XEROX®

Service
Manual

Phaser® 6120
Color Laser Printer

Service Manual

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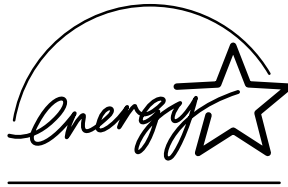
Service Terms

Cautions, Notes, and Warnings

Note: A note indicates an operating or maintenance procedure, practice or condition that is necessary to efficiently accomplish a task. A note can provide additional information related to a specific subject or add a comment on the results achieved through a previous action.

Caution: A caution statement indicates an operating or maintenance procedure, practice or condition that, if not strictly observed, could result in damage to, or destruction of, equipment.

Warning: A warning statement indicates an operating or maintenance procedure, practice or condition that, if not strictly observed, could result in injury or loss of life.

Product Terms

Caution: A personal injury hazard exists that may not be apparent. For example, a panel may cover the hazardous area.

Warning: A personal injury hazard exists in the area where you see the sign.

Safety Precautions

Power Source

For 110 VAC printers, do not apply more than 135 volts RMS between the supply conductors or between either supply conductor and ground. Use only the specified power cord and connector. For 220 VAC printers, do not apply more than 254 volts RMS between the supply conductors or between either supply conductor and ground. Use only the specified power cord. This manual assumes that the reader is a qualified service technician.

Plug the power cord into a grounded AC outlet only. If necessary, contact a licensed electrician to install a properly grounded outlet. If the product loses its ground connection, contact with conductive parts may cause an electrical shock.

Disconnecting Power

Turning the power off using the On/Off switch may not completely de-energize the printer. You must also disconnect the printer power cord from the AC outlet. Position the power cord so that it is easily accessible during servicing so that you may power down the printer during an emergency.

Disconnect the power plug by pulling the plug, not the cord.

Disconnect the power cord in the following cases:

■ if the power cord or plug is frayed or otherwise damaged,
■ if any liquid or foreign material is spilled into the case,
■ if the printer is exposed to any excess moisture,
■ if the printer is dropped or damaged,
■ if you suspect that the product needs servicing or repair,
■ whenever you clean the product.

Electrical Safety

■ Use the power cord supplied with your printer.
■ Plug the power cord directly into a properly grounded electrical outlet. Make sure each end of the cord is securely connected. If you do not know if an outlet is grounded, ask an electrician to check the outlet.
■ Do not use a ground adapter plug to connect the printer to an electrical outlet that does not have a ground connection terminal.
■ Do not use an extension cord or power strip.
■ Verify that the printer is plugged into an outlet that is capable of providing the correct voltage and current. Review the printer's electrical specification with an electrician if necessary.

Avoid the potential of electrical shock by ensuring that the printer is properly grounded. Electrical products may be hazardous if misused.

- Do not place the printer in an area where people might step on the power cord.
- Do not place objects on the power cord.
- Do not block the ventilation openings. These openings are provided to prevent overheating of the printer.
- Do not drop paper clips or staples into the printer.
- Do not push objects into slots or openings on the printer. Making contact with a voltage point or shorting out a part could result in fire or electrical shock.

If you notice unusual noises or odors:

- Turn off the printer immediately.
- Disconnect the power cord from the electrical outlet.
- Call an authorized service representative to correct the problem.

The power cord is attached to the printer as a plug-in device at the back of the printer. If it is necessary to disconnect all electrical power from the printer, disconnect the power cord from the electrical outlet.

- Power should be OFF when servicing the printer, unless a procedure instructs otherwise.

Electrostatic Discharge (ESD) Precautions

Some semiconductor components, and the respective sub-assemblies that contain them, are vulnerable to damage by Electrostatic Discharge (ESD). These components include Integrated Circuits (ICs), Large-Scale Integrated Circuits (LSIs), field-effect transistors and other semiconductor chip components. The following techniques will reduce the occurrence of component damage caused by static electricity.

Be sure the power to the chassis or circuit board is off, and observe all other safety precautions.

- Before handling any semiconductor components assemblies, drain the electrostatic charge from your body. This can be accomplished by touching an earth ground source or by wearing a wrist strap device connected to an earth ground source. Wearing a wrist strap will also prevent accumulation of additional bodily static charges. Be sure to remove the wrist strap before applying power to the unit to avoid potential shock.
- After removing a static sensitive assembly from its anti-static bag, place it on a grounded conductive surface. If the anti-static bag is conductive, you may ground the bag and use it as a conductive surface.
- Do not use freon-propelled chemicals, as they can generate electrical charges that may damage some devices.
- Do not remove a static sensitive replacement component or electrical sub-assembly from its protective package until you are ready to install it.
- Before removing the protective material from the leads of a replacement device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
- Minimize body motions when handling unpackaged replacement devices. Simple motions such as your clothes brushing together or lifting a foot from a carpeted floor can generate enough static electricity to damage a static sensitive device
- Handle IC's and EPROM's carefully to avoid bending pins.
- Pay attention to the direction of parts when mounting or inserting them on Printed Circuit Boards (PCB's).

Service Safety Summary

General Guidelines

Your printer and supplies were designed and tested to meet strict safety requirements. These include safety agency examination, approval, and compliance with established environmental standards.

Your attention to the following safety guidelines helps to ensure the continued, safe operation of your printer.

> **Warning:** The material presented here, assumes, and is intended as a safety reminder for qualified service personnel. Refer also to the preceding Power Safety Precautions.

Avoid servicing alone

Do not perform internal service or adjustment of this product unless another person capable of rendering first aid or resuscitation is present.

Use care when servicing with power

Dangerous voltages may exist at several points in this product. To avoid personal injury, do not touch exposed connections and components while power is on. Disconnect power before removing the power supply shield or replacing components.

Do not wear jewelry

Remove jewelry prior to servicing. Rings, necklaces and other metallic objects could come into contact with dangerous voltages and currents.

Power Source

This product is intended to operate from a power source that will not apply more then 254 volts rms for a 220 volt AC outlet or 135 volts rms for a 110 volt AC outlet between the supply conductors or between either supply conductor and ground. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Warning Labels

Read and obey all posted warning labels. Warning labels are displayed on potentially dangerous printer components. As you service the printer, check to make certain that all warning labels remain in place.

Safety Interlocks

Make sure all covers and the printer's control panel are in place and all interlock switches are functioning correctly after you have completed a printer service call. If you bypass an interlock switch during a service call, use extreme caution when working on or around the printer.

Servicing Electrical Components

Before starting any service procedure, switch off the printer power and unplug the power cord from the wall outlet. If you must service the printer with power applied, be aware of the potential for electrical shock.

Warning: Turning the power off by using the On/Off switch may not completely de-energize the printer. You must also disconnect the printer power cord from the AC outlet. Position the power cord so that it is easily accessible during servicing.

Warning: Do not touch any electrical component unless you are instructed to do so by a service procedure.

The following are hazards to your safety:

- The power cord is damaged or frayed.
- Liquid is spilled into the printer.
- The printer is exposed to water.

If any of these conditions occur, do the following:

- Turn off the printer immediately.
- Disconnect the power cord from the electrical outlet.

Servicing Mechanical Components

Caution: When servicing mechanical components within the printer, manually rotate drive assemblies, rollers, and gears.

Warning: Do not try to manually rotate or manually stop the drive assemblies while any printer motor is running.

Warning: This printer uses heat to fuse the toner image to media. The Fuser Assembly is VERY HOT. Turn the printer power off and wait at least 5 minutes for the Fuser to cool before you attempt to service the Fuser Assembly or adjacent components.

Moving the Printer

Follow these guidelines to avoid injuring yourself or damaging the printer:

■ Turn off the printer and unplug all power cables before moving the printer.
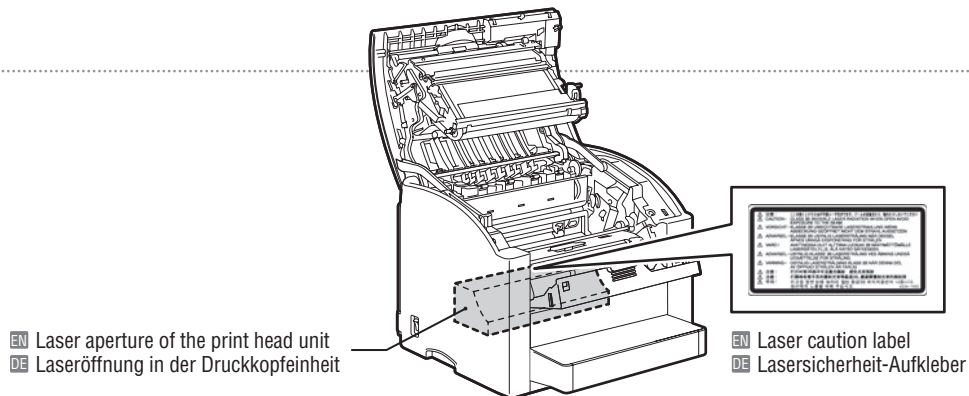■ Always lift the printer from the designated lift points.
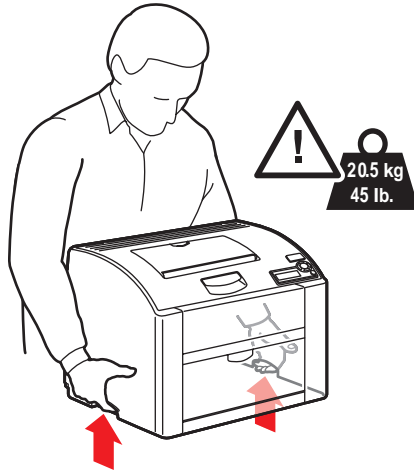
■ Do not place any food or liquids on the printer.

Caution: Damage to the printer resulting from improper moving or failure to repackage the printer properly for shipment, is not covered by the warranty, service agreement, or Total Satisfaction Guarantee. The Total Satisfaction Guarantee is available in the United States and Canada. Coverage may vary outside these areas; please contact your local representative for details.

Safety Specifications

Laser Safety

EN Laser aperture of the print head unit
DE Laseröffnung in der Druckkopfeinheit

EN Laser caution label
DE Lasersicherheit-Aufkleber

Regulation Notices

● **Laser Safety**
This product employs a Class 3B laser diode having maximum power of 10 mW and wavelength of 775 - 800 nm. This product is certified as a Class 1 laser product. Since the laser beam is concealed by protective housings, the product does not emit hazardous laser radiation as long as the product is operated according to the instructions in this manual.

● **Internal Laser Radiation**
Maximum average radiation power: 7.5 µW at the laser aperture of the print head unit.
Wavelength: 775-800 nm

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

● **Ozone Release**
During print operation, a small quantity of ozone is released. This amount is not large enough to harm anyone. However, be sure the room where the machine is being used has adequate ventilation, especially if you are printing a high volume of materials, or if the machine is being used continuously over a long period.

Hinweise und gesetzliche Bestimmungen

● **Lasersicherheit**
In diesem Produkt kommt eine Laserdiode der Klasse 3B mit einer maximalen Leistung von 10 mW und einer Wellenlänge von 775 - 800 nm zum Einsatz. Dieses Produkt ist als Laserprodukt der Klasse 1 zertifiziert. Da der Laserstrahl durch Schutzgehäuse abgeschirmt ist, gibt das Produkt keinerlei Laserstrahlung ab, solange es gemäß den Anweisungen in dem vorliegenden Handbuch betrieben wird.

● **Laserstrahlung im Geräteinnern**
Maximale durchschnittliche Strahlungsleistung: 7,5 µW an der Laseröffnung der Druckkopfeinheit.
Wellenlänge: 775 - 800 nm

VORSICHT:
Alle im *Benutzerhandbuch* nicht beschriebenen Verfahren oder davon abweichende Vorgehensweisen können dazu führen, dass gefährliche Laserstrahlung freigesetzt wird.

● **Ozonemission**
Während des Druckbetriebs wird in geringen Mengen Ozon freigesetzt. Die freigesetzte Ozonmenge ist völlig unschädlich. Dennoch sollte der Raum, in dem der Drucker installiert wird, ausreichend belüftet sein, insbesondere, wenn größere Aufträge verarbeitet werden oder der Drucker längere Zeit im Dauerbetrieb genutzt wird.

● **Schallleistungspegel**
Maschinenlärminformations-Verordnung 3. GPSGV: Der höchste Schalldruckpegel beträgt 70 dB(A) oder weniger gamäss EN ISO 7779.

Symbols Marked on Product

⚠	Use caution (or draws attention to a particular component). See the manual(s) for information.
⚠ ⚠	Use caution (or draws attention to a particular component). See the manual(s) for information. Hot surface on or in the printer. Use caution to avoid personal injury.
🚫✋	Do not touch the imaging unit.
🚫🔥	Do not burn the item.
🚫💡	Do not expose the imaging unit to intense light or light for long periods of time.

Material Safety Data Sheet

For Material Safety Data information regarding your Phaser 6120 printer, go to www.xerox.com/office/msds. For the Customer Support Center phone numbers, see the information sheet that shipped with your printer or go to www.xerox.com/office/contacts.

Ozone Release

During print operation, a small quantity of ozone is released. This amount is not large enough to harm anyone adversely. However, be sure the room where the machine is being used has adequate ventilation, especially if you are printing a high volume of materials, or if the machine is being used continuously over a long period.

Product Recycling and Disposal

All Countries

If you are managing the disposal of your Xerox product, please note that the product contains lead, mercury, and other materials whose disposal may be regulated due to environmental considerations in certain countries or states. The presence of lead and mercury is fully consistent with global regulations applicable at the time that the product was placed on the market.

European Union

Some equipment may be used in both a domestic/household and a professional/business application.

Domestic/Household Environment

Application of this symbol on your equipment is confirmation that you should not dispose of the equipment in the normal household waste stream.

In accordance with European legislation, end of life electrical and electronic equipment subject to disposal must be segregated from household waste.

Private households within EU member states may return used electrical and electronic equipment to designated collection facilities free of charge. Please contact your local disposal authority for information.

In some member states, when you purchase new equipment, your local retailer may be required to take back your old equipment free of charge. Please ask you retailer for information.

Professional/Business Environment
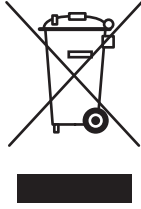
Application of this symbol on your equipment is confirmation that you must dispose of this equipment in compliance with agreed national procedures.

In accordance with European legislation, end of life electrical and electronic equipment subject to disposal must be managed within agreed procedures.

Prior to disposal, please contact your local dealer or Xerox representative for end of life takeback information.

North America

Xerox operates an equipment takeback and reuse/recycle program. Contact your Xerox sales representative (1-800-ASK-XEROX) to determine whether this Xerox product is part of the program. For more information about Xerox environmental programs, visit www.xerox.com/environment.html or for recycling and disposal information, contact your local authorities.

In the United States, you may also refer to the Electronic Industries Alliance website at www.eiae.org.

Other Countries

Please contact your local waste authorities and request disposal guidance.

Regulatory Information (English Only)

Xerox has tested this product to electromagnetic emission and immunity standards. These standards are designed to mitigate interference caused or received by this product in a typical office environment.

United States (FCC Regulations)

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

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

Any changes or modifications not expressly approved by Xerox could void the user's authority to operate the equipment. To ensure compliance with Part 15 of the FCC rules, use shielded interface cables.

Canada (Regulations)

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

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

European Union (Declaration of Conformity)

Xerox Corporation declares, under our sole responsibility, that the product to which this declaration relates is in conformity with the following standards and other normative documents:

Low Voltage Directive 73/23/EEC as amended

EN 60950-1:2001

Electromagnetic Compatibility Directive 89/336/EEC as amended

EN 55022:1998+A1:2000 +A2:2003

EN 55024:1998+A1:2001 +A2:2003

EN 61000-3-2:2000

EN 61000-3-3:1995+A1:2001

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1   Print Engine General Information

2   Print Engine Maintenance Information

3   Print Engine Adjustments/Settings

4 Print Engine Troubleshooting

5   Print Engine Service Parts Disassembly

6   Print Engine Parts List

7   Print Engine Theory of Operation

8   Optional Lower Tray Unit (500-Sheet Feeder)

9   Duplex Unit

10　Wiring

A　Appendix

1 Print Engine General Information

This section contains the following:

System Configuration

Front View

1. Output tray
2. Front cover
3. Control panel
4. Tray 1 (Multipurpose tray)
5. Power switch
6. Top cover
7. Transfer belt
8. Fuser
9. Fuser separator levers
10. Imaging unit
11. Toner cartridge carousel (containing 4 toner cartridges: C, M, Y and K)
12. USB port
13. Parallel port
14. 10Base-T/100Base-TX (IEEE 802.3) Ethernet Interface port
15. Toner cartridge
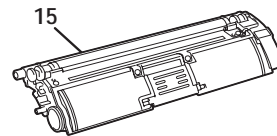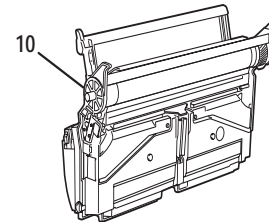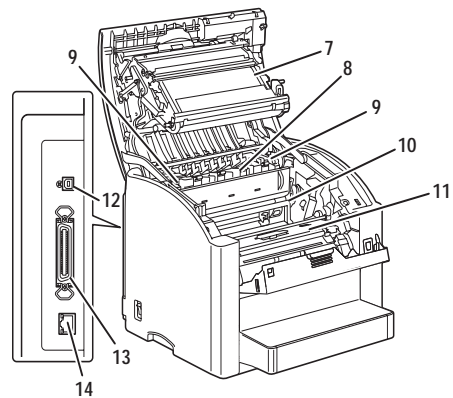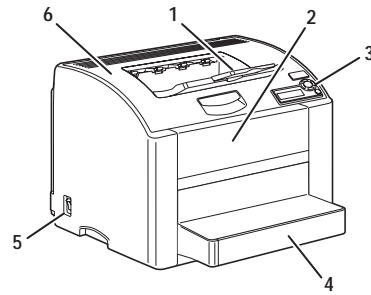
Front View with Options

Tray 2
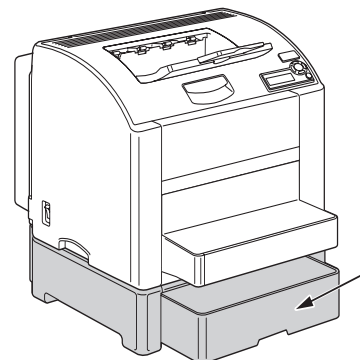
Rear View with Options

Duplex unit
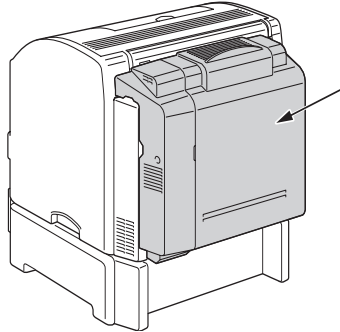
Space Requirements

To ensure easy operation, consumable replacement and maintenance, adhere to the recommended space requirements detailed below.

Front View

Side View
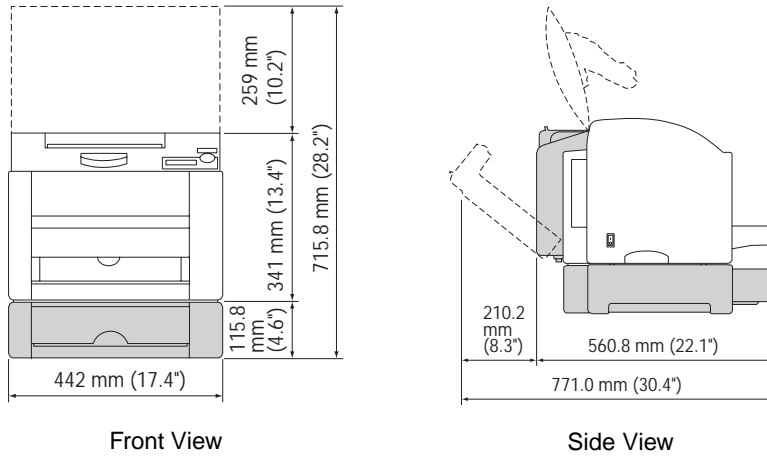
Note: The options appear shaded in the above illustration.

Product Specifications

Type	Desktop full-color laser beam printer
Printing System	Semiconductor laser and electrostatic image transfer to plain paper
Exposure System	2 laser diodes and polygon mirror
PC Drum Type	OPC (organic photo conductor)
Photoconductor Cleaning	Blade cleaning system
Print Density	600 x 600 dpi Enhance Mode = 600 x 600 x 4 bit rendering (default) Standard Mode = 600 x 600 x 1 bit rendering
Paper Feeding System	One-way system (Tray 1: 200 sheets) * Expandable to a two-way system by adding an optional Lower Feeder Unit.
Developing System	Single-element developing system
Charging System	DC comb electrode Scorotron system
Image Transfer System	Intermediate transfer belt system
Paper Separating System	Curvature separation + Charge-neutralizing system
Fusing System	Roller fusing
Paper Exit System	Face down (Output Tray capacity: 200 sheets)
CPU	freescale MPC8220i (300 MHz)
Memory	128 MB
Interfaces	10 Base-T/100 Base-TX (IEEE 802.3) Ethernet USB Revision 2.0/1.1 IEEE1284 (Default: Not active)

	Windows	Windows NT4.0/2000/Server 2003/XP PostScript driver, Windows 98 SE/NT 4.0/Me/2000/ Server 2003/XP PPDs, PCL xl driver
	Mac OS 9	PPD
	Mac OS X	PPD + PDE
	Linux	PPD for CUPS
OS Compatibility	Windows 98 SE/Me/NT 4.0 (SP6 or later)/2000 (SP4 or later)/XP (SP1 or later)/ Server 2003	
	Mac OS 9 (9.1 or later/Mac OS X (10.2 or later) Mac OS X Server (10.2 or later)	
	Red Hat Linux 9.0.1, SuSE Linux 8.2 (CUPS 1.1.15 or later)	

Media Specifications

Paper Type	Size	Paper Type	Size
Letter	8.5" x 11"	Government Letter	8.0" x 10.5"
A4	210 x 297 mm	Government Legal	8.0" x 13"
Legal	8.5" x 14"	SP Folio	8.5" x 12.69"
Folio	210 x 330 mm	DL	110 x 220 mm
Executive	7.25" x 10.5"	C5	162 x 229 mm
B5 (JIS)	182 x 257 mm	C6	114 x 162 mm
B5 (ISO)	176 x 250 mm	Monarch	3.88" x 7.5"
A5	148 x 210 mm	Com 10	4.13" x 9.5"
Statement	5.5" x 8.5"	Japanese PostCard	100 x 148 mm
Foolscap	8" x 13"	Custom size	Width 92-216 mm
UK Quatro	8" x 10"		Length 148-356 mm*
Custom Paper Sizes	Paper width: 92 to 216 mm (3.6" to 8.5")		
	Paper length: 148 to 356 mm (5.9" to 14")		
Media Types	Plain Paper (60 to 90 g/m^2 / 16 to 24 lb.)		
	Transparencies		
	Thick stock (90 to 163 g/m^2/ 25 to 40 lb.)		
	Postcards		
	Envelopes		
	Letterhead		
	Label stock (60-163 g/m^2/16-43 lb. bond)		
	Glossy stock(163 g/m^2 index max/110 lb. book max)		

*148-209 mm not supported for plain paper

210-297 mm supported for all media

298-356 mm supported only for plain paper

Note:

Lower Feeder Unit: Only plain paper and recycled paper weighing 60 to 90 g/m^2 (16 to 24 lb.) can be loaded.

Duplex Unit: Only plain paper and recycled paper weighing 75 to 90 g/m^2 (20 to 24 lb.) can be fed through the unit.

For details about the lower tray unit, see Optional Lower Tray Unit (500-Sheet Feeder) on page 8-1. For details about the duplex unit, see Duplex Unit on page 9-1.

Media Input Capacity

Source	Plain Paper	Transparency	Paper Label	Envelope/ Cardstock	Remark
Tray 1	200	50	50	10	20 lb. paper
Tray 2	500	N/A	N/A	N/A	20 lb. paper

Media Output Stacker Capacity

Output Location	20 lb. paper	Remark
Face Down	200 sheets (paper)	20 lb. paper

Functional Specifications

Warm-up Time (at ambient temperature of 23° C/ 73.4° F and rated source voltage)	110 V to 127 V	Average: 52 seconds
	220 V to 240 V	Average: 55 seconds
System Speed	Plain paper	126.78 mm/second
	Thick stock	63.39 mm/second
	OHP film	42.26 mm/second
First-Page-Out Time (Plain Paper)	Full Color	1-sided: 22 seconds 2-sided: 35 seconds
	Monochrome	1-sided: 13 seconds 2-sided: 26 seconds
Print Speed (Plain Paper)	Full Color	1-sided: 5 pages/minute
		2-sided: 5 pages/minute
	Monochrome	1-sided: 20 pages/minute
		2-sided: 11.4 pages/minute
Tray Capacities	Plain paper and letterhead:200 sheets Transparencies, thick stock, postcards, labels stock, and glossy stock:50 sheets Envelopes:10 sheets	
Hard Drive	Option 20 GB	
Tilt	Operating at maximum tilt angle of 2º	
Printable Area (Margins)	Non-printable area: 4 mm (0.16") from edge (top, bottom, left and right) of listed media sizes except legal size. For Legal size the bottom 16 mm is black only, color printing area only reach 335.6 mm from top edge. Side Print Position Accuracy: 4 mm +/- 2.0 mm (0.08 in.) Top/Bottom Print Position Accuracy: 4mm +/-2.5 mm (0.1 in.)	
Skew	Simplex Printing	A rectangular box of 189 mm by 256 mm will be used to measure skew. A. Vertical skew $a < \pm 2.0$ mm (0.08") B. Horizontal skew $b < \pm 1.5$ mm (0.06")
	Duplex Printing (front to back)	A. Vertical skew $a < 3.0$ mm (0.12") B. Horizontal skew $b < 2.5$ mm (0.10")
Output paper stacking	In feeding direction: +/- 9 mm In side direction: +/- 9 mm Occasionally, a piece of paper may get pushed out by another paper, this occurrence rate should be less than 1 for every 50 sheet and less than 50 mm. The scattering should be tested with either Xerox 4024 75 gsm paper or Xerox 4200 75 gsm paper.	
Color Registrations	Vertical: Plain paper at all zones; average 0.12 mm	
	Horizontal: Plain paper at all zones; average 0.12 mm	
Print Magnification	Vertical (applied to 270.9 mm (10.67 in.) length) < 2.0 mm (0.08") (0.74%)	
	Horizontal (applied to 184.2 mm (7.25 in.) length) < 1.2 mm (0.05 in.) (0.65%)	

Printer Recommended Duty Cycle	Average Number of Printed Sheets (Monthly): 650 pages (A4 and Letter size 5% coverage)
	Maximum Number Of Printed Sheets (Monthly): 35K pages (A4 and Letter 5% coverage)
Printer Life	200,000 pages or 5 years
Printer Serial Number	YGG = 120 V printer
	YGH = 220 V printer
	The first digit of the serial number string is the revision of the printer. The remaining 5 digits represent the actual serial number of the printer.

Operating Environment

Power Requirements Voltage:	AC 110 to 127 V AC 220 to 240 V
Frequency:	50/60 Hz ±3 Hz
Max Power Consumption	1100 W (Maximum peak)
Dimensions	442 mm (W) x 395 mm (D) x 341 (H) mm 16.9" (W) x 15.6" (D) x 13.4" (H)
Weight	Approximately 19.6 kg (43.9 lb.) (excluding the Dust Cover)
Operating Noise	During standby: 35 dB (A) or less During printing: 54 dB (A) or less
Operating Range Temperature	10° to 32° C / 50° to 90° F (with a fluctuation of 10° C / 18° F or less per hour)
Operating Range Humidity	10%-80% RH @ 15° to 32° C/59° to 89° F to with water vapor no higher than 25.5 C/77.9° F 80% condition. Five operating corners are 15° C /59° F/15%, 15° C/80%, 25.5° C / 77.9° F/80%, 32° C /60%, 32° C / 89° F/15%
Operating Range Altitude	0-2,500 meters (8,000 ft.)
Transportation Range Temperature	-20° C to +55° C/-4° to 131° F
Transportation Range Humidity	30%-85% RH, non-condensing
Transportation Range Altitude	0-6,092 meters (20,000 ft.)
Storage Range Temperature	Normal: 0° to 35° C / 32° to 95° F 15%-80% RH For 18 months max Severe: -20° to 40° C / -4° to 104° F 5%-95% RH For 1 month max **Note:** Applies only to CRUs.

Low/Out Behavior for Consumables

	FP Message	Device for New CRU Detection	Low	Life (100%)	Hard Stop	Reset to 0	Life Data Stored at
Toner (pixel)	Low / Out	CRUM	96%/ 88%*	100%		By new toner	MCU/ Toner NVRAM
Toner (page)	Low / Out	CRUM		6000 pages	6000 pages	By new toner	MCU/ Toner NVRAM
Imaging unit (rotation)	Low / Out	first use fuse	96%	100%**	when waste toner box full	By new imaging unit	MCU NVRAM
Transfer belt	No	No	No	135,000 images	No	By front panel (user)	MCU NVRAM
Fuser	No	No	No	120,000 pages	No	By control panel (Service)	MCU NVRAM
Transfer roller	No	No	No	120,000 pages	No	By front panel (Service)	MCU NVRAM
Pick roller	No	No	No	200,000 pages	No	none	none

* For 4.5K/1.5K toner. Toner life calculations are based on 5% coverage.

** 45,000 images for continuous printing, shorter job length will shorten the imaging unit life.

Periodic Replacement Service Parts Table

Transfer Belt	135K Images	User replaceable with coin screws
Fuser	120K pages	Service replaceable
Transfer Roller	120k pages	Service replaceable

2 Print Engine Maintenance Information

This section contains the following:

- Consumables/Routine Maintenance Items on page 2-2
- Maintenance Procedures on page 2-3
- Firmware Upgrade on page 2-17

Consumables/Routine Maintenance Items

To ensure that the machine produces good print quality and to extend its service life, it is recommended that the maintenance procedures described in this section are followed.

The maintenance parts should be replaced following the quoted page counts in the life expectancy column in the following table.

Maintenance conditions are based on A4 or Letter, Standard mode, and Energy Saver.

User Replaceable and Maintenance Parts

No	Classification	Part Name	Number of prints	Clean	Replace	Reference Page in this Manual
1	Processing section	Toner Cartridge * (C, Y, M, K)	1,500 Standard-capacity 4,500 High-capacity		●	page 5
2		Imaging Unit	Monochrome 45,000 (continuous printing)		●	page 9
			Monochrome 20,000 (3-4 pages per job)			
			Full Color 11,250 (continuous printing)			
			Full Color 10,000 (3-4 pages per job)			
3	Image Transfer section	Transfer Belt	Monochrome 135,000 (continuous printing)		●	page 12
			Monochrome 75,000 (3 pages per job)			
			Full Color 33,700 (continuous printing)			
			Full Color 28,000 (3 pages per job)			
4		Laser (PH) Window	When a print-quality defect is visible.	●		page 5
5	Tray1 paper pick-up section	Pick-Up Roller	When a paper jam occurs	●		page 3

* The high capacity toner cartridges have a life expectancy of 4,500 printed pages at 5% coverage. Maximum life for the toner cartridge is 6,000 prints. There are components in the cartridge that degrade beyond 6,000 prints.

No	Classification	Part name	Number of prints	Clean	Replace	Reference Page in this Manual
1	Image Transfer section	Transfer Roller	120,000		●	page 9
2	Fusing section	Fuser	120,000		●	page 14

Maintenance Parts Life Count Explanation

	Description	Near Life Value	Life Value
Imaging Unit	The period of time during which the Main Motor is energized is counted.	43,200 prints	45,000 continuous prints
Fuser	The number of printed pages is counted.	-	120,000 prints
Transfer Roller	The number of printed pages is counted.	-	120,000 prints
Transfer Belt	The period of time during which the Main Motor is rotated and the number of printed pages are both counted.	-	135,000 continuous prints
Toner Cartridge C,M,Y,K *	The number of printed pages compared with the pixel counter value, whichever reaches the life specifications value, is detected.	1,200 prints	1,500 prints**
		3,600 prints	4,500 prints**

* Standard-Capacity Toner Cartridges (C,M,Y), High-Capacity Toner Cartridges (C,M,Y,K).

** In the Quality menu you can specify whether to continue or stop printing when there is a toner empty condition.

Maintenance Procedures

Pick-Up Roller

Cleaning Procedure

1. Open the Top Cover.
2. Remove the Imaging Unit. See Imaging Unit on page 2-9.

3. Using a soft cloth dampened with mild detergent, wipe the Pick-Up Roller [1] clean of dirt. Do not spray detergent directly on the printer.

4139fs2501c0
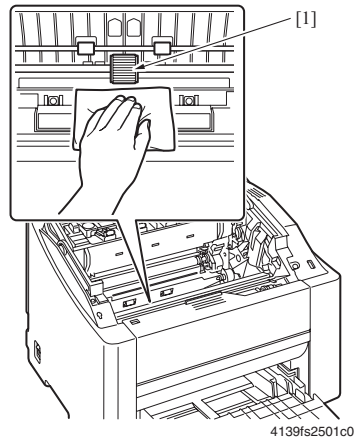
Removal Procedure

1. Open the Top Cover.

2. Remove the imaging unit. See Imaging Unit on page 2-9.

3. Lift the tab on the right side of the Pick-Up roller and slide the roller to the right [2] to remove the Pick-Up Roller [1].

4139fs2509c0
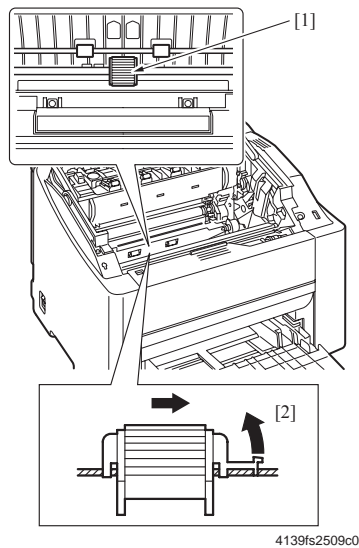
Laser (PH) Window

Cleaning Procedure

1. Open the Top Cover.

2. Remove the Imaging Unit. See Imaging Unit on page 2-9

3. Using a dry lint-free cloth, wipe the Laser (PH) window [1] clean of dirt.

4139fs2508c0
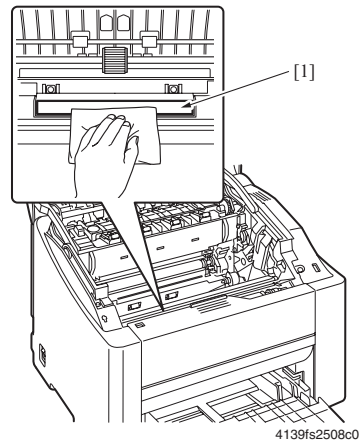
Toner Cartridge (C/M/Y/K)

Removal Procedure

1. Check the color of the toner cartridge to be replaced on the control panel.

2. Select QUALITY MENU -> TONER REMOVAL from the menu and select the Toner Cartridge of the specific color of toner to be replaced.

Note: For details, see QUALITY MENU on page 3-18.

3. Open the Top Cover.

4. Open the Front Cover [1] and make sure that the specific Toner Cartridge to be replaced is in the front.

[1]

4139fs2502c0
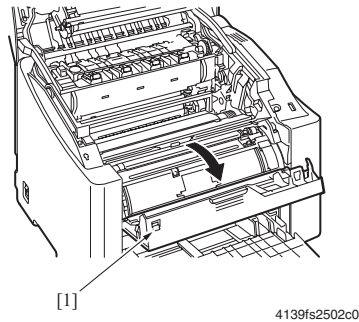
5. Hold onto the handle [2] of the Toner Cartridge, pull it and remove the Toner Cartridge [3].

Note: If you need to manually move the toner carousel to a specific color, open the top cover, open the front cover, and use a pen or pencil to push the release lever on the right side of the printer.

[2]

[3]

4139fs2503c0
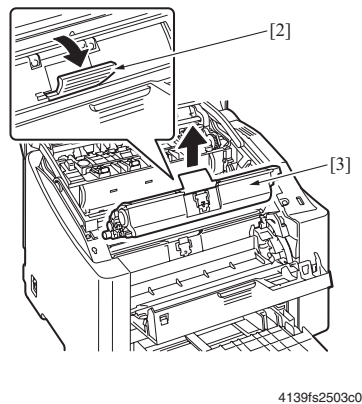
Reinstallation Procedure

Note: Do not let the Toner Cartridge stand upright or keep it in an upright position.

4139fs2506c0
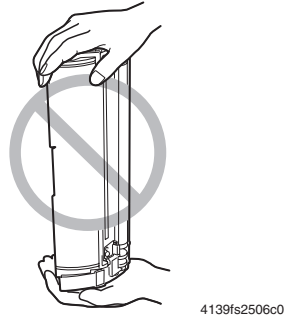
1. Prepare a new Toner Cartridge.
2. Shake the Toner Cartridge [1] a few times to distribute the toner.

[1]

4139fs2534c0
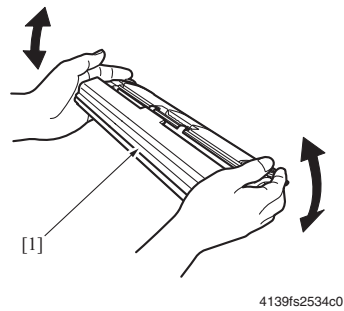
3. Remove the Protective Cover [2].

[2]

4139fs2504c0
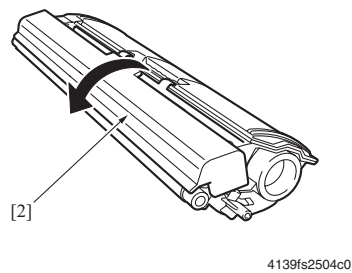
4. Aligning the shaft [3] on both sides of the Toner Cartridge with the rails in the machine, install the Toner Cartridge [4].

4139fs2505c0
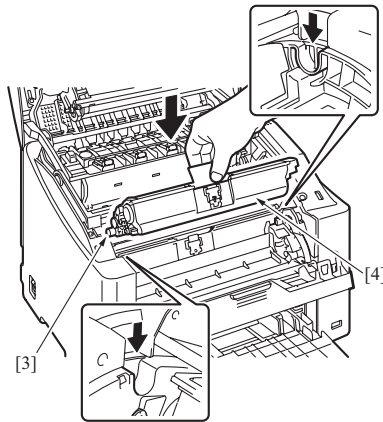
5. Press down on the Toner Cartridge [5] until it snaps into place.

4139fs2537c0
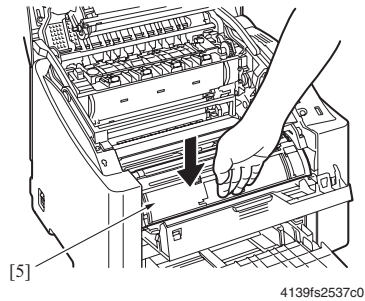
6. Close the Front Cover.
7. Close the Top Cover.

Imaging Unit

Replacement Procedure

1. Open the Top Cover.
2. Hold onto the handle [2] of the Imaging Unit [1] and slowly lift the Imaging Unit out of the machine.

4139fs2507c0
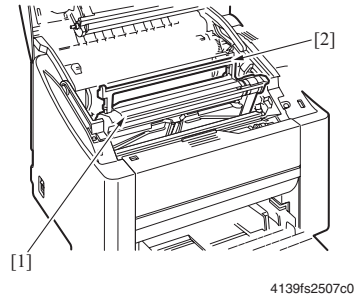
3. To reinstall, reverse the order of removal.

   Note: There is a first-use fuse. Once you have installed the imaging unit, the fuse is blown. If you are using a new imaging unit to troubleshoot a print-quality problem, the fuse can be removed until you confirm that the imaging unit is the cause of the defect. Remember to re-install the fuse so the life counter will work.

Transfer Roller

Replacement Procedure

1. Open the Top Cover.
2. Remove the Imaging Unit. See Imaging Unit on page 2-9

3. Remove the Transfer Roller Assy [3] as follows. While squeezing the tabs [2] of the holders [1] located on both sides, pull out the transfer roller [1].

> **Caution:** Use care not to lose the two springs of the Transfer Roller Assy. They can easily come off.

4139fs2516c0
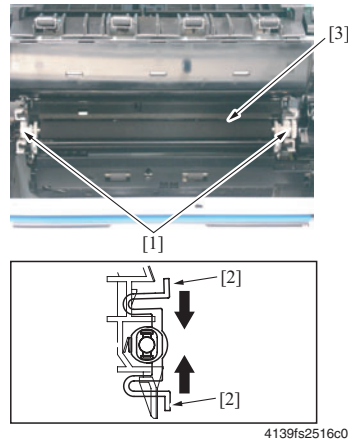
4. Remove the conductive material [4], gear [5], two springs [6], two holders [7], and two collars [8].

5. To reinstall, move the pieces in Step 4 to the new roller.

> **Caution:** Do not touch the surface of the roller.

4139fs2523c0
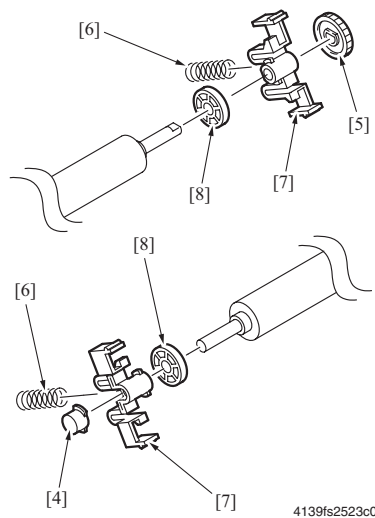
6. Snap the roller into position.

7. When the Transfer Roller is replaced with a new one, it is necessary to reset the life counter in the Service menu. For details of how to reset the counter, see Service Menu on page 3-30.

8. Perform the Density Calibration in the Quality menu. For information about the density calibration, see DENSITY CALIBRATION on page 3-18.

Reassembly Procedures

1. Align the spring with the post on the plastic housing.

2. Make sure that the drive gear on the transfer roller is aligned with the coupling on the right side of the printer.

3. Make sure that the spring action of the transfer roller is working correctly.

Caution: Ensure that the High-Voltage Bias Spring is making contact with the Transfer Roller Bias Contact Plate [1].
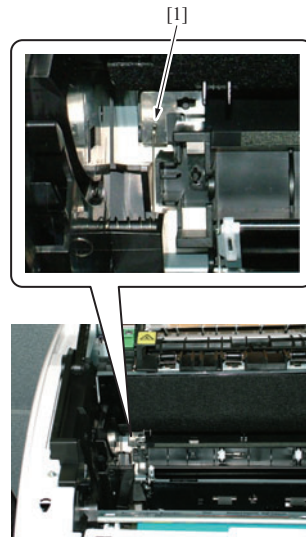
transrollspr

Transfer Belt

Replacement Procedure

1. Open the Top Cover.

2. Disconnect the connector [1].
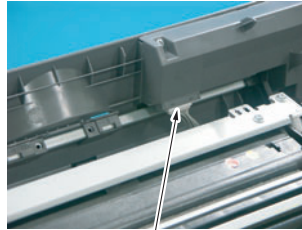
[1]

4139fs2002c0

Caution: When reconnecting, make sure that the connector is connected in the correct direction (the guides should be facing up toward the top cover).

3. Remove two shoulder screws [2].
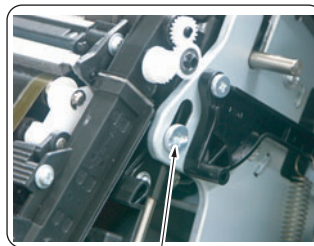
[2]
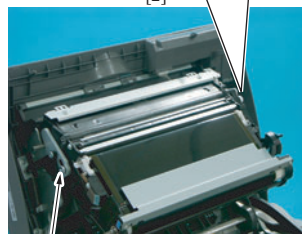
[2]

4139fs2003c1

4. Remove the Transfer Belt [3].

[3]
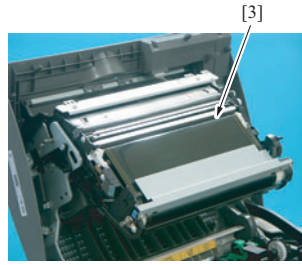
4139fs2004c0

Caution: When replacing the Transfer Belt, use care not to touch the surface of the belt. A scratchy or dirty belt could result in image problems. Do not over-tighten the coin screws because you may strip the plastic threads.

5. To reinstall, reverse the order of removal.

6. When the Transfer Belt is replaced with a new one, it is necessary to reset the life counter in the Service menu, see Entering the Service Menu on page 30.

7. Perform the Density Calibration in the Quality menu. For information about the density control, see DENSITY CALIBRATION on page 3-18.

Fuser

Warning: Before replacing the Fuser, ensure that it has had time to cool down.

Replacement Procedure

1. Remove the Rear Cover. See Rear Cover on page 5-4.

2. Remove the Left Cover. See Left Cover on page 5-5.

3. Remove the screws securing the metal plate, and then remove the plate [1].
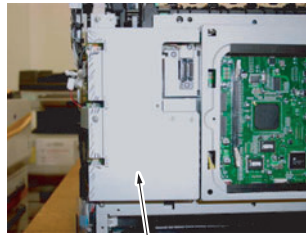
[1]   shield_plate

4. Disconnect two connectors (PJ6, PJ71) [2] from the PWB-A (Engine Control Board) [1].

[2]
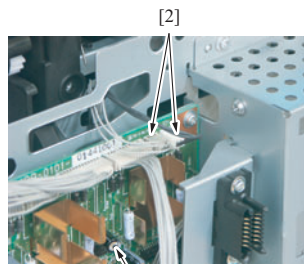
[1]
4139fs2005f0

5. Disconnect the two connectors [4] (black and white) of the Fusing Safety Switch [3].

[4]
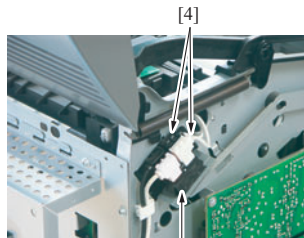
[3]
4139fs2006c1

6. Remove the Transfer Belt. See Transfer Belt on page 2-12.

7. Carefully remove two C-rings [6] of the Top Cover [5] and unhook the two fulcrum pins of the Top Cover.
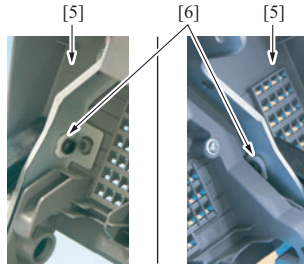
4139fs2007c0

Note: When the fulcrum pins of the Top Cover are unhooked, the springs of the Top Cover can fall off easily.
If the springs are unhooked, make sure to reinstall them in the correct direction. Put the longer hook on the black plastic piece and the rounded hook on the printer.

4139fs2521c0

The image shows a printer fuser assembly maintenance procedure.
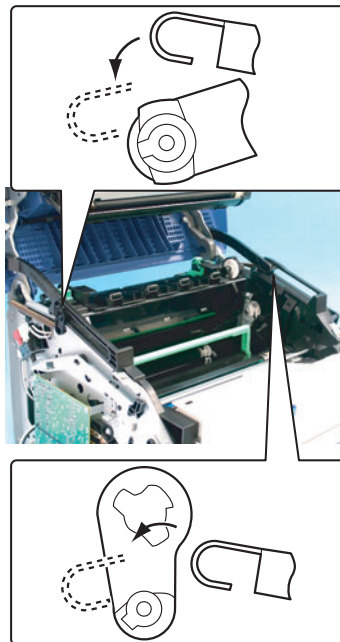
8. Swing open the Fuser gear cover [7].
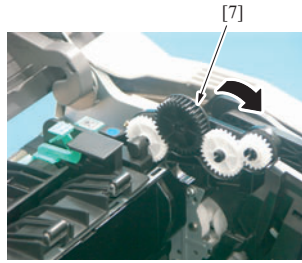
4139fs2008c0

9. Remove two screws [9] from the Fuser [8].
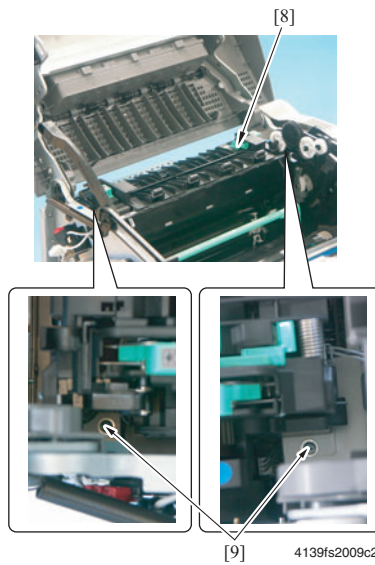
[9]   4139fs2009c2

10. Remove the screws to loosen the metal crossbars. This allows flexibility when removing the fuser.

11. Remove the Fuser [10] by sliding it to the left, and then lifting it up.

[10]

②

①
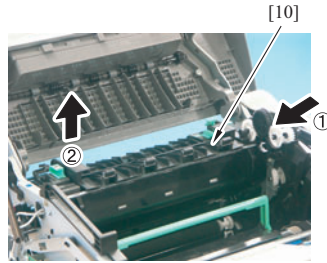
4139fs2010c1

12. To reinstall, reverse the order of removal.

13. When the Fuser is replaced with a new one, it is necessary to reset the life counter in the Service menu, see Entering the Service Menu on page 30.

Precaution for Reinstalling the Fuser

■ Use a long magnetic screwdriver to replace the screws.

■ Use the screws holes as a reference inside the fuser when replacing it.

■ Make sure that the fuser drive gear aligns with the gear in the fuser.

■ When reinstalling the Left Cover after reinstalling the Fuser, make sure that the harness of the Fuser is located below the rib of the Left Cover. See Left Cover on page 5-5.

Firmware Upgrade

Check the version of the firmware currently installed in the printer before performing the printer firmware update, to determine if the printer requires the updated firmware. The Current firmware version installed in the printer can be found on the Configuration Page. A Configuration Page is printed from the printer's control panel.

Print the Configuration Page

1. Press the **Menu/Select** key on the printer's control panel, and then press the **Right** arrow key to scroll to the **Printable Pages** menu.

2. Press the **Menu/Select** key to select **Printable Pages** menu.

3. Press the **Right** arrow key until the **Configuration Page** appears, and then press enter **Menu/Select** key to print the Configuration Page.

Refer to the "System Release" number in the Printer Information section of the page to identify the current version of firmware loaded in the printer.

Next, go to the "Active I/F" menu within the "Connection Setup" menu and activate the interface to be used for the Upgrade.

Firmware Upgrade via a TCP/IP Network Connection

Note: This is the preferred method for installing the firmware update for most environments.

Caution: Some of the printer's settings will be changed from their present value back to the factory default values by the firmware update. Print a Configuration Page as described in "Checking the Version of Firmware above, and use this page as a reference to restore the printer's settings after the firmware update is complete.

1. Launch your preferred web browser on your computer. Microsoft Internet Explorer, Netscape Navigator, Apple Safari, or most other web browsers are supported.
2. Enter the TCP/IP address of the printer or its DNS network name in the web browser's address bar, and press Return or Enter to open the page. The address bar is typically at the top of a browser window.
3. Click on the **Job** button in the list of functions on the right side of the page.
4. Click on the **File Download** link in the list of options on the left side of the page.
5. Click the **Browse** button. In the resulting file open window, select the firmware update file that is provided as part of any update package.
6. Click the Blue button to transmit the firmware update to the printer.
7. The printer restarts automatically when the update process is complete.

   Caution: Do not attempt to cancel the firmware update process or turn off the printer power during the update. The printer automatically restarts after the firmware update process is complete.

8. Restore the printer's settings to their previous values shown in the configuration page printed earlier. Settings may be changed at the printer's front panel interface, or through CentreWare IS using a web browser.

Firmware Upgrade via a Parallel Connection

1. Connect the machine to the PC using an IEEE 1284 cable. (The printer should be OFF.)
2. Copy the firmware data (XXXXXX.sys) to any directory on the PC.
3. Holding down the **Menu/Select** key and **UP** key on the Control Panel at the same time, turn ON the printer's Power Switch.
4. For each of the following functions, select **YES** using the **Right** or **Left** key and press the **Menu/Select** key: "UPDATE PRINTER," "REPLACE CODE," "REPLACE ALL FONT," and "UPDATE NOW."
   Confirm that the message "SEND DATA NOW" appears on the Control Panel.
5. At the PC, open a command prompt window, and then go to the directory in which the firmware data is stored.

6. Type "copy_/b_XXXXXX.sys_lpt1:" and then press the Enter button (XXXXXX is the firmware data file name).

Caution: Do not attempt to cancel the firmware update process or turn off the printer power during the update. The printer automatically restarts after the firmware update process is complete.

```
Command Prompt                                                    _ □ ×
D:\>copy /b augusta.sys lpt1:
        1 file(s) copied.

D:\>
```

4139F2E508DA

7. Check the message on the Control Panel and make sure that "Ready" is displayed.

```
PRINTER UPDATE
READING CODE
```
↓
```
PRINTER UPDATE
READING FONTS
```
↓
```
PRINTER UPDATE
WRITING CODE
```
↓
```
PRINTER UPDATE
WRITING FONT
```
↓
```
READY
```
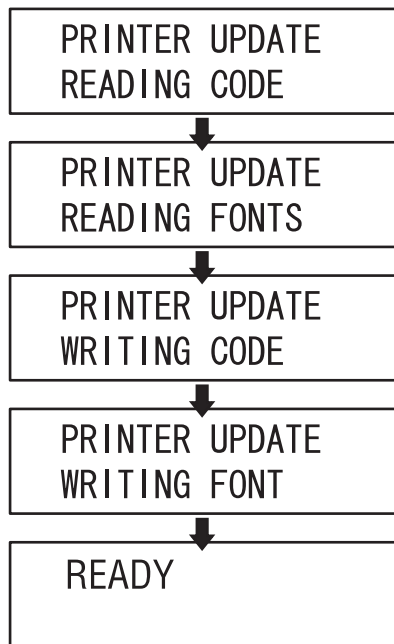
4139F2E509DA

8. Print a Configuration Page (Printable Pages Menu > Configuration) and check the firmware version to verify the upgrade.

Firmware Upgrade via an AppleTalk Network Connection

1. Launch the "Apple Printer Utility" provided with the firmware update package.

   Note: The Apple Printer Utility is a classic Macintosh application that runs in either Mac OS 9 as a native program or Mac OS X within the Classic environment.

2. Select the Phaser 6120 printer in Printer Selector window of the Apple Printer Utility, and press the **Open Printer**" button. If the Phaser 6120 printer does not appear in the list of printers, ensure the AppleTalk zone containing the Phaser 6120 printer is selected.

3. Select the **Send PostScript File…** item in the "File" menu of the Apple Printer Utility.

4. Select the appropriates firmware update file named in the open file dialog that appears, and press the "Open" button. This file is provided as part of this update package.
   The printer restarts automatically when the update process is complete.

   Caution: Do not attempt to cancel the firmware update process or turn off the printer power during the update. The printer automatically restarts after the firmware update process is complete.

5. Restore the printer's settings to their previous values shown in the configuration page printed earlier. Settings may be changed at the printer's front panel interface, or through CentreWare IS using a web browser.

3 Print Engine Adjustments/Settings

This section contains the following:

Adjustments

How to Use the Adjustments Section

This section contains detailed information on the control panel, menus, and adjustment items and procedures needed for this machine.

Description of the Control Panel

Control Panel Display

The control panel, located on the top of the printer, allows you to direct the printer's operation. In addition, it displays the current status of the printer, including any condition(s) that needs user attention.
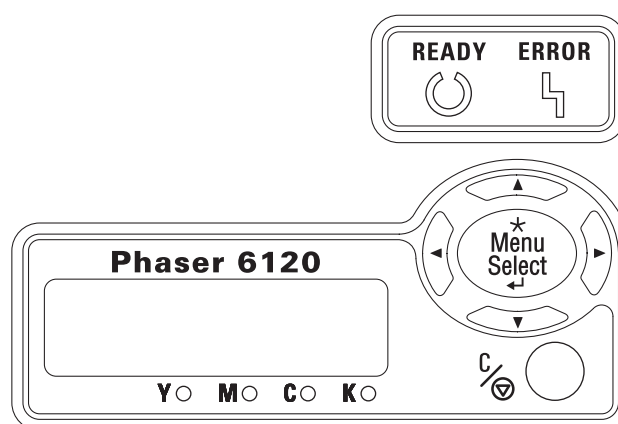
Control Panel Indicators and Keys

No.	Indicator	Off	On
1	**Ready**	The printer is not ready to accept data.	The printer is ready to accept data.
2	**Error**	No problem.	The printer requires operator attention (usually accompanied by a status message in the message window).

Control Panel Indicators and Keys (Continued)

No.	Key	Function
3	▲	■ Moves up in the menu structure. ■ Within a menu choice that is changeable character by character, scrolls upward through the available characters.
4	▶	■ Moves right in the menu structure. ■ Moves right through the available menu choices.
5	▼	■ Moves down in the menu structure. ■ Within a menu choice that is changeable character by character, scrolls downward through the available characters.
6	◀	■ Moves left in the menu structure. ■ Moves left through the available menu choices.
7	C/▽	■ Cancels the currently displayed menu choice. ■ Allows you to cancel one or all print jobs that are currently being printed or processed: 1. Press the **Cancel** key. 2. Press the **Right** or **Left** keys to select either. **CANCEL/CURRENT JOB** or **CANCEL/ALL JOBS**. 3. Press the **Menu/Select** key. The print job(s) is (are) cancelled.
8	✱ Menu Select ↵	■ Enters the menu system. ■ Selects the displayed menu choice.

Toner Supply Indicators

The indicators shown below will appear, indicating the amount of toner that remains in the Yellow (Y), Magenta (M), Cyan (C), and Black (K) toner cartridges.

```
READY
         ▬    ■    ■    ▬
       Y ○  M ●  C ○  K ●
```
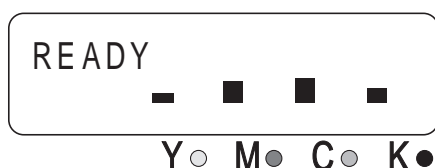
Cancel Key

The Cancel key can be used to cancel a print job. It also allows that specific print job to be resumed after the error has been eliminated.

Canceling a Print Job

The currently processing print job can be canceled.

1. While data is being processed or printed (the green Ready indicator is blinking), hold down the Cancel key for more than 5 seconds.
2. Release the Cancel key after both indicators light up. The current print job has now been canceled.

Continuing a Print Job After an Error Message

The print job can be resumed after an error of any of the following types has been eliminated:

■ When there is no more media in the tray
■ When media of a different format than that set in the printer driver was fed into the printer
1. Check that one of the above errors has occurred.
2. Perform the remedial action according to the error.
3. Press the Cancel key to reinitiate media feeding.
4. The print job continues.

Control Panel LCD Messages

Basic Screen

The Basic Screen is the Initialization Screen that displays when warmup is complete or when you exit from the configuration menu.

```
READY
```

4139F3E501DA
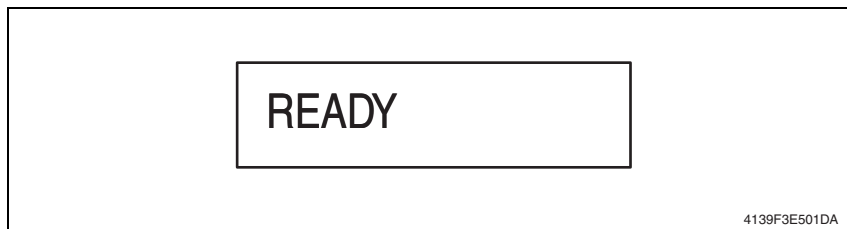
Caution Display

A caution display appears when an event occurs that requires user intervention, but does not affect printing.

```
IMAGING UNIT LOW
```

4139F3E502DA
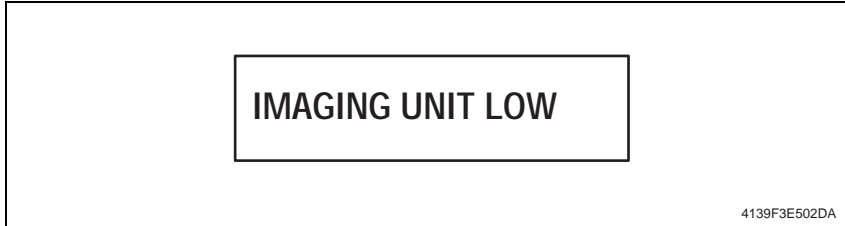
Error Display

This display appears when an error occurs that can be taken care of by the user.

```
REPLACE IMAGING
UNIT
```

4139F3E503DA

Malfunction Screen

This screen appears when a malfunction occurs that requires a service technician.

```
ERROR 08 -  MOTOR
```

4139F3E504DA
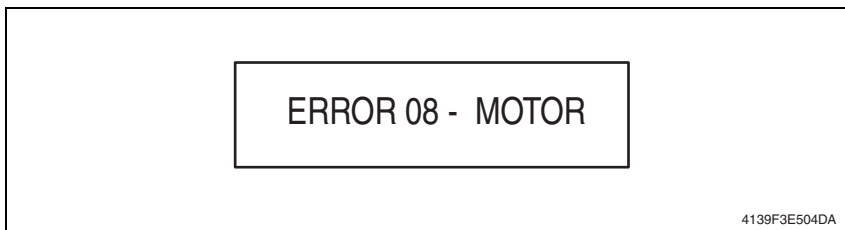
Index of Control Panel Messages

Standard Status Messages

Normal state messages are displayed on the upper line of the LCD.

Message	Description
READY	Ready to print
WARMING UP	Warming up
INITIALIZING	The printer is being initialized.
ENERGY SAVER	Energy Saver mode
CANCELLING JOB	Canceling a job
PROCESSING	A print job is being processed.
PRINTING (XXX/XXX)	The machine is printing with the collating function.
IMAGE ADAPT	
QUALITY DOWNGRADE	
FIRMWARE UPDATE WRITING IMAGE	The firmware is being updated.
FIRMWARE UPDATE FORMATTING	
UPDATE FIRMWARE READING IMAGE	
STARTING SYSTEM FIRMWARE IMAGE	
CALIBRATING	Calibrating Whenever you replace a toner cartridge or reboot the printer after making an temperature/humidity environmental change, the printer automatically pauses to do an Automatic Image Density Control (AIDC) cycle. This process is provided to make reliable printer operation with optimum output quality possible.

Warning Messages

Message	Description
IMAGING UNIT LOW	This message is displayed when the usage becomes 4% or under.
CYAN LOW	This is displayed when the usage becomes 4% or less for 4.5K cartridge and 12% or under for 1.5K cartridge. And this status is cleared when the usage becomes 0%.
MAGNETA LOW	This is displayed when the usage becomes 4% or less for 4.5K cartridge and 12% or under for 1.5K cartridge. And this status is cleared when the usage becomes 0%.
BLACK LOW	This is displayed when the usage becomes 4% or less for 4.5K cartridge and 12% or under for 1.5K cartridge. And this status is cleared when the usage becomes 0%.
YELLOW LOW	This is displayed when the usage becomes 4% or less for 4.5K cartridge and 12% or under for 1.5K cartridge. And this status is cleared when the usage becomes 0%.
DISK NEAR FULL	The hard drive is nearly full.

Warning Messages (Continued)

Message	Description
BLACK EMPTY	This is displayed when the usage becomes 0%. And this status clears Near Empty/End status. The print job can be accepted if Quality Menu /Toner Out Action/CONTINUE is set in the Control Panel
YELLOW EMPTY	This is displayed when the usable remaining toner is 0% (Toner Empty). And this status clears Near Empty/End status. The print job can be accepted if Quality Menu/TonerOutAction / CONTINUE is set in the Control Panel.
MAGENTA EMPTY	This is displayed when the usable remaining toner is 0% (Toner Empty). And this status clears Near Empty/End status. The print job can be accepted if Quality Menu /Toner Out Action/CONTINUE is set in the Control Panel.
CYAN EMPTY	This is displayed when the usable remaining toner is 0% (Toner Empty). And this status clears Near Empty/End status. The print job can be accepted if Quality Menu /Toner Out Action/CONTINUE is set in the Control Panel.
IMAGING UNIT OUT	This is displayed when the usable life remaining is 0% or the waste toner bottle is near full.
ADJUST INPUT BIN TRAY 2 OPEN	No cassette in Tray 2 or Tray 2 drawer is open. This occurs only when Tray 2 is attached and not selected.
CANNOT ROTATE CARTRIDGE	The printer is unable to rotate the toner cartridge carousel to the correct unload position.

Error Messages

Message	Description
REPLACE IMAGING UNIT	Waste toner bottle full
REPLACE K TONER	This is displayed when 0% TONER EMPTY has occurred when TONER OUT ACTION/STOP is set in the Control Panel. Or This is displayed when the toner life hits 6K end of life hard stop. Control Panel must show the "Color" that it is on the replacement position when multiple toner empty occurs.
REPLACE Y TONER	This is displayed when 0% TONER EMPTY has occurred when TONER OUT ACTION/STOP is set in the Control Panel. Or This is displayed when the toner life hits 6K end of life hard stop. Control Panel must show the "Color" that it is on the replacement position when multiple toner empty occurs.
REPLACE M TONER	This is displayed when 0% TONER EMPTY has occurred when TONER OUT ACTION/STOP is set in the Control Panel. Or This is displayed when the toner life hits 6K end of life hard stop. Control Panel must show the "Color" that it is on the replacement position when multiple toner empty occurs.
REPLACE C TONER	This is displayed when 0% TONER EMPTY has occurred when TONER OUT ACTION/STOP is set in the Control Panel. Or This is displayed when the toner life hits 6K end of life hard stop. Control Panel must show the "Color" that it is on the replacement position when multiple toner empty occurs.

Error Messages (Continued)

Message	Description
PAPER JAM TRAY 1	Jam at Tray 1 Or Paper exists at Tray 1 after jam occurs.
PAPER JAM TRAY 2	Jam at Tray 2 Or Paper exists at Tray 2 after jam occurs.
PAPER JAM DUPLEX	Jam at Switchback or Jam at duplex paper path (07H) or Paper exists at refeed area /switchback section of duplex option after jam occurs.
PAPER JAM TRANSFER	Jam at Transfer Roller or Paper exists at Transfer Roller after jam occurs.
PAPER JAM FUSER	Jam at Fusing Unit or Paper exists at Fuser area after jam occurs.
PAPER JAM EXIT	Jam at Ejection section or Paper exists at Fuser area after jam occurs.
DENSITY SENSOR ERROR	
PUT [paper size] [paper type] IN ANY T RAY	PUT [paper size] [media type] IN ANY TRAY By putting specified paper in specified tray and closing tray, printer automatically restarts. Cancel Key is Active
PUT [paper size] [paper type] IN TRAY1	PUT [paper size] [media type] IN TRAY1 By putting specified paper in specified tray and closing tray, printer automatically restarts. Cancel Key is Active
IMAGING UNIT MISSING	Drum is not attached.
CYAN TONER MISSING	Cyan toner cartridge is not installed. When more than one cartridge is missing, the Control Panel messages "xx TONER/MISSING" for the corresponding missing cartridges is shown with the priority in the order of c/b/y/m. The developing rack will be positioned so that the user can install the corresponding missing cartridge in the order of c/b/y/m. The message may also appear if the engines does not recognize the cartridge as a Xerox product.

Error Messages (Continued)

Message	Description
MAGENTA TONER MISSING	Magenta toner cartridge is not installed.
	When more than one cartridge is missing, the Control Panel messages "xx TONER/MISSING" for the corresponding missing cartridges is shown with the priority in the order of c/b/y/m. The developing rack will be positioned so that the user can install the corresponding missing cartridge in the order of c/b/y/m.
	The message may also appear if the engines does not recognize the cartridge as a Xerox product.
BLACK TONER MISSING	Black toner cartridge is not installed.
	When more than one cartridge is missing, the Control Panel messages "xx TONER/MISSING" for the corresponding missing cartridges is shown with the priority in the order of c/b/y/m. The developing rack will be positioned so that the user can install the corresponding missing cartridge in the order of c/b/y/m.
	The message may also appear if the engines does not recognize the cartridge as a Xerox product.
YELLOW TONER MISSING	Yellow toner cartridge is not installed.
	When more than one cartridge is missing, the Control Panel messages "xx TONER/MISSING" for the corresponding missing cartridges is shown with the priority in the order of c/b/y/m. The developing rack will be positioned so that the user can install the corresponding missing cartridge in the order of c/b/y/m.
	The message may also appear if the engines does not recognize the cartridge as a Xerox product.
PRINTER COVER OPEN	Printer Front cover is open.
DUPLEX UNIT DOOR OPEN	Duplex cover is open.
DISK ERROR	Disk Error: full or broken condition.
DISK FULL	Disk Error: full or broken condition. Format hard drive or replace. Cancel key Is active to release temporarily.
ERROR LOADING IMAGE	Generic message to be used when the situation does not match and specific errors. The user should attempt the download process again.
FIRMWARE UPDATE FORMAT ERROR	Error occurred while formatting. The user should attempt the download process again.
FIRMWARE UPDATE INVALID IMAGE	The download image could not be decompressed (bad data) or was a wrong version, header length, etc. The user should attempt the download process again.

Fatal Error Messages

Message	Description
ERROR 04 - ENGINE BOARD	Engine board error
ERROR 05 - FLASH ROM	Retry engine firmware rewriting process error
ERROR 08 - MAIN MOTOR	Main motor (M1) error
ERROR 0B - TRANSFER FAN	Transfer fan error
ERROR 0C - PWR SUPPLY FAN	Power supply fan error
ERROR 0F - DUPLEX FAN	Duplex fan error
ERROR 10 - LASER UNIT	P/H unit error

Fatal Error Messages (Continued)

Message	Description
ERROR 10 - LASER UNIT	P/H unit error
ERROR 12 - LASER UNIT	Laser unit error
ERROR 14 - TRANSFER ROLLER	Transfer roller error
ERROR 15 - TRANSFER BELT	Transfer belt error
ERROR 16 - TRANSFER BELT	Transfer belt error
ERROR 17 - TONER CAROUSEL	Toner rack error
ERROR 18 - FUSER WARMUP	Fuser temp error
ERROR 19 - FUSER LOW TEMP	Fuser temp error
ERROR 1A - FUSER	Fuser temp error
ERROR 1B - FUSER	Fuser temp error
ERROR 21 - OHP DETECT SENSOR	OHP (PC2A) sensor error
ERROR 23 - WASTE TONER	Waste toner detection sensor (PWB-C) error
ERROR 24 - FUSER TEMP	Fuser temp error
ERROR 29 - NVRAM COUNTER	NVRAM counter error
ERROR 2A - NVRAM COUNTER	NVRAM data error
ERROR 2B - NVRAM ACCESS	NVRAM access error
Error 2C - NVRAM INSTALL	NVRAM installation error
FIRMWARE UPDATE WRITING ERROR	FLASH error

For details of malfunction messages and troubleshooting procedures, see Print Engine Troubleshooting on page 4-1

Menu Map

Printing the Menu Map

The Menu Map helps you navigate the control panel menus. To print the Menu Map:

1. On the control panel, select **Printable Pages Menu**, and then press the **Menu/Select** key.
2. Select **Menu Map**, and then press the **Menu/Select** key.
3. Select **Yes**, and then press the **Menu/Select** key.

List of Menu Functions

MENU

PROOF/PRINT MENU *1

PRINTABLE
PAGES MENU

MENU MAP
CONFIGURATION
SUPPLIES PAGE
FONT LIST
DIRECTORY LIST
DEMO PAGE

POSTSCRIPT
PCL

PAPER MENU

INPUT TRAY
DUPLEX *3
ORIENTATION
JAM RECOVERY

TRAY 1 MODE
TRAY 1
TRAY 2
AUTO CONTINUE
TRAY SWITCHING
CUSTOM
MAP

QUALITY MENU

TONER REMOVAL
TONER OUT ACTION
DENSITY CAL
DENSITY CONTROL
TRANSFER BELT

BLACK
CYAN
MAGENTA
YELLOW

REQUEST CAL

BLACK
CYAN
MAGENTA
YELLOW
REMOVE ALL

*1 This setting is available only when an optional Hard Drive is installed.

*2 This setting is available only when an optional Lower Feeder Unit is installed.

*3 This setting is available only when a Duplex Unit is installed.

MENU

CONNEC-
TION SETUP
MENU

NETWORK
SETUP
USB SETUP
PARALLEL
SETUP
ACTIVE I/F

TCP/IP
IPX/SPX
ETHERTALK
ETHERNET SPEED
PS PROTOCOL

ENABLE
JOB TIMEOUT

JOB TIMEOUT

ENABLE
DHCP/BOOTP
IP ADDRESS
DEFAULT ROUTER
SUBNET MASK
ENABLE HTTP
ENABLE AUTO IP

FRAME TYPE

NAME
NAME2
NETZONE
NETZONE2

*1 This setting is
available only when
an optional Hard
Drive is installed.

*2 This menu item
appears only on
110 V units.

SYSTEM DEFAULT

PRINT QUALITY
COLOR MODE
EMULATIONS
STARTUP OPTIONS
DATE & TIME *1
ENERGY SAVER
ENERGY SAVER MGT *2
SECURITY
CAPTURE PRT JOB *1
FORMAT
RESTORE/SAVE

DEFAULT
AUTO DEFAULT
POSTSCRIPT
PCL

START PAGE
SYSSTART *1

CONFIG

FORMAT FLASH
FORMAT DISK *1

RESTORE FACTORY
SAVE CUSTOM
RESTORE CUSTOM

SERVICE MENU

LANGUAGE

ENVIRONMENT MENU

PROOF/PRINT MENUS

With this menu item, print jobs that were set to be saved on the hard drive by using Job Retention on the Basic tab of the printer driver can be printed or deleted.

