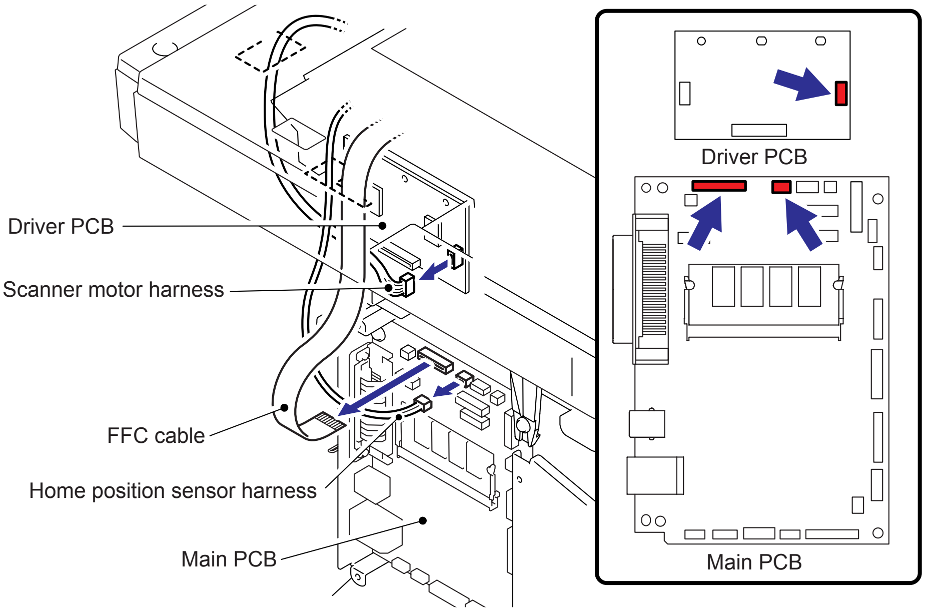


Fig. 5-95

(3) Remove the two cup B M4x20 Taptite screws. Lift up the rear of the Scanner unit slightly and remove the Scanner unit.

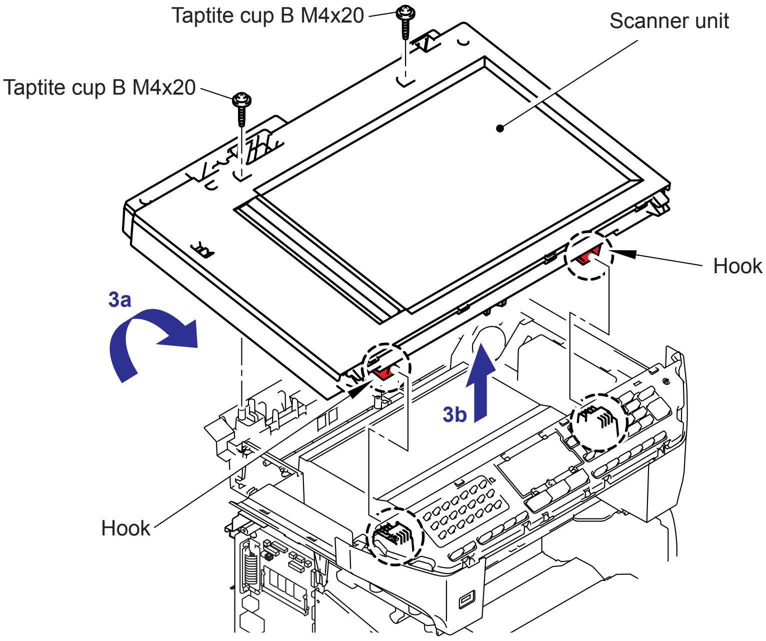


Fig. 5-96

9.10.2 Top Cover ASSY

Note:

- Be sure not to open the Top cover ASSY in a dusty place.

(1) Remove the six cup B M4x12 Taptite screws.

(2) Remove the Top cover ASSY from the Scanner base ASSY.

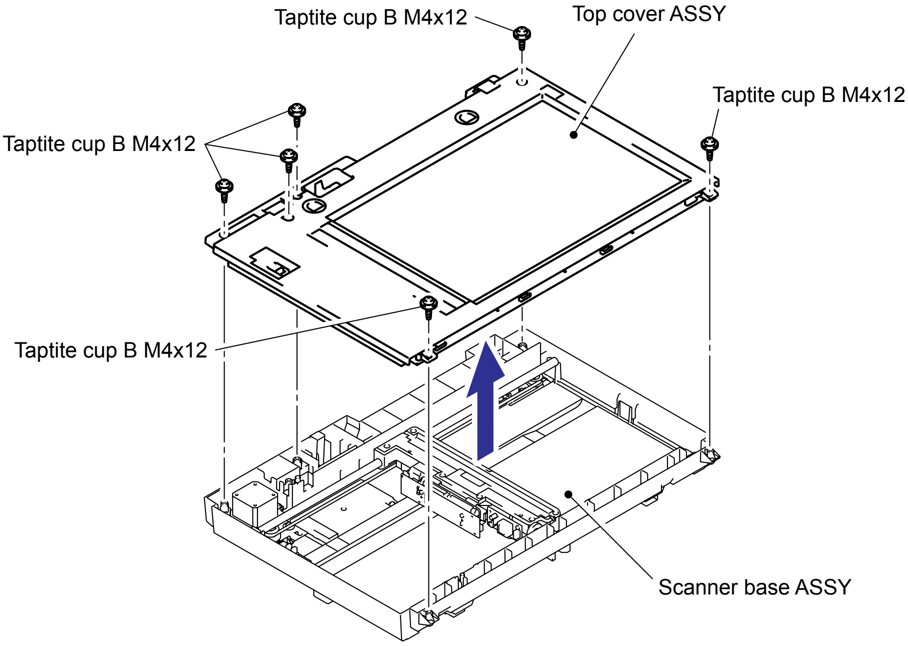


Fig. 5-97

9.10.3 Lock Lever B / Lock Lever ASSY

(1) Remove the cup B M3x6 Taptite screw, and then remove the Lock lever B.

(2) Remove the two cup B M3x6 Taptite screws, and then remove the Lock lever ASSY.

Assembling Note:

- After moving the Lock lever ASSY to "A" direction, assemble "B" of the Lock lever B that is to the direction of the top cover rib in touch.

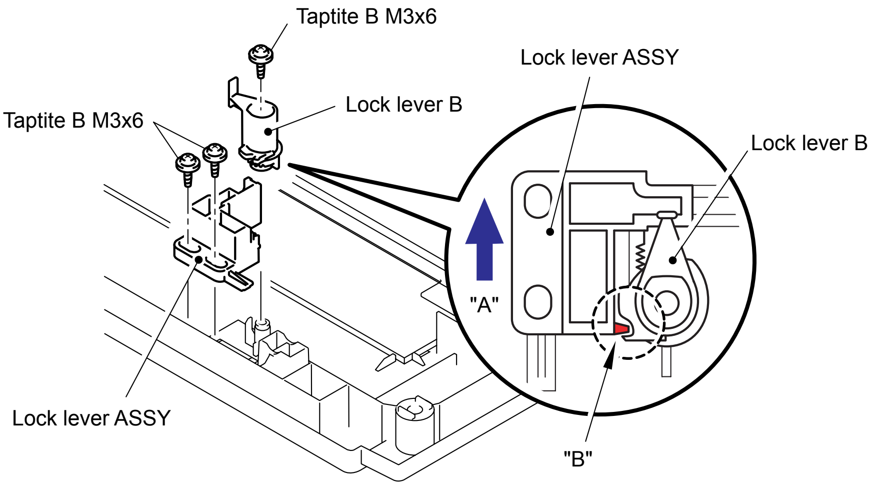


Fig. 5-98

9.10.4 CCD Module

(1) Push the Pulley ASSY to the direction of the arrow 1a and remove the Belt.

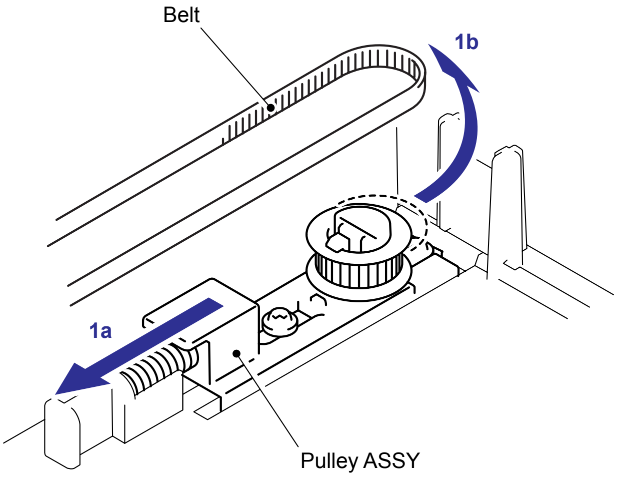
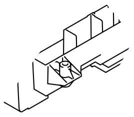


Fig. 5-99



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9.10.5 FFC Cable ASSY

(1) Release the Hooks and remove the FFC plate.

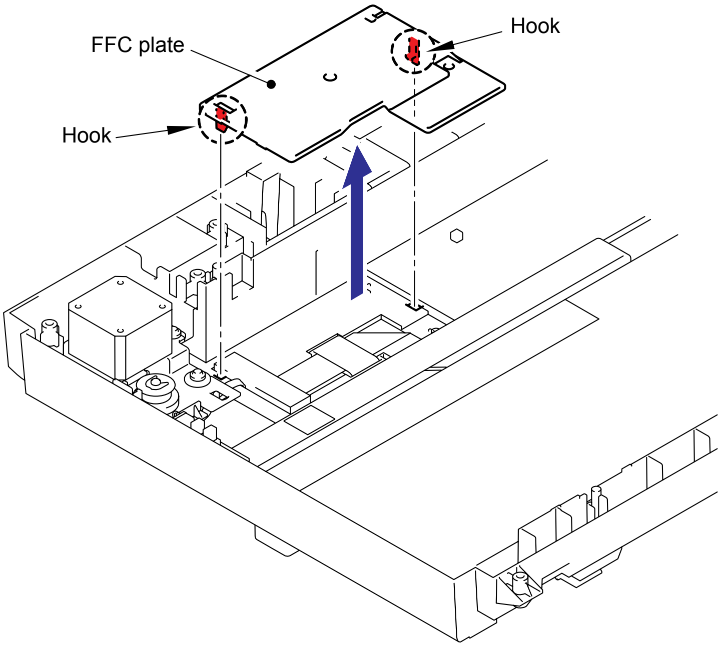


Fig. 5-102

(2) Remove the Shield sponge and FFC cable ASSY.

(3) Remove the Flat core from the FFC cable ASSY.

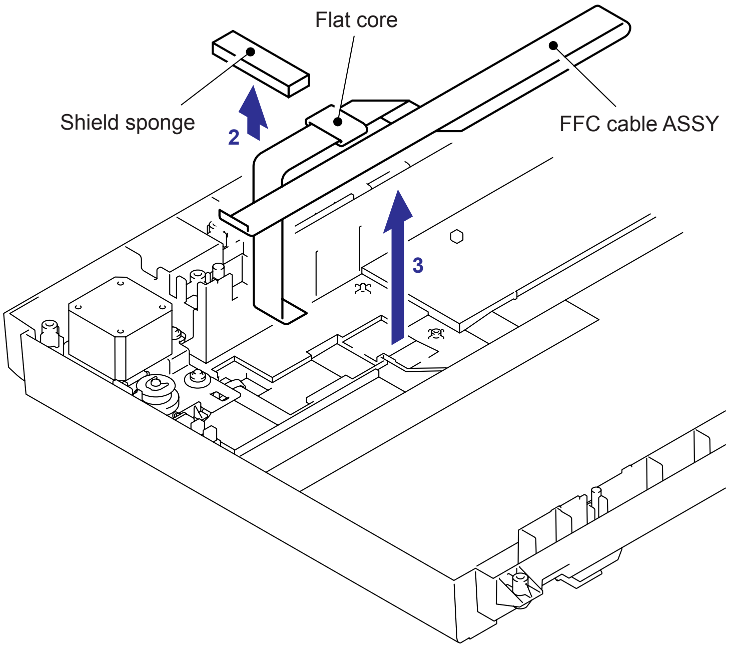


Fig. 5-103

9.10.6 Scanner Motor FB

(1) Remove the cup S M3x6 Taptite screw, and then remove the FB FG harness.

(2) Remove the four pan B M3x8 Taptite screws, and then remove the Drive plate ASSY.

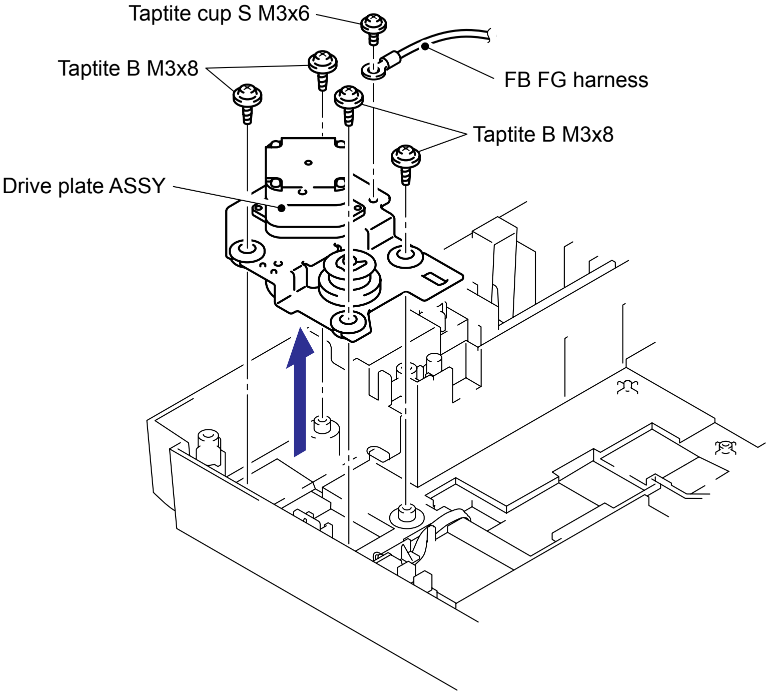


Fig. 5-104

(3) Remove the two Screws pan (S/P washer) M3x6, and then remove the Scanner motor FB.

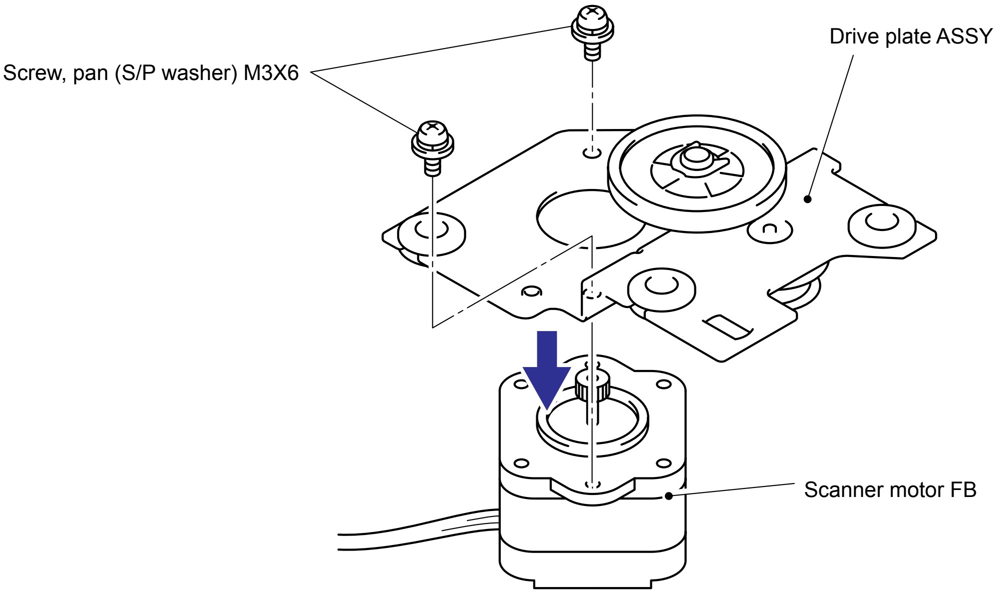


Fig. 5-105

9.10.7 Pulley ASSY

(1) Remove the two B M3x6 Taptite screws, and then remove the Pulley ASSY.

(2) Remove the Pulley spring.

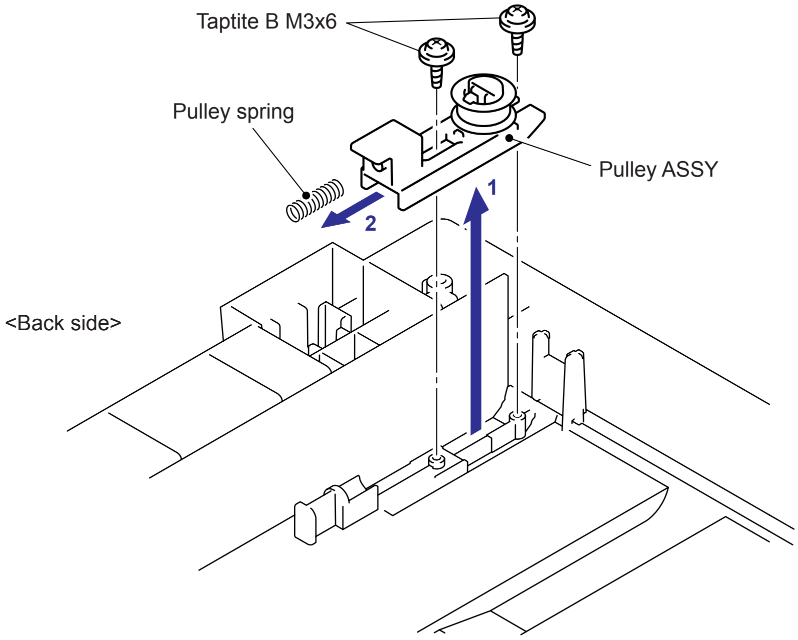


Fig. 5-106

9.10.8 Home Position Sensor

(1) Release the Hooks and remove the Home position sensor.

(2) Disconnect the Connector from the Home position sensor.

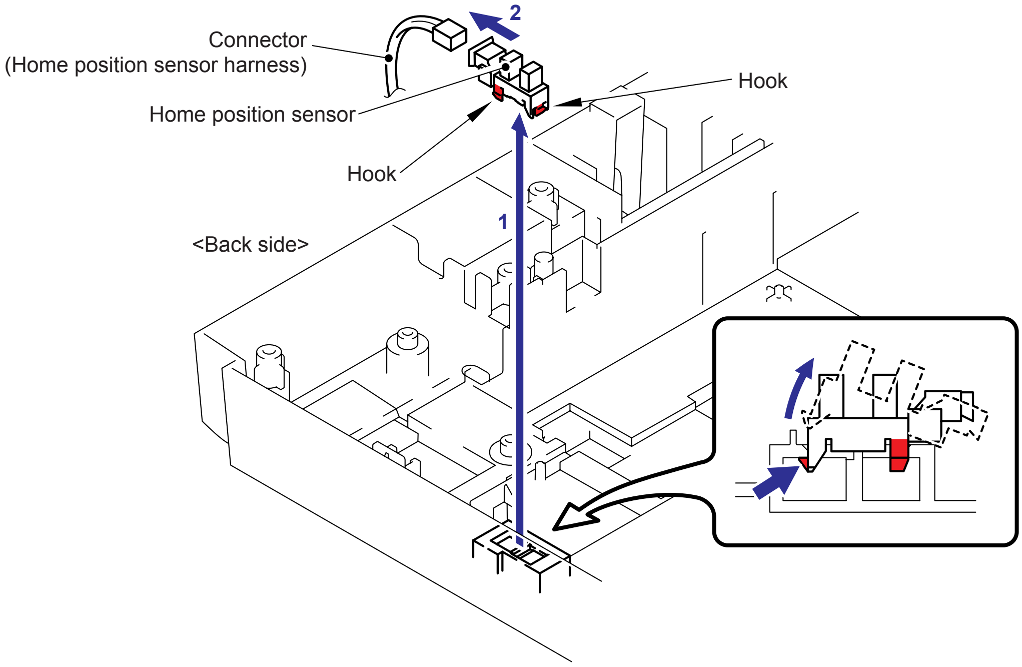


Fig. 5-107

9.11 Panel Unit

9.11.1 Panel Unit

(1) Disconnect the connector of the Panel PCB harness from the Main PCB.

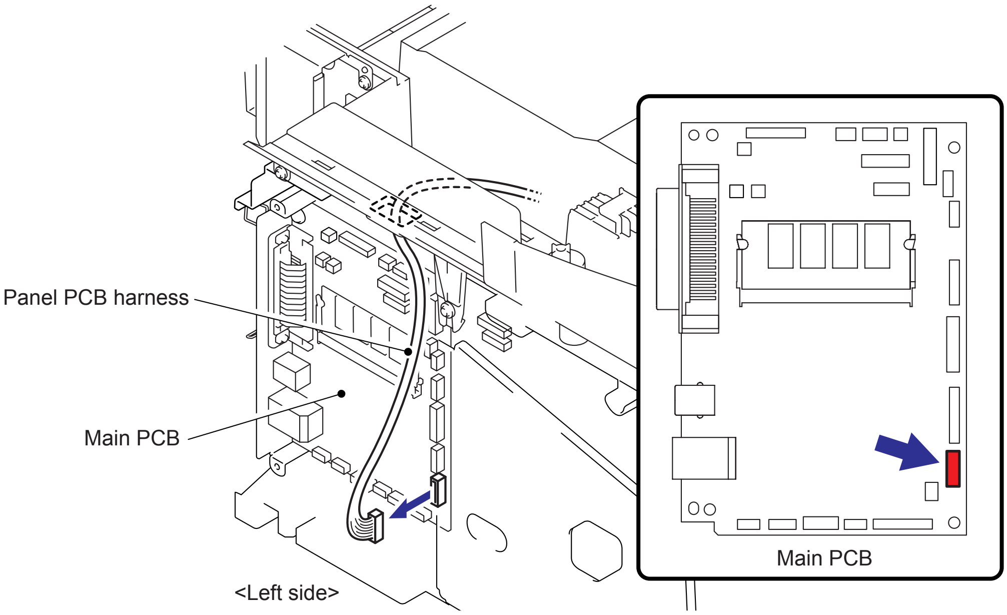


Fig. 5-108

(2) Remove the four cup B M4x12 Taptite screw.

(3) Remove the Tape fixing the Panel PCB harness.

(4) Remove the Panel Unit.

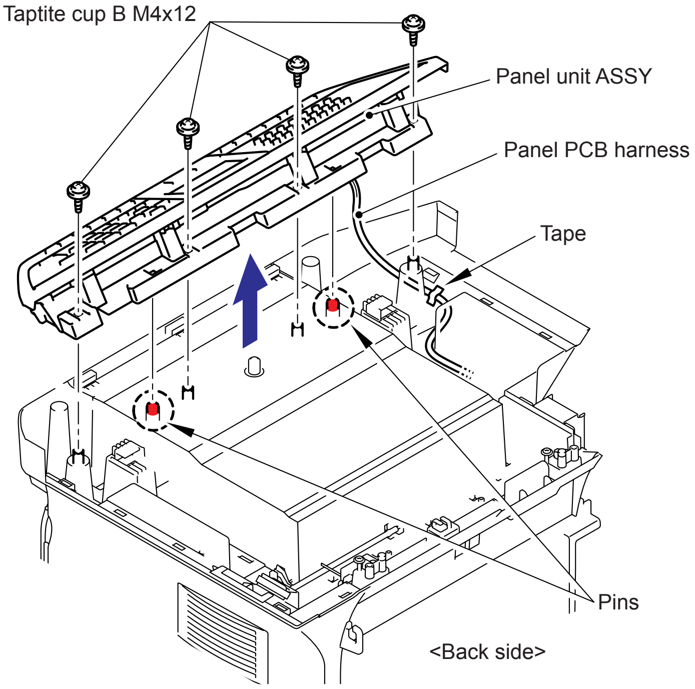


Fig. 5-109

9.11.2 Panel PCB ASSY

(1) Disconnect the connector of the Panel PCB harness from the Panel unit ASSY.

(2) Remove the four cup B M3x10 Taptite screws, release the two Hooks and remove the Panel cover.

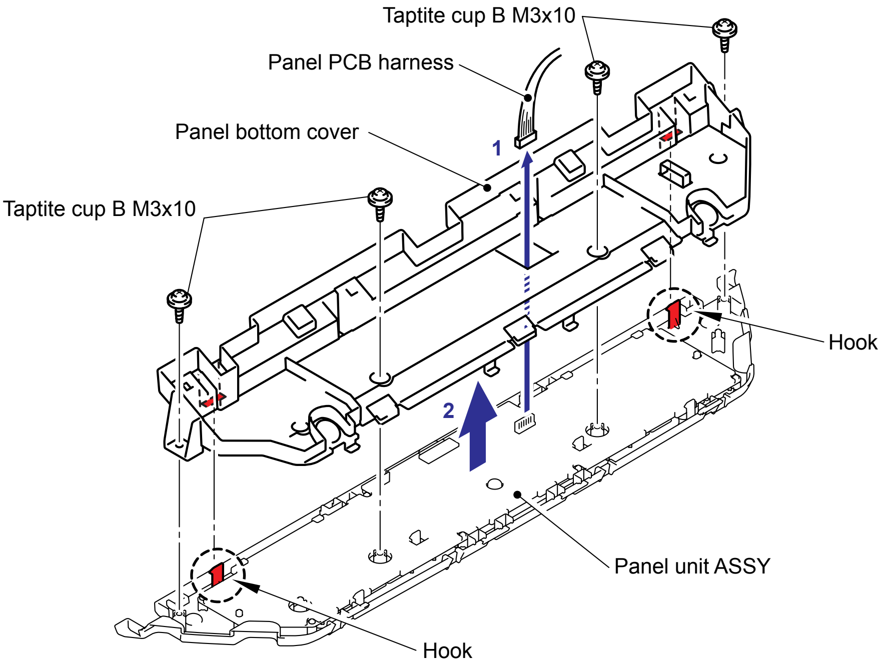


Fig. 5-110

(3) Disconnect the connector of the Backlight module harness from the Panel PCB ASSY.

(4) Unlock the lock, and remove the LCD cable from the Panel PCB ASSY.

Note:

- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.

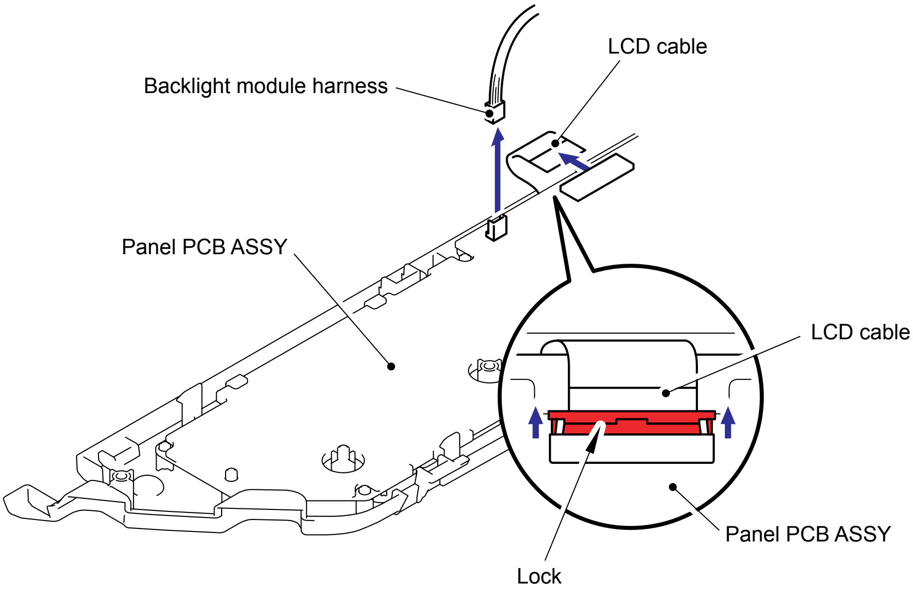


Fig. 5-111

(5) Release the four Hooks, lift up the Panel PCB ASSY to the direction of the arrow 5a and remove the Panel PCB ASSY.

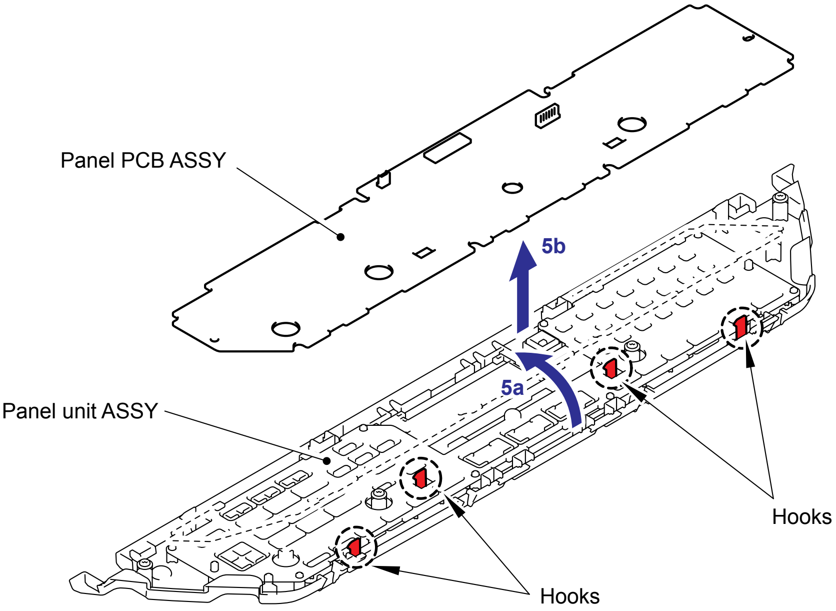


Fig. 5-112

9.11.3 Printed Rubber Key

(1) Remove the Printed rubber key.

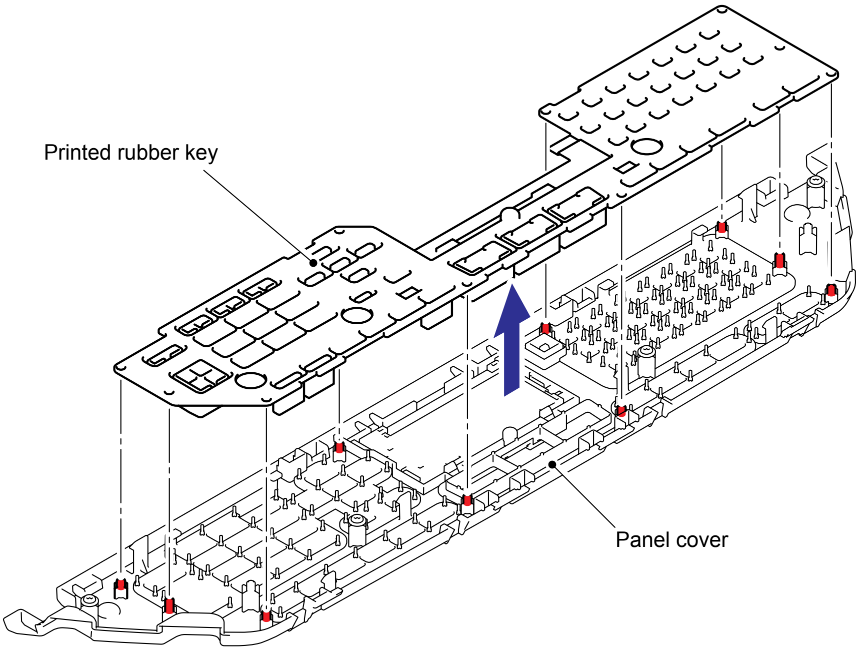


Fig. 5-113

9.11.4 LCD Cover / Backlight Module / LCD

(1) Remove the Panel insulation sheet from the LCD cover.

(2) Release the Hooks on the Panel cover to the direction of the arrow and remove the LCD cover from the Panel cover.

(3) Remove the LCD ASSY.

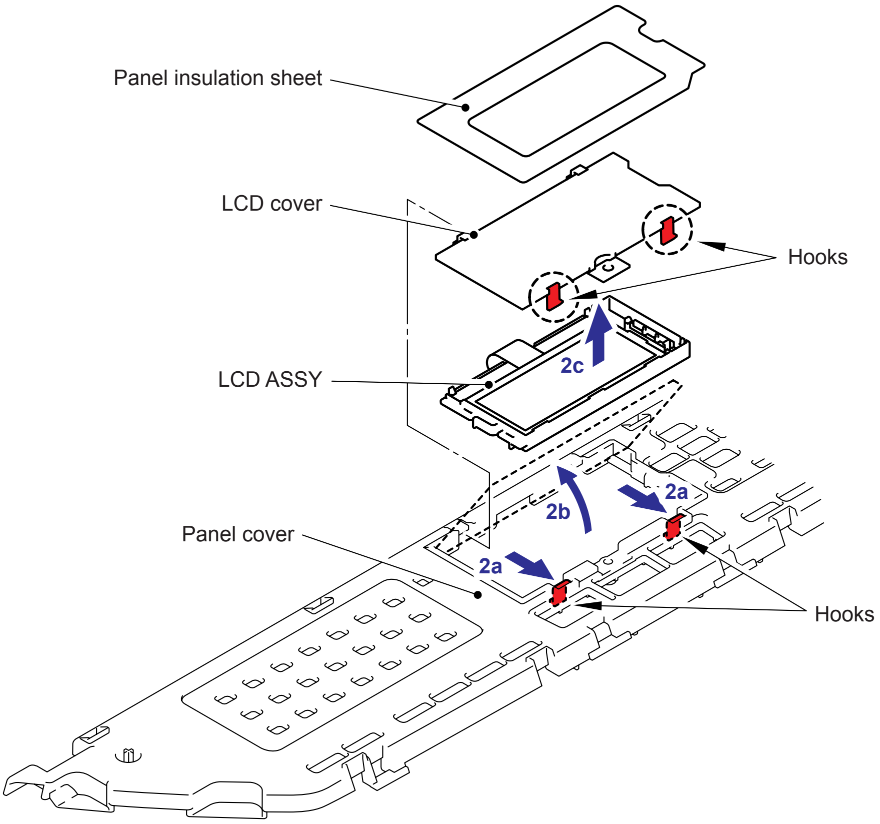


Fig. 5-114

(4) Remove the LCD from the Backlight module.

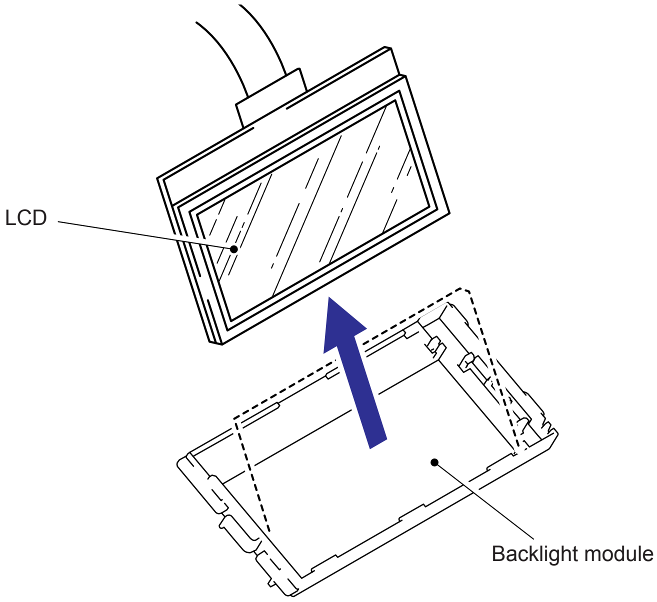


Fig. 5-115

9.12 NCU PCB ASSY

(1) Disconnect the connector of the NCU harness from the Main PCB.

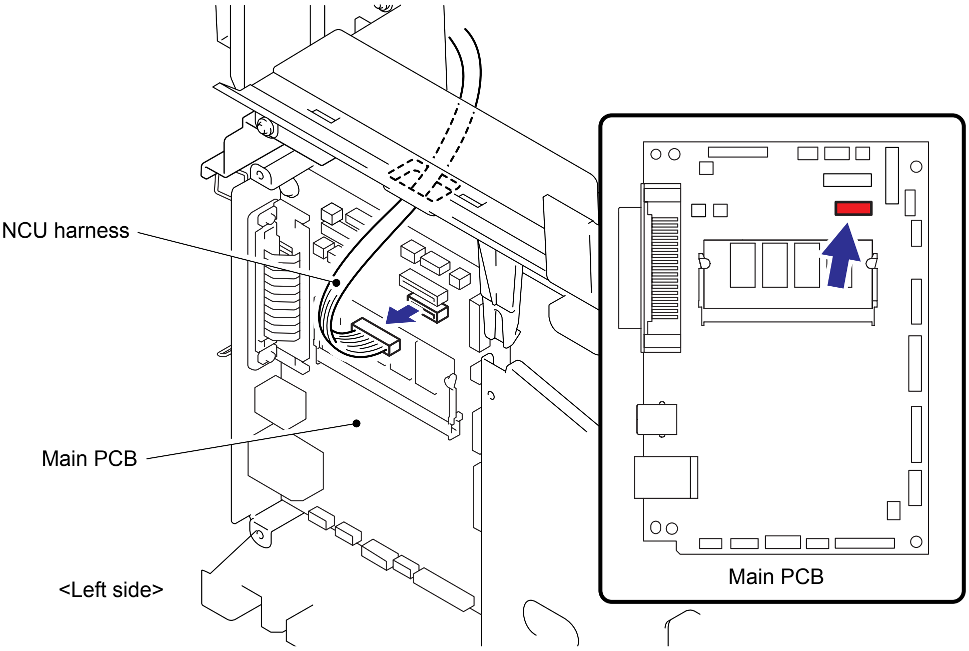


Fig. 5-116

(2) Remove the Screw pan (S/P washer) M3.5x6, and remove the NCU FG harness ASSY.

(3) Remove the two bind B M4x12 Taptite screws, and then remove the NCU unit.

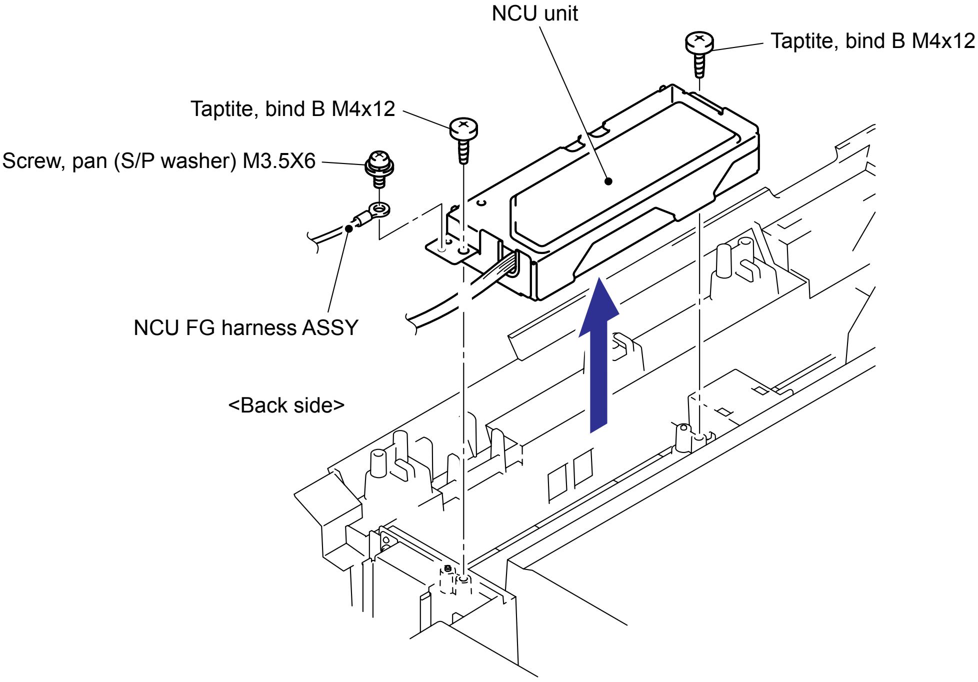


Fig. 5-117

(4) Remove the Screw pan (S/P washer) M3.5x6 screw, and then remove the NCU shield cover.

(5) Disconnect the connector of the NCU harness.

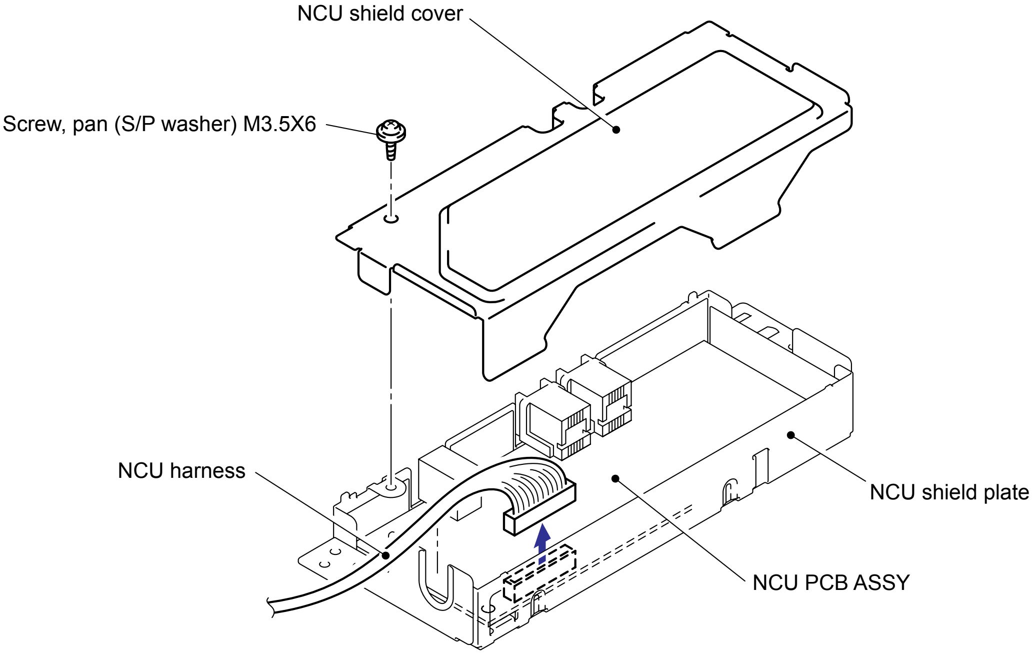


Fig. 5-118

(6) Remove the two cup S M3x6 SR Taptite screws, and then remove the NCU PCB ASSY.

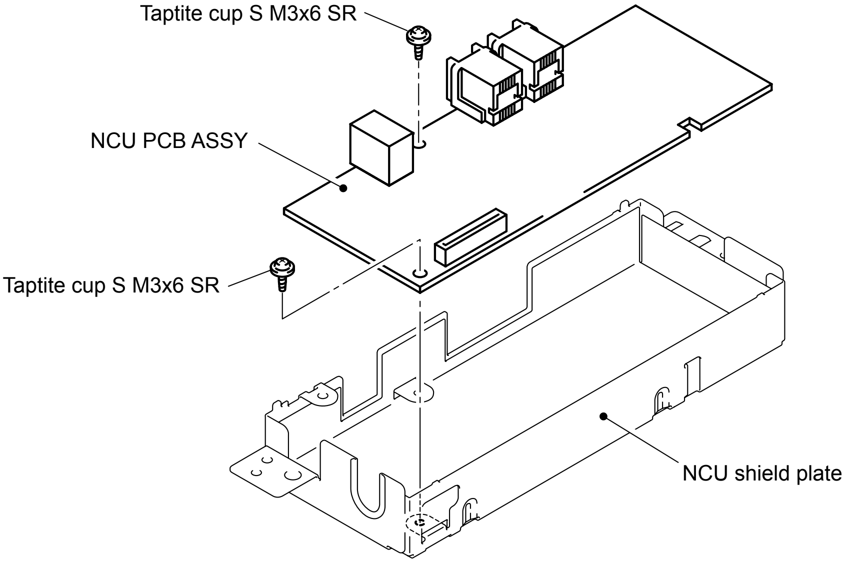


Fig. 5-119

9.13 Speaker ASSY

(1) Disconnect the connector of the Speaker harness from the Main PCB.

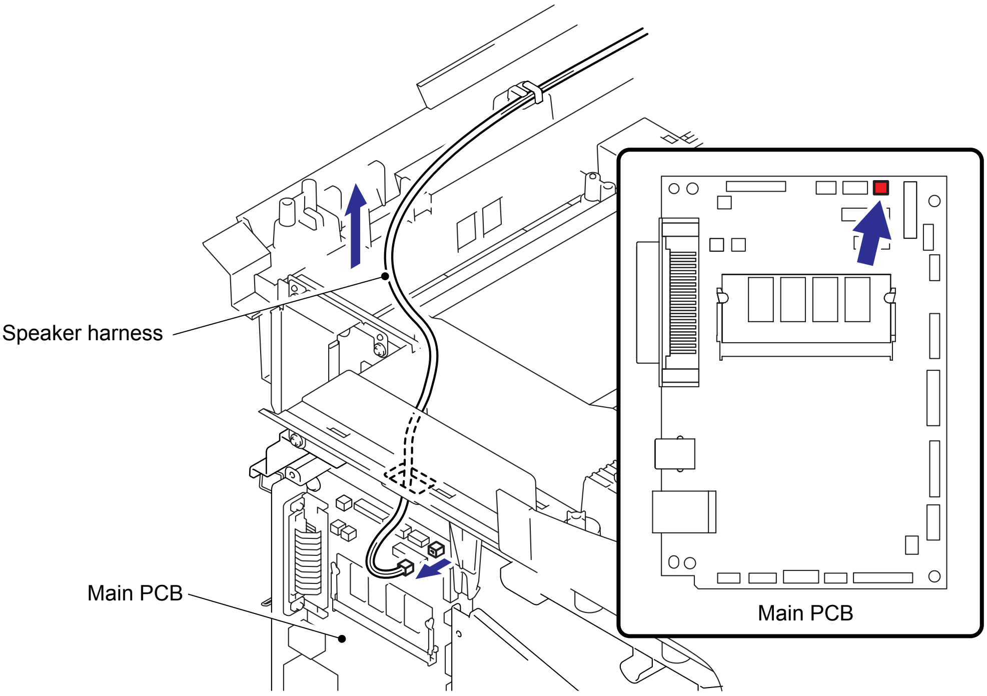


Fig. 5-120

(2) Remove the bind B M4x12 Taptite screw.

(3) Remove the Speaker hold spring and Speaker ASSY.

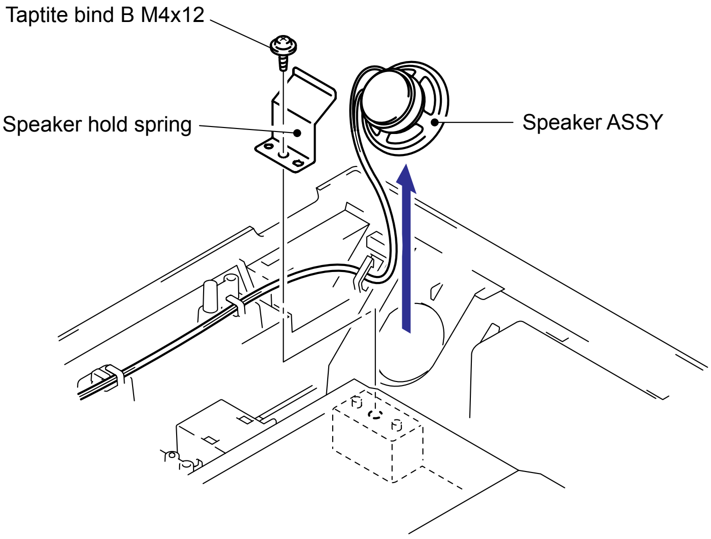


Fig. 5-121

9.14 Driver PCB

(1) Disconnect the connector of the Driver harness from the Main PCB.

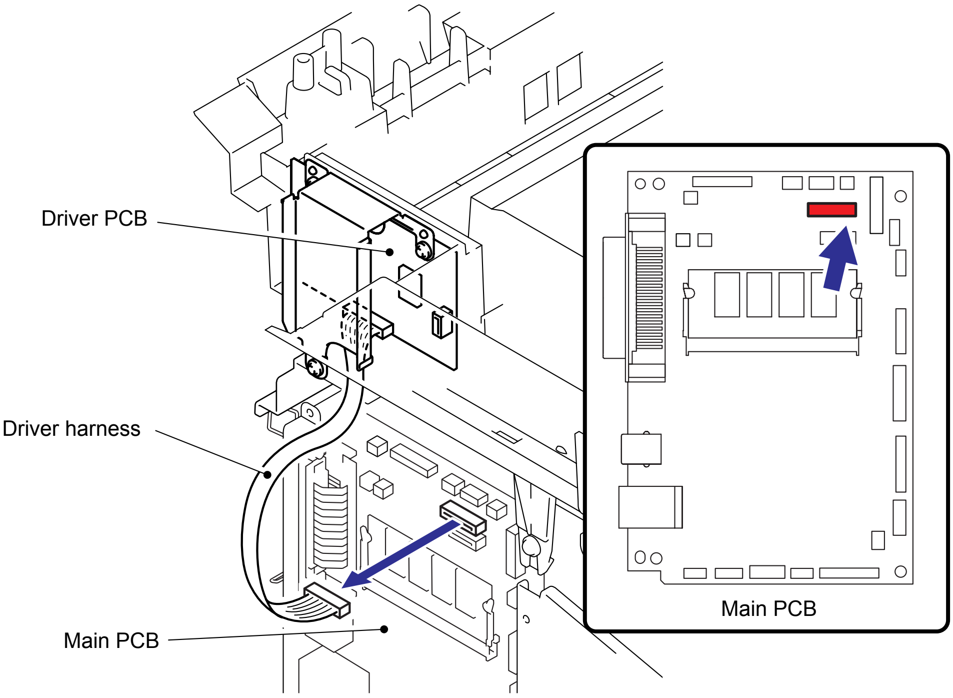


Fig. 5-122

(2) Remove the cup S M3x6 SR Taptite screw and two cup B M3x8 Taptite screws.

(3) Remove the Driver PCB shield and Driver PCB from the Joint cover ASSY.

(4) Disconnect the connector of the Driver harness from the Driver PCB.

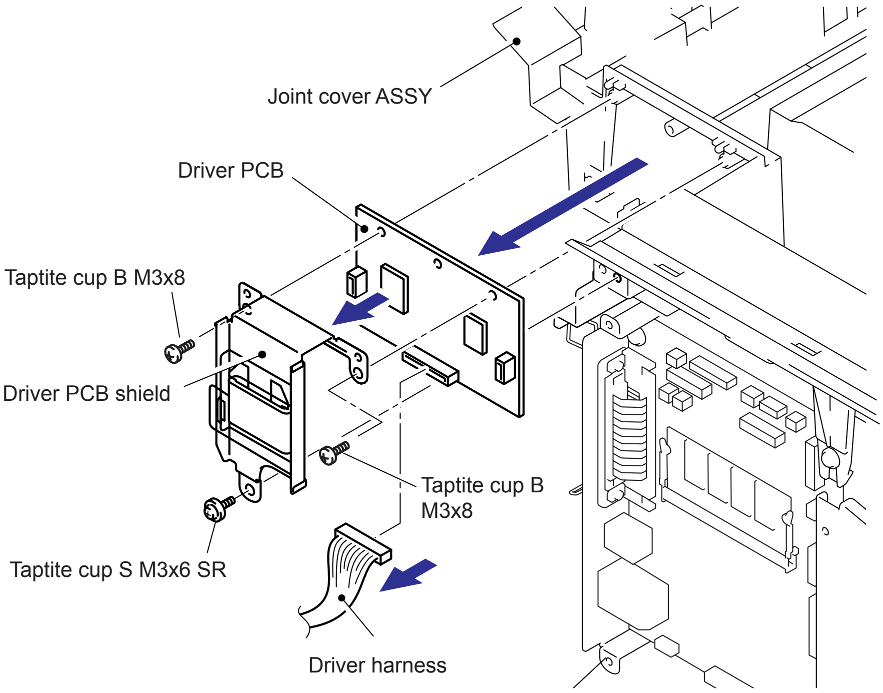


Fig. 5-123

9.15 USB HOST PCB ASSY

(1) Disconnect the connector of the USB HOST harness ASSY from the Main PCB.

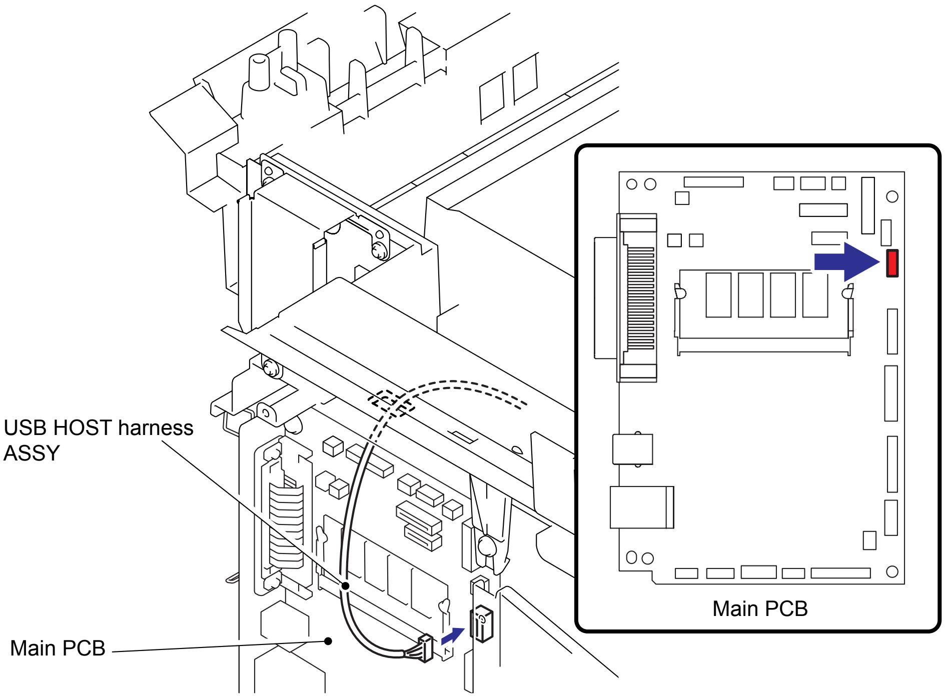


Fig. 5-124

(2) Disconnect the connector of the USB HOST harness ASSY from the USB HOST PCB ASSY.

(3) Remove the bind B M4x12 Taptite screw, and remove the USB HOST FG harness.

(4) Remove the bind B M4x12 Taptite screw, and remove the USB PCB holder from the Joint cover ASSY.

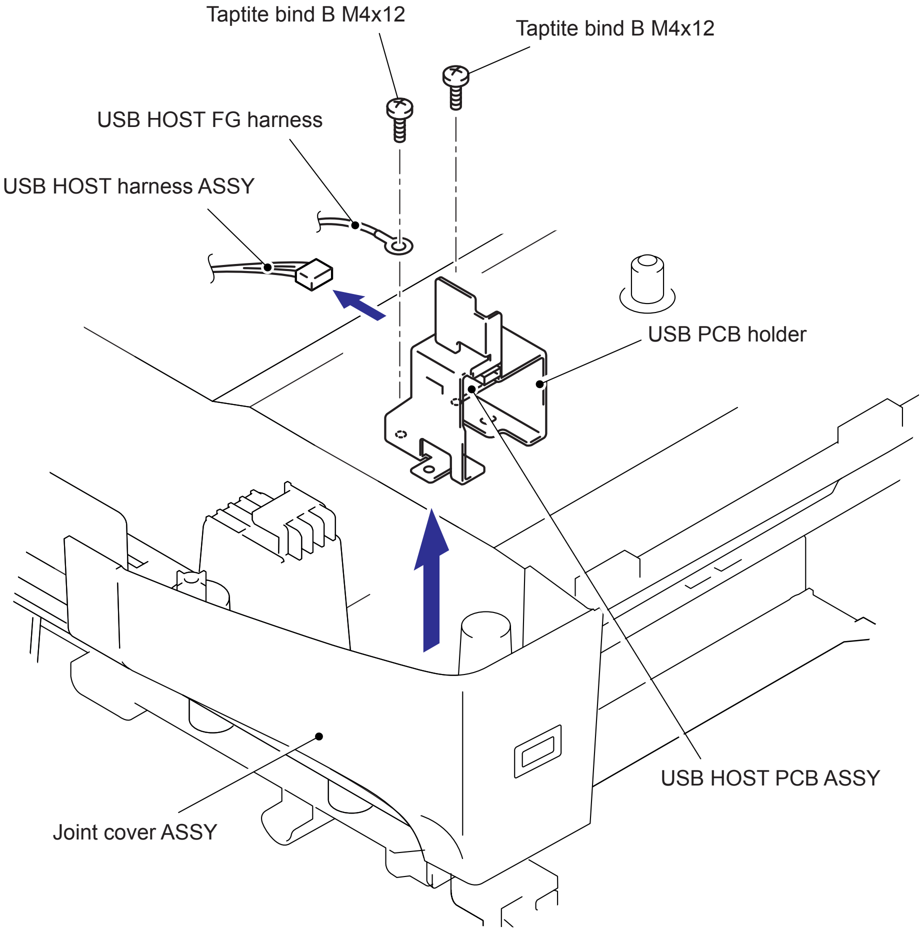


Fig. 5-125

(5) Remove the cup S M3x6 SR Taptite screw, and remove the USB HOST PCB ASSY from the USB PCB holder.

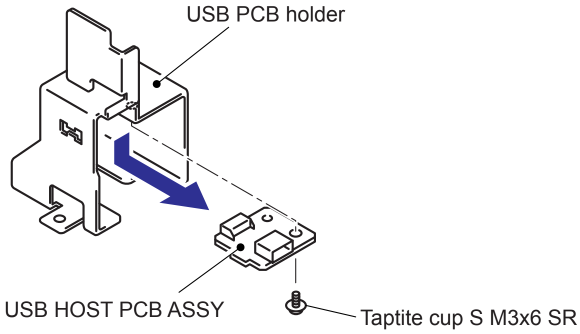


Fig. 5-126

9.16 Side Cover R

(1) Remove the two bind B M4x12 Taptite screws, and then remove the Side cover R by following the direction from 1a to 1d.

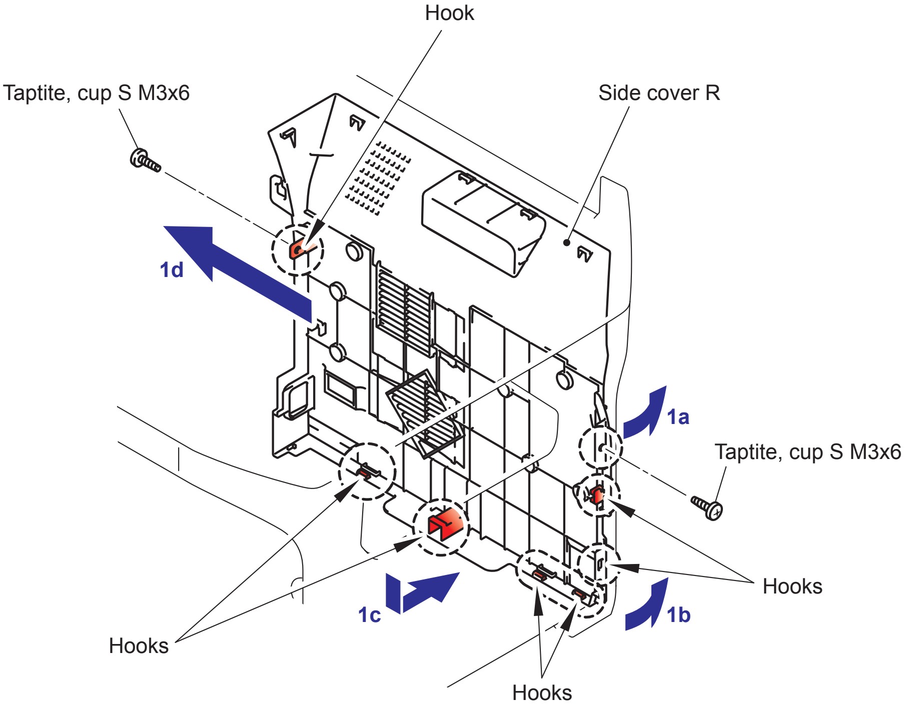


Fig. 5-127

9.17 Battery

(1) Remove the Battery.

(2) Disconnect the connector of the Battery.

(3) Disconnect the connector of the Battery harness from the Main PCB, and then remove the Battery harness.

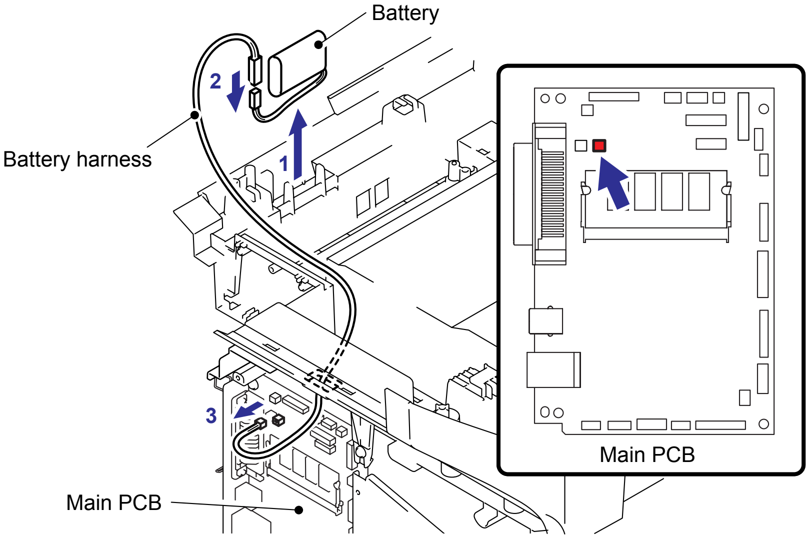


Fig. 5-128

⚠ DANGER

- Never disassemble or recharge the battery.
- Never dispose of the battery in fire.

⚠ WARNING

- There is a danger of explosion if the battery is incorrectly replaced.
- When replacing the battery, use the spare part authorized by Konica Minolta.
- Batteries used should be disposed of in accordance with the local codes and regulations.

⚠ GEFAHR

- Die Batterie niemals zerlegen oder wieder aufladen.
- Die Batterie niemals durch Verbrennen entsorgen.

⚠ WARNUNG

- Wenn die Batterie inkorrekt ausgewechselt wird, besteht Explosionsgefahr.

9.18 Joint Cover ASSY

(1) Remove the four bind B M4x12 Taptite screws from the Joint cover ASSY.

(2) Release all Hooks of the Joint cover and lift up the front side of the Joint cover ASSY.

(3) Pull out the Joint cover ASSY’s Bosses to the front side.

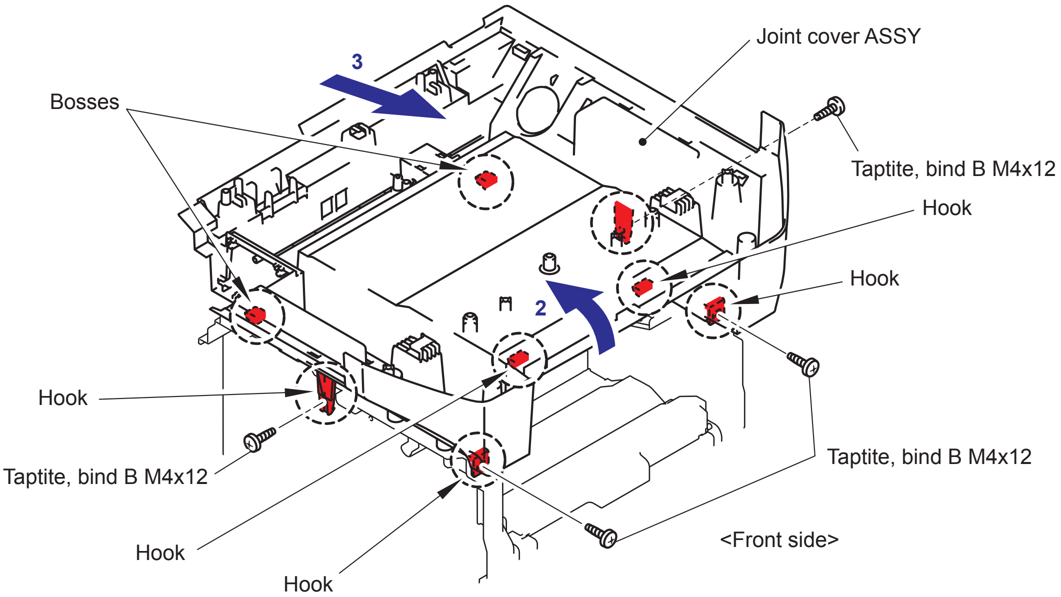


Fig. 5-129

9.19 Main PCB

(1) Disconnect the 6 connectors and 6 flat cables from the Main PCB.

Caution:

- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.

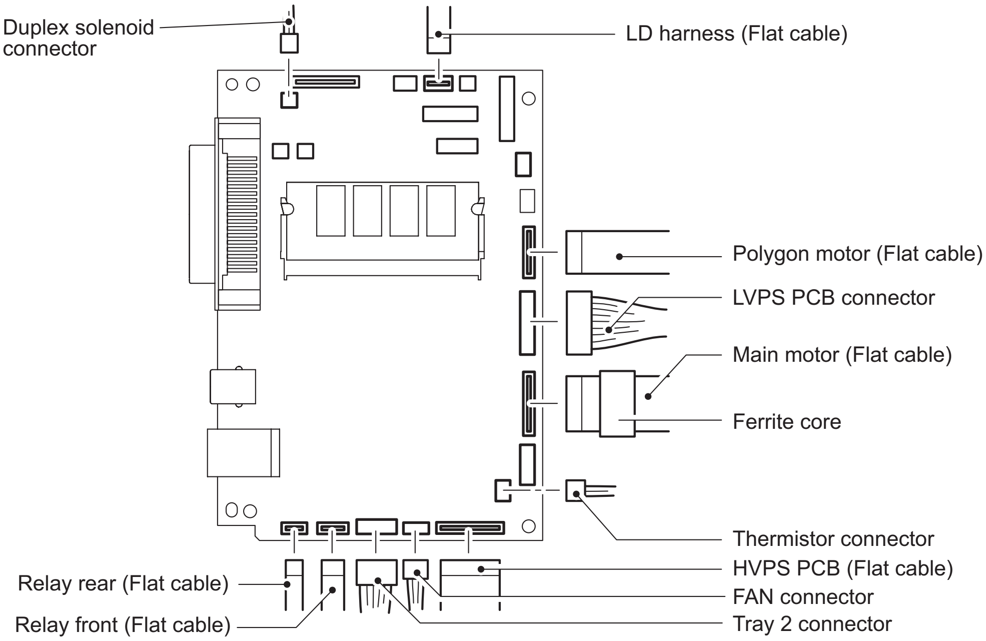


Fig. 5-130

Assembling Note:

- When assembling the Main PCB, ensure to place the Ferrite Core correctly.

(2) Remove the four cup S M3x6 SR Taptite screws and two Screw pan 3x6 to remove the Main PCB.

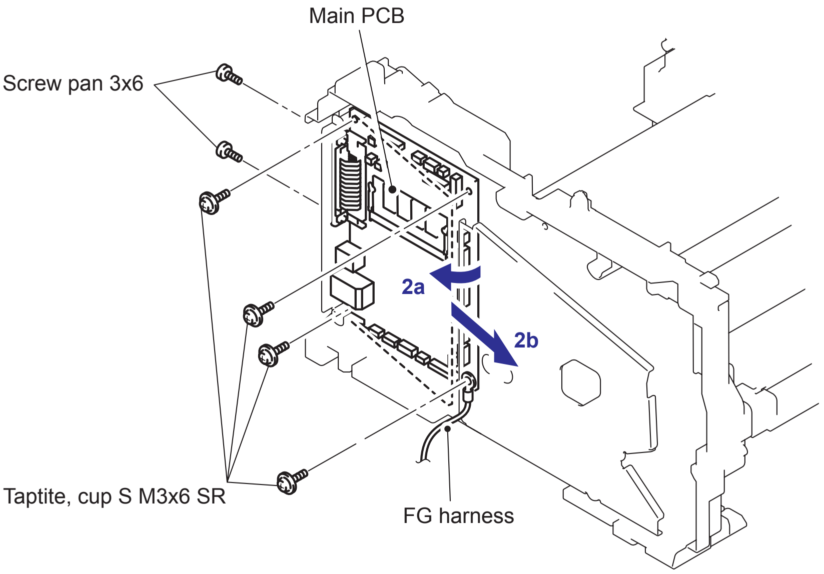


Fig. 5-131

Note:

There are procedures for disassembling Frame L after this procedure.
(9.41 FRAME L ASSY)

9.20 Gear Plate Calking ASSY / Develop Joint / Main Motor ASSY

(1) Place the machine body so that the Frame L is at the top.

(2) Remove the eight bind B M4x12 Taptite screws and one cup S M3x6 taptite screw.

(3) Remove the Gear plate calking ASSY from the Frame L.

> **Note:**
>
> - Be careful not to drop the gear.

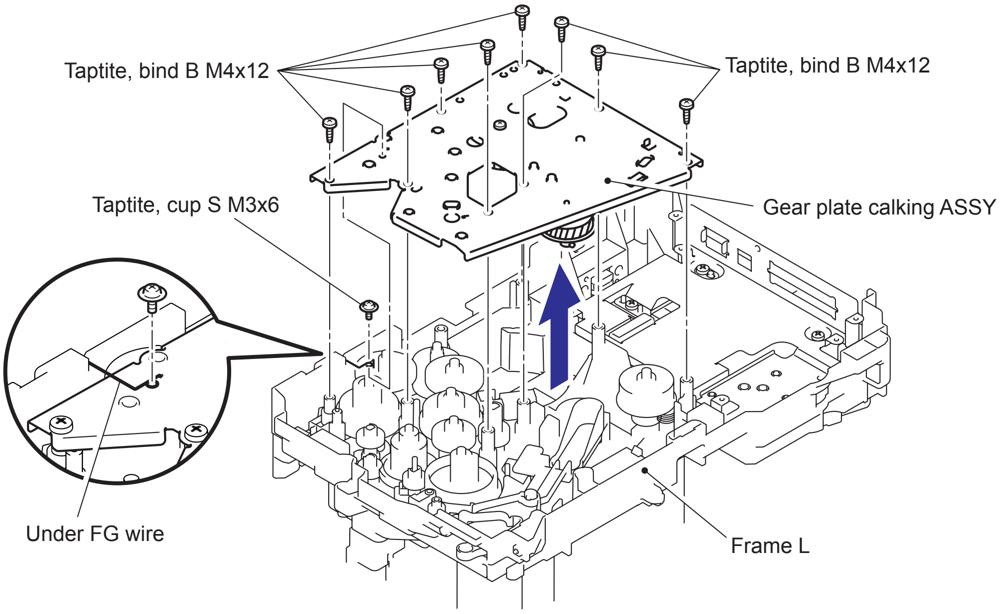


Fig. 5-132

(4) Remove the four cup S M3x6 Taptite screws, and then remove the Main motor ASSY.

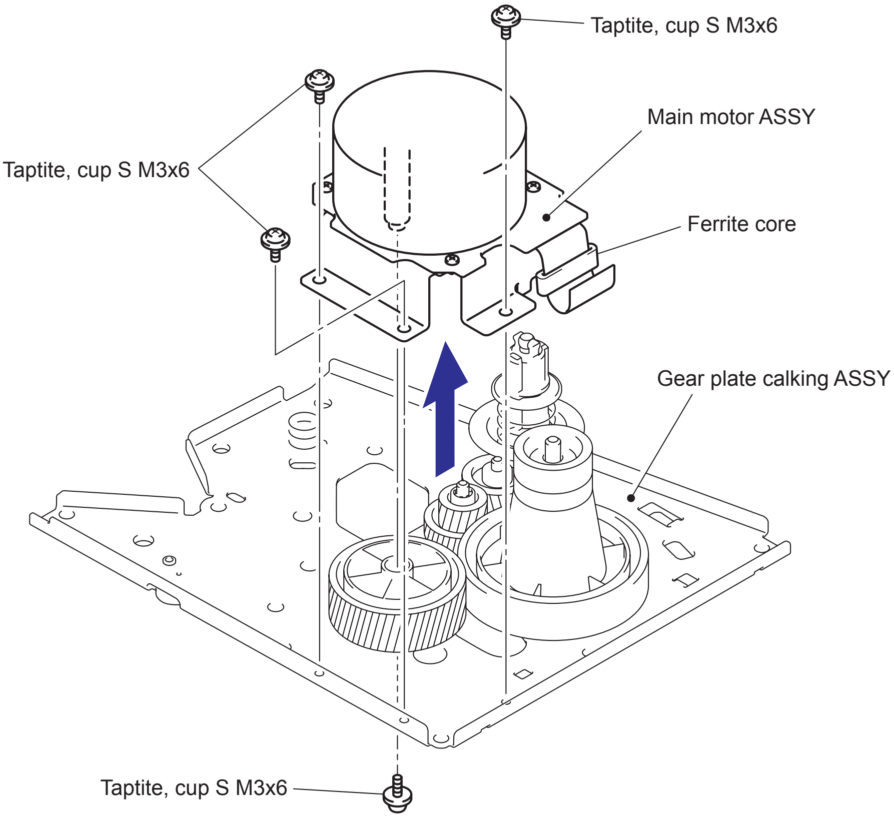


Fig. 5-133

(5) Remove the Develop joint from the Gear plate calking ASSY.

