KYOCERA

FS-6970DN

SERVICE MANUAL

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Rev. 2

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
1	December 15, 2009	CONTENTS, 1-2-1, 1-3-2, 1-3-4, 1-4-4 to 1-4-7, 1-5-2, 2-2-1, 2-3-6, 2-3-7, 2-4-1 to 2-4-3	-
2	March 26, 2010	1-3-2 to 1-3-6, 1-3-10, 1-3-12, 1-3-13	-

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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

Printing method	Semiconductor laser and electrophotography
Printing speeds	Simplex: A4: 35 ppm A5: 35 ppm A3: 17 ppm Duplex: A4: 24.5 ppm A5-R: 16 ppm A3: 10.5 ppm
Paper sizes	Paper cassette: Ledger, Legal, Letter, A3, A4, B4, A5, JIS B5, A5, A6, Folio, Oficio II, Statement, Envelope C4, Envelope C5, ISO B5, Executive, 8 kai, 16 kai, Custom (148 × 210 to 297 × 432 mm) MP tray: Ledger, Legal, Letter, A3, A4, B4, A5, JIS B5, A5, A6, Folio, Oficio II, Envelope, Monarch, Envelope #10, Envelope DL, Statement, Envelope C4, Envelope C5, ISO B5, Executive, Envelope #9, Envelope #6, Hagaki, Ofuku-Hagaki, 8 kai, 16 kai, Yokei 2, Yokei 4, Custom (70 × 148 to 297 × 450 mm)
Paper types	Paper cassette: Plain, Preprinted, Bond, Recycled, Rough, Letterhead, Color (Colour), Prepunched, High Quality, and Custom (1 to 8) MP tray: Plain, Transparency, Preprinted, Labels, Bond, Recycled, Rough, Vellum, Letterhead, Color (Colour), Prepunched, Envelope, Cardstock, Thick paper, High Quality, and Custom (1 to 8)
Resolution	Fine 1200, Fast 1200 mode, 600 dpi, 300 dpi
Warm-up time (22 °C/71.6 °F, 60%RH)	Power on: 15 seconds or less Sleep: 15 seconds or less
First print out (A4)	9 seconds or less when EcoFuser is Off and the printer is in Ready status. 24 seconds or less when EcoFuser is On and the printer is in sleep mode.
Paper feed source capacity	Paper cassette: 250 sheets (80 g/m^2) MP tray: 100 sheets (80 g/m^2)
Output ray capacity	Top tray: 250 sheets (80 g/m^2) Face up tray (optional): PT-430: 250 sheets (80 g/m^2)
Photo conductor	a-Si (diameter: 30mm/1 3/16")
Charging system	Contact charger roller method (positive charging)
Developing system	Single component developer
Transfer system	Transfer roller
Separation system	Separation brush (DC bias)
Fixing System	Heat fusing with a heat roller and a press roller
Charge erasing system	Light emitted by LED
Cleaning system	Counter blade cleaning
Operating systems	Windows 2000 Service Pack 2 or later, Windows Server 2003, Windows XP, Windows Vista, Mac OS X 10.x
Controller	PowerPC440/600 MHz
Memory	Standard: 128 MB Maximum: 1152 MB
Interface	Standard: Parallel: 1 (IEEE1284) Hi-Speed USB: 1 Network: 1(10BASE-T/100BASE-TX) Full-speed USB: 1 (USB flash memory slot) KUIO-LV(W) slot

Operation environment	Temperature: 10 to 32.5°C/50 to 90.5°F Relative humidity: 15 to 80% Altitude: 2,500 m/8,202 ft maximum Illumination: 1,500 lux maximum
Dimensions (W × D × H)	469 × 395 × 285 mm/18 7/16 × 15 9/16 × 11 1/4"
Weight (without toner container)	19.5 kg/43 lbs
Power source	220-240 V, 50 Hz/60 Hz, max. 3.9 A (European countries) Max. Allowable voltage fluctuation: ±10% Max. Allowable frequency fluctuation: ±2%
Power consumption	Maximum 976 W During printing: 516 W During standby: 9.6 W (EcoFuser: ON), 67 W (EcoFuser: OFF) Power off: 0 W

1-1-2 Parts names

(1) Overall

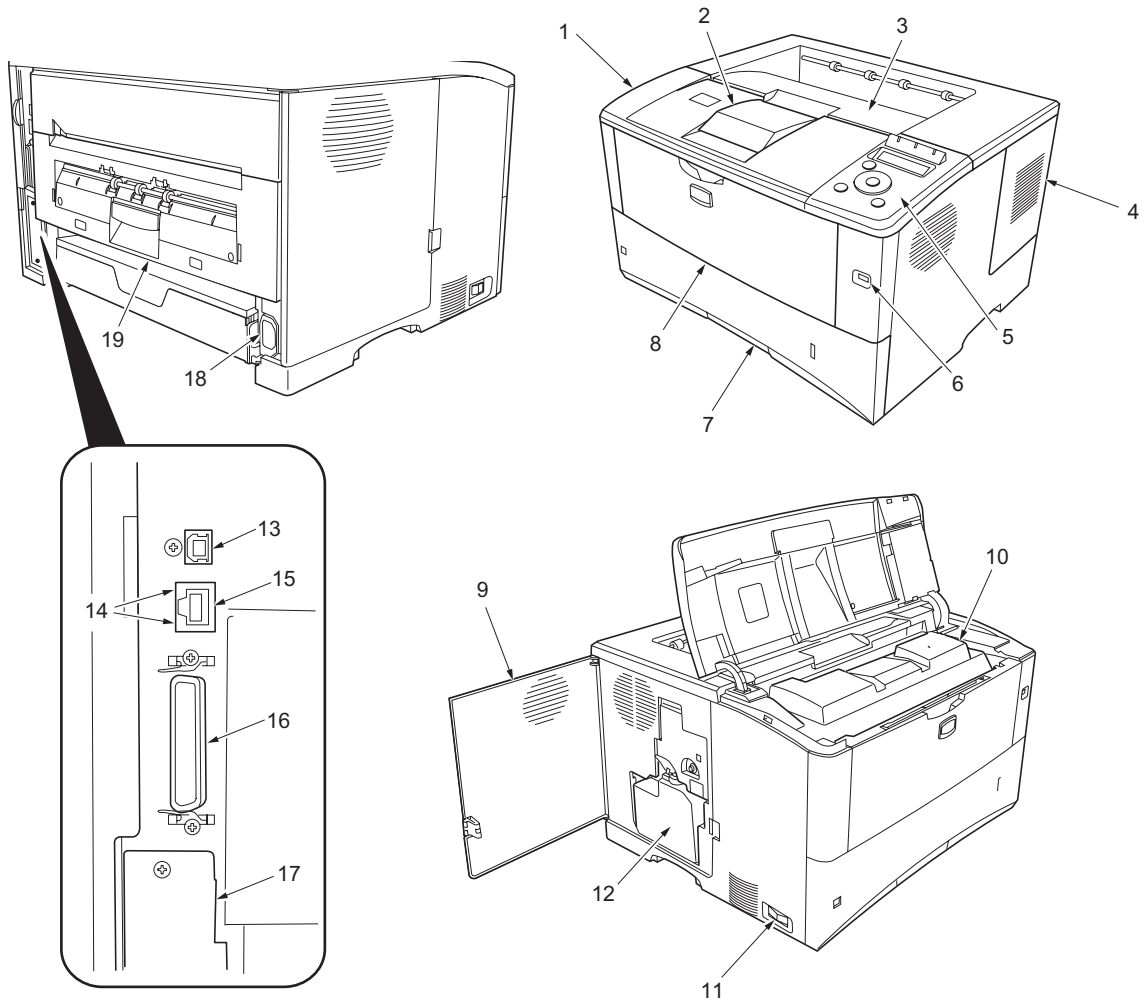

Figure 1-1-1

1. Top cover
2. Paper stopper
3. Top tray
4. Right side cover
5. Operation panel
6. USB memory slot
7. Paper cassette
8. MP (Multi-Purpose) tray
9. Left side cover
10. Toner container
11. Power switch
12. Waste toner box
13. USB interface connector
14. Network indicators
15. Network interface connector
16. Parallel interface connector
17. Option interface slot (Memory card/Hard disk)
18. AC inlet
19. Rear unit

(2) Operation panel

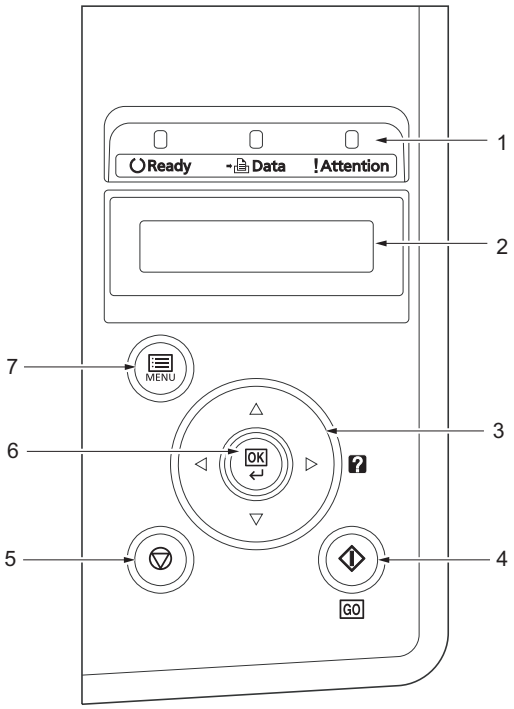

Figure 1-1-2

1. Indicators
2. Message display
3. Cursor keys
4. GO Key
5. Cancel Key
6. OK Key
7. MENU Key

1-1-3 Machine cross section

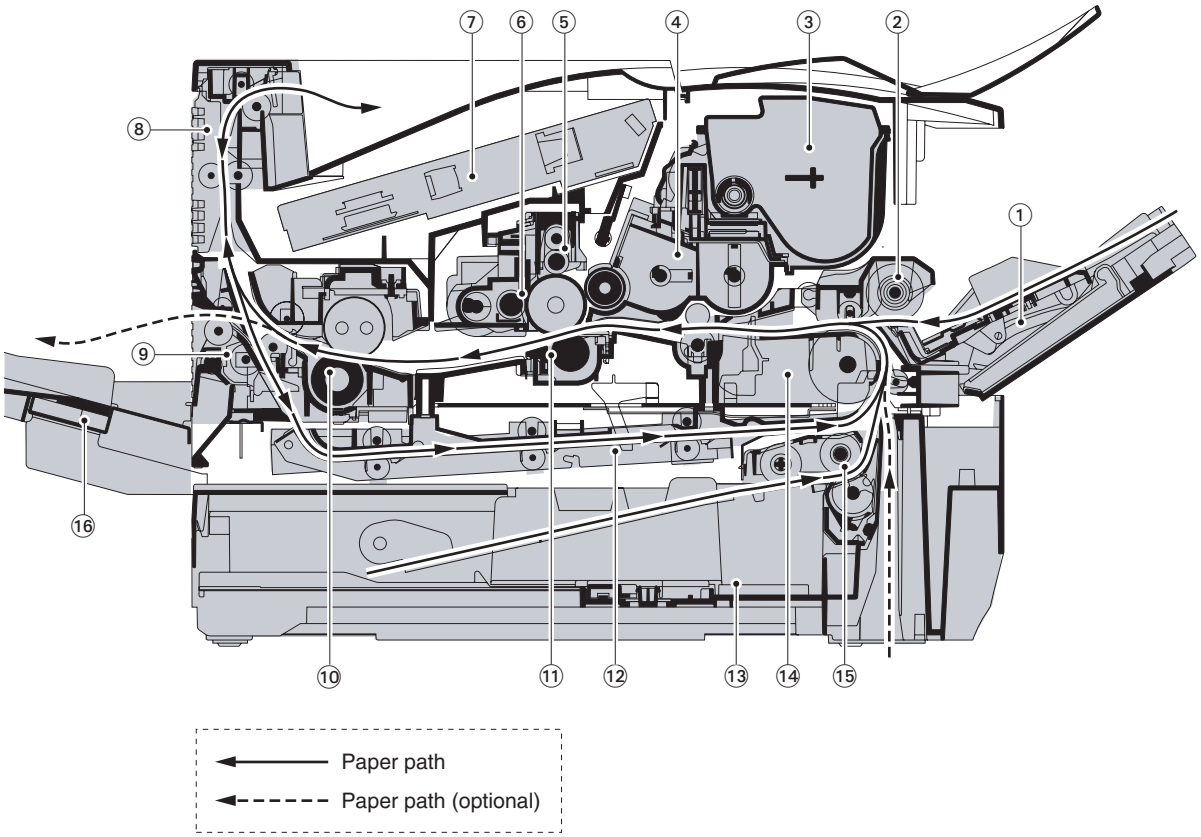

Figure 1-1-3 Machine cross section

1. MP (Multi-Purpose) tray
2. MP tray paper feed unit
3. Toner container
4. Developer unit
5. Main charger unit
6. Drum unit
7. Laser scanner unit
8. Paper exit section
9. Rear unit
10. Fuser unit
11. Transfer/separation section
12. Duplex paper conveying section
13. Paper cassette
14. Paper conveying section
15. Paper cassette paper feed section
16. Face-up tray (optional)

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1-2-1 Drum unit

Note the following when handling or storing the drum (drum unit).
Note the following when handling or storing the drum unit.

1. When removing the drum unit, never expose the drum surface to strong direct light.
2. Avoid abrupt changes in temperature and humidity.
3. Avoid exposure to any substance which is harmful to or may affect the quality of the drum.
4. Do not touch the drum surface with any object. Should it be touched by hands or stained with oil, clean it.

1-2-2 Developer unit and toner container

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

1-2-3 Installation environment

1. Temperature: 10 to 32.5°C/50 to 90.5°F
2. Humidity: 15 - 80%RH
3. Power supply: 220 - 240 V AC, 3.9 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.

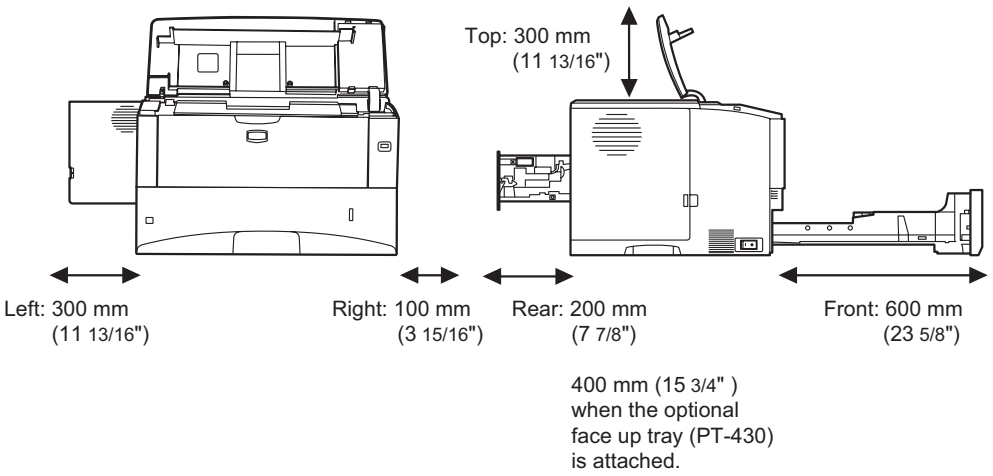

Figure 1-2-1

1-2-4 Unpacking and installation

(1) Unpacking

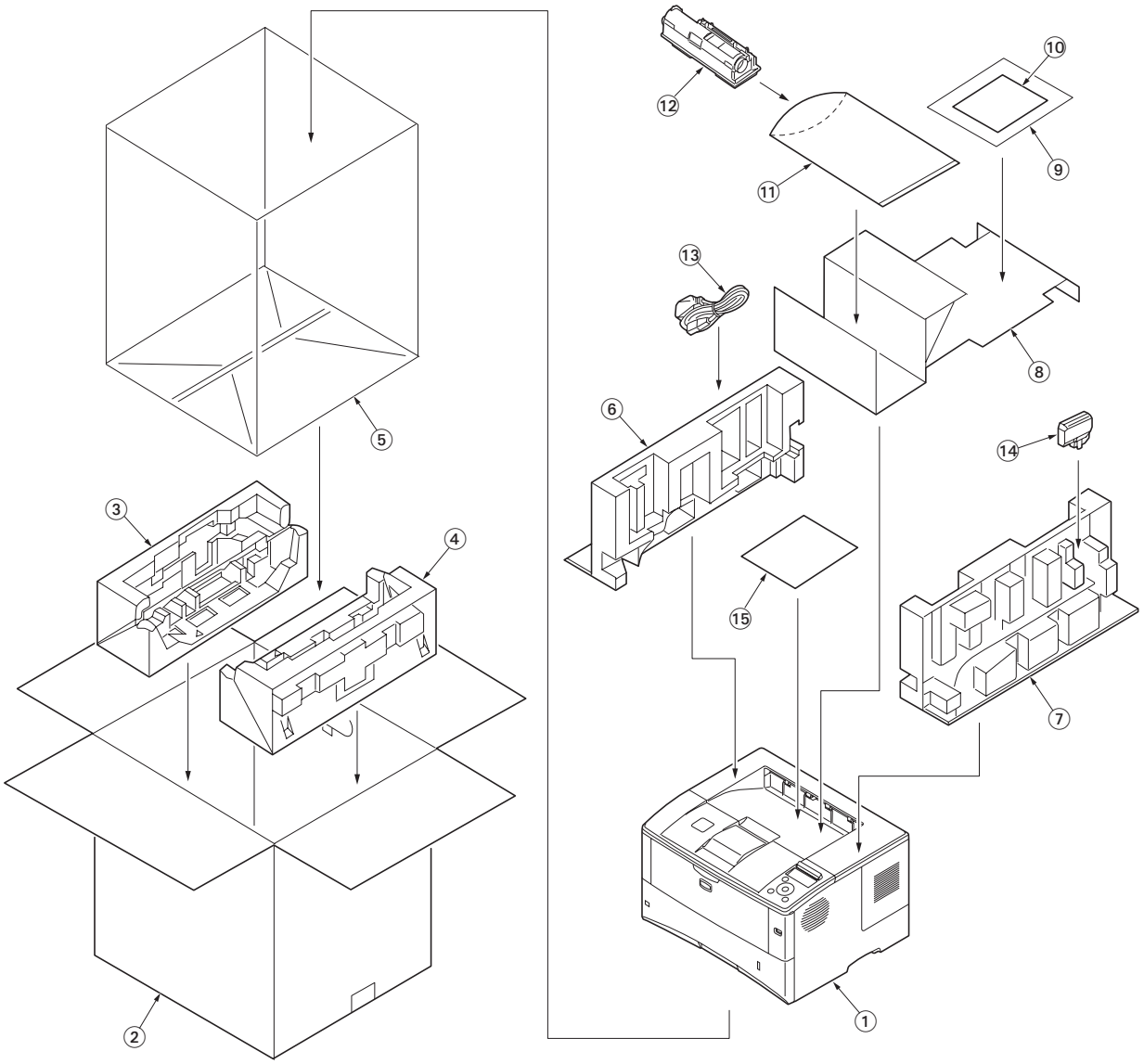

Figure 1-2-2 Unpacking

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. Accessory spacer
9. Plastic bag
10. Installation guide etc.
11. Plastic bag
12. Toner container
13. Power cord
14. Waste toner box
15. Leaflet

1-2-5 Installing the expanding memory (option)

<Procedure>

1. Power off the printer and unplug the printer power cord.
2. Open the right side cover.
3. Remove the screw and open the inner cover.

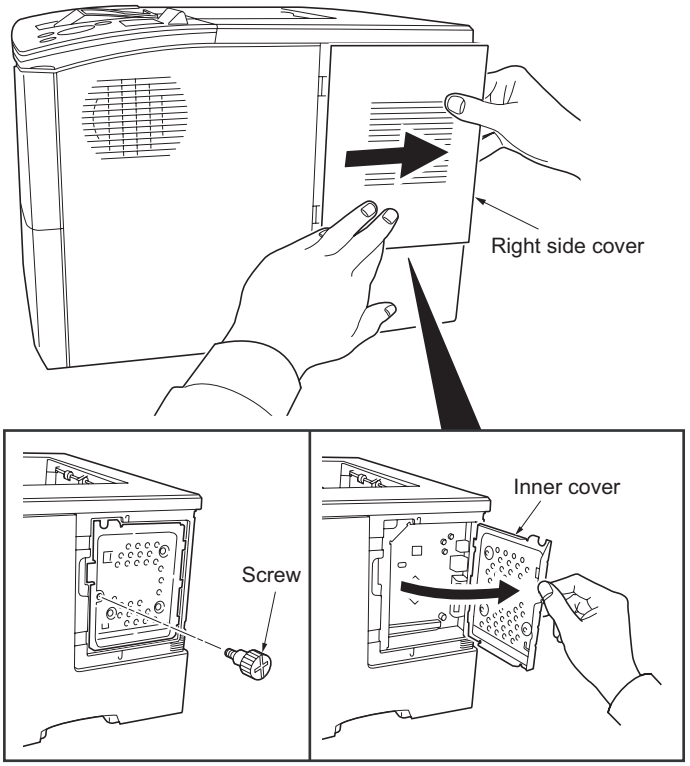

Figure 1-2-3

4. Aligning the cutouts of the memory module with the matching keys of the socket, carefully plug the memory module into the memory socket until it clicks in place.
5. Then, push down the memory module to secure.
6. Close and secure the inner cover by one screw.
7. Refit the right side cover.

Verifying the expanded memory

1. To verify that the memory module is working properly, test it by printing a status page.

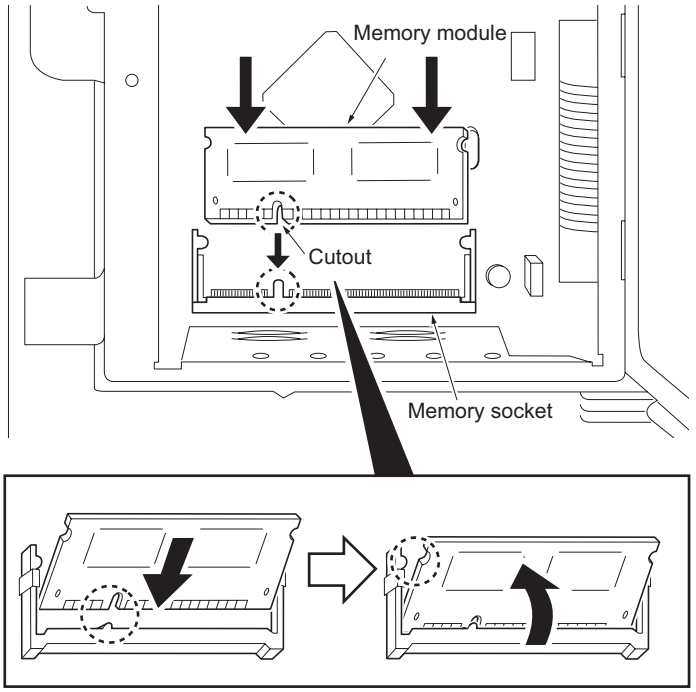

Figure 1-2-4

1-2-6 Installing the memory card (option)

<Procedure>

1. Turn off the printer and disconnect the power cord and printer cable.
2. Remove two screws and then open the option interface slot cover.
3. Install the memory card into the option interface slot.
4. Refit the option interface slot cover by two screws.

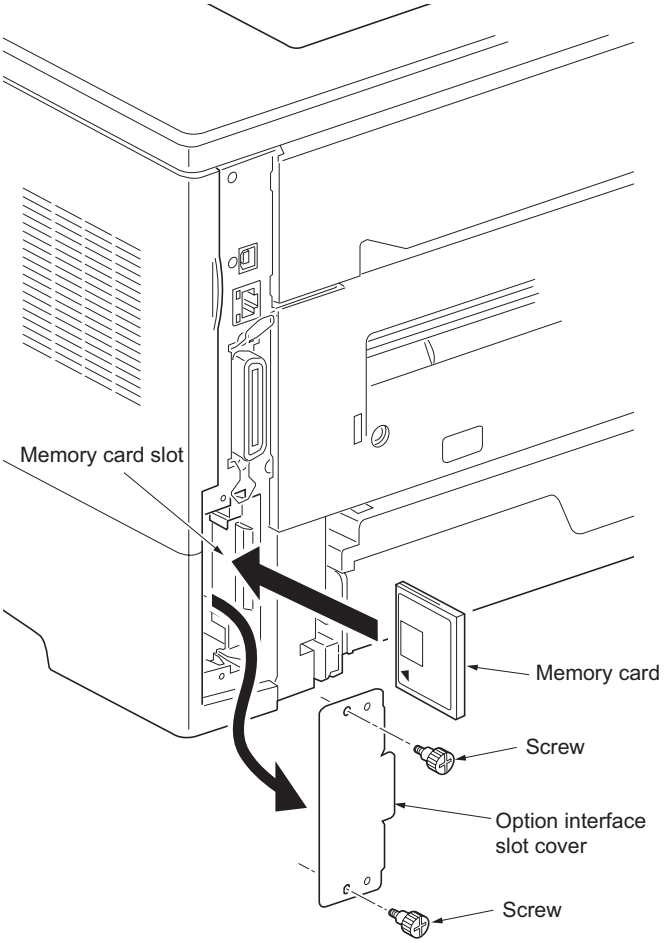

Figure 1-2-5

1-2-7 Installing the hard disk (option)

<Procedure>

1. Turn off the printer and disconnect the power cord and printer cable.
2. Remove two screws and then open the option interface slot cover.
3. Install the hard disk into the option interface slot.
4. Refit the option interface slot cover by two screws.

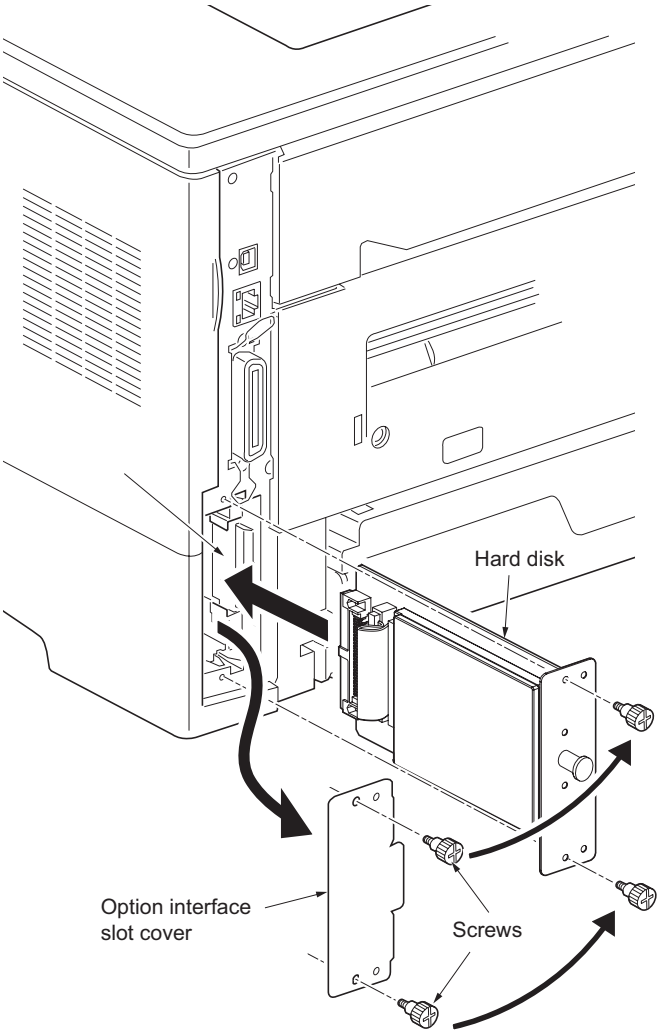

Figure 1-2-6

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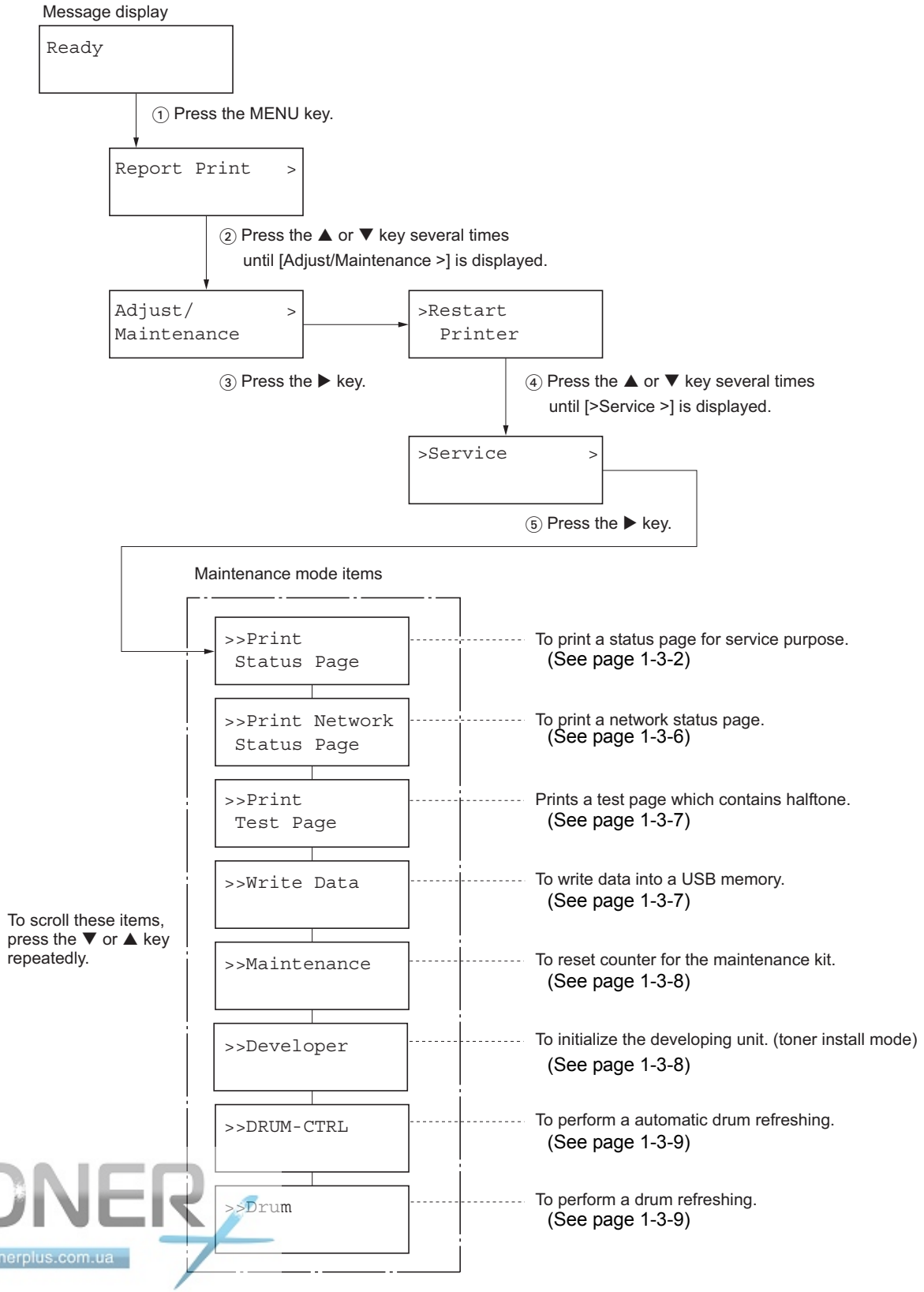
1-3-1 Maintenance mode

The printer is equipped with a maintenance function which can be used to maintain and service the machine.