Note: This setting is available only when an optional hard drive is installed.

```
                          ┌──────────────────────┐
                          │ MENU                 │
                          │ PROOF/PRINT MENU *1   │
                          └──────────┬───────────┘
                          ┌──────────┴───────────┐
                          │    "User name"        │
                          └──────────┬───────────┘
        ┌──────────────┬─────────────┴──────────────┬──────────────┐
  ┌─────┴──────┐ ┌─────┴──────┐ ┌─────┴──────┐ ┌─────┴──────┐
  │ SECURED    │ │ PROOF/PRINT│ │ PRINT/HOLD │ │ STORED     │
  │ "Job name" │ │ "Job name" │ │ "Job name" │ │ "Job name" │
  └─────┬──────┘ └─────┬──────┘ └─────┬──────┘ └─────┬──────┘
   ┌────┴───┐    ┌─────┴───┐    ┌─────┴───┐    ┌─────┴───┐
 ┌─┴──┐ ┌───┴─┐┌─┴──┐ ┌───┴─┐┌─┴──┐ ┌───┴─┐┌─┴──┐ ┌───┴─┐
 │PRINT││DELETE││PRINT││DELETE││PRINT││DELETE││PRINT││DELETE│
 └─┬──┘ └─┬──┘ └─┬──┘ └─────┘└─┬──┘ └─────┘└─┬──┘ └─────┘
 ┌─┴──┐┌──┴──┐┌──┴──┐      ┌───┴──┐      ┌───┴──┐
 │PIN ││PIN  ││COPIES│      │COPIES│      │COPIES│
 │XXXX││XXXX │└──────┘      └──────┘      └──────┘
 │ *2 ││ *2  │
 └─┬──┘└─────┘
 ┌─┴────┐
 │COPIES│                                  4139fs3526e0
 └──────┘
```
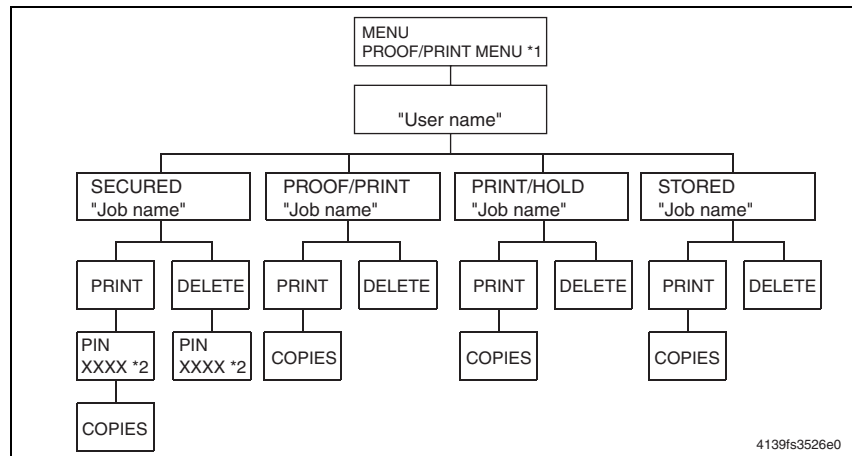
*1: If no jobs have been stored on the hard drive, NO STORED JOBS appears.

*2: In order to print or delete a secured job, enter the four-digit password specified from the printer driver. For details on entering the password, refer to "Entering the password."

Entering the Password

In order to print or delete a secured job, the four-digit password specified from the printer driver must be entered. Follow the procedure described below.

1. Press the **Up** or **Down** keys to increase or decrease the first digit of the password.
2. Press the **Right** key to move the cursor to the next digit.
3. Press the **Up** or **Down** keys to increase or decrease the second digit of the password.
4. Continue these steps until all four digits of the password are specified.
5. Press the **Menu/Select key**.
   The PRINT/DELETE selection screen appears.

Note: If an incorrect password is entered, INVALID ENTRY appears and the screen for entering the password appears again.

PRINTABLE PAGES MENU

MENU MAP

Function	Prints the Menu Map.
Use	To check the available menu settings.
Setting/procedure	Select MENU MAP and press the Menu Select key.

CONFIGURATION

Function	Prints the Configuration Page.
Use	To check configuration of the machine. The following items can be checked: Printer Information Printer Interfaces INSTALLED OPTIONS PAPER SETTINGS
Setting/procedure	Select CONFIGURATION and press the Menu Select key.

SUPPLIES PAGE

Function	Prints the Supplies Page.
Use	To check the consumable status and the usage of the machine, such as the number of pages printed.
Setting/procedure	Select SUPPLIES PAGE and press the Menu Select key.

FONT LIST

POSTSCRIPT

Function	Prints a list of PostScript fonts.
Use	To check the available PostScript fonts.
Setting/procedure	Select FONT LIST→POSTSCRIPT and press the Menu Select key.

PCL

Function	Prints a PCL fonts.
Use	To check the available PCL fonts.
Setting/procedure	Select FONT LIST→PCL and press the Menu Select key.

DIRECTORY LIST

Function	Prints a directory list of the hard drive and flash.
Use	To check the files saved on the hard drive and in flash.
Setting/procedure	Select DIRECTORY LIST and press the Menu Select key. **Note:** This menu item appears only if the optional hard drive is installed.

DEMO PAGE

Function	Prints the Demo Page.
Use	To print a Demo Page.
Setting/procedure	Select DEMO and press the Menu Select key.

PAPER MENU

INPUT TRAY

TRAY 1 MODE

Function	When printing from Tray 1, selects whether the media size and media type set in the printer driver or the MEDIA SIZE and MEDIA TYPE settings set by selecting PAPER MENU →INPUT TRAY →TRAY 1 in the control panel have priority.
Use	■ If AUTO is selected, to specify that the printer driver settings have priority during printing. ■ If CASSETTE is selected, to specify that printing is performed when the printer driver settings and the control panel settings are all the same.
Setting/procedure	The default setting is AUTO. "AUTO", CASSETTE

TRAY 1

MEDIA SIZE

Function	Specifies the size of the media loaded in Tray 1.
Use	To specify the size of the media loaded in Tray 1.
Setting/procedure	■ The default setting for North America is LETTER. The default setting for all other regions is A4. ■ The media sizes available are as follows.

LETTER	LEGAL	EXECTIVE	A4
A5	B5(JIS)	GOVT LETTER	STATEMENT
FOLIO	SP FOLIO	UK QUATRO	FOOLSCAP
GOVT LEGAL	B5 (ISO)	Com 10	Custom
ENV C5	ENV C6	ENV DL	ENV MONARCH

MEDIA TYPE

Function	■ Specifies the setting for the type of media loaded in Tray 1.
Use	■ To specify the type of media loaded in Tray 1.
Setting/procedure	■ The default setting is PLAIN PAPER. "PLAIN PAPER", THICK, TRANSPARENCY, LETTERHEAD, LABEL, POSTCARD, ENVELOPE, GLOSSY

TRAY 2

MEDIA SIZE

Function	Specifies the size of the media loaded in Tray 2.
Use	To specify the size of the media loaded in Tray 2.
Setting/procedure	The default setting for North America is LETTER. The default setting for all other regions is A4. LETTER, A4

MEDIA TYPE

Function	Specifies the setting for the type of media loaded in Tray 2.
Use	To specify the type of media loaded in Tray 2.
Setting/procedure	The default setting is PLAIN PAPER. PLAIN PAPER, LETTERHEAD

CUSTOM

WIDTH

Function	Specifies the width of the custom-sized paper in Tray 1.
Use	To specify the width of the custom-sized media in Tray 1.
Setting/procedure	■ On the model for North America, the settings appear in inches and the menu item appears as WIDTH (IN). On the models for all other regions, the settings appear in millimeters and the menu item appears as WIDTH (MM). ■ The default setting is 92.0 mm (3.62 in.). 92.0 to 216.0 mm (3.62 to 8.50 in.)

LENGTH

Function	Specifies the length of the custom-sized paper in Tray 1.
Use	To specify the length of the custom-sized media in Tray 1.
Setting/procedure	■ On the model for North America, the settings appear in inches and the menu item appears as LENGTH (IN). On the models for all other regions, the settings appear in millimeters and the menu item appears as LENGTH (MM). ■ The default setting is 148.0 mm (5.83 in.). 148.0 to 356.0 mm (5.83 to 14.02 in.)

AUTO CONTINUE

Function	Enables or disables printing when the size of the media loaded in the tray does not match that of the print data.
Use	To print data on the media loaded in the tray of the media loaded in the tray does not match that of the print data.
Setting/procedure	The default setting is ON. "ON", OFF

TRAY SWITCHING

Function	Allows a print cycle to continue without interruption when the current tray runs out of media during the print cycle by automatically reselecting another tray, in which the media of the same size and the same type is loaded.
Use	To allow media to be pulled from another tray when the media in the first tray runs out.
Setting/procedure	The default setting is ON. "ON", OFF **Note:** This setting is available only when an optional Lower Feeder Unit is installed.

DUPLEX

Function	Selects whether or not the duplex print function is used.
Use	To use the duplex print function. OFF: Duplex printing is not possible. LONG EDGE: The pages will be printed on both sides of the paper for long-edge binding. SHORT EDGE: The pages will be printed on both sides of the paper for short-edge binding.
Setting/procedure	The default setting is OFF. "OFF", LONG EDGE, SHORT EDGE This setting is available only when a Duplex Unit is installed.

ORIENTATION

Function	Specifies the orientation of the media.
Use	To change the orientation of the media.
Setting/procedure	The default setting is PORTRAIT. "PORTRAIT", LANDSCAPE

JAM RECOVERY

Function	Selects whether or not the page is printed again after recovering from a media misfeed.
Use	To specify the point from which printing should continue after a media misfeed. ON: The page that was misfeed is printed again. OFF: Printing continues with the next page without reprinting the misfed page.
Setting/procedure	The default setting is ON. "ON", OFF

QUALITY MENU

TONER REMOVAL

BLACK/CYAN/MAGENTA/YELLOW

Function	Moves the specified color of Toner Cartridge into replacement position, so it can be replaced.
Use	To replace the specified color of Toner Cartridge.
Setting/procedure	1. Select QUALITY MENU→TONER and the specific color of toner to be replaced. 2. The rack rotates to bring the specified color of Toner Cartridge to the replacement position. When the rack stops moving, the message "OPEN DOOR AND REPLACE (color) TONER" appears on the display. 3. Open the Upper Cover and replace the Toner Cartridge. For the Toner Cartridge replacement procedures, see "Maintenance." 4. Close the Upper Cover. The initial screen will then reappear.

TONER OUT ACTION

Function	Specifies whether to stop or continue printing when a toner empty condition is detected.
Use	To select to permit printing upon a toner empty condition.
Setting/procedure	The default setting is STOP. "STOP", CONTINUE

DENSITY CALIBRATION

REQUEST CAL

Function	Executes image adjustments.
Use	To calibrate the engine when there are print image-quality problems. To calibrate the engine when the Transfer Belt Unit and Transfer Roller are replaced with new ones.
Setting/procedure	The default setting is NO. YES, "NO" If YES is selected, image adjustments are performed.

MODE

Function	Applies the image adjustments
Use	■ If ON is selected, to apply the image adjustments. ■ If OFF is selected, to not apply image adjustments.
Setting/procedure	The default setting is ON. "ON", OFF

DENSITY CONTROL

BLACK/CYAN/MAGENTA/YELLOW

Function	Adjusts the density of the toner to one of five levels.
Use	To vary the density of the printed image.
Setting/procedure	The default setting is 3. 1 to 5

TRANSFER BELT

Function	Resets the transfer belt life count.
Use	To reset life count.
Setting/procedure	After the transfer belt is replaced, select QUALITY MENU→TRANSFER BELT →RESET COUNT

CONNECTION SETUP

NETWORK SETUP

TCP/IP

Function	Sets whether to enable or disable TCP/IP.
Use	To disable TCP/IP.
Setting/procedure	The default setting is YES. **"YES"**, NO

DHCP/BOOTP

Function	Automatically acquires an IP address from the DHCP or BOOTP server, if there is one in the network, and specifies whether to load other network information.
Use	To automatically acquire an IP address and load other network information.
Setting/procedure	The default setting is YES. **"YES"**, NO

IP ADDRESS

Function	Sets the IP address of the printer on the network.
Use	To enter the printer's IP address.
Setting/procedure	Enter the IP address using the up, down, right, and left arrow keys. The default setting is "192.168.1.2." **Note:** When the printer's IP address is set manually, DHCP/BOOTP is automatically set to OFF.

DEFAULT ROUTER

Function	Sets the IP address of the router if one is on the network.
Use	To enter the IP address of the router.
Setting/procedure	Enter the IP address using the up, down, right, and left arrow keys. The default setting is "192.168.1.2."

SUBNET MASK

Function	Sets the subnet mask of the printer used on the network.
Use	To enter the printer subnet mask.
Setting/procedure	Enter the subnet mask using the up, down, right, and left arrow keys. The default setting is "0.0.0.0."

ENABLE HTTP

Function	Specifies whether or not HTTP is used.
Use	To specify whether HTTP is used. ON: the Web page provided in the printer by the built-in HTTP server is enabled. OFF: the Web page cannot be used.
Setting/procedure	■ The machine must be restarted after the setting has been changed. ■ The default setting is ON. "ON", OFF

ENABLE AUTO IP

Function	Selects whether or not the IP address is automatically acquired when DHCP/BOOTP, PING, and ARP are not functioning or when there is no response.
Use	To automatically acquire an IP address when DHCP/BOOTP, PING, and ARP are not functioning or when there is no response.
Setting/procedure	The default setting is YES. "YES", NO

IPX/SPX

FRAME TYPE

Function	Sets the Ethernet frame type.
Use	To specify the Ethernet frame type for transmission.
Setting/procedure	The default setting is Auto. "Auto", 802.2, 802.3, ETHER II, SNAP

ETHERTALK

NAME

Function	Specifies the first part of the name of the printer on the Macintosh EtherTalk (AppleTalk) network, so it can be "found."
Use	To set the Printer name displayed on the Macintosh EtherTalk (AppleTalk) network. The printer name can contain a maximum of 16 characters.
Setting/procedure	The default setting is Phaser 6120.

NAME 2

Function	Specifies the second part of the name of the printer on the Macintosh EtherTalk (AppleTalk) network, so it can be "found."
Use	■ To set the Printer name displayed on the Macintosh EtherTalk (AppleTalk) network. ■ The printer name can contain a maximum of 16 characters.
Setting/procedure	The default setting is NULL.

NETZONE

Function	Specifies the first part of the Macintosh EtherTalk zone name.
Use	■ To set the Zone name on Macintosh EtherTalk (AppleTalk) network where the printer is located. ■ The zone name can contain a maximum of 16 characters.
Setting/procedure	The default setting is ✶.

NETZONE 2

Function	Specifies the second part of the Macintosh EtherTalk zone name.
Use	■ To set the Zone name connected with Macintosh EtherTalk (AppleTalk) network where the printer is located. ■ The zone name can contain a maximum of 16 characters.
Setting/procedure	The default setting is NULL.

ETHERNET SPEED

Function	Specifies the transmission speed for the network and the transmission method for bi-directional transmission.
Use	To set the specific network speed and the transmission method.
Setting/procedure	The default setting is Auto. "Auto", 100 Full Duplex, 100 Half Duplex, 10 Full Duplex, 10 Half Duplex **Note:** Make sure to turn the Power Switch OFF and ON again after changing the network speed.

PS PROTOCOL

Function	Selects whether PostScript jobs are received in the binary format or the quoted format.
Use	To transmit PostScript data in quoted format.
Setting/procedure	The default setting is BINARY. "BINARY", QUOTED BINARY

USB SETUP

ENABLE

Function	Specifies whether to enable or disable USB.
Use	To disable USB.
Setting/procedure	The default setting is YES. "YES". NO

JOB TIMEOUT

Function	Specifies the length of time until the print job being received is timed out when the USB interface is being used.
Use	To set the amount of time before a print job sent to the USB interface times out.
Setting/procedure	The default setting is 60 (seconds). 0 to 999

JOB TIMEOUT

Function	Specifies the length of time until the print job being received is timed out when the parallel interface is being used.
Use	To set the amount of time before a print job sent to the parallel interface times out.
Setting/procedure	The default setting is 30 (seconds). 0 to 999

ACTIVE I/F

Function	Sets the interface to be used.
Use	To set the interface to be used.
Setting/procedure	The default setting is ETHERNET. "ETHERNET", PARALLEL

SYSTEM DEFAULT MENU

PRINT QUALITY

Function	Selects the image quality for prints.
Use	To change the image quality setting.
Setting/procedure	The default setting is HIGH. "HIGH", STANDARD

COLOR MODE

Function	Specifies whether printing is in full color or grayscale.
Use	To select color or grayscale printing.
Setting/procedure	The default setting is COLOR. "COLOR", GRAYSCALE

EMULATIONS

DEFAULT

Function	Specifies the printer control language.
Use	■ To change the printer control language. ■ If AUTOMATIC is selected, the printer automatically selects the printer control language from the data stream.
Setting/procedure	The default setting is AUTOMATIC. "AUTOMATIC", POSTSCRIPT, PCL5, PCL XL, HEX DUMPPDF

AUTO DEFAULT

Function	Selects the printer description language when it cannot be identified from the data.
Use	To set the printer control language to be used when it cannot be automatically identified from the print job.
Setting/procedure	The default setting is AUTOMATIC. "AUTOMATIC", PCL5, POSTSCRIPT

POSTSCRIPT

ERROR PAGE

Function	Sets whether or not an error page is printed when a PostScript error occurs.
Use	To specify whether an error page should be printed if a PostScript error occurs.
Setting/procedure	The default setting is ON. "ON", OFF

PCL

LINE TERMINATION

Function	Sets the CR/LF mapping for line termination in the PCL language.
Use	To change the CR/LF mapping.
Setting/procedure	The default setting is CR=CR LF=CRLF. "CR=CR LF=CRLF" CR=CR LF=LF CR=CRLF LF=LFCR=CRLF LF=CRLF

FONT

<PITCH SIZE>

Function	Sets the font pitch size in the PCL language when not specified by the printer driver.
Use	To set the font pitch size in the PCL language when it cannot be specified by the printer driver during printing from Windows DOS, etc.
Setting/procedure	The default setting is 1000. 44 to 9999

<FONT NUMBER>

Function	Sets the font in the PCL language when not specified by the printer driver.
Use	To use when the printer driver cannot specify the font during printing from Windows DOS, etc. The font numbers that appear correspond to the PCL font list. For details on printing the font list, refer to FONT LIST on page 3-14.
Setting/procedure	The default setting is 0. 0 to 32767

<POINT SIZE>

Function	Sets the font size in the PCL language when not specified by the printer driver.
Use	To set the font size in the PCL language when it cannot be specified by the printer driver during printing from Windows DOS, etc.
Setting/procedure	The default setting is 1200. 400 to 99975

<SYMBOL SET>

Function	Sets the font symbol set in the PCL language when not specified by the printer driver.
Use	To use when the font symbol set cannot be specified by the printer driver during printing from Windows DOS, etc.
Setting/procedure	■ The default setting is PC8. ■ The font symbol set available for setting are as follows. PC8, DESKTOP, ISO4, ISO6, ISO11, ISO15, ISO17, ISO21, ISO60, ISO69, ISOL1, ISOL2, ISOL5, ISOL6, ISOL9, LEGAL, MATH8, MCTEXT, MSPUBL, PC775, PC850, PC852, PC8DN, PC8TK, PC1004, PIFONT, PSMATH, PSTEXT, ROMAN8, VNINTL, VNMATH, VNUS, WIN30, WINBALT, WINL1, WINL2, WINL5, WIN31J, GB2312, ARABIC8, HPWARA, PC864ARA, HEBREW7, ISOHEB, HEBREW8, PC862HEB, ISOCYR, PC866CYR, WINCYR, PC866UKR, GREEK8, WINGRK, PC851GRK, PC8GRK, ISOGRK

STARTUP OPTIONS

STATUP PAGE

Function	Selects whether or not a Startup Page is printed when the printer is turned on.
Use	To specify whether a Startup Page is printed. YES: The Startup Page is printed when the printer is turned on. NO: The Startup Page is not printed.
Setting/procedure	The default setting is NO. YES, "NO"

SYSSTART

Function	Selects whether or not the PostScript format definitions file is applied when the printer is turned on.
Use	To specify whether to apply the PostScript format definitions file. YES: The PostScript format definitions file is applied. NO: The PostScript format definitions file is not applied.
Setting/procedure	The default setting is NO. YES "NO"

DATE & TIME

Function	Sets the TOD (time-of-day) clock on the hard drive.
Use	■ To adjust the TOD clock on the hard drive. ■ The settings appear in the following order: year, month, day:hour, minutes, seconds. **Note:** This menu item appears only if an optional hard drive installed.
Setting/procedure	1. Select "DATE & TIME." 2. Using ▲, ▼, ◄, and ► keys, enter the time-of-day, and day, month, and year. 3. Accept the date and time setting using the Menu Select key.

ENERGY SAVER

Function	Specifies the length of time before the machine enters Energy Saver mode after the last print is received or the last key operated.
Use	To set the amount of time before the machine enters Energy Saver mode.
Setting/procedure	The default setting is 30 MINUTES. 15 MINUTES 30 MINUTES 1 HOUR 2 HOURS * Displayed only on the 110 V models. **Note:** This setting is available only when SYSTEM DEFAULT→ENERGY SAVER MGT is set to "ON."

ENERGY SAVER MGT

Function	Sets whether the printer should go into Energy Saver mode when not printing or processing a print job and when the Control Panel is not being used.
Use	To specify whether Energy Saver mode is to be used.
Setting/procedure	The default setting is ON. ON/OFF **Note:** This menu item is available only on the 110 V model.

SECURITY

CONFIG

ENABLE

Function	Selects whether or not the menus are protected with a password.
Use	To protect all menus with a password.
Setting/procedure	The default setting is OFF. ON/OFF

SET PASSWORD

Function	Sets the password for displaying the menus.
Use	To set the password for protecting the menus. The specified password is applied only if SECURITY →CONFIG →ENABLE is set to "ON."
Setting/procedure	1. Select "SET PASSWORD." 2. Enter the 8-digit password. 3. Accept the password setting using the Menu Select key.

CAPTURE PRT JOB

Function	Selects whether or not received print jobs are saved on the hard drive.
Use	When an error occurs, to help you analyze the cause of the error according to the print job data. OFF: The print jobs are not saved on the hard drive. ON: The received print jobs are saved on the hard drive without being printed. PRINT: The received print jobs are printed and saved on the hard drive. **Note:** This menu item appears only if an optional hard drive is installed.
Setting/procedure	The default setting is OFF. ON/OFF/PRINT

FORMAT

FORMAT FLASH

Function	Selects whether or not to initialize the flash RAM.
Use	To initialize the flash RAM.
Setting/procedure	The default setting is NO. NO/YES If YES is selected, the flash RAM is initialized.

FORMAT DISK

Function	Selects whether or not to initialize the hard drive.
Use	Initializes the hard drive. **Note:** This menu item appears only if an optional hard drive is installed.
Setting/procedure	The default setting is NO. NO/YES If YES is selected, the hard drive is initialized.

RESTORE/SAVE

RESTORE FACTORY

Function	Selects whether or not all menu items are reset to their factory default settings.
Use	To return the current settings to their factory default settings.
Setting/procedure	The default setting is NO. NO/YES If YES is selected, all menu items are reset to their initial settings.

SAVE CUSTOM

Function	Selects whether or not all changed menu settings are saved.
Use	To save the custom settings.
Setting/procedure	The default setting is NO. NO/YES If YES is selected, all changes are saved.

RESTORE CUSTOM

Function	Selects whether or not menu items are reverted to the previously saved settings.
Use	To revert the settings to the previously saved settings.
Setting/procedure	The default setting is NO. NO/YES If YES is selected, the menu items are reverted to the previously saved settings.

LANGUAGE MENU

Function	Sets the language of the Control Panel display.
Use	To change the language of the Control Panel display. The default setting varies according to the applicable marketing area.
Setting/procedure	ENGLISH, FRANCAIS, ESPANOL, PORTUGES, DEUTSCH, ITALIANO, NEDERLANDS, SVENSKA

ENVIRONMENT MENU

Entering the ENVIRONMENT MENU>

At the top level (Ready status), press the ▲ key for 3 to 4 seconds. Then go into the menu and press the left arrow key. The ENVIRONMENT MENU appears.

ALTITUDE SETUP

Function	Optimizes the image by varying the output value of the developing bias when an image problem occurs due to the atmospheric pressure at high altitudes.
Use	To adjust the developing when an image problem (uneven density) occurs in an environment of low atmospheric pressure in places such as at high altitudes.

Setting/procedure	The default setting is 0.
	1. Call the ENVIRONMENT MENU to the menu screen.
	2. Select ALTITUDE SETUP using the < or > key and press the Menu/Select key.
	3. In ALTITUDE SETUP, press the < or > key as necessary to select the appropriate altitude setting value. Adjustment range: 0 to 3

Setting Value	Developing Bias Value
0	No offset
1	100 V
2	200 V

	1. Press the Menu/Select key to accept the new setting.
	Note: After the setting has been changed, be sure to run REQUEST AIDC (QUALITY MENU).

TRANSFER VOLTAGE

Function	Adjusts image characteristics according to user requirements for each type of media by varying the second transfer voltage.
Use	To adjust the second transfer voltage when an image problem (void areas, white spots) occurs due to the characteristics of the type of media being used.
	If white spots occur, decrease the 2nd transfer voltage (adjust in the minus direction).
	If void areas occurs, increase the 2nd transfer voltage (adjust in the plus direction).
Setting/procedure	The default setting is 0.
	1. Call the ENVIRONMENT MENU to the menu screen.
	2. Select TRANSFER VOLTAGE using the < or > key and press the Menu/Select key.
	3. In TRANSFER VOLTAGE, press the < or > key as necessary to select the appropriate voltage value. Adjustment range: -3 to +3

Setting Value	Voltage Value	Setting Value	Voltage Value
-3	-600 V	+1	+200 V
-2	-400 V	+2	+400 V
-1	-200 V	+3	+600 V
0	0 V		

	4. Press the Menu/Select key to accept the new voltage setting.

DUPLEX DENSITY

The duplex density function allows the user to adjust the toner density (T/C) to compensate for an image quality (light or dark duplex print) issue that may occur in duplex outputs, when the printer operates in certain climates, such as dry or high humidity.

Function	Adjusts the toner cartridge (T/C) ratio control level when a faulty image density occurs due to changes in weather or environment.
Use	To adjust the T/C ratio changes to compensate for changes in the user's operating environment during 2-sided printing.
Setting/procedure	The default setting is 0. 1. Call the ENVIRONMENT MENU to the menu screen. 2. With DUPLEX DENSITY selected, press the < or > key as necessary to select the appropriate density level value. Adjustment range: -3 to +3 3. Press the Menu/Select key to accept the new density level setting.

Service Menu

Entering the Service Menu

Note: Ensure appropriate security for the Service menu entry procedure. It should NEVER be given to any unauthorized person.

1. Select **SERVICE MENU** and press the **Menu Select** key.
2. Press the **Menu Select** key twice. Using the Arrow keys, enter the password. (The password is "XRX6120N." The password is case sensitive.)
3. Press the **Menu Select** key and right arrow key.

Exiting

1. Press **UP** key to return to the initial screen.

List of Service Menu Functions

```
SERVICE MENU

SERVICE PASSWORD



                      TRANSFER BELT
                      FUSER UNIT
          RESET       TRANSFER ROLLER
          COUNTERS    REMOVE ALL
```
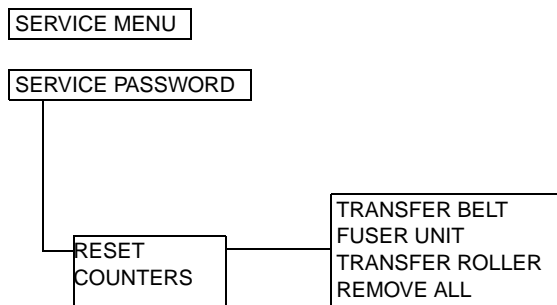
Settings/Adjustments in Service Menu Functions

RESET COUNTERS

TRANSFER BELT

Function	Resets the counter value of the Transfer Belt Unit.
Use	To reset the Transfer Belt Unit counter when the Transfer Belt Unit is replaced.
Setting /procedure	1. Enter the Service menu. 2. Select "TRANSFER BELT." 3. Select "YES" and press the Menu Select key.

FUSER UNIT

Function	Resets the counter value of the Fusing Unit.
Use	To reset the Fusing Unit counter when the Fusing Unit is replaced.
Setting /procedure	1. Enter the Service menu. 2. Select "FUSER UNIT." 3. Select "YES" and press the Menu Select key.

TRANSFER ROLLER

Function	Resets the counter value of the Transfer Roller.
Use	To reset the Transfer Roller counter when the Transfer Roller is replaced.
Setting /procedure	1. Enter the Service menu. 2. Select "TRANSFER ROLLER." 3. Select "YES" and press the Menu Select key.

REMOVE ALL

Function	Moves each color Toner Cartridge to the appropriate replacement position, one by one, to allow all of the Toner Cartridges to be removed.
Use	To allow all of the Toner Cartridges to be removed.
Setting /procedure	1. Enter the Service menu. 2. Select "REMOVE ALL." 3. The rack rotates to bring the first color Toner Cartridge to the replacement position. When the rack stops moving, the message "OPEN DOOR/REMOVE TONER C" appears on the display. 4. Open the Upper Cover and remove the Toner Cartridge. For the Toner Cartridge removal procedures, see "Maintenance." 5. Close the Upper Cover. Then, the message "OPEN DOOR/REMOVE TONER K" appears on the display. 6. Repeating the same steps, remove all Toner Cartridges. **Note:** The Toner Cartridges are to be removed in the order of C -> K -> Y -> M. 7. Close the Upper Cover. The initial screen will then reappear.

4 Print Engine Troubleshooting

This section contains the following:

Overview

Troubleshooting procedures isolate a problem to a specific component or subassembly. Locate the Jam or Error Code troubleshooting procedure and follow the steps through completion and replace any component that fails a troubleshooting "Check Procedure". If you go through the procedures and are still unable to solve the problem, re-read the "Theory of Operation" section for the problem area to understand how that section of the printer functions.

Before Troubleshooting: Advance Checks

Before attempting to solve the customer's problem, the following advance checks must be made:

1. Verify that the AC power supply is within proper specifications. See Operating Environment on page 1-8.
2. Verify that the power cord is free from damage and connected properly.
3. Does the machine share a power supply with any other machine that draws a large current intermittently (for example, an elevator or air conditioner that generates electrical noise)?
4. Is the installation site level and environmentally appropriate (for example, away from high temperatures, high humidity, direct sunlight, direct ventilation, etc.?
5. Does the customer file have a problem that may cause a defective image?
6. Are the density control setting in the Quality menu correct?
7. Is the correct media being used for printing?
8. Are the maintenance and supply items correctly installed and not at the end of their useful life?
9. Is there an adequate supply of toner in the toner cartridges?
10. Is the problem visible on the internal printable pages?

Precautions for Servicing the Printer

1. Unplug the machine's power cord before starting a service job procedure.
2. If it is necessary to service the machine with the power turned ON, use extreme caution not to get caught in the cables or drive assemblies of the exposed component.
3. Use special care when handling the Fuser, which can be extremely hot.

   Caution: Turn the printer off and wait at least 5 minutes to cool before you attempt to service the Fuser or adjacent areas.

4. The Developing Unit has a strong magnetic field. Keep watches and measuring instruments away from it.
5. Take care not to damage the PC Drum in the Imaging Unit.
6. Do not touch any electrical components unless you are instructed to do so by a service procedure.

Paper Path Test

Run the Paper Path diagnostic test to confirm the functionality of all electro-mechanical components (rollers, clutches, motors, sensors, etc.) required by the printer to successfully pick and feed paper through the printer.

> **Note:** This test will not run if the printer is currently in an error state.

Test Notes:

1. The test will run continuously until the paper tray is empty.
2. The Control Panel is blank during this test.
3. No image is placed on the paper during the test.

Use the procedure below to initiate the Paper Path Diagnostic test:

1. Power off the printer.
2. Remove the PWB-P (Image Processor Board) form the printer. Refer to page XX for PWB-P removal procedures.
3. Load enough paper in either paper tray to adequately test the printer.
4. Power up the printer to initiate the test.

Test Results:

Observe the behavior of the printer while running this test. If the printer stalls, focus the troubleshooting efforts on the immediate area within the printer where the paper stopped. It may be required to run the test multiple times to isolate the exact problem area.

Misfeeds and Paper Jams

Misfeed or Jam Control Panel Display

When a media misfeed or jam occurs, the printer shows the corresponding media misfeed status by means of the Error indicator and status message on the Control Panel.

For details on each status message, see Print Engine Adjustments/Settings on page 3-1.

4139fs4502c0

4139F4E502DA
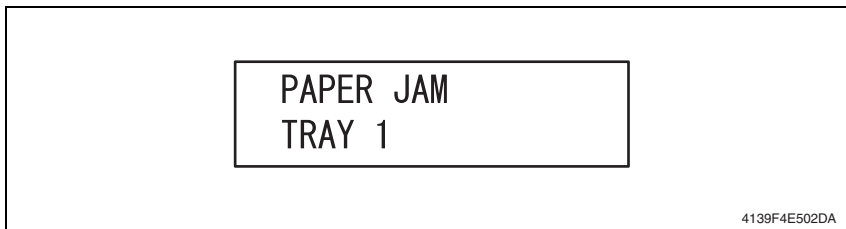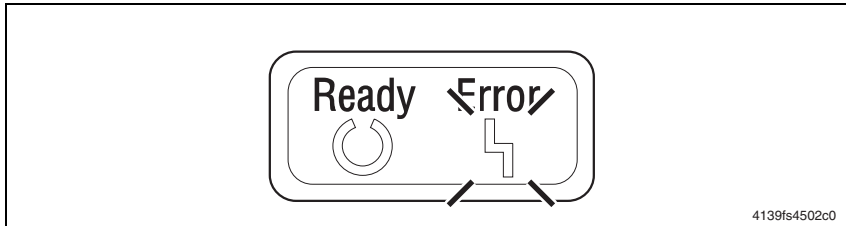
Misfeed/Jam Clearing Procedure

In order to reset the printer display, you must follow the steps detailed below.

1. Open the relevant cover.
2. Clear the sheet of misfed media.
3. Close the cover.

Misfeed/Jam Definition Table

Control Panel	Misfeed Location	Misfeed Clearing	Action
PAPER JAM TRAY 1	Paper take-up section	Top Cover, Front Cover	page 4-7
PAPER JAM TRANSFER	Transfer section	Top Cover	page 4-8
PAPER JAM FUSER	Fusing section	Top Cover	page 4-9
PAPER JAM EXIT	Exit section	Top Cover	page 4-10
PAPER JAM TRAY 2	Lower Feeder Unit paper take-up section	Tray 2	page 8-12
PAPER JAM DUPLEX	Duplex Option paper feed/conveyance section	Duplex Option Door	page 9-16

Paper Path Sensor Location Diagram

Note: Refer to Appendix A for other sensor locations.

4139fs4508c0
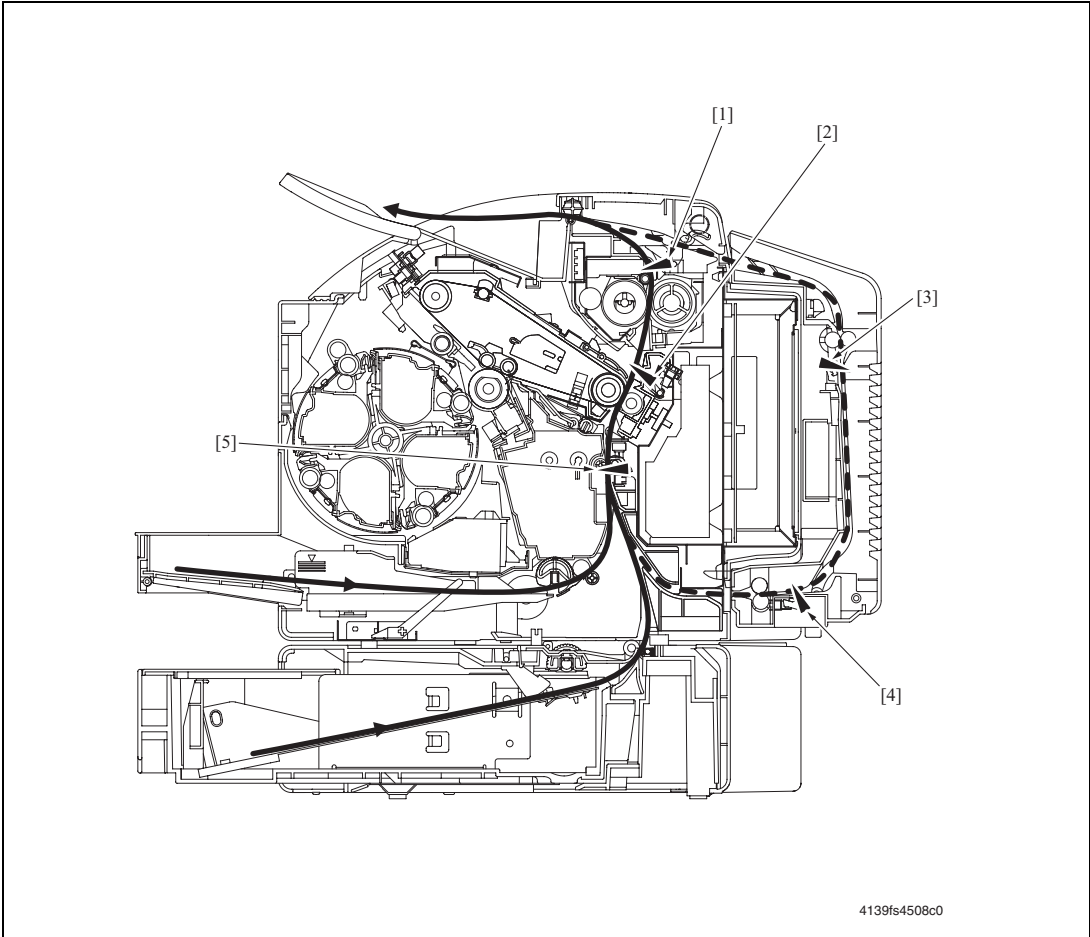
No.	Name		No.	Name	
1	Exit Sensor	PC7	**4**	Duplex Paper Loop Sensor	PC10 DU
2	Fusing Paper Loop Sensor	PC8	**5**	Registration Sensor	PC1
3	Duplex Transport Sensor	PC12 DU			

Misfeed/Jam Troubleshooting Procedures

Initial Check Items

When a media misfeed occurs, perform the following steps first:

Check Item	Action
Does the media meet product specifications? See Media Specifications on page 1-5.	Change the media.
Is the media curled, wavy, or damp?	Change the media. Instruct the user about correct media storage.
Is a foreign object present along the media path, or is the media path deformed or worn?	Clean or change the media path.
Are the rolls/rollers dirty, deformed, or worn?	Clean or change the defective roll/roller.
Are the Edge Guides in the paper tray at the correct position to accommodate paper?	Set as necessary.
Are the sensors and actuators operational?	■ Visually inspect each sensor actuator in the paper path and confirm functionality. ■ Run the Paper Path Diagnostic Test to validate the functionality of all sensors and actuators. Replace any defective parts. See Repeating Defects on page 4-23.

Paper Jam Tray 1

Detection and Description

Type	Description
There is a misfeed at the paper feed section of the printer.	The leading edge of the paper does not block the Registration Sensor (PC1) even after the lapse of a predetermined period of time after the Tray1 Paper Pick-Up Solenoid has been energized.

Relevant Electrical Parts	
Registration Sensor (PC1) Tray1 Paper Pick-up Solenoid (SL1)	PWB-A (Engine Control Board)

Actions

Steps	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Initial check items.	-	-
2	Check the PWB-A connector for proper connection and correct as necessary.	-	-
3	PC1 sensor check.	PWB-A PJ12A-3 (ON)	2-C
4	SL1 operation check.	HV PJ2HV-2 (REM) REM = Solenoid On	4-A
5	Change PWB-A.	-	-

Paper Jam Transfer Roller

Timing Detection and Description

Type	Description
There is a misfeed at the 2nd transfer section.	The paper does not unblock the Registration Sensor (PC1) even after the lapse of a predetermined period of time after the Registration Roller Solenoid (SL2) has been de-energized.
	The Fusing Paper Loop Sensor (PC8) is not blocked by the paper that has moved past the position, at which the sensor is blocked.
Detection of paper left in 2nd transfer section	The Registration Sensor (PC1) is blocked when the Power Switch is turned ON, a cover is opened and closed, or a misfeed or malfunction is reset.
	The Fusing Paper Loop Sensor (PC8) is blocked when the Power Switch is turned ON, a cover is opened and closed, or a misfeed or malfunction is reset.

Relevant Electrical Parts	
Registration Sensor (PC1) Fusing Paper Loop Sensor (PC8) Registration Roller Solenoid (SL2)	PWB-A (Engine Control Board)

Actions

Step	Action	WIRING DIAGRAM	
		Control Signal	**Location (Electrical Component)**
1	Initial check items.	-	-
2	Check the PWB-A connector for proper connection and correct as necessary.	-	-
3	PC1 sensor check.	PWB-A PJ12A-3 (ON)	2-C
4	PC8 sensor check.	PWB-A PJ14A-6 (ON)	2-A
5	SL2 operation check.	PWB-A PJ11A-4 (REM)	2-C
6	Change PWB-A.	-	-

Paper Jam Fuser

Detection Timing

Type	Description
Detection of misfeed at fusing section	The paper does not block the Exit Sensor (PC7) even after the lapse of a predetermined period of time after the Registration Roller Solenoid (SL2) has been energized.
	The Exit Sensor (PC7) is unblocked within a predetermined period of time after it has been blocked by the paper.
	The Main Motor, Laser (Polygon) Motor, and Rack Motor are energized even after the lapse of a predetermined period of time after paper information has been created.
Detection of paper left in fusing section	The Exit Sensor (PC7) is blocked when the Power Switch is turned ON, a cover is opened and closed, or a misfeed or malfunction is reset.

Relevant Electrical Parts	
Exit Sensor (PC7)	PWB-A (Engine Control Board)
Registration Roller Solenoid (SL2)	Print Control Board (PWB-P)

Actions

Step	Action	WIRING DIAGRAM	
		Control Signal	**Location (Electrical Component)**
1	Initial check items.	-	-
2	Check the PWB-P connector for proper connection and correct as necessary.	-	-
3	Check the PWB-A connector for proper connection and correct as necessary.	-	-
4	PC7 sensor check.	PWB-A PJ6A-3 (ON)	2-D
5	SL2 operation check.	PWB-A PJ11A-4 (REM)*	2-C
6	Change PWB-P.	-	-
7	Change PWB-A.	-	-

* for a definition of REM, see 08: Main Motor Malfunction on page 4-15.

Paper Jam Exit

Detection Timing

Type	Description
Detection of misfeed at exit section	The Exit Sensor (PC7) is not unblocked even after the lapse of a predetermined period of time after it has been blocked by the paper.
Detection of paper left in exit section	The Exit Sensor (PC7) is blocked when the Power Switch is turned ON, a cover is opened and closed, or a misfeed or malfunction is reset.

Relevant Electrical Parts	
Exit Sensor (PC7)	PWB-A (Engine Control Board)

Actions

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Initial check items.	-	-
2	Check the PWB-A connector for proper connection and correct as necessary.	-	-
3	PC7 sensor check.	PWB-A PJ6A-3 (ON)	2-D
4	SL2 operation check.	PWB-A PJ11A-4 (REM)	2-C
5	Change PWB-A.	-	-

Undefined Jam/Misfeed

Detection Timing

Type	Description
Detection of undefined misfeed	Conflicting settings are made in the printer driver.

Relevant Electrical Parts	
Print Control Board (PWB-P)	PWB-A (Engine Control Board)

Actions

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check printer driver settings.	-	-
2	Check the PWB-P connector for proper connection and correct as necessary.	-	-

| Step | Action | WIRING DIAGRAM | |
		Control Signal	Location (Electrical Component)
3	Check the PWB-A connector for proper connection and correct as necessary.	-	-
4	Change PWB-P.	-	-
5	Change PWB-A.	-	-

Error Codes

Error Code Messages

When a malfunction occurs, the printer shows the corresponding error status by means of the Error indicator and status/error code message on the control panels LCD display.

Error Code Control Panel Display Example

The printer's CPU performs a self-diagnostics function that, on detecting a malfunction, gives the corresponding error message and code on the Control Panel.

ERROR 08 - MOTOR

4139F3E504DA
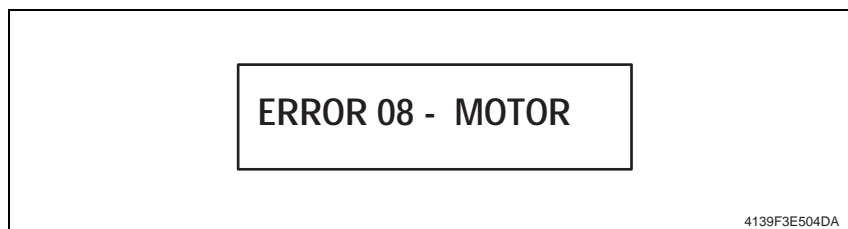
Error Codes and Messages Index

For the exact control panel fatal error message, see on page 3-9.

Code	Description	Detection Timing
04	Mechanical Control Board malfunction	Communications with the M/C expansion IO G/A (IC on the Mechanical Control Board) are not properly carried out.
05	Flash ROM malfunction	Firmware upgrading has failed.
08	Main Motor malfunction	The Motor Lock signal remains HIGH for a predetermined consecutive period of time while the Main Motor remains energized.
		The Motor Lock signal remains LOW for a predetermined consecutive period of time while the Main Motor remains de-energized.
0B	Transfer Fan Motor malfunction	The Fan Motor Lock signal remains HIGH for a predetermined consecutive period of time while the Ventilation Fan Motor remains energized.
0C	Power Supply Cooling Fan Motor malfunction	The Fan Motor Lock signal remains HIGH for a predetermined consecutive period of time while the Power Supply Cooling Fan Motor remains energized.
0F	Duplex Cooling Fan Motor malfunction	The Fan Motor Lock signal remains HIGH for a predetermined consecutive period of time while the Power Supply Cooling Fan Motor remains energized.
		For details, see the Duplex Unit Service Manual.
10	Laser Unit, Polygon Motor malfunction	A LOW Motor Lock signal is not detected even after the lapse of a predetermined period of time after the Polygon Motor has been started.
		The Motor Lock signal remains HIGH for a predetermined consecutive period of time while the Polygon Motor remains energized.
12	Laser Unit malfunction	The SOS signal is not detected within a predetermined period of time after the output of a laser has been started.
		The SOS signal is never detected in the image area.
14	Transfer Roller, 2nd image transfer pressure/retraction failure	The state of the Retraction Position Sensor/2nd Image Transfer is not changed from the unblocked to blocked state even after the lapse of a predetermined period of time during predrive.
		The Retraction Position Sensor/2nd Image Transfer is in the unblocked state even after the lapse of a predetermined period of time during predrive.
		The Retraction Position Sensor/2nd Image Transfer is not blocked (roller in the retracted position) within a predetermined period of time after the retraction sequence of the 2nd Transfer Roller has been started.
		The Retraction Position Sensor/2nd Image Transfer is not unblocked (roller in the pressed position) within a predetermined period of time after the pressure sequence of the 2nd Transfer Roller has been started.

Code	Description	Detection Timing
15	Transfer Belt, Cleaning Blade pressure/retraction failure	The state of the Retraction Position Sensor/Cleaning Blade is not changed from the blocked to unblocked state even after the lapse of a predetermined period of time during predrive.
		The Retraction Position Sensor/Cleaning Blade is in the blocked state even after the lapse of a predetermined period of time during predrive.
		The Retraction Position Sensor/Cleaning Blade is not unblocked (blade in the retracted position) within a predetermined period of time after the retraction sequence of the Cleaning Blade has been started.
		The Retraction Position Sensor/Cleaning Blade is not blocked (blade in the pressed position) within a predetermined period of time after the pressure sequence of the Cleaning Blade has been started.
16	Transfer Belt rotation failure	The Belt Positioning Sensor does not detect the Transfer Belt position detection hole a second time even after the lapse of a predetermined period of time after it has detected one while the Transfer Belt is rotated.
17	Toner carousel rotation failure	The Rack Positioning Sensor is in the blocked state when the Rack Motor remains de-energized.
		The Rack Positioning Sensor is not blocked a second time even after the lapse of a predetermined period of time after it has been blocked once while the Rack Motor remains energized.
		The Rack Positioning Sensor is unable to detect the deceleration control position after the lapse of a given period of time after the Rack Motor has started while the Rack Motor is turning.
		The count value of the edge of ON signal of the Rack Positioning Sensor during each developing positions are not a predetermined value while the Rack Motor is turning.
18	Fuser warm-up heating roller failure	The Thermistor does not detect a predetermined temperature value even after the lapse of a predetermined period of time after the current warm-up cycle has been started and the current warm-up cycle is thus not completed.
19	Fuser low temp error	The temperature detected by the Thermistor remains lower than a predetermined value for a predetermined period of time.
1A	Fuser overheat error	The temperature detected by the Thermistor is a predetermined value or higher for a predetermined period of time.
1B	Fuser faulty thermistor	The condition of a temperature rise of less than 1°C extends continuously for a predetermined period of time that begins when the warm-up cycle is started.
21	Faulty OHP Sensor	It is determined that the OHP Sensor is faulty through a check made at the end of the predrive.
23	Faulty Waste Toner Near Full Detection Board	It is determined that the LED and photoreceiver are faulty through a check made when a new Imaging Unit is detected.

Code	Description	Detection Timing
24	Fuser Temp Faulty Thermistor Resistor	The Heater Lamp remains ON for a predetermined consecutive period of time.
29	Faulty NVRAM counter	It is determined that the life counter value is faulty when the NVRAM data is read as the Power Switch is turned ON.
2A	Faulty NVRAM data	It is determined that the NVRAM data is faulty when read.
2B	NVRAM access failure	It is determined that there is a NVRAM data access failure.
2C	NVRAM Install failure	Mounting of the NVRAM on the Mechanical Control Board is faulty.
	Firmware Update Writing Error	

Resetting the Printer:

To reset the printer after a malfunction has occurred, turn the Power Switch OFF, and then ON again.

Error Codes and Messages Troubleshooting Procedures

04: Engine Board Malfunction

Relevant Electrical Parts	
PWB-A (Engine Control Board)	

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the PWB-A connector for proper connection and correct as necessary.	-	-
2	Change PWB-A.	-	-

05: Flash ROM Malfunction

Relevant Electrical Parts	
PWB-A (Engine Control Board)	

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the PWB-A connector for proper connection and correct as necessary.	-	-
2	Change PWB-A.	-	-

08: Main Motor Malfunction

Relevant Electrical Parts	
Main Motor (M1)	PWB-A (Engine Control Board)
	Power Unit (PU)

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the M1 connector for proper connection and correct as necessary.	-	-
2	Check M1 for proper drive coupling and correct as necessary.	-	-
3	Check the PWB-A connector for proper connection and correct as necessary.	-	-
4	M1 operation check.	PWB-A PJ8A-5 (REM) PWB-A PJ8A-8 (LOCK)	2-G-H
5	Change PWB-A.	-	-
6	Change PU (LVPS).	-	-

Note: REM = Motor/Solenoid ON and LOCK = Motor OFF (failure)

0B: Transfer Fan Malfunction

Relevant Electrical Parts	
Ventilation Fan Motor (M6)	PWB-A (Engine Control Board)
	Power Unit (PU)

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the M6 connector for proper connection and correct as necessary.	-	-
2	Check the fan for possible overload and correct as necessary.	-	-
3	Check the PWB-A connector for proper connection and correct as necessary.	-	-
4	M6 operation check.	PWB-A PJ10A-1 (REM) PWB-A PJ10A-3 (LOCK)	2-H
5	Change PWB-A.	-	-
6	Change PU.	-	-

0C: Power Supply Cooling Fan Malfunction

Relevant Electrical Parts	
Power Supply Cooling Fan Motor (M4)	PWB-A (Engine Control Board)
	Power Unit (PU)

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the M4 connector for proper connection and correct as necessary.	-	-
2	Check the fan for possible overload and correct as necessary.	-	-
3	Check the PWB-A connector for proper connection and correct as necessary.	-	-
4	M4 operation check.	PWB-A PJ4A-1 (REM) PWB-A PJ4A-3 (LOCK)	7-I
5	Change PWB-A.	-	-
6	Change PU.	-	-

10: Polygon Motor (Laser) Malfunction

Relevant Electrical Parts	
Laser Unit (PH) Unit	PWB-A (Engine Control Board)

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the cables and connectors for proper connection and correct as necessary.	-	-
2	Change Laser Unit (PH) Unit.	-	-
3	Change PWB-A.	-	-

12: Laser Malfunction

Relevant Electrical Parts	
Laser Unit (PH) Unit	PWB-A (Engine Control Board)

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the cables and connectors for proper connection and correct as necessary.	-	-
2	Change Laser Unit (PH) Unit.	-	-
3	Change PWB-A.	-	-

14: Transfer Roller Failure

Relevant Electrical Parts	
Retraction Position Sensor /2nd Image Transfer (PC5)	PWB-A (Engine Control Board)
Pressure/Retraction Solenoid /2nd Image Transfer (SL4)	
Main Motor (M1)	

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the M1 connector for proper connection and correct as necessary.	-	-
2	Check M1 for proper drive coupling and correct as necessary.	-	-
3	Check the SL4 connector for proper connection and correct as necessary.	-	-
4	Check the PWB-A connector for proper connection and correct as necessary.	-	-
5	PC5 sensor check.	PWB-A PJ14A-3 (ON)	2-G
6	SL4 operation check.	PWB-A PJ11A-2 (REM)	2-G
7	M1 operation check.	PWB-A PJ8A-5 (REM) PWB-A PJ8A-8 (LOCK)	2-G-H
8	Change PWB-A.	-	-

15: Transfer Belt Cleaning Blade Pressure/Retraction Failure

Relevant Electrical Parts	
*Retraction Position Sensor /Cleaning Blade (PC6) Pressure/Retraction Solenoid /Cleaning Blade (SL3) Main Motor (M1)	PWB-A (Engine Control Board)

* PC6 is part of the transfer belt.

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the M1 connector for proper connection and correct as necessary.	-	-
2	Check M1 for proper drive coupling and correct as necessary.	-	-
3	Check the SL3 connector for proper connection and correct as necessary.	-	-
4	Check the PWB-A connector for proper connection and correct as necessary.	-	-
5	PC6 sensor check.	PWB-A PJ9A-11 (ON)	2-F
6	SL3 operation check.	PWB-A PJ10-5 (REM)	2-F
7	M1 operation check.	PWB-A PJ8A-5 (REM) PWB-A PJ8A-8 (LOCK)	2-G-H
8	Change PWB-A.	-	-

16: Transfer Belt Rotation Failure

Relevant Electrical Parts	
Transfer Belt	PWB-A (Engine Control Board)

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the PWB-A connector for proper connection and correct as necessary.	-	-
2	Change Transfer Belt.	-	-
3	Change PWB-A.	-	-

17: Toner Carousel Failure

Relevant Electrical Parts	
Toner Carousel Motor (M2)	PWB-A (Engine Control Board)
Toner Carousel Positioning Sensor (PC3)	

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the M2 connector for proper connection and correct as necessary.	-	-
2	Check M2 for proper drive coupling and correct as necessary.	-	-
3	Check the PWB-A connector for proper connection and correct as necessary.	-	-
4	PC3 sensor check.	PWB-A PJ5A-11 (ON)	4-C
5	M2 operation check.	PWB-A PJ5A-1-4 (Pulse Output)	4-B
6	Change PWB-A.	-	-

Fuser Failures:

18: Fuser Warm-Up Failure
19: Fuser Low Heating Roller Temperature
1A: Fuser High Heating Roller Temperature
1B: Fuser Faulty Thermistor

Relevant Electrical Parts	
Fuser	PWB-A (Engine Control Board)
	Power Unit (PU)

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check that the input voltage to the printer matches the configuration of the engine (110/220 V)		
2	Check the Fusing Unit for correct installation (whether it is secured in position).	-	-
3	Check the Fusing Unit, LVPS (PU), and PWB-A for proper connection and correct as necessary.	-	-
4	Check the lever and position of the Safety Switch (S2) and correct as necessary.	-	-
5	Change the Fusing Unit.	-	-
6	Change PWB-A.	-	-
7	Change LVPS (PU).	-	-

21: OHP Detect Sensor

Relevant Electrical Parts	
OHP Sensor (PC2A)	PWB-A (Engine Control Board)

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the PWB-A connector for proper connection and correct as necessary.	-	-
2	PC2A sensor check.	PWB-A PJ12A-6 (ON)	2-D
3	Change PWB-A.	-	-

23: Waste Toner Near Full Error

Relevant Electrical Parts	
Waste Toner Near Full Detection Board (PWB-C) Imaging Unit	PWB-A (Engine Control Board)

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the PWB-C connector for proper connection and correct as necessary.	-	-
2	Check the PWB-A connector for proper connection and correct as necessary.	-	-
3	Change the Imaging Unit.	-	-
4	Change PWB-C.	-	-
5	Change PWB-A.	-	-

29: Faulty NVRAM Counter

Relevant Electrical Parts	
NVRAM	PWB-A (Engine Control Board)

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Unplug the power cord and plug it in, then turn OFF and ON the Power Switch.	-	-
2	Check NVRAM (PJ26) on PWB-A for proper connection and correct as necessary.	-	-
3	Change PWB-A.	-	-

2A: Faulty NVRAM Data

Relevant Electrical Parts	
NVRAM	PWB-A (Engine Control Board)

Step	Action	WIRING DIAGRAM	
		Control Signal	**Location (Electrical Component)**
1	Unplug the power cord and plug it in, then turn OFF and ON the Power Switch.	-	-
2	Check NVRAM (PJ26) on PWB-A for proper connection and correct as necessary.	-	-
3	Change PWB-A.	-	-

2B: NVRAM Access Failure

Relevant Electrical Parts	
NVRAM	PWB-A (Engine Control Board)

Step	Action	WIRING DIAGRAM	
		Control Signal	**Location (Electrical Component)**
1	Unplug the power cord and plug it in, then turn OFF and ON the Power Switch.	-	-
2	Check NVRAM (PJ26) on PWB-A for proper connection and correct as necessary.	-	-
3	Change PWB-A.	-	-

2C: NVRAM Install Failure

Relevant Electrical Parts	
NVRAM	PWB-A (Engine Control Board)

Step	Action	WIRING DIAGRAM	
		Control Signal	**Location (Electrical Component)**
1	Unplug the power cord and plug it in, then turn OFF and ON the Power Switch.	-	-
2	Check NVRAM (PJ26) on PWB-A for proper connection and correct as necessary.	-	-
3	Change PWB-A.	-	-

Power Supply Errors

Printer Does Not Power ON - LVPS (PU) Operation Check

Relevant Electrical Parts	
Power Switch PWB-A (Engine Control Board)	Power Unit (PU)

Step	Check Item	Location (Electrical Component)	Result	Action
1	Is the power source voltage being applied to CN1 on LVPS (PU)?	7-I	NO	Check wiring from power outlet PG1 to CN1.
2	Are fuses (F1 and F2) on PU conducting?	-	NO	Change PU.
3	Are DC24 V and DC5 V being applied to PJ2A on the Mechanical Control Board?	4-E	NO	Change PU.
			YES	Change PWB-A.

Control Panel Indicators Do Not Light

Relevant Electrical Parts	
Print Control Board (PWB-P) Control Panel (PWB-OP)	Power Unit (PU)

Step	Check Item	Location (Electrical Component)	Result	Action
1	Is the power source voltage being applied to CN1 on PU?	7-C	NO	Check wiring from power outlet PG1 to CN1.
2	Are fuses (F1 and F2) on PU conducting?	-	NO	Change PU.
3	Is PJ13P on PWB-P properly connected?	13-A	NO	Reconnect.
4	Is PJ10P on PWB-OP properly connected?	8-D	NO	Reconnect.
			YES	Change PWB-OP. Change PWB-P.

Fusing Heaters Do Not Operate

Relevant Electrical Parts	
Safety Switch (S2) Fusing Unit	Power Unit (PU)

Step	Check Item	Location (Electrical Component)	Result	Action
1	Is the power source voltage being applied to CN1 on PU? The Top Cover and Front Cover should in closed position at this time.	7-C	NO	Check wiring from power outlet PG1 to CN1.
2	Is the power source voltage being applied to CN2 on PU?	7-E	YES	Change the Fusing Unit.
			NO	Change PU.

Image-Quality Problems

Image-quality defects can be attributed to printer components, consumable, media, internal software, external software applications, and environmental conditions. To successfully troubleshoot image-quality problems, as many variables as possible must be eliminated.

The following guidelines should be used before troubleshooting an image-quality problem:

■ Use an unopened ream of approved media for evaluating image-quality problems

Note: See the approved media list, Media Specifications on page 1-5, for media that has been tested and approved for use with the Change to local value.

■ When analyzing a image-quality defect, first determine if the defect is repeating or random. Repeating defects can often be associated with a particular component.

■ Inspect the surfaces of all rollers in the paper path for obvious defects.

Repeating Defects

Match the distance of the repeating spot or defect in your print and compare it to the corresponding table below in order to identify the part responsible for the defect.

For example, your prints have a visible spot on the page. This spot repeats (down the page) every 94.4mm. The chart identifies the Imaging Unit as the most likely cause of the defect.

Consumable, Routine Maintenance or Service Item	Component	Distance on Page Between Defect
Toner Cartridge	Developer Roller	34 mm
	Toner Supply Roller	25 mm
Transfer Belt	Belt	379 mm
Imaging Unit	PC Drum	94.4 mm
Transfer Roller	Roller	50.4 mm
Fuser	Heat Roller	108 mm
	Backup Roller	115 mm
	Cleaning Roller	52 mm

White Lines, White Bands, Colored Lines, and Colored Bands in the Feed Direction (FD)

Typical Faulty Images

White lines in FD	White bands in FD	Colored lines in FD	Colored bands in FD
4036fs4021c0	4036fs4022c0	4036fs4023c0	4036fs4024c0

Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Imaging Unit	Are there scratches or lines evident on the photo conductor surface?	YES	Replace the Imaging Unit.
2		Is the outside of the imaging unit dirty?	YES	Clean.
3		Is the connector or contact terminal of the Imaging Unit connected properly?	NO	Clean the contact terminal or reconnect the connector.
4	Laser Unit (PH) Unit	Are the connectors or contact terminals of the Laser Unit (PH) Unit connected properly?	NO	Clean the contact terminal or reconnect the connector.
5		Is the window surface dirty?	YES	Clean.
6	Transfer Belt Unit	Is the Transfer Belt dirty with fingerprints or oil?	YES	Clean.
7		Is the Transfer Belt dirty or scratched?	YES	Wipe the surface clean of dirt with a soft cloth. Replace the scratched Transfer Belt with a new Transfer Belt Unit.
8		Is the 2nd Transfer Roller dirty or scratched?	YES	Replace the 2nd Transfer Roller.
9	Paper path	Is there a foreign object in the paper path?	YES	Remove the foreign object.
10	Fusing Unit	Is the Fusing Entrance Guide Plate dirty or scratched?	YES	Clean. Replace the Fusing Unit.
11		Is the Separation Claw dirty?	YES	Replace the Fusing Unit.
12		Have steps 1-11 eliminated the problem?	NO	■ Replace the problem Toner Cartridge. ■ Replace the Laser Unit (PH).

White Lines, White Bands, Colored Lines, and Colored Bands in the Scan Direction (CD)

Typical Faulty Images

White lines in CD   White bands in CD   Colored lines in CD   Colored bands in CD

4036fs4025c0   4036fs4026c0   4036fs4027c0   4036fs4028c0

Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Imaging Unit	Are there scratches or lines evident on the photo conductor surface?	YES	Replace the Imaging Unit.
2		Is the outside of the imaging unit dirty?	YES	Clean.
3		Is the connector or contact terminal of the Imaging Unit connected properly?	NO	Clean the contact terminal or reconnect the connector.
4	Toner Cartridge	Is the developing bias contact terminal in good contact?	NO	Clean the contact terminal or check the terminal position.
5	Laser Unit (PH)	Is the connector or contact terminal of the Laser Unit (PH) Unit connected properly?	NO	Clean the contact terminal or reconnect the connector.
6	Transfer Belt Unit	Is the Transfer Belt dirty or scratched?	YES	Wipe the surface clean of dirt with a soft cloth. Replace the scratched Transfer Belt with a new Transfer Belt Unit.
7		Is the 2nd Transfer Roller dirty or scratched?	YES	Replace the 2nd Transfer Roller.
8	Paper path	Is there a foreign object in the paper path?	YES	Remove the foreign object.
9	Fusing Unit	Is the Fusing Entrance Guide Plate dirty or scratched?	YES	Clean.
10		Is the Separation Claw dirty?	YES	Replace the Fusing Unit.
11		Have steps 1-10 eliminated the problem?	NO	Replace the Power Unit.

Uneven Density in the Feed Direction

Typical Faulty Images

4036fs4043c0   4036fs4044c0   4036fs4045c0

Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Imaging Unit	Are there scratches or lines evident on the photo conductor surface?	YES	Replace the Imaging Unit.
2		Is the outside of the imaging unit dirty?	YES	Clean.
3	Laser (PH) Unit	Is the window surface dirty?	YES	Clean.
4	Transfer Belt Unit	Is the Transfer Belt dirty or scratched?	YES	Wipe the surface clean of dirt with a soft cloth. Replace the scratched Transfer Belt with a new Transfer Belt Unit.
5		Is the terminal dirty?	YES	Clean.
6		Is the 2nd Transfer Roller dirty or scratched?	YES	Replace the Transfer Roller.
7		Have steps 1-6 eliminated the problem?	NO	■ Replace the Problem Toner Cartridge. ■ Replace the Laser Unit (PH). ■ Replace High Voltage Unit.

Uneven Density in Scan Direction (CD)

Typical Faulty Images

4036fs4046c0

4036fs4047c0

Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Imaging Unit	Are there scratches or lines evident on the photo conductor surface?	YES	Replace the Imaging Unit.
2		Is the outside of the imaging unit dirty?	YES	Clean.
3	Transfer Belt Unit	Check the mounting shafts on the transfer belt assembly to ensure the assembly is fully seated and installed correctly.	NO	Check or correct contact.
4		Does the transfer belt have fingerprints, dirt or oil on it?	YES	Wipe the surface clean of dirt with a soft cloth.
5		Is the Transfer Belt scratched?	YES	Replace the Transfer Belt Unit.
6		Is the terminal dirty?	YES	Clean.
7				
8		Have steps 1-7 eliminated the problem?	NO	■ Replace the problem Toner Cartridge. ■ Replace High Voltage Unit.

Low Image Density

Typical Faulty Images

4036fs4036c0

Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Imaging Unit	Is the outside of the imaging unit dirty?	YES	Clean.
2	Laser (PH) Unit	Is the window surface dirty?	YES	Clean.
3	Transfer Belt Unit	Check the mounting shafts on the transfer belt assembly to ensure the assembly is fully seated and installed correctly.	NO	Check or correct contact.
4		Is the contact dirty?	YES	Clean.
5	2nd Transfer Roller	■ Is the high-voltage contact dirty? ■ Are the contact springs correctly seated? ■ Is the high-voltage bias spring in the correct location (making contact with the plate.?	YES NO NO	Clean. Reseat Realign spring.
6	Paper	Is the paper damp?	YES	Replace the paper with new paper that has just been unwrapped.
7	Density Sensor	Is the sensor dirty?	YES	Clean.
8		Have steps 1-7 eliminated the problem?	NO	■ Replace the Toner Cartridge. ■ Replace the Transfer Belt Unit. ■ Replace the Transfer Roller. ■ Replace the Laser Unit (PH). ■ Replace the Density Sensor. ■ Replace the Control Board. ■ Replace the High Voltage Unit.

Gradation Reproduction Failure

Typical Faulty Images

4036fs4048c0   4036fs4049c0

Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Imaging Unit	Is the outside of the imaging unit dirty?	YES	Clean.
2	Laser (PH) Unit	Is the window surface dirty?	YES	Clean.
3	Density Sensor	Is the sensor dirty?	YES	Clean.
4		Have steps 1-3 eliminated the problem?	NO	■ Replace the Toner Cartridge. ■ Replace the Laser Unit (PH). ■ Replace the Density Sensor. ■ Replace the High Voltage Unit.

Foggy Background

Typical Faulty Images

ABCD
ABCD
ABCD
ABCD
ABCD

4036fs4030c0

Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Imaging Unit	Are there scratches or lines evident on the photo conductor surface?	YES	Replace the Imaging Unit.
2		Is the outside of the imaging unit dirty?	YES	Clean.
3		Is the connector or contact terminal of the Imaging Unit connected properly?	NO	Clean the contact terminal or reconnect the connector.
4	Toner Cartridge	Is the developing bias contact terminal in good contact?	NO	Clean the contact terminal or check the terminal position.
5	Laser (PH) Unit	Is the connector or contact terminal of the Laser Unit (PH) Unit connected properly?	NO	Clean the contact terminal or reconnect the connector.
6		Is the window surface dirty?	YES	Clean.
7	Density Sensor	Is the Density (AIDC) sensor dirty?	YES	Clean. It is located on top of the transfer belt.
8		Have steps 1-7 eliminated the problem?	NO	■ Replace the Toner Cartridge. ■ Replace the Laser Unit (PH). ■ Replace the Transfer Belt.

Poor Color Reproduction

Typical Faulty Images

4138fs4503c0

Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Paper	Is the paper damp?	YES	Replace the paper with new paper that has just been unwrapped.
2	Transfer Belt Unit	Is the terminal dirty?	YES	Clean.
3	Density Sensor	Is the sensor dirty?	YES	Clean.
4		Have steps 1-3 eliminated the problem?	NO	■ Replace the Transfer Belt. ■ Replace the Mechanical Control Board. ■ Replace the High Voltage Unit.

Void Areas, White Spots

Typical Faulty Images

Void areas   White spots

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A⌐CDE
ABCD⌐
AB⌐DE
AB⌐DE
⌐3CDE
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4036fs4050c0

4036fs4051c0

Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Imaging Unit	Are there scratches or lines evident on the photo conductor surface?	YES	Replace the Imaging Unit.
2		Is the outside of the imaging unit dirty?	YES	Clean.
3	Transfer Belt Unit	Does the transfer belt have fingerprints, dirt or oil on it?	YES	Wipe the surface clean of dirt with a soft cloth.
4		Is the Transfer Belt scratched?	YES	Replace the Transfer Belt Unit.
5	Transfer Roller	Is the Transfer Roller dirty or scratched?	YES	Replace the Transfer Roller.
6		Check the mounting shafts on the transfer belt assembly to ensure the assembly is fully seated and installed correctly.	NO	Clean the contacts and reseat.
7	Fuser	Are the green nip release levers in the closed position?	NO	Close the green nip release levers.
8	Paper path	Is there a foreign object in the paper path?	YES	Remove the foreign object.
9		Is the Fusing Entrance Guide Plate dirty or scratched?	YES	Clean or replace.
10		Have steps 1-8 eliminated the problem?	NO	Replace the Toner Cartridge.

Colored Spots

Typical Faulty Images

Colored spots

AA

4036fs4052c0
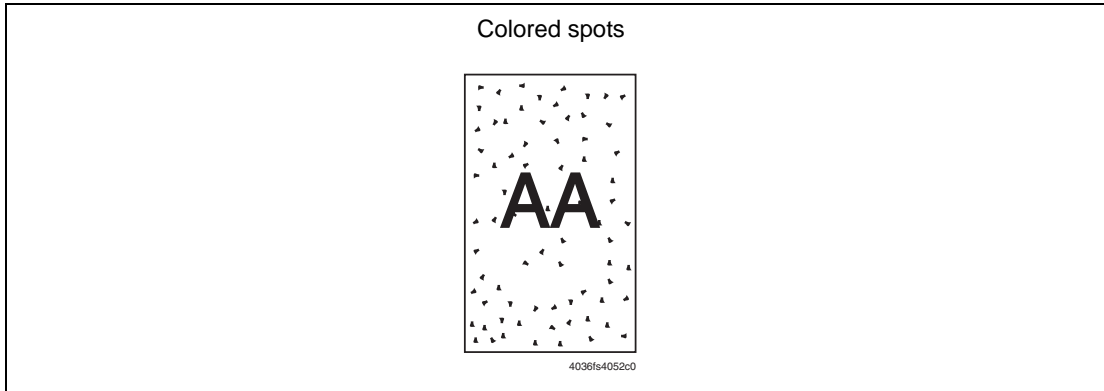
Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Paper Size	Does the paper size loaded in the tray match the selected paper size?	NO	Correct the paper size mismatch.
2	Imaging Unit	Are the spots in a single color?	NO	Replace the Imaging Unit.
3		Are there scratches or lines evident on the photo conductor surface?	YES	Replace the Imaging Unit.
4	Transfer Belt Unit	Does the transfer belt have fingerprints, dirt or oil on it?	YES	Wipe the surface clean of dirt with a soft cloth.
5		Is the Transfer Belt scratched?	YES	Replace the Transfer Belt Unit.
6	Transfer Roller	Is the Transfer Roller dirty or scratched?	YES	Replace the Transfer Roller.
7	Paper path	Is there a foreign object in the paper path?	YES	Remove the foreign object.
8	Fusing Unit	Is the Fusing Roller dirty or scratched?	YES	Replace the Fusing Unit.
9		Have steps 1-7 eliminated the problem?	NO	Replace the Problem Toner Cartridge.

Blurred Image

Typical Faulty Images

Blurred image

ABCDE
ABCDE
ABCDE
ABCDE

4036fs4031c0
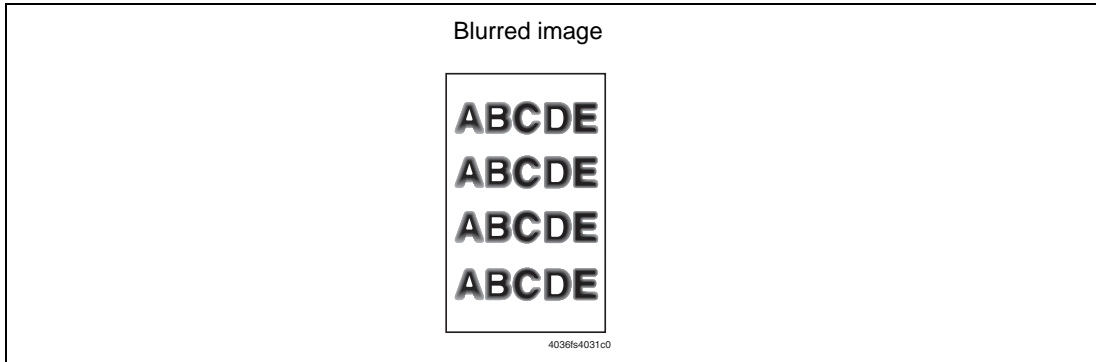
Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Laser (PH) Unit	Is the window surface dirty?	YES	Clean.
2	Imaging Unit	Is the outside of the imaging unit dirty?	YES	Clean.
3		Have steps 1-2 eliminated the problem?	NO	■ Replace the Toner Cartridge. ■ Replace the Laser Unit (PH).

