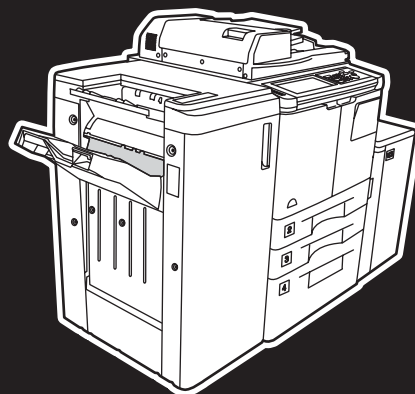




hp LaserJet 9055 mfp
hp LaserJet 9065 mfp



service manual

hp LaserJet 9055mfp (Q3631A)
hp LaserJet 9065mfp (Q3632A)

service manual

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Manual contents

The *HP LaserJet 9055mfp/9065mfp Service Manual* contains six separate documents. Each document provides specific service information for one of the components that make up the HP LaserJet 9055mfp/9065mfp. The following are the component documents, listed in the order that they appear in the manual:

- HP LaserJet 9055mfp/9065mfp (main engine)
- Automatic document feeder
- 4000-sheet high capacity input
- Post insertion kit
- Punch kit
- Stapler/stacker and multifunction finisher

Manual organization

Each separate document contains its own table of contents and index. The tabs on the right-hand pages help you identify the sections of the manual. The tab for the table of contents in each document appears in magenta. The tabs for the remaining chapters in each document appear in gray.

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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 notices

Because of possible hazards to an inexperienced person servicing this MFP as well as the risk of damage to the MFP, HP strongly recommends that all servicing be performed only by HP-trained service technicians.

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

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

Therefore, this service handbook 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 MFP properly.

Keep this service handbook also for future service.

When it is impossible to read the description about safety and warnings (due to contamination or tear), the relevant page should be replaced.

Description items for Warning, Caution, and Note

In this service handbook, Warning, Caution, and Note are defined as follows together with a symbol mark to be used in a limited meaning.

When servicing the MFP, the relevant works (disassembling, reassembling, adjustment, repair, maintenance, and so forth) need to be conducted with utmost care.

WARNING!

Warning messages alert the reader to a specific procedure or practice which, if not followed correctly, could cause personal injury or catastrophic loss of data or equipment.

CAUTION

Caution messages appear before procedures which, if not observed, could result in loss of data or damage to equipment

Note

Notes contain important information.

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


Precaution when
using the MFP


General precaution


Electric hazard


High temperature


Prohibition when
using the MFP


General prohibition


Do not touch with wet hand


Do not disassemble


Direction when
using the MFP


General instruction


Unplug

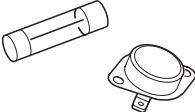
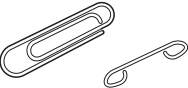

Ground/Earth

Safety warnings

Modifications not authorized by hp

HP MFPs are renowned for their high reliability. This reliability is achieved through high-quality design and a solid service network.

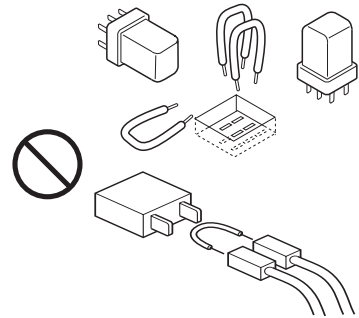
MFP design is a highly complicated and delicate process where numerous mechanical, physical, and electrical aspects have to be taken into consideration, with the aim of arriving at proper tolerances and safety factors. For this reason, unauthorized modifications involve a high risk of degradation in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

 WARNING: Prohibited actions		
Do not use any cables or power cord not specified by HP.		
- Do not use any fuse or thermostat not specified by HP. - Safety will not be assured, leading to a risk of fire and injury.		
Do not disable fuse functions or bridge fuse terminals with wire, metal clips, solder, or similar object.		



WARNING: Prohibited actions

- Do not disable relay functions (such as wedging paper between relay contacts).



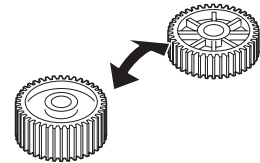
- Do not disable safety functions (interlocks, safety circuits, and so forth). Safety will not be assured, leading to a risk of fire and injury.



- Do not make any modification to the MFP unless instructed by HP.



- Do not use parts not specified by HP.



Note

Only qualified service personnel should disable relay functions and safety functions when it is necessary to solve problems.

Checkpoints when performing on-site service

HP MFPs are extensively tested before shipping to ensure that all applicable safety standards are met, and 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.

Power supply



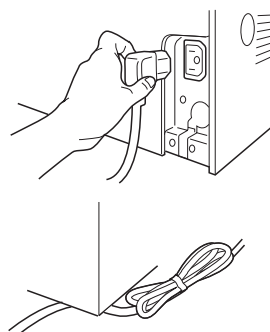
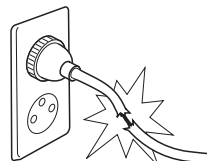
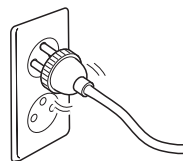
WARNING: Wall outlet

- Check that main voltage is as specified. 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 are 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.



WARNING: Power plug and cord

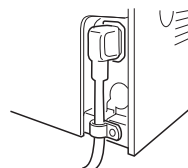
- Make sure the power cord is plugged in the wall outlet securely.
Contact problems may lead to increased resistance, overheating, and the risk of fire.
-
- Check whether the power cord is damaged. Check whether the sheath is damaged.
If the power plug, cord, or sheath is damaged, replace with a new power cord (with plugs on both ends) specified by HP. Using the damaged power cord may result in fire or electric shock.
-
- When using the power cord (inlet type) that came with this MFP, be sure to observe the following precautions:
 - a Make sure the MFP-side power plug is securely inserted in the socket on the rear panel of the MFP.
Secure the cord with a fixture properly.
 - b If the power cord or sheath is damaged, replace with a new power cord (with plugs on both ends) specified by HP.
If the power cord (inlet type) is not connected to the MFP securely, a contact problem may lead to increased resistance, overheating, and risk of fire.



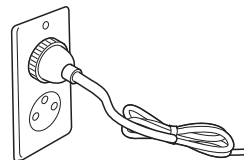


WARNING: Power plug and cord

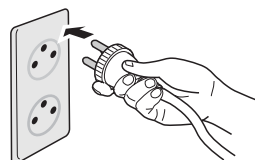
- Check whether the power cord is not stepped on or pinched by a table and so on.
- Overheating may occur there, leading to a risk of fire.



- Do not bundle or tie the power cord.
Overheating may occur there, leading to a risk of fire.



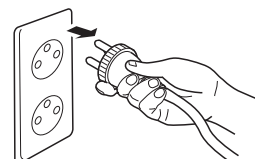
- Check whether dust has collected around the power plug and wall outlet.
Using the power plug and wall outlet without removing dust may result in fire.



- Do not insert the power plug into the wall outlet with a wet hand.
The risk of electric shock exists.

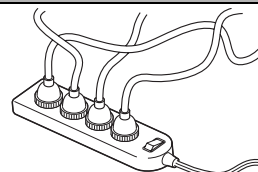


- When unplugging the power cord, grasp the plug, not the cable.
The cable may be broken, leading to a risk of fire and electric shock.



WARNING: Wiring

- Never use multi-plug adapters to plug multiple power cords in the same outlet.
If used, the risk of fire exists.



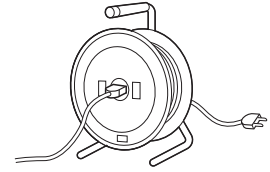


WARNING: Wiring

- When an extension cord is required, use a specified one.

Current that can flow in the extension cord is limited, so using an extension cord that is too long may result in fire.

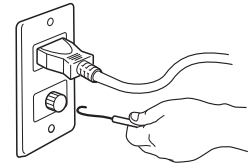
Do not use an extension cable reel with the cable taken up. Fire may result.



WARNING: Ground lead

- Check whether the MFP is grounded properly. If current leakage occurs in an ungrounded MFP, you may suffer electric shock while operating the MFP. Connect the ground lead to one of the following points:

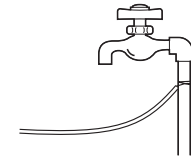
- Ground terminal of wall outlet
- Ground terminal for which Class D work has been done



- Pay attention to the point where the ground lead is connected.

Connecting the ground lead to an improper point as listed below results in a risk of explosion and electric shock:

- Gas pipe (A risk of explosion or fire exists.)
- Lightning rod (A risk of electric shock or fire exists.)
- Telephone line ground (A risk of electric shock or fire exists in the case of lightning.)
- Water pipe or faucet (It may include a plastic portion.)



Installation requirements



WARNING: Prohibited installation place

- Do not place the MFP near flammable materials such as curtains or volatile materials that may catch fire.

A risk of fire exists.



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

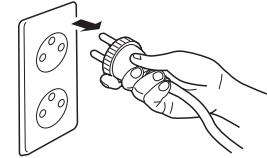
A risk of fire and electric shock exists.



WARNING: Non-operational handling

- When the MFP is not used over an extended period of time (holidays, and so forth), turn it off and unplug the power cord.

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



CAUTION: Temperature and humidity

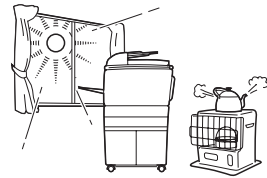
- Do not place the MFP in a place exposed to direct sunlight or near a heat source such as a heater.

A risk of degradation in MFP performance or deformation exists.

Do not place the MFP in a place exposed to cool wind. Recommended temperature and humidity are as follows:

Temperature: 10° C to 30° C (50° F to 86° F)

Humidity: 10 percent to 80 percent (no dew condensation)



CAUTION: Ventilation

- Do not place the MFP in a place where there is much dust, cigarette smoke, or ammonia gas.

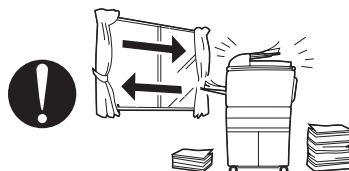
Place the MFP in a well-ventilated location to prevent MFP problems and image issues.





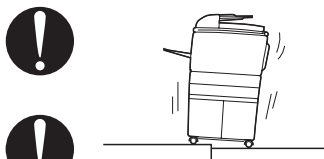
CAUTION: Ventilation

- The MFP generates ozone gas during operation, but it is not sufficient to be harmful to the human body. If a bad smell of ozone is present in the following cases, ventilate the room.
 - When the MFP is used in a poorly ventilated room
 - When making a lot of copies
 - When using multiple MFPs at the same time



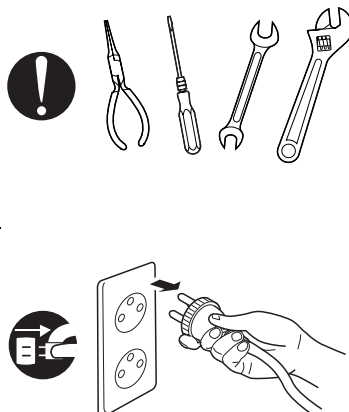
CAUTION: Vibration

- When installing the MFP, read the installation guide thoroughly. Be sure to install the MFP on a level and sturdy surface. Constant vibration will cause problems.
- Be sure to lock the caster stoppers. In the case of an earthquake and so on, the MFP may slide, leading to a injury.



CAUTION: Inspection before servicing

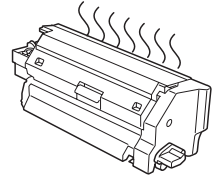
- Before conducting an inspection, read all relevant documentation (service handbook, technical notices, and so forth) and proceed with the inspection following the prescribed procedure in safety clothes, using only the prescribed tools. Do not make any adjustment not described in the documentation. If the prescribed procedure or tool is not used, the MFP may break and a risk of injury or fire exists.
- Before conducting an inspection, be sure to disconnect the power cords from the MFP and optional accessories. 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.





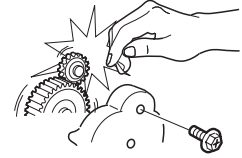
CAUTION: Inspection before servicing

- The area around the fuser unit is hot.
You may get burned.



WARNING: Work performed with the MFP powered

- Be careful when making adjustments or performing an operation check with the MFP powered on.
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.



- Be careful when servicing with the external cover detached.
High-voltage exists around the drum unit. A risk of electric shock exists.

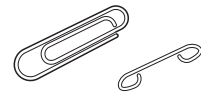


WARNING: Safety checkpoints

- Check the exterior and frame for edges, burrs, and other damage.
The user or CE may be injured.



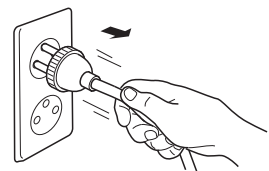
- Do not allow any metal parts such as clips, staples, and screws to fall into the MFP.
They can short internal circuits and cause electric shock or fire.

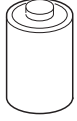
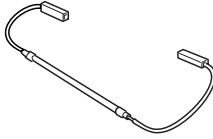


- Check wiring for squeezing and any other damage.
Current can leak, leading to a risk of electric shock or fire.



- When disconnecting connectors, grasp the connector, not the cable. (Specifically, connectors of the AC line and high-voltage parts.)
Current can leak, leading to a risk of electric shock or fire.



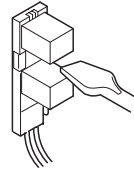
 WARNING: Safety checkpoints		
Carefully remove all toner remnants and dust from electrical parts and electrode units such as a charging corona unit. Current can leak, leading to a risk of MFP trouble or fire.		
Check high-voltage cables and sheaths for any damage. Current can leak, leading to a risk 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.		
Before disassembling or adjusting the laser/scanner assembly 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 laser/scanner assembly. Do not supply power with the laser/scanner assembly 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 (for example, optical lamp and fuser lamp), be sure to check the installation state. A risk of fire exists.		



WARNING: Safety checkpoints

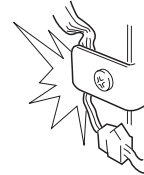
- Check the interlock switch and actuator for loosening and check whether the interlock functions properly.

If the interlock does not function, you may receive an electric shock or be injured when you insert your hand in the MFP (for example, when clearing a 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, and so forth 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, and so forth).

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

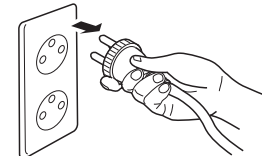


× pcs?



WARNING: Handling of service materials

- 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 MFP on before any solvent remnants on the cleaned parts have fully evaporated.

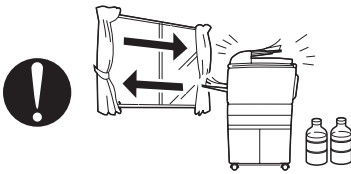
A risk of fire exists.



- 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.



 WARNING: Handling of service materials	
When using any solvent, ventilate the room well. Breathing large quantities of organic solvents can lead to discomfort.	
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, and so forth. 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 toner bottle and toner into fire. You may be burned due to dust explosion.	

Measures to take in case of an accident

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.

If a report of a serious accident has been received from a customer, an on-site evaluation must be carried out quickly and HP must be notified.

To determine the cause of the accident, conditions and materials must be recorded through direct on-site checks, in accordance with instructions issued by HP.

Conclusion

Safety of users and customer engineers depends highly on accurate maintenance and administration. Therefore, safety can be maintained by the appropriate daily service work conducted by the customer engineer.

When performing service, each MFP on the site must be tested for safety. The customer engineer must verify the safety of parts and ensure appropriate management of the equipment.

Regulatory statements

FCC Class A Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense. The end user of this product should be aware that any changes or modifications made to this equipment without the approval of Hewlett-Packard could result in the product not meeting the Class A limits, in which case the FCC could void the user's authority to operate the equipment.

Note

Any changes or modifications to the MFP that are not expressly approved by HP could void the user's authority to operate this equipment.

Use of a shielded interface cable is required to comply with the Class A limits of Part 15 of the FCC Rules.

Safety information

Safety circuits

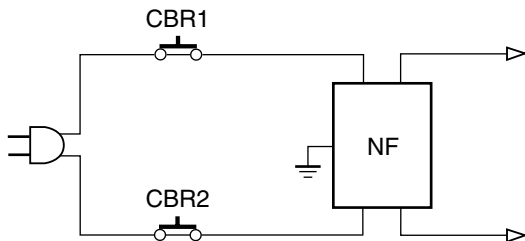
This MFP is provided with the following safety circuits to prevent MFP issues from resulting in serious accidents.

Overall protection circuit

L2 and L3 (fuser heater lamps) overheating prevention circuit

These safety circuits are described below to provide the service engineer with a renewed awareness of them in order to prevent servicing errors that may impair their functions.

Overall protection circuit



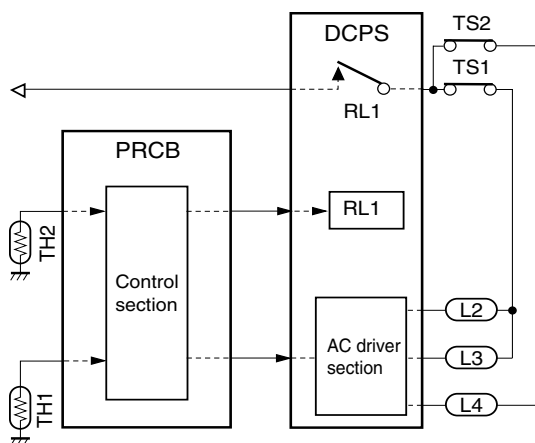
Protection by CBR1 and CBR2 (circuit breakers)

CBR1 and CBR2 interrupt the AC line instantaneously when an excessive current flows due to a short in the AC line.

CAUTION

The CBR1 and CBR2 functions must not be deactivated under any circumstances.

Protection by L2, L3 and L4 (fuser heater lamps) overheating prevention circuit



Protection by software

The output voltage from TH1 (fuser temperature sensor 1) is read by the CPU. If this voltage is abnormal, L2 (fuser heater lamp 1), L3 (fuser heater lamp 2), L4 (fuser heater lamp 3) and RL1 (main relay) are turned off.

CAUTION

Do not change the gap between the roller and TH1. When replacing TH1, check the specified mounting dimensions. The RL1 function must not be deactivated under any circumstances.

Protection by the hardware circuit

The output voltages from TH1 and TH2 (fuser temperature sensors) are compared with the abnormality judgment reference value in the comparator circuit. If the output voltage from TH1 or TH2 exceeds the reference value, L2 (fuser heater lamp 1), L3 (fuser heater lamp 2), L4 (fuser heater lamp 3) and RL1 (main relay) are turned off.

CAUTION

Periodically check the TH2 face contacting the roller, and replace TH2 if any abnormality is detected.

Since TH1 (fuser temperature sensor) face does not contact the roller, check the distance from the roller and the sensor orientation if any abnormality is detected.

The RL1 function must not be deactivated under any circumstances.

Protection by TS1 (thermostat/U) and TS2 (thermostat/L)

When the temperature of the fuser roller (upper/lower) exceeds the specified value, TSs are turned off, thus interrupting the power to L2 (fuser heater lamp/1), L3 (fuser heater lamp/2), and L4 (fuser heater lamp/3) directly.

CAUTION

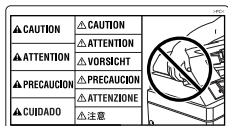
Do not use any other electrical conductor in place of TS1 and TS2. Do not change the distance between the roller and TS (thermostat).

Safety

Safety



(Finisher with Cover Sheet Feeder only)



CAUTION

DO NOT insert your finger into the bottom of the upper part of the feeder when returning to its original position; otherwise you may be injured.

CAUTION

DO NOT put your hand between the main body and tray; otherwise you may be injured.



(All trays)



(Punch Kit)

CAUTION

To avoid injury, **DO NOT** put your hand on top of the printed sheets. Be sure to hold both sides of the printed sheets when removing them, and **DO NOT** leave your hand on the printed sheets while the primary (main) tray goes up.



(Q3634A Finisher)

CAUTION

Use care after opening the paper exit outlet. **DO NOT** put your hand into it; otherwise you may be injured.



(Q3634A Finisher only)

CAUTION

Inside the lower paper exit outlet is the roller drive unit. **DO NOT** put your hand into it; otherwise you may be injured.

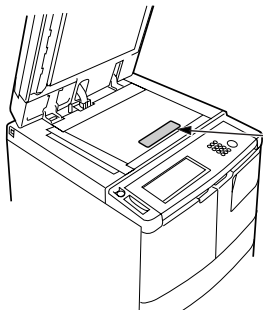
CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to avoid.

CAUTION

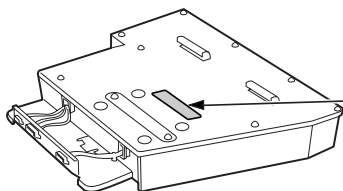
Do not remove caution labels. If any caution label has come off or is soiled and therefore the caution cannot be read, contact our service office.

Scanner section



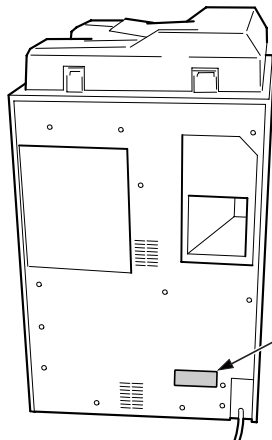
	WARNING	Unplug the machine before removing platen glass.
	DANGER	Débrancher le copieur avant de retirer la vitre d'exposition.
	WARNUNG	Vor Entfernen des Vorlagenglases Netzstecker ziehen.
	ADVERTENCIA	Desenchufe la máquina antes de quitar el vidrio.
	AVVERTIMENTO	Estrarre la spina dalla presa prima di rimuovere il vetro di esposizione.

Laser/scanner assembly



DANGER		위험 이코를 앞면 레이저광이 나옵니다. 광안정 직접 보거나 닿지 않도록 주의가 필요합니다.
INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM.		
VORSICHT		注意
UNRECHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAL AUSSETZEN.		ここを触くとレーザー光が出ます。 ビームを直接見たり、触れたり しないでください。
DANGER		
RAYON LASER INVISIBLE LORS DE L'OUVERTURE. ÉVITER L'EXPOSITION DIRECTE.		

Rear cover



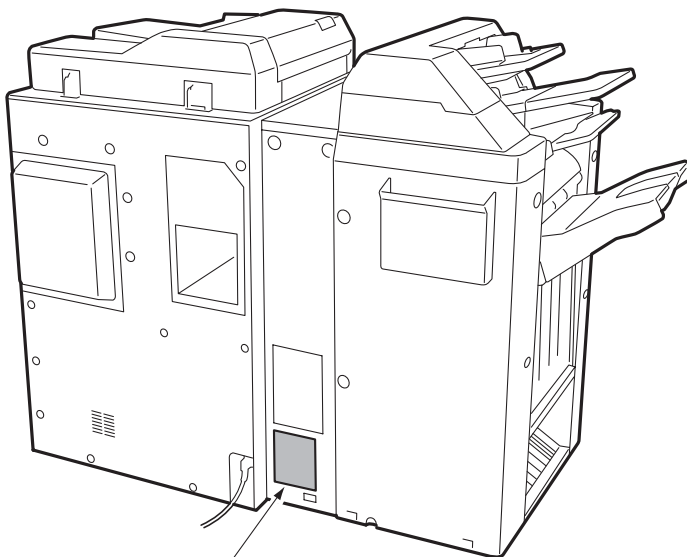
	WARNING	Unplug the machine before removing panels.
	DANGER	Débrancher l'appareil avant de retirer les panneaux arrière.
	WARNUNG	Vor Abnahme der Schutzverkleidung Netzstecker ziehen.
	ADVERTENCIA	Desenchufe la máquina antes de quitar los paneles.
	AVVERTIMENTO	Staccare la macchina prima di rimuovere i pannelli.

CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to avoid.

CAUTION

Do not remove caution labels. If any caution label has come off or is soiled and therefore the caution cannot be read, contact our service office.



⚠ WARNING

⚠ WARNING	Unplug the machine before removing panels.
⚠ DANGER	Débrancher l'appareil avant de retirer les panneaux arrière.
⚠ ADVERTENCIA	Desenchufar la máquina antes de quitar los paneles.
⚠ ADVERTENCIA	Desconecte a unidade de tomada antes de remover os painéis.
⚠ WARNING	Unplug the machine before removing panels.
⚠ DANGER	Débrancher l'appareil avant de retirer les panneaux arrière.
⚠ WARNING	Vor Abnahme der Schutzverkleidung Netzstecker ziehen.
⚠ ADVERTENCIA	Desenchufar la máquina antes de quitar los paneles.
⚠ AVVERTIMENTO	Scollegare la macchina prima di rimuovere i pannelli.
⚠ 警告	パネルを外す時は、電源プラグを抜いてください。
⚠ 警告	在取下前面板之前，請拔出電源插頭。
⚠ 警告	在取下前面板之前，請拔出電源插頭。
⚠ إنذار	استحب سحب طاقة DCI قبل إزالة الوحدة الخلفية.

CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to avoid.

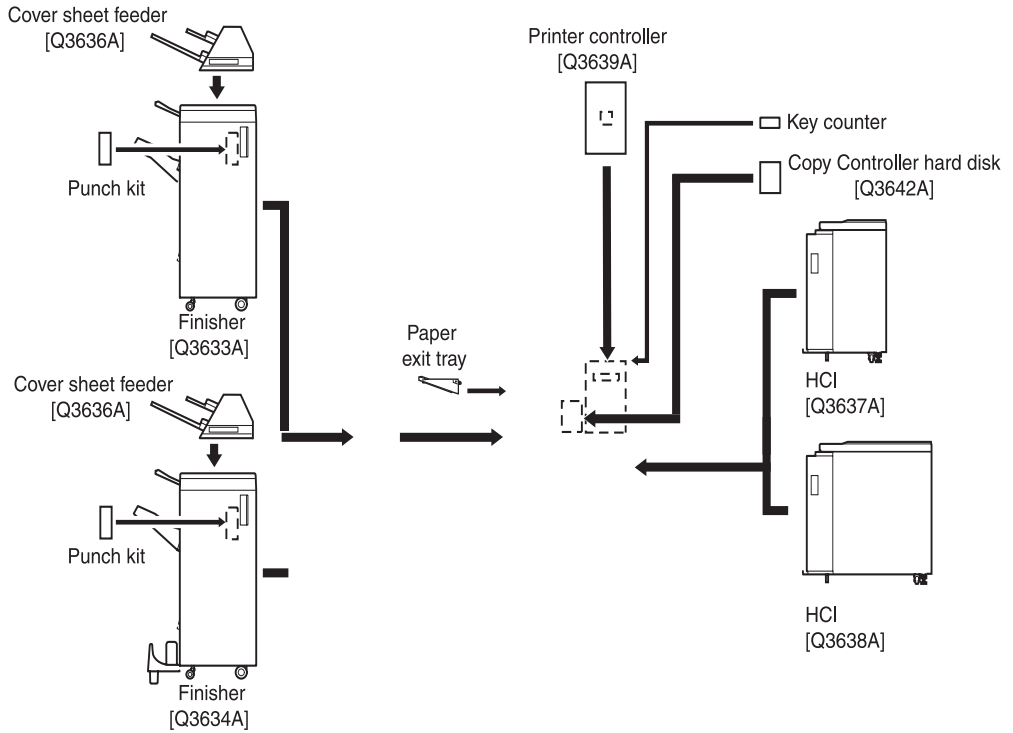
CAUTION

Do not remove caution labels. If any caution label has come off or is soiled and therefore the caution cannot be read, contact our service office.

3 MFP overview

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Overview of system



hp LaserJet 9055mfp/9065mfp product specifications

Type

Installation type

Console type (floor-mounted)

Copying method

Indirect electrostatic method

Document tray type

Fixed

Photosensitive material

OPC

Sensitizing method

Laser writing

Paper feed trays

Three stacked trays (two for 500 sheets of 80 g/m² or 20 lb paper, one for 1500 sheets of 80 g/m² or 20 lb paper)

Tray 1 tray for various paper sizes (100 sheets of 80 g/m² or 20 lb paper)

Q3637A (4000 sheets of 80 g/m² or 20 lb paper) (optional)

Q3638A (4000 sheets of 80 g/m² or 20 lb paper) (optional)

Functions

Applicable document types

Sheets, books, and solid objects

Document size

A3/11 by 17 maximum

Copy paper size

- Metric area
A3 to A6R, F4
- Inch area
11 by 17 to 8.5 by 5.5
Wide paper (up to 314 mm by 459 mm maximum)

Magnifications

Fixed magnifications

- Metric area
x1.00, x2.00, x1.41, x1.22, x1.15, x0.86, 0.82, x0.71, x0.50
- Inch area
x1.00, x2.00, x1.55, x1.29, x1.21, x0.93, 0.77, x0.65, x0.50

Special ratio magnifications

3 modes

Zoom magnifications

x0.25 to x4.00 (in 1 percent steps)

Vertical magnifications

x0.25 to x4.00 (in 1 percent steps)

Horizontal magnifications

x0.25 to x4.00 (in 1 percent steps)

Warm-up time

5.5 minutes maximum	20° C, rated voltage	9055
6 minutes maximum	20° C, rated voltage	9065

First copy out time (FCOT)

Mode	A4/8.5 by 11
Manual	3.4 seconds or shorter (9055)
	3.1 seconds or shorter (9065)

* Straight paper ejection, platen mode, life size, non AE or AES, without finisher, and paper feed from Tray 2

Continuous copy speed (life size, copies/min)

Size	cpm
A4/8.5 by 11	55 (9055)
	65 (9065)

Continuous copy count

1 to 9999

Copy density selection

- AE or AES, manual (9 steps)
- Arbitrary density (2 modes)

E-RDH memory capacity

Standard 64 MB
Maximum 192 MB

Applicable copy paper

Plain paper

High-quality paper of 60 g/m², or
17 lb to 90 g/m², or 24 lb

Special paper (Tray 1 feed only)

OHT film

Blueprint master paper
(both Tray 1 tray and stacked trays)

Tabs

Plain paper of 50 g/m², or 13 lb to
59 g/m², or 16 lb

Plain paper of 91 g/m², or 24 lb to
200 g/m², or 45 lb

Options

HCI: Q3637A (Letter/A4), Q3638A
(Ledger/A3)

Paper exit Tray 100 sheet: Q3640A

Hard disk: Q3642A

Finisher: Q3633A, Q3634A

Cover sheet feeder: Post inserter Q3636A

Puncher: Punch Kit

- 2-hole Q3635A
- 3-hole Q3689A
- 4-hole Swedish Q3691A
- 4-hole Q3690A

Print Controller: Q3639A

Particulars of machine

Power supply

230 VAC -14 percent to 10.6 percent
50Hz/60Hz

120 VAC $\pm$ 10 percent 60 Hz

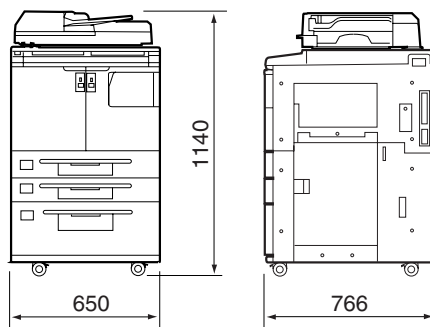
Power consumption

230 V Machine: 2300 W maximum (full
option)

120 V Machine: 1920 W maximum (full
option)

Weight: Approximately 203 kg (447 lb)

External dimensions



(mm)

Maintenance and life

Periodic maintenance: Every 250,000
copies

Machine life: 5,000,000 copies or 5 years

Environmental conditions

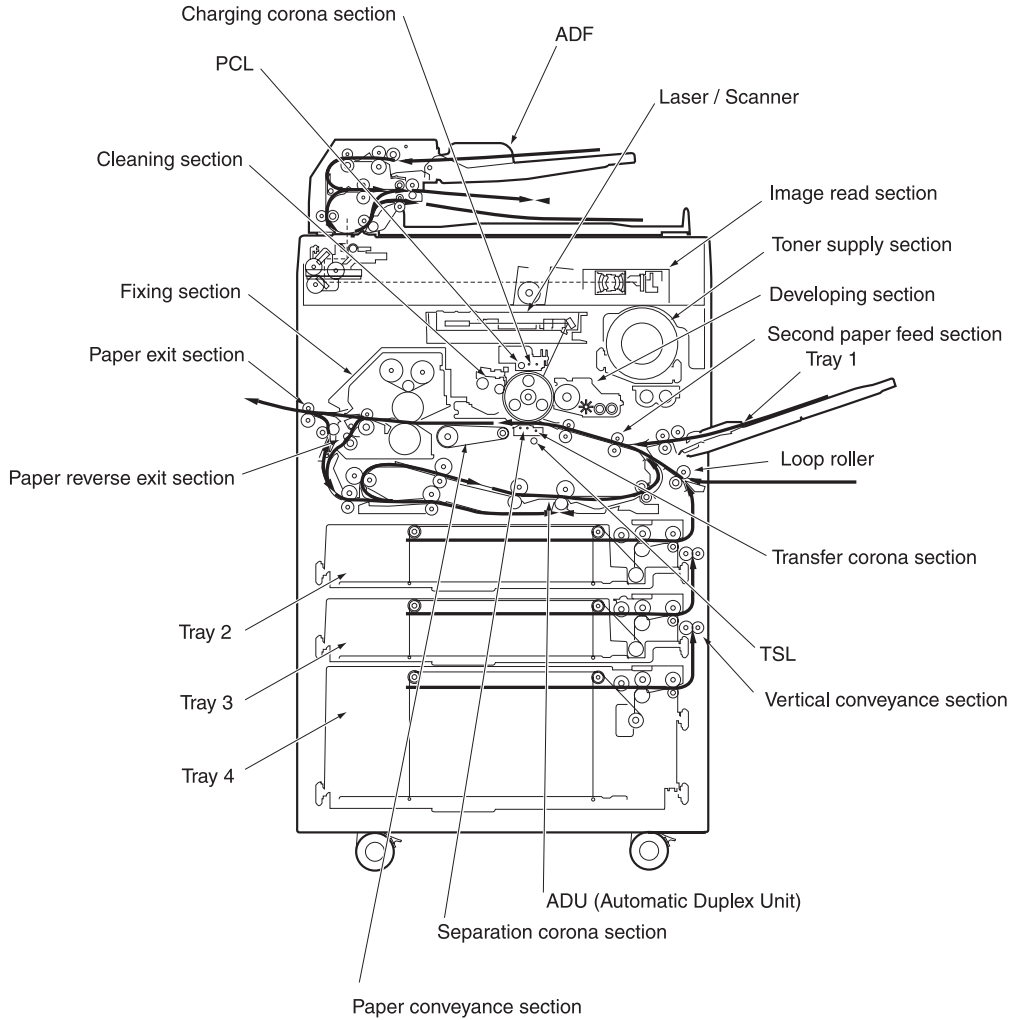
Temperature: 10° C to 30° C (50° F to
86° F)

Humidity: 10 percent to 80 percent RH

Note

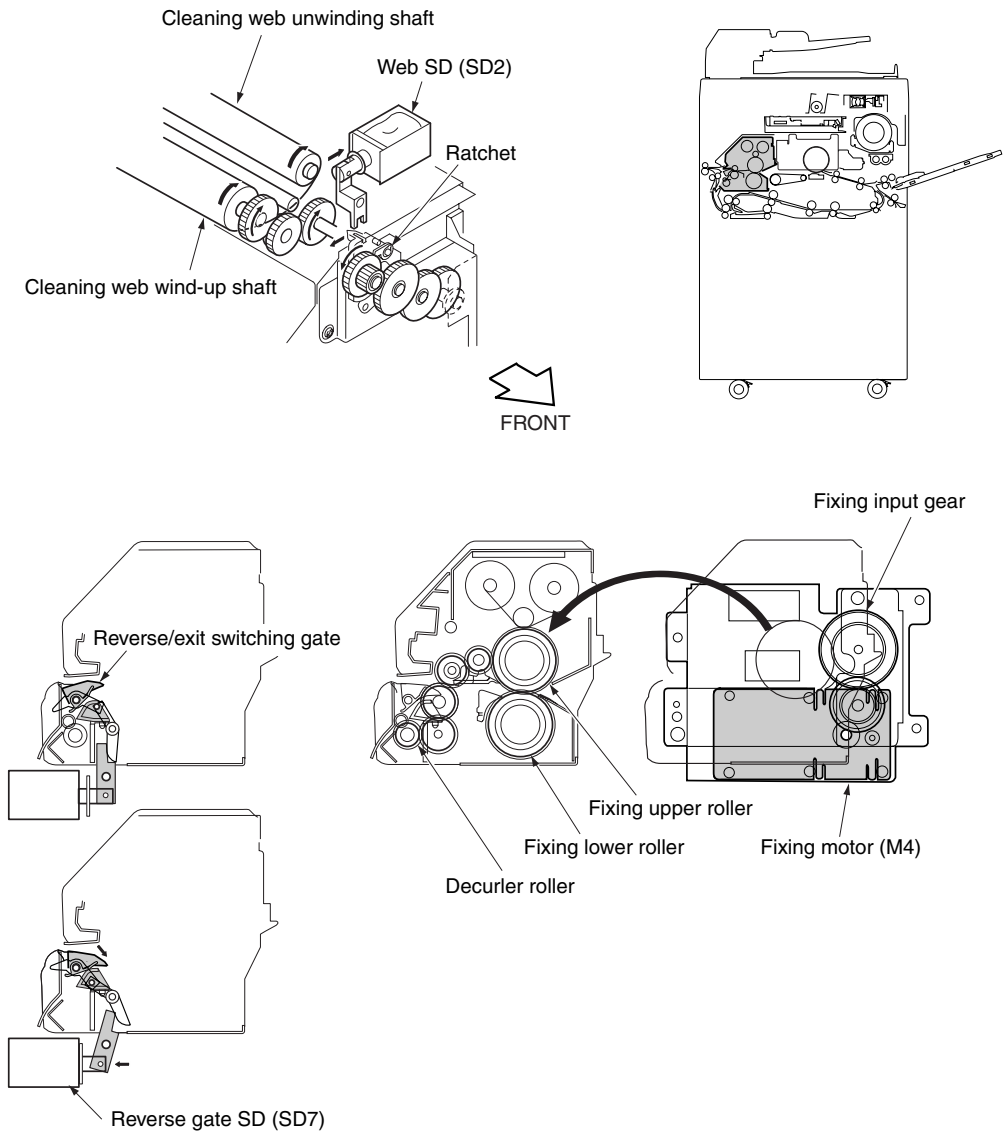
The information herein may be
subject to change for
improvement without notice.

Central cross-sectional view

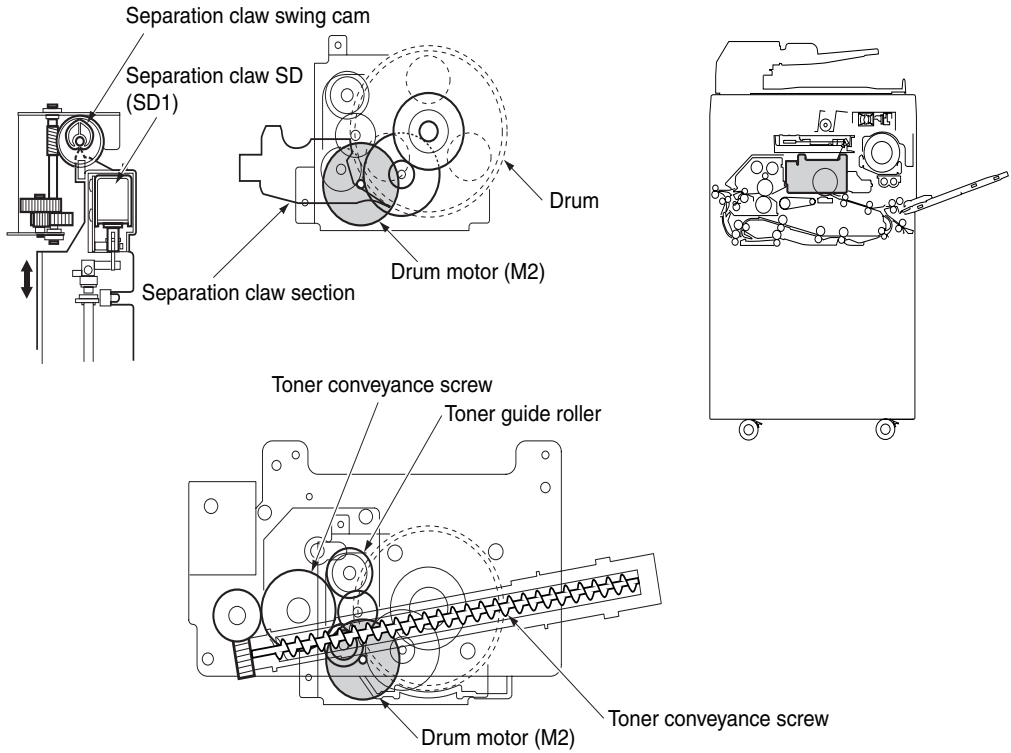


Drive system diagram

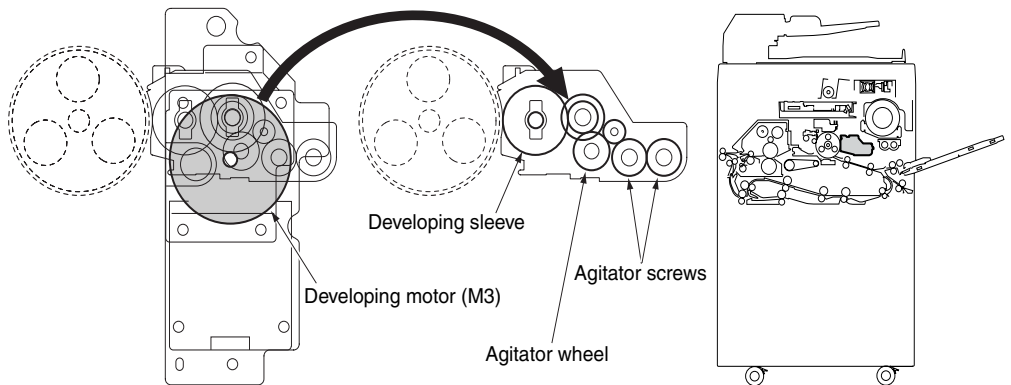
Fuser/web drive section



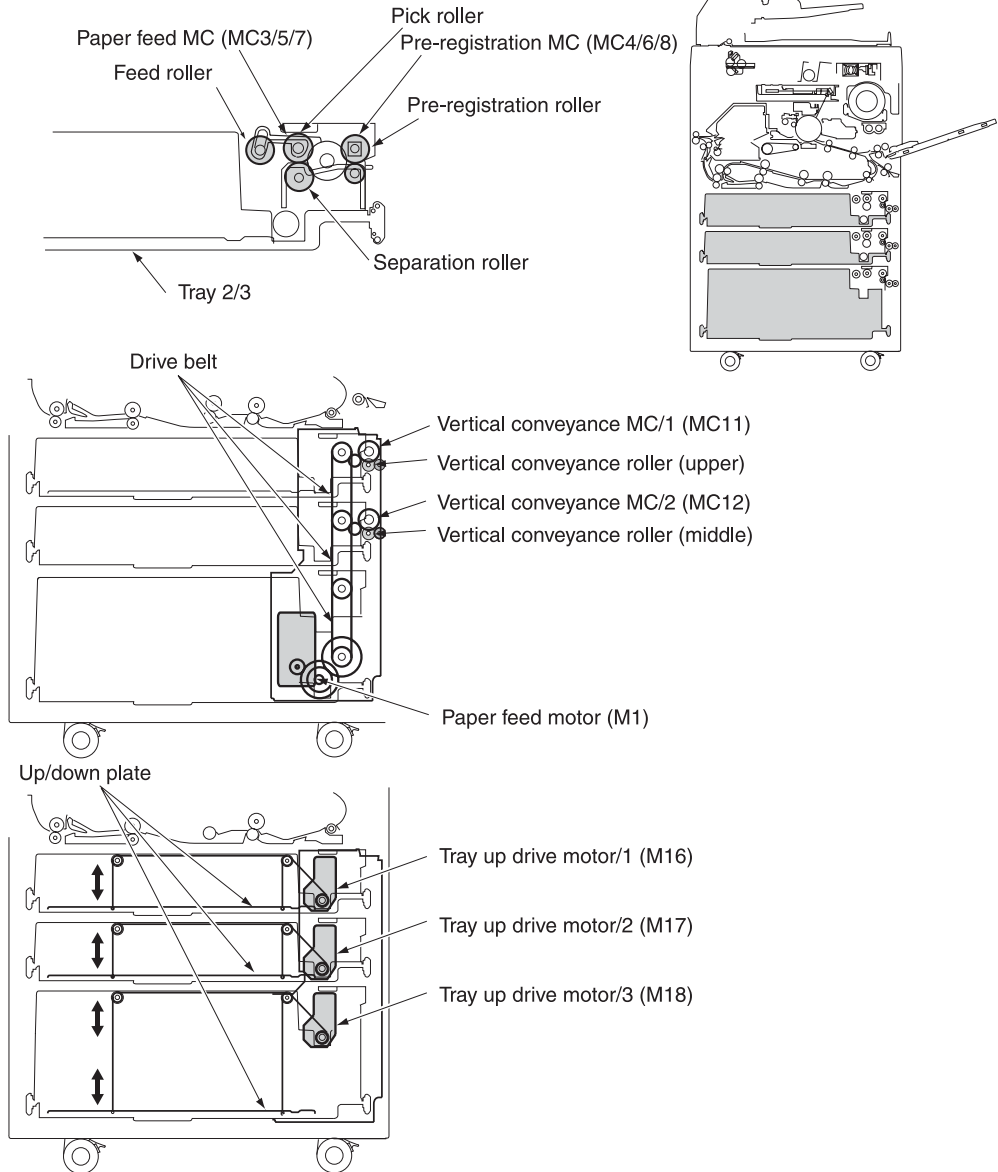
Drum drive section



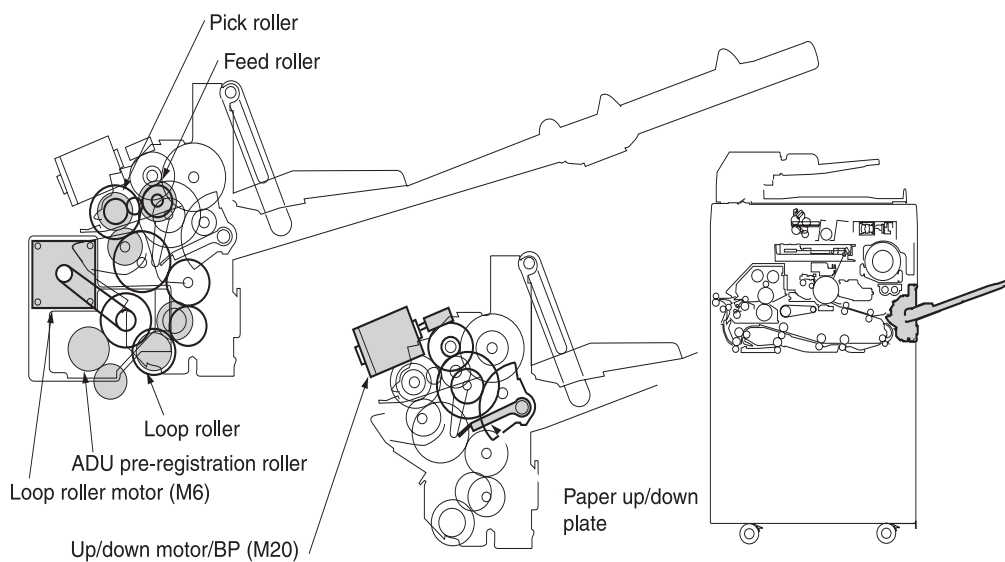
Developing drive section



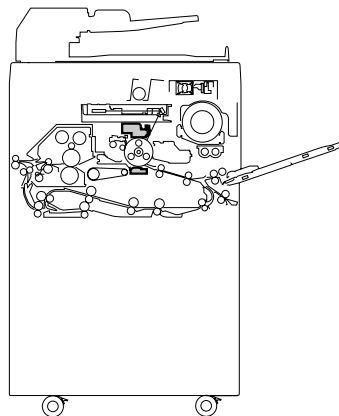
Paper feed/vertical conveyance/tray up drive sections



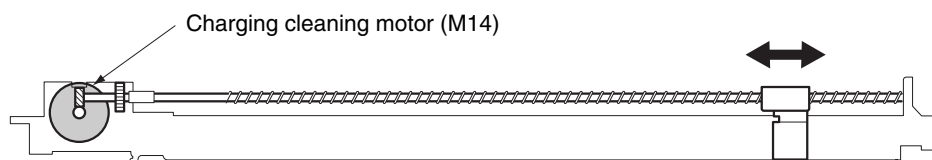
Tray 1 paper feed/automatic duplex unit (ADU) pre-registration drive section



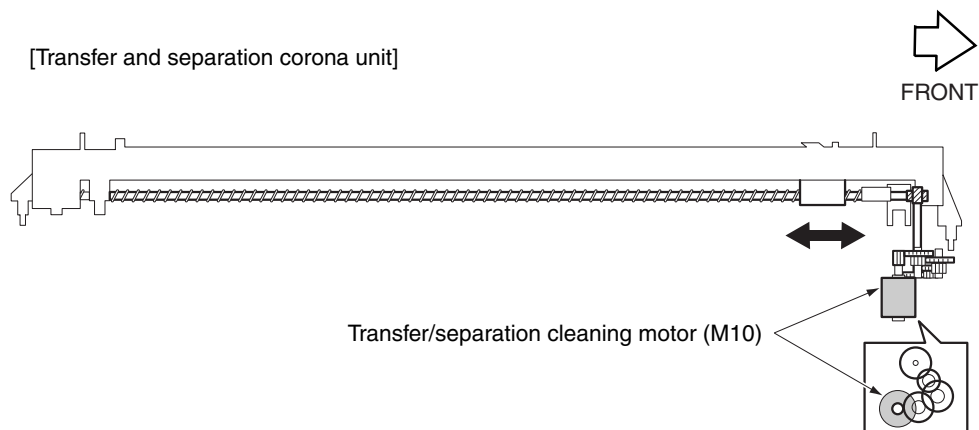
Charging and transfer/separation wire cleaning drive section



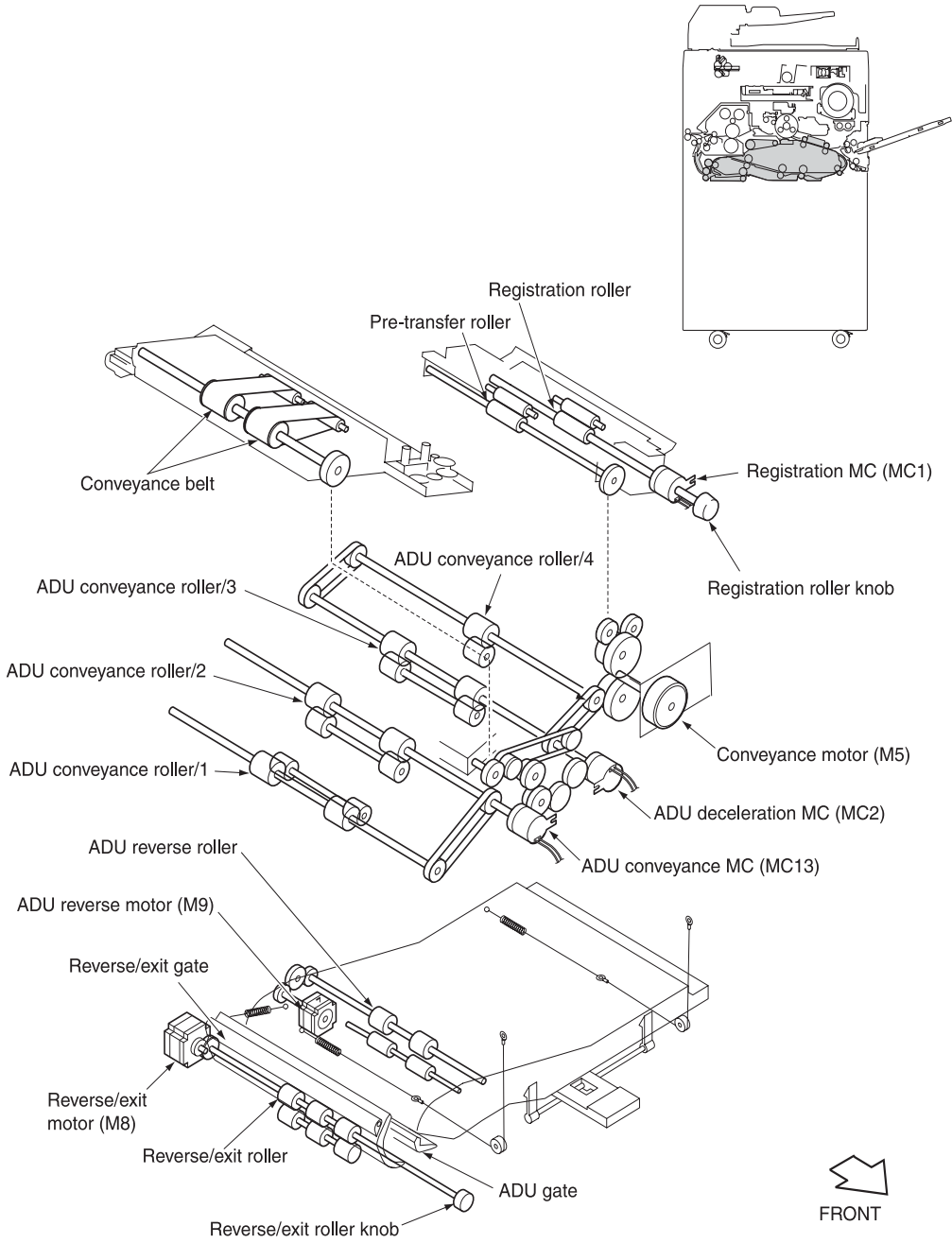
[Charging corona unit]



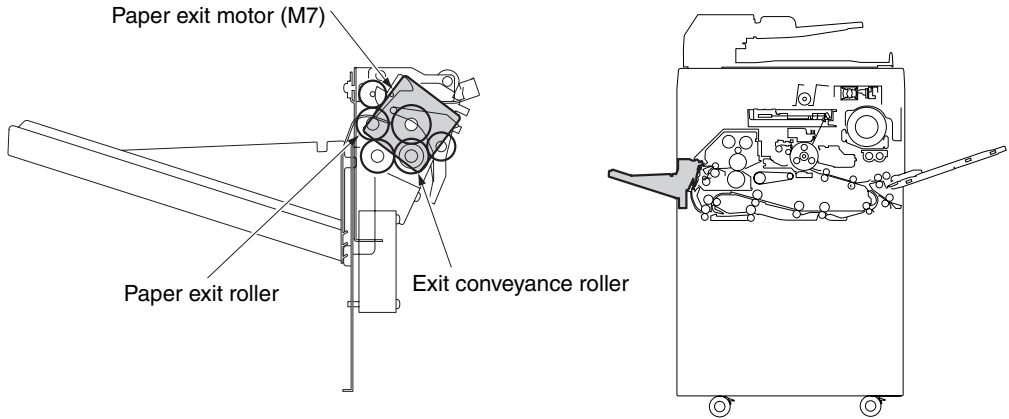
[Transfer and separation corona unit]



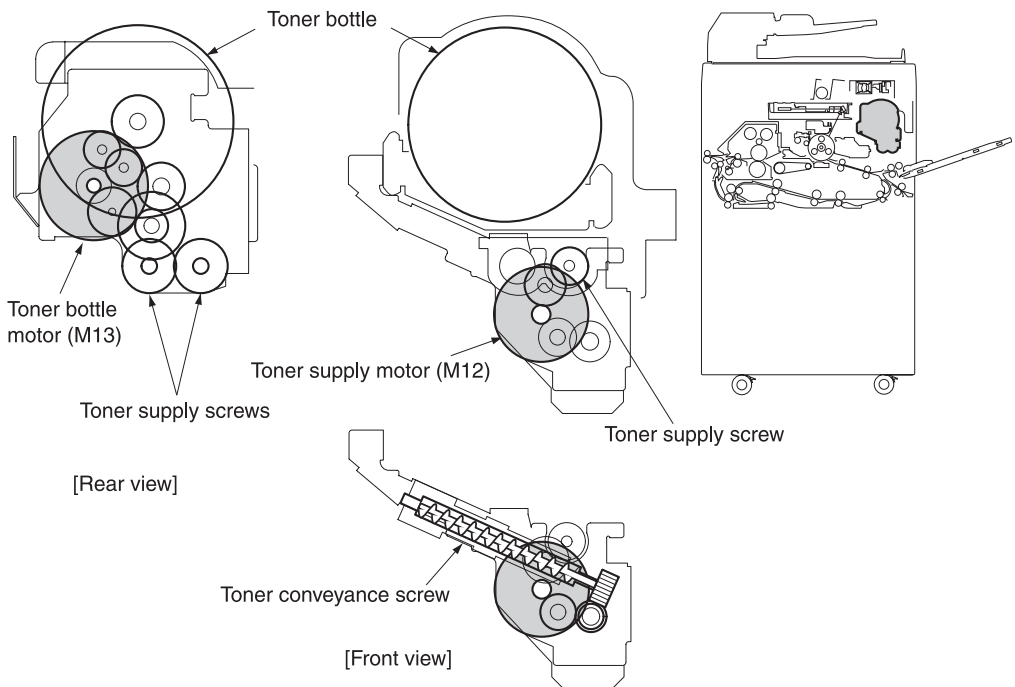
Automatic Duplex Unit (ADU) conveyance drive section



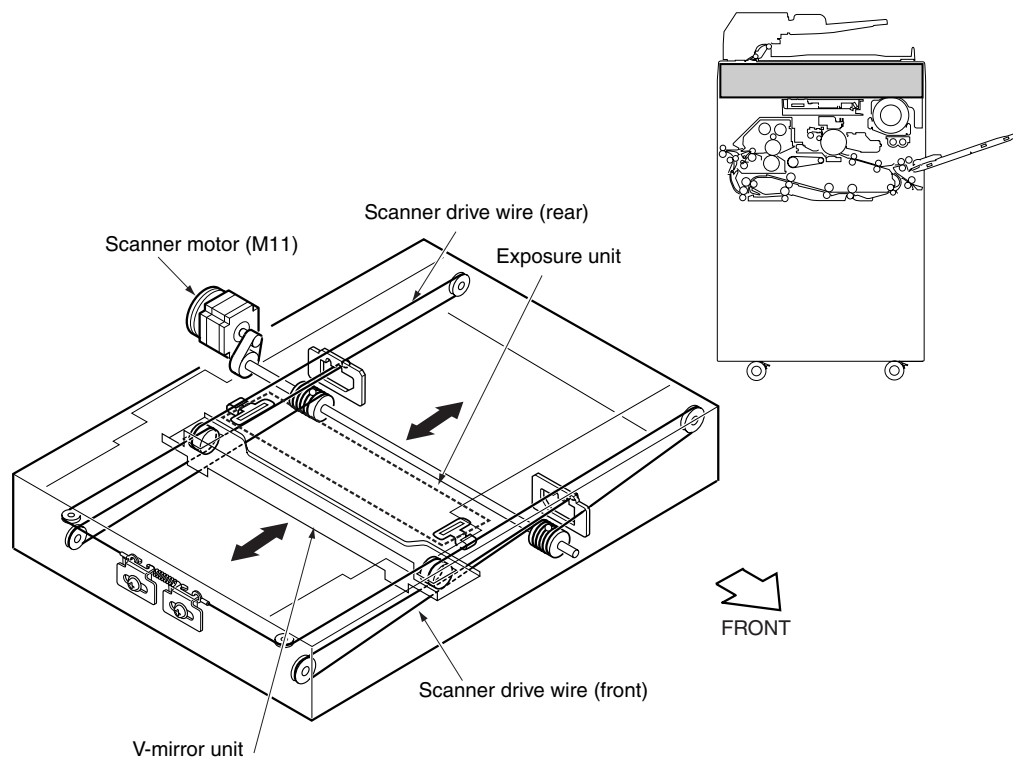
Paper exit drive section



Toner supply drive section



Optics drive section



4 MFP unit explanation

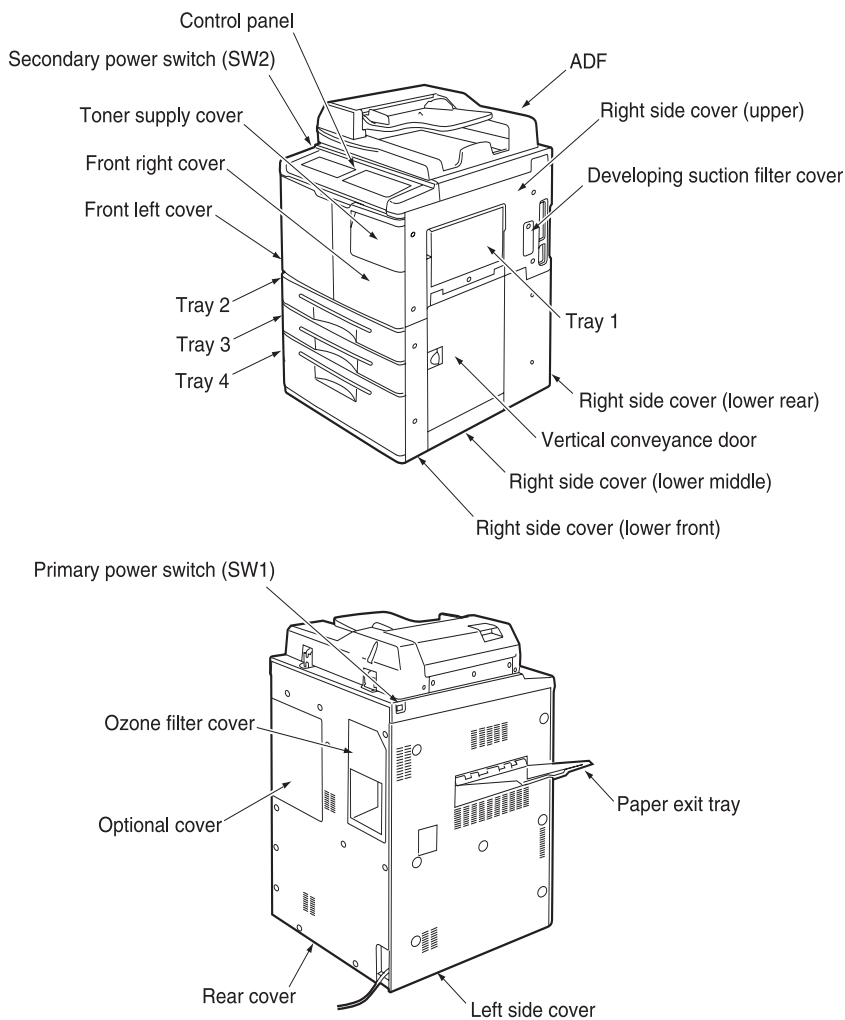
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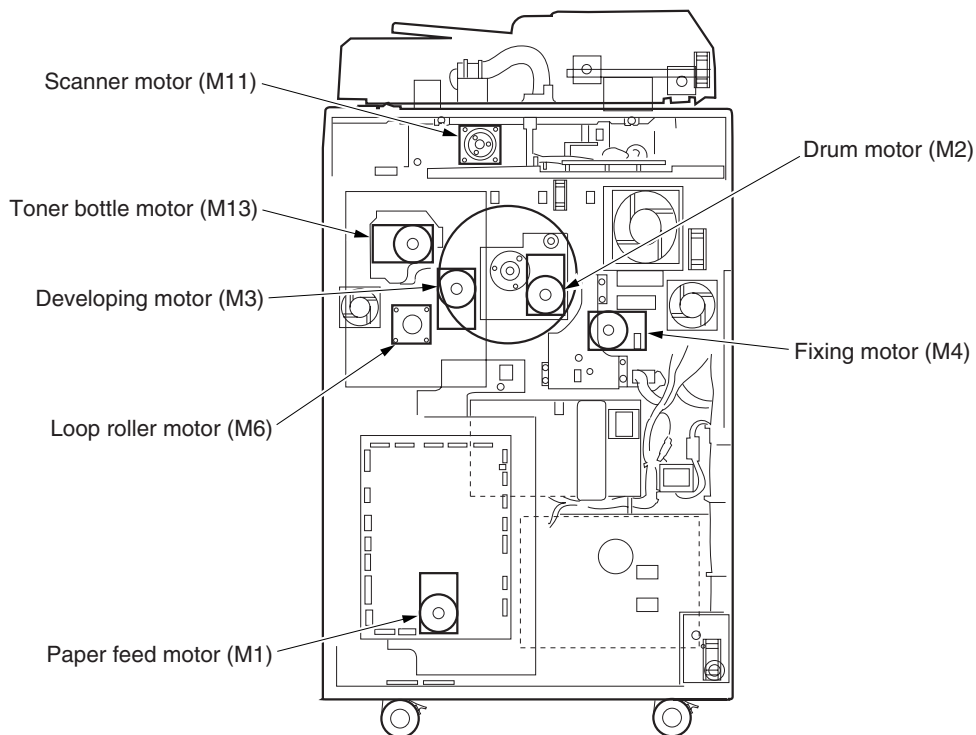
External section

Composition



Drive section

Composition



Mechanisms

Mechanism	Driven parts	Method
Drum drive*1	Drum, Toner guide roller, Toner conveyance screw, and Separation claw swing	Gear drive (dedicated motor)
Developing drive*1	Developing sleeve	Gear drive (dedicated motor)
Fuser drive*1	Fuser roller (upper)	Gear drive (dedicated motor)
Paper feed drive*1	Tray 2/3/4, Vertical conveyance roller (middle/lower)	Gear drive (dedicated motor) + Belt
Tray 1/loop drive*1	Tray 1 feed roller and ADU pre-registration roller	Gear drive (dedicated motor) + Belt
Scanner drive*1	Exposure unit, V-mirror unit	Wire drive (dedicated motor)+ Belt
Paper exit drive*1	Paper exit roller	Gear drive (dedicated motor)

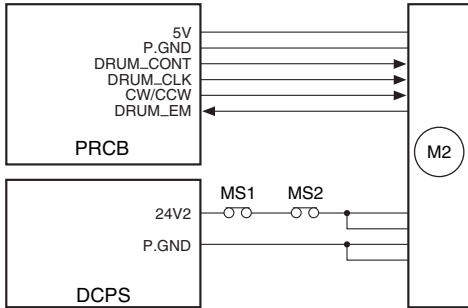
*1 Independent drive mechanisms

Drive mechanisms of this machine are driven by dedicated motors to ensure high-speed operation and to improve serviceability of the drum unit and developing performance.

Speeds of the drum motor (M2), fuser motor (M4), and loop roller motor (M6) are switched as shown below according to the paper type selected in the key operator mode, thus enhancing reliability of copying on thick paper.

Paper type	Motor speed
Thick paper	185 mm/s
Others	280 mm/s (9055)
	320 mm/s (9065)

M2 (drum) control



M2 (drum) is controlled by PRCB (printer control board) and the motor drive power is supplied from DCPS (DC power supply unit).

1 Operation

M2 (drum) is a motor driven by 24 VDC. It drives the drum, toner guide roller, toner conveyance screw, and separation claw swing. The flywheel mechanism adopted for M2 ensures accurate and steady rotation.

M2 starts rotating when the START button is pressed and stops when the specified time lapses after completion of second paper feeding of the last copy.

When either one of the front-left and front-right doors of this machine opens, MS1 (interlock MS/R) or MS2 (interlock MS/L) actuates to stop supplying the DC power to the motor, causing M2 to stop.

2 Signals

a Input signal

1 DRUM_EM (M2 to PRCB)

M2 (drum) rotation abnormality detection signal

[H]: Rotation error (when motor speed changes by 6.5 percent more or less than the motor speed specified value)

[L]: Normal rotation

b Output signals

1 DRUM_CONT (PRCB to M2)

M2 (drum) ON/OFF control signal

[L]: M2 on

[H]: M2 off

2 CW/CCW (PRCB to M4)

M2 (drum) rotational direction switchover signal

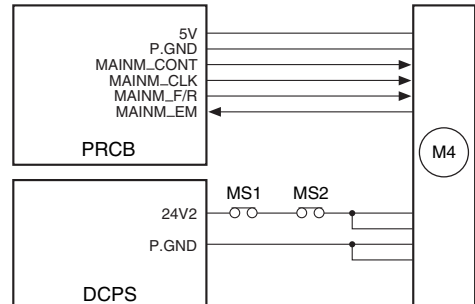
[L]: CW rotation

[H]: CCW rotation

3 DRUM_CLK (PRCB to M2)

M2 (drum) rotational speed control clock signal

M4 (fuser) control



M4 (fuser) is controlled by PRCB (printer control board) and the motor drive power is supplied from DCPS (DC power supply unit).

1 Operation

M4 (fuser) is a motor driven by 24 VDC. It drives the fuser roller.

M4 starts rotating when the START button is pressed and stops when the last copied paper has been ejected.

During the warm-up operation, M4 rotates to rotate the fuser roller.

2 Signals

a Input signal

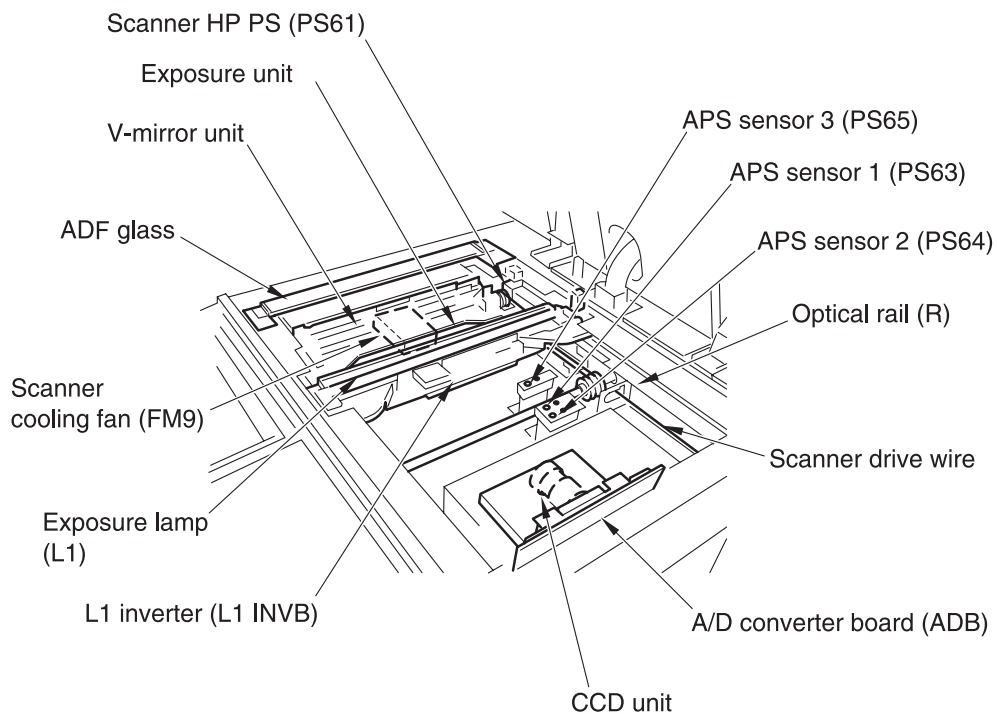
- 1 MAINM_EM (M4 to PRCB)
M4 (fuser) rotation error detection
signal
[H]: Rotation error (when motor speed
changes by 6.5 percent more or less
than the motor speed specified value)
[L]: Normal rotation

b Output signals

- 1 MAINM_CONT (PRCB to M4)
M4 (fuser) ON/OFF control signal
[L]: M4 on
[H]: M4 off
- 2 MAINM_F/R (PRCB to M4)
M4 (fuser) rotational direction
switchover signal
[L]: CW rotation
[H]: CCW rotation
- 3 MAINM_EM (M4 to PRCB)
M4 (fuser) rotational speed control
clock signal

Scanner section

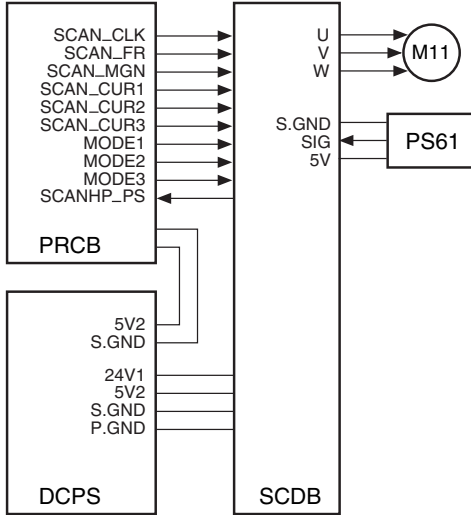
Composition



Mechanisms

Mechanism	Method
Light source	Xenon lamp
Exposure	Light source moving slit exposure, static exposure
Scanning	Platen original scanning: 1st, 2nd, and 3rd mirrors are shifted. ADF original scanning: Original is moved with light source held stationary.
Lamp power supply	Lamp cord
Scanner cooling	Cooling fan

M11 (scanner) control



M11 (scanner) is driven by SCDB (scanner drive board) and is controlled by PRCB (printer control board).

The related signal is PS61 (scanner HP).

1 Operation

a Operation of M11 (scanner)

M11 (scanner) is a 3-phase stepping motor driven by the 3-phase bipolar constant-current drive method. The motor is turned on/off by supplying/stopping clock pulses.

The rotational speed, direction, and amount of movement of M11 is determined by the increment of the driving step count. This count is reset each time PS61 (scanner HP) is turned on or off by the exposure unit.

b Movement speed of the exposure unit

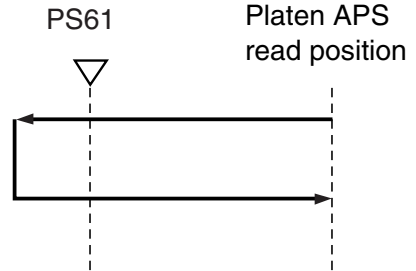
Scanning speed

Operation mode	Movement speed
Scan	320 mm/s (1:1)
Return	640 mm/s
Home position search	247 mm/s

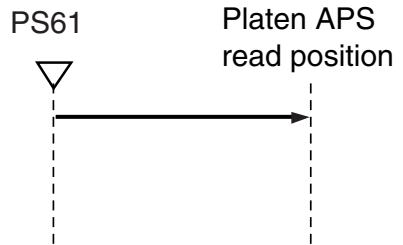
c Exposure unit home position search

When SW2 (sub power switch) or the START button is pressed, M11 (scanner) searches for the home position of the exposure unit. However, this operation is performed in different ways depending on whether PS61 (scanner HP) is on or off.

1 When PS61 (scanner HP) is off



2 When PS61 (scanner HP) is on



d Read with shading correction

Shading correction is performed in different ways depending on whether SW2 (sub power) is on or the START button is on. When shading correction starts, the exposure unit is at the home position and PS61 (scanner HP) is off.

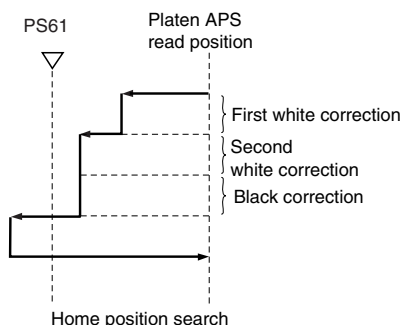
1 When SW2 (sub power) is on

L1 (exposure lamp) turns on. Next, M11 (scanner) moves the exposure unit toward the paper exit side. After being driven by the specified number of steps, M11 stops, thus reading the light reflected by the white reference plate installed underneath the glass stopper plate and performing the first

white correction. Next, M11 moves the exposure unit toward the paper exit side. After being driven by the specified number of steps, M11 performs the second white correction.

Then, L1 is turned off for black correction, searching for the home position of the exposure unit.

In each of the first and second shading correction processes, the CCD 1 line data is read to compare brightness levels between pixels. The brighter data is used as white correction data.



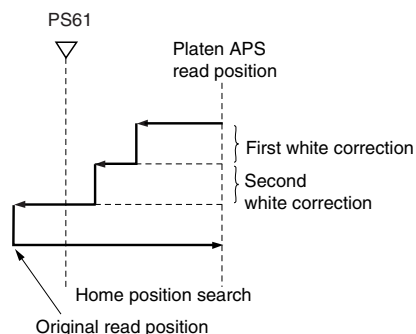
- 2** When the START button is on L1 (exposure lamp) turns on. Next, M11 (scanner) moves the exposure unit toward the paper exit side. After being driven by the specified number of steps, M11 (scanner) stops, thus reading the light reflected by the white reference plate installed underneath the glass stopper plate and performing the first white correction. Next, M11 moves the exposure unit toward the paper exit side. After being driven by the specified number of steps, M11 performs the second white correction.

Then, M11 proceeds to the ADF copy operation or platen copy operation.

e ADF copy operation

After completion of the shading correction started by pressing the START button, M11 (scanner) moves the exposure unit toward the paper exit side. After being driven by the specified number of steps from the position where PS61 (scanner HP) was turned on, it stops. This position is the exposure position for ADF copy operation.

Then, ADF copy operation is performed. After completion of the ADF copy operation, L1 (exposure lamp) is turned off to start searching for the exposure unit home position.



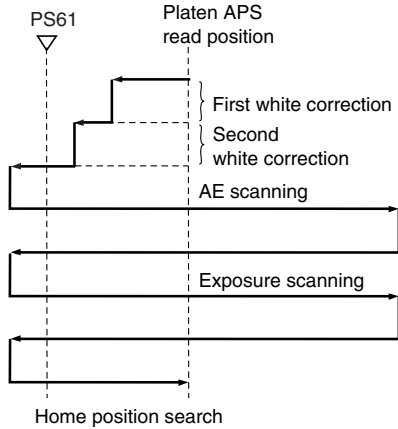
f Platen (scanner glass) copy operation

Platen copy operation is performed in different ways depending on whether AE control is performed.

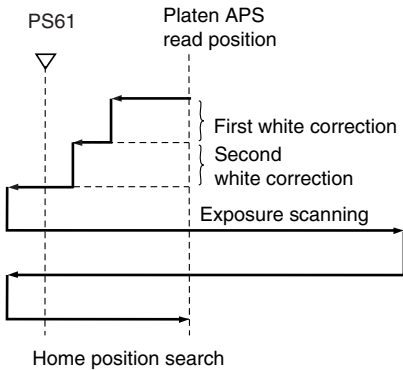
After completion of the shading correction started by pressing the START button, AE scanning is performed in the paper feed direction if the AE mode has been selected.

Then, exposure scanning is performed at the speed corresponding to the specified magnification by the distance corresponding to the original size, thus searching for the home position.

1 Operation with AE



2 Operation without AE



b PRCB output signal

1 SCAN_CLK (PRCB to SCDB)

M11 (scanner) clock signal

2 SCAN_F/R (PRCB to SCDB)

M11 (scanner) rotational direction switchover signal

[L]: The exposure unit is moved toward the paper exit side.

[H]: The exposure unit is moved toward the paper feed side.

3 MODE1 to 3 (PRCB to SCDB)

M11 (scanner) energize switchover signals

4 SCAN_CUR1 to 3 (PRCB to SCDB)

M11 (scanner) energize current switchover signals

c SCDB output signals

1 U, V, W (SCDB to M11)

M11 (scanner) drive control signals

These signals are used to control rotation of M11 (scanner). By supplying and stopping clock pulses, the motor is turned on/off and the rotational direction is switched.

2 Signals

a Input signals

1 SIG/SCANHP_PS (PS61 to SCDB to PRCB)

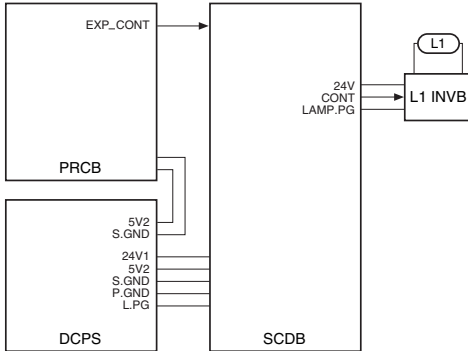
Scanner home position detection signal

The reference position of the home position of the exposure unit is detected.

[L]: The exposure unit is detected.

[H]: The exposure unit is not detected.

Exposure control



L1 (exposure lamp) is driven by L1 INVB (L1 inverter) and is controlled by PRCB (printer control board) via SCDB (scanner drive board).

1 Operation

L1 (exposure lamp) is a xenon lamp driven by the inverter circuit. The xenon lamp can emit a constant light intensity and generates less heat than other lamps, so it does not require the light intensity control circuit that has been used in the existing machines, requiring no thermal protector circuit. However, since L1 is held lit when the exposure unit is stationary in the ADF mode, FM9 (scanner cooling) is installed in the read section.

2 Signals

a Output signals

1 EXP_CONT (PRCB to SCDB)

L1 (exposure lamp) ON/OFF control signal

[L]: L1 on

[H]: L1 off

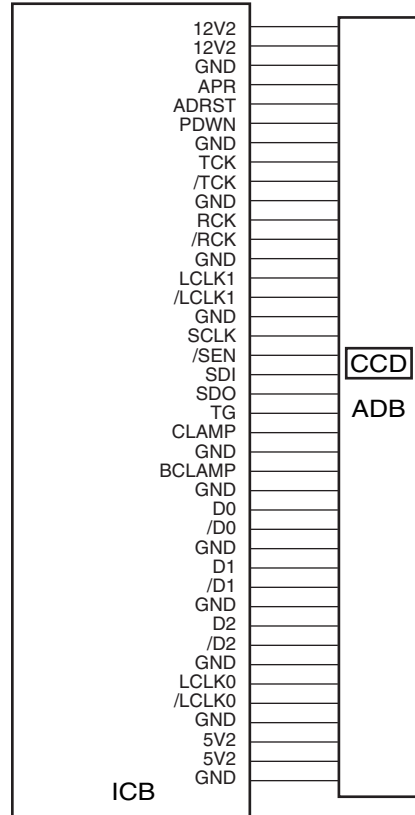
2 CONT (SCDB to L1 INVB)

L1 (exposure lamp) ON/OFF control signal

[L]: L1 on

[H]: L1 off

Original read control



Original read control is performed by ADB (A/D converter board) and CCD sensor installed in ADB.

1 Operation

The light reflected by the exposed original is input to the CCD sensor through the lens. The analog voltage corresponding to the quantity of the input light is A/D-converted in the ADB (A/D converter board), being output to the ICB (image control board).

a Original read

The original read timing is as follows:

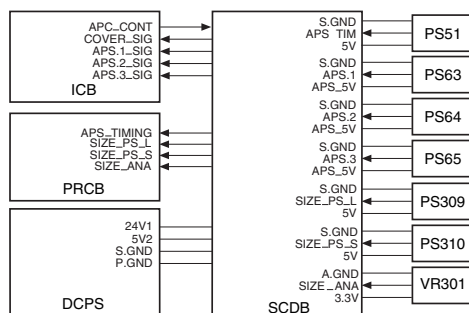
1 Platen mode

After lapse of the specified interval since the exposure unit turned PS61 (scanner HP) off.

2 ADF mode

After lapse of the specified interval since the original's leading edge turned PS306 (original conveyance) on.

APS control



The APS method used in the platen mode is different from that used in the ADF mode. The signal read by the APS sensor or ADF's original size detection sensor is processed by ICB (image control board) via SCDB (scanner drive board).

1 Operation

a APS detection

1 ADF mode

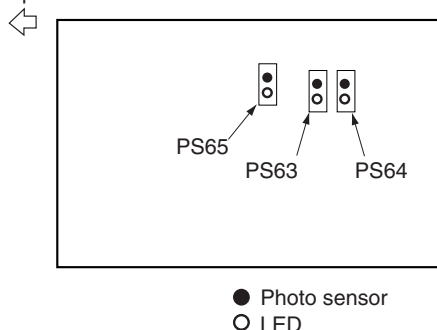
The paper size is detected according to the combination of on/off states of PS309 (original size/2) and PS310 (original size/1) of the ADF's original feed tray and the resistance value of VR301 (original paper size).

2 Platen mode

The paper size is detected according to the combination of on/off states of PS63 (APS/1), PS64 (APS/2), and

PS65 (APS/3) and the signal read by the CCD sensor. PS63 to PS65 are used to detect the original size in the sub-scanning direction and the CCD sensor is used to detect the original size in the main scanning direction.

Paper exit side



Relationships between sensors and paper sizes are as follows:

Sensor	PS65	PS63	PS64
Paper size			
Min. size	○	○	○
B5R	●	○	○
B5	○	○	○
B4	●	●	●
A4R	●	●	○
A4	○	○	○
A3	●	●	●
8.5 by 11R	●	○	○
8.5 by 11	○	○	○
8.5 by 14	●	●	●
11x 17	●	●	●

● ON

○ OFF

b APS detection timing

The APS detection timing differs between the platen mode and DF mode.

1 ADF mode

When the ADF mode is selected or an original is set on the ADF original feed tray, APS detection takes place using

PS309 (original size/2), PS310 (original size/1), and VR301 (original size).

2 Platen mode

When the ADF is closed and PS51 (APS timing) turns on, L1 (exposure lamp) turns on and the CCD detects the reflected light to detect the original size in the main scanning direction. Since ADF is still open at this time, the black level of the sky shot (outside the original) and the white level of the original (inside the original) are detected according to whether an original is present. At this time, the original size in the sub-scanning direction is detected using PS63 to PS65 (APS/1 to APS/3). When the ADF is closed completely and PS311 (ADF open/close) turns on, CCD reads the white level of the platen cover and the black level in the original. Among the two original sizes detected as discussed above, the larger size is determined as the original size in the main scanning direction.

2 Signals

a Input signals

1 APS_TIM (PS51 to SCDB)

ADF open/close detection signal

[L]: ADF is closed.

[H]: ADF is open.

2 APS.1/APS.1_SIG (PS63 to SCDB to ICB)

Paper size detection signal

[L]: Paper is detected.

[H]: Paper is not detected.

3 APS.2/APS.2_SIG (PS64 to SCDB to ICB)

Paper size detection signal

[L]: Paper is detected.

[H]: Paper is not detected.

4 APS3/APS.3_SIG (PS65 to SCDB to ICB)

Paper size detection signal

[L]: Paper is detected.

[H]: Paper is not detected.

5 SIZE_PS_L (PS309 to SCDB to ICB)

Paper size detection signal

[L]: Paper is detected.

[H]: Paper is not detected.

6 SIZE_PS_S (PS310 to SCDB to ICB)

Paper size detection signal

[L]: Paper is detected.

[H]: Paper is not detected.

7 SIZE_ANA (PS301 to SCDB to ICB)

Paper size detection signal

[L]: Paper is detected.

[H]: Paper is not detected.

8 COVER_SIG (SCDB to ICB)

Same as APS TIM signal.

9 APS_TIMING (SCDB to PRCB)

Same as APS TIM signal.

b Output signals

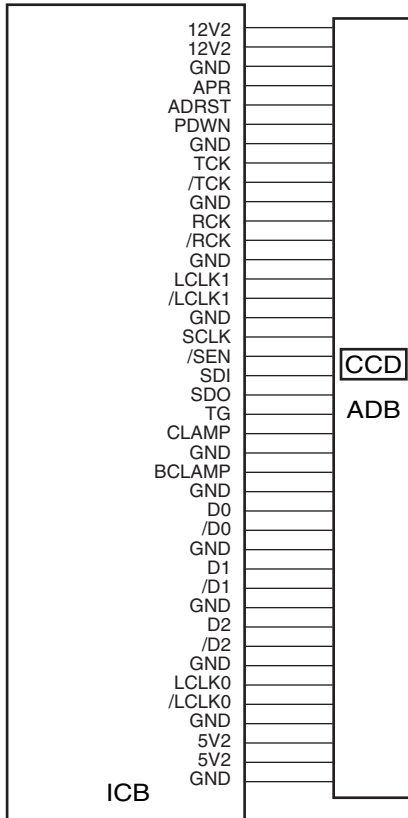
1 APS_CONT

This signal controls on/off states of APS_5V power for driving PS63, PS64, and PS65 (APS1 to APS3).

[L]: APS_5V off

[H]: APS_5V on

AE control



The CCD sensor detects the image density on an original during AE scanning to select the optimum copy gamma correction curve.

AE processing is controlled by the ICB (image control board).

1 Operation

a AE detection

1 Platen mode

The image density on an original is measured during AE scanning preceding the exposure scanning that is carried out after depression of the START button.

<AE sampling area>

1) Normal copy

10 mm inside the perimeter of the original detected by APS.

2) Non-image area erasure mode

Entire original area detected during pre-scanning.

2 ADF mode

The image at the leading edge of the original is read when the PRINT button is pressed.

The read data is used to measure the image density on the original.

<AE sampling area>

1) Main scanning direction

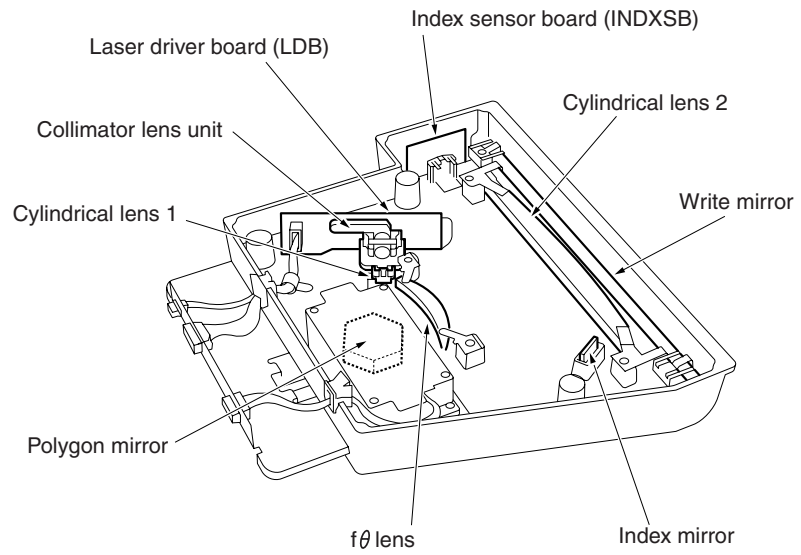
10-mm area inside the original detected by APS

2) Sub-scanning direction

2-to-4 mm area from the leading edge of the original.

Laser scanner unit

Composition

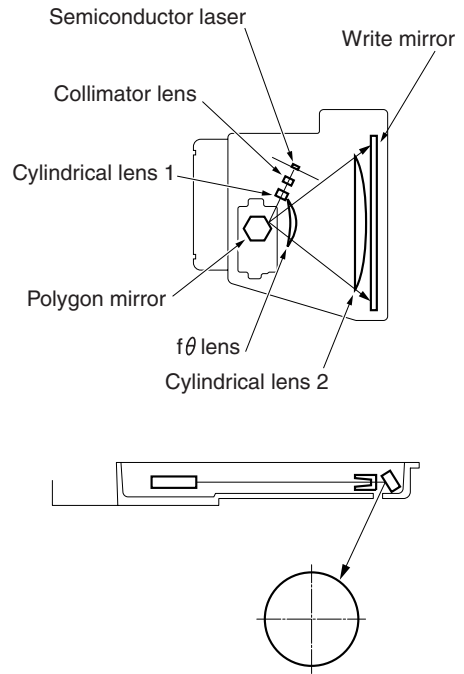


Mechanisms

Mechanism	Method
Scan*1	Polygon mirror
Light source*2	1-chip, 2-beam laser diode (Power: 15 mW per beam)
Reference positioning	Index sensor

*1 Path of laser light

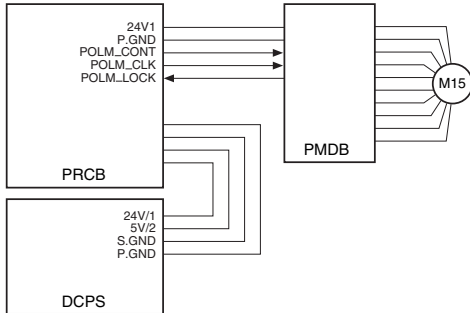
The light output from the semiconductor laser is radiated onto the OPC drum via the collimator lens, cylindrical lens 1, polygon mirror, $f\theta$ lens, cylindrical lens 2, and write mirror.



*2 Light source

Conventionally, two parallel beams were generated from two laser beams. The laser diode adopted for this machine can generate two beams using a single chip, requiring neither fine-adjustment prism nor beam composition prism.

M15 (polygon) control



M15 (polygon) is driven by PMDB (polygon drive board) and is controlled by PRCB (printer control board).

1 Operation

a Explanation of operation

M15 is a 3-phase brushless DC motor which is driven by the 3-phase bipolar method. The current flowing through the coil is switched according to the position of the rotor detected by the position sensor (magnetic sensor) in the motor.

This motor rotates the polygon mirror to scan the laser beams from LDB (laser driver board) in the axial direction of the drum. Its rotation is held constant by PLL control.

b Rotational speed

M15 is powered by 24 VDC and its rotational speed is as follows:

Rotational speed	Linear speed	9055	9065
37,795 rpm	320 mm/s	-	normal
33,070 rpm	280 mm/s	normal	-
21,850 rpm	185 mm/s	thick paper	

2 Signals

a Input signals

1 POLM_LOCK (PMDB to PRCB)

This signal indicates the clock synchronization state of M15 (polygon).

[L]: Synchronous (normal)

[H]: Asynchronous (abnormal)

b Output signals

1 POLM_CONT (PRCB to PMDB)

This signal turns on/off M15.

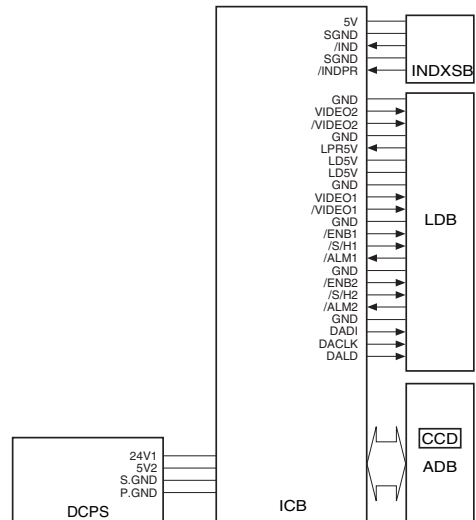
[L]: M15 on

[H]: M15 off

2 POLM_CLK (PRCB to PMDB)

This is a reference clock signal for PLL-controlling M15 in PMDB.

Image write control



The analog image data from the CCD sensor is A/D-converted by the ADB (A/D converter board), then sent to the ICB (image control board) for data processing. The processed image data is converted into a laser beam on the LDB (laser driver board), and then the

beams are radiated onto the drum surface. Two beams are emitted per laser diode. Two lines of image data is written per scan.

The write start reference position is detected by the index sensor board. The ICB has an E-RDH function to store digitized image data. Various editing functions can be performed based on this data.

1 Operation

a Image processing

The following processing is performed by the ICB (image control board):

1 Automatic offset control (AOCl)

The IC on the A/D converter board (ADB) automatically adjusts the analog offset voltage of the CCD sensor output so that it is at the lower limit of the A/D converter level.

2 Automatic gain control (AGC)

During shading correction, the white reference plate is read to adjust the analog amplification factor of the CCD sensor output so that the read level is at the upper limit of the A/D converter level.

3 Shading correction

<Timing>

- When SW2 (sub power) is on
- At job start

4 Brightness/density conversion

5 AE processing

6 Text/dot pattern judgment

7 Filtering

8 Magnification change processing

9 Copy gamma correction

10 Skew correction

11 Error diffusion processing

12 Data compression/expansion processing

13 Write density control

b Write

The image control board (ICB) sends image data on a pixel basis to laser driver board (LDB) according to the control signals from the PRCB (printer control board).

LDB causes the laser light to be emitted for a period corresponding to the image data. This laser light is radiated onto the drum surface.

1 Maximum power control (MPC)

Image control board (ICB) informs LDB (laser driver board) of the maximum output value and sets that value for the laser beam emission. LDB store this value and maintain the laser beam level using the APC (Auto Power Control).

<MPC timing>

When SW2 (sub power switch) is turned on

2 Automatic power control (APC)

After MPC is set, the ICB (image control board) outputs an APC start instruction to LDB (laser driver board) at the following timing:

APC timing

LDB (laser driver board) automatically monitor the laser drive current one line at a time, and controls it so that the light intensity remains the MPC value.

3 Write timing

a) Main scanning direction

Using INDEX signal (/IND) from INDXSB (index sensor board), the laser write reference position is determined for each scan in the drum rotation direction, and the image is written onto the copy paper according to the copy paper position detected by PS70 (paper mis-centering).

- b) Sub scanning direction
Specified interval after PS44
(registration) detects the leading edge
of the copy paper.

2 Signals

a Input signals

1 /IND (INDXSB to ICB)

This is an index signal used to detect
deviation of main scanning.

2 /INDPR (INDXSB to ICB)

This signal monitors the INDXSB
(index sensor board) power supply.

[H]: Abnormal

[L]: Normal

3 /ALM1 (LDB to ICB)

This signal indicates the state of the
laser 1 drive current.

[H]: Normal

[L]: Abnormal

4 LPR5V (LDB to ICB)

This signal monitors the LDB (laser
driver board) power supply.

[H]: Normal

[L]: Abnormal

5 /ALM2 (LDB to ICB)

This signal indicates the state of the
laser 2 drive current.

[H]: Normal

[L]: Abnormal

b Output signals

1 /S/H1 (ICB to LDB)

APC sampling signal for one line (for
laser 1)

2 /ENB1 (ICB to LDB)

Laser APC function ON/OFF control
signal (for laser 1)

Laser beam emission stops when it is
off.

3 /S/H2 (ICB to LDB)

APC sampling signal for one line (for
laser 2)

4 /ENB2 (ICB to LDB)

Laser APC function ON/OFF control
signal (for laser 2)

Laser beam emission stops when it is
off.

5 VIDEO1/VIDEO1 (ICB to LDB)

Image signal for laser 1

6 VIDEO2/VIDEO2 (ICB to LDB)

Image signal for laser 2

DACLK (ICB to LDB)

LDB (laser driver board) MPC value
data transmission clock signal

7 DADI (ICB to LDB)

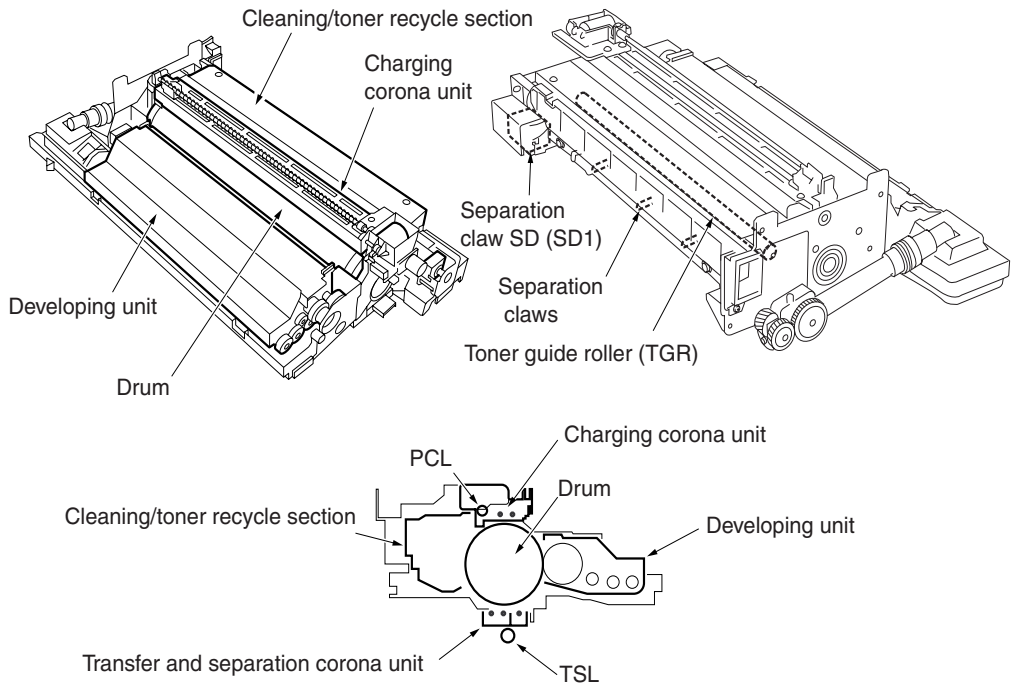
LDB (laser driver board) signal for
MPC

8 DALD (ICB to LDB)

LDB (laser driver board) MPC value
memory command signal

Drum unit

Composition



Mechanisms

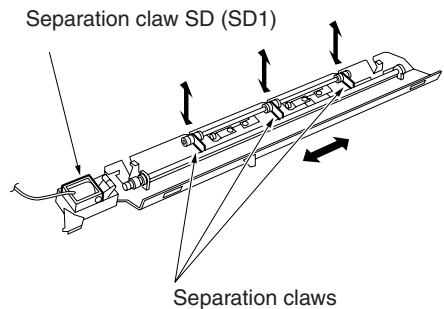
Mechanism	Method
PCL/TSL	LED
Auxiliary separation *1	Separation claws
Transport assistance *2	Ratchet wheel

The drum unit is an integral assembly consisting of a drum, charging corona unit, developing unit, cleaning/toner recycle unit, PCL, and separation claws.

*1 Auxiliary separation

- To prevent paper jamming, three separation claws are used to separate paper from the drum forcibly. These separation claws are pressed against the drum or detached from it by turning on/off the separation claw solenoid (SD1).

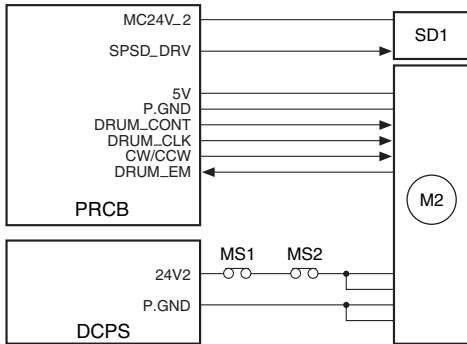
- To prevent a specific part of image-copied paper from being stained and to prevent the drum from being scratched, the swing mechanism slides the separation claws about 8 mm back and forth in parallel with the drum surface.



*2 Transport assistance

The thick paper conveyance ability has been improved by the use of ratchets (star wheels).

Separation claw control



Separation claws are driven by SD1 (separation claw). Separation claws are swung by M2 (drum). SD1 is controlled by PRCB (printer control board).

1 Operation

a Separation claw ON/OFF control

SD1 (separation claw) is a pull-type solenoid powered by 24 VDC. It turns on to press separation claws against the drum to help image-copied paper separate.

1 SD1 (separation claw) operation timing

SD1 turns on after a lapse of specified time from turning on of PS43 (leading edge) of the second paper feed section. It turns off after a lapse of the time set by PRCB (printer control board).

b Separation claw swing control

Separation claws are swung by M2 (drum) via the cam mechanism.

2 Signals

a Output signal

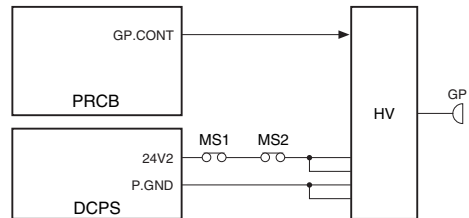
1 SP5D_DRV (PRCB to DCDB)

SD1 (separation claw) drive control signal

[L]: SD1 on

[H]: SD1 off

Paper guide plate control



To prevent toner from adhering to the paper guide plate, a constant voltage is applied to the paper guide plate. This voltage is supplied from HV (high voltage unit) and is controlled by PRCB (printer control board).

1 Operation

a ON/OFF timing

Turning ON/OFF in sync with M2 (drum)

b Applied voltage

-500 VDC

2 Signal

a Output signal

1 GP.CONT (PRCB to HV)

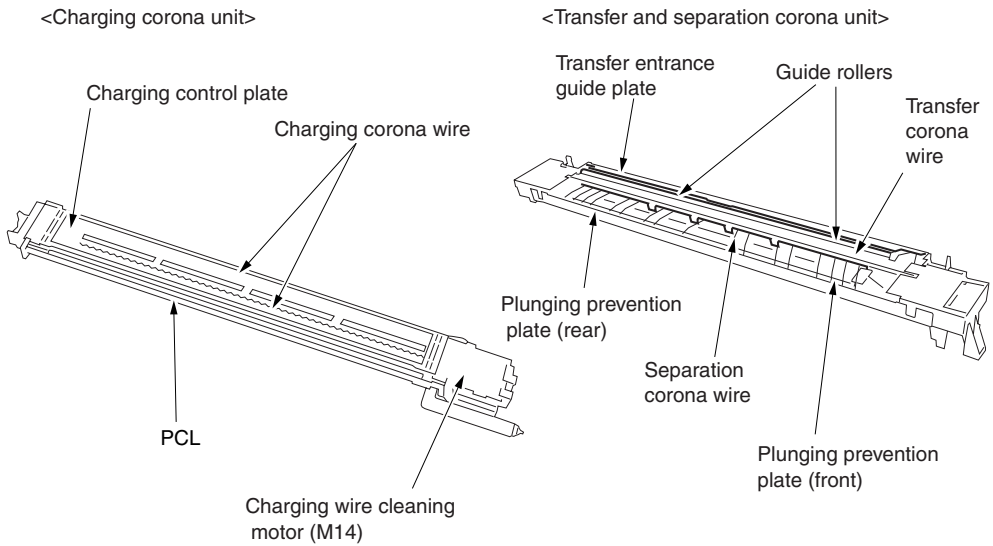
This signal controls turning ON/OFF the voltage application to the paper guide plate.

[L]: Voltage applied

[H]: Voltage not applied

Corona unit section

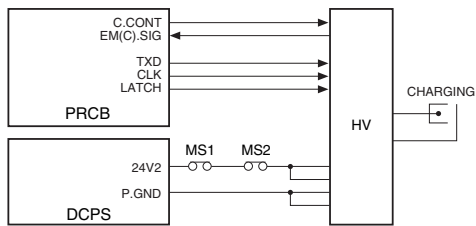
Composition



Mechanisms

Mechanism	Method
Charging	Scorotron (DC negative corona discharge) Discharging wire: Tungsten, 0.06 mm diameter (gold-plated skin path, with automatic wire cleaner) Grid control: Gold-plated stainless plate
Transfer	DC positive corona discharge Discharging wire: Oxide film tungsten, 0.06 mm diameter, with automatic wire cleaner
Separation	AC/DC corona discharge Discharging wire: Oxide film tungsten, 0.06 mm dia., with automatic wire cleaner

Charging control



The current output to the charging wire and the voltage applied to the grid are supplied from HV (high voltage unit) and they are controlled by PRCB (printer control board).

The levels of outputs to these are transmitted using 8-bit serial data. This serial data includes the level information for all outputs driven by HV, excluding the ON/OFF control signal. Accordingly, a separate signal line is provided to turn on/off only the charging wire output and the grid output at the same time.

1 Operation

a Charging

A Scorotron charging method is used. 24 VDC supplied from DCPS is raised to a negative DC voltage which is then discharged after being applied to the charging wire.

Charge output range:
-600 μ A to -1200 μ A

b Grid voltage

The grid voltage is output from HV to the charging plate.

Grid voltage output range: -500 V to -1000 V

2 Signals

a Input signal

1 EM (C).SIG (HV to PRCB)

This signal indicates the leak or short state of the charging corona unit.

[L]: Normal

[H]: Abnormal

b Output signals

1 C.CONT (PRCB to HV)

This signal turns on/off the charging wire.

[L]: Charging voltage on

[H]: Charging voltage off

2 TXD (PRCB to HV)

Output level of each high voltage electrode.

Serial data signal for control

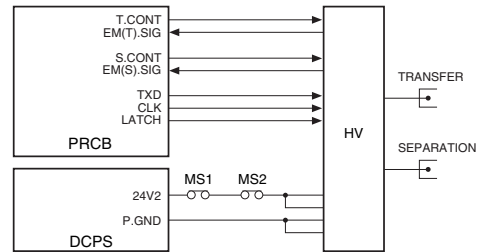
3 CLK (PRCB to HV)

Clock signal for TXD

4 LATCH (PRCB to HV)

Latch signal for TXD

Transfer/separation control



The voltages applied to the transfer wire and separation wire is supplied from HV (high voltage unit) and are controlled by PRCB (printer control board). The levels of outputs to these wires are transmitted using 8-bit serial data. This serial data includes the level information for all outputs driven by HV, excluding the ON/OFF control signal. Accordingly, a separate signal line is provided to turn on/off only the transfer wire or separation wire.