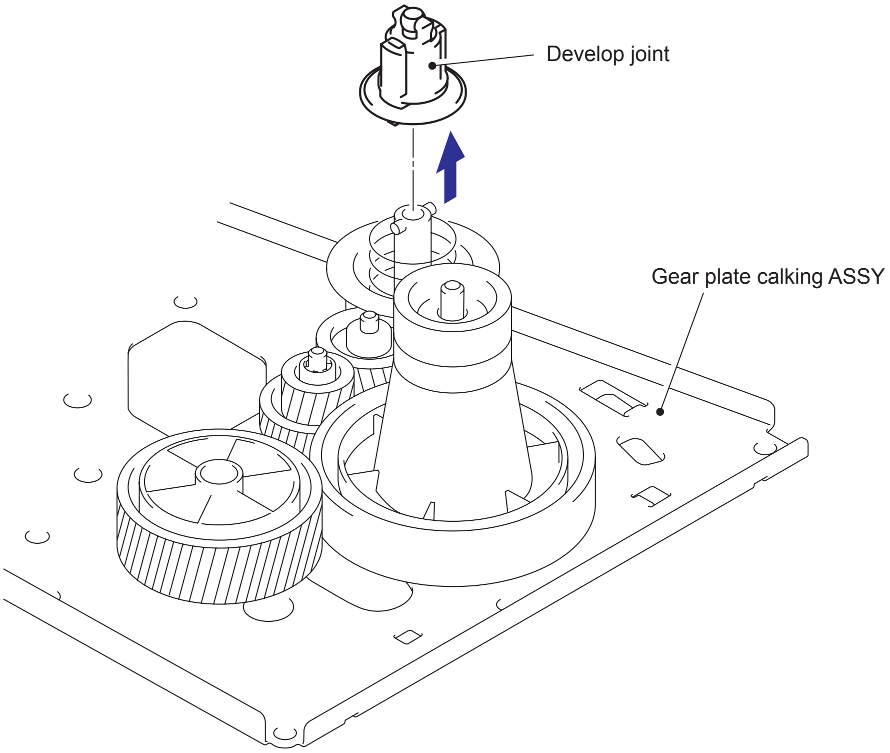


Fig. 5-134

9.21 Main Shield Plate ASSY

(1) Remove the Insulation sheet.

(2) Pull out the Flat cable from the Ferrite core.

(3) Remove the Main PCB sheet.

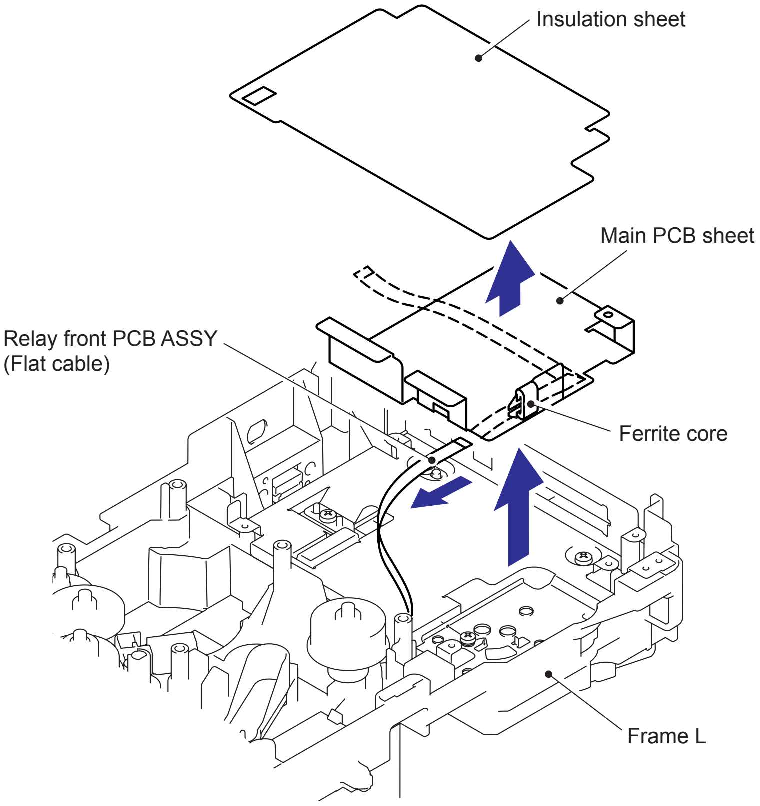


Fig. 5-135

(4) Remove the two bind B M4x12 Taptite screws, and then remove the Plate.

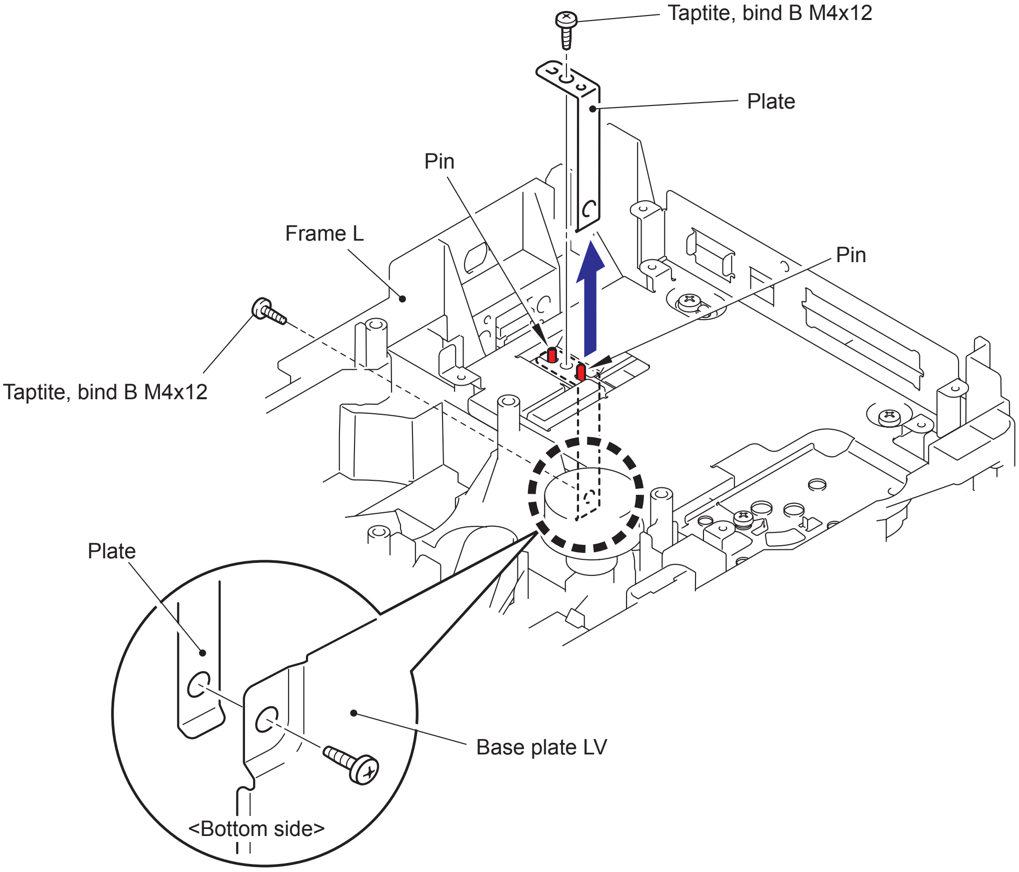


Fig. 5-136

Assembling Note:

- When assembling the Plate, ensure to put the Plate into the base plate LV.
- When assembling the Plate, secure the screw at the Frame L side first, then the screw at the base plate LV side.

(5) Remove the three bind B M4x12 Taptite screws and cup S M3x6 Taptite screw, and then remove the Main shield plate ASSY.

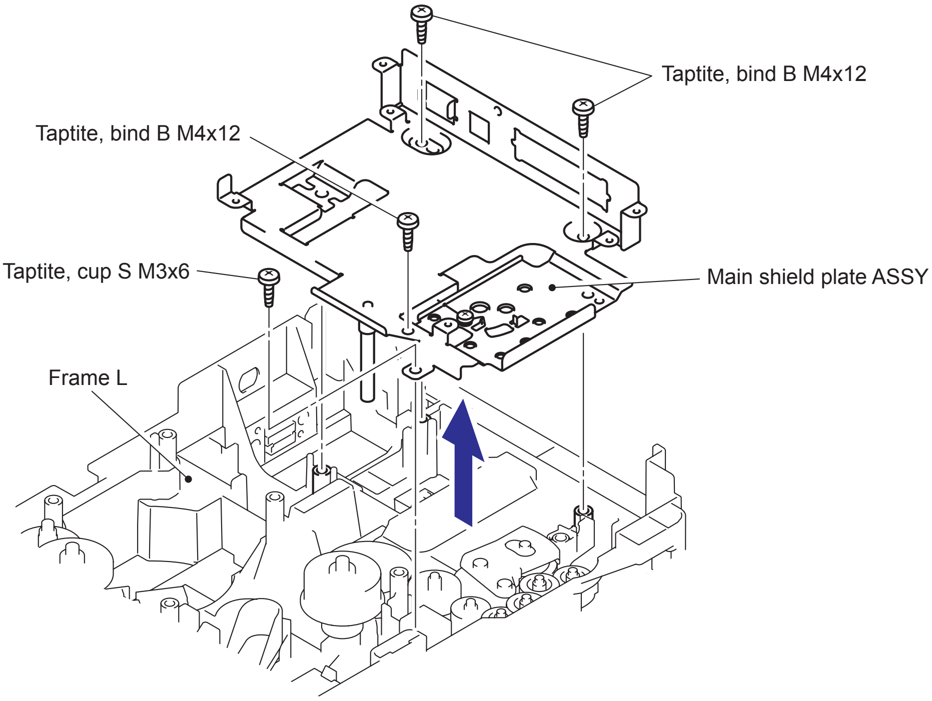


Fig. 5-137

Assembling Note:

- Hang the Tip of the Switch arm spring of the Main shield plate on the Eject gear 28 sector.

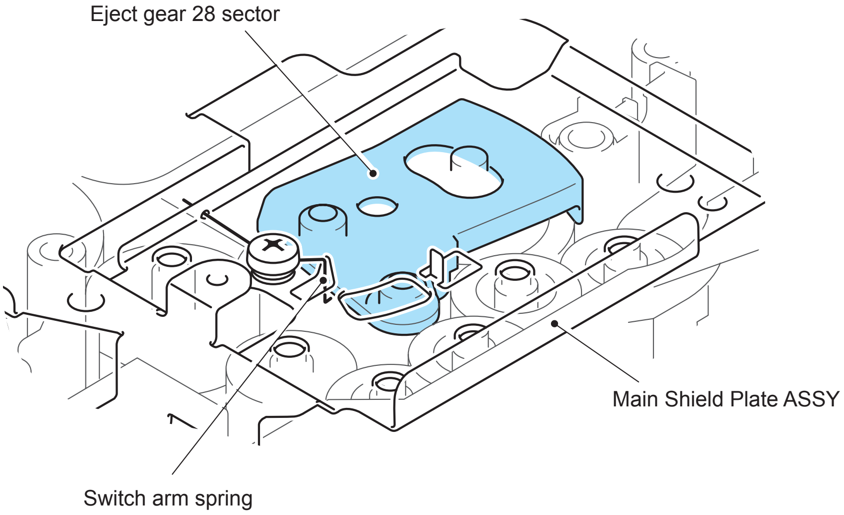


Fig. 5-138

9.22 Relay Rear PCB ASSY / tray 2 Connector

(1) Remove the Relay rear PCB ASSY (Include the duplex sensor).

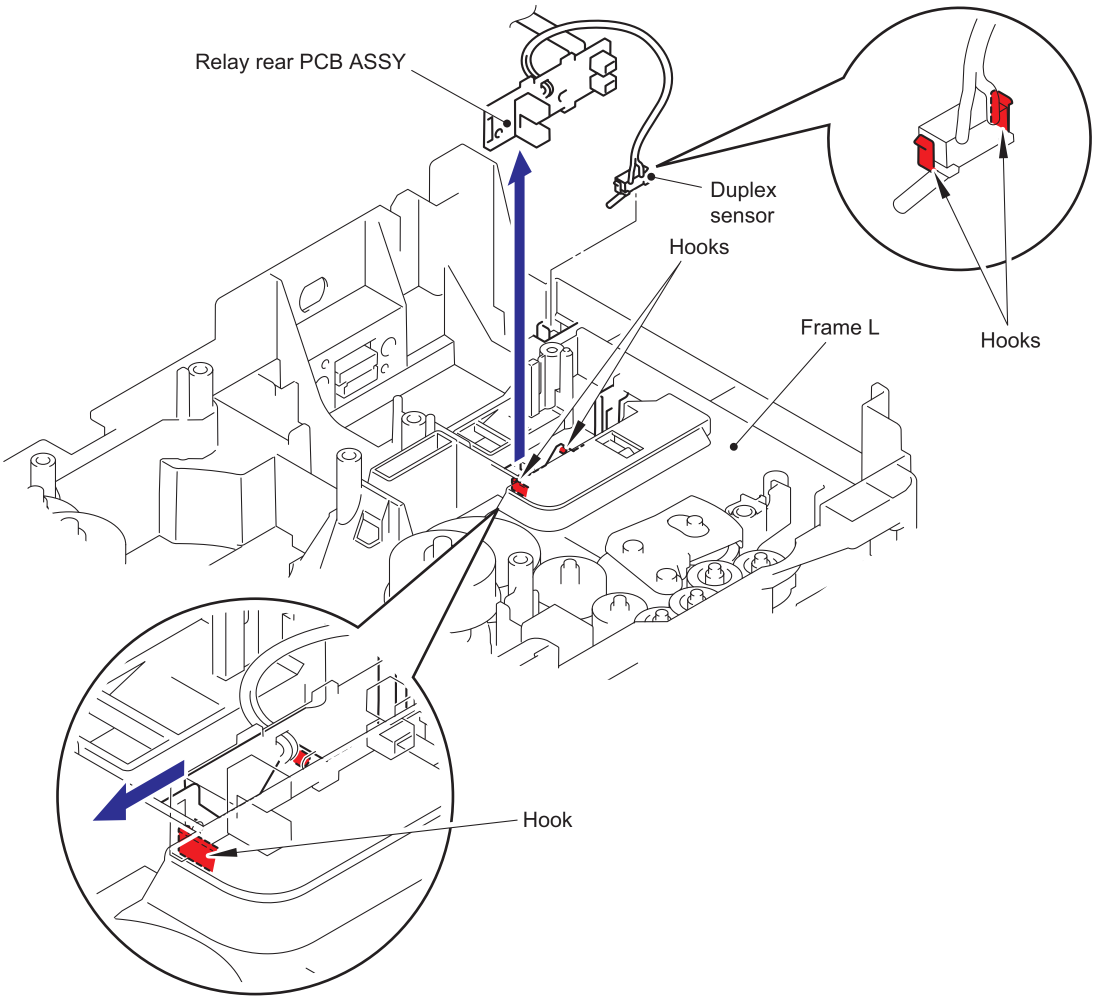


Fig. 5-139

(2) Remove the Connector harness.

(3) Disconnect the tray 2 connector while pressing the Hook inwards.

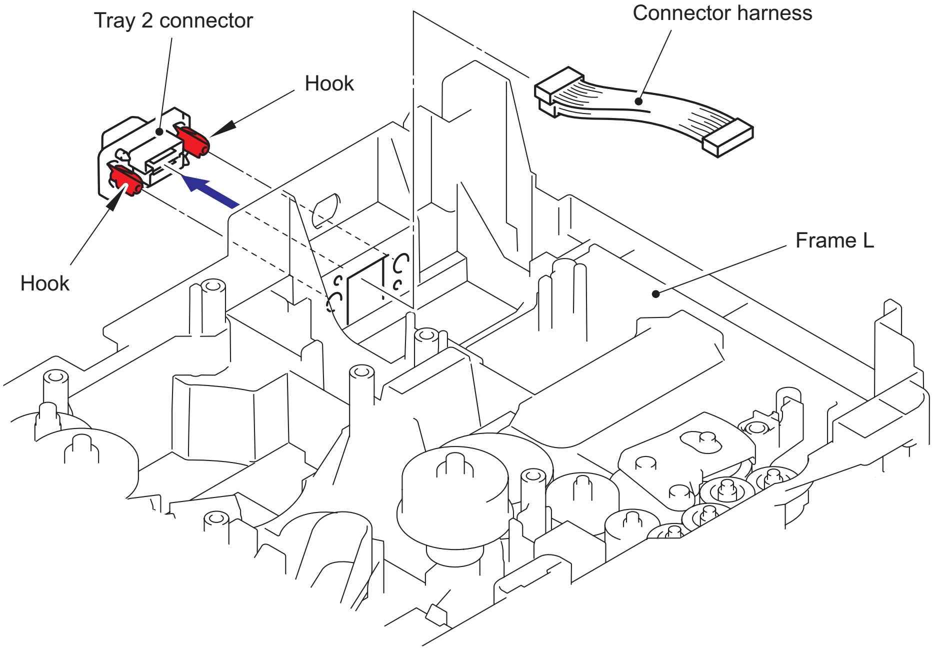


Fig. 5-140

Assembling Note:

- When assembling the tray 2 connector, ensure that its direction is correct referring to the figure below.

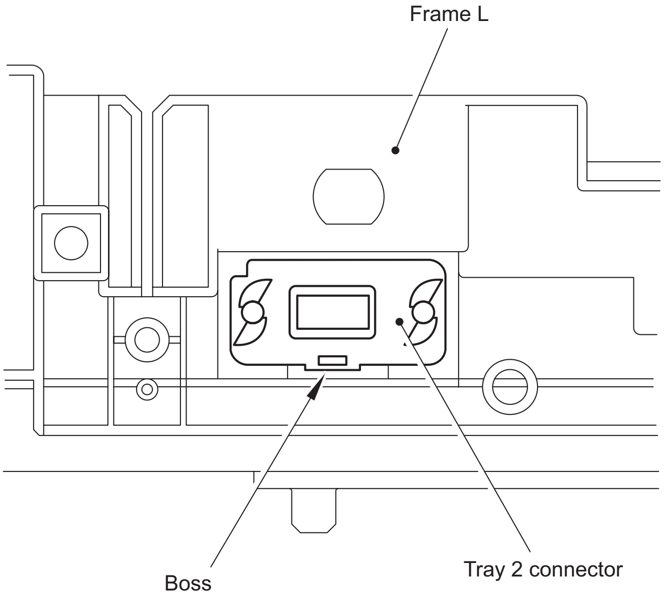


Fig. 5-141

9.23 Relay Front PCB ASSY

(1) Remove the Relay front PCB ASSY.

(2) Disconnect the five connectors from the Relay front PCB ASSY.

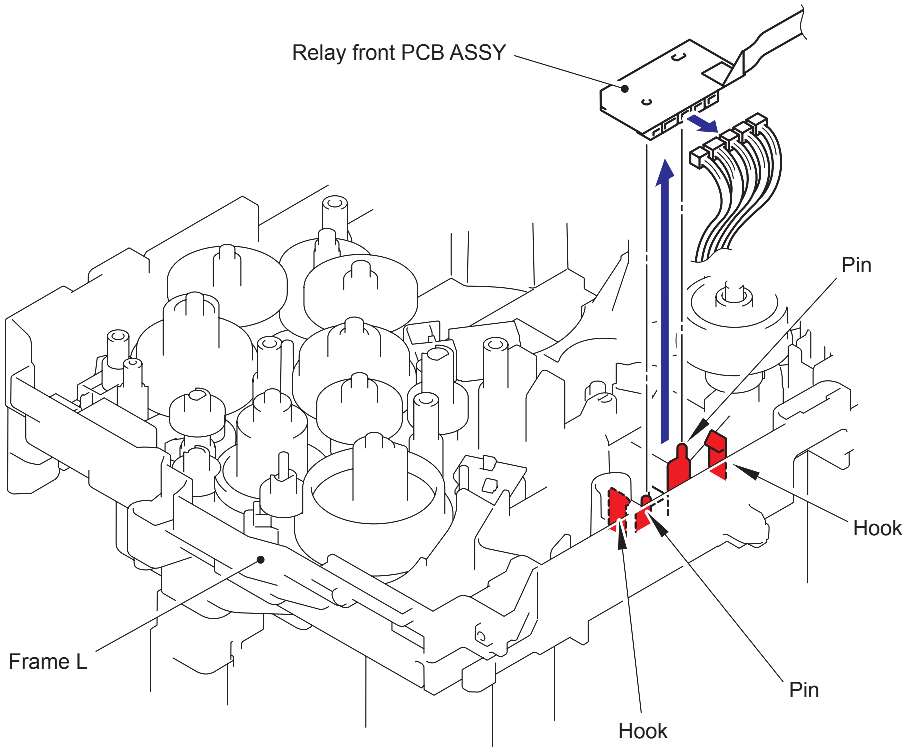


Fig. 5-142

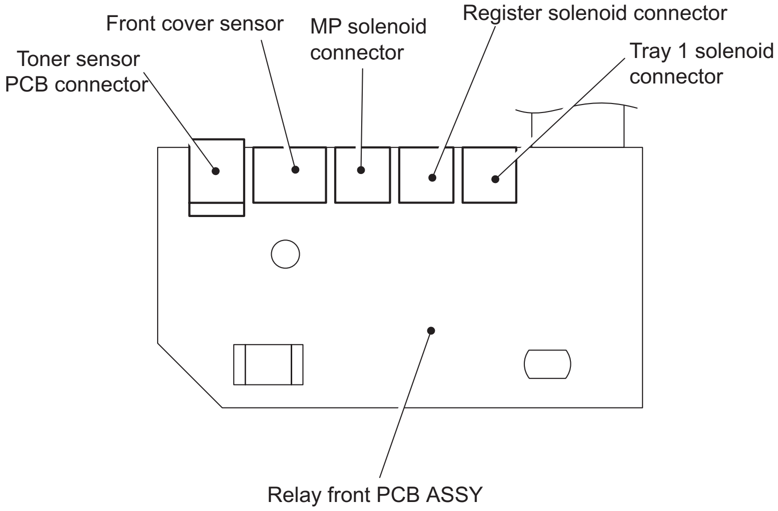

Front cover sensor
MP solenoid connector
Register solenoid connector
Tray 1 solenoid connector
Toner sensor PCB connector
Relay front PCB ASSY

Fig. 5-143

9.24 Drive Release Link

(1) Remove the bind B M3x10 Taptite screw.

(2) Lift up the back end of the Drive release cam slightly while lifting up the MP solenoid lever and the MP solenoid ASSY and remove them from the guide part of the Frame L.

(3) Turn the Drive release link to the direction of the arrow 3 until the groove of the Drive release link is aligned with the boss of the Frame L.

(4) Remove the Drive release cam.

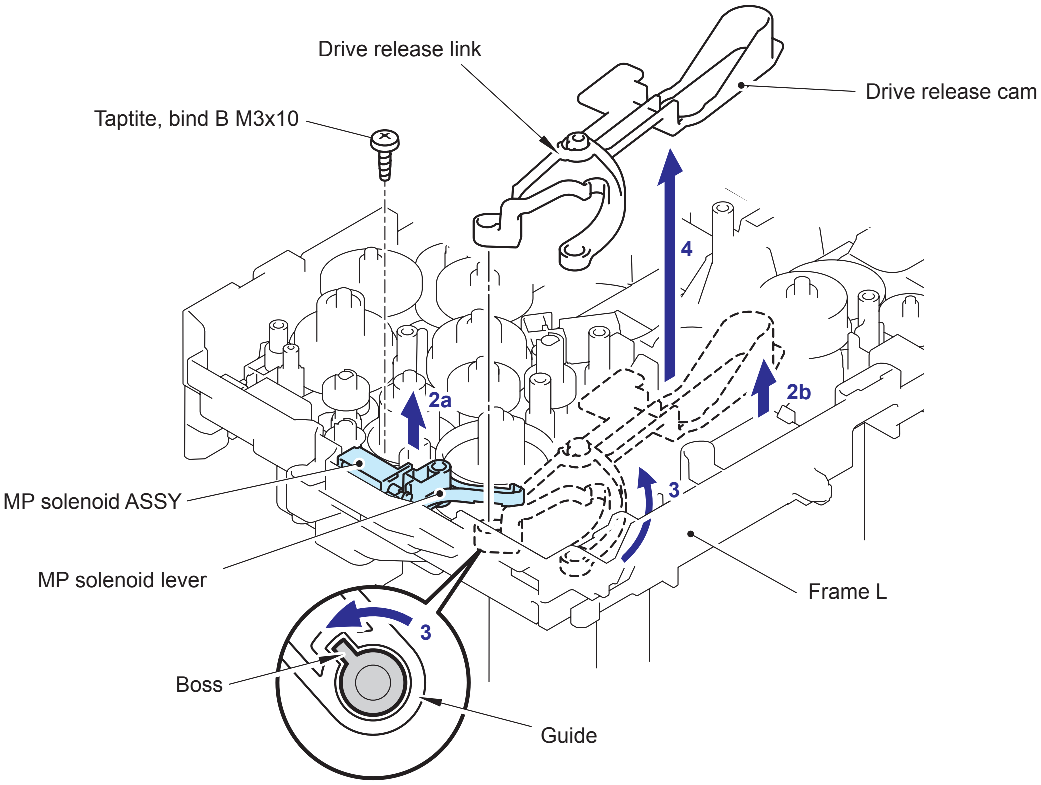


Fig. 5-144

9.25 MP Solenoid ASSY

(1) Remove the cup B M3x8 Taptite screw, and then remove the Spring.

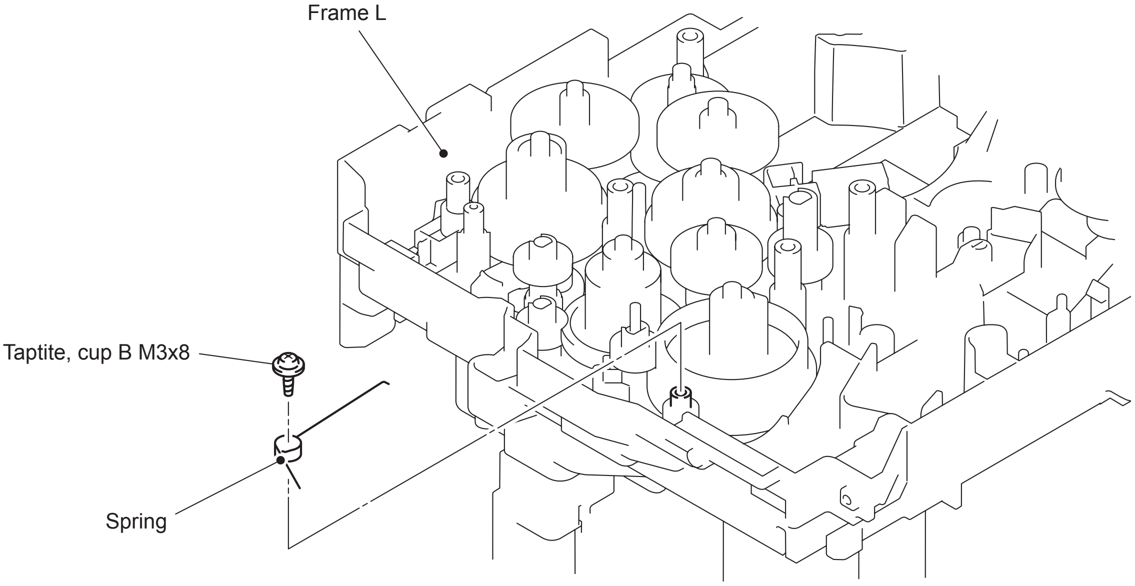


Fig. 5-145

Assembling Note:

- When assembling the Spring, ensure that its direction is correct referring to the figure below.

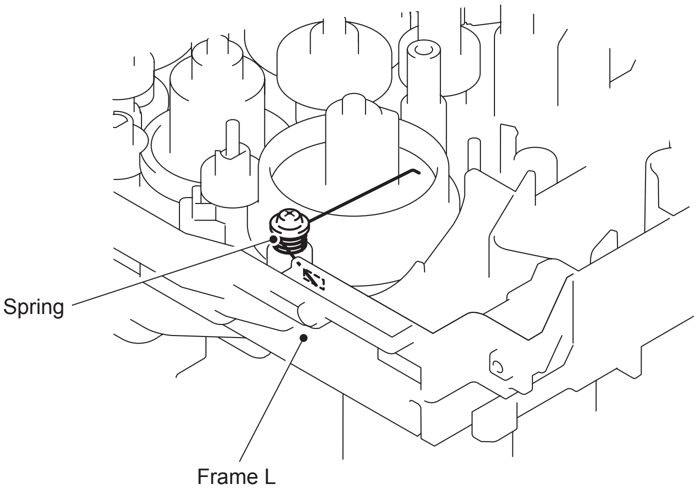


Fig. 5-146

(2) Remove the MP solenoid ASSY, Solenoid release spring P/R and MP solenoid lever.

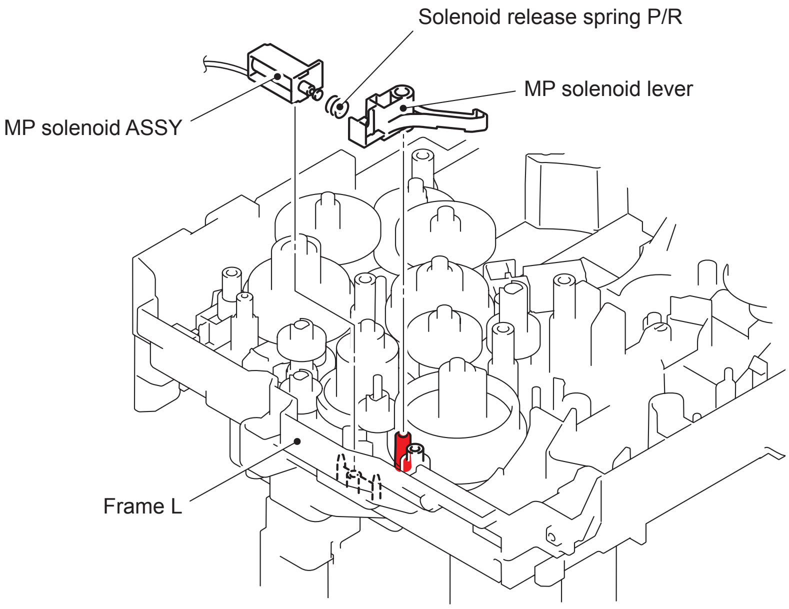


Fig. 5-147

9.26 Tray 1 Solenoid ASSY

(1) Remove the bind B M3x10 Taptite screw.

(2) Remove the tray 1 solenoid ASSY and the Solenoid release spring.

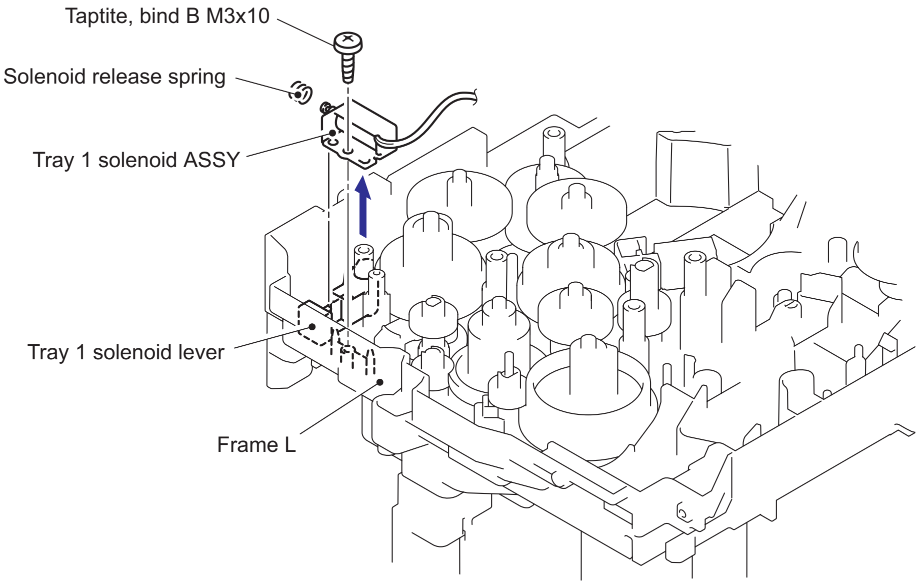


Fig. 5-148

9.27 Toner Sensor PCB ASSY

(1) Remove the Toner sensor PCB ASSY from the Frame L.

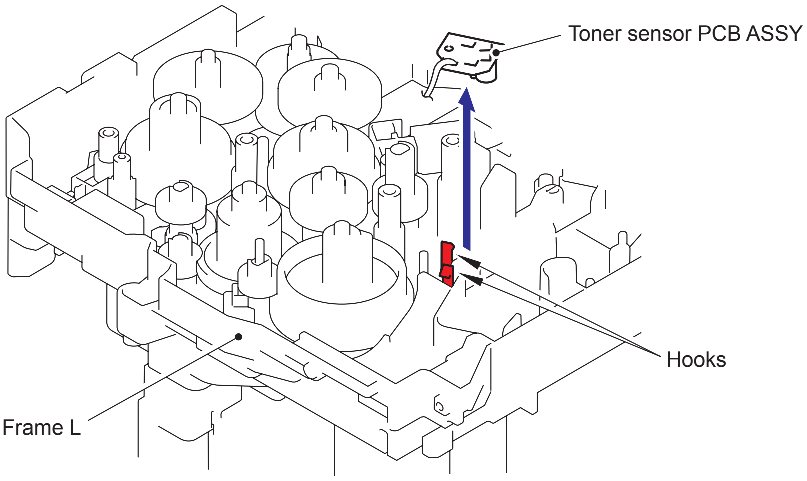


Fig. 5-149

(2) Remove the PT sensor holder from the Toner sensor PCB ASSY.

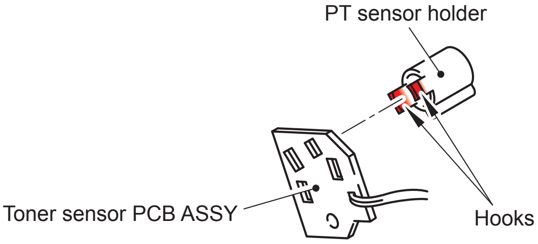


Fig. 5-150

9.28 Register Solenoid ASSY

(1) Remove the bind B M3x10 Taptite screw.

(2) Remove the Register solenoid ASSY and the Solenoid release spring.

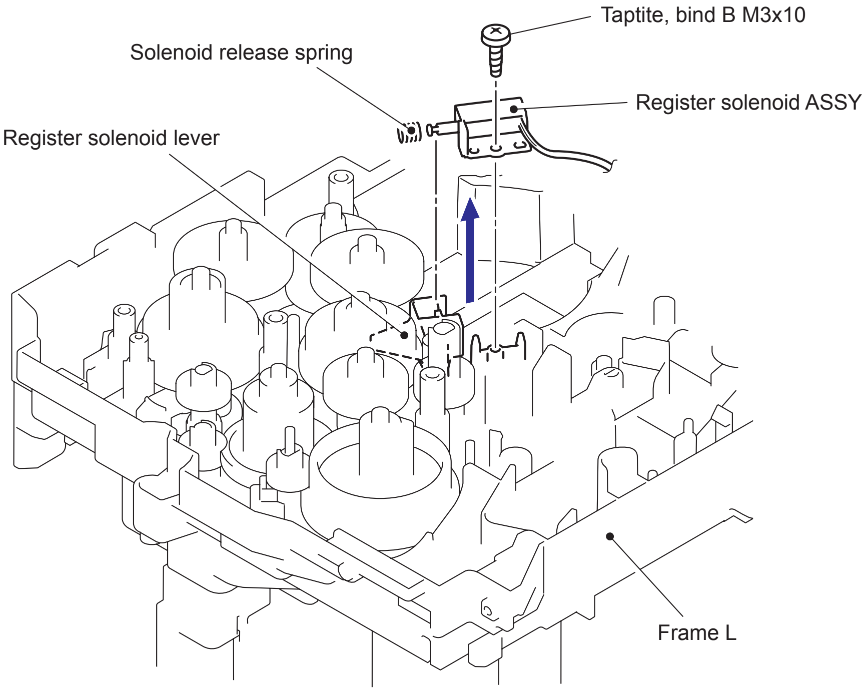


Fig. 5-151

9.29 Ejector Solenoid ASSY

(1) Remove the bind B M3x10 Taptite screw.

(2) Remove the Ejector solenoid and the Solenoid release spring.

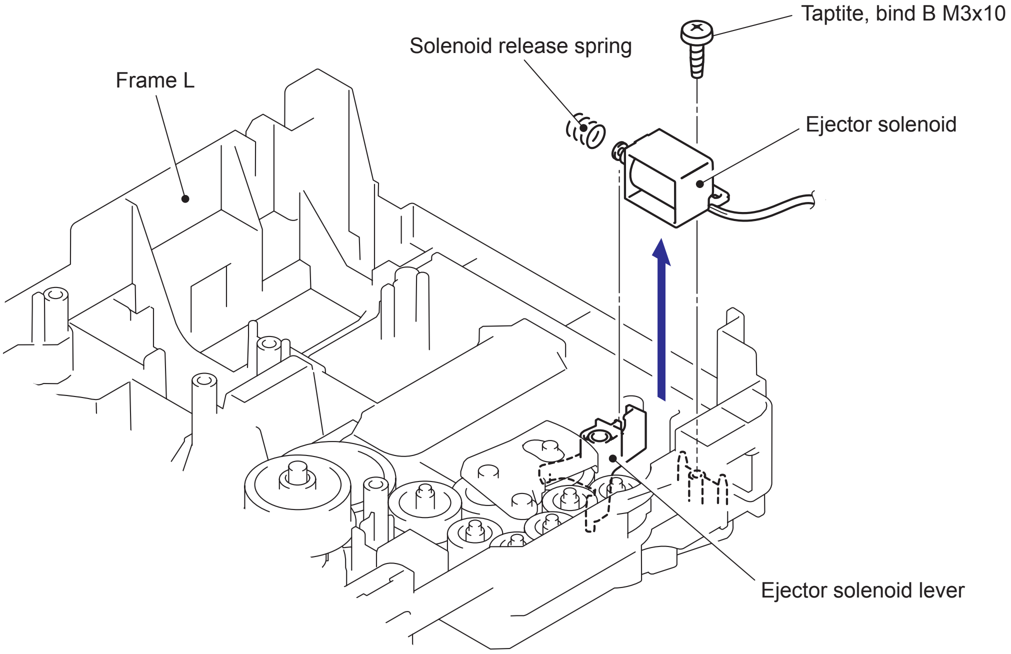


Fig. 5-152

9.30 Front Cover Sensor ASSY

(1) Remove the Front cover sensor ASSY from the Frame L.

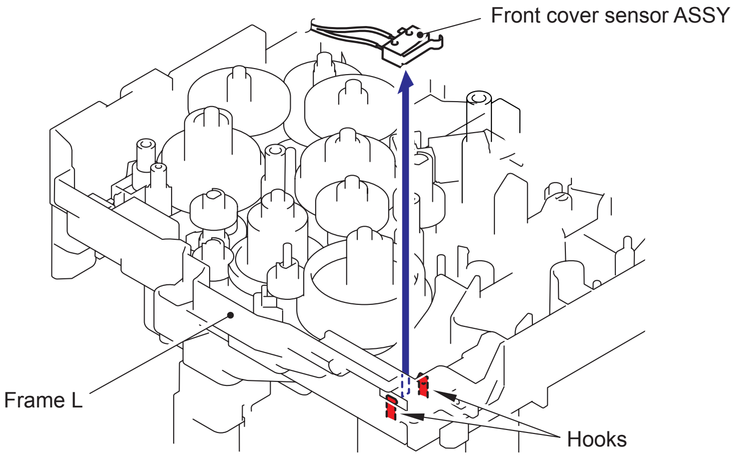


Fig. 5-153

9.31 New Toner Actuator

(1) Remove the cup B M2x6 Taptite screw.

(2) Remove the New toner actuator and the New toner actuator spring.

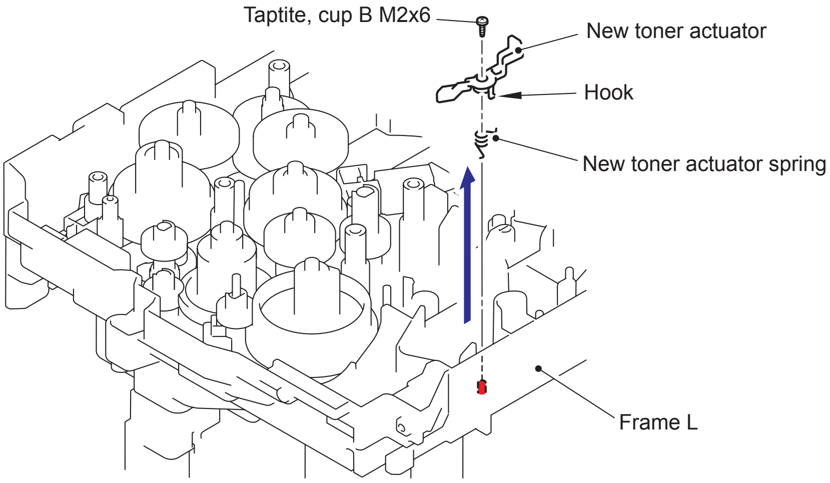


Fig. 5-154

Assembling Note:

- When assembling the New toner actuator spring, ensure that its direction is correct referring to the figure below.

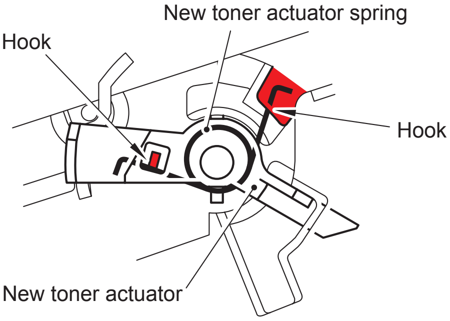


Fig. 5-155

9.32 Gear 17/20/23

(1) Remove the Gear 23.

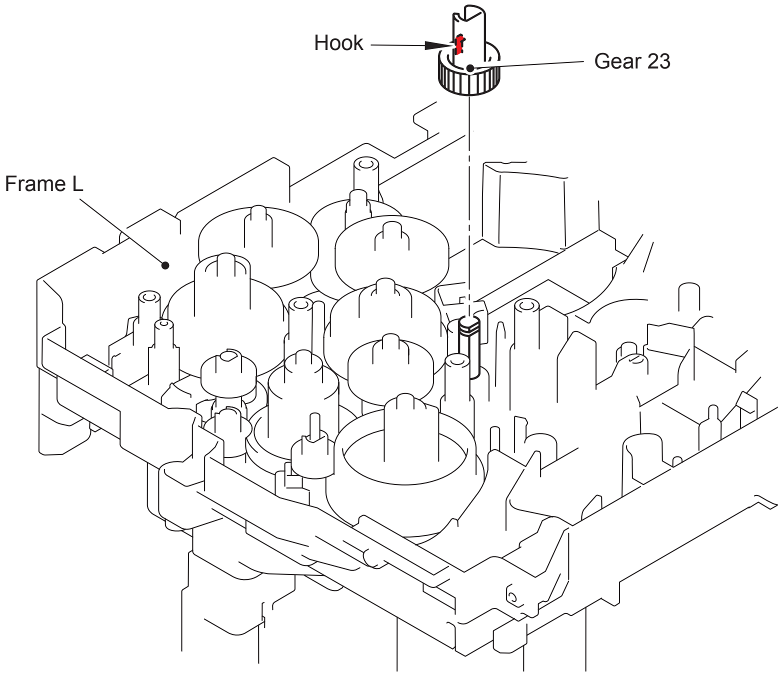


Fig. 5-156

(2) Remove the Gear 20.

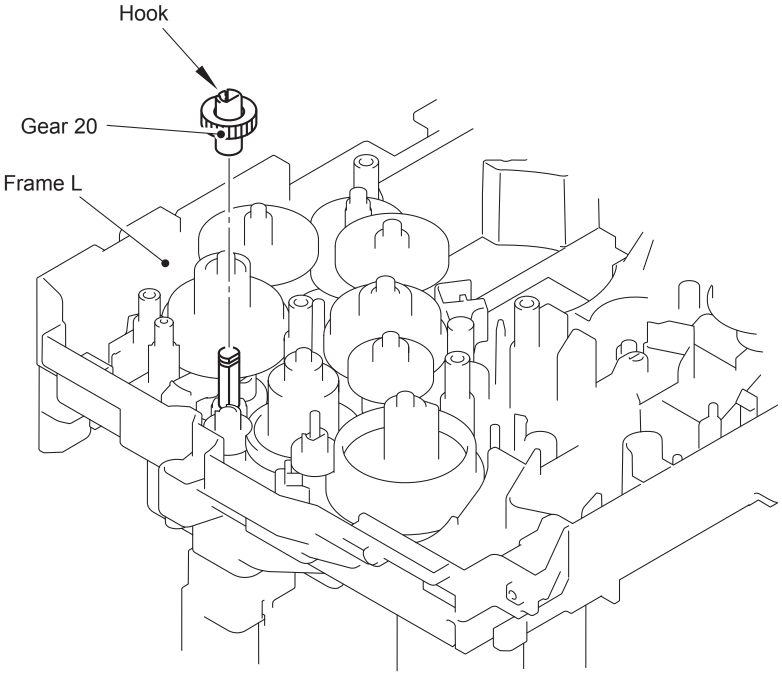


Fig. 5-157

(3) Remove the Gear 17 (black).

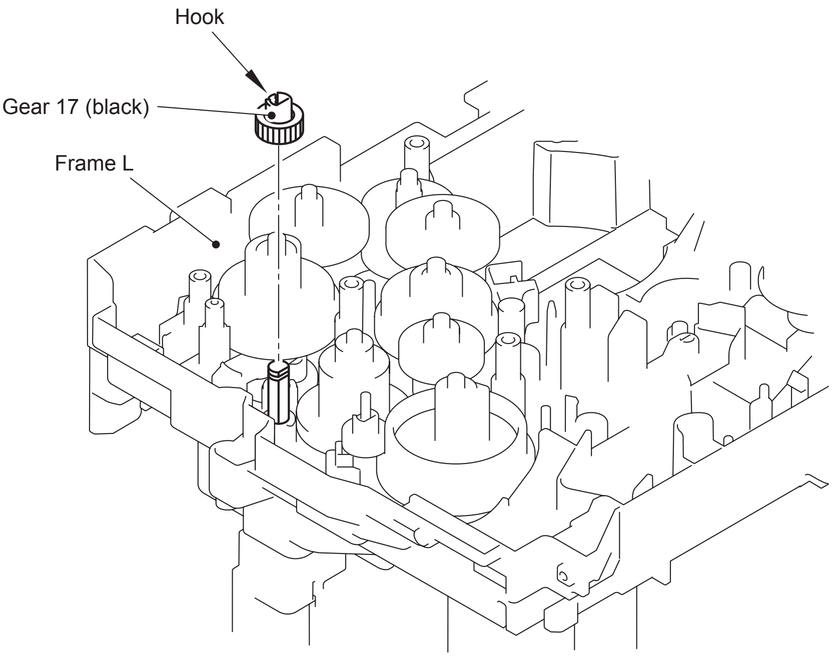


Fig. 5-158

(4) Remove the Gear 17 (white).

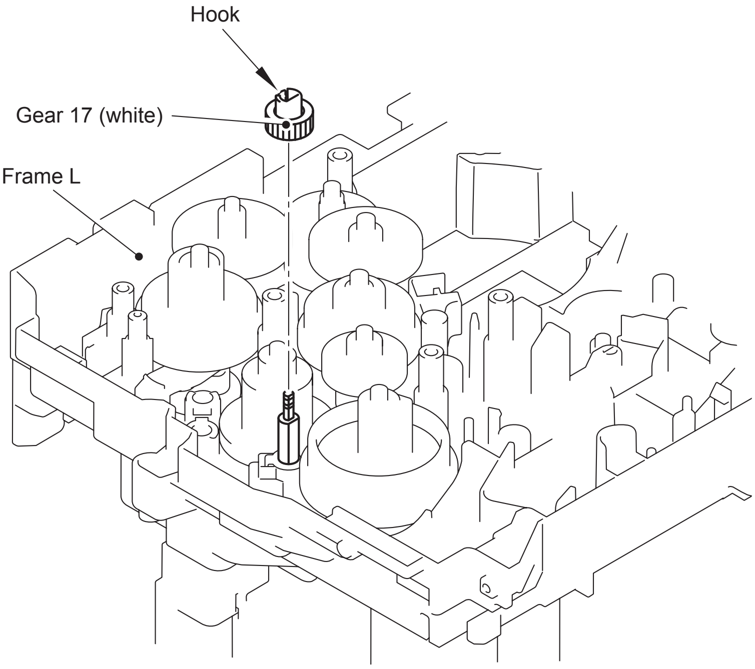


Fig. 5-159

9.33 Thermistor ASSY

(1) Remove the Thermistor ASSY from the Frame L.

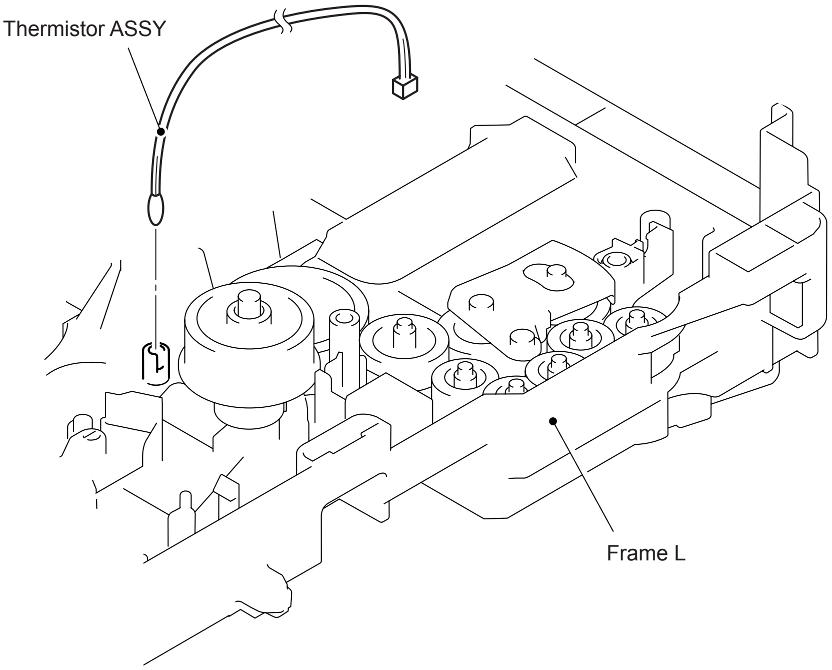


Fig. 5-160

9.34 Filter

(1) Slide the Sub duct to the direction of 1b while pressing the Hook to the direction of 1a and remove the Sub duct from the Air duct.

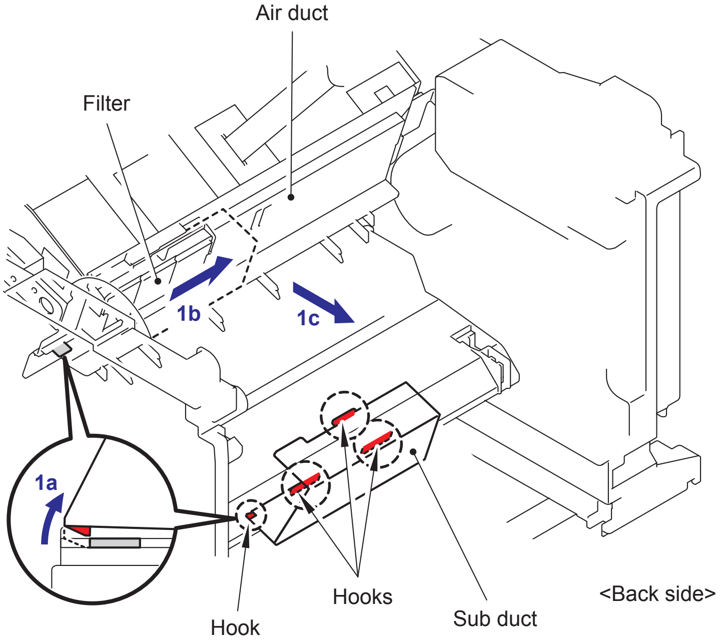


Fig. 5-161

(2) Remove the Filter from the Air duct.

Note:

- The filter is dirt. Be careful when disassembling or assembling it.

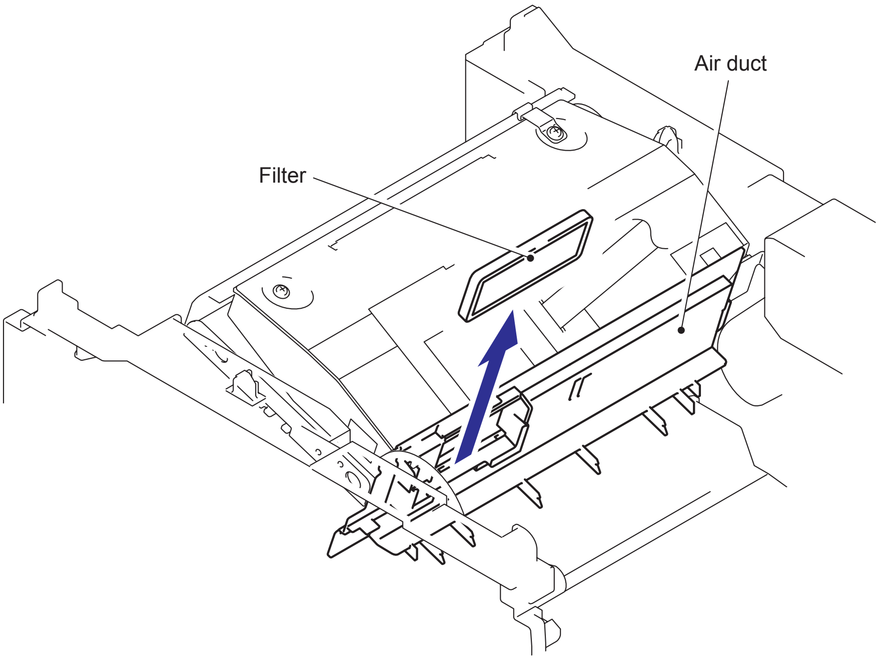


Fig. 5-162

9.35 Laser Unit

(1) Remove the Hook of the Air duct from the frame. Slide the Air duct to the direction of 1b and remove the Air duct.

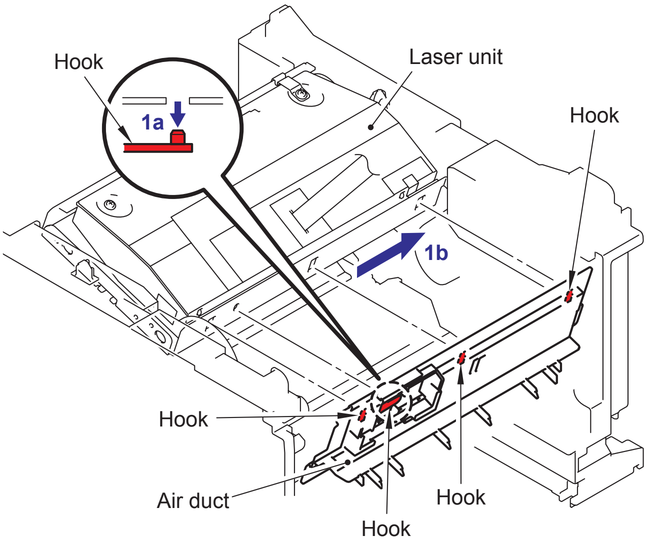


Fig. 5-163

(2) Remove the five cup S M3x6 Taptite screws.
(The left back screw has already remove at “8.13 Main Shield Plate ASSY“)

(3) Remove the Protective film from the Flat cable.

(4) Pull out the two Flat cables from the Core.

(5) Remove the Laser unit.

Note:

- Be careful not to lose the Protective film attached on the flat cable.
- Do not touch the Laser scanner window directly.

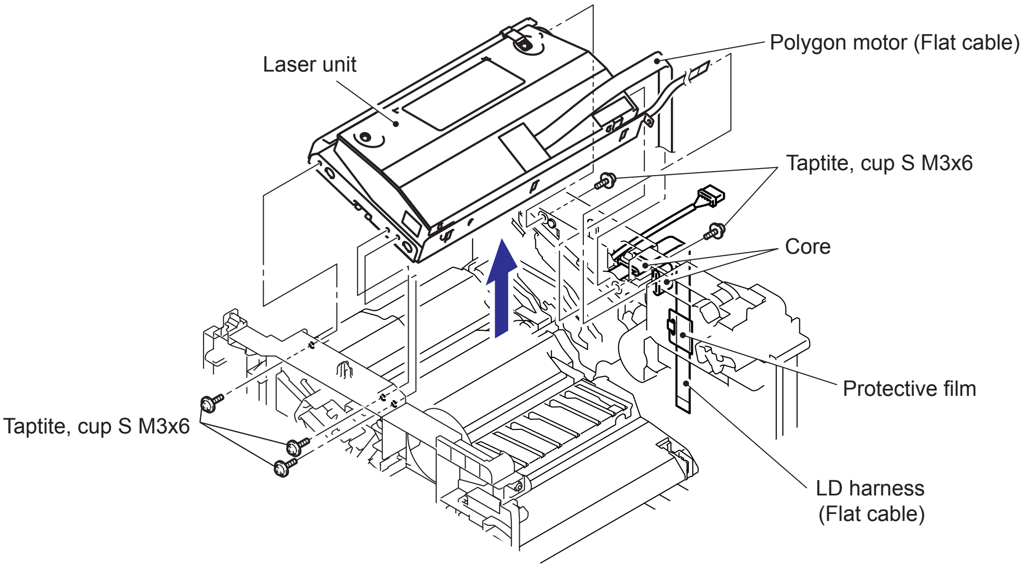


Fig. 5-164

Assembling Note:

- Before assembling the Laser unit, make sure put on the Core.

9.36 LVPS PCB Unit

(1) Turn the machine upside down.

(2) Remove the Screw pan (S/P washer) M3.5x7.5SR, and remove the NCU FG harness.

(3) Remove the five bind B M4x12 Taptite screws, and then remove the Base plate LV.

(4) Remove the Screw pan (S/P washer) M3.5x7.5SR from the Base plate LV to remove the LVPS PCB unit terminal.

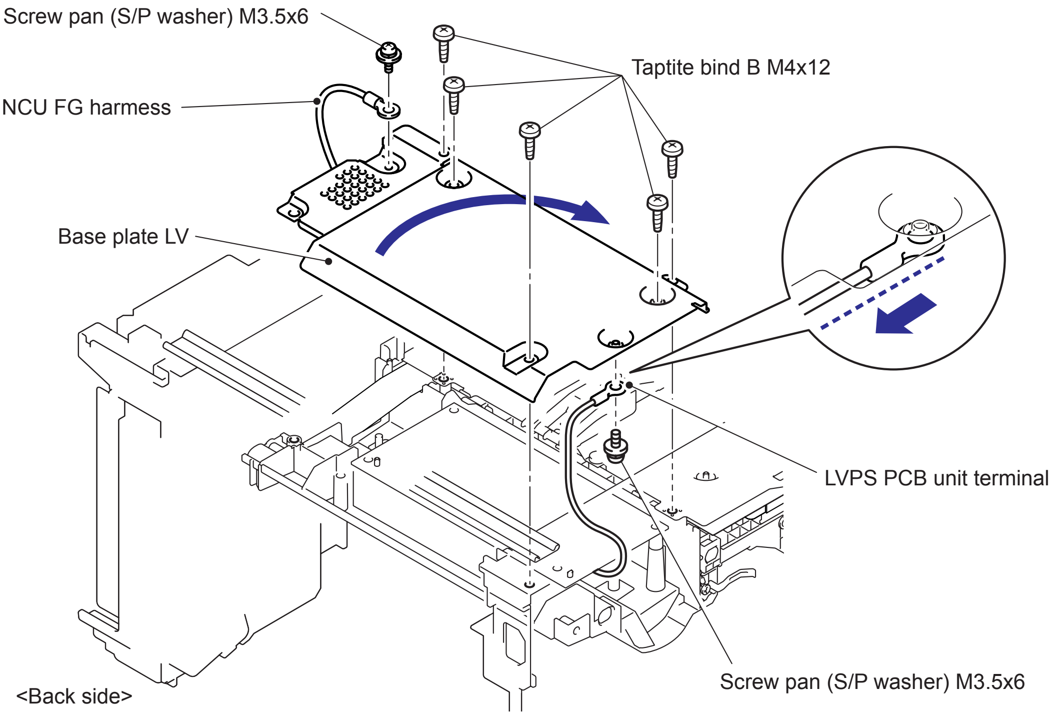


Fig. 5-165

Assembling Note:

- When assembling the Base plate LV, Direct the cable side of the LVPS PCB unit terminal to the backward (Fig. 5-165: To the direction of an arrow of the enlarged illustration.), and align parallel the LVPS PCB unit terminal with the side of the Base plate LV.

(5) Remove the two bind B M4x12 Taptite screws, and then remove the LV insulation sheet.

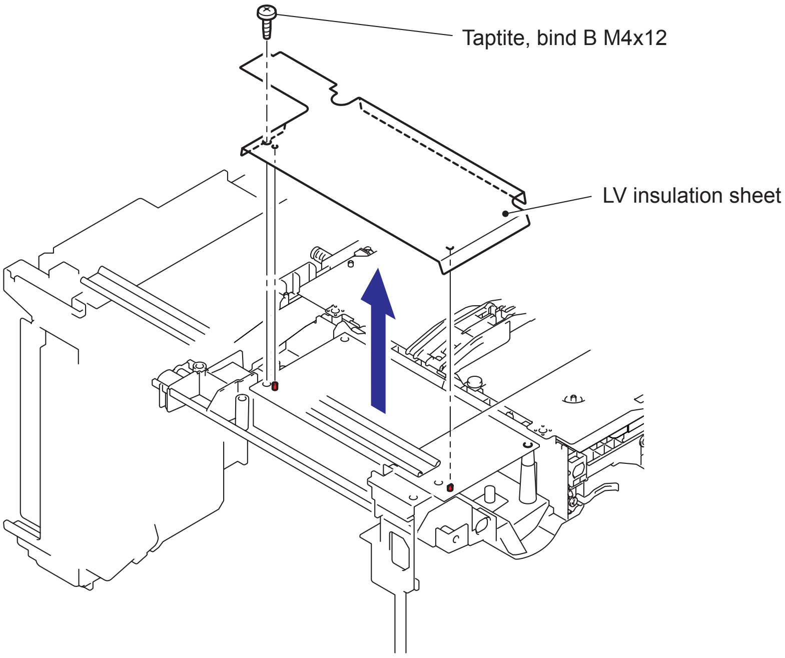


Fig. 5-166

(6) Remove the bind B M4x12 Taptite screw, and then remove the SW holder ASSY.

(7) Float the Fan motor 60 unit LV from the Frame R.

Note:

- Do not remove the Fan motor 60 unit LV at the above step.

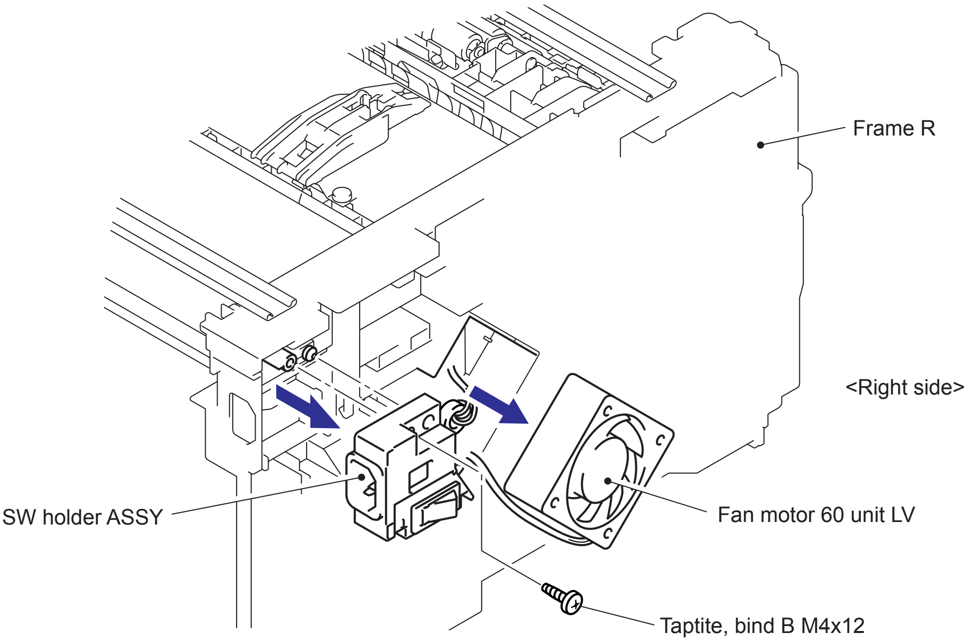


Fig. 5-167

(8) Remove the bind B M3x10 Taptite screw, and remove the Safety louver.

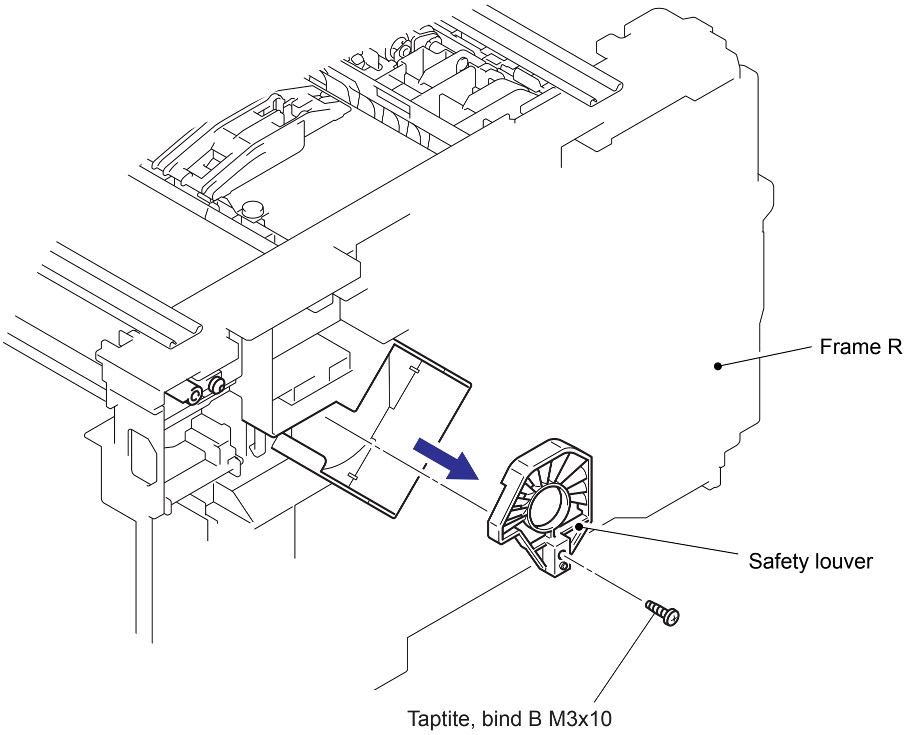


Fig. 5-168

(9) Remove the Inlet harness ASSY from the SW holder.

(10) Press the Hooks on both sides of the Power supply switch, pull out the Power supply switch to the direction of 10a and pull the wire out of the groove on the SW holder.

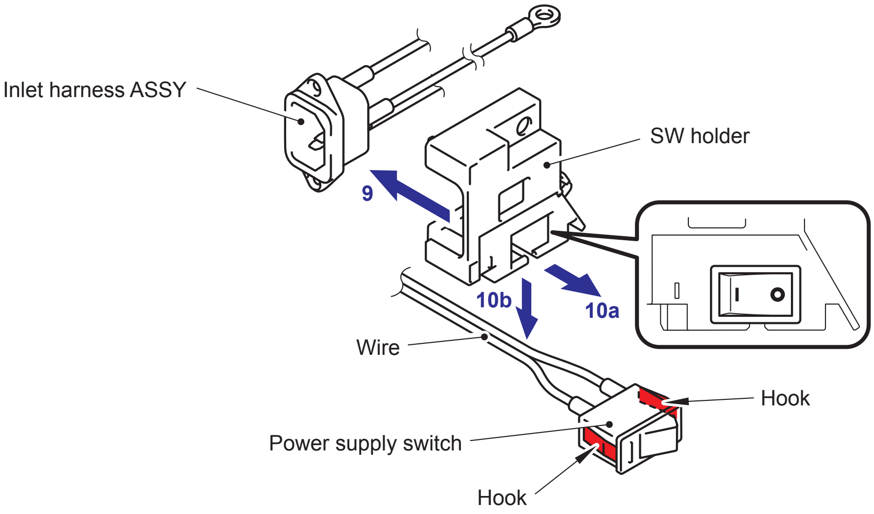


Fig. 5-169

Assembling Note:

- When assembling the power supply switch onto the SW holder, give attention to the direction of the switch.
- Align the “ I ” of the power supply switch with the “ I ” of the SW holder to attach the power supply switch

(11) Remove the harness of the fuser unit and power supply harness.

(12) Put each harness through the space where the fan 60 unit LV is assembled and remove the LVPS PCB unit.

(13) Remove the harness from the LVPS PCB unit.

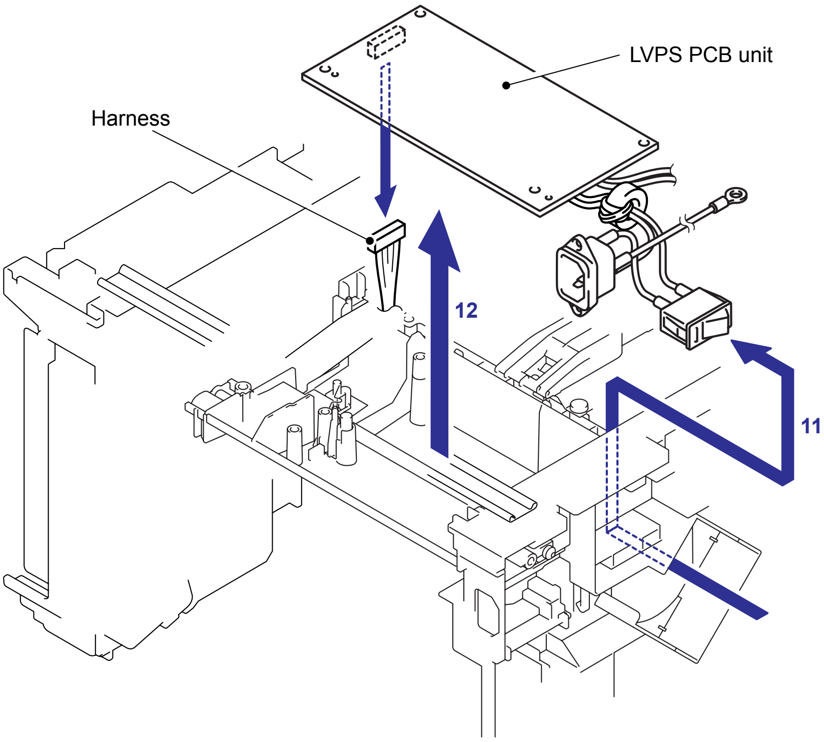


Fig. 5-170

9.37 High-Voltage PS PCB ASSY

(1) Remove the four bind B M4x12 Taptite screws, and then remove the Base plate HV.

