



KONICA MINOLTA

**SERVICE MANUAL**

**THEORY OF OPERATION**

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# **bizhub C25**

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# SAFETY AND IMPORTANT WARNING ITEMS

Read carefully the safety and important warning items described below to understand them before doing service work.

## IMPORTANT NOTICE

Because of possible hazards to an inexperienced person servicing this product as well as the risk of damage to the product, KONICA MINOLTA BUSINESS TECHNOLOGIES, INC. (hereafter called the KMBT) strongly recommends that all servicing be performed only by KMBT-trained service technicians.




Changes may have been made to this product to improve its performance after this Service Manual was printed. Accordingly, KMBT does not warrant, either explicitly or implicitly, that the information contained in this service manual is complete and accurate.

The user of this service manual must assume all risks of personal injury and/or damage to the product while servicing the product for which this service manual is intended.




Therefore, this service manual must be carefully read before doing service work both in the course of technical training and even after that, for performing maintenance and control of the product properly.

Keep this service manual also for future service.













## DESCRIPTION ITEMS FOR DANGER, WARNING AND CAUTION

In this Service Manual, each of three expressions “ DANGER”, “ WARNING”, and “ CAUTION” is defined as follows together with a symbol mark to be used in a limited meaning.

When servicing the product, the relevant works (disassembling, reassembling, adjustment, repair, maintenance, etc.) need to be conducted with utmost care.

-  **DANGER: Action having a high possibility of suffering death or serious injury**
-  **WARNING: Action having a possibility of suffering death or serious injury**
-  **CAUTION: Action having a possibility of suffering a slight wound, medium trouble, and property damage**

Symbols used for safety and important warning items are defined as follows:

	:Precaution when servicing the product.		General precaution		Electric hazard		High temperature
	:Prohibition when servicing the product.		General prohibition		Do not touch with wet hand		Do not disassemble
	:Direction when servicing the product.		General instruction		Unplug		Ground/Earth

## SAFETY WARNINGS

### [1] MODIFICATIONS NOT AUTHORIZED BY KONICA MINOLTA BUSINESS TECHNOLOGIES, INC.

KONICA MINOLTA brand products are renowned for their high reliability. This reliability is achieved through high-quality design and a solid service network.

Product design is a highly complicated and delicate process where numerous mechanical, physical, and electrical aspects have to be taken into consideration, with the aim of arriving at proper tolerances and safety factors. For this reason, unauthorized modifications involve a high risk of degradation in performance and safety. Such modifications are therefore strictly prohibited. The points listed below are not exhaustive, but they illustrate the reasoning behind this policy.

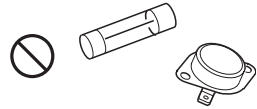
#### Prohibited Actions

#### DANGER

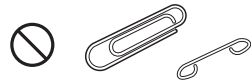
- Using any cables or power cord not specified by KMBT.



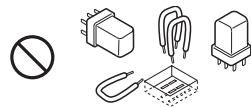
- Using any fuse or thermostat not specified by KMBT. Safety will not be assured, leading to a risk of fire and injury.



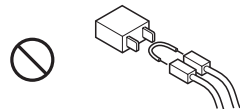
- Disabling fuse functions or bridging fuse terminals with wire, metal clips, solder or similar object.



- Disabling relay functions (such as wedging paper between relay contacts).



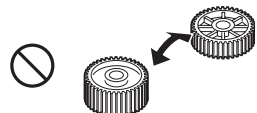
- Disabling safety functions (interlocks, safety circuits, etc.). Safety will not be assured, leading to a risk of fire and injury.



- Making any modification to the product unless instructed by KMBT.



- Using parts not specified by KMBT.



## [2] POWER PLUG SELECTION

In some countries or areas, the power plug provided with the product may not fit wall outlet used in the area. In that case, it is obligation of customer engineer (hereafter called the CE) to attach appropriate power plug or power cord set in order to connect the product to the supply.

### Power Cord Set or Power Plug

#### WARNING

- Use power supply cord set which meets the following criteria:
    - provided with a plug having configuration intended for the connection to wall outlet appropriate for the product's rated voltage and current, and
    - the plug has pin/terminal(s) for grounding, and
    - provided with three-conductor cable having enough current capacity, and
    - the cord set meets regulatory requirements for the area.
- Use of inadequate cord set leads to fire or electric shock.



- Attach power plug which meets the following criteria:
    - having configuration intended for the connection to wall outlet appropriate for the product's rated voltage and current, and
    - the plug has pin/terminal(s) for grounding, and
    - meets regulatory requirements for the area.
- Use of inadequate cord set leads to the product connecting to inadequate power supply (voltage, current capacity, grounding), and may result in fire or electric shock.



- Conductors in the power cable must be connected to terminals of the plug according to the following order:
  - Black or Brown:L (line)
  - White or Light Blue:N (neutral)
  - Green/Yellow:PE (earth)



Wrong connection may cancel safeguards within the product, and results in fire or electric shock.

## [3] CHECKPOINTS WHEN PERFORMING ON-SITE SERVICE

KONICA MINOLTA brand products are extensively tested before shipping, to ensure that all applicable safety standards are met, in order to protect the customer and customer engineer (hereafter called the CE) from the risk of injury. However, in daily use, any electrical equipment may be subject to parts wear and eventual failure. In order to maintain safety and reliability, the CE must perform regular safety checks.

## 1. Power Supply

**Connection to Power Supply****⚠ WARNING**

- Check that mains voltage is as specified.

Connection to wrong voltage supply may result in fire or electric shock.



- Connect power plug directly into wall outlet having same configuration as the plug.

Use of an adapter leads to the product connecting to inadequate power supply (voltage, current capacity, grounding), and may result in fire or electric shock.

If proper wall outlet is not available, advise the customer to contact qualified electrician for the installation.



- Plug the power cord into the dedicated wall outlet with a capacity greater than the maximum power consumption.

If excessive current flows in the wall outlet, fire may result.



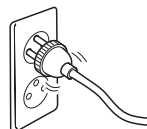
- If two or more power cords can be plugged into the wall outlet, the total load must not exceed the rating of the wall outlet.

If excessive current flows in the wall outlet, fire may result.



- Make sure the power cord is plugged in the wall outlet securely.

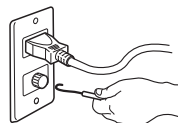
Contact problems may lead to increased resistance, overheating, and the risk of fire.



- Check whether the product is grounded properly.

If current leakage occurs in an ungrounded product, you may suffer electric shock while operating the product.

Connect power plug to grounded wall outlet.



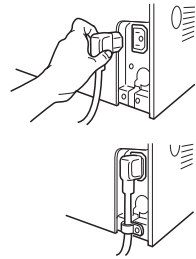
## Power Plug and Cord

### WARNING

- When using the power cord set (inlet type) that came with this product, make sure the connector is securely inserted in the inlet of the product.

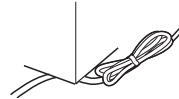
When securing measure is provided, secure the cord with the fixture properly.

If the power cord (inlet type) is not connected to the product securely, a contact problem may lead to increased resistance, overheating, and risk of fire.



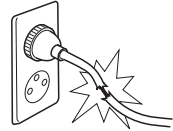
- Check whether the power cord is not stepped on or pinched by a table and so on.

Overheating may occur there, leading to a risk of fire.



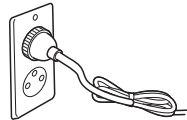
- Check whether the power cord is damaged. Check whether the sheath is damaged.

If the power plug, cord, or sheath is damaged, replace with a new power cord (with plug and connector on each end) specified by KMBT. Using the damaged power cord may result in fire or electric shock.



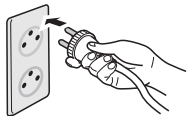
- Do not bundle or tie the power cord.

Overheating may occur there, leading to a risk of fire.



- Check whether dust is collected around the power plug and wall outlet.

Using the power plug and wall outlet without removing dust may result in fire.



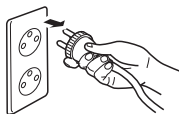
- Do not insert the power plug into the wall outlet with a wet hand.

The risk of electric shock exists.



- When unplugging the power cord, grasp the plug, not the cable.

The cable may be broken, leading to a risk of fire and electric shock.



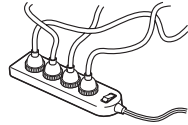


## Wiring

### ⚠ WARNING

- Never use multi-plug adapters to plug multiple power cords in the same outlet.

If used, the risk of fire exists.



- When an extension cord is required, use a specified one. Current that can flow in the extension cord is limited, so using a too long extension cord may result in fire.

Do not use an extension cable reel with the cable taken up. Fire may result.



## 2. Installation Requirements

### Prohibited Installation Places

#### ⚠ WARNING

- Do not place the product near flammable materials or volatile materials that may catch fire.

A risk of fire exists.



- Do not place the product in a place exposed to water such as rain.

A risk of fire and electric shock exists.

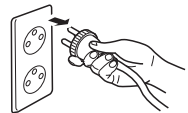


### When not Using the Product for a long time

#### ⚠ WARNING

- When the product is not used over an extended period of time (holidays, etc.), switch it off and unplug the power cord.

Dust collected around the power plug and outlet may cause fire.



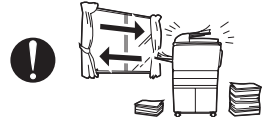
## Ventilation

### CAUTION

- The product generates ozone gas during operation, but it will not be harmful to the human body.

If a bad smell of ozone is present in the following cases, ventilate the room.

- When the product is used in a poorly ventilated room
- When taking a lot of copies
- When using multiple products at the same time



## Stability

### CAUTION

- Be sure to lock the caster stoppers.

In the case of an earthquake and so on, the product may slide, leading to a injury.

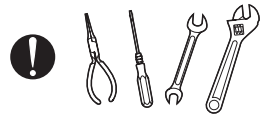


## Inspection before Servicing

### CAUTION

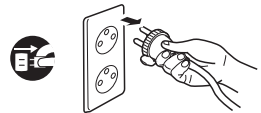
- Before conducting an inspection, read all relevant documentation (service manual, technical notices, etc.) and proceed with the inspection following the prescribed procedure in safety clothes, using only the prescribed tools. Do not make any adjustment not described in the documentation.

If the prescribed procedure or tool is not used, the product may break and a risk of injury or fire exists.



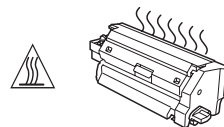
- Before conducting an inspection, be sure to disconnect the power plugs from the product and options.

When the power plug is inserted in the wall outlet, some units are still powered even if the POWER switch is turned OFF. A risk of electric shock exists.



- The area around the fixing unit is hot.

You may get burnt.



## Inspection before Servicing

### CAUTION

- Do not leave the machine unattended during transportation, installation, and inspection of the machine. If it is to be unavoidably left unattended, face protrusions toward the wall or take other necessary risk reducing action.



The user may stumble over a protrusion of the machine or be caught by a cable, falling to the floor or being injured.

## Work Performed with the Product Powered On

### WARNING

- Take every care when making adjustments or performing an operation check with the product powered.

If you make adjustments or perform an operation check with the external cover detached, you may touch live or high-voltage parts or you may be caught in moving gears or the timing belt, leading to a risk of injury.



- Take every care when servicing with the external cover detached.

High-voltage exists around the drum unit. A risk of electric shock exists.



- If it is absolutely necessary to service the machine with the door open or external covers removed, always be attentive to the motion of the internal parts.

A normally protected part may cause unexpected hazards.



## Safety Checkpoints

### WARNING

- Check the exterior and frame for edges, burrs, and other damage.

The user or CE may be injured.



- Whenever mounting an option on the machine, be attentive to the motion of the fellow worker of the joint work.

The fellow worker may be injured with his or her finger or hand pinched between the machine and the option.



## Safety Checkpoints

### WARNING

- When mounting an option on the machine, be careful about the clearance between the machine and the option.

You may be injured with your finger or hand pinched between the machine and the option.



- When removing a part that secures a motor, gear, or other moving part, disassembling a unit, or reinstalling any of such parts and units, be careful about moving parts and use care not to drop any part or unit. During the service procedure, give sufficient support for any heavy unit.

You may be injured by a falling part or unit.



- Check the external covers and frame for possible sharp edges, burrs, and damage.

They can be a cause of injury during use or servicing.



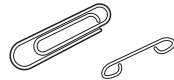
- When accessing a hard-to-view or narrow spot, be careful about sharp edges and burrs of the frame and parts.

They may injure your hands or fingers.



- Do not allow any metal parts such as clips, staples, and screws to fall into the product.

They can short internal circuits and cause electric shock or fire.



- Check wiring for squeezing and any other damage.

Current can leak, leading to a risk of electric shock or fire.



- Carefully remove all toner remnants and dust from electrical parts and electrode units such as a charging corona unit.

Current can leak, leading to a risk of product trouble or fire.



- Check high-voltage cables and sheaths for any damage.

Current can leak, leading to a risk of electric shock or fire.



- Check electrode units such as a charging corona unit for deterioration and sign of leakage.

Current can leak, leading to a risk of trouble or fire.



## Safety Checkpoints

### WARNING

- Before disassembling or adjusting the write unit (P/H unit) incorporating a laser, make sure that the power cord has been disconnected.

The laser light can enter your eye, leading to a risk of loss of eyesight.



- Do not remove the cover of the write unit. Do not supply power with the write unit shifted from the specified mounting position.

The laser light can enter your eye, leading to a risk of loss of eyesight.



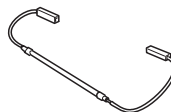
- When replacing a lithium battery, replace it with a new lithium battery specified in the Parts Guide Manual. Dispose of the used lithium battery using the method specified by local authority.

Improper replacement can cause explosion.



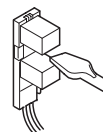
- After replacing a part to which AC voltage is applied (e.g., optical lamp and fixing lamp), be sure to check the installation state.

A risk of fire exists.



- Check the interlock switch and actuator for loosening and check whether the interlock functions properly.

If the interlock does not function, you may receive an electric shock or be injured when you insert your hand in the product (e.g., for clearing paper jam).



- Make sure the wiring cannot come into contact with sharp edges, burrs, or other pointed parts.

Current can leak, leading to a risk of electric shock or fire.



- Make sure that all screws, components, wiring, connectors, etc. that were removed for safety check and maintenance have been reinstalled in the original location. (Pay special attention to forgotten connectors, pinched cables, forgotten screws, etc.)

A risk of product trouble, electric shock, and fire exists.



## Handling of Consumables

### WARNING

- Toner and developer are not harmful substances, but care must be taken not to breathe excessive amounts or let the substances come into contact with eyes, etc. It may be stimulative.

If the substances get in the eye, rinse with plenty of water immediately. When symptoms are noticeable, consult a physician.



- Never throw the used cartridge and toner into fire.  
You may be burned due to dust explosion.

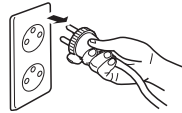


## Handling of Service Materials

### CAUTION

- Unplug the power cord from the wall outlet.

Drum cleaner (isopropyl alcohol) and roller cleaner (acetone-based) are highly flammable and must be handled with care. A risk of fire exists.



- Do not replace the cover or turn the product ON before any solvent remnants on the cleaned parts have fully evaporated.

A risk of fire exists.



- Use only a small amount of cleaner at a time and take care not to spill any liquid. If this happens, immediately wipe it off.

A risk of fire exists.



- When using any solvent, ventilate the room well.  
Breathing large quantities of organic solvents can lead to discomfort.



#### [4] LASER SAFETY

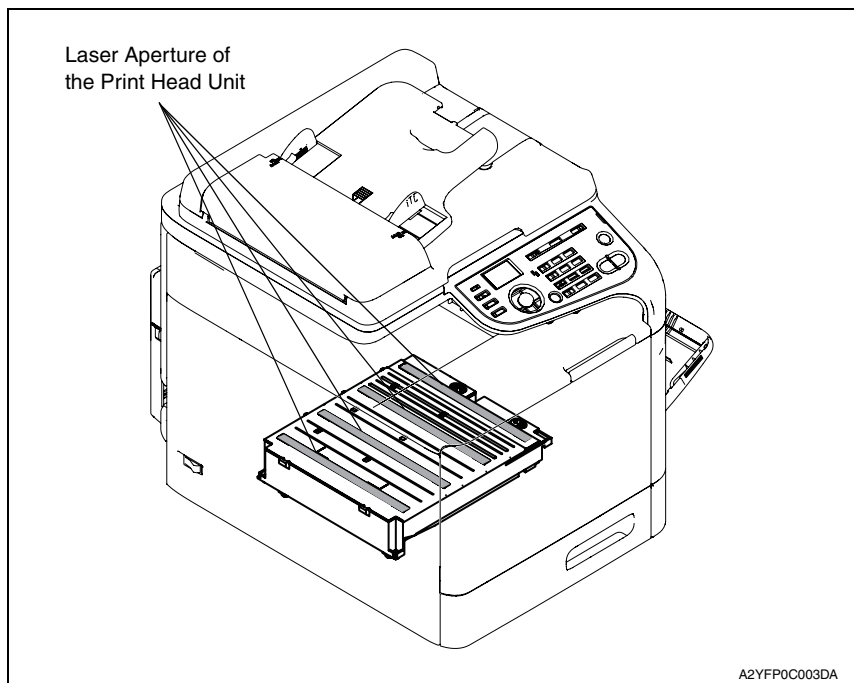
- This is a digital machine certified as a Class 1 laser product. There is no possibility of danger from a laser, provided the machine is serviced according to the instruction in this manual.

#### 4.1 Internal Laser Radiation

semiconductor laser	
Maximum power of the laser diode	15 mW
Maximum average radiation power (*)	11.2 $\mu$ W
Wavelength	770 - 800 nm

\*at laser aperture of the Print Head Unit

- This product employs a Class 3B laser diode that emits an invisible laser beam. The laser diode and the scanning polygon mirror are incorporated in the print head unit.
- The print head unit is NOT A FIELD SERVICEABLE ITEM. Therefore, the print head unit should not be opened under any circumstances.



**U.S.A., Canada  
(CDRH Regulation)**

- This machine is certified as a Class 1 Laser product under Radiation Performance Standard according to the Food, Drug and Cosmetic Act of 1990. Compliance is mandatory for Laser products marketed in the United States and is reported to the Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration of the U.S. Department of Health and Human Services (DHHS). This means that the device does not produce hazardous laser radiation.
- The label shown on page S-16 indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.

**CAUTION**

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

semiconductor laser	
Maximum power of the laser diode	15 mW
Wavelength	770 - 800 nm

**All Areas**

**CAUTION**

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

semiconductor laser	
Maximum power of the laser diode	15 mW
Wavelength	770 - 800 nm

**Denmark**

**ADVARSEL**

- **Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling. Klasse 1 laser produkt der opfylder IEC60825-1 sikkerheds kravene.**

halvlederlaser	
Laserdiodens højeste styrke	15 mW
bølgelængden	770 - 800 nm



## Finland, Sweden

**LUOKAN 1 LASERLAITE**  
**KLASS 1 LASER APPARAT**
**VAROITUS!**

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

puolijohdelaser	
Laserdiodin suurin teho	15 mW
aallonpituus	770 - 800 nm

**WARNING!**

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

halvledarlaser	
Den maximala effekten för laserdioden	15 mW
våglängden	770 - 800 nm

**VARO!**

- Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle laser-säteilylle. Älä katso säteeseen.

**WARNING!**

- Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

## Norway

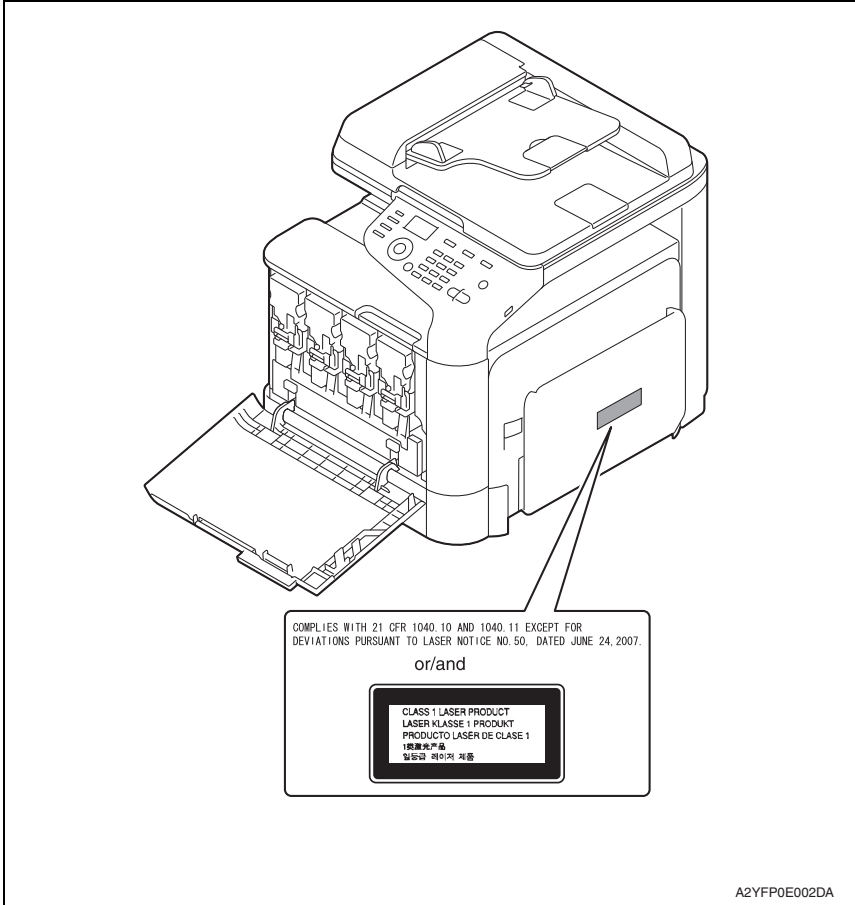
**ADVERSEL**

- Dersom apparatet brukes på annen måte enn spesifisert i denne bruksanvisning, kan brukeren utsettes for usynlig laserstrålning, som overskrider grensen for laser klass 1.

halvleder laser	
Maksimal effekt till laserdioden	15 mW
bølgelengde	770 - 800 nm

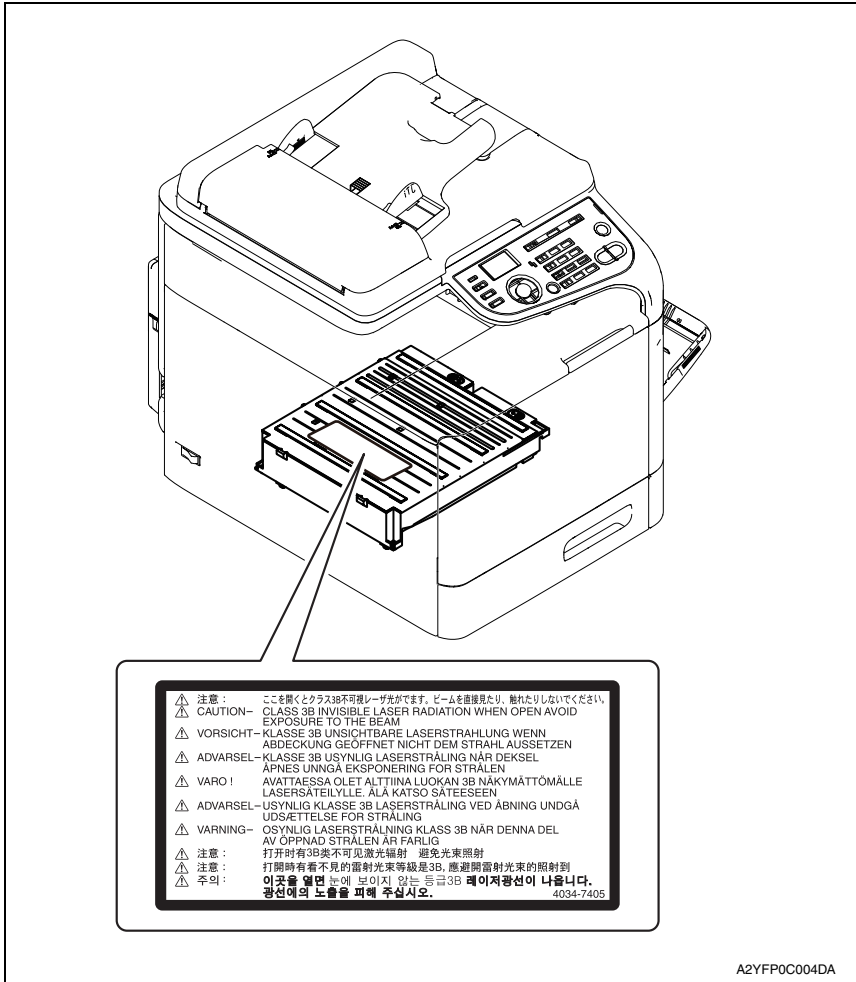
## 4.2 Laser Safety Label

- A laser safety label is attached to the outside of the machine as shown below.



### 4.3 Laser Caution Label

- A laser caution label is attached to the inside of the machine as shown below.

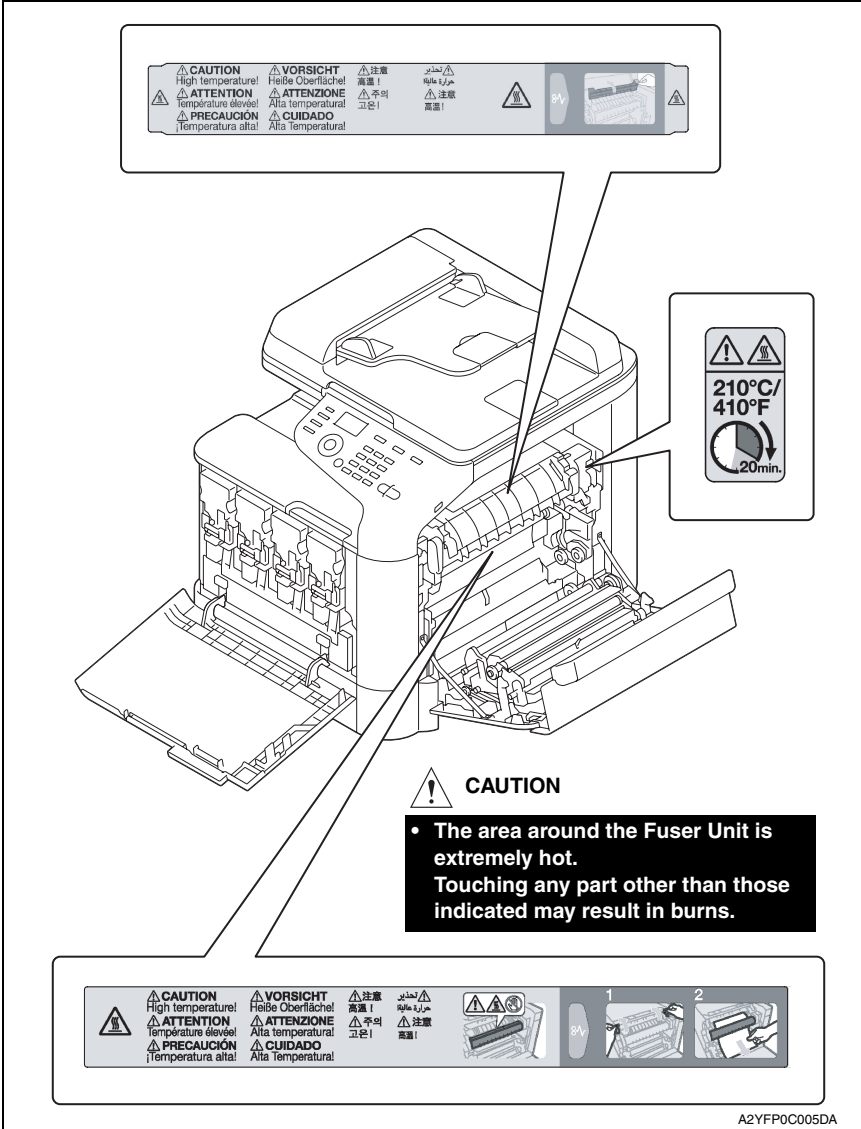


### 4.4 PRECAUTIONS FOR HANDLING THE LASER EQUIPMENT

- When laser protective goggles are to be used, select ones with a lens conforming to the above specifications.
- When a disassembly job needs to be performed in the laser beam path, such as when working around the printerhead and PC Drum, be sure first to turn the printer OFF.
- If the job requires that the printer be left ON, take off your watch and ring and wear laser protective goggles.
- A highly reflective tool can be dangerous if it is brought into the laser beam path. Use utmost care when handling tools on the user's premises.

## INDICATION OF WARNING ON THE MACHINE

Caution labels shown below are attached in some areas on/in the machine.  
When accessing these areas for maintenance, repair, or adjustment, special care should be taken to avoid burns and electric shock.





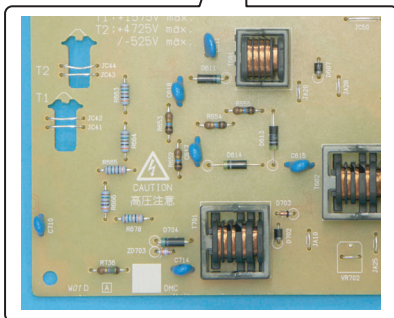
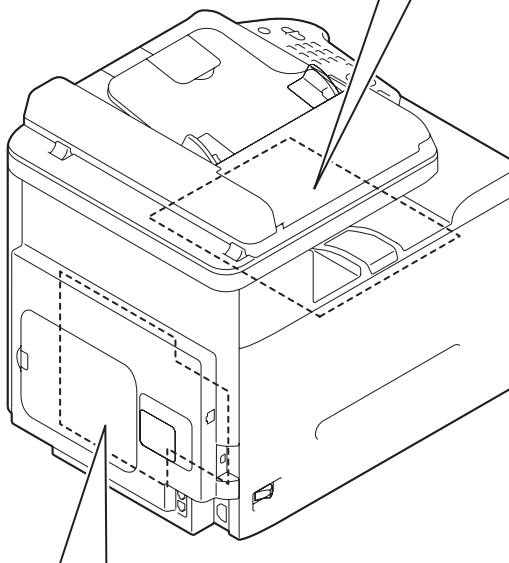
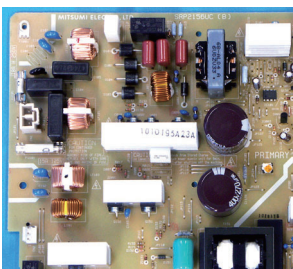
**High voltage**

- This area generates high voltage. Be careful not to touch here when the power is turned ON to avoid getting an electric shock.



**Electric hazard**



- To avoid electrical shock, after turning OFF the power switch, do not touch the DC power supply for 9 minutes.

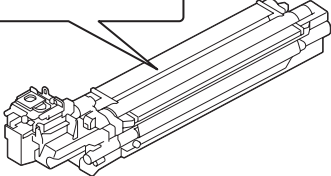


**High voltage**

- This area generates high voltage. Be careful not to touch here when the power is turned ON to avoid getting an electric shock.

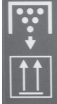



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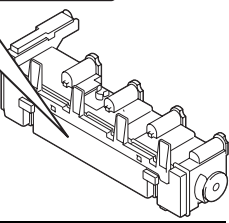
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⚠ WARNUNG	⚠ AVISO	⚠ 경고		
⚠ ATENCIÓN	⚠ ATTENTION	⚠ انتباه		



**⚠ WARNING**


- Do not burn used Imaging Unit.  
Toner expelled from the fire is dangerous.

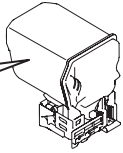
	⚠ WARNING	⚠ 警告		
	⚠ WARNUNG	⚠ 경고		
	⚠ ATENCIÓN	⚠ انتباه		
	⚠ AVISO			
	⚠ AVISO			
	⚠ ATTENTION			



**⚠ WARNING**

- Do not burn used Waste Toner Bottle.  
Toner expelled from the fire is dangerous.

⚠ WARNING	
⚠ WARNUNG	
⚠ ATENCIÓN	
⚠ AVISO	⚠ 警告
⚠ AVISO	⚠ 경고
⚠ ATTENTION	⚠ انتباه



**⚠ WARNING**

- Do not burn used Toner Cartridges.  
Toner expelled from the fire is dangerous.

A2YFPOC006DA

**⚠ CAUTION:**

- You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from. Do not remove caution labels. And also, when the caution label is peeled off or soiled and cannot be seen clearly, replace it with a new caution label.

## **MEASURES TO TAKE IN CASE OF AN ACCIDENT**

1. If an accident has occurred, the distributor who has been notified first must immediately take emergency measures to provide relief to affected persons and to prevent further damage.
2. If a report of a serious accident has been received from a customer, an on-site evaluation must be carried out quickly and KMBT must be notified.
3. To determine the cause of the accident, conditions and materials must be recorded through direct on-site checks, in accordance with instructions issued by KMBT.
4. For reports and measures concerning serious accidents, follow the regulations specified by every distributor.

# Composition of the service manual

This service manual consists of Theory of Operation section and Field Service section to explain the main machine and its corresponding options.

Theory of Operation section gives, as information for the CE to get a full understanding of the product, a rough outline of the object and role of each function, the relationship between the electrical system and the mechanical system, and the timing of operation of each part.

Field Service section gives, as information required by the CE at the site (or at the customer's premise), a rough outline of the service schedule and its details, maintenance steps, the object and role of each adjustment, error codes and supplementary information.

The basic configuration of each section is as follows. However some options may not be applied to the following configuration.

## <Theory of Operation section>

OUTLINE:	Explanation of system configuration, product specifications, unit configuration, and paper path
COMPOSITION/OPERATION:	Explanation of configuration of each unit, operating system, and control system

## <Field service section>

OUTLINE:	Explanation of system configuration, and product specifications
MAINTENANCE:	Explanation of service schedule, maintenance steps, service tools, removal/reinstallation methods of major parts, and firmware version up method etc.
ADJUSTMENT/SETTING:	Explanation of utility mode, service mode, and mechanical adjustment etc.
TROUBLESHOOTING:	Explanation of lists of jam codes and error codes, and their countermeasures etc.
APPENDIX:	Parts layout drawings, connector layout drawings, timing chart, overall layout drawing are attached.