Blank or Black Prints

Typical Faulty Images

Blank print   Black print

4036fs4038c0   4036fs4039c0

Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Image check	Does a blank print occur?	YES	Check the Laser Unit (PH) connector for proper connection.
2	Imaging Unit	Is the gear of the Imaging Unit drive mechanism installed properly?	NO	Check or correct the drive transmitting section or replace the Imaging Unit.
3		Is the charge corona voltage contact or photo conductor ground contact of the Imaging Unit connected properly?	NO	Check, clean, or correct the contact.
4	High Voltage Unit	Is the connector connected properly?	NO	Reconnect.
5		Have steps 1-4 eliminated the problem?	NO	■ Replace the High Voltage Unit. ■ Replace the Mechanical Control Board. ■ Replace the Laser Unit (PH) Unit.

Incorrect Color Image Registration

Typical Faulty Images

AA

4036fs4032c0
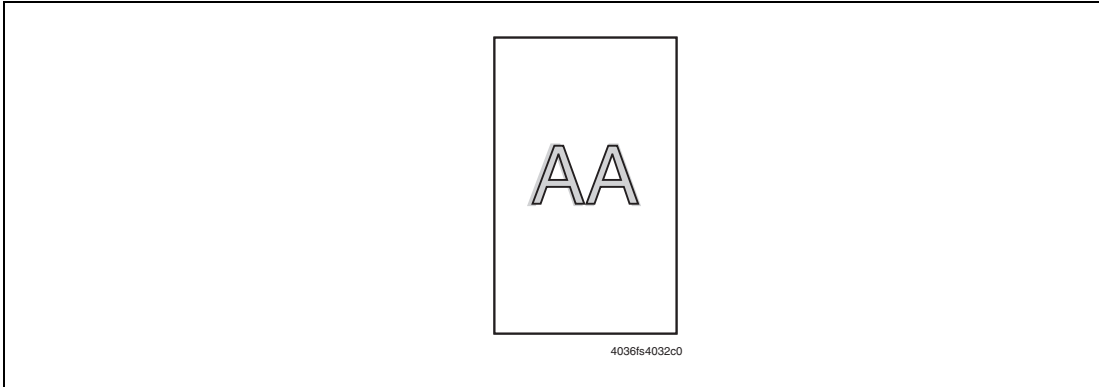
Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Transfer Belt Unit	Is the Transfer Belt dirty with fingerprints or foreign matter?	YES	Wipe the surface clean of dirt with a soft cloth.
2		Is the Transfer Belt scratched?	YES	Replace the Transfer Belt.
3		Is the Transfer Belt drive coupling to the engine dirty or damaged?	YES	Clean or replace coupling.
4		Is the Transfer Roller dirty or scratched?	YES	Replace the Transfer Roller.
5	Imaging Unit	Is the Imaging Unit installed in position?	NO	Reinstall the Imaging Unit.
6		Is the photo conductor scratched?	YES	Replace the Imaging Unit.
7		Have steps 1-6 eliminated the problem?	NO	■ Replace the Laser Unit (PH) Unit. ■ Replace the Mechanical Control Board.

Poor Fusing Performance, Offset

Typical Faulty Images

Poor fusing performance

C F

4036fs4059c0

Offset

C F

C F

4036fs4060c0
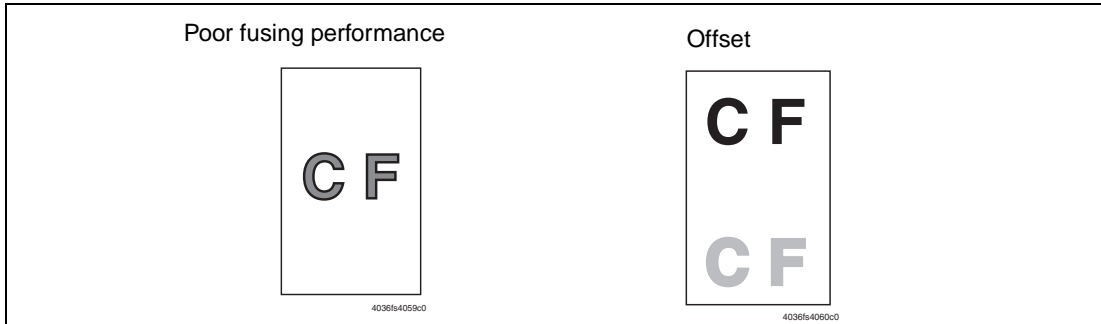
Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Paper	Does the paper being used conform to specifications?	NO	Replace the paper.
2	Fusing Unit	Are the green fuser separator levers in the correct position?	NO	Correct.
3		Have steps 1-2 eliminated the problem?	NO	■ Replace the Fusing Unit. ■ Replace the Mechanical Control Board.

Ghosting, Blurred Image

Typical Faulty Images
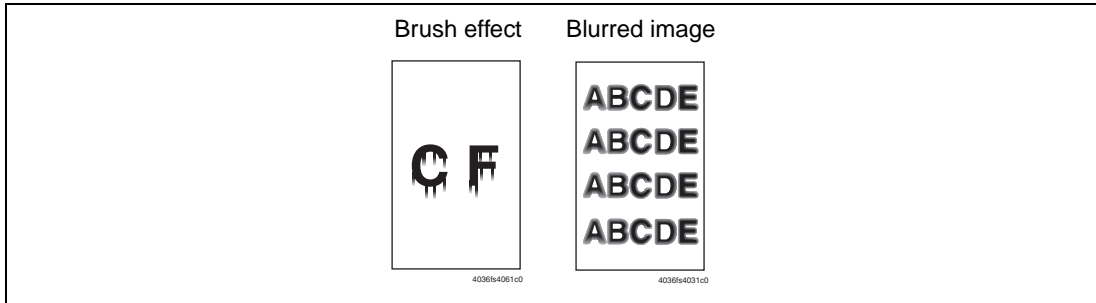
Brush effect   Blurred image

Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Paper	Is the paper damp?	YES	Replace the paper with new paper that has just been unwrapped.
2		Does the paper being used conform to specifications?	NO	Replace the paper.
3	Imaging Unit	Are there scratches or lines evident on the photo conductor surface?	YES	Replace the Imaging Unit.
4	Transfer Belt Unit	Is the Transfer Belt dirty with fingerprints or oil?	YES	Clean.
5		Is the Transfer Belt dirty or scratched?	YES	Clean or Replace Transfer Belt.
6	Fusing Unit	Is the Fusing Entrance Guide Plate dirty?	YES	Clean.
			NO	Replace the Fusing Unit.

Back Marking

Typical Faulty Images

ABCDE
ABCDE
4036fs4062c0

AA
4036fs4063c0
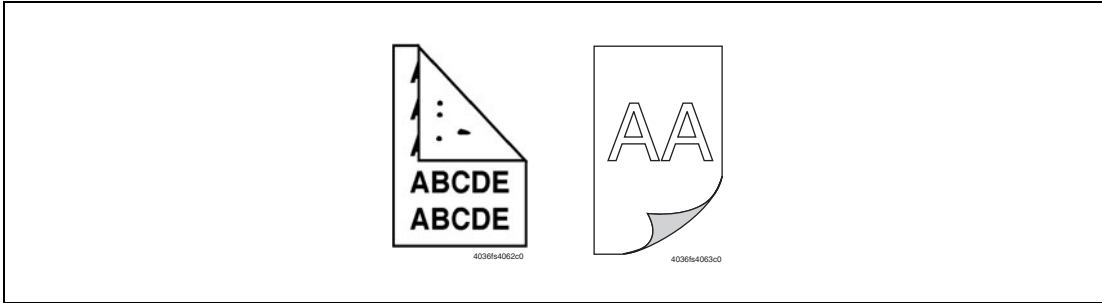
Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Paper path	Is there a foreign object in the paper path?	YES	Remove the foreign object.
2	Fusing Unit	Is the Fusing Entrance Guide Plate dirty or scratched?	YES	Clean or replace.
3		Is the Fusing Roller scratched or dirty?	YES	Replace the Fusing Unit.
4	Transfer Belt Unit	Is the Transfer Belt dirty with fingerprints or foreign matter?	YES	Clean.
5		Is the 2nd Transfer Roller scratched?	YES	Replace the Transfer Roller.
6		Have steps 1-5 eliminated the problem?	NO	■ Replace the Transfer Belt Unit. ■ Replace the High Voltage Unit.

Uneven Pitch

Typical Faulty Images

4138fs4507c0
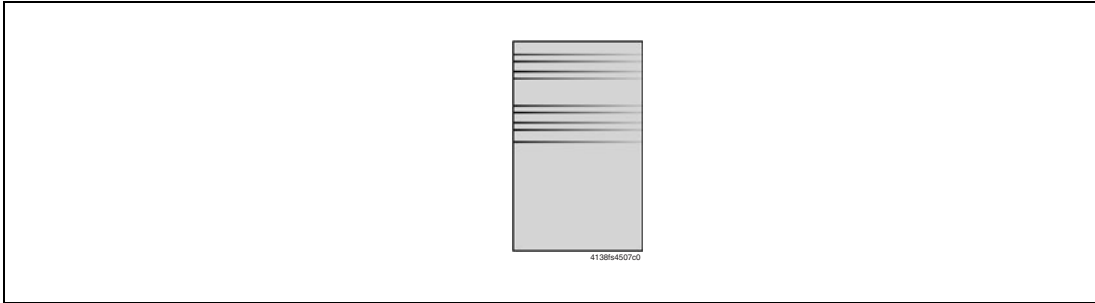
Troubleshooting Procedure

Step	Section	Check Item	Result	Action
1	Toner Cartridge	Is the Toner Cartridge for each color of toner installed in position?	NO	Reinstall.
2	Laser (PH) Unit	Is the Laser Unit (PH) Unit secured in position with the fixing screw?	NO	Secure it in position.
3	Toner Cartridge	Is the drive mechanism of the Toner Cartridge dirty or damaged?	YES	Clean or replace the Toner Cartridge.
4	Imaging Unit	Is the photo conductor dirty, scratched, or worn?	YES	Replace the Imaging Unit.
5	2nd Transfer Roller	Are the Transfer Roller and drive mechanism dirty, deformed, or worn?	YES	Replace the 2nd Transfer Roller.
6	Fusing Unit	Are the rollers and drive mechanism of the Fusing Unit dirty, scratched, deformed, or worn?	YES	Replace the Fusing Unit.
7		Have steps 1-6 eliminated the problem?	NO	Replace the Transfer Belt Unit.

5 Print Engine Service Parts Disassembly

This section contains the following:

Disassembly/Adjustment Prohibited Items

Paint-Locked Screws

Screws coated with black paint (such as the safety switch) indicates that the assembly has specific adjustment requirements after reassemlby. Refer to the specific disassembly/assembly procedures for details.

Screws coated with red paint indicates that the part or assembley requires sensitive factory adjustments. Any screw coated with red paint must not be removed in the field.

Variable Resistors on the Board

Note: Do not turn the variable resistors on the boards for which no adjusting instructions are given in the "Adjustment/Setting" section.

Removal of PWBs

Note:

- When removing a circuit board or other electrical component, refer to "Handling of PWBs" and follow the corresponding removal procedures.
- The removal procedures given in the following sections omit the removal of connectors and screws securing the circuit board support or circuit board.
- Where it is absolutely necessary to touch the ICs and other electrical components on the board, be sure to ground your body first.

Before Performing Service

1. Remove the Imaging Unit. See Imaging Unit on page 2-9.

   Warning:

   - Make sure that the printer is unplugged prior to starting any disassemlby.
   - Do not touch any components unless it is specifically instructed to do so.

Disassembly/Assembly List

No	Section	Part name	Ref.Page
1	Exterior parts	Front Cover	page 6
2		Right Cover	page 6
3		Left Cover	page 5
4		Rear Cover	page 4
5		Rear Panel	page 4
6		Paper Take-up Cover	page 6
7	Boards	PWB-P (Image Processor Board)	page 9
8		PWB-A (Engine Control Board)	page 12
9		Waste Toner Near Full Detection Board	page 18
10		Power Unit	page 14
11		High Voltage Unit	page 17
12		Control Panel	page 8
14	Assemblies	Laser (PH) Unit	page 19
15		Paper Pick-up Unit	page 23
16	Other Parts	Main Motor	page 27
17		Developing Motor	page 30
18		Rack Motor	page 31
19		Power Supply Cooling Fan Motor	page 28
20		Ventilation Fan Motor	page 28
21		Fusing Motor	page 29
22		Tray1 Paper Pick-up Solenoid	page 32
23		Registration Roller Solenoid	page 33
24		Pressure/Retraction Solenoid /Cleaning Blade	page 34
25		Pressure/Retraction Solenoid /2nd Image Transfer	page 34
26		Temperature/Humidity Sensor	page 35
27		Density Sensor	page 37
28		Torque Limiter	page 37
29		Hard Drive**	page 39

Disassembly/Assembly Procedures

Rear Panel

1. Remove the screw [1] and the Rear Panel [2].
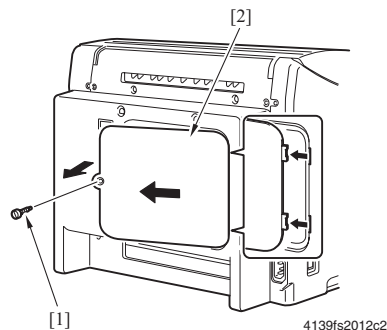
Rear Cover

1. Remove the Rear Panel. See Rear Panel on page 5-4.
2. Remove four screws [1] and the Rear Cover [2].
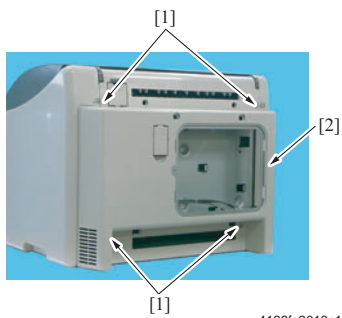
Left Cover

1. Open the Top Cover.

2. Remove two screws [1].

3. Slightly pull the cover away from the printer and lift it to release the two tabs [2] and remove the Left Cover [3].

Caution: Use care not to break the tabs during removal and reinstallation of the Left Cover.

4139fs2014c1
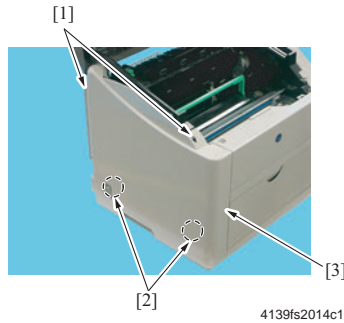
Note:

- When installing the Left Cover, make sure that the harness [4] of the Fuser is located below the rib [5] of the Left Cover.

- After installing the Left Cover, make sure that the harness [4] of the Fuser is located below the rib [5] of the Left Cover at the location shown on the left.

4139fs2549c0
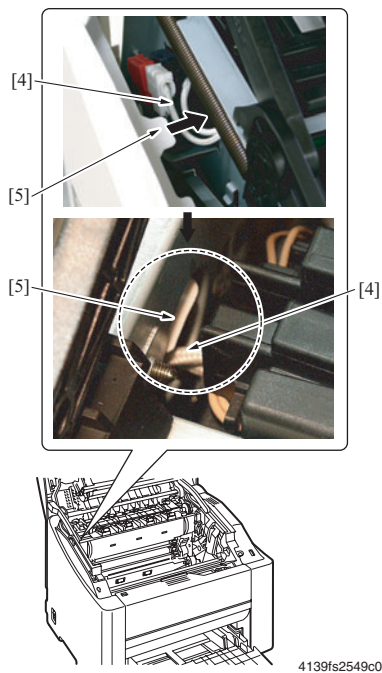
Right Cover

1. Open the Top Cover.
2. Remove two screws [1].
3. Slightly pull the cover away from the printer and lift it to release the two tabs [2] and remove the Right Cover [3].

Caution: Use care not to break the tabs during removal and reinstallation of the Right Cover.

4139fs2015c2
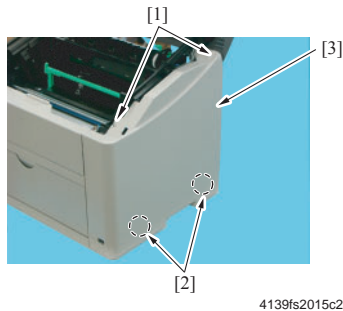
Tray 1 (Paper Take-Up Cover)

1. Remove the blue tray cover.
2. Push in on the sides of the Tray 1 cover and remove the cover.
3. Push in the right and left holders [1] and remove Tray 1 [2].

4139fs2016c0
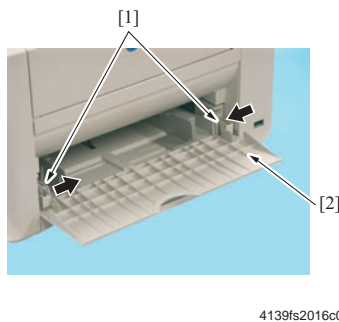
Front Cover

1. Open the Top Cover.
2. Remove the Right Cover. See Right Cover on page 5-6.
3. Remove the Left Cover. See Right Cover on page 5-6.

4. Remove Tray 1 (Paper Take-up Cover). See Tray 1 (Paper Take-Up Cover) on page 5-6.

5. Remove four screws [1] and the Front Cover [2].
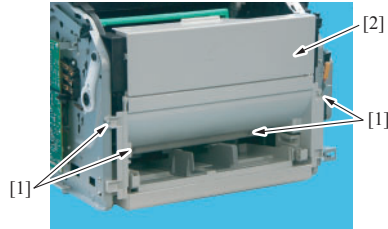
4139fs2017c1

Caution: When removing and reinstalling the Front Cover, use care not to touch the Developing Roller of the Toner Cartridge.

Precautions for Remounting the Front Cover

1. When remounting the Front Cover, make sure that the two tabs in [A] are properly fitted in position.

2. When tightening the screws, make sure that there is no clearance between the machine frame and Front Cover [B]. If there is any clearance, tighten the screws, while pressing the machine frame.
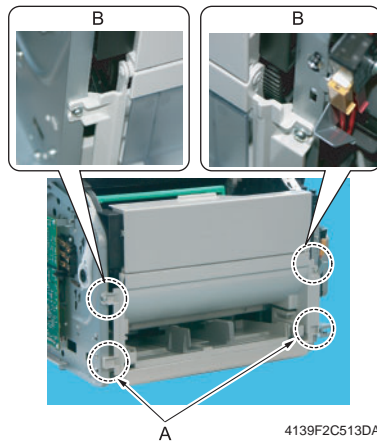
4139F2C513DA

Control Panel (PWB-OP)

1. Open the Top Cover.

2. Disconnect the connector from the Transfer Belt.

3. Remove four screws [1] and disconnect the Control Panel Protective Cover [2] from the Top Cover.

4139fs2514c0
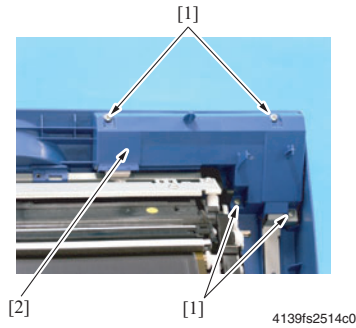
4. Remove five screws and disconnect the connector(PJ1), and then remove the Control Panel.

PWB-P (Image Processor Board)

1. Remove the Rear Cover. See Rear Cover on page 5-4.
2. Remove the Left Cover. See Left Cover on page 5-5.
3. Remove five screws [1].

[1]   [1]
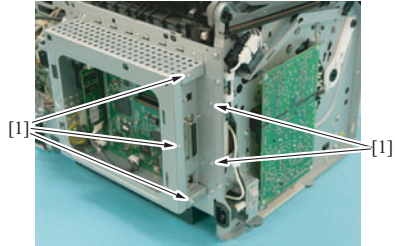
4139F2C502AA

4. Remove the screws securing the metal plate, and then remove the plate [1].
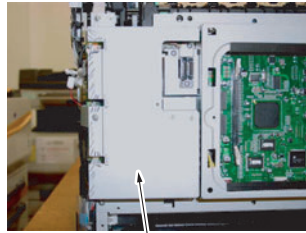
[1]   shield_plate

5. Disconnect one connector (PJ21) [2].
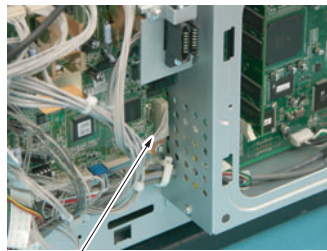
[2]   4139F2C503AA

6. Remove six screws [3], and then lift the left side of the PWB-P (Image Processor Board) protective shield [4] to remove it.

Note: For reinstallation, notice that the screw in the top middle [3] is different from the rest of the screws.

4139F2C504AA
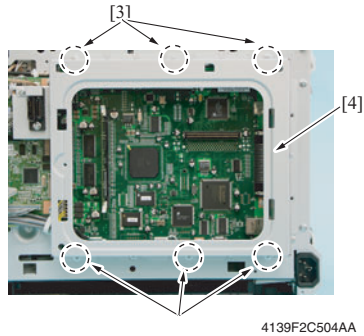
7. Disconnect all connectors from the PWB-P (Image Processor Board) [5].

4139F2C505AA
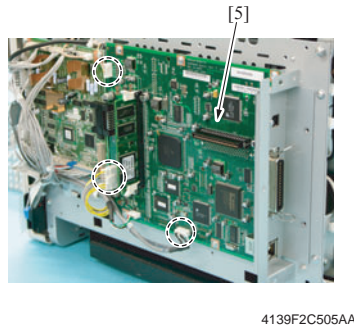
Note: If installed, remove the optional hard drive. See Hard Drive (Option) on page 5-39.

8. Remove six screws [6].

4139F2C506AA
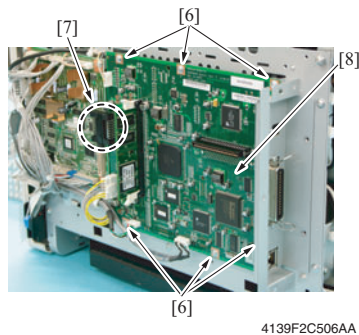
9. Slide the board to the right to disconnect CN8 [7]from the PWB-A (Engine Control Board) to remove the PWB-P (Image Processor Board) Assy [8].

10. If you are replacing the board, remove the three screws [9] and move the panel to the replacement board.

[9]
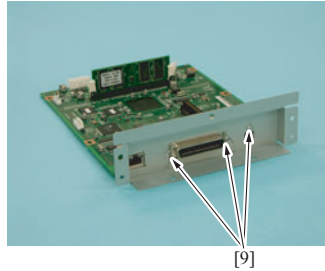
4139F2C507AA

PWB-A (Engine Control Board)

1. Remove the Rear Cover. See Rear Cover on page 5-4.

2. Remove the screws securing the metal plate, and then remove the plate [1].
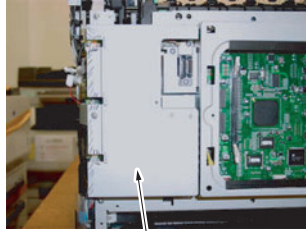
[1] shield_plate

3. Disconnect all connectors and flat cables from the PWB-A (Engine Control Board) [1].
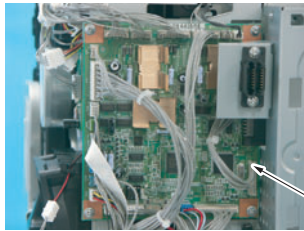
[1]

4139fs2018c0

4. Remove four screws [2].
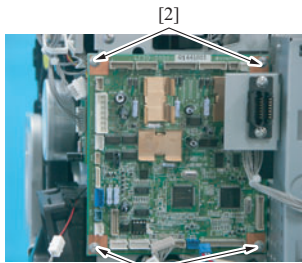
[2]

[2]

4139fs2019c0

5. Slide the PWB-A (Engine Control Board) [4] to left to disconnect it from the PWB-P (Image Processor Board).

6. Remove Parameter Chip (NVRAM) [5] from the PWB-A (Engine Control Board) and move it to the replacement board.

[4]

[3]   4139fs2520c0
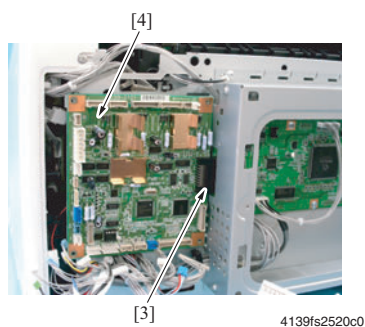
Note:

■ Remember to remove the Parameter Chip (NVRAM) from the old PWB-A (Engine Control Board) and mount it on the new PWB-A (Engine Control Board).

[5]

4139fs2020c2
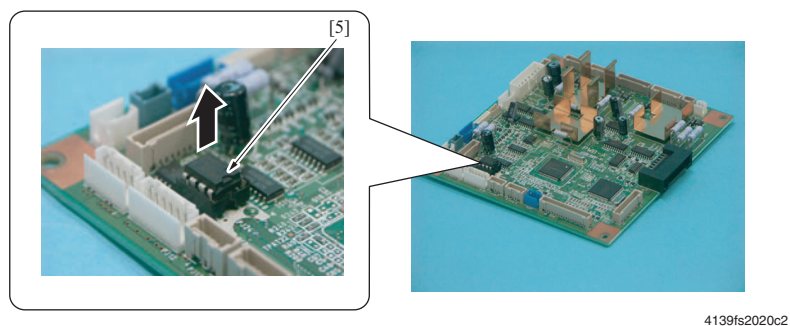
■ When mounting Parameter Chip (NVRAM), align the notches (indicated by "A" in the illustration).

A

A

4138fs2544c0
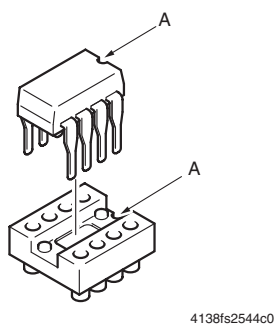
Power Unit (PU)

1. Remove the PWB-P (Image Processor Board). See PWB-P (Image Processor Board) on page 5-9.

2. Remove the PWB-A (Engine Control Board). See PWB-A (Engine Control Board) on page 5-12.

3. Disconnect the rear white and black connectors [2] of the Fusing Safety Switch [1] and remove the wire from the two wiring saddles [3].

4139fs2021c2
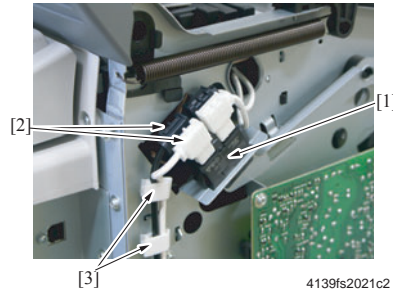
4. Remove three screws [5] from the Power Switch Assy [4] and remove the wire from the wiring saddle [6].

4139fs2074c1
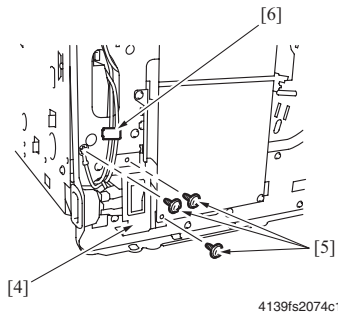
Note: One of the two Power Switch screws is used to secure the Power Switch Assy to the High Voltage Unit.

5. Disconnect the two white connectors [7] of the Power Switch.
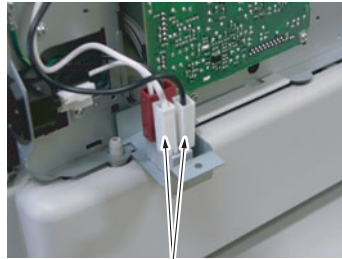
[7]   4139fs2023c2

6. On the right side of the printer, remove a screw [8] and remove the Power Supply Cooling Fan Motor Cover [9].

[9]

[8]
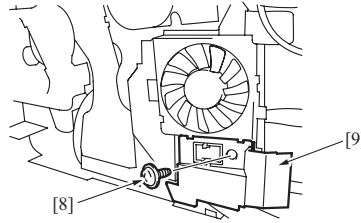
4139fs2073c1

7. Remove the Harness Protective Seal [12] from the rear plate.
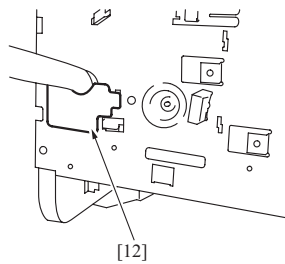
[12]   4139fs2075c1

**8.** Remove the black plastic guide at the bottom of the printer by pushing the two locking tabs on the right side and then allow the guide to fall.

Note: Notice the orientation of the black plastic guide and reinstall it in the same orientation.

9. Remove six screws [13] and pull the rear plate containing the Power Unit Assy [14] away from the printer.

> **Note:** Do not pull the rear plate hard, as a number of harnesses are connected to it.

4139fs2024c2
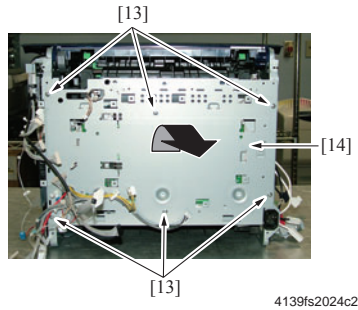
10. Disconnect four connectors [16] from the Power Unit [15].

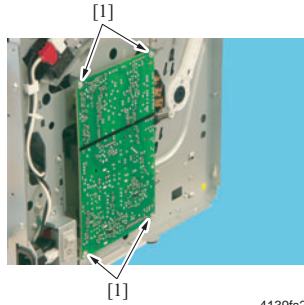**11.** Remove three screws [17], and then the Power Unit [15] from underneath the brackets [18].
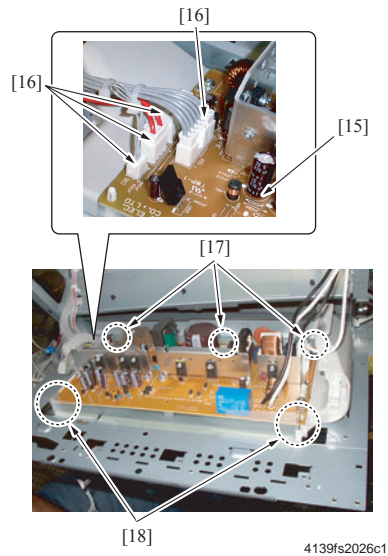
4139fs2026c1

High Voltage Unit (HV)

Warning: Make sure the power switch is off and the cord is unplugged prior to starting this (or any other) disassembly procedure.

1. Remove the Left Cover. See Left Cover on page 5-5.
2. Remove four screws [1].

4139fs2027c0

3. Disconnect two connectors [2] and remove the High Voltage Unit [3].

   Caution: Do not damage the springs. Use caution around the springs. Confirm that all 5 springs are securely in place and are not bent prior to reinstalling the HV Board
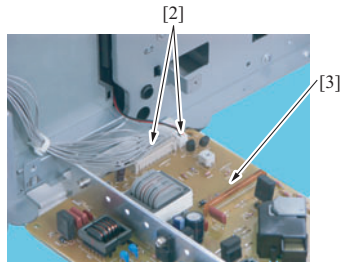
4139fs2028c0

Precautions for Reinstallation of the High Voltage Unit

■ Make sure that the High Voltage Unit fits underneath the tab [4] as shown in the following illustration.

■ During the reinstallation procedure, make sure that the rack terminal assembly [5] is not deformed or left loose.
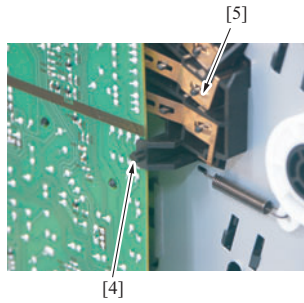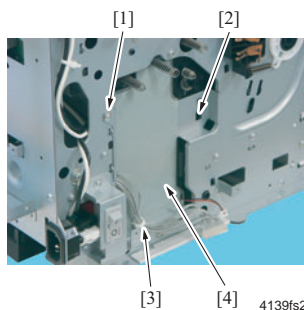

4139fs2029c0

Waste Toner Near Full Detection Board (PWB-C)

1. Remove the High Voltage Unit. See High Voltage Unit (HV) on page 5-17.

2. Remove the screw [1], unlock the tab [2], the wiring saddle [3], and then remove the shield [4].
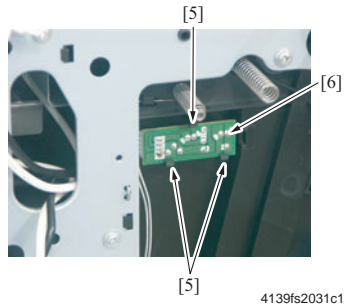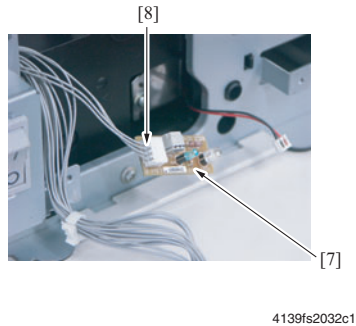
Caution: Use caution when unlocking the tabs.

4139fs2030c1

3. Unlock three tabs [5] and remove the Waste Toner Near Full Detection Board [6].

> **Note:** When reinstalling the shield, make sure that no part of the harness is wedged in the mechanism.

4139fs2031c1

4. Disconnect the connector [8] of the Waste Toner Near Full Detection Board [7].


4139fs2032c1

Laser (PH) Unit

Warning:

■ Ensure that the power is turned off and the power cord is disconnected from the printer before performing this procedure.
■ Do not attempt to disassemble or adjust the Laser (PH) Unit.

1. Remove the Imaging Unit. See Imaging Unit on page 2-9.
2. Remove the Rear Cover. See Rear Cover on page 5-4.
3. Remove the Right Cover. See Right Cover on page 5-6.
4. Remove the Left Cover. See Left Cover on page 5-5.
5. Remove the Front Cover. See Front Cover on page 5-6.

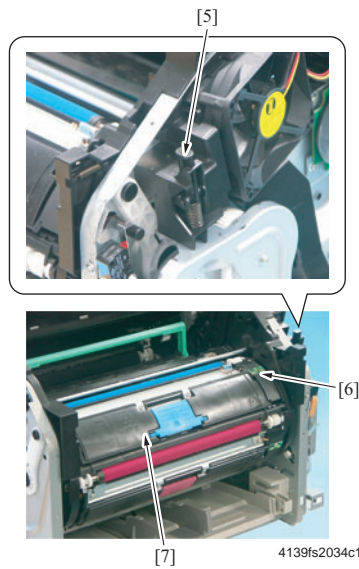**6.** Disconnect the connector (PJ20) [2] and the flat cable (PJ19) [3] from the PWB-A (Engine Control Board) [1].

4139fs2033c2
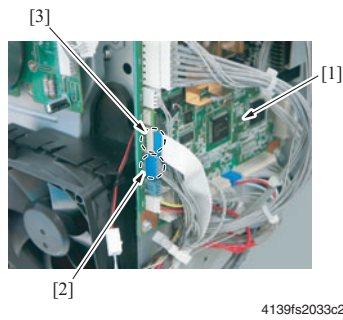
7. Disconnect the connector (PJ107) from the PWB-P (Image Processor Board) [4].


4139fs2522c0
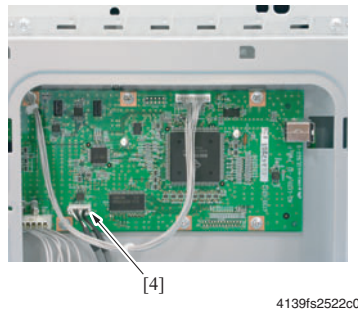
8. Open the Top Cover.

9. Press the Rack Release Lever [5] and then rotate the Rack [6] to position the Toner Cartridge [7] for removal.


[5]

[6]

[7]   4139fs2034c1

Caution: When rotating the Rack, use care not to touch the Developing Roller on the toner cartridge.

10. Hold onto the toner cartridge handle, pull it and remove the Toner Cartridge [8].

11. Repeat Steps 7-9 to remove all Toner Cartridges.


[8]

4139fs2035c0
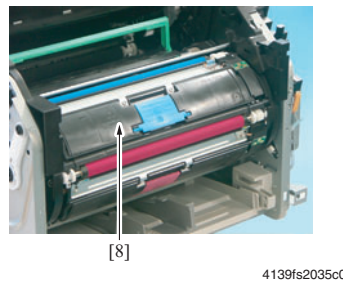
12. Remove the Laser (PH) Unit Covers (Right) [9], (Left) [10].

   a. Disconnect the blue connector from the switch (S5).

   b. Push the tabs of the Laser (PH) Unit Cover [11] and remove the Laser (PH) Unit Cover.

   Caution: Use care not to pull the laser unit with an excessive force, so you do not damage the wiring harnesses.

[9]   [11]

[10]   4139fs2036c1
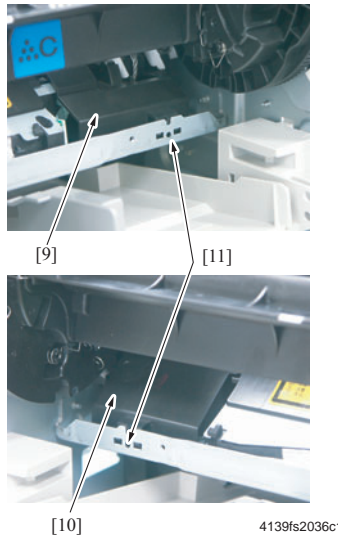
13. Remove the screw [8], remove the Power Supply cooling Fan Motor Cover [9], and the cooling fan housing in order to gain access to the harnesses.

[9]

[8]

4139fs2073c1
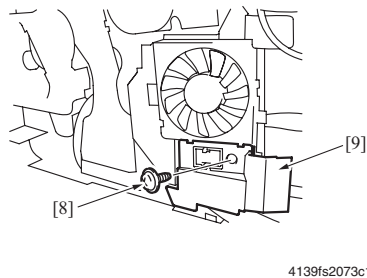
14. Remove the 3 harnesses from the saddle, and then feed the 3 harnesses that you unplugged from the controller board underneath the black fan duct.

15. Press the Rack Release Lever and turn the Rack so that the screw securing the Laser (PH) Unit to the chassis can be accessed through the hole [12] in the metal cross plate.

16. Remove three screws [12] and the Laser (PH) Unit [13].


[13]

[12]   [12]

4139fs2037c2
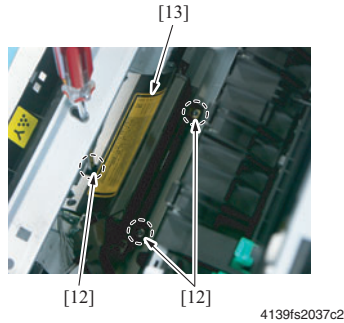
Precautions for Reinstallation of the Laser (PH) Unit

Warning: When reinstalling the Laser (PH) Unit, make sure that you insert the lever [14] of the Laser (PH) shutter into the lever of the machine [15].

Note:

- Reconnect the blue connector (S5) before you reinstall the cover onto the printer.
- To reinstall the ribbon cable, loosen the lower tab on the plastic air duct to give access to the route.

[14]

[15]

4139fs2539c0
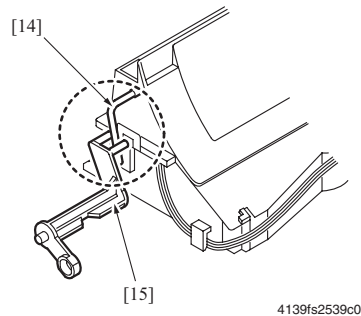
Paper Take-Up Unit

1. Remove the Rear Cover. See Rear Cover on page 5-4.

2. Remove the Right Cover. See Right Cover on page 5-6.

3. Remove the Left Cover. See Left Cover on page 5-5.

4. Remove the High Voltage Unit. See High Voltage Unit (HV) on page 5-17.

**5.** Remove one screw [1], unlock the tab [2], and release the wiring harness from the saddle [3]. Then, remove the shield [4].

[1]   [2]

[3]   [4] 4139fs2030c1
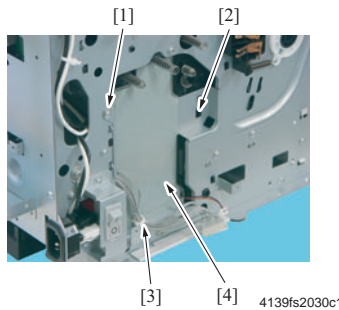
Warning: When reinstalling the shield, make sure that no part of the harness is wedged in the mechanism.

6. Remove the Rack Drive Assy. See the removal procedure steps 1 to 3 of Developing Motor (M3) on page 5-30.

7. Remove the Ventilation Fan Motor. See Ventilation Fan Motor (M6) on page 5-28.

8. Remove one screw [1], unlock two tabs [2], loosen the 4 wiring harnesses that feed the laser, and then remove the Ventilation Fan Duct [3].
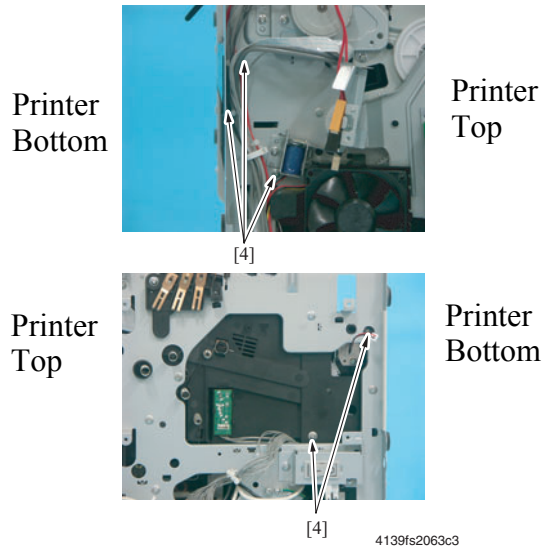

[1]   [3]

[2]

4139fs2077c1
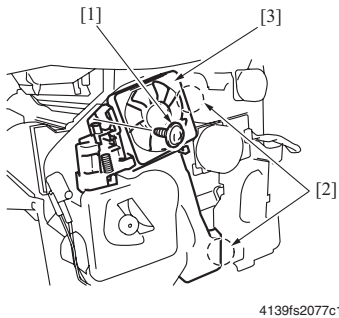
9. Lay the main body of the printer on its back of the printer.

Caution: Be careful not to pinch the wires on the back of the printer.

**10.** Remove the Power Supply Cooling Fan and shroud.

11. Remove five screws [4].

Printer
Bottom

Printer
Top

[4]

Printer
Top

Printer
Bottom

[4]   4139fs2063c3

12. Remove the PJ22 connector from the PWB-A (Engine Control Board).

13. Remove one screw and the metal plate from the right side, rear of the printer.

14. Remove the black plastic guide by pushing the two locking tabs on the right side, and then allow the guide to fall.

   Note: Notice the orientation of the black plastic guide and reinstall it in the same orientation.

15. Pull the tray completely towards you and remove the Paper Pick-up Unit [6].

[6]

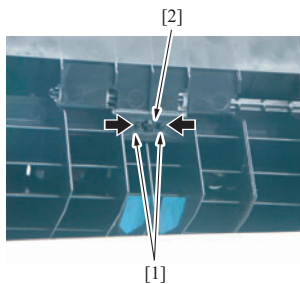4139fs2064c3
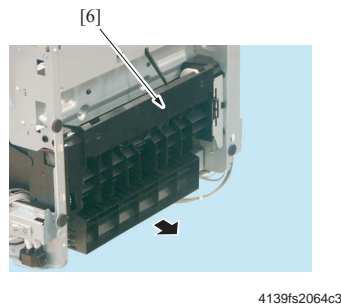
Notes for Reassembly

1. Ensure that the cams on the take-up assembly are in the up position.

2. Insert the black and red solenoid harness through the opening on the left side of the chassis.

3. Reinsert PJ22 through the opening of the chassis on the right side of the printer.

4. Align the top pin on the left side of the take-up assembly with the groove on the chassis.

5. Pull the tray forward until it rests underneath the cams on the take-up assembly.

6. Using the lower alignment pin, as a reference, reinstall the unit into the printer.

7. Reinstall the springs.

Separation Pad

Removal Procedure

1. Remove the Paper Pick-Up Unit. See Paper Take-Up Unit on page 5-23.

2. Unlock tabs [1] and remove the Separation Pad [2].

4139fs2065c1

3. Unhook the spring [3].

Note: When replacing the separation pad, reattach the spring to the new separation pad. When reinstalling the separation pad, line the spring up with the locator tab, and then snap the pad into the slots. Push on the pad to confirm that the spring is moving correctly.
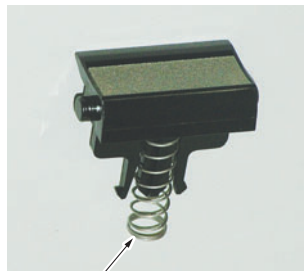
[3]   4139fs2066c1

Removal Procedure Shortcut

1. Open the Top Cover.
2. Remove Tray 1.
3. Remove the Imaging Unit. See Imaging Unit on page 2-9.
4. Move the tray to the down position by turning the pick roller shaft.
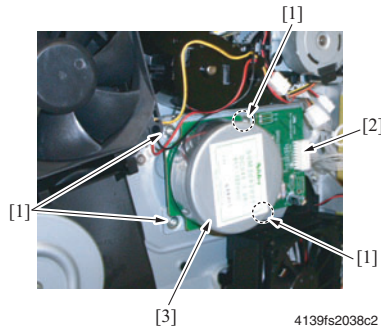5. Unlock tabs [1] and remove the Separation Pad [2].
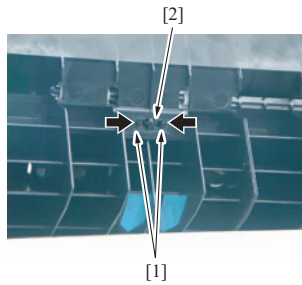
4139fs2065c1

Main Motor (M1)

1. Remove the Right Cover. See Right Cover on page 5-6.
2. Disconnect the connector [2], remove four screws [1] and Main Motor [3].

4139fs2038c2

Power Supply Cooling Fan Motor (M4)

1. Remove the Right Cover. See Right Cover on page 5-6.
2. Disconnect the connector (PJ4A) [2] from the (PWB-A) Engine Control Board [1].

[1]

[2]

4139fs2039c0
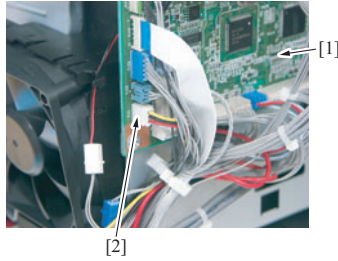
3. Unlock tabs and remove the Power Supply Cooling Fan Motor [3].

[3]

4139fs2040c1
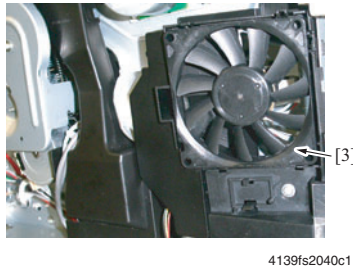
Ventilation Fan Motor (M6)

1. Remove the Right Cover. See Right Cover on page 5-6.
2. Remove the harness from the wiring saddle [3]and disconnect the connector [2] of the Ventilation Fan Motor [1].

[1]

[2]

[3]
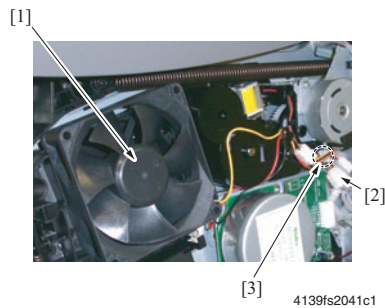
4139fs2041c1

3. Unlock tabs and remove the Ventilation Fan Motor [4].

> **Note:** Notice the position of the fan for reassembly.
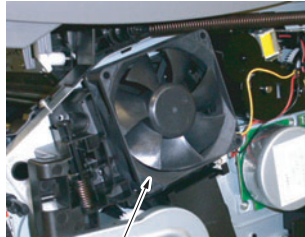
[4]   4139fs2042c1

Fusing Motor (M7)

1. Remove the Right Cover. See Right Cover on page 5-6.
2. Remove two screws [1] and the connector [2].
3. Remove the harness [3] from the wiring saddle [4] and then remove the Fusing Motor [5].

[5]

[1]

[3]
[2]
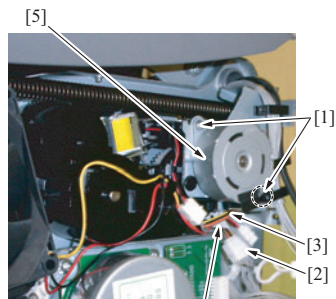
[4]   4139fs2043c1

Developing Motor (M3)

1. Remove the Right Cover. See Right Cover on page 5-6.
2. Remove the screw [1] and the Safety Switch Assy [2].

[1]

[2]

4139fs2044c1
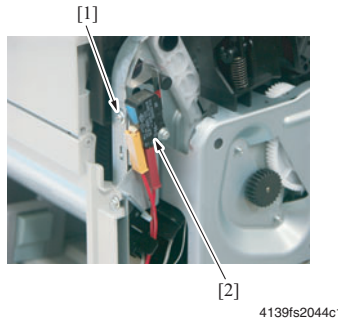
Note: Precautions for Reinstallation of the Safety Switch Assy

■ Check that the switch is actuated with the Front Cover and the Top Cover closed.
■ If the screw is not in the original position, make sure that the distance between the switch lever and switch case (with the switch in the actuated position) falls within the specified range.
Specifications: 0.1 to 1.0 mm

4139fs2068c2
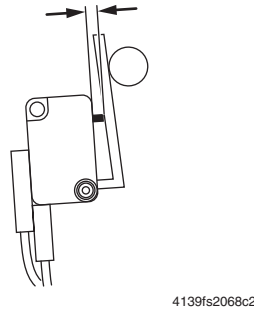
3. Remove four screws [5] and remove the Rack Drive Assy [6] by pulling it straight out of the printer.

4139fs2046c0
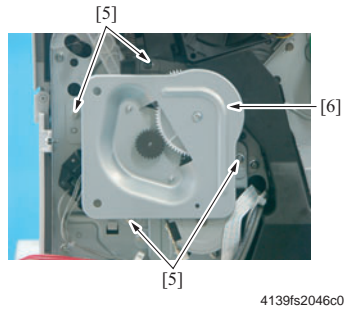
4. Remove two screws [7], disconnect the connector [8], and remove the Developing Motor [9].

4139fs2047c0
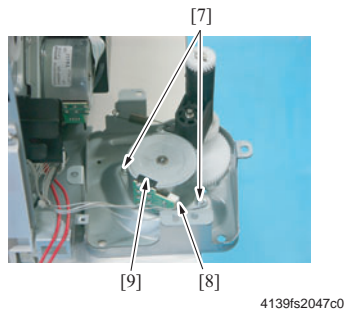
Rack Motor (M2)

1. Remove the Rack Drive Assy. See the removal procedure Steps 1 to 3 of Developing Motor (M3) on page 5-30.

2. Remove two screws [1], disconnect the connector [2], and remove the Rack Motor [3].

4139fs2048c1
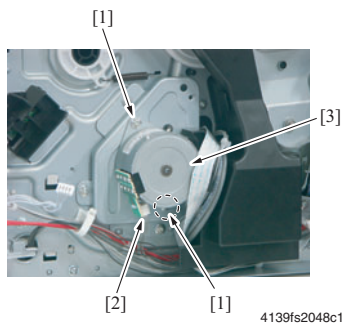
Tray 1 Paper Take-up Solenoid (SL1)

1. Remove the High Voltage Unit. See High Voltage Unit (HV) on page 5-17.

2. Remove one screw [1], unlock the tab [2], and release the wiring harness from the saddle [3]. Then, remove the shield [4].

[1]   [2]

[3]   [4]   4139fs2030c1
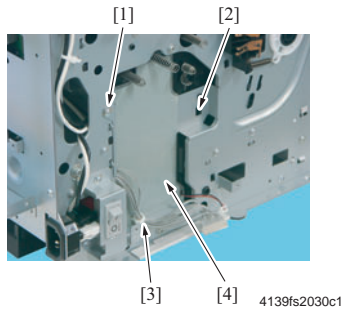
Caution: When reinstalling the shield, make sure that no part of the harness is wedged in the mechanism.

3. Remove the screw [5] and the Tray1 Paper Take-up Solenoid [6].

[5]   [6]

4139fs2050c0
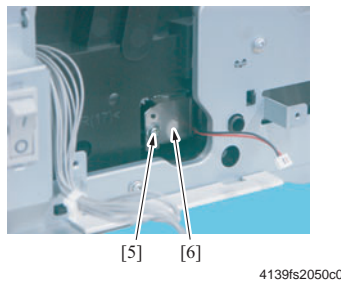
Registration Roller Solenoid (SL2)

1. Remove the Right Cover. See Right Cover on page 5-6.
2. Remove the Power Supply Cooling Fan Motor Assy. See Power Unit (PU) on page 5-14.
3. Disconnect the connector, remove the screw [1], and remove the Registration Roller Solenoid [2].

4139fs2051c1
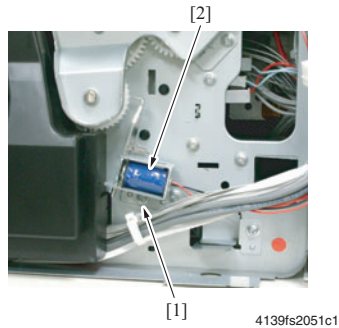
Precaution for Reinstallation

■ Confirm that the registration roller solenoid is securely seated on the location pins, before securing screw [1] to the chassis.

■ Reinstall the solenoid so that the clearance between the gear of the registration roller clutch and flapper falls within the specified range.
Specifications: 1.0 ± 0.2 mm

4139fs2067c1
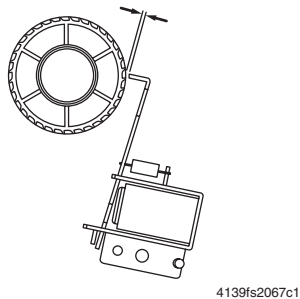
Pressure/Retraction Solenoid/Cleaning Blade (SL3)

1. Remove the Right Cover. See Right Cover on page 5-6.
2. Remove the screw [1], disconnect the connector [2], and remove the Pressure/Retraction Solenoid for the Cleaning Blade [3].

4139fs2052c1
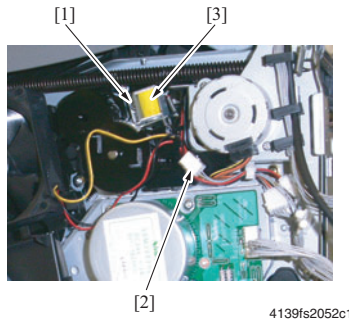
Pressure/Retraction Solenoid /2nd Image Transfer Roller (SL4)

1. Remove the Right Cover. See Right Cover on page 5-6.
2. Remove the Power Supply Cooling Fan Motor Assy. See Power Unit (PU) on page 5-14.
3. Disconnect the connector [2] from the Solenoid [1].
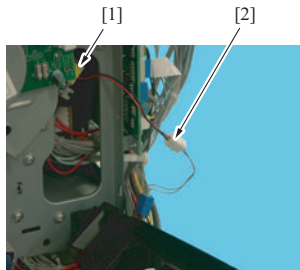
4139fs2054c2

4. Move the mylar sheet out of the way, and then remove the screw [3] and the Solenoid [4].

Caution: Be careful not the damage the mylar.

4139fs2055c1

Temperature/Humidity Sensor (HS1)

1. Remove the Front Cover. See Front Cover on page 5-6.

2. Rotate the printer on its back and remove the C-clip [1].
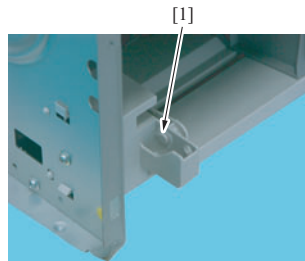
4139fs2056c0

3. Remove the springs from between the feed unit and the paper tray.

4. Loosen the paper tray by releasing the post on the left side, and then lift Tray 1 [2] out of the way.
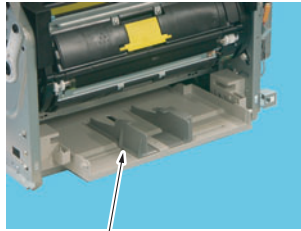
[2]

4139fs2057c0

Note:

■ Use care not to lose the two springs.
■ Be careful not to damage the actuator of the Tray1 Paper Empty Sensor.

5. Push in the tab that secures the housing to the frame.

6. Disconnect the connector [3] and remove the Temperature/Humidity Sensor [4] from the black plastic housing.

[3]
[4]
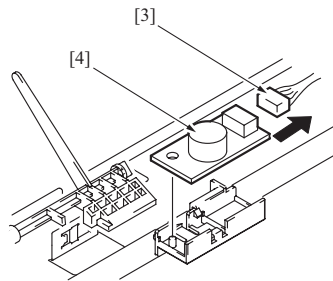
4139fs2533c0

Notes for Reassembly

■ When re-attaching the paper tray, make sure that the cam lobes are in the up position, pointing into the printer.
■ If the tray or cams have slipped out of position, rotate the pick roller to position the cams in relation to the tray.

Density Sensor (AIDC)

1. Remove the Transfer Belt. See Transfer Belt on page 2-12.

2. On the transfer belt, remove two screws [1] and the Density Sensor protective cover [2].
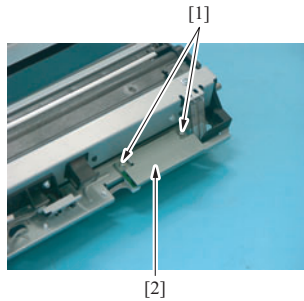
4139fs2061c0

3. Disconnect the connector [3] and remove the Density Sensor [4].
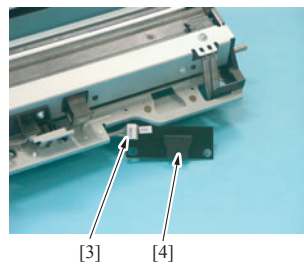
4139fs2062c0

Torque Limiter

1. Remove the Paper Take-up Unit. See Paper Take-Up Unit on page 5-23.

2. Remove the screw [1] and the Paper Take-up Clutch.

3. Disassemble the Paper Take-up Clutch and remove the torque limiter [2].
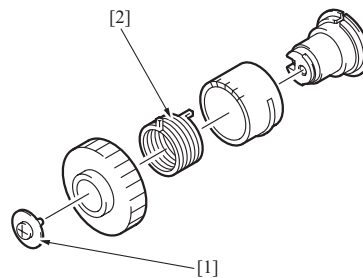
4139fs2512c0

Reinstallation Procedure

Note:

■ There are five slots provided in the coupling gear [1] of the Paper Take-up Clutch. These slots are for adjusting the position of the Take-up Roller.
When the torque limiter [2] is reinstalled, it is necessary to adjust the position of the coupling gear [1] and torque limiter [2] so that any paper take-up failure can be prevented.

4139fs2513c0
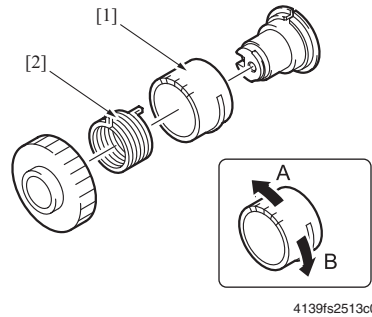
1. Install the Paper Take-up Clutch [3].

2. Turn the Paper Take-up Clutch [3] in the direction of the arrow shown on the left until it is engaged with the solenoid and stopped.

4139fs2530c0
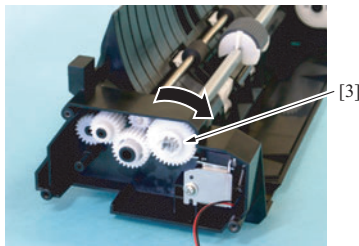
3. If the Take-up Roller [4] tilts in the clockwise direction, turn the coupling gear of the Paper Take-up Clutch in the direction of A and reassemble the Paper Take-up Clutch.
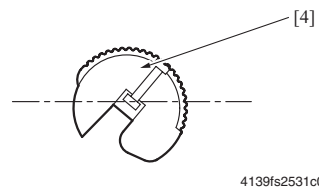
4139fs2531c0

4. If the Take-up Roller [5] tilts in the counterclockwise direction, turn the coupling gear of the Paper Take-up Clutch in the direction of B and reassemble the Paper Take-up Clutch.
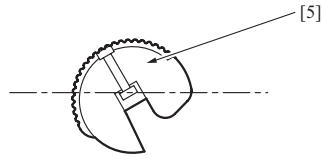
4139fs2532c0

Hard Drive (Option)

1. Remove the Rear Panel. See Rear Panel on page 5-4.

2. Disconnect the hard drive from the PWB-P (Image Processor Board).

Note: Do not remove the Hard Drive with great force, as connector [2] is connected to it.
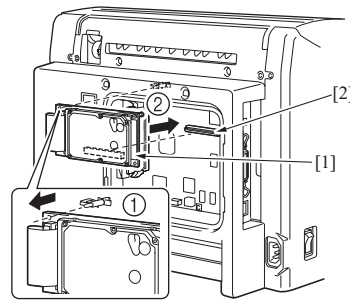
4139F2C501DA

6 Print Engine Parts List

This section covers the following:

Using the Parts List

Changes to Xerox products are made to accommodate improved components as they become available. As improvements are made, part numbers may change from those appearing in this section. To get the latest part, provide the following information when ordering:

- Component's part number
- Product type or configuration number
- Serial number of the printer

Only those parts listed with part numbers are available for order. Parts listed without part numbers are only available as part of a parent assembly or Service Kit.

1. **Key:** The callout number from the exploded part diagram.
2. **Part No:** The material part number used to order specific parts.
3. **Description:** Name of the part and number supplied per order.
4. **Qty:** This column lists the quantity of this part in the printer, for example a quantity of "2" means there are two of these parts, however, when ordering the part you will only receive one part.
5. **Comments**: The comments column is used for clarification.
6. For information on hardware (screens, washers, e-rings, etc.), see the letter designate in the exploded diagram. All hardware is available for the hardware kit.

Serial Number Format

The serial number is coded as follows:

■ The text **"S/N"** followed by the serial number in the barcode.

■ The barcode **does not** include a field identifier.

■ The nine digit serial number format **PPPRSSSSS** where:

PPP - Is the alphanumeric Product Code

Product	Voltage	Product Code
6120	110 V	YGG
6120	220 V	YGH

R - Is the numeric revision digit. Changes at major product updates or when the serial number is reset to a starting value or (30001, 60001, or 90001).

SSSSS - Is the five digit numeric serial number.

For example:

S/N YGG032148
YGG = Product code for the 6120, 110 V Printer
0 = Revision level
32148 = Serial number for 6120

Note: The barcoded serial number label is located under the top cover on the left side of the metal crossbar.

Diagrams of Main Parts
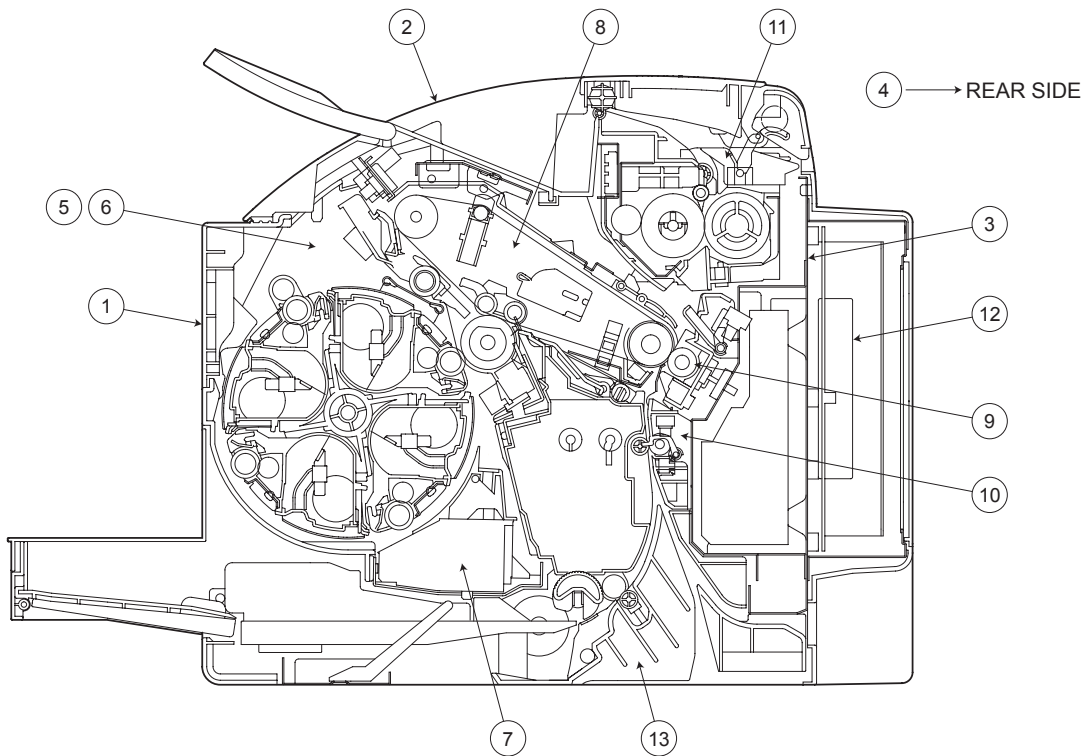
No.	Description	Parts List No.	Page No.
1	External Parts	P1	page 6-6
2	Top Cover	P2	page 6-8
		P3	page 6-10
3	Main Frame	P4	page 6-12
4	Left Frame	P5	page 6-14
5	Right Frame	P6	page 6-16
		P7	page 6-18
6	Drive Section	P8	page 6-20
		P9	page 6-22
		P10	page 6-24
		P11	page 6-26
7	Laser (PH) Section	P12	page 6-28

No.	Description	Parts List No.	Page No.
8	Transfer Section	P13	page 6-30
9	Transfer Roller Section	P14	page 6-32
10	Vertical Transport Section	P15	page 6-34
11	Fuser	P16	page 6-36
12	Electrical Components	P17	page 6-38
13	Paper Take-Up Section	P18	page 6-40
		P19	page 6-41
		P20	page 6-43
	Wiring	P21	page 6-45
		P22	page 6-46
		P23	page 6-47
	Wiring Accessories and Jigs	P24	page 6-48
	Accessory Parts	P25	page 6-49

P1 External Parts

P 1
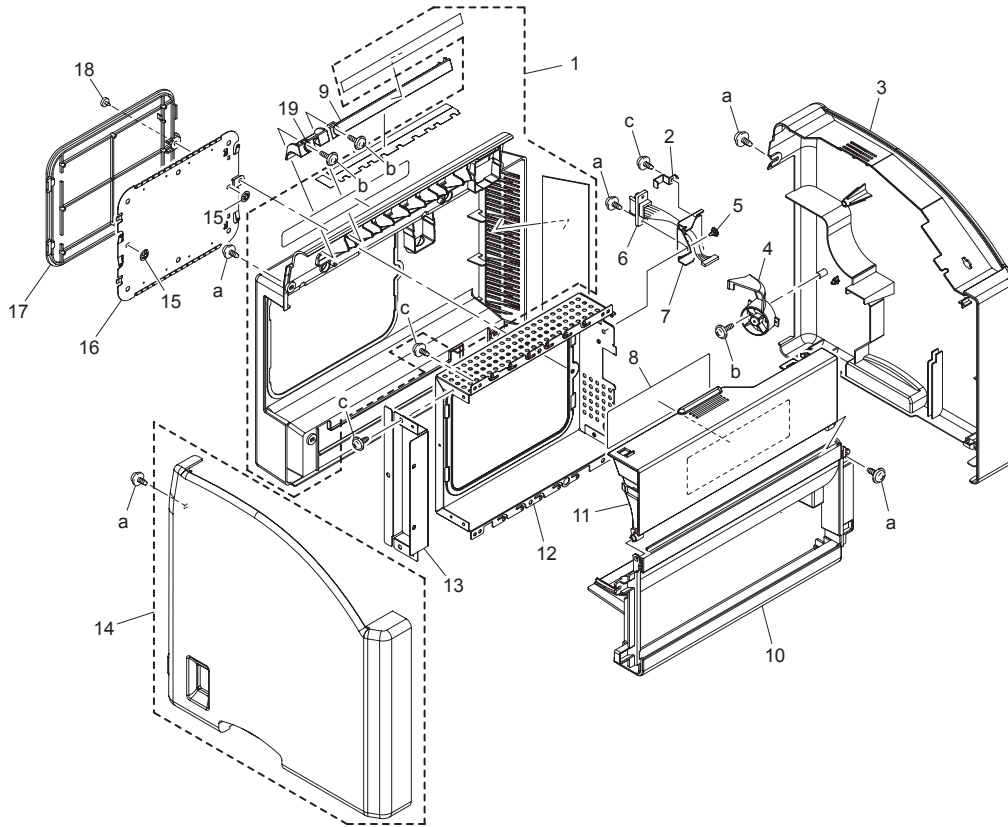
P1 External Parts List Table

Key	Part No.	Description	Qty	Comments
1	604K35100	REAR COVER KIT	1	Includes all parts shown within the dotted line. Some assembly required
2		REGULATING PLATE	1	
3	802E99590	RIGHT COVER	1	
4		DUCT	1	
5		SHOULDER SCREW	1	
6		WIRE HARNESS ASSY	1	
7		BRACKET	1	
8	893E86110	INSTRUCTIONS (LABEL)	1	
9		HOLDER	1	

P1 External Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
10	802E99600	FRONT LOWER COVER	1	
11	802E99610	FRONT UPPER COVER	1	
12		SHIELD	1	
13		BRACKET	1	
14	604K35120	LEFT COVER KIT (US)	1	
14	604K35110	LEFT COVER KIT (EU)	1	
15		RETAINING RING	2	
16		SHIELD	1	
17	802E99620	COVER	1	
18	826E27440	SHOULDER SCREW	1	
19		GUIDE	1	
a b	604K35500	Part of Hardware Kit		

P2 Top Cover

P 2
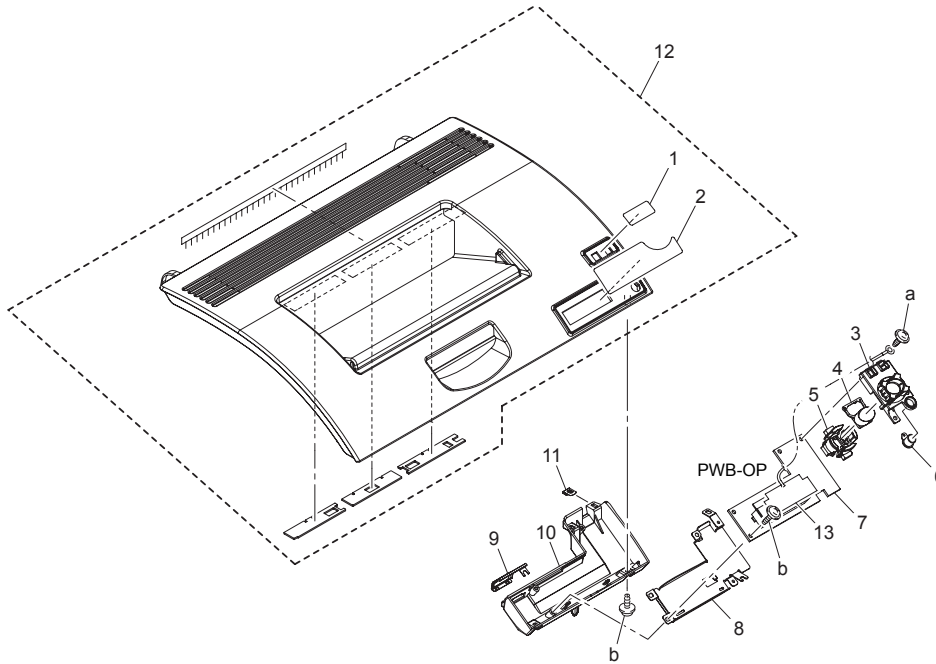
P2 Top Cover Parts List Table

Key	Part No.	Description	Qty	Comments
1		FACE SHEET READY ERROR	1	
2		FACE SHEET TONER	1	
3		HOLDER	1	
4		BUTTON	1	
5		BUTTON	1	
6		BUTTON	1	
7	960K25480	PWB-OP (Control Panel)	1	Includes LCD
8		SHIELD	1	
9		EARTH GROUND	1	
10		COVER	1	
11		EARTH GROUND	1	

P2 Top Cover Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
12	604K35130	UPPER COVER KIT	1	Includes all parts within the dotted lines. Some assembly required
13		PLASTIC COVER	1	Includes ground plate and strap.
a b	604K35500	Part of Hardware Kit		

P3 Top Cover

P3 Top Cover Parts List Table
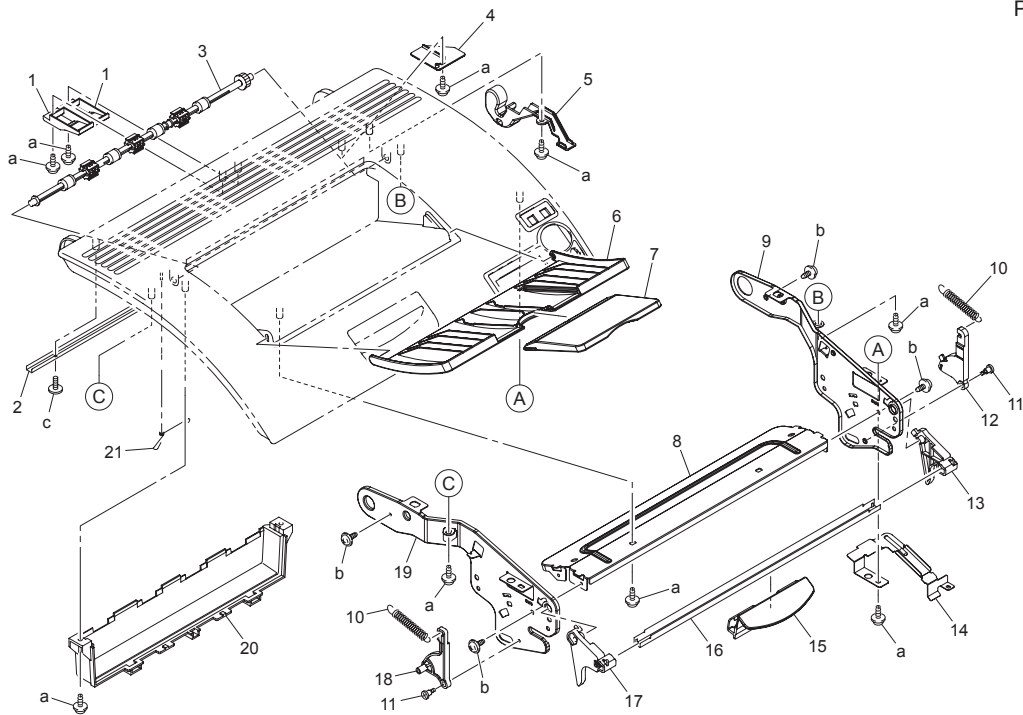
Key	Part No.	Description	Qty	Comments
1		GUIDE	2	
2		REINFORCE PLATE	1	
3	059E05440	ROLLER	1	
4		GUIDE	1	
5		COVER	1	
6	050E23340	TRAY	1	
7	050E23350	TRAY	1	
8		REINFORCE PLATE	1	
9		FRAME	1	
10		TENSION SPRING	2	
11		SHOULDER SCREW	2	
12		ARM	1	