1 Operation

a Transfer

Positive DC high voltage is used for transfer.

Transfer DC output range: 50 μ A to 600 μ A

b Separation

AC high voltage and negative DC voltage are used for separation.

Separation AC output range: 4kV to 5.7kV

Separation DC output range: 0 μ A to -400 μ A

2 Signals

a Input signals

1 EM (T).SIG (HV to PRCB)

This signal indicates the leak or short state of the transfer corona unit.

[L]: Normal

[H]: Abnormal

2 EM (S).SIG (HV to PRCB)

This signal indicates the leak or short state of the separation corona unit.

[L]: Normal

[H]: Abnormal

b PRCB output signals

1 T.CONT (PRCB to HV)

This signal turns on/off the voltage applied to the transfer wire.

[L]: Transfer voltage on

[H]: Transfer voltage off

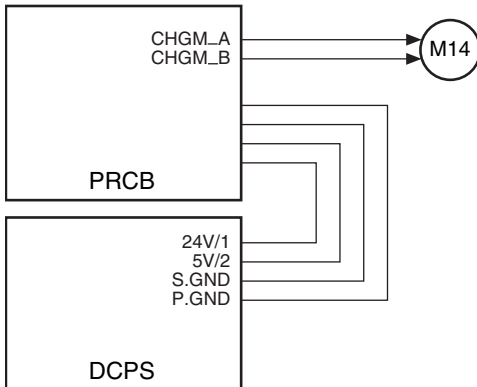
2 S.CONT (PRCB to HV)

This signal turns on/off the voltage applied to the separation wire.

[L]: Separation voltage on

[H]: Separation voltage off

M14 (charger cleaning) control



M14 (charger cleaning) is a DC motor powered by 24 VDC and is controlled by PRCB (printer control board).

1 Operation

a Purpose of driving

M14 (charger cleaning) is used to drive the charging wire cleaning unit.

b Operation timing

The charging wires are cleaned when SW2 (sub power) is turned on and when the fuser temperature is lower than 50° C. They are also cleaned after the specified copy count is reached.

*Changeable with the 25-mode DIP SW

c Cleaning operation

Normally, the charging wire cleaning unit is on the front side of the machine. It moves back and forth to clean the charging wires. The movement direction is changed by changing the rotational direction of M14 (charge cleaning).

The rotational direction of M14 and the position of the cleaner are detected by monitoring the current value of M14 with PRCB (printer control board).

2 Signals

a Output signal

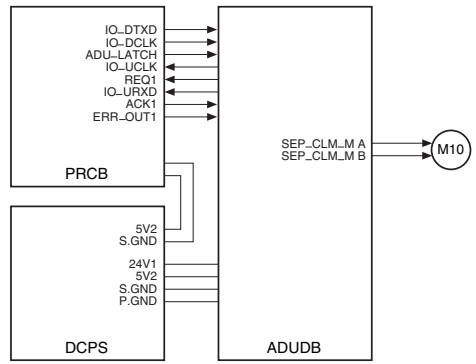
1 CHGM_A, B (PRCB to M14)

M14 (charger cleaning) drive control signal.

The drive direction of M14 is controlled by switching between the drive current directions of two signals.

Status	CHGM_A	CHGM_B
Forward stroke of cleaning	H	L
Backward stroke of cleaning	L	H
Stop	L	L

M10 (transfer/separation cleaning control)



M10 (transfer/separation cleaning) is a DC motor powered by 24 VDC and is controlled by PRCB (printer control board) via ADUDB (ADU drive board). Between PRCB and ADUDB, signals are exchanged using serial data.

1 Operation

a Purpose of driving

M10 (transfer/separation cleaning) used to drive the transfer/separation wire cleaning pads.

b Operation timing

The transfer/separation wires are cleaned when SW2 (sub power) is turned on or when the fuser temperature is lower than 50° C.

It is also carried out after the specified copy count is reached.

*Changeable with the 25-mode DIP SW

c Cleaning operation

Normally, the transfer/separation wire cleaning pads are on the front side of the machine. They move back and forth to clean the transfer and separation wires. The movement direction is changed by changing the rotational direction of M10 (transfer/separation cleaning).

The rotational direction of M10 and the position of the cleaner are detected by monitoring the current value of M10 with PRCB (printer control board).

2 Signals

a Input signals

1 IO_URXD (ADUDB to PRCB)

Serial data used to report the ADUDB (ADU drive board) operation state to PRCB (printer control board)

2 REQ1 (ADUDB to PRCB)

This signal indicates that sending data from ADUDB (ADU drive board) to PRCB (printer control board) is requested.

When ADUDB receives ACK1 and can send data, this signal stands at the [L] level.

3 IO_UCLK (ADUDB to PRCB)

Clock signal for IO_URXD signal

b Output signals

1 SEP_CLM_M A, B (ADUDB to M10)

M10 (transfer/separation cleaning) drive control signal

The drive direction of M10 (transfer/separation cleaning) drive control signal

The drive direction of M10 is controlled by switching between the drive current directions of two signals.

Status	SEP_CLM_MA	SEP_CLM_MB
Forward stroke of cleaning	H	L
Backward stroke of cleaning	L	H
Stop	L	L

2 IO_DTXD (PRCB to ADUDB)

Serial data used to report the machine operation state understood by PRCB (printer control board) to ADUDB (ADU drive board)

3 IO_DCLK (PRCB to ADUDB)

Clock signal for IO_DTXD signal

4 ADU_LATCH (PRCB to ADUDB)

Latch signal for IO_DTXD signal

5 ACK1 (PRCB to ADUDB)

Reception acknowledgment signal. It is sent each time PRCB (printer control board) receives one-byte data from ADUDB (ADU drive board).

When PRCB receives REQ1 and can receive data, this signal stands at the [L] level.

6 ERR_OUT1 (PRCB to ADUDB)

This signal requires resending of data when PRCB (printer control board) has failed in data reception from ADUDB (ADU drive board) due to an error.

PRCB (printer control board). TSL is driven by ADUDB (ADU drive board). PCL and TSL are controlled by PRCB.

1 Operation

PCL turns on when the START button is pressed. It is turned off after a lapse of the specified time from turning on of PS37 (paper exit). TSL turns on after a lapse of the specified time from turning on of PS43 (leading edge) of the second paper feed section. It turns off after a lapse of the specified time from detection of the trailing edge of copy paper.

2 Signals

a Output signals

1 PCL CONT (PRCB to PCL)

PCL ON/OFF control signal

[L]: PCL on

[H]: PCL off

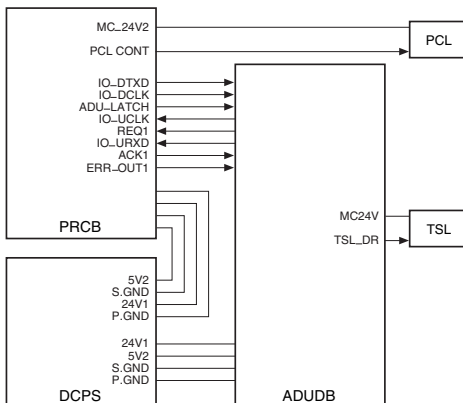
2 TSL_DR (ADUDB to TSL)

TSL ON/OFF control signal

[L]: TSL on

[H]: TSL off

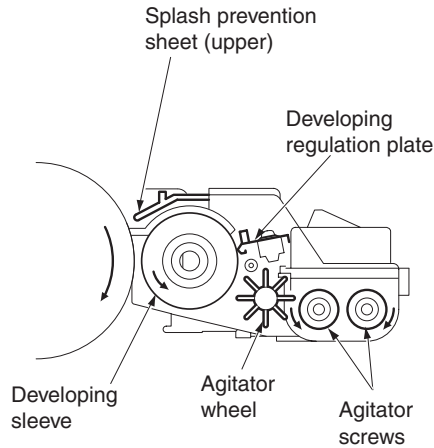
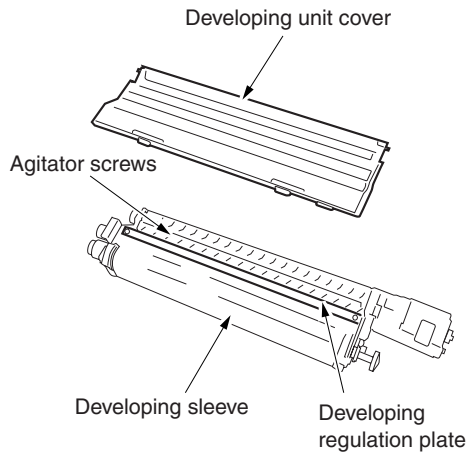
PCL/TSL control



LEDs are used for PCL (pre-charging exposure lamp) and TSL (transfer synchronization lamp). PCL is driven by the

Developing unit

Composition



Mechanisms

Mechanism	Method
Developing	2-component developer
Developing bias	DC bias
Developer agitation	Main agitator Auxiliary agitator

1 Developing drive

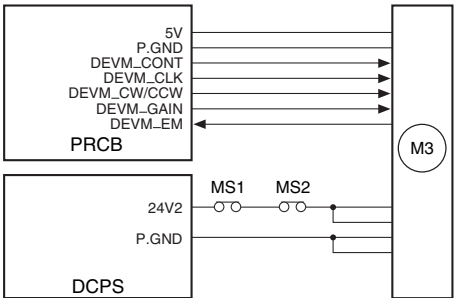
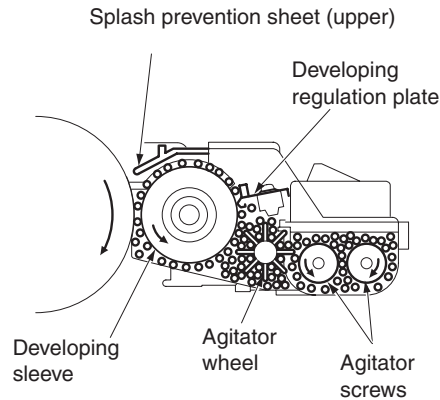
The developing motor (M3) drives the following parts via the gear unit at the back:

- Developing sleeve
- Agitator wheel
- Agitator screws

2 Flow of developer

The developer inside the developing unit is supplied to the developing sleeve by the agitator wheel, and maintained at a constant thickness by the developer regulation plate (bristle height regulation plate). The developer remaining on the developing sleeve is returned to the agitator screws.

M3 (developing) control



M3 (developing) is controlled by PRCB (printer control board) and the motor drive power is supplied from DCPS (DC power supply unit).

1 Operation

M3 (developing) is a DC motor driven by 24 V. It drives the developing sleeve, agitator wheel, and agitator screws.

M3 turns on when the PRINT button is pressed, and turns off after lapse of the specified time from turning off of the charging.

2 Signals

a Input signals

1 DEVM_EM (M3 to PRCB)

M3 (developing) abnormality detection signal

[H]: Abnormal rotation (when motor speed changes by 6.5 percent more or less than the motor speed specified value)

[L]: Normal rotation

b Output signals

1 DEVM_CONT (PRCB to M3)

M3 (developing) drive control signal

[L]: M3 on

[H]: M3 off

2 DEVM_CLK (PRCB to M3)

M3 (developing) rotational speed control clock signal

3 DEVM_CW/CCW (PRCB to M3)

M3 (developing) rotational direction indication signal

[H]: CW direction rotation

[L]: CCW direction rotation

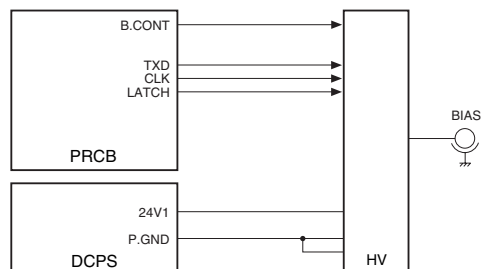
4 EDVM_GAIN (PRCB to M3)

M3 (developing) rotational speed range indication signal

[H]: High speed range

[L]: Low speed range

Developing bias control



The developing bias voltage is supplied from HV (high voltage unit) and is controlled by PRCB (printer control board). The output level of the developing bias voltage is transmitted using 8-bit serial data. This serial data includes the level information for all outputs driven by HV, excluding the ON/OFF control signal. Accordingly, a separate signal line is provided to turn on/off only the developing bias.

1 Operation

Application of the developing bias voltage starts after a lapse of the specified time from turning on of the START button, and stops after a lapse of the specified time from turning off of PS43 (leading edge) by the last copy paper.

Developing bias output range: -300 V to -700 V

2 Signals

a Output signal

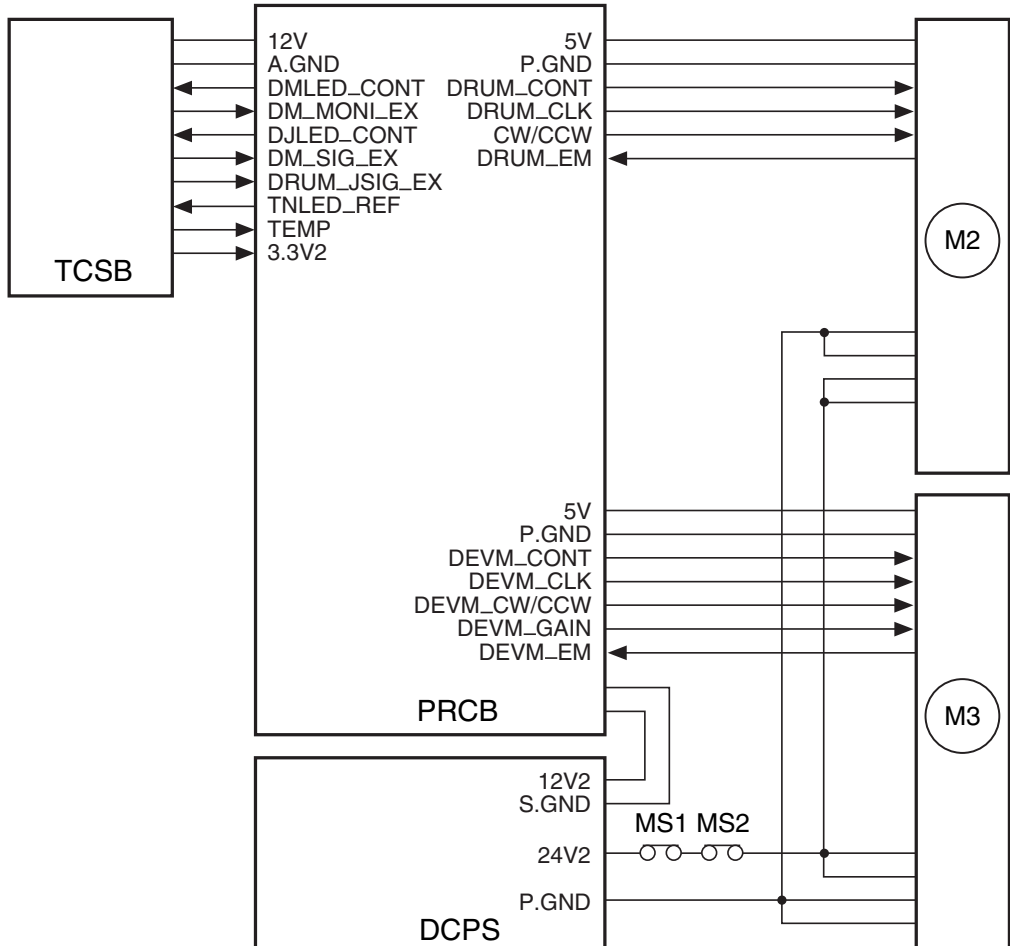
1 B.CONT (PRCB to HV)

Developing bias output ON/OFF control signal.

[L]: Developing bias on

[H]: Developing bias off

Dmax (maximum contrast) control



Dmax (maximum contrast) control is performed by TCSB (toner control sensor board), M2 (drum), M3 (developing), and so on under the control of PRCB (printer control board).

1 Operation

The purpose of Dmax (maximum contrast) control is to adjust the maximum density to the reference level for each machine.

a Dmax (maximum contrast) control

1 Method

Several latent images are created at the maximum laser power, images are developed with the rotational speed of the developing sleeve varied, and then each density is read by the Dmax (maximum contrast) sensor (PD1) on TCSB (toner control sensor board).

The developing sleeve speed detected when the density has reached the reference level is recorded as the optimum sleeve speed, allowing developing to be performed at this sleeve speed.

2 Timing

- a) When the fuser temperature is lower than 50° C (122° F) at SW2 (sub power) on
- b) Every 10,000 prints, upon completion of the last job.

2 Signals

a Input signals

1 DM_SIG_EX (TCSB to PRCB)

Output voltage of Dmax (maximum contrast) detection sensor (PC1) on TCSB (toner control sensor board)
Reference voltage: 2.5 V

2 DM_MONI_EX (TCSB to PRCB)

This signal monitors the light reflected by the drum surface (without toner).

The voltage applied to the Dmax (maximum contrast) detection LED is corrected by TNLED_REF so that the output voltage becomes 1.9 V (calibration).

Reference voltage: 1.9 V

<Timing>

Before Dmax (maximum contrast) correction

3 DRUM_JSIG_EX (TCSB to PRCB)

This signal detects a jam caused by paper wrapping around the drum. A jam is detected when the voltage becomes 4.0 V or more.

4 TEMP, 3.3V2 (TCSB to PRCB)

Drum temperature detection signal

b Output signals

1 DMLED CONT (PRCB to TCSB)

Dmax (maximum contrast) LED ON/OFF control signal

[L]: LED on

[H]: LED off

2 TNLED_REF (PRCB to TCSB)

Power supply line for PD1 LED on TCSB.

The voltage is adjusted so that the Dmax (maximum contrast) MONI signal becomes 1.9 V.

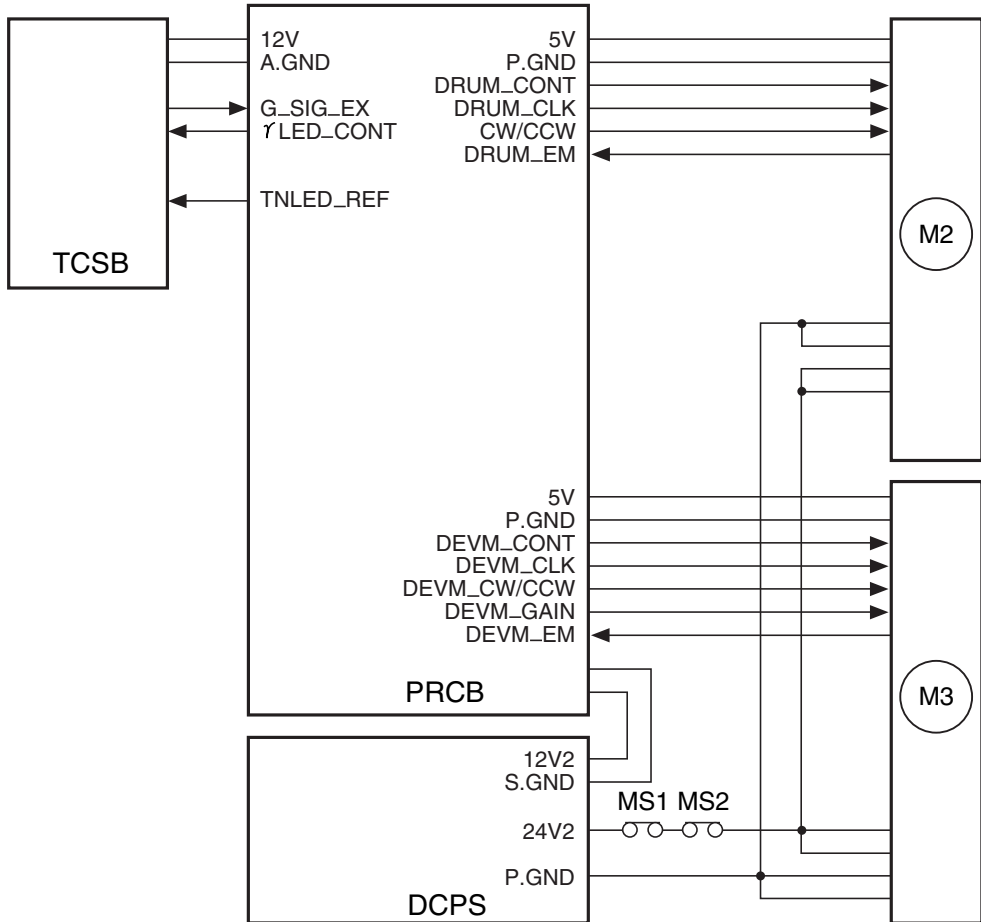
3 DJLED_CONT (PRCB to TCSB)

JAM LED ON/OFF control signal

[L]: LED on

[H]: LED off

Gradation correction control



Gradation correction control is performed by TCSB (toner control sensor board), M2 (drum), M3 (developing), and so on under the control of PRCB (printer control board).

1 Operation

The gradation characteristics of the toner density versus exposure amount at the image-forming section (drum area) are detected to obtain a linear relation between the image density on a document and the copying image density.

a Method

Exposure is performed with the laser PWM varied in several steps, and development is performed at the sleeve speed obtained by Dmax (maximum contrast) correction.

Next, each density is read by the γ sensor (PD2) on TCSB (toner control sensor board) to detect the gradation characteristics of image density.

The gradation characteristics obtained here are used as the values for correcting the laser exposure amount.

Gradation correction control must be performed in two ways: 1-dot PWM (for normal mode) and 2-dot PWM (for photo mode).

b Timing

- 1 When the fuser temperature is lower than 50° C at SW2 (sub power) on
- 2 Every 5,000 prints, upon completion of the last job.

2 Signals

a Input signals

1 G_SIG_EX (TCSB to PRCB)

This signal monitors the output voltage from the γ sensor (PD2) on the TCSB (toner control sensor board) as well as the light reflected by the drum surface (without toner).

The voltage applied to the gradation detection LED is corrected by TNLED_REF so that the output voltage becomes 3.0 V (calibration).

Reference voltage: 3.0 V

<Timing>

Before gradation correction.

b Output signal

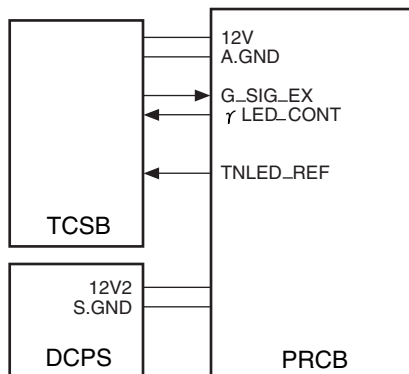
1 γ LED CONT (PRCB to TCSB)

Gradation detection LED ON/OFF control signal

[L]: LED on

[H]: LED off

Dot diameter correction control



Dot diameter is detected by TCSB (toner control sensor board) and is controlled by PRCB (printer control board).

1 Operation

Dot diameter correction is performed to prevent the 1-dot laser beam diameter from fluctuating due to the change in developing characteristics (caused by deteriorated developer) and soil in the laser scanner unit.

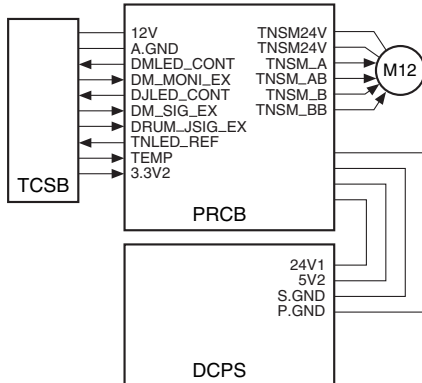
a Method

Multiple dot pattern patches with the same condensation are created to be read by the γ sensor (PD2). The laser power where the γ sensor output reaches the reference voltage is used as the MPC value.

b Timing

- 1 Every 10,000 prints, upon completion of the last job.

Toner density control



The density of toner is controlled by controlling M12 (toner supply) from PRCB (printer control board).

1 Operation

a Toner density detection

The reference patch density is detected using the patch detection method of TCSB (toner control sensor board) and the corresponding analog voltage signal is output to PRCB (printer control board), thus detecting the toner density. The PRCB compares the detected voltage with the reference value to determine whether toner must be added.

b Toner supply operation

Upon read of the patch, M12 (toner supply) is turned on to supply toner. The time needed to add toner depends on the paper size.

2 Signals

a Output signals

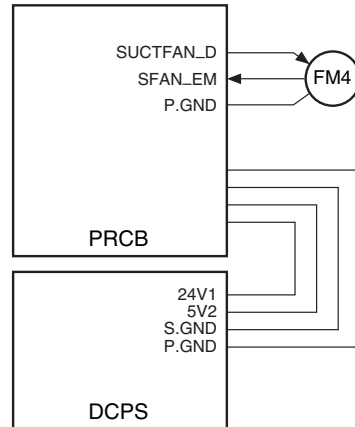
1 TNSM_A, AB (PRCB to M12)

A-phase drive signal of M12 (toner supply)

2 TNSM_B, BB (PRCB to M12)

B-phase drive signal of M12 (toner supply)

FM4 (developing suction) control



FM4 (developing suction) is controlled by PRCB (printer control board).

1 Operation

a ON timing

FM4 (developing suction) is turned on when M2 (drum) is turned on.

b OFF timing

FM4 (developing suction) is turned off after a lapse of the specified time from turning off of M2 (drum).

2 Signals

a Input signal

1 FM2 EM (FM4 to PRCB)

FM4 (developing suction) abnormality detection signal

[L]: FM4 is normal.

[H]: FM4 is abnormal.

b Output signal

1 SUCTFAN_D (ACDB to FM4)

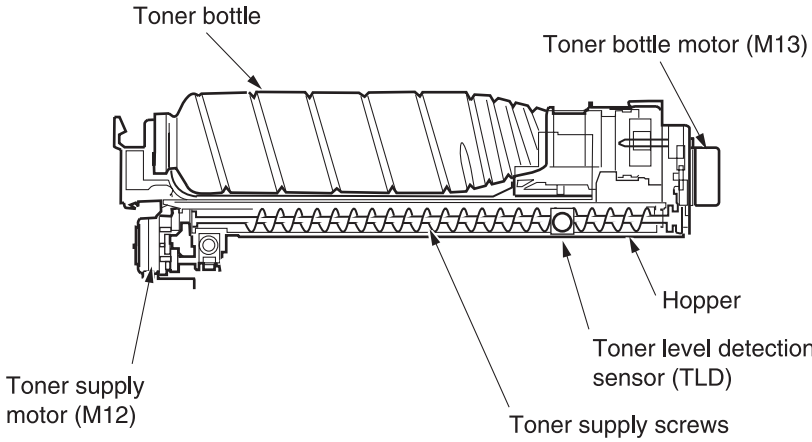
FM4 (developing suction) drive signal

[L]: FM4 off

[H]: FM4 on

Toner supply unit

Composition



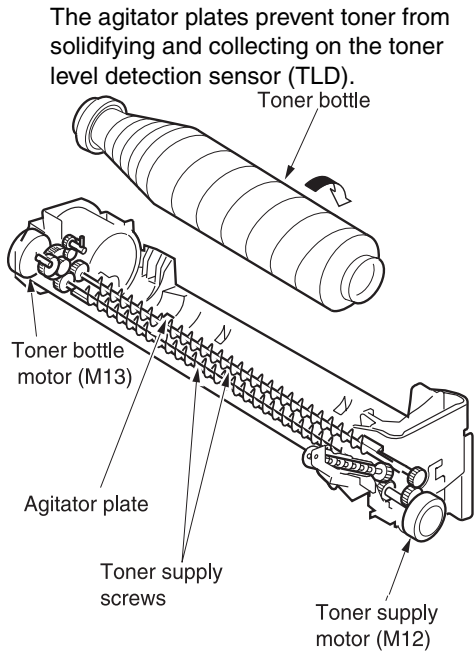
Mechanisms

Mechanism	Method
Toner supply	Supply by screw
Toner level detection	Piezoelectric method 100 ± 25 g
Toner agitation*1	Agitator plate
Toner bottle*2	Rotary cartridge Capacity: 1000 g
Toner leakage prevention	Toner supply shutter

*1 Toner agitation

Toner agitator plates are driven by the following two motors through the gear unit:

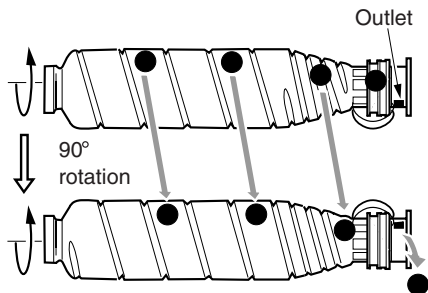
- a Toner supply motor (M12): Drives the toner supply screws.
- b Toner bottle motor (M13): Drives the toner bottle.



*2 Toner bottle

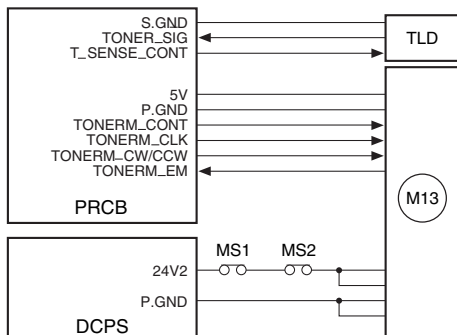
When the toner bottle rotates, toner is fed to the outlet of the bottle through the spiral groove on the surface of the toner bottle. When the outlet of the bottle

faces downward, toner flows out of the outlet into the agitation/conveyance section of the toner supply unit.



To agitation/conveyance block
of toner supply unit

Toner level detection control



Toner level detection is controlled by the TLD (toner level detection sensor) and the PRCB (printer control board).

1 Operation

a Toner level detection

A piezoelectric device is used as the TLD (toner level detection sensor).

When the level of toner in the hopper becomes low, the toner supply signal is output to PRCB (printer control board). As a result, a message is displayed on the LCD connected to OB1 (operation board/1).

b Detection timing

The detection timing is as follows:

- Power-on
- When the front door opens or closes
- During copying

c Toner supply to toner supply unit

When the no toner state is detected by TLD (toner level detection sensor), M13 (toner bottle) is turned on to supply toner from the toner bottle to the toner supply unit.

d Detection of no toner state in toner bottle

If the no toner state is detected by TLD (toner level detection) after M13 has been held on for a specified period of time, the toner bottle is assumed to be empty.

2 Signals

a Input signals

1 TONER_SIG (TLD to PRCB)

When the level of toner in the toner supply unit becomes low, this signal goes low ([L]), displaying a message on the LCD connected to OB1 (operation board/1).

2 TONERM_EM (M13 to PRCB)

M13 (toner bottle) abnormality detection signal

[L]: M13 is normal.

[H]: M13 is abnormal.

b Output signals

1 T_SENSE_CONT (PRCB to TLD)

TLD (toner level detection sensor) power control signal

The TLD is powered only when it is detecting the toner level.

2 TONERM_CONT (PRCB to M13)

M13 (toner bottle) control signal

[L]: M13 on

[H]: M13 off

3 TONERM_CLK (PRCB to M13)

M13 (toner bottle) rotation speed control clock signal

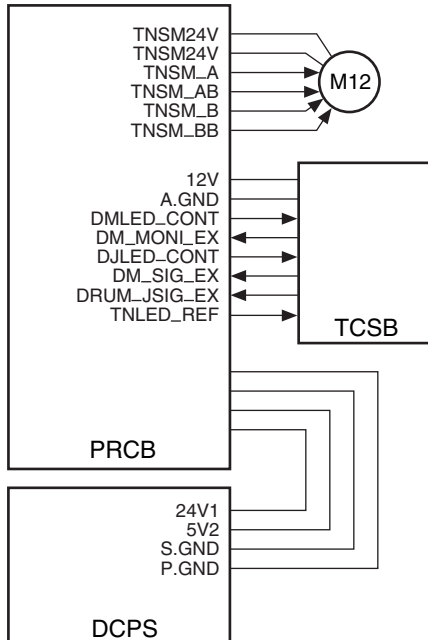
4 TONERM_CW/CCW (PRCB to M13)

M13 (toner bottle) rotational direction indication signal

[H]: CW direction rotation

[L]: CCW direction rotation

M12 (toner supply) control



M12 (toner supply) is controlled by the PRCB (printer control board). Toner density is detected by TCSB (toner control sensor board).

1 Operation

a Toner density detection

The Dmax (maximum contrast) sensor (PD1) on the TCSB (toner control sensor board) detects the density of the toner control patch developed on the drum surface to output the signal corresponding to the detected density to PRCB (printer control board).

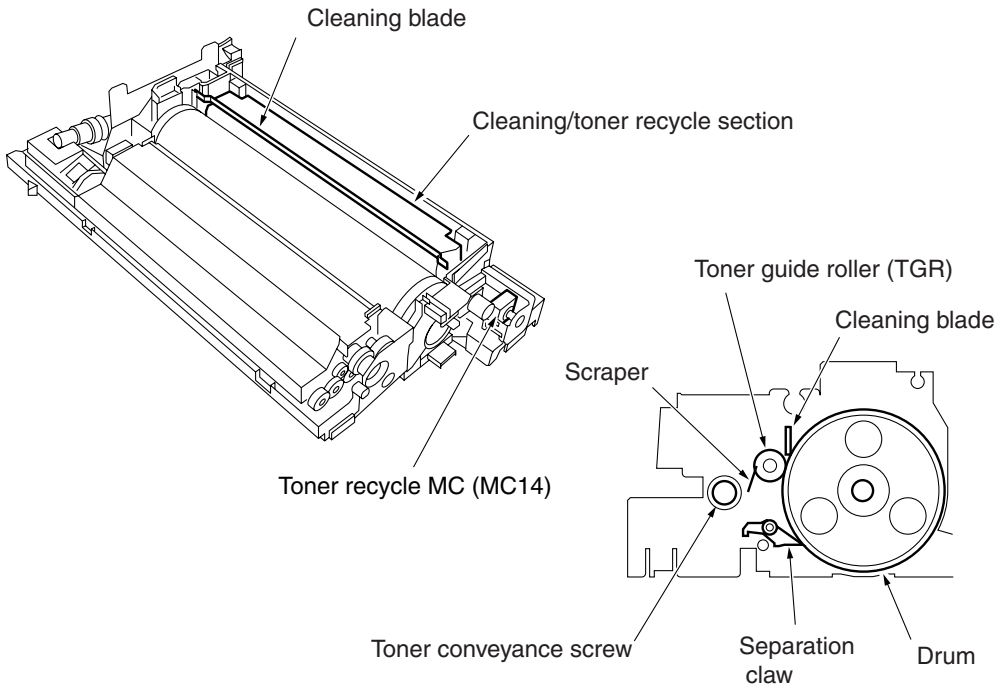
b Toner supply

When the voltage detected by TCSB (toner control sensor board) is below the specified value, PRCB issues a control signal to drive M12 (toner supply). The relationship between the paper size and toner supply time is summarized in the following table:

Paper size	Supply time (seconds)
A3	1.30
B4	0.98
F4	0.98
A4	0.65
B5	0.49
B5R	0.49
A5	0.33
11 by 17	1.30
8.5 by 14	0.98
8.5 by 11	0.65
5.5 by 8.5	0.49

Cleaning/toner recycle unit

Composition



Mechanisms

Mechanism	Method
Drum cleaning	Cleaning blade
Toner collection *1	Toner guide roller (TGR)
Toner recycle	Screw conveyance + toner recycle MC (MC14)

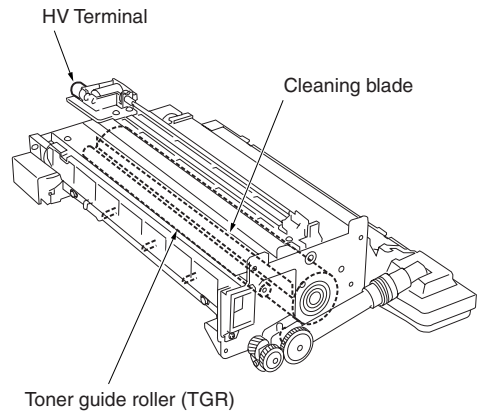
*1 Toner collection

Toner removed by the cleaning blade is collected by the toner guide roller (TGR) and removed by the scraper, then conveyed by the toner conveyance screw to be reused. High pressure is applied to the toner guide roller (TGR) to enhance the toner cleaning ability.

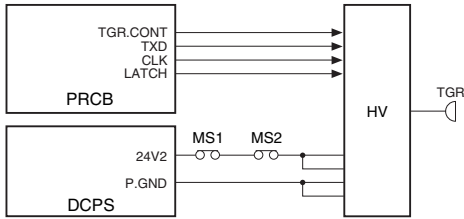
*2 Toner recycle

When the drum performs preliminary rotation as warm-up, toner recycle MC (MC14) is turned off, stopping the drive

force from the toner conveyance screw. This prevents excessive recycled toner from being conveyed to the developing unit.



Toner guide roller (TGR) control



To enhance the toner cleaning ability, voltage is applied to the TGR (toner guide roller). This voltage is applied by HV (high voltage unit) under the control of PRCB (printer control board). The output level of the applied voltage is transmitted using 8-bit serial data. This serial data includes the level information for all outputs driven by the HV unit excluding the ON/OFF control signal. Accordingly, a separate signal line is provided to turn on/off only the TGR.

1 Operation

a ON/OFF timing

The TGR is turned on/off in sync with M2 (drum).

b TGR (toner guide roller) output range

0 to 50 μ A

2 Signals

a Output signal

1 TGR.CONT (PRCB to HV)

TGR (toner guide roller) voltage
ON/OFF control signal

[L]: Voltage is applied.

[H]: Voltage is not applied.

Other control

To improve durability of the cleaning blade, the following control is performed:

1 Blade setting mode

A blade setting mode is available in the 36 mode.

This mode will perform a task that is required after blade replacement during maintenance, and so forth. When this mode is used, toner adheres on the drum and then the blade cleans the drum, preventing blade peeling.

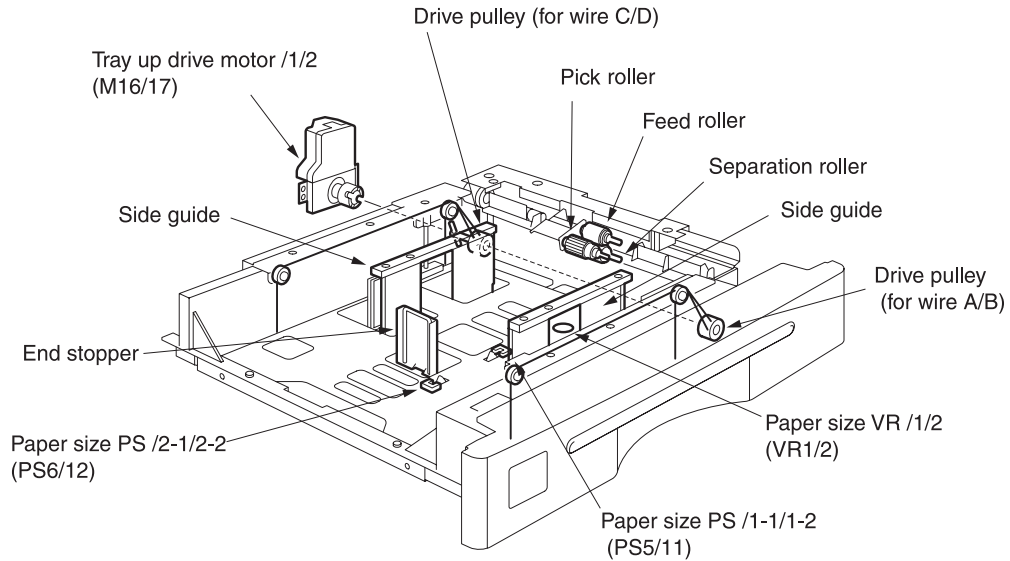
2 Black stripe creation control

To improve durability of the blade (stabilize load and stabilize paper dust crushing), a black stripe of toner is adhered on the drum once every 10 copies and then cleaned.

*Changeable with the 25-mode DIP SW

Tray 2/3 paper feed unit

Composition



Note

Trays 2 and 3 have the same shape and mechanisms.

Mechanisms

Mechanism	Method
Paper lift-up *1	Up: Driven by wires Down: Falls down by its own weight
Tray loading	Front loading
Double feed prevention	Torque limiter
1st paper feed	Pick roller
No paper detection	Photosensor + Actuator
Paper size detection *2 (Universal)	Width: VR Length: Photosensor + actuators (two)
1st paper feed paper loop mechanism*3	Photosensor + Actuator + clutch

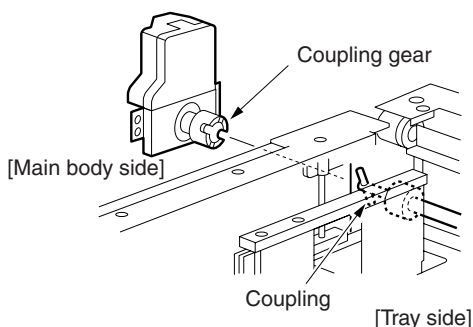
*1 Paper lift-up

- a** Hoisting of up/down plate
Paper feed trays are driven by wires. When a paper tray is loaded, the tray up drive motor/1(M16)/2(M17) rotates to wind the wires around the drive pulleys and consequently the

up/down plate in the tray moves up. When the tray upper limit PS/1(PS2)/2(PS8) detects the actuator of the roller that has been moved up by paper, the tray up drive motor/1(M16)/2 (M17) stops.

b Lowering of tray

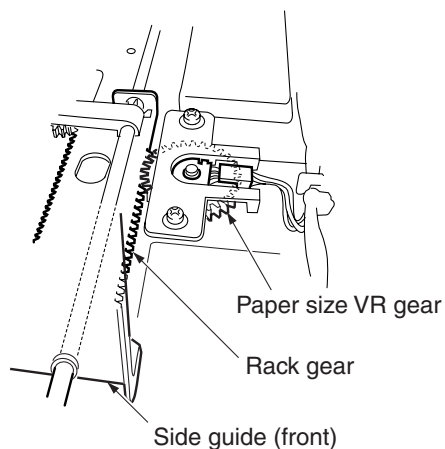
When the paper feed tray is pulled out, the coupling shaft of the tray is disengaged from the coupling gear of the tray up drive motor on the MFP side, allowing the up/down plate in the tray to fall down by its own weight.



*2 Paper size detection

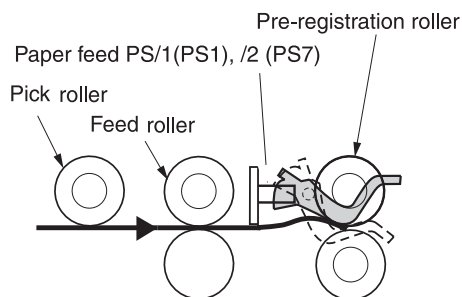
Length: When paper pushes the paper size detection actuator, the paper size PS/2-1/2-2 (PS6/PS12) and the paper size PS/1-1/1-2 (PS5/PS11) turn on. Thus, the paper size is automatically determined according to the combination of the on/off states of these PSs.

Width: When the side guides of the tray are slid, the rack gear of the side guide (front) turns the paper size VR/1/2 gear. Thus, the paper size is automatically determined according to the change in the resistance value of the VR.

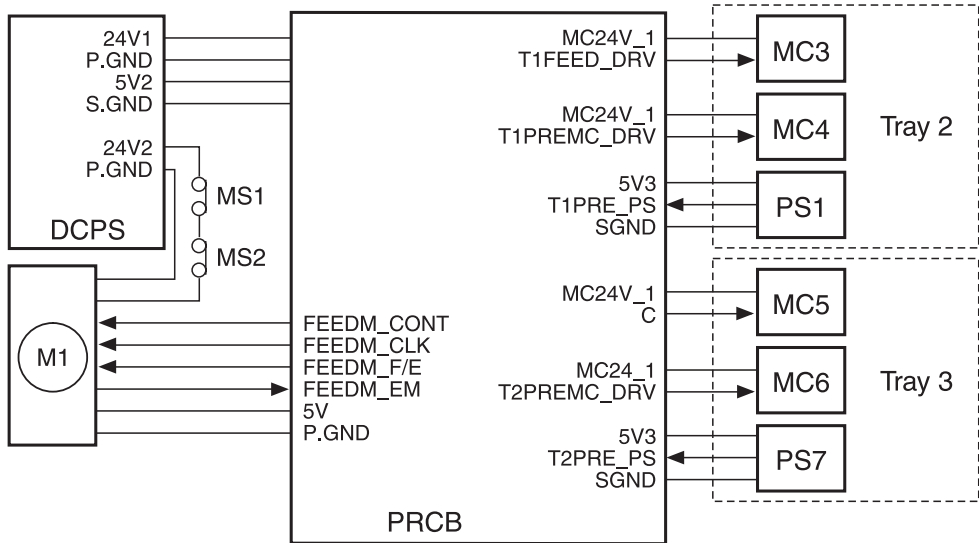


*3 First paper feed paper loop mechanism

When paper feed starts, paper is fed to the pre-registration roller by the feed roller and pick rollers. The fed out paper operates the actuator of the paper feed PS/1 (PS1), the paper feed PS/2 (PS7) turning it on. The feed and pick rollers remain on for a specified time after the actuation of the paper feed PS/1 (PS1) and PS/2 (PS7), causing a paper loop to form against the pre-registration rollers which are not turning. In this way, paper skew is corrected.



First paper feed control



The 1st paper feed from Tray 2/3 takes place as the result of the transmission of the drive force from M1 (paper feed) to each pick roller by MC3/5 (paper feed MC/1/2) and MC4/6 (pre-registration MC/1/2). The feed roller picks up paper using its own weight.

The above operations are controlled by the PRCB (printer control board). Related signals are PS1/7 (paper feed/1/2) and PS25/26 (vertical conveyance/1/2) issued from the vertical conveyance section.

1 Operation

a Operation of the MC3/5 (paper feed MC/1/2)

1 Start timing of printing of the first copy

MC3/5 (paper feed MC/1/2) turns on at the timing that is determined by the P Counter from when copying starts, and turns off after a lapse of the specified time from PS1/7 (paper feed/1/7) turning off. Thus, paper skew is corrected by forming the loop before pre-registration roller.

2 Start timing of printing of the second copy

When the preceding paper turns off PS1/7

3 OFF timing

When PS1/7 is turned on

b Operation of the MC4/6 (pre-registration MC/1/2)

1 ON timing

After a specified time from MC3/5 (paper feed MC/1/2) turning on

2 OFF timing

When PS1/7 (paper feed/1/2) is turned off

2 Signals

a PRCB input signals

1 T1PRE_PS (PS1 to PRCB)

Paper passage detection signal (Tray 2)

[L]: Detected

[H]: Not detected

2 T2PRE_PS (PS7 to PRCB)

Paper passage detection signal
(Tray 3)

[L]: Detected

[H]: Not detected

b PRCB output signals

1 T1FEED_DRV (PRCB to MC3)

MC3 drive control signal (Tray 2)

[L]: MC3 on

[H]: MC3 off

2 T1PREMC_DRV (PRCB to MC4)

MC4 drive control signal (Tray 2)

[L]: MC4 on

[H]: MC4 off

3 T2FEED_DRV (PRCB to MC5)

MC5 drive control signal (Tray 3)

[L]: MC5 on

[H]: MC5 off

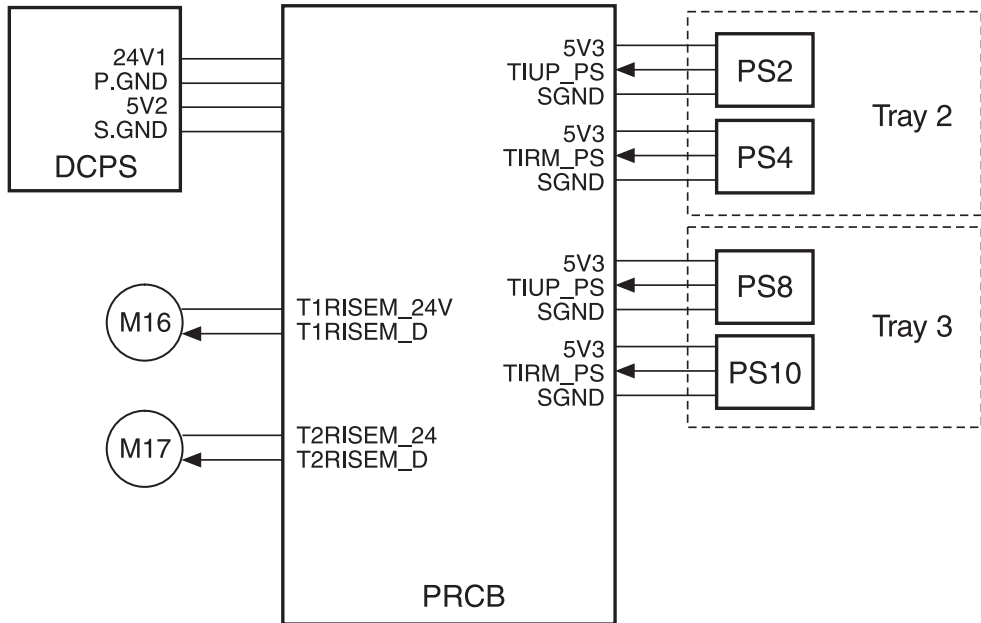
4 T2PREMC_DRV (PRCB to MC6)

MC6 drive control signal (Tray 3)

[L]: MC6 on

[H]: MC6 off

Paper up drive control



Paper stacked in the tray is pushed up by transmitting the drive force of M16/17 (tray up drive/1/2) to the up/down plate in the tray via drive wires. M16/17 are controlled by the PRCB (printer control board). Related signals are PS2/8 (tray upper limit/1/2) and PS4/10 (remaining paper/1/2).

1 Operation

a Paper up drive control

When Tray 2/3 is loaded, M16/17 (tray up drive/1/2) turns on to lift the up/down plate in the tray. When PS2/8 (tray upper limit/1/2) detects the upper limit of paper as the paper up/down plate in the tray goes up, it turns on and consequently M16/17 goes off, causing the tray to stop going up. When PS2/8 turns off after paper is fed, M16/17 goes on again to move the paper up/down plate upward. The up/down plate in the tray is lowered mechanically by its own weight.

b Paper up drive timing

1 ON timing

M16/17 (tray up drive/1/2) is turned on when loading of a tray is detected (by shorting wires at both ends of the drawer connector).

2 OFF timing

One of M16/17 (tray up drive/1/2) is turned off when PS2/8 (tray upper limit/1/2) is turned on.

c Remaining paper detection control

The level of paper remaining in each tray is detected according to the time that M16/17 (tray up drive/1/2) requires to lift up the up/down plate when the tray is set. This lift-up time (operation time of M16/17) is saved in the PRCB (printer control board). After this, the remaining paper is detected using the paper feed counter. The detected remaining paper level is displayed on the control panel in five steps. PS4/10

(remaining paper/1/2) are used to detect the remaining paper level when it lowers below about 10 percent.

2 Signals

a PRCB input signals

1 TIUP_PS (PS2 to PRCB)

Paper upper limit detection signal (Tray 2)

[L]: Not detected

[H]: Detected

2 TIRM_PS (PS4 to PRCB)

Remaining paper detection signal (Tray 2)

[L]: Not detected

[H]: Detected

3 TIUP_PS (PS8 to PRCB)

Paper upper limit detection signal (Tray 3)

[L]: Not detected

[H]: Detected

4 TIRM_PS (PS10 to PRCB)

Remaining paper detection signal (Tray 3)

[L]: Not detected

[H]: Detected

b PRCB output signals

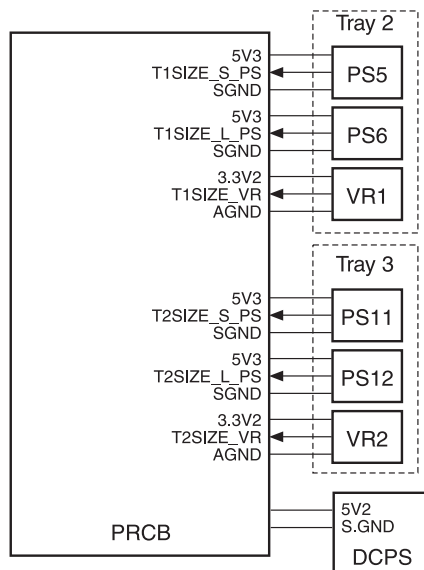
1 T1RISEM_24V (PRCB to M16)

M16 ON/OFF control signal (Tray 2)

2 T2RISEM_24 (PRCB to M17)

M17 ON/OFF control signal (Tray 3)

Paper size detection control



The paper size in Tray 2/3 is detected using PS5/6/11/12 (paper size/1-1/2-1/1-2/2-2), and VR1/2 (paper size/1/2). Based on the detection signals, the PRCB (printer control board) judges the paper size.

1 Operation

The length of paper is detected using PS5/6/11/12 (paper size/1-1/2-1/1-2/2-2). Variable resistors (VR1/2) interlocked with the guide position are installed at the bottom of the tray to detect the width of paper.

The relationships between the sensors and paper sizes (lengths) are as follows:

Paper size	8.5 by 11 or less	A4R to B5R	F4 or larger
PS5/11	OFF	ON	ON
PS6/12	OFF	OFF	ON

2 Signals

a PRCB input signals

3 T1SIZE_S_PS (PS5 to PRCB)

Paper size detection signal (Tray 2)

[L]: Paper does not exist.

[H]: Paper exists.

4 T1SIZE_L_PS (PS6 to PRCB)

Paper size detection signal (Tray 2)

[L]: Paper does not exist

[H]: Paper exists

5 T2SIZE_L_PS (PS11 to PRCB)

Paper size detection signal (Tray 3)

[L]: Paper does not exist

[H]: Paper exists

6 T2SIZE_S_PS (PS12 to PRCB)

Paper size detection signal (Tray 3)

[L]: Paper does not exist

[H]: Paper exists

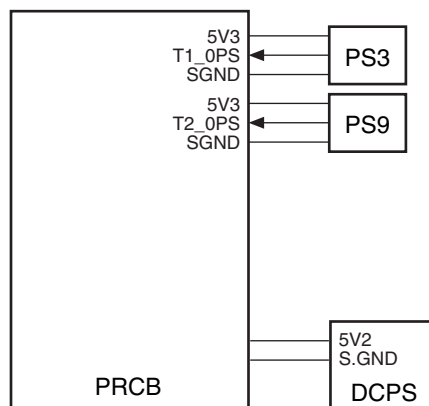
7 T1SIZE_VR (VR1 to PRCB)

Paper width detection signal (Tray 2)

8 T2SIZE_VR (VR2 to PRCB)

Paper width detection signal (Tray 3)

No paper detection control



No paper in the tray is detected by PS3 (no paper/1) and PS9 (no paper/2) which are controlled by the PRCB (printer control board).

1 Operation

When the tray becomes empty, PS3/9 (no paper/1/2) is turned off, displaying a message on the LCD via OB1 (operation board/1).

2 Signals

a PRCB input signals

1 T1_0PS (PS3 to PRCB)

No paper detection signal (Tray 2)

[L]: Paper does not exist in tray.

[H]: Paper exists in tray.

2 T2_0PS (PS9 to PRCB)

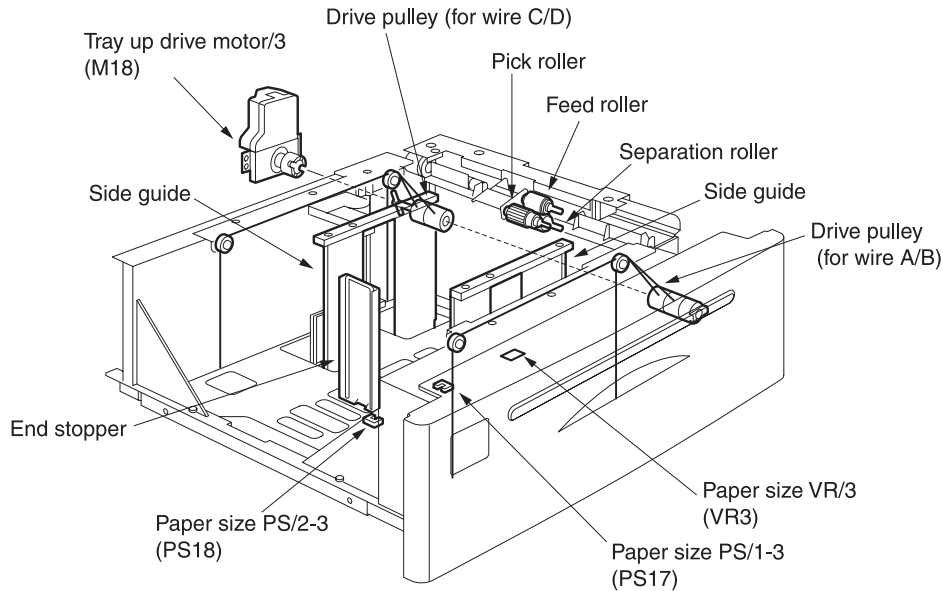
No paper detection signal (Tray 3)

[L]: Paper does not exist in tray.

[H]: Paper exists in tray.

Tray 4 paper feed unit

Composition



Mechanisms

Mechanism	Method
Paper lift-up *1	Up: Driven by wires Down: Falls down by its own weight
Tray loading	Front loading
Double feed prevention	Torque limiter
First paper feed	Pick roller
No paper detection	Photosensor + actuator
Paper size detection *2 (Universal)	Width: VR Length: Photosensor + actuators (two)
First paper feed Paper loop mechanism*3	Photosensor + actuator + magnetic clutch

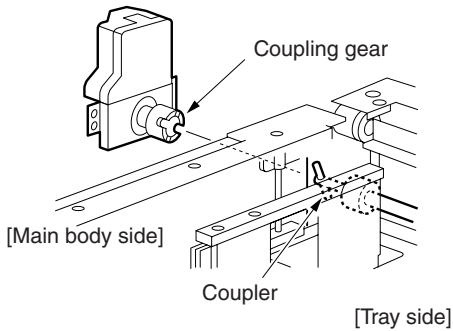
*1 Paper lift-up

- a** Hoisting of up/down plate
paper feed tray is driven by wires.
When the paper tray is loaded, the tray up drive motor 3 (M18) rotates to wind the wires around the drive pulleys and consequently the

up/down plate in the tray moves up.
When the tray upper limit PS/3 (PS14) detects the actuator of the roller that has been moved up by paper, the tray up drive motor 3 (M18) stops.

b Lowering of tray

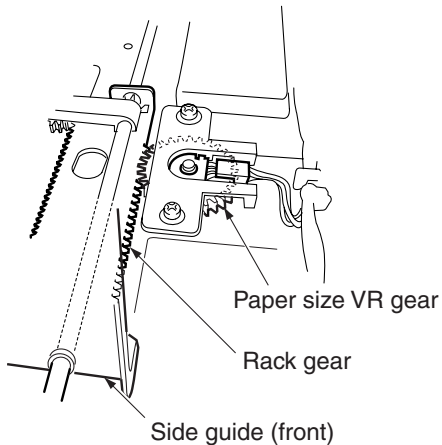
When the paper feed tray is pulled out, the coupling shaft of the tray is disengaged from the coupling gear of the tray up drive motor on the MFP side, allowing the up/down plate in the tray to fall down by its own weight.



*2 Paper size detection

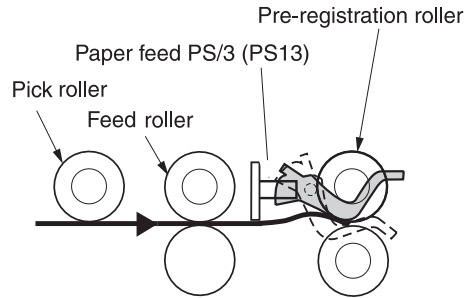
Length: When paper pushes the paper size detection actuator, the paper size PS/1-3/ (PS18) and the paper size PS2-3 (PS17) turns on. Thus, the paper size is automatically determined according to the combination of the on/off states of this PS.

Width: When the side guides of the tray are slid, the rack gear of the side guide (front) turns the paper size VR3 gear. Thus, the paper size is automatically determined according to the change in the resistance value of the VR.

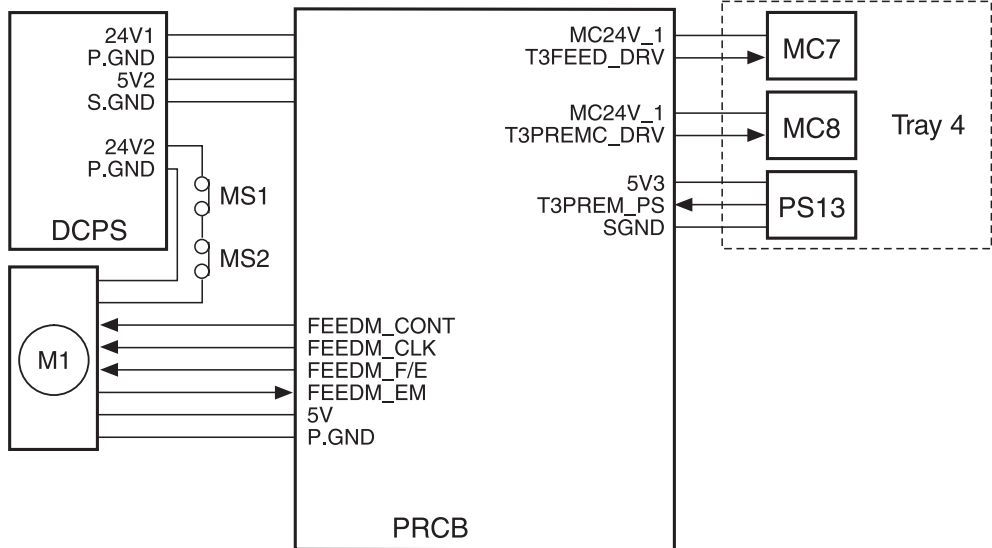


*3 First paper feed paper loop mechanism

When paper feed starts, paper is fed to the pre-registration roller by the feed roller and pick rollers. The fed out paper operates the actuator of the paper feed PS/3 (PS13), turning it on. The feed and pick rollers remain on for a specified time after the actuation of the paper feed PS/3 (PS13) causing a paper loop to form against the pre-registration rollers which are not turning. In this way paper skew is corrected.



First paper feed control



The first paper feed from Tray 4 takes place as the result of the transmission of the drive force from M1 (paper feed) to each pick roller by MC7 (paper feed MC/3) and MC8 (pre-registration MC/3). The feed roller picks up paper using its own weight.

The above operations are controlled by the PRCB (printer control board). Related signals are PS13 (paper feed/3) and PS27 (vertical conveyance/3) issued from the vertical conveyance section.

1 Operation

a Operation of the MC7 (paper feed MC/3)

1 Start timing of printing of the first copy

MC7 (paper feed MC/3) turns on at the timing that is determined by the P counter from when copying starts, and turns off after a lapse of the specified time from PS13 (paper feed/3) turning off. Thus, paper skew is corrected by forming the loop before pre-registration roller.

2 Start timing of printing of the second copy

When the preceding paper turns off PS13.

3 OFF timing

When PS13 is turned on.

b Operating of the MC8 (pre-registration MC/3)

1 ON timing

After a specified time from the MC7 (paper feed MC/5).

2 OFF timing

When PS13 (paper feed/3) is turned off.

2 Signals

a PRCB input signals

1 T3PREM_PS (PS13 to PRCB)

Paper passage detection signal
(Tray 4)

[L]: Detected

[H]: Not detected

b PRCB output signals

1 T3FEED_DRV (PRCB to MC7)

MC7 drive control signal (Tray 4)

[L]: MC7 on

[H]: MC7 off

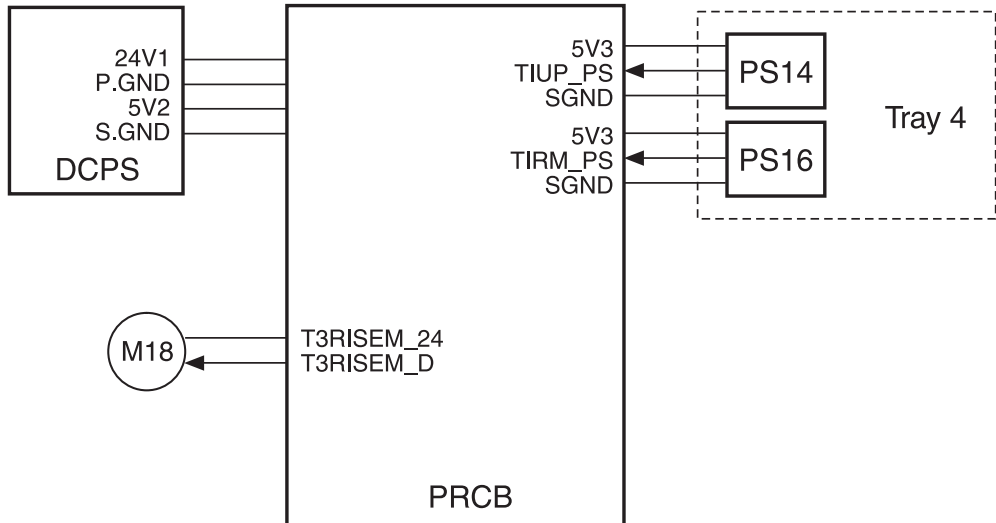
2 T3PREM_PS (PRCB to MC8)

MC8 drive control signal (Tray 4)

[L]: MC8 on

[H]: MC8 off

Paper up drive control



Paper stacked in the tray is pushed up by transmitting the drive force of M18 (tray up drive/3) to the up/down plate in the tray via drive wires. M18 is controlled by the PRCB (printer control board). Related signals are PS14 (tray upper limit/3) and PS16 (remaining paper/3).

1 Operation

a Paper up drive control

When Tray 4 is loaded, M18 (tray up drive/3) turns on to lift the up/down plate in the tray. When PS14 (tray upper limit/3) detects the upper limit of paper as the paper up/down plate in the tray goes up, it turns on and consequently M18 goes off, causing the tray to stop going up. When PS14 turns off after paper is fed, M18 goes on again to move the paper up/down plate upward. The up/down plate in the tray is lowered mechanically by its own weight.

b Paper up drive timing

1 ON timing

M18 (tray up drive/3) is turned on when loading of a tray is detected. (by shorting wires at both ends of the drawer connector)

2 OFF timing

M18 (tray up drive/3) is turned off when PS14 (tray upper limit/3) is turned on.

c Remaining paper detection control

The level of paper remaining in the tray is detected according to the time that M18 (tray up drive/3) requires to lift up the up/down plate when the tray is set. This lift-up time (operation time of M18) is saved in the PRCB (printer control board). After this, the remaining paper is detected using the paper feed counter. The detected remaining paper level is displayed on the control panel in five steps. PS16 (remaining paper/3) is used to detect the remaining paper level when it lowers below about 10 percent.

2 Signals

a PRCB input signals

1 TIUP_PS (PS14 to PRCB)

Paper upper limit detection signal

[L]: Not detected

[H]: Detected

2 TIRM_PS (PS16 to PRCB)

Remaining paper detection signal

[L]: Not detected

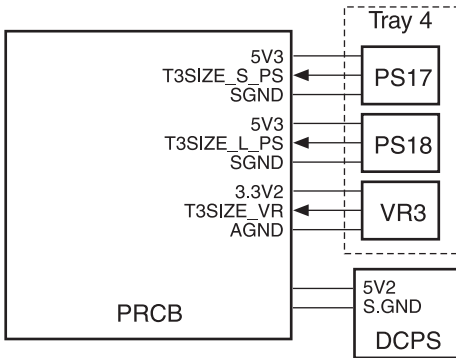
[H]: Detected

b PRCB output signals

1 T3RISEM_24 (PRCB to M18)

M18 ON/OFF control signal

Paper size detection control



The paper size in Tray 4 is detected using PS17 (paper size/1-3), PS18 (paper size/2-3), and VR3 (paper size/3). Based on the detection signals, the PRCB (printer control board) judges the paper size.

1 Operation

The length of paper is detected using PS17/18 (paper size/1-3/2-3). Variable resistor (VR3) interlocked with the guide position is installed at the bottom of the tray to detect the width of paper.

The relationships between the sensors and paper sizes (lengths) are as follows:

Paper size Sensor	8.5 by 11 or less	A4R to B5R	F4 or larger
PS17	OFF	ON	ON
PS18	OFF	OFF	ON

2 Signals

a PRCB input signals

1 T3SIZE_S_PS (PS17 to PRCB)

Paper size detection signal

[L]: Paper does not exist.

[H]: Paper exists.

2 T3SIZE_L_PS (PS18 to PRCB)

Paper size detection signal

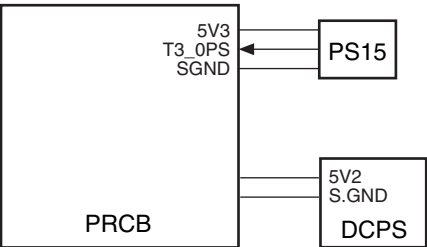
[L]: Paper does not exist.

[H]: Paper exists.

3 T3SIZE_VR (VR3 to PRCB)

Paper width detection signal

No paper detection control



No paper in the tray is detected by PS15 (no paper/3), and which is controlled by the PRCB (printer control board).

1 Operation

When the tray becomes empty, PS15 (no paper/3) is turned off, displaying a message on the LCD via OB1 (operation board/1).

2 Signals

a PRCB input signals

1 PS15 (PS15 to PRCB)

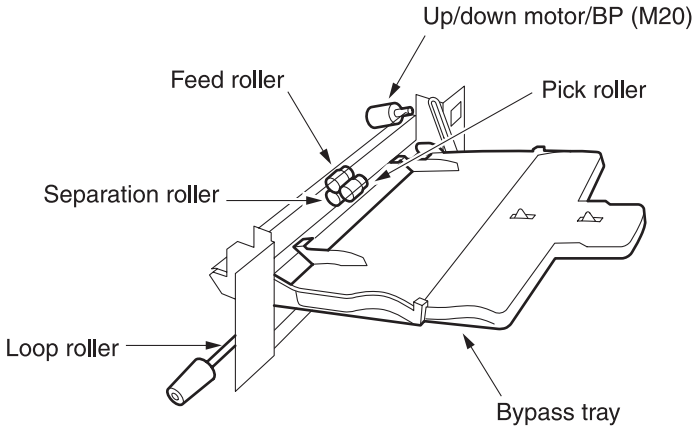
No paper detection signal

[L]: Paper does not exist in tray.

[H]: Paper exists in tray

Tray 1 (bypass tray)

Composition

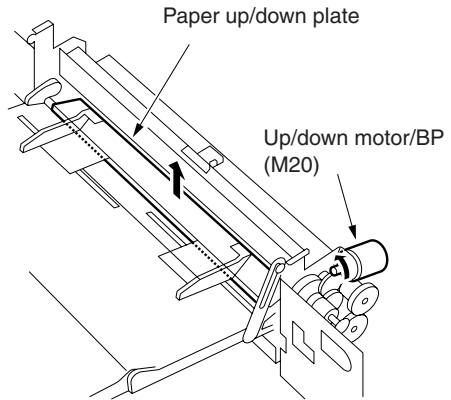


Mechanisms

Mechanism	Method
First paper feed	Tray 1 feed roller
Paper lift-up *1	Paper up/down plate Up/down motor/BP (M20) + Upper/lower limit detection sensor
Double feed prevention	Torque limiter
No paper detection	Photo sensor + actuator
Paper size detection *2	Width: VR Length: Photo sensor + actuators (two)

*1 Paper lift-up

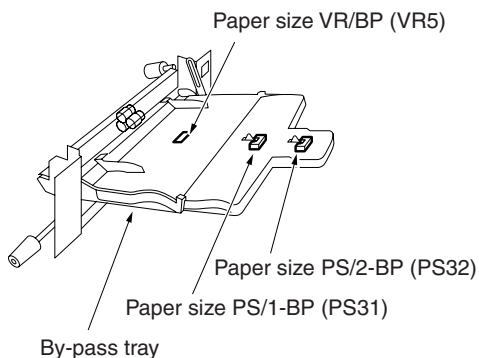
The up/down motor/BP (M20) drives the paper up/down plate via gears. Paper is automatically pushed up to the paper feed position, when the print start button is pressed. When paper is removed or exhausted M20 will drive down the up/down plate.



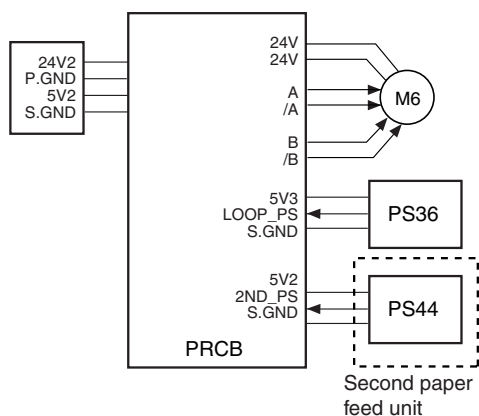
*2 Paper size detection

The paper size is automatically detected by the following three sensors:

- Lateral: Paper size detection VR/BP (VR5)
- Longitudinal: Paper size PS/1, 2-BP (PS31/32)



First paper feed control



The first paper feed from Tray 1 takes place as the result of the transmission of the drive force from M6 (loop roller) to the pick roller. M6 is controlled by PRCB (printer control board). The related signal is PS36 (loop).

1 Operation

- a** When printing of the first copy starts M6 (loop) is turned on at the timing that is determined by the P counter (that starts when printing starts), thus starting feed of paper.

M6 is stopped temporarily after lapse of a specified time from turning on of PS44 (registration) by the leading edge of

paper, a loop is formed by registration rollers, and the paper is fed to the transfer unit.

- b** When printing of the second or subsequent copy After lapse of the specified time from turning off of PS44 (registration) by the trailing edge of the preceding paper.

2 Signals

a PRCB input signals

1 LOOP_PS (PS36 to PRCB)

Paper passage detection signal

[L]: Paper does not exist.

[H]: Paper exist.

2 2ND_PS (PS44 to PRCB)

Second paper feed reference timing detection signal

[L]: Paper exists.

[H]: Paper does not exist.

b PRCB output signals

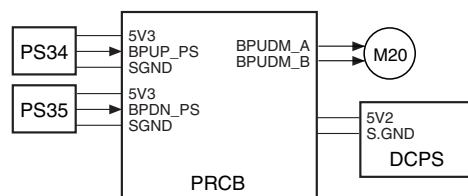
1 A and /A (PRCB to M6)

A-phase drive control pulse signal for M6

2 B and /B (PRCB to M6)

B-phase drive control pulse signal for M6

Paper up/down control



Paper in Tray 1 is pushed up/down by M20 (up/down motor/BP). M20 is controlled by PRCB (printer control board). Related signals are PS34 (tray upper limit /BP) and PS35 (tray lower limit /BP).

1 Operation

a Paper up/down control

M20 (up/down motor/BP) is turned on to push up paper. When PS34 (tray upper limit/BP) detects the paper upper limit and turns on, M20 turns off to stop pushing up paper. When paper is fed and consequently PS34 turns off, M20 turns on again, maintaining the upper limit position of paper.

b Paper up timing

1 ON timing

At start of copying

2 OFF timing

M20 (up/down motor/BP) is turned off when PS34 (tray upper limit /BP) is turned on.

c Paper down timing

1 ON timing

When there is no paper or a paper jam occurs.

2 OFF timing

M20 (up/down motor/BP) is turned off when PS35 (tray lower limit/BP) is turned on.

2 Signals

a PRCB input signals

1 BPUP_PS (PS34 to PRCB)

Paper upper limit position detection signal (Tray 1)

[L]: Not detected

[H]: Detected

2 BPDN_PS (PS35 to PRCB)

Paper lower limit position detection signal (Tray 1)

[L]: Not detected

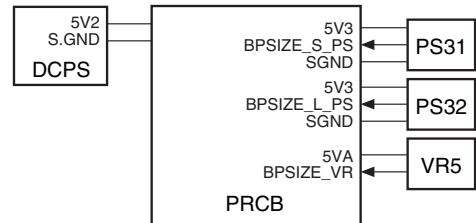
[H]: Detected

b PRCB output signal

1 BPUDM_A, B (PRCB to M20)

M20 drive control signal

Paper size detection control



The size of paper in the Tray 1 is detected by PS31 (paper size/1-BP), PS32 (paper size/2-BP), and VR5 (paper size/BP). Based on the detection signals, PRCB (printer control board) judges the paper size.

1 Operation

The length of paper is detected by PS31 (paper size/1-BP) and PS32 (paper size/2-BP). Tray 1 is provided with a variable resistor (VR5) interlocked with the guide position to judge the paper width according to the change in the resistance value.

The relationships between the sensors and paper sizes (lengths) are as follows:

Paper size Sensor	8.5 by 11 or less	A4R to B5R	F4 or larger
PS31	OFF	ON	ON
PS32	OFF	OFF	ON

2 Signals

a PRCB input signals

1 BPSIZE_S_PS (PS31 to PRCB)

Paper size detection signal

[L]: Paper does not exist.

[H]: Paper exists.

2 BPSIZE_L_PS (PS32 to PRCB)

Paper size detection signal

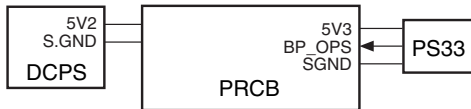
[L]: Paper does not exist.

[H]: Paper exists.

3 BPSIZE_VR (VR5 to PRCB)

Paper width detection signal

No paper detection control



No paper in the tray is detected by PS33 (no paper/BP) which is controlled by PRCB (printer control board).

1 Operation

When the tray becomes empty, PS33 (no paper/BP) is turned off, displaying a message on the LCD via OB1 (operation board/1).

2 Signal

a Input signal

1 BP OPS (PS33 to PRCB)

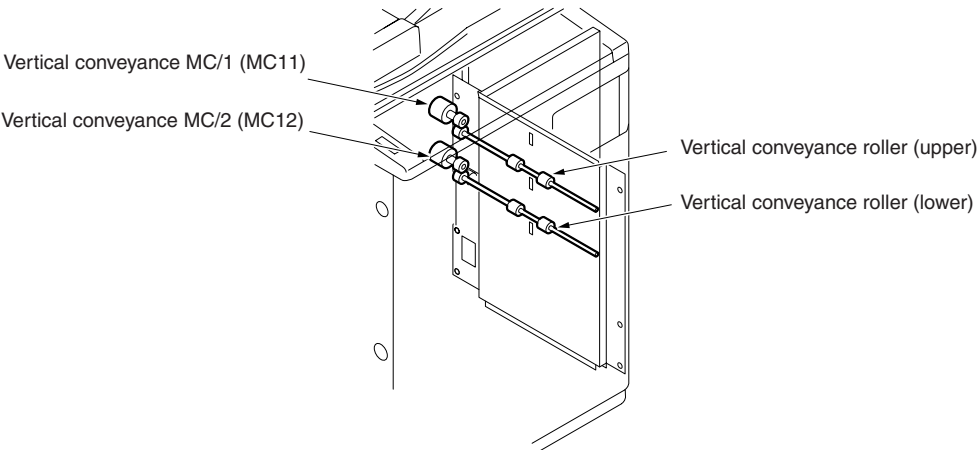
No paper detection signal

[L]: Paper does not exist.

[H]: Paper exists.

Vertical conveyance section

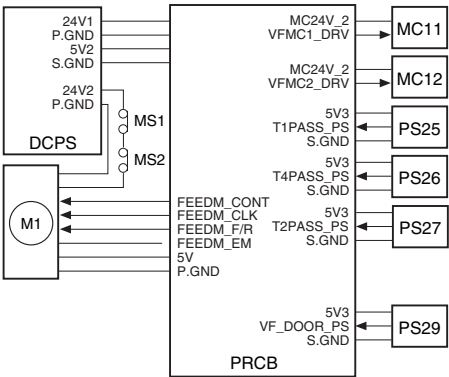
Composition



Mechanisms

Mechanism	Method
Paper conveyance	Rollers
Conveyance drive	Vertical conveyance roller (upper): Paper feed motor (M1) Vertical conveyance roller (lower): Paper feed motor (M1)

Vertical conveyance control



In the vertical conveyance section, paper is fed vertically by transmitting the drive force

of M1 (paper feed) to the vertical conveyance roller (upper) and vertical conveyance roller (lower) via MC11 (vertical conveyance MC/1) and MC12 (vertical conveyance MC/2). The above parts are controlled by PRCB (printer control board). Related signals are PS25 to PS27 (vertical conveyance/1 to /3) and PS29 (vertical conveyance door open/close).

1 Operation

Paper fed from Tray 2 is then fed to the second paper feed unit directly without passing through vertical conveyance rollers. When paper is fed from Tray 3 or 4, PS26 (vertical conveyance/2) is used to feed paper to the standby position. When PS26 is turned off by the preceding paper, MC11 and MC12 (vertical conveyance MC/1 and MC/2) are turned on and the paper fed from Tray 3 or 4 is fed to the standby position (where PS26 was turned on) by the drive force of M1 (paper feed). MC11 and MC12 are turned on after lapse of the specified time from restart of

registration of the preceding paper to rotate all vertical conveyance rollers, thus feeding paper to the second paper unit.

2 Signals

a PRCB input signals

1 T1PASS_PS (PS25 to PRCB)

Paper passage detection signal (for Tray 2)

[L]: Not detected

[H]: Detected

2 T2PASS_PS (PS26 to PRCB)

Paper passage detection signal (for Tray 3)

[L]: Not detected

[H]: Detected

3 T3PASS_PS (PS27 to PRCB)

Paper passage detection signal (for Tray 4)

[L]: Not detected

[H]: Detected

4 VF_DOOR_PS (PS29 to PRCB)

Vertical conveyance section
open/close detection signal

[L]: Open

[H]: Closed

b PRCB output signals

1 VFMC1_DRV (PRCB to MC11)

MC11 drive control signal

[L]: MC11 on

[H]: MC11 off

2 VFMC2_DRV (PRCB to MC12)

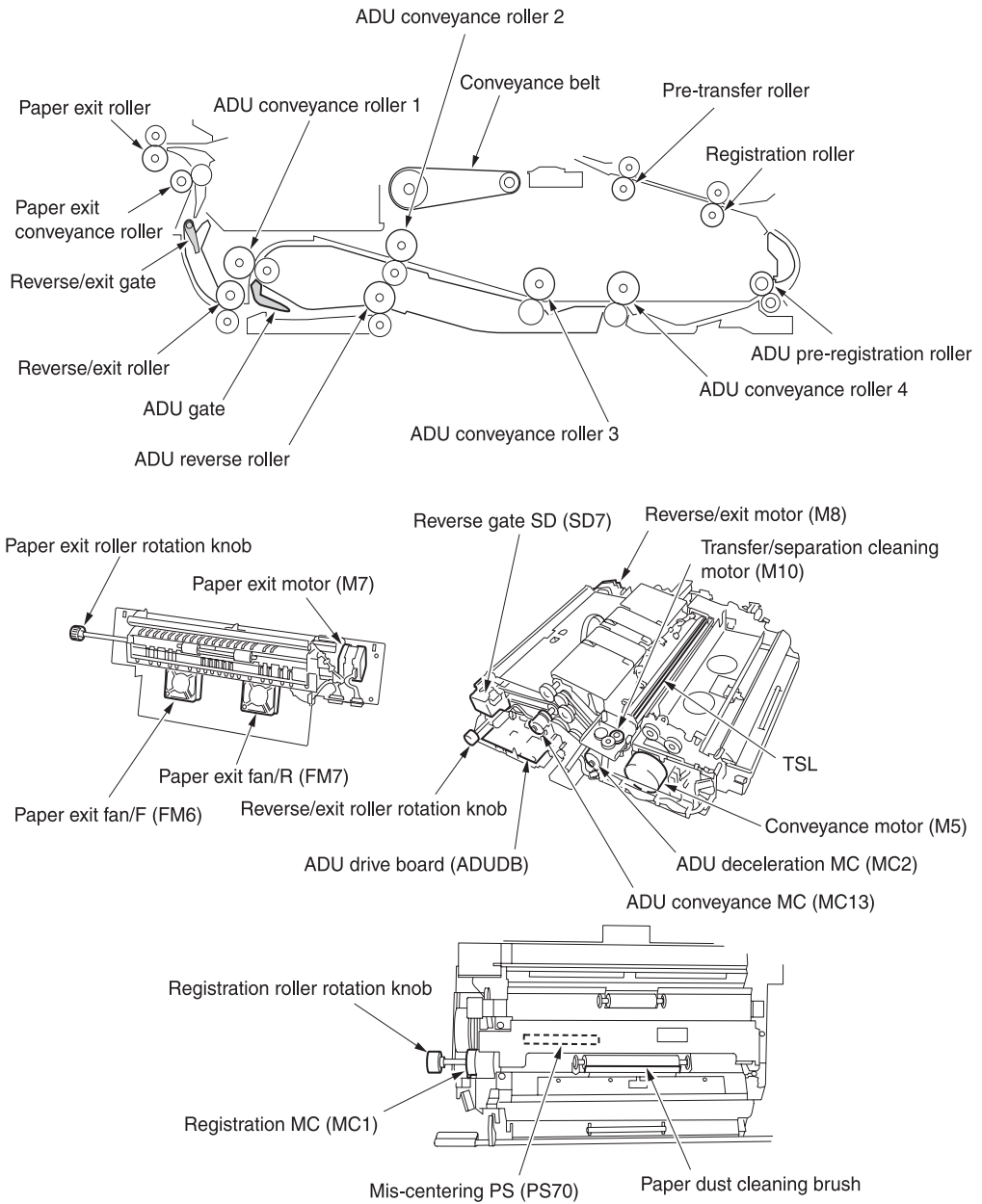
MC12 drive control signal

[L]: MC12 on

[H]: MC12 off

Automatic duplex unit (ADU)

Composition



Mechanisms

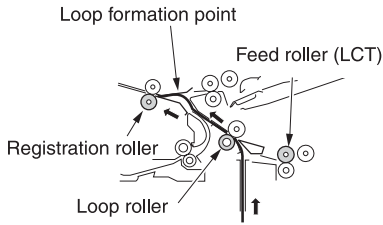
Mechanisms	Method
Second paper feed paper loop *1	Loop roller (trays 1-3/HCI), feed roller (Q3640A), ADU pre-registration roller (ADU)
Image position correction *2	Image position is corrected according to the information detected by PS43 (leading edge) and PS70 (paper mis-centering).
Second paper feed auxiliary mechanism *3	Pre-transfer roller
Second paper feed paper conveyance	Conveyance motor (M5) drive
Second paper feed jam removal mechanism	Opening/closing of jam removal section of pre-transfer section, Registration roller rotation knob
Conveyance section paper conveyance	Conveyance belts (two)
Conveyance section paper suction mechanism *4	Conveyance suction fan (FM3) + suction duct
Reverse/exit section paper path selection *5	Reverse/exit selection gate, reverse gate SD (SD7) drive paper is automatically guided owing to the paper guide shape.
Reverse/exit section paper conveyance	Reverse/exit roller, ADU reverse roller
Reverse/exit section paper conveyance drive	Reverse/exit motor (M8) drive, ADU reverse motor (M9) drive
Reverse/exit section jam removal mechanism	Paper exit guide plate opening/closing, ADU bottom plate assembly opening/closing, reverse/exit roller rotation knob
Paper exit section jam removal mechanism	Paper exit roller rotation knob
Paper exit conveyance	Paper exit motor (M7) drive
ADU paper feed *6	Nonstack
ADU reverse paper conveyance path selection	Paper is automatically guided owing to ADU gate operation and the paper guide shape.
ADU paper conveyance	ADU reverse roller, ADU conveyance rollers 1 and 2
ADU pre-registration mechanism *7	ADU pre-registration roller, ADU conveyance rollers 3 and 4
Thick paper conveyance *8	Conveyance motor (M5), paper exit motor (M7), reverse/exit motor (M8), ADU reverse motor (M9), linear velocity selection
ADU paper conveyance drive	Conveyance motor (M5), reverse/exit motor (M8), ADU reverse motor (M9), loop roller motor (M6)
ADU jam removal mechanism	ADU bottom plate assembly opening/closing, exit guide plate opening/closing

*1 Second paper feed paper loop mechanism

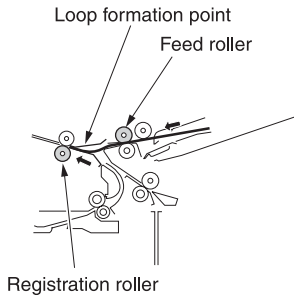
A paper loop is formed before the registration roller to correct mis-centering of paper during second paper feed. The paper loop is formed by pushing the fed paper against the registration roller for the prescribed time. The paper loop mechanism differs between paper feed paths.

- Trays 2-4, HCI paper feed
Loop roller
- Tray 1
Tray 1 feed roller
- ADU
ADU pre-registration roller

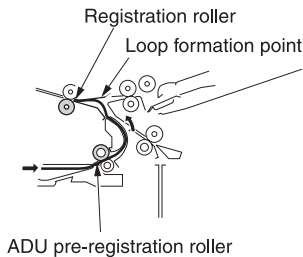
<Trays 2-4/HCI>



<By-pass tray>



<ADU>



*2 Image position correction

A leading edge PS (PS43) and paper mis-centering PS (PS70) are provided at the exit of the registration roller, thus enhancing the positional accuracy of the copy image.

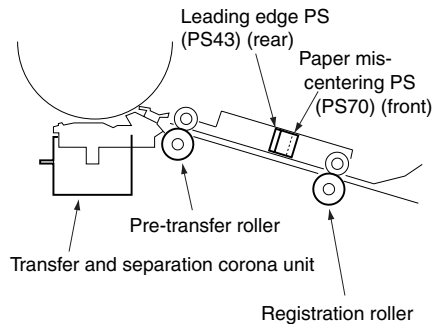
The paper position information detected by PS43 and PS70 is processed by the image processor to correct the image

write position in such a manner that the document (scanned image) position match the copy paper position.

The leading edge PS (PS43) is used to correct the write position in the sub-scanning direction, and the mis-centering PS (PS70) is used to correct the write position in the main scanning direction.

*3 Second paper feed auxiliary mechanism

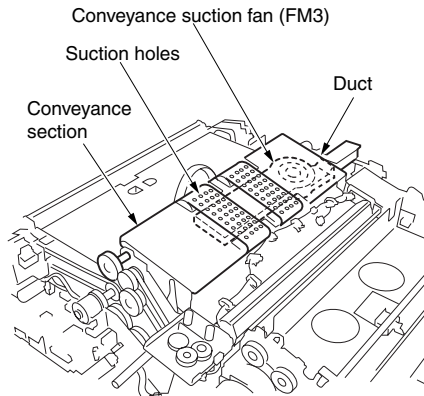
The distance between the registration roller and the transfer and separation corona unit is made long to achieve the time required for correcting the image position. To assist conveyance of paper between the registration roller and the image transfer and separation corona unit, a pre-transfer roller is provided just before the transfer and separation corona unit.



*4 Conveyance section paper suction mechanism

A paper suction duct is provided in the middle of the conveyance section and is led to the conveyance suction fan (FM3) installed in the ADU. To improve transportability of the paper that passes

through the conveyance section, the conveyance suction fan is used to provide suction for the paper.



*5 Reverse/exit paper path selection

The reverse/exit selection gate in the fuser unit determines whether the paper is to be ejected straight or reversed and ejected. The paper gate is operated by the reverse gate SD (SD7) installed in the ADU.

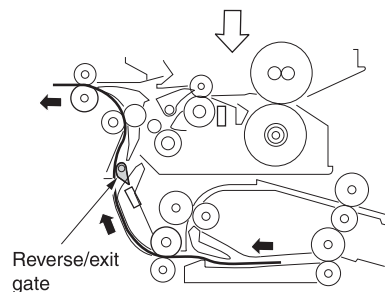
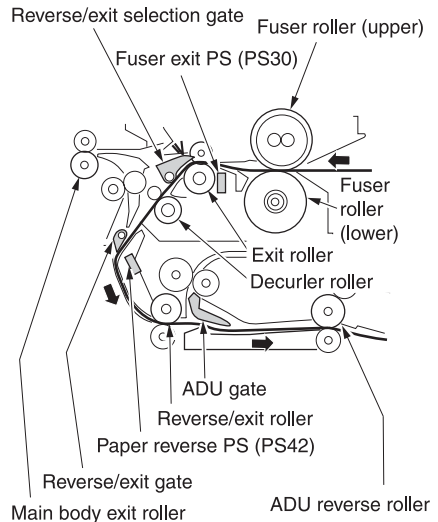
Because paper is reversed in the reverse/exit section in the ADU, the reverse/exit section is provided with a reverse/exit gate to switch between the forward and backward paper conveyance paths. This gate has no drive mechanism and it is opened by the rigidity of the paper.

a Reverse/exit operation

Normally, the reverse/exit selection gate opens when the reverse gate SD (SD7) is turned off. The paper fed by the exit roller in the fuser unit is fed, through the path under the reverse/exit selection gate, to the reverse/exit section in the ADU by the decurler roller. Normally, the reverse/exit gate in the reverse/exit section is closed. This gate is opened by the rigidity of the fed paper, allowing the paper to be fed to the reverse/exit roller, ADU gate, and

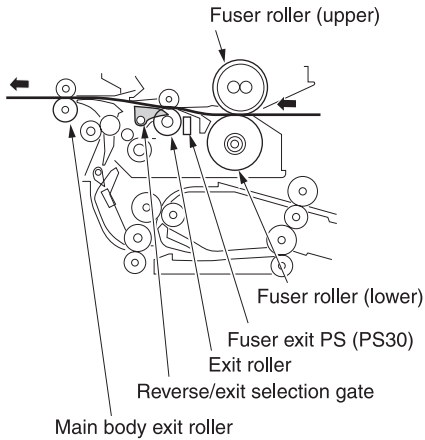
ADU reverse roller sequentially. Normally, the ADU gate is closed and it has no drive mechanism; it is opened by the rigidity of paper.

When the paper reverse PS (PS42) detects the trailing edge of paper and consequently turns off, the reverse/exit roller and ADU reverse roller start rotating in the opposite direction, feeding the paper back toward the fuser unit. However, since the reverse/exit gate is closed, the paper is fed to the MFP exit roller via the path outside this gate. Thus, the paper is ejected with the print side down.



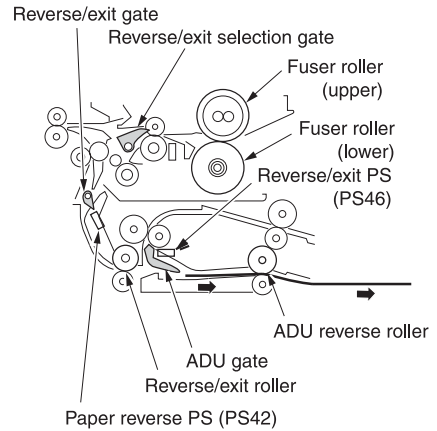
b Straight ejection

When paper is ejected straight, the reverse gate SD (SD7) is turned on to close the reverse/exit selection gate. The paper fed by the paper exit roller is fed to the paper exit roller with the print side up.



c ADU paper conveyance

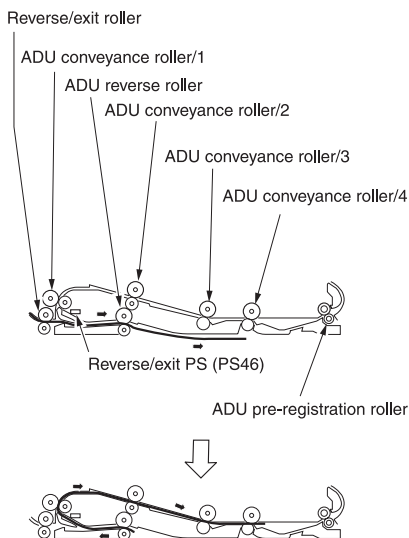
In the two-sided copy mode, the paper finished with printing on the front side is fed, through the path under the reverse/exit selection gate, into the reverse/exit section just like the reverse/exit operation. Then, the paper is fed to the ADU by the reverse/exit roller and ADU reverse roller. These rollers do not rotate in the opposite direction even when the paper reverse PS (PS42) detects the trailing edge of the paper, allowing the paper to be fed until the reverse/exit PS (PS46) turns off.



*6 Non-stack paper feed mechanism

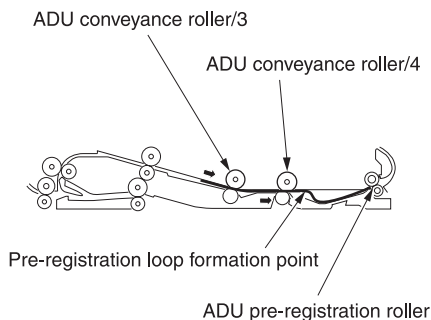
In the two-sided copy mode, the ADU reverse roller starts rotating in the opposite direction when the reverse/exit PS (PS46) detects the trailing edge of paper and consequently it turns off. The paper is fed toward the reverse/exit section. However, since the ADU gate is closed, the paper is fed to the ADU conveyance roller/1 through the path above this gate. Thus, the paper is reversed and fed to the ADU exit, without being stacked in the ADU.

The reversed paper is fed by ADU conveyance rollers 1-4.



*7 ADU pre-registration mechanism

In the ADU, paper is looped by the ADU pre-registration roller to correct paper inclination in the conveyance section. The ADU pre-registration roller stops when the loop roller motor (M6) stops; however, the ADU conveyance roller continues to feed paper at a constant speed, forming a paper loop between the ADU pre-registration roller and ADU conveyance roller. As a result, paper inclination is corrected. When M6 starts, the ADU pre-registration roller starts rotating to feed the paper to the second feed section. An ADU conveyance MC (MC13) is provided to turn on/off the drive force of ADU conveyance rollers 1 and 2 in order to stop the looped paper temporarily and to adjust the loop size. In addition, an ADU deceleration MC (MC2) is provided to turn on/off the drive force of ADU conveyance rollers 3 and 4. The ADU conveyance MC (MC13) is turned on/off only when the paper length is 325 mm or longer. If the paper length is less than 325 mm, it stays on during copying.

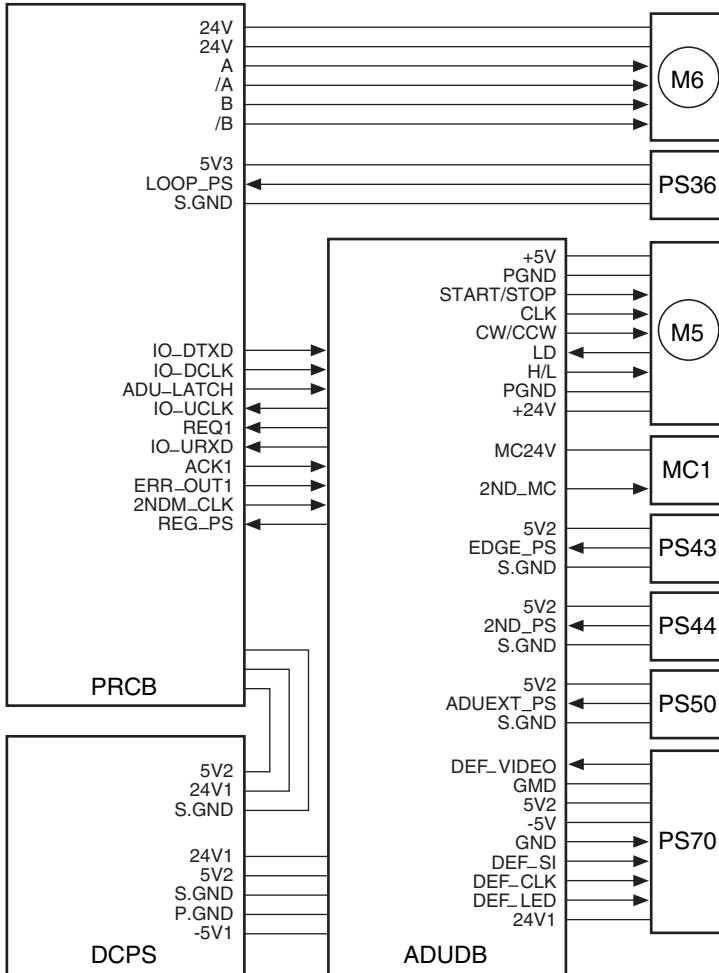


*8 Thick paper conveyance mechanism

To enhance reliability of thick paper copying, the conveyance motor (M5), paper exit motor (M7), reverse/exit motor (M8), and ADU reverse motor (M9) are switched as shown below according to the paper type selected in the key operator mode.

Paper type	Linear speed
Thick paper	185 mm/s
Others	280 mm/s (9055)
	320 mm/s (9065)

Loop/second paper feed control



The paper fed from each tray is fed to the second paper feed section. The second paper feed takes place as the result of the transmission of the drive force from M5 (conveyance) to the second pick roller via MC1 (registration). The second paper feed section is preceded by a loop roller used to form a paper loop, and this conveyance section is also used for the paper fed from the HCI. It is not used for the paper fed from Tray 1 or the ADU. The loop roller is driven by M6 (loop roller). The above parts are

controlled by PRCB (printer control board) via ADUDB (ADU drive board). M6 is driven by PRCB directly.

Related signals are PS36 (loop), PS43 (leading edge), PS44 (registration), and PS50 (ADU pre-registration).

1 Operation

a Loop control

After a lapse of the specified time from turning on of PS44 (registration) by the paper fed from each tray or the ADU at

a high speed, M6 (loop roller) is turned off to form a paper loop in the registration section.

b Second paper feed control

After formation of a paper loop under loop control, MC1 (registration) is turned on to transmit the drive force of M5 (conveyance) to the second pick roller, starting the second paper feed.

c Image position correction control

Mis-centering of the paper fed from each tray is detected by PS70 (paper mis-centering) and the paper leading edge timing is detected by PS43 (leading edge) and they are corrected at the time of image write.

A contact image sensor is used as PS70 (paper mis-centering). The paper edge position is detected by paper mis-centering sensors. Based on the edge position information, the image write position is shifted to correct mis-centering and leading edge timing at the time of image write. PS70 operates after a lapse of the specified time from turning on of PS43 (leading edge).

2 Signals

a Input signals

1 LOOP_PS (P36 to PRCB)

Loop formation reference timing detection signal.

The leading edge or trailing edge of paper is detected.

[L]: Detected

[H]: Not detected

2 LD (M5 to ADUDB)

M5 fault detection signal

[L]: Normal

[H]: Abnormal

3 DEF_VIDEO (PS70 to ADUDB)

PS70 (paper mis-centering) sensor output signal

4 2ND_PS (PS44 to ADUDB)

Second paper feed reference timing detection signal

[L]: Detected

[H]: Not detected

5 EDGEF_PS (PS43 to ADUDB)

Paper leading edge detection signal

[L]: Detected

[H]: Not detected

6 REG_PS (ADUDB to PRCB)

Paper leading edge detection signal.

[L]: Detected

[H]: Not detected

b Output signals

1 START/STOP (ADUDB to M5)

M5 (conveyance) drive control signal

[L]: M5 on

[H]: M5 off

2 2NDM_CLK, CLK (PRCB to ADUDB to M5)

M5 (conveyance) clock signal

3 2ND_MC (ADUDB to MC1)

MC1 (registration) drive control signal

[L]: MC1 on

[H]: MC1 off

4 DEF_SI (ADUDB to PS70)

PS70 (paper mis-centering) start pulse

5 DEF_CLK (ADUDB to PS70)

PS70 (paper mis-centering) drive clock signal

6 DEF_LED (ADUDB to PS70)

PS70 (paper mis-centering) LED control signal

7 CW/CCW (ADUDB to M5)

M5 (conveyance) rotational direction indication signal

[L]: CCW

[H]: CW

8 H/L (ADUDB to M5)

M5 (conveyance) rotational speed indication signal

[L]: Low speed

[H]: High speed

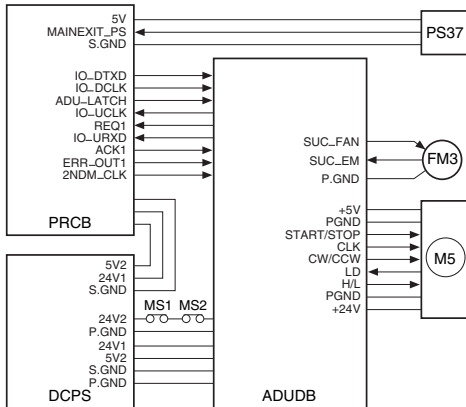
9 A, /A (PRCB to M6)

M6 (loop roller) A-phase drive control pulse signal

10B, /B (PRCB to M6)

M6 (loop roller) B-phase drive control pulse signal

Paper conveyance control



The paper fed from the second paper feed section is fed to the fuser unit by the pre-transfer roller and conveyance belt driven by M5 (conveyance). In the conveyance section, paper suction is provided by FM3 (conveyance suction) through the duct installed on the back of the

conveyance belt. M5 and FM3 are controlled by PRCB (printer control board) via the ADUDB (ADU drive board).

1 Operation

a M5 (conveyance) operation

M5 (conveyance) starts when the START button is pressed, and it stops when the PS37 (paper exit) turns off at detection of the trailing edge of the last sheet of paper.

b FM3 (conveyance suction) operation

FM3 is turned on/off in sync with M2 (drum).

2 Signals

a Input signals

1 MAINEXIT_PS (PS37 to PRCB)

MFP exit section paper passage detection signal

[L]: Detected

[H]: Not detected

2 SUC_EM (FM3 to ADUDB)

FM3 (conveyance suction) fault detection signal

[L]: FM3 is normal

[H]: FM3 is abnormal

b Output signal

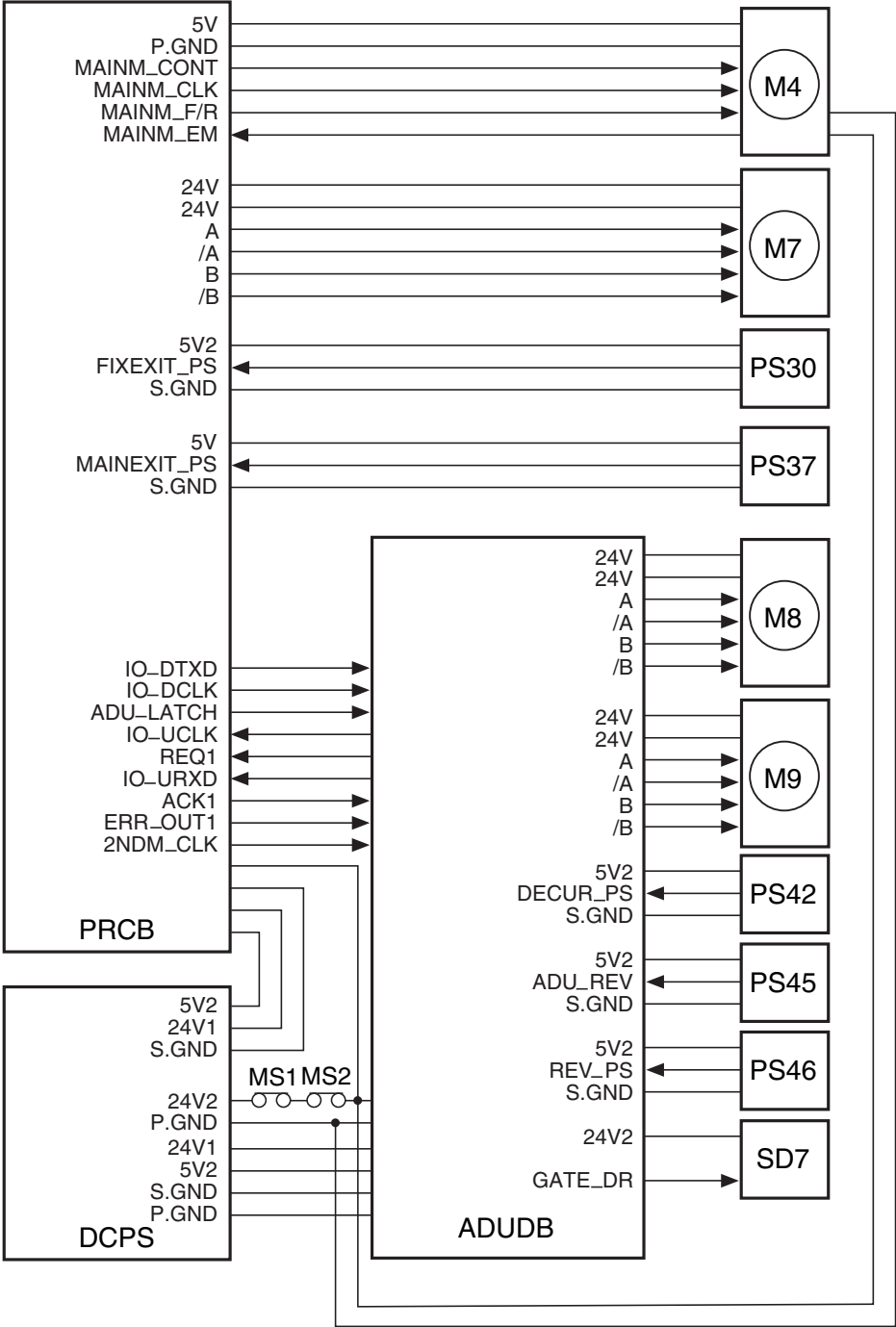
1 MAINEXIT_PS (ADUDB to FM3)

FM3 (conveyance suction) drive signal

[L]: FM3 off

[H]: FM3 on

Paper reverse and exit control



The reverse/exit selection gate in the fuser unit determines whether the paper fed from the fuser unit is to be ejected straight or reversed.