(1) Executing a maintenance item



(2) Contents of maintenance mode items

Maintenance items	Description
>>Print Status Page	**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. Enter the maintenance mode [>>Print Status Page]. 2. Press the OK key. [Print Status Page?] will be displayed. 3. Press the OK key. Two pages will be printed. **Completion**

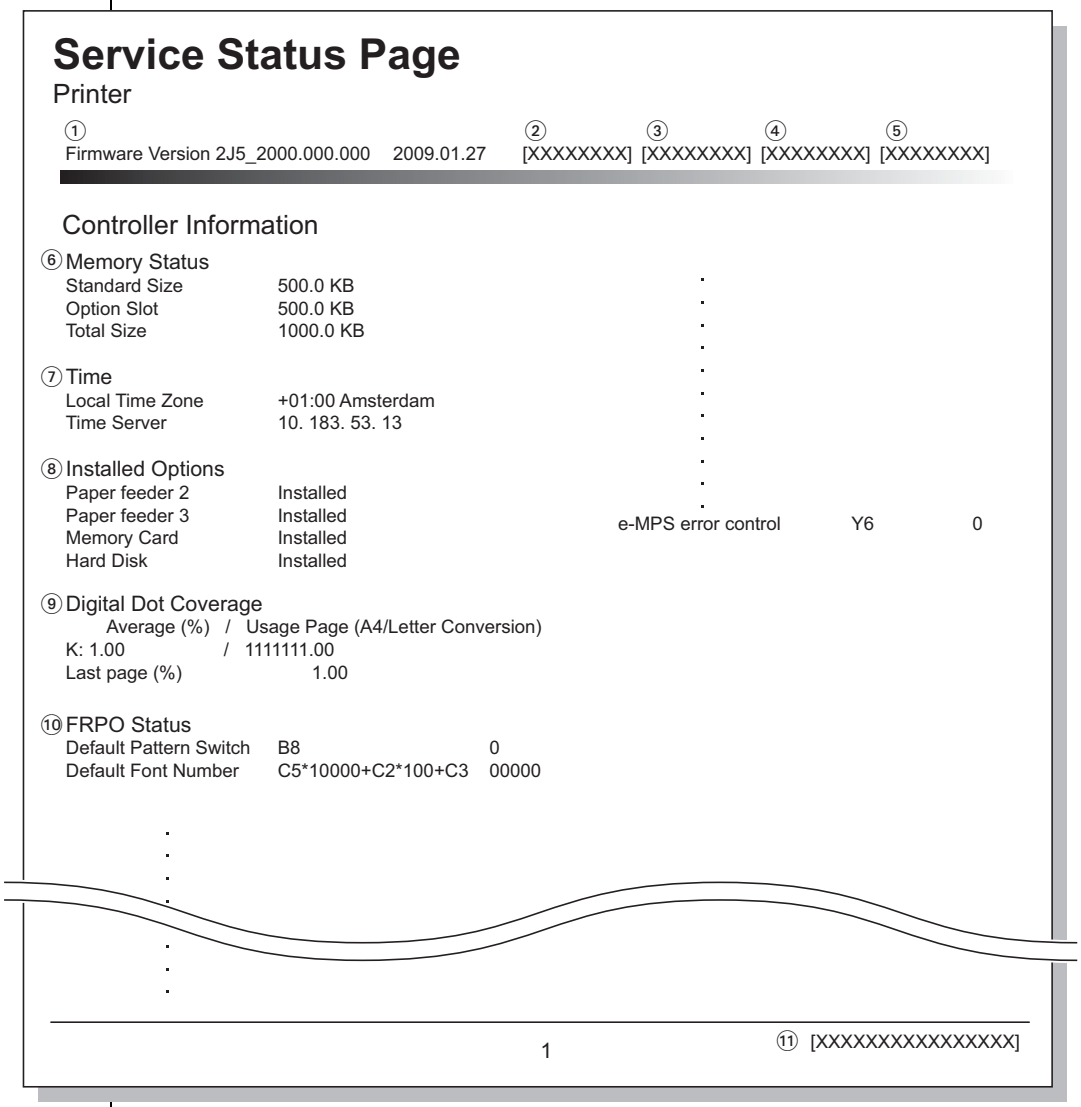


Figure 1-3-1Service status page (1)

Maintenance items	Description

Service Status Page

Printer

Firmware Version 2J5_2000.000.000 2009.01.27 [XXXXXXXX] [XXXXXXXX] [XXXXXXXX] [XXXXXXXX]

