MINOLTA QMS

The essentials of imaging

Trademarks

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Safety Precautions for Inspection and Service

When performing inspection and service procedures, observe the following precautions to prevent accidents and ensure utmost safety.

* Depending on the model, some of the precautions given in the following do not apply.

Different markings are used to denote specific meanings as detailed below.

WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

The following graphic symbols are used to give instructions that need to be observed.

△	Used to call the service technician's attention to what is graphically represented inside the marking (including a warning).
⃠	Used to prohibit the service technicians from doing what is graphically represented inside the marking.
●	Used to instruct the service technicians to do what is graphically represented inside the marking.

⚠ WARNING

1. Always observe precautions.
   - Parts requiring special attention in this product include a label containing the mark shown on the left plus precautionary notes. Be sure to observe the precautions.
   - Be sure to observe the "Safety Information" given in the user documentation.
2. Before starting the procedures, be sure to unplug the power cord.
   - This product contains a high-voltage unit and a circuit with a large current capacity that may cause an electric shock or burn.
   - The product also contains parts that can jerk suddenly and cause injury.
   - This product uses a laser, laser beam leakage may cause eye damage or blindness.

3. Use the specified parts.

- For replacement parts, always use the genuine parts specified in the parts manual. Installing a wrong or unauthorized part could cause dielectric breakdown or overload, or undermine safety devices resulting in possible electric shock or fire.

- Replace a blown electrical fuse or thermal fuse with its corresponding genuine part specified in the parts manual. Installing a fuse of a different make or rating could lead to a possible fire. If a thermal fuse blows frequently, the temperature control system may have a problem and action must be taken to eliminate the cause of the problem.

4. Handle the power cord with care and never use a multiple outlet.

- Do not break, crush, or otherwise damage the power cord. Placing a heavy object on the power cord, or pulling or bending it may damage it, resulting in a possible fire or electric shock.

- Do not use a multiple outlet to which any other appliance or machine is connected. Be sure the power outlet meets or exceeds the specified capacity.

5. Be careful with the high-voltage parts.

- A part marked with the symbol shown on the left carries a high voltage. Touching it could result in an electric shock or burn. Be sure to unplug the power cord before servicing this part or the parts near it.

6. Do not work with wet hands.

- Do not unplug or plug in the power cord, or perform any kind of service or inspection with wet hands. Doing so could result in an electric shock.

7. Do not touch a high-temperature part.

- A part marked with the symbol shown on the left and other parts such as the exposure lamp and fusing roller can be very hot while the machine is energized. Touching them may result in a burn.

- Wait until these parts have cooled down before replacing them or any surrounding parts.

8. Maintain a grounded connection at all times. (This item may not apply in the USA.)

- Be sure to connect the ground wire to the ground terminal even when performing an inspection or repair. Without proper grounding, electrical leakage could result in an electric shock or fire.

- Never connect the ground wire to a gas pipe, water pipe, telephone ground wire, or a lightning conductor.

9. Do not remodel the product.

- Modifying this product in a manner not authorized by the manufacturer may result in a fire or electric shock. If this product uses a laser, laser beam leakage may cause eye damage or blindness.

10. Restore all parts and harnesses to their original positions.

- To promote safety and prevent product damage, make sure the harnesses are returned to their original positions and properly secured in their clamps and saddles in order to avoid hot parts, high-voltage parts, sharp edges, or being crushed.
- To promote safety, make sure that all tubing and other insulating materials are returned to their original positions. Make sure that floating components mounted on the circuit boards are at their correct distance and position off the boards.

⚠ CAUTION

1. Precautions for Service Jobs

- A toothed washer and spring washer, if used originally, must be reinstalled. Omitting them may result in contact failure which could cause an electric shock or fire.
- When reassembling parts, make sure that the correct screws (size, type) are used in the correct places. Using the wrong screw could lead to stripped threads, poorly secured parts, poor insulating, or grounding, and could result in a malfunction, electric shock or injury.
- Take great care to avoid personal injury from possible burrs and sharp edges on the parts, frames, and chassis of the product.
- When moving the product or removing an option, use care not to injure your back or allow your hands to be caught in mechanisms.

2. Precautions for Servicing with Covers and Parts Removed

- Wherever feasible, keep all parts and covers mounted when energizing the product.
- If energizing the product with a cover removed is absolutely unavoidable, do not touch any exposed live parts and use care not to allow your clothing to be caught in the moving parts. Never leave a product in this condition unattended.
- Never place disassembled parts or a container of liquid on the product. Parts falling into, or the liquid spilling inside, the mechanism could result in an electric shock or fire.
- Never use a flammable spray near the product. This could result in a fire.
- Make sure the power cord in unplugged before removing or installing circuit boards or plugging in or unplugging connectors.
- Always use the interlock switch actuating jig to actuate an interlock switch when a cover is opened or removed. The use of folded paper or some other object may damage the interlock switch mechanism, possibly resulting in an electric shock, injury, or blindness.

3. Precautions for the Working Environment

- The product must be placed on a flat, level surface that is stable and secure.
- Never place this product or its parts on an unsteady or tilting workbench when servicing.
- Provide good ventilation at regular intervals if a service job must be done in a confined space for a long period of time.
- Avoid dusty locations and places exposed to oil or steam.
- Avoid working positions that may block the ventilation ports of the product.

4. Precautions for Handling Batteries (Lithium, Nickel-Cadmium, etc.)

- Replace a rundown battery with the same type as specified in the manufacturer's parts manual.
- Before installing a new battery, make sure of the correct polarity of the installation or the battery could burst.
- Dispose of used batteries according to the local regulations. Never dispose of them at the user's premises or attempt to try to discharge one.

5. Precautions for the Laser Beam (Only for Products Employing a Laser)

- Removing the cover marked with the indicated caution label could lead to possible exposure to the laser beam, resulting in eye damage or blindness. Be sure to unplug the power cord before removing this cover.
- If removing this cover while the power is ON is unavoidable, be sure to wear protective laser goggles that meet specifications.
- Make sure that no one enters the room when the machine is in this condition.
- When handling the laser unit, observe the "Precautions for Handling Laser Equipment."

Other Precautions

- To reassemble the product, reverse the order of disassembly unless otherwise specified.
- While the product is energized, do not unplug or plug connectors into the circuit boards or harnesses.
- The magnet roller generates a strong magnetic field. Do not bring it near a watch, floppy disk, magnetic card, or CRT tube.
- An air gun and vacuum cleaner generates a strong electrostatic charge that can destroy the ATDC sensor and other sensors. Before cleaning a component with one of these devices be sure to remove all the sensors. Otherwise, use a blower brush and cloth when cleaning parts.
- When handling circuit boards with MOS ICs, observe the “INSTRUCTIONS FOR HANDLING THE PWBs WITH MOS ICs” (applicable only to the products using MOS ICs).
- The PC Drum is a very delicate component. Observe the precautions given in “HANDLING OF THE PC DRUM” because mishandling may result in serious image problems.
- Note that replacement of a circuit board may call for readjustments or resetting of particular items, or software installation.
- After completing a service job, perform a safety check. Make sure that all parts, wiring and screws are returned to their original positions.
- Check the area surrounding the service site for any signs of damage, wear, or need of repair.
- Do not pull out the toner hopper while the toner bottle is turning. This could result in a damaged hopper motor or locking mechanism.
- If the product is to be run with the front door open, make sure that the toner hopper is in the locked position.

Safety Information

All Areas

INTERNAL LASER RADIATION

- Maximum average radiant power: 31.3 X 10^{-6} W
- Wavelength: 770–810 nm
- This product employs a Class IIIb Laser Diode.
- The Laser Diode and Scanning Polygon Mirror are incorporated in the print head unit.
- The print head unit is NOT A FIELD SERVICE ITEM. Therefore, the print head unit should not be opened under any circumstances.

WARNING: Use of controls, adjustment or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

U.S.A.

LASER SAFETY

This LBP printer is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Food, Drug and Cosmetic Act of 1990. This means that the LBP printer does not produce hazardous laser radiation.

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

CDRH REGULATIONS

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 1, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States. The label shown in the figure indicates compliance with the CDRH regulations and must and be attached to laser products marketed in the United States.

CLASSIFICATION OF THE LASER PRODUCT

This product is classified as a Class 1 Laser Product under the CDRH Regulations, U.S.A.

This is a semiconductor laser. The maximum power of the laser diode is 5mW and the wavelength is 770–810 nm.

Denmark

ADVARSEL: Usynlig laserståling vad åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsttelse for stråling. Klasse 1 laser produkt der opfylder IEC60825 sikkerheds kravene.

Finland, Sweden

VAROITUS!: Laitteen käyttäminen muulla kuin tässä käyttöohjeessa maintulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARNNING: Om apparaten används på annat sätt än i denna bruksanvisning specificerats, kan användaren utsattas för osynling laserstrålnig, som överskrider gransen för laserklass 1.

VARO: Avattaessa ja suojalukitus ohitettaessa olet alttiina nakymattomalle lasersateilylle.

Aja katso sateeseen.

VARNING: Osynlig laserstråining när denna del är öppnad och spärren är urkopplad. Batrakta ej stråien.

Norway

ADVERSEL: Dersum apparatet brukes på annen måte enn spesifisert i denne bruksanvisning, kan brukeren utsettes for unsynlig laserstråling som overskrider grensen for laser klasse 1.

Dette er en halvleder laser. Maksimal effect til laserdiode er 5mW og bølgelengde er 770–810 nm.

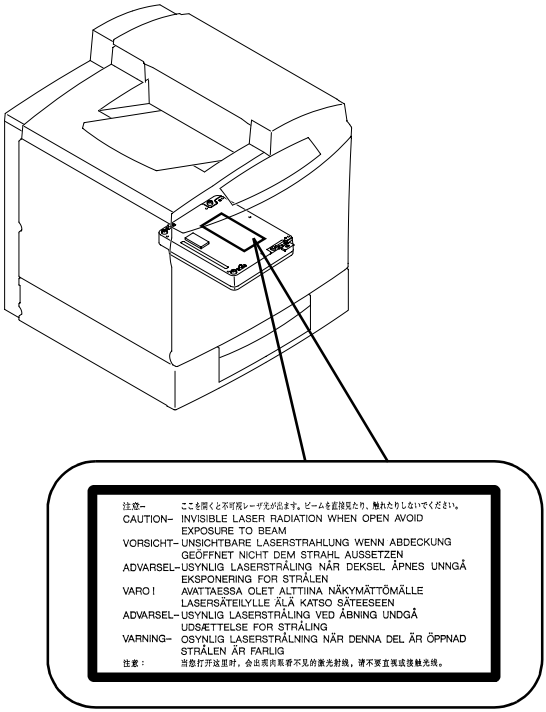
User Instruction (for all users)

The outlet should be located near the printer and should be easily accessible.

Please read the following for your own protection.

⚠ CAUTION

Opening the cover indicated by Caution label below may expose you to harmful laser radiation which could cause damage or loss of eyesight. Do not open the cover when the power is on.



PRECAUTIONS

(1) Precautions

Refer to D: DISASSEMBLY/CLEANING for the disassembly procedure.

1. When unplugging connectors on the PWBs themselves, always make sure the power is OFF first. Be sure to unplug the printer before disassembling and cleaning.

2. Always unplug connectors by holding the connector housing. Pulling on the wires can lead to problems with poor contact.

3. It is recommended that a body ground not be used when carrying out any troubleshooting procedure. Be sure to ground DC lines to a ground test point on the PWB

(2) At Replacement/Adjustment/Cleaning

1. Be sure to handle the Fusing Unit carefully. It remains hot a while after the printer is turned off.

2. Do not disassemble the Imaging Cartridge or Print Head Unit.

3. Do not expose the PC Drum of the Imaging Cartridge to direct sunlight for more than 1 minute or to room lighting for more than 5 minutes.

4. Turn off the power before removing the Print Head Unit to protect the eyes from possible exposure to the laser beam.

5. Use a Fuse only of the indicated rating.

(3) During Operation

1. Keep your hands, clothing, etc. well away from operating or rotating parts.

2. Never touch the terminals of electrical parts or high voltage parts.

3. This printer uses an invisible laser beam. To prevent a laser beam leak, the printer performs a trial run to make sure the covers are in position.

Handling The Pwb

Observe the following precautions when handling a PWB with ICs.

(1) During Transportation/Storage

1. During transport and storage, PWBs should be kept in conductive bags or on mats and not taken out unless absolutely necessary.

2. PWBs should be stored in a place where direct sunlight does not strike them.

3. Do not touch IC terminals with your hands.

(2) At Replacement

1. Before removing connectors from a PWB, make sure the printer has been unplugged.

2. When PWBs are taken out of their conductive bags or off their mats, hold them by their edges to avoid touching the terminals or the patterned surfaces.

3. Before installing connectors on a PWB, make sure the printer has been unplugged.

(3) At Inspection

1. Avoid checking a PWB with testers; instead, use operating parts of the printer, indicator lamps, and other means to evaluate operational conditions.

2. Be careful not to short-circuit IC terminals when using metal tools or screws.

3. If it is necessary to touch elements on the PWB with your hand, make sure your body is properly grounded.

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A. INSTALLATION

1 Precautions when installing

1-1 Installation environment

Ensure the following conditions are met when installing the printer:

- It is not exposed to direct sunlight.
- It is not exposed to rapid changes in temperature and humidity.
- It is not exposed to extremely high or extremely low temperature and humidity.
- It is not in direct contact with the outlet airflow from an air conditioner heater or ventilator.
- Does not have low levels of moisture, dust, and other airborne materials in the area.
- It is level and not subject to vibration.
- It is away from sources of heat, such as kerosene heaters.
- Does not expose the power supply to water which could cause electrical leakage.
- It is not exposed to volatile materials (such as thinners and gasoline) or corrosive gases.

Environmental requirements

The printer has the following operating environment requirements:

Temperature:	10–35° C/50–95° F	Temperature fluctuation:	10°C/50° F per hour or less
Humidity:	15–85%	Humidity fluctuation:	20% per hour or less

Power requirements

The printer has the following power supply requirements:

Power supply:	100V, 120V	Voltage fluctuation	±10% or less
	220V, 240V	Voltage fluctuation	±10% or less
	50/60 Hz	Frequency fluctuation	±3 Hz or less

- When other electrical appliances are plugged into the same power outlet, make sure that the current capacity of the outlet is not exceed.
- When using sockets with multiple outlets, never plug in excessive numbers of cords.
- Make sure that following conditions are met after the printer has been installed.
  - *The power cord is free of cracks, damage, and other defects.
  - *The plug from the power cord is securely inserted into the socket.
  - *The plug from the power cord is not abnormally hot.

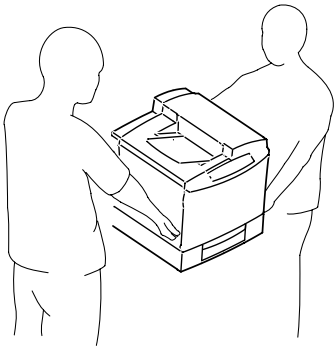
2 Installation

2-1 Transporting

Before moving the printer, always remove the drum cartridge, toner cartridge, media, and any optional equipment.

WARNING

Never attempt to lift the printer alone. Always use two people when removing the printer from its shipping package and when transporting it. The printer weighs approximately 40 kg/88 lb without the drum cartridge and toner cartridge. If it is lifted by one person, back injury could occur or the printer could be dropped and damaged.



* Always remove the toner cartridge before transporting the printer. If the printer is transported without removing the toner cartridge, the vibration will cause toner to fall onto the laser lens cover.

2-2 Connecting the ground

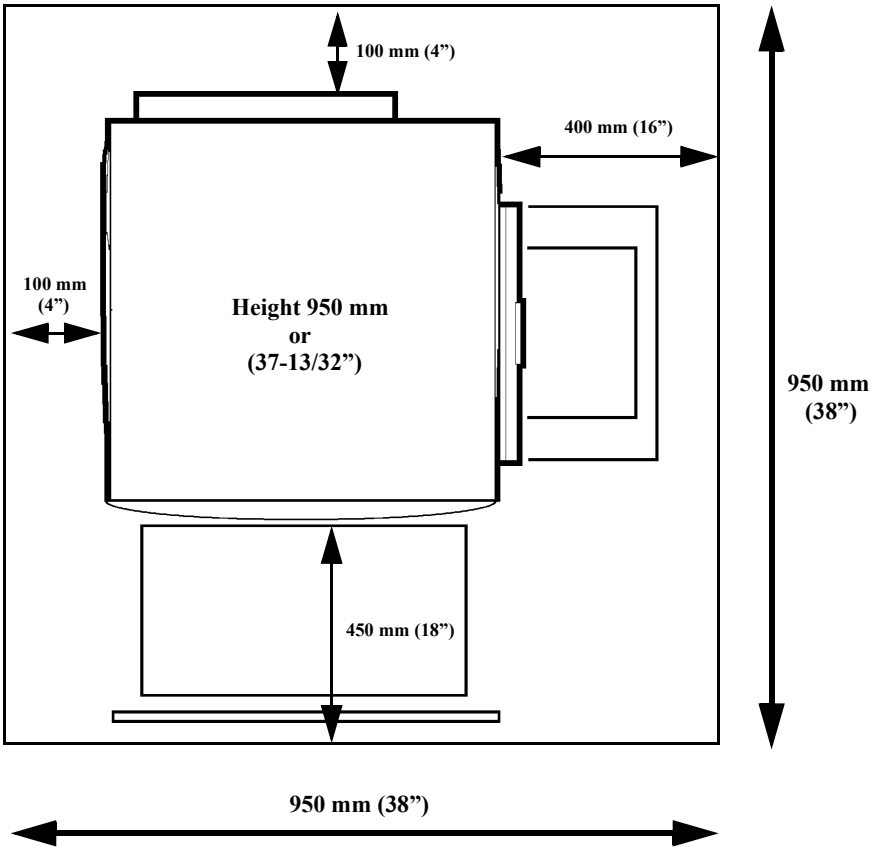
Always ground the printer to prevent electrical leakage, shocks and other such hazards.

- Always connect the ground wire to a proper ground point, such the ground terminal of the outlet or a ground point that complies with local electrical standards.
- Never connect the ground wire to an incomplete ground point, such as a gas pipe, the ground wire for a telephone, or a water pipe.

2-3 Installation space

Always provide adequate space around the printer to ensure proper cooling and easy inspection and maintenance. Refer to the dimensions in the following diagrams when installing.

Top view



B. GENERAL INFORMATION

1 Product specifications

1-1 Printer

Type: Desktop full-color laser beam printer

Printing system: Laser diode and polygon mirror scanning

Print resolution: 600 dpi × 600 dpi (without controller)

Print range: Black and white: (W) 208 mm × (L) 348 mm (8.19" × 13.69")
Color: (W) 208 mm × (L) 348 mm (8.19" × 13.69")

Print speed:

First printing time Unit: Seconds

	Monochrome printing		Color printing	
	Ordinary plain paper	**Transparencies, Thick paper**	**Ordinary plain paper**	**Transparencies, Thick paper**
Single print				
A4	16	29	25	38
A5	16	28	25	37
Letter, B5	16	28	25	38
Legal	17	—	26	—
Postcards	—	27	—	36
Duplex print				
A4, Letter	25	—	37	—

Multi print speed Unit: Sheets

	Monochrome printing		Color printing	
	Ordinary plain paper	**Transparencies, Thick paper**	**Ordinary plain paper**	**Transparencies, Thick paper**
Single print				
A4, A5 Letter, B5	20	3.8	5	2.4
Legal	20	—	4	—
Postcards	—	3.8	—	2.4
Duplex print				
A4, Letter	13	—	5	—

Media size: A4, A5L, JIS B5L, Letter (8.5" × 11"), Legal (8.5" × 14"), Invoice (8.5" × 5.5"), Regulation postcards (Lengthwise only)

Media type: Ordinary plain paper (60–90 g/m^2) (16–24 lbs)

Special media: Transparencies, letterhead paper, labels, thick paper (91–163 g/m^2) (24–43 lbs), Postcards (J-Post), envelopes

Paper take-up system: 3-way system
Multipurpose tray: 150 sheets
Upper tray: 500 sheets
Lower tray: 500 sheets (Option)

Multipurpose tray

Paper type	Paper size	Paper type	Capacity
Minimum A5	92 mm × 210 mm (3.62" × 5.85")	Ordinary plain paper 60–90 g/m^2 (16–24 lbs)	150 sheets 90 g/m^2 (24 lbs.)
Maximum Legal size	216 mm × 356 mm (8.5" × 14.02")		
Ordinary plain paper Letterhead paper	Same as the minimum and maximum sizes shown above	Weight: 91–163 g/m^2 (24.3–43.7 lbs)	50 sheets
Thick paper Labels J-Post			50 sheets
Transparencies			50 sheets
Envelopes	—	Weight: No specifications	10 envelopes

- *Does not apply for legal-size thick paper.*
- *No weight and thickness specifications have been set for envelopes.*
- *The paper take-up direction is lengthwise for all media sizes.*

Upper tray, Lower tray (Optional)

Paper type	Paper size	Paper type	Capacity
A4	210 mm × 297 mm (8.27" × 11.69")	60–90 g/m^2 (16–24 lbs.)	500 sheets 80 g/m^2 (21 lbs.)
Letter	216 mm × 279 mm (8.5" × 11")		
Legal	216 mm × 356 mm (8.5" × 14.02")		
Transparencies	216 mm × 279 mm (8.5" × 11")		50 sheets

- *Does not apply for thick paper.*
- *The paper take-up direction is lengthwise for all paper sizes.*

Paper exit system: Face-down system, ordinary plain paper 500 sheets/A4 or letter (80 g/m^2)

Warm-up time: 150 seconds/100V, 120 V or less, 160 seconds/ 220V – 240V or less (23° C/73.4° F, rated voltage)

Acoustic noise: Standby 41 dB(A) or less (Average value) / Printing 55 dB(A) or less (Average value)

Power supply: AC100V 12A/50/60Hz, 120V 10A 50/60 Hz, 220V – 240V 6A 50/60 Hz

Power consumption: Maximum 1000 W/100V, 120 V, 1100W/220V – 240V
Printing: Monochrome 700W or less / Color 550W or less
Standby: 250W or less (Controller 5V-6A)
Heater OFF: 30W or less (Controller 5V-1.4A)

Dimensions: 463 mm (W) × 564 mm (D) × 511 mm (H)/18.22"(W) × 22.22"(D) × 20"(H)

Weight: Approximately 39 kg/86 lb (without OPC drum, toner cartridge, control panel, and controller)

System speed: 159.9 mm/6.3" per second

Developing system: Single element developing system

OPC drum system: Comb electrode scorotron system

OPC drum: Photoconductive drum

OPC drum cleaning: Blade system

Image transfer system:	Transport image transfer belt system, Paper image transfer: Roller image transfer
Separation system:	Curvature separation system + charge neutralizing (comb)
Fusing system:	Belt heat fusing system + oil coating roller
Waste toner collection system:	Stored in waste toner container
Environmental compatibility:	Power save function using the sleep mode

Recommended paper

		Paper type	Note
Plain paper[1]	Mono	Xerox 4024	Letter
	Color	Microprint Laser 1000	Letter
	Color	Neusiedler Color Copy	A4
	Color	Hammermill Laser Print Radiant White	Letter
Envelopes[2]		Commercial #10: Sphinx	
		International DL: Auto Fil #1914 (white)	
Transparency[3]	Color	Q-Media P/N - 1710464-001	Letter
	Color	Q-Media P/N - 1710464-002	Letter
	Color	Q-Media P/N - 1710464-003	A4
	Mono	Q-Media P/N - 1710465-001	Letter
	Mono	Q-Media P/N - 1710465-002	Letter
	Mono	Q-Media P/N - 1710465-003	A4
	Color	Q-Media P/N - 1730796-001	Letter
	Color	Q-Media P/N - 1730796-002	Letter
	Color	Q-Media P/N - 1730796-003	A4
	Color	Q-Media P/N - 1730796-004	A4
	Color	Q-Media P/N - 1710117-001	A4
	Mono	Q-Media P/N - 1710118-003	A4

1 It is not recommended to use perforated or 3-hole punched, long-grain plain (16 to24 lb/60 to 90 g/m2), or long-grain thick stock (up to 60 lb cover, 90lb index/163 g/m2)

2 Envelopes must not have fastners, clasps, transparent windows, peel-off strips for sealing, or material that will melt, vaporize, off-set, dicolor, or emit dangerous fumes at the fusing temperature (200°C/392°F). Use commonoffice envelopes with diagonal joints, sharp folds and edges, and ordinary gummed flaps. Only print envelopes via the multipurpose tray.

3 Use only transparencies meeting normal photocopier standards that can withstand the fusing temperature (200°C/392°F).

1-2 Parts

Parts provided

User manual:	
Power cord:	
OPC drum unit:	
Toner cartridge:	Yellow, Magenta, Cyan, Black
Fusing oil roller:	

Parts already mounted

Waste toner container:	
Laser lens cover:	
Fusing unit:	
Image transfer belt:	
Secondary image transfer roll:	
Upper tray:	A4/Letter, Legal 500 sheet cassette

1-3 Options

Lower tray

Paper types:	Ordinary plain paper (60–90 g/m^2, 16–24 lbs)
Paper sizes:	A4, Letter, Legal
Paper take-up capacity:	Ordinary plain paper 500 sheets
Power supply:	5V printer (Power supply from printer)
Size:	435 mm (W), 488 mm (D), 116.5 mm (H) 17.1” (W), 19.2 (D), 4.6” (H)
Weight:	Approximately 6.0 kg (13.25 lb) (Including cassette)

Duplex unit

Paper types:	Ordinary plain paper (60–90 g/m^2, 16–24 lbs)
Paper sizes:	A4, Letter
Power supply:	24V printer (Power supply from printer)
Size:	353 mm (W), 135 mm (D), 228 mm (H) 13.9” (W), 5.3” (D), 9.0” (H)
Weight:	Approximately 3.0 kg (6.25 lb)

5-Bin Mailbin

Type:	Desktop type (connected to the exit section of the printer)

Paper feed reference: Center

Transport method:

Output section: By roller

Main unit storage section/ Mailbin switching: Switching arm method

Storage section:

Bin type: Fixed

No. of bins: 5

Bin switching: Passage switching system

Capacity: Determined by paper stack height (can be stored until paper full is detected)

Paper type	Plain (60 to 90 g/m^2 or 16-24 lbs.)		Approximately 14 mm Approximately 50
	OHP sheet		Not usable
	Thick paper (91 to 163 g/m^2 or 24-43 lbs.)		Not usable
	Postcard		Not usable
	Envelope		Not usable
Paper size	Maximum ( ) is inches	CD FD	215.9 mm (8.5) 297 mm
	Minimum ( ) is inches	CD FD	210 mm 279.4 mm (11)

Paper empty detection: By lever and photo interrupter (provided for each bin)

Paper full detection: By lever and photo interrupter (provided for each bin)

Paper speed: Speed of main unit × 1.013

Power supply: AC 100 – 240V, 50 – 60 Hz

Power consumption: 24 W or less

Consumed current: DC 16V (1.5 A)

Dimensions: 390 (W) × 438 (D) × 400 (H) mm/15.34” (W) × 17.25” (D) × 15.81” (H)

Weight (including accessories) 7.2 kg/16.2 lbs.

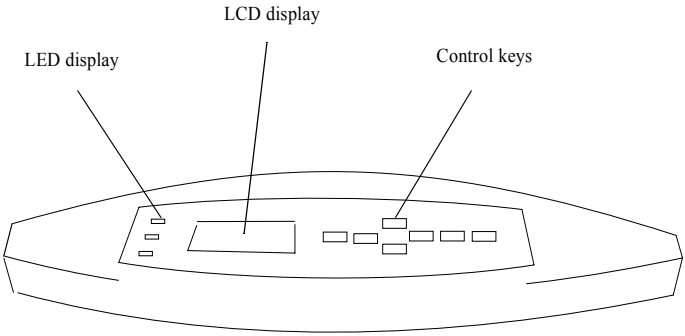
Operating environment: Conforms to printer

Signal (Drawer connector)

Pin No.	Name	Signal source
1.	Empty	–
2.	Empty	–
3.	Empty	–
4.	Mailbin transmit	5-bin mailbin
5.	Mailbin receive	Printer
6.	Set detection	Printer
7.	Main unit GND	Printer
8. . . . 14	Empty	–

2 Control panel

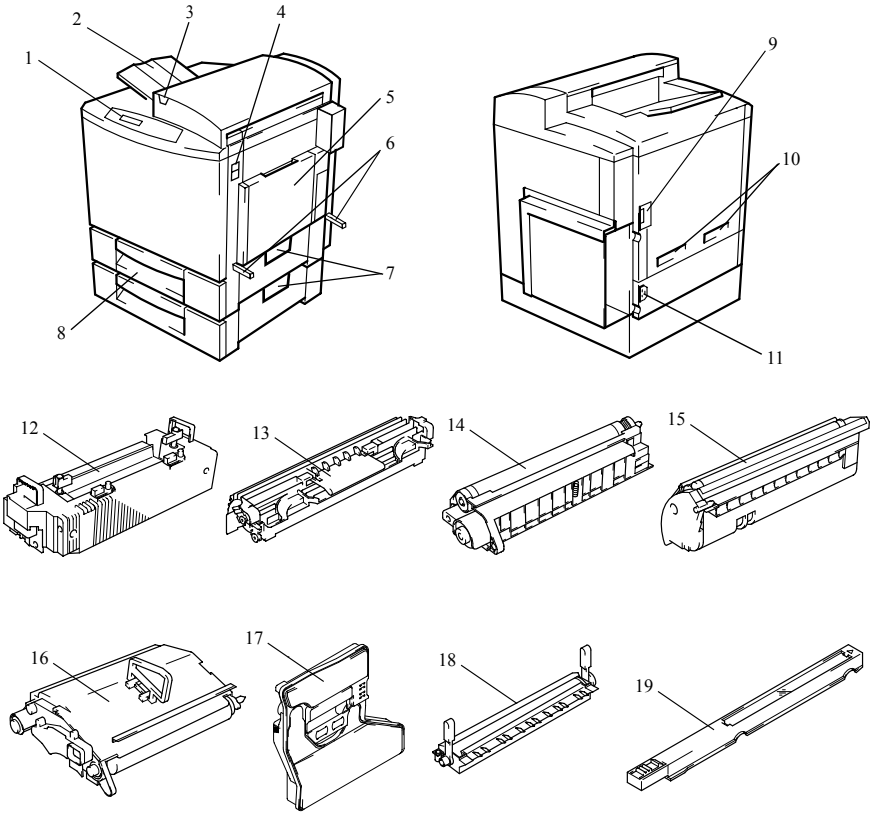
2-1 Display section and key functions



Name	Function
LED display	Status display (Online – Data)
LCD display	Message display
Control keys	Function setting (Menu key, cancel key, execute key, up/down key, right/left key

3 Part names

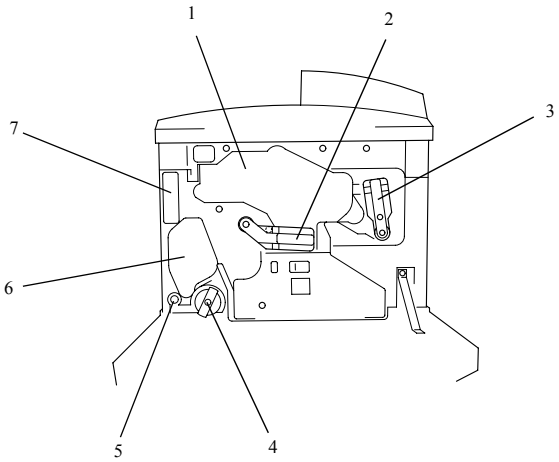
3-1 Printer



1.	Control panel	11.	Power cord socket
2.	Out put tray	12.	Fusing unit
3.	Upper-door lock-release button	13.	Oil coating roller
4.	Right-door lock-release button	14.	OPC drum
5.	Multipurpose tray	15.	Toner cartridge
6.	Right side grip	16.	Image transfer belt unit
7.	Lower-right door 1.2	17.	Waste toner container
8.	Upper tray	18.	Image transfer roller unit
9.	Power switch	19.	Laser lens cover for laser unit
10.	Left side grip		

Printer control levers

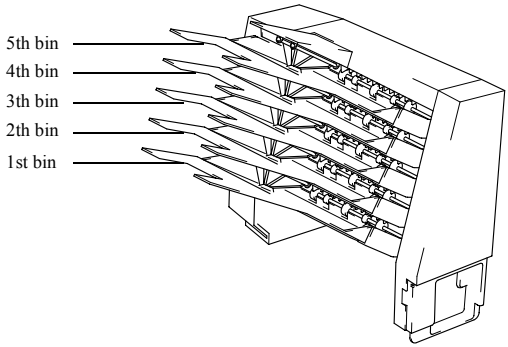
The following shows the control levers with the printer with the front cover open and the waste toner container removed.