P3 Top Cover Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
13		ARM	1	
14		COVER	1	
15		HANDLE	1	
16		SHAFT	1	
17		ARM	1	
18		ARM	1	
19		FRAME	1	
20		HOLDER	1	
21		CONTACT	1	
a b c	604K35500	Part of Hardware Kit		

P4 Main Frame
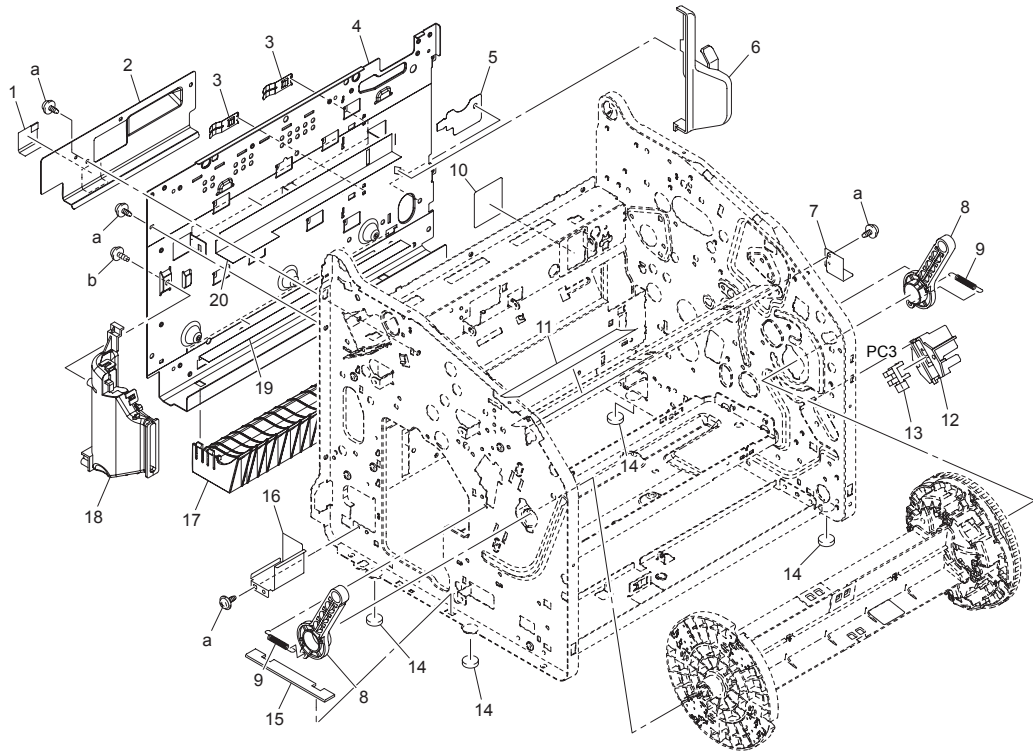
P4 Main Frame Parts List Table

Key	Part No.	Description	Qty	Comments
1		SEAL	1	
2		COVER	1	
3		EARTH GROUND	2	
4		FRAME	1	
5		SEAL	1	
6		DUCT	1	
7		COVER	1	
8		LEVER	2	
9		TENSION SPRING	2	
10		SEAL	1	
11		LABEL CONSUMABLES REODER	1	
12	019E74390	HOLDER	1	

P4 Main Frame Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
13	130E11800	RACK POSITION SENSOR (PC3)	1	
14	017E11460	RUBBER FOOT	4	1 per part number
15		COVER	1	
16		COVER	1	
17		GUIDE	1	
18		DUCT ASSY	1	
19		SEAL	1	
20		SEAL	1	
a b	604K35500	Part of Hardware Kit		

P5 Left Frame

P 5
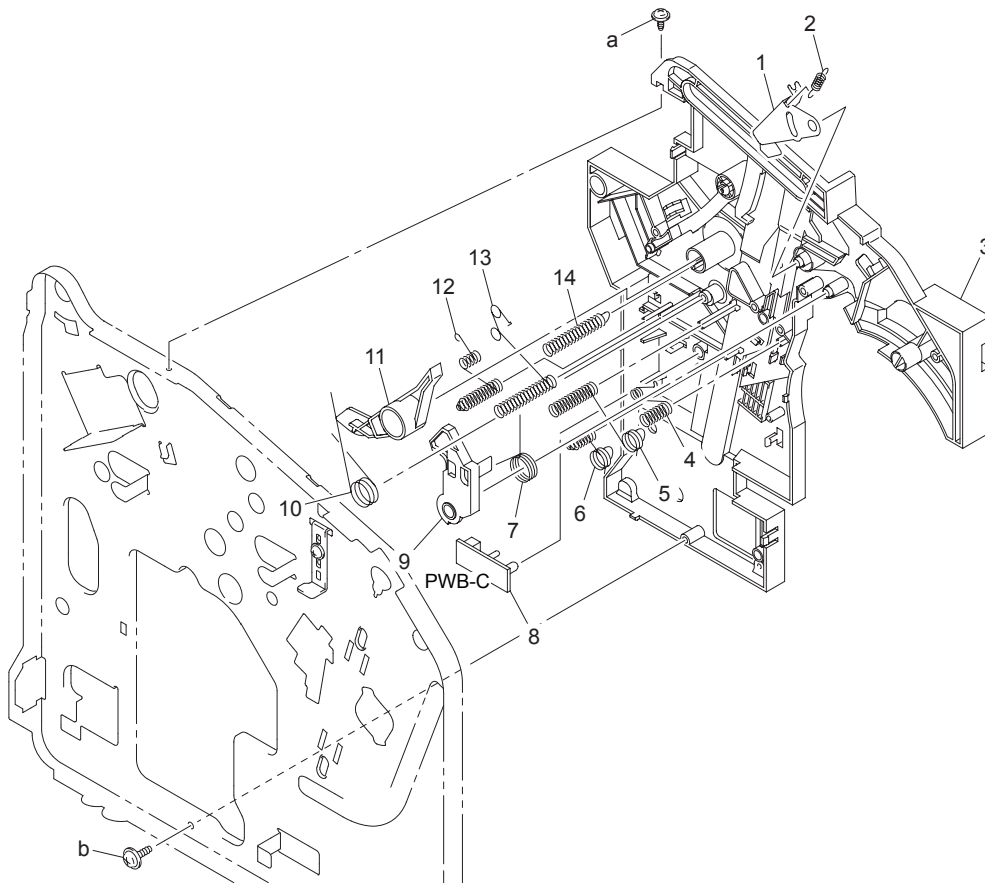
P5 Left Frame Parts List Table

Key	Part No.	Description	Qty	Comments
1		LEVER	1	
2		TENSION SPRING	1	
3		GUIDE	1	
4		EARTH GROUND	1	
5		CONTACT	1	
6		CONTACT	1	
7		TORSION SPRING	1	
8	960K25450	WASTE TONER NEAR FULL (PWB-C)	1	

P5 Left Frame Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
9		PAWL	1	
10		TORSION SPRING	1	
11		LEVER	1	
12		CONTACT	1	
13		CONTACT	1	
14		CONTACT	1	
a b	604K35500	Part of Hardware Kit		

P6 Right Frame

P 6
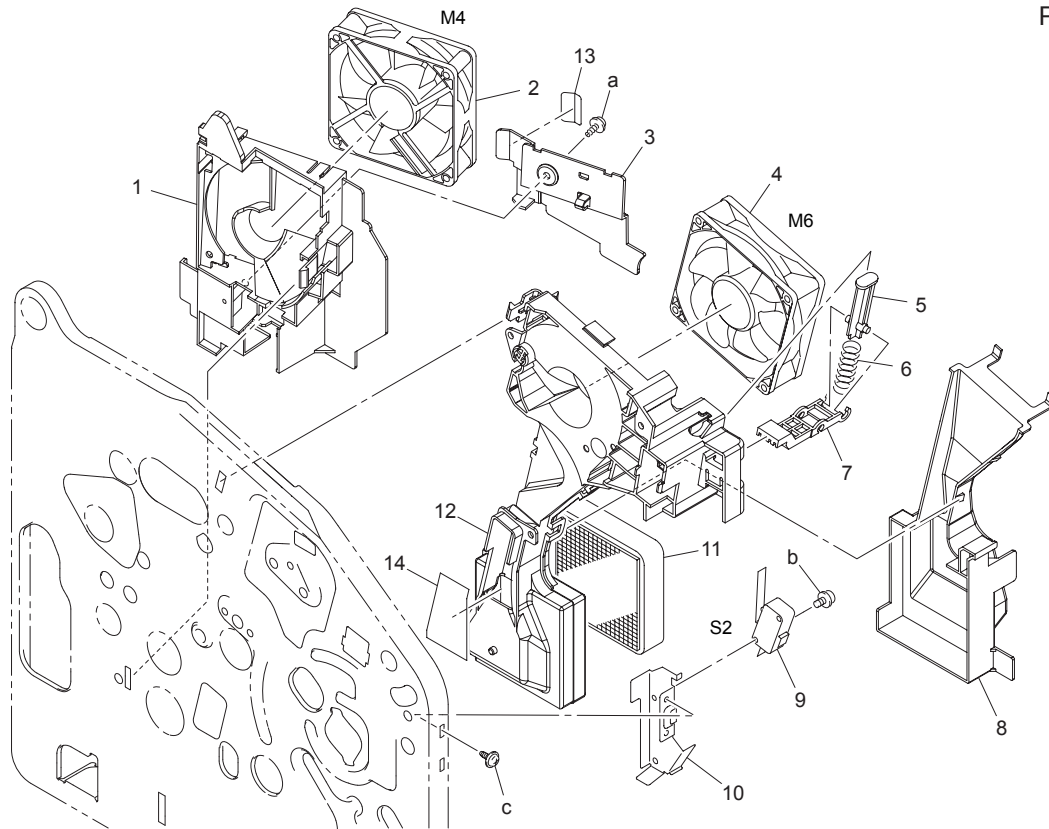
P6 Right Frame Parts List Table

Key	Part No.	Description	Qty	Comments
1		DUCT	1	
2	127E15240	POWER SUPPLY COOLING (M4)	1	
3		COVER	1	
4	127E15250	VENTILATION FAN (M6)	1	
5		LEVER	1	
6		PRESSURE SPRING	1	
7		PAWL	1	
8		DUCT	1	
9	110K15620	SAFETY SWITCH (S2)	1	
10		BRACKET	1	

P6 Right Frame Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
11	053E07470	FILTER	1	
12		DUCT	1	
13		SEAL	1	
14		SEAL	1	
a b c	604K35500	Part of Hardware Kit		

P7 Right Frame 2
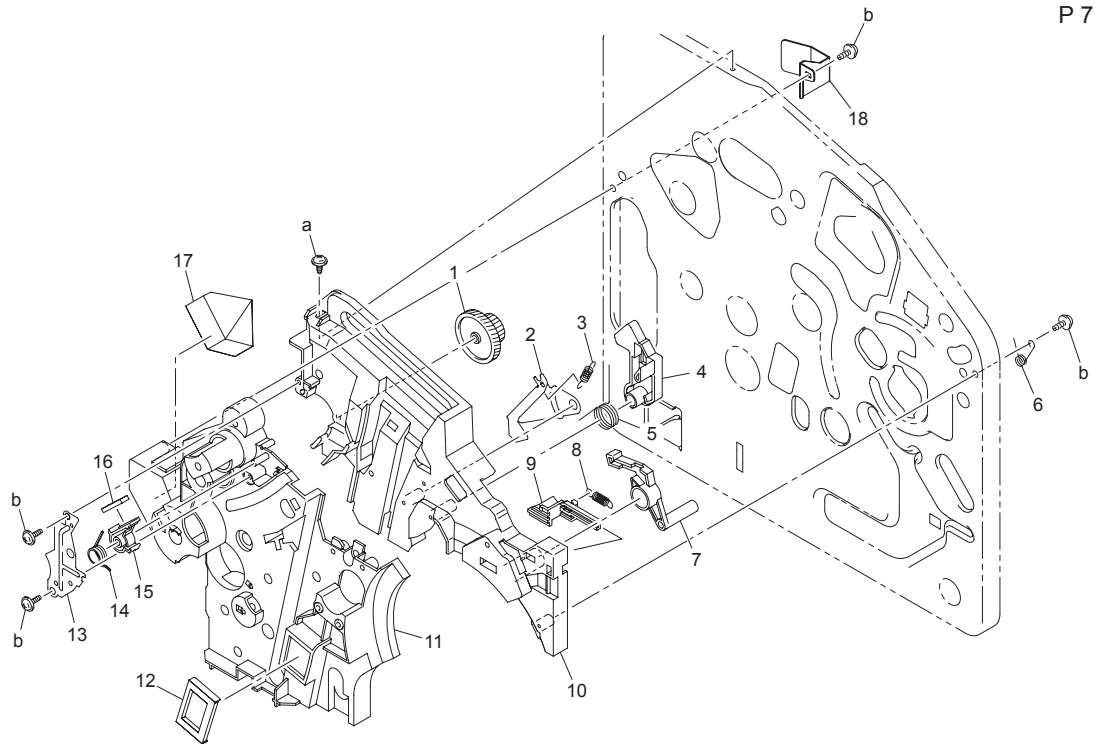
P7 Right Frame 2 Parts List Table

Key	Part No.	Description	Qty	Comments
1		GEAR 22/64T	1	
2		LEVER	1	
3		TENSION SPRING	1	
4		PAWL	1	
5		TORSION SPRING	1	
6		TORSION SPRING	1	
7		LEVER	1	
8		TENSION SPRING	1	
9		LEVER	1	
10		GUIDE	1	
11		HOLDER	1	
12		SEAL	1	

P7 Right Frame 2 Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
13		REINFORCE PLATE	1	
14		TORSION SPRING	1	
15		HOLDER	1	
16		FRICTION SHEET	1	
17		SEAL	1	
18		SHIELD	1	
a b	604K35500	Part of Hardware Kit		

P8 Drive Section

P8 Drive Section Parts List Table

Key	Part No.	Description	Qty	Comments
1		GEAR 16T	1	
2		GEAR 19T	1	
3		SHAFT	1	
4		DRUM	1	
5		TORSION SPRING	1	
6		GEAR 108T	1	
7		GEAR 31T	1	
8		GEAR 25/42T	1	

P8 Drive Section Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
9		GEAR 60T	1	
10		GEAR 15/90T	1	
11		GEAR 19T	1	
12		TORSION SPRING	1	
13		LEVER	1	
14		BRACKET ASSY	1	
15	121E20250	PRESSURE RETRACTION SOLENOID, 2ND BTR (SL4)	1	
16		CAM	1	
17		GEAR 20T	1	
18		RATCHET	1	
a b c d	604K35500	Part of Hardware Kit		

P9 Drive Section

P 9
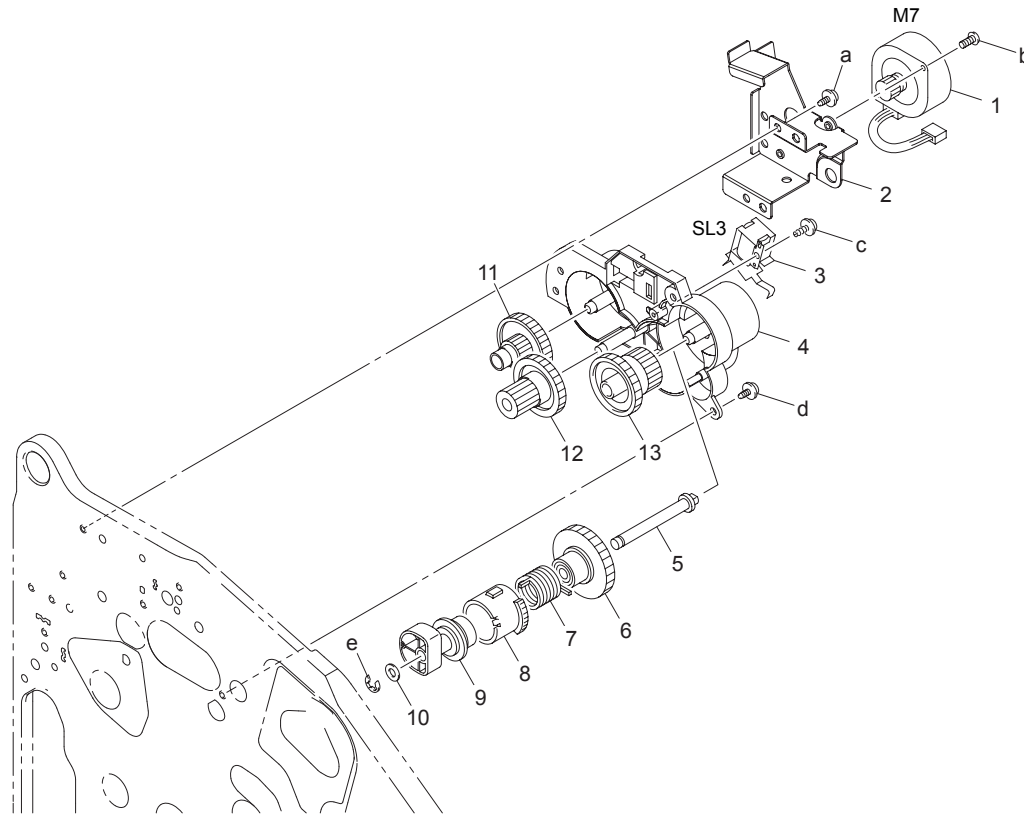
P9 Drive Section Parts List Table

Key	Part No.	Description	Qty	Comments
1	127E15260	FUSER MOTOR (M7)	1	
2		BRACKET	1	
3	121E20250	PRESSURE RETRACTION SOLENOID, CLN BLADE (SL3)	1	
4		HOLDER	1	
5		SHAFT	1	
6		GEAR 48T	1	
7		TORSION SPRING	1	
8		RATCHET	1	
9		CAM	1	

P9 Drive Section Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
10		WASHER	1	
11		GEAR 14/48T	1	
12		GEAR 14/32T	1	
13		GEAR 27/40T	1	
a b c d e	604K35500	Part of Hardware Kit		

P10 Drive Section

P 10
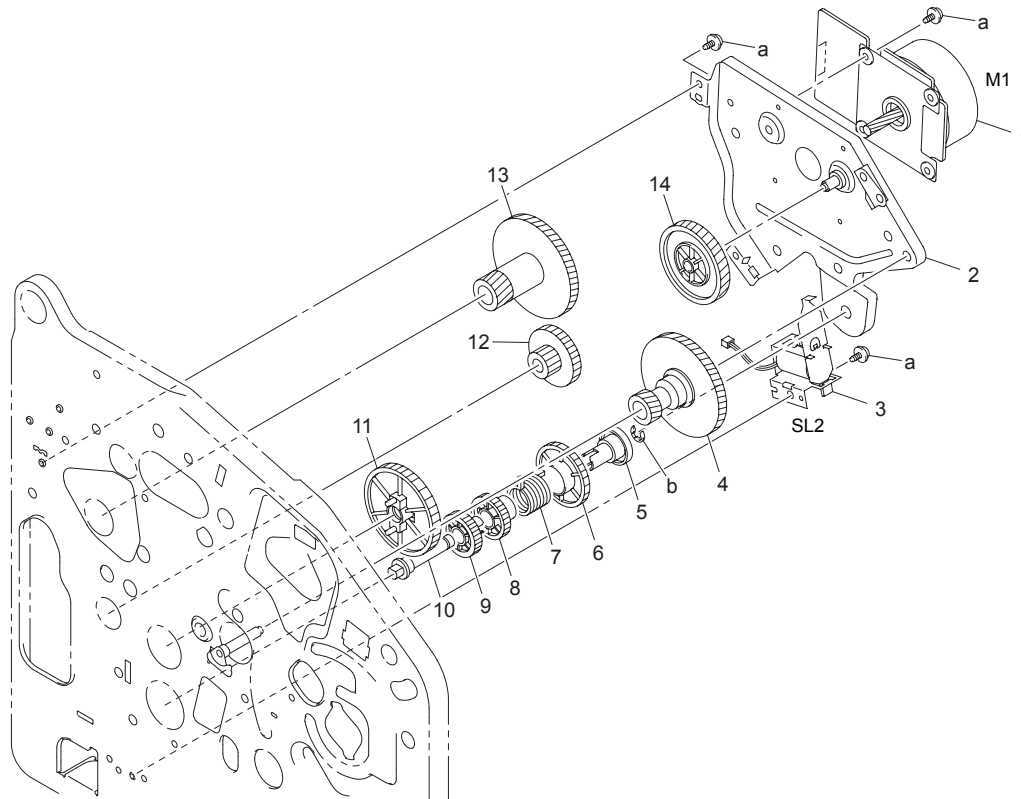
P10 Drive Section Parts List Table

Key	Part No.	Description	Qty	Comments
1	127E15270	MAIN MOTOR (M1)	1	
2		BRACKET ASSY	1	
3	121E20270	REGISTRATION ROLLER SOLENOID (SL2)	1	
4		GEAR 20/117T	1	
5		DRUM	1	
6		RATCHET	1	
7		TORSION SPRING	1	
8		GEAR 24T	1	
9		GEAR 24T	1	

P10 Drive Section Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
10		SHAFT	1	
11		GEAR 52T	1	
12		GEAR 14/33T	1	
13		GEAR 20/117T	1	
14		GEAR 91T	1	
a b	604K35500	Part of Hardware Kit		

P11 Drive Section

P 11
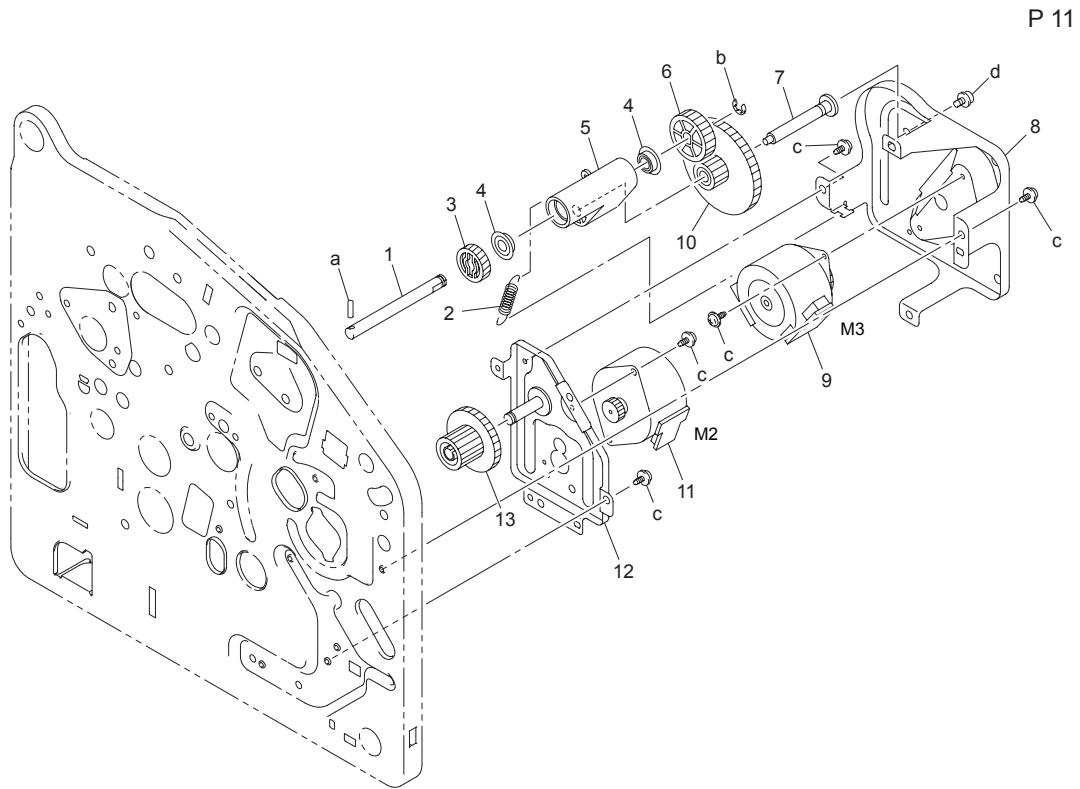
P11 Drive Section Parts List Table

Key	Part No.	Description	Qty	Comments
1		SHAFT	1	
2		TENSION SPRING	1	
3	807E17730	GEAR 24T	1	
4		BALL BEARING	2	
5		LEVER	1	
6		GEAR 35T	1	
7		STAY	1	
8		BRACKET	1	
9	127E15280	DEVELOPER MOTOR (M3)	1	
10		GEAR 20/73T	1	
11	127E15290	RACK MOTOR (M2)	1	

P11 Drive Section Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
12		BRACKET ASSY	1	
13		GEAR 19/48T	1	
a b c d	604K35500	Part of Hardware Kit		

P12 Laser (PH) Section

P 12
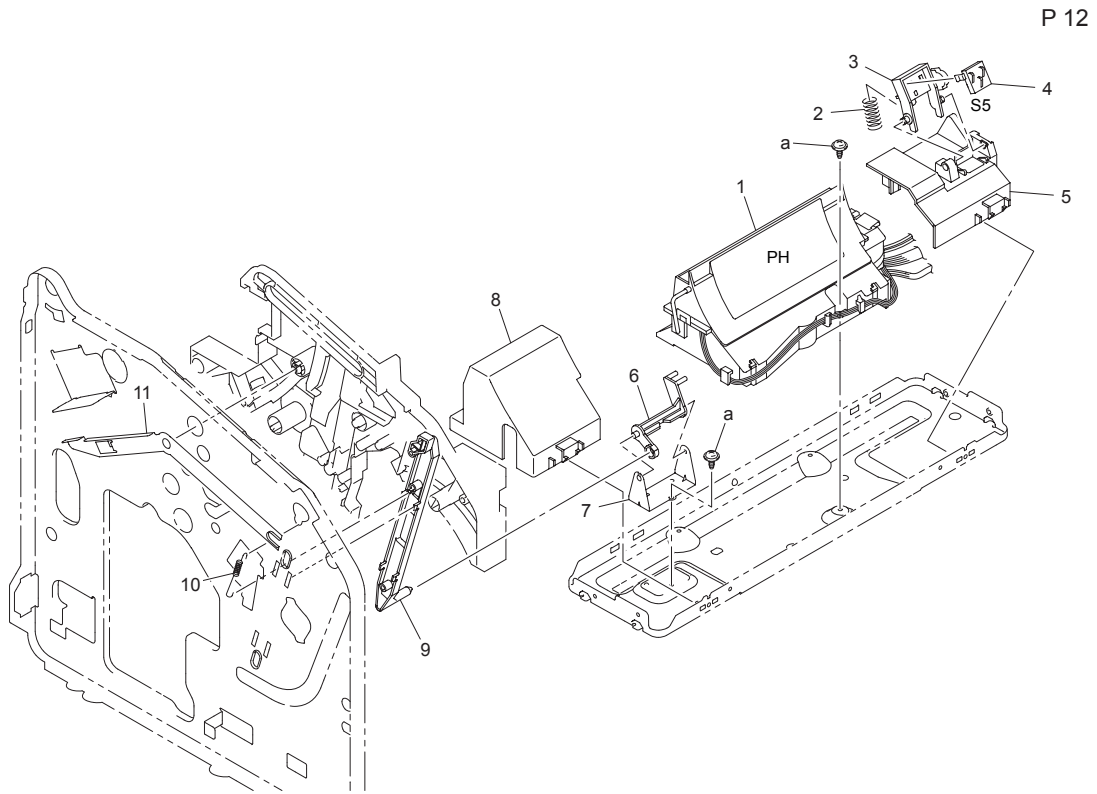
P12 PH Section Parts List Table

Key	Part No.	Description	Qty	Comments
1	122K02590	LASER (PH) UNIT	1	
2		PRESSURE SPRING	1	
3		HOLDER	1	
4	110E19940	TONER CRUM CONTACT SWITCH (S5)	1	
5		HOLDER	1	
6	011E20120	LEVER	1	
7		BRACKET	1	
8		COVER	1	
9		LEVER	1	
10		TENSION SPRING	1	
11		LEVER	1	

P12 PH Section Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
a	604K35500	Part of Hardware Kit		

P13 Transfer Section
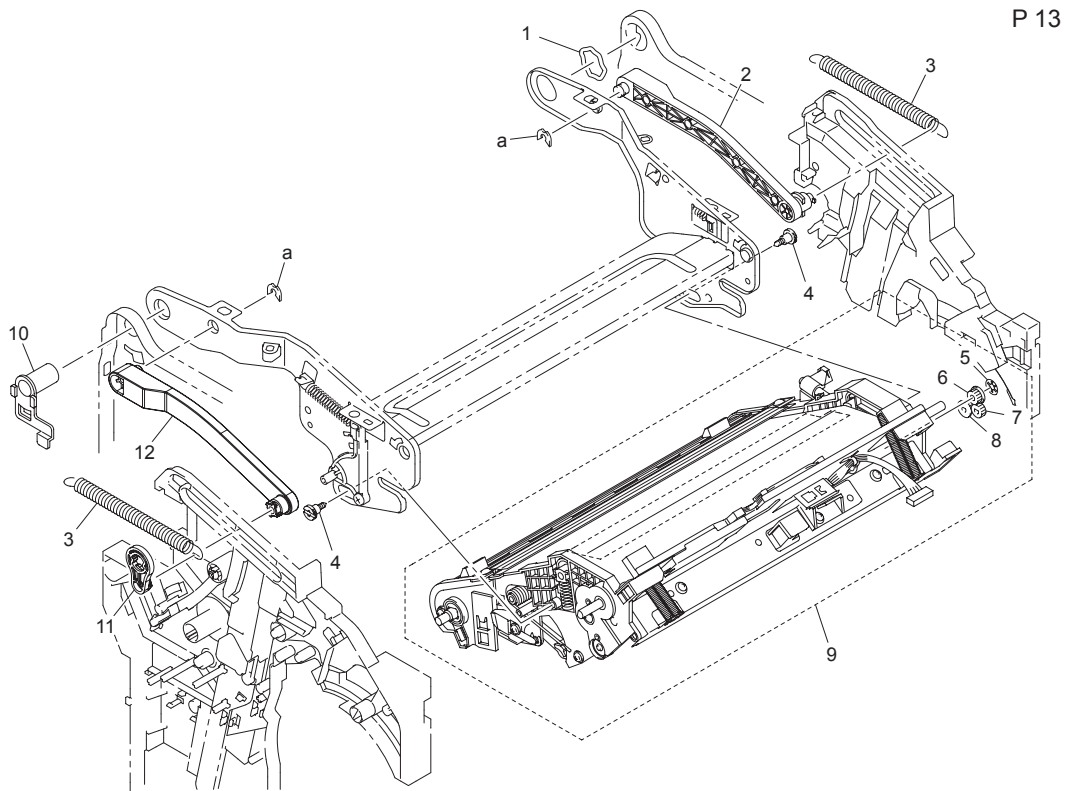
P13 Transfer Section Parts List Table

Key	Part No.	Description	Qty	Comments
1		SPACER	1	
2		LEVER	1	
3		TENSION SPRING	2	
4	826E27450	SHOULDER SCREW	2	
5		STOPPER RING	1	
6		GEAR 19T	1	
7		GEAR 28T	1	
8		GEAR 20T	1	
9	023E30890	TRANSFER BELT	1	
10		HOLDER	1	
11		HOLDER	1	

P13 Transfer Section Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
12		LEVER	1	
a	604K35500	Part of Hardware Kit		

P14 Transfer Roller Section

P 14
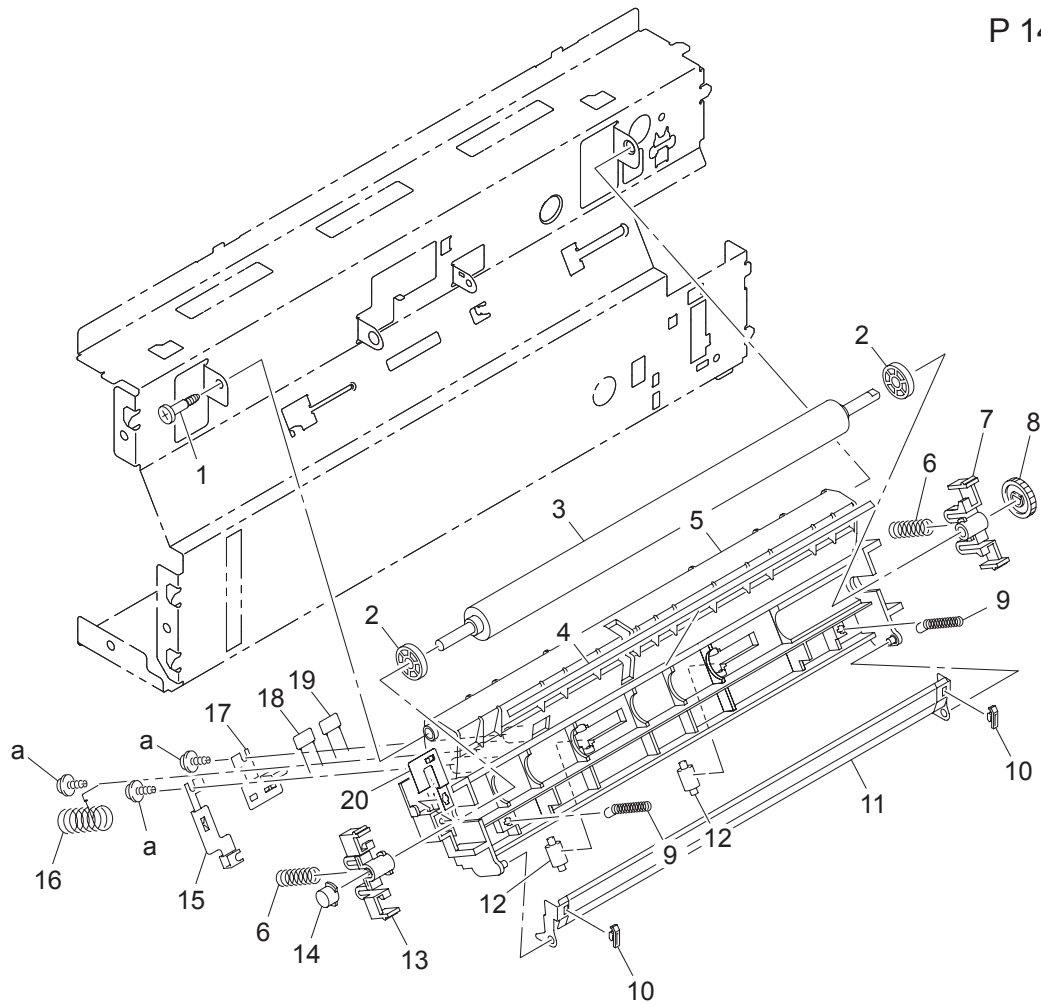
P14 Transfer Roller Section Parts List Table

Key	Part No.	Description	Qty	Comments
1	826E27460	SHOULDER SCREW	1	
2	005E23460	COLLAR	2	
3	059E05450	TRANSFER ROLLER	1	Item 3 only
4		NETURALIZING MEMBER	1	
5		HOLDER	1	
6	809E71890	PRESSURE SPRING	2	
7	019E74400	HOLDER	1	

P14 Transfer Roller Section Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
8	807E17740	GEAR 16T	1	
9	809E71900	PRESSURE SPRING	2	
10		SPACER	2	
11		GUIDE	1	
12		ROLL	2	
13	019E74410	HOLDER	1	
14	101E23500	CONDUCTIVE CAP	1	
15		CONTACT	1	
16	809E71910	PRESSURE SPRING	1	
17		CONTACT	1	
18		RESISTOR	1	
19		RESISTOR	1	
20		CONTACT	1	
a	604K35500	Part of Hardware Kit		

P15 Vertical Transport Section
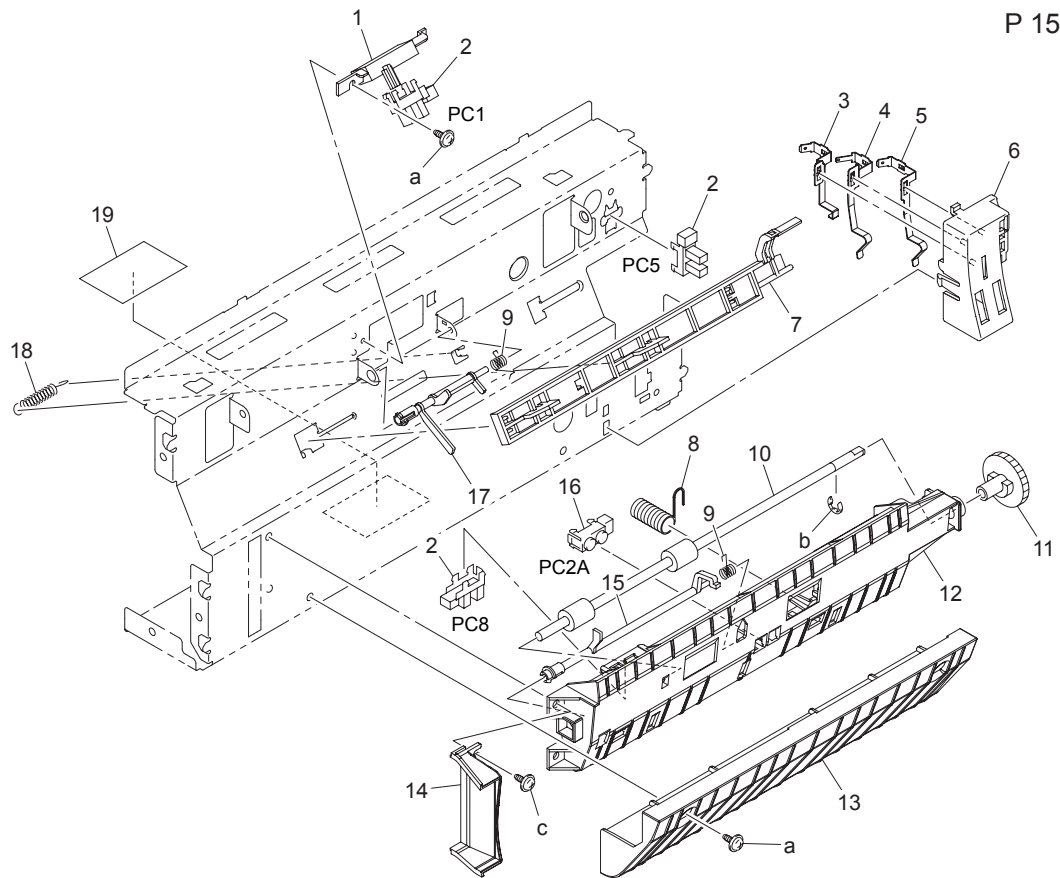
P 15

P15 Vertical Transport Section Parts List Table

Key	Part No.	Description	Qty	Comments
1		HOLDER	1	
2	130E11800	SENSOR	3	PC1=REGISTRATION SENSOR PC5=RETRACTION POS SENSOR, 2ND IMAGE TRANSFER PC8=FUSING SENSOR (PAPER LOOP)
3		CONTACT	1	
4		CONTACT	1	
5		CONTACT	1	
6		HOLDER	1	

P15 Vertical Transport Section Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
7		SLIDER	1	
8		EARTH GROUND	1	
9		TORSION SPRING	2	
10		ROLLER	1	
11		GEAR 28T	1	
12		GUIDE	1	
13		GUIDE	1	
14		DUCT	1	
15	120E29270	ACTUATOR	1	FUSING SENSOR
16	130E11820	OHP SENSOR (PC2A)	1	
17	120E29280	ACTUATOR	1	REGISTRATION SENSOR
18		TENSION SPRING	1	
19		SEAL	1	
a b c	604K35500	Part of Hardware Kit		

P16 Fusing Unit

P16 Fusing Unit Parts List Table
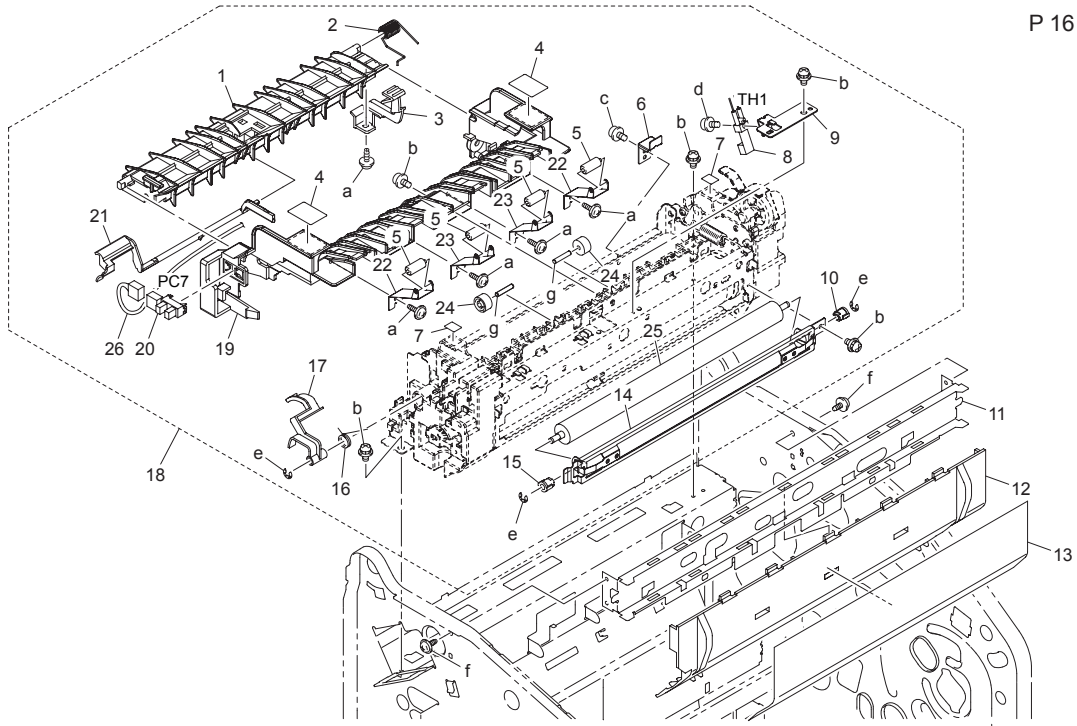
Key	Part No.	Description	Qty	Comments
1		GUIDE	1	
2		TORSION SPRING	1	
3		LEVER	1	
4		SEAL CAUTION HOT	2	
5		ROLL	4	
6		BRACKET	1	
7		LABEL	2	
8		THERMISTOR	1	
9		BRACKET	1	
10		BUSHING	1	
11		REINFORCE PLATE	1	
12		COVER	1	
13		SEAL	1	

P16 Fusing Unit Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
14		BRACKET	1	
15		BUSHING	1	
16		TORSION SPRING	1	
17		LEVER	1	
18	126K23190	FUSING UNIT 120V	1	Includes all parts shown within the dotted line.
18	126K23200	FUSING UNIT 230V	1	
19		GUIDE	1	
20		EXIT SENSOR (PC7)	1	
21	120E29290	ACTUATOR	1	EXIT SENSOR
22		PLATE SPRING	2	
23		PLATE SPRING	2	
24		COLLAR	2	
25		ROLLER	1	
26		WIRE HARNESS ASSY	1	
a, b, c, d, e, f, g	604K35500	Part of Hardware Kit		

P17 Electrical Components

P 17
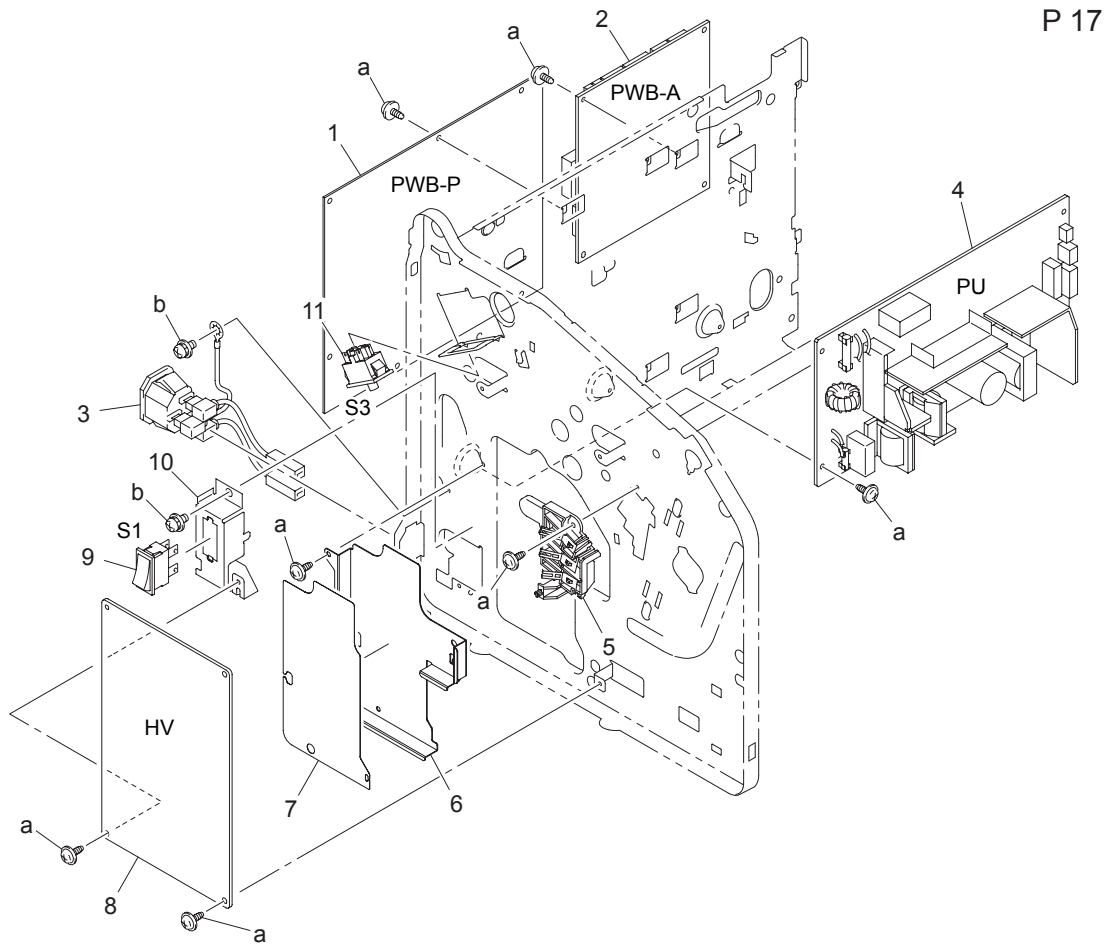
P17 Electrical Components Parts List Table

Key	Part No.	Description	Qty	Comments
1	960K25460	PWB-P (Image Processor)	1	
2	960K25470	PWB-A (Engine Control Board)	1	
3	962K49980	WIRE HARNESS ASSY	1	
4	105E18500	POWER SUPPLY (100/120V)	1	Power Unit (PU)
	105E18510	POWER SUPPLY (220/240V)	1	Power Unit (PU)
5	802K94020	RACK TERMINAL ASSY	1	
6		SHIELD	1	
7		SHIELD	1	

P17 Electrical Components Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
8	105E18520	HIGH VOLTAGE POWER SUPPLY	1	HV Board
9	110E19910	POWER-SWITCH (S1)	1	
10		BRACKET	1	
11	110E19920	FUSING SAFEY SWITCH (S3)	1	
a b	604K35500	Part of Hardware Kit		

P18 Paper Take-Up Section

P 18
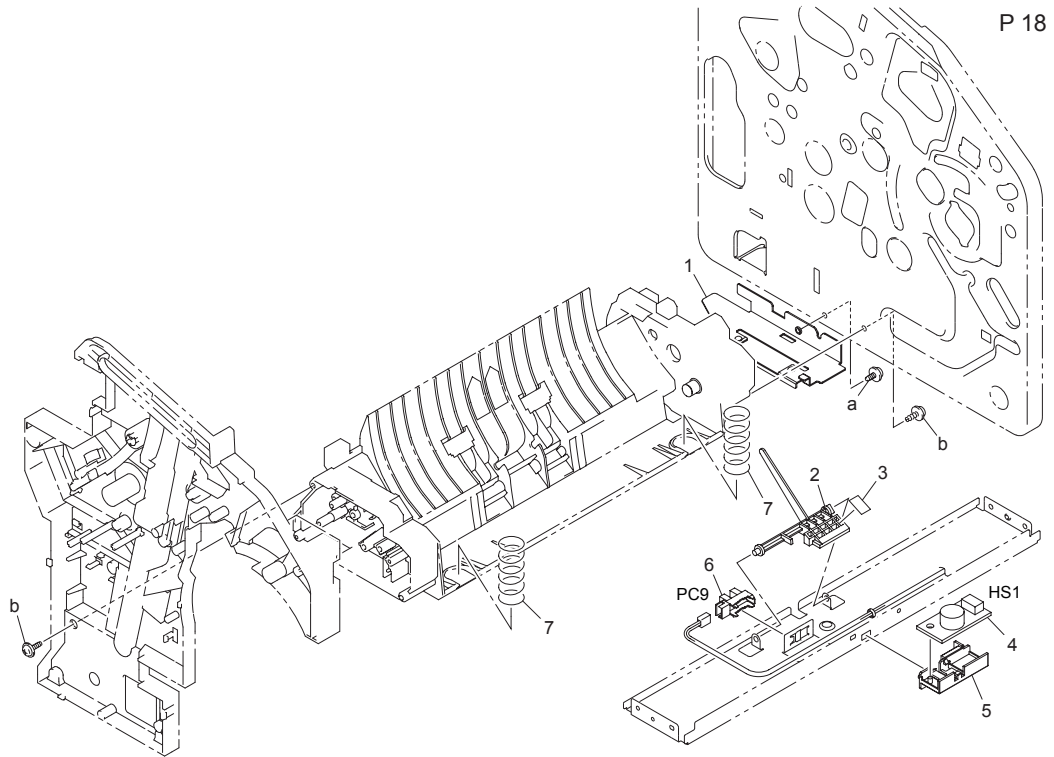
P18 Paper Take-Up Section Parts List Table

Key	Part No.	Description	Qty	Comments
1		BRACKET	1	
2	120E29300	ACTUATOR	1	TRAY 1 EMPTY SENSOR
3		BRACKET	1	
4	130E11840	TEMP/HUMIDITY SENSOR (HS1)	1	Does not include holder.
5		HOLDER	1	
6	130E11800	TRAY 1 EMPLTY SENSOR (PC9)	1	
7	809E71920	PRESSURE SPRING	2	TRAY 1
a	604K35500	Part of Hardware Kit		

P19 Paper Take-Up Section 2
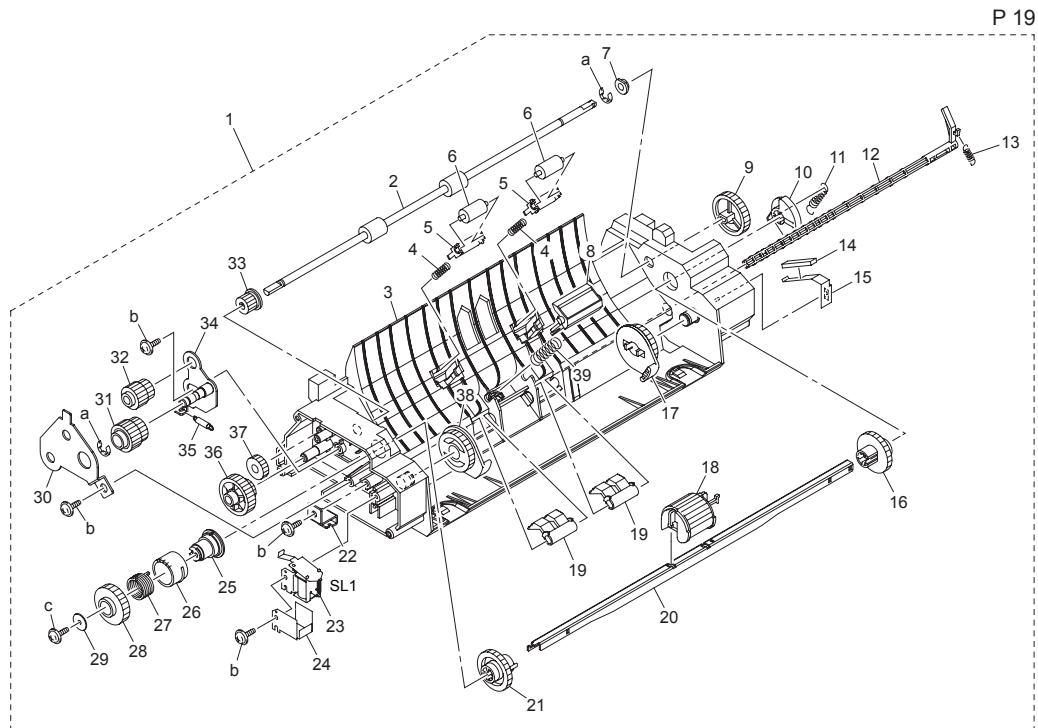
P19 Paper Take-Up Section 2 Parts List Table

Key	Part No.	Description	Qty	Comments
1	130K74270	PAPER TAKE-UP ASSY	1	Includes all parts shown with the dotted lines.
2		ROLLER	1	
3		GUIDE	1	
4		PRESSURE SPRING	2	
5		HOLDER	2	
6		ROLL	2	
7		BUSHING	1	
8	019K13070	FRICTION SHEET ASSY	1	Does not include spring.
9		GEAR 28T	1	
10		CAM	1	
11		TENSION SPRING	1	
12		LEVER	1	

P19 Paper Take-Up Section 2 Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
13		TENSION SPRING	1	
14		FRICTION SHEET	1	
15		PLATE SPRING	1	
16		GEAR 27T	1	
17		CAM	1	
18	059E05460	ROLLER	1	
19		STOPPER	2	
20		SHAFT	1	
21		GEAR 27T	1	
22		BRACKET	1	
23	121E20250	TRAY 1 PAPER PICK SOLENOID (SL1)	1	
24		SHIELD	1	
25		DRUM	1	
26		RATCHET	1	
27		TORSION SPRING	1	
28		GEAR 35T	1	
29		WASHER	1	
30		BRACKET	1	
31		GEAR 21/25T	1	
32		GEAR 14/20T	1	
33		GEAR 14T	1	
34		LEVER ASSY	1	
35		TENSION SPRING	1	
36		GEAR 17/26T	1	
37		GEAR 20T	1	
38		CAM	1	
39		PRESSURE SPRING	1	
a b c	604K35500	Part of Hardware Kit		

P20 Paper Take-Up Section 3
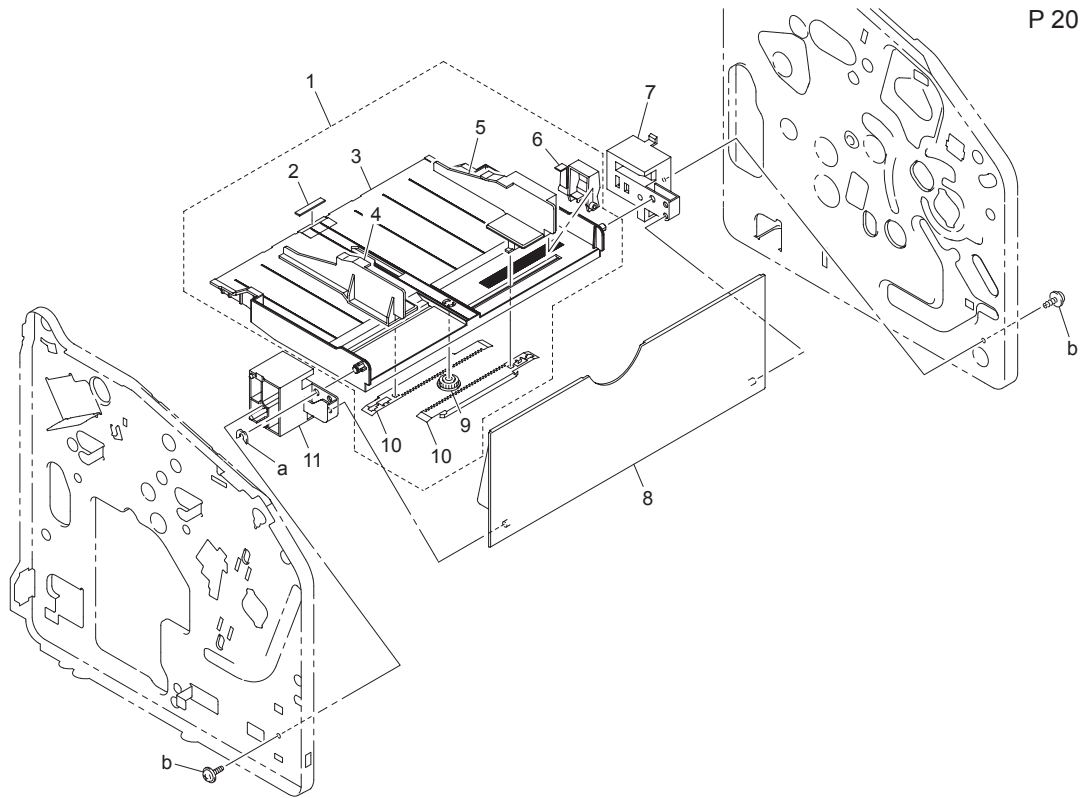
P20 Paper Take-Up Section 3 Parts List Table

Key	Part No.	Description	Qty	Comments
1	053K04740	TRAY 1	1	Includes all parts within the dotted lines. Regulating plate assembly.
2		FRICTION SHEET	1	
3		LIFTING PLATE	1	
4		REGULATING PLATE	1	
5		REGULATING PLATE	1	
6		LEVER	1	
7	019E74420	HOLDER	1	
8	050E23360	TRAY 1 COVER	1	
9		GEAR 14T	1	
10		RACK	2	

P20 Paper Take-Up Section 3 Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
11	019E74430	HOLDER	1	
a b	604K35500	Part of Hardware Kit		

P21 Wiring
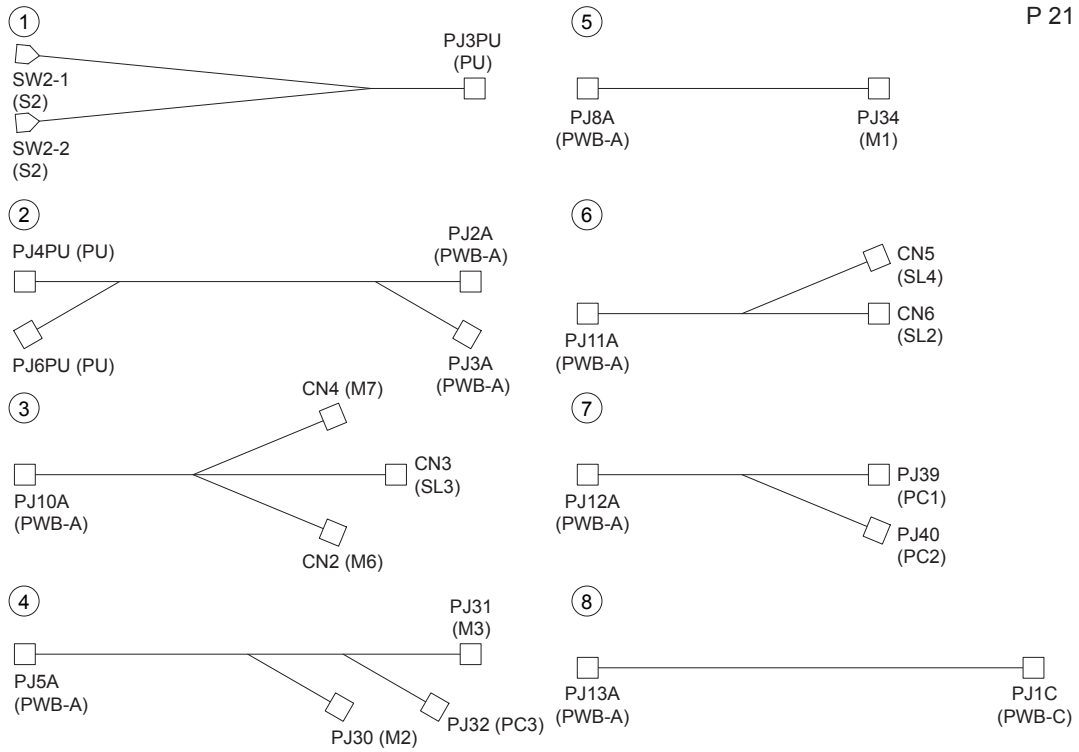
P21 Wiring Parts List Table

Key	Part No.	Description	Qty	Comments
1	962K49990	WIRE HARNESS ASSY	1	
2	962K50000	WIRE HARNESS ASSY	1	
3	962K50010	WIRE HARNESS ASSY	1	
4	962K50020	WIRE HARNESS ASSY	1	
5	962K50030	WIRE HARNESS ASSY	1	
6	962K50040	WIRE HARNESS ASSY	1	PWBA=IMAGING UNIT
7	962K50050	WIRE HARNESS ASSY	1	
8	962K50060	WIRE HARNESS ASSY	1	

P22 Wiring

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①                                          ⑤                              P 22

▢────────────────────────▢      ▢────────────────────────▢
PJ16A                    PJ44          CN1                      PJ9A
(PWB-A)                  (PC9)                                  (PWB-A)


②                            PJ41            ⑥                        ◁ DC1
                          ◁ (PC5)                                   DC2
▢──────────────▢                     ▢──────────◁─────────◁ DC2
PJ14A                    PJ42          PJ17A                      ◁ DC3
(PWB-A)                  (PC8)         (PWB-A)                      DC3


③                                          ⑦

▢────────────────────────▢      ▢────────────────────────▢
PJ15A                    PJ43          PJ18A                    PJ1HV
(PWB-A)                  (HS1)         (PWB-A)                   (HV)


④                                          ⑧

▢────────────────────────▢      ▢────────────────────────▢
CN8                      PJ22A         PJ46                     PJ23A
(2nd Casette)            (PWB-A)       (S5)                     (PWB-A)
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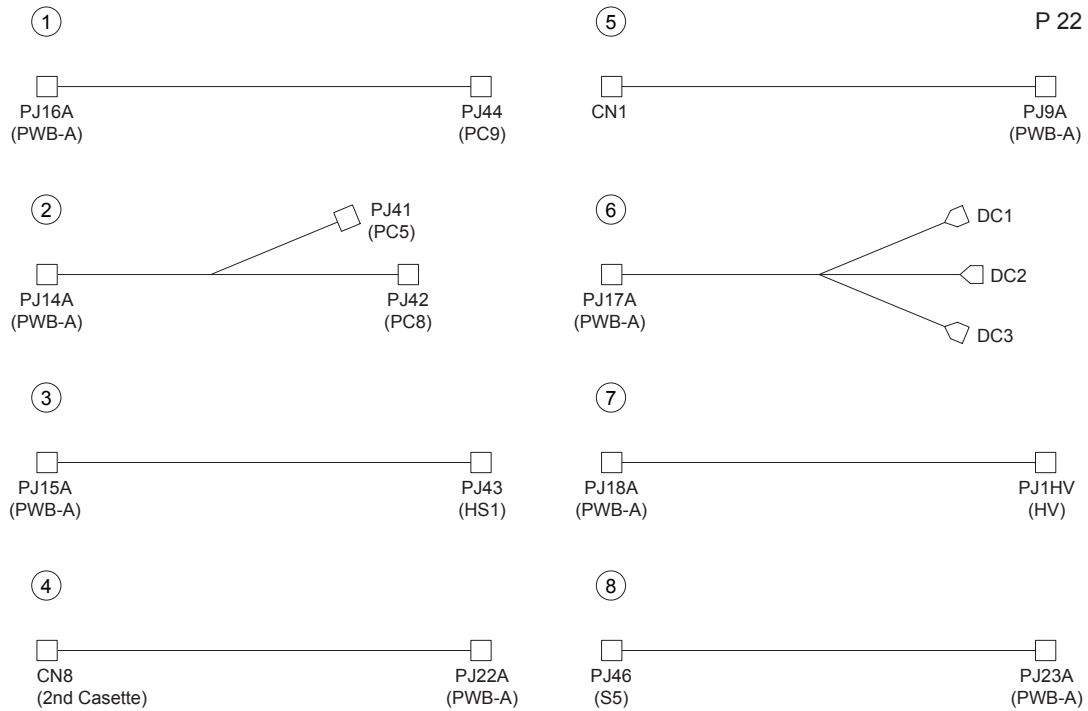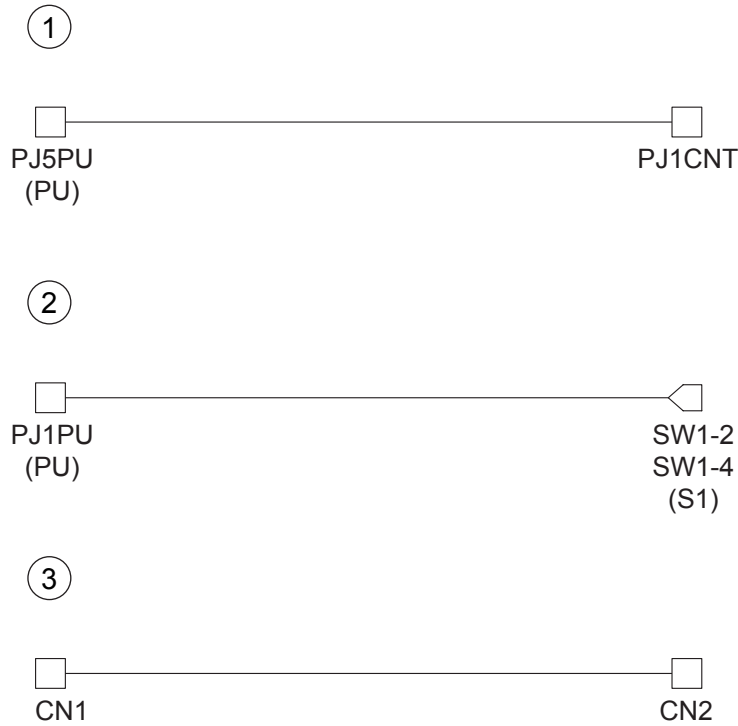
P22 Wiring Parts List Table

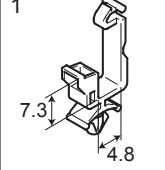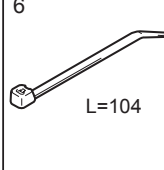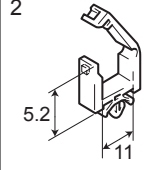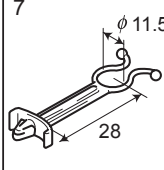| Key	Part No.	Description	Qty	Comments
1	962K50070	WIRE HARNESS ASSY	1	
2	962K50080	WIRE HARNESS ASSY	1	
3	962K50090	WIRE HARNESS ASSY	1	
4		WIRE HARNESS ASSY	1	
5	962K50100	WIRE HARNESS ASSY	1	
6	962K50110	WIRE HARNESS ASSY	1	PWB-A<=>IMAGING UNIT
7	962K50120	WIRE HARNESS ASSY	1	
8	962K50130	WIRE HARNESS ASSY	1	

*Items 1-8 included in the hardware kit.

P23 Wiring

P 23

①

PJ5PU   PJ1CNT
(PU)

②

PJ1PU   SW1-2
(PU)   SW1-4
                      (S1)

③

CN1   CN2
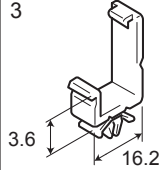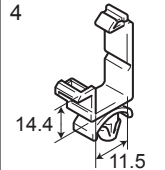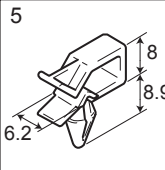
P23 Wiring Parts List Table

Key	Part No.	Description	Qty	Comments
1	962K50140	WIRE HARNESS ASSY	1	PU<=>OP PANEL
2		WIRE HARNESS ASSY	1	
3	962K50150	WIRE HARNESS ASSY	1	PWB-P<=>OP PANEL

P24 Wiring Accessories

1	6	11	16	21	26
7.3 4.8	L=104				
2	7	12	17	22	27
5.2 11	φ 11.5 28				
3	8	13	18	23	28
3.6 16.2					
4	9	14	19	24	29
14.4 11.5					
5	10	15	20	25	30
8 8.9 6.2					

P24 Wiring Parts List Table

Key	Part No.	Description	Qty	Comments
1		WIRING SADDLE	4	
2		WIRING SADDLE 5.2H	6	
3		WIRING SADDLE 18.5H	3	
4		WIRING SADDLE 14.4H	4	
5		WIRING SADDLE 8.0H	1	
6		CABLE TIE 104L	2	
7		SO CLIP	1	

*Items 1-7 included in the hardware kit.

P25 Accessories
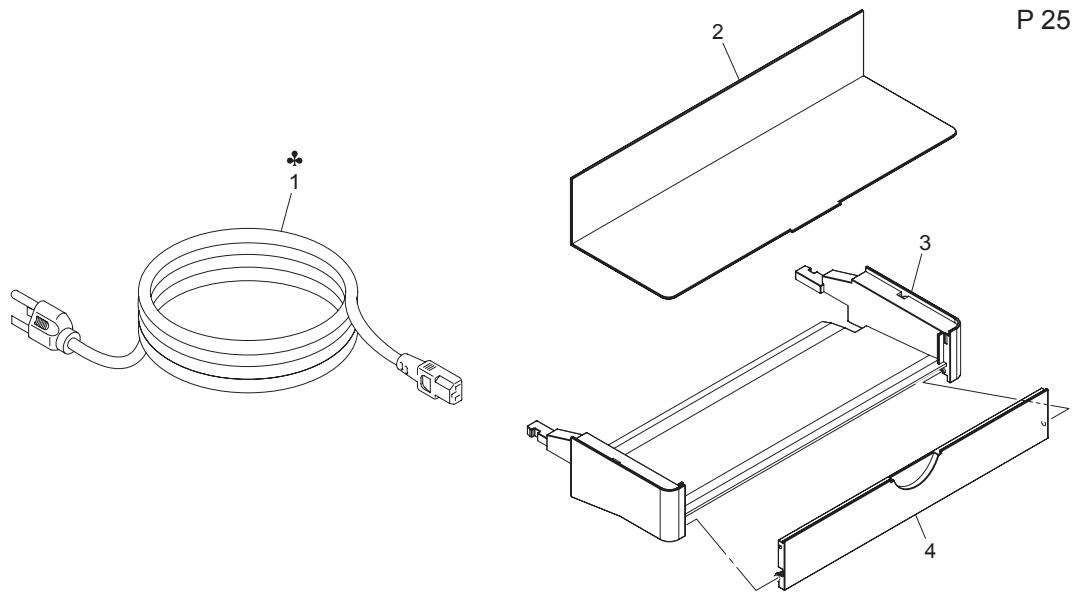
P25 Accessories Parts List Table

Key	Part No.	Description	Qty	Comments
1	117E29050	POWER CORD (120 V)	1	
2	802E99630	COVER	1	
3	050E23370	TRAY	1	
4	802E99640	COVER	1	

Miscellaneous Parts, Consumables, Maintenance Parts, and Options

Key	Part No.	Description	Qty	Comments
	604K35500	HARDWARE KIT		
	117E29060	CABLE ASSEMBLY, 3, 18AWG, 115V, 98, 0L		
	117E29070	CABLE, PWR, EURO, 220V, 99L9		
	117E29080	CABLE, PWR, U.K., 24OV, 96L		
	117E29090	CABLE, PWR, AUST, 24OV, 96L		
	117E29100	CABLE, PWR, SWISS, 220/24OV, 50 HZ		
	117E29110	CABLE ASSEMBLY, PWR, DANISH, 250V		
	117E29120	CABLE ASSEMBLY, PWR PRC		
	117E29130	POWER, 240, ARGENTINA		
	084K3550	DUPLEX UNIT		Includes 128 MB memory
	059K51210	OPTIONAL LTA (500 SHEET FEEDER, LETTER)		
	059K51290	OPTIONAL LTA (500 SHEET FEEDER, A4-SIZE)		
	121K44630	HARD DISK		
	133K25150	128MB MEMORY		
	113R00689	CYAN STANDARD CAPACITY TONER CARTRIDGE		
	113R00690	YELLOW STANDARD CAPACITY TONER CARTRIDGE		
	113R00691	MAGENTA STANDARD CAPACITY TONER CARTRIDGE		
	113R00692	BLACK HIGH CAPACITY TONER CARTRIDGE		
	113R00693	CYAN HIGH CAPACITY TONER CARTRIDGE		
	113R00694	YELLOW HIGH CAPACITY TONER CARTRIDGE		
	113R00695	MAGENTA HIGH CAPACITY TONER CARTRIDGE		

Key	Part No.	Description	Qty	Comments
	108R00691	IMAGING UNIT		
	059E05450	TRANSFER ROLLER		
	023E30890	TRANSFER BELT		
	126K23190	FUSER (120 V)		
	126K23200	FUSER (220 V)		
	695K23070	REPACK KIT		

7 Print Engine Theory of Operation

This section contains:

Parts of the Printer

Cross Section

4139to1590c0
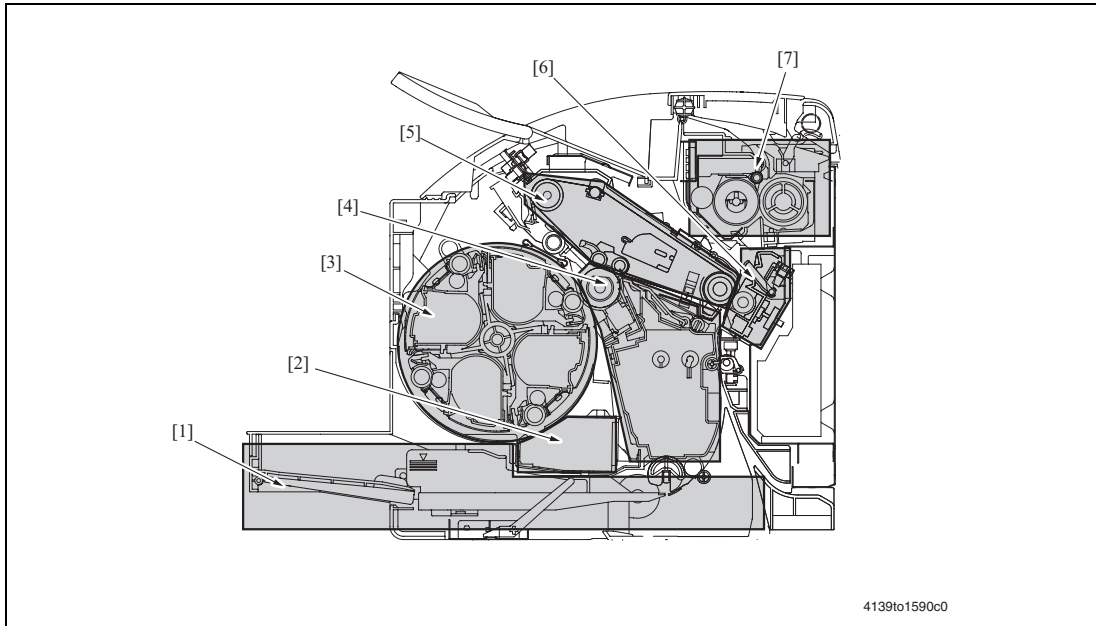
[1]	Paper Feed Section		[4]	Imaging Unit Section
[2]	Write Section		[5]	Transfer Belt (1st Transfer) Section
[3]	Toner Cartridge Section		[6]	Transfer Roller (2nd Transfer) Section
			[7]	Fusing section

Printer Paper Path

4139to1502c0
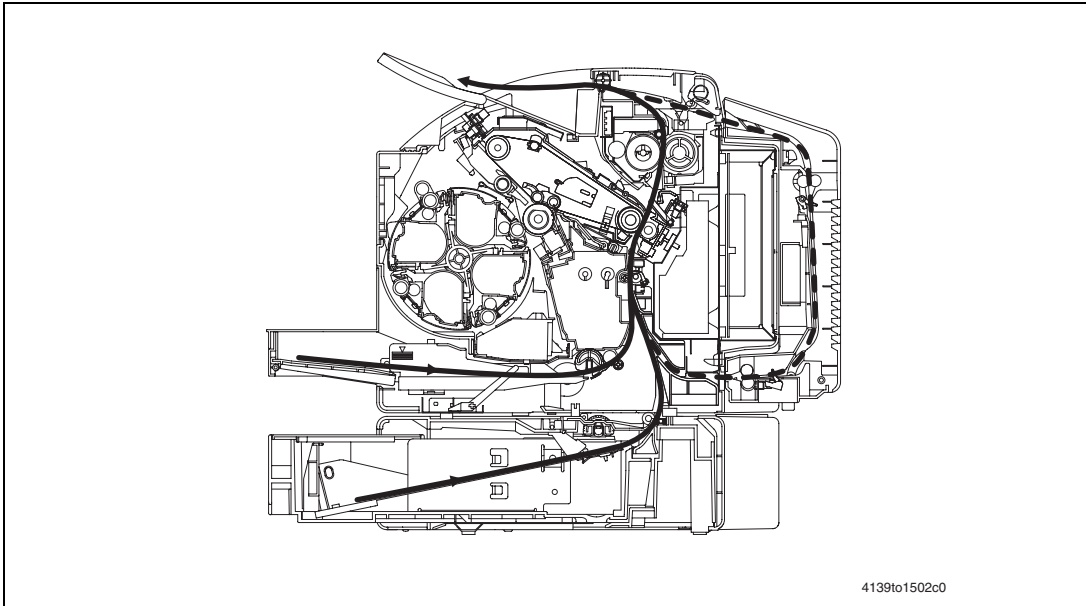
Image Creation Process
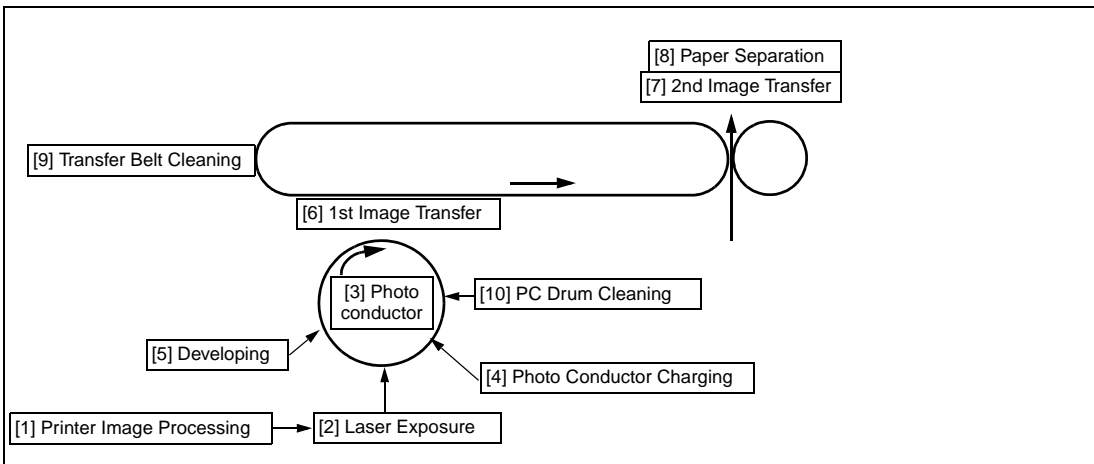
Key	Name	Function/System
[1]	Printer Image Processing	The intensity of the laser light is controlled by the image signal sent from the image processor board.
[2]	Laser Exposure	The surface of the Photo Conductor is irradiated with the laser light and an electrostatic latent image is thereby formed.
[3]	Photo Conductor	The image projected onto the surface of the Photo Conductor and is converted to a corresponding electrostatic latent image.
[4]	Photo Conductor Charging	A negative Imaging Unit charge layer is formed on the surface of the Photo Conductor.