Engine Information

```
⑫ NVRAM Version     _1F31225_1F31225
⑬ MAC Address       00:00:00:00:00:00



   1/2 ⑭⑮
⑯ 100/100
⑰ 0/0/0/0/0/0/0/
⑱ 0/0/0/0/0/0/0/
⑲ 0/0/0/0/0/0/0/0/
⑳ 0000000/0000000/0000000/0000000/0000000/0000000/0000000/0000000/
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   F00/U00/0/0/0/0/70/00/00/00/00/abcde/1/  ㉑㉒㉓㉔㉕㉖㉗㉘㉙㉚㉛㉜㉝
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2 [XXXXXXXXXXXXXXXX]

Figure 1-3-2Service status page (2)

Maintenance items	Description
	Detail of service status page

No.	Items	Description
①	Firmware version	-
②	Engine software version	-
③	Engine boot version	-
④	Main ROM version	-
⑤	Panel mask version	-
⑥	Used memory	-
⑦	Local time zone	-
⑨	Digital Dot Coverage	Number of pages printed converted in reference to A4 or Letter size.
⑩	FRPO settings	-
⑪	Machine serial No.	-
⑫	NVRAM version	_ 1F3 1225 _ 1F3 1225 (a) (b) (c) (d) (e) (f) a) Consistency of the present software version and the database _ (underscore): OK * (Asterisk): NG (b) Database version (c) The oldest time stamp of database version (d) Consistency of the present software version and the ME firmware version _ (underscore): OK * (Asterisk): NG (e) ME firmware version (f) The oldest time stamp of the ME database version Normal if (a) and (d) are underscored, and (b) and (e) are identical with (c) and (f).
⑬	Mac address	-
⑭	Destination information	-
⑮	Area information	-
⑯	Margin settings	Top margin/Left margin
⑰	Top offset for each paper source	MP tray/Paper feeder 1/Paper feeder 2/Paper feeder 3/ Paper feeder 4/Duplex/Page rotation
⑱	Left offset for each paper source	MP tray/Paper feeder 1/Paper feeder 2/Paper feeder 3/ Paper feeder 4/Duplex/Page rotation
⑲	L value settings	Top margin (integer)/Top margin (decimal place)/Left margin (integer)/Left margin (decimal place)/Paper length (integer)/Paper length (decimal place)/Paper width (integer)/Paper width (decimal place)

Maintenance items	Description

No.	Items	Description	
⑳	Life counter (The first line)	Machine/MP tray/Printer cassette/Paper feeder 1/Paper feeder 2/ Paper feeder 3/Paper feeder 4/Duplex printing	
	Life counter (The second line)	Drum unit/Maintenance kit/	
㉑	Operation panel lock status	0: Off 1: Partial lock 2: Full lock	
㉒	USB information	0: Not connected 1: Full-Speed 2: Hi-Speed	
㉓	Paper handling information	0: Paper source unit select 1: Paper source unit	
㉔	Black and white printing double count mode	0: All single counts 3: Folio, Single count, Less the 330 mm (length)	
㉕	Billing counting timing	-	
㉖	Temperature (machine outside)	-	
㉗	Relative temperature (machine outside)	-	
㉘	Absolute temperature (machine outside)	-	
㉙	XLI calibration information	-	
㉚	Fixed asset number	-	
㉛	Laser beam-B BD synchronization exact adjustment value	-	
㉜	Laser beam-B BD synchronization exact adjustment value	-	
㉝	Setting at JOB end judgment time-out time in local IF	-	
㉞	Media type attributes 1 to 28 (Not used: 18, 19, 20)	Weight settings 0: Light 1: Normal 1 2: Normal 2 3: Normal 3 4: Heavy 1 5: Heavy 2 6: Heavy 3 7: Extra Heavy	Fuser settings 0: High 1: Middle 2: Low 3: Vellum Duplex settings 0: Disable 1: Enable

Maintenance items	Description

No.	Items	Description
㉟	SPD information	-
㊱	RFID information	-
㊲	RFID reader/writer version information	-
㊳	Toner install information	0: Off t: On
㊴	Engine parameter information	Hexadecimal, 512 bytes
㊵	Drum status	-
㊶	Drum surface potential	-
㊷	Drum sensitivity	-
㊸	Quantity of light	-
㊹	DRT parameter coefficient	-
㊺	Optional paper feeder software version	Paper feeder 1/Paper feeder 2/Paper feeder 3/Paper feeder 4
㊻	Optional font version	-
㊼	Optional table version	-
㊽	Optional message version	-
㊾	Optional WEB version	-
㊿	Drum ID	-
(51)	Drum 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

>>Print Network Status Page

Printing a status page for network

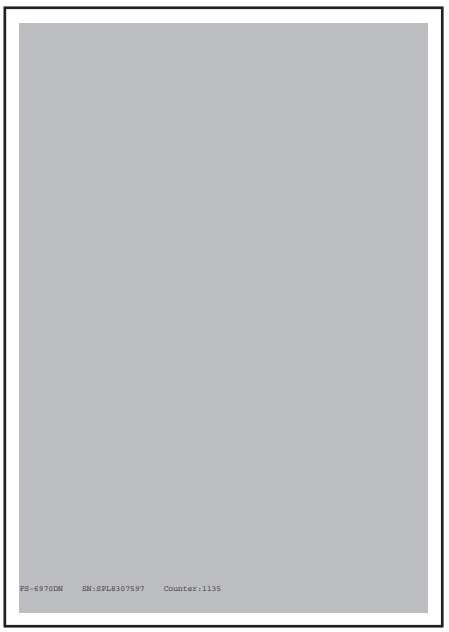
Description

On the status page for network, detailed network setting information is printed.

Procedure

1. Enter the maintenance mode [>>Print Network Status Page].
2. Press the OK key. [>>Print Network Status Page?] will be displayed.
3. Press the OK key. Three sheets of network status page will be printed.

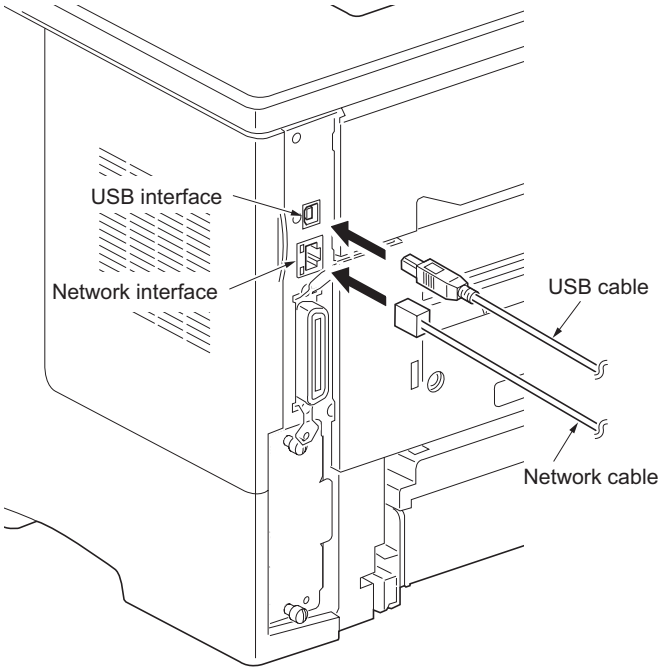
Completion

Maintenance items	Description
>>Print Test Page	**Printing a test page** **Description** Prints a test page which contains halftone. **Purpose** To check the activation of the developer unit and drum units. **Procedure** 1. Enter the maintenance mode [>>Print Test Page]. 2. Press the OK key. [>>Print Test Page?] will be displayed. 3. Press the OK key. A sheet of test page will be printed. **Completion**  **Figure 1-3-3 Test page**
>>Write Data	**Write data (USB memory data write)** **Description** To write data into a USB memory. **Procedure** Install the USB memory before attempting to write data. 1. Enter the maintenance mode [>>Write Data]. 2. Press the OK key. [>>Write Data?] will be displayed. 3. Press the OK key. [Data waiting] is displayed and the printer waits for data to be written. 4. When the data is sent, [Processing] appears and the data is written to USB memory. When data writing ends, the display returns to [Ready]. **Completion**

Maintenance items	Description
>>Maintenance	**Counter reset for the maintenance kit** **Description** The "Install MK" message means that maintenance kit should be replaced at 300,000 pages of printing. The interval counter must be manually reset using this service item. Maintenance kit MK-450 Maintenance kit includes the following units: Drum unit Developer unit Fuser unit Transfer roller Separation charger brush unit Paper feed system rollers **Purpose** To reset the life counter for the developer unit and drum unit included in maintenance kit. **Procedure for replacing the maintenance kit** Drum unit (See page 1-5-12) Developer unit (See page 1-5-11) Fuser unit (See page 1-5-16) Transfer roller (See page 1-5-14) Separation charger brush unit (See page 1-5-14) Paper feed system rollers: Paper feed assembly [paper feed roller and pickup roller] (See page 1-5-5) Retard roller (See page 1-5-6) **Procedure** 1. Enter the maintenance mode [>>Maintenance]. 2. Press the OK key. [>>Maintenance?] will be displayed. 3. Press the OK key twice. The counter for each component is reset immediately. **Completion** Note: Occurrences of resetting the maintenance kits are recorded on the service status page or event log in number of pages at which the maintenance kit was replaced (See page 1-3-2 or 1-3-10). This may be used to determine the possibility that the counter was errorneously or unintentionally reset.
>>Developer	**Initializing the developer unit (toner install mode)** **Description** The new developer unit is shipped from the factory with no toner contained. The developer unit can be automatically replete with toner when a toner container is installed onto it and the printer is turned on. However, because the toner reservoir in the developer unit has a large capacity, it requires a lengthy period of time until a substantial amount of toner has been fed to get the printer ready. (A new developer unit needs approximately 200 g for triggering the sensor inside.) **Purpose** To execute when the developer unit has been replaced. **Method** 1. Enter the maintenance mode [>>Developer]. 2. Press the OK key. [>>Developer?] will be displayed. 3. Press the OK key. [Ready] will be displayed. 4. Turn off and on the printer. [Self test] [Please wait (Adding toner)] will displayed. The printer continually engages in this mode for a period of approximately 10 minutes, after which the printer reverts to the [Ready] state. [Ready] will displayed. developer unit initialization is finished. **Completion**

Maintenance items	Description
>>DRUM-CTRL	**Automatic drum surface refreshing** **Description** The drum surface refreshing operation is normally performed when the power is turned on to the printer or during warm-up when the printer is recovering from the Sleep mode, but even then only at those times that the temperature/humidity sensor detects the drum surface to be in a state of dew condensation. By using this mode, it is possible to force the drum surface refreshing operation to be performed automatically at a predetermined period of time, regardless of the status detected by the temperature/humidity sensor. **Purpose** To prevent bleeding of the output image when the printer's operating environment is one of high humidity. **Method** 1. Enter the maintenance mode [>>DRUM-CTRL]. 2. Press the OK key. [>>DRUM-CTRL?] will be displayed. 3. Press the OK key. 4. Press the ▼ key or ▲ key and select the desire mode (from 00 to 02). 00 — Mode turned OFF (default) 01 — Refreshing operation time (short) 02 — Refreshing operation time (long) 5. Press the OK key. The new value is set. **Completion**
>>Drum	**Drum surface refreshing** **Description** Rotates the drum approximately 3 minutes with toner lightly on the overall drum using the high-voltage output control of the engine PWB. The cleaning blade in the drum unit scrapes toner off the drum surface to clean it. **Purpose** To clean the drum surface when image failure occurs due to the drum. This mode is effective when dew condensation on the drum occurs. **Method** 1. Enter the maintenance mode [>>Drum]. 2. Press the OK key. [>>Drum?] will be displayed. 3. Press the OK key. Drum surface refreshing will start and finish after approximately 3 minutes, after which the printer reverts to the [Ready] state. [Ready] will displayed. Drum surface refreshing is finished. **Completion**

(3) Printing an event log (EVENT LOG)

Service items	Description
Printing an event log (EVENT LOG)	**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 or network cable between printer and PC (network). 2. Connect the power cord.  **Figure 1-3-4** 3. Turn printer power on. Make sure the printer is ready. 4. Send the following PRESCRIBE command sequence from the PC to the printer. `!R!KCFG"ELOG";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. A sheet of event log will be printed. **Completion**

Service items	Description

Detail of event log

Event Log

Printer

① Firmware Version 2J5_2000.000.000 2009.01.27 ② [XXXXXXXX] ③ [XXXXXXXX] ④ [XXXXXXXX] ⑤ [XXXXXXXX]

⑦ Paper Jam Log

#	Count.	Event Descriptions
16	9999999	10. 01. 88. 01. 01
15	8888888	10. 01. 88. 01. 01
14	7777777	10. 01. 88. 01. 01
13	6666666	10. 01. 88. 01. 01
12	5555555	10. 01. 88. 01. 01
11	4444444	10. 01. 88. 01. 01
10	3333333	10. 01. 88. 01. 01
9	2222222	10. 01. 88. 01. 01
8	1111111	10. 01. 88. 01. 01
7	999999	10. 01. 88. 01. 01
6	888888	10. 01. 88. 01. 01
5	777777	10. 01. 88. 01. 01
4	666666	10. 01. 88. 01. 01
3	555555	10. 01. 88. 01. 01
2	444444	10. 01. 88. 01. 01
1	1	10. 01. 88. 01. 01

10. 01. 88. 01. 01
(a) (b) (c) (d) (e)

⑧ Service Call Log

#	Count.	Service Code
8	1111111	00. 0000
7	999999	00. 0000
6	888888	00. 0000
5	777777	00. 0000
4	666666	00. 0000
3	555555	00. 0000
2	444444	00. 0000
1	1	00. 0000

⑨ Maintenance Log

#	Count.	Item
		Log Data Nothing...

⑩ Unknown Toner Log

#	Count.	Item
5	1111111	00. 00
4	999999	00. 00
3	888888	00. 00
2	777777	00. 00
1	666666	00. 00

⑪ Counter Log

(f)

J00:	0	J13:	1	J25:	1		
J01:	1	J14:	1	J26:	1		
J02:	11	J15:	1	J27:	1		
J03:	222	J16:	1	J28:	1		
J04:	1	J17:	1	J29:	1		
J05:	1	J18:	1	J30:	1		
J06:	1	J19:	1	J31:	1		
J07:	1	J20:	1	J32:	1		
J08:	1	J21:	1	J33:	1		
J09:	1	J22:	1	J34:	1		
J10:	1	J23:	1	J35:	1		
J12:	999	J24:	1	J36:	1		

(g)

C0000:	0	C0012:	12
C0001:	1	C0013:	13
C0002:	2	C0014:	14
C0003:	3	C0015:	15
C0004:	4	C0016:	16
C0005:	5	C0017:	17
C0006:	6	C0018:	18
C0007:	7	C0019:	19
C0008:	8	C0020:	20
C0009:	9	C0021:	21
C0010:	10	C0022:	22
C0011:	11	C0023:	23

(h)

T00:	10
M01:	20

⑥ [XXXXXXXXXXXXXXXX]

Figure 1-3-5Event log

No.	Items	Description
①	Firmware version	-
②	Engine software version	-
③	Engine boot version	-
④	Main ROM version	-
⑤	Panel mask version	-
⑥	Machine serial No.	-

Service items	Description

No.	Items	Description		
⑦	Paper Jam Log	# Remembers 1 to 16 of occurrence. If the occurrence of the previous paper jam is less than 16, all of the paper jams are logged. When the occurrence excessed 16, the oldest occurrence is removed.	Count. The total page count at the time of the paper jam.	Event Log code (2 digit, hexadecimal, 5 categories) (a) Cause of a paper jam (b) Paper source (c) Paper size (d) Paper type (e) Paper exit

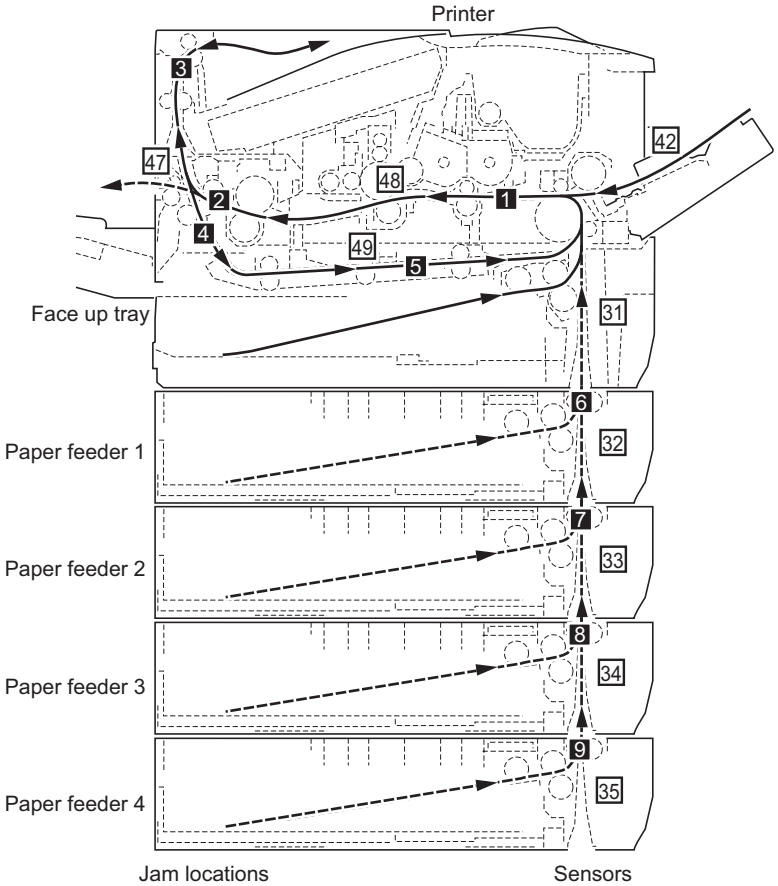
(a) Cause of paper jam

10: Paper does not arrive at the registration sensor. [42] (MP tray)
10: Paper does not arrive at the registration sensor. [31] (Printer's cassette)
10: Paper does not arrive at the registration sensor. [31] (Paper feeder 1)
10: Paper does not arrive at the registration sensor. [31] (Paper feeder 2)
10: Paper does not arrive at the registration sensor. [31] (Paper feeder 3)
10: Paper does not arrive at the registration sensor. [31] (Paper feeder 4)
10: Paper does not arrive at the registration sensor. [49] (Duplex conveying)
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 paper exit sensor. [48]
21: Paper does not pass the paper exit sensor. [47]
22: Paper remains at the paper exit sensor when power is turned on. [47]
30: Paper does not arrive at the paper feeder 1's paper feed sensor. [32] (Paper feeder 1)
30: Paper does not arrive at the paper feeder 1's paper feed sensor. [33] (Paper feeder 2)
30: Paper does not arrive at the paper feeder 1's paper feed sensor. [33] (Paper feeder 3)
30: Paper does not arrive at the paper feeder 1's paper feed sensor. [33] (Paper feeder 4)
31: Paper does not pass the paper feeder 1's paper feed sensor. [32]
32: Paper remains at the paper feeder 1's paper feed sensor when power is turned on. [32]
40: Paper does not arrive at the paper feeder 2's paper feed sensor. [33] (Paper feeder 2)