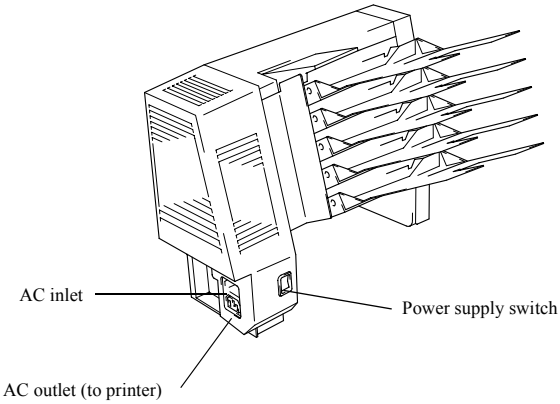
No.	Name	Function
1.	Image transfer belt unit	The toner image overlays the four YMCK colors for developing.
2.	Image transfer belt unit left release lever	This is used for removing the OPC drum/transfer belt unit.
3.	Image transfer belt unit right release lever	This retracts the image transfer roller from the image transfer unit for removing the image transfer belt unit.
4.	Toner cartridge rack dial	This is used when removing the Y, M, C, K, Toner cartridges and image transfer belt. It is used to turn the rack and align each of the color cartridges with the removal port.
5.	Toner cartridge rack release button	This is used to release the lock for the knob (dial) used for turning the rack.
6.	Toner cartridge removal port	This is the opening for removing toner cartridge.
7.	Toner cartridge eject lever	This is used to pull the toner cartridge forward.

3-2 5-Bin Mailbin

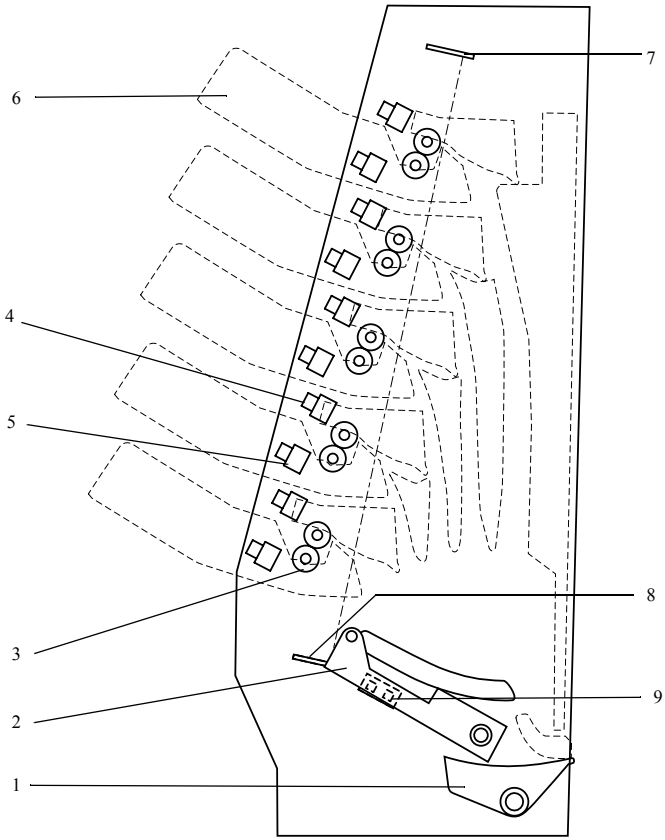
External view (front when connected to printer)



External view (back when connected to printer)



Cross-sectional view

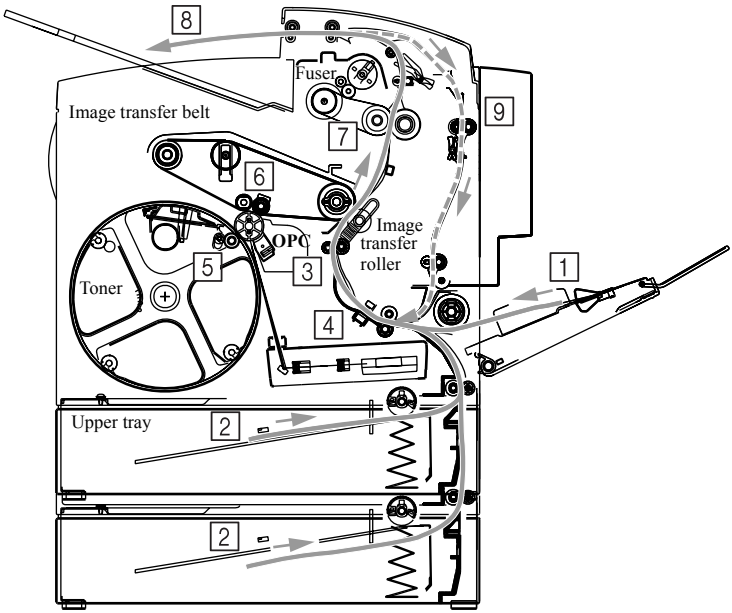


1. Switching arm
2. Paper guide
3. Paper exit roller (for each bin)
4. Paper empty sensor (for each bin)
5. Paper full sensor (for each bin)
6. Bin tray (1st to 5th bin, from bottom)
7. Upper paper exit sensor circuit board
8. Lower paper exit sensor circuit board
9. Paper guide, home position sensor

4 Printer block diagrams

4-1 Paper path

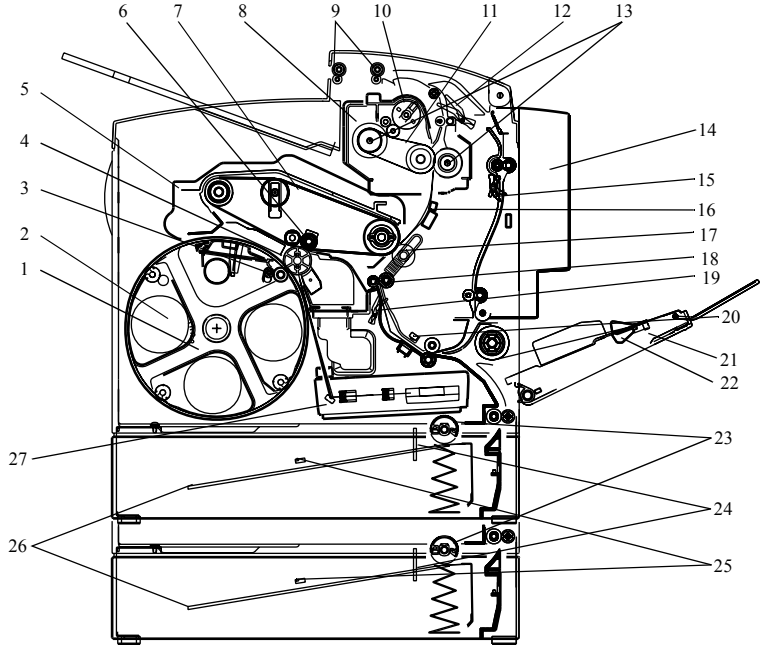
Front surface printing paper Rear surface printing paper



No.	Name	No.	Name
1.	Multipurpose section	6.	Image transfer section
2.	Paper take-up section	7.	Fusing section
3.	OPC drum charge section	8.	Paper exit section
4.	Exposure section	9.	Duplex printing section (option)
5.	Developing section		

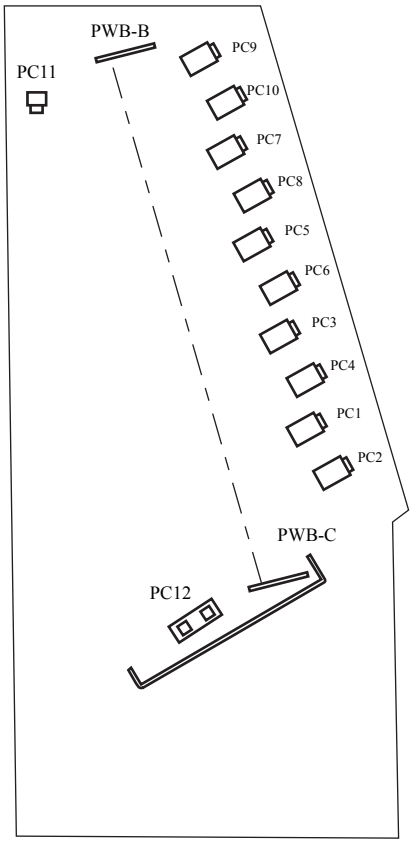
5 Component layout

5-1 Printer



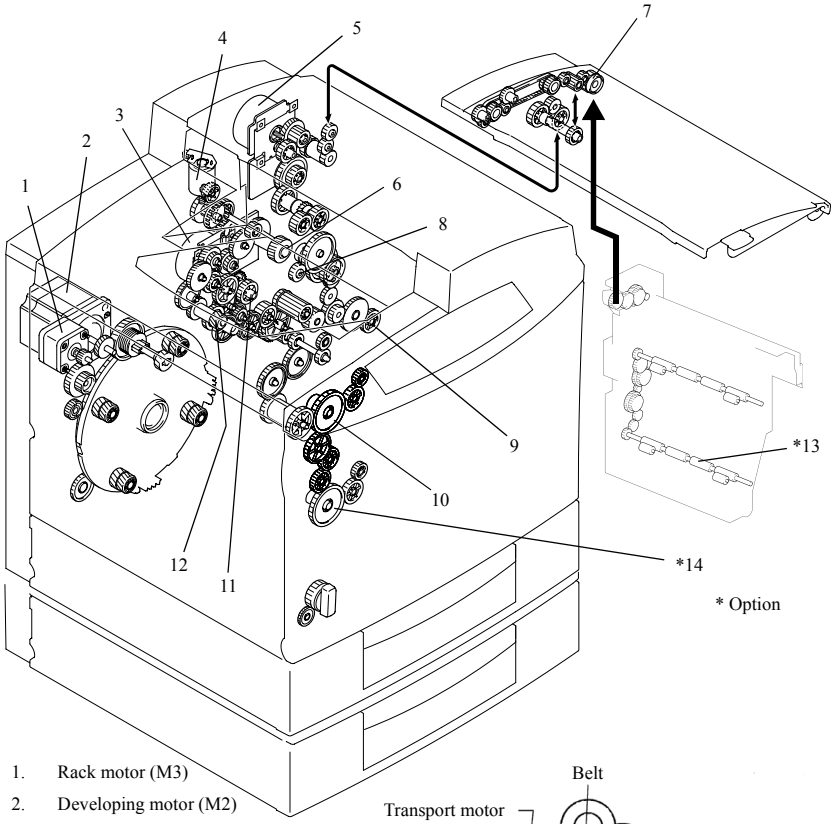
No.	Name	No.	Name
1.	Toner cartridge rack	15.	Duplex paper sensor (option)
2.	Toner cartridge	16.	Transport paper sensor
3.	Sleeve roller	17.	Image transfer roller
4.	OPC drum	18.	Timing roller
5.	Image transfer belt unit	19.	Timing roller paper sensor
6.	Electrode roller	20.	OHP (transparency)-detecting sensor
7.	Image transfer belt	21.	Multipurpose tray
8.	Fusing unit	22.	Paper empty sensor
9.	Paper exit roller	23.	Paper take-up roller
10.	Oil coating roller	24.	Paper empty sensor
11.	Fusing belt	25.	Near-empty sensor
12.	Paper exit sensor	26.	Paper lifting arm
13.	Heater lamp	27.	Laser unit
14.	Duplex printing unit (option)		

5-2 5-bin mailbin

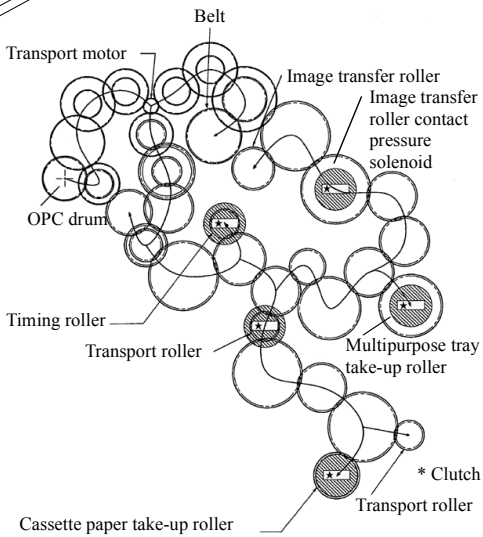


PC1	1st bin - paper empty sensor
PC2	1st bin - paper full sensor
PC3	2nd bin - paper empty sensor
PC4	2nd bin - paper full sensor
PC5	3rd bin - paper empty sensor
PC6	3rd bin - paper full sensor
PC7	4th bin - paper empty sensor
PC8	4th bin - paper full sensor
PC9	5th bin - paper empty sensor
PC10	5th bin - paper full sensor
PC11	Door sensor
PC12	Paper guide - Home position sensor
PWB-B	Upper paper exit sensor circuit board
PWB-C	Lower paper exit sensor circuit board

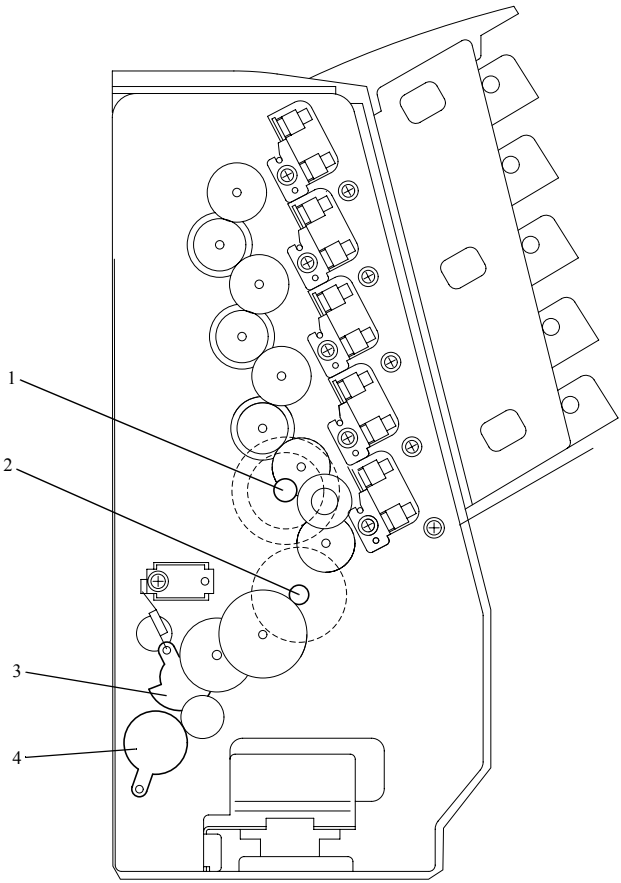
6-1 Printer



1. Rack motor (M3)
2. Developing motor (M2)
3. Transport motor (M1)
4. Fusing contact motor (M5)
5. Fusing motor (M4)
6. Image transfer unit
7. Paper exit roller
8. Paper exit roller
9. Multipurpose tray
10. Cassette paper take-up roller
11. Timing roller
12. OPC drum
13. * Transport roller
14. * Cassette paper take-up roller

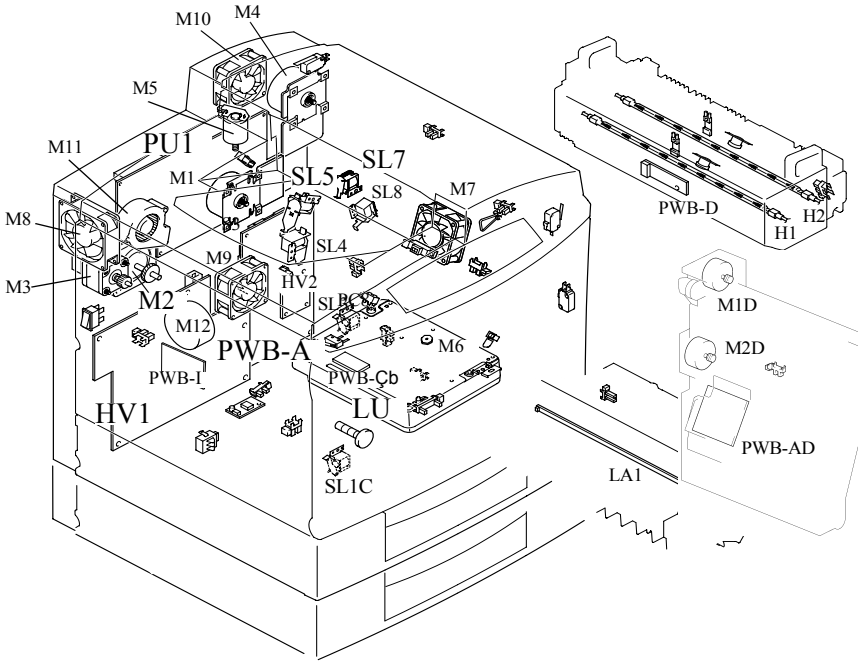


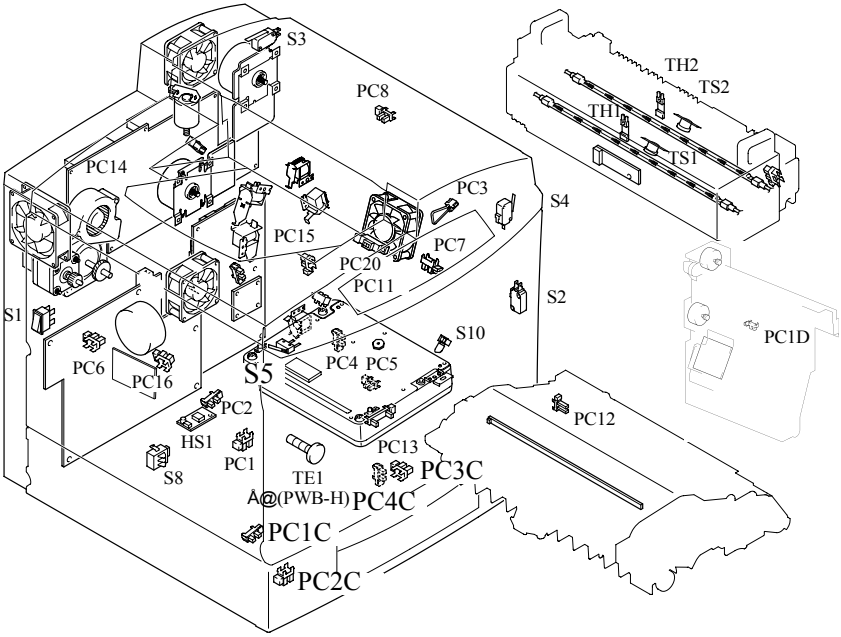
6-2 5-Bin Mailbin



1. Transport motor (M1)
2. Paper guide motor (M2)
3. Paper guide drive gear
4. Switching arm drive gear

7-1 Printer


M10
M4
M5
M11
PU1
M1
SL5
SL7
SL8
M7
M8
M9
SL4
M3
HV2
M2
SL2
M12
PWB-A
M6
PWB-I
PWB-Cb
HV1
LU
SL1C
PWB-D
H2
H1
M1D
M2D
PWB-AD
LA1

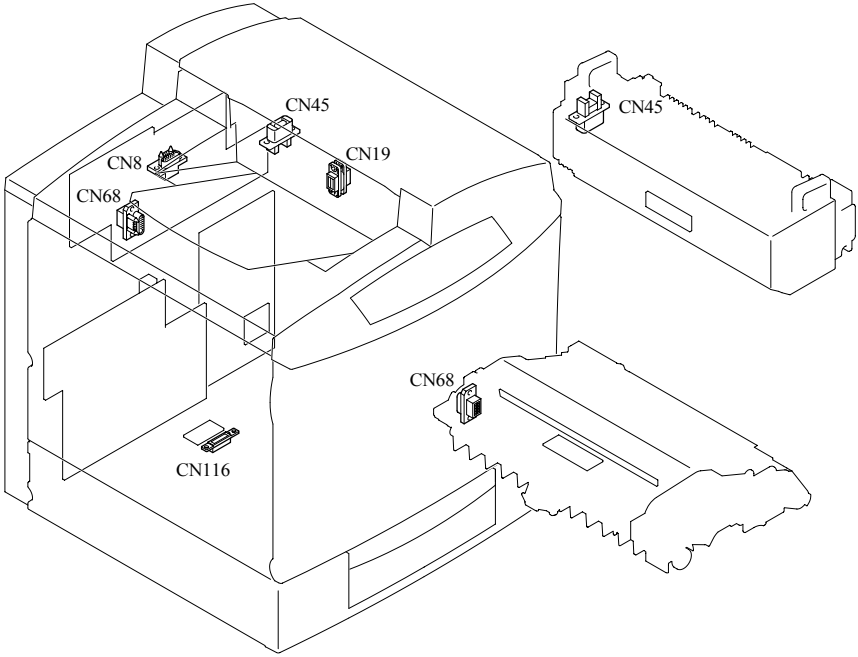


Code	Name	Code	Name
LA1	Eraser lamp	PC20	Transport paper sensor
H1	Heater lamp (Heat roller)	LU	Laser unit
H2	Heater lamp (Pressure roller)	PU1	Power supply unit
HS1	Humidity sensor	PWB-A	Main circuit board
HV1	High-voltage unit 1	PWB-C	Laser control circuit board (In LU)
HV2	High-voltage unit 2	PWB-D	Fusing controller circuit board
M1	Transport motor	PWB-1	Belt cleaner circuit board
M2	Developing motor	S1	Power supply switch
M3	Rack motor	S2	Interlock switch – Front right
M4	Fusing motor	S3	Interlock switch – Upper rear
M5	Fusing pressure contact motor	S4	Interlock switch – Right side
M6	Polygon motor laser unit section)	S5	Laser safety switch
M7	Suction fan motor	S8	Upper tray paper sensor switch
M8	Power supply cooling fan motor	S10	Waste toner container – Laser lens cover switch
M9	Ozone fan motor	SL3	Cassette paper take-up solenoid
M10	Fusing fan motor	SL4	Transport roller solenoid
M11	Toner suction fan motor	SL5	Timing roller solenoid

M12	Belt cleaner motor	SL7	Image transfer roller contact pressure solenoid
PC1	Upper tray paper empty sensor	SL8	Multipurpose tray take-up solenoid
PC2	Upper tray paper near empty sensor	TE1	Toner empty sensor
PC3	Multipurpose tray empty sensor	TH1,2	Thermistor 1,2
PC4	Upper tray door open sensor	TS1,2	Thermostat 1, 2
PC5	Timing roller paper sensor	**Options**	
PC6	Black toner cartridge home position sensor	MD1D*	Switchback motor
PC7	Image transfer roller contact pressure sensor	MD2D*	Duplex paper take-up motor
PC8	Paper exit sensor	PC1D*	Duplex paper take-up sensor
PC10	Fusing pressure contact position sensor	PC1C*	Paper near-empty sensor
PC11	Transparency (OHP) sensor	PC2C*	Paper empty sensor
PC12	Image transfer belt positioning sensor	PC3C*	Door open sensor
PC13	Waste toner full sensor	PC4C*	Paper take-up sensor
PC14	Pressure roller release sensor	S1C*	Paper size switch
PC15	Multipurpose tray position sensor	S1C*	Paper take-up solenoid
PC16	Belt cleaner separation position sensor		

8 Connector layout

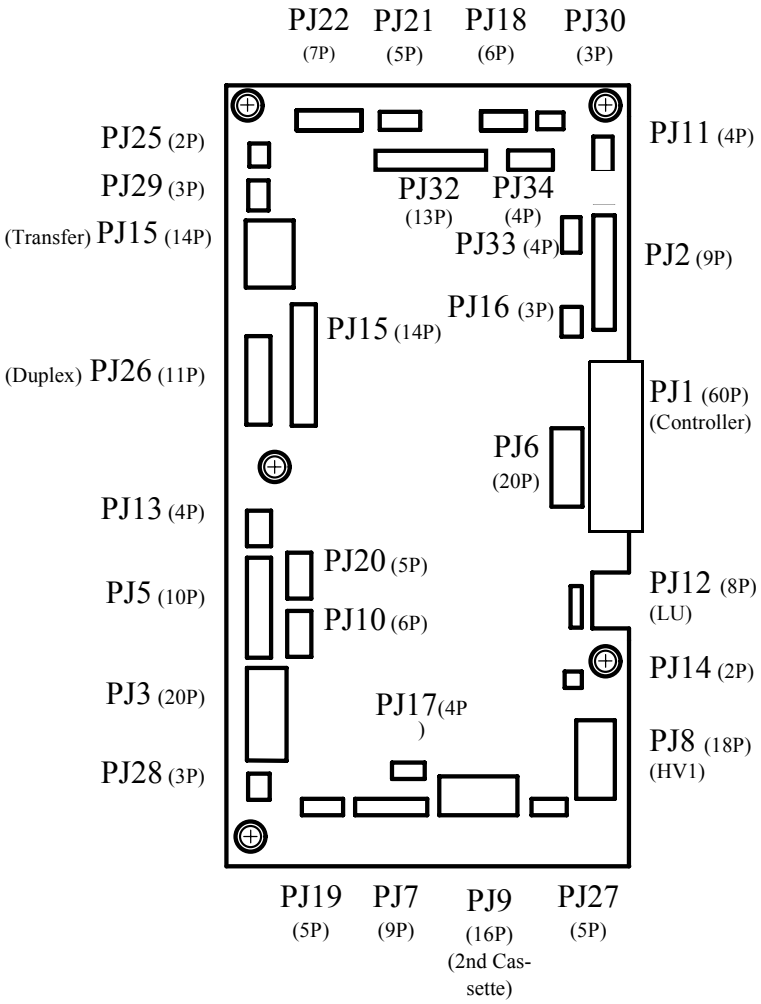
8-1 Printer



Connector	Number of pins	Unit name
CN8	7 × 2	—
CN19	11	Duplex unit
CN45	8	Fusing unit
CN68	14	Image transfer unit
CN116	12	Lower tray (Option)

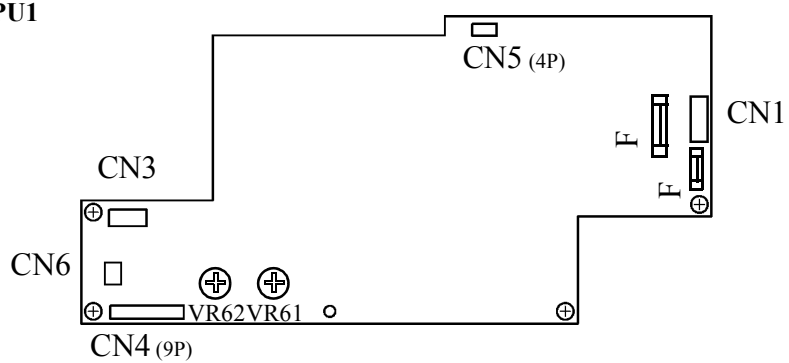
8-2 Circuit board layout diagrams

PWB-A main circuit board

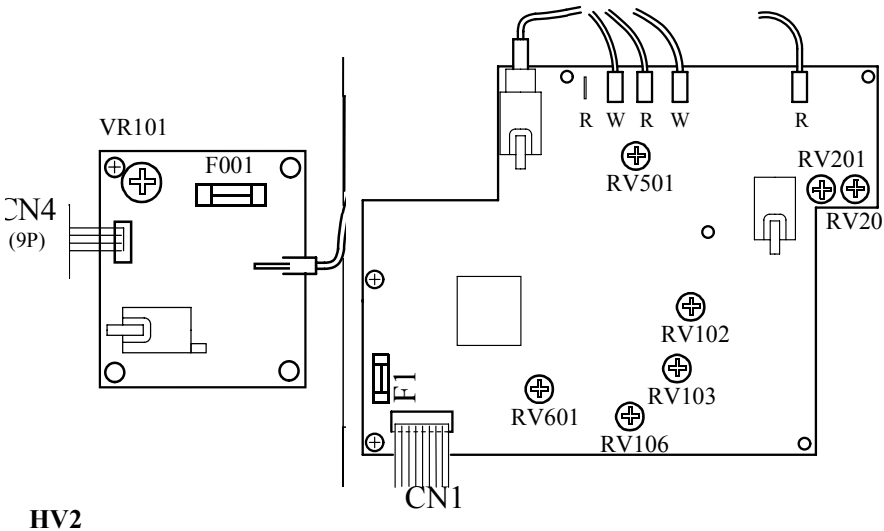


( ) indicates number of pins
( ) indicates connection destination

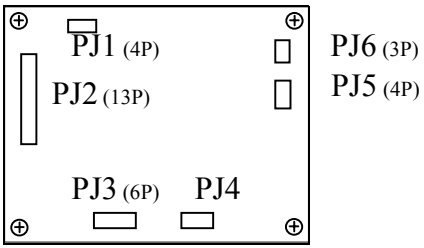
PU1



HV2 **HV1**

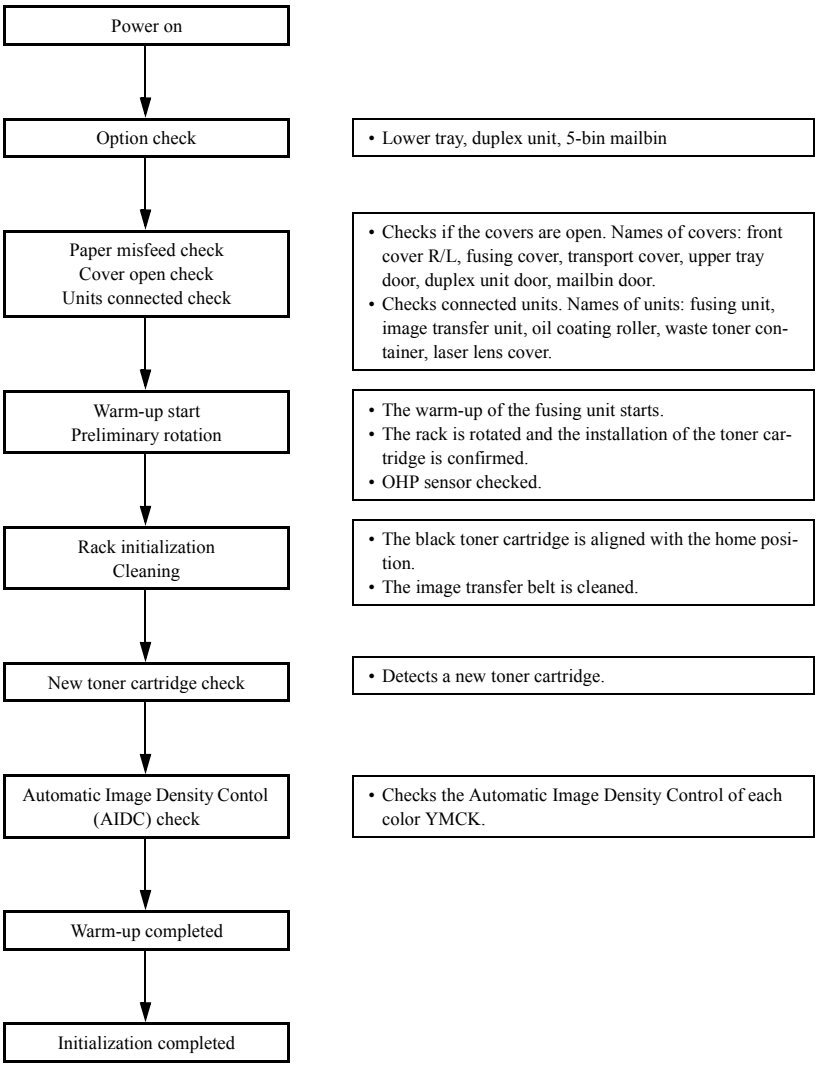


HV2



9 Power-on sequence

The following diagram shows the initialization process the printer follows after the power is turned on.