The reverse/exit selection gate is driven by SD7 (reverse gate). The decurler roller is driven by M4 (fuser) and the reverse/exit roller is driven by M8 (reverse/exit). The ADU reverse roller is driven by M9 (ADU reverse). The exit conveyance roller and MFP exit roller are driven by M7 (paper exit).

M4 and M7 are controlled by PRCB (printer control board) directly. M8, M9, and SD7 are controlled by PRCB (printer control board) via ADUDB (ADU drive board).

Related signals are PS30 (fuser exit), PS37 (paper exit), and PS42 (paper reverse).

1 Operation

a Reverse/exit selection gate control

The reverse/exit selection gate is driven by SD7 (reverse gate). Normally, the reverse/exit selection gate is open to guide paper to the reverse/exit section in ADU. When paper is ejected straight, SD7 is turned on to close the reverse/exit selection gate.

When paper is ejected straight, SD7 is turned on when the START button is pressed and it is turned off when PS37 (paper exit) turns off at detection of the trailing edge of the last sheet of paper.

b M4 (fuser) control

M4 (fuser) starts when the START button is pressed, and it stops when PS37 (paper exit) turns off at detection of the trailing edge of the last sheet of paper.

1 Straight paper exit

Paper is fed to the paper exit section straight by the paper exit roller driven by M4 (fuser) because SD7 (reverse gate) is turned on to close the reverse/exit selection gate.

2 Paper reverse/exit

Because SD7 (reverse gate) has been turned off to open the reverse/exit selection gate, paper is fed to the reverse/exit section in ADU by the paper exit roller and decurler roller driven by M4 (fuser).

3 ADF conveyance

Same as paper reverse/exit.

c Reverse control

M8 (reverse/exit) starts when the START button is pressed, and it stops when PS37 (paper exit) turns off at detection of the trailing edge of the last sheet of paper. Its rotational speed and direction change when paper is ejected or reversed, or is fed to ADU.

1 Paper reverse/exit

The paper fed from the fuser unit is then fed to the reverse/exit section via the reverse/exit selection gate. Normally, M8 and M9 are rotating in the forward direction at a low speed, feeding the paper to the ADU reverse section.

When PS30 (fuser exit) detects the trailing edge of paper and consequently turns off, M8 and M9 start rotating in the forward direction at a high speed, feeding paper to the ADU reverse section continuously. When PS42 (paper reverse) detects the trailing edge of paper and consequently turns off, M8 and M9 start rotating in the opposite direction at a high speed, feeding the paper in the paper exit direction.

When PS45 (ADU paper reverse) detects the trailing edge of paper and consequently turns off, M9 starts rotating in the forward direction at a low speed. After a lapse of the specified time from detection of the trailing edge of paper by PS46 (reverse/exit), M8 (reverse/exit) starts

rotating in the forward direction at a low speed, proceeding to feed the next sheet of paper.

2 ADF conveyance

The operation performed from the moment PS30 (fuser exit) turns off at detection of the trailing edge of paper to the moment M8 (reverse/exit) and M9 (ADU reverse) start rotating in the forward direction at a high speed, is the same as reverse/exit.

When PS46 (reverse/exit) turns off at detection of the trailing edge of paper, M8 starts rotating in the forward direction at a high speed, proceeding to feed the next sheet of paper.

After a lapse of the specified time from detection of the trailing edge of paper by PS46, M9 starts rotating in the opposite direction at a low speed, feeding paper to the ADU conveyance section. When PS45 (ADU paper reverse) detects the trailing edge of paper and consequently turns off, M9 starts rotating in the forward direction at a low speed, proceeding to feed the next sheet of paper.

d M7 (paper exit) control

M7 (paper exit) turns on when the START button is pressed. The OFF timing is different between paper straight exit and reverse/exit.

1 Paper straight exit

The paper fed from the fuser unit by the exit roller is ejected by the MFP exit roller driven by M7 (paper exit). M7 is always rotating at a constant speed and it is turned off when PS37 (paper exit) turns off at detection of the trailing edge of the last sheet of paper.

2 Paper reverse/exit

The paper fed from the reverse/exit section in ADU with it reversed, is

ejected by the exit conveyance roller and MFP exit roller which are driven by M7 (paper exit) rotating at a high speed. After a lapse of the specified time from turning off of PS42 (paper reverse) at detection of the trailing edge of paper, M7 (paper exit) starts rotating at a low speed to even up the edges of paper in the exit tray. When PS37 (paper exit) is turned off at detection of the trailing edge of paper, M7 starts rotating at a high speed again, proceeding to eject the next sheet of paper. When PS37 detects the trailing edge of the last sheet of paper, M7 (paper exit) stops. If finisher is provided, M7 is always rotating at a high speed.

2 Signals

a Input signals

1 FIXEXIT_PS (PS30 to PRCB)

Detection signal of paper passage at fuser unit exit

[L]: Detected

[H]: Not detected

2 DECUR_PS (PS42 to ADUDB)

Reverse/exit gate open/close detection signal

[L]: Gate is open.

[H]: Gate is closed.

3 ADU_REV (PS45 to ADUDB)

ADU reverse section paper passage detection signal

[L]: Detected

[H]: Not detected

4 REV_PS (PS46 to ADUDB)

ADU gate open/close detection signal

[L]: Gate is open.

[H]: Gate is closed.

b Output signals

1 GATE_DR (ADUDB to SD7)

SD7 (reverse gate) ON/OFF drive signal

[L]: SD7 on

[H]: SD7 off

2 A, /A (PRCB to M7)

M7 (paper exit) A-phase drive control pulse signal

3 B, /B (PRCB to M7)

M7 (paper exit) B-phase drive control pulse signal

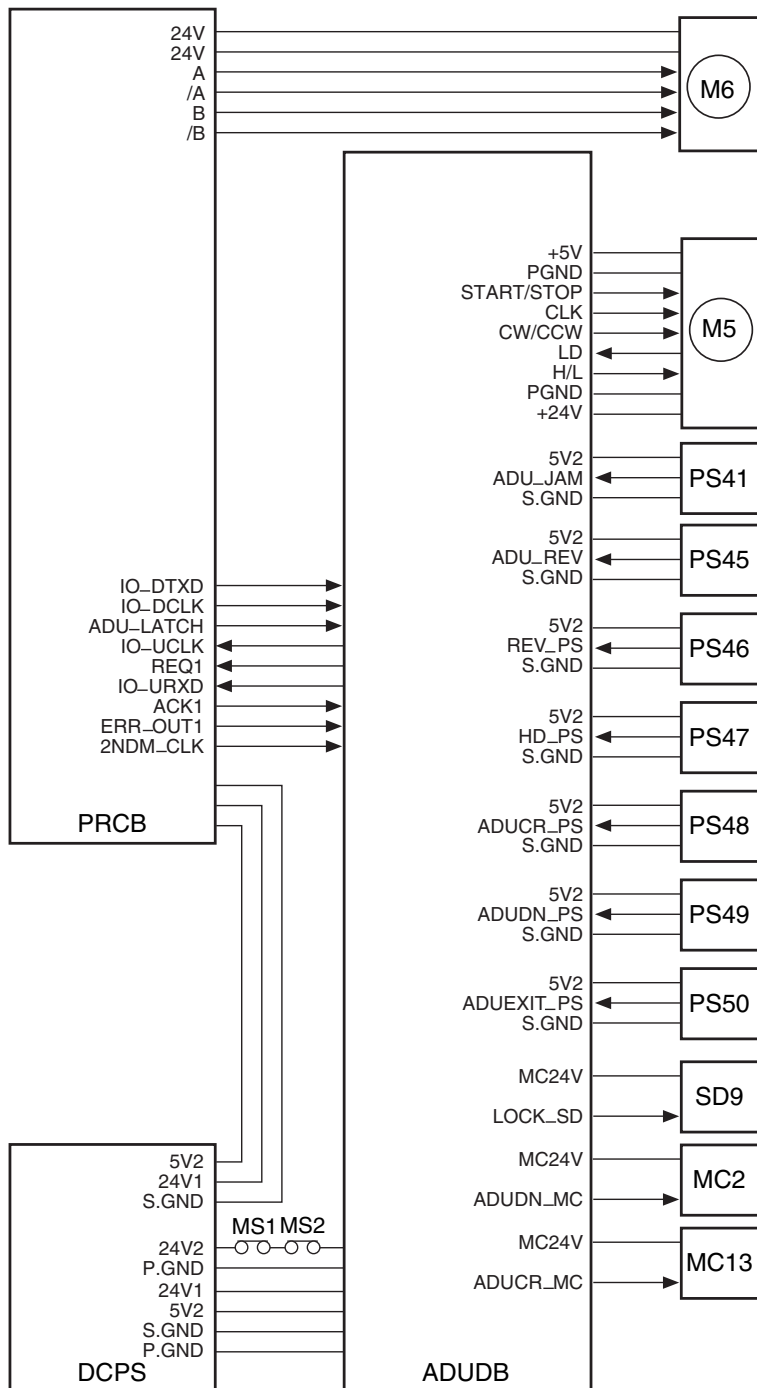
4 A, /A (ADUDB to M8)

M8 (reverse/exit) A-phase drive control pulse signal

5 B, /B (ADUDB to M8)

M8 (reverse/exit) B-phase drive control pulse signal

ADF paper conveyance/feed control



The paper fed from the ADU paper reversal section is fed by transmitting the drive force of M5 (conveyance) to ADU conveyance rollers 1 to 4. Paper is then fed to the second paper feed section by the drive force of M6 (loop roller). In the ADU conveyance section, pre-loop control is performed to correct paper skew forcibly. To perform this control, MC2 (ADU deceleration) and MC13 (ADU conveyance) are provided. Related signals are PS41 (ADU conveyance/1), PS45 (ADU paper reverse), PS46 (reverse/exit), PS48 (ADU paper conveyance/2), PS49 (ADU deceleration), and PS50 (ADU pre-registration). SD9 (ADU lock) is provided to lock the handle of the ADU.

1 Operation

a ADF conveyance control

The paper fed from the ADU paper reversal section is fed to ADU pre-registration rollers at a high speed by transmitting the drive force of M5 (conveyance) to ADU conveyance rollers 1 to 4. ADU conveyance rollers 1 and 2 are turned on/off by MC13 (ADU conveyance) and ADU conveyance rollers 3 and 4 are controlled by MC2 (ADU deceleration). After a lapse of the specified time from turning on of PS49 (ADU deceleration), MC2 and MC13 are turned off to press the paper against the ADU pre-registration roller, forming a paper loop.

MC13 is turned on/off only when the paper length is 325 mm or longer. If the paper length is less than 325 mm, it stays on during copying.

b ADF feed control

M6 (loop roller) starts rotating at a high speed after a lapse of the specified time from detection of the leading edge of paper by PS50 (ADU pre-registration). Thus, the ADU pre-registration roller starts rotating to feed paper to the second paper feed section. At this time, MC2 (ADU deceleration) and MC13

(ADU conveyance) are turned off so that the drive force of M5 (conveyance), which is also used to drive the second paper feed section, is not transmitted to ADU conveyance rollers 1, 2, 3, and 4. MC2 and MC13 are turned on after a lapse of the specified time from detection of the trailing edge of paper by PS49 (ADU deceleration), proceeding to feed the next sheet of paper.

After a lapse of the specified time from detection of the leading edge of paper by PS44 (registration), M6 starts rotating at a low speed. MC1 (registration) is turned on after formation of a paper loop by the registration roller, thus writing the image on the back side.

c ADF lock control

The ADU handle is locked by SD9 (ADU lock). PS47 (ADU handle) detects the handle position to determine whether the handle is locked or released.

2 Signals

a Input signals

1 ADU_JAM (PS41 to ADUSDB)

Detection signal of paper passage from exit of ADU conveyance roller 1

[L]: Detected

[H]: Not detected

2 HD_PS (PS47 to ADUDB)

ADU handle position detection signal

[H]: Handle is released.

3 ADUCR_PS (PS48 to ADUDB)

Detection signal of paper passage from exit of ADU conveyance roller 2

[L]: Detected

[H]: Not detected

4 ADUDN_PS (PS49 to ADUDB)

Detection signal of paper passage
from exit of ADU conveyance roller 3

[L]: Detected

[H]: Not detected

b Output signals

1 LOCK_SD (ADUDB to SD9)

SD9 (ADU lock) drive signal

[L]: SD9 on

[H]: SD9 off

2 ADUDN_MC (ADUDB to MC2)

MC2 (ADU deceleration) drive signal

[L]: MC2 on

[H]: MC2 off

3 ADUCR_MC (ADUDB to MC13)

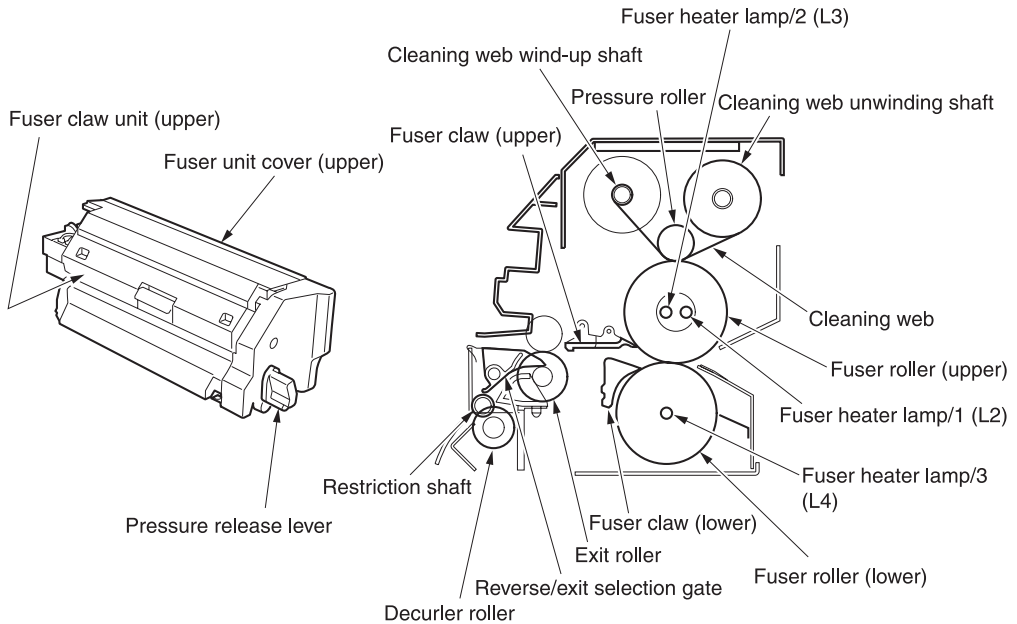
MC13 (ADU conveyance) drive signal

[L]: MC13 on

[H]: MC13 off

Fuser unit

Composition



Mechanisms

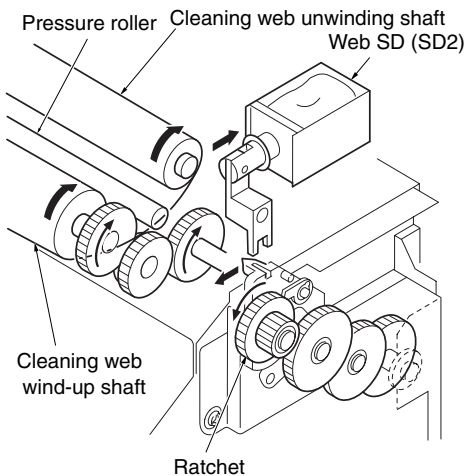
Mechanism	Method
Fuser	Pressure + heat roller
Heat source *1	Heater lamp (Upper rollers: two, lower roller: one)
Cleaning *2	Upper roller: cleaning web (containing silicon oil)
Upper roller	Aluminum + Teflon coating
Lower roller	Silicon rubber + PFA tube
Separation	Separation claws (six upper and three lower claws)
Temperature detection	Upper roller: - noncontact type thermistor (for control) TH1 - contact type thermistor (for fault detection) TH2
Overheat protection	Upper roller: - noncontact type thermostat (for fault detection) TS1 Lower roller: - noncontact type thermostat (for fault detection) TS2
Neutralizing	Neutralizing brush
Pressure release	Pressure release shaft and spring
Exit path selection	Reverse/exit selection gate
Decurler *3	Decurler roller + restriction shaft
Jam detection *4	Jam detection plate + actuator + photo sensor

*1 Fuser heater lamps

Two halogen lamps are used for the fuser upper roller and one halogen lamp is used for the fuser lower roller to reduce the warm-up time and ensure reliable fuser.

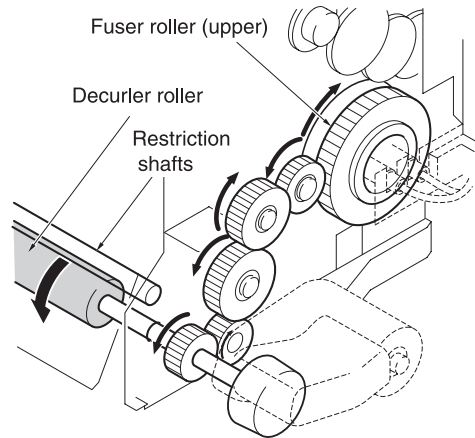
*2 Cleaning

Cleaning web is used to clean the fuser upper roller. The web SD (SD2) in the MFP turns on/off to drive the cleaning web wind-up shaft via the ratchet mechanism and gears, thus supplying cleaning web from the cleaning web unwinding shaft. SD2 is controlled according to the copy count, and cleaning web supplied about 0.025 to 0.05 mm/copy. Cleaning web containing silicon oil is pressed against the fuser roller (upper) by the pressure roller.



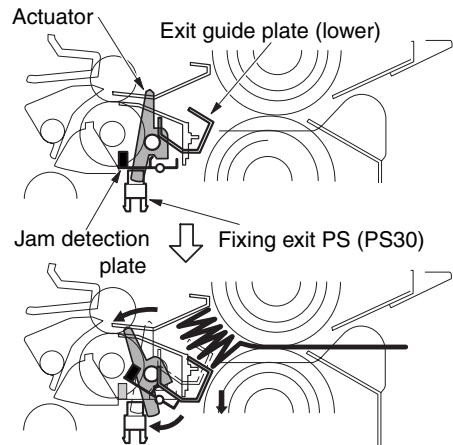
*3 Decurler

The paper guided by the reverse/exit selection gate is decurled while it passes between the decurler roller and restriction shafts. The decurler roller is driven by the fuser roller (upper) via gears.

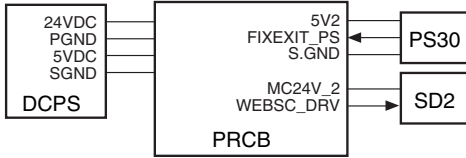


*4 Jam detection

When a jam occurs in the fuser exit section, the paper exit guide plate (lower) is pressed down, causing the fuser exit PS (PS30) to detect a jam via the jam detection plate and actuator.



M16 (web drive) control



SD2 (web) is controlled by PRCB (printer control board). The related signal is PS30 (fuser exit).

1 Operation

When PS30 is turned on by passage of paper, SD2 is controlled by PRCB (printer control board) according to the fuser web counter value. The fuser web counter value is incremented together with the total counter in exit section of the MFP. The relationship between the fuser web counter values and SD2 (web) is as follows:

Fuser web counter value	SD2 drive count
1 to 12,000	Once per copy
12,001 to 30,000	Once per copy *1
30,001 to 60,000	Once per copy *2
60,001 to 125,000	Once per 2 copies
125,0001 to 260,000	Once per 3 copies
260,001 or more	Once per 6 copies

- *1 SD2 is turned on once per copy, but is not turned on once per six copies.
- *2 SD2 is turned on once per copy, but is not turned on once per three copies.

3 Signals

a PRCB input signal

1 FIXEXIT_PS (PS30 to PRCB)

Detection signal of passage of paper at fuser unit exit

[L]: Detected

[H]: Not detected

b PRCB output signal

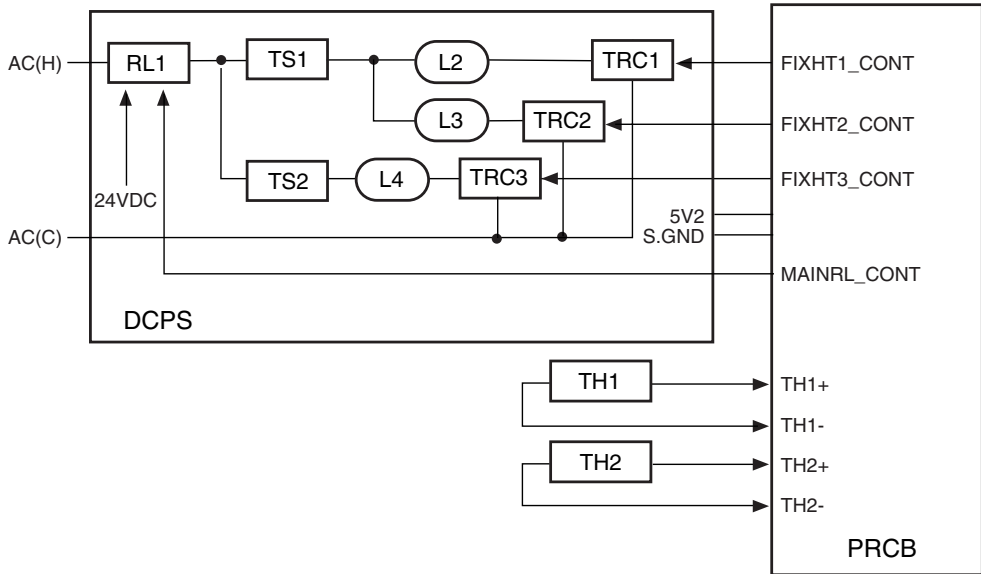
1 WEBSC_DRV (PRCB to SD2)

SD2 (web) drive control signal

[L]: SD2 on

[H]: SD2 off

Fuser temperature control



The fuser roller (upper) is heated by L2 (fuser heater lamp 1) and L3 (fuser heater lamp 2), and the fuser roller (lower) is heated by L4 (fuser heater lamp 3). The PRCB (printer control board) detects the temperature of the fuser roller (upper) using TH1 (fuser temperature sensor/1) and TH2 (fuser temperature sensor/2), and controls L2 and L3 via DCPS (DC power supply unit).

1 Operation

a Temperature control

The PRCB (printer control board) turns on the fuser heater lamp circuit in DCPS as soon as the SW2 (sub power) is turned on, holding L2 (fuser heater lamp/1), L3 (fuser heater lamp/2), and L4 (fuser heater lamp/3) lit until the fuser roller (upper) reaches the specified temperature. L2, L3, and L4 are turned on/off under the control of the TRC1 (triac/1), TRC2 (triac/2) and TRC3 (triac/3).

b Protection against abnormal temperature rise

Thermostats are used to prevent the temperature of the fuser rollers from rising abnormally. TS1 (thermostat/U) and TS2 (thermostat/L) are used for the fuser roller (upper/lower). As these thermostat are of the noncontact type, those do not touch the fuser roller (upper/lower).

The operating temperature of the thermostats are as follows:

TS1: Opens at 180° C

TS2: Opens at 110° C

2 Signals

a PRCB input signals

1 TH1+,- (TH1 to PRCB)

Fuser roller (upper) temperature detection signal

This signal is used to control the temperature of the fuser roller (upper) and to detect abnormal temperature rise.

2 TH2+,- (TH2 to PRCB)

Fuser roller (upper) temperature detection signal

This signal is used to detect the fuser roller (upper) abnormal temperature rise.

b PRCB output signals

1 FIXHT1_CONT (PRCB to DCPS)

L2 drive control signal

[L]: L2 on

[H]: L2 off

2 FIXHT2_CONT (PRCB to DCPS)

L3 drive control signal

[L]: L3 on

[H]: L3 off

3 FIXHT3_CONT (PRCB to DCPS)

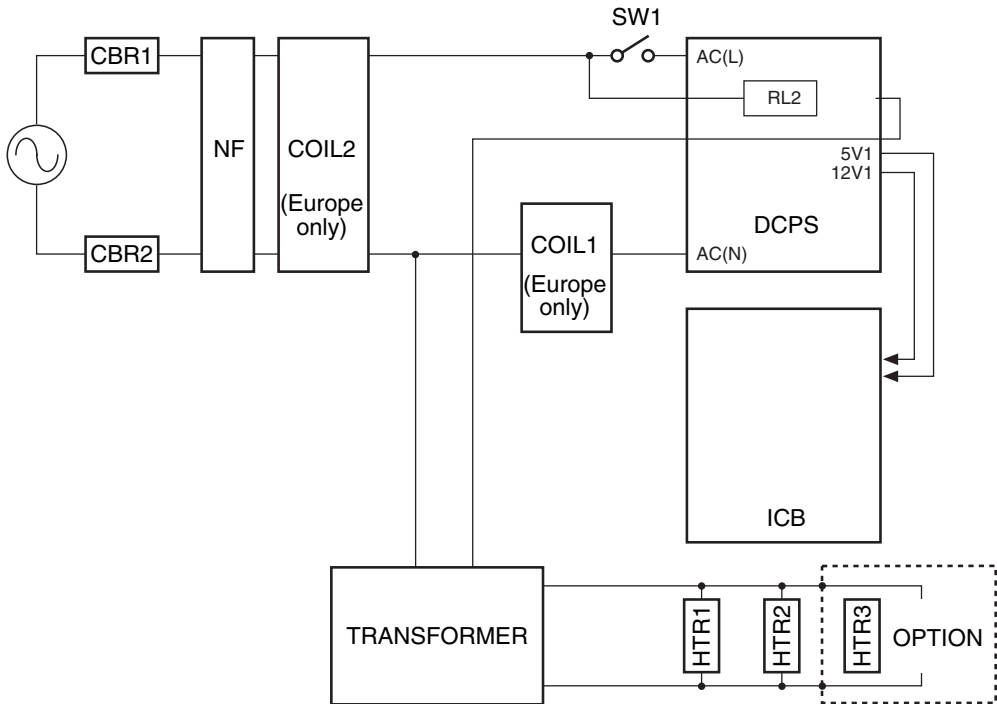
L4 drive control signal

[L]: L4 on

[H]: L4 off

Other kinds of control

Parts energized when SW1 (main power) is off



1 Operation

If the power cord is plugged in the wall outlet, the following parts are energized regardless of whether SW1 (main power) is on or off:

a CBR1/2 (circuit breaker/1/2)

If an excessive current flows due to a short in an internal part or other factors, this breaker turns off to cut off the power to the machine.

b NF (noise filter)

The noise filter is used to reduce the noise arriving through the power line.

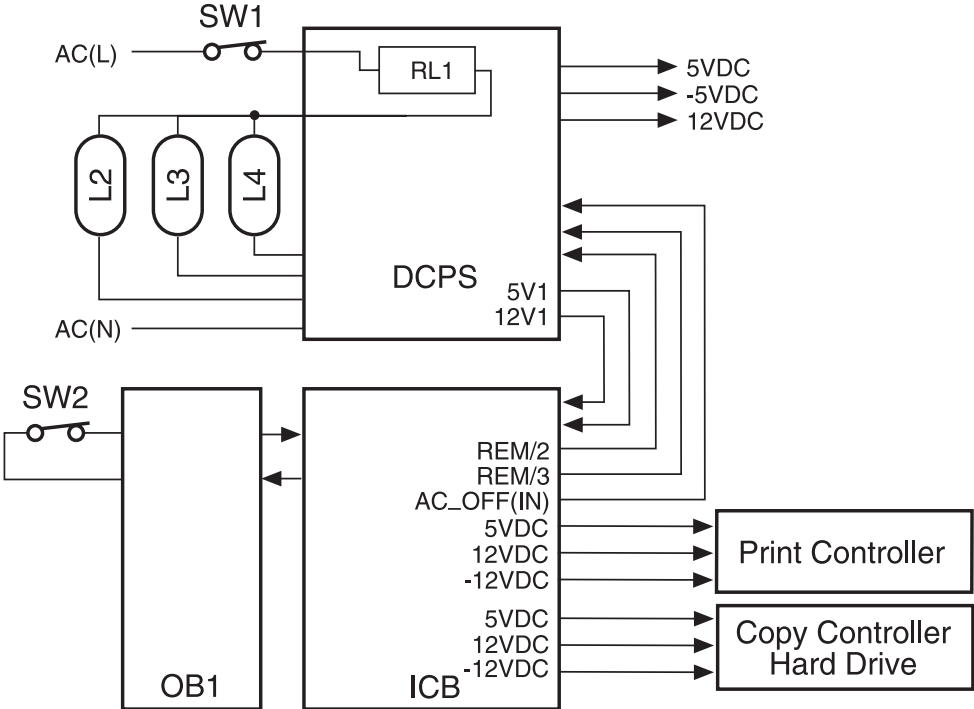
c DCPS (DC power supply unit)

RL2 (heater relay) is turned on to turn on HTR1 (heater/1), HTR2 (heater/2), and HTR3 (drum heater (spare parts)).

d Internal heaters

HTR1 (heater/1), HTR2 (heater/2), and HTR3 (drum heater (spare parts)) are energized irrespective of whether SW1 (main power) is on or off.

Parts that operate when SW1 (main power)/SW2 (secondary power) is on



1 Operation

a Operation performed when SW1 (main power) is on

When SW1 (main power) is turned on, AC power is supplied to DCPS (DC power supply unit). As a result, DCPS supplies 5 VDC and 12 VDC to the status management and control circuit on ICB (image control board), HD-105, and Q3639A. ICB supplies 5 VDC to OB1 (operation board/1).

b Operation performed when SW2 (sub power) is on

If SW2 (sub power) is turned on when SW1 (main power) is already on, DCPS supplies 24 DVC for driving various loads. Thus, all boards are energized and initialization of this machine starts.

2 Signals

a Output signals

1 REM/2, /3 (ICB to DCPS)

The DC voltage output from DCPS (DC power supply unit) is controlled according to the combination of levels of two signals.

REM/2	REM/3	Output
H	H	5V1, 12V1
L	H	5V1, 12V1, 5V2, 12V2, 24V1, -5V1
L	L	5V1, 12V1, 5V2, 12V2, 24V1, -5V1, 24V2

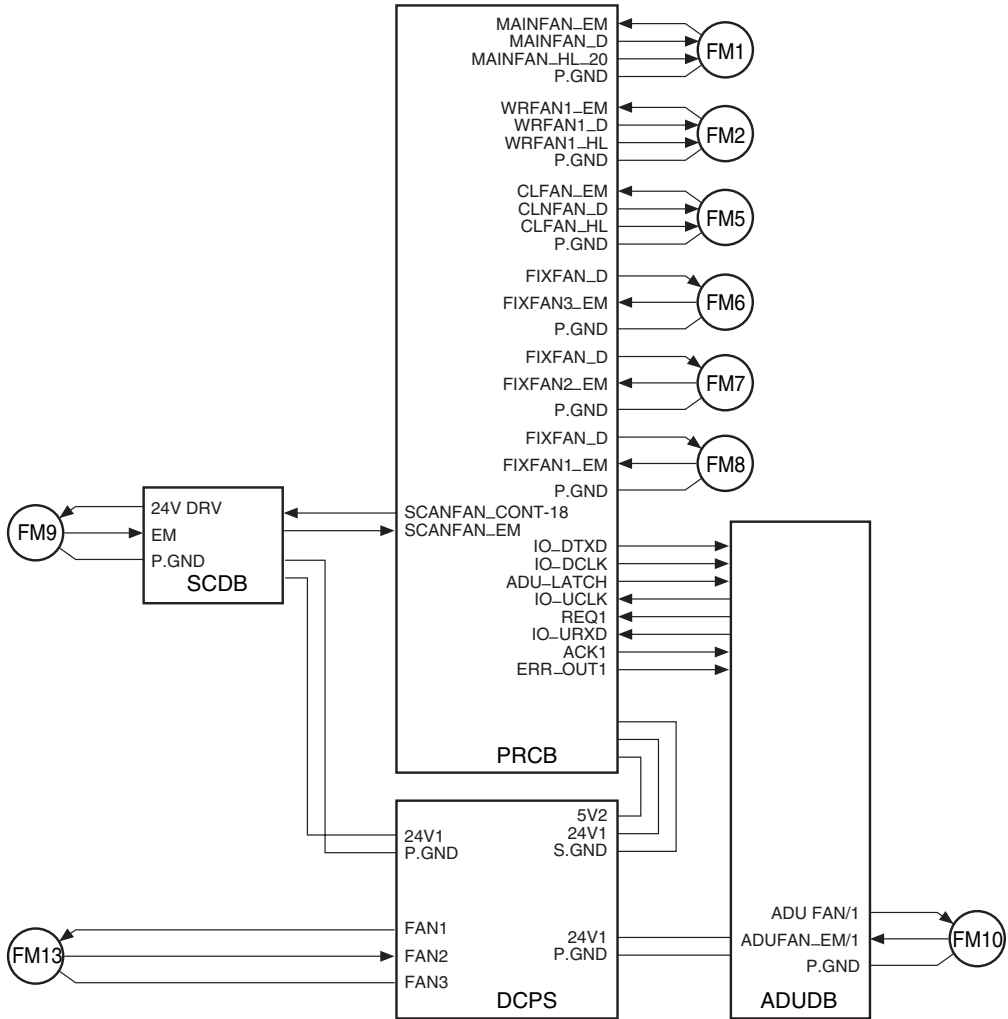
2 AC_OFF (IN) (ICB to DCPS)

RL1 (main relay) control signal

[L]: RL1 on

[H]: RL1 off

Cooling fan control



FM1 (MFP cooling/1), FM2 (laser scanner unit cooling), FM5 (cleaner cooling), FM6 (paper exit /F), FM7 (paper exit/R), and FM8 (main cooling /2) are controlled by PRCB (printer control board) directly. FM9 (scanner cooling) is driven by SCDB (scanner drive board). FM10 (ADU reverse motor cooling) is driven by ADUDB (ADU drive board) and is controlled by PRCB. FM13 (power supply cooling) is driven by DCPS (DC power supply unit).

1 Operation

A 24 VDC motor is used for each cooling fan.

a FM1 (MFP cooling/1)

1 ON timing

- During warm-up, starts rotating at a low speed when M2 (drum) is turned on.

- During copying, held rotating at a high speed. When copying is completed, rotates at a high speed for the specified time according to the temperature in the machine, then starts rotating at a low speed.

2 OFF timing

- During warm-up, stops when M2 (drum) is turned off.
- After completion of warm-up, not turned off until SW2 (sub power) is turned off.

b FM2 (writing section cooling)

1 ON timing

Turned on when M15 (polygon) is turned on.

- During copying, held rotating at a high speed in sync with M2 (drum).
- When not copying, held rotating at a low speed.

2 OFF timing

Not turned off until SW2 (sub power) is turned off.

c FM5 (cleaner cooling)

1 ON timing

Turned on when SW2 (sub power) is turned on.

- During copying, held rotating at a high speed.
- When copying is completed, starts rotating at a low speed after a lapse of the specified time from turning off of M7 (paper exit). After this, switching between high- and low-speed operations takes place according to the temperature in the machine.

2 OFF timing

Not turned off until SW2 (sub power) is turned off.

d FM6 (paper exit/F), FM7 (paper exit/R), and FM8 (main cooling/2)

1 ON timing

At the start of copying, starts rotating at a constant speed.

2 OFF timing

Turned off when M7 (paper exit) is turned on.

e FM9 (scanner cooling)

1 ON timing

Turned on when L1 (exposure lamp) is turned on.

2 OFF timing

Turned off when L1 (exposure lamp) is turned off.

f FM10 (ADU reverse motor cooling)

1 ON timing

Starts rotating at a constant speed when M9 (ADU reverse) is turned on.

OFF timing

Turned off when M9 (ADU reverse) is turned off.

g FM13 (power supply cooling)

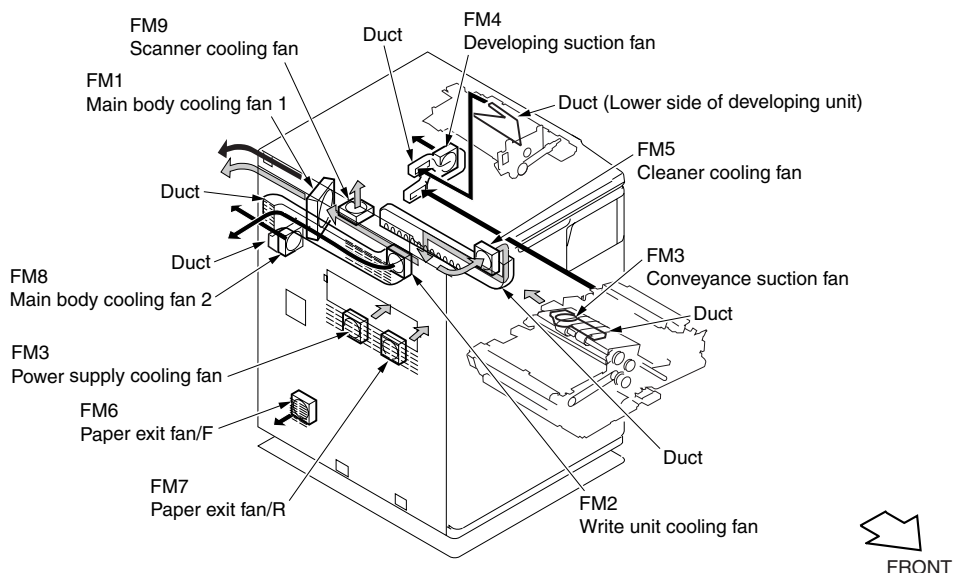
1 ON timing

Starts rotating at a constant speed when SW1 (main power) is turned on.

2 OFF timing

Not turned off until SW1 (main power) is turned off.

h Fan air flow



2 Signals

a Input signals

1 MAINFAN_EM (FM1 to PRCB)

FM1 (MFP cooling/1) abnormality detection signal

[H]: Abnormality is detected.

2 WRFAN1_EM (FM2 to PRCB)

FM2 (writing section cooling) abnormality detection signal

[H]: Abnormality is detected.

3 CLFABN_EM (FM5 to PRCB)

FM5 (cleaner cooling) abnormality detection signal

[H]: Abnormality is detected.

4 FIXFAN3_EM (FM6 to PRCB)

FM6 (paper exit/F) abnormality detection signal

[L]: FM6 is normal.

[H]: FM6 is abnormal

5 FIXFAN2_EM (FM7 to PRCB)

FM7 (paper exit/R) abnormality detection signal

[L]: FM7 is normal.

[H]: FM7 is abnormal.

6 FIXFAN1_EM (FM8 to PRCB)

FM8 (main cooling/2) abnormality detection signal

[L]: FM8 is normal.

[H]: FM8 is abnormal.

7 EM (FM9 to SCDB)

FM9 (scanner cooling) abnormality detection signal

[L]: FM9 is normal.

[H]: FM9 is abnormal.

8 ADUFAN_EM/1 (FM10 to PRCB)

FM10 (ADU reverse motor cooling) abnormality detection signal

[L]: FM10 is normal.

[H]: FM10 is abnormal.

9 FAN2 (FM13 to PRCB)

FM13 (power supply cooling)
abnormality detection signal

[L]: FM13 is normal.

[H]: FM13 is abnormal.

10SCANFAN_EM (SCDB to PRCB)

FM9 (scanner cooling) abnormality
detection signal

[L]: FM9 is normal.

[H]: FM9 is abnormal.

b Output signals

1 MAINFAN_D (PRCB to FM1)

FM1 (MFP cooling/1) ON/OFF control
signal

[L]: FM1 on

[H]: FM1 off

2 MAINFAN_HL_20 (PRCB to FM1)

FM1 (MFP cooling/1) rotational speed
control signal

[L]: Low speed

[H]: High speed

3 WRFAN1_D (PRCB to FM2)

FM2 (writing section cooling) ON/OFF
control signal

[L]: FM2 on

[H]: FM2 off

4 WRFAN1_HL (PRCB to FM2)

FM2 (laser scanner unit cooling)
rotational speed control signal

[L]: Low speed

[H]: High speed

5 CLNFAN_D (PRCB to FM5)

FM5 (cleaner cooling) ON/OFF
control signal

[L]: FM5 on

[H]: FM5 off

6 CLFFAN_D (PRCB to FM5)

FM5 (cleaner cooling) rotational
speed control signal

[L]: Low speed

[H]: High speed

7 FIXFAN_D (PRCB to FM6)

FM6 (paper exit/F) rotational speed
control signal

[L]: Low speed

[H]: High speed

8 FIXFAN_D (PRCB to FM7)

FM7 (paper exit/R) ON/OFF control
signal

[L]: FM7 on

[H]: FM7 off

9 FIXFAN-D (PRCB to FM8)

FM8 (main cooling/2) ON/OFF control
signal

[L]: FM8 on

[H]: FM8 off

1024V DRV (SCDB to FM9)

FM9 (scanner cooling) ON/OFF
control signal

[L]: FM9 on

[H]: FM9 off

11ADU FAN/1 (ADUSDB to FM10)

FM10 (ADU reverse motor cooling)
ON/OFF control signal

[L]: FM10 on

[H]: FM10 off

12FAN1 (DCPS to FM13)

[L]: FM13 on

[H]: FM13 off

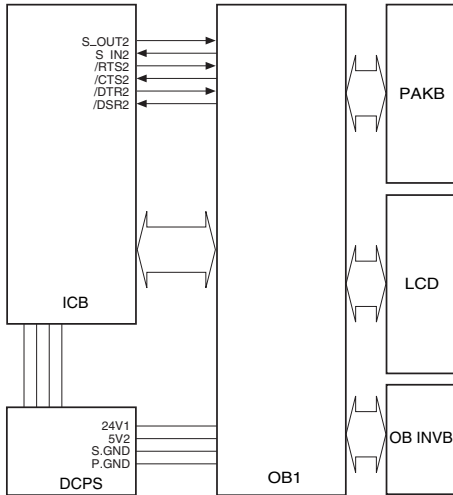
13SCANFAN_CONT-18 (PRCB to SCDB)

FM9 (scanner cooling) ON/OFF control signal

[L]: FM9 on

[H]: FM9 off

Control panel control



The control panel consists of OB1 (operation board 1), PAKB (panel key board), and LCD (indicator board). The LCD has a backlight which is driven by OB INVB (OB inverter) and touch switches which correspond to the display messages.

The control panel is controlled by the OB1 based on the serial data output from the ICB (image control board).

1 Operation

a LED ON operation

The LED on the OB1 (operation board/1) is controlled by sub CPU of OB1 at the command of ICB (image control board).

b LCD (indicator board) control

1 LCD (indicator board) display operation

The LCD (image control board) displays various information according to the 4-bit parallel data from ICB (image control board) via OB1 (operation board 1).

2 Backlight ON operation

The LCD (indicator board) has a backlight (cold cathode tube) to facilitate viewing. The backlight is driven by OB INVB (OB inverter), and controlled by the OB1 (operation board/1).

3 PAKB (panel key board) control

The LCD (indicator board) has PAKB (panel key board) to allow you to select an item displayed on the LCD directly. PAKB is controlled by OB1 (operation board/1).

2 Signals

a Input signals

1 S_IN2 (OB1 to ICB)

Serial data which informs ICB (image control board) of the operation state of OB1 (operation board/1).

2 /CTS2 (OB1 to ICB)

Signal which indicates that data can be sent from OB1 (operation board/1) to ICB (image control board)

When this signal is at the high level ([H]), ICB stops sending the S_OUT2 signal.

3 /DSR2 (OB1 to ICB)

Acknowledgment signal which is returned each time OB1 (operation board/1) receives one-byte data from ICB (image control board)

b Output signals

1 S_OUT2 (ICB to OB1)

Serial data which informs OB1 (operation board /1) of the machine status that is known to ICB (image control board).

2 /RTS2 (ICB to OB1)

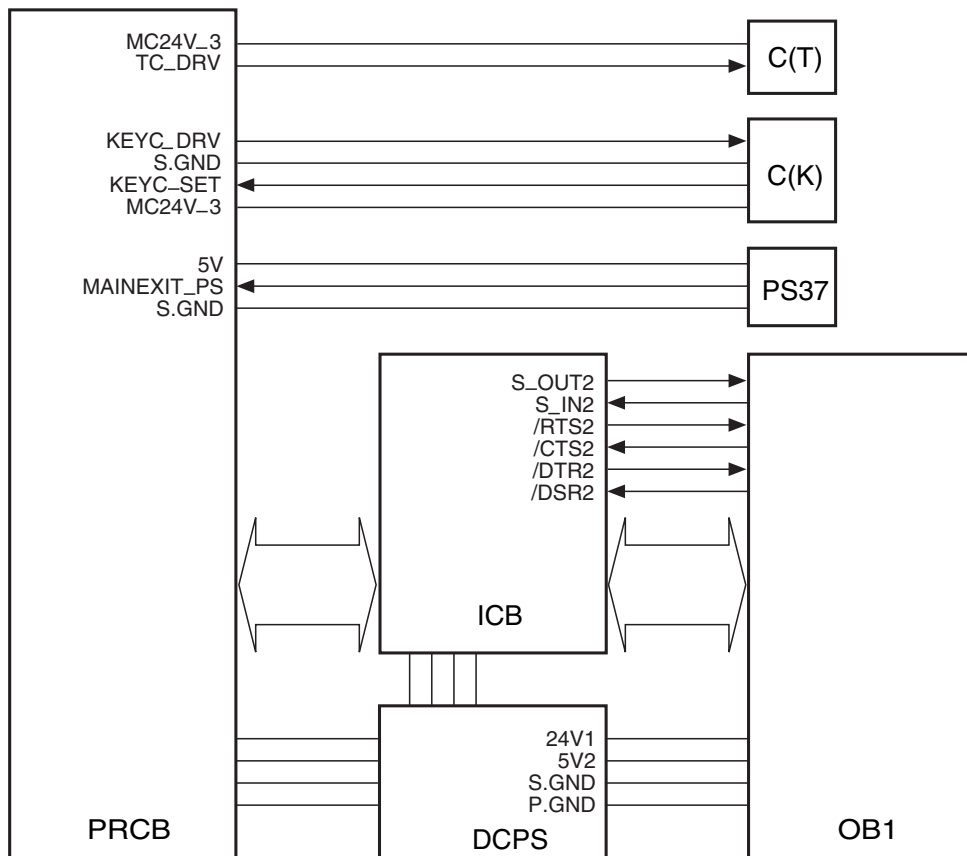
Signal which indicates that data can be sent from ICB (image control board) to OB1 (operation board/1).

When this signal is at the high level ([H]), OB1 stops sending the S_IN2 signal.

3 /DTR2 (ICB to OB1)

Acknowledgment signal which is returned each time ICB (image control board) receives one-byte data from OB1 (operation board/1).

Counter control



This machine has the following counters:

C (T): Total counter

C (K): Key counter

These counters are controlled by the PRCB (printer control board).

The related signal is PS37 (paper exit).

1 Operation

This machine counts copies using a software counter.

a Paper exit counter

The count increases by 1 each time PS37 (paper exit) which has been on is turned off (two counts in the dual-sided document copy mode).

<Operation of each counter>

1 Copy quantity display counter on OB

Displays the count of ejected papers

2 C (K)

This counter counts in sync with the paper exit counter.

3 C (T)

This counter counts in sync with the paper exit counter.

2 Signals

a PRCB input signals

1 KSYC_SET (C (K) to PRCB)

Signal indicating the state of 24 V power supply to C (K)

[L]: 24V power is not supplied.

b Output signals

1 TC_DRV (PRCB to C (T))

C (T) drive control signal

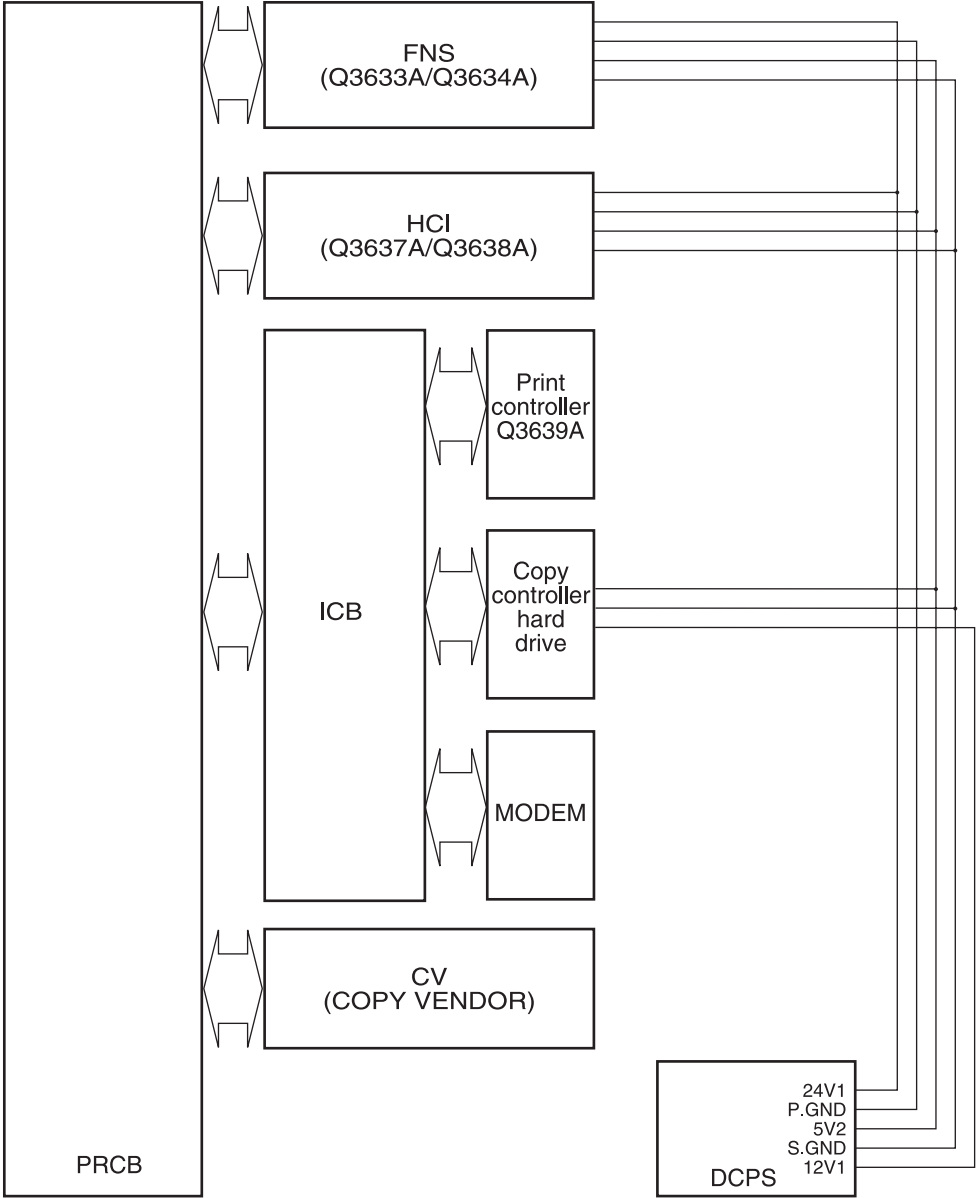
[L]: C (T) on

2 KEYC_DRV (PRCB to C (K))

C (K) drive control signal

[L]: C (K) on

Option control



Options such as HCI and finisher are controlled by the PRCB (printer control board).

1 Operation

Finisher incorporates CB which exchanges only control data with PRCB (printer control board) of the MFP. HCI, finisher, and HDD are powered by the DCPS (DC power supply unit).

Functions and output timings of signals for copy vendors

Connector	Pin no.	Signal name	Description	Output timing	Signal type
35	1	DV24V	Key counter power supply	Always	24 V, 300 mA
	2	C(K) SIG	Key counter connection recognition	-	-
	3	C(K) GND	Signal ground		
	4	C(K) DRIVE	Key counter signal count up	100-ms L-signal output after paper ejection	-
	5	P. GND	Power ground	-	-
36	1	Vendor Copy	Copying signal	Output from the moment START PRINT button is pressed to the moment paper ejection is completed.	Open collector 5V, 200 mA
	2	Vendor FEED	Paper feed signal	Common to MFP tray. 100-ms L-signal output in sync with paper feed.	
	3	Paper size 0	Paper size signal	Output when paper size is changed.	
	4	Paper size 1			
	5	Paper size 2			
	6	Paper size 3			
	7	Vendor screen	Double-sided copy selection signal	Output when ADU mode is selected.	
	8	CPF SIG0	CPF mode selection signal	Output when copy or printer mode is selected.	
	9	CPF SIG1			
	10	P. GND	Power ground	-	

5 MFP

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External section

Replacing the ozone filter

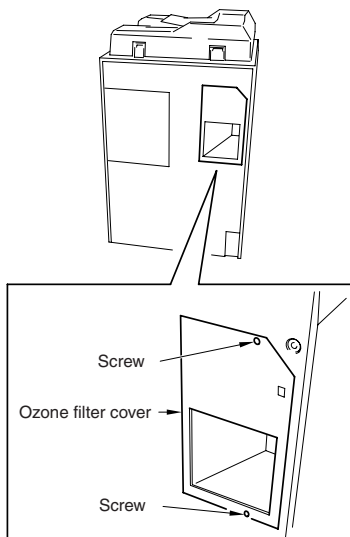
CAUTION

Be sure the power cord has been unplugged from the wall outlet.

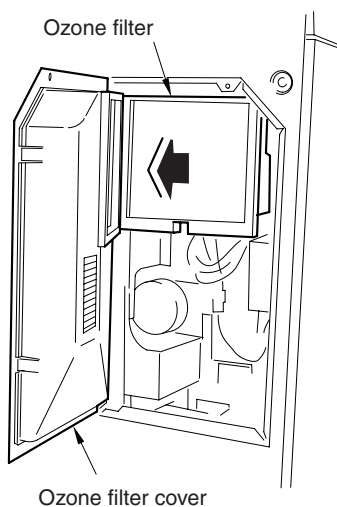
When replacing the ozone filter, insert it in the opening in the MFP as far as it will go.

Procedure

- 1 Loosen two screws to remove the ozone filter cover.



- 2 Replace the ozone filter.



- 3 Reinstall the above parts following the removal steps in reverse.

Replacing the developing suction filter

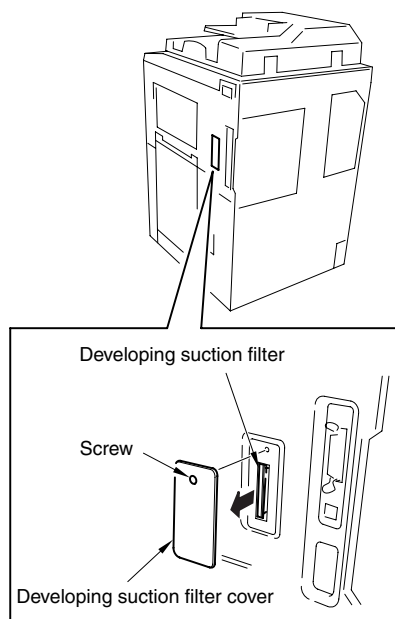
CAUTION

Be sure the power cord has been unplugged from the wall outlet.

When replacing the developing suction filter, insert it in the opening in the MFP as far as it will go.

Procedure

- 1 Loosen the screw to remove the developing suction filter cover.
- 2 Replace the developing suction filter.



- 3 Reinstall the above parts following the removal steps in reverse.

CAUTION

When installing the developing suction filter, the filter-supporting material should face the back of the MFP.

Removing and reinstalling the external covers

CAUTION

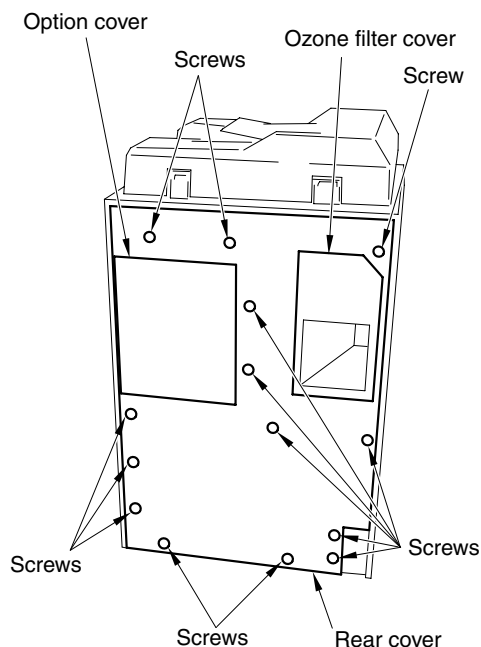
Be sure the power cord has been unplugged from the wall outlet.

Procedure

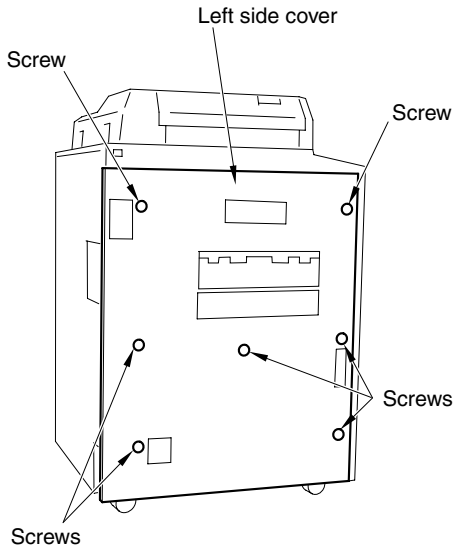
- 1 Remove fourteen screws to detach the rear cover.

CAUTION

The ozone filter cover and the option cover detach together with the rear cover.



- 2 Remove seven screws to detach the left side cover.



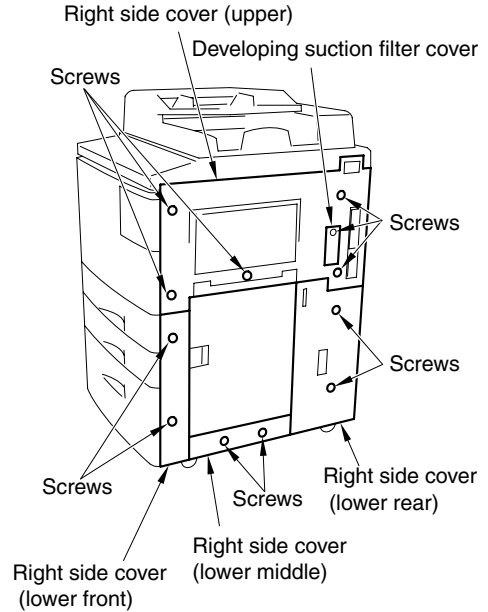
- 3 Loosen one screw and remove the developing suction filter cover.
- 4 Loosen five screws and detach the right side cover (upper).

CAUTION

The developing suction filter cover detaches together with the right side cover (upper).

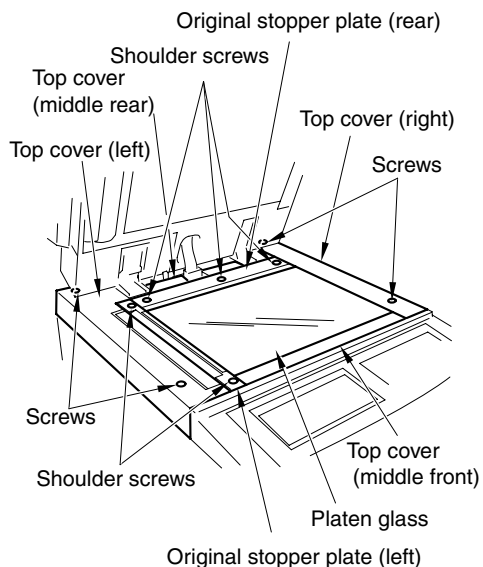
- 5 Loosen two screws to detach the right side cover (lower front).
- 6 Loosen two screws to detach the right side cover (lower rear).

- 7 Loosen two screws to detach the right side cover (lower middle).



- 8 Open the ADF.
- 9 Remove the two shoulder screws to remove the original stopper plate (left).
- 10 Remove the three shoulder screws to remove the original stopper plate (rear).
- 11 Remove the scanner glass.
- 12 Remove two screws to detach the top cover (left).
- 13 Remove two screws to detach the top cover (right).

- 14** Remove the top cover (middle front) and top cover (middle rear).

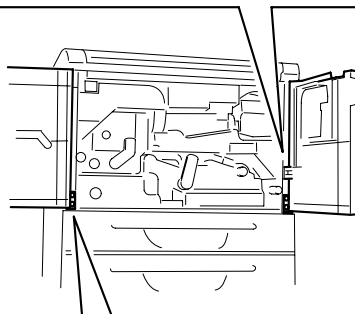
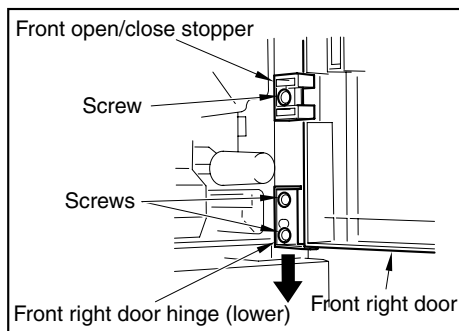


- 15** Open the front right door and front left door.

- 16** Remove one screw to remove the front open/close stopper.

- 17** Remove two screws to remove the front right door open/close hinge (lower) and front right door.

- 18** Remove two screws and remove the front left door hinge (lower) and the front left door.



- 19** Reinstall the above parts following the removal steps in reverse.

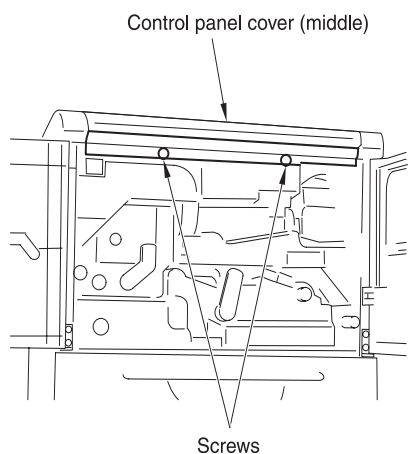
Changing the control panel attachment angle and removing/reinstalling

CAUTION

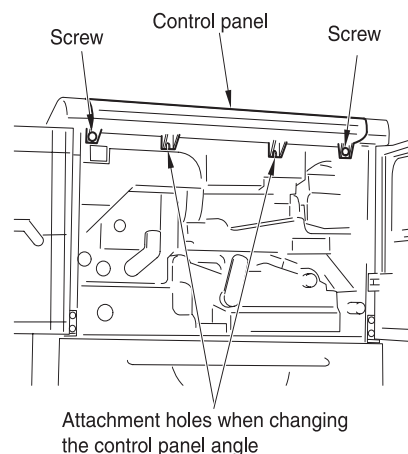
Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Open the front left door and front right door.
- 2 Remove two screws to remove the control panel cover (middle).



- 3 Remove two screws to unlock the control panel.



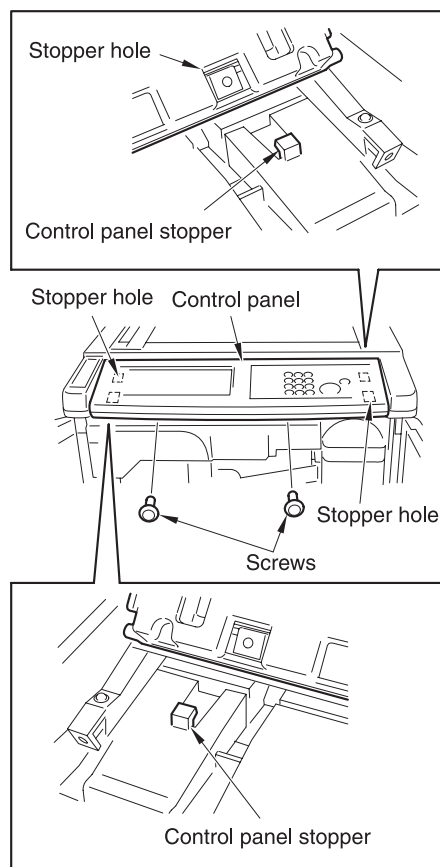
- 4 When changing the control panel attachment angle, align the control panel stopper with the stopper hole at the front side on the bottom of the control panel and fasten using two screws in the operation cover attachment holes.

CAUTION

To remove the control panel, skip this step and proceed to step (5).

CAUTION

When the attachment angle of the control panel is changed, the control panel cover and two screws will become unnecessary.

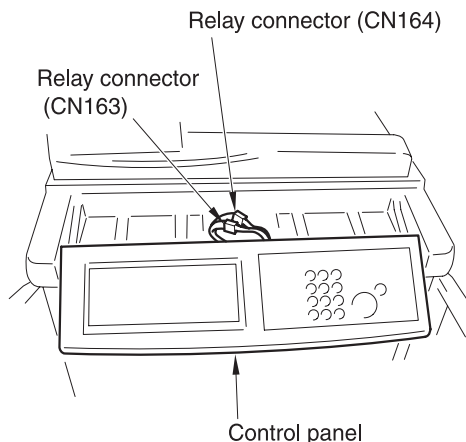


- 5 Remove the inline connectors (CN163, 164).

CAUTION

Each inline connector consist of two male sides and one female side. Be sure to remove only the male side (shown below).

- 6 Remove the control panel.



- 7 Reinstall the above parts following the removal steps in reverse.

Resetting the circuit breaker

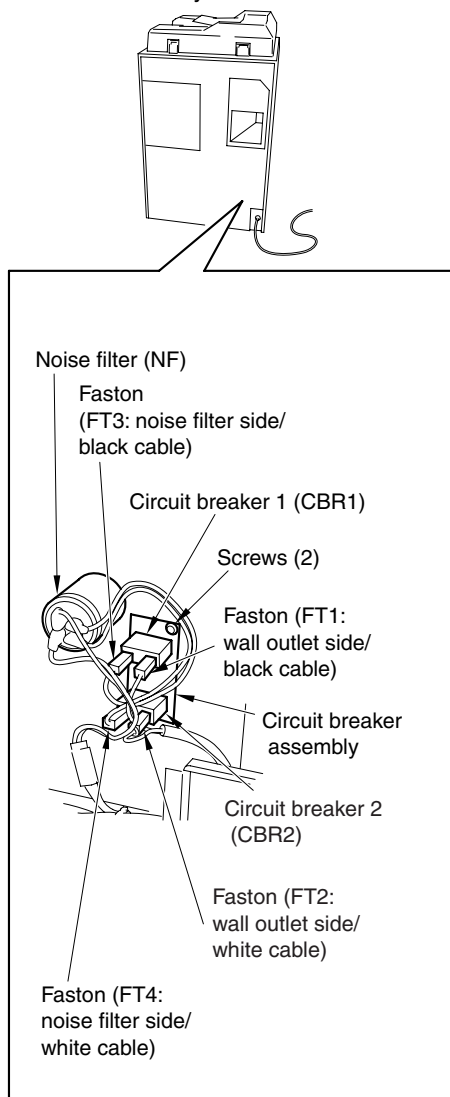
CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Connection of cables to circuit breaker 1 and 2 (CBR1, 2) must not be changed.

Procedure

- 1 Remove the rear cover.
- 2 Remove two screws and loosen the circuit breaker assembly.



- 3 Turn over the circuit breaker assemblies and press the reset button at the center of each circuit breaker.
- 4 Reinstall the above parts following the removal steps in reverse.

Drive section

Removing and reinstalling the drum motor (M2)

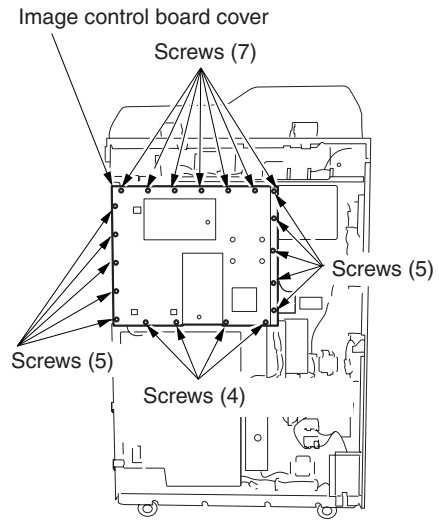
CAUTION

Be sure the power cord has been unplugged from the wall outlet.

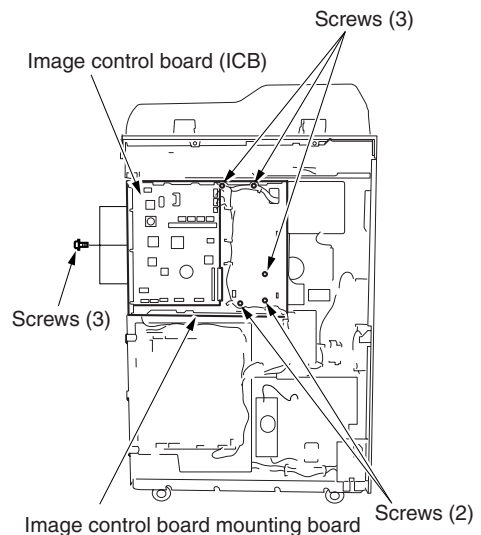
Be sure to pull the drum unit out of the MFP before removing or reinstalling the drum drive motor. If you fail to pull out the drum unit, the cleaning blade may be damaged because the drum rotates when installing or removing the flywheel or gear.

Procedure

- 1 Pull the drum unit out of the MFP. See “Drum unit” on page 152.
- 2 Remove the rear cover. See “External section” on page 132.
- 3 Remove the developing suction cover and right cover (top). See “External section” on page 132.
- 4 Remove twenty-one screws and remove the image control board cover.

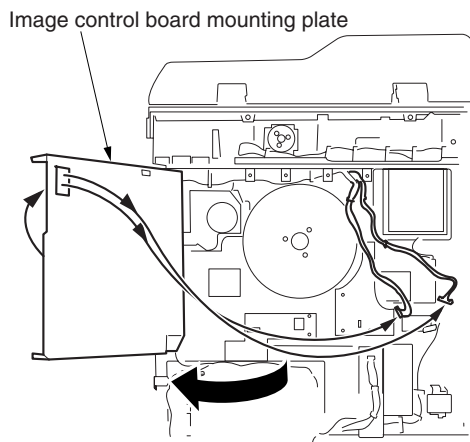


- 5 Remove five screws at the rear and three screws on the right side and remove all connectors from the image control board (ICB).

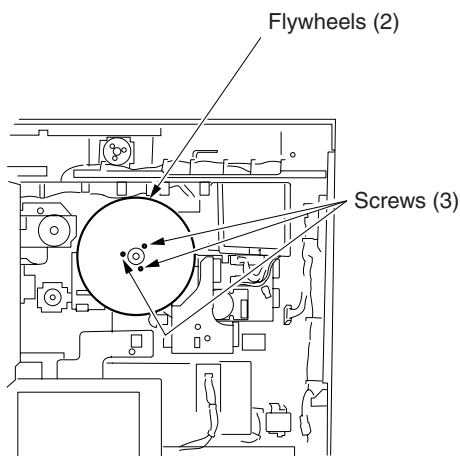


- 6 Remove each cable from wire guide.

- 7** Remove one cable from the scanner board and two cables from the laser/scanner assembly, pull them through the hole and open the image control board mounting plate.

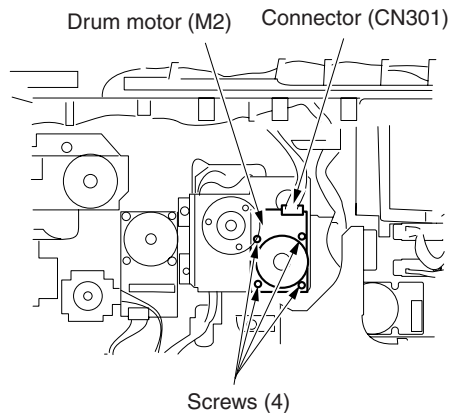


- 8** Remove three screws and remove the two flywheels.



- 9** Remove the connector (CN301).

- 10** Remove four screws and remove the drum motor (M2).



- 11** Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the fusing input gear

CAUTION

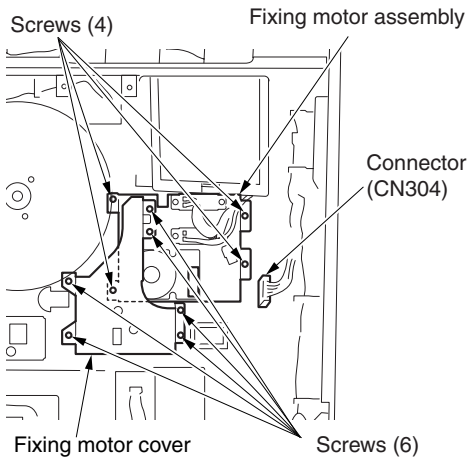
Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Open the image control bard mounting board.
- 2 Remove six screws and remove the fusing motor cover.
- 3 Pull out the connector (CN304), remove four screws to remove the fusing motor assembly.

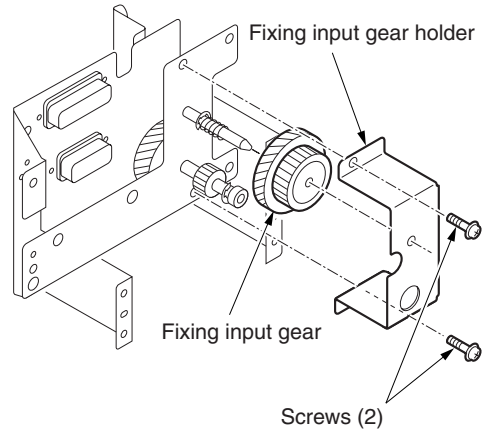
CAUTION

Hold the fusing motor assembly with your hand because it is connected to the MFP with cable.



- 4 Remove two screws to remove the fusing input gear holder.

- 5 Pull out the fusing input gear from the shaft.

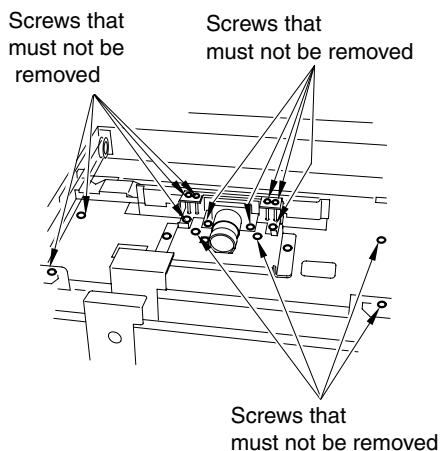


- 6 Reinstall the above parts following the removal steps in reverse.

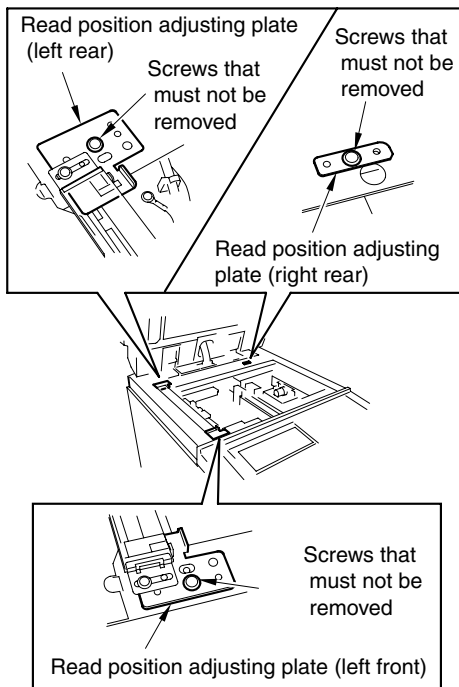
Scanner section

Screws that must not be removed

14 screws securing the CCD unit



Read position adjusting plate screw (1 each)



Removing and reinstalling the CCD unit

CAUTION

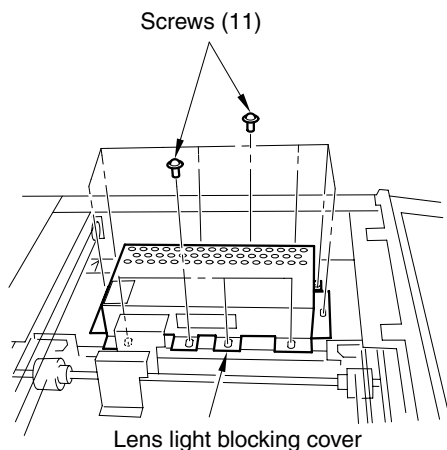
Be sure the power cord has been unplugged from the wall outlet.

Be sure to adjust the image after installing the CCD unit.

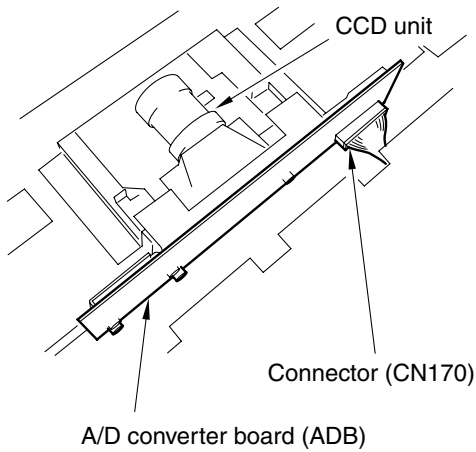
When disconnecting or reconnecting connectors from / to the AD converter board, be careful not to place any stress on the board.

Procedure

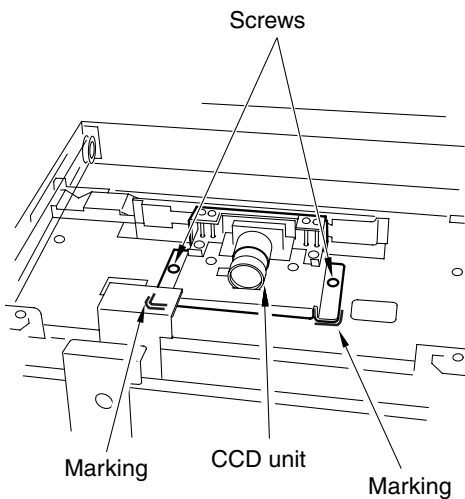
- 1 Remove the right side cover (top), left side cover, original stopper plates (left and rear), scanner glass and top cover (right, left, front center, and rear center). See "External section" on page 132.
- 2 Remove eleven screws to remove the lens light blocking cover.



- 3 Remove the connector (CN170) from the A/D converter board (ADB).



- 4 Remove two screws to remove the CCD unit.



CAUTION Mark the place where the CCD unit is installed before removing it.

- 5 Reinstall the above parts following the removal steps in reverse.

Replacing the exposure lamp

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

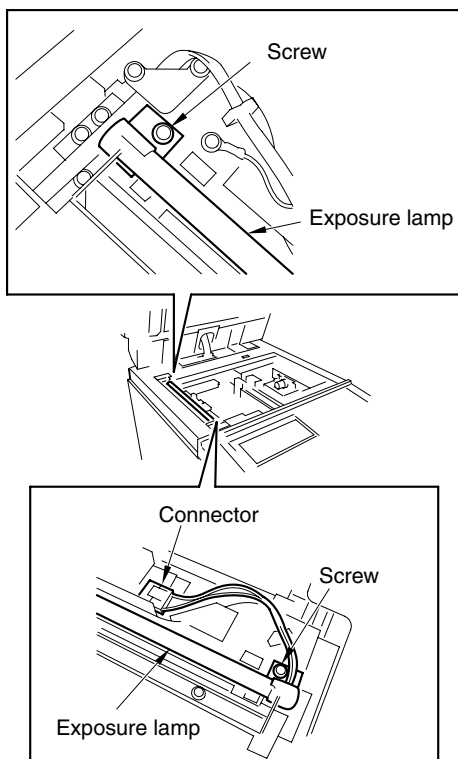
Do not touch the exposure lamp with bare hands.

Be sure to check the image after installing the exposure lamp.

Procedure

- 1 Remove the original stopper plates (left and rear), scanner glass and top cover (right, middle front, and middle rear). See "External section" on page 132.
- 2 Move the exposure unit to the notch in the MFP frame on the paper exit side.

- 3 Remove the connector and two screws, then remove the exposure lamp.



- 4 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the exposure unit

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

When installing the exposure unit, use the optics unit positioning tool.

Be sure to perform image adjustment after installing the exposure unit.

Procedure

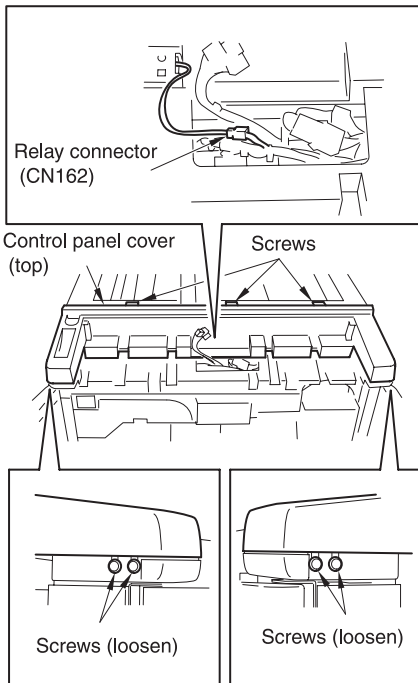
- 1 Remove the right side cover (top), left side cover, original stopper plates (left and rear), scanner glass and top cover (right, left, front center, and rear center). See "External section" on page 132.
- 2 Remove the control panel.
- 3 Remove the inline connector (CN162).

CAUTION

Each inline connector consist of two male sides and one female side. Be sure to remove only the male side (shown below) of the CN162 connector.

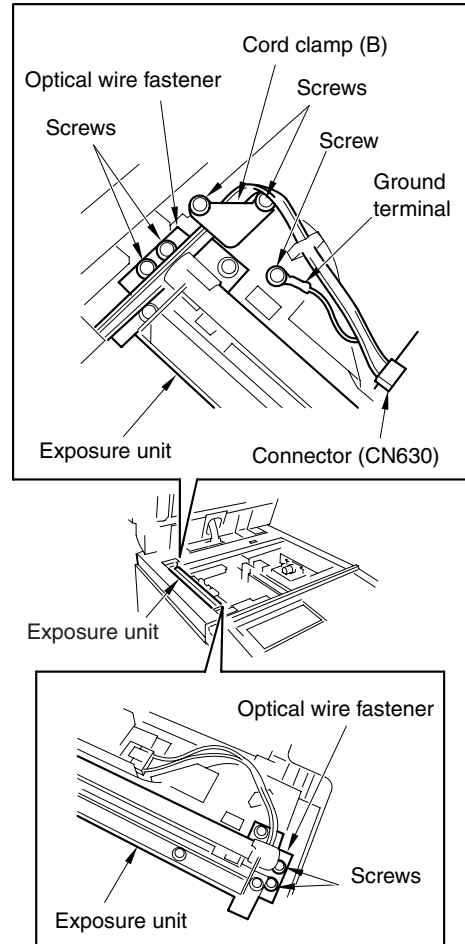
- 4 Loosen the left and right screws on the control panel cover (top).

- 5** Remove three screws and remove the operation unit cover (top).



- 6** Move the exposure unit to the notch in the MFP frame on the paper exit side.
- 7** Remove two screws to detach the cord clamp (B).
- 8** Remove one screw to remove the ground terminal.
- 9** Disconnect the connector (CN630).

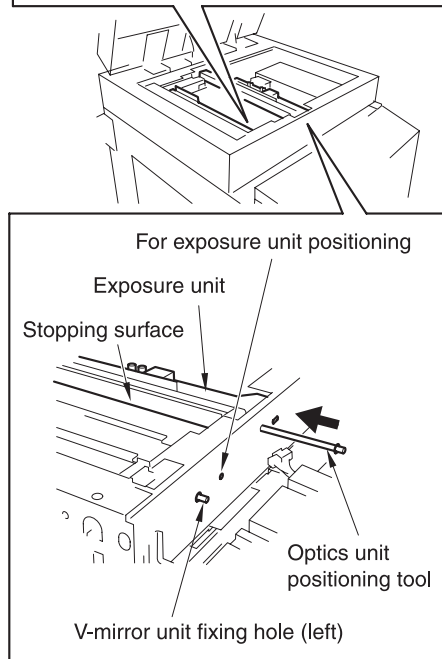
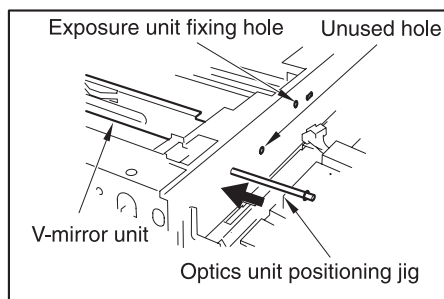
- 10** Remove four screws to detach the exposure unit.



Installation procedure

- 1** Move the V-mirror unit toward the paper exit side, then insert the optics positioning tools from the front to secure the V-mirror unit. Ensure that the optics positioning tools pass through the V-mirror unit.
- 2** Insert the optics positioning tools in the holes at the exposure unit mounting position from the front.

- 3 Slide the exposure unit to the paper exit side until it touches the optics unit positioning tool.



- 4 Install the exposure unit to the optics wire mounting bracket with four screws.
- 5 Remove two optics unit positioning tools.
- 6 Reverse the removal procedure to reinstall the removed parts.

Installing the optics wire

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

When winding the optics wire around the pulley, be sure to run the wire tightly so that it does not ride on the side of the pulley.

Then re-tensioning or replacing the optics wire, be sure to use the optics positioning tool.

Be sure to perform image adjustment after replacing or re-installing the wire.

Procedure

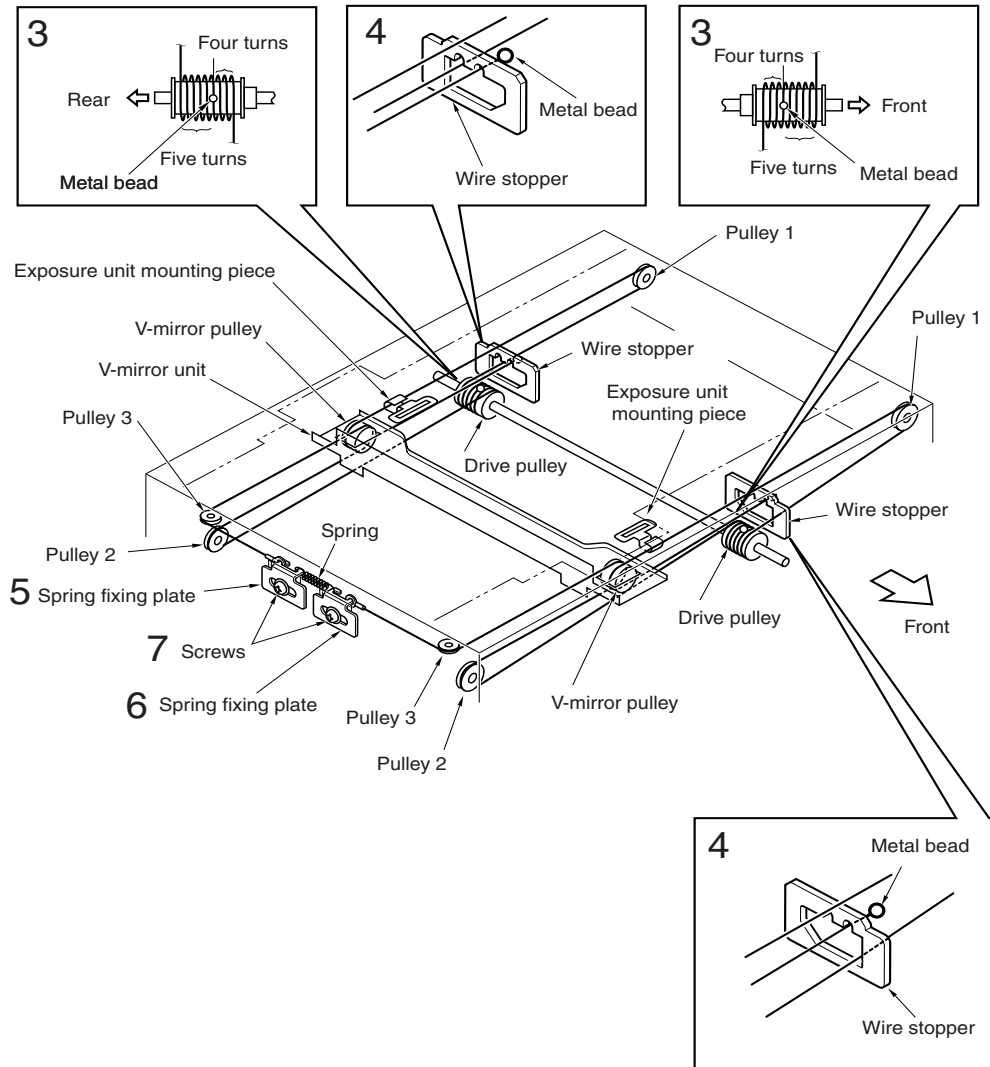
- 1 Remove the exposure unit.
- 2 Move the V-mirror unit toward the paper exit side then insert the optics positioning tools from the front to secure the V-mirror unit. Ensure that the optics positioning tools pass through the V-mirror unit.
- 3 Place the metal bead at the midpoint of each optics wire in the mounting hole in the drive pulley. Starting at this point, wind the optics wire five turns to the outside and four times to the inside on the drive pulley.

CAUTION

Ensure that there is a metal bead at the end of the outer wire, and a wire terminal at the end of the inner wire.

Pull out the outer wire from above the drive pulley in the paper exit direction, and the inner wire from under the drive pulley in the paper feed direction.

- After winding the outer wire, secure it to the wire stopper via the outside of pulley 1 and V-mirror pulley through the notch in the wire stopper.



CAUTION

There are two grooves in the wire stopper. Ensure that the outer groove is at the rear and the inner groove is at the front.

- 5 Reverse the inner wire at pulley 2, pass it along the inside of the V-mirror pulley and pulley 3, then attach the wire terminal to the spring fusing plate. At this time, secure the spring fusing plate temporarily with one screw.
- 6 Install the other wire following the same procedure.
- 7 Loosen each screw that was tightened temporarily, install the spring on the spring fusing plate, and tighten each screw.

Cleaning the ADF glass and scanner glass

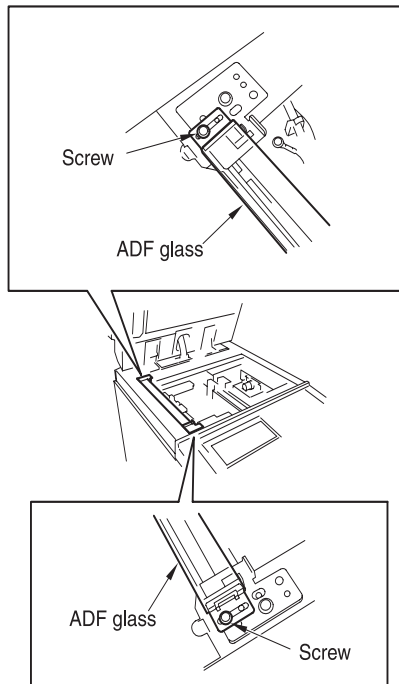
CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Remove the original stopper plates (left and rear), scanner glass, and top cover (right, left, front center, and rear center). See "External section" on page 132.
- 2 Remove two screws to detach the ADF glass.

- 3 Place the removed ADF glass and scanner glass on a rag and clean with drum cleaner and a cleaning pad.



- 4 Reinstall the above parts following the removal steps in reverse.

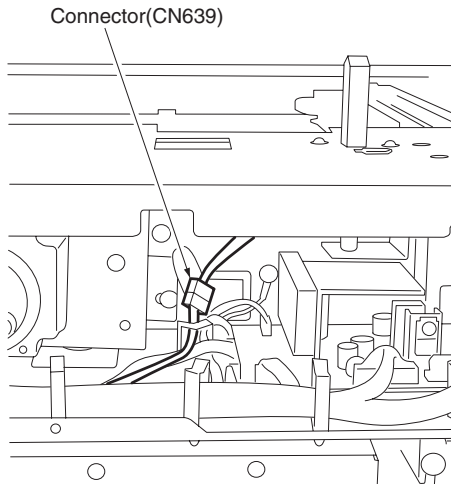
Replacing the scanner motor (M11)

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Remove the ADF unit, original stopper plates (left and rear), scanner glass, and top cover (right, left, front center, and rear center). See “External section” on page 132.
- 2 Remove one connector (CN639) from the auto paper timing PS (PS51).

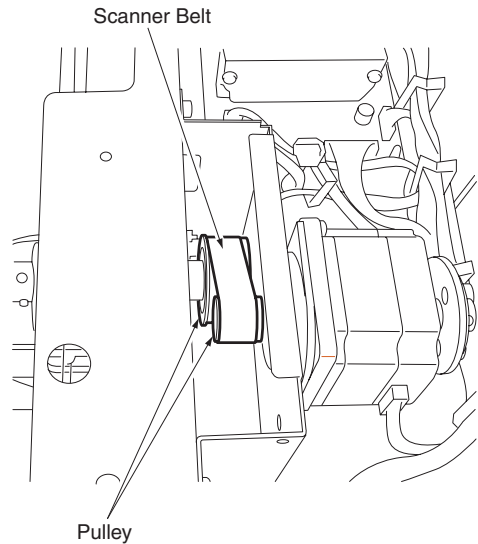


- 3 Remove the hinge mounting plate (rear side) from the scanner unit. (12 screws)
- 4 Remove four screws from the scanner motor (M11), then remove the scanner belt and the scanner motor.
- 5 Install the scanner motor (M11) and the scanner belt. Tighten the scanner motor loosely with four screws.

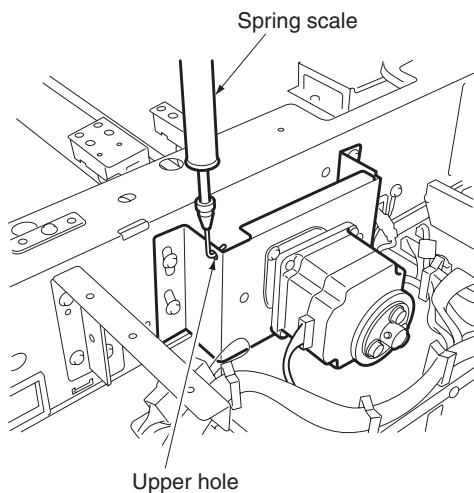
CAUTION

Make sure to install the belt in the middle of two pulleys. Also make sure that the belt is not placed on the edges of pulleys, or that it is running off from the pulleys.

Tighten the motor by first tightening the screw and then give it one turn to loosen slightly.



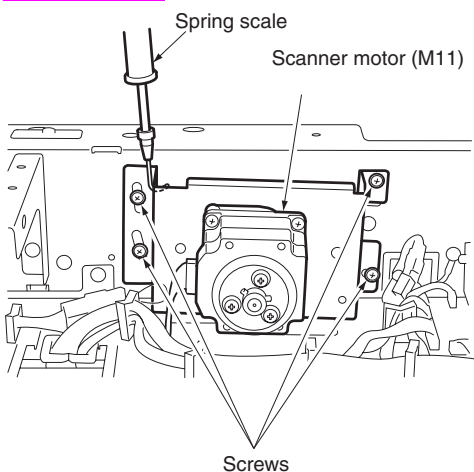
- 6 Hook the spring scale on the upper hole of the scanner motor (M11).



- 7 Pull the spring scale upward until a tension of 2 ± 0.2 kg is indicated. Tighten the four screws.

CAUTION

Make sure that the scanner motor moves up and down when confirming the tension pressure.



- 8 Insert the connector to the scanner motor (M11).
- 9 Follow the disassembly procedures in reverse order to install.

Laser scanner unit

Removing and reinstalling the laser/scanner assembly

WARNING!

Do not energize the laser/scanner assembly when it is not in the correct position.

Never remove the laser/scanner assembly cover and the polygon unit cover.

Never look directly into the laser beam. It can cause blindness.

Never remove the laser/scanner assembly for at least two minutes after turning off the primary power switch.

CAUTION

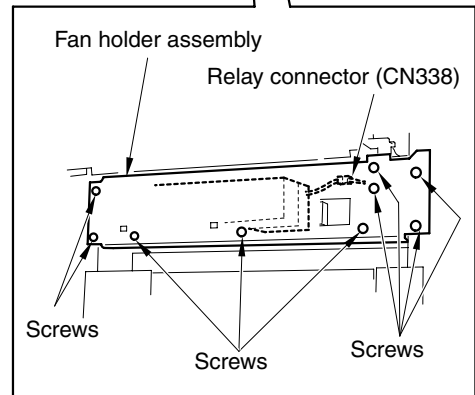
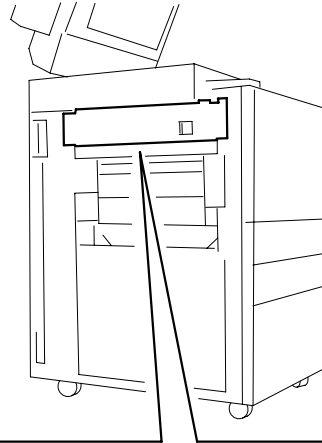
Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Remove the left side cover. See “External section” on page 132.
- 2 Remove nine screws to detach the fan holder assembly.
- 3 Remove the inline connector (CN338).

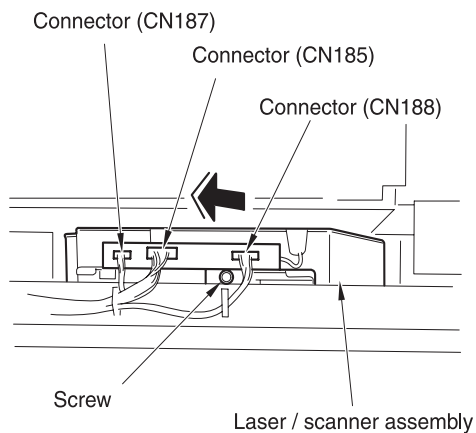
CAUTION

Each inline connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the CN338 connector.



- 4 Remove the three connectors (CN185, 187, 188). Move the connectors out of the way to allow for easy removal of the laser scanner unit.

- 5** Loosen the screw to pull out and remove the laser/scanner assembly.



- 6** Reinstall the above parts following the removal steps in reverse.

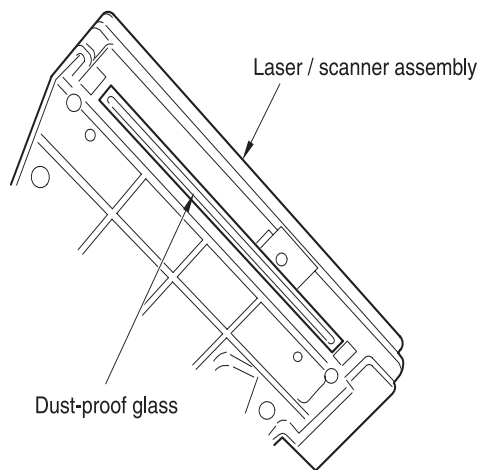
Cleaning the dust-proof glass

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1** Remove the laser/scanner assembly.
- 2** Clean the dust-proof glass at the bottom of the laser/scanner assembly with a cleaning pad and blower brush.



- 3** Reinstall the above parts following the removal steps in reverse.

Drum unit

Removing and reinstalling the drum unit

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Be sure to put a drum cover over the removed drum unit and store the drum unit in a dark place.

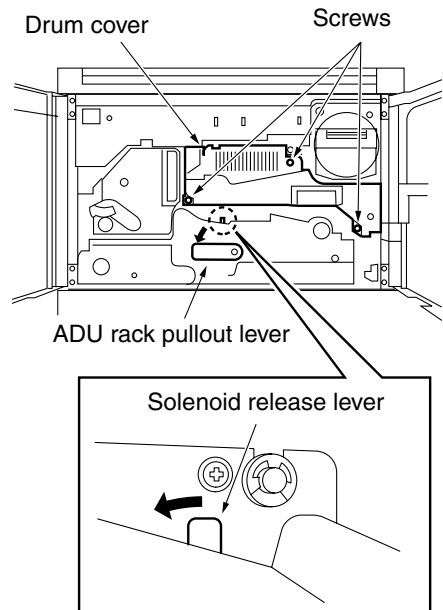
When installing or removing the drum unit, do not rotate it in the direction opposite to the specified one. Rotating the drum unit in the opposite direction during copy operation could damage the cleaning blade.

When installing or removing the drum unit, take care not to touch the separation claw.

Procedure

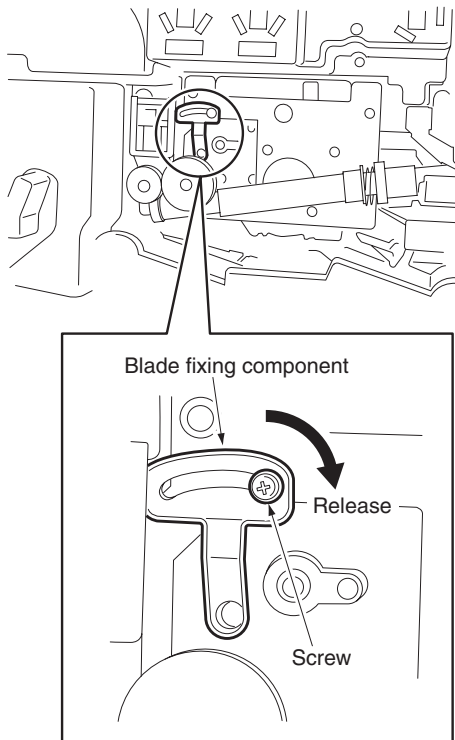
- 1 Open the left and right front doors.
- 2 While pressing the solenoid release lever on top of the ADU rack to the left, flip the ADU rack pullout lever to the left.

- 3 Loosen three screws to remove the drum cover.



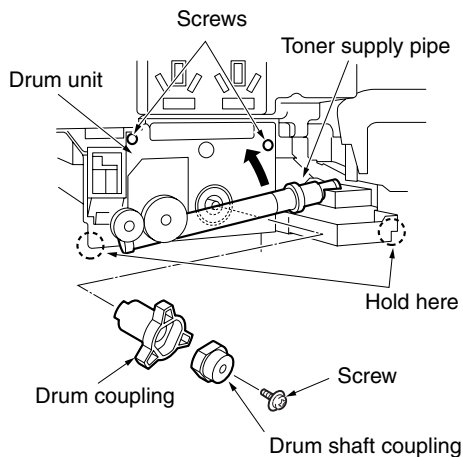
- 4 Loosen one screw and slide the blade fusing component in the direction of the arrow until it stops to release the crimp of the cleaning blade.

- 5** Loosen the screw of the blade fusing component.



- 6** Remove the two screws securing the drum unit.
- 7** Release the toner supply pipe in the direction of the arrow.
- 8** Remove the screw securing the coupling to detach the drum shaft coupling and drum coupling.

- 9** Hold the two sections shown in the figure and pull out the drum unit.



- 10** Reinstall the above parts following the removal steps in reverse.

CAUTION

To install the coupling, see "Installing the coupling" on page 154.

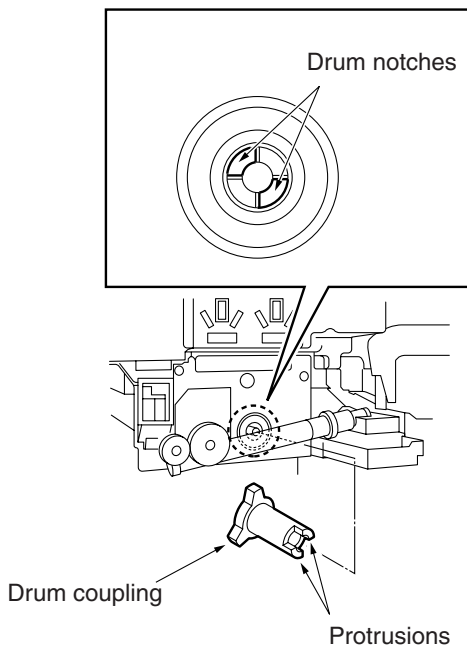
Installing the coupling

CAUTION

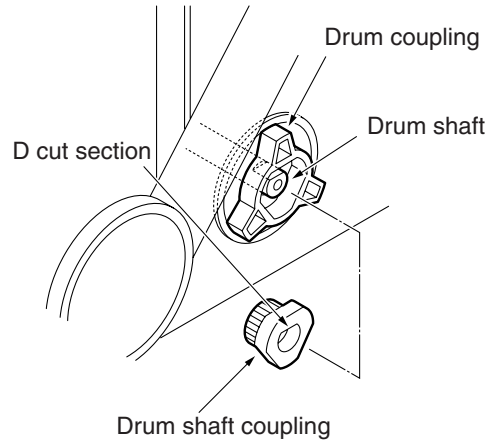
Be sure the power cord has been unplugged from the wall outlet.

Procedure

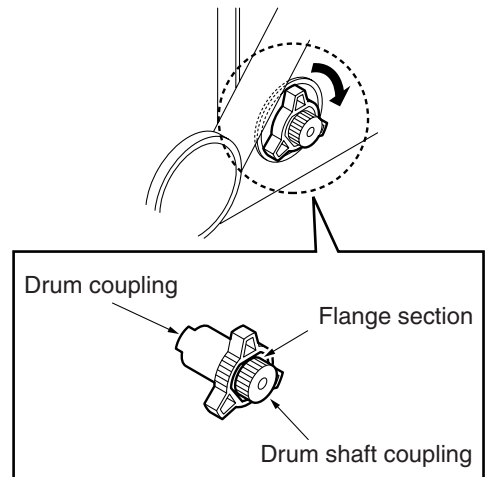
- 1 Clean the outer surface of the drum coupling and drum shaft coupling with drum cleaner and a cleaning pad.
- 2 Insert the drum coupling aligning the protrusions on the drum coupling with the notches in the drum.



- 3 Insert the drum shaft coupling so that the D cut section of the drum shaft coupling matches the drum shaft.



- 4 Turn the head of the drum coupling clockwise so that the flange section on the drum shaft coupling is flush.



- 5 Tighten with a screw.

Removing, cleaning, and reinstalling the drum

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Be careful not to touch the drum or the cleaning blade with bare hands, or damage them.

When leaving the drum, be sure to put the drum cover over the drum and store it in a dark place.

When reinstalling the drum, cleaning blade, and toner guide roller, apply setting powder to the entire surface of the drum and also to the cleaning blade regardless of whether the parts are new or old.

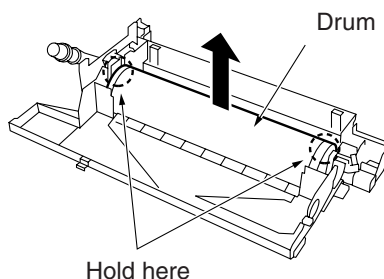
After applying setting powder to the drum, perform the following before installing the drum unit in the MFP.

With the charging corona unit and developing unit removed, turn the drum once (to prevent setting powder from scattering onto the charging corona unit, and to prevent image defects).

When installing a new drum, be sure to enter **Mode 25** and select **Copy Count by Parts to be Replaced** to reset drum counter.

Procedure

- 1 Remove the drum unit from the MFP.
- 2 Remove the charging corona unit, developing unit, cleaning blade, and toner guide roller from the drum unit. (See "Corona unit" on page 159, "Developing unit" on page 166, and "Cleaning/toner recycle unit" on page 170.)
- 3 Supporting the drum at both ends with your fingers so that the drum surface is not damaged, slowly remove it upward (front side first).
- 4 Clean the toner scattered around the drum installation area using a blower brush and a cleaning pad.



- 5 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the separation claws and separation claw solenoid

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Take care not to damage the drum when removing the separation claws.