40: Paper does not arrive at the paper feeder 2's paper feed sensor. [34] (Paper feeder 3)
40: Paper does not arrive at the paper feeder 2's paper feed sensor. [34] (Paper feeder 4)
41: Paper does not pass the paper feeder 2's paper feed sensor. [33]
42: Paper remains at the paper feeder 2's paper feed sensor when power is turned on. [33]
50: Paper does not arrive at the paper feeder 3's paper feed sensor. [34] (Paper feeder 3)
50: Paper does not arrive at the paper feeder 3's paper feed sensor. [35] (Paper feeder 4)
51: Paper does not pass the paper feeder 3's paper feed sensor. [34]
52: Paper remains at the paper feeder 3's paper feed sensor when power is turned on. [34]
60: Paper does not arrive at the paper feeder 4's paper feed sensor. [35] (Paper feeder 4)
61: Paper does not pass the paper feeder 4's paper feed sensor. [35]
62: Paper remains at the paper feeder 4's paper feed sensor when power is turned on. [35]
A1: Paper does not arrive at the duplex sensor. [47] (Rear unit)
A2: Paper does not pass the duplex sensor. [47] (Rear unit)
A3: Paper does not arrive at the duplex jam sensor. [49] (Duplex conveying)
A4: Paper does not pass the duplex jam sensor. [49] (Duplex conveying)
A5: Paper remains at the duplex jam sensor when power is turned on. [49]
E0: Paper misfeed occurs due to forced stop when an error occurs during printing. (such as opening of a cover) [00]
E1: The length of paper is shorter than designated for the paper cassette. [47]
E2: A5 lengthwise paper has been fed despite the paper cassette is set to A4 width wise (see reference 1 below). [00]
E3: Paper cassette 1 was opened in the middle of duplex printing (see reference 2 below). [49]
F0: Paper does not arrive at the face down tray paper full sensor. [47]
F1 to FE: Paper misfeed by another cause. [00]

Note:
Values (hexadecimal) within [ ] indicate paper misfeed locations.

Service items	Description

No.	Items	Description
⑦ cont.	Paper Jam Log	Reference 1: Widthwise A4 size and lengthwise A5 are identical in length, however, the fuser temperature differs. Detecting the fuser temperature depending on this temperature difference allows detection of paper misfeed due to a wrong paper size. Reference 2: The DU cover of the duplex paper conveying section is designed to operate as being held against the main unit as the paper cassette is installed. (Paper feeding fails when the paper cassette is not properly installed because of the resultant space between the DU cover and the main unit.) Therefore, paper jam occurs if the paper cassette is opened in the middle of duplex printing. Detail of jam location (Hexadecimal)



<table>
<tr><th>Service items</th><th>Description</th></tr>
<tr><td></td><td>
<table>
<tr><th>No.</th><th>Items</th><th>Description</th></tr>
<tr><td>⑦
cont.</td><td>Paper Jam Log</td><td>(b) Detail of paper source (Hexadecimal)

00: MP tray
01: Paper cassette 1 (printer)
02: Paper cassette 2 (paper feeder 1)
03: Paper cassette 3 (paper feeder 2)
04: Paper cassette 4 (paper feeder 3)
05: Paper cassette 5 (paper feeder 4)
06: -
07: -
08: -
09: -</td></tr>
<tr><td></td><td></td><td>(c) Detail of paper size (Hexadecimal)

01: Monarch
02: Business
03: International DL
04: International C5
05: Executive
06: Letter-R
86: Letter-E
07: Legal
08: A4R
88: A4E
09: B5R
89: B5E
0A: A3
0B: B4
0C: Ledger
0D: A5R
8D: A5E
0E: A6
0F: B6
10: Commercial #9
11: Commercial #6
12: ISO B5
13: Custom size
1E: C4
1F: Postcard
20: Reply-paid postcard
21: Oficio II
22: Special 1
23: Special 2
24: A3 wide
25: Ledger wide
26: Full bleed paper (12 × 8)
27: 8K
28: 16K-R
A8: 16K-E
32: Statement-R
B2: Statement-E
33: Folio
34: Western type 2
35: Western type 4</td></tr>
<tr><td></td><td></td><td>(d) Detail of paper type (Hexadecimal)

01: Plain
02: Transparency
03: Preprint
04: Labels
05: Bond
06: Recycle
07: Vellum
08: Rough
09: Letter head
0A: Color
0B: Prepunched
0C: Envelope
0D: Cardstock
0E: Coated
0F: 2nd side
10: Media 16
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</td></tr>
<tr><td></td><td></td><td>(e) Detail of paper exit location (Hexadecimal)

01: Face down tray (FD)
02: Face up tray (FU)
03 to 48: -</td></tr>
<tr><td>⑧</td><td>Service Call (Self diagnostic error) Log</td><td>#

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.

Count.

The total page count at the time of the self diagnostics error.

Service Code

Self diagnostic error code (See page 1-4-2)

Example
01.6000

01 means a self-diagnostic error; 6000 means a self diagnostic error code.</td></tr>
</table>
</td></tr>
</table>

Service items	Description

No.	Items	Description		
⑨	Maintenance Log	# 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.	Count. 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” or “Install MK” condition since the replacement of the toner container is not precisely detectable.	Item Code of maintenance replacing item (1 byte, 2 categories) First byte (Replacing item) 01: Toner container Second byte (Type of replacing item) 00: (Fixed) First byte (Replacing item) 02: Maintenance kit Second byte (Type of replacing item) 01: Fixed (MK-450)
⑩	Unknown Toner Log	# 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.	Count. The total page count at the time of the “Toner Empty” error with using an unknown toner container.	Item Unknown toner log code (1 byte, 2 categories) First byte 01: Fixed (Toner container) Second byte 00: (Fixed)
⑪	Counter Log Comprised of three log counters including paper jams, self diagnostics errors, and replacement of the toner container.	(f) Jam Indicates the log counter of paper jams depending on location. Refer to Paper Jam Log. All instances including those are not occurred are displayed.	(g) Self diagnostic error Indicates the log counter of self diagnostics errors depending on cause. (See page 1-4-2) Example C6000: 4 Self diagnostics error 6000 has happened four times.	(h) Maintenance item replacing Indicates the log counter depending on the maintenance item for maintenance. T: Toner container 00: Black M: Maintenance kit 00: (Fixed) Example T00: 1 The (black) toner container has been replaced once. This is virtually logged as the occurrence of the” Toner Empty” or “Install MK” condition.

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1-4-1 Paper misfeed detection

(1) Paper misfeed indication

When a paper misfeed occurs, the printer immediately stops printing and displays the paper misfeed message on the operation panel. To remove paper misfed in the printer, pull out the paper cassette, pull out the rear unit, remove the developer unit or open the duplex cover.

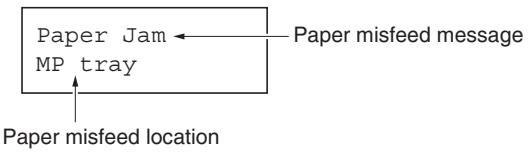


Figure 1-4-1

(2) Paper misfeed detection

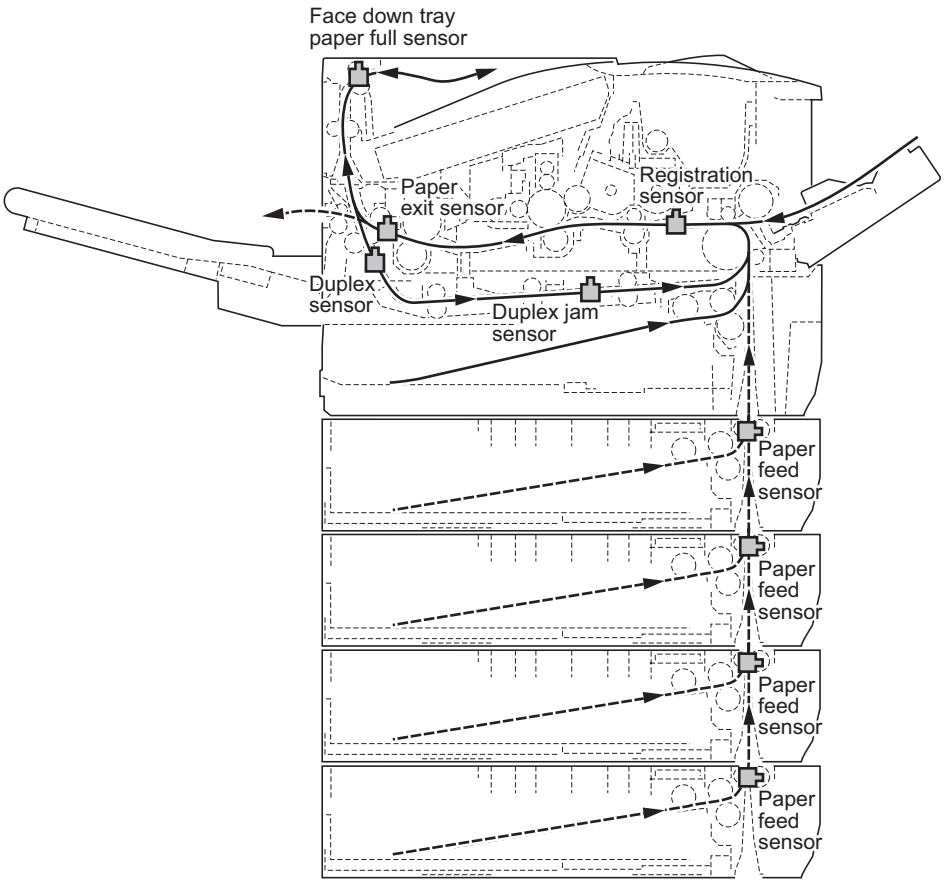
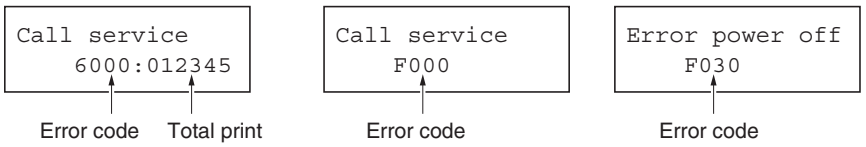


Figure 1-4-2

1-4-2 Self-diagnostic function

(1) Self-diagnostic function

This printer is equipped with self-diagnostic function. When a problem is detected, the printer stops printing and display an error message on the operation panel. An error message consists of a message prompting a contact to service personnel, total print count, and a four-digit error code indicating the type of the error. (The display varies depending on the type of the error.)



(2) Self diagnostic codes

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
0100	**Backup memory device error**	Defective flash memory.	Replace main PWB (See page 1-5-27).
		Defective main PWB.	Replace main PWB (See page 1-5-27).
0110	**Backup memory data error**	Defective flash memory.	Replace main PWB (See page 1-5-27).
		Defective main PWB.	Replace main PWB (See page 1-5-27).
0120	**MAC address data error**	Defective flash memory.	Replace the engine PWB (See page 1-5-23).
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
0150	**Engine PWB EEPROM error** Detecting engine PWB EEPROM communication error.	Improper installation engine PWB EEPROM.	Check the engine PWB EEPROM installation, Remedy.
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
0170	**Billing counting error**	Defective main PWB.	Replace main PWB (See page 1-5-27).

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
0420	**Paper feeder communication error** Communication error between engine PWB and optional paper feeder.	Improper installation paper feeder.	Follow installation instruction carefully again.
		Defective harness between connect-L PWB (YC2) and paper feeder interface connector, or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
		Defective harness between connect-L PWB (YC6) and engine PWB (YC504), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
		Defective paper feeder.	Replace the paper feeder.
2000	**Main motor error** MMOTRDYN signal does not go low within 2 s after MMOTONN signal goes low.	Defective harness between main motor and engine PWB (YC501), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
		Defective main motor drive transmission system.	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.
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
2200	**Drum motor error** DMOTRDYN signal does not go low within 2 s after DMOTONN signal goes low.	Defective harness between drum motor and engine PWB (YC11), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
		Defective drum motor drive transmission system.	Check if the gears rotate smoothly. If not, grease the bushings and gears. Check for broken gears and replace if any.
		Defective drum motor.	Replace the drum motor.
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
4000	**Polygon motor (laser scanner unit) error** POLRDYN signal does not go low within 10 s after POLONN signal goes low.	Defective harness between polygon motor and main PWB (YC11), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
		Defective harness between main PWB (YC12) and engine PWB (YC12), 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 1-5-35).
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
		Defective main PWB.	Replace the main PWB (See page 1-5-27).
4200	**Laser output (pin photo sensor) error** The pin photo signal (PDN) is not output within a specified time after the polygon motor ready signal (POLRDYN) becomes ready (L level).	Defective harness between PD PWB (YC1) and main PWB (YC16), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
		Defective APC PWB.	Replace the laser scanner unit (See page 1-5-35).
		Defective PD PWB.	Replace the laser scanner unit (See page 1-5-35).
		Defective main PWB.	Replace the main PWB (See page 1-5-27).
5100	**Short-circuited main charger output** Five pages have been printed with the main charger output short-circuited.	Drum unit installed incorrectly.	Verify harness is not pinched in the drum unit.
		Engine PWB installed incorrectly.	Verify harness is not pinched in the engine PWB.
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
6000	**Broken fuser heater lamp M wire** The temperature does not reach 100°C/212°F after the fuser heater lamp M has been turned on continuously for 30 s. The detected temperature of fuser thermistor M/S does not rise 1°C/1.8°F after fuser heater lamp has been turned on continuously for 15 s. However, the signal will not be detected when the detected temperature of fuser thermistor M is 200°C/392°F or more.	Poor contact in the fuser thermistor M connector terminals.	Reinsert the connector (See page 1-5-21).
		Fuser thermistor M installed incorrectly.	Check and reinstall if necessary (See page 1-5-21).
		Thermal cutout triggered.	Check for continuity. If none, replace the thermal cutout (See page 1-5-21).
		Fuser heater lamp installed incorrectly.	Check and reinstall if necessary (See page 1-5-17).
		Broken fuser heater lamp wire.	Check for continuity. If none, replace the fuser heater lamp M (See page 1-5-17).

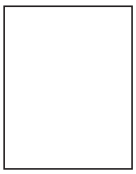
Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
6020	**Abnormally high fuser thermistor S temperature** The temperature of the fuser thermistor S detects 250°C/482°F or more continuously for 3 s.	Shorted fuser thermistor S.	Measure the resistance. If it is 0 Ω, replace the fuser thermistor S (See page 1-5-21).
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
6030	**Broken fuser thermistor S wire** The detected temperature of fuser thermistor S is 50°C/122°F or more and input from fuser thermistor S is 1 less than 1 (A/D value) continuously for 1.8 second. Except when the fuser heater is turned off.	Poor contact in the fuser thermistor S connector terminals.	Reinsert the connector (See page 1-5-21).
		Broken fuser thermistor S wire.	Measure the resistance. If it is ∞ Ω, replace the fuser thermistor S (See page 1-5-21).
		Fuser thermistor S installed incorrectly.	Check and reinstall if necessary (See page 1-5-21).
		Thermal cutout triggered.	Check for continuity. If none, replace the thermal cutout (See page 1-5-21).
		Fuser heater lamp installed incorrectly.	Check and reinstall if necessary (See page 1-5-17).
		Broken fuser heater lamp wire.	Check for continuity. If none, replace the fuser heater lamp M (See page 1-5-17).
6220	**Abnormally high fuser thermistor M temperature** The temperature of the fuser thermistor M detects 255°C/482°F or more continuously for 3 s.	Shorted fuser thermistor M.	Measure the resistance. If it is 0 Ω, replace the fuser thermistor M (See page 1-5-21).
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
6230	**Broken fuser thermistor M wire** The detected temperature of fuser thermistor S is 50°C/122°F or more and input from fuser thermistor S is 1 less than 1 (A/D value) continuously for 1.8 second. Except when the fuser heater is turned off.	Poor contact in the fuser thermistor M connector terminals.	Reinsert the connector (See page 1-5-21).
		Broken fuser thermistor M wire.	Measure the resistance. If it is ∞ Ω, replace the fuser thermistor M (See page 1-5-21).