# Notation of the service manual

## A. Product name

In this manual, each of the products is described as follows:

- |                                |                     |
|--------------------------------|---------------------|
| (1) bizhub C25:                | Main body           |
| (2) Microsoft Windows 2000:    | Windows 2000        |
| Microsoft Windows XP:          | Windows XP          |
| Microsoft Windows Vista:       | Windows Vista       |
| Microsoft Windows 7:           | Windows 7           |
| Microsoft Windows Server 2003: | Windows Server 2003 |
| Microsoft Windows Server 2008: | Windows Server 2008 |

When the description is made in combination of the OS's mentioned above:

Windows 7/Vista/Server 2008/XP/Server  
2003/2000  
Windows 7/Vista/XP/2000  
Windows Server 2008/Server 2003

## B. Brand name

The company names and product names mentioned in this manual are the brand name or the registered trademark of each company.

## C. Feeding direction

- When the long side of the paper is parallel with the feeding direction, it is called short edge feeding. The feeding direction which is perpendicular to the short edge feeding is called the long edge feeding.
- Short edge feeding will be identified with [S (abbreviation for Short edge feeding)] on the paper size. No specific notation is added for the long edge feeding.  
When the size has only the short edge feeding with no long edge feeding, [S] will not be added to the paper size.

<Sample notation>

Paper size	Feeding direction	Notation
A4	Long edge feeding	A4
	Short edge feeding	A4S
A3	Short edge feeding	A3



KONICA MINOLTA

**SERVICE MANUAL**

THEORY OF OPERATION

---

**bizhub C25**   
Main body





# Revision history

After publication of this service manual, the parts and mechanism may be subject to change for improvement of their performance.

Therefore, the descriptions given in this service manual may not coincide with the actual machine.

When any change has been made to the descriptions in the service manual, a revised version will be issued with a revision mark added as required.

Revision mark:

- To indicate clearly a section revised,  is shown at the left margin of the revised section.  
The number inside  represents the number of times the revision has been made.
- To indicate clearly a page that contains the revision,  is shown near the page number of the corresponding page.  
The number inside  represents the number of times the revision has been made.

## NOTE

Revision marks shown in a page are restricted only to the latest ones with the old ones deleted.

- When a page revised in Ver. 2.0 has been changed in Ver. 3.0:  
The revision marks for Ver. 3.0 only are shown with those for Ver. 2.0 deleted.
- When a page revised in Ver. 2.0 has not been changed in Ver. 3.0:  
The revision marks for Ver. 2.0 are left as they are.

2011/01	1.0	—	Issue of the first edition
Date	Service manual Ver.	Revision mark	Descriptions of revision

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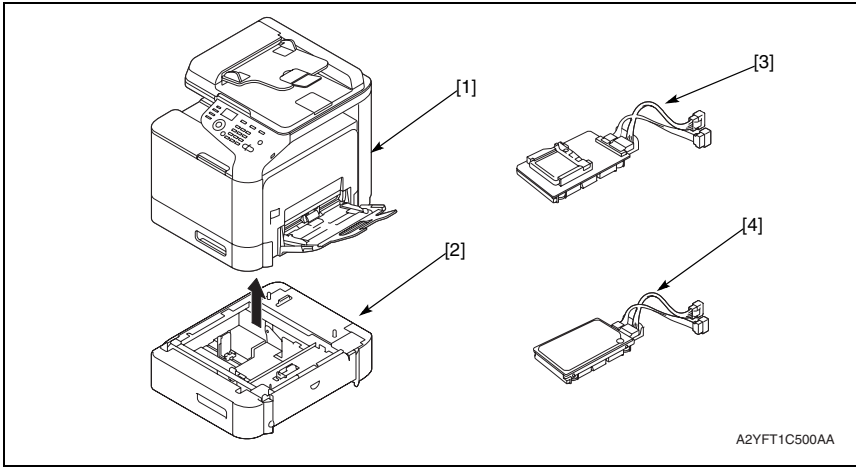


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# OUTLINE

## 1. SYSTEM CONFIGURATION



[1] bizhub C25

[2] Lower Feeder Unit (PF-P09)

[3] Compact Flash Adapter (MK-725)

[4] Hard Disk Kit (HD-P03)

## 2. PRODUCT SPECIFICATIONS

### 2.1 Type

Type	Full-color printer/copier/scanner with stationary plate and ADF
Printing system	Semiconductor laser and electrostatic image transfer to plain paper
Exposure system	4 laser diode and 1 polygon mirror
PC drum type	OPC (organic photo conductor)
Photoconductor cleaning	Blade cleaning system
Scan resolution	600 x 600 dpi, 600 x 300 dpi
Luminous source	CCFL Dual
Original scanning	Flatbed CIS scanning system
Print resolution	600 x 600 dpi
Paper feeding system	Tray1: Small roller separation system with torque limiter Tray2: Small roller separation system with torque limiter
Developing system	Single-element developing system
Charging system	Charge roller system
Image transfer system	Intermediate transfer belt system
Paper separating system	Curvature separation + charge-neutralizing system
Fusing system	Belt fusing
Paper exit system	Face down (Output tray capacity: 150 sheets (A4S/LetterS))

### 2.2 Functions

Types of original	Sheets, books, and three-dimensional objects
Max. original size	A4 or Legal
Max. original weight	3 kg
Multiple copies	1 to 99
Image loss	Copy Leading edge: 4.0 mm, trailing edge: 4.0 mm, rear edge: 4.0 mm, front edge: 4.0 mm  Print: Leading edge: 4.2 mm, trailing edge: 4.2 mm, rear edge: 4.2 mm, front edge: 4.2 mm
Warm-up time	Power on to ready: average 38 seconds or less (Power on to ready, at ambient temperature of 23 °C/73.4 °F and rated source voltage)
Process speed	144 mm/sec. (plain paper) 72.0 mm/sec. (thick paper 1/2, envelope, post card, label, letterhead, glossy 1/2)
First-page output time	16.0 second or less (A4S/LetterS, plain paper)

Copy speed	Simplex Monochrome/Full color: 24.0 page per minutes for A4 (plain paper) 25.0 page per minutes for Letter (plain paper) 12.0 page per minutes for A4 (thick paper1/2) 12.5 page per minutes for Letter (thick paper1/2)	
	Duplex (double-sided) Monochrome/Full color: 24.0 sheet per minutes for A4 (plain paper) 25.0 sheet per minutes for Letter (plain paper) 12.0 sheet per minutes for A4 (thick paper1/2) 12.5 sheet per minutes for Letter (thick paper1/2)	
Fixed zoom ratios	Metric area	Enlargement: x4.00, x2.00, x1.41, x1.15 Reduction: x0.86, x0.70, x0.50, x0.25
	Inch area	Enlargement: x4.00, x2.00, x1.54, x1.29 Reduction: x0.78, x0.64, x0.50, x0.25
Variable zoom ratios	Platen: x 0.25 to x4.00 (in x0.01 increments) ADF: x 0.25 to x2.00 (in x0.01 increments)	

## 2.3 Media

Type		Paper source (maximum tray capacity)	
		Tray 1	Tray 2
Media type	Plain paper (60 to 90 g/m <sup>2</sup> ; 16 to 24 lb)	100 sheets	250 sheets
	Thick 1 (91 to 150 g/m <sup>2</sup> )	20 sheets	20 sheets
	Thick 2 (151 to 210 g/m <sup>2</sup> )		
	Label		
	Letterhead		
	Glossy 1 (100 to 128 g/m <sup>2</sup> )		
	Glossy 2 (129 to 158 g/m <sup>2</sup> )		
	Postcard		
Envelope	10 sheets	-	
Media dimensions	Width	92 to 216 mm* (3.6 to 8.5 inch)	92 to 216 mm (3.6 to 8.5 inch)
	Length	148 to 356 mm* (5.8 to 14.0 inch)	148 to 297 mm (5.8 to 11.7 inch)

\*: If the width set 210 mm to 216 mm, the max. length is to 279.4 mm.

## 2.4 Machine specifications

Power requirements	Voltage:	AC 100 V, 120 V, 220 to 240 V	
	Current:	100 V	9.7 A
		110 V	8.2 A
		120 V	8.2 A
		127 V	8.2 A
		220 to 240 V	4.4 A
Frequency:	50 to 60 Hz		
Max power consumption	1,000 W or less (100 V, 120 V) 900 W or less (110 V) 1,100 W or less (127 V, 220-240 V) Power save mode: 34 W or less		
Dimensions	421.5 (W) x 544 (D) x 476 (H) mm 16.6 (W) x 21.42 (D) x 18.74 (H) inch *Manual paper feed is not included.		
Weight	Approx. 27.7 kg (61.1 lb) or less without consumables Approx. 32.5 kg (71.7 lb) or less with consumables		
Operating noise	During standby : 33 dB (A) or less During printing : 52.5 dB (A) or less During copying : 53.5 dB (A) or less		

## 2.5 Operating environment

Temperature	10 °C to 30 °C / 50 °F to 86 °F (with a fluctuation of 10 °C / 18 °F or less per hour)
Humidity	15% to 85% (with a fluctuation of 10% or less per hour)

## 2.6 Print functions

Type	Built-in printer controller
RAM	128 MB (MFP board/1) 256 MB (MFP board/2)
HDD	40 GB (User's usage area)
Interface	USB 2.0 (High Speed) compliant 10Base-T/100Base-TX/1000Base-T Ethernet, Host USB (PictBridge1.0 USB Device Printing) RJ-45 connector
Supported protocols	TCP/IP, IPX/SPX, Ethertalk, UDP
Print speed	20 pages/min. (A4S/LetterS, 1-sided print, plain paper) 12 pages/min. (A4S/LetterS, 1-sided print, thick paper)
Printer language	PostScript3 (3016) PCL 5 e/c, PCL 6 (XL3.0) XPS (Version1.0) PDF Direct Printing (Version 1.7) JPEG/TIFF Direct Print
Print resolution	600 x 600 dpi x 3bit
Printer fonts	PCL: 80 fonts, PostScript3: 137 fonts

Supported operating system	Windows Server 2008/Server 2003/Server 2008 x64 Edition/Server 2003 x64 Edition Netware 4/5/6 Windows 7/Vista (ServicePack1)/7 x64 Edition /Vista x64 Edition/ XP (ServicePack2 or later)/XP x64 Edition/ Mac OS X (10.3/10.4/10.5/10.6) Linux SUSE Linux Enterprise Desktop 10 (CUPS Ver. 1.1.23) Red Hat Enterprise Linux 5 Desktop (CUPS Ver. 1.2.4)	
Printer driver	PCL driver	Windows 7/Vista/Server 2008/XP/Server 2003 Windows 7/Vista/Server 2008/XP/Server 2003 64bit Windows 7/Vista/Server 2008/XP/Server 2003 printer driver for monochrome printing Windows 7/Vista/Server 2008/XP/Server 2003 64bit printer driver for monochrome printing
	PostScript driver	Windows 7/Vista/Server 2008/XP/Server 2003 Windows 7/Vista/Server 2008/XP/Server 2003 64bit Mac OS X (10.3/10.4/10.5/10.6) Mac OS X (10.3/10.4/10.5/10.6) printer driver for monochrome printing Linux printer driver (PPD for CUPS)
	PostScript PPD driver	Mac OS X (10.3/10.4/10.5/10.6) Red Hat Enterprise Linux 5 Desktop SUSE Linux Enterprise Desktop 10
	XPS driver	Windows 7/Vista/Server 2008 Windows 7/ Vista/Server 2008 64bit
	PC FAX driver	Windows 7/Vista/Server 2008/XP/Server 2003 Windows 7/Vista/Server 2008/XP/Server 2003 64 bit

## 2.7 Scan functions

Scannable range	Based on copy specifications
Scan Speed (ADF scan, resolution 300 dpi)	Monochrome: 20 pages/min (A4/Letter) Full color: 10 pages/min (A4/Letter)
Functions	Scan to E-mail, Scan to FTP, Scan to SMB, Scan to USB memory
Scanning resolution	150 x 150 dpi, 300 x 300 dpi (Network Twain: 150/300/600/1,200/2,400/4,800 dpi)
Supported operation system	Windows 7/Vista/Server 2008/XP/Server 2003 Mac OS X (10.3/10.4/10.5/10.6)
Drivers	TWAIN Driver for Windows 7/Vista/Server 2008/XP/Server 2003 TWAIN Driver for Mac OS X (10.3/10.4/10.5/10.6) WIA Driver for Windows 7/Vista/Server 2008/XP WIA Driver for Windows 7/Vista/Server 2008/XP 64bit
Output file format	TIFF, PDF, JPEG

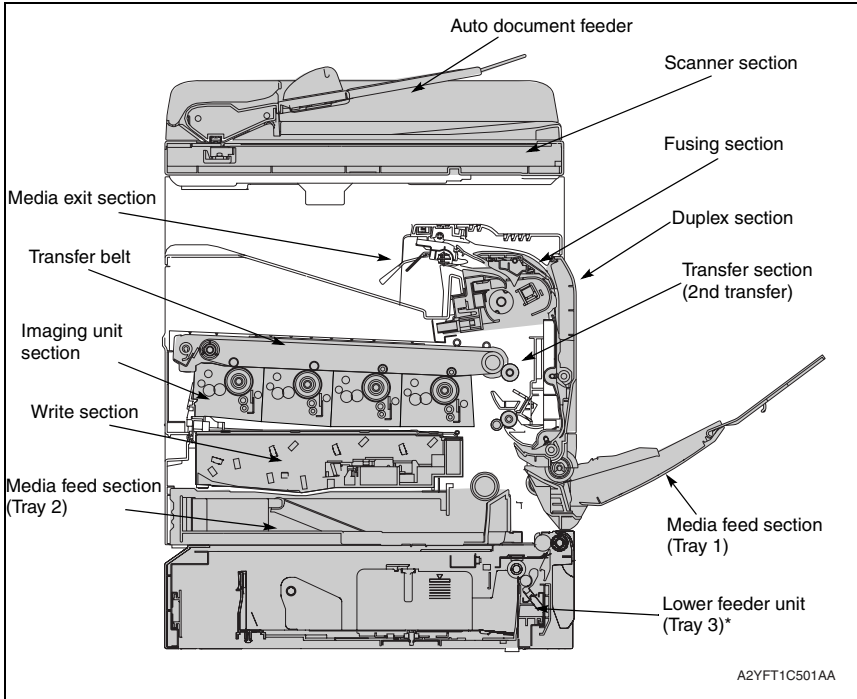
## 2.8 Fax functions

Applicable lines	PSTN (Public Switched Telephone Network), PBX (Private Branch Exchange)	
Resolution	Standard (203 dpi x 98 dpi)	
	Fine (203 dpi x 196 dpi)	
	Super fine (203 dpi x 392 dpi)	
Compatibility	ECM/Super G3	
Modem speed	2.4 to 33.6 kbps	
Transmit speed	3 second/page (A4, V.34, 33.6 kbps, JBIG)	
Coding method	MH/MR/MMR/JBIG	
Memory for receiving	6 MB (approx. 384 pages)	
Paper size	A4S, LegalS, LetterS, 8 1/2x13 1/2S	
Paper type	Plain paper, recycled paper	
Functions	Speed dial	220
	Group dial	20 groups (50 destination stations for one group)
	Broadcast	Available maximum 236 stations. (Speed dial 220 stations, full dial 16 stations)
	Other supported functions	Timer transmission, address book, automatic redial, smoothing

### NOTE

- These specifications are subject to change without notice.

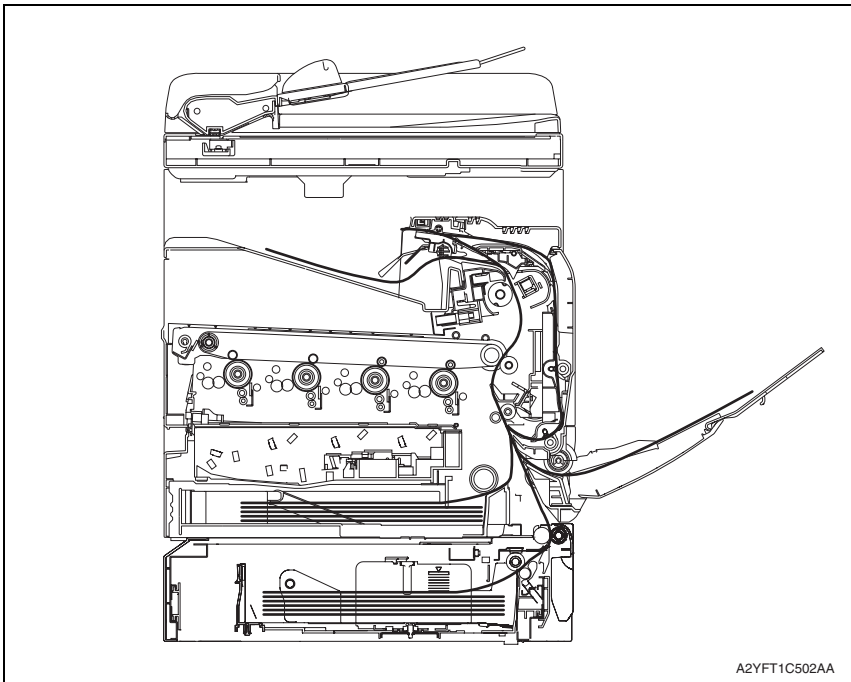
### 3. SECTION CONFIGURATION



\*: option



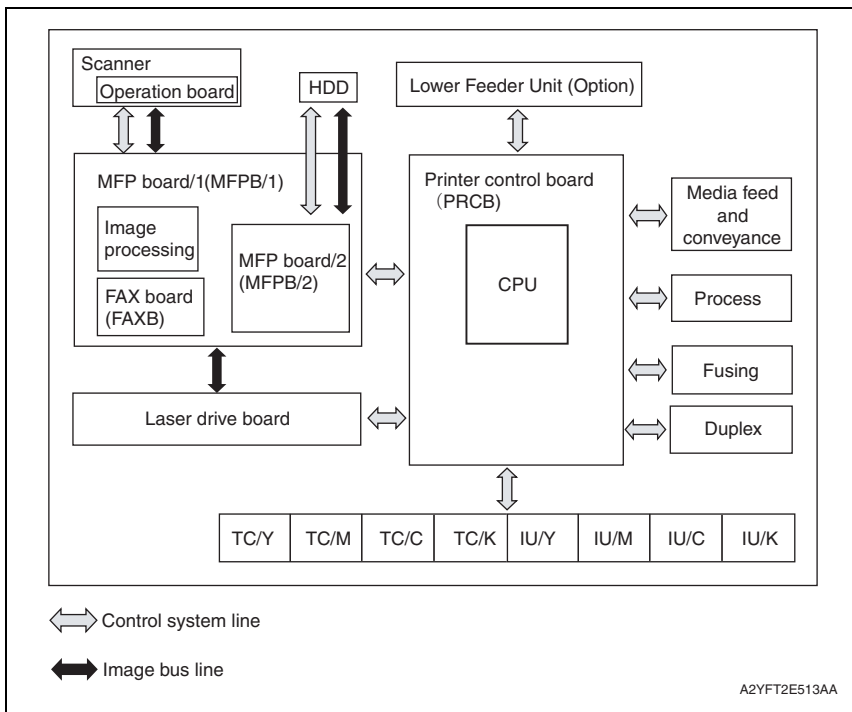
# 4. MEDIA PATH



# COMPOSITION/OPERATION

## 5. OVERALL COMPOSITION

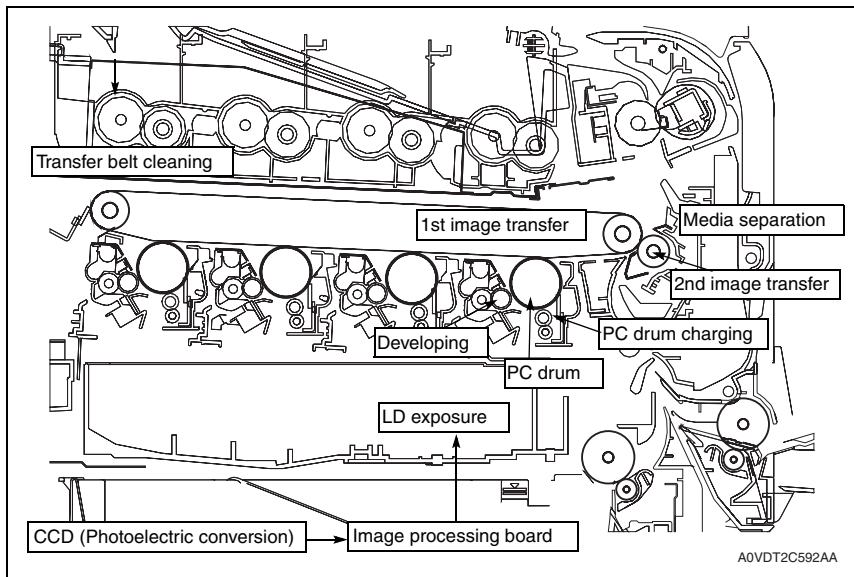
### 5.1 Control block diagram



bizhub C25

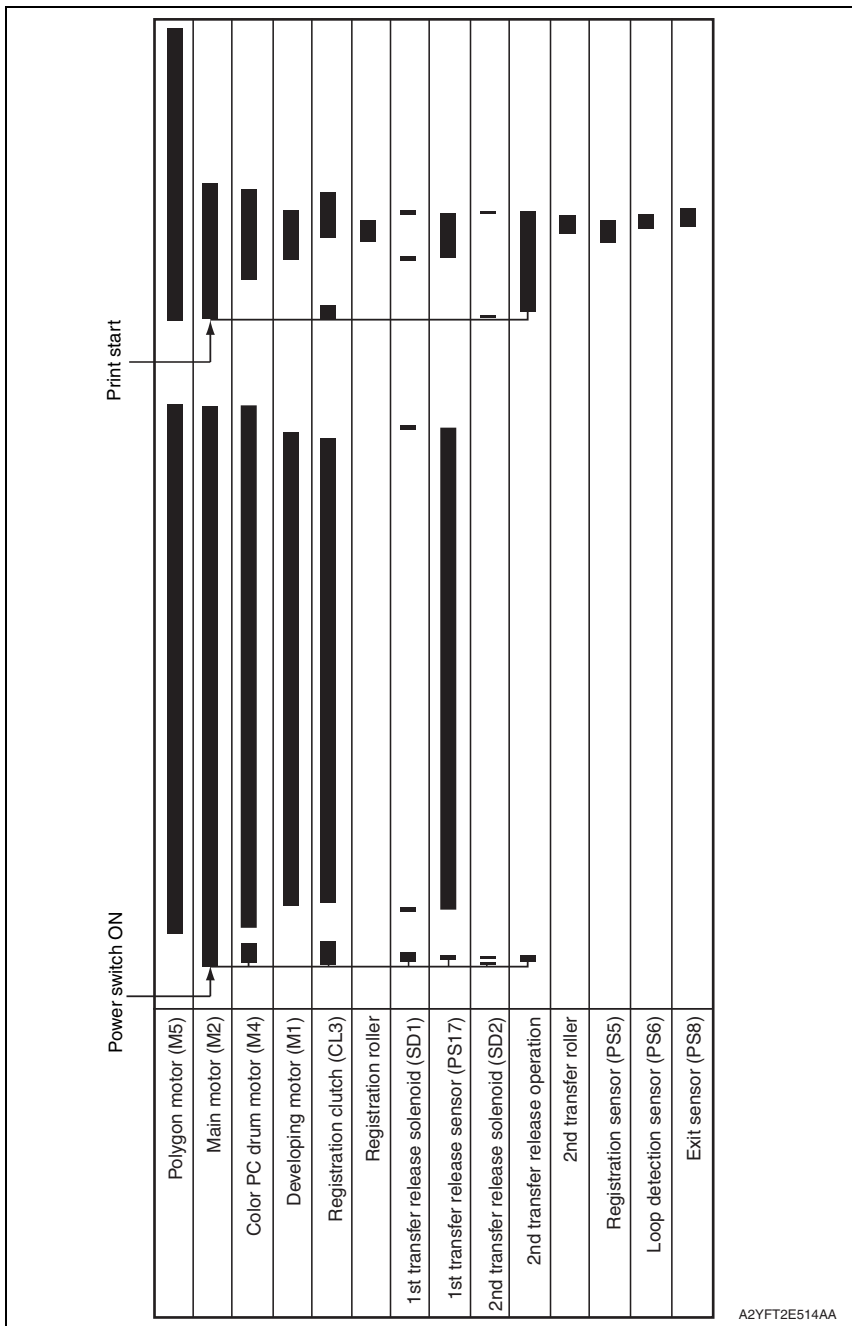
COMPOSITION/  
OPERATION

## 5.2 Image creation process



[1]	CCD (Photoelectric conversion)	<ul style="list-style-type: none"> <li>Light reflected off the surface of the original is converted to a corresponding electric signal by CCD and the resultant electric signal is sent to the image processing board.</li> </ul>
[2]	Image processing board	<ul style="list-style-type: none"> <li>The intensity of the laser light is controlled based on the image signal transmitted to CCD.</li> </ul>
[3]	PC drum	<ul style="list-style-type: none"> <li>The image of the original projected onto the surface of the PC drum is changed to a corresponding electrostatic latent image.</li> </ul>
[4]	PC drum charging	<ul style="list-style-type: none"> <li>Apply DC (-) charge to the photo conductor.</li> </ul>
[5]	LD exposure	<ul style="list-style-type: none"> <li>The surface of the PC drum is irradiated with laser light, and an electrostatic latent image is thereby formed.</li> </ul>
[6]	Developing	<ul style="list-style-type: none"> <li>The toner, agitated and negatively charged in the toner chamber, is attracted onto the electrostatic latent image formed on the surface of the PC drum. It is thereby changed to a visible, developed image.</li> </ul>
[7]	1st image transfer	<ul style="list-style-type: none"> <li>A DC positive voltage is applied to the backside of the transfer belt, thereby allowing the visible, developed image on the surface of each of the PC drums (Y, M, C and K) to be transferred onto the transfer belt.</li> </ul>
[8]	2nd image transfer	<ul style="list-style-type: none"> <li>A DC positive voltage is applied to the backside of the media, thereby allowing the visible, developed image on the surface of the transfer belt to be transferred onto the media.</li> </ul>
[9]	Media separation	<ul style="list-style-type: none"> <li>The media, which has undergone the 2nd image transfer process, is neutralized so that it can be properly separated from the transfer belt.</li> </ul>
[10]	Transfer belt cleaning	<ul style="list-style-type: none"> <li>The residual toner left on the surface of the transfer belt is scraped off.</li> </ul>
[11]	PC drum cleaning	<ul style="list-style-type: none"> <li>The residual toner left on the surface of the PC drum is scraped off.</li> </ul>

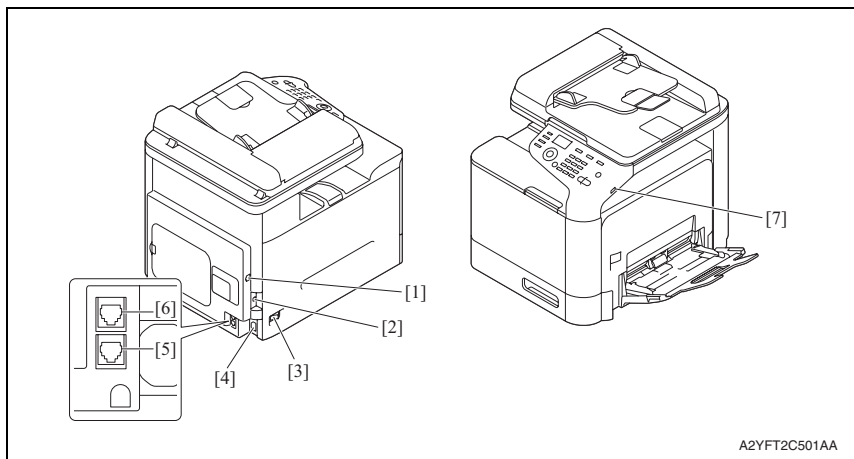
### 5.3 Timing chart at main body power on



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# 6. INTERFACE SECTION

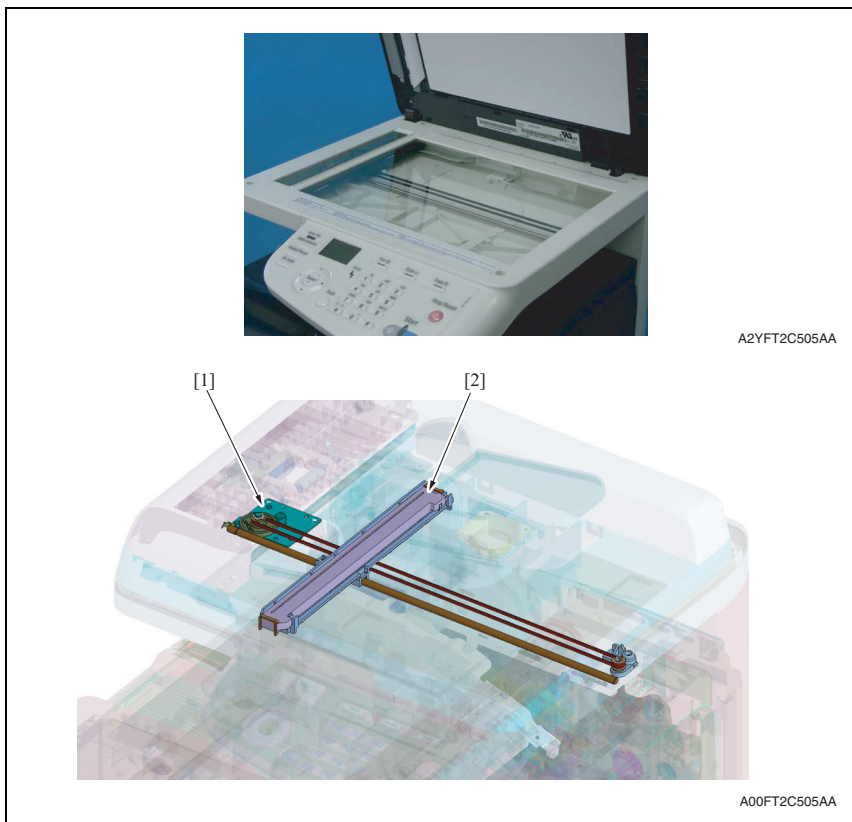
## 6.1 Composition



No.	Type	Use
[1]	10Base-T/100Base-TX/1000Base-T Ethernet interface port	For network
[2]	USB port	For PC connection
[3]	Power switch	For power OFF/ON
[4]	Power connection	For power connection
[5]	LINE (telephone line) jack	For line connection
[6]	TEL (telephone) jack	For telephone connection
[7]	USB HOST port	For connection of USB device

## 7. SCANNER SECTION

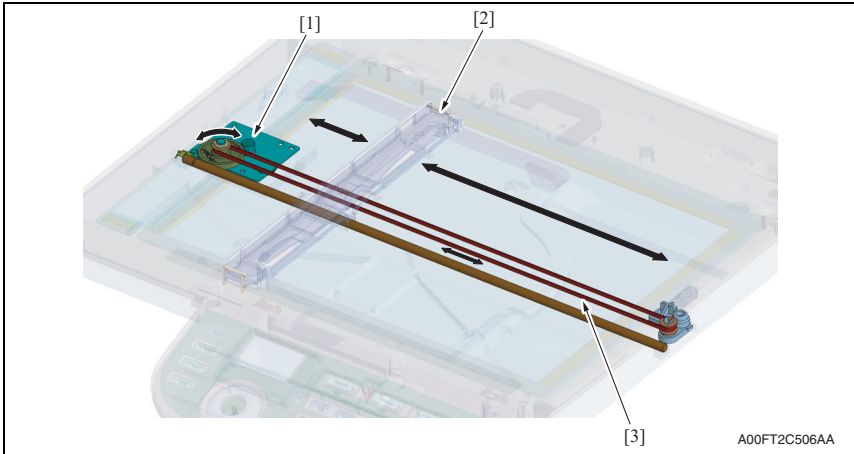
### 7.1 Composition



[1] Scanner motor (M101)

[2] Scanner unit

## 7.2 Drive



[1] Scanner motor (M101)

[3] Drive belt

[2] Scanner unit

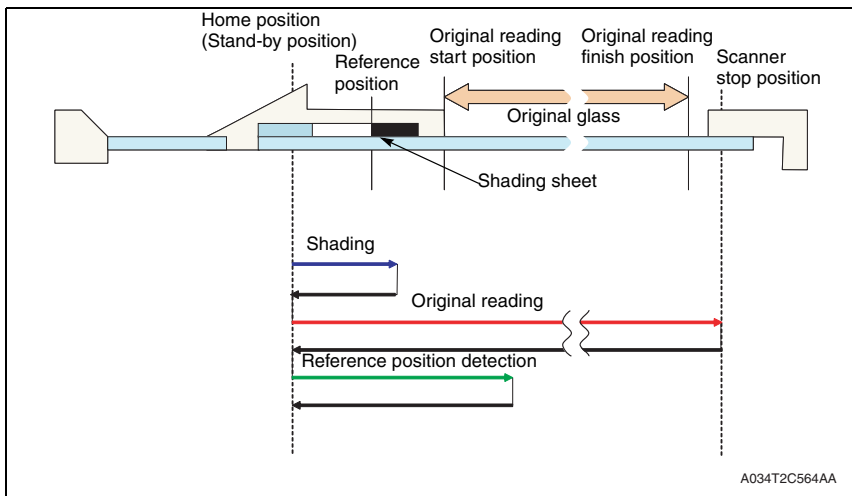
### 7.3 Operation

#### 7.3.1 When the Start key is pressed

##### A. Original reading mode

##### (1) Original cover mode

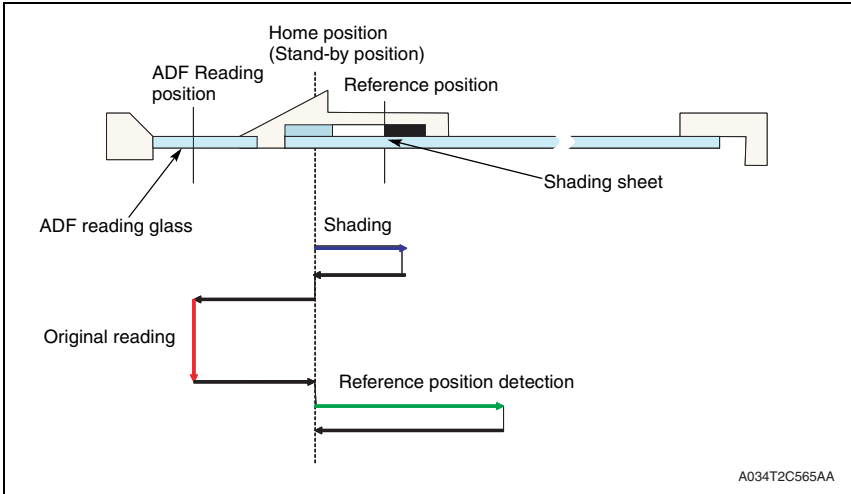
1. Press the start key, and the LED lights ON.
2. The exposure units moves from the home position (stand-by position) reading the shading sheet to make a shading compensation.
3. The exposure units moves to the stand-by position.
4. Original image reading starts from the start position of original reading.
5. When the original reading completes, it moves to scanner stop position.
6. After the reading completes, the exposure lamp lights OFF and it moves to the stand-by position.
7. It moves again to detect the reference position.
8. It moves to the stand-by position and stops there.





