KYOCERA

FS-1110

SERVICE MANUAL

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First Edition

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

It may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for proper disposal.

ATTENTION

IL Y A UN RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACEE PAR UN MODELE DE TYPE INCORRECT. METTRE AU REBUT LES BATTERIES UTILISEES SELON LES INSTRUCTIONS DONNEES.

Il peut être illégal de jeter les batteries dans des eaux d'égout municipales. Vérifiez avec les fonctionnaires municipaux de votre région pour les détails concernant des déchets solides et une mise au rebut appropriée.

Revision history

Revision	Date	Replaced pages	Remarks

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Safety precautions

This booklet provides safety warnings and precautions for our service personnel to ensure the safety of their customers, their machines as well as themselves during maintenance activities. Service personnel are advised to read this booklet carefully to familiarize themselves with the warnings and precautions described here before engaging in maintenance activities.

Safety warnings and precautions

Various symbols are used to protect our service personnel and customers from physical danger and to prevent damage to their property. These symbols are described below:

⚠**DANGER:** High risk of serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

⚠**WARNING:** Serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

⚠**CAUTION:** Bodily injury or damage to property may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

Symbols

The triangle (△) symbol indicates a warning including danger and caution. The specific point of attention is shown inside the symbol.

 General warning.

 Warning of risk of electric shock.

 Warning of high temperature.

⃠ indicates a prohibited action. The specific prohibition is shown inside the symbol.

 General prohibited action.

 Disassembly prohibited.

● indicates that action is required. The specific action required is shown inside the symbol.

 General action required.

 Remove the power plug from the wall outlet.

 Always ground the copier.

1. Installation Precautions

⚠ WARNING

- Do not use a power supply with a voltage other than that specified. Avoid multiple connections to one outlet: they may cause fire or electric shock. When using an extension cable, always check that it is adequate for the rated current. .....

- Connect the ground wire to a suitable grounding point. Not grounding the copier may cause fire or electric shock. Connecting the earth wire to an object not approved for the purpose may cause explosion or electric shock. Never connect the ground cable to any of the following: gas pipes, lightning rods, ground cables for telephone lines and water pipes or faucets not approved by the proper authorities. .....

⚠ CAUTION:

- Do not place the copier on an infirm or angled surface: the copier may tip over, causing injury. .....

- Do not install the copier in a humid or dusty place. This may cause fire or electric shock. .....

- Do not install the copier near a radiator, heater, other heat source or near flammable material. This may cause fire. .....

- Allow sufficient space around the copier to allow the ventilation grills to keep the machine as cool as possible. Insufficient ventilation may cause heat buildup and poor copying performance. .....

- Always handle the machine by the correct locations when moving it. .....

- Always use anti-toppling and locking devices on copiers so equipped. Failure to do this may cause the copier to move unexpectedly or topple, leading to injury. .....

- Avoid inhaling toner or developer excessively. Protect the eyes. If toner or developer is accidentally ingested, drink a lot of water to dilute it in the stomach and obtain medical attention immediately. If it gets into the eyes, rinse immediately with copious amounts of water and obtain medical attention. .....

- Advice customers that they must always follow the safety warnings and precautions in the copier's instruction handbook. .....

2. Precautions for Maintenance

⚠WARNING

- Always remove the power plug from the wall outlet before starting machine disassembly. 
- Always follow the procedures for maintenance described in the service manual and other related brochures. 
- Under no circumstances attempt to bypass or disable safety features including safety mechanisms and protective circuits. 
- Always use parts having the correct specifications. 
- Always use the thermostat or thermal fuse specified in the service manual or other related brochure when replacing them. Using a piece of wire, for example, could lead to fire or other serious accident. 
- When the service manual or other serious brochure specifies a distance or gap for installation of a part, always use the correct scale and measure carefully. 
- Always check that the copier is correctly connected to an outlet with a ground connection. 
- Check that the power cable covering is free of damage. Check that the power plug is dust-free. If it is dirty, clean it to remove the risk of fire or electric shock. 
- Never attempt to disassemble the optical unit in machines using lasers. Leaking laser light may damage eyesight. 
- Handle the charger sections with care. They are charged to high potentials and may cause electric shock if handled improperly. 

⚠CAUTION

- Wear safe clothing. If wearing loose clothing or accessories such as ties, make sure they are safely secured so they will not be caught in rotating sections. 
- Use utmost caution when working on a powered machine. Keep away from chains and belts. 
- Handle the fixing section with care to avoid burns as it can be extremely hot. 
- Check that the fixing unit thermistor, heat and press rollers are clean. Dirt on them can cause abnormally high temperatures. 

- Do not remove the ozone filter, if any, from the copier except for routine replacement. .....

- Do not pull on the AC power cord or connector wires on high-voltage components when removing them; always hold the plug itself. .....

- Do not route the power cable where it may be stood on or trapped. If necessary, protect it with a cable cover or other appropriate item. .....

- Treat the ends of the wire carefully when installing a new charger wire to avoid electric leaks. .....

- Remove toner completely from electronic components. .....

- Run wire harnesses carefully so that wires will not be trapped or damaged. .....

- After maintenance, always check that all the parts, screws, connectors and wires that were removed, have been refitted correctly. Special attention should be paid to any forgotten connector, trapped wire and missing screws. .....

- Check that all the caution labels that should be present on the machine according to the instruction handbook are clean and not peeling. Replace with new ones if necessary. .....

- Handle greases and solvents with care by following the instructions below: .....
  · Use only a small amount of solvent at a time, being careful not to spill. Wipe spills off completely.
  · Ventilate the room well while using grease or solvents.
  · Allow applied solvents to evaporate completely before refitting the covers or turning the power switch on.
  · Always wash hands afterwards.

- Never dispose of toner or toner bottles in fire. Toner may cause sparks when exposed directly to fire in a furnace, etc. .....

- Should smoke be seen coming from the copier, remove the power plug from the wall outlet immediately. .....

3. Miscellaneous

⚠WARNING

- Never attempt to heat the drum or expose it to any organic solvents such as alcohol, other than the specified refiner; it may generate toxic gas. .....

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CONTENTS

1-1-1 Specifications

Type	Desktop
Printing method	Electrophotography, laser scan
Paper weight	Cassette: 60 to 120 g/m^2 Manual feed tray: 60 to 220 g/m^2
Paper type	Cassette: Plain, Preprinted, Bond, Recycled, Rough, Letterhead, Color (Colour), Prepunched, High quality, Custom 1 to 8 Manual feed tray: Plain, Transparency, Preprinted, Labels, Bond, Recycled, Rough, Vellum, Letterhead, Color (Colour), Prepunched, Envelope, Cardstock, Thick paper, High quality, Custom 1 to 8
Paper size	Cassette: A4, JIS B5, A5, Follio, Legal, Letter, Oficio II, Statement, Executive, A6, ISO B5, Envelope C5, 16K, Custom (105 × 148 to 216 × 356 mm/4 1/8 × 5 13/16" to 8 1/2 × 14") Manual feed tray: A4, JIS B5, A5, Follio, Legal, Letter, Oficio II, Statement, Executive, A6, B6, ISO B5, Envelope C5, Envelope #10, Envelope #9, Envelope #6-3/4, Envelope Monarch, Envelope DL, Hagaki, Ofuku Hagaki, 16K, Yokei 2, Yokei 4, Custom (70 × 148 to 216 × 356 mm/2 13/16 × 5 13/16" to 8 1/2 × 14")
Printing speed	A4: 24 ppm Letter: 24 ppm Legal: 20 ppm B5: 17 ppm A5: 12 ppm A6: 12 ppm
First print time	7.5 s or less (A4, feed from cassette)
Warm-up time	Room temperature 22°C/71.6°F, 60% RH 120 V AC model Power on: 20 s or less Sleep mode: 15 s or less 220 - 240 V AC model Power on: 19 s or less Sleep mode: 14 s or less
Paper capacity	Cassette: 250 sheets (80 g/m^2, Letter/A4 or smaller) Manual feed tray: 1 sheet (80 g/m^2, Letter/A4 or smaller)
Output tray capacity	250 sheets (80 g/m^2)
Continuous printing	1 to 99 sheets
Photoconductor	OPC drum (diameter 30 mm)
Image write system	Semiconductor laser (1 beam)
Charging system	Scorotron (positive charging)
Developing system	Mono component dry developing method Toner replenishing: Automatic from the toner container
Transfer system	Transfer roller (negative-charged)
Separation system	Small diameter separation, discharger brush
Cleaning system	Drum: Counter blade
Charge erasing system	Exposure by eraser lamp (LED)
Fusing system	Heat roller system
Resolution	600 dpi
Operating environment	Temperature: 10 to 32.5 °C/50 to 90.5 °F Humidity: 15 to 80% Altitude: 2,500 m/8,202 ft maximum Brightness: 1,500 lux maximum
Controller	PowerPC 405F5/360 MHz
Supported OS	Microsoft Windows 2000/XP/Vista/7, Windows Server 2003/2008, Mac OS X 10.x
Interface	Hi-Speed USB × 1
Page Description Language	Host-based (PCL5e)
Memory	32 MB
Dimension (W × D × H)	375 × 393 × 250 mm 14 3/4 × 15 1/2 × 9 7/8"

Weight (without toner container)..... 11 kg/24.2 lb
Power source..... 120 V AC, 60 Hz, 8.0 A/220 to 240 V AC, 50 Hz, 4.2 A

NOTE: These specifications are subject to change without notice.

1-1-2 Parts names

(1) Overall

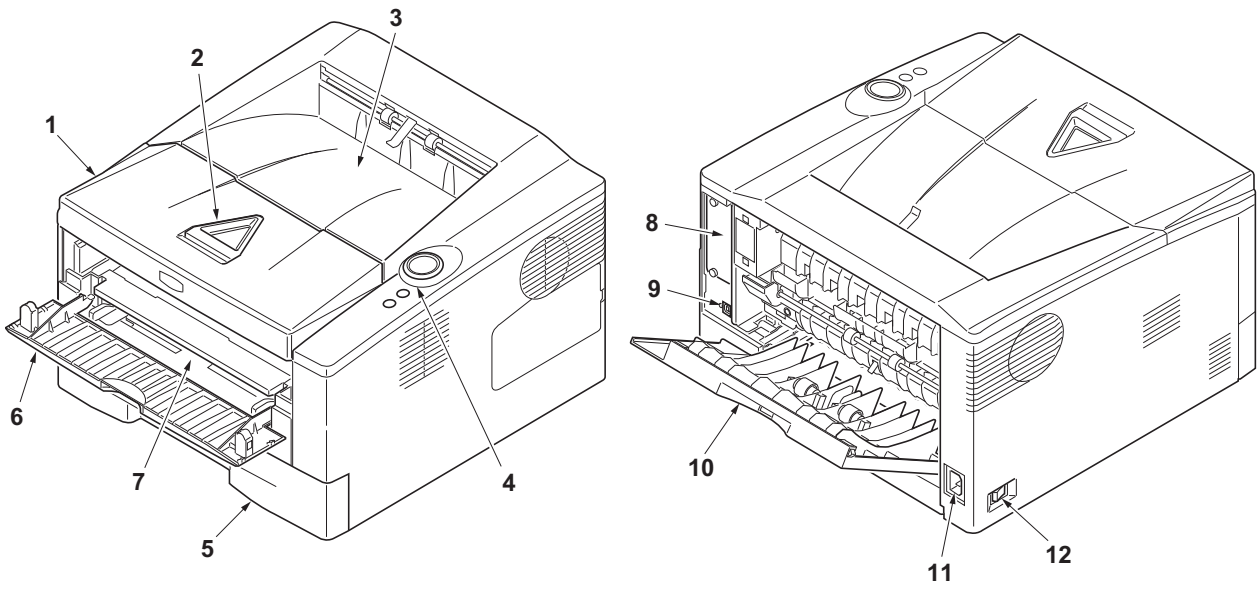

Figure 1-1-1

1. Top cover
2. Paper stopper
3. Top tray
4. Operation panel
5. Cassette
6. Front cover
7. Manual feed tray
8. Interface slot cover
9. USB interface connector
10. Rear cover
11. Power cord connector
12. Power switch

(2) Operation panel

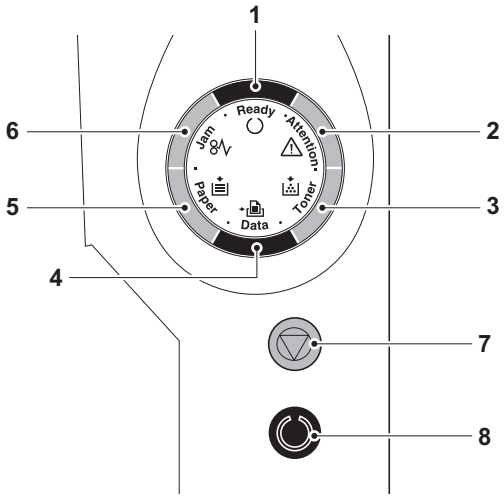

Figure 1-1-2

1. Ready indicator
2. Attention indicator
3. Toner indicator
4. Data indicator
5. Paper indicator
6. Jam indicator
7. Cancel key
8. GO key

1-1-3 Machine cross section

I

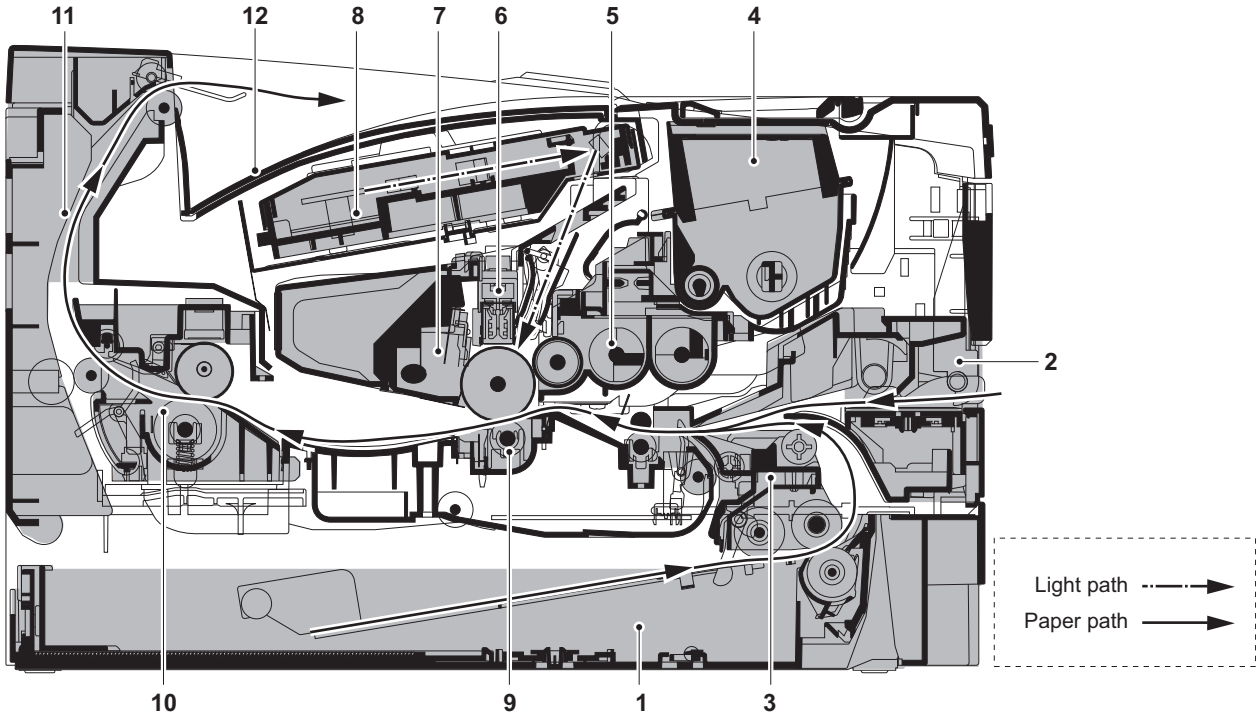

Figure 1-1-3

1. Cassette
2. Manual feed tray
3. Paper feed/conveying section
4. Toner container
5. Developing unit
6. Main charger unit
7. Drum unit
8. Laser scanner unit
9. Transfer/separation section
10. Fuser section
11. Exit section
12. Top tray

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1-2-1 Installation environment

1. Temperature: 10 to 32.5°C/50 to 90.5°F
2. Humidity: 15 to 80%RH
3. Power supply: 120 V AC, 8.0 A
   220 - 240 V AC, 4.2 A
4. Power source frequency: 50 Hz ±0.3%/60 Hz ±0.3%
5. Installation location
   Avoid direct sunlight or bright lighting. Ensure that the photoconductor will not be exposed to direct sunlight or other strong light when removing paper jams.
   Avoid locations subject to high temperature and high humidity or low temperature and low humidity; an abrupt change in the environmental temperature; and cool or hot, direct air.
   Avoid places subject to dust and vibrations.
   Choose a surface capable of supporting the weight of the machine.
   Place the machine on a level surface (maximum allowance inclination: 1°).
   Avoid air-borne substances that may adversely affect the machine or degrade the photoconductor, such as mercury, acidic of alkaline vapors, inorganic gasses, NOx, SOx gases and chlorine-based organic solvents.
   Select a well-ventilated location.
6. Allow sufficient access for proper operation and maintenance of the machine.

   Machine front: 500 mm/19 11/16"
   Machine rear: 400 mm/15 3/4"
   Machine right: 300 mm/11 13/16"
   Machine left: 300 mm/11 13/16"
   Machine top: 300 mm/11 13/16"

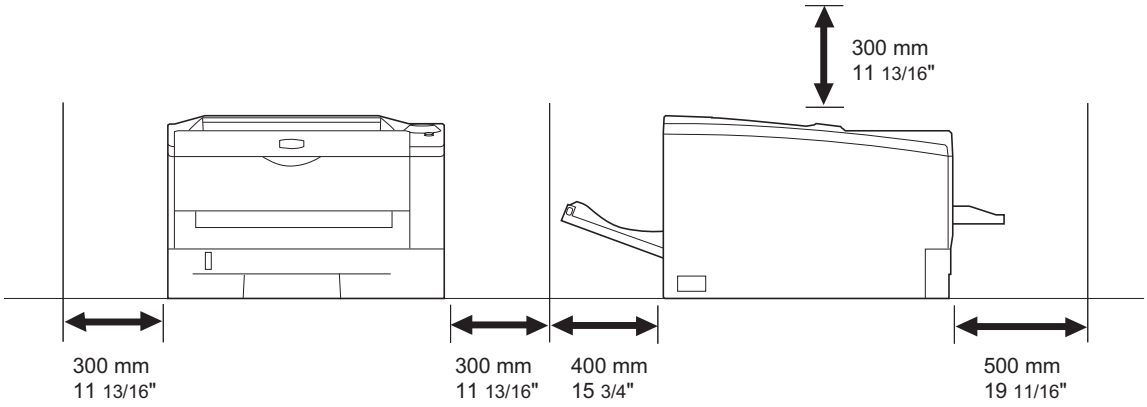

Figure 1-2-1

1-2-2 Unpacking

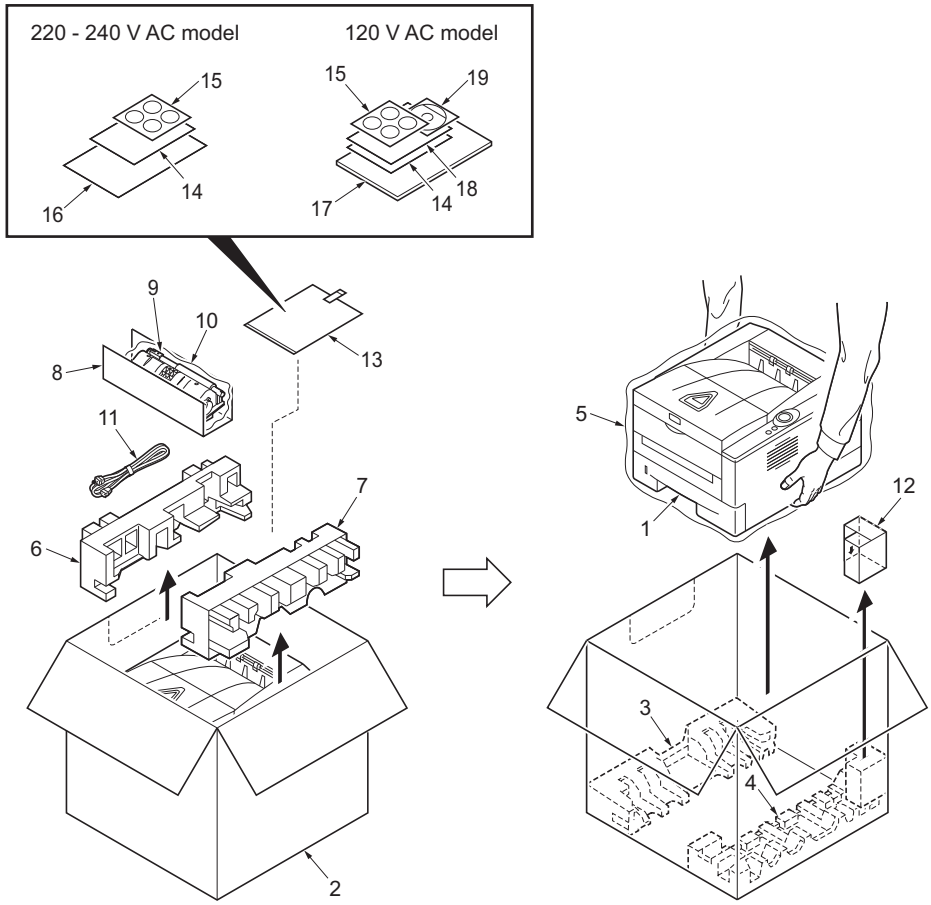

Figure 1-2-2

1. Printer
2. Outer case
3. Bottom pad L
4. Bottom pad R
5. Machine cover
6. Top pad L
7. Top pad R
8. Spacer
9. Toner container
10. Plastic bag
11. Power cord
12. Pad
13. Plastic bag
14. Installation guide
15. Panel GFIS sheet
16. EEA information leaflet
17. Operation guide
18. Energy star leaflet
19. CD-ROM

(1) Removing the tapes

Procedure

1. Remove three tapes.

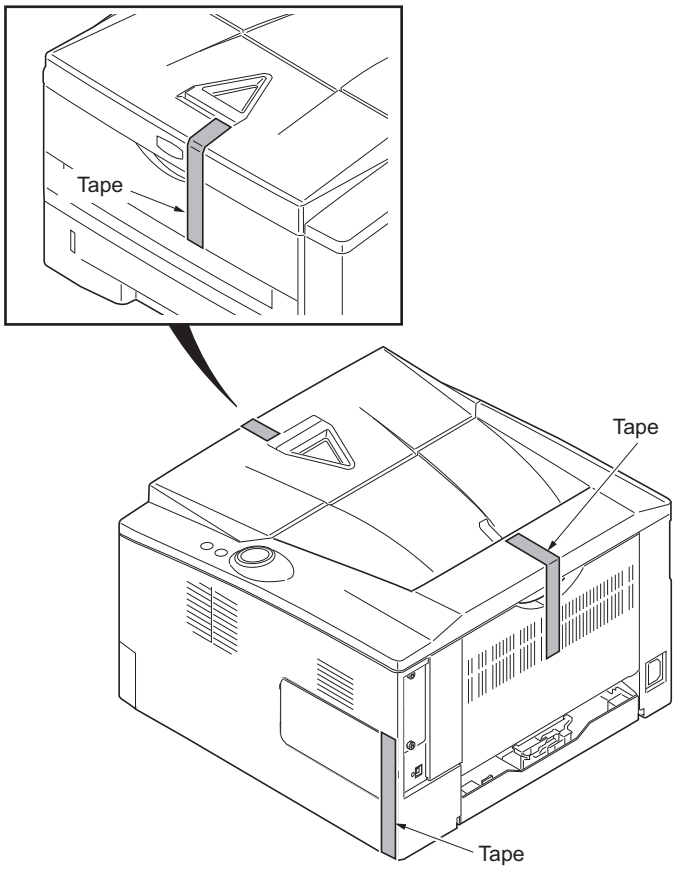

Figure 1-2-3

1-2-3 Installing the memory card

Procedure

1. Turn off printer power switch.
   Caution: Do not insert or remove memory card while printer power is on.
   Doing so may cause damage to the printer and the memory card.
2. Open the rear cover.

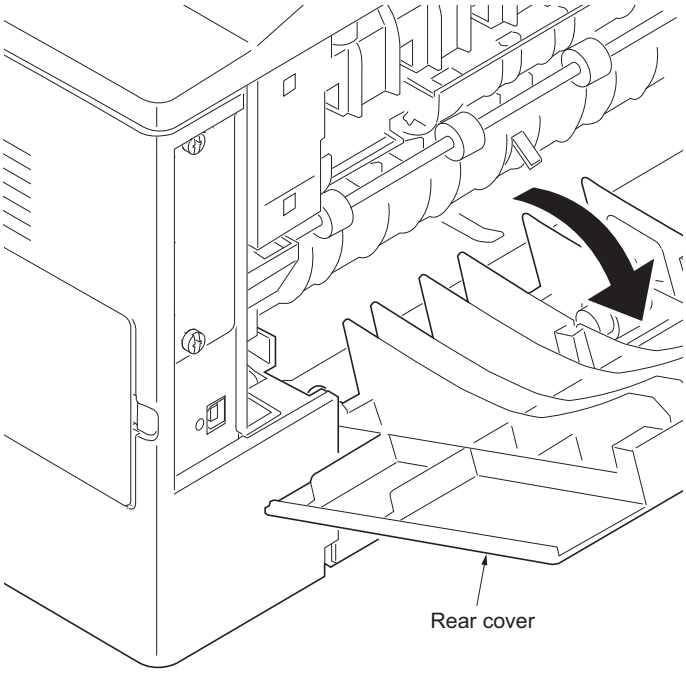

Figure 1-2-4

3. Remove two screws and then remove the optional interface slot cover.
4. Insert the memory card into the memory card slot. Push it in all the way.
5. Secure the optional interface slot cover by using two screws.
6. Format the memory card before use.

   To format the memory card:
   Send the following PRESCRIBE command sequence from the PC to the printer.

   !R! RWER F, A; EXIT;

   Note: To send a PRESCRIBE command sequence to the printer, use COMMAND CENTER (the printer's embedded web) while the printer is connected to the PC via its network interface.

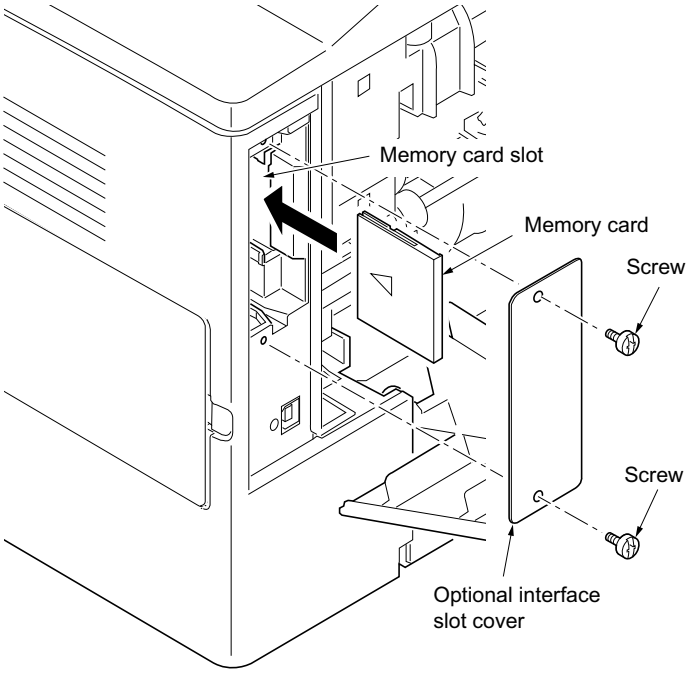

Figure 1-2-5

1-3-1 Maintenance mode

The product incorporates several service modes which are activated by using the keys on the operation panel or by commanding from a PC.

(1) Executing a service mode

Service items	Description
Printing a status page for service purpose	**Description** Prints a status page for service purpose. The status page includes various printing settings and service cumulative. **Purpose** To acquire the current printing environmental parameters and cumulative information. **Procedure** 1. Press the GO key for 10 seconds or more. Two pages will be printed. (The second page includes service information.)