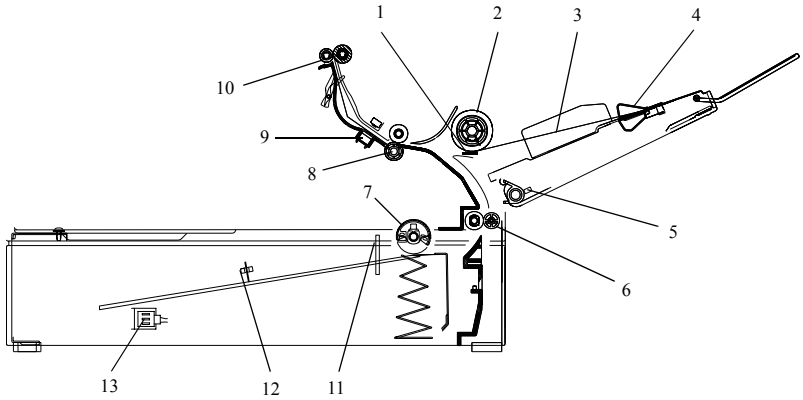


C. MECHANICAL AND ELECTRICAL

1 Paper take-up section

1-1 Overview

The paper take-up system is a two-way system consisting of the multipurpose tray (150 sheets) and upper tray (500 sheets). If the optional lower tray is added (500 sheets), the paper take-up system becomes a three-way system.



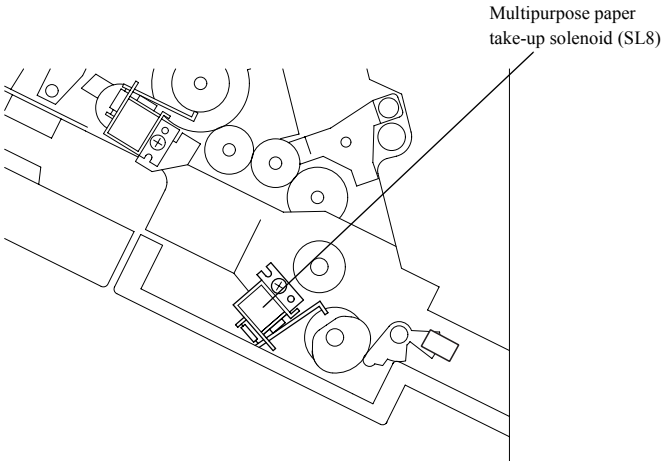
Name	Function
1. Paper-separating pad	Prevents multiple sheets of paper from being fed.
2. Paper take-up roller	Feeds the paper in the multipurpose tray.
3. Multipurpose tray	Stores paper.
4. Multipurpose tray empty sensor (PC3)	Detects when there is no paper in the multipurpose tray.
5. Multipurpose tray position sensor (PC15)	Detects the upper and lower position amount of the multi-purpose tray.
6. Vertical transport roller	Transports the paper that has been fed to it.
7. Paper take-up roller	Feeds the paper in the cassette.
8. Paper transport roller	Transports the paper to the timing roller.
9. Transparency (OHP) sensor	Detects if the sheet that has been fed is transparency film.
10. Timing roller	Aligns the paper with the Print (image) Starting position and transport it.
11. Paper empty sensor (PC1)	Detects when there is no paper in the cassette.
12. Paper near empty sensor (PC2)	Detects when there are approximately 50 sheets remaining in the cassette.
13. Paper size switch	Detects the size of the paper in the cassette.

1-2 Multipurpose tray

The drive force that has been supplied from the transport motor is conveyed as follows.

When the multipurpose paper take-up solenoid (SL8) is set on, the take-up clutch engages and drive power is conveyed to the take-up roller, and one sheet of paper is lifted up and transported by the Vertical Transport Roller/Paper Transport Roller.

The frictional force of the separator pad prevents the second sheet of paper from being sent simultaneously. If the transparency (OHP) sensor (PC11) detects transparency film, the speed of the system is reduced.



1-3 Upper tray

The drive force that has been supplied from the transport motor is conveyed as follows.

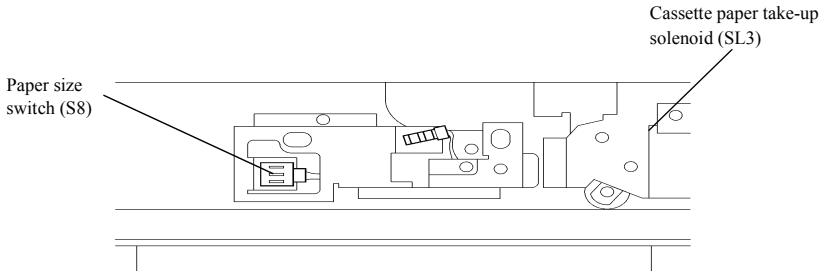
When the paper take-up solenoid (SL3) is set on, the take-up clutch engages and drive power is conveyed to the take-up roller, and one sheet of paper is lifted up and transported by the Vertical Transport Roller/Paper Transport Roller roller.

The frictional force of the separator pad prevents the second sheet of paper from being sent simultaneously.

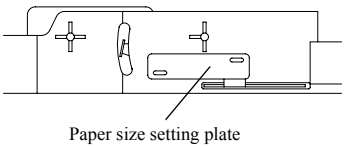
- The paper size is detected by the paper size switch and paper size setting plate. The paper size is determined by the combined L and H signals from the switches as shown in the table below.

SW1	SW2	SW3	Paper size
L	H	H	Letter
H	H	L	Legal
H	H	H	A4
Other			Cassette not set

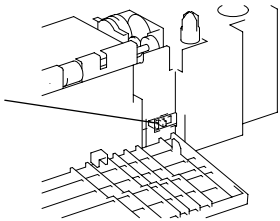
- The opening of the cassette door for correcting a paper jam is detected by door open sensor (PC4).



Cassette – Rear view

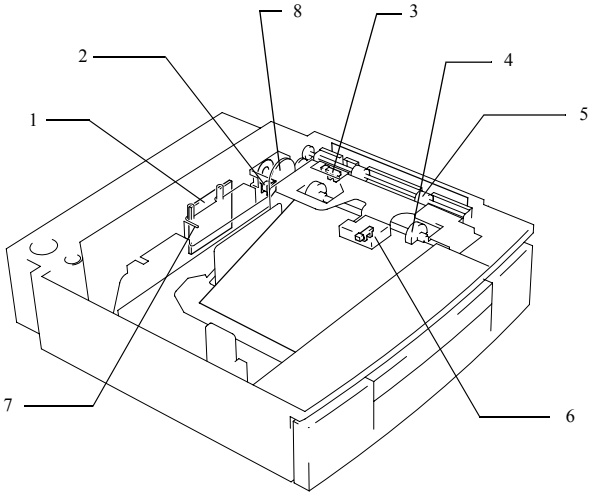


Cassette – Side view



1-4 Lower tray

Lower tray can store up to 500 sheets of paper. Its design and function are the same as upper tray. A paper take-up miss of lower tray is detected by the newly added lower tray paper take-up sensor. The tray paper take-up sensor detects whether or not paper take-up has been properly performed. If the paper take-up has not been properly performed, it is detected as a paper jam (misfeed). Refer to "1-2 Upper tray" on the previous page for details about other design and function items.



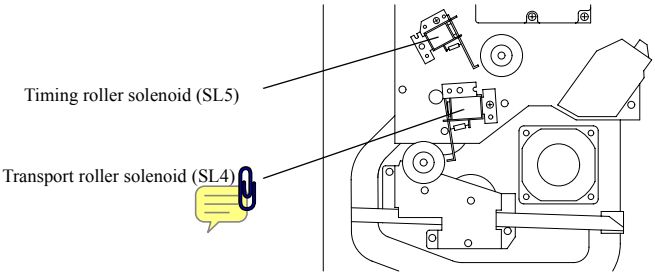
Name	Function
1. Paper size/tray detection switch	Detects the size of the paper in the tray and whether or not there is a cassette tray.
2. Paper take-up solenoid	Provides drive power to the paper take-up roller.
3. Paper take-up sensor	Optional cassette only.
4. Paper take-up roller	Picks up and feeds the top-most sheet of paper.
5. Transport roller	Transports the paper to the transport roller and timing roller.
6. Paper empty sensor	Detects when there is no paper in the cassette tray.
7. Paper near empty sensor	Detects when there are approximately 50 sheets remaining in the cassette.
8. Drive Transmission Gear	Drive motors are not installed in this tray. The drive for feeding and transporting paper is transmitted from the printer via the Drive Transmission Gear.

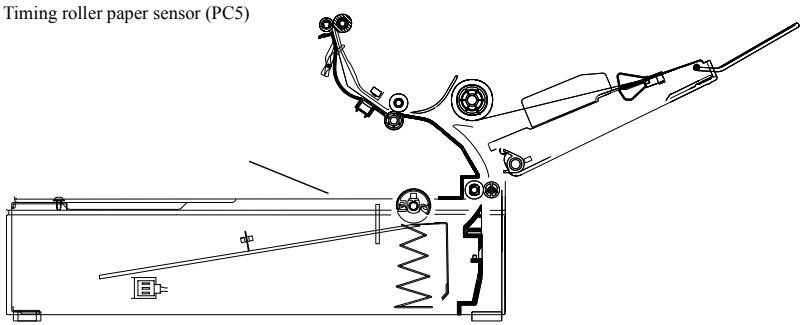
1-5 Timing roller

The timing roller corrects the angular movement of the paper that has been sent from the paper take-up section and adjusts the timing so that the end position of the visible image on the image transfer belt is the same as the edge of the paper. The timing roller rotates when the timing roller solenoid (SL5) is set on.

- When the timing roller paper sensor (PC5) detects the edge of the paper that has been transported from the paper take-up has reached the timing roller, the transport roller solenoid is set on and transport of the paper is temporarily stopped by the timing roller.
- Only during color printing, if the timing sensor is not set on within a specified time after the paper take-up solenoid (SL 8) has been set on, the paper take-up is performed again to prevent a paper take-up miss.
- The timing sensor detects the length of the paper at the same time it detects the edge of the paper. If the paper is longer or shorter than the specified length, a paper size error is detected.

Main unit – Rear view



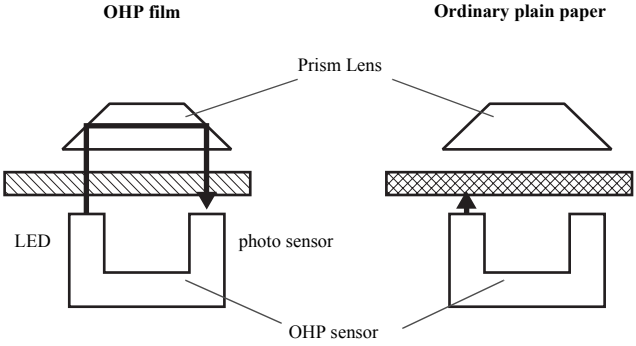


1-6 OHP sensor

This sensor detects when transparent (OHP) film is being used.

Because the film is transparent, the LED light from the light-emitting section of the sensor passes through it and is reflected by the Prism Lens mounted at the top of the sensor. This light enters the Prism Lens (LED light), and the presence of the OHP film is detected. Ordinary plain paper prevents the light from entering the photo sensor, and it is therefore not detected as OHP film.

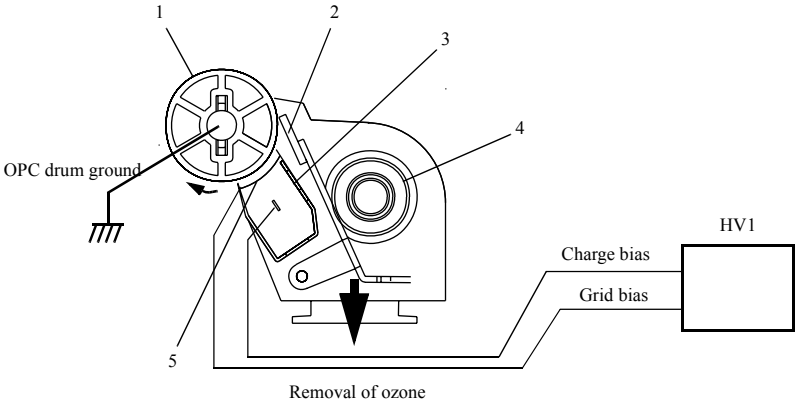
If the paper that has been set (OHP) is actually ordinary plain paper, the printout will be white.



2 OPC drum charge section

Before exposing to laser light, the comb electrode scorotron system is used to perform a minus (-) scorona discharge to the surface of the OPC drum, and the ozone created by the grid mesh is drawn in by the ozone fan and removed by the ozone filter. This charges the surface of the OPC drum with an even electrical load.

2-1 OPC Drum



Name	Function
1. OPC Drum	Laser light is used to create a latent image on the surface of the OPC drum, and toner is used to develop it. The image is then transferred on the image transfer belt.
2. Cleaning Blade	Scrapes off residual toner from the OPC drum.
3. Comb electrode	Scorona system charger for providing a minus charge to the surface of the OPC drum.
4. Waste toner collecting coil	Transports the waste toner that has fallen off of the OPC drum to the waste toner container.
5. Grid	Evenly provides the created electrical load to the OPC drum.

3 Exposure section

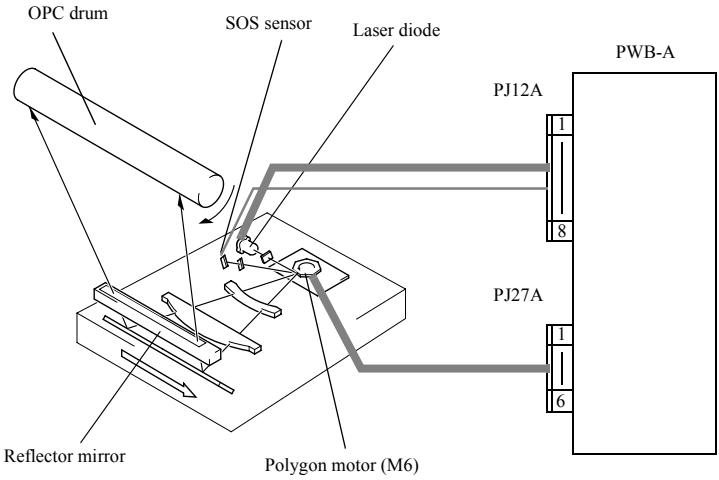
The laser light from the Laser Unit creates an electrostatic latent image on the OPC drum. When the main circuit board (PWB-A) receives a print signal from the controller, the transport motor and polygon motor (M6) are rotated, and printing begins. The image is aligned on the printing position of the paper as shown below.

3-1 In the Sub-scanning direction (Vertical scan direction)

When the image transfer belt position sensor is set on, the printer sends a TOD signal to the controller, and printing starts in the sub-scan direction.

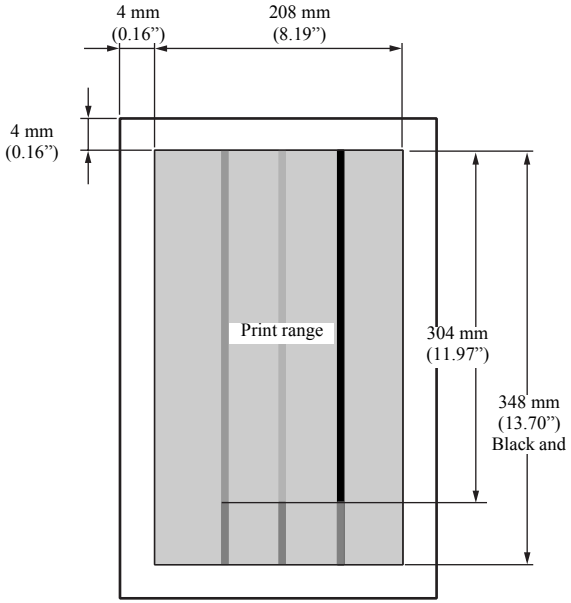
3-2 In the Scanning direction (Horizontal scan direction)

The laser unit receives a video signal from the controller by the laser controller board (PWB-C) SOS sensor signal. Laser light is emitted, and printing starts in the main scan direction.



3.3 Printing range

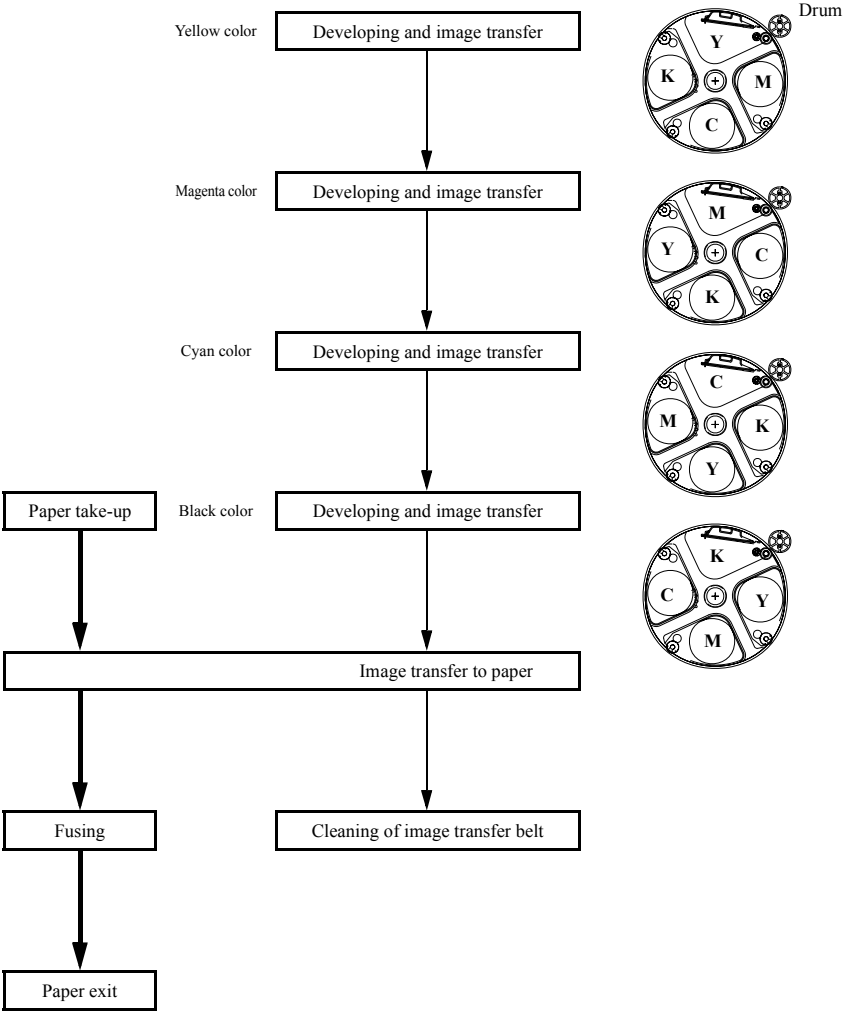
The printing range for the sub-scan direction and the main scan direction are shown below.



4 Developing section

4-1 Color developing process

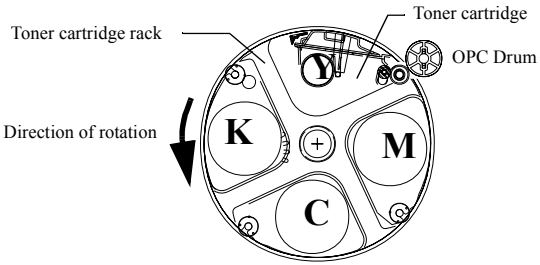
The developing and image transfer for each toner (Y,M,C,K) is performed in the sequence shown below.

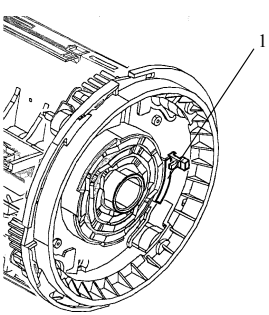


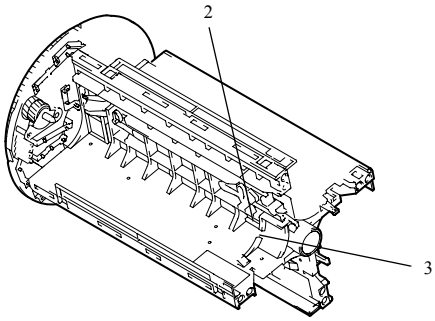
4-2 Toner cartridges

The toner cartridges for the four colors Y (yellow), M (magenta), C (cyan), and K (black) are stored on the toner cartridge rack.

- During printing, the toner cartridges are rotated by the rack motor (M3), and the cartridge for each color is moved in the sequence Y, M, C, K to the developing position.







Name	Function
1. Black toner cartridge home position-detecting sensor	The sensor and breaker plate detect when the toner cartridge for the black toner is in the developing position (home position).
2. Toner empty-detecting sensor port	This port detects whether or not the toner cartridge has toner in it.
3. Toner color identification rib	This rib identifies the color of the toner when each toner cartridge is inserted into the rack.

4-3 Developing position of the toner cartridge

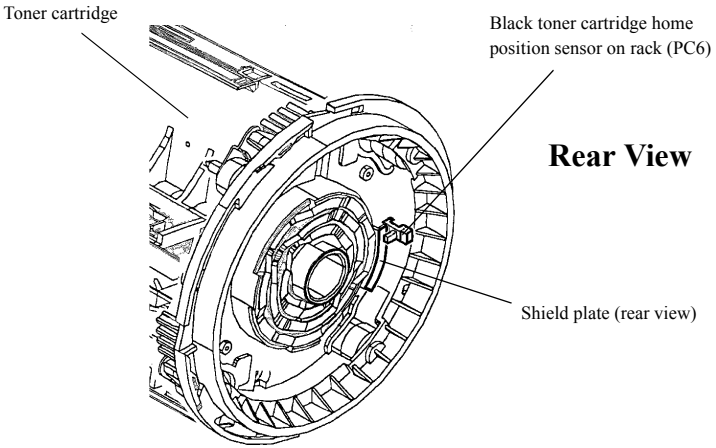
The developing position of each toner cartridge is controlled by the rack motor (stepping motor), which stops in each developing position.

Positioning the black toner

At the same time the rack is rotated by the rack motor (M3), the developing motor rotates in reverse to mesh the gears. When the black toner cartridge home position sensor (PC6) on the rack is set on, the rack motor stops. This rotates the developing motor forward to eliminate gear-meshing looseness.

Positioning each toner color

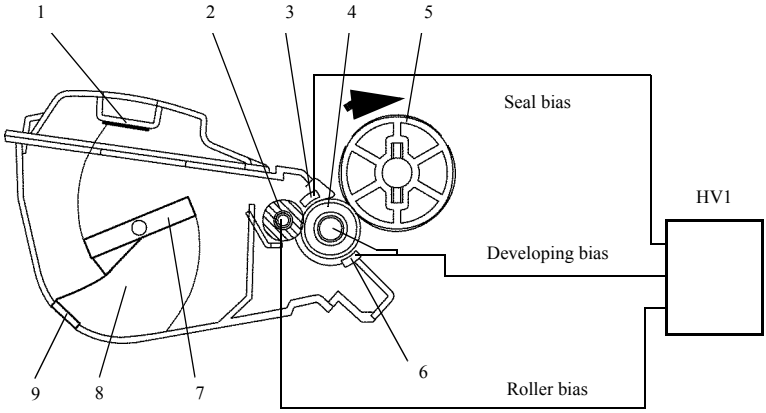
The home position for the black toner cartridge is used as a reference, and the rack motor is turned 90° forward each time (clockwise direction) and the developing (rack) position for each color is determined.



Note: The rack turns counterclockwise when viewed from the front.

4-4 Toner cartridge

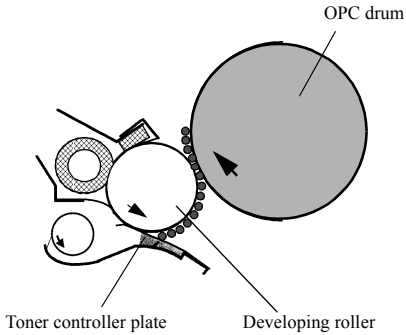
The design of the toner cartridge is shown below.



Name	Function
1. Reflector mirror	This reflects the LED light for detecting when the toner cartridge is empty.
2. Toner transport roller	This transports the toner to the developing roller.
3. Seal bias	This collects toner that has been scattered.
4. Sleeve/magnet roller	This applies toner to the electrostatic latent image on the OPC drum for developing.
5. OPC drum	This uses a laser beam to create the electrostatic latent image, and developing is performed by the developing roller. The developed toner image is transported to the image transfer belt.
6. Toner controller plate	This evenly applies the toner to the developing roller. The toner passes between the toner controller plate and the developing roller and is negatively (-) charged.
7. Toner agitating vane	This stirs the contents of the toner hopper and transports the toner to the toner transport roller.
8. Toner hopper	This is the container that holds the toner.
9. LED light passage port	Light passing through this port is used to determine when there is no toner.

4-5 Developing

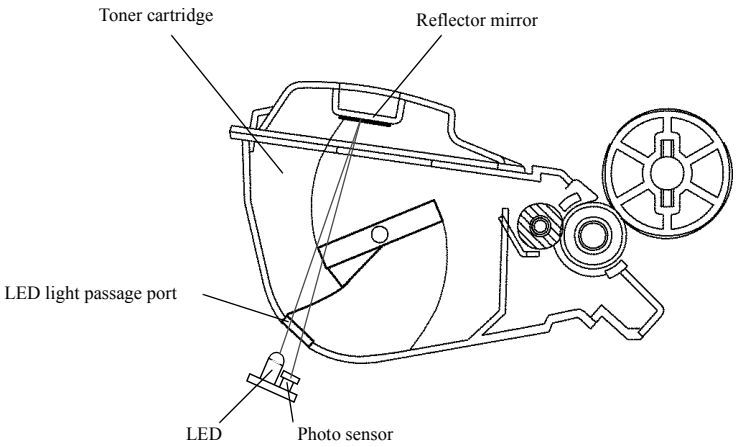
The toner is applied in an even thickness to the developing roller by the toner controller plate, the toner is then applied to the electrostatic latent image on the OPC drum, and finally the toner image is developed.



4-6 Toner empty detection

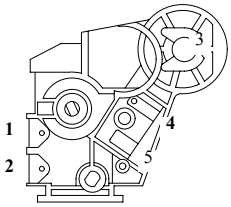
Toner empty detection is performed when the light from the toner empty sensor (PWB-H) is reflected by the reflector mirror in the toner cartridge. The amount of reflected light is measured by the photo sensor. This measurement detects the strength and duration of the reflected light as the toner stirring blades also block the reflected light.

- Toner empty detection is performed by the faster of either of the following: the optical detection mentioned above or the count for the number of images.