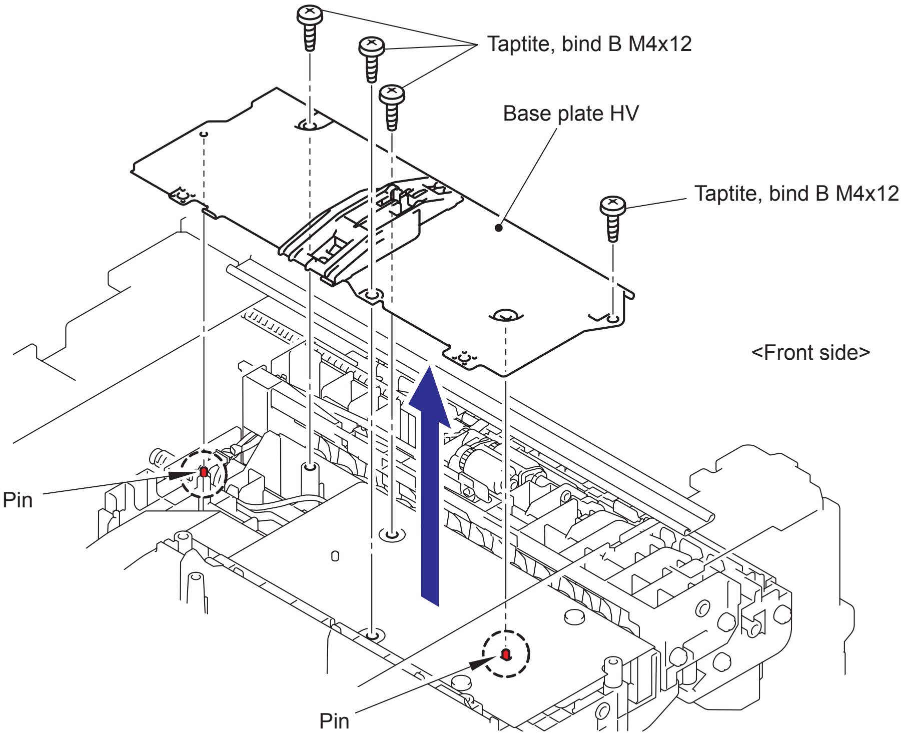


Fig. 5-171

(2) Remove the bind B M4x12 Taptite screw, and then remove the HV insulation sheet.

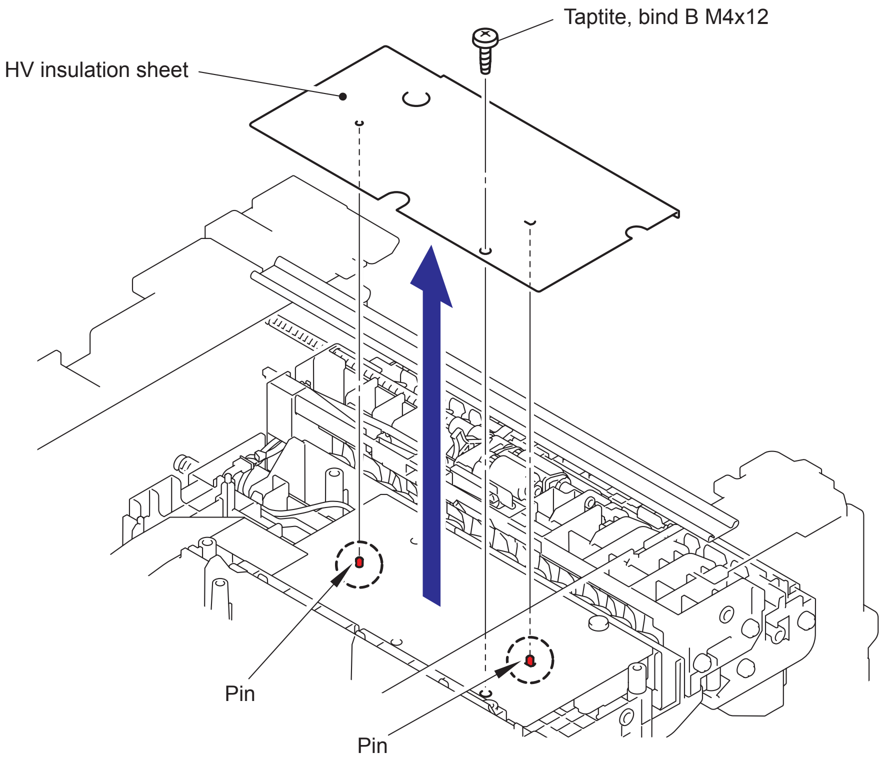


Fig. 5-172

(3) Remove the bind B M4x12 Taptite screw, and then remove the High-voltage PS PCB ASSY.

(4) Disconnect the three connectors from the High-voltage PS PCB ASSY.

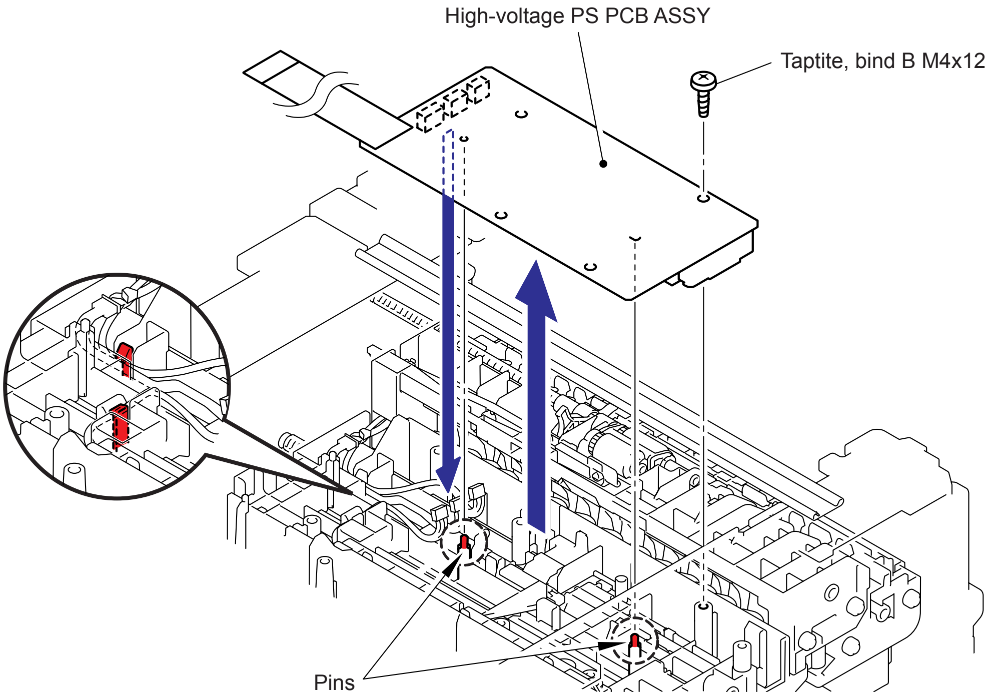


Fig. 5-173

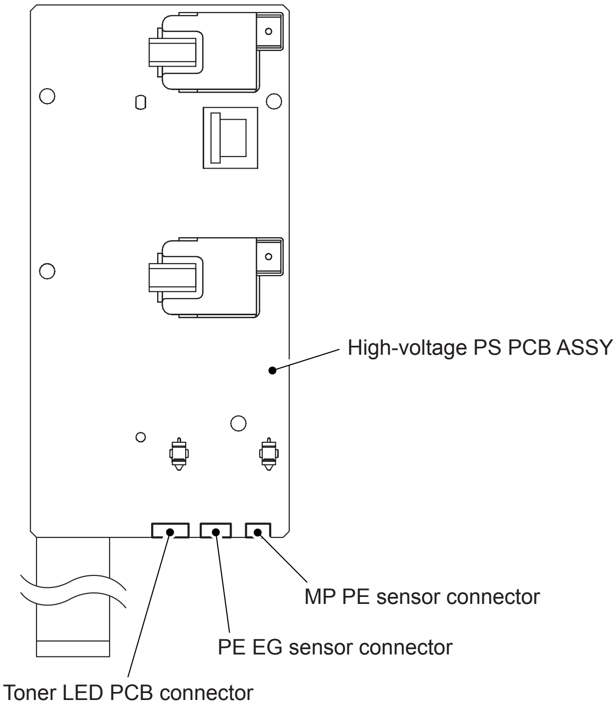


Fig. 5-174

9.38 Toner LED PCB Unit ASSY

(1) Remove the pan B M3x8 Taptite screw, and remove the Regist ground spring.

(2) Remove the Toner LED PCB unit ASSY from the Frame R.

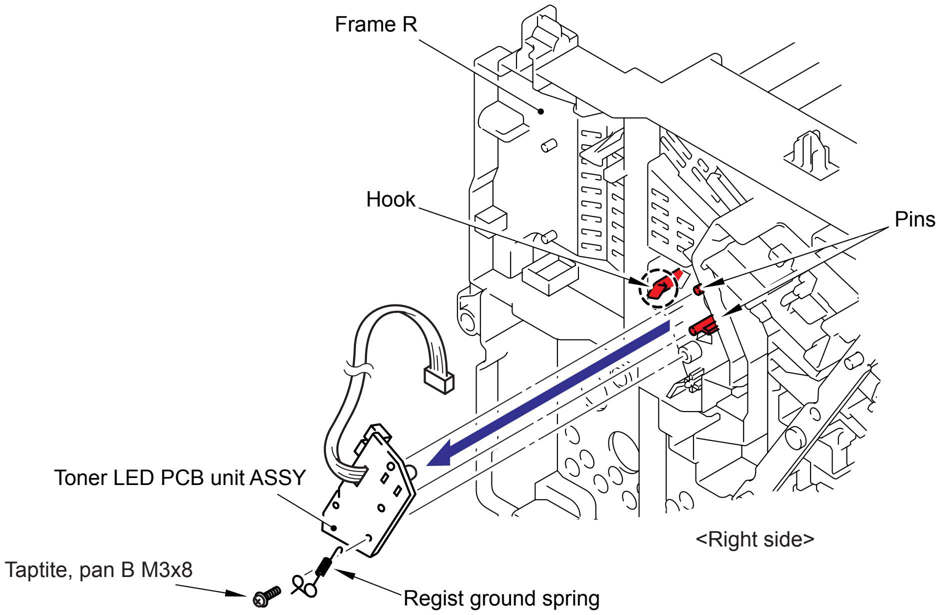


Fig. 5-175

Assembling Note:

- Hang the Hook of the Regist ground spring on the Pinch spring and hang the ring part of the Regist ground spring on the Pin, and secure the end part and the Toner LED PCB unit ASSY to the Frame R with the screw.

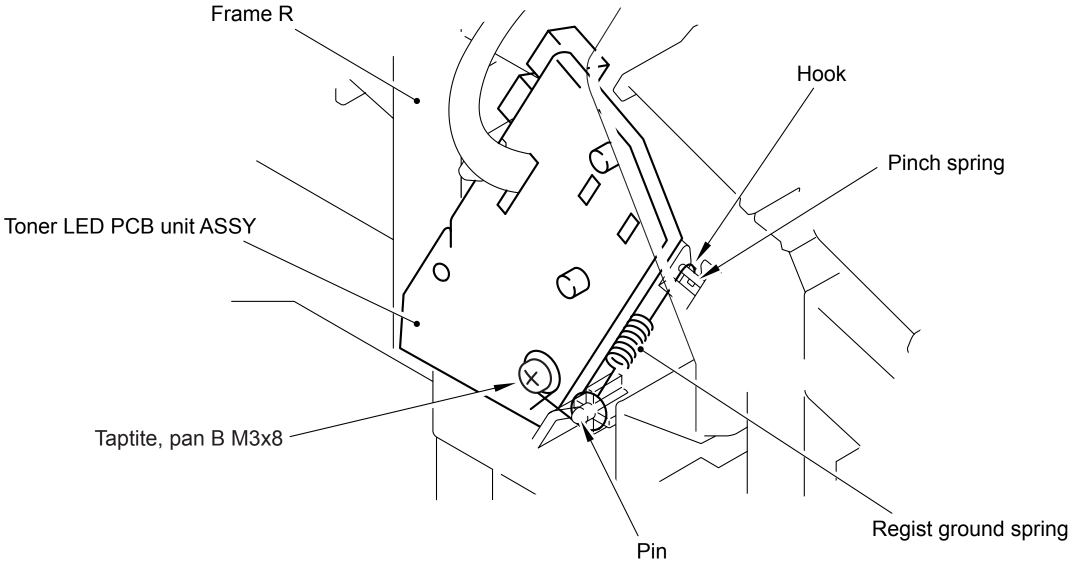


Fig. 5-176

(3) Disconnect the two connectors from the Toner LED PCB.

(4) Release the two Hooks to remove the LED holder from the Toner LED PCB.

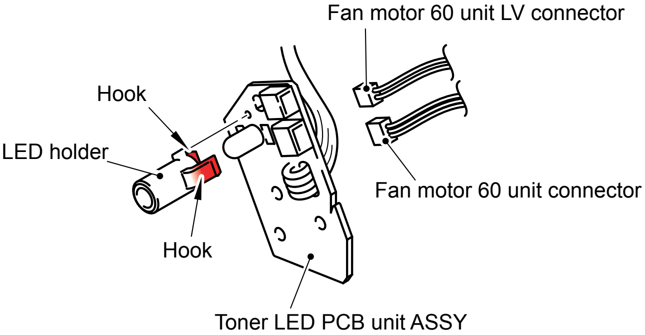


Fig. 5-177

9.39 Fan Motor 60 Unit

(1) Remove the Fan motor 60 unit from the Frame R.

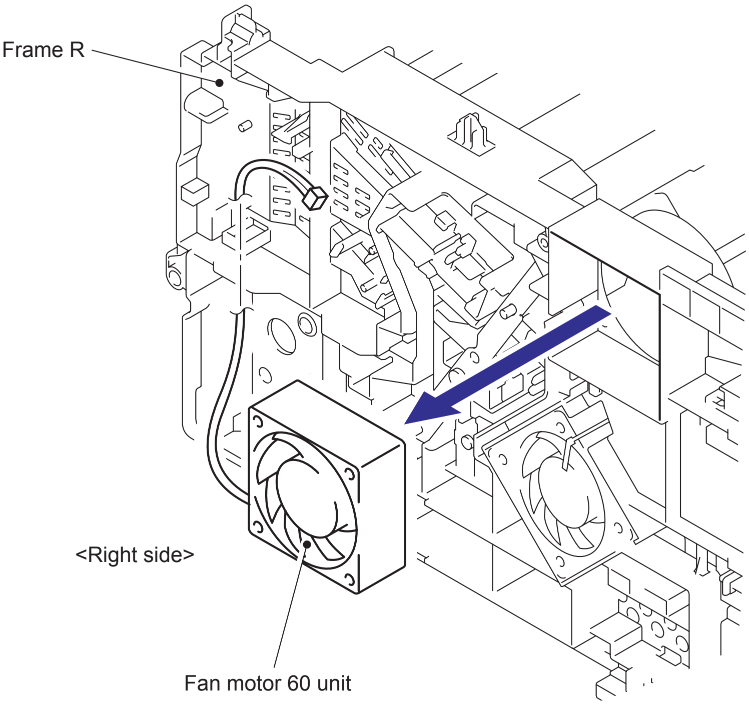


Fig. 5-178

9.40 Fan Motor 60 Unit LV

(1) Remove the Fan motor 60 unit LV from the Frame R.

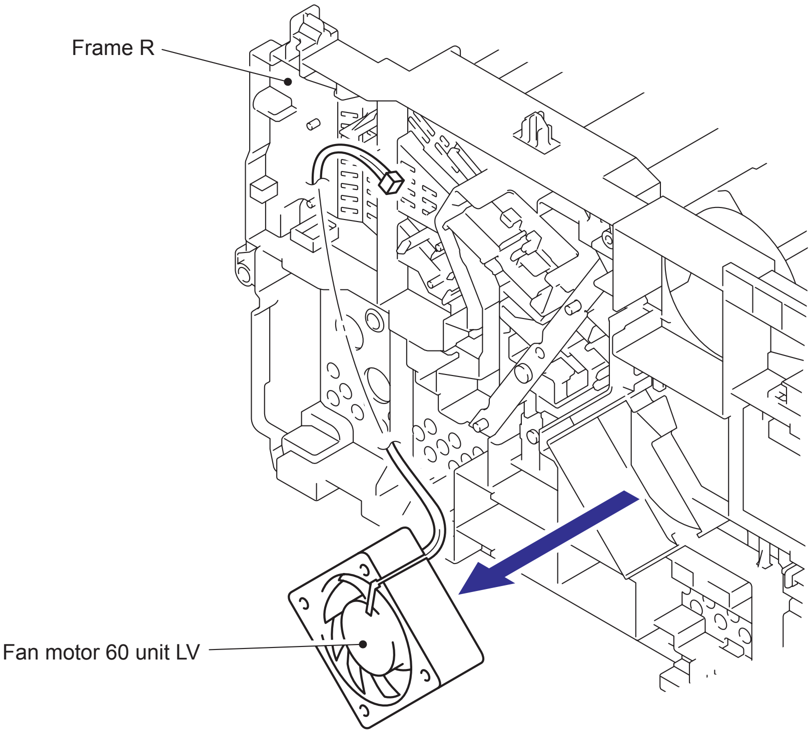


Fig. 5-179

Note:

The procedure for disassembling the Frame L after "9.19 Main PCB" is described below.

9.41 FRAME L ASSY

(1) Remove the Insulation sheet.

(2) Pull out the flat cable from the Ferrite core.

(3) Remove the Main PCB sheet.

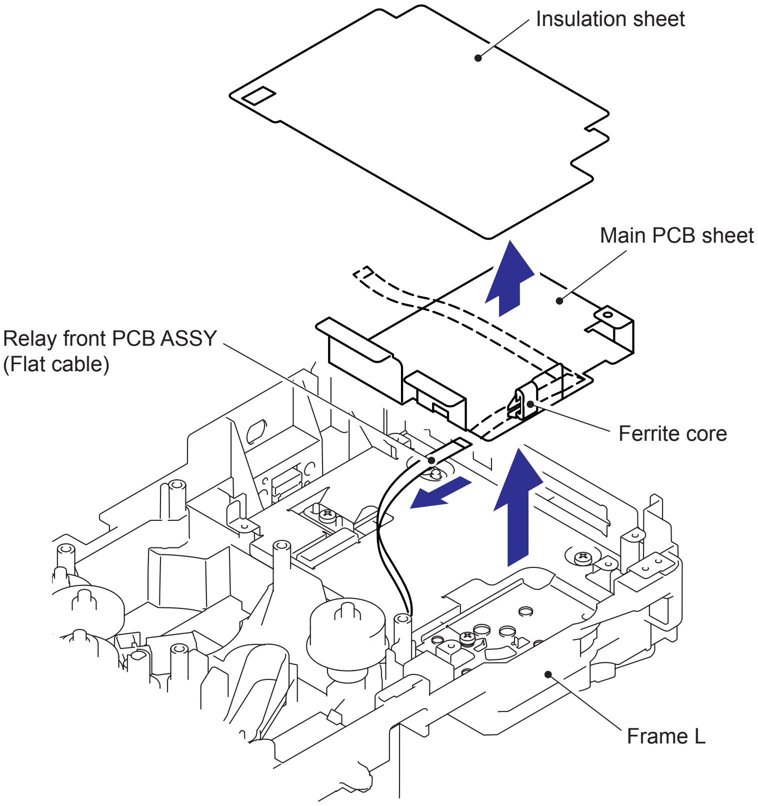


Fig. 5-180

(4) Remove the two bind B M4x12 Taptite screws, and then remove the Plate.

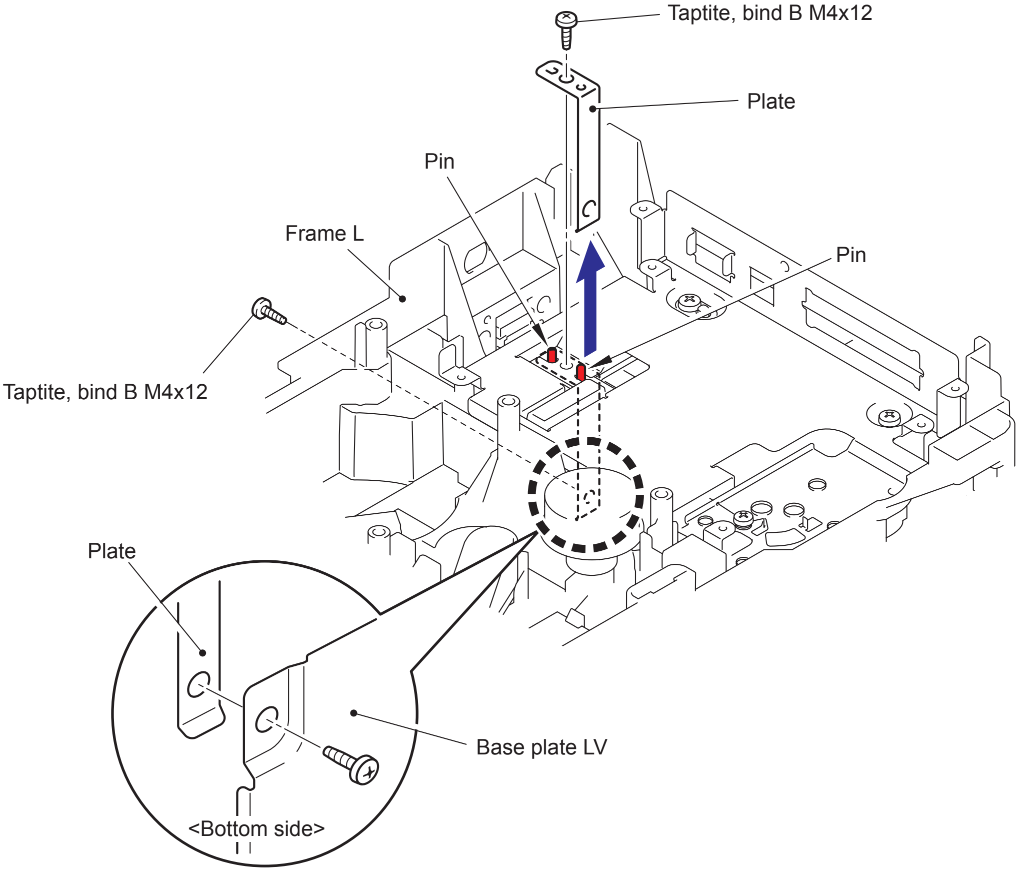


Fig. 5-181

(5) Remove the Gear 23, Gear 17 (white), Gear 17 (black) and Gear 20.

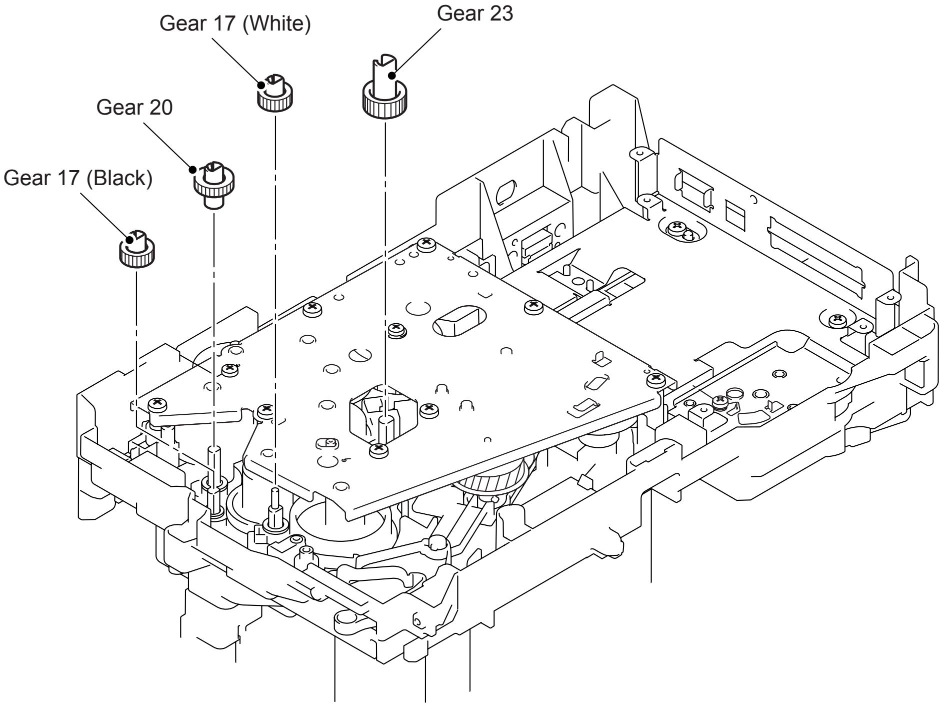


Fig. 5-182

(6) Remove the six bind B M4x12 Taptite screws and the three cup S M3x6 Taptite screws.

(7) Remove the Frame L.

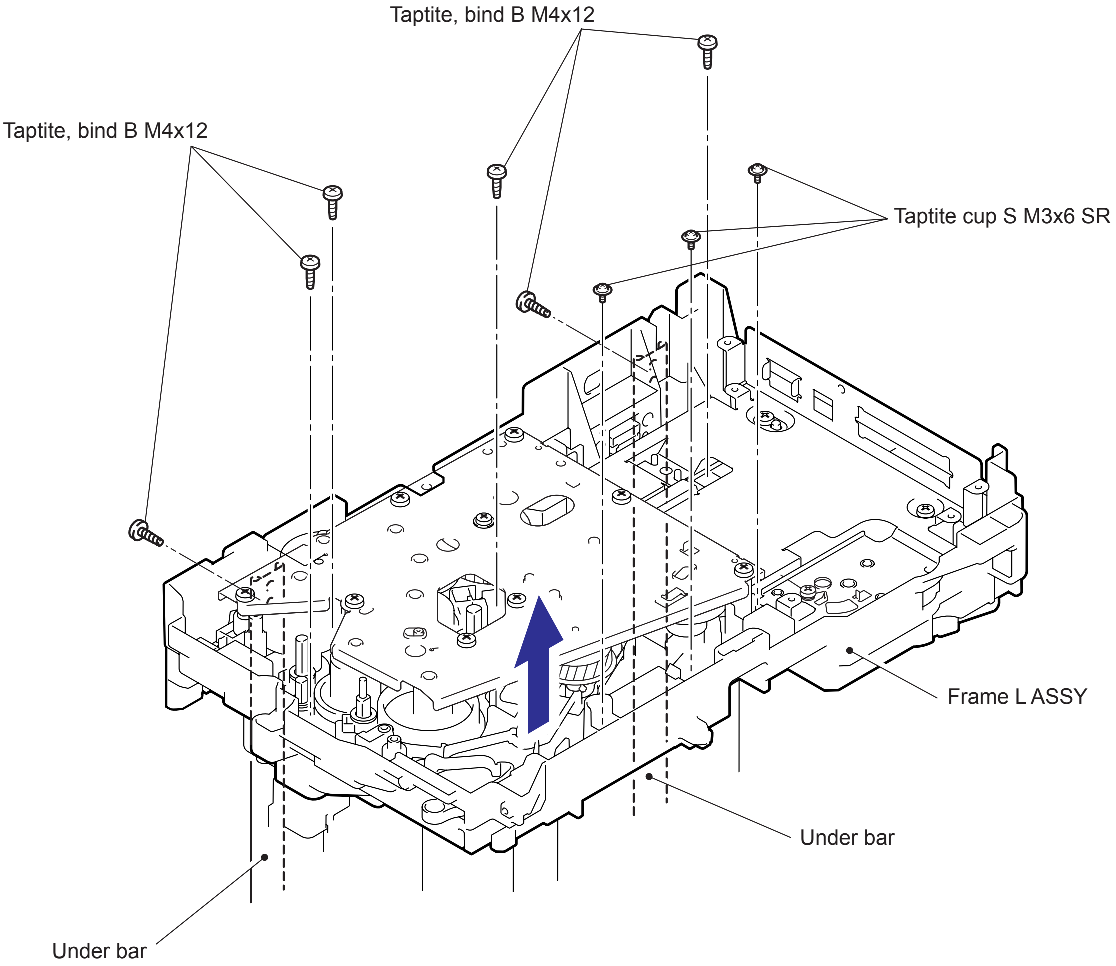


Fig. 5-183

9.42 MP Unit

(1) Cut the Binder bundling the harnesses with nippers.

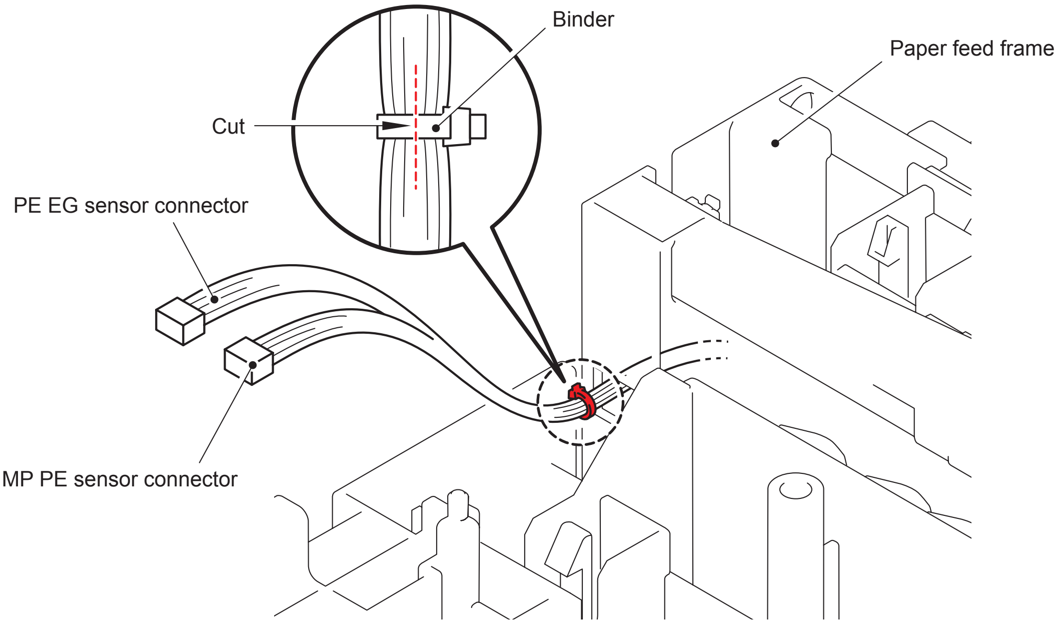


Fig. 5-184

(2) Remove the two bind B M3x8 Taptite screws.

(3) Lift up the back side of the MP feed frame and pull up the MP feed frame to remove.

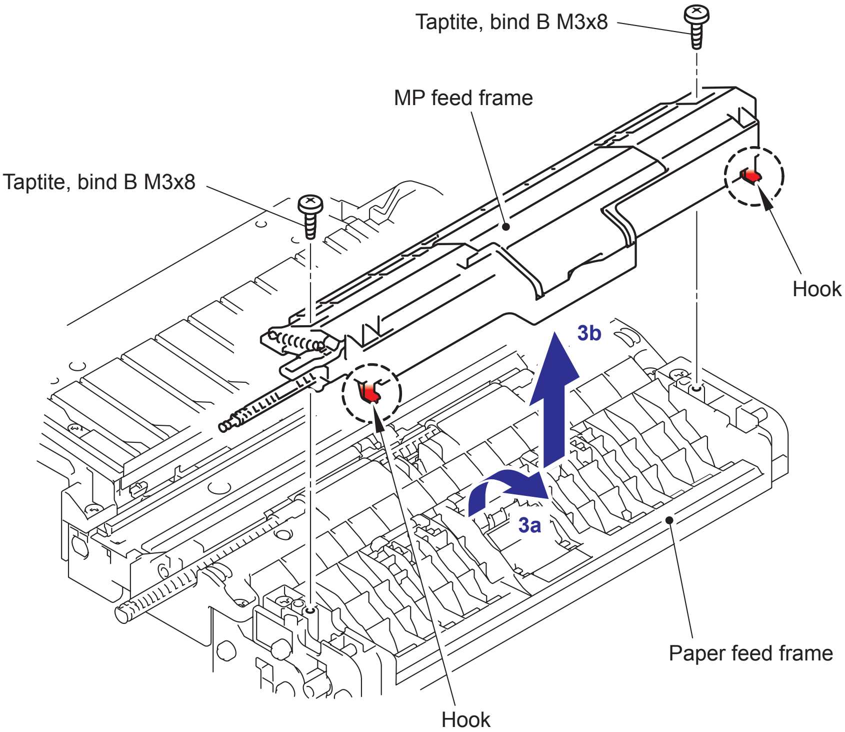


Fig. 5-185

(4) Open the MP feed frame cover.

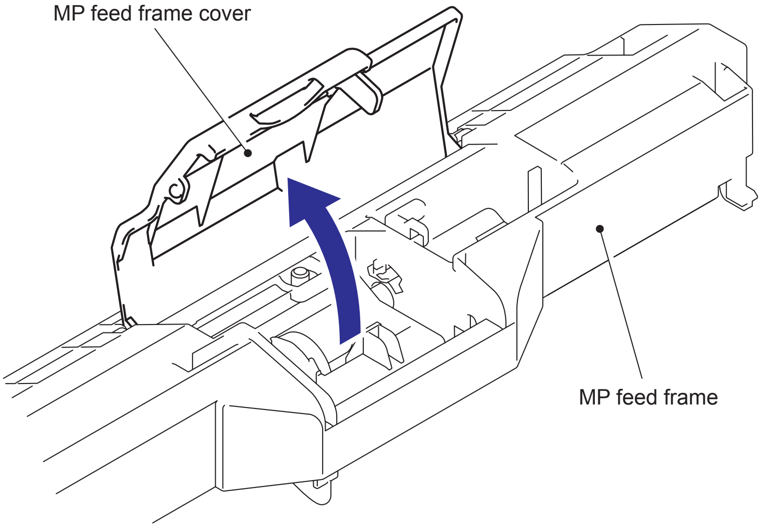


Fig. 5-186

(5) Release the Hook to remove the Holder bearing MP from the MP feed frame.

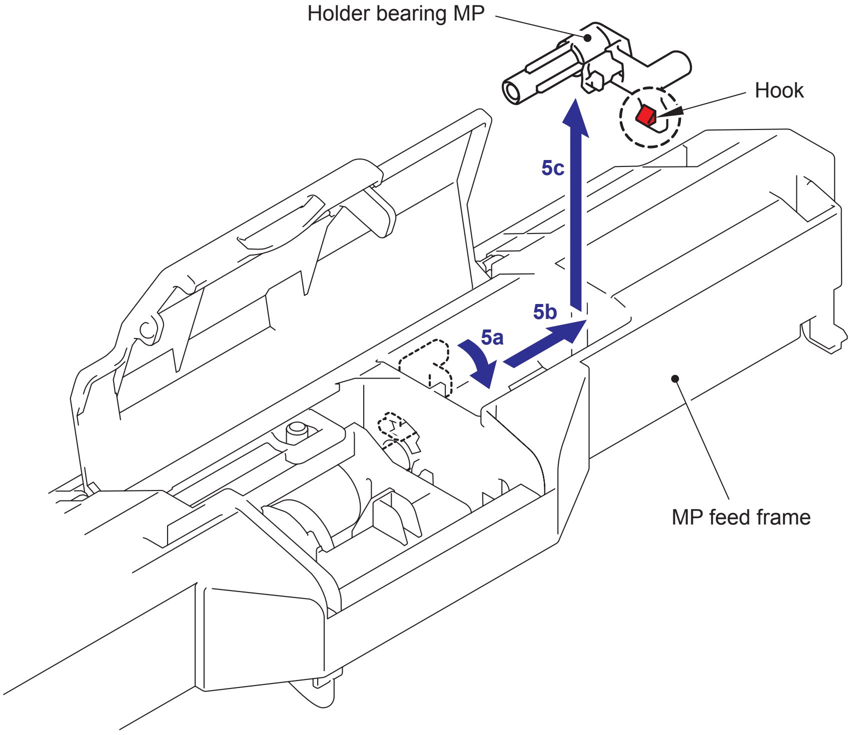


Fig. 5-187

(6) Slide the MP roller holder ASSY to the direction of 6a and pull it up to remove.

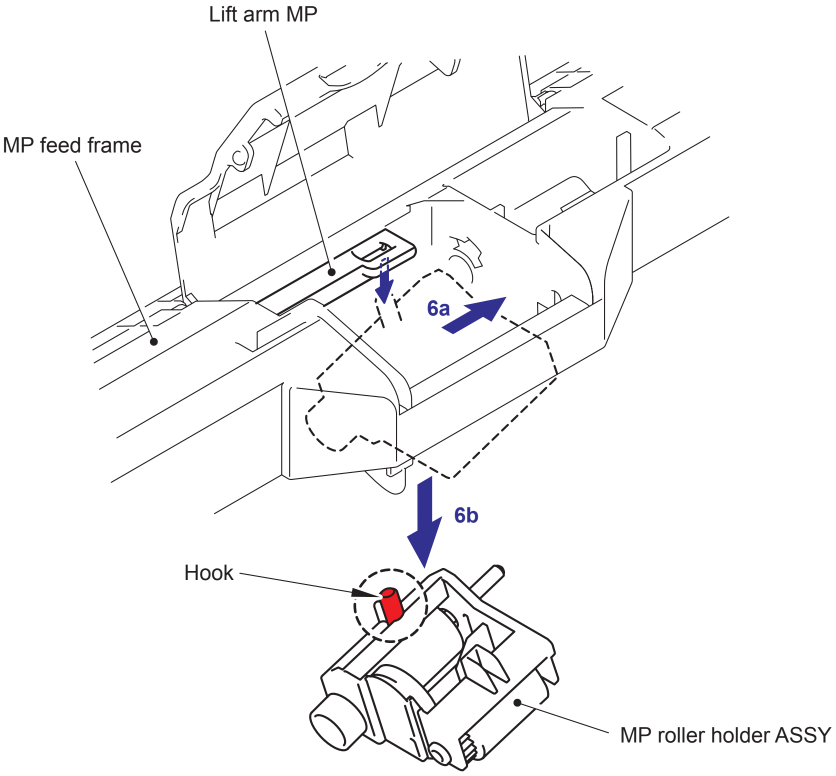


Fig. 5-188

(7) Turn the MP feed frame upside down.

(8) Slide the PE actuator MP B2 to the direction of 8b while pressing the Hook to the direction of 8a, and pull it up to remove.

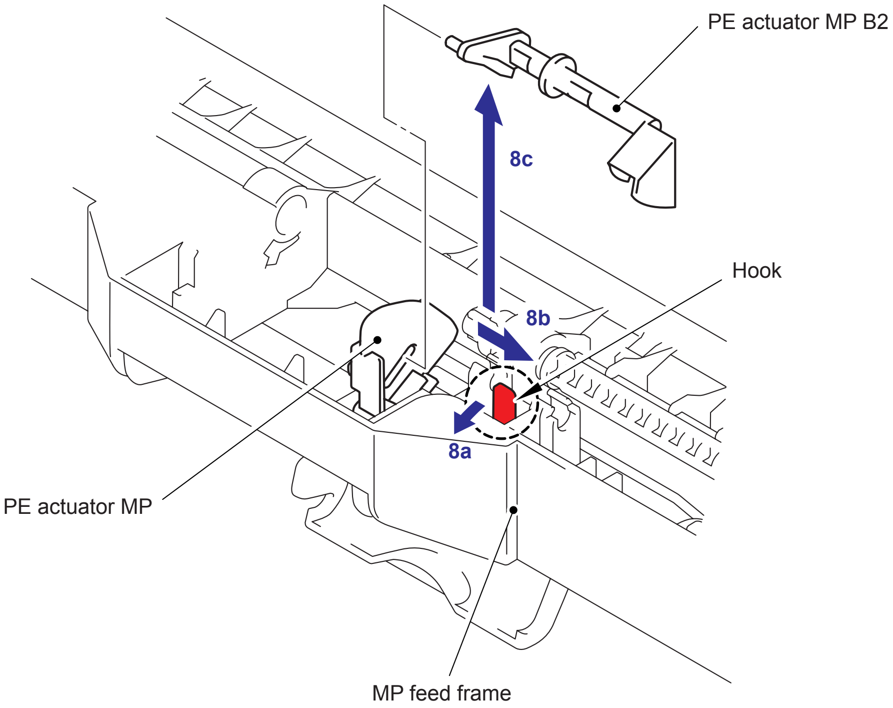


Fig. 5-189

(9) Turn the PE actuator MP to the direction of 9a and pull it up to remove.

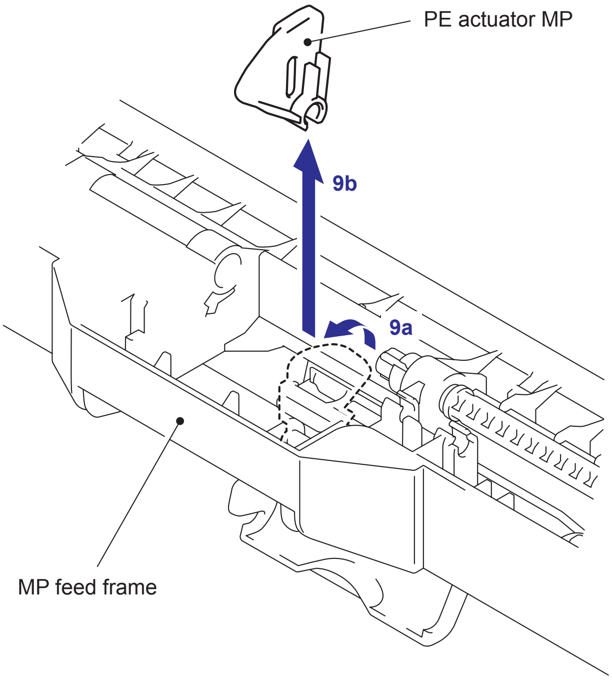


Fig. 5-190

(10) Remove the bind B M3x8 Taptite screw, and then remove the MP PE sensor ASSY.

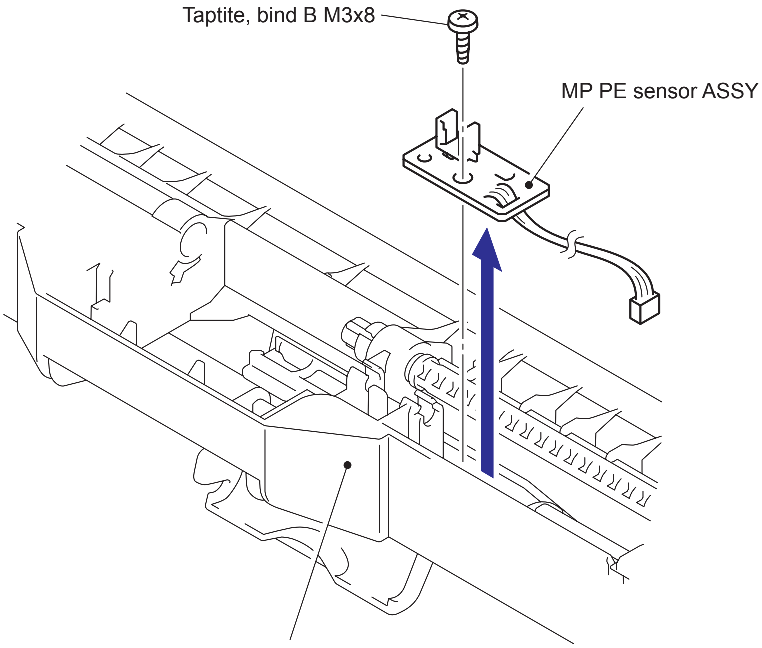


Fig. 5-191

(11) Turn the back side of the Separation pad ASSY MP to the direction of the arrow 11a and put it up to the direction 11b to remove.

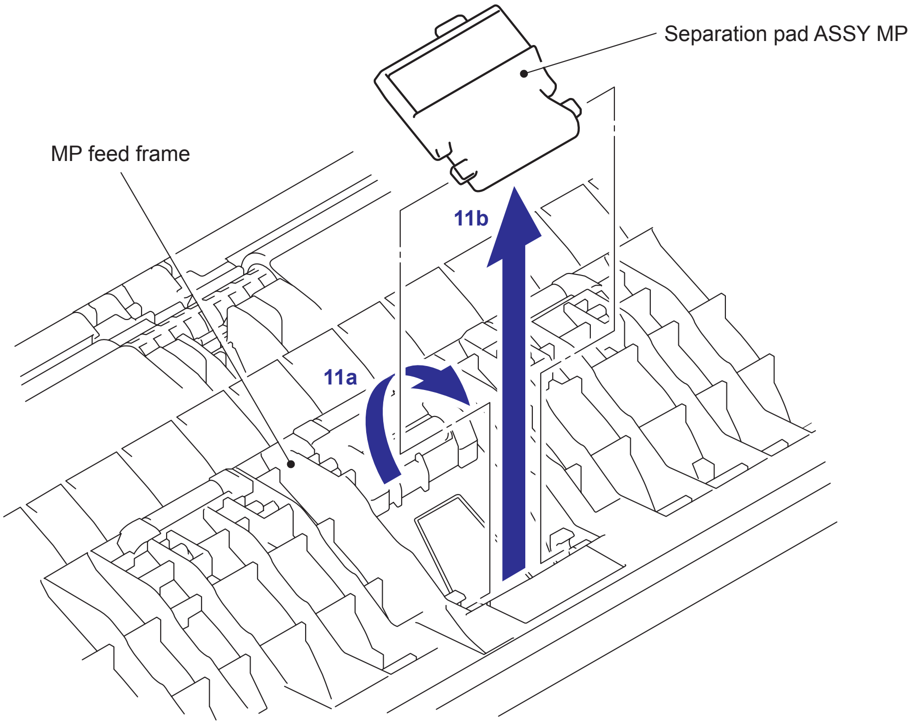


Fig. 5-192

(12) Remove the MP separation spring from the MP feed frame.

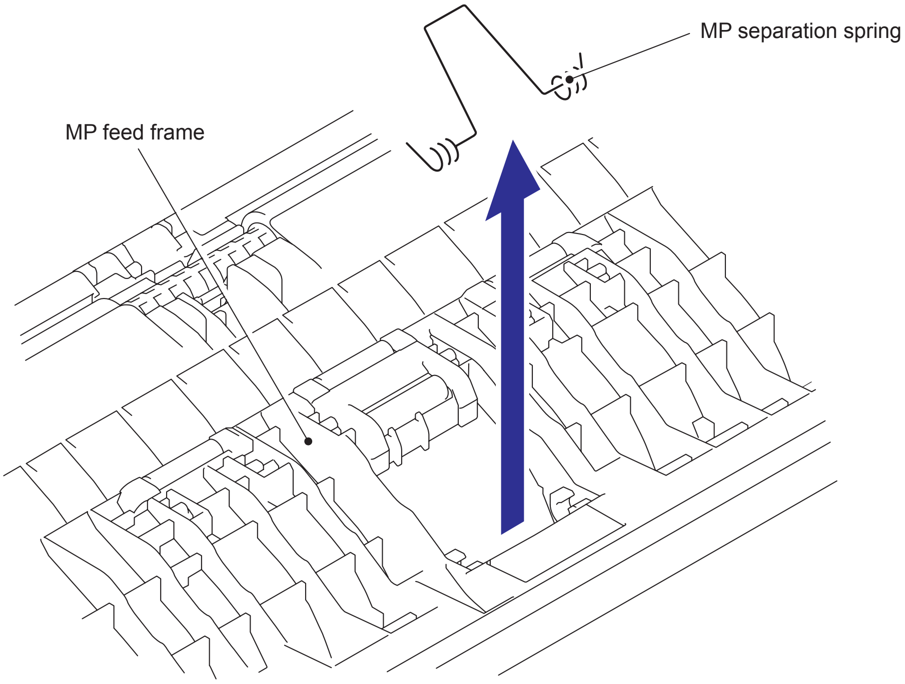


Fig. 5-193

Assembling Note:

- When assembling the MP separation spring, ensure that its direction is correct referring to the figure below.

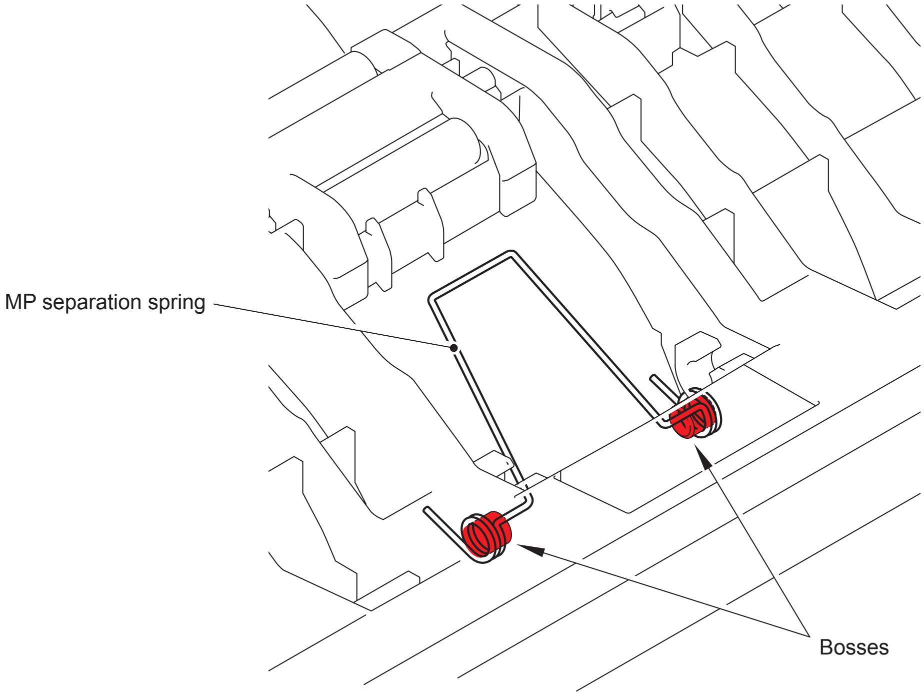


Fig. 5-194

9.43 Regist Actuator Rear / Regist Actuator Spring

(1) Turn the Paper feed frame upside down.

(2) Release the Hook A of the Actuator cover to pull up the Actuator cover to remove.

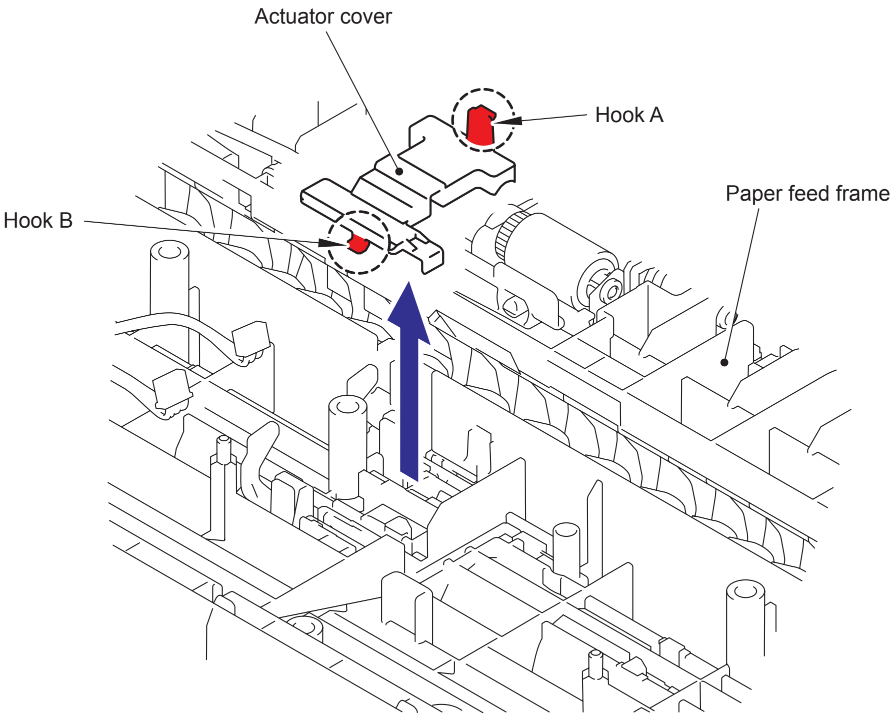


Fig. 5-195

(3) Slide the Regist actuator rear to the direction of 3b while pressing the Hook to the direction of 3a and pull up the Regist actuator rear to remove. Then, remove the Regist actuator spring from the Regist actuator rear.

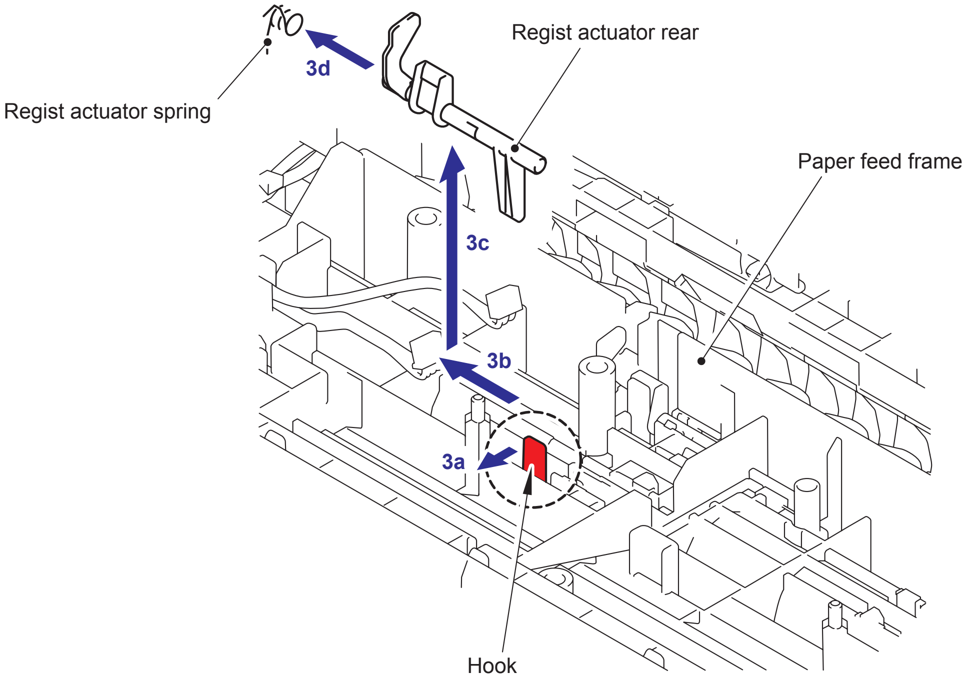


Fig. 5-196

Assembling Note:

- When assembling the Regist actuator spring, ensure that its direction is correct referring to the figure below.

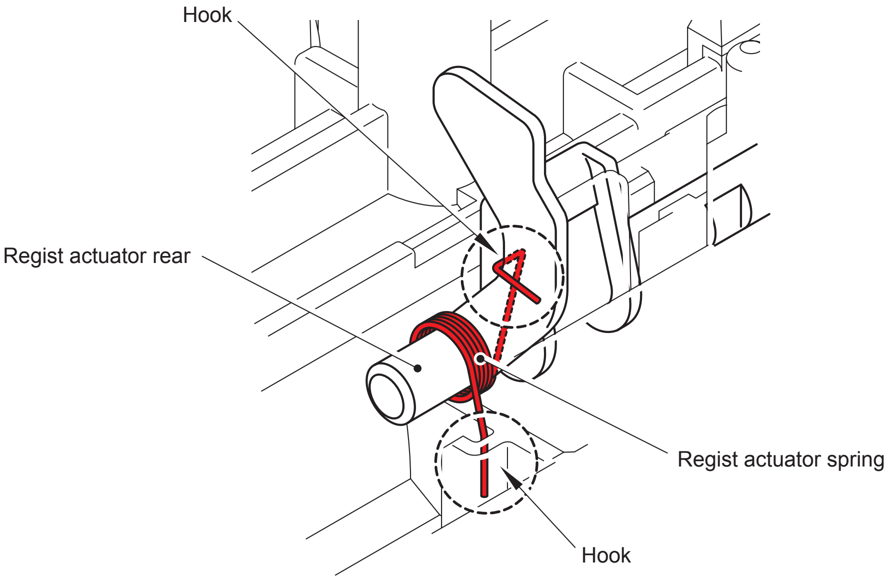


Fig. 5-197

9.44 Regist Actuator Front / Regist Actuator Spring

(1) Slide the Regist actuator front to the direction of 1b while pressing the Hook to the direction of 1a and pull up the Regist actuator front to remove. Then, remove the Regist actuator spring from the Regist actuator front.

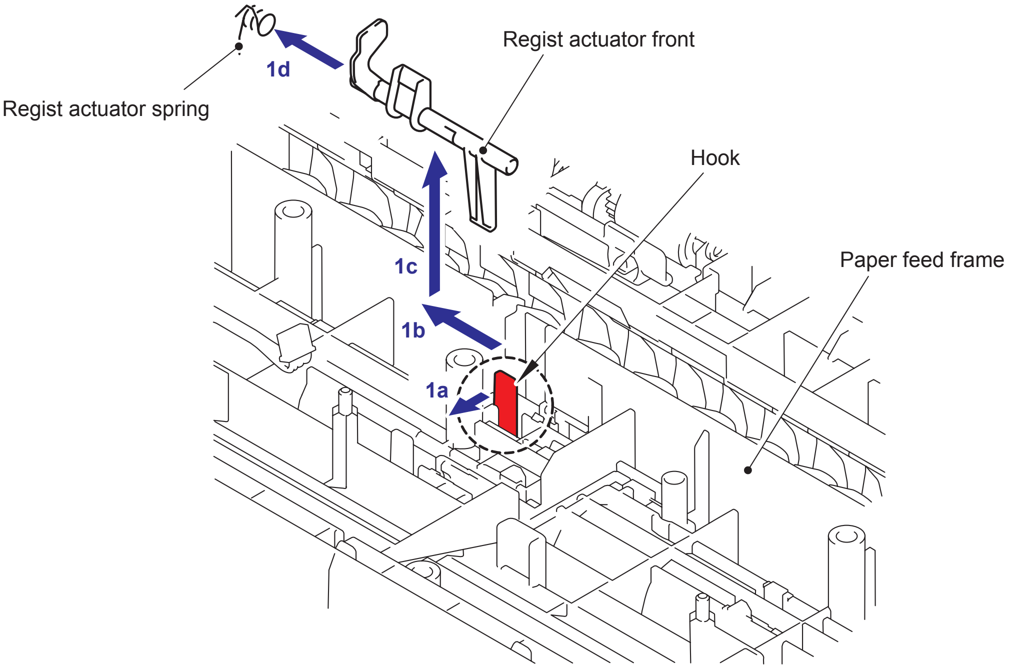


Fig. 5-198

Assembling Note:

- When assembling the Regist actuator spring, ensure that its direction is correct referring to the figure below.

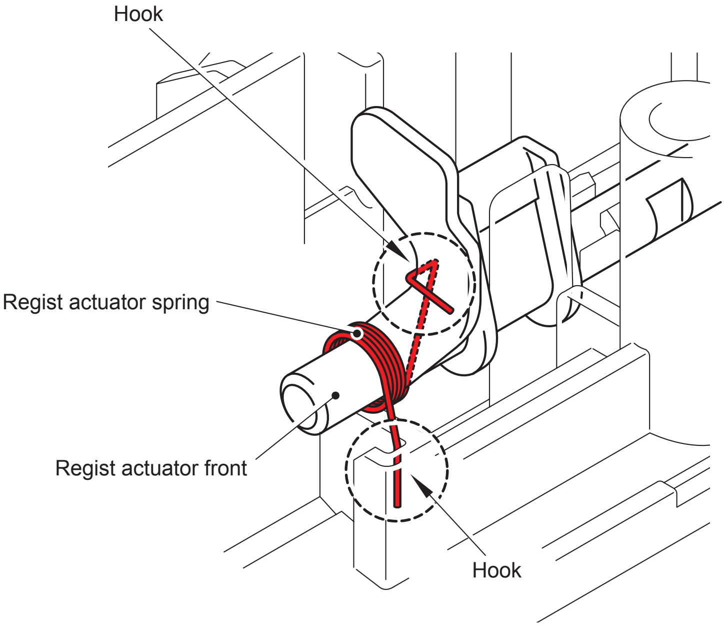


Fig. 5-199

9.45 Roller Holder ASSY

(1) Push the Lift arm to the direction of 1a and pull out the pin of the Roller holder ASSY. Then, turn the Roller holder ASSY to the direction of 1b.

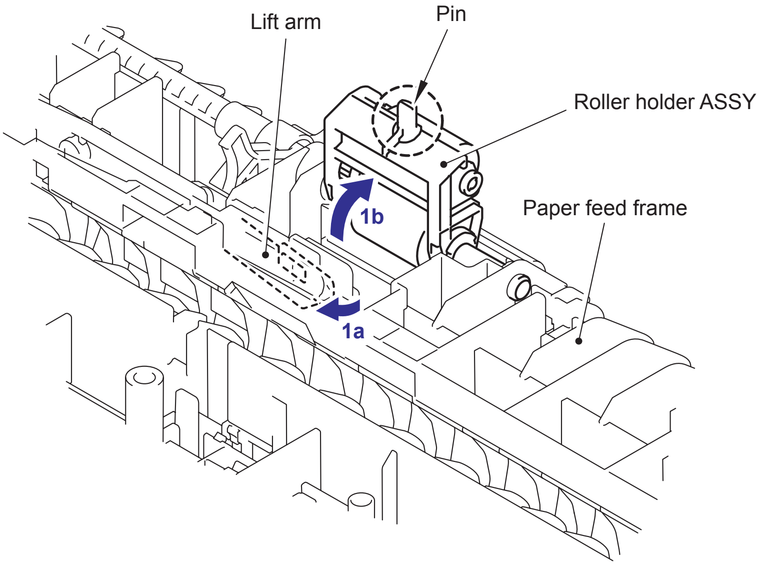


Fig. 5-200

(2) Slide the Roller holder ASSY to the direction of 2a. Then, lift up the gear side of the Roller holder ASSY to the direction of 2b and pull it out to the direction of 2c to remove.

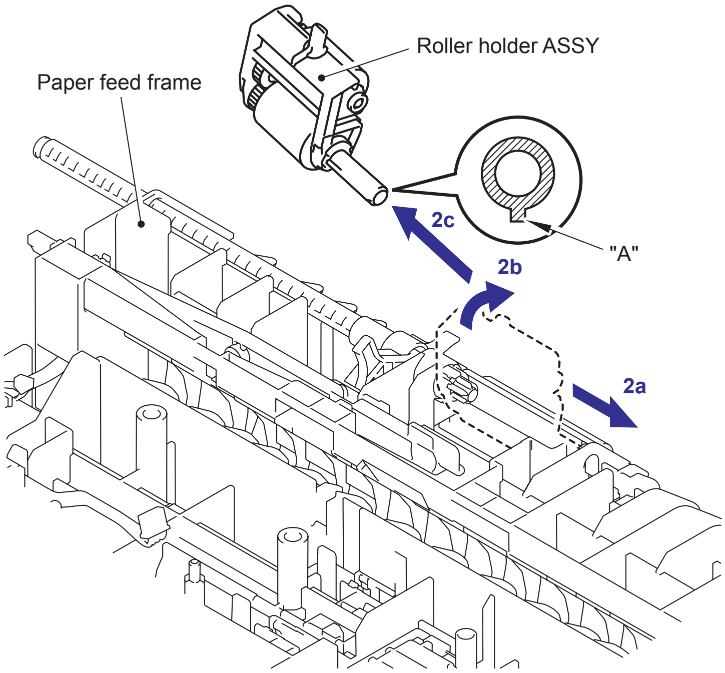


Fig. 5-201

Assembling Note:

- When assembling the roller holder ASSY, align the section "A" on the shaft of the roller holder ASSY with the hole on the paper feed frame.

9.46 PE Actuator / Edge Actuator / Edge Actuator Spring

(1) Remove the Edge actuator spring.

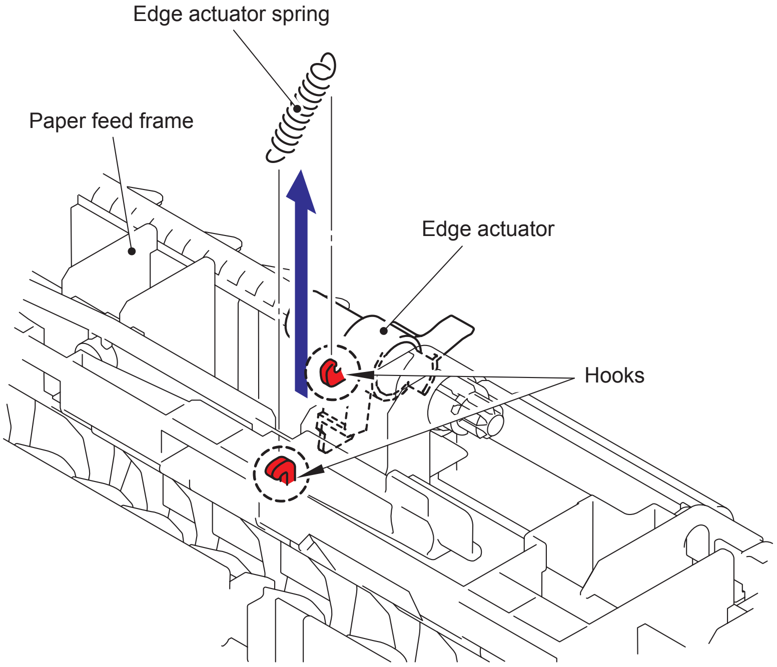


Fig. 5-202

(2) Release the hook and remove the Separation R shaft bearing.

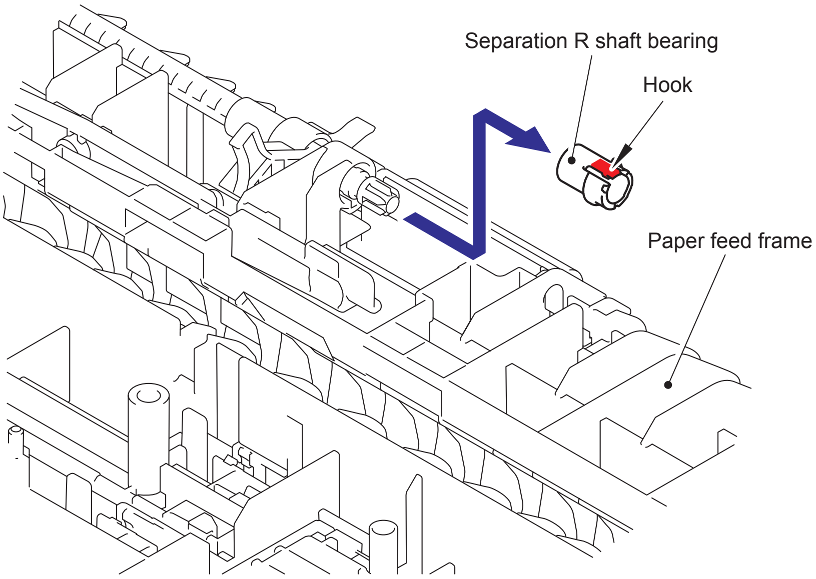


Fig. 5-203

(3) Pull out the Separation roller drive shaft to the direction of the arrow and remove the Edge actuator and PE actuator.

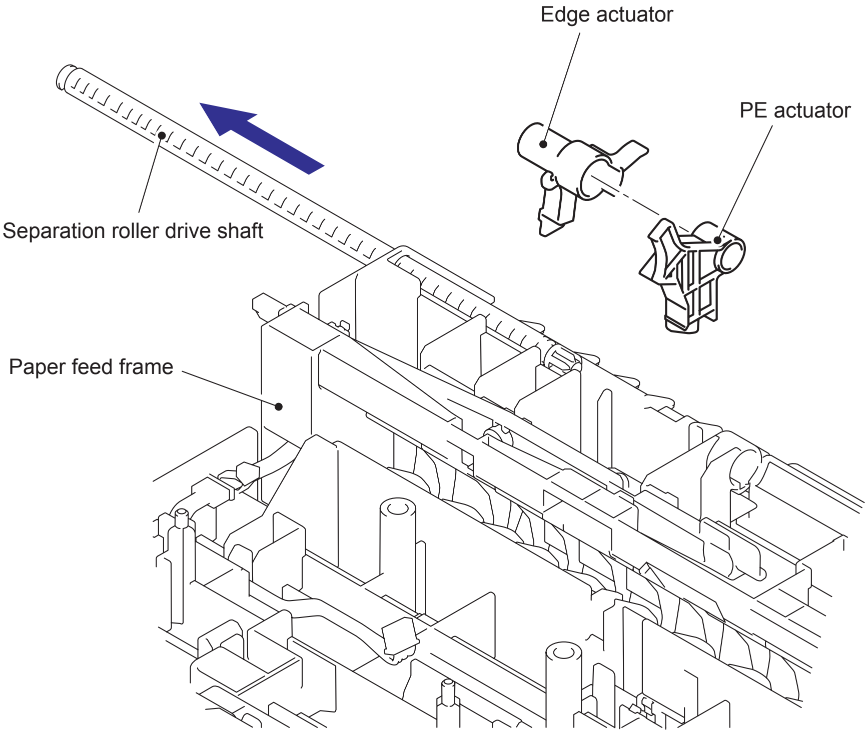


Fig. 5-204

9.47 PE EG Sensor ASSY

(1) Remove the three bind B M4x12 Taptite screws, and remove the MP feed frame.

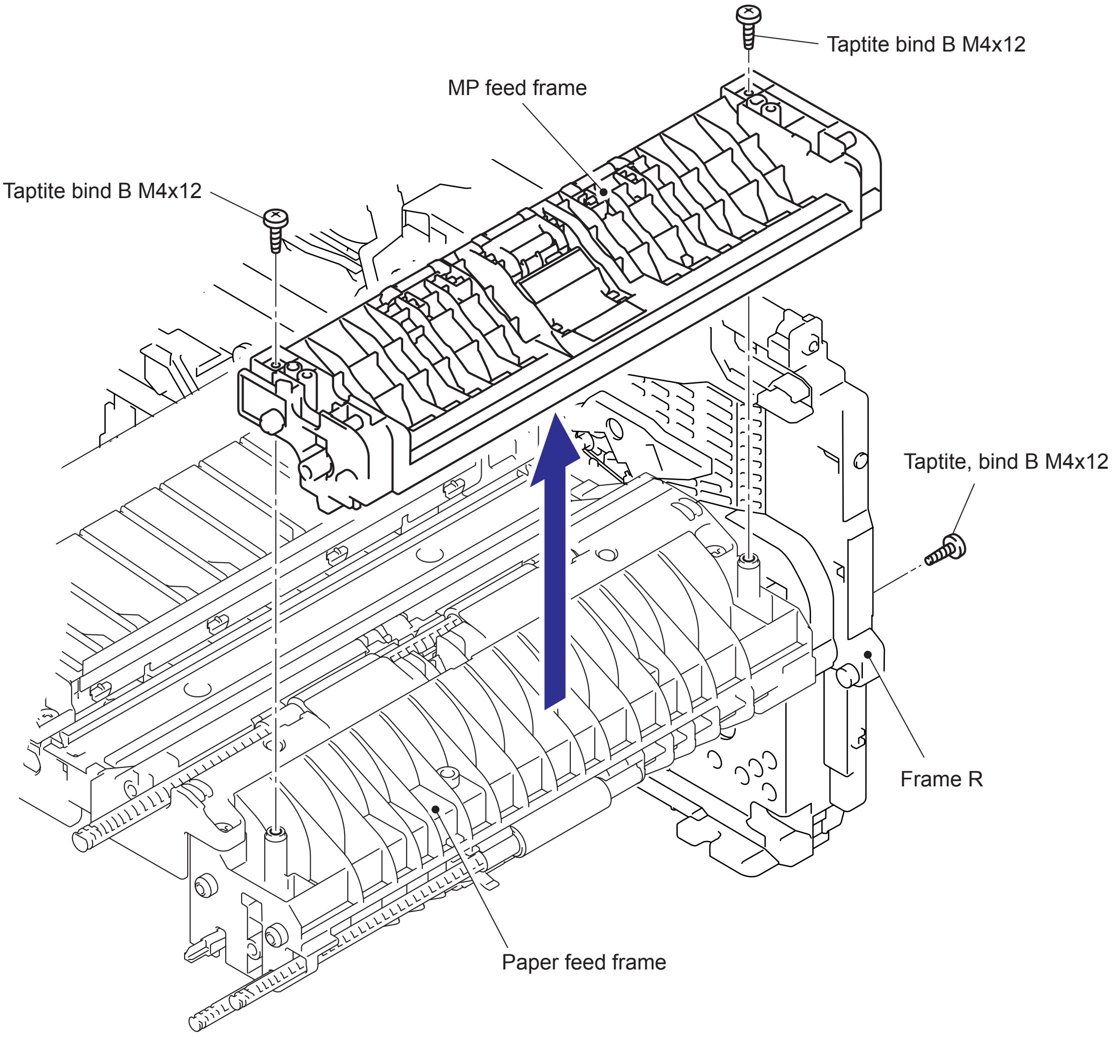


Fig. 5-205

(2) Remove the bind B M3x8 Taptite screw, and then remove the PE EG sensor ASSY.