**(2) DF mode**

1. Press the start key, and the LED lights ON.
2. The exposure units moves from the home position (stand-by position) reading the shading sheet to make a shading compensation.
3. The exposure units moves to the stand-by position.
4. It moves to ADF reading position and original image reading starts.
5. After the reading completes, the exposure lamp lights OFF and it moves to the stand-by position.
6. After it moves again to detect the reference position, it moves to the stand-by position and stops there.

**7.3.2 Home position detection**

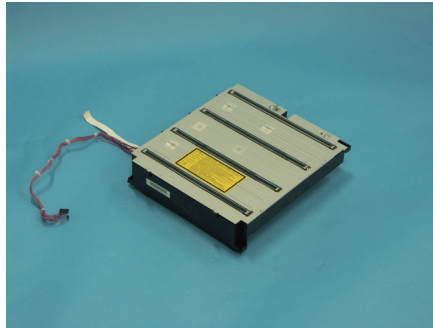
- Reading parts doesn't have a sensor to detect the home position of the scanner.
- Therefore the green LED lights on while the scanner is moving so that the reference positions to be the boarder between the white and black of the shading sheet is searched and the scanner moves from that position to the home position where locates far to the given distance. Home position detection is conducted when power is On and the scan completes its moving.

**7.3.3 Shading compensation**

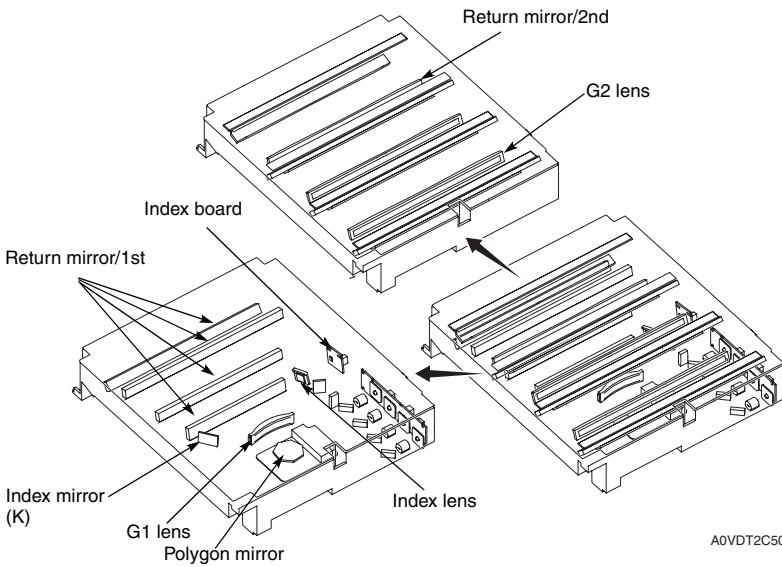
- This shading compensation function compensates reading quality dispersion due to sensitivity uniformity of image element of each CIS sensor or LED light distribution irregularity.
- Shading compensation is carried out immediately before the original glass reading and ADF original reading.

# 8. WRITE SECTION

## 8.1 Composition



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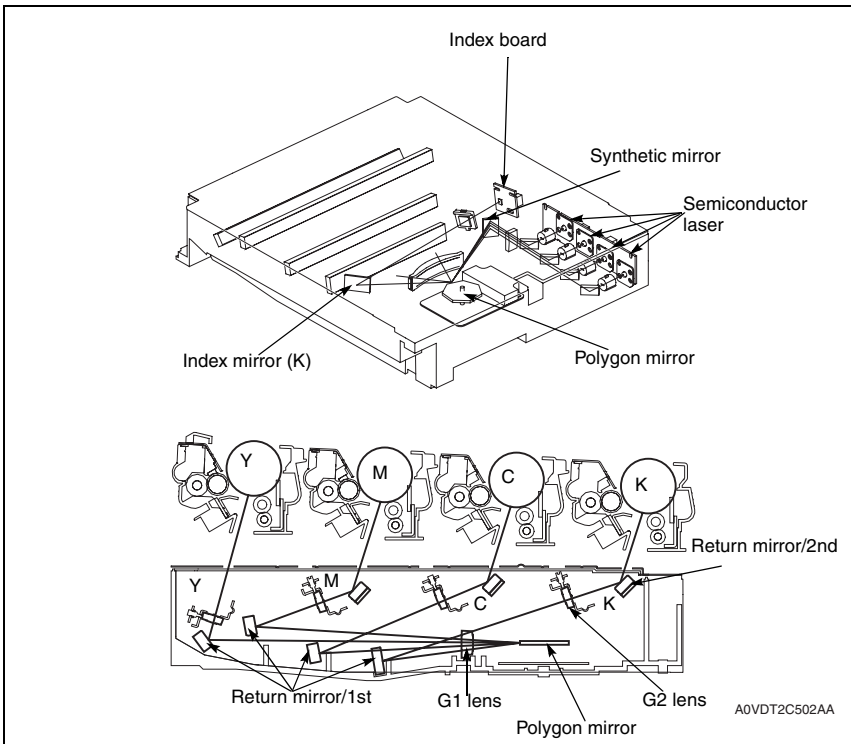
## 8.2 Operation

### 8.2.1 Overview

- A semiconductor laser is provided for each of four different colors. A single polygon motor is used to make a scan.
- Each photo conductor is irradiated with a laser light so that an electrostatic latent image is formed on it.

### 8.2.2 Laser exposure process

1. The laser light emitted by each of the semiconductor laser/Y, M, C, and K is reflected onto the polygon mirror via the synthetic mirror.
2. Since the angle of incidence for each color of laser light varies, the laser light reflected by the polygon mirror is reflected at a different angle for each color.
3. The condensing angle of each color of laser light is corrected by the G1 lens before reaching each return mirror.
4. The laser light of each color is condensed on the surface of the photo conductor through the return mirror/1st, G2 lens, and return mirror/2nd.



### 8.2.3 Laser emission timing

- When a ready signal is detected after the lapse of a given period of time after the print cycle has been started, a laser ON signal is output from the MFP board.
- The laser ON signal triggers the firing of each laser light, which illuminates the index board via the polygon mirror, G1 lens, index mirror (K), and Index lens. This generates an Index signal.
- This Index signal unifies the timing at which the laser lights are irradiated for each main scan line.
- The Index signal is generated only from the K laser light. For the other colors, the emission timing is determined with reference to K.

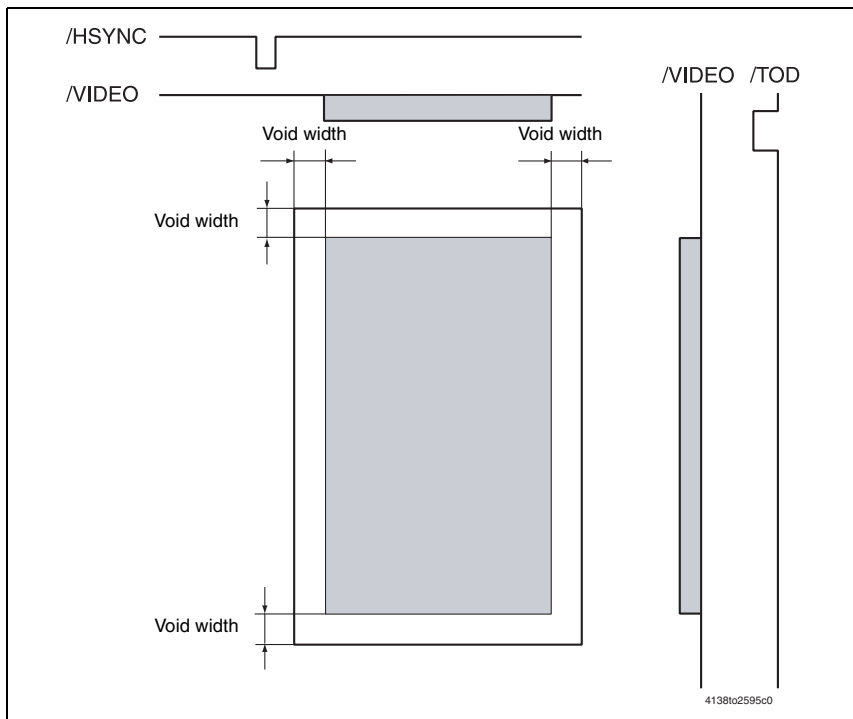
### 8.2.4 Laser emission area

#### A. Main scan direction (FD)

- The print start position in the FD direction is determined by the FD print start signal (HSYNC) that is output from the MFP board and the width of the media.
- The laser emission area is determined by the media size. However, there is a 4.0 mm (copy) /4.2 mm (PC print) wide void area on both the both edges of the media.

#### B. Sub scan direction (CD)

- The print start position in the CD direction is determined by the CD print start signal (TOD) that is output from the MFP board and the length of the media.
- The laser emission area is determined by the media size. However, there is a 4.0 mm (copy) /4.2 mm (PC print) wide void area on both the both edges of the media.



### 8.2.5 Main scan magnification adjustment

- Magnification of the main scan direction is adjusted.
- The main body is mounted with only one IDC sensor and therefore unable to make the main scan magnification adjustment or calculate the skew amount automatically. The main scan magnification adjustment is therefore manually made using the menu on the control panel.
- The adjustment is necessary when replacing the PH unit or EEPROM on the printer control board.

### 8.2.6 Image processing

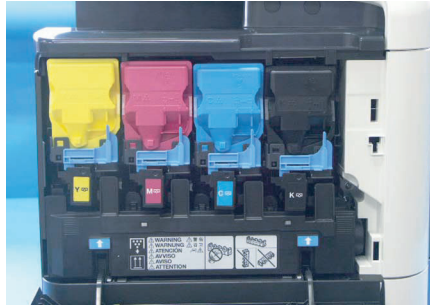
- The following image stabilization functions are available as they relate to the write section. For more details, see “Image stabilization control”.

[See P.92](#)

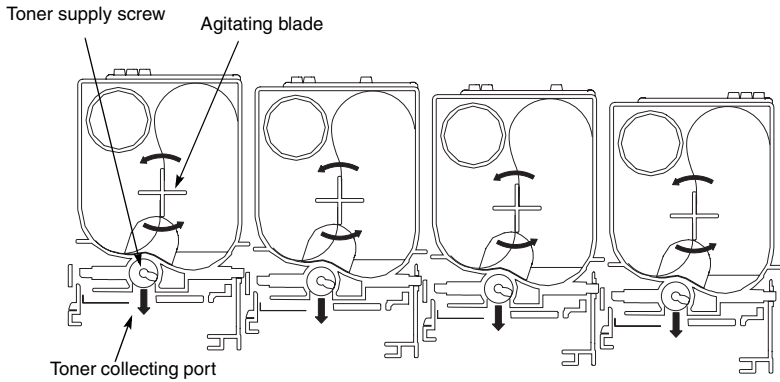
- Laser light intensity correction control
- Color registration correction control (main scan/sub-scan)
- Gamma correction

# 9. TONER SUPPLY SECTION

## 9.1 Composition



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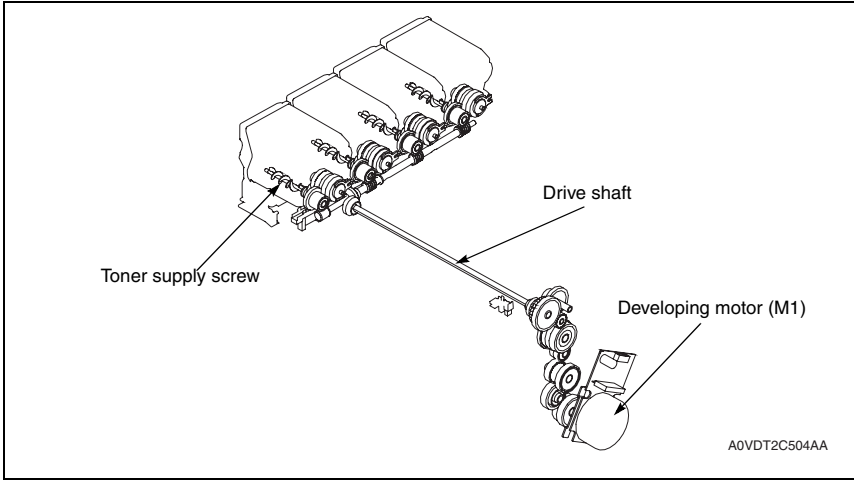


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OPERATION

### 9.2 Drive



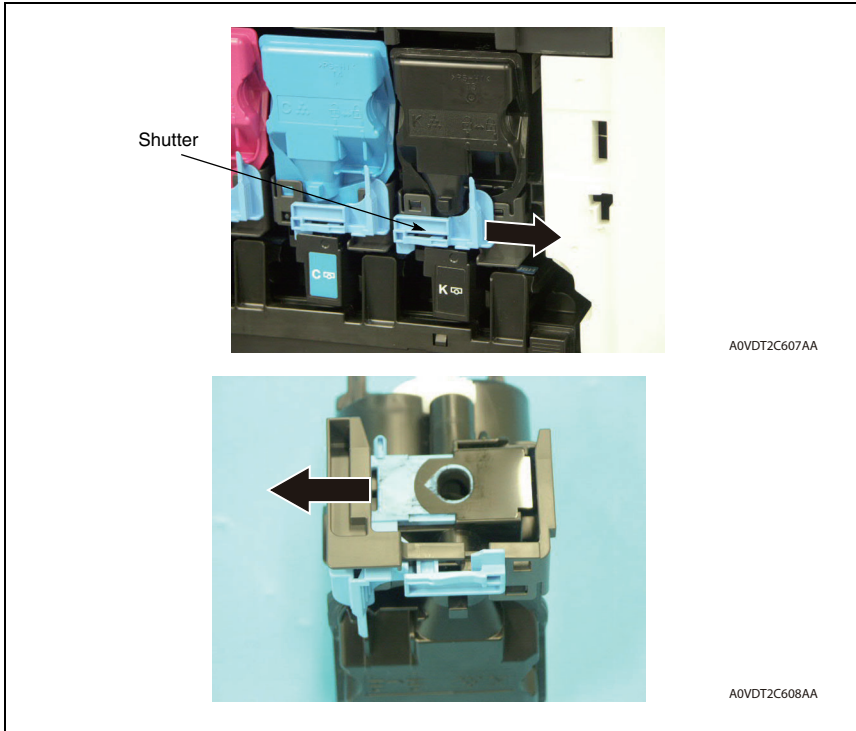
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OPERATION

## 9.3 Operation

### 9.3.1 Toner collecting port shutter mechanism

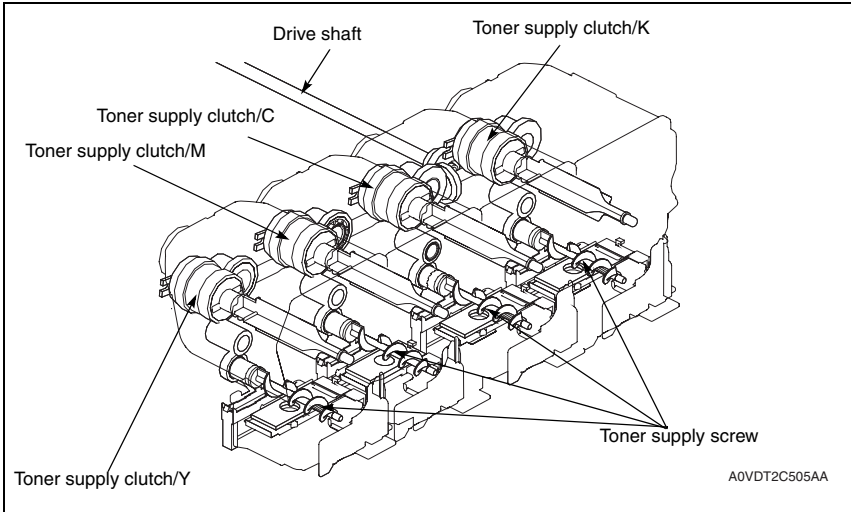
- The toner collecting port is provided with a shutter that prevents toner from being spilled out when the toner cartridge is removed from the main body.
- After installing the toner cartridge into the main body, placing the toner cartridge release lever in its locked position opens the shutter of the toner collecting port. Then toner can be conveyed to the imaging unit.
- Moving the toner cartridge release lever to the right or left accompanies a synchronized movement of the slider to open or close the shutter. The toner collecting port is provided with a shutter that prevents toner from being spilled out when the imaging unit is removed from the main body.





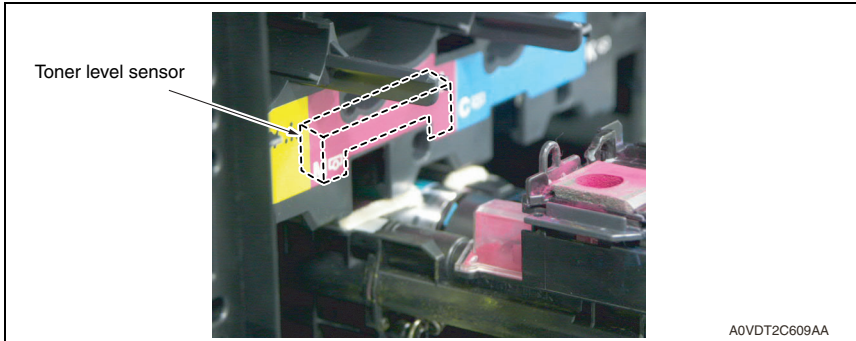
### 9.3.2 Toner replenishing mechanism

- The developing motor is energized by monitoring the condition of the toner level sensor for each color of toner. Toner is then supplied from the toner cartridge to the imaging unit as necessary.
- Rotation of the developing motor transmits the drive to the drive shaft via each gear.
- Rotation of the drive shaft then transmits the drive to the supply screw of the toner cartridge.
- The drive of the supply screw is controlled by the toner supply clutch of each toner cartridge. The supply screw is operated when the toner supply clutch is energized.



### 9.3.3 Toner replenishing control

- The toner level sensor is used to detect the amount of toner in the pre-agitation section (imaging unit), so that the main body can determine whether to replenish the toner or not.
- During developing drive, the toner level sensor measures the amount of toner. If the value detected by the toner level sensor is a predetermined value in V or less, the main body determines that there is a short supply of toner and replenish the toner as necessary.
- When the value detected by the toner level sensor reaches the predetermined value in V or more, the toner replenishing sequence is stopped.



### 9.3.4 Toner cartridge detection

- Different toner cartridge detection methods apply according to the type of toner cartridge: the in-box toner cartridge shipped with the main body and the replacement toner cartridge.

#### A. In-box toner cartridge

- The in-box toner cartridge is not provided with the CSIC board and thus does not allow the user to determine whether a toner cartridge is mounted or not.  
A new print cycle can therefore be started even when each of the toner cartridges is not mounted.

#### B. Replacement toner cartridge

- The main body accesses the CSIC board when the front door is closed or the power switch is turned ON, thereby determining whether or not the toner cartridge is mounted.
- After the toner cartridge has been detected, the main body then determines whether the cartridge is new or not.

#### C. Combination of alternative (used) toner cartridge

- The main body allows an alternative (used) toner cartridge to be used among main body variations of the same model in consideration of a case in which a new toner cartridge is not ready when the toner near-empty or empty message appears.  
When the alternative toner cartridge is mounted, the consumption rate display succeeds the information of the alternative toner cartridge.

### 9.3.5 Toner consumption rate detection

- The toner consumption rate is calculated based on the toner supply time (the period of time the toner supply clutch is energized).
- The toner level (approximate threshold) can be checked with Statistics Page, control panel, or PageScope Web Connection.

### 9.3.6 Toner life detection

- A near life (near-empty) condition of the toner cartridge is detected based on the toner supply time (the period of time the toner supply clutch is energized) of each color of toner.
- When a near life condition is detected, a corresponding message will appear on the control panel.
- A life (empty) condition of the toner cartridge is detected by the toner level sensor.
- If the toner level sensor detects a life (empty) condition and toner is not replenished after the lapse of a predetermined period of time thereafter, the main body determines that there is an empty condition, giving a corresponding message on the control panel and stopping to operate.

### 9.3.7 Toner near-empty condition detection

- The target value for the toner near-empty condition (toner level) detection is as follows.

Toner cartridge	Toner level (target value)
In-box toner cartridge: Equivalent to 2,000 images (Y,M,C)*	15%
In-box toner cartridge: Equivalent to 2,000 images (K)*	25%
Toner cartridge: Equivalent to 4,500 images (Y,M,C)*	25%
Toner cartridge: Equivalent to 5,000 images (K)*	

\*: Based on the 5% chart.

- The toner near-empty condition is reset when a new toner cartridge is detected.

### 9.3.8 Toner empty condition detection

- A sequence is started for detecting a toner empty condition when a toner near-empty condition is detected.

The main body determines that there is a toner empty condition when the toner level sensor output value exceeds a predetermined value and if the following event is detected a predetermined number of consecutive times: the output value of the toner level sensor exceeds a predetermined value for more than a predetermined period of time.

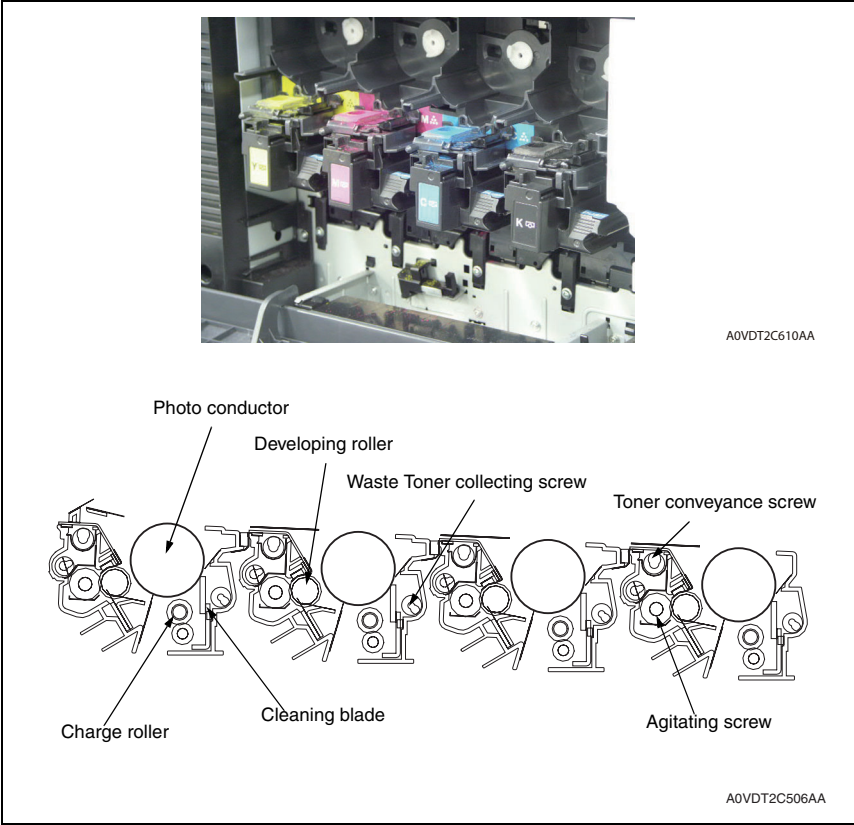
- The consecutive detection count is retained in memory even when the power switch is turned OFF.
- The toner empty condition is reset when a new toner cartridge is detected.

### 9.3.9 Monochrome prints

- The color print is disabled when any of the C, M, and Y toner cartridges is empty. Monochrome print only is, however, enabled if the K toner cartridge is not empty.
- The monochrome print is also controlled by the ordinary near-empty and empty condition detection methods.

# 10. IMAGING UNIT SECTION (overall composition)

## 10.1 Composition



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OPERATION

## 10.2 Operation

### 10.2.1 Imaging unit detection

- Different imaging unit detection methods apply according to the type of imaging unit: the in-box imaging unit shipped with the main body and the replacement imaging unit.

#### A. In-box imaging unit

- The in-box imaging unit has no CSIC board and the toner level sensor is used to determine whether the imaging unit is mounted or not.
- The detection is made during the print cycle and image stabilization sequence.
- When the imaging unit not being mounted during printing is detected, it is determined as paper misfeed at the stabilizing part.  
Though the paper may be discharged in cases such as with small papers, it is still detected as paper misfeed.

#### B. Replacement imaging unit

- The main body accesses the CSIC board when the front door is closed or the power switch is turned ON, thereby determining whether or not the imaging unit is mounted.
- After the imaging unit has been detected, the main body then determines whether the imaging unit is new or not.

#### C. Combination of alternative (used) imaging unit

- The main body allows an alternative (used) imaging unit to be used among main body variations of the same model in consideration of a case in which a new imaging unit is not ready when the imaging unit near-life or life message appears.  
When the alternative imaging unit is mounted, the consumption rate display succeeds the information of the alternative imaging unit.

### 10.2.2 Imaging unit consumption rate detection

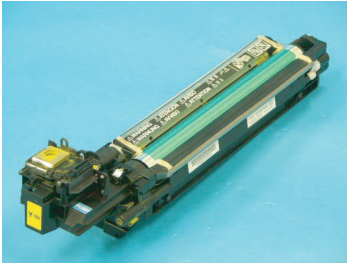
- The consumption rate is calculated based on the period of time through which the main motor and the color PC drum motor are energized and displayed on the Statistics Page, control panel and PageScope Web Connection.

### 10.2.3 Imaging unit life detection

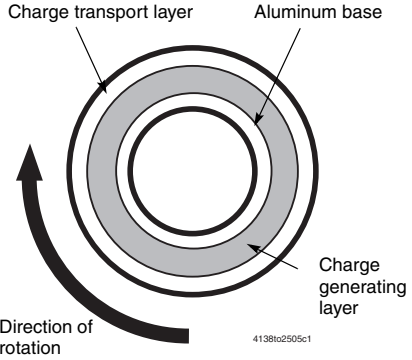
- The life of the imaging unit is determined based on the main motor drive time, color PC drum motor drive time, and the number of printed pages produced.
- When any one of the main motor drive time, color PC drum motor drive time, and the number of printed pages produced reaches a life value, the near-life and life message is displayed on the control panel.
- When the life value (empty) is reached, the main body is brought to a stop and a message prompting replacement is displayed on the control panel.

# 11. IMAGING UNIT SECTION (photo conductor)

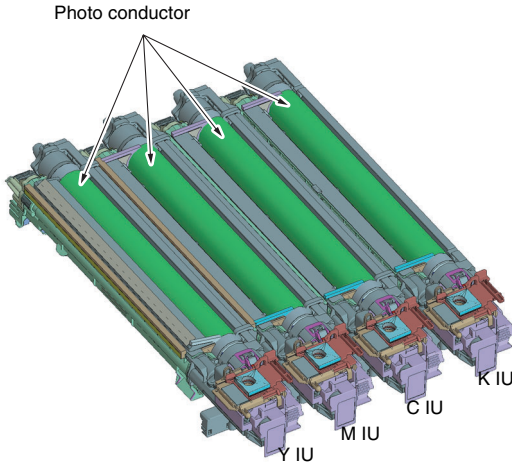
## 11.1 Composition



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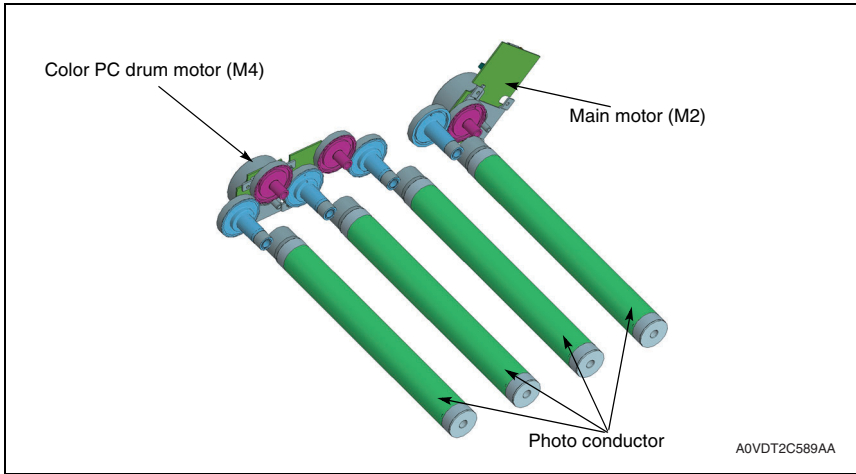


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OPERATION

## 11.2 Drive



## 11.3 Operation

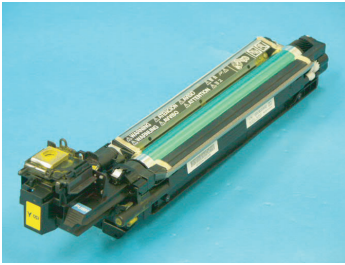
### 11.3.1 Photo conductor drive mechanism

- Motors are used for the drive mechanism independently of the developing system to suppress incorrect color registration and uneven pitch.
- Because the drive for the color imaging unit is stopped in the monochrome mode, different motors are used to drive the color photo conductors and black photo conductor.
- The color PC drum motor drives the photo conductor/Y, M, and C, while the main motor drives the photo conductor/K.
- In addition to the photo conductor/K, the main motor also drives the transfer system, media feed system, and synchronizing drive system.

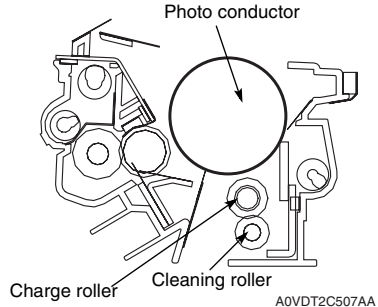


## 12. IMAGING UNIT SECTION (charge corona)

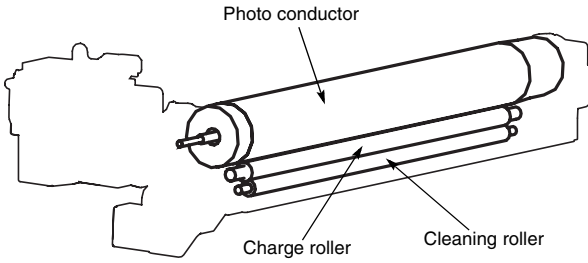
### 12.1 Composition



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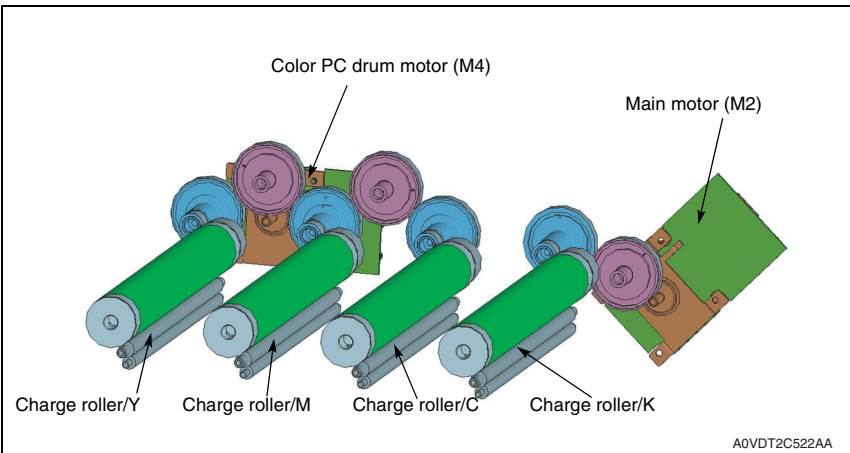


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### 12.2 Drive

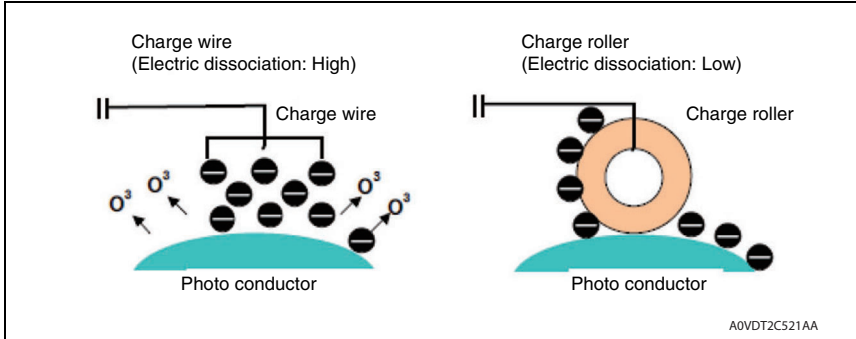


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## 12.3 Operation

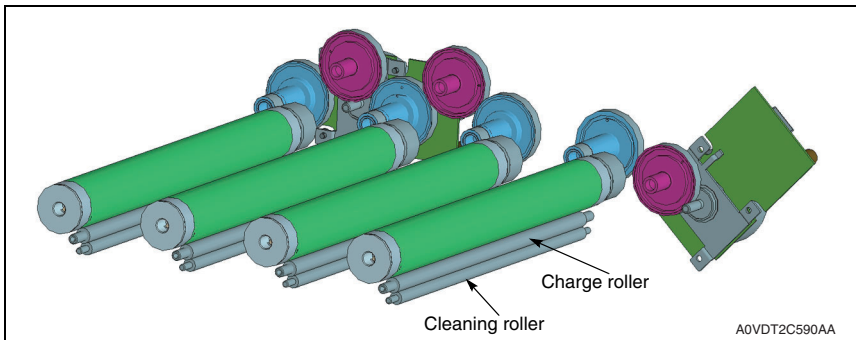
### 12.3.1 Charge roller

- Charge rollers are used for charging the photo conductor.
- As compared with the charge wire, the charge roller applies a lower voltage and thus produces a smaller amount of ozone. The main body is not therefore mounted with any ozone filter.
- The charge roller is driven to follow the movement of the photo conductor.