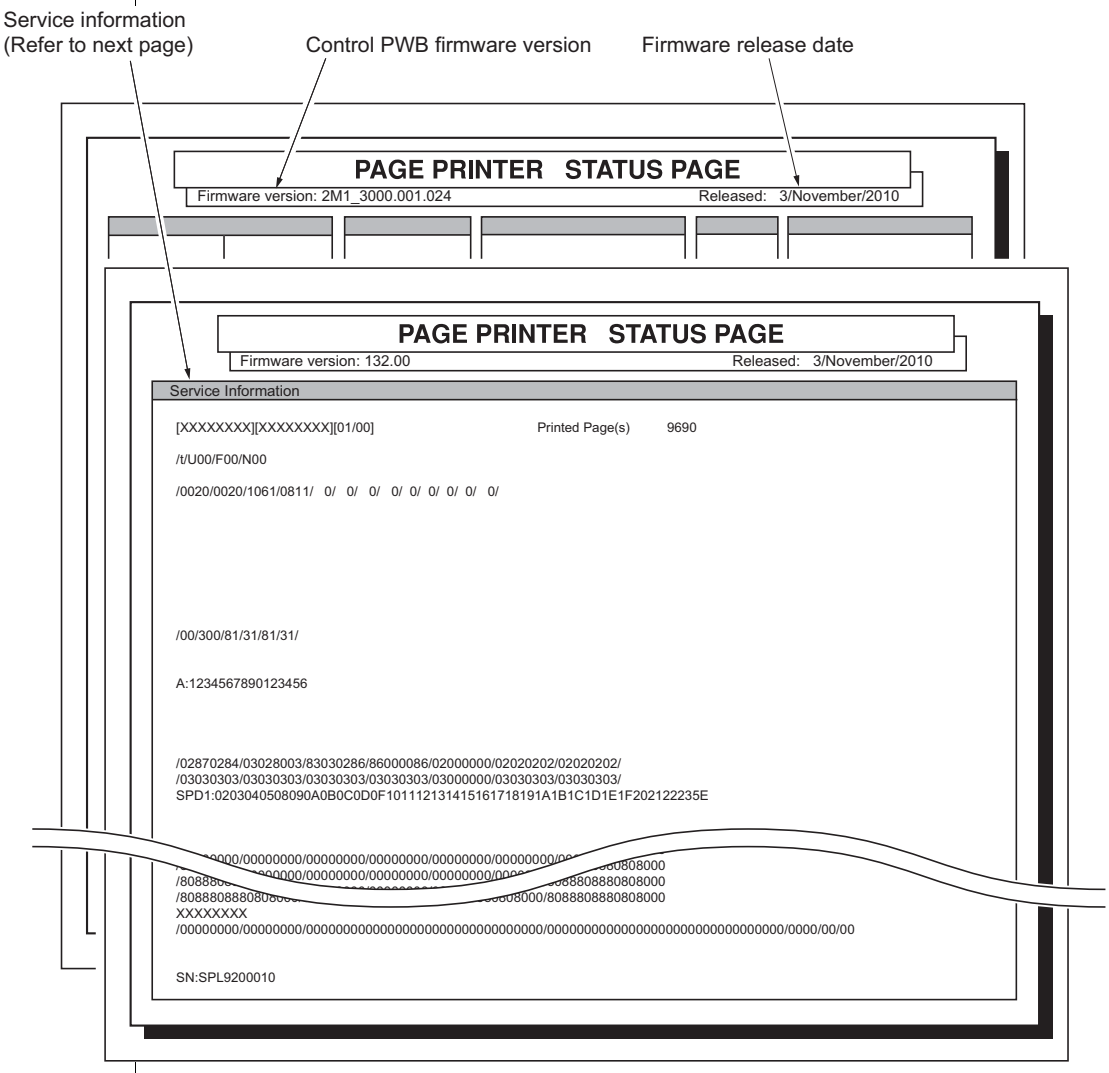

Figure 1-3-1 Service status page

Service items	Description
	Detail of service information

Service information

```
[XXXXXXXX][XXXXXXXX][01/00]                                             Total page    9690
    (1)       (2)     (3)                                                     (4)

/t/U00/F00/N00
(5) (6) (7) (8)

/0020/0020/1061/0811/   0/   0/   0/   0/   0/   0/   0/   0/   0/
        (9)                    (10)              (11)        (12)



/00/300/81/31/81/31/
(13)(14)(15)(16)(17)(18)

(19) A:1234567890123456

(20) /02870284/03028003/83030286/86000086/02000000/02020202/02020202/
(21) /03030303/03030303/03030303/03030303/03000000/03030303/03030303/
(22) SPD1:0203040508090A0B0C0D0F101112131415161718191A1B1C1D1E1F202122235E

(23) /00000000/00000000/00000000/00000000/00000000/00000000/00000000/00000000/00000000/00000000/00000000/
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(24) /8088808880808000/8088808880808000/8088808880808000/8088808880808000
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     /8088808880808000/8088808880808000/8088808880808000/8088808880808000
     /8088808880808000/8088808880808000/8088808880808000/8088808880808000
(25) XXXXXXXX
(26) /00000000/00000000/00000000000000000000000000000000/00000000000000000000000000000000/0000/00/00



(27) SN:SPL9200010
```

Figure 1-3-2 Detail of service information

Service items	Description

No.	Items	Description
(1)	Engine ROM information	[Flash ROM version]
(2)	Boot ROM information	[Boot ROM version]
(3)	Software jumper switch information (hexadecimal) [First byte/Second byte (displayed in OEM model only)]	First byte bit 0 = 1: (Fixed) bit 1 = 0: Overseas, 1: Domestic (Japan) bit 2, 3 (Not used) bit 4 = 0: Kyocera, 1: OEM bit 5 = 0: For Europe, 1: For US bit 6 = 0: Non MICR mode, 1: MICR mode bit 7 (Not used) Second byte: Displayed in OEM model only
(4)	Total page	-
(5)	Toner install information	-
(6)	USB information	00: Not connected 01: Full-Speed 02: Hi-Speed
(7)	Operation panel lock status (displayed only when locked)	01: Partial lock 02: Full lock
(8)	NVRAM error (displayed only when any error has occurred)	01: ID error 02: Version error 03: Checksum error 04: NVRAM crush error
(9)	Printable area setting	/Top offset/Left offset/Page length/Page width
(10)	Left offset for each paper source	/Manual feed tray/Cassette (1/600 inches unit)
(11)	Top offset for each paper source	/Manual feed tray/Cassette (1/600 inches unit)
(12)	Offset for rotation	/Top offset/Left offset/ (1/600 inches unit)
(13)	Calibration table setting	Setting value (FRPO I4), Hexadecimal
(14)	Resolution	Current value of bit-per-pixel
(15)	Copy quantity	-
(16)	Installed device/function information	bit0: HDD bit1: Optional ROM bit2: Memory card bit3: USB memory bit4: HDD security
(17)	Operation panel message language	PMSG command setting (decimal)
(18)	Current temperature	0 to 50 °C/32 to 122 °F (in 1 °C/1.8 °F increment, “-” = Temperature sensor is abnormal.)

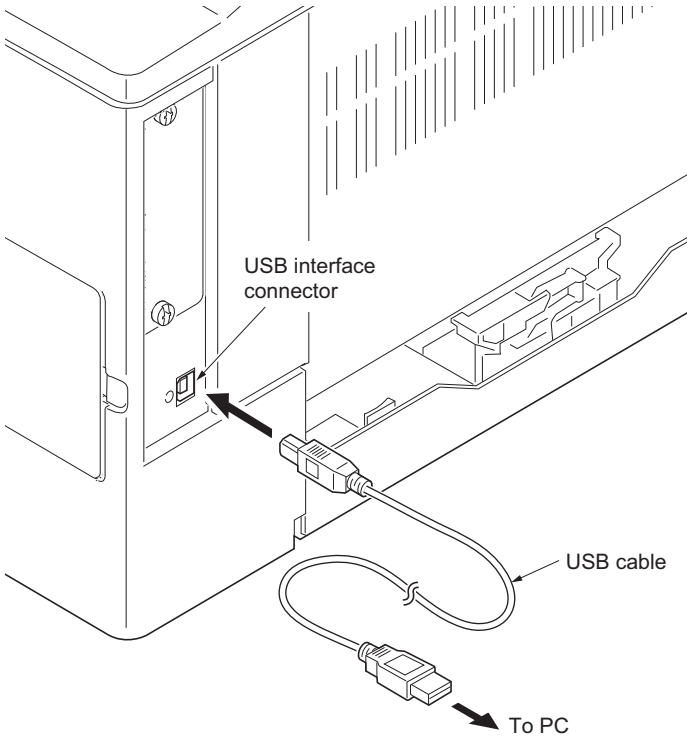
Service items	Description

No.	Items	Description
(19)	Fixed asset number	(Maximum 16 characters)
(20)	Paper type attributes	Paper type setting value from 1 to 28 (fuser, weight) (unused paper type are always 0x00.)
(21)	Paper type attributes	Paper type setting value from 1 to 28 (density) (unused paper type are always 0x00.)
(22)	Memory SPD information (slot 1)	2 to 6 bytes, 8 to 36 bytes, 94 to 95 bytes (total 32 bytes)
(23)	DRT correction coefficient	4 bytes × 11 × 23 groups
(24)	Engine parameter	Hexadecimal, 256 bytes
(25)	RFID reader/writer version information	-
(26)	RFID information	-
(27)	Machine serial number	-

NOTE:

Code conversion

A	B	C	D	E	F	G	H	I	J
0	1	2	3	4	5	6	7	8	9

Service items	Description
Printing an event log (EVENT LOG)	**Description** Prints a history list of occurrences of paper jam, self-diagnostics, toner replacements, etc. **Purpose** To allow machine malfunction analysis based on the frequency of paper misfeeds, self diagnostic errors and replacements. **Procedure** 1. Connect the USB cable between printer and PC.  **Figure 1-3-3** 2. Connect the power cord. 3. Turn printer power on. Make sure the printer is ready. 4. At the DOS prompt, send the following command to the printer: echo !R! ELOG;EXIT;>prn Event log will be printed.

Service items	Description

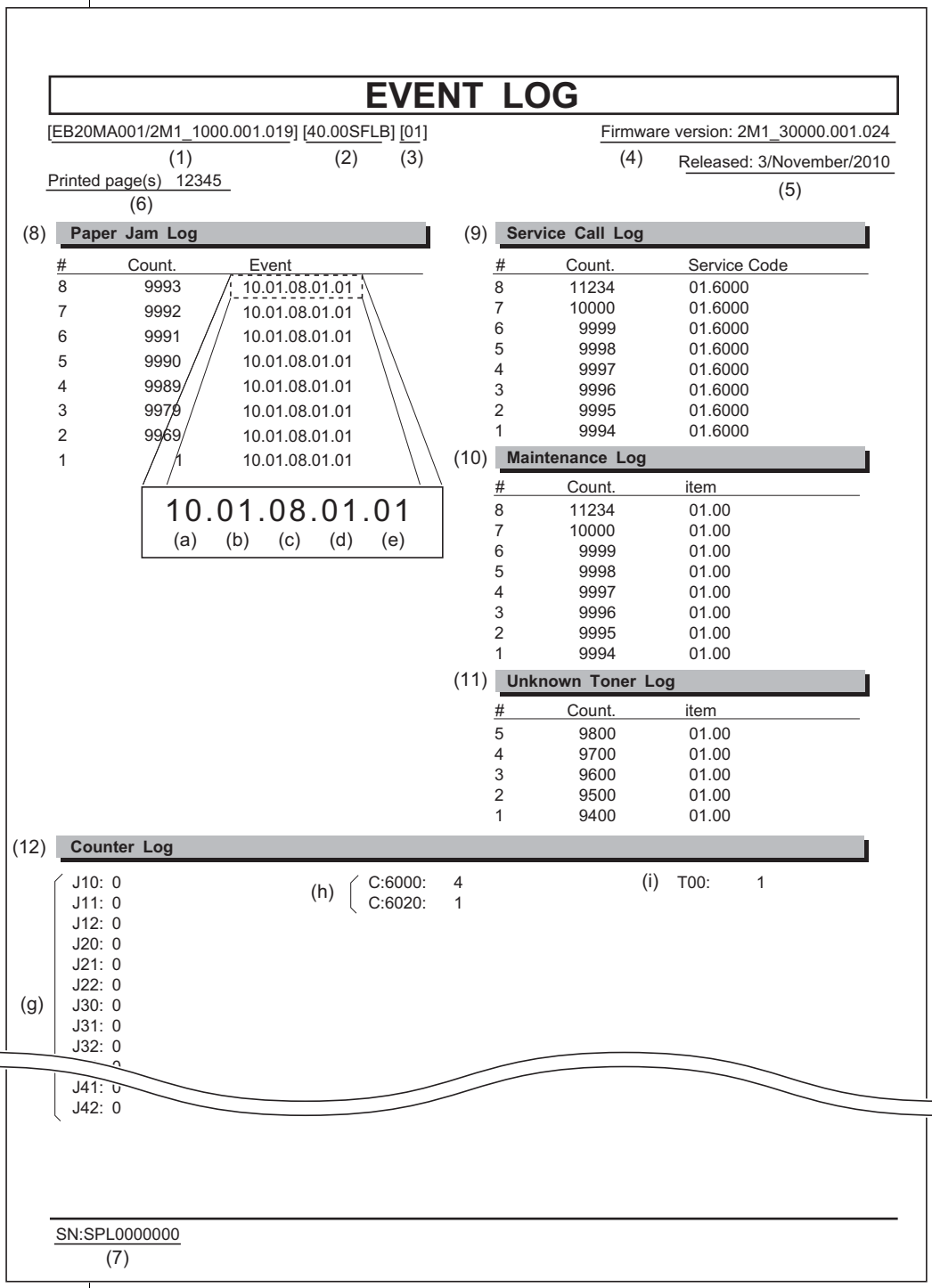


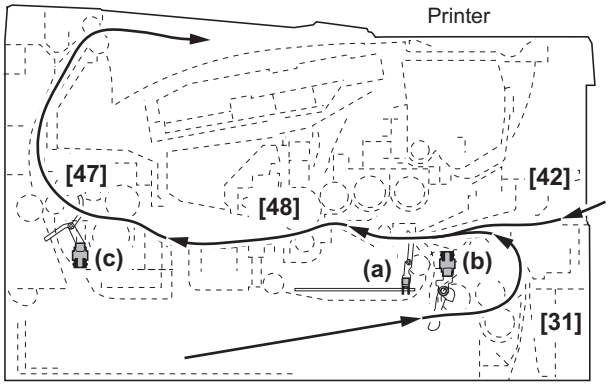
Figure 1-3-4 Event log (EVENT LOG)

Service items	Description

Detail of event log (EVENT LOG) information

No.	Items	Description		
(1)	Control PWB mask version	[Engine mask version/Engine software version]		
(2)	BROM version	-		
(3)	Software jumper switch information (hexadecimal) [First byte/Second byte (displayed in OEM mode only)]	First byte bit 0 = 1: (Fixed) bit 1 = 0: Overseas, 1: Domestic (Japan) bit 2, 3 (Not used) bit 4 = 0: Kyocera, 1: OEM bit 5 = 0: For Europe, 1: For US bit 6 = 0: Non MICR mode, 1: MICR mode bit 7 (Not used) Second byte: Displayed in OEM mode only		
(4)	Control PWB firmware version	-		
(5)	Control PWB firmware release date	-		
(6)	Total page counter	-		
(7)	Printer serial number	-		
(8)	Paper Jam Log	# Remembers 1 to 8 of occurrence. If the occurrence of the previous paper jam is less than 8, all of the paper jams are logged. When the occurrence excesseds 8, the oldest occurrence is removed.	Count. The total page count at the time of the paper jam.	Event Log code (2 digit, hexadecimal, 6 categories) (a) Cause of a paper jam (b) Paper source (c) Paper size (d) Paper type (e) Paper exit Refer to the next page for the details of each log code.

Service items	Description

No.	Items	Description
(8) cont.	Paper Jam Log	(a) Cause of paper jam
		10: Paper does not arrive at the registration sensor. (Cassette) [31] 11: Paper does not pass the registration sensor. [48] 12: Paper remains at the registration sensor when power is turned on. [48] 20: Paper does not arrive at the exit sensor. [48] 21: Paper does not pass the exit sensor. [47] 22: Paper remains at the exit sensor when power is turned on. [47] E0: Paper misfeed occurs due to forced stop when an error occurs during printing. (such as opening of a cover) [00] F0 to FE: Paper misfeed by another cause. [00] Note: Values (hexadecimal) within [ ] indicate paper misfeed locations.
		(b) Detail of jam location
		

Paper jam location
[31] Cassette
[42] Manual feed tray
[47] Fuser/Exit section
[48] Printer inside

Sensors
(a) Registration sensor
(b) Paper sensor
(c) Paper exit sensor

Service items	Description

No.	Items	Description		
(8) cont.	Paper Jam Log	(c) Detail of paper source (Hexadecimal)		
		00: Manual feed tray 01: Cassette		
		(d) Detail of paper size (Hexadecimal)		
		00: (Undefined) 01: Monarch 02: Business 03: International DL 04: International C5 05: Executive 06: Letter-R 07: Legal 08: A4R	09: B5R 0D: A5R 0E: A6 0F: B6 10: Commercial #9 11: Commercial #6 12: ISO B5 13: Custom 1F: Post card	20: Reply-paid postcard 21: Oficio II 28: 16K-R 32: Statement-R 33: Folio 34: Western type 2 35: Western type 4
		(e) Detail of paper type (Hexadecimal)		
		01: Plain 02: Transparency 03: Preprint 04: Labels 05: Bond 06: Recycle 07: Vellum 08: Rough	09: Letterhead 0A: Color 0B: Prepunched 0C: Envelope 0D: Cardstock 10: Thick 11: High quality 15: Custom 1	16: Custom 2 17: Custom 3 18: Custom 4 19: Custom 5 1A: Custom 6 1B: Custom 7 1C: Custom 8
		(f) Detail of paper exit location (Hexadecimal)		
		01: Top tray		
(9)	Service Call (Self diagnostic error) Log	#	Count.	Service Code
		Remembers 1 to 8 of occurrence of self diagnostics error. If the occurrence of the previous diagnostics error is less than 8, all of the diagnostics errors are logged.	The total page count at the time of the self diagnostics error.	Self diagnostic error code (See page 1-4-4) Example 01.6000 01 means a self-diagnostic error; 6000 means a self diagnostic error code.
(10)	Maintenance Log NOTE: It is not logged if 100 or more counts are not added to the count at the last occurrence of replacement.	#	Count.	Item
		Remembers 1 to 8 of occurrence of replacement. If the occurrence of the previous replacement of toner container is less than 8, all of the occurrences of replacement are logged.	The total page count at the time of the replacement of the toner container. This is virtually logged as the occurrence of the “Toner Empty” condition since the replacement of the toner container is not precisely detectable.	Code of maintenance replacing item (1 byte, 2 categories) First byte (Replacing item) 01: Toner container

Service items	Description

No.	Items	Description		
(11)	Unknown Toner Log NOTE: It is not logged if 100 or more counts are not added to the count at the last error.	#	Count.	Item
		Remembers 1 to 5 of occurrence of unknown toner detection. If the occurrence of the previous unknown toner detection is less than 5, all of the unknown toner detection are logged.	The total page count at the time of the “Toner Empty” condition with using an unknown toner container.	Unknown toner log code (1 byte, 2 categories) First byte 01: Fixed (Toner container) Second byte 00: Fixed (Black)
(12)	Counter Log Comprised of three log counters including paper jams, self diagnostics errors, and replacement of the toner container. NOTE: It is not logged if 100 or more counts are not added to the count at the last error.	(g) Paper jam	(h) Self diagnostic error	(i) Maintenance item replacing
		Indicates the log counter of paper jams depending on location. Refer to (8) Paper Jam Log. All instances including those are not occurred are displayed.	Indicates the log counter of self diagnostics errors depending on cause. (See page 1-4-4) Example C6000: 4 Self diagnostics error 6000 has happened four times.	Indicates the log counter depending on the maintenance item for maintenance. T: Toner container 00: Black Example T00: 1 The (black) toner container has been replaced once.

Toner install mode	**Description** Replenishes toner rapidly from the toner container into the developing unit. **Purpose** To execute after replacing the developing unit to replenish toner rapidly into the developing unit. **Procedure** Toner install mode is performed by simultaneously pressing and holding the GO and Cancel keys for more than 5 seconds. To abort toner install mode, turn power on while pressing and holding the GO and Cancel keys.

Service items	Description
[REPLACE MAINTE-NANCE KIT] message sheet	**Description** [REPLACE MAINTENANCE KIT] message sheet is printed at the 1st power-up after the page count exceeding 70,000 pages. **Procedure** Replace the maintenance kit. Maintenance kit MK-1102 (for 120 V specifications) Maintenance kit MK-1100 (for 220-240 V specifications) **Procedure for replacing** Drum unit (See page 1-5-11) Developing unit (See page 1-5-10)

1-4-1 Paper misfeed detection

(1) Paper misfeed indication

If paper jams in the paper conveying system, or no paper sheets are fed at all, the printer automatically goes offline, and the jam indicator will flash rapidly. Status Monitor can indicate the location of the paper jam. After removing the jammed paper, the printer will resume printing.

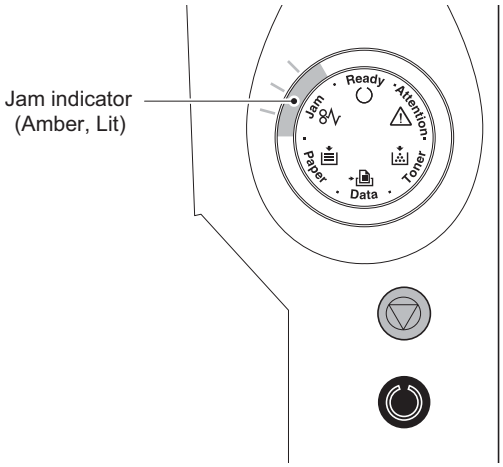


Figure 1-4-1

(2) Paper misfeed detection condition

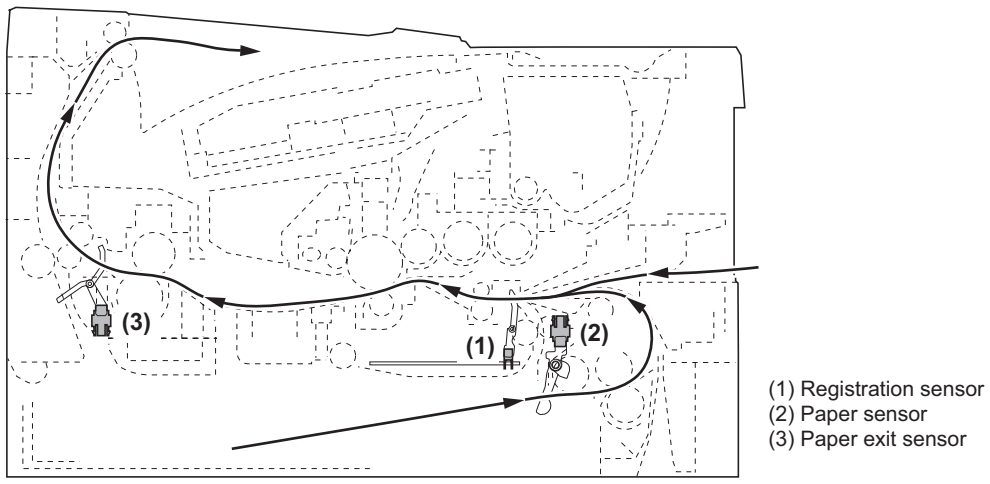


Figure 1-4-2

1-4-2 Self-diagnostic function

(1) Self-diagnostic function

The printer is equipped with self-diagnostic function which automatically halts the printer when an error is detected. The four indicators (Jam, Paper, Attention, Toner) are simultaneously lit, then indicate a specific error by the combination of the four indicators.

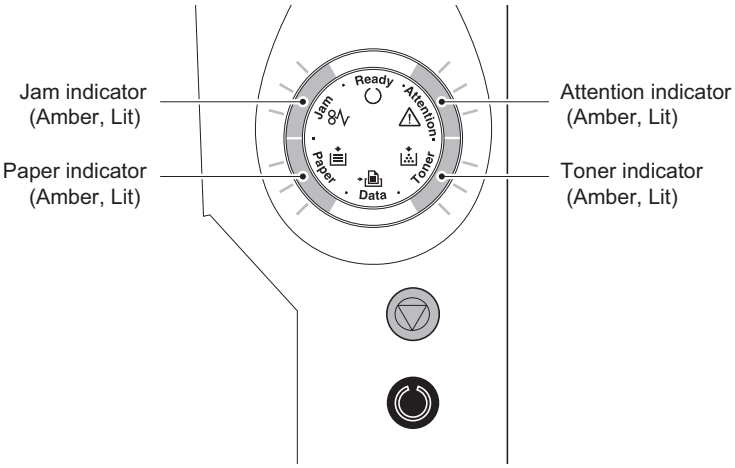
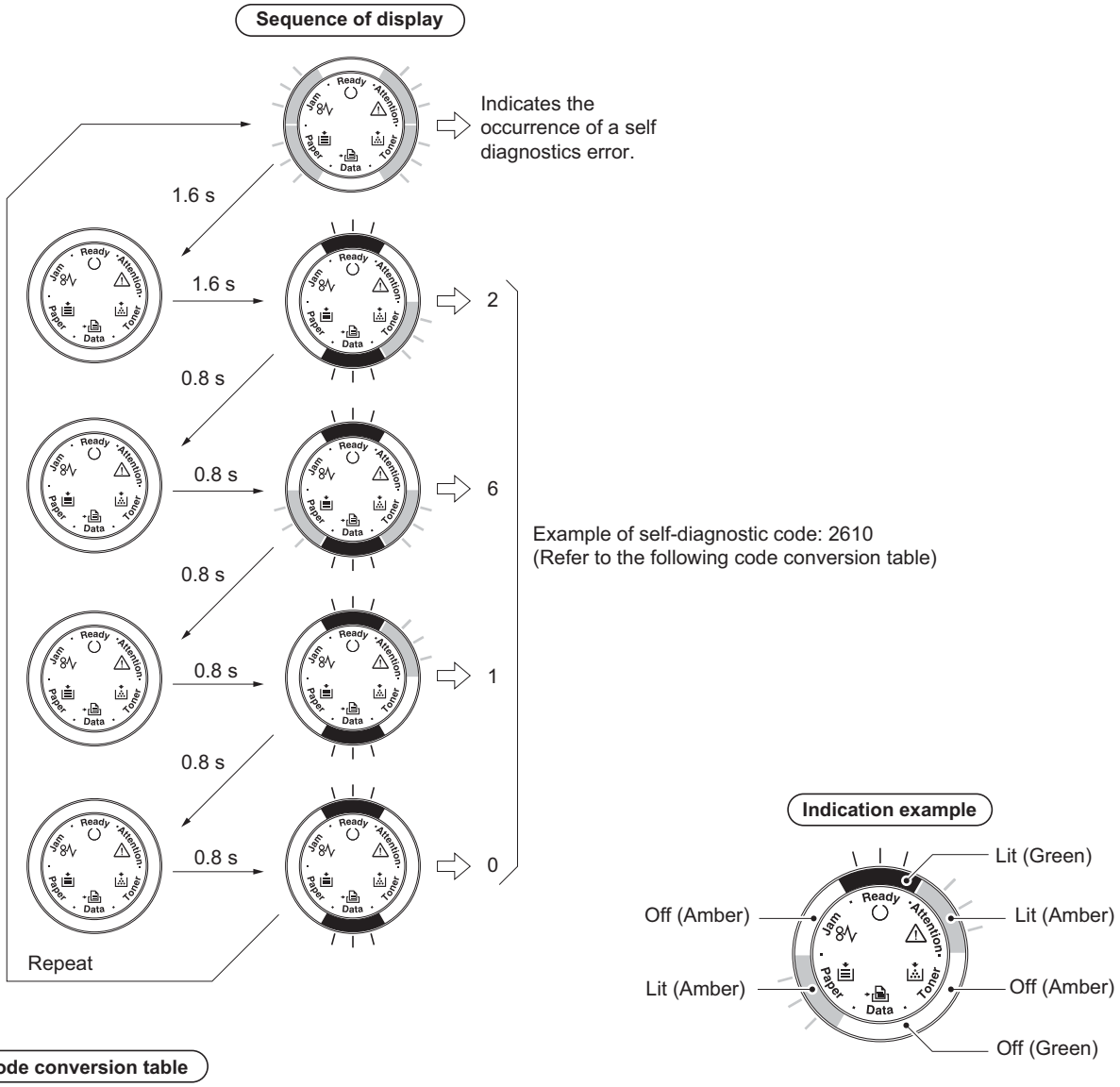


Figure 1-4-3

(2) Self diagnostic codes indication



Code conversion table

Code	1	2	3	4	5	
Indicator						
Code	6	7	8	9	0	F
Indicator						

Figure 1-4-4

(3) Self diagnostic codes

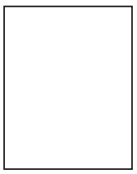
Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
0150	**Control PWB EEPROM error** Detecting control PWB EEPROM (U300) communication error.	Improper installation control PWB EEPROM (U300).	Check the installation of the EEPROM (U300) and remedy if necessary (See page 1-5-18).
		Defective control PWB.	Replace the control PWB (See page 1-5-18).
2000	**Main motor error** The main motor ready input is not given for 2 s during the main motor is ON.	Defective harness between main motor (CN1) and control PWB (YC305), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
		Defective drive transmission system of the main motor.	Check if the rollers and gears rotate smoothly. If not, grease the bushings and gears. Check for broken gears and replace if any.
		Defective main motor.	Replace the main motor (See page 1-5-27).
		Defective control PWB.	Replace the control PWB (See page 1-5-18).
4000	**Polygon motor (laser scanner unit) error** The polygon motor ready input is not given for 6 s during the polygon motor is ON.	Defective harness between polygon motor and control PWB (YC319), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
		Defective laser scanner unit.	Replace the laser scanner unit (See page 1-5-28).
		Defective control PWB.	Replace the control PWB (See page 1-5-18).
6000	**Broken fuser heater lamp wire** The fuser temperature does not rise after the fuser heater lamp has been turned on.	Poor contact in the fuser thermistor connector terminals.	Reinsert the connector (See page 1-5-15).
		Poor contact in the fuser heater lamp connector terminals.	Reinsert the connector (See page 1-5-15).
		Fuser thermistor installed incorrectly.	Replace the fuser unit (See page 1-5-15).
		Fuser thermal cutout triggered.	Replace the fuser unit (See page 1-5-15).
		Fuser heater lamp installed incorrectly.	Replace the fuser unit (See page 1-5-15).
		Broken fuser heater lamp wire.	Replace the fuser unit (See page 1-5-15).
6020	**Abnormally high fuser thermistor temperature** Fuser thermistor detects abnormally temperature.	Shorted fuser thermistor.	Replace the fuser unit (See page 1-5-15).
		Defective control PWB.	Replace the control PWB (See page 1-5-18).

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
6030	**Broken fuser thermistor wire** Input from fuser thermistor is 0 (A/D value).	Poor contact in the fuser thermistor connector terminals.	Reinsert the connector (See page 1-5-15).
		Broken fuser thermistor wire.	Replace the fuser unit (See page 1-5-15).
		Fuser thermistor installed incorrectly.	Replace the fuser unit (See page 1-5-15).
		Fuser thermal cutout triggered.	Replace the fuser unit (See page 1-5-15).
		Fuser heater lamp installed incorrectly.	Replace the fuser unit (See page 1-5-15).
		Broken fuser heater lamp wire.	Replace the fuser unit (See page 1-5-15).
6400	**Zero cross signal error** The zero cross signal does not reach the control PWB for specified time.	Defective harness between high voltage PWB (YC202) and control PWB (YC311), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness (See page 1-5-24).
		Defective harness between power source PWB (YC103) and high voltage PWB (YC201), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness (See page 1-5-24).
		Defective power source PWB.	Replace the power source PWB (See page 1-5-21).
		Defective control PWB.	Replace the control PWB (See page 1-5-18).
7990	**Waste toner full** The waste toner sensor has detected that the waste toner reservoir (drum unit) is full.	Waste toner reservoir (drum unit) is full.	Turn the main power switch off/on to restart the printer. If the error is not resolved, replace the drum unit (See page 1-5-11).
		Defective waste toner sensor.	Replace the waste toner sensor.
		Defective control PWB.	Replace the control PWB (See page 1-5-18).
F010	**Control PWB checksum error**	Defective code ROM (flash memory).	Turn the power switch off/on to restart the printer. If the error is not resolved, replace the control PWB (See page 1-5-18).
		Defective control PWB.	Replace the control PWB (See page 1-5-18).
F020	**Control PWB RAM checksum error**	Defective main memory (RAM) on the control PWB.	Turn the power switch off/on to restart the printer. If the error is not resolved, replace control PWB (See page 1-5-18).
F030	**Control PWB general failure**	Defective control PWB.	Turn the power switch off/on to restart the printer. If the error is not resolved, replace control PWB (See page 1-5-18).

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
F040	**Control PWB engine communication error**	Defective control PWB.	Turn the power switch off/on to restart the printer. If the error is not resolved, replace control PWB (See page 1-5-18).
F050	**Control PWB engine checksum error**	Some error may have occurred when downloading the firmware of the control PWB.	Download the firmware of the control PWB again using the memory card (See page 1-6-2).
		Defective control PWB.	Turn the power switch off/on to restart the printer. If the error is not resolved, replace control PWB (See page 1-5-18).
F226	**Control PWB video data control error**	Defective control PWB.	Turn the power switch off/on to restart the printer. If the error is not resolved, replace control PWB (See page 1-5-18).

1-4-3 Image formation problems

(1)Completely blank printout.

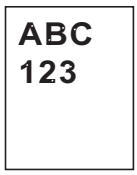


See page 1-4-8

(2)All-black printout.

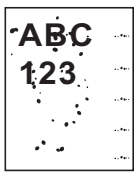
See page 1-4-8

(3)Dropouts.



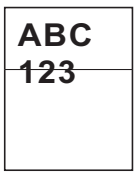
See page 1-4-9

(4)Black dots.



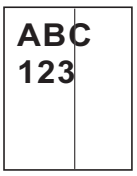
See page 1-4-9

(5)Black horizontal streaks.



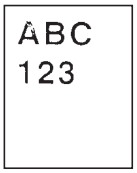
See page 1-4-9

(6)Black vertical streaks.



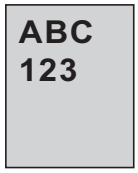
See page 1-4-10

(7)Unsharpness.