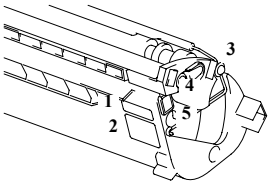
4-7 Unit contact terminals and names

OPC drum terminals



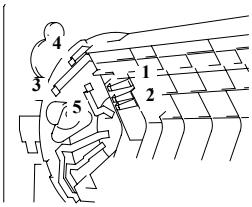
1.	New fuse (2 has D/C and is also used for detecting)
2.	
3.	Ground
4.	Grid bias
5.	Charge bias

Toner cartridge terminals



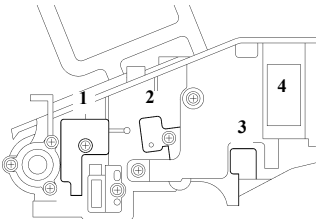
1.	New fuse (2 has D/C and is also used for detecting)
2.	
3.	Blade bias
4.	Seal bias
5.	Developing bias

Toner cartridge rack terminals



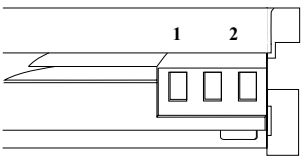
1.	New fuse (2 has T/C and is also used for detecting)
2.	
3.	Blade bias
4.	Seal bias
5.	Developing bias

Image transfer unit terminals



1.	Image transfer bias
2.	Primary image transfer bias
3.	Ground
4.	Drawer connector

Oil coating roller terminals

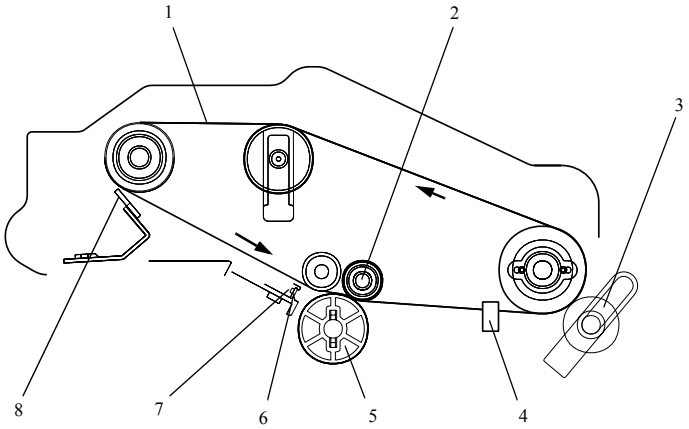


1.	New fuse (2 has T/C and is also used for detecting)
2.	

5 Image transfer section

Image transfer is performed two times: primary image transfer and paper image transfer (secondary image transfer).

5-1 Image transfer belt unit



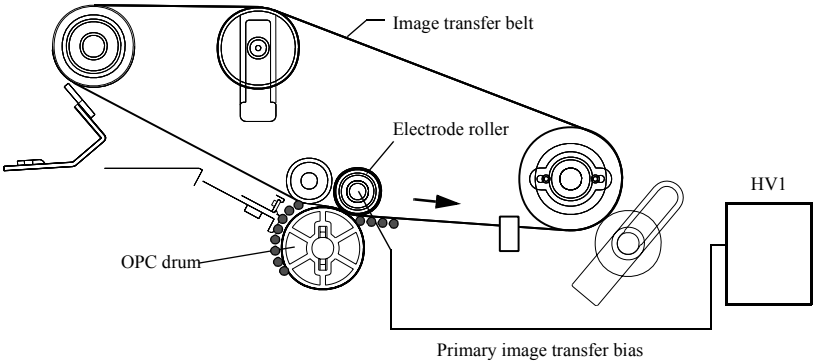
Name	Function
1. Image transfer belt	The four colors on the OPC drum are overlaid in the sequence Y, M, C, and K on the surface of the belt to create the color image.
2. Electrode roller	The toner image on the OPC drum is transferred to the image transfer belt.
3. Image transfer roller	The toner image on the image transfer belt is transferred to the paper.
4. Image transfer belt positioning sensor (PC12)	This detects the image transfer belt position so that the position for the start of image writing on the image transfer is always the same.
5. OPC drum	Creates the toner image.
6. Eraser lamp	Removes the electric load outside of the print range on the OPC drum before primary image transfer.
7. AIDC sensor	Measures the density of the AIDC mark created by the toners (Y, M, C, K) on the OPC drum.
8. Image transfer belt cleaner	Removes the residual toner on the image transfer belt after the visible image has been transferred to the paper.

5-2 First transfer

The primary image transfer of the image transfer system is a belt image transfer system.

The color toner image created on the OPC drum is created as a visual image on the image transfer belt by overlaying the colors in the sequence Y, M, C, and K.

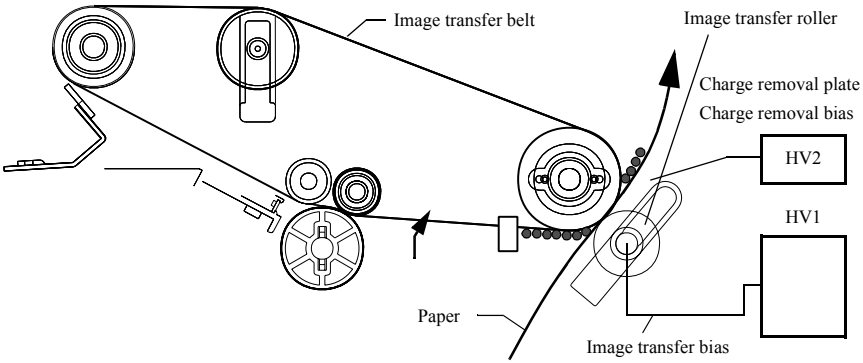
- The toner image on the OPC drum applies the image transfer bias that is supplied by HV1 to the electrode roller. It is drawn onto the image transfer belt for transfer.



5-3 Second transfer

The paper transfer system is a roller transfer system.

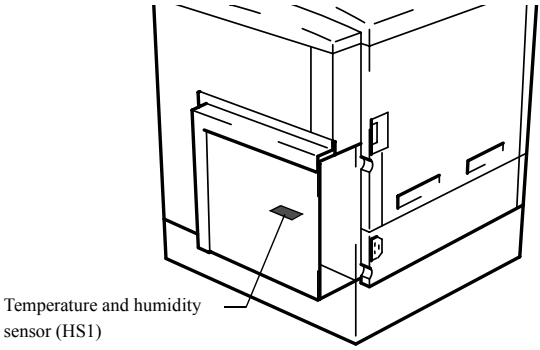
The image on the image transfer belt is transferred to the paper when the image transfer bias that is supplied by HV2 is applied to the image transfer roller. The electric load remaining on the paper is removed when the removal bias that is supplied by HV2 is applied to the charge removal plate.



5-4 Temperature and humidity sensor

The temperature and humidity sensor (HS1) is located inside the lower rear of the unit.

It measures the humidity and temperature outside of the unit. This data is read by the CPU for controlling the optimum image transfer bias and fusing temperature.



5-5 Image transfer roller pressure contact and release spacing

The image transfer roller applies and releases pressure to the image transfer as needed.

- When the toner image is transferred to the paper, the image transfer roller pressure contact solenoid (SL7) is set on and the drive force is conveyed to the cam, forcing it to turn, and the image transfer roller applies pressure to the image transfer belt. Refer to the drawing below left.

- Once the toner image has been transferred to the paper, the image transfer roller pressure solenoid is set on, and the cam rotates and pushes the lever that releases the image transfer roller from the image transfer belt. Refer to the drawing below right.

- The shield plate attached to the cam blocks the image transfer roller pressure sensor to detect image transfer roller pressure.

Image transfer roller pressure

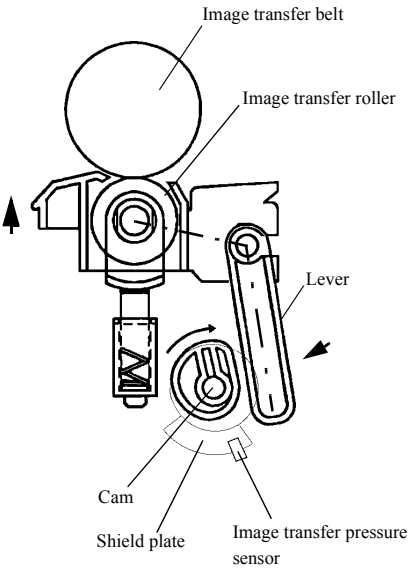
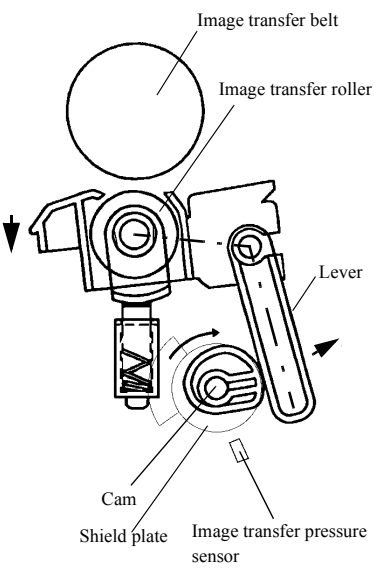
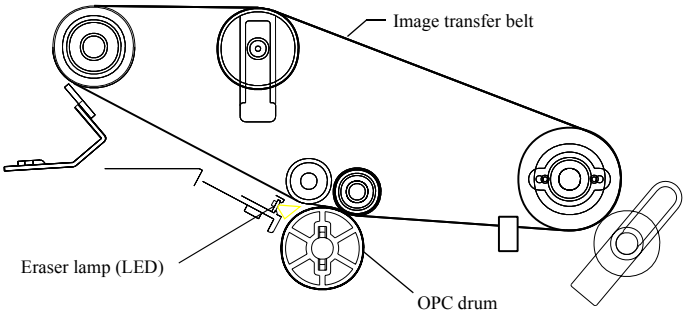


Image transfer roller release



5-6 Erase (before image transfer)

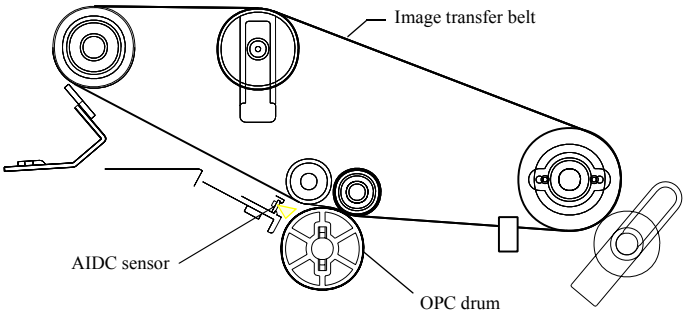
The before image transfer erase removes the electrical load for sections on the OPC drum with no toner attached. The 24 eraser lamps (LED) on the eraser board come on and remove the electrical load for the unexposed sections by irradiating the surface of the OPC drum for the pre-image transfer of the image on the image transfer belt.



5-7 Automatic Image Density Control (AIDC)

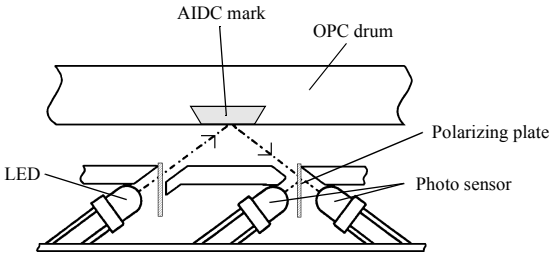
The AIDC sensor is located at the same position as the eraser lamp. It detects the density of the AIDC marks for each color that have been formed on the OPC drum, and the AIDC controller determines the optimum developing bias value for printing.

- The detection of AIDC density is performed by one LED and two reflector-type photo sensors.
- AIDC detection is performed for each toner cartridge color when the power supply switch is turned on.



5-8 AIDC sensor

Light emitted from the LED to the AIDC mark on the OPC drum is reflected and received by the photo sensor, and the AIDC sensor measures the density as shown in the illustration below.



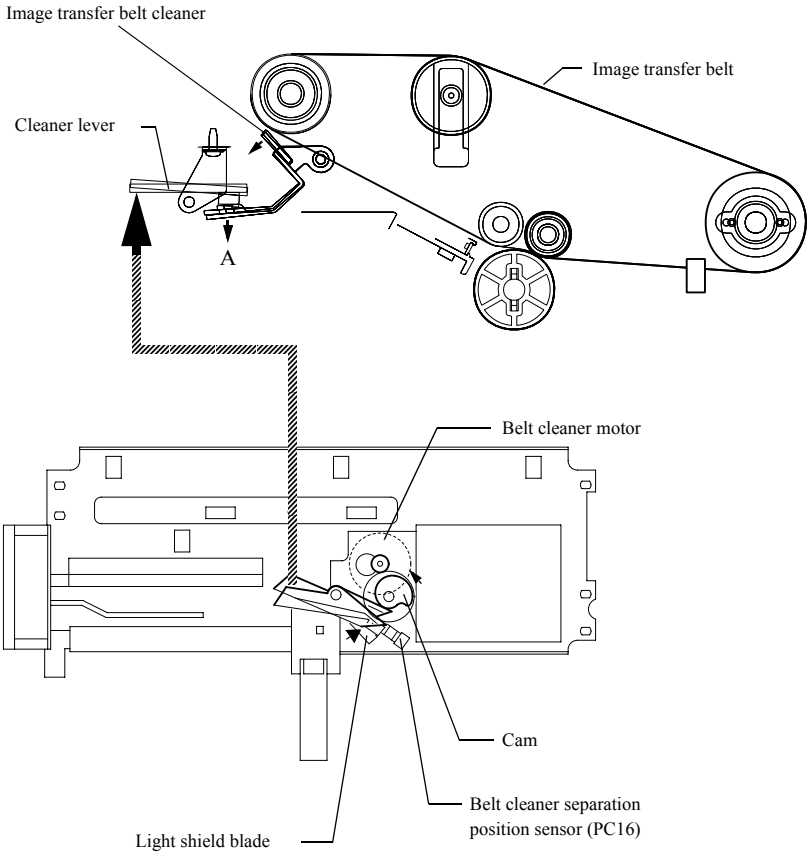
5-9 Image transfer belt cleaner contact and release

When there is a toner image on the image transfer belt, the image transfer belt cleaner is released from the image transfer belt.

To release the image belt cleaner, the belt cleaner motor (M12) is set on and the cam is turned, pushing down the cleaner lever. This pushes down the section shown as “A” in the illustration below, releasing the image transfer belt cleaner from the image transfer belt. Conversely, contact is made by setting the belt cleaner motor to on and rotating the cam. This releases the cleaner lever, applying pressure to the image transfer belt cleaner.

- The shield blades of the sensor are rotated, and the release of the image transfer belt cleaner is detected when the belt cleaner separation position sensor is set off.

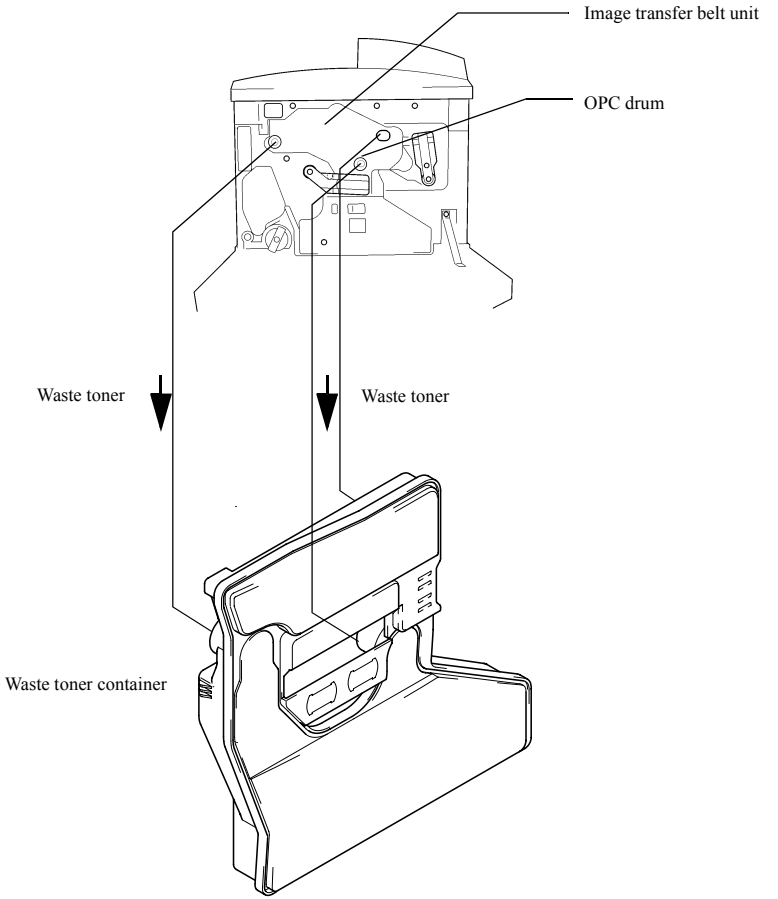
- Contact of the image transfer belt cleaner is made during one cycle of the belt after the image has been transferred to the paper.



5-10 Waste toner collection mechanism

The waste toner on the OPC drum and image transfer belt is collected in the waste toner container. The waste toner remaining on the OPC drum after the transfer of the toner image is scraped off by the cleaning blade, collected by the waste toner collection coil, and transported to the waste toner container.
The waste toner remaining on the image transfer belt is scraped off by the image transfer belt cleaner, collected by the waste toner collection coil, and transported to the waste toner container.

Flow of waste toner

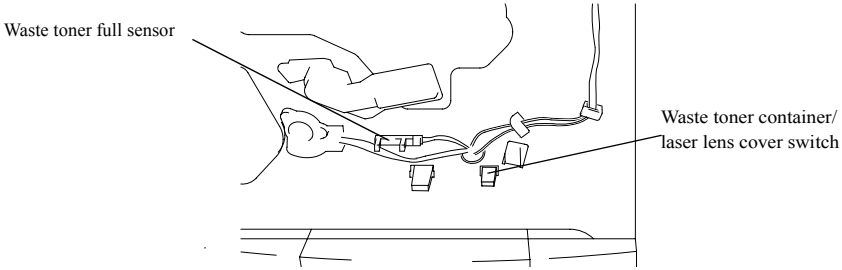


5-11 Waste toner collecting container

Detection of whether or not the waste toner container is mounted is performed by the on/off status of the waste toner container/laser lens cover switch (S10). Printing is prohibited when the waste toner container is not mounted.

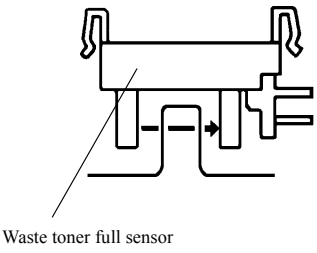
5-12 Waste toner full detection

The waste toner full sensor (PC13) detects when the waste toner container is full of waste toner. Printing is prohibited when the waste toner full is detected.



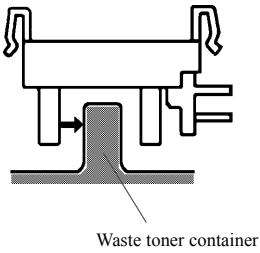
- **When there is little waste toner**

  The LED light from the sensor passes through the waste toner container to the photo sensor.



- **When waste toner full is detected**

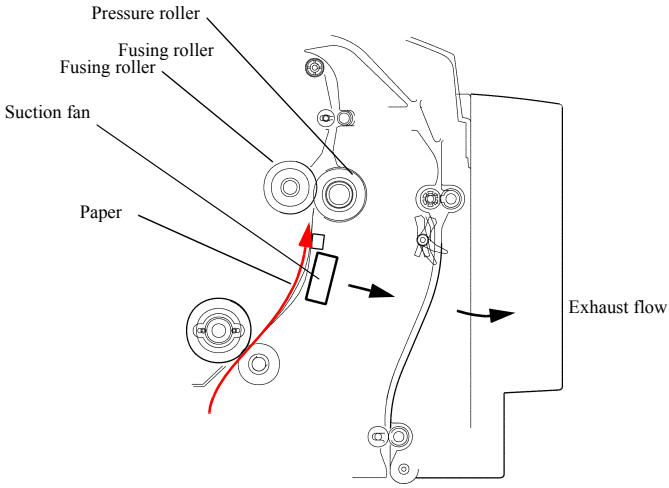
  When waste toner fills the waste toner container up to the waste toner full sensor section, it blocks the LED light from the sensor, and the toner full detection is made.



5-13 Suction transfer

After image transfer, the paper is drawn in by the suction fan motor (M7) and is transported along the paper path to the fusing unit.

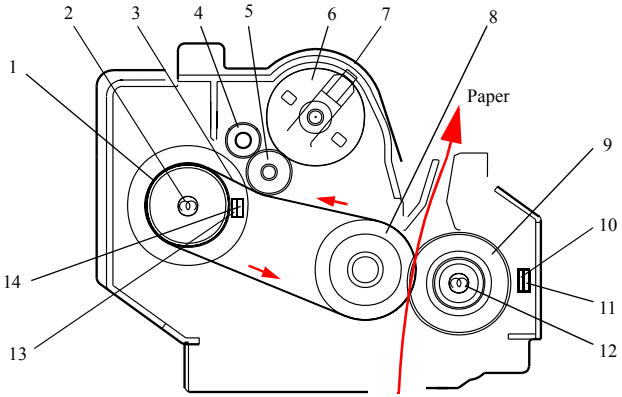
- Exhaust from the suction fan flows between the multipurpose tray or duplex unit and is discharged from the unit.



6 Fusing section

6-1 Fusing unit

Fusing the toner to the media is accomplished by a belt heat fusing system. The system uses the heat on the fusing belt that has been heated by heater lamp and the pressure from the fusing roller and pressure roller to fuse the toner to the paper.



Name	Function
1. Heat roller	Conveys the heat from the heater lamp to the fusing belt.
2. Heater lamp 1	Uses the heat of the heater lamp (650W) to heat the roller.
3. Fusing belt	Conveys the heat from the heating roller to the fusing roller and paper.
4. Cleaning roller	Cleans the coating roller
5. Oil coating roller	Cleans the fusing belt and applies oil.
6. Oil supply roller	Supplies oil to the oil coating roller.
7. Oil coating roller unit	Applies oil to the fusing belt as needed.
8. Fusing roller	Fuses the toner to the paper.
9. Pressure roller	Applies pressure to the paper by spring pressure.
10.Thermistor 2	Detects the surface temperature of the pressure roller.
11.Thermostat 2	Operates to turn the heater lamp off if the temperature of the pressure roller is abnormally high.
12.Heater lamp 2	Uses the heat of the heater lamp (650W) to heat the roller.
13.Thermistor 1	Detects the surface temperature of the heat roller
14.Thermostat 1	Operates to turn the heater lamp off if the temperature of the heat roller is abnormally high.

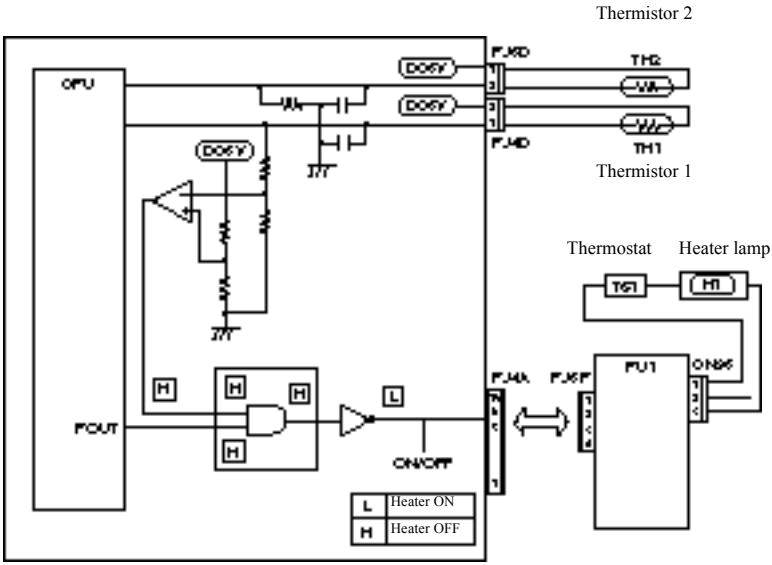
6-2 Fusing temperature control

Controller circuit

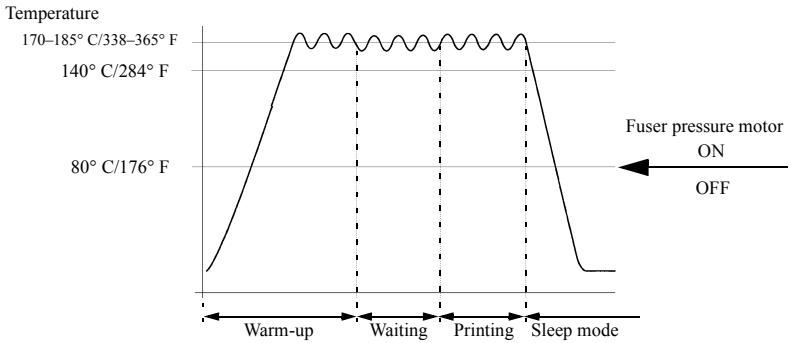
Thermistor 1 (TH1) detects the surface temperature of the heat roller and sends a temperature signal to the CPU. The heater lamp (H1) uses the POUT signal that has been sent in response to the detected temperature of thermistor 1 to control the temperature of the heat roller by turning the heater lamp on and off with heater on/off signals.

- The surface temperature of the pressure roller is controlled by heater lamp and thermistor in the same manner as the heat roller.

- If the POUT signal is not set off even when the thermistor has detected an abnormally high temperature (the surface temperature of the heat roller exceeds 220°C/428°F), the RY1 relay in PU1 is set off to force the heater lamp off.



6-3 Temperature control



Name	Function		
1. Warm up	When the power switch is turned on, the warm-up begins and the heater lamp is turned on. Contact of the pressure roller is made after its temperature has been raised and the fusing motor is turned on. The heater lamp remains on until the heat roller reaches 170° C/338° F and the pressure roller reaches 140° C/284° F. The fusing motor is stopped and the pressure roller is separated.		
2. Waiting	Temperature control is performed to keep the temperature of the heat roller at approximately 170° C/338° F and the temperature of the pressure roller at approximately 150° C/302° F.		
3. Printing	The CPU reads the data from the humidity and heat sensor (HS1) as well as the temperatures of the heat roller and pressure roller, and then the following control of the heat roller temperature is performed. • The temperature of the pressure roller is compared with the temperature of the heat roller and is adjusted to be slightly less.		
	Types of paper	**Black & white**	**Color**
	Ordinary plain paper	170–185° C/338–365° F	175–185° C/347–365° F
	Letterhead	170–185° C/338–365° F	175–185° C/347–365° F
	Thick paper	170–180° C/338–356° F	165–180° C/329–356° F
	OHP	170–175° C/338–347° F	170–175° C/338–347° F
	Envelopes	175–180° C/347–356° F	175–180° C/347–356° F
4. Sleep mode	The heater mode is turned off when a sleep mode command is received from the controller. It remains off until a command canceling the sleep mode is received from the controller. If the sleep mode command is received during printing, sleep mode control is performed after the printing has been completed.		

6-4 Fusing speed switching

There are two speeds for the fusing drive motor and the transport motor. The speed most suitable for the type of paper is selected to achieve optimum fusing.

Types of paper	Black & white	Color
Ordinary plain paper	160 mm/sec (6.3”/sec)	160 mm/sec (6.3”/sec)
Letterhead	60 mm/sec (2.4”/sec)	60 mm/sec (2.4”/sec)
Thick paper	60 mm/sec (2.4”/sec)	60 mm/sec (2.4”/sec)
OHP	60 mm/sec (2.4”/sec)	60 mm/sec (2.4”/sec)
Envelopes	60 mm/sec (2.4”/sec)	60 mm/sec (2.4”/sec)

Operation of fusing speed switching

1. The image transfer of the black (K) toner on the image transfer belt is completed.

2. The speeds of the transport motor (M1) and fusing drive motor (M4) are switched from 160 mm (6.3”) per second to 60 mm (2.4”) per second.

3. The image transfer belt turns one time with the image in the formed state on the image transfer belt.

4. The timing roller turns and the transport of paper starts.

5. The image is transferred to the paper and fused.

6. The paper passes by the paper exit sensor (PC8).

7. The speeds of the transport motor (M1) and fusing drive motor (M4) are switched from 60 mm (2.4”) per second to 160 mm (6.3”) per second.

Never tamper with the adjustment of the variable resistor (VR1D). Precise adjustment has been made to the internal variable resistor (VR1) to match the speed of the fusing motor with the finished diameter of the roller.

6-5 Fusing roller pressure release

A pressure release operation is performed at the fusing contact motor (M5) as needed to extend the life of the pressure roller for fusing.

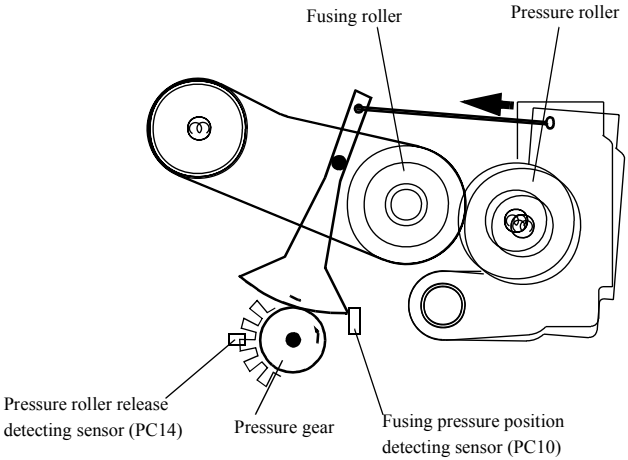
Contact

- The fusing pressure motor is set on, and the pressure gears turn (forward). The blade-shaped gear is turned and the pressure roller is made to contact the fusing roller.
- The fusing pressure position detecting sensor (PC10) is set on and the contact of the pressure roller is detected.
- The fusing pressure motor is set off.

Release

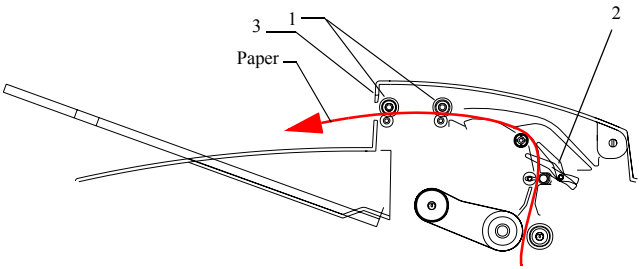
- The fusing pressure motor is turned on in reverse. This reverses the pressure gear and releases the pressure roller.
- At the pressure release sensor the release of the pressure roller is detected by the pulse disk plate attached to the same shaft as the pressure gear, and release is made to the specified distance.
- The fusing pressure motor is turned off.

That release is also made during the envelope printing mode to reduce wrinkles.



7 Paper exit section

The static electricity on the fused paper is removed by the brushes as the paper is discharged to the paper exit tray.



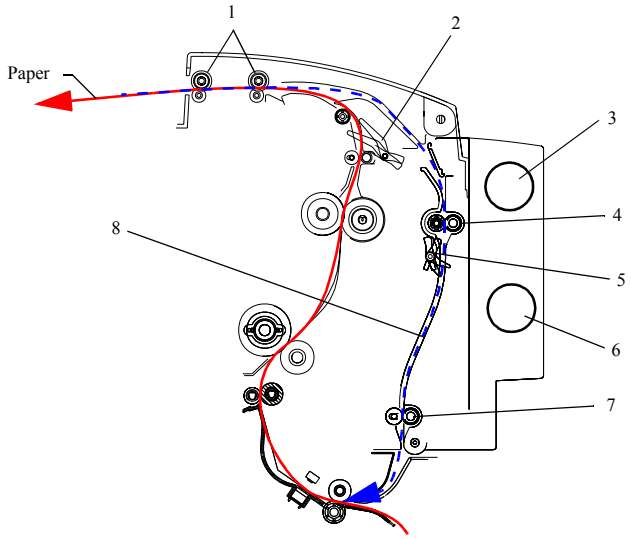
Name	Function
1. Paper exit roller	After the fusing has been completed, the paper is discharged to the print tray.
2. Paper exit sensor (PC8)	Detects that the paper has been discharged.
3. Static discharge brushes	Discharge static electricity from the paper.