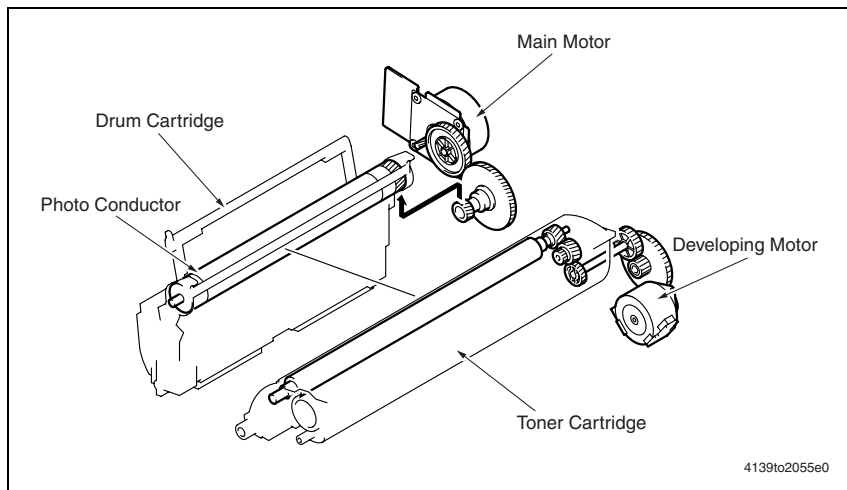| Key	Name	Function/System
[5]	Developing	The toner, negatively charged in the Hopper, is attracted onto the electrostatic latent image formed on the surface of the Photo Conductor. It is thereby changed to a visible, developed image. A Imaging Unit negative bias voltage is applied to the Developing Roller, thereby preventing toner from sticking to the background image portion.
[6]	1st Image Transfer	A Imaging Unit positive voltage is applied to the backside of the Transfer Belt, thereby allowing the visible, developed image on the surface of the Photo Conductor to be transferred onto the Transfer Belt.
[7]	2nd Image Transfer	A Imaging Unit positive voltage is applied to the backside of the paper, thereby allowing the visible, developed image on the surface of the Transfer Belt to be transferred onto the paper.
[8]	Paper Separation	The paper, which has undergone the 2nd image transfer process, is neutralized.
[9]	Transfer Belt Cleaning	A charge is applied to the Transfer Belt. By potential difference, residual toner on the surface of the Transfer Belt is collected for cleaning.
[10]	Photo Conductor (Drum) Cleaning	The residual toner left on the surface of the Photo Conductor is scraped off.

Operation Sequence
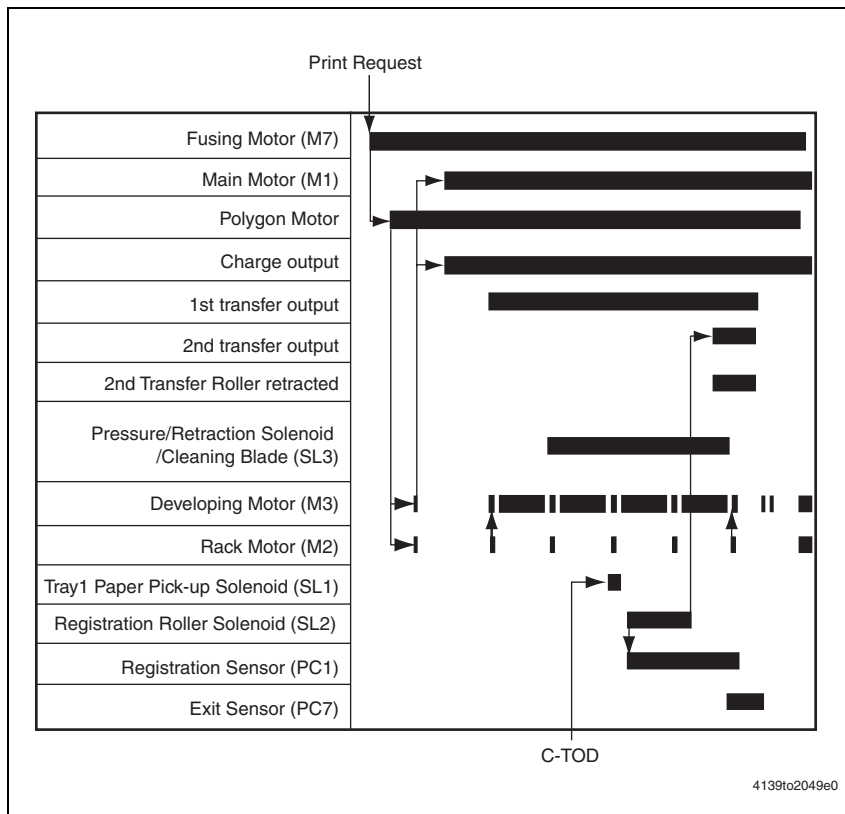
Control Block Diagram
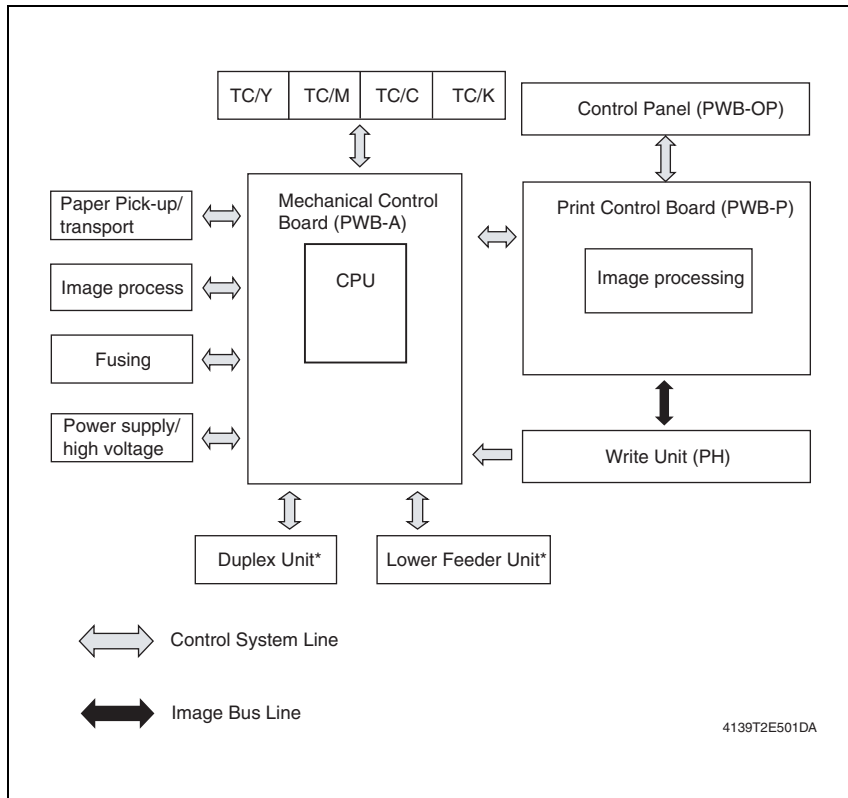
Imaging Section

Toner Cartridge

Toner Cartridge

4139to1569c1

4139to2054e0

Toner Cartridge Drive

Main Motor

Drum Cartridge

Photo Conductor

Developing Motor

Toner Cartridge

4139to2055e0
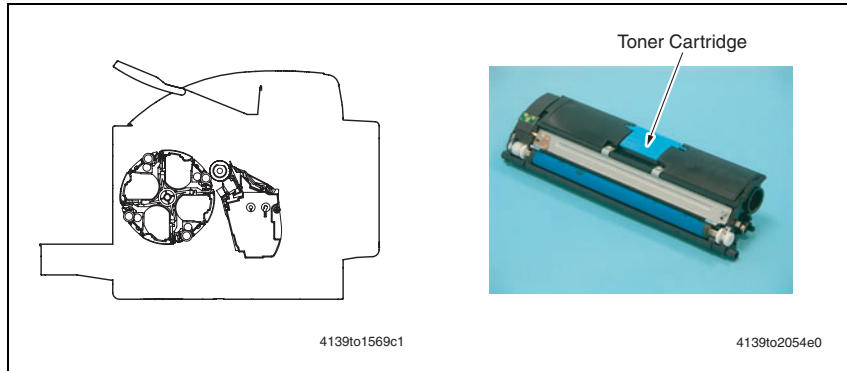
Drum Cartridge (Imaging Unit) Life Control

The Imaging Unit offers the following life controls:

■ Detecting a new Imaging Unit
■ Resetting the life counter

New Imaging Unit Detection

■ The machine attempts to perform a new Imaging Unit detection sequence when the Power Switch is turned OFF and ON, or the Front Door is closed.
■ If no new Imaging Unit is detected, the image stabilization sequence is not carried out.
■ If a new Imaging Unit is detected, the image stabilization sequence is carried out.

■ There is a fuse inside the Imaging Unit and upon first use the life counter detects the blown fuse and resets.

■ The image stabilization sequence is carried out upon detection of a new imaging unit.

Reaching End of Life

■ The life counter is reset when a new Imaging Unit is detected.

■ The machine gives a warning message when the life value is reached (printing will be continued). When the waste toner inside the Imaging Unit reaches its full level, the initiation of any new print cycle will be prohibited. The machine then prompts the user to replace the Imaging Unit.

Toner Cartridge (TC) Life Control

Toner Cartridge Detection and New Cartridge Detection Timing

The machine attempts to perform a detection sequence when the Front Door is closed.

Toner Cartridge Detection

The machine accesses the TC Detection Board (CSIC or CRUM) to check for data stored in it. Using that data, the machine determines whether or not a Toner Cartridge is loaded.

New Toner Cartridge Detection

After a Toner Cartridge has been detected, the machine determines whether it is new or not based on the data acquired from the CRUM.

Toner Cartridge Near Empty and Empty Condition Detection

The amount of toner consumed is calculated from the number of dots produced for one printed page by the controller. A toner near empty condition and a toner empty condition are thereby detected.

[CMYK} LOW

The machine determines that there is a toner near empty condition when the image counter and dot counter reach the life value.
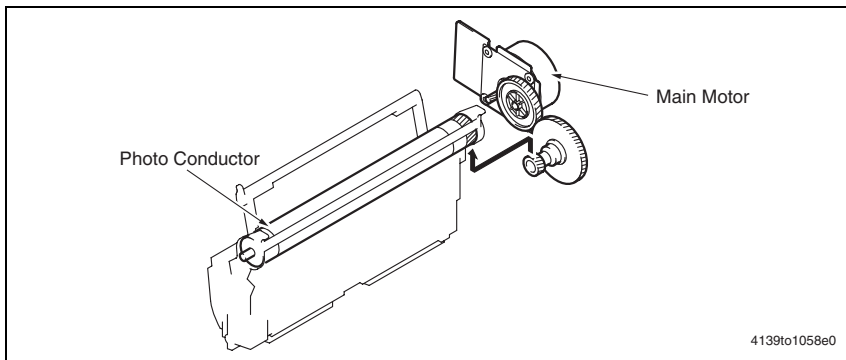
[CMYK] EMPTY

The machine determines that there is a toner empty condition when a predetermined number of printed pages are produced after the toner near empty condition has been detected.

Imaging Unit (DC)

Drum Cartridge

Photo Conductor

Charge Generating Layer

Charge Transport Layer

Aluminum Base

4139to1570c1

4139to2056e0

4139to2057e0

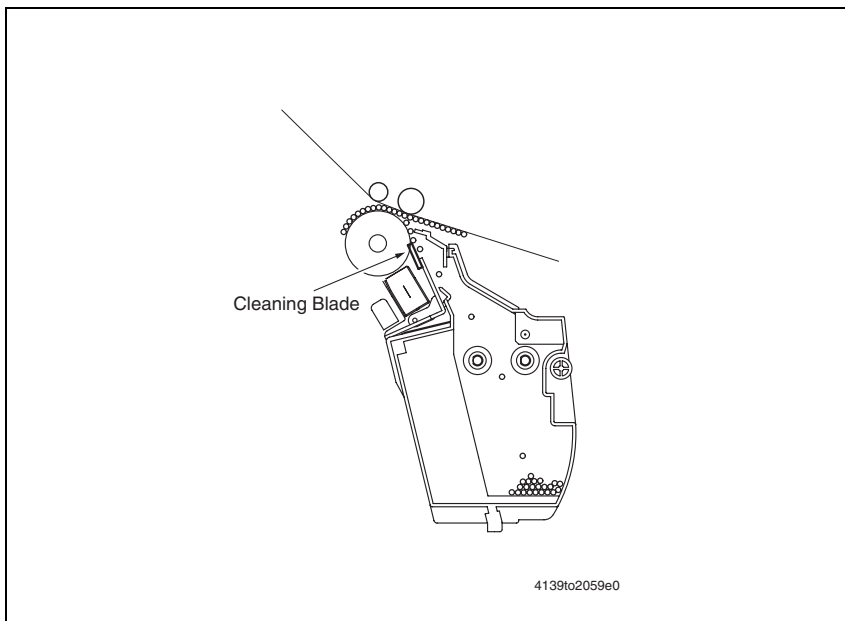# Imaging Unit Drive

Main Motor

Photo Conductor

4139to1058e0
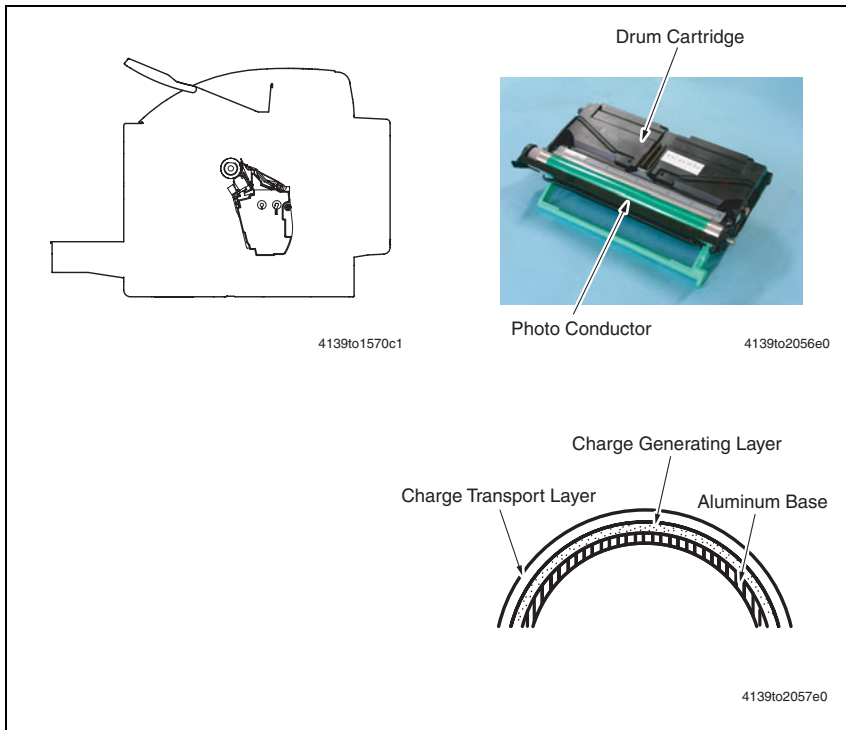
Imaging Unit (DC) Control

Photo Conductor (OPC Drum) Drive Mechanism

■ The Photo Conductor is driven by the Main Motor (M1).

■ When the Main Motor (M1) is energized, it turns the drive gear, which in turn rotates the Photo Conductor.

Photo Conductor Cleaning Mechanism

■ The Cleaning Blade is pressed up against the surface of the Photo Conductor, scraping residual toner off the surface.

■ The toner scraped off the surface of the Photo Conductor is collected in the waste toner bin inside the Imaging Unit.

Cleaning Blade

4139to2059e0

Imaging Unit Charge

4139to1570c1

[1]

4139to1523c0

[2]   [3]

4139to2010c1
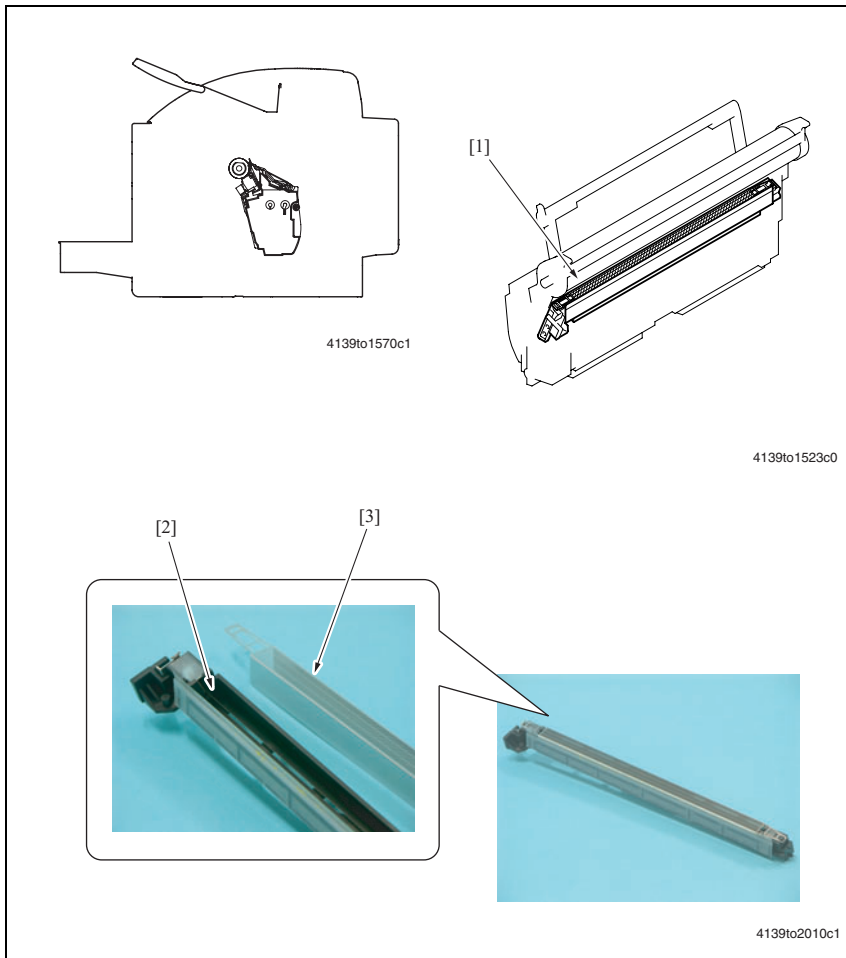
Key	Name	Function/System
[1]	Charge	■ Deposits a charge to the surface of the Photo Conductor. ■ Imaging Unit comb electrode Scorotron system
[2]	Electrode	■ Imaging Unit comb electrode Scorotron system ■ Using the comb electrode ensures that the charge is concentrated on the grid mesh, thus reducing the amount of ozone produced.
[3]	Grid Mesh	■ Evens out the charge deposited from the Electrode to make the surface potential uniform throughout the surface of the Photo Conductor. ■ The grid voltage is applied to the Grid Mesh.

Charge Corona Unit ON/OFF Control

The grid voltage (Vg) is applied to the grid mesh and is controlled by image stabilization control.

4139to2060e0

Laser (PH)

4139to1568c0

4139to2001c1

4139to2002c0
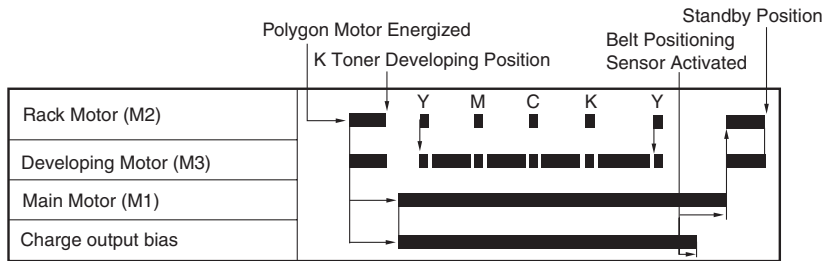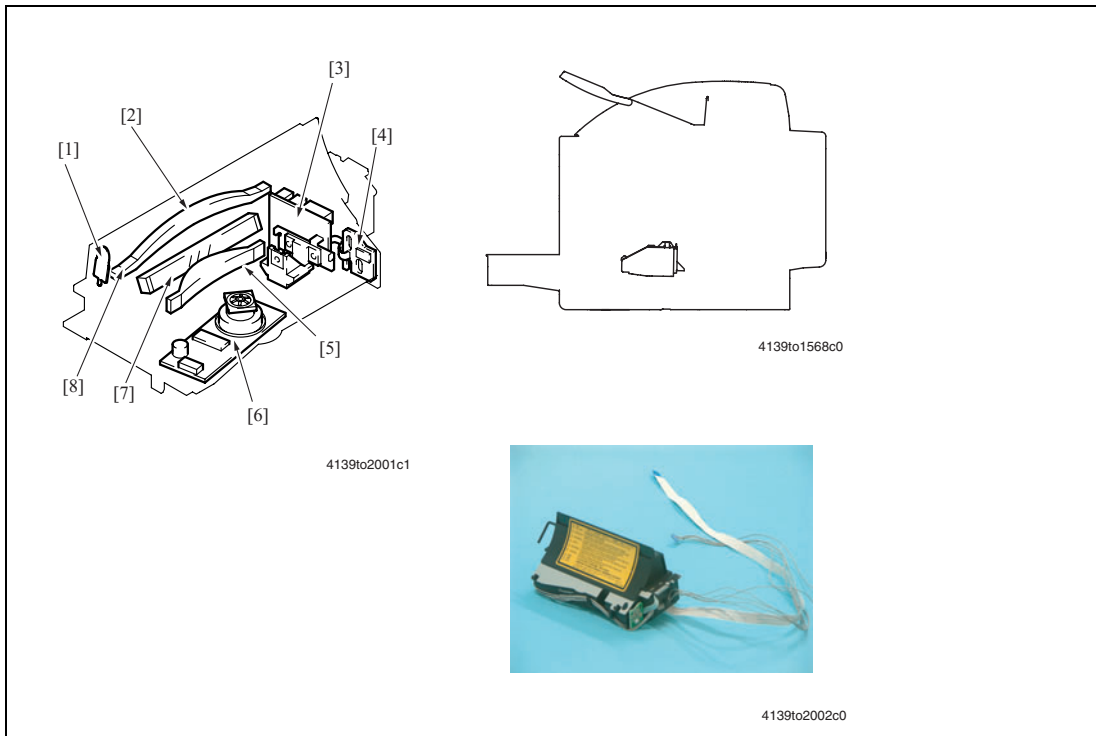
Key	Name	Function/System
[1]	SOS Mirror	Condenses the incident laser light onto the SOS Sensor.
[2]	G2 Lens	Condenses the incident laser light, with which the Photo Conductor is irradiated.
[3]	Semiconductor Laser	■ Emits a laser light. ■ Two-beam array LD
[4]	SOS Sensor	Produces an SOS signal using the incident laser light.
[5]	G1 Lens	Corrects the condensing angle of the incident laser light.
[6]	Polygon Mirror	■ Scans the incident laser light in the main scan direction and reflects it onto the G1 Lens. ■ Four-face polygon mirror
[7]	Return Mirror	Reflects the laser light condensed by the G1 Lens onto the G2 Lens.
[8]	G2 Lens (SOS Lens)	Condenses the incident laser light onto the SOS Sensor.

Warning: The Laser Assembly is spared as one component. DO NOT disassemble the Laser Assembly or personal injury can result.

Laser Operation

■ The surface of the Photo Conductor is irradiated with a laser light and an electrostatic latent image is thereby formed.

■ The Polygon Mirror has four faces. The machine uses a two-beam array Laser Diode (LD) to inhibit the speed of the Polygon Mirror.

■ The two-beam array LD consists of two LD elements arranged vertically. Two lines are scanned with two laser beams emitted from these two LD elements through a single face of the Polygon Mirror.
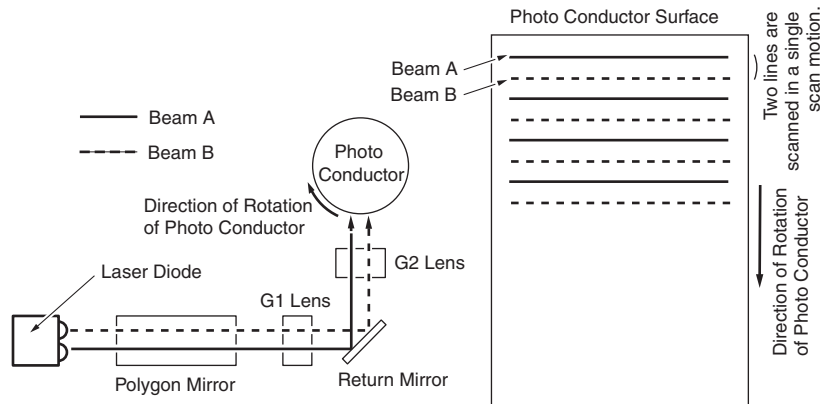
4139to2051e0

Laser Exposure Process

1. The laser light emitted from the Semiconductor Laser strikes the Polygon Mirror.

2. The Polygon Mirror with four faces is rotated at high speed by the Polygon Motor.

3. The SOS Sensor ensures that the laser light emission start timing remains constant for each line of the main scan.
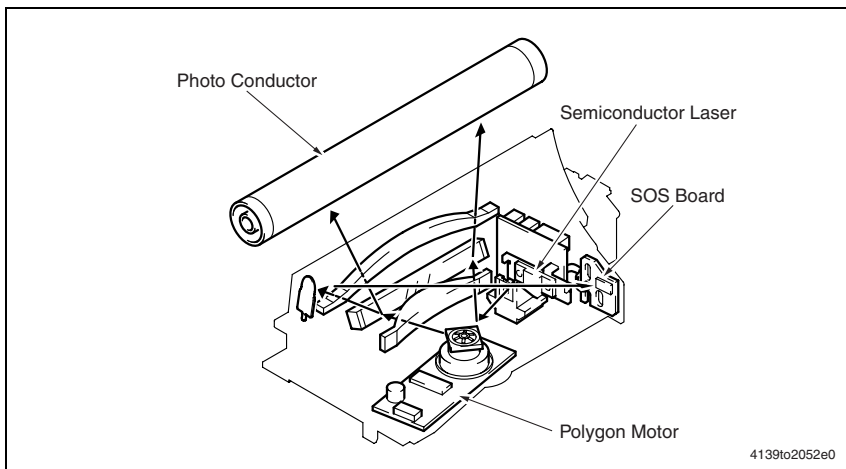
4139to2052e0

Laser Timing

■ When a Ready signal is detected, a Laser ON signal is output from the PWB-P (Image Processor Board).

■ The Laser ON signal triggers the firing of each laser Diode which illuminates the SOS Board via the Polygon Mirror, G1 Lens, Return Mirror, G2 Lens (SOS Lens), and SOS Mirror. This generates an SOS (Start of Scan) signal.

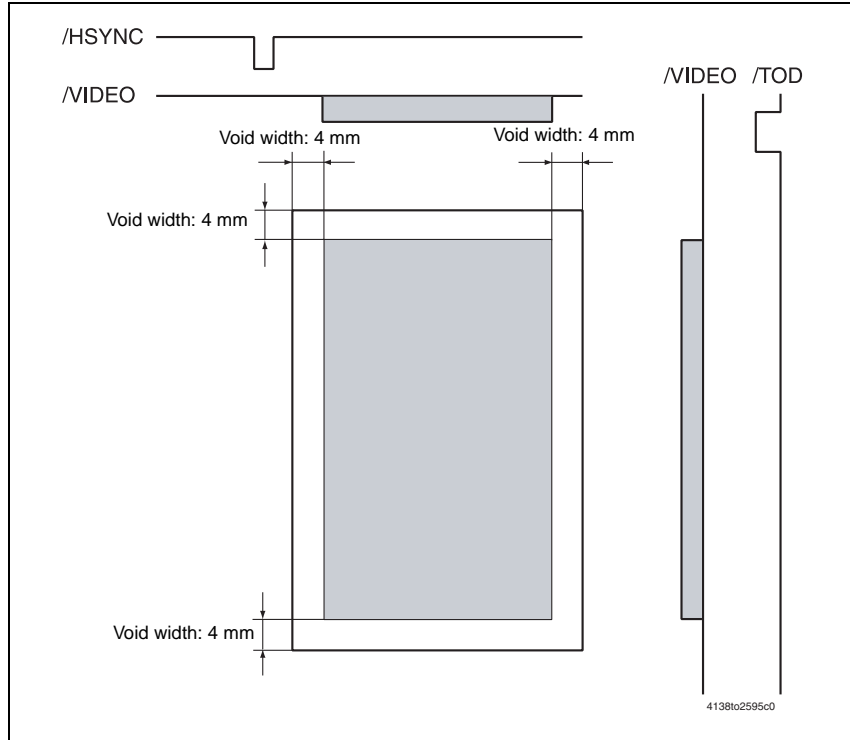■ This SOS signal unifies the timing at which the laser lights are irradiated for each main scan line.
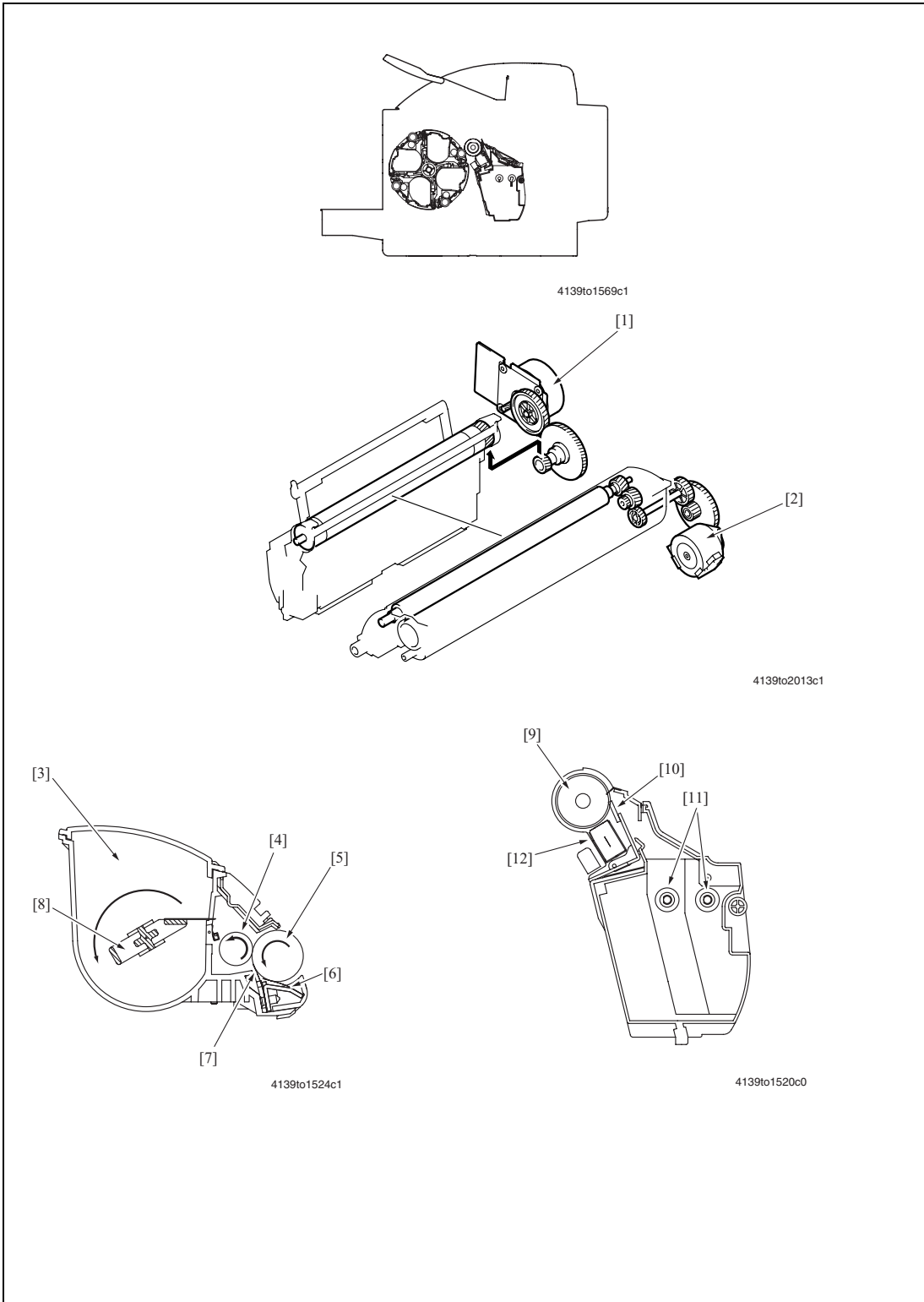
Laser Area

Main Scan Direction (CD)

■ The print start position in the CD (or scan) direction is determined by the CD print start signal (/HSYNC) that is output from the PWB-P (Image Processor Board) and the width of the paper.

■ The laser emission area is determined by the paper size. An area of 4 mm on both edges of the paper is the image area boundary or margin.

Sub Scan Direction (FD or Feed Direction)

■ The print start position in the FD direction is determined by the image write start signal (/TOD) that is output from the PWB-P (Image Processor Board) and the length of the paper.

■ The laser emission area is determined by the paper size. An area of 4 mm on both the leading and trailing edges of the paper is the void image area.


4138to2595c0

Developing

4139to1569c1

[1]

[2]

4139to2013c1

[9]

[3] [10]

[4] [11]

[8] [5] [12]

[6]

[7]

4139to1524c1 4139to1520c0

| Key	Name	Function/System
[1]	Main Motor (M1)	■ Drives the Photo Conductor. ■ Driven by the PWB-A (Engine Control Board). ■ Brushless DC Motor.
[2]	Developing Motor (M3)	■ Drives the Developing Roller. ■ Stepper motor.
[3]	Hopper	■ Loaded with toner that is conveyed onto the Developing Unit by way of the Conveyance Pipe.
[4]	Supply Roller	Supplies toner fed off from the Hopper to the Developing Roller.
[5]	Developing Roller	■ Supplies toner fed by the Supply Roller to the surface of the Photo Conductor. ■ Conveys toner to the surface of the Photo Conductor through voltage potential difference. ■ The developing bias voltage is applied to this roller. ■ Single component developing system.
[6]	Regulator Blade/2nd	■ Regulates the height of toner on the surface of the Developing Roller.
[7]	Regulator Blade/1st	■ The blade bias voltage is applied to the blade.
[8]	Agitating Blade	Agitates toner in the Hopper.
[9]	Photo Conductor	■ The drum surface on which an image of each color of toner is formed for subsequent transfer of the image to the Transfer Belt. ■ OPC drum.
[10]	Cleaning Blade	Scrapes residual toner off the surface of the Photo Conductor.
[11]	Waste Toner Agitating Screw	Evens out waste toner scraped off by the Cleaning Blade and that scraped off by the Cleaning Blade of the Image Transfer Belt so that the waste toner can be stored evenly.
[12]	Charge Corona	■ Deposits a charge to the surface of the Photo Conductor. ■ Imaging Unit comb electrode Scorotron system.

Drive

4139to2014c1
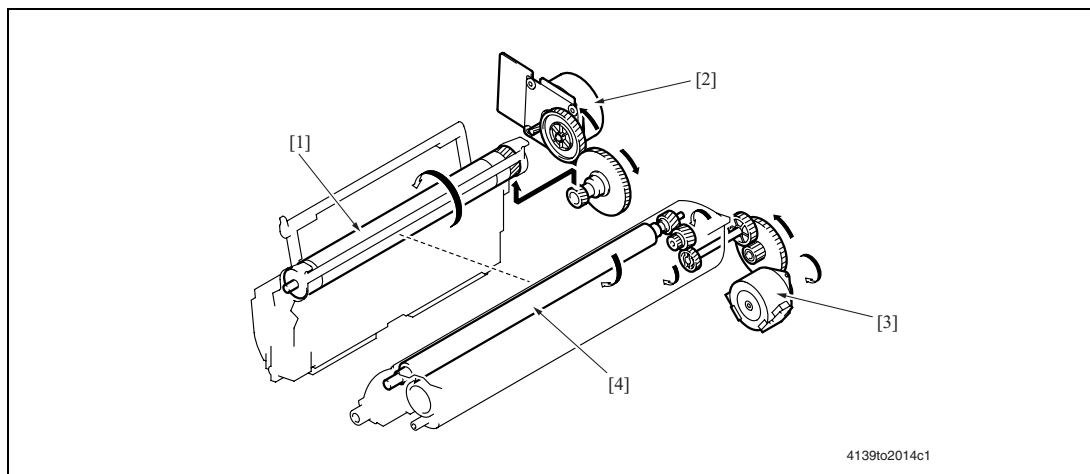
|			
[1]	Photo Conductor	[3]	Developing Motor (M3)
[2]	Main Motor (M1)	[4]	Developing Roller

Developing Roller Drive

■ The Developing Roller is driven by the Developing Motor (M3) and Intermediate Gear.

■ When the Toner Cartridge Rack is stationery at the developing position, the Developing Roller Drive Gear comes into mesh with the Intermediate Gear. The Developing Roller is then rotated through the drive provided by the Developing Motor (M3) and Intermediate Gear.


4139to1530c0
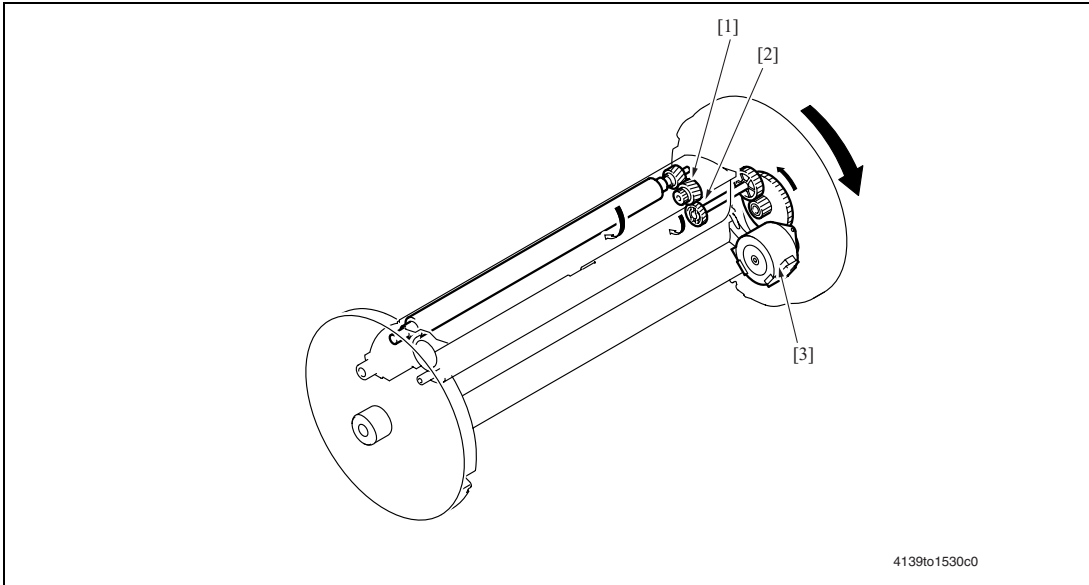
[1]   Developing Roller Drive Gear   [3]   Developing Motor (M3)
[2]   Intermediate Gear

Developing Drive Control

4139to2102e0
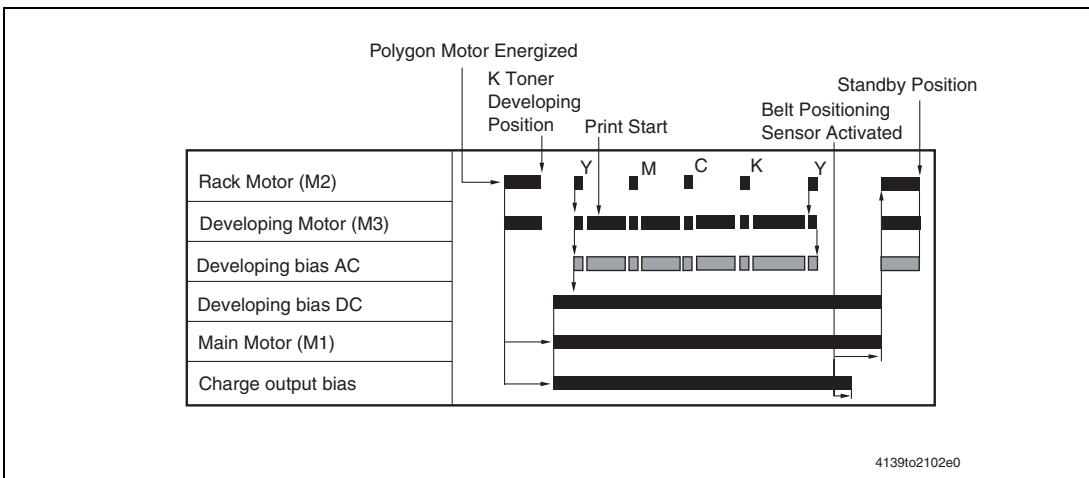
Toner Flow

1. Toner stored in the Hopper is agitated by the Agitating Blade and conveyed into the Toner Supply Portion by the Conveyance Blade fitted to the leading edge of the Agitating Blade.

2. The toner conveyed into the Toner Supply Portion is conveyed by the Supply Roller onto the Developing Roller.

3. At this time, Regulator Blade/1st and /2nd regulate the height of toner on the surface of the Developing Roller.

4. Toner then sticks to the electrostatic latent image formed on the surface of the Photo Conductor. Any part of toner left on the surface of the Developing Roller is returned to the Toner Supply Portion.


4139to2061e0
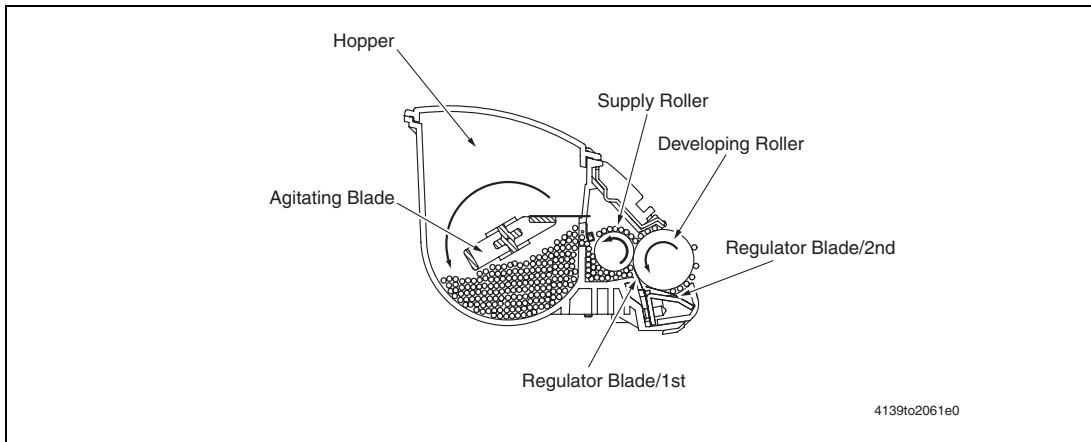
Developing Bias

■ The developing bias voltage (Vb) is applied to the Developing Roller so that an adequate amount of toner is attracted onto the surface of the Photo Conductor.

■ To allow toner to transfer to the Photo Conductor easily, Imaging Unit + AC developing bias voltage (Vb) is applied to the Developing Roller during development. This AC component of the developing bias voltage is applied only during development. At any time other than the development, only the Imaging Unit (-) component of the developing bias voltage is applied.

■ The developing bias voltage (Vb) is supplied by the High Voltage Unit (HV).

4139to2062e0
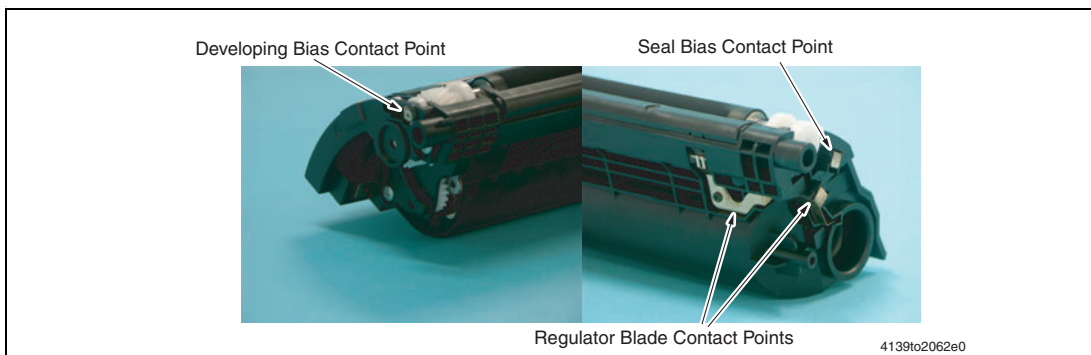
Developing System

■ The machine employs the single-component, non-contact developing system.

■ In the non-contact, single-component developing system, the magnetic brush does not rub the surface of the Photo Conductor (or the image). This prevents a foggy image from occurring and the Photo Conductor from being worn.
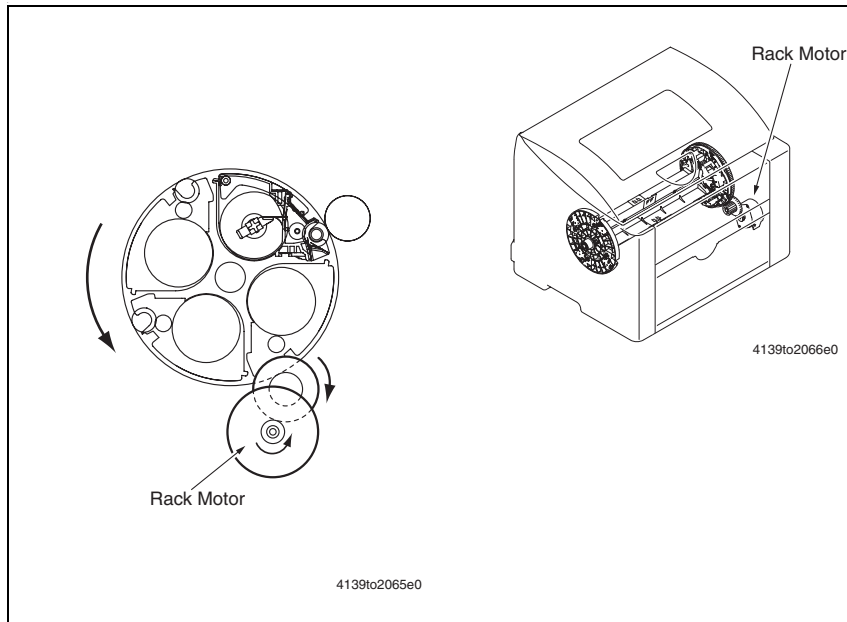

Developing Roller

Photo Conductor

4139to2063e1
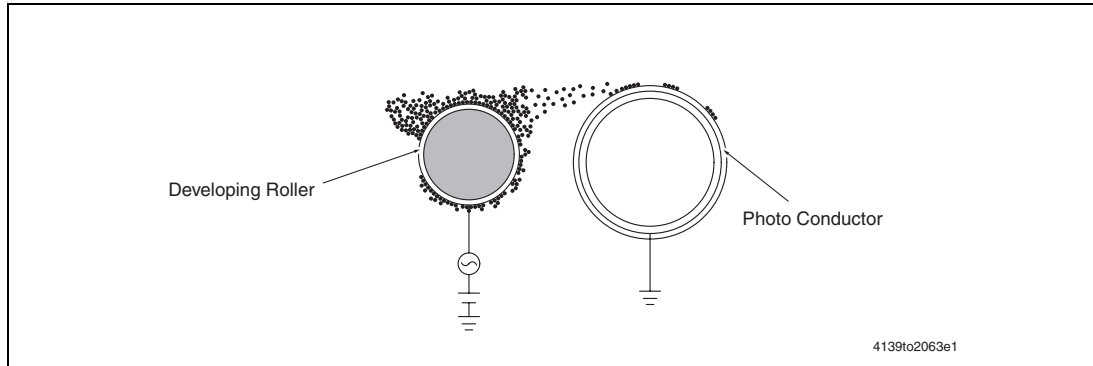
Toner Cartridge Rack (Carousel)

■ The Toner Cartridge Rack is mounted with four Toner Cartridges. The rack employs a rotary system.

■ Development of the image of each color of toner is performed by rotating the Toner Cartridge Rack.

Y Toner Cartridge

K Toner Cartridge

M Toner Cartridge

C Toner Cartridge

4139to2064e0

4139to1528c0
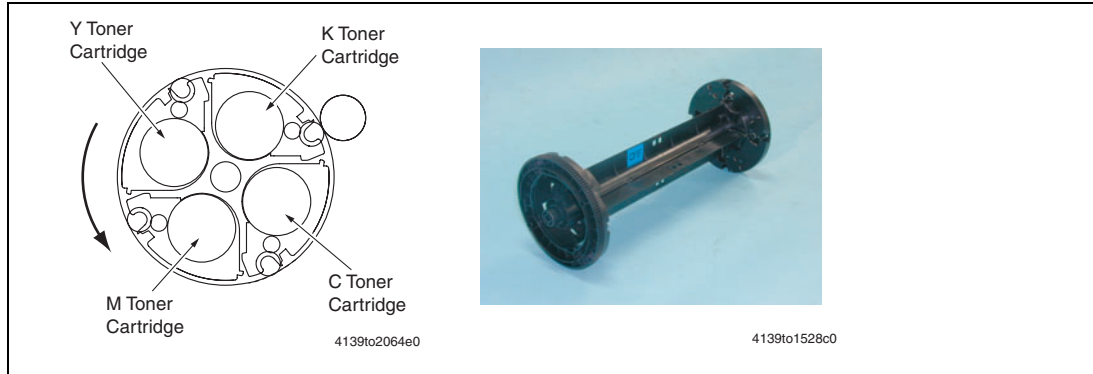
Toner Cartridge Rack Drive

The Toner Cartridge Rack is driven by the Rack Motor (M2).

Rack Motor

Rack Motor

4139to2066e0

4139to2065e0

Toner Cartridge Rack Stop Position

■ The Toner Cartridge Rack must be brought to a stop so that the Toner Cartridge of each color of toner is located at its correct position. To accomplish this task, three stop positions are established: the standby (reference) position, the developing position, and the cartridge replacement position. For additional information regarding rack positioning, see Toner Cartridge Rack Stop Position Detection on page 7-23.

■ The standby position refers to the position at which the Toner Cartridge Rack is stationary when the machine is in the Ready state. The Toner Cartridge Rack is located at this standby position when the machine completes a warm-up cycle or waits for a print command.

■ The development position refers to the position at which the Toner Cartridge Rack stops during development of a specific color of toner.

■ The cartridge replacement position refers to the position at which the Toner Cartridge Rack is stopped for replacement of the Toner Cartridge of a specific color of toner.
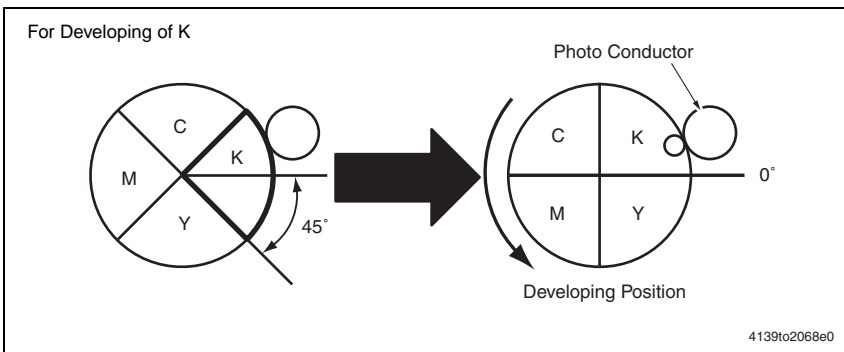
Standby (Reference) Position

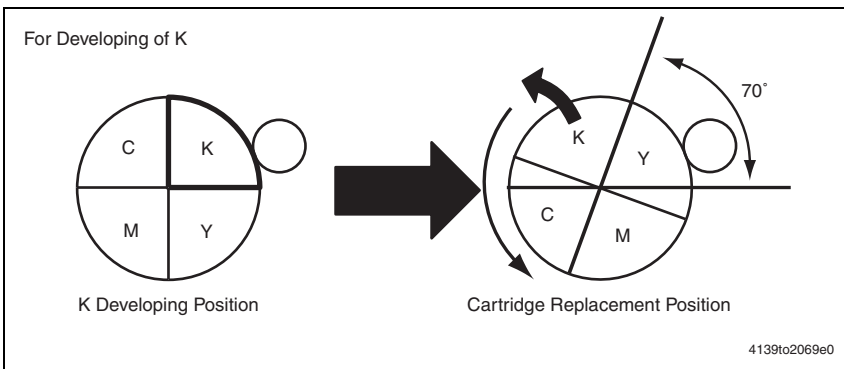The standby position is 45° before the developing position of the K Toner Cartridge.

4139to2067e0
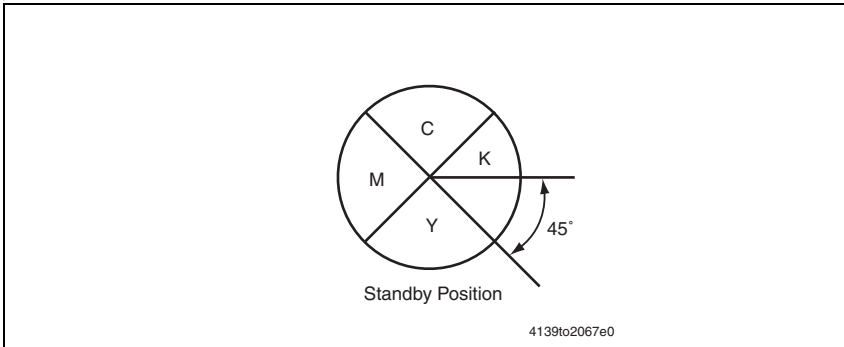
Developing Position

The developing position is where the Toner Cartridge Rack is rotated 45° from the standby position.
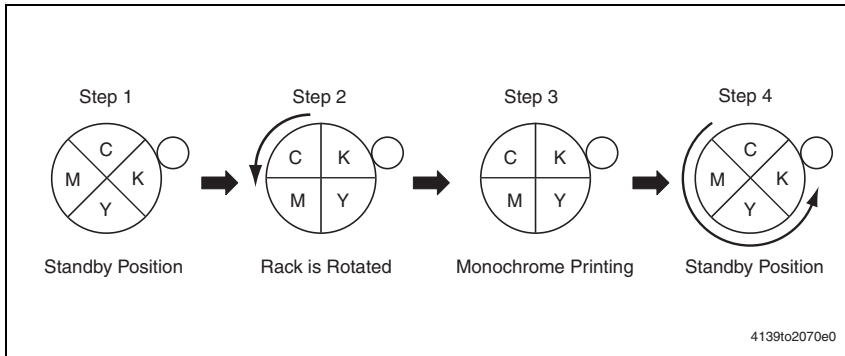

4139to2068e0

Cartridge Replacement Position

The cartridge replacement position is where the Toner Cartridge Rack is rotated 70° from the developing position.

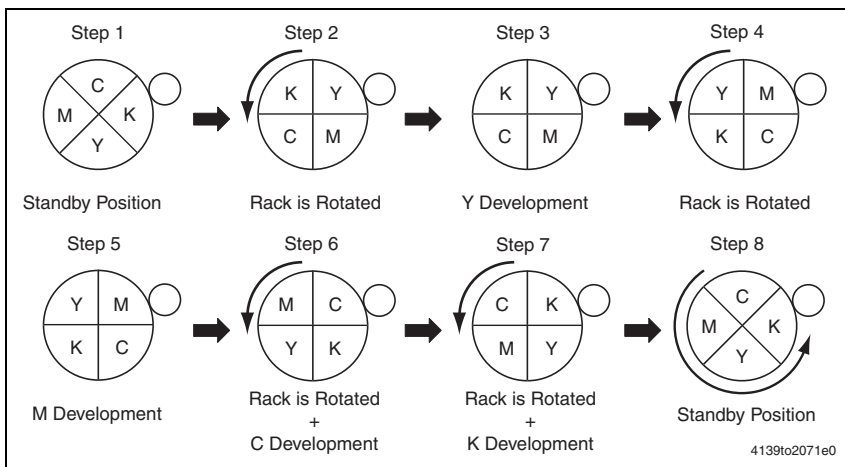4139to2069e0

Monochrome Printing Process

Step 1 — Standby Position
Step 2 — Rack is Rotated
Step 3 — Monochrome Printing
Step 4 — Standby Position

4139to2070e0

Operation Sequence

1. The Toner Cartridge Rack is stationary at the standby position.

2. When a print request is received from the controller, the Toner Cartridge Rack is rotated to bring the K Toner Cartridge to its developing position.

3. Development of monochrome printing is started.

4. When the development is completed, the Toner Cartridge Rack is rotated and brought to a stop at the standby position.

Color Printing Process

Step 1 — Standby Position
Step 2 — Rack is Rotated
Step 3 — Y Development
Step 4 — Rack is Rotated
Step 5 — M Development
Step 6 — Rack is Rotated + C Development
Step 7 — Rack is Rotated + K Development
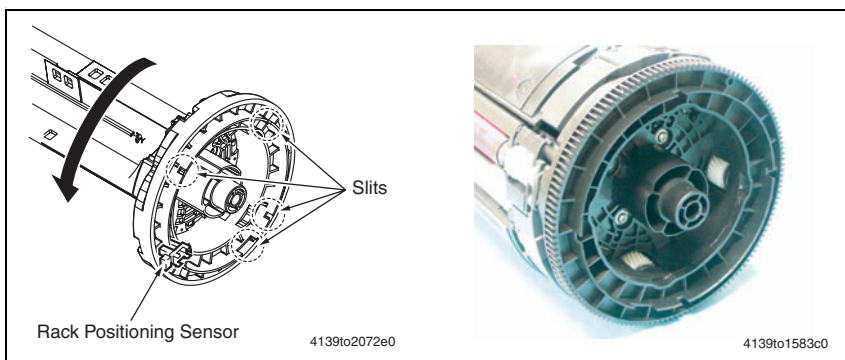Step 8 — Standby Position

4139to2071e0

Operation Sequence

1. The Toner Cartridge Rack is stationary at the standby position.

2. When a print request is received from the controller, the Toner Cartridge Rack is rotated to bring the Y Toner Cartridge to its developing position.

3. Development of Y is carried out.

4. When development of Y is completed, the Toner Cartridge Rack is rotated to bring the M Toner Cartridge to its developing position.

5. Development of M is carried out.

6. Similarly, the Toner Cartridge Rack is rotated and development of C is carried out.

7. Similarly, the Toner Cartridge Rack is rotated and development of K is carried out.

8. When the development of K is completed, the Toner Cartridge Rack is rotated and brought to a stop at the standby position.
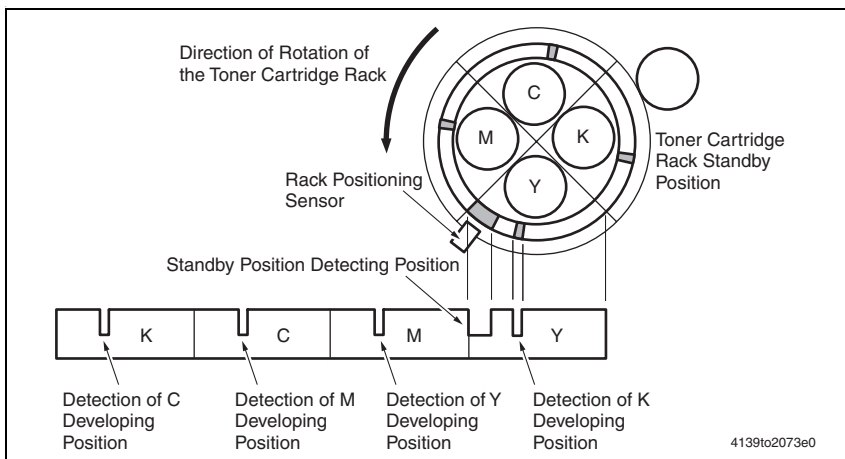
Toner Cartridge Rack Stop Position Detection

■ The Toner Cartridge Rack stop position for each color of toner is detected by the Rack Motor (M2) and the Rack Positioning Sensor (PC3).

■ The Toner Cartridge Rack is provided with slits, each for a specific color of toner. When the rack rotates, the Rack Positioning Sensor (PC3) is blocked and unblocked.
A specific stop position is detected when the Rack Positioning Sensor (PC3) is blocked and unblocked.

Slits

Rack Positioning Sensor

4139to2072e0

4139to1583c0

Toner Cartridge Rack Standby Position

■ The standby position is 45 ° before the developing position of the K Toner Cartridge. The Y Toner Cartridge is therefore provided with a slit for detecting the K developing position.

■ When the Toner Cartridge Rack is rotated, the Rack Positioning Sensor (PC3) moves past the slit for detecting the K developing position. This allows the machine to determine that the current development is for K. Through pulse control of the Rack Motor, the machine then successfully brings the Toner Cartridge Rack to its standby position

Direction of Rotation of the Toner Cartridge Rack

Toner Cartridge Rack Standby Position

Rack Positioning Sensor

Standby Position Detecting Position

Detection of C Developing Position

Detection of M Developing Position

Detection of Y Developing Position

Detection of K Developing Position

4139to2073e0

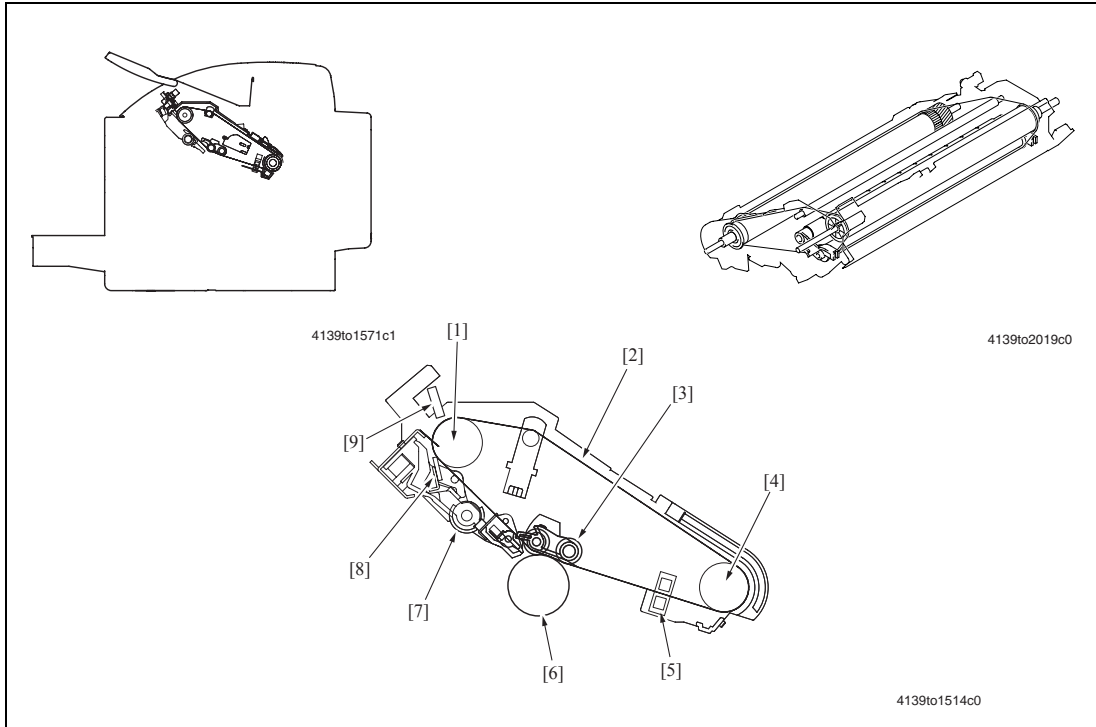## Toner Cartridge Rack Developing Position

To bring the Toner Cartridge Rack to a stop at the corresponding developing position, the rack is rotated from the standby position 45° through pulse control of the Rack Motor.

Cartridge Replacement Position

When a request is made for replacing the Toner Cartridge of a specific color of toner (by means of an input from the control panel, upon a toner empty condition, or through an input made via the controller board), the Toner Cartridge Rack is rotated 70° from the developing position through pulse control of the Rack Motor.
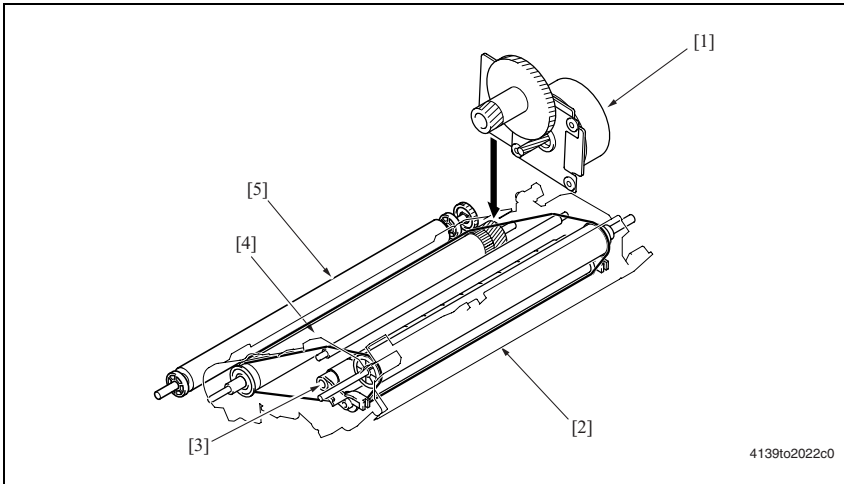
Image Transfer

1st Transfer

| Key	Name	Function/System
[1]	Driven Roller	Rotated as driven by the Transfer Belt.
[2]	Transfer Belt	The image of each color of toner is transferred from the 1st Transfer Roller to this Transfer Belt in the order of Y, M, C, and K, thereby forming a full color toner image.
[3]	1st Transfer Roller	Transfers the toner image from the Photo Conductor to the Transfer Belt (1st transfer).
		The 1st transfer voltage (T1) is applied.
		No mechanism is provided for retracting and pressing the 1st Transfer Roller.
[4]	Transfer Belt Drive Roller	Drives the Transfer Belt.
		Driven by the Main Motor (M1).
[5]	Belt Positioning Sensor (PC4)	Detects the position of the Transfer Belt as the sensor is blocked/ unblocked by a hole for detecting the Transfer Belt position provided in the Transfer Belt.
[6]	Photo Conductor	The drum surface on which an image of each color of toner is formed for subsequent transfer of the image to the Transfer Belt.
[7]	Toner Collecting Screw (auger)	Conveys toner scraped off by the Cleaning Blade onto the Imaging Unit.
[8]	Cleaning Blade	Scrapes residual toner off the surface of the Transfer Belt.
[9]	Density Sensor (AIDC)	Detects the toner density on the Image Transfer Belt.

Transfer Drive

[1]   Main Motor (M1)   [4]   Transfer Belt Drive Roller
[2]   Image Transfer Belt   [5]   2nd Transfer Roller
[3]   1st Transfer Roller

Transfer Belt Cleaning Mechanism

■   A cleaning blade is used to remove residual toner from the surface of the transfer belt.

■   The Cleaning Blade is pressed up against the Transfer Belt, thereby scraping residual toner off the surface of the Transfer Belt.