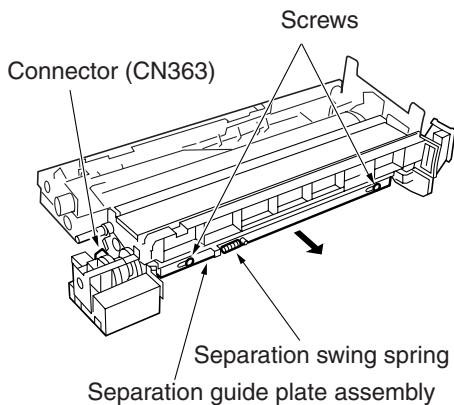
Note the orientation and position of the separation claws when reinstalling them.

CAUTION

Do not touch the cleaning blade and drum with bare hands.

Procedure

- 1 Remove the drum unit from the MFP.
- 2 Remove the drum.
- 3 Remove the connector (CN363) and separation swing spring.
- 4 Remove two screws and detach the separation guide plate assembly.



- 5 Remove the snap ring, slide the shaft, and remove the three separation claws.

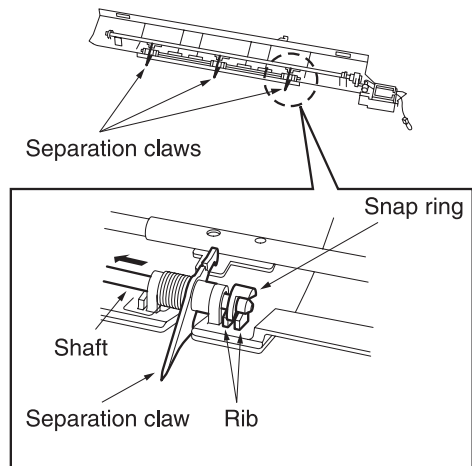
CAUTION

Clean the shaft with drum cleaner and a cleaning pad when installing.

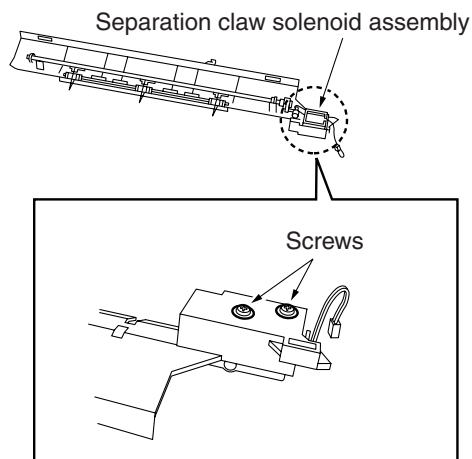
The separator claws cannot move smoothly if they are installed with toner remaining on the shaft.

When installing, insert the retaining ring between the ribs.

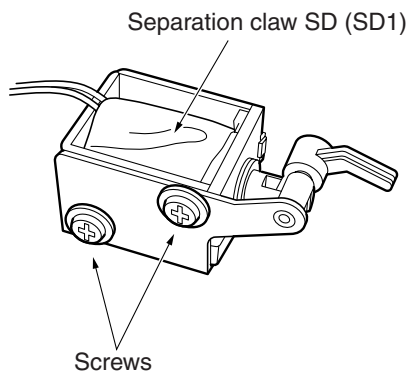
After installing the separation claws, check that they move smoothly.



- 6** Remove two screws and remove the separator claw solenoid assembly.



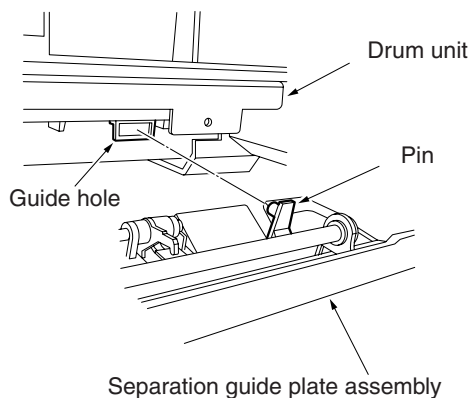
- 7** Remove two screws and detach the separation claw SD (SD1).



- 8** Reinstall the above parts following the removal steps in reverse.

CAUTION

When installing the separation claw unit, match the pin and guide hole shown in the figure.

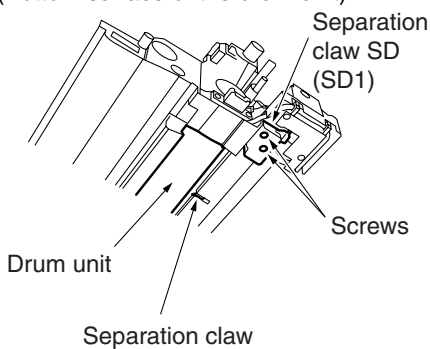


Note

When removing the separation claw solenoid (Normally, it should not be removed except when replacing the solenoid).

- 1** Install the separation claw unit to the drum unit.
- 2** Tighten the solenoid screw when the claw closest to the drum touches the drum.

(Bottom surface of the drum unit)



- 3** Set the drum unit to the MFP and check that the tips of the separation claws are off the drum. (Standard clearance: More than 0 mm up to 1mm.)

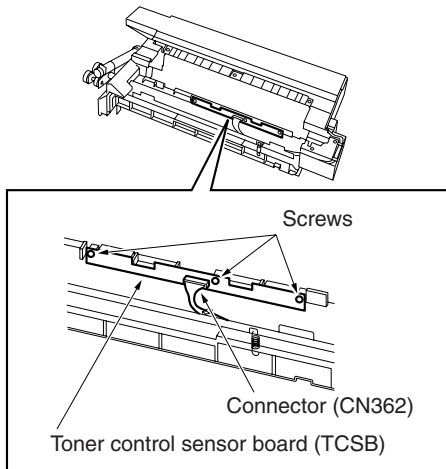
Removing and reinstalling the toner control sensor board

CAUTION

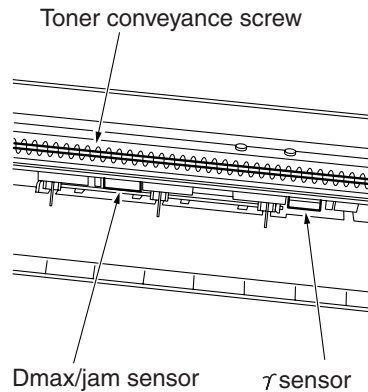
Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Remove the drum unit from the MFP.
- 2 Remove the drum.
- 3 Remove the separator claw solenoid assembly.
- 4 Remove the connector (CN362).
- 5 Remove three screws and remove the toner control sensor board.



- 6 Clean the sensors of the toner control sensor board (the Dmax (maximum contrast)/jam sensor at the front and the γ sensor at the back) using a blower brush, drum cleaner, and a cleaning pad.



- 7 Reinstall the above parts following the removal steps in reverse.

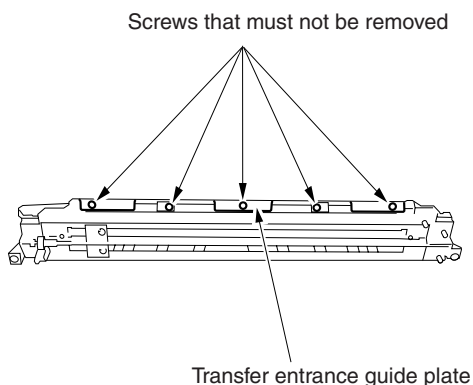
CAUTION

When reinstalling the toner control sensor board (TCSB), tighten the shoulder screws and then verify that the board moves back and forth.

Corona unit

Screws that must not be removed

Five screws securing the transfer entrance guide plate



CAUTION

Do not strain the transfer entrance guide plate and guide rollers, for example, pressing down on them strongly.

Take care not to damage the edge of the transfer entrance guide plate since it is deformed easily.

Removing and reinstalling the charging corona unit

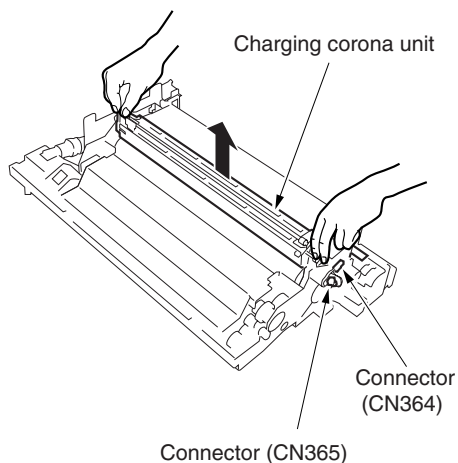
CAUTION

Be sure the power cord has been unplugged from the wall outlet.

When removing the charging corona unit, do not touch the mesh of the charging corona unit control plate.

Procedure

- 1 Remove the drum unit from the MFP. See "Drum unit" on page 152.
- 2 Disconnect the two connectors (CN364, 365). Remove the charging corona unit by holding it at the positions shown below with both hands.



- 3 Reinstall the above parts following the removal steps in reverse.

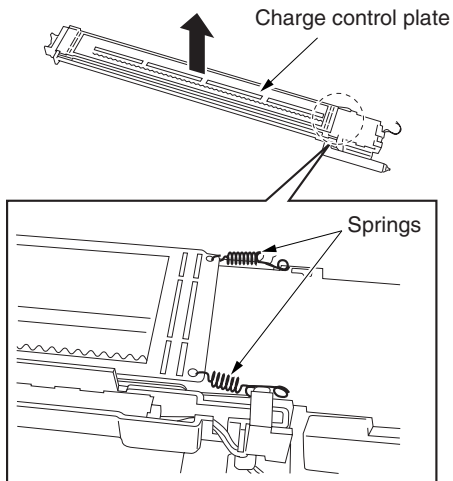
Removing and reinstalling the charge control plate

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Remove the charging corona unit.
- 2 Remove the two springs and remove the charge control plate.



- 3 Reinstall the above parts following the removal steps in reverse.

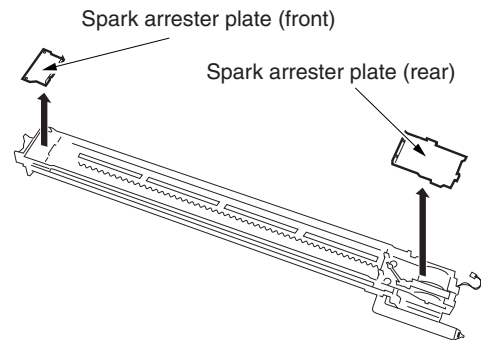
Replacing the charging wires

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

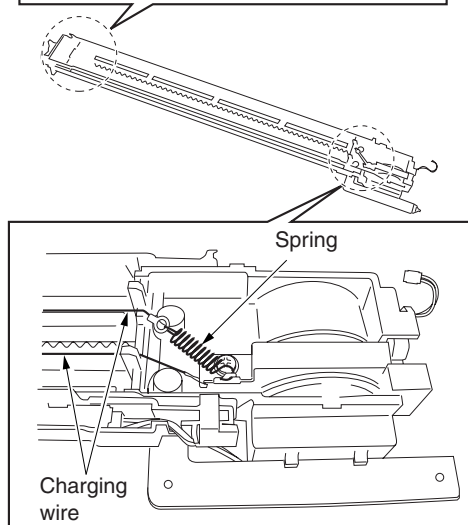
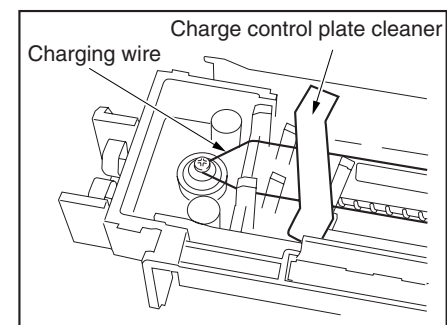
Procedure

- 1 Remove the charging corona unit.
- 2 Remove the charge control plate.
- 3 Remove the spark arrester plates (front and rear).



- 4 Remove the charge control plate cleaner.

- 5 Remove the spring and remove the charging wire.



- 6 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the charging wire cleaning unit

CAUTION

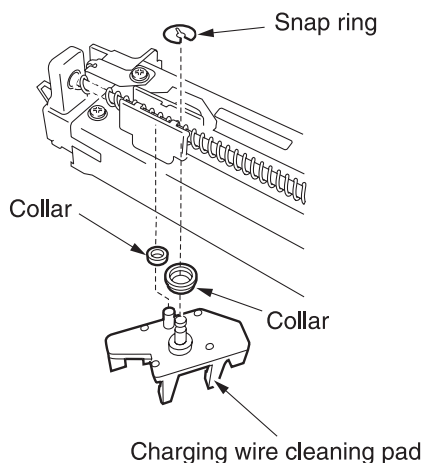
Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Remove the charging wire.
- 2 Remove the snap ring and remove the charging wire cleaning pad.

CAUTION

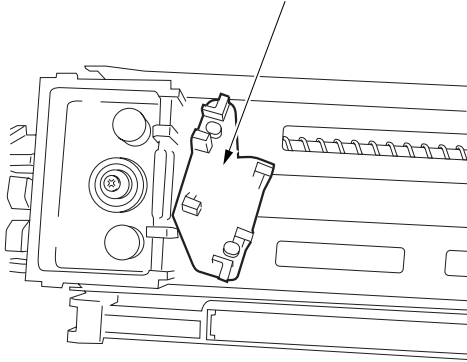
When removing the charging wire cleaning pad, be careful not to drop the two collars.



CAUTION

When installing the charging wire cleaning pad, install the pad in the orientation shown below. Also, do not forget to attach the two collars.

Charging wire cleaning pad



- 3 Reinstall the above parts following the removal steps in reverse.

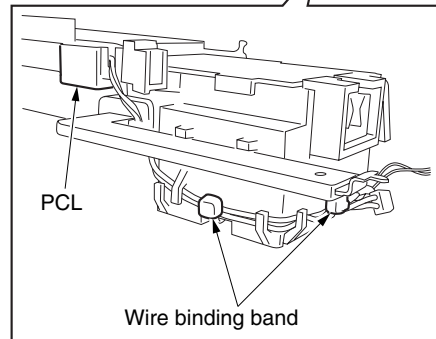
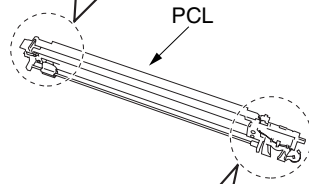
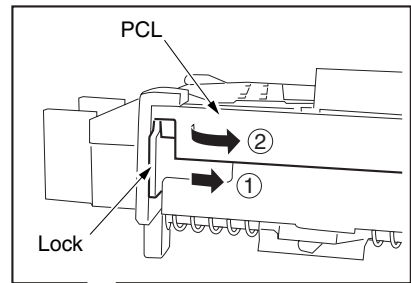
Removing and reinstalling the PCL

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Remove the charging corona unit.
- 2 Disconnect the wire binding band at two locations.
- 3 Release the lock and remove the PCL.



- 4 Reinstall the above parts following the removal steps in reverse.

Cleaning the charging corona unit/PCL

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

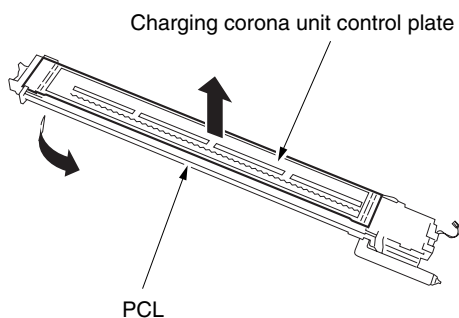
Procedure

- 1 Remove the charging corona unit.
- 2 Remove the charge control plate and PCL.
- 3 Place the charge control plate on a flat surface and clean by gently tapping with a cleaning pad moistened with drum cleaner. Next, remove any remaining dirt with a blower brush.

CAUTION

Take care not to damage the mesh of the charge control plate during cleaning.

- 4 Clean the PCL with a cleaning pad moistened with drum cleaner.



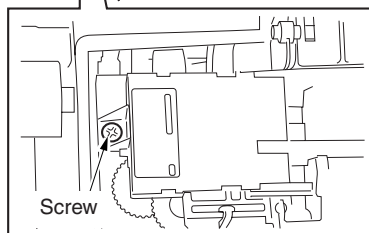
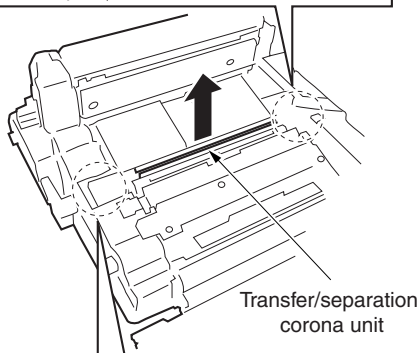
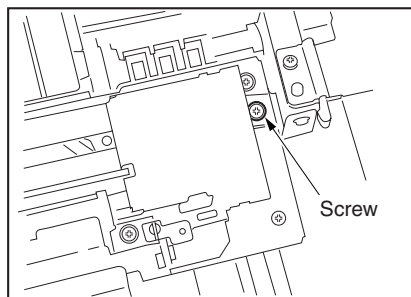
Removing and reinstalling the transfer/separation corona unit

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull the ADU frame from the MFP. See "Pulling out and reinstalling the ADU stand" on page 188.
- 2 Loosen two screws to remove the transfer/separation corona unit.



- 3 Reinstall the above parts following the removal steps in reverse.

CAUTION

When installing the transfer/separation corona unit, make sure the cleaning gear coupling is engaged properly.

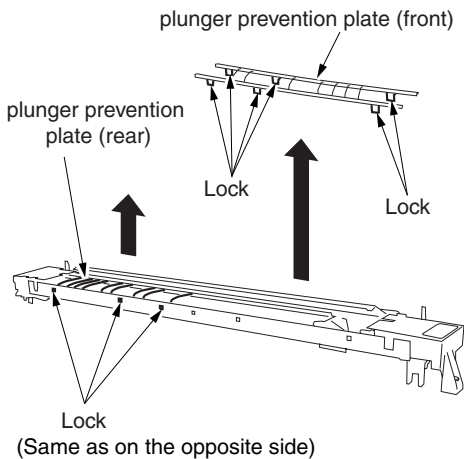
Removing and reinstalling the plunger prevention plate

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull the ADU frame from the MFP. See “Pulling out and reinstalling the ADU stand” on page 188.
- 2 Remove the transfer/separation corona unit.
- 3 Release the six locks and remove the plunger prevention plate (front).
- 4 Release the six locks and remove the plunger prevention plate (rear).



- 5 Reinstall the above parts following the removal steps in reverse.

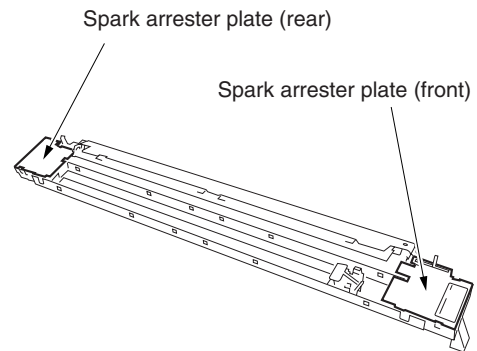
Replacing the transfer/separation wires and transfer/separation wire cleaning block

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull the ADU frame from the MFP. See “Pulling out and reinstalling the ADU stand” on page 188.
- 2 Remove the transfer/separation corona unit.
- 3 Remove the plunger prevention plate.
- 4 Remove the spark arrester plates (front and rear).



- 5 Remove the springs of wires (one each).

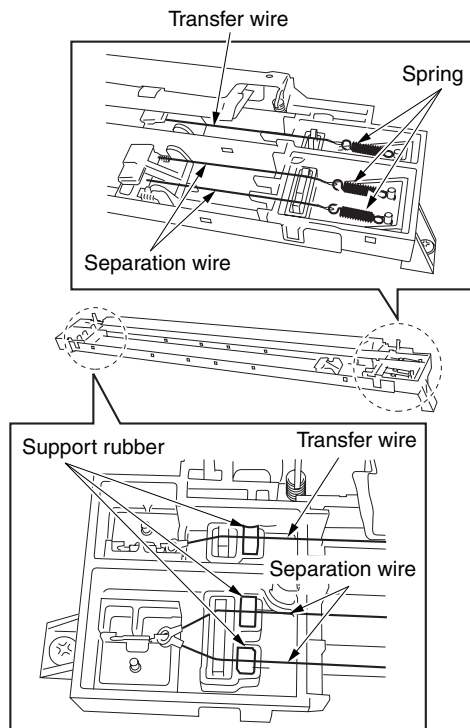
CAUTION

When installing the springs, bend the edge of each spring inside.

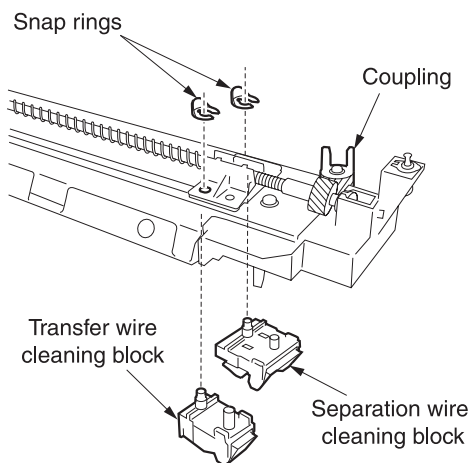
- 6 Release and remove three wires from each cleaning block.

CAUTION

Be careful not to drop and lose the support rubber when removing the wire.



- 7 Turn the transfer/separation corona unit upside down, remove the snap rings, and remove the transfer wire cleaning block and separation wire cleaning block from the front side.



- 8 Reinstall the above parts following the removal steps in reverse.

CAUTION

When installing the transfer/separation wires, check that the coupling of the cleaning pad drive gear is engaged correctly.

Removing and reinstalling the TSL unit

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

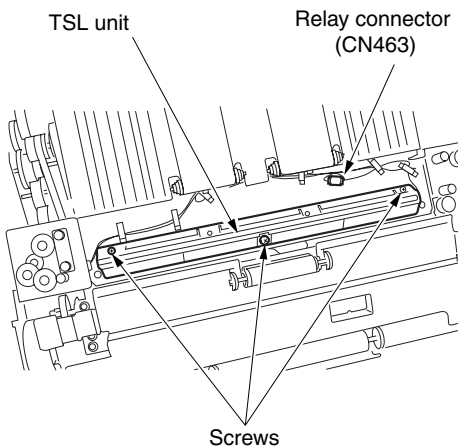
Procedure

- 1 Pull the ADU frame from the MFP. See “Pulling out and reinstalling the ADU stand” on page 188.
- 2 Remove the transfer/separation corona unit.
- 3 Remove the inline connector (CN463).

CAUTION

A inline connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the CN463 connector.

- 4 Remove the three screws and remove the TSL unit.



- 5 Reinstall the above parts following the removal steps in reverse.

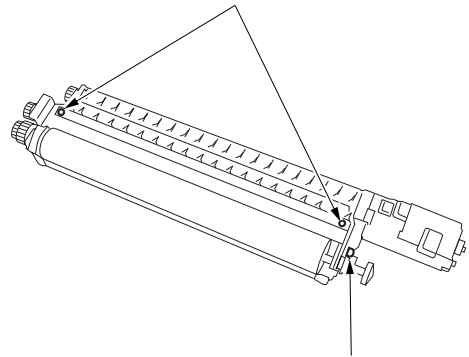
Developing unit

Screws that must not be removed

Procedure

- 1 Two screws securing the toner transfer regulation plate.
- 2 One screw securing the magnet angle adjusting knob.

Screws that must not be removed



Screw that must not be removed

Removing and reinstalling the developing unit

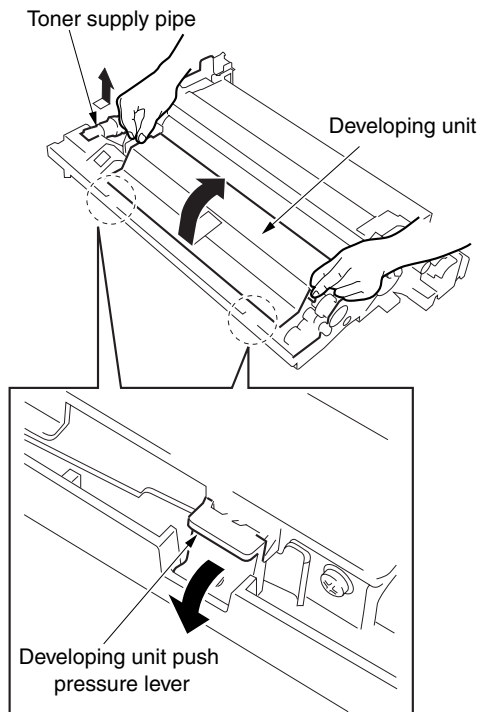
CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out the drum unit from the MFP. See “Drum unit” on page 152.
- 2 Release the toner supply pipe.
- 3 Release the developing unit push pressure lever.

- 4 Supporting the developing unit at the positions shown below with both hands, remove it from the drum unit.



- 5 Reinstall the above parts following the removal steps in reverse.

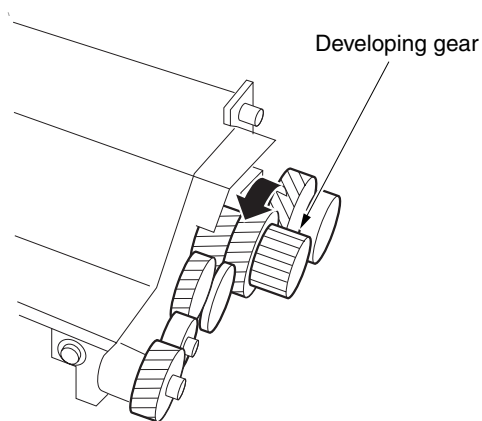
Replacing the developer

CAUTION

When replacing the developer in the developing unit, take care not to allow dirt to get into it.

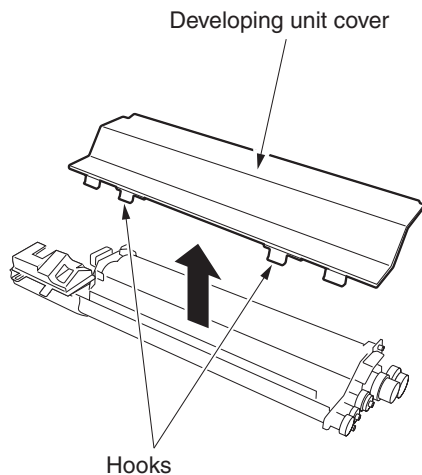
To rotate the developing sleeve, rotate the developing gear counterclockwise.

Never rotate the developing gear clockwise.

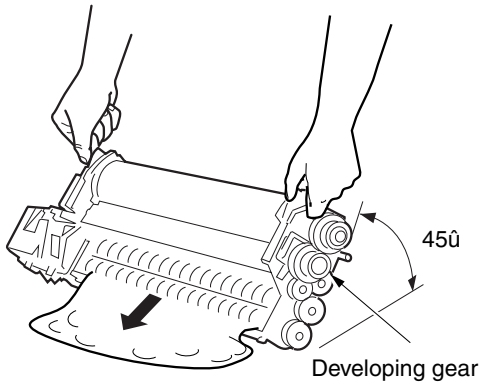


Procedure

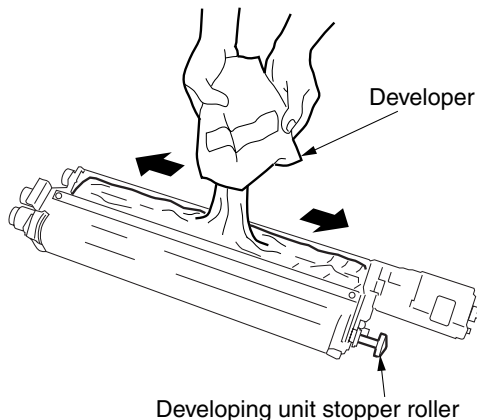
- 1 Pull out the drum unit from the MFP. See "Drum unit" on page 152.
- 2 Remove the developing unit from the drum unit.
- 3 Release the hook of the developing unit cover and remove it upward.



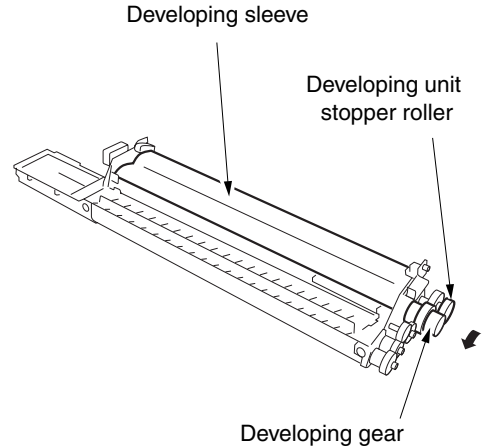
- 4 Tilt the developing unit about 45 degrees and rotate the developing gear counterclockwise to discharge all of the developer adhering to the inside of the developing unit and magnet roller.



- 5 Supply fresh developer evenly from the top of the developer supply screws.
- 6 Rotate the developing gear until the developer enters the developing unit.
- 7 Repeat steps (5) and (6) to supply all of the developer.



- 8 Rotate the developing gear counterclockwise to check that the developer bristles along the entire length of the developing sleeve.



- 9 Install the developing unit cover, then install the developing unit in the drum unit.

CAUTION

After installing the developing unit in the drum unit, make sure the developing unit stopper roller is in contact with the developing unit stopper plate (allocation of DSD).

Cleaning the developing unit bias shaft

CAUTION

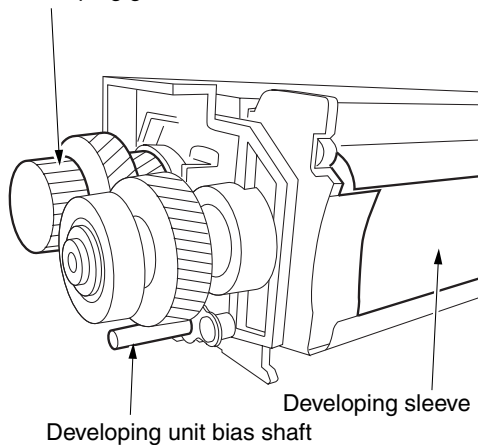
Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out the drum unit from the MFP. See "Drum unit" on page 152.
- 2 Remove the developing unit from the drum unit.

- 3** Wipe the dirt on the developing unit bias shaft with a cleaning pad.

Developing gear



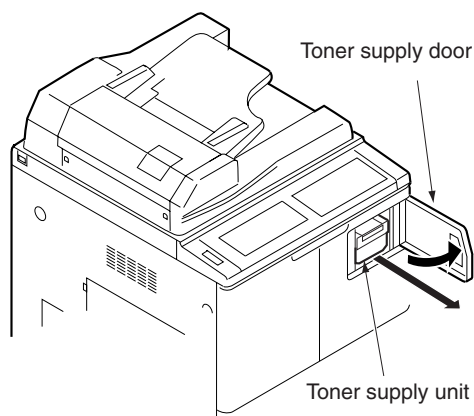
- 4** Reinstall the above parts following the removal steps in reverse.

Toner supply unit

Replacing and cleaning the toner bottle

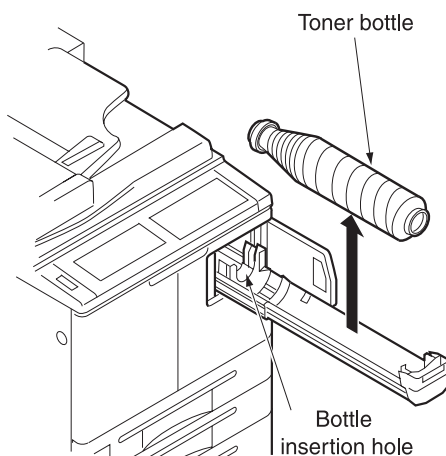
Procedure

- 1** Open the toner supply door and pull the toner supply unit forward.



- 2** Remove the toner bottle.

- 3** After removing the toner bottle, clean the area around the toner bottle insertion hole with a cleaning pad.



- 4** Reinstall the above parts following the removal steps in reverse.

Cleaning/toner recycle unit

Removing and reinstalling the cleaning blade

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Be sure to replace the following parts at the same time:

Cleaning blade
Toner guide roller (TGR)

Do not touch the edges of the cleaning blade with bare hands.

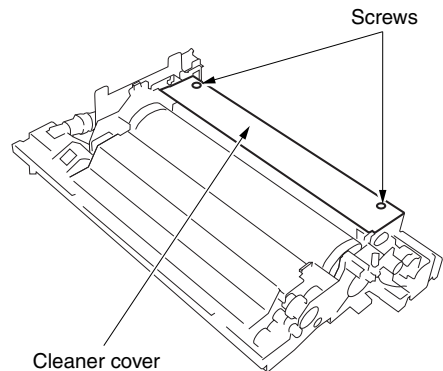
When reinstalling the cleaning blade, apply setting powder to the entire surface of the drum and cleaning blade regardless of whether the drum and cleaning blade are new or old.

When you have applied setting powder to the drum, perform the following before installing the drum unit on the MFP:

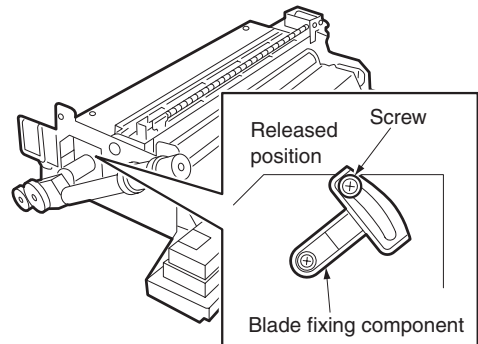
-- To ensure accurate toner concentration, wipe scattered setting powder off the γ sensor and Dmax (maximum contrast)/JAM sensor on the toner control sensor board with a rag moistened with alcohol.
-- With the charging corona unit and developing unit removed, turn the drum once (to prevent setting powder from scattering onto the charging corona unit, and to prevent image defects).

Procedure

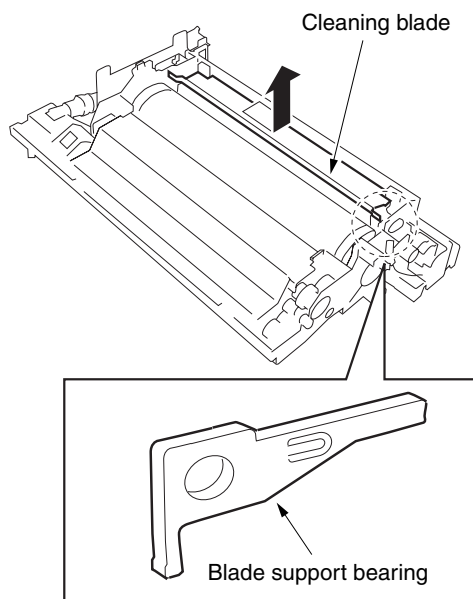
- 1 Remove the drum unit. See "Drum unit" on page 152.
- 2 Remove the charging corona unit. See "Corona unit" on page 159.
- 3 Remove the developing unit. "Developing unit" on page 166.
- 4 Remove two screws to remove the cleaner cover.



- 5 Check that the blade fusing component is released. If it is not, release it referring to "Drum unit" on page 152.



- 6 Remove the blade support bearing to remove the cleaning blade.



- 7 Reinstall the above parts following the removal steps in reverse.

CAUTION

After replacing the cleaning blade, be sure to perform Blade Setting Mode Adjustment in the 3-6 mode (to prevent the blade from peeling).

Removing and reinstalling the toner guide roller (TGR)

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Be sure to replace the following parts at the same time:

- Cleaning blade
- Toner guide roller

Do not touch the edges of the cleaning blade with bare hands.

When reinstalling the cleaning blade, apply setting powder to the entire surface of the drum and cleaning blade regardless of whether the parts are new or old.

When reinstalling the toner guide roller, apply setting powder to the toner guide roller evenly. Apply with the toner guide roller removed from the drum unit.

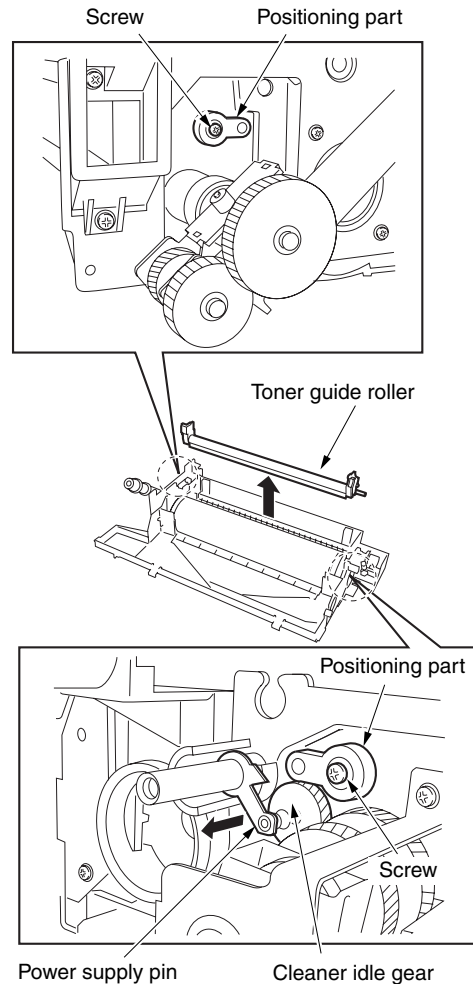
Do not touch the toner guide roller brush with bare hands. Also, do not directly contact the rollers to any object.

After replacing the toner guide roller, be sure to apply electricity lubricant on the edge of the guide roller shaft (on power supply pin side).

Procedure

- 1 Remove the drum unit. See “Drum unit” on page 152.
- 2 Remove the charging corona unit. See “Corona unit” on page 159.
- 3 Remove the cleaning blade.
- 4 Release the power supply pin in contact with the toner guide roller shaft.
- 5 Remove the cleaner idle gear.
- 6 Remove the screws securing the front and rear positioning parts.

- 7 Remove the toner guide roller.



- 8 Reinstall the above parts following the removal steps in reverse.

Paper feed units of Trays 2 and 3

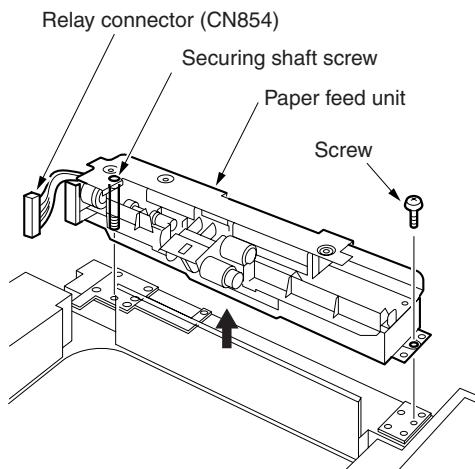
Removing and reinstalling the paper feed unit

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out paper feed Tray 2 or 3.
- 2 Loosen the securing shaft screw, and remove one screw.
- 3 Disconnect the inline connector (CN814, 834) and remove the paper feed unit by lifting.



- 4 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the paper feed Trays 2 and 3

WARNING!

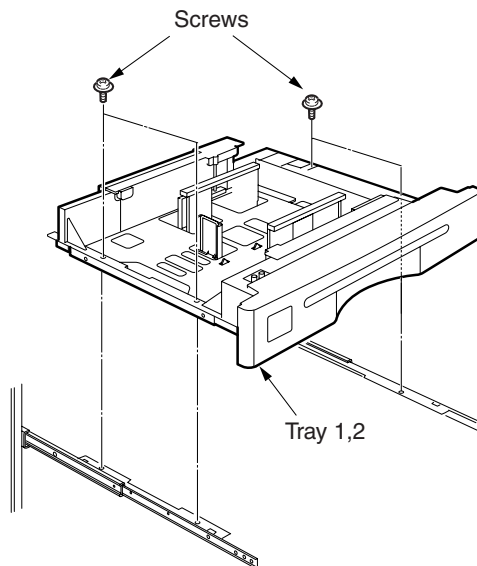
When removing the tray, stand in a proper position so that you do not hurt your back and waist. If the tray contains paper, remove all paper before removing the tray.

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out paper feed Tray 2 or 3.
- 2 Remove the paper feed unit.
- 3 Remove four screws and remove Tray 2 or 3 by lifting.

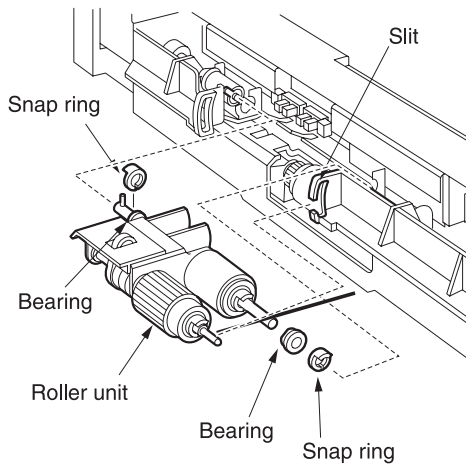


- 4 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the paper pick roller and pick roller rubber

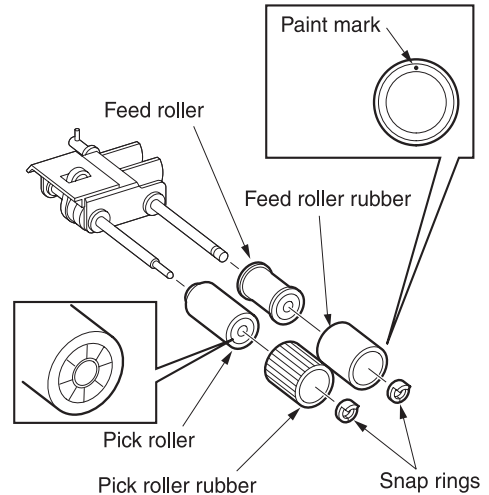
Procedure

- 1 Remove the paper feed unit.
- 2 Remove the two snap rings and slide the two bearings outward.
- 3 Release the pick roller axis from the holder slit to detach the paper pick roller unit.



- 4 Remove the two snap rings from the paper pick roller unit to detach the paper pick roller and pick roller.

- 5 Remove the rubber from each roller.



- 6 Reinstall the above parts following the removal steps in reverse.

CAUTION

When reinstalling the rollers, pay attention to their orientation.

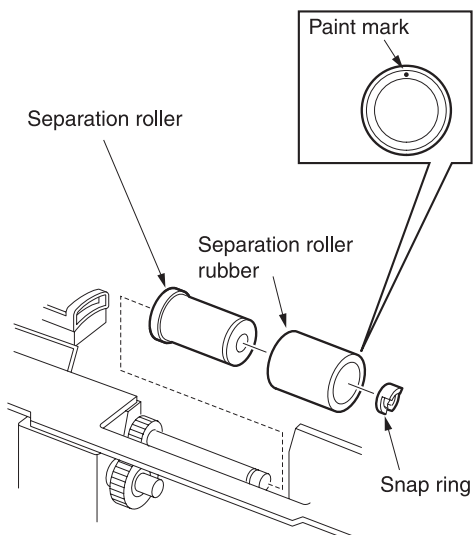
Check that no grease or the like remains on each roller.

Removing and reinstalling the separation roller rubber

Procedure

- 1 Remove the paper feed unit.
- 2 Remove the paper pick roller unit.
- 3 Remove the snap ring to detach the separation roller.

- 4 Remove the separation roller rubber from the roller.



- 5 Reinstall the above parts following the removal steps in reverse.

CAUTION

When reinstalling the separation roller, pay attention to their orientation.

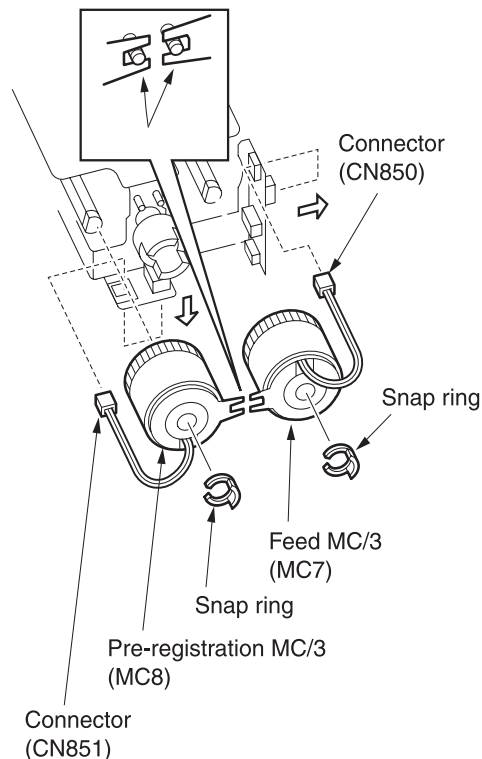
Check that no grease or the like remains on the separation roller.

Replacing the pre-registration and feed clutches (MCs)

Procedure

- 1 Remove the paper feed unit.
- 2 Remove the four connectors (CN810, 811, 830, 831).

- 3 Remove the snap ring to detach the pre-registration MC/1/2 (MC4/6) and feed MC/1/2 (MC3/5).



- 4 Reinstall the above parts following the removal steps in reverse.

CAUTION

When reinstalling each MC, fit the detent in the slit in the MC.

Replacing the wires

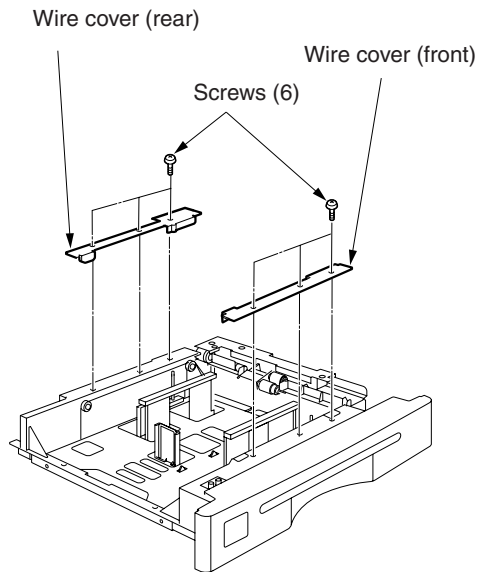
CAUTION

After replacing or reinstalling the wires, manually rotate the up/down drive shaft to check that the tray moves up and down smoothly.

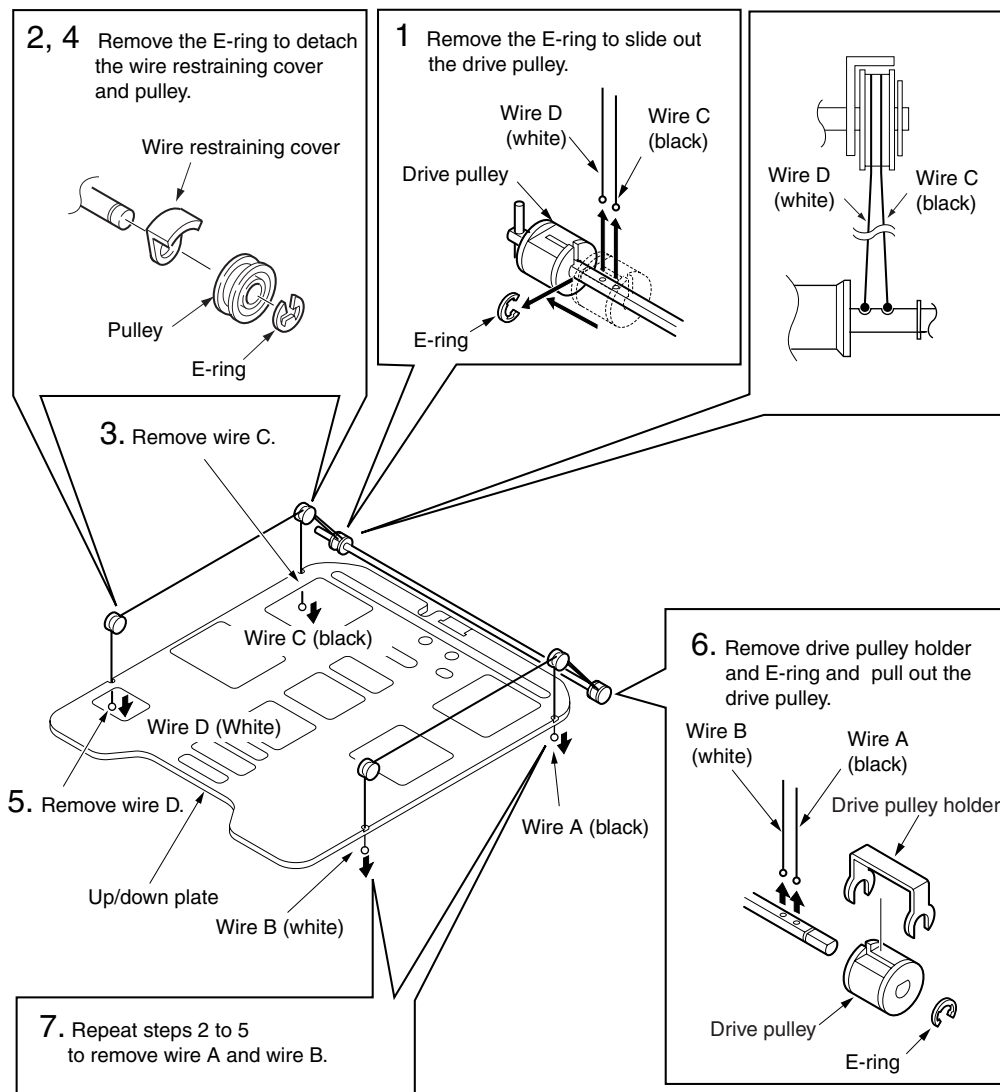
Be sure to install the wires so that they do not cross or ride over each other.

Procedure

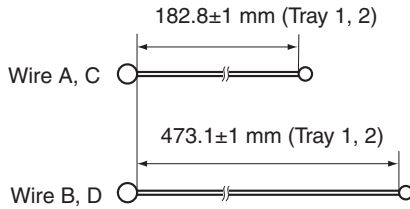
- 1 Remove the paper feed unit.
- 2 Remove three screws to remove the wire cover (front) and wire cover (rear).



- 3 Remove the front and rear wires according to steps 1 to 7 below.

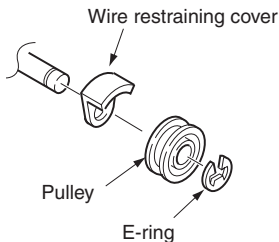


Wire lengths

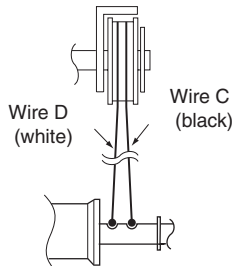


Installing wires

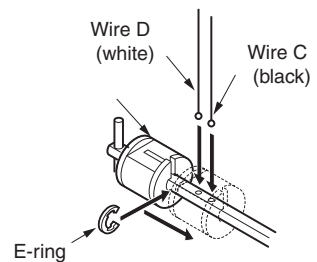
2. Install the pulley, pass wire D through the pulley, and install the wire restraining cover and E-ring.



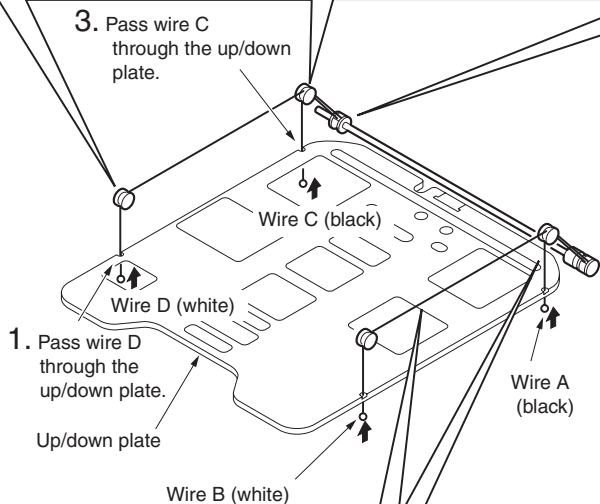
4. Install the pulley, pass wires C and D, and install the wire restraining cover and retaining ring. Wire D must be inside. Wires must not cross.



5. Install the wires C and D from inside the drive shaft hole, push in the drive pulley, and secure with E-ring.



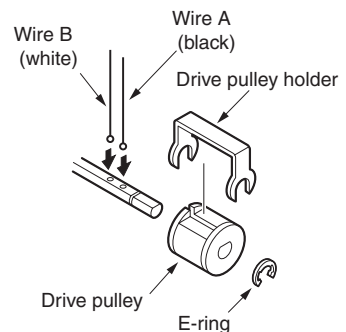
3. Pass wire C through the up/down plate.



1. Pass wire D through the up/down plate.

6. Repeat steps 1 to 4 to install wire A and wire B.

7. Install the wires A and B from inside the drive shaft hole, push in the drive pulley, and secure with E-ring. Next, install the drive pulley holder.



Paper feed unit of Tray 3

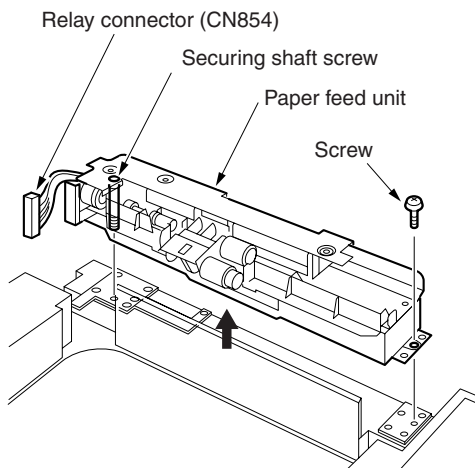
Removing and reinstalling the paper feed unit

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out paper feed Tray 3.
- 2 Loosen the securing shaft screw, and remove one screw.
- 3 Disconnect the inline connector (CN854) and remove the paper feed unit by lifting.



- 4 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling paper feed Tray 3

WARNING!

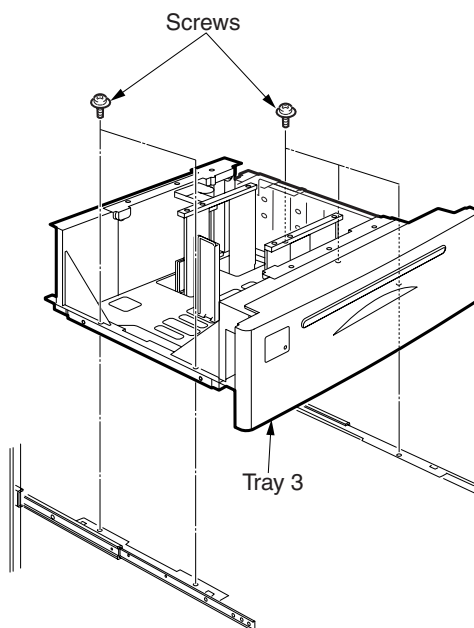
When removing the tray, stand in a proper position so that you do not hurt your back and waist. If the tray contains paper, remove all paper before removing the tray.

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out paper feed Tray 3.
- 2 Remove the paper feed unit.
- 3 Remove four screws and remove Tray 3 by lifting.



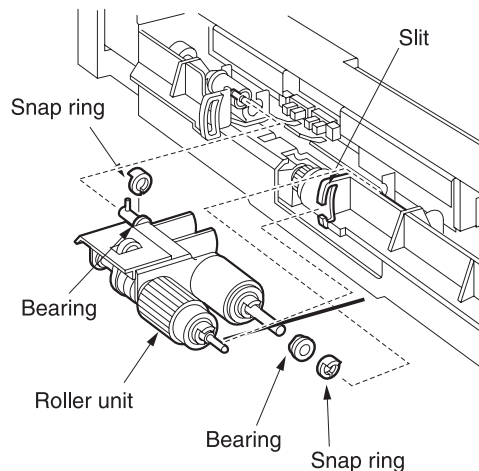
- 4 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the paper pick roller and pick roller rubber

Procedure

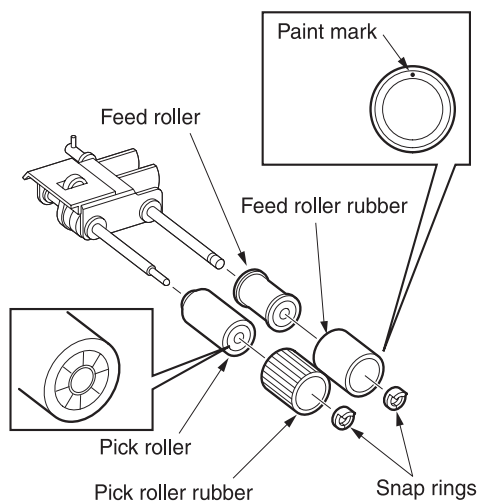
- 1 Remove the paper feed unit.
- 2 Remove two snap rings and slide the two bearings outward.

- 3 Release the pick roller axis from the holder slit to detach the paper pick roller unit.



- 4 Remove two snap rings from the paper pick roller unit to detach the paper pick roller and pick roller.

- 5 Remove the rubber from each roller.



- 6 Reinstall the above parts following the removal steps in reverse.

CAUTION

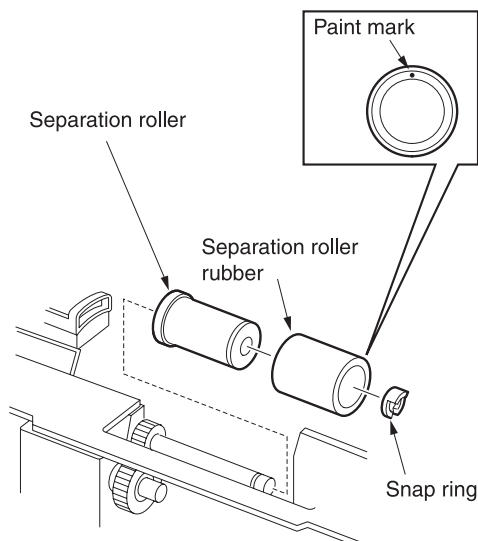
When reinstalling the rollers, pay attention to their orientation.

Check that no grease or the like remains on each roller.

Removing and reinstalling the separation roller rubber

Procedure

- 1 Remove the paper feed unit.
- 2 Remove the paper pick roller unit.
- 3 Remove the snap ring to detach the separation roller.
- 4 Remove the separation roller rubber from the roller.



- 5 Reinstall the above parts following the removal steps in reverse.

CAUTION

When reinstalling the separation roller, pay attention to their orientation.

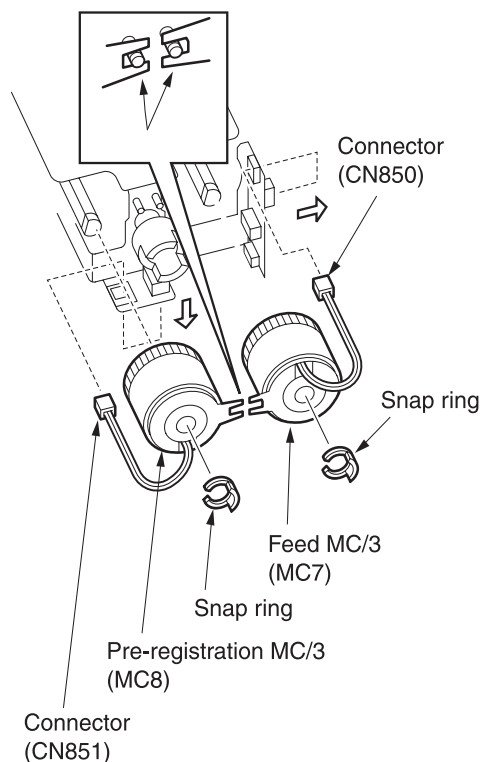
Check that no grease or the like remains on the separation roller.

Replacing the pre-registration and feed clutches (MCs)

Procedure

- 1 Remove the paper feed unit.
- 2 Remove two connectors (CN850, 851).

- 3 Remove two snap rings to detach the pre-registration MC/3 (MC8) and feed MC/3 (MC7).



- 4 Reinstall the above parts following the removal steps in reverse.

CAUTION

When reinstalling each MC, fit the detent in the slit in the MC.

Replacing the wires

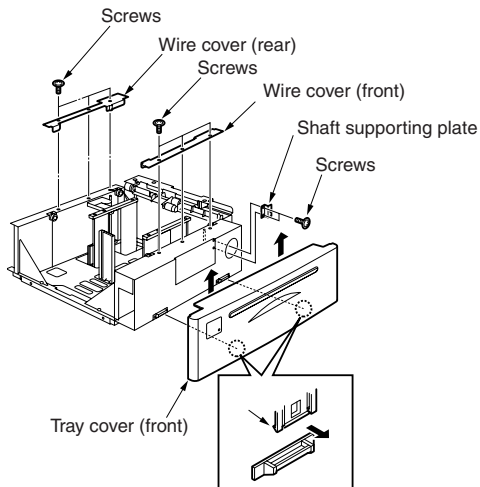
CAUTION

After replacing or reinstalling the wires, manually rotate the up/down drive shaft to check that the tray moves up and down smoothly.

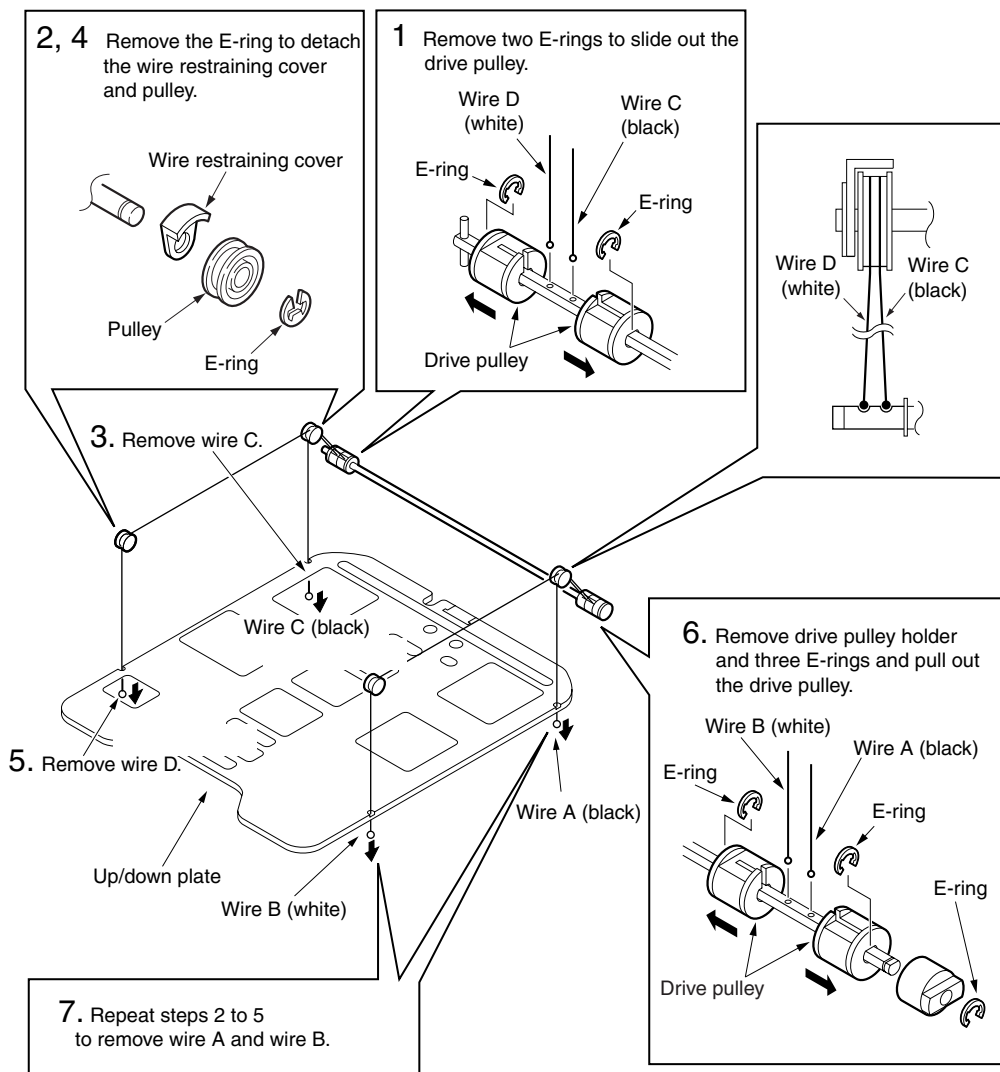
Be sure to install the wires so that they do not cross or ride over each other.

Procedure

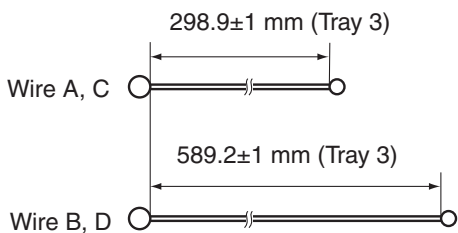
- 1 Remove the paper feed unit.
- 2 Remove two claws to remove the tray front cover.
- 3 Remove two screws to remove shaft supporting plate.
- 4 Remove three screws to remove the wire cover (front) and wire cover (rear).



- 5 Remove the front and rear wires according to steps 1 to 7 below.

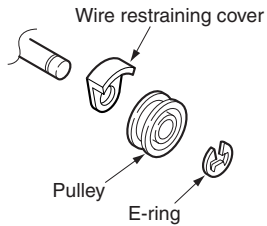


Wire lengths

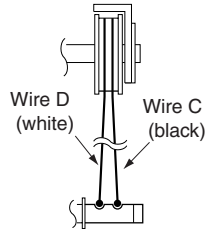


Installing wires

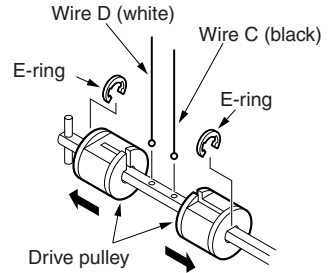
2. Install the pulley, pass wire D through the pulley, and install the wire restraining cover and E-ring.



4. Install the pulley, pass wires C and D, and install the wire restraining cover and retaining ring. Wire D must be inside. Wires must not cross.



5. Install the wires C and D from inside the drive shaft hole, push in the drive pulley, and secure with E-rings.



3. Pass wire C through the up/down plate.

1. Pass wire D through the up/down plate.

Up/down plate

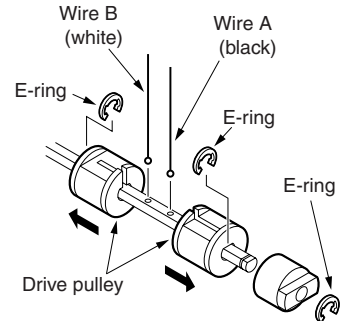
Wire B (white)

Wire C (black)

Wire A (black)

6. Repeat steps 1 to 4 to install wire A and wire B.

7. Install the wires A and B from inside the drive shaft hole, push in the drive pulley, and secure with E-rings. Next, install the drive pulley holder.



Tray 1

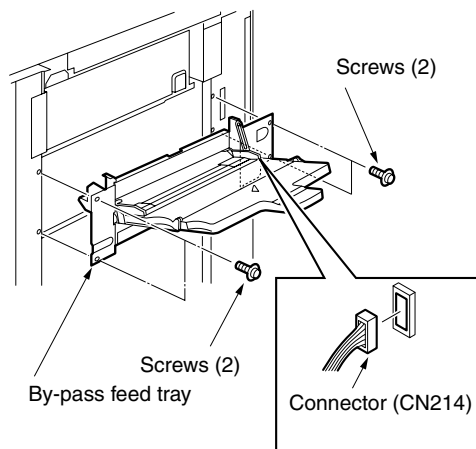
Removing and reinstalling Tray 1

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Remove the developing suction filter cover and right side cover (upper). See "External section" on page 132.
- 2 Remove connector (CN214).
- 3 Remove four screws to remove Tray 1.



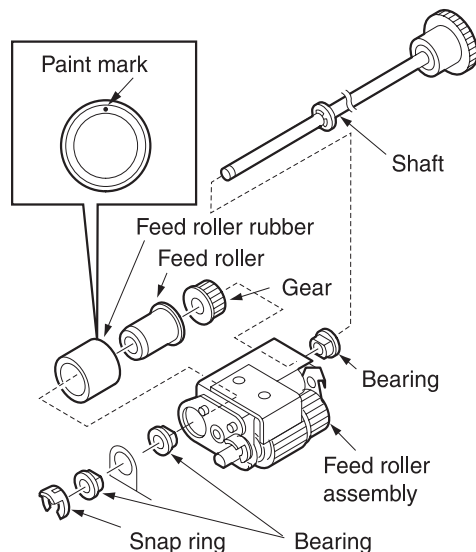
- 4 Reinstall the above parts following the removal steps in reverse.

Replacing the paper pick roller/paper pick roller rubber

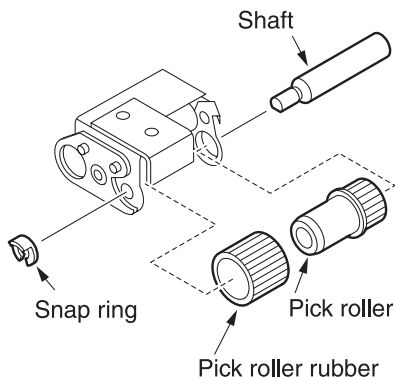
Procedure

- 1 Remove Tray 1.
- 2 Remove the snap ring and bearing and pull out the shaft from the paper pick roller.

- 3 Remove the two bearings and one gear and remove the paper pick roller rubber from the paper pick roller.



- 4 Remove the snap ring from the paper pick roller assembly to pull out the shaft and remove the paper pick roller rubber from the paper pick roller.



- 5 Reinstall the above parts following the removal steps in reverse.

CAUTION

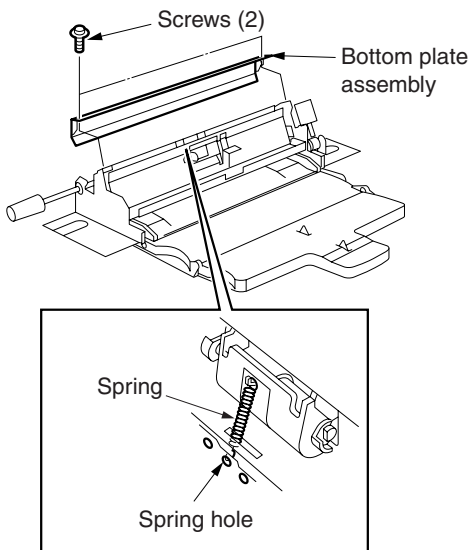
Check that the orientation of the roller is correct when installing.

Check that no grease or the like remains on the roller.

Replacing the separation roller rubber

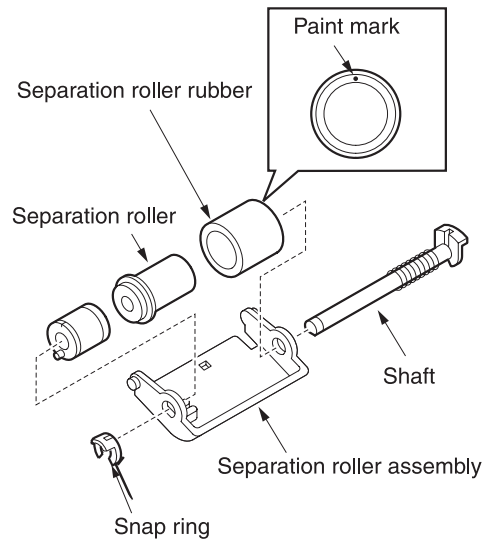
Procedure

- 1 Remove Tray 1 and place the tray upside down.
- 2 Remove two screws to remove the bottom plate assembly.
- 3 Remove the spring.



- 4 Remove the separation roller assembly from Tray 1.

- 5 Remove the snap ring to pull out the shaft and remove the separation roller rubber from the separation roller.



- 6 Reinstall the above parts following the removal steps in reverse.

CAUTION

Check that the orientation of the separation roller is correct when installing.

Check that no grease or the like remains on the separation roller.

There are three spring holes. Insert the spring in the middle hole.

Vertical conveyance section

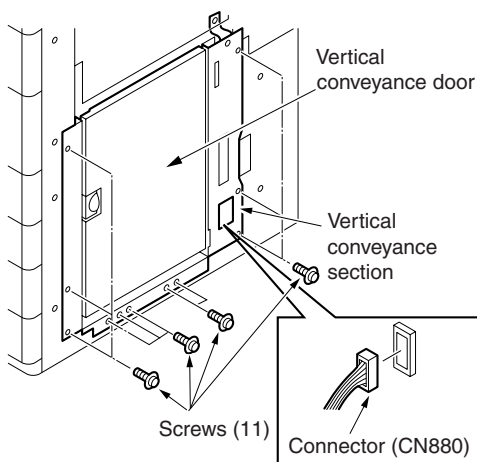
Removing and reinstalling the vertical conveyance section

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Remove all right side covers. See "External section" on page 132.
- 2 Disconnect the connector (CN880).
- 3 Remove eleven screws to remove the vertical conveyance section.



- 4 Reinstall the above parts following the removal steps in reverse.

CAUTION

When installing the vertical conveyance section, be sure to secure the screws with the vertical conveyance door closed.

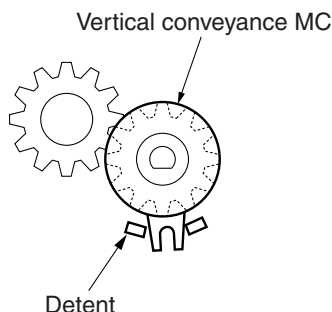
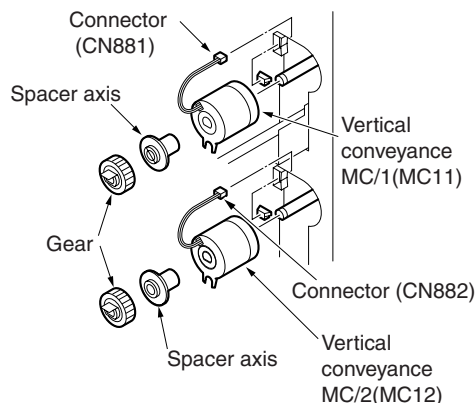
Removing and reinstalling the vertical conveyance MC (MC11, MC12)

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Remove the vertical conveyance section.
- 2 Remove the gear lock to remove the two gears and two spacer axes.
- 3 Disconnect the two connectors (CN881, CN882) to remove the wiring harness from the harness guide.
- 4 Remove each MC.



5 Reinstall the above parts following the removal steps in reverse.

CAUTION

When installing, be sure the detent of the clutch is at the position shown above.

ADF unit

Pulling out and reinstalling the ADU stand

WARNING!

The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

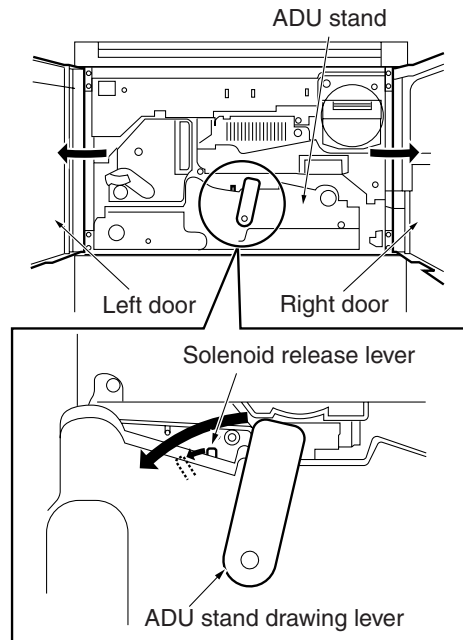
CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Open the front right and left doors.
- 2 With the solenoid release lever on the ADU stand pushed to the left, turn down the ADU pulling lever to the left.

- 3 Grip the ADU stand pulling lever and pull out the ADU stand.



- 4 To reinstall the ADU stand, push in the ADU stand and then turn the ADU stand pulling lever upright.

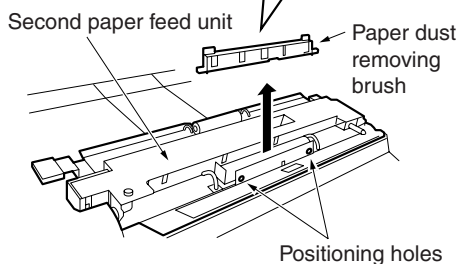
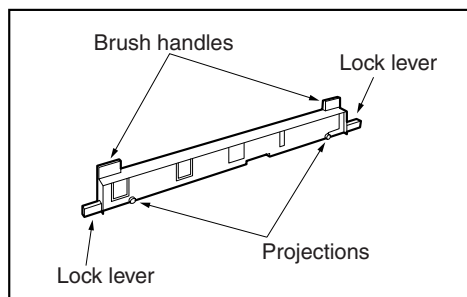
Cleaning the paper dust removing brush

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

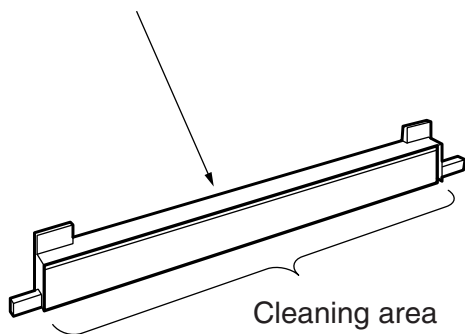
Procedure

- 1 Pull out the ADU stand from the MFP.
- 2 Release the left and right lock levers, lift the brush handles by the handles to remove the paper dust removing brush.



- 3** Using a blower brush, clean the paper dust removing brush.

Paper dust removing brush



- 4** Reinstall the above parts following the removal steps in reverse.

CAUTION

When installing, align the projection on the paper dust removing brush with the positioning hole on the second paper feed unit.

Cleaning the paper mis-centering PS (PS70)/leading edge PS (PS43)

WARNING!

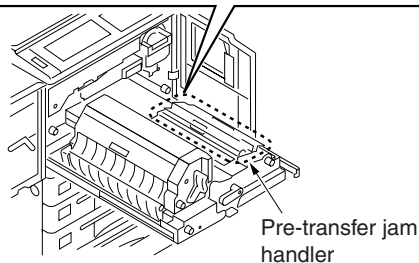
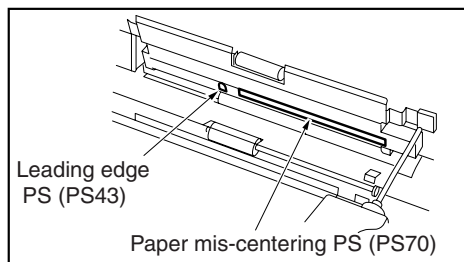
The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out the ADU stand from the MFP.
- 2 Open the pre-transfer jam handler. Clean the sensor of the paper mis-centering PS (PS70) and leading edge PS (PS43) at the rear of the pre-transfer jam handler using a drum cleaner or cleaning pad.



- 3 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the registration MC (MC1)

WARNING!

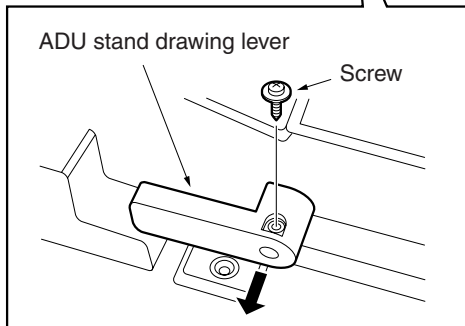
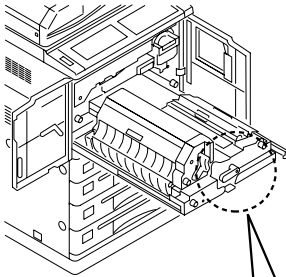
The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

CAUTION

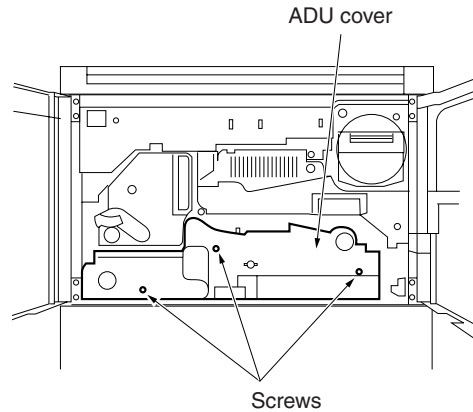
Be sure the power cord has been unplugged from the wall outlet.

Procedure

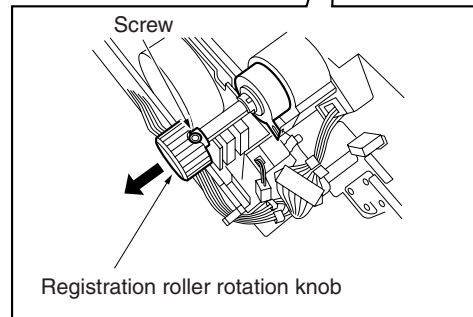
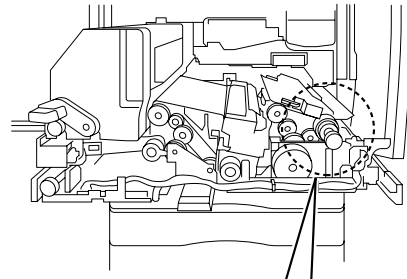
- 1 Pull out the ADU stand from the MFP.
- 2 Remove one screw to remove the ADU stand pulling lever.



- 3 Remove three screws to remove the ADU cover.



- 4 Remove one screw and remove the registration roller rotation knob.



5 Disconnect the inline connector (CN422).

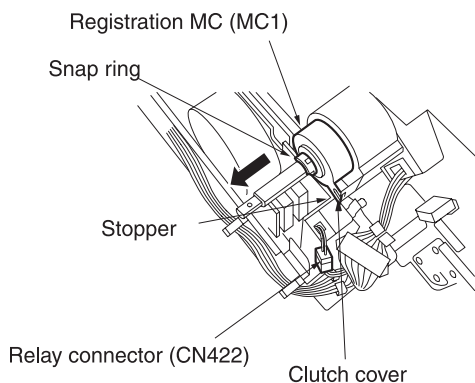
CAUTION

An inline connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the CN422 connector.

6 Remove the snap ring to detach the registration MC (MC1).

CAUTION

When reinstalling, be sure the detent of the clutch is in the clutch cover groove.



7 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the second paper feed unit (registration assembly)

WARNING!

The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

CAUTION

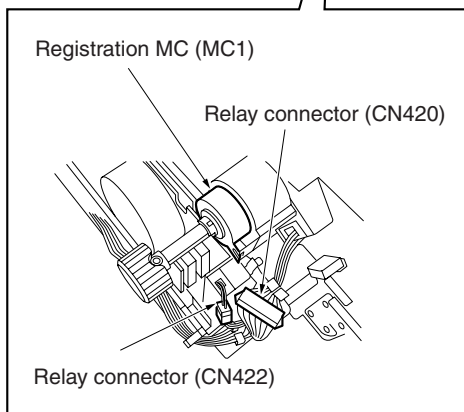
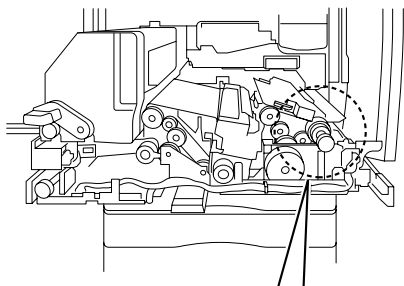
Be sure the power cord has been unplugged from the wall outlet.

Procedure

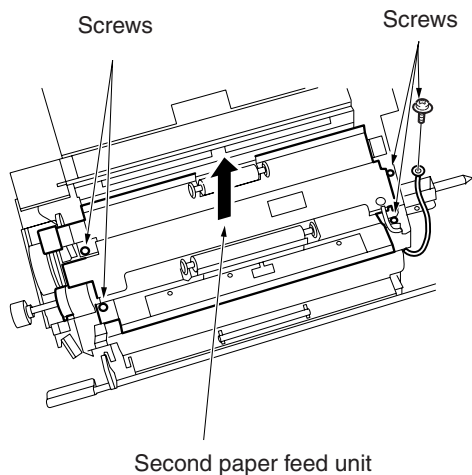
- 1 Pull out the ADU stand from the MFP.
- 2 Detach the ADU cover.
- 3 Disconnect the two inline connectors (CN420, 422), and disconnect the inline connector from the wiring harness.

CAUTION

Each inline connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the connector.



- 4 Remove five screws to remove the second paper feed unit.



- 5 Reinstall the above parts following the removal steps in reverse.

Cleaning the registration PS (PS44)

WARNING!

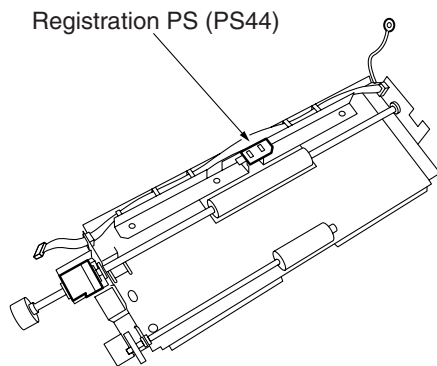
The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out the ADU stand from the MFP.
- 2 Detach the ADU cover.
- 3 Remove the second paper feed unit
- 4 Turn the second paper feed unit upside down and clean the registration PS (PS44) with a blower brush.



- 5 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the registration roller

WARNING!

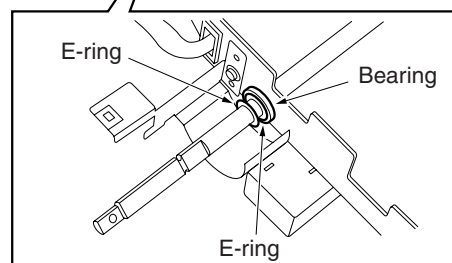
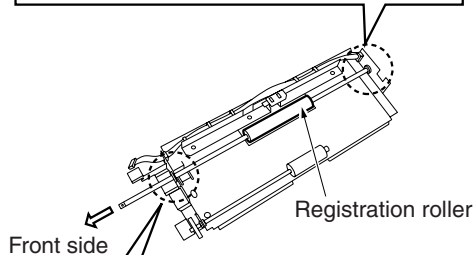
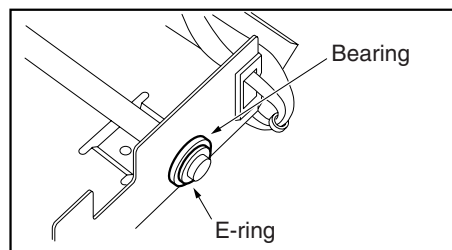
The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

CAUTION

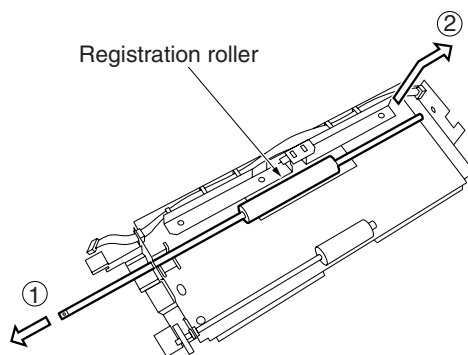
Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1)Pull out the ADU stand from the MFP.
- 2 Detach the ADU cover.
- 3 Remove the second paper feed unit
- 4 Remove the registration MC (MC1).
- 5 Turn the second paper feed unit upside down and remove the E-ring on the front of the registration roller.
- 6 Remove the two E-rings (one on the left and the other on the right) and one bearing from the registration roller.



- 7 Slide the registration roller to the front, then remove it by lifting the rear end.



- 8 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the pre-transfer roller

WARNING!

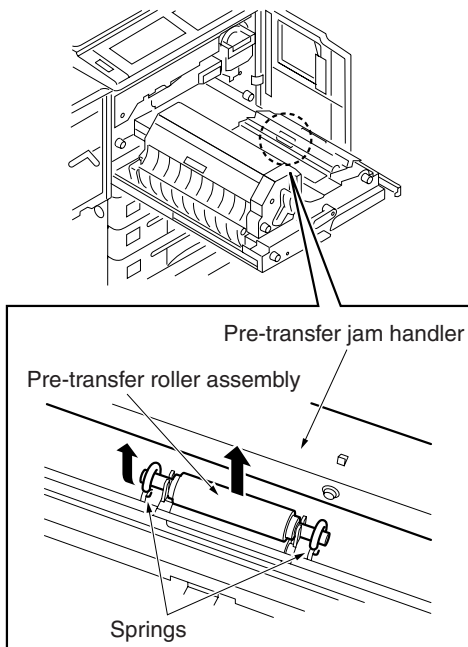
The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

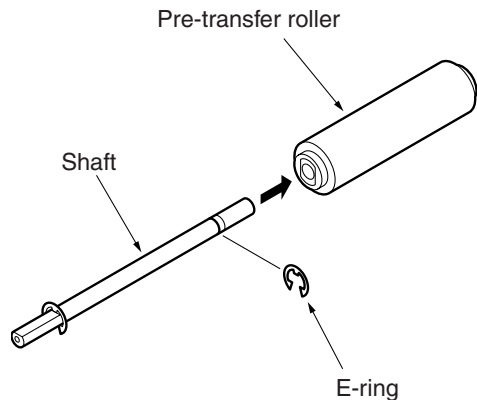
- 1 Pull out the ADU stand from the MFP.
- 2 Remove the two springs.
- 3 Open the pre-transfer jam handler to remove the pre-transfer roller assembly.



- 4 Remove the E-ring to remove the pre-transfer roller from the shaft.

CAUTION

When reinstalling, pay attention to the position of the E-ring.



- 5 Reinstall the above parts following the removal steps in reverse.

Cleaning the automatic document feeder paper reverse PS (PS45)/ Reverse/Exit PS (PS46)

WARNING!

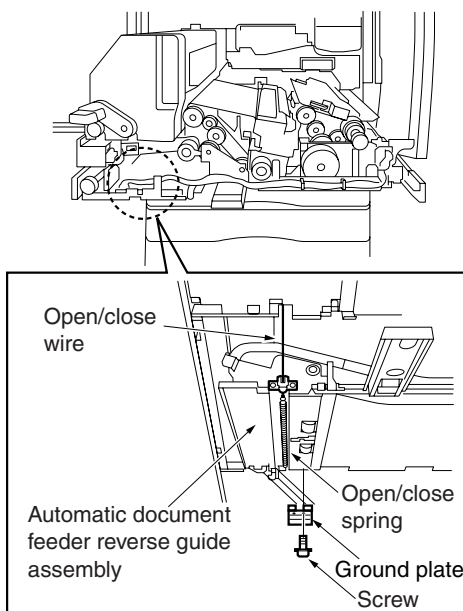
The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out the ADU stand from the MFP.
- 2 Remove the fuser. See "Fuser" on page 208.
- 3 Remove the ADU cover.
- 4 Remove one screw to remove the ground plate.
- 5 Remove the open/close spring from the paper exit side open/close wire.

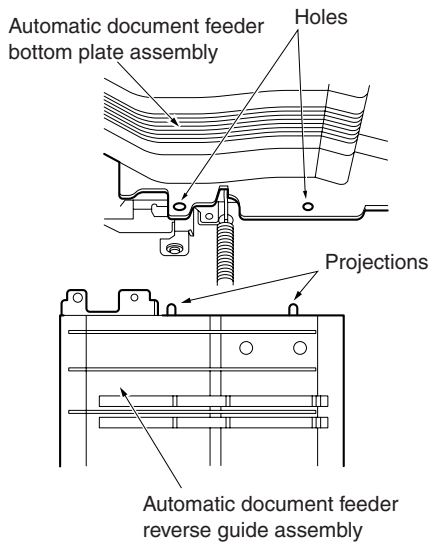
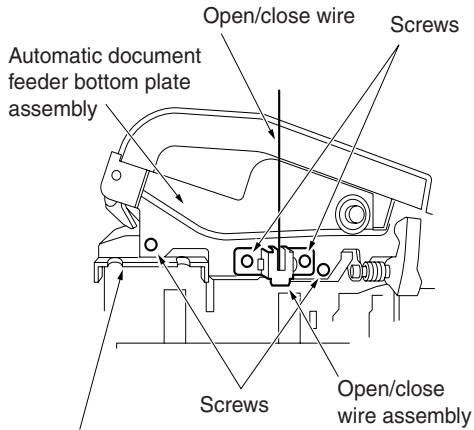


- 6 Remove two screws to remove the open/close wire assembly.

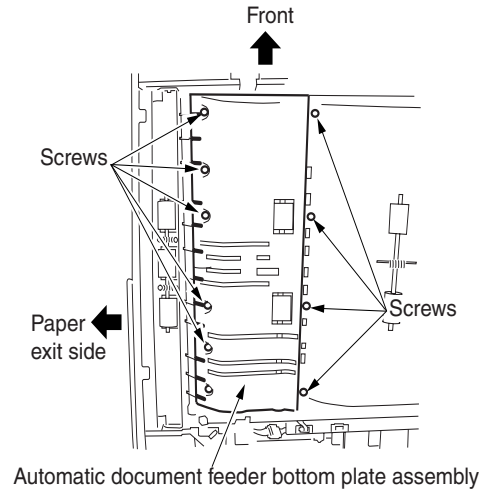
- 7 Remove two screws to remove the ADU reverse guide assembly.

CAUTION

When reinstalling, align the projection on the rear of the ADU reverse guide assembly with the hole on the ADU bottom plate assembly.



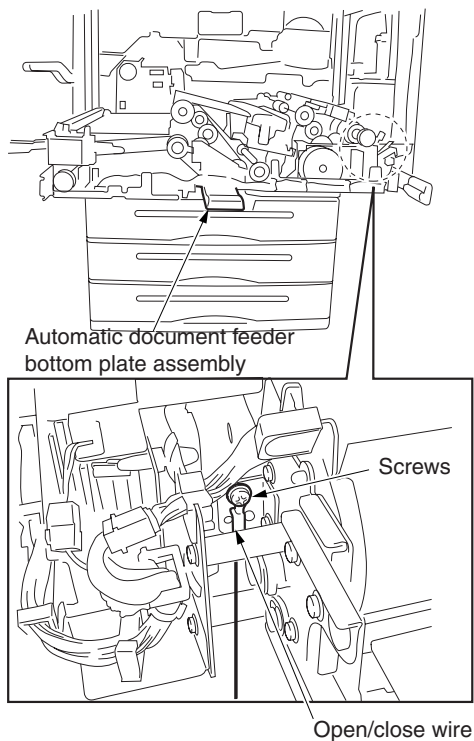
- 8 Remove the nine screws illustrated from the bottom of the ADU stand.



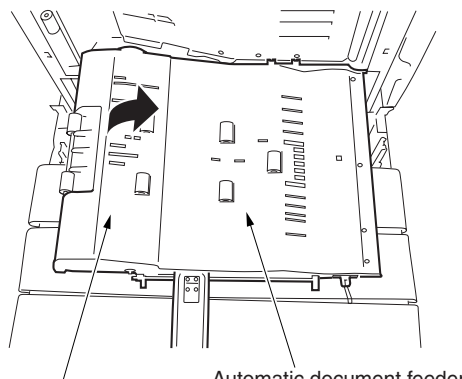
- 9** Remove one screw while holding the ADU bottom plate assembly to remove the paper feed side open/close wire.

CAUTION

Be sure to hold ADU bottom plate assembly when removing the screws because the ADU bottom plate assembly becomes free when the paper feed side open/close wire is removed.

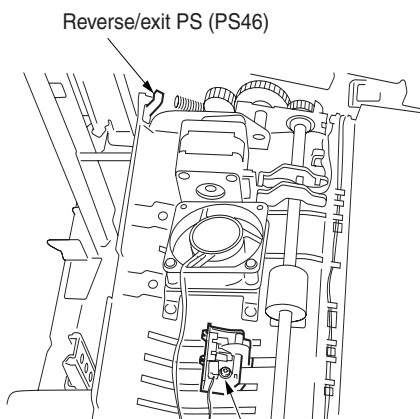


- 10** Lower the ADU bottom plate assembly straight down and remove the ADU guide cover.



Automatic document feeder bottom plate assembly
feeder guide cover

- 11** Clean the ADU paper reverse PS (PS45) and reverse/exit PS (PS46) with a blower brush.



Automatic document feeder paper reverse PS (PS45)

- 12** Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the ADF reverse roller

WARNING!

The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

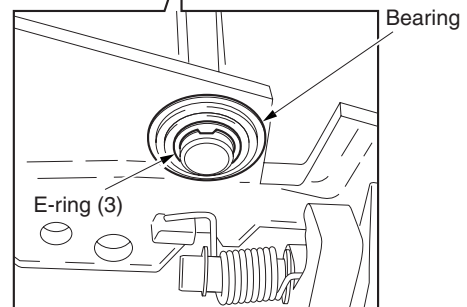
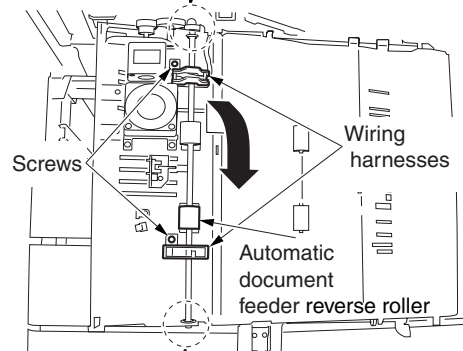
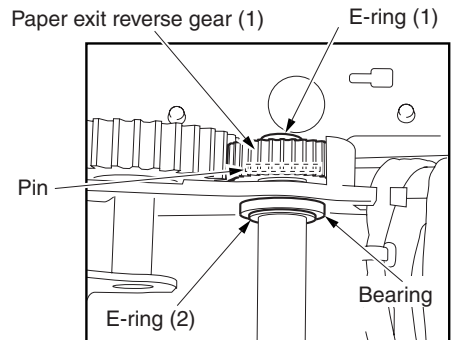
CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out the ADU stand from the MFP.
- 2 Remove the fuser. See “Fuser” on page 208.
- 3 Remove the ADU cover.
- 4 Remove the ADU guide cover.
- 5 Remove the screw to remove two wiring harnesses.
- 6 Remove E-ring (1) to remove the paper eject reverse gear (1) and pin.
- 7 Remove E-ring (2) to remove the rear side bearing.
- 8 Remove E-ring (3) to remove the front side bearing.

- 9 Slide the ADU reverse roller to the upper side and then to the lower side to slide it out.



- 10 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the ADU stand

WARNING!

The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

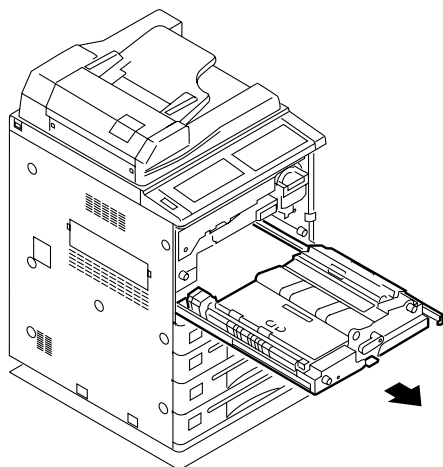
Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out the ADU stand from the MFP.
- 2 Remove the fuser. See "Fuser" on page 208.
- 3 Remove the transfer/separation corona unit. See "Corona unit" on page 159.
- 4 Remove the second paper feed unit.
- 5 Remove the front right door and the front left door. See "External section" on page 132.

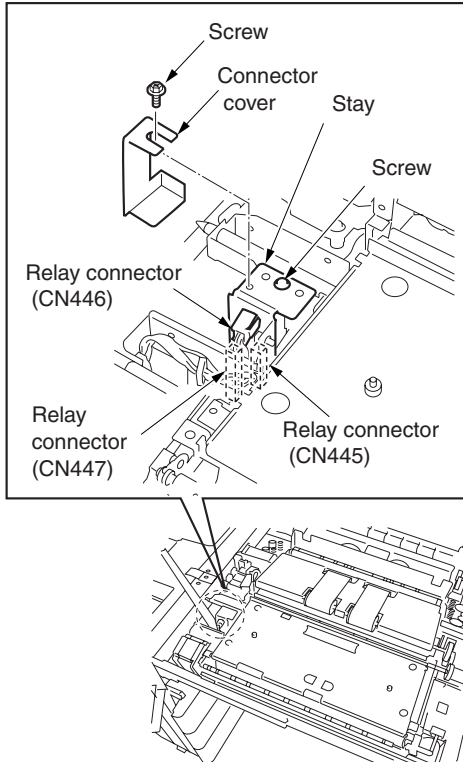


- 6 Remove one screw to remove the connector cover.
- 7 Remove the screw to loosen the stay.

- 8 Disconnect the three inline connectors (CN445, 446, 447).

CAUTION

Disconnect each connector on the ADU stand.



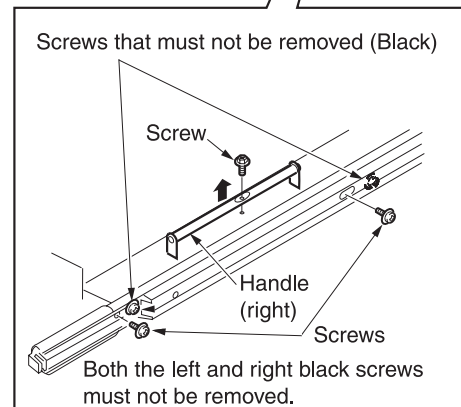
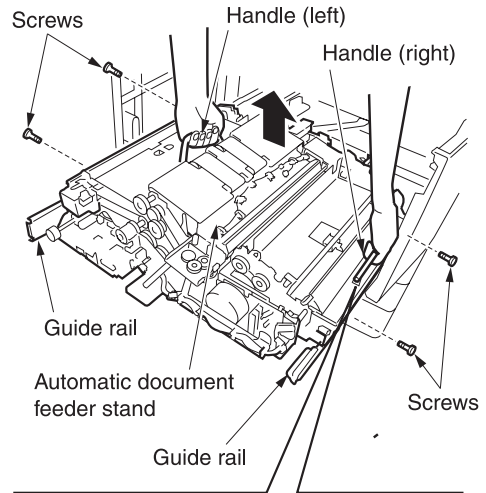
- 9 Remove one screw to release the lock of the handle (right).

- 10 Remove the two screws securing the guide rails on the paper feed side and paper exit side.

CAUTION

Do not mistake the screws securing the guide rails for screws (black) that must not be removed. (Black screws must not be removed)

- 11 To remove the ADU stand, one person holds the handle (right) on the paper-feed side, and the other holds the handle (left) on the fuser. Then, they lift up the ADU stand.



- 12 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the pre-registration roller

WARNING!

The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

WARNING!

Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

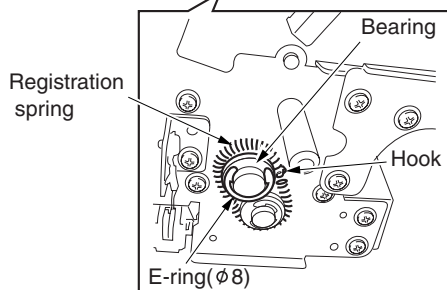
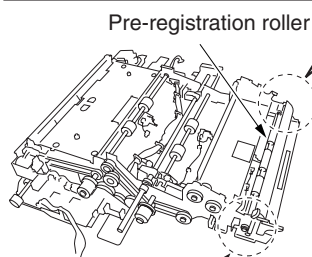
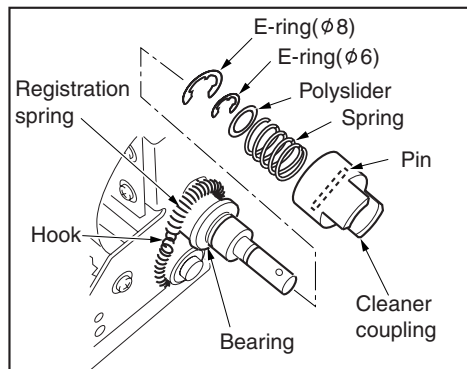
- 1 Remove the front and rear registration springs.

CAUTION

When reinstalling, pay attention to the location of the registration spring hook.

- 2 Remove the E-ring ($\phi 6$)
- 3 Press the cleaner coupling and pull out the pin.
- 4 Remove the spring.
- 5 Remove the front and rear E-rings ($\phi 8$) and remove each bearing.

- 6 Slide the ADU pre-registration roller back and forth to remove.



- 7 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the ADU conveyance roller 3 and 4

WARNING!

The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

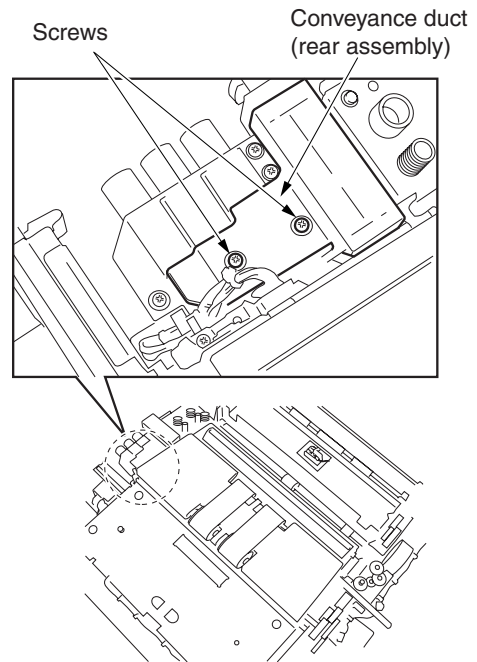
CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out the ADU stand from the MFP.
- 2 Remove the fuser. See “Fuser” on page 208.
- 3 Remove the transfer/separation corona unit. See “Corona unit” on page 159.
- 4 Remove the second paper feed unit.
- 5 Remove the ADU stand.

- 6 Remove two screws to detach the conveyance duct (rear assembly).

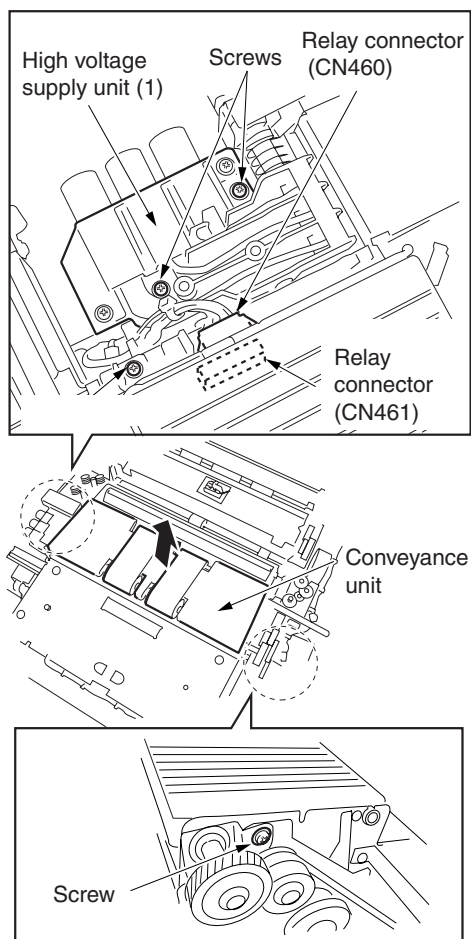


- 7 Remove two screws to release the high voltage supply unit (1).
- 8 Disconnect the two connectors (CN460, 461).

CAUTION

Each inline connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the connector.

- 9 Remove two screws to remove the conveyance unit.

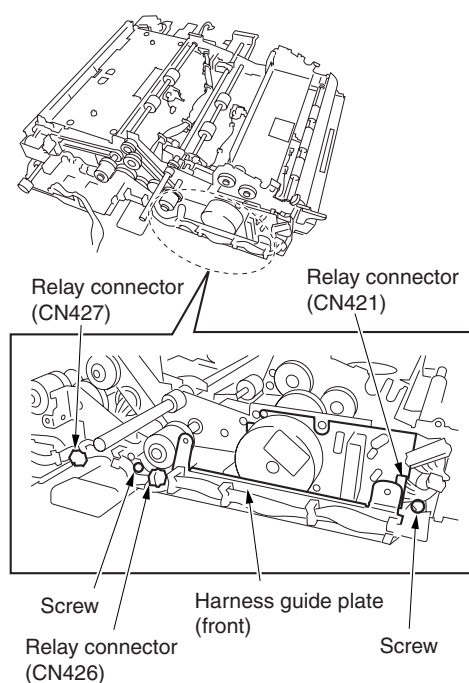


- 10 Disconnect the three connectors (CN421, 426, 427).

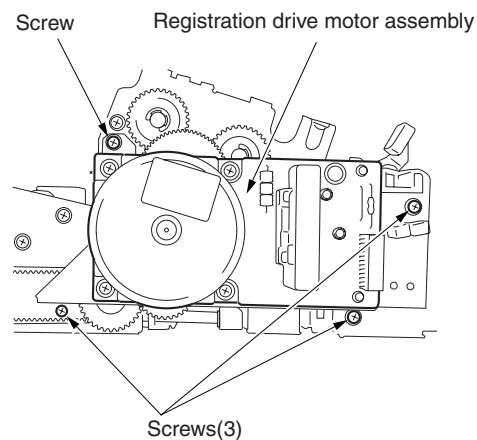
CAUTION

Each inline connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the connector.