		Fuser thermistor M installed incorrectly.	Check and reinstall if necessary (See page 1-5-21).
		Thermal cutout triggered.	Check for continuity. If none, replace the thermal cutout (See page 1-5-21).
		Fuser heater lamp installed incorrectly.	Check and reinstall if necessary (See page 1-5-17).
		Broken fuser heater lamp wire.	Check for continuity. If none, replace the fuser heater lamp M (See page 1-5-17).

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
6400	**Zero cross signal error** The ZCROSS signal does not reach the engine PWB for more than 2 s.	Defective harness between connect-L PWB (YC8) and engine PWB (YC503), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
		Defective connection between power source unit (YC103) and connect-L PWB (YC1).	Reinsert the connector.
		Defective power source unit.	Replace the power source unit (See page 1-5-29).
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
7000	**Toner motor lock error** A motor over-current signal is detected continuously for 5 seconds since the toner motor is activated.	Lump of toner inside toner container.	Replace the toner container.
		Defective toner replenishment drive system.	Replace the developer unit (See page 1-5-11).
		Defective toner motor.	Replace the developer unit (See page 1-5-11).
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
7410	**Drum unit non- installing error** The drum unit is not installed or not installed properly. The drum PWB EEPROM does not communicate normally.	The drum unit is not installed.	Install the drum unit (See page 1-5-12).
		Defective connection drum PWB (YC1) and connect-L PWB (YC3).	Check the connection of connectors drum PWB (YC1) and connect-L PWB (YC3). (See page 1-4-10, refer to figure 1-4-5)
		Defective drum PWB EEPROM.	Replace the drum unit (See page 1-5-12).
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
F0 F000	**Communication problem between the main PWB and operation panel PWB** Communication is failed between the operation panel PWB and the main PWB.	Defective main PWB.	Turn the power switch off/on to restart the printer. If the error is not resolved, replace main PWB (See page 1-5-27).
		Defective operation panel PWB.	Replace the operation panel PWB.
F010	**Main PWB checksum error**	Defective main PWB.	Turn the power switch off/on to restart the printer.
			In recovery mode, download the controller firmware using a CompactFlash card. In recovery mode, only a CompactFlash card is usable, not a USB memory.
			Replace main PWB (See page 1-5-27).

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
F020	**Main or expanded memory error** Checksum failed with main memory (RAM) on the main PWB or expanded memory (DIMM).	Defective system main memory (RAM) on the main PWB.	Turn the power switch off/on to restart the printer. If the error is not resolved, replace main PWB (See page 1-5-27).
		Defective expanded memory (DIMM).	Replace the expanded memory (DIMM) (See page 1-2-3).
F030	**General failure**	Defective mainPWB.	Turn the power switch off/on to restart the printer. If the error is not resolved, replace main PWB (See page 1-5-27).
F040	**Main PWB - engine PWB communication error** Communication between main PWB and engine PWB is failed.	Defective harness between engine PWB (YC12) and main PWB (YC12), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
		Defective main PWB.	Turn the power switch off/on to restart the printer. If the error is not resolved, replace main PWB (See page 1-5-27).
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
F050	**Engine PWB ROM checksum error** A checksum error occurred with ROM on the engine PWB.	Some error may have occurred when downloading the firmware of the engine PWB.	Download the firmware of the engine PWB again using the memory card (See page 1-6-3).
		Defective ROM on the engine PWB.	Turn the power switch off/on to restart the printer. If the error is not resolved, replace the EEPROM on the engine PWB or engine PWB (See page 1-5-23).
F226	**Main PWB video data control error**	Defective mainPWB.	Turn the power switch off/on to restart the printer. If the error is not resolved, replace main PWB (See page 1-5-27).

1-4-3 Image formation problems

(1)Completely blank printout.

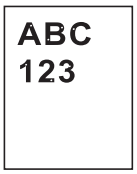


See page 1-4-9

(2)All-black printout.

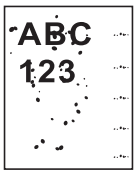
See page 1-4-10

(3)Dropouts.



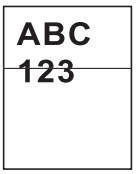
See page 1-4-11

(4)Black dots.



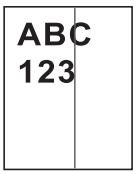
See page 1-4-11

(5)Black horizontal streaks.



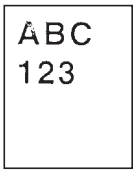
See page 1-4-12

(6)Black vertical streaks.



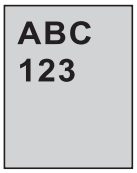
See page 1-4-12

(7)Unsharpness.



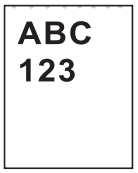
See page 1-4-12

(8)Gray background.



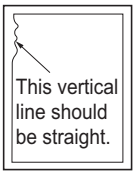
See page 1-4-13

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



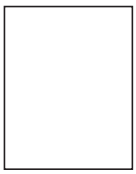
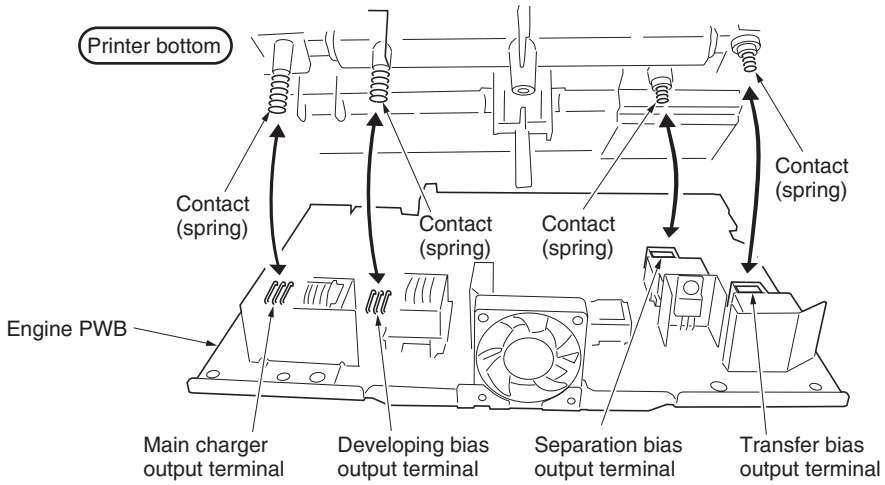
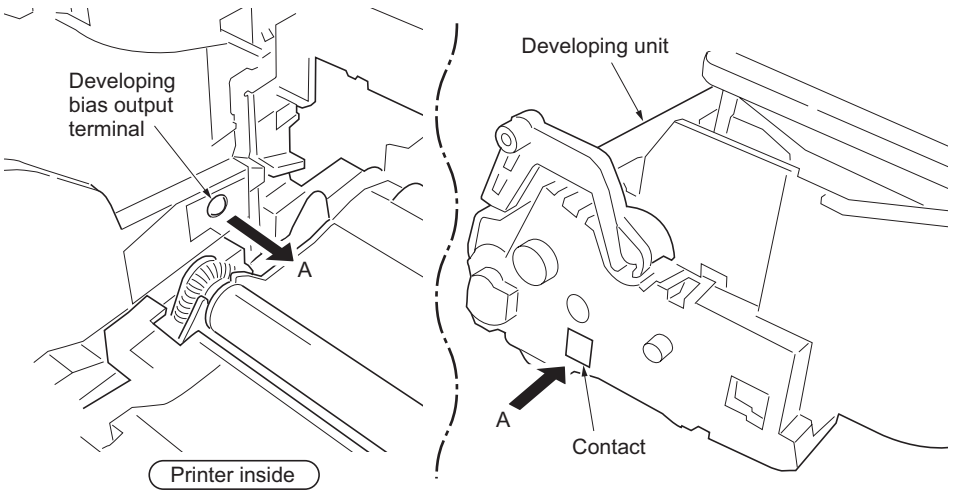
See page 1-4-13

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

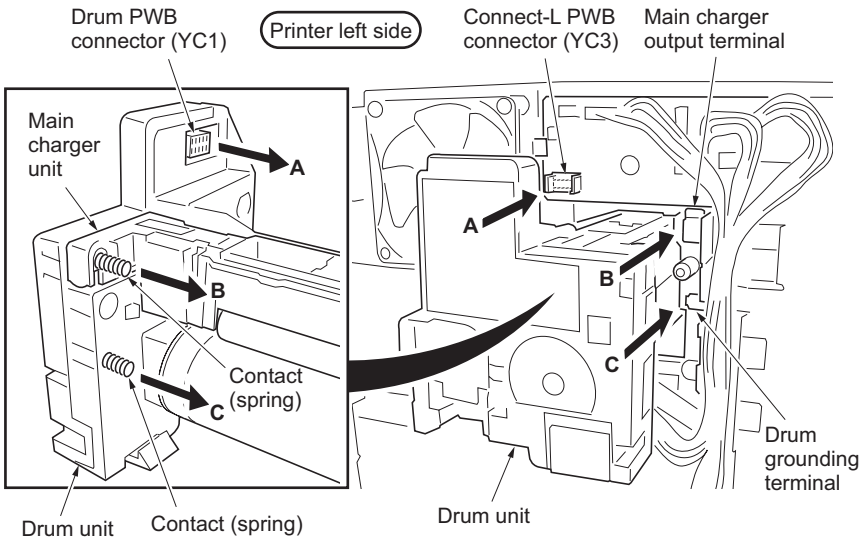


See page 1-4-13

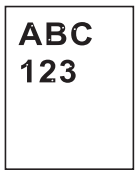
(1) Completely blank printout.

Print example	Causes		Check procedures/corrective measures
	No transfer charging.	Poor contact of engine PWB's transfer bias output terminal and printer's contact (spring).	Check the installation position of the engine PWB. Refer to figure 1-4-3 below.
		 **Figure 1-4-3**	
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
	No developing bias output.	Poor contact of engine PWB's developing bias output terminal and printer's contact (spring).	Check the installation position of the engine PWB (Refer to figure1-4-3 above and 1-5-23).
		Poor contact of engine PWB's developing bias output terminal and developer unit's contact.	Check the installation of the developer unit. Refer to figure 1-4-4 below.
		 **Figure 1-4-4**	
	No laser beam output.	Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
		Defective laser scanner unit.	Replace the laser scanner unit (See page 1-5-35).
		Defective main PWB.	Replace the main PWB (See page 1-5-27).

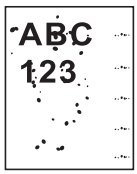
(2) All-black printout.

Print example	Causes		Check procedures/corrective measures
	No main charging.	Defective main charger unit.	Replace the main charger unit (See page 1-5-13).
		Poor contact of engine PWB's main charger output terminal and main charger unit's contact (spring).	Check the installation of the drum (main charger) unit (Refer to figure 1-4-5 below and 1-5-12).
		 **Figure 1-4-5**	
		Poor contact of engine PWB's main charger output terminal and printer's contact (spring).	Check the installation position of the engine PWB. (See page 1-5-23 and 1-4-9 refer to figure 1-4-3)
		Defective engine PWB.	Replace the engine PWB (See page 1-5-23).

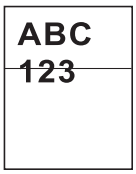
(3) Dropouts.

Print example	Causes	Check procedures/corrective measures
	Defective developing roller (developer unit).	If the defects occur at regular intervals of 39 mm/1 9/16" (See page 2-4-1), the problem may be the damaged developing roller (in the developer unit). Replace developer unit. If a developer unit which is known to work normally is available for check, replace the current developer unit in the printer with the normal one. If the symptom disappears, replace the developer unit with a new one (See page 1-5-11).
	Defective drum (drum unit).	If the defects occur at regular intervals of 94 mm/3 11/16" (See page 2-4-1), the problem may be the damaged drum (in the drum unit). Replace drum unit. If a drum unit which is known to work normally is available for check, replace the current drum unit in the printer with the normal one. If the symptom disappears, replace the drum unit with a new one (See page 1-5-12).
	Fuser unit (heat roller or press roller).	If the defects occur at regular intervals of 82 mm/3 1/4" or 93 mm/3 11/16" (See page 2-4-1), the problem may be the damaged heat roller or press roller (in the fuser unit). Replace fuser unit (heat roller or press roller). If a fuser unit which is known to work normally is available for check, replace the current fuser unit in the printer with the normal one. If the symptom disappears, replace the fuser unit (heat roller or press roller) with a new one (See page 1-5-16, 1-5-19 and 1-5-20).
	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 1-5-14).
	Defective engine PWB (transfer bias output circuit).	Replace the engine PWB (See page 1-5-23).

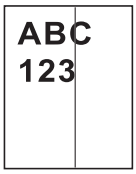
(4) Black dots.

Print example	Causes	Check procedures/corrective measures
	Defective drum unit.	If the defects occur at regular intervals of 94 mm/3 11/16" (See page 2-4-1), the problem may be the damaged drum (in the drum unit). Replace drum unit. If the defects occur at random intervals, the toner may be leaking from the developer unit or drum unit. Replace developer unit or drum unit (See page 1-5-11 or 1-5-12).

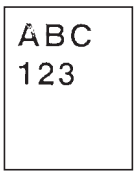
(5) Black horizontal streaks.

Print example	Causes	Check procedures/corrective measures
	Defective drum unit's ground.	Defective drum unit's ground. The contact (spring) in the drum unit and its counter part, the drum grounding terminal in the printer, must be in a good contact. (See page 1-4-9, refer to figure 1-4-3)
	Defective drum unit.	If a drum unit which is known to work normally is available for check, replace the current drum unit in the printer with the normal one. If the symptom disappears, replace the drum unit with a new one (See page 1-5-12).

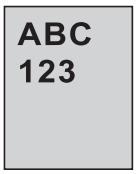
(6) Black vertical streaks.

Print example	Causes	Check procedures/corrective measures
	Flawed main charger roller.	Replace the main charger unit (See page 1-5-13).
	Dirty or flawed drum.	Clean the drum or, if it is flawed, replace the drum unit (See page 1-5-12).
	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. If a drum unit which is known to work normally is available for check, replace the current drum unit in the printer with the normal one. If the symptom disappears, replace the drum unit with a new one (See page 1-5-12).
	Defective developing roller (developer unit).	If a developer unit which is known to work normally is available for check, replace the current developer unit in the printer with the normal one. If the symptom disappears, replace the developer unit with a new one (See page 1-5-11).

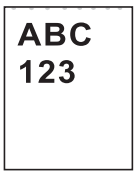
(7) Unsharpness.

Print example	Causes	Check procedures/corrective measures
	Defective paper specifications.	Paper with rugged surface or dump tends to cause unsharp printing. Replace paper with the one that satisfies the paper specifications.
	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 operation panel. For details refer to the printer's operation guide.
	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.
	Poor contact of engine PWB's transfer bias output terminal and printer's contact (spring).	Check the installation position of the engine PWB (See page 1-4-9, figure 1-4-3 and 1-5-23).

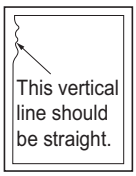
(8) Gray background.

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 printer's operation guide.
	Defective drum surface potential.	If a drum unit which is known to work normally is available for check, replace the current drum unit in the printer with the normal one. If the symptom disappears, replace the drum unit with a new one (See page 1-5-12).
	Defective main charger unit.	Replace the main charger unit (See page 1-5-13).
	Defective developing roller (developer unit).	If a developer unit which is known to work normally is available for check, replace the current developer unit in the printer with the normal one. If the symptom disappears, replace the developer unit with a new one (See page 1-5-11).

(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, paper transportation paths, the bottom of the drum and developer, 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 left edge (scanning start position).

Print example	Causes	Check procedures/corrective measures
	Defective polygon motor (laser scanner unit).	Replace the laser scanner unit (See page 1-5-35).
	Defective engine PWB.	Replace the engine PWB (See page 1-5-23).

1-4-4 Electric problems

Problem	Causes	Check procedures/corrective measures
(1) Defective waste toner box detecting.	Defective waste toner sensor.	Replace the drum unit (See page 1-5-12).
	Defective connection between drum PWB (YC1) and connect-L PWB (YC3).	Check the connection of connectors between drum PWB (YC1) and connect-L PWB (YC3). (See page 1-4-10, refer to figure 1-4-5)
	Defective harness between connect-L PWB (YC6) and engine PWB (YC504), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
	Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
(2) Defective paper jam detecting. Paper jam frequently occurs. False paper jam message display.	Defective registration sensor or duplex jam sensor.	Replace the engine PWB (See page 1-5-23).
	Defective paper exit sensor, duplex sensor or face down tray paper full sensor.	Replace the paper exit sensor, duplex sensor or face down tray paper full sensor.
	Actuators of registration sensor, duplex jam sensor, duplex sensor or face down tray paper full sensor does not operate smoothly.	Repair or replace.
	A piece of paper torn from a sheet is caught around actuator of registration sensor, paper exit sensor, duplex sensor, duplex jam sensor or face down tray paper full sensor.	Check visually and remove it, if any.
	Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