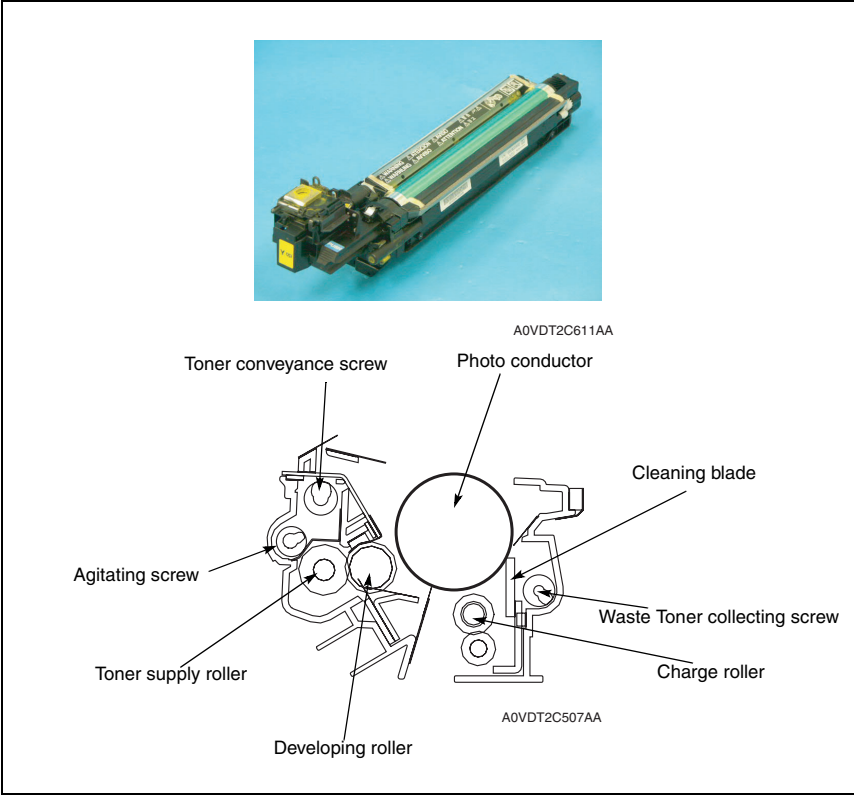
### 12.3.2 Cleaning roller

- The cleaning roller removes toner stick to the charge roller.
- The cleaning roller is driven to follow the movement of the charge roller.



# 13. IMAGING UNIT SECTION (developing)

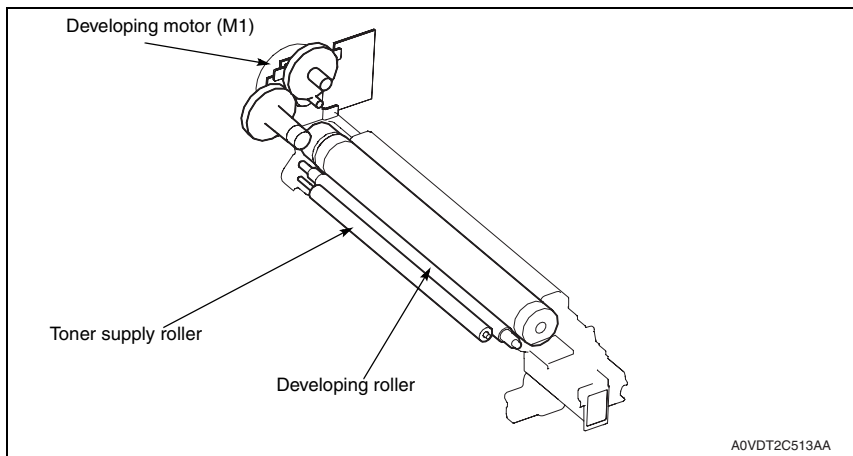
## 13.1 Composition



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### 13.2 Drive



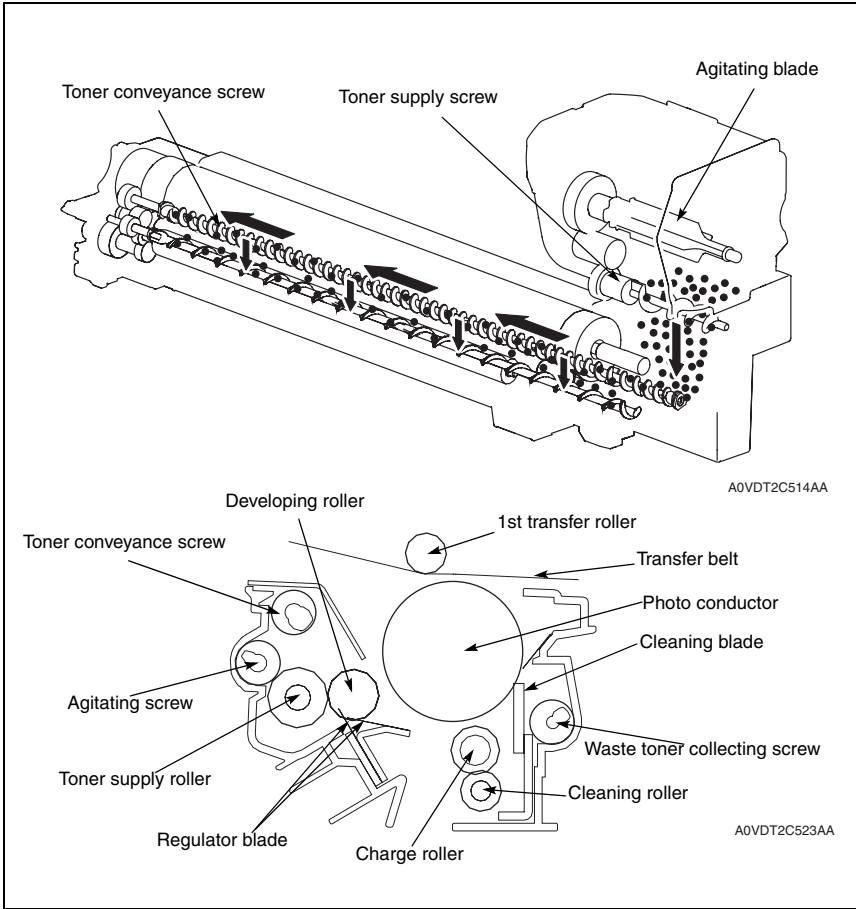
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OPERATION

## 13.3 Operation

### 13.3.1 Toner flow

1. Toner stored in the toner cartridge is agitated by the agitating blade and conveyed onto the front side of the toner cartridge by the toner supply screw.
2. Toner conveyed onto the front side of the toner cartridge is conveyed through the toner collecting port and then conveyed to the imaging unit collecting port.
3. The toner conveyed to the collecting port is conveyed into the toner chamber by the conveyance screw.
4. The toner level detection system of the imaging unit (the sensor is mounted on the main body side) detects, at this time, the level of toner still available for use in the toner chamber.
5. Toner conveyed onto the rear side of the toner chamber is fed to the toner supply roller via the agitating screw.
6. Toner fed to the supply roller is conveyed onto the developing roller.  
At this time, the regulator blade/1st and /2nd regulate the height of toner on the surface of the developing roller.
7. Toner on the developing roller is fed to the electrostatic latent image formed on the surface of the photo conductor.
8. Toner left on the developing roller is neutralized and returned to the supply roller.
9. The toner on the surface of the photo conductor is transferred onto the transfer belt.
10. Toner left on the surface of the photo conductor is scraped off by the cleaning blade.
11. The toner scraped off by the cleaning blade is conveyed to the waste toner conveyance section by the waste toner collecting screw.
12. The toner conveyed by the toner collecting screw is conveyed and stored as waste toner in the waste toner bottle.

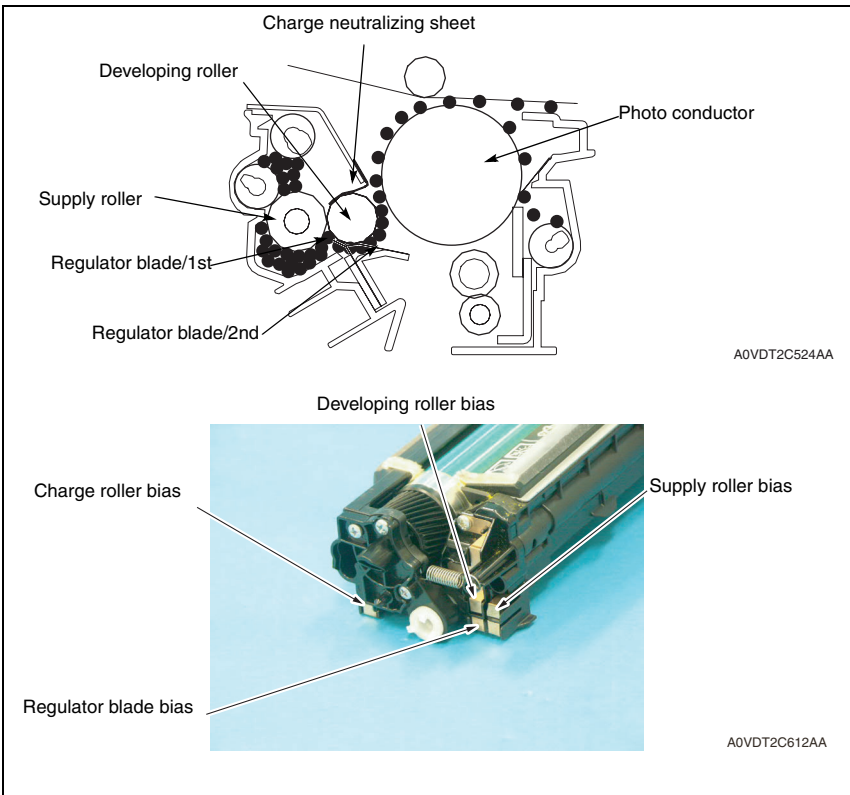


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COMPOSITION/  
OPERATION

### 13.3.2 Developing system

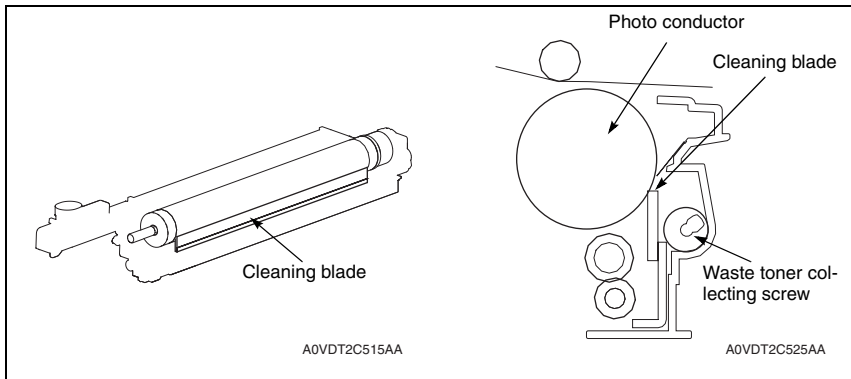
- Two types of developing systems are used, a non-contact developing system and an alternating current application system.
  1. A negative charge (supply bias voltage  $V_r$ ) is applied the supply roller to regulate the amount of toner sticking to the developing roller.
  2. A negative charge (blade bias voltage  $V_{b1}$ ) is applied to the regulator blade/1st to negatively charge the toner and form a thin layer of toner.
  3. Toner on the surface of the developing roller is evened out by the regulator blade/2nd.
  4. During development, DC + AC developing bias voltage ( $V_b$ ) is applied to developing roller. The AC component of the developing bias voltage is applied only during development. At any time other than the development, only the DC component of the developing bias voltage is applied.
  5. The developing roller causes the toner to stick to the photo conductor when the AC component of the developing bias voltage is negative. The voltage and time length of the negative component determine the image density.
  6. A negative charge (charge neutralizing bias voltage: same potential as the developing bias) is applied to the charge neutralizing sheet to neutralize any toner left on the surface of the developing roller. The neutralized toner is returned to the supply roller.



### 13.3.3 Cleaning mechanism

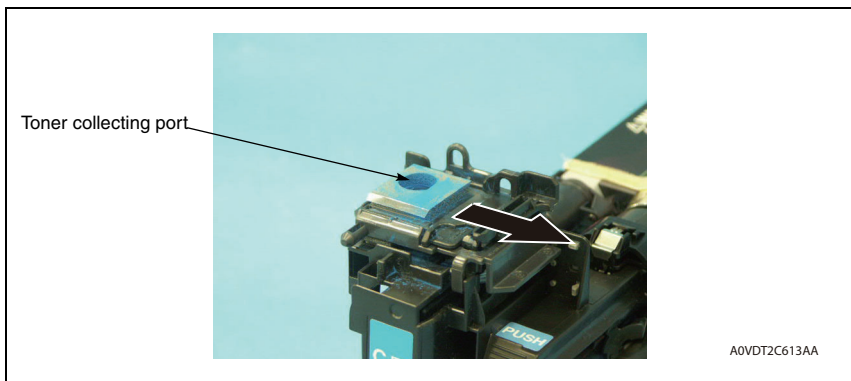
#### A. Cleaning operation

1. The cleaning blade is pressed against the surface of the photo conductor to remove toner left off the surface (fixed blade system).
2. The toner, which has been scraped off by the cleaning blade, is conveyed by the waste toner collecting screw and collected in the waste toner transport section.



### 13.3.4 Toner collecting port shutter mechanism

- The toner collecting port is equipped with a shutter mechanism that prevents toner from being spilled out when the imaging unit is removed from the main body.
- The shutter of the toner collecting port is operatively connected to the toner cartridge release lever. Operating the toner cartridge release lever to the right or left opens or closes the shutter of the imaging unit.



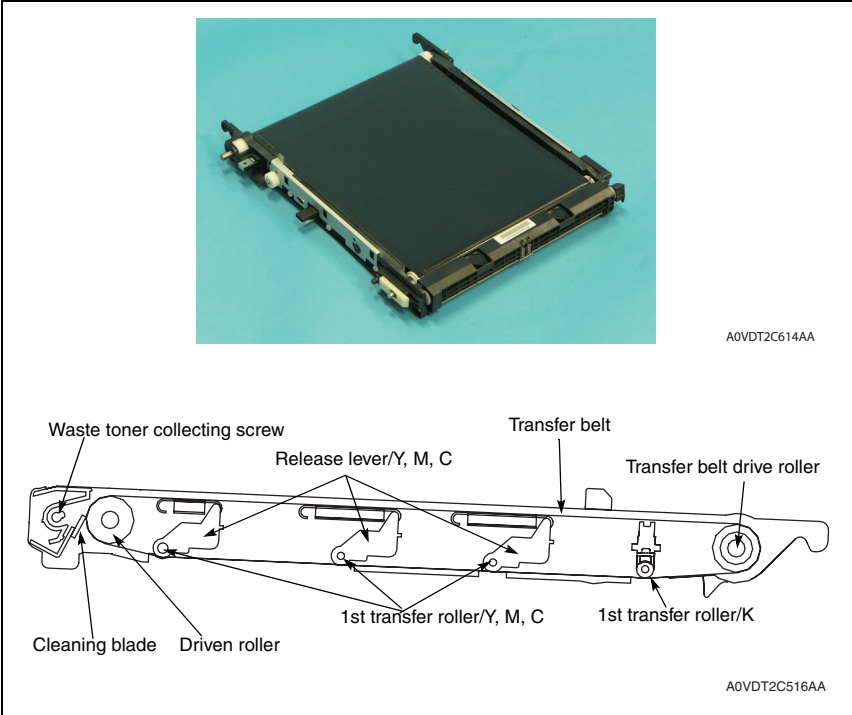
### 13.3.5 Image processing

- The following image stabilization functions are available as they relate to the imaging unit section (developing). For more details, see "Image stabilization control".  
[See P.92](#)
- Developing bias correction
- Control of the maximum amount of toner sticking to the transfer belt

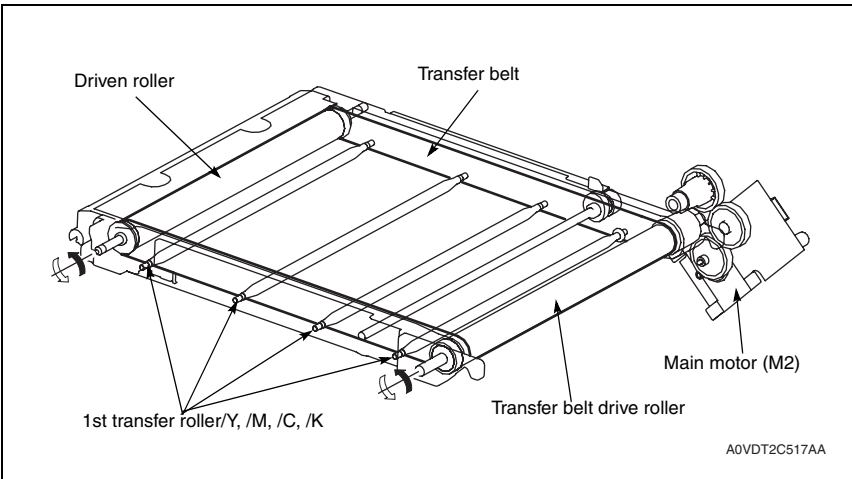


# 14. TRANSFER SECTION (1st transfer)

## 14.1 Composition



## 14.2 Drive



bizhub C25

COMPOSITION/  
OPERATION

## 14.3 Operation

### 14.3.1 1st transfer output control

- To transfer the toner image from the photo conductor to the transfer belt, the transfer voltage is applied to the 1st transfer roller.
- A charge of the same potential is applied to each of the 1st transfer rollers.
- The transfer voltage is applied after the 1st transfer roller/Y, M, C is pressed against the transfer belt for color mode.
- The transfer output is turned OFF after the last image moves past the 2nd transfer section.

#### A. Monochrome mode

- The 1st transfer roller/Y, M, C is moved inward the unit (for retraction) and the photo conductor/Y, M, C is stopped.

#### B. Color mode

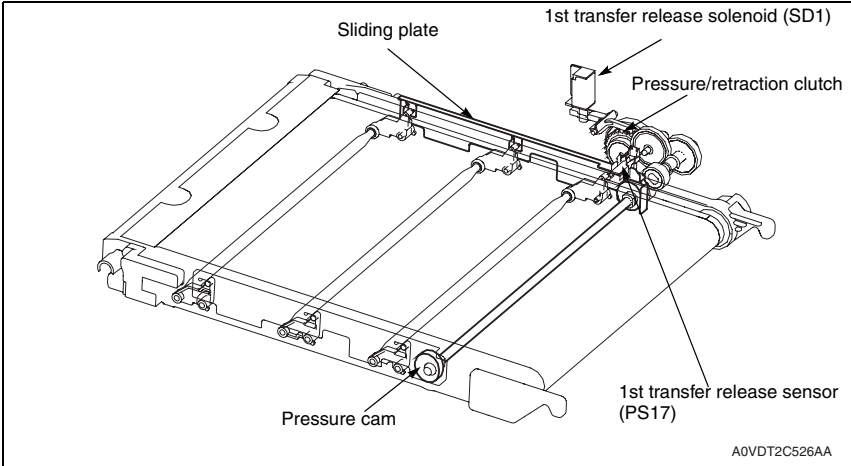
- During the 1st transfer in the color mode, the 1st transfer roller/Y, M, C is moved toward the photo conductor (pressed) so that transfer belt is pressed against the photo conductor.

#### C. Others

- The transfer roller is moved (retracted) and the photo conductor is stopped in the ordinary standby state.

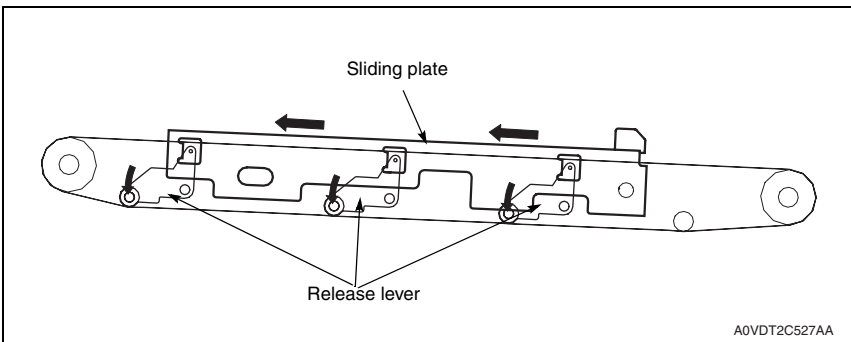
### 14.3.2 1st transfer roller pressure/retraction control

- To extend the service life of the photo conductor/Y, M, C, the pressure position of the 1st transfer roller is changed between the monochrome mode and the color mode. The 1st transfer roller/K is not provided with a retraction mechanism; the transfer belt is pressed against the photo conductor/K at all times.
- The main motor provides the drive for pressure/retraction operation of the 1st transfer roller/Y, M, C.



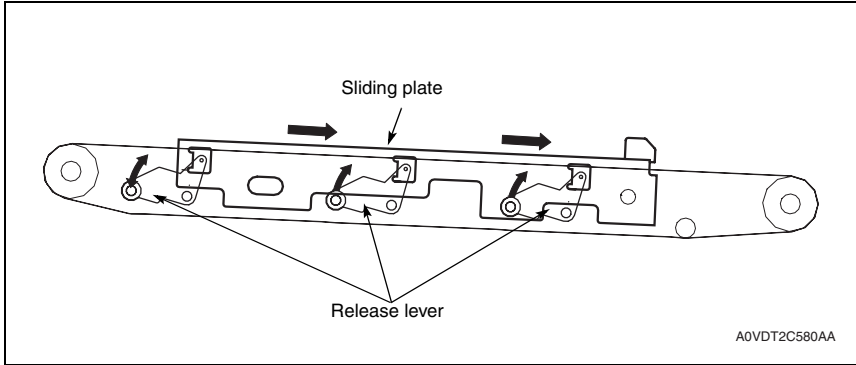
#### A. 1st transfer roller pressure operation

1. Rotation of the Transport motor is transmitted by a gear train to the pressure/release clutch.
2. Drive through the pressure/release clutch rotates the pressure cam a half turn, thus pushing back the sliding plate.
3. As the sliding plate is pushed back, the release lever turns.
4. As the release lever turns, the 1st transfer roller is pressed against the transfer belt.



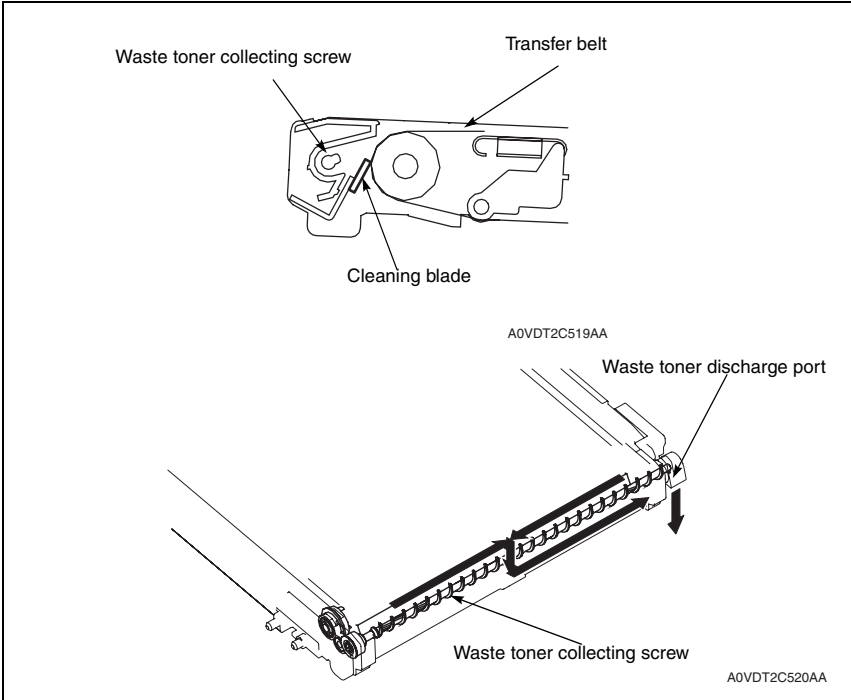
**B. 1st transfer roller release operation**

1. Rotation of the Transport motor is transmitted by a gear train to the pressure/release clutch.
2. Drive through the pressure/release clutch rotates the pressure cam a half turn, thus pushing the sliding plate.
3. As the sliding plate is pushed, the release lever turns.
4. As the release lever turns, the 1st transfer roller is released from the transfer belt.



### 14.3.3 Transfer belt cleaning mechanism

- To scrape residual toner off the surface of the transfer belt unit, the transfer belt is provided with a cleaning blade.
- The cleaning blade is in pressed contact with the transfer belt at all times. That is, it cleans the surface of the transfer belt as long as the belt turns.
- The toner scraped off by the cleaning blade is collected to the middle of the transfer belt by the waste toner collecting screw.
- The collected waste toner is conveyed from the waste toner discharge port of the transfer belt unit to the waste toner bottle by way of the waste toner collecting screw.



#### 14.3.4 1st transfer belt backward rotation control

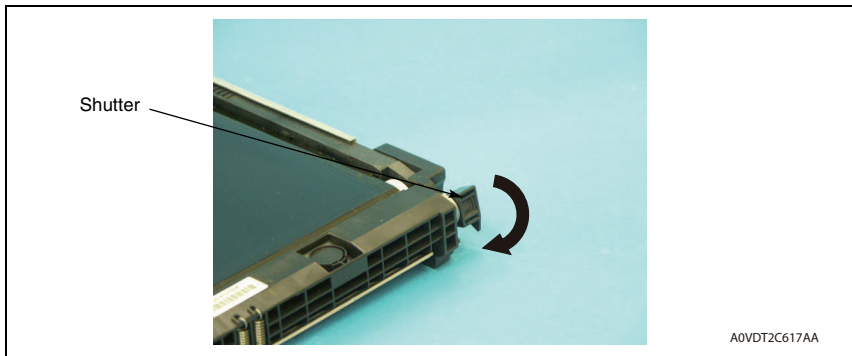
- To prevent media dust, toner, and other foreign matter from being wedged in the cleaning blade while the transfer belt remains stationary, the transfer belt is turned backward so that the foreign matter can be removed.

##### A. Operation timing

- At the end of the print cycle
- Main body interior temperature is a predetermined value or less.

#### 14.3.5 Toner collecting port shutter mechanism

- A shutter mechanism is provided to prevent waste toner from being spilled from the waste toner discharge port when the transfer belt unit is removed and reinstalled.
- The shutter is fitted to the transfer belt unit. When the transfer belt unit is removed, the waste toner discharge port is automatically closed.



#### 14.3.6 Detecting New Article

- The transfer roller belt does not have the function to detect a new article.
- When the transfer belt is replaced, the counter value needs to be reset using [SUPPLIES REPLACE] function of the USER MODE or SERVICE MODE.
- Reference (User mode): [ADMIN. MANAGEMENT] / [SUPPLIES REPLACE] and execute [TRANSFER BELT].
- Reference (Service mode): [ADJUST] / [SUPPLIES REPLACE] and execute [TRANSFER BELT].

# 15. TRANSFER SECTION (2nd transfer)

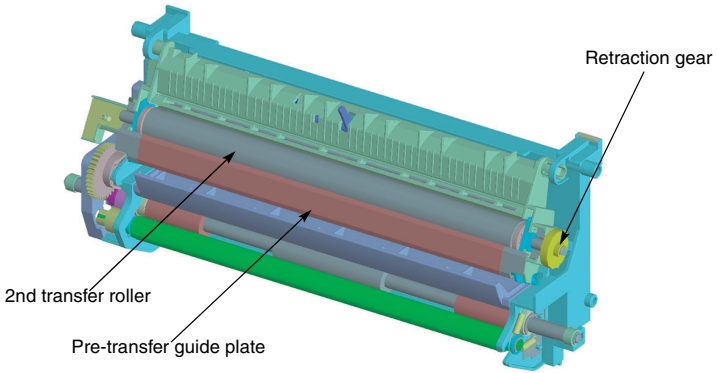
## 15.1 Composition

bizhub C25

COMPOSITION/  
OPERATION

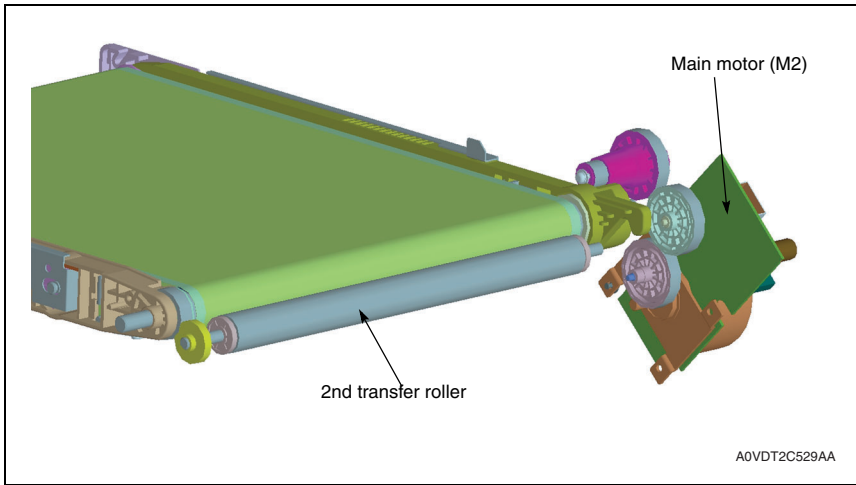


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A0VDT2C528AA

## 15.2 Drive



## 15.3 Operation

### 15.3.1 2nd transfer roller pressure mechanism

- The main body is provided with a mechanism that presses the 2nd transfer roller up against, and retracts it from, the transfer belt. This is done to prevent the 2nd transfer roller from being dirtied due to patterns produced for purposes other than an actual printing operation and to prevent creep that would otherwise occur between the transfer belt and the 2nd transfer roller as a result of tight contact between them at all times.
- The IDC sensor serves to determine whether the two parts are in contact with, or separated from, each other.
- When the registration clutch and the 2nd transfer release solenoid are energized, drive of the gear train is transmitted to the lever of the IDC sensor, closing the IDC sensor shutter. When the shutter is closed, the IDC sensor outputs a predetermined value, which allows the main body to determine that the 2nd transfer roller is pressed up against the transfer belt.

#### A. 2nd transfer roller pressure

- The 2nd transfer roller is pressed against the transfer belt to allow the toner image on the transfer belt to be transferred onto the media.
- The 2nd transfer roller is pressed against the transfer belt to allow the roller to be cleaned.

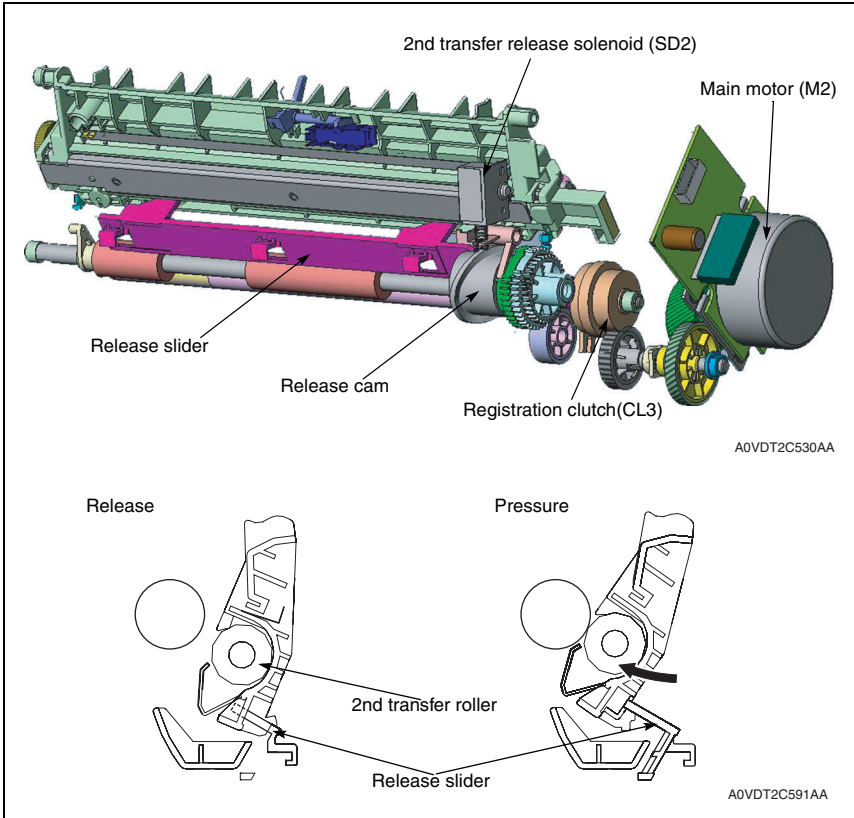
#### B. 2nd transfer roller retraction

- The 2nd transfer roller is retracted from the transfer belt at timing when a detection pattern is produced on the transfer belt during, for example, an image stabilization control sequence.
- The 2nd transfer roller is also retracted from the transfer belt when the image on the transfer belt cannot be transferred onto paper due to a paper empty condition during a print cycle.
- The 2nd transfer roller is retracted from the transfer belt after the 2nd transfer of the last image is completed during a multi-print cycle.



**C. Pressure/release operation**

1. When the registration clutch and the 2nd transfer release solenoid are energized, the rotation is transmitted to the release cam via a coupling gear.
2. When the release cam is rotated a half turn, the release slider moves to the front side of the main body, which results in the 2nd transfer roller being pressed against the transfer belt.
3. When the registration clutch and the 2nd transfer release solenoid are energized a second time, the release cam is rotated another half turn. This moves the release slider toward the back side of the main body, which results in the 2nd transfer roller being retracted from the transfer belt.



bizhub C25

COMPOSITION/  
OPERATION

### 15.3.2 2nd transfer voltage control

- The transfer voltage is applied to the 2nd transfer roller in order to transfer the toner image from the transfer belt to the media.
- The transfer voltage is applied after the 2nd transfer roller has been pressed against the transfer belt.

### 15.3.3 2nd transfer voltage setting control (ATVC: auto transfer voltage control)

- The transfer voltage is corrected to reduce effect from the transfer belt and environmental changes of toner.

#### A. Operation timing

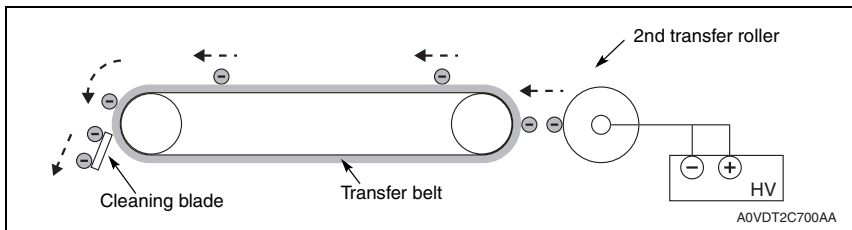
- A print request is accepted.
- During a multi-print cycle, the temperature inside the main body changes by a predetermined value or more from the level during execution of ATVC, and a predetermined number of printed pages or more have been produced since the execution of the previous ATVC.