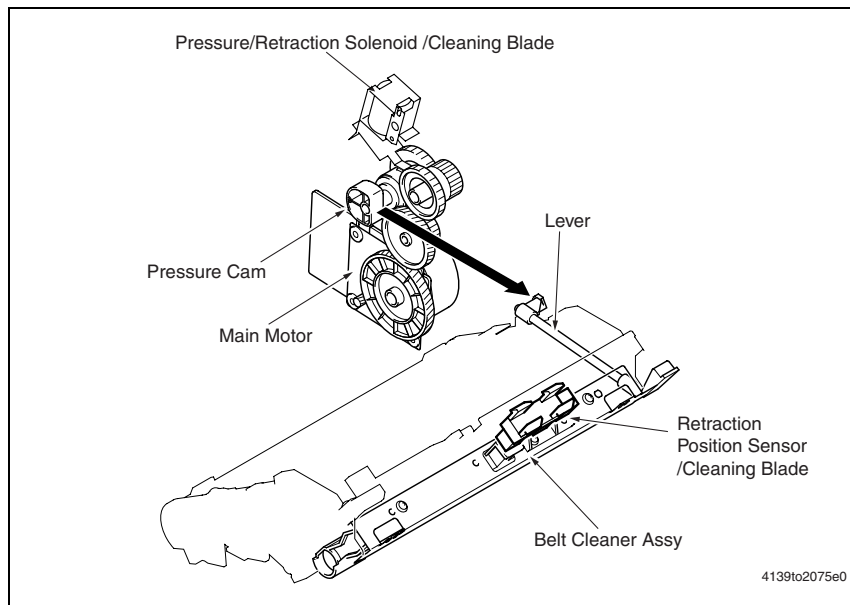■   The Toner Collecting Screw conveys toner scraped off by the Cleaning Blade onto the Imaging Unit
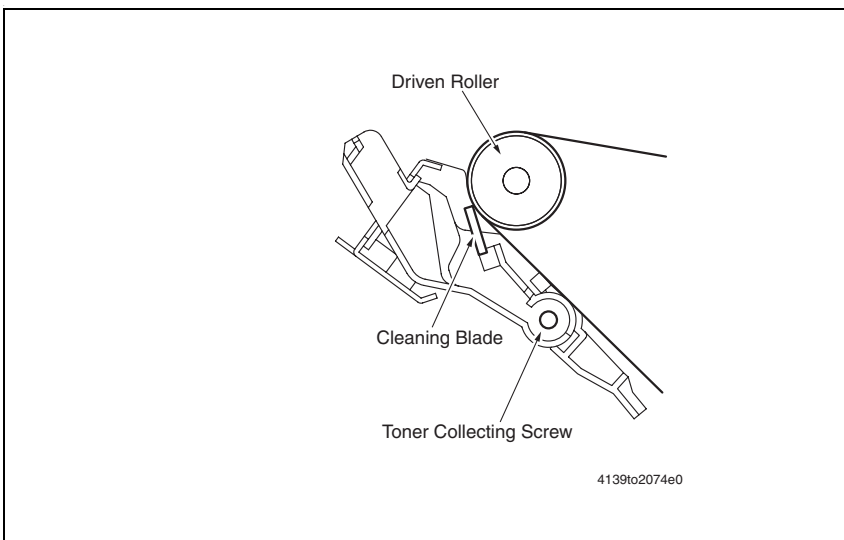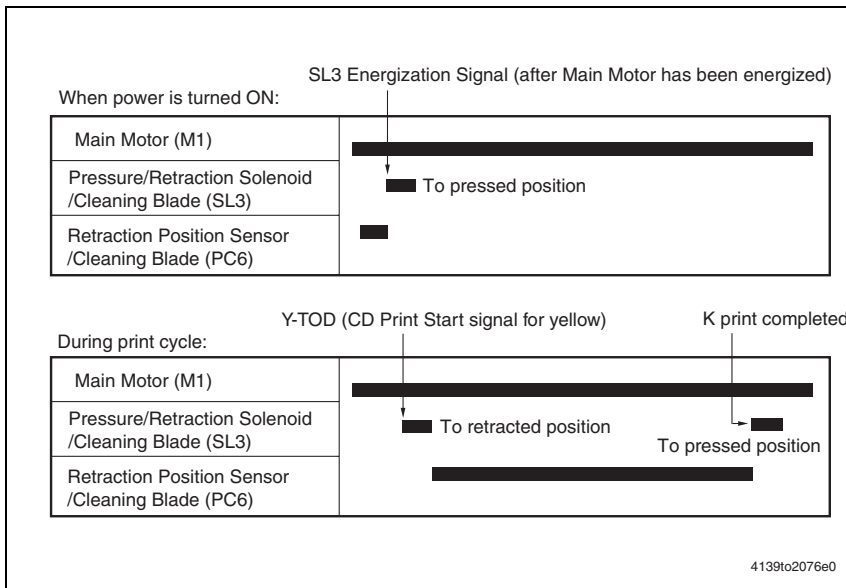
Cleaning Blade Pressure/Retraction Mechanism

■ During color printing, an image is formed on the Transfer Belt for each color of toner. The Cleaning Blade is therefore provided with a pressure/retraction mechanism. that moves the cleaning blade and applies pressure at the correct time.

■ In monochrome printing, no retraction sequence is carried out.

■ The Cleaning Blade is normally in contact with the Transfer Belt.

Pressure/Retraction Operation

■ The Cleaning Blade pressure/retraction operations are performed by the Main Motor (M1), Pressure/Retraction Solenoid /Cleaning Blade (SL3), pressure cam, lever, and Retraction Position Sensor /Cleaning Blade (PC6).

■ When the Pressure/Retraction Solenoid /Cleaning Blade (SL3) is energized, drive from the Main Motor (M1) is transmitted to the pressure cam.
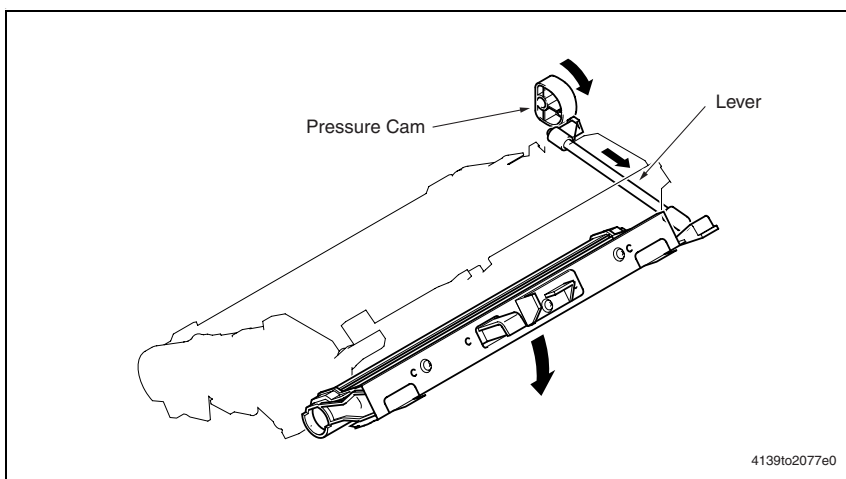

Pressure/Retraction Solenoid /Cleaning Blade

Lever

Pressure Cam

Main Motor

Retraction Position Sensor /Cleaning Blade

Belt Cleaner Assy

4139to2075e0

Transfer Timing Operation

When power is turned ON:

SL3 Energization Signal (after Main Motor has been energized)

Main Motor (M1)	
Pressure/Retraction Solenoid /Cleaning Blade (SL3)	To pressed position
Retraction Position Sensor /Cleaning Blade (PC6)	

During print cycle:

Y-TOD (CD Print Start signal for yellow)   K print completed

Main Motor (M1)	
Pressure/Retraction Solenoid /Cleaning Blade (SL3)	To retracted position To pressed position
Retraction Position Sensor /Cleaning Blade (PC6)	

4139to2076e0

Retraction Sequence

1. Drive from the Main Motor (M1) is transmitted to the drive gear.
2. Rotation of the drive gear is transmitted to the pressure cam.
3. When the Pressure/Retraction Solenoid /Cleaning Blade (SL3) is energized, the half-moon-shaped pressure cam rotates a half turn to push the lever forward.
4. When the lever is pushed forward, the Cleaning Blade is retracted.
5. When the Cleaning Blade is retracted, it results in the Cleaning Blade being retracted from the Transfer Belt.
6. During this time, the Retraction Position Sensor /Cleaning Blade (PC6) detects whether or not the Cleaning Blade is retracted from the Transfer Belt


Pressure Cam   Lever

4139to2077e0

Pressure Sequence

1. When the Pressure/Retraction Solenoid /Cleaning Blade (SL3) is energized in the condition, in which the Cleaning Blade is retracted from the Transfer Belt, the pressure cam rotates a half turn. This pushes the lever backward.

2. When the lever is pushed backward, the Cleaning Blade is returned. Then, the Cleaning Blade is pressed against the Transfer Belt.

Pressure Cam

Lever

4139to2078e0

Home Position Detection

■ The position of the Cleaning Blade is unknown when the Power Switch is turned ON or the cover is opened and closed, the machine performs a home position detection sequence during a warm-up cycle.

■ During the warm-up cycle, the Pressure/Retraction Solenoid /Cleaning Blade (SL3) is energized to start a pressure/retraction sequence. When the Retraction Position Sensor / Cleaning Blade (PC6) is blocked, the Pressure/Retraction Solenoid /Cleaning Blade (SL3) is de-energized.

1st Transfer Roller Voltage ON/OFF Control

Image write start position for a paper size greater than A4

Image write start position for a paper size of A4 or smaller

| Belt Positioning Sensor (PC4) |
| /TOD (Image Write Start signal) |
| Rack Motor (M2) |
| 1st Transfer output |

4139to2103e0

2nd Transfer Section

4139to1572c1   4139to2020c0

[1]

[3]   4139to1548c0

[4]

[2]

[1]

4139to2021c1

Key	Name	Function/system
[1]	2nd Transfer Roller	Driven to rotate by the Transfer Belt.
[2]	Pressure/Retraction Slider	Moves via a gear coupled to it when the Pressure/Retraction Solenoid/2nd Image Transfer (SL4) is energized.
[3]	Pressure/Retraction Roller	When the Pressure/Retraction Slider moves, it comes into contact with this roller, which presses the 2nd Transfer Roller.
[4]	Pressure/Retraction Clutch	■ Transmits the driving force of the Main Motor (M1) to the pressure cam. ■ Mechanical clutch

2nd Transfer Roller Pressure/Retraction Mechanism

■ During color printing, the toner image of each color of toner is transferred to the Transfer Belt (a total of four times, once for each color). Pressure/retraction control with respect to the Transfer Belt is provided for the 2nd Transfer Roller.

■ In the standby state, the 2nd Transfer Roller is in a position retracted from the Transfer Belt.

Pressure/Retraction Operation

■ The pressure/retraction operation is performed by the Main Motor (M1), Pressure/Retraction Solenoid /2nd Image Transfer (SL4), and Pressure/Retraction Clutch.

■ When the Pressure/Retraction Solenoid /2nd Image Transfer (SL4) is energized, drive from the Main Motor (M1) is transmitted to the Pressure/Retraction Clutch.

4139to2079e0
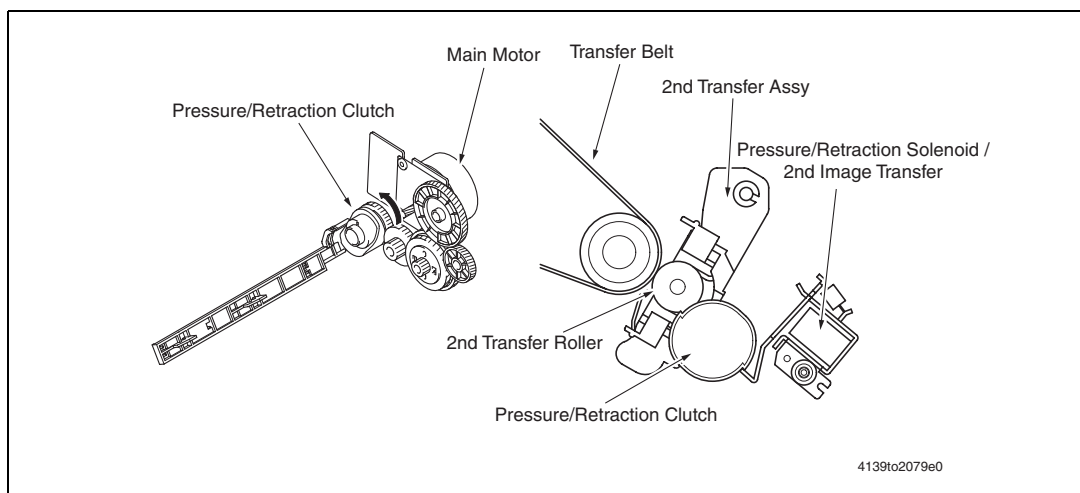
Pressure Sequence

■ Drive from the Main Motor (M1) is transmitted to the drive gear.

■ Rotation of the drive gear is transmitted to the Pressure/Retraction Clutch.

■ When the Pressure/Retraction Solenoid /2nd Image Transfer (SL4) is energized, the Pressure/Retraction Clutch rotates a half turn. This moves the Pressure Slider.

■ When the Pressure Slider is moved, ribs on the Pressure Slider push up the 2nd Transfer Assembly.

■ When the 2nd Transfer Assy is pushed up, the 2nd Transfer Roller is pressed up against the Transfer Belt.

4139to2080e0
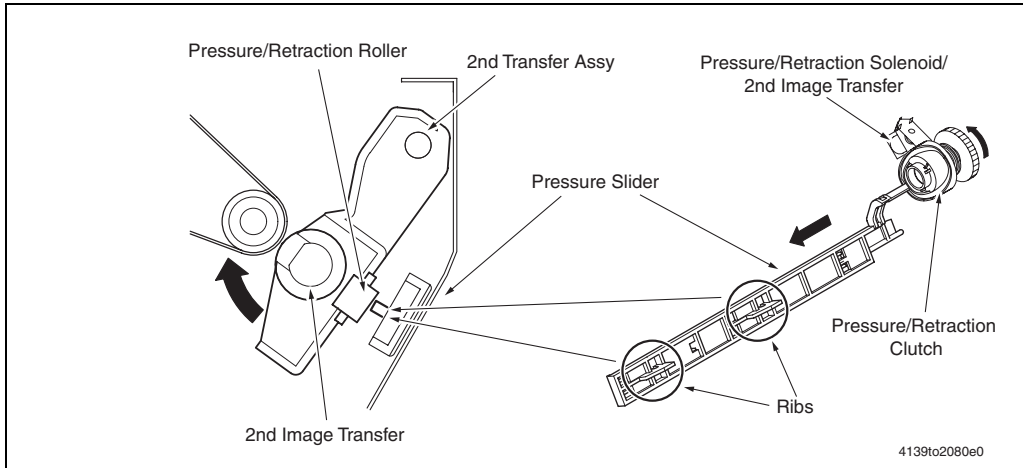
Retraction Sequence

1. When the Pressure/Retraction Solenoid /2nd Image Transfer (SL4) is energized in the condition in which the 2nd Transfer Roller is pressed against the Transfer Belt, the Pressure/Retraction Clutch rotates a half turn. This moves the Pressure Slider.

2. When the Pressure Slider is moved, the 2nd Transfer Assy, which has been pushed up by the ribs on the Pressure Slider, lowers.

3. When the 2nd Transfer Assy lowers, it allows the 2nd Transfer Roller to be retracted from the Transfer Belt.

4139to2081e0
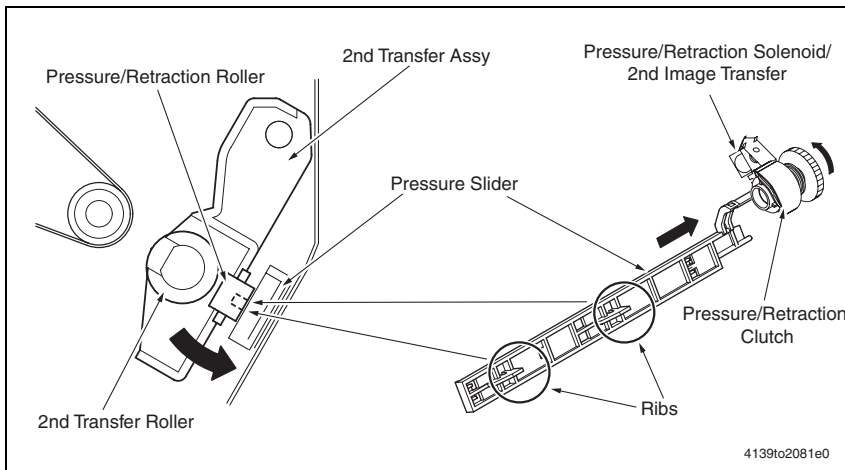
2nd Transfer Roller Cleaning

■ Imaging Unit positive and negative transfer bias voltages are alternately applied to the 2nd Transfer Roller. This allows toner residue on the surface of the 2nd Transfer Roller to be transferred back to the Transfer Belt, thus cleaning the 2nd Transfer Roller.

■ The toner transferred back to the Transfer Belt is collected by the Cleaning Blade.

4139to2082e0
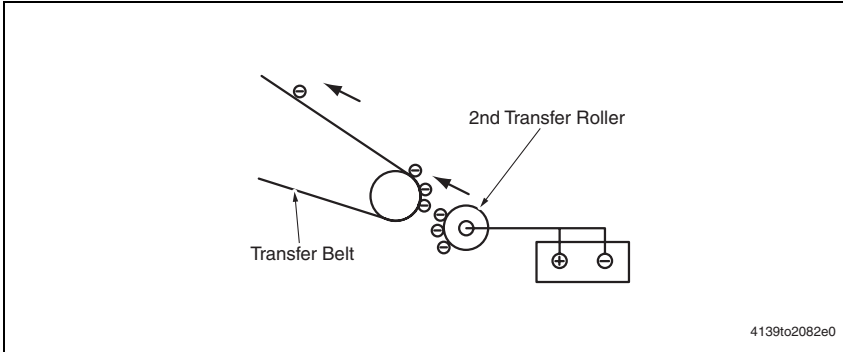
Operation Timing

The 2nd Transfer Roller cleaning sequence is carried out under any of the following conditions:

■ Power Switch is turned ON.

■ Cover is opened and closed.

■ A media error occurs during a print cycle.

■ A paper empty condition occurs during a print cycle.

■ A paper size error occurs during a print cycle.

4139to2083e0
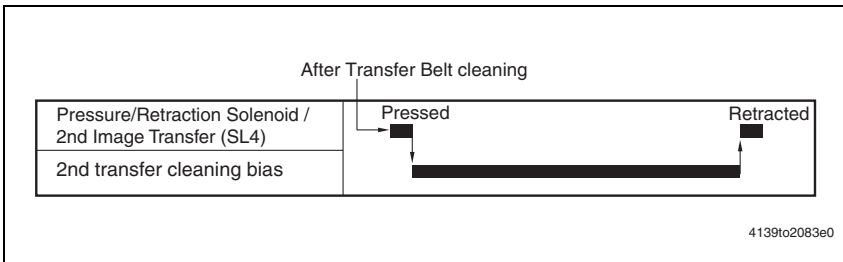
Neutralization and Separation of Paper (De-Tack)

To neutralize the paper that has undergone the 2nd transfer process, a Charge Neutralizing Cloth is provided for the guide plate after the 2nd Transfer Roller.

4139to2084e0
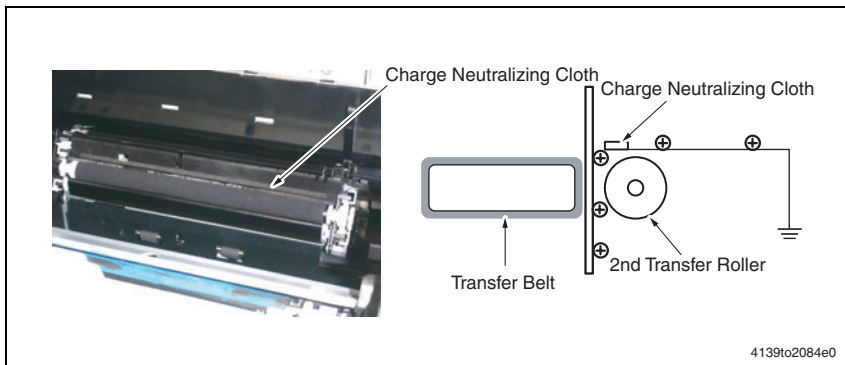
Belt Positioning Sensor

■ When development takes place in this machine, the image of each color of toner is formed on the surface of the Transfer Belt. The leading edge of the image of each color of toner must therefore be aligned correctly with each other on the surface of the Transfer Belt.

■ The position of the Transfer Belt is detected when the Belt Positioning Sensor (PC4) detects detection holes provided in the Transfer Belt.

■ There are two detection holes provided in the Transfer Belt. The image write start position is varied according to the paper size. For a paper size of A4 or smaller, the image write start position is aligned with detection hole A. For a paper size greater than A4, detection hole B serves as the reference for the image write start position.

4139to2104e0
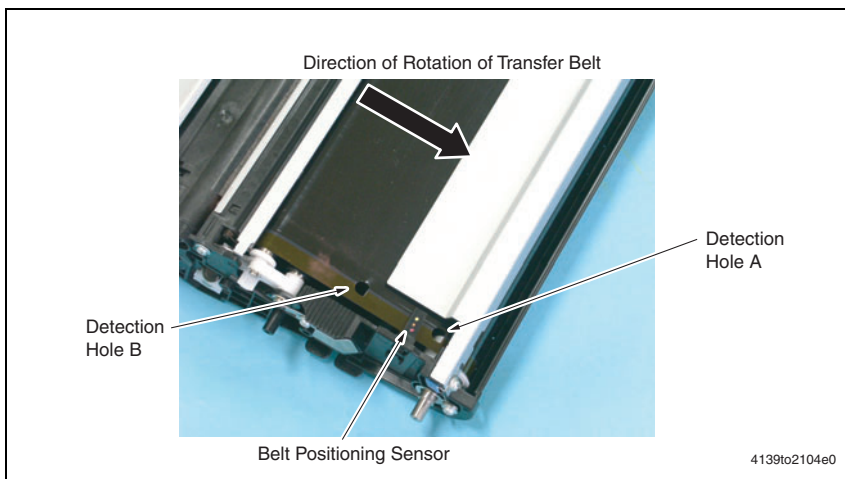
ATVC (Auto Transfer Voltage Control)

The ATVC, or Auto Transfer Voltage Control, is for optimizing the transfer output. A constant current is made to flow through each of the Transfer Rollers. From the detected voltage, the resistance of each of the 1st Transfer Roller, 2nd Transfer Roller, and Transfer Belt is measured. The ATVC then automatically adjusts the appropriate image transfer output voltage to be applied to the 1st Transfer Roller and the 2nd Transfer Roller during the print cycle.

Overview of ATVC Operation
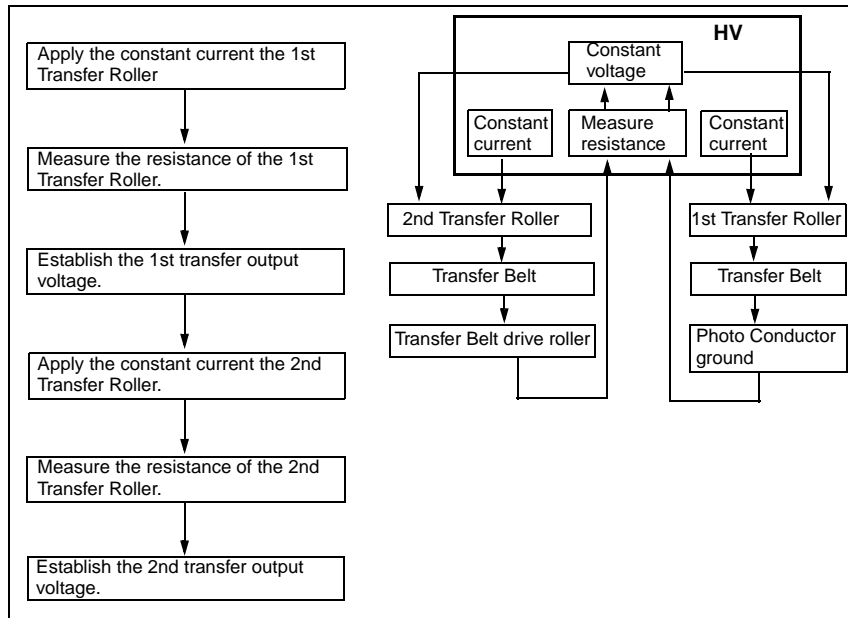
1st Transfer ATVC Operation

1. On the 1st transfer, the constant current for each color of toner output from the High Voltage Unit (HV) is fed back to the High Voltage Unit via the 1st Transfer Roller, Transfer Belt, and the Photo Conductor ground. The resistance of the Transfer Belt is then measured.

2. Based on the measured resistance value, the optimum 1st transfer voltage is established.

2nd Transfer ATVC Operation

1. On the 2nd transfer, the constant current output from the High Voltage Unit (HV) is fed back to the High Voltage Unit via the 2nd Transfer Roller, Transfer Belt, and the Transfer Belt drive roller. The resistance of the Transfer Belt is then measured.

2. Based on the measured resistance value and in conjunction with the environmental conditions and print color, the optimum 2nd transfer voltage is established.

Toner Collecting

4139to1573c0

4139to1536c0
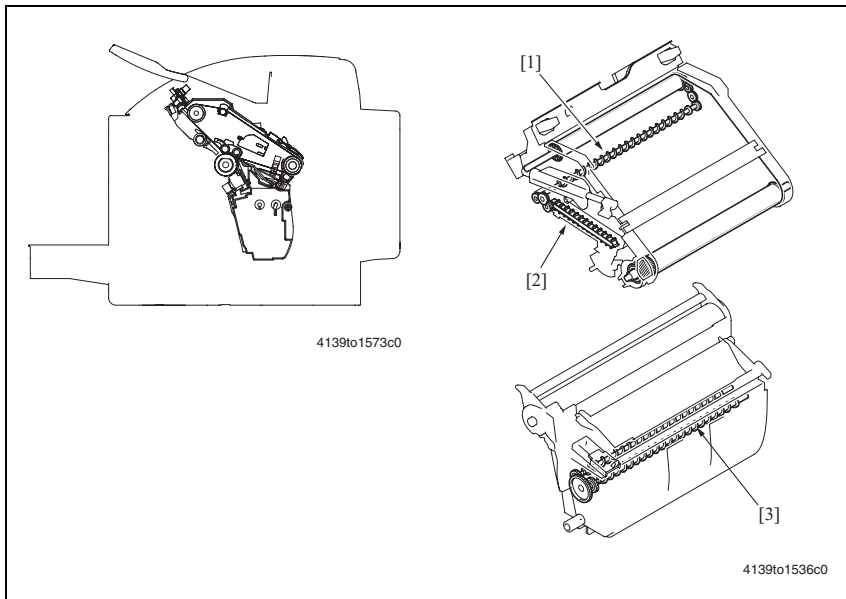
Key	Name	Function/System
[1]	Toner Collecting Screw (auger)	■ Conveys waste toner scraped off by the Cleaning Blade to the Waste Toner Conveyance Unit.
[2]	Waste Toner Conveyance Unit	■ Conveys the waste toner fed by the Toner Collecting Screw into the Imaging Unit.
[3]	Toner Agitating Screw (auger)	■ Evens out waste toner scraped off by the Cleaning Blade and that scraped off by the Cleaning Blade of the Image Transfer Belt so that the waste toner can be stored evenly.

Waste Toner Bin Drive Mechanism

4139to2028c0
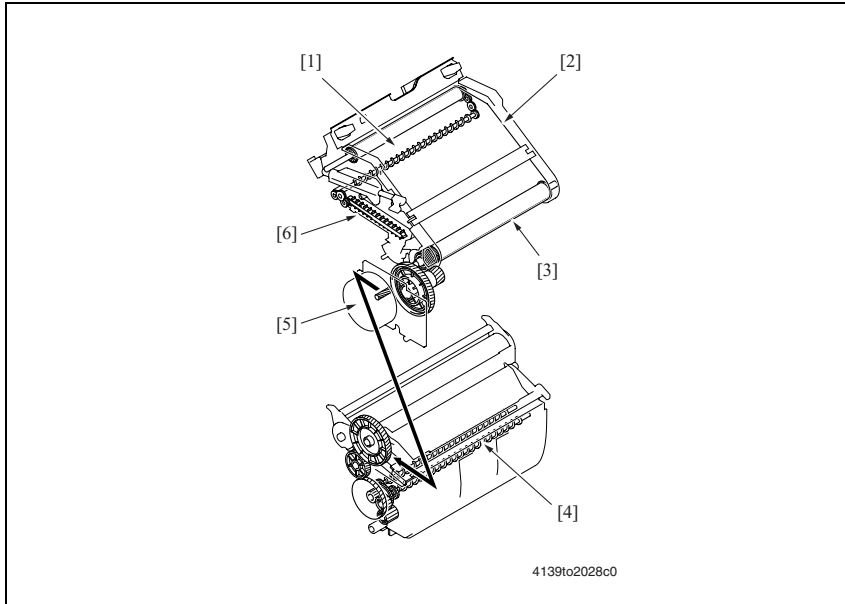
[1]	Toner Collecting Screw	[4]	Toner Agitating Screw
[2]	Transfer belt	[5]	Main Motor (M1)
[3]	Driven Roller	[6]	Waste Toner Conveyance Unit

Toner Collecting Mechanism

Waste toner scraped off the transfer belt by the cleaning blade and scraped off by the Cleaning Blade of the Photo Conductor are conveyed by each of the Toner Collecting Screws into the Imaging Unit Waste Bin.

Image Transfer Belt Unit

■ Waste toner scraped off by the Cleaning Blade is collected by the Toner Collecting Screw for Transfer Belt.

■ The waste toner collected by the Toner Collecting Screw is conveyed to the Imaging Unit by way of the Waste Toner Conveyance Unit.

Toner Collecting Screw

Toner Agitating Screw

4139to2085e0
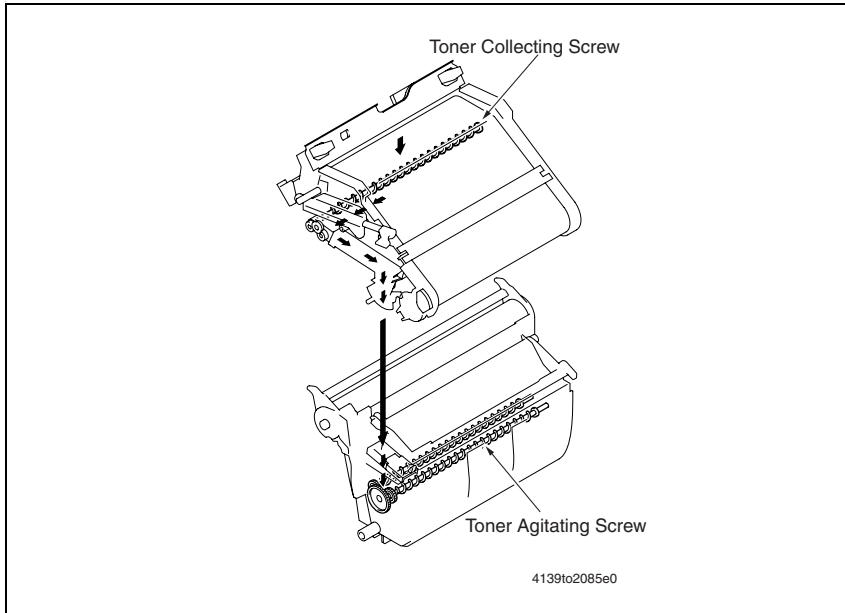
Waste Toner Full Detection System

■ A waste toner near full condition is detected using the output state of the Waste Toner Near Full Detection Board (PWB-C).

■ A waste toner near full condition is detected by letting the light emitted from the LED mounted on the Waste Toner Near Full Detection Board (PWB-C) travel through the light guide.

■ To prevent false detection, the Imaging Unit is provided with the Toner Agitating Screw that ensures that the waste toner is evenly stored.

Waste Toner Detection Area

Light Guide

Waste Toner Near Full
Detection Board (PWB-C)

4139to2086e0

Light Guide   LED Light   LED   Waste Toner

Normal Condition   At Waste Toner Near Full Condition

4139to2087e0
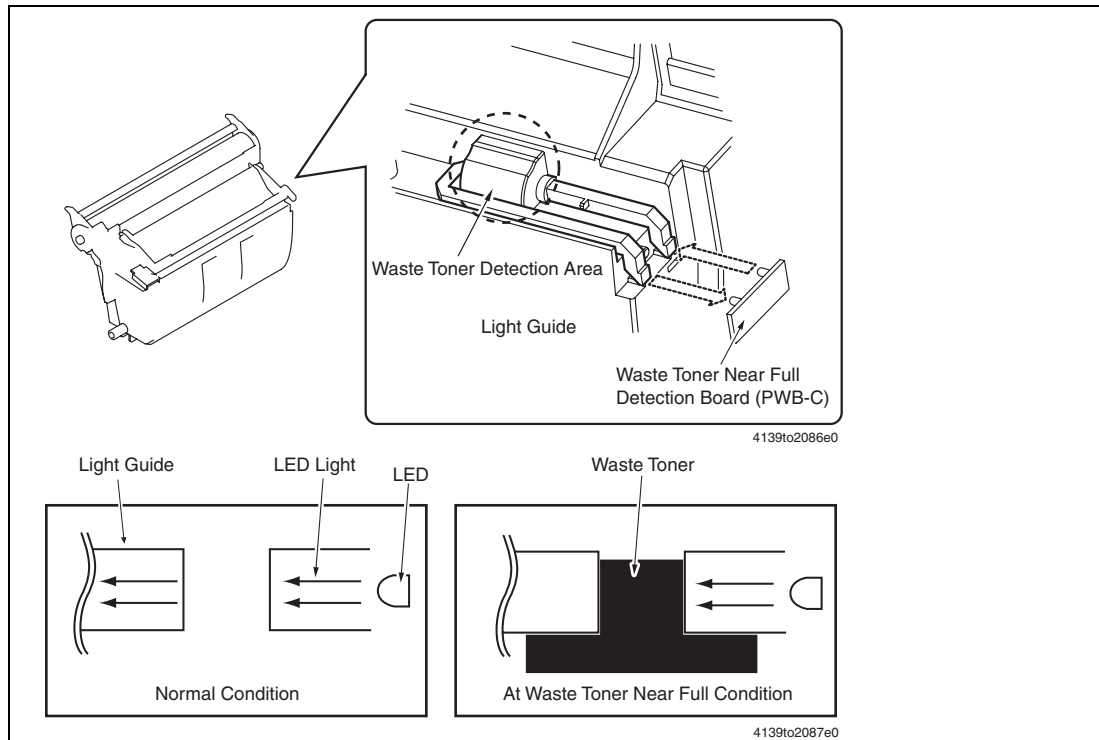
Waste Toner Near Full Condition Detection Control

■ Light emitted from the LED mounted on the Waste Toner Near Full Detection Board (PWB-C) is made to travel through the light guide. This light is blocked if the waste toner reaches an upper limit, which allows the machine to determine that there is a waste toner near full condition.

■ To prevent false detection, the Imaging Unit is provided with the Toner Agitating Screw that ensures that the waste toner is evenly stored.

Waste Toner Full Detection Control

■ The machine determines that there is a waste toner full condition when 200 images* are reached after a waste toner near full condition has been detected. (* The initiation of any new print cycle is prohibited when 50 full-color printed pages are produced after the waste toner near full condition has been detected.)

■ When light of the LED on the Waste Toner Near Full Detection Board (PWB-C) is unblocked after the Imaging Unit has been replaced, the waste toner full condition is reset.

Paper Feed Section

4139to1574c0   4139to2031c0

4139to1537c0
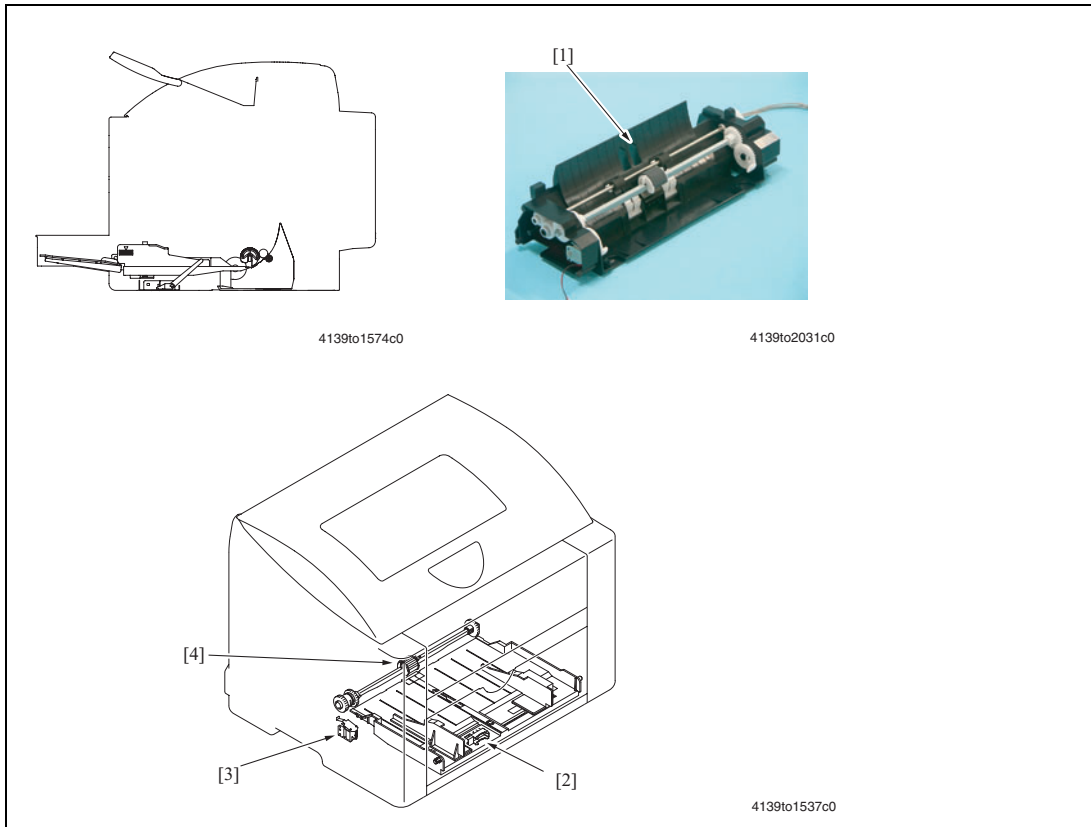
Key	Name	Function/System
[1]	Paper Pick-Up Unit	■ Tray1 paper tray, in which a paper stack is loaded ■ Max. paper capacity Plain paper: 200 sheets Thick stock, OHP film, postcards, glossy stock, labels: 50 sheets Envelopes: 10
[2]	Tray1 Paper Empty Sensor (PC9)	■ Detects the last sheet of paper was used.
[3]	Tray1 Paper Pick-up Solenoid (SL1)	■ Controls drive from the Main Motor (M1).
[4]	Pick-up Roller	■ Pick-up paper from Tray 1.

Paper Feed Drive

4139to2032c0
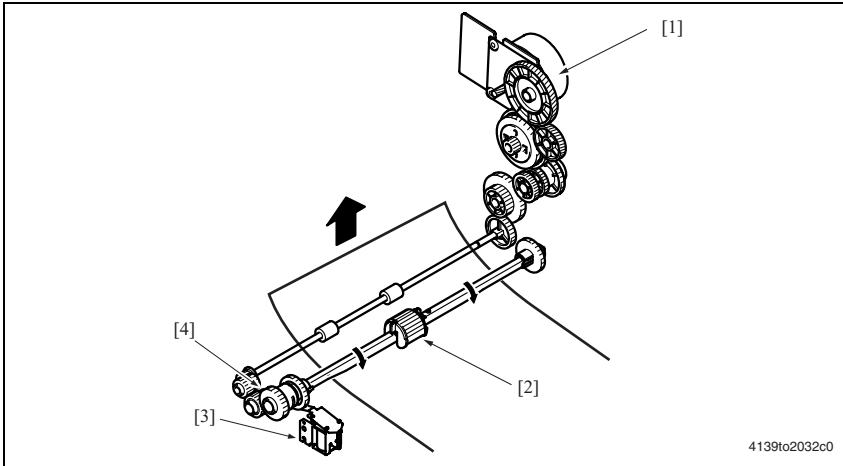
[1]	Main Motor (M1)	[2]	Pick-up Roller
[3]	Tray1 Paper Pick-up Solenoid (SL1)	[4]	Paper Pick-up Clutch

Paper Feed Control

* C-TOD (Top of Data): CD Print Start signal for cyan   4139to2088e0
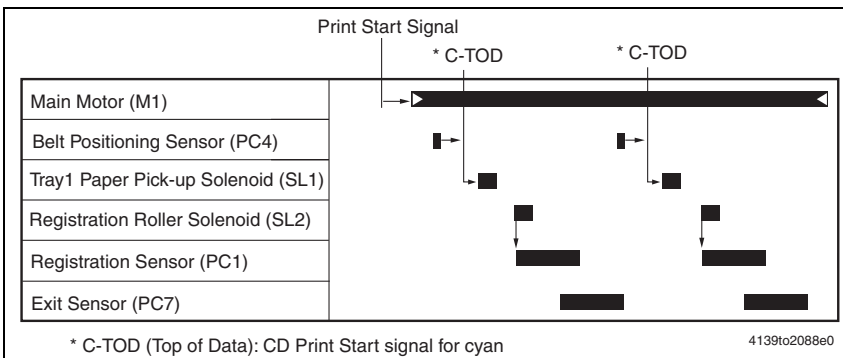
Paper Feed Speed Control

■ The Conveyance Roller and Registration Roller are driven by the Main Motor (M1).

■ The appropriate paper feed and conveyance speed are selected according to the type of paper.

Media Type	Main Motor (mm/sec)
Plain paper, letterhead	126.78 mm/5 in.
Thick stock, postcards, labels, glossy stock	63.39 mm/2.5 in.
OHP film, envelopes	42.26 mm/1.6 in.

Paper Feed Mechanism

■ When the Tray1 Paper Pick-up Solenoid (SL1) is energized, drive from the Main Motor (M1) is transmitted to the Pick-up Roller via the Paper Pick-up Clutch. The Pick-up Roller is then rotated.

■ At the same time, the Lift Cam is rotated, which raises the Paper Lift Plate. This allows the paper to be taken up or picked, and then fed by the Pick-up Roller.

4139to2101e0

4139to2089e0
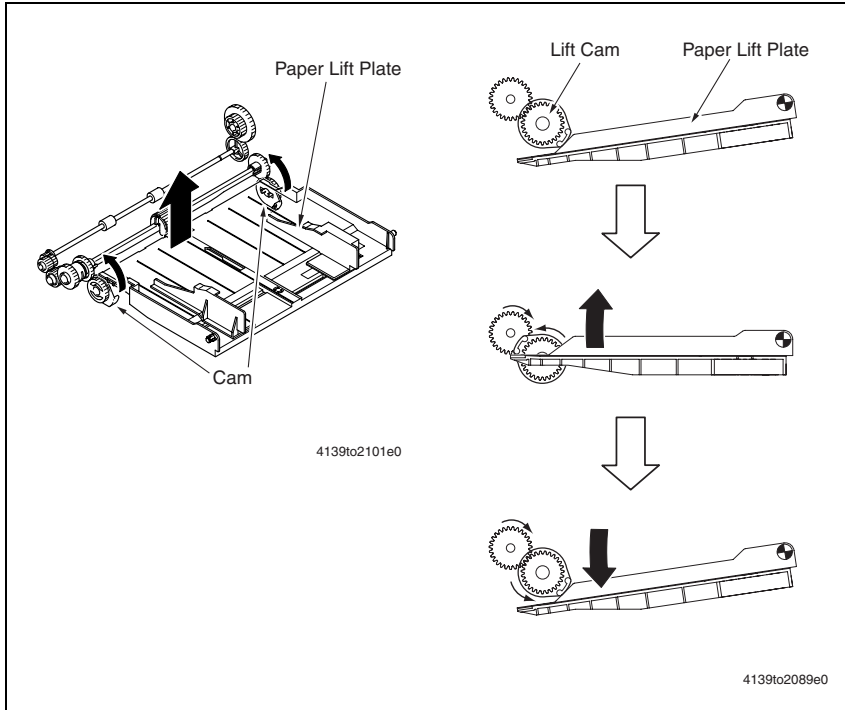
Double Feed Prevention Mechanism

The fixed Separation Pad system plus the Claw Stoppers are used for paper separation. This ensures that only the first sheet of paper is taken up and fed in.

4139to2090e0
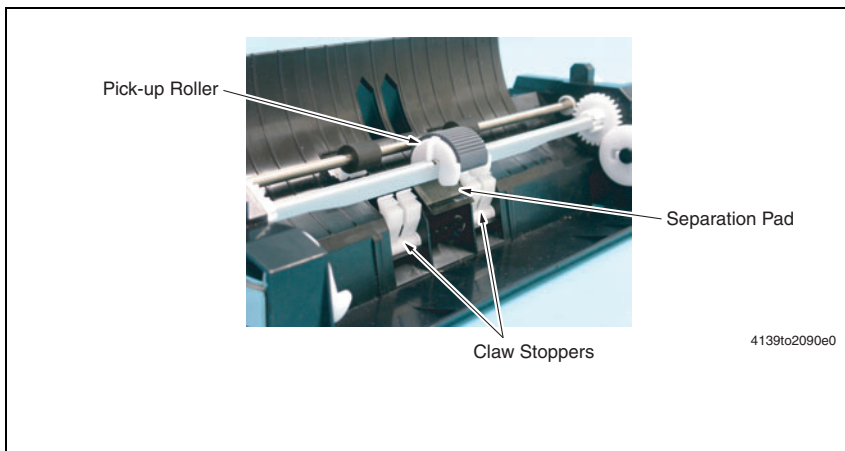
Paper Empty Condition Detection

■ The Tray1 Paper Empty Sensor (PC9) is located on the underside of Tray1, detecting the paper loaded in the tray.

■ When there is paper loaded in the tray, the actuator drops into the tray, unblocking the sensor light.

■ When paper runs out, the actuator is raised, blocking the sensor light.

4139to2091e0
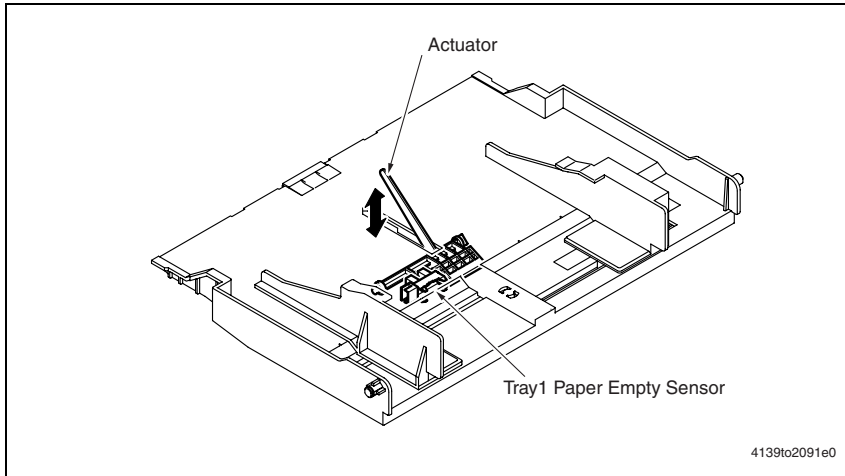
Paper Feed Retry Function

To reduce the number of paper misfeeds detected due to failure to take up and feed in paper properly, another paper feed sequence is carried out if the Registration Sensor (PC1) is not unblocked and blocked within a predetermined period of time.

Registration Roller

4139to1575c0

4139to1542c0

4139to1563c0
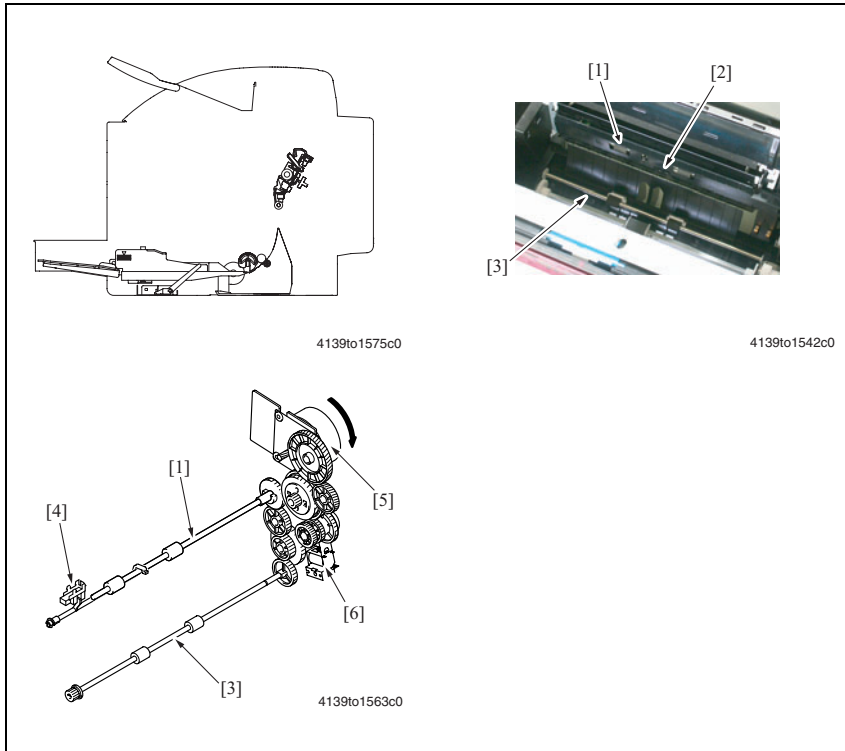
Key	Name	Function/system
[1]	Registration roller	Moves the paper from the transport (or conveyance) roller to the transfer section.
[2]	OHP Sensor (PC2A)	Detects whether or not there is OHP film.
[3]	Conveyance roller	Conveys paper from Tray1 to the Registration Roller.
[4]	Registration Sensor (PC1)	Detects the leading edge of the paper conveyed from the Pick-up Roller.
[5]	Main Motor (M1)	Drives the Conveyance Roller. Driven by the PWB-A (Engine Control Board).
[6]	Registration Roller Solenoid (SL2)	Controls drive of the Registration Roller and Conveyance Roller.

Registration Roller Drive

4139to2035c0
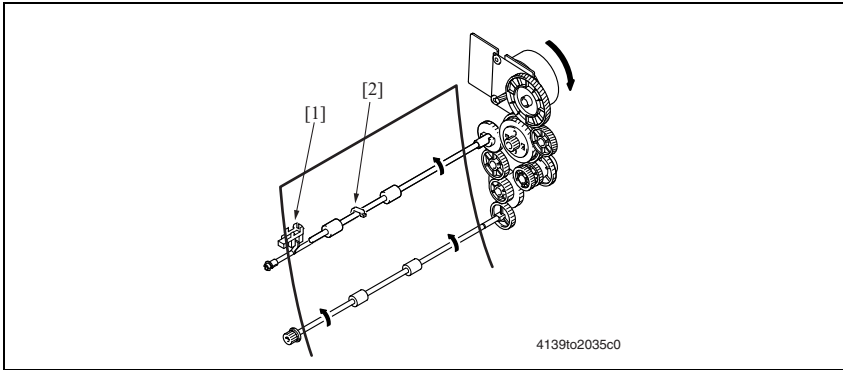
[1]   Registration Sensor (PC1)   [2]   Actuator

Registration Roller Control

■   The Registration Sensor (PC1) detects whether or not the paper has reached the Conveyance Section.

■   Conveyance of paper is restarted by synchronizing the paper conveyed with the image.

■   Since the Conveyance Roller and Registration Roller are synchronized with each other, no loop is formed in the paper at the Registration Roller.

Paper feed sequence started

Tray1 Paper Pick-up Solenoid (SL1)

Registration Roller Solenoid (SL2)

Registration Sensor (PC1)

Drive stopped

4139to2105e0
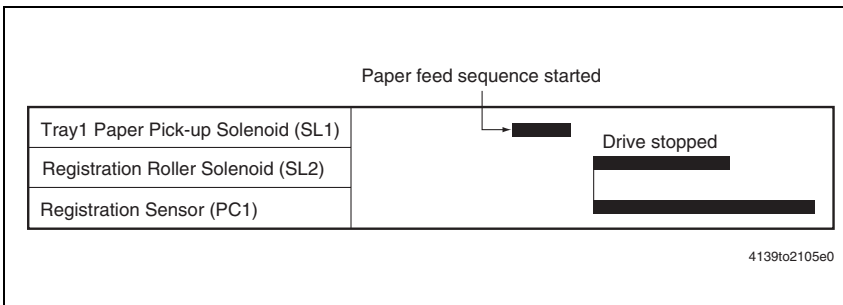
OHP Film Detection

To ensure that the correct paper type is being used, the OHP Sensor (PC2A) detects the presence of OHP or paper. When the Registration Sensor (PC1) is activated, the OHP Sensor (PC2A) is also activated and the type of paper being conveyed is determined if it is OHP film or any type other than OHP. If the OHP Sensor (PC2A) is not deactivated, the machine determines that the paper is a type other than OHP film. If the OHP Sensor (PC2A) is activated, the machine determines that the paper is OHP film. If the paper type specified by the

controller when a print request is made does not match the results of OHP Sensor (PC2A) detection, the machine suspends the print cycle and displays a corresponding message on the control panel.
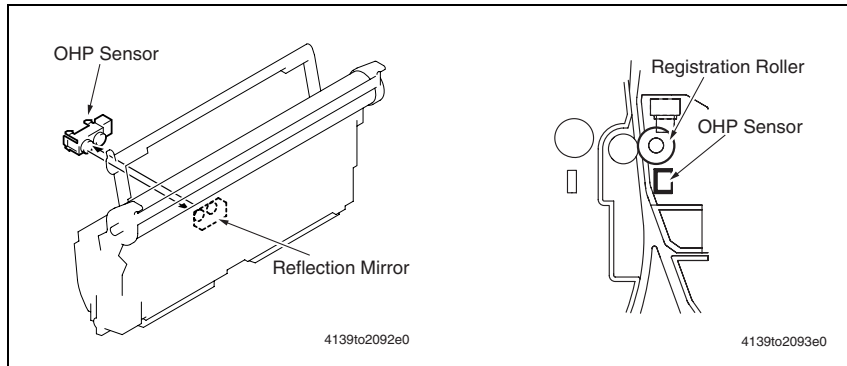
Size Error Detection Control

- To prevent incorrect printed pages, the size of the paper being conveyed is detected using the Registration Sensor (PC1).
- The length of the paper is detected based on the value calculated using the period of time that begins when the sensor is activated and ends when it is deactivated.
- If the paper size specified by the controller does not match the paper size detected by the Registration Sensor (PC1), the machine displays a corresponding message on the control panel.
- The paper that has caused the size error is processed through the printer. Subsequent sheets of paper are stopped until the size error is corrected or the job is cancelled.

Fusing Section

4139to1576c0

4139to1546c0

4139to1565c0

4139to1547c0
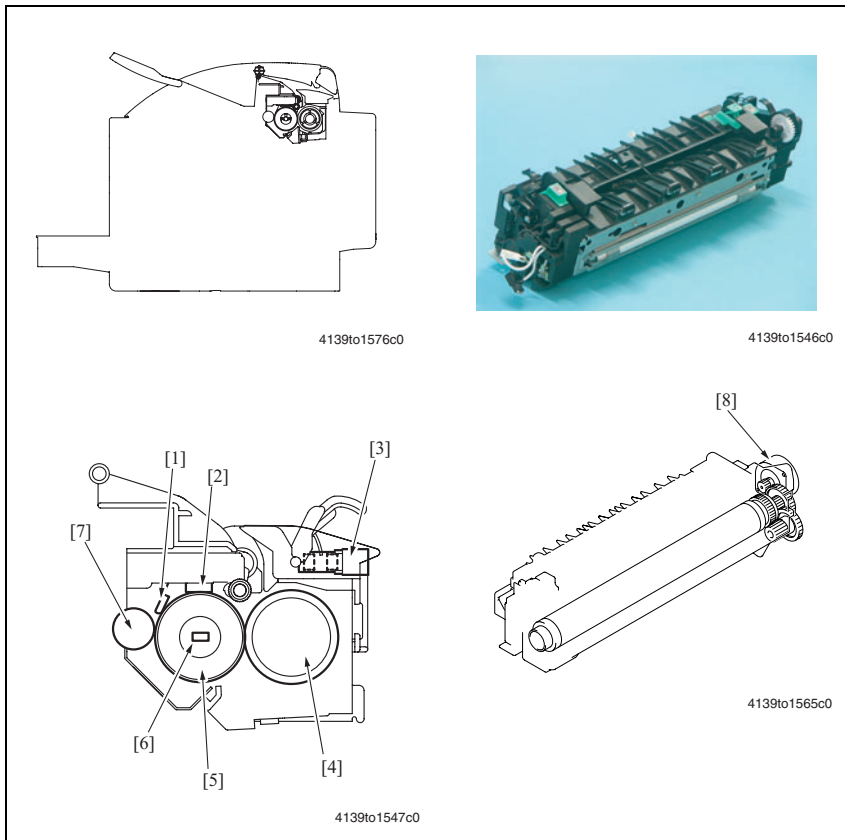
Key	Name	Function/system
[1]	Thermistor (TH1)	Detects the temperature of the Heating Roller.
[2]	Thermostat (TS1)	Detects an abnormally high temperature of the Heating Roller.
[3]	Exit Sensor (PC7)	Detects the paper conveyed from the Fusing Pressure Roller and Fusing Roller.
[4]	Pressure Roller	Applies pressure to the toner so that it is fused into the paper.
[5]	Heating Roller	Applies heat and pressure to the toner so that it is fused into the paper.
[6]	Heater Lamp (H1)	■ Heats the Heating Roller. ■ Heater Lamp power: 760 W
[7]	Cleaning Roller	Removes paper dust from the Heating Roller.
[8]	Fusing Motor (M7)	Drives the Heating Roller.

Fuser Drive

4139to2094e0
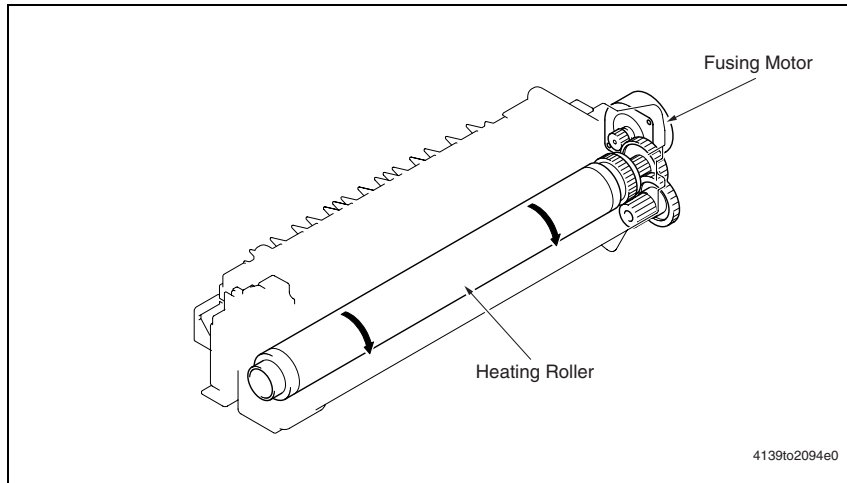
Heating Roller Drive Control

Speed Change Control

■ Drive for the Heating Roller is provided by the Fusing Motor (M7).
■ To prevent fusing failure, the fusing speed is changed according to the media type in use.

Speed Stabilization

■ To prevent ghosting or smearing, the difference between the fusing speed and paper transport speed during image transfer is corrected.
■ The fusing speed is changed in two steps relative to the system speed, either at high speed (which is +2% of the system speed) or low speed (which is -2.5% of the system speed).
■ The Fusing Motor (M7) is controlled to achieve this speed change in two steps.

Fuser Sequence

1. The initial fusing speed is set to the low speed, thereby forming a loop in the paper between the 2nd Transfer Roller and Fusing Rollers.
2. The Fusing Paper Loop Sensor (PC8) is activated (blocked) when the loop is formed.
3. While the Fusing Paper Loop Sensor (PC8) remains activated, the fusing speed is kept at the high level.
4. When the Fusing Paper Loop Sensor (PC8) is deactivated, the fusing speed is immediately switched to the low level.

5. The sequence of these operations is repeated so that the fusing speed is changed automatically according to the loop length. This effectively makes for the difference between the fusing speed and paper conveyance speed during image transfer.

4139to1592c0   4139to1593c0
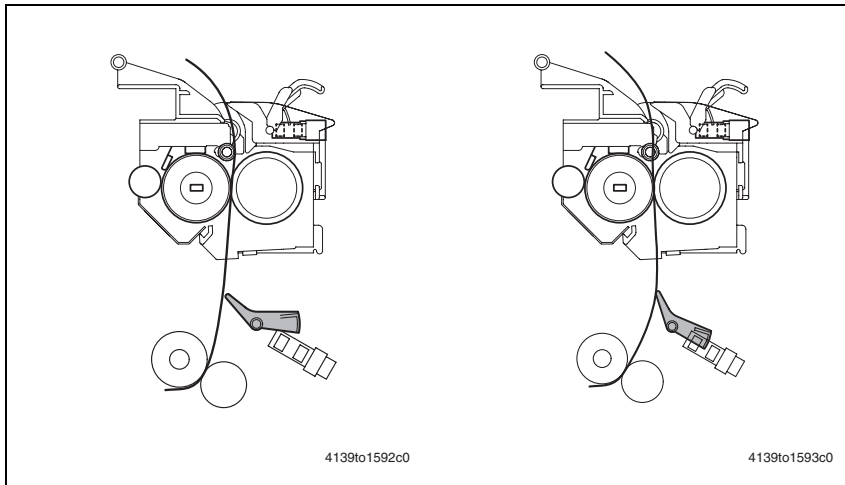
Fusing Temperature Control

A thermistor is used to detect the surface temperature of the Heating Roller. The Heater Lamp (H1) is then turned ON and OFF as necessary to achieve the set temperature.

Warm-Up

■   The lamp is on until the Heating Roller temperature reaches 178° C.

■   This control is performed when the Power Switch is turned ON, a malfunction or paper misfeed is reset, the Energy Saver mode is canceled, or the door is opened and closed.

Ready

The fusing temperature in the Ready (or standby) state is maintained at a constant temperature.

During Print Cycle

To ensure good fusing performance, the set temperature of each roller is varied according to the paper type and environment.

Energy Saver Mode

Heater control is suspended when a malfunction or paper misfeed occurs or in the Energy Saver mode.

Protection Against Abnormally High Temperature

The machine provides protection at three different stages to prevent abnormally high temperature of the Fusing Unit.

■   Soft Protection (Warning)
    If the Thermistor (TH1) detects a temperature exceeding a predetermined value, the malfunction code representing abnormally high temperature is displayed. At this time, the

Heater Lamp (H1) is turned OFF forcibly and the initiation of any new print cycle is prohibited (abnormally high temperature detection control).

■ Hard Protection (Hard Stop)
Circuitry within the PWB-A Controls a relay that shuts down the power supply to the Heater Lamp (H1) when an abnormal temperature is detected.

■ Thermostat Protection
If neither the soft protection nor hard protection can detect an abnormally high temperature due to a defective Thermistor (TH1) or other reason, the Thermostat (TS1) operates at the specified temperature. This shuts down the power supply to the Heater Lamp (H1), thus forcibly turning it OFF.

4139to2097e0
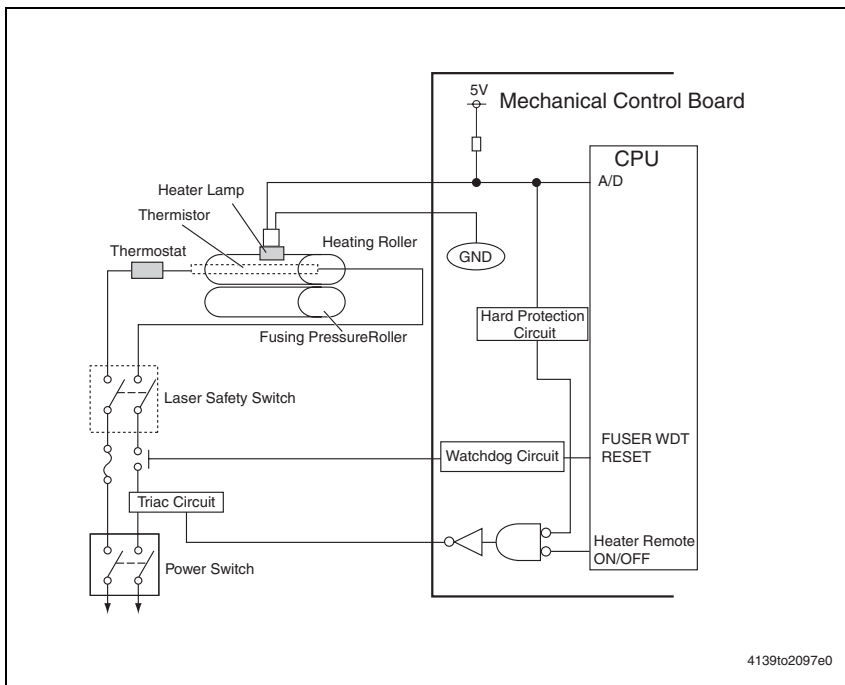
PPM (Pages Per Minute) Control

■ PPM control is provided to prevent the temperature on edges of the Heating Roller from increasing during a multi-print cycle using plain paper of a small size.

■ The distance between sheets of paper is widened according to the number of printed pages set to be produced and the paper length. This evens out the temperature of the Heating Roller and thus stabilizes fusing performance of the printed toner image.

■ To perform the PPM control, the number of printed pages per minute is established for each paper size.

Monochrome Ordinary/Low Environment

The low temperature environment refers to the condition, in which the Temperature/Humidity Sensor (HS1) detects a temperature of less than 20° C.

		Length			
		210 mm (8.2")	211 - 216 mm (8.3" - 8.5")	217 - 257 mm (8.6" - 10.1")	258 - 297 mm (10.2" - 11.7")
Width	92 - 138 mm (3.6" - 5.4")	14/12	14/12	14/12	14/12
	139 - 147 mm (5.5" - 5.8")	18/15	18/15	14/12	14/12
	148 - 181 mm (5.9" - 7.1")	19/16	18/15	14/12	14/12
	182 - 209 mm (7.2" - 8.2")	20/17	20/17	20/17	14/12
	210 - 216 mm (8.3" - 8.5")	20/20	20/20	20/20	20/20

Color Environment

		Length			
		210 mm (8.2")	211 - 216 mm (8.3" - 8.5")	217 - 257 mm (8.6" - 10.1")	258 - 297 mm (10.2" - 11.7")
Width	92 - 138 mm (3.6" - 5.4")	3	3	3	3
	139 - 147 mm (5.5" - 5.8")	5	5	3	3
	148 - 181 mm (5.9" - 7.1")	5	5	3	3
	182 - 209 mm (7.2" - 8.2")	5	5	5	3
	210 - 216 mm (8.3" - 8.5")	5	5	5	5

Paper Exit

4139to1576c0

4139to1577c0

4139to1578c0
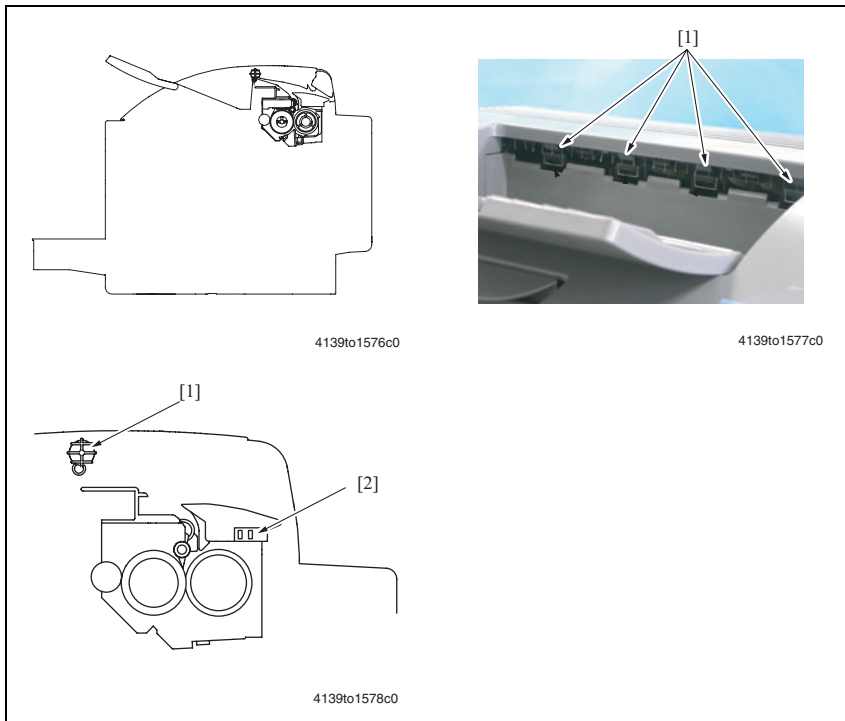
Key	Name	Function/System
[1]	Paper Exit Roller	■ Feeds paper out of the machine onto the Paper Exit Tray. ■ Driven by the Fusing Motor (M7).
[2]	Exit Sensor (PC7)	■ Detects a sheet of paper fed from the Heating Roller and Fusing Pressure Roller.

Paper Exit Drive

4139to1604c0
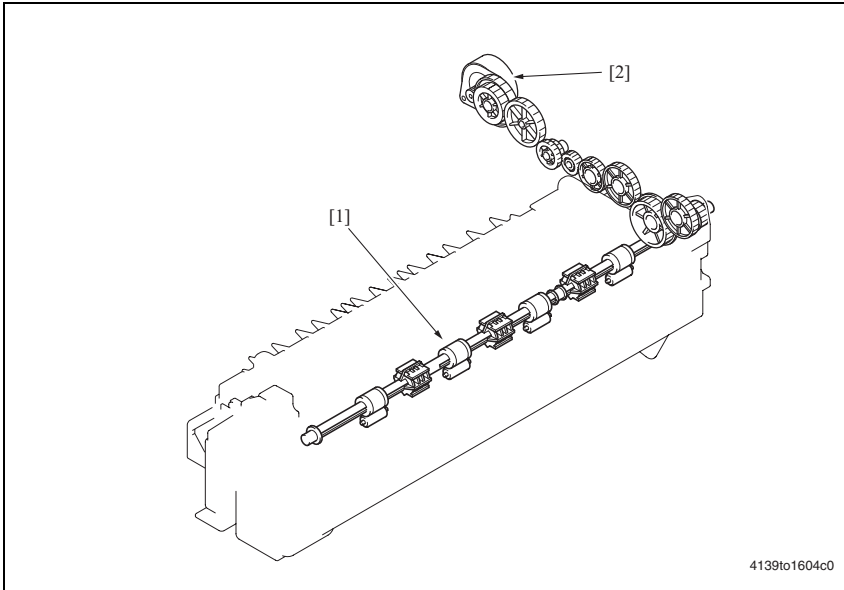
[1]   Paper exit roller   [2]   Fusing Motor (M7)

Image Stabilization Control (Density) and Output Process

To ensure that a stabilized output image is produced at all times, the following image stabilization controls are provided

Purpose	Control	Detection
To ensure stabilized transfer output	ATVC ■ See the Transfer section on page 7-22.	Temperature/Humidity Sensor (HS1)
To ensure stabilized image density; to ensure good tone reproduction	AIDC control (Density) ■ Leak detection control ■ AIDC intensity control ■ Reflectance measurement control ■ Control of the maximum amount of toner sticking ■ Laser intensity adjustment control ■ Correction control	AIDC Sensor (AIDC) Temperature/Humidity Sensor (HS1)

4139to2098e0
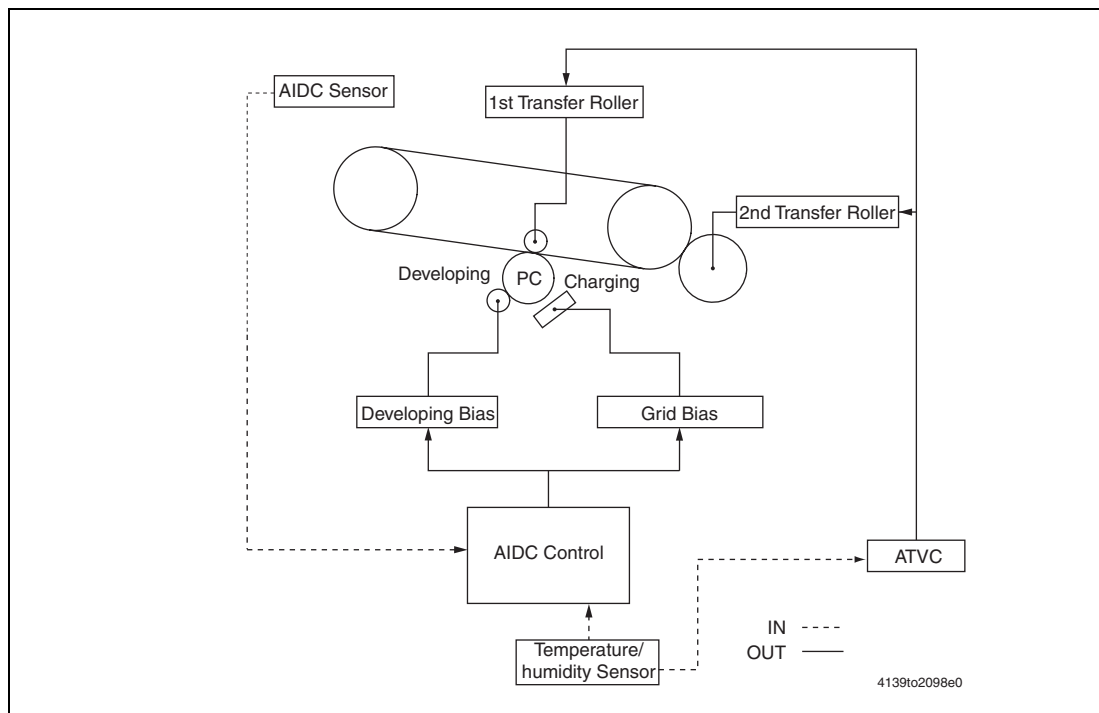
Leak Detection Control

For the clearance between the Photo Conductor and Developing Roller, an optimum developing bias voltage is established that does not result in a light image or uneven density.

AIDC Sensor LED Intensity Control

The following adjustment is made to correct any changes in characteristics occurring due to change with time and contamination of the AIDC Sensor (AIDC): the intensity of the LED is adjusted for the surface of the Transfer Belt on which no toner sticks, so that the output value of the AIDC Sensor (AIDC) becomes constant.

Reflectance Measurement Control

■ The reflectance of the Image Transfer Belt is measured using the ADIC Sensor (AIDC). One measurement is taken for one complete turn of the Image Transfer Belt.

■ The measured value is corrected during the laser intensity adjustment control.

Control of the Maximum Amount of Toner Sticking

The developing bias setting value is adjusted to keep constant the amount of toner sticking to the surface of the Photo Conductor.

Laser Intensity Adjustment Control

Characteristics of the Photo Conductor, developing, and charging change as affected by changes with time and in environment. The intensity of the laser light is adjusted so that fine lines and gradations of a predetermined level are reproduced at all times.

Density Correction Control

A gradation pattern is produced on the surface of the Image Transfer Belt. The AIDC Sensor (AIDC) measures the density of the pattern and sends the measured result to the controller for gradation adjustment.

Image Stabilization Timing

Mode	Operation Timing
Mode 1	■ The environment in which the Power Switch is turned ON is different from the environment the machine was in when the Power Switch was turned OFF last. ■ The environment in which the Energy Saver mode is canceled is different from the environment the machine was in when it entered the Energy Saver mode last. ■ The Power Switch is turned OFF and ON or the Energy Saver mode is canceled after a predetermined number of printed pages have been produced. ■ A new Imaging Unit or Toner Cartridge is detected.
Mode 2	The Power Switch is turned OFF and ON or the Energy Saver mode is canceled after a predetermined number of printed pages have been produced.