(3)Defective paper gauge sensing. False paper gauge indication.	Defective paper gauge sensor 1 or 2.	Replace the engine PWB (See page 1-5-23).
	Actuator of paper gauge sensor 1 and 2 does not operate smoothly.	Repair or replace.
	Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
(4)Defective paper size detecting. False paper size message display.	Defective cassette size switch.	Replace the cassette size switch.
	Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
(5) Defective message displaying (LCD) [1]. No message appears on the message display (LCD), though the message background is faintly illuminated. (Power is supplied to the operation panel PWB.)	Defective harness between operation panel PWB (YC1) and main PWB (YC7), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
	Defective operation panel PWB.	Replace the operation panel PWB.

Problem	Causes	Check procedures/corrective measures
(6) Defective message displaying (LCD) [2]. No message appears on the message display (LCD), even thought the message background does not illuminate faintly. (The power is not supplied to the operation panel PWB.)	Broken power cord.	Replace the power cord.
	The power cord is not plugged in properly.	Check the contact between the printer's AC inlet and the AC power outlet.
	No electricity at the AC power outlet.	Measure the AC input voltage.
	Defective power source unit.	Replace the power source unit (See page 1-5-29).
	Defective harness between operation panel PWB (YC1) and main PWB (YC7), or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
	Defective operation panel PWB.	Replace the operation panel PWB.
	Defective main PWB.	Replace the main PWB (See page 1-5-27).
(7) "Close rear unit" display is not cancelled to closing the rear unit.	Defective fuser unit's drawer connector.	If a fuser unit which is known to work normally is available for check, replace the current fuser unit in the printer with the normal one. If the symptom disappears, replace the fuser unit with a new one.
	Defective harness between engine PWB (YC506) and fuser drawer connector, or improper connector insertion.	Reinsert the connector. Also check for continuity within the connector harness. If none, remedy or replace the harness.
	Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
(8) "Close top cover" display is not cancelled to closing the top cover.	Deformed interlock switch's actuator lever.	Check the bending of the actuator lever of the interlock switch, if there is trouble, remedy or replace.
	Defective power source unit.	Replace the power source unit (See page 1-5-29).
	Defective engine PWB.	Replace the engine PWB (See page 1-5-23).
(9) "Close left side cover" display is not cancelled to closing the left side cover.	Defective engine PWB.	Replace the engine PWB (See page 1-5-23).

1-4-5 Mechanical problems

Problem	Causes/check procedures	Corrective measures
(1) No primary paper feed.	Check if the surfaces of the following rollers are dirty with paper powder: pickup roller, paper feed roller, and MP tray feed roller.	Clean with isopropyl alcohol.
	Check if the pickup roller, paper feed roller and MP tray feed roller are deformed.	Check visually and replace any deformed rollers.
	Defective installation position of paper feed drive unit (paper feed clutch, MP tray paper feed clutch and middle feed clutch) or MP tray paper feed solenoid.	Check the installation position of paper feed drive unit (paper feed clutch, MP tray paper feed clutch and middle feed clutch) or MP tray paper feed solenoid.
	Defective installation position of paper feed motor.	Check the installation position of paper feed motor.
(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 installation position of paper feed drive unit (paper feed clutch, MP tray paper feed clutch and middle feed clutch) or MP tray paper feed solenoid.	Check the installation position of paper feed drive unit (paper feed clutch, MP tray paper feed clutch and middle feed clutch) or MP tray paper feed solenoid.
	Defective installation position of paper feed motor.	Check the installation position of paper feed motor.
(3) Skewed paper feed.	Check if the paper is curled.	Change the paper.
(4) Multiple sheets of paper are fed at one time.	Check if the paper is excessively curled.	Change the paper.
	Deformed guides along the paper conveying path.	Check visually and replace any deformed guides.
(5) Paper jams.	Check if the contact between the upper and lower registration rollers is correct.	Check visually and remedy if necessary. Replace the pressure spring if it is deformed.
	Check if the heat roller or press roller is extremely dirty or deformed.	Clean or replace the heat roller or press roller (See page 1-5-19 or 1-5-20).
	Check if the contact between the heat roller and its separation claws is correct.	Repair if any springs are off the separation claws.
(6) Toner drops on the paper conveying path.	Check if the developer unit or drum unit is extremely dirty.	Clean the developer unit or drum unit (See page 1-5-11 or 1-5-12).
(7) Abnormal noise is heard.	Check if the pulleys, rollers and gears operate smoothly.	Grease the bearings and gears.
	Check if the following drive unit are installed correctly: Paper feed drive unit Main drive unit	Correct (See page 1-5-32 or 1-5-34).

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.
Use only the specified parts to replace the fuser unit thermostat. Never substitute electric wires, as the printer may be seriously damaged.
When removing the hook of the connector, be sure to release the hook.

(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(s) 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.

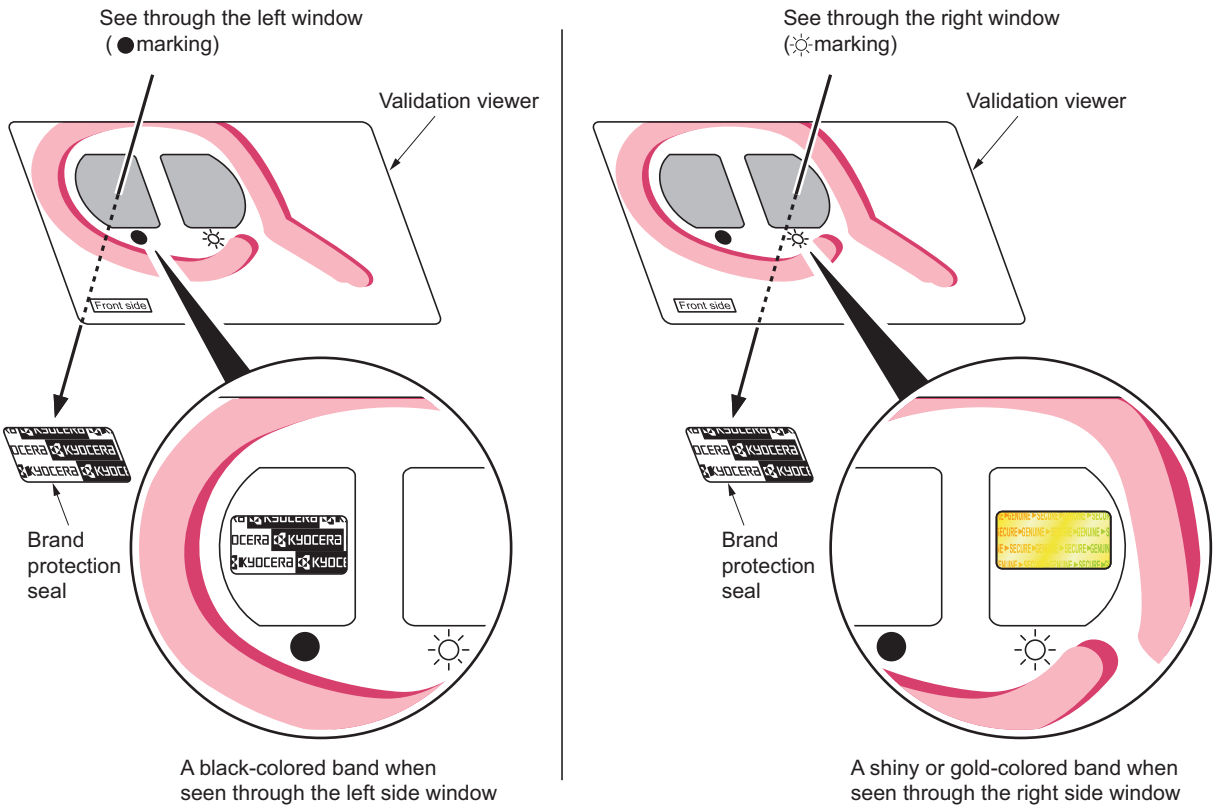


Figure 1-5-1

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

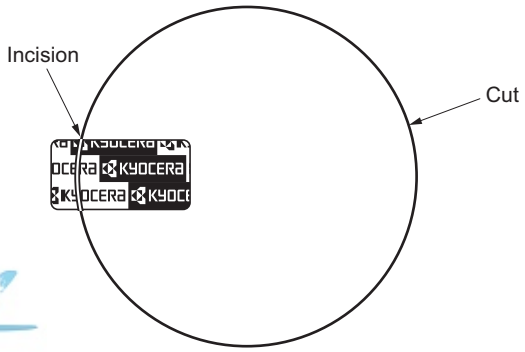


Figure 1-5-2

1-5-2 Outer covers

(1) Detaching and refitting the top cover

Procedure

1. Open the top cover.
2. Remove two screws.
3. Remove the connector and then remove the top cover.

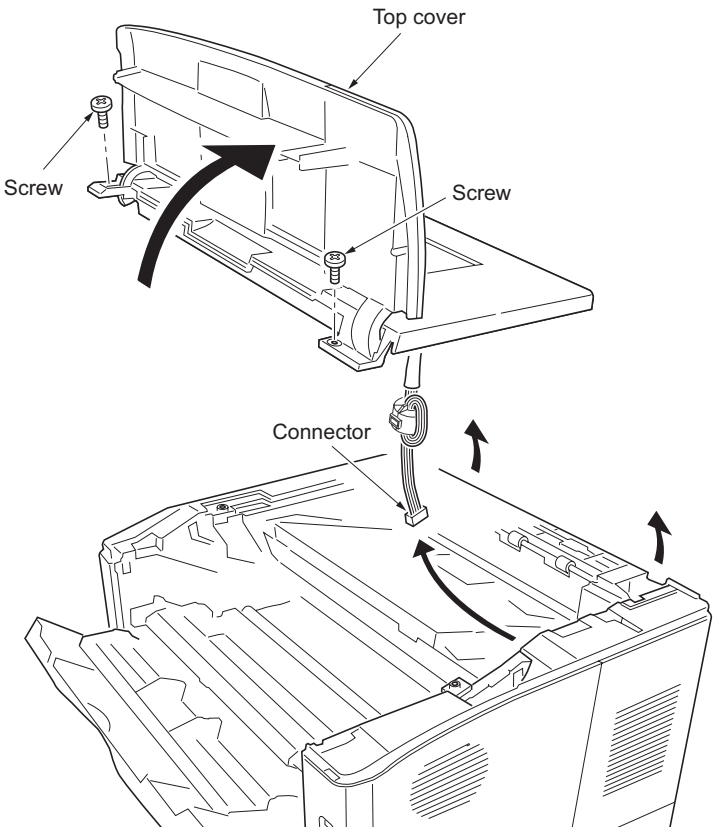


Figure 1-5-3

(2) Detaching and refitting the right cover and left cover

Procedure

1. Remove the paper cassette.
2. Open the MP tray.
3. Open the rear unit.
4. Remove the top cover (See page 1-5-3).
5. Unlatch three latches and then remove the right cover.

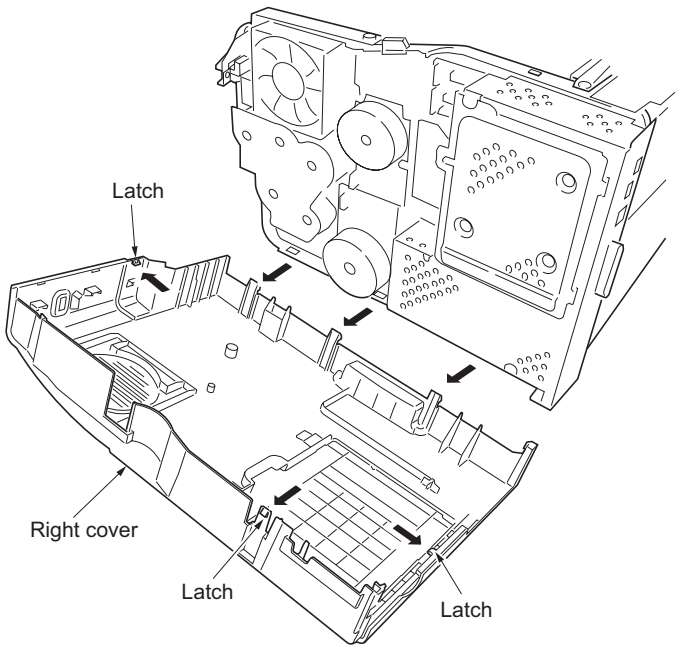


Figure 1-5-4

6. Remove the screw.
7. Unlatch six latches and then remove the left cover.

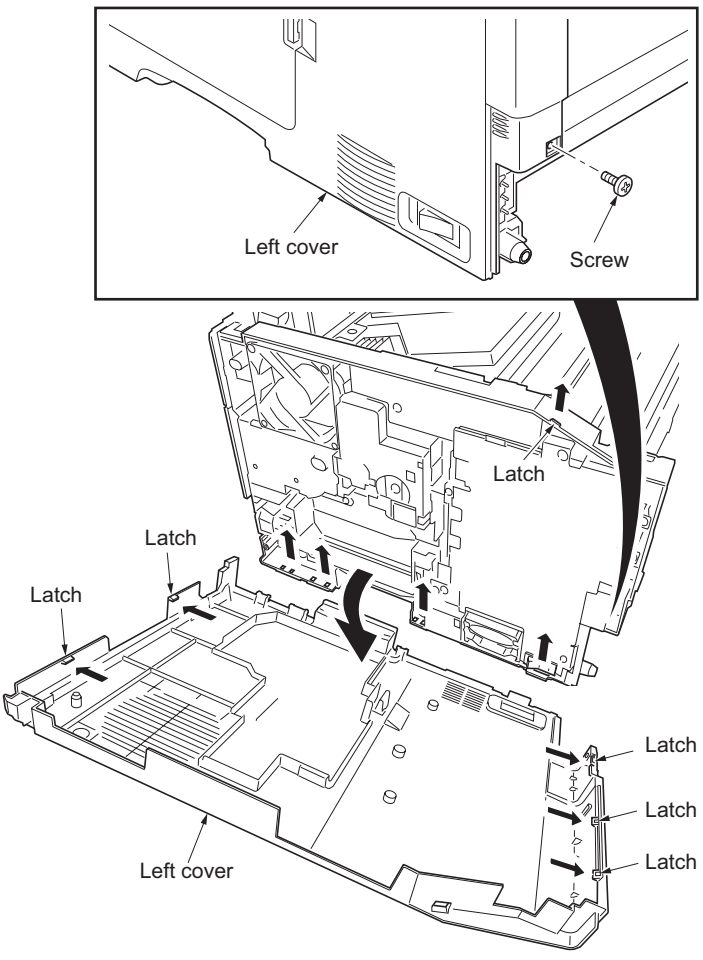


Figure 1-5-5

1-5-3 Paper feed section

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

Procedure

1. Remove the paper cassette.
2. Slide the paper feed roller pin.
3. While pressing the lever and then remove the paper feed roller assembly.
4. Check or replace the paper feed assembly and refit all the removed parts.

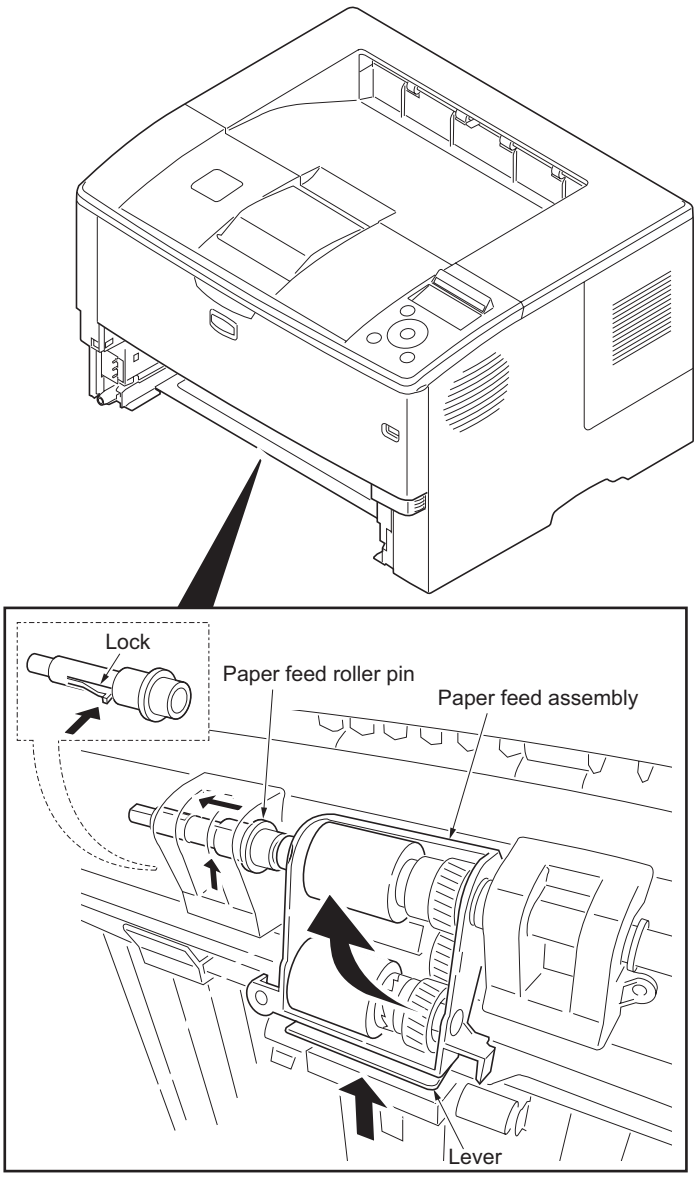


Figure 1-5-6

(2) Detaching and refitting the retard roller

Procedure

1. Remove the paper cassette.
2. Push the bottom plate down until it locks.
3. Unlatch two latches and then remove the retard guide.

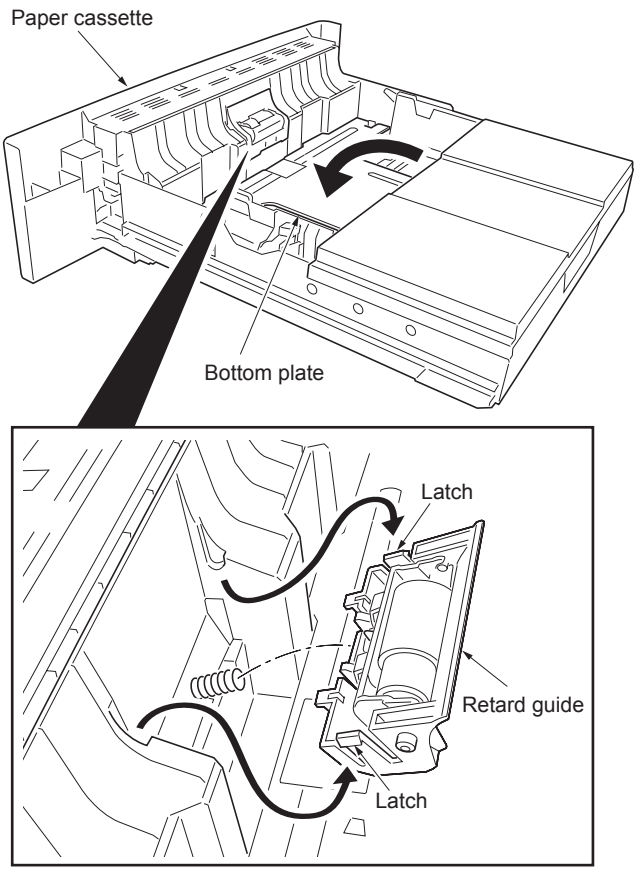


Figure 1-5-7

4. Remove the retard holder (roller) from the retard guide.
5. Check or replace the retard roller and refit all the removed parts.

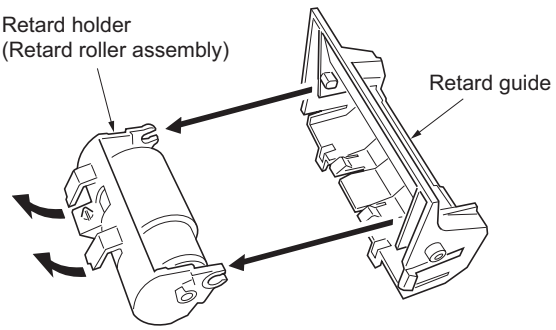


Figure 1-5-8

(3) Detaching and refitting the registration upper and lower roller

Procedure

1. Remove the developer unit (See page 1-5-11).
2. Remove the spring.
3. Pull the registration upper roller.

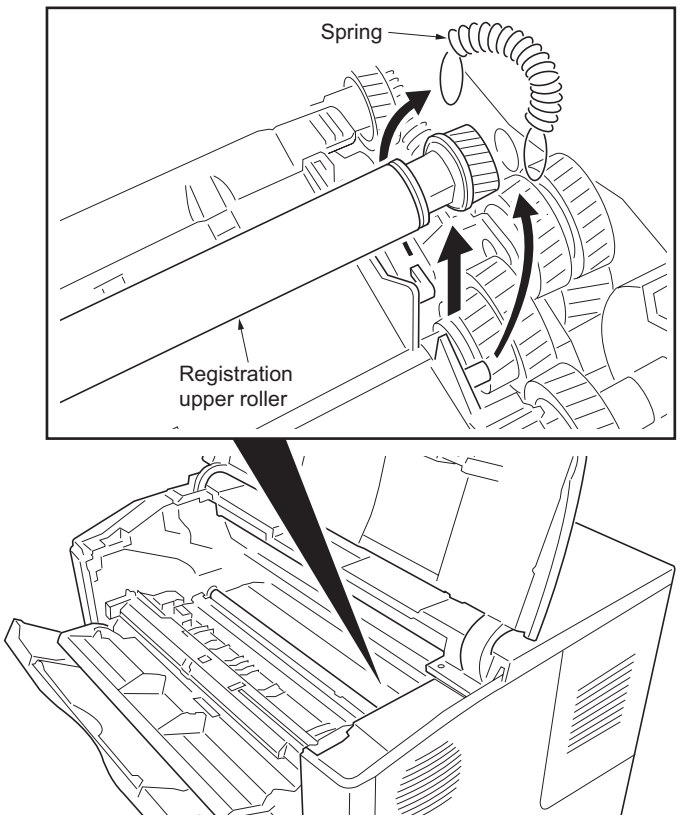


Figure 1-5-9

4. Remove the registration upper roller from the bush.
5. Remove the gear and bush from the registration upper roller.

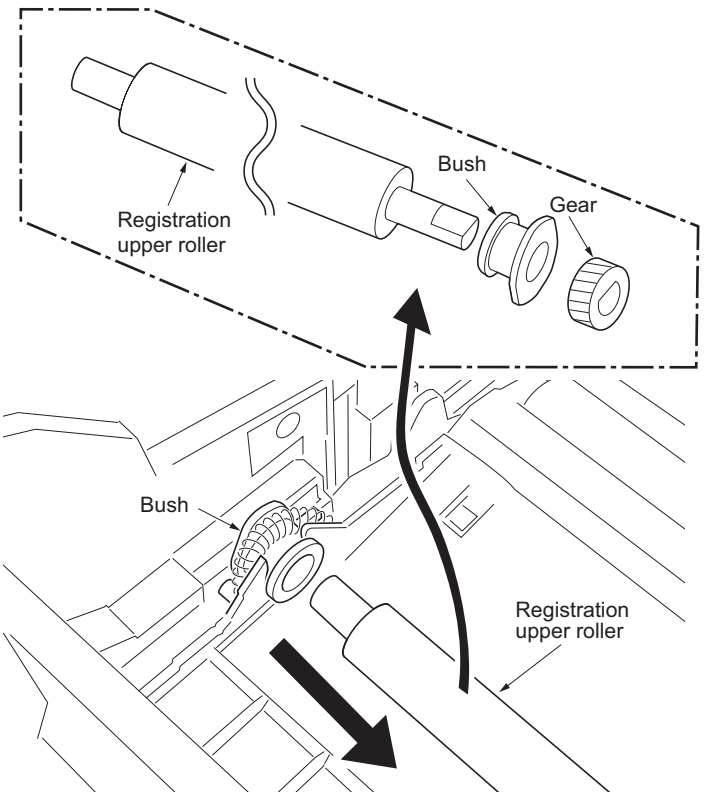


Figure 1-5-10

6. Remove the stopper.
7. Slide the bush.

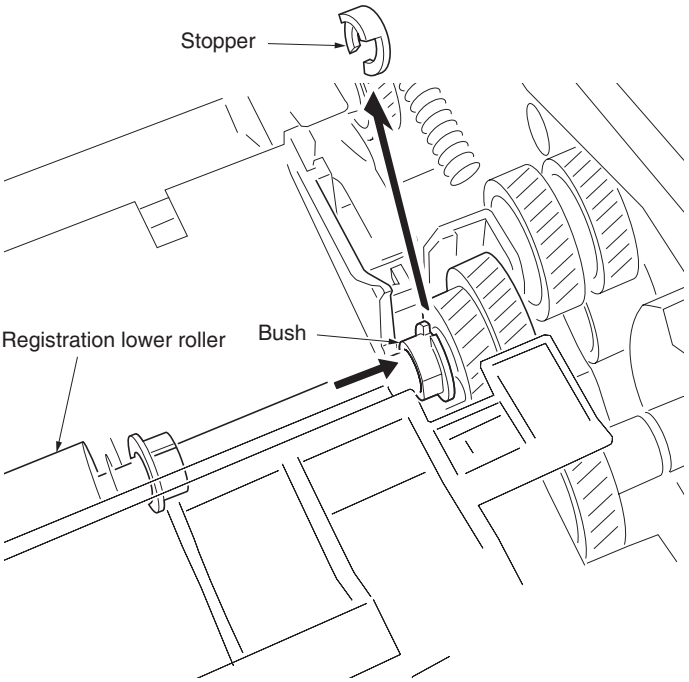


Figure 1-5-11

8. Remove the registration lower roller.
9. Remove the gear and three bushes from the registration lower roller.
10. Check or replace the registration upper and lower roller and refit all the removed parts.

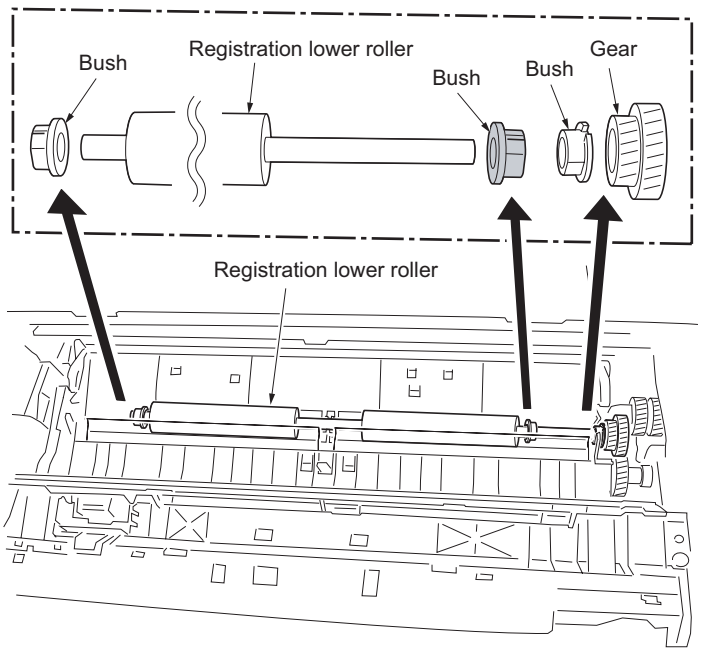


Figure 1-5-12

(4) Detaching and refitting the MP tray paper feed roller

Procedure

1. Remove the paper cassette.
2. Open the top cover.
3. Remove two holders from the main unit frame.

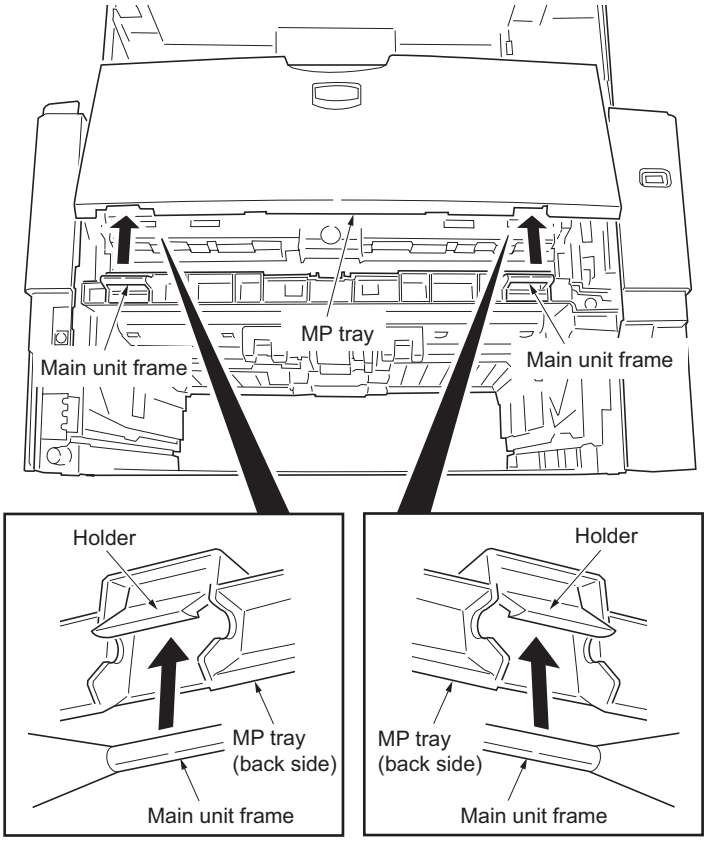


Figure 1-5-13

4. Remove two holders from the main unit frame.
5. Remove the MP tray.

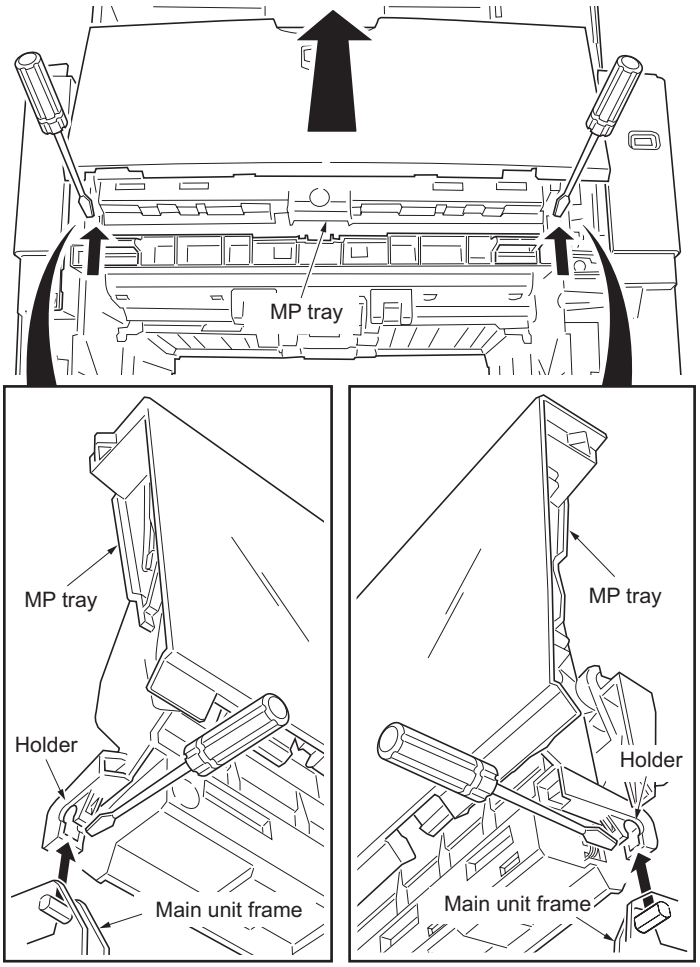


Figure 1-5-14

6. Pull the MP tray paper feed roller holder.
7. Slide the MP tray paper feed roller holder.
8. Remove the MP tray paper feed roller.
9. Check or replace the MP tray paper feed roller and refit all the removed parts.

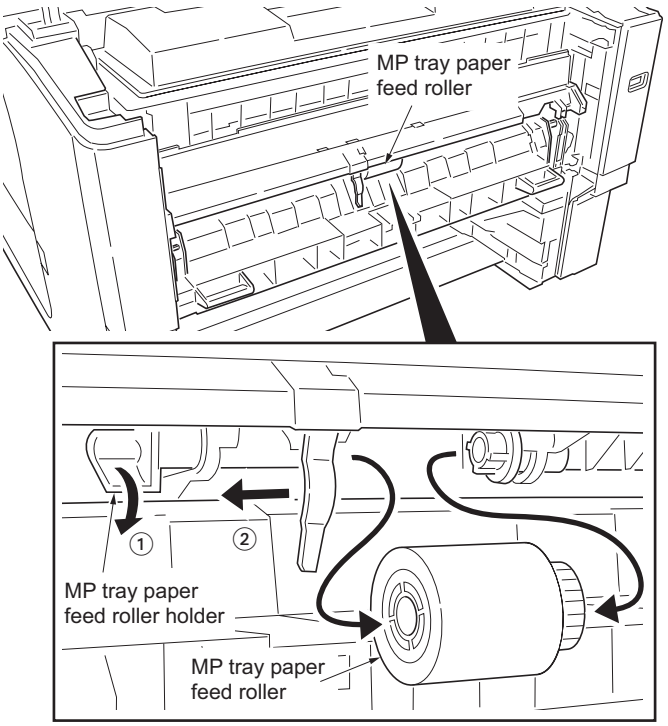


Figure 1-5-15

1-5-4 Developer section

(1) Detaching and refitting the developer unit

Procedure

1. Open the top cover.
2. Open the MP tray.
3. Remove the developer unit.
4. Check or replace the developer unit and refit all the removed parts.

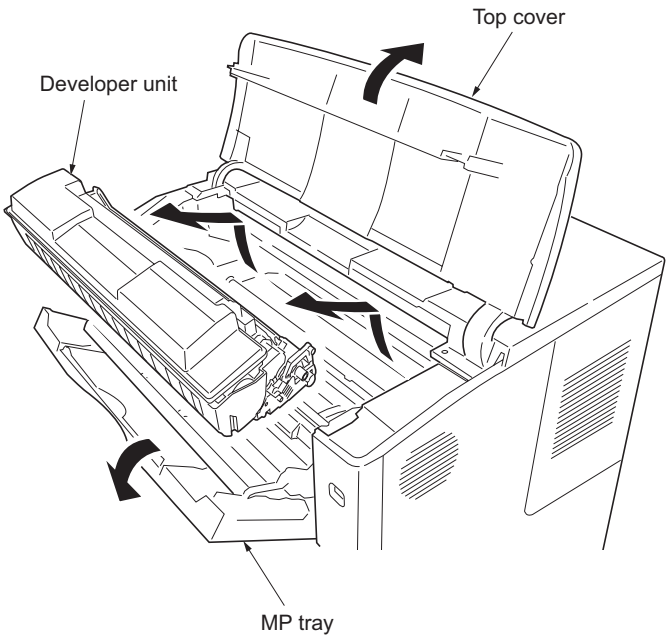


Figure 1-5-16

1-5-5 Drum section

(1) Detaching and refitting the drum unit

Procedure

1. Remove the developer unit (See page 1-5-11).
2. Open the left side cover and then remove the waste toner box.
3. Unlock the drum unit lock and then remove the drum unit.
4. Check or replace the drum unit and refit all the removed parts.

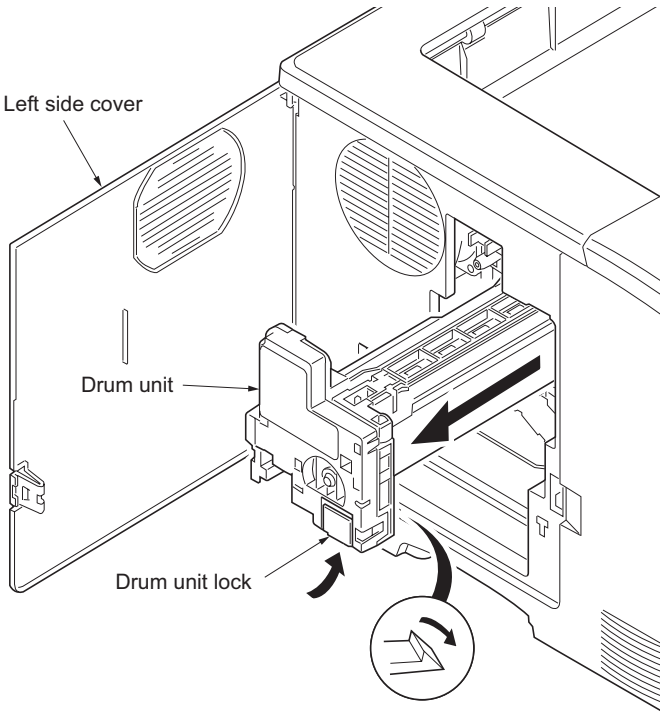


Figure 1-5-17

(2) Detaching and refitting the main charger unit

Procedure

1. Remove the drum unit (See page 1-5-12).
2. Unlock the lock lever and then remove the main charger unit.
3. Check or replace the main charger unit and refit all the removed parts.

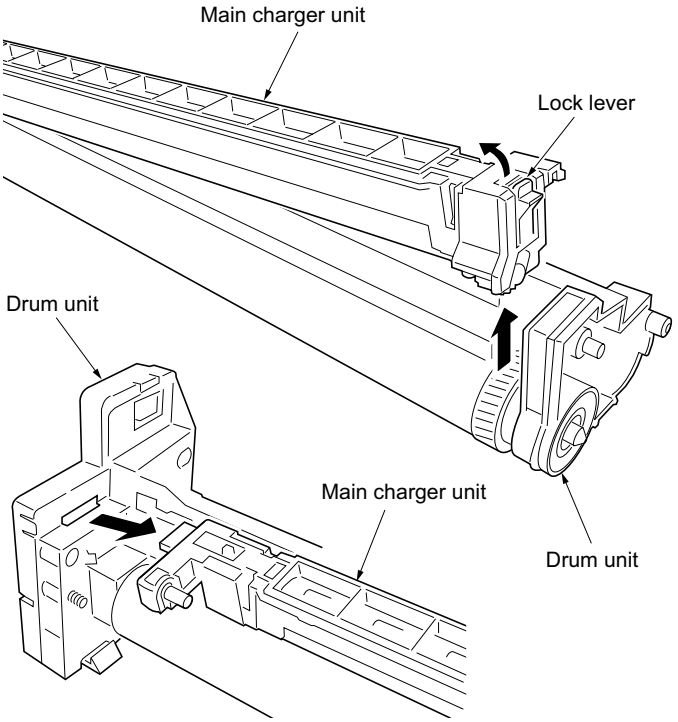


Figure 1-5-18

1-5-6 Transfer/separation section

(1) Detaching and refitting the transfer roller and separation charger brush unit

Procedure

1. Remove the developer unit (See page 1-5-11).
2. Remove the drum unit (See page 1-5-12).
3. Slide the paper chute guide and unhook the hooks.
4. Remove the paper chute guide.

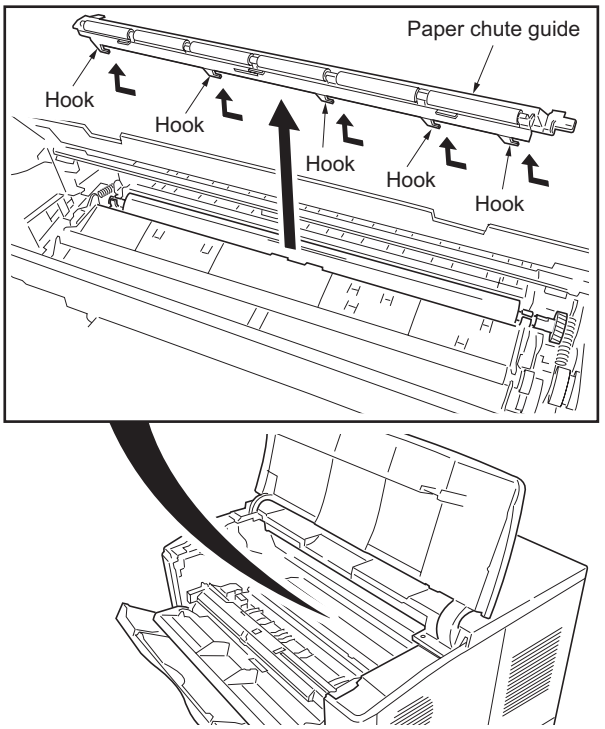


Figure 1-5-19

5. Remove the shaft (transfer roller) from the both bushes.

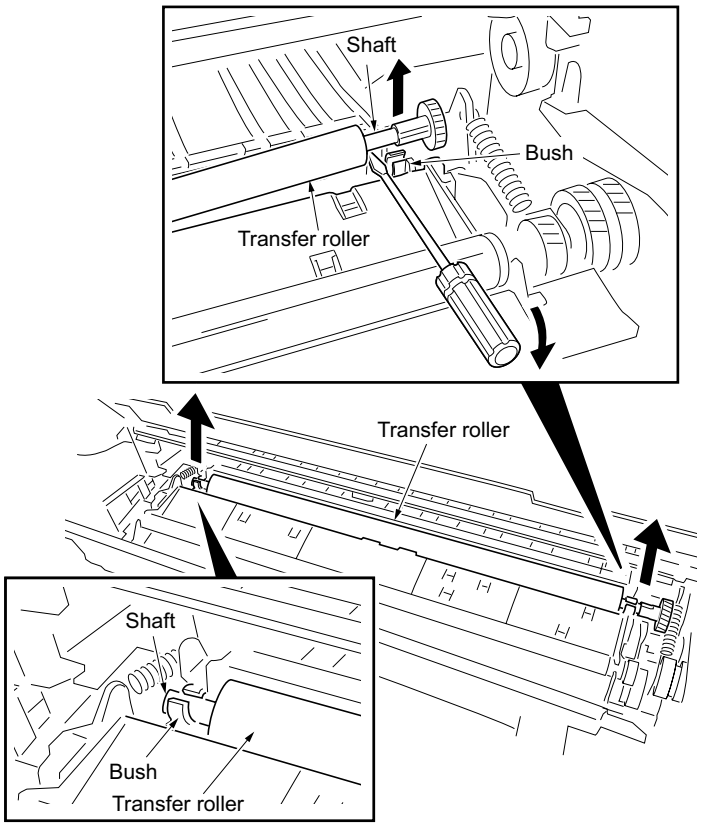


Figure 1-5-20

6. Release six latches and then remove the separation charger brush unit.
7. Check or replace the transfer roller and separation charger brush unit and refit all the removed parts.
   CAUTION: Note the following, when refitting the separation charger brush unit.
   A. The separation charger brush unit is inserted into the four projections of the frame and does not run on to the projections.
   B. The separation charger brush unit is firmly in contact with the separation charger plate of the frame.

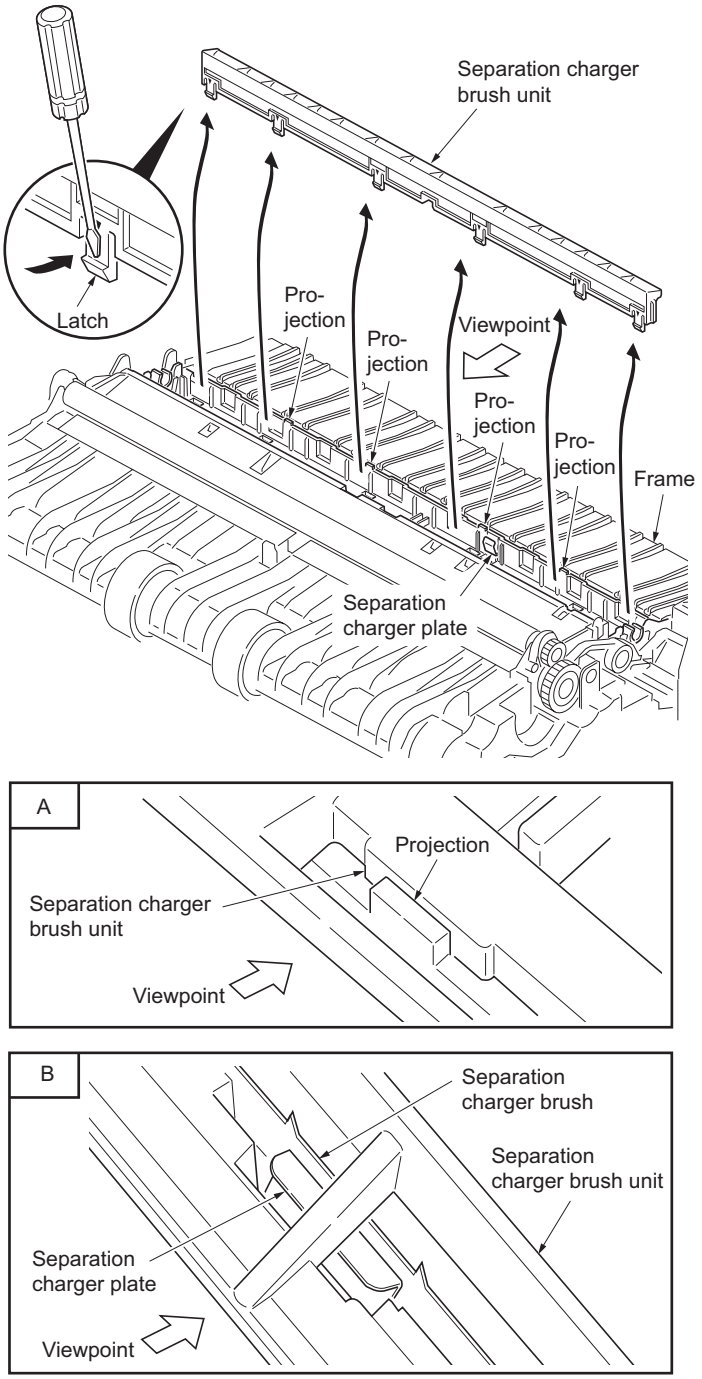


Figure 1-5-21

1-5-7 Fuser section

(1) Detaching and refitting the fuser unit

Procedure

1. Open the rear unit.
2. Insert a flat-blade screwdriver to push the fuser lock (gray colored) on the rear unit and the fuser unit is separated from the rear unit (rails).
   Do it both ends of the rear unit.
3. Check or replace the fuser unit and refit all the removed parts.
   Place the fuser unit on the rear unit (rails) and push the fuser lock so that the fuser lock catches the fuser unit.
   Do it for the both ends of the fuser unit.

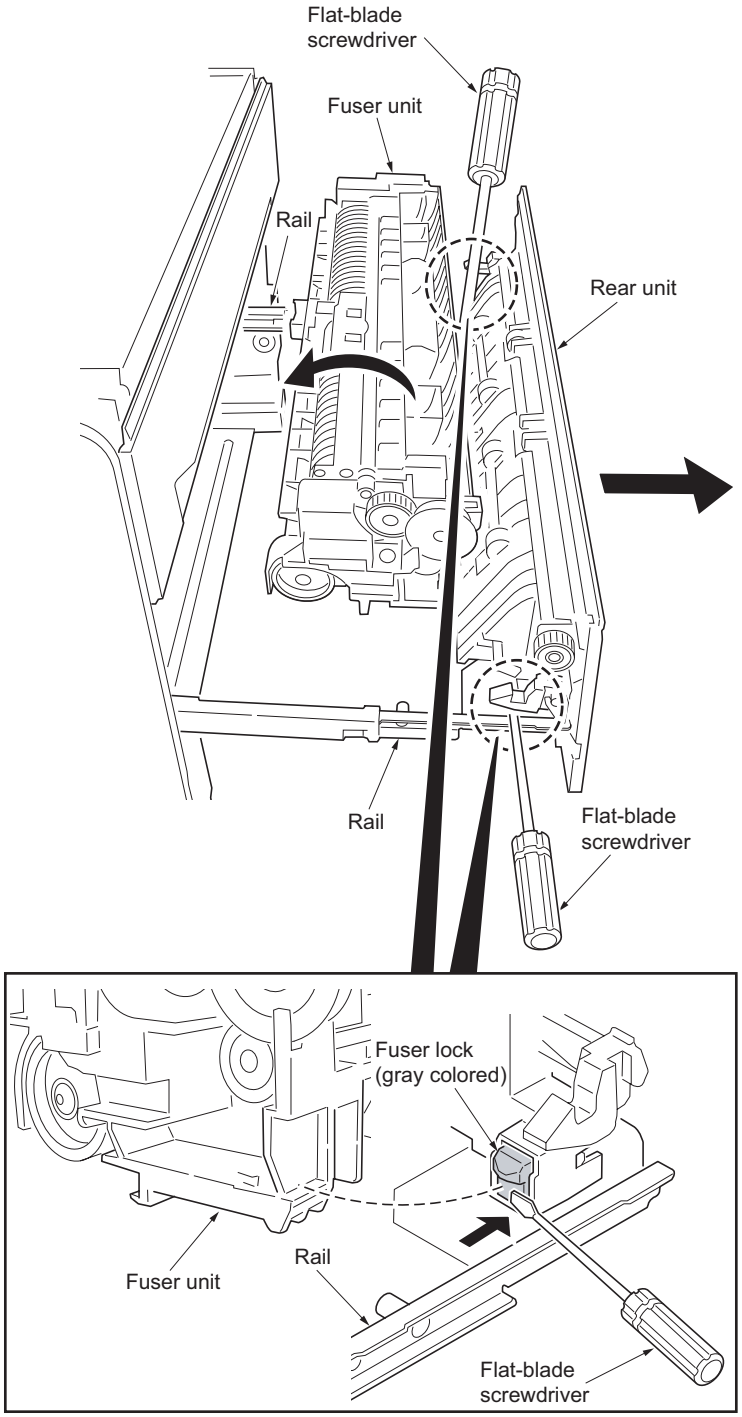


Figure 1-5-22

(2) Detaching and refitting the fuser heater lamp M and S

Procedure

1. Remove the fuser unit (See page 1-5-16).
2. Remove two screws and then open the fuser unit.

   NOTE:
   When fixing the screw again, be careful not to tighten the screw too much because the fuser lower frame is made of resin.

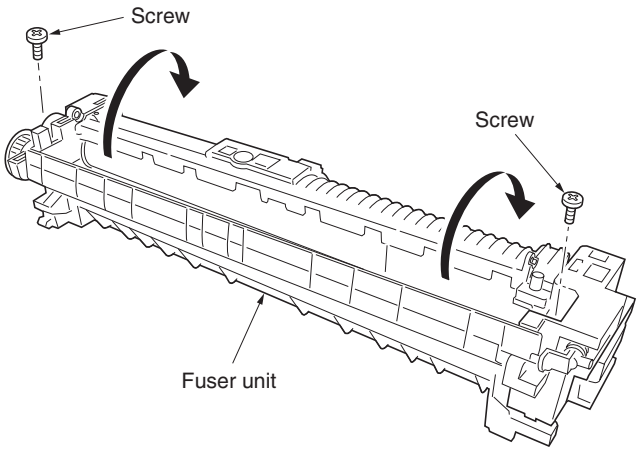


Figure 1-5-23

3. Remove two screws from the fuser heater lamp M and S.

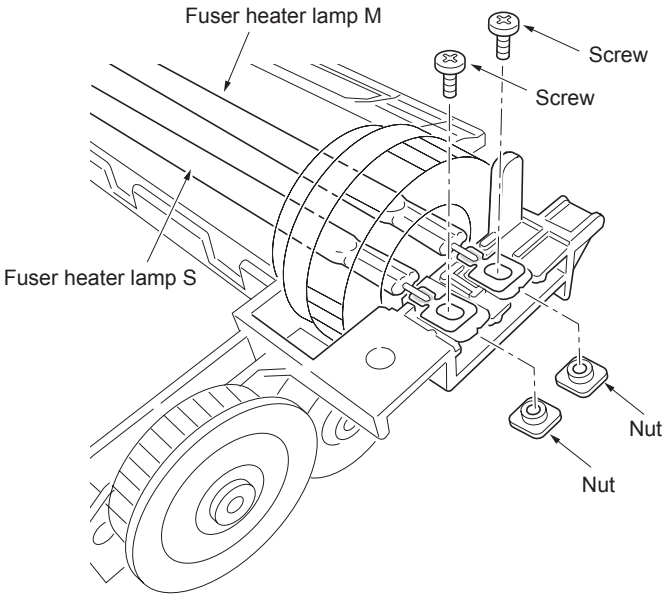


Figure 1-5-24

4. Remove two screws from the fuser heater lamp M and S.
5. Remove the fuser heater lamp M and S.
6. Check or replace the fuser heater lamp M and S, and refit all the removed parts.

   Seat the fuser heater lamp M and S aligning its wattage mark and welding mark faced with the correct direction and side.

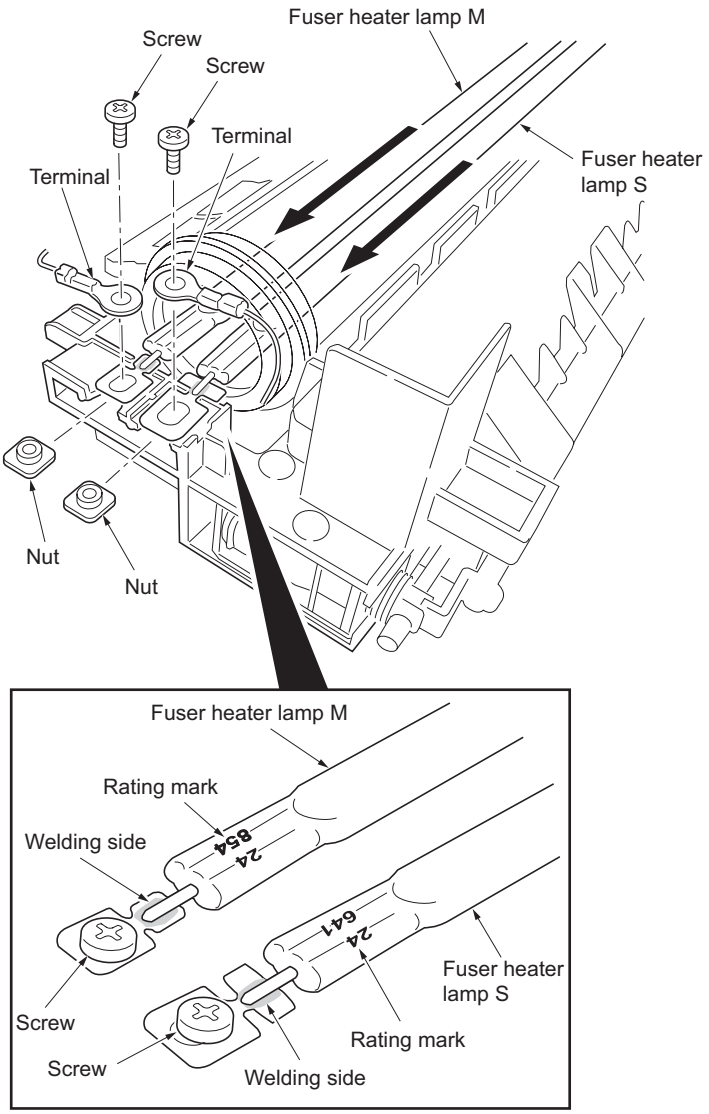


Figure 1-5-25

(3) Detaching and refitting the heat roller

Procedure

1. Remove the fuser heater lamp M and S (See page 1-5-17).
2. Remove the heat roller from the fuser upper frame.
3. Remove the heat R bush, heat L bush, heat gear Z46 and heat roller ground plate from the heat roller.
4. Check or replace the heat roller and refit all the removed parts.

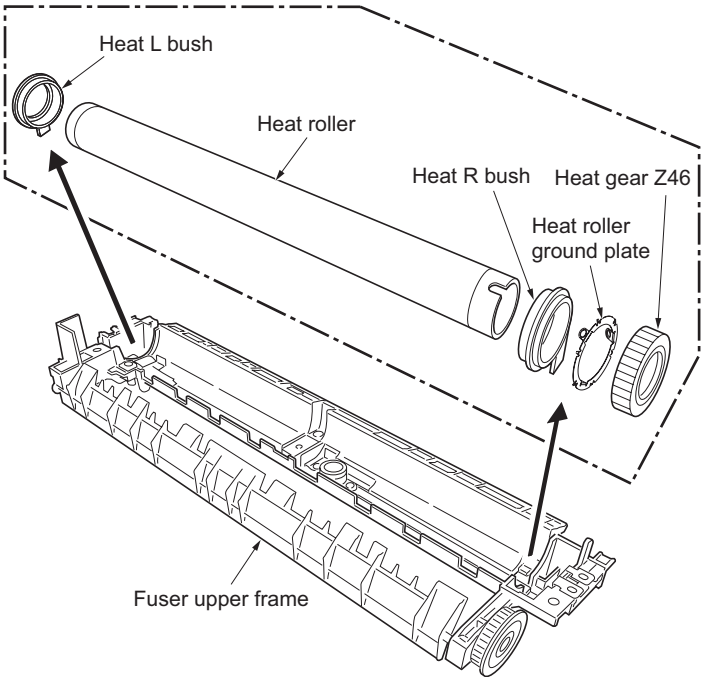


Figure 1-5-26

(4) Detaching and refitting the press roller

Procedure

1. Remove the fuser unit (See page 1-5-16).
2. Open the fuser unit (See page 1-5-17).
3. Remove the press roller from the fuser lower frame.
4. Remove two bearings.
5. Check or replace the press roller and refit all the removed parts.

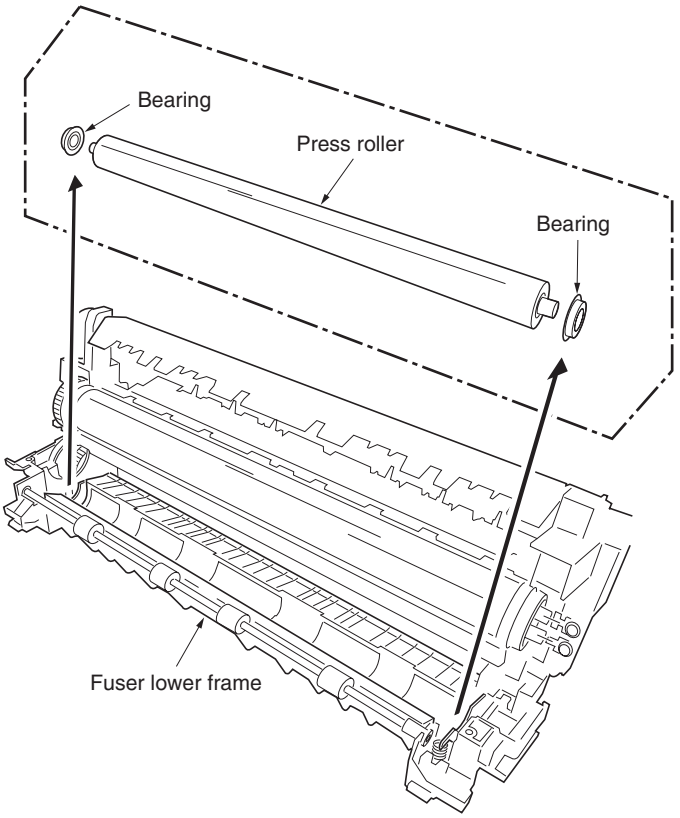


Figure 1-5-27

(5) Detaching and refitting the fuser thermistor M, fuser thermistor S and thermal cutout

Procedure

1. Remove the fuser unit (See page 1-5-16).
2. Turn the fuser unit bottom side up.
3. Unlatch two latches and then remove the cord cover.
4. Unlatch four latches and then remove the fuser drawer connector.
5. Remove two connectors.

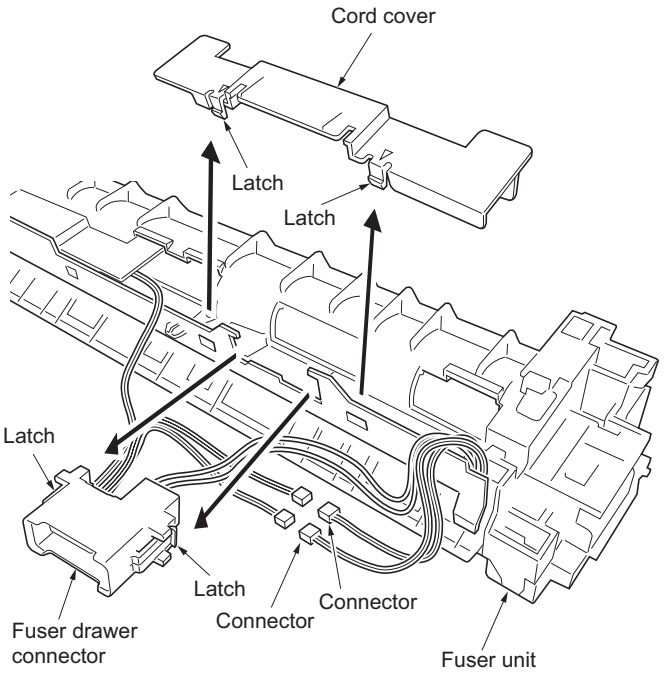


Figure 1-5-28

6. Remove the heat roller (See page 1-5-19).
7. Remove the screw and then remove the fuser thermistor S.

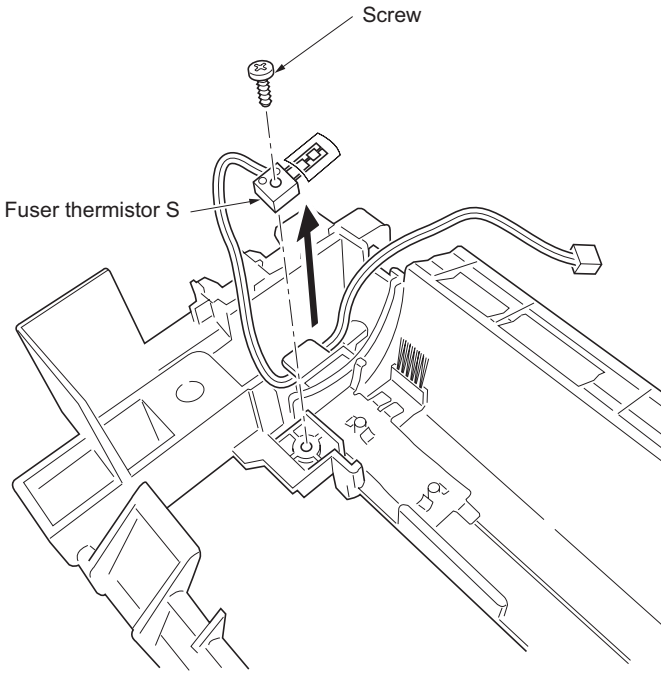


Figure 1-5-29

8. Remove the screw (nut) and then remove the fuser thermistor M.

   NOTE:
   Set spacer A so that its insulating sheet faces the fuser thermistor.
   The number of spacer Bs differs depending on the fuser unit.

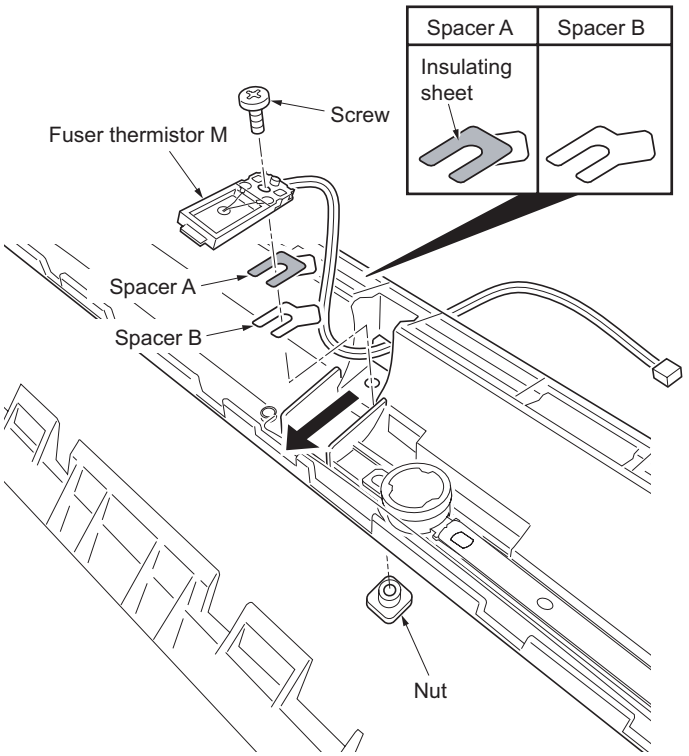


Figure 1-5-30

9. Remove two screws (nuts) and then remove the terminal and cord plate.
10. Remove the thermal cutout.