#### B. Control

1. The 2nd transfer roller is pressed against the transfer belt.
2. A constant current is applied to the 2nd transfer roller.
3. The voltage of the 2nd transfer roller surface is detected.
4. Using a conversion formula, the output value of the transfer voltage is determined.
5. The current temperature inside the main body is detected and backed up.

### 15.3.4 2nd transfer roller cleaning control

- DC 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.
- Any voltage for other control purposes is not applied during the cleaning procedure.
- The toner transferred back to the transfer belt is collected by the cleaning blade.



#### A. Operation timing

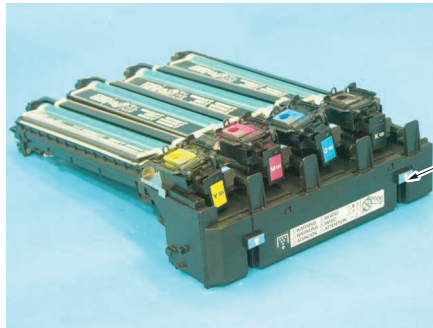
- The 2nd transfer roller cleaning sequence is carried out after the transfer belt has been cleaned during recovery from a media misfeed or malfunction.
- If a predetermined number of printed pages or more have been produced after the last cleaning sequence when the printer completes a print cycle and is then brought to a stop, a new cleaning sequence is carried out before the printer is brought to a stop.
- The cleaning sequence is carried out when a media size error occurs.

### 15.3.5 Detecting New Article

- The transfer roller does not have the function to detect a new article.
- When the transfer roller is replaced, the counter value needs to be reset using [SUPPLIES REPLACE] function of the USER MODE or SERVICE MODE.
- Reference (User mode): [ADMIN. MANAGEMENT] / [SUPPLIES REPLACE] and execute [TRANSFER ROLLER].
- Reference (Service mode): [ADJUST] / [SUPPLIES REPLACE] and execute [TRANSFER ROLLER].

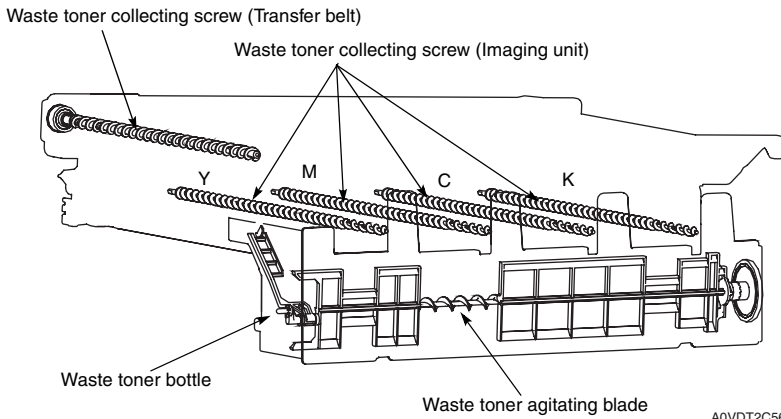
# 16. WASTE TONER COLLECTING SECTION

## 16.1 Composition



Waste toner bottle

A0VDT2C619AA

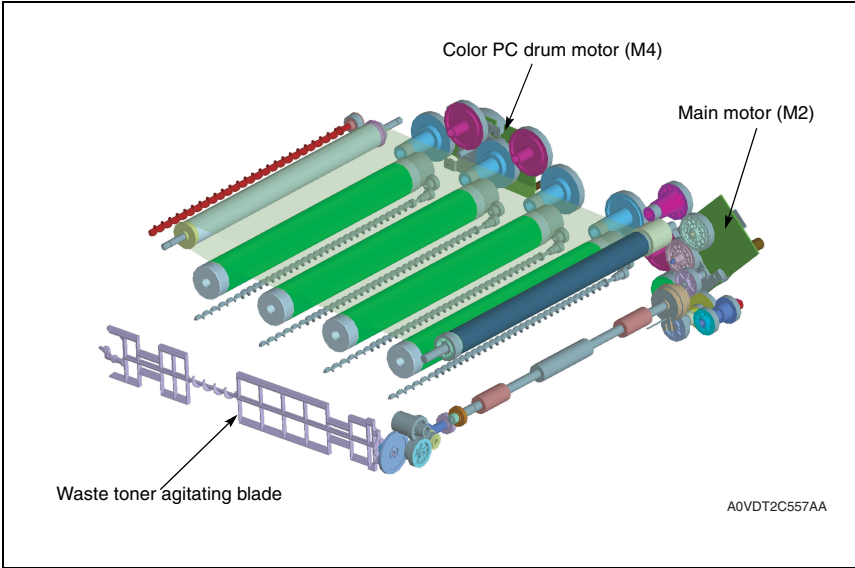


Waste toner bottle

Waste toner agitating blade

A0VDT2C560AA

### 16.2 Drive



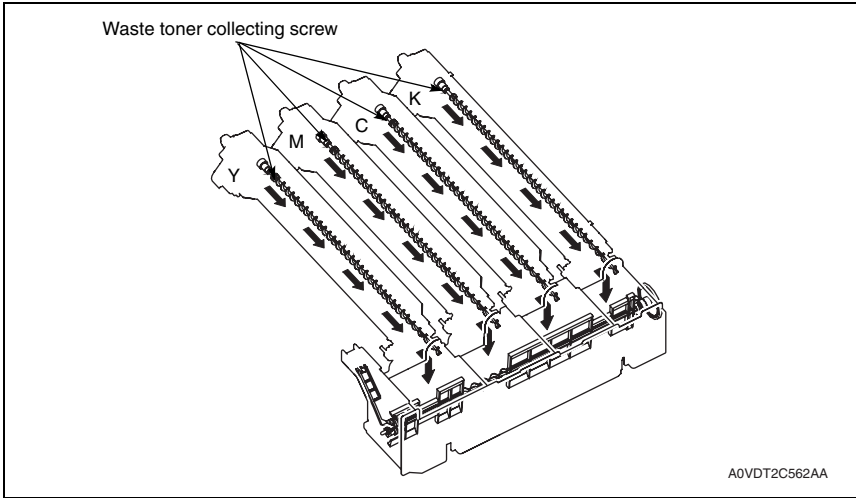
bizhub C25

COMPOSITION/  
OPERATION

### 16.3 Operation

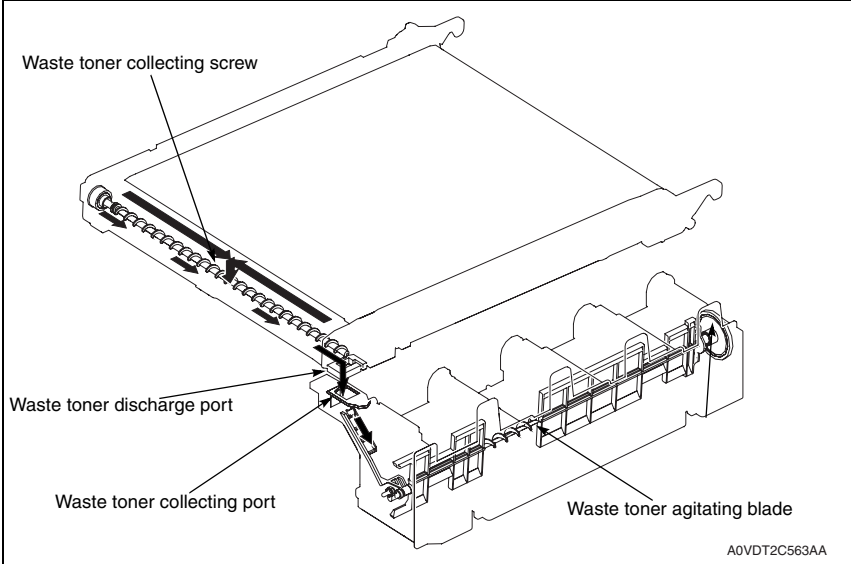
#### 16.3.1 Toner flow at the imaging unit section

1. Toner scraped off by the cleaning blade in the imaging unit is conveyed to the waste toner discharge port by the toner collecting screw.
2. The toner conveyed is stored in the waste toner bottle.



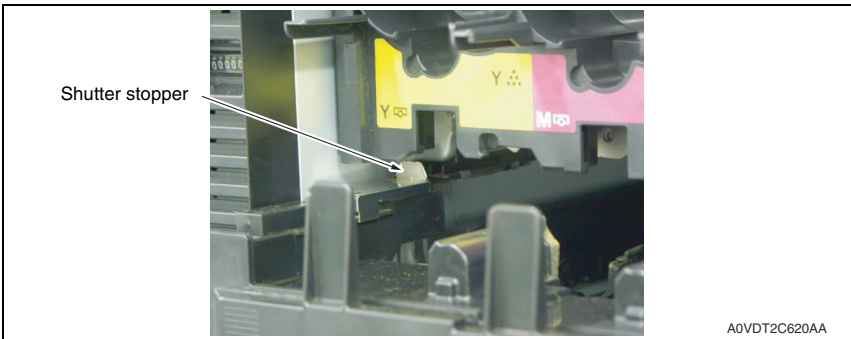
### 16.3.2 Waste toner flow at transfer belt unit section/2nd transfer section

1. Toner scraped off by the cleaning blade provided in the transfer belt unit is collected onto the waste toner discharge port of the transfer belt unit by the toner collecting screw.
2. The waste toner collected is conveyed to the waste toner bottle by the waste toner agitator blade from the toner collecting port that is provided in the middle of the transfer belt unit.



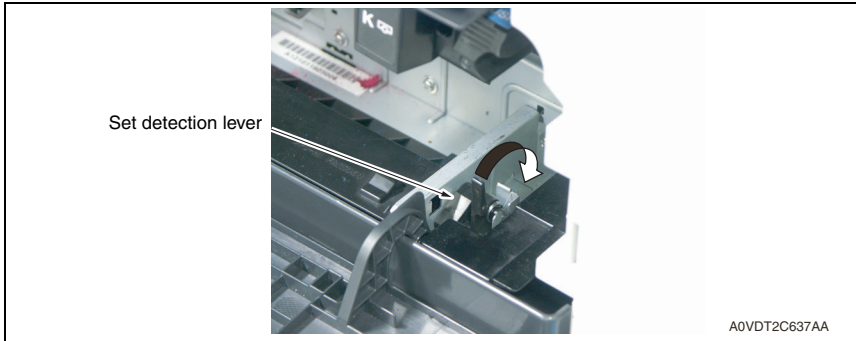
### 16.3.3 Toner collecting port shutter mechanism

- A shutter mechanism is provided to prevent waste toner from being spilled from the toner collecting port when the waste toner bottle is removed or reinstalled.
- Inserting the waste toner bottle causes the shutter stopper to be caught by the frame of the main body, which automatically opens the shutter.



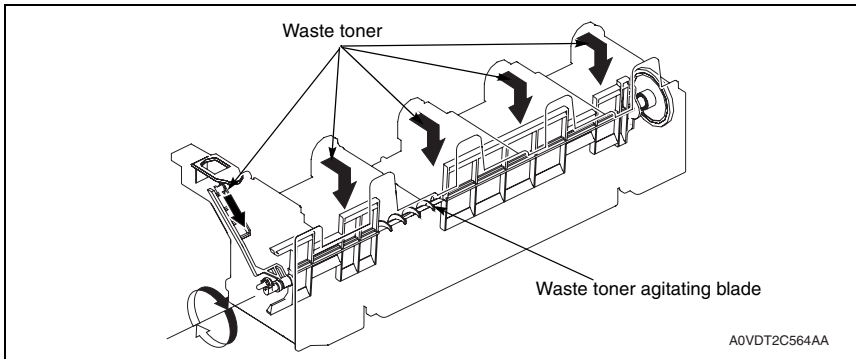
### 16.3.4 Waste toner bottle-in-position detection mechanism

- The waste toner bottle set detection lever is provided to detect a waste toner bottle loaded in position.
- When the waste toner bottle is not loaded, the set detection lever is raised, so that the protrusion provided in the front door interferes with the set detection lever. Then, the front door cannot be closed.



### 16.3.5 Waste toner flow in the waste toner bottle

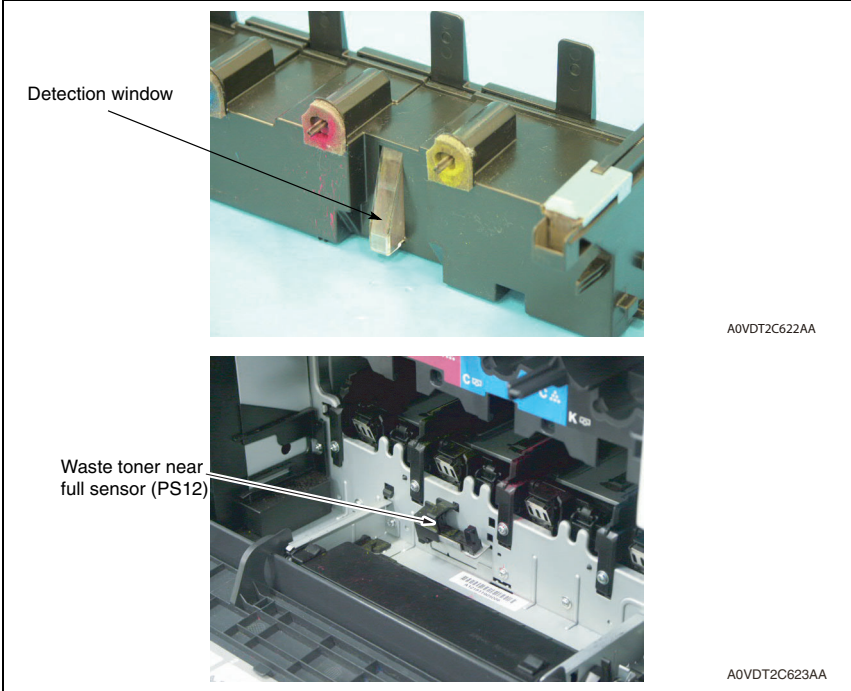
- Waste toner conveyed from the transfer belt and each of the imaging units is evened out in the waste toner bottle by the waste toner agitating blade.
- The waste toner bottle is provided with a detection window. The waste toner sensor is unblocked or blocked through the detection window to detect the amount of waste toner in the waste toner bottle.
- The waste toner sensor is blocked, which allows the main body to determine a waste toner near-full condition.





### 16.3.6 Waste toner near-full condition detection control

- A waste toner near-full condition is detected when the Waste toner near full sensor continuously blocks for a predetermined period of time.
- At this time, a waste toner near-full condition warning is given on the panel.
- Approx. 2,400 (monochrome)/600 (color) images can be produced for the period of time that begins when the waste toner near-full condition is detected and ends when the lifetime is reached (Based on the 5% chart and 2 page prints/job).



### 16.3.7 Waste toner full condition detection control

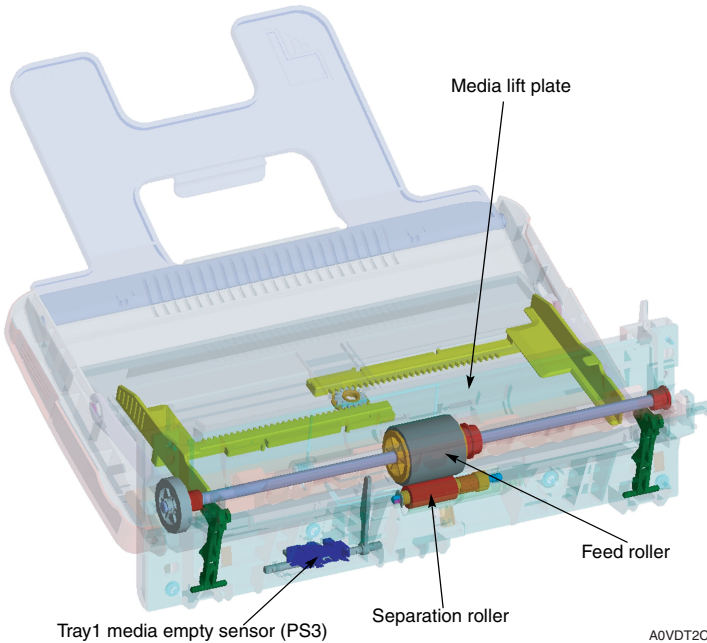
- The main body accepts no print job after the waste toner full condition has been detected.
- A waste toner full condition warning is given on the panel at this time.
- The waste toner full warning indication disappears when a new waste toner bottle is installed.

# 17. MEDIA FEED SECTION (Tray 1)

## 17.1 Composition

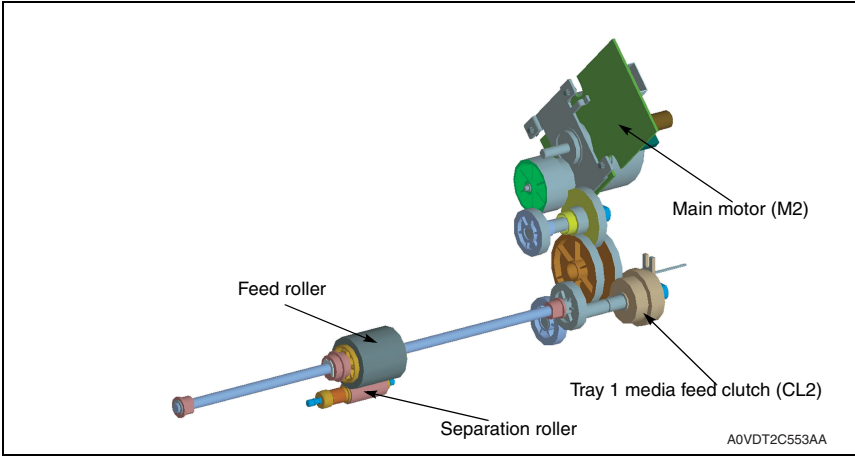


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A0VDT2C554AA

### 17.2 Drive



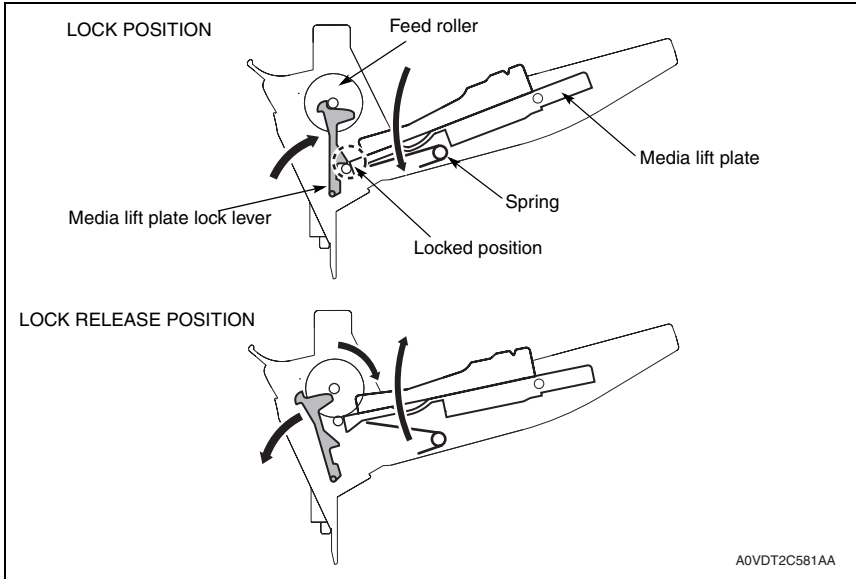
bizhub C25

COMPOSITION/  
OPERATION

## 17.3 Operation

### 17.3.1 Media lift plate mechanism

- The media lift plate will be locked under the media lift plate lock lever by pressing it down (in which the media is loaded in position).
- The media feed clutch causes the feed roller shaft to rotate, which causes the media lift plate lock lever to follow the motion to thereby release the media lift plate.
- The media lift plate (media stack) is pressed against the feed roller.
- The media lift plate (media stack) is pressed upward by the springs at all times.



### 17.3.2 Media separation mechanism

- Rotation of the transport motor is transmitted through the media feed clutch to thereby drive the feed roller.
- The feed roller rotates to take up and feed media into the main body.
- Double-feeding of media is prevented by the separation roller provided with a torque limiter.

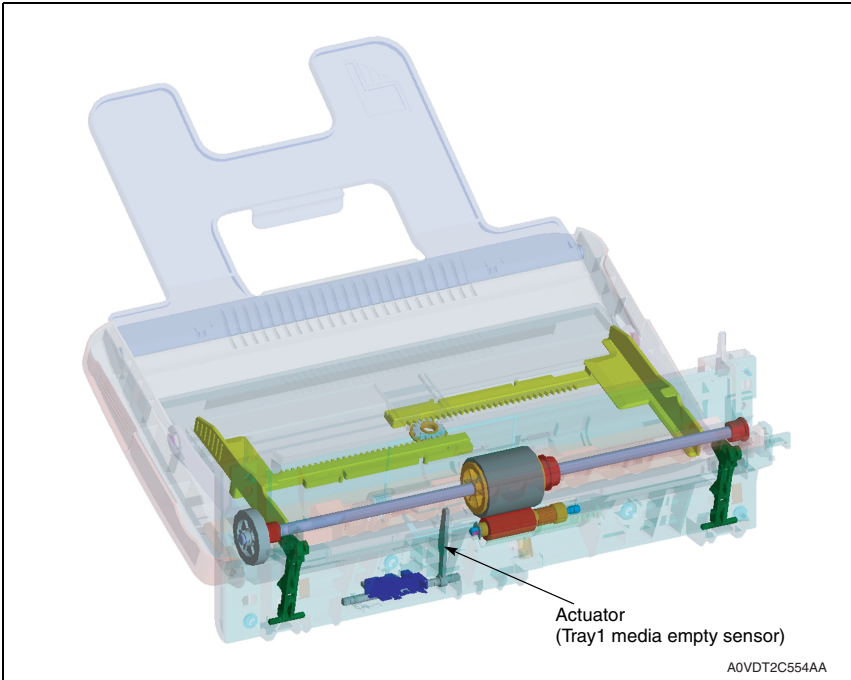


### 17.3.3 Media feed control

- Rotation of the transport motor is transmitted through the media feed clutch to drive the feed roller to take up and feed the media.
- The media taken up and fed in is conveyed onto the registration roller.
- The media is pressed against the stationary registration roller so that a loop is formed in the media. The feed roller is then stopped. The loop thus formed in the media corrects any mechanical skew in the media.

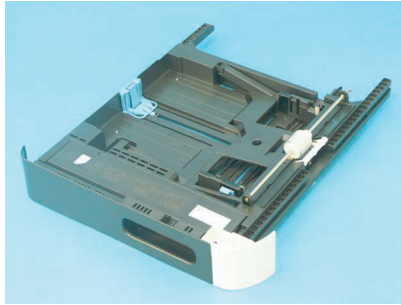
### 17.3.4 Media empty condition detection control

- A media empty condition is detected when the empty sensor actuator blocks the media empty sensor.
- No mechanism is provided for detecting a media near-empty condition. The media supply level indicator serves this purpose.

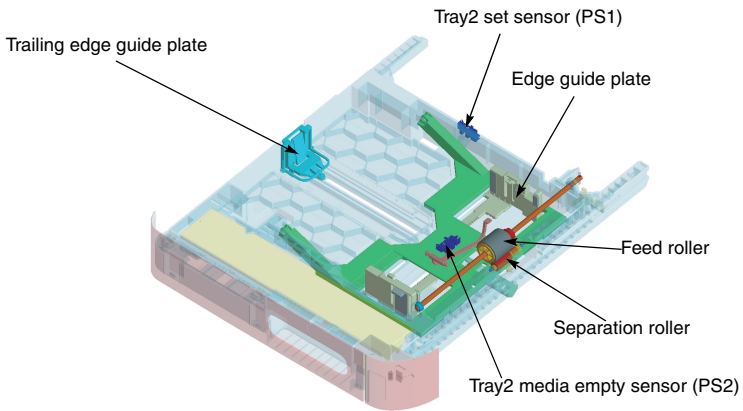


# 18. MEDIA FEED SECTION (Tray 2)

## 18.1 Composition

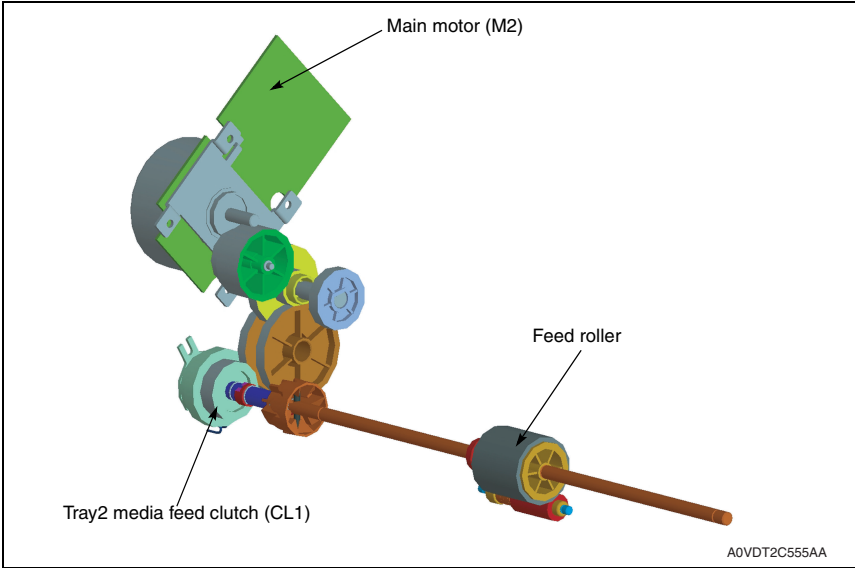


A2YFT2C512AA



A0VDT2C556AA

### 18.2 Drive



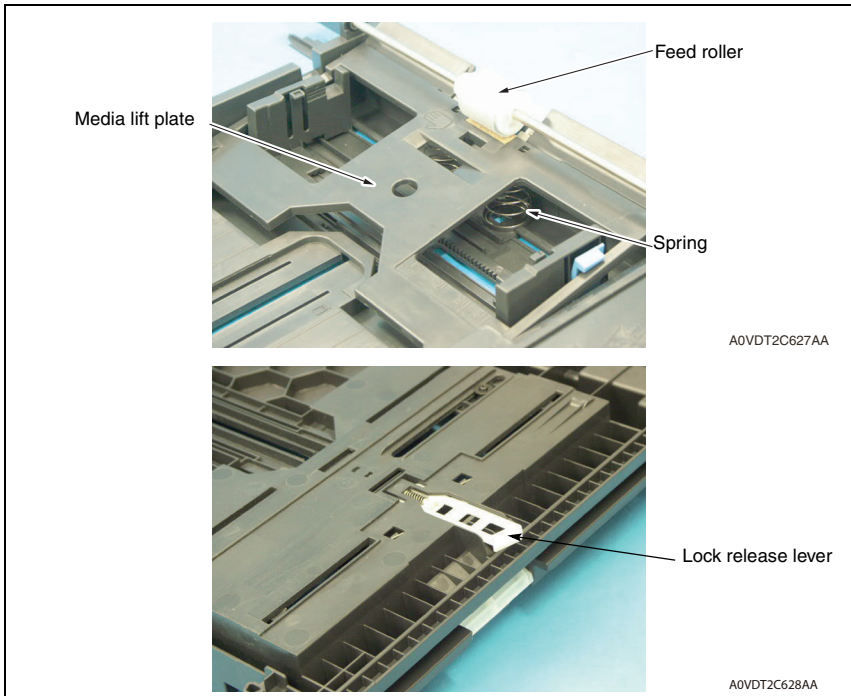
bizhub C25

COMPOSITION/  
OPERATION

### 18.3 Operation

#### 18.3.1 Media lift plate mechanism

- The media lift plate is pressed down into the locked position (in which the media is loaded in position).
- Load a media stack and then slide the tray into the main body. This causes the lock release lever to unlock the media lift plate.
- The media lift plate (media stack) is pressed against the feed roller.
- The media lift plate (media stack) is pressed upward by the springs at all times.



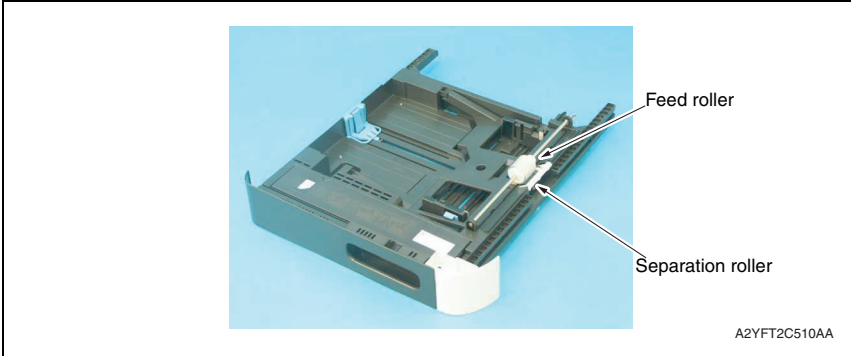
bizhub C25

COMPOSITION/  
OPERATION



### 18.3.2 Media separation mechanism

- Rotation of the main motor is transmitted through the media feed clutch to thereby drive the feed roller.
- The feed roller rotates to take up and feed media into the main body.
- Double-feeding of media is prevented by the separation roller provided with a torque limiter.

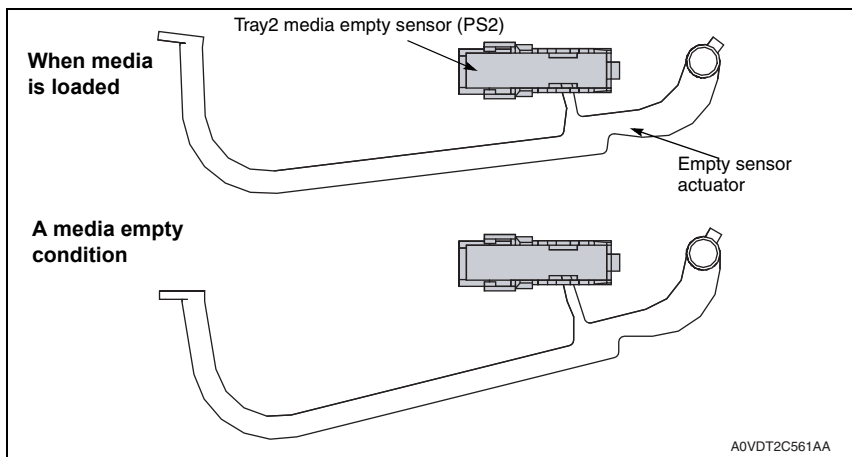


### 18.3.3 Media feed control

- Rotation of the main motor is transmitted through the media feed clutch to drive the feed roller to take up and feed the media.
- The media taken up and fed in is conveyed onto the registration roller.
- The media is pressed against the stationary registration roller so that a loop is formed in the media. The feed roller is then stopped. The loop thus formed in the media corrects any mechanical skew in the media.
- As the trailing edge of the media reaches a point immediately before the feed roller, the feed roller is stopped.

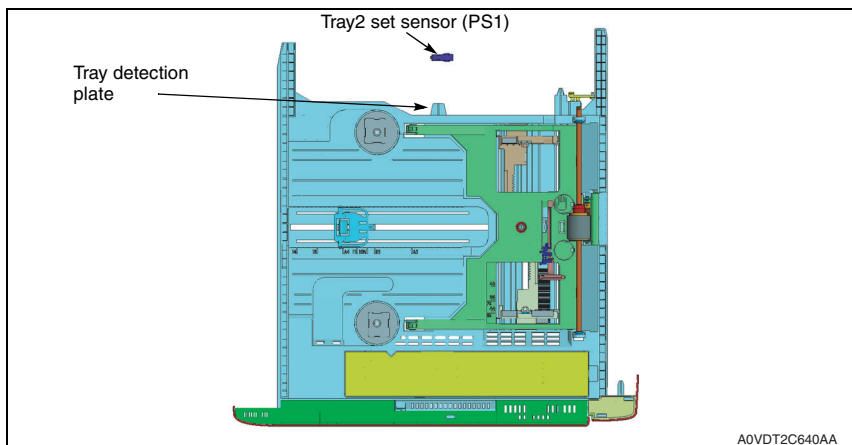
### 18.3.4 Media empty condition detection control

- The media empty message “PAPER EMPTY” is displayed on the panel when the empty sensor actuator unblocks the media empty sensor.
- No mechanism is provided for detecting a media near-empty condition.



### 18.3.5 Tray open/close detection control

- The tray2 set sensor detects a tray in the open or closed position.
- The detection plate of tray 2 blocks or unblocks the tray2 set sensor, which allows the main body to determine that tray 2 is in place or not.

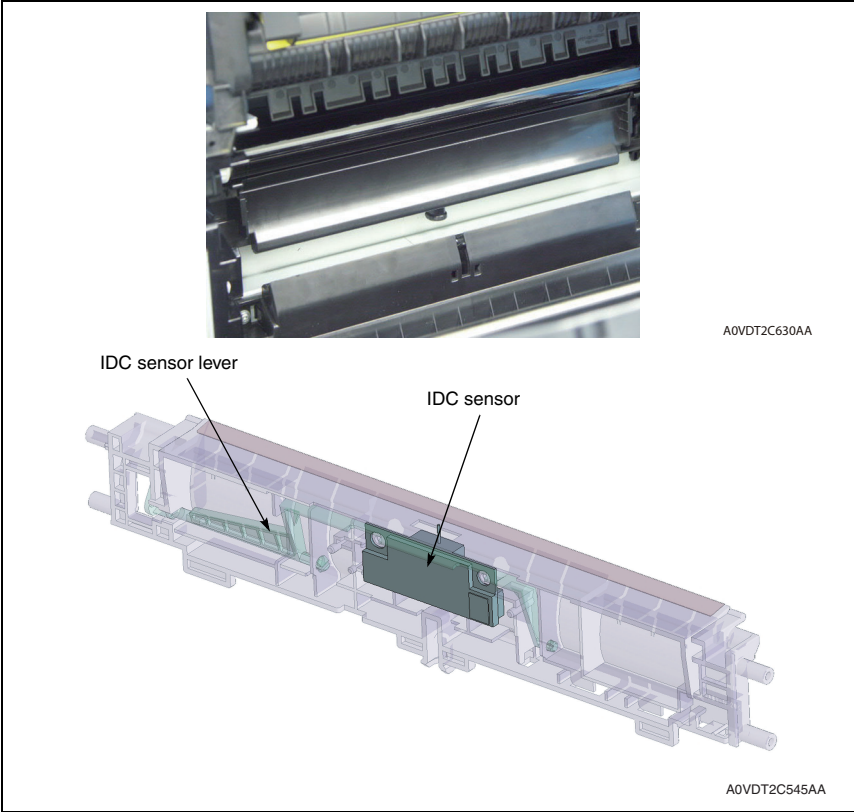


### 18.3.6 Media misfeed detection control

- If the registration sensor is not activated within a predetermined period of time after a media feed sequence has been started, the main body determines that there is a media misfeed. It then gives the message “PAPER EMPTY” on the panel.
- The media misfeed display can be reset by opening and closing any of the doors.