Flowchart

Mode 1	Mode 2
ATVC control	AIDC intensity control
Leak detection control	Control of the maximum amount of toner sticking
AIDC intensity control	Reflectance measurement control
Reflectance measurement control	Laser intensity control
Control of the maximum amount of toner sticking	
Laser intensity control	
γ correction control	

4139to2099e0

Fan Airflow

4139to2100e0
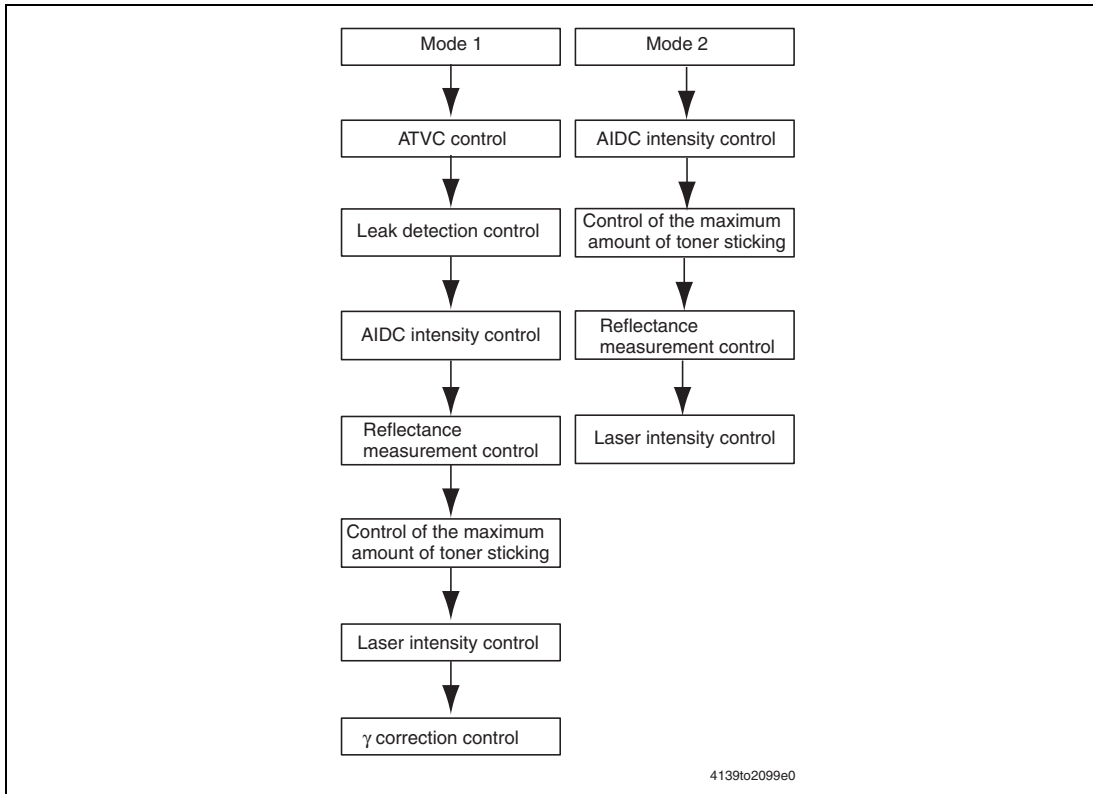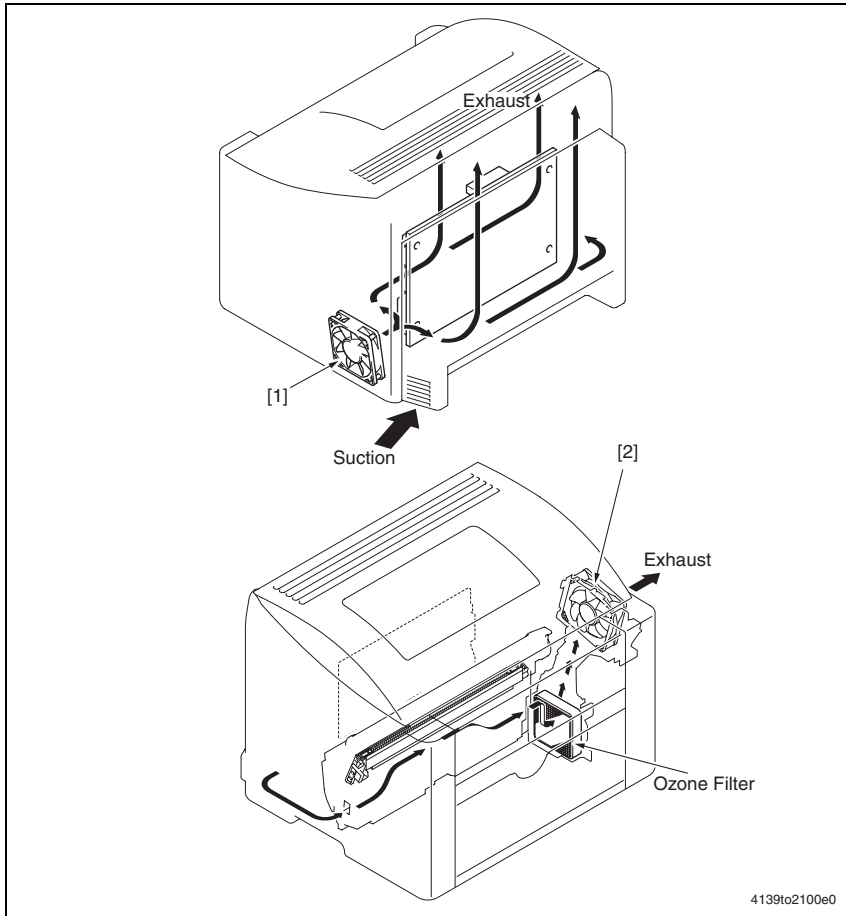
Key	Name	Function/System
[1]	Power Supply Cooling Fan Motor (M4)	Cools the Power Unit (PU) and draws in outside air.
[2]	Ventilation Fan Motor (M6)	Uses the Ozone Filter that removes ozone from the air drawn by this motor to the outside.

Fan Control

Power Supply Cooling Fan Motor

<Full-speed conditions>

■ For the predetermined period of time after the Power Switch has been turned ON

■ For the specified period of time up to the end of Energy Saver mode

■ At the start of a print cycle (full-speed rotation after the lapse of a predetermined period of time of half-speed rotation). No full-speed rotation is performed if the print cycle is completed during half-speed rotation.

<Half-speed conditions>

■ At the end of a print cycle (half-speed rotation after the lapse of a predetermined period of time of full-speed rotation)

■ Half-speed rotation under any condition other than above

<Stop conditions>

■ In Energy Saver mode

■ The Power Supply Cooling Fan Motor (M4) develops a malfunction.

Ventilation Fan Motor

<Full-speed condition>

■ While the Main Motor (M1) remains energized.

<Stop conditions>

■ The lapse of a predetermined period of time after the Main Motor (M1) has been de-energized.

■ Stop under any condition other than above.

<Forced stop condition>

■ A door is opened, a paper misfeed has occurred, or a malfunction has occurred.

Temperature/ Humidity Sensor
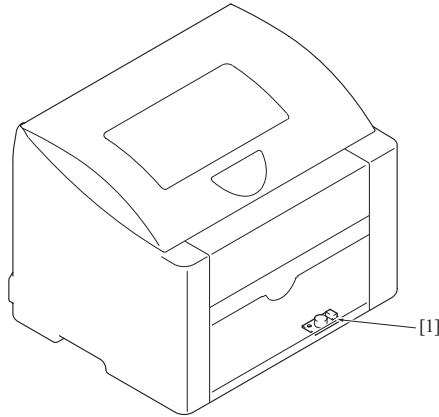
4139to1594c0

Key	Name	Function/System
[1]	Temperature/ Humidity Sensor (HS1)	■ Measures the temperature and humidity inside the machine. ■ Used for image stabilization control, ATVC, and fusing temperature control.

8 Optional Lower Tray Unit (500-Sheet Feeder)

This section contains:

General Information and Specifications

Option Specifications

Media Specifications

Paper Size	A4/Letter
Paper Type	■ Plain paper: 60 to 90 g/m^2 (16 to 24 lb) ■ Recycled paper: 60 to 90 g/m^2 (16 to 24 lb)
Capacity	500 sheets of 20 lbs.

Machine Specifications

Power Requirements	DC 24 V $\pm$10% (supplied from the main unit)
	DC 5 V $\pm$5%
Max. Power Consumption	12 W
Dimensions	430 (W)× 500 (D)× 138 (H) mm 16.9" (W) × 19.6" (H) × 5.4" (D)
Weight	Approx. 4.6 kg (10.1 lb)

Operating Environment

Temperature	10 to 35° C / 50 to 95° F (with a fluctuation of 10° C / 18° F or less per hour)
Humidity	15% to 80% (with a fluctuation of 20%/h)

Maintenance

Maintenance Parts

Pick-Up Roller

Cleaning Procedure

1. Remove the Lower Feeder Unit from the main unit.

2. Wipe the Pick-up Roller [1] clean of dirt using a soft cloth dampened with water.

[1]   [1]

4056fs2501c0
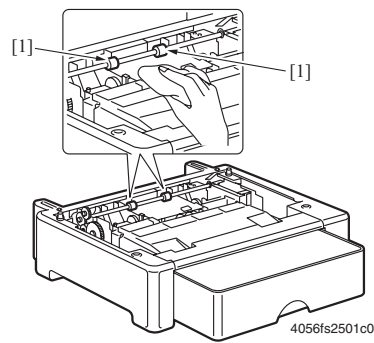
Removal Procedure

1. Remove the Lower Feeder Unit from the main unit.

2. Remove two Pick-up Rollers [1].

[1]

4056fs2502c0
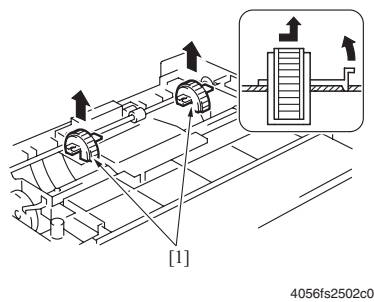
Service Parts Disassembly

Variable Resistors on Board

Do not turn the variable resistors on boards for which no adjusting instructions are given in Adjustment/Setting.

Removal of PWBs

■ When removing a circuit board or other electrical component, refer to "Handling of PWBs" and follow the corresponding removal procedures.

■ The removal procedures given in the following omit the removal of connectors and screws securing the circuit board support or circuit board.

■ Where it is absolutely necessary to touch the ICs and other electrical components on the board, be sure to ground yourself.

Disassembly Index

No	Section	Part name	Ref. page
1		Lower Feeder Unit	page 8-5
2	Exterior parts	Tray	page 8-5
3		Lower Feeder Unit Rear Cover	page 8-5
4	Unit	Lower Feeder Paper Pick-up Unit	page 8-6
5	Board and etc	Lower Feeder Board	page 8-7
6	Others	Lower Feeder Paper Pick-up Solenoid	page 8-8
7		Lower Feeder Paper Size Switch	page 8-9

Lower Feeder Unit

Note: Whenever removing or reinstalling the Lower Feeder Unit, be sure first to unplug the power cord of the printer from the power outlet.

1. Lift the printer main body and then remove the Lower Feeder Unit [1] from the printer.

[1]

4056fs2504c0
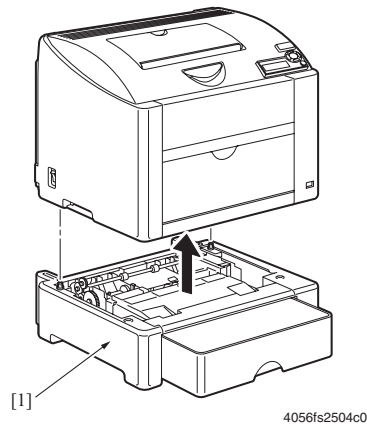
Tray

1. Remove the Lower Feeder Unit from the main unit.
2. Slide out the Tray [1].

[1]

4056fs2503c0
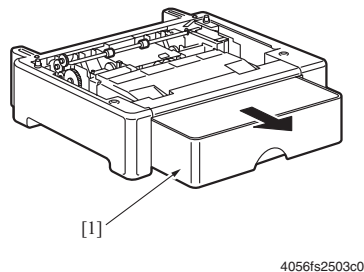
Lower Feeder Rear Cover

1. Slide out the Tray, see Tray on page 8-5.
2. Remove four screws [1], and remove the Lower Feeder Unit Rear Cover [2].
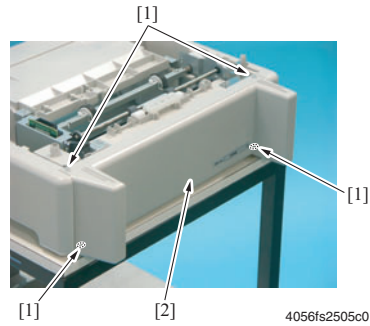
Lower Feeder Paper Pick-Up Unit

1. Remove the Lower Feeder Unit Rear Cover, see Lower Feeder Rear Cover on page 8-6.
2. Unlock two tabs [1] and remove the Cover [2].
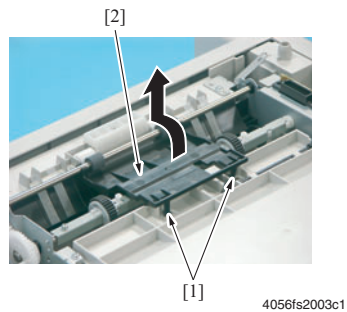
3. Remove the Actuator [3].
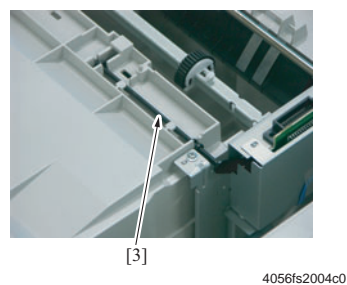
4. Remove one screw [4] and the metal plate [5].

4056fs2005c0
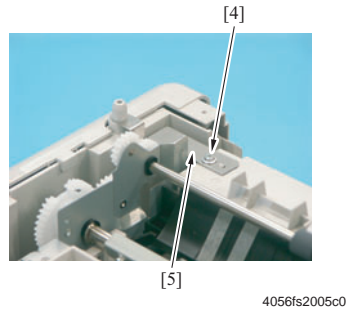
5. Remove five screws [6] and the Lower Feeder Paper Pick-up Unit [7].

4056fs2006c1
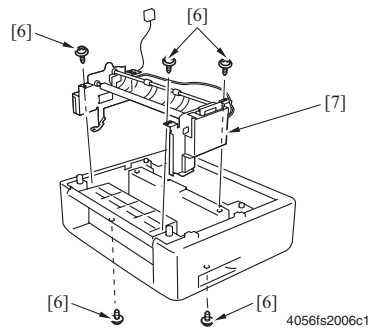
Lower Feeder Board (PWB-A PF)

1. Remove the Lower Feeder Paper Pick-up Unit, see Lower Feeder Paper Pick-Up Unit on page 8-6.

2. Disconnect two connectors [1] from the Lower Feeder Board.

3. Remove one screw [2] and the PWB Protective Cover [3].

4056fs2001c1
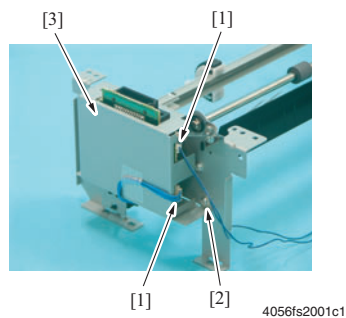
4. Remove two screws [4] and the Lower Feeder Board [5].

[4]

[5]   4056fs2002c1
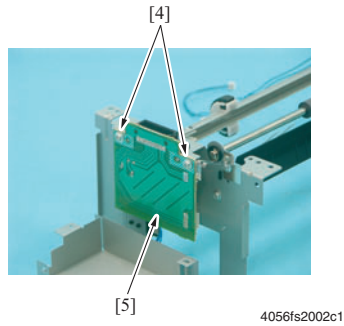
Lower Feeder Paper Pick-Up Solenoid (SL7 PF)

1. Remove the Lower Feeder Paper Pick-up Unit, see Lower Feeder Paper Pick-Up Unit on page 8-6.
2. Disconnect one connector [1].
3. Remove one screw [2] and the Protective Cover [3].

[2]

[3]

[1]   4056fs2008c0
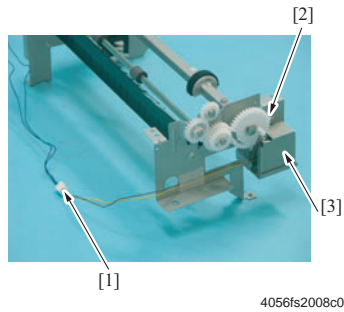
4. Remove one screw [3] and the Lower Feeder Paper Pick-up Solenoid [4].

[4]
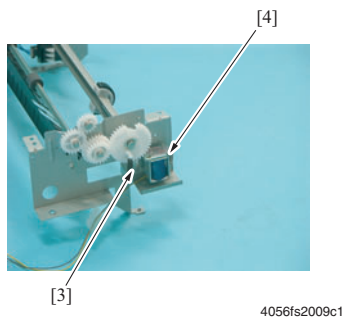
[3]   4056fs2009c1

Tray Set Detecting Switch (S4 PF)

1. Remove the Lower Feeder Paper Pick-up Unit, see Lower Feeder Paper Pick-Up Unit on page 8-6.

2. Unlock two tabs [1], disconnect one connector [2] and remove the Tray Set Detecting Switch [3].
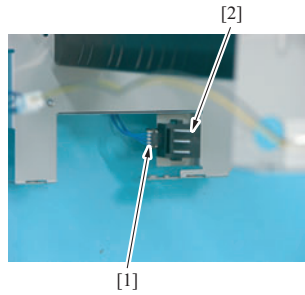
4056fs2007c0

Troubleshooting

Jam and Misfeed Messages

Jam and Misfeed Display

When a paper jam or misfeed occurs a message is displayed on the Control Panel display.

```
PAPER JAM
TRAY 2
```

4537fs4503e0
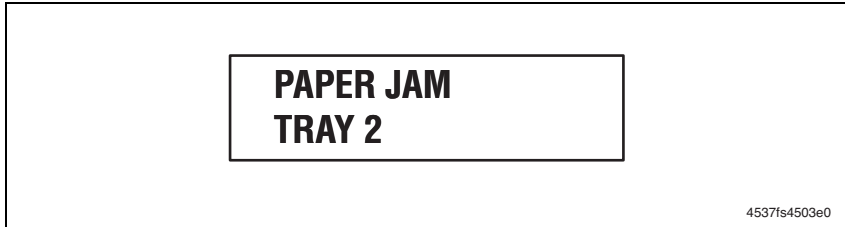
Display	Misfeed location	Misfeed clearing location	Ref. page
PAPER JAM TRAY 2	Tray 2 paper feed section	Tray 2	page 8-12

Jam Clearing Steps

■ Open the relevant door.
■ Clear the sheet of misfed paper.
■ Close the door.

Sensor layout Diagram

(shown with the optional Lower Feeder Unit and Duplex Unit)
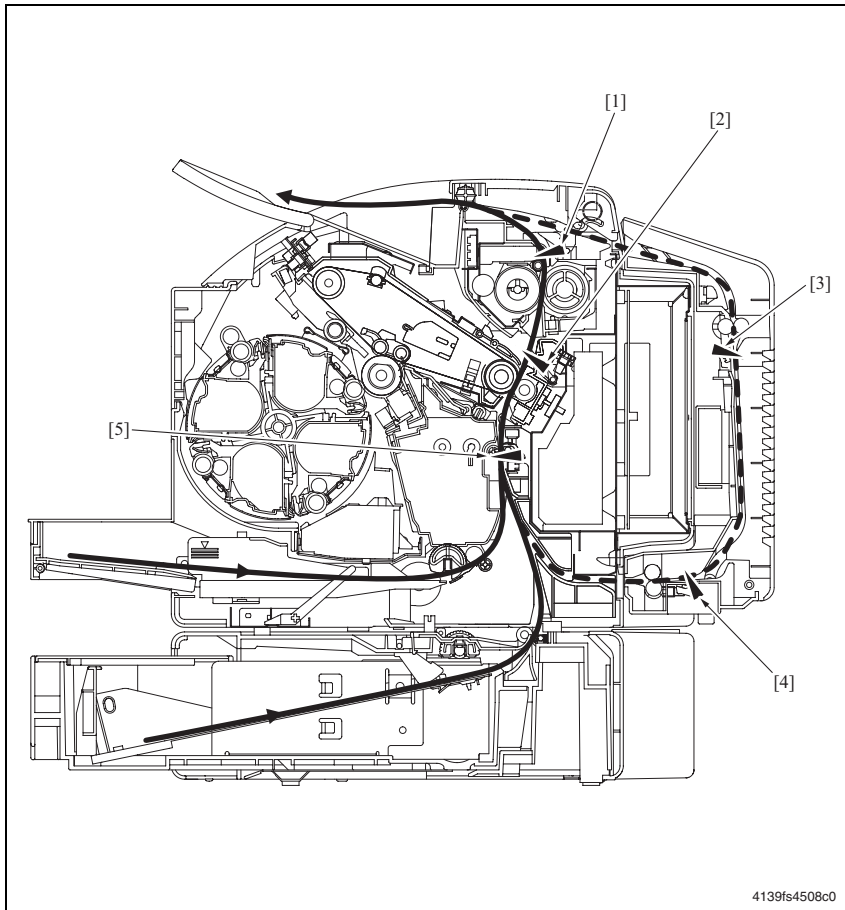
4139fs4508c0

[1]	Exit Sensor	PC7	[4]	Duplex Paper Loop Sensor	PC10 DU
[2]	Fusing Paper Loop Sensor	PC8	[5]	Registration Sensor	PC1
[3]	Duplex Transport Sensor	PC12 DU			

Jam and Misfeed Troubleshooting Procedures

Initial Actions

When a paper misfeed occurs, first check the following.

Check Item	Action
Does the paper meet product specifications?	Change the paper.
Is paper curled, wavy, or damp?	Change the paper. Instruct the user in correct paper storage.
Is a foreign object present along the paper path, or is the paper path deformed or worn?	Clean or change the paper path.
Are the rolls/rollers dirty, deformed, or worn?	Clean or change the defective roll/roller.
Are the Edge Guide and Trailing Edge Stop at the correct position to accommodate the paper?	Set as necessary.
Are the actuators and sensors operational when checked for correct operation?	Correct or change the defective actuator.

Jam at Tray 2

Detection Timing

| Type	Description
Detection of misfeed at Tray 2 paper feed section	The leading edge of the paper does not block the Registration Sensor (PC1) even after the lapse of a predetermined period of time after the Lower Feeder Paper Pick-up Solenoid (SL7 PF) has been energized.

Actions

Relevant Electrical Parts	
Registration Sensor (PC1) Lower Feeder Paper Pick-up Solenoid (SL7 PF)	PWB-A (Engine Control Board)

| Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Check the initial check items.	-	-
2	Check the PWB-A connector for proper connection and correct as necessary.	-	-
3	Check the PC1 sensor.	PWB-A PJ12A-3 (ON)	2-C (Main Unit)
4	Check the Pick-Up Solenoid (SL7) for correct operation.	PWB-A PF PJ22A PF-2 (REM)	4-E
5	Change PWB-A.	-	-

Theory of Operation

Lower Feeder Unit Drive
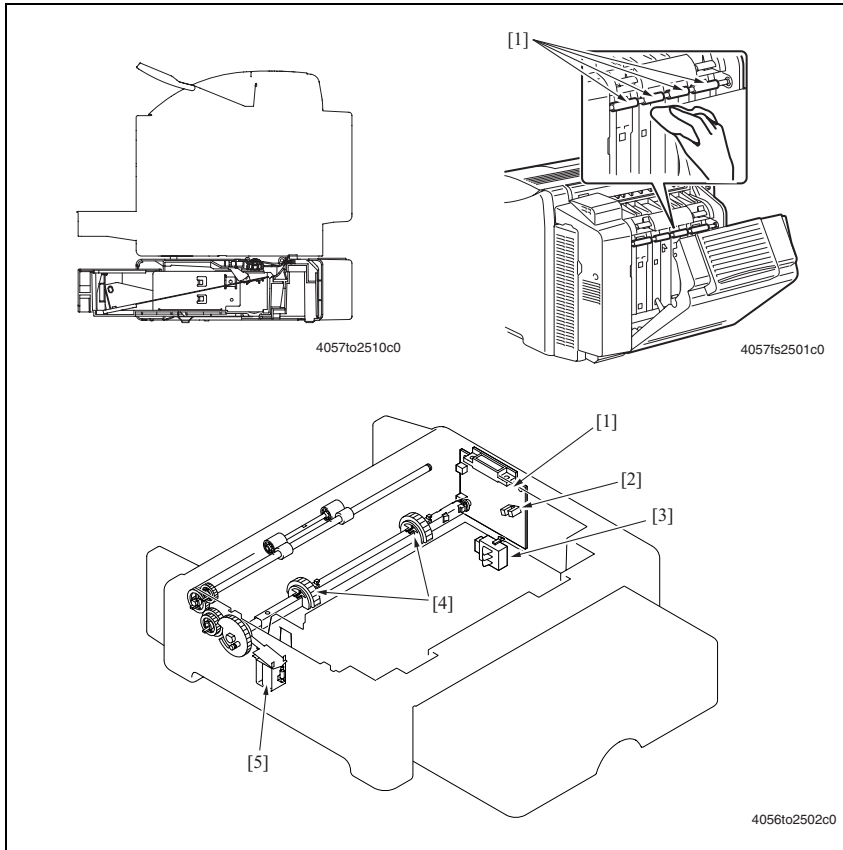
Key	Name	Function/system
[1]	Lower Feeder Board (PWB-A PF)	Controls the Lower Feeder Unit.
[2]	Lower Feeder Paper Empty Sensor (PC13 PF)	Detects the level of the paper still available for use in the Lower Feeder Unit.
[3]	Tray Set Detecting Switch (S4 PF)	Detects whether or not Tray 2 is installed.
[4]	Pick-up Roller	Takes up and Pick-up paper from the tray.
[5]	Lower Feeder Paper Pick-up Solenoid (SL7 PF)	Transmits drive from the Main Motor to the Pick-up Roller.

Lower Feeder Unit Drive

4056to2503c0
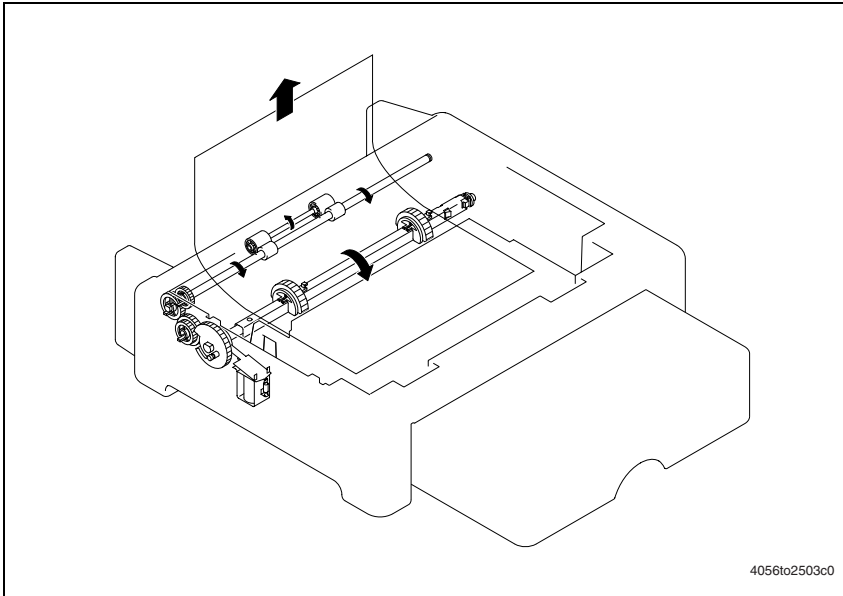
Conveyance Drive Mechanism

■ The Lower Feeder Unit is not provided with any drive motor. The driving force for paper feeding and conveyance (drive from M1) is transmitted through a coupling gear from the printer.

■ The paper separation mechanism uses separation claws installed in the unit and elasticity of the paper. It ensures that only one sheet of paper is fed in at time.

■ The Lower Feeder Paper Pick-up Solenoid (SL7 PF) is controlled from the printer side through the Lower Feeder Board (PWB-A PF) mounted in the Lower Feeder Unit.

Coupling gear

Lower Feeder Board (PWB-A PF)

Lower Feeder Paper Empty Sensor (PWB-A PF)

Lower Feeder Paper Pick-up Solenoid (SL7 PF)

4056to2504e0
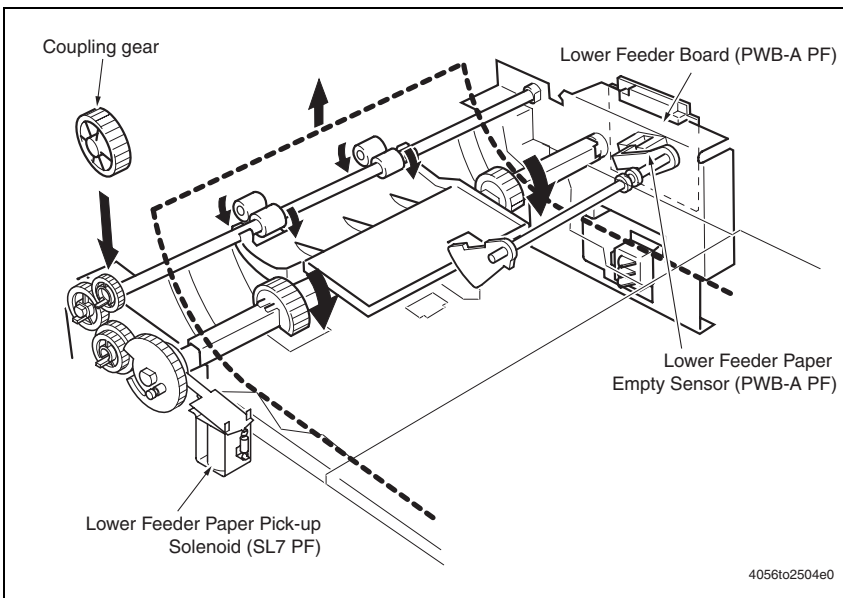
Paper Empty Detection

■ The Lower Feeder Paper Empty Sensor (PC13 PF) of the Lower Feeder Board (PWB-A PF) detects a paper empty condition in the Lower Feeder Unit.

■ When there is paper loaded in the Lower Feeder Unit, the actuator is raised, which unblocks the sensor.

■ When there is no paper, the actuator drops into the slit in the Paper Lift Plate, thus blocking the sensor.

Lower Feeder Board (PWB-A PF)

Lower Feeder Paper Empty Sensor (PC13 PF)

At paper empty condition   Under normal condition   4056to2505e0
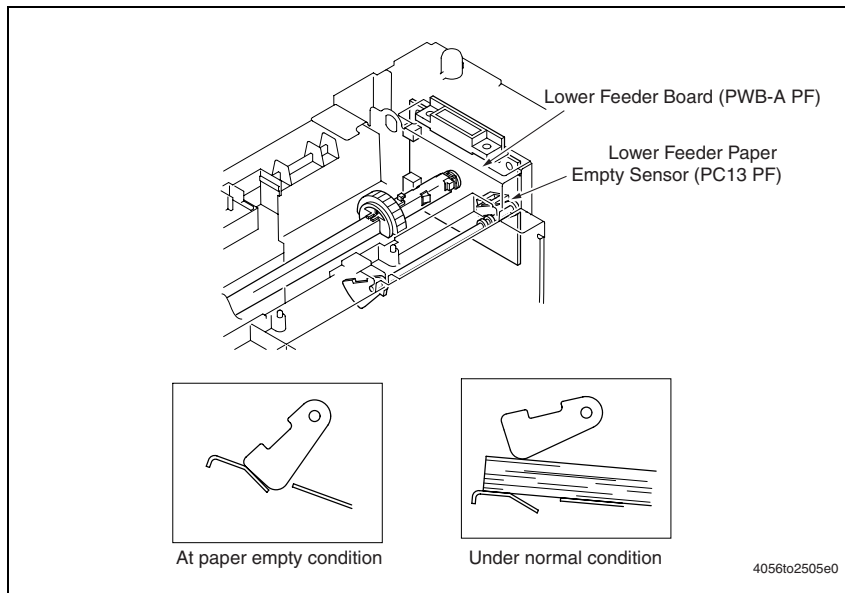
Tray Set Detection

■ The Lower Feeder Unit is provided with a Tray Set Detecting Switch (S4 PF) that is attached with a segment lever.

■ When Tray 2 is inserted, the switch actuator on the right-hand side of Tray 2 pushes the lever. This turns ON the Tray Set Detecting Switch (S4 PF).

Lever

Tray Set Detecting Switch (S4 PF)

OFF

ON

Switch Actuator

Tray 2   4056to2506e0
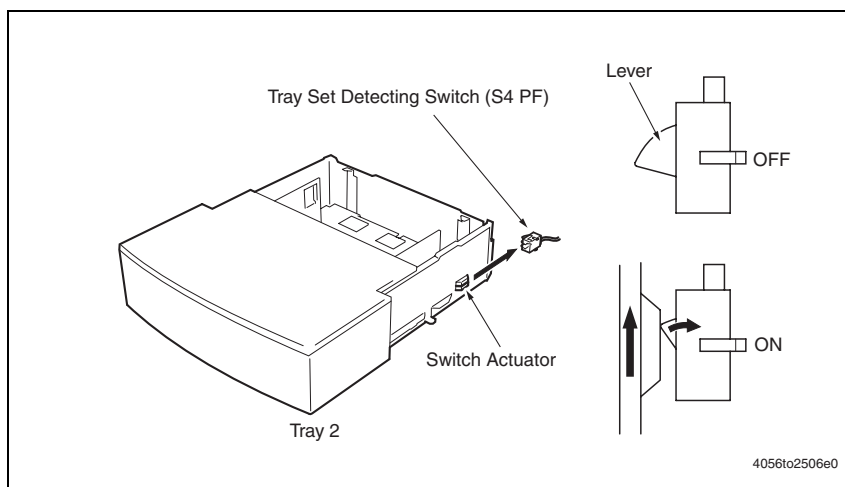
Lower Feeder Unit Parts List

Using the Parts List

Changes to Xerox products are made to accommodate improved components as they become available. As improvements are made, part numbers may change from those appearing in this section. To get the latest part, provide the following information when ordering:

- Component's part number
- Product type or configuration number
- Serial number of the printer

Only those parts listed with part numbers are available for order. Parts listed without part numbers are only available as part of a parent assembly or Service Kit.

1. **Key:** The callout number from the exploded part diagram.
2. **Part No:** The material part number used to order specific parts.
3. **Description:** Name of the part and number supplied per order.
4. **Qty:** This column lists the quantity of this part in the printer, for example a quantity of "2" means there are two of these parts, however, when ordering the part you will only receive one part.
5. **Comments:** The comments column is used for clarification.

P1 Housing
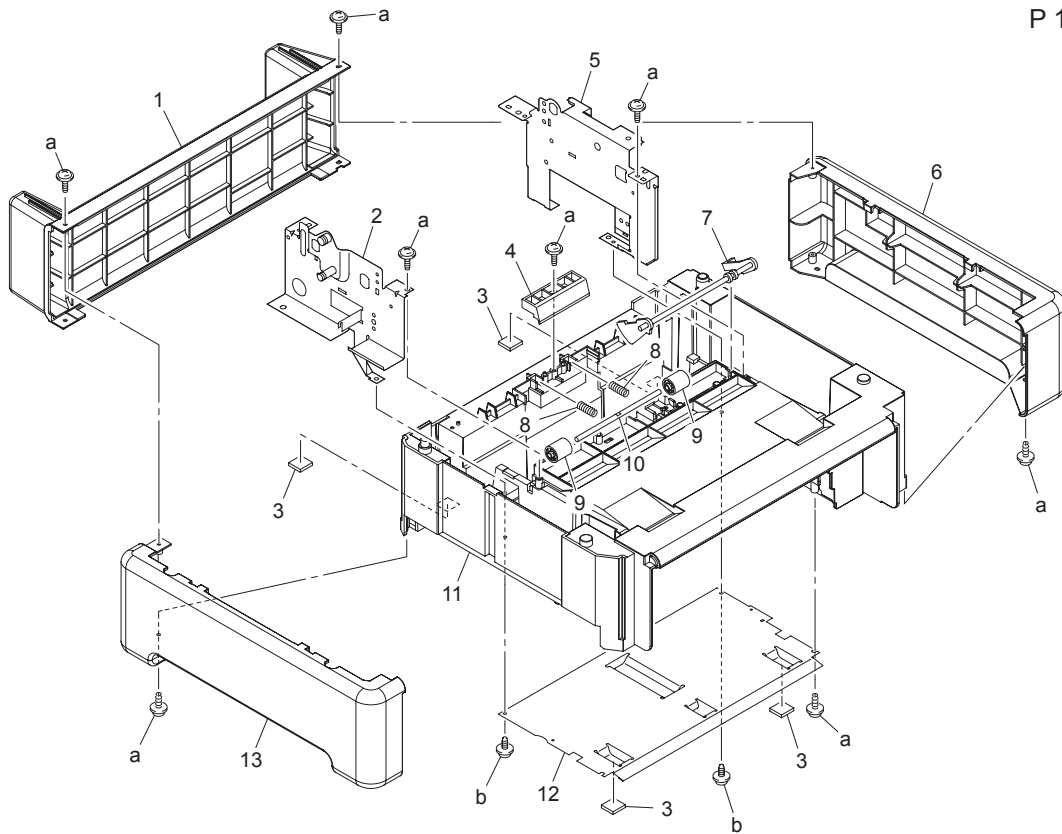
P1 Housing Parts List Table

Key	Part No.	Description	Qty	Comments
1		REAR COVER	1	
2		BRACKET ASSY	1	
3	107E11450	RUBBER FOOT	4	1 per part number
4		BRACKET	1	
5		FRAME	1	
6		RIGHT COVER	1	
7		ACTUATOR	1	
8		PRESSURE SPRING	2	
9		ROLL	2	
10		SHAFT	1	

Key	Part No.	Description	Qty	Comments
11		BASE FRAME	1	
12		PLATE	1	
13		LEFT COVER	1	
a b	604K35500	Part of Hardware Kit		

P2 Paper Take-Up Section
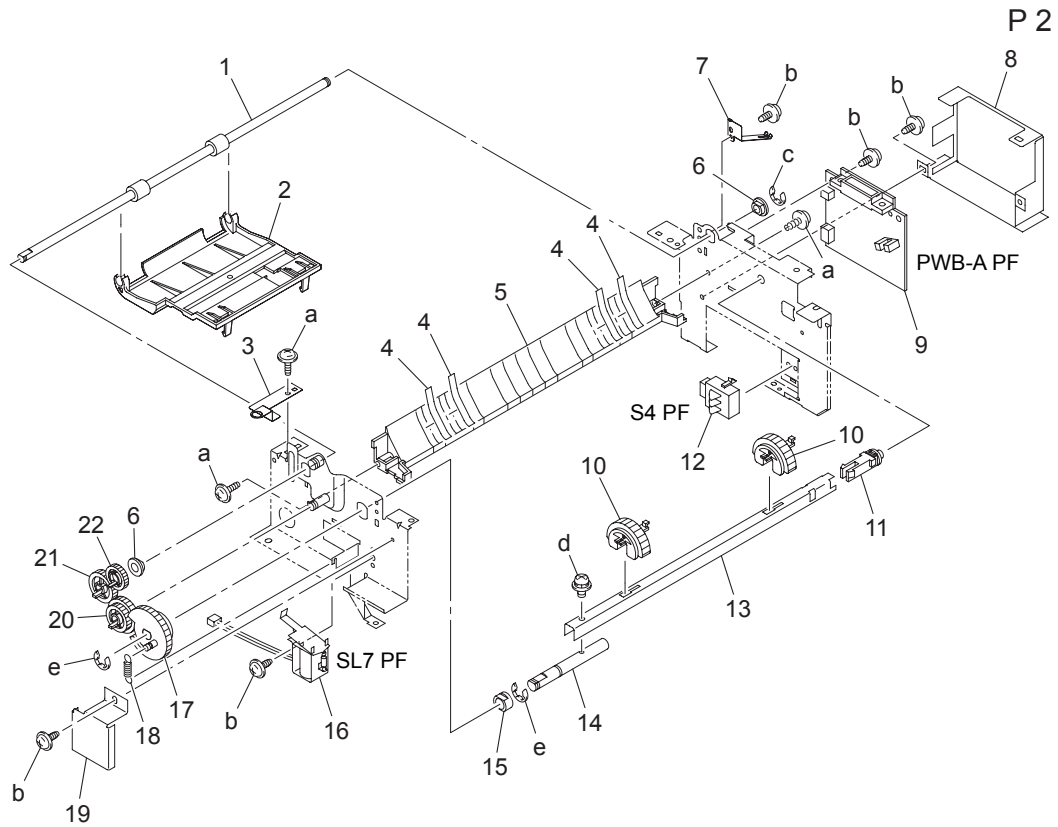
P2 Paper Take-Up Section Parts List Table

Key	Part No.	Description	Qty	Comments
1		ROLLER	1	
2		GUIDE	1	
3		EARTH GROUND	1	
4		GUIDE	4	
5		GUIDE	1	
6		BUSHING	2	
7		EARTH GROUND	1	
8		COVER	1	
9	960K25600	PWB-A PF	1	

Key	Part No.	Description	Qty	Comments
10	059E05470	PICK ROLLER	2	1 per part number Always order a quantity of 2 for this part.
11		SHAFT	1	
12	110E19930	SWITCH (DETECT) S4	1	
13		BRACKET	1	
14		SHAFT	1	
15		BUSHING	1	
16	121E20310	TRAY 2 PICK-UP SOLENOID (SL7)	1	
17		GEAR 38T	1	
18		TENSION SPRING	1	
19		COVER	1	
20		GEAR 20/26T	1	
21		GEAR 22T	1	
22	807E17790	GEAR 17T	1	
a b c d e	604K35500	Part of Hardware Kit		

P3 Paper Cassette Section
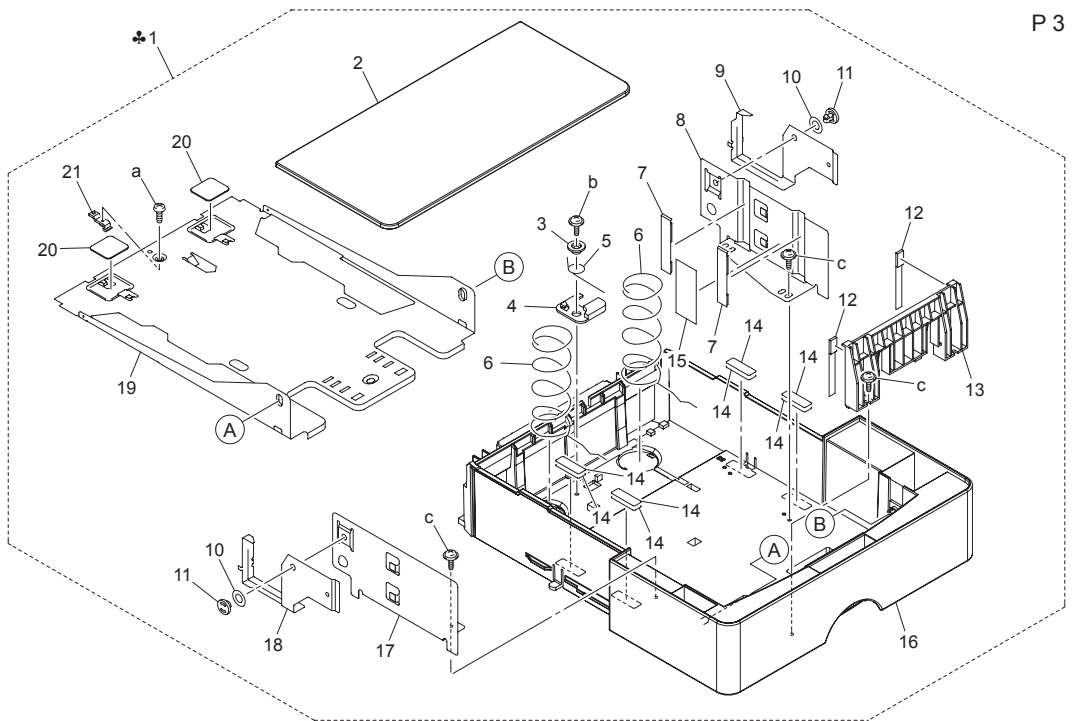
P3 Paper Cassette Section Parts List Table

Key	Part No.	Description	Qty	Comments
1	050E23380	CASSETTE (A4)	1	
	050E23390	CASSETTE (A3, Letter)		
2		COVER	1	
3		COLLAR	1	
4		CAM	1	
5		TORSION SPRING	1	
6		PRESSURE SPRING	2	
7		CUSHION	2	
8		GUIDE	1	
9		SEPARATOR	1	
10		WASHER	2	
11		PIN	2	

P3 Paper Cassette Section Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
12		CUSHION	2	
13		REGULATING PLATE	1	
14		SPACER	8	
15		LABEL	1	
16		CASSETTE	1	
17		GUIDE	1	
18		SEPARATOR	1	
19		LIFTING PLATE	1	
20		FRICTION PLATE	2	
21		LOCK LEVER	1	
a b c	604K35500	Part of Hardware Kit		

P4 Wiring

P 4

①

CN22S   CN24B

②

CN3A   CN4S

P4 Wiring Parts List Table

Key	Part No.	Description	Qty	Comments
1		WIRE HARNESS ASSY	1	
2		WIRE HARNESS ASSY	1	

P5 Accessories

P5 Accessories Parts List Table

Key	Part No.	Description	Qty	Comments
1	604K35500	Part of Hardware Kit	4	WIRING SADDLE
2	604K35500	Part of Hardware Kit	7	EDGE COVER 8.5H

9 Duplex Unit

This section contains the following:

General Information and Specifications

Product Specifications

Media Specifications

Paper Size	A4/Letter
Paper Type	Plain paper: 60 to 90 g/m^2 (16 to 24 lb.)
	Note: Duplex Unit: Only plain paper and recycled paper weighing 75 to 90 g/m^2 (20 to 24 lb.) can be fed through the unit.
	Recycled paper: 60 to 90 g/m^2 (16 to 24 lb.)

Machine Specifications

Power Requirements	DC 24 V ±10% (supplied from the main unit)
	DC 5 V ±5% (supplied from the main unit)
Max. Power Consumption	42 W
Dimensions	370 (W) × 153 (D) × 327 (H) mm
	14.6" (W) × 6.0" (D) × 12.9" (H)
Memory Requirements	For full duplex printing capabilities, an additional 128 MBytes of memory is required.
	(The duplex option comes with one stick of 128 MBytes of RAM included).
Weight	Approx. 2.3 kg (5.1 lb.)

Operating Environment

Temperature	10 to 35° C / 50 to 95° F (with a fluctuation of 10° C / 18° F or less per hour)
Humidity	10% to 80% (with a fluctuation of 20%/h)

Maintenance

Maintenance Parts

Transport Roller

Cleaning Procedure

1. Open the Duplex Door.
2. Using a soft cloth dampened with water, wipe the Transport Roller [1] clean of dirt.

[1]

4057fs2501c0
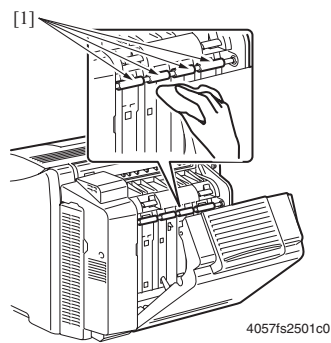
Service Parts Disassembly

Disassembly and Adjustment Notes

Variable Resistors on Board

Do not turn the variable resistors on boards for which no adjusting instructions are given in Adjustment/Setting.

Removal of PWBs

■ When removing a circuit board or other electrical component, refer to "Handling of PWBs" and follow the corresponding removal procedures.

■ The removal procedures given in the following omit the removal of connectors and screws securing the circuit board support or circuit board.

■ Where it is absolutely necessary to touch the ICs and other electrical components on the board, be sure to ground yourself.

Disassembly Index

No	Section	Part name	Ref. page
1	-	Duplex Option	page 9-29
2	Exterior parts	Right Cover	page 9-8
3	Board and etc.	Duplex Board	page 9-8
4	Others	Duplex Cooling Fan Motor	page 9-9
5		Duplex Transport Motor	page 9-12
6		Duplex Reverse Motor	page 9-12
7		Duplex Registration Solenoid	page 9-13

Duplex Unit

Note: Whenever removing or reinstalling the Duplex Unit, be sure first to unplug the power cord of the printer from the power outlet.

1. Open the Duplex Unit Door.
2. Turn the two locking knobs [1] to unlock the Duplex Unit.

4057fs2502c0
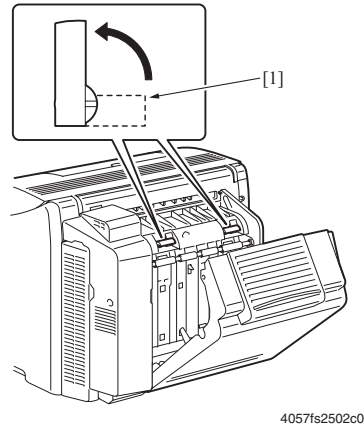
3. Remove the Duplex Unit [2].

4057fs2503c0
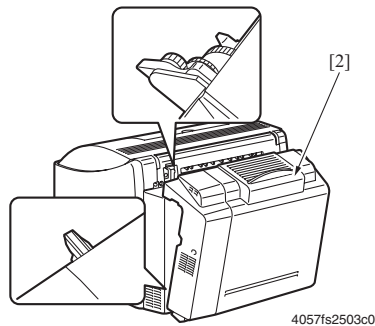
Reinstall Procedure

1. Open the Duplex Unit Door [1] and turn the two locking knobs [2] to unlock the Duplex Unit.

4057fs2504c0
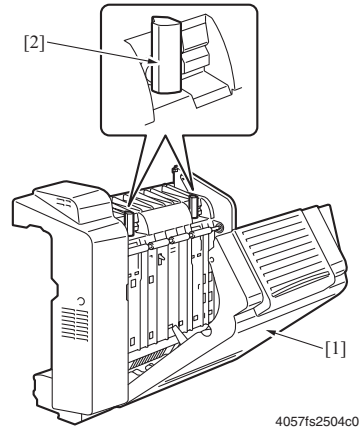
2. Mount the Duplex Unit [3] onto the printer main body.

4057fs2505c0
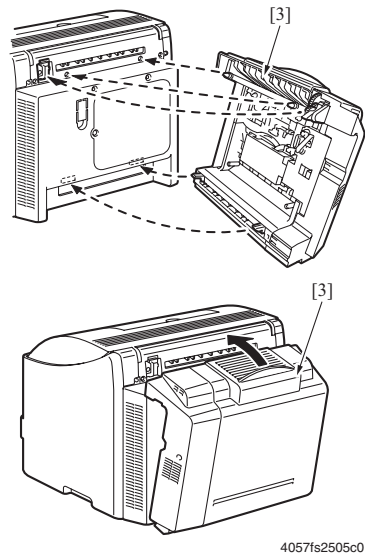
3. Turn the two locking knobs [4] to lock the Duplex Unit into position.

> **Note:** When locking the Duplex Unit into position, be sure to hold the unit with a hand and, at the same time, press it up against the printer main body.

4057fs2506c0
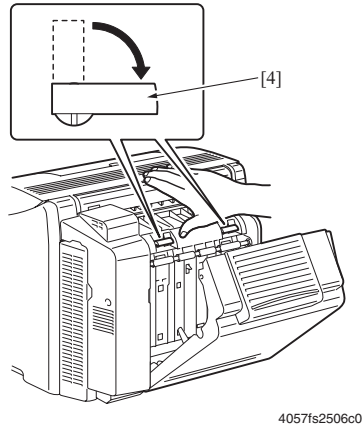
> **Note:** After the Duplex Unit has been locked into position, check that the two locking knobs are in the correct locked position.

4. Close the Duplex Unit Door [5].

4057fs2507c0
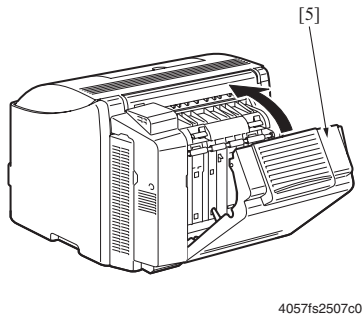
Right Cover

1. Remove one screw [1], unlock three tabs [2] and remove the Right Cover [3].

4057fs2508c0
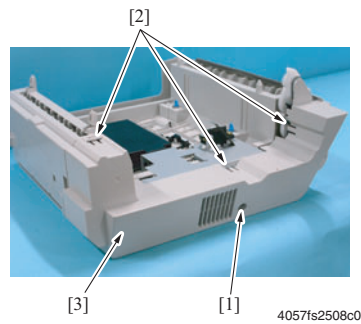
Duplex Board (PWB-A DU)

1. Remove the Right Cover. See Right Cover on page 9-8.

2. Remove one screw [1] and the Duplex Board Cover [2].

4057fs2509c0
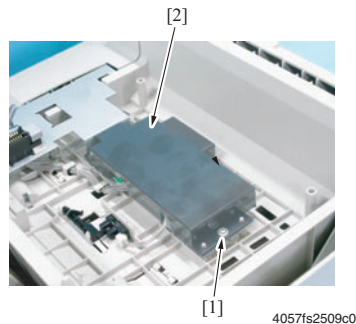
3. Disconnect all connectors from the Duplex Board [3].

4057fs2510c0
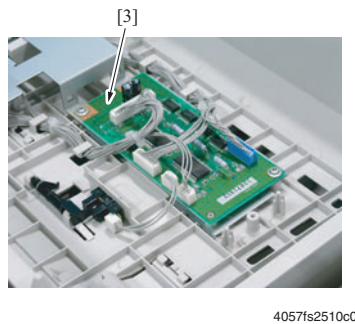
4. Remove three screws [4] and the Duplex Board [5].

[4]

[4]

[5]   4057fs2511c0
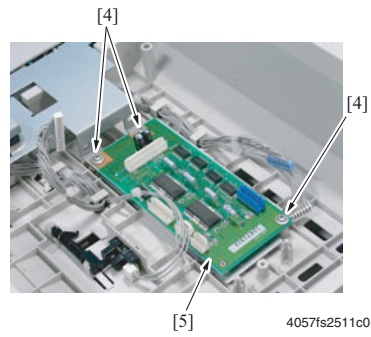
Duplex Cooling Fan Motor (M10 DU)

1. Remove the Right Cover. See Right Cover on page 9-8.

2. Open the Duplex Door [1] and disconnect the connector [2].

[2]

[1]   4057fs2516c0
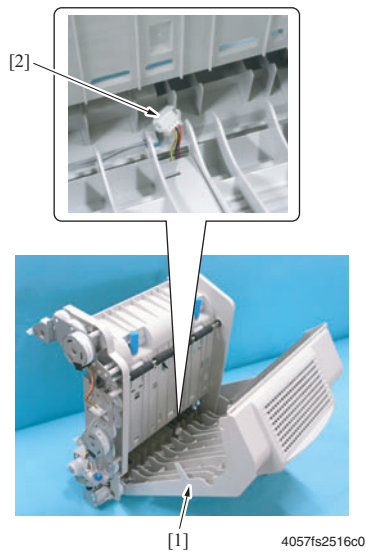
3. Remove one screw [3].
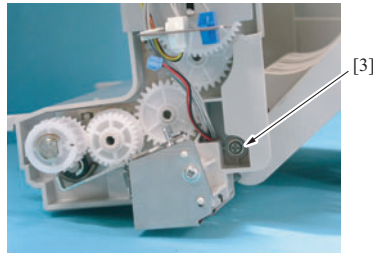
4057fs2517c0

4. Unhook the two dowel pins [4] and remove the Duplex Unit Door [5].

[4] [4]
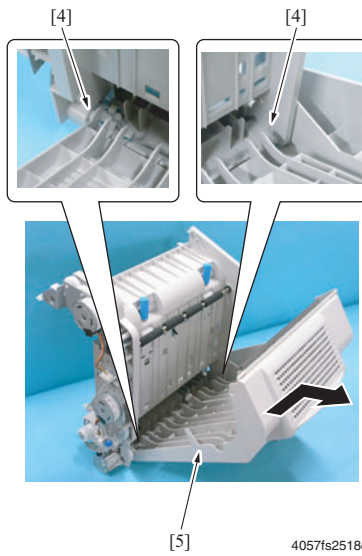
[5] 4057fs2518c0

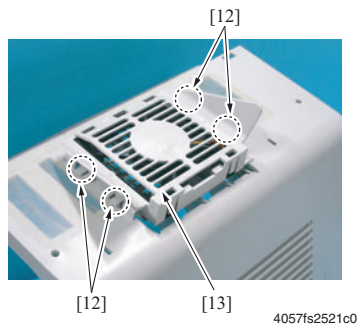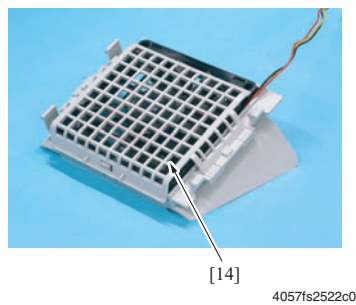**5.** Remove one screw [6], unlock one tab [7] and remove the Harness Cover [8].

[6]
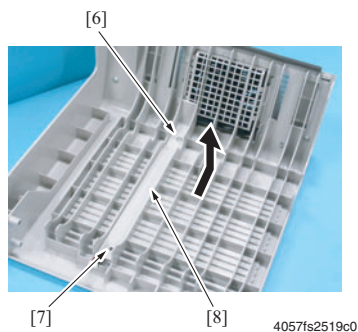
[7] [8] 4057fs2519c0

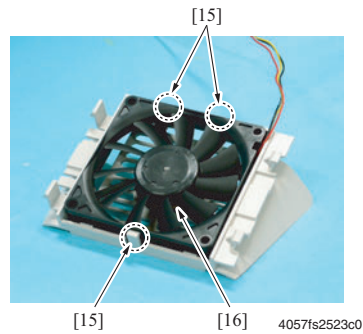**6.** Remove two screws [9], unlock two tabs [10] and remove the Duplex Door Upper Cover [11].

[10]

[9]

[11]

4057fs2520c0
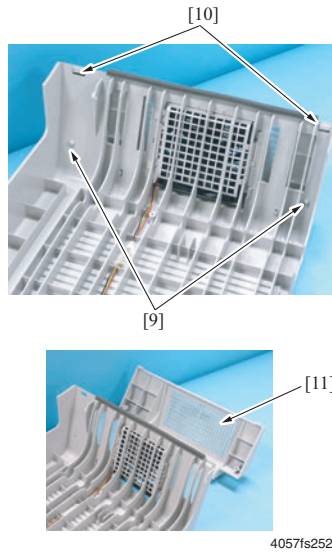
7. Unlock four tabs [12] and remove the Duplex Cooling Fan Motor Assy [13].

[12]

[12]   [13]

4057fs2521c0

8. Remove the Duplex Cooling Fan Motor Cover [14].

[14]

4057fs2522c0

9. Unlock three tabs [15] and remove the Duplex Cooling Fan Motor [16].

[15]

[15]   [16]   4057fs2523c0

Duplex Transport Motor (M8 DU)

1. Remove the Right Cover. See Right Cover on page 9-8.

2. Remove two screws [1] and disconnect the connector [2].

3. Remove the harness from the harness holder [3] and then remove the Duplex Transport Motor [4].

[3]   [1]

[2]   [4]   4057fs2512c0
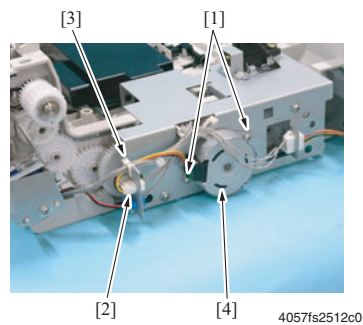
Duplex Reverse Motor (M9 DU)

1. Remove the Right Cover. See Right Cover on page 9-8.

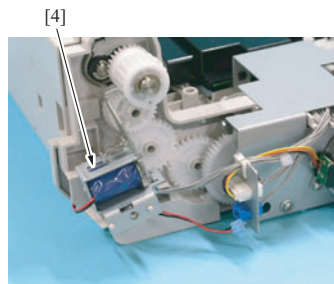**2.** Remove two screws [1], disconnect the connector [2], and remove the Duplex Reverse Motor [3].

4057fs2513c0
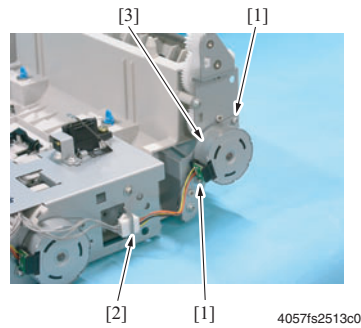
Duplex Registration Solenoid (SL6 DU)

1. Remove the Right Cover. See Right Cover on page 9-8.

2. Disconnect the connector [1].
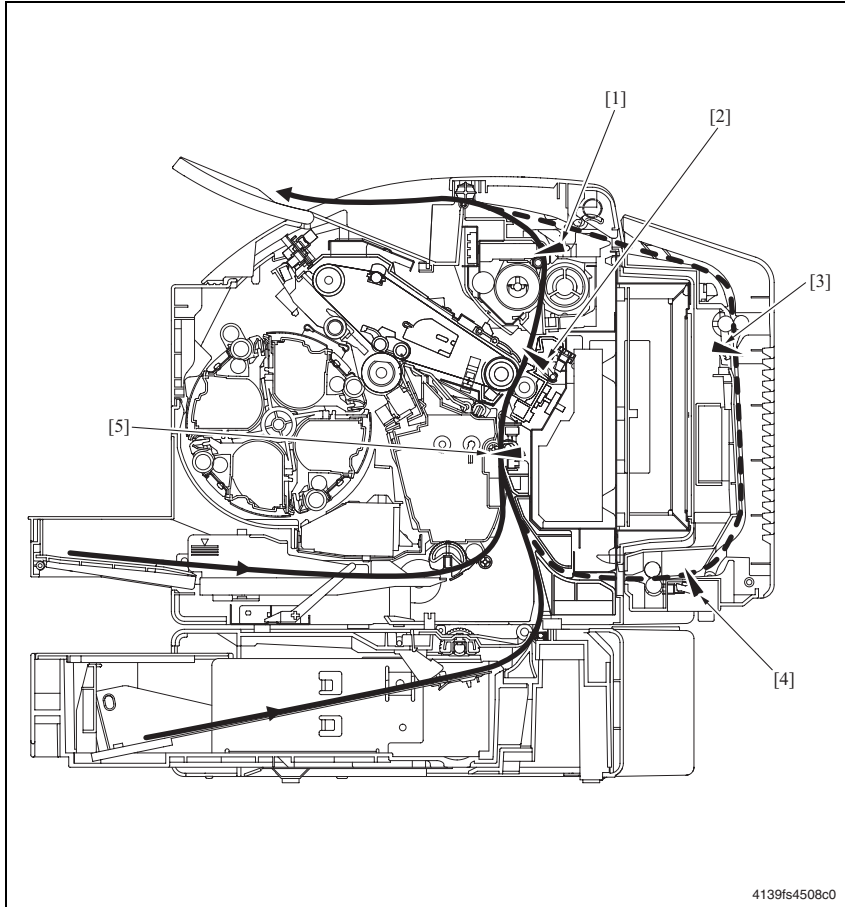
3. Remove one screw [2] and the Protective Cover [3].

4057fs2514c0
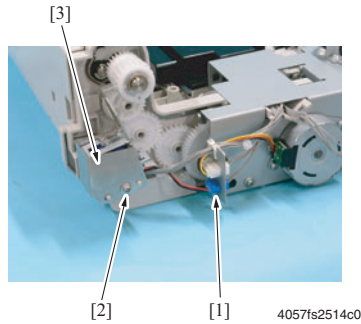
4. Remove the Duplex Registration Solenoid [4].

4057fs2515c0

Sensor Layout

(shown with the Lower Feeder Unit and Duplex Unit)

4139fs4508c0

[1]	Exit Sensor	PC7		[4]	Duplex Paper Loop Sensor	PC10 DU
[2]	Fusing Paper Loop Sensor	PC8		[5]	Registration Sensor	PC1
[3]	Duplex Transport Sensor	PC12 DU				

Jam and Misfeed Troubleshooting

Jam and Misfeed Messages

Jam and Misfeed Display

When a paper misfeed occurs a message is displayed on the Control Panel.

```
PAPER JAM
DUPLEX
```

4538fs4503e0
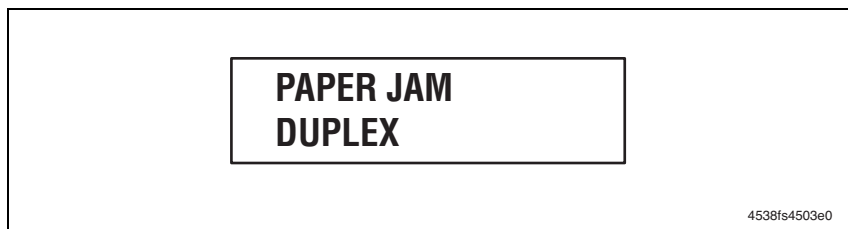
Display	Misfeed location	Misfeed clearing location	Ref. page
PAPER JAM	Duplex Unit reverse drive/storage section	Duplex Unit Door	page 9-16
DUPLEX	Duplex Unit paper feed section		page 9-17

Jam Clearing Steps:

■ Open the relevant door.
■ Clear the sheet of paper.
■ Close the door.

Jam and Misfeed Troubleshooting Procedures

Initial Actions

When a paper misfeed occurs, first check the following initial check items.

Check Item	Action
Does the paper meet product specifications?	Change the paper.
Is paper curled, wavy, or damp?	Change the paper. Instruct the user in correct paper storage.
Is a foreign object present along the paper path, or is the paper path deformed or worn?	Clean or change the paper path.
Are the Paper Separator Fingers dirty, deformed, or worn?	Clean or change the defective Paper Separator Finger.
Are the rolls/rollers dirty, deformed, or worn?	Clean or change the defective roll/roller.
Are the Edge Guide and Trailing Edge Stop at the correct position to accommodate the paper?	Set as necessary.
Are the actuators found operational when checked for correct operation?	Correct or change the defective actuator.

Misfeed at Duplex Unit Reverse Drive/Storage Section

Detection Timing

Type	Description
Detection of misfeed at Duplex Unit reverse drive/storage section	The Duplex Transport Sensor (PC12 DU) is not unblocked within a specified period of time after the Duplex Reverse Motor (M9 DU) has been energized for reverse drive.

Actions

Relevant Electrical Parts	
Duplex Transport Sensor (PC12 DU) Duolex Transport Motor (M8 DU) Duplex Reverse Motor (M9 DU)	Duplex Board (PWB-A DU) PWB-A (Engine Control Board)

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Initial check items.	-	-
2	Check the PC12 DU sensor.	PWB-A DU PJ5A DU-3 (ON)	3-C
3	Check M8 DU for correct operation.	PWB-A DU PJ2A DU-1~4 (pulse)	5~6-C
4	Check M9 DU for correct operation.	PWB-A DU PJ2A DU-5~8 (pulse)	5~6-C~D
5	Change PWB-A DU.	-	-
6	Change PWB-A.	-	-

Misfeed at Duplex Unit Paper Feed Section

Detection Timing

Type	Description
Detection of misfeed at Duplex Unit paper feed section	The Duplex Paper Loop Sensor (PC10 DU) is not unblocked even after the lapse of a predetermined period of time after a Duplex paper feed sequence has been started.
	The Duplex Paper Loop Sensor (PC10 DU) is not blocked even after the lapse of a predetermined period of time after a Duplex paper feed sequence has been started.
	The Duplex Transport Sensor (PC12 DU) is not blocked even after the lapse of a predetermined period of time after a Duplex paper feed sequence has been started.

Actions

Relevant Electrical Parts	
Duplex Paper Loop Sensor (PC10 DU)	Duplex Board (PWB-A DU)
Duplex Transport Sensor (PC12 DU)	PWB-A (Engine Control Board)
Duolex Transport Motor (M8 DU)	

Step	Action	WIRING DIAGRAM	
		Control Signal	Location (Electrical Component)
1	Initial check items.	-	-
2	Check the PC10 DU sensor.	PWB-A DU PJ3A DU-3 (ON)	3-G
3	Check the PC12 DU sensor.	PWB-A DU PJ5A DU-3 (ON)	3-C
4	Check M8 DU for correct operation.	PWB-A DU PJ2A DU-1~4 (pulse)	5~6-C
5	Change PWB-A DU.	-	-
6	Change PWB-A.	-	-

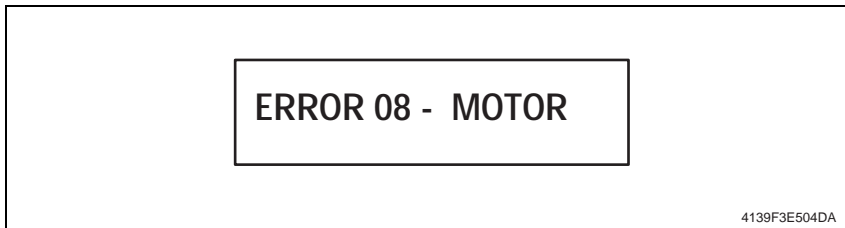# Error Code Troubleshooting

Error Code Messages

Verifying an Error Message

When a malfunction occurs, the printer displays the corresponding error indicator and status message on the control panel.

Control Panel Status Message Example

The printer's CPU performs self-diagnostics that detect a malfunction and displays the corresponding error code on the Control Panel.

```
ERROR 08 -  MOTOR
```

4139F3E504DA

Error Code Troubleshooting Procedures

0F: Duplex Cooling Fan Motor Malfunction

| Code	Item	Detection Timing
0F	Duplex Cooling Fan Motor malfunction	The Fan Motor Lock signal remains HIGH for a predetermined consecutive period of time while the Power Supply Cooling Fan Motor remains energized.

Actions

		Relevant Electrical Parts	
Duplex Cooling Fan Motor (M10 DU)		Duplex Board (PWB-A DU)	

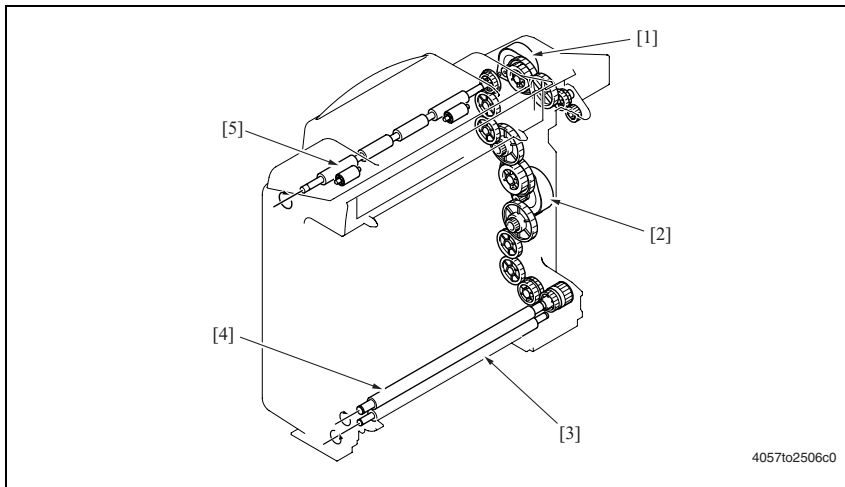|		WIRING DIAGRAM	
Step	**Action**	**Control Signal**	**Location (Electrical Component)**
1	Check the M10 connector for proper connection and correct as necessary.	-	-
2	Check the fan for possible overload and correct as necessary.	-	-
3	Check the PWB-A DU connector for proper connection and correct as necessary.	-	-
4	M10 DU operation check.	-	-
5	Replace the Duplex Cooling Fan. Replace the PWB-A DU		

Theory of Operation

Duplex Unit

4057to2504c0   4057to2500c0

4057to2503c0   4057to2505c0
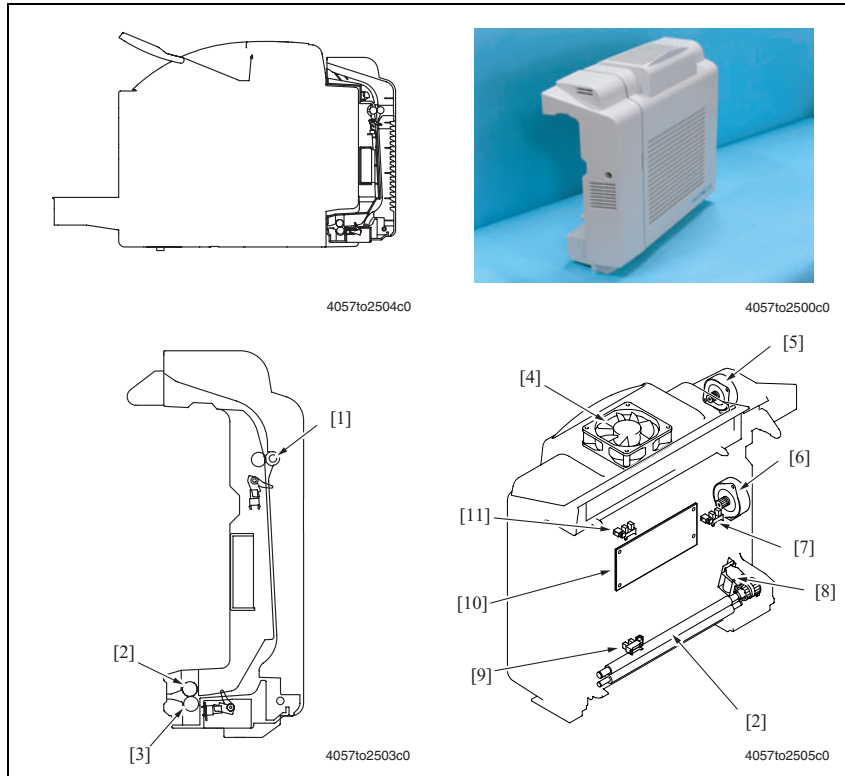
| Key	Name	Function/System
[1]	Duplex Unit Transport Roller 1	■ Conveys paper in the Duplex Unit. ■ Driven by the Duplex Transport Motor.
[2]	Duplex Registration Roller	Starts feeding the paper from the Duplex Unit so that the paper is correctly synchronized with the image on the Transfer Belt.
[3]	Duplex Unit Transport Roller 2	
[4]	Duplex Cooling Fan Motor (M10 DU)	Cools the inside of the Duplex Unit.
[5]	Duplex Reverse Motor (M9 DU)	■ Conveys the paper into the Duplex Unit. ■ Drives the Paper Exit Roller.
[6]	Duolex Transport Motor (M8 DU)	Conveys paper in the Duplex Unit.
[7]	Duplex Door Sensor (PC11 DU)	Determines whether the Duplex Door is open or closed.
[8]	Duplex Registration Solenoid (SL6 DU)	Controls drive of the Duplex Registration Roller.
[9]	Duplex Paper Loop Sensor (PC10 DU)	Activated to allow a loop to be formed in the paper.
[10]	Duplex Board (PWB-A DU)	Controls drive of the Duplex Unit.
[11]	Duplex Transport Sensor (PC12 DU)	Detects paper conveyed into the Duplex Unit.