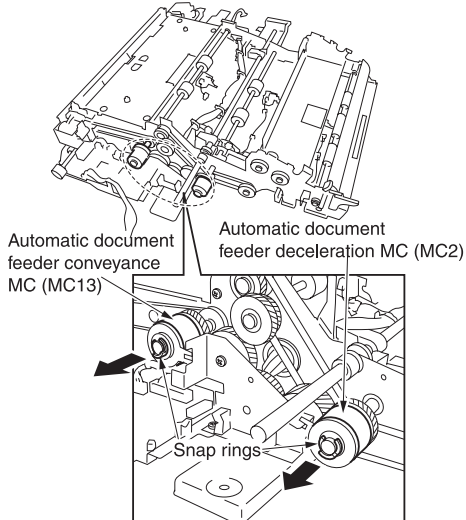
- 11 Remove two screws to remove the harness guide plate (front).



- 12 Remove four screws to detach the registration drive motor assembly.



- 13** Remove the snap rings to remove the ADU deceleration MC (MC2) and ADU conveyance MC (MC13).



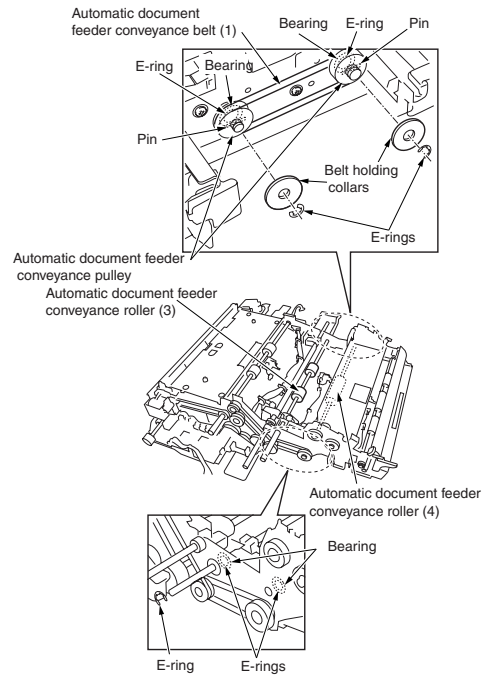
- 14** Remove the E-ring at the rear, two belt holding collars, ADU conveyance belt (1), and two ADU conveyance pulleys.

- 15** Remove the pin from each roller shaft.

- 16** Remove the E-ring and bearing on the inside of the ADU conveyance pulley.

- 17** Remove the E-ring on the ADU conveyance roller (3) shaft.

- 18** Remove the front E-ring and bearing, and remove the ADU conveyance roller (3) and ADU conveyance roller (4) by sliding them back and forth.



- 19** Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the ADU conveyance roller 1 and 2

WARNING!

The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

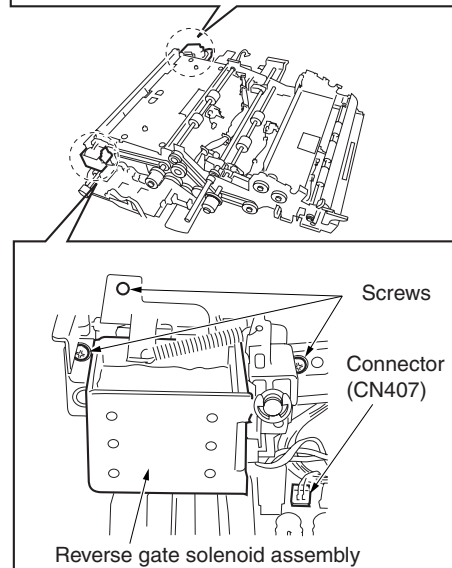
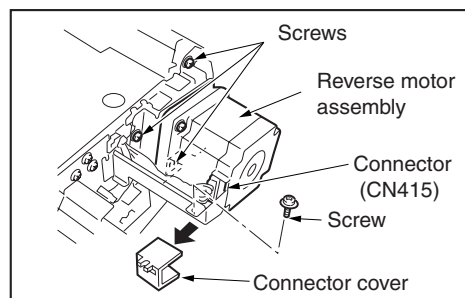
CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out the ADU stand from the MFP.
- 2 Remove the fuser. See "Fuser" on page 208.
- 3 Remove the transfer/separation corona unit. See "Corona unit" on page 159.
- 4 Remove the second paper feed unit.
- 5 Remove the ADU stand.
- 6 Remove the conveyance unit.
- 7 Remove the ADU conveyance MC (MC13).
- 8 Disconnect the connector (CN407).
- 9 Remove three screws to detach the reverse gate solenoid assembly.
- 10 Remove one screw to remove the connector cover.

- 11 Remove three screws to detach the reverse motor assembly.



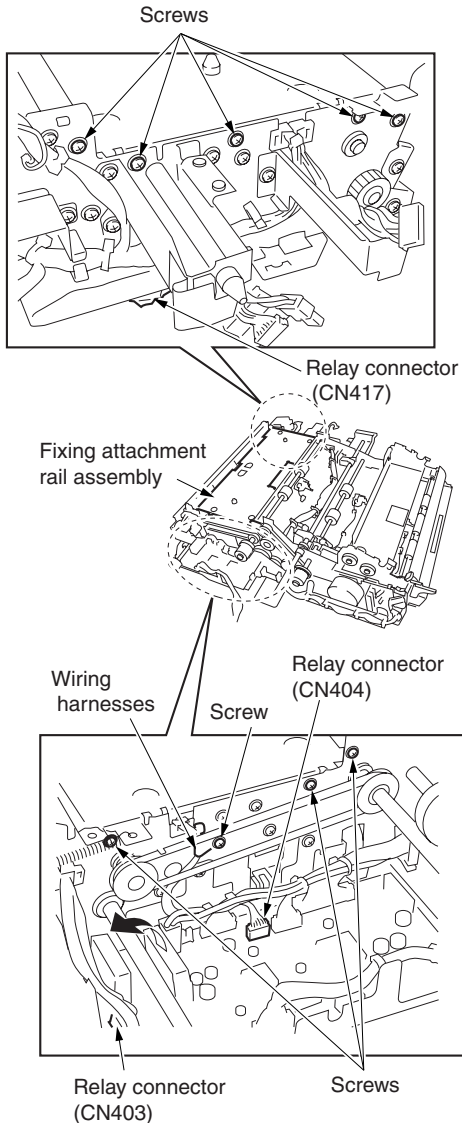
- 12 Disconnect the two connectors (CN403, 404).
- 13 Disconnect the connector (CN415).
- 14 Disconnect the connector (CN417).

CAUTION

Each inline connector consists of two male sides and one female side. Be sure to remove only the male side (shown below) of the connector.

- 15 Remove one screw to remove the wiring harness for CN404.

- 16** Remove eight screws (three front, five rear) and turn over the fusing attachment rail assembly to the paper exit side.

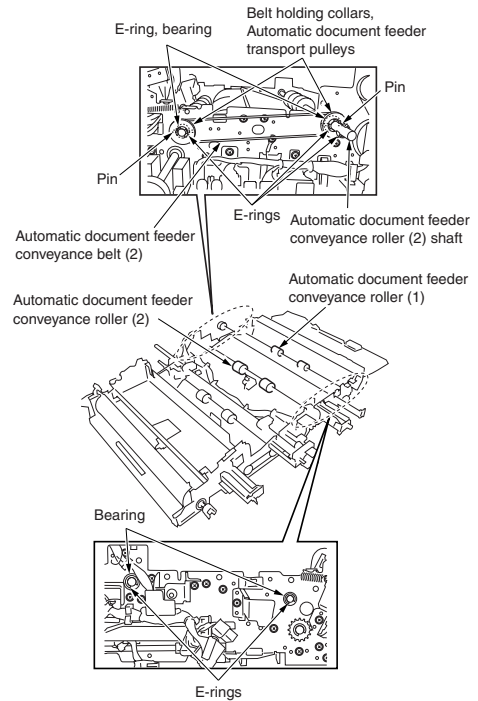


- 17** Remove the E-ring from ADU conveyance roller (2) shaft.
- 18** Remove the front E-ring, two belt holding collars, ADU conveyance belt (2), and two ADU conveyance pulleys.

- 19** Remove the pin from the shaft of each roller.

- 20** Remove the E-ring and bearing inside the ADU conveyance pulley.

- 21** Remove the rear E-ring and bearing, and remove the ADU conveyance roller (1) and ADU conveyance roller (2) by sliding them back and forth.



- 22** Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the paper reverse/exit roller

WARNING!

The interlock, which is turned off when the front right or left door opens or closes, should never be turned on forcibly with the ADU stand pulled out.

WARNING!

Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

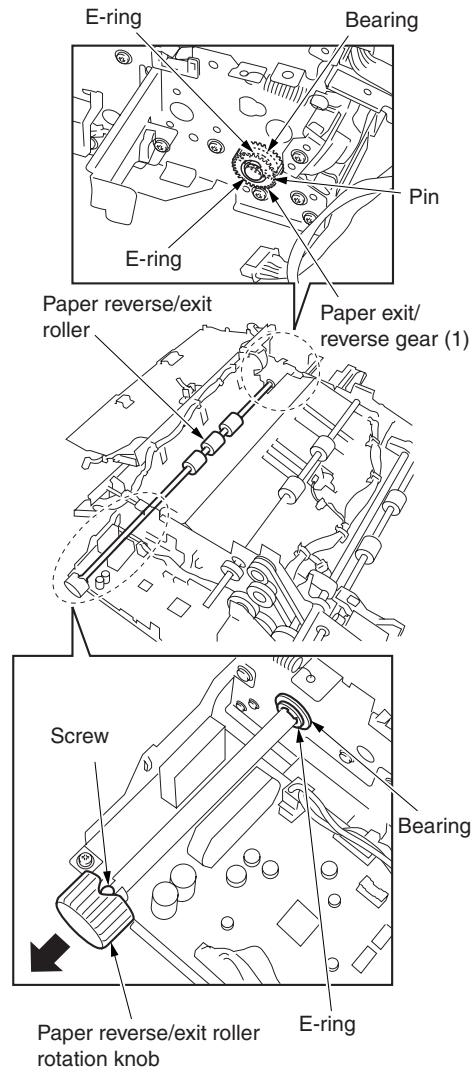
CAUTION

Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out the ADU stand from the MFP.
- 2 Remove the fuser. See "Fuser" on page 208.
- 3 Remove the transfer/separation corona unit. See "Corona unit" on page 159.
- 4 Remove the second paper feed unit.
- 5 Remove the ADU stand.
- 6 Remove the conveyance unit.
- 7 Remove the ADU conveyance roller (1).
- 8 Remove the screw to remove the paper reverse/exit roller rotation knob.
- 9 Remove the front E-ring and remove the bearing.
- 10 Remove the rear E-ring to remove the paper exit reverse gear (1) and pin.
- 11 Remove the E-ring and remove the bearing.

- 12 Remove the paper reverse/exit roller by sliding it back and forth.



- 13 Reinstall the above parts following the removal steps in reverse.

Fuser

Removing and reinstalling the fuser

WARNING!

Do not touch the fuser immediately after turning off the main power switch because it is very hot and you may suffer burns. Wait until the fuser has cooled down sufficiently before working on it.

CAUTION

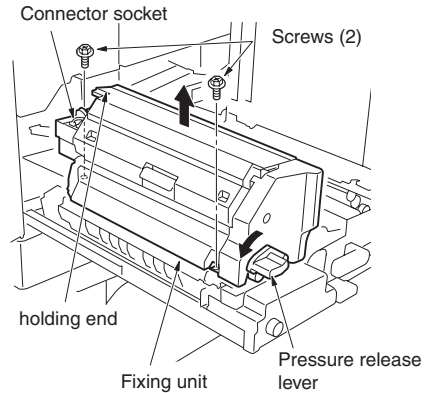
Be sure the power cord has been unplugged from the wall outlet.

Procedure

- 1 Pull out the ADU stand. See “Pulling out and reinstalling the ADU stand” on page 188.
- 2 Turn the pressure release lever counterclockwise to release the pressure.
- 3 Remove two screws and remove the fuser by lifting.

CAUTION

Do not hold the connector socket. Remove by holding the pressure release lever and the holding end at the far side.



- 4 Reinstall the above parts following the removal steps in reverse.

CAUTION

After installing the fuser, turn the pressure release lever clockwise and return it to the original position.

Removing and reinstalling the fuser (top)

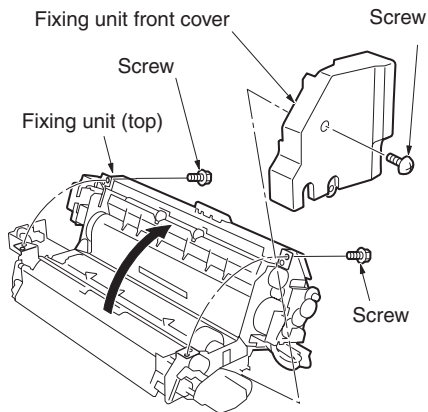
CAUTION

Before opening the fuser (top), check that the pressure release lever is turned counterclockwise and the bottom roller pressure is released.

Procedure

- 1 Remove the fuser.
- 2 Remove one screw to detach the fuser front cover.

- 3** Remove two screws to open the fuser (top).

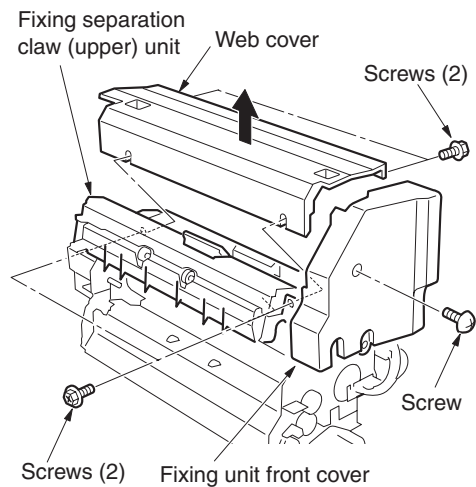


- 4** Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the web cover

Procedure

- 1** Remove the fuser.
- 2** Remove the fuser front cover.
- 3** Open the fusing separation claw (upper unit) and remove two screws inside.
- 4** Remove two screws to detach the web cover.

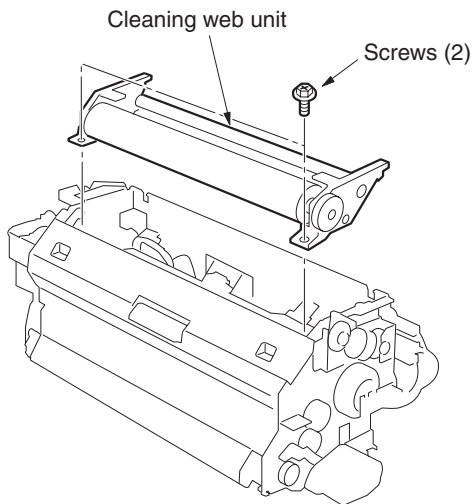


- 5** Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the cleaning web

Procedure

- 1 Pull out the ADU stand. See "Pulling out and reinstalling the ADU stand" on page 188.
- 2 Remove the web cover.
- 3 Remove two screws to remove the cleaning web unit.



- 4 Reinstall the above parts following the removal steps in reverse.

CAUTION

When reinstalling, make sure the cleaning web does not sag.

When reinstalling, wind it until the red line of the cleaning web is fully wound to the take-up shaft.

After replacing the cleaning web, make sure to reset the count value of the fuser cleaning web by "Copy count by parts to be replaced (fixed parts)" in the 2-5 mode.

Replacing the fusing heater lamps (L2, L3)

CAUTION

Do not touch the fusing heater lamp with bare hands.

Install the heater lamp with the manufacturers mark facing the rear.

The heater lamp should not touch the inner surface of the upper roller.

When replacing the heater lamp, be sure to insert the lamp end in the lamp terminal securely. Also, check that the Faston terminals are connected correctly.

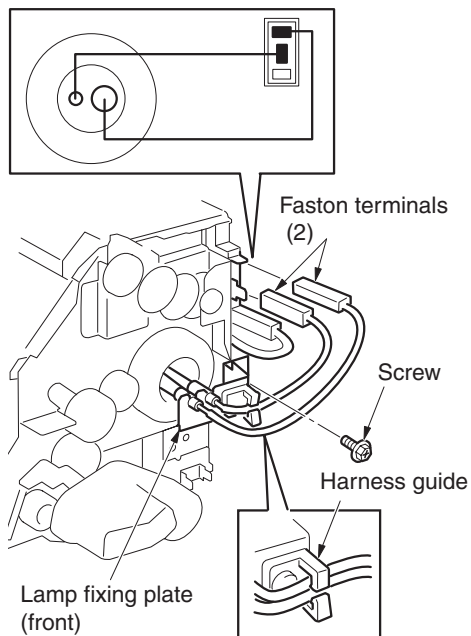
Procedure

- 1 Remove the fuser.
- 2 Remove the fuser front cover.
- 3 Remove the screw at the front to remove the lamp fusing plate (front).

- 4 Remove the front lamp harness from the harness guide to remove the two Faston terminals.

CAUTION

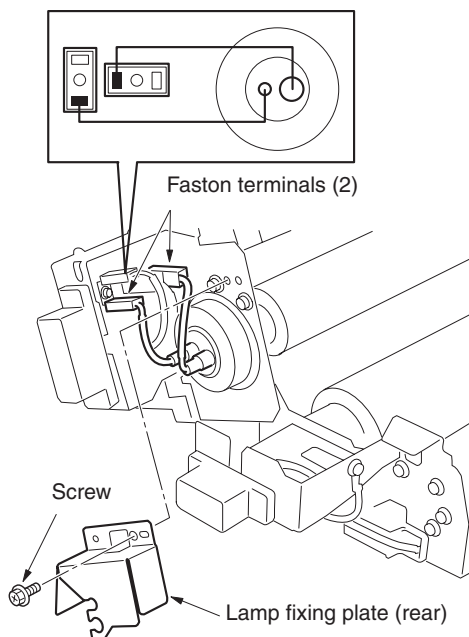
When removing the Faston terminals, be sure to hold the connector. The connector cannot be removed by pulling on the harness.



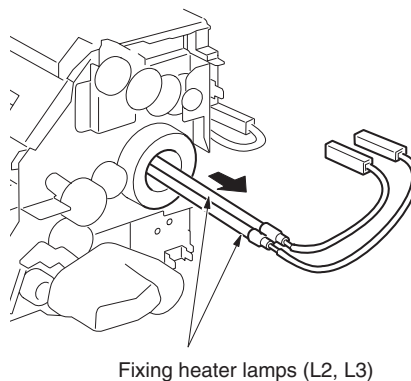
- 5 Open the fuser (top).
- 6 Remove the screw at the far side to remove the lamp fusing plate (rear).
- 7 Remove the two Faston terminals of the far side lamp.

CAUTION

When removing the Faston terminals, be sure to hold the connector. The connector cannot be removed by pulling on the harness.



- 8 Pull out the fusing heater lamps (L2, L3) from the front side of the fusing upper roller.



- 9 Reinstall the above parts following the removal steps in reverse.

CAUTION

When installing the lamps, pay attention to their orientation. The size of the lamp terminal mounting hole in the front lamp fusing plate is different from that in the rear lamp fusing plate. The lamp cannot be installed properly if it is facing the opposite direction.

Replacing the fusing heater lamp (L4)

CAUTION

Do not touch the fusing heater lamp with bare hands.

Install the heater lamp with the manufacturers mark facing the rear.

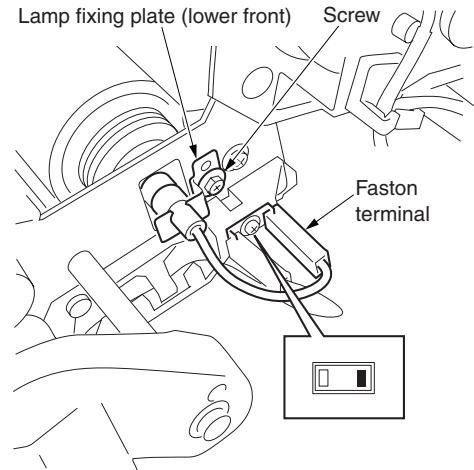
The heater lamp should not touch the inner surface of the upper roller.

When replacing the heater lamp, be sure to insert the lamp end in the lamp terminal securely. Also, check that the Faston terminals are connected properly.

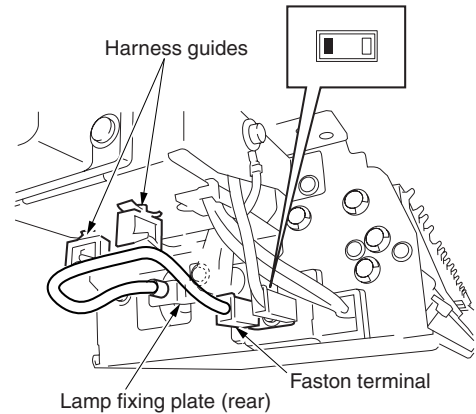
Procedure

- 1 Open the fusing cover (upper).
- 2 Remove the screw at front to remove the lamp fusing plate (lower front).

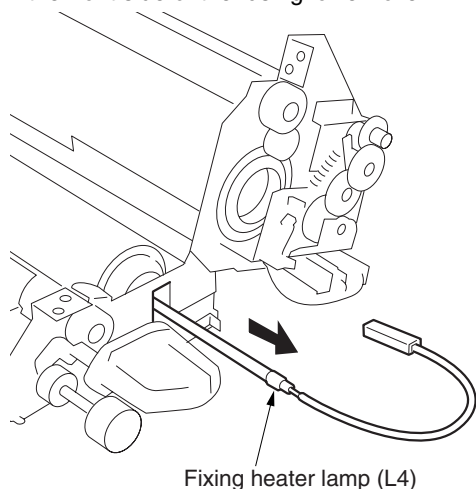
- 3 Remove the Faston terminal.



- 4 Remove the rear lamp harness from the two harness guide to remove the Faston terminal.



- 5 Pull out the fusing heater lamp (L4) from the front side of the fusing lower roller.



Fixing heater lamp (L4)

- 6 Reinstall the above parts following the removal steps in reverse.

CAUTION

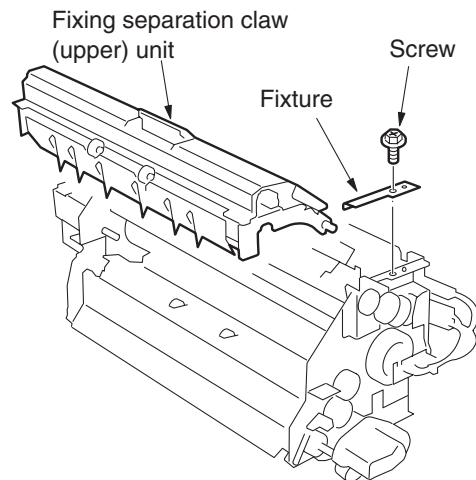
When installing the lamp, pay attention to its orientation. The lamp cannot be installed properly if it is facing the opposite direction.

Removing and reinstalling the fusing separation claw (upper) unit and fusing separation claws (upper)

Procedure

- 1 Remove the fuser.
- 2 Remove the fuser front cover.
- 3 Remove the web cover.
- 4 Remove the screw to detach the fixture.

- 5 Remove the fusing separation claw (upper) unit



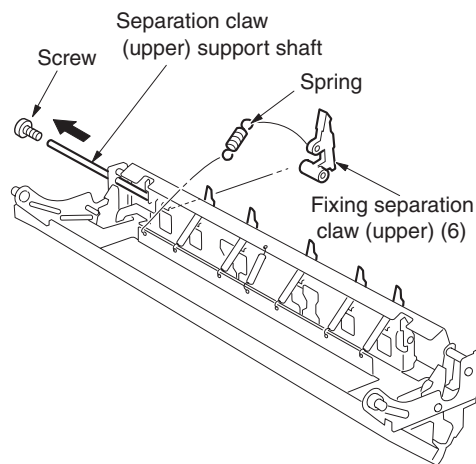
- 6 Remove the screw to remove the upper separation claw support shaft from the fusing separation claw (upper) unit.

CAUTION

Be careful when removing the shaft because it bends easily.

- 7 Remove six springs attached to the fusing separation claw (upper) unit.

- 8 Remove six fusing separation claws (upper).



- 9 Reinstall the above parts following the removal steps in reverse.

CAUTION

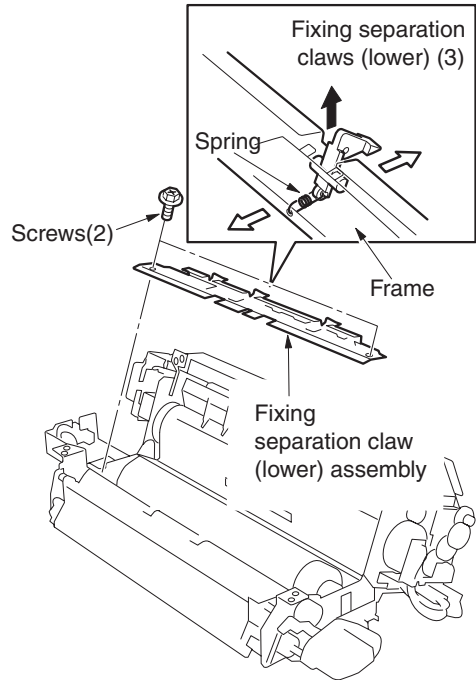
After installing the fusing separation claw (upper), move the upper claws with your finger and check that they return with the force of the spring.

Removing and reinstalling the fusing separation claw (lower) unit and fusing separation claws (lower)

Procedure

- 1 Remove the fuser.
- 2 Open the fuser (upper).
- 3 Remove two screws to detach the fusing separation claw (lower) assembly.
- 4 Remove the three springs from the three fusing separation claws (lower).

- 5 Slide the frame holding the fusing separation claws (lower) and remove the three claws.



- 6 Reinstall the above parts following the removal steps in reverse.

CAUTION

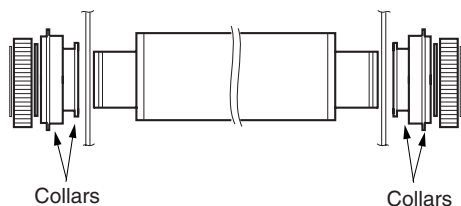
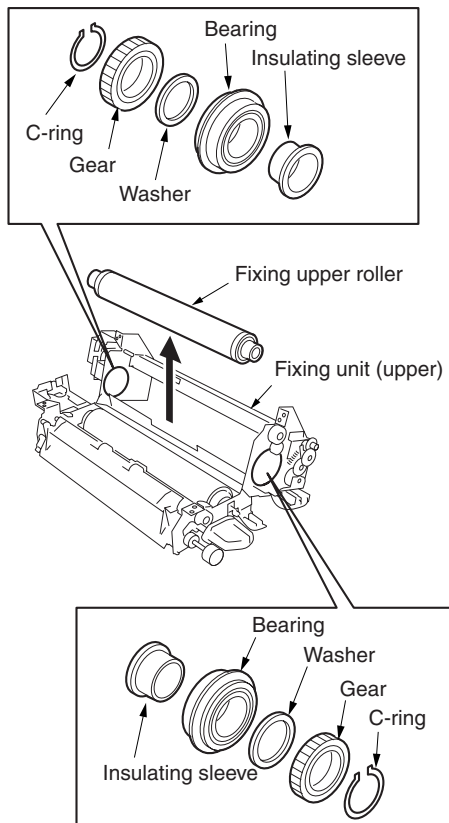
After installing the fusing separation claw (lower), check that the frame moves smoothly.

Removing and reinstalling the fusing upper roller

Procedure

- 1 Remove the fuser.
- 2 Remove the fuser front cover.
- 3 Remove the fusing separation claw (upper) unit.
- 4 Open the fuser (top).
- 5 Remove the fusing heater lamps (L2, L3).

- 6 Remove the two C-rings, two gears, two bearings, two washers and two insulating sleeves from the fusing upper roller.
- 7 Remove the fusing upper roller from the frame.



- 8 Reinstall the above parts following the removal steps in reverse.

CAUTION

Before reinstalling the insulating sleeve, coat the inside with Tri-flow.

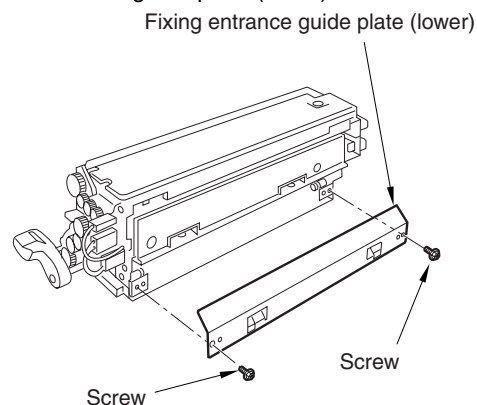
CAUTION

Reinstall the bearings and insulating sleeves with the collars facing the figure.

Removing and reinstalling the fusing lower roller

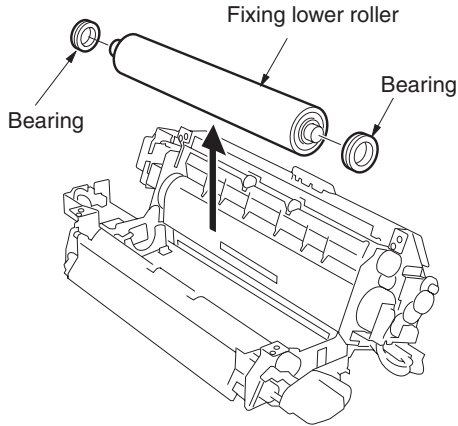
Procedure

- 1 Remove the fuser.
- 2 Remove two screws to remove the fusing entrance guide plate (lower)



- 3 Remove the fusing separation claw (lower) unit.
- 4 Remove the fusing lower roller upward.

- 5 Remove two bearings from the fusing lower roller.



- 6 Reinstall the above parts following the removal steps in reverse.

CAUTION

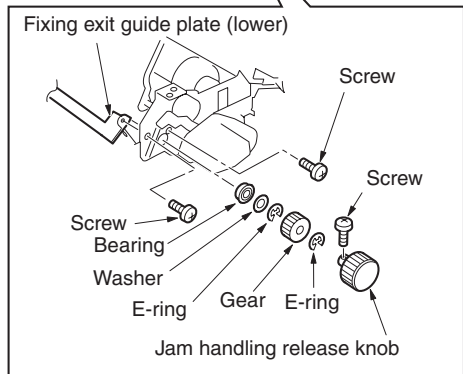
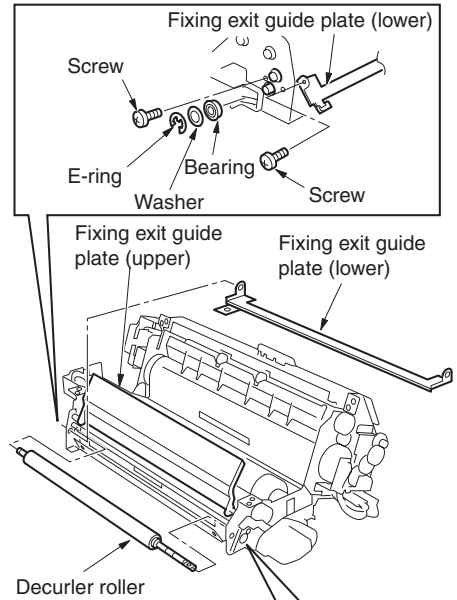
The fusing entrance guide plate (lower) should be pressed against the fusing upper roller bearing when installing.

Removing and reinstalling the decurler roller

Procedure

- 1 Remove the fuser.
- 2 Open the fuser (top).
- 3 Lift the fusing exit guide plate (upper) and remove two screws to remove the fusing exit guide plate (lower).
- 4 Remove the screw to detach the jam handling release knob.
- 5 From the front side, remove one E-ring, one gear, one E-ring, one washer, one screw, and bearing in this order.

- 6 From the rear side, remove one E-ring, one washer, one screw, and bearing in this order and then remove the decurler roller from the frame.



- 7 Reinstall the above parts following the removal steps in reverse.

CAUTION

When reinstalling, check that the gear is installed correctly.

Removing and reinstalling the fusing temperature sensors 1 and 2

CAUTION

After reinstalling fusing temperature sensor 2, make sure that the sensor touches the fusing upper roller.

Make sure the sensor wires do not touch the fusing upper roller.

When reinstalling fusing temperature sensor 1, adjust its position using the positioning tool (7050K0010) and secure it with screws. Be sure to apply screw lock agent to the screws. This adjustment should be made in a pressured state.

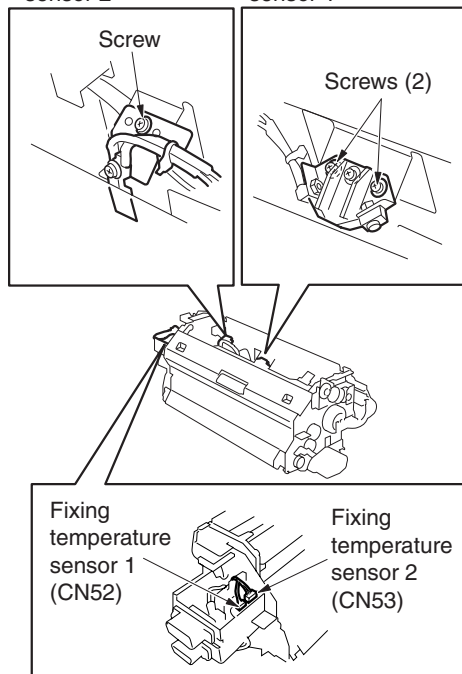
Removal procedure

- 1 Remove the fuser.
- 2 Remove the web cover.
- 3 Remove the cleaning web.
- 4 Disconnect the two inline connectors (fusing temperature sensor 1, CN52; fusing temperature sensor 2, CN53) and release the sensor wires from the cable guides.
- 5 Remove two screws to detach fusing temperature sensor 1.

- 6 Remove one screw to detach fusing temperature sensor 2.

Fixing temperature sensor 2

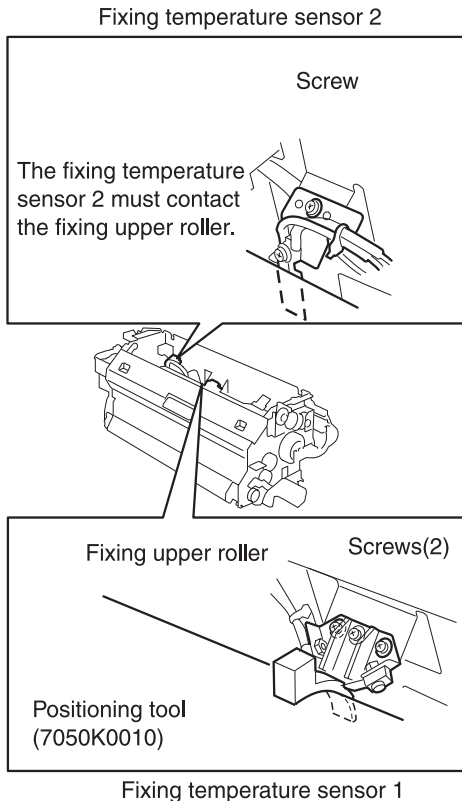
Fixing temperature sensor 1



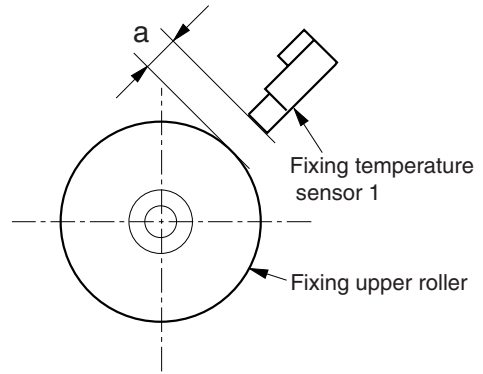
Reinstallation procedure

- 1 Secure fusing temperature sensor 2 to the fusing plate with a screw.
- 2 Make sure that fusing temperature sensor 2 touches the fusing upper roller. If they do not touch each other, be sure to bring the sensor in contact with the roller.

- 3** Set a fusing temperature sensor positioning tool between fusing temperature sensor 1 and fusing upper roller, and secure fusing temperature sensor 1 with two screws so that the distance between the sensor and roller is equal to the thickness of the tool.



- 4** Set the distance "a" between the fusing temperature sensor 1 and fusing upper roller so that it is equal to the thickness of the positioning tool.



Standard value of a: $0.75 \pm 0.05\text{mm}$

- 5** Apply screw lock agent to the two screws securing fusing temperature sensor 1.
- 6** Secure the wires of fusing temperature sensors 1 and 2 in the wire guides and connect their connectors.
- 7** Reverse the removal procedure to reinstall other parts.

Removing and reinstalling the thermostat/U (TS1)

CAUTION

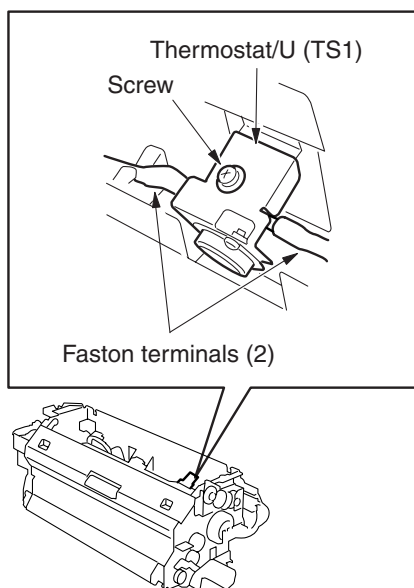
This is an important safety part. (P/N: SP00-0020) Be sure to observe the following cautions and steps when removing or reinstalling.

After reinstalling the thermostat/U, make sure that its wires do not touch the fusing upper roller.

When reinstalling the thermostat/U, adjust its position using the positioning tool (00M8-1-00) and secure it with screws. Be sure to apply screw lock agent to the screws. This adjustment should be made in a pressured state.

Removal procedure

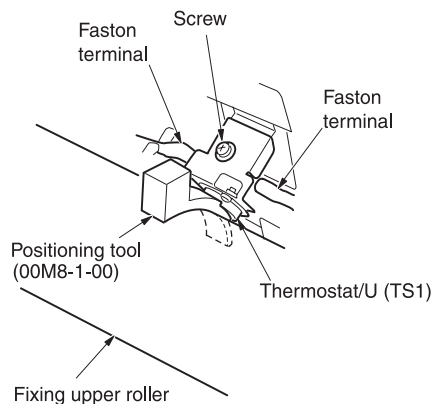
- 1 Remove the fuser.
- 2 Remove the web cover.
- 3 Remove the cleaning web.
- 4 Remove one screw and two Faston terminals to detach the thermostat/U.



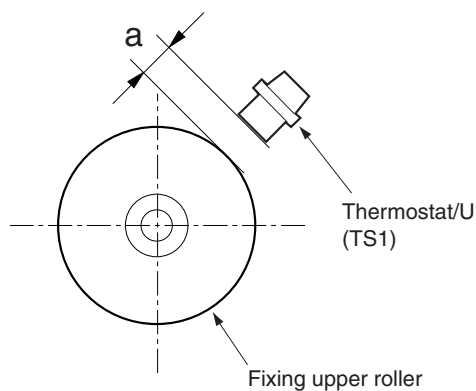
Reinstallation procedure

- 1 Connect two Faston terminals to the thermostat/U.

- 2 Set a thermostat positioning tool (00M8-1-00) between the thermostat/U and fusing upper roller and secure the thermostat/U with one screw so that the distance between the roller and thermostat/U is equal to the thickness of the tool.

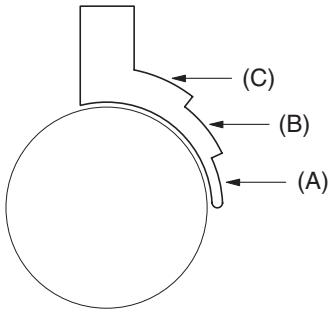


- 3 Set the distance "a" between the thermostat/U and fusing upper roller so that it is equal to the thickness (B) of the positioning tool.



Standard value of a: $3.75 \pm 0.25\text{mm}$

- 4 When making the adjustment, make sure that the thermostat/U does not ride on the positioning tool (C).



- 5 Apply screw lock agent to the screw securing the thermostat/U.
- 6 Reverse the removal procedure to install other parts.

Removing and reinstalling the thermostat/L (TS2)

CAUTION

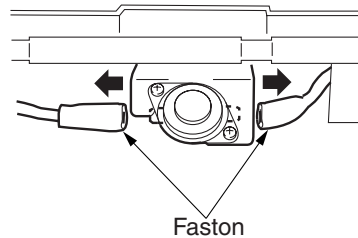
This is an important safety part. (P/N: SP00-0010) Be sure to observe the following cautions and steps when removing or reinstalling.

After reinstalling the thermostat/L, make sure that its wires do not touch the fusing lower roller.

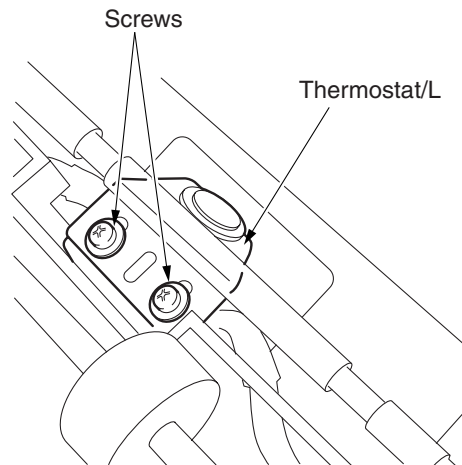
When reinstalling the thermostat/L, adjust its position using the positioning tool (56AEJG011) and secure it with screws. Be sure to apply screw lock agent to the screws. This adjustment should be made in a pressured state.

Removal procedure

- 1 Remove the fusing lower roller.
- 2 Close the fusing cover (top).
- 3 Remove the two Faston terminals of the thermostat/L through the fusing entrance side.

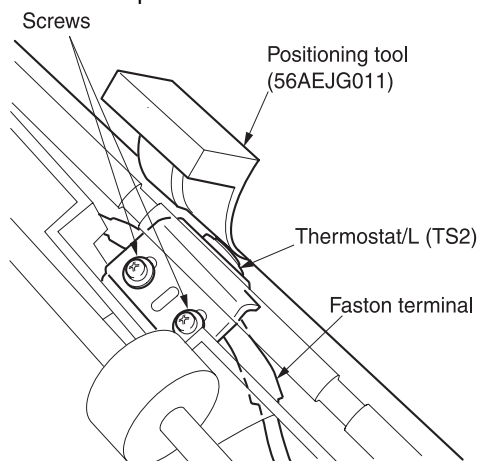


- 4 Open the fusing cover (top).
- 5 Remove two screws to remove the thermostat/L.

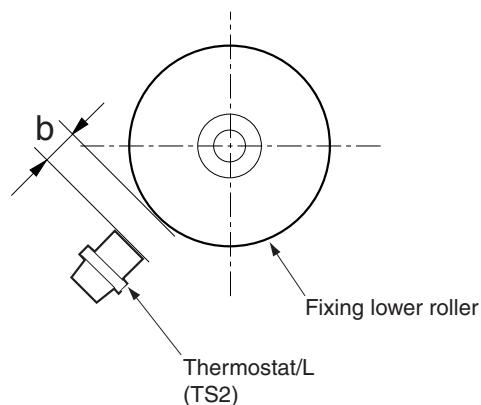


Reinstallation procedure

- 1 Set a part (a) thermostat/L positioning tool (56AEJG011) between the thermostat/L and the fusing lower roller, and secure the thermostat/L with two screws so that the distance between the thermostat/L and roller is equal to the thickness of the tool.

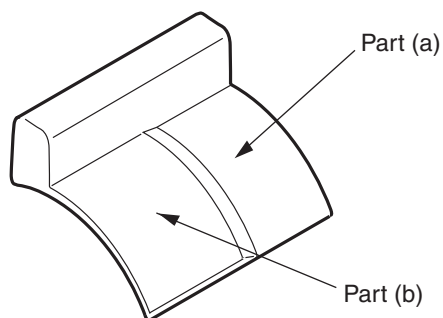


- a Set the distance "b" between the thermostat/L and the fusing lower roller so that it is equal to the thickness of the positioning tool.



Standard value of a: $1.75 \pm 0.25\text{mm}$

- b After setting the distance "b", remove the thermostat/L positioning tool, and make sure that the part (b) thermostat/L positioning tool cannot be inserted in a space between the fusing lower roller and the thermostat/L.



- 2 Apply screw lock agent to the two screws securing the thermostat/L.
- 3 Reverse the removal procedure to reinstall other parts.

6 Product comparison

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hp LaserJet 9055mfp/9065mfp list of differences

Classification		9065	9055	Reason
Specification	Warm-up time	6 minutes max	5.5 minutes max	CPM change
	First copy out time (A4)	3.1 seconds or shorter	3.4 seconds or shorter	CPM change
	Continuous copy speed (A4)	65 copies / min	55 copies / min	CPM change
	Consumables	Developer	Common to 9065/9055	
		Toner		
		Drum		
Drive Section	Linear speed	320 mm/s (standard) 185 mm/s (thick paper)	280 mm/s (standard) 185 mm/s (thick paper)	CPM change
Laser Scanner Unit	Polygon motor revolutions	37,795rpm (standard) 21,850rpm (thick paper)	33,070rpm (standard) 21,850rpm (thick paper)	CPM change
ADU Section	ADU drive board	Exclusively for 9065	Exclusively for 9055	ADU linear speed change
Control	Image control program	Exclusively for 9065	Exclusively for 9055	CPM change
	Printer control program			

A Environmental Product Stewardship Program

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Environmental Product Stewardship Program

Protecting the environment

Hewlett-Packard Company is committed to providing quality products in an environmentally sound manner. This product has been designed with several attributes to minimize impacts on our environment.

Ozone protection

This product contains an ozone filter to protect indoor air quality. The ozone filter should be replaced every 250,000 pages during preventive maintenance.

Paper use

This product's automatic duplex capability can reduce paper usage and the resulting demands on natural resources.

Plastics

Plastic parts over 25 grams are marked according to international standards that enhance the ability to identify plastics for recycling purposes at end-of-life.

Paper

This product is capable of using recycled papers when the paper meets the guidelines outlined in the *Print Media Guide*. This product is suitable for the use of recycled paper according to EN 12281:2000.

Material restrictions

This HP product contains mercury in the fluorescent lamp on the liquid crystal display control panel that may require special handling at end-of-life.

This HP product contains lead in solder that may require special handling at end-of-life.

This HP product contains a lithium battery located on the memory board unit that may require special handling at end-of-life.

For recycling information, you can contact <http://www.hp.com/go/recycle> or contact your local authorities or the Electronics Industries Alliance at <http://www.eiae.org/>.

Material safety data sheet

Material Safety Data Sheets (MSDS) can be obtained by contacting the HP LaserJet printer supplies website at <http://www.hp.com/go/msds>.

For more information

To obtain information about these environmental topics:

- product environmental profile sheet for this and many related HP products
- commitment to the environment
- environmental management system
- end-of-life product return and recycling program
- MSDS

Visit <http://www.hp.com/go/environment> or <http://www.hp.com/hpinfo/community/environment>

B Terminology cross-reference

Terminology cross-reference for the MFP	228
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Terminology cross-reference for the MFP

Copy industry terminology	HP terminology
1 oblique staple	1 corner staple
11 by 17	Ledger or 11 by 17; but ledger when referring to the HCI's name
25 mode	2-5 mode
36 mode	3-6 mode
47 mode	4-7 mode
5.5" X 8.5"	5.5 by 8.5 (half-letter)
5.5" X 8.5" R	5.5 by .8.5 R (half-letter rotated)
8.5" X 11"	Letter
8.5" X 14"	Legal
80 g/m ²	75 g/m ² (20 lb)
Agitator screws	Developer supply screws
AMS (Automatic Magnification Selection)	Auto scale
APS (Automatic Paper Selection)	Auto paper
APS sensors	Document size detection sensors (in text) APS sensors (in tables or drawings)
Armature	Shaft
Basic screen	Main screen
Bypass tray	Tray 1
Cartridge set mode	Cartridge set mode (drum)
Centring Adjustment	Centering Adjustment
Charging control plate	Charge control grid
Charger cleaning block/U	Corona cleaning block
Charger cleaning block/L	Charge control grid cleaner
Copier	Copy controller
Copy quantity setting keys	Keypad
Cover sheet feeder	Post Insertion Kit
Cylindrical lens 2	Focusing lens 2
Dmax	Maximum contrast
Double feed prevention roller	Separation roller

Copy industry terminology	HP terminology
F0 lens	Focusing lens 1 (F0)
Faults	Issues
Feed roller	Pick roller
Feeder cover	Jam access cover
Fixing	Fusing
Fixing unit	Fuser
Flatbed unit	Scanning glass
FNS	Finisher
Fold	Folding
HCI left side door	HCI door
HCI lever	HCI jam access lever
HCI top door	HCI top cover
HP sensor	Home position sensor
Jig	Adjustment tool
Large Capacity Tray (LCT)	Tray 5/HCI
Left-partition glass	ADF glass
LT driver board	HCI control board
Magnetic clutch	Clutch
Main switch SW1	Primary power switch
Main tray or main bin	Paper exit face down tray
MC (magnetic clutch)	CL (clutch)
Measuring guides (glass)	Alignment guides
MS	SW (switch)
MT/MTEM	Motor/motor error message
OHP interleave	Transparency interleave
Oil-less metal	Bushing
Operation panel	Control panel
Original feed tray (ADF)	ADF input tray
Original stopper plates	Alignment guides (scanner glass)
Output tray (ADF)	Original exit tray

Copy industry terminology	HP terminology
Paper up/down plate	Paper lift plate
Platen glass	Scanner glass
Platen guide cover	White board
Power saver on/off	Sleep on/off
Print controller	Formatter assembly (when referring to contents of print kit)
Printer, copier, machine, or main body	MFP
Proof output	Proof and hold
RADF	ADF
Relay connector	Inline connector
Resin ring	Snap ring
Resis or Resist	Registration
Saddle stitch	2-position flat
Scan/server	Send/store
SD (solenoid)	SL (solenoid)
Semiconductor laser	Laser diode
Shaft holder	Bushing
Slit glass	ADF glass
Start (copy/print)	Start
Stitch and fold	Staple and fold
Stop ring	Snap ring
Stop/Scan	Stop
Sub switch (SW2)	Secondary power switch (SW2)
Sub tray	Paper exit tray
Three-fold	Tri-fold
To and fro	Back and forth
Toner cartridge	Toner bottle
Total counter, odometer, mechanical counter, or paper exit counter	
Touch screen	Touch display
Transparent film	Transparency (OHT)

Copy industry terminology	HP terminology
Upper bin	Paper exit tray
Upper unit release lever (post insertion kit)	Release lever
Worktable	Shelf
Write unit	Laser/scanner assembly
/F or /R	Front or Rear
/U or /L	Upper or Lower

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hp LaserJet 9055mfp/9065mfp

**automatic document feeder
(Q3644A)**

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Automatic document feeder product specifications

Type

Sheet-through type reversible DF

Functions

Original size

- Metric area
A3 / B4 / A4 / A4R / B5 / B5R / A5 / A5R / B6R
- Inch area
ledger / legal / letter / letterR / 5.5 x 8.5 / 5.5 x 8.5 R
- All sizes are detected through the APS.
- Mixing of original sizes possible.

Original type

Plain original

50 g/m² or 14 lb to 130 g/m² or 35 lb high quality paper.

Special original

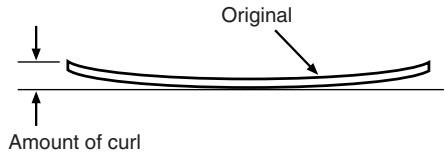
Original feed and conveyance ability may be inferior to those of 50 g/m² or 14 lb to 130 g/m² or 35 lb high quality original.

The following types of original cannot be used:

- Fine quality paper less than 35 g/m² or 10 lb
- Fine quality paper more than 201 g/m² or 54 lb
- Ohp film
- Blueprint masters
- Label original
- Offset masters
- Bonded originals

Original curling

10 mm maximum



Maximum number of stacked originals

100 sheets maximum (80 g/m² or 22 lb)

Original read speed (copies per minute, 600 dpi):

Mode	Original size	Feed speed
Single sided original	A4/letter	65
Double sided original	A4/letter	38

Original feed layout

Face-up placement, centered, U-turn feed/straight eject, switch-back reversal method (paper fed in order of 2 → 1 → 4 → 3 during the double sided original copy).

Original image read position

At the ADF glass section

Machine data

Power source

DC24V/5V (supplied from the MFP)

Maximum power consumption

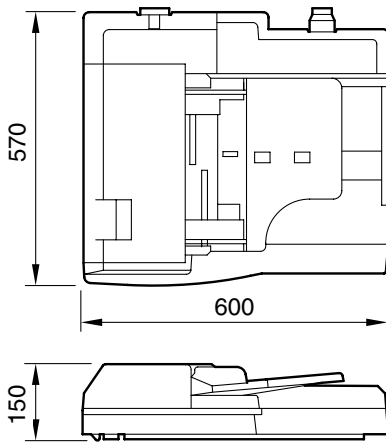
Less than 120 VA

Weight

Approximately 11.5 kg

Machine dimensions:

Unit: mm

**Maintenance****Maintenance**

Same as the MFP

Operating environment**Temperature**

10° C to 30° C (50° F to 86° F)

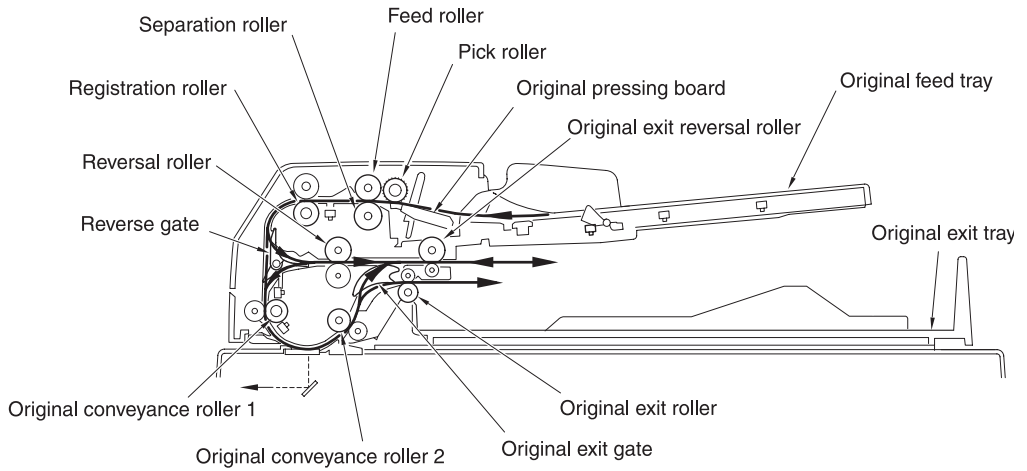
Humidity

10 percent to 80 percent RH

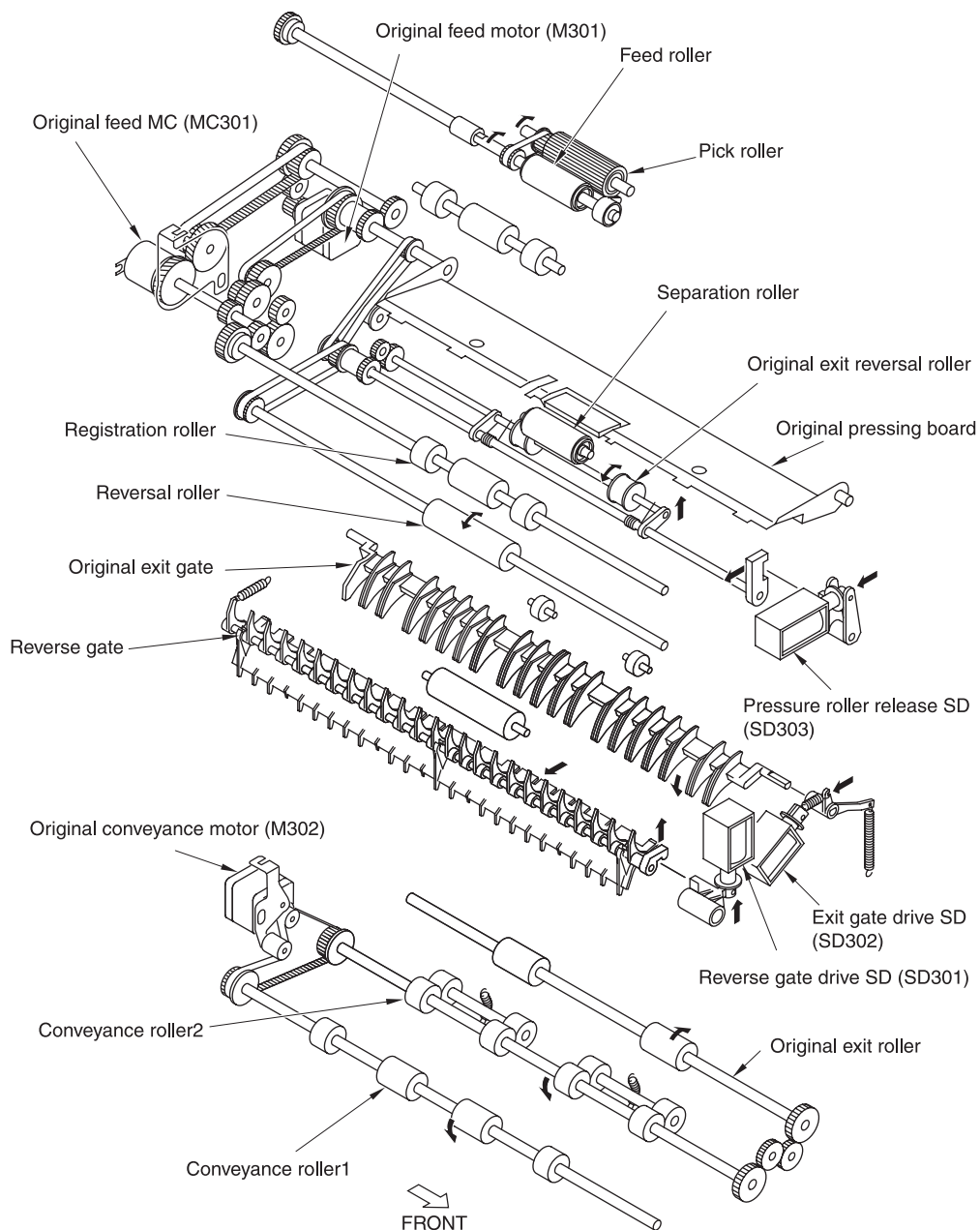
Note

The information herein may be subject to change for improvement without notice.

Center cross-sectional drawing

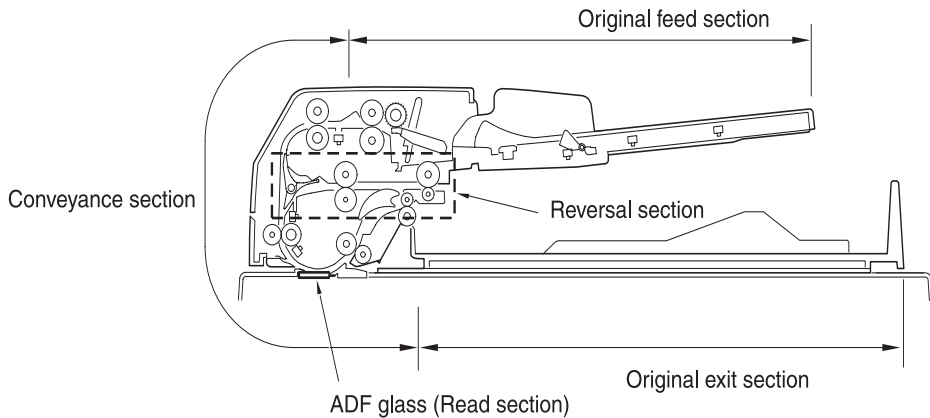


Drive system diagram



Original conveyance process

The ADF consists of an original feed section, conveyance section, reversal section, and original exit section.



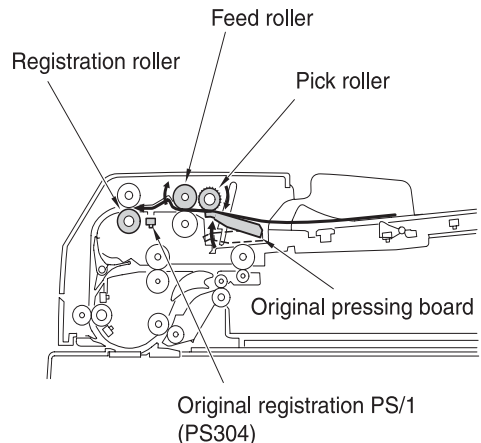
The original face up on the original feed tray, is fed from the topmost original. The fed original is not conveyed to the original glass. Instead, it is read when it passes the ADF glass placed in the conveyance path.

The ADF operation consists of single side original copy mode, double side original copy mode, mixed original copy mode and Z-fold mode. Each has a different conveyance path.

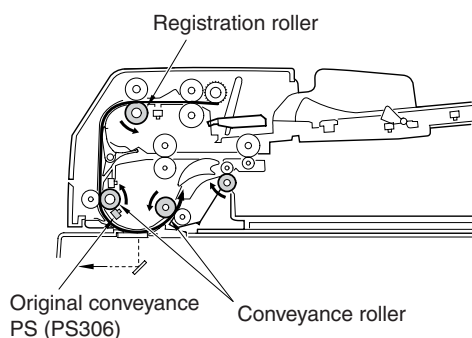
Single side original copy mode

(single side to single side, single side to double side)

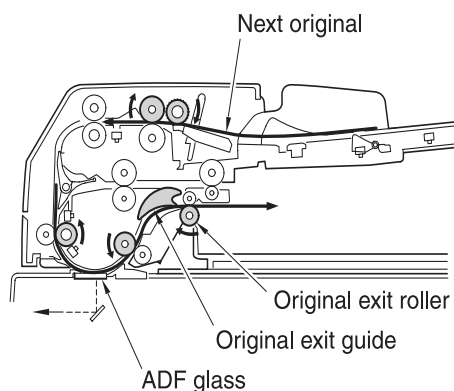
The original set in the original feed tray is pressed to the pick roller by the original pressing board. The pick roller and feed roller pre-feed the original until the original registration PS/1 (PS304) turns on and original reaches the registration roller.



After completing the registration loop, the registration roller re-feeds the original and the original is conveyed to the read section. The original is conveyed by the conveyance roller. The scanning starts when the original registration PS (PS306) turns on.



The original is read when it passes over the ADF glass. The original that has been read is ejected to the original exit section by the original exit roller, passing along the circumference of the original exit guide. The next original is pre-fed if there is one.



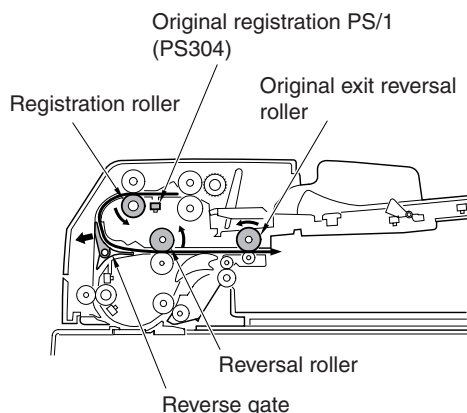
Double side original copy mode

(single side copy, double side copy)

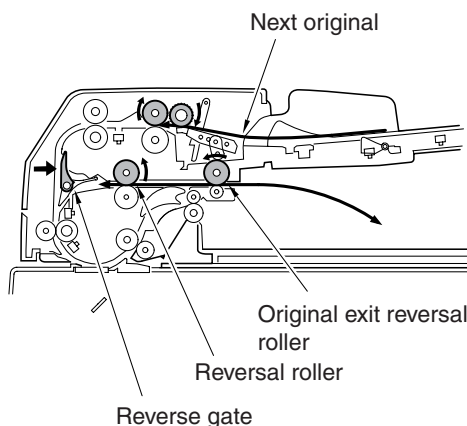
The order by which the original is scanned is $2 \rightarrow 1 \rightarrow 4 \rightarrow 3$ during the double side original copy mode; the back side is scanned first, then the front side.

The original set on the original feed tray is pre-fed by the pick roller and feed roller until the original registration PS/1 (PS304) turns on and original reaches the registration roller. Then, the reverse gate opens, and the registration roller conveys the original to the

reversal section. The reversal roller and original exit reversal roller feed the original inside the reversal section.

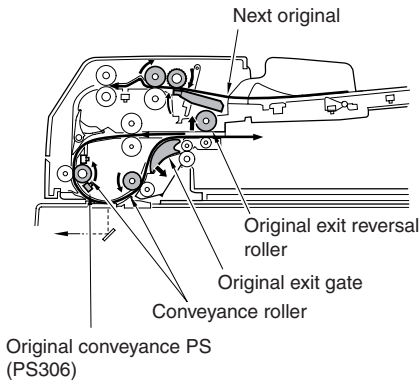


The original is conveyed to the edge of the reverse gate until it stops when the specified time has passed since the PS304 detects the trailing edge of the original. The original flips over and the reverse gate closes. The reversal roller and the original exit reversal roller turn to the reverse direction, and feed the original to the read section.

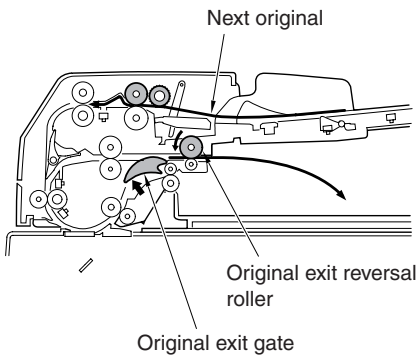


The reading of the back side of the original starts when the original conveyance PS (PS306) turns on. The original exit gate lowers and the original is fed to the original exit reversal roller when the back side is scanned. The pressure on the original exit

reversal roller is released for a specified period of time. The leading edge and the trailing edge of the original brush against each other at the original exit reversal roller. The next original is pre-fed if there is one.

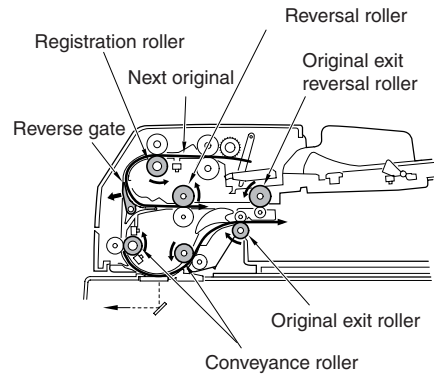


The original is conveyed to the original reversal exit when the back side is scanned. The original exit gate returns to the original position.



The original is now reversed again, and the reading of the front side of the original is conveyed to the read section by the reversal roller and the original exit reversal roller in the same manner as scanning the back side of the original starts.

The original that has been scanned passes under the original exit gate, and is ejected to the original exit section by the original exit roller. The next original is conveyed to the reversal section if there is one.



Mixed original copy mode

The mixed original copy mode supports both the same series original and different series originals, and the size of the original is determined by the ON interval of the original registration PS/1 (PS304). In single-side original copy mode (with out AMS) and double-side original copy mode, the conveyance path of original is same as normal conveyance path. In single-side original copy mode (with AMS), the conveyance path of original is same as that in double-side original copy mode.

For details on size detection, refer to the section Original size detection control.

Z-fold original copy mode

In the Z-fold original copy mode, the length of the original is determined by the ON interval of the original registration PS/1 (PS304).

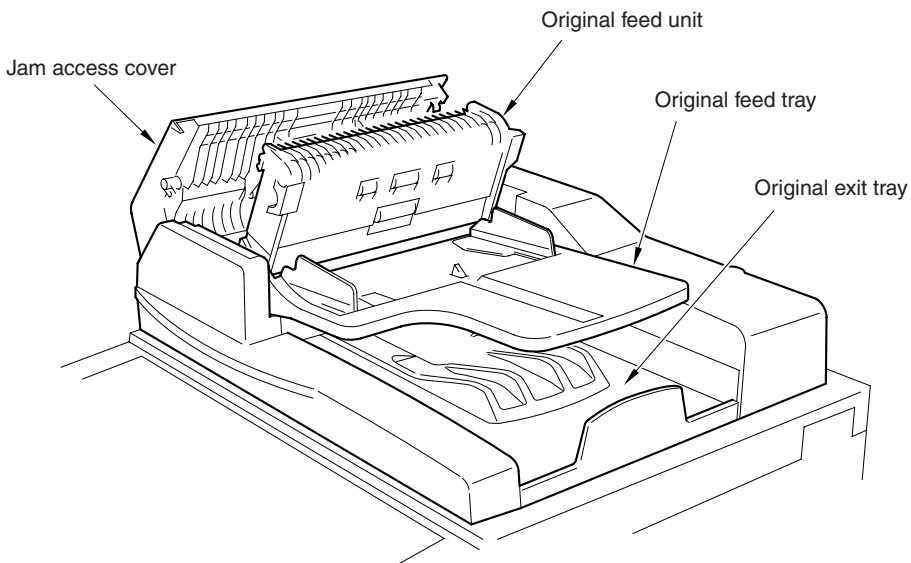
The length is detected for the first sheet of original. The conveyance path of the original is the same as the single-side original copy mode and the double-side original copy mode.

2 ADF unit explanation

External section	10
Composition	10
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External section

Composition

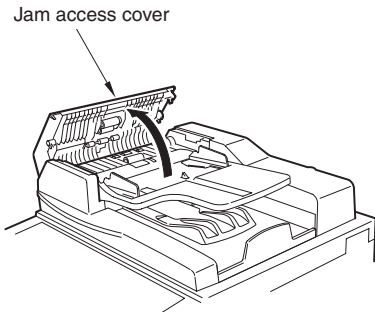


Mechanism

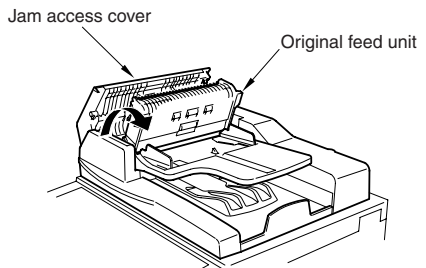
Mechanism	Method
Jam removal *1	Open / close cover Original feed unit White board

*1 Jam removal

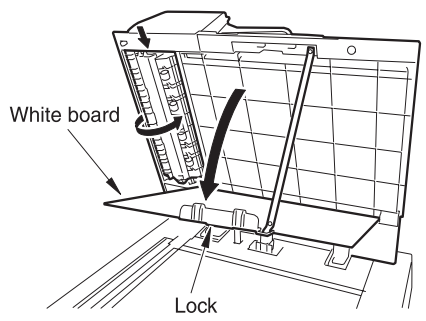
Remove the jammed original in the paper feed section by opening the jam access cover.



Remove the jammed original in the reversal section by opening the jam access cover and paper feed unit.

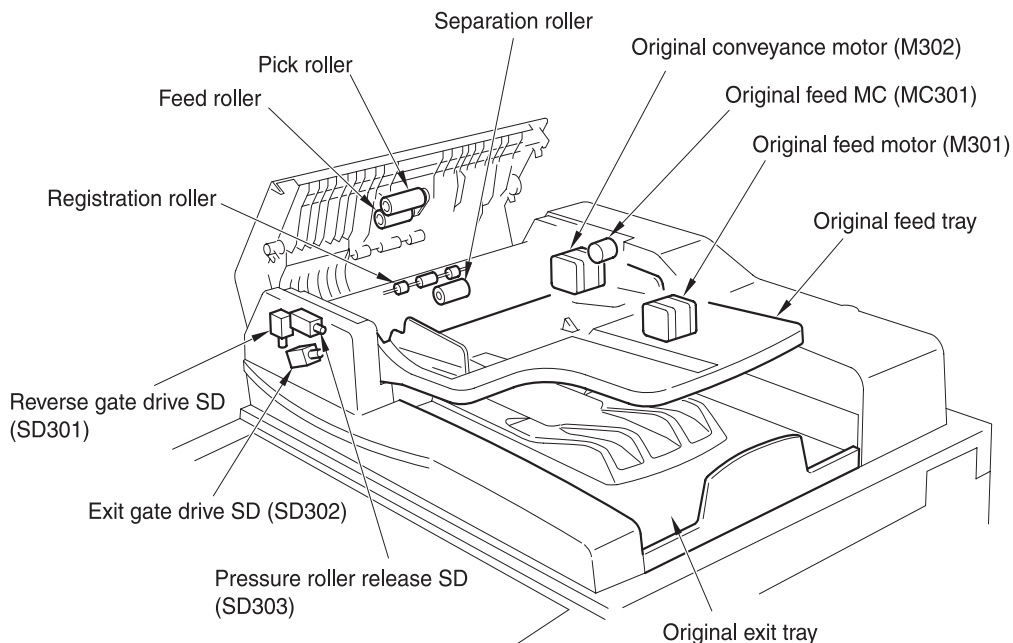


Remove the jammed original in the conveyance section by opening the white board.



Original feed/conveyance/exit section

Composition



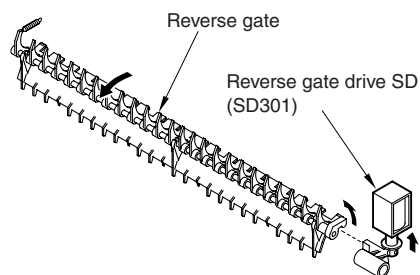
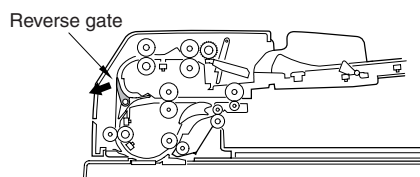
Mechanism

Mechanism	Method
Original feed	Pick roller Feed roller
Double feed prevention	Separation roller
Original conveyance	Original conveyance roller (two)
Original exit	Original exit roller
Original conveyance path selection *1	Reverse gate
Original reverse and feed	Reversal roller Original exit reversal roller
Original exit path selection *2	Original exit gate

*1 Original conveyance path selection

During the double-side copy mode, the original conveyance path is selected at the reverse gate in order to flip the original over to the other side, and the original is conveyed to the reversal section. The reverse gate drive SD

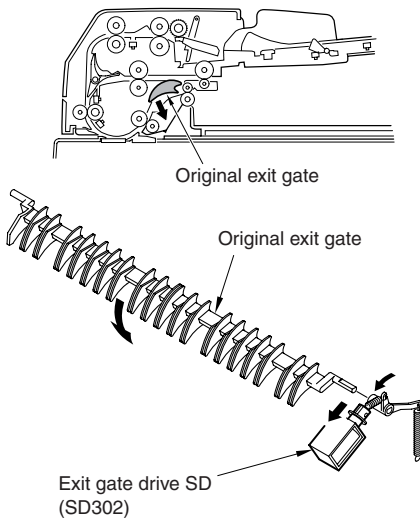
(SD301) is turned on/off to switch between the reversal section and the original exit section.



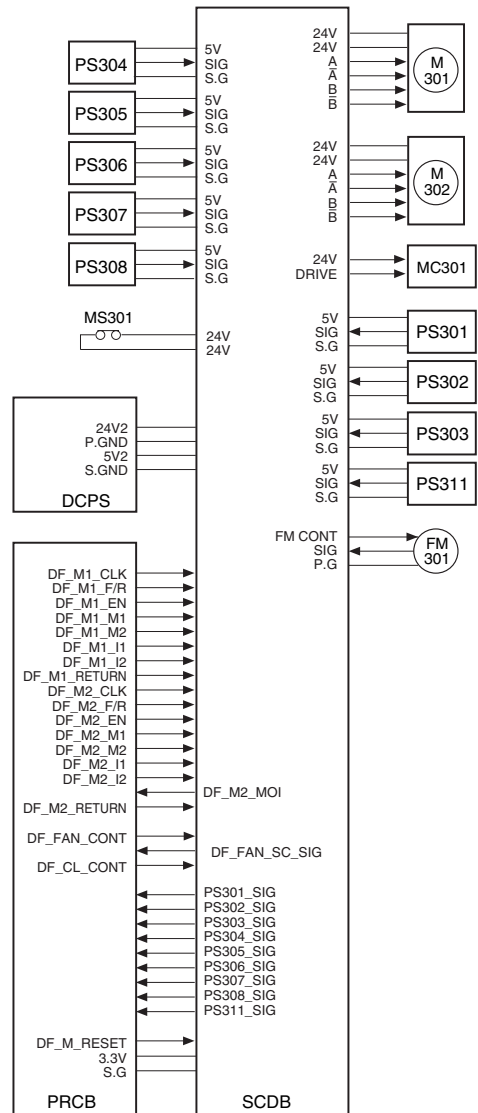
*2 Original exit path switching

During the double side copy mode, the up/down movement of the original exit gate determines whether to eject the original, or to feed the original to the reversal section to scan it again.

The exit gate drive SD (SD302) turns on/off during the double side copy mode. To scan the back side, the original exit gate goes down to convey the original to the reversal section. When both sides of the original are read, the original exit gate lifts to exit the original to the original exit tray.



Original feed/conveyance/scan control



Original feed is performed by the pick roller and feed roller driven by M301 (original feed). Original conveyance is performed by the original conveyance roller driven by M302. Original is fed when MS301 (cover open/close MS) and PS311 (ADF open/close PS) are turned on.

Each of these features is controlled by PRCB (printer control board) and driven by SCDB (scanner drive board).

1 Operation

a Pressing original against roller and pre-feeding original

1 Pre-feeding the first sheet of original

By pressing the START button, M301 (original feed) rotates backwards at high speed (MC301 (original feed MC) is on) to raise the original pressing plate. Since M301 rotates backward at high speed, the original feed starts by the action of the pick roller and the feed roller. M301 stops when a specified time has passed after the original has turned PS304 (original registration PS/1) on.

2 Pre-feeding the second and subsequent originals

When the currently scanned original is conveyed and PS304 (original registration /1) turns off during the single side original copy mode, M301 (original feed) rotates backward at high speed (MC301 (original feed MC) is on), the prefeeding of the next original starts. During the double-side original copy mode, M301 rotates backward at high speed after a specified time when the scanning of the back side of the first sheet of original has completed, and the prefeeding of the next original starts. M301 stops after a specified time after the original has turned PS304 on.

b Original conveyance operation

When the control signal is received from the MFP after the pre-feeding operation of the original has completed, M301 (original feed) rotates forward at high speed (MC301 (original feed MC) is on). The registration roller rotates and the original is conveyed at high speed.

The forward rotation of M301 releases the pressure on the original pressing plate.

During the single-side original copy, the conveyance switches to low speed when the specified time has passed after PS305 (original registration /2) has turned on. During the double-side original copy, the reverse gate opens and the original passes through the reverse gate to be conveyed to the reversal section at high speed. (For details on reverse and conveyance control, refer to Original reverse and conveyance control.)

c Scan operation

1 Single-side original copy mode:

The low-speed rotation of M302 (original conveyance motor) starts in the same timing as the conveyance procedure described above, and the original is conveyed by the conveyance roller. The scanning starts when the specified time has passed after PS306 (original conveyance) has turned on.

2 Double-side original copy mode:

The back side of the original is scanned first, then the front side. The scanning procedure is the same for both sides. M301 (original feed) rotates backward at high speed (MC301 (original feed MC) is on), and the original is conveyed from the reversal section to the read section. Then it switches back to low speed when the specified time has passed after PS305 (original registration /2) has turned on. At the same time, M302 (original conveyance) starts rotating to scan the original.

The scanning operation is the same as for the single-side original copy.

d Scanning the last sheet of original

When PS301 (last original) turns off while scanning is in progress, currently scanned original is processed as the last original. The pre-feed of the original stops, and with PS302 (original setting) turned off, the original feed tray is detected as empty. M301 (original feed) and M302 (original conveyance) stop when the specified time has passed after the original has passed through PS303 (original exit) and original ejection has completed.

e Original skew detection control

PS307 (original skew/F) and PS308 (original skew/R) are provided to detect the inclined leading edge of the original during conveyance. PS307 and PS308 are placed at the front and back of the pre-scan conveyance path and determine the inclination in interval at which the leading edge of the original turns these switches on. A skewed image caused by original inclination is corrected through image processing and image data is written.

f FM301 (original feed motor cooling fan) operation

FM301 is used to cool M301 so that M301 does not overheat during operation.

1 ON timing

At the start of DF

2 OFF timing

When M302 is off

2 Signals

a Input signal

1 24V (MS301 to SCDB)

Open/close detection signal of Jam access cover.

[L]: Cover opened

[H]: Cover closed

2 SIG (PS301 to SCDB)

Last sheet of original on the original feed tray detected

[L]: Original present

[H]: No original

3 SIG (PS302 to SCDB)

No original on original feed tray detection signal

[L]: Original present

[H]: No original

4 SIG (PS303 to SCDB)

Original exit detection signal

[L]: Original present

[H]: No original

5 SIG (PS311 to SCDB)

ADF open/close detection signal

[L]: ADF closed

[H]: ADF opened

6 SIG (PS304 to SCDB)

Original detected at the entrance of the registration roller

[L]: Original present

[H]: No original

7 SIG (PS305 to SCDB)

Original detected for double side original copy mode

[L]: Original present

[H]: No original

8 SIG (PS306 to SCDB)

Original detected before the scan position

[L]: Original present

[H]: No original

9 SIG (PS307 to SCDB)

Front side original skew detection signal

[L]: Original present

[H]: No original

- 10 SIG (PS308 to SCDB)**
Rear side original skew detection signal
[L]: Original present
[H]: No original
- 11 DF_FAN_SC_SIG (FM301 to SCDB to PRCB)**
FM301 abnormal operation detection signal
[L]: FM301 normal
[H]: FM301 abnormal
- 12 DF_M1_CLK (PRCB to SCDB)**
M301 control clock
- 13 DF_M1_F/R (PRCB to SCDB)**
M301 drive direction control signal
- 14 DF_M1_EN (PRCB to SCDB)**
M301 drive IC enable signal
- 15 DF_M1_M1 (PRCB to SCDB)**
M301 drive control signal
- 16 DF_M1_M2 (PRCB to SCDB)**
M301 drive control signal
- 17 DF_M1_I1 (PRCB to SCDB)**
M301 drive electric current control signal
- 18 DF_M1_I2 (PRCB to SCDB)**
M301 drive electric current control signal
- 19 DF_M1_RETURN (PRCB to SCDB)**
M301 return signal
- 20 DF_M2_CLK (PRCB to SCDB)**
M302 control clock
- 21 DF_M2_F/R (PRCB to SCDB)**
M302 drive direction control signal
- 22 DF_M2_EN (PRCB to SCDB)**
M302 drive IC enable signal
- 23 DF_M2_M1 (PRCB to SCDB)**
M302 drive control signal
- 24 DF_M2_M2 (PRCB to SCDB)**
M302 drive control signal
- 25 DF_M2_I1 (PRCB to SCDB)**
M302 drive electric current control signal
- 26 DF_M2_I2 (PRCB to SCDB)**
M302 drive electric current control signal
- 27 DF_M2_RETURN (PRCB to SCDB)**
M302 return signal
- 28 DF_M_RESET (PRCB to SCDB)**
M301/M302 drive reset signal
- 29 DF_FAN_CONT (PRCB to SCDB)**
FM301 drive control signal
- 30 DF_CL_CONT (PRCB to SCDB)**
MC301 drive control signal
- b Output signal**
 - 1 A, $\bar{A}$ (SCDB to M301)**
M301 A phase drive signal
 - 2 B, $\bar{B}$ (SCDB to M301)**
M301 B phase drive signal
 - 3 A, $\bar{A}$ (SCDB to M302)**
M302 A phase drive signal
 - 4 B, $\bar{B}$ (SCDB to M302)**
M302 B phase drive signal
 - 5 DRIVE (SCDB to M301)**
MC301 ON/OFF drive signal
[L]: MC301 on
[H]: MC301 off
 - 6 FM CONT (SCDB to FM301)**
FM301 ON/OFF drive signal
[L]: FM301 off
[H]: FM301 on

7 DF_M2_MOI (SCDB to PRCB)

M302 MOI signal

8 SIG (SCDB a PRCB)

FM301 operation detection signal

9 PS301_SIG (SCDB to PRCB)

See: Input signal

10PS302_SIG (SCDB to PRCB)

See: Input signal

11PS303_SIG (SCDB to PRCB)

See: Input signal

12PS304_SIG (SCDB to PRCB)

See: Input signal

13PS305_SIG (SCDB to PRCB)

See: Input signal

14PS306_SIG (SCDB to PRCB)

See: Input signal

15PS307_SIG (SCDB to PRCB)

See: Input signal

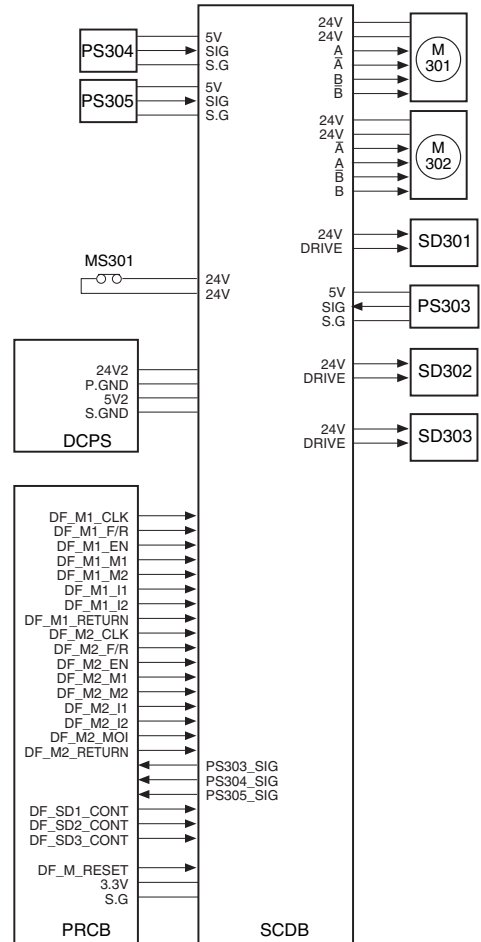
16PS308_SIG (SCDB to PRCB)

See: Input signal

17PS311_SIG (SCDB to PRCB)

See: Input signal

Original reversal and conveyance control



The original exit gate which switches the original exit path is driven by SD302 (exit gate drive). The reverse gate, which switches the original feed path during double-side original copy mode, is driven by SD301 (reverse gate drive). SD303 (pressure roller release) releases the pressure on the original exit reversal roller.

Ejection of the original and conveyance to the reversal exit are performed by M302 (original conveyance), which rotates the conveyance roller and original exit roller. M301 (original feed) drives the reversal roller

and original exit reversal roller to convey the original to the reversal section. Each of these features is controlled by PRCB (printer control board) and driven by SCDB (scanner drive board).

1 Operation

a Original ejection operation

During the single side copy mode and when copying the front side in the double side copy mode, the original exit gate lifts upward because SD302 (exit gate drive SD) is turned off. Therefore, scanned original is ejected to the original exit tray by the action of the original exit roller. PS303 (original exit PS) detects the original ejection.

b Reversal operation for double side original copy

1 The first sheet of original

When PS304 (original registration/1) turns on and pre-feed of the original has completed, SD301 (reverse gate drive) receives a signal from the MFP and turns on to open the reverse gate. M301 (original feed) rotates forward (MC301 (original feed MC) is on), and the registration roller, reversal roller, and original exit reversal roller convey the original to the reversal section at high speed, passing through the reverse gate. M301 stops when a specified time has passed after PS304 has detected the trailing edge of the original. (The original is conveyed to the reversal section until the trailing edge crosses over the reverse gate.) During this time, SD301 turns off and the reverse gate closes.

2 Second and subsequent original

When PS305 (original registration/2) detects the trailing edge of the front side of the first original, SD301 (reverse gate drive) turns on to open the reverse gate. The second and

subsequent originals are thus conveyed to the reversal section in the same manner as the first original.

c Feeding the back side

When the reversal operation for the double-side copy mode described above has completed, high speed backward rotation of M301 (original feed) (MC301 (original feed MC) is off) conveys the original to the read section by the action of the reversal roller and the original exit reversal roller. When M301 rotates backward, SD302 (exit gate drive) turns on to lower the original exit gate, and the original exit path switches from the original exit tray to the reversal exit. When the specified time has passed since PS305 (original registration /2) is turned on by detecting the leading edge of the original, SD303 (pressure roller release SD) turns on temporarily according to the original size. By SD303's turning on, the pressure on the original exit reversal roller is released. This enables the leading edge and the trailing edge of the original to pass each other. When a specified time has passed since the back side of the original starts to be scanned, SD303 turns off, at the same time, M301 has been switched to low speed forward rotation (MC301 is off). The original exit reversal roller rotates in the reverse direction, and the original is conveyed to the reversal exit again. As soon as scanning of the back side of the original has completed, SD302 turns off, and after the predefined time, M301 is switched to high speed rotation. It stops after the specified interval.

d Feeding the front side of the original

The original, which is conveyed to the reversal section, is conveyed to the read section again in order to scan the front side. Since SD302 (exit gate drive) is off, the scanned original is ejected to the original exit tray.

2 Signals

a Input signals

1 DF_SD1_CONT (PRCB to SCDB)

SD301 ON/OFF control signal

[L]: SD301 on

[H]: SD301 off

2 DF_SD2_CONT (PRCB to SCDB)

SD302 ON/OFF control signal

[L]: SD302 on

[H]: SD302 off

3 DF_SD3_CONT (PRCB to SCDB)

SD303 ON/OFF control signal

[L]: SD303 on

[H]: SD303 off

b Output signal

1 DRIVE (SCDB to SD301)

SD301 ON/OFF drive signal

[L]: SD301 on

[H]: SD301 off

2 DRIVE (SCDB to SD302)

SD302 ON/OFF drive signal

[L]: SD302 on

[H]: SD302 off

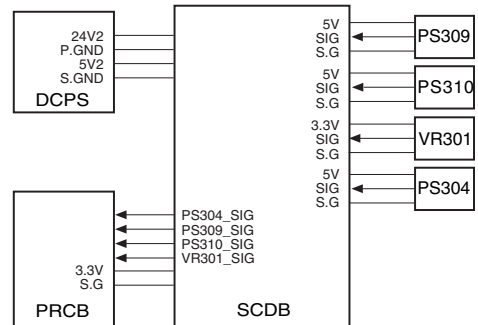
3 DRIVE (SCDB to SD303)

SD303 ON/OFF drive signal

[L]: SD303 on

[H]: SD303 off

Original size detection control



The size of the original placed in the original feed tray is detected by PS309 (original size/2), PS310 (original size/1), and VR301 (original size VR).

Each of these features is controlled by PRCB (printer control board) and driven by SCDB (scanner drive board).

1 Operation

a Normal copy mode

PRCB detects the original size from the combination of the following signals:

1 Drum axis direction size detection

A guide plate is connected to VR301 (original size VR) and the resistance value varies with the position of the guide plate. This is used to determine the vertical dimension of the original.

2 Original feed direction size detection

The horizontal dimension of the original is detected with the on/off combination of PS309 (original size /2) and PS310 (original size PS/1).

b Mixed/Z-fold copy mode original size detection

Size detection during mixed and Z-fold copy modes are performed as follows:

1 Drum axis direction size detection

The vertical dimension of the largest original is determined by the position of the guide plate.

2 Original feed direction size detection

The ON interval of PS304 (original registration/1) after the original passes the registration roller is used to determine the horizontal dimension of each original.

3 Original feed direction size detection operation

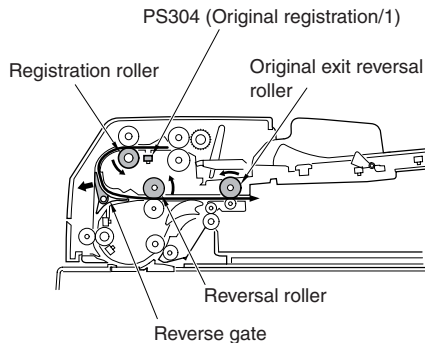
When the original is fed from the registration roller, in single-side original copy mode (when AMS is not used) and double-side original copy mode, the conveyance path of original is same as normal conveyance path.

In single-side original copy mode (when AMS is used) and Z-fold copy mode, the conveyance path of original is same as that in double-side original copy mode, passing the reverse gate and reverse section.

In each case, the ON interval of PS304 (original registration/1) is measured and used to detect the length of the original.

In single-side original copy mode (when AMS is used), the original is not read before magnification rate is decided. Therefore, the conveyance path of original is same as that in double side original copy mode, so that PS304 detects the length of the original.

In Z-fold original copy mode, the length of the first original is detected.



c Allowed size combination

(□ : Same size, ○ : Same series, ⊙ : Different series, X: Mixing prohibited, -: Not supported)

1 AB series *1

		Reference original (maximum-size original detectable with guide plate)									
		A3	A4	B4	B5	A4 R	A5	B5 R	A5 R	B6 R	
	A3			-	-	-	-	-	-	-	
	A4			-	-	-	-	-	-	-	
	B4					-	-	-	-	-	
	B5					-	-	-	-	-	
	A4R							-	-	-	
	A5							-	-	-	
	B5R	X	X						-	-	
	A5R	X	X	X	X	X	X	X		-	
	B6R	X	X	X	X	X	X	X			

*1 Memory switch in the key operator mode needs to be changed to use the inch series.

2 Inch series *2

	Reference original (maximum-size original detectable with guide plate)					
	11x17	8.5x11	8.5x14	8.5x11R	8.5x 5.5	8.5x 5.5R
11x17			-	-	-	-
8.5x11			-	-	-	-
8.5x14						-
8.5x11R						-
8.5x5.5						-
8.5x5.5R	X	X	X	X	X	

***2** Memory switch in the key operator mode needs to be changed to use the AB series.

3 Signals

a Input signals

1 SIG (PS309 to SCDB)

Original horizontal dimension detection signal

[L]: Original present

[H]: No original

2 SIG (PS310 to SCDB)

Original horizontal dimension detection signal

[L]: Original present

[H]: No original

3 SIG (VR301 to SCDB)

Original vertical dimension detection signal

b Output signal

1 PS309_SIG (SCDB to PRCB)

See: Input signal

2 PS310_SIG (SCDB to PRCB)

See: Input signal

3 VR301_SIG (SCDB to PRCB)

See: Input signal

3 ADF

disassembly/assembly

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External section

This section explains how to disassemble and reassemble the machine.

CAUTION

When disassembling and reassembling the machine, follow the precautions given below.

- Be sure the power cord has been unplugged from the wall outlet.
- The disassembled parts must be reassembled following the disassembly procedure in reverse unless otherwise specified.
- Care should be taken not to lose small parts. Care should also be taken not to install small parts in wrong places.
- Do not operate the machine before installing all the disassembled parts completely.
- Removal of some screws is prohibited in this section. Never loosen them.

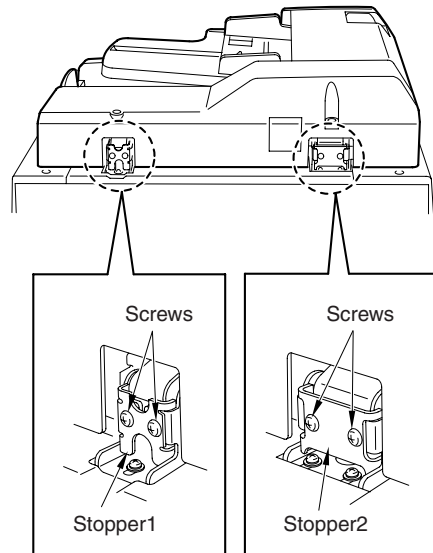
Removing the ADF

CAUTION

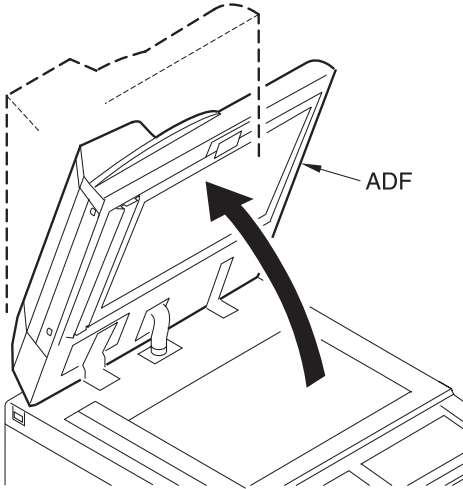
Make sure the power cord of the main unit has been unplugged from the wall outlet.

Procedure

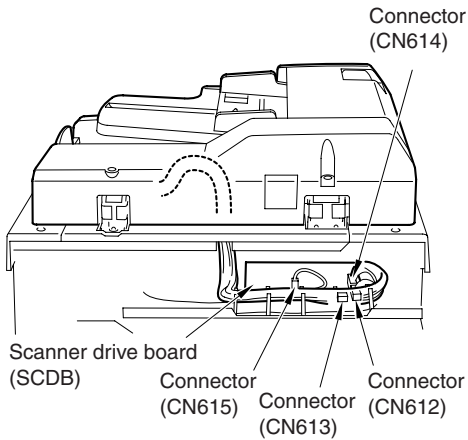
- 1 Remove the rear cover. (See the external section of the MFP.)
- 2 Remove two screws to detach the two stoppers.



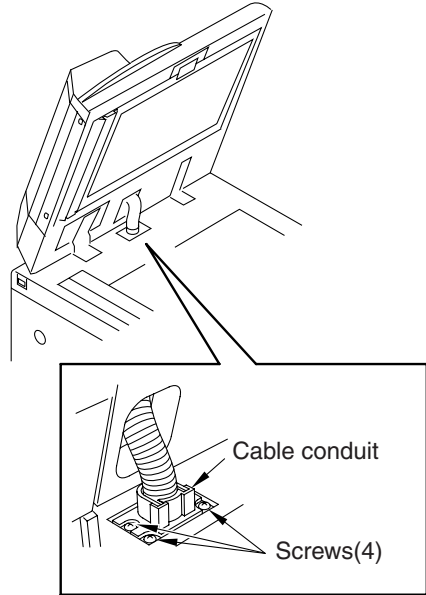
3 Open the ADF to the upright position.



4 Remove four connectors (CN612 to CN615) from the scanner drive board (SCDB) on the MFP.

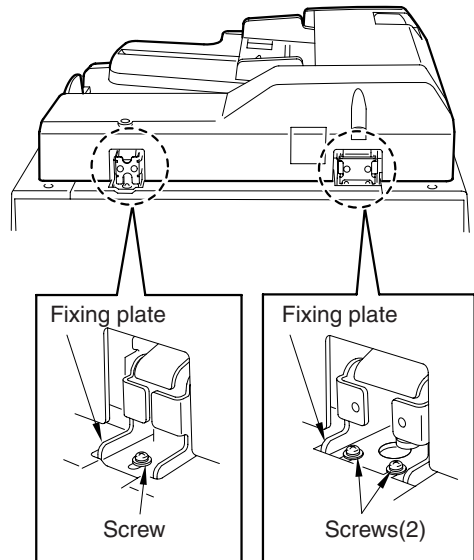


5 Remove four screws to detach the cable conduit.



6 Pull the cable to the top of the MFP.

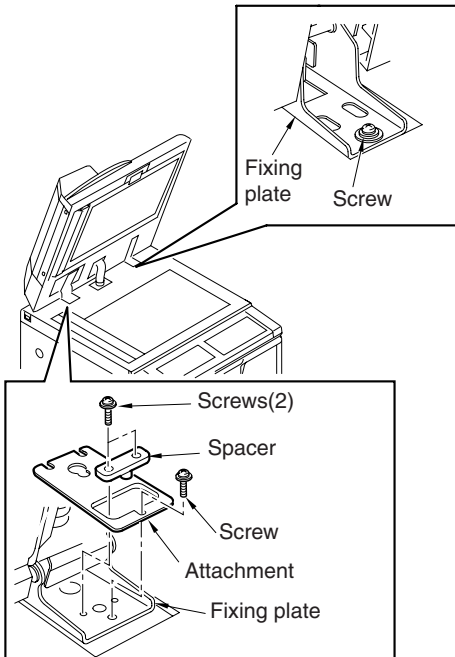
7 Close the ADF. Remove three screws to detach each of two fixing plates.



- 8 Open the ADF to the upright position.
- 9 Remove two screws to detach the spacer and attachment from the left fixing plate.
- 10 Holding the ADF, remove two screws to detach two fixing plates and remove the ADF from the MFP.

CAUTION

When fixing plates are removed, the ADF may fall down to the rear side. Be sure to hold the ADF.



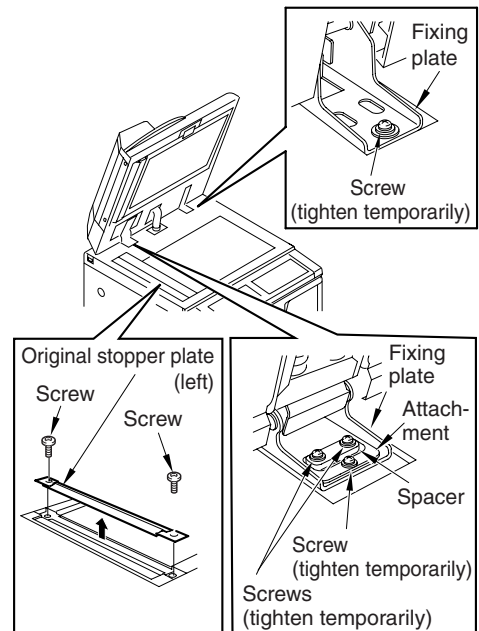
Reinstalling the ADF

CAUTION

Make sure the power cord of the main unit has been unplugged from the wall outlet.

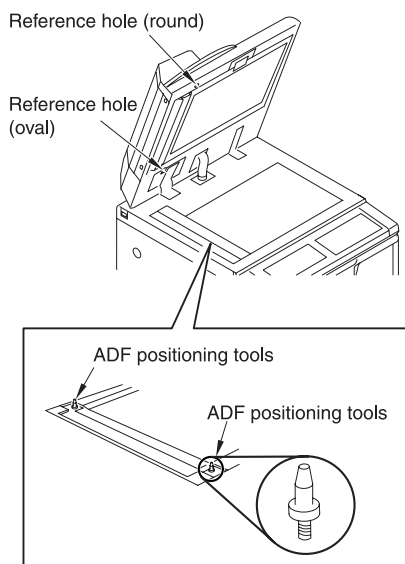
Procedure

- 1 Place the ADF on the top of the main unit and loosely secure each of the two fixing plates with two screws.
- 2 Secure the attachment and spacer to the left fixing plate, and loosely secure it with two screws.
- 3 Remove two screws to detach the original stopper plate (left).

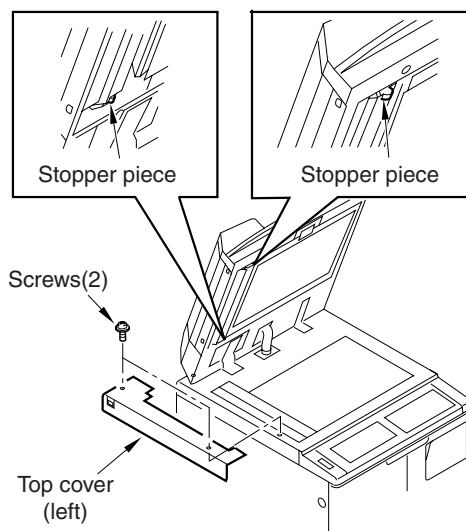


- 4 Follow the removal procedure in reverse and install the cable conduit and four relay connectors (CN612 to CN615).
- 5 Install two ADF positioning tools in the mounting holes of the original stopper plates (left).

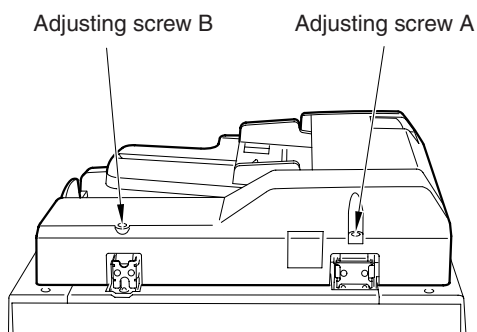
- 6 Close the ADF to connect the reference holes and ADF positioning tools.
- 7 Install three screws to secure each of the two fixing plates with three screws following the removal procedure in reverse.
- 8 Open the ADF and tighten all of the four screws to secure the two fixing plates.



- 9 Remove the ADF positioning tools and install the original stopper plate (left) with two screws.
- 10 Remove two screws and uninstall the top cover (left).
- 11 Close the ADF and check whether both stopper pieces on the ADF-side touch the ADF glass.



- 12 If both stopper pieces do not touch the ADF glass at the same time, make adjustments using adjusting screws A and B alternately.
- 13 Perform steps 11 and 12 repeatedly until the two stopper pieces touch the ADF glass at the same time.



- 14 For further installation, follow the removal procedure in reverse.
- 15 The open and close angle of ADF can be changed from 70 degrees to 40 degrees when the stopper is attached to opposite direction.

Original feed/conveyance/exit section

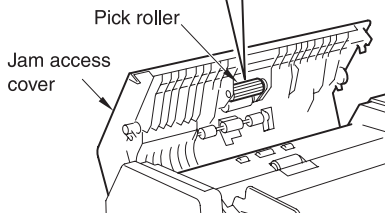
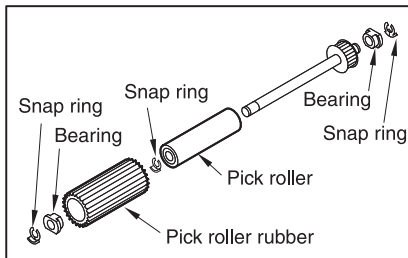
Replacing the pick roller and conveyance roller rubber

CAUTION

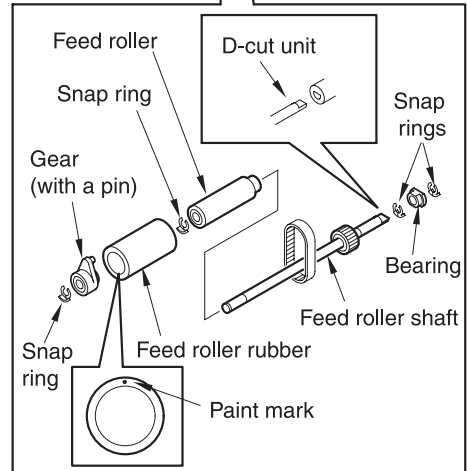
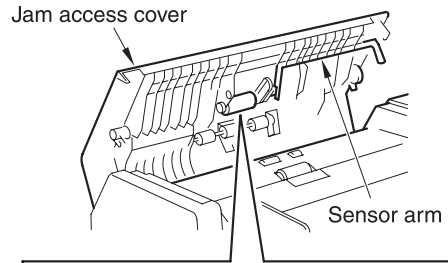
Make sure the power cord of the main unit has been unplugged from the wall outlet.

Procedure

- 1 Open the jam access cover.
- 2 Remove three snap rings, shift each of the two bearings outward, and detach them.
- 3 Remove the pick roller assembly to detach the pick roller.
- 4 Remove the pick roller rubber from the pick roller.



- 5 Remove four snap rings, and shift the gear (with a pin) and bearing outward.
- 6 Shift the feed roller assembly to the left until it stops and lift it up to remove it.
- 7 Remove the gear (with a pin) and remove the feed roller.
- 8 Remove the feed roller rubber from the feed roller.



- 9 Reinstall the above parts following the removal procedure in reverse.

CAUTION

Make sure that the feed roller is installed in the correct direction.

Install the D-cut shaft of the feed roller assembly while inserting it in the receiver side.

Make sure not to damage the sensor arm during installation.

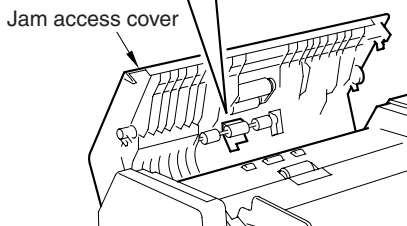
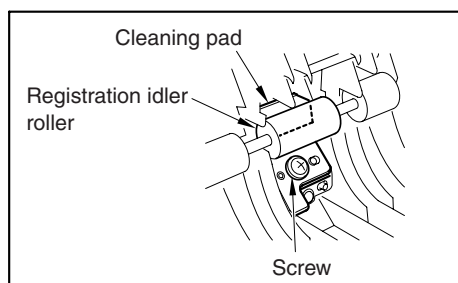
Cleaning the cleaning pad

CAUTION

Make sure the power cord of the main unit has been unplugged from the wall outlet.