# 19. CONVEYANCE SECTION (IDC sensor)

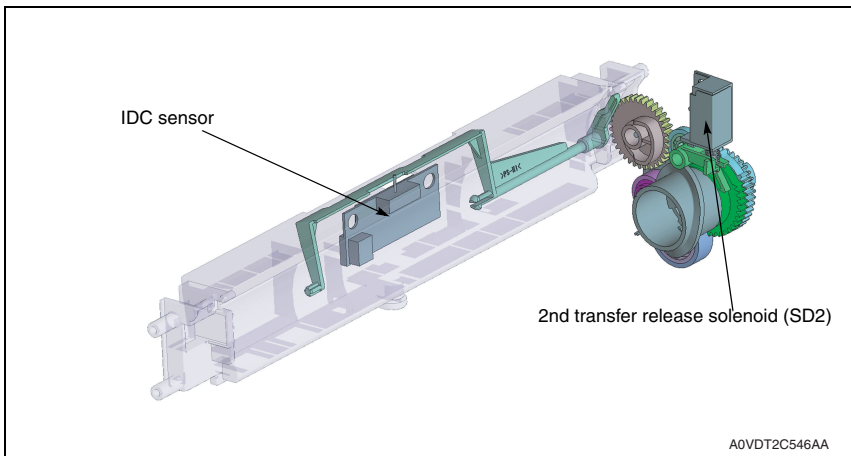
## 19.1 Composition



bizhub C25

COMPOSITION/  
OPERATION

19.1.1 Drive



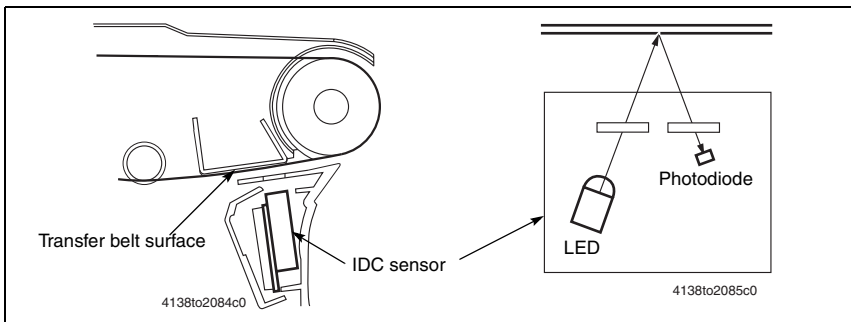
bizhub C25

COMPOSITION/  
OPERATION

19.2 Operation

19.2.1 Toner density detection control

- A reflective sensor is used for the IDC sensor that detects the amount of toner sticking to the surface of the transfer belt. Image stabilization is performed based on the value detected.
- The detection pattern (toner image) produced on the surface of the transfer belt is irradiated with light emitted by the LED of the sensor.
- The photodiode of the sensor detects the light reflected off the toner pattern on the surface of the transfer belt.



- A voltage corresponding to the intensity of the light reflected off the toner pattern is output to the MFP board.

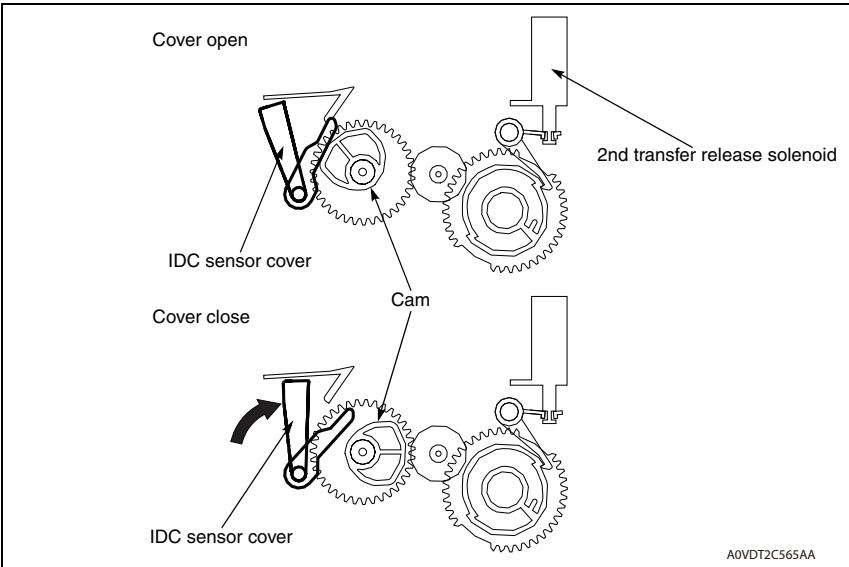
Amount of toner sticking	Intensity of light reflected	Output
Large	Small	Low
Small	Great	High

### 19.2.2 IDC sensor calibration control

- Changes in various types of characteristics due to change with time of the IDC sensor (deteriorated LED, dirty sensor surface), part-to-part variations in the sensors, and change of environment affect the IDC sensor output corresponding to the clear transfer belt surface. To correct fluctuations in the output, the sensor LED intensity is adjusted so as to keep constant the IDC sensor output value.
- This calibration is executed when an image stabilization sequence is performed.

### 19.2.3 IDC sensor cover open/close mechanism

- Since the IDC sensor is installed below the transfer belt, it can be dirtied with toner or other foreign matter. A shutter mechanism is therefore provided above the IDC sensor to prevent it from being dirtied.
- The cover is opened or closed in synchronism with the pressure or retraction motion of the 2nd transfer roller. When the 2nd transfer roller is released, the cam pushes up the sensor lever, which opens the cover above the IDC sensor.
- When the 2nd transfer roller is pressed, on the other hand, the cover above the IDC sensor is closed by the tension of a spring.

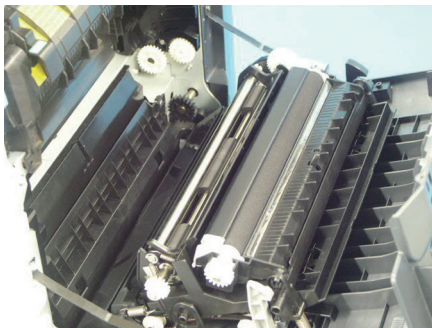


### 19.2.4 Image processing

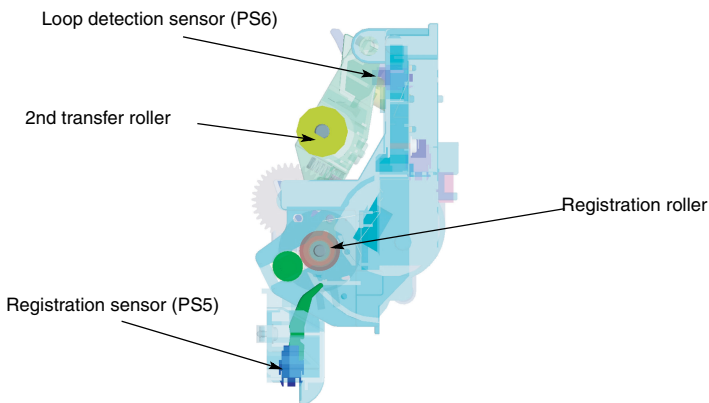
- The following image stabilization function is available as they relate to the imaging unit section (developing). For more details, see “Image stabilization control”.  
[See P.92](#)
- IDC sensor output correction

## 20. CONVEYANCE SECTION (Registration roller)

### 20.1 Composition

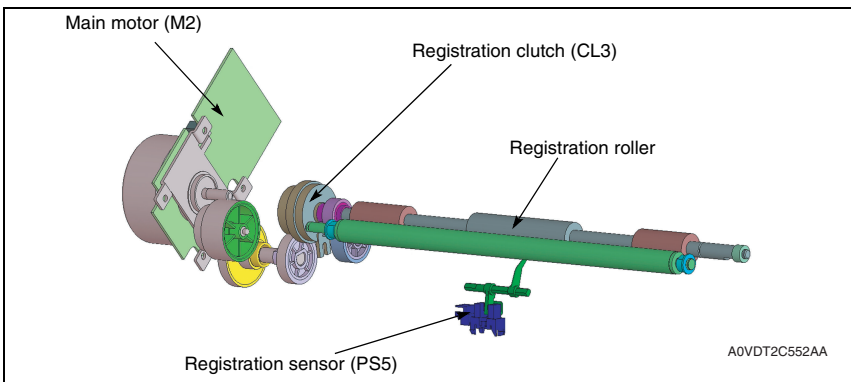


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A0VDT2C551AA

### 20.2 Drive



A0VDT2C552AA

## 20.3 Operation

### 20.3.1 Conveyance speed control

- The Transport motor provides drive for the conveyance section.
- The conveyance speed is variable in two steps and the appropriate one is selected according to the media type and print mode as detailed below.

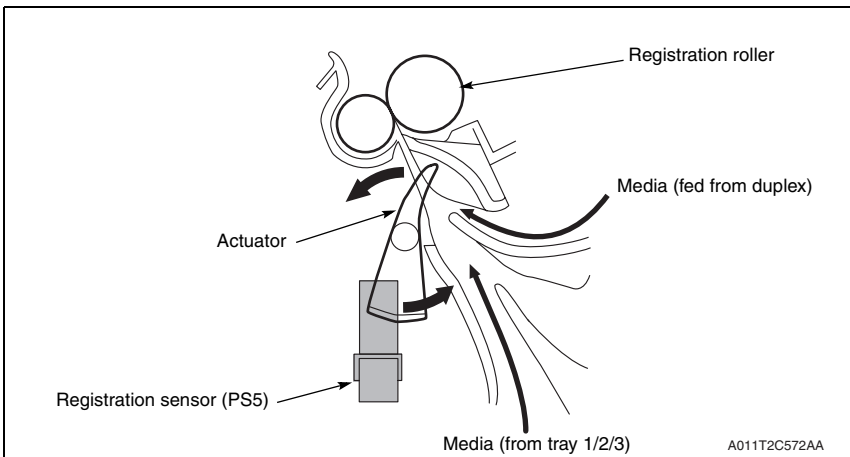
Media type/print mode	Conveyance speed
Plain media	144 mm/s
Thick paper, envelopes, postcards, label	72 mm/s

### 20.3.2 Registration roller control

- When the media taken up and fed in by the feed roller reaches the registration roller, a loop is formed in the media and media conveyance is temporarily stopped. Conveyance skew is corrected by this loop.
- The registration sensor detects whether or not the media has reached the registration roller.
- The media fed in is synchronized with the image before media conveyance is restarted.

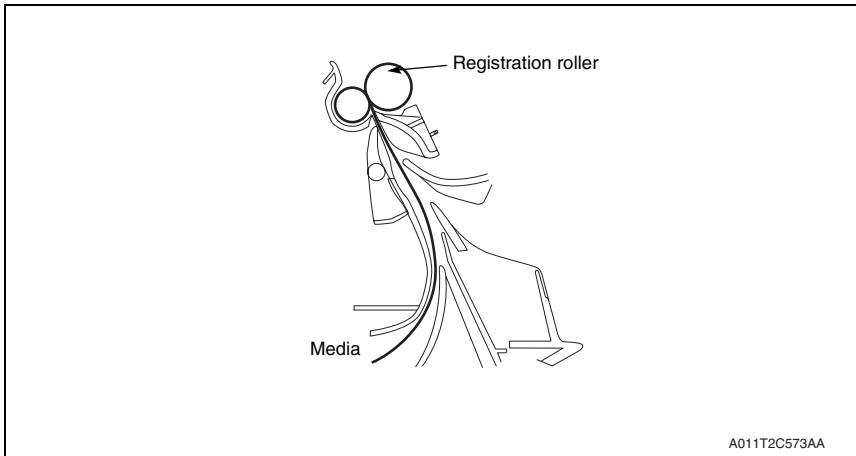
#### A. Media detection control

- When the media fed from the feed roller pushes up the actuator of the registration sensor, the sensor is unblocked. The main body then determines that the media has reached the registration roller.



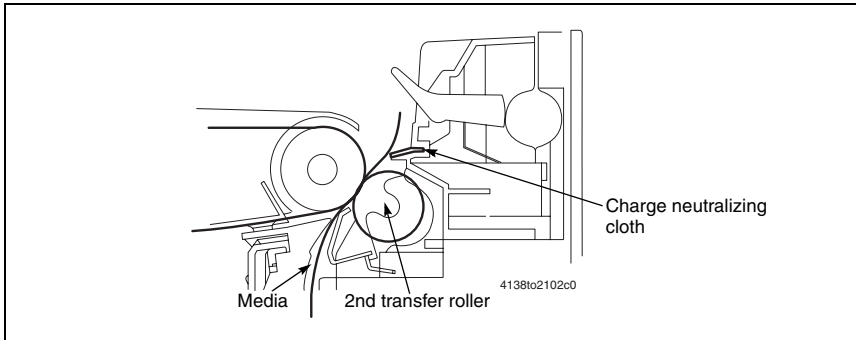
### 20.3.3 Control of loop formed before registration roller

- Media conveyance is stopped after the lapse of a predetermined period of time after the leading edge of the media fed from the feed roller has reached the registration roller. This forms a loop in the media.
- The loop in the media corrects skew in the media.



### 20.3.4 Media neutralization

- The charge neutralizing cloth neutralizes any charge left in the media after the 2nd transfer process.
- The charge residue is grounded through the charge neutralizing cloth to the main body frame.





**20.3.5 Media size error detection control**

- To prevent incorrect printed pages, the size of the media being conveyed is detected using the registration sensor and media feed sensor.
- The length of the media 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 for each media source.
- For the lower feeder unit, even if the media feed sensor does not detect a media size error, the downstream registration sensor makes an error check again.

Media source	Media length detection sensor	Starting point	Ending point
Tray 1	Registration sensor (PS5)	Registration roller clutch CL3: ON	Registration sensor PS5: OFF
Tray 2	Registration sensor (PS5)	Registration roller clutch CL3: ON	Registration sensor PS5: OFF
Tray 3 (Lower feeder unit)	Media feed sensor (PS3: Tray 3)	Media feed sensor PS3: ON	Media feed sensor PS3: OFF
	Registration sensor (PS5)	Registration roller clutch CL3: ON	Media feed sensor PS3: OFF

**20.3.6 Temperature/humidity sensor**

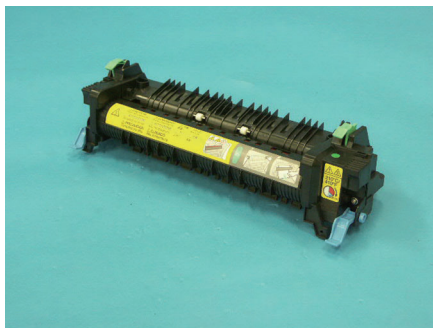
- The temperature/humidity sensor detects temperature and humidity inside the main body.
- The detected data are used for image stabilization control, ATVC control, and transfer output control.

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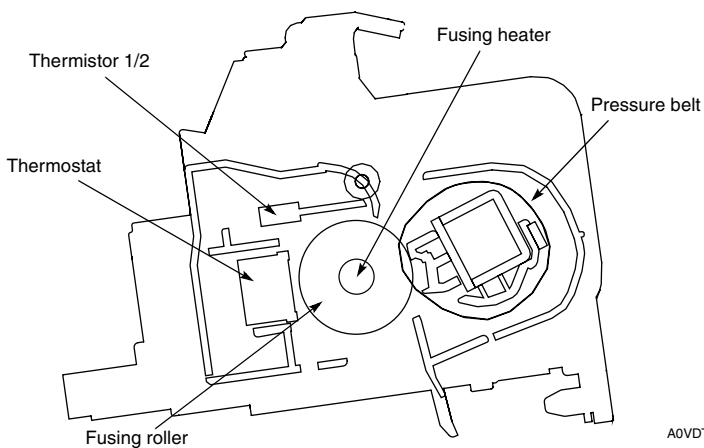
COMPOSITION/  
OPERATION

# 21. FUSING SECTION

## 21.1 Composition



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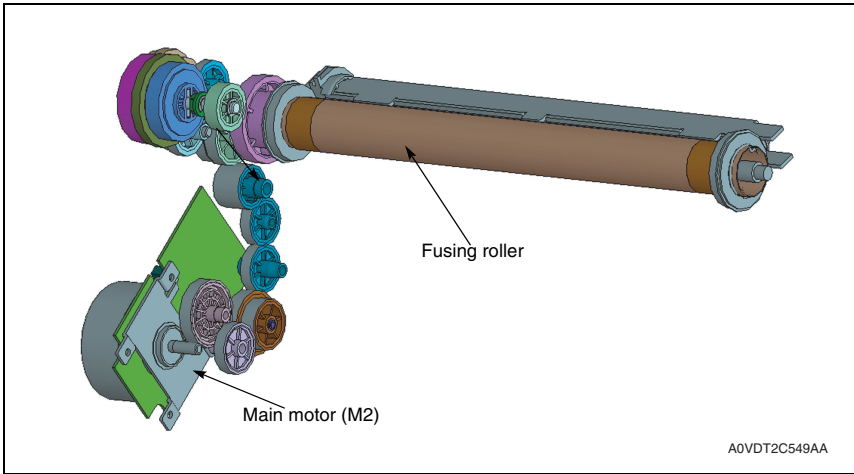


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COMPOSITION/  
OPERATION

### 21.2 Drive



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COMPOSITION/  
OPERATION

## 21.3 Operation

### 21.3.1 Fusing roller drive control

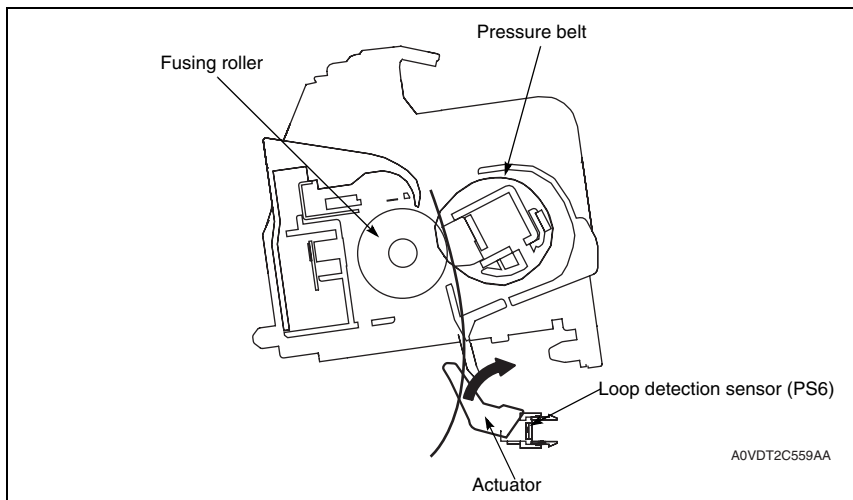
#### A. Fusing speed switching control

- The main motor provides drive for the fusing section.
- To prevent poor fusing performance, the conveyance speed is changed in two steps according to the media type.

	Plain paper (mm/s)	Thick paper, envelopes, postcards, label (mm/s)
Fusing speed	144	72

#### B. Fusing speed control (control of loop before fusing)

- To prevent double transferred images and brush effects from occurring, the difference between the fusing speed and the media conveyance speed during image transfer is corrected.
- The loop detection sensor detects the length of the loop formed in the media between the 2nd transfer roller and the fusing pressure roller. The fusing speed is then varied according to the media type. By varying the fusing speed, media is prevented from being misfed or contacting the charge neutralizing cloth.
- No loop control is provided to perform the fusing process when envelopes are used (to prevent wrinkles).

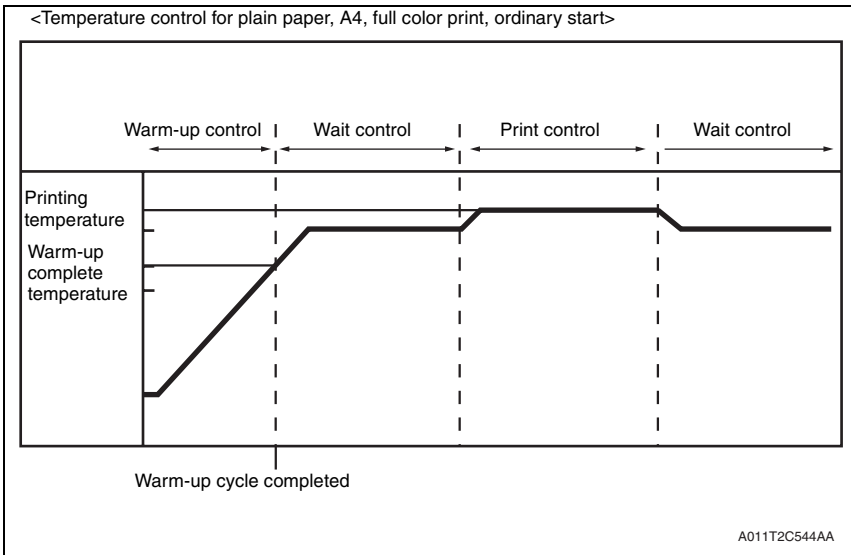


#### C. Fusing roller deformation prevention control

- To prevent the fusing roller from being deformed, the fusing roller is forcibly turned if it is left idle for a predetermined period of time.
- Operation timing
  1. If the main body remains in the standby state for more than a predetermined period of time, the fusing motor is energized for a predetermined period of time.
  2. If the main body remains in the power save mode for more than a predetermined number of days, the temperature adjustment is started. After the temperature rises to a predetermined value or more, the main motor is energized for a predetermined period of time.

### 21.3.2 Fusing temperature control

- To fuse the toner image on the media (image yet to be permanently fixed) properly into the media, the heater lamps are turned ON and OFF as necessary to bring the fusing temperature to an appropriate level.
- Thermistors are used to detect the surface temperature of the Fusing roller. The heater lamps are then turned ON and OFF as necessary to achieve the set temperature.



**A. Warm-up control**

- Control is provided until the Fusing roller reaches the predetermined level.

**(1) Control start timing**

- The power switch is turned ON.
- The main body leaves the power save mode.
- A door is closed.

**(2) Control termination timing**

- The Fusing roller reaches a predetermined temperature.
- A door is opened.

**B. Wait control**

- Control is provided to ensure that the temperature of the fusing roller becomes a constant value during the standby state.

**(1) Control start timing**

- At the end of the warm-up control
- At the end of a print cycle

**(2) Control termination timing**

- At the start of a print cycle
- A door is opened.
- A malfunction or media misfeed occurs.

**C. Print control**

- The fusing speed and fusing temperature are controlled to ensure a sufficient fusing strength.

**(1) Control start timing**

- A print request is received.

**(2) Control termination timing**

- A malfunction or media misfeed occurs.

**(3) Print control temperatures**

- The fusing roller temperature is set according to the type of media, main body interior temperature (as measured by the temperature/humidity sensor), and warm-up start temperature.
- For types of media other than plain paper, the fusing speed is controlled at the 1/2 speed.

**(4) Print control temperature adjustments**

- The temperature during print control is adjusted using the menu available from the control panel. The temperature can, however, be decreased only.
- Adjustment steps are 0°C, -5°C, and -10°C.

**D. Temperature control during the power save mode**

- The fusing heater is turned OFF during the power save mode.

### 21.3.3 Protection from abnormal temperatures

- The main body provides protection at three different stages to prevent abnormal temperatures of the fusing unit.
  1. Thermistor protection (Soft protection)
  2. Thermistor protection (Hard protection)
  3. Thermostat protection

#### A. 1st stage: Thermistor protection (Soft protection)

- If the thermistor detects a temperature exceeding a predetermined value, the malfunction code representing abnormal temperatures is displayed. At this time, the heater lamps are turned OFF forcibly and the initiation of any new print cycle is prohibited.

#### B. 2nd stage: Thermistor protection (Hard protection)

- The following hard protection control is provided if the CPU overruns and becomes unable to detect an abnormal temperature.
  1. The thermistor/1 or thermistor/2 detect a temperature exceeding a predetermined value.
  2. The remote signal for the corresponding heater lamp of the DC power supply is forcibly turned OFF through the MFP board.
  3. The triac circuit on the DC power supply is turned OFF to shut down the power supply to the corresponding heater lamp.
  4. The heater lamp is forcibly turned OFF.
  5. The temperature detected by the thermistor/1 or thermistor/2 is decreased to a level below the predetermined value.
  6. The remote signal forcible OFF of the corresponding heater lamp is reset so that power supply to the heater lamp is resumed.

#### C. 3rd stage: Thermostat protection

- If neither the soft protection nor hard protection can detect an abnormal temperature due to a defective thermistor or other reason, the thermostat operates at a specified temperature. This shuts down the power supply to the fusing heater lamp, thus forcibly turning them OFF.

### 21.3.4 Fusing speed control

#### A. PPM control

- The PPM control is performed to inhibit the temperature of the fusing roller from decreasing during a multi-print cycle and the temperatures of the edges of the roller from increasing.
- Running a multi-print cycle causes the temperature of the fusing roller to decrease, thus degrading fusing performance of the printed image.
- To prevent this, fusing performance is estimated from the surface temperature of the fusing roller; the distance between sheets of media is then widened according to the length of the media and the fusing speed, thereby allowing the fusing pressure roller and fusing belt to recover their temperatures to thereby achieve satisfactory fusing performance of the printed toner image.
- If a multi-print cycle is run using plain paper of a small size (B5, A5) or thick paper of a small size (B5, A5, postcards), a difference is produced in temperature between the center portion of the roller/belt (the surface over which the media moves past) and the edges of the roller/belt (where no part of the media moves past). To inhibit this situation, the distance between sheets of media is widened and the temperature of the fusing roller is thereby made uniform.
- The PPM control is also performed during a two-sided print cycle to produce a predetermined number of printed pages or more continuously.
- Only the plain paper (A4, Letter, B5) is subject to this control.

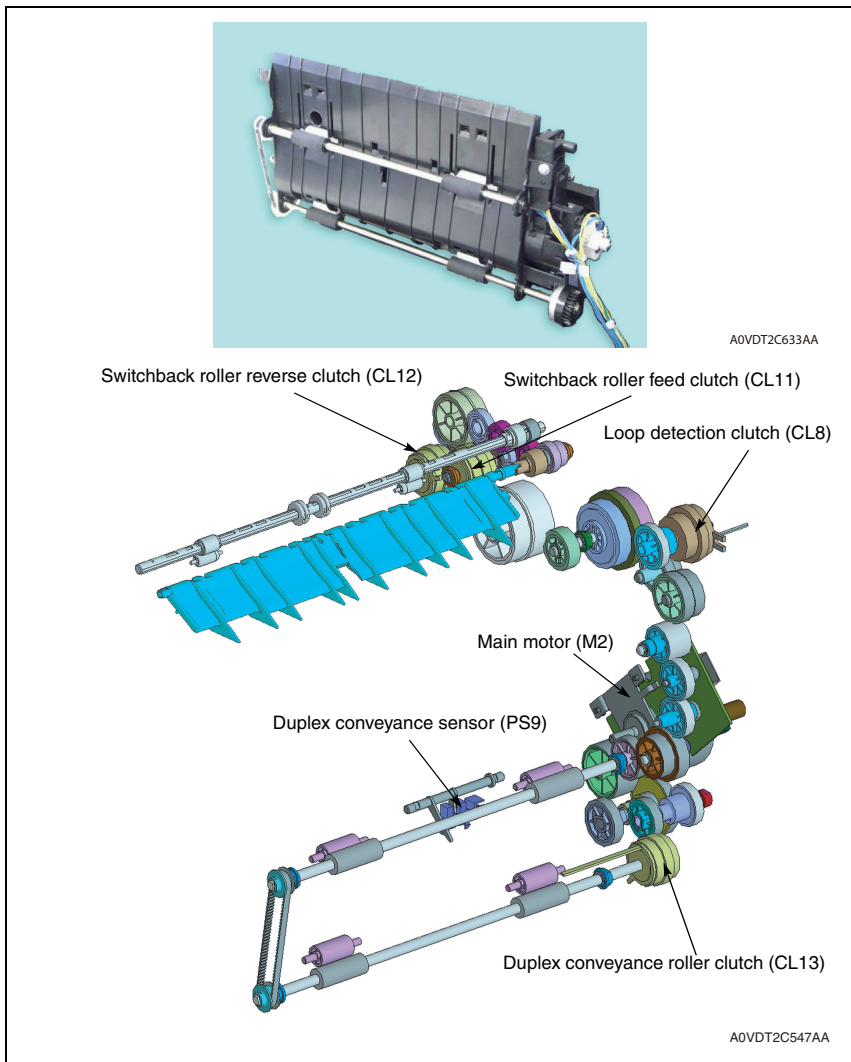
### 21.3.5 Detecting New Article

- The fuser unit does not have the function to detect a new article.
- When the fuser unit is replaced, the counter value needs to be reset using [SUPPLIES REPLACE] function of the USER MODE or SERVICE MODE.
- Reference (User mode): [ADMIN. MANAGEMENT] / [SUPPLIES REPLACE] and execute [FUSER UNIT].
- Reference (Service mode): [ADJUST] / [SUPPLIES REPLACE] and execute [FUSER UNIT].

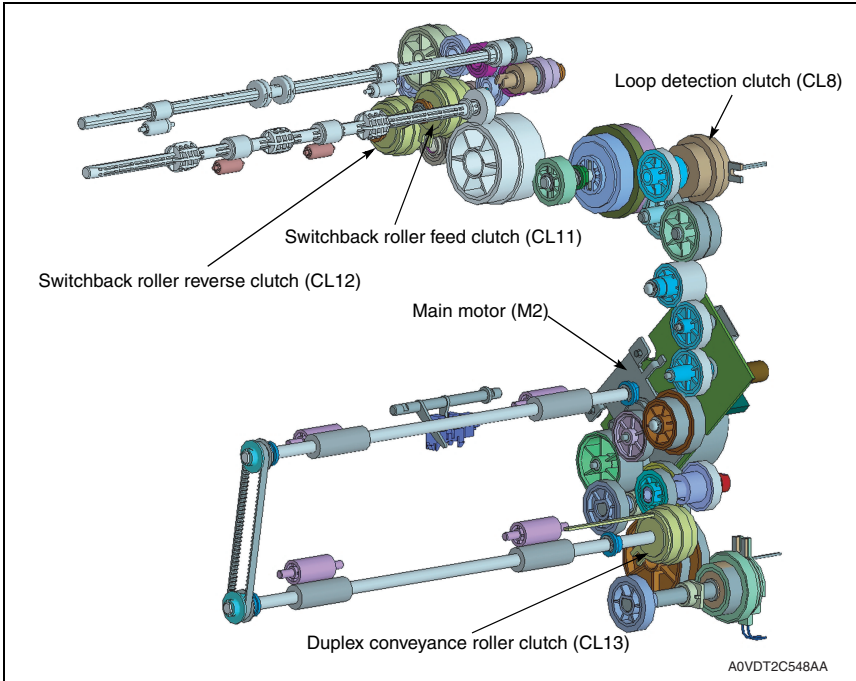


## 22. DUPLEX SECTION

### 22.1 Composition



### 22.2 Drive



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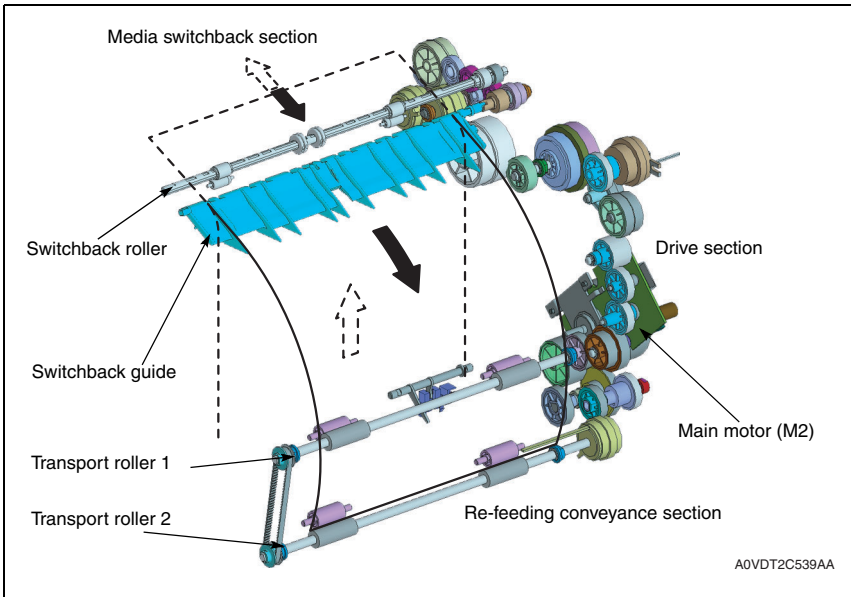
COMPOSITION/  
OPERATION

## 22.3 Operation

### 22.3.1 Media transport control

#### A. Media transport

- The main motor provides drive for media transport onto the duplex section.
- When the main motor is energized, the media exit roller, switchback roller, transport roller 1, and transport roller 2 are driven to transport media from the duplex section to re-feeding position.
- The duplex conveyance sensor is located at the re-feeding position in the duplex section, serving to control the timing at which media is moved and detect media misfeed or media left in the duplex section.
- To enable a thick paper two-sided printing, transport roller 2 is located between the transport roller 1 and registration roller to ensure that media is properly transported onto the main body.