Duplex Unit Drive

4057to2506c0

[1]   Duplex Reverse Motor (M9 DU)   [4]   Duplex Registration Roller

[2]   Duplex Transport Motor (M8 DU)   [5]   Duplex Unit Transport Roller 1

[3]   Duplex Unit Transport Roller 2

Switchback Mechanism

The Paper Exit Roller of the main unit is used to subject the 1-sided print to a switchback sequence so that the 1-sided print is to be transported through the Duplex Unit.

Feeding the Paper into Duplex Unit

Exit Sensor (PC7)

Paper Exit Roller

4057to2507c0
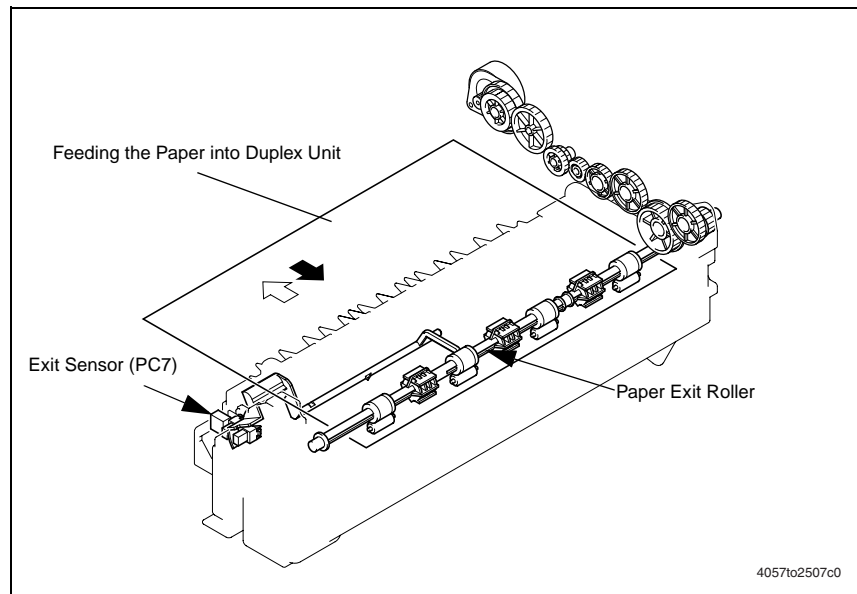
Paper Exit Roller Drive Coupling

When the Duplex Unit is mounted, the gear assy of the Fusing Unit is raised by the leading edge of the Duplex Unit lever, thereby disconnecting drive from the machine (Fusing Roller). The Paper Exit Roller is driven by the Duplex Reverse Motor.


Duplex Reverse Motor (M9 DU)

Fusing Unit Gear Assy

Duplex Unit Lever

4057to2508c0
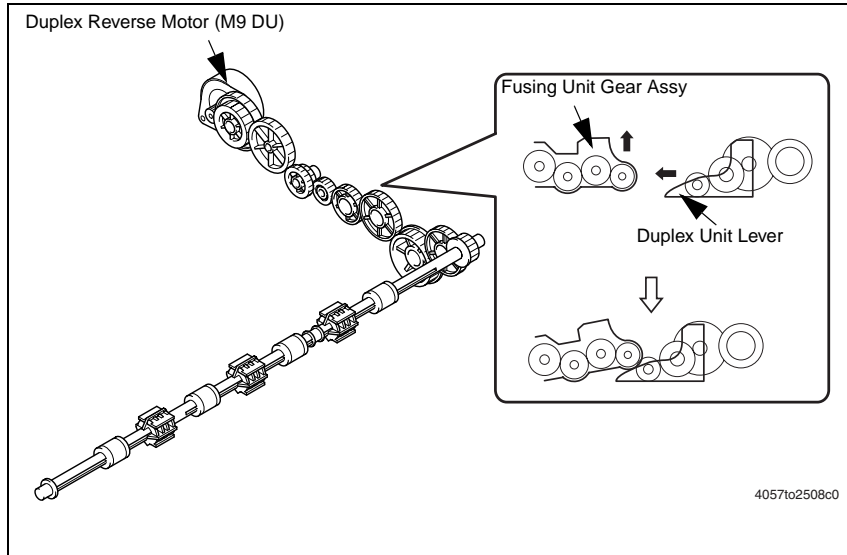
Switchback Motor Control

Rotation of the Duplex Reverse Motor (M9 DU) is controlled by the signal output from the Duplex Board (PWB-A DU).

Transport and Duplex Paper Take-Up Mechanism

Transport and Duplex Paper Take-Up Operation

Drive for the Duplex Unit is provided by the Duplex Unit Transport Motor (M8 DU).

Duplex Unit Transport Roller 1

Duplex Unit Transport Motor (M8 DU)

Duplex Registration Roller

Duplex Unit Transport Roller 2

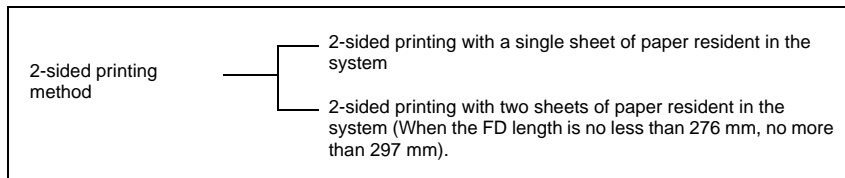4057to2509c0
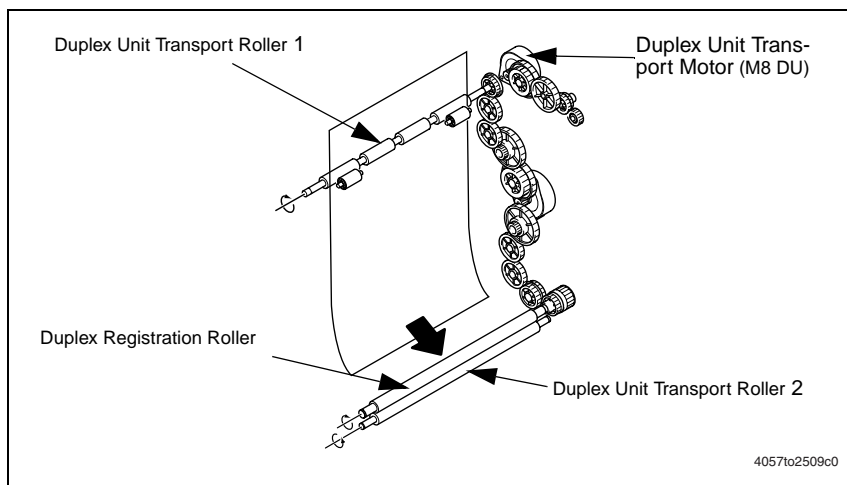
Duplex Unit Transport Motor Control

Rotation of the Duplex Unit Transport Motor is controlled by the signals output from the Duplex Control Board.

Duplex Unit Loop Correction Control

■ A loop correction mechanism is provided to prevent skew from occurring in the second page.

■ The Duplex Registration Solenoid (SL6 DU) is energized after the lapse of a given period of time after the Duplex Paper Loop Sensor (PC10 DU) has been activated. This drives the Duplex Registration Roller. When the Duplex Registration Roller is driven, the paper is conveyed into the machine.

2-Sided Printing Method

The following two types of 2-sided printing methods are available.

2-sided printing method ─── 2-sided printing with a single sheet of paper resident in the system

2-sided printing with two sheets of paper resident in the system (When the FD length is no less than 276 mm, no more than 297 mm).
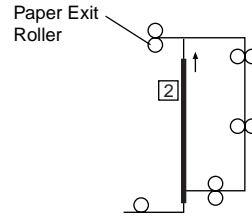
Note: Automatic 2-sided printing is not effective when the FD length is less than 276 mm.

## Operations in 2-sided Printing with a Single Sheet of Paper Resident in the System

Operation 1

■ The first sheet of paper is taken up and fed in from the main unit drawer and the main unit starts the first print cycle to produce the print image of the second page of the original.

Paper Exit Roller

Operation 2

■ Immediately before the 1-sided print leaves the Paper Exit Roller, the direction of rotation of the Paper Exit Roller is reversed and the 1-sided print is transported toward and into the Duplex Unit.
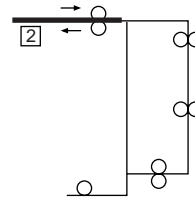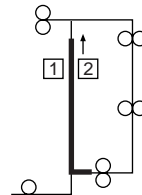
Operation 3

■ The paper conveyed through the Duplex Unit is temporarily stopped at the Duplex take-up position.
■ Any skew in the paper is corrected at the Duplex Unit Timing Roller before the paper is taken up and fed by the Duplex Unit.
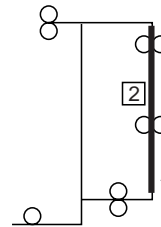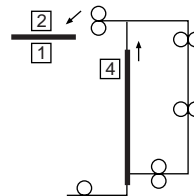
Operation 4

■ The main unit carries out the second print cycle to produce the print image of the first page of the original on the other side of the 1-sided print.
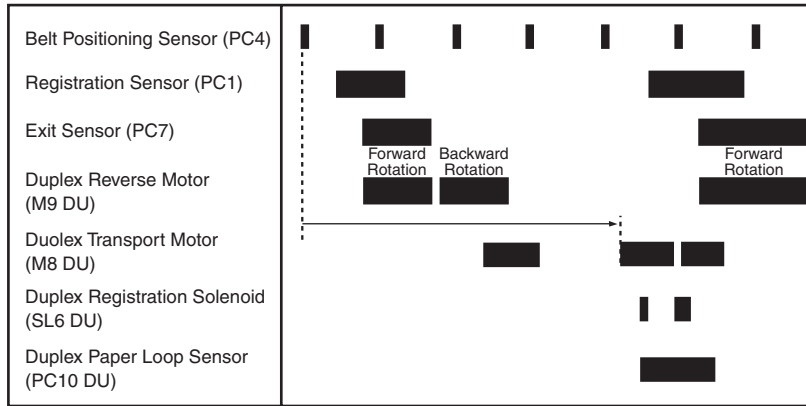
Operation 5

■ While feeding the first 2-sided print out of itself, the main unit carries out the first print cycle for the second sheet of paper to produce the print image of the fourth page of the original.

■ Steps 2 through 5 are repeated.

## Two A4 Originals with a Single Sheet of Paper Resident in the System

Belt Positioning Sensor (PC4)

Registration Sensor (PC1)

Exit Sensor (PC7)

Duplex Reverse Motor (M9 DU)

Duolex Transport Motor (M8 DU)

Duplex Registration Solenoid (SL6 DU)

Duplex Paper Loop Sensor (PC10 DU)

Forward Rotation   Backward Rotation   Forward Rotation

4057to2501e0

Operations in 2-Sided Printing with Two Sheets of Paper Resident in the System
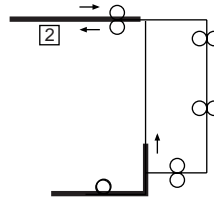
Operation 1

■ The first sheet of paper is taken up and fed in from the main unit drawer and the main unit starts the first print cycle to produce the print image of the second page of the original.
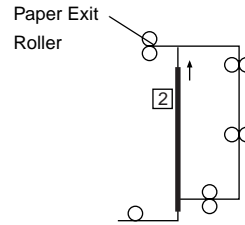
Paper Exit Roller

Operation 2

■ Immediately before the first 1-sided print leaves the Paper Exit Roller, the direction of rotation of the Paper Exit Roller is reversed and the first 1-sided print is transported toward and into the Duplex Unit.

■ At the same time, the second sheet of paper is taken up and fed into the main unit.
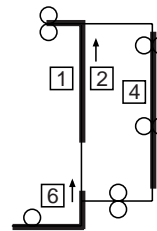
Operation 3

■ The main unit carries out the first print cycle for the second sheet of paper to produce the print image of the fourth page of the original.

■ At the same time, the first 1-sided print is transported through the Duplex Unit.
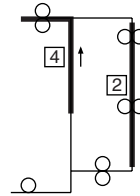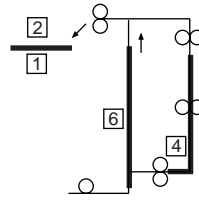
Operation 4

■ The main unit produces the print image of the first page of the original on the first 1-sided print that has been fed through the Duplex Unit.

■ At the same time, the second sheet of paper is subjected to a switchback sequence at the exit section and fed into the Duplex Unit.

■ At the same time, the third sheet of paper is taken up and fed into the main unit.
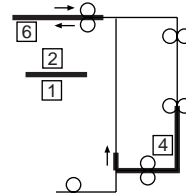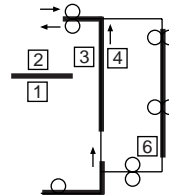
Operation 5

■ While feeding the first 2-sided print out, main unit produces the print image of the 6th page of the original on the third sheet of paper.

■ The second sheet of paper waits at the Duplex take-up position until the third sheet of paper is subjected to a switchback sequence.
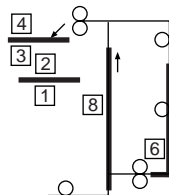
Operation 6

■ Immediately before the first 1-sided print leaves the Paper Exit Roller, the direction of rotation of the Paper Exit Roller is reversed and the first 1-sided print for the third sheet is transported toward and into the Duplex Unit.

■ At the same time, the second sheet of paper is fed into the main unit again.

Operation 7

■ The main unit carries out the first print cycle for the second sheet of paper to produce the print image of the third page of the original.

■ At the same time, the first 1-sided print for the third is transported through the Duplex Unit.

■ At the same time, the forth sheet of paper is taken up and fed into the main unit.

Operation 8

■ While feeding the second 2-sided print out, main unit produces the print image of the 8th page of the original on the fourth sheet of paper.

■ The third sheet of paper waits at the Duplex take-up position until the fourth sheet of paper is subjected to a switchback sequence.

■ Steps 6 through 8 are repeated.

2-sided Printing of Two A4 Originals with Two Sheets of Paper Resident in the System

4057to2502e0

Parts List - Duplex Unit Option

This section covers the following:

Using the Parts List

Changes to Xerox products are made to accommodate improved components as they become available. As improvements are made, part numbers may change from those appearing in this section. To get the latest part, provide the following information when ordering:

- Component's part number
- Product type or configuration number
- Serial number of the printer

Only those parts listed with part numbers are available for order. Parts listed without part numbers are only available as part of a parent assembly or Service Kit.

1. **Key:** The callout number from the exploded part diagram.
2. **Part No:** The material part number used to order specific parts.
3. **Description:** Name of the part and number supplied per order.
4. **Qty:** This column lists the quantity of this part in the printer, for example a quantity of "2" means there are two of these parts, however, when ordering the part you will only receive one part.
5. **Comments:** The comments column is used for clarification.

P1 Duplex Unit
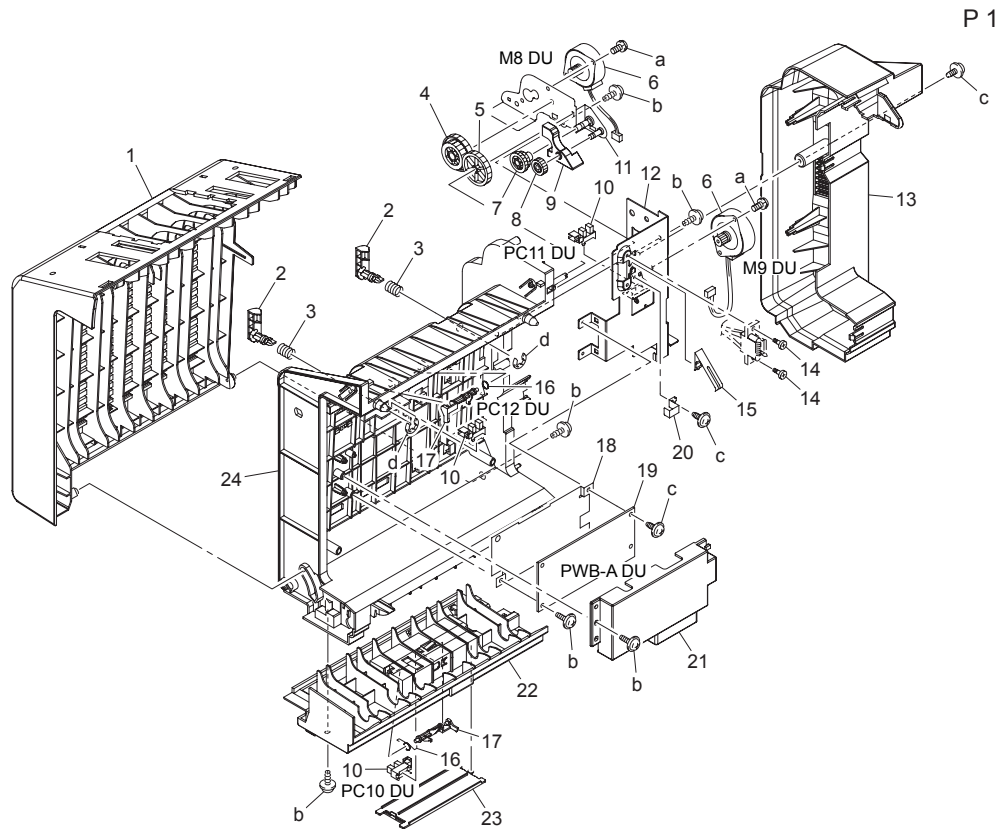
P1 Duplex Unit Parts List Table

Key	Part No.	Description	Qty	Comments
1		TOP COVER	1	
2	011E20130	LEVER	2	
3		PRESSURE SPRING	2	
4		GEAR 33/50T	1	
5		GEAR 12/47T	1	
6	127E15300	DUPLEX MOTOR	2	M8/M9 DU
7		GEAR 16/27T	1	
8		GEAR 16T	1	
9		COLLAR	1	

P1 Duplex Unit Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
10	130E11800	DUPLEX SENSOR (PC10, 11, 12)	3	PC10=Paper Loop Sensor PC11=Door Sensor PC12= Transport Sensor
11		BRACKET ASSY	1	
12		BRACKET	1	
13		RIGHT COVER	1	
14		SHOULDER SCREW	2	
15		PLATE SPRING	1	
16		TORSION SPRING	2	
17	120E29310	ACTUATOR	2	Paper Loop Sensor
18		SHIELD	1	
19	960K25590	PWB-A DU (Duplex Board)	1	
20		REGULATING PLATE	1	
21		COVER	1	
22		LOWER COVER	1	
23		COVER	1	
24		FRAME	1	
a b c d	604K35500	Part of the Hardware Kit		

P2 Duplex Unit
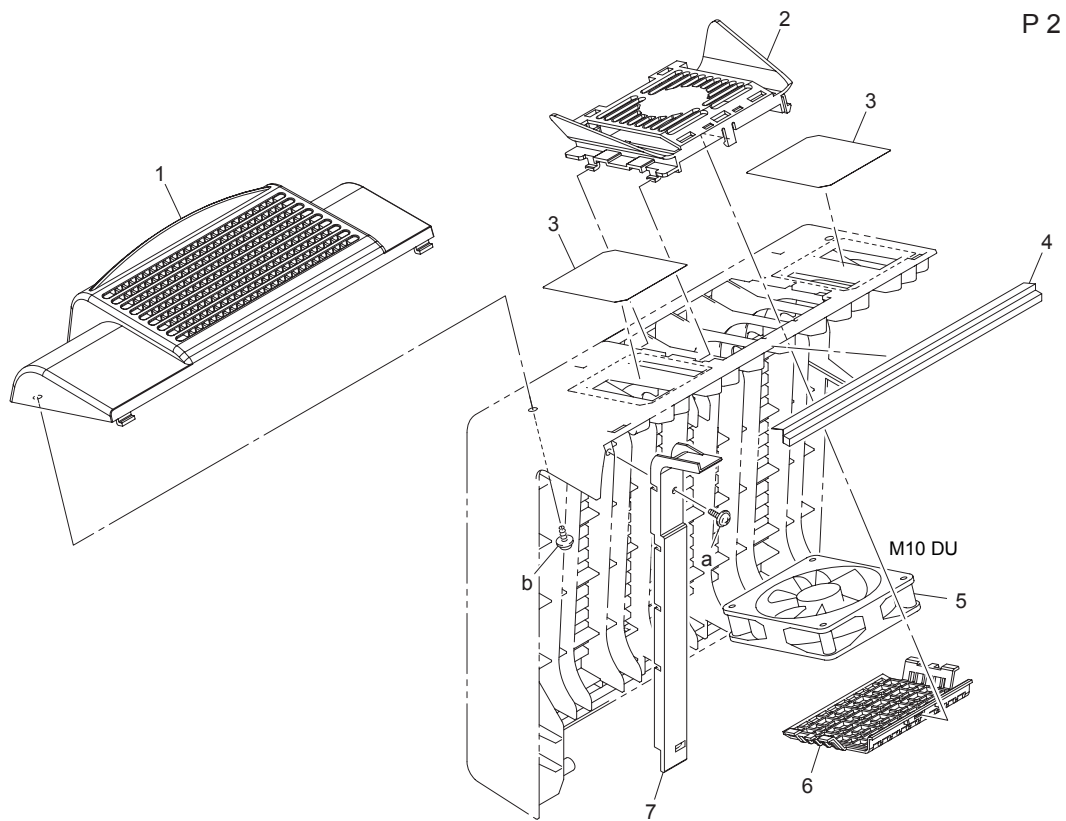
P2 Duplex Unit Parts List Table

Key	Part No.	Description	Qty	Comments
1		COVER	1	
2		HOLDER	1	
3		SEAL	2	
4		SEAL	1	
5	127E15240	DUPLEX COOLING FAN	1	M10 DU
6		COVER	1	
7		COVER	1	
a b	604K35500	Part of the Hardware Kit		
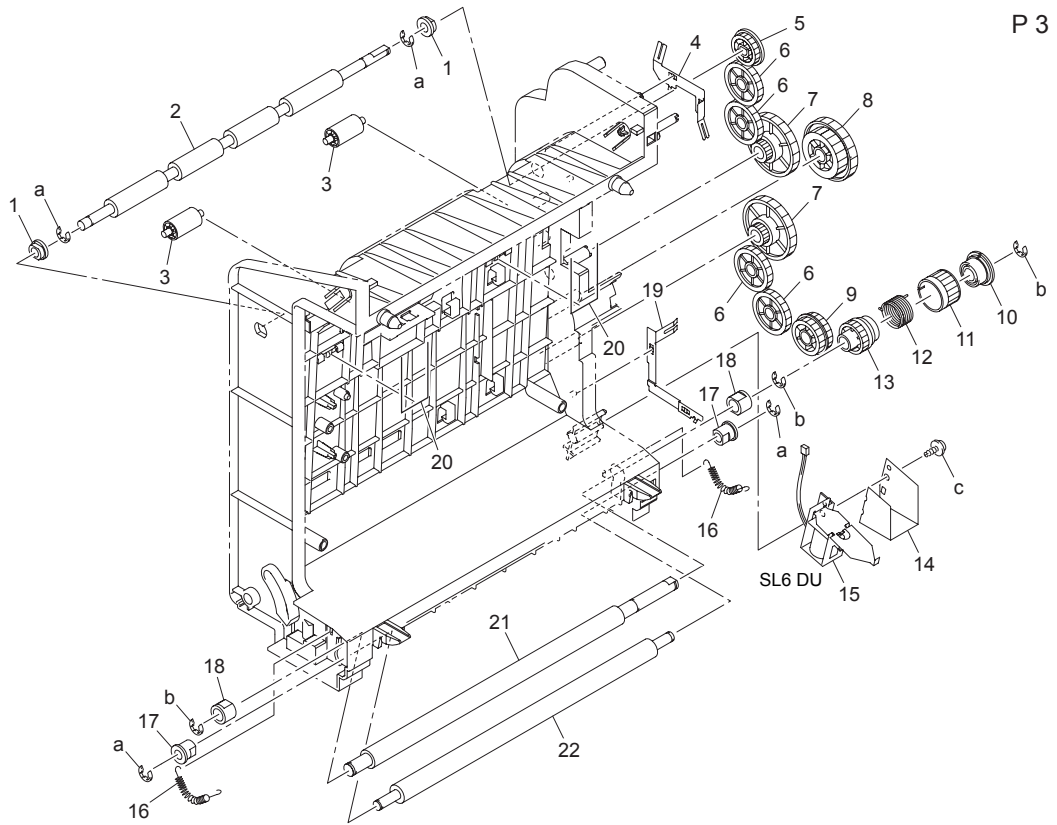
P3 Duplex Unit

P3 Duplex Unit Parts List Table

Key	Part No.	Description	Qty	Comments
1		BUSHING	2	
2		ROLLER	1	
3		ROLL	2	
4		PLATE SPRING	1	
5		GEAR 20T	1	
6		GEAR 28T	4	
7		GEAR 13/53T	2	
8		GEAR 33/50T	1	
9		GEAR 23/29T	1	
10		DRUM	1	
11		RATCHET WHEEL	1	

P3 Duplex Unit Parts List Table (Continued)

Key	Part No.	Description	Qty	Comments
12		TORSION SPRING	1	
13		GEAR 26T	1	
14		SHIELD	1	
15	121E20270	DUPLEX REGISTRATION SOLENOID	1	SL6 DU
16		TENSION SPRING	2	
17		BUSHING	2	
18		BUSHING	2	
19		PLATE SPRING	1	
20		SPRING	2	
21		ROLLER	1	
22		ROLLER	1	
a b c	604K35500	Part of the Hardware Kit		

P4 Wiring
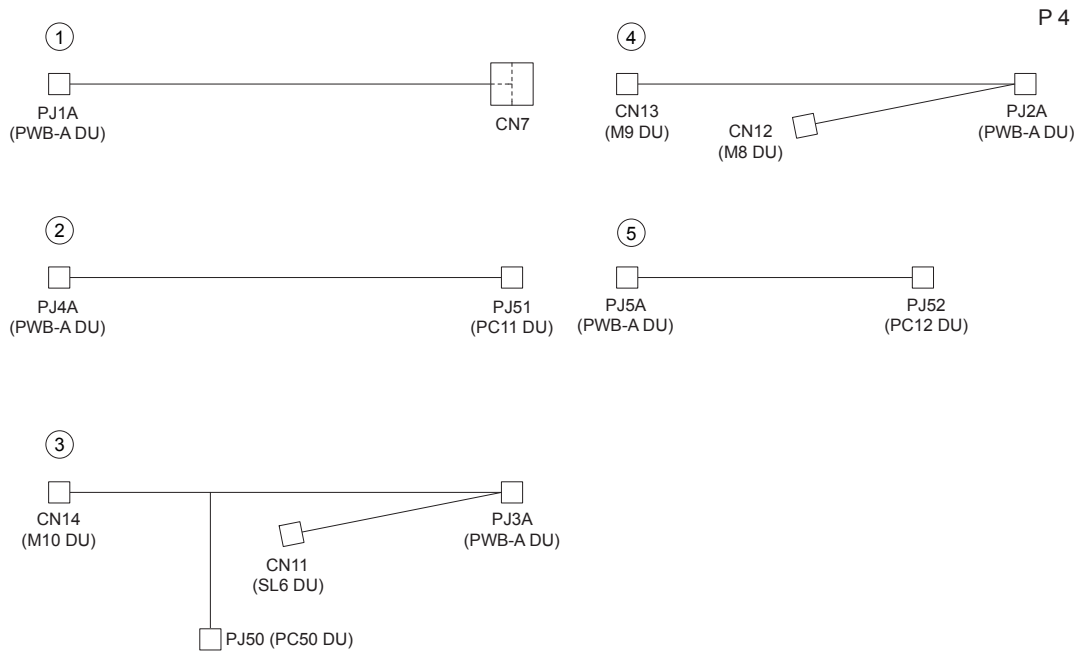
① PJ1A (PWB-A DU) —————— CN7

P 4

④ CN13 (M9 DU) —— CN12 (M8 DU) —— PJ2A (PWB-A DU)

② PJ4A (PWB-A DU) —————— PJ51 (PC11 DU)

⑤ PJ5A (PWB-A DU) —————— PJ52 (PC12 DU)

③ CN14 (M10 DU) —— CN11 (SL6 DU) —— PJ3A (PWB-A DU)

PJ50 (PC50 DU)

P4 Wiring Parts List Table

Key	Part No.	Description	Qty	Comments
1		WIRE HARNESS ASSY	1	
2		WIRE HARNESS ASSY	1	
3		WIRE HARNESS ASSY	1	
4		WIRE HARNESS ASSY	1	
5		WIRE HARNESS ASSY	1	

P5 Accessories

P5 Accessories and Jigs Parts List Table

Key	Part No.	Description	Qty	Comments
1			4	WIRING SADDLE
2			7	EDGE COVER 8.5H

10 Wiring

This section contains the following:

Use the alpha-numeric grid locators contained in the Overall Wiring Diagram on page 10-3 to locate the specific section needed, and then go to the corresponding pages for larger versions of that section.
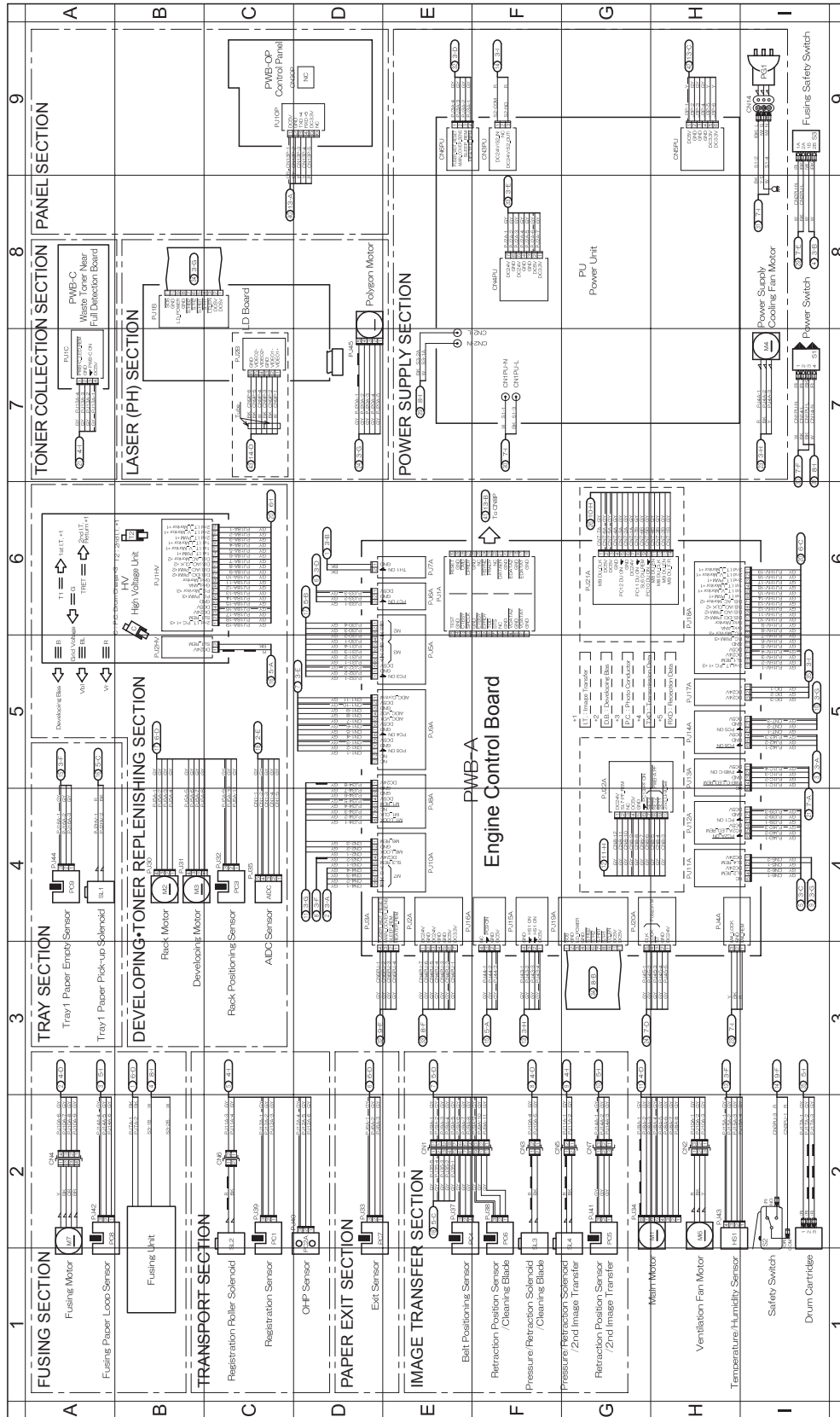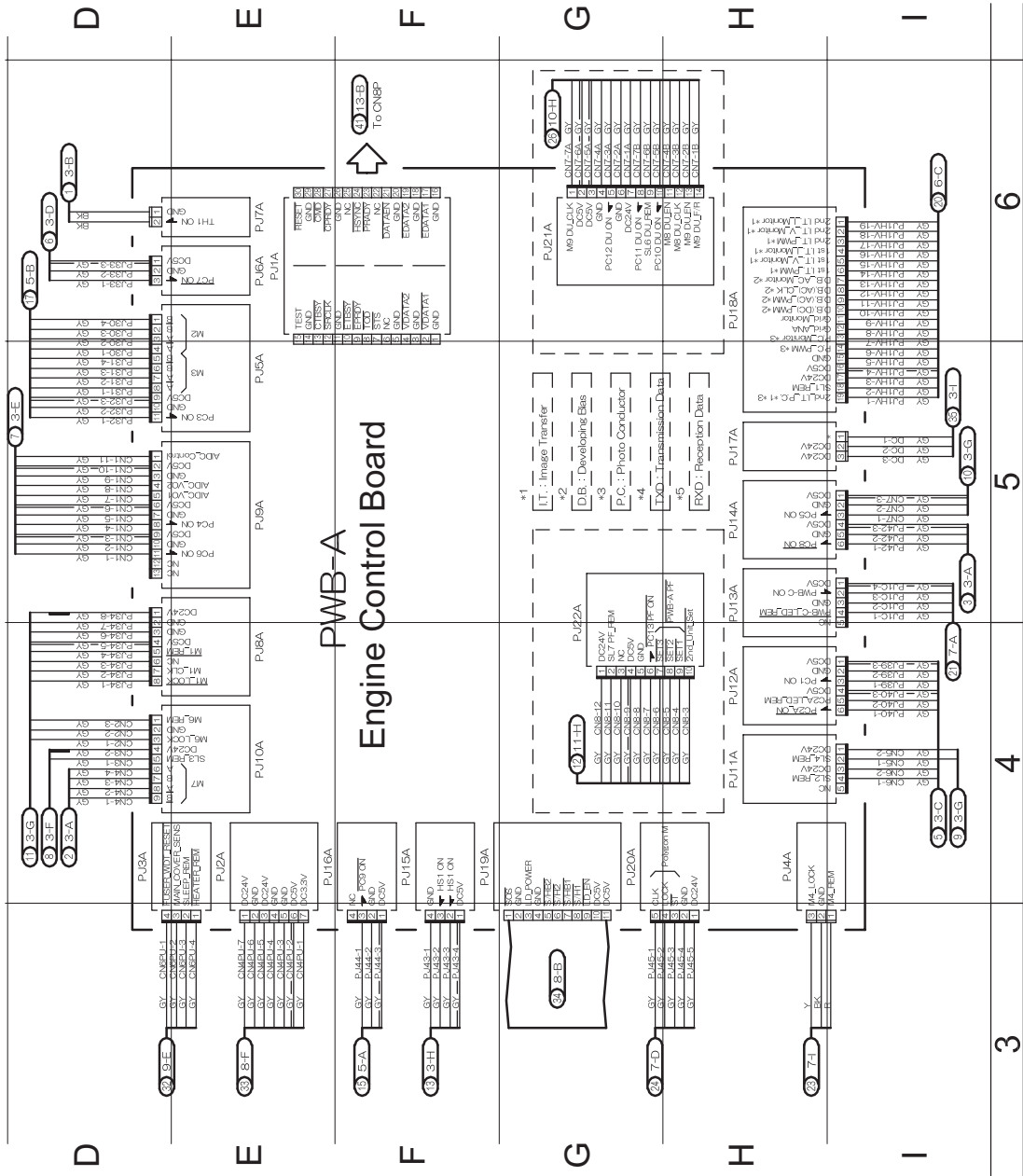
Control Block Diagram
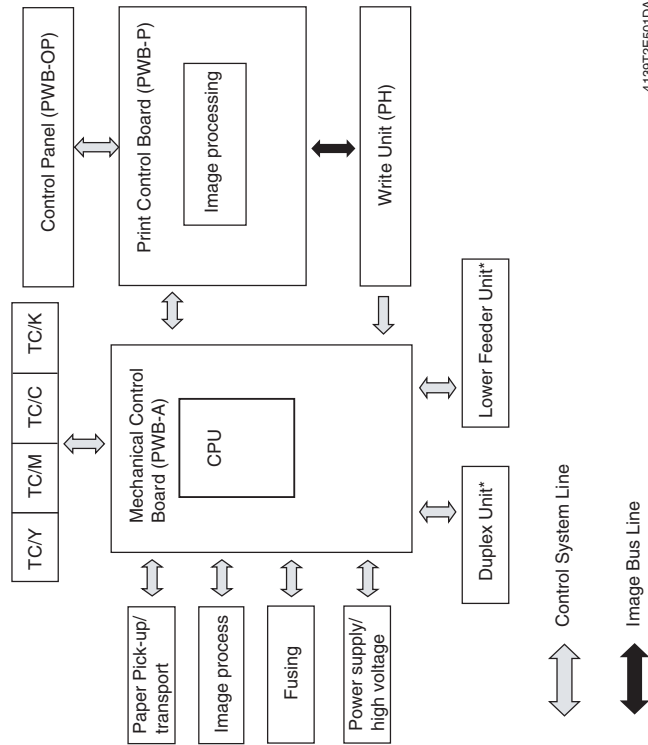
Wiring Diagram Legend
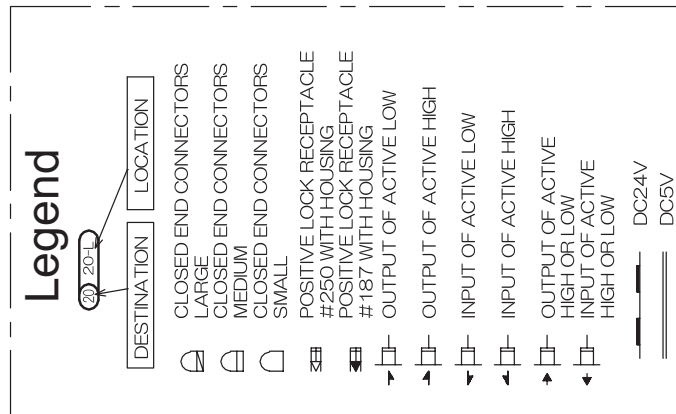
Overall Wiring Diagram

PWB-A (Engine Control Board)

PWB-P (Image Processor Board)

Image Transfer Section

IMAGE TRANSFER SECTION

Belt Positioning Sensor

Retraction Position Sensor /Cleaning Blade

Pressure/Retraction Solenoid /Cleaning Blade

Pressure/Retraction Solenoid /2nd Image Transfer

Retraction Position Sensor /2nd Image Transfer

Main Motor

Ventilation Fan Motor

Temperature/Humidity Sensor

Safety Switch

Drum Cartridge
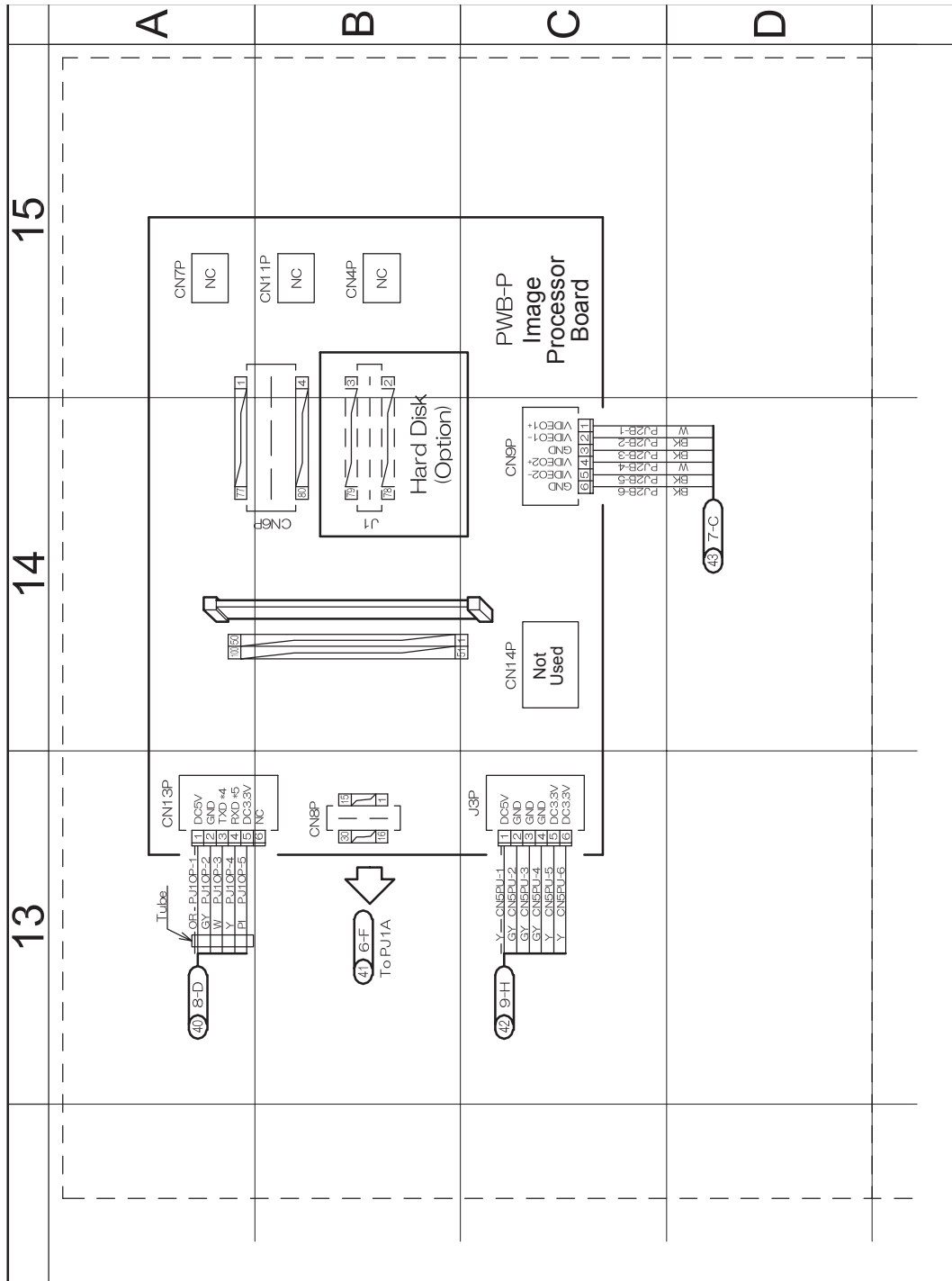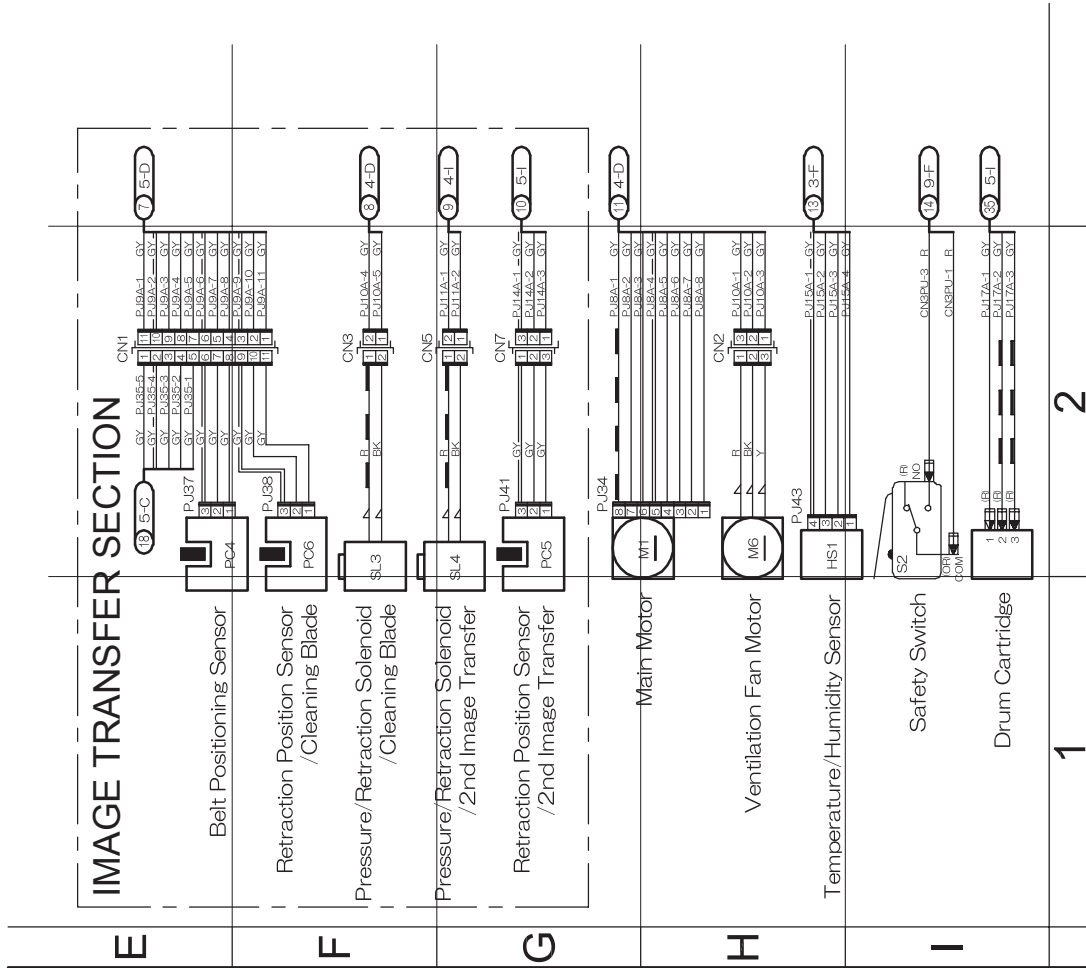
Fusing, Transport, and Paper Exit Section

Tray and Developing Toner Replenishing Section
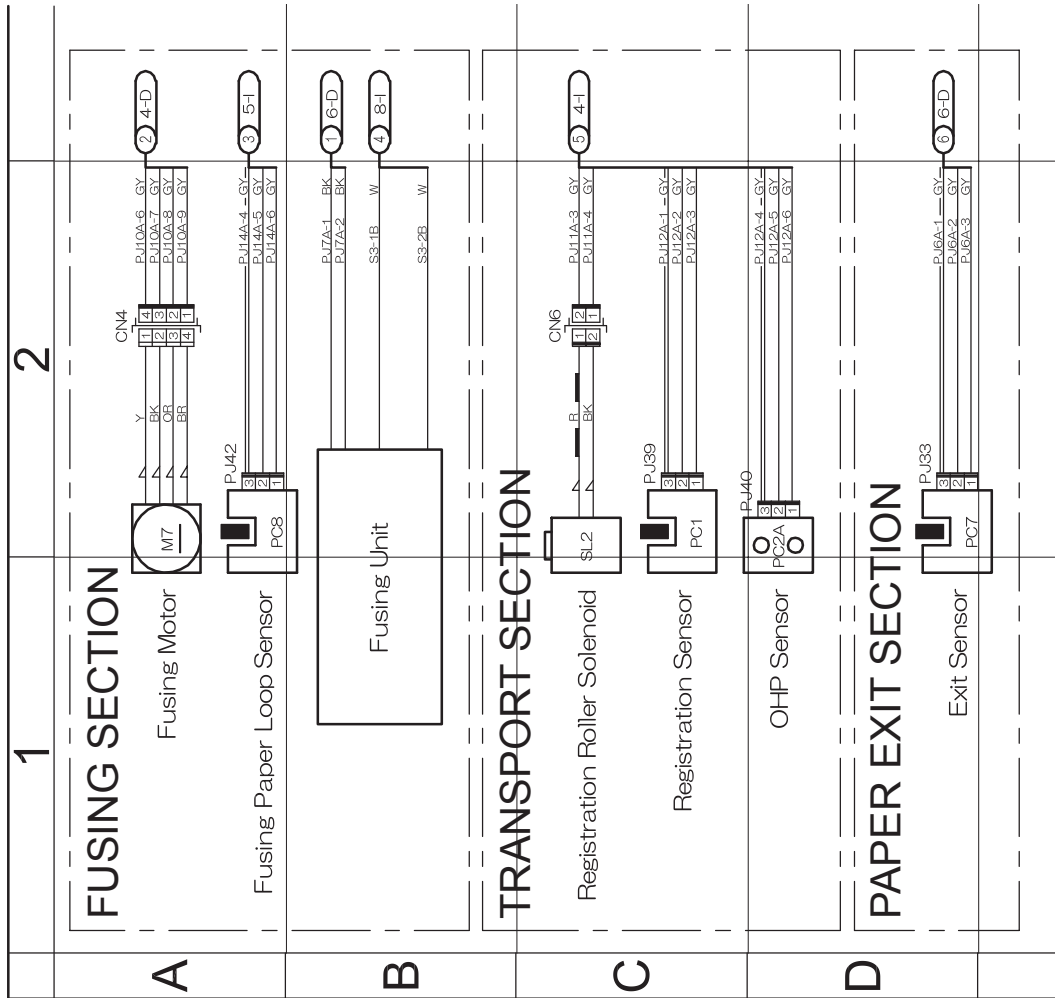
Toner Collection, Laser, (PH), and Panel Section

PANEL SECTION

TONER COLLECTION SECTION

LASER (PH) SECTION

PWB-OP
Control Panel

CN3OP

NC

PJ1OP
1 DC5V
2 GND
3 TXD +4
4 RXD +5
5 DC3.3V
6 NC

CB-CN13P-1
GY CN13P-2
W CN13P-3
Y CN13P-4
P CN13P-5

40 13-A

PWB-C
Waste Toner Near
Full Detection Board

PJ1C
1 PWB-C LED REM
2 GND
3 PWB-C ON
4 DC5V

GY PJ13A-4
GY PJ13A-3
W PJ13A-2
GY PJ13A-1

21 4-I

PJ1B
11 SOS
10 GND
9 LD_POWER
8 GND
7 STRB2
6 STRB2
5 STRB1
4 STRT
3 LD_EN
2 DC5V
1 DC5V

34 3-G

LD Board

PJ2B
6 GND
5 VIDEO2-
4 VIDEO2+
3 GND
2 VIDEO1-
1 VIDEO1+

BK CN9P-6
BK CN9P-5
W CN9P-4
BK CN9P-3
BK CN9P-2
W CN9P-1

Tube

43 14-D

Polygon Motor

PJ45
5 GY PJ20A-1
4 GY PJ20A-2
3 GY PJ20A-3
2 GY PJ20A-4
1 GY PJ20A-5

24 3-G

A   B   C   D

9   8   7

Power Supply Section

POWER SUPPLY SECTION

PU
Power Unit

Power Supply
Cooling Fan Motor

Power Switch

Fusing Safety Switch

Duplex/Lower Feed Unit Printer Connections
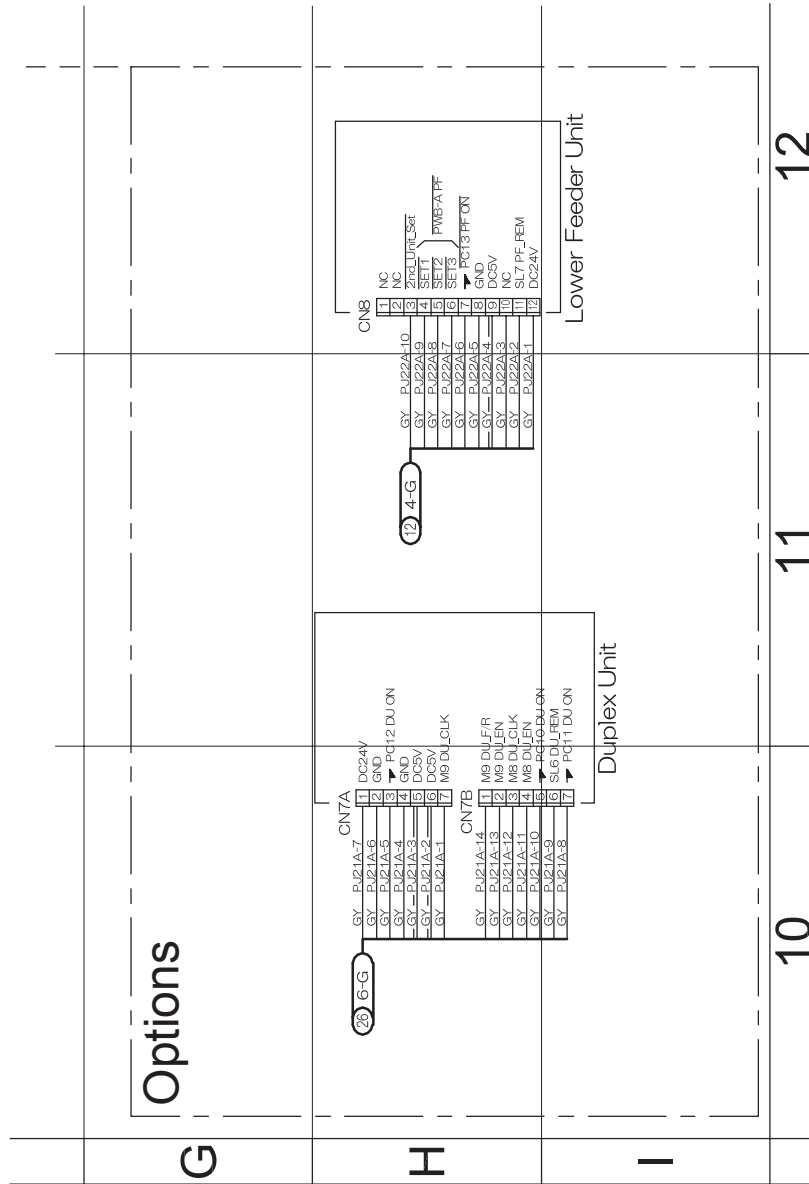
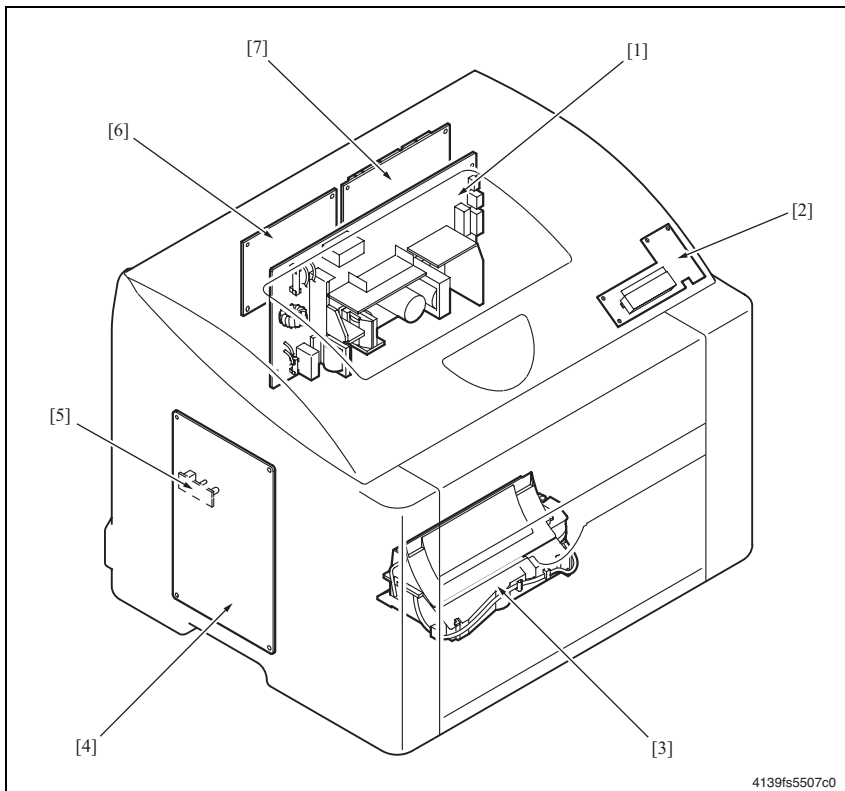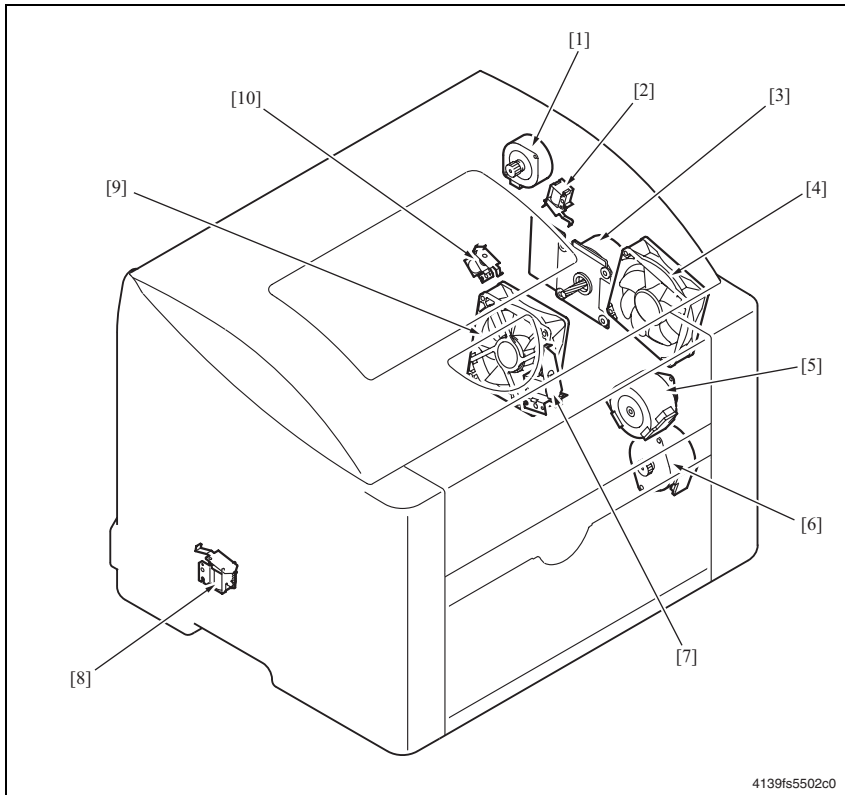# Lower Feed Board

Duplex Unit Board
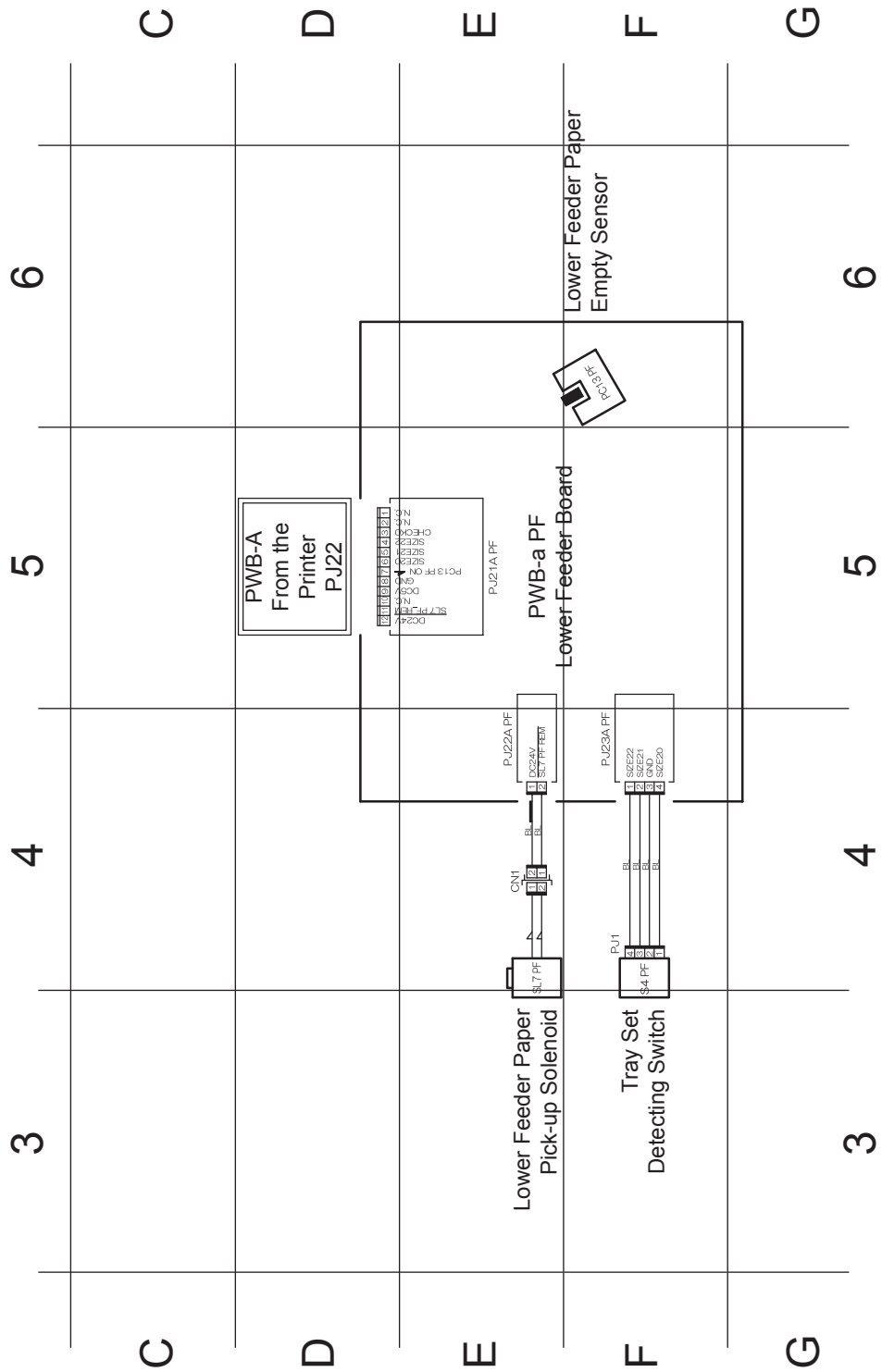
A Appendix

Parts Layout Drawing

Main Unit

4139fs5507c0

[1]	LVPS (PU)	[5]	Waste Toner Near Full Detection Board (PWB-C)
[2]	Control Panel (PWB-OP)	[6]	PWB-P (Image Processor Board)
[3]	Laser (PH) Unit	[7]	PWB-A (Engine Control Board)
[4]	High Voltage Unit (HV)		

4139fs5502c0

[1] Fusing Motor (M7)

[2] Pressure/Retraction Solenoid /Cleaning Blade (SL3)

[3] Main Motor (M1)

[4] Ventilation Fan Motor (M6)

[5] Developing Motor (M3)

[6] Rack Motor (M2)

[7] Registration Roller Solenoid (SL2)

[8] Tray1 Paper Pick-up Solenoid (SL1)

[9] Power Supply Cooling Fan Motor (M4)

[10] Pressure/Retraction Solenoid /2nd Image Transfer (SL4)

4139fs5503c0

[1]	Retraction Position Sensor /Cleaning Blade (PC6)	[8]	Fusing Paper Loop Sensor (PC8)
[2]	Safety Switch (S2)	[9]	Registration Sensor (PC1)
[3]	Rack Positioning Sensor (PC3)	[10]	Belt Positioning Sensor (PC4)
[4]	Temperature/ humidity Sensor (HS1)	[11]	Fusing Safety switch (S3)
[5]	Tray1 Paper Empty Sensor (PC9)	[12]	Exit Sensor (PC7)
[6]	OHP Sensor (PC2A)	[13]	Retraction Position Sensor /2nd Image Transfer (PC5)
[7]	Power Switch (S1)	[14]	Density (AIDC) Sensor

Lower Feeder Unit (option)

4056fs5501c0
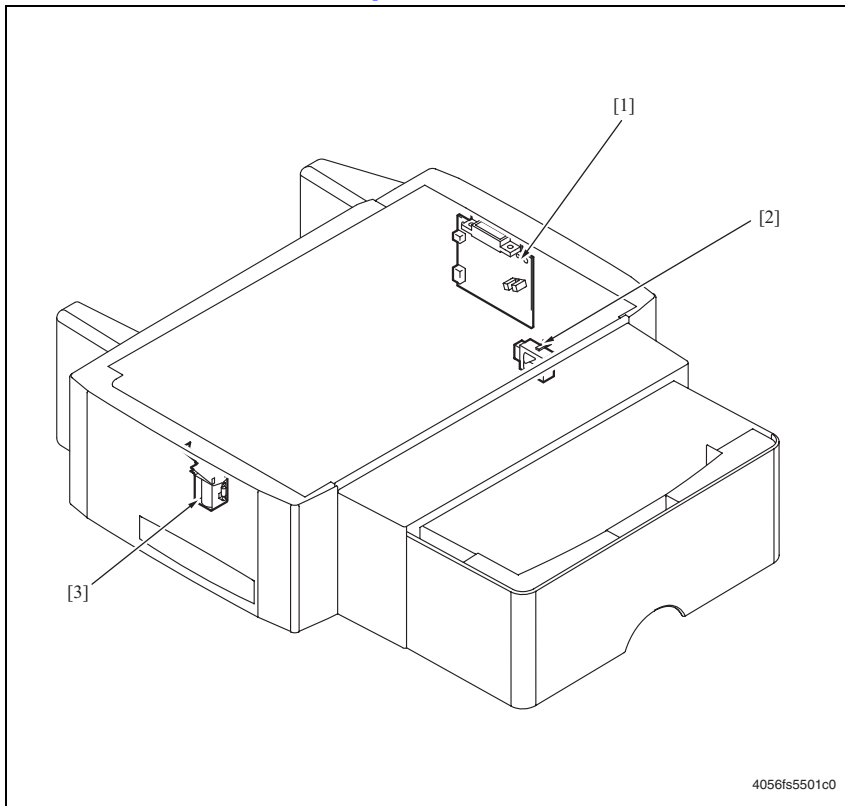
[1]   Lower Feeder Board (PWB-F PF)

[2]   Tray Set Detecting Switch (S4 PF)

[3]   Lower Feeder Paper Pick-up Solenoid (SL7 PF)

Duplex Unit (Option)
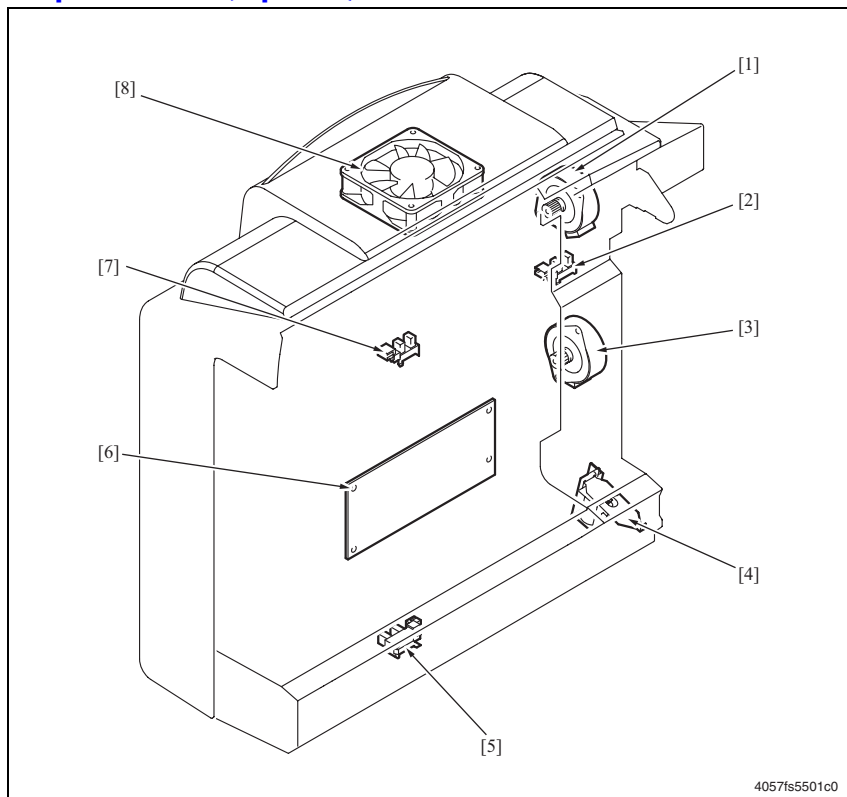
4057fs5501c0

[1]   Duplex Reverse Motor (M9 DU)

[2]   Duplex Door Sensor (PC11 DU)

[3]   Duplex Transport Motor (M8 DU)

[4]   Duplex Registration Solenoid (SL6 DU)

[5]   Duplex Paper Loop Sensor (PC10 DU)

[6]   Duplex Board (PWB-A DU)

[7]   Duplex Transport Sensor (PC12 DU)

[8]   Duplex Cooling Fan Motor (M10 DU)

Connector Layout Drawing

Description

Number of Pins ⟶ ① Possible to confirm by removing external cover.

⬚1 Not possible to confirm by removing external cover.

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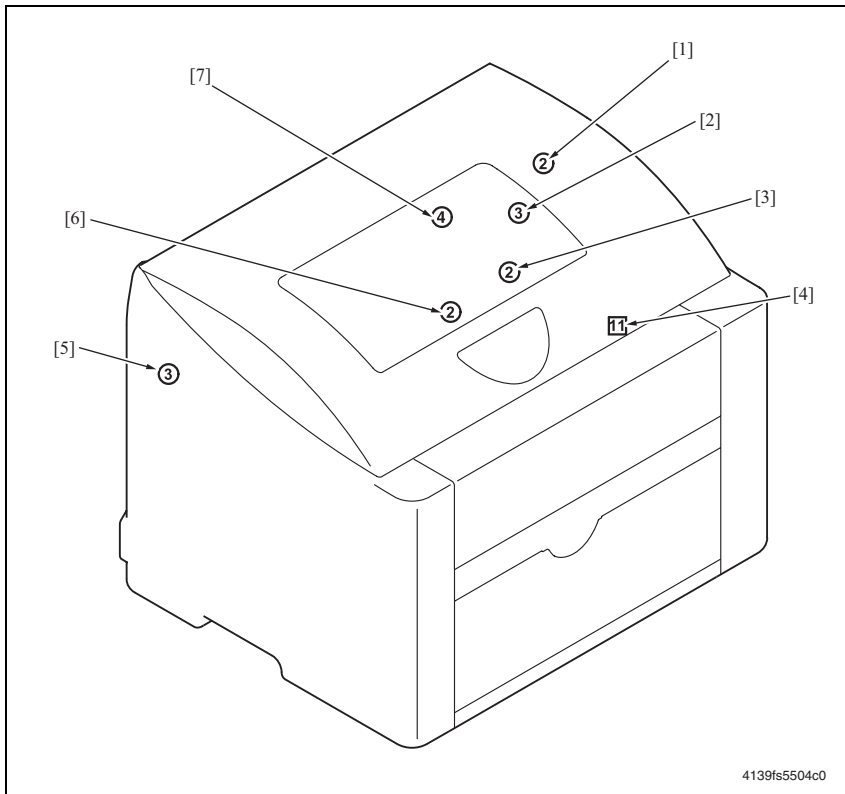
No.	CN No.	Location	No.	CN No.	Location
[1]	CN3	2-F	[5]	CN7	2-G
[2]	CN2	2-H	[6]	CN6	2-C
[3]	CN5	2-G	[7]	CN4	2-A
[4]	CN1	2-E-F			

Timing Chart

Fusing Motor (M7)	
Main Motor (M1)	
Rack Motor (M2)	
Developing Motor (M3)	
Developing Bias/Y	
Developing Bias/M	
Developing Bias/C	
Developing Bias/K	
TOD	
2nd Image Transfer Bias	
2nd Image Transfer Pressure/Retraction	
Transfer Belt Cleaner Retraction	
1st Image Transfer Bias	
Registration Roller Sensor (PC1)	
Registration Roller Solenoid (SL2)	
Fusing Paper Loop Sensor (PC8)	
Exit Sensor (PC7)	

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Acronym and Terminology Definitions Table

Term	Definition
(W)x(D)x(H)	Width x Depth x Height
1st Transfer	1st Image Transfer
2nd Transfer	2nd Image Transfer
AC	Alternating Current
AIDC	Density Sensor
Assy	Assembly
ATVC	Auto Transfer Voltage Control
C	Celsius
CD	Scan Direction
CMYK	Cyan, Magenta, Yellow, Black
CN	Connector
CRUM	Customer Replaceable Unit Memory
DC	Direct Current
DPI	Dots per inch
DRAM	Dynamic Random Access Memory
Drum Cartridge	Imaging Unit
DU	Duplex
EEPROM	Electronically Erasable Programmable Read Only Memory
ESD	Electromagnetic Static Device
F	Farenheit
FD	Feed or Process Direction
FPOT	First Page Out Time
FRU	Field Replaceable Unit
GND	Ground
HS#	Humidity Sensor
HV	High-Voltage
IC	Integrated Circuit
IEEE	Institute of Electrical and Electronics Engineers, Inc.
in	inch
K	Thousand, (i.e., 6K = 6,000)

Term	Definition
lb.	Pound
LCD	Liquid Crystal Display
LD	Laser Diode
LOCK	Motor Off (Bad Motor Failure)
LVPS	Low Voltage Power Supply
M#	Motor
MB	Megabyte
MCU	Machine Control Unit
MHz	Megahertz
mm	Millimeters
MP	Multiple Page Job
NIC	Network Interface Card
NVRAM	Non-Volatile Random Access Memory
OPC	Organic Photo Conductor
Parameter Chip	NVRAM
PC	Photo Conductor (sensor)
PCL	Printer Command Language
PF	Lower Feeder Unit
PH Unit	Laser Unit
PPM	Pages Per Minute
PS	PostScript
PU	Power Unit or LVPS
PWB-A or Mechanical Control Board	Engine Control Board
PWB-A DU	Duplex Board
PWB-A-PF	Lower Feeder Board
PWB-C	Waste Toner Full Detection Board
PWB-OP	Control Panel
PWB-P Print Control Board	Image Processor Board
Qty	Quantity
RAM	Random Access Memory
REM	Motor On / Solenoid On

Term	Definition
RH	Relative Humidity
ROM	Read Only Memory
S4 PF	Tray Detection Switch
SD or CD	Scan Direction
SL#	Solenoid
TC	Toner Cartridge
URL	Uniform Resource Locator
USB	Universal Serial Bus
V	Volts
Vb	Bias Voltage
W	Watts