Procedure

- 1 Open the jam access cover.
- 2 Remove one screw to detach the cleaning pad.
- 3 Using a blower brush, clean the cleaning pad.



- 4 Reinstall the above parts following the removal steps in reverse.

Replacing the separation roller/separation roller rubber

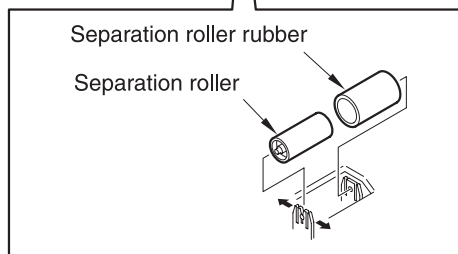
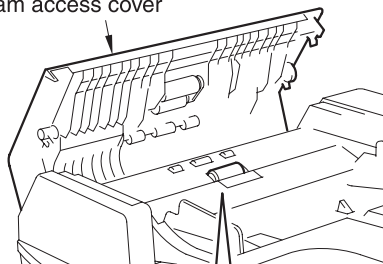
CAUTION

Make sure the power cord of the main unit has been unplugged from the wall outlet.

Procedure

- 1 Open the jam access cover.
- 2 Open the retaining clip and remove the separation roller.
- 3 Remove the separation roller rubber from the separation roller.

Jam access cover



- 4 Reinstall the above parts following the removal procedure in reverse.

CAUTION

Make sure that the separation roller is installed in the correct direction.

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hp LaserJet 9055mfp/9065mfp

**4000-sheet high capacity input
(A4/Letter - Q3637A)
(A3/Ledger - Q3638A)**

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Q3637A/Q3638A product specifications

Type

Side mount type large volume paper feed tray

Functions

Standard size paper

Q3637A

- Metric area
A4 / B5 / letter
Wide paper (314 mm by 223 mm maximum)
- Inch area
letter / A4
Wide paper (314 mm by 223 mm maximum)

Q3638A

- Metric area
A3 / B4 / A4 / A4R / F4
Wide paper (314 mm by 459 mm maximum)
- Inch area
ledger / legal / letter / letterR
Wide paper (314 mm by 459 mm maximum)

Maximum quantity

4000 sheets (80 g/m² or 20 lb)

Machine data

Power source

24V DC/5V (supplied from the MFP),
AC27.3V

Maximum power consumption

Q3637A maximum 82 W

Q3638A maximum 100 W

Weight

Q3637A approximately 30 kg

Q3638A approximately 42 kg

Machine dimensions

Q3637A

430 (W) by 639 (D) by 690 (H) mm

Q3638A

670 (W) by 639 (D) by 695 (H) mm

Maintenance

Maintenance

Same as the MFP

Machine life

Same as the MFP

Operating environment

Temperature

10° C to 30° C (50° F to 86° F)

Humidity

10 percent to 80 percent RH

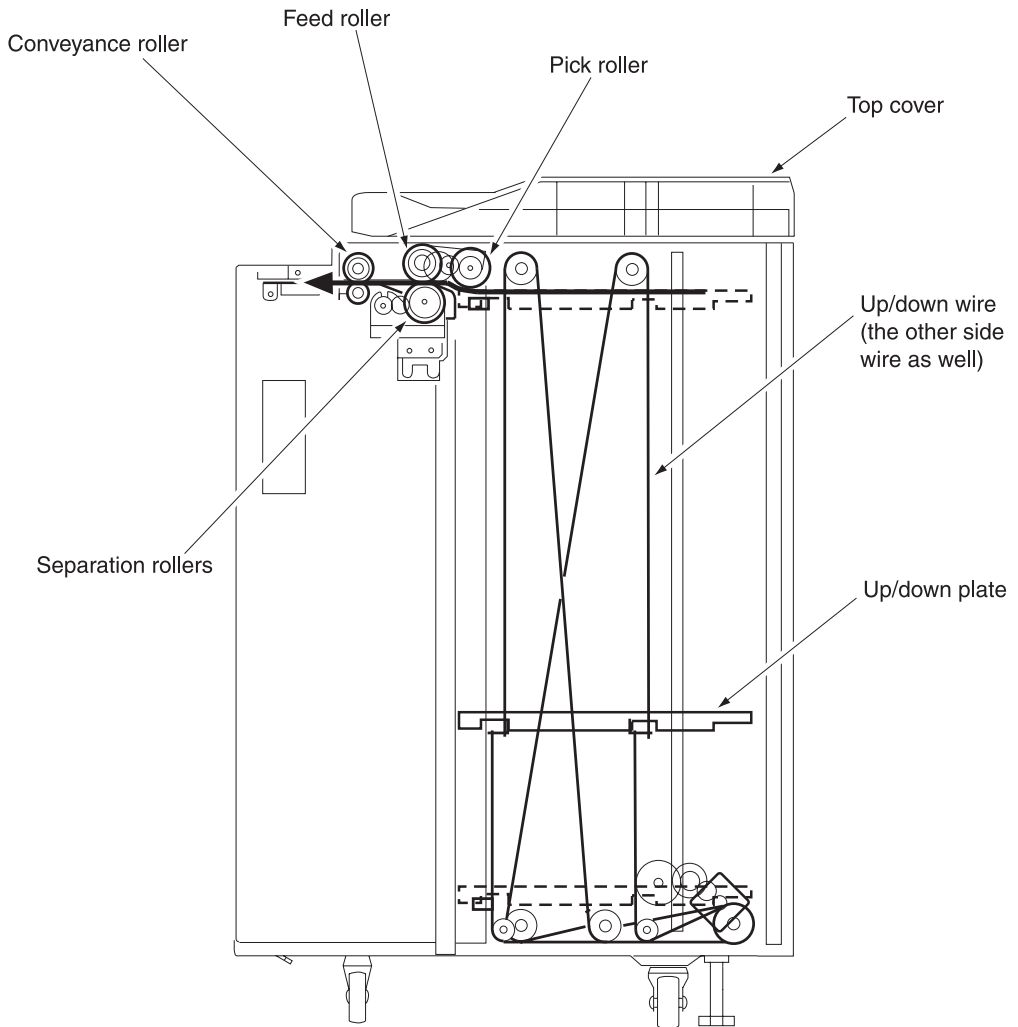
Note

The information herein may be subject to change for improvement without notice.

Center cross-sectional drawing

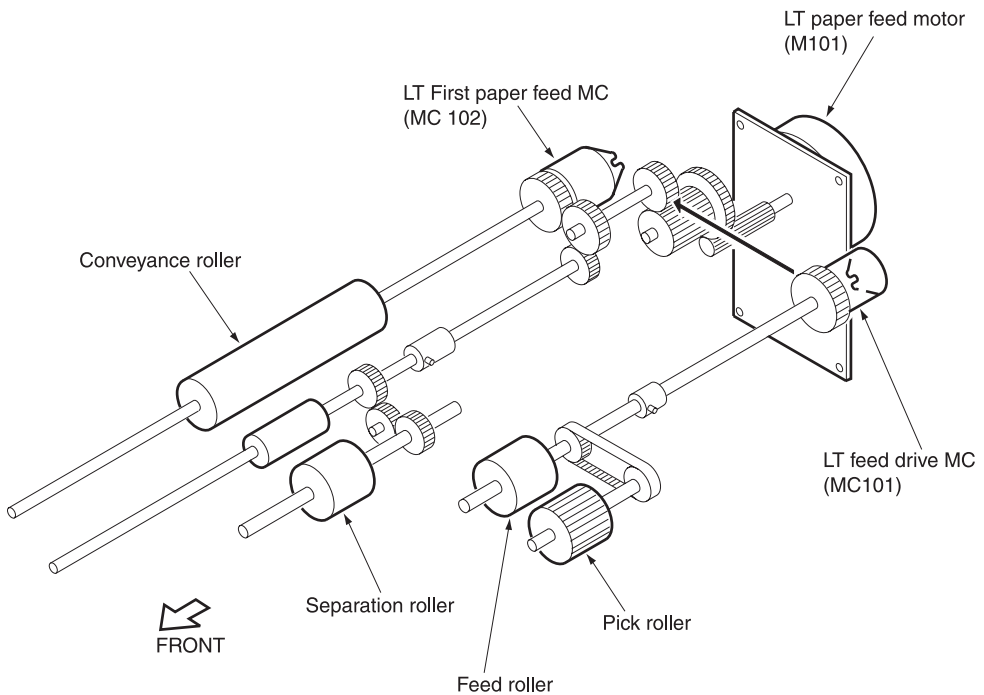
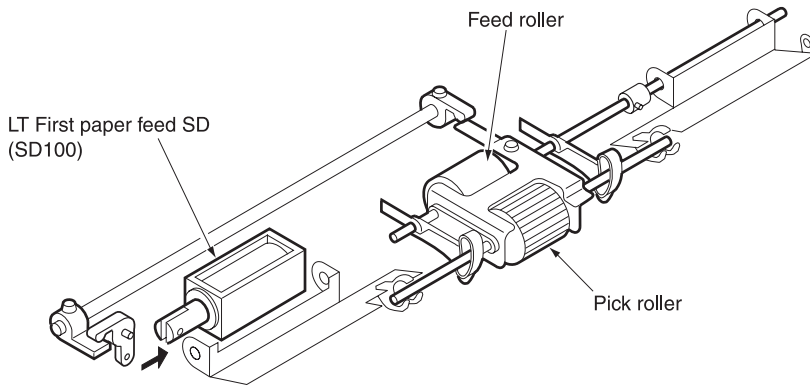
Note

In the following drawings, LT refers to the high capacity input (HCI).



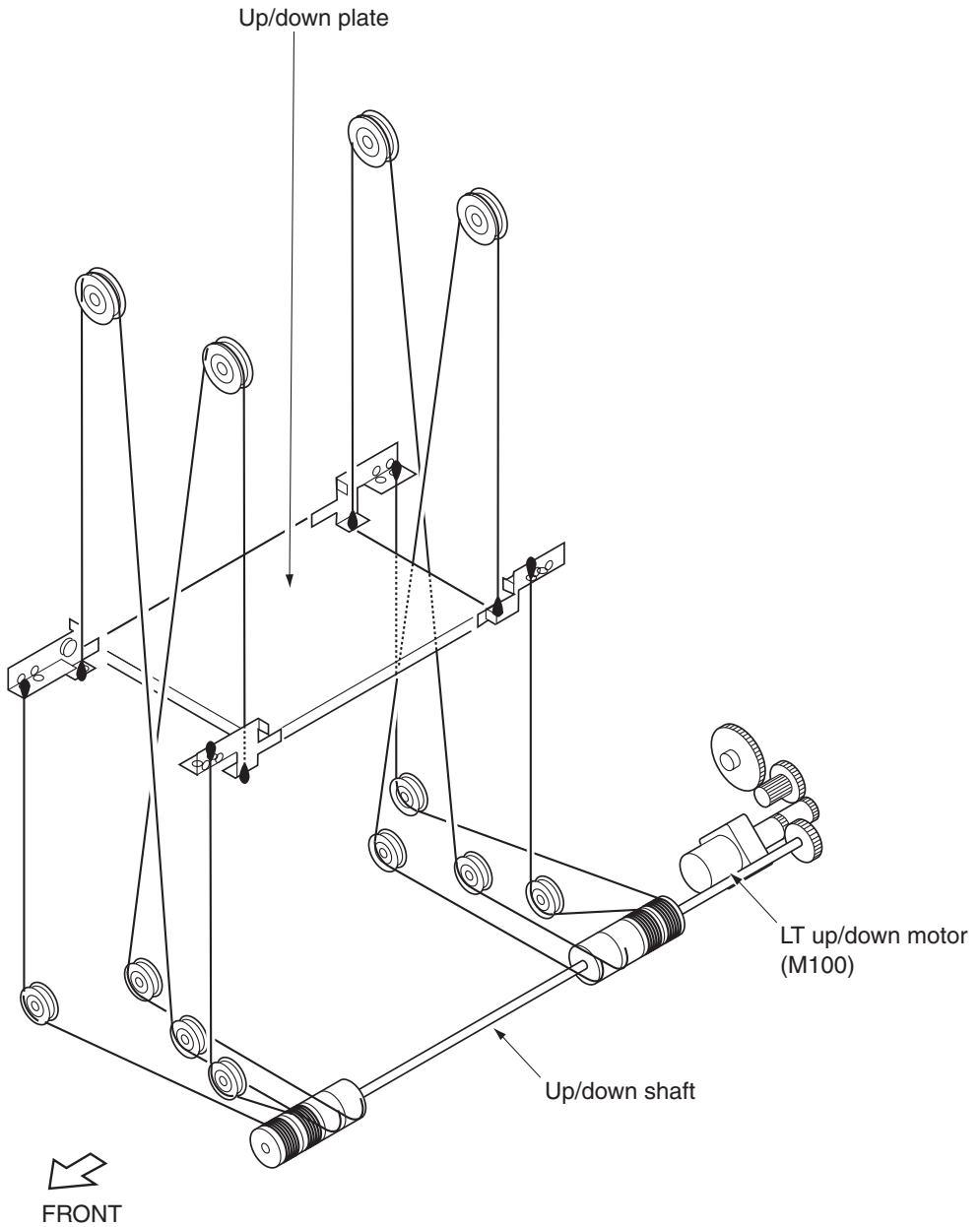
Drive system drawing

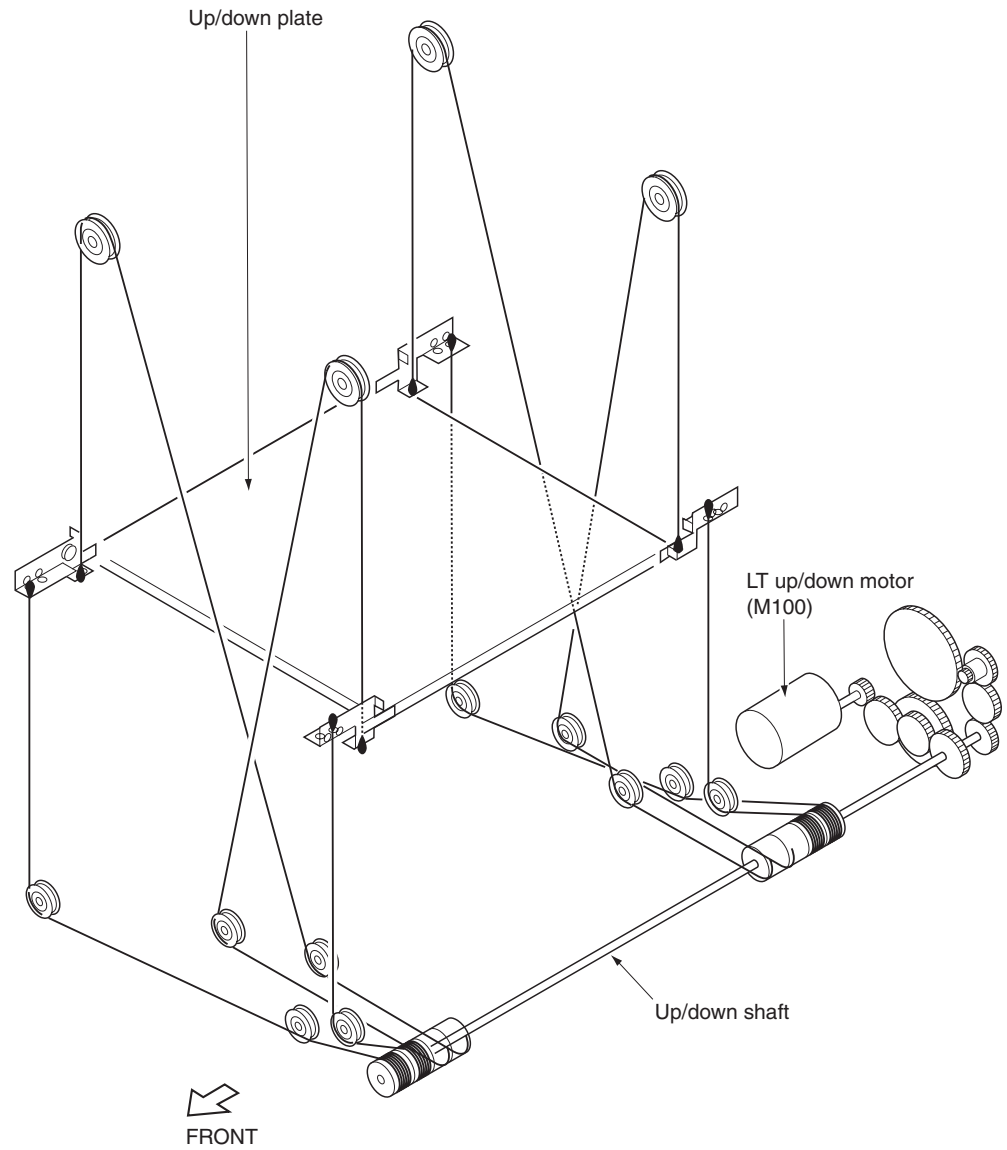
Paper feed drive section



Stacked paper up/down wire drive section

Q3637A





2 HCl unit explanation

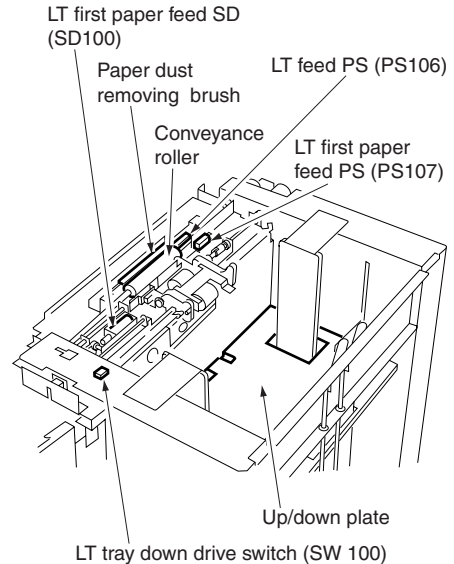
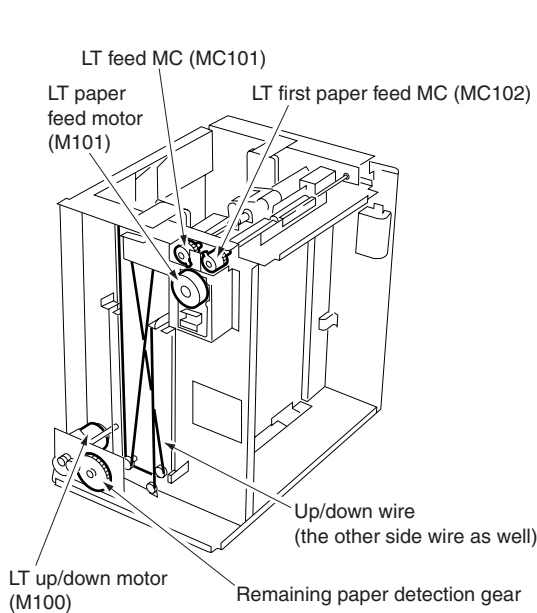
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Paper feed section

Composition

Note

In the following diagram, LT refers to the high capacity input (HCI).



Mechanisms

Mechanism	Method
Paper lifting *1	Wire drive
Paper feed	Pick roller
No paper detection	Photo sensor (PS108) + actuator
Remaining paper detection *2	Remaining paper detection gear+ photo sensor (PS102, PS103, PS104, PS105)
Paper conveyance	Roller conveyance

*1 Paper lifting

a Up/down plate lifting drive operation

The up/down plate is lifted with the up/down wires. When the top cover closes, HCI up/down motor (M100) rotates and the up/down plate connected to the up/down wires rises.

a Up/down plate down drive operation

The up/down plate automatically lowers by 120 mm when the top cover is opened.

Subsequently, it is lowered by 120 mm each time HCI tray down drive switch (SW100) is pressed.

*2 Remaining paper detection

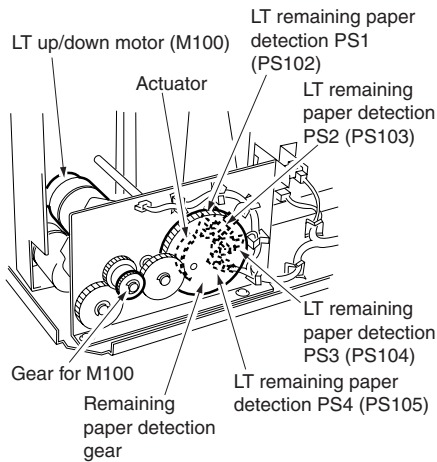
The HCI is equipped with a remaining paper detection gear which rotates together with HCI up/down motor (M100) driving the up/down plate.

The remaining paper detection gear has an actuator to turn on/off HCI remaining paper detection PS1 (PS102), HCI remaining paper detection PS2

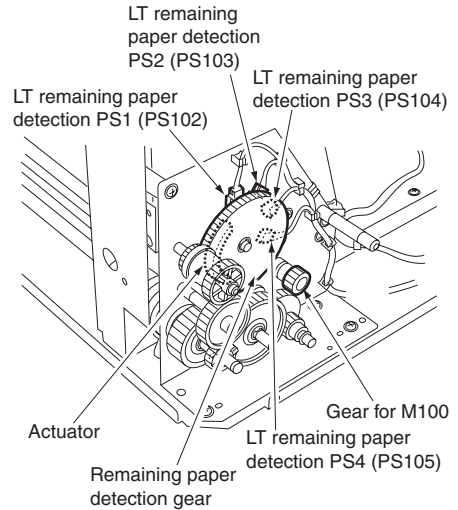
(PS103), HCI remaining paper detection PS3 (PS104), and HCI remaining paper detection PS4 (PS105).

Each sensor is turned on/off according to the rotating position of the remaining paper detection gear and since this is linked with the up/down position of the up/down plate, the remaining paper quantity in the HCI can be determined by monitoring the on/off of each sensor. The remaining paper quantity detected with the four sensors is displayed on the MFP display.

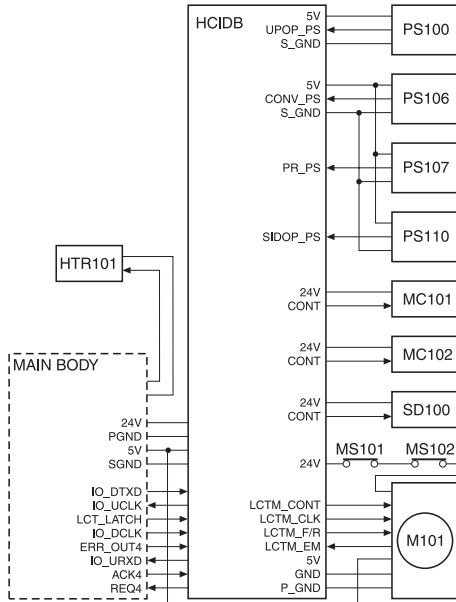
a Q3637A



b Q3638A



First paper feed control



The first paper is fed by the pick roller and the feed roller, driven by M101 (HCI paper feed) via MC101 (HCI feed MC). The pick roller and feed roller touch the paper when SD100 (HCI first feed) is on, feeding the paper to the conveyance roller. Then, SD100 (HCI first paper feed) turns off to release the pick roller and feed roller from the paper. The conveyance roller is also driven by M101, by turning on MC102 (HCI first feed MC), paper is fed to the MFP.

The related signals are: PS100 (HCI top cover open/close detection), PS106 (HCI feed), PS107 (HCI first feed), and PS110 (HCI jam access door open/close detection).

1 Operation

a First paper feed timing

1 Start of first paper feed

At predefined interval after the START button is pressed.

2 Start of second and subsequent papers

When PS106 (HCI feed) is turned off by the preceding paper.

3 OFF timing

When the MFP M7 (paper exit) turns off.

b Interlock

The power supply line of M101 (HCI paper feed) is equipped with MS101 (HCI interlock/1) and MS102 (HCI interlock/2). When the top cover is opened, MS101 turns off, and when the jam access door is opened MS102 turns off, thereby cutting off the power supply to M101.

Furthermore, the top cover is equipped with PS100 (HCI top cover open/close detection) and the jam access door is equipped with PS110 (HCI jam access door open/close detection) and when either of these doors is opened during paper feed, the M101 drive signal is turned off to stop the paper feed operation.

c Internal heater

The HCI is equipped with HTR101 (HCI internal heater) to protect the paper from humidity. HTR101 is directly controlled by the MFP PRCB (printer control board) rather than by the HCIDB (HCI drive board).

2 Signals

a Input signals

1 UPOP_PS (PS100 to HCIDB)

Top cover open/close detection signal

[L]: Cover opened

[H]: Cover closed

2 CONV_PS (PS106 to HCIDB)

Conveyance roller exit paper detection signal

[L]: Paper detected

[H]: Paper not detected

3 PR_PS (PS107 to HCIDB)

Conveyance roller entrance (pre-registration position) paper detection signal

[L]: Paper detected

[H]: Paper not detected

4 SIDOP_PS (PS110 to HCIDB)

Jam access door open/close detection signal

[L]: Door opened

[H]: Door closed

5 HCIM_EM (M101 to HCIDB)

M101 rotation error detection signal

[L]: M101 rotating

[H]: M101 not rotating

6 IO_DTXD (MFP to HCIDB)

Serial data to transmit MFP PRCB (printer control board) operating status to HCIDB

7 HCI_LATCH (MFP to HCIDB)

IO_DTXD signal latch signal

8 IO_DCLK (MFP to HCIDB)

IO_DTXD signal clock signal

9 ERR_OUT4 (MFP to HCIDB)

Signal to notify HCIDB (HCI drive board) when there is error in the MFP

10ACK4 (MFP to HCIDB)

Serial data transmission enable signal from HCI to MFP PRCB (printer control board)

b Output signals**1 CONT (HCIDB to MC101)**

MC101 (HCI feed MC) ON/OFF drive signal

[L]: MC101 on

[H]: MC101 off

2 CONT (HCIDB to MC102)

MC102 (HCI first paper feed MC) ON/OFF drive signal

[L]: MC102 on

[H]: MC102 off

3 CONT (HCIDB to SD100)

SD100 (HCI first paper feed) ON/OFF drive signal

[L]: SD100 on

[H]: SD100 off

4 HCIM_CONT (HCIDB to M101)

M101 (HCI paper feed) ON/OFF control signal

[L]: M101 on

[H]: M101 off

5 IO_URXD (HCIDB to MFP)

Serial data to transmit the HCIDB (HCI drive board) operating status to MFP PRCB

6 IO_UCLK (HCIDB to MFP)

IO_URXD signal clock signal

7 REQ4 (HCIDB to MFP)

Serial data send request signal from HCI to MFP PRCB

8 HCIM_CLK (M101 to HCIDB)

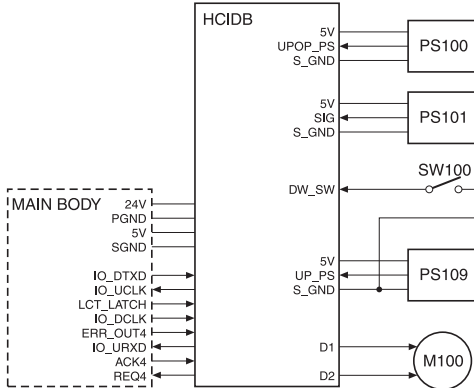
M101 (HCI paper feed) rotational speed control clock signal

9 HCIM_F/R (M101 to HCIDB)

M101 (HCI paper feed) rotational direction indication signal

This MFP always indicates [H]: normal rotation.

Up/down plate drive control



When the top cover opens or closes, M100 (HCI up/down motor) rotates forward or backward to move the up/down plate up or down. The up/down plate descends by 120 mm each time SW100 (HCI tray down drive) is pressed while the top cover is opened.

The related signals are PS100 (HCI top cover open/close detection), PS101 (HCI lower limit detection), and PS109 (HCI upper limit detection).

1 Operation

a Up/down plate descend timing

1 ON timing

When the top cover is opened and PS100 (HCI top cover open/close detection) is turned off, M100 rotates backward to lower the up/down plate.

When SW100 (HCI tray down drive) turns on by pressing, M100 rotates backward to move the up/down plate down.

2 OFF timing

M100 turns off at predefined interval after PS100 turns off or SW100 turns on. This in turn lowers the up/down plate by 120 mm.

3 Others

The up/down plate descends by 120 mm each time SW100 is pressed until PS101 turns on to indicate the bottom limit of the up/down plate.

b Up/down plate ascend timing

1 ON timing

When the top cover is closed and PS100 (HCI top cover open/close detection) is turned on, M100 (HCI UP/DOWN) rotates forward to raise the up/down plate.

2 OFF timing

When the up/down plate rises and PS109 (HCI upper limit detection) turns on to indicate the detection of the topmost paper, M100 (HCI UP/DOWN) turns off and stops the up/down plate.

The up/down plate also stops when the top cover is opened and PS100 (HCI top cover open/close detection) turns off.

2 Signals

a Input signals

1 SIG (PS101 to HCIDB)

Up/down plate lower limit detection signal

[L]: Up/down plate not at lower limit

[H]: Up/down plate at lower limit

2 UP_PS (PS109 to HCIDB)

Up/down plate upper limit detection signal

[L]: Up/down plate not at upper limit

[H]: Up/down plate at upper limit

3 DW_SW (SW100 to HCIDB)

SW100 (HCI tray down switch) ON/OFF detection signal

[L]: SW100 on

[H]: SW100 off

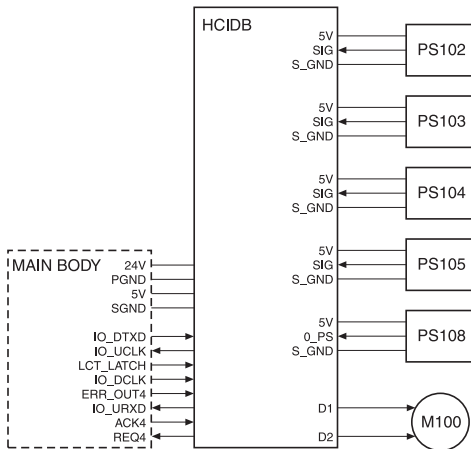
b Output signal

1 D1, 2 (HCIDB to M100)

M100 (HCI UP/DOWN) drive signal

These signals switches the direction of the drive current to control the rotation direction of M100.

Remaining paper detection/no paper detection control



The remaining paper quantity is detected by PS102 (HCI remaining paper detection 1), PS103 (HCI remaining paper detection 2), PS104 (HCI remaining paper detection 3), PS105 (HCI remaining paper detection 4), and no paper detection is made by PS108 (HCI no paper detection).

The signals detected by these sensors are controlled by HCIDB (HCI drive board) and displayed on the MFP display.

1 Operation

a Remaining paper detection control

The remaining paper quantity is determined from the on/off combination of sensors PS102 (HCI remaining paper detection 1), PS103 (HCI remaining paper detection 2), PS104 (HCI remaining paper detection 3), and PS105 (HCI remaining paper detection 4), which detects the

rotational position of M100 (HCI UP/DOWN) that is driving the up/down plate. Each sensor turns on or off according to the position of the remaining paper detection gear which is linked with the rotation of M100.

The remaining paper quantity is detectable at eight levels, but it is displayed on the MFP display as five levels.

Remaining paper quantity and display

Stacked paper quantity	PS102	PS103	PS104	PS105	Remaining paper quantity display
0 to 700	OFF	OFF	OFF	OFF	1 flashing
701 to 1200	ON	OFF	OFF	OFF	1 on
1201 to 1700	ON	ON	OFF	OFF	2 on
1701 to 2200	ON	ON	ON	OFF	2 on
2201 to 2700	ON	ON	ON	ON	3 on
2701 to 3200	OFF	ON	ON	ON	3 on
3201 to 3700	OFF	OFF	ON	ON	4 on
3701 or more	OFF	OFF	OFF	ON	4 on

Note

The remaining paper quantity is indicated on the control panel with four horizontal bars.

Stacked paper quantity differs depending on the thickness of the paper.

b No paper detection control

When there is no more paper inside the HCI, PS108 (HCI no paper detection) turns on and a message is displayed on the MFP display.

2 Signals

a Input signals

1 SIG (PS102 to HCIDB)

Remaining paper detection gear rotational position detection signal

[L]: PS102 off

[H]: PS102 on

2 SIG (PS103 to HCIDB)

Remaining paper detection gear
rotational position detection signal

[L]: PS103 off

[H]: PS103 on

3 SIG (PS104 to HCIDB)

Remaining paper detection gear
rotational position detection signal

[L]: PS104 off

[H]: PS104 on

4 SIG (PS105 to HCIDB)

Remaining paper detection gear
rotational position detection signal

[L]: PS105 off

[H]: PS105 on

5 0_PS (PS108 to HCIDB)

HCI no paper detection signal

[L]: No paper

[H]: Paper present

3 HCI

disassembly/assembly

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Explanation

This section explains how to disassemble and reassemble the MFP. When disassembling and reassembling the MFP, follow the precautions given below.

CAUTION

- Be sure the power cord has been unplugged from the wall outlet.
- The disassembled parts must be reassembled following the disassembly procedure in reverse unless otherwise specified.
- Care should be taken not to lose small parts. Care should also be taken not to install small parts in wrong places.
- Do not operate the MFP before installing all the disassembled parts completely.
- Removal of some screws is prohibited in this section. Never loosen them.

Paper feed section

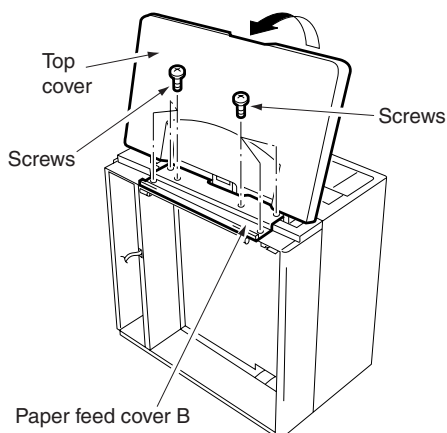
Cleaning the paper dust removing brush

CAUTION

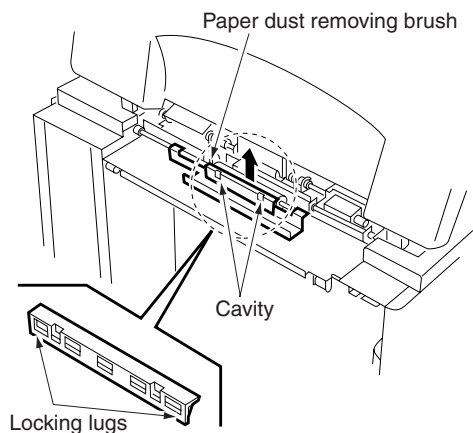
If HCI is connected to the MFP, make sure that the MFP power plug is disconnected from the power outlet.

Procedure

- 1 Open the top cover.
- 2 Remove six screws to detach the paper feed cover B.



- 3 Insert a flat bladed screwdriver in the cavities (in two locations) for paper dust removing brush to release the locking lugs, then remove the paper dust removing brush.



- 4 Clean the paper dust removing brush using a blower brush.
- 5 Reinstall the above parts following the removal steps in reverse.

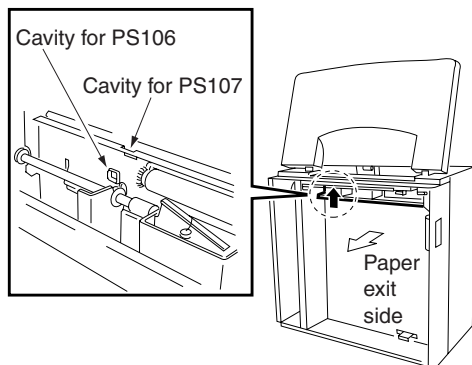
Cleaning the HCI feed PS (PS106)/HCI first paper feed PS (PS107)

CAUTION

If HCI is connected to the MFP, make sure that the MFP power plug is disconnected from the power outlet.

Procedure

- 1 Looking into the paper exit side of the HCI from below, clean sensors through the cavity for HCI feed PS (PS106) and the cavity for HCI first paper feed (PS107) using a blower brush.



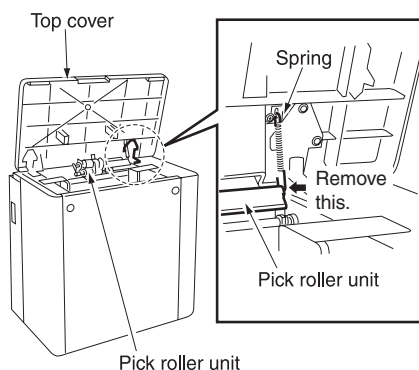
Removing and reinstalling the pick roller unit

CAUTION

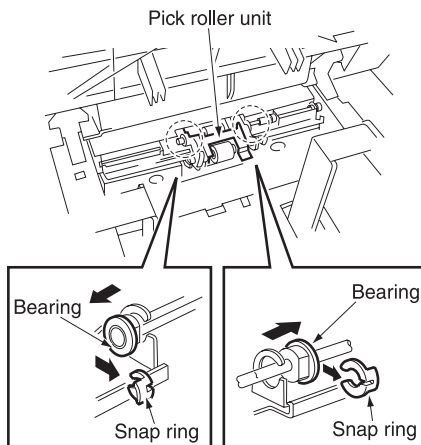
If HCI is connected to the MFP, make sure that the MFP power plug is disconnected from the power outlet.

Procedure

- 1 Open the top cover.
- 2 Remove the spring from the pick roller unit.



- 3 After removing two snap rings, remove the two bearings outward to remove the pick roller unit.



- 4 Reinstall the above parts following the removal steps in reverse.

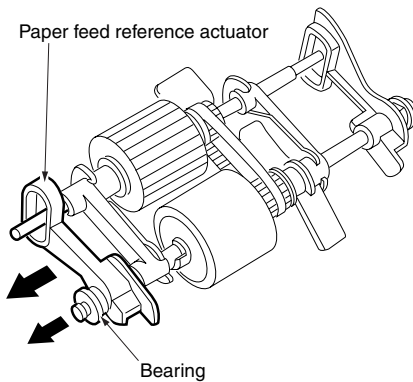
Replacing the pick roller rubber/feed roller rubber

CAUTION

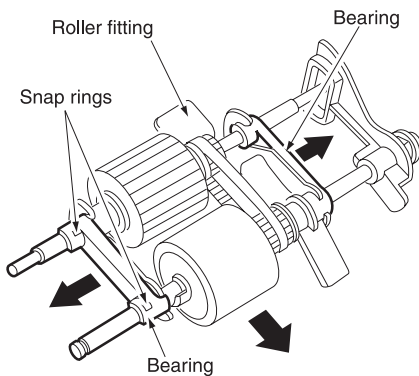
If HCI is connected to the MFP, make sure that the MFP power plug is disconnected from the power outlet.

Procedure

- 1 Remove the pick roller unit.
- 2 Remove the bearing and paper feed reference actuator.

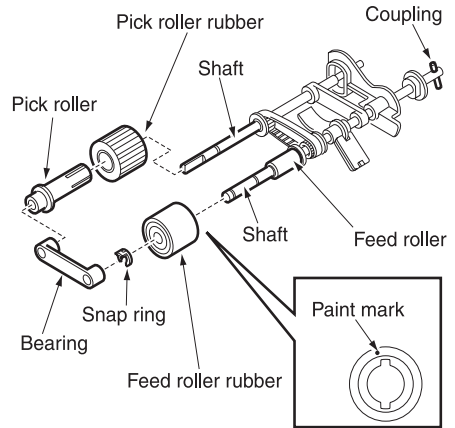


- 3 Remove two snap rings.
- 4 Remove two bearings outward to detach the roller section from the roller fitting.



- 5 Remove the bearing from the opposite side of the coupling, then remove the pick roller from the shaft.

- 6 Remove the snap ring to pull the feed roller from the shaft.
- 7 Remove the rubber from each roller.



- 8 Reinstall the above parts following the removal steps in reverse.

CAUTION

Make sure rollers and rubber portions are oriented properly when reinstalling them.

Make sure the one-way clutch direction is correct.

Check whether grease is present on each roller.

Replacing the separation roller rubber

CAUTION

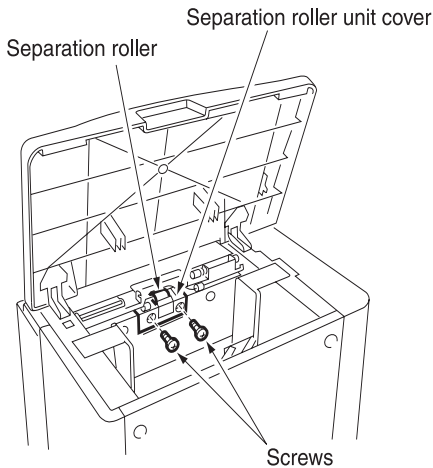
If HCI is connected to the MFP, make sure that the MFP power plug is disconnected from the power outlet.

Procedure

CAUTION

With the power held on, press the HCI tray down switch (SW100) to move the up/down plate down to the bottom in advance.

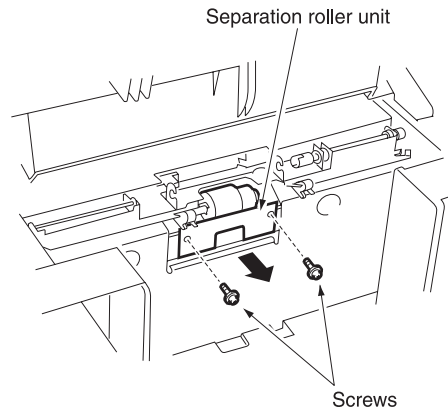
- 1 Remove the pick roller unit.
- 2 Remove two screws to detach the separation roller unit cover.



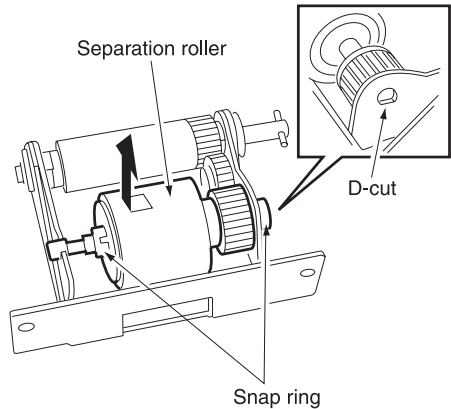
- 3 Remove two screws to detach the separation roller unit.

CAUTION

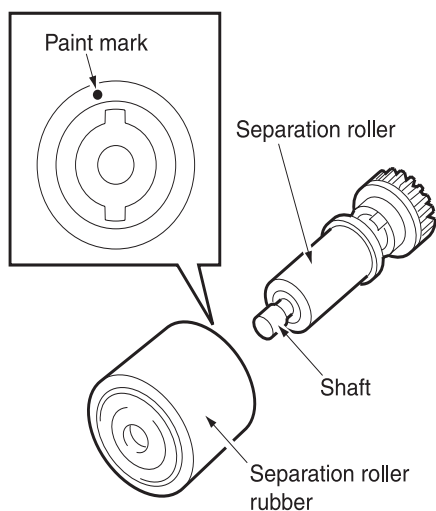
When reinstalling the separation roller unit, tighten the screws on the rear side first.



- 4 Remove two snap rings, fit the shaft into the D-cut in the fitting, and remove the separation roller together with the shaft.



- 5 Remove the separation roller rubber from the separation roller.



- 6 Reinstall the separation roller in the reverse order of the removal procedure.

CAUTION

Make sure the separation roller rubber is oriented properly when reinstalling it.

Check whether scratches are visible on the pet cover for the drive gear.

Check whether grease is present on separation roller.

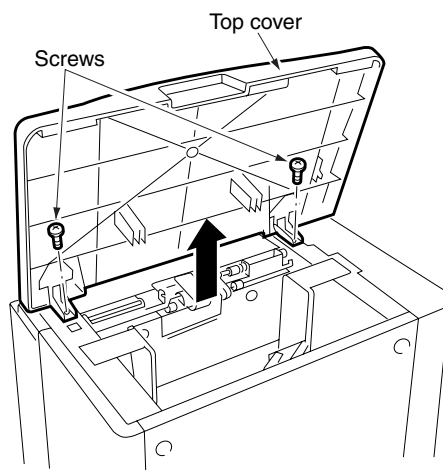
Replacing the HCI feed MC (MC101)/HCI first paper feed MC (MC102)

Procedure

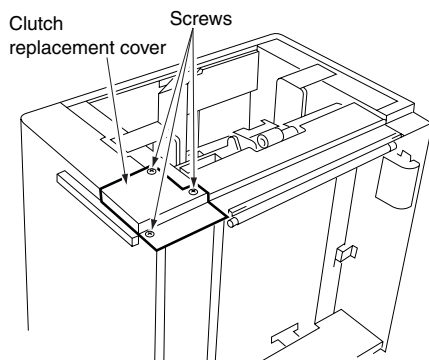
- 1 Open the top cover.
- 2 Remove the spring from the pick roller unit.
- 3 Remove two screws to detach the top cover.

CAUTION

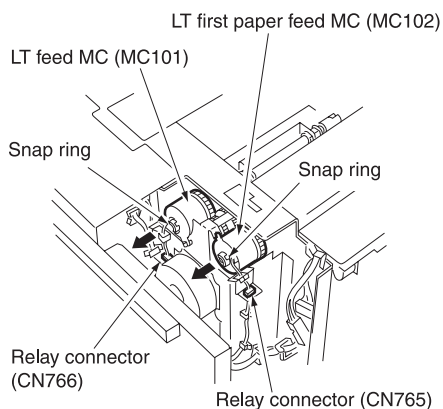
If the top cover is removed, actuating the top cover interlock switch can cause the paper tray to lift beyond the upward limit and damage the HCI.



- 4 Remove three screws to detach the clutch replacement cover.



- 5 Disconnect two relay connectors (CN765, CN766) of the clutches.
- 6 Remove the snap ring to detach each clutch.



- 7 Reinstall the above parts following the removal steps in reverse.

CAUTION

When installing each MC, make sure that the stopper of each clutch is on the predefined position.

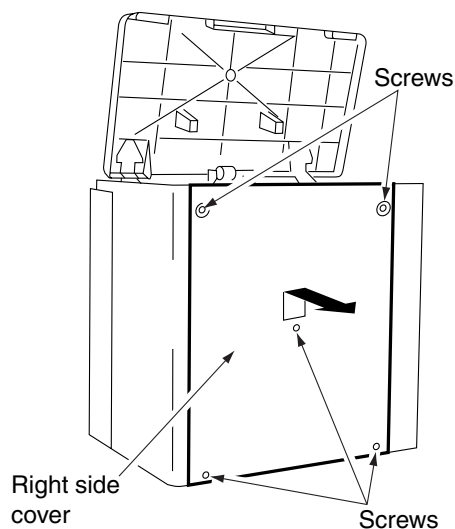
Replacing the Q3637A up/down wires

CAUTION

With the power held on, press the HCI tray down switch (SW100) to move the up/down plate down to the bottom in advance.

Procedure

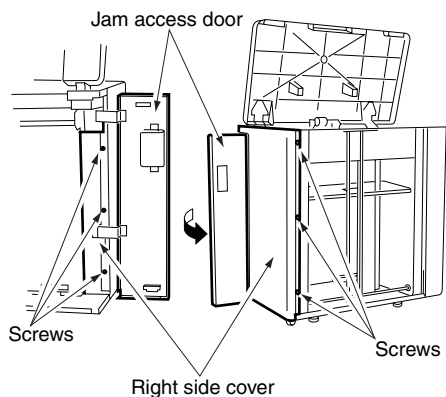
- 1 Open the top cover.
- 2 Remove the clutch replacement cover.
- 3 Remove five screws to detach the right side cover.



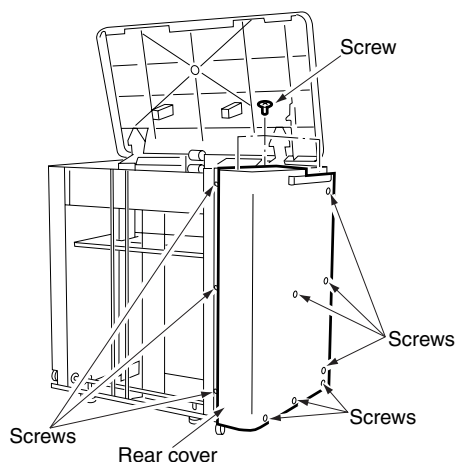
- 4 After opening the jam access door, remove six screws to detach the front cover.

CAUTION

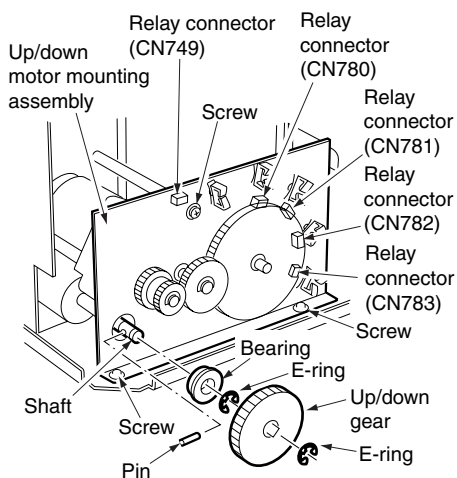
When removing the front cover, close the jam access door after removing the screws.



- 5** Remove twelve screws to detach the rear cover.



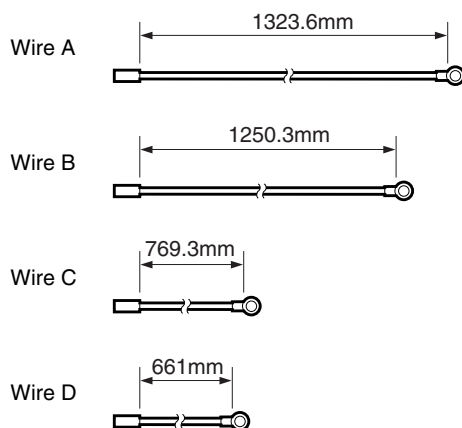
- 6** Remove the five relay connectors (CN749, CN780, CN781, CN782, CN783) to disconnect the wiring harness from the up/down motor mounting assembly.
- 7** Remove the E-ring to detach the up/down gear.
- 8** Pull the pin from the shaft.
- 9** Remove the E-ring to detach the bearing.
- 10** Remove three screws to detach the up/down motor assembly.



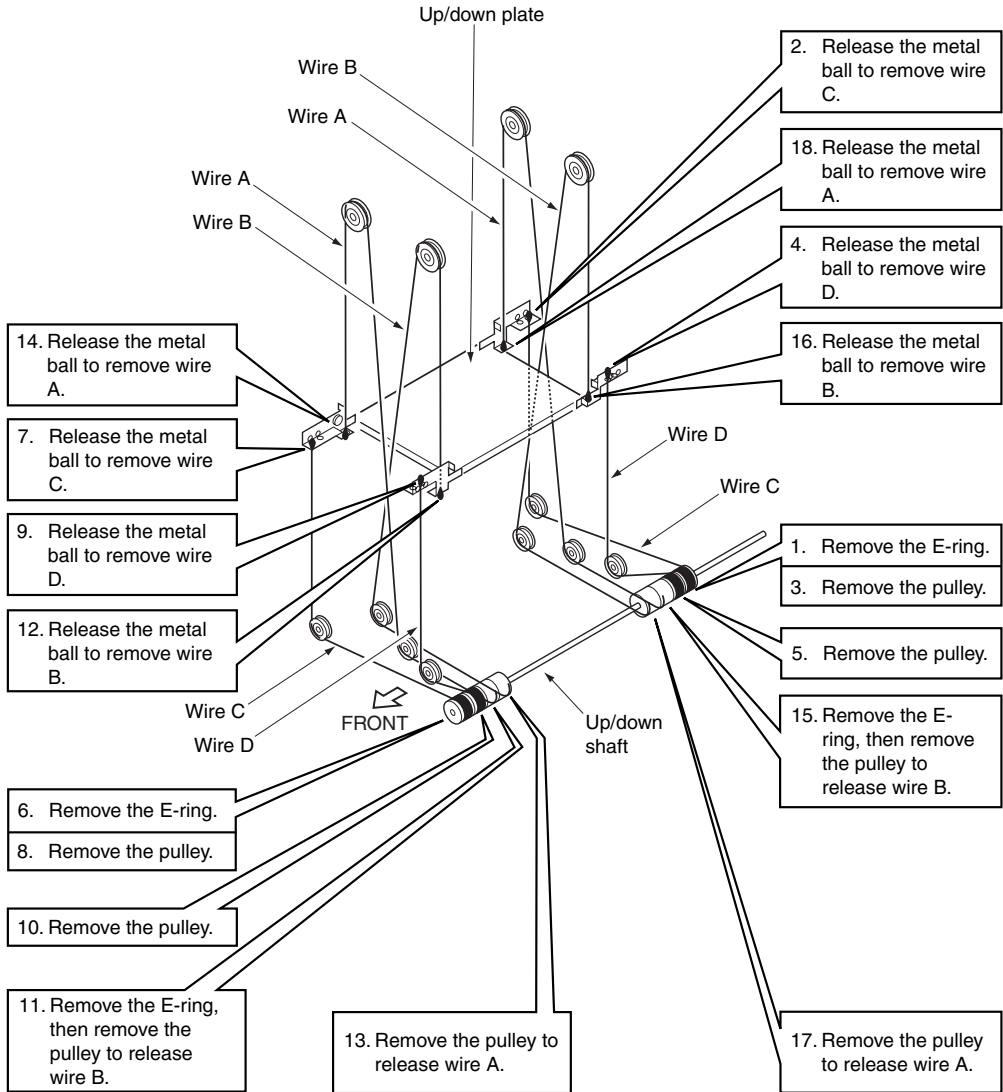
- 11** Replace the up/down wire following the instructions in "Removing the up/down wires" on page 23 and "Installing the up/down wires" on page 24.

CAUTION

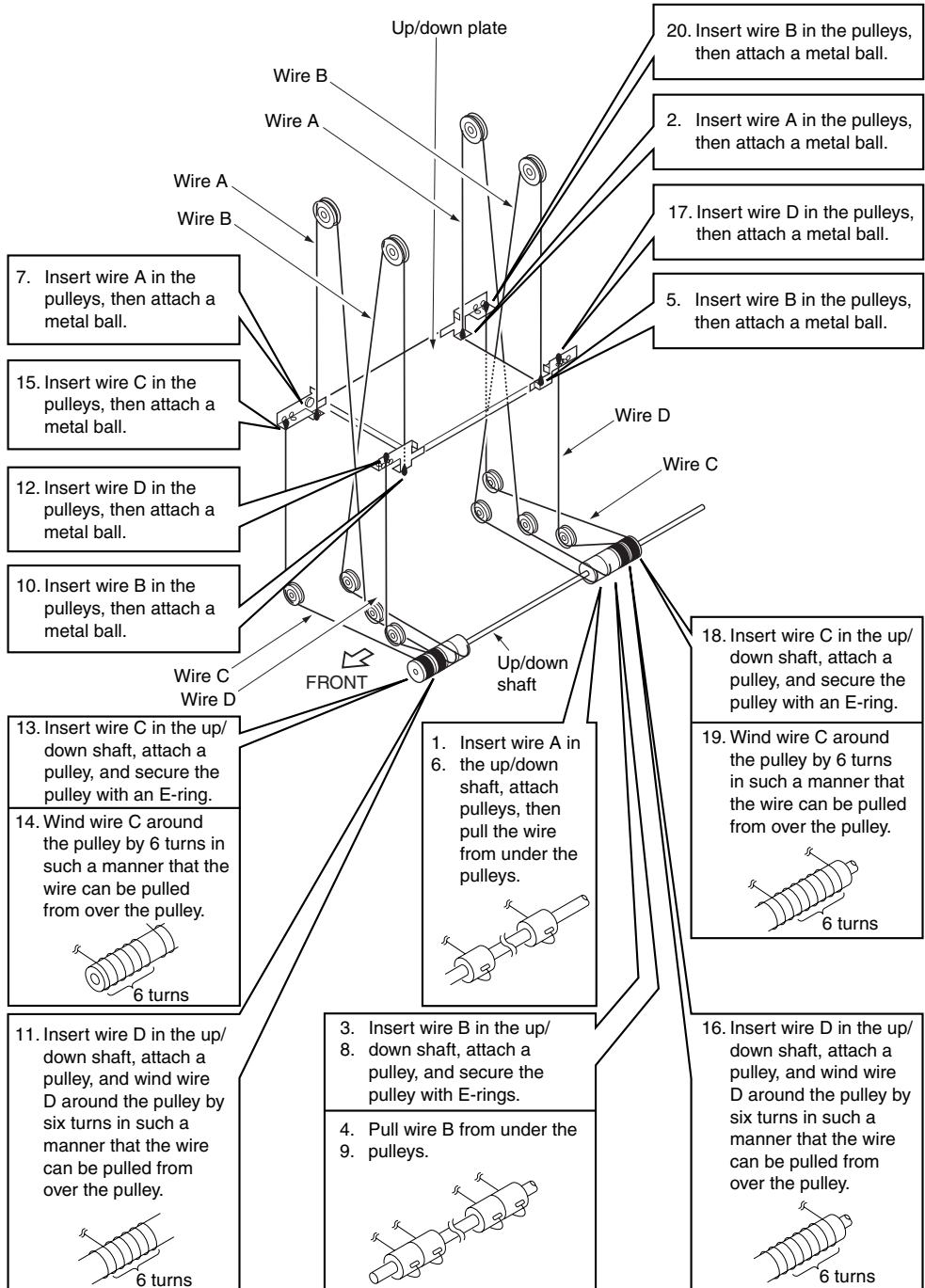
Two sets of four up/down wires with different length, one set at the front and the other at the back, are used. Wires with the same length can be used either at the front or back if they are used in the same location.



Removing the up/down wires



Installing the up/down wires



- 12** After installing the up/down wires, make sure the up/down wires are passed in the grooves in the pulleys properly and wires do not run on the sides of the pulleys. Also make sure the up/down plate can be moved up and down smoothly by hand.

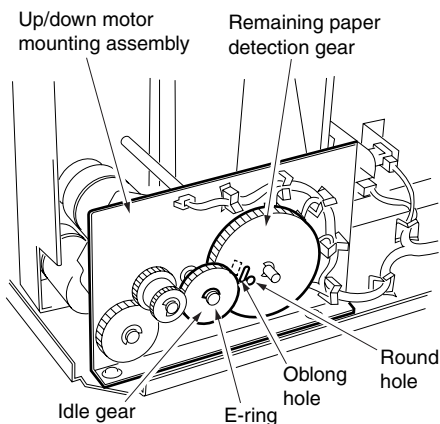
CAUTION

If the up/down plate does not move up and down smoothly, reinstall the up/down wires.

- 13** Install the up/down wire drive motor assembly, up/down gear, and relay connectors, following the removal steps in reverse.
- 14** Remove the E-ring to detach the idle gear.
- 15** Rotate the remaining paper detection gear until the round hole in this gear is aligned with the oblong hole in the up/down motor mounting assembly.

CAUTION

Align when the up/down plate is in lowest position.



- 16** Install the idle gear.

- 17** Attach the covers following the removal steps in reverse.

CAUTION

After replacing the up/down wires, make horizontal and centering adjustment of the up/down plate. (Refer to "Adjustment section.")

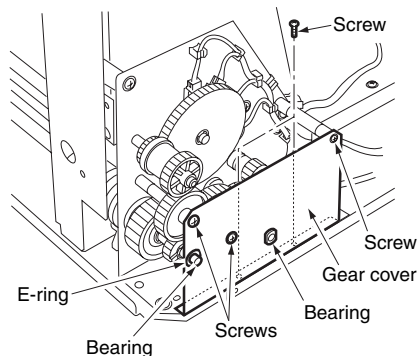
Replacing the Q3638A up/down wires

CAUTION

With the power held on, press the HCI tray down switch (SW100) to move the up/down plate down to the bottom in advance.

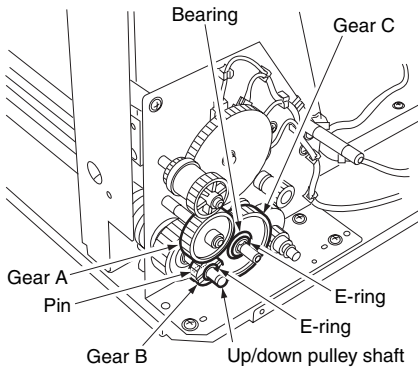
Procedure

- 1 Remove the clutch replacement cover, side cover (right), front cover, and rear cover following the steps (1) to (5) in [7] Replacing the Q3637A up/down Wires.
- 2 Remove the E-ring.
- 3 Remove the five screws to detach the gear cover.
- 4 Remove the two bearings.



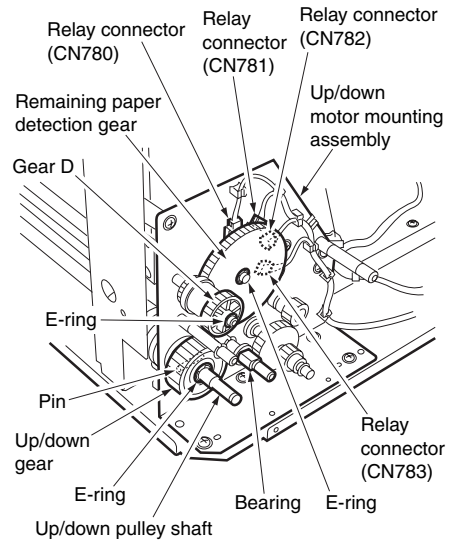
- 5 Remove the gear A.
- 6 Remove the E-ring to remove gear B.

- 7 Remove the detent pin for gear B from the up/down pulley shaft.
- 8 Remove the E-ring and bearing to remove gear C.

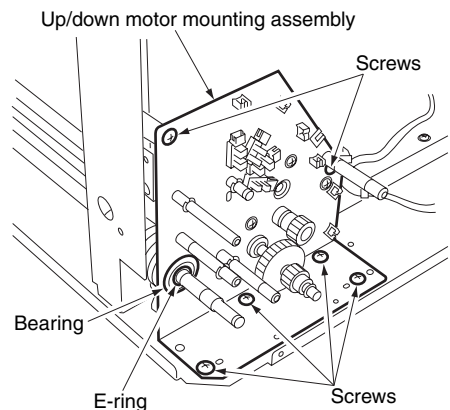


- 9 Remove the bearing behind gear C.
- 10 Remove the E-ring to remove the up/down gear.
- 11 Remove the detent pin for up/down gear from the up/down pulley shaft.
- 12 Remove the E-ring to remove gear D.
- 13 Remove the E-ring to remove the remaining paper detection gear.

- 14 Remove four relay connectors (CN780, CN781, CN782, and CN783) to disconnect the wiring harness from the up/down motor mounting assembly.



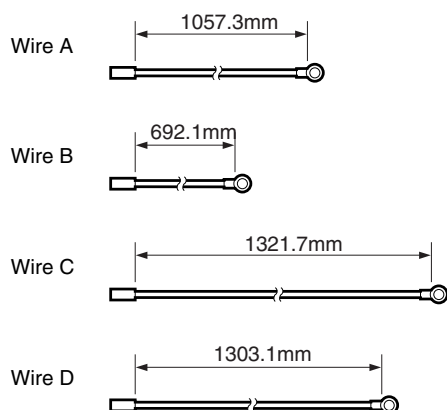
- 15 Remove the E-ring to remove the bearing.
- 16 Remove the six screws to remove the up/down motor mounting assembly.



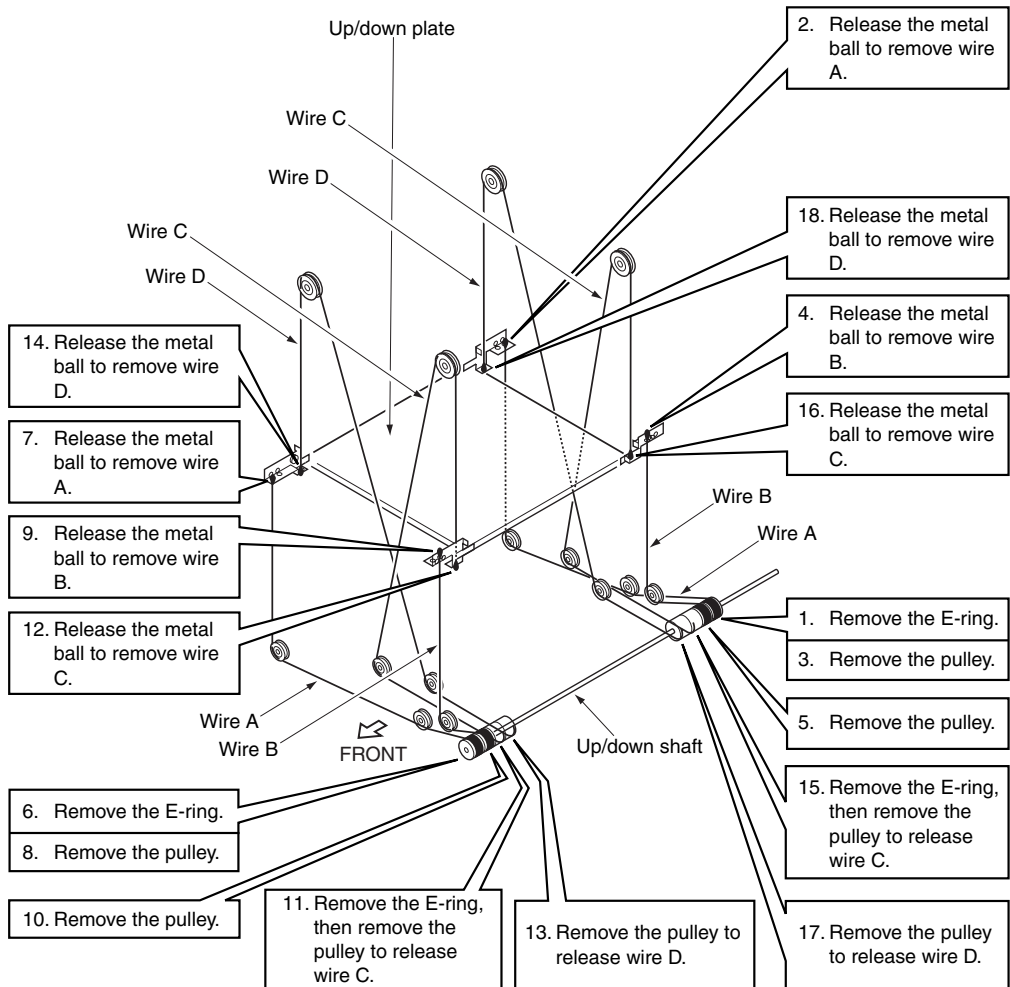
- 17 Replace the up/down wires following the instructions in "Removing the up/down wires" on page 28 and "Installing the up/down wires" on page 29.

CAUTION

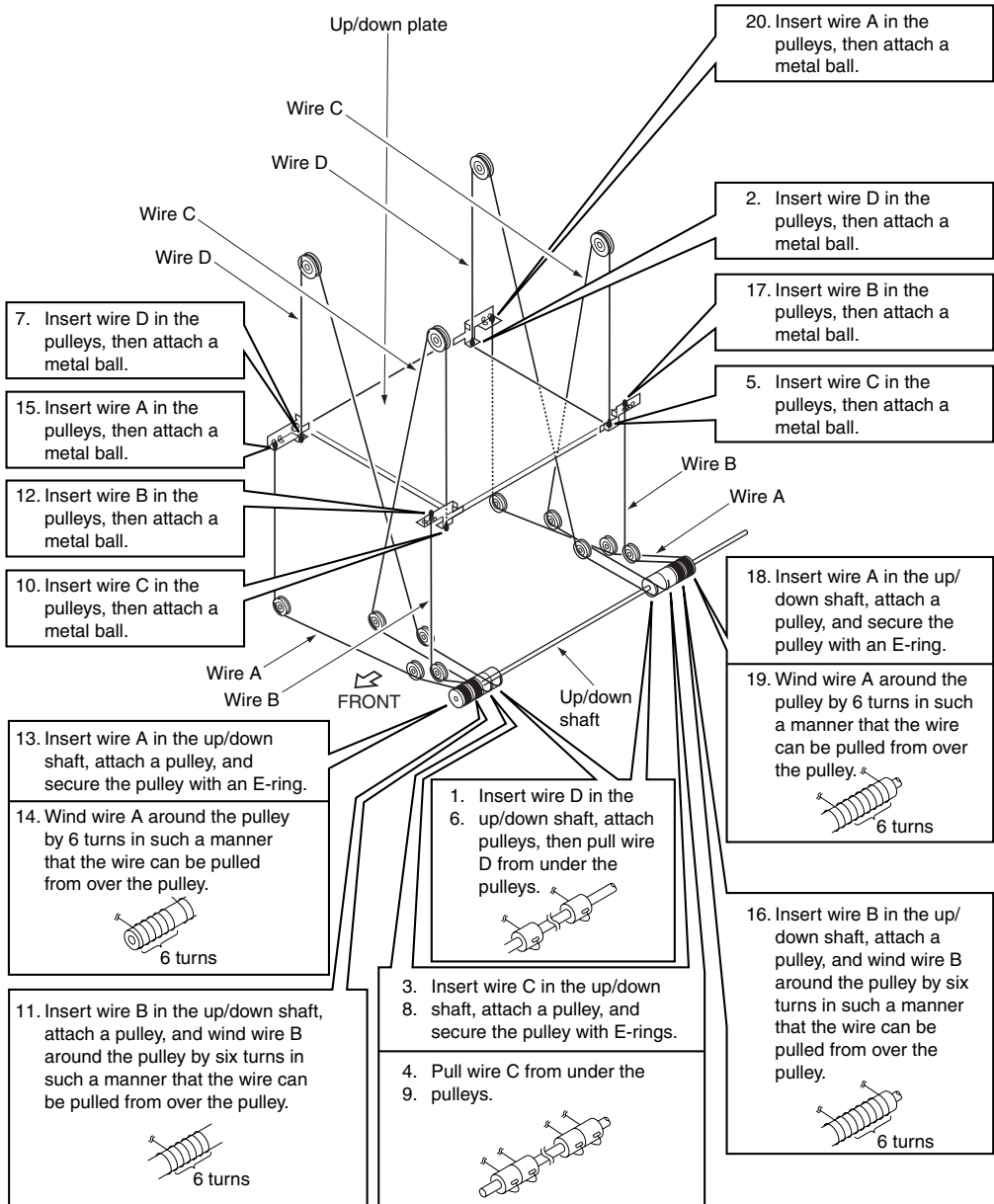
Two sets of four up/down wires with different lengths, one set at the front and the other at the back, are used. Wires with the same length can be used either at the front or back if they are used in the same location.



Removing the up/down wires



Installing the up/down wires

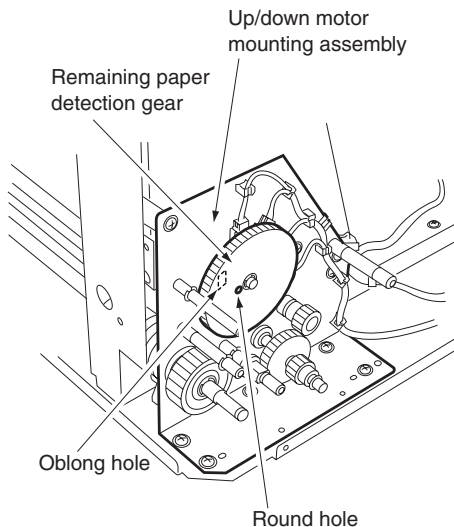


- 18** After installing the up/down wires, check whether they are engaged with the pulleys properly and whether they do not ride over the pulleys. Next, move the up/down plate manually to check whether it moves up and down smoothly.

CAUTION

If the up/down plate does not move smoothly, remove the up/down wires and install them again.

- 19** Install the up/down motor mounting assembly, relay connectors, remaining paper detection gear, gear D, and up/down gear following the removal steps in reverse.
- 20** Rotate the remaining paper detection gear until the round hole in this gear is aligned with the oblong hole in the up/down motor mounting assembly.



CAUTION

Align them when the up/down plate is at the bottom.

- 21** Install gear C.

- 22** Attach the other gears, gear cover, and external covers following the removal steps in reverse.

CAUTION

After replacing the up/down wires, make horizontal and centering adjustments of the up/down plate. (Refer to "Adjustment section.")

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**stapler/stacker (Q3633A)
multifunction finisher
(Q3634A)**

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Stapler/stacker (Q3633A) and multifunction finisher (Q3634A) product specifications

Type

Q3633A

Finishing device with offset collation (sort and group), stapling, and sub-tray eject features.

Q3634A

Finishing device with offset collation (sort and group), stapling, sub-tray eject, booklet (stitch-and-fold), and tri-folding features.

Functions

Type of paper

Same as the MFP

Paper size

		Q3633A/Q3634A				Q3634A only	
		Non-sort	Sort	Staple	Sub-tray	Booklet	Tri-fold
A/B standards	A3	☐	☐	☐	☐	☐	
	B4	☐	☐	☐	☐	☐	
	F4R	☐	☐	☐	☐		
	A4R	☐	☐	☐	☐	☐	☐ *1
	A4	☐	☐	☐	☐		
	B5R	☐	☐	☐	☐		
	B5	☐	☐	☐	☐		
	A5R	☐	☐		☐		
	A5	☐	☐	☐	☐		
	B6R	☐			☐		
By inch	11x17	☐	☐	☐	☐	☐	
	8.5x14	☐	☐	☐	☐	☐	
	8.5x11R	☐	☐	☐	☐		☐ *1
	8.5x11	☐	☐	☐	☐		
	5.5x8.5R	☐	☐	☐	☐		
	5.5x8.5	☐	☐		☐		
	Wide	☐	☐	☐	☐	☐	
	Other				☐		

*1 The position of the stopper must be changed when using paper with different size.

Paper stacking capacity (80 g/m² or 20 lb)

Sub-tray exit mode

Maximum 200 sheets (same-size sheets only)

Non-Staple, group, and offset modes

- Maximum 1500 sheets (A3, B4, F4R, 11 by 17, and 8.5 by 14)
- Maximum 3000 sheets (A4, A4R, B5, B5R, 8.5 by 11, and 8.5 by 11R)
- Maximum 500 sheets (A5, A5R, B6R, 5.5 by 8.5, and 5.5 by 8.5R)

Note

For Q3634A, the maximum stacking capacity is 2500 sheets for A4, A4R, B5, B5R, 8.5 by 11, and 8.5 by 11R paper.

Staple mode

Maximum 1000 sheets (paper must be the same size)

Main tray capacity

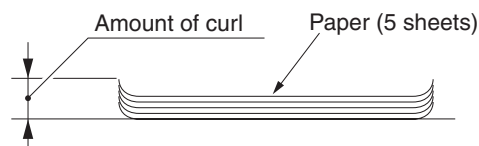
Original pages	A3, 11 by 17, A5, and 5.5 by 8.5	Other paper types
2 to 9	50 stacks	100 stacks
10 to 20	50 stacks	50 stacks
21 to 30	30 stacks	30 stacks
31 to 40	25 stacks	25 stacks
41 to 50	20 stacks	20 stacks

Booklet mode (Q3634A only)

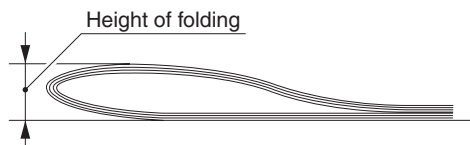
- Stitch-and-fold
20 booklets with 5 sheets folded each.
15 booklets in case of small size paper (A4R/8.5 by 11R). One booklet with 6 sheets folded is taken as two and more booklets.
- Folding
33 booklets with 3 or less sheets folded each 25 booklets in case of small size paper (A4R/8.5 by 11R).
- Tri-folding
Tray capacity is a maximum of 50 individual folded sheets.

Paper curling

10 mm or less



Height of folding in the booklet mode (Q3634A only): (80 g/m² or 20 lb)



Original pages	A3, 11 by 17	B4, 8.5 by 14	A4R, 8.5 by 11R
0 to 5	25 mm or less	25 mm or less	25 mm or less
6 to 10	50 mm or less	50 mm or less	Not specified*
11 to 20	Not specified*	Not specified*	Not specified*

*The height of folding may be larger after exit, although the booklet must be folded with ease manually.

Width (a, b and c) and height (h) in the tri-folding mode:

Width/height	Measurements	Nominal values		Allowance
		A4R	8.5x11R	
Width	a	93 mm	86.4 mm	±2 mm
	b	102 mm	97 mm	±2 mm
	c	102 mm	97 mm	±2 mm
Height	h	25 mm or less	25 mm or less	

Note

Measurements must be made using a single sheet.

Amount of sort offsetting

30 mm (after sorting and grouping)

Staple mode

Number of sheets to be stapled

50 sheets or less (the height must be 5 mm or less when using 80 g/m² or 20 lb quality paper)

Positions for stapling

A = 8.5 mm ± 3 mm

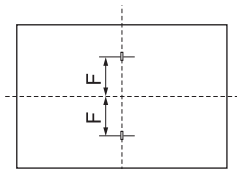
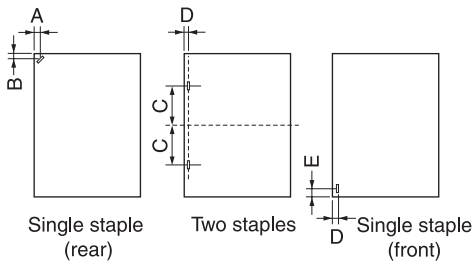
B = 8.5 mm ± 3 mm

C = 60 mm ± 3 mm

D = 8.5 mm ± 3 mm

E = 14 mm ± 3 mm

F = 60 mm ± 3 mm



Booklet mode (stitch-and-fold)
(Multifunction finisher only)

Staple capacity:

5000 staples/cartridge

Booklet mode (Q3634A only)

Stitch-and-fold

- Maximum 20 sheets (when using 80 g/m² or 20 lb quality paper)
- Maximum 19 sheets (when using 80 g/m² or 20 lb quality paper) + one sheet (200 g/m² or 45 lb quality paper)

Folding

Maximum 3 sheets (when using 80 g/m² or 20 lb quality paper)

Tri-folding mode (Q3634A only)

Number of tri-folding:

Maximum 3 sheets (when using 80 g/m² or 20 lb quality paper)

However, special paper cannot be used.

Option

Q3636A

HP Post insertion kit

Punch kit

Machine specifications

Power source

24V, 5VDC (supplied from the MFP)

Maximum power consumption

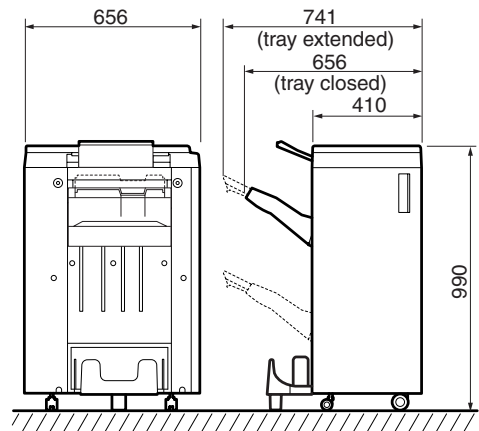
100VA

Weight

Q3633A: Approximately 55 kg

Q3634A: Approximately 65 kg

External dimensions



Maintenance

Maintenance procedures

Same as the MFP

Service life

Same as the MFP

Operating environment

Temperature

10° C to 30° C (50° F to 86° F)

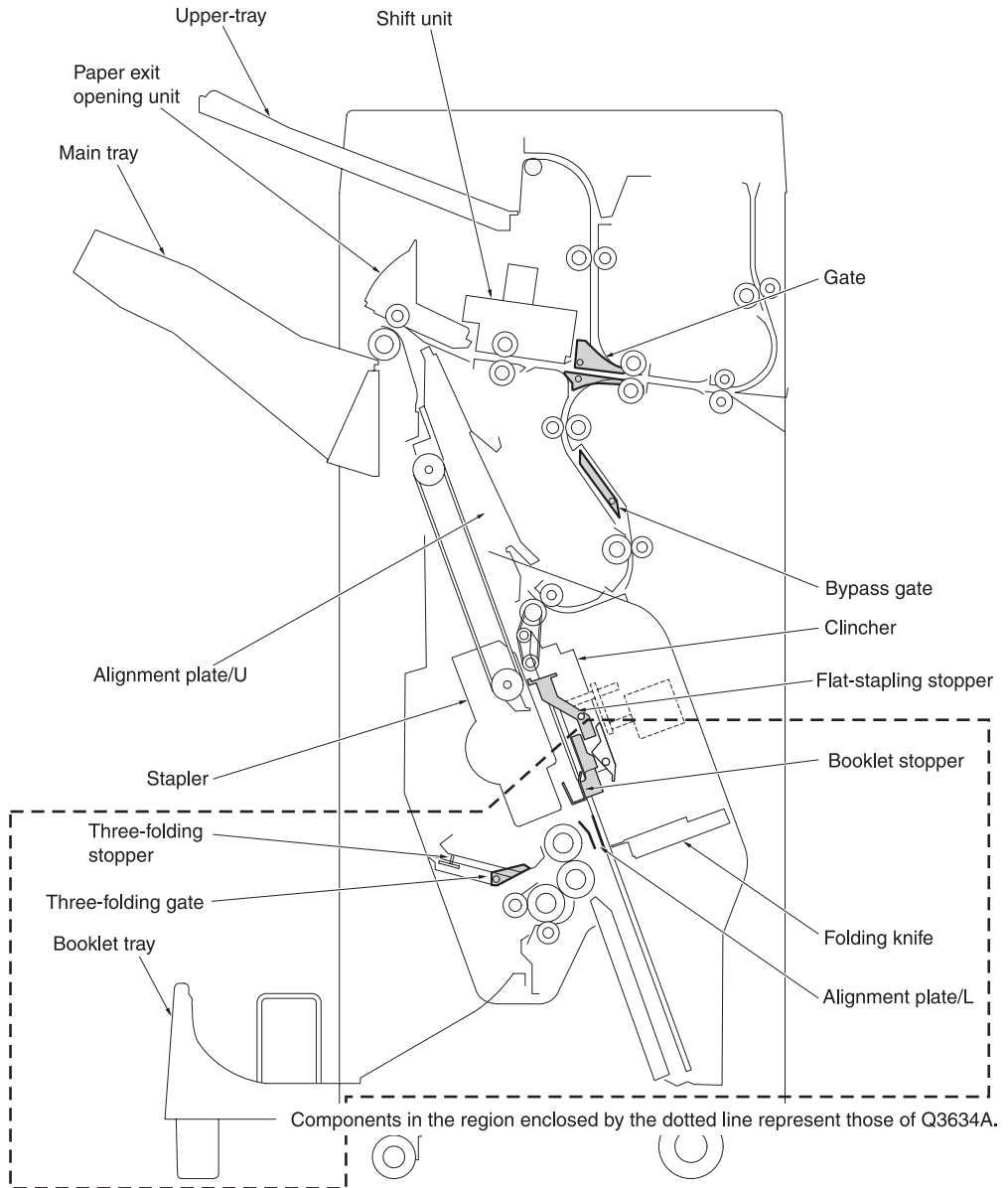
Humidity

10 percent to 80 percent RH

Note

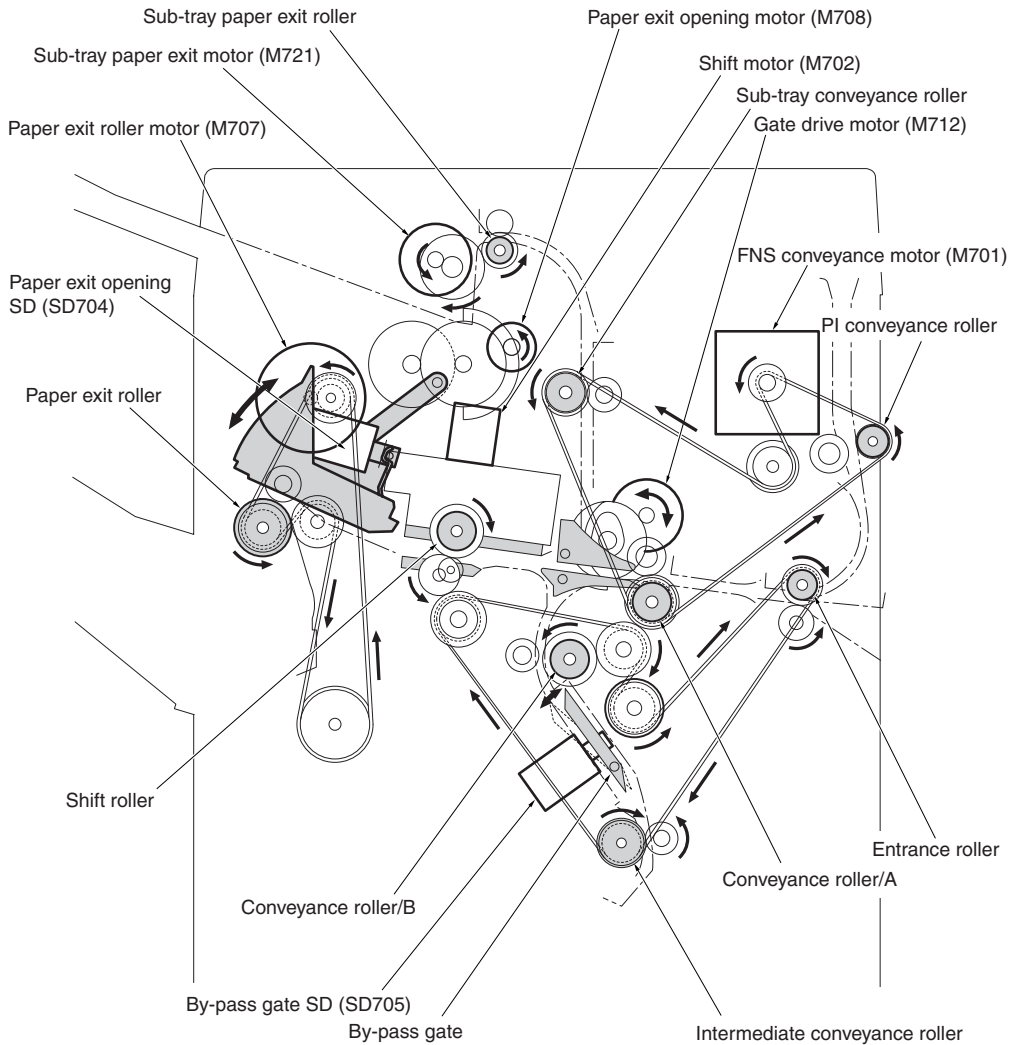
The information herein may be subject to change for improvement without notice.

Cross section diagram

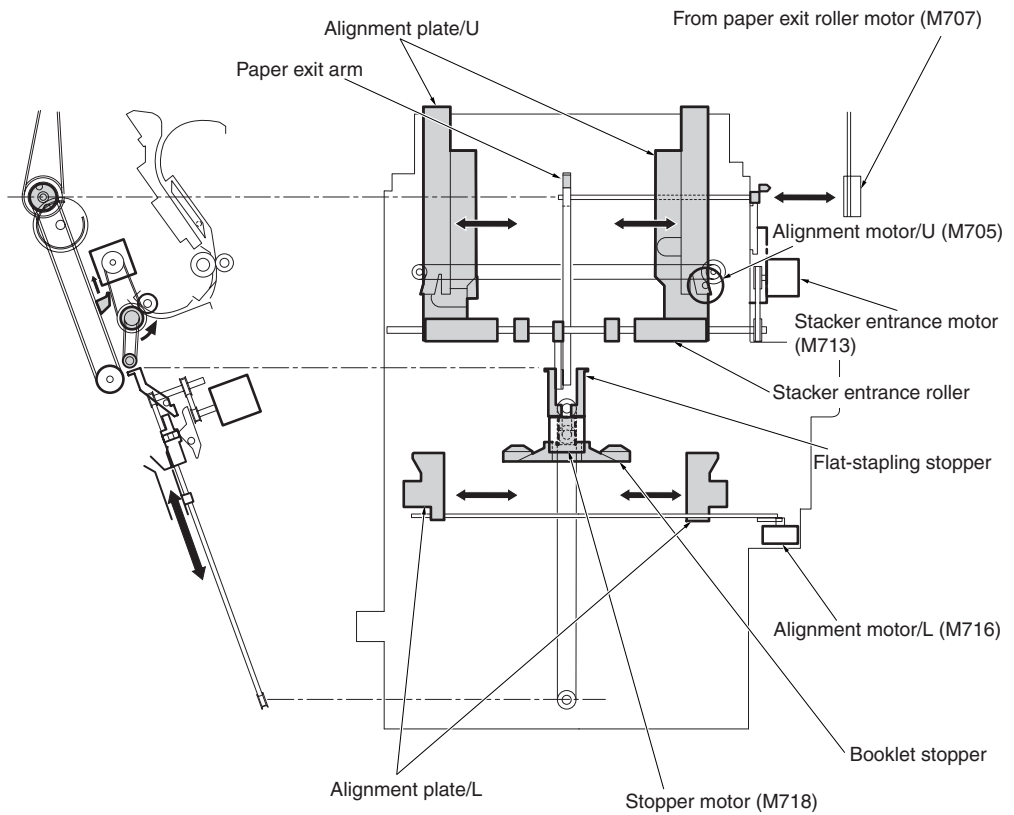


Drive system diagram

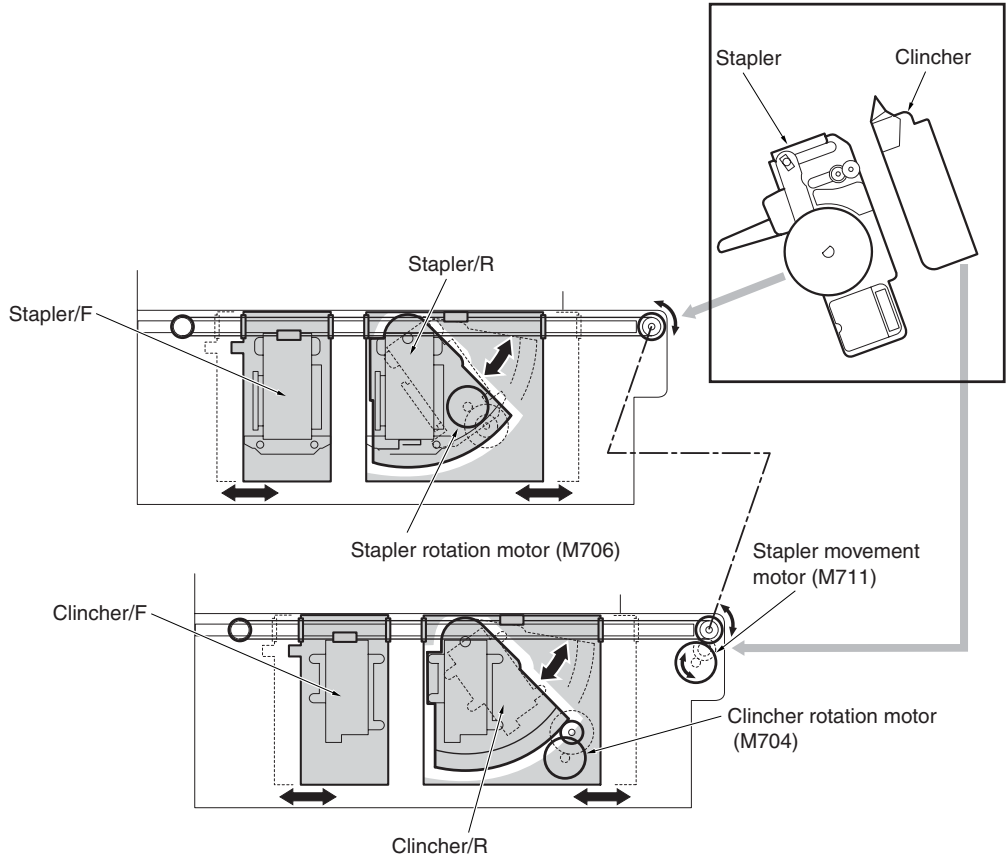
Paper conveyance drive



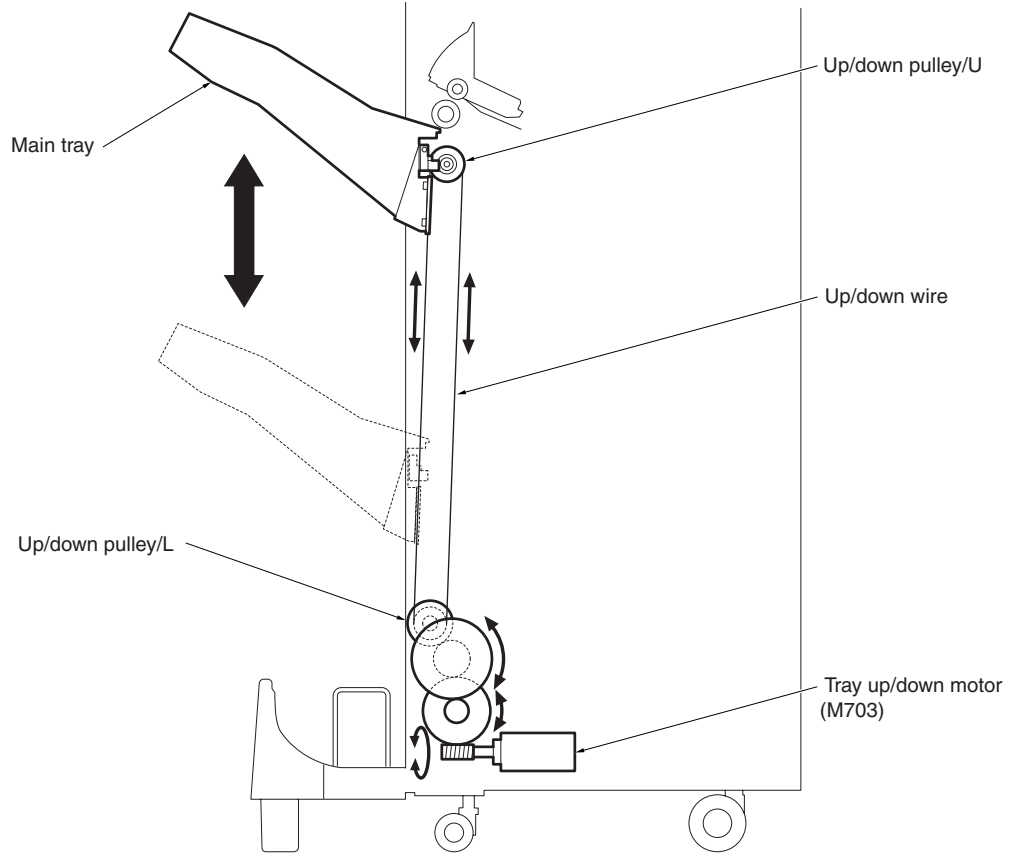
Stacker drive



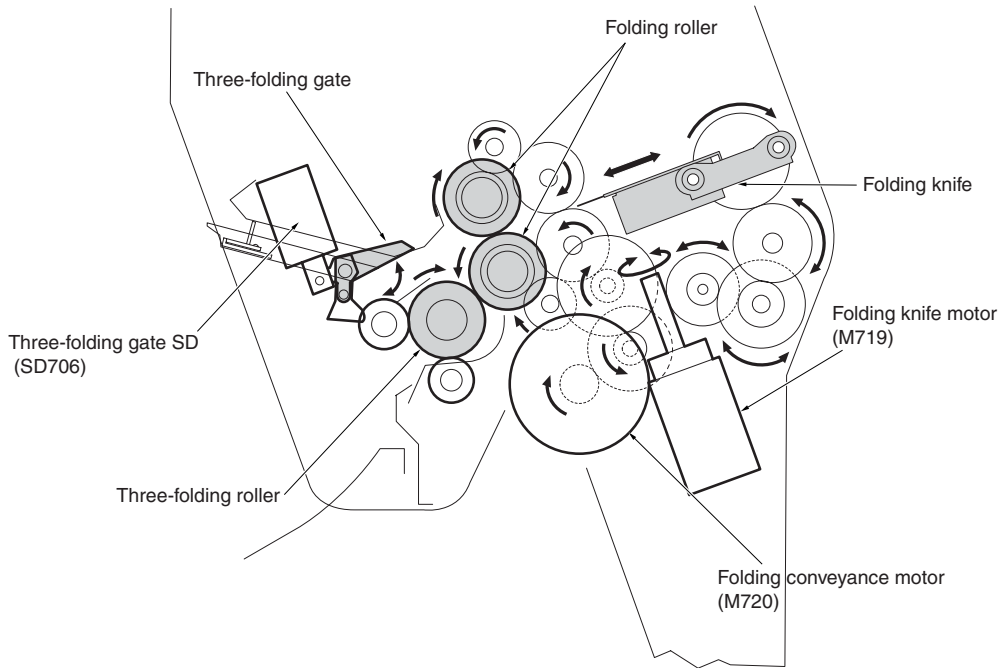
Staple drive



Tray drive



Folding drive

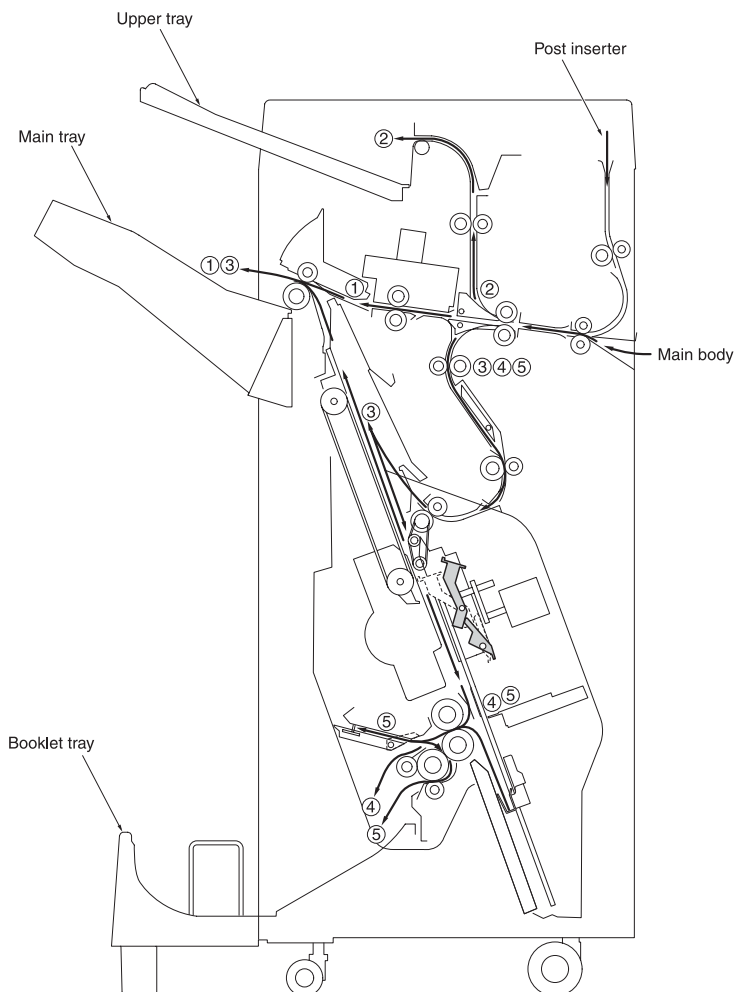


Paper conveyance path

The finisher consists of five paper paths, as shown in the diagram below.

Sheets are turned over by the MFP's exit page inverter, and then passed to the finisher.

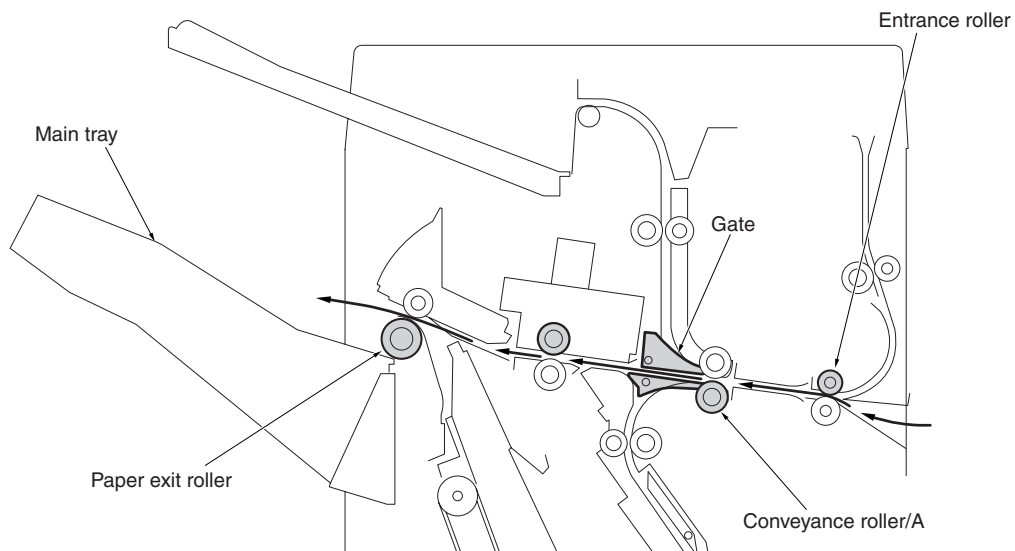
The finisher has two paper entrance connections: one from the MFP, and the other from PI-110 (optional).



Paper conveyance path	Finishing mode
1	Non-sort, sort, and group modes
2	Upper tray
3	Staple mode
4	Booklet mode (Q3634A only)
5	Tri-folding mode (Q3634A only)

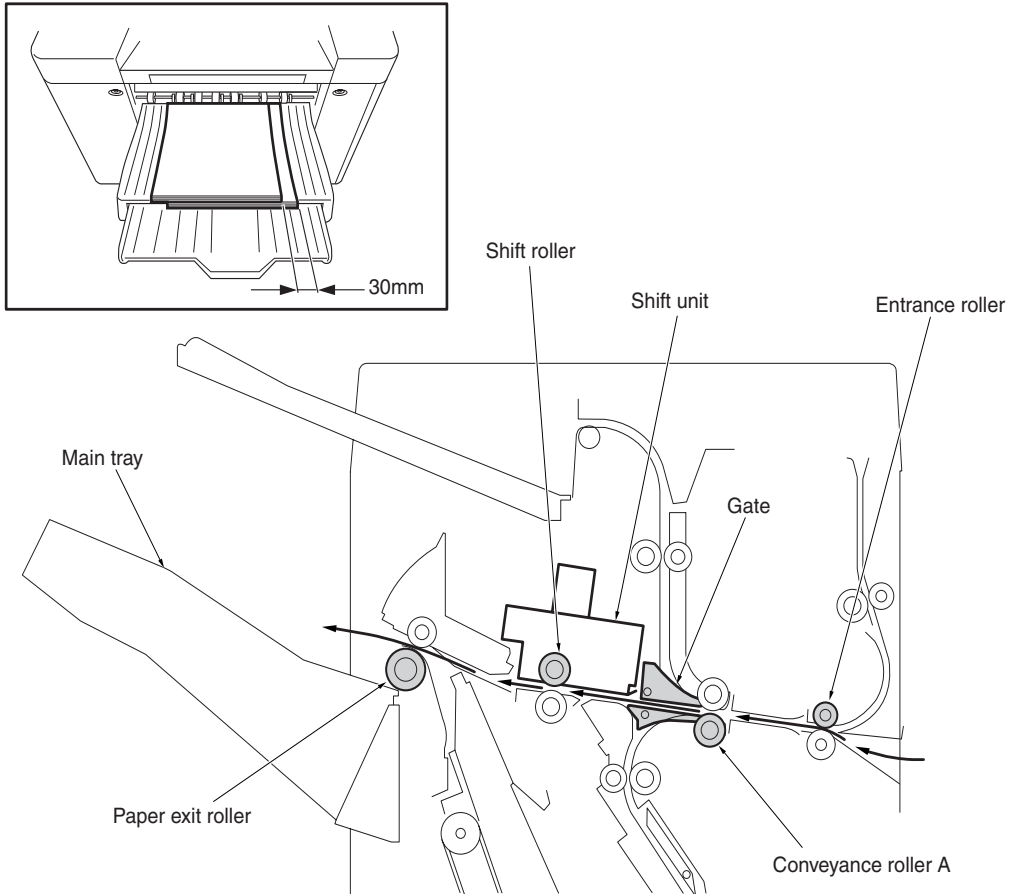
Non-sort mode

In the non-sort mode, the gate is set to the position to carry paper to the main tray. Each sheet, delivered from the MFP, is carried to the main tray through the gate.



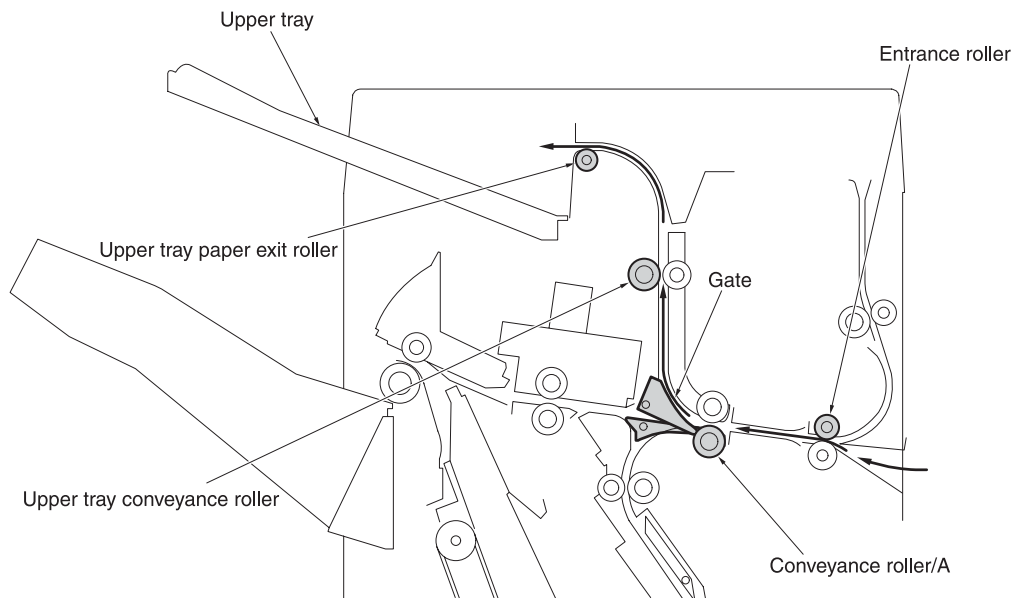
Sort and group modes

In the sort and group modes, the gate is set to the position to carry paper to the main tray. Each sheet, delivered from the MFP, is conveyed to the main tray while the sheet is shifted by 30 mm to the rear. The shift roller of the shift unit performs the shift action. In the sort mode, even pages are offset. In the group mode, even numbered copies are offset.



Sub-tray mode

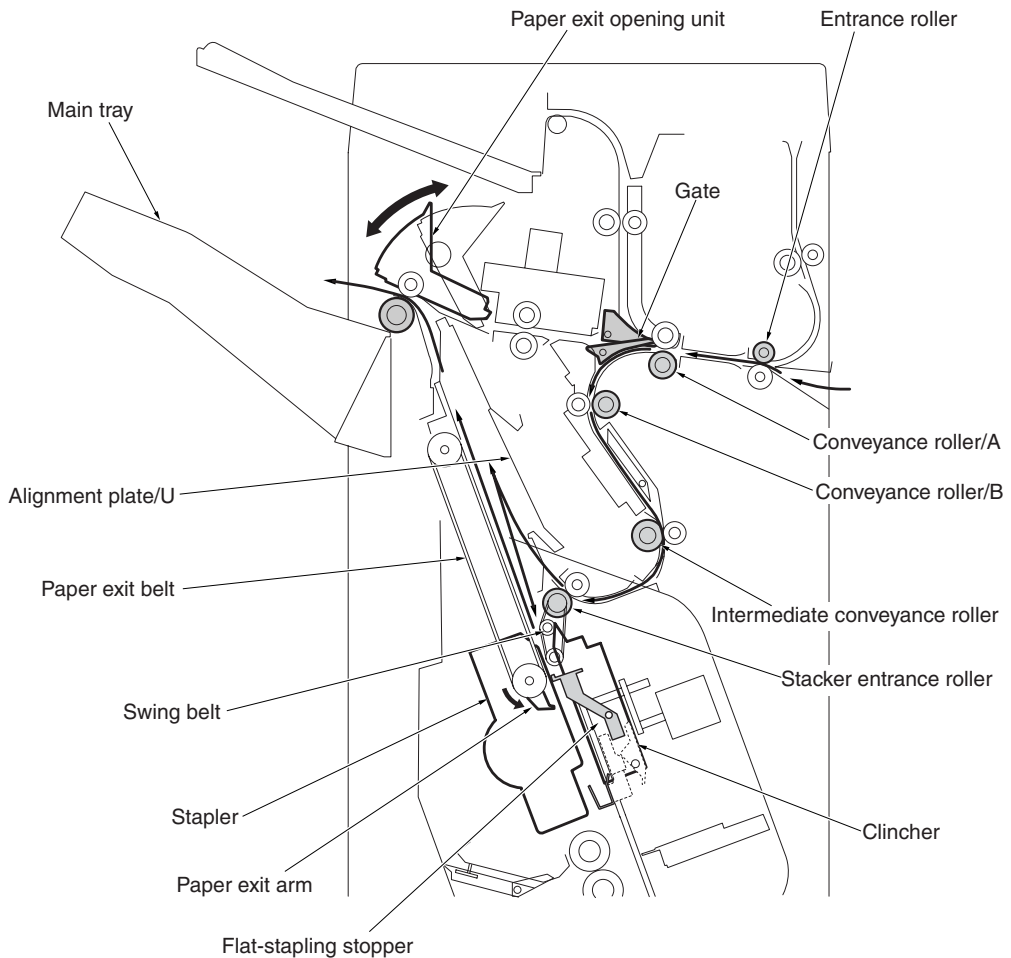
In the sub-tray mode, the gate is set to the position to carry paper to the sub-tray. Each sheet, delivered from the MFP, is delivered to the sub-tray.