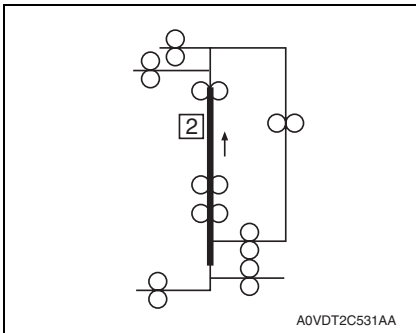


#### B. Loop formation

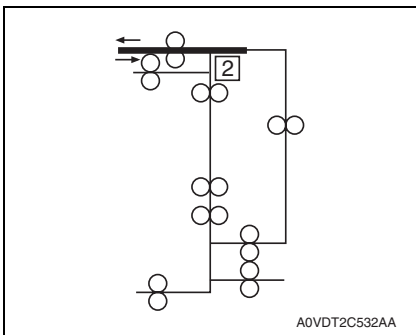
- To correct skew in the media transported to the duplex section, a loop is formed in the media at the duplex section before the media is transported onto the main body.
- The registration roller functions to control formation of the loop. The registration roller is brought to a stop after the lapse of a predetermined period of time after the media has moved past the duplex conveyance sensor. A loop is thereby formed in the media at the duplex section.

**22.3.2 Duplex print control**

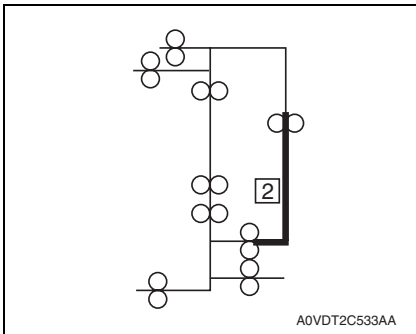
**A. 1 sheet operation**



1. A sheet of paper is taken up and fed in and the image of the second page of the original is printed.



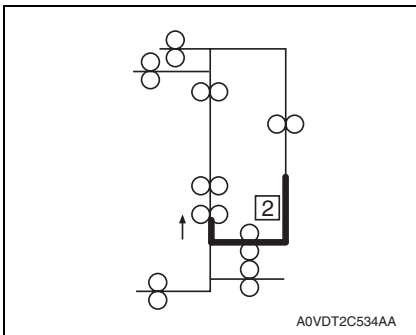
2. The switchback guide operates so as to transport the paper to the switchback section. Immediately before the paper leaves the media exit roller, the direction of rotation of the switchback roller is reversed and the paper is transported toward and into the duplex section.



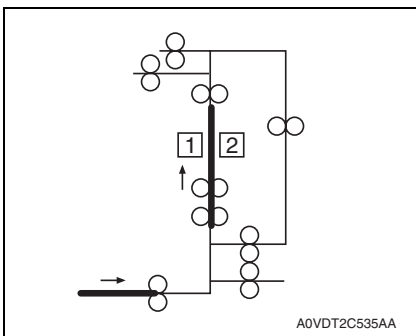
3. While passing through the duplex section, the paper stops temporarily at the re-feeding position.

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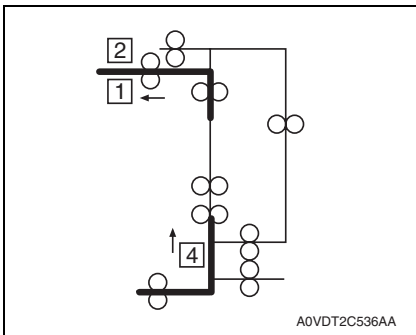
COMPOSITION/  
OPERATION



- The paper is subject to skew correction at the registration roller section before being re-fed.

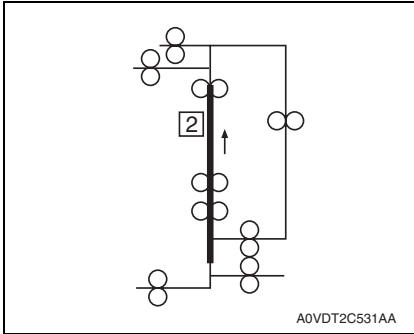


- The image of the first page of the original is printed on the paper re-fed from the duplex section.

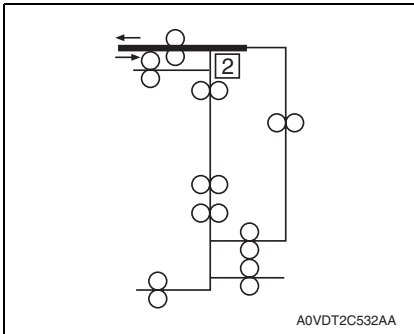


- While the first sheet of paper is fed out, the second sheet of paper is taken up and fed in and the image of the fourth page of the original is printed.

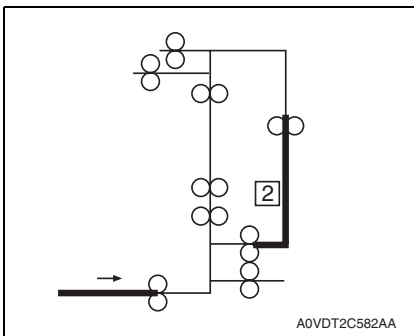
- Steps 2 to 5 are repeated hereafter.

**B. 2 sheet operation**

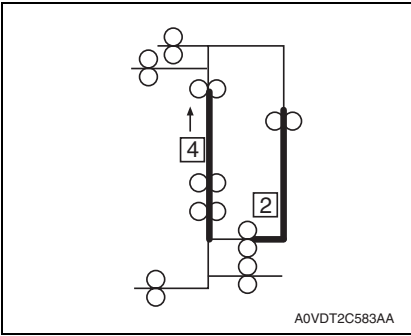
1. A sheet of paper is taken up and fed in and the image of the second page of the original is printed.



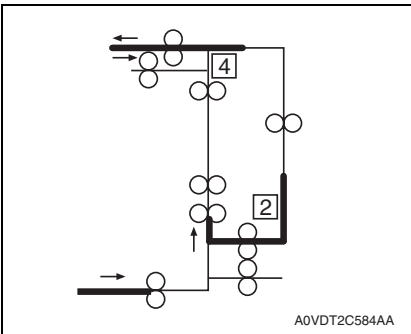
2. The switchback guide operates so as to transport the paper to the switch-back section. Immediately before the paper leaves the media switchback roller, the direction of rotation of the switchback roller is reversed and the paper is transported toward and into the duplex section.



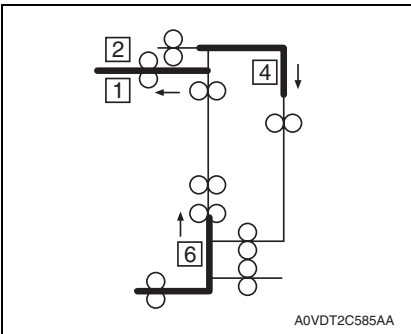
3. While passing through the duplex section, the paper stops temporarily at the re-feeding position. At the same time, the second sheet of paper is taken up and fed in.



4. The second sheet of paper is taken up and fed in and the image of the fourth page of the original is printed. The first sheet of paper stops temporarily at the re-feeding position.



5. The first sheet of paper is subject to skew correction at the registration roller section before being re-fed. The second sheet of paper is transported into the duplex section by the switchback roller. At the same time, the third sheet of paper is taken up and fed in.

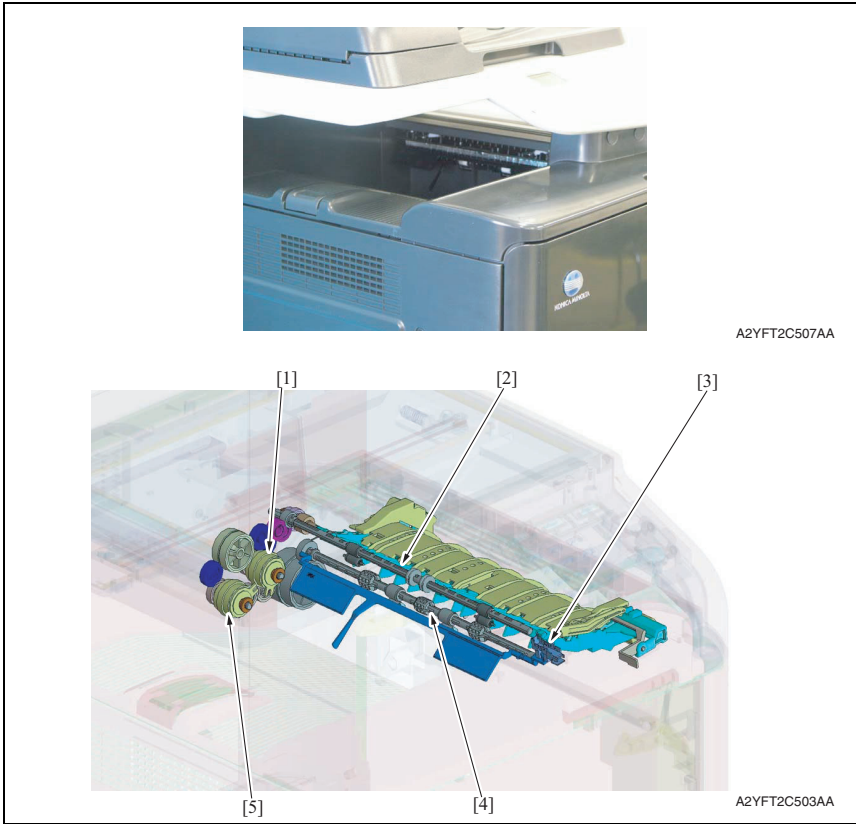


6. The image of the first page of the original is printed on the paper re-fed from the duplex section.
7. While the first sheet of paper is fed out, the third sheet of paper is taken up and fed in and the image of the six page of the original is printed. The second sheet of paper being transported through the duplex section is brought to a temporary stop at the re-feeding position.

- Steps 4 to 7 are repeated hereafter.

## 23. MEDIA EXIT SECTION

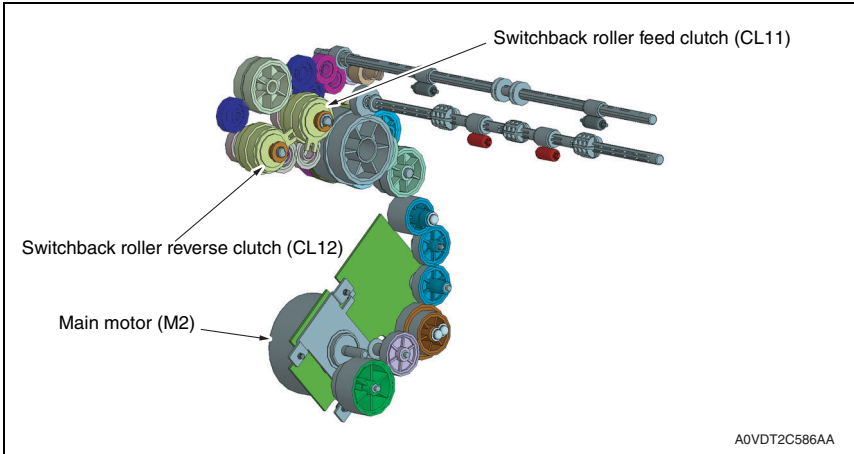
### 23.1 Composition



- |  |   |
|--|---|
| [1] Switchback roller feed clutch (CL11) | [4] Media exit roller                       |
| [2] Switchback roller                    | [5] Switchback roller reverse clutch (CL12) |
| [3] Media full sensor (PS7)              |   |



### 23.2 Drive



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COMPOSITION/  
OPERATION

### 23.3 Operation

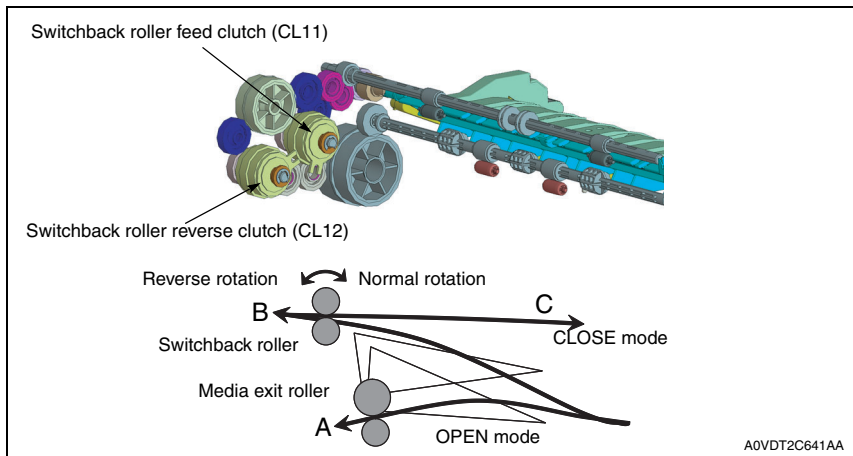
#### 23.3.1 Transport control

##### A. Media exit switching mechanism

- The media transport path is switched between one in the exit direction and one toward the switchback roller.
- The path is switched through the combination of the two clutches, switchback roller feed clutch and switchback roller reverse clutch. The direction of media travel is controlled by the position of the switchback guide and normal or reverse rotation of the switchback roller.
- The two clutches are never energized at the same time.

##### (1) Normal/reverse rotation clutch motion

Transportation route	Switchback roller rotating direction	Normal rotation clutch	Reverse rotation clutch	Switchback guide mode
A	Stopping	OFF	OFF	CLOSE
B	Normal rotation	ON	OFF	OPEN
C	Reverse rotation	OFF	ON	CLOSE

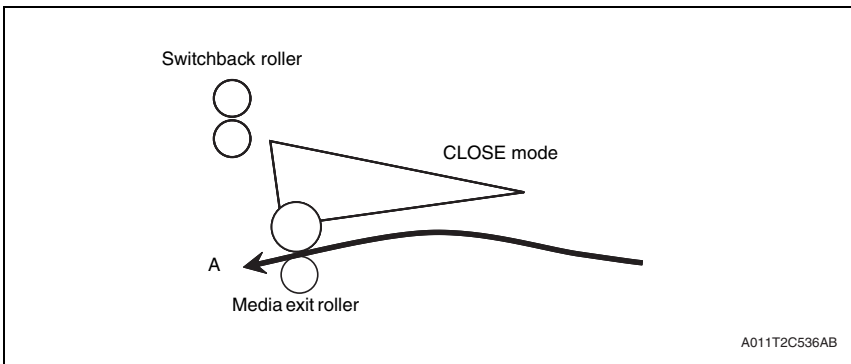


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COMPOSITION/  
OPERATION

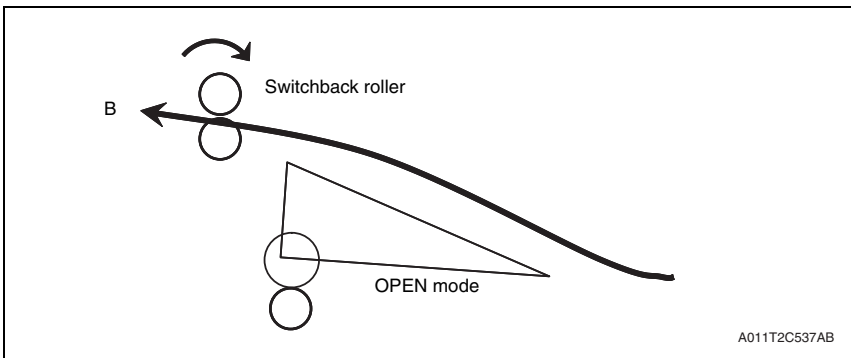
<Single-side printing>

- Media exits outside the machine with the switchback gate in CLOSE mode.
- The switchback roller mode is stopping.

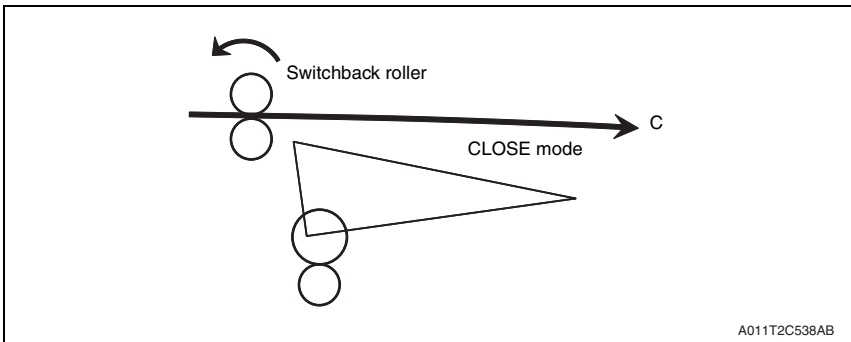


<Duplex printing>

1. The switchback guide turns to the OPEN mode and the media is transported to the direction of the switchback roller.
2. The switchback roller rotates forward.

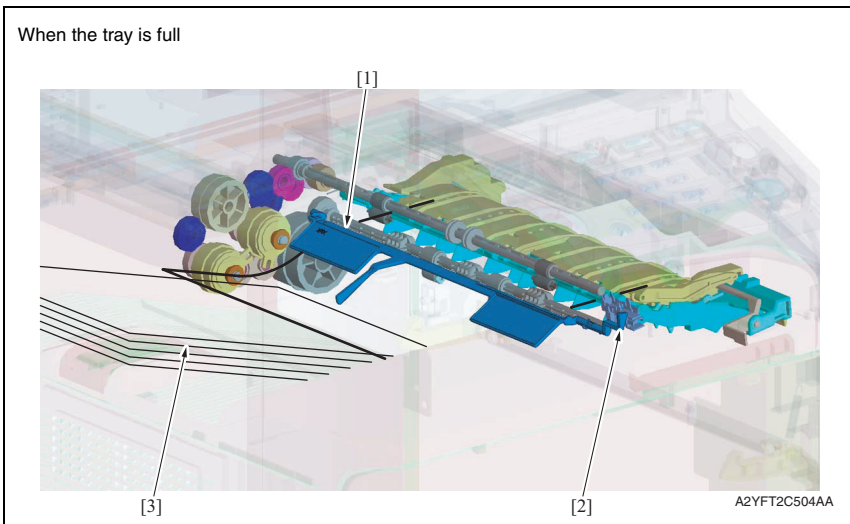


3. The switchback guide becomes CLOSE mode after the back end of the media passes through the switchback roller, and the switchback roller starts rotating backward to send the media to the duplex unit direction.



### 23.3.2 Media full detection

- The media full sensor detects the load capacity of output media in the exit tray.
- When the media holding plate is low, the edge of the media holding plate shades the media full sensor.
- When printing starts, the output media pushes up the media holding plate and the edge of the plate unblocks the media full sensor.
- After all media is discharged, the media holding plate goes down and the edge of the plate shades the media full sensor. If the sensor is shaded, the printed media is judged to not have reached the maximum load capacity yet.
- After all media is discharged, if the output media in the exit tray keeps the media holding plate up and the media full sensor remains unblocked, the printed media is judged to have reached the maximum load capacity, and the operation panel displays the message.
- If the sensor detects that the exit tray is full, printing is stopped.



[1] Actuator

[3] Media

[2] Tray media full sensor (PS7)

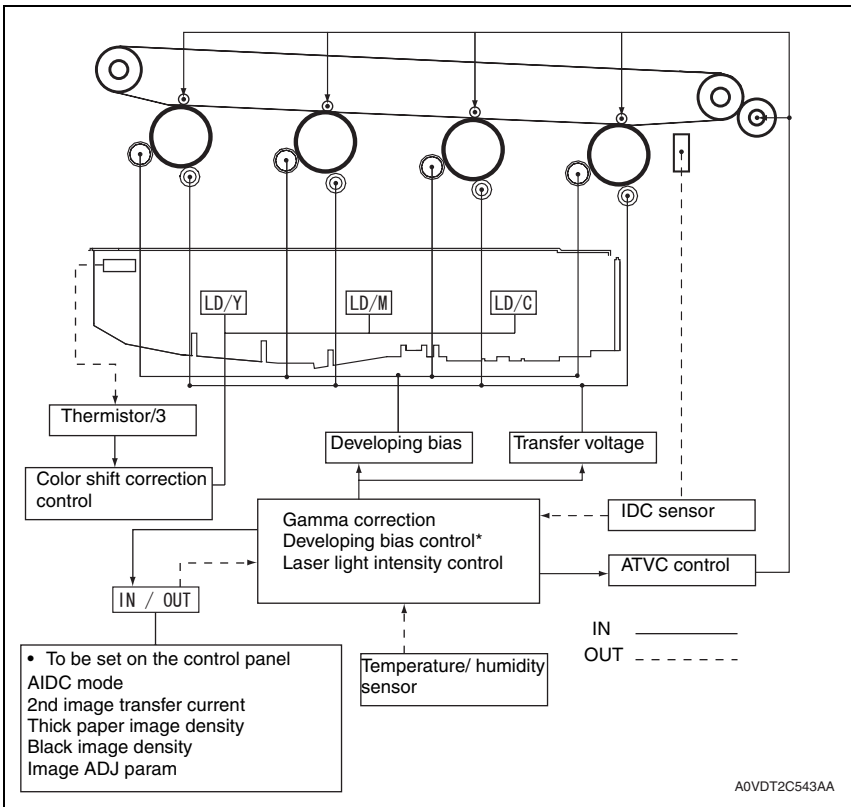
## 24. IMAGE STABILIZATION CONTROL

### 24.1 Outline

- To ensure uniform output image quality at all times, comprehensive control is provided including control of the developing bias voltage, laser light intensity, registration correction, gamma correction, and other parameters.

Purpose	Control	Control means
To stabilize image density	<ul style="list-style-type: none"> <li>IDC sensor output control</li> <li>Developing bias control</li> <li>Developing bias control (control of the maximum amount of toner sticking to the transfer belt)</li> <li>Laser light intensity control</li> <li>Gamma correction control</li> <li>Color shift correction control</li> </ul>	IDC sensor Temperature/ humidity sensor Thermistor/3
To stabilize image transfer	<ul style="list-style-type: none"> <li>1st image transfer ATVC</li> <li>2nd image transfer ATVC</li> </ul>	Temperature/ humidity sensor

An explanation is given of the control for each section.



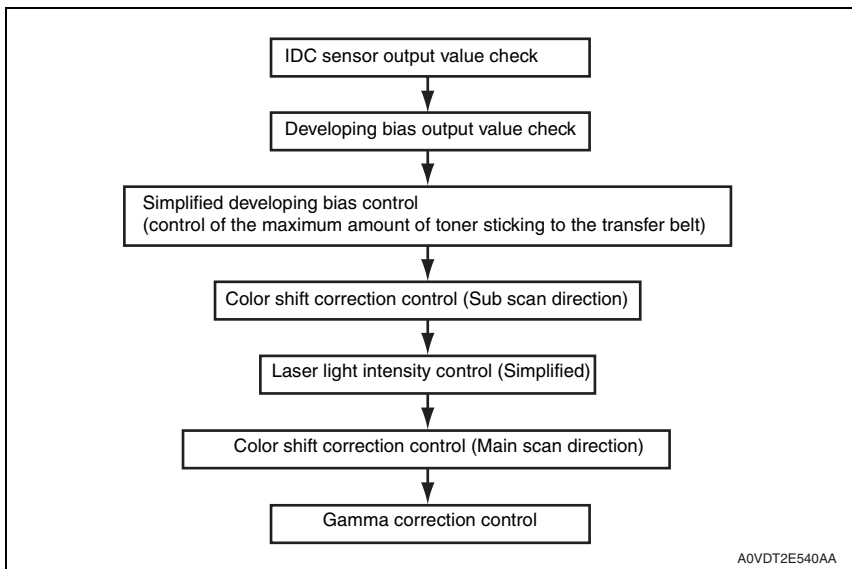
\*: Developing bias control (control of the maximum amount of toner sticking to the transfer belt)

## 24.2 Operation sequence

- Image stabilization control may be divided into three types according to the condition of the main body.
- Image stabilization control may be divided into three types: complete correction control, simplified correction control, and individual registration control. The following explain specific details of each type of control.

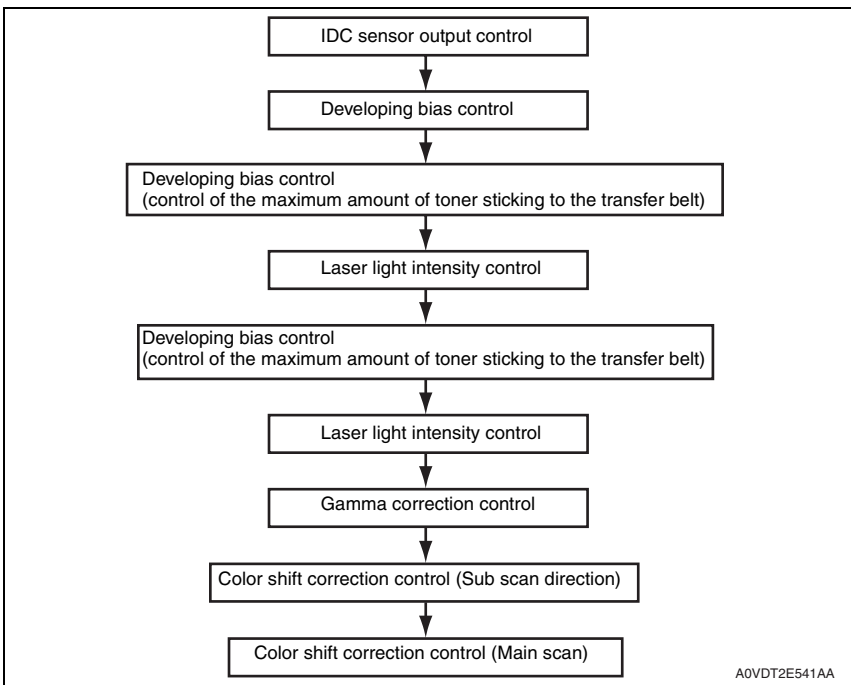
### 24.2.1 Simplified correction control

- A comparison is made with the previous measurements and the simplified correction control is executed if any faulty measurement is noted. If the simplified correction control is not effective in making the necessary corrections, the complete correction control is executed.



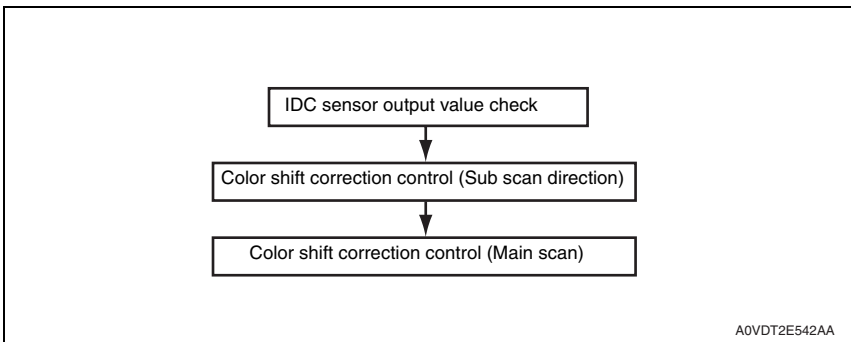
### 24.2.2 Complete correction control

- The complete correction control is executed if the simplified correction control is not effective in making the necessary corrections.



### 24.2.3 Individual registration control

- Incorrect color registration that occurs due to variations in parts of the main body used for regulating different drawing positions is detected and corrected.



## 24.3 Control descriptions

### 24.3.1 Simplified correction control

- The complete correction control is executed if the simplified correction control is not effective in making the necessary corrections.

	Control name	Purpose
1	IDC sensor output value check	To check the intensity of light (output value) of the IDC sensor relative to the clear surface of the transfer belt on which no toner sticks. A comparison is made with the previous measurement and, if the output value falls outside a specified range, control is shifted to the complete correction.
2	Developing bias output value check	To measure the voltage value at which a leak is detected when a predetermined developing bias is outputted to the developing roller of each color. A comparison is made with the previous measurement and, if the output value falls outside a specified range, control is shifted to the complete correction.
3	Simplified developing bias control (control of the maximum amount of toner sticking to the transfer belt)	To detect the amount of toner sticking to the transfer belt using the IDC registration sensor by producing a simplified detection pattern on the transfer belt. With reference to the detected data and the environmental data obtained from the temperature/humidity sensor, the developing bias value with which the optimum maximum density is obtained is calculated and stored in memory.
4/6	Color shift correction control (Main scan/Sub scan direction)	In the tandem engine having an image forming process for each color, incorrect color registration, which occurs due to variations in parts used for regulating different drawing positions, tends to occur. The incorrect color registration is automatically detected and corrected.
5	Laser light intensity control (Simplified)	To correct the target level of fluctuations in fine line reproduction and reverse image reproducibility that occur due to variations in photo conductor electrostatic characteristics, developing characteristics, and transfer characteristics (part-to-part variations, environment, durability). A simplified detection pattern is produced on the surface of the transfer belt with a predetermined intensity of laser light and the output value of the IDC registration sensor is detected. The laser light intensity is calculated from the output data detected of the IDC registration sensor.
7	Gamma correction control	To adjust the intensity of the laser light in order to correct changes in gradation characteristics caused by variations in the photo conductor sensitivity, developing characteristics, durability, environment, and part-to-part variations in manufacturing to a linear one. A simplified gradation pattern is produced on the transfer belt and gradation characteristics outputted by the current printer is calculated using the IDC registration sensor. The gamma correction data is calculated using the detected data of different gradation levels. The optimum laser light intensity is set for each of the different gradation levels.



**24.3.2 Complete correction control**

- The following controls 1 to 6 are collectively called the complete correction control.

	Control name	Purpose
1	IDC sensor output control	Changes in various types of characteristics due to change with time of the IDC sensor (deteriorated LED, dirty sensor surface), part-to-part variations in the sensors, and change of environment affect the IDC sensor output corresponding to the clear transfer belt surface. To correct fluctuations in the output, the sensor LED intensity is adjusted so as to keep constant the IDC sensor output value.
2	Developing bias control	If the developing bias voltage (Vpp) is too high for the Ds distance in each imaging unit, a leak image (background leak, image area leak) results. If Vpp is excessively low, halftone reproducibility becomes poor. This control detects a Vpp range, in which no image failure occurs, to set the optimum Vpp.
3/5	Developing bias control (control of the maximum amount of toner sticking to the transfer belt)	Control details are equivalent to those of the simplified correction control. Unlike the simplified correction control, however, an even more detailed detection pattern is transferred to calculate detailed output values.
4/6	Laser light intensity control	
7	Gamma correction control	Control details are equivalent to those of the simplified correction control.
8/9	Color shift correction control (Main scan/Sub scan direction)	

**24.3.3 Individual registration control**

	Control name	Purpose
1	IDC sensor output control	Control details are equivalent to those of the simplified correction control.
2	Color shift correction control (Main scan/Sub scan direction)	

## 24.4 Execution timing

### 24.4.1 Predrive operation

- The following describe image stabilization controls performed when, for example, the main power switch is turned ON, the sleep mode is canceled, the door is closed, or a malfunction is reset.

Operation conditions	Stabilization control type
<ul style="list-style-type: none"> <li>A new imaging unit is detected.</li> <li>A replacement imaging unit is detected.</li> <li>A change in environment is detected (there is a change in humidity or temperature of a predetermined value or more from the levels during the last stabilization sequence).</li> <li>There is a change in environment (temperature) of a predetermined value or more in PH during a multi-print cycle.</li> <li>A malfunction is reset.</li> <li>The simplified correction control is not effective in making a good correction.</li> <li>A change in environment is detected during the sleep mode (there is a change in humidity or temperature of a predetermined value or more from the levels during the last stabilization sequence).*1</li> </ul>	Complete correction control
<ul style="list-style-type: none"> <li>When the main power switch is turned ON, a period of 24 hours or more has elapsed since the last operation of power turning OFF.</li> <li>The count of the number of printed pages produced reaches a predetermined value as counted from the last stabilization sequence.</li> <li>The main body exits from the sleep mode that has lasted for a predetermined period of time or more.</li> </ul>	Simplified correction control
<ul style="list-style-type: none"> <li>There is a change in environment (temperature) of a predetermined value or more in PH.</li> <li>There is a change in environment (temperature) of a predetermined value or more in PH during the sleep mode.</li> </ul>	Individual registration control

\*1: During the sleep mode, an environmental check is made every hour and the DC power supply fan motor is energized for several seconds for taking measurement.

### 24.4.2 During and after a print cycle

- The following describe image stabilization controls performed during and after a print cycle.

Operation conditions	Stabilization control type
<ul style="list-style-type: none"> <li>A change in environment is detected (there is a change in humidity or temperature of a predetermined value or more from the levels during the last stabilization sequence)</li> </ul>	Complete correction control
<ul style="list-style-type: none"> <li>The count of the number of printed pages produced reaches a predetermined value as counted from the last stabilization sequence.</li> </ul>	Simplified correction control
<ul style="list-style-type: none"> <li>There is a change in environment (temperature) of a predetermined value or more in the PH.</li> </ul>	Individual registration control

### 24.4.3 When the AIDC mode is selected

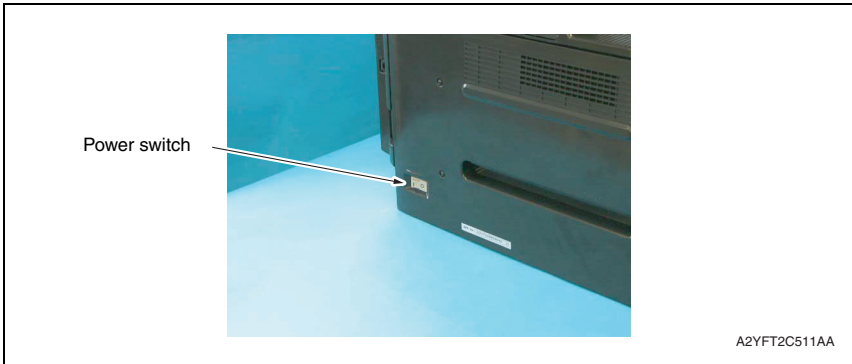
- The following describe the stabilization controls executed using the AIDC menu available on the control panel.

<ul style="list-style-type: none"> <li>At execution of the AIDC menu</li> </ul>	Gamma correction control Color shift correction control (Main scan/Sub scan direction)
---	---

## 25. POWER SUPPLY SECTION

### 25.1 Parts energized when the main power switch is turned ON

#### 25.1.1 Configuration



#### 25.1.2 Operation

- When the main power switch is turned ON, power is supplied from the DC power supply to the following components.