11. Check or replace the fuser thermistor S and M and thermal cutout and refit all the removed parts.

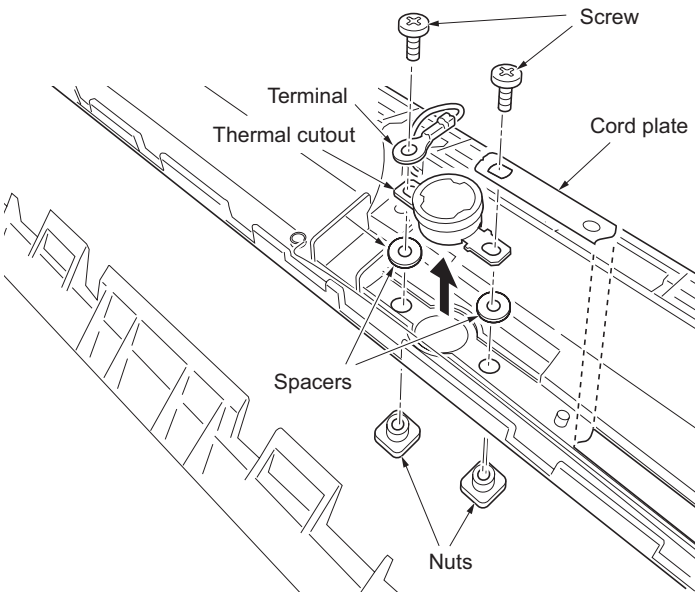


Figure 1-5-31

1-5-8 PWBs

(1) Detaching and refitting the engine PWB

Procedure

1. Remove the developer unit (See page 1-5-11).
2. Remove the drum unit (See page 1-5-12).
3. Remove the top cover (See page 1-5-3).
4. Remove the left cover (See page 1-5-4).
5. Remove the PSU fan motor (See page 1-5-29).
6. Stand the printer front side up.
7. Remove five screws and then remove the bottom plate 1.
8. Remove four screws and then remove the bottom plate 2.

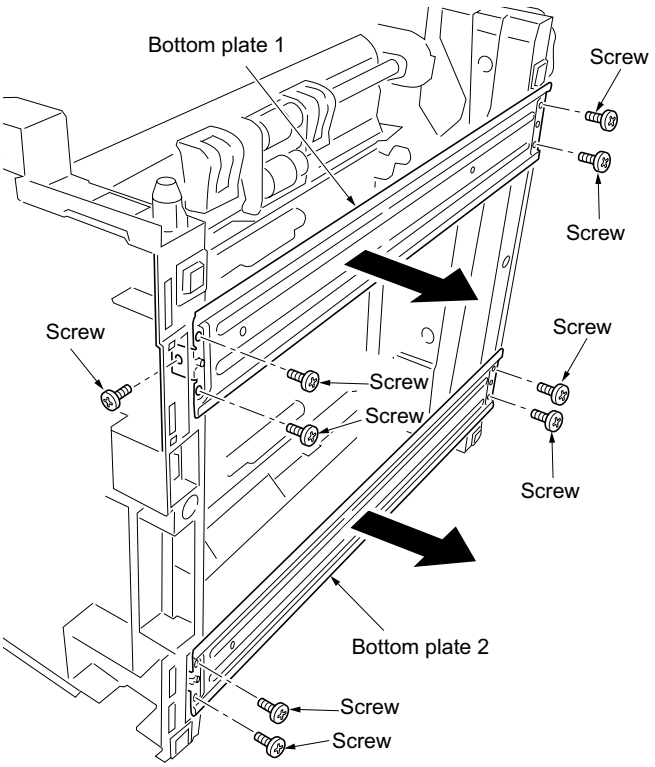


Figure 1-5-32

9. Remove two wires from the hooks and notches.
10. Open the DU guide (duplex cover).

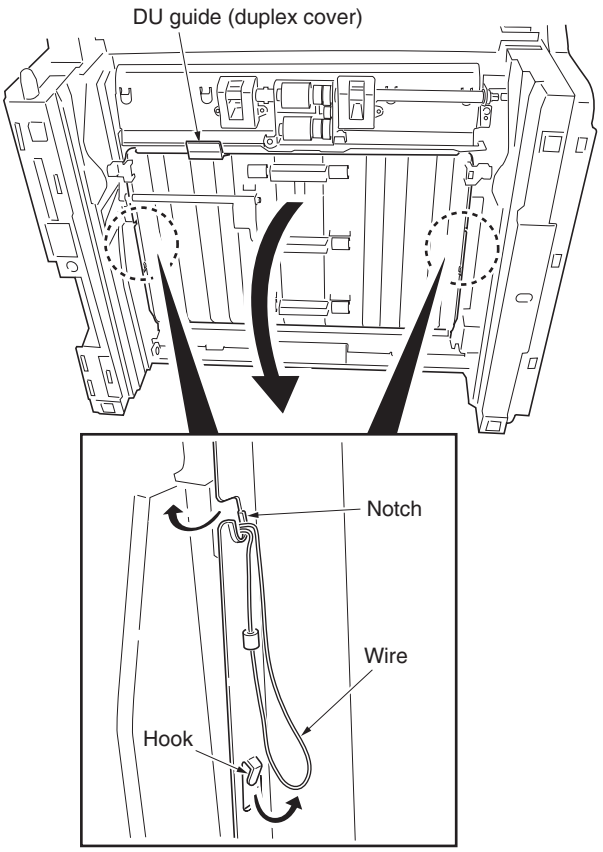


Figure 1-5-33

11. Detach the joint.
12. Remove eight screws and then remove the DU base.

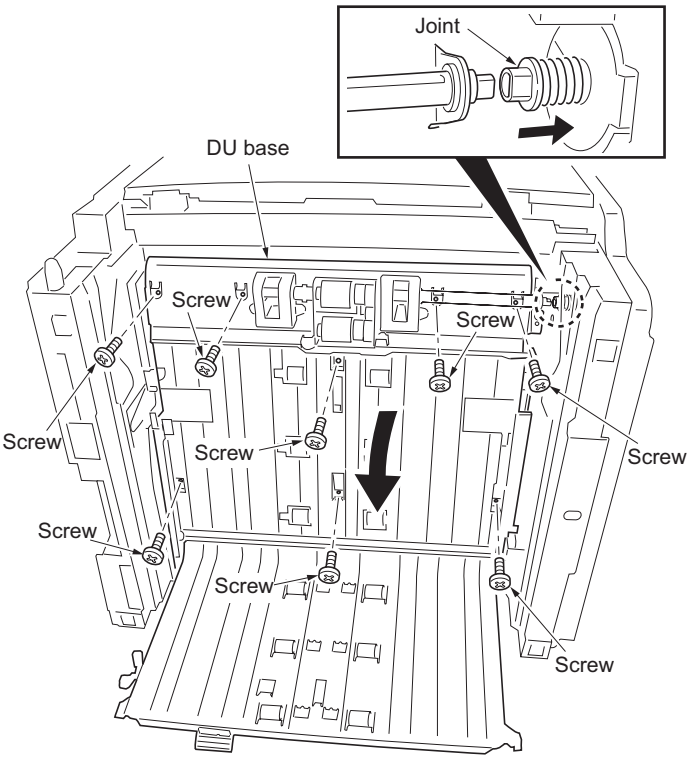


Figure 1-5-34

13. Remove four snaps.
14. Remove the tab.
15. Remove five connectors.

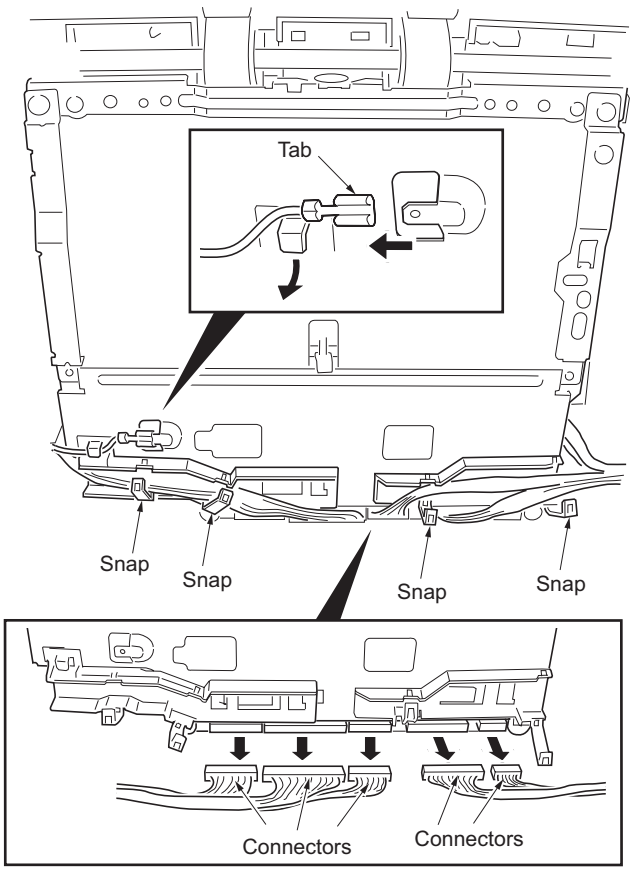


Figure 1-5-35

16. Remove four screws.

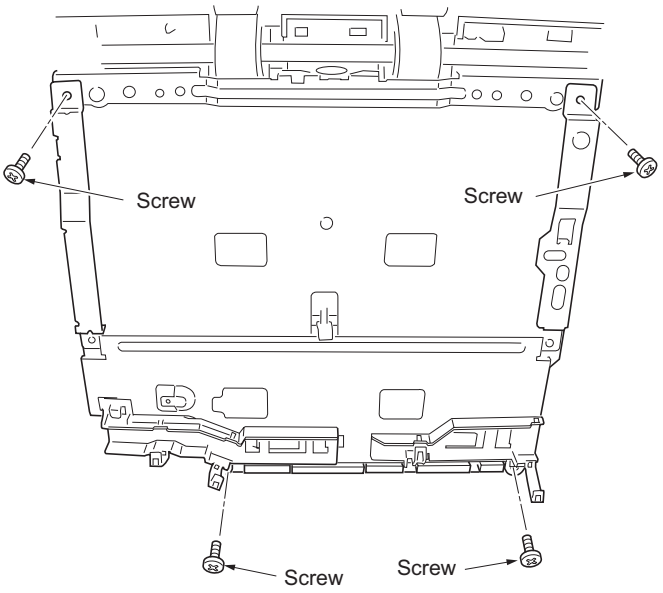


Figure 1-5-36

17. Detach the engine PWB assembly.
18. Remove four connectors.
19. Remove the engine PWB assembly.

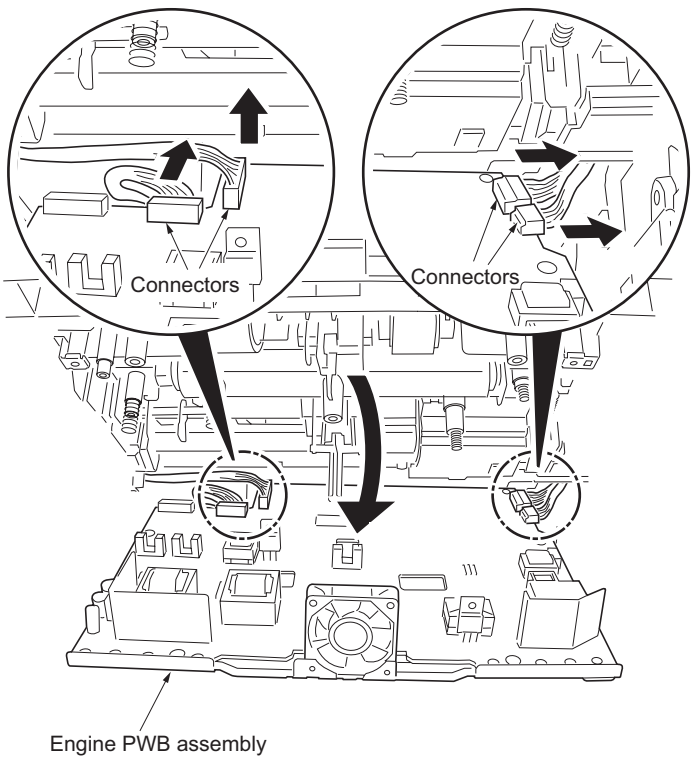


Figure 1-5-37

20. Remove the connector.
21. Remove two screws-A and then remove the HV plate.
22. Remove two screws-B and then remove the engine R ground plate, engine L ground plate and shield plate.
23. Check or replace the engine PWB and refit all the removed parts.
    To replace the engine PWB, remove the EEPROM from the old engine PWB and mount it to the new engine PWB.

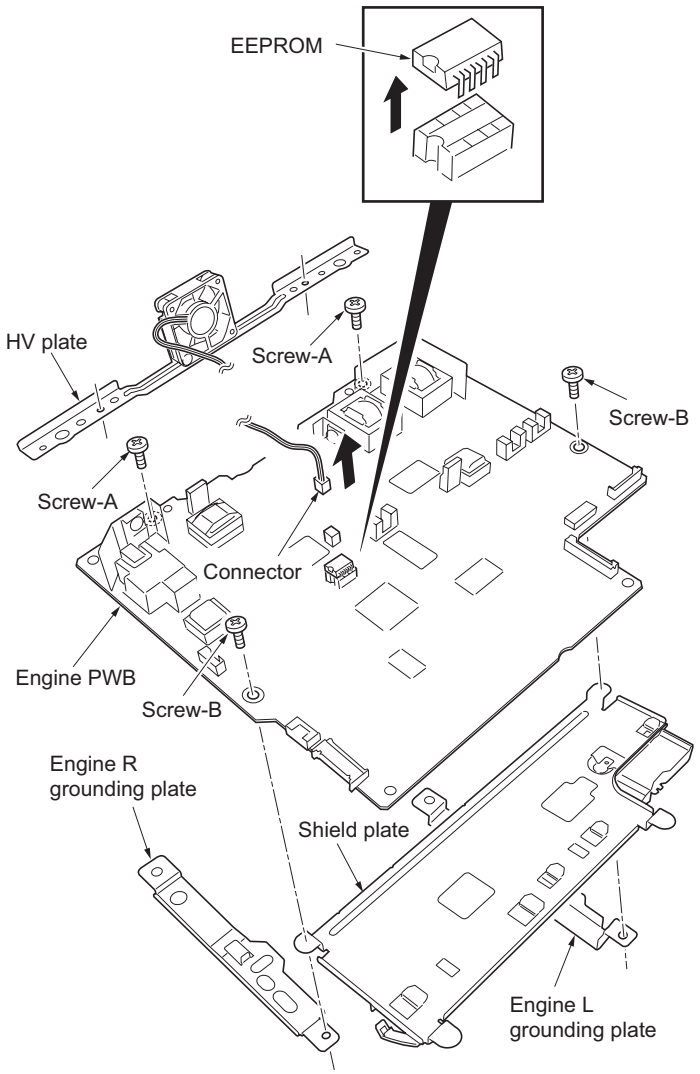


Figure 1-5-38

(2) Detaching and refitting the main PWB

Procedure

1. Remove the top cover (See page 1-5-3).
2. Remove the right cover (See page 1-5-4).
3. Remove six connectors from the main PWB.
4. Remove thirteen connectors from the connect-R WPB.
5. Remove the wires from the clamp.
6. Remove the screw and then remove the connect-R PWB.

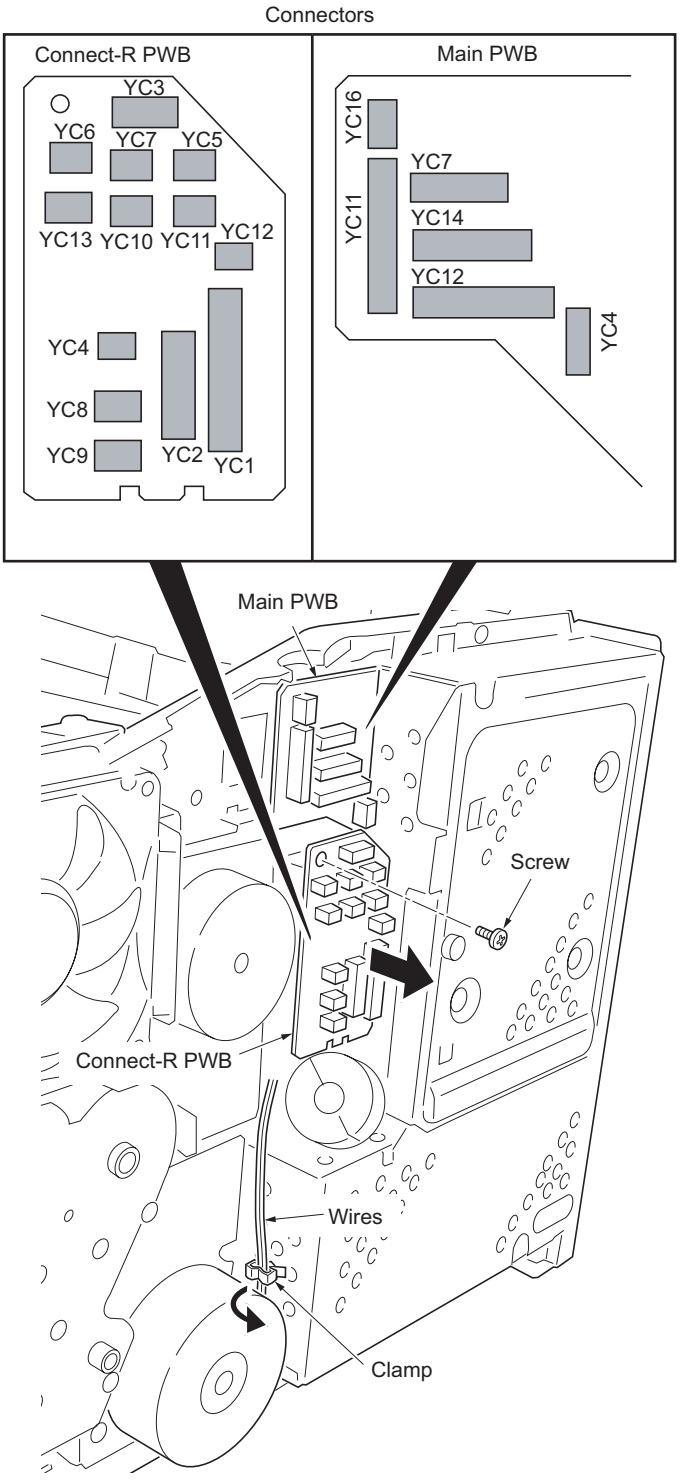


Figure 1-5-39

7. Open the rear unit.
8. Remove six screws and then remove the controller box (main PWB).

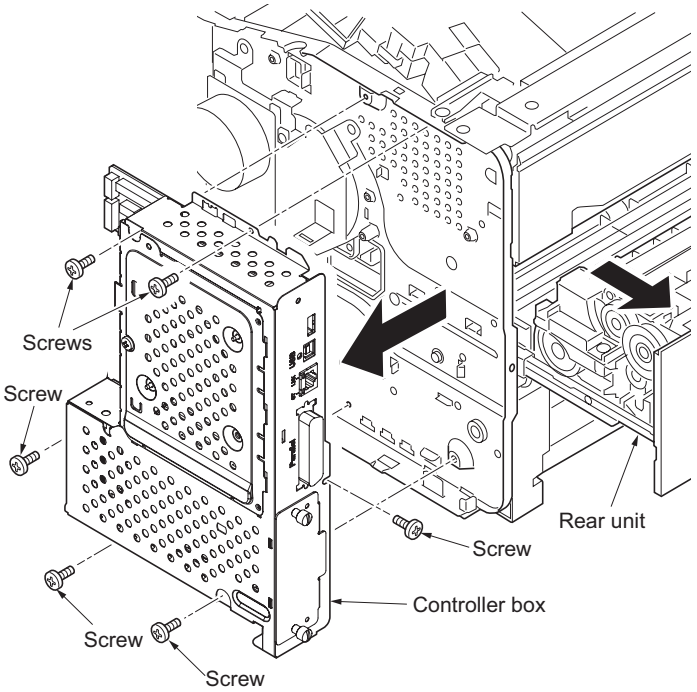


Figure 1-5-40

9. Remove five screws and then remove the main PWB from the controller box.
10. Check or replace the main PWB and refit all the removed parts.

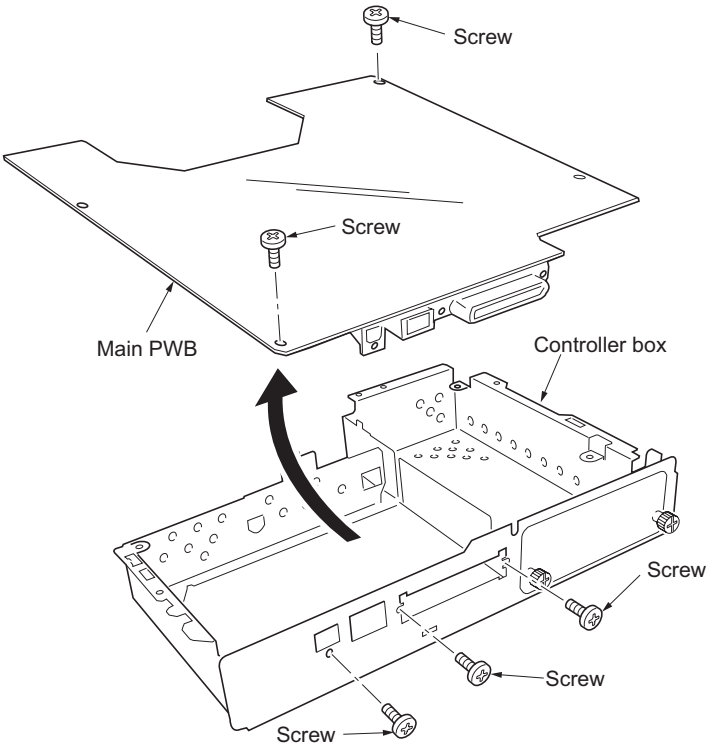


Figure 1-5-41

(3) Detaching and refitting the power source unit

Procedure

1. Remove the top cover (See page 1-5-3).
2. Remove the left cover (See page 1-5-4).
3. Remove the drum unit (See page 1-5-12).
4. Remove the connector (YC11) from the connect-L PWB.
5. Remove the wires from the drum grounding plate and clamp.
6. Remove two hooks and then remove the PSU fan motor.

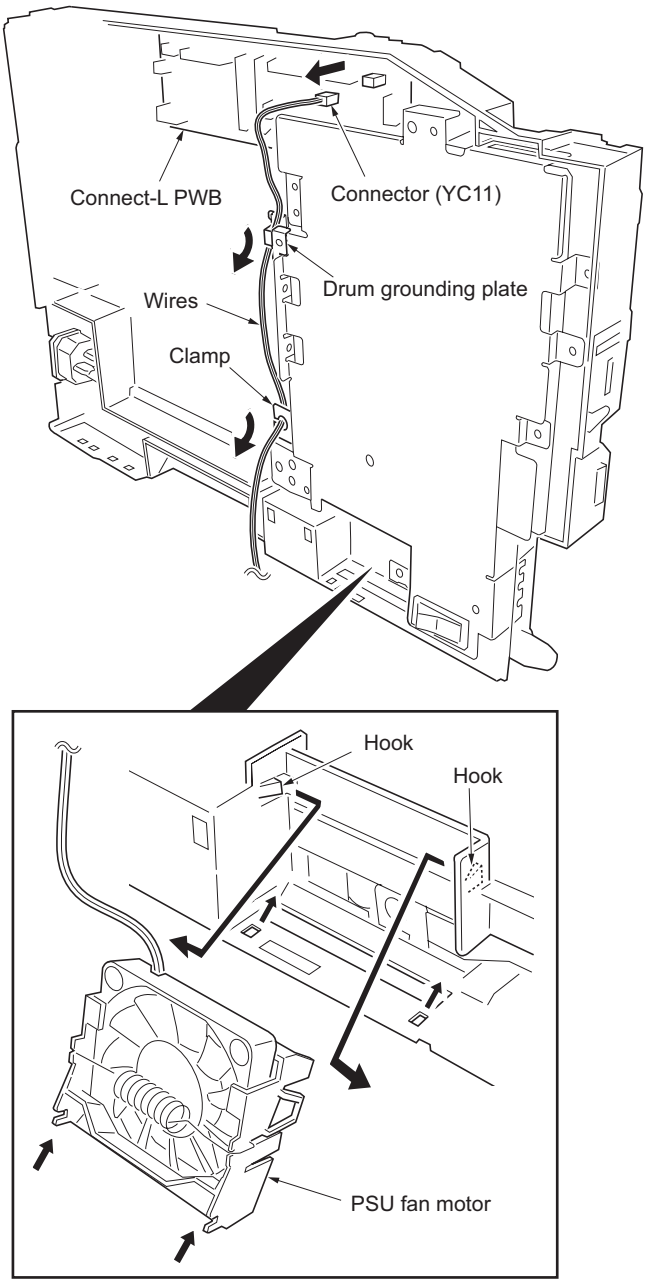


Figure 1-5-42

7. Remove seven screws-A and then remove the drum grounding plate and two grounding terminals.
8. Remove the screw-B and then remove the grounding terminal.
9. Remove the AC inlet.

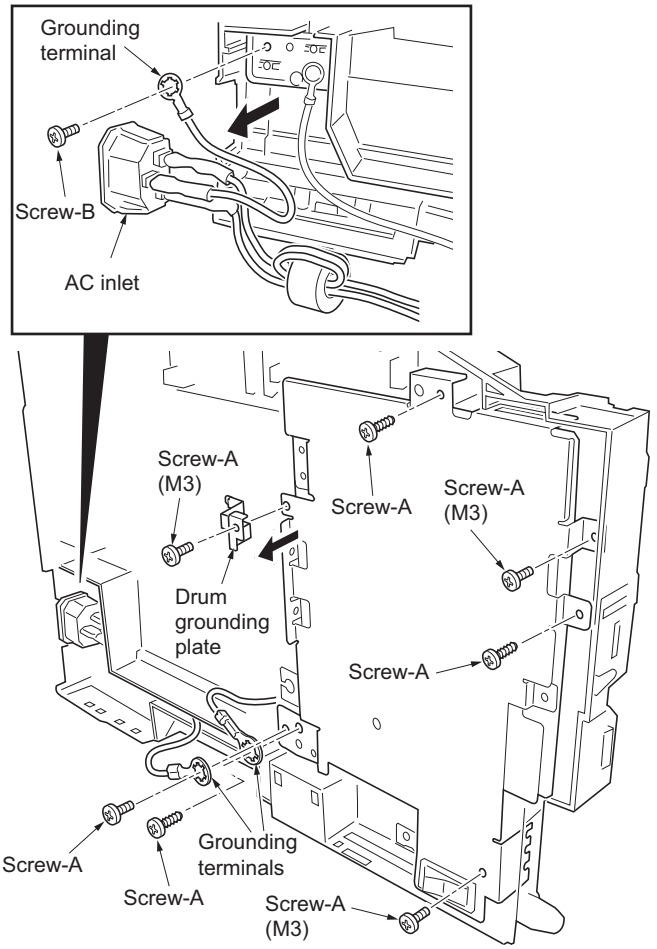


Figure 1-5-43

10. Remove the connector.
11. Remove the PWB connector between connect-L PWB and then remove the power source unit.
12. Remove the power source unit.

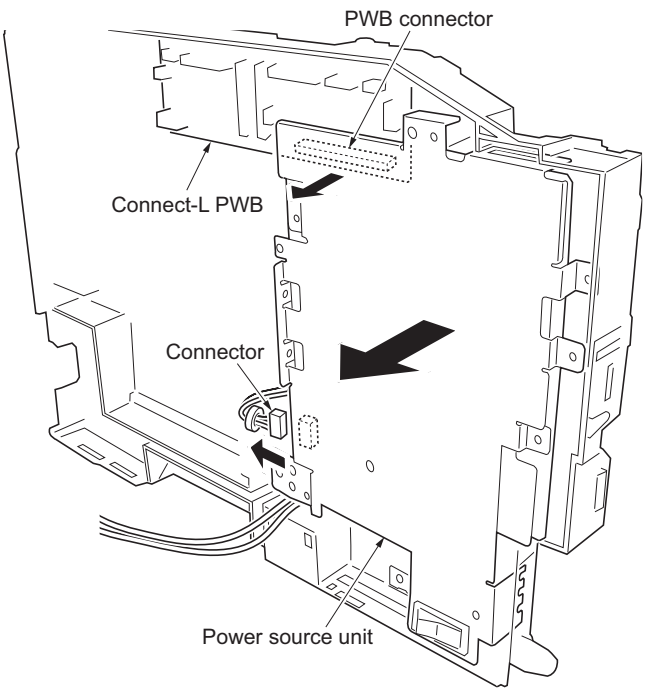


Figure 1-5-44

13. Remove the connector.
14. Remove seven screws and then remove the power source PWB.
15. Check or replace the power source unit and refit all the removed parts.

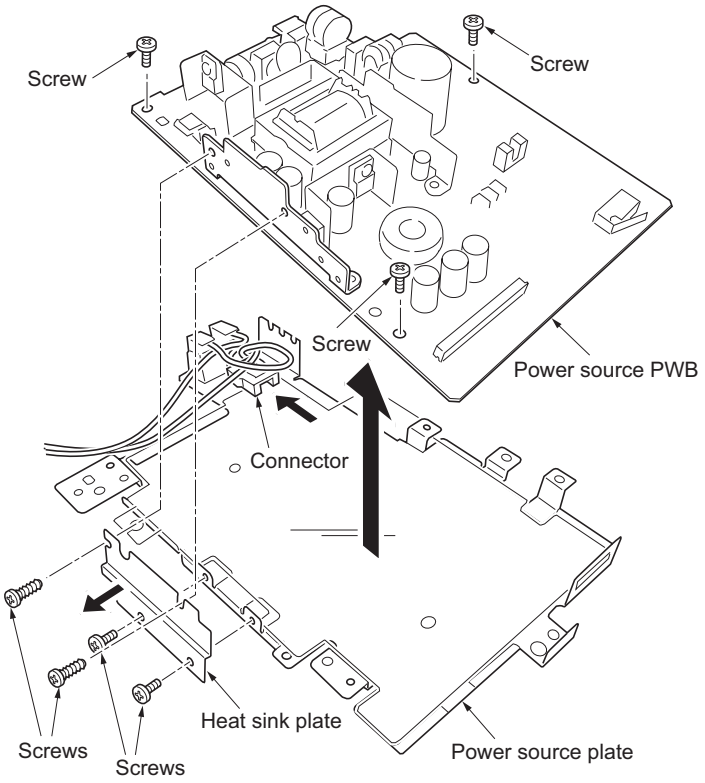


Figure 1-5-45

1-5-9 Others

(1) Detaching and refitting the paper feed drive unit

Procedure

1. Remove the paper cassette.
2. Remove the developer unit (See page 1-5-11).
3. Remove the top cover (See page 1-5-3).
4. Remove the right cover (See page 1-5-4).
5. Remove five connectors from the connect-R PWB.
6. Remove wires from the clamp.
7. While opening the four hooks and then remove the wires.
8. Remove the right fan motor.
   When detaching or refitting the right fan motor be careful of the airflow direction.

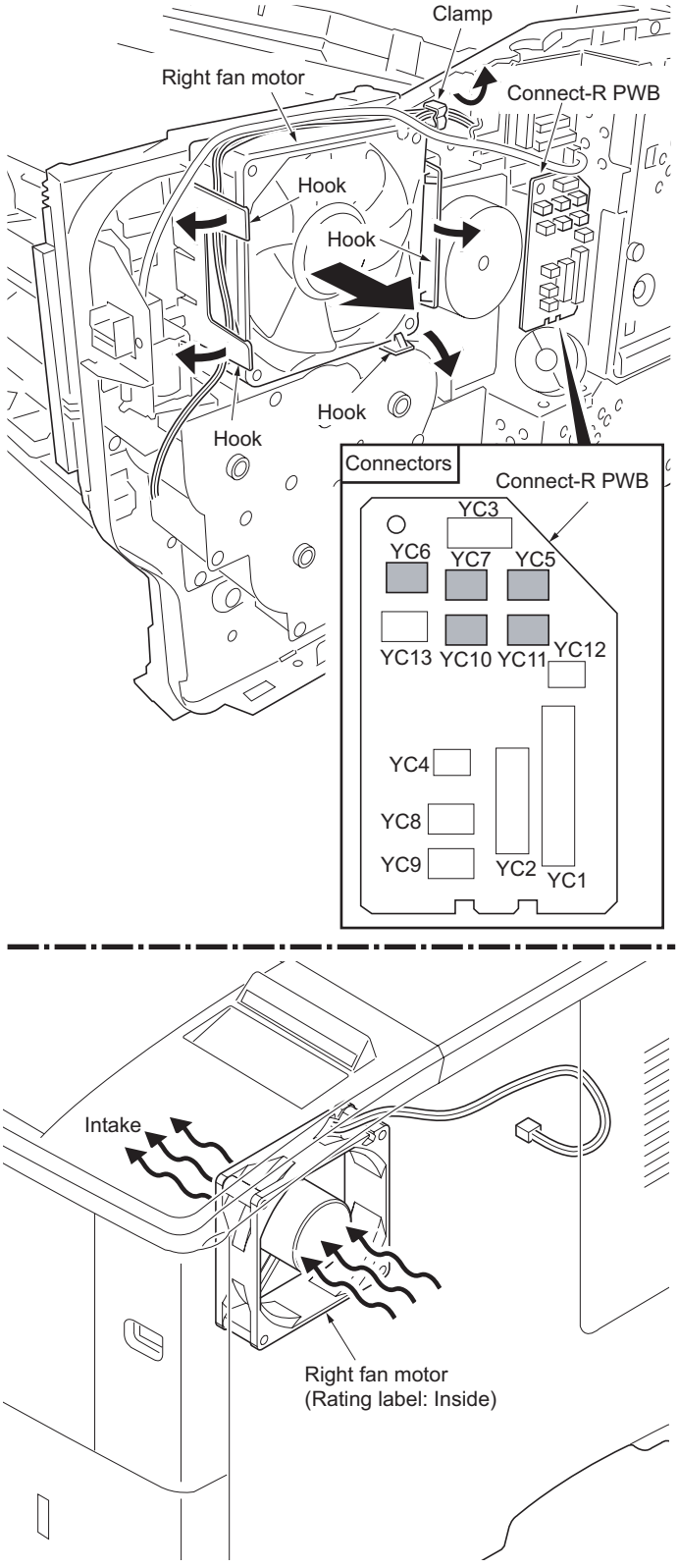


Figure 1-5-46

9. Remove three screws and then remove the paper feed drive unit.
10. Check or replace the paper feed drive unit and refit all the removed parts.
11. To refit the paper feed drive unit, make sure mesh of gears.

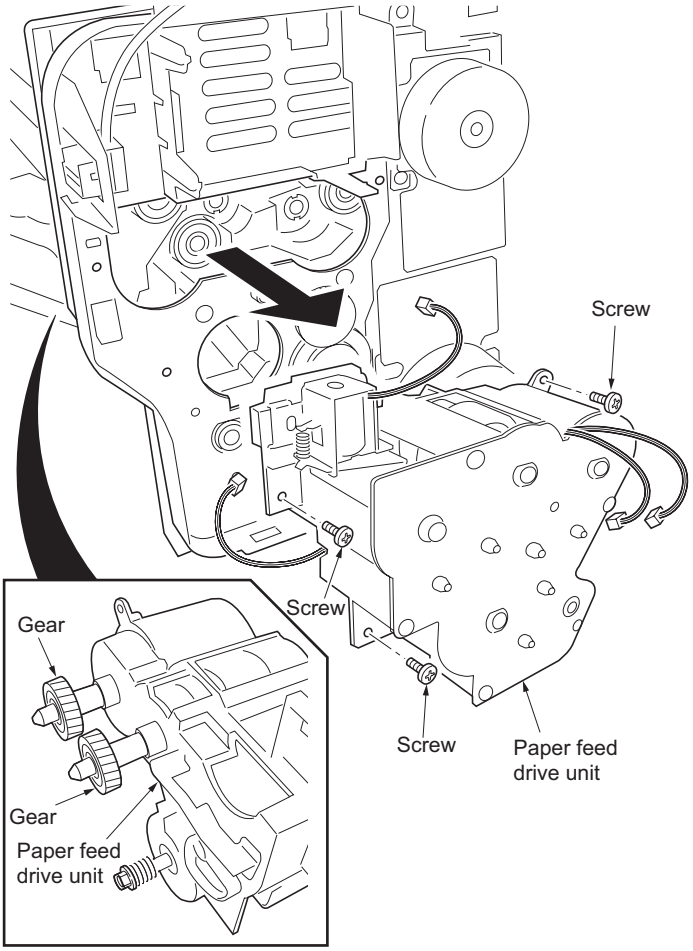


Figure 1-5-47

(2) Detaching and refitting the main drive unit

Procedure

1. Remove the top cover (See page 1-5-3).
2. Remove the right cover (See page 1-5-4).
3. Remove the controller box (See page 1-5-27).
4. Remove two connectors.
5. Remove five screws and then remove the main drive unit.
6. Check or replace the main drive unit and refit all the removed parts.

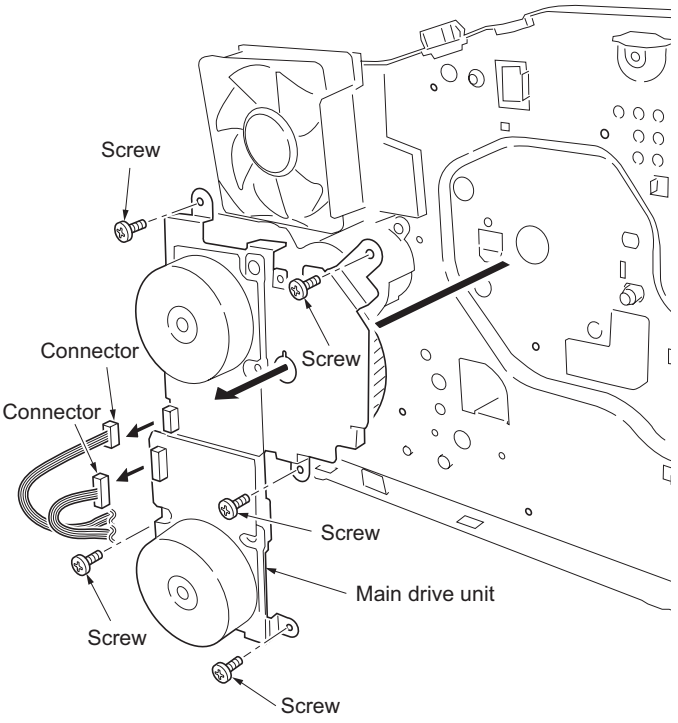


Figure 1-5-48

(3) Detaching and refitting the laser scanner unit

Procedure

1. Remove the top cover (See page 1-5-3).
2. Remove the right cover (See page 1-5-4).
3. Remove two connectors from the main PWB.

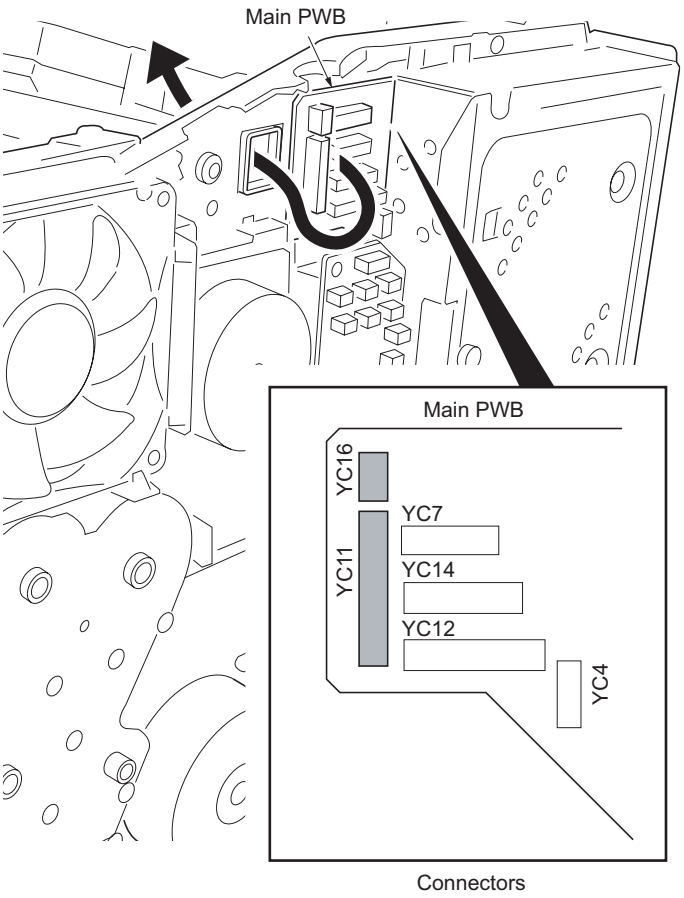


Figure 1-5-49

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

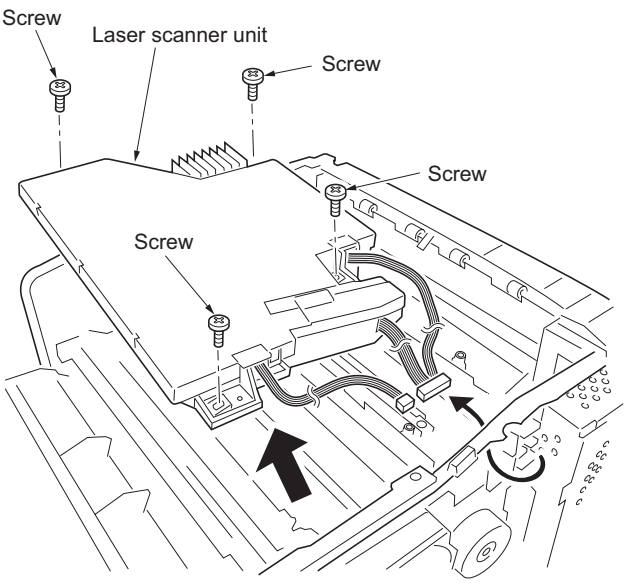


Figure 1-5-50

(4) Direction of installing the principal fan motors

When detaching or refitting the left fan motor or right fan motor, be careful of the airflow direction (intake or exhaust).

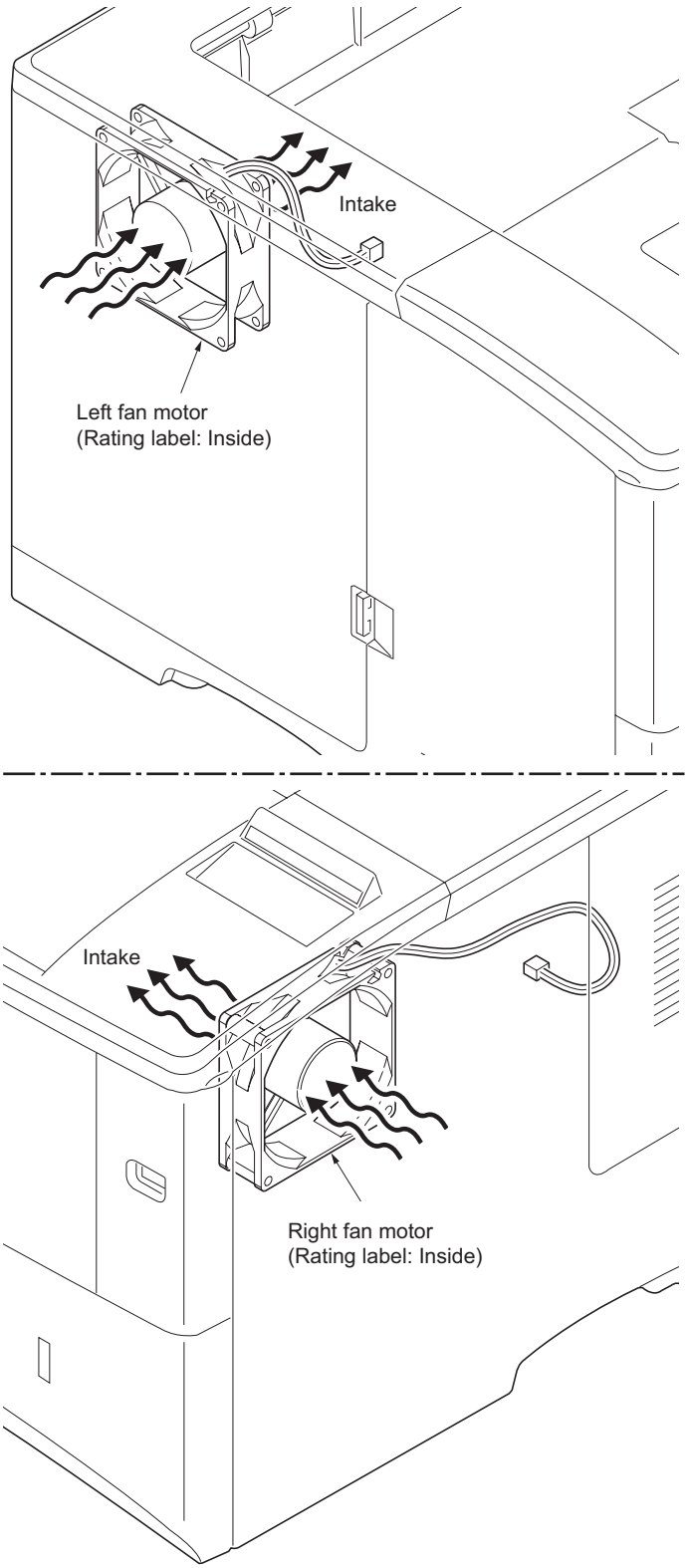


Figure 1-5-51

1-6-1 Downloading firmware

Firmware files are named after the following codes:

Firmware file name example

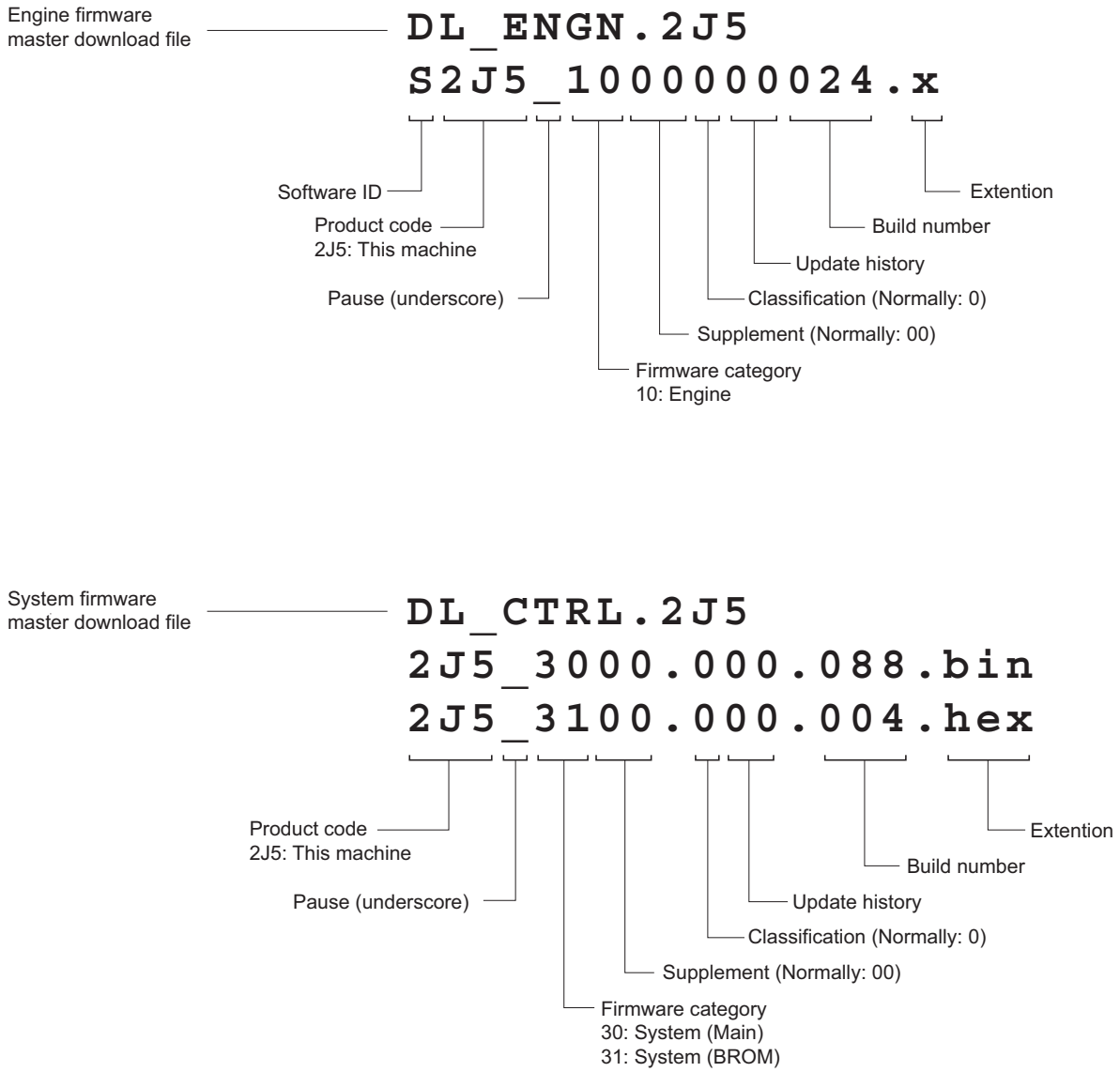


Figure 1-6-1

(1) Downloading the firmware from the USB memory

To download data written in a USB memory 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 main PWB may have to be replaced.

1. Turn printer power off.
2. Connect the USB memory to the PC.
3. Copy the firmware file to the root directory of the USB memory.
4. Remove the USB memory from the PC and then insert the USB memory into the printer's USB memory slot.

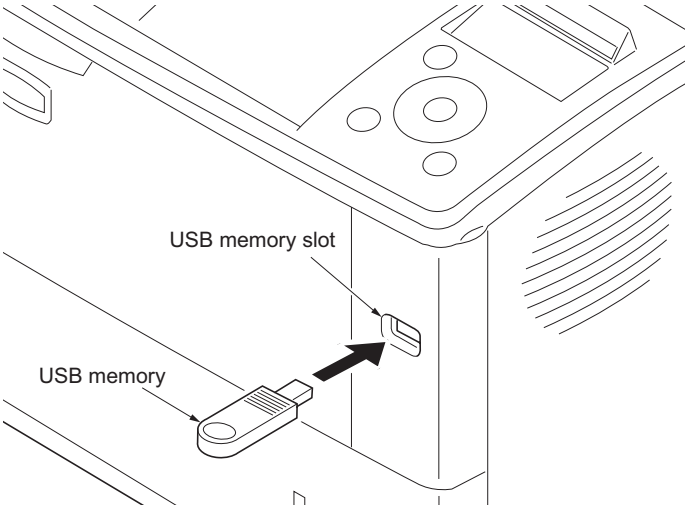


Figure 1-6-2

5. Turn printer power on.
6. When message display (1) is displayed to detect firmware in the USB memory.
7. Message display (2) is displayed during downloading.
8. When message display (3) is displayed to indicate downloading is finished.
9. Turn printer power off.
10. Remove the USB memory from USB memory slot.
11. Turn printer power on.
12. Confirm that message display (4) is displayed after warm-up.
13. Print the status page. Print the status page to check that the firmware version has been updated.

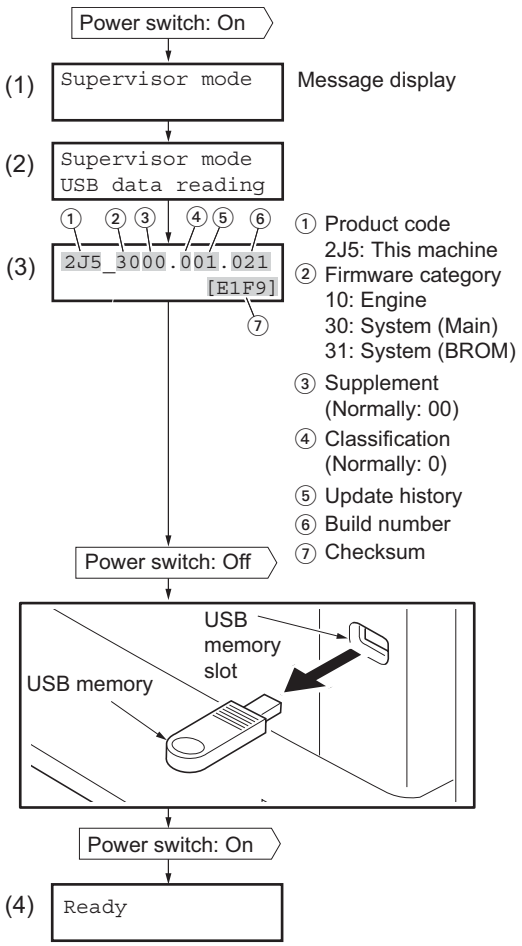


Figure 1-6-3

(2) 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 main PWB may have to be replaced.

1. Turn printer power off.
2. Remove two screws and then remove the option interface slot cover.
3. Insert the memory card into the printer's memory card slot.

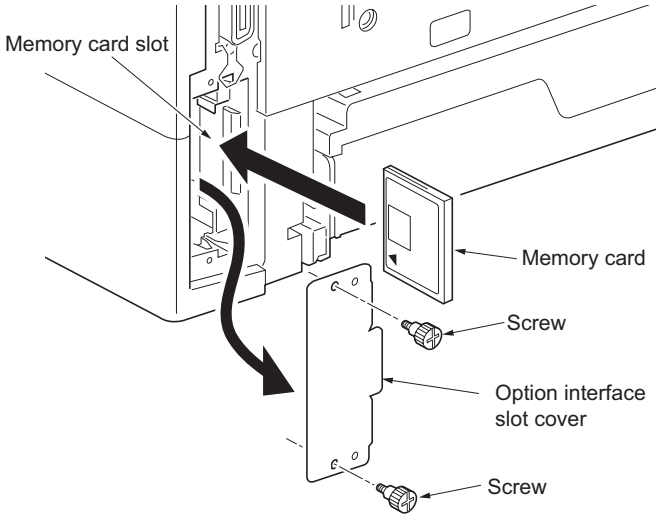


Figure 1-6-4

4. Turn printer power on.
5. Press Menu key on the printer's operation panel and carry out the memory card formatting procedure (1).
6. When formatting is complete, turn printer power off.

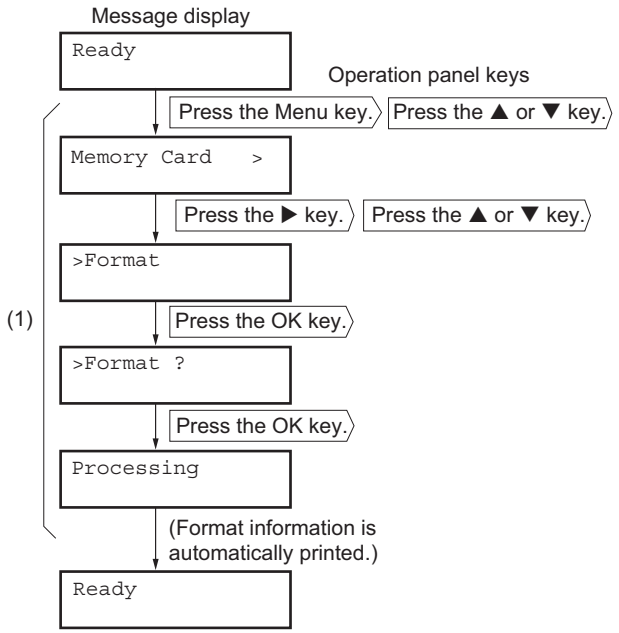


Figure 1-6-5

7. Remove the formatted memory card from the memory card slot.
8. Insert the memory card to the PC's slot or to the adaptor.
9. Copy the firmware file to download to the root directory of the memory card.
10. Remove the memory card from the PC's slot or the adaptor.

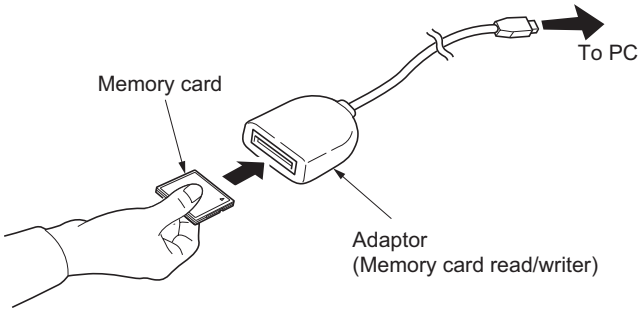


Figure 1-6-6

11. Confirm that the printer's power switch is set to off.
12. Insert the memory card into the printer's memory card slot.

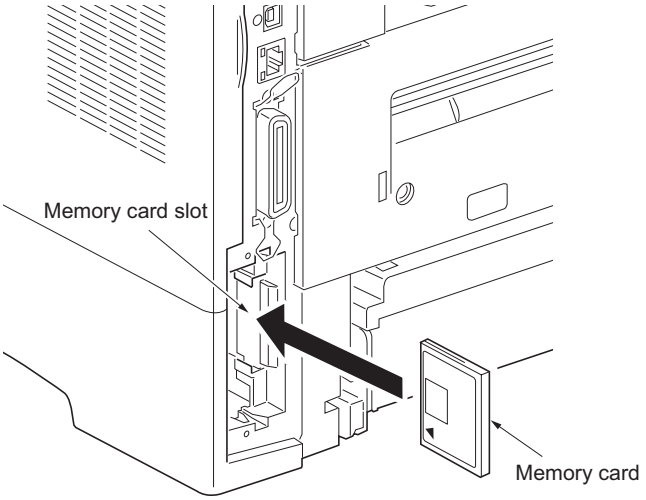


Figure 1-6-7

13. Turn printer power on.
14. When message display (1) is displayed to detect firmware in the memory card.
15. Message display (2) is displayed during downloading.
16. When message display (3) is displayed to indicate downloading is finished.
17. Turn printer power off.
18. Remove the memory card from memory card slot.
19. Refit the option interface slot cover by two screws.
20. Turn printer power on.
21. Confirm that message display (4) is displayed after warm-up.
22. Print the status page. Print the status page to check that the firmware version has been updated.

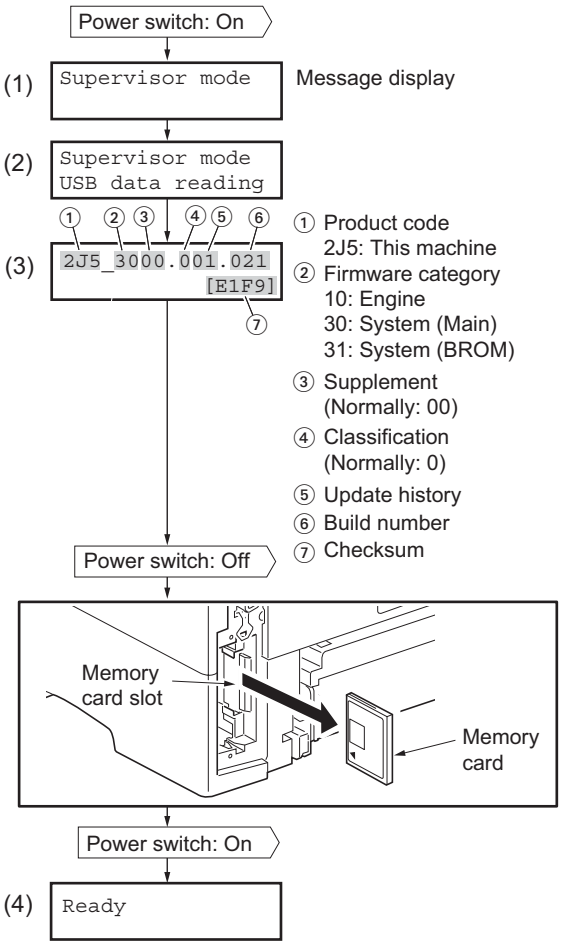


Figure 1-6-8

2-1-1 Paper feed section

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

(1) Paper cassette paper feeding

Paper cassette is the universal type that is applicable to various paper sizes by adjusting the side guides and paper stopper and approximate 250 pages can be put in. Mechanism in the paper cassette consists of the bottom plate that lifts the paper in order to let it touch the pickup roller and the retard roller that prevents papers from multiple feeding. Paper that is drawn out by the rotation of pickup roller of the paper cassette paper feed section is then sent in between the feed roller and the retard roller. Function of the built-in torque limiter in the retard roller gives weak resistance force against the rotation. Normally, when only a page is drawn out by the rotation of pickup roller, the paper is conveyed to the printer by the rotation of feed roller on its own. If the pickup roller drew out two lapped pages someway, the upper paper is conveyed by the feed roller and the lower paper stays due to the rotation resistant force of the retard roller because the friction force between papers is smaller than the rotation resistance force of the retard roller and then the multiple paper feed can be prevented.

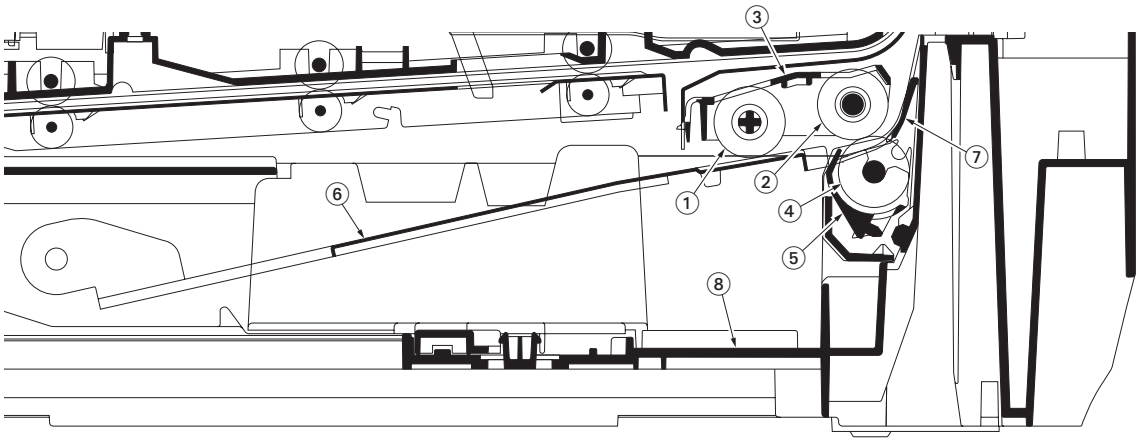


Figure 2-1-1 Paper cassette section

(1)	Pickup roller	(5)	Retard holder
(2)	Paper feed roller	(6)	Bottom plate
(3)	Feed holder	(7)	Retard guide
(4)	Retard roller	(8)	Cassette base

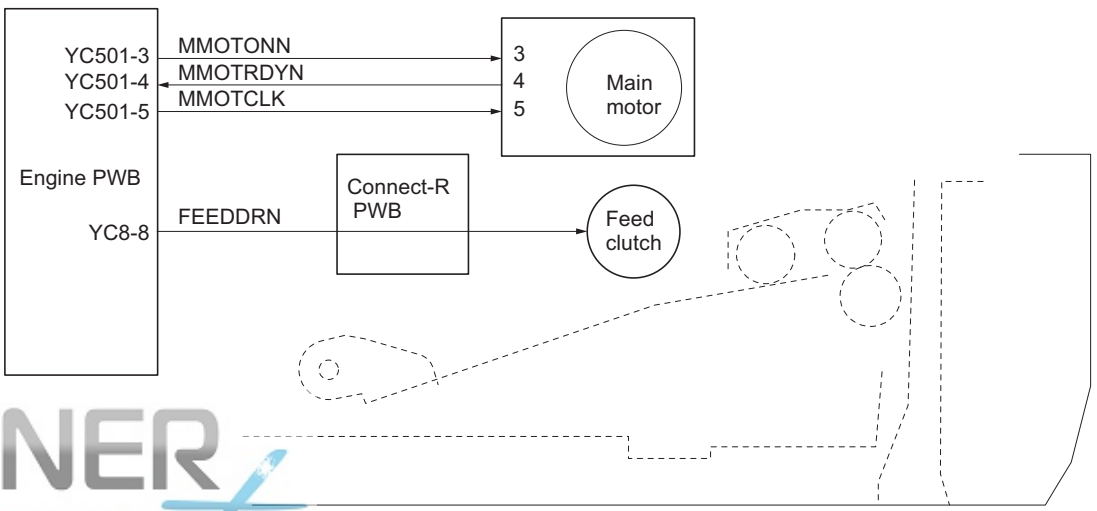


Figure 2-1-2Paper cassette section block diagram

(2) MP tray paper feed section

The MP tray can contain about 100 pages. Feeding is performed by the rotation of the MP tray feed roller from the MP tray. Function of the MP tray friction pad prevents papers from multiple feeding.

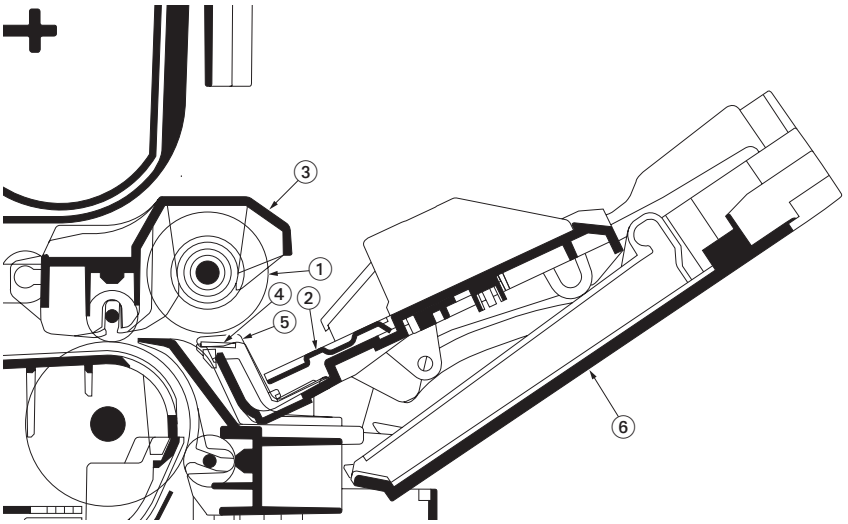


Figure 2-1-3 MP tray paper feed section

(1) MP tray paper feed roller
(2) Bottom plate
(3) MP tray frame
(4) MP tray separator
(5) MPF base
(6) MP tray cover

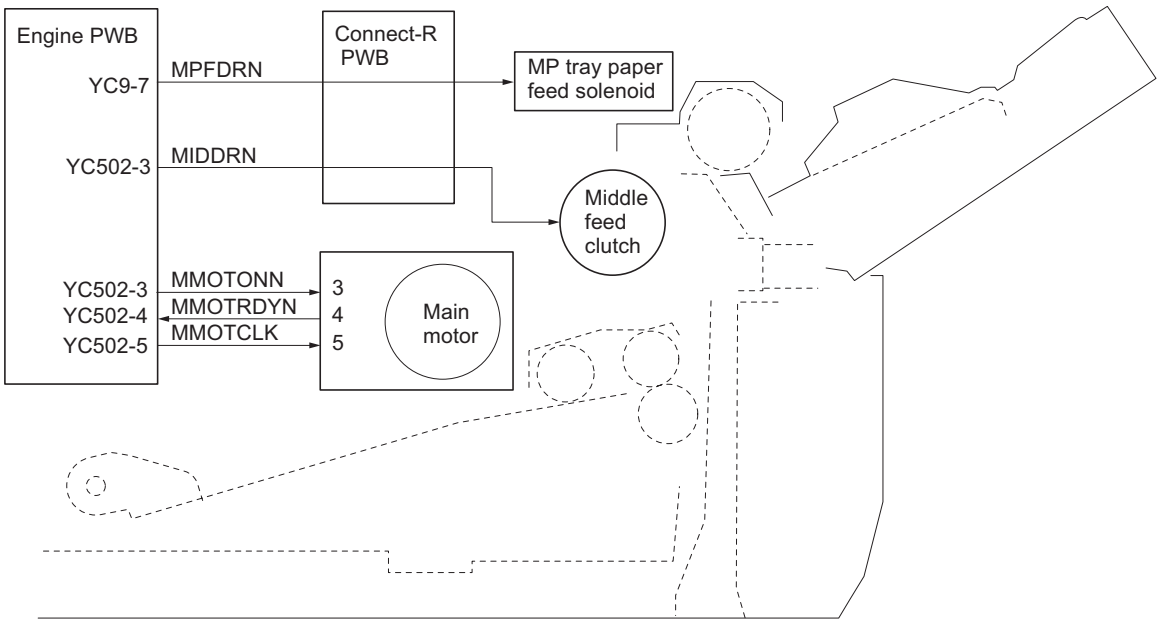


Figure 2-1-4MP tray paper feed section block diagram

(3) Paper feed conveying section

The conveying section consists of the parts shown in the following illustration and conveys papers from the paper cassette or the MP tray to the transfer/separation section when papers are fed. Paper by feeding or refeeding is conveyed by the middle feed roller to the position where the registration sensor is turned on, and then sent to the transfer/separation section by the upper registration roller and lower registration roller.

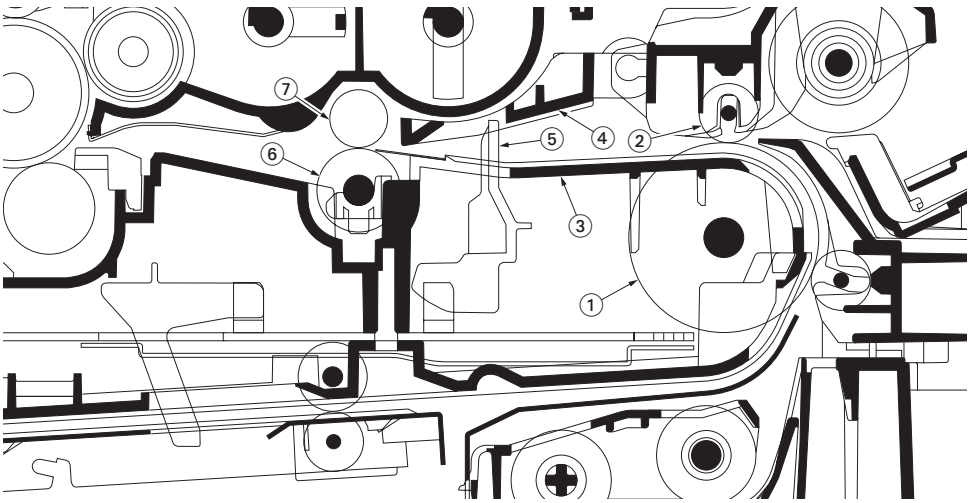


Figure 2-1-5Paper feed conveying section

(1) Middle feed roller
(2) Feed DU pulley
(3) Feed frame
(4) Registration upper guide
(5) Registration sensor (actuator)
(6) Registration lower roller
(7) Registration upper roller

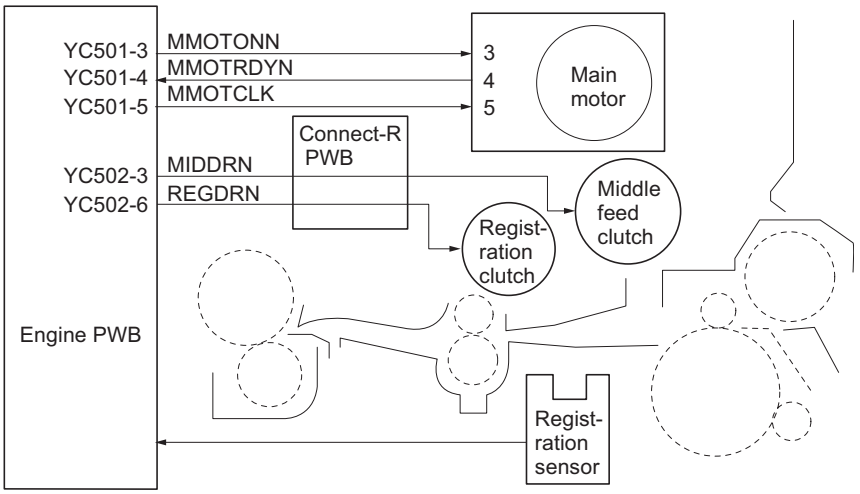


Figure 2-1-6Paper feed conveying section block diagram

2-1-2 Drum section

(1) Drum section

The drum unit includes a photoconductive drum, eraser lamp, cleaning blade and, a main charger unit. The drum unit is removable with the main charger unit.

.

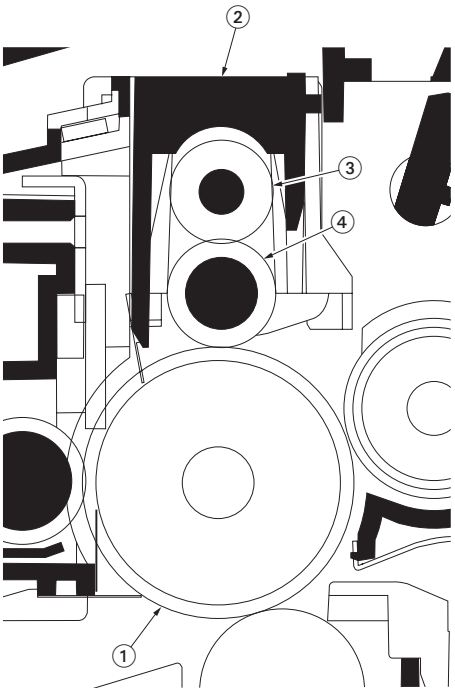


Figure 2-1-7 Drum section

(1) Drum
(2) Main charger case
(3) Charger roller cleaning roller
(4) Main charger roller

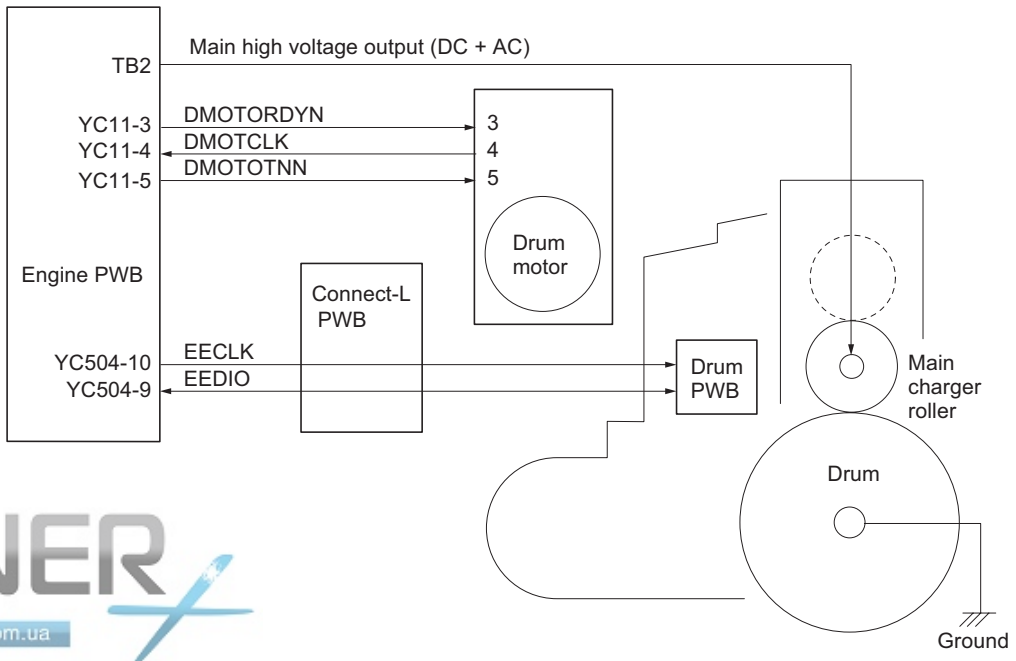


Figure 2-1-8Drum section block diagram

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 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.

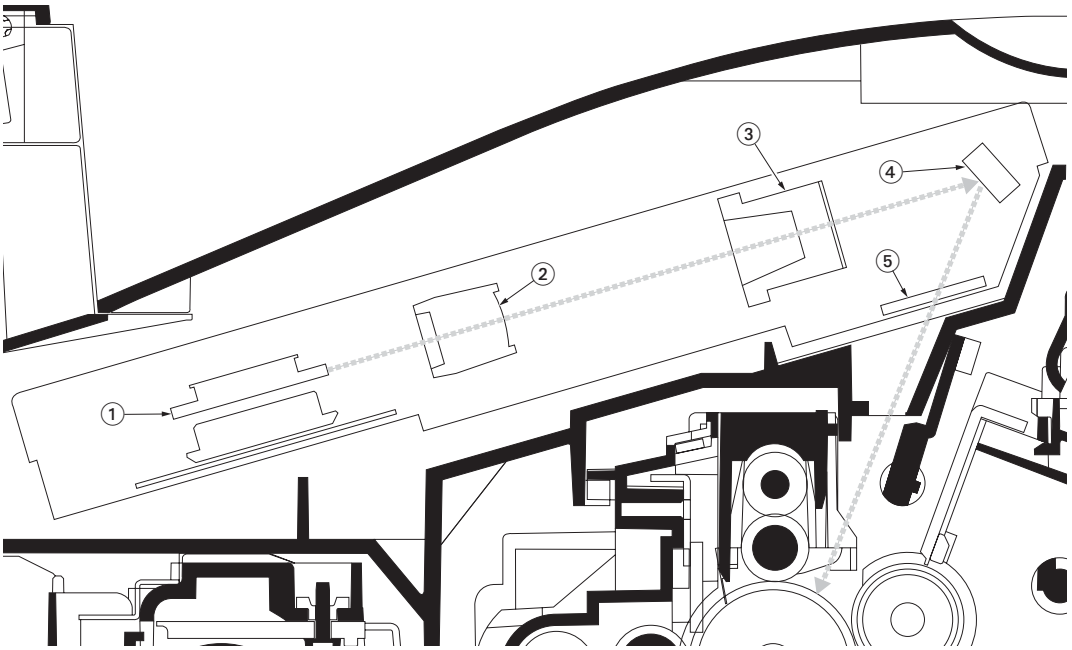


Figure 2-1-9Laser scanner unit

(1) Polygon motor (polygon mirror)
(2) f-θ sub lens
(3) f-θ main lens
(4) Direction change mirror
(5) Protective glass

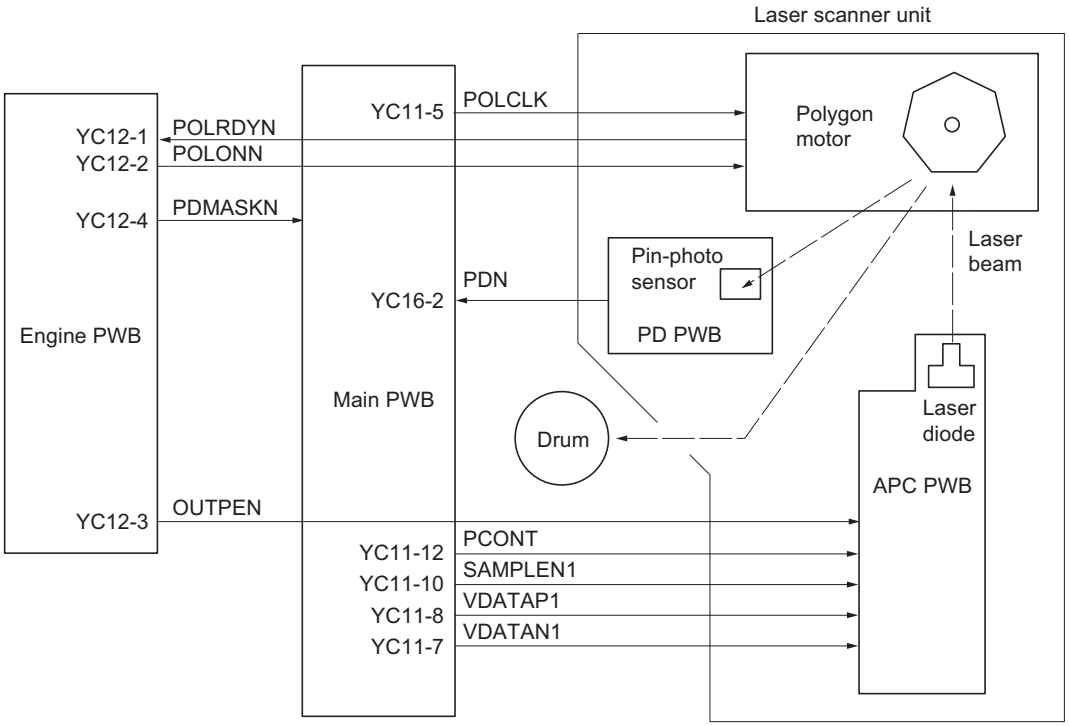


Figure 2-1-10Laser scanner unit block diagram

2-1-4 Developing section

(1) Developer unit

The developing section consists of the developer unit and the toner container. The developer unit consists of the developing roller where a magnetic brush is formed, the doctor blade and the agitator A and B that agitate the toner. Also, the toner sensor checks whether or not toner remains in the developer unit.

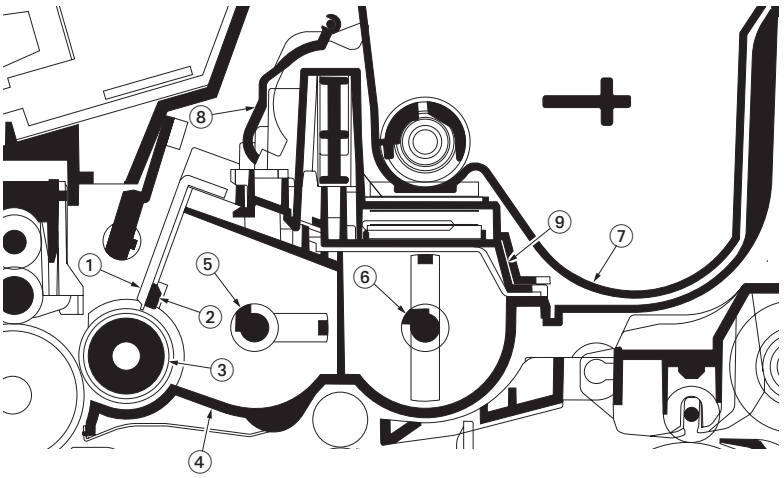


Figure 2-1-11Developer unit

(1) Developing blade
(2) Blade magnet
(3) Developing roller
(4) Developer case
(5) Agitator A
(6) Agitator B
(7) Toner container
(8) Developer lid
(9) Sleeve cover

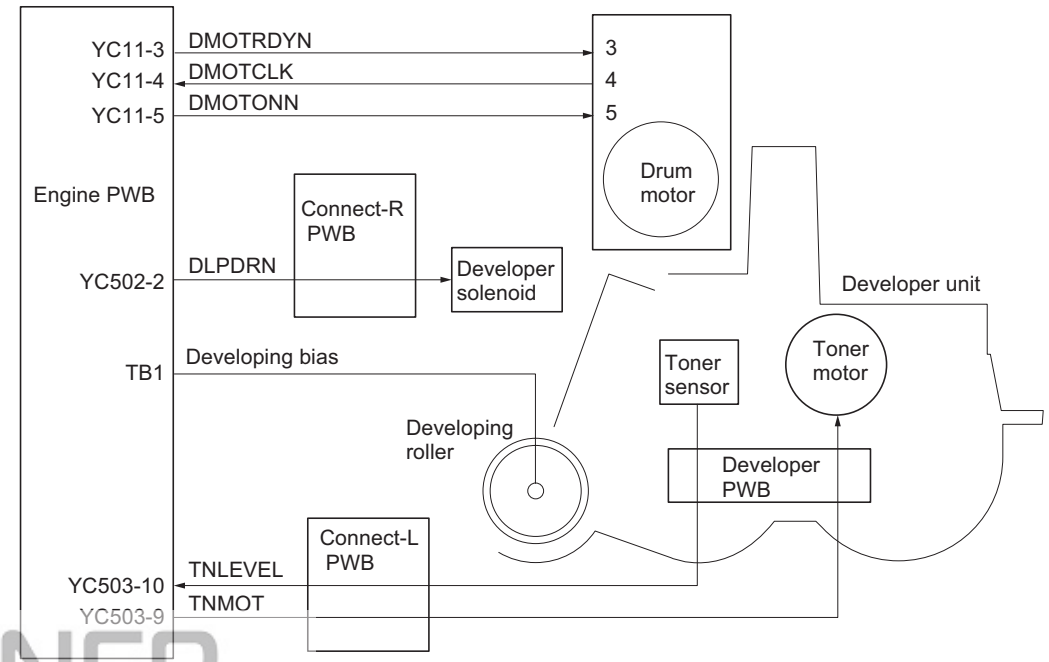


Figure 2-1-12Developing section block diagram

2-1-5 Transfer/separation section

(1) Transfer/separation section

The image developed by toner on the drum is transferred onto the paper because of the electrical attraction between the toner itself and the transfer roller. The transfer roller is negatively biased so that the positively charged toner is attracted onto the paper while it is pinched by the drum and the transfer roller.

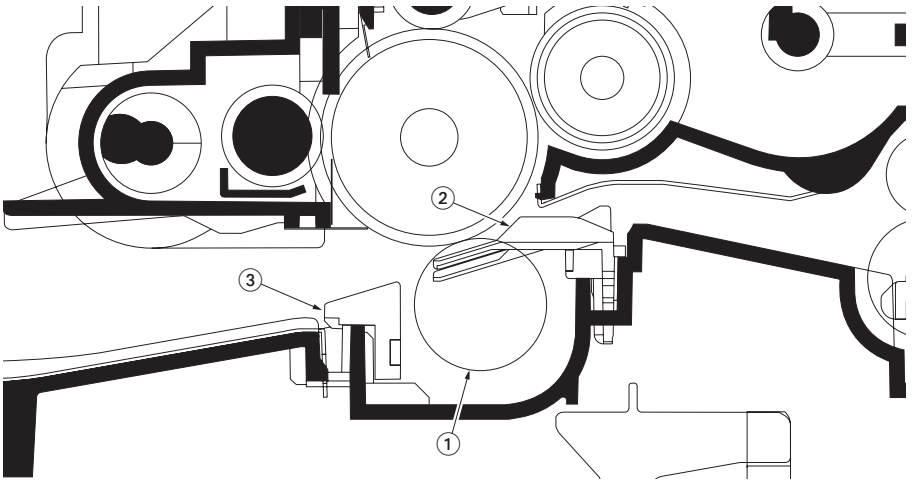


Figure 2-1-13Transfer/separation section

(1) Transfer roller
(2) Paper chute guide
(3) Separation brush

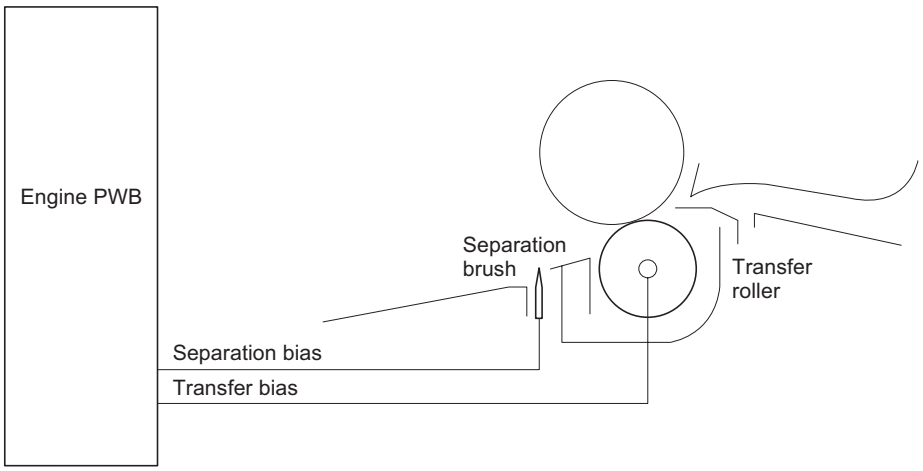


Figure 2-1-14Transfer /separation section block diagram

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 cleaning roller. The waste toner is collected at the output end of the drum screw and sent to the waste toner box.
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.

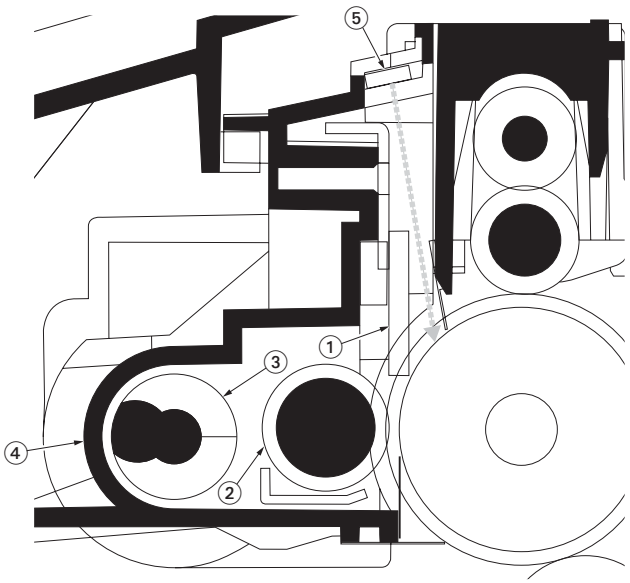


Figure 2-1-15Cleaning section

(1) Cleaning blade
(2) Cleaning roller
(3) Drum screw
(4) Drum frame