8 Duplex unit

8-1 Paper path

When the duplex unit has been added, the movement of the paper is as shown in the diagram below.

- The paper exit roller is driven by the switch back motor (MDID) with the duplex unit mounted,.
- The printing on the back side of the paper is performed in the following manner. Once the paper has been discharged to the specified position, the switch back motor operates in reverse to send the paper to the duplex unit.
- The paper is transported to the printer by the transport roller.

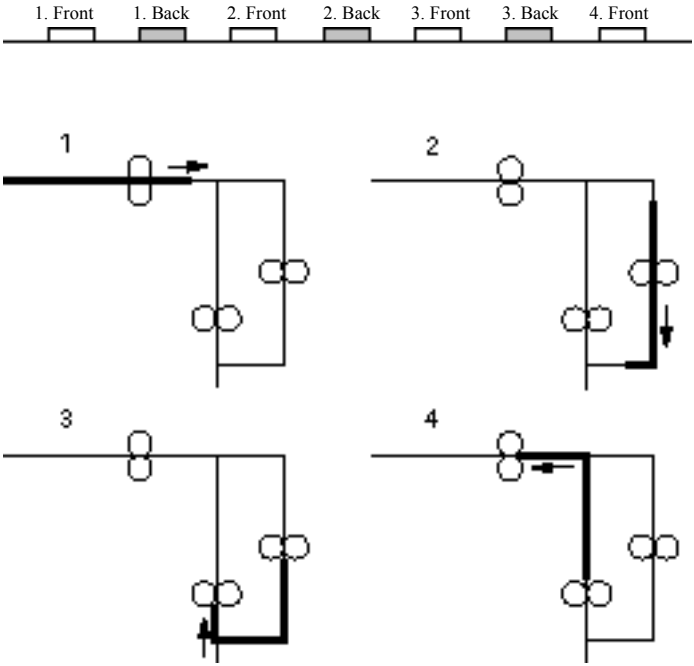


Name	Function
1. Paper exit roller	After the fusing has been completed, the paper is discharged to the print tray.
2. Paper exit sensor	Detects that the paper has been discharged.
3. Switch back motor	Reverses the direction of the paper roller and feeds the paper to the duplex unit.
4. Pick-up roller	Feeds paper to the duplex unit for printing on the back-side.
5. Paper detecting sensor	Detects paper that has been sent to the duplex unit.
6. Duplex unit drive motor	Drives the transport roller.
7. Transport roller	Transports the paper for back-side printing.
8. Back-side printing paper	Shows the route of the paper for back-side printing.

8-2 Duplex printing method

Single-sheet internal circulation system

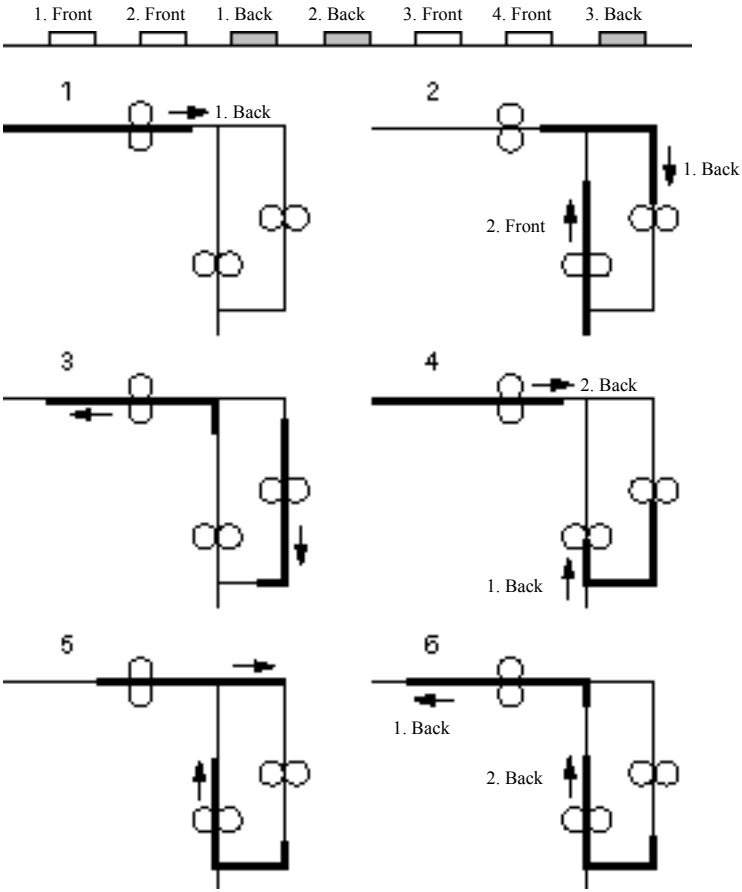
Printing on both sides is performed in the following sequence. Printing is done on both the front and back of the first sheet, the front and back of the second sheet, the front and back of the third sheet, and so on.



Two-sheet internal circulation method

(Only for black and white printing of A4- and letter-size paper. Cannot be used for color printing)

Printing of both sides is performed in the following sequence. Printing is done on the front of the first sheet and the front of the second sheet, the back of the first sheet and the back of the second sheet, the front of the third sheet and the front of the fourth sheet, the back of the third sheet and the back of the fourth sheet, and so on.



9 5-Bin Mailbin

9-1 Paper exit modes

The following two paper exit modes are available.

Ordinary mode

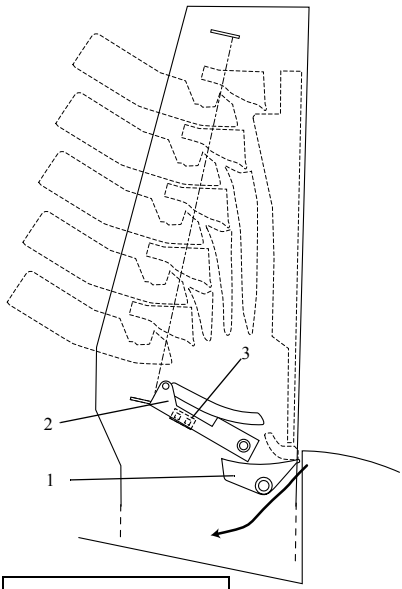
In this mode all paper from the printer is discharged to the paper exit tray for the printer.

Mailbin mode

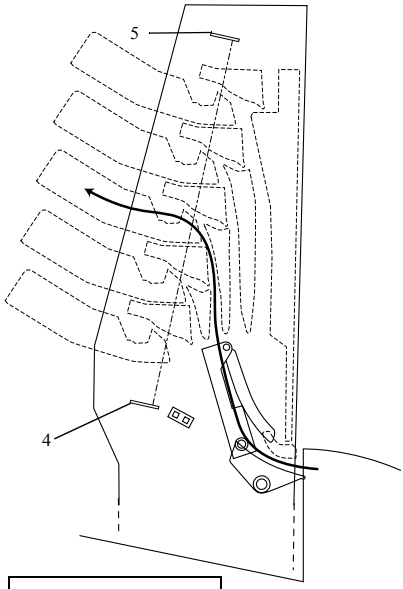
In this mode the paper from the printer is discharged to its designated bin. The bin designations are assigned to users to prevent mixing of the printed material. Any bin from 1 to 5 can be assigned as a dedicated bin.

9-2 Paper path

The path of the paper ejected from the printer varies with the selected paper output mode.



Simple stacking mode



Mail stacking mode

In simple stacking mode, the switching arm (1) is in the raised position, and the paper is ejected to the printer paper tray. At that time, the paper guide (2) is in its home position, and the paper guide and home position sensor (3) are on.

In mail stacking mode, the switching arm (1) is in the lowered position and the paper is taken into the mailbin. The paper taken in by the mailbin is then distributed by the paper guide (2) to each mailbin. The paper distributed into each bin follows a route past the paper exit sensors (4)(5), paper exit roller and paper empty sensor and is ejected into the tray for the bin. The paper guide is operated by the pulse motor. It counts the number of pulses from the home position and stops the paper guide in the correct position.

In the duplex mode the paper exit tray for the printer or the paper exit route to the 5 bins is used to perform switch back for the paper.

The switch back is performed by the paper exit tray for the printer:

- **Conditions:** When the paper is A4 size or larger and when the paper has been discharged to the paper exit tray of the printer immediately preceding.
- **Operation:** The switching arm (1) raises and the paper is discharged into the paper exit tray for the printer. The operating direction of the printer is then reversed and the paper enters the duplex unit via the printer.

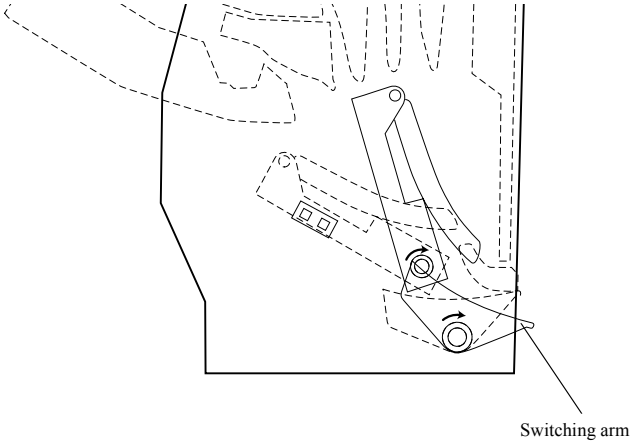
When switch back is performed using the paper exit route to the paper bins.

- **Conditions:** When paper is smaller than A4 size and has just been discharged to the bins.
- **Operation:** The switching arm (1) lowers and the paper is taken in by the mailbin. The paper that has been taken in by the mailbin is distributed by the paper guide (2) to the paper passage to the bins. The operating direction of the printer is then reversed and the paper enters the duplex unit via the printer.

9-3 Switching arm operation

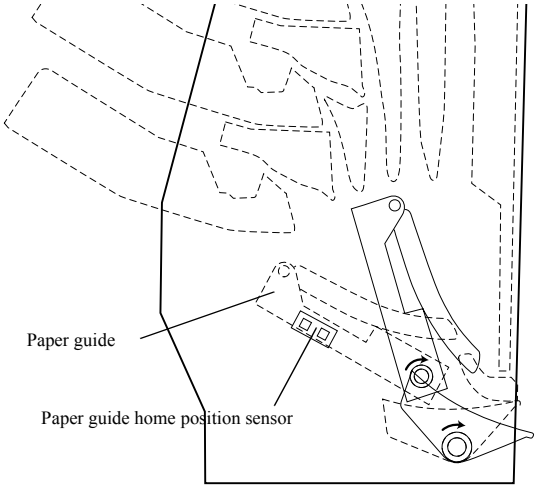
The switching arm is operated by the paper guide motor (M2) and it switches position so that the paper is either taken in by the mailbins or discharged into the paper exit tray for the printer.

When the switching arm rises, the paper is discharged to the paper exit tray for the printer. When the switching arm is lowered, the paper is taken up by the 5-bin mailbin.

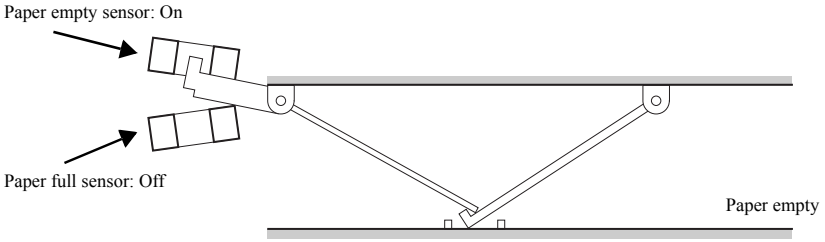


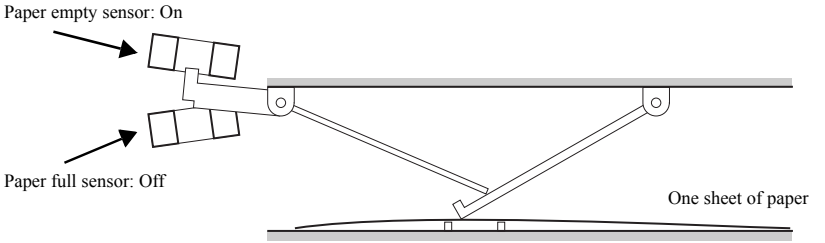
9-4 Paper guide operation

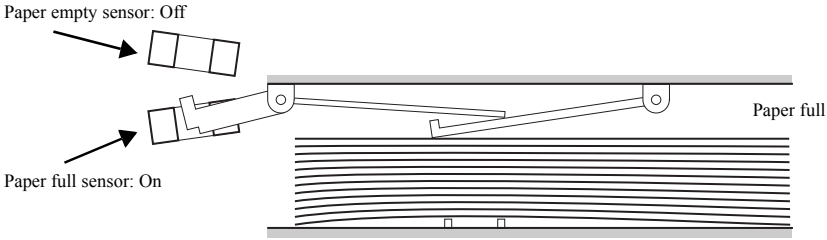
The paper guide is operated by the paper guide motor (M2), and the paper is distributed to bins 1 through 5. When the paper guide is in the bottom most position, the paper guide home position sensor is on. The paper guide motor (M2) is a pulse motor and the amount the paper guide moves from the home position is controlled by the pulse count.



9-5 Paper empty and paper full detection







D. DISASSEMBLY AND CLEANING

Safety precautions when disassembling and adjusting

⚠ WARNING

Always use the genuine parts specified in the manufacturer's manual as the replacement parts. Installing a wrong or unauthorized part could cause dielectric breakdown or overload, or undermine safety devices, resulting in possible electric shock or fire.

Never modify the unit or mount optional components not specified by MINOLTA-QMS, Inc. Modifying the unit or adding unauthorized components could expose the user to hazards; cause dielectric breakdown, overload, misoperation, or other such problems; and result in electrical shock, fire, injury, or loss of sight.

Always use the same screws when reassembling the unit. Improper screw connections could cause looseness, dielectric breakdown, improper installation, electrical shock, or injury.

Never tamper with screws marked with red paint. Tampering with these screws could image defects or abnormal noises.

Always check that the safety switches operate properly after servicing has been completed. Improperly operating safety switches could result in electrical shock or injury to the user.

Periodically clean and inspect the power cord plug and socket for damage. A build-up of dust could cause the tracking phenomenon and result in fire.

Periodically inspect the power cord for damage. Failure to discover damage could result in electrical shock or fire.

Precautions when handling the circuit boards

⚠ CAUTION

Always follow these precautions when handling circuit boards in order to prevent static electricity from damaging them:

- Precautions when transporting and storing circuit boards

  1. Place circuit boards in a conductive bag or case, or wrap them in aluminum foil.

  2. Store them in a place not exposed to direct sunlight.

- Precautions when changing circuit boards

  1. Always disconnect the power supply cord or cables before unplugging or plugging in any connectors.

  2. Always handle the circuit board by its insulated parts so that you do not touch the terminals or soldered sections.

- Precautions when inspecting circuit boards

  1. Before touching the circuit board, always touch the frame (or some other grounded item) to ground any static electricity in the body.

  2. Never determine a defect on a circuit board by touching it with your hand or a metal object. Use a moving part (such as a solenoid, motor, or lamp) for checking the circuit board.

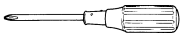
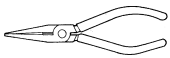
1-1 Parts to be replaced

Part name	Replacement interval	Notes
OPC drum kit • OPC drum • Waste toner container • Laser lens cover	Black and white Continuous printing: 30,000 sheets Single-sheet printing: 10,000 sheets Color Continuous printing: 7,500 sheets Single-sheet printing: 5,000 sheets	Replace at the same time.
Toner cartridge (K)	6,000 sheets	
Toner cartridge (C,M,Y)	6,000 sheets	
Image transfer belt unit	100,000 image transfer cycles	
Fusing unit	100,000 sheets	
Image transfer roller unit	100,000 sheets	Replace at the same time.
Fuser oil roller	**Coverage**	**Fuser Oil Roller Life**
	Intermittent Monochrome Printing	
	7.5% or less	100% / 7000 pages
	7.6% - 12.5%	45% / 3094 pages
	12.6% - 17.5%	30% / 2063 pages
	17.6% - 25%	25% / 1707 pages
	26% or greater	15% / 971 pages
	Continuous Monochrome Printing	
	7.5% or less	100% / 21,000 pages
	7.6% - 12.5%	20% / 4304 pages
	12.6% - 17.5%	12% / 2538 pages
	17.6% - 25%	10% / 2020 pages
	26% or greater	5% / 1065 pages
	Intermittent Full-Color Printing	
	25% or less	100% / 5000 pages
	26% - 50%	65% / 3194 pages
	51% - 75%	50% / 2538 pages
	76% or greater	35% / 1737 pages
	Continuous Full-Color Printing	
	25% or less	100% / 7500 pages
	26% - 50%	60% / 4500 pages
	51% - 75%	45% / 3300 pages
	76% or greater	30% / 2063 pages

1-2 Parts to be cleaned

Part name	Cleaning procedure	Notes
Paper take-up roller Laser lens cover	Wipe off any contamination from the surface of the roller with a soft, dry cloth.	Cleaning by user
General Cleaning	Wipe off exterior and interior of printer. Vacuum excess toner from the inside of the printer with a toner vacuum.	Cleaning by user.

1-3 Service tools

Tools			
Phillips screwdriver (No. 2)	Phillips long screwdriver	Tweezers	Needle nose pliers
			
Standard servicing	For parts with Phillips head screws	Standard servicing	For E-rings

1-4 Screws

Drawing	No.	D × L (mm)	Application
	3541 Silver color 9735-0308-14	3 × 8 mm	For mounting external parts
	3504 Copper color 9735-0308-13	3 × 8 mm	For mounting internal parts
	3704 Copper color 9739-0308-13	3 × 8 mm	For mounting internal parts
	1308 Silver color 9646-0308-13	3 × 8 mm	For mounting external parts (Levers and knobs)
	8301 Copper color 9712-300-13	—	For mounting external covers

There are screws other than those shown here. Always use the same screw in the same location when reassembling. In particular, always use screws with toothed washers in the same location.

1-5 Fuse ratings

Circuit name	Symbol	Explanation
HV1	F1	125V – 3.15A
HV2	F001	125V – 3.15A
PU1	F1 F2A	100V: AC125V –10A 220V: AC250V – 5.0A 100V: AC250V –15A 220V: AC250V – 5.0A

2 Items not to be handled

Never remove, disassemble, or adjust any of the items indicated below.

2-1 Mounting the rail for the image transfer belt unit

Never remove the rail for the image transfer belt unit. It has been mounted at the factory using a positioning jig to ensure that it is level.

If the rail for the image transfer belt unit is removed, the image transfer belt unit will become twisted, the paper will not be transported straight, the belt will become damaged, and the colors will be mispositioned.

2-2 Mounting the developing motor

Never remove the developing motor. It has been mounted at the factory using a jig and the drive gears adjusted to ensure optimum gear meshing. If the developing motor is removed, the gear meshing will become too shallow or too deep, noise will develop, and imaging problems such as the mispositioning of color, streaks, and color unevenness will occur.

2-3 Mounting the rack motor

Never remove the rack motor. It has been mounted at the factory using a jig and the drive gears adjusted to ensure optimum gear meshing. If the rack motor is removed, the gear meshing will become too shallow or too deep, noise will develop and imaging problems such as the mispositioning of color, streaks, and color unevenness will occur.

2-4 Variable resistors on the circuit board

Never adjust the variable resistor on the circuit board. It has been adjusted at the factory.

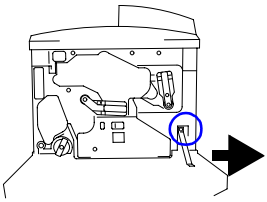
3 Disassembly procedures

Before disassembling the printer, it may be necessary to remove some of the removable optional or provided components (such as the YMCK toner cartridges and OPC drum).

- Never remove the laser lens cover as it prevents toner and dust from falling into the laser unit window during the servicing.

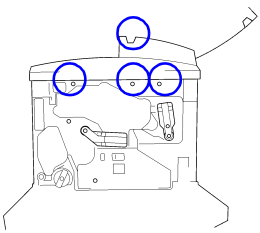
3-1 Removing the exterior covers

1. Remove the front cover



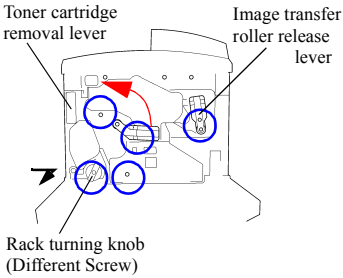
1. Open the front cover.
2. Remove the mounting screw for the front cover. (1 screw)
3. Push on the right pin section and, while carefully bending the front cover, remove it to the right.

2. Remove the control panel



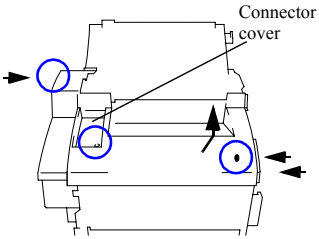
1. Open the front cover and remove the toner waste container.
2. Remove the 3 mounting screws for the control panel.
3. Open the fusing cover and remove the 1 mounting screw.
4. Remove the mail bin cover (front).
5. Lift up on the control panel, disconnect one connection, and remove it.

3. Remove the front center cover



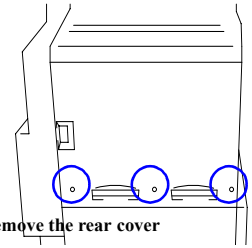
1. Remove the 1 mounting screw for the rack turning knob and remove the turning knob.
2. Remove the 2 mounting screws for the image transfer release lever and remove the lever.
3. Remove the 3 mounting screws for the front center cover. Rotate the transfer belt handle to remove 1 of the mounting screws.
4. Grab the handle on the right end of the front center cover and pull towards you. Remove the tabs on the left side, pull on the toner cartridge removal lever, and remove the front center cover.

4. Remove the upper cover



1. Remove the rear connector cover.
2. Remove the 2 set screws for the top cover (right rear of the main unit, 1 screw inside the connector cover and 1 screw under the control panel).
3. Loosen the top-right set screw on the rear cover.
4. Remove the hook at the front center from the frame and remove the cover by pulling it to the right.

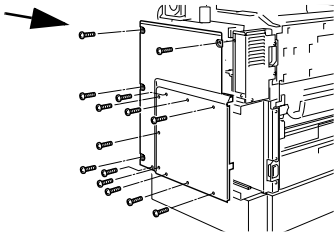
5. Remove the left cover



1. Remove the 3 set screws for the left cover.
2. While pulling the left cover forward, lift it up and then push the cover down and remove the 3 hooks at the bottom.
3. Pull the left cover downward to remove the 3 hooks at the top.

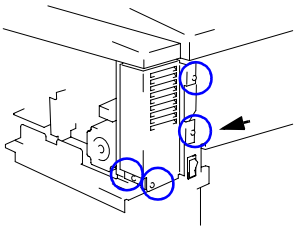
Do not forget to mount the reinforcement plate when reassembling the printer.

6. Remove the rear cover



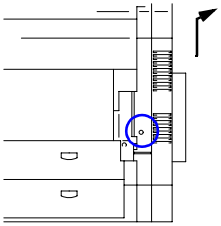
1. Remove the 13 set screws for the rear cover.
   - The area indicated by the arrow in the drawing to the left uses a serrated washer.

7. Remove the left rear cover



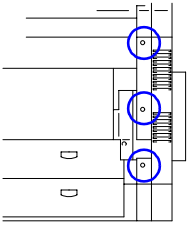
1. Remove the 4 set screws for the left rear cover.
   - The area indicated by the arrow in the drawing to the left uses a serrated washer.

8. Remove right rear cover 1



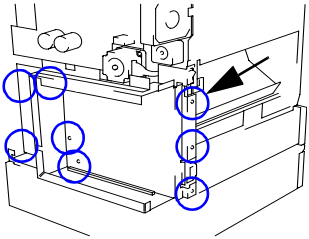
1. Remove the 1 set screw for the right rear cover.

9. Remove right rear cover 2 (located under right-rear cover 1)



1. Remove the 3 set screws for right rear cover 2.

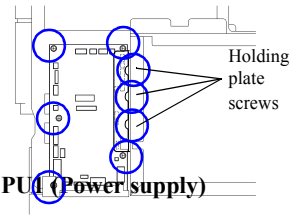
10. Remove the controller box



1. Remove the 8 set screws for the controller box.

- The area indicated by the arrow in the drawing to the left uses a lock washer

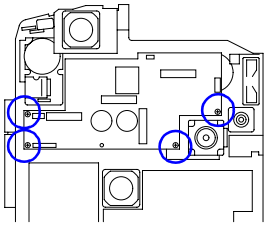
3-2 PWB-A (Main circuit board)



1. Remove the rear cover.
2. Remove the right-rear 1 cover.
3. Remove the right-rear 2 cover.
4. Remove the 29 connectors for the PWB-A circuit board and the 5 set screws.
5. Remove the PWB-A circuit board.

Be sure to check the connections of all connectors after reassembly.

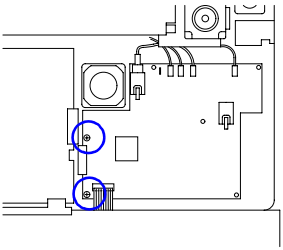
3-3 PU1 (Power supply)



1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear cover 1.
4. Remove the right-rear cover 2.
5. Disconnect 6 connectors and one wire harness. One connector is attached to the frame.
6. Release the nylon standoff clip.
7. Remove PU1.

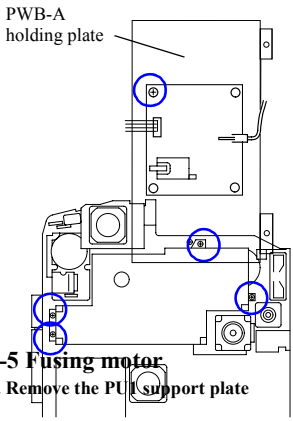
3-4 HV1 and HV2 (High-voltage circuit boards)

1. Remove HV1 (high-voltage circuit board)



1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear cover 1.
4. Remove the right-rear cover 2.
5. Remove PWB-A.
6. Remove the 6 connectors for the HV1 circuit board and 2 set screws. Release 4 nylon standoff clips from the board.
7. Remove HV1.
8. Remove the insulation sheet.

2. Remove HV2 (high-voltage circuit board)



1. Remove the rear cover.
2. Remove the right-rear cover 1.
3. Remove the right-rear cover 2.
4. Remove 29 connectors and 5 set screws from PWB-A.
5. Remove the 2 connectors for the HV2 circuit board and 1 set screw. Release 3 nylon standoffs clips from the circuit board.

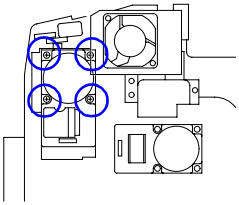
3-5 Fusing motor

1. Remove the PU1 support plate

1. Remove the rear cover.

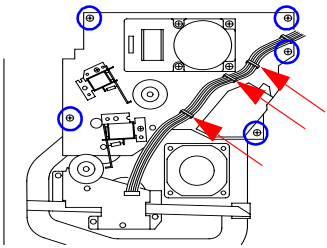
2. Remove the left-rear cover.
3. Remove the right-rear 1 cover.
4. Remove the right-rear 2 cover.
5. Remove the 4 set screws for the PU1 holding plate. Do not remove PU1 from the bracket.

2. Remove the fusing motor



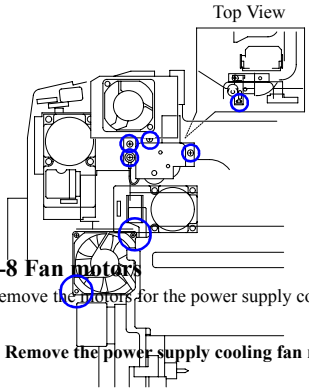
1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear 1 cover.
4. Remove the right-rear 2 cover.
5. Remove the 1 connector and 4 set screws for the fusing motor.

3-6 Transport motor



1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear 1 cover.
4. Remove the right-rear 2 cover.
5. Remove the PU1 holding plate (do not remove PU1 from bracket).
6.) Remove the PWB-A holding plate (do not remove PWB-A from bracket).
7.) Remove the 1 connector for the transport motor.
8.) Remove the wiring harness from the transport motor driving assembly by releasing 4 harness clips.
9.) Remove 5 screws from the transport motor driving assembly.
10.) Remove the transport motor driving assembly.

3-7 Fusing pressure motor



1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear 1 cover.
4. Remove the right-rear 2 cover.
5. Remove the PU1 holding plate (do not remove PU1 from bracket).
6. Remove the fusing contact motor holding plate. Remove 5 screws (one of which is ground), and 2 connectors.
7. Remove the 2 fusing contact motor set screws.

Care should be taken when removing the motor so the pins are not lost. The pin positions are to be aligned when reassembling.

3-8 Fan motors

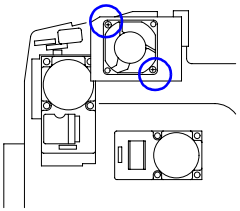
Remove the motors for the power supply cooling fan, fusing fan, toner fan, and the ozone fan.

1. Remove the power supply cooling fan motor

1. Remove the rear cover.

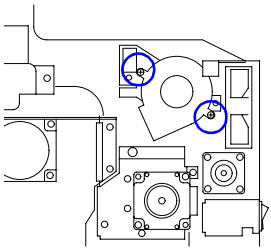
2. Remove the left-rear cover.
3. Remove the right-rear cover 1.
4. Remove the right-rear cover 2.
5. Remove the PU1 holding plate (do not remove PU1 from bracket).
6. Remove the 1 connector for the power supply fan and the 2 set screws. (There are 5 harness clamps.)

2. Remove the fusing fan motor



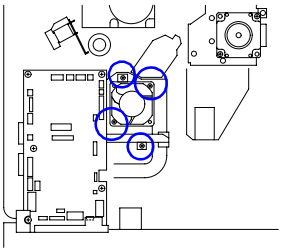
1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear cover 1.
4. Remove the right-rear cover 2.
5. Remove the PU1 holding plate (do not remove PU1 from bracket).
6. Remove the 1 connector for the fusing fan and the 2 set screws. (There are 4 harness clamps.)