Staple mode

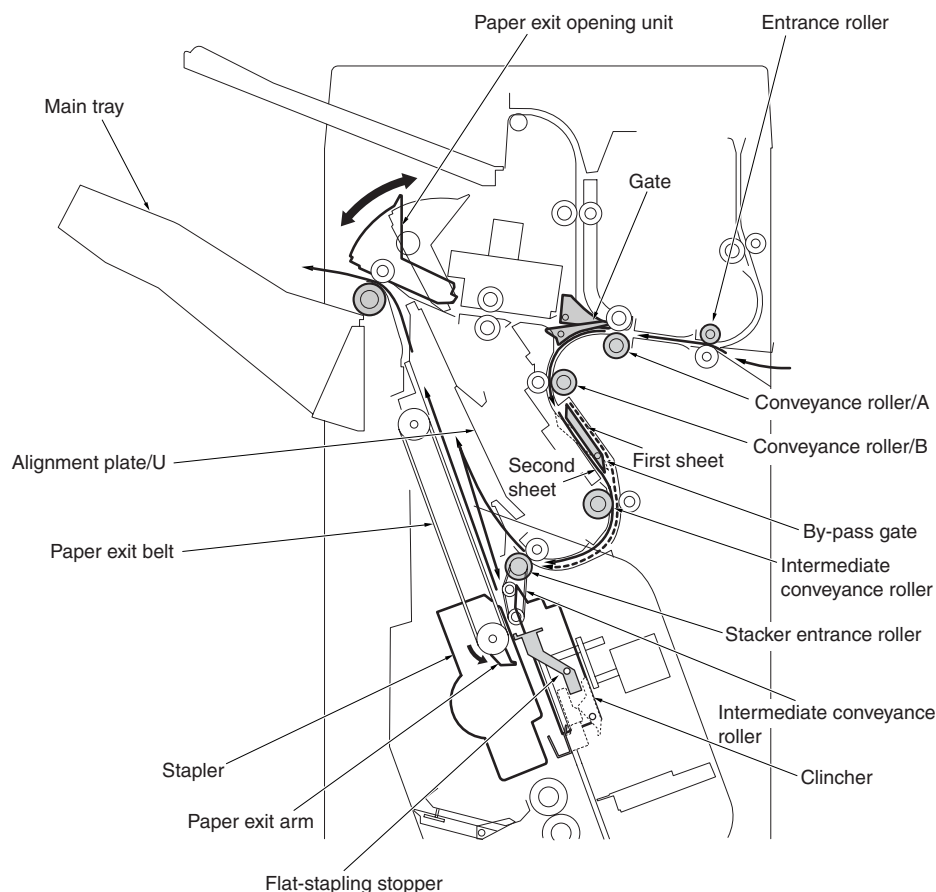
For sheets of all sizes except A4, B5, and 8.5 by 11

- 1 The gates are set to the position to carry paper to the stacker.
- 2 If paper is larger than A4R, the paper exit opening will open.
- 3 Each sheet is carried to the flat-stapling stopper and its vertical position (feeding direction) is adjusted.
- 4 The horizontal position (width/direction) of each sheet is adjusted by the alignment plate/U.
- 5 When all necessary sheets are stacked, they are stapled with the stapler and the clincher.
- 6 The set of stapled sheets is delivered by the paper exit arm to the main tray.
- 7 Steps 3 through 6 are repeated for each set of sheets to be stapled.



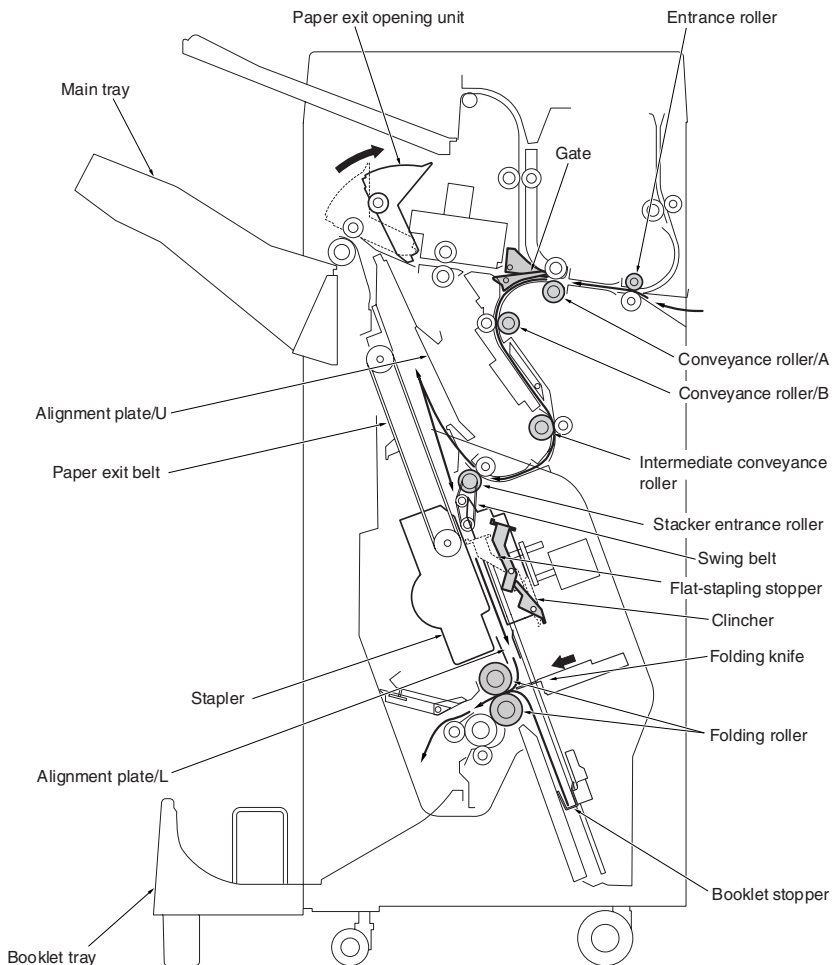
For sheets of A4, B5, and 8.5 by 11

- 1 The first set is stapled and delivered to the main tray in the same manner as sheets of all size except A4, B5, and 8.5 by 11.
- 2 As the front of the first set is being discharged, the stacker entrance roller stops and the bypass gate opens. The first sheet of the second set (and subsequent sets) is conveyed to the stacker entrance.
- 3 The bypass gate closes, and a second sheet is laid over the first sheet which is fixed by the stacker entrance roller.
- 4 When the front of the first set has been delivered, the stacker entrance roller starts to rotate. The first and second sheets are conveyed to the stacker.
- 5 The alignment plate/U lines up each sheet in the widthwise direction.
- 6 When all sheets are stacked, they are stapled with the stapler and the clincher.
- 7 The set of stapled sheets is delivered by the paper exit arm to the main tray.
- 8 Steps 2 through 7 are repeated for each set of sheets.



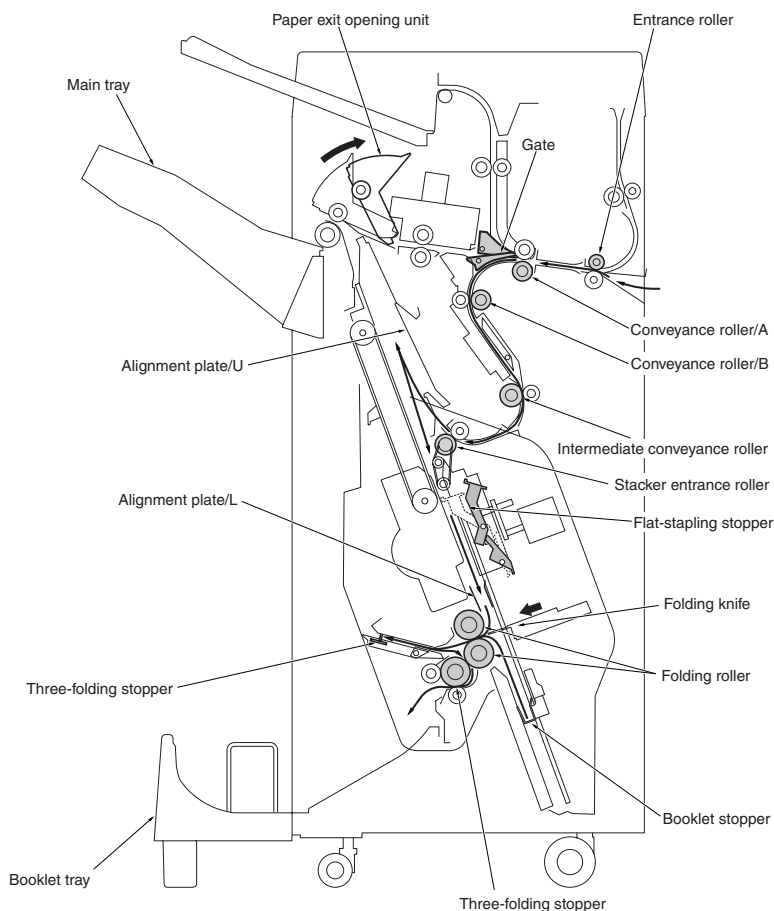
Booklet mode

- 1 The gates are set to the position to carry paper to the stacker.
- 2 The paper exit opening opens.
- 3 The booklet stopper lowers to the stitch-and-fold position. The flat-stapling stopper is released as the booklet stopper lowers.
- 4 The paper is conveyed to the booklet stopper to line up sheets in the lengthwise direction.
- 5 The alignment plate/U and alignment plate/L line up each sheet in the widthwise direction.
- 6 When the stitch-and-fold mode is selected, the sheets are stapled by the stapler and the clincher.
- 7 The booklet stopper lowers to the folding position for setting the paper to the folding position.
- 8 The folding knife and the folding roller fold the sheets, which are delivered to the booklet tray.



Tri-folding mode

- 1 The gates are set to the position to carry paper to the stacker.
- 2 The paper exit opening opens.
- 3 The booklet stopper lowers to the stitch-and-fold position. The flat-stapling stopper is released as the booklet stopper lowers.
- 4 The paper is conveyed to the booklet stopper to line up in the lengthwise direction.
- 5 The alignment plate/U and the alignment plate/L line up each sheet in the widthwise direction.
- 6 The booklet stopper lowers to the first folding position, and the sheet is set to the first folding position.
- 7 The folding knife and the folding roller perform the first folding, and the paper is conveyed toward the tri-folding stopper.
- 8 The tri-folding stopper curls the sheet, and the second folding is made by drawing it to the tri-folding roller. The tri-folded sheet is delivered to the booklet tray.

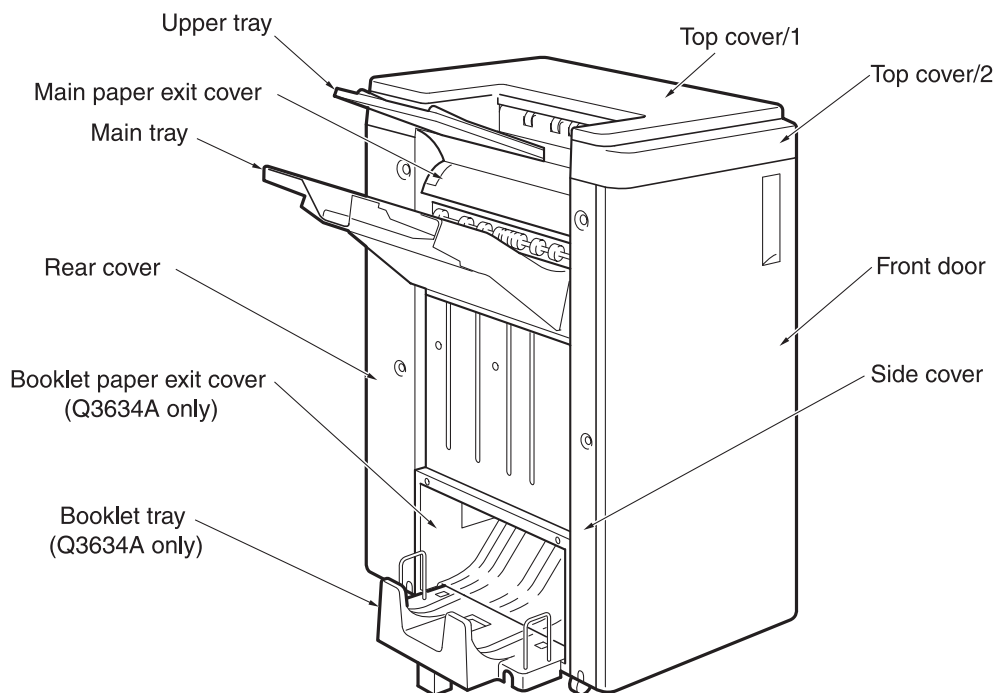


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External section

Composition



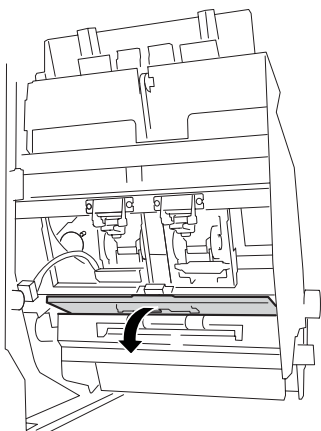
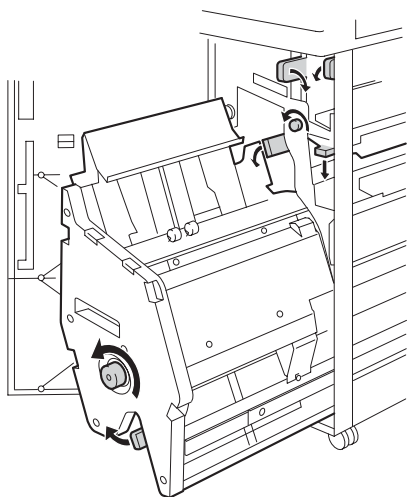
Mechanism

Mechanism	Method
Jam removal*1	Through the rotation of roller(s) and the opening/closing operation of the guide plates.

*1 Jam removal

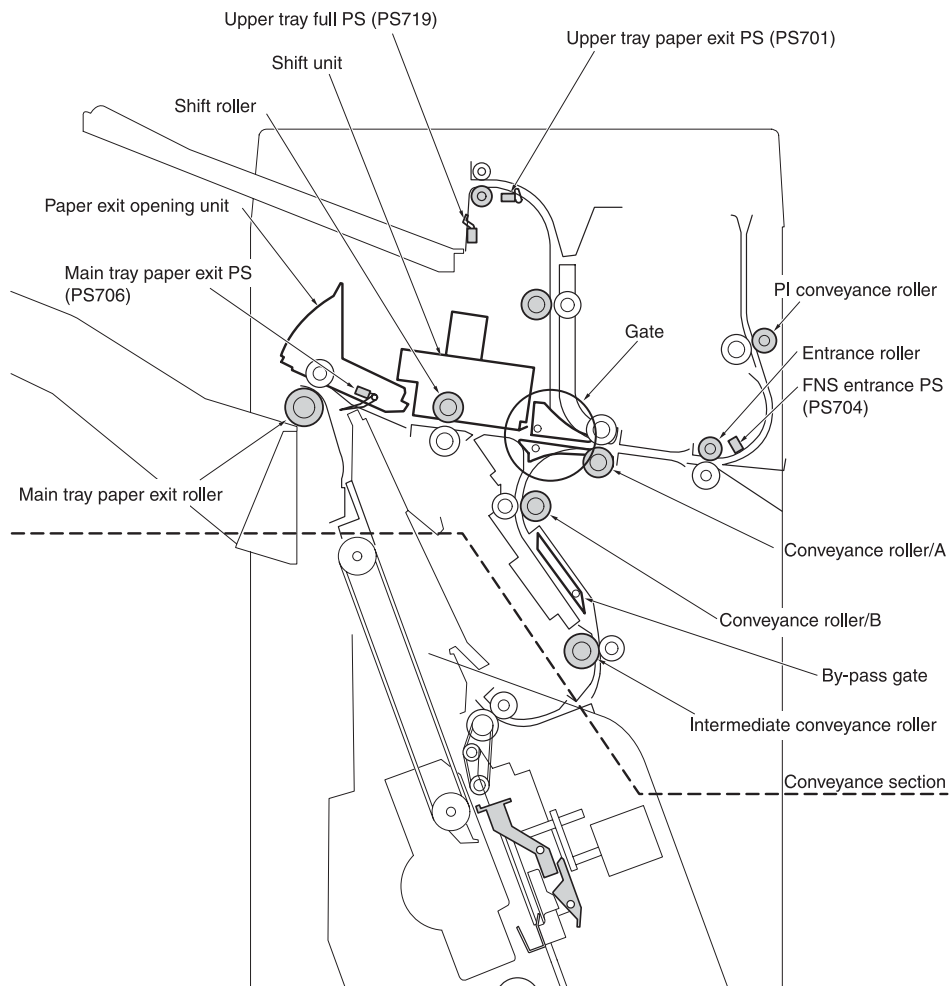
When a jam occurs in the conveyance section, open the front door, turn the conveyance roller, open the guide plates, and remove the jammed paper.

When a jam occurs in the stacker section, open the front door, draw out the stacker section, rotate the folding roller, open the guide plates, and remove the jammed paper.



Conveyance section

Composition

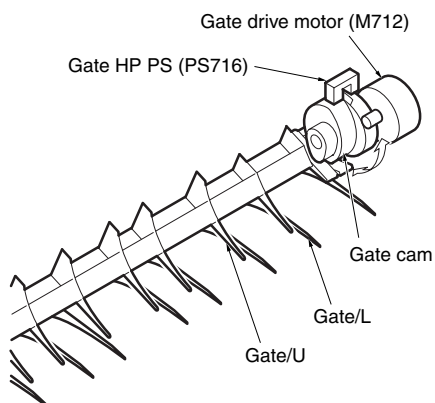


Mechanism

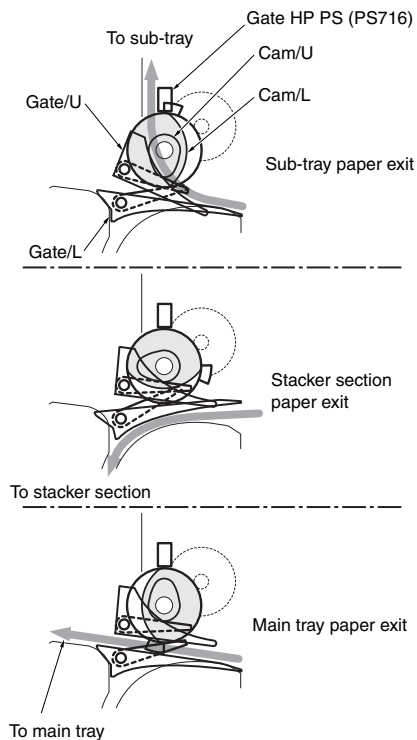
Mechanism	Method
Gate switching *1	Driven by the stepping motor/cam.
bypass gate *2	Solenoids
Shift mechanism of the shift unit *3	Crank mechanism
Open/close of paper exit opening *4	Crank mechanism
paper exit opening nip *5	Pressure rollers driven by solenoid.

*1 Gate switching

The two gates (/U and /L) switch the paper path to three directions: the sub-tray, the main tray, and the stacker section. The upper and lower gates (/U and /L) are driven by the gate cam, which is driven by the gate drive motor (M712).



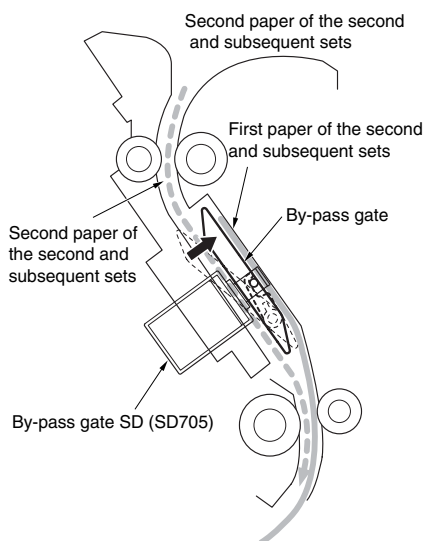
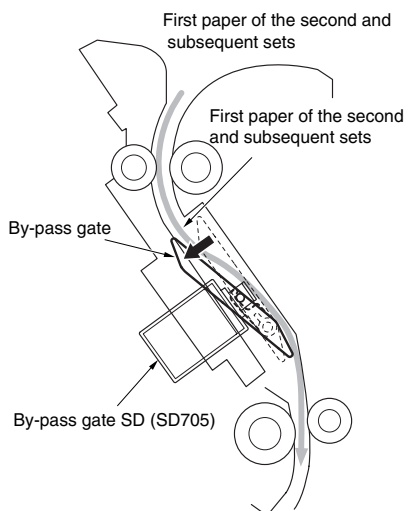
The gate cam consists of two cams (/U and /L) on the same shaft. The position of the cams determines the paper path.



*2 Bypass gate

The bypass gate is located on the path to the stacker. This gate changes the conveyance path of the next sheet while the stapling is being performed, saving time and improving performance. This gate is used for small size papers (A4, B5, and 8.5 by 11). The gate changes the feeding direction of the second sheet so that it is laid over the first sheet. The first and second sheets will be conveyed to the stacker simultaneously.

The bypass gate SD (SD705) drives the bypass gate.



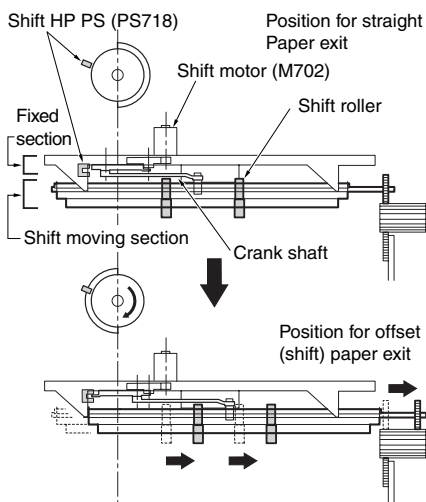
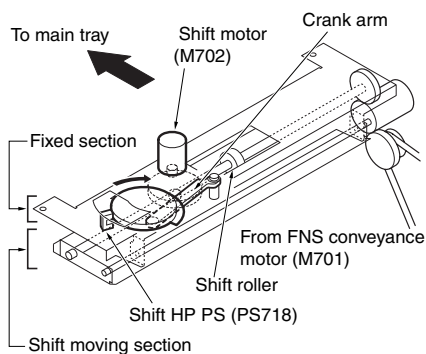
*3 Shift mechanism of the shift unit

The finisher conveyance motor (M701) drives the shift roller, conveying the paper forward to the main tray.

While the paper is conveyed to the main tray, the shift motor (M702) rotates to activate the crank mechanism. This mechanism moves the shift moving section (including the shift roller) by

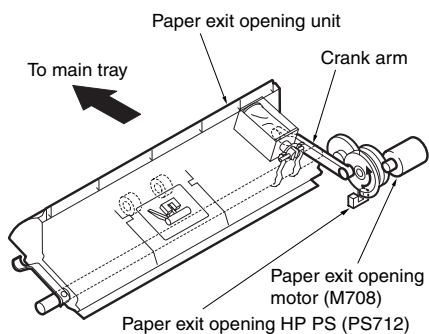
300 mm toward the rear, which also moves the paper and then it is delivered.

The shift hp PS (PS718) detects the shift position.

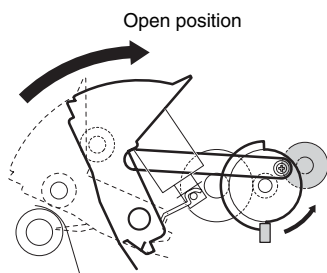
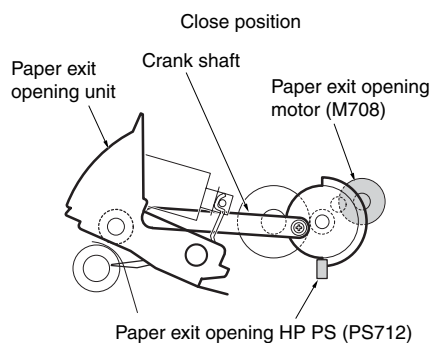


*4 Open/close of paper exit opening

When paper is conveyed to the stacker, and it is larger than B5R in the vertical length (feeding direction), it does not fit the paper exit opening. This mechanism addresses this problem by opening the paper exit opening from the start of copying until the completion of stapling.



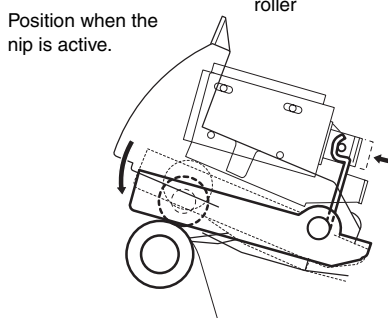
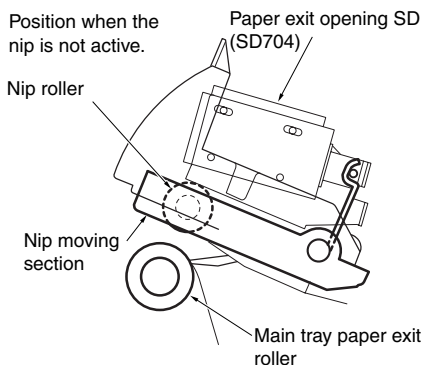
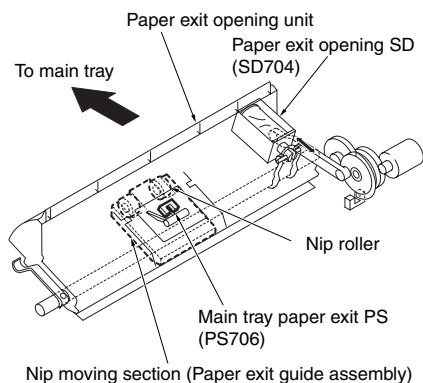
The paper exit opening motor (M708) rotates to activate the crank mechanism, lifting the paper exit opening unit. The paper exit opening opens.



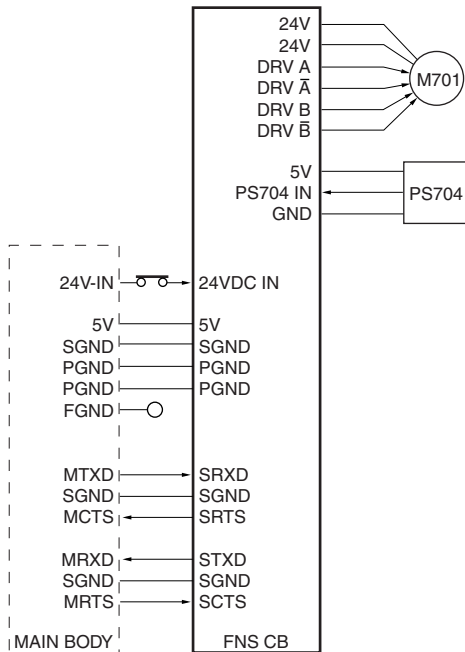
*5 Paper exit opening nip

Because the rotational speed of the paper exit roller is slower than that of the conveyance roller, the nip is in the released position except during the paper exit action. When a sheet of paper reaches the paper exit opening, the paper exit opening solenoid

(SD704) activates the nip roller. The roller nips the sheet to deliver to the main tray.



M701 (finisher conveyance) control



M701 (finisher conveyance) operation is performed by the 24V DC motor and controlled by the finisher CB (finisher control board).

The related signals is PS704 (finisher entrance).

1 Operation

a Interlock control

Finisher paper conveyance drive control is initiated by the ON signal from the MFP's START button. If MS701 (interlock) is off at this time, however, the finisher transmits an error signal to the MFP's PRCB and does not begin this control.

b M701 (finisher conveyance) control

When the position of the START button is on, and the paper exit speed is high, ON from PS37 (MFP paper exit) sets the speed to low, and ON from PS704

(finisher entrance) sets the speed to high after a predefined time period. For the main tray paper exit operation, PS704 detects the end of the paper, and, after a predefined time period, the speed mode switches to medium to match the paper exit speed of the finisher. Then, after a predefined time, the mode returns to the high speed to prepare for the next conveyance of paper.

2 Signals

a Input signals

1 SRXD (MFP to finisher CB)

Serial data line transmits the operating status of the MFP's CB to the finisher CB.

2 SCTS (MFP to finisher CB)

Acknowledgment signal, sent from the MFP to the finisher, allows the finisher to send data to the MFP.

3 24V-IN (MS701 to finisher CB)

Interlock signal:

[H]: Front cover is closed.

[L]: Front cover is open.

4 PS704 IN (PS704 to finisher CB)

Signal indicating whether the paper passes through the entrance. The front and rear ends of the paper are detected.

[H]: paper does not exist.

[L]: paper exists.

b Output signals

1 SRTS (finisher CB to MFP)

Acknowledgment signal, sent from the finisher to the MFP, allows the MFP to send data to the finisher.

2 STXD (finisher CB to MFP)

Serial data line transmits the operating status of the finisher to the MFP's CB.

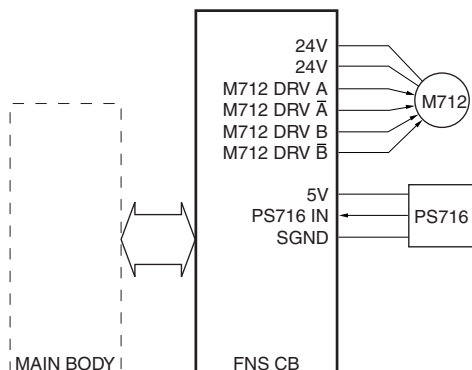
3 M701 DRV A, $\bar{A}$ (finisher CB to M701)

Pulse signal to drive/control the Phase A of M701

4 M701 DRV B, $\bar{B}$ (finisher CB to M701)

Pulse signal to drive/control the Phase B of M701

M712 (gate drive) control



M712 (gate drive) performs the paper conveyance path switching between the sub-tray, main tray or stacker section. The finisher CB (finisher control board) controls the operation of M712.

The related signal is PS716 (gate HP).

1 Operation

M712 (gate drive) is activated by the finisher operation signal from the MFP, selecting one of the three positions depending on the paper exit destinations: the sub-tray (home position), main tray or stacker. However, when the current paper exit destination is the sub-tray, M712 is not activated (it is already in the home position).

After the operation, M712 returns to its home position based on PS716 (gate HP).

2 Signals

a Finisher CB input signals

PS716 IN (PS716 to finisher CB)

Signal relating to the gate home position

[H]: HP

[L]: Non-HP

b Finisher CB output signals

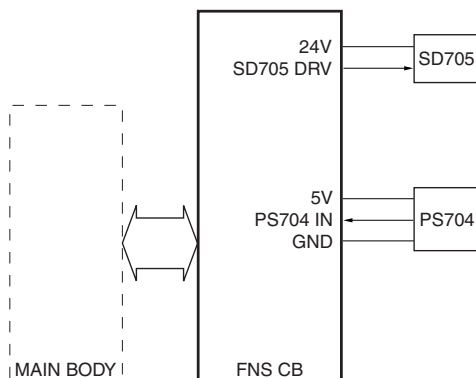
1 M712 DRV A, $\bar{A}$ (finisher CB to M712)

Pulse signal to drive/control the Phase A of M712

2 M712 DRV B, $\bar{B}$ (finisher CB to M712)

Pulse signal to drive/control the Phase B of M712

SD705 (bypass gate) control



SD705 (bypass gate) only operates for small size papers (A4, B5 or 8.5 by 11). The finisher CB (finisher control board) controls SD705.

The related signal is PS704 (finisher entrance).

1 Operation

a First set:

While the sheets of the first set are being processed, SD705 (bypass gate) does not operate.

b Second set:

The stapling operation for the first set is activated, and, after a predefined time, SD705 (bypass gate) is activated to pull the first sheet of the second set toward the bypass.

SD705 stops its operation when a predefined time has elapsed since PS704 (finisher entrance) detected the rear end of the first sheet of the second set.

SD705 does not operate when the second and subsequent sheets of the second set are processed.

c Third and subsequent sets:

PS704 (finisher entrance) detects the rear end of the last sheet of the second set. Then, after a predefined time, SD705 (bypass gate) is activated to pull the first sheet of the third set toward the bypass.

SD705 stops its operation when a predefined time has elapsed since PS704 (finisher entrance) detected the rear end of the first sheet of the third set.

SD705 does not operate when the second and subsequent sheets of the third and subsequent sets are processed.

2 Signals

a Finisher CB output signals

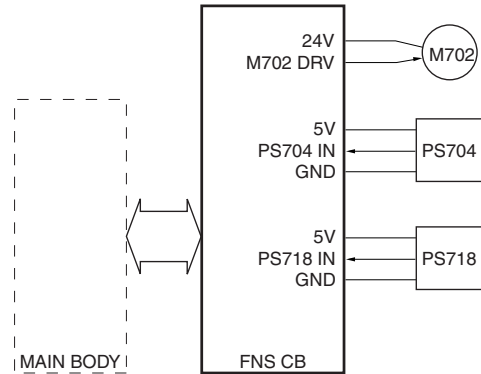
1 PS705 DRV (finisher CB to SD705)

Signal to drive/control the SD705.

[H]: SD705 is on.

[L]: SD705 is off.

M702 (shift) control



M702 (shift) performs the paper offset operation in the sort or group mode.

The finisher CB (finisher control board) controls M702.

The related signals are PS704 (finisher entrance) and PS718 (shift HP).

1 Operation

In the sort or group mode, PS704 (finisher entrance) detects the rear end of the paper. After a predefined time period, M702 (shift) operates. Its rotation triggers the shift (travel) of the shift moving section. The shift roller, rotated by M701 (finisher conveyance), carries the paper while the shift operation is being performed.

The completion of the shift operation is detected by the change of PS718 (shift HP) signal, from off to on, and then M702 is deactivated.

After a predefined time period has elapsed since M702 was deactivated, it is activated again. M702 stops when PS718 (shift HP) signal changes from on to off. This operation allows the shift moving section to return to its original position to wait for the next paper to be shifted.

This sequence of actions is repeated for each sheet to achieve offsetting of paper.

2 Signals

a Finisher CB input signals

1 PS718 IN (PS718 to finisher CB)

Signal relating to the shift position

[L] to [H]: Straight position

[H] to [L]: Shift position

b Finisher CB output signals

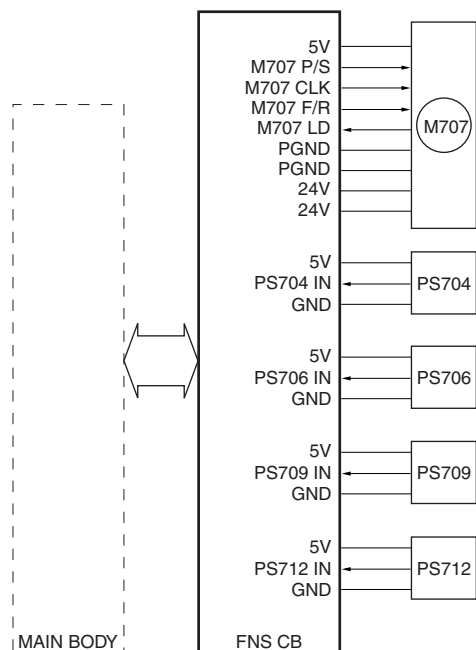
1 M702 DRV (finisher CB to M702)

Signal to drive/control M702.

[L]: M702 on

[H]: M702 off

M707 (paper exit roller) control



M707 (paper exit roller) drives the main tray paper exit roller and the paper exit belt of the stacker section.

The finisher CB (finisher control board) controls M707.

The related signals are PS704 (finisher entrance), PS706 (main tray paper exit), PS709 (paper exit belt HP), and PS712 (paper exit opening HP).

1 Operation

a Straight, sort, and group modes

When PS704 (finisher entrance) detects the leading edge of the paper, M707 starts to rotate at a high speed. When PS704 has detected the trailing edge of the paper and a predefined time period has elapsed, the rotation of M707 changes to low. Then the paper delivery action is performed.

When PS706 (main tray paper exit) has detected the trailing edge of the paper (preparation for the next paper conveyance) and a predefined time period has elapsed, the rotation speed of M707 returns to high.

When PS704 has detected the last paper and a predefined time period has elapsed, M707 ceases to rotate.

b Staple mode (for papers whose length in the feeding direction is smaller than B5R)

The finisher operation signal from the MFP lets M707 (paper exit roller) rotate. When PS709 (paper exit belt HP) signal has changed from off to on and a predefined time period has elapsed, M707 stops. The paper exit arm moves to the staple mode HP.

When the stapling operation has been completed, M707 rotates to drive the paper exit belt of the stacker section. This action allows the paper exit arm to lift the paper to the level of the paper exit roller, which delivers it to the main tray.

When PS709 detects the change in signal, from off to on, M707 stops.

c Staple mode (other than those above)

The finisher operation signal from the MFP lets M707 (paper exit roller) rotate. When PS709 (paper exit belt HP) signal has changed from off to on and a predefined time period has elapsed, M707 stops. The paper exit arm moves to the staple mode HP.

When paper other than those described above is used, the paper exit opening is open. The paper exit opening is closed by M708 upon the completion of stapling. When PS712 (paper exit opening HP) detects that the paper exit opening has been closed, M707 starts rotating to drive the paper exit arm. This allows the paper exit arm to lift the paper to the level of the paper exit roller, which delivers it to the main tray.

When PS709 detects the change in signal, from off to on, M707 stops.

d Folding and stitch-and-fold modes

The finisher operation signal from the MFP lets M707 (paper exit roller) counter-rotate. When PS709 (paper exit belt HP) signal has changed from off to on, M707 stops. The paper exit arm moves to the booklet mode HP.

When the stapling operation has completed, the paper is moved to the folding position. At this stage, the paper exit arm will not operate. This is because the paper exit arm may come into contact with the paper, which is waiting for a process at the folding position.

e Tri-folding mode

The finisher operation signal from the MFP lets M707 (paper exit roller) counter-rotate. When PS709 (paper exit belt HP) signal has changed from off to on, M707 stops. The paper exit arm moves to the booklet mode HP.

When the paper alignment has been completed, M707 (paper exit roller) counter-rotates, helping the paper to be carried to the tri-folding position. When PS709 signal has changed from off to on, M707 stops.

2 Signals

a Finisher CB input signals

1 PS706 IN (PS706 to finisher CB)

Signal relating to the main tray paper exit.

[L]: Paper does not exist.

[H]: Paper exists.

2 PS709 IN (PS709 to finisher CB)

Signal relating to the paper exit belt HP

[L]: Paper exit belt is not at the HP.

[H]: Paper exit belt is at the HP.

3 PS712 IN (PS712 to finisher CB)

Signal relating to the paper exit opening HP

[L]: Paper exit opening is open.

[H]: Paper exit opening is closed

4 M707 LD (M707 to finisher CB)

Signal relating to the rotation speed of M707

[L]: Operating at a specified rotation speed

[H]: Operating at a speed other than a specified rotation speed

b Finisher CB output signals

1 M707 P/S (finisher CB to M707)

Signal relating to rotation/stop of M707

[L]: M707 on

[H]: M707 off

2 M707 CLK (finisher CB to M707)

Signal relating to the clock for controlling the rotation speed of M707

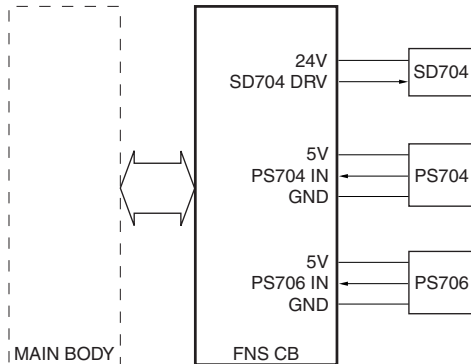
3 M707 F/R (finisher CB to M707)

Signal to control the rotation direction of M707

[L]: CCW

[H]: CW

SD704 (paper exit opening solenoid) control



SD704 (paper exit opening) drives the nip moving section. This solenoid allows the nip paper exit roller to firmly contact the main tray paper exit roller for nipping the paper. The finisher CB (finisher control board) controls the operation of SD704.

The related signals are PS704 (finisher entrance) and PS706 (main tray paper exit).

1 Operation

a SD704 on

1 Straight, sort, and group modes:

When PS704 (finisher entrance) has detected the rear end of the paper, and a predefined time period has elapsed, SD704 is activated (on).

2 Staple mode:

When the stapling operation has been completed and a predefined time period has elapsed, SD704 is activated (on) for nipping the paper.

b SD704 OFF

In each mode, when PS706 (main tray paper exit) has detected the paper and a predefined time period has elapsed, SD704 is deactivated (off).

2 Signals

a Finisher CB output signals

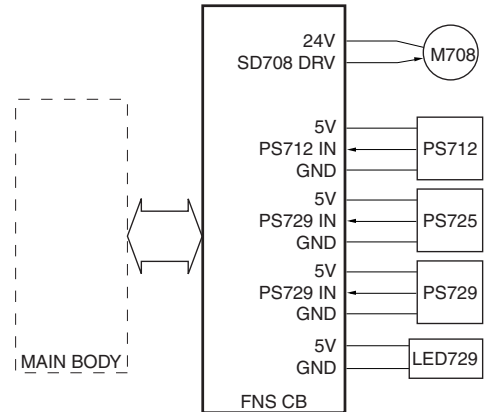
1 SD704 DRV (finisher CB to SD704)

Signal to drive/control SD704

[L]: SD704 on

[H]: SD704 off

M708 (paper exit opening) control



In the staple (when the length of the paper in the feeding direction is larger than B5R), booklet, or tri-folding mode, M708 (paper exit opening) drives the open/close operation of the paper exit opening through the link mechanism.

The finisher CB (finisher control board) controls the operation of M708.

The related signals are PS712 (paper exit opening HP), PS725 (folding exit), and PS729 (folding full PS).

1 Operation

- a** Staple mode (for papers whose length in the feeding direction is larger than B5R)

The finisher operation signal from the MFP lets M708 (paper exit opening) rotate, causing the paper exit opening to be opened.

Upon completion of the stapling operation, M708 (paper exit opening) rotates again to start the closing operation of the paper exit opening. When PS712 (paper exit opening HP) detects the closed position, M708 stops.

The steps above are repeated for each set of the sheets that will be stapled.

- b** Folding, stitch-and-fold, and tri-folding modes

The ON signal from the MFP's START button lets M708 (paper exit opening) rotate, causing the paper exit opening to be opened.

When PS725 (folding paper exit) or PS729 (folding full PS) has detected the trailing edge of the last sheet, and a predefined time period has elapsed since then, M708 again rotates to start the closing operation of the paper exit opening. When PS712 (paper exit opening HP) detects the position closed, M708 stops.

2 Signals

- a** Finisher CB output signals

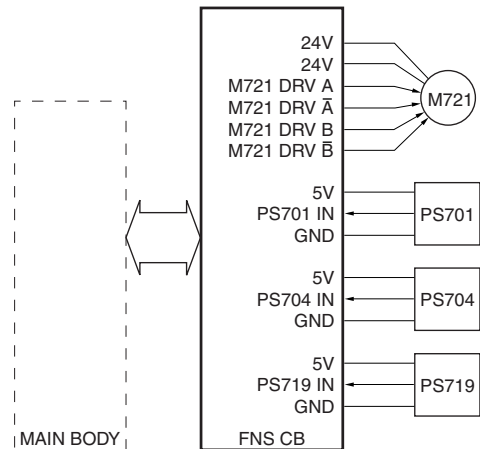
1 M708 DRV (finisher CB to M708)

Signal to drive/control M708

[L]: M708 on

[H]: M708 off

M721 (upper-tray paper exit) control



M721 (upper-tray paper exit), controlled by the finisher CB (finisher control board), drives the upper-tray paper exit roller.

The related signals are PS701 (upper-tray paper exit), PS704 (finisher entrance), and PS719 (upper-tray full).

1 Operation

- a** M721 (upper-tray paper exit) control

M721 (upper-tray paper exit) starts its high-speed rotation when PS701 (upper-tray paper exit) detects the leading edge of the paper.

When PS704 (finisher entrance) has detected the trailing edge of the paper and a predefined time period has elapsed since then, the rotation of M721 changes to low.

When PS701 detects the trailing edge of the paper and a predefined time period has elapsed, M721 stops.

b Upper-tray full detection

When the papers ejected to upper-tray reach to specified height, PS719 (upper-tray full) turns on, and finisher transmits “upper-tray full” information to the MFP.

When the MFP receives it, the message is displayed on the control panel.

2 Signals**a** Finisher CB input signals**1** PS701 IN (PS701 to finisher CB)

Signal indicating the existence of the paper at the location of the sub-tray paper exit sensor.

[L]: paper does not exist.

[H]: paper exists.

2 PS719 IN (PS719 to finisher CB)

Signal indicating the sub-tray full

[L]: Sub-tray full

[H]: Sub-tray not full

b Finisher CB output signals**1** M721 DRV A, $\overline{A}$ (finisher CB to M721)

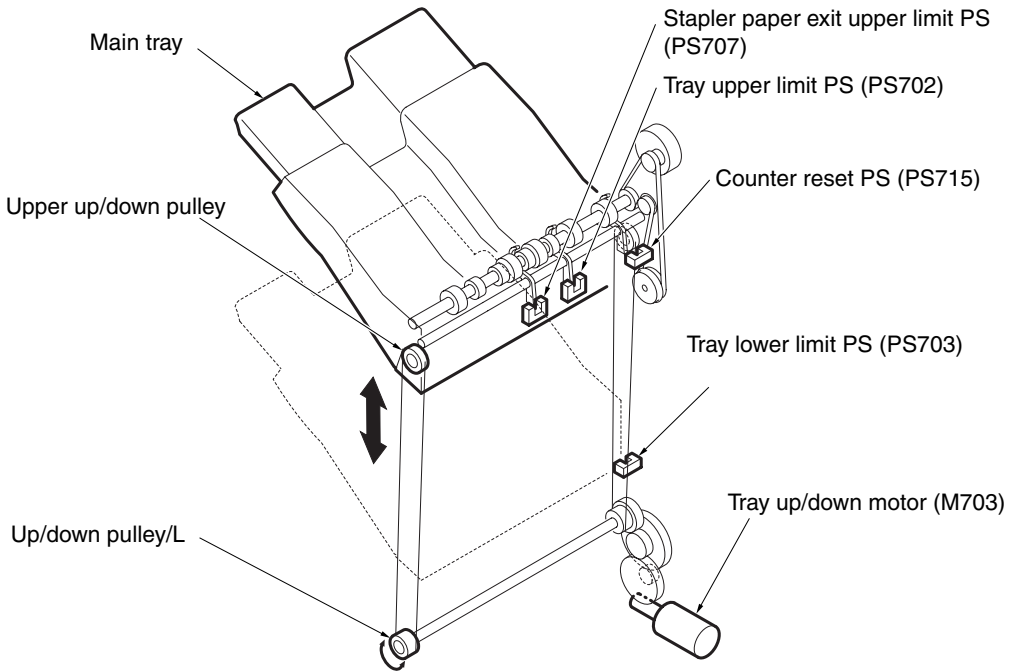
Pulse signal to drive/control the Phase A of M721

2 M721 DRV B, $\overline{B}$ (finisher CB to M721)

Pulse signal to drive/control the Phase B of M721

Main tray section

Composition



Mechanism

Mechanism	Method
Main tray up/down*1	Wire drive
paper detection*2	Photo sensor

*1 Main tray up/down

The tray up/down motor (M703) and the worm gear installed on the motor shaft perform the winding operation of the up/down wire. The rotation direction of the motor shaft determines the moving direction of the main tray (that is, the rise or fall). If the up/down pulley/L rotates clockwise seen from the front, the main tray rises. Otherwise, the main tray falls.

*2 Paper detection

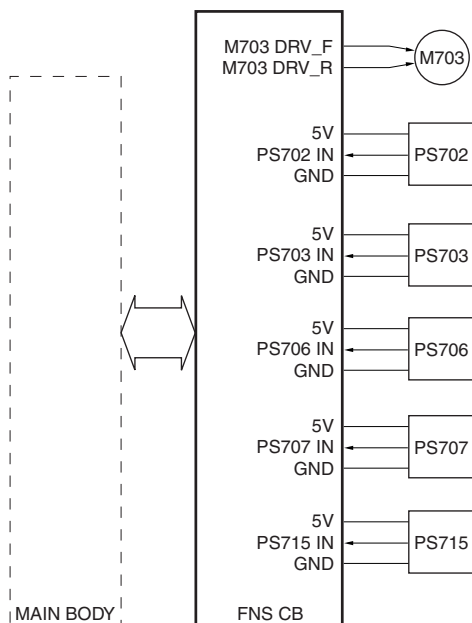
The distance between the top surface of the piled sheets on the main tray (the top surface of the main tray if there's no sheet on the tray) and the paper exit opening is monitored using the tray upper limit PS (PS702) and the stapler paper exit upper limit PS (PS707). This distance is kept constant to avoid misalignment of delivered sheets.

The counting program, built in the finisher, counts the number of delivered sheets on the main tray during continuous copying. When the total number of delivered sheets reaches a maximum (values are predefined depending on type/size of paper), the copying operation is suspended.

However, when some delivered sheets are removed, the main tray is raised and the counter reset PS is activated. This resets the current sheet counter. This enables limitless delivery.

The tray lower limit PS (PS703) detects the bottom of the main tray. The number of delivered sheets on the main tray is not counted by the software counter during non-continuous copying. PS703 is used for the limitation of the number.

M703 (tray up/down) control



M703 (tray up/down) raises or lowers the main tray by a normal or reverse rotation. The finisher CB (finisher control board) controls the operation of M703.

The related signals are PS702 (tray upper limit), PS703 (tray lower limit), PS707 (stapler exit upper limit), PS715 (counter reset), and PS706 (main tray paper exit).

1 Operation

a Non-sort, sort, and group modes

According to the finisher operation signal from the MFP, M703 (tray up/down) elevates the main tray until PS702 (tray upper limit) responds (on).

When PS706 (main tray paper exit) detects the paper, M703 lowers the tray. When the signal from PS702 has changed to off, and a predefined time period has elapsed, M703 raises the tray again. M703 stops with PS702 signal on.

b Staple mode

When M707 (paper exit roller) has started rotating and a predefined time period has elapsed, M703 (tray up/down) lowers the main tray. The rotation of M703 is reversed to raise the main tray when PS706 (main tray paper exit) detects the trailing edge of the paper stack on the tray. M703 stops when the signal from PS707 (stapler paper exit upper limit) changes from on to off.

2 Signals

a Finisher CB input signals

1 PS702 IN (PS702 to finisher CB)

Signal relating to the main tray upper limit position

[L]: Non-upper limit position

[H]: Upper limit position

2 PS703 IN (PS703 to finisher CB)

Signal relating to the main tray lower limit position

[L]: Non-lower limit position

[H]: Lower limit position

3 PS707 IN (PS707 to finisher CB)

Signal relating to the main tray upper limit position in the staple mode

[L]: Upper limit position

[H]: Non-upper limit position

4 PS715 IN (PS715 to finisher CB)

Signal relating to the counter reset

[L]: Non-counter reset position

[H]: Counter reset position

b Finisher CB output signals

1 M703 DRV_F (finisher CB to M703)

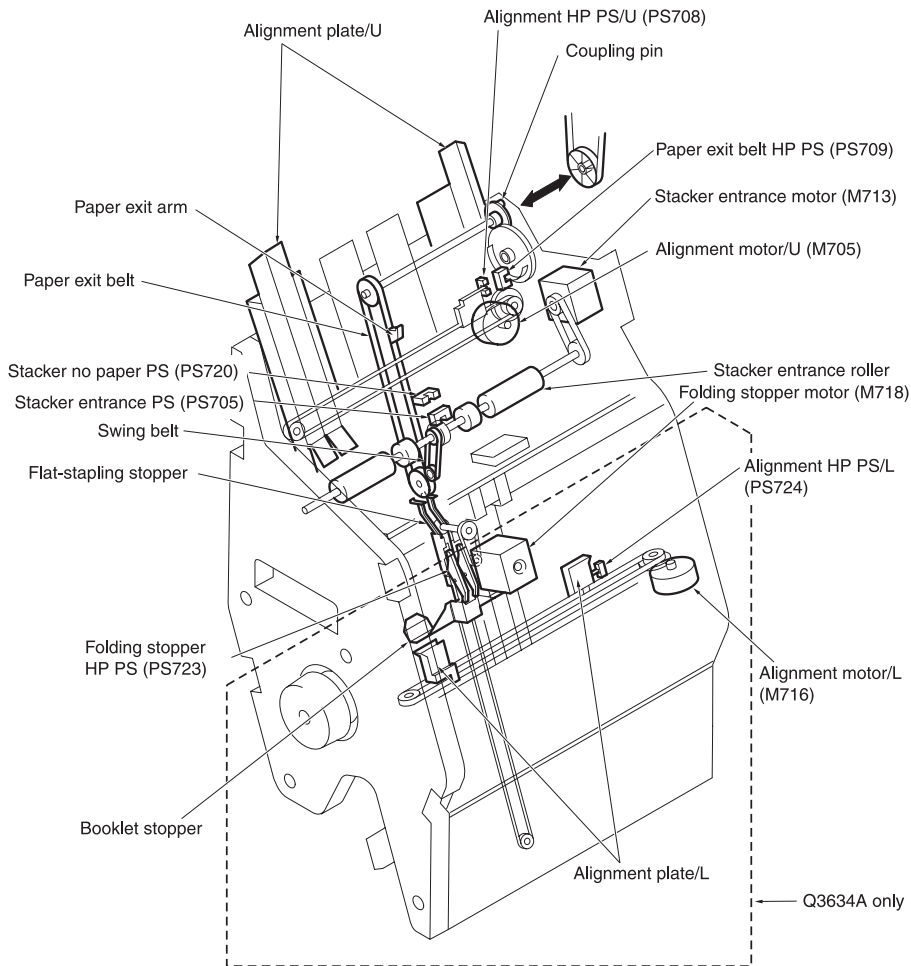
Signal to drive/control the normal rotation of M703

2 M703 DRV_R (finisher CB to M703)

Signal to drive/control the reverse rotation of M703

Stacker section

Composition

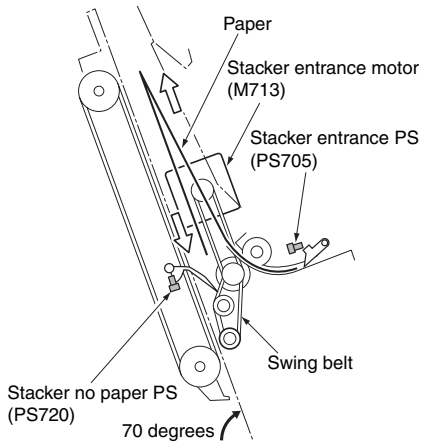


Mechanism

Mechanism	Method
Stack*1	Corrugation roller Swing belt + own weight
Paper exit belt*2	Timing belt driven by coupling connection
Booklet stopper*3	Driven by timing belt using stepping motor (the flat stapling stopper is released by the interlocking mechanism)
Paper alignment/U*4	Stepping motor
Paper alignment/L*5	Stepping motor

*1 Stack

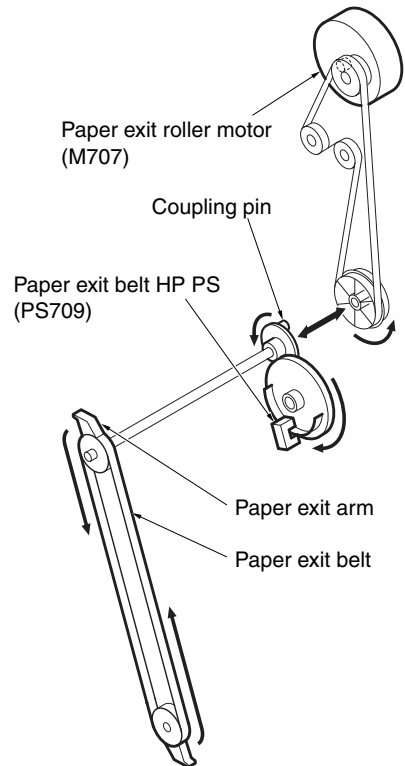
The stacker section features a compact component design using the stack with an inclination of 70 degrees. The corrugation roller is employed for the stacker entrance roller, which facilitates a smooth paper delivery to the stacker. The paper sinks under its own weight into the stacker, of which lower end is supported by the swing belt.



*2 Paper exit belt

The paper exit arm delivers the paper to the main tray in the staple mode, or to the folding section in the tri-folding mode. The paper exit arm is driven by the paper exit belt, which is in turn driven by the paper exit roller motor (M707) through the coupling connection.

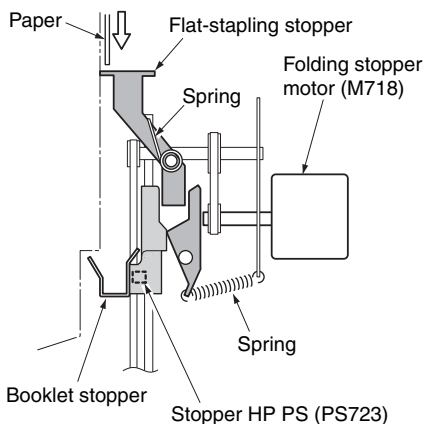
The paper exit belt hp PS (PS709) detects the home position of the paper exit arm.



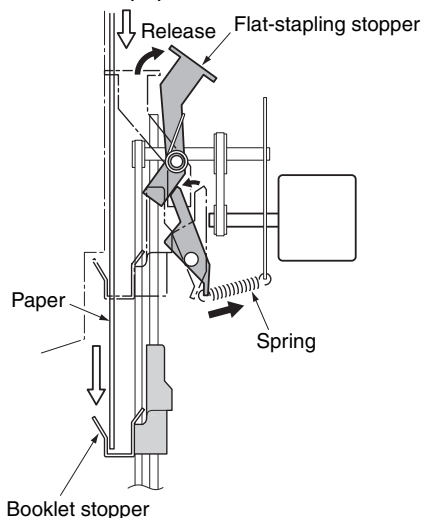
*3 Booklet stopper (Q3634A only)

The folding stopper motor (M718) operates the booklet stopper.

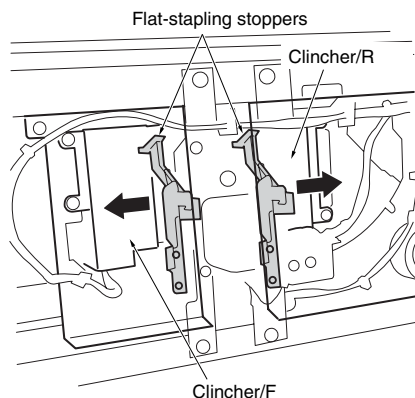
The folding stopper hp PS (PS723) detects the home position of the booklet stopper. The booklet stopper is interlocked with the flat-stapling stopper. When the booklet stopper is at its home position, the flat-stapling stopper is in the position to support the paper by the pressure of the spring. With this configuration, stapling is performed in the staple mode.



When the booklet stopper lowers, the flat-stapling stopper is released via the link mechanism. The booklet stopper catches the paper that falls.



One flat-stapling stopper is fixed on each of two clinchers (R and F). When the two clinchers move away from each other, the two stoppers also become remote.



*4 Paper alignment/U

In the staple (flat-stapling) mode, the paper alignment plate/U (front and rear) oscillate to align the sheets.

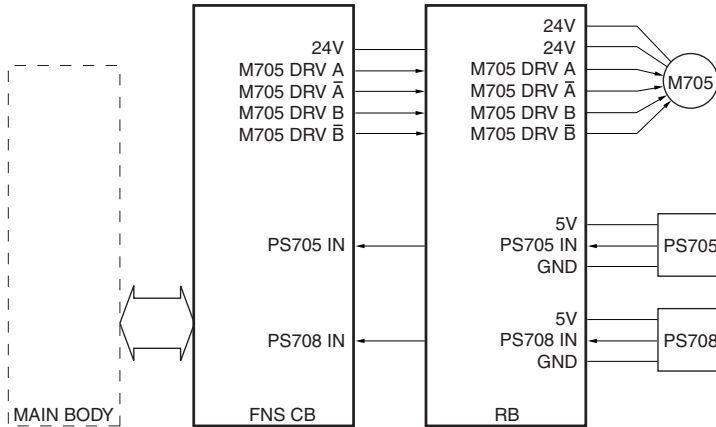
The oscillation of the paper alignment plate/U is achieved by the normal and reverse rotations of the alignment motor/U (M705). The alignment hp PS/U (PS708) detects the home position of the paper alignment plate/U.

*5 Paper alignment/L (Q3634A only)

In the stitch-and-fold, folding, tri-folding modes, both the paper alignment plate/U and the paper alignment plate/L oscillate to align the sheets.

The oscillation of the paper alignment plate/L is achieved by the normal and reverse rotations of the alignment motor/L (M716). The alignment hp PS/L (PS724) detects the home position of the paper alignment plate/L.

M705 (alignment/U) control



In the staple, folding, stitch-and-fold, tri-folding modes, the widthwise alignment operation of the paper carried into the stacker section is performed by the alignment plate/U. The space between the two alignment plates/U extends or shrinks by means of the rotation of the M705 (alignment/U). The finisher CB (finisher control board) controls the operation of M705 through the RB (relay board).

The related signals are PS705 (stacker entrance) and PS708 (alignment HP/U).

1 Operation

The finisher operation signal from the MFP lets M705 (alignment/U) rotate so that the space between the two alignment plates/U will become narrower. The rotation of M705 stops when the plates reach their waiting positions that provide a little wider space for the paper to be accommodated.

When PS705 (stacker entrance) has detected the trailing edge of the paper and a predefined time period has elapsed, the alignment plates/U horizontally oscillate to align the paper. The oscillation is provided by the normal and reverse rotations of M705. This paper alignment action is repeated each time a sheet of paper is fed.

2 Signals

a Finisher CB input signals

1 PS705 IN (PS705 to RB to finisher CB)

Signal relating to the detection of the paper by the stacker entrance sensor

[L]: Paper not detected

[H]: Paper detected

2 PS708 IN (PS708 to RB to finisher CB)

Signal relating to the detection of the home position of the alignment plate/U

[L]: Not in the home position

[H]: In the home position

b Finisher CB output signals

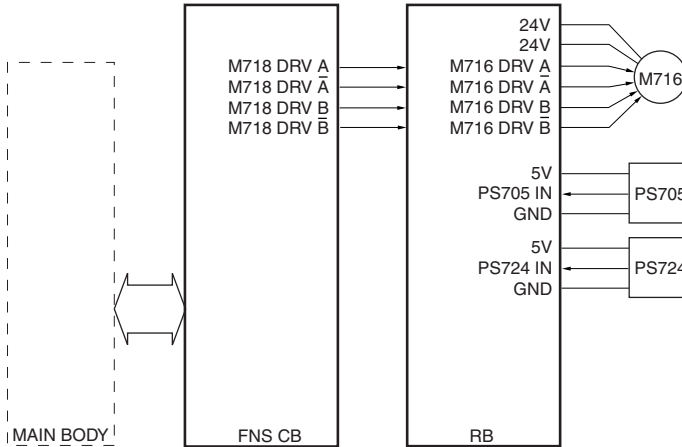
1 M705 DRV A, $\bar{A}$ (finisher CB to RB to M705)

Pulse signal to drive/control the Phase A of M705

2 M705 DRV B, $\bar{B}$ (finisher CB to RB to M705)

Pulse signal to drive/control the Phase B of M705

M716 (alignment/L) control (Q3634A only)



In the folding, stitch-and-fold, tri-folding modes, the widthwise alignment operation of the paper carried into the stacker section is performed by the alignment plate/L. The space between the two alignment plates/L extends or shrinks by means of the rotation of M716 (alignment/L).

The finisher CB (finisher control board) controls the operation of M716 through the RB (relay board).

The related signals are PS705 (stacker entrance) and PS724 (alignment HP/L).

1 Operation

The finisher operation signal from the MFP lets M716 (alignment/L) rotate so that the space between the two alignment plates/L will become narrower. The rotation of M716 stops when the plates reach their waiting positions that provide a little wider space for the paper to be accommodated.

When PS705 (stacker entrance) has detected the rear end of the paper and a predefined time period has elapsed, the alignment plates/L horizontally oscillate to align the paper. The oscillation is provided by the normal and reverse rotations of

M716. This paper alignment action is repeated each time a sheet of paper is fed.

2 Signals

a Finisher CB input signals

- 1 PS724 IN (PS724 to RB to finisher CB)

Signal relating to the detection of the home position of the alignment plate/L

[L]: Not in the home position

[H]: In the home position

b Finisher CB output signals

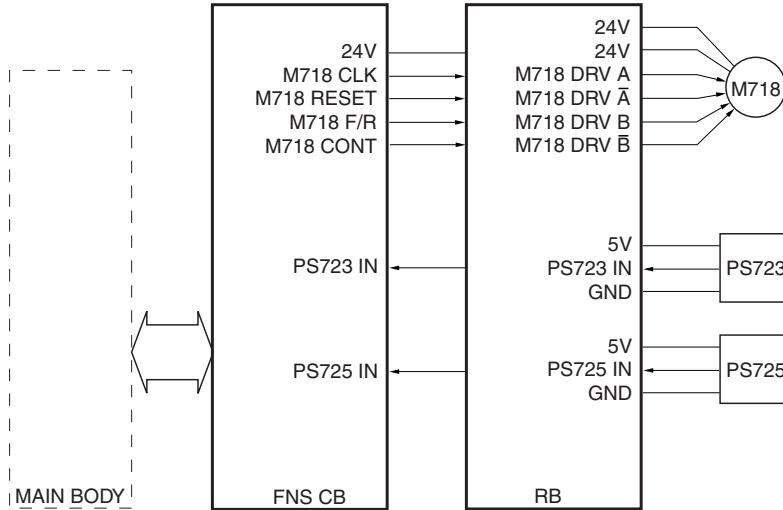
- 1 M716 DRV A, $\bar{A}$ (finisher CB to RB to M716)

Pulse signal to drive/control the Phase A of M716

- 2 M716 DRV B, $\bar{B}$ (finisher CB to RB to M716)

Pulse signal to drive/control the Phase B of M716

M718 (folding stopper) control (Q3634A only)



M718 (folding stopper) moves the booklet stopper. The link mechanism releases the flat-stapling stopper when the booklet stopper comes down.

The finisher CB (finisher control board) controls the operation of M718 through the RB (relay board).

The signals (or sensors) related to this component include PS723 (folding stopper HP), PS725 (folding paper exit) and PS729 (folding full PS).

1 Operation

a Folding mode

The finisher operation signal from the MFP lets M718 (folding stopper) drive to lower the booklet stopper. The booklet stopper comes down to the appropriate alignment position that fits the size of the paper to be handled.

When the last sheet has been aligned, M718 rotates to lower it to the folding position.

When the folding has been completed and the trailing edge of the set has been detected by PS725 (folding paper exit), M718 is activated. The booklet stopper

is raised to the paper-size specific position. The machine waits for the sheet of the next set.

b Stitch-and-fold mode

The finisher operation signal from the MFP lets M718 (folding stopper) drive to lower the booklet stopper. The booklet stopper comes down to the appropriate stitch-and-fold position that fits the size of the paper.

When the stapling has been completed, M718 rotates to lower the paper to the folding position.

When the folding has been completed and the trailing edge of the set has been detected by PS725 (folding paper exit), M718 is activated. The booklet stopper is raised to the paper-size specific position. The machine waits for the sheet of the next set.

c Tri-folding mode

The finisher operation signal from the MFP lets M718 (folding stopper) drive to lower the booklet stopper. The booklet

stopper comes down to the appropriate alignment position that fits the size of the paper.

When the last sheet has been aligned, M718 operates to lower it to the first folding position for tri-folding.

When the folding has been completed and the trailing edge of the set has been detected by PS729 (folding full PS), M718 is activated. The booklet stopper is raised to the paper-size specific position. The machine waits for the sheet of the next set.

2 Signals

a Finisher CB input signals

1 PS723 IN (PS723 to RB to finisher CB)

Signal relating to the detection of the booklet stopper's home position

[L]: Not in the home position

[H]: In the home position

2 PS725 IN (PS725 to RB to finisher CB)

Signal relating to the detection of the paper at the folding paper exit position

[L]: paper not detected

[H]: paper detected

b Finisher CB output signals

1 M718 CLK (finisher CB to RB)

Signal relating to the clock for controlling the rotation speed of the M718

2 M718 Reset (finisher CB to RB)

Reset signal for the M718

3 M718 F/R (finisher CB to RB)

Signal to control the rotation direction of the M718

[L]: CCW

[H]: CW

4 M718 CONT (finisher CB to RB)

Signal to activate or deactivate the M718

[L]: M718 on

[H]: M718 off

c RB output signals

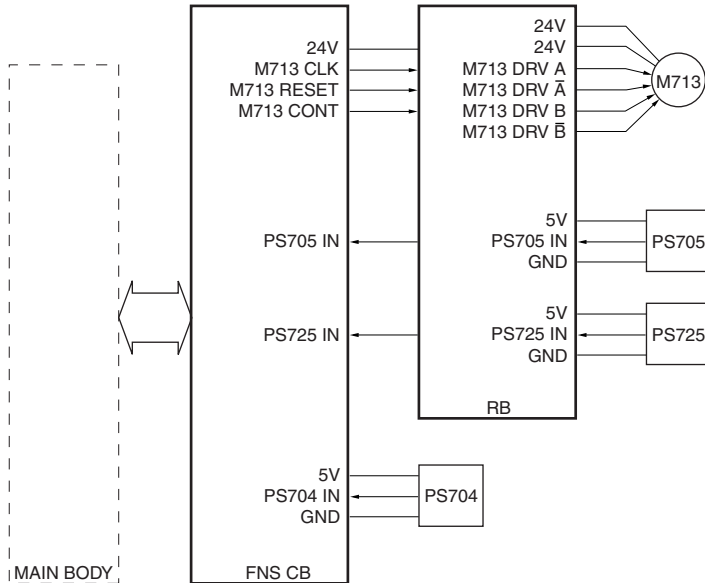
1 M718 DRV A, $\bar{A}$ (RB to M718)

Pulse signal to drive/control the Phase A of M718

2 M718 DRV B, $\bar{B}$ (RB to M718)

Pulse signal to drive/control the Phase B of M718

M713 (stacker entrance) control



M713 (stacker entrance) drives the stacker entrance roller and the swing belt. These components are responsible for conveying the paper to the stacker, aligning the paper rear end, and controlling the timing for stapling.

The finisher CB (finisher control board) controls the operation of M713 through the RB (relay board).

The related signals are PS704 (finisher entrance), PS705 (stacker entrance), and PS725 (folding paper exit).

1 Operation

- a** Staple mode (for sheets of all paper sizes except A4, B5, and 8.5 by 11 = without bypass feature)

The finisher operation signal from the MFP lets M713 (stacker entrance) start to rotate at a high-speed.

When PS705 (stacker entrance) has detected the rear end of the paper, the rotation speed of M713 changes to low, conveying the paper slowly to the stacker. Then, after a predefined time

has elapsed, the rotation returns to the high-speed mode to prepare for the next conveyance of paper.

When the last sheet of the set has passed through and the stapling operation has started, M713 stops.

When M708 (paper exit) has closed the opening, the rotation of M713 changes to a high speed to prepare for the conveyance of the paper to be stapled.

- b** Staple mode (for sheets of paper sizes A4, B5, and 8.5 by 11 = with bypass feature)

1 Sheets of the first set

The sheets of the first set are processed in the same way as in the staple mode described above (for sheets of all paper sizes except A4, B5, and 8.5 by 11 = without bypass feature).

2 First sheets of the second and subsequent sets

When PS705 (stacker entrance) has detected the rear end of the last sheet

of the first set, and a predefined time period has elapsed, M713 (stacker entrance) stops. This action ensures that the stapling of the first set completes before the sheets of the second set are fed to the stacker section (the first sheet waits on the bypass channel).

3 Second sheets of the second and subsequent sets

When PS704 (finisher entrance) has detected the trailing edge of the second sheet of the second (and subsequent sets), and a predefined time period has elapsed, M713 (stacker entrance) rotates at a high speed. This action allows the first and second sheets to be conveyed to the stacker section at the same time.

4 Third and subsequent sheets of the second and subsequent sets

The third and subsequent sheets of the second (and subsequent sets) are conveyed to the stacker in the same manner as the sheets of the first set.

c Folding and stitch-and-folding modes

The finisher operation signal from the MFP lets M713 (stacker entrance) start to rotate at a high-speed.

When PS705 (stacker entrance) has detected the rear end of the paper, the rotation speed of M713 changes to low, conveying the paper slowly to the stacker. Then, after a predefined time has elapsed, the rotation returns to the high-speed mode to prepare for the next conveyance of paper.

When the last sheet of the set has been aligned, M713 stops.

When PS725 (folding paper exit) has detected the rear end of the set, M713 (stacker entrance) returns to its high-speed rotation mode to prepare for the next paper conveyance.

d Tri-folding mode

The finisher operation signal from the MFP lets M713 (stacker entrance) start to rotate at a high-speed.

When PS705 (stacker entrance) has detected the trailing edge of the paper, the rotation speed of M713 changes to low, conveying the paper slowly to the stacker. Then, after a predefined time has elapsed, the rotation returns to the high-speed mode to prepare for the next conveyance of paper.

When the last sheet of the set has been aligned and the booklet stopper has moved to the tri-folding position, M713 stops.

When PS729 (folding full) has detected the trailing edge of the set, M713 (stacker entrance) returns to its high-speed rotation mode to prepare for the next paper conveyance.

2 Signals

a Finisher CB output signals

1 M713 CLK (finisher CB to RB)

Signal relating to the clock for controlling the rotation speed of M713

2 M713 RESET (finisher CB to RB)

Reset signal for M713

3 M713 CONT (finisher CB to RB)

Signal to activate or deactivate M713

[L]: M713 on

[H]: M713 off

b RB output signals

1 M713 DRV A, $\bar{A}$ (RB to M713)

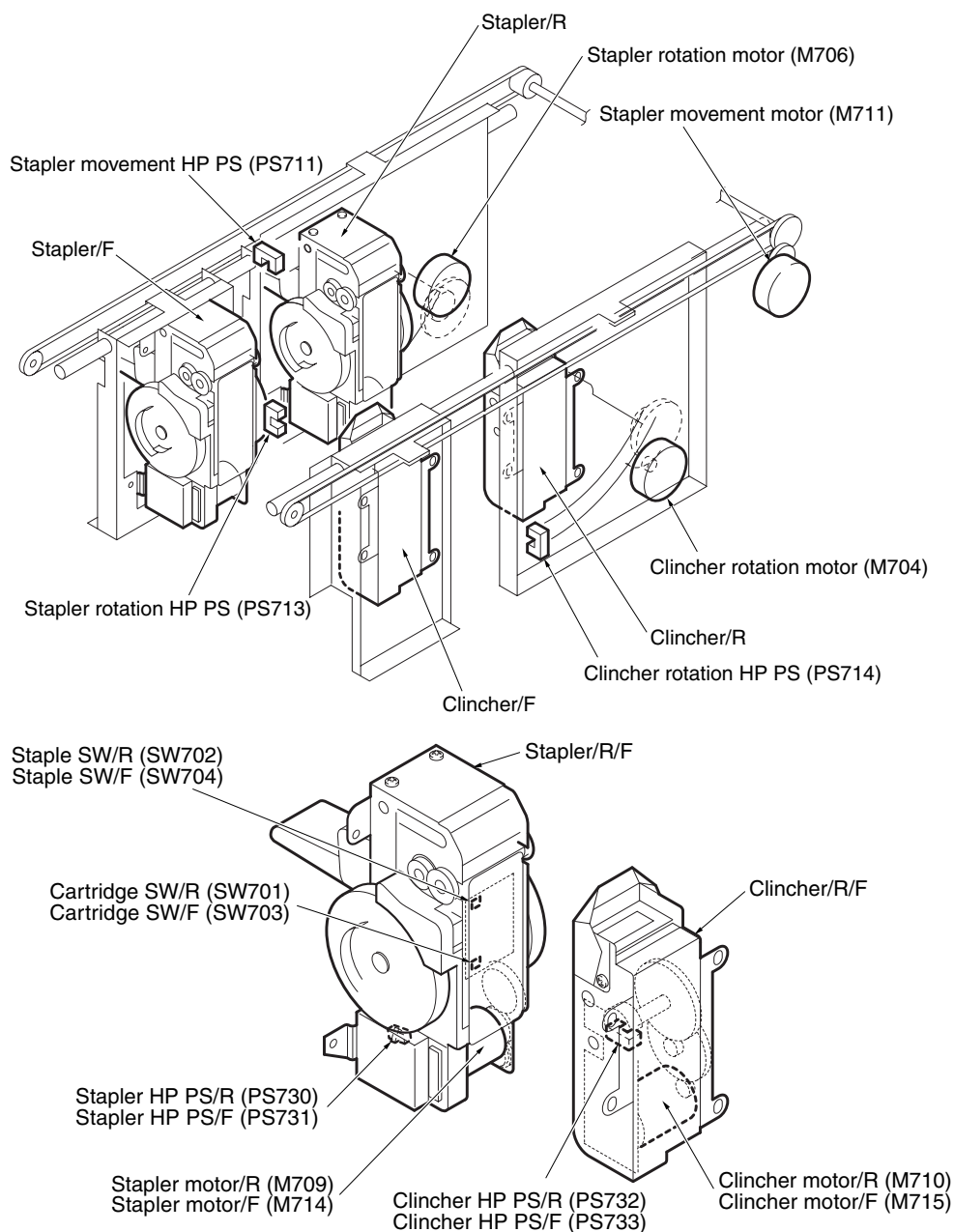
Pulse signal to drive/control the Phase A of M713

2 M713 DRV B, $\bar{B}$ (RB to M713)

Pulse signal to drive/control the Phase B of M713

Stapler section

Composition

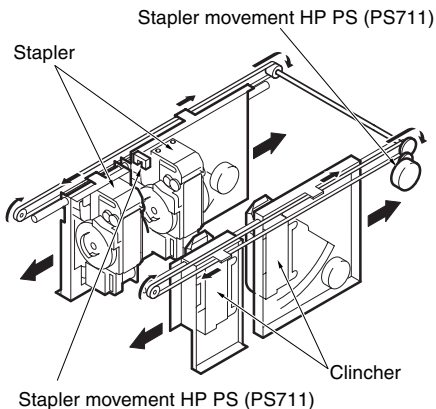


Mechanism

Mechanism	Method
Stapler horizontal movement*1	Interlocked mechanism by stapler and clincher with stepping motor and timing belt
Stapler/clincher rotational movement*2	Stepping motor Ball locking mechanism
Stapling*3	Flat clinch

*1 Stapler horizontal movement

The stapler movement motor (M711) drives the timing belts. The stapler/R is attached to the upper part of one timing belt. Also the clincher/R is attached to the upper part of another timing belt. The stapler/F and the clincher/F are attached to the lower part of each timing belt.

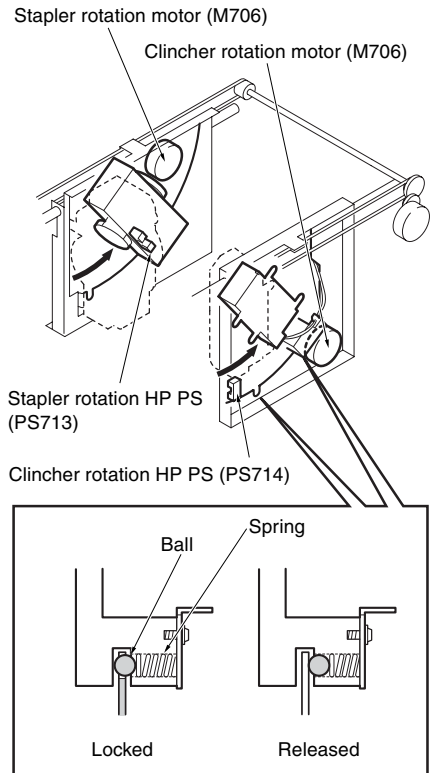


*2 Stapler/clincher rotational movement

The stapler/R and clincher/R are rotatable up to 45 degrees for the single staple (rear).

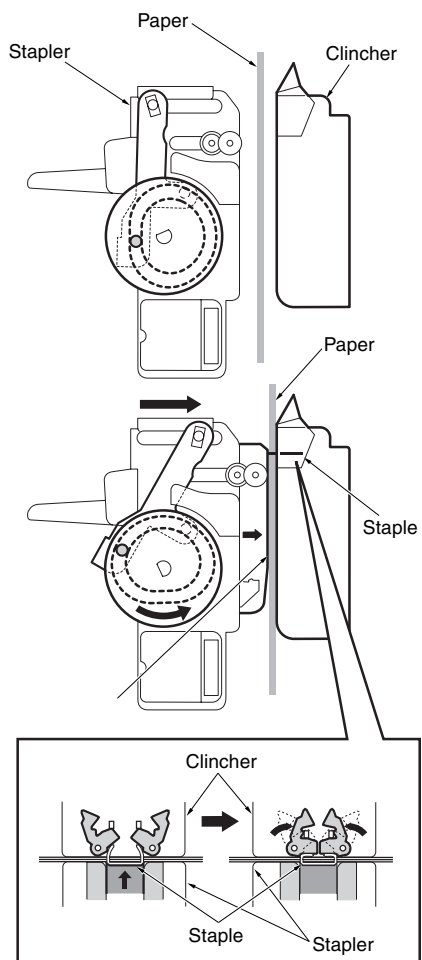
The stapler rotation motor (M706) rotates the stapler/R. The clincher rotation motor (M704) rotates the clincher/R.

The ball lock mechanism locks the stapler/clincher at angles of 0 degrees or 45 degrees.

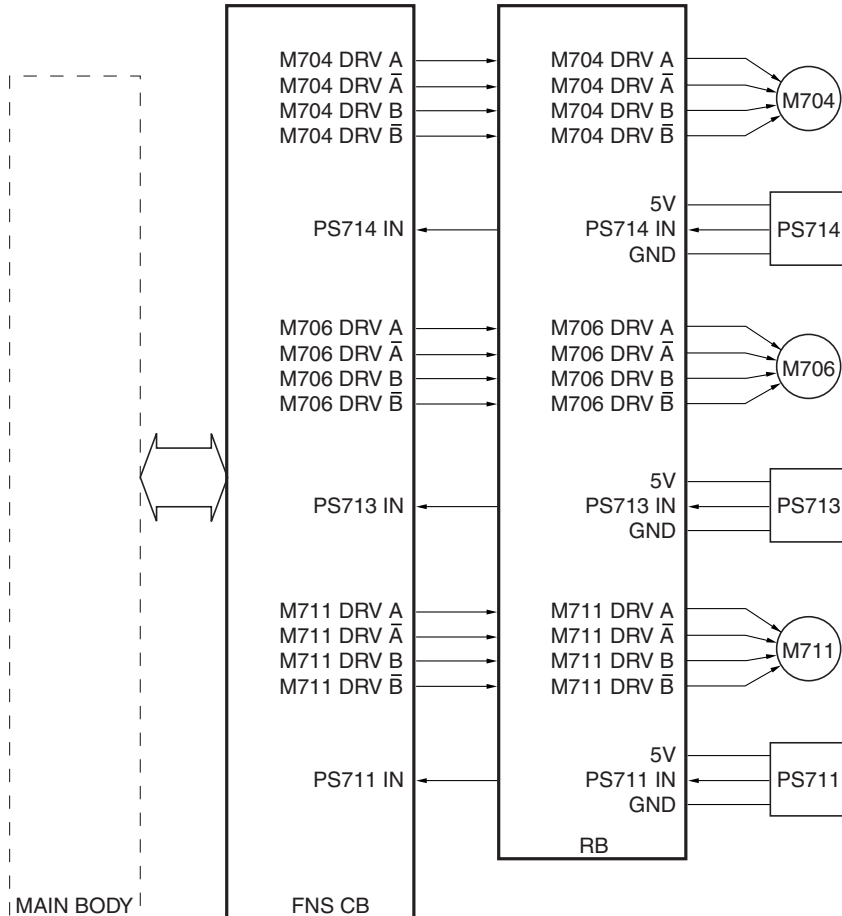


*3 Stapling

For stapling, first the stapler motors /R and /F (M709 and M714) in the staplers /R and /F push out the paper pressure unit to press the paper respectively. Then the staples are pushed out. Finally, the staples are folded inside by the force of the clincher motors /R and /F (M710 and M715) mounted in the clinchers /R and /F respectively.



Stapler movement control



The stapler/F and the stapler/R move horizontally in opposite directions each other. In addition, the stapler/R rotates up to 45 degrees according to the current staple mode.

The horizontal movement of the staplers is performed by M711 (stapler movement), whereas the rotation is performed by M704 (clinch rotation) and M706 (staple rotation).

The finisher CB (finisher control board) controls the operations of M711, M704, and M706 through the RB (relay board).

The related signals are PS711 (stapler movement HP), PS713 (stapler rotation HP), and PS714 (clinch rotation HP).

1 Operation

a Single staple (front)

The finisher operation signal from the MFP activates M711 (stapler movement) to carry the staplers to extend the distance between the staplers and the clinchers, and then M711 stops at the appropriate positions.

When PS706 (main tray paper exit) has detected the last sheet and a predefined time period has elapsed, M711 is activated again to move the staplers to the home position, and M711 stops when PS711 (stapler movement HP) turns on.

b Single staple (rear, oblique)

The finisher operation signal from the MFP activates M711 (stapler movement) to extend the distances between the two staples as well as the two clinchers. After a predefined time period has elapsed, M706 (stapler rotation) and M704 (clinch rotation) start to rotate the stapler/R and the clincher/R respectively. When the staplers and clinchers are set in place, M704, M706, and M711 stop.

PS706 (main tray paper exit) turns on by detecting the last paper, and after a predefined time has elapsed, M704 and M706 start to rotate the stapler/R and the clincher/R back to their home positions. The rotating actions of the stapler/R and the clincher/R stop when PS713 (stapler rotation HP) and PS714 (clinch rotation HP) detect them respectively. At the same time, M711 starts moving the staplers to the home position. The operation of M711 stops when PS711 (stapler movement HP) turns on.

c Two staples

When two staples are used, the staplers and the clinchers stay in their home positions for the stapling operation.

2 Signals

a Finisher CB input signals

1 PS711 IN (PS711 to RB to finisher CB)

Signal indicating whether the staplers (/F and /R) are in the home position
[L]: Not in the home position

[H]: In the home position

2 PS713 IN (PS713 to RB to finisher CB)

Signal indicating whether the stapler/R is in the home position

[L]: Not in the home position

[H]: In the home position

3 PS714 IN (PS714 to RB to finisher CB)

Signal indicating whether the clincher/R is in the home position

[L]: Not in the home position

[H]: In the home position

b Finisher CB output signals

1 M704 DRV A, $\bar{A}$ (finisherCB to RB to M704)

Pulse signal to drive/control the Phase A of M704

2 M704 DRV B, $\bar{B}$ (finisherCB to RB to M704)

Pulse signal to drive/control the Phase B of M704

3 M706 DRV A, $\bar{A}$ (finisherCB to RB to M706)

Pulse signal to drive/control the Phase A of M706

4 M706 DRV B, $\bar{B}$ (finisherCB to RB to M706)

Pulse signal to drive/control the Phase B of M706

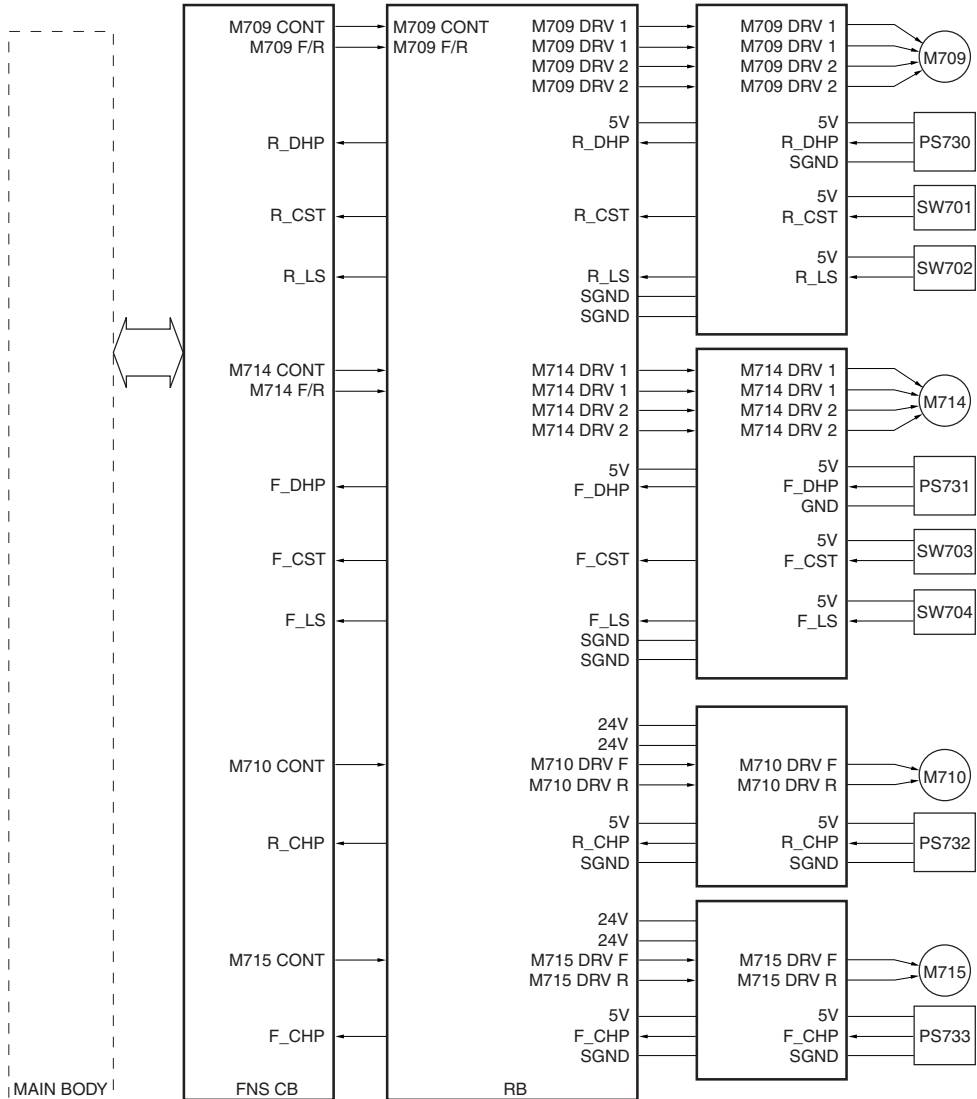
5 M711 DRV A, $\bar{A}$ (finisherCB to RB to M711)

Pulse signal to drive/control the Phase A of M711

6 M711 DRV B, $\bar{B}$ (finisherCB to RB to M711)

Pulse signal to drive/control the Phase B of M711

Staple control



The stapling operation is performed using four motors: M709 (stapler/R), M714 (stapler/F), M710 (clincher/R), and M715 (clincher/F).

The stapler pushes out the staple, which is bent by the clincher.

The finisher CB (finisher control board) controls the operations of the four motors: M709, M714, M710, and M715.

The related signals are PS730 (stapler hp PS/R), PS731 (stapler hp /F), PS732 (clincher hp /R), PS733 (clincher hp /F), SW701 (cartridge /R), SW703 (cartridge /F), SW702 (staple /R), and SW704 (staple /F).

1 Operation

a Staple

Upon completion of the alignment operation by the alignment plates, M709 and M714 (stapler /R and /F) initiate the operation of pushing the needles into the paper. After a predefined time period has elapsed, M710 and M715 (clincher /R and /F) start bending of the needles. The stapling operation finishes when PS732 (clincher hp /R) and PS733 (clincher hp /F) as well as PS730 (stapler hp /R) and PS731 (stapler hp /F) detect the clinchers and the staplers at their home positions (off to on).

b Staple clogging detection

During the stapling action, if one or more signals from PS730, PS731 (stapler hp /R and /F), PS732 and/or PS733 (clincher hp /R and /F) do not return to on within a predefined time period since they have changed to off, the MFP recognizes that a needle clogging error has occurred. In this case, M709, M714 (stapler /R and /F), M710, and M715 (clincher /R and /F) initiate reverse rotations to return the staplers and the clinchers to their home positions.

c Cartridge detection

SW701 and SW703 (cartridge /R and /F) in the staplers detects whether the cartridges are properly installed or not.

If the cartridge is not found or is considered to be improperly installed, an error message will be displayed on the LCD of the MFP.

d Staple detection control

When SW702 (staple /R) or SW704 (staple /F) detects the state of no needle remaining staples, an error message will be displayed on the LCD of the MFP.

2 Signals

a Finisher CB input signals

1 R_Dhp (PS730 to RB to finisher CB)

Signal from the stapler hp PS/R, indicating whether the stapler/R is in the home position

[L]: In the home position

[H]: Not in the home position

2 F_Dhp (PS731 to RB to finisher CB)

Signal from the stapler hp PS/F, indicating whether the stapler/F is in the home position

[L]: In the home position

[H]: Not in the home position

3 R_Chp (PS732 to RB to finisher CB)

Signal from the clincher hp PS/R, indicating whether the clincher/R is in the home position

[L]: In the home position

[H]: Not in the home position

4 F_Chp (PS733 to RB to finisher CB)

Signal from the clincher hp PS/F, indicating whether the clincher/F is in the home position

[L]: In the home position

[H]: Not in the home position

5 R_CST (SW701 to RB to finisher CB)

Signal from the cartridge SW/R, indicating whether the cartridge is properly installed

[L]: Properly installed

[H]: Not properly installed

6 R_LS (SW702 to RB to finisher CB)

Signal from the staple SW/R, indicating the remaining volume of needles

[L]: Sufficient staples

[H]: Out of staples

7 F_CST (SW703 to RB to finisher CB)

Signal from the cartridge SW/F,
indicating whether the cartridge is
properly installed

[L]: Properly installed

[H]: Not properly installed

8 F_LS (SW704 to RB to finisher CB)

Signal from the staple SW/F,
indicating the remaining volume of
staples.

[L]: Sufficient staples.

[H]: Out of staples.

b Finisher CB output signals**1 M709 CONT (finisher CB to RB)**

Signal to activate or deactivate M709

[L]: M709 on

[H]: M709 off

2 M709 F/R (finisher CB to RB)

Signal to control the rotation direction
of M709

[L]: CW

[H]: CCW

3 M710 CONT (finisher CB to RB)

Signal to activate or deactivate M710

[L]: M710 on

[H]: M710 off

4 M714 CONT (finisher CB to RB)

Signal to activate or deactivate M714

[L]: M714 on

[H]: M714 off

5 M714 F/R (finisher CB to RB)

Signal to control the rotation direction
of M714

[L]: CW

[H]: CCW

6 M715 CONT (finisher CB to RB)

Signal to activate or deactivate M715

[L]: M715 on

[H]: M715 off

c RB output signals**1 M709 DRV 1 (RB to M709)**

Pulse signal to drive/control the
Phase A of M709

2 M709 DRV 2 (RB to M709)

Pulse signal to drive/control the
Phase B of M709

3 M710 F (RB to M710)

Pulse signal to start or stop the
normal rotation of M710

4 M710 R (RB to M710)

Pulse signal to start or stop the
reverse rotation of M710

5 M714 DRV 1 (RB to M714)

Pulse signal to drive/control the
Phase A of M714

6 M714 DRV 2 (RB to M714)

Pulse signal to drive/control the
Phase B of M714

7 M715 F (RB to M715)

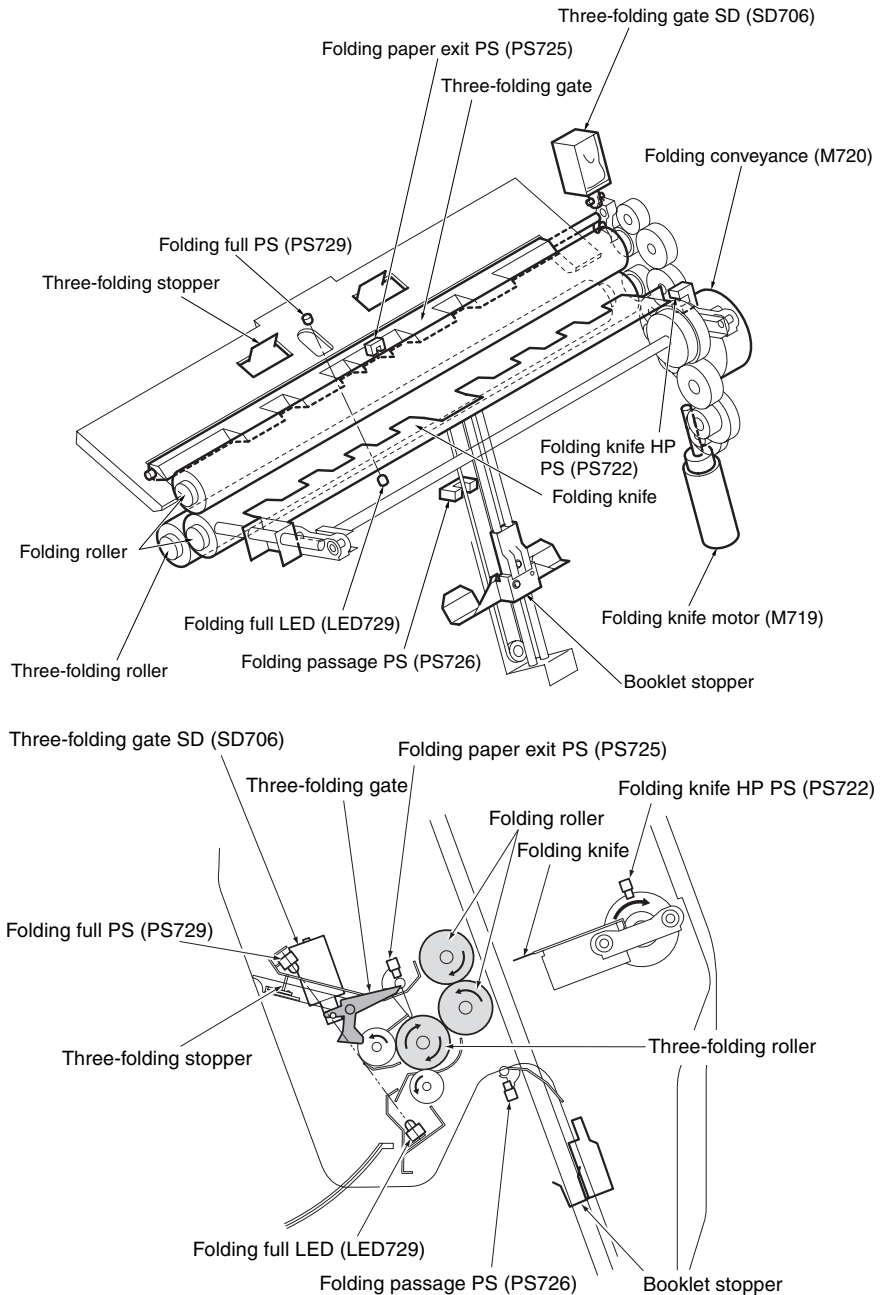
Pulse signal to start or stop the
normal rotation of M715

8 M715 R (RB to M710)

Pulse signal to start or stop the
reverse rotation of M715

Folding/Tri-folding section (Q3634A only)

Composition



Mechanism

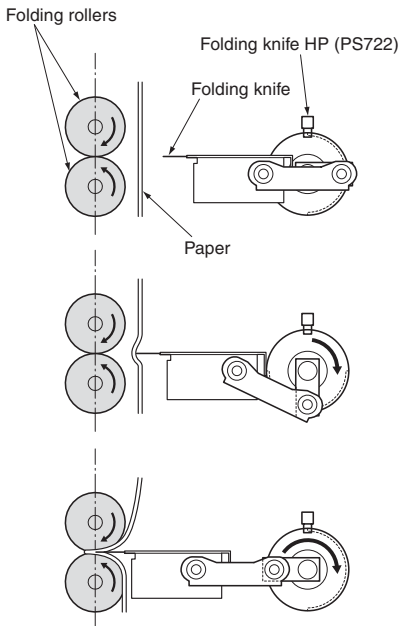
Mechanism	Method
Folding/Tri-folding (first folding)*1	Folding knife and roller folding
Tri-folding (second folding)*2	Roller folding
Booklet full detection*3	Translucent sensor

*1 Folding/tri-folding (first folding)

The folding knife motor (M719) rotates the crank axle 180 degrees, which protrudes the folding knife toward the contact surface of two folding rollers.

The two folding rollers rotate to drag and fold the sheet(s) of paper.

The location at which the paper is folded will be controlled by the position of the booklet stopper.

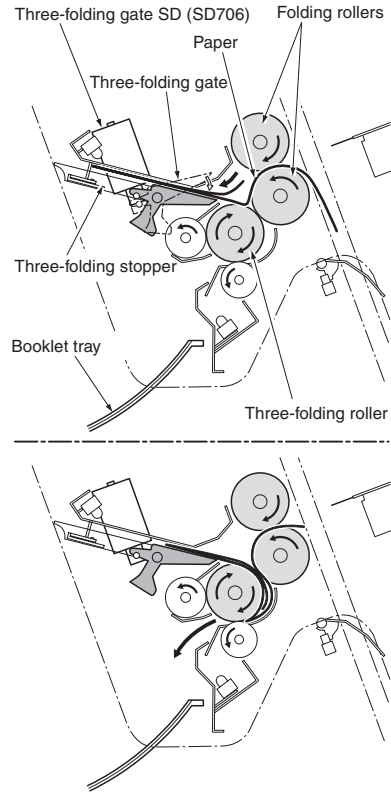


*2 Tri-folding (second folding)

The tri-folding gate SD (SD706) changes the position of the tri-folding gate so that the paper carried from the folding rollers will be conveyed toward the tri-folding stopper.

After the paper has been stopped by the tri-folding stopper, it is bent along the surfaces of the upper folding roller and the tri-folding roller. Then the paper is carried through the contact surface of the two rollers, which completes the second folding operation.

The location for the second folding is determined by the position of the tri-folding stopper.

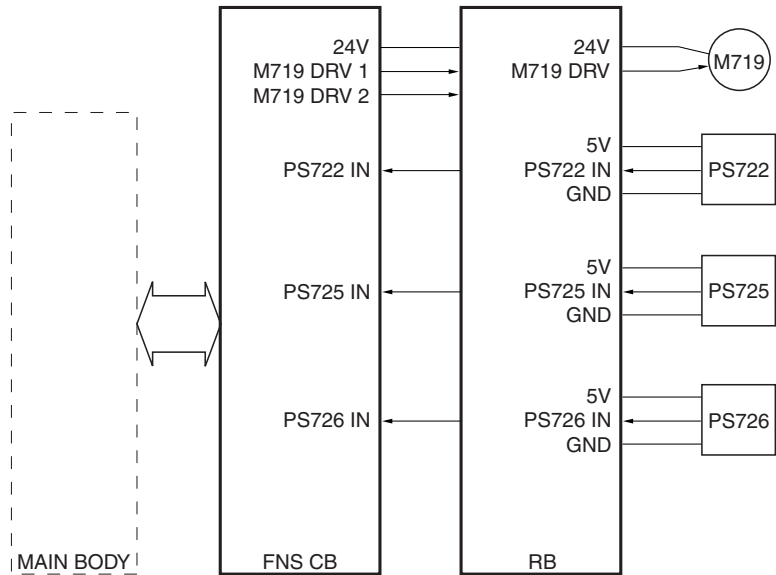


*3 Booklet full detection

The folding full LED (LES729) and the folding full PS (PS729), which consist of a pair of translucent sensors, detect the booklet tray full condition.

If a predefined time period has elapsed since the paper shielded the sensor light, a booklet full condition is reported.

M719 (folding knife) control



M719 (folding knife) drives the folding knife. This knife is used when the mode is folding, stitch-and-fold, or tri-folding.

The finisher CB (finisher control board) controls the operation of M719.

The related signals are PS722 (folding knife HP), PS725 (folding paper exit), and PS726 (folding passage).

1 Operation

PS726 (folding passage) detects the paper and the booklet stopper stops at the folding position. After a predefined time period has elapsed since then, M719 (folding knife) is activated, letting the folding knife protrude toward the paper.

The operation of PS726 ends when the folding knife returns and the signal from PS722 (folding knife HP) changes from H to L.

a Finisher CB input signals

- 1 PS722 IN (PS722 to RB to finisher CB)

Signal indicating whether the folding knife is in the home position

[L]: In the home position

[H]: Not in the home position

- 2 PS726 IN (PS726 to RB to finisher CB)

Signal indicating whether the paper has passed through the folding passage sensor.

[L]: Paper exists.

[H]: Paper does not exist.

b Finisher CB output signals

- 1 M719 DRV 1 and 2 (finisher CB to RB)

Signal to activate or deactivate M719

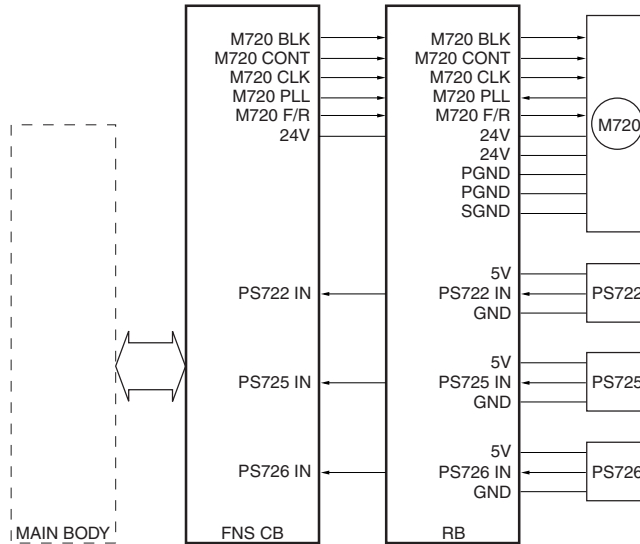
	DRV1	DRV2
Normal rotation	H	L
Reverse rotation	L	H
Halt	L	L

c RB output signals

- 1 M719 DRV (RB to M719)

Signal to drive/control M709

M720 (folding conveyance) control



M720 (folding conveyance) operates the folding roller(s), which rotates the tri-folding roller.

The finisher CB (finisher control board) controls the operation of M720.

The related signals are PS722 (folding knife HP), PS725 (folding paper exit), and PS726 (folding passage).

1 Operation

PS726 (folding passage) detects the paper and the booklet stopper stops at the folding position. After a predefined time period has elapsed since then, M719 (folding knife) is activated. When PS722 (folding knife HP) detects the paper, M720 (folding conveyance) is activated to fold the paper with the folding roller(s) and the tri-folding roller. The folded paper is delivered to the booklet tray.

When PS725 (folding paper exit) has detected the trailing edge of the paper and a predefined time period has elapsed since then, M720 stops.