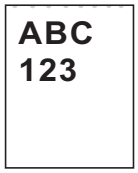
See page 1-4-10

(8)Gray background.



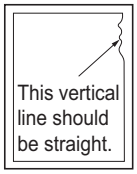
See page 1-4-10

(9)Dirt on the top edge or back of the paper.



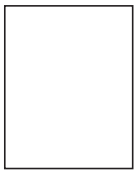
See page 1-4-11

(10)Undulated printing at the right edge (scanning start position).



See page 1-4-11

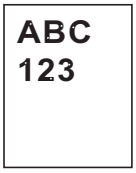
(1) Completely blank printout.

Print example	Causes	Check procedures/corrective measures
	Defective drum unit or developing unit.	Open the top cover and check that the drum unit and developing unit are correctly seated. Investigate that the terminals between the main charger unit and the drum unit are not in loose contact (See page 1-5-11 and 1-5-10).
	Defective transfer bias output or developing bias output.	Replace the high voltage PWB (See page 1-5-24).
	Poor contact of developing bias terminal (spring) and high voltage output terminal B (J401, J402, J403) on the high voltage PWB. Poor contact of transfer bias terminal (spring) and transfer bias terminal T (J201, J202, J203) on the high voltage PWB.	Check the high voltage PWB visually and correct or replace if necessary (See page 1-5-24).
	Defective laser scanner unit.	Replace the laser scanner unit (See page 1-5-28).
	Defective control PWB.	Replace the control PWB (See page 1-5-18).

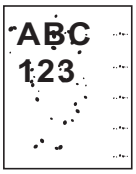
(2) All-black printout.

Print example	Causes	Check procedures/corrective measures
	Defective main charger unit.	Open the top cover and check that the drum unit and developing unit are correctly seated (See page 1-5-11). Investigate that the terminals between the main charger unit and the drum unit are not in loose contact.
	Poor contact of main charger terminal (spring) and main charger output terminal M on the high voltage PWB.	Check the high voltage PWB visually and correct or replace if necessary (See page 1-5-24).
	Defective main charging output.	Replace the high voltage PWB (See page 1-5-24).
	Broken main charger wire.	Replace the main charger unit (See page 1-5-12).
	Defective control PWB.	Replace the control PWB (See page 1-5-18).

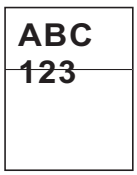
(3) Dropouts.

Print example	Causes	Check procedures/corrective measures
	Defective developing roller (developing unit).	If the defects occur at regular intervals of 62.8 mm/2 1/2" (See page 2-4-2), the problem may be the damaged developing roller (in the developing unit). Replace the developing unit (See page 1-5-10).
	Defective drum unit.	If the defects occur at regular intervals of 94 mm/3 11/16" (See page 2-4-2), the problem may be the damaged drum (in the drum unit). Replace the drum unit (See page 1-5-11).
	Defective fuser unit (heat roller or press roller).	If the defects occur at regular intervals of 73.162 mm/2 7/8", or 78.5 mm/3 1/16" (See page 2-4-2), the problem may be the damaged heat roller or press roller (in the fuser unit). Replace fuser unit (See page 1-5-15).
	Defective paper specifications.	Paper with rugged surface or dump tends to cause dropouts. Replace paper with the one that satisfies the paper specifications.
	Defective transfer roller installation.	The transfer roller must be supported by the bushes at the both ends. Clean the bush to remove oil and debris. Replace the transfer roller if necessary (See page 1-5-13).
	Defective transfer bias output.	Replace the high voltage PWB or control PWB (See page 1-5-24 or 1-5-18).

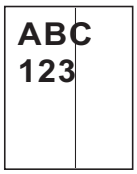
(4) Black dots.

Print example	Causes	Check procedures/corrective measures
	Defective drum unit or developing unit.	If the defects occur at regular intervals of 94 mm/3 11/16" (See page 2-4-2), the problem may be the damaged drum (in the drum unit). Replace drum unit (See page 1-5-11). If the defects occur at random intervals, the toner may be leaking from the developing unit or drum unit. Replace the developing unit or drum unit (See page 1-5-10 or 1-5-11).

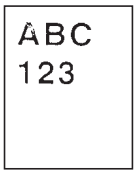
(5) Black horizontal streaks.

Print example	Causes	Check procedures/corrective measures
	Defective drum unit's ground.	Check that the drum shaft and the grounding tab (printer) are in good contact. Apply the grounding tab a small amount of electroconductive grease as required.
	Defective drum unit.	Replace the drum unit (See page 1-5-11).

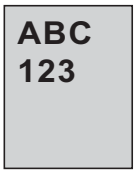
(6) Black vertical streaks.

Print example	Causes	Check procedures/corrective measures
	Adhesion of oxide to main charger wire.	Remove the drum unit (See page 1-5-11). Slide the charger cleaner (green) left and right 2 or 3 times to clean the charger wire, then return it to its original position (CLEANER HOME POSITION). Refer to the operation guide.
	Defective drum unit.	A streak of toner remaining on drum after printing means that the cleaning blade (in the drum unit) is not working properly. Replace the drum unit (See page 1-5-11).
	Defective developing roller (developing unit).	Replace the developing unit (See page 1-5-10).

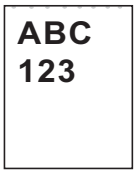
(7) Unsharpness.

Print example	Causes	Check procedures/corrective measures
	Defective paper specifications.	Replace paper with the one that satisfies the paper specification.
	Defective transfer roller installation.	The transfer roller must be supported by the bushes at the both ends. Clean the bush to remove oil and debris. Replace the transfer roller if necessary (See page 1-5-13).
	Defective transfer bias output.	Replace the high voltage PWB or control PWB (See page 1-5-24).
	EcoPrint mode setting.	The EcoPrint mode can provides faint, unsharp printing because it acts to conserve toner for draft printing purpose. For normal printing, turn the EcoPrint mode off by using the operator panel. For details, refer to the operation guide.

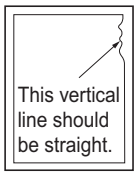
(8) Gray background.

Print example	Causes	Check procedures/corrective measures
	Print density setting.	The print density may be set too high. Try adjusting the print density. For details, refer to the operation guide.
	Defective potential on the drum surface.	Replace the drum unit (See page 1-5-11).
	Defective main charger grid.	Clean the main charger grid (See page 1-5-12).
	Defective developing roller (developing unit).	If a developing unit which is known to work normally is available for check, replace the current developing unit in the printer with the normal one. If the symptom disappears, replace the developing unit with a new one (See page 1-5-10).

(9) Dirt on the top edge or back of the paper.

Print example	Causes	Check procedures/corrective measures
	Toner contamination in various parts.	Dirty edges and back of the paper can be caused by toner accumulated on such parts as the paper chute guide, paper conveying paths, the bottom of the drum and developing unit, and the fuser unit inlet. Clean these areas and parts to remove toner.
	Defective transfer roller.	If the transfer roller is contaminated with toner, clean the transfer roller using a vacuum cleaner or by continuously printing a low density page until the symptom has faded away.

(10) Undulated printing at the right edge (scanning start position).

Print example	Causes	Check procedures/corrective measures
	Defective polygon motor (laser scanner unit).	Replace the laser scanner unit (See page 1-5-28).
	Defective control PWB.	Replace the control PWB (See page 1-5-18).

1-4-4 Electric problems

Problem	Causes	Check procedures/corrective measures
(1) The machine does not operate when the power switch is turned on.	No electricity at the power outlet.	Measure the input voltage.
	The power cord is not plugged in properly.	Check the contact between the power plug and the outlet.
	The top cover is not closed completely.	Check the top cover.
	Broken power cord.	Check for continuity. If none, replace the cord.
	Defective power switch.	Check for continuity across the contacts. If none, replace the power source PWB (See page 1-5-21).
	Blown fuse in the power source PWB.	Check for continuity. If none, remove the cause of blowing and replace the power source PWB (See page 1-5-21).
	Defective interlock switch.	Check for continuity across the contacts of interlock switch. If none, replace the power source PWB (See page 1-5-21).
	Defective power source PWB.	Replace the power source PWB (See page 1-5-21).
	Defective control PWB.	Replace the control PWB (See page 1-5-18).
(2) Right cooling fan motor does not operate.	Broken right cooling fan motor coil.	Check for continuity across the coil. If none, replace the right cooling fan motor.
	Defective harness between right cooling fan motor and control PWB (YC315), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
	Defective control PWB.	Replace the control PWB (See page 1-5-18).
(3) Left cooling fan motor does not operate.	Broken left cooling fan motor coil.	Check for continuity across the coil. If none, replace the left cooling fan motor.
	Defective harness between left cooling fan motor and control PWB (YC104), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
	Defective control PWB.	Replace the control PWB (See page 1-5-18).
(4) Registration clutch does not operate.	Broken registration clutch coil.	Check for continuity across the coil. If none, replace the registration clutch.
	Defective harness between registration clutch and control PWB (YC308), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
	Defective control PWB.	Replace the control PWB (See page 1-5-18).
(5) Paper feed clutch does not operate.	Broken paper feed clutch coil.	Check for continuity across the coil. If none, replace the paper feed clutch.
	Defective harness between paper feed clutch and control PWB (YC308), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
	Defective control PWB.	Replace the control PWB (See page 1-5-18).

Problem	Causes	Check procedures/corrective measures
(6) Developing clutch does not operate.	Broken developing clutch coil.	Check for continuity across the coil. If none, replace the developing clutch.
	Defective harness between developing clutch and control PWB (YC308), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
	Defective control PWB.	Replace the control PWB (See page 1-5-18).
(7) Eraser lamp does not turn on.	Defective harness between eraser lamp (YC701) and control PWB (YC316), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
	Defective eraser lamp (PWB).	Replace the eraser lamp (PWB) (See page 1-5-30).
	Defective control PWB.	Replace the control PWB (See page 1-5-18).
(8) Paper indicator is flashing when paper is present in the cassette.	Defective paper sensor.	Replace the paper sensor.
	Defective harness between paper sensor and control PWB (YC306), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
(9) A paper jam in the paper feed/conveying section or fuser section is indicated when the power switch is turned on.	A piece of paper torn from paper is caught around registration sensor or exit sensor.	Check and remove if any.
	Defective registration sensor on the high voltage PWB.	Replace the high voltage PWB (See page 1-5-24).
	Defective exit sensor.	Replace the exit sensor.
(10) Attention indicator is lit when the top cover is closed.	Defective interlock switch on the power source PWB.	Check for continuity across the interlock switch. If there is no continuity when the interlock switch is on, replace the power source PWB (See page 1-5-21).

1-4-5 Mechanical problems

Problem	Causes/check procedures	Corrective measures
(1) No primary paper feed.	Check if the surfaces of the paper feed roller is dirty with paper powder.	Clean with isopropyl alcohol.
	Check if the paper feed roller is deformed.	Check visually and replace any deformed paper feed roller (assembly) (See page 1-5-6).
	Defective paper feed clutch installation.	Check visually and remedy if necessary.
(2) No secondary paper feed.	Check if the surfaces of the upper and lower registration rollers are dirty with paper powder.	Clean with isopropyl alcohol.
	Defective registration clutch installation.	Check visually and remedy if necessary.
(3) Skewed paper feed.	Paper width guide in a cassette installed incorrectly.	Check the paper width guide visually and correct or replace if necessary.
(4) Multiple sheets of paper are fed at one time.	Check if the separator pad is worn.	Replace the separator pad if it is worn.
	Check if the paper is curled.	Replace the paper.
(5) Paper jams.	Check if the paper is excessively curled.	Replace the paper.
	Check if the contact between the upper and lower registration rollers is correct.	Check visually and remedy if necessary.
	Check if the heat roller or press roller is extremely dirty or deformed.	Replace the fuser unit (See page 1-5-15).
	Check if the contact between the ejection roller and fuser ejection pulley is correct.	Check visually and remedy if necessary.
(6) Toner drops on the paper conveying path.	Check if the drum unit or developing unit is extremely dirty.	Clean the drum unit or developing unit (See page 1-5-10 or 1-5-11).
(7) Abnormal noise is heard.	Check if the pulleys, rollers and gears operate smoothly.	Grease the bearings and gears.
	Check if the following electromagnetic clutches are installed correctly: Paper feed clutch, registration clutch and developing clutch.	Check visually and remedy if necessary.

1-5-1 Precautions for assembly and disassembly

(1) Precautions

Be sure to turn the power switch off and disconnect the power plug before starting disassembly.
When handling PWBs, do not touch connectors with bare hands or damage the PWB.
Do not touch any PWB containing ICs with bare hands or any object prone to static charge.
When removing the hook of the connector, be sure to release the hook.
Take care not to get the wire caught.
To reassemble the parts, use the original screws. If the types and the sizes of screws are not known, refer to the PARTS LIST.

(2) Drum

Note the following when handling or storing the drum.
When removing the drum unit, never expose the drum surface to strong direct light.
Keep the drum at an ambient temperature between 0 °C/32 °F and 40 °C/104 °F and at a relative humidity not higher than 90% RH. Avoid abrupt changes in temperature and humidity.
Avoid exposure to any substance which is harmful to or may affect the quality of the drum.
Do not touch the drum surface with any object. Should it be touched by hands or stained with oil, clean it.

(3) Toner container

Store the toner container in a cool, dark place.
Avoid direct light and high humidity.

(4) How to tell a genuine Kyocera Mita toner container

As a means of brand protection, the Kyocera Mita toner container utilizes an optical security technology to enable visual validation. A validation viewer is required to accomplish this.

Hold the validation viewer over the left side part of the brand protection seal on the toner container. Through each window of the validation viewer, the left side part of the seal should be seen as follows:

A black-colored band when seen through the left side window
A shiny or gold-colored band when seen through the right side window

The above will reveal that the toner container is a genuine Kyocera Mita branded toner container, otherwise, it is a counterfeit.

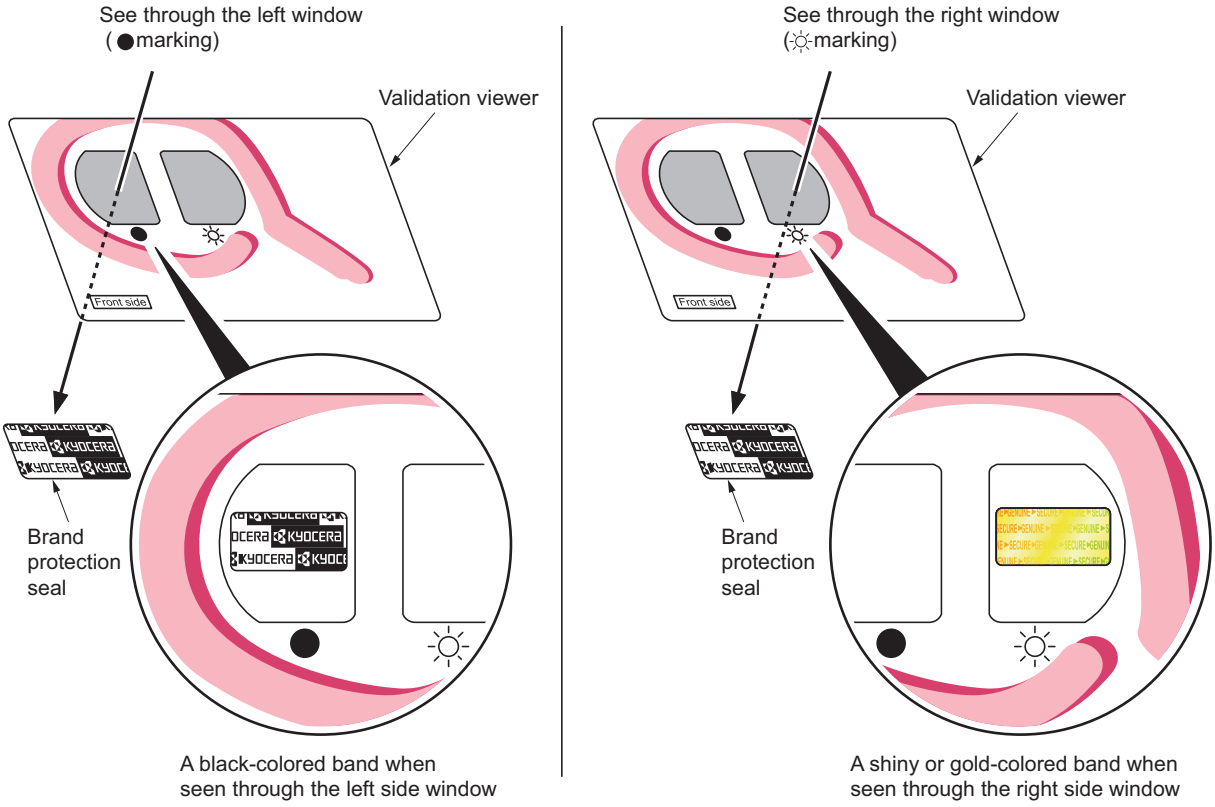


Figure 1-5-1

The brand protection seal has an incision as shown below to prohibit reuse.

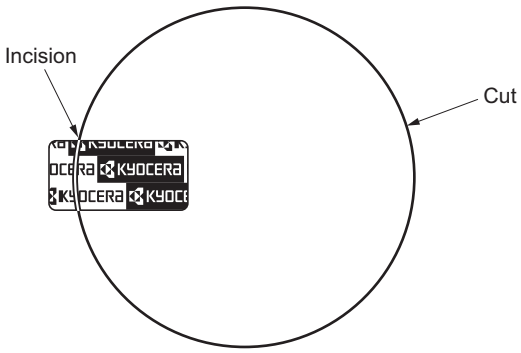


Figure 1-5-2

1-5-2 Outer covers

(1) Detaching and refitting the top cover

Procedure

1. Open the top cover.
2. Remove two screws.

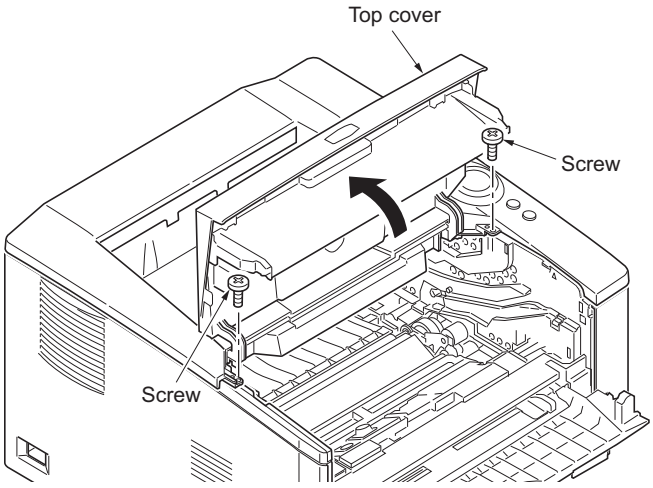


Figure 1-5-3

3. Extract the boss from the hole.
4. Unhook the A hook.
5. Unhook two B hooks.
6. Remove the connector.
7. Remove the top cover.

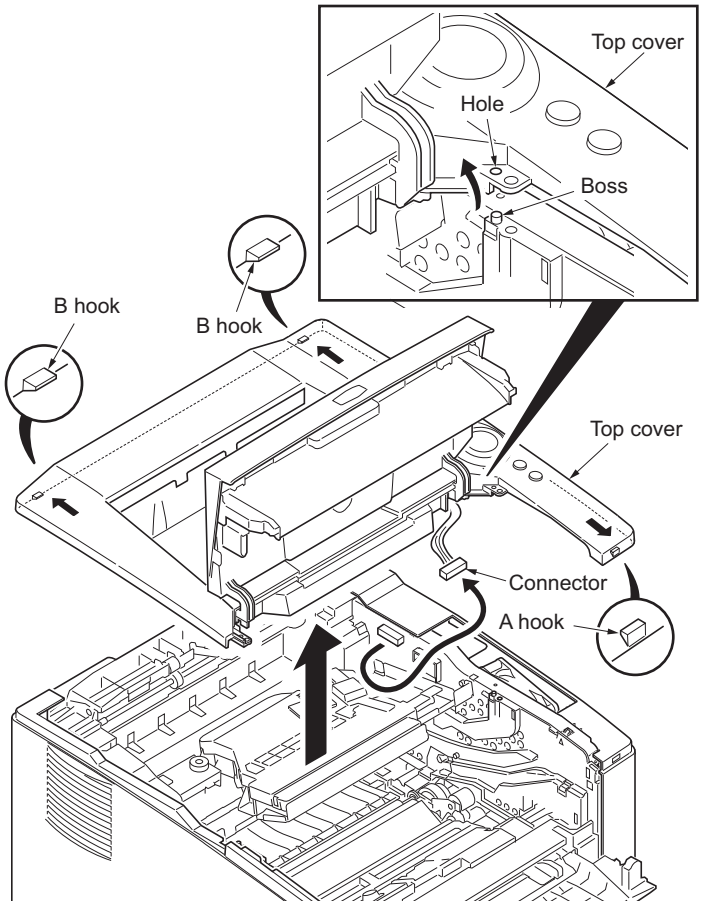


Figure 1-5-4

(2) Detaching and refitting the right and left covers

Procedure

1. Remove the top cover (See page 1-5-3).
2. Remove the cassette (See page 1-5-6).
3. Open the front cover.
4. Unhook seven hooks and then remove the right cover.

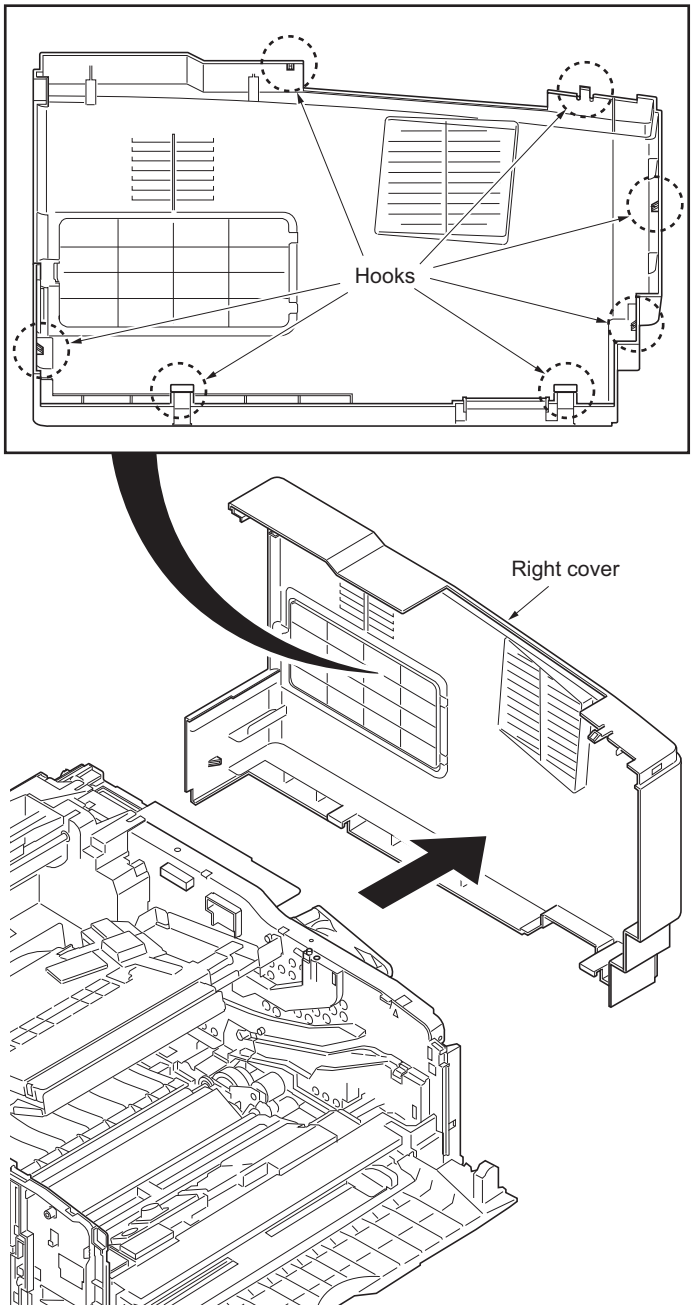


Figure 1-5-5

5. Unhook seven hooks and then remove the left cover.

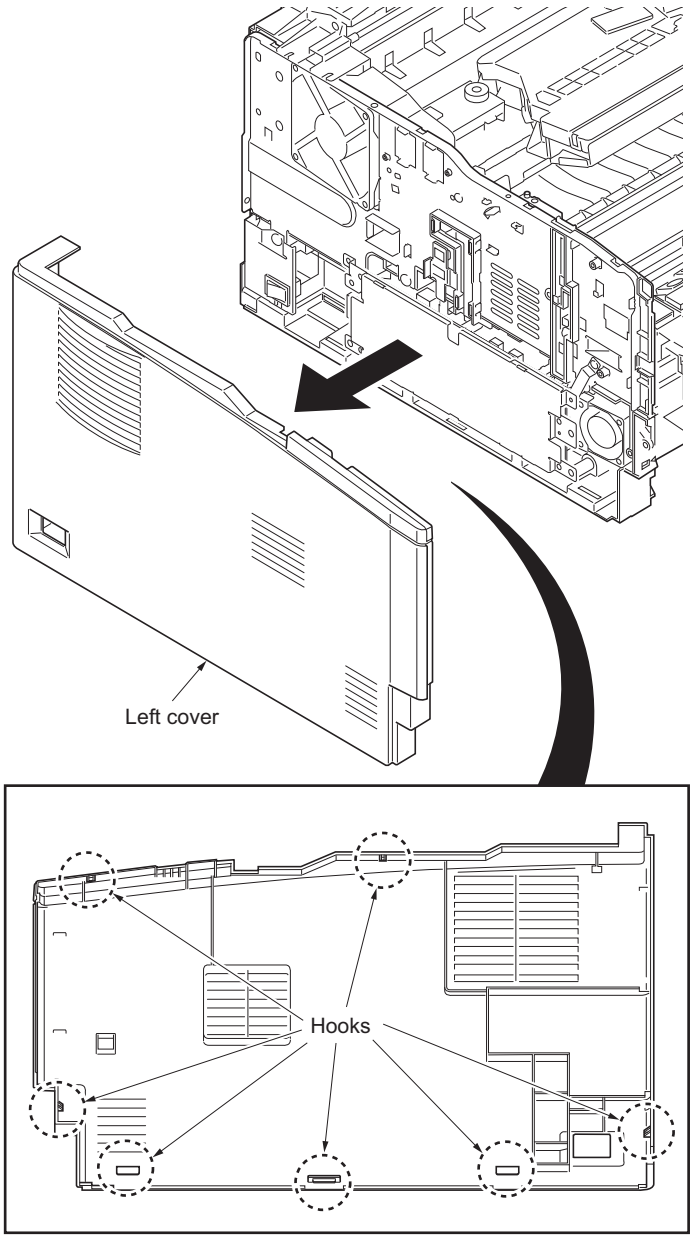


Figure 1-5-6

1-5-3 Paper feed section

(1) Detaching and refitting the paper feed assembly (paper feed roller and pickup roller)

Procedure

1. Remove the cassette.

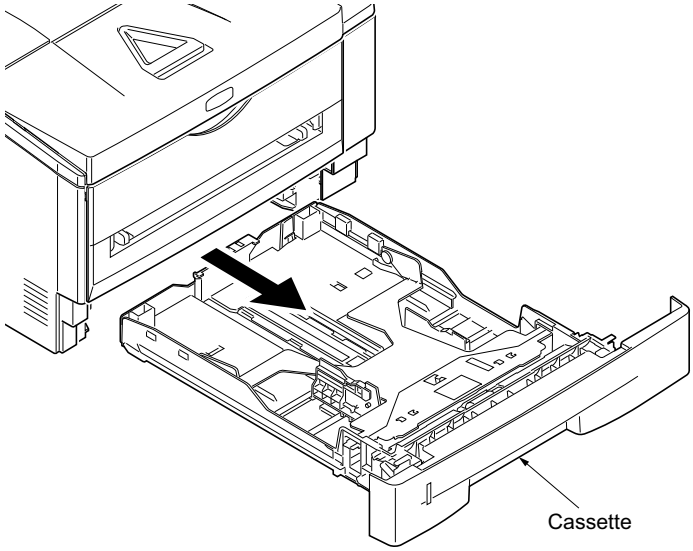


Figure 1-5-7

2. Slide the feed shaft.
3. While pressing the lever and then remove the paper feed roller assembly.

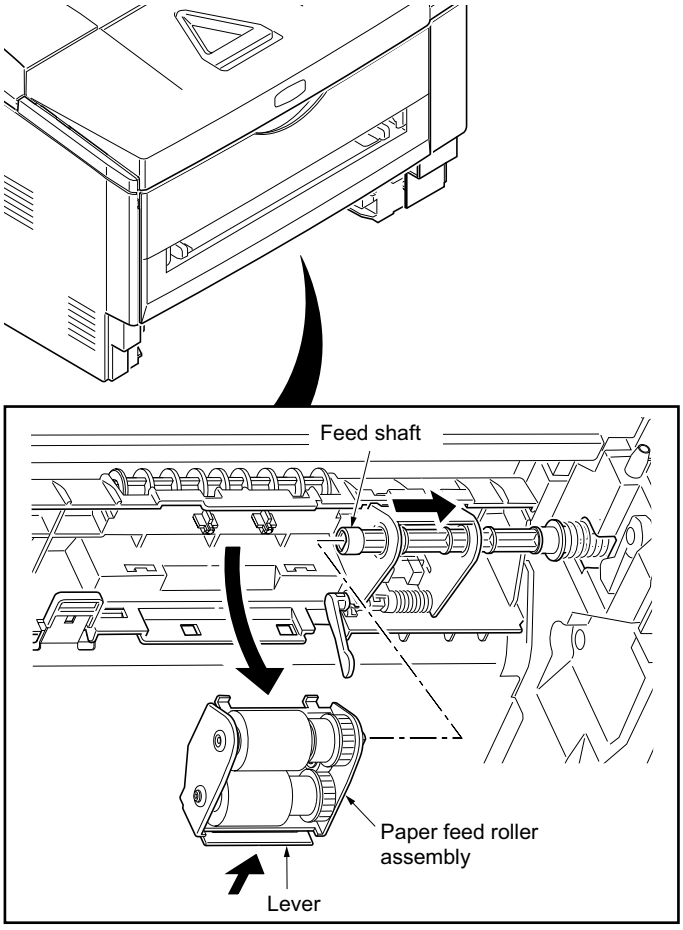


Figure 1-5-8

4. Check or replace the paper feed assembly and refit all the removed parts.
   When refitting the paper feed roller assembly, be sure to align the paper feed roller pivot with the slotted hole on the feed shaft.

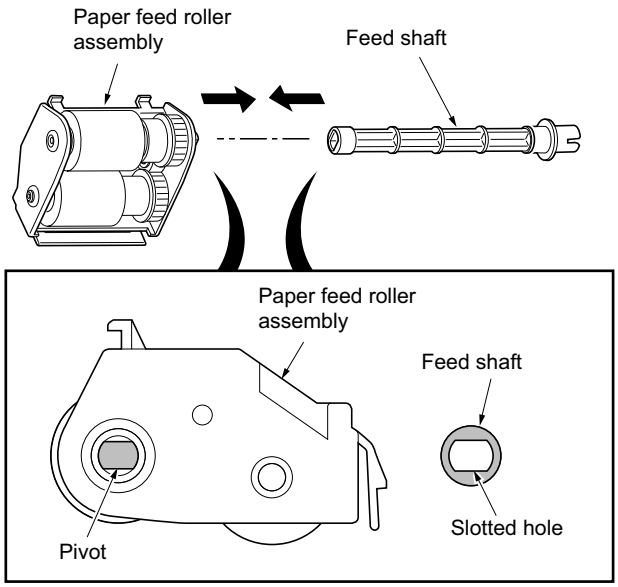


Figure 1-5-9

(2) Detaching and refitting the retard roller assembly

Procedure

1. Remove the cassette (See page 1-5-6).
2. Push the bottom plate down until it locks.
3. Unhook two hooks and then remove the retard guide.