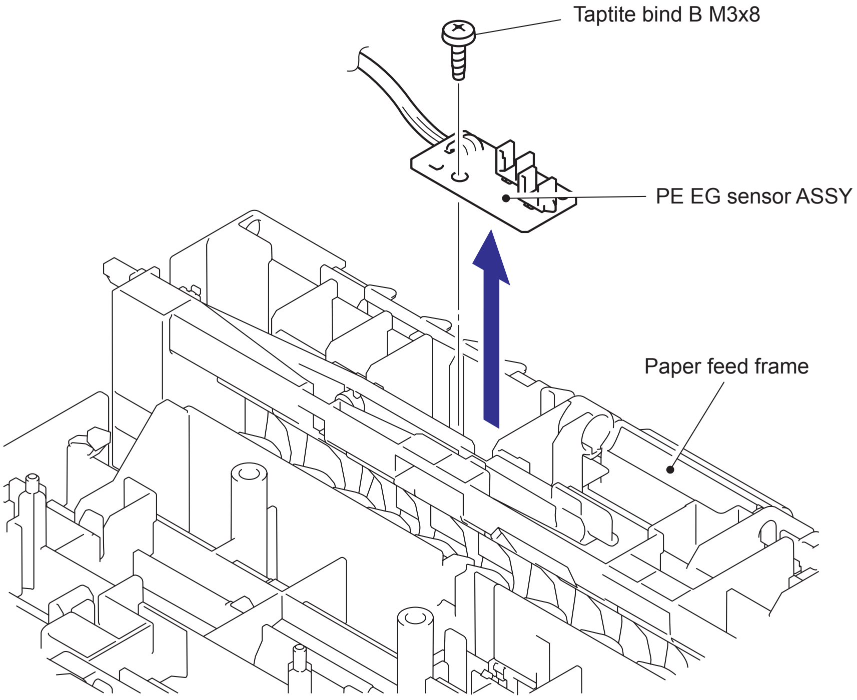


Fig. 5-206

10. DISASSEMBLY PROCEDURE OPTIONAL LOWER TRAY (PF-P10)

10.1 Paper Tray

(1) Pull out the Paper tray from the PF-P10.

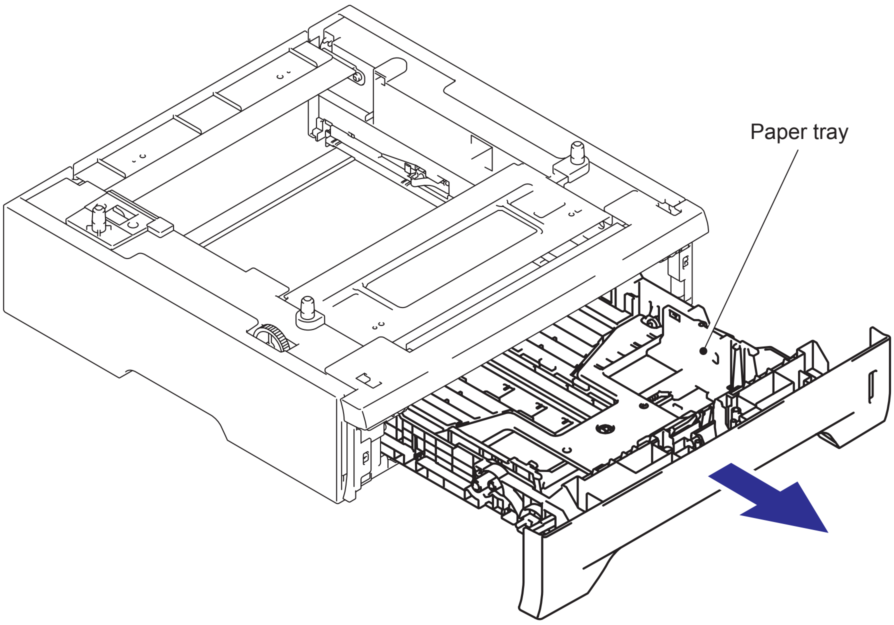


Fig. 5-207

(2) Pull up the back side of the Separation pad ASSY.

(3) Push the Hooks provided on both sides of the Separation pad ASSY inwards.

(4) Pull up the Separation pad ASSY.

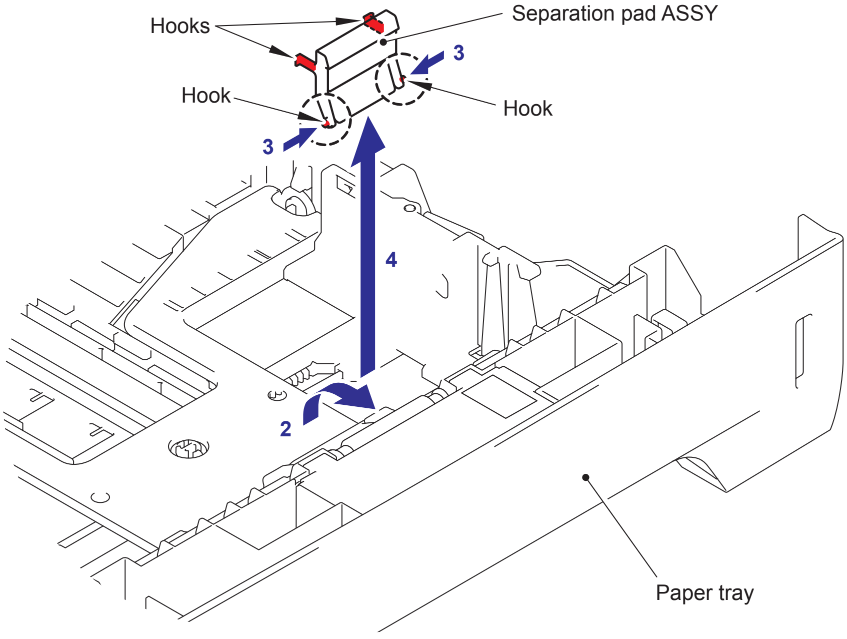


Fig. 5-208

(5) Remove the Separation pad spring.

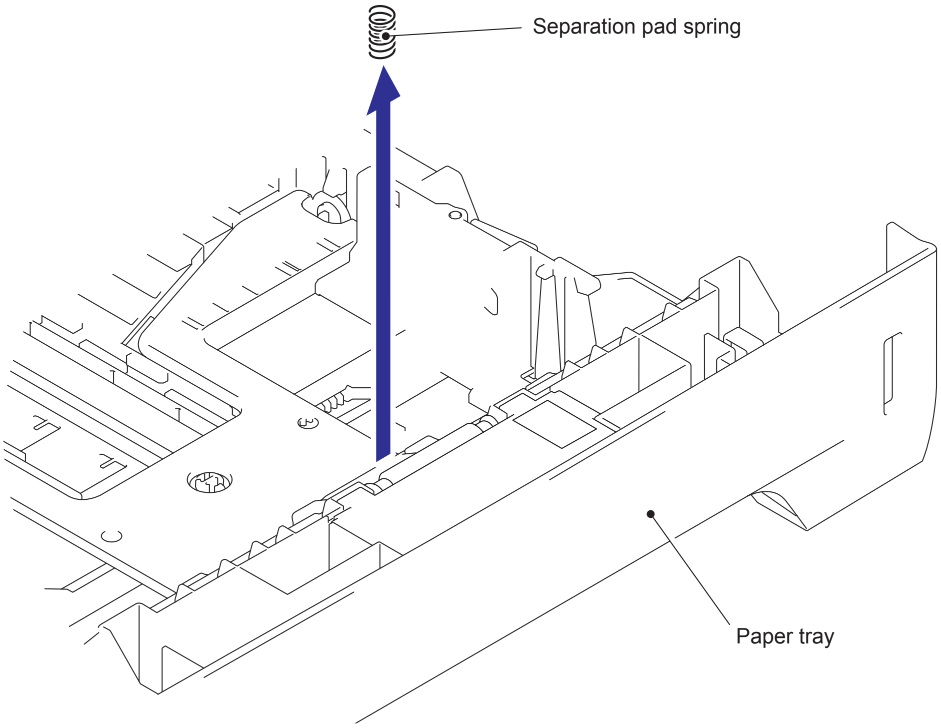


Fig. 5-209

(6) Remove the Lift gear 46.

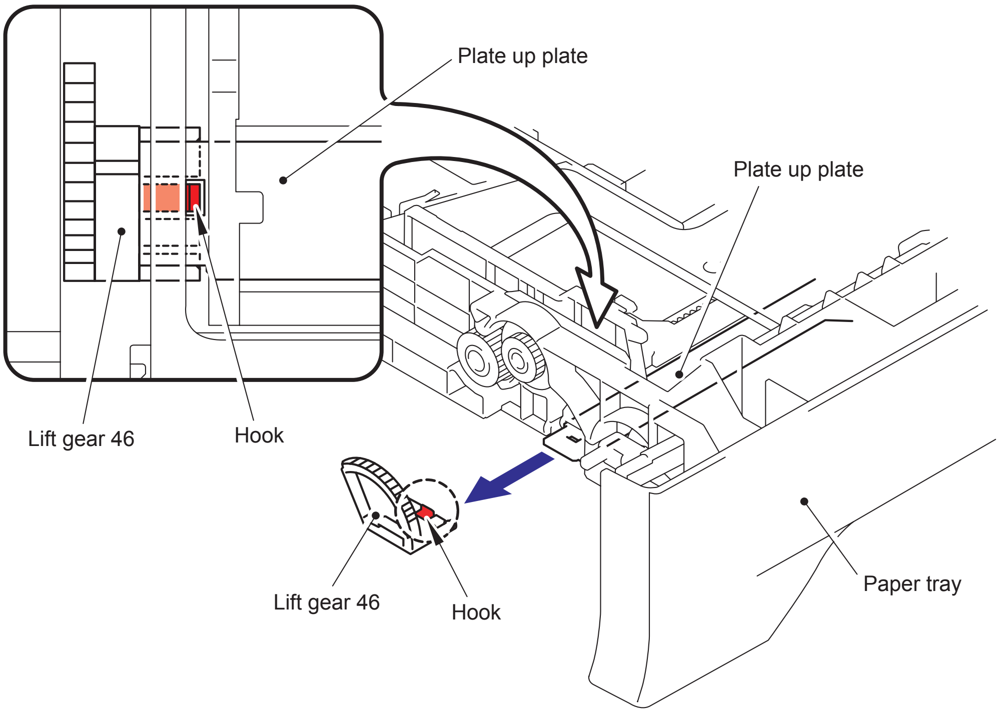


Fig. 5-210

(7) Remove the Gear 21-16.

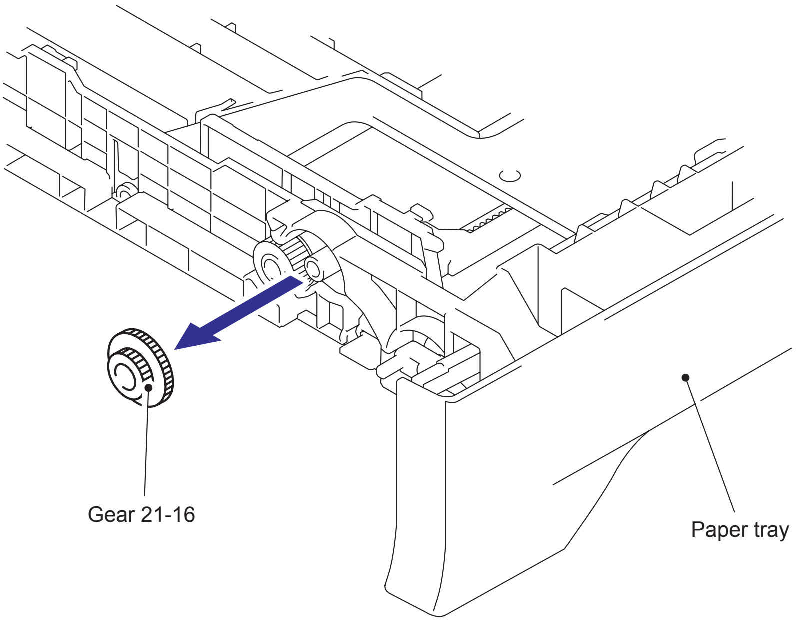


Fig. 5-211

(8) Remove the Gear 15.

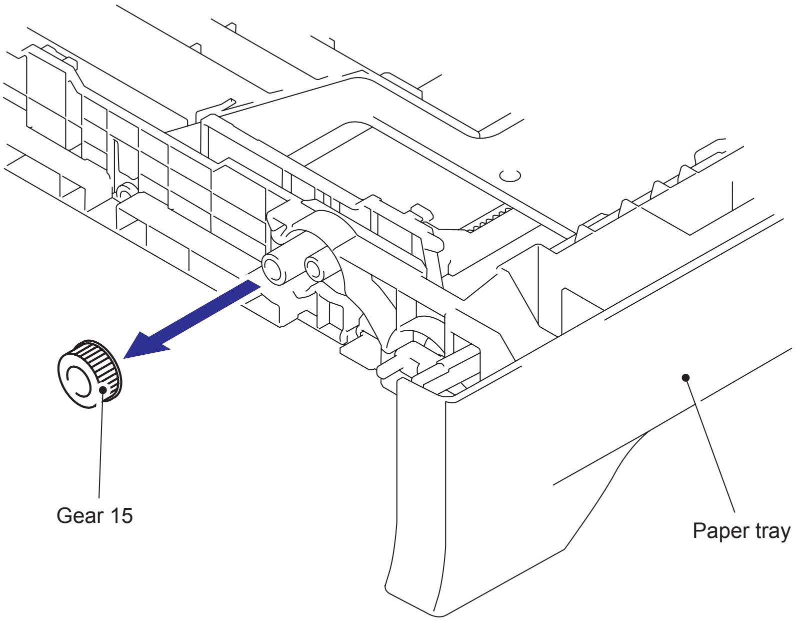


Fig. 5-212

10.2 Tray 2 Front Cover ASSY

(1) Remove the two bind B M4x12 Taptite screws.

(2) Remove the tray 2 front cover ASSY.

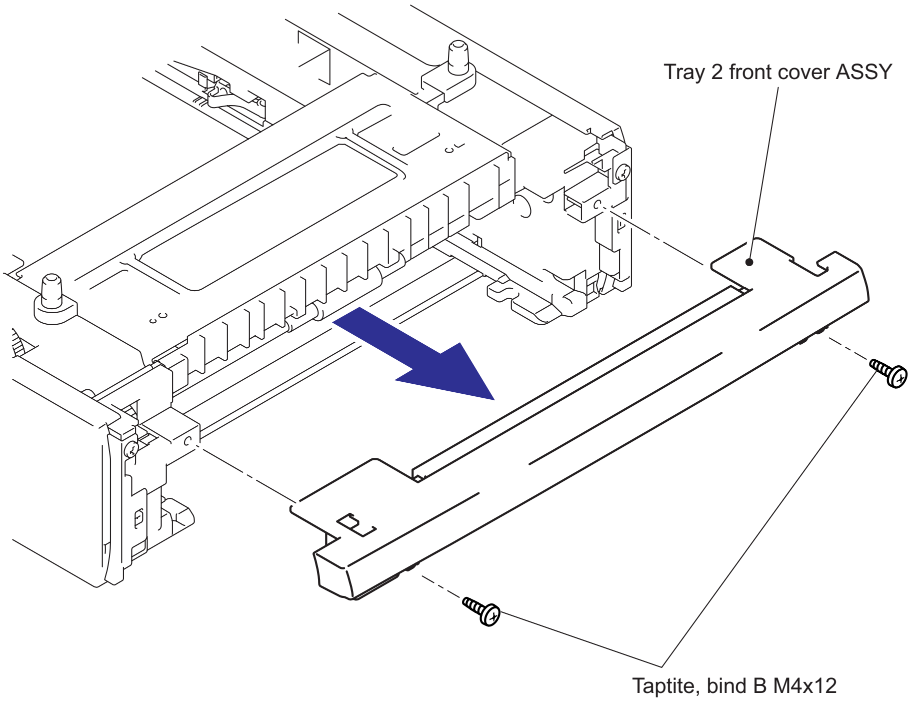


Fig. 5-213

(3) Remove the tray 2 front paper guide from the tray 2 front cover ASSY while pulling the two hooks inwards.

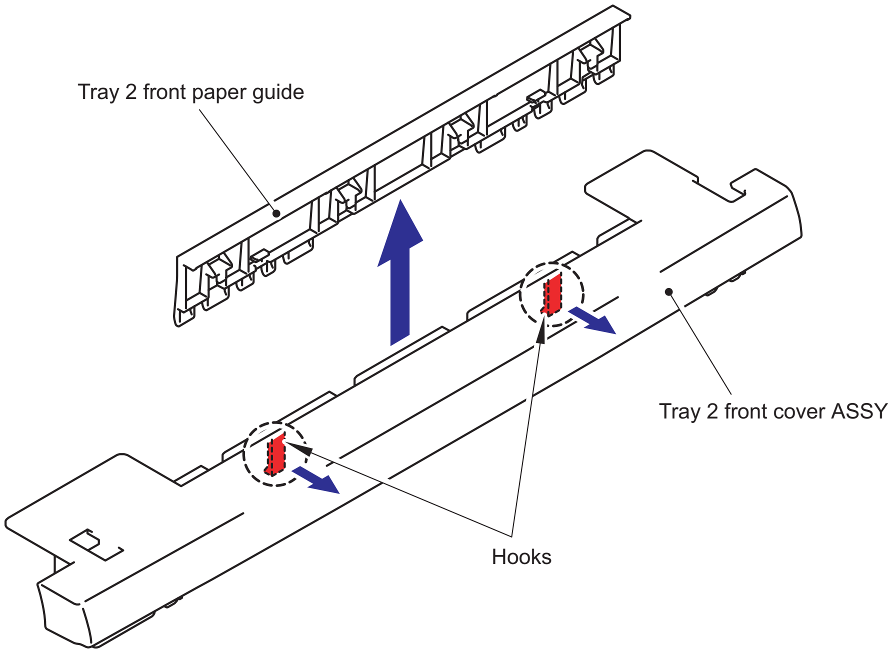


Fig. 5-214

10.3 Tray 2 Rear Cover

(1) Remove the two cup S M3x6 Taptite SR screws.

(2) Remove the tray 2 rear cover.

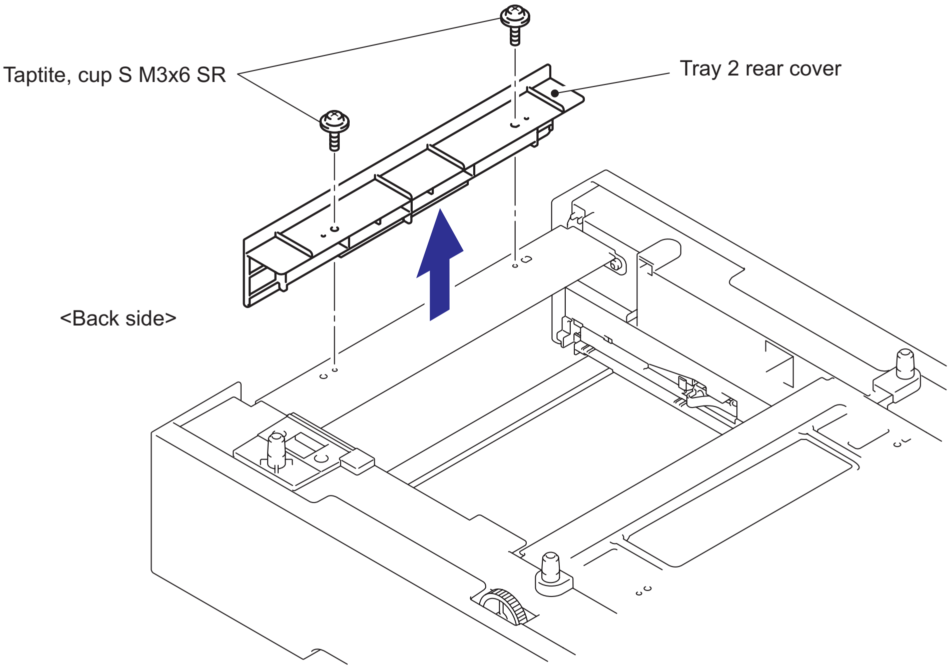


Fig. 5-215

10.4 Tray 2 Side Cover L

(1) Remove the bind B M4x12 Taptite screw.

(2) Remove the cup S M3x6 Taptite SR screw.

(3) Release the Hooks in the order of the arrows and remove the tray 2 side cover L.

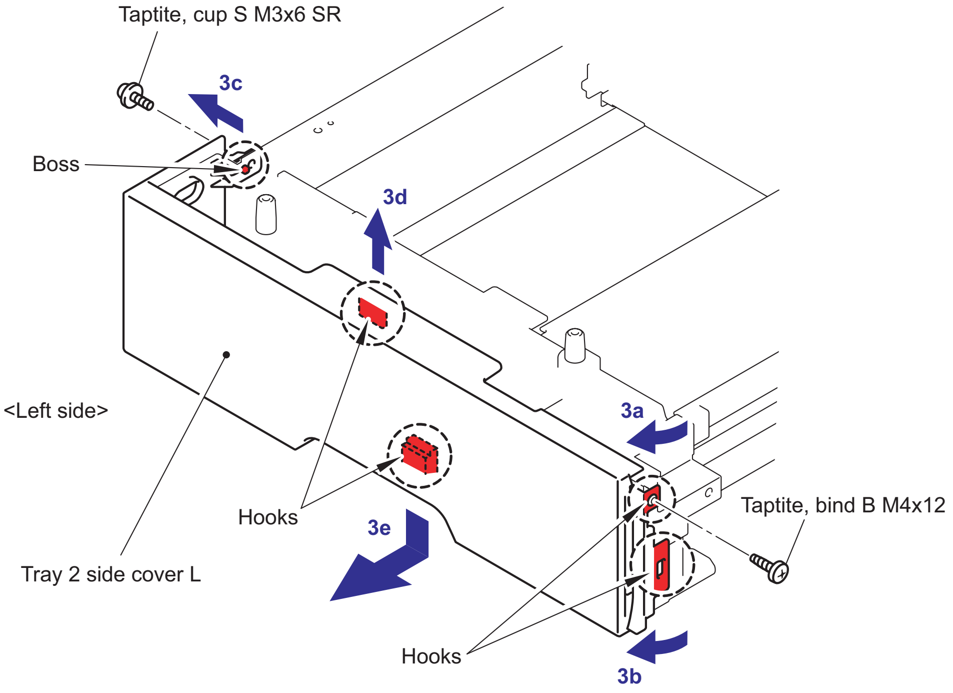


Fig. 5-216

10.5 Tray 2 Side Cover R

(1) Remove the bind B M4x12 Taptite screw.

(2) Remove the cup S M3x6 Taptite SR screw.

(3) Release the Hooks in the order of the arrows and remove the tray 2 side cover R.

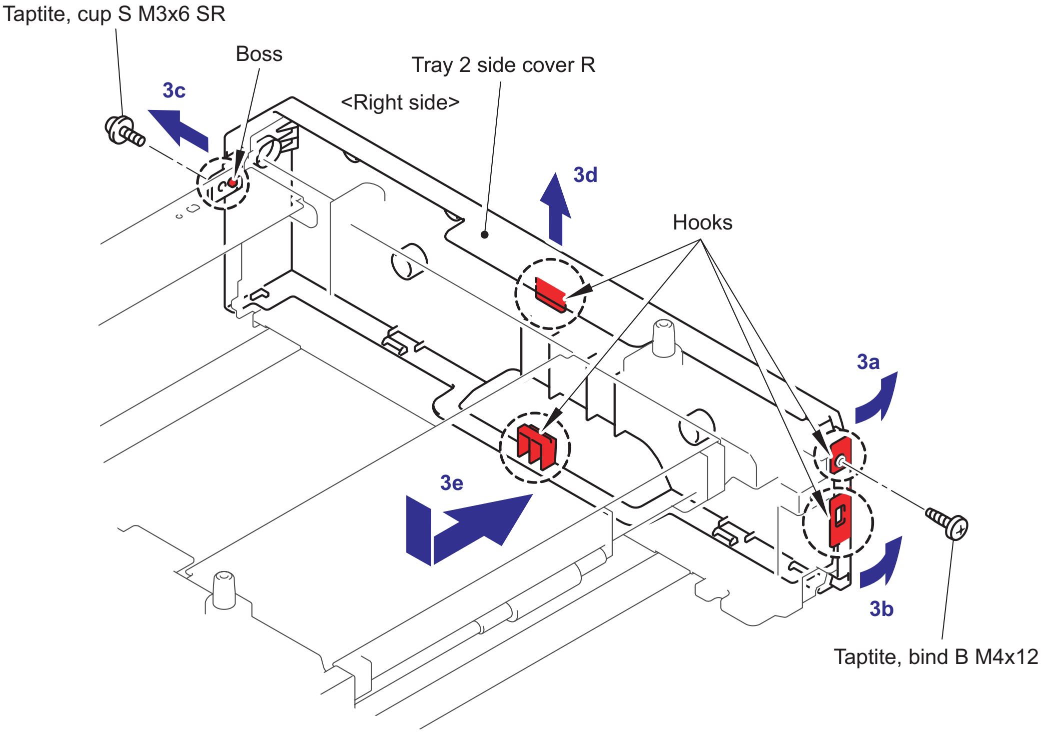


Fig. 5-217

10.6 tray 2 PCB ASSY

(1) Disconnect the connectors from the tray 2 PCB ASSY.

(2) Remove the bind B M4x12 Taptite screw, and then remove the tray 2 PCB ASSY.

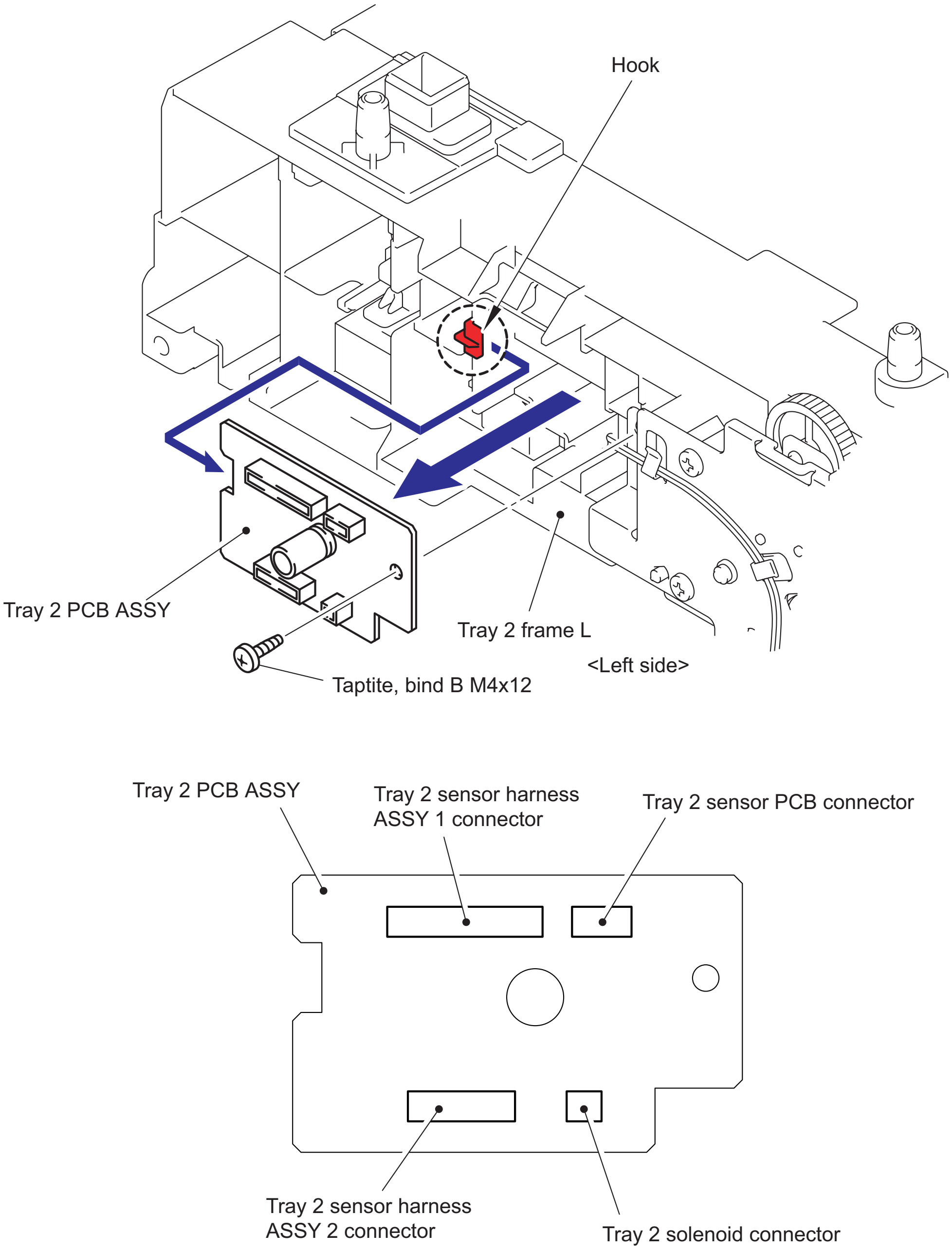

Hook
Tray 2 PCB ASSY
Tray 2 frame L
<Left side>
Taptite, bind B M4x12
Tray 2 PCB ASSY
Tray 2 sensor harness ASSY 1 connector
Tray 2 sensor PCB connector
Tray 2 sensor harness ASSY 2 connector
Tray 2 solenoid connector

Fig. 5-218

10.7 Connector: 55533-1219

(1) Remove the tray 2 sensor harness ASSY 1 from the Connector: 55533-1219.

(2) Disconnect the Connector: 55533-1219 while pressing the Hooks inwards.

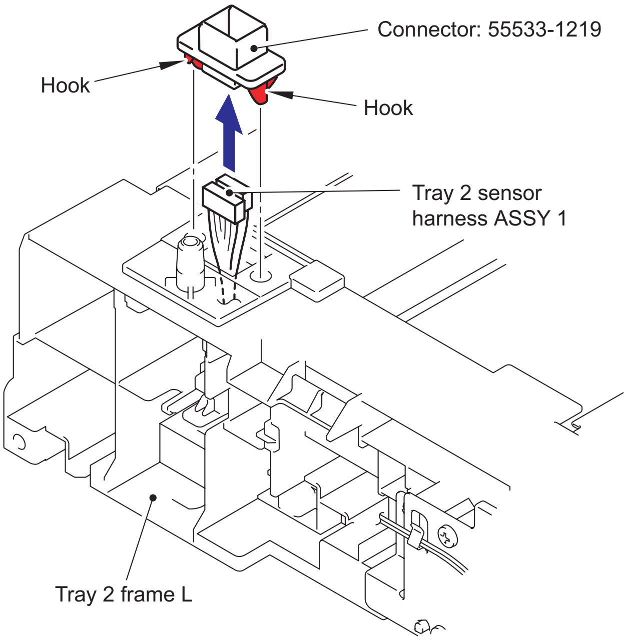


Fig. 5-219

10.8 Connector: 54702-1219

(1) Remove the tray 2 sensor harness ASSY 2 from the Connector: 54702-1219.

(2) Disconnect the Connector: 54702-1219 while pressing the Hooks inwards.

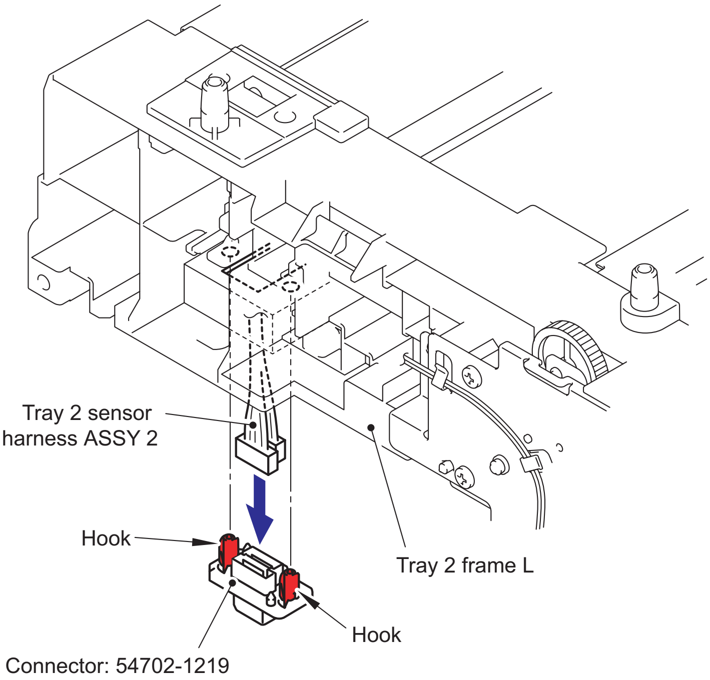


Fig. 5-220

10.9 Gear 24 tray 2

(1) Place the tray 2 so that the tray 2 frame L is at the top.

(2) Release the Hook to remove the Gear 20 tray 1 roller drive from the tray 2 frame L.

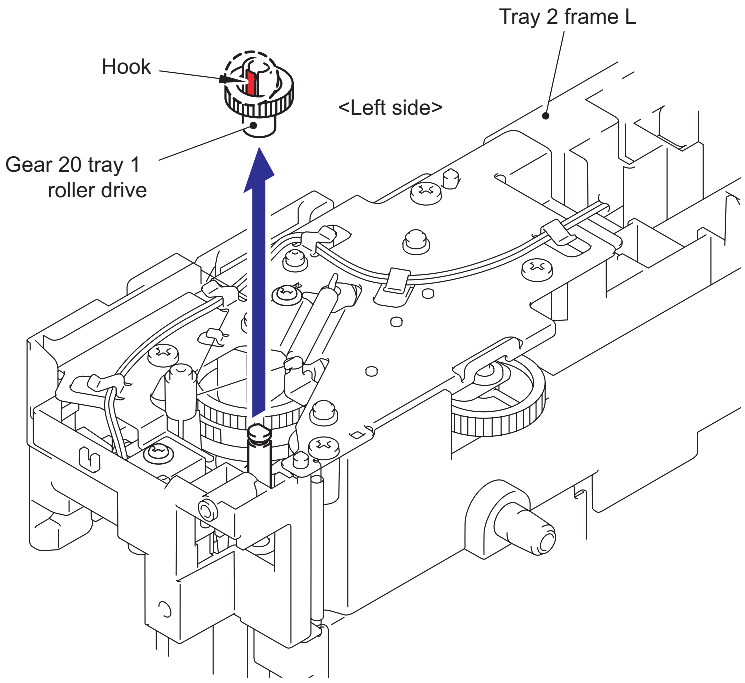


Fig. 5-221

(3) Remove the Retaining ring E4.

(4) Remove the Gear 24 tray 2 from the tray 2 frame L.

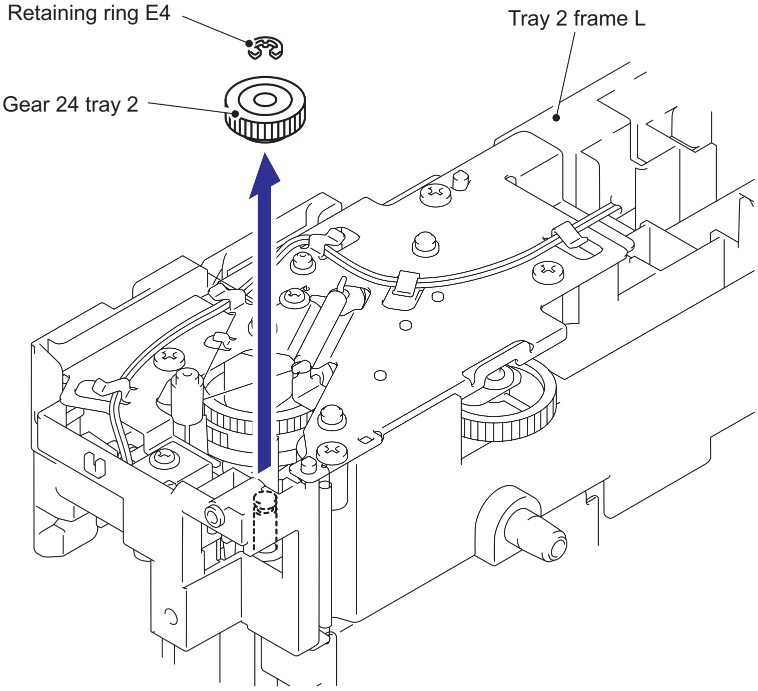


Fig. 5-222

10.10 Collar 6

(1) Remove the Gear plate ground spring from the tray 2 frame L.

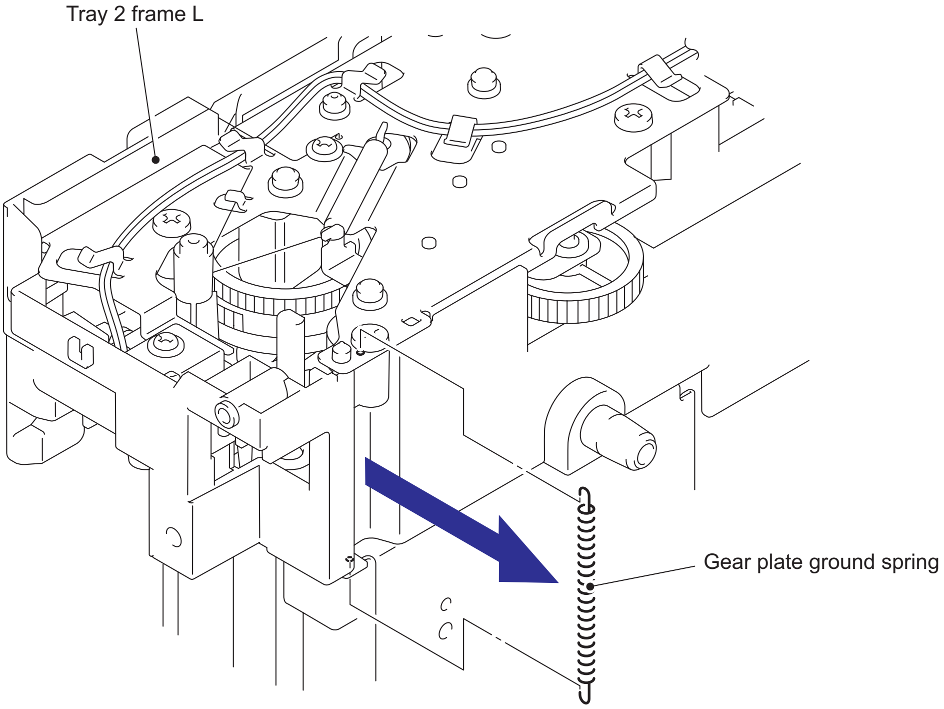


Fig. 5-223

(2) Remove the cup S M3x6 Taptite SR screw, and then remove the Feed roller ground plate.

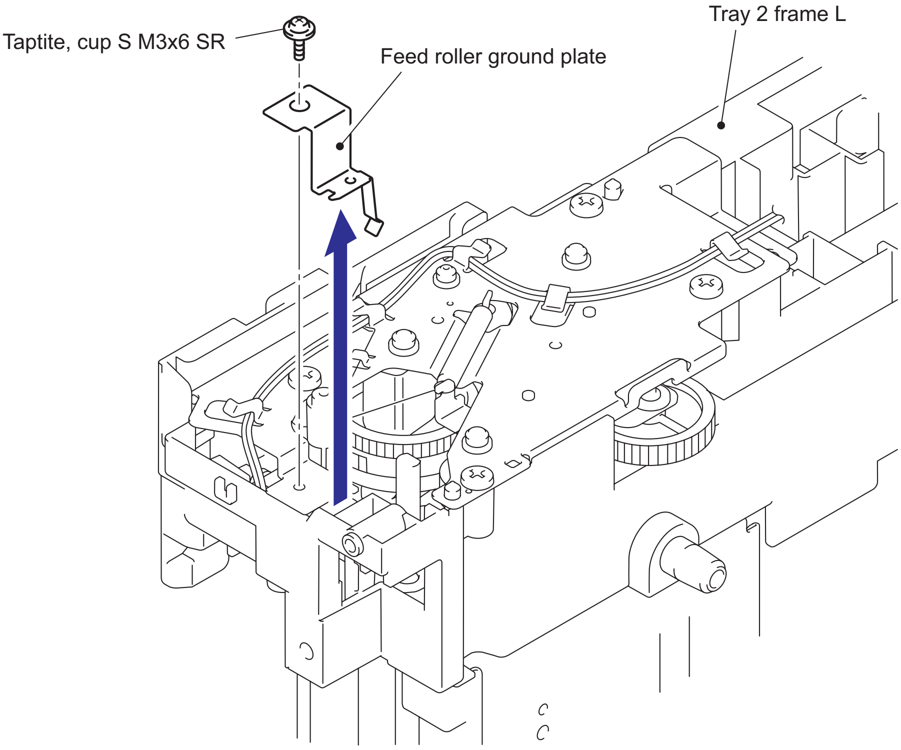


Fig. 5-224

(3) Remove the tray 1 sector gear spring tray 2 from the tray 2 frame L.

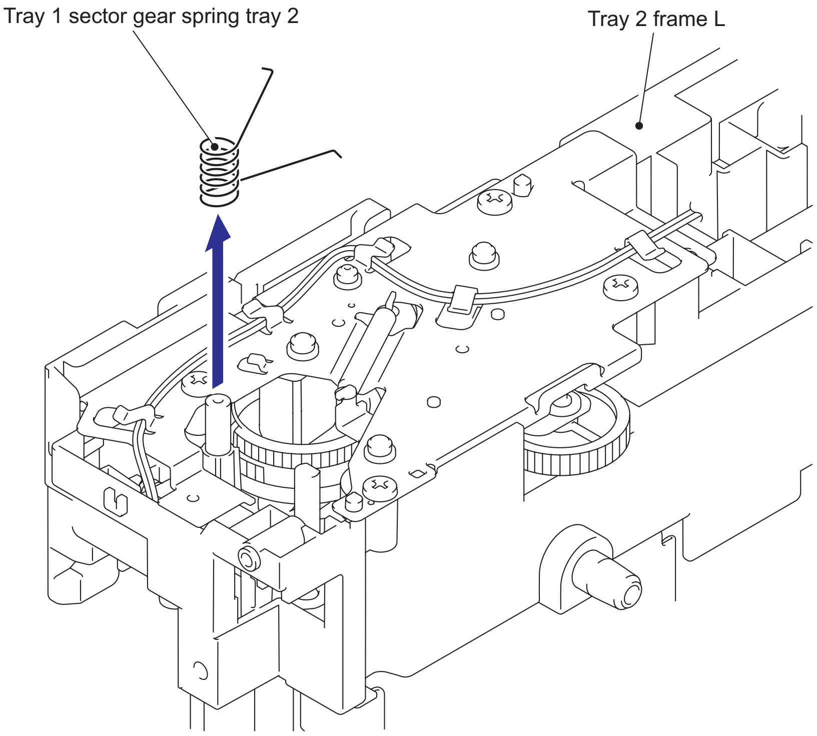


Fig. 5-225

Assembling Note:

- When assembling the tray 1 sector gear spring tray 2, ensure that its direction is correct referring to the figure below.

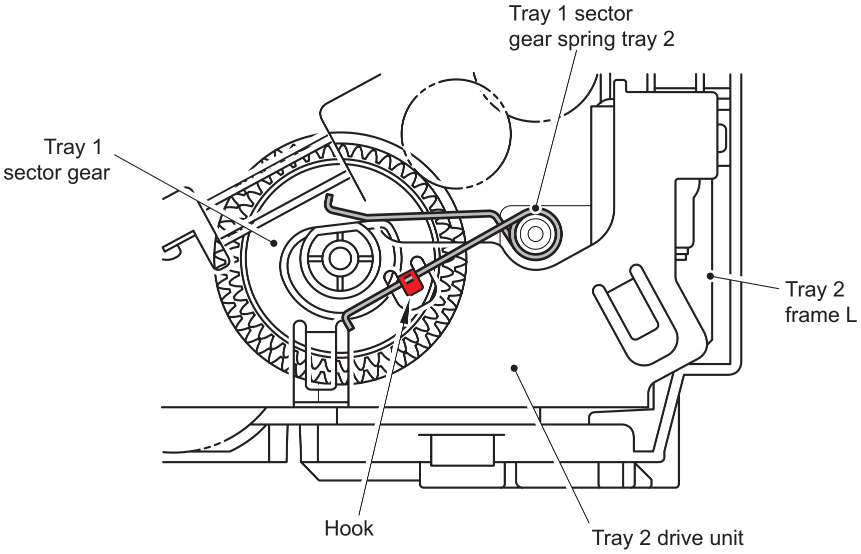


Fig. 5-226

(4) Remove the tray 2 solenoid harness from the hooks of the tray 2 drive unit.

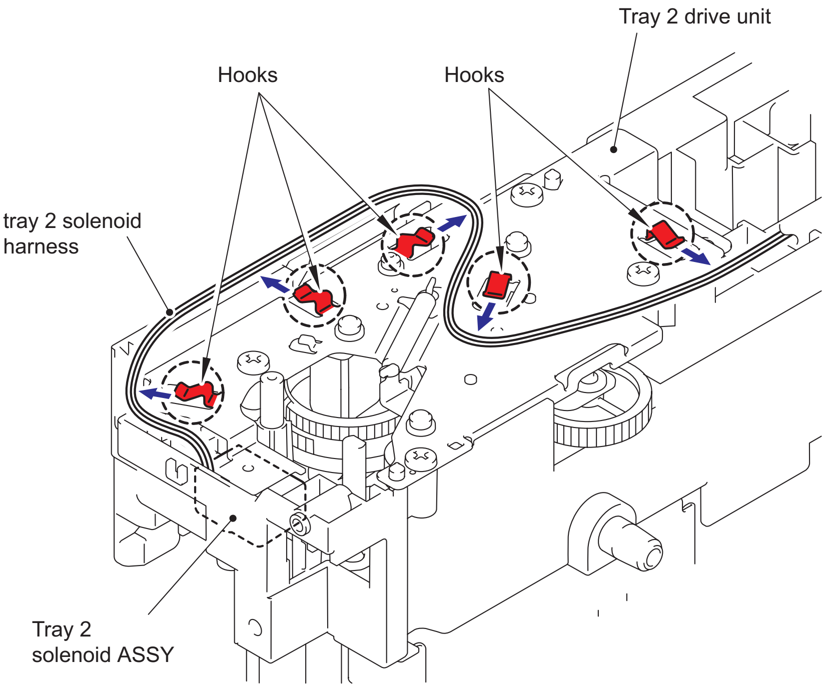


Fig. 5-227

(5) Remove the cup S M3x6 Taptite screw.

(6) Remove the four bind B M4x12 Taptite screws, and then remove the tray 2 drive unit.

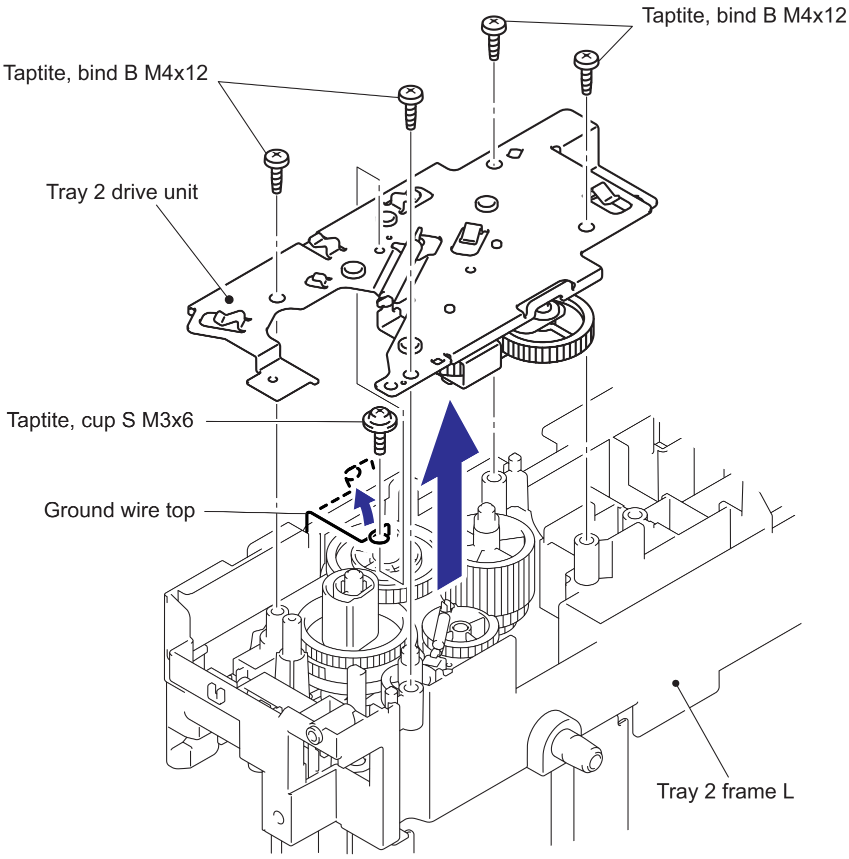


Fig. 5-228

(7) Remove the Clutch spring from the tray 2 drive unit.

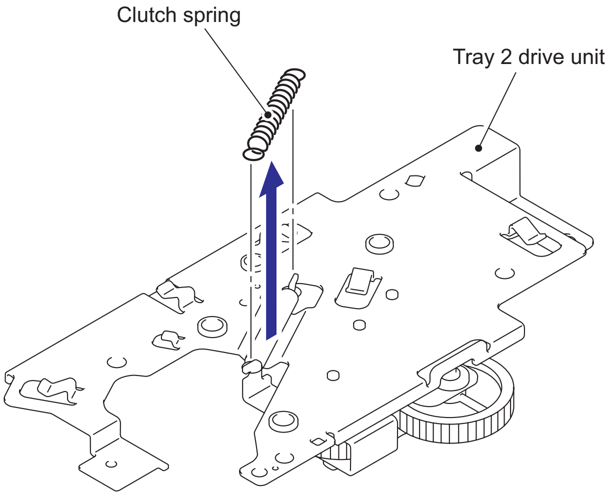


Fig. 5-229

(8) Remove the Collar 6.

(9) Remove the Clutch arm ASSY from the tray 2 drive unit.

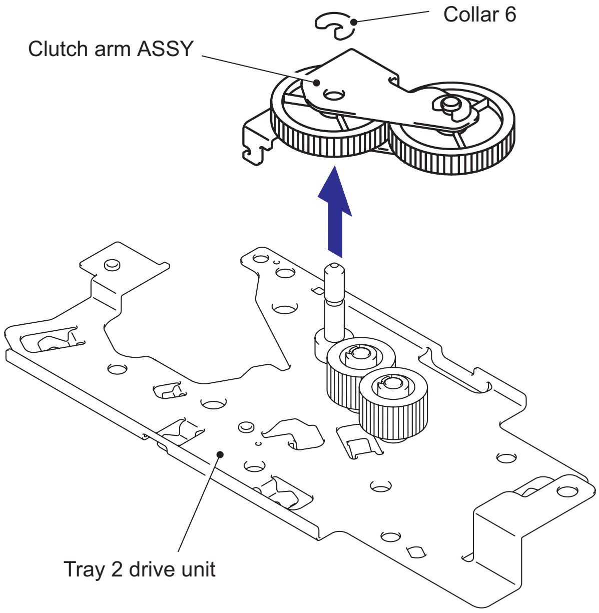


Fig. 5-230

(10) Remove the Collar 6 from the Clutch arm ASSY.

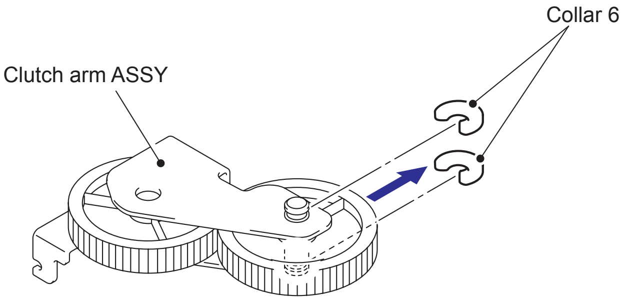


Fig. 5-231

10.11 Tray 2 Solenoid ASSY

(1) Remove the bind B M3x10 Taptite screw, and then remove the tray 2 solenoid ASSY.

(2) Remove the Solenoid release spring P/R from the tray 2 solenoid ASSY.

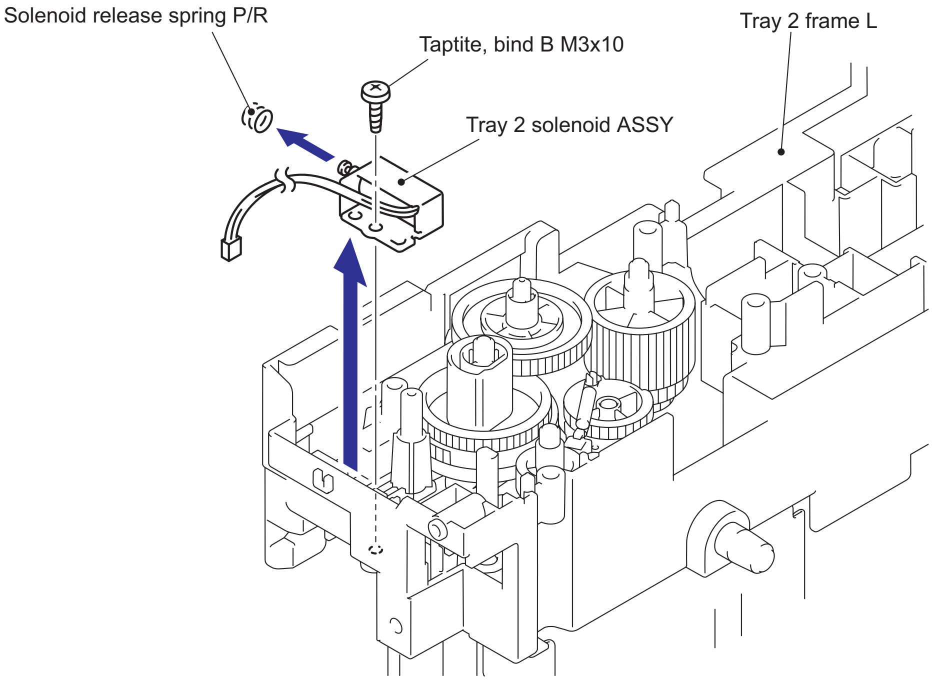


Fig. 5-232

10.12 Roller Holder ASSY

(1) Push the Lift arm to the direction of the arrow 1a and pull out the pin of the Roller holder ASSY. Then, turn the Roller holder ASSY to the direction of the arrow 1b.

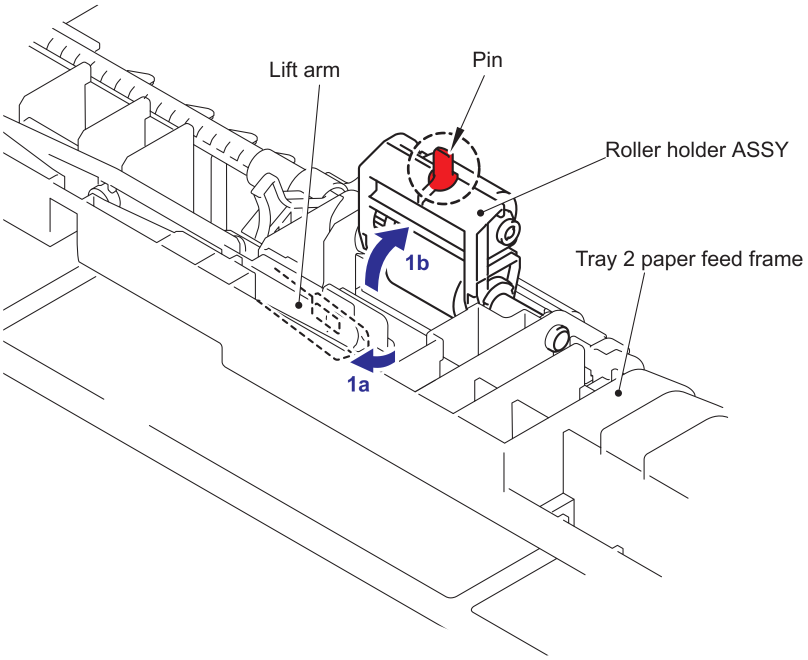


Fig. 5-233

(2) Slide the Roller holder ASSY to the direction of the arrow 2a. Then, lift up the gear side of the Roller holder ASSY to the direction of the arrow 2b and pull it out to the direction of the arrow 2c to remove.

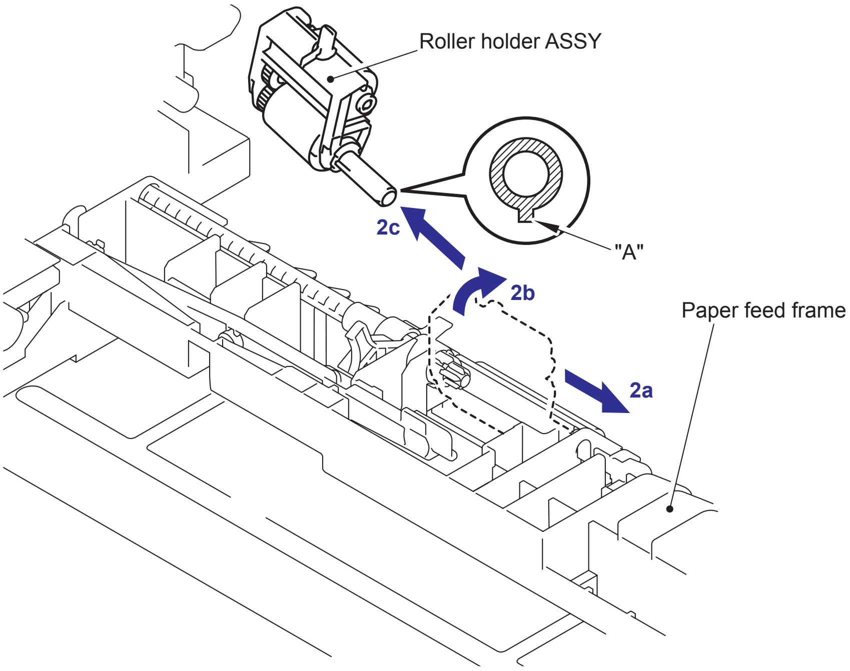


Fig. 5-234

Assembling Note:

- When assembling the roller holder ASSY, align the section "A" on the shaft of the roller holder ASSY with the hole on the paper feed frame.

10.13 Edge Actuator Spring

(1) Remove the Edge actuator spring.

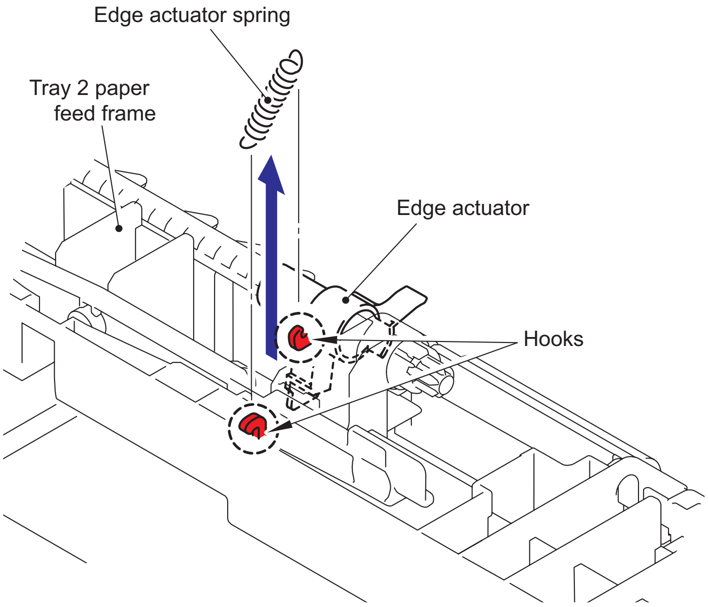


Fig. 5-235

10.14 PE Actuator / Edge Actuator

(1) Release the Hook and remove the Separation R shaft bearing.

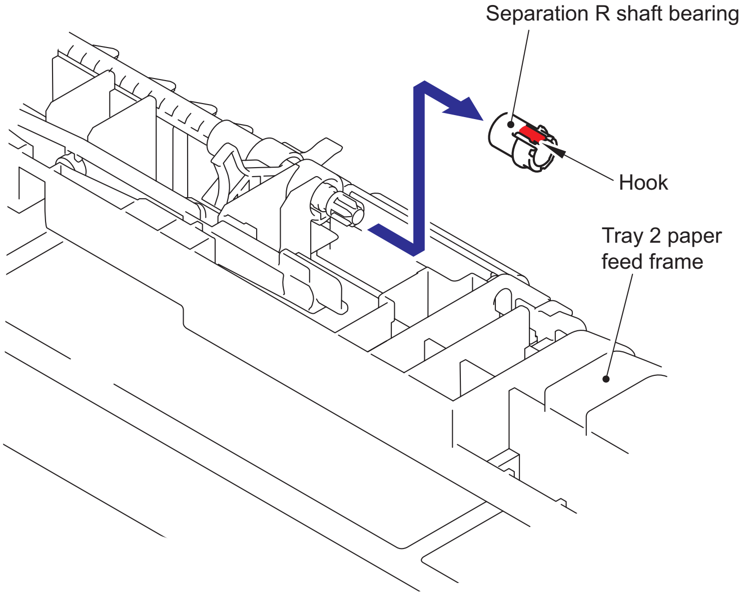


Fig. 5-236

(2) Pull out the Separation roller drive shaft to the direction of the arrow and remove the Edge actuator and PE actuator.

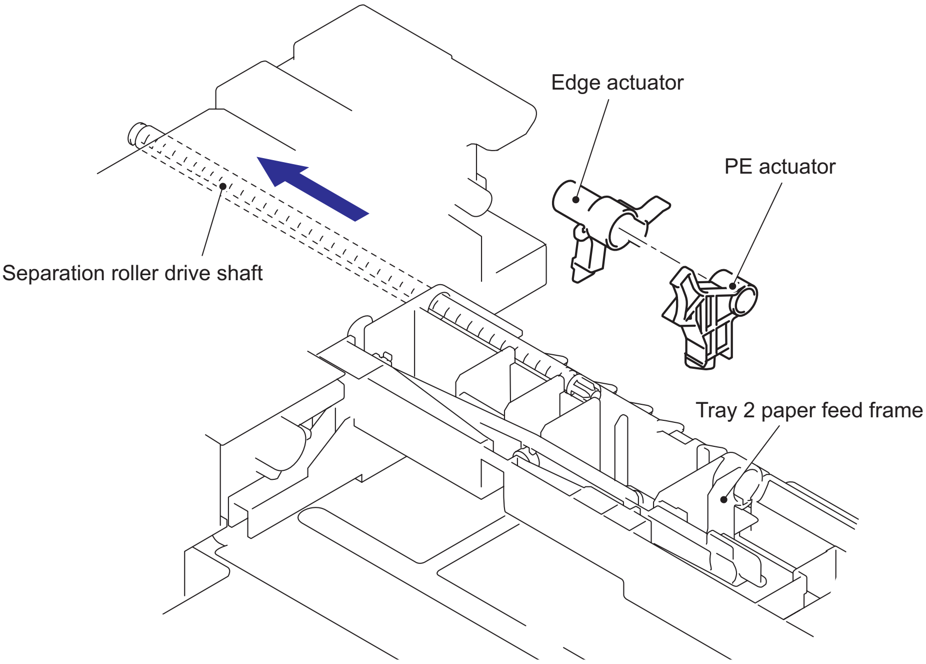


Fig. 5-237

10.15 Tray 2 Sensor PCB ASSY

(1) Remove the two bind B M4x12 Taptite screws.

(2) Remove the four cup S M3x6 Taptite SR screws, and then remove the tray 2 frame L.

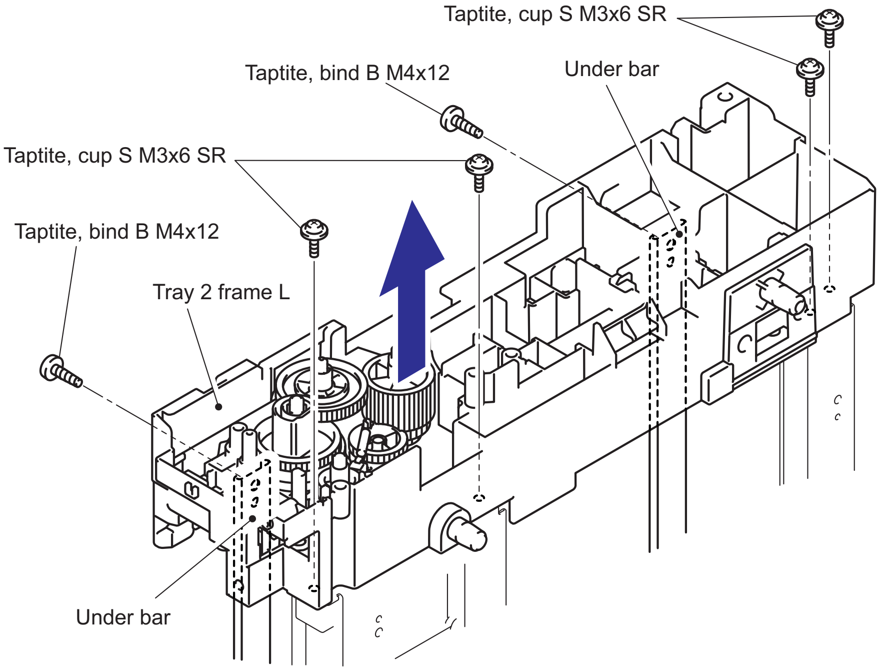


Fig. 5-238

(3) Remove the two cup S M3x6 Taptite SR screws, and then remove the tray 2 paper feed frame.

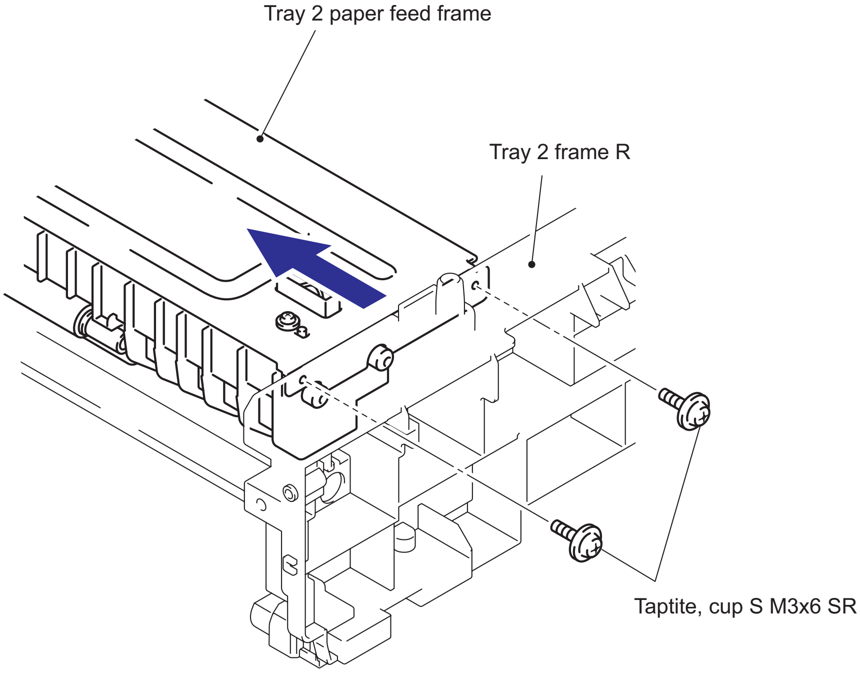


Fig. 5-239

(4) Remove the two cup B M3x12 Taptite screws, and then remove the tray 2 front beam.

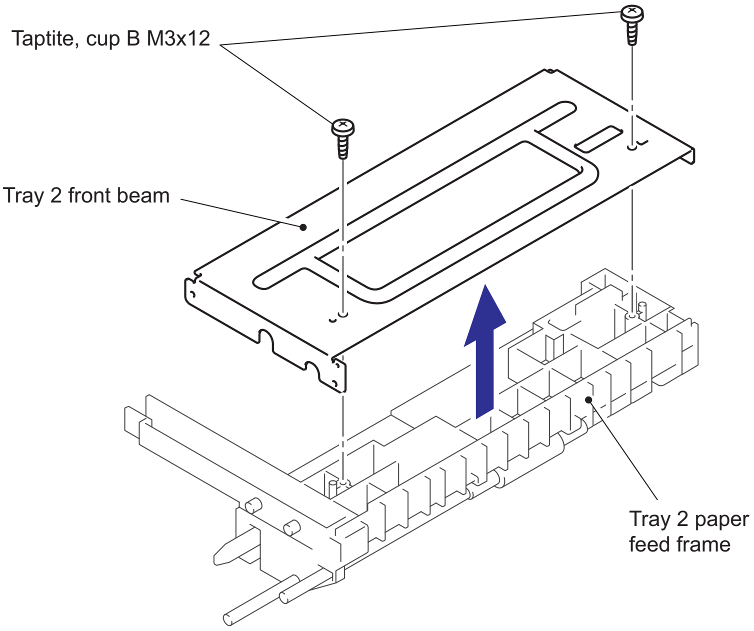


Fig. 5-240

(5) Remove the bind B M3x8 Taptite screw, and then remove the tray 2 sensor PCB ASSY.

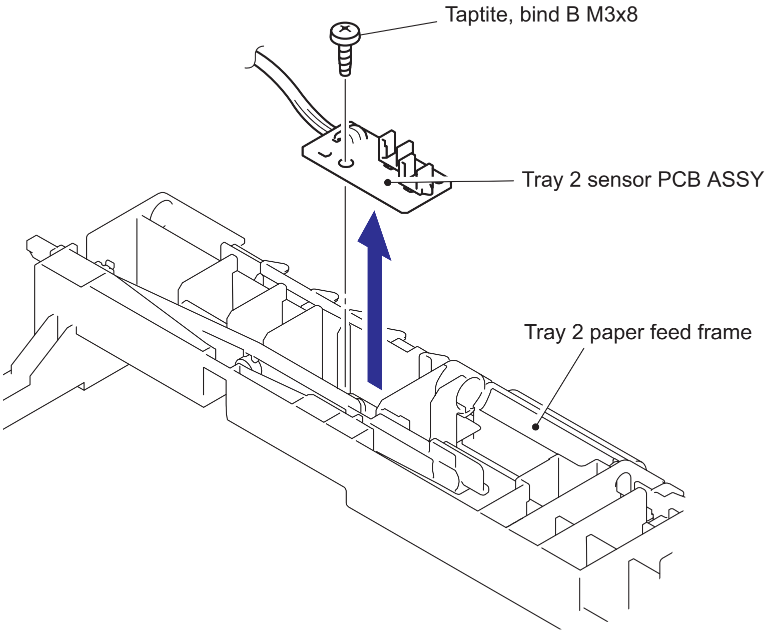


Fig. 5-241

CHAPTER 6

SERVICE MODE

CHAPTER 6 SERVICE FUNCTIONS

The maintenance mode is exclusively designed for the purpose of checks, settings and adjustments using the buttons on the control panel or open/close of the front cover. You can perform operational checks of panel PCB, sensors, perform a print test, display the log information or error codes.

CONTENTS

1. ENTRY INTO THE MAINTENANCE MODE

Press the [Menu], [Start] ,and [▲] button four times quickly in this order to make the machine enter the maintenance mode.

The machine beeps for approx. one second and displays "▮▮ MAINTENANCE ▮▮▮" on the LCD, indicating that it is placed in the initial stage of the maintenance mode, a mode in which the machine is ready to accept entry from the buttons.

To select one of the maintenance-mode functions listed in "2. LIST OF MAINTENANCE-MODE FUNCTIONS", press the [▲] button or [▼] button to display any function code on the LCD. Then press the [**OK**] button.
(The details of each maintenance-mode function are described in "4. DETAILED DESCRIPTION OF MAINTENANCE-MODE FUNCTIONS".)

Note:

- To exit from the maintenance mode and switch to standby, press the [**9**] key twice in the initial stage of the maintenance mode.
- Pressing the [**Stop/Exit**] button after entering only one digit restores the machine to the initial stage of the maintenance mode.
- If an invalid function code is entered, the machine resumes the initial stage of the maintenance mode.