(5) Eraser lamp (PWB)

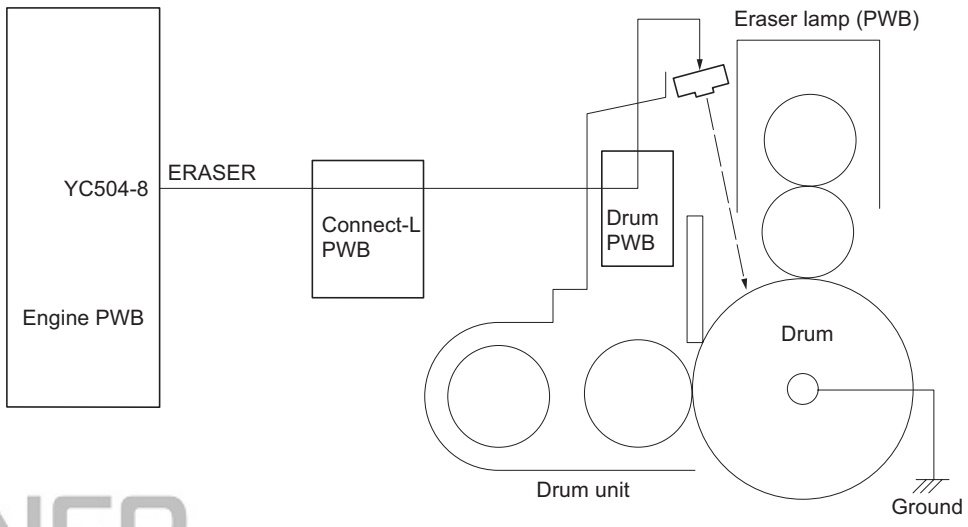


Figure 2-1-16Cleaning section block diagram

2-1-7 Fuser section

(1) Fuser unit

The fuse section consists of the following parts and fixes the toner that is transferred to the paper at the transfer/separation section. The paper sent from the transfer/separation section is interleaved between the heat roller and the press roller. The heat roller is heated by the fuser heater lamp installed inside, and the toner is fused by heat and pressure and fixed onto the paper because the press roller is pressed by the fuser press spring. The fuser thermistor detects the temperature of the surface on the heat roller heated by the fuser heater lamp and this temperature is controlled by the engine PWB. If the fuser section shows extremely high temperature, the power line will be shut off and the fuser heater lamp is forced to turn off. When fusing of toner is complete, the paper is separated from he heat roller by the separator and ejected to the paper eject section/rear unit.

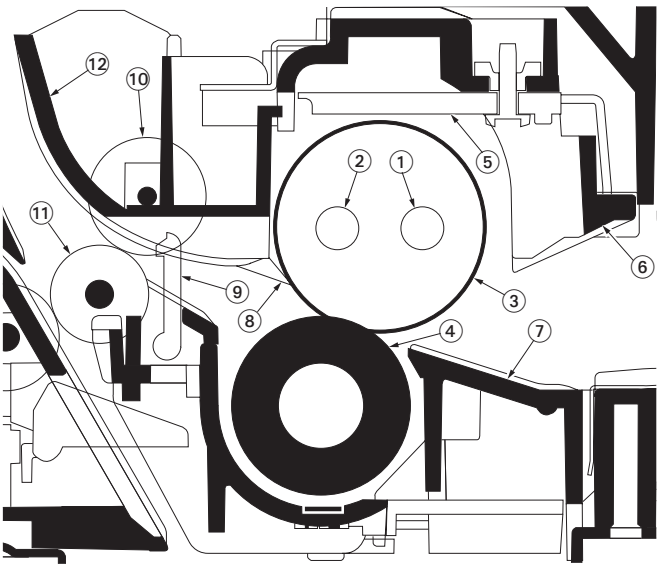


Figure 2-1-17Fuser unit

(1) Fuser heater lamp M
(2) Fuser heater lamp S
(3) Heat roller
(4) Press roller
(5) Fuser thermistor M
(6) Fuser upper frame
(7) Fuser lower frame
(8) Separator
(9) Paper exit sensor (actuator)
(10) Paper exit pulley
(11) Paper exit roller
(12) Feed guide

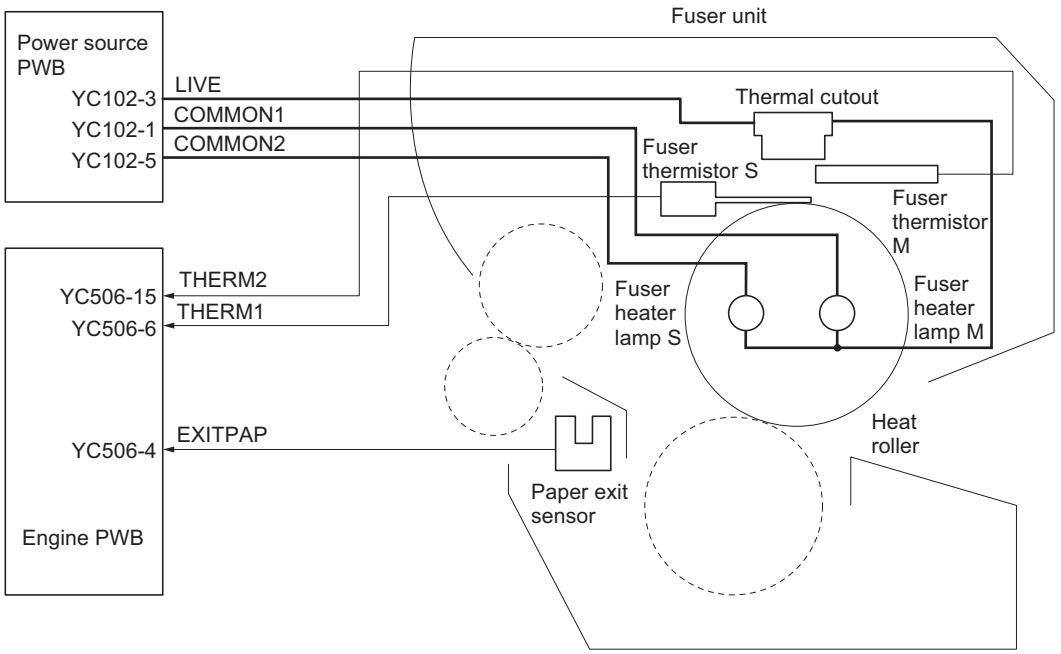


Figure 2-1-18Fuser section block diagram

2-1-8 Paper exit section/rear unit

(1) Paper exit section/rear unit

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 paper exit sensor which is driven by the fuser actuator in the fuser unit, and is led by the guide comprised of the rear cover and the frame, finally reaching the face down upper roller. The paper is delivered to the top tray by the rotation of the face down upper roller.

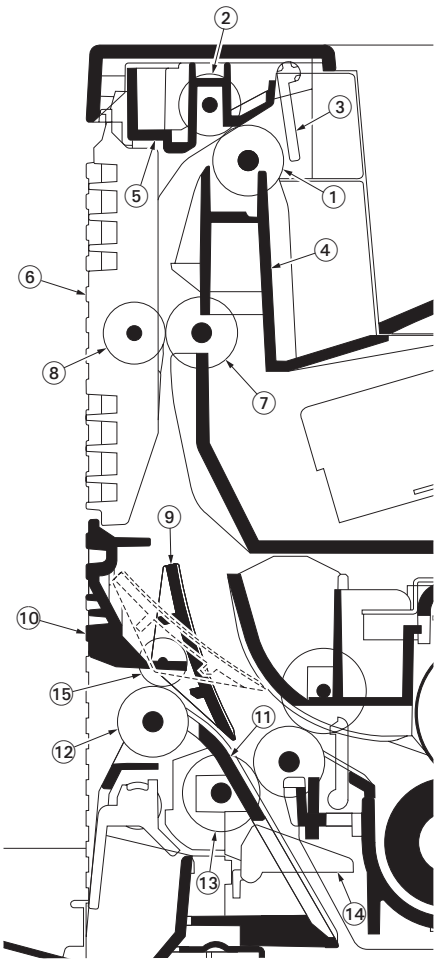


Figure 2-1-19Paper exit section/rear unit

(1) Face down upper roller
(2) Exit FD pulley
(3) Face down tray paper full sensor (Actuator)
(4) Vertical guide
(5) Paper exit guide
(6) FD cover
(7) Face down lower roller
(8) Feed FD pulley
(9) Face up guide
(10) Rear cover
(11) DU guide
(12) Face up roller
(13) Feed DU pulley
(14) Duplex sensor (Actuator)
(15) Exit FU pulley

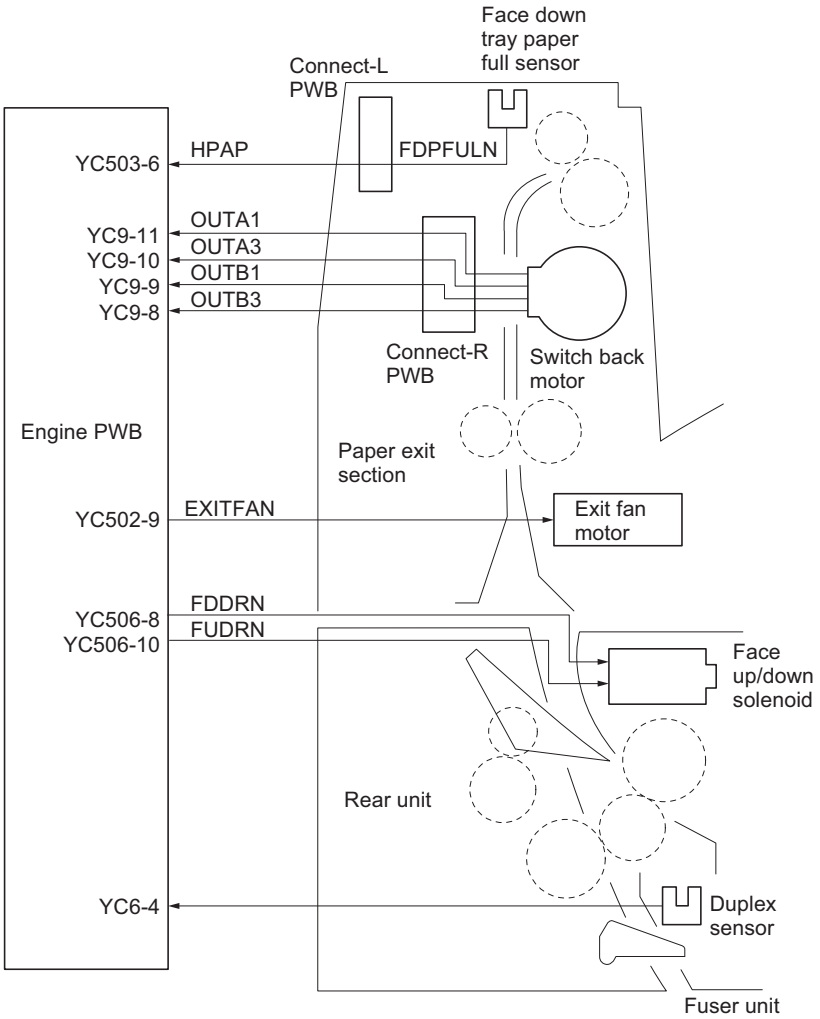


Figure 2-1-20Paper exit section/rear unit block diagram

2-1-9 Duplex conveying section

(1) Duplex conveying section

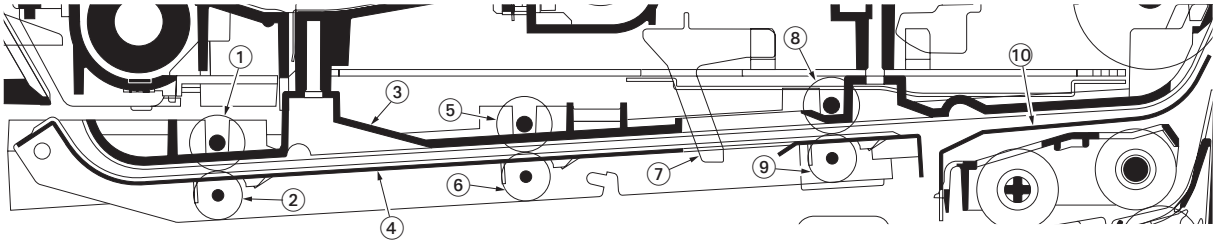


Figure 2-1-21Duplex conveying section

(1) DU roller
(2) DU feed pulley
(3) DU base
(4) DU lower guide
(5) DU roller
(6) DU feed pulley
(7) Duplex jam sensor (actuator)
(8) DU roller
(9) DU feed pulley
(10) Feed upper guide

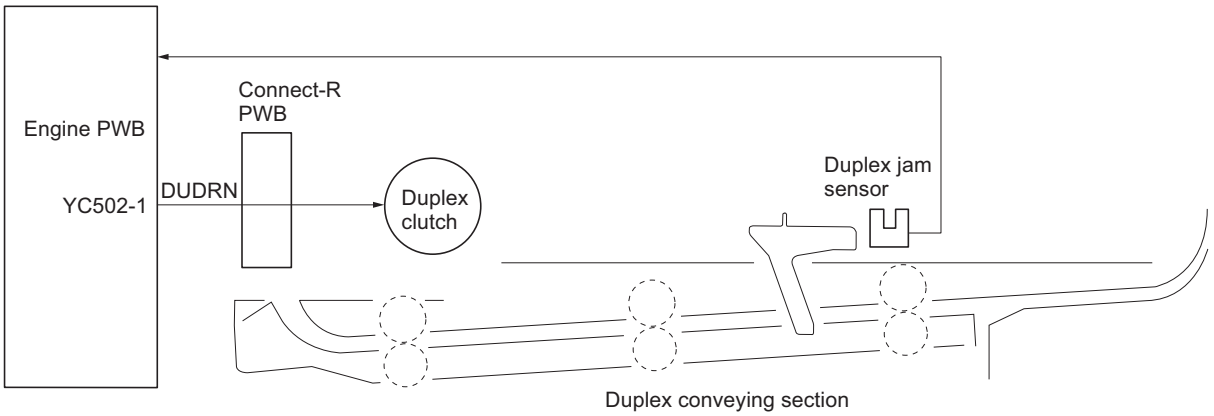


Figure 2-1-22Duplex conveying section block diagram

2-2-1 Electrical parts layout

(1) Electrical parts layout

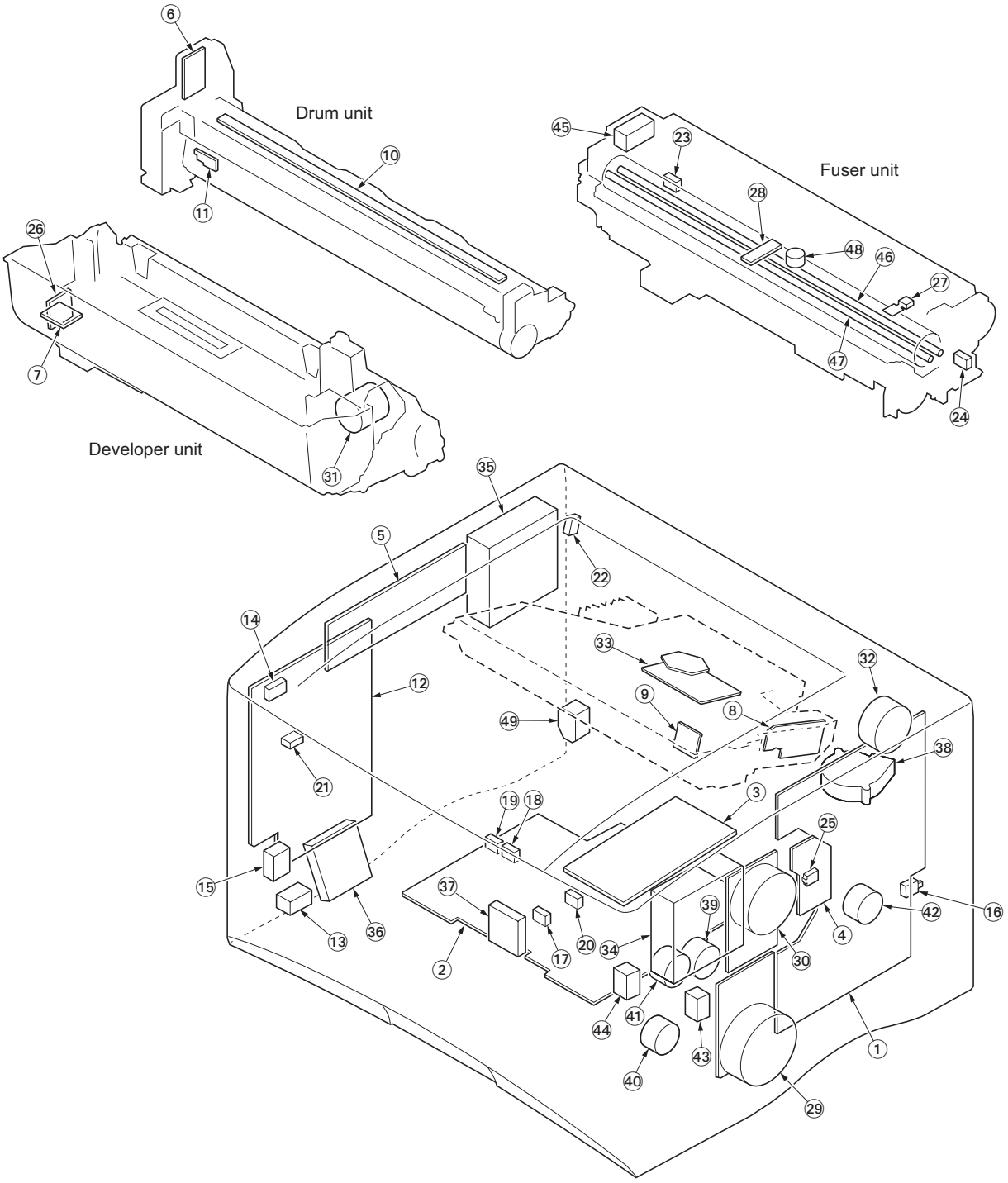


Figure 2-2-1 Electrical parts layout

1. Main PWB ..... Controls the software such as the print data processing and provides theinterface with computers.
2. Engine PWB ..... Controls printer hardware such as high voltage/bias output control, paper conveying system control, and fuser temperature control, etc.
3. Operation panel PWB ..... Indicates the LCD message display and LED indicators. Controls key inputs.

4. Connect-R PWB ..... Interconnects the engine PWB and the electrical parts.
5. Connect-L PWB ..... Interconnects the engine PWB and the electrical parts.
6. Drum PWB ..... Relays wirings from electrical components on the drum unit. Drum individual information in EEPROM storage.
7. Developer PWB ..... Relays wirings from electrical components on the developer unit.
8. APC PWB ..... Generates and controls the laser beam.
9. PD PWB ..... Controls horizontal synchronizing timing of laser beam.
10. Eraser lamp PWB ..... Eliminates the residual electrostatic charge on the drum.
11. Waste toner sensor PWB ..... Detects the waste toner box being full.
12. Power source unit ..... Generates 24 V DC and 5 V DC power source. Controls the fuser heater lamp.
13. Power switch ..... Turns ON/OFF the AC power source.
14. Interlock switch ..... Shuts off 24 V DC power line when the top cover is opened.
15. Cassette size switch ..... Detects the paper size dial setting of the paper setting dial.
16. Fuser unit switch ..... Detects open/close rear unit (fuser unit).
17. Registration sensor ..... Detects the timing of primary feeding.
18. Paper gauge sensor 1 ..... Detects the paper remaining amount level.
19. Paper gauge sensor 2 ..... Detects the paper remaining amount level.
20. Duplex jam sensor ..... Detects paper jam in the duplex conveying section.
21. MP tray paper feed sensor ..... Detects paper on the MP tray.
22. Face down tray paper full sensor ..... Detects whether the face down tray is full.
23. Paper exit sensor ..... Detects paper jam in the fuser unit.
24. Duplex sensor ..... Detects paper jam in the rear unit.
25. Temperature/humidity sensor ..... Detects the ambient temperature and absolute humidity.
26. Toner sensor ..... Detects the toner in the toner container.
27. Fuser thermistor S ..... Measures the heat roller temperature.
28. Fuser thermistor M ..... Measures the heat roller temperature.
29. Main motor ..... Drives the paper feed/conveying section and fuser unit.
30. Drum motor ..... Drives the drum unit and developer unit.
31. Toner motor ..... Replenishes the developer with toner.
32. Switchback motor ..... Drives paper exit (switchback) section.
33. Polygon motor ..... Drives the polygon mirror.
34. Right fan motor ..... Cools the interior of machine.
35. Left fan motor ..... Cools the interior of machine.
36. PSU fan motor ..... Cools the power source unit.
37. Feed fan motor ..... Cools the paper feed conveying section and duplex conveying section.
38. Exit fan motor ..... Disperses steam.
39. Registration clutch ..... Controls the secondary paper feed.
40. Paper feed clutch ..... Controls the paper cassette paper feed.
41. Middle feed clutch ..... Controls the paper conveying at the conveying section.
42. Duplex clutch ..... Controls the paper conveying at the duplex conveying section.
43. Developer solenoid ..... Controls the developer unit drive.
44. MP tray paper feed solenoid ..... Controls the primary paper feed from the MP tray.
45. Face up/down solenoid ..... Switches the output stack between face up and face down.
46. Fuser heater lamp M ..... Heats the heat roller.
47. Fuser heater lamp S ..... Heats the heat roller.
48. Thermal cutout ..... Shuts off the power source to the fuser heater lamp when the heat roller reaches extremely high temperature.
49. AC inlet ..... Connects the AC power source.

2-3-1 Power source unit

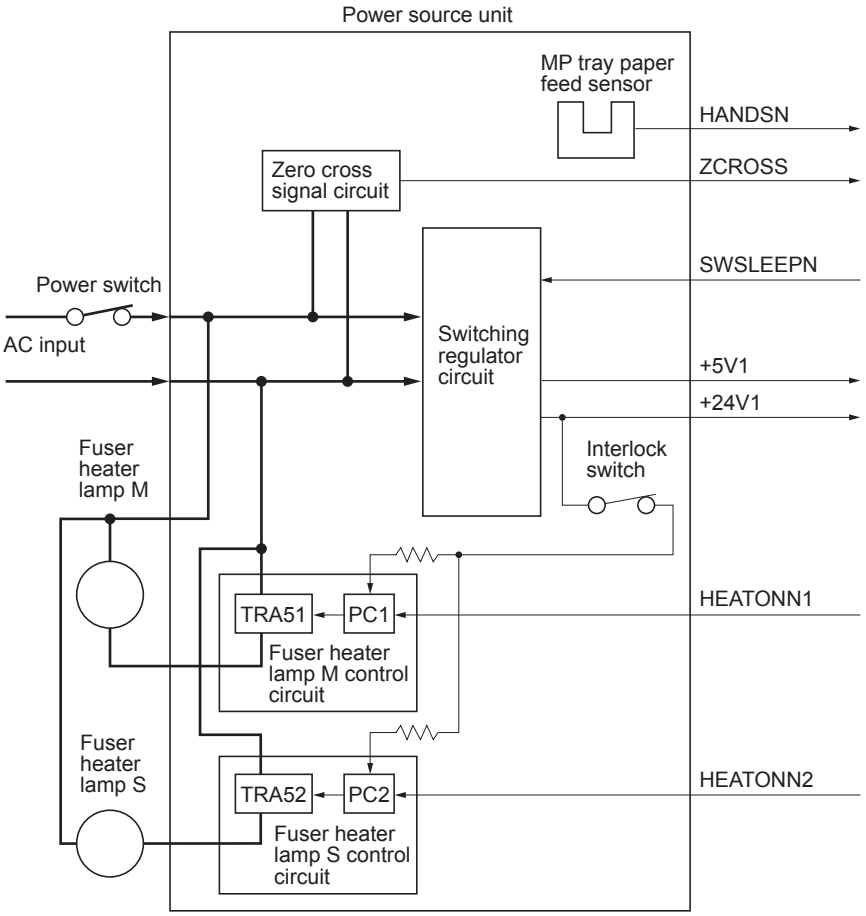


Figure 2-3-1Power source unit block diagram

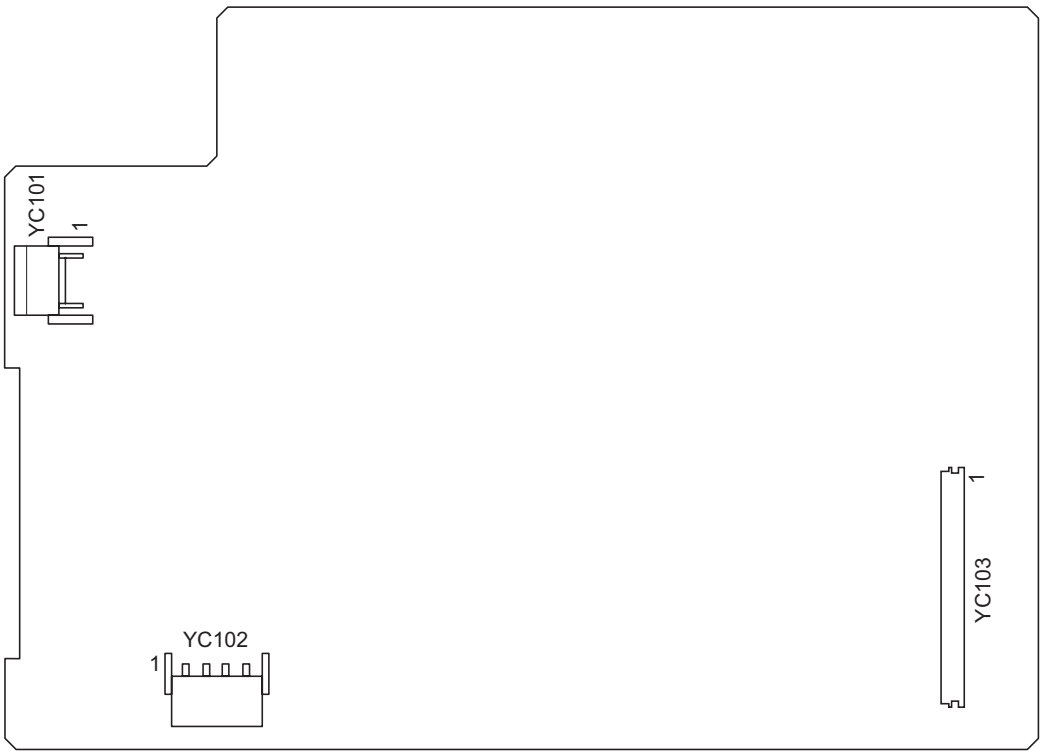


Figure 2-3-2Power source unit silk-screen diagram

Connector	Pin No.	Signal	I/O	Voltage	Description
YC101	1	LIVE	I	220 - 240 V AC	AC power input
Connected to the AC inlet	2	NEUTRAL	I	220 - 240 V AC	AC power input
YC102	1	COMMON1	O	220 - 240 V AC	Fuser heater lamp M
Connected to the heater lamp M and S	2	N.C.	-	-	Not used
	3	LIVE	O	220 - 240 V AC	
	4	N.C.	-	-	Not used
	5	COMMON2	O	220 - 240 V AC	Fuser heater lamp S
YC103	1	+5V1	O	5 V DC	5 V DC power source
Connected to the con-nect-L PWB	2	+5V1	O	5 V DC	5 V DC power source
	3	+5V1	O	5 V DC	5 V DC power source
	4	+24V1	O	24 V DC	24 V DC power source
	5	N.C.	-	-	Not used
	6	HANDSN	O	0/5 V DC	MP tray paper feed sensor: On/Off
	7	HEATONN2	I	0/5 V DC	Fuser heater lamp S: On/Off
	8	HEATONN1	I	0/5 V DC	Fuser heater lamp M: On/Off
	9	ZCROSS	O	0/5 V DC (pulse)	Zero cross signal
	10	SWSLEEPN	I	0/5 V DC	Sleep mode: On/Off
	11	+24V2	O	24 V DC	24 V DC power source (via interlock switch)
	12	GND	-	-	Ground
	13	GND	-	-	Ground
	14	GND	-	-	Ground
	15	GND	-	-	Ground
	16	+24V2	O	24 V DC	24 V DC power source (via interlock switch)
	17	+24V2	O	24 V DC	24 V DC power source (via interlock switch)

2-3-2 Engine PWB

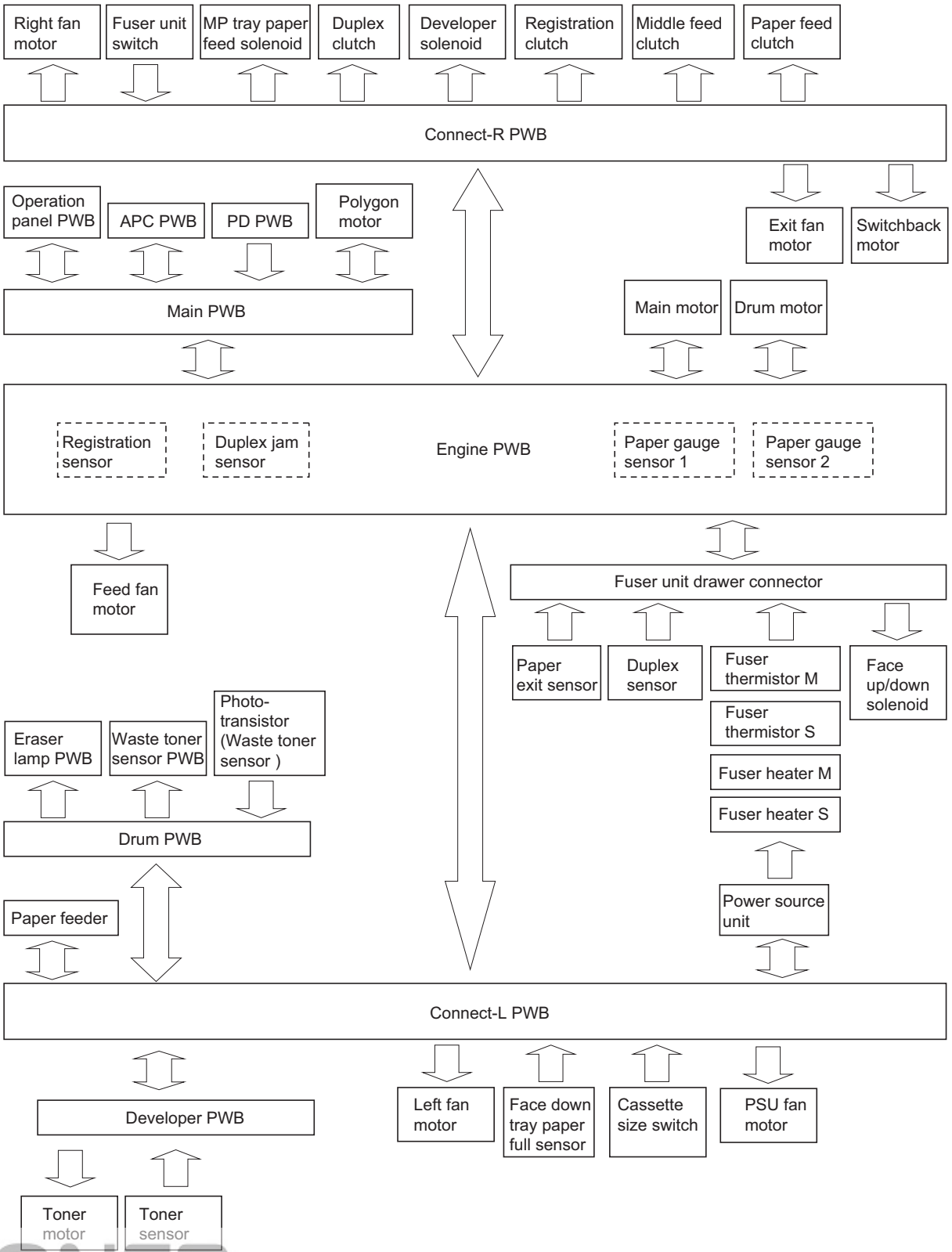


Figure 2-3-3Engine PWB block diagram

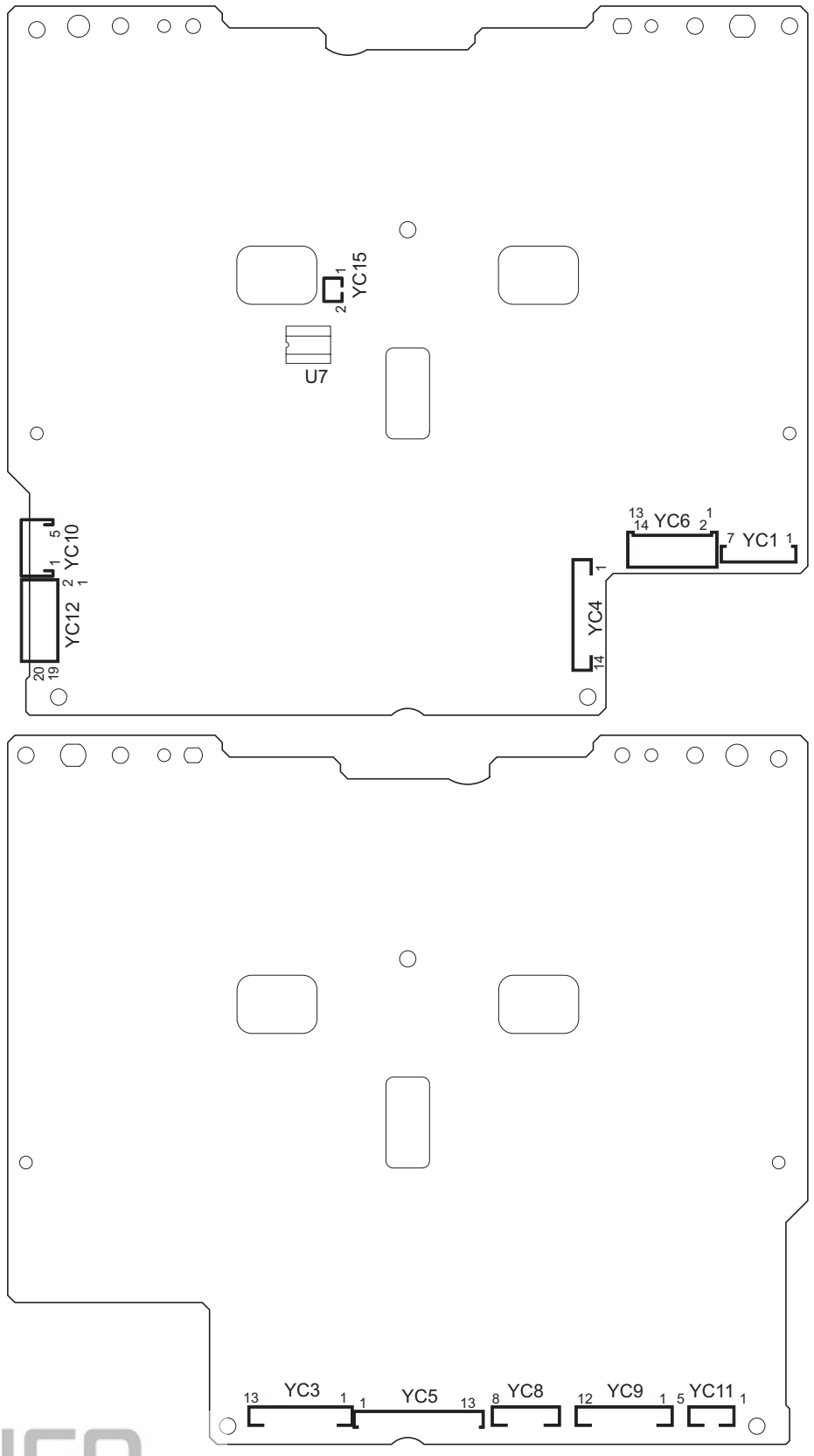


Figure 2-3-4Engine PWB silk-screen diagram

Connector	Pin No.	Signal	I/O	Voltage	Description
YC5	1	OPSDO	O	0/5 V DC (pulse)	Paper feeder serial communication data output signal
Connected to the connect-L PWB (YC7)	2	+24V2	I	24 V DC	24 V DC power source (via interlock switch)
	3	+24V2	I	24 V DC	24 V DC power source (via interlock switch)
	4	GND	-	-	Ground
	5	GND	-	-	Ground
	6	GND	-	-	Ground
	7	GND	-	-	Ground
	8	GND	-	-	Ground
	9	+24V1	I	24 V DC	24 V DC power source
	10	+5V1	I	5 V DC	5 V DC power source
	11	+5V1	I	5 V DC	5 V DC power source
	12	+5V1	I	5 V DC	5 V DC power source
	13	+5V2	I	5 V DC	5 V DC power source
YC501	1	+24V4	O	24 V DC	24 V DC power source
Connected to the main motor	2	GND	-	-	Ground
	3	MMOTONN	O	0/5 V DC	Main motor: On/Off
	4	MMOTRDYN	I	0/5 V DC	Main motor ready signal
	5	MMOTCLK	O	0/5 V DC (pulse)	Main motor clock signal
YC502	1	DUDRN	O	0/24 V DC	Duplex clutch: On/Off
Connected to the connect-R PWB (YC2)	2	DLPDRN	O	0/24 V DC	Developer solenoid: On/Off
	3	MIDDRN	O	0/24 V DC	Middle feed clutch: On/Off
	4	+24V2	O	24 V DC	24 V DC power source
	5	+24V2	O	24 V DC	24 V DC power source
	6	REGDRN	O	0/24 V DC	Registration clutch: On/Off
	7	FEEDDRN	O	0/24 V DC	Paper feed clutch: On/Off
	8	EXITFAN	O	0/24 V DC	Exit fan motor: On/Off
YC503	1	HEATONN2	O	0/5 V DC	Fuser heater lamp S: On/Off
Connected to the connect-L PWB (YC8)	2	HEATONN1	O	0/5 V DC	Fuser heater lamp M: On/Off
	3	ZCROSS	I	0/5 V DC (pulse)	Zero cross signal
	4	SWSLEEPN	O	0/5 V DC	Sleep mode: On/Off
	5	HANDSN	I	0/5 V DC	MP tray paper feed sensor: On/Off
	6	HPAP	-	-	Not used
	7	SWFAN	O	0/24 V DC	PSU fan motor: On/Off
	8	CASET	I	0 to 2.5 V DC	Cassette size switch detection voltage (8 levels)
	9	TNMOT	O	24/0V DC	Toner motor: On/Off
	10	TNLEVEL	I	Analog	Toner sensor detection voltage
YC504	1	OPSDI	I	0/5 V DC (pulse)	Paper feeder serial communication data input signal
Connected to the connect-L PWB (YC6)	2	OPSEL2	O	0/5 V DC	Paper feeder selection signal (2)
	3	OPSEL1	O	0/5 V DC	Paper feeder selection signal (1)
	4	OPSEL0	O	0/5 V DC	Paper feeder selection signal (0)
	5	OPRDYN	I	0/5 V DC	Paper feeder READY signal
	6	OPSCLK	O	0/5 V DC (pulse)	Paper feeder serial communication clock signal
	7	WTNLEDN	O	0/5 V DC (pulse)	Waste toner sensor (light emission) control signal
	8	ERASER	O	24/0 V DC	Eraser lamp: On/Off
	9	EEDIO	I/O	0/5 V DC (pulse)	Drum PWB EEPROM data input/output signal
	10	EECLK	O	0/5 V DC (pulse)	Drum PWB EEPROM clock signal
	11	LFANDRN	O	0/12/24 V DC	Left fan motor: Full speed/Half speed/Off
	12	WTNFUL	I	0/5 V DC (pulse)	Waste toner sensor detection signal

Connector	Pin No.	Signal	I/O	Voltage	Description
YC506	1	+5V1	O	5 V DC	5 V DC power source
Connected to the fuser unit	2	THERM3	I	Analog	Fuser unit detection voltage
	3	+5V2	O	5 V DC	5 V DC power source
	4	EXITPAP	I	0/5 V DC	Paper exit sensor: On/Off
	5	GND	-	-	Ground
	6	THERM1	I	Analog	Fuser thermistor M detection voltage
	7	+5V1	O	5 V DC	5 V DC power source
	8	FDDRN	O	0/24 V DC	Face up/down solenoid: On/Off
	9	+24V2	O	24 V DC	24 V DC power source
	10	FUDRN	O	0/24 V DC	Face up/down solenoid: On/Off
	11	+5V2	O	5 V DC	5 V DC power source
	12	DUPAP	I	0/5 V DC	Duplex sensor: On/Off
	13	GND	-	-	Ground
	14	+5V1	O	5 V DC	5 V DC power source
	15	THERM2	I	Analog	Fuser thermistor S detection voltage
YC9	1	WETCLK2	O	0/5 V DC (pulse)	Temperature/humidity detection sensor clock signal
Connected to the connect-R PWB (YC1)			I	Analog	and detection voltage (humidity)
	2	WETCLK1	O	0/5 V DC (pulse)	Temperature/humidity detection sensor clock signal
	3	+5V1	O	5 V DC	5 V DC power source
	4	AIRTEMP	I	Analog	Temperature/humidity detection sensor detection voltage (temperature)
	5	RFANDRN	O	0/12/24 V DC	Right fan motor: Full speed/Half speed/Off
	6	+24V1	O	24 V DC	24 V DC power source
	7	MPFDRN	O	0/24 V DC	MP tray paper feed solenoid: On/Off
	8	OUTB3	O	0/24 V DC (pulse)	Switchback motor drive pulse
	9	OUTB1	O	0/24 V DC (pulse)	Switchback motor drive pulse
	10	OUTA3	O	0/24 V DC (pulse)	Switchback motor drive pulse
	11	OUTA1	O	0/24 V DC (pulse)	Switchback motor drive pulse
	12	GND	-	-	Ground
YC11	1	+24V4	O	24 V DC	24 V DC power source
Connected to the drum motor	2	GND	-	-	Ground
	3	DMOTRDYN	I	0/5 V DC	Drum motor ready signal
	4	DMOTCLK	O	0/5 V DC (pulse)	Drum motor clock signal
	5	DMOTONN	O	0/5 V DC	Drum motor: On/Off

Connector	Pin No.	Signal	I/O	Voltage	Description
YC12	1	POLRDYN	I	0/5 V DC	Polygon motor ready signal
Connected to the main PWB	2	POLONN	O	0/5 V DC	Polygon motor: On/Off
	3	OUTPEN	O	0/5 V DC	Print data output enable signal
	4	PDMASKN	O	0/5 V DC	PD mask control signal
	5	SBSY	O	0/5 V DC	Engine busy signal
	6	SDIR	O	0/5 V DC	Communication direction change signal
	7	EGIRN	O	0/5 V DC	Engine interrupt signal
	8	EGSI	I	0/5 V DC (pulse)	Main PWB serial communication data signal input
	9	EGSO	O	0/5 V DC (pulse)	Main PWB serial communication data signal output
	10	SCKN	O	0/5 V DC (pulse)	Main PWB serial communication clock signal
	11	RESETN	O	0/5 V DC	Reset signal
	12	+24V5	O	24 V DC	24 V DC power source
	13	+5V1	O	5 V DC	5 V DC power source
	14	+5V1	O	5 V DC	5 V DC power source
	15	GND	-	-	Ground
	16	+5V1	O	5 V DC	5 V DC power source
	17	GND	-	-	Ground
	18	GND	-	-	Ground
	19	GND	-	-	Ground
	20	+24V4	O	24 V DC	24 V DC power source
YC15	1	+5V1	O	5 V DC	5 V DC power source
Connected to the feed fan motor	2	FFANDRN	O	0/2.5/5 V DC	Feed fan motor: Full speed/Half speed/Off

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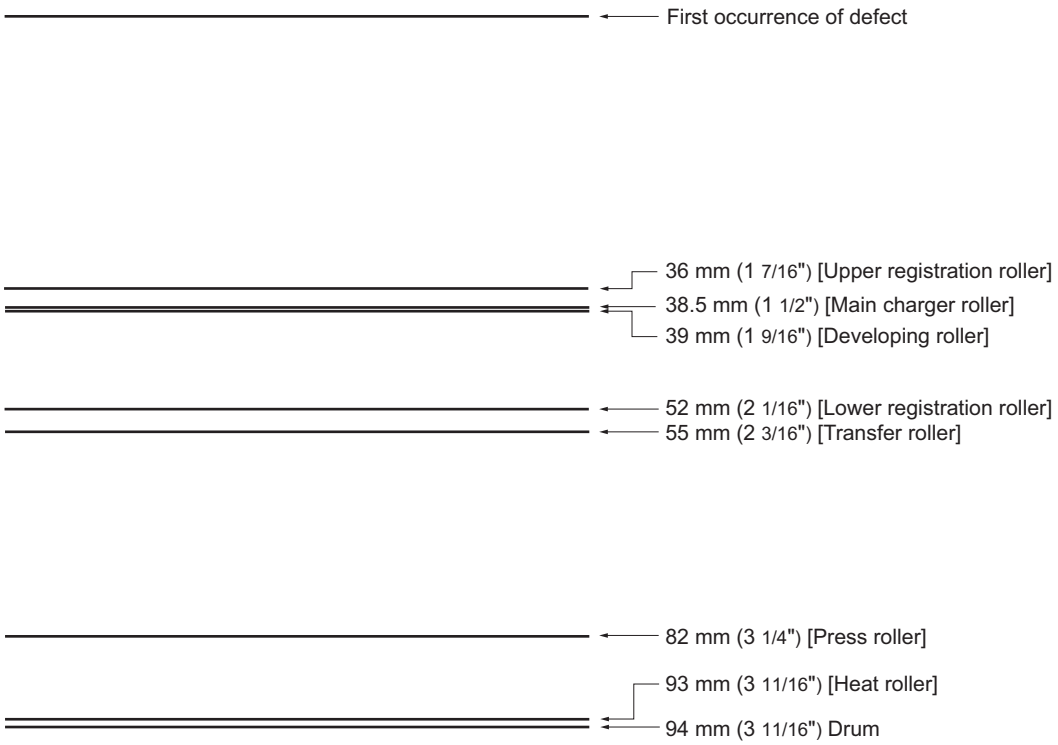
Repetitive defects gauge



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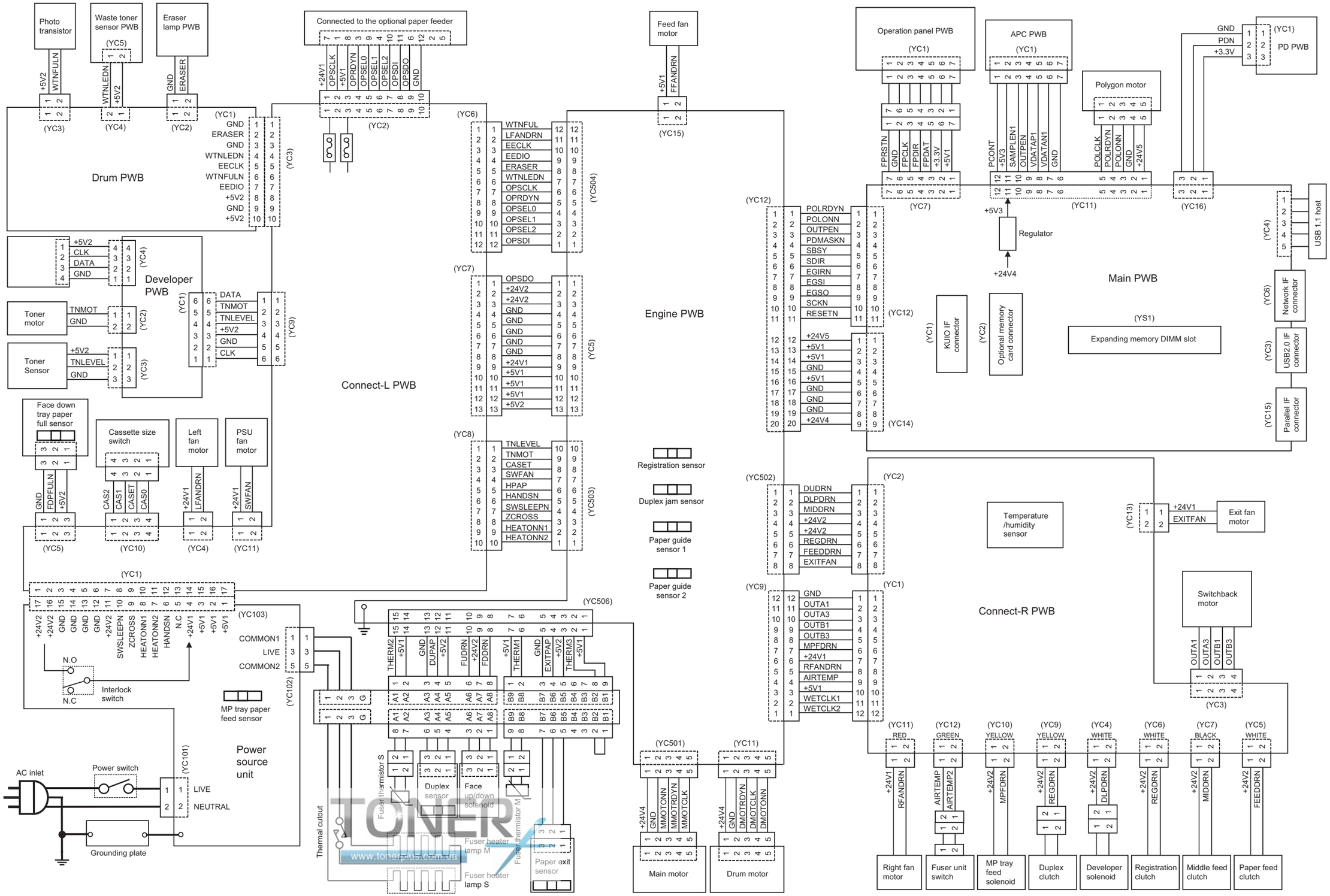
Wiring diagram



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