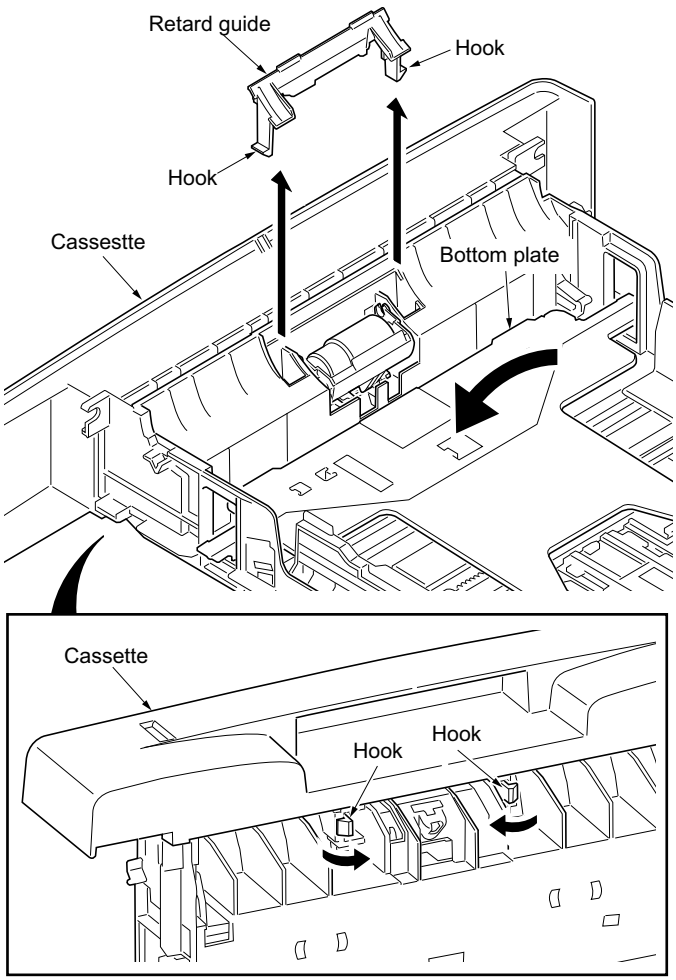


Figure 1-5-10

4. Remove the retard roller assembly.

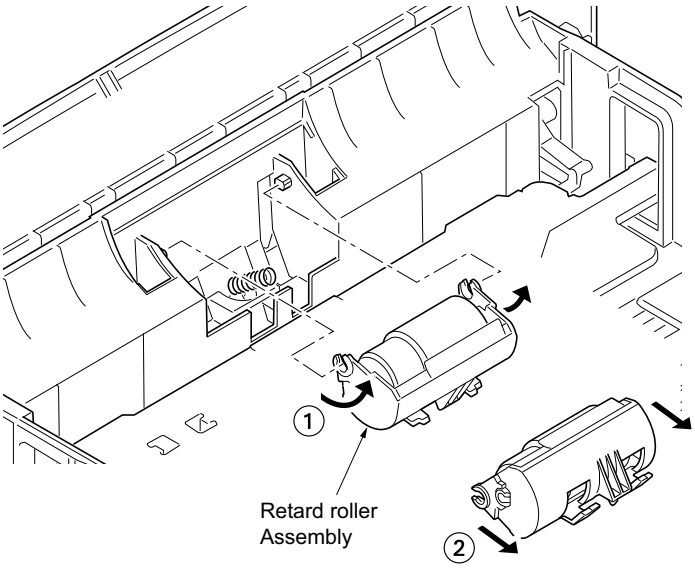


Figure 1-5-11

5. Check or replace the retard roller assembly and refit all the removed parts.
   Caution: Before refitting the retard roller assembly, firmly install the spring onto the projection of the retard roller assembly.

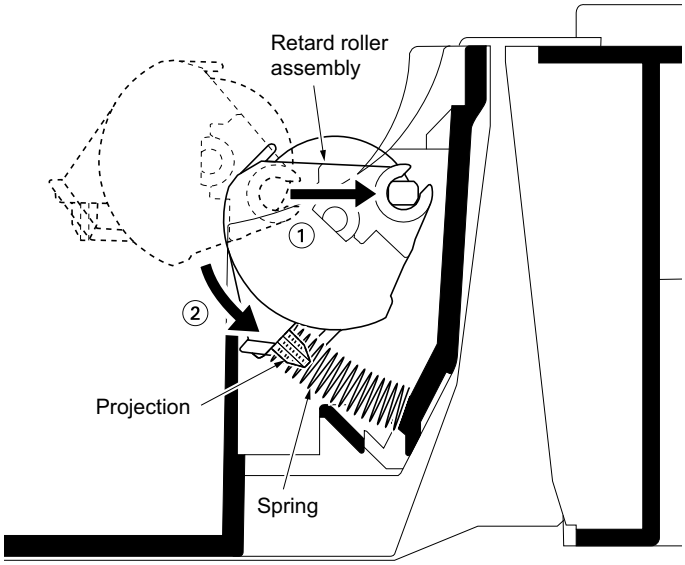


Figure 1-5-12

1-5-4 Developing section

(1) Detaching and refitting the developing unit

Procedure

1. Open the top cover.
2. Open the front cover.
3. Remove the developing unit (with toner container).
4. Check or replace the developing unit and refit all the removed parts.

5. When the developing unit is replaced with a new one, carry out the following procedure.
6. Perform toner install mode in the service mode (see page 1-3-11).

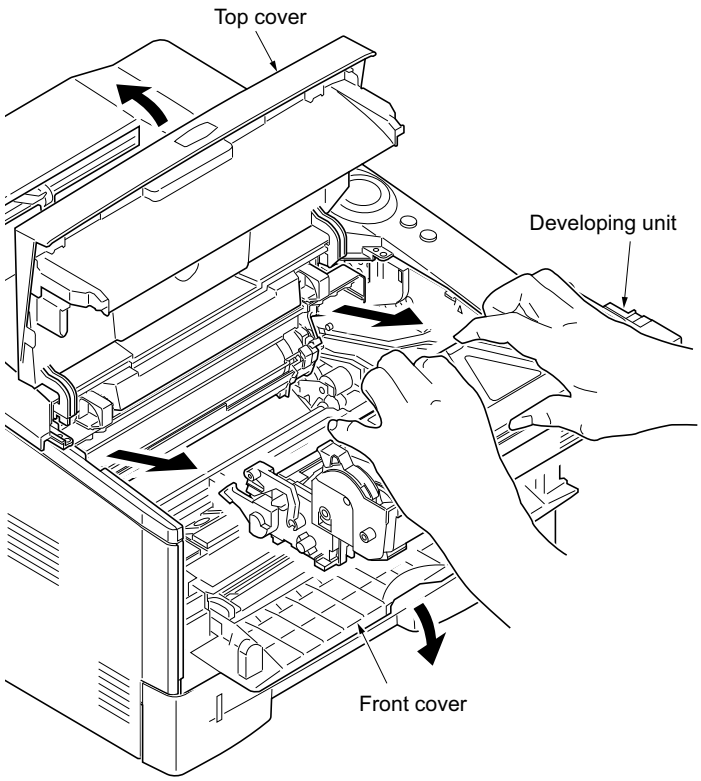


Figure 1-5-13

1-5-5 Drum section

(1) Detaching and refitting the drum unit

Procedure

1. Remove the developing unit (See page 1-5-10).
2. Remove the drum unit.
3. Check or replace the drum unit and refit all the removed parts.

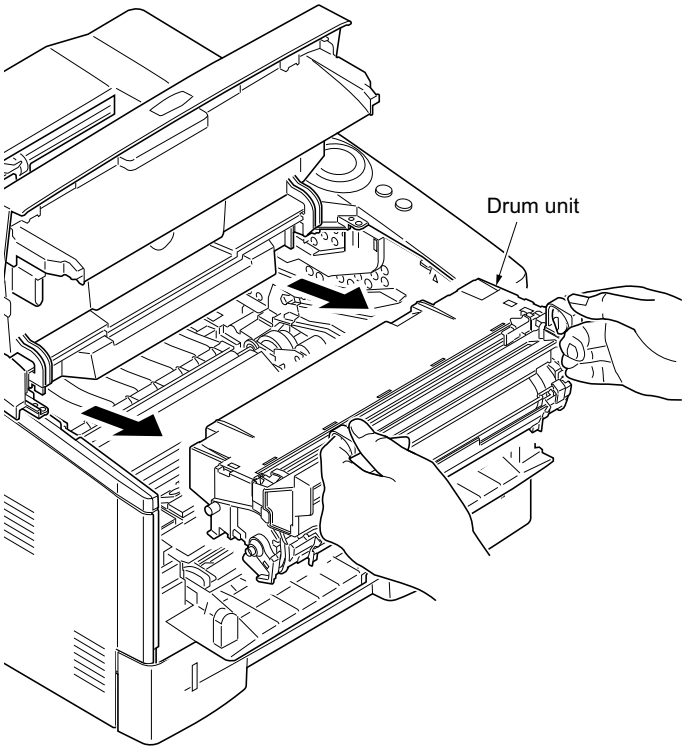


Figure 1-5-14

(2) Detaching and refitting the main charger unit

Procedure

1. Remove the drum unit (See page 1-5-11).
2. Remove the tape.
3. While pushing on the main plate (1), slide the main charger unit (2).

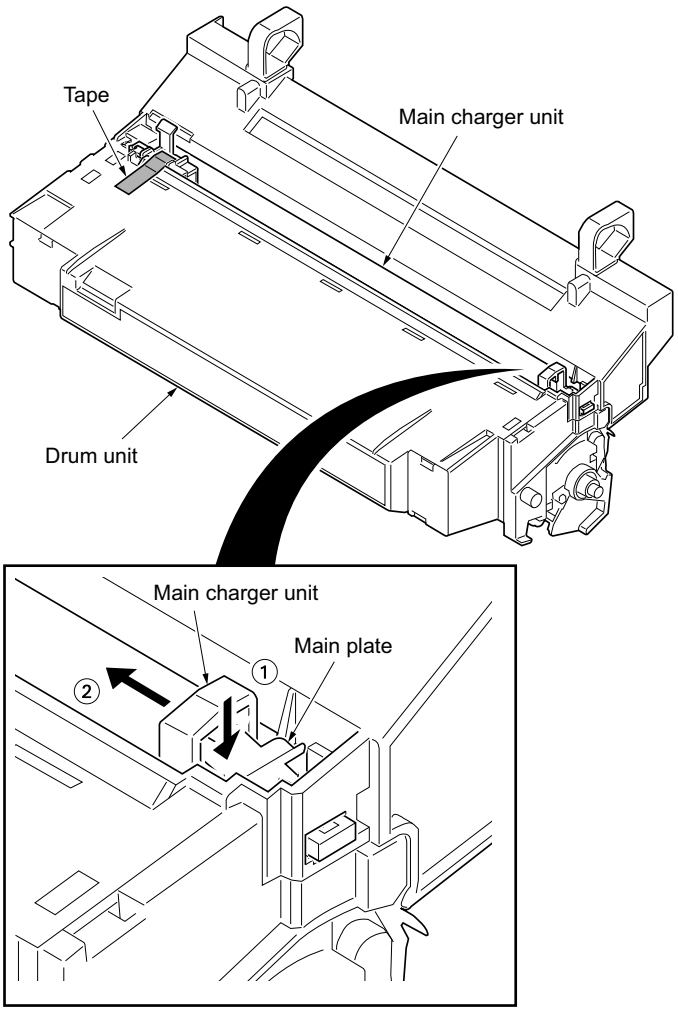


Figure 1-5-15

4. Remove the main charger unit by lifting it.
5. Check or replace the main charger unit and refit all the removed parts.

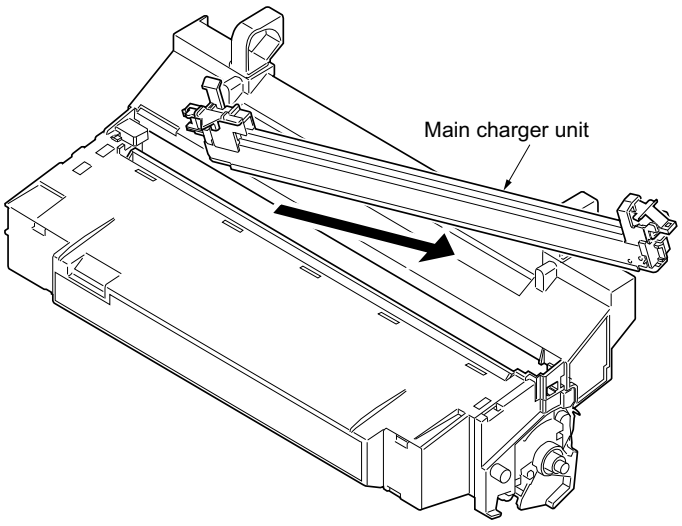


Figure 1-5-16

1-5-6 Transfer/separation section

(1) Detaching and refitting the transfer roller

Procedure

1. Remove the developing unit (See page 1-5-10).
2. Remove the drum unit (See page 1-5-11).
3. Slide the paper chute guide and unhook the hooks.
4. Remove the paper chute guide.

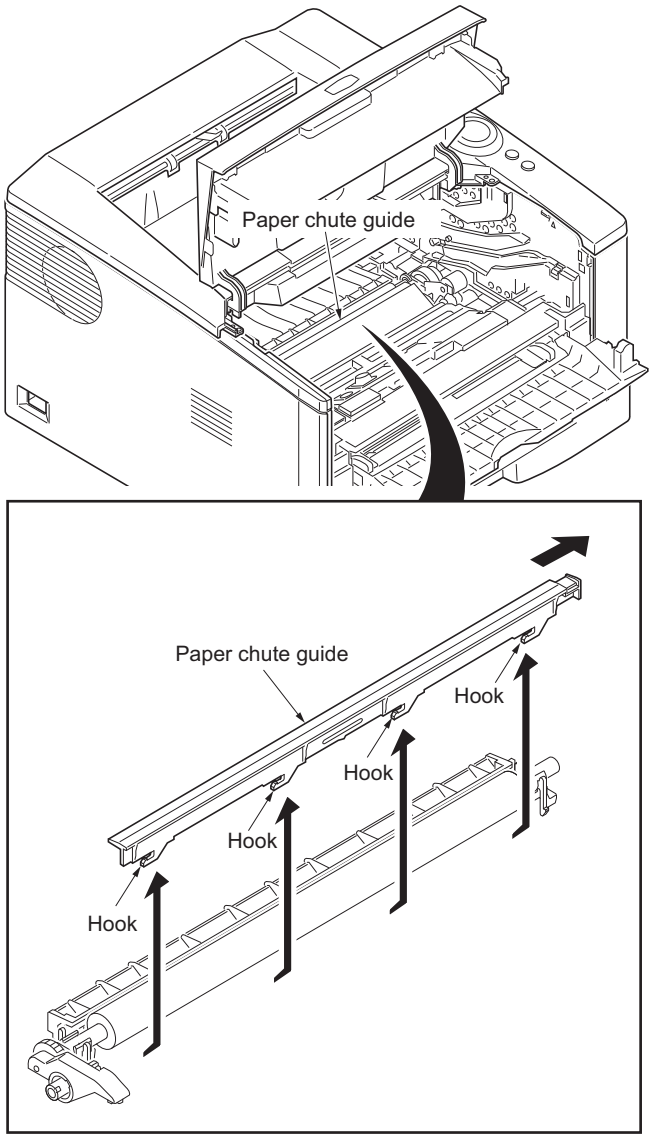


Figure 1-5-17

5. Remove the transfer roller's shaft from the both transfer bushes.
6. Remove the gear Z16 from the transfer roller.

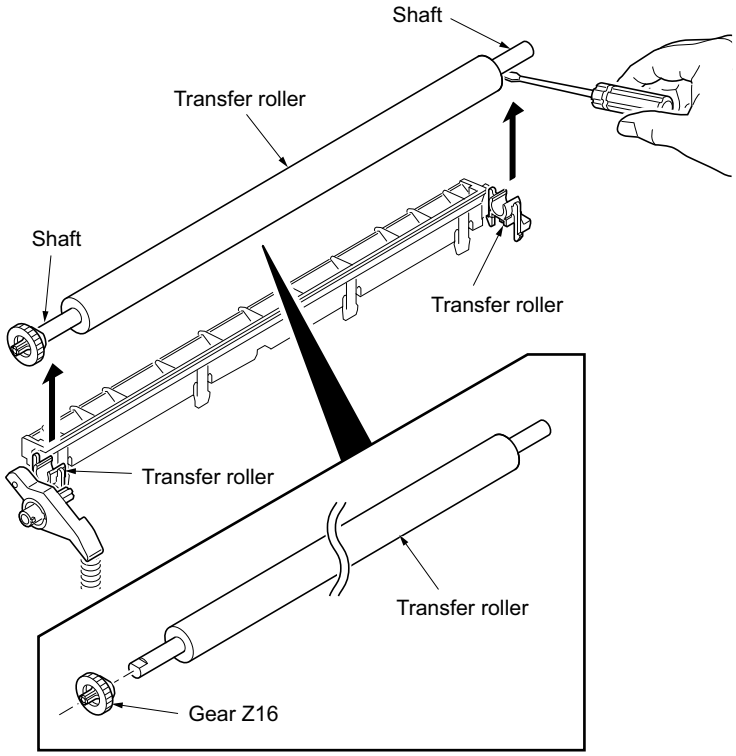


Figure 1-5-18

7. Check or replace the transfer roller and refit all the removed parts.
   Caution: When refitting the transfer roller, be careful about following point.
   Push the release lever to raise the lever end, then insert the front of gear Z16 under the release lever end.

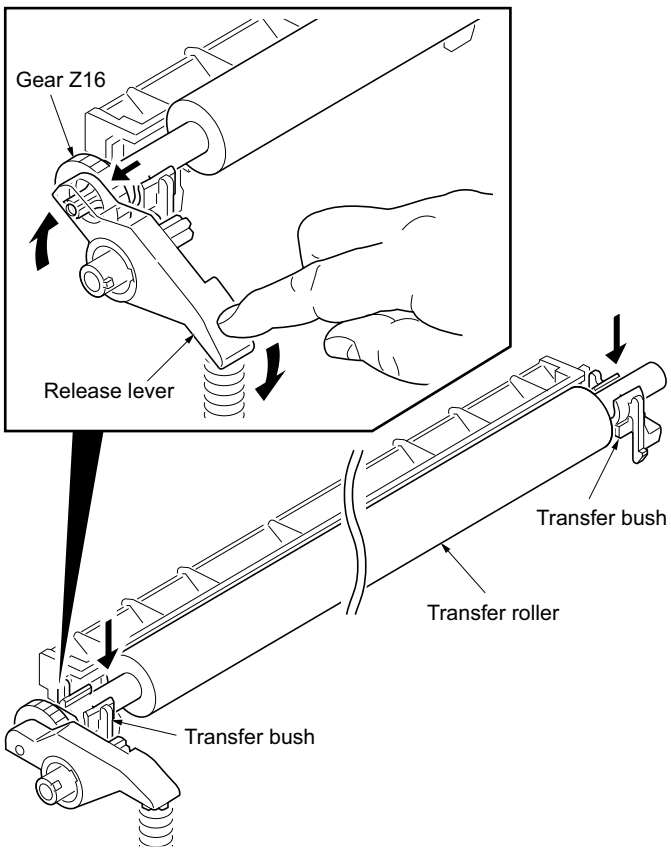


Figure 1-5-19

1-5-7 Fuser section

(1) Detaching and refitting the fuser unit

Procedure

1. Remove the outer covers (See page 1-5-3).
2. Remove two connectors.
3. Release the wires form wire clamps.

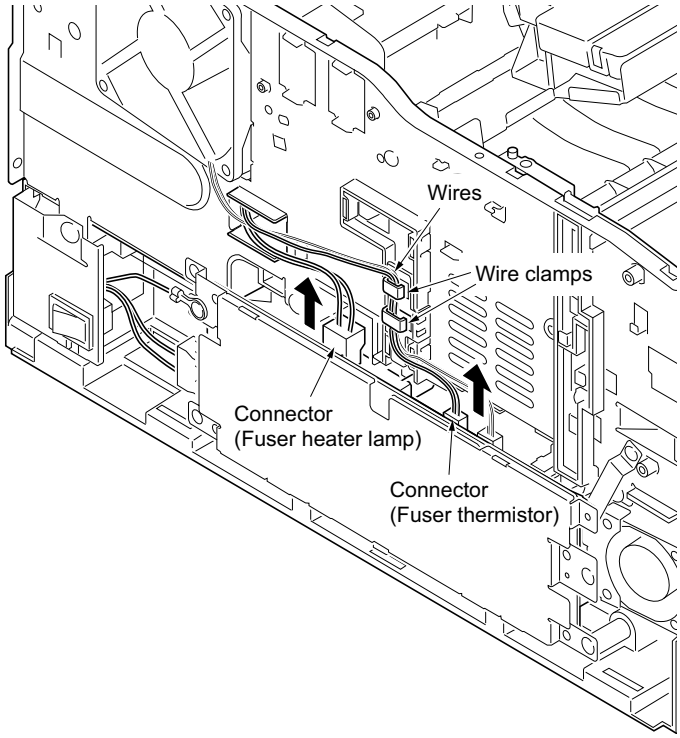


Figure 1-5-20

4. Remove the connector.

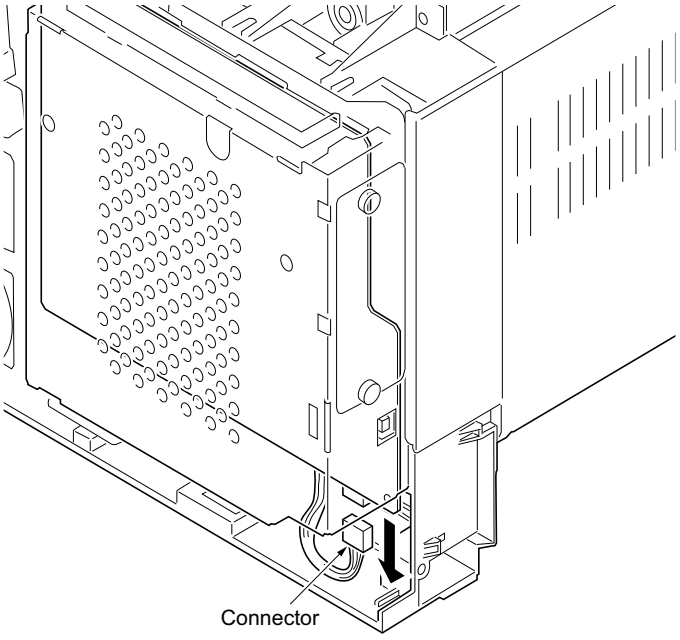


Figure 1-5-21

5. Remove the rear cover.

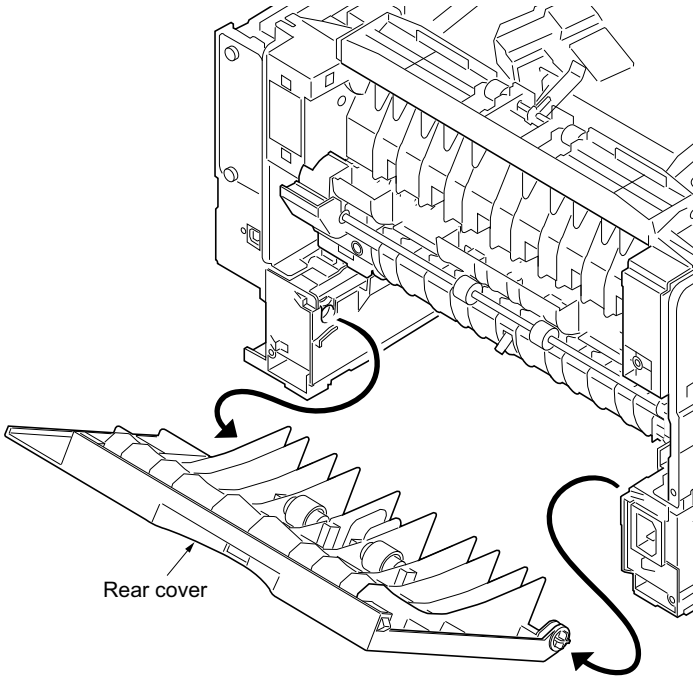


Figure 1-5-22

6. Remove two screws and then remove the fuser unit.
7. Check or replace the fuser unit and refit all the removed parts.

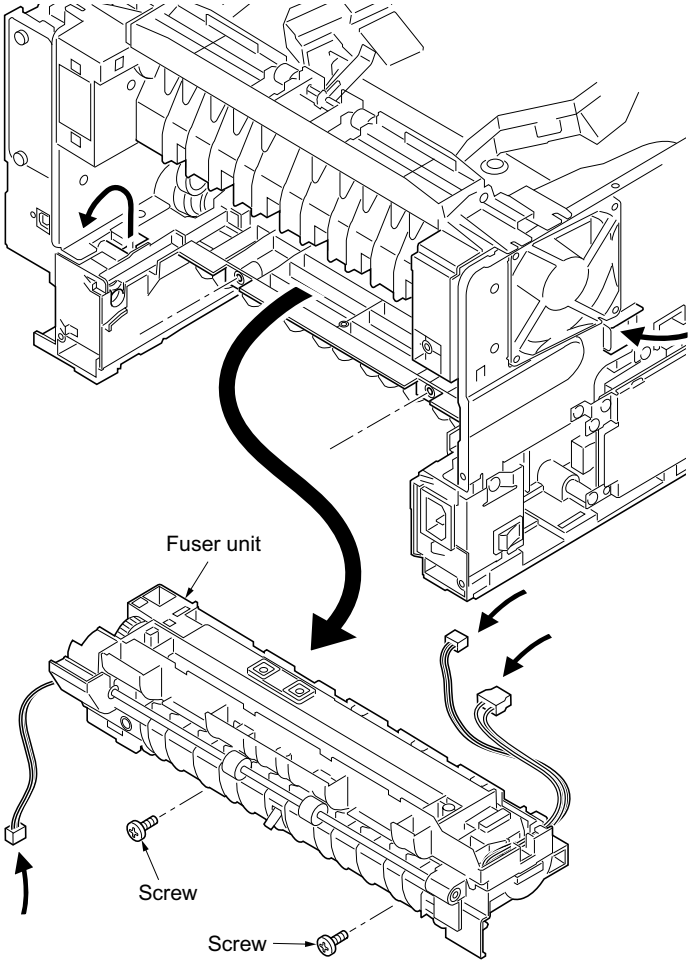


Figure 1-5-23

(2) Switching the fuser pressure

The fuser pressure may be decreased to suppress the print quality problems such as paper creases and curls.
It must be cautioned that decreasing the fuser pressure could cause loose toner fusing.

Procedure

1. Remove the cassette (See page 1-5-6).
2. Slide the fuser lever R and L.
   Normal: Flush with the front of the machine.
   Fuser pressure decreased: Flush with the rear of the machine.

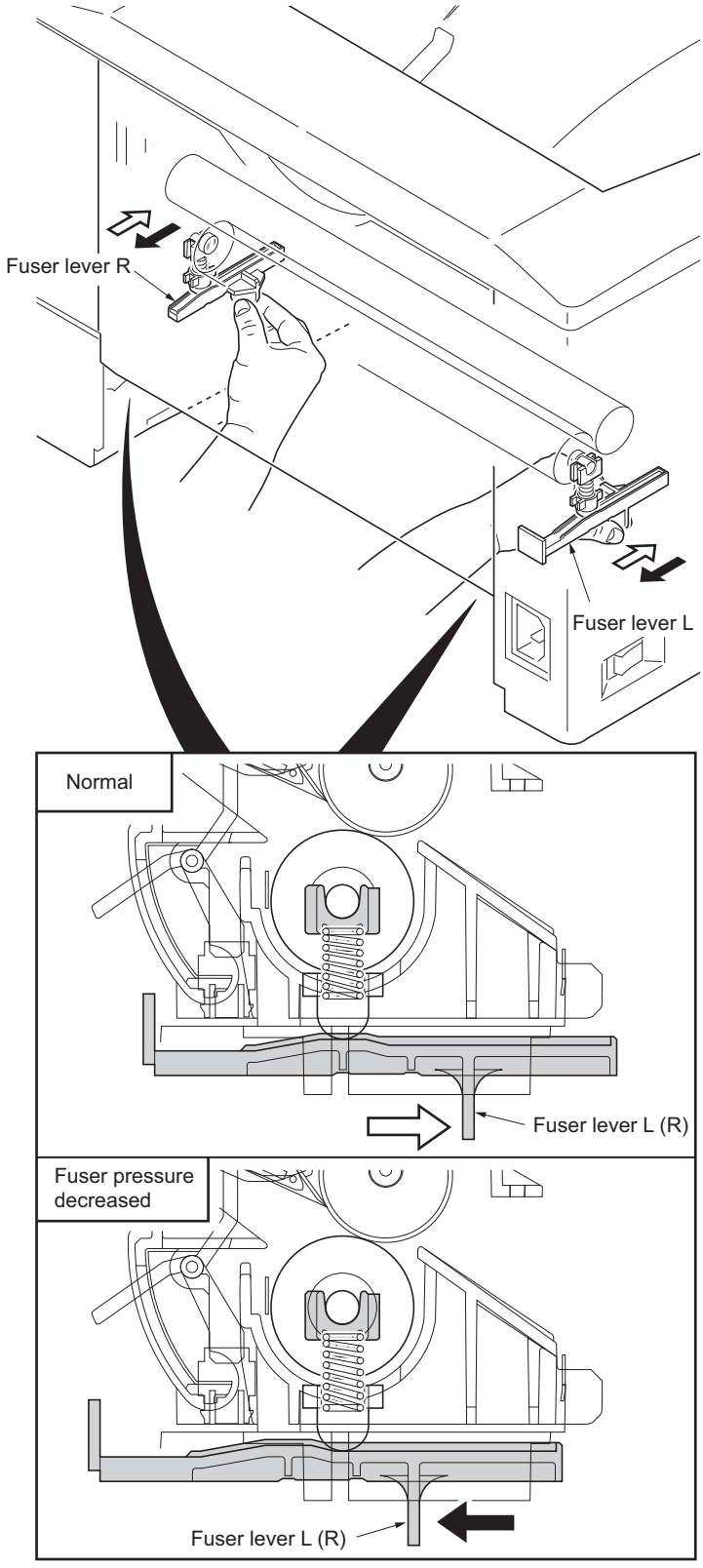


Figure 1-5-24

1-5-8 PWBs

(1) Detaching and refitting the control PWB

Procedure

1. Remove the right cover (See page 1-5-4).
2. Remove all connectors form the control PWB.
3. Release the wires from the wire clamps.