2. LIST OF MAINTENANCE-MODE FUNCTIONS

Function Code	Function	Refer to:
01	EEPROM Parameter Initialization	4.1 (6-4)
05	Printout of Scanning Compensation Data	4.2 (6-5)
06	Placement of Scanner Module Position for Transportation	4.3 (6-8)
08	ADF Performance Test	4.4 (6-8)
09	Test Pattern	4.5 (6-9)
10	Worker Switch (WSW) Setting	4.6.1 (6-10)
11	Printout of Worker Switch Data	4.6.2 (6-14)
12	Operational Check of LCD	4.7 (6-15)
13	Operational Check of Control Panel Button	4.8 (6-16)
25	ROM Version Check	4.9 (6-17)
32	Operational Check of Sensors	4.10 (6-18)
43	PC Print Function	4.11 (6-20)
45	Switching the USB Setting	4.12 (6-23)
52	EEPROM Customizing (User-accessible)	4.13 (6-24)
53	Received Data Transfer Function	4.14 (6-25)
54	Fine Adjustment of Scan Start/End Positions	4.15 (6-27)
55	Acquisition of White Level Data	4.16 (6-29)
67	Paper Feeding and Ejecting Test	4.17 (6-31)
74	EEPROM Customizing	4.18 (6-31)
78	Operational Check of Fans	4.19 (6-33)
80	Display of the Machine's Log	4.20 (6-34)
82	Error Code Indication	4.21 (6-36)
87	Output of Transmission Log to the Telephone Line	4.22 (6-36)
88	Counter Reset After Replacing the Fuser Unit, Laser Unit and Paper Feed Kit	4.23 (6-37)
91	EEPROM Parameter Initialization	4.1 (6-4)
99	Maintenance Mode Finish	4.24 (6-37)
—	Cancellation of the Memory Security Mode	

3. USER-ACCESS TO THE MAINTENANCE MODE

Basically, the maintenance-mode functions listed on the previous page should be accessed by service personnel only. However, you can allow end users to access some of these under the guidance of service personnel (e.g., by telephone).

The user-accessible functions (codes 06, 09, 10, 11, 12, 25, 45, 53, 54, 80, 82, 87 and 88) are shaded in the table given on the previous page. Function code 10 accesses the firmware switches, each of which has eight selectors. You should not allow end users to access all of those selectors, but you can allow them to access user-accessible selectors which are shaded in the firmware switch tables in APPENDIX 1.

The service personnel should instruct end users to follow the procedure given below.

(1) Press the [**Menu**], [**Start**], [**Menu**], and [▲] buttons in this order.
The "MAINTENANCE 10" appears on the LCD.

(2) Press the [▲] button or [▼] button several times to display the desired maintenance code on the LCD.
Then press the [**OK**] button.

(3) To switch the machine back to the standby state, press the [**Stop/Exit**] button. When each of the user-accessible functions is completed, the machine automatically returns to the standby state.

4. DETAILED DESCRIPTION OF MAINTENANCE-MODE FUNCTIONS

4.1 EEPROM Parameter Initialization (Function code 01/91)

<Function>

The machine initializes the parameters, user switches, and firmware switches registered in the EEPROM, to the initial values. Entering the function code 01 initializes all of the EEPROM areas, but entering 91 does not initialize some areas, as listed below.

Function code Data item	01	91
Maintenance-mode functions User switches Firmware switches	All of these will beinitialized.	These will be initialized.
Remote activation code		These will not be initialized.
Station ID data Outside line number Telephone function registration One-touch dialing Speed dialing Group dialing		These will not be initialized.

Note:

- If you replace the main PCB with the one used for any other machine, customize the EEPROM (maintenance mode function code 74 in Section 4.18.) and then carry out this procedure.

<Operating Procedure>

(1) Press the [**0**] and [**1**] keys (or the [**9**] and [**1**] keys according to your need) in this order in the initial stage of the maintenance mode.
The "PARAMETER INIT" will appear on the LCD.

(2) Upon completion of parameter initialization, the machine returns to the initial stage of the maintenance mode.

(3) Press the [**9**] key twice to exit from the maintenance mode.

(4) Turn the machine power off.

4.2 Printout of Scanning Compensation Data (Function code 05)

<Function>
The machine prints out the white and black level data for scanning compensation.

<Operating Procedure>
Implement the operating procedure below after scanning the document once at least, not immediately after the machine is turned on. Since the machine initializes the white and black level data and obtains the standard value for document scanning compensation when starting scanning the document, the correct data for compensation cannot be printed out even if this operation is implemented without scanning the document.

The print result will be different depending on whether the document scanning performed just before this procedure is color scanning or white and black scanning. Make sure the white and black level data you want to print and implement the operation below.

(1) For white and black scanning, copy the document. For color scanning, implement color scanning of the document.

(2) Press the [**0**] and [**5**] keys in this order in the initial stage of the maintenance mode. The "WHITE LEVEL 1" will appear on the LCD.

(3) The machine prints out the scanning compensation data list containing the following:

■ **Black and white scanning**

a) Dark output adjustment value (CH0)	1Byte
b) Dark output adjustment value (CH1)	1Byte
c) Bright output adjustment value (CH0)	1Byte
d) Bright output adjustment value (CH1)	1Byte
e) Background color compensated data	1Byte
f) Black level data (CH0)	2Byte
g) Black level data (CH1)	2Byte
h) White level data (G)	by previous scanning pixel count
i) White level data (B)	by previous scanning pixel count
j) White level data (CH2)	by previous scanning pixel count

■ **Color scanning**

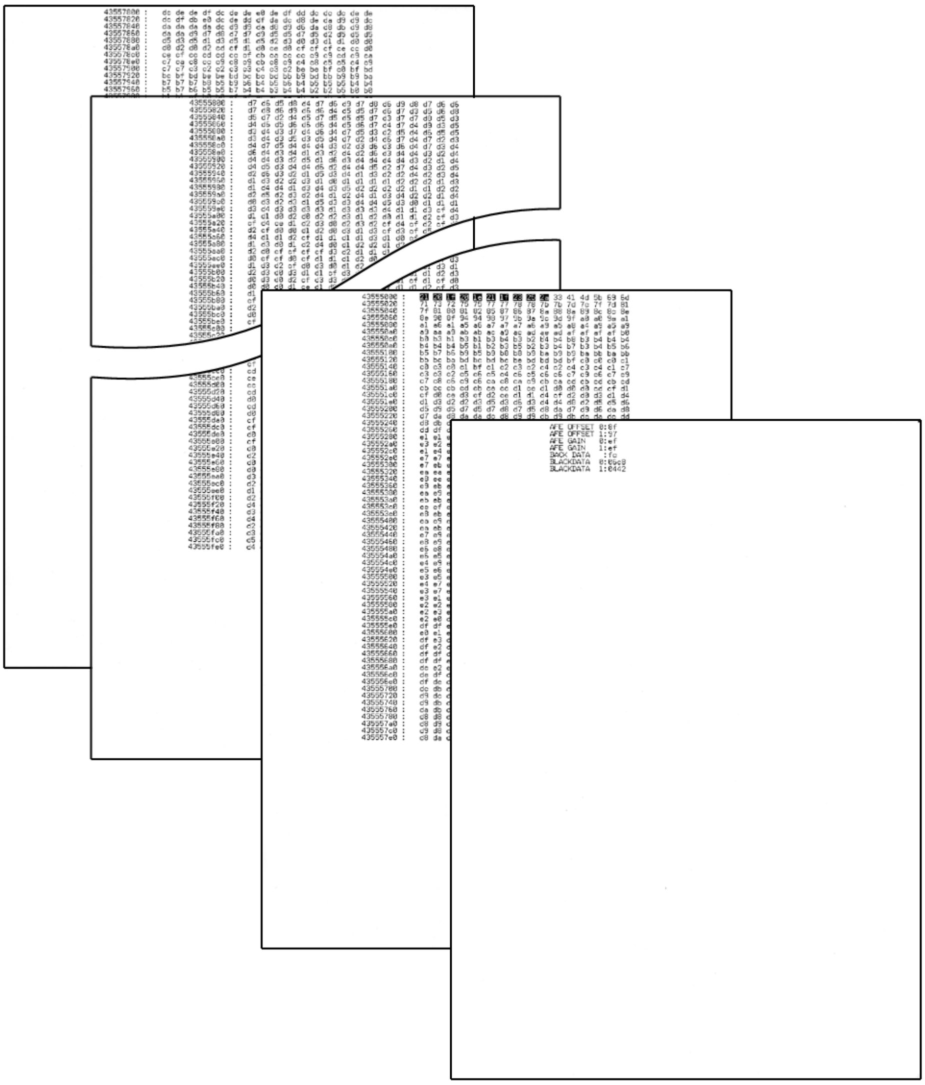
a) Dark output adjustment value (G)	1Byte
b) Dark output adjustment value (B)	1Byte
c) Dark output adjustment value (R)	1Byte
d) Bright output adjustment value (G)	1Byte
e) Bright output adjustment value (B)	1Byte
f) Bright output adjustment value (R)	1Byte
g) Background color compensated data	1Byte
h) Black level data (G)	2Byte
i) Black level data (B)	2Byte
j) Black level data (R)	2Byte
k) White level MIN data (G)	by previous scanning pixel count
l) White level MIN data (B)	by previous scanning pixel count
m) White level MIN data (R)	by previous scanning pixel count

(4) Upon completion of printing of the compensation data list, the machine returns to the initial stage of the maintenance mode.

Note:

- If any data is abnormal, its code will be printed in inline style.

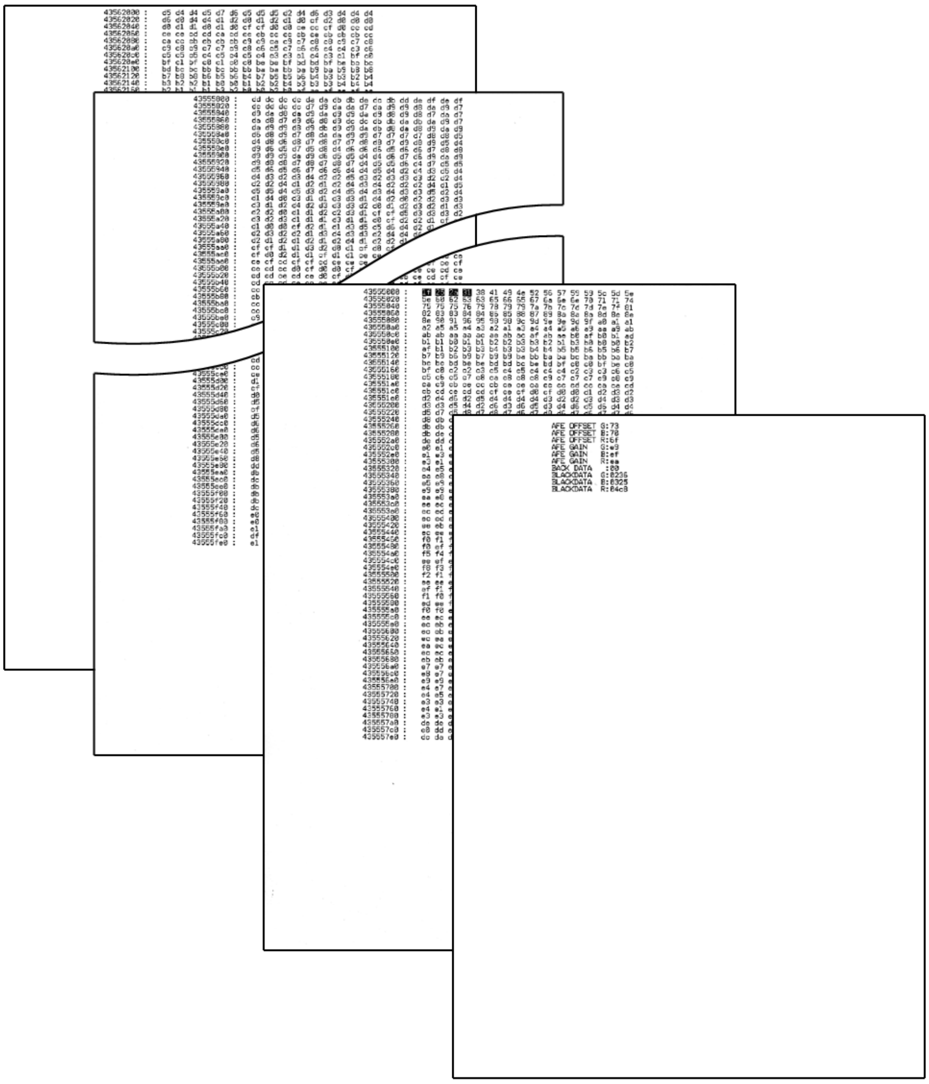
■ For white and black scanning



```
AFE OFFSET 0:8f
AFE OFFSET 1:97
AFE GAIN   0:ef
AFE GAIN   1:ef
BACK DATA   :fc
BLACKDATA  0:05c8
BLACKDATA  1:0442
```

Fig. 6-1

■ For color scanning



```
AFE OFFSET G:73
AFE OFFSET B:70
AFE OFFSET R:6f
AFE GAIN   G:e9
AFE GAIN   B:ef
AFE GAIN   R:ea
BACK DATA   :00
BLACKDATA  G:0236
BLACKDATA  B:0325
BLACKDATA  R:04c8
```

Fig. 6-2

4.3 Placement of Document Scanner Unit in Position for Transportation (Function code 06)

<Function>

This function is to move the document scanner unit in position for transportation located at the left end.
When you fix the FAX equipment and check its operation, you need to perform this function right before packing and shipping it.

Note:

- Please instruct end users to perform this function if possible before packing and shipping their FAX equipment to a sales agent or a service dealer for the purpose of repair. (For the procedure to allow users to perform maintenance modes, please see Section 3.)

<Operating Procedure>

(1) Press the [**0**] and [**6**] keys in this order in the initial stage of the maintenance mode.
The CCD unit moves to the designated position for transportation located at the left end.
The "MAINTENANCE 06" is displayed until the CCD unit is placed in position.
When the CCD unit is placed in the position, the "PLEASE SCAN LOCK" appears on the LCD.

(2) Open the document cover, and lock the scanner lock lever at the rear left of the document scanner unit. When the scanner lock lever is locked, the "SCAN LOCKED" appears.
To terminate this operation, press the [**Stop/Exit**] button. The machine returns to the initial stage of the maintenance mode. The machine will be unable to scan after this operation until switch OFF/ON is pressed or the "Function 99" is performed.

4.4 ADF Performance Test (Function code 08)

<Function>

The machine counts the documents fed by the automatic document feeder (ADF) and displays the count on the LCD for checking the ADF performance.

<Operating Procedure>

(1) Set documents. (Allowable up to the ADF capacity.)
The "DOC. READY" will appear on the LCD.

(2) Press the [**0**] and [**8**] keys in this order.
Press the [▲] or [▼] buttons so that the "[▲]: DX, [▼]: SX" is displayed on the LCD.
While counting the documents, the machine feeds them in and out, displaying the current count on the LCD as shown below.

ADF CHECK P.01

Current count (1st page in this example)

(3) Press the [**Stop/Exit**] button, then the operation of the above will finish and return the machine to the initial stage of the maintenance mode.

4.5 Test Pattern 1 (Function code 09)

<Function>

This function, much like the copying function, prints out test pattern 1 to allow the service personnel to check for record data missing or print quality.

<Operating Procedure>

Press the [**0**] and [**9**] keys in this order in the initial stage of the maintenance mode.
The figure below shows test pattern.

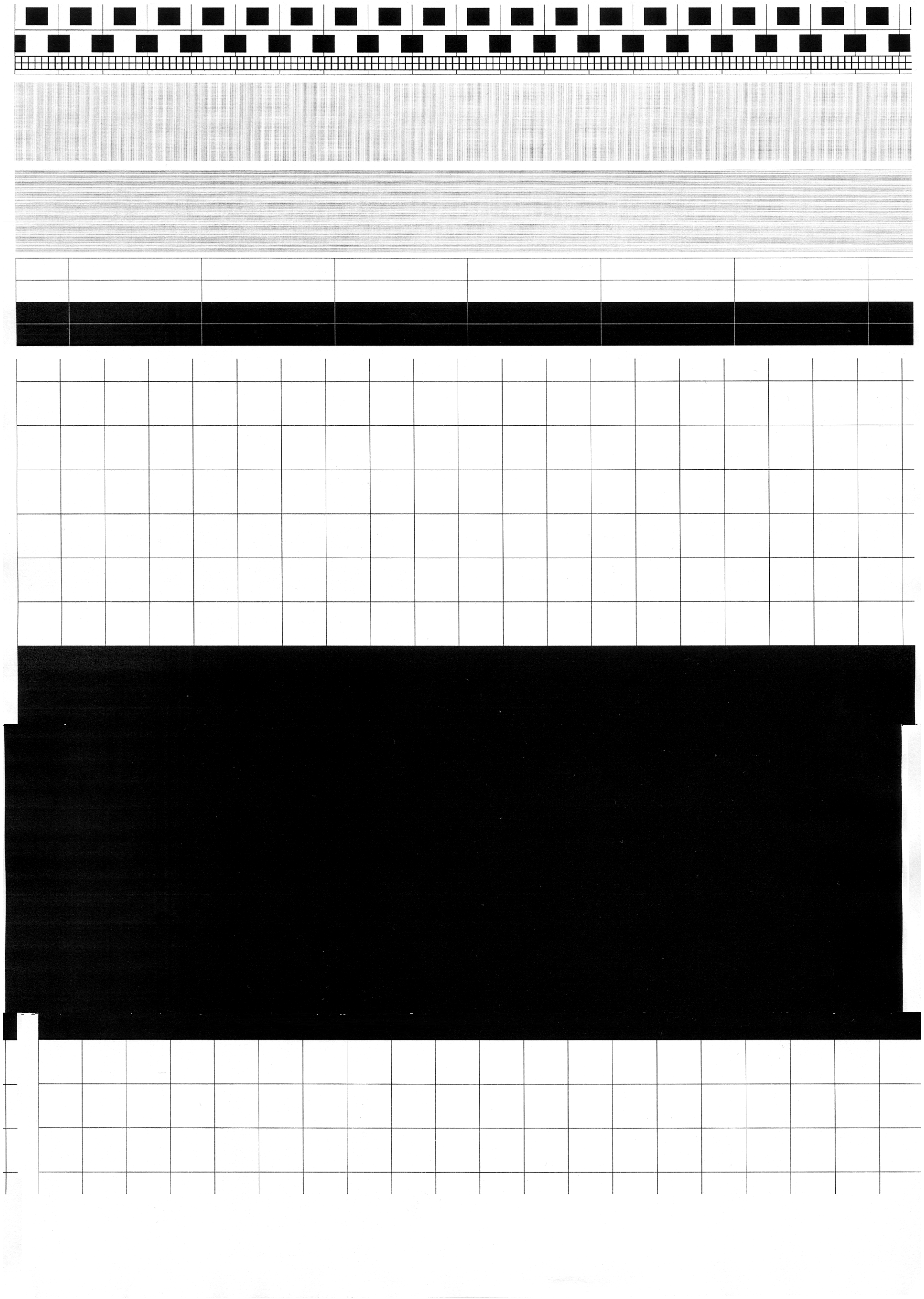


Fig. 6-3

4.6 Firmware Switch Setting and Printout

4.6.1 Firmware switch setting (Function code 10)

<Function>

The machine incorporates the following firmware switch functions which may be activated with the procedures using the control panel keys and buttons.

The firmware switches have been set at the factory in conformity to the communications standards and codes of each country. Do not disturb them unless necessary. Some firmware switches may not be applicable in some versions. The firmware switch data list indicates "Not used." for those inapplicable switches.

■ Firmware Switches (WSW01 through WSW77)

WSW No.	Function	Refer to:
WSW01	Dial pulse setting	App. 1-4
WSW02	Tone signal setting	App. 1-6
WSW03	PABX mode setting	App. 1-7
WSW04	TRANSFER facility setting	App. 1-9
WSW05	1st dial tone and busy tone detection	App. 1-10
WSW06	Redial/Pause button setting and 2nd dial tone detection	App. 1-11
WSW07	Dial tone setting 1	App. 1-13
WSW08	Dial tone setting 2	App. 1-14
WSW09	Protocol definition 1	App. 1-15
WSW10	Protocol definition 2	App. 1-16
WSW11	Busy tone setting	App. 1-17
WSW12	Signal detection condition setting	App. 1-18
WSW13	Modem setting	App. 1-19
WSW14	AUTO ANS facility setting	App. 1-20
WSW15	REDIAL facility setting	App. 1-21
WSW16	Function setting 1	App. 1-22
WSW17	Function setting 2	App. 1-22
WSW18	Function setting 3	App. 1-23
WSW19	Transmission speed setting	App. 1-24
WSW20	Overseas communications mode setting	App. 1-25
WSW21	TAD setting 1	App. 1-26
WSW22	ECM and call waiting caller ID	App. 1-26
WSW23	Communications setting	App. 1-27
WSW24	TAD setting 2	App. 1-28
WSW25	TAD setting 3	App. 1-28
WSW26	Function setting 4	App. 1-29
WSW27	Function setting 5	App. 1-30
WSW28	Function setting 6	App. 1-31
WSW29	Function setting 7	App. 1-32
WSW30	Function setting 8	App. 1-32
WSW31	Function setting 9	App. 1-33
WSW32	Function setting 10	App. 1-34
WSW33	Function setting 11	App. 1-34

WSW No.	Function	Refer to:
WSW34	Function setting 12	App. 1-35
WSW35	Function setting 13	App. 1-35
WSW36	Function setting 14	App. 1-36
WSW37	Function setting 15	App. 1-37
WSW38	V.34 transmission settings	App. 1-38
WSW39	V.34 transmission speed	App. 1-39
WSW40	V.34 modem settings	App. 1-40
WSW41	ON-duration of the scanning light source	App. 1-42
WSW42	Internet mail settings	App. 1-43
WSW43	Function setting 16	App. 1-43
WSW44	Speeding up scanning-1	App. 1-44
WSW45	Speeding up scanning-2	App. 1-45
WSW46	Monitor of power ON/OFF state and parallel port kept at high	App. 1-46
WSW47	Switching between high- and full-speed USB	App. 1-47
WSW48	USB setup latency	App. 1-48
WSW49	End-of-copying beep and print in black	App. 1-48
WSW50	SDAA settings (Not used)	App. 1-49
WSW51	Function setting 17	App. 1-49
WSW52	Function setting 18	App. 1-50
WSW53	Function setting 19	App. 1-50
WSW54	Function setting 20	App. 1-51
WSW55	Not used	App. 1-52
WSW56	Function setting 21	App. 1-53
WSW57	Function setting 22	App. 1-54
WSW58	Function setting 23	App. 1-54
WSW59	Function setting 24	App. 1-55
WSW60	Not used	App. 1-56
WSW61	Scanning light intensity to judge to be stable 1	App. 1-57
WSW62	Scanning light intensity to judge to be stable 2	App. 1-58
WSW63	Not used	App. 1-59
WSW64	Setting the language / Default paper size	App. 1-60
WSW65	Setting the paper support	App. 1-60
WSW66	Drum life end	App. 1-61
WSW67	Not used	App. 1-61
WSW68	Fuser unit life end	App. 1-61
WSW69	Document scanner unit life end	App. 1-61
WSW70	Paper feeding kit life end	App. 1-61
WSW71	Paper feeding kit 2 life end	App. 1-61
WSW72	Paper feeding kit MP life end	App. 1-62
WSW73	Not used	App. 1-62
WSW74	The limited number of the documents in order for paper ejection of the simplex scanning from ADF.	App. 1-62
WSW75	Paper eject distance of switch back	App. 1-63

WSW No.	Function	Refer to:
WSW76	The limited number of the documents in reverse for paper ejection of the simplex scanning from ADF.	App. 1-64
WSW77	The limited number of the documents in reverse for paper ejection of the duplex scanning from ADF.	App. 1-64

<Operating Procedure>

(1) Press the [**1**] and [**0**] keys in this order in the initial stage of the maintenance mode. The machine displays the "WSW00" on the LCD and becomes ready to accept a firmware switch number.

(2) Enter the desired number from the firmware switch numbers (01 through 75). The following appears on the LCD:

```
   Selector 1    Selector 8
        ↓             ↓
WSWXX = 0 0 0 0 0 0 0 0
```

(3) Use the [◀] and [▶] buttons to move the cursor to the selector position to be modified.

(4) Enter a value to be set (0 or 1) using the [**0**] and [**1**] keys.

(5) Press the [**OK**] button. This operation saves the newly entered selector values onto the EEPROM and readies the machine for accepting a firmware switch number.

(6) Repeat steps (**2**) through (**5**) until the modification for the desired firmware switches is completed.

(7) Press the [**Stop/Exit**] button to return the machine to the initial stage of the maintenance mode.

Note:

- To cancel this operation and return the machine to the initial stage of the maintenance mode during the above procedure, press the [**Stop/Exit**] button.
- If there is a pause of more than one minute after a single-digit number is entered for double-digit firmware switch numbers, the machine will automatically return to the initial stage of the maintenance mode.

■ Details of Firmware Switches

- The details of the firmware switches are described in APPENDIX 1 in which the user-accessible selectors of the firmware switches are shaded.

4.6.2 Printout of firmware switch data (Function code 11)

<Function>

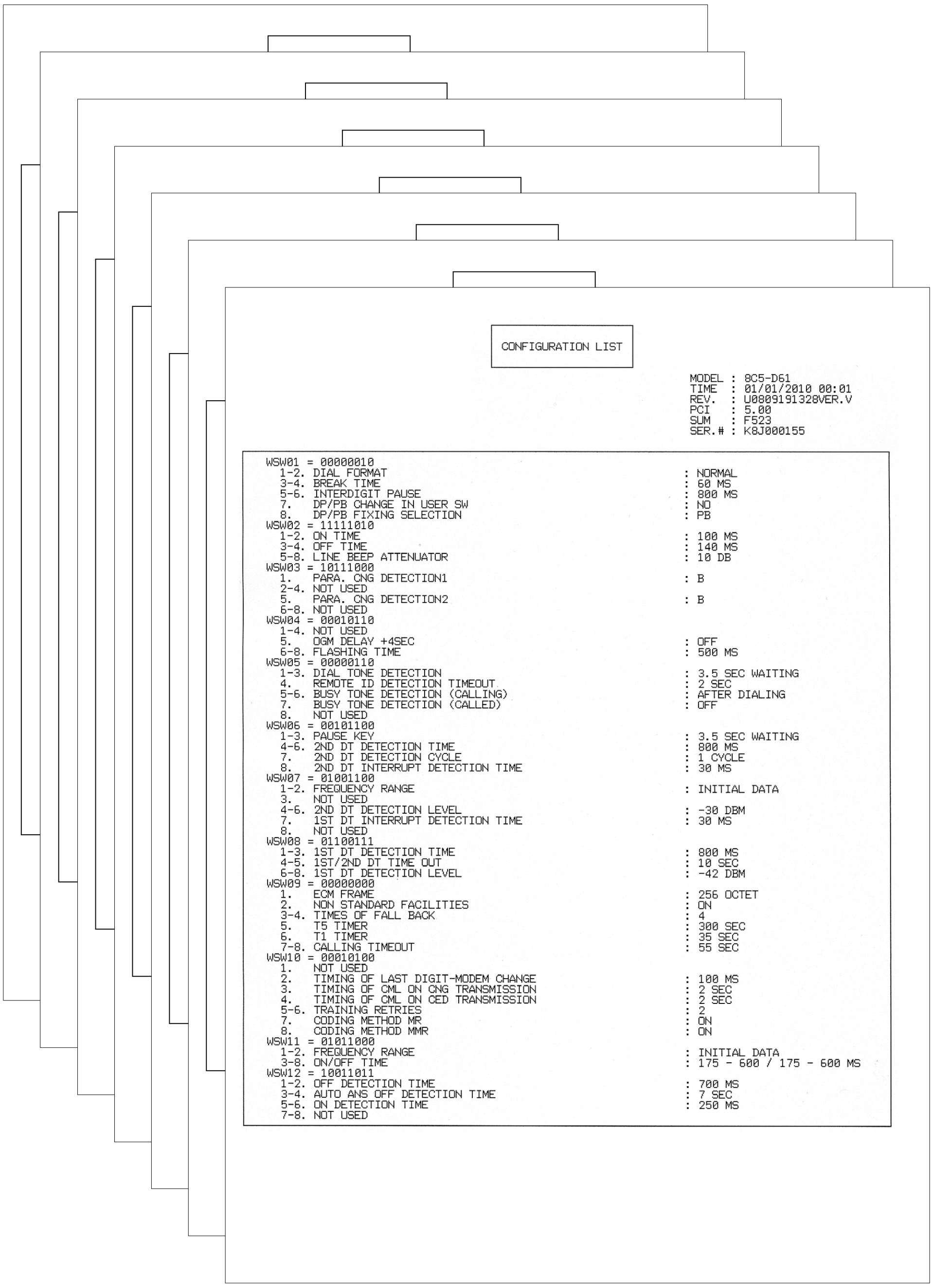
The machine prints out the setting items and contents specified by the firmware switches.

<Operating Procedure>

(1) Press the [**1**] key twice in the initial stage of the maintenance mode.
The "PRINTING" will appear on the LCD.

(2) The machine prints out the configuration list as shown in the figure below.

(3) Upon completion of printing, the machine returns to the initial stage of the maintenance mode.



```
                         CONFIGURATION LIST

                                                   MODEL : 8C5-D61
                                                   TIME  : 01/01/2010 00:01
                                                   REV.  : U0809191328VER.V
                                                   PCI   : 5.00
                                                   SUM   : F523
                                                   SER.# : K8J000155

WSW01 = 00000010
  1-2. DIAL FORMAT                                : NORMAL
  3-4. BREAK TIME                                 : 60 MS
  5-6. INTERDIGIT PAUSE                           : 800 MS
  7.   DP/PB CHANGE IN USER SW                    : NO
  8.   DP/PB FIXING SELECTION                     : PB
WSW02 = 11111010
  1-2. ON TIME                                    : 100 MS
  3-4. OFF TIME                                   : 140 MS
  5-8. LINE BEEP ATTENUATOR                       : 10 DB
WSW03 = 10111000
  1.   PARA. CNG DETECTION1                       : B
  2-4. NOT USED
  5.   PARA. CNG DETECTION2                       : B
  6-8. NOT USED
WSW04 = 00010110
  1-4. NOT USED
  5.   OGM DELAY +4SEC                            : OFF
  6-8. FLASHING TIME                              : 500 MS
WSW05 = 00000110
  1-3. DIAL TONE DETECTION                        : 3.5 SEC WAITING
  4.   REMOTE ID DETECTION TIMEOUT                : 2 SEC
  5-6. BUSY TONE DETECTION (CALLING)              : AFTER DIALING
  7.   BUSY TONE DETECTION (CALLED)               : OFF
  8.   NOT USED
WSW06 = 00101100
  1-3. PAUSE KEY                                  : 3.5 SEC WAITING
  4-6. 2ND DT DETECTION TIME                      : 800 MS
  7.   2ND DT DETECTION CYCLE                     : 1 CYCLE
  8.   2ND DT INTERRUPT DETECTION TIME            : 30 MS
WSW07 = 01001100
  1-2. FREQUENCY RANGE                            : INITIAL DATA
  3.   NOT USED
  4-6. 2ND DT DETECTION LEVEL                     : -30 DBM
  7.   1ST DT INTERRUPT DETECTION TIME            : 30 MS
  8.   NOT USED
WSW08 = 01100111
  1-3. 1ST DT DETECTION TIME                      : 800 MS
  4-5. 1ST/2ND DT TIME OUT                        : 10 SEC
  6-8. 1ST DT DETECTION LEVEL                     : -42 DBM
WSW09 = 00000000
  1.   ECM FRAME                                  : 256 OCTET
  2.   NON STANDARD FACILITIES                    : ON
  3-4. TIMES OF FALL BACK                         : 4
  5.   T5 TIMER                                   : 300 SEC
  6.   T1 TIMER                                   : 35 SEC
  7-8. CALLING TIMEOUT                            : 55 SEC
WSW10 = 00010100
  1.   NOT USED
  2.   TIMING OF LAST DIGIT-MODEM CHANGE          : 100 MS
  3.   TIMING OF CML ON CNG TRANSMISSION          : 2 SEC
  4.   TIMING OF CML ON CED TRANSMISSION          : 2 SEC
  5-6. TRAINING RETRIES                           : 2
  7.   CODING METHOD MR                           : ON
  8.   CODING METHOD MMR                          : ON
WSW11 = 01011000
  1-2. FREQUENCY RANGE                            : INITIAL DATA
  3-8. ON/OFF TIME                                : 175 - 600 / 175 - 600 MS
WSW12 = 10011011
  1-2. OFF DETECTION TIME                         : 700 MS
  3-4. AUTO ANS OFF DETECTION TIME                : 7 SEC
  5-6. ON DETECTION TIME                          : 250 MS
  7-8. NOT USED
```

Fig. 6-4

4.7 Operation Check of LCD (Function code 12)

<Function>

This function allows you to check whether the LCD on the control panel works normally.

<Operating Procedure>

(1) Press the [**1**] and [**2**] keys in this order in the initial stage of the maintenance mode. The LCD shows.

(2) Press the [**Start**] button. Each time you press the [**Start**] button, the LCD cycles through the displays shown below.

The Status lamp also changes from orange, red, to green each time you press the [**Start**] button.

(3) Press the [**Stop/Exit**] button in any process of the above display cycle. The machine beeps for one second and returns to the initial stage of the maintenance mode.

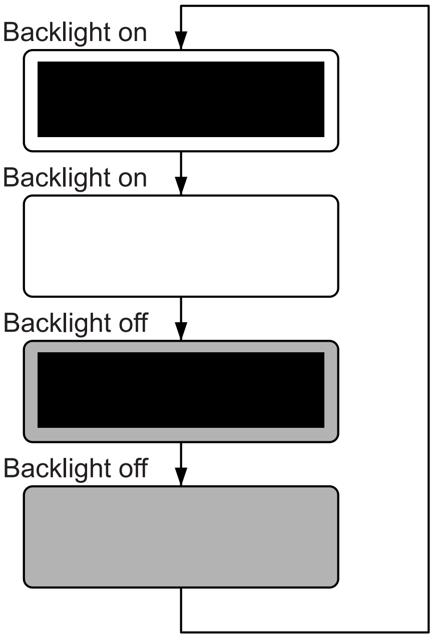


Fig. 6-5

4.8 Operational Check of Control Panel Button (Function code 13)

<Function>

This function allows you to check the control panel PCB for normal operation.

<Operating Procedure>

(1) Press the [**1**] and [**3**] keys in this order in the initial stage of the maintenance mode.
The "00" will appear on the LCD.

(2) Press the keys and buttons in the order designated in the illustration shown below.
The LCD shows the corresponding number in decimal notation each time a key or button is pressed. Check that the displayed number is correct by referring to the illustration below.
If a key or button is pressed out of order, the machine beeps and displays the "INVALID OPERATE" on the LCD. To return to the status ready to accept key & button entry for operational check, press the [**Stop/Exit**] button.

(3) After the last number key or button is pressed, the machine beeps for one second and returns to the initial stage of the maintenance mode.
To terminate this operation, press the [**Stop/Exit**] button. The machine returns to the initial stage of the maintenance mode.

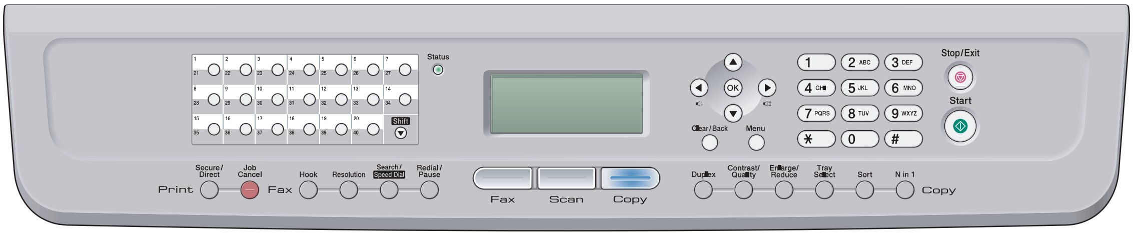


Fig. 6-6

4.9 ROM Version Check (Function code 25)

<Function>

This function allows you to check the management information of the software programs such as version information, check sum.

<Operating Procedure>

(1) Press the [**2**] key and [**5**] key in this order in the initial stage of the maintenance mode. The machine displays each of terms described below on the LCD.

(2) Press the [▲] or [▼] button to check the next term.

LCD	Description
TOTAL: Ver A*	Main firmware version information (Revision information)
PCL : Ver1.00*	Sub firmware (PCL/PS) version information (ROM size)
NET : Ver1.00	Network version information
PANEL : A08103015	Panel firmware version information
i0802312359: 1234* *1	I-FAX firmware version information
B0808071049:5708*	Boot program creation date & check sum information
U0812271600:7B0A*	Main firmware creation date & check sum information
D0812312359: 1234* *2	Demo program creation date & check sum information
P0812271602:BD40*	Sub firmware (PCL/PS) creation date & check sum information
ROM Check Sum *3	Calculate the check sum information of the main and PCL and display the “OK” if right.

*1 I-FAX firmware version does not display on the LCD, if you have not downloaded the I-FAX.

*2 In the case of the model without Demo data, the “D·········· : ····” displayed on the LCD.

*3 To perform the ROM Check Sum, press the [**OK**] button during the "ROM Check Sum" is displayed on the LCD. If the calculation result of the check sum is correct, "ROM Check Sum OK" will be displayed on the LCD, otherwise "ROM Check Sum NG" will be displayed on the LCD.

- How to display the check sum information
  Terms displayed with “*” have the check sum information as well. Press the [**OK**] button when its version information is displayed on the LCD. Press the [**OK**] button again to go back to the version information display. Press the [▲] or [▼] buttons to check the next term.

Note:

- Even if you press the [**OK**] button when each version information of Engine, Network and Panel is displayed on the LCD, you cannot check the check sum information.

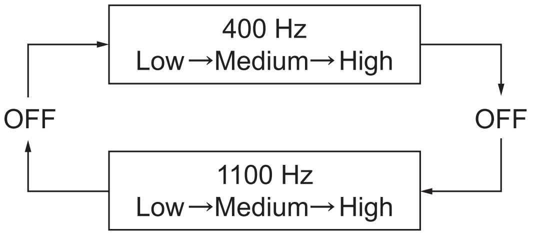
(3) To terminate this operation, press the [**Stop/Exit**] button. The machine beeps for one second and returns to the initial stage of the maintenance mode.

4.10 Sensor Operational Check (Function code 32)

<Function>
This function allows you to check whether the each sensors work correctly.

<Operating Procedure>

(1) Press the [**3**] and [**2**] keys in this order in the initial stage of the maintenance mode. The machine beeps 1100 Hz and 400 Hz tones cyclically through the following volumes for testing the speaker. To stop beeping, press the [**OK**] button.



If the sensing status are as listed below, the LCD will show the following: "C1P1C2P2T2T3BC**", "TNMPNTRMRSPOCV" and "DFDRDLDSFCFH****" (which can be switched by pressing the [**Start**] button for machines.)

Given below is the relationship among the LCD indication, sensor names and sensor status.

LCD	Sensors	Sensing status
C1	Tray1 sensor	Tray installed.
P1	Tray1 paper sensor	Paper detected.
C2	Tray2 sensor	Tray installed.
P2	Tray2 paper sensor	Paper detected.
T2	Tray2 connect sensor	Tray2 connected.
T3	Tray3 connect sensor	Tray3 connected. (Not used)
BC	Back cover sensor (Used for both standard tray and duplex tray.)	Back cover detected. (Tray detected.)
TN	Toner sensor	Toner detected.
MP	Multi-purpose tray sensor	Paper detected.
NT	New toner sensor	New toner detected.
RM	Front registration sensor	No paper detected.
RS	Rear registration sensor	No paper detected.
PO	Paper ejection sensor	No paper detected.
CV	Front cover sensor	Front cover detected.
DF	Document front sensor	No document detected.
DR	Document rear sensor	No document detected.
DL	ADF document separation sensor/ Size sensor	Document detected.
DS	ADF document switch back sensor	No document detected.
FC	FB cover sensor	Document cover closed.
FH	Document scanner home position sensor	Scanner module home position detected.

(2) Change the detecting conditions to check that the indication on the LCD changes according to the sensor states. For instance, insert paper through the document front (or rear) sensor or the registration sensor (s), open the front cover or the document cover, remove the toner cartridge, jam paper at the paper outlet, insert paper from the manual feeder, and load a paper tray, etc.

(3) Press the [**Stop/Exit**] button. The machine beeps for one second and returns to the initial stage of the maintenance mode.

Note:

- If you have opened and closed the front cover during the above procedure, you need to open and close the front cover again upon completion of the procedure.

■ Location of sensors

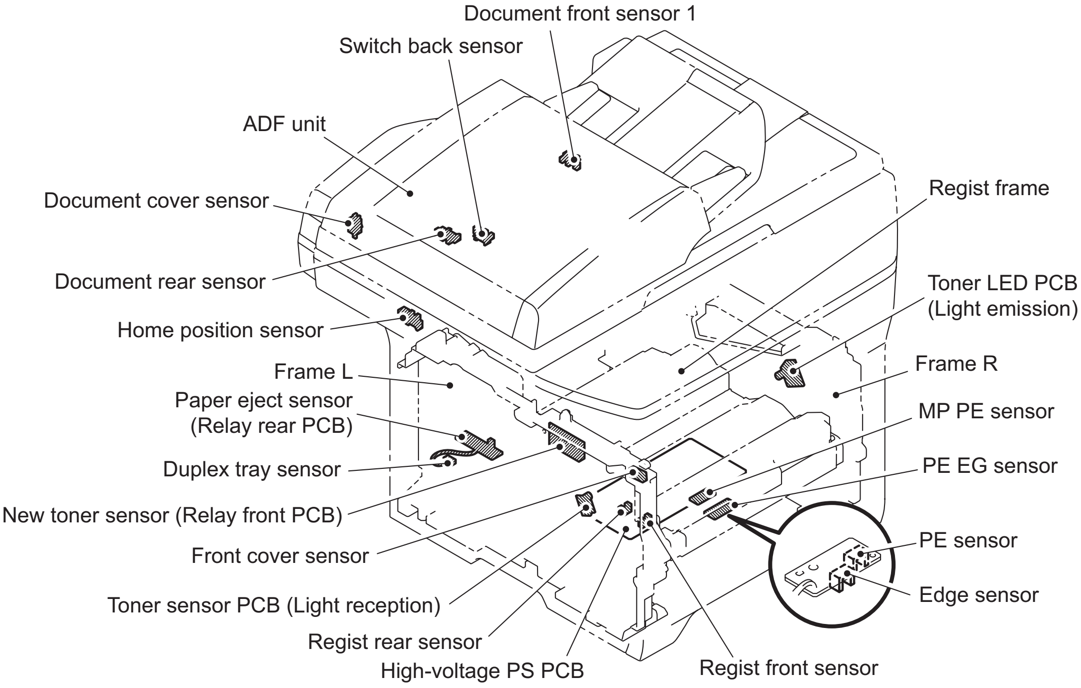


Fig. 6-7

4.11 PC Print Function (Function code 43)

<Function>
This function allows the machine change that the setting of each PC printing function indicated to the following function settings.

<Operating Procedure>

(1) Press the [**4**] and [**3**] keys in this order in the initial stage of the maintenance mode.
The “Manual Feed” will appear on the LCD.

(2) Press the [▲] or [▼] buttons to select the function you want to set and press the [**OK**] button.

(3) When select the unchanging (On/Off) parameter, press the [▲] or [▼] button to change the parameter, then press the [**OK**] button.
When select the parameter of the numeric input, enter the numeric value using the numeric keys directly, then press the [**OK**] button.

(4) If press the [**Stop/Exit**] button, the machine will return to the initial stage of the maintenance mode.

■ Function setting

LCD indication	Description	Set value	Initial value
Manual Feed	Switching of the Manual Feed	On/Off	Off
Resolution	Resolution to print	300/600/1200dpi	600
Toner Save	Switching of the Toner Save	On/Off	Off
Density	Switching of the Density level	-6 to 6	0
JB-Can Time	Setting of the time until the host time-out at the Job Cancel	2 to 225 (seconds)	4
Sleep Time	Setting of the time until enter the Sleep Mode	0 to 99 (minutes)	5
Page Protection	Switching of the protection of the page memory	Off/Letter/A4/Legal/Auto	Off
Emulation	Switching of the emulation	Auto/HP/PS	Auto
Auto I/F Time	Switching of the I/F open time	1 to 99 (seconds)	5
Media Type	Switching of the paper type	Thin/Plain/Thick/Thicker/ Trancparency/Recycled/ Bond/Envlopes/EnvThin/ EnvThick	Plain or Thin
Paper Size	Switching of the area of develop the image	Letter/Legal/A4/ Executive/B5/JISB5/A5/ B6/A6/Monarch/C5/ COM10/DL/DLL/ A4Long/PostCard/Folio	Letter or A4
Copies	Switching of the print copies	1 to 99 (pages)	1
Orientation	Switching of the print direction	PortLait/Landscape	Portlait
P-Pos X-Offset	Switching of the offset print position of the landscape orientation	-500 to 500 (1/300dpi)	0
P-Pos Y-Offset	Switching of the offset print position of the portrait orientation	-500 to 500 (1/300dpi)	0

LCD indication	Description	Set value	Initial value
AutoFF	Switching of the auto form feed	On/Off	Off
AutoFF Time	Switching of the time-out period of the auto feed	1 to 99 (seconds)	5
FF Surpress	Switching of the FF suppress	On/Off	Off
Auto LF	Switching of the auto LF	On/Off	Off
Auto CR	Switching of the auto CR	On/Off	Off
Auto WRAP	Switching of the auto CRLF at the print width	On/Off	Off
Auto SKIP	Switching of the SKIP at the back-end/tip of the paper	On/Off	On
Left Margin	Switching of the margin at the left end	0 to 145 (columus)	0
Right Margin	Switching of the margin at the right end	10 to 155 (columus)	80
Top Margin	Switching of the margin at the upper end	0 to 2.00 (inches)	0.5
Bottom Margin	Switching of the margin at the bottom end	0 to 2.00 (inches)	0.5
Lines	Number of the text lines in the page	5 to 128 (lines)	60
Error Print	Switching of the Error Print of the PostScript	On/Off	On

■ Detail description

LCD indication	Detail description
Manual Feed	Effective for the print from the PC, or for the print of the NetWorkConfig/TestPrint/Fontlist/Configuration from the panel. When select the tray on the PC, the setting becomes effective. And this setting is ignored.
Resolution	Effective only for the print from the PC. When set the Resolution on the PC, the setting becomes effective. And this setting is ignored.
Toner Save	Effective for all print, and change the setting of the Function Menu. However, as for the Copy, this setting becomes invalid. When set the Toner Save or the PC, the setting becomes effective. And this setting is ignored.
Density	Effective for the print from the PC, or for the print of the NetWorkConfig/TestPrint/FontList/Configuration from the panel. Link the setting of the Toner Save. Judge the both setting, and decide the density. When set the Density or the PC, the setting becomes effective. And this setting is ignored.
JB-Can Time	Configure the setting for until the host time-out at the Job Cancel. The setting value is the second time scale.
Sleep Time	Configure the setting for the time until shift to the Sleep Time. Change the setting of the Function Menu.
Page Protection	Configure the setting to protect the page memory, when recording in PC. Set in the PCL-Core. There is not the influence of the memory management problem of the MFC.
Emulation	Configure the setting for the Emulation. Charge the setting of the Function Menu. When the data include the ENTER LANGUAGE, the setting becomes effective. And this setting is ignored.

LCD indication	Detail description
Auto I/F Time	Configure the setting for the interface open time. The function is in the PC-Print. When the PC-Scan/Remote-SetUp works on the way, the setting becomes invalid.
Media Type	Effective for the print from the PC. When set the type of the paper on the PC, the setting becomes effective. And this setting is ignored. The default value is the Plain.
Paper Size	Switching of the area of develop the image. Does not set the Paper Size of the Menu, set the drawing size of the PC-Print. When set the size of the paper on the PC, the setting becomes effective. And this setting is ignored. The default value is different by the country setting. US is the Letter, and others are the A4.
Copies	Effective for the print from the PC. When set the number of the copies on the PC, the setting becomes effective. And this setting is ignored.
Orientation	Configure the switching for the print direction. Effective for the print from the PC.
P-Pos X-Offset	Configure the setting for the offset print position of the landscape orientation. Effective for the print from the PC. When set the X-Offset on the PC, the setting becomes effective. And this setting is ignored.
P-Pos Y-Offset	Configure the setting for the offset print position of the portrait orientation. Effective for the print from the PC. When set the Y-Offset on the PC, the setting becomes effective. And this setting is ignored.
AutoFF	Configure the setting for the ON/OFF of the Auto Form Feed. Effective for the print from the PC.
AutoFF Time	Configure the setting for the Time Out, when the Auto Form Feed is ON.
FF Surpress	Configure the setting for the skip of the blank page. Effective for the print from the PC. The blank data in the Copy/Fax cannot be turned ON/OFF in this setting.
Auto LF	Configure the setting for the auto line feed.
Auto CR	Configure the setting for the auto Carriage Return.
Auto WRAP	Configure the setting for the auto CRLF at the print width.
Auto SKIP	Configure the setting for the skip at the back-end/tip of the paper and add the blank space.
Left Margin	Configure the setting for the column space at the left end.
Right Margin	Configure the setting for the column space at the right end.
Top Margin	Configure the setting for the space at the upper end.
Bottom Margin	Configure the setting for the space at the bottom end.
Lines	Configure the setting for the number of the lines in the PCL.
Error Print	Configure the setting for the Error Print of the BR-Script 3.

4.12 Switching the USB Setting (Function code 45)

<Function>

If a Vista supported PC connect with a USB device by USB full-speed 2.0, the PC's operation system may be unable to recognize the serial number of the USB device depending on the PC and the USB device. In that case, the virtual printing port for USB will increase continually whenever the PC connects to the USB device. This function can solve the problem by switching the return value of serial number to "0".

- USBNo.=ON: Return to the serial number of the machine.
- USBNo.=OFF: Return to the "0".

<Operating Procedure>

(1) Press the [**4**] and [**5**] keys in this order in the initial stage of the maintenance mode. The “USBNo.=ON” will appear on the LCD.

(2) Press the [**OK**] button. and select the “USBNo. = ON” or “USBNo. = OFF” by pressing the [▲] or [▼] button. And press the [**OK**] or [**Start**] button. The machine beeps for approx. one second, and return to the initial stage of the maintenance mode.

4.13 EEPROM Customizing (User-accessible) (Function code 52)

<Function>

This function allows users to customize the EEPROM settings such as language, function settings or worker switch settings.

Note:

- This function is applicable Europe model only.

<Operating Procedure>

(1) Press the [**Menu**], [**Start**] and [**Menu**] buttons in this order in the ready state.
The “0” will appear on the LCD.

(2) Press the [**5**] and [**2**] keys in this order.
The “Set Country” will appear on the LCD, and the country name will appear on the LCD.

(3) Press the [▲] or [▼] button to display the country name where the machine is used.
Press the [**OK**] button while the country name is being indicated.

(4) The “1.Yes, 2.No” will appear on the LCD. Press the [**1**] key when it is good in the displayed country.
The EEPROM is customized, and the machine returns to the ready state.
Press the [**2**] key when it is mistake in the displayed country. Return to the procedure (3) and enter the country again.

4.14 Received Data Transfer Function (Function code 53)

<Function>

This function transfers received FAX data to another machine. It is useful when the machine cannot print received data due to the printing mechanism being defective.

Note:

- The number of files that can be transferred at a time is 99. To transfer 100 files or more, carry out the following procedure more than one time.

<Operating Procedure>

(1) Press the [**5**] and [**3**] keys in this order in the initial stage of the maintenance mode.
The "FAX TRANSFER" appears on the LCD.

(2) To check the number of received files, press the [**1**] key.
The "1.NO. OF JOBS" appears on the LCD.
Press the [**OK**] button, and the number of received files appears, just as "NO. OF. JOBS: 10."

(3) To transfer the activity report only, press the [**2**] key.
The "2.ACTIVITY" appears.
To transfer received files (together with the activity report), press the [**3**] key.
The "3.DOCUMENTS" appears. Note that if there is no received file, the "NO DOCUMENTS" appears.

(4) To transfer the communication list for the latest communication, press the [**4**] key.
The "4.COM.LIST (NEW)" appears.
To transfer the communication list for last three errors, press the [**5**] key.
The "5.COM.LIST (ERR3)" appears.

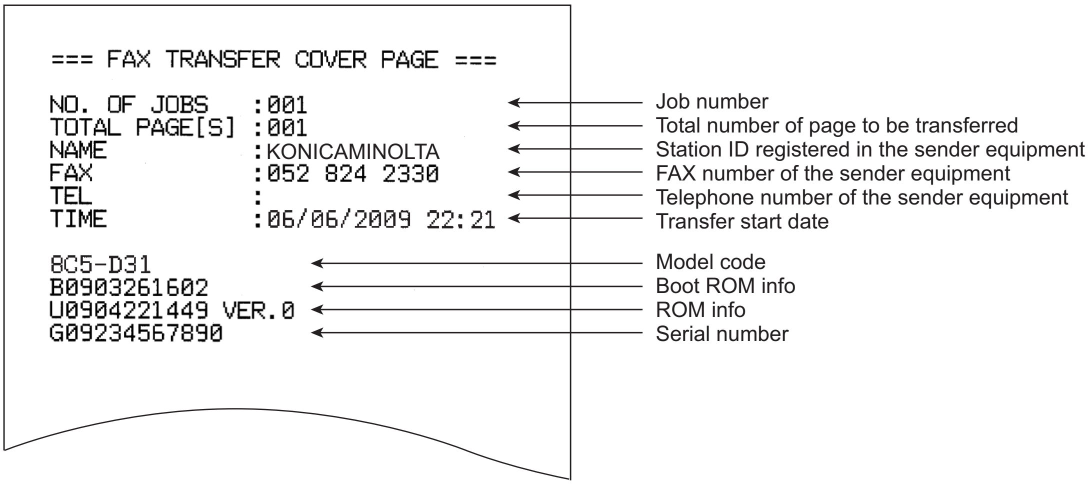
(5) With the "2.ACTIVITY," "3.DOCUMENTS," "4.COM.LIST (NEW)," or "5.COM.LIST (ERR3)" being displayed, press the [**OK**] button.
The "ENTER NO. & SET" appears.

(6) Enter the telephone number of the receiver machine and press the [**OK**] button again.

Note:

- Be sure to type the telephone number with the numerical buttons. No one-touch dialing is allowed in this procedure.
  The machine displays the "ACCEPTED" for approx. two seconds and starts dialing to transfer data.
  No station ID will be attached. A cover page and end page as shown on the next page will be automatically attached, instead.

■ Cover page sample

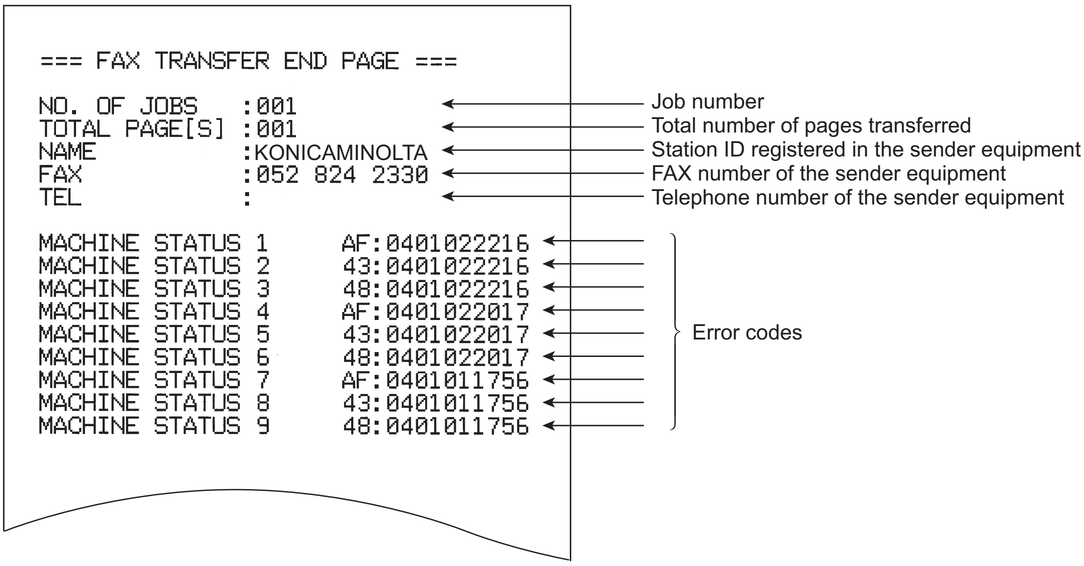


```
=== FAX TRANSFER COVER PAGE ===

NO. OF JOBS    :001
TOTAL PAGE[S] :001
NAME           :KONICAMINOLTA
FAX            :052 824 2330
TEL            :
TIME           :06/06/2009 22:21

8C5-D31
B0903261602
U0904221449 VER.0
G09234567890
```

Job number
Total number of page to be transferred
Station ID registered in the sender equipment
FAX number of the sender equipment
Telephone number of the sender equipment
Transfer start date
Model code
Boot ROM info
ROM info
Serial number

Fig. 6-8

■ End page sample



```
=== FAX TRANSFER END PAGE ===

NO. OF JOBS    :001
TOTAL PAGE[S] :001
NAME           :KONICAMINOLTA
FAX            :052 824 2330
TEL            :

MACHINE STATUS 1      AF:0401022216
MACHINE STATUS 2      43:0401022216
MACHINE STATUS 3      48:0401022216
MACHINE STATUS 4      AF:0401022017
MACHINE STATUS 5      43:0401022017
MACHINE STATUS 6      48:0401022017
MACHINE STATUS 7      AF:0401011756
MACHINE STATUS 8      43:0401011756
MACHINE STATUS 9      48:0401011756
```

Job number
Total number of pages transferred
Station ID registered in the sender equipment
FAX number of the sender equipment
Telephone number of the sender equipment
Error codes

Fig. 6-9

4.15 Fine Adjustment of Scan Start/End Positions (Function code 54)

<Function>
This function allows you to adjust the scanning start and end positions with the ADF and document scanner unit.

<Operating Procedure>

(1) Press the [**5**] and [**4**] keys in this order in the initial stage of the maintenance mode.
The “SCAN START ADJ.” will appear on the LCD.

(2) The “▲: ADF ▼: FB” will appear after two seconds.
Select one of them that you want to adjust the start position.
If you want to adjust the start position of the ADF, press [▲] button, and if you want to adjust that of the document scanner unit, press [▼] button.

(3) Press the [**1**] or [**2**] key to display the present compensation level for the start position. Compensation levels can be adjusted in 11 steps from +5 to –5 (mm).

(4) Press the [▲] button to increase compensation levels, and the [▼] button to lower them. Press the [**Stop/Exit**] button so that the machine beeps for one second and returns to the initial state of the maintenance mode without adjusting compensation levels.

(5) Set the compensation level and press the [**OK**] button.
The “ACCEPTED” will appear on the LCD. One second later, the machine “▲: ADF ▼: FB” will appear on the LCD.

(6) Press the [**Stop/Exit**] button when finish the adjustment. The machine beeps for one second and returns to the initial state of the maintenance mode.

Note:

- The correlation between the scan start/end positions and compensation levels is shown below.

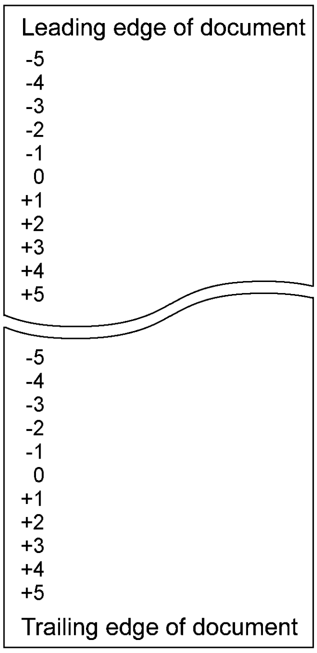


Fig. 6-10

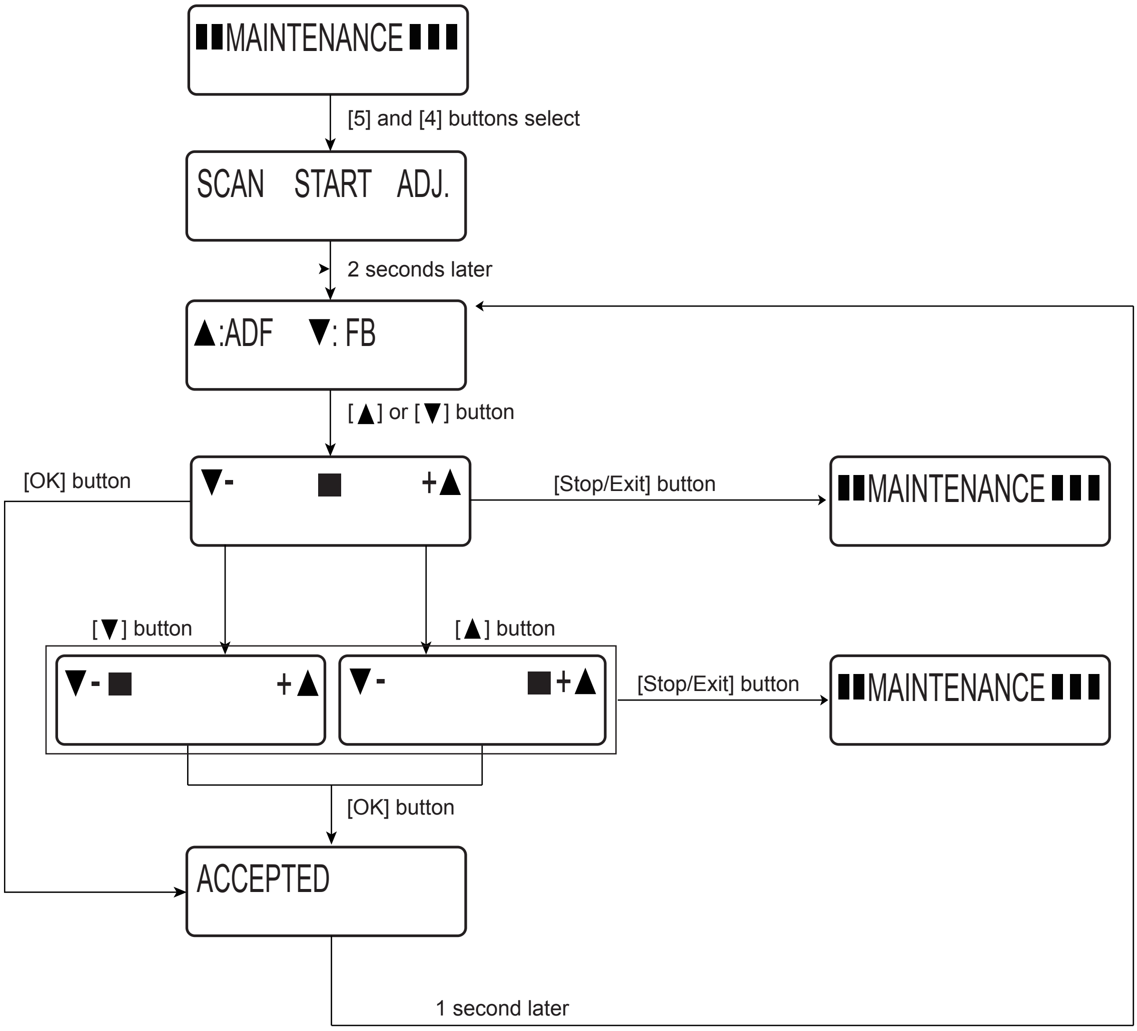

MAINTENANCE
[5] and [4] buttons select
SCAN START ADJ.
2 seconds later
▲:ADF ▼: FB
[▲] or [▼] button
[OK] button
▼- ■ +▲
[Stop/Exit] button
MAINTENANCE
[▼] button
[▲] button
▼- ■ +▲
▼- ■+▲
[Stop/Exit] button
MAINTENANCE
[OK] button
ACCEPTED
1 second later

Fig. 6-11

4.16 Acquisition of White Level Data and CCD Scanner Area Setting (Function code 55)

<Function>

This function allows the machine to obtain white level data for the scanner module and save it together with the scanner module area into the EEPROM on the main PCB.

<Operating Procedure>

(1) Press the [**5**] key twice in the initial stage of the maintenance mode.
"PRESS START" will appear on the LCD.

(2) Press [**START**] button, then "SCANNER AREA START" will appear on the LCD.

(3) When setting of the scanner area is completed, a 4-digit number will appear on the LCD. (e.g., 4723)

* If you press the [**Stop/Exit**] button at this point, the machine will beep for one second and return to the initial stage of the maintenance mode.

Enter the input data value of a 5-digit number based on the 4-digit number to be displayed referring to the table below. (e.g., 4723 → 47247)

(4) The machine saves the magnification compensation setting value into the EEPROM, and then it beeps for one second and returns to the initial stage of the maintenance mode.

	Maintenance mode 55 required input data		Input data
1	4610 - 4619	→	46156
2	4620 - 4629	→	46257
3	4630 - 4639	→	46358
4	4640 - 4649	→	46459
5	4650 - 4659	→	46550
6	4660 - 4669	→	46651
7	4670 - 4679	→	46752
8	4680 - 4689	→	46853
9	4690 - 4699	→	46954
10	4700 - 4709	→	47056
11	4710 - 4719	→	47157
12	4720 - 4729	→	47247
13	4730 - 4739	→	47359
14	4740 - 4749	→	47450
15	4750 - 4759	→	47551
16	4760 - 4769	→	47652
17	4770 - 4779	→	47753
18	4780 - 4789	→	47854
19	4790 - 4799	→	47955
20	4800 - 4809	→	48057
21	4810 - 4819	→	48158
22	4820 - 4829	→	48259
23	4830 - 4838	→	48350

Note:

- You need to do this procedure for Function code 55, if you replace the document scanner unit, CCD unit or main PCB ASSY.

4.17 Paper Feeding and Ejecting Test (Function code 67)

<Function>

This function allows you to check that a sheet of paper is fed and ejected correctly by printing the grid pattern on a page, whose interval is 1cm.

<Operating Procedure>

(1) Press the [**6**] and [**7**] keys in this order in the initial stage of the maintenance mode.

(2) The “SELECT A4” will appear on the LCD. Select the paper size by using [▼] [▲] button. Press the [**OK**] button.

(3) The “SELECT: TRAY1” will appear on the LCD. Select the paper tray by using [▼] [▲] button. Press the [**OK**] button.

(4) The “PAPER DEED TEST” will appear on the LCD. The test printing is started, and the grid pattern is printed.

(5) Press the **[Stop/Exit]** button so that machine stops printing. Then the machine returns to the initial stage of the maintenance mode.

Note:

- In the case that the front cover is opened, or that there is no paper in the tray during test printing, the test printing is stopped.

4.18 EEPROM Customizing (Function code 74)

<Function>

This function allows you to customize the EEPROM according to language, function settings, and worker switch settings.

Note:

- If you replace the main PCB, be sure to carry out this procedure.

<Operating Procedure>

(1) Press the [**7**] and [**4**] keys in this order in the initial stage of the maintenance mode.
The current customizing code appears.

(2) Enter the desired customizing code 4 digit numbers listed on next page (e.g., bizhub 20 (UK): 0304). The newly entered code appears.

Note:

- The machine does not work properly when an incorrect code is entered.

(3) Press the [**Start**] button.
The machine saves the setting and displays the “PARAMETER INIT” on the LCD. The machine beeps for one second and returns to the initial stage of the maintenance mode.

If you press the [**Stop/Exit**] button or no buttons are pressed for one minute in the above procedure, the machine stops the procedure, beeps for one second and returns to the initial stage of the maintenance mode.
The modification of the setting data is not saved in this case.

<EEPROM customizing code list>

Destination	bizhub 20
US	0301
Germany	0303 (0354) *
UK	0304 (0354) *
France	0305 (0354) *
Belgium	0308 (0354) *
Netherlands	0309 (0354) *
Switzerland	0310 (0354) *
Austria	0314 (0354) *
Spain	0315 (0354) *
Italy	0316 (0354) *
Portugal	0318 (0354) *
Norway	0307 (0354) *
Sweden	0326 (0354) *
Finland	0312 (0354) *
Denmark	0313 (0354) *
Czech	0337 (0354) *
Hungary	0338 (0354) *
Poland	0339 (0354) *
Bulgaria	0332 (0354) *
Romania	0333 (0354) *
Slovakia	0330 (0354) *
Others	0350 (0354) *
South Africa/Gulf	0324 (0354) *
Russia	0348

* If you can determine the country where the customer uses the machine, enter the code outside the brackets. If not, enter the code inside.

Specifications are subject to change without notice.

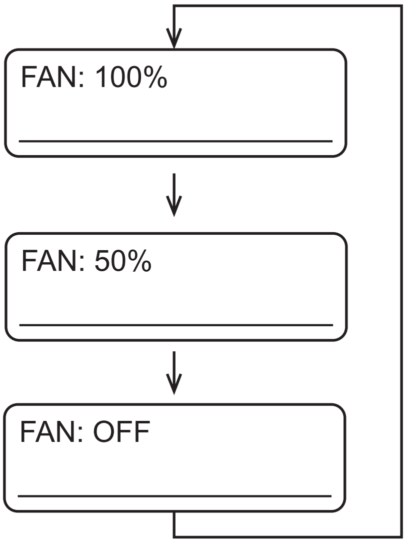
4.19 Operational Check of Fans (Function code 78)

<Function>

This function is to check whether each of fans is operating correctly or not. The following fans are checked.

<Operating Procedure>

(1) Press the [**7**] and [**8**] keys in this order in the initial stage of the maintenance mode. The indication will appear on the LCD as shown in the figure below.


FAN: 100%

FAN: 50%

FAN: OFF

Fig. 6-12

(2) Press the [**Start**] button so that the LCD indication is changed in the order shown in the figure above. The fan operation is also changed as indicated on the LCD.

(3) Press the [**Stop/Exit**] button so that the machine stops checking the fans, beeps for one second and returns to the initial stage of the maintenance mode.

Note:
- If the air intake fan (AIR) error occurs, the following error message appears on the LCD.
  If you press the [**Stop/Exit**] button, the machine returns to the initial stage of the maintenance mode without recovering from this error. To recover from this error, turn the power switch of the machine off and then turn it on again.

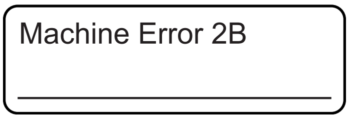

Machine Error 2B

Fig. 6-13

4.20 Display of the Machine's Log Information (Function code 80)

<Function>

The machine may display its log information on the LCD.

<Operating Procedure>

(1) Press the [**8**] and [**0**] keys in this order in the initial stage of the maintenance mode. The USB serial number appears on the LCD.

(2) Press the [**Start**] button. Each time the [**Start**] button is pressed, one of the following information items appears on the LCD. The representative items are given below.

(3) Press the [**Stop/Exit**] button so that the machine stops this operation, beeps for one second and returns to the initial stage of the maintenance mode.

*1 When you press the [**OK**] button while the MACHINE ERR error code is displayed, the last error code is displayed. Each time the [**OK**] button is pressed, up to the ten error codes are displayed one by one in reverse order.

*2 When you press the [**OK**] button while the COMEER1 error is displayed, the last error, the previous error, and the second previous error are displayed in turn. The indication changes from COMEER1, COMEER2, to COMEER3.