3. Remove the toner (suction) fan motor



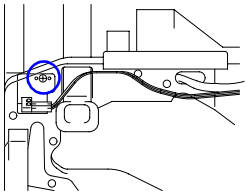
1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear cover 1.
4. Remove the right-rear cover 2.
5. Remove the PU1 holding plate (do not remove PU1 from bracket).
6. Remove the 1 connector for the toner suction fan and the 2 stop screws. (There are 4 harness clamps.)

4. Remove the ozone fan motor



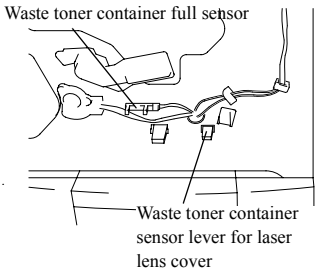
1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear cover 1.
4. Remove the right-rear cover 2.
5. Remove the PWB-A holding plate (do not remove PWB-A from bracket).
6. Remove the 1 connector for the ozone fan and the 2 set screws. (There are 2 harness clamps under the PWB-A.)
7. Remove the 2 set screws for the ozone fan mounting platform.

3-9 Laser safety switch (CDRH-SW)



1. Remove the front cover.
2. Remove the control panel.
3. Remove the front center cover.
4. Remove the 2 safety switch connectors on the top left of the front cover and the 1 set screw. Notice that the set screw can be used to adjust the position of the switch.

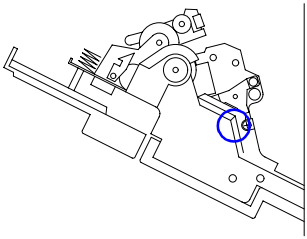
3-10 Waste toner full sensor



1. Remove the front cover.
2. Remove the control panel.
3. Remove the front center cover.
4. Remove the waste toner container full sensor. (There is 1 connector.)

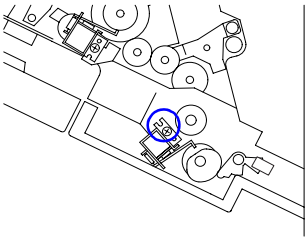
3-11 Multipurpose tray take-up solenoid

1. Remove the paper take-up section cover



1. Remove the 1 set screw for the paper take-up section cover. (There are 4 tabs.)

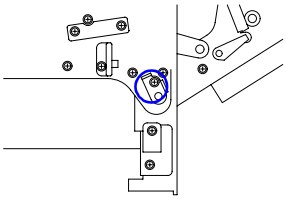
2. Remove the multipurpose tray paper take-up solenoid



1. Remove the 1 set screw for the multipurpose tray paper take-up solenoid. (There is 1 connector.)

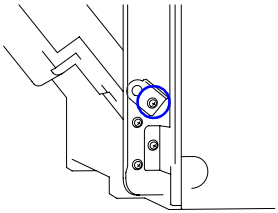
3-12 Multipurpose paper take-up tray

1. Remove the bearing on the front side of the multipurpose tray paper take-up section



1. Remove the front cover.
2. Remove the front center cover.
3. Remove the 1 set screw for the bearing on the front side.
4. Remove the 1 plastic c-clip and slide the pivot arm from the shaft..

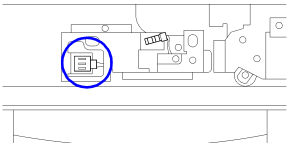
2. Remove the bearing on the rear side of the multipurpose tray paper take-up section



1. Remove the rear cover.
2. Remove the 1 set screw for the bearing on the rear side.
3. While using care for the spring, remove the bearings on the front and rear side.
4. Remove the multipurpose paper take-up unit. (There is 1 connector.)

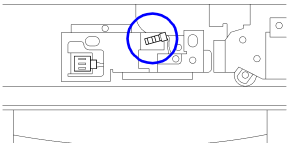
3-13 Cassette paper take-up section

1. Remove the paper size switch



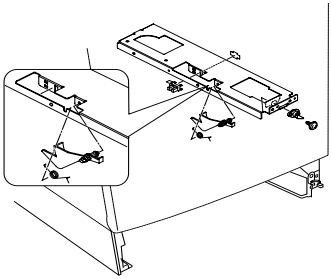
1. Remove the 2 trays from the unit.
2. Remove the hook for the paper size switch and pull out the 1 connector.

2. Remove the paper near-empty sensor



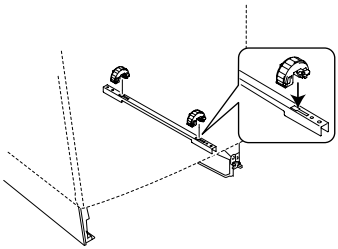
1. Remove the hook for the paper near-empty sensor and pull on the 1 connector.

3. Remove the paper empty sensor



1. Remove four hooks for the paper empty sensor and disconnect 1 connector.
2. Remove the sensor.

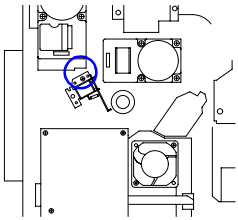
3. Remove the paper pickup rollers



1. Slide paper pickup roller toward the front of the printer.
2. Remove the roller.

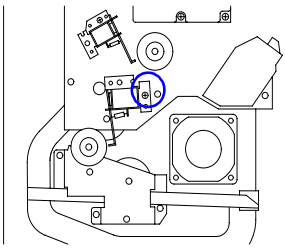
3-14 Transport section

1. Remove the timing roller solenoid



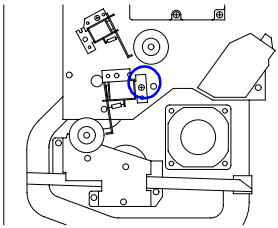
1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear 1 cover.
4. Remove the right-rear 2 cover.
5. Remove the 4 screws for the mounting plate for PU1 (power supply circuit board) and remove the mounting plate together with PU1.
6. Remove the 1 set screw for timing roller solenoid connector. (There is 1 harness clamp.)

2. Remove the transport roller solenoid



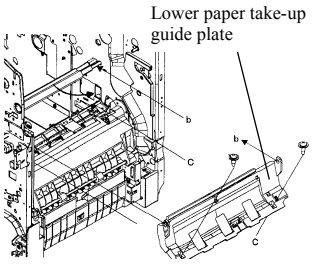
1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear 1 cover.
4. Remove the right-rear 2 cover.
5. Remove the PWB-A mounting plate together with the PWB-A attached.
6. Remove the 1 set screw for the transport roller solenoid connector.

3. Remove the registration roller



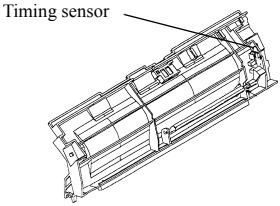
1. Remove the front cover.
2. Remove the control panel cover.
3. Remove the front center cover.
4. Remove the rear cover.
5. Remove one plastic c-clip and the brushing bushing from the front side.
6. Remove one metal c-clip and gear from the rear side of the registration roller.
7. Remove one plastic c-clip and the brass bushing from the rear side of the registration roller.
8. Remove one c-clip and brass bushing from the front end of the registration roller.
9. Remove the registration roller cover attached to the registration roller.
10. Remove the registration roller.

4. Remove the lower paper take-up guide



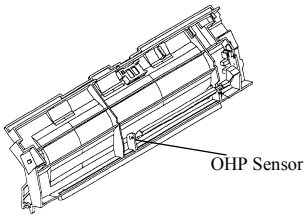
1. Remove the front cover.
2. Remove the control panel cover.
3. Remove the front center cover.
4. Remove the rear cover.
5. Remove the registration roller.
6. Lift up the bottom end of the lower paper take-up guide and remove it from the clamping of the timing roller section.
(b, c sections) (There are 2 connectors.)

5. Remove the timing sensor



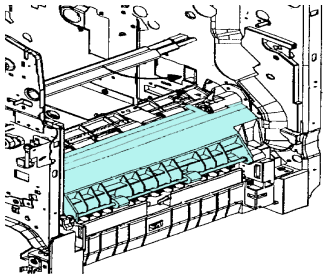
1. Remove the front cover.
2. Remove the control panel cover.
3. Remove the front center cover.
4. Remove the rear cover.
5. Remove the registration roller.
6. Remove the lower paper take-up guide.
7. Remove the timing sensor and the 1 connector.

6. Remove the OHP sensor



1. Remove the front cover.
2. Remove the control panel cover.
3. Remove the front center cover.
4. Remove the rear cover.
5. Remove the registration roller.
6. Remove the lower paper take-up guide.
7. Remove the OHP sensor and the 1 connector.

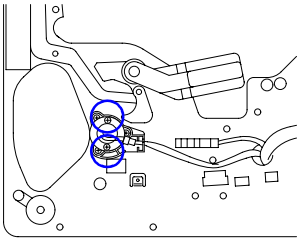
7. Remove the paper guide



1. Remove the front cover.
2. Remove the control panel cover.
3. Remove the front center cover.
4. Remove the rear cover.
5. Remove the registration roller.
6. Remove the lower paper take-up guide.
7. Remove the 4 screws and remove the paper guide.

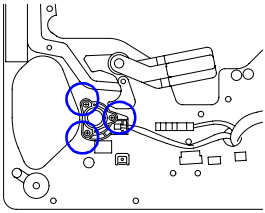
3-15 Developing section

1. Remove the toner empty sensor



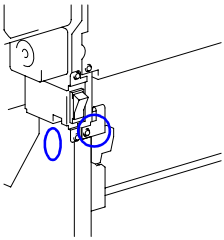
1. Remove the front cover.
2. Remove the control panel.
3. Remove the front center cover.
4. Remove the 1 toner empty sensor connector and 2 set screws.

2. Remove the front rack bearing



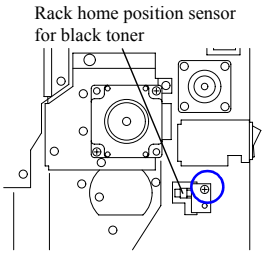
1. Remove the front cover.
2. Remove the control panel.
3. Remove the front center cover.
4. Remove the 3 set screws for the front rack bearing and remove it.

3. Remove the rack lock lever



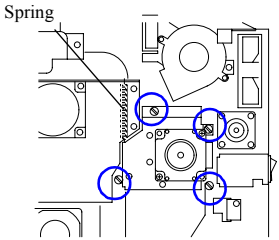
1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the left cover.
4. Remove 2 screws for the rack lock lever and remove it. The screw from the left side has a serrated washer.

4. Remove the rack home position sensor for black toner



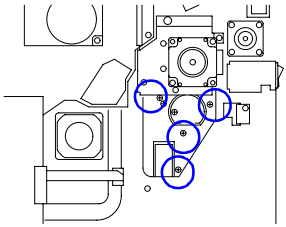
1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear cover 1.
4. Remove the right-rear cover 2.
5. Remove PWB-A mounting plate with the PWB-A attached.
6. Remove HV1 mounting plate with HV1 attached.
7. Remove the 1 set screw for the rack home position sensor for black toner and the 1 connector to remove the sensor.

5. Remove the developing motor assembly

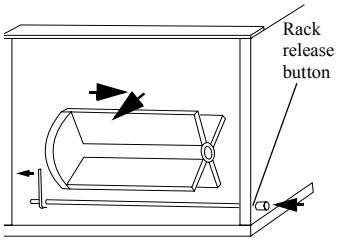


1. Remove the controller cover.
2. Remove the rear cover.
3. Remove PU1 together with its mounting plate.
4. Remove the 1 connector for the developing motor assembly and the 4 set screws (tension screws). (There is 1 spring and 4 harness clamps.)

6. Remove the toner cartridge rack



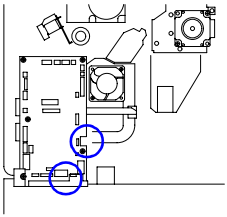
1 Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear cover 1.
4. Remove the right-rear cover 2.
5. Remove the upper cover.
6. Remove PWB-A mounting bracket with PWB-1 and HV2 attached.
7. Remove the upper-right reinforcement plate.
8. Remove the left frame plate.
9. Remove the 3 connectors for the rear rack bearing and the 4 set screws.
10. Carefully remove the front and rear bearings.



11. Push the rack release button from the front surface. (Remove the E-rings for the rack release lever and free the lever.)
12. Bring the rack to the front and remove it, using care not to catch the piece on the end.

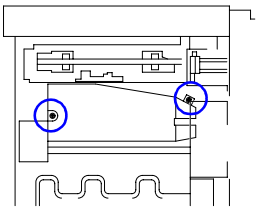
3-16 Laser unit section

1. Remove the laser unit connector



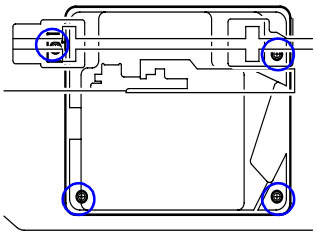
1. Remove the rear cover.
2. Remove the 2 laser unit connectors from the PWB-A circuit board and pull them out from the harness duct.

2. Remove the laser unit cover



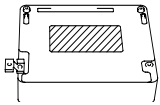
1. Spread out a any absorbing material on the left side and tip left side of the printer down and over on its side.
2. Remove the 2 set screws for the laser unit cover.

3. Remove the laser unit



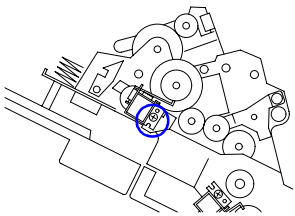
1. Remove the 4 set screws for the laser unit. One of the screws is for the grounding strip.

Never turn on the power with the unit in this condition. Invisible laser light that can cause blindness will be emitted.



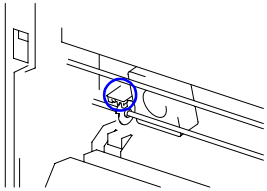
3-17 Image transfer section

1. Remove the image transfer roller pressure solenoid



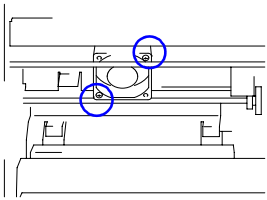
1. Remove the cover for the paper take-up section.
2. Remove the 1 set screw and 1 connector for the image transfer roller pressure solenoid.

2. Remove the image transfer roller pressure sensor



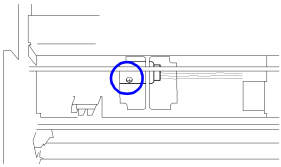
1. Remove the transport cover (or duplex cover if installed) by removing two screws.
2. Remove the tabs for the image transfer roller pressure sensor. (There is 1 connector and no screws.)

3. Remove the suction fan motor



1. Remove the transport cover (or duplex cover if installed) by removing two screws.
2. Remove the 2 set screws for the suction fan. (There are 3 harness saddles and 1 connector.)

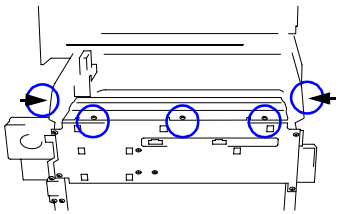
4. Remove the transport paper sensor



1. Remove the transport cover (or duplex cover if installed) by removing two screws.
2. Remove the suction fan.
3. Remove the transfer roller.
4. Remove the transfer roller pressure shaft by removing 1 clip and two screws. Be careful when removing this shaft because it also serves to secure the spring loaded transfer roller housing.
5. Remove the topmost paper guide (2 clips)
6. Remove the 1 set screw for the transport paper sensor and 1 connector.

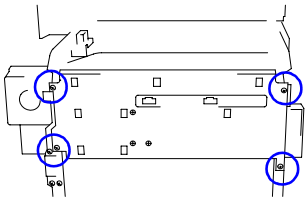
3-18 Belt cleaner section

1. Remove the upper-right reinforcement plate



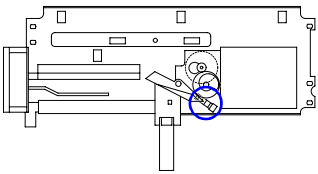
1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear 1 cover.
4. Remove the right-rear 2 cover.
5. Remove the top cover.
6. Remove the 5 screws for the upper-right reinforcement plate.

2. Remove the left frame plate



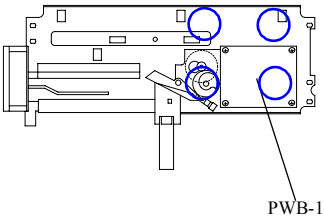
1. Remove the 4 set screws for the left frame plate.
2. Remove the 4 connectors.

3. Remove the belt cleaner release position sensor



1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear 1 cover.
4. Remove the right-rear 2 cover.
5. Remove the top cover.
6. Remove the upper-right reinforcement plate.
7. Remove the left frame plate.
8. Remove the tabs for the belt cleaner release position sensor. (There is 1 connector.)

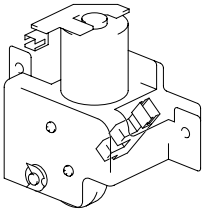
4. Remove the PWB-1 (belt cleaner controller circuit board)



1. Remove the rear cover.
2. Remove the left-rear cover.
3. Remove the right-rear 1 cover.
4. Remove the right-rear 2 cover.
5. Remove the top cover.
6. Remove the upper-right reinforcement plate.
7. Remove the left frame plate.
8. Remove the PWB-1 (belt cleaner controller circuit board). (There are 2 connectors and 4 screws.)

3-19 Fusing section

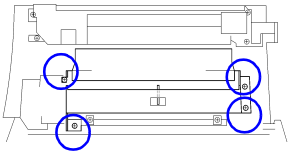
1. Remove the pressure roller release sensor



1. Remove the fusing pressure motor. (☞ Refer to Section 3-7)
2. Remove the 1 connector for the pressure roller release sensor and the 1 set screw.

3-20 Paper exit section

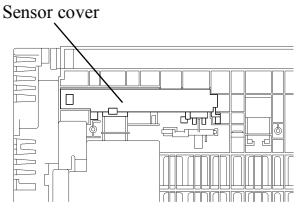
1. Remove the paper exit section



1. Open the fusing cover.
2. Remove the 4 screws for the sensor protection plate and remove it.
3. Remove the 1 connector for the paper exit section and remove the hooks.

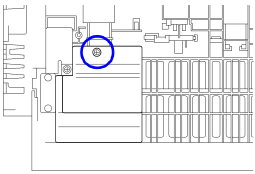
3-21 Duplex unit section

1. Remove the duplex paper-detecting sensor



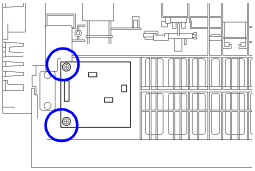
1. Remove the 2 screws for the duplex unit and remove it from the main printer unit.
2. Remove the sensor cover.
3. Remove the stopper for the duplex paper-detecting sensor. (There is 1 connector.)

2. Remove the duplex unit circuit board cover



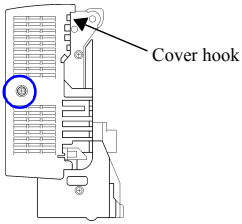
1. Remove the circuit board cover. (There is 1 screw.)

3. Remove the duplex unit circuit board (PWB-AD)



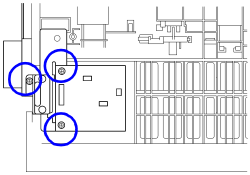
1. Remove the circuit board cover.
2. Remove the 2 set screws for the duplex unit circuit board (PWB-AD). (There are 3 connectors.)

4. Remove the motor cover



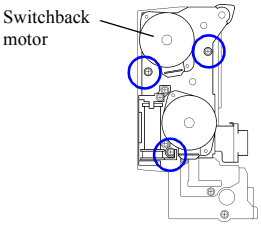
1. Remove the 1 set screw for the motor cover.

5. Remove the motor mount plate



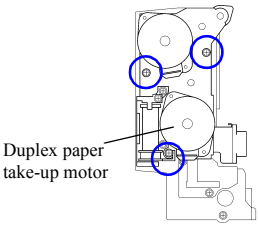
1. Remove the 3 set screws for the circuit board and the 2 connectors for the motor mount plate.

6. Remove the switchback motor



1. Remove the 3 set screws for the motor mount plate.
2. Remove the 2 set screws for the switchback motor. (There are 3 harness saddles.)

7. Remove the duplex paper take-up motor



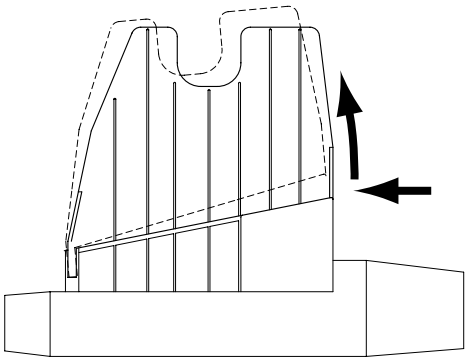
1. Remove the 3 set screws for the motor mount plate.
2. Remove the 2 set screws for the duplex paper take-up motor. (There are 3 harness saddles.)

4 5-bin mailbin

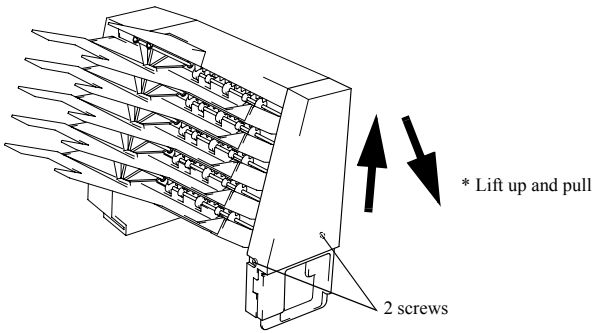
- *Always turn off the power before disassembly. Make sure no power is being supplied to the unit.*
- *Never remove connectors, jacks or other connections while power is being supplied to the unit.*
- *Use extreme care when operating the unit with its covers removed. Keep clothing and other objects away from moving parts such as pulleys and gears.*
- *Do not operate the unit if a component has been removed.*
- *Do not operate the unit if a component has been removed.*
- *Unless otherwise specified, assemble in the reverse order of disassembly.*

4-1 Disassembly

Bin tray

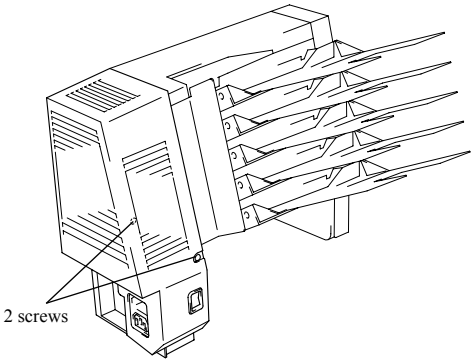


Front cover

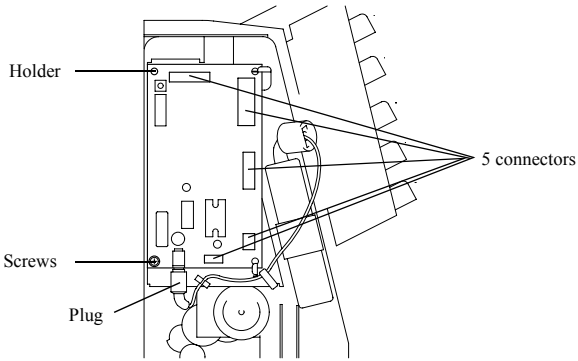


Rear cover

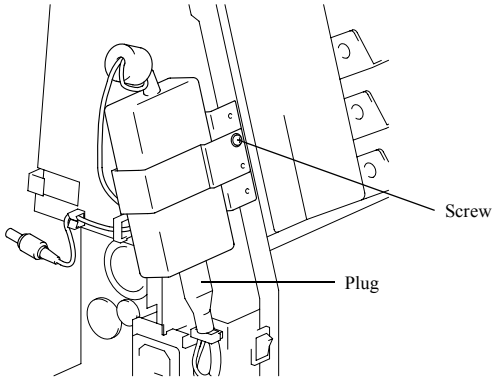
* Lift up
Lift and pull



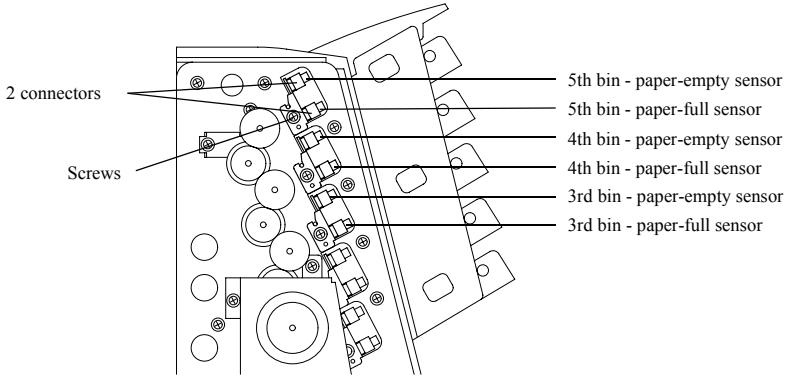
Main circuit board



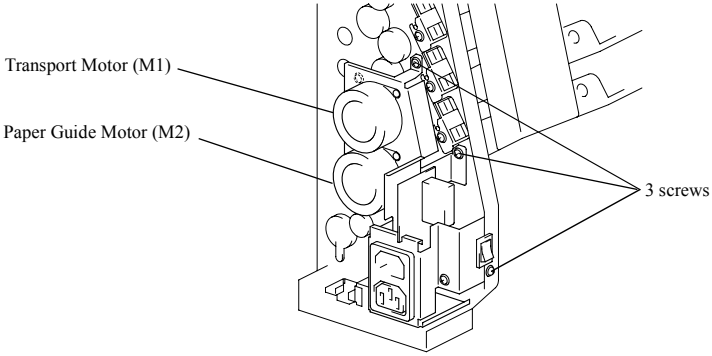
AC adapter



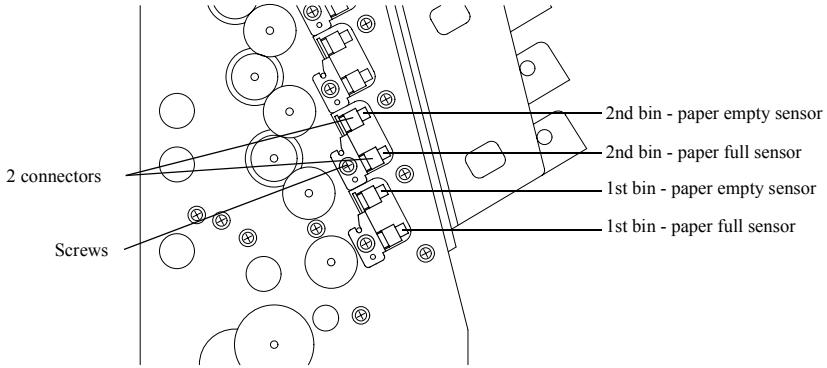
Paper-empty sensor and paper-full sensor (bin 3 to bin 5)



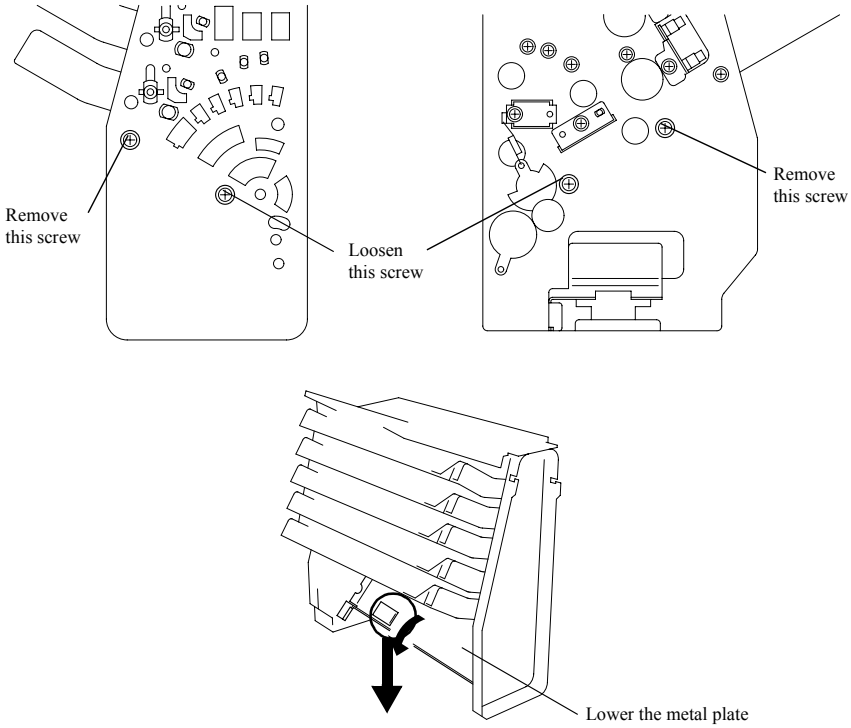
Motor assembly and power supply unit

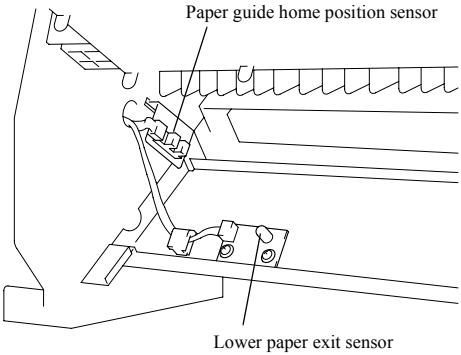


Paper empty sensor and paper full sensor (bin 1 to bin 2)



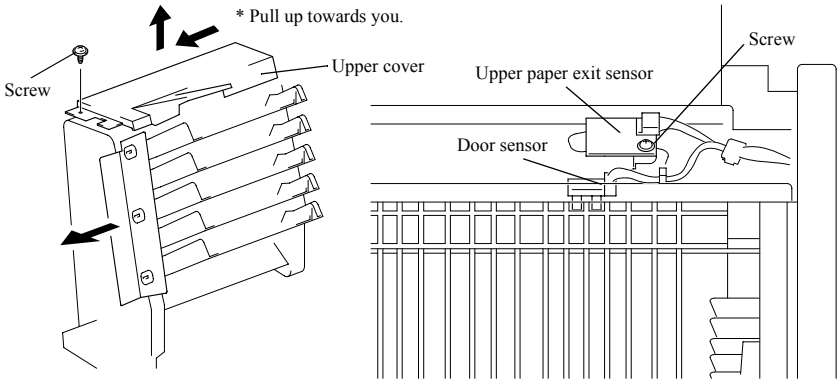
Paper guide, home position sensor, and lower paper exit sensor





Door sensor and upper paper exit sensor

* The top cover cannot be removed unless the screws for the 5-bin full sensor and empty sensor mounting plate are removed first.