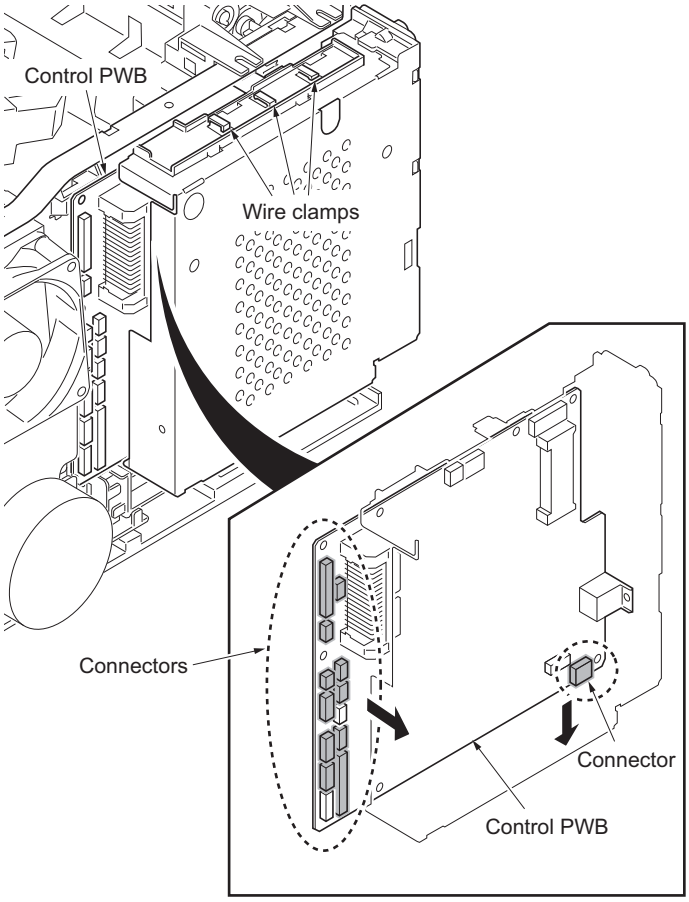


Figure 1-5-25

4. Remove five screws.
5. Remove two connectors form the control PWB.
6. Unhook the hook and then remove the control PWB assembly.

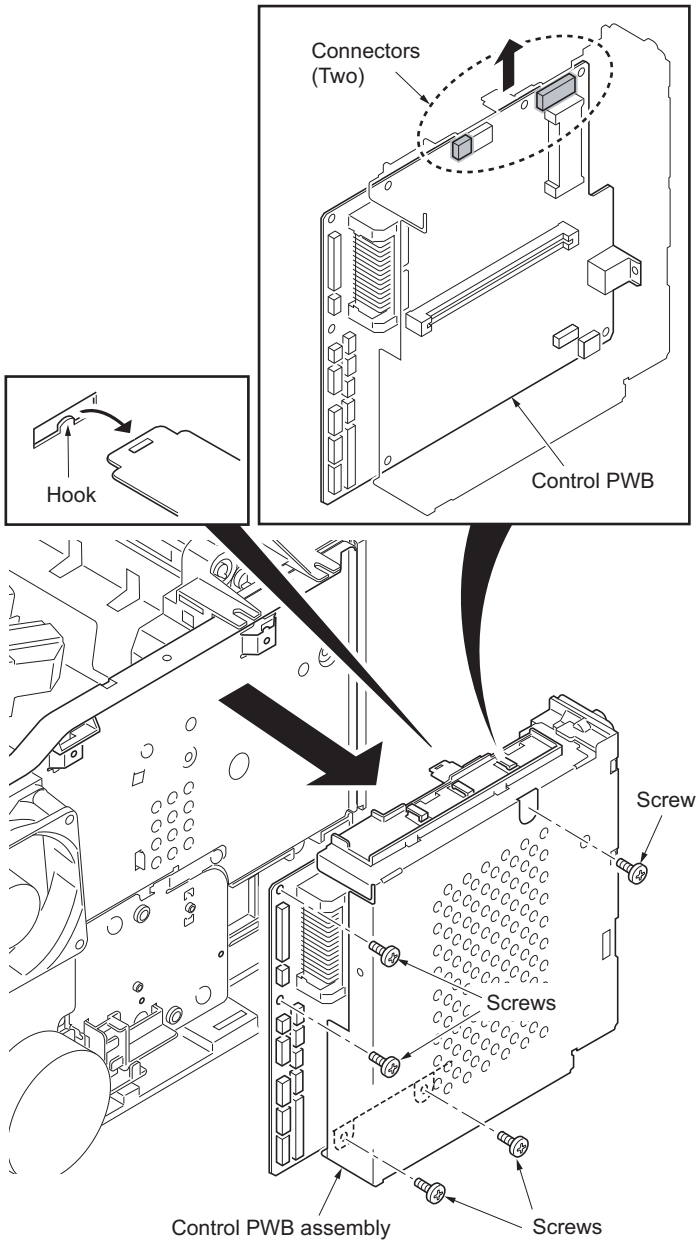


Figure 1-5-26

7. Remove five screws and then remove the control PWB.
8. Check or replace the control PWB and refit all the removed parts.
   To replace the control PWB, remove the EEPROM (U300) from the old control PWB and mount it to the new control PWB.

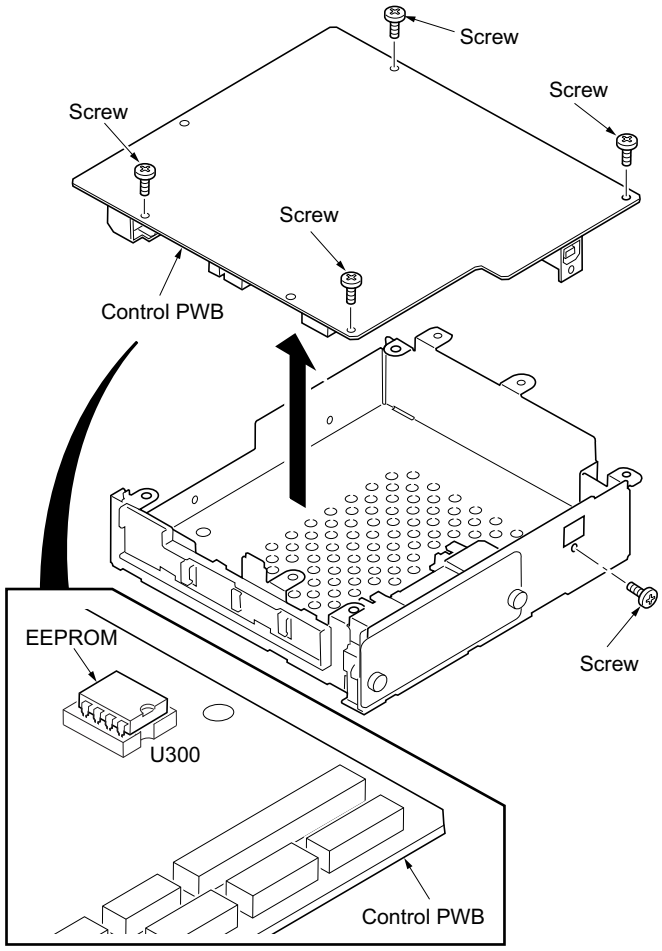


Figure 1-5-27

(2) Detaching and refitting the power source PWB

Procedure

1. Remove the top cover (See page 1-5-3).
2. Remove the left cover (See page 1-5-4).
3. Remove four connectors.

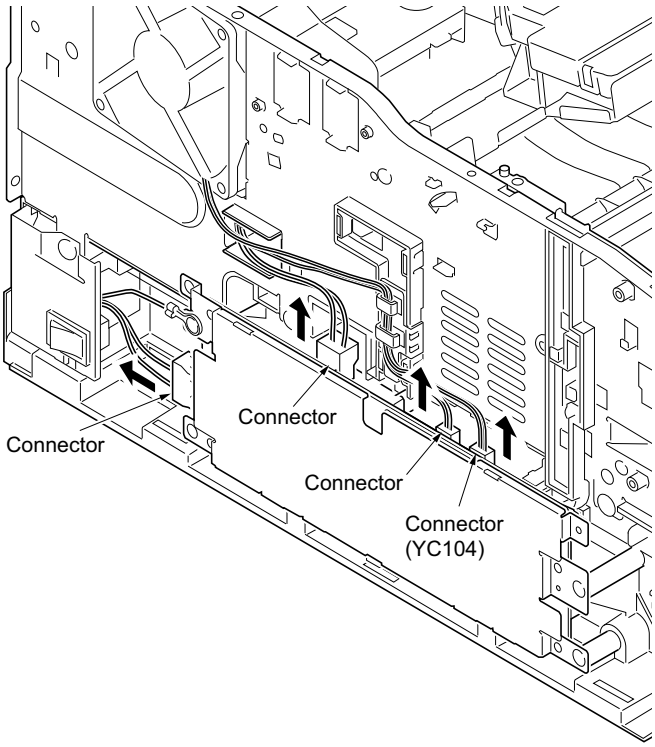


Figure 1-5-28

4. Remove four P tight screws, two screws and ground terminal.
5. Remove the power source PWB assembly from the high voltage PWB's connector.

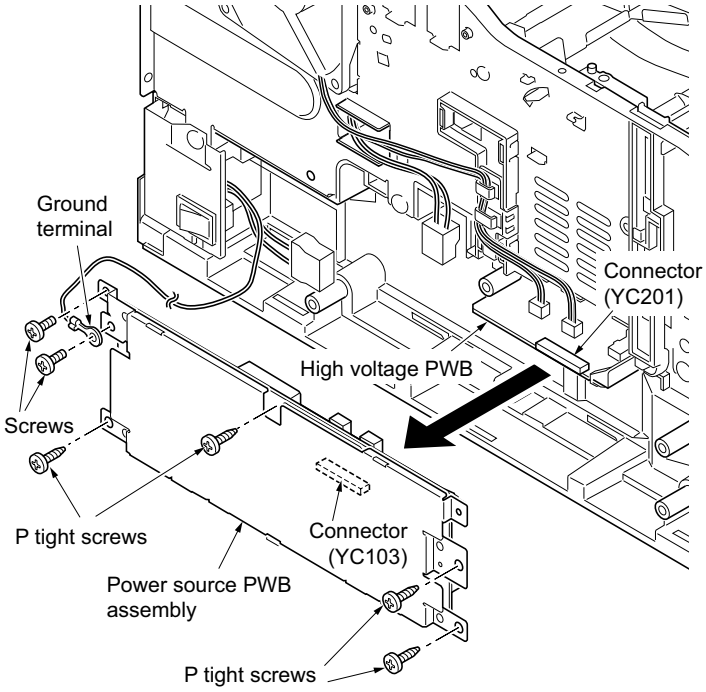


Figure 1-5-29

6. Remove four screws and then remove the power source plate from the power source PWB.
7. Check or replace the power source PWB and refit all the removed parts.
   Caution: The power source film must be installed in the specified position.

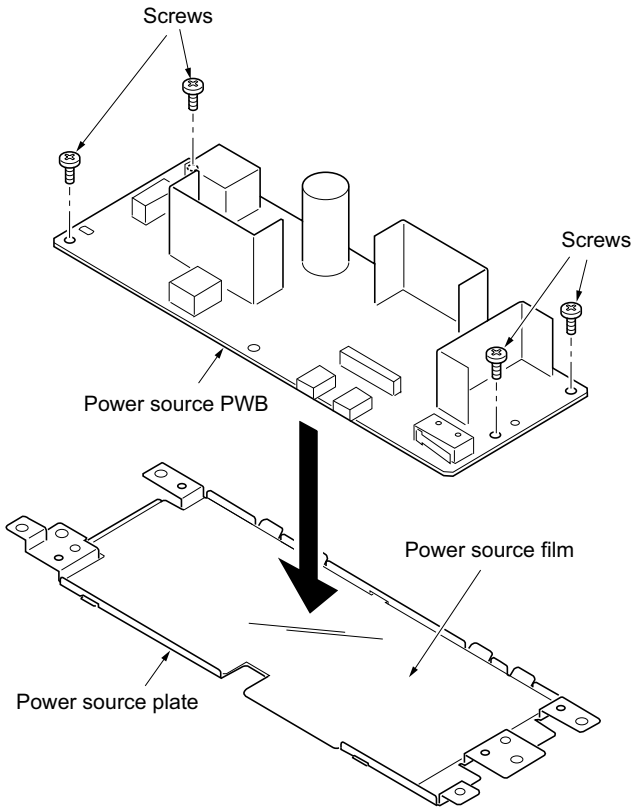


Figure 1-5-30

(3) Detaching and refitting the operation panel PWB

Procedure

1. Remove the top cover (See page 1-5-3).
2. Remove two screws and then remove the panel cover.
3. Remove the operation panel PWB.
4. Remove the connector.
5. Check or replace the operation panel PWB and refit all the removed parts.
   Be sure to fit the GO and Cancel keys in the appropriate position.

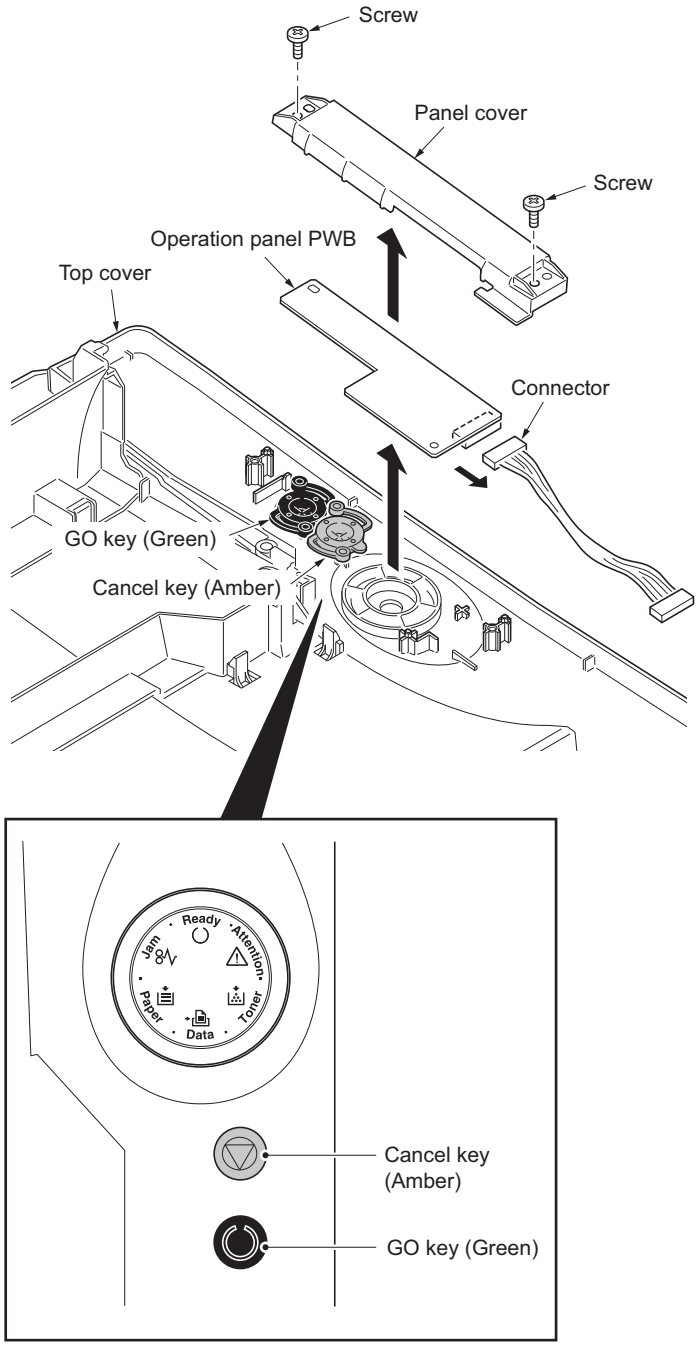


Figure 1-5-31

(4) Detaching and refitting the high voltage PWB

Procedure

1. Remove the developing unit (See page 1-5-10).
2. Remove the drum unit (See page 1-5-11).
3. Remove the cassette (See page 1-5-6).
4. Remove the outer covers (See page 1-5-3).
5. Remove the power source PWB (See page 1-5-21).
6. Turn the printer with the bottom side up.
7. Remove four screws.
8. Unhook three hooks and then remove the lower base cover.

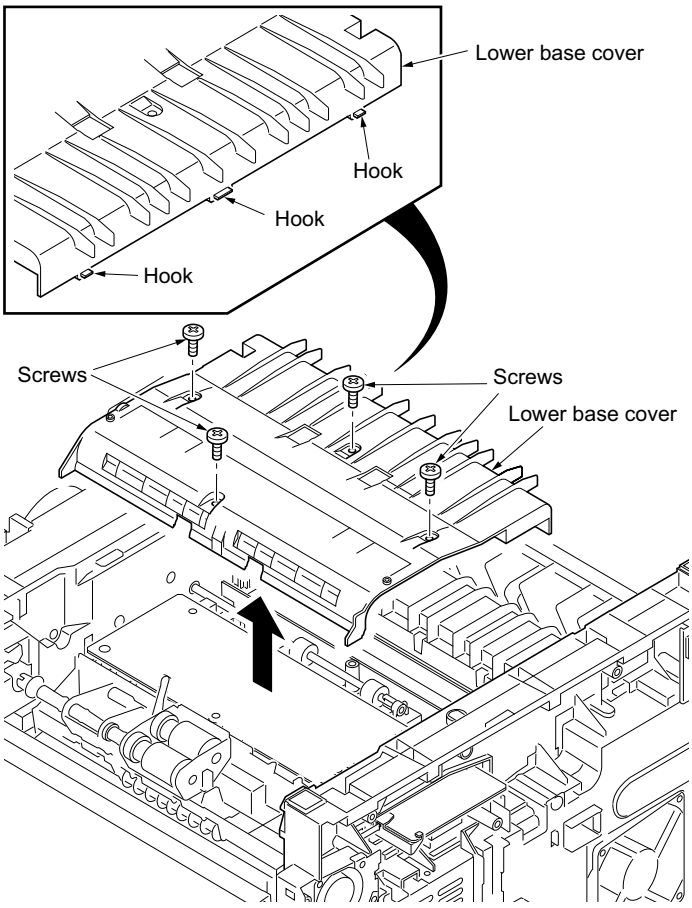


Figure 1-5-32

9. Remove the spring.
10. Remove the cassette pin.

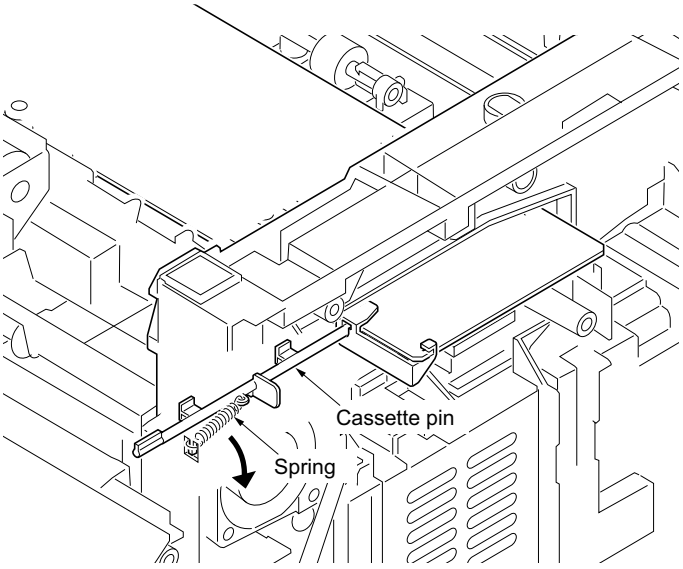


Figure 1-5-33

11. Remove two connectors and then remove the high voltage PWB.
12. Remove the cassette pin holder from the high voltage PWB.

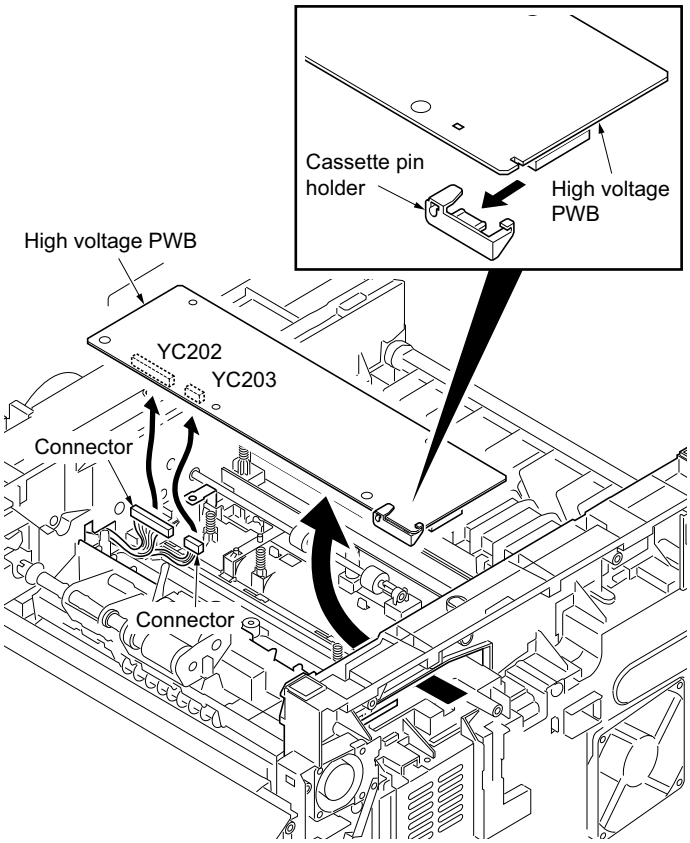


Figure 1-5-34

13. Check or replace the high voltage PWB and refit all the removed parts.
    When refitting the high voltage PWB, be careful about following points.
    - Position the ground plate so that it is atop the high voltage PWB.
    - Each interface is firmly in contact with each spring.
    - The bias contact pin must be installed in the specified position.
    - The cassette pin must be inserted in the cassette pin holder.

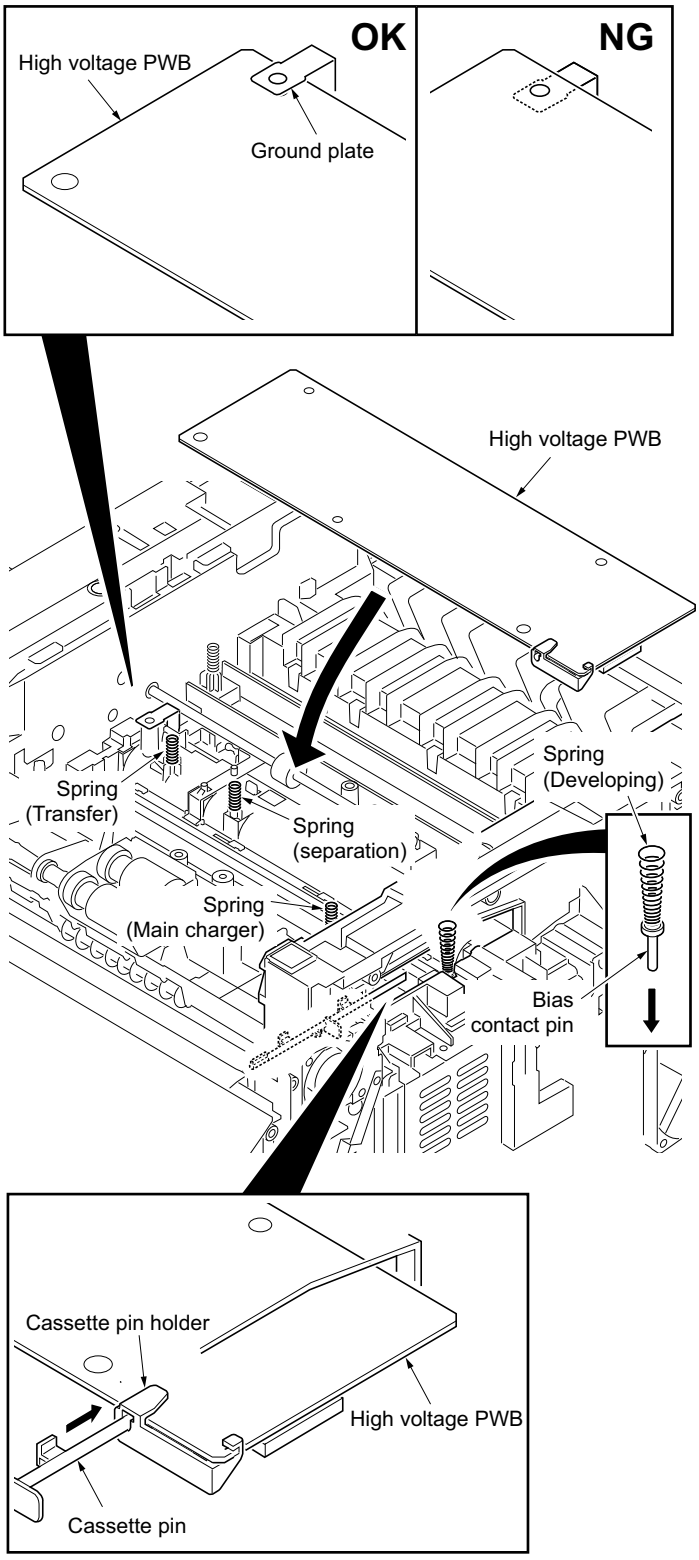


Figure 1-5-35

1-5-9 Others

(1) Detaching and refitting the main motor

Procedure

1. Remove the right cover (See page 1-5-4).
2. Remove the connector.

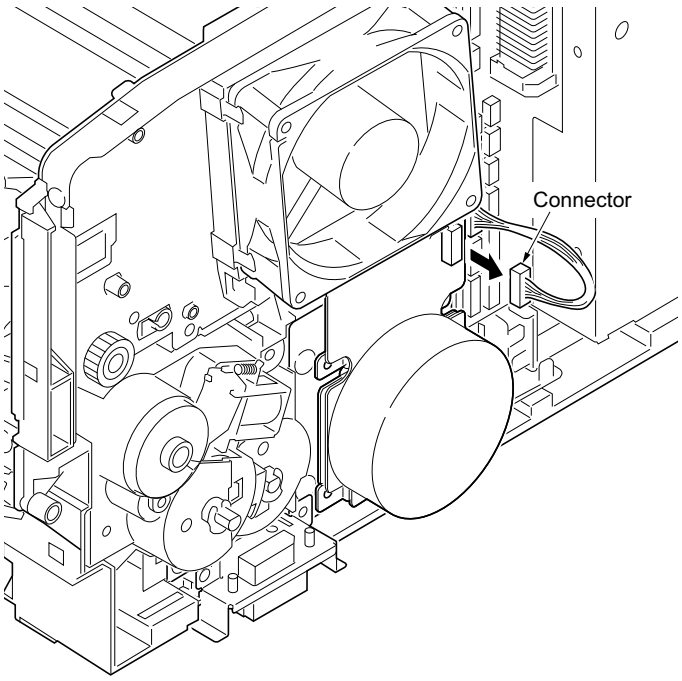


Figure 1-5-36

3. Remove the M3 screw and two M4 screws.
4. Remove the main motor.
5. Check or replace the main motor and refit all the removed parts.

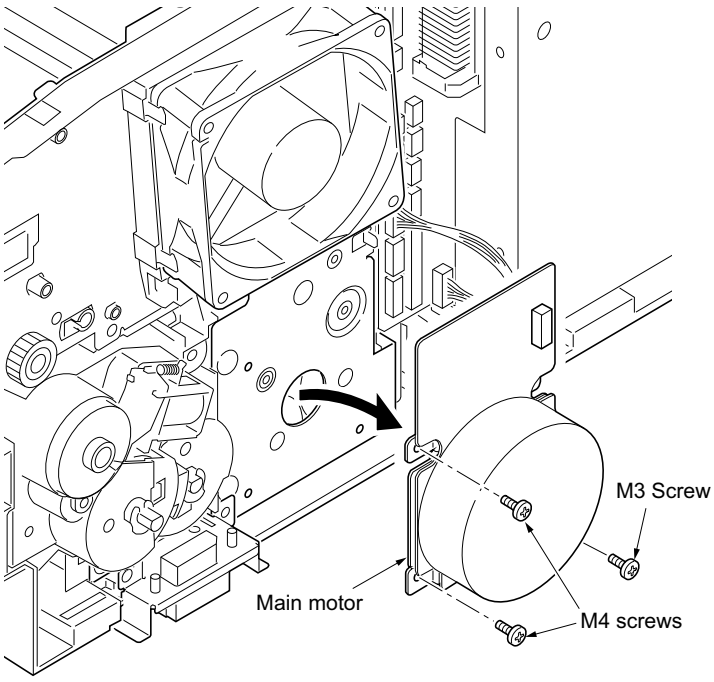


Figure 1-5-37

(2) Detaching and refitting the laser scanner unit

Procedure

1. Remove the right cover (See page 1-5-4).
2. Remove the connector from the control PWB.
3. Release the wire clamp.
4. Draw in the connector inside.

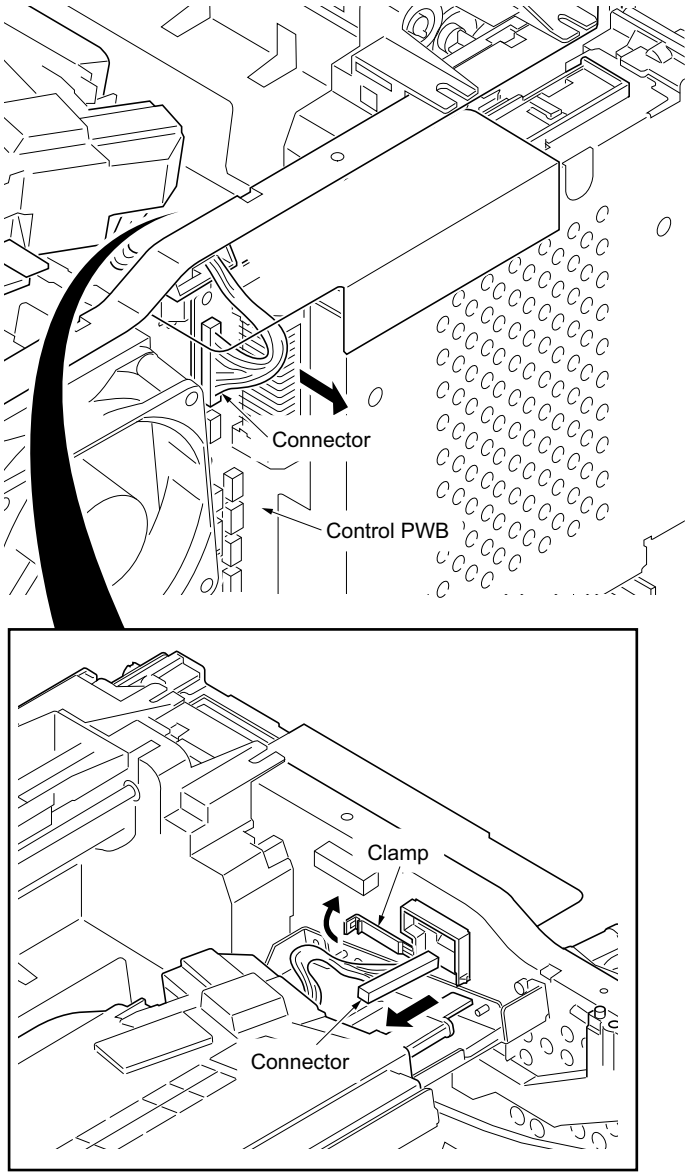


Figure 1-5-38

5. Remove four screws and then remove the laser scanner unit.
6. Check or replace the laser scanner unit and refit all the removed parts.