USB:	Serial number
DRUM:	Drum count
DRUM_PG	Number of printed pages with the drum unit.
DRUM_CH	Number of times the drum unit has been replaced.
KTN_PG1:	Number of printed pages with the Black toner cartridge.
KTN_PG2:	Previous number of printed pages with the Black toner cartridge.
KTN_CH:	Number of times the Black toner cartridge has been replaced.
WTNR_PG:	Number of printed pages with the waste toner box. *1
WTNR_CH:	Number of times the waste toner box has been replaced. *1
BELT_PG:	Number of printed pages with the belt unit. *1
BELT_CH:	Number of times the belt unit has been replaced. *1
PFMP_PG:	Number of Printed pages with the MP paper feeding kit.
PFMP_CH:	Number of times the MP paper feeding kit has been replaced.
PFK1_PG:	Number of Printed pages with the tray 1 paper feeding kit.
PFK1_CH:	Number of times the tray 1 paper feeding kit has been replaced.
PFK2_PG:	Number of printed pages with the tray 2 paper feeding kit.
PFK2_CH:	Number of times the tray 2 paper feeding kit has been replaced.
FUSR_PG:	Number of printed pages with the fuser unit.
FUSR_CH:	Number of times the fuser unit has been replaced.
LASR_PG:	Number of printed pages with the laser unit.
LASR_CH:	Number of times the laser unit has been replaced.
KCVRGUSI:	Coverage with the toner cartridge. (%) *2
KCVRGACC:	Cumulative coverage (%) *2
TTL_PG:	Total number of printed pages
TTLCOPY:	Number of copies made
TTLPCPT:	Number of PC prints made

TTLFAX:	Number of FAX outputs made
TR1_PG:	Number of pages picked up from the tray 1.
TR2_PG:	Number of pages picked up from the tray 2.
MP_PG:	Number of pages picked up from the MP.
DX_PG:	Number of pages picked up from the duplex.
A4+LTR:	Number of A4/Letter size sheets picked up.
LG+A4L:	Number of LEGAL/A4 LONG size sheets picked up.
B5+EXE:	Number of B5/Executive size sheets picked up.
ENVLOP:	Number of envelopes picked up.
A5:	Number of A5 size sheets picked up.
OTHER:	Number of other-size sheets picked up.
PLTNRE:	Number of Plain/Thin/Recycled sheets made.
TRANSP:	Number of Transparency mode.
TKTRBD:	Number of Thick/Thicker/Bond made.
ENVTYP:	Number of envelopes picked up.
HAGAKI:	Number of HAGAKI
LABEL:	Number of label
ADSX_PG:	Number of pages scanned with the ADF. (Simplex scanning)
ADDX_PG:	Number of pages scanned with the ADF. (Duplex scanning)
FB_PG:	Number of pages scanned with the document scanner unit.
KDEV_BIAS:	Black developing bias voltage
POWER:	Total energization time
PWRCNT:	Number of power ON
TTL_JAM:	Total number of jams
TR1_JAM:	Number of jams that occurred at the tray 1.
TR2_JAM:	Number of jams that occurred at the tray 2.
MP_JAM:	Number of jams that occurred at the MP.
DX_JAM:	Number of jams that occurred at the duplex.
IN_JAM:	Number of jams that occurred inside the machine.
RE_JAM:	Number of jams that occurred at the ejecting.
ADSX_JAM:	Number of jams occurred in simplex scanning with the ADF.
ADDX_JAM:	Number of jams occurred in duplex scanning with the ADF.
HODN_ER:	Number of electric discharge error.
FUSR_ER:	Number of fuser error.
MTLK_ER:	Number of motor lock error.
MACHINE ERR_01 to 10	Last machine error code 01 to 10
COMERR1 to 3	Last communication error code 1 to 3

*[1] Not counted.

*[2] Some margin of error must be taken into consideration because coverage for the printable area of A4-size paper is calculated using video signals.

4.21 Error Code Indication (Function code 82)

<Function>

This function displays an error code of the machine on the LCD.

<Operating Procedure>

(1) Press the [**8**] and [**2**] keys in this order in the initial stage of the maintenance mode. The machine displays "MACHINE ERROR X X" on the LCD.

(2) Press the [**Stop/Exit**] button. The machine beeps for one second and returns to the initial stage of the maintenance mode.

4.22 Output of Transmission Log to the Telephone Line (Function code 87)

<Function>

This function outputs the transmission log (that the machine has stored about the latest transmission) to the telephone line. It allows the service personnel to receive the transmission log of the user's machine at a remote location and use it for analyzing problems arising in the user's machine.

<Operating Procedure>

(1) If the user's machine has a transmission-related problem, call the user's machine at a remote location from your machine.

(2) If the line is connected, have the user perform the following:

  1) Hook up to the external phone.

  2) Press the [**Menu**], [**Start**], [**Menu**] buttons in this order.

  3) Press the [**8**] and [**7**] keys.
  The above operation makes the user's machine send CNG to your machine for sending the transmission log.

(3) If you hear the CNG sent from the user's machine, press the [**Start**] button of your machine.
Your machine will start to receive the transmission log from the user's machine.

4.23 Counter Reset After Replacing the Fuser Unit,Laser Unit and Paper Feed Kit (Function code 88)

<Function>
The number of replacement is increased by one, and the warning indication “Replace ***” is cleared, with implementing this operation after replacing the fuser unit, laser unit and paper feed Kit (MP, T1, T2).

<Operating Procedure>

(1) Press the [**8**] and [**8**] keys in this order in the initial stage of the maintenance mode.

(2) The LCD shows the “Reset Laser Unit”.

(3) Press the [▲] or [▼] button to select the item you want to reset. The LCD shows.
“Reset-Laser Unit”
“Reset PF-KIT T2”
“Reset PF-KIT T1”
“Reset PF-KIT MP”
“Reset-Fuser Unit”

(4) Press the [**OK**] or [**Start**] button, then “ *** OK?” will appear on the LCD.

(5) OK: Press the [**Start**] button to reset the counter of the selected part and returns the operating procedure (2) mode.

NG: Press the [◀] button to return the operating procedure (2) mode. Then select again the part which you want to reset by using [▼] button or [▲] button.

4.24 Maintenance Mode Finish (Function code 99)

<Function>
Finish the maintenance mode.

<Operating Procedure>

(1) Press the [**9**] key twice in the initial stage of the maintenance mode.

(2) The maintenance mode is finished, and the machine returns to the standby status.

5. OTHER SERVICE FUNCTIONS

5.1 Resetting the Periodical Maintenance Parts Life

■ Resetting the Life Counter of the Fuser Unit

<Function>
This function allows you to reset the page counter of the fuser unit and increase the number of replacement times by one.

<Operating Procedure>

(1) Press the [**3**] and [**9**] keys at the same time in the ready state.
The "Reset Menu" will appear on the LCD.

(2) Press the [▲] button a few times to select "Fuser".

(3) Press the [**OK**] button.
The "1. Reset / 2. Exit" will appear on the LCD.

(4) Press the [**1**] key when resetting the life counter of the fuser unit. Press the [**2**] key if not resetting.

(5) The "Accepted" will appear on the LCD if pressing the [**1**] key. The page counter of the fuser unit is reset, and the number of replacement times is increased by one. Then, the machine returns to the ready state. If pressing the [**2**] key, the machine do not reset the page counter and the "Fuser" will appear on the LCD.

■ Resetting the Life Counter of the Drum Unit

<Function>
This function allows you to reset the page counter of the drum unit and increase the number of replacement times by one.

<Operating Procedure>

(1) Press the [**3**] and [**9**] keys at the same time in the ready state.
The "Reset Menu" will appear on the LCD.

(2) Press the [▲] button a few times to select "Drum".

(3) Press the [**OK**] button.
The "1. Reset / 2. Exit" will appear on the LCD.

(4) Press the [**1**] key when resetting the life counter of the drum unit. Press the [**2**] key if not resetting.

(5) The "Accepted" will appear on the LCD if pressing the [**1**] key. The page counter of the drum unit is reset, and the number of replacement times is increased by one. Then, the machine returns to the ready state. If pressing the [**2**] key, the machine do not reset the page counter and the "Drum" will appear on the LCD.

■ Resetting the Life Counter of the Paper Feeding Kit

<Function>
This function allows you to reset the page counter of the paper feeding kit (1 or 2) and increase the number of replacement times by one.

<Operating Procedure>

(1) Press the [**3**] and [**9**] keys at the same time in the ready state.
The “Reset Menu” will appear on the LCD.

(2) Press the [▲] button a few times to select “PF Kit 1” or “PF Kit 2”.

(3) Press the [**OK**] button.
The “1. Reset / 2. Exit” will appear on the LCD.

(4) Press the [**1**] key when resetting the life counter of the paper feeding kit. Press the [**2**] key if not resetting.

(5) The “Accepted” will appear on the LCD if pressing the [**1**] key. The page counter of the paper feeding kit is reset, and the number of replacement times is increased by one. Then, the machine returns to the ready state. If pressing the [**2**] key, the machine do not reset the page counter and the “PF Kit 1” or “PF Kit 2” will appear on the LCD.

■ Resetting the Life Counter of the MP Paper Feeding Kit

<Function>
This function allows you to reset the page counter of the MP paper feeding kit and increase the number of replacement times by one.

<Operating Procedure>

(1) Press the [**3**] and [**9**] keys at the same time in the ready state.
The “Reset Menu” will appear on the LCD.

(2) Press the [▲] button a few times to select “PF Kit MP”.

(3) Press the [**OK**] button.
The “1. Reset / 2. Exit” will appear on the LCD.

(4) Press the [**1**] key when resetting the life counter of the MP paper feeding kit. Press the [**2**] key if not resetting.

(5) The “Accepted” will appear on the LCD if pressing the [**1**] key. The page counter of the MP paper feeding kit is reset, and the number of replacement times is increased by one. Then, the machine returns to the ready state. If pressing the [**2**] key, the machine do not reset the page counter and the “PF Kit MP” will appear on the LCD.

■ Resetting the Life Counter of the Laser Unit

<Function>
This function allows you to reset the page counter of the laser unit and increase the number of replacement times by one.

<Operating Procedure>

(1) Press the [**3**] and [**9**] keys at the same time in the ready state.
The "Reset Menu" will appear on the LCD.

(2) Press the [▲] button a few times to select "Laser".

(3) Press the [**OK**] button.
The "1. Reset / 2. Exit" will appear on the LCD.

(4) Press the [**1**] key when resetting the life counter of the laser unit. Press the [**2**] key if not resetting.

(5) The "Accepted" will appear on the LCD if pressing the [**1**] key. The page counter of the laser unit is reset, and the number of replacement times is increased by one. Then, the machine returns to the ready state. If pressing the [**2**] key, the machine do not reset the page counter and the "Laser" will appear on the LCD.

5.2 Develop Roller / Developing Bias Voltage Counter Reset Function

Since print density is likely to become darker as the toner gets older, the developing bias is lowered by degrees (bias voltage is reduced) according to the number of develop roller rotations so that an almost fixed density can be maintained from the beginning to the end. The developing bias voltage can be verified in the display of log information (Function code 80).

In the case that the toner cartridge is replaced with a new one, the develop roller counter and developing bias voltage are reset at the same time. This function allows you to reset these manually.

Panel Operation	Function
Pressing the [**Clear/Back**] button while the front cover is being opened.	Menus of the develop roller counter reset

<Operating Procedure>

(1) Press the [**Clear/Back**] button while the front cover is being opened.

(2) The "Replace Drum ?" "1. Yes 2. No" will appear on the LCD. If resetting the counter, press the [**1**] key. If not, press the [**2**] key.

(3) Press the [*****], [**0**] and [**0**] key in this order, the counter will reset and "Accepted" will appear on the LCD.

(4) The machine returns to the status that the front cover is opened.

Note:

- If there is no operation for 60 seconds or more, the machine automatically deactives the develop roller / developing bias voltage counter reset function. The "Cover is Open Close the Front Cover" will appear on the LCD. Then, the machine returns to the ready state.

5.3 Drum condensation countermeasure mode

The printing spots may occur with the condensation of the surface of the drum in the high humidity environment. When the drum condensation countermeasure mode is set to ON to follow the procedure described below, you can remedy the condensation of the surface of the drum in drying by heat of the fuser unit.

<Operating Procedure>

(1) Open the front cover.

(2) Press the [**Enlarge/Reduce**] button.
The LCD shows the
"LONG WARMUP MODE
1. On
2. Off "

(3) Select the "ON" or "OFF" by pressing the [**1**] or [**2**] button, and press the [**OK**] button.
The LCD shows the "Accepted", and the machine returns to the standby status.

5.4 Unlocking and Clearing the Password of the Function Lock / Setting Lock

■ How to clear the password

The user's can not clear the password that registered by operation of the panel. Perform the following procedures to clear the registered password.

<Operating Procedure>

(1) Press the [**Menu**], [**#**], [**2**], [**7**], [**9**], [**0**] and [**0**] button in this order in the ready state.
The "**0**" will appear on the LCD.

(2) The registered password is cleared, and the machine returns to the ready state.

5.5 Clearing the Data of the Secure Print

If forgot the password of the Secure Print, turn the power switch off and then turn it on again to clear the printing data.

CHAPTER 7

CIRCUIT DIAGRAMS, WIRING DIAGRAM

CHAPTER 7 CIRCUIT DIAGRAMS, WIRING DIAGRAM

This chapter provides the circuit diagrams of the High-voltage power supply PCB, LVPS PCB and NCU PCB and the wiring diagrams that help you understand the connections between PCBs.

CONTENTS

1. CIRCUIT DIAGRAMS

High-voltage Power Supply PCB Circuit Diagram

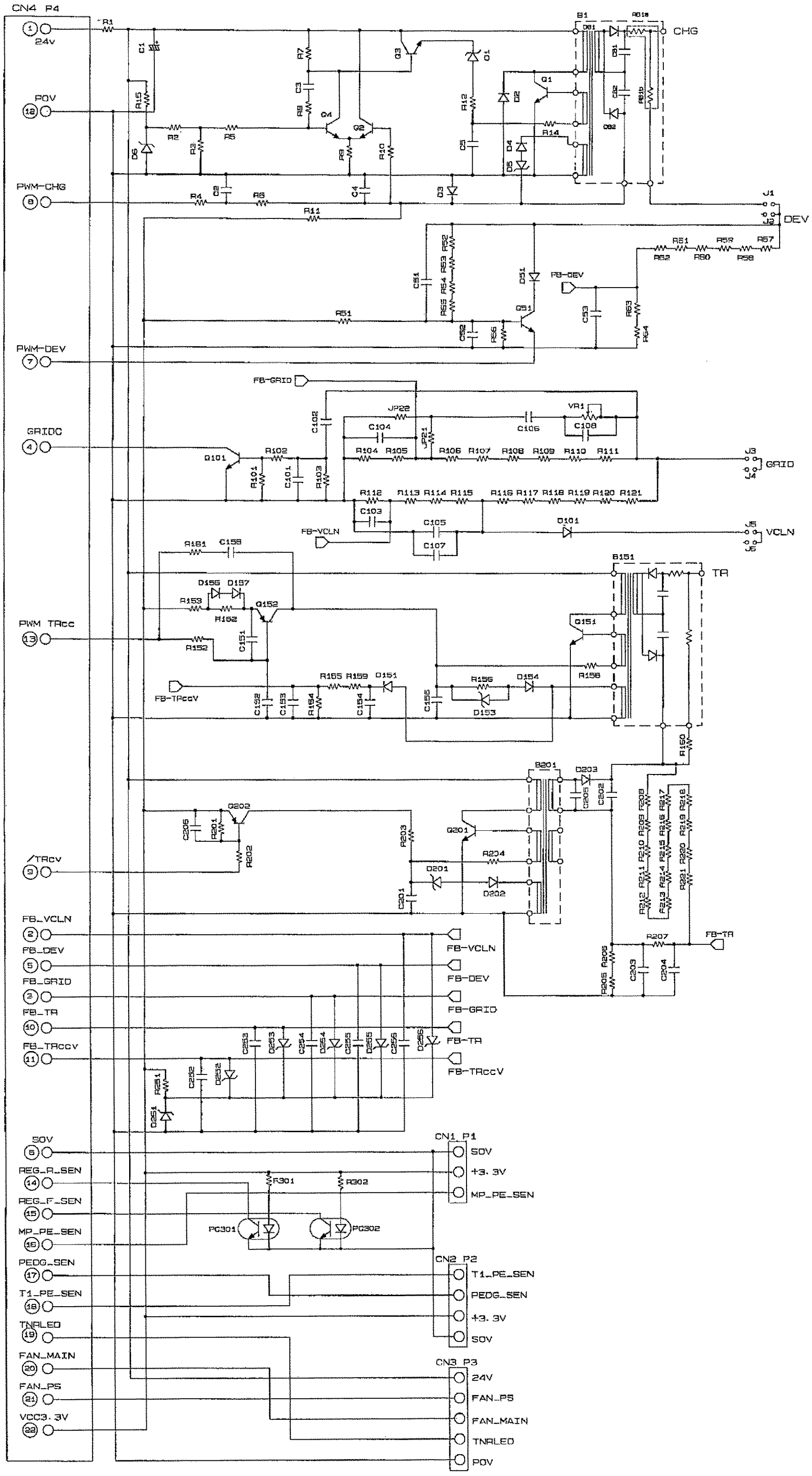


Fig. 7-1

■ LVPS PCB Circuit Diagram (230V)

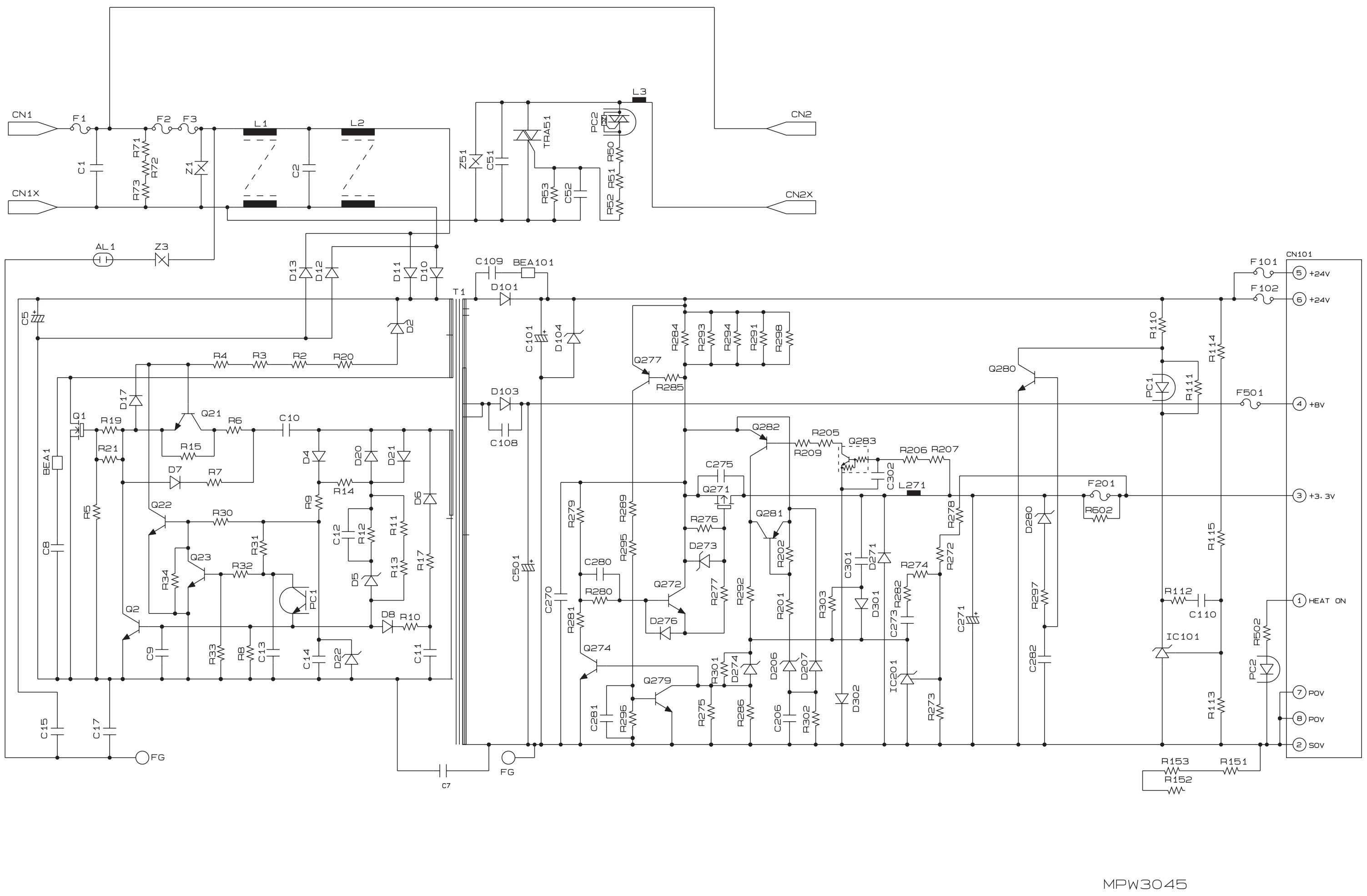


Fig. 7-2

■ LVPS PCB Circuit Diagram (115V)

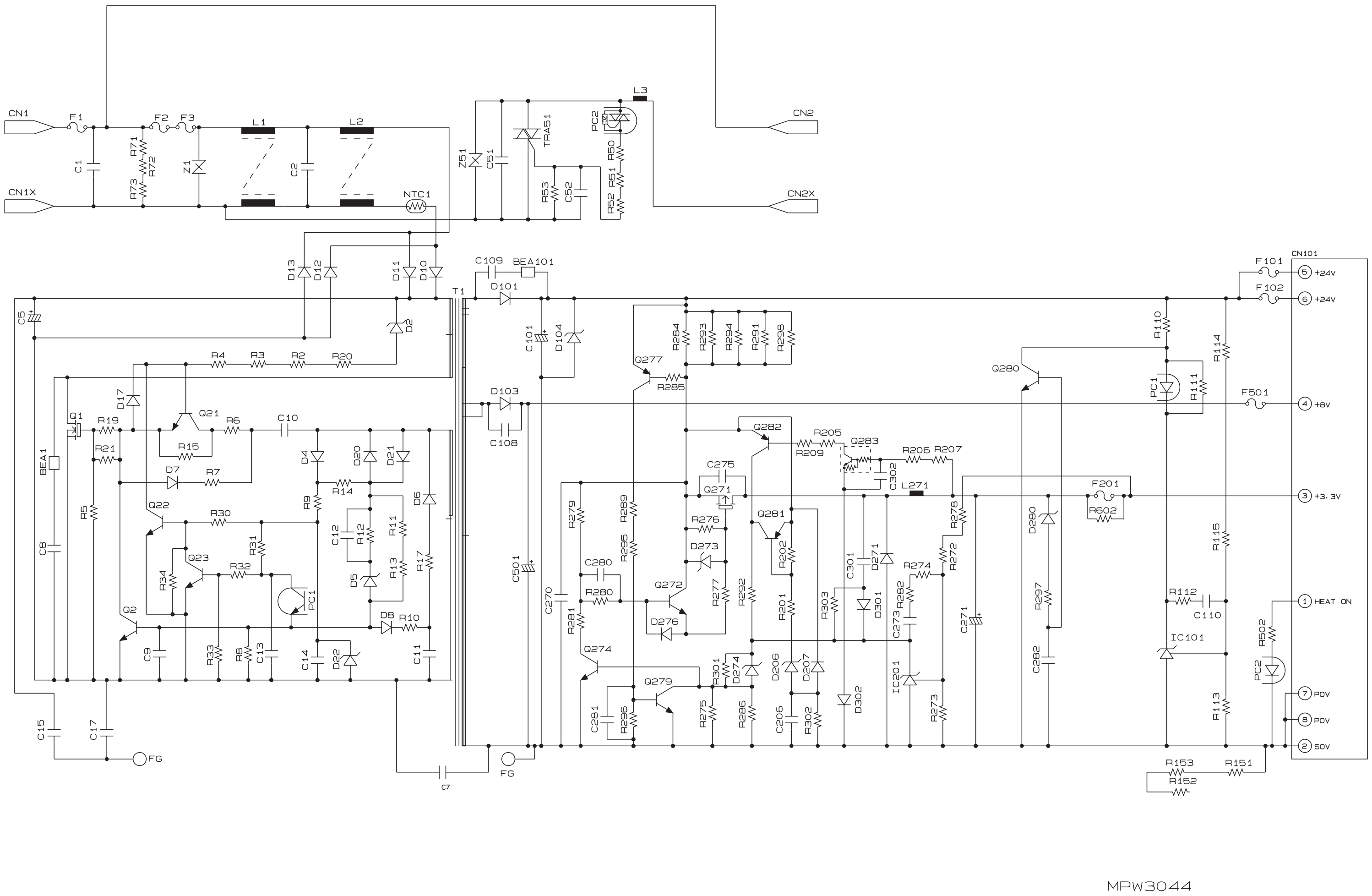


Fig. 7-3

■ NCU PCB circuit diagram : USA/Canada

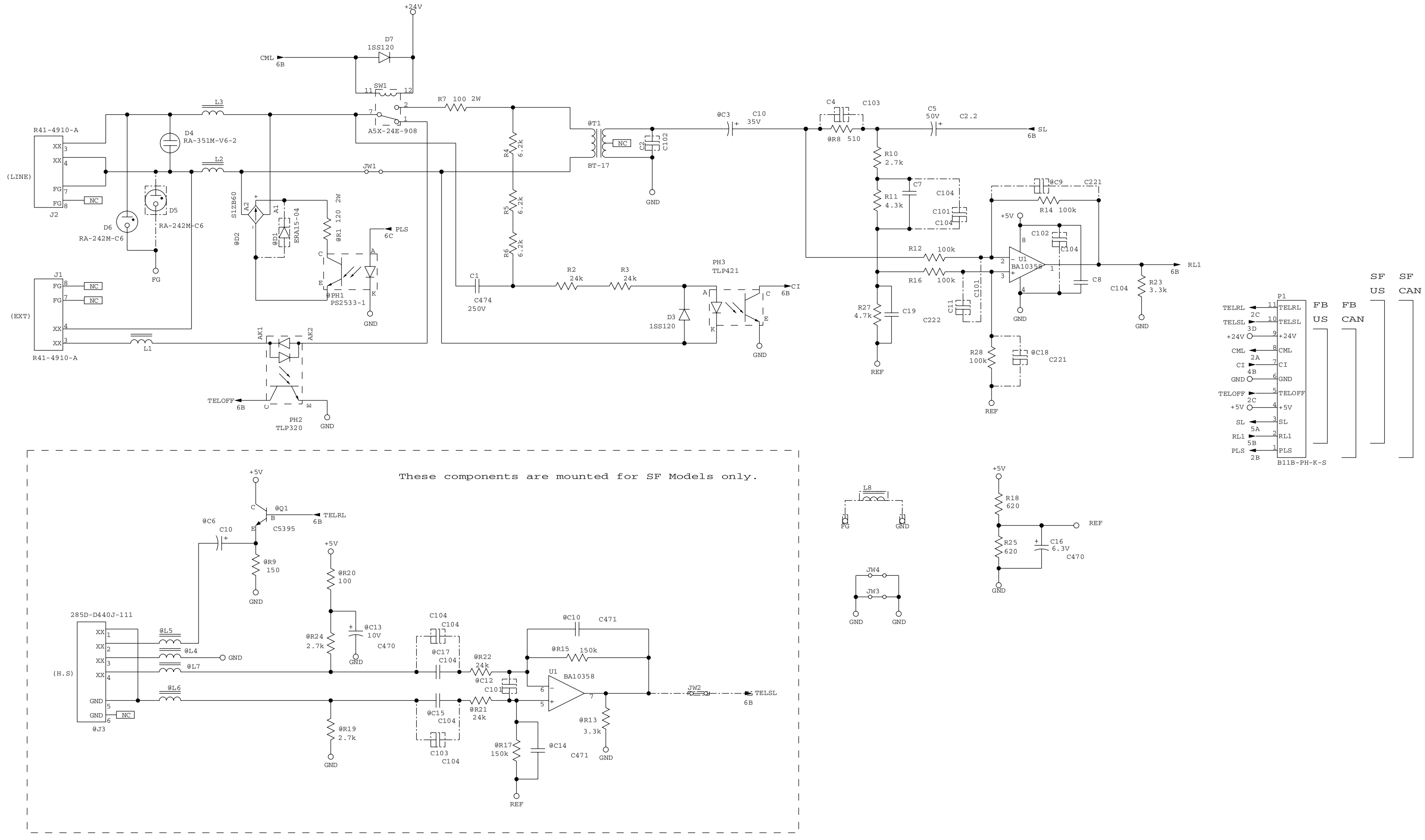


Fig. 7-4

■ NCU PCB circuit diagram : Europe

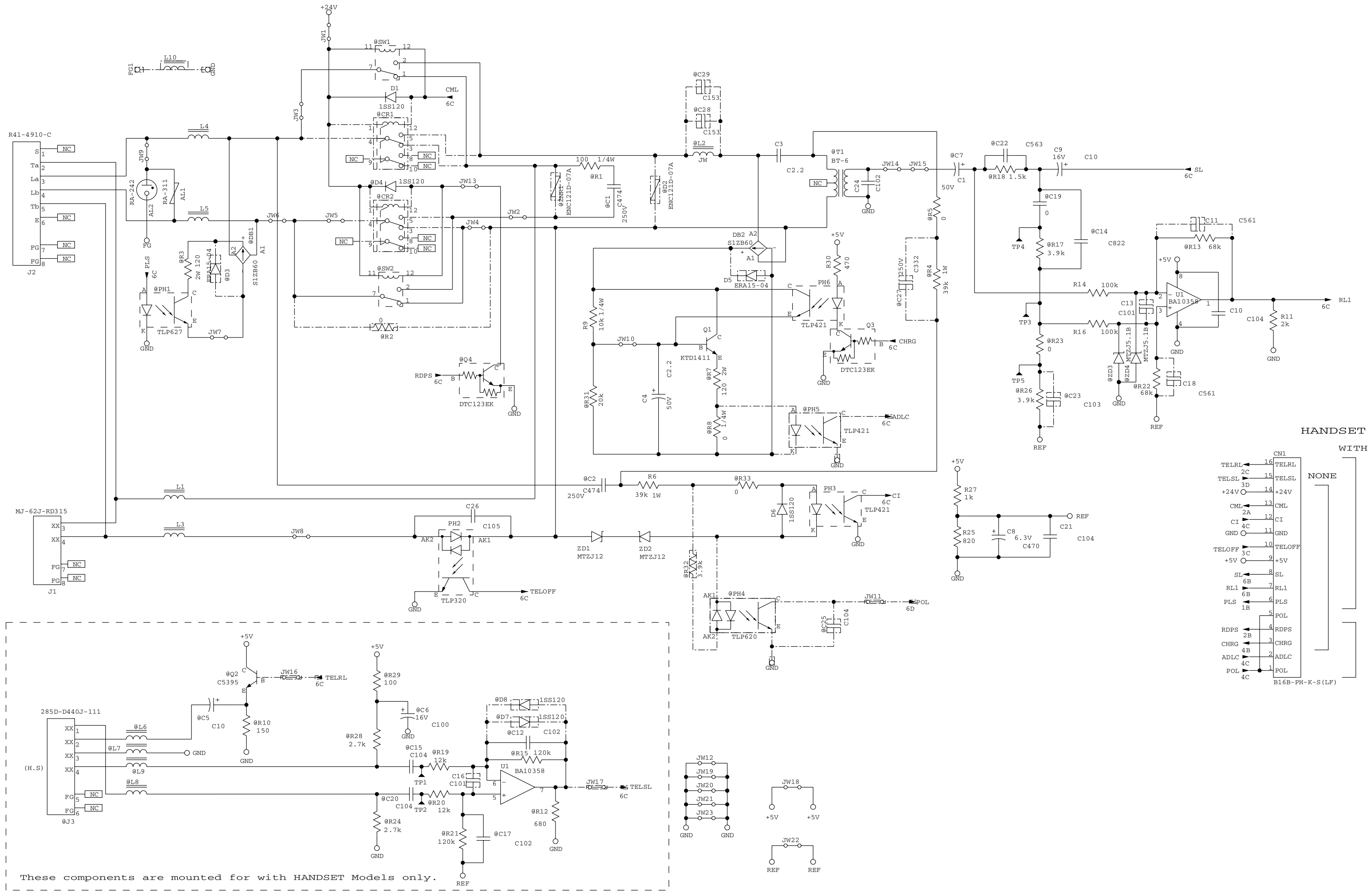


Fig. 7-5

■ NCU PCB circuit diagram : South Africa/Gulf

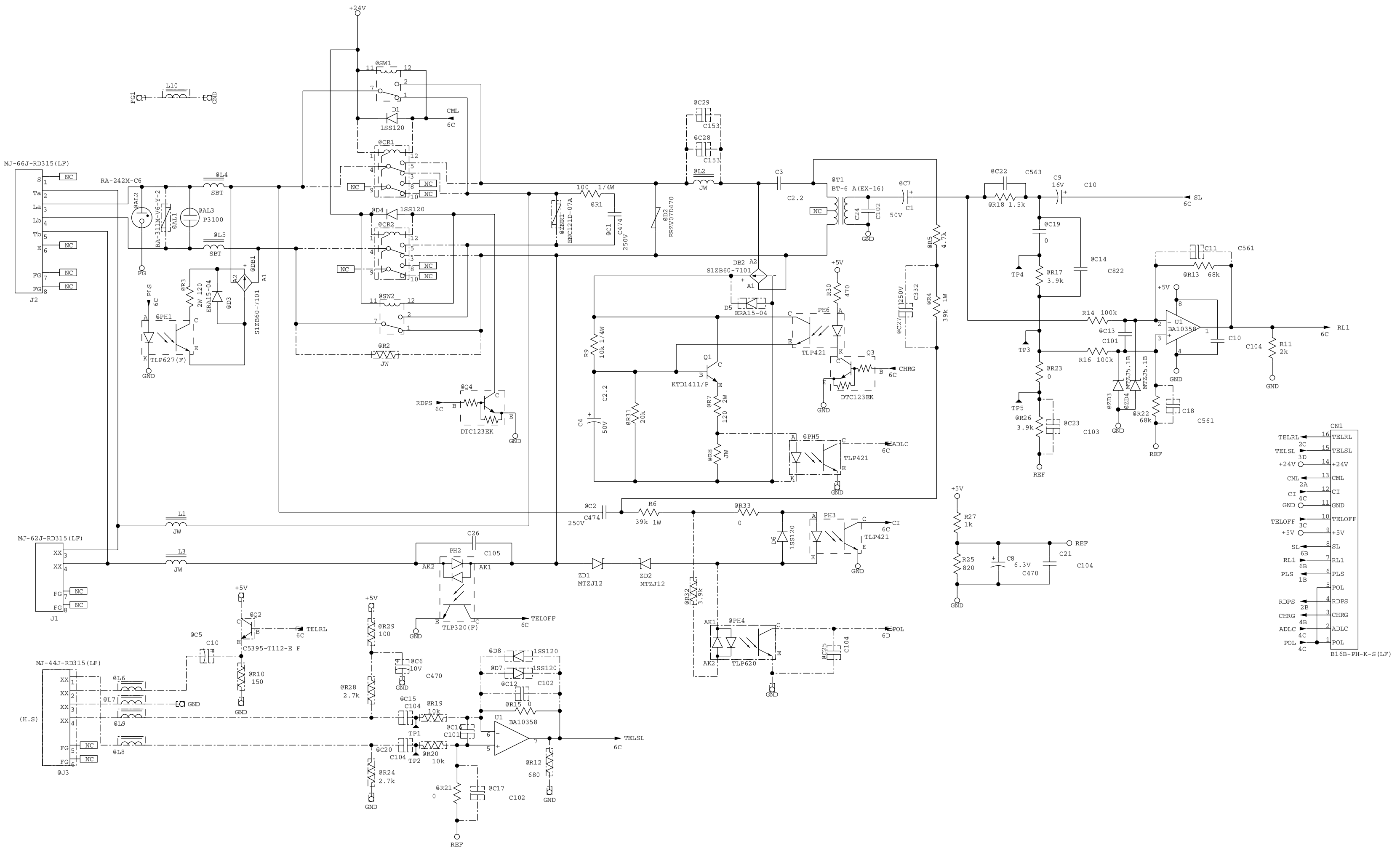


Fig. 7-6

2. WIRING DIAGRAM

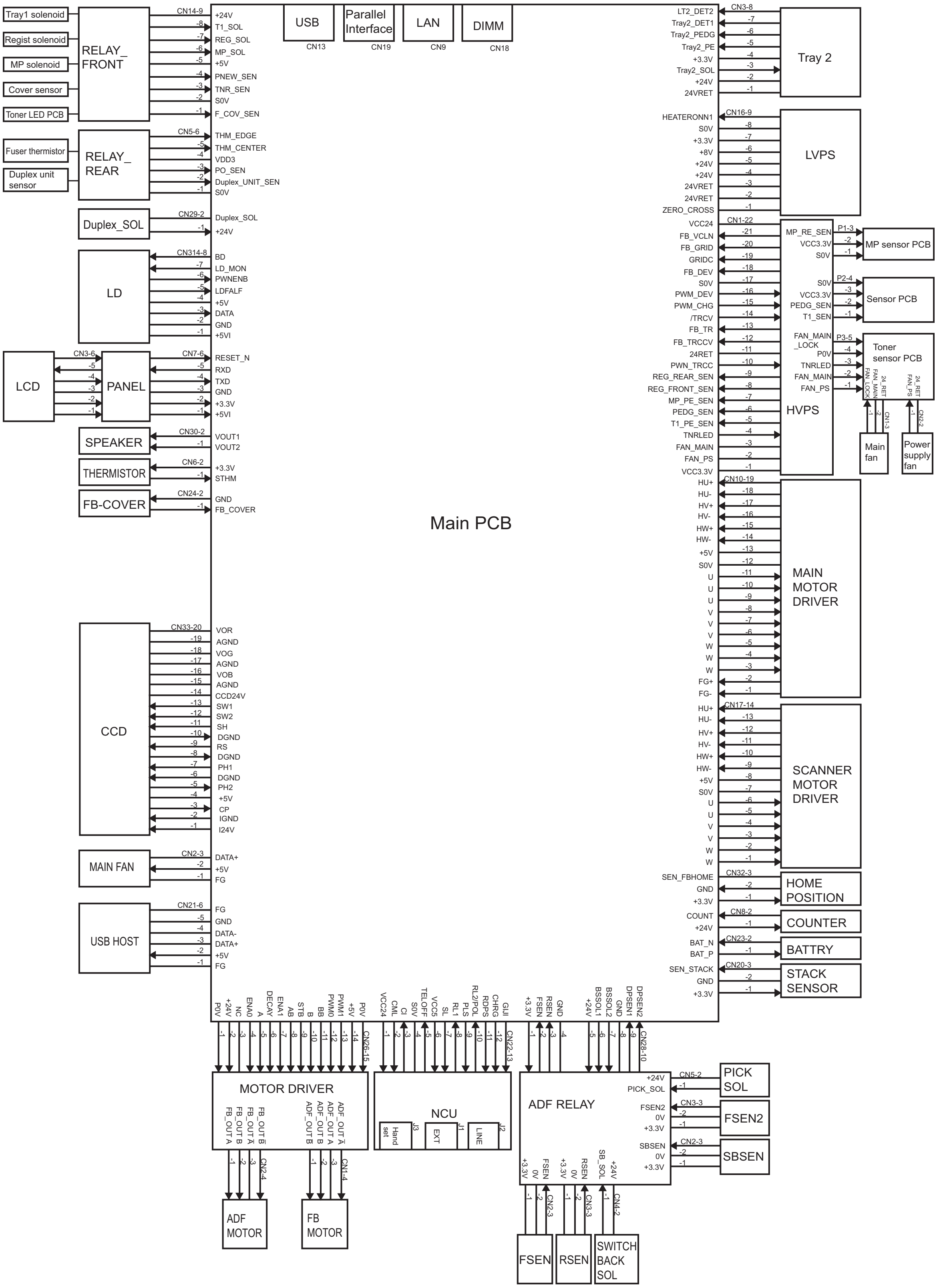


Fig. 7-7

APPENDIX 1

WORKER SWITCH (WSW)

This appendix describes the functions of the Firmware switches. Use the Firmware switch to match the environmental conditions if the machine malfunctions due to mismatching.

FIRMWARE SWITCHES (WSW)

This appendix describes the functions of the Worker switches, which can be divided into two groups: one is for customizing preferences designed for the shipping destination (Refer to "4.18 EEPROM Customizing (Function code 74)" in Chapter 6) and the other is for modifying preferences that match the machine to the environmental conditions. Use the latter group if the machine malfunctions due to mismatching.

Each switch has eight selectors. However, some of them cannot be set by an end user. Only selectors in the worker switch setting tables of this Appendix that are shaded can be set by an end user.

The worker switch setting procedure is described in "4.6.1 Firmware switch setting (Function code 10)" in Chapter 6.

■ Worker Switch

WSW No.	Function	Refer to:
WSW01	Dial pulse setting	App. 1-4
WSW02	Tone signal setting	App. 1-6
WSW03	PABX mode setting	App. 1-7
WSW04	Transfer facility setting	App. 1-9
WSW05	1st dial tone and busy tone detection	App. 1-10
WSW06	[**Redial/Pause**] button setting and 2nd dial tone detection	App. 1-11
WSW07	Dial tone setting 1	App. 1-13
WSW08	Dial tone setting 2	App. 1-14
WSW09	Protocol definition 1	App. 1-15
WSW10	Protocol definition 2	App. 1-16
WSW11	Busy tone setting	App. 1-17
WSW12	Signal detection condition setting	App. 1-18
WSW13	Modem setting	App. 1-19
WSW14	AUTO ANS facility setting	App. 1-20
WSW15	Redial facility setting	App. 1-21
WSW16	Function setting 1	App. 1-22
WSW17	Function setting 2	App. 1-22
WSW18	Function setting 3	App. 1-23
WSW19	Transmission speed setting	App. 1-24
WSW20	Overseas communications mode setting	App. 1-25
WSW21	TAD setting 1	App. 1-26
WSW22	ECM and call waiting caller ID	App. 1-26
WSW23	Communications setting	App. 1-27
WSW24	TAD setting 2	App. 1-28
WSW25	TAD setting 3	App. 1-28
WSW26	Function setting 4	App. 1-29
WSW27	Function setting 5	App. 1-30
WSW28	Function setting 6	App. 1-31
WSW29	Function setting 7	App. 1-32

WSW No.	Function	Refer to:
WSW30	Function setting 8	App. 1-32
WSW31	Function setting 9	App. 1-33
WSW32	Function setting 10	App. 1-34
WSW33	Function setting 11	App. 1-34
WSW34	Function setting 12	App. 1-35
WSW35	Function setting 13	App. 1-35
WSW36	Function setting 14	App. 1-36
WSW37	Function setting 15	App. 1-37
WSW38	V.34 transmission settings	App. 1-38
WSW39	V.34 transmission speed	App. 1-39
WSW40	V.34 modem settings	App. 1-40
WSW41	ON-duration of the scanning light source	App. 1-42
WSW42	Internet mail settings	App. 1-43
WSW43	Function setting 16	App. 1-43
WSW44	Speeding up scanning-1	App. 1-44
WSW45	Speeding up scanning-2	App. 1-45
WSW46	Monitor of power ON/OFF state and parallel port kept at high	App. 1-46
WSW47	Switching between high- and full-speed USB	App. 1-47
WSW48	USB setup latency	App. 1-48
WSW49	End-of-copying beep and print in black	App. 1-48
WSW50	SDAA settings (Not used)	App. 1-49
WSW51	Function setting 17	App. 1-49
WSW52	Function setting 18	App. 1-50
WSW53	Function setting 19	App. 1-50
WSW54	Function setting 20	App. 1-51
WSW55	Not used	App. 1-52
WSW56	Function setting 21	App. 1-53
WSW57	Function setting 22	App. 1-54
WSW58	Function setting 23	App. 1-54
WSW59	Function setting 24	App. 1-55
WSW60	Not used	App. 1-56
WSW61	Scanning light intensity to judge to be stable 1	App. 1-57
WSW62	Scanning light intensity to judge to be stable 2	App. 1-58
WSW63	Function setting 25	App. 1-59
WSW64	Setting the language / Default paper size	App. 1-60
WSW65	Setting the paper support	App. 1-60
WSW66	Drum life end	App. 1-61
WSW67	Not used	App. 1-61
WSW68	Fuser unit life end	App. 1-61
WSW69	Document scanner unit life end	App. 1-61

WSW No.	Function	Refer to:
WSW70	Paper feeding kit life end	App. 1-61
WSW71	Paper feeding kit 2 life end	App. 1-61
WSW72	Paper feeding kit MP life end	App. 1-62
WSW73	Not used	App. 1-62
WSW74	Not used	App. 1-62
WSW75	Paper ejecting distance of the switch back	App. 1-63
WSW76	The limited number of the documents in reverse for paper ejection of the simplex scanning from ADF	App. 1-64
WSW77	The limited number of the documents in reverse for paper ejection of the duplex scanning from ADF	App. 1-64

The functions and settings for each worker switch (WSW) are described below;

<WSW01> (Dial pulse setting)

Selector No.	Function	Setting and Specifications
1 2	Dial pulse generation mode	No. 1 2 0 0 : N 0 1 : N+1 1 0 : 10-N 1 1 : N
3 4	Break time length in pulse dialing	No. 3 4 0 0 : 60 ms 0 1 : 67 ms 1 0 : 40 ms 1 1 : 64 ms (for 16 PPS)
5 6	Inter-digit pause	No. 5 6 0 0 : 800 ms 0 1 : 850 ms 1 0 : 950 ms (for 16 PPS) 1 1 : 600 ms (at 106-ms intervals)
7	Switching between pulse and tone dialing, by the function switch	0: Yes 1: No
8	Default dialing mode, pulse (DP) or tone (PB) dialing	0: PB 1: DP

- **Selectors 1 and 2: Dial pulse generation mode**

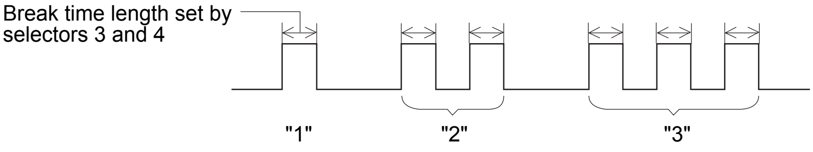
  These selectors set the number of pulses to be generated in pulse dialing.

  N: Dialing "N" generates "N" pulses. (Dialing "0" generates 10 pulses.)
  N + 1: Dialing "N" generates "N + 1" pulses.
  10 - N: Dialing "N" generates "10 - N" pulses.

- **Selectors 3 and 4: Break time length in pulse dialing**

  These selectors set the break time length in pulse dialing.

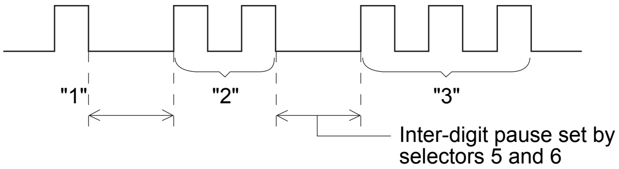
  (Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)



- **Selectors 5 and 6: Inter-digit pause**

  These selectors set the inter-digit pause in pulse dialing.

  (Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)



- **Selector 7: Switching between pulse and tone dialing, by the function switch**

  This selector determines whether or not the dialing mode can be switched between the pulse (DP) and tone (PB) dialing by using the function switch.

- **Selector 8: Default dialing mode, pulse (DP) or tone (PB) dialing**

  This selector sets the default dialing mode (pulse dialing or tone dialing) which can be changed by the function switch. If the user switches it with the function switch when selector 7 is set to "0," the setting specified by this selector will also be switched automatically.

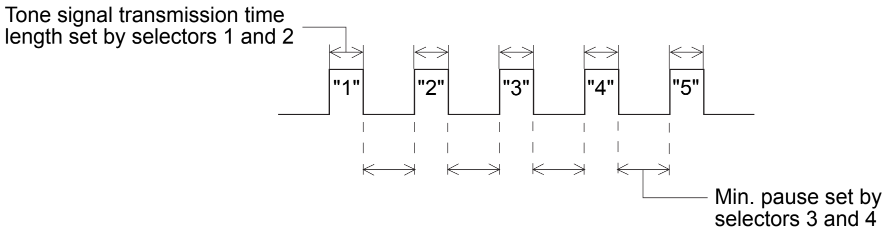
<WSW02> (Tone signal setting)

Selector No.	Function	Setting and Specifications
1 2	Tone signal transmission time length	No. 1 2 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 100 ms
3 4	Min. pause in tone dialing	No. 3 4 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 140 ms
5 I 8	Attenuator for pseudo ring backtone to the line (selectable in the range of 0-15 dB, in 1 dB increments)	0: 0 dB 1: 8 dB 0: 0 dB 1: 4 dB 0: 0 dB 1: 2 dB 0: 0 dB 1: 1 dB

- **Selectors 1 through 4:Tone signal transmission time length and Min. pause in tone dialing**

  These selectors set the tone signal transmission time length and minimum pause in tone dialing.

  (Example: If "1," "2," "3," "4," and "5" are dialed.)


Tone signal transmission time length set by selectors 1 and 2
"1"
"2"
"3"
"4"
"5"
Min. pause set by selectors 3 and 4

- **Selectors 5 through 8: Attenuator for pseudo ring backtone to the line**

  These selectors are used to adjust the sound volume of a ring backtone in the F/T mode, an on-hold sound, or a beep generated as a signal during remote control operation or at the start of ICM recording.

  The larger the value specified by these selectors, the greater the attenuation.

<WSW03> (PABX mode setting)

Selector No.	Function	Setting and Specifications
1	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
2 I 4	Detection time length of PABX* dial tone, required for starting dialing	No. 2 3 4 0 0 0: 50 ms 0 0 1: 210 ms 0 1 0: 500 ms 0 1 1: 800 ms 1 0 0: 900 ms 1 0 1: 1.5 sec. 1 1 0: 2.0 sec. 1 1 1: 2.5 sec
5	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
6 7	Dial tone detection in PABX*	No. 6 7 0 0 : No detection (3.5 sec. wait) 0 1 : No detection (5 sec. wait) 1 0 : No detection (7 sec. wait) 1 1 : Detection (Frequency only)
8	Not used.	

* PABX: Private automatic branch exchange

Note:

- Selectors 2 through 4, 6 and 7 are not applicable where no PABX is installed.

- **Selectors 1 and 5: CNG detection when sharing a modular wall socket with a telephone**

  These selectors determine whether or not the machine detects a CNG signal when a line is connected to a telephone sharing a modular wall socket with the machine. Upon detection of CNG signals by the number of cycles specified by these selectors, the machine interprets CNG as an effective signal and then starts FAX reception.

Selector		Cycle
No. 1	No. 5	
0 (A)	0 (A)	0.5 cycle
0 (A)	1 (B)	1.0 cycle
1 (A)	0 (A)	1.5 cycle
1 (B)	1 (B)	2.0 cycle

- **Selectors 2 through 4: Detection time length of PABX dial tone, required for starting dialing**

  Upon detection of the PABX dial tone for the time length set by these selectors, the machine starts dialing. These selectors are effective only when both selectors 6 and 7 are set to "1" (Detection).

- **Selectors 6 and 7: Dial tone detection in PABX***

  These selectors activate or deactivate the dial tone detection function which detects a dial tone when a line is connected to the PABX.

  Setting both of these selectors to "1" activates the dial tone detection function so that the machine starts dialing upon detection of a dial tone when a line is connected.

  Other setting combinations deactivate the dial tone detection function so that the machine starts dialing after the specified WAIT (3.5, 5.0, or 7.0 sec.) without detection of a dial tone when a line is connected.

<WSW04> (Transfer facility setting)

Selector No.	Function	Setting and Specifications
1	Earth function in transfer facility (Not used.)	
2 3	Dual tone detection frequency in ICM recording (Not used.)	
4	Dual tone detection sensitivity in ICM recording (Not used.)	
5	Length of time added to time designated by selectors 3 and 4 on the WSW 24 (time between CML ON and pseudo ring backtone return).	0: Not added 1: +4 seconds added
6 I 8	Break time length for flash function	No. 6 7 8 0 0 0: 80 ms 0 0 1: 100 ms 0 1 0: 110 ms 0 1 1: 120 ms 1 0 0: 200 ms 1 0 1: 250 ms 1 1 0: 500 ms 1 1 1: 700 ms

Note:

- Selectors 1 and 5 through 8 are not applicable in those countries where no transfer facility is supported.

- **Selectors 6 and 8: Break time length for flash function**

  These selectors set the break time length. This setting is effective only when the flash function is selected for the [**Search/Speed Dial**] button by using the function switch.

<WSW05> (1st dial tone and busy tone detection)

Selector No.	Function	Setting and Specifications
1 I 3	1st dial tone detection	No. 1 2 3 0 0 0: 3.5 sec. wait 0 0 1: 7.0 sec. wait 0 1 0: 10.5 sec. wait 0 1 1: 14.0 sec. wait 1 0 0: 17.5 sec. wait 1 0 1: 21.0 sec. wait 1 1 0: 24.5 sec. wait 1 1 1: Detection (Without wait)
4	Max. pause time allowable for remote ID code detection	0: 2 sec. 1: 1 sec.
5 6	Busy tone detection in auto-matic sending mode	No. 5 6 0 0: No detection 0 1: Detection only after dialing 1 0: No detection 1 1: Detection before and after dialing
7	Busy tone detection in auto-matic receiving mode	0: Yes 1: No
8	Not used.	

Note:

- Selectors 5 through 7 are not applicable in those countries where no busy tone detection is supported.

- **Selectors 1 through 3: 1st dial tone detection**

  These selectors activate or deactivate the 1st dial tone detection function which detects the 1st dial tone issued from the PSTN when a line is connected to the PSTN.

  Setting all of these selectors to "1" activates the dial tone detection function so that the machine starts dialing upon detection of a dial tone when a line is connected. (However, in those countries which support no dial tone detection function, e.g., in the U.S.A., setting these selectors to "1" makes the machine start dialing after a WAIT of 3.5 seconds.) For the detecting conditions of the 1st dial tone, refer to WSW07 and WSW08.

  Other setting combinations deactivate the dial tone detection function so that the machine starts dialing after the specified WAIT (3.5, 7.0, 10.5, 14.0, 17.5, 21.0, or 24.5 seconds) without detection of a dial tone when a line is connected to the PSTN.

- **Selector 4: Max. pause time allowable for remote ID code detection**

  This selector sets the maximum pause time allowable for detecting the second digit of a remote ID code after detection of the first digit in remote reception.

  If selector 4 is set to "0" (2 seconds), for instance, only a remote ID code whose second digit is detected within 2 seconds after detection of the first digit will become effective so as to activate the remote function.

- **Selectors 5 and 6: Busy tone detection in automatic sending mode**

  These selectors determine whether or not the machine automatically disconnects a line upon detection of a busy tone in automatic sending mode.

  Setting selector 6 to "0" ignores a busy tone so that the machine does not disconnect the line. Setting selectors 5 and 6 to "0" and "1," respectively, makes the machine detect a busy tone only after dialing and disconnect the line.

  Setting both of selectors 5 and 6 to "1" makes the machine detect a busy tone before and after dialing and then disconnect the line.

- **Selector 7: Busy tone detection in automatic receiving mode**

  This selector determines whether or not the machine automatically disconnects the line upon detection of a busy tone in automatic receiving mode.

<WSW06> ([Redial/Pause] button setting and 2nd dial tone detection)

Selector No.	Function	Setting and Specifications
1 | 3	[**Redial/Pause**] button setting and 2nd dial tone detection	No. 1 2 3 0 0 0: No pause 0 0 1: 3.5 sec. wait 0 1 0: 7 sec. wait 0 1 1: 10.5 sec. wait 1 0 0: 2.8 sec. wait 1 0 1: 2nd dial tone detection both in DP and push-button (PB) dialing system 1 1 0: 2nd dial tone detection only in pulse dialing (DP) system 1 1 1: 2nd dial tone detection both in DP and push-button (PB) dialing system
4 | 6	Detection of 2nd dial tone	No. 4 5 6 0 0 0: 50 ms 0 0 1: 250 ms 0 1 0: 500 ms 0 1 1: 620 ms 1 0 0: 800 ms 1 0 1: 1.5 sec. 1 1 0: 2.0 sec. 1 1 1: 2.5 sec.
7	No. of 2nd dial tone detection cycles	0: 1 cycle 1: 2 cycles
8	Allowable instantaneous interrupt during reception of 2nd dial tone	0: 30 ms 1: 50 ms

Note:

- Selectors 4 through 8 are not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.

- **Selectors 1 through 3: [Redial/Pause] button setting and 2nd dial tone detection**

Selectors 1	 2	 3	
0	0	0	No wait is inserted even if the [**Redial/Pause**] button is pressed.
0 0 0 1	0 1 1 0	1 0 1 0	If you press the [**Redial/Pause**] button during dialing, the machine will insert wait as defined in the above table. If the [**Redial/Pause**] button is pressed repeatedly, the machine inserts the specified wait multiplied by the number of depressions. It applies also in hook-up dialing.
1 1 1	0 1 1	1 0 1	When these selectors are set to "1, 0, 1": Each time you press the [**Redial/Pause**] button in dialing, the machine will wait for the 2nd dial tone to be sent via the communications line regardless of pulse dialing or tone dialing. When these selectors are set to "1, 1, 0": If you press the [**Redial/Pause**] button in pulse dialing, the machine will first wait for the 2nd dial tone to be sent via the communications line. After that, pressing the [**Redial/Pause**] button will cause the machine to insert a WAIT of 3.5 seconds. In tone dialing, the machine will insert a WAIT of 3.5 seconds. When these selectors are set to "1, 1, 1": If you press the [**Redial/Pause**] button, the machine will first wait for the 2nd dial tone to be sent via the communications line regardless of pulse dialing or tone dialing. After that, pressing the [**Redial/Pause**] button will cause the machine to insert a wait of 3.5 seconds. ((In those countries where no dial tone detection function is supported, setting these selectors to "1, 0, 1," "1, 1, 0," or "1, 1, 1" inserts a wait of 3.5 seconds.)

- **Selectors 4 through 6: Detection of 2nd dial tone**

  Upon detection of the 2nd dial tone for the time length specified by these selectors, the machine starts dialing.
  This setting is effective only when the 2nd dial tone detection function is activated by selectors 1 through 3 (Setting 101, 110, or 111).
  This function does not apply in those countries where no dial tone detection function is supported.

- **Selector 7: No. of 2nd dial tone detection cycles**

  This selector sets the number of dial tone detection cycles required for starting dialing.

- **Selector 8: Allowable instantaneous interrupt during reception of 2nd dial tone**

  This selector sets the allowable instantaneous interrupt period that should be ignored during reception of the 2nd dial tone.

<WSW07> (Dial tone setting 1)

Selector No.	Function	Setting and Specifications
1 2	Dial tone frequency band control	No. 1 2 0 0: Narrows by 10 Hz 0 1: Initial value 1 0: Widens by 10 Hz 1 1: Widens by 10 Hz
3	Line current detection (Not used.)	
4 I 6	2nd dial tone detection level (Z = 600 Ω)	No. 4 5 6 0 0 0: -21 dBm 0 0 1: -24 dBm 0 1 0: -27 dBm 0 1 1: -30 dBm 1 0 0: -33 dBm 1 0 1: -36 dBm 1 1 0: -39 dBm 1 1 1: -42 dBm
7	Allowable instantaneous interrupt during reception of 1st dial tone	0: 30 ms 1: 50 ms
8	Not used.	

Note:

- Selectors 1, 2, 4 through 7 are not applicable in those countries where no dial tone or line current detection is supported, e.g., U.S.A.

- **Selectors 1 and 2: Dial tone frequency band control**

  These selectors set the frequency band for the 1st dial tone and busy tone (before dialing) to be detected. This setting is effective only when selectors 1 through 3 on WSW05 are set to "1,1,1."

- **Selectors 4 through 6: 2nd dial tone detection level**

  These selectors set the detection level of the 2nd dial tone.

- **Selector 7: Allowable instantaneous interrupt during reception of 1st dial tone**

  This selector sets the allowable instantaneous interrupt period that should be ignored during reception of the 1st dial tone.

<WSW08> (Dial tone setting 2)

Selector No.	Function	Setting and Specifications
1 | 3	1st dial tone detection time length	No. 1 2 3 0 0 0: 50 ms 0 0 1: 250 ms 0 1 0: 500 ms 0 1 1: 620 ms 1 0 0: 800 ms 1 0 1: 1.5 sec. 1 1 0: 2.0 sec. 1 1 1: 2.5 sec.
4 5	Time-out length for 1st and 2nd dial tone detection	No. 4 5 0 0: 10 sec. 0 1: 20 sec. 1 0: 15 sec. 1 1: 30 sec.
6 | 8	Detection level of 1st dial tone and busy tone before dialing	No. 6 7 8 0 0 0: -21 dBm 0 0 1: -24 dBm 0 1 0: -27 dBm 0 1 1: -30 dBm 1 0 0: -33 dBm 1 0 1: -36 dBm 1 1 0: -39 dBm 1 1 1: -42 dBm

Note:

- The WSW08 is not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.

- **Selectors 1 through 3: 1st dial tone detection time length**

  Upon detection of the 1st dial tone for the time length set by these selectors, the machine starts dialing. This setting is effective only when selectors 1 through 3 on WSW05 are set to "1,1,1."

- **Selectors 4 and 5: Time-out length for 1st and 2nd dial tone detection**

  These selectors set the time-out length for the 1st and 2nd dial tone detection so that the machine waits dial tone input for the specified time length and disconnects itself from the line when no dial tone is inputted.

<WSW09> (Protocol definition 1)

Selector No.	Function	Setting and Specifications
1	Frame length selection	0: 256 octets 1: 64 octets
2	Use of non-standard commands	0: Allowed 1: Prohibited
3 4	No. of retries	No. 3 4 0 0: 4 times 0 1: 3 times 1 0: 2 times 1 1: 1 times
5	T5 timer	0: 300 sec. 1: 60 sec.
6	T1 timer	0: 35 sec. 1: 40 sec.
7 8	Timeout for response from the called station in automatic sending mode	No. 7 8 0 0: 55 sec. (in U.S.A. model) 60 sec. (in other models) 0 1: 140 sec. 1 0: 90 sec. 1 1: 35 sec.

Note:
- Selectors 1 through 5 are not applicable in those models which do not support ECM.

- **Selector 1: Frame length selection**

  Usually a single frame consists of 256 octets (1 octet = 8 bits). For communications lines with higher bit error rate, however, set selector 1 to "1" so that the machine can divide a message into 64-octet frames.

  Remarks: The error correction mode (ECM) is a facsimile transmission manner in which the machine divides a message into frames for transmission so that if any data error occurs on the transmission line, the machine retransmits only those frames containing the error data.

- **Selector 2: Use of non-standard commands**

  If this selector is set to "0," the machine can use non-standard commands (the machine's native-mode commands, e.g., NSF, NSC, and NSS) for communications. If it is set to "1," the machine will use standard commands only.

- **Selectors 3 and 4: No. of retries**

  These selectors set the number of retries in each specified modem transmission speed.

- **Selector 5: T5 timer**

  This selector sets the time length for the T5 timer.

- **Selector 6: T1 timer**

  This selector sets the time length for the T1 timer.

- **Selectors 7 and 8: Timeout for response from the called station in automatic sending mode**

  If the machine (calling station) receives no response (no G3 command) from the called terminal in automatic sending mode for the period specified by these selectors, it disconnects the line.

<WSW10> (Protocol definition 2)

Selector No.	Function		Setting and Specifications
1	DPS switching interfacing with CML		0: No 1: Yes
2	Time length from transmission of the last dial digit to CML ON		0: 100 ms 1: 50 ms
3	Time length from CML ON to CNG transmission		0: 2 sec. 1: 4 sec.
4	Time length from CML ON to CED transmission (except for facsimile-to-telephone switching)		0: 0.5 sec. 1: 2 sec.
5 6	No. of training retries		No. 5 6 0 0: 1 time 0 1: 2 times 1 0: 3 times 1 1: 4 times
7	Encoding system (Compression)	MR	0: Allowed 1: Not allowed
8		MMR	0: Allowed 1: Not allowed

- **Selector 2: Time length from transmission of the last dial digit to CML ON**

  This selector sets the time length from when the machine transmits the last dial digit until the CML relay comes on.

- **Selector 3: Time length from CML ON to CNG transmission**

  This selector sets the time length until the machine transmits a CNG after it turns on the CML relay.

- **Selector 4: Time length from CML ON to CED transmission**

  This selector sets the time length until the machine transmits a CED after it turns on the CML relay. This setting does not apply to switching between facsimile and telephone.

- **Selectors 5 and 6: No. of training retries**

  These selectors set the number of training retries to be repeated before automatic fallback.

- **Selectors 7 and 8: Encoding system (Compression)**

  This selector determines whether or not to allow the use of the MR/MMR coding system.

<WSW11> (Busy tone setting)

Selector No.	Function	Setting and Specifications
1 2	Busy tone frequency band control	No. 1 2 0 0: Narrows by 10 Hz 0 1: Initial value 1 0: Widens by 10 Hz 1 1: Widens by 10 Hz
3	ON/OFF time length ranges for busy tone (More than one setting allowed)	1: 250-750/250-750 ms
4		1: 400-600/400-600 ms
5		1: 175-440/175-440 ms
6		1: 100-1000/17-660 ms
7		1: 110-410/320-550 ms
8		1: 100-660/100-660 ms

Note:

- WSW11 is not applicable in those countries where no busy tone detection is supported.
- The setting of WSW11 is effective only when selectors 5 and 6 on WSW05 are set to "0, 1" or "1, 1" (Busy tone detection).

- **Selectors 1 and 2: Busy tone frequency band control**

  These selectors set the frequency band for busy tone to be detected.

- **Selectors 3 through 8: ON/OFF time length ranges for busy tone**

  These selectors set the ON and OFF time length ranges for busy tone to be detected. If more than one selector is set to "1," the ranges become wider. For example, if selectors 4 and 5 are set to "1," the ON and OFF time length ranges are from 175 to 600 ms.

<WSW12> (Signal detection condition setting)

Selector No.	Function	Setting and Specifications
1 2	Min. detection period required for interpreting incoming calling signal (CI) as OFF	No. 1 2 0 0: 1500 ms 0 1: 500 ms 1 0: 700 ms 1 1: 900 ms
3 4	Max. detection period for incoming calling signal (CI) being OFF	No. 3 4 0 0: 6 sec. 0 1: 7 sec. 1 0: 9 sec. 1 1: 11 sec.
5 6	Min. detection period required for acknowledging incoming calling signal (CI) as ON	No. 5 6 0 0: 800 ms (1000 ms*) 0 1: 200 ms 1 0: 250 ms 1 1: 150 ms
7	Line connection timing	0: Ringer-OFF period 1: Ringer-ON period
8	Not used.	

* 1000 ms in Chinese models.

- **Selectors 1 through 4: Min. detection period required for interpreting incoming calling signal (CI) as OFF**
  Max. detection period for incoming calling signal (CI) being OFF

  If the machine detects the OFF state of a CI signal for the period greater than the value set by selectors 1 and 2 and less than the value set by selectors 3 and 4, it interprets the CI signal as OFF.

- **Selectors 5 and 6: Min. detection period required for acknowledging incoming calling signal (CI) as ON**

  These selectors set the period required to make the machine acknowledge itself to be called. That is, if the machine continuously detects a CI signal with the frequency set by selectors 1 through 4 on WSW14 during the period set by these selectors 5 and 6, then it acknowledges the call.

- **Selector 7: Line connection timing**

  If a line is connected in a ringer-ON period, FAX models equipped with SDAA circuits may malfunction due to the ringer voltage. To make the line connection stable, this selector should be set to "0" so that a line is connected in a ringer-OFF period.

<WSW13> (Modem setting)

Selector No.	Function	Setting and Specifications
1 2	Cable equalizer	No. 1 2 0 0: 0 km 0 1: 1.8 km 1 0: 3.6 km 1 1: 5.6 km
3 4	Reception level	No. 3 4 0 0: -43 dBm 0 1: -47 dBm 1 0: -49 dBm 1 1: -51 dBm
5 | 8	Modem attenuator	No. 5 6 7 8 0 0 0 0: 0 dB 0 0 0 1: 1 dB 0 0 1 0: 2 dB 0 0 1 1: 3 dB 0 1 0 0: 4 dB ⋮ 1 1 1 1: 15 dB

- **Selectors 1 and 2: Cable equalizer**

  These selectors are used to improve the pass-band characteristics of analogue signals on a line. Attenuation in the high-band frequency is greater than in the low-band frequency.

  Set these selectors according to the distance from the telephone switchboard to the machine.

- **Selectors 3 and 4: Reception level**

  These selectors set the optimum receive signal level.

- **Selectors 5 through 8: Modem attenuator**

  These selectors are used to adjust the transmitting level attenuation of the modem when the reception level at the remote station is improper due to line loss. This function applies for G3 protocol signals.

  Setting two or more selectors to "1" produces addition of attenuation assigned to each selector.

  If selector 8 on WSW23 is set to "0," this setting is so limited that 10 dB (1 dB in France) or higher setting only is effective.

<WSW14> (AUTO ANS facility setting)

Selector No.	Function	Setting and Specifications
1 2	Frequency band selection (lower limit) for incoming calling signal (CI)	No. 1 2 0 0: 13 Hz 0 1: 15 Hz 1 0: 23 Hz 1 1: 20 Hz
3 4	Frequency band selection (upper limit) for incoming calling signal (CI)	No. 3 4 0 0: 30 Hz 0 1: 55 Hz 1 0: 70 Hz 1 1: 200 Hz
5 │ 8	No. of rings in AUTO ANS mode	No. 5 6 7 8 0 0 0 0: Fixed to once 0 0 0 1: 1 to 6 times 0 0 1 0: 1 to 8 times 0 0 1 1: 2 to 8 times 0 1 0 0: 1 to 2 times 0 1 0 1: 1 to 3 times 0 1 1 0: 1 to 4 times 0 1 1 1: 1 to 5 times 1 0 0 0: 2 to 3 times 1 0 0 1: 2 to 4 times 1 0 1 0: 2 to 5 times 1 0 1 1: 2 to 6 times 1 1 0 0: 1 to 10 times 1 1 0 1: 2 to 10 times 1 1 1 0: 3 to 5 times 1 1 1 1: 4 to 10 times

- **Selectors 1 through 4: Frequency band selection for incoming calling signal (CI)**

  These selectors are used to select the frequency band of CI for activating the AUTO ANS facility.

  In the French models, if the user sets the PBX to OFF from the control panel, the setting made by selectors 1 and 2 will take no effect and the frequency's lower limit will be fixed to 32 Hz. (Even if the setting made by these selectors does not apply, it will be printed on the configuration list.)

- **Selectors 5 through 8: No. of rings in AUTO ANS mode**

  These selectors set the number of rings to initiate the AUTO ANS facility.

<WSW15> (Redial facility setting)

Selector No.	Function	Setting and Specifications
1 2	Redial interval	No. 1 2 0 0: 5 min. 0 1: 1 min. 1 0: 2 min. 1 1: 3 min.
3 | 6	No. of redialings	No. 3 4 5 6 0 0 0 0: 16 times 0 0 0 1: 1 times 0 0 1 0: 2 times 0 0 1 1: 3 times | 1 1 1 1: 15 times
7	(Not used.)	
8	CRP option	0: Disable 1: Enable

- **Selectors 1 through 6: Redial interval and No. of redialings**

  The machine redials by the number of times set by selectors 3 through 6 at intervals set by selectors 1 and 2.

- **Selector 8: CRP option**

  If a command error occurs in the machine (calling station), the machine usually waits for three seconds and then makes a retry three times. This CRP option is a request command that can be sent from the called station for requesting the calling station to retry the failed command immediately.

<WSW16> (Function setting 1)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	ITU-T (CCITT) superfine recommendation	0: OFF 1: ON
3 I 6	Not used.	
7	Max. document length limitation	0: 400 cm 1: 90 cm
8	[**Stop/Exit**] button pressed during reception	0: Not functional 1: Functional

- **Selector 2: ITU-T (CCITT) superfine recommendation**

  If this selector is set to "1," the machine communicates in ITU-T (CCITT) recommended superfine mode (15.4 lines/mm). If it is set to "0," it communicates in native superfine mode.

- **Selector 7: Max. document length limitation**

  This selector is used to select the maximum length of a document to be sent.

- **Selector 8: [Stop/Exit] button pressed during reception**

  If this selector is set to "1," pressing the [**Stop/Exit**] button can stop the current receiving operation. The received data will be lost.

<WSW17> (Function setting 2)

Selector No.	Function	Setting and Specifications
1 2	Off-hook alarm (Not used.)	
3 4	Not used.	
5	Calendar clock type	0: U.S.A. type 1: European type
6	Not used.	
7	Non-ring reception	0: OFF 1: ON
8	Not used.	

- **Selector 5: Calendar clock type**

  If this selector is set to "0" (USA), the MM/DD/YY hh:mm format applies; if it is set to "1" (Europe), the DD/MM/YY hh:mm format applies: DD is the day, MM is the month, YY is the last two digits of the year, hh is the hour, and mm is the minute.

- **Selector 7: Non-ring reception**

  Setting this selector to "1" makes the machine receive calls without ringer sound if the number of calling is set to 0.