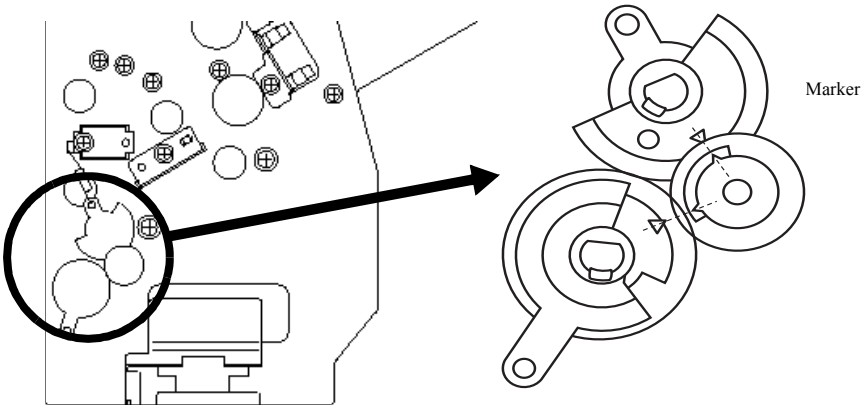


1. Remove the rear cover - (2 screws).
2. Remove the main circuit board mounting screws (3 screws) (disconnect 5-bin sensor connector × 2).
3. Remove the mounting screws for the 5-bin tray.
4. Remove the upper cover.

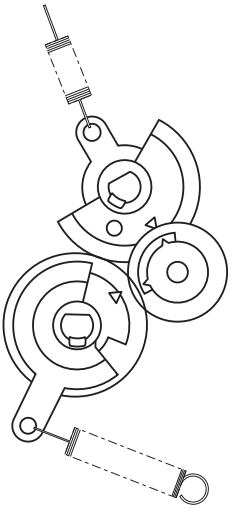
4-2 Adjustment

Paper guide gear and switching arm gear—positioning adjustment

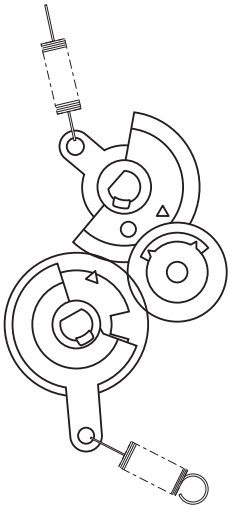
When mounting the paper guide gear and switching arm gear, align the markers and mount as shown in the illustration below.



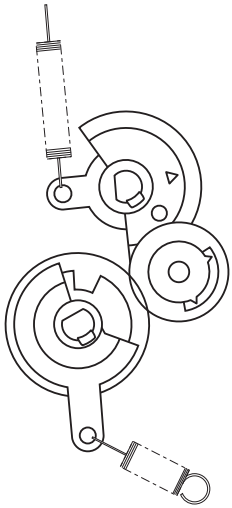
When the bins are being moved, the gears have the following configurations.



When discharging from main printer unit.



When discharging to bin 1.



When discharging to bin 5.

E. TROUBLE-SHOOTING

1 Troubleshooting procedures

In order to repair the printer, gather information from the user and follow the repair procedure to check each area as you inspect the printer. The repair procedure is shown below.

CAUTION
Use care when pulling out the paper cassette tray. If the paper take-up roller is in the neutral position, damage could occur.

1-1 Repair procedures

Procedure	Description and corrective action
1. Interview the user.	Carefully listen to and understand the user's description of the problem. Take notes.
2. Turn the power on and check the area where the printer is installed.	1. Does the engine properly initialize and perform its self-diagnosis when the power is turned on? ☞ Refer to page E-3. 2. Are there any problems with the area where the printer is installed. ☞ Refer to page A-1 "Installation Environment"
3. Check the control panel display.	Does the control panel display "Ready" or "Power Save" mode? 1. Are the connectors for the control panel properly inserted? 2. Perform the self-diagnostic paper passage test (engine test). ☞ Refer to page E-4 3. If the control panel display is working properly, perform the repair for the error shown.
4. Is there a jam error?	Is there paper remaining inside the printer? • If the problem is due to a jam error, remove the piece of paper. ☞ Refer to page E-5.
5. Is there a problem with the print image quality?	1. Compare the print quality of a printed page with that of a test print. 2. If the page is white, do the following: ☞ Refer to page E-29. 3. If the page is black, check the following. ☞ Refer to page E-29.

1-2 Initial inspection

Item	Description and cause	Corrective action
1. Power supply on	1. The engine does not properly operate no matter how long you wait.	• Make sure the power supply cord is properly plugged into the printer and the outlet.
	2. Does the engine cooling fan operate? (Does it operate when the power supply is turned on?)	• Check for a blown fuse on the power supply circuit board for the engine. • Check for an engine error and refer to the proper repair procedure. ☞ Refer to page B-22
2. Check the power being supplied to the printer.	1. Is the voltage of the power supply within ± 10% of the rated value?	Use an outlet with a voltage meeting the specification standards.
3. Check the installation environment.	1. Is the area subject to vibration or on an incline?	Ensure the printer is level and not subject to vibration.
	2. Is the temperature and/or humidity within the range presented in Section A, “Installation Environment”?	Move the printer to a location away from sources of heat and not in direct contact with air flow from an air conditioner.
	3. Is the area subject to direct sunlight?	If unavoidable, use curtains or other measures to protect the printer from direct sunlight.
	4. Is there a lot of dust or foreign material in the air?	Move the printer to a location not exposed to high levels of dust or other airborne materials.
	5. Are there corrosive gases (such as ammonia) in the air?	Move the printer to a location not exposed to corrosive gases.
4. Check the paper type.	1. Is the correct type and size of paper being used?	Use the type and size of paper recommended by the specifications for the printer.
5. Check the maintenance procedures. Print a consumable statistics page.	1. Has maintenance been properly performed?	Clean the paper transport passages. If the surface of a roller is noticeably dirty, clean or replace it.
	2. Is the fusing belt dirty?	Replace the oil coating roller.
6. Precautions during cold weather operation.	If a cold printer is suddenly heated, condensation can form inside of it and cause the following problems. • The lens can become fogged and make the printed image light. • The charge may be defective and make the printed image dark. • The paper may become damp and wrinkle or cause uneven printing.	Turn the power on and allow the printer to stand unoperated for 20 minutes or more.

Clean the laser lens cover and paper take-up rollers by gently wiping the surface with a soft, dry lint-free cloth.

1-3 No power

Step	Item to check	Result	Corrective action
1.	Is the power switch on?	No	Turn power switch on.
2.	Is the power cord properly connected to the printer?	No	Properly connect the power cord to the printer.
3.	Is the power cord properly connected to the outlet?	No	Properly connect the power cord to the outlet.
4.	Is the voltage at the electrical outlet the correct voltage?	No	Inform the customer.
4.	Is the connector for the power supply circuit board properly inserted?	No	Properly insert the connector.
5.	Is the fuse burned out in PU1 (power supply circuit board)?	Yes	Replace the fuse. ☞ Refer to page B-17.
Other			Replace PU1 (power supply circuit board).

2 Test prints

2-1 Engine test print

The following mode is available as a self-diagnostic function.

- Engine test print
  To check for problems with either the controller or engine sections.
- The test cannot be performed if there is a displayed error.

Precautions

Do not feed the paper if the display indicates an error.
It takes approximately one minute from the start of the test until the passage of the paper is completed.

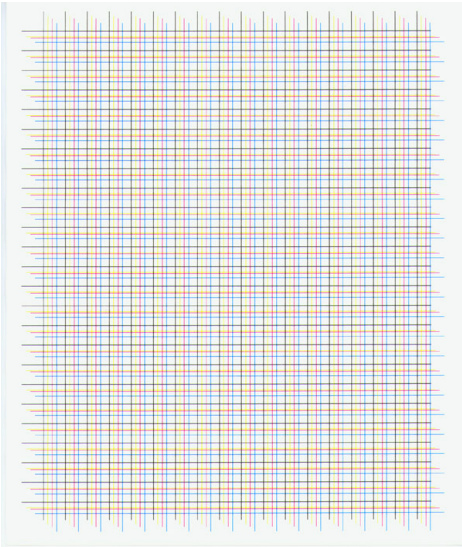
Procedure

1. Turn the power off.
2. Remove the controller.
3. Install one of the following trays: multipurpose tray, upper tray, or lower tray (optional) with paper.
4. Turn the power on.
5. The test will run until paper is consumed, printer turned off, or paper jam occurs.

   *Pull out the paper tray to stop the test print operation.

   If a duplex unit or 5-bin mailbin is installed, they will automatically be tested for proper operation.
6. If the test print is normal, there are no problems with the engine, which leads to the controller and interface as probable causes for errors.

Test pattern



2-2 Controller Test Pages

Perform a test page 1.

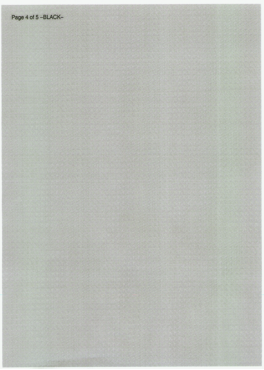
Procedure

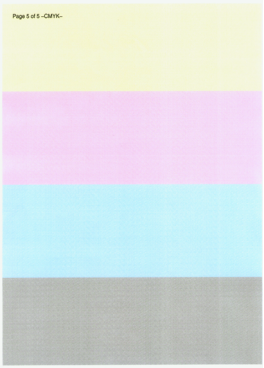
1. Turn the power on.
2. Allow the printer warmup and come online.
3. Access the test through the printer's menu system.

   Administration>Special Pages>Test Page 1

4. This test prints five pages-one page for each color and the last page with all four colors.

Test patterns





Perform a test page 2.

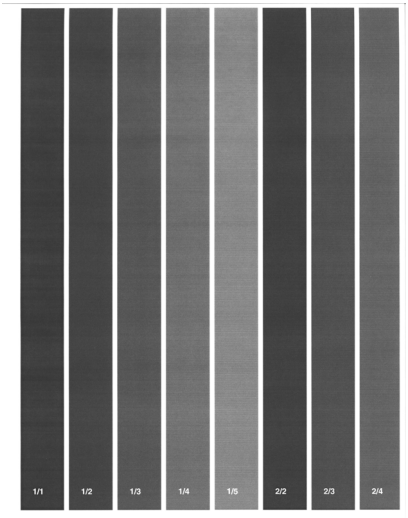
Procedure

1. Turn the power on.
2. Allow the printer warmup and come online.
3. Access the test through the printer's menu system.

   Administration>Special Pages>Test Page 2

4. This test prints one page.

Test pattern

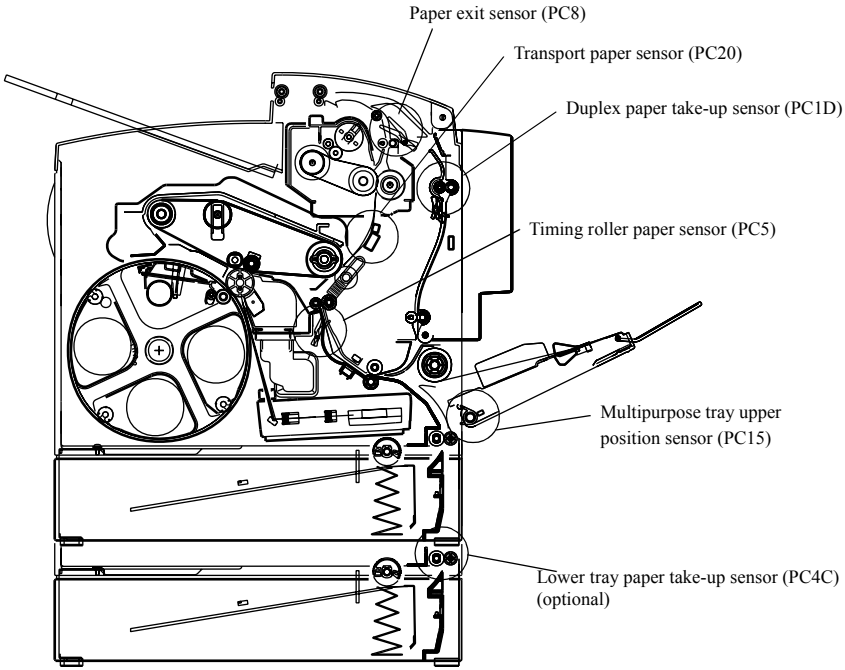


3 Troubleshooting for jams

When a problem is detected, all operation except for the cooling fan is stopped.

A jam error is reset when the power switch is cycled off and on, or when any one of the following doors or covers are closed: front cover, fusing cover, transport cover, door for upper tray, or door for the duplex unit.

3-1 Location of jam detection sensors



3-2 Media jam upper tray/Media jam MPT (Paper take-up section)

Problem	Check	Result	Corrective action
There is no paper taken up.	1. Is the paper the correct type and size?	No	Install recommend paper.
		Yes	Position the guide plate so that it is in slight contact with the paper.
	2. Is the paper curled, wrinkled or damp?	Yes	Replace the paper and instruct the user on how to properly store paper.
	3. Are the paper take-up rollers worn or dirty with paper dust or particles?	Yes	Clean the rollers. Replace the rollers.
	4. Does the paper lift arm for the multipurpose tray lift until it contacts the paper take-up roller?	No	Close the multipurpose paper take-up section and then open it.
	5. Does the paper take-up roller rotate when there is paper taken up from the multipurpose tray?	No	Replace the paper take-up solenoid (SL8).
	6. Is paper taken up when the paper take-up rollers rotate?	No	Clean the paper take-up rollers.
Paper was not sensed at the timing roller.	1. Does the lever for the timing roller paper sensor (PC5) operate correctly?	No	Correct the operation of the lever. Replace the timing roller paper sensor (PC5)
		Yes	Replace the timing roller solenoid (SL5).
Other			Replace PWB-A

The detection of a problem is made when the power switch is on or when an H/L signal from the timing roller paper sensor (PC5) is received when paper is passing through.

- If the timing roller paper sensor (PC5) is not set to on within the prescribed time after the paper take-up roller has started to turn, a paper jam error will occur after the paper being transported is discharged.

3-3 Paper jam when the power switch is turned on.

Problem	Check	Result	Corrective action
When there is paper in the printer.	1. Is there paper when any cover and door is opened?	Yes	Remove the paper and print.
When there is no paper in the printer.	1. When there is a paper jam 2, does the lever for the timing sensor (PC5) operate normally?	No	Correct the lever.
		Yes	Replace the timing roller solenoid (SL5).
	2. When there is a paper jam 3, does the lever for the paper exit sensor (PC8) operate properly?	No	Correct the lever.
		Yes	Replace the fusing unit. Replace the paper exit unit.

The detection of a problem is made when the power switch is on or when the front, fusing, or transport cover is closed and paper has remained in the printer. The internal sensors detect whether or not paper is present by reading the H/L signals from the timing roller paper sensor (PC5), transport paper sensor (PC20) and paper exit sensor (PC8).

- Media jam transfer is when the timing roller paper sensor (PC5) is on.
- Media jam fuser/media jam exit is when the transport paper sensor (PC20) or the paper exit sensor (PC8) is on.

3-4 Media jam transfer (image transfer section)

Problem	Check	Result	Corrective action
The paper is stopped at the timing roller section.	Is the timing rolling contaminated with paper dust or other particles?	Yes	Clean the timing roller.
The leading edge of the paper is stopped at the fusing roller section.	Is the tab on the one-way clutch for the transport roller worn?	No	Replace the one-way clutch gear.
		Yes	Replace the transport roller solenoid (SL4).
The paper wraps around the image transfer belt.	Is it a thin paper within the range of specifications for the paper?	Yes	Replace the HV2 (high voltage circuit board).
There is no paper anywhere.	Is the transport paper sensor (PC20) properly detecting paper?	No	Replace the transport paper sensor (PC20).
Others			Replace PWB-A.

A discrepancy is detected when the presence or absence of paper in the paper transport path, by receiving the H/L signals from the timing roller paper sensor (PC5), transport paper sensor (PC20), and paper exit sensor (PC8). Paper jams for paper passing through are performed by monitoring the PC5, PC20, and PC8 signals.

- When the timing roller paper sensor (PC5) does not go off within the specified time from the start of turning of the timing roller.
-
- When the transport paper sensor (PC20) does not go on within the specified time from the start of turning of the timing roller.

The transport paper sensor (PC20) does not operate when OHP transparency film is being used.

3-4 Media jam fuser/media jam exit (fusing and paper exit section)

Problem	Check	Result	Corrective action
The paper crumples up at the entrance to the fusing unit and jams.	1. Is the fusing pressure motor (M5) turning properly? (Determine by sound.)	Yes	Replace the fusing unit.
	2. Is there a tab on the one-way clutch for the timing roller?	No	Replace the gear for the one-way clutch.
	3. Is the duplex unit mounted? 4. Does the image appear faintly on the paper?	Yes	Replace the timing roller solenoid (SL5).
The trailing edge of the paper is caught in the paper exit roller.	1. Does the image appear faintly on the paper?	Yes	Replace the timing roller solenoid (SL5).
Printing is performed properly and stops at the paper exit section.	1. Does the paper exit sensor (PC8) lever operate properly?	No	Correct the lever.
		Yes	Replace the paper exit sensor (PC8).
Other			Replace the PWB-A

A paper jam is detected by receiving the H/L signals from the timing roller paper sensor (PC5), take-up sensor (PC8), and transport paper sensor (PC20). The H/L signals are generated by the presence or absence of paper in the paper transport path.

- When the from transport paper sensor (PC20) does not go off within the specified time after the timing sensor (PC5) has been set to off.
- When the paper exit sensor (PC8) does not go on within the specified time after the transport paper sensor (PC20) has been set to on.
- When paper exit sensor (PC8) is not set to off within the specified time after the transport paper sensor (PC20) has been set to off.

CAUTION
**1 How to remove a jam of crumpled paper in the fusing unit.*

Remove the fusing unit from the printer. Use your fingers to rotate the gears on the top of the fusing unit. Use the tip of a ball pen or other such object to lift up the paper while turning the rollers. Once the paper can be grasped by the hand, use your hands to pull it out while turning the roller. Damage will occur to the fusing unit if the paper is pulled through it.

4 Unit service life control

4-1 Counter control

The service life of the following components is detected by the operating time or number of prints: OPC drum, toner cartridges, image transfer belt unit and fusing unit. When the printer detects the end of the service life for one of these components, it stops printing operations.

Note: Printing will not stop for an empty toner.

The printer calculates the operating time of the units or the number of prints and saves the information.

- The operating time for each unit (OPC drum, image transfer belt unit and fusing unit) is counted by the passage of each 30 seconds when the transport motor and fusing contact motor are on.
- One "1" is added to the counter each time a TOD (top of data) signal is detected to count the number of toner cartridge images. The amount of toner consumed is calculated using the printing data for the number of pixels printed and added to the count.
- When a new unit (OPC drum, toner cartridge, image transfer belt unit or fusing unit) is inserted, it blows the fuse for the unit, and the count is set to zero.

Component	Parameter	Service life	Description
OPC drum	New OPC drum detection: Fuse system Operating time: count	7,200 prints	Near end of service life
		9,000 prints	End of service life
K toner	New unit detection: Fuse system Number of black images	4,800 prints	K toner low
		6,000 prints	K toner empty
Y toner	New unit detection: Fuse system Number of yellow images	4,800 prints	Y toner low
		6,000 prints	Y toner empty
M toner	New unit detection: Fuse system Number of Magenta images	4,800 prints	M toner low
		6,000 prints	M toner empty
C toner	New unit detection: Fuse system Number of Cyan images	4,800 prints	C toner low
		6,000 prints	C toner empty
Waste toner container	Optical detection Print count	7,200 prints	Near end of service life
		9000 prints	End of service life
Oil coating roller	New unit detection: Fuse system Operating time: count	7,200 prints	Near end of service life
		9,000 prints	End of service life
Image transfer belt unit	New unit detection: Fuse system Operating time: count	80,000 prints	Near end of service life
		100,000 prints	End of service life
Fusing unit	New unit detection: Fuse system Operating time: count	80,000 prints	Near end of service life
		100,000 prints	End of service life
Image transfer roller	—	No detection	Replace at the same time as the fusing unit.

4-2 Detection (sensor) items by unit type

No.	Part name	Detection	Detection method
1.	Toner cartridge	• New cartridge detection • Service life detection • Unit installed detection • Toner near empty • Toner empty	• Fuse system • Image count • Electric contact • Image dot count and image count • Photoelectric detection and image counter
2.	OPC drum	• New cartridge detection • Service life detection • Unit installed detection	• Fuse system • Operating time counter • Electric contact
3.	Waste toner container	• Waste toner container installed detection • Waste toner container near full • Waste toner container full	• Switch system • Photo-optic detection • Photo-optic detection + print number
4.	Oil coating roller	• New unit detection • Service life detection • Unit detection	• Fuse system • Operating time counter • Electric contact
5.	Image transfer belt unit	• New unit detection • Service life detection • Unit detection	• Fuse system • Operating time counter • Electric contact
6.	Fusing unit	• New unit detection • Service life detection • Unit detection	• Fuse system • Operating time counter • Electric contact
7.	Image transfer roller unit	No detection	—

5 Troubleshooting for malfunction errors

5-1 Overview

When a problem is detected, all operations except the cooling fan are stopped. In particular, a problem in the laser unit, fusing unit, developing, or image transfer section will cause a momentary stop. When the printer is in error mode, cycling the power supply switch off and on again will restore it.

If a fatal error is detected in the engine, the paper transport motor will stop after the paper take-up roller has returned to the top position and the fusing pressure motor will stop after the pressure roller has been released.

1. Fusing unit errors
   - Temperature control error
2. Fan motor errors (5 items)
   - Power supply fan motor error
   - Ozone fan motor error
   - Suction fan motor error
   - Toner suction fan motor error
   - Fusing fan motor error
3. Drive motor errors (3 items)
   - Transport motor error
   - Fusing motor error
   - Fusing contact motor error
4. Laser unit errors
5. Image transfer belt errors (3 items)
   - Image transfer belt error
   - Belt cleaner pressure error
   - AIDC error
6. Image transfer roller error
7. Toner cartridge rack error
8. Multipurpose tray lift arm plate error
9. OHP sensor error
10. Other errors

5-2 Fusing unit errors

Temperature control error

No.	Check	Result	Corrective action
1.	Repower the printer. If problem is not resolved, go to step 2.	---	---
2.	Improve the connection between the fusing unit and its connectors.	—	Remove the fusing unit and Reset.
3.	Does heater lamp 1 (H1) come on when the power supply is turned on?	No	Replace the fusing unit.
4.	Does heater lamp 1 (H2) come on when the power supply is turned on?	No	Replace the fusing unit.
Others			Replace PU1 (Power supply circuit board) Replace PWB-A

An error is detected in the fusing motor when one of the following items is detected:

1. **Service Call 1B FUS UPPER THERM**: After the warm up has started, a thermistor error is detected when the temperature of the heater roller does not rise to the specified temperature within 22 to 40 seconds.

2. **Service Call 1E FUS LOW HIGTMP**: After the warm up has started, a high temperature error for the pressure roller is detected if the temperature of the pressure roller exceeds 80° C/176° F within 90 seconds.

3. **Service Call 1A FUS UPP HIG TMP**: After the warm up has started, a heat-rise temperature error is detected when the temperature of the heater roller exceeds 170° C/338° F within 140 seconds after it has reached 80° C/176° F.

4. **Service Call 1F FUS LOW THERM**: After the warm up has started, a pressure roller heat error is detected if the temperature of the pressure roller does not reach 130° C/266° F within 70 seconds or does not exceed 150° C/302° F within 140 seconds, after the temperature of the heat roller has reached 170° C/338° F or more.

5. **Service Call 1D FUS LOW LOWTMP or Service Call 19 FUS UPP LOWTMP**: If during printing a low fusing temperature error is detected at the heater roller, or the pressure roller during standby falls below 70° C/158° F.

6. **Service Call 18 FUS UPP WARMUP or Service Call 1C FUS LOW WARMUP**: A high fusing temperature error is detected if the temperature of the heater roller during temperature control rises above 210° C/410°F, and if the temperature of the pressure roller rises above 195° C/383° F.

7. **Service Call 18 FUS UPP WARMUP**: Heater roller does not heat up to 160° C/338° F within 70 seconds

8. The hardware high breaker temperature is 220° C/428° F for the heater roller and 205° C/401° F for the pressure roller. The thermostats are 210° C/410° F for the heater roller and 150° C/302° F for the pressure roller.

5-3 Fan motor errors

There are five fan motor errors: power supply fan motor, ozone fan motor, suction motor, toner suction motor, and fuser fan motor.

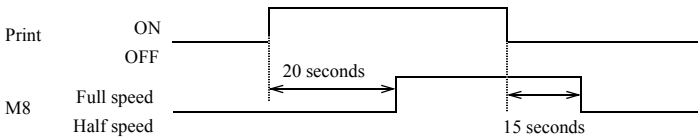
5-3-1 Service Call 0C PWR SUPPLY FAN (Power supply fan motor error)

No.	Check	Result	Corrective action
1.	Does the power supply fan motor (M8) operate during power on initialization? (Place your hand over the fan exhaust port and feel for air movement to check.)	No	Ensure the connection of the connector (PJ16A) is secure. Replace fan motor.
Others			Replace PWB-A.

The power supply fan motor (M8) operates at two speeds: full speed and half speed.

A power supply fan motor error is detected when the power supply fan lock signal is active for 0.5 seconds.

Power supply fan motor operation

No.	Mechanical status	Fan motor operation
1.	When the front cover, fusing cover, or transport cover is open.	Half speed.
2.	During power supply fan motor error	Stopped
3.	During a printing error (except for a power supply fan motor error.)	15 seconds full speed and half speed afterwards.
4.	Other than during a printing error. (Except for power supply from a motor error.)	Half speed
5.	When the power supply switch is on.	Full speed for 2 seconds and half speed afterwards.
6.	During warmup.	Half speed
7.	During pause motor.	Stopped
8.	During printing.	Half speed at the start of printing. Full speed 20 seconds after the start of printing. Half speed 15 seconds after the end of printing. Half speed for others.
		

5-3-2 Service Call 0D ENGINE FAN (Ozone fan motor error)

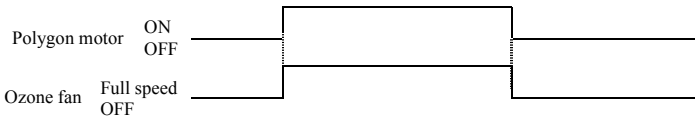
No.	Check	Result	Corrective action
1.	Does the ozone fan motor (M9) operate during power on initialization? (Place your hand over the fan exhaust port and feel for air movement to check.)	No	Ensure the connection of the connector (PJ28A) is secure. Replace fan motor.
Others			Replace PWB-A

The ozone fan motor (M9) normally operates when the polygon motor is operating.

- When the polygon motor (M6) is operating: full speed.
- Cover open: stop. (The covers are the front cover, fusing cover, transport cover, upper tray jam removal cover, duplex unit cover, and mailbin cover.)

A ozone fan motor error is detected when the ozone fan lock signal is active for 0.5 seconds.

Fan motor operation



5-3-3 Service Call 0E SUCTION FAN (Suction fan motor error)

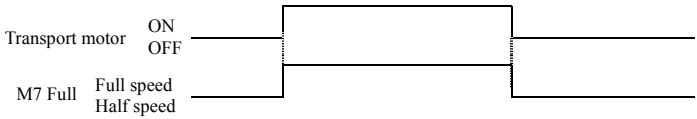
No.	Check	Result	Corrective action
1.	Does the suction fan motor (M7) operate during power on initialization?	No	Ensure the connection of the connector (PJ3A) is secure. Replace fan motor.
Others			Replace PWB-A

The suction motor (M7) operates at two speeds: full speed and half speed.

- When the fan motor is starting, when the cover is closed, when the pause mode has ended: Full speed for 2 seconds and half speed afterward.
- During transport motor (M1) operation: full speed
- During transport motor (M1) stop: half speed
- Cover open: stop
- Others: Half speed

A suction fan motor error is detected when the suction fan lock signal is active for 0.5 seconds.

Fan motor operation



5-3-4 Service Call 0B XFER FAN BELT (Toner suction fan motor error)

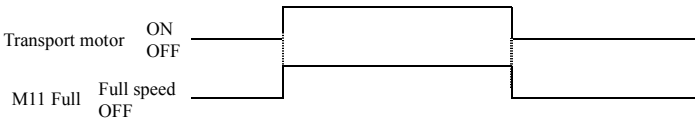
No.	Check	Result	Corrective action
1.	Does the toner suction fan motor (M11) operate during power on initialization? (Place your hand over the fan exhaust port and feel for air movement to check.)	No	Ensure the connection of the connector (PJ30A) is secure. Replace fan motor.
Others			Replace PWB-A

The toner suction fan motor (M11) normally operates when the transport motor (M1) is in operation.

- During transport motor (M1) operation: Full speed
- Cover open: stop

A toner suction fan motor error is detected when the toner suction fan lock signal is active for 0.5 seconds.

Fan motor operation



5-3-5 Service Call 0F FUSING UNIT FAN (Fusing fan motor error)

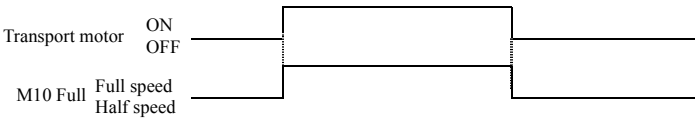
No.	Check	Result	Corrective action
1.	Does the fusing fan motor (M10) operate during power on initialization? (Place your hand over the fan exhaust port and feel for air movement to check.)	No	Ensure the connection of the connector (PJ29A) is secure. Replace fan motor.
Others			Replace PWB-A

The fusing fan motor (M10) operates at two speeds, full speed and half speed.

- When the fan motor is starting, and when warmup is completed: Full speed for 2 seconds and half speed afterward
- During transport motor (M1) operation: full speed
- After warm-up is completed: half speed
- Cover open, pause mode: stop

A fusing fan motor error is detected when the fusing fan lock signal is active for 0.5 seconds.

Fan motor operation



5-4 Error Drive motor errors

There are three drive motor errors: transport motor error, fusing motor error and fusing pressure motor.

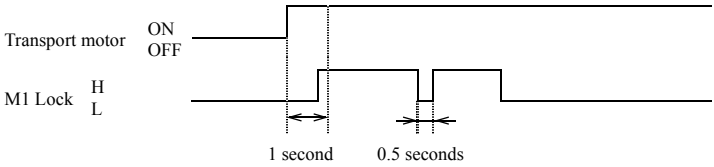
5-4-1 Service Call 08 MAIN MOTOR (Transport motor error)

No.	Check	Result	Corrective action
1.	Does the transport motor (M1) operate during printing?	No	Ensure the connection of the connector (PJ21A) is secure. Replace the transport motor.
		Yes	Check if there is excessive load on any of the rollers, gears, etc. Repair.
Others			Replace PWB-A

Transport motor (M1) operation detection is performed from one second after the start of transport motor (M1) operation to the stop of transport motor (M1) operation.