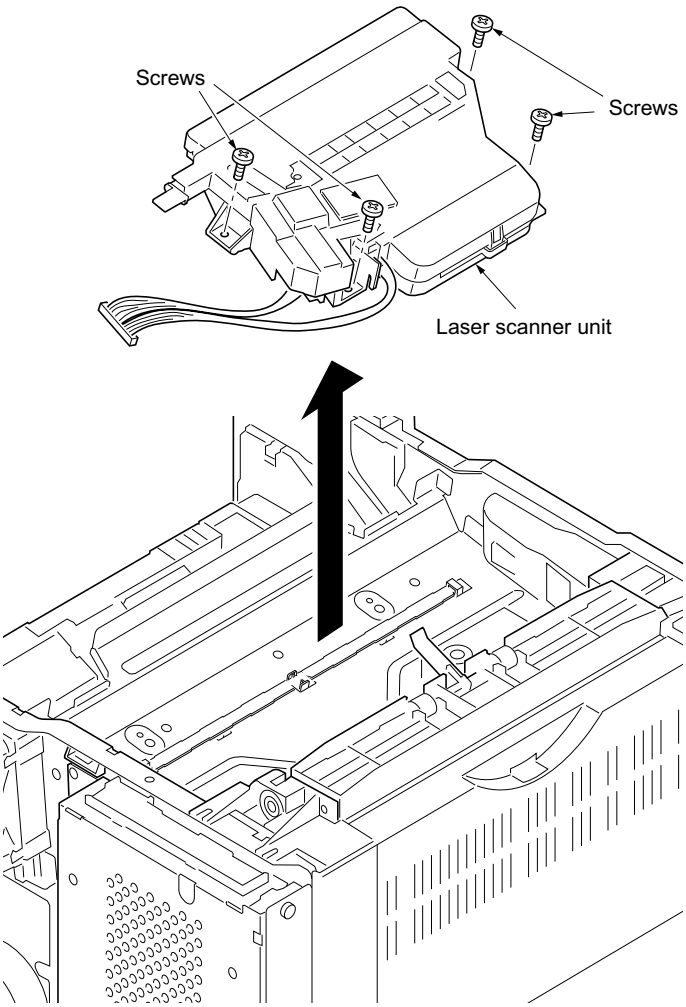


Figure 1-5-39

(3) Detaching and refitting the eraser lamp

Procedure

1. Remove the laser scanner unit (See page 1-5-28).
2. Remove the connector.
3. Remove the eraser lamp.
4. Check or replace the eraser lamp and refit all the removed parts.

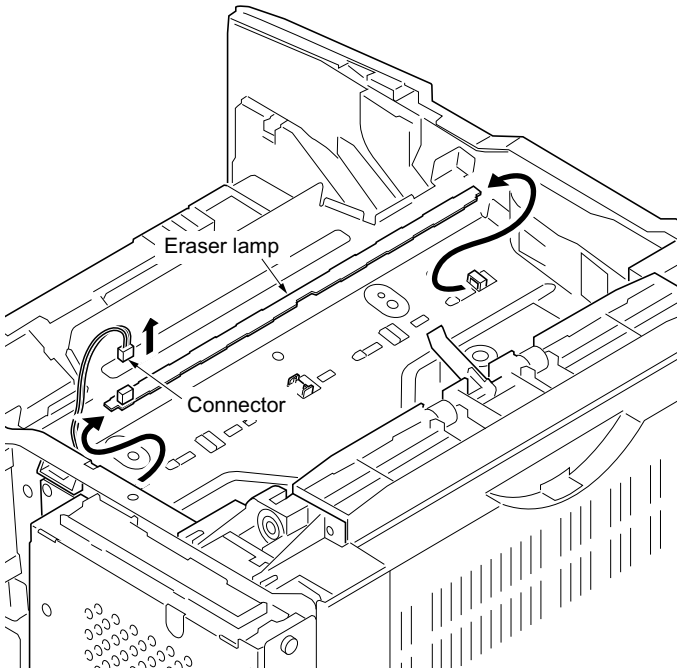


Figure 1-5-40

(4) Direction of installing the left and right cooling fan motors

When detaching or refitting the left and/or right cooling fan motors, be careful of the airflow direction (intake or exhaust).

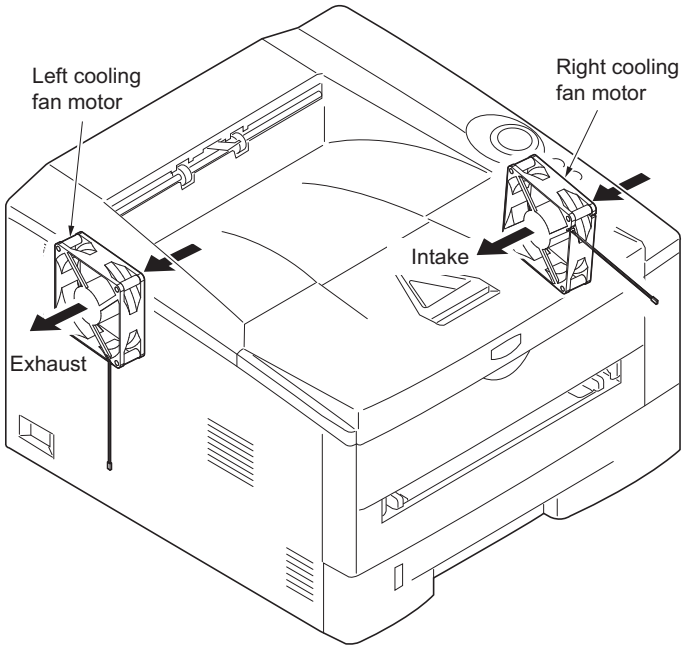


Figure 1-5-41

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1-6-1 Downloading firmware

Firmware files are named after the following codes:

Firmware file name example

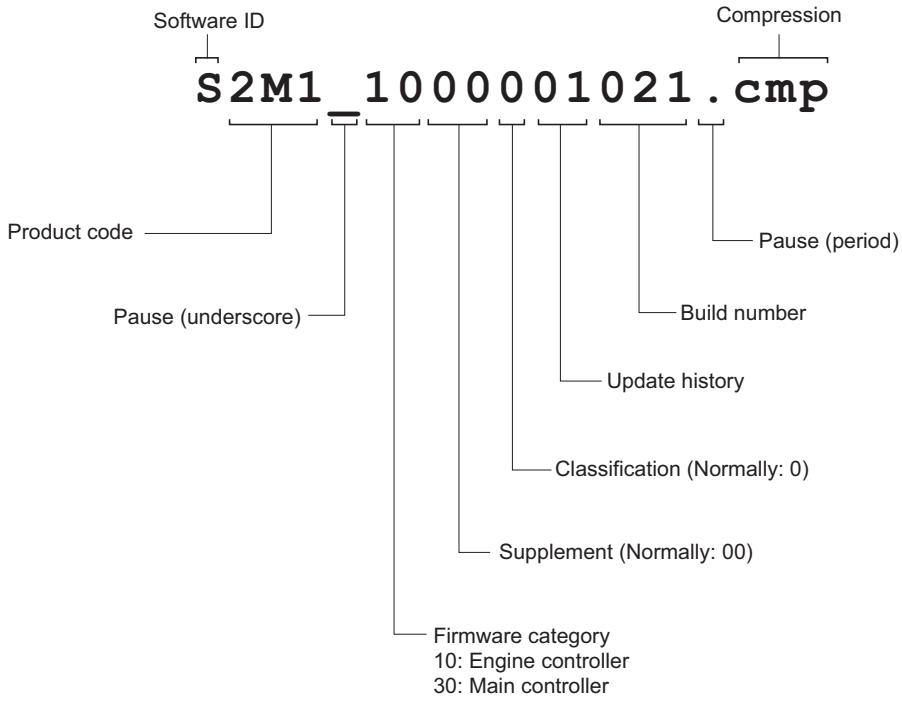

Figure 1-6-1

(1) Downloading the firmware from the memory card

To download data written in a memory card (CompactFlash) to the printer, proceed as explained in this section.

CAUTION
Downloading firmware takes several minutes. Do not turn power off during downloading. If downloading is interrupted by an accidental power failure, etc., the control PWB may have to be replaced.
Do not download the system firmware and engine firmware at one time. Store the either firmware in a memory card and download one by one.

Procedure

1. Turn printer power off.
2. Open the rear cover.

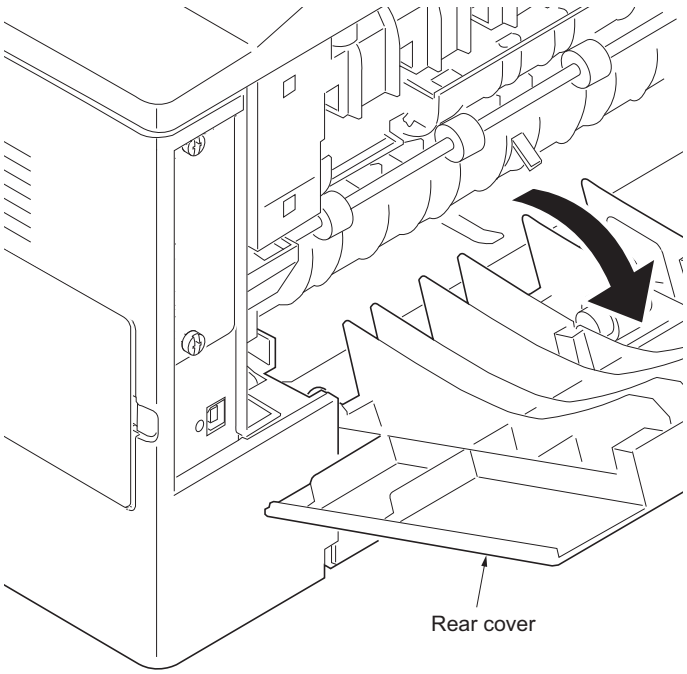

Figure 1-6-2

3. Remove two screws and then remove the optional interface slot cover.
4. Insert the memory card into the memory card slot.

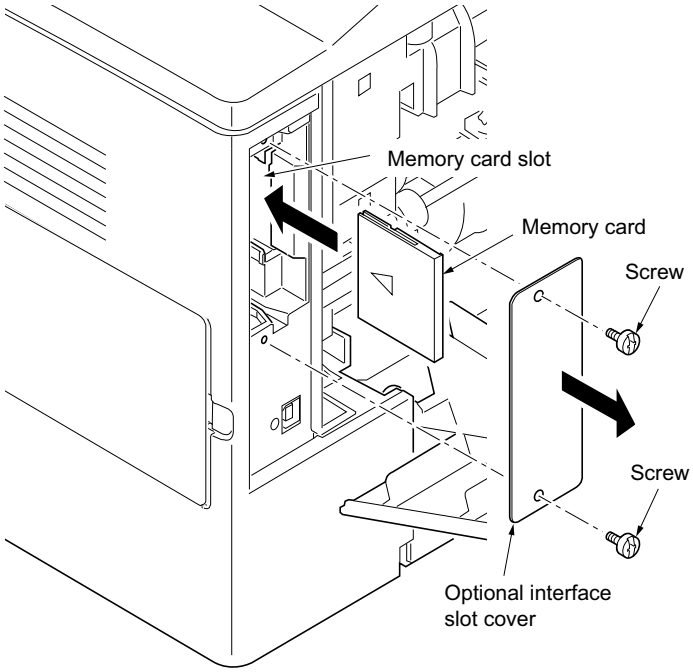

Figure 1-6-3

5. Turn printer power on.
   The printer starts and finishes downloading automatically.

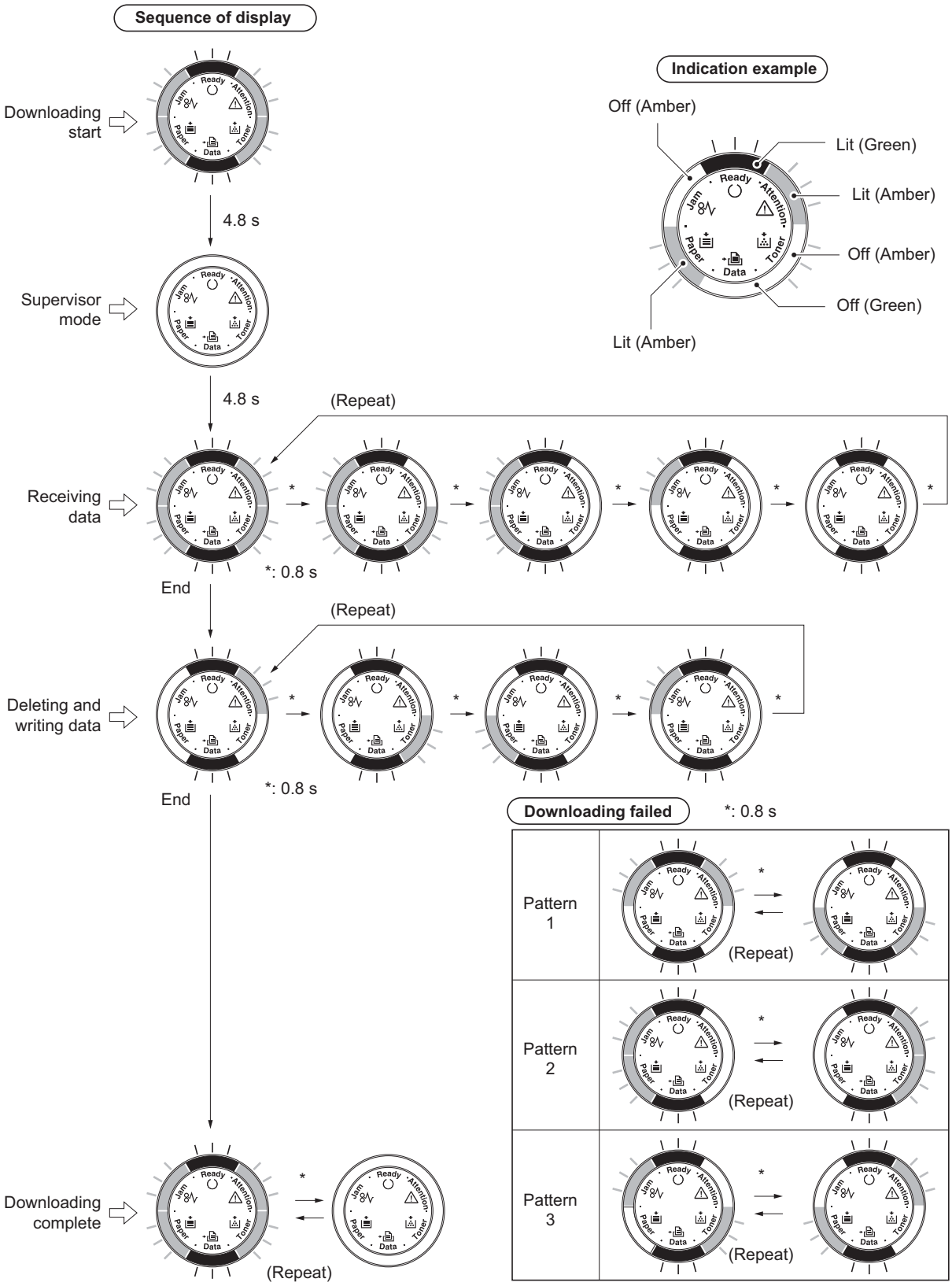

Figure 1-6-4

6. Confirm that downloading was finished normally (See previous page).
7. Turn power off.
8. Remove the memory card.
9. Secure the optional interface slot cover by using two screws.
10. Close the rear cover.
11. Turn power on again.
    Check the printer gets ready and Ready indicator is lit.
12. Print a status page (See page P.1-3-2).
13. Confirm the status page shows the new firmware version.

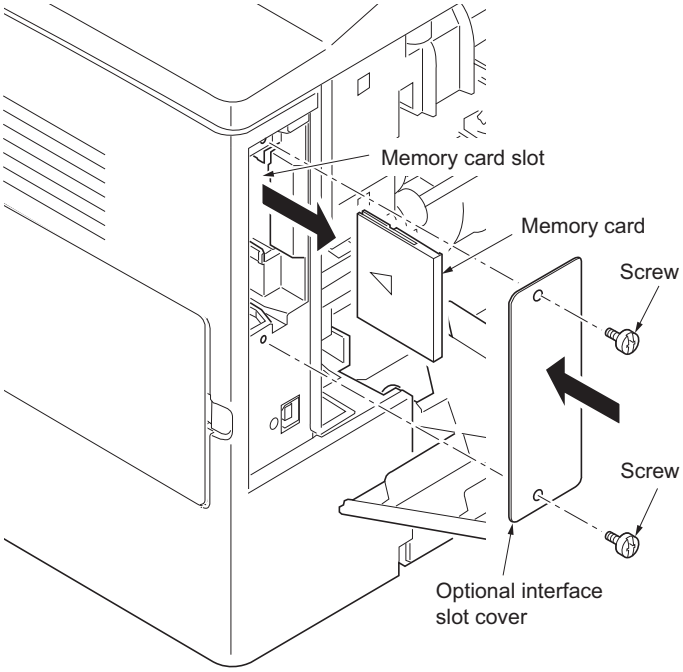

Figure 1-6-5

2-1-1 Paper feed/conveying section

Paper feed/conveying section consists of the paper feed unit that feeds paper from the cassette and the manual feed tray, and the paper conveying section that conveys the fed paper to the transfer/separation section.

(1) Cassette paper feed section

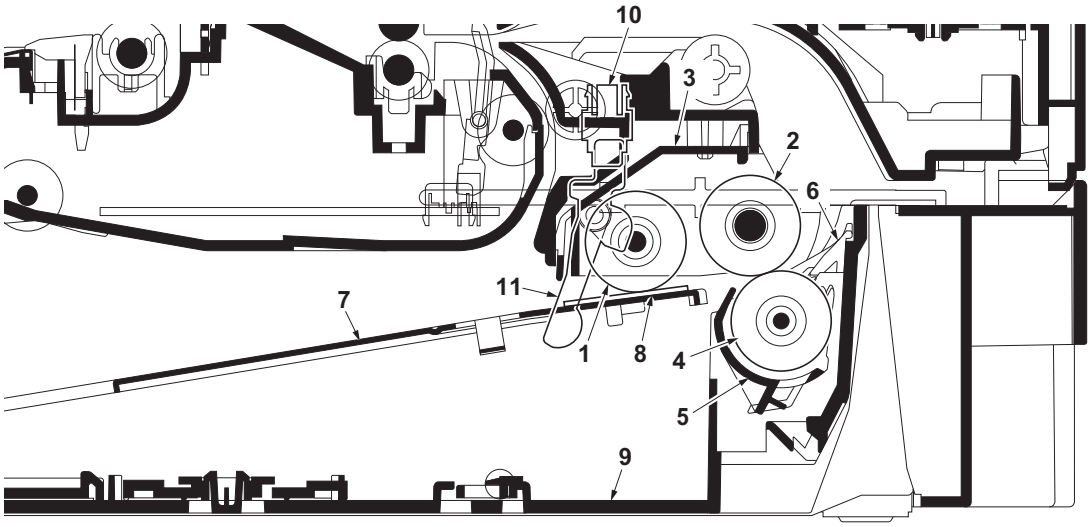

Figure 2-1-1 Cassette paper feed section

(1) Pickup roller
(2) Paper feed roller
(3) Feed holder
(4) Retard roller
(5) Retard holder
(6) Retard guide
(7) Bottom plate
(8) Bottom pad
(9) Cassette base
(10) Paper sensor
(11) Actuator (paper sensor)

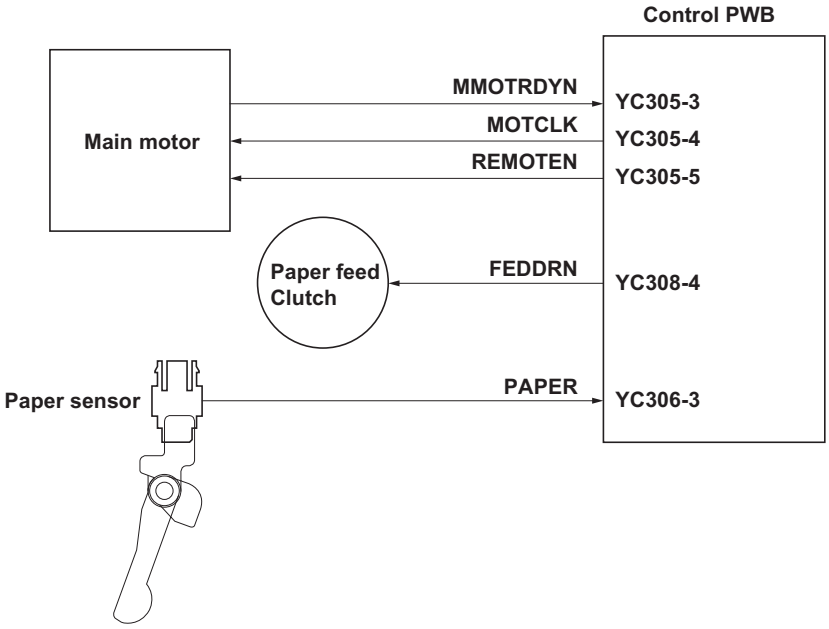

Figure 2-1-2Cassette paper feed section block diagram

(2) Manual feed tray

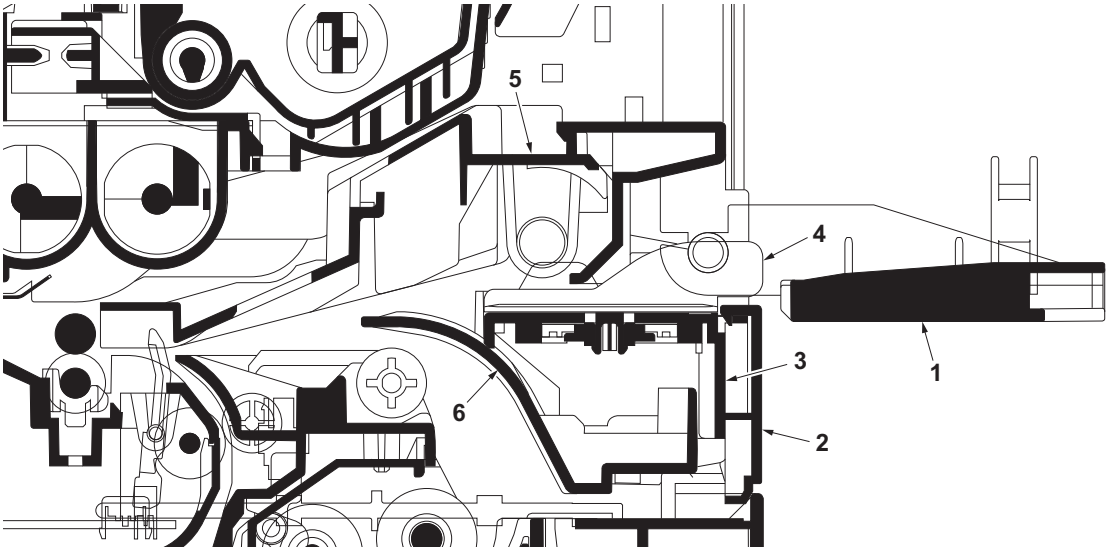

Figure 2-1-3 Manual feed tray

(1) MP upper cover
(2) MP lower cover
(3) MP base
(4) MP guide R/L
(5) MPF frame
(6) MPF turn guide

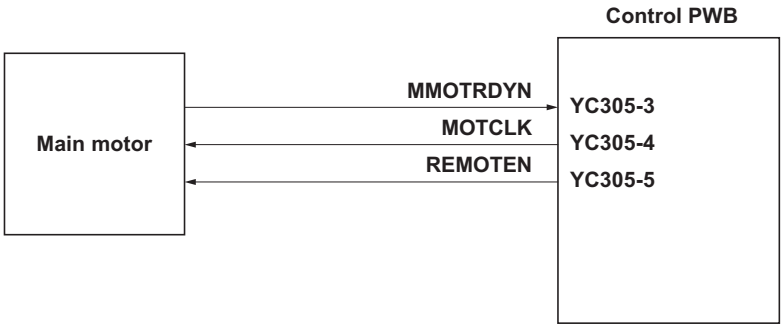

Figure 2-1-4 Manual feed tray block diagram

(3) Paper conveying section

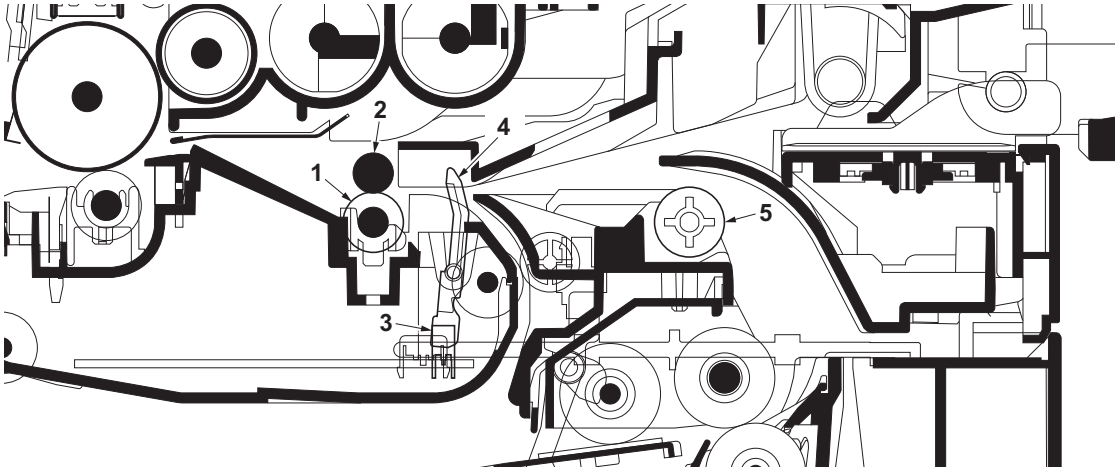

Figure 2-1-5 Paper conveying section

(1) Lower registration roller
(2) Upper registration roller
(3) Registration sensor
(4) Actuator (registration sensor)
(5) Feed pulley

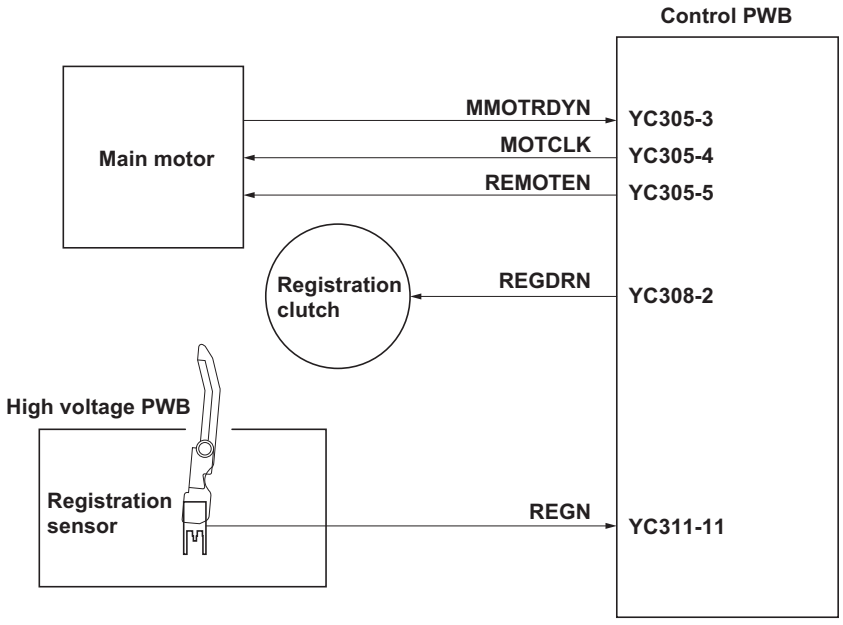

Figure 2-1-6 Paper conveying section block diagram

2-1-2 Drum section

(1) Drum section

The durable layer of organic photoconductor (OPC) is coated over the aluminum cylinder base. The OPC tend to reduce its own electrical conductance when exposed to light. After a cyclic process of charging, exposure, and development, the electrostatic image is constituted over the OPC layer.
Since the OPC is materialized by resin, it is susceptible to damage caused by sharp edges such as a screwdriver, etc., resulting in a print quality problem. Also, finger prints can cause deterioration of the OPC layer, therefore, the drum (in the drum unit) must be handled with care. Substances like water, alcohol, organic solvent, etc., should be strictly avoided.
As with all other OPC drums, the exposure to a strong light source for a prolonged period can cause a print quality problem. The limit is approximately 500 lux for less than five minutes. If the drum (drum unit) remains removed form the printer, it should be stored in a cool, dark place.
.

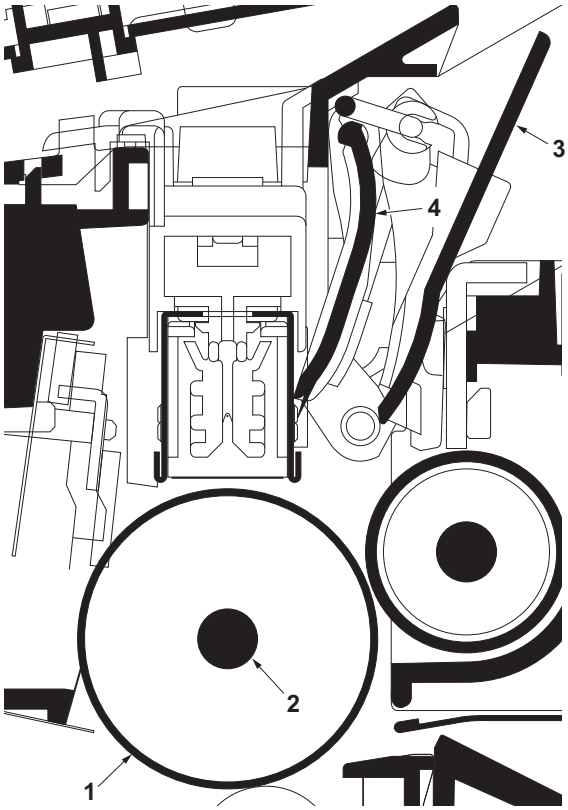

Figure 2-1-7 Drum section

(1) Drum
(2) Drum shaft
(3) Drum cover A
(4) Drum cover B

(2) Main charger unit

As the drum rotates in a “clean (neutral)” state, its photoconductive layer is given a uniform, positive (+) corona charge dispersed by the main charger wire. Due to high-voltage scorotron charging, the charging wire can get contaminated by oxidization after a long run. Therefore, the charger wire must be cleaned at a specific interval. Cleaning the charging wire prevents print quality problems such as black streaks.

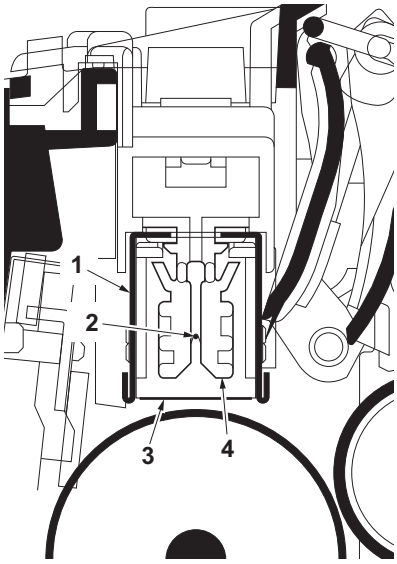

Figure 2-1-8 Main charger unit

(1) Main charger shield
(2) Main charger wire
(3) Main charger grid
(4) Main charger wire cleaner

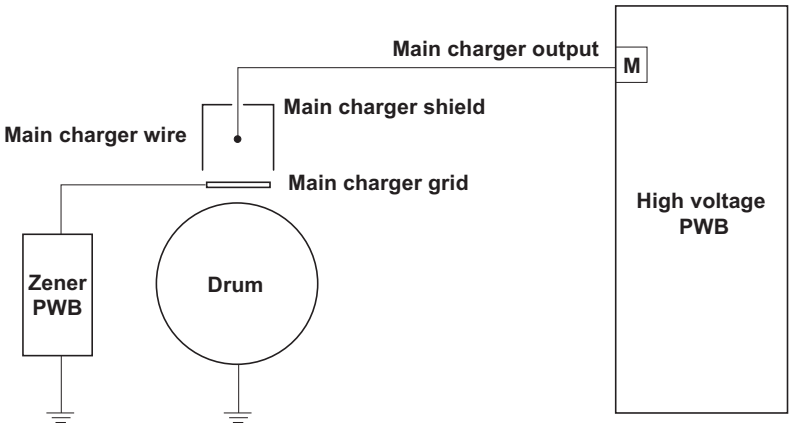

Figure 2-1-9 Drum unit and main charger unit block diagram

2-1-3 Expose section

(1) Laser scanner unit

The charged surface of the drum is then scanned by the laser beam from the laser scanner unit.
The laser beam (780 nm wavelength) beam is dispersed as the polygon motor revolves to reflect the laser beam over the drum. Various lenses and mirror are housed in the laser scanner unit, adjust the diameter of the laser beam, and focalize it at the drum surface.