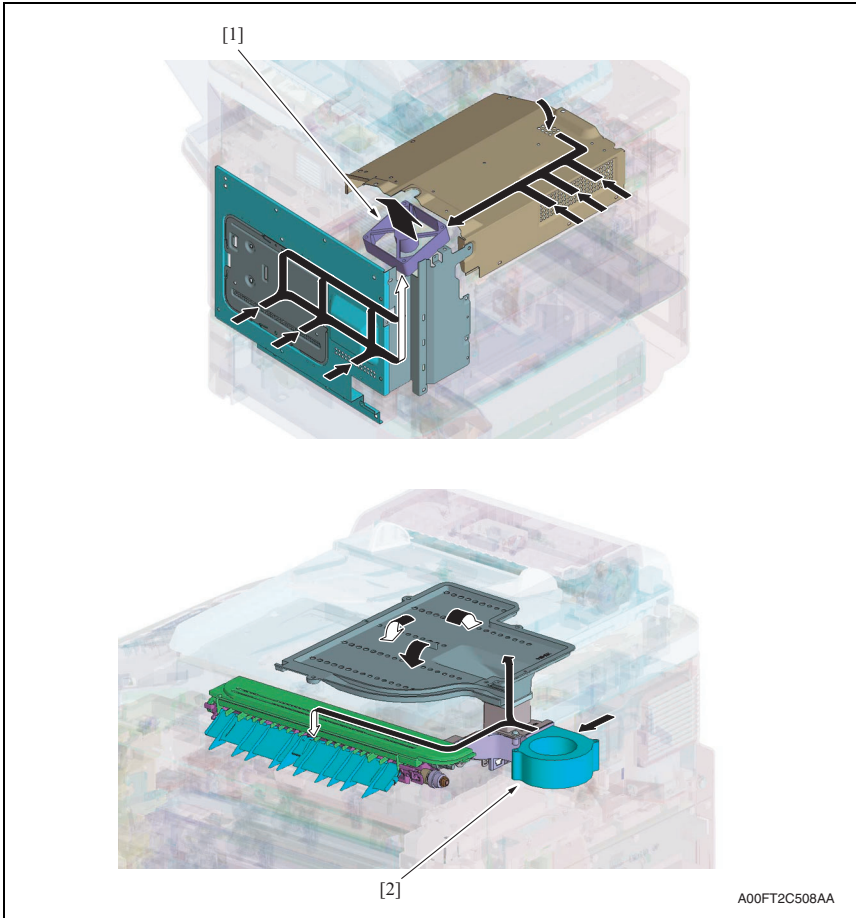
Voltage	Power supplied to
24V	Printer control board
5V	MFP board
3.4V	MFP board

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OPERATION

## 26. FAN CONTROL

### 26.1 Configuration



[1] DC power supply fan motor (FM10)

[2] Cooling fan motor (FM11)

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## 26.2 Operation

### 26.2.1 Function

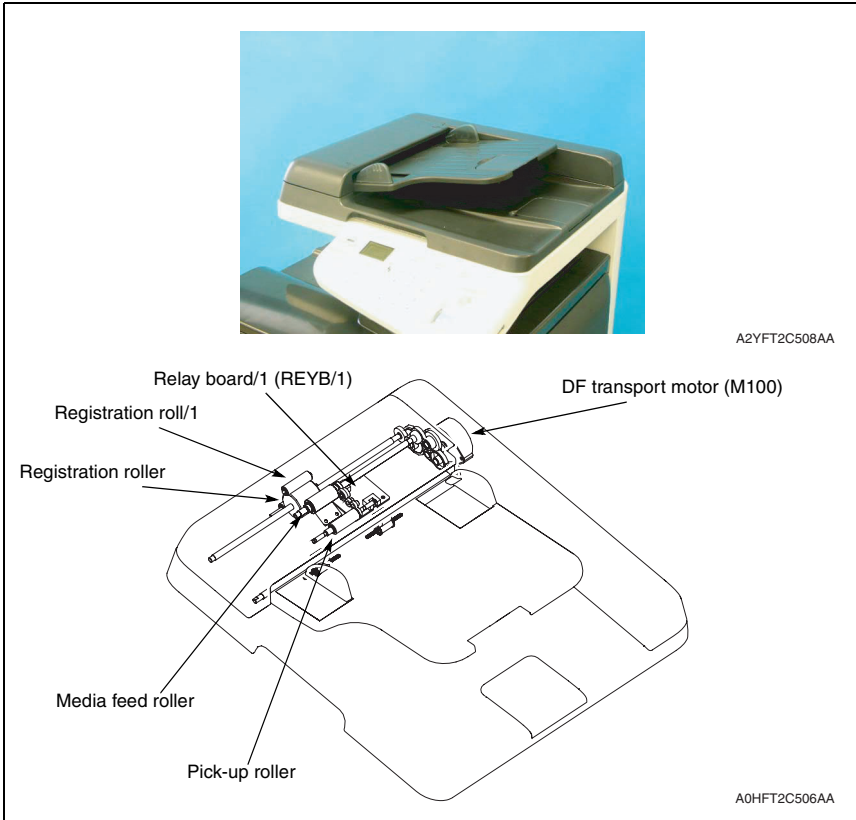
Motor name	Function (purpose)
DC power supply fan motor	<ul style="list-style-type: none"> <li>Discharges heat generated from the interior parts (including the DC power supply, transfer belt section, toner cartridges/C, M, Y, and motor drives) from the main body to prevent the interior temperature from rising inordinately.</li> <li>Discharges heat generated from the print head from the main body to prevent the print head temperature from becoming inordinately high.</li> <li>Removes ozone produced from the toner cartridges and charging section.</li> <li>The heat generated inside the MFP board is discharged outside the main body.</li> </ul>
Cooling fan motor	<ul style="list-style-type: none"> <li>It prevents the paper from being stuck due to fusing heat at both-sides printing part.</li> <li>It prevents overheat inside the scanner.</li> </ul>

### 26.2.2 Fan control

Motor name	Control	Control conditions (outline)
DC power supply fan motor	ON (high speed)	During a print cycle, warm-up cycle (including door open/close), image stabilization sequence, or firmware upgrading, high temperature inside the PH
	ON (medium speed)	No control
	ON (low speed)	Conditions other than those of ON (high speed)
	OFF	Not turned OFF
Cooling fan motor	ON (high speed)	During a print cycle, high temperature inside the PH
	ON (medium speed)	No control
	ON (low speed)	No control
	OFF	Conditions other than those of ON (high speed)

## 27. AUTOMATIC DOCUMENT FEEDER SECTION

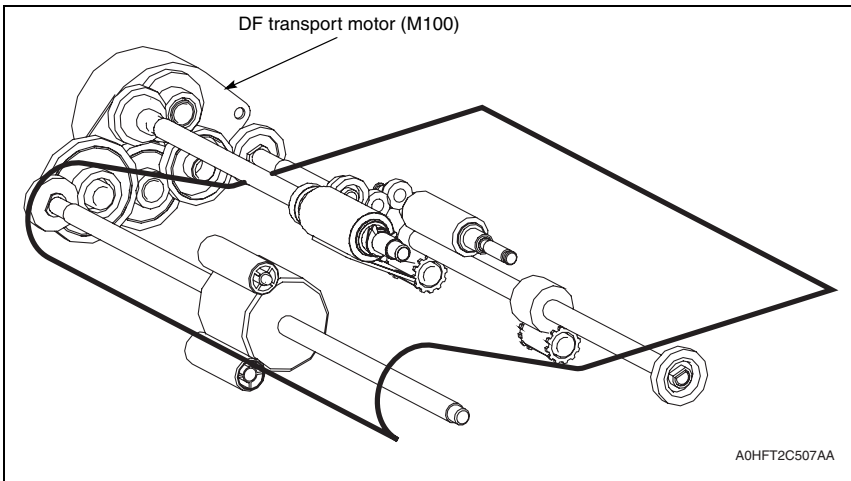
### 27.1 Composition



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## 27.2 Drive



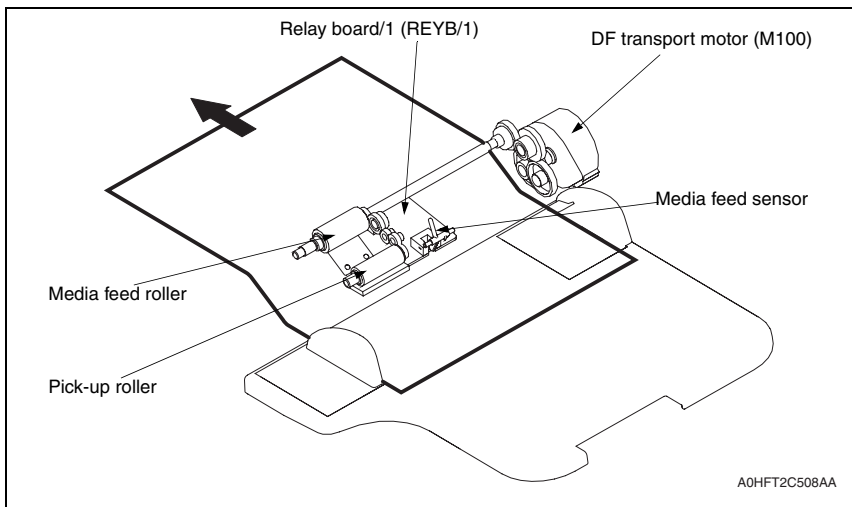
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## 27.3 Operation

### 27.4 Document feed mechanism

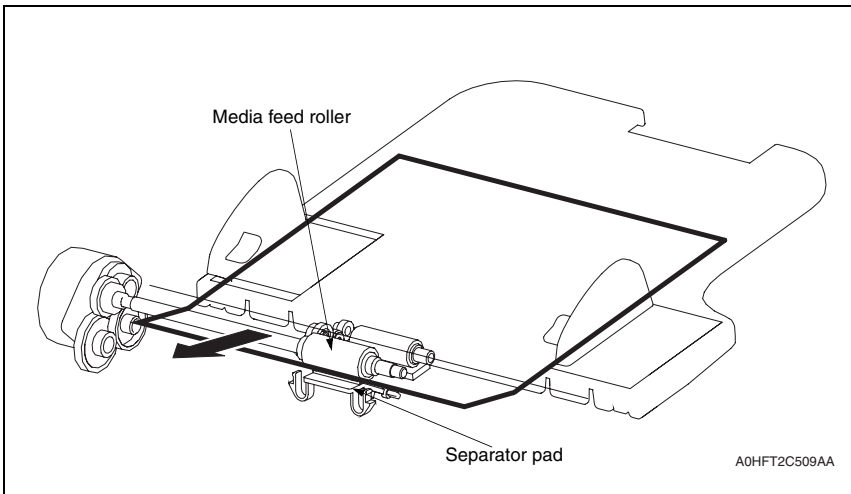
- The media feed sensor detects a document that has been properly loaded in the document feeder.
- The document stopper establishes the leading edge position of the document loaded in the document feeder. The stopper is lowered in the standby state and raised when the document is taken up and fed in.
- The document stopper is raised and lowered in synchronism with the raising and lowering motion of the pick-up roller.
- The pick-up roller and media feed roller turn to take up and feed the original properly.
- The pick-up roller transports the original up to the media feed roller.
- The DF transport motor drives the pick-up roller and media feed roller through a gear train.





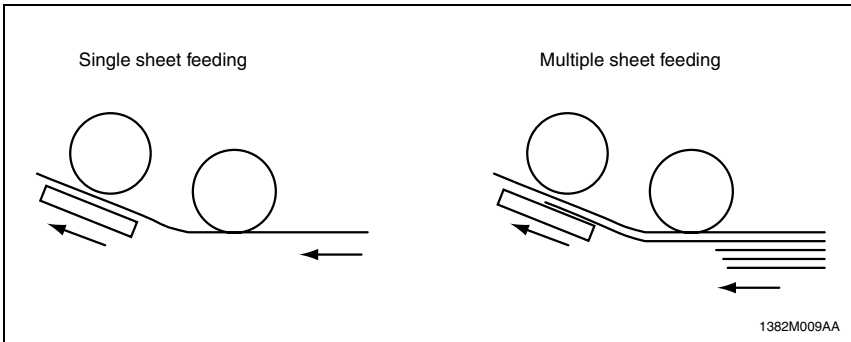
**27.4.1 Document separation mechanism**

- Double feeding of paper is prevented using coefficient of friction between the media feed roller and separator pad.



**Single sheet feeding** : The coefficient of friction on the front side of the paper fed between the media feed roller and separator pad is equal to that on the backside of the paper. This allows the media feed roller to transport the paper.

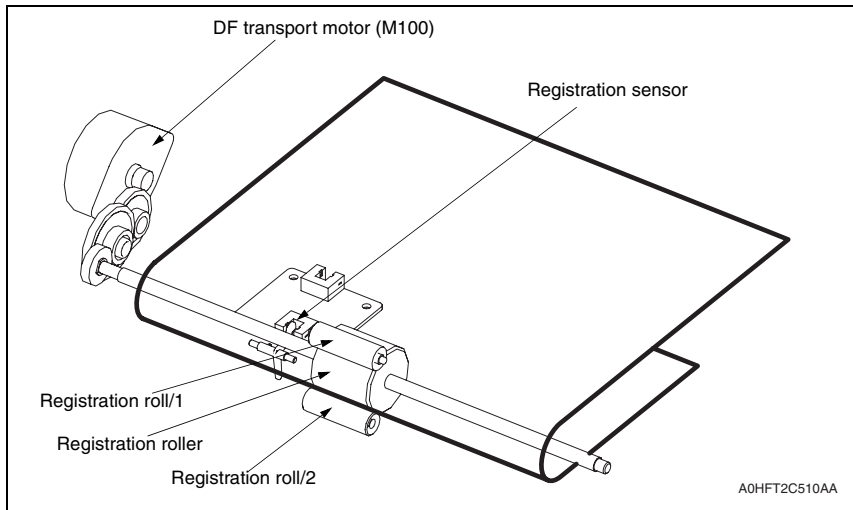
**Multiple sheet feeding** : The coefficient of friction between the paper and separator pad is greater than that between sheets of paper. This allows only the first sheet of paper to be transported by the media feed roller.



## 27.5 Document transport/exit mechanism

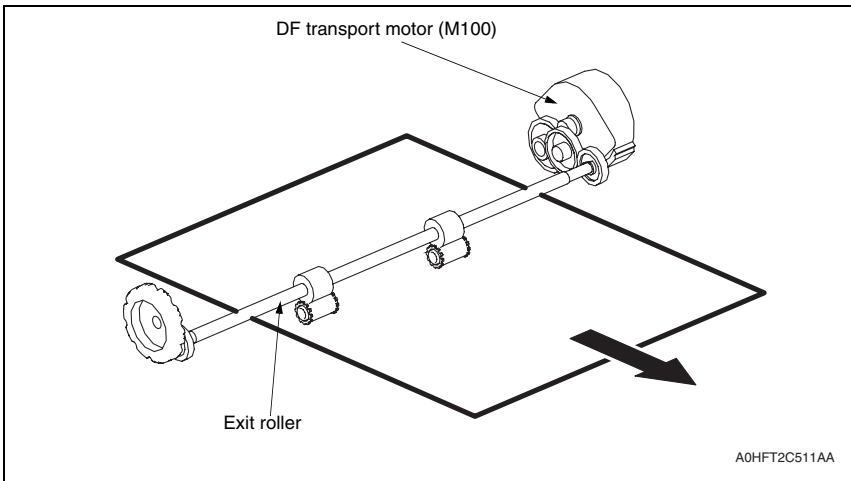
### 27.5.1 Document transport mechanism

- The registration roller is rotated by the drive from the DF transport motor and transports the original that has been taken up to the document scanning position of the printer.
- The DF transport motor drives the transport roller through a gear train.
- Activation of the registration sensor establishes the document scan start timing.
- Deactivation of the registration sensor establishes the document scan end timing and timing to de-energize the DF transport motor.



### 27.5.2 Document exit mechanism

- The exit roller turns to feed the original out of the document feeder. The original is fed onto the document exit tray.
- The DF transport motor turns the exit roller through a gear train.





KONICA MINOLTA

**SERVICE MANUAL**

THEORY OF OPERATION

---

# Lower Feeder Unit PF-P09





# Revision history

After publication of this service manual, the parts and mechanism may be subject to change for improvement of their performance.

Therefore, the descriptions given in this service manual may not coincide with the actual machine.

When any change has been made to the descriptions in the service manual, a revised version will be issued with a revision mark added as required.

Revision mark:

- To indicate clearly a section revised,  is shown at the left margin of the revised section.  
The number inside  represents the number of times the revision has been made.
- To indicate clearly a page that contains the revision,  is shown near the page number of the corresponding page.  
The number inside  represents the number of times the revision has been made.

## NOTE

Revision marks shown in a page are restricted only to the latest ones with the old ones deleted.

- When a page revised in Ver. 2.0 has been changed in Ver. 3.0:  
The revision marks for Ver. 3.0 only are shown with those for Ver. 2.0 deleted.
- When a page revised in Ver. 2.0 has not been changed in Ver. 3.0:  
The revision marks for Ver. 2.0 are left as they are.

2011/01	1.0	—	Issue of the first edition
Date	Service manual Ver.	Revision mark	Descriptions of revision

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## Lower Feeder Unit

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# OUTLINE

## 1. PRODUCT SPECIFICATIONS

### A. Type

Name	Add-on 500-sheet media feed cassette
Type	Front-loading type
Installation	Desk type
Media feeding system	Media separation by a small-diameter roller with torque limiter
Document alignment	Center

### B. Media type

Media size	B5S(JIS)/Executive/LetterS/A4S/Letter Plus/G-Legal/Legal
Media type	<ul style="list-style-type: none"> <li>• Plain paper: 60 to 90 g/m<sup>2</sup> (16 to 24 lb)</li> <li>• Recycled paper: 60 to 90 g/m<sup>2</sup> (16 to 24 lb)</li> </ul>
Capacity	500 sheets

### C. Machine specifications

Power Requirements	DC 24 V $\pm$ 10% (supplied from the main body)
	DC 3.3 V $\pm$ 5%
Max. Power Consumption	16 W or less
Dimensions	533 mm (W) $\times$ 508 mm (D) $\times$ 117 mm (H) 21.0 inch (W) $\times$ 20.0 inch (D) $\times$ 4.6 inch (H)
Weight	Approx. 8.5 kg (18.74 lb)

### D. Operating environment

Temperature	10° to 30° C/50° to 86° F (with a fluctuation of 10° C/h (18° F/h))
Humidity	15% to 85% (with a fluctuation of 10%/h)

### NOTE

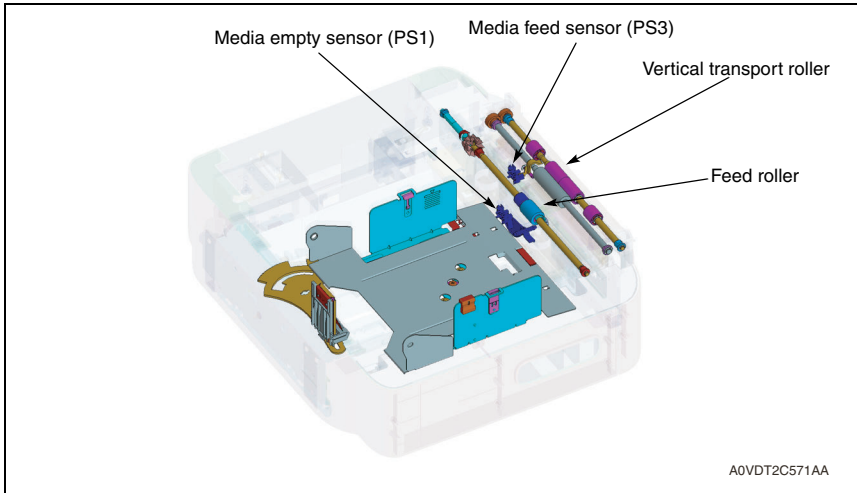
These specifications are subject to change without notice.



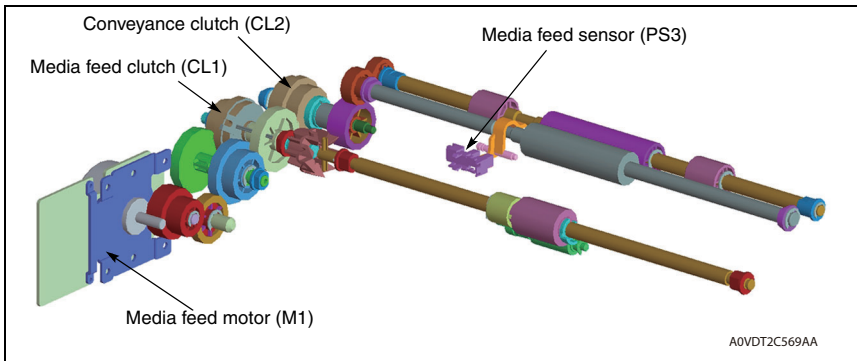
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# COMPOSITION/OPERATION

## 2. OVERALL COMPOSITION



## 3. DRIVE



Lower feeder unit

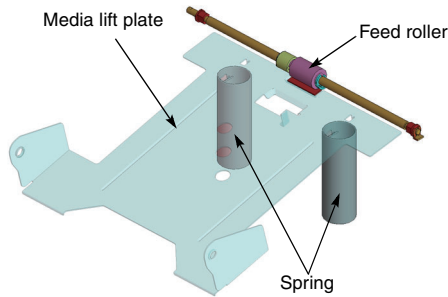
COMPOSITION/  
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## 4. OPERATIONS

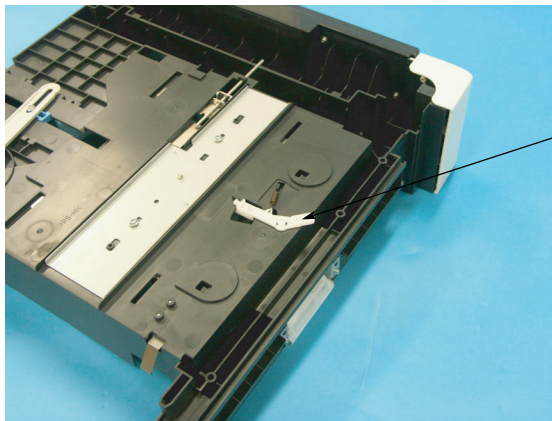
### 4.1 Media feed control

#### 4.1.1 Media lift plate mechanism

- The media lift plate is pressed down into the locked position (in which the media is loaded in position).
- Load a media stack and then slide the tray into the main body. This unlocks the media lift plate.
- The media lift plate (media stack) is pressed against the feed roller.
- The media lift plate (media stack) is pressed upward by the springs at all times.



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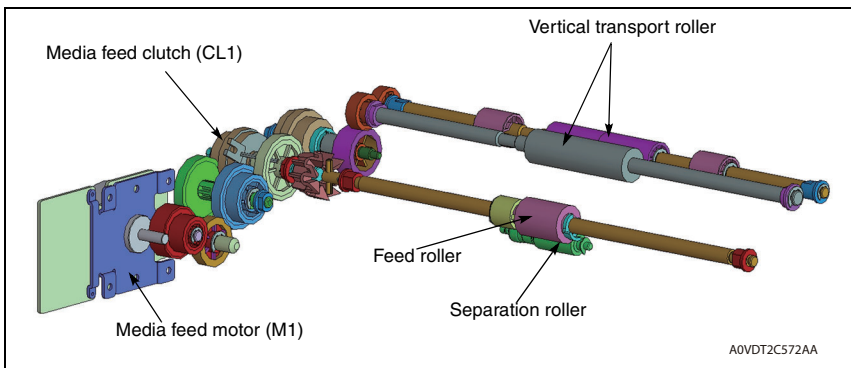
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Lower feeder unit

COMPOSITION/  
OPERATION

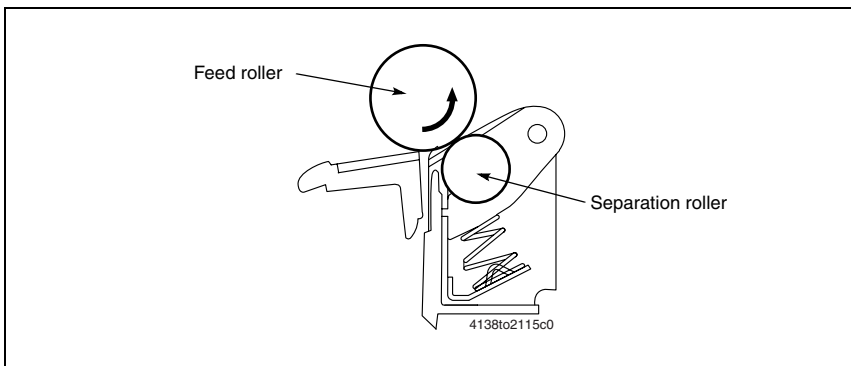
### 4.1.2 Feed roller/vertical transport roller control

- The feed roller and vertical transport roller are rotated, which feeds media from the lower feeder unit and conveys it further into the inside of the main body
  1. The media feed motor is energized to turn the vertical transport roller.
  2. The media feed clutch is energized to turn the feed roller.
  3. The media is fed in by the feed roller.
  4. The media fed in by the feed roller is conveyed onto the registration roller of the main body by the vertical transport roller.
  5. When the media feed sensor is activated and then the media is conveyed onto a predetermined point in the media path, the media feed clutch is de-energized, thus bringing the feed roller to a stop. The vertical transport roller thereafter takes charge of conveying media further.
  6. When the trailing edge of the last sheet of media moves past the registration sensor, the media feed motor is de-energized to bring the vertical transport roller to a stop.



### 4.1.3 Media separation mechanism

- A separation roller provided with a torque limiter is used to prevent double feeding of media.



Lower feeder unit

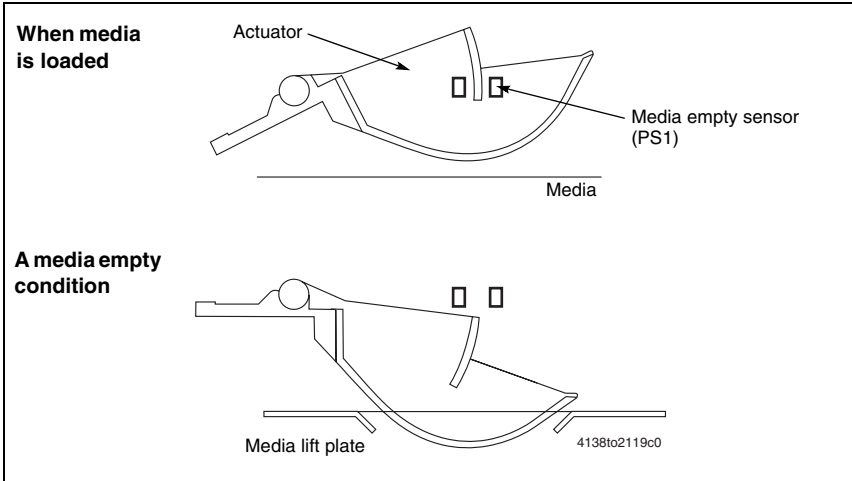
COMPOSITION/  
OPERATION

#### 4.1.4 Media detection mechanism

- The media feed sensor detects the media fed in by the feed roller.
- When the media feed sensor actuator unblocks the media feed sensor, the main body considers that the media has reached the sensor position.

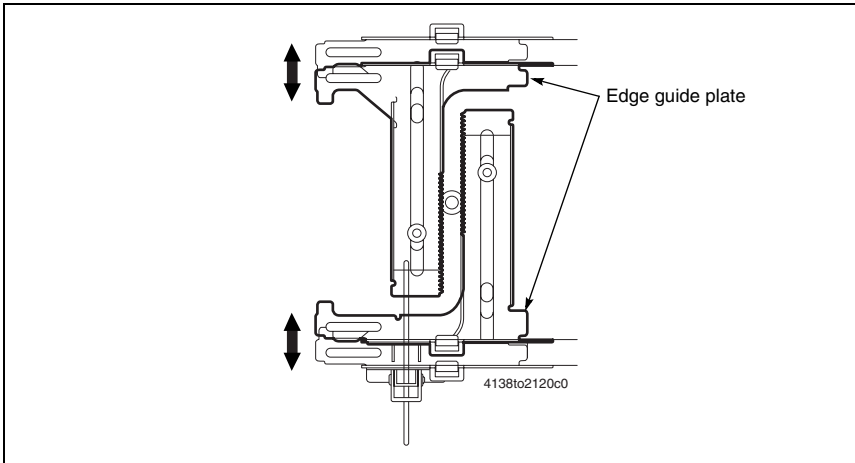
#### 4.1.5 Media empty condition detection control

- The media empty message is displayed on the panel when the empty sensor actuator unblocks the media empty sensor.
- No mechanism is provided for detecting a media near empty condition.



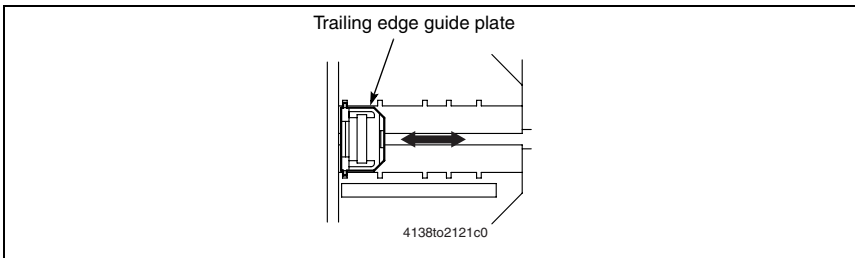
#### 4.1.6 Edge guide plate

- The edge guide plate can be slid to the exact size in the width direction of the media to be loaded (A4, B5, 8/12).



#### 4.1.7 Trailing edge guide plate

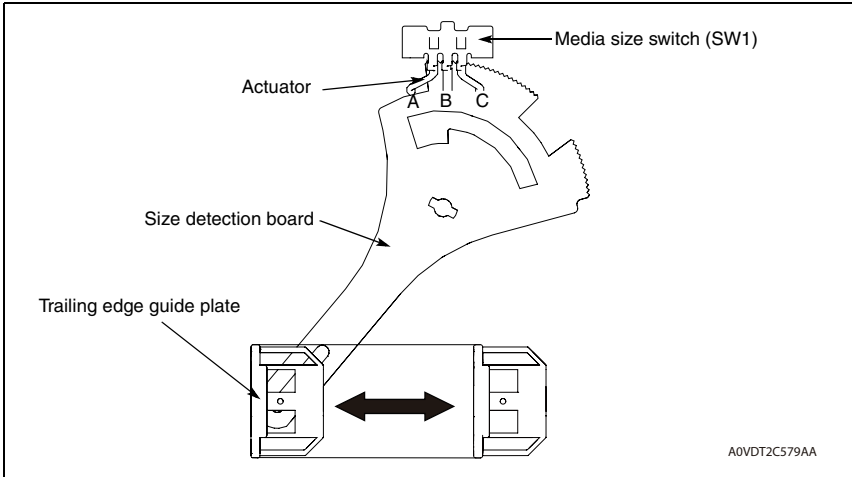
- The trailing edge guide plate can be slid to the exact size in the length direction of the media to be loaded (14 inch, 13 inch, 12<sup>7</sup>/<sub>10</sub> inch, A4, 11, 10<sup>1</sup>/<sub>2</sub> inch, B5).



**4.1.8 Media size detection control**

- The media size switch detects the length size (feed direction) of the media.
  1. The size detection board turns as the trailing edge guide plate is moved.
  2. When the tray is slid into the main body, the size detection board pushes the actuator of the media size switch installed to the main body frame, thus turning ON the switch.
  3. The combination of ON/OFF positions of the sub-switches of the media size switch determines the specific media size that can be either one of the seven different sizes.

Lower feeder media size switch			Media size
SW1	SW2	SW3	
OFF	ON	ON	Legal (8.5" × 14")
ON	ON	ON	Government legal letter plus
ON	ON	OFF	A4
ON	OFF	OFF	Letter (8.5" × 11")
ON	OFF	ON	Executive
OFF	ON	OFF	Custom Size
OFF	OFF	ON	B5
OFF	OFF	OFF	Lower feeder unit not installed

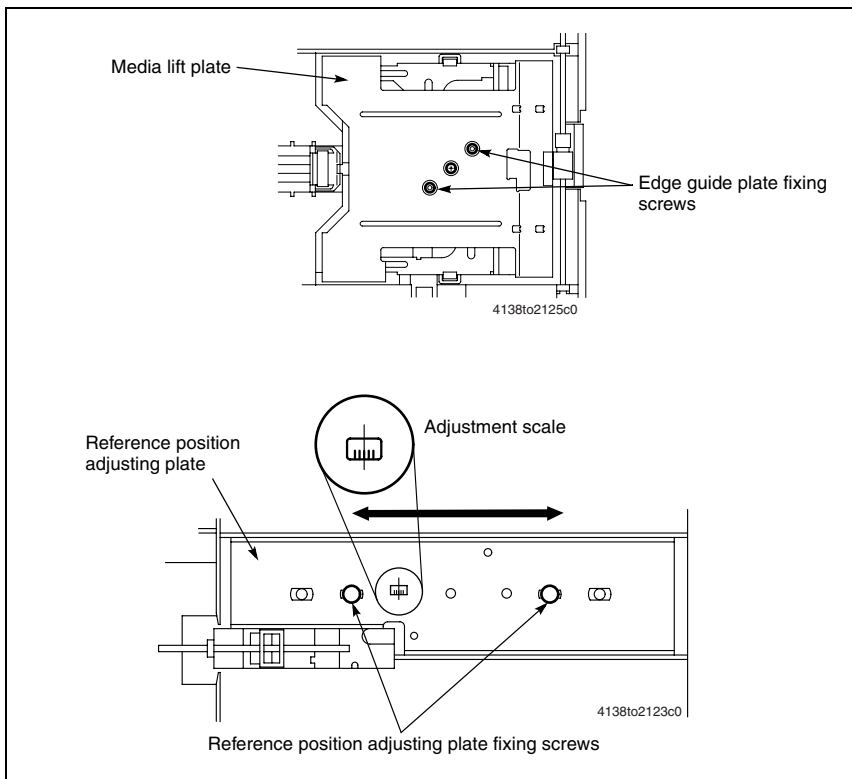


Lower feeder unit

COMPOSITION/  
OPERATION

#### 4.1.9 Media reference position adjustment mechanism

- The edge guide plate can be moved to allow the print start reference position for the media to be adjusted.
  1. Through a hole in the media lift plate on top of the tray, loosen two screws that secure the edge guide plate.
  2. Accessing the tray from its bottom surface, loosen two screws that secure the reference position adjusting plate.
  3. Slide the reference position adjusting plate as necessary as indicated on the scale.
  4. From the bottom surface of the tray, tighten the two screws that secure the reference position adjusting plate.
  5. Through the hole in the media lift plate on top of the tray, tighten the two screws that secure the edge guide plate.



#### 4.1.10 Media misfeed detection control

- If the media feed sensor is not activated within a predetermined period of time after a media feed sequence has been started, the main body determines that there is a media misfeed. It then displays a media misfeed message on the panel.
- The media misfeed display can be reset by opening and closing any door.



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