A transport motor error is detected when the transport motor M_Lock signal is active for 0.5 seconds.

Transport motor operation



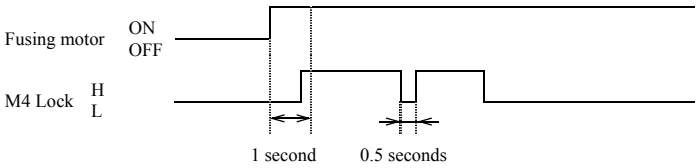
5-4-2 Call for Service 09 FUSING MOTOR (Fusing motor error)

No.	Check	Result	Corrective action
1.	Does the fusing motor (M4) operate during printing?	No	Ensure the connection of the connector (PJ22A) is secure.
		Yes	Check if there is excessive load on any of the rollers, gears, etc. Repair.
Others			Replace PWB-A

Fusing motor (M4) operation detection is performed from one second after the start of fusing motor (M4) operation to the stop of transport motor (M1) operation.

A fusing motor error is detected when the fusing motor M_Lock signal is active for 0.5 seconds.

Fusing motor error detection



5-4-3 Service Call 20 FUS RETRACT (Fusing pressure motor error)

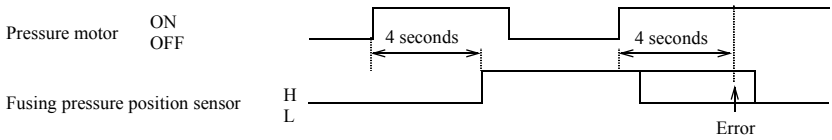
No.	Check	Result	Corrective action
1.	Is the fusing unit floating?	Yes	Mount the fusing unit properly.
2.	Does the fusing pressure motor (M5) operate during printing? (Check by sound.)	No	Ensure the connection of the connector (PJ25A) is secure. Replace fusing pressure motor.
		Yes	Check if there is excessive load on any of the rollers, gears, etc. Replace the fusing pressure position sensor. Replace the pressure roller release sensor.
Others			Replace PWB-A

A fusing pressure motor error is detected when any one of the following items is detected:

1.A fusing pressure motor error is detected if a pressure state is not detected 4 seconds after the start of pressure by the pressure roller.

2.A fusing pressure motor error is detected when a release state cannot be detected 4 seconds after the start of release of the pressure roller.

Fusing pressure motor error detection



5-5 Laser unit errors

Laser unit error

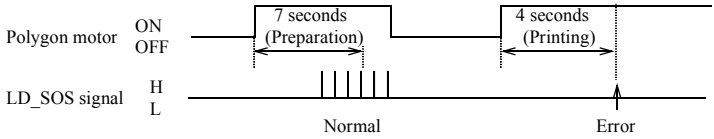
No.	Check	Result	Corrective action
1.	Check that the connections between the connectors for the laser unit control section and polygon motor are correct.	—	Ensure the connection of the connector (PJ27A) is secure. Ensure the connection of the connector (PJ12A) is secure.
2.	—	Yes	Replace laser unit. Replace laser safety switch.
Others			Replace PWB-A

A laser unit error is detected when one of the following is detected:

1. **Service Call 10 POLYGON MOTOR:** A laser unit error is detected when the polygon Motor M_Lock signal is inactive for 0.4 seconds from 8 seconds after the polygon motor (M6) starts until the polygon motor (M6) stops.

2. **Service Call 12 LASER ERROR:** A laser unit error is detected when a LD_SOS signal has not been detected within the specified time after the polygon motor has been set to on and the laser light emission has started. **OR** a laser unit error is detected when a LD_SOS signal has not been detected during printing (during laser light emission).

Laser unit error detection



5-6 Image transfer belt errors

There are three image transfer belt errors. They are image transfer belt errors, belt cleaner pressure error, and AIDC error.

5-6-1 Service Call 16 XFER BELT ROT (Image transfer belt error)

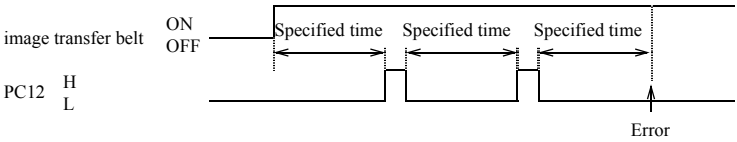
No.	Check	Result	Corrective action
1.	Does the image transfer belt rotate during printing?	No	Check if the image transfer belt unit is properly positioned and repair it.
		Yes	Replace the image transfer belt unit.
Others			Replace PWB-A .

Detection of image transfer belt rotation is performed from start to stop of image transfer belt rotation.

A image transfer belt error is detected during transport motor operation if there is no change at the image transfer belt position sensor within each specified time interval.

The printer must be cycled off and on again to clear the error (if applicable).

Image transfer belt error detection



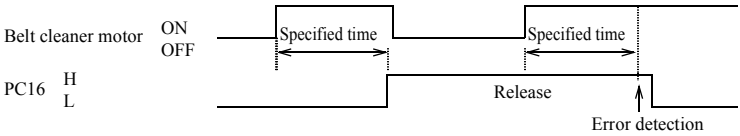
5-6-2 Service Call 15 XFER BELT CLN (Belt cleaner pressure error)

No.	Check	Result	Corrective action
1.	Does the belt cleaner motor operate during printing? (Check by sound, or remove the left cover and look in from the lower front to check the operation of the lever.)	No	Ensure the connection of the connectors (PJ32A and PJ33A) are secure. Ensure the connection of the connectors (PJ51 and PJ61) are secure.
2.	Turn the cam gear by hand and check if the sensor light breaker plate stops the light.	Yes	Replace the belt cleaner release sensor.
Others			Replace PWB-A

Belt cleaner pressure detection is performed during color printing and during special printing contact and release operations.

A belt cleaner error is detected when there has been no change at the belt cleaner release sensor (PC16) within the specified time after the start of belt cleaner motor operation.

Belt cleaner pressure error detection



5-6-3 AIDC error

No.	Check	Result	Corrective action
1.	Is the AIDC sensor dirty?	Yes	Operate unit release lever A (center) and clean the AIDC sensor.
2.	Does the image transfer belt rotate during printing? (Open the front cover and check.)	Yes	Replace the image transfer belt unit. Replace the OPC drum.
Others			Ensure the connection of the connector for the high voltage unit is secure. Replace HV1 (high voltage circuit board). Replace PWB-A.

AIDC control is performed during preparation rotation.

An AIDC error is detected if AIDC control is not properly performed during AIDC control. The engine is not stopped and printing continues using an alternative value.

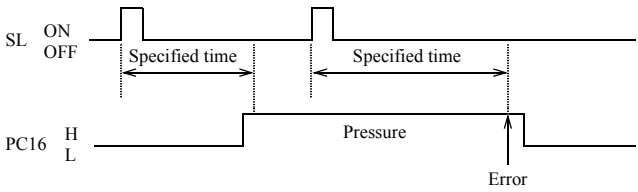
5-7 Call for Service 14 XFER ROLLER (Transfer roller error)

No.	Check	Result	Corrective action
1.	Does the image transfer roller pressure solenoid one-way clutch have a hook? Check for wear.	No	Replace the one-way clutch.
2.	Remove the multipurpose tray cover and check whether or not the image transfer roller pressure sensor light breaker plate rotates.	No	Replace the image transfer roller pressure solenoid.
		Yes	Replace the image transfer roller pressure sensor.
Others			Replace PWB-A

Detection of image transfer roller pressure release position is performed during the pressure and release operations before and after paper image transfer.

An image transfer roller operation error is detected when there is no change in the output of the image transfer roller pressure sensor (PC7) after the specified time has passed since the image transfer roller pressure solenoid (SL7) was set to on.

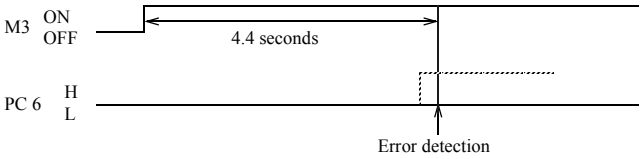
Image transfer roller operation error detection



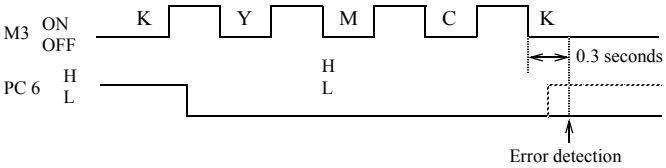
5-8 Service Call 17 TONER RACK (Toner cartridge rack error)

No.	Check	Result	Corrective action
1.	Does the rack motor (M3) operate during printing?	No	Remove and reconnect connectors PJ32A and PJ33A.
2.	Can the following be performed? Turn the power off, push the rack release button and turn the toner cartridge rack by hand.	Yes	Replace the black cartridge home position sensor (PC6).
		No	Examine assembly, toner cartridges, or other components associated with the rack for binding of the rack rotational movement.
Others			Replace PWB-A.

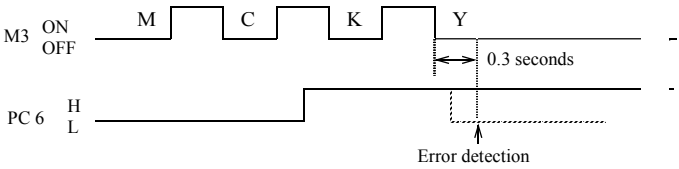
Toner cartridge rack error detection is detected when the black cartridge home position sensor (PC6) is not set to on within 3 seconds after the rack motor (M3) has started to operate during the initialization of the toner cartridge rack position.



Toner cartridge rack error detection is detected when the black cartridge home position sensor (PC6) is not set to on within 0.3 seconds after rack motor (M3) operates when the black toner should be in the developing position (home position).



Toner cartridge rack error detection is detected when the black cartridge home position sensor (PC6) is set to on within 0.3 seconds after rack motor (M3) has stopped.



5-9 Service Call 22 MAN TRAY LIFT (Multipurpose tray lifting arm error)

No.	Check	Result	Corrective action
1.	Does the paper in the multipurpose tray press against the paper take-up roller?	No	Check media in multipurpose tray to ensure it is not overloaded. If overloaded, the lift will not be capable of lifting all the media. Use paper that meets printer specifications.
2.	Is there a tab on the one-way clutch for the multi-purpose tray take-up roller?	No	Replace the gears for the one-way clutch.
		Yes	Replace the paper take-up solenoid for the multipurpose tray.
Others			Replace PWB-A.

Multipurpose tray-lifting arm position detection is performed when paper take-up is being performed from the multipurpose tray.

Multipurpose tray-lifting arm position error is detected when there is no change in the output for the multipurpose tray upper position sensor (PC15) even after the specified time has passed since the multipurpose tray paper take-up solenoid (SL8) has been set to on.

5-10 Service Call 21 TRANS DET SENSOR (OHP sensor error)

No.	Check	Result	Corrective action
1.	Are the light emitting and receiving ports for the OHP sensor dirty?	Yes	Clean the OHP sensor port.
2.	Does the prism for the OHP sensor have paper dust or particles on it?	Yes	Clean the reflector plate for the OHP.
Others			Replace PWB-A.

OHP sensor detection is performed during preliminary rotation of the transport motor (M1).

5-11 Memory errors

There are four memory errors.

5-11-1 Service Call 29 MEM MALF COUNTER

No.	Check	Result	Corrective action
1.	Cycle the power switch on and off. Does the error reoccur?	Yes	Replace the PWB-A.

5-11-2 Service Call 2A MEM MALF DATA

No.	Check	Result	Corrective action
1.	Cycle the power switch on and off. Does the error reoccur?	Yes	Replace the PWB-A.

5-11-3 Service Call 2B MEM MALF ACCESS

No.	Check	Result	Corrective action
1.	Cycle the power switch on and off. Does the error reoccur?	Yes	Replace the PWB-A.

5-11-4 Service Call 2C MEM MALF INSTALL

No.	Check	Result	Corrective action
1.	Cycle the power switch on and off. Does the error reoccur?	Yes	Inspect associated wiring between the memory board and PWB-A.
2.	Are any discrepancies found with the wiring?	Yes	Repair as needed.
		No	Replace the PWB-A.

5-12 Service Call 04 MAIN UNIT

No.	Check	Result	Corrective action
1.	Cycle the power switch on and off. Does the error reoccur?	Yes	Replace the PWB-A.

5-13 Service Call 05 FLASH ROM

No.	Check	Result	Corrective action
1.	Cycle the power switch on and off. Does the error reoccur?	Yes	Replace the PWB-A.

CAUTION
- *Always use extreme caution when checking the printer with the covers removed. Use caution to prevent fingers, tools or other objects from becoming entangled in the moving components.*
- *Always turn off the power supply before disconnecting any connectors.*
- *Keep all removed parts and tools that are being used organized near the printer, to prevent them from becoming lost or damaged.*

6-1 Check items

5-bin Mailbin and printer connection

Is the 5-bin mailbin properly connected to the main printer unit? Has there been any damage to the connectors? Are there any foreign objects or materials caught in the mailbin?

6-2 Messages

Operator call messages

When one of these messages is displayed, the printer is stopped and placed off-line.

Message	Cause	Corrective action
Mailbin Cover Open	The door for the 5-bin mailbin is open. Door sensor (PC11) is off.	Close the door. If the problem persists, check the door sensor (PC11).
Mailbin **X** Output Bin Full	Paper full detection has been made for the indicated bin (**X**). The paper full sensor for the indicated bin has been set to on.	Remove the paper. If the problem persists, check the paper full sensor.
Media Jam Mailbin	Paper jam has occurred in mailbin.	Remove the paper. If the problem still persists, check the upper paper exit sensor and the lower paper exit sensor.
Mailbin Power Off	Power cord improperly connected. Power switch off.	Properly secure the power cord connections. Turn power switch on.

Service call messages

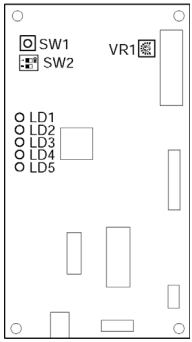
When a service call message is displayed, the printer has a mechanical problem.

Message	Cause	Corrective action
5BIN MAIL	1. The home position sensor did not come on in the 1.5 seconds after the engine commanded the paper guide to move.	The message will reset with the power switch being cycled. If it comes back on replace the home position sensor or the paper deflector motor.
5BIN INST MAIL	The mailbin is not receiving power.	Check the power switch and the power cord connections.

6-3 Test Mode

Test mode operation: While pressing SW1, move the mode setting switch from off to on. The mode display LEDs flash to show that the unit is in test mode.

Ending test mode: Move the mode setting switch from on to off. The LEDs for the mode display go out



	Mode	Objective	Mode setting switch	Mode display LED
1	Paper exit sensor adjustment.	VR1 adjustment for paper exit sensor current.	SW2-1 ON.	LD1
2	Confirm sensor input (Refer to next paragraph).	(1)Confirm paper empty sensor input for bins 1 to 5.	SW2-2 ON. Each push of SW1 switches in following sequence: (1)→ (2)→ (3)→ (1).	LD2, LD4
		(2)Confirm paper full sensor input for bins 1 to 5.		LD2, LD3
		(3)Confirm door sensor input.		LD2, LD3, LD4
3	Transport motor operation.	Confirm transport motor (M1) operation.	SW1 and SW2-2 go on simultaneously. Each push of SW1 operates the transport motor/stop switching.	LD3

Sensor input confirmation

Checking sensor input is done in test mode.

No.		LD1	LD2	LD3	LD4	LD5
1	Sensor name	Bin1 empty	Bin 2 empty	Bin 3 empty	Bin 4 empty	Bin 5 empty
	Mode display	Out	Flashing	Out	Flashing	Out
	Light on display	No paper	No paper	No paper	No paper	No paper
2	Sensor name	Bin 1 full	Bin 2 full	Bin 3 full	Bin 4 full	Bin 5 full
	Mode display	Out	Flashing	Flashing	Out	Out
	Light on display	Full detected	Full detected	Full detected	Full detected	Full detected
3	Sensor name	Door sensor	—	—	—	—
	Mode display	Out	Flashing	Flashing	Flashing	Out
	Light on display	Door closed	—	—	—	—

Mode and sensor status are displayed alternately.

Mode display (3 seconds) → Sensor status display (5 seconds) → Mode display (3 seconds) → Repeats.

For an inappropriate LED state check the associated sensor, connector and wiring for a discrepancy. Make repairs as necessary.

Paper exit sensor adjustment

(1) Turn on the power supply.

(2) While pressing SW1, switch SW2-1 to on. LD1 will flash to indicate that the test mode has operated.

(3) Starting with VR1 turned all the way to the left, turn it to the right (clockwise) and record when the LD2 changes from off to on. This is position (H).

If LD2 does not come on when VR1 is turned all the way to the right, that position is (H).

(4) Open the door and insert a A4 or Letter sheet of paper into the paper passage for the 5 bins.

(5) Turn VR1 to the left (counterclockwise) and record when LD2 changes from on to off. This is position (L).

If LD2 does not change from on to off when VR1 is turned all the way to the left, that position is (L).

(6) Set VR1 between (H) and (L) position and check that (LD2) goes from off to on.

(7) Remove the sheet of A4 or Letter paper and check that (LD2) goes from on to off.

(8) Switch SW2-1 to off and check that all LEDs have gone out.

Sensor input confirmation

Checking sensor input is done in test mode.

No.		LD1	LD2	LD3	LD4	LD5
1	Sensor name	Bin1 empty	Bin 2 empty	Bin 3 empty	Bin 4 empty	Bin 5 empty
	Mode display	Out	Flashing	Out	Flashing	Out
	Light on display	No paper	No paper	No paper	No paper	No paper
2	Sensor name	Bin 1 full	Bin 2 full	Bin 3 full	Bin 4 full	Bin 5 full
	Mode display	Out	Flashing	Flashing	Out	Out
	Light on display	Full detected	Full detected	Full detected	Full detected	Full detected
3	Sensor name	Door sensor	—	—	—	—
	Mode display	Out	Flashing	Flashing	Flashing	Out
	Light on display	Door closed	—	—	—	—

Mode and sensor status are displayed alternately.

Mode display (3 seconds) → Sensor status display (5 seconds) → Mode display (3 seconds) → Repeats.

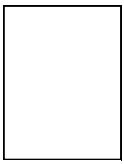
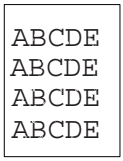
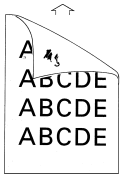
Image defect	Cause	Step
No image 	OHP selected but ordinary plain paper used.	Set the correct driver.
	Defective bias contact (T/C).	Reset the toner cartridge. (If special color, replace the toner cartridge.) Reset the image transfer roller unit.
	Bad connection (image transfer roller).	Ensure the connection of the connector (PJ12A) is secure. Replace the laser unit.
	Bad connector connection (laser unit). Defective data output.	Replace HV1 (high voltage circuit board).
Completely black image 	Defective bias contact (D/C).	Replace the OPC drum
	Defective charge (D/C).	Replace HV1 (high voltage circuit board).
White spots/ Black spots 	Impurities in the toner cartridge.	Replace the toner cartridge.
	Impurities in the OPC drum.	Replace the OPC drum.
	Impurities on the image transfer belt.	Clean the image transfer belt. Replace the image transfer belt.
	Impurities on fusing belt.	Clean the fusing belt. Replace the oil coating roller. Replace the fusing unit.
Toner smudges on back side 	Dirty paper transport passage.	Clean the paper transport passage.
	Dirty image transfer roller.	Replace the image transfer roller unit.
	Dirty fusing pressure roller.	Clean the pressure roller. Replace the oil coating roller.

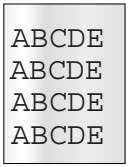
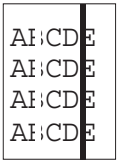
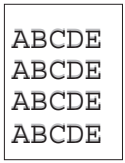
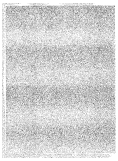
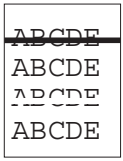
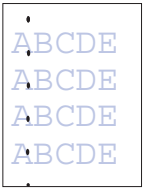
Image defect	Cause	Step
Foggy background 	Impurities in the developing section.	Replace the toner cartridge.
	Dark print density.	Replace the OPC drum. Replace HV1 (high voltage circuit board).
Low image density 	OPC drum deterioration.	Replace the toner cartridge.
	Defective AIDC. Defective image transfer transport. Defective paper image transport. Defective contact (image transfer roller).	Replace the image transfer unit. Reset the image transfer roller unit. Replace the image transfer roller. Replace HV1 (high voltage circuit board).
Black/white lines and bands 	Impurities in developing section or damage to OPC drum.	Replace the toner cartridge. Replace the OPC drum.
	Damage to image transfer belt.	Replace the image transfer belt unit.
	Damage to fusing belt.	Replace the fusing unit.
	Dirty laser lens cover.	Clean the laser lens cover.
Offset image 	Image memory.	Replace the OPC drum.
	Image transfer belt offset.	Replace the image transfer belt unit.
	Fusing offset.	Replace the oil coating roller. Replace the fusing unit.
Incorrect color image registration 	Improper toner cartridge setting.	Remount the toner cartridge.
	Defective image transfer transport.	Replace the image transfer belt unit.
Poor color reproduction 	Dirty AIDC detection sensor. Defective paper image transfer.	Clean the AIDC detection sensor. Reset the image transfer belt unit. (Remove the D/C release operation.) Replace the image transfer unit.

Image defect	Cause	Step
Uneven color density 	Defective contact at image transfer roller unit contact point.	Reset the image transfer roller unit. Replace the image transfer roller unit.
	If it occurs on one side only, T/C mounting is loose.	Reset the toner cartridge. Replace the toner cartridge.
Whited out area 	Damp paper.	Adjust the humidity for paper storage. Use dry paper.
	When whited out.	Replace the fusing unit.
	When using a duplex unit.	Replace the duplex unit.
Lateral lines 	1–2 mm spacing.	Replace the laser unit.
	35 mm developing spacing unevenness.	Replace the color toner cartridge.
	75 mm image transfer roller.	Replace the image transfer roller unit.
	95 mm OPC drum.	Replace OPC drum.
	204 mm fusing belt.	Replace the fusing unit.
	Other spacing.	Replace the OPC drum.
Image Defects that are Cyclical (evenly spaced) 	1–2 mm spacing.	Replace the laser unit.
	35 mm developing spacing unevenness.	Replace the color toner cartridge.
	75 mm image transfer roller.	Replace the image transfer roller unit.
	95 mm OPC drum.	Replace the OPC drum.
	204 mm fusing belt.	Replace the fusing unit
	Other spacing.	Replace the OPC drum.
	Same place on page.	Replace the image transfer belt.

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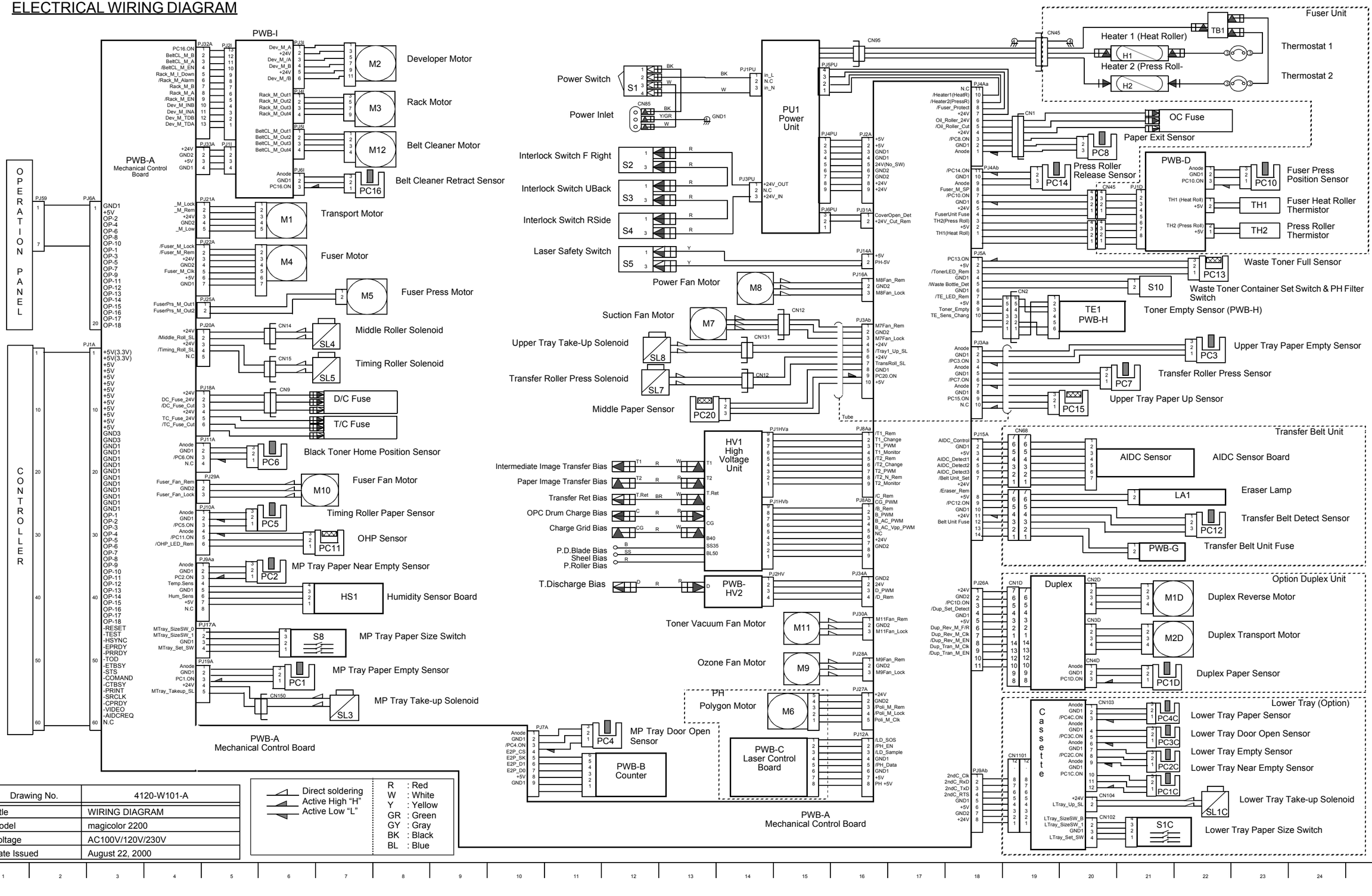
ELECTRICAL WIRING DIAGRAM

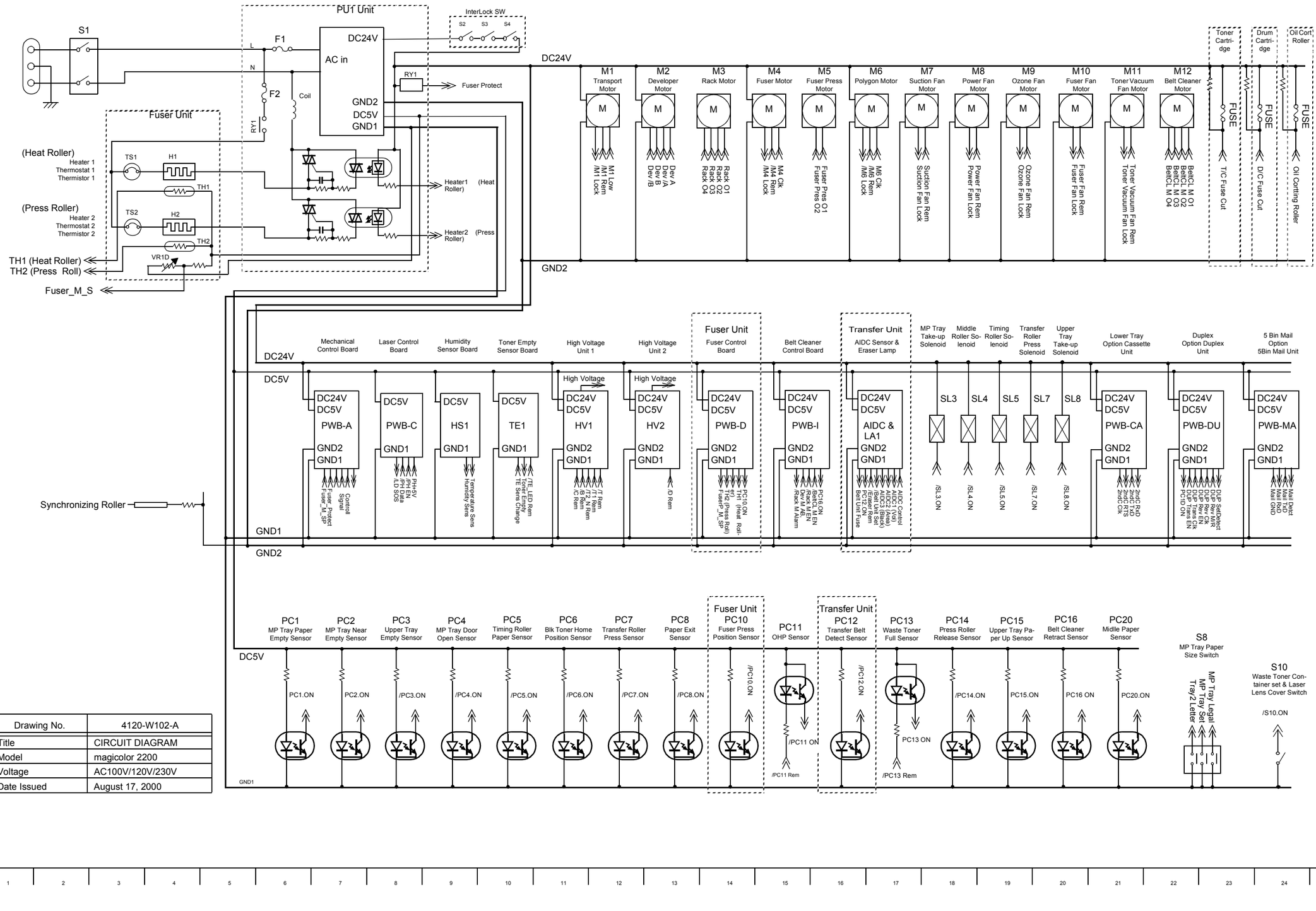


Drawing No.	4120-W101-A
Title	WIRING DIAGRAM
Model	magicolor 2200
Voltage	AC100V/120V/230V
Date Issued	August 22, 2000

Direct soldering
Active High “H”
Active Low “L”

R : Red
W : White
Y : Yellow
GR : Green
GY : Gray
BK : Black
BL : Blue

ELECTRICAL CIRCUIT DIAGRAM



Drawing No.	4120-W102-A
Title	CIRCUIT DIAGRAM
Model	magicolor 2200
Voltage	AC100V/120V/230V
Date Issued	August 17, 2000