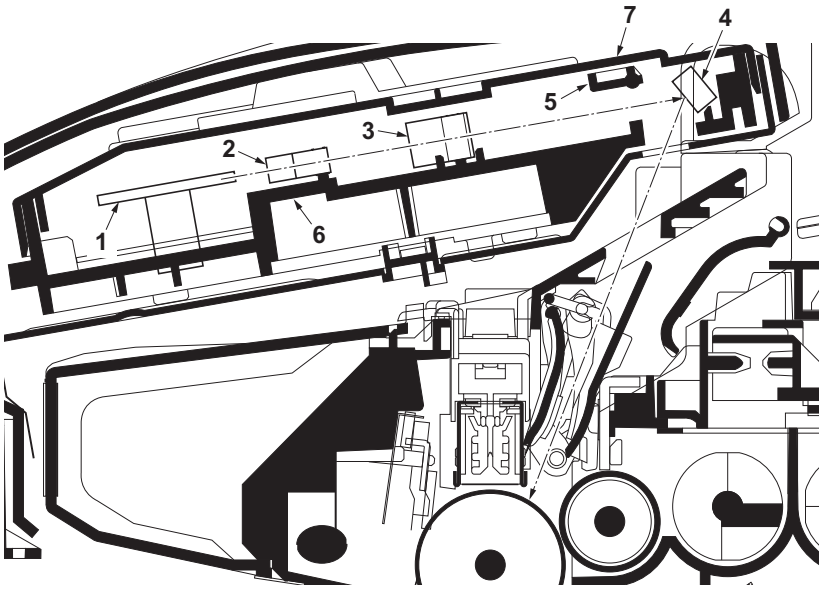

Figure 2-1-10 Laser scanner unit

(1) Polygon motor (mirror)
(2) F-θ lens
(3) F-θ lens
(4) LSU mirror
(5) LSU shutter
(6) LSU frame
(7) LSU cover

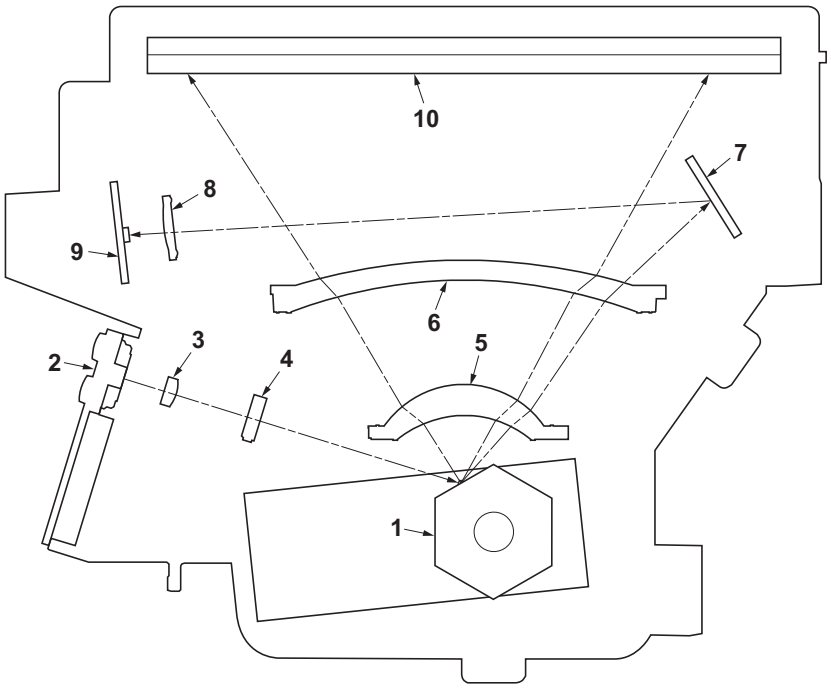

Figure 2-1-11 Laser scanner unit

(1) Polygon motor (mirror)
(2) Laser diode (APC PWB)
(3) Collimator lens
(4) Cylindrical lens
(5) F-θ lens
(6) F-θ lens
(7) PD mirror
(8) SOS lens
(9) Pin photo diode sensor (PD PWB)
(10) LSU mirror

2-1-4 Developing section

The latent image constituted on the drum is developed into a visible image. The developing roller contains a 3-pole (S-NS) magnet roller and an aluminum cylinder rotating around the magnet roller. Toner attracts to the magnet sleeve since it is powdery ink made of black resin bound to iron particles. Developing blade, magnetized by magnet, is positioned approximately 0.3 mm above the magnet sleeve to constitute a smooth layer of toner in accordance with the magnet sleeve revolution.

The developing roller is applied with the AC-weighted, positive DC power source. Toner on the magnet sleeve is given a positive charge. The positively charged toner is then attracted to the areas of the drum which was exposed to the laser light. (The gap between the drum and the magnet sleeve is approximately 0.32 mm.) The non-exposed areas of the drum repel the positively charged toner as these areas maintain the positive charge.
The developing roller is also AC-biased to ensure contrast in yielding by compensating the toner's attraction and repelling action during development.

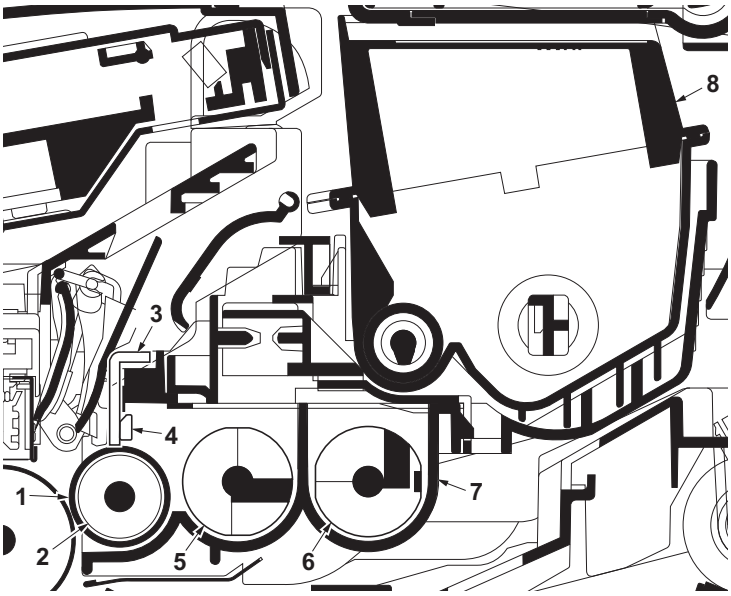

Figure 2-1-12 Developing unit and toner container

(1)	Magnet sleeve	(5)	DLP screw A
(2)	Magnet roller	(6)	DLP screw B
(3)	Developing blade	(7)	DLP case
(4)	Blade magnet	(8)	Toner container

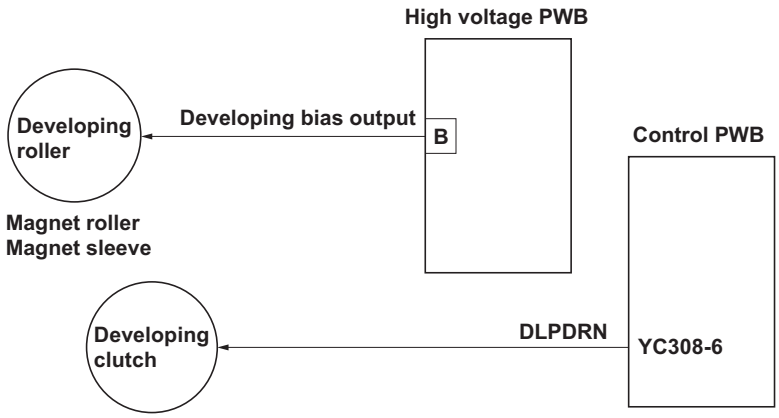

Figure 2-1-13 Developing section block diagram

2-1-5 Transfer/separation section

The transfer/separation section consists of the transfer roller, discharger brush and paper chute guide. A high voltage generated by the high voltage PWB is applied to the transfer roller for transfer charging. Paper after transfer is separated from the drum.

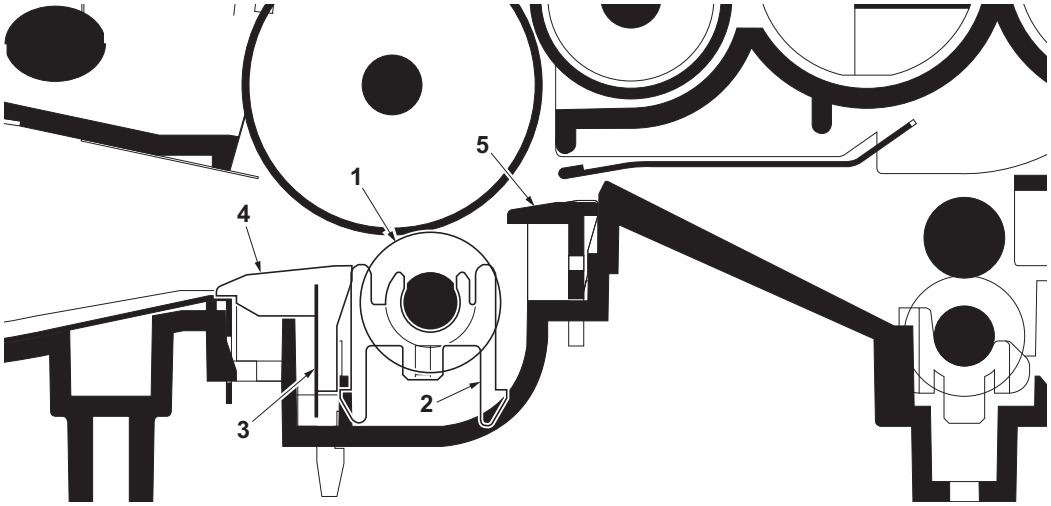

Figure 2-1-14 Transfer/separation section

(1) Transfer roller
(2) Transfer bushes
(3) Discharger brush
(4) DC brush holder
(5) Paper chute guide

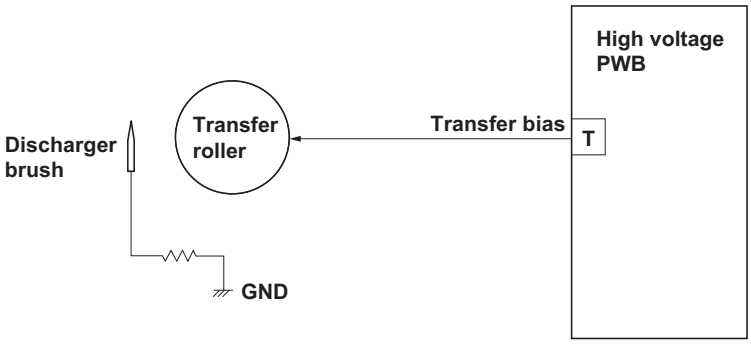

Figure 2-1-15 Transfer/separation section block diagram

2-1-6 Cleaning section

After the transferring process, the drum needs to be physically cleaned of toner which is residual after the development process. The cleaning blade is constantly pressed against the drum and scrapes the residual toner off to the sweep roller. The waste toner is collected at the output end of the sweep roller and sent back to the toner container, into the waste toner reservoir.
After the drum is physically cleaned, it then must be cleaned to the electrically neutral state. This is necessary to erase any residual positive charge, ready to accept the uniform charge for the next print process. The residual charge is canceled by exposing the drum to the light emitted from the eraser lamp (PWB). This lowers the electrical conductivity of the drum surface making the residual charge on the drum surface escape to the ground.

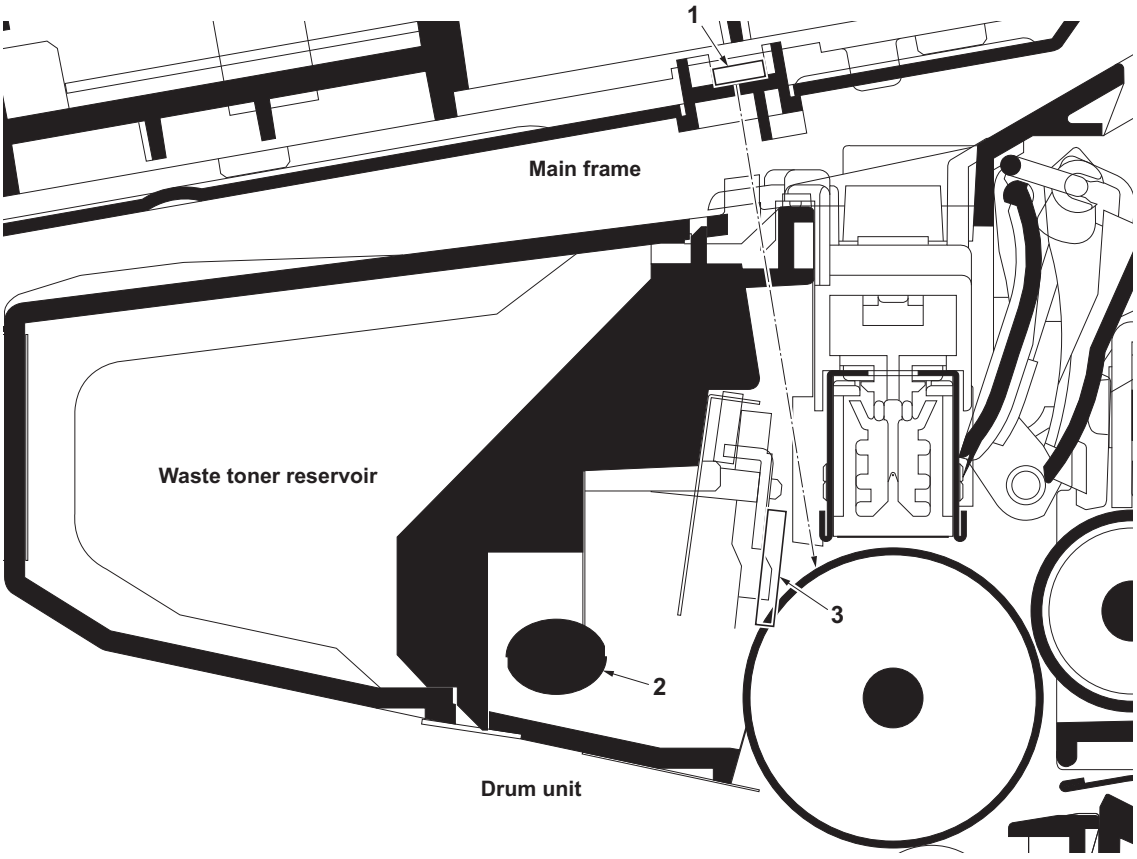

Figure 2-1-16 Cleaning section

(1) Eraser lamp (PWB)
(2) Sweep roller
(3) Cleaning blade

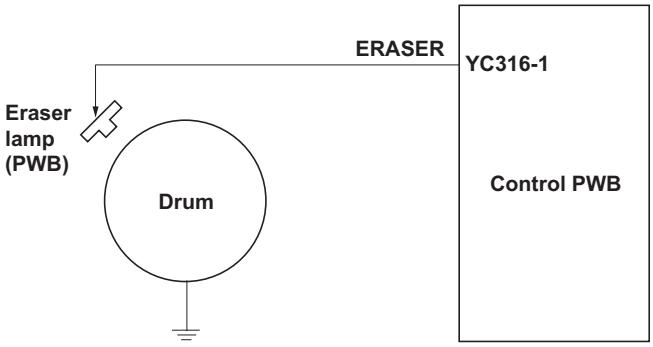

Figure 2-1-17 Cleaning section block diagram

2-1-7 Fuser section

The toner on the paper is molten and pressed into the paper as it passes between the heat roller and the press roller in the fuser unit. The heat roller has a heater lamp inside which continuously turns on and off by the fuser thermistor to maintain the constant temperature onto the heat roller surface. The heat roller is resin coated by florin to prevent toner from accumulating on the roller after a long run. Care must be taken while handling the heat roller not to scratch the roller surface as doing so may result in print problems. Fuser temperature is optimized to the paper type. The heat roller has four separators (claws) which are continuously in contact with its surface. These separators (claws) prevent the paper on which toner has been fused from being wound around the heat roller causing paper jam. The press roller is made of the heat-resistant silicon rubber. This roller is used to strongly press the paper towards the heat roller by means of press springs. The temperature of the heat roller is constantly monitored by the control PWB using the fuser thermistor. Should the temperature of the heat roller exceed the predetermined value, the fuser thermal cutout is activated to effectively disconnect the heater lamp from power.

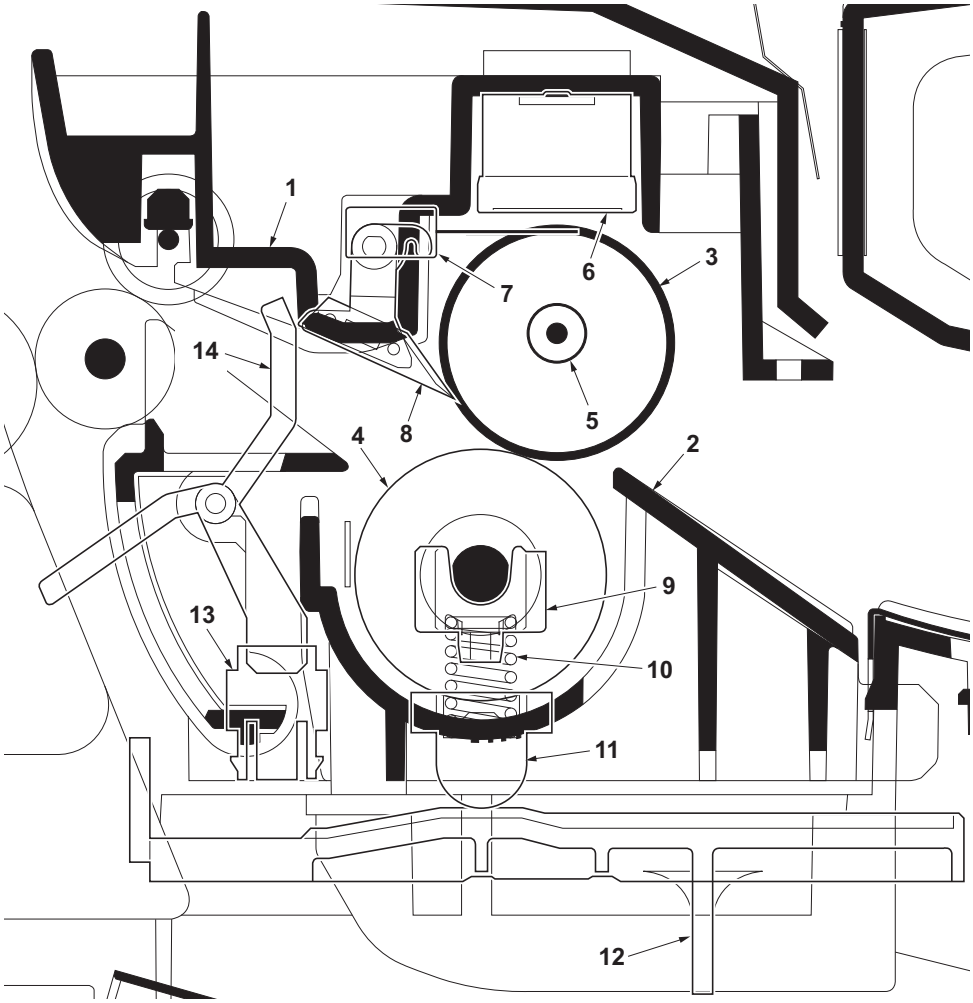

Figure 2-1-18 Fuser section

(1) Upper fuser frame
(2) Lower fuser frame
(3) Heat roller
(4) Press roller
(5) Fuser heater lamp
(6) Fuser thermal cutout
(7) Fuser thermistor
(8) Separators
(9) Fuser bushes
(10) Press springs
(11) Press spring holders
(12) Fuser lever L (R)
(13) Exit sensor
(14) Actuator (exit sensor)

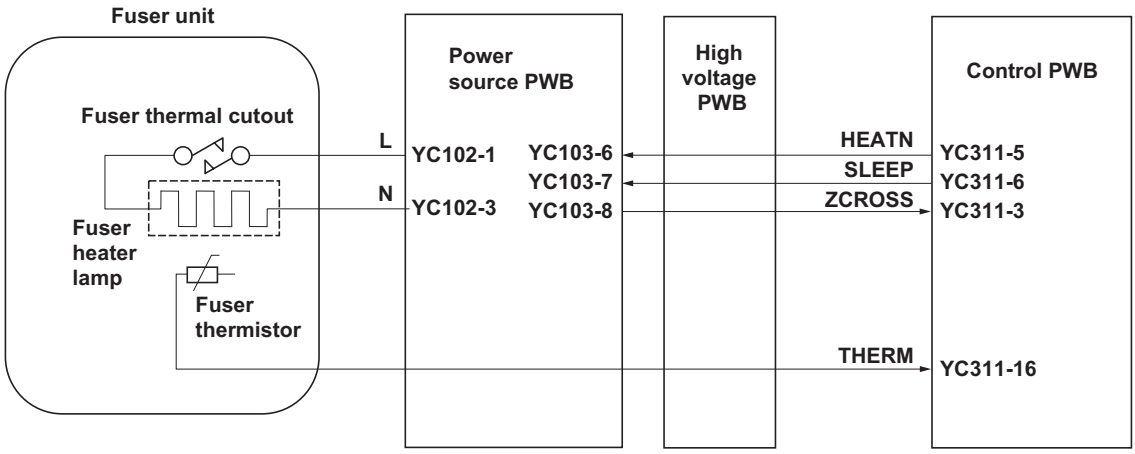

Figure 2-1-19 Fuser section block diagram

2-1-8 Paper exit section

The paper exit section transports the paper which passed the fuser unit towards the top tray. The paper which passed through the fuser unit turns on the actuator (exit sensor) in the fuser unit, and is led by the guide comprised of the rear cover, frame and the FD cover guide, finally reaching the upper FD roller. The paper is delivered to the top tray by the rotation of the upper FD roller.

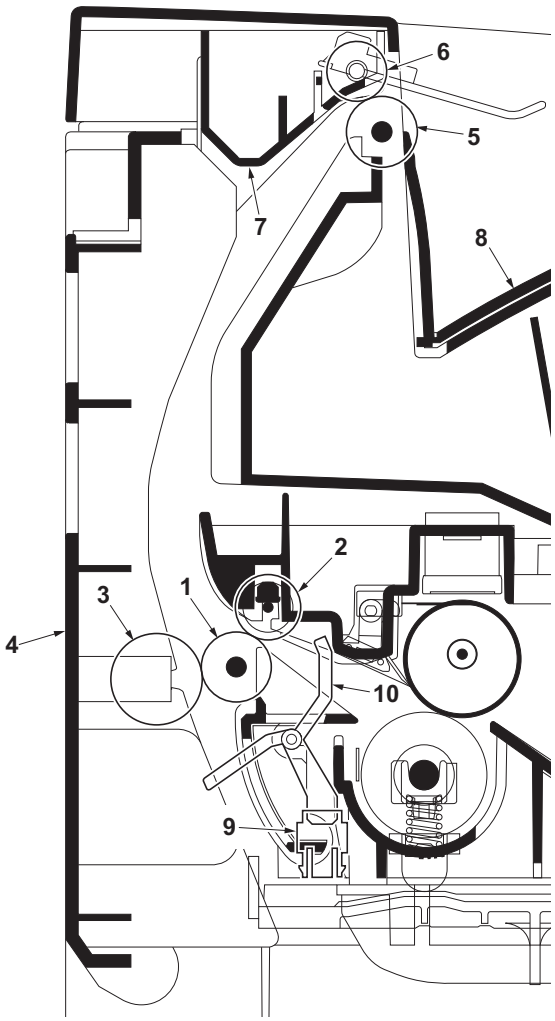

Figure 2-1-20 Paper exit section

(1) Exit roller
(2) Fuser exit pulley
(3) Middle pulley
(4) Rear cover
(5) Upper FD roller
(6) Exit pulley
(7) FD cover
(8) Top tray
(9) Exit sensor
(10) Actuator (exit sensor)

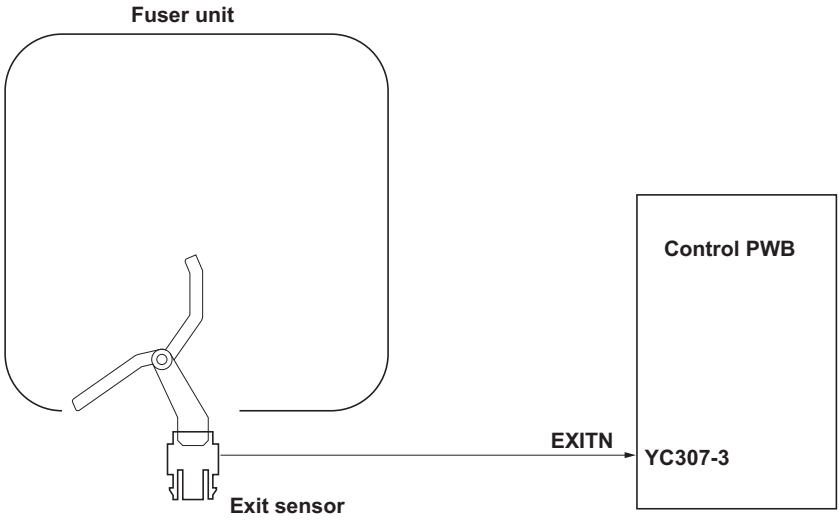

Figure 2-1-21 Paper exit section block diagram

2-2-1 Electrical parts layout

(1) PWBs

I

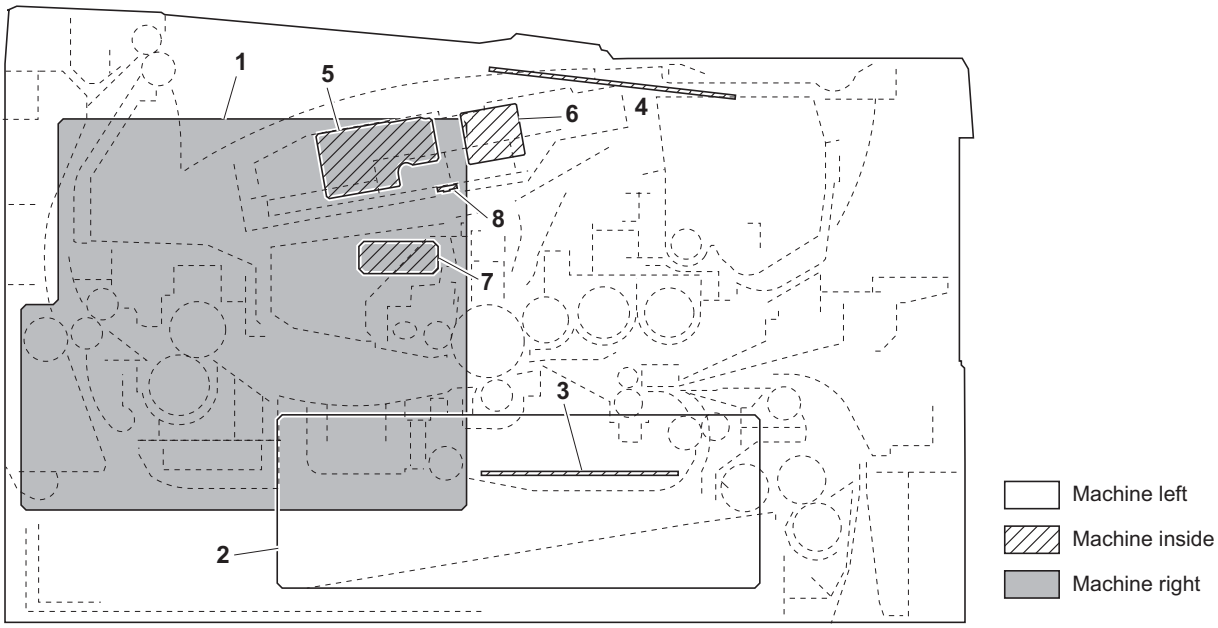

Figure 2-2-1 PWBs

1. Control PWB ..... Main controller: Controls the software such as the print data processing and provides the interface with computers.
   Engine: Controls printer hardware such as high voltage/bias output control, paper conveying system control, and fuser temperature control, etc.
2. Power source PWB..... After full-wave rectification of AC power source input, switching for converting to 24 V DC for output. Controls the fuser heater lamp.
3. High voltage PWB..... Generates main charging, developing bias and transfer bias.
4. Operation panel PWB ..... Consists the LED indicators and key switches.
5. APC PWB ..... Generates and controls the laser beam.
6. PD PWB..... Controls horizontal synchronizing timing of laser beam.
7. Zener PWB ..... Adjusts the drum surface potential.
8. Eraser lamp PWB ..... Eliminates the residual electrostatic charge on the drum.