<WSW18> (Function setting 3)

Selector No.	Function	Setting and Specifications
1	Addition of registration of station ID for PC-FAX	
2 3	Detection enabled time for CNG and no tone	No. 2 3 0 0: 40 sec. 0 1: 0 sec. (No detection) 1 0: 5 sec. 1 1: 80 sec.
4 5	Not used.	
6	Registration of station ID	0: Permitted 1: Prohibited
7 8	Tone sound monitoring	No. 7 8 0 0: No monitoring 0 1: No monitoring 1 0: Up to phase B at the calling station only 1 1: All transmission phases both at the calling and called stations

- **Selector 1: Addition of registration of station ID for PC-FAX**

  The sending state is as follows whether add the station ID in the PC side or not.

  The data do not add the station ID in the PC side.
  ⇒ Follow the Selector 1 in WSW 18, add the station ID or not.

  The data add the station ID in the PC side.
  ⇒ Let it lie in the main body side.

- **Selectors 2 and 3: Detection enabled time for CNG and no tone**

  After the line is connected via the external telephone or by picking up the handset of the machine, the machine can detect a CNG signal or no tone for the time length specified by these selectors. The setting specified by these selectors becomes effective only when selector 8 on WSW20 is set to "1."

- **Selector 6: Registration of station ID**

  Setting this selector to "0" permits the registration of station ID for the models set Austria and Czech in EEPROM Customizing (Function Code 74).

- **Selectors 7 and 8: Tone sound monitoring**

  These selectors set monitoring specifications of the tone sound inputted from the line.

<WSW19> (Transmission speed setting)

Selector No.	Function	Setting and Specifications
1 | 3	First transmission speed choice for fallback	No. 1 2 3 No. 4 5 6 0 0 0: 2,400 bps 0 0 1: 4,800 bps 0 1 0: 7,200 bps 0 1 1: 9,600 bps 1 0 0: 12,000 bps 1 0 1: 14,400 bps 1 1 0: 14,400 bps 1 1 1: 14,400 bps
4 | 6	Last transmission speed choice for fallback	
7	V.34 mode	0: Permitted 1: Prohibited
8	V.17 mode	0: Permitted 1: Prohibited

- **Selectors 1 through 6: First and last choices of transmission speed for fallback**

  These selectors are used to set the MODEM speed range. With the first transmission speed choice specified by selectors 1 through 3, the machine attempts to establish the transmission link via the MODEM. If the establishment fails, the machine automatically steps down to the next lowest speed and attempts to establish the transmission link again. The machine repeats this sequence while stepping down the transmission speed to the last choice specified by selectors 4 through 6.

  If the MODEM always falls back to a low transmission speed (e.g., 4,800 bps), set the first transmission speed choice to the lower one (e.g., modify it from 12,000 bps to 7,200 bps) in order to deactivate the high-speed MODEM function and reduce the training time for shorter transmission time.

  Generally, to save the transmission time, set the last transmission speed choice to a higher one.

- **Selector 7: V.34 mode**

  If this selector is set to "0," selectors 5 through 8 on the WSW38 through WSW40 and on WSW41, will become effective.

<WSW20> (Overseas communications mode setting)

Selector No.	Function	Setting and Specifications
1	EP* tone prefix	0: OFF 1: ON
2	Overseas communications mode (Reception)	0: 2100 Hz 1: 1100 Hz
3	Overseas communications mode (Transmission)	0: OFF 1: Ignores DIS once.
4 5	Min. time length from reception of CFR to start of transmission of video signals	No. 4 5 0 0: 100 ms 0 1: 200 ms 1 0: 300 ms 1 1: 400 ms
6 7	At CNG detection, elimination of chattering noise (Not used.)	
8	Limitation on CNG detection	0: OFF 1: ON

* EP: Echo protection

- **Selector 1: EP tone prefix**

  Setting this selector to "1" makes the machine transmit a 1700 Hz echo protection (EP) tone immediately preceding training in V.29 modulation system to prevent omission of training signals.

  Prefixing an EP tone is useful when the machine fails to transmit at the V.29 modem speed and always has to fall back to 4800 bps transmission.

  The setting made by this selector takes effect only when the Overseas Mode is set to ON.

- **Selectors 2 and 3: Overseas communications mode**

  These selectors should be used if the machine malfunctions in overseas communications. According to the communications error state, select the signal specifications.

  Setting selector 2 to "1" allows the machine to use 1100 Hz CED signal instead of 2100 Hz in receiving operation. This prevents malfunctions resulting from echoes, since the 1100 Hz signal does not disable the echo suppressor (ES) while the 2100 Hz signal does.

  Setting selector 3 to "1" allows the machine to ignore a DIS signal sent from the called station once in sending operation. This operation suppresses echoes since the first DIS signal immediately follows a 2100 Hz CED (which disables the ES) so that it is likely to be affected by echoes in the disabled ES state. However, such a disabled ES state will be removed soon so that the second and the following DIS signals are not susceptible to data distortion due to echoes. Note that some models when called may cause error by receiving a self-outputted DIS.

  The setting made by selector 3 takes effect only when the Overseas Communications Mode is set to ON. (The setting made by selector 2 is always effective.)

- **Selectors 8: Limitation on CNG detection**

  If this selector is set to "1," the machine detects a CNG signal according to the condition preset by selectors 2 and 3 on WSW18 after a line is connected. If it is set to "0," the machine detects a CNG signal as long as the line is connected.

<WSW21> (TAD setting 1)

Selector No.	Function	Setting and Specifications
1 I 5	Max. waiting time for voice signal (Not used.)	
6 7	Taping the call (Not used.)	
8	Erasure of message stored in the memory after the message transfer (Not used.)	

<WSW22> (ECM and call waiting caller ID)

Selector No.	Function	Setting and Specifications
1	ECM* in sending	0: Valid 1: Invalid
2	ECM* in receiving	0: Valid 1: Invalid
3	Call Waiting Caller ID (Not used.)	
4	Not used.	
5 I 8	Acceptable TCF bit error rate (%) (Only at 4800 bps) (Not used.)	

* ECM: Error correction mode

Note:

- Selector 3 is applicable to the American models only.

<WSW23> (Communications setting)

Selector No.	Function	Setting and Specifications
1	Starting point of training check (TCF)	0: 0 From the head of a series of zeros 1: From any arbitrary point
2 3	Allowable training error rate	No. 2 3 0 0: 0 % 0 1: 0.5 % 1 0: 1 % 1 1: 2 %
4 5	Decoding error rate for transmission of RTN	No. 4 5 0 0: 16 % 0 1: 14% 1 0: 10 % 1 1: 8 %
6 7	Not used.	
8	Limitation of attenuation level	0: Yes 1: No

Note:

- Selector 8 is not applicable to the model set France in EEPROM Customizing (Function Code 74)

- **Selector 1: Starting point of training check (TCF)**

  At the training phase of receiving operation, the called station detects for 1.0 second a training check (TCF) command, a series of zeros which is sent from the calling station for 1.5 seconds to verify training and give the first indication of the acceptability of the line.

  This selector sets the starting point from which the called station should start counting those zeros. If this selector is set to "0," the called station starts counting zeros 100 ms after the head of a series of zeros is detected.

  If it is set to "1," the called station starts counting zeros upon detection of 10-ms successive zeros 50 ms after the head of a series of zeros is detected. In this case, if the detection of 10-ms successive zeros is too late, the data counting period will become less than 1.0 second, making the called station judge the line condition unacceptable.

- **Selectors 2 and 3: Allowable training error rate**

  The called station checks a series of zeros gathered in training (as described in Selector 1) according to the allowable training error rate set by these selectors. If the called station judges the line condition to be accepted, it responds with CFR; if not, it responds with FTT.

- **Selectors 4 and 5: Decoding error rate for transmission of RTN**

  The machine checks the actual decoding errors and then transmits an RTN according to the decoding error rate (Number of lines containing an error per page ÷ Total number of lines per page) set by these selectors.

- **Selector 8: Limitation of attenuation level**

  Setting this selector to "0" limits the transmitting level of the modem to -10 dB. This setting has priority over the settings selected by WSW02 (selectors 5 through 8) and WSW13 (selectors 5 through 8).

<WSW24> (TAD setting 2)

Selector No.	Function	Setting and Specifications
1 2	Maximum OGM recording time (Not used.)	
3 4	Time length from CML ON to start of pseudo ring backtone transmission	No. 3 4 0 0: 4 sec. 0 1: 3 sec. 1 0: 2 sec. 1 1: 1 sec.
5 | 8	Attenuator for playback of ICM/ OGM to the line (Not used.)	

- **Selectors 3 and 4: Time length from CML ON to start of pseudo ring backtone transmission**

  These selectors set the length of time from CML-ON up to the start of pseudo ring backtone transmission.

  In models with OGM facilities, the settings made by these selectors also apply to the length of time from CML-ON up to the start of OGM transmission.

<WSW25> (TAD setting 3)

Selector No.	Function	Setting and Specifications
1 2	Not used.	
3 4	External TAD no-tone detection level	No. 3 4 0 0: -43 dB (A) 0 1: -46 dB (B) 1 0: -49 dB (C) 1 1: -51 dB (D)
5 | 7	Pause between paging number and PIN (Not used.)	
8	Not used.	

Note:
- Selectors 5 through 7 are applicable to the U.S.A. model only.

- **Selectors 3 and 4: External TAD no-tone detection level**

  These selectors set the no-tone detection level in the external TAD mode.

<WSW26> (Function setting 4)

Selector No.	Function	Setting and Specifications
1 2	Not used.	
3	Dialing during document reading into the temporary memory in in-memory message transmission	0: Disable 1: Enable
4 5	No. of CNG cycles to be detected (when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone)	In the case of Selector 3=0 in WSW54. No. 4 5 0 0: 0.5 (A) 0 1: 1 (B) 1 0: 1.5 (C) 1 1: 2 (D) In the case of Selector 3=1 in WSW54. No. 4 5 0 0: 2.5 (A) 0 1: 3 (B) 1 0: 3.5 (C) 1 1: 4 (D)
6 7	No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode)	In the case of Selector 6=0 in WSW58. No. 6 7 0 0: 0.5 (A) 0 1: 1 (B) 1 0: 1.5 (C) 1 1: 2 (D) In the case of Selector 6=1 in WSW58. No. 6 7 0 0: 2.5 (A) 0 1: 3 (B) 1 0: 3.5 (C) 1 1: 4 (D)
8	Not used.	

- **Selector 3: Dialing during document reading into the temporary memory in in-memory message transmission**

  If this selector is set to "0," the machine waits for document reading into the memory to complete and then starts dialing. This enables the machine to list the total number of pages in the header of the facsimile message.

- **Selectors 4 and 5: No. of CNG cycles to be detected (when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone)**

  The machine interprets a CNG as an effective signal if it detects the CNG by the number of cycles specified by these selectors when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone.

- **Selectors 6 and 7: No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode)**

  The machine interprets a CNG as an effective signal if it detects the CNG by the number of cycles specified by these selectors when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode.

<WSW27> (Function setting 5)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	Ringer OFF setting	0: Yes 1: No
3	Automatic playback of OGM when switched to the TAD mode (Not used.)	
4	Detection of distinctive ringing pattern	0: Yes 1: No
5	Not used.	
6	Recording quality (Not used.)	
7	Recording time for high recording quality (Not used.)	
8	Not used.	

Note:

- Selectors 4 and 5 are applicable to the U.S.A. model only.

- **Selector 2: Ringer OFF setting**

  This selector determines whether or not the ringer can be set to OFF.

- **Selectors 4: Detection of distinctive ring**

  If this selector is set to "1," the machine detects only the number of rings; if it is set to "0," the machine detects the number of rings and the ringing time length to compare the detected ringing pattern with the registered distinctive one.

<WSW28> (Function setting 6)

Selector No.	Function	Setting and Specifications
1 | 3	Transmission level of DTMF high-band frequency signal	No. 1 2 3 0 0 0: 0 dB 0 0 1: +1 dB 0 1 0: +2 dB 0 1 1: +3 dB 1 0 0: 0 dB 1 0 1: -1 dB 1 1 0: -2 dB 1 1 1: -3 dB
4 | 6	Transmission level of DTMF low-band frequency signal	No. 4 5 6 0 0 0: 0 dB 0 0 1: +1 dB 0 1 0: +2 dB 0 1 1: +3 dB 1 0 0: 0 dB 1 0 1: -1 dB 1 1 0: -2 dB 1 1 1: -3 dB
7 8	Not used.	

- **Selectors 1 through 6: Transmission level of DTMF high-/low-band frequency signal**

  These selectors are intended for the manufacturer who tests the machine for the Standard. Never access them.

<WSW29> (Function setting 7)

Selector No.	Function	Setting and Specifications
1 I 3	Compression threshold level for voice signals inputted via the telephone line in the built-in TAD operation (Not used.)	
4 I 6	Compression threshold level for voice signals inputted via the handset in the built-in TAD operation (Not used.)	
7	Impedance switching control in pulse dialing	0: OFF 1: ON
8	Prompt beep when the memory area for the activity report becomes full	0: No 1: Yes

Note:
- Selectors 7 and 8 are applicable only to the European model.

- **Selector 8: Prompt beep for activity report**

  This selector determines whether or not to beep if the memory area for the activity report becomes full, for prompting you to print out the report. (Printing it out will clear the memory area.)

<WSW30> (Function setting 8)

Selector No.	Function	Setting and Specifications
1 I 3	Dial tone/busy tone detection level during recording of ICM (Not used.)	
4 I 6	Not used.	
7	Scanning magnification adjusting function	0: Enable 1: Disable
8	Not used.	

<WSW31> (Function setting 9)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	Default reduction rate for failure of automatic reduction during recording	0: 100 %　1: 75 %
3	Not used.	
4	(Do not disturb this selector.)	
5	Minimum ON and OFF duration of ringer signals effective in distinctive ringing	0: 130 ms　1: 90 ms
6 | 7	Not used.	
8	Drum life indication	0: No　1: Yes

Note:
- Selector 5 is applicable only to the U.S.A. model.

- **Selector 2: Default reduction rate for failure of automatic reduction during recording**

  This selector sets the default reduction rate to be applied if the automatic reduction function fails to record one-page data sent from the calling station in a single page of the current paper.

  If it is set to "0," the machine records one-page data at full size (100%) without reduction; if it is set to "1," the machine records it at 70% size.

- **Selector 5: Minimum ON and OFF duration of ringer signals effective in distinctive ringing**

  The ringer pattern consists of short and long rings, e.g., short-short-long rings. This selector sets the minimum ON and OFF duration of ringer signals that are required for the machine to interpret ringer signals as being ON or OFF. This is to prevent components of a ringer pattern from being misinterpreted due to chattering in distinctive ringing.

  The machine monitors ringer signals at 10-ms intervals. If the signal is ON, the machine counts +1; if it is OFF, it counts -1. If the counter increments up to +5 or +13 when this selector is set to "1" (90 ms) or "0" (130 ms), respectively, the machine interprets the current signal as being ON.

  If the counter returns to zero, the machine interprets the signal as being OFF.
  If the Distinctive Ring is set to OFF, this selector is not effective.

<WSW32> (Function setting 10)

Selector No.	Function	Setting and Specifications
1 I 4	Not used.	
5 6	Default resolution when FAX scanning	No. 5 6 0 0: Standard 0 1: Fine 1 0: Super fine 1 1: Photo
7 8	Default contrast when FAX scanning	No. 7 8 0 0: Automatic 0 1: Automatic 1 0: Super light 1 1: Super dark

- **Selectors 5 and 6: Default resolution**

  These selectors set the default resolution which applies when the machine is turned on or completes a transaction.

- **Selectors 7 and 8: Default contrast**

  These selectors set the default contrast which applies when the machine is turned on or completes a transaction.

<WSW33> (Function setting 11)

Selector No.	Function	Setting and Specifications
1 I 3	Detection threshold level of "no tone" during recording of ICM (Not used.)	
4 5	FAX receiving speed to be kept within the transmission speed limit to the PC (Not used.)	
6	Report output of polled transmission requests	0: Yes 1: No
7 8	Comfortable noise level (Not used.)	

<WSW34> (Function setting 12)

Selector No.	Function	Setting and Specifications
1 I 3	Erasing time length of ICM tone recorded preceding the tone detection starting point in the case of automatic line disconnection due to no voice signal received (Not used.)	
4 5	No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode or via the machine in F/T mode) (Not used.)	
6 7	Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation (Not used.)	
8	Not used.	

<WSW35> (Function setting 13)

Selector No.	Function	Setting and Specifications
1 I 4	Max. detection period of dial tone/busy tone during recording of ICM (Not used.)	
5 I 8	Not used.	

<WSW36> (Function setting 14)

Selector No.	Function	Setting and Specifications
1	ECP mode*	0: ON 1: OFF
2	Recovery from Inactive PC Interface	0: Disable 1: Enable
3	PC Power-off Recognition Time	0: Normal 1: Long
4	Not used.	
5	Escape from phase C	0: Yes 1: No
6 I 8	Extension of incoming calling signal (CI) frequency band specified by selectors 1 through 4 on WSW14	No. 6 7 8 0 0 0: 0 (Ignored) 0 0 1: 4 (448 Hz) 0 1 0: 8 (244 Hz) 0 1 1: 12 (162 Hz) 1 0 0: 16 (122 Hz) 1 0 1: 20 (97 Hz) 1 1 0: 24 (81 Hz) 1 1 1: 28 (69 Hz)

*ECP (Enhanced Capabilities Port)

Note:

- Selectors 2 and 3 will become operative if selectors 1 and 2 of WSW46 are set to "monitor" the PC power ON/OFF state.

- **Selector 1: ECP mode**

  The ECP mode enhances the normal bidirectional communications between the machine and the connected PC for higher transmission speed throgh the parallel interface.

- **Selector 2: Recovery from Inactive PC Interface**

  If the machine recognizes via the STB signal line that the connected PC is powered off throgh the parallel interface, it will turn the PC interface outputs Low to protect the PC from hazards that could be caused by weak electric current accidentally flown from the machine. This selector determines whether or not the machine should recover from the inactive PC interface to normal interfacing state upon receipt of data from the PC.

- **Selector 3: PC Power-off Recognition Time**

  This selector sets the time length from when the machine detects the PC powered off until it recognizes the detected state as power-off.
  If selector 2 is set to "0," it is recommended that selector 3 be set to "1"; otherwise, the machine may mistakenly detect PC powered off.

- **Selector 5: Escape from phase C**

  This selector determines whether or not the machine will escape from phase C when it detects an RTC (Return to Control) in non-ECM mode or an RCP (Return to Control Partial page) in ECM mode.

- **Selectors 6 through 8: Extension of incoming calling signal (CI) frequency band specified by selectors 1 through 4 on WSW14**

  At the start of reception, if the machine detects the frequency of a CI signal specified by selectors 1 through 4 on WSW14, it starts the ringer sounding. However, the machine may fail to detect the CI signal normally due to noise superimposed at the time of reception. To prevent it, use selectors 6 through 8 on WSW36.

  If the machine detects higher frequencies than the setting made here, it regards them as noise and interprets the detecting state as being normal, allowing the ringer to keep sounding according to the preset number of ringers (until it starts automatic reception of FAX data in the FAX mode or enters the TAD mode in the TEL mode).

<WSW37> (Function setting 15)

Selector No.	Function	Setting and Specifications
1	Printout of the stored image data of an unsent document onto an error report	0: No 1: Yes
2	Erasure of the stored image data of an unsent document at the time of the subsequent in-memory message transmission	0: No 1: Yes
3 | 8	Not used.	

- **Selector 1: Printout of the stored image data of an unsent document onto an error report**

  This selector determines whether or not to print out the 1st-page image data of a document onto the error report if the document image data stored in the temporary memory cannot be transmitted normally.

- **Selector 2: Erasure of the stored image data of an unsent document at the time of the subsequent in-memory message transmission**

  If in-memory message transmission fails repeatedly when selector 1 is set to "1," the temporary memory will be occupied with image data. Setting selector 2 to "1" will automatically erase the stored 1st-page image data of an unsent document at the time of the subsequent in-memory message transmission only when paper or toner runs out.

<WSW38> (V.34 transmission settings)

Selector No.	Function	Setting and Specifications
1 2	Setting of the equalizer	No. 1 2 0 0: Automatic 0 1: Automatic 1 0: Fixed to 4 points 1 1: Fixed to 16 points
3	Sending level of guard tone at phase 2	0: Normal - 7 db 1: Normal
4	Stepping down the transmission speed at fallback each	0: 2,400 bps 1: 4,800 bps
5 6	Automatic control of modem's EQM gain for proper transmission speed choice	No. 5 6 0 0: For higher transmission speed than the current setting 0 1: No change from the current setting 1 0: For lower transmission speed than the current setting 1 1: For further lower transmission than the setting made by 1, 0
7	Redialing when a communications error occurs	0: ON 1: OFF
8	Detection of CED for stopping CNG	0: ON 1: OFF

- **Selectors 1 and 2: Setting of the equalizer**

  These selectors set the equalizer's training level to be applied if the machine fails to send training due to weak line connection. If these selectors are set to "0, X," the modem will automatically set the appropriate training level.

- **Selector 3: Sending level of guard tone at phase 2**

  This selector sets the sending level of guard tone for 1800 Hz to be sent at Phase 2 in the V. 34 mode.

- **Selector 4: Stepping down the transmission speed at fallback each**

  This selector determines how much the modem steps down the transmission speed at fallback when called by the remote station. If this selector is set to "1," the modem may step down the transmission speed from 33600 bps to 28800 bps by one-time fallback.

- **Selectors 5 and 6: Automatic control of modem's EQM gain for proper transmission speed choice**

  These selectors determine how the modem controls the EQM (Eye Quality Monitor) gain for proper choice of the transmission speed, which applies if the modem selects higher transmission speed than the possible speed so that it always repeats falling back.

- **Selector 8: Detection of CED for stopping CNG**

  If this selector is set to "0," the detection time of CED specified by WSW43, selectors 4 and 5 will apply.

<WSW39> (V.34 transmission speed)

Selector No.	Function	Setting and Specifications
1 | 4	First transmission speed choice for fallback	No. 1 2 3 4 No. 5 6 7 8 0 0 0 0: 2,400 bps 0 0 0 1: 4,800 bps 0 0 1 0: 7,200 bps 0 0 1 1: 9,600 bps 0 1 0 0: 12,000 bps 0 1 0 1: 14,400 bps 0 1 1 0: 16,800 bps 0 1 1 1: 19,200 bps 1 0 0 0: 21,600 bps 1 0 0 1: 24,000 bps 1 0 1 0: 26,400 bps 1 0 1 1: 28,800 bps 1 1 0 0: 31,200 bps 1 1 0 1: 33,600 bps 1 1 1 0: 33,600 bps 1 1 1 1: 33,600 bps
5 | 8	Last transmission speed choice for fallback	

- **Selectors 1 through 8: First and last choices of transmission speed for fallback**

  These selectors are used to set the modem speed range. With the first transmission speed choice specified by selectors 1 through 4, the machine attempts to establish the transmission link via the modem. If the establishment fails, the machine automatically steps down to the next highest speed and attempts to establish the transmission link again. The machine repeats this sequence while stepping down the transmission speed to the last choice specified by selectors 5 through 8.

  If the modem always falls back to a low transmission speed (e.g., 24,000 bps), set the first transmission speed choice to the lower one (e.g., modify it from 31,200 bps to 26,400 bps) in order to deactivate the high-speed modem function and reduce the training time for shorter transmission time.

  WSW39 will be limited by selectors 3 through 8 on WSW40.

<WSW40> (V.34 modem settings)

Selector No.	Function	Setting and Specifications			
1 2	Not used.				
3 | 8	Masking of symbol rate(s)		Not masking	Masking	
		No. 3	0	1	3429 symbols/sec
		No. 4	0	1	3200 symbols/sec
		No. 5	0	1	3000 symbols/sec
		No. 6	0	1	2800 symbols/sec
		No. 7	-	-	Not used.
		No. 8	0	1	2400 symbols/sec

Note:

- WSW40 takes effect only when the V.34 mode is permitted (WSW19, selector 7) in models supporting V.34 mode.

- **Selectors 3 through 8: Masking of symbol rate(s)**

  These selectors allow you to limit the transmission speed range in V.34 mode by masking the desired symbol rate(s). Transmission speeds assigned to the symbol rates are listed on the next page. The setting made by these selectors will limit the setting made by selectors 1 through 4 on WSW39.

  If selector 3 is set to "1" to mask the 3429 symbols/second when the first transmission speed choice is 33600 bps (specified by selectors 1 through 4 of WSW39), for example, then the allowable maximum transmission speed will be limited to 31200 bps. If selector 8 is set to "1" to mask the 2400 symbols/second when the first transmission speed choice is 33600 bps, then the allowable maximum transmission speed remains 33600 bps.

  If selector 8 is set to "1" to mask the 2400 symbols/second when the first transmission speed choice is 21600 bps (specified by selectors 1 through 4 on WSW39), then the allowable maximum transmission speed remains 21600 bps but the minimum transmission speed will be limited to 4800 bps.

Symbol rate	Transmission speed (bps)	Symbol rate	Transmission speed (bps)	Symbol rate	Transmission speed (bps)
2400	2,400	3000	4,800	3429	4,800
	4,800		7,200		7,200
	7,200		9,600		9,600
	9,600		12,000		12,000
	12,000		14,400		14,400
	14,400		16,800		16,800
	16,800		19,200		19,200
	19,200		21,600		21,600
	21,600		24,000		24,000
			26,400		28,800
			28,800		31,200
2800	4,800	3200	4,800		33,600
	7,200		7,200		
	9,600		9,600		
	12,000		12,000		
	14,400		14,400		
	16,800		16,800		
	19,200		19,200		
	21,600		21,600		
	24,000		24,000		
	24,600		26,400		
			28,800		
			31,200		

<WSW41> (ON-duration of the scanning light source)

Selector No.	Function	Setting and Specifications
1 | 3	ON-duration of the scanning light source at room temperature	No. 1 2 3 0 0 0: 16 hours 0 0 1: 24 hours 0 1 0: 12 hours 0 1 1: 8 hours 1 0 0: 4 hours 1 0 1: 2 hours 1 1 0: 1/6 hours 1 1 1: 0 hours
4	I-FAX relay report	0: ON 1: OFF
5 | 8	Modem attenuator	No. 5 6 7 8 0 0 0 0: -10 dBm 0 0 0 1: -11 dBm 0 0 1 0: -12 dBm 0 0 1 1: -13 dBm 0 1 0 0: -14 dBm | 1 1 1 1: -25 dBm

- **Selectors 1 through 3: ON-duration of the scanning light source at room temperature**

  If the scanning operation is started when the scanning light source is off, then it will come on for scanning. These selectors determine how long the light source is ON after scanning.

  If these selectors are set to "1, 1, 1," the Scanner unit goes off for protection of the Scanner unit for 10 minutes after the scanning sequence.

- **Selectors 5 through 8: Modem attenuator**

  These selectors are used to adjust the transmitting level of the modem when the reception level at the remote station is improper due to line loss. This function applies to super G3 protocol signals.

<WSW42> (Internet mail settings)

Selector No.	Function	Setting and Specifications
1	Access to the incoming mail (POP3) server (Periodical or on-demand) (Not used.)	
2	Access to the outgoing mail (SMTP) server	0: OFF 1: ON
3	I-FAX relay (Not used.)	
4	JBIG encoding system	0: Not allowed 1: Allowed
5	Drum discharge detection	0: ON 1: OFF
6 I 8	Not used.	

<WSW43> (Function setting 16)

Selector No.	Function	Setting and Specifications
1	Header for sent mail (Station ID)	0: Yes 1: No
2 3	Wait time for PC-Fax reception (Class 2) and FPTS command transmission	No. 2 3 0 0: 50 ms 0 1: 100 ms 1 0: 150 ms 1 1: 0 ms
4 5	Detection time of 2100 Hz CED or ANSam	No. 4 5 0 0: 200 ms 0 1: 300 ms 1 0: 400 ms 1 1: 500 ms
6	Not used.	
7	Automatic start of remote maintenance (Not used.)	
8	JPEG coding	0: Disable 1: Enable

- **Selector 1: Header for sent mail (Station ID)**

  This selector set whether add the header (Station ID) to the image data of the reading sent mail.

- **Selector 8: JPEG coding**

  Setting this selector to "0" disables the machine from sending/receiving JPEG color images and from receiving JPEG monochrome images.

<WSW44> (Speeding up scanning-1)

Selector No.	Function	Setting and Specifications
1 I 5	Not used.	
6 I 8	Effective time length of the white level compensation data obtained beforehand	No. 6 7 8 0 0 0: Obtained compensation data ineffective 0 0 1: 1 min. 0 1 0: 3 min. 0 1 1: 5 min. 1 0 0: 10 min. 1 0 1: 15 min. 1 1 0: 20 min. 1 1 1: 30 min.

- **Selectors 6 through 8: Effective time length of the white level compensation data obtained beforehand**

  These selectors determine how long compensation data obtained beforehand will keep effective.

<WSW45> (Speeding up scanning-2)

Selector No.	Function	Setting and Specifications
1 | 3	Delay time from when documents are set until the ADF starts drawing them in	No. 1 2 3 0 0 0: No automatic drawing-in 0 0 1: 1 sec. 0 1 0: 2 sec. 0 1 1: 3 sec. 1 0 0: 4 sec. 1 0 1: 5 sec. 1 1 0: 6 sec. 1 1 1: 7 sec.
4 | 6	Periodical correction intervals of the reference voltage to be applied to white level compensation for document scanning, during standby	No. 4 5 6 0 0 0: No correction of reference voltage during standby 0 0 1: 10 sec. 0 1 0: 30 sec. 0 1 1: 1 min. 1 0 0: 3 min. 1 0 1: 5 min. 1 1 0: 10 min. 1 1 1: 30 min.
7	Standby position of the scanner unit	0: Unit lock position 1: Location of the white-level reference film
8	Line polarity reverse detection function	0: No 1: Yes

- **Selectors 1 through 3: Delay time from when documents are set until the ADF starts drawing them in**

  These selectors determine how long the ADF will delay automatic drawing-in of documents (to the scanning standby position) after you set them in the ADF, as well as determining whether or not the ADF automatically draws in documents.

- **Selectors 4 through 6: Periodical correction intervals of the reference voltage applied to white level compensation for document scanning, during standby**

  These selectors set the correction intervals (in seconds) of the reference voltage to be applied to white level compensation for document scanning during standby, as well as determining whether or not the controller makes the reference voltage correction during standby. (Conventionally, the correction has been made immediately before the start of actual scanning)

  This function takes effect in copying. Making the correction during standby may shorten the preparation time for copying.

Note:

- Do not access selectors 4 through 6.

- **Selector 7: Standby position of the scanner unit**

  This selector determines whether the standby position of the scanner unit should be the unit lock position or the location of the white-level reference film (attached to the inside of the scanner top cover). If the location of the reference film is selected, the scanner unit will not return to the home position so as to shorten the travel time, decreasing the preparation time for copying.

- **Selector 8: Line polarity reverse detection function**

  Line polarity will be reversed if the phone is hung up at the other end of the line. If this selector is set to "1," the machine will detect the reverse polarity during an answering machine operation and thereby determine that the phone has been hung up.

<WSW46> (Monitor of power ON/OFF state and parallel port kept at high)

Selector No.	Function	Setting and Specifications
1 2	Monitoring the PC ON/OFF state	No. 1 2 0 0: Disable 0 1: Monitor SELECT IN 1 0: Monitor STROBE 1 1: Monitor both SELECT IN and STROBE
3	Parallel port output pins kept at high level (Not used.)	
4	Previous filtering parameters for white level compensation	0: Enable 1: Disable
5 | 8	Not used.	

Note:

- Selector 4 is not applicable to models equipped with flat-bed scanners.

- **Selectors 1 and 2: Monitoring the PC ON/OFF state**

  For the related functions, refer to WSW36, selectors 2 and 3.

- **Selector 4: Previous filtering parameters for white level compensation**

  At the start of scanning operation, the machine usually initializes white and black level data stored in the EEPROM by scanning the while-level reference film attached to the inside of the scanner top cover. After long use of the machine, however, the film may be contaminated with dust or dirt.

  Accordingly, incorrect white level data will be set up so that white vertical streaks will be brought on the scanning result.

  Setting this selector to "0" (Enabled) will apply previously saved white level data instead of new incorrect compensation.

<WSW47> (Switching between high- and full-speed USB)

Selector No.	Function	Setting and Specifications
1	Handling paper at the occurrence of a paper feed timing error (Not used.)	
2	Reducing to A4 from B4 and sending at the real time sending	0: No 1: Yes
3 4	Delay of FAX line disconnection when switching to the pseudo-ringing external telephone	No. 3 4 0 0: 200 ms 0 1: 400 ms 1 0: 700 ms 1 1: 1000 ms
5	Disable the ringer of external telephone at non-ring reception	0: No 1: Yes
6	Not used.	
7	Disable the ringer of external telephone with CAR signal when caller ID service is available	0: No 1: Yes
8	Switching between high-speed USB and full-speed USB	0: Auto switching between high-speed USB (ver. 2.0) and full-speed USB (ver. 1.1) 1: Fixed to full-speed USB (ver. 1.1)

Note:

- Selector 1 is applicable only to models equipped with flat-bed scanners.
- Selectors 3 and 4 are applicable only to models supporting pseudo-ringing of a connected external telephone.

- **Selectors 3 and 4: Delay of FAX line disconnection when switching to the pseudo-ringing external telephone**

When the machine receives a phone call, it can make the connected external telephone ring (so called pseudo-ringing). During pseudo-ringing, if you pick up the handset of the external telephone, the line might be disconnected due to cut-off of the line current. To hold the line, the machine may supply line current by making use of the pulse generator circuit that forms a parallel loop. This way the FAX line disconnection may be delayed. These selectors determine the delay period.

<WSW48> (USB setup latency)

Selector No.	Function	Setting and Specifications
1 2	Not used.	
3 I 5	Number of network TWAIN PCs registered for each application	No. 3 4 5 0 0 0: 25 PCs 0 0 1: 50 PCs 0 1 0: 75 PCs 0 1 1: 100 PCs 1 0 0: 125 PCs 1 0 1: 150 PCs 1 1 0: 175 PCs 1 1 1: 200 PCs
6 I 8	USB setup latency (Not used.)	

<WSW49> (End-of-copying beep and print in black)

Selector No.	Function	Setting and Specifications
1 2	RAM disc size in PCL/ PS	No. 1 2 0 0: None 0 1: 1MB 1 0: 2MB 1 1: 4MB
3	End-of-copying beep	0: Yes 1: No
4 5	Command flag detection time	No. 4 5 0 0: 150 ms 0 1: 350 ms 1 0: 550 ms 1 1: 750 ms
6 7	Scanner unit warm-up time adjustment	No. 6 7 0 0: Not adjusted 0 1: 80 % 1 0: 120 % 1 1: 150 %
8	Print in black (Not used.)	

- **Selectors 4 and 5: Command flag detection time**

  After receiving a command flag, the machine will wait for the command that should follow for the time length specified by these selectors.

<WSW50> (SDAA settings)

Selector No.	Function	Setting and Specifications
1 2	Percentage voltage for interpreting the external telephone as being hooked up (based on the network's standard voltage) (Not used.)	
3	DC mask curve table to be applied when the line is connected (Not used.)	
4	AC impedance to be applied when the line is connected (Not used.)	
5 6	Current control to be applied immediately after connection of the line (Not used.)	
7 8	AC voltage threshold for detection of ring (Not used.)	

<WSW51> (Function setting 17)

Selector No.	Function	Setting and Specifications
1	Output of communications error report when transmission verification report is disabled	0: Enable 1: Disable
2	CR motor torque variation reduction control (Not used.)	
3 4	Cordless handset microphone volume (Not used.)	
5 I 7	Main unit microphone level and echo cancellation ON/OFF function (Not used.)	
8	Support between nearly empty → empty when main unit cover opened after nearly empty detected (Not used.)	

<WSW52> (Function setting 18)

Selector No.	Function	Setting and Specifications
1 I 3	Cordless handset microphone level and echo cancellation ON/OFF (Not used.)	
4 I 6	External telephone pseudo ringing signal frequency setting (Not used.)	
7	Caller ID display after the machine has returned to TEL mode from FAX mode (Not used.)	
8	Dial display during transmission (Not used.)	

<WSW53> (Function setting 19)

Selector No.	Function	Setting and Specifications
1 2	Not used.	
3 4	Caller ID FSK receiving timing delay setting (Not used.)	
5 6	Caller ID instantaneous interrupt detection time setting (Not used.)	
7	CNG detection retry after invalid CNG detected	0: Yes 1: No
8	Decompression of JPEG compressed file (Not used.)	

<WSW54> (Function setting 20)

Selector No.	Function	Setting and Specifications
1 2	PictBridge command delay time (Not used.)	
3	More CNG detection cycles in user-friendly reception	0: No 1: 2 more cycles
4	Cordless handset ID recovery future (Not used.)	
5 6	Caller ID tone alert detection time length	No. 5 6 0 0: 10 ms (default) 0 1: 20 ms 1 0: 30 ms 1 1: 40 ms
7	Caller ID wet pulse transmission	0: Yes (default) 1: No
8	Switching between DTMF and FSK for caller ID reception (Not used.)	

Note:

- Selectors 5 through 7 are applicable only to models designed for the UK market.

- **Selector 3: More CNG detection cycles in user-friendly reception**

  If CNG detection fails even after adjustment of selectors 4 and 5 on WSW26, try adding 2 more cycles to the permitted number of CNG detection cycles.

- **Selectors 5 and 6: Caller ID tone alert detection time length**

  In the event of a false detection of a caller ID tone alert, adjust the detection time length.

- **Selector 7: Caller ID mild pulse transmission**

  If a caller ID cannot be displayed due to mild pulses transmitted after detection of tone alert, use this selector so as to make it impossible to transmit mild pulses.

- **Selector 8: Switching between DTMF and FSK for caller ID reception**

  If a caller ID cannot be received, switch from DTMF to FSK. This operation can also be performed by means of the menu, by switching between DTMF and FSK.

<WSW55> (Not used)

Selector No.	Function	Setting and Specifications
1 | 8	Interval of time required for the developing bias voltage correction (hour) (Not used.)	

The setting example of the selector number is as follows;

No.1 2 3 4 5 6 7 8
0 0 0 0 0 0 0 0 : The developing bias voltage correction is performed on each print job.
0 0 0 1 1 0 0 0 : The developing bias voltage correction is performed when a print job occurs after 24 hours (default value) or later.
0 0 0 1 0 0 1 0 : The developing bias voltage correction is performed when a print job occurs after 72 hours or later.
1 1 1 1 1 1 1 1 : The developing bias voltage correction is not performed.

<WSW56> (Function setting 21)

Selector No.	Function	Setting and Specifications
1	PS emulation function setting (Not used.)	
2	Switching of the PPT setting	0: Invalid 1: Valid
3	"Last Job Reprint" function setting	0: Invalid 1: Valid
4	Wireless LAN function (Not used.)	
5	Switching of the echo suppression improvement during calling	0: Enable 1: Disable
6	Switching of the display for the coverage of toner cartridge	0: The coverage only for the current toner cartridge 1: The coverage for all toner cartridges which had been consumed
7	PCL emulation function setting	0: Invalid 1: Valid
8	Switching of the CPU sleep mode	0: Invalid 1: Valid

- **Selector 3: "Last Job Reprint" function setting**

  Setting this selector to "0" makes the machine not to reprint the "Last Job Print" data such as confidential document in order to prevent the misuse.

- **Selector 5: Switching of the echo suppression improvement during calling**

  To suppress the echo during calling, set this selector to "0". The default value is "0:Enable".

- **Selector 6: Switching of the display for the coverage of toner cartridge**

  This selector specifies the display for the coverage of toner cartridge. Setting this selector to "0", the machine displays the coverage only for the current toner cartridge. If this selector sets to "1", the machine displays the coverage for all toner cartridge which had been consumed.

- **Selector 7: PCL emulation function setting**

  This selector is applicable to models equipped without PCL emulation.

- **Selector 8: Switching of the CPU sleep mode**

  This selector specifies the CPU sleep mode ON or OFF.

<WSW57> (Function setting 22)

Selector No.	Function	Setting and Specifications
1 | 3	Caller ID judgment voltage (to be distinguished from rings) (Not used.)	
4 | 6	Caller ID judgment voltage (to be distinguished from reverse polarity voltages) (Not used.)	
7	Not used.	
8	Base unit [**Start**] button after cordless handset dialing (Not used.)	

<WSW58> (Function setting 23)

Selector No.	Function	Setting and Specifications
1 | 3	Prevention of line interrupt during ICM recording (ratio of guard tone response time to call end tone ON time) (Not used.)	
4 5	Not used.	
6	Extension of the "No. of CNG cycles to be detected" (which allows two cycles to be added to the cycles specified by selectors 6 and 7 on WSW26 and selectors 4 and 5 on WSW34)	0: No 1: +2 cycles
7 8	No. of busy tone detection cycles	No. 7 8 0 0: -1 cycle 0 1: +0 cycles (default) 1 0: +1 cycle 1 1: +2 cycles

<WSW59> (Function setting 24)

Selector No.	Function	Setting and Specifications
1	USB serial number (SN) transmission enabled/disabled	0: USB serial number transmitted 1: USB serial number not transmitted
2	Extension of the waiting time between ANSam and DIS	0: Enable (default) 1: Disable
3 | 7	Checking of the specified character code set when displaying or printing the folder/ file names stored in memory cards or USB flash memory drives	No. 34567 00000 : ASC11 (default for U.S.A/ European models) 00001 : Latin1 (CP1252) 00010 : Latin2 (CP1250) 00011 : Cyrillic (CP1251) 00100 : SJIS (CP932) 00101 : Thai (CP874) 00110 : Korean (CP949) 00111 : Traditional Chinese (CP950) 01000 : Simplified Chinese (CP936) (default for Chinese and Asia & Pacific models) 01001 : Arabic (CP1256) 01010 | Reserved. 11111
8	Improvement of DTMF detection function (to minimize the effects of momentary power failure or noise)	0: Disable 1: Enable (default)

- **Selector 1: Frame length selection**

  This is intended to prevent the problem of a continued increase in USB ports when serial numbers are transmitted from the bizhub 20 to a Windows Vista-based PC.

  It is intended only to prevent a problem specific to Windows Vista; its default setting is "0: USB SN enabled."

- **Selector 2: Extension of the waiting time between ANSam and DIS**

  Setting this selector to "0" extends the waiting time between the ANSam and DIS in order to secure the time required for switching the calling machine's echo suppressor in transmission from a G3 to G4 FAX machine.

- **Selector 3 through 7: Checking of the specified character code set when displaying or printing the folder/file names stored in memory cards or USB flash memory drives**

  Setting these selectors to "0, 0, 0, 0, 0" does not check any character code set. When folder/ file names stored in memory cards or USB flash memory drives contain Chinese characters, for example, those characters may get garbled in displaying on the color LCD or printing indexes. If it happens, select the character code set of the language in use with these selectors.

- **Selector 8: Improvement of DTMF detection function (to minimize the effects of momentary power failure or noise)**

<WSW60> (Not used)

Selector No.	Function	Setting and Specifications
1 | 8	Not used.	

<WSW61> (Scanning light intensity to judge to be stable 1)

Selector No.	Function	Setting and Specifications
1 | 4	Change rate of the Scanner scanning light intensity to judge to be stable in the long time mode	No. 1 2 3 4 0 0 0 0: 1% (Default) 0 0 0 1: 0.5% 0 0 1 0: 3% 0 0 1 1: 5% 0 1 0 0: 10% 0 1 0 1: 15% 0 1 1 0: 20% 1 1 1 1: 100% * * (Scans immediately after the light source ON)
5 | 8	Change rate of the Scanner scanning light intensity to judge to be stable in the short time mode	No. 5 6 7 8 0 0 0 0: 5% (Default) 0 0 0 1: 1% 0 0 1 0: 3% 0 0 1 1: 10% 0 1 0 0: 15% 0 1 0 1: 20% 0 1 1 0: 30% 1 1 1 1: 100% * * (Scans immediately after the light source ON)

- **Selectors 1 through 8: Change rate of the CCD scanning light intensity to judge to be stable.**

The light intensity of the Scanner unit is changed widely immediately after the light source is on, that influences scanning density. Therefore, the first scanning after the light source is off and on is started after the change rate of the Scanner light intensity is stabilized in the definite range. These selectors set the change rate to start the scanning operation above. If you want to start scanning immediately even if the image quality is not good, set the rate to high.

Long / short time mode:
The selectors are divided between the long and short time modes depending on the scanning resolution and black and white or color mode. The long time mode is selected in color scanning at 600dpi or more, or in black and white scanning at 1200dpi. The short time mode is selected in other scanning conditions than the above.

<WSW62> (Scanning light intensity to judge to be stable 2)

Selector No.	Function	Setting and Specifications
1 I 4	Change rate of the Scanner light intensity for scanning pages compensation	No. 1 2 3 4 — Change rate for simple compensation — Change rate for regular compensation 0 0 0 0: 3% 10% * 0 0 0 1: 3% 7% 0 0 1 0: 3% 15% 0 0 1 1: 3% 20% 0 1 0 0: 3% 25% 0 1 0 1: 5% 10% 0 1 1 0: 5% 15% 0 1 1 1: 5% 20% 1 0 0 0: 5% 25% 1 0 0 1: 7% 15% 1 0 1 0: 7% 20% 1 0 1 1: 7% 25% 1 1 0 0: 10% 15% 1 1 0 1: 10% 20% 1 1 1 0: 10% 25% 1 1 1 1: 15% 30% * Default
5 6	Selection of judging function for simple scanning pages compensation	No. 5 6 0 0: Judges according to the change rate 0 1: Not judges 1 0: Judges every page
7 8	Selection of judging function for regular scanning pages compensation	No. 7 8 0 0: Judges according to the change rate 0 1: Not judges 1 0: Judges every page

- **Selectors 1 through 4:Change rate of the Scanner light intensity for scanning pages compensation**

  The light intensity of the Scanner unit may be changed (decreased, especially), and difference of density may appear among the scanning pages if continuous copying or scanning is implemented from the ADF for a long time. To prevent the above, in simplex copying or scanning from the ADF, the machine checks the change rate of the light intensity in every page. Then, it takes the compensation data again if the rate is over the set value. These selectors set the change rate of the light intensity to control such operations.

  Change rate for simple compensation:
  Change rate when compensating the pages using the standard data in the machine memory without moving the Scanner unit to the designated position for scanning of the compensation data.

  Change rate for regular compensation:
  Change rate when compensating the pages with moving the Scanner unit to the designated position for scanning of the compensation data and obtaining the data actually.

  For duplex scanning, this setting is not used since the machine takes the compensation data of every page again.

- **Selectors 5 and 6 / 7 and 8:Selection of judging function for scanning pages compensation**

  These selectors set the condition to control scanning pages compensation. Some operation losses occur in the control of the compensation. If you want to start scanning immediately even if the image quality is not good, set to "01: Not discriminates". If you want to give priority to the image quality even though losses are increased, select one of others ("00: Discriminates depending on the rate of change" or "10: Discriminates every page").

<WSW63> (Function setting 25)

Selector No.	Function	Setting and Specifications
1 2	Not used	00 : Speed1 01 : Speed2 10 : Speed3 11 : Speed4
3	Clock type	0 : Follow to WSW17 1 : Japanese Type (YMD)
4 | 7	Demo print type (Demo language)	0000 : Other 0001 : English 0010 : USA 0011 : CANADA 0100 : JAPANESE 0101 : EU1 0110 : EU2 0111 : EU3 1000 : EU4 1001-1111 : Reserved
8	Font support for Israel	0: Disable 1: Enable

- **Selector 3: Clock type**

  Setting this selector to "1"displays Japanese clock type (YMD). If this selector sets to "0", select USA type (MDY) or European type (DMY) by WSW17 selector 5.

- **Selector 4: Demo print type (Demo language)**

  This selector specifies the language for Demo print.

- **Selector 8: Font support for Israel**

  To enable the font support for Israel, set this selector to "1".

<WSW64> (Setting the language / Default paper size)

Selector No.	Function	Setting and Specifications
1 | 6	Setting the language	No. 1 2 3 4 5 6 0 0 0 0 0 0: English 0 0 0 0 0 1: French 0 0 0 0 1 0: German 0 0 0 0 1 1: Dutch 0 0 0 1 0 0: Spanish 0 0 0 1 0 1: Italian 0 0 0 1 1 0: Norwegian 0 0 0 1 1 1: Portuguese 0 0 1 0 0 0: Danish 0 0 1 0 0 1: Swedish 0 0 1 0 1 0: Finnish 0 0 1 0 1 1: Czech 0 0 1 1 0 0: Polish 0 0 1 1 0 1: Hungarian 0 0 1 1 1 0: Russian 0 0 1 1 1 1: Bulgarian 0 1 0 0 0 0: Romanian 0 1 0 0 0 1: Slovakian 0 1 0 0 1 0: Brazilian 0 1 0 0 1 1: Turkish 0 1 0 1 0 1: Reserve
7 | 8	Default paper size	No. 1 2 0 0: Letter 0 1: A4 1 0: Reserve 1 1: Reserve

- **Selectors 1 through 6: Setting the language**

  Set the language displayed in the LCD.

<WSW65> (Setting the paper support)

Selector No.	Function	Setting and Specifications
1 2	Default media type	No. 1 2 0 0: Plain Paper 0 1: Thin Paper 1 0: Reserve 1 1: Reserve
3	Supporting of BOND paper	0: Disable 1: Enable
4	Supporting of HAGAKI paper	0: Disable 1: Enable
5	Supporting of OHP	0: Disable 1: Enable
6	Supporting of LABEL paper	0: Disable 1: Enable
7 8	Not used	

<WSW66> (Drum life end)

Selector No.	Function	Setting and Specifications
1 l 8	<Reserved> * Prohibit a change of the setting	

<WSW67> (Not used)

Selector No.	Function	Setting and Specifications
1 l 8	<Reserved> * Prohibit a change of the setting	

<WSW68> (Fuser unit life end)

Selector No.	Function	Setting and Specifications
1 l 8	<Reserved> * Prohibit a change of the setting	

<WSW69> (Document scanner unit life end)

Selector No.	Function	Setting and Specifications
1 l 8	<Reserved> * Prohibit a change of the setting	

<WSW70> (Paper feeding kit life end)

Selector No.	Function	Setting and Specifications
1 l 8	<Reserved> * Prohibit a change of the setting	

<WSW71> (Paper feeding kit 2 life end)

Selector No.	Function	Setting and Specifications
1 l 8	<Reserved> * Prohibit a change of the setting	

<WSW72> (Paper feeding kit MP life end)

Selector No.	Function	Setting and Specifications
1 I 8	<Reserved> * Prohibit a change of the setting	

<WSW73> (Not used)

Selector No.	Function	Setting and Specifications
1 I 8	<Reserved> * Prohibit a change of the setting	

<WSW74> (Not used)

Selector No.	Function	Setting and Specifications
1 I 8	The limited number of the documents in order for paper ejection of the simplex scanning from ADF	No. 1 2 3 4 5 6 7 8 0 0 0 0 0 0 0 0: 0 0 0 0 0 0 0 0 1: 1 0 0 0 0 0 0 1 0: 2 0 0 0 0 0 0 1 1: 3 0 0 0 0 0 1 0 0: 4 | 0 1 1 0 0 0 1 1: 99 0 1 1 0 0 1 0 0 or later: Invalidity

- **Selectors 1 through 8:** The limited number of the documents in order for paper ejection of the simplex scanning from ADF

  These selectors are used to set the limited number of the paper ejection under the following condition.

  - The machine takes action simplex scanning from the ADF.
  - The documents which are stacked on the ADF are ejected in order of the documents which has been scanned.

  There is a possibility that loading problem or dog-ear problem occurs if the limited number is over a maximum number which machine can paper feeding.

<WSW75> (Paper ejecting distance of the switch back)

Selector No.	Function	Setting and Specifications
1	Adjustment for the paper feeding distance for turning the document counter when the machine takes action duplex scanning	0: + 1: -
2 | 8	Paper feeding parameter for turning the document counter when the machine takes action duplex scanning	No. 2 3 4 5 6 7 8 0 0 0 0 0 0 0: 0 0 0 0 0 0 0 1: 1 0 0 0 0 0 1 0: 2 | 1 1 1 1 1 1 1: 127

- **Selector 1: Adjustment for the paper feeding distance for turning the document counter when the machine takes action duplex scanning**

  This selector is used to adjust the timing that the switch back roller is turned counter (the paper feeding distance for the document which has already passed through the switch back sensor) after scanning the first page when the machine takes action duplex scanning from ADF by using selectors from 2 to 8.

  It is available to choose the direction "+" or "-" from the standard position of the paper feeding distance for the document which you have selected by using selectors from 2 to 8.

- **Selectors 2 through 8: Paper feeding parameter for turning the document counter when the machine takes action duplex scanning**

  These selectors are used to adjust the paper feeding distance from the standard position that the timing of the switch back roller is turned counter after scanning the first page when the machine takes action duplex scanning from ADF. The value is parameter, so it is not actual.

<WSW76> (The limited number of the documents in reverse for paper ejection of the simplex scanning from ADF)

Selector No.	Function	Setting and Specifications
1 | 8	The limited number of the documents in reverse for paper ejection of the simplex scanning from ADF	No. 1 2 3 4 5 6 7 8 0 0 0 0 0 0 0 0: 0 0 0 0 0 0 0 0 1: 1 0 0 0 0 0 0 1 0: 2 0 0 0 0 0 0 1 1: 3 0 0 0 0 0 1 0 0: 4 | 0 1 1 0 0 0 1 1: 99 0 1 1 0 0 1 0 0 or later: Invalidity

- **Selectors 1 through 8:** The limited number of the documents in reverse for paper ejection of the simplex scanning from ADF

  These selectors are used to set the limited number of the paper ejection under the following condition.

  - The machine takes action simplex scanning from the ADF.
  - The documents which are stacked on the ADF are ejected in reverse of the documents which has been scanned.

  There is a possibility that loading problem or dog-ear problem occurs if the limited number is over a maximum number which machine can paper feeding.

<WSW77> (The limited number of the documents in reverse for paper ejection of the duplex scanning from ADF)

Selector No.	Function	Setting and Specifications
1 | 8	The limited number of the documents in reverse for paper ejection of the duplex scanning from ADF	No. 1 2 3 4 5 6 7 8 0 0 0 0 0 0 0 0: 0 0 0 0 0 0 0 0 1: 1 0 0 0 0 0 0 1 0: 2 0 0 0 0 0 0 1 1: 3 0 0 0 0 0 1 0 0: 4 | 0 1 1 0 0 0 1 1: 99 0 1 1 0 0 1 0 0 or later: Invalidity

- **Selectors 1 through 8:** The limited number of the documents for paper ejection of the duplex scanning from ADF

  These selectors are used to set the limited number of the paper ejection when the machine takes action duplex scanning from the ADF.

  There is a possibility that loading problem or dog-ear problem occurs if the limited number is over a maximum number which machine can paper feeding.

APPENDIX 2

DELETION OF USER SETTING INFORMATION, etc.

This appendix describes how to delete user setting information, etc.

DELETION OF USER SETTING INFORMATION, etc.

User setting such as wired network settings in the machine is recorded in the EEPROM and the Flash memory on the Main PCB. Follow the procedure described below to delete this information with a single operation.

- **Your name and telephone number**
- **Telephone directory data**
- **Group dialing data**
- **Dispatch history data**
- **FAX forwarding destination data**
- **Password**
- **Memory data**
- **No transfer of PC-FAX received data**
- **Ready polling data**
- **Timer sending data**
- **Collective sending data**
- **Received calls data**
- **Communication management report**
- **Net-related information**

<Operating Procedure>

(1) Press the [**MENU**] button.

(2) Press the [▼] or [▲] button, then the “Initial setup” will appear on the LCD and press the [**OK**] button.

(3) Press the [▼] or [▲] button, then the “Reset” will appear on the LCD and press the [**OK**] button.

(4) Press the [▼] or [▲] button, then the “All Settings” will appear on the LCD and press the [**OK**] button.

(5) “1. Reset 2. Exit” will appear on the LCD.

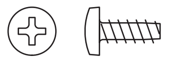
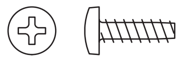
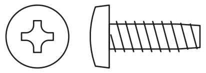
(6) Press the [**1**] key to delete the User Setting Information, etc and returns to the ready mode.

APPENDIX 3
SCREW CATALOGUE

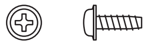
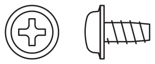
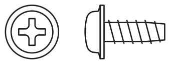
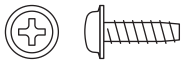
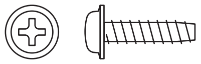
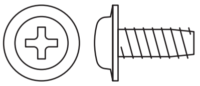
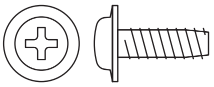
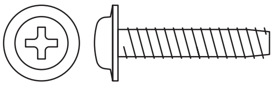
This appendix describes the used all screws in this machine by actual size. Use this appendix when lose the screw type.

SCREW CATALOGUE

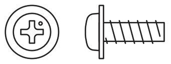
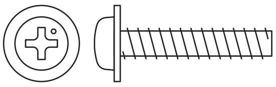
Taptite bind B

Taptite bind B M3x8	
Taptite bind B M3x10	
Taptite bind B M4x12	

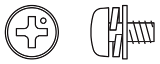
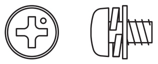
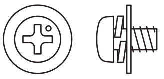
Taptite cup B

Taptite cup B M2x6	
Taptite cup B M3x6	
Taptite cup B M3x8	
Taptite cup B M3x10	
Taptite cup B M3x12	
Taptite cup B M4x10	
Taptite cup B M4x12	
Taptite cup B M4x20	

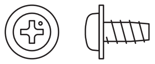
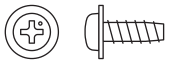
Taptite pan (washer)

Taptite pan (washer) B M3x8	
Taptite pan (washer) B M4x20	

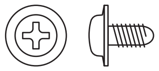
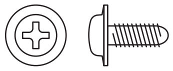
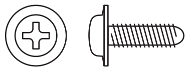
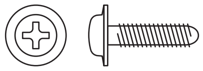
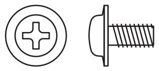
Screw pan (S/P washer)

Screw pan (S/P washer) M3x6	
Screw pan (S/P washer) M3.5x6	
Screw pan (S/P washer) M3.5x7.5 SR	

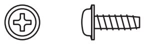
Taptite B

Taptite B M3x6	
Taptite B M3x8	

Taptite cup S

Taptite cup S M3x6	
Taptite cup S M3x8	
Taptite cup S M3x10	
Taptite cup S M3x12	
Taptite cup S M3x6 SR	

Screw

Screw M2x6	

APPENDIX 4

REFERENCES

This page provides the retrieve information. It is possible to get the instruction of the subject by just clicking on the link next page.

REFERENCES

This page provides reference information. It is possible to get the full instructions of the subjects listed by just clicking on the links below.

1. Error codes

(Refer to "3. ERROR CODES" in Chapter 3.)

2. Error message

(Refer to "2. DISTINGUISH ERROR CAUSE" in Chapter 3.)

3. Diameter of rollers

(Refer to "5.2 The pitch which appears in the image caused by failure of a roller." in Chapter 3.)

4. Periodical maintenance parts

(Refer to "1.1 Periodical Maintenance Parts" in Chapter 4.)

5. Reset parts life

(Refer to "5.1 Resetting the Periodical Maintenance Parts Life" in Chapter 6.)

6. Machine specification

(Refer to "2. SPECIFICATIONS LIST" in Chapter 1.)

7. Paper specification

(Refer to "2.6 Paper" in Chapter 1.)

APPENDIX 5

GLOSSARY

This appendix describes the manual specific acronyms and technical terms that are used in addition to the generally used ones. The next page contains typical acronyms and technical terms that are used throughout these manuals.

GLOSSARY

■ ACRONYMS AND TECHNICAL TERMS

In this Service Manual, the manual specific acronyms and technical terms are used in addition to the generally used ones. The table below contains typical acronyms and technical terms that are used throughout this manuals.

APIPA	Automatic Private IP Addressing
ASIC	Application Specific Integrated Circuit
ASSY	Assembly
CN	Connector
CPU	Central Processing Unit
dB	decibel
DEV	Development
DIMM	Dual Inline Memory Module
dpi	dots per inch
DX	Duplex
EEPROM	Electronically Erasable and Programmable Read Only Memory
FR	Feed Roller
FU	Fuser
HEX	Hexadecimal
HUM	Humidity
HV	High Voltage
HVPS	High Voltage Power Supply
IEEE 1284	Institute of Electrical and Electronic Engineers 1284
IF	Interface
IPv4	Internet Protocol Version 4
IPv6	Internet Protocol Version 6
LCD	Liquid Crystal Display
LD	Laser Diode
LED	Light Emitting Diode
LT	Lower Tray
LV	Low Voltage
LVPS	Low Voltage Power Supply
MP	Multi-Purpose
N/A	Not Applicable
NC*	Network Circuit
PF	Paper Feed
PP gear	Pressure Plate gear
ppm	Pages per minute
PU	Pick-Up roller
RAM	Random Access Memory
REGI	Registration
SB	Switch Back

SOL	Solenoid
SP	Spare Parts
SX	Simplex
T1	Tray 1
TE	Toner Empty
THM	Thermal
TN	Toner
TR	Transfer

* Excluding the acronym shown on the wiring diagram or circuit diagram.

KONICA MINOLTA

KONICA MINOLTA

PARTS GUIDE MANUAL

MAY 2010

bizhub 20
A32R012

KONICA MINOLTA BUSINESS TECHNOLOGIES, INC.

INFORMATION FOR PARTS GUIDE MANUAL

To find correct Parts No., refer to the “HOW TO MAKE THE BEST USE OF THIS MANUAL” in the following page.

HOW TO MAKE THE BEST USE OF THIS MANUAL

1 When you order, please check the proper figures beforehand that are on Our Parts Guide Manual, and order with the appropriate figures.

2 For screws, Nuts, Washers, retaining rings and Pins which are used in this model, one letter is shown on the Standard parts column of Parts list and exploded diagrams.

3 In order to maintain safety of the product, some specific parts composed of this product are set up as "essential safety parts".

4 The assigned parts number for the "essential safety parts" is indicated as "SP00-****".
When replacing these parts, follow precautions for disassembling and installing which are listed in the Service Manual.
Do not use any parts that are not set up as

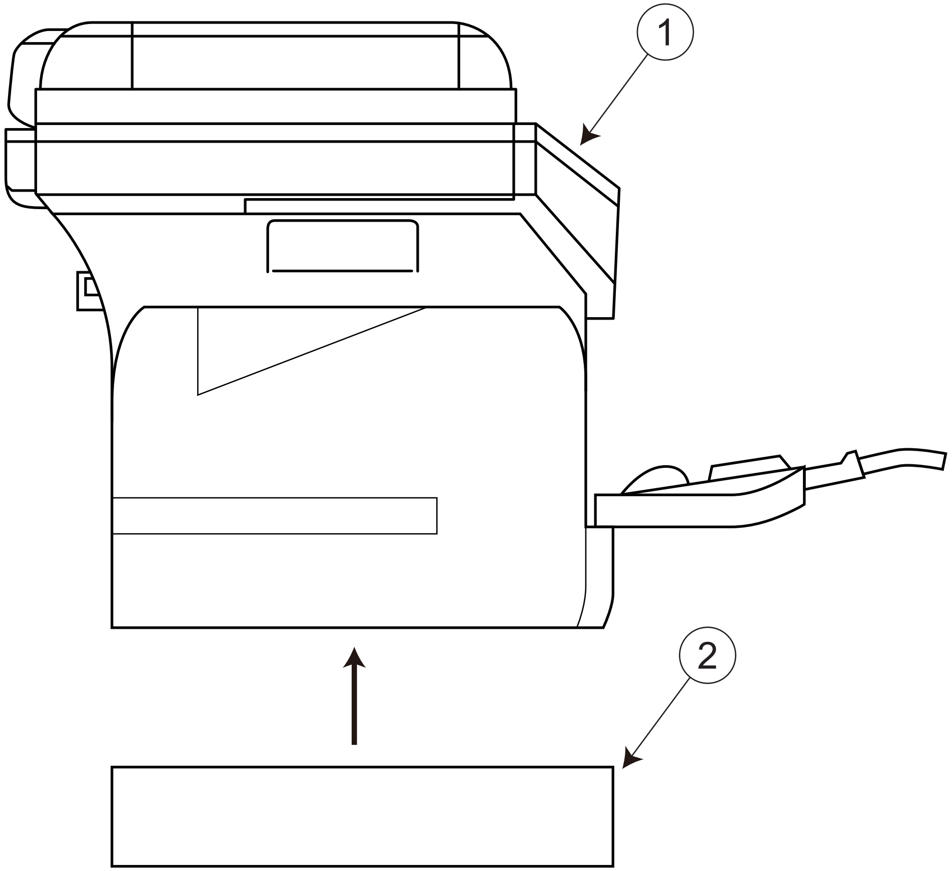
5 ♣ means that there are exclusive parts for each destination.
Please check the appropriate destination when you order.

6 Revision Mark
Marked as ▲ on the illustration shows that the revision has been made.

7 All rights reserved. (any reprints or quotations are prohibited.)
Use of this parts guide manual should be strictly supervised to avoid disclosure of confidential information.

5/26/2010

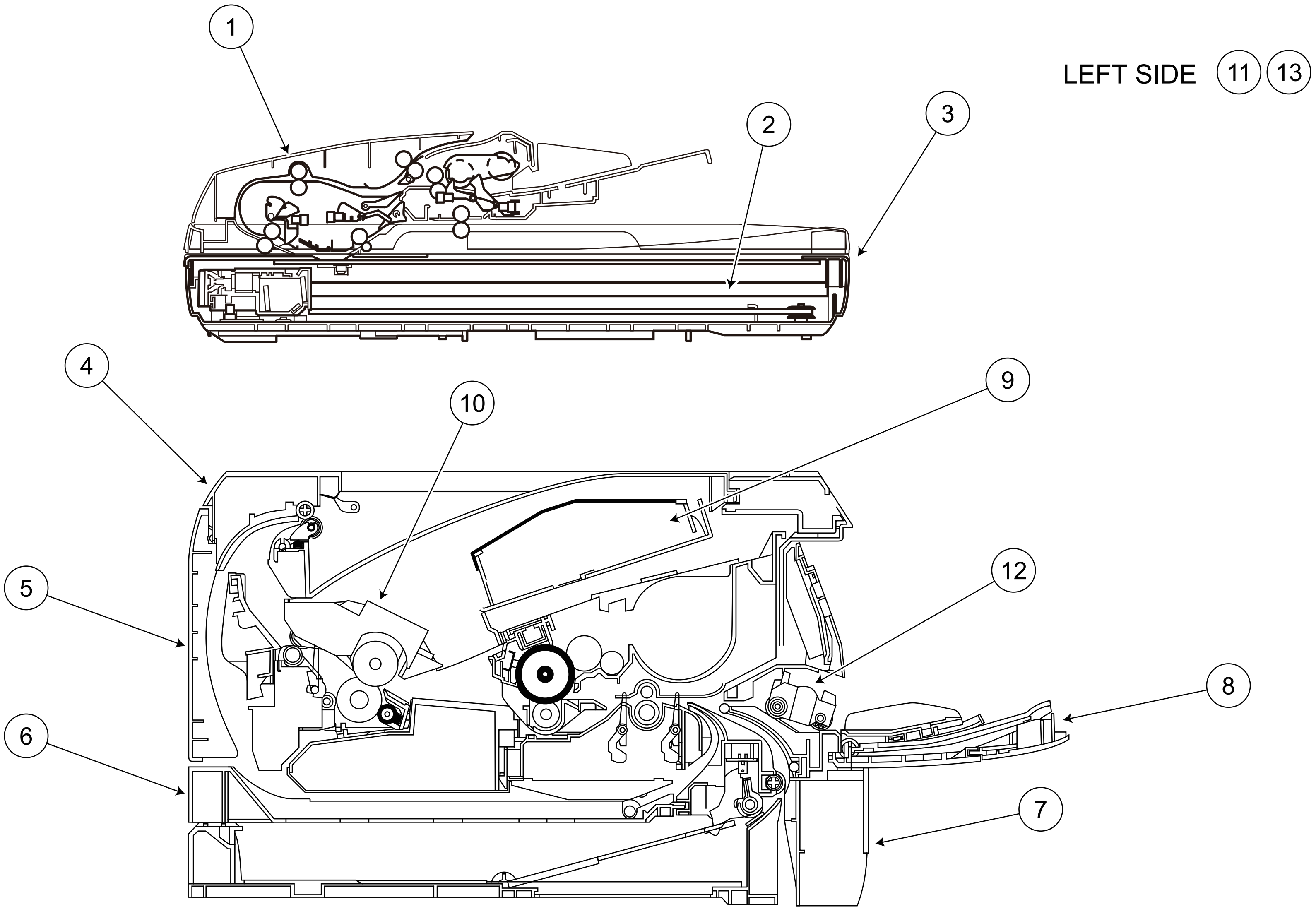
SYSTEM OUTLINE



GENERAL CONTENTS

No.	Description	Model
1	PRINTER B/W	bizhub 20
2	PAPER FEEDER	PF-P10

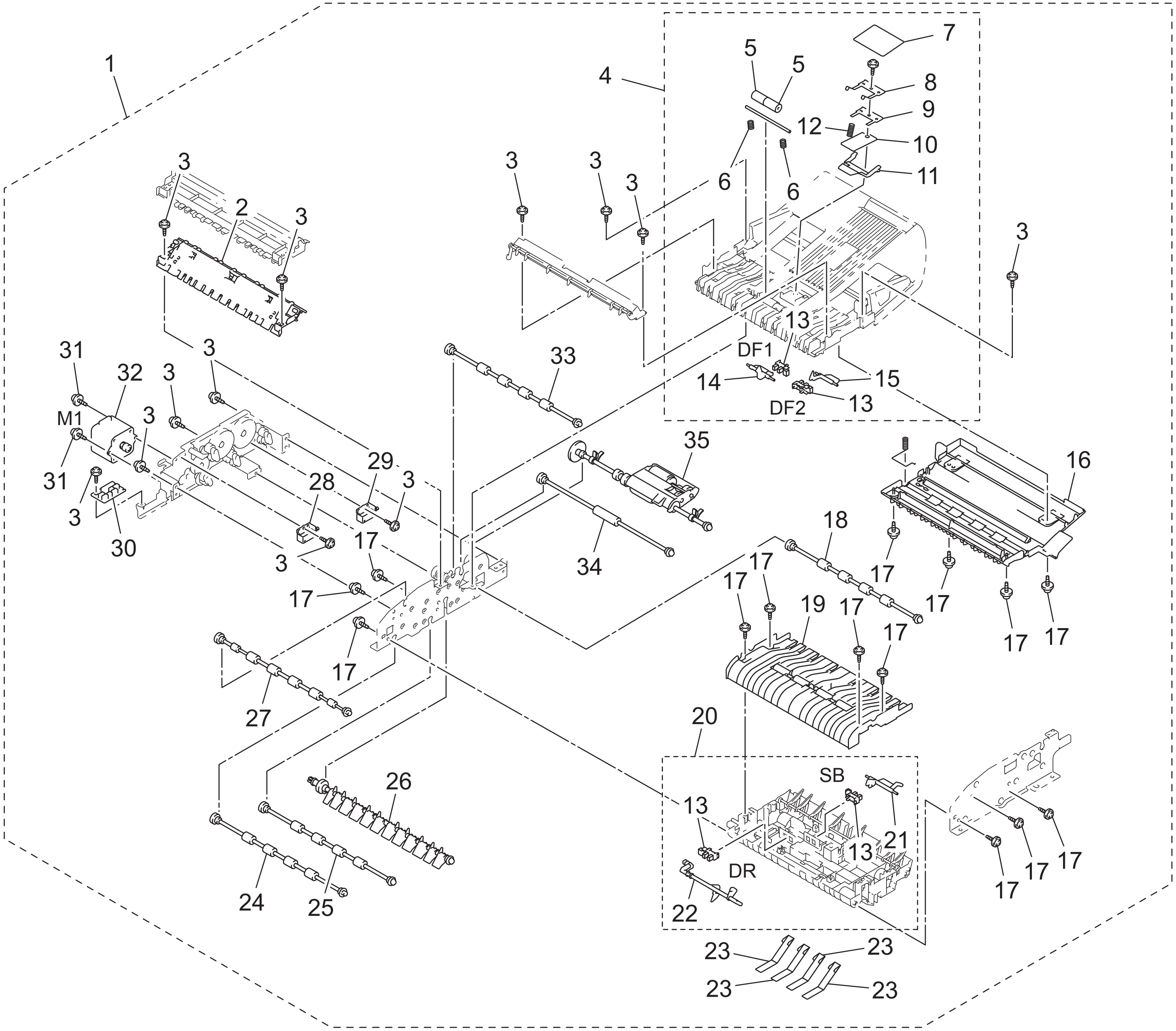
DIAGRAMS OF MAIN PARTS SECTION



CONTENTS

INDEX

ADF UNIT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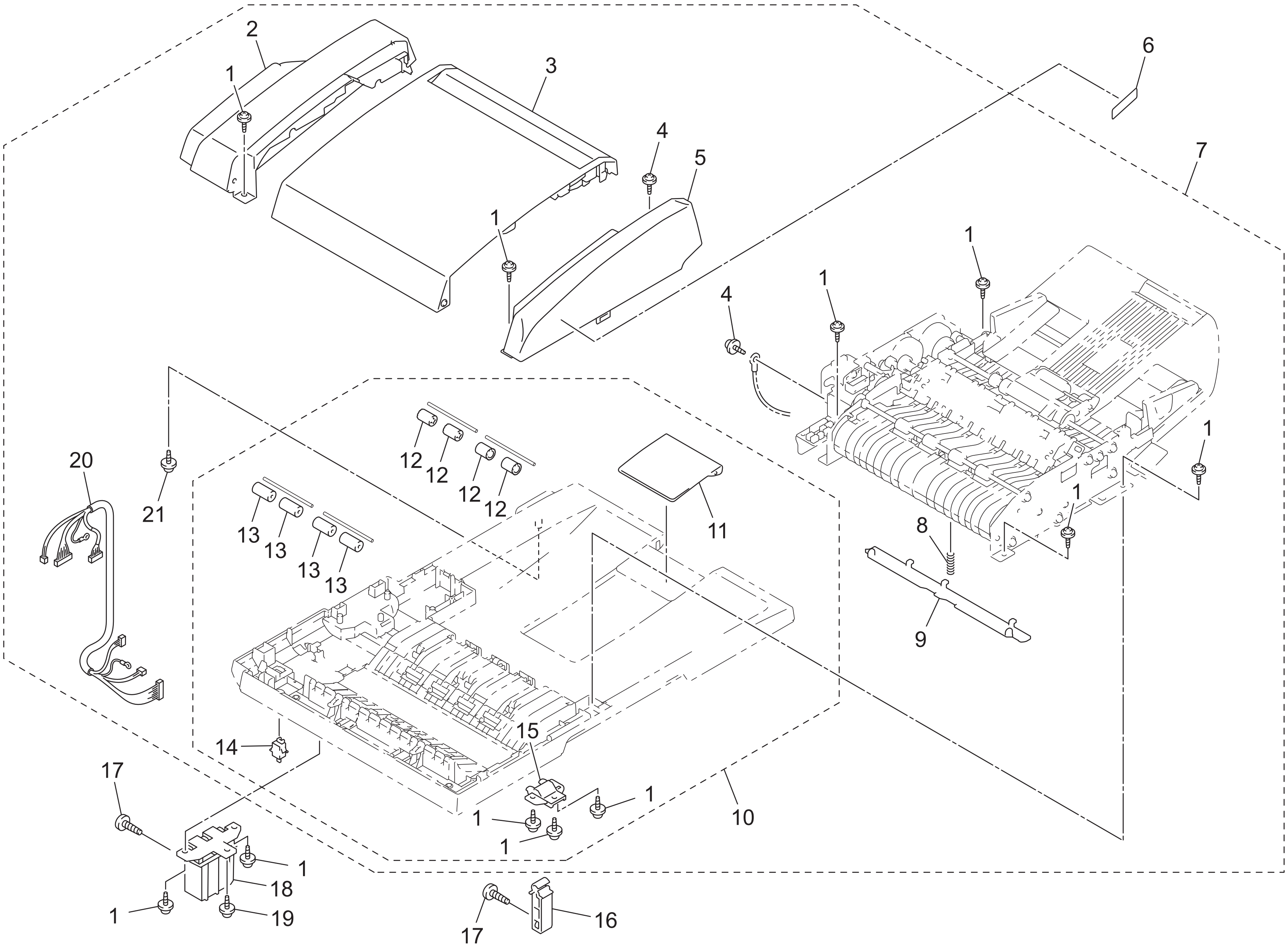
M1
DF1
DF2
SB
DR

ADF UNIT

Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32R PP2M 01	ADF CHUTE ASSY DX		C	1	
2	A32R PP1G 00	SB CHUTE ASSY		C	1	
3	A32R PP2A 00	TAPTITE CUP S M3X8 SR		D	12	
4	A32R PP1D 01	PAPER FEED CHUTE ASSY		C	1	
5	A32R PP24 00	PRESSURE ROLLER		C	2	
6	A32R PP08 00	LF SPRING		D	2	
7	A32R PP07 00	ADF FILM		D	1	
8	A32R PP06 00	SPRING PLATE ADF FRONT A ASSY		D	1	
9	A32R PP2D 00	BACK SHEET ADF		D	1	
10	A32R PP13 00	SEPARATION RUBBER		C	1	
11	A32R PP12 00	RUBBER HOLDER		C	1	
12	A32R PP11 00	SEPARATION SPRING		C	1	
13	A32R PP1J 00	PHOTO INTERRUPTER		D	4	
14	A32R PP10 00	ACTUATOR FRONT1		C	1	
15	A32R PP1E 00	ACTUATOR FRONT2		C	1	
16	A32R PP14 01	EXIT CHUTE COVER ASSY		C	1	
17	A32R PP01 00	TAPTITE CUP B M3X10		D	14	
18	A32R PP0V 00	EXIT ROLLER ASSY		C	1	
19	A32R PP0T 00	UPPER MAIN CHUTE ASSY		C	1	
20	A32R PP1A 00	LOWER MAIN CHUTE ASSY		C	1	
21	A32R PP1B 00	ACTUATOR SB		C	1	
22	A32R PP0U 00	ACTUATOR R		C	1	
23	A32R PP26 00	LF4 FILM		C	4	
24	A32R PP0X 00	LF ROLLER3 ASSY		C	1	
25	A32R PP0Y 00	LF ROLLER4 ASSY		C	1	
26	A32R PP1C 00	FLAP ASSY		C	1	
27	A32R PP2E 00	LF ROLLER2 ASSY		D	1	
28	A32R PP27 00	S/B SOLENOID ASSY		C	1	
29	A32R PP28 00	PF SOLENOID ASSY		C	1	
30	A32R PP1X 00	ADF RELAY PCB		C	1	
31	A32R PP04 00	SCREW PAN (S/P WASHER) M3X6		D	2	
32	A32R PP0F 00	ADF MOTOR		D	1	
33	A32R PP1F 00	SB ROLLER ASSY		C	1	
34	A32R PP2B 00	LF ROLLER1 ASSY		C	1	
35	A32R PP2F 00	PF ROLLER HOLDER ASSY		D	1	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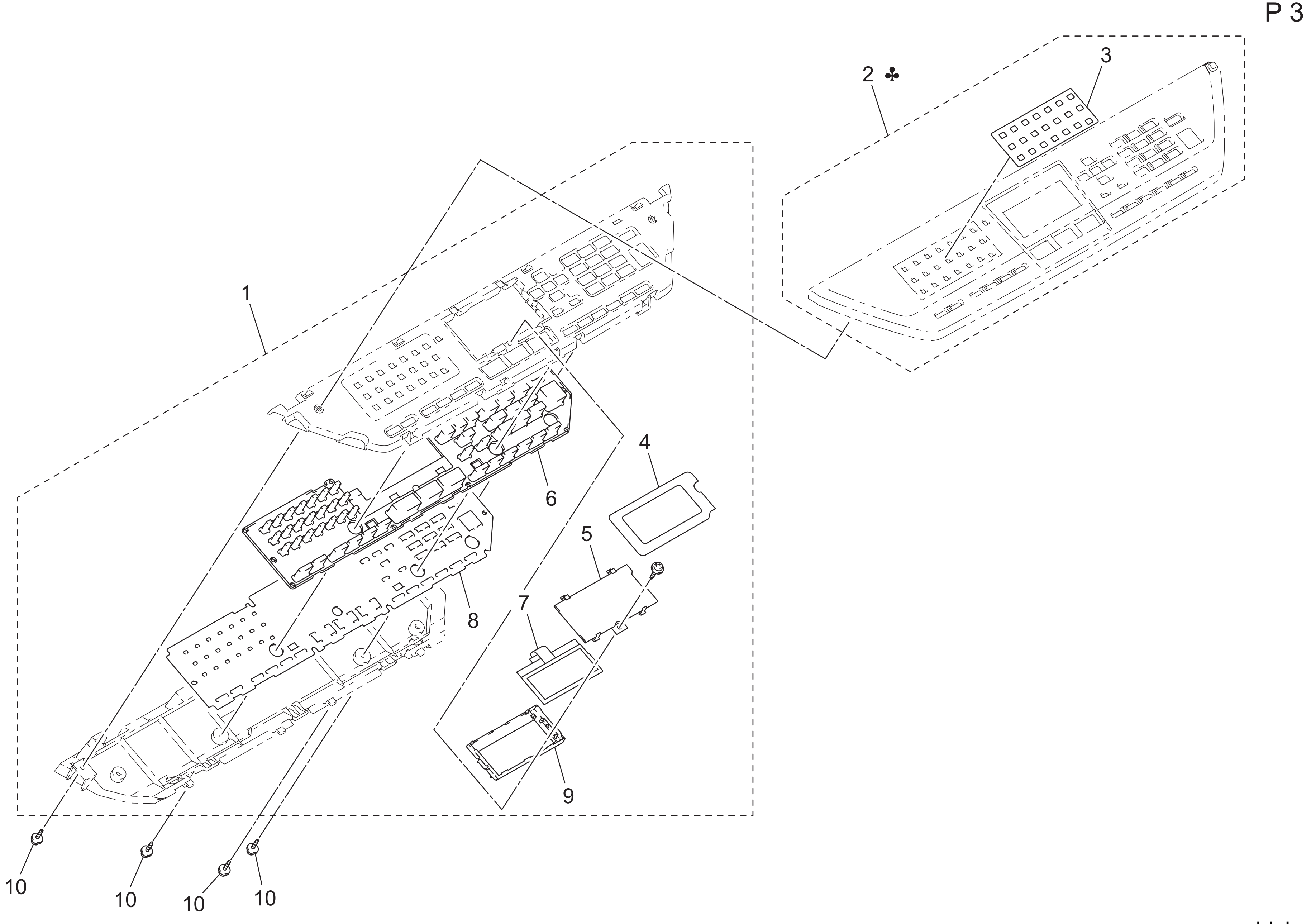
ADF UNIT

Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32R PP01 00	TAPTITE CUP B M3X10		D	11	
2	A32R PP15 01	ADF SIDE COVER R		C	1	
3	A32R PP1H 01	ADF COVER ASSY DX		C	1	
4	A32R PP2A 00	TAPTITE CUP S M3X8 SR		D	2	
5	A32R PP2J 01	ADF SIDE COVER F		D	1	
6	A32R PP3S 00	ADF EMBLEM KM BLANK		C	1	
7	A32R PP30 01	ADF UNIT LGL DX (SP)		C	1	
8	A32R PP0K 00	DOCUMENT HOLD SPRING		D	1	
9	A32R PP0G 00	DOCUMENT HOLD ASSY		C	1	
10	A32R PP2L 01	DOCUMENT COVER LGL SUB ASSY		C	1	
11	A32R PP0S 01	DOCUMENT EJECTION TRAY		C	1	
12	A32R PP3H 00	EJECTION ROLLER B4		D	4	
13	A32R PP3G 00	PRESSURE ROLLER		D	4	
14	A32R PP1L 00	DOCUMENT COVER SENSOR		D	1	
15	A32R PP0A 01	HINGE BASE R		C	1	
16	A32R PP2X 00	HINGE ARM R		C	1	
17	A32P PP03 00	TAPTITE BIND B M4X12		D	2	
18	A32R PP16 00	HINGE ASSY L		C	1	
19	A32R PP02 00	TAPTITE CUP S M3X12		D	1	
20	A32R PP35 00	ADF HARNESS ASSY ALEFB DX		D	1	
21	A32R PP25 00	TAPTITE CUP B M3X10		D	1	

CONTROL PANEL

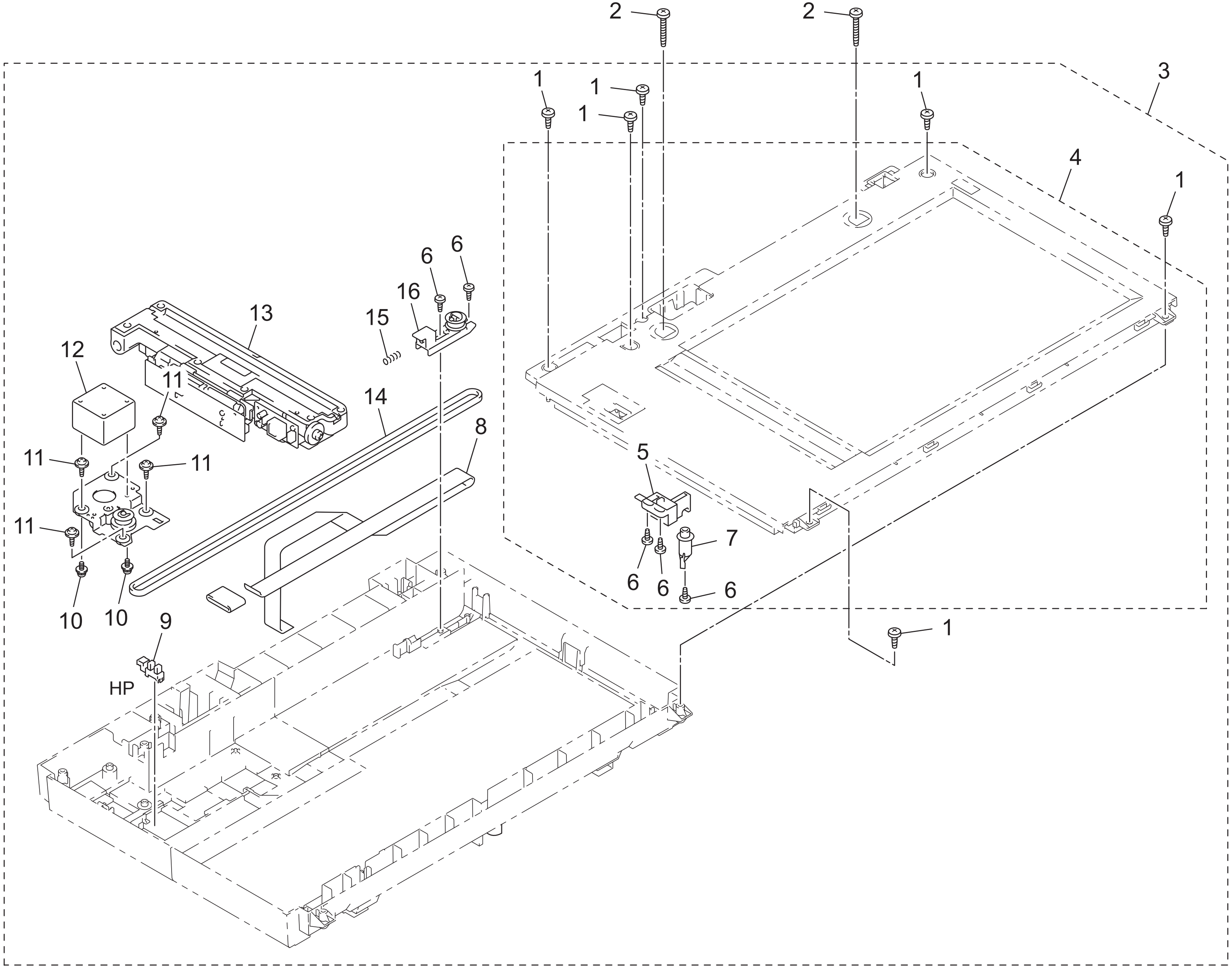


CONTROL PANEL

Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32R PP2H 01	PANEL UNIT		C	1	
2	A32R PP2Y 01	PANEL COVER ASSY	B,G2	D	1	
2	A32R PP3L 00	PANEL COVER ASSY (RUSSIAN) FOR RUS	C,(RUSSIA)	D	1	
2	A32R PP3M 00	PANEL COVER ASSY (ENGLISH) FOR RUS	C,(RUSSIA)	D	1	
3	A32R PP18 01	ADDRESS LABEL		C	1	
4	A32R PP39 00	PANEL INSULATION SHEET		D	1	
5	A32R PP17 00	LCD COVER		C	1	
6	A32R PP2K 01	PRINTED RUBBER KEY		D	1	
7	A32R PP05 00	LCD		C	1	
8	A32R PP33 00	PANEL PCB ASSY		C	1	
9	A32R PP1Y 00	BACK LIGHT MODULE		C	1	
10	A32P PP07 00	TAPTITE CUP B M4X12		D	4	

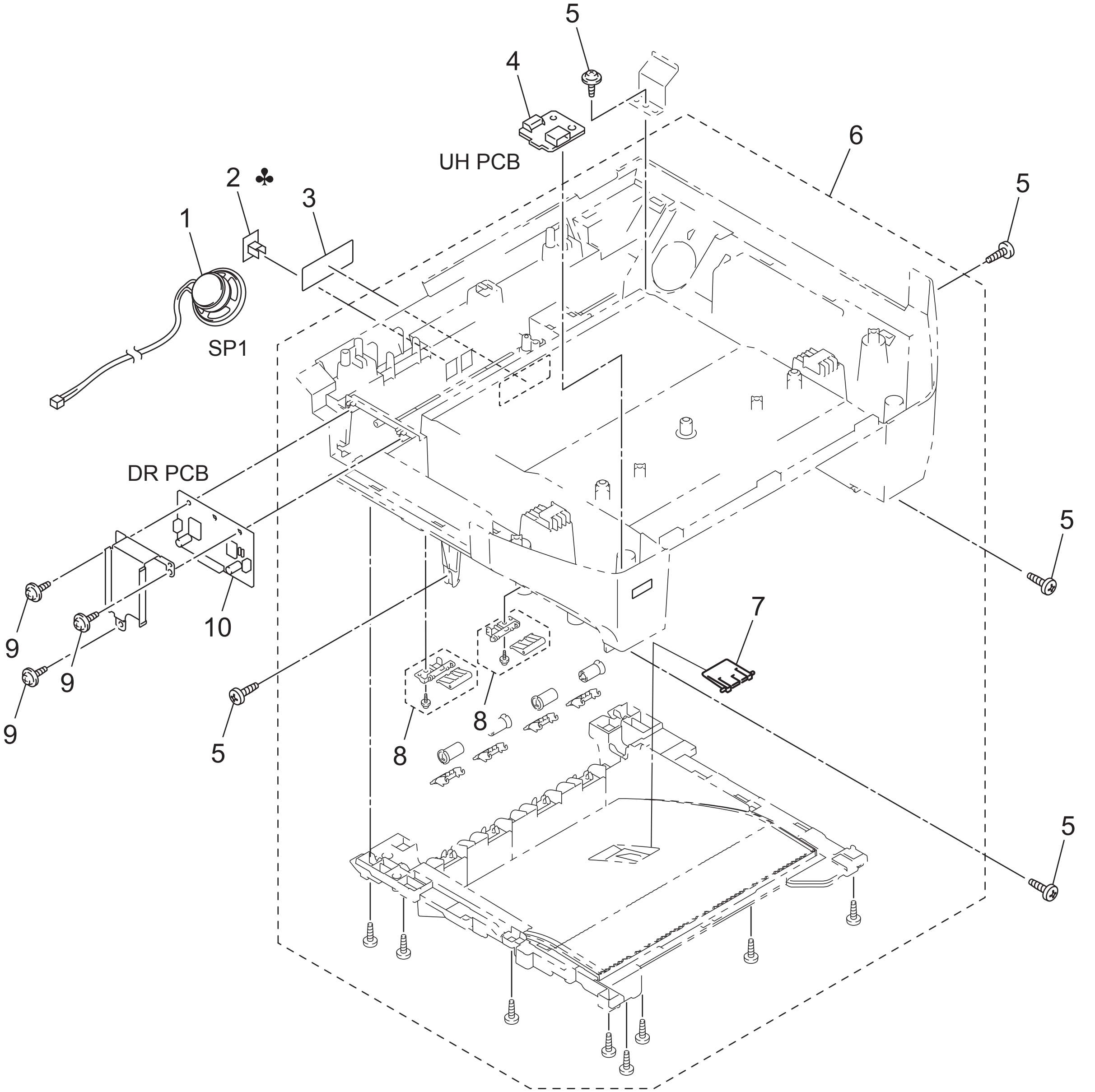
IR SECTION

P 4



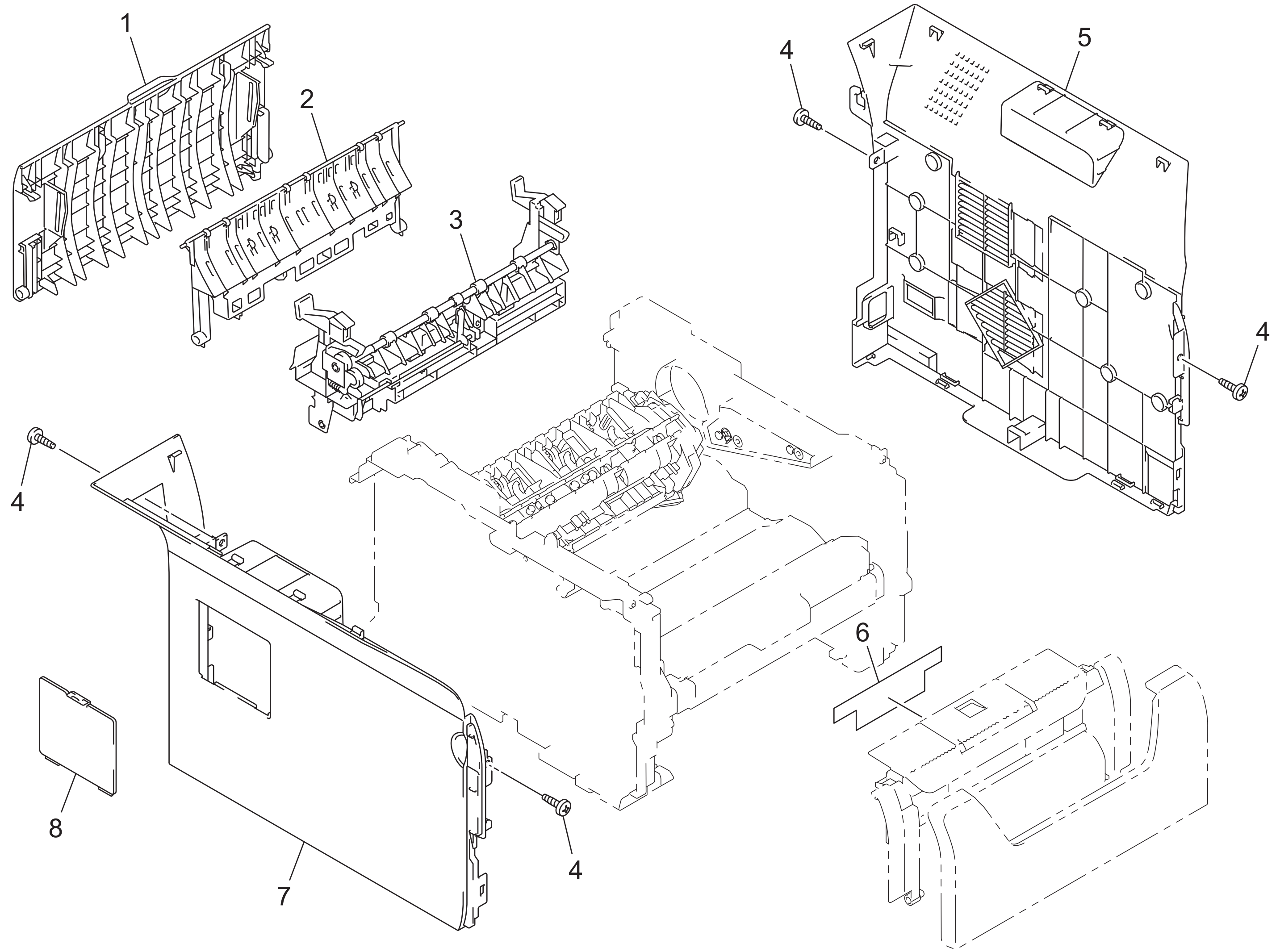
Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32P PP07 00	TAPTITE CUP B M4X12		D	6	
2	A32R PP03 00	TAPTITE CUP B M4X20		D	2	
3	A32R PP29 01	FB UNIT ASSY(SP)		S	1	
4	A32R PP0R 01	TOP COVER ASSY		C	1	
5	A32R PP0J 00	LOCK LEVER ASSY		D	1	
6	A32R PP3F 00	TAPTITE B 3X6		D	5	
7	A32R PP0E 00	LOCK LEVER B		D	1	
8	A32R PP0P 00	FFC CABLE ASSY		C	1	
9	A32R PP1J 00	PHOTO INTERRUPTER		D	1	
10	A32R PP04 00	SCREW PAN (S/P WASHER) M3X6		D	2	
11	A32R PP09 00	TAPTITE PAN B M3X8		D	4	
12	A32R PP0B 00	SCANNING MOTOR FB		C	1	
13	A32R PP0L 00	CCD MODULE(SP)		I	1	
14	A32R PP0D 00	BELT		D	1	
15	A32R PP0C 00	PULLEY SPRING		D	1	
16	A32R PP0Q 00	PULLEY ASSY		C	1	

EXTERNAL PARTS



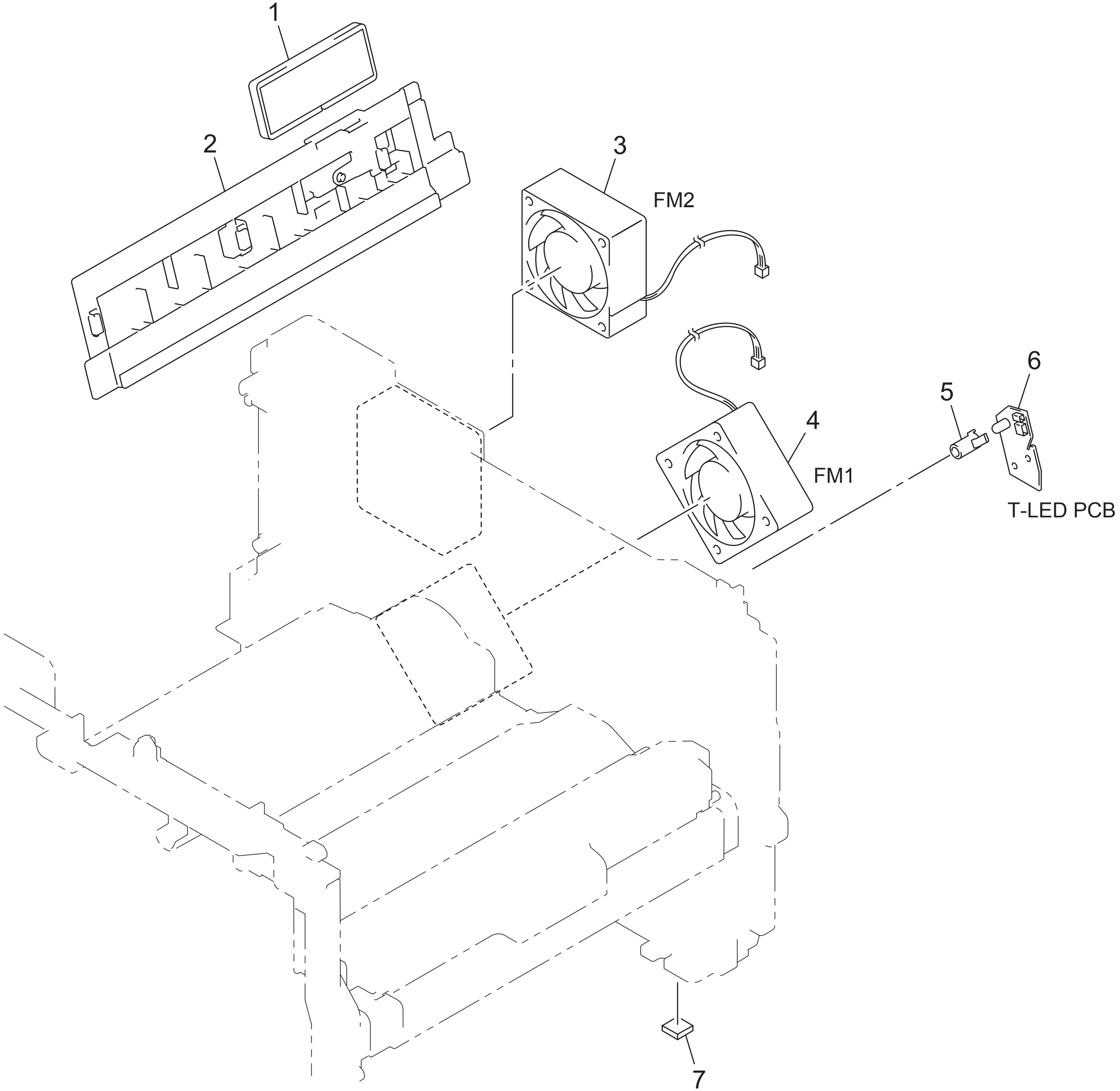
Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32R PP1U 00	SPEAKER ASSY		C	1	
2	A32R PP0H 00	EXT CAP	B,G2,C,(RUSSIA)	D	1	
2	A32R PP3K 00	MJ COVER EXT FOR EUR	C,(EUROPE)	D	1	
3	A32P PP3R 00	FUSER CAUTION LABEL		C	1	
4	A32R PP32 00	USB HOST PCB		C	1	
5	A32P PP03 00	TAPTITE BIND B M4X12		D	5	
6	A32R PP2U 00	JOINT COVER ASSY		C	1	
7	A32P PP2G 01	SUPPORT FLAP 2		D	1	
8	A32P PP2V 00	PAPER STACK LEVER SP ASSY		C	2	
9	A32R PP00 00	TAPTITE CUP B M3X8		D	3	
10	A32R PP1V 00	DRIVER PCB ASSY		I	1	

EXTERNAL PARTS



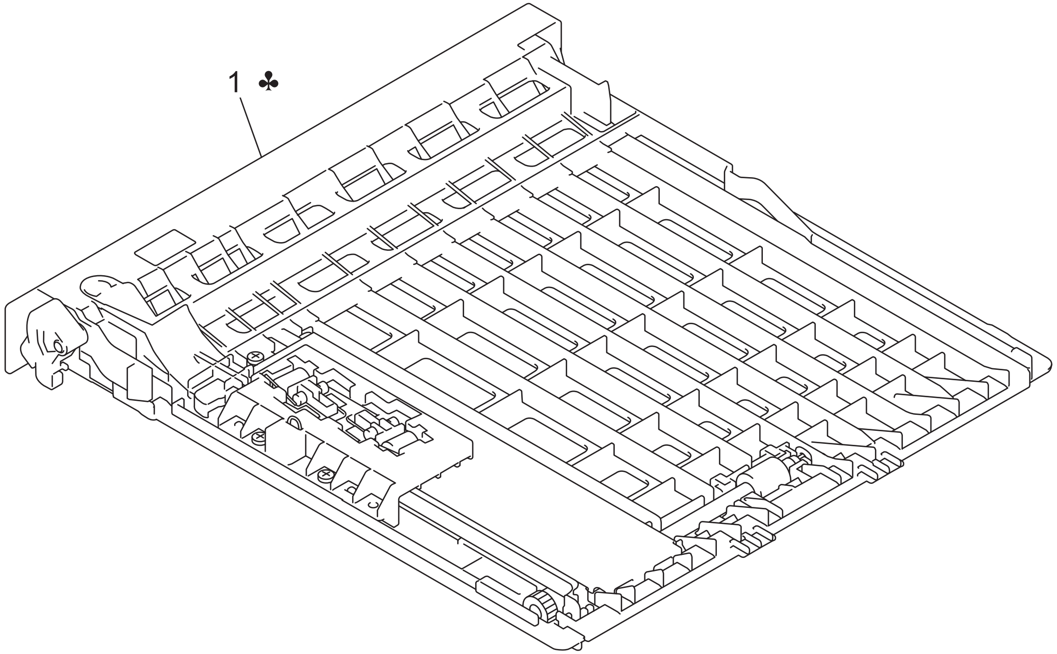
Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32P PP2D 01	BACK COVER		D	1	
2	A32P PP2E 00	OUTER CHUTE ASSY		D	1	
3	A32P PP2H 00	REAR CHUTE ASSY		D	1	
4	A32P PP03 00	TAPTITE BIND B M4X12		D	4	
5	A32R PP0M 01	SIDE COVER R		C	1	
6	A32P PP3P 00	PROCESS UNIT OP LABEL		C	1	
7	A32R PP0N 01	SIDE COVER L		C	1	
8	A32P PP1Q 01	ACCESS COVER		C	1	

MAIN FRAME SECTION

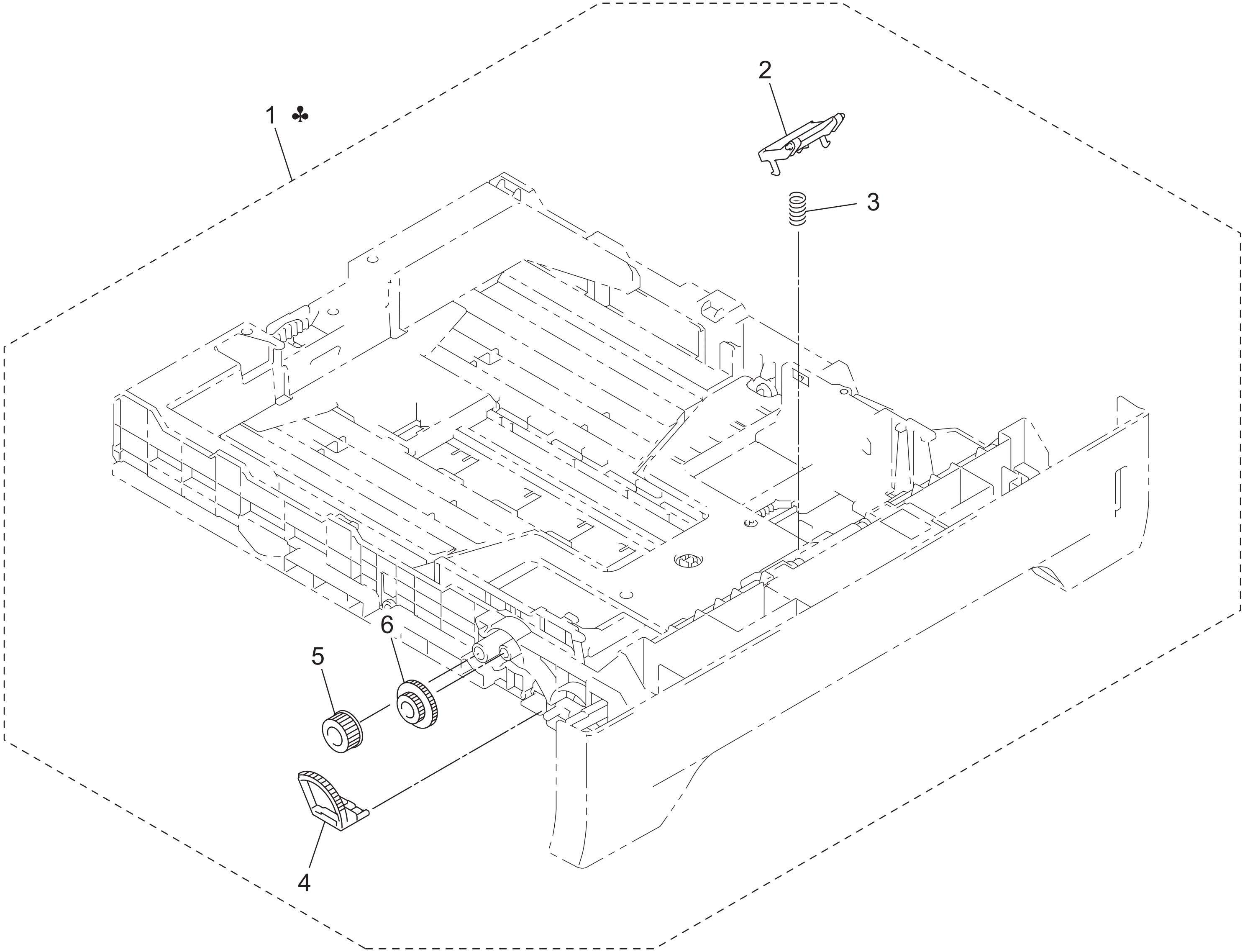


Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32P PP2J 00	FILTER		C	1	
2	A32P PP23 00	AIR DUCT JPN ASSY AL		D	1	
3	A32P PP2A 00	FAN MOTOR 60 UNIT		C	1	
4	A32P PP18 00	FAN MOTOR 60 UNIT LV		C	1	
5	A32P PP0Q 00	LED HOLDER		D	1	
6	A32P PP3C 00	TONER LED PCB ASSY		C	1	
7	A32P PP0C 00	RUBBER FOOT		D	1	

DUPLEX TRAY SECTION



Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32P PP3K 00	DX FEED ASSY A4 FOR GER/RUS	C	C	1	
1	A32R PP23 00	DX FEED ASSY	B,G2	C	1	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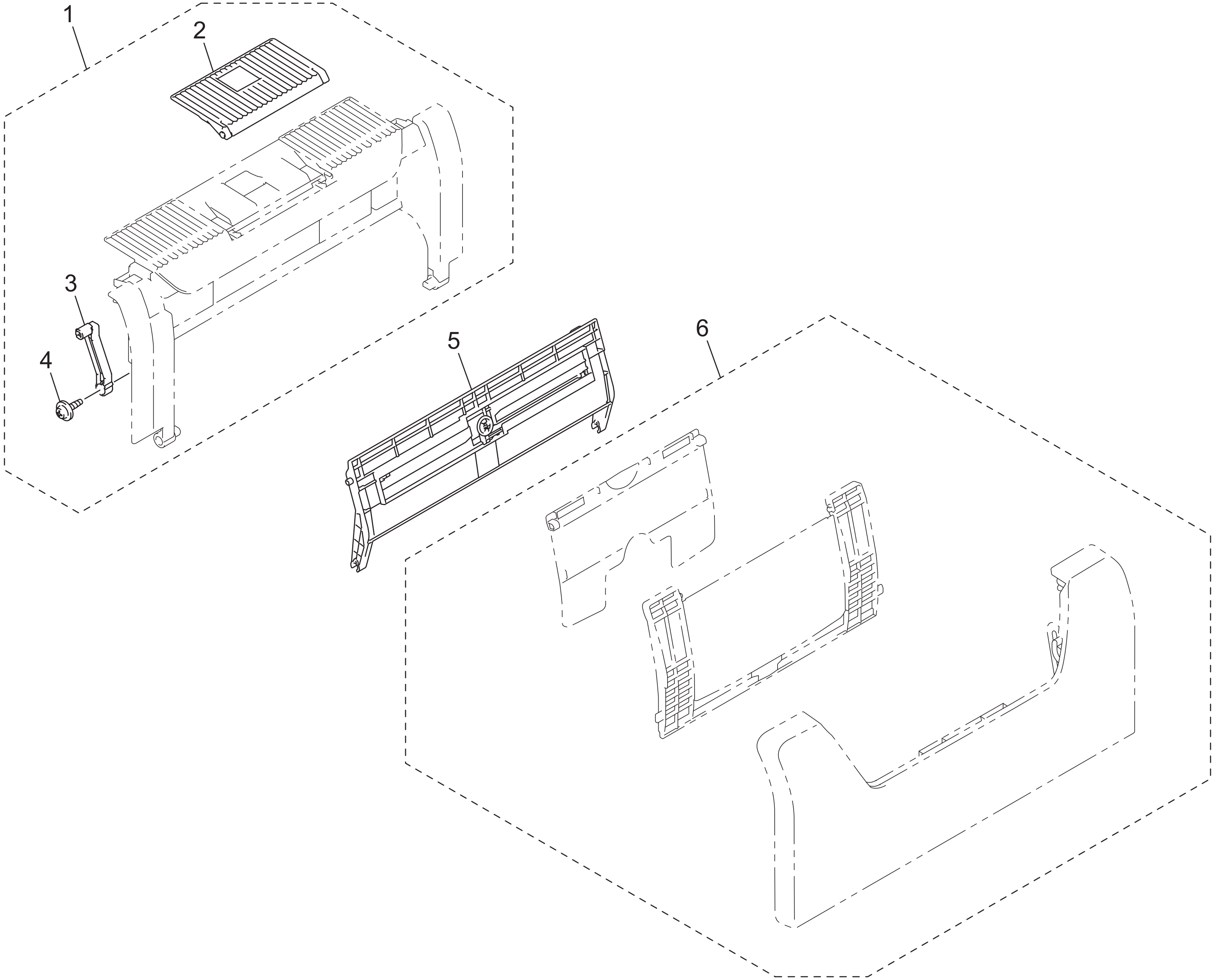
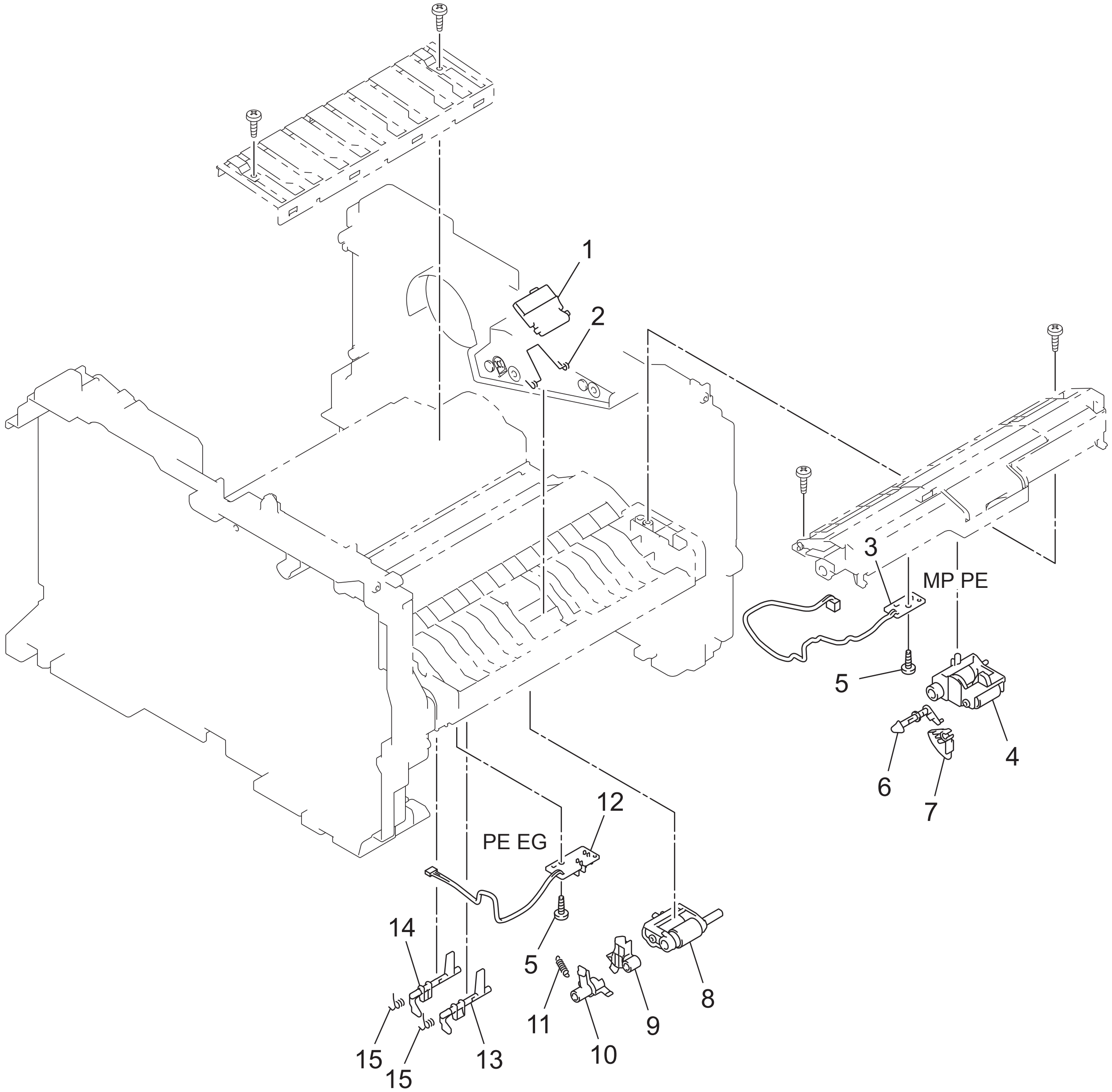
Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32R PP3T 00	PAPER TRAY UNIT A4 FOR EUR/RUS	C	S	1	
1	A32R PP3J 00	PAPER TRAY UNIT UNIV FOR US	B,G2	S	1	
2	A32P PP1K 00	SEPARATION PAD ASSY		B	1	
3	A32P PP1L 00	SEPARATION PAD SPRING		C	1	
4	A32P PP1P 00	LIFT GEAR 46		C	1	
5	A32P PP1M 00	GEAR 15		C	1	
6	A32P PP1N 00	GEAR 21-16		C	1	

PAPER FEED TRAY SECTION



Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32P PP35 01	PROCESS COVER ASSY		D	1	
2	A32P PP31 00	SUPPORT FLAP 1		D	1	
3	A32P PP19 00	PROCESS COVER STOPPER		D	1	
4	A32P PP06 00	TAPTITE CUP B M4X10		D	1	
5	A32P PP1H 01	TRAY MP ASSY		D	1	
6	A32R PP2T 01	MP TRAY COVER ASSY		D	1	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PE EG
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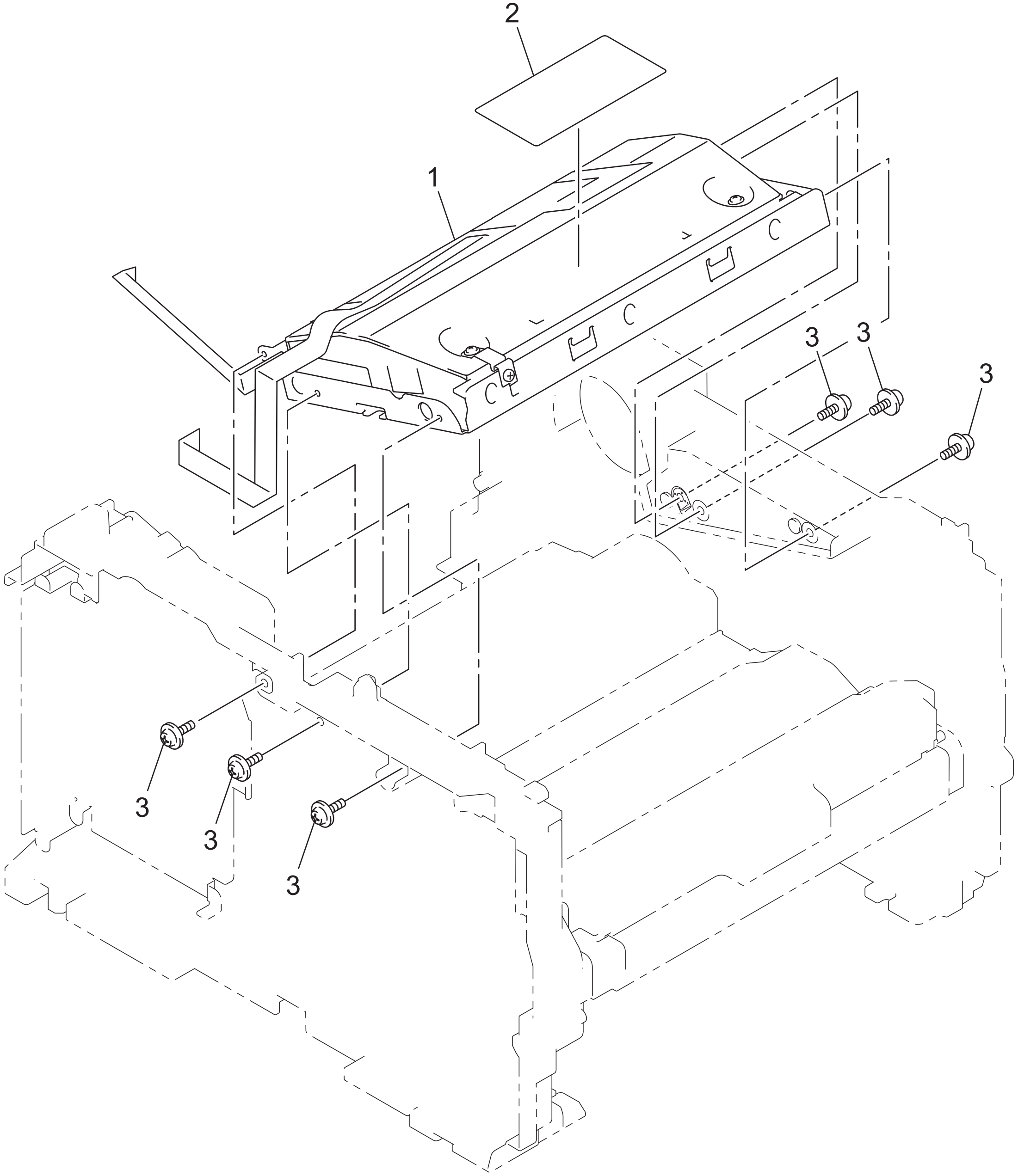
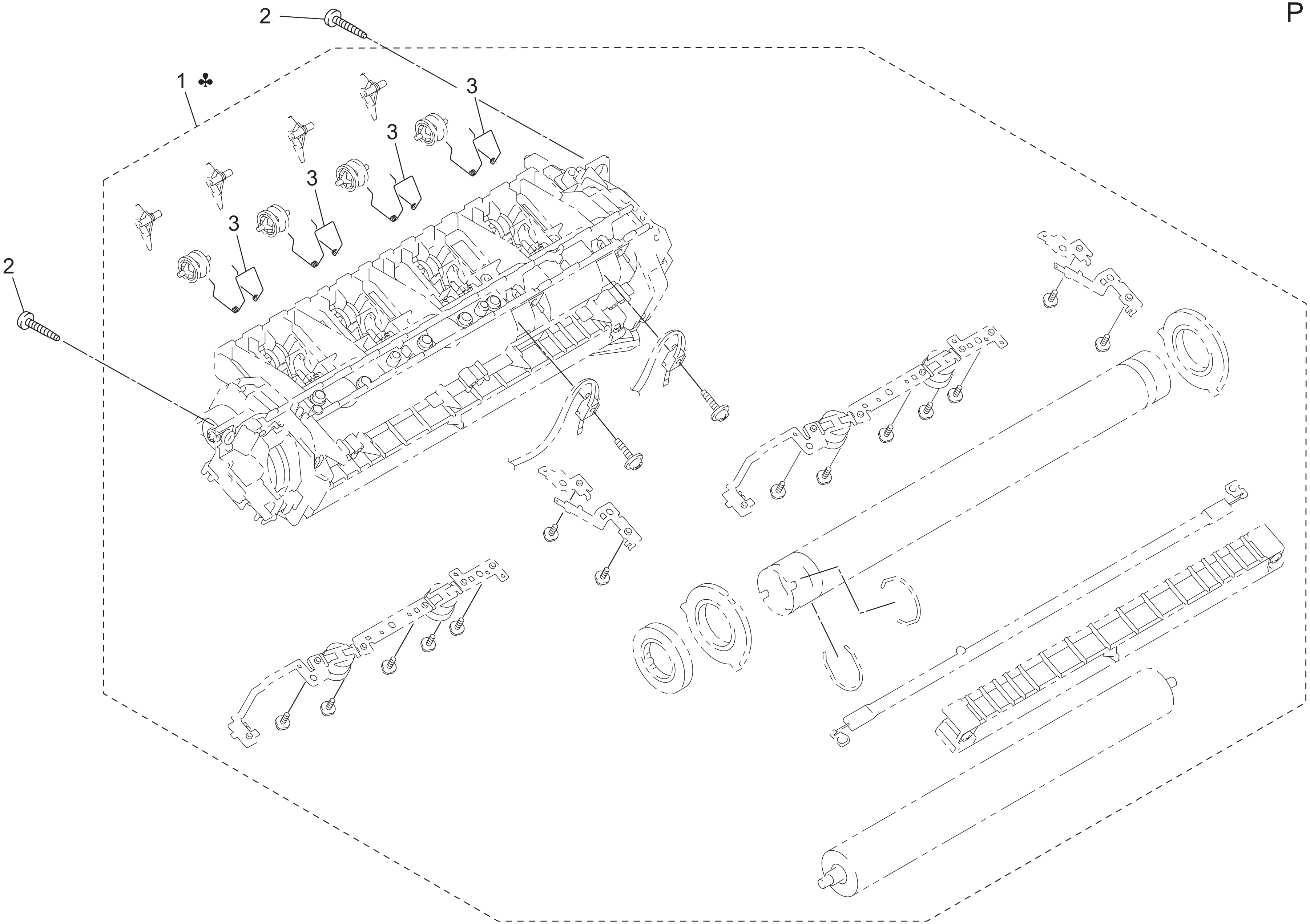
Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32P PP24 00	SEPARATION PAD ASSY MP 2		B	1	
2	A32P PP22 00	MP SEPARATION SPRING A		C	1	
3	A32P PP0N 00	MP PE SENSOR ASSY		C	1	
4	A32P PP2N 00	MP ROLLER HOLDER ASSY		B	1	
5	A32P PP01 00	TAPTITE BIND B M3X8		D	2	
6	A32P PP27 00	PE ACTUATOR MP B 2		D	1	
7	A32P PP1G 00	PE ACTUATOR MP		C	1	
8	A32P PP2M 00	ROLLER HOLDER ASSY		B	1	
9	A32P PP39 00	PE ACTUATOR 2		D	1	
10	A32P PP1A 00	EDGE ACTUATOR		C	1	
11	A32P PP1B 00	EDGE ACTUATOR SPRING		C	1	
12	A32P PP25 00	PE EG SENSOR ASSY		C	1	
13	A32P PP1D 00	REGIST ACTUATOR FRONT		C	1	
14	A32P PP1E 00	REGIST ACTUATOR REAR		C	1	
15	A32P PP1F 00	REGIST ACTUATOR SPRING		C	2	

LASER UNIT



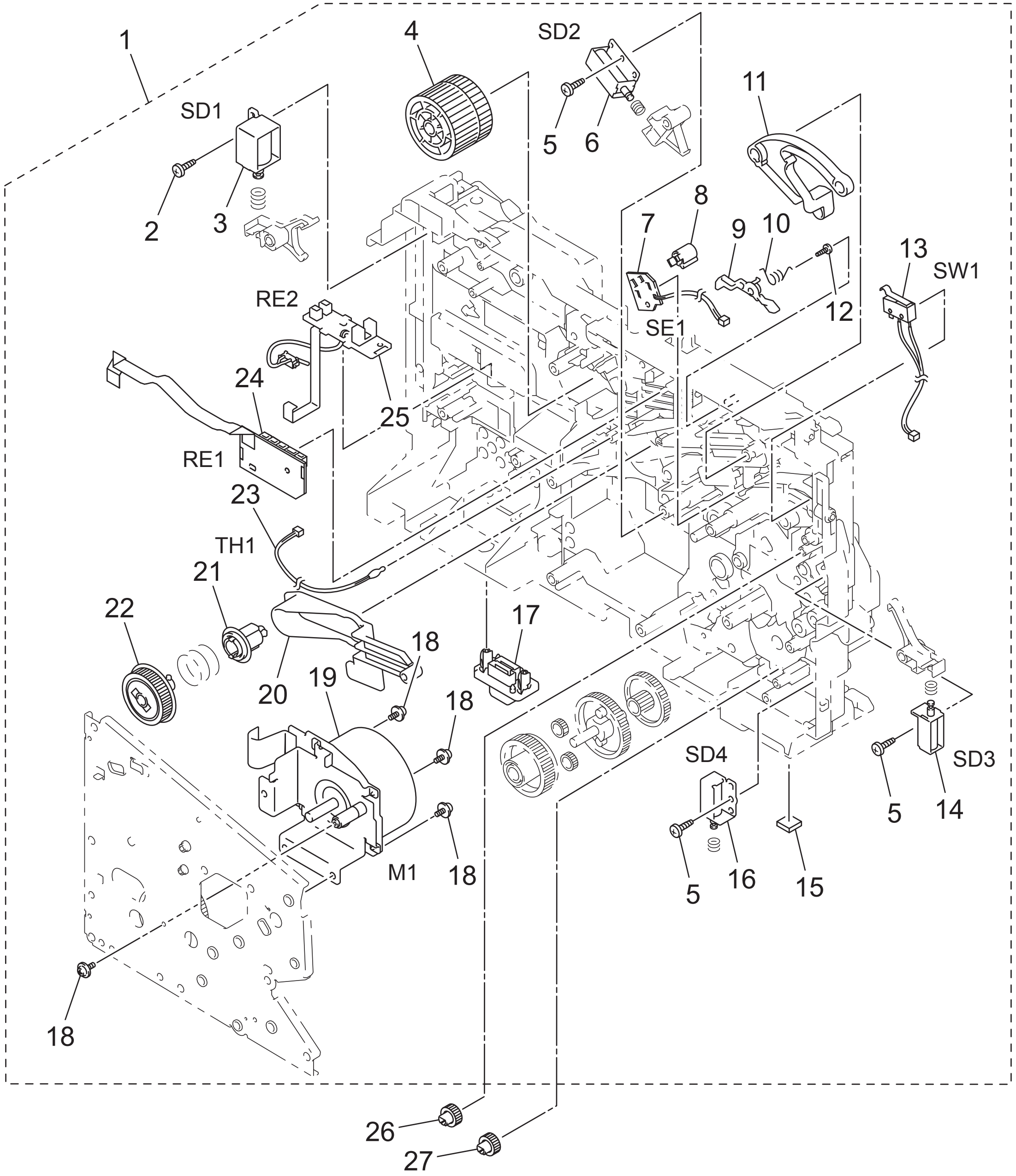
Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32P PP2L 00	LASER UNIT (SP)		C	1	
2	A32P PP08 00	LASER CAUTION LABEL B		D	1	
3	A32P PP05 00	TAPTITE CUP S M3X6		D	6	

FUSING UNIT



Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32P PP3A 00	FUSER UNIT 115V (SP)	B,G2	I	1	
1	A32P PP3B 00	FUSER UNIT 230V (SP)	C	I	1	
2	A32R PP36 00	TAPTITE PAN B M4X20		D	2	
3	A32P PP2F 00	PRESSURE SPRING		C	4	

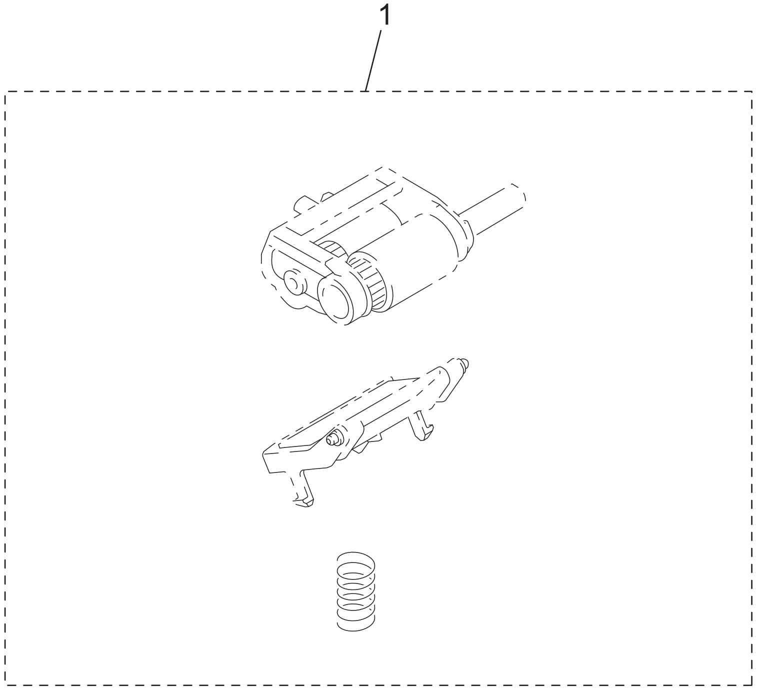
DRIVE SECTION

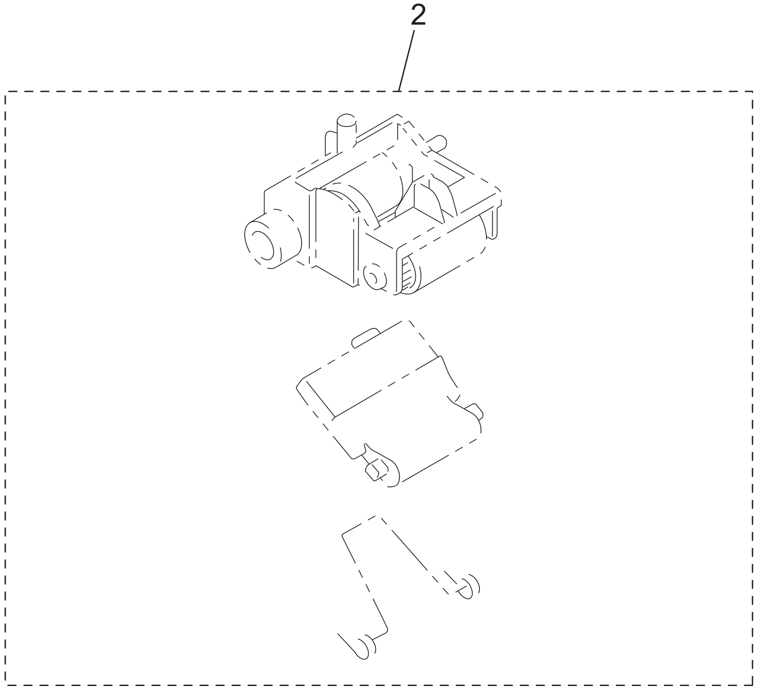


DRIVE SECTION

Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32R PP2G 00	MAIN FRAME L UNIT		C	1	
2	A32P PP02 00	TAPTITE BIND B M3X10		D	1	
3	A32P PP0R 00	EJECTOR SOLENOID		C	1	
4	A32P PP0U 00	FUSER GEAR 39 H/R DRIVE		C	1	
5	A32P PP02 00	TAPTITE BIND B M3X10		D	3	
6	A32P PP0V 00	REGISTER SOLENOID ASSY		C	1	
7	A32P PP0E 00	TONER SENSOR PCB ASSY		I	1	
8	A32P PP3H 00	PT SENSOR HOLDER		C	1	
9	A32P PP14 00	NEW TONER ACTUATOR		C	1	
10	A32P PP15 00	NEW TONER ACTUATOR SPRING		C	1	
11	A32P PP11 00	DRIVE RELEASE LINK		D	1	
12	A32P PP04 00	TAPTITE CUP B M2X6		D	1	
13	A32P PP0G 00	INTERLOCK SW ASSY		C	1	
14	A32P PP0X 00	MP SOLENOID ASSY		C	1	
15	A32P PP0C 00	RUBBER FOOT		D	1	
16	A32P PP0Y 00	T1 SOLENOID ASSY		C	1	
17	A32P PP0J 00	CONNECTOR 54702-1219		C	1	
18	A32P PP05 00	TAPTITE CUP S M3X6		D	4	
19	A32P PP0T 00	MAIN MOTOR ASSY		B	1	
20	A32P PP10 00	DRIVE RELEASE CAM		D	1	
21	A32P PP2P 00	DEVELOP JOINT		C	1	
22	A32P PP0S 00	DEV GEAR 37R JOINT DRIVE		C	1	
23	A32R PP1N 00	THERMISTOR ASSY		D	1	
24	A32R PP21 00	RELAY FRONT PCB ASSY		C	1	
25	A32P PP0H 00	RELAY REAR PCB ASSY		C	1	
26	A32P PP17 00	GEAR 17 MP ROLLER DRIVE		C	1	
27	A32P PP16 00	GEAR 20 T1 ROLLER DRIVE		C	1	

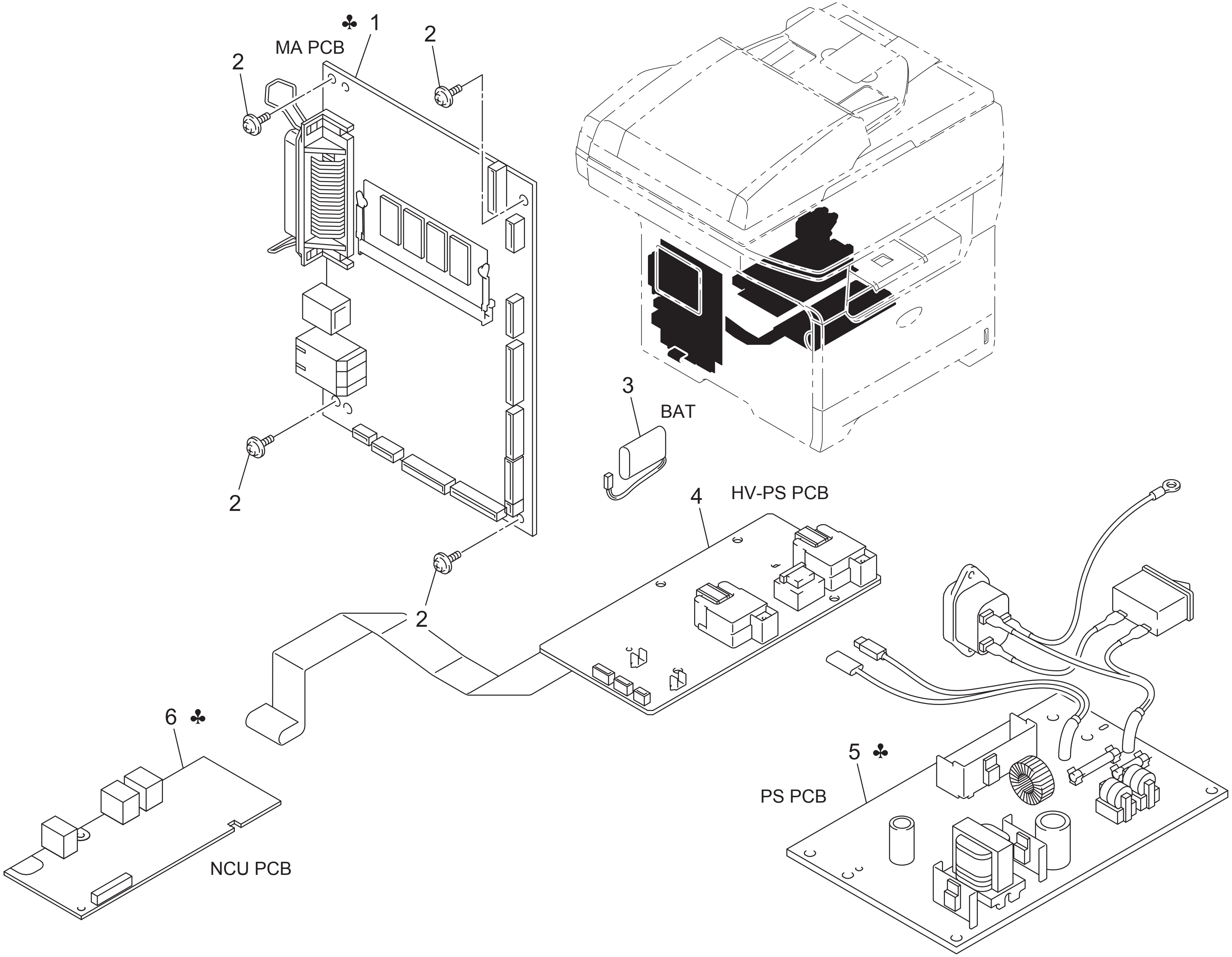
ROLLER ASSY





Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32P PP2X 00	ROLLER HOLDER ALE SP ASSY		B	1	
2	A32P PP2Y 00	MP ROLLER HOLDER ALE SP ASSY		B	1	

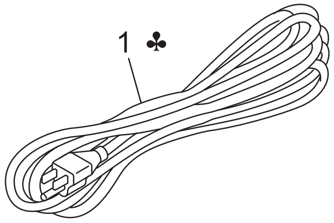
ELECTRICAL COMPONENTS

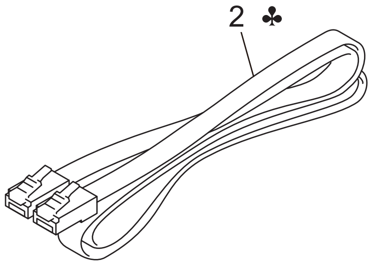


ELECTRICAL COMPONENTS

Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32R PP34 01	MAIN PCB ASSY	B,G2	D	1	
1	A32R PP3N 00	MAIN PCB ASSY FOR EUR/RUS	C	D	1	
2	A32P PP21 00	TAPTITE CUP S M3X6 SR		D	4	
3	A32R PP1S 00	BATTERY ASSY		D	1	
4	A32P PP0M 00	HIGH-VOLTAGE PS PCB ASSY		I	1	
5	A32P PP3E 00	PS PCB UNIT 115V	B,G2	C	1	
5	A32P PP3M 00	PS PCB UNIT 230V FOR RUS	C,(RUSSIA)	C	1	
5	A32P PP3F 00	PS PCB UNIT 230V	C,(EUROPE)	C	1	
6	A32R PP1T 01	NCU PCB ASSY	B,G2	I	1	
6	A32R PP3P 00	NCU PCB ASSY FOR EUR/RUS	C	I	1	

ACCESSORY PARTS

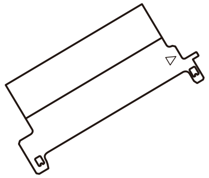




ACCESSORY PARTS

Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32R PP37 00	AC CORD BAG ASSY	B,G2	D	1	
1	A32R PP3Q 00	AC CORD BAG ASSY LF VDE FOR EUR/RUS	C	D	1	
2	A32R PP1K 00	TELEPHONE LINE CORD	B,G2,C,(RUSSIA)	D	1	
2	A32R PP3R 00	TELEPHONE LINE CORD FOR EUR	C,(EUROPE)	D	1	

WIRING ACCESSORIES AND JIGS

1 	6	11	16	21	26	31	36
2	7	12	17	22	27	32	37
3	8	13	18	23	28	33	38
4	9	14	19	24	29	34	39
5	10	15	20	25	30	35	40

Key	Part No.	Description	Destinations	Class	QTY	Standard parts
1	A32P PP32 00	DRUM CLEANING SHEET KIT		S	1	

MAINTENANCE LIST

● The items with no Page/Key numbers are not handled as spare parts.

No.	Section	PM Parts Description	Maintenance Cycle (K=1,000)		Parts No.	Destinations	Page/Key	Note
			QTY	Replace				
1	ADF unit	ADF unit	1	50K	A32RPP3001		P2-7	
2		Document Scanner unit	1	50K	A32RPP2901		P4-3	
3	Fusing section	Fuser unit	1	100K	A32PPP3A00	AREA 120V	P13-1	
4		Fuser unit	1	100K	A32PPP3B00	AREA 230V	P13-1	
5	Laser unit section	Laser unit	1	100K	A32PPP2L00		P12-1	
6	Paper feed section	Paper feed kit T1/T2	1	100K	A32PPP2M00		P11-8	
7		Paper feed kit MP	1	50K	A32PPP2N00		P11-4	

DESTINATION

Destination No.		Destinations		V	Hz	Model No.
A	A1	JAPAN				
	A2	JAPAN				
B		USA, CANADA		120	60	A32R012
C		EUROPEAN TYPE		220-240	50/60	A32R022/ A32R0R2
D	D1	S.E ASIA TYPE	THAILAND, SRI LANKA, SINGAPORE, MALAYSIA, HONG KONG, PAKISTAN, INDIA, BANGLADESH, INDONESIA			
	D3	OCEANIA TYPE	AUSTRALIA, NEW ZEALAND			
E		PHILIPPINES				
F	F1	SAUDI ARABIA				
	F2	SAUDI ARABIA				
G	G1	C.S AMERICA				
	G2	C.S AMERICA		120	60	A32R012
H		TAIWAN				
I		JORDAN, LEBANON, SYRIA, SOUTH AFRICA, IRAQ, IRAN, N.YEMEN, CAMEROON, UAE, BAHRAIN, OMAN, QATAR, KUWAIT, KENYA, TUNISIA, IVORY COAST, MOROCCO				
J		CHINA				
K		KOREA				