List of correspondences of PWB names

No.	Name used in service manual	Name used in parts list
1	Control PWB	P.W.BOARD ASSY CONTROL WITH SOFTWARE(SP)
2	Power source PWB	SWITCHING REGULATOR 120V
		SWITCHING REGULATOR 230V
3	High voltage PWB	HIGH VOLTAGE UNIT
4	Operation panel PWB	P.W.B BOARD ASSY PANEL
5	APC PWB	-
6	PD PWB	-
7	Zener PWB	-
8	Eraser lamp PWB	-

(2) Switches and sensors

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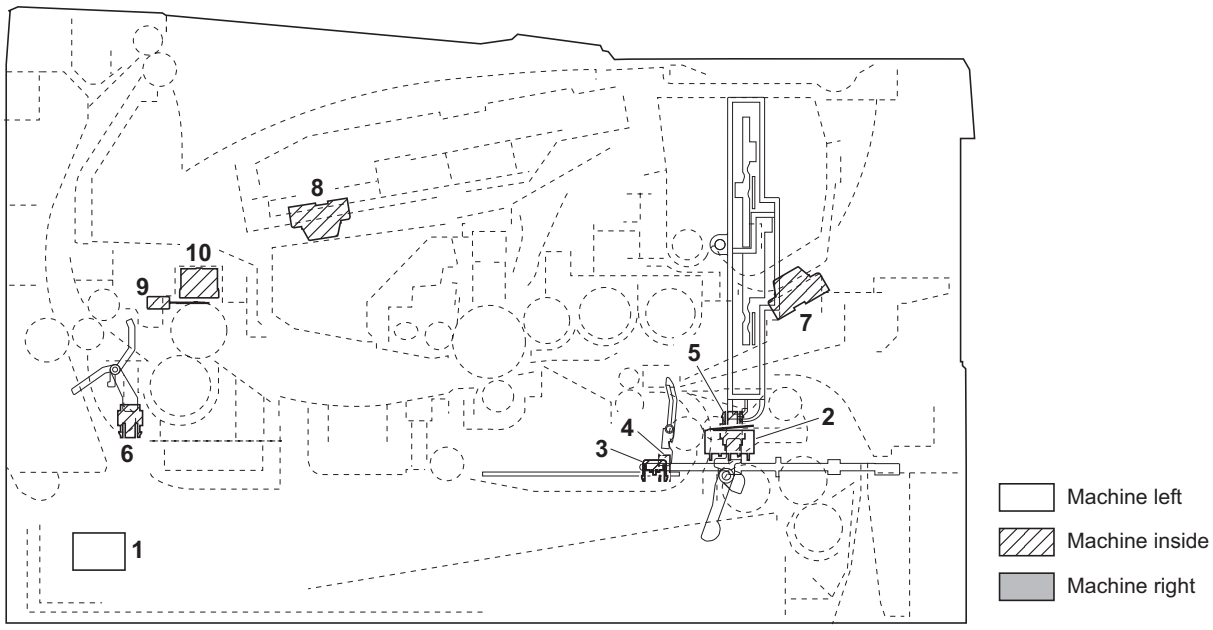

Figure 2-2-2 Switches and sensors

1. Power switch..... Turns ON/OFF the AC power source.
2. Interlock switch ..... Shuts off 24 V DC power line when the top cover is opened.
3. Cassette switch..... Detects open/close cassette.
4. Registration sensor ..... Detects the timing of primary paper feed.
5. Paper sensor..... Detects the presence of paper in the cassette.
6. Exit sensor ..... Detects paper jam in the fuser section.
7. Toner sensor ..... Detects the quantity of toner in a toner container.
8. Waste toner sensor..... Detects when the waste toner reservoir (Drum unit) is full.
9. Fuser thermistor..... Measures the heat roller temperature.
10. Fuser thermal cutout..... Shuts off the power source to the fuser heater lamp when the heat roller reaches extremely high temperature.

(3) Other electrical components

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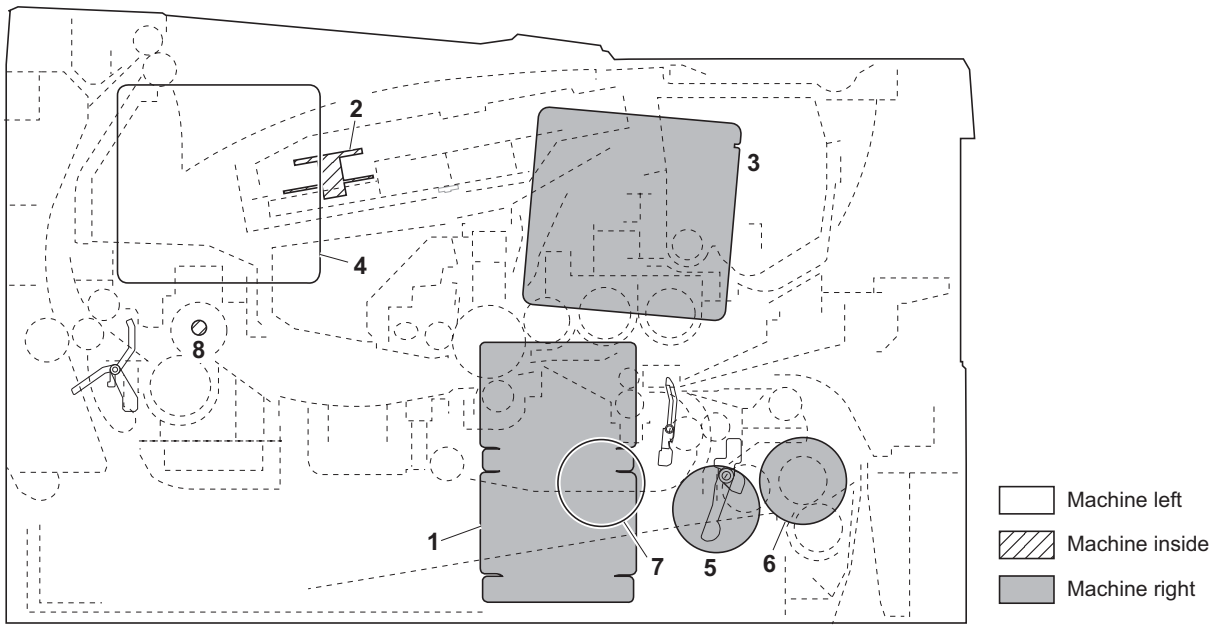

Figure 2-2-3 Other electrical components

1. Main motor ..... Drives the paper feed/conveying section and fuser unit.
2. Polygon motor ..... Drives the polygon mirror.
3. Right cooling fan motor ..... Cools the interior of machine.
4. Left cooling fan motor ..... Cools the interior of machine.
5. Registration clutch ..... Controls the secondary paper feed.
6. Paper feed clutch ..... Controls the paper cassette paper feed.
7. Developing clutch ..... Controls the toner feed.
8. Fuser heater lamp ..... Heats the heat roller.

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2-3-1 Power source PWB

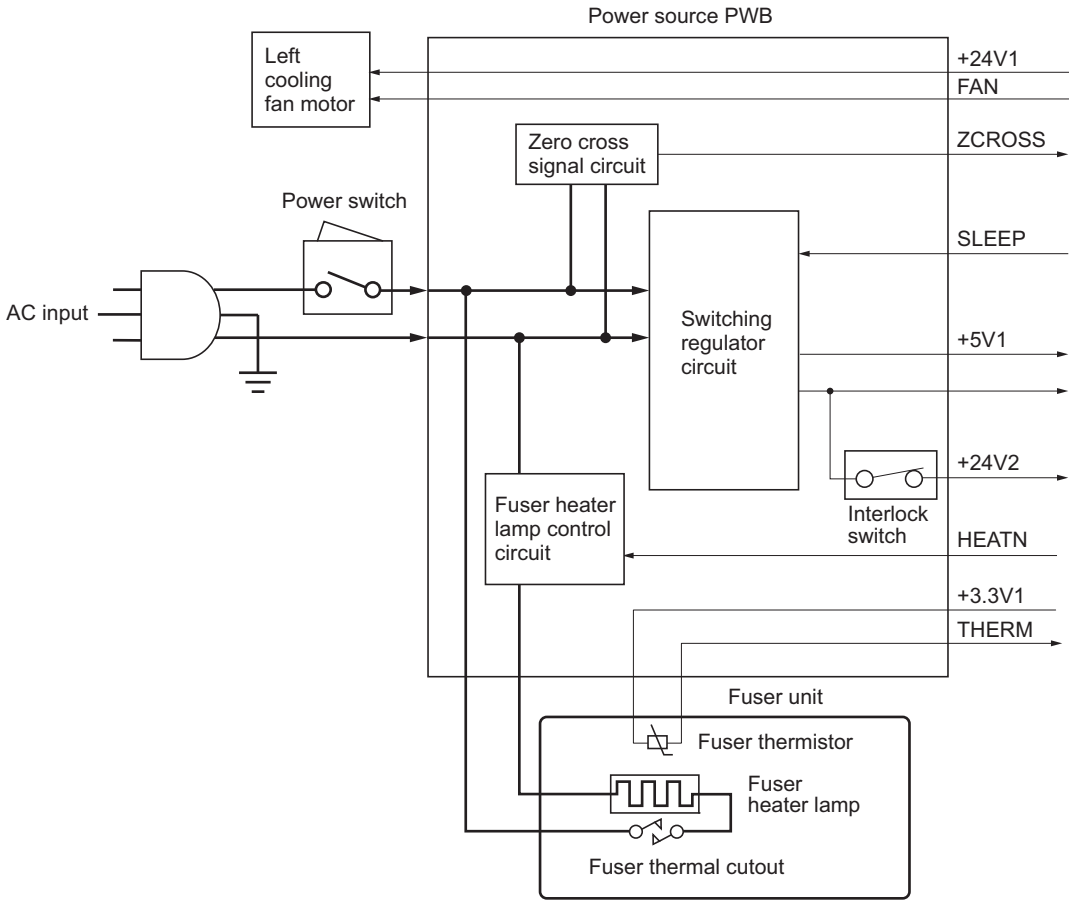


Figure 2-3-1 Power source PWB block diagram

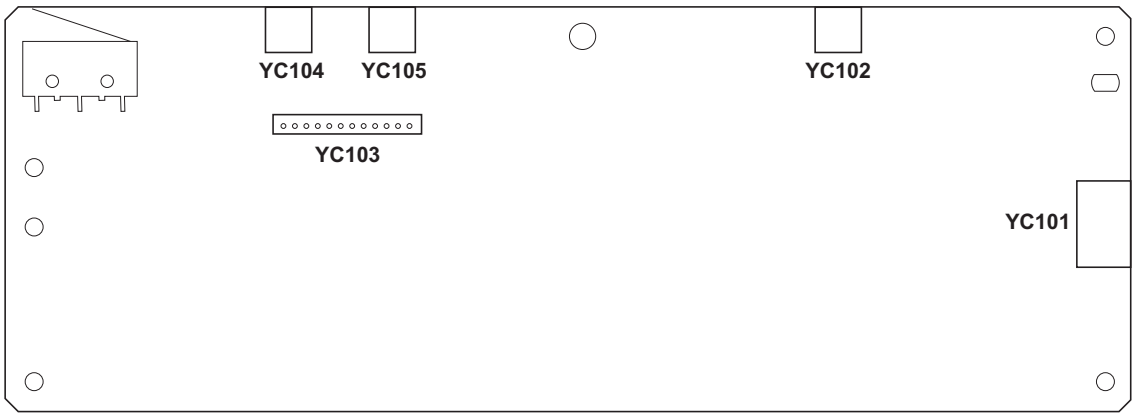


Figure 2-3-2 Power source PWB silk-screen diagram

Connector	Pin No.	Signal	I/O	Voltage	Description
YC101	1	LIVE	I	120 V AC 220 - 240 V AC	AC power input
Connected to the AC inlet	2	NEUTRAL	I	120 V AC 220 - 240 V AC	AC power input
YC102	1	HEATER COM	O	120 V AC 220 - 240 V AC	Fuser heater lamp output
Connected to the fuser heater lamp	2	N.C.	-	-	Not used
	3	HEATER LIVE	O	120 V AC 220 - 240 V AC	Fuser heater lamp output
YC103	1	+24V1	O	24 V DC	24 V DC power source
Connected to the high voltage PWB	2	SGND	-	-	Ground
	3	FAN	I	0/24 V DC	Left cooling fan motor: On/Off
	4	THERM	O	Analog	Fuser thermistor detection voltage
	5	+3.3V	I	3.3 V DC	3.3 V DC power source
	6	HEATN	I	0/3.3 V DC	Fuser heater lamp: On/Off
	7	SLEEP	I	0/3.3 V DC	Sleep mode signal: On/Off
	8	ZCROSS	O	0/3.3 V DC (pulse)	Zero cross signal
	9	+24V2	O	24 V DC	24 V DC power source (via interlock switch)
	10	+24V2	O	24 V DC	24 V DC power source (via interlock switch)
	11	PGND	-	-	Ground
	12	PGND	-	-	Ground
YC104	1	+24V1	O	24 V DC	24 V DC power source
Connected to the left cooling fan motor	2	FAN	O	0/24 V DC	Left cooling fan motor: On/Off
YC105	1	+3.3V1	O	3.3 V DC	3.3 V DC power source
Connected to the fuser thermistor	2	THERM	I	Analog	Fuser thermistor detection voltage

2-3-2 Control PWB

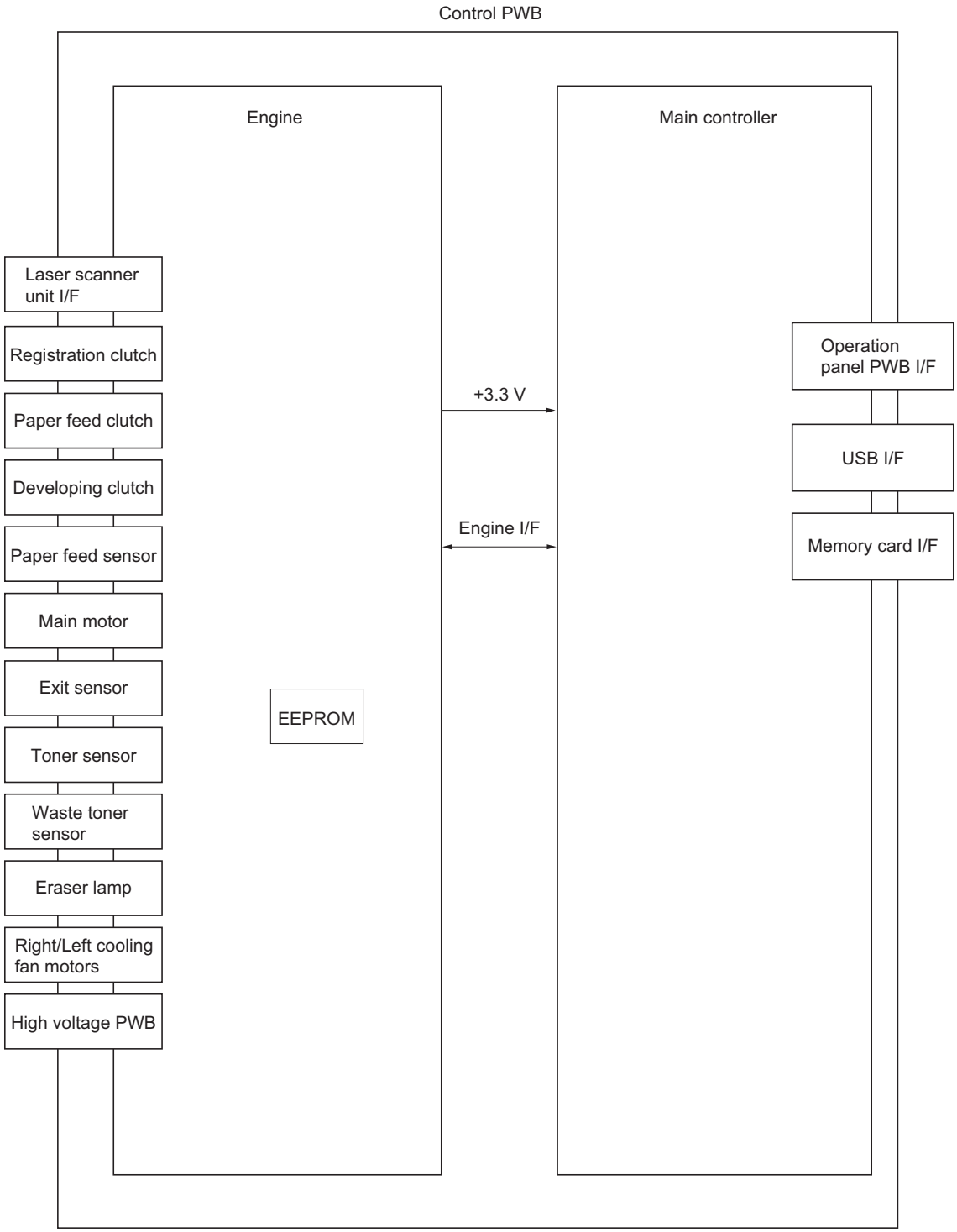


Figure 2-3-3 Control PWB block diagram

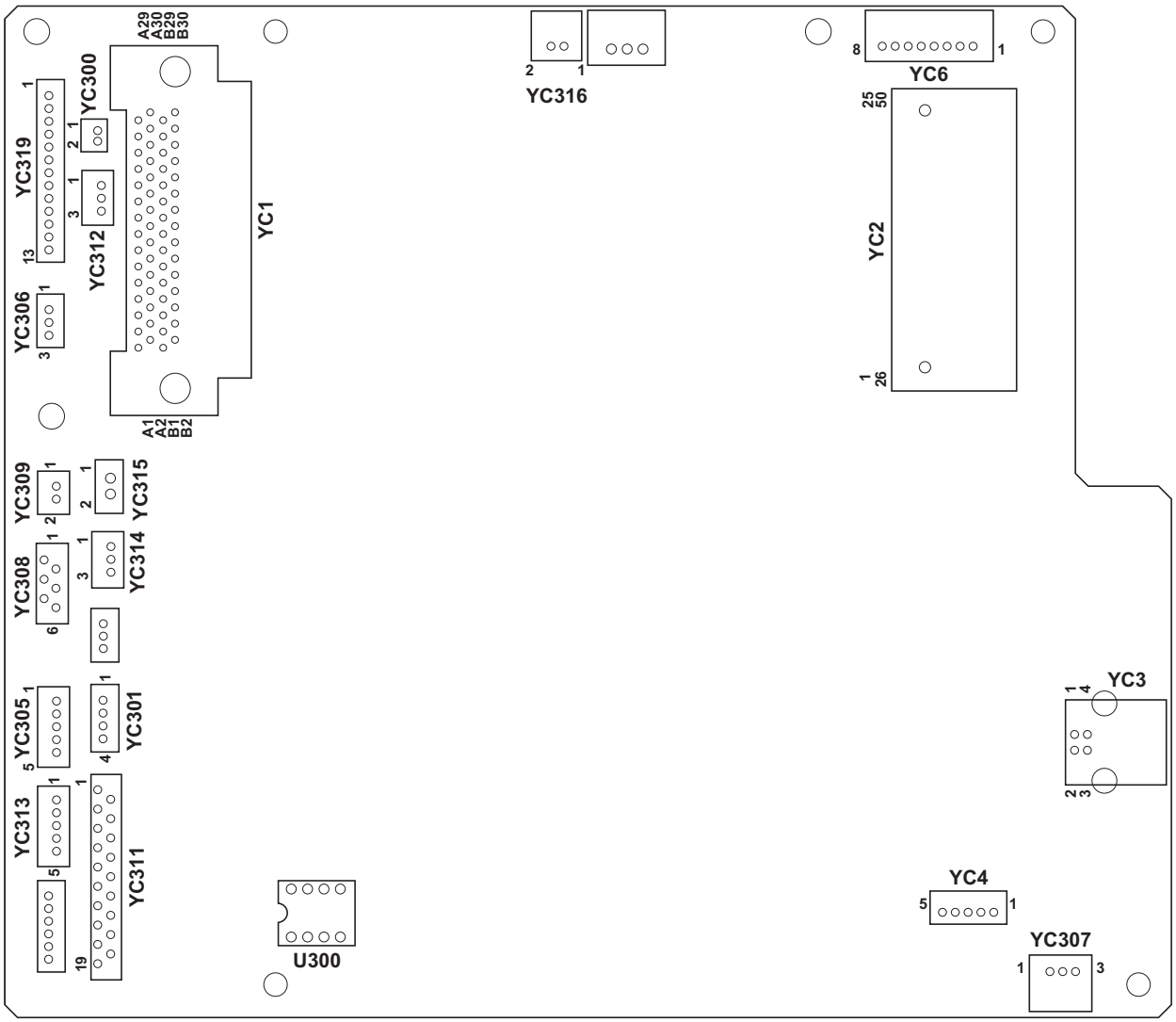


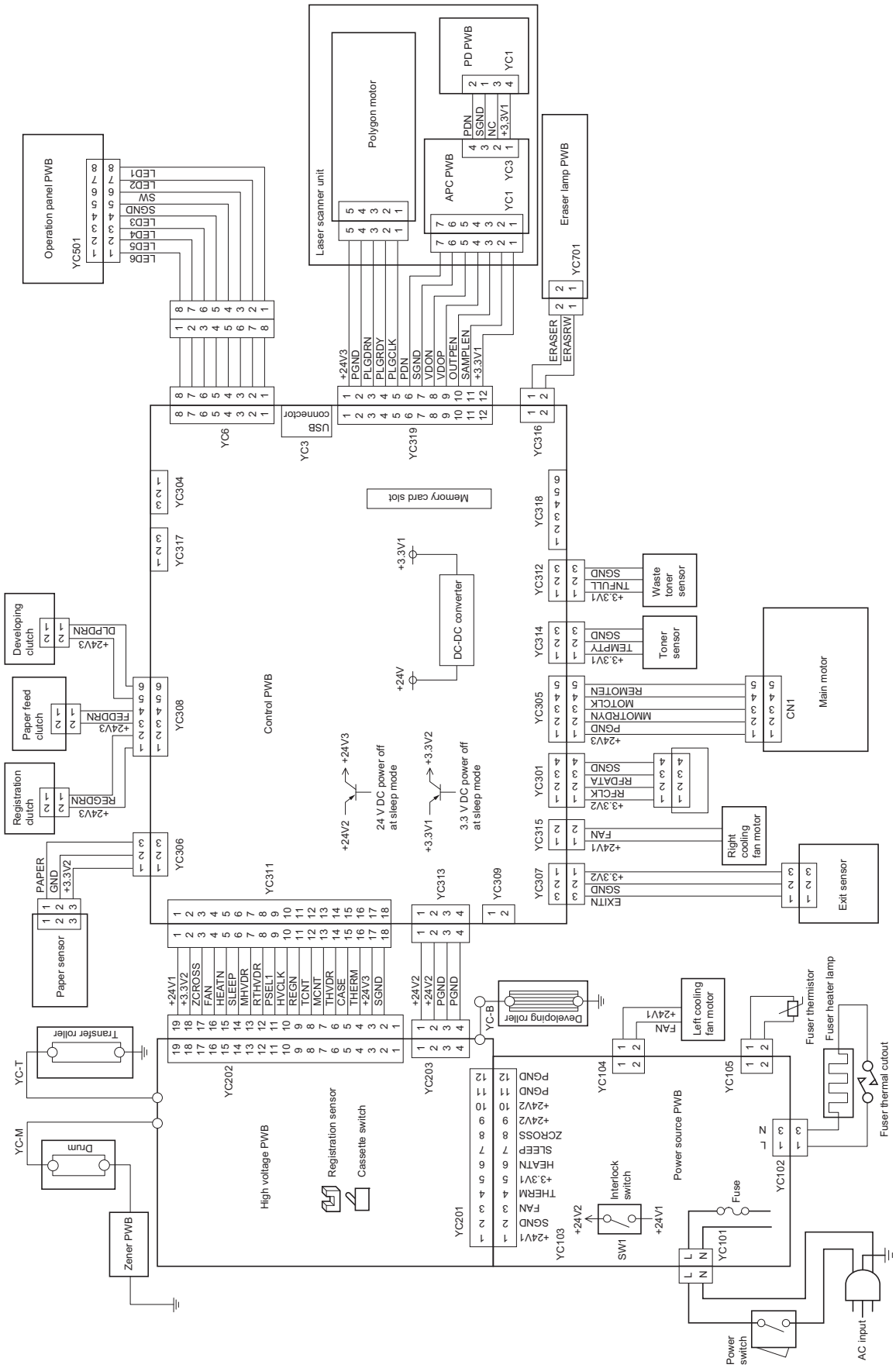
Figure 2-3-4 Control PWB silk-screen diagram

Connector	Pin No.	Signal	I/O	Voltage	Description
YC6	1	LED1	O	3.3/0 V DC	Paper indicator display: On/Off
Connected to the operation panel PWB	2	LED2	O	3.3/0 V DC	Jam indicator display: On/Off
	3	SW	I	Analog	Cancel key/GO key: On/Off
	4	SGND	-	-	Ground
	5	LED3	O	3.3/0 V DC	Ready indicator display: On/Off
	6	LED4	O	3.3/0 V DC	Attention indicator display: On/Off
	7	LED5	O	3.3/0 V DC	Toner indicator display: On/Off
	8	LED6	O	3.3/0 V DC	Data indicator display: On/Off
YC305	1	+24V3	O	24 V DC	24 V DC power source
Connected to the main motor	2	PGND	-	-	Ground
	3	MMOTRDYN	I	0/3.3 V DC	Main motor ready signal
	4	MMOTCLK	O	0/3.3 V DC (pulse)	Main motor clock signal
	5	REMOTEN	O	0/3.3 V DC	Main motor: On/Off
YC306	1	+3.3V2	O	3.3 V DC	3.3 V DC power source
Connected to the paper sensor	2	GND	-	-	Ground
	3	PAPER	I	0/3.3 V DC	Paper sensor: On/Off
YC307	1	+3.3V2	O	3.3 V DC	3.3 V DC power source
Connected to the exit sensor	2	SGND	-	-	Ground
	3	EXITN	I	0/3.3 V DC	Exit sensor: On/Off
YC308	1	+24V3	O	24 V DC	24 V DC power source
Connected to the registration clutch, paper feed clutch and developing clutch	2	REGDRN	O	0/24 V DC	Registration clutch: On/Off
	3	+24V3	O	24 V DC	24 V DC power source
	4	FEDDRN	O	0/24 V DC	Paper feed clutch: On/Off
	5	+24V3	O	24 V DC	24 V DC power source
	6	DLPDRN	O	0/24 V DC	Developing clutch: On/Off
YC311	1	+24V1	I	24 V DC	24 V DC power source
Connected to the high voltage PWB	2	+3.3V2	O	3.3 V DC	3.3 V DC power source
	3	ZCROSS	I	0/3.3 V DC (pulse)	Zero cross signal
	4	FAN	O	0/24 V DC	Left cooling fan motor: On/Off
	5	HEATN	O	0/3.3 V DC	Fuser heater lamp: On/Off
	6	SLEEP	O	0/3.3 V DC	Sleep mode signal: On/Off
	7	MHVDR	O	0/3.3 V DC	Main charger output signal: On/Off
	8	RTHVDR	O	0/3.3 V DC	Transfer (reverse) bias output signal: On/Off
	9	PSEL1	O	0/3.3 V DC	Transfer (reverse) bias control signal: On/Off
	10	HVCLK	O	0/3.3 V DC (pulse)	Developing bias clock signal
	11	REGN	I	0/3.3 V DC	Registration sensor: On/Off
	12	TCNT	O	PWM	Transfer current control signal
	13	MCNT	O	PWM	Main charger output control signal
	14	THVDR	O	0/3.3 V DC	Transfer bias output signal: On/Off
	15	CASE	I	Analog	Cassette switch: On/Off
	16	THERM	I	Analog	Fuser thermistor detection voltage
	17	+24V3	O	24 V DC	24 V DC power source
	18	SGND	-	-	Ground

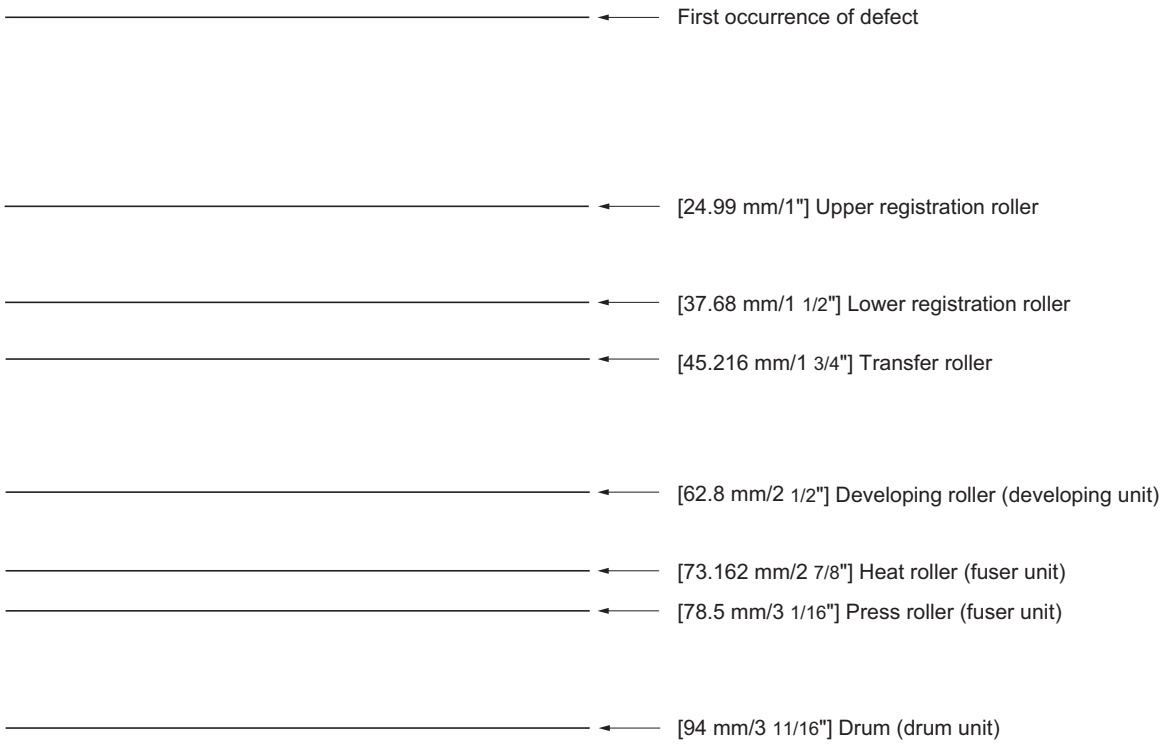
Connector	Pin No.	Signal	I/O	Voltage	Description
YC312	1	+3.3V1	O	3.3 V DC	3.3 V DC power source
Connected to the waste toner sensor	2	TNFULL	I	0/3.3 V DC	Waste toner full detection signal
	3	SGND	-	-	Ground
YC313	1	+24V2	I	24 V DC	24 V DC power source
Connected to the high voltage PWB	2	+24V2	I	24 V DC	24 V DC power source
	3	PGND	-	-	Ground
	4	PGND	-	-	Ground
YC314	1	+3.3V1	O	3.3 V DC	3.3 V DC power source
Connected to the toner sensor	2	TEMPTY	I	0/3.3 V DC	Toner quantity detection signal
	3	SGND	-	-	Ground
YC315	1	+24V1	O	24 V DC	24 V DC power source
Connected to the right cooling fan motor	2	FAN	O	0/24 V DC	Right cooling fan motor: On/Off
YC316	1	ERASER	O	0/24 V DC	Eraser lamp: On/Off
Connected to the eraser lamp	2	ERASRW	O	24 V DC	24 V DC power source
YC319	1	+24V3	O	24 V DC	24 V DC power source
Connected to the laser scanner unit	2	PGND	-	-	Ground
	3	PLGDRN	O	0/3.3 V DC	Polygon motor: On/Off
	4	PLGRDY	I	0/3.3 V DC	Polygon motor ready signal
	5	PLGCLK	O	0/3.3 V DC (pulse)	Polygon motor clock signal
	6	PDN	I	0/3.3 V DC (pulse)	Horizontal synchronizing signal
	7	SGND	-	-	Ground
	8	VDON	O	0/3.3 V DC (pulse)	Video data signal (+)
	9	VDOP	O	0/3.3 V DC (pulse)	Video data signal (-)
	10	OUTPEN	O	0/3.3 V DC	Laser output enable signal
	11	SAMPLEN	O	0/3.3 V DC	Sample/hold timing switching signal
	12	+3.3V1	O	3.3 V DC	3.3 V DC power source

2-4-1 Appendixes

(1) Wiring diagraml



(2) Repetitive defects gauge



(3) Maintenance parts list

Maintenance part name		Part No.	Alternative part No.
Name used in service manual	**Name used in parts list**		
Maintenance kit (120 V)	MK-1102/MAINTENANCE KIT DK-1105 DV-1102	1702M17UX0	072M17UX
Maintenance kit (220-240 V)	MK-1100/MAINTENANCE KIT DK-1105 DV-1100	1702M18NX0	072M18NX

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