2 Signals

a Finisher CB input signals

1 M720 PLL (M720 to RB to finisher CB)

Signal for monitoring the rotation of M720

[L]: M720 is rotating at a specified speed.

[H]: M720 is not rotating at a specified speed.

b Finisher CB output signals

1 M720 BLK (finisher CB to RB to M720)

Signal to apply braking to the M720

[L]: Braking on

[H]: Braking off

2 M720 CONT (finisher CB to RB to M720)

Signal to drive/control M720

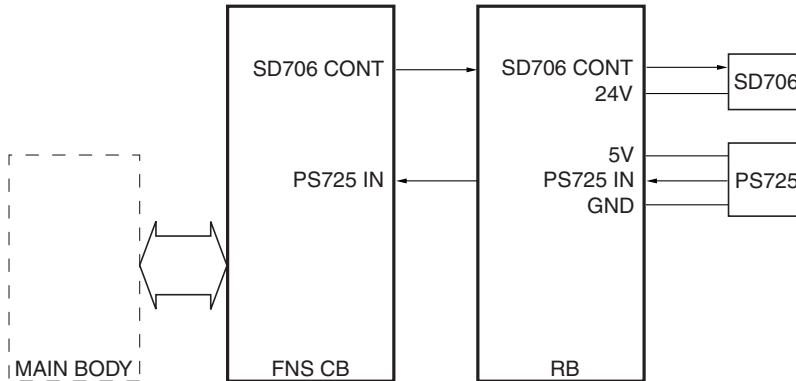
[L]: M720 on

[H]: M720 off

- 3 M720 CLK (finisher CB to RB to M720)**
Signal relating to the clock for controlling the rotation speed of M720

- 4 M720 F/R (finisher CB to RB to M720)**
Signal to control the rotation direction of M720
[L]: CW
[H]: CCW

SD706 (tri-folding gate) control



SD706 (tri-folding gate) operates the tri-folding gate, which provides the appropriate paper passage for either one of the three operations: folding, stitch-and-fold, or tri-folding.

The finisher CB (finisher control board) controls the operation of SD706.

The related signal is PS725 (folding exit).

1 Operation

When the booklet stopper stops at the tri-folding position, SD706 (tri-folding gate) is activated. This operates the tri-folding gate, providing the paper passage that leads to the tri-folding stopper.

When PS725 (folding exit) has detected the trailing edge of the paper and a predefined time period has elapsed since then, SD706 is deactivated.

2 Signals

a Finisher CB output signals

- 1 SD706 CONT (finisher CB to RB to SD706)**

Signal to activate/deactivate SD706

[L]: SD706 on

[H]: SD706 off

3 Finisher disassembly/assembly

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External section

Note

Note the following points when you detach the finisher from the MFP:

- Be sure the power cord has been unplugged from the wall outlet.
- The disassembled parts must be reassembled following the disassembly procedure in reverse unless otherwise specified.
- Care should be taken not to lose small parts. Care should also be taken not to install small parts in wrong places.

WARNING!

- Do not operate the MFP before installing all the disassembled parts completely.
- Removal of some screws is prohibited in this section. Never loosen them.

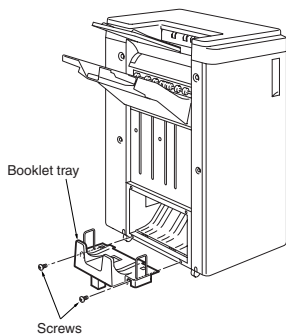
CAUTION

For Q3634A, the booklet tray must be removed prior to starting the service. If the unit is moved with the booklet tray attached, the mounting section may be damaged.

Removing and reinstalling the booklet tray (Q3634A only)

Procedure

- 1 Remove two screws to detach the booklet tray.

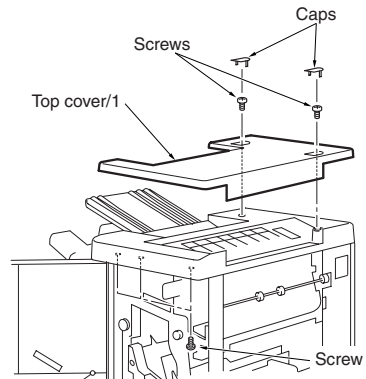


- 2 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the top cover/1

Procedure

- 1 Remove the two caps.
- 2 Open the front door, and remove five screws to detach the top cover/1.



- 3 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the top cover/2

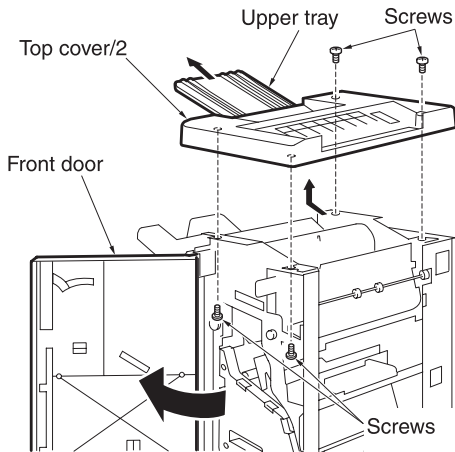
CAUTION

Make sure that the power cord of the MFP is unplugged from the power outlet.

Uninstall the PI (optional) if installed.

Procedure

- 1 Remove the top cover/1.
- 2 Open the front door.
- 3 Remove four screws, and pull out the upper tray. Then remove the top cover/2.



- 4 Reinstall the above parts following the removal steps in reverse.

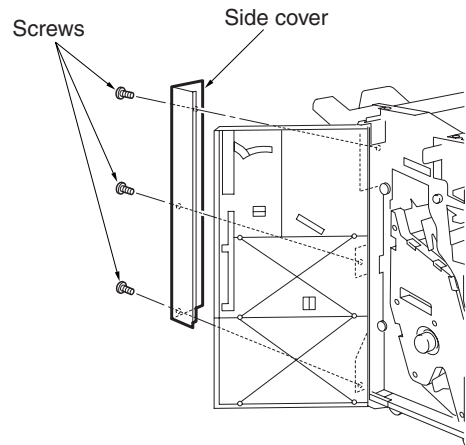
Removing and reinstalling the side cover

CAUTION

Make sure that the power cord of the MFP is unplugged from the power outlet.

Procedure

- 1 Open the front door.
- 2 Remove three screws, and remove the side cover.



- 3 Reinstall the above parts following the removal steps in reverse.

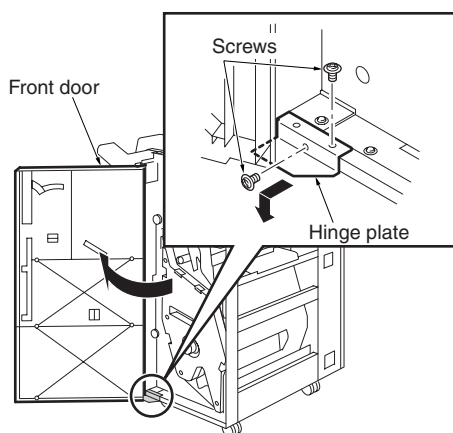
Removing and reinstalling the front door

CAUTION

Make sure that the power cord of the MFP is unplugged from the power outlet.

Procedure

- 1 Open the front door.
- 2 Remove the two mounting screws holding the hinge plate at the bottom, and remove the front door.



- 3 Reinstall the above parts following the removal steps in reverse.

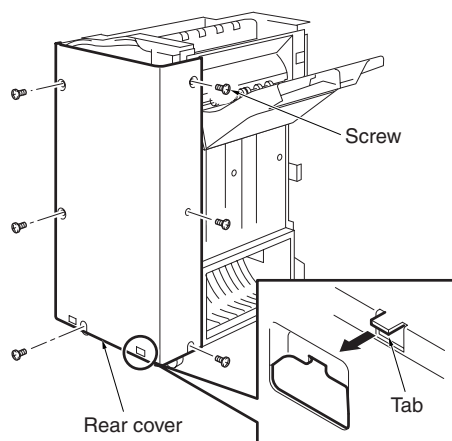
Removing and reinstalling the rear cover

CAUTION

Make sure that the power cord of the MFP is unplugged from the power outlet.

Procedure

- 1 Remove the six mounting screws, and detach the rear cover.



- 2 Reinstall the above parts following the removal steps in reverse.

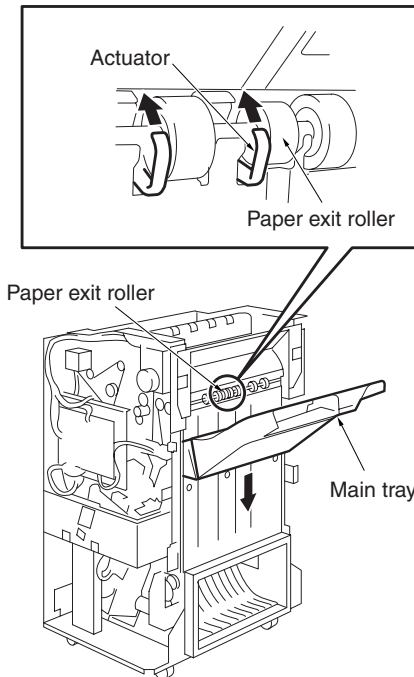
Removing and reinstalling the main tray

CAUTION

After you have lowered the main tray, be sure to unplug the power cord of the MFP from the power outlet.

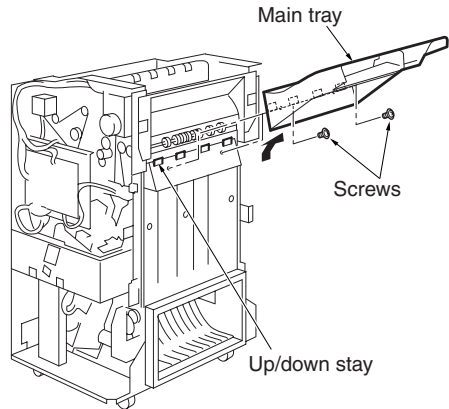
Procedure

- 1 Push up the actuator of the main tray exit with your finger to lower the main tray.



- 2 Turn the MFP's main power switch (SW1) off, and unplug the power cord from the power outlet.
- 3 Remove the two mounting screws.

- 4 Lift the main tray and detach it from the hooks of the up/down stay.



- 5 Reinstall the above parts following the removal steps in reverse.

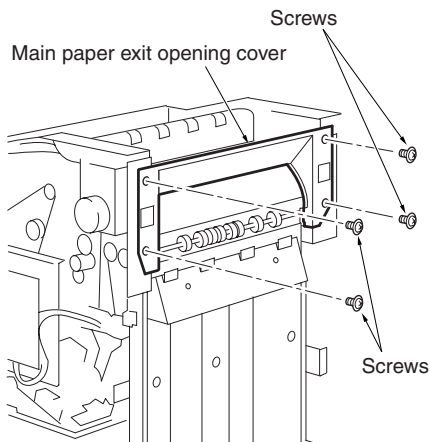
Removing and reinstalling the main paper exit opening cover

CAUTION

Make sure that the power cord of the MFP is unplugged from the power outlet.

Procedure

- 1 Remove the following parts:
 - Top cover/1 or optional PI (if installed)
 - Top cover/2
 - Side cover
 - Rear cover
 - Main tray
- 2 Remove four screws and detach the main paper exit opening cover.

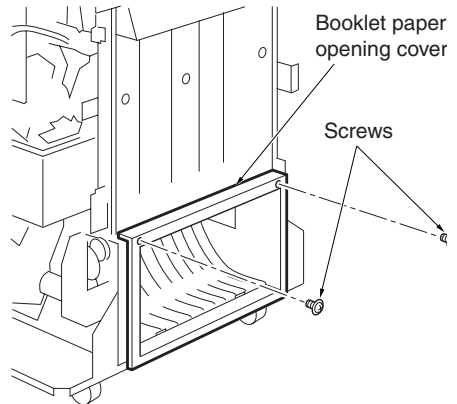


- 3 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the booklet paper exit opening cover (Q3634A only)

Procedure

- 1 Remove the booklet tray.
- 2 Remove two screws and detach the booklet paper exit opening cover.



- 3 Reinstall the above parts following the removal steps in reverse.

Conveyance section

Replacing the paper exit roller (sponge roller)

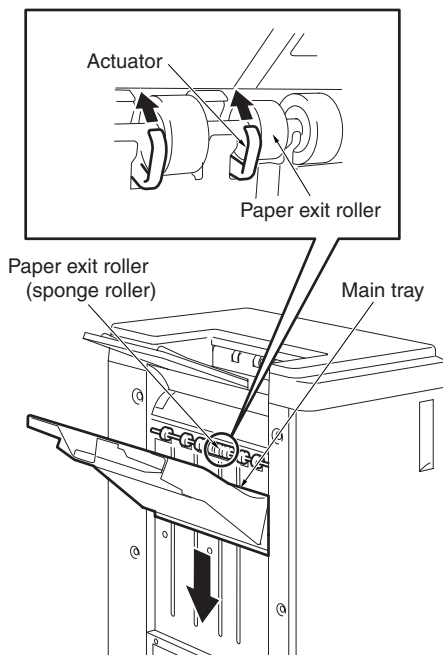
CAUTION

After you have lowered the main tray, be sure to unplug the power cord of the MFP from the power outlet.

When replacing the sponge rollers, all of the five pairs (10 components) must be replaced.

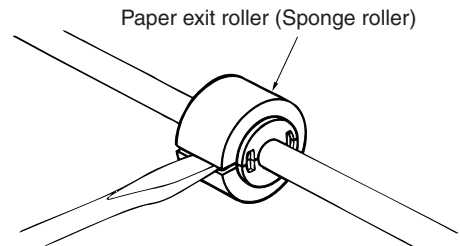
Procedure

- 1 Push up the actuator of the main tray exit with your finger to lower the main tray.

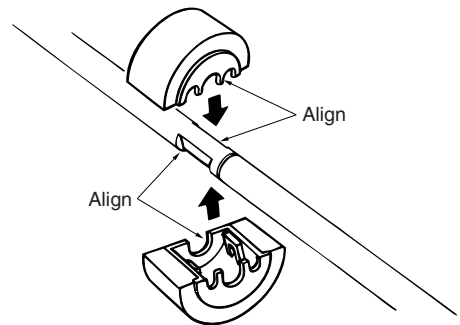


- 2 Turn the MFP's main power switch (SW1) off, and unplug the power cord from the power outlet.

- 3 Insert the end of the blade screwdriver into the slot in the sponge roller, and twist the screwdriver to pry apart.



- 4 Place the two components of a new sponge roller around the roller shaft so that the tabs of the components are aligned with the dents on the shaft. Press the components together firmly until you hear the two "click" sounds.



- 5 To reattach the sponge roller shaft, perform the same procedure in reverse order.

Replacing the intermediate conveyance roller (sponge roller)

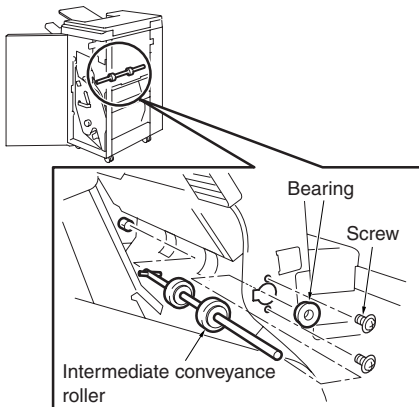
CAUTION

Make sure that the power cord of the main tray is unplugged from the power outlet.

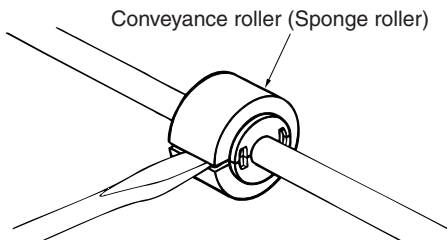
When replacing the sponge rollers, all of the two pairs (four components) must be replaced.

Procedure

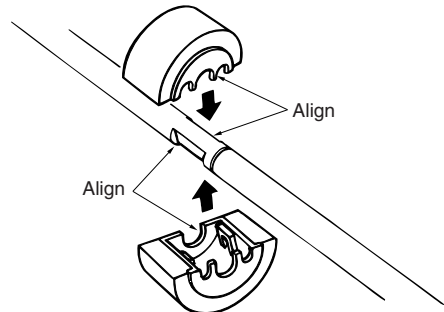
- 1 Open the front door.
- 2 Remove two screws and a bearing, and detach the intermediate conveyance rollers.



- 3 Insert the end of the blade screwdriver into the slot in the sponge roller, and twist the screwdriver to pry apart.



- 4 Place the two components of a new sponge roller around the roller shaft so that the tabs of the components are aligned with the dents on the shaft. Press the components together firmly until you hear the two "click" sounds.



- 5 To reattach the sponge roller shaft, perform the same procedure in reverse order.

CAUTION

When reinstalling the shaft, make sure that the pin on the far end of the shaft is placed properly in the slot.

Removing and reinstalling the paper exit opening unit

CAUTION

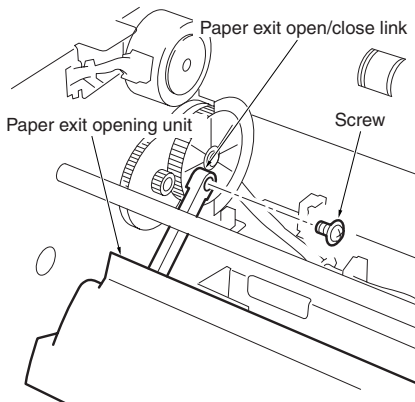
Make sure that the power cord of the MFP is unplugged from the power outlet.

Procedure

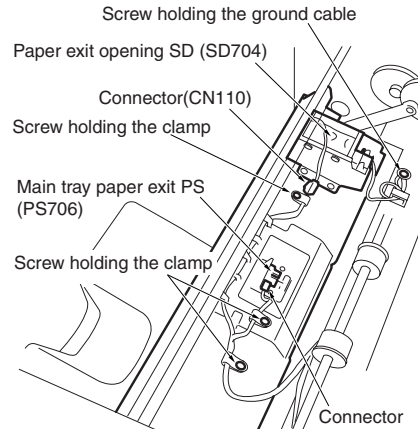
1 Remove the following parts:

- Top cover/1 or optional PI (if installed)
- Top cover/2
- Side cover
- Rear cover
- Main tray
- Main paper exit opening cover

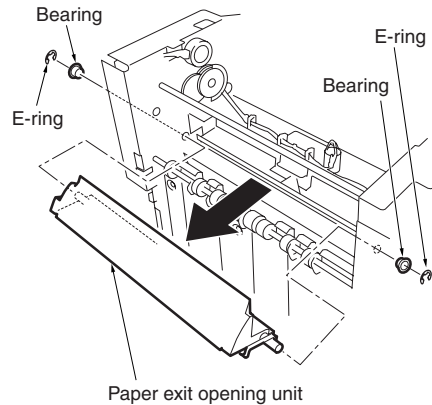
2 Remove a mounting screw on the paper exit open/close link.



3 Remove three screws holding the clamps, one screw holding the ground. Also remove the connector (CN110) for the paper exit opening SD (SD704) and the main tray paper exit PS (PS706).



4 Remove the two E-rings and the two brushings (at the front and rear side). Remove the paper exit opening unit.



5 Reinstall the above parts following the removal steps in reverse.

Main tray section

Replacing the tray up/down motor (M703)

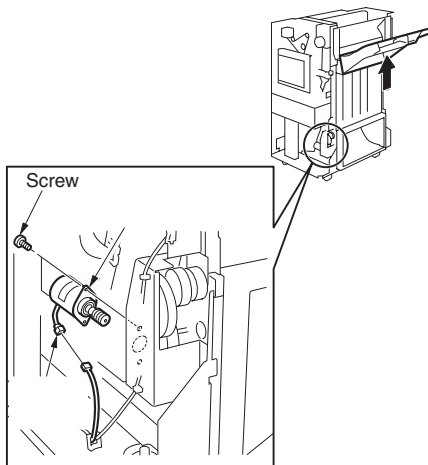
CAUTION

Make sure that the power cord of the MFP is unplugged from the power outlet.

When removing the tray up/down motor, be sure to hold the main tray to prevent it from falling.

Procedure

- 1 Remove the rear cover.
- 2 Remove the connector. Remove two mounting screws while holding the main tray, and then detach the tray up/down motor (M703).



- 3 Reinstall the above parts following the removal steps in reverse.

Replacing the up/down wire

CAUTION

Make sure that the power cord of the MFP is unplugged from the power outlet.

When removing the tray up/down motor, be sure to hold the main tray to prevent it from falling.

Note

The wire replacing procedure described below is of the rear side. For the front side, the design as well as the winding direction of the wire is symmetrical.

CAUTION

“F” is impressed on the front side surface of the wire bracket. Also, “R” is impressed on the rear side surface.

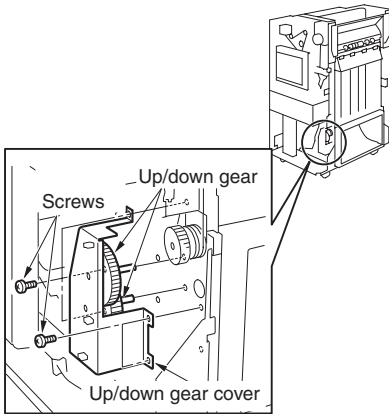
Be sure of the direction when installing.

Procedure

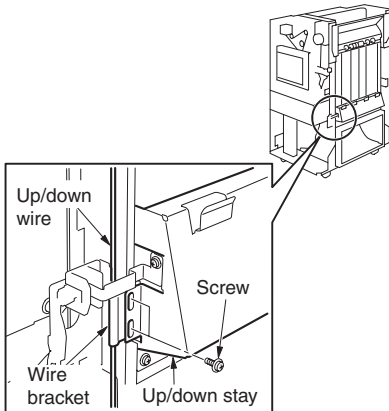
- 1 Remove the following parts:

- Side cover
- Front door
- Rear cover
- Tray up/down motor (M703)
- Main tray

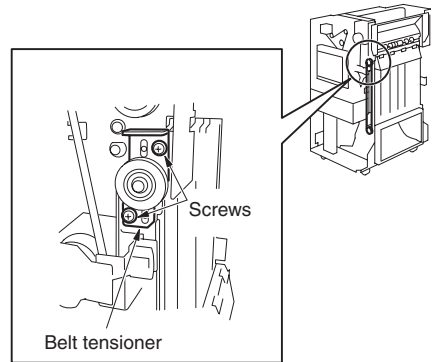
- 2 Remove five mounting screws. Remove the up/down gear cover and the gear.



- 3 Remove two screws. Detach the wire bracket on the rear from the up/down stay.



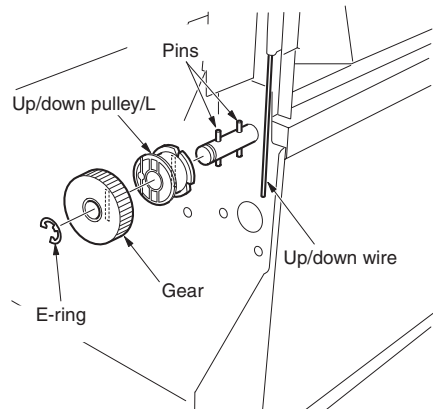
- 4 Loosen the two screws on the belt tensioner.



- 5 Remove the E-ring and the up/down pulley/L. Then remove the up/down wire.

CAUTION

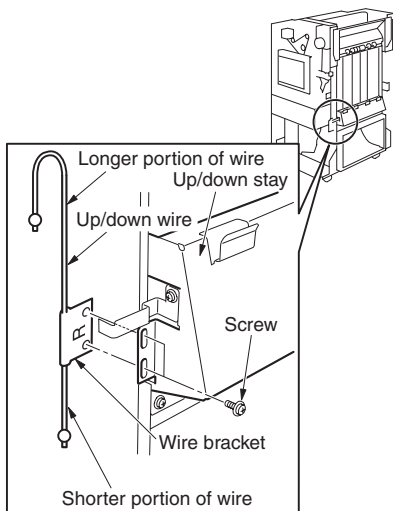
When you remove the up/down pulley, the pin falls. Be careful not to lose the pin.



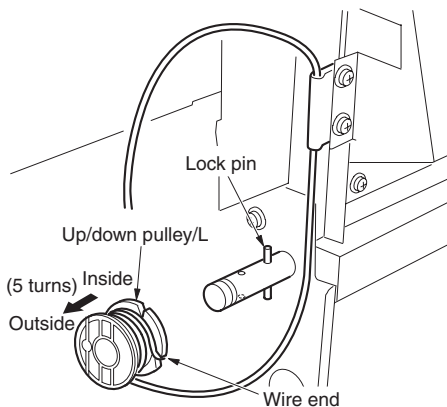
CAUTION

Temporarily attach the wire bracket to the up/down stay with two screws.

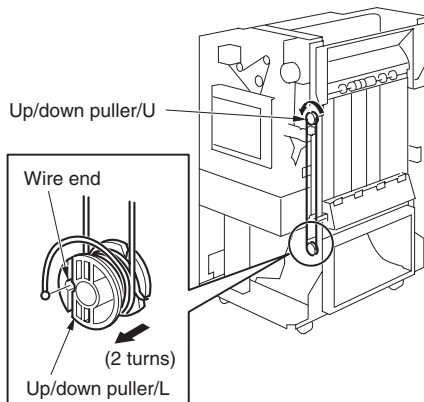
The wire bracket must be installed with the longer portion of the wire facing upward.



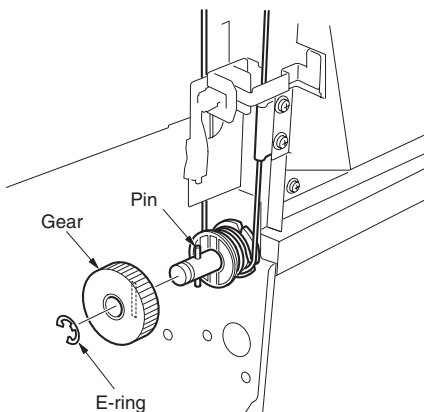
- 6** Secure the end of a new up/down wire to the wire end of the up/down pulley/L. Wind the wire tightly around the up/down pulley/L approx. 5 turns from inside to outside. Insert the pulley/L into the shaft so that the slots on the pulley/L align with the lock pin on the shaft.



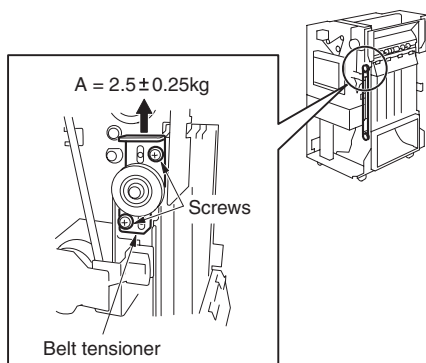
- 7** Hook the up/down wire around the up/down pulley/U. Wind the wire tightly around the up/down pulley/L 2 turns from inside to outside. Secure the end of the wire to another wire end (outside) of the up/down pulley/L.



- 8** Insert the pin into the hole in the shaft. Put the gear into the shaft and fix the gear with the E-ring.



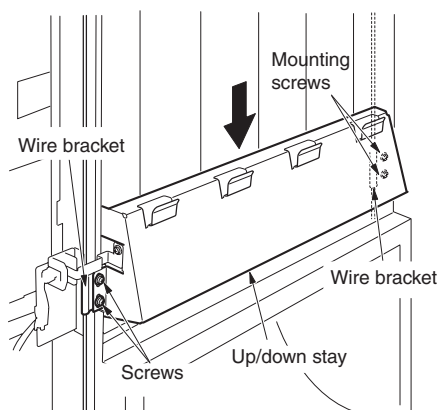
- 9 Attach a spring scale to the hole on the top of the belt tensioner. Pull the spring scale upward until a tension of 2.5 ± 0.25 kg is indicated. Tighten the two screws.



- 10 Loosen the two screws securing the front wire bracket. Adjust the height of the front wire bracket to level the up/down stay. Tighten the four mounting screws on the wire brackets (front and rear).

CAUTION

Make sure the up/down stay is level. If the stay is not level, an unnecessary load is put on the tray up/down motor or gear, which can result in damage to these components.



- 11 Reinstall the above parts following the removal steps in reverse.

Stacker section

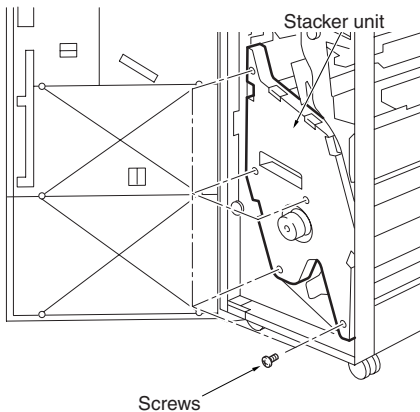
Removing and reinstalling the stacker unit cover

CAUTION

Make sure that the power cord of the MFP is unplugged from the power outlet.

Procedure

- 1 Open the front door.
- 2 Remove five screws to detach the stacker unit cover.



- 3 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the stacker unit

WARNING!

HP recommends that at least two people perform this service.

CAUTION

Make sure that the power cord of the MFP is unplugged from the power outlet.

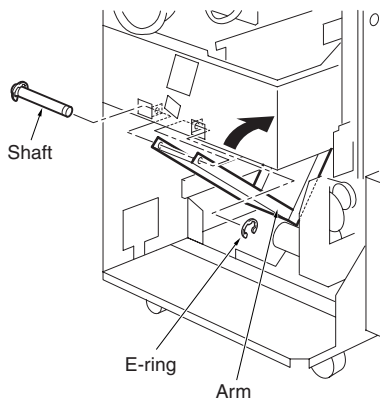
WARNING!

Be careful when detaching the stacker unit. If you remove the stopper, and in succession pull out the stacker unit, the finisher may fall due to the weight of the stacker unit. This may cause injury.

Procedure

- 1 Remove the following parts:
 - Booklet tray
 - Side cover
 - Front door
 - Rear cover
- 2 Detach the finisher from the MFP.
- 3 Pull the handle and draw the stacker unit.
- 4 Disconnect the three connectors (CN1, CN2, and CN3) from the relay board (RB). (Q3633A has two connectors, CN1 and CN2).
- 5 Remove each cable from wire guide.

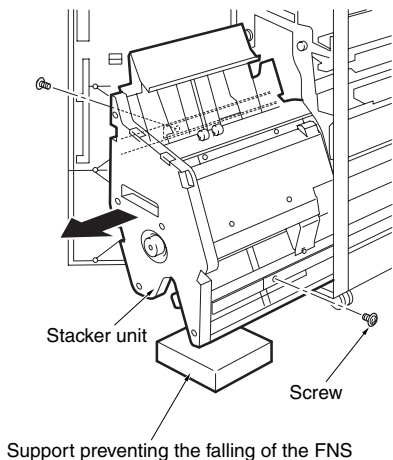
- 6 Remove the E-ring to remove the shaft, then fold up the arm and secure it using tape or other materials.



- 7 Remove two screws, and further pull stacker unit out.

CAUTION

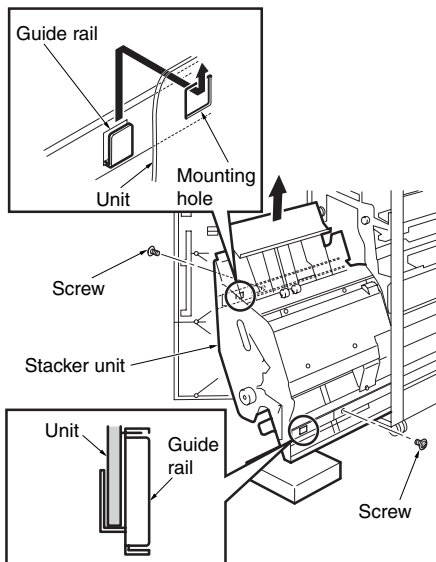
Place something under the drawn stacker unit to prevent the finisher from falling due to the weight of the unit.



- 8 Remove two screws. Lift the stacker unit to detach from the guide rail.

WARNING!

Take care of your posture when servicing to avoid damage to your back or other joints.



- 9 Reinstall the above parts following the removal steps in reverse.

CAUTION

Make sure that the hook in the guide rail is inserted into the mounting hole of the stacker unit, and then tighten the securing screw.

Stapler section

Removing and reinstalling the stapler unit cover

CAUTION

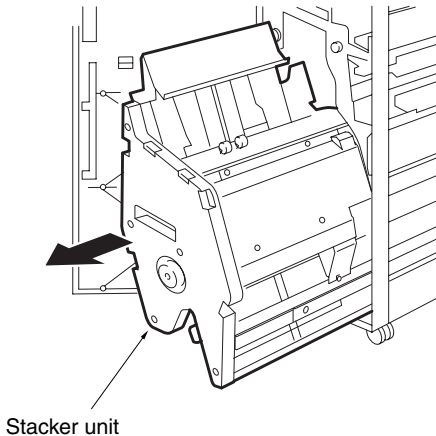
Make sure that the power cord of the MFP is unplugged from the power outlet.

WARNING!

Be careful when you detach the finisher from the MFP. If you pull out the stacker unit, the finisher may fall. This may cause injury.

Procedure

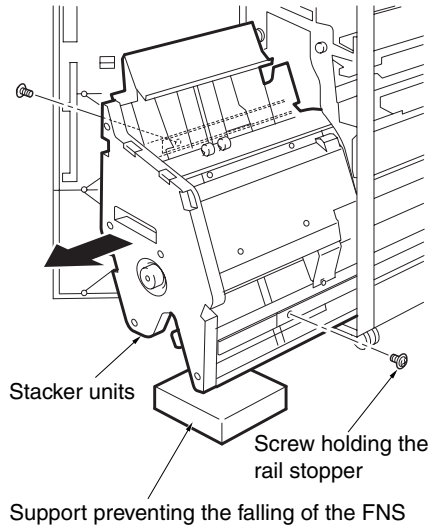
- 1 Open the front door.
- 2 Draw the stacker unit out.



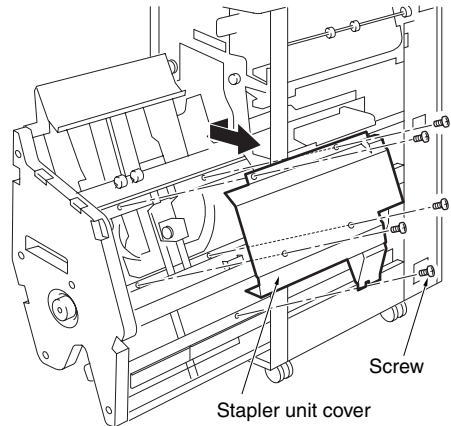
- 3 Remove the two screws securing the rail stopper. Further pull the stacker unit out.

CAUTION

Place something under the drawn stacker unit to prevent the finisher from falling due to the weight of the unit.



- 4 Remove five screws and detach the cover.



- 5 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the clincher

CAUTION

Make sure that the power cord of the MFP is unplugged from the power outlet.

WARNING!

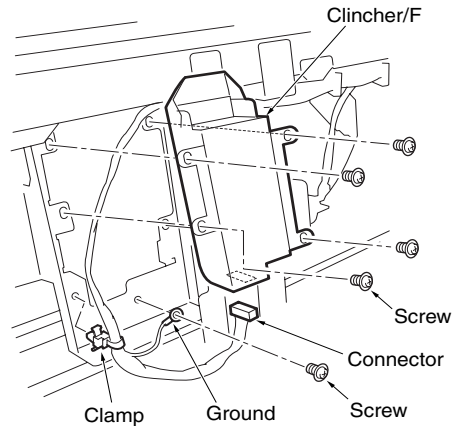
Do not move the stapler units manually. This can result in a misalignment between the gear and belt use to move the stapler units. Use the 47 mode to move the stapler units or remove the stapler movement motor (M711).

CAUTION

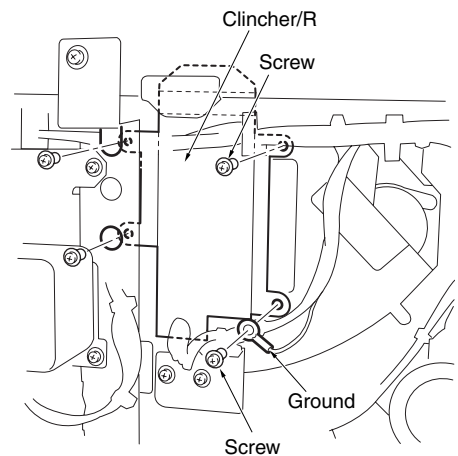
Be sure to perform the adjustment work described in the “finisher/stapler upper/lower positions adjustment” section of the manual, and the “adjustment” section after you have attached the clincher.

Procedure

- 1 Open the front door.
- 2 Pull the stacker unit out and remove the stapler unit cover.
- 3 Remove a mounting screw holding the ground cable. Remove the ground cable and the clamp.
- 4 Remove four screws securing the clincher. Detach the clincher/F and the connector.



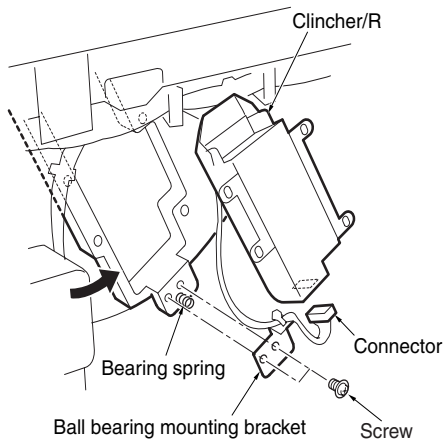
- 5 Remove four mounting screws holding the clincher/R.



- 6 Remove two screws. Detach the ball bearing bracket, and then remove the clincher/R by rotating it to the appropriate position. Remove the connector.

CAUTION

Do not lose the bearing spring and the ball.



- 7 Reinstall the above parts following the removal steps in reverse.

Removing and reinstalling the stapler

CAUTION

Make sure that the power cord of the MFP is unplugged from the power outlet.

WARNING!

Do not use hands to move stapler units to horizontal direction. (Otherwise the belt and the gear teeth skipping may occur.)

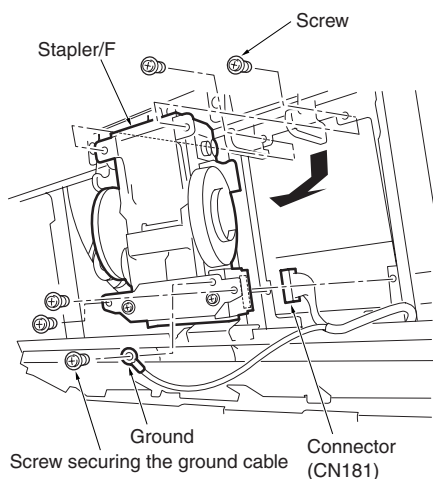
CAUTION

Be sure to perform the adjustment work described in the "finisher/stapler upper/lower positions adjustment" section of the manual, and the "adjustment" section after you have attached the stapler.

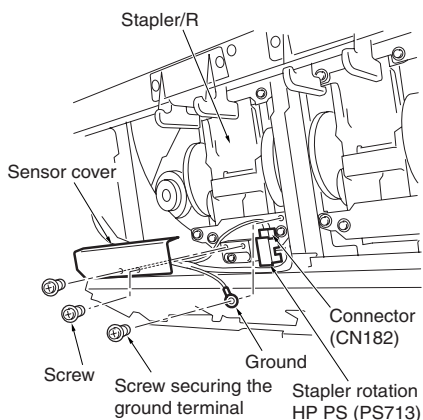
Procedure

- 1 Open the front door.
- 2 Draw the stacker unit out.
- 3 Remove the cartridge from the stapler.

- 4 Remove four mounting screws securing the stapler and the screw holding the ground cable. Detach the stapler/F and the connector (CN181).



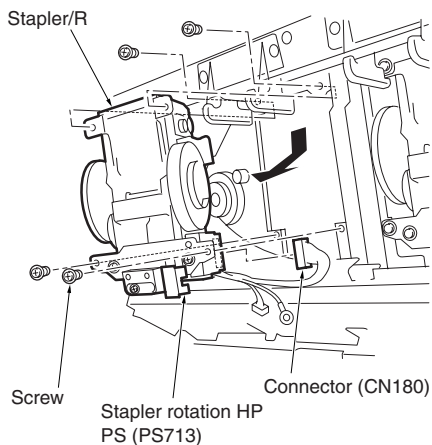
- 5 Remove two screws holding the sensor cover of the stapler/R. Remove the screw securing the ground cable. Detach the connector (CN182) of the stapler rotation hp PS (PS713).



- 6 Remove four screws. Detach the stapler/R and the connector (CN180).

CAUTION

Take care not to damage the stapler rotation hp PS (PS713) when removing the stapler/R.



- 7 Reinstall the above parts following the removal steps in reverse.

CAUTION

When installing the sensor cover of the stapler/R, take care that the bundled cable does not disturb the stapler rotation HPPS (PS713) and is not nipped by the gears.

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hp LaserJet 9055mfp/9065mfp

post insertion kit (Q3636A)

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Post insertion kit (Q3636A) product specifications

Type

Sheet feeder employing torque-limiter separation

Functions

Automatic sheet feed (online operation)

The Q3636A automatically feeds sheets into the finisher in accordance with instructions from the MFP.

Manual sheet feed (offline operation)

User feeds sheets into finisher by operating the PI control panel.

User can select from the following four finishing modes

- Single-staple mode (staple at rear)
- Two-staple mode (flat stapling)
- Punch mode (with punch kit)
- Staple-and-fold mode (available only if mounted to the Q3634A)
- Tri-fold mode (available only if mounted to the Q3634A)
- Manual sheet feed is only available with the lower tray.

This is not allowed for wide papers.

Copy paper

Plain paper

60 to 90 g/m² or 17 lb to 24 lb high-quality paper, recycled paper

Special paper

- 50 to 59 g/m² or 13 lb to 16 lb high-quality paper, recycled paper
- 91 to 200 g/m² or 24 lb to 45 lb high-quality paper, recycled paper

Printing paper

- Double-sided art paper
- Mat coating paper
- High-quality paper

Upper tray copy sizes

- Metric area
A4, A4R, B5, B5R, A5
- Inch area
Letter, Letter R, 5.5 by 8.5

Lower tray copy sizes

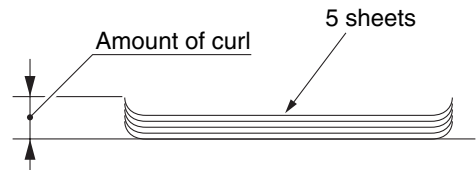
- Metric area
A3, B4, A4, A4R, B5, B5R, A5, F4 wide paper (314 mm by 445 mm maximum)
- Inch area
Ledger, 8.5 by 14, Letter, Letter R, 5.5 by 8.5, wide paper (314 mm by 445 mm maximum.)

Paper staking capacity

Up to 200 sheets (when using 128 g/m² or 28 lb-equivalent paper) to maximum. height of 30 mm

Paper curling

Maximum 10 mm



Power, weight, dimensions

Power source

24 VDC, 5 VDC (supplied from finisher)

Maximum power

30 VA

Weight

Maximum 10.5 kg

External dimensions

Approximately 511 mm (W) by 620 mm (D) by 220 mm (H)

Maintenance

Maintenance

Same as the MFP

Service life

Same as the MFP

Operating environment

Temperature

10° C to 30° C (50° F to 86° F)

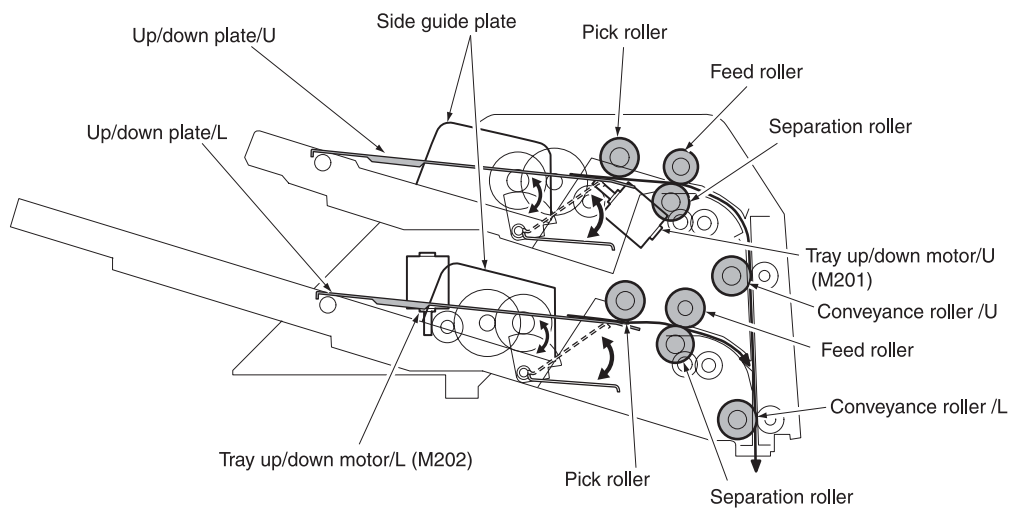
Humidity

10 percent to 80 percent RH

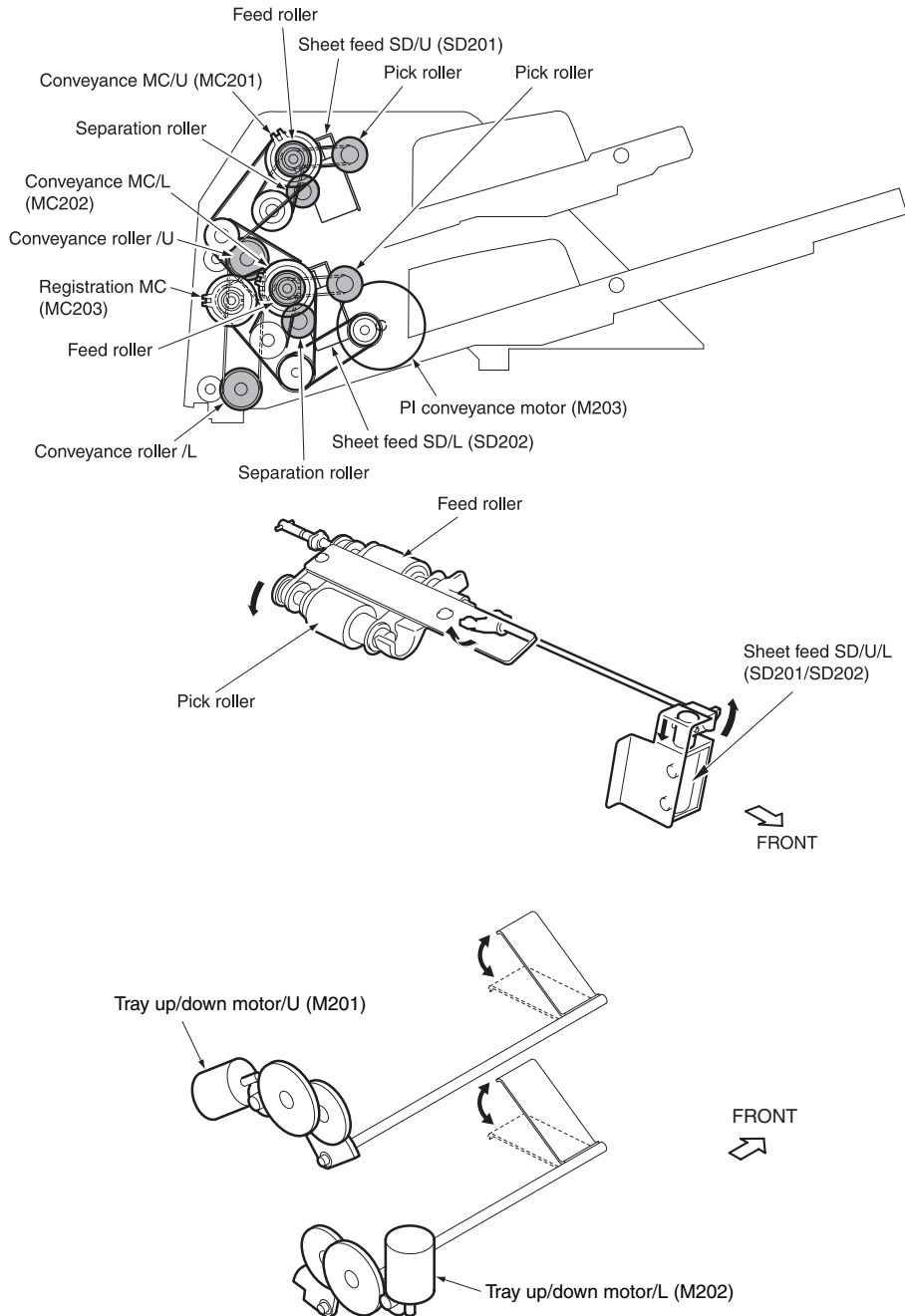
Note

The information herein may be subject to change for improvement without notice.

Center cross section



Drive system diagram



Feeding process

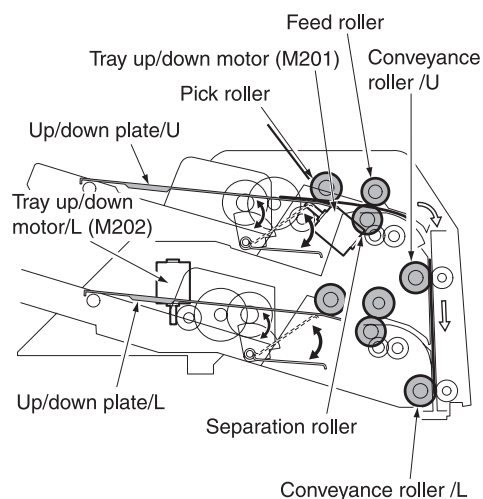
Automatic sheet feeding (online operation)

Tray up/down motors/U/L (M201/M202) raise the Up/down plate/U/L.

When sheet feed SD/U/L (SD201/SD202) and conveyance MC/U/L (MC201/MC202) come on, the drive of PI conveyance motor (M203) is transmitted and the sheets are fed, one by one, by pick, feed, and separation rollers.

For the fed sheet, a loop is formed at the conveyance rollers /U/L to correct the bend temporarily, and then the sheet is conveyed.

Sheets are stacked in the finisher as cover sheets for papers conveyed from the MFP, and then applied with finishing processes.

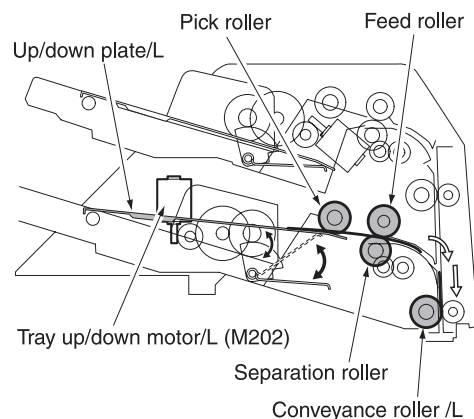


Manual sheet feeding (offline operation)

M201/M202 (tray up/down/U/L) raises the Up/down plate/L.

When sheet feed SD/U/L (SD201/SD202) and conveyance MC/U/L (MC201/MC202) come on, the drive of PI conveyance motor (M203) is transmitted and all sheets set on the lower tray are fed into the finisher stacker by pick, feed, and separation rollers. finisher carries out finishing processes.

In this case, a loop is formed at the conveyance roller /L for the sheet, the bend is corrected temporarily, and then the sheet is conveyed.

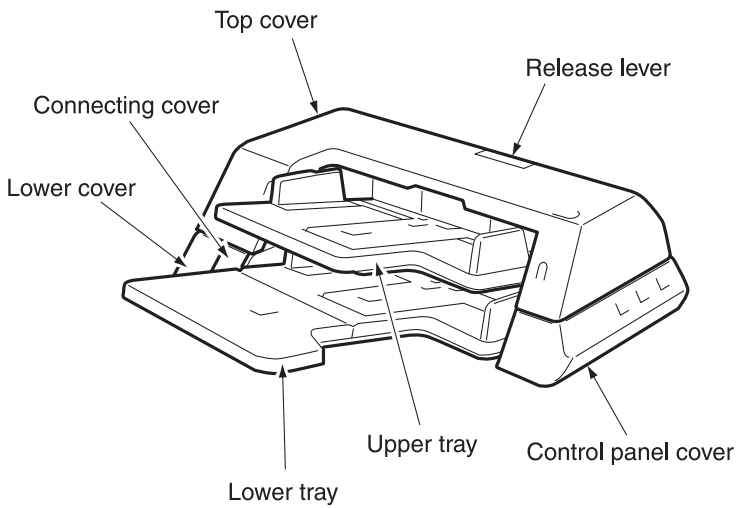


2 Post insertion unit explanation

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Mechanisms	9
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External section

Composition



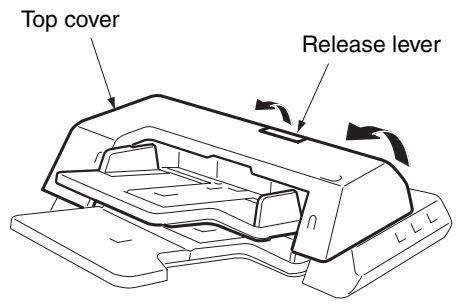
Mechanisms

Mechanism	Method
Clearing paper jams*1	Release lever

*1 Clearing paper jams

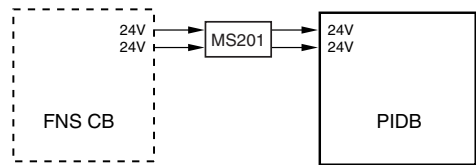
Clear paper jams with the following procedure:

- 1 Lift the release lever.
- 2 In that status, lift up the upper tray in a slanting direction.



3 Remove paper jams.

Interlock control



Interlock control uses MS201 (PI interlock MS) that detects the opened upper tray.

1 Operation

a Detecting the opened upper tray

MS201 (PI interlock) is a switch for the interlock.

When opening the upper tray of PI, MS201 goes off and 24V power from finisher CB is shut off.

2 Signals

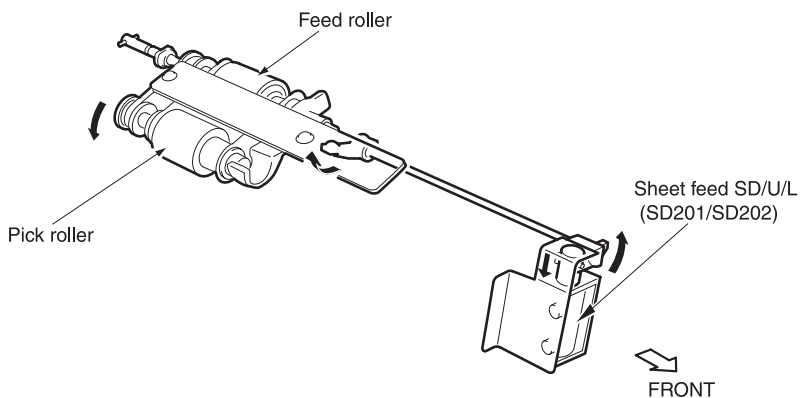
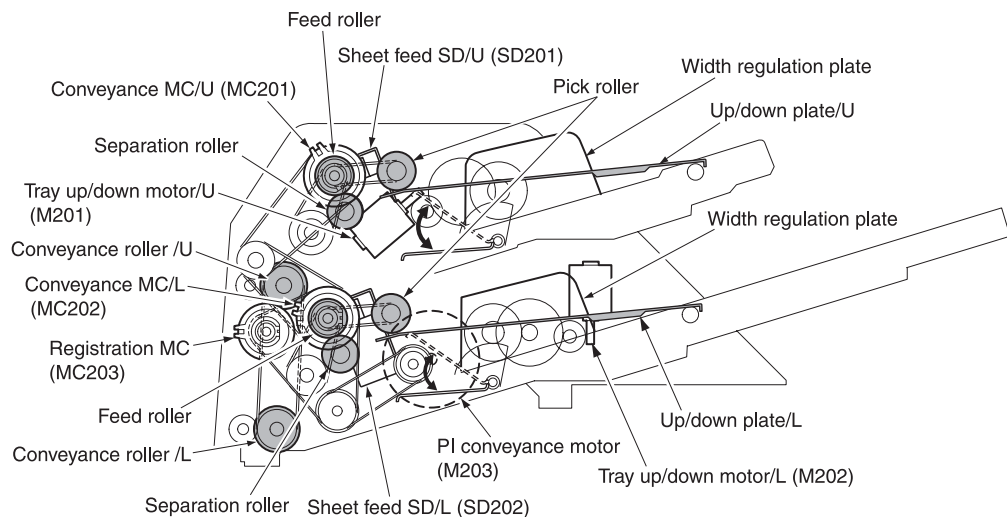
a Input signals

- 1 24V, 24V (finisher CB to PIDB)

Input from a DC24V power source

Paper feed unit

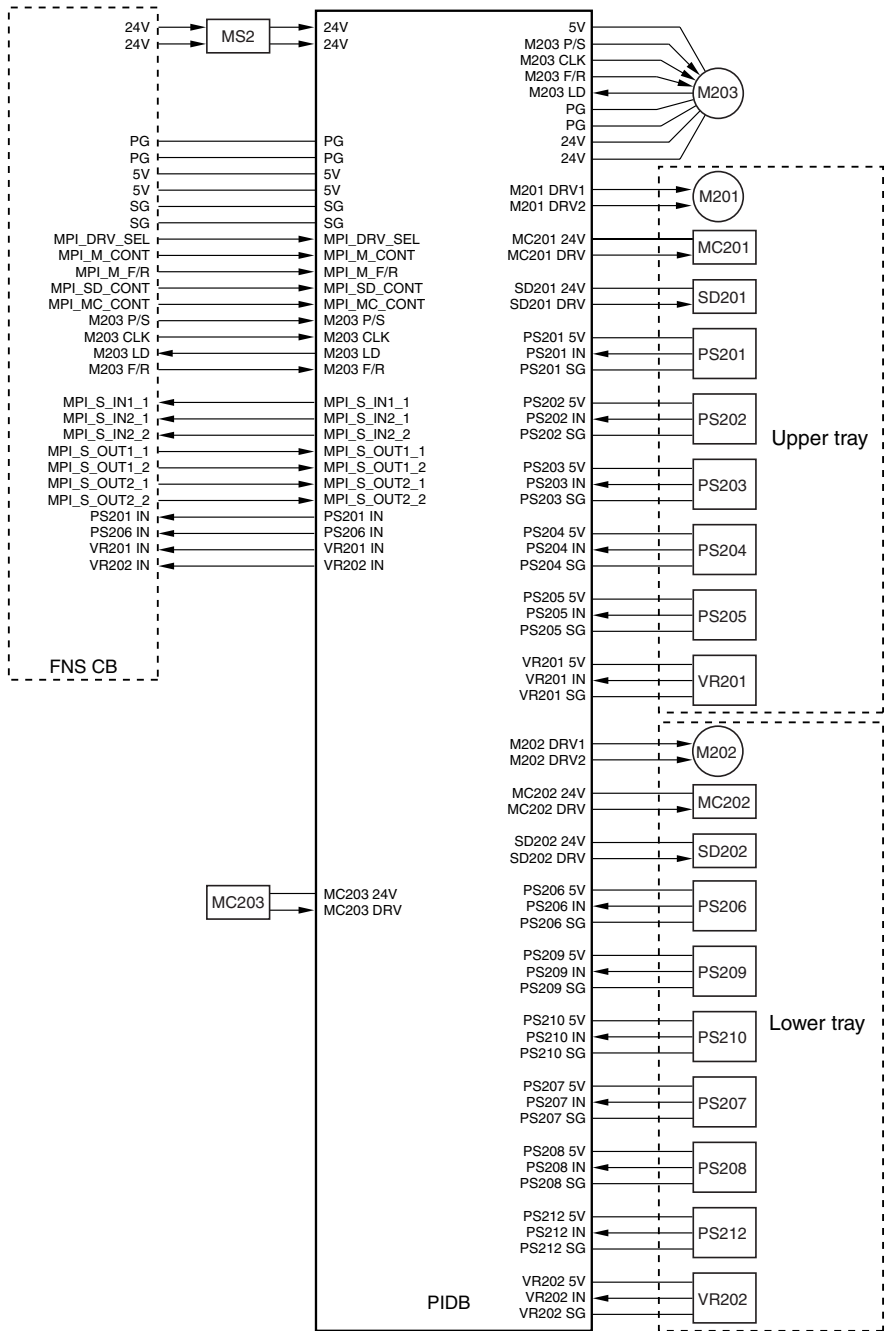
Composition



Mechanisms

Mechanism	Method
Pickup section	Upward feeding method, Oscillated pick roller, paper pick roller
Sheet feed section	Reverse torque limiter method, Separation roller. Torque limiter
Loop formation	Thrust method Conveyance rollers /U/L

Feed control



M201/M202 (tray up/down/U/L) raises the up/down plate/U/L.

When SD201/SD202 (sheet feed/U/L) and MC201/MC202 (conveyance/U/L) comes on, the drive of M203 (PI conveyance) is transmitted and the sheets are fed one by one by pick, feed, and separation rollers.

MC203 (registration) controls the drive force transmitted to the conveyance rollers /U/L, which forms a loop for the fed sheet.

The related signals are:

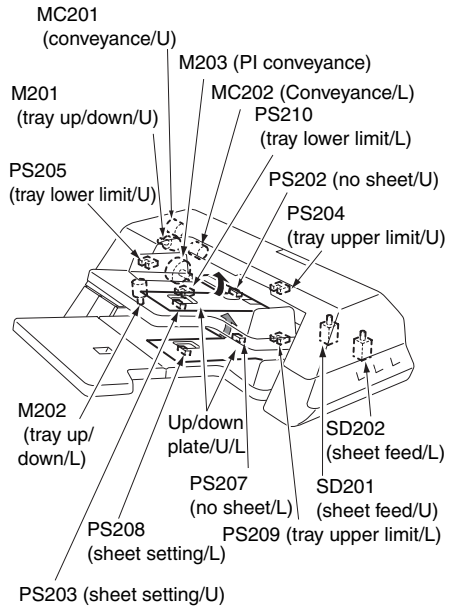
PS201/PS206 (PI passage U/L),
PS202/PS207 (No sheet/U/L),
PS203/PS208 (Sheet setting/U/L),
PS204/PS209 (Tray upper limit/U/L),
PS205/PS210 (Tray lower limit/U/L), PS212
(Sheet size/L), and VR201/VR202 (Sheet
size/U/L).

1 Operation

a Automatic sheet feeding (online)

- 1 When the MFP's START button turns on, M201/M202 (tray up/down/U/L) are driven in forward, which lifts the up/down plate/U/L until PS204/PS209 (tray upper limit/U/L) are activated.
- 2 Concurrently, while M203 (PI conveyance) is driven at low speed, SD201/SD202 (sheet feed/U/L) and MC201/MC202 (conveyance/U/L) comes on and sheets are fed into the finisher stacker.
- 3 When the last sheet on the up/down plate/U/L is fed and PS203/PS208 (sheet setting/U/L) comes off, the no-sheet-signal is sent to the MFP, causing the first feed of MFP to stop.

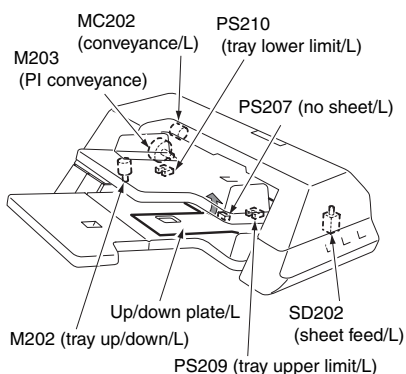
After that, when PS202/PS207 (no sheet/U/L) comes off, M201/M202 (tray up/down/U/L) are driven in reverse, which lowers the up/down plate/U/L until PS205/PS210 (tray lower limit/U/L) are activated.



b Manual sheet feeding (offline)

Only the lower tray is allowed.

- 1 When the PI control panel's START button turns on, M202 (tray up/down/L) is driven in forward, which lifts the up/down plate/L until PS209 (tray upper limit/L) is activated.
- 2 Concurrently, while M203 (PI conveyance) is driven at low speed, SD202 (sheet feed/L) and MC202 (conveyance/L) comes on and all sheets set in the up/down plate/L fed into the finisher stacker.
- 3 The finisher carries out the required finishing processes (stapling, tri-folding, etc.).
- 4 PS207 (no sheet/L) comes off, M202 (tray up/down/L) is driven in reverse, which lowers the sheet tray until PS210 (tray lower limit/L) is activated.



c Sheet conveyance

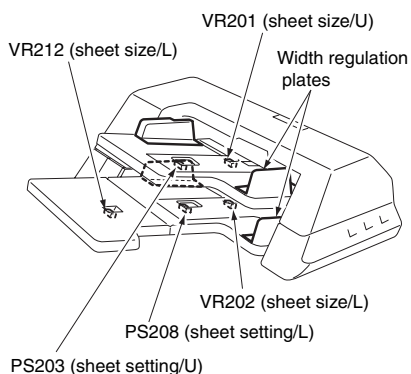
When the sheet fed from the paper feed unit at low speed turns PS201/PS206 (PI passage /U/L) on, M203 (PI conveyance) changes its rotating speed to high-speed. At this time, as MC203 (registration) turns off, the sheet is pressed against the conveyance rollers /U/L to form a loop. MC203 turns on when a specified time has passed since PS201/PS206 turned on, and the drive force of M203 is transmitted to the conveyance rollers /U/L. This causes the sheet whose bend is corrected by loop formation to be conveyed into finisher.

When the sheet turns PS206 off, MC203 turns off after a specified time. With the same timing, MC203 changes its rotating speed to low-speed and comes into feeding operation for the next sheet.

d Detection of sheet size

VR201/VR202 (sheet size/U/L) detect the sheet width.

Sheet length is detected by the combination of PS203/PS208 (sheet setting/U/L) and PS212 (sheet size/L).



2 Signals

a Input signals

1 PS201 IN (PS201 to PIDB)

Detection signal of sheet passage on upper tray

L: Sheet passed

H: Sheet not passed

2 PS202 IN (PS202 to PIDB)

Detection signal of no sheet on upper tray

L: Sheet detected

H: Sheet not detected

3 PS203 IN (PS203 to PIDB)

Detection signal of sheet setting on upper tray

L: Sheet detected

H: Sheet not detected

4 PS204 IN (PS204 to PIDB)

Detection signal of upper limit of up/down plate/U

L: Positioned at upper limit

H: Not positioned at upper limit

5 PS205 IN (PS205 to PIDB)

Detection signal of lower limit of up/down plate/U

L: Positioned at lower limit

H: Not positioned at lower limit

6 PS206 IN (PS206 to PIDB)

Detection signal of sheet passage on lower tray

L: Sheet passed

H: Sheet not passed

7 PS207 IN (PS207 to PIDB)

Detection signal of no sheet on lower tray

L: Sheet detected

H: Sheet not detected

8 PS208 IN (PS208 to PIDB)

Detection signal of sheet setting on lower tray

L: Sheet detected

H: Sheet not detected

9 PS209 IN (PS209 to PIDB)

Detection signal of upper limit of up/down plate/L

L: Positioned at upper limit

H: Not positioned at upper limit

10PS210 IN (PS210 to PIDB)

Detection signal of lower limit of up/down plate/L

L: Positioned at lower limit

H: Not positioned at lower limit

11PS212 IN (PS212 to PIDB)

Detection signal of sheet size on lower tray

L: Sheet detected

H: Sheet not detected

12VR201 IN (VR201 to PIDB)

Detection signal of sheet size on lower tray

13VR202

Detection signal of sheet size on lower tray

14M203 LD (M203 to PIDB)

Achieves specified speed of M203

L: Achieves specified speed

H: Not achieves specified speed

15MPI_DRV_SEL IN (finisher CB to PIDB)

Switch signal between M201/M202, MC201/MC202, and SD201/SD202

16MPI_M_CONT (finisher CB to PIDB)

Drive control signal of M201/M202

L: ON

H: OFF

17MPI_M_F/R (finisher CB to PIDB)

Rotating direction signal of M201/M202

L: Tray down

H: Tray up

18MPI_SD_CONT (finisher CB to PIDB)

Drive control signal of SD201/SD202

L: ON

H: OFF

19MPI_MC_CONT (finisher CB to PIDB)

Drive control signal of M201/M202

L: ON

H: OFF

20MC203 P/S (finisher CB to PIDB)

Drive control signal of M203

L: ON

H: OFF

21M203 CLK (finisher CB to PIDB)

Clock signal for controlling the rotating speed of M203

22M203 F/R (finisher CB to PIDB)

Rotating direction signal of M203

L: CW

H: CCW

- 23MPI_S_OUT1_1** (finisher CB to PIDB)
Output selecting signal 1 of PS202 to 205
- 24MPI_S_OUT1_2** (finisher CB to PIDB)
Output selecting signal 2 of PS202 to 205
- 25MPI_S_OUT2_1** (finisher CB to PIDB)
Output selecting signal 1 of PS207 to 210, PS211
- 26MPI_S_OUT2_2** (finisher CB to PIDB)
Output selecting signal 2 of PS207 to 210, PS211
- b Output signals**
- 1 M201 DRV1, 2** (PIDB to M201)
Signal for driving M201
- 2 MC201 DRV** (PIDB to MC201)
Signal for driving MC201
L: ON
H: OFF
- 3 SD201 DRV** (PIDB to SD201)
Signal for driving SD201
L: ON
H: OFF
- 4 M202 DRV1, 2** (PIDB to M202)
Signal for driving M202
- 5 MC202 DRV** (PIDB to MC202)
Signal for driving MC202
L: ON
H: OFF
- 6 SD202 DRV** (PIDB to SD202)
Signal for driving SD202
L: ON
H: OFF
- 7 M203 P/S** (PIDB to M203)
Drive control signal of M203
L: ON
H: OFF
- 8 M203 CLK** (PIDB to M203)
Clock signal for controlling the rotating speed of M203
- 9 M203 F/R**
Rotating direction signal of M203
L: CW
H: CCW
- 10M203 LD** (PIDB to finisher CB)
Achieves specified speed of M203
L: Achieves specified speed
H: Not achieves specified speed
- 11MPI_S_IN1_1** (PIDB to finisher CB)
Detection signal from PS202 to PS205
- 12MPI_S_IN2_1** (PIDB to finisher CB)
Detection signal from PS207, PS208, PS209 or PS210
- 13MPI_S_IN2_2** (PIDB to finisher CB)
Detection signal from PS212
- 14PS201 IN** (PIDB to finisher CB)
Detection signal of sheet passage on upper tray
L: Sheet passed
H: Sheet not passed
- 15PS206 IN** (PIDB to finisher CB)
Detection signal of sheet passage on lower tray
L: Sheet passed
H: Sheet not passed
- 16VR201 IN** (PIDB to finisher CB)
Detection signal of sheet size on upper tray

17VR202 IN (PIDB to finisher CB)

Detection signal of sheet size on
lower tray

18MC203 DRV (PIDB to MC203)

Signal for driving MC203

L: ON

H: OFF

3

Post insertion disassembly/assembly

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Replacing the paper pick roller and pick roller	19
Replacing the double feed prevent roller and torque limiter	20

This section explains how to disassemble and reassemble the MFP. When disassembling and reassembling the MFP, follow the precautions given below.

CAUTION

- Be sure the power cord has been unplugged from the wall outlet.
- The disassembled parts must be reassembled following the disassembly procedure in reverse unless otherwise specified.
- Care should be taken not to lose small parts. Care should also be taken not to install small parts in wrong places.
- Do not operate the MFP before installing all the disassembled parts completely.
- Removal of some screws is prohibited in this section. Never loosen them.

External section

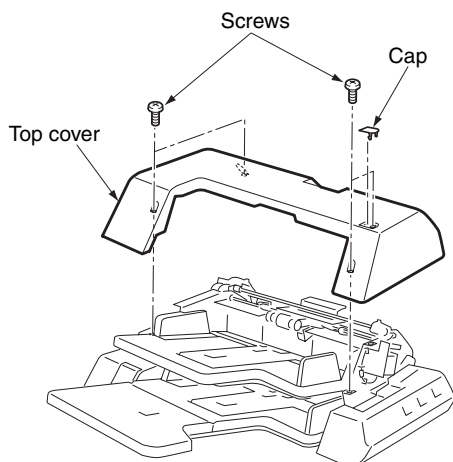
Removing/reinstalling the external covers

CAUTION

Make sure that the power cord of the MFP is unplugged from the power outlet.

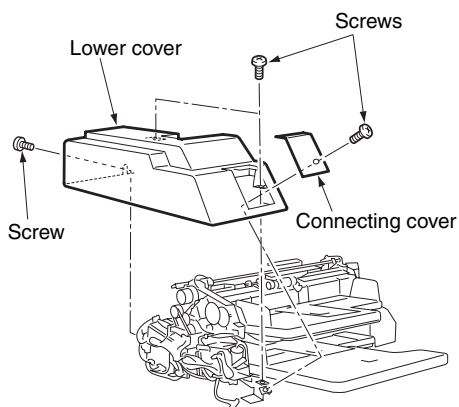
Procedure

- 1 Remove cap on the top cover.
- 2 Remove four screws to detach the top cover.

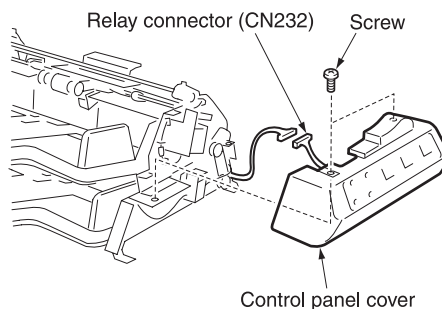


- 3 Remove one screw to detach the connector cover.

- 4 Remove three screws to detach the lower cover.



- 5 Remove two screws, disconnect the inline connector (CN232), and detach the control panel cover.



- 6 Reinstall the above parts following the removal steps in reverse.

Paper feed unit

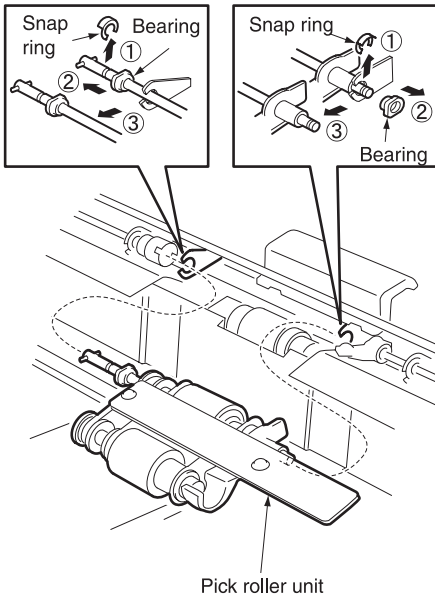
Replacing the paper pick roller and pick roller

CAUTION

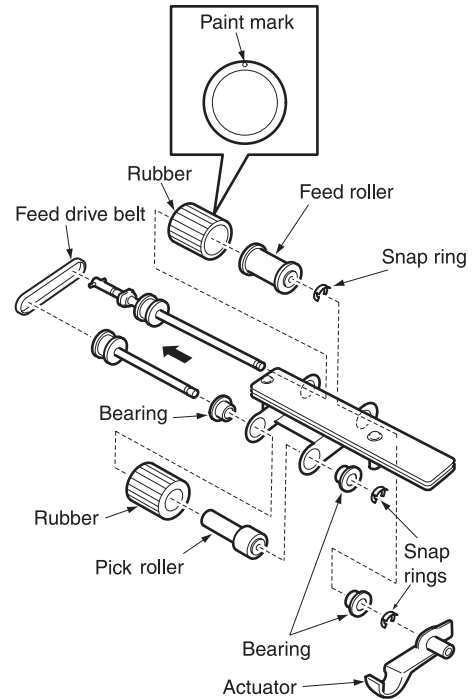
Make sure that the power cord of the MFP is unplugged from the power outlet.

Procedure

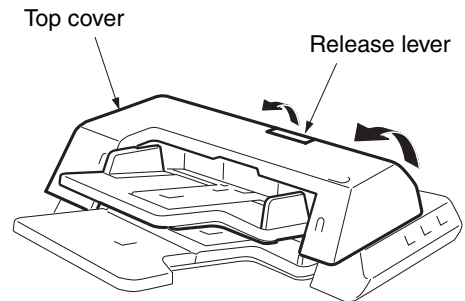
- 1 When replacing the paper pick roller and pick roller for the upper tray, detach the top cover.
- 2 Remove the two snap rings, then shift the left and right bearings outside, and remove the pick roller unit.



- 3 Remove actuator, three snap rings, three bearings of the pick roller unit, then slide the roller shaft in the direction of the arrow to remove each roller.



- 4 When replacing the paper pick roller and pick roller for the lower tray, open the upper tray and perform the steps 2 and 3.



- 5 Reinstall the above parts following the removal steps in reverse.

CAUTION

Ensure that the mounting direction of each roller and rubber is correct.

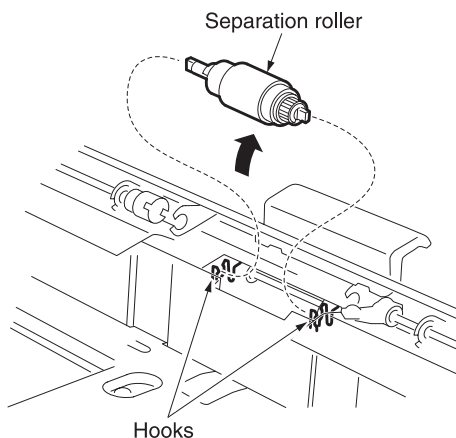
Replacing the double feed prevent roller and torque limiter

CAUTION

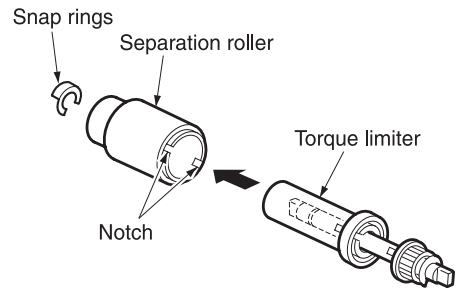
Make sure that the power cord of the MFP is unplugged from the power outlet.

Procedure

- 1 When replacing the double feed prevent roller and the torque limiter for the upper tray, detach the top cover.
- 2 Detach the paper pick roller unit.
- 3 Release the hooks on both sides, remove the separation roller assembly by lifting up, then pull out the shaft, and remove the double-feed-prevention roller together with the feed-reverse gear.



- 4 Separate the separation roller and the torque limiter from the separation roller assembly.



- 5 When replacing the separation roller and the torque limiter for the lower tray, open the upper unit and perform the steps 2 and 3.
- 6 Reinstall the above parts following the removal steps in reverse.

CAUTION

Ensure that the mounting direction of each roller and rubber is correct.

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hp LaserJet 9055mfp/9065mfp

**punch kit (Q3689A, Q3635A,
Q3690A, Q3691A)**

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Punch Kit product specifications

Type

Self-contained puncher

Functions

Punching method

Reciprocating type punching

Number of holes

Inch 2 holes / 3 holes (for inch area),
4 holes / Swedish 4 holes (for metric area)
and 2 holes (for Japan) *1

Hole diameter

φ6.5 mm (2 holes / 4 holes / Swedish
4 holes)

φ8.0 mm (3 holes / Inch 2 holes)

Hole pitch

80 mm (2 holes / 4 holes)

108 mm (3 holes)

70 mm (Inch 2 holes)

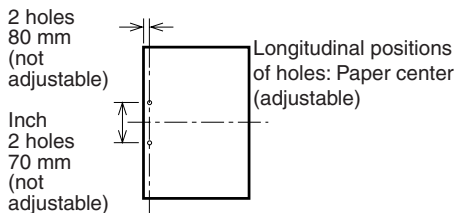
21 mm, 70 mm, 21 mm (Swedish 4 holes)

Hole positions

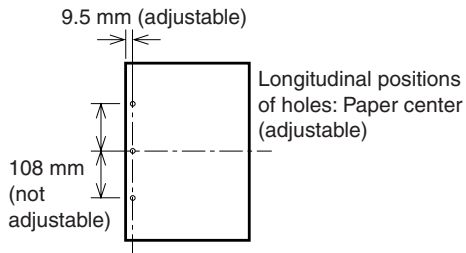
<2 holes / Inch 2 holes>

2 holes: 10.5 mm (adjustable)

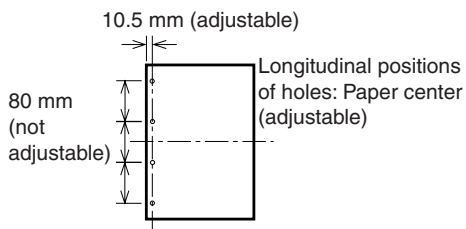
Inch 2 holes: 9.5 mm (adjustable)



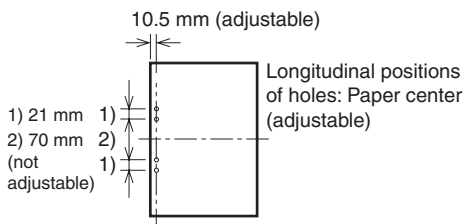
<3 holes>



<4 holes>



<Swedish 4 holes>



*1 The 2 holes type is used in Japan.

There are five types of punch kit
2 holes, inch 2 holes, 3 holes, 4 holes
and swedish 4 holes types. All the five
types can be purchased as product.

Applicable paper

Non-Punch mode

Same as MFP

Punch mode

- Metric area (4 holes / Swedish 4 holes)
A3 / B4 / A4 / B5 / Ledger / Letter
- Inch area (3 holes)
Ledger / Letter / A3 / B4 / A4 / B5
- Inch area (2 holes)
Ledger / Legal / Letter / Letter R
5.5 by 8.5 / 5.5 by 8.5R
A3 / B4 / A4 / A4R / B5 / B5R / A5 / A5R
/ F4
- Punch mode with A5R or 5.5 by 8.5R
size paper cannot be used together with
the stapling mode
- High quality paper of 64 g/m² to
128 g/m² or 16 lb to 24 lb

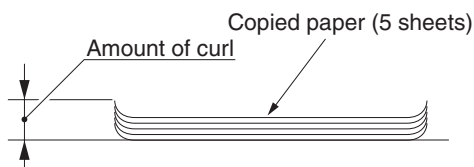
Punch mode cannot be used together with
the fold mode, staple-and-fold mode, or
tri-fold mode.

Media not supported in punch mode

Transparency, label paper, blueprint
master, binding-holed paper, tabs

Amount of paper curl

Maximum 10 mm for 5 sheets of copied
paper in piles



Punch kit data

Power source

DC24V, DC5V (supplied from finisher)

Maximum power consumption

40VA

Punch kit dimensions

130 mm (W) by 470 mm (D) by
115 mm (H)

Weight

Approximately 3 kg

Maintenance

Maintenance

Same as the MFP

Operating environment

Temperature

10° C to 30° C (50° F to 86° F)

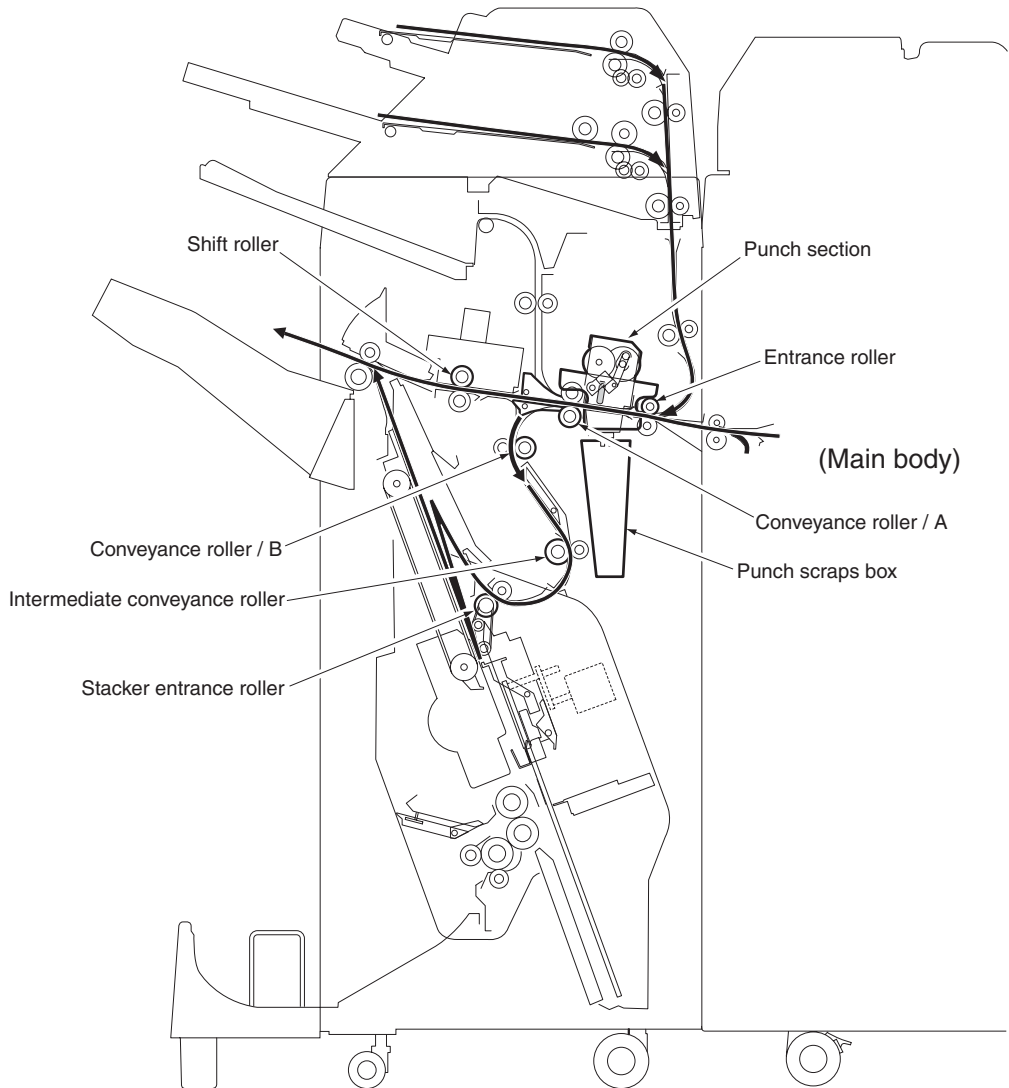
Humidity

10 percent to 80 percent RH

Note

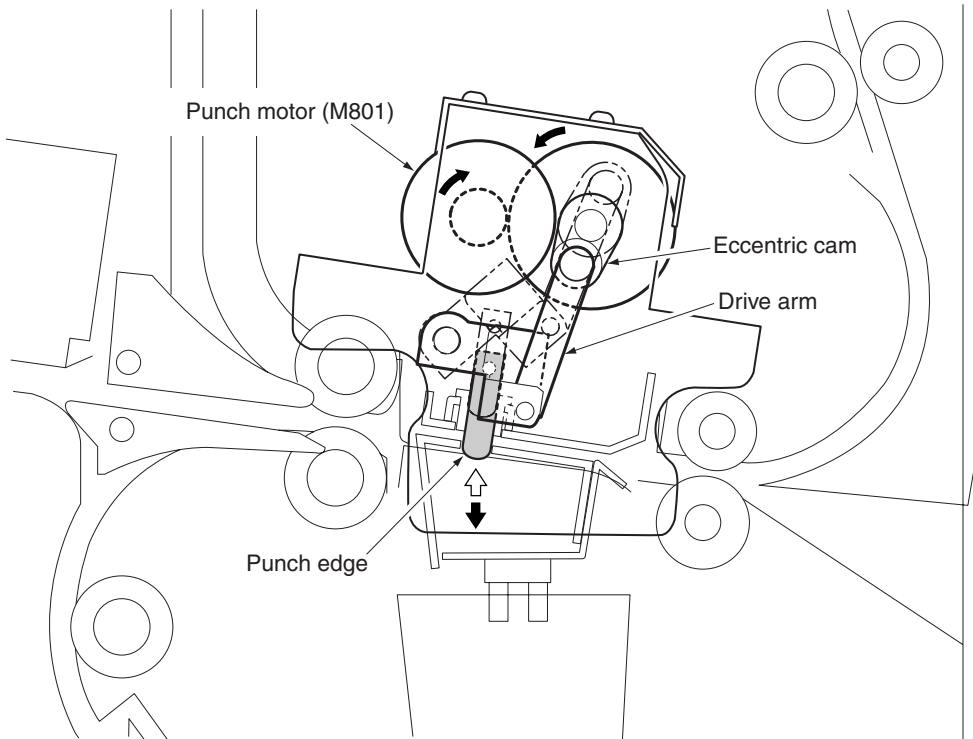
The information herein may be
subject to change for
improvement without notice.

Center cross-sectional view

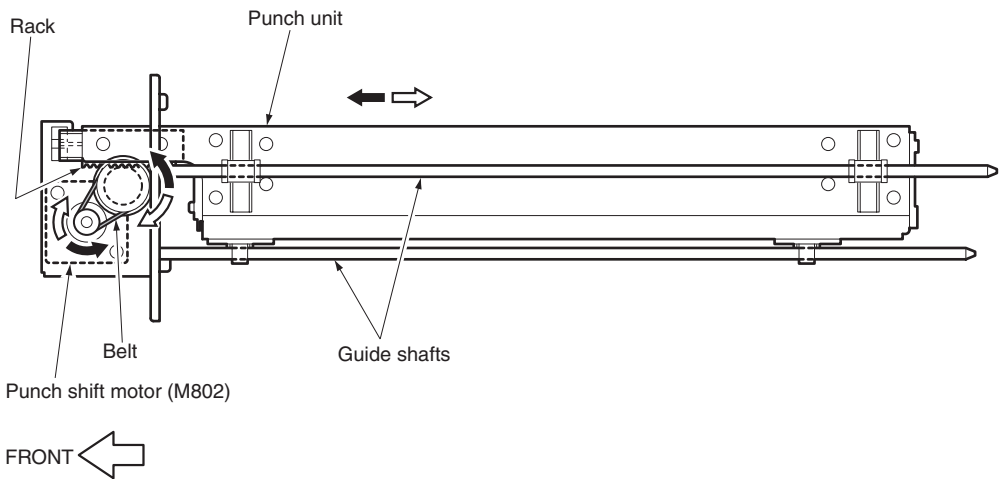


Drive system diagram

Punch section

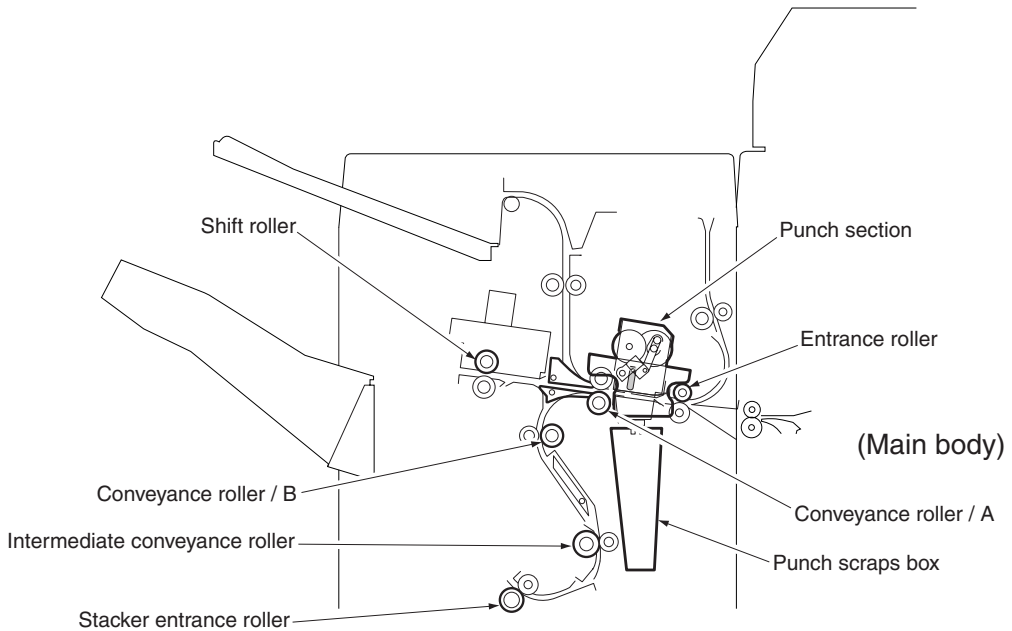


Moving section



Punching process

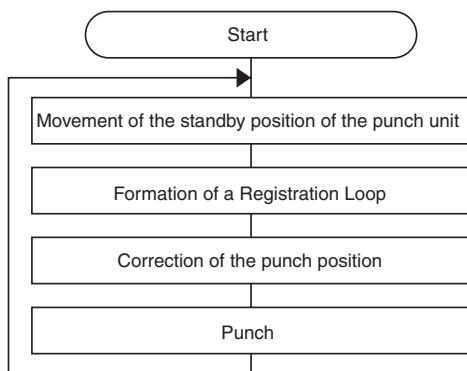
Punch Kit consists of the following sections:



Note

The punching process differs between the punch mode (holes are made) and non-punch mode (no holes are made). Either of these modes can be selected on the control panel of the MFP.

The following flowchart shows the flow of operations performed by the above sections. These operations are explained according to this flowchart.



Movement of the standby position of the punch unit

When the punch mode is selected, the punch shift motor (M802) runs to move the punch unit so that the paper edge sensor mounted on the punch unit is placed inside of the side edge of paper by 5 mm. However, if the paper size is Letter, Legal, or 5.5 by 8.5R, the sensor is positioned by 10 mm inside.

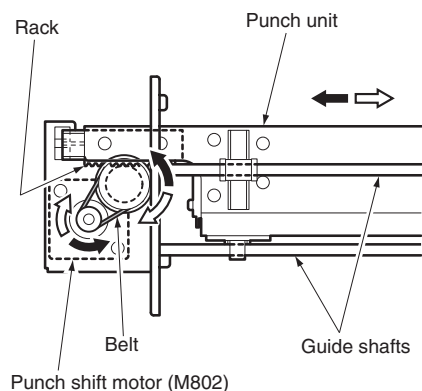
The above operation is not generally performed in the non-punch mode, however, for the paper sizes shown below, the punch unit is moved to the position located inside of the side edge of paper by 10 mm in order to secure the easy feeding of paper when conveyed.

2 holes / 4 holes / Inch 2 holes / Swedish
4 holes MFPs

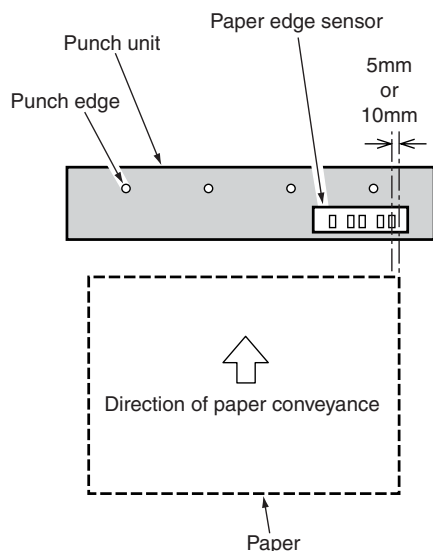
B6 / 16K

3 holes MFP

Letter / Legal / 5.5 by 8.5R / A5R / A4



FRONT 

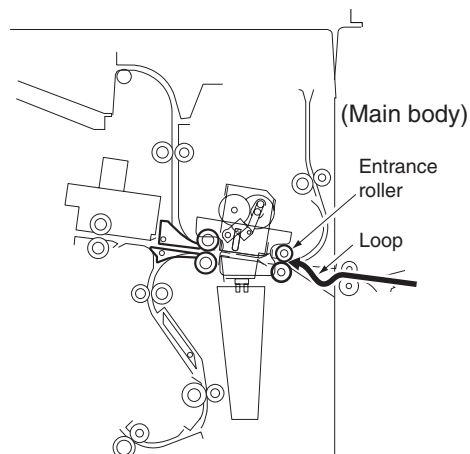


Formation of a registration loop

The finisher conveyance motor (M701) turns off temporarily to stop conveyance of paper when the specified time has passed since paper exit PS (PS37) detected the leading edge of the paper. Thus the paper is pressed against the entrance roller forming a loop to correct the bend. When the specified time has passed, M701 turns on to restart conveying the paper.

The above operation is not performed when conveying a large paper (220 mm and longer in direction of conveyance) and in the non-punching mode.

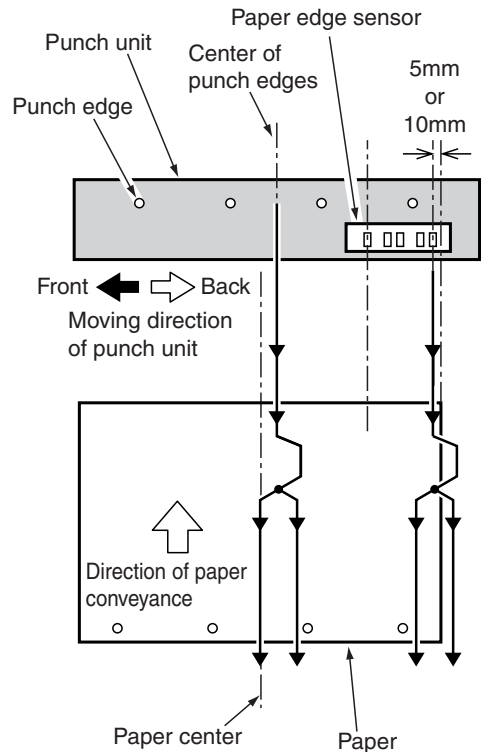
When punching the paper conveyed from PI, the loop is formed on the PI's side. For details, refer to Q3636A SHB.



Correction of the punch position

The punch unit positioned inside of the side edge of paper by 5 mm or 10 mm performs the following procedures to correct the punch position so that the punch is always centered on the paper. The punch position is corrected by moving the punch unit to and fro during conveyance of the paper.

- When finisher entrance PS (PS704) detects the leading edge of the paper, the punch unit is moved backward temporarily until the paper edge sensor detects the side edge of the paper. If punching is performed for the paper conveyed from PI, the time when PI passage PS/U (PS201) or PI passage PS/L (PS206) detects the leading edge of the paper becomes the starting point.
- Subsequently, the punch unit moves back frontward until the paper edge sensor re-detects the side edge of the paper (Detection of side edge reference position).
- When the side edge reference position is detected, the punch unit is again moved to position the center of punch edges to the center of the paper. The distance and direction of this movement differ from paper sizes. Only when moving backward, the punch unit makes a stop at the side edge reference position.

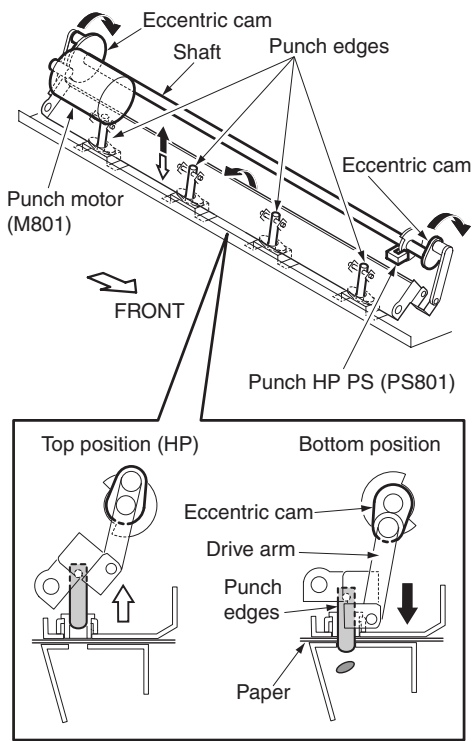


Punch

In the punch mode, the finisher conveyance motor (M701) turns off to stop the paper conveyance temporarily when the specified time has passed since the finisher entrance PS (PS704) detected the trailing edge of the paper, and holes are punched.

During punching, the drive force of the punch motor (M801) is transferred to the shaft to rotate the shaft once. As the shaft rotates, the eccentric cams at both ends of the shaft rotate to lower the punch edges, making holes in the paper.

After the punch is finished, the punch unit moves to the side edge reference position when the specified time has passed since the trailing edge of the paper is detected by PS704, which makes a standby status for the punch process for the following paper.

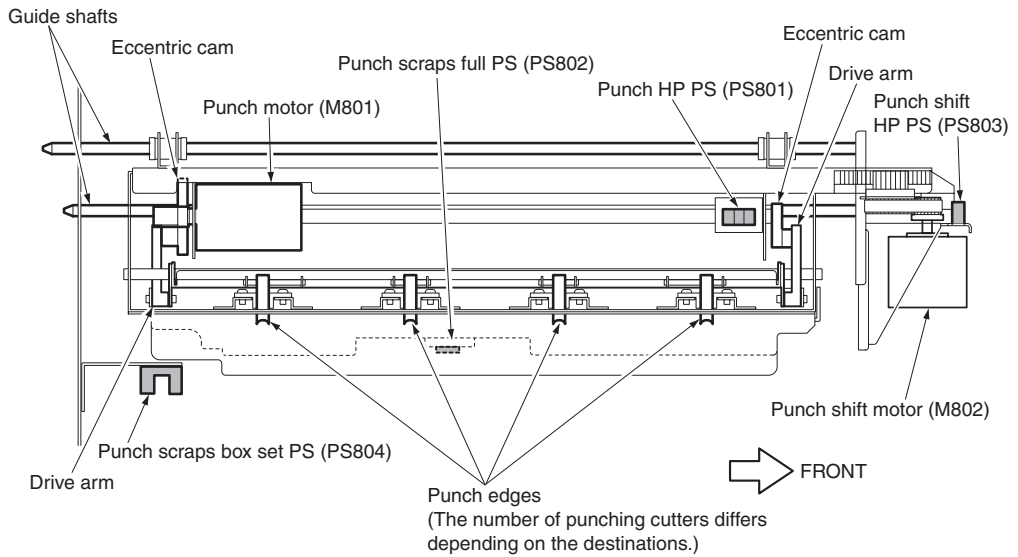


2 Punch kit unit explanation

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Punch section

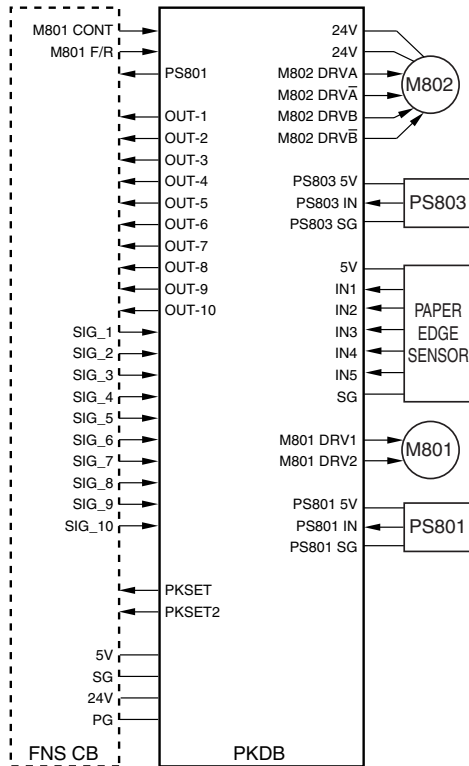
Composition



Mechanisms

Mechanism	Method
Back-and-forth movement of punch unit	Punch motor (M801) Eccentric cam Drive arms Punch edges
Punch unit movement	Punch shift motor (M802) Concurrent use of Gear / Rack

Punch control



The movement of the punch unit is driven by M802 (punch shift) and the punching operation is driven by M801 (punch). M801 is DC motor, and rotates once per punch. Related signals are PS801 (punch HP), PS803 (punch shift HP), and paper edge sensor.

1 Operation

The punching operation can be divided into the movement of the punch unit and the punch movement that makes holes. In the punch mode, these movements are performed for every sheet of paper, while in the non-punch mode these are not performed. However, the movement of the punch unit is performed for some paper sizes even in the non-punch mode.

a Searching the standby home position of the punch unit

With power turned on, M802 (punch shift) runs to move the punch unit to the position where PS803 (punch shift HP) is turned on, which makes a standby state. This position becomes the standby home position of the punch unit.

b Moving the standby position of the punch unit

When the punch mode is selected, M802 (punch shift) runs to move the punch unit so that the paper edge sensor mounted on the punch unit is located inside of the side edge of paper by 5 mm. However, if the paper size is Letter, Legal, or 5.5 by 8.5R, the sensor is positioned by 10 mm inside. Either of these positions becomes the standby position in the punch mode.

The above operation is not generally performed in the non-punch mode, however, for the paper sizes shown below, the punch unit is moved to the position located inside of the side edge of paper by 10 mm in order to secure the easy feeding of paper when conveyed.

2 holes / 4 holes / Inch 2 holes /
Swedish 4 holes MFPs:

B6 / 16K

3 holes MFP:

Letter / 8.5 by 14 / 5.5 by 8.5R / A5R /
A4

c Detecting the side edge reference position

When the finisher entrance PS (PS704) detects the leading edge of paper, M802 (punch shift) runs again to move the punch unit backward temporarily until the paper edge sensor detects the side edge of the paper. If punching is performed for the paper conveyed from PI, the time when PS201 (PI passage/U) or PS206 (PI passage/L) detects the leading edge of the paper is the starting point.

Subsequently, M802 runs inversely to move the punch unit frontward until the paper edge sensor re-detects the side edge of the paper. This position becomes the side edge reference position.

d Moving the punch position

When the side edge reference position is detected, M802 (punch shift) moves the punch unit again so that the center of punch edges is positioned to the center of paper. The distance and direction of this movement differ from paper sizes. Only when moving backward, the punch unit makes a stop at the side edge reference position. The direction of the movement from the side edge reference position to the punch position classified by paper sizes is as follows:

Frontward:

A5 / A5R / B5R / A4 / A4R / B4 / A3 / Letter / 8.5 by 14 / 5.5 by 8.5 / 5.5 by 8.5R / 8K / 16K / 16KR

Backward:

B5 / F4 / Letter R / Ledger

The series of movement from “c. Detecting the side edge reference position to “d.” “Moving the punch position” is performed per each paper, and these movements correct the punch position.

e Forming a registration loop

M701 (finisher conveyance) turns off temporarily a specified time after PS37 (paper exit) detects the leading edge of the paper to form a loop at the entrance roller. If punching is performed for the paper conveyed from PI, the loop will be formed on the PI's side.

f Punch movement

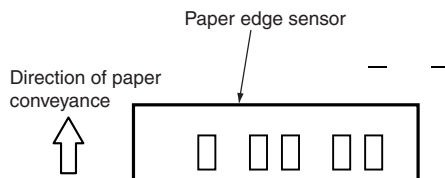
When finisher entrance PS (PS704) detects the trailing edge of the paper, M801 (punch) runs and performs the punch movement. For some paper sizes, the punch movement is executed before completing the correction of the punch position for the punch unit. To avoid this, switch the conveyance speed on finisher to a low speed only for such paper size.

Paper size	Conveyance speed
A5 / 5.5 by 8.5R	345 mm/s
Other sizes	670 mm/s

If punching is performed for the paper conveyed from PI, the time when the trailing edge of the paper is detected by PS206 (PI passage/L) is the starting point.

g Paper edge sensor

To detect the side edge of the paper, the paper edge sensor mounted on the punch unit is used. The paper edge sensor consists of 5 sensors shown in the below figure. Which sensor is used depends on the paper sizes.



2 Signals

a Input signals

- 1 PS801 IN (PS801 to PKDB)
Punch drive HP detection signal
[L]: Other than HP
[H]: HP
- 2 PS803 IN (PS803 to PKDB)
Punch unit HP detection signal
[L]: Other than HP
[H]: HP
- 3 IN1 to 5 (PAPER EDGE SENSOR to PKDB)
• IN1 to 5 (paper edge sensors)
[L]: Without paper
[H]: With paper
- 4 M801 CONT (finisher CB to PKDB)
on/off control signal for M801 (punch)
[L]: M801 ON
[H]: M801 OFF
- 5 M801 F/R (finisher CB to PKDB)
Signal for switching the direction of rotation for M801 (punch)
[L]: Forward direction
[H]: Reverse direction
- 6 SIG_1 to 10 (finisher CB to PKDB)
PK control signal from finisher CB

b Output signals

- 1 M801: DRV 1, 2 (PKDB to M801)
Drive signal for M801 (punch)
- 2 M802: DRVA, A, B, B (PKDB to M802)
Drive signal for M802 (punch shift)
(A phase, B phase)

3 PKSET, PKSET2 (PKDB to finisher CB)

Connection signal of PK

[L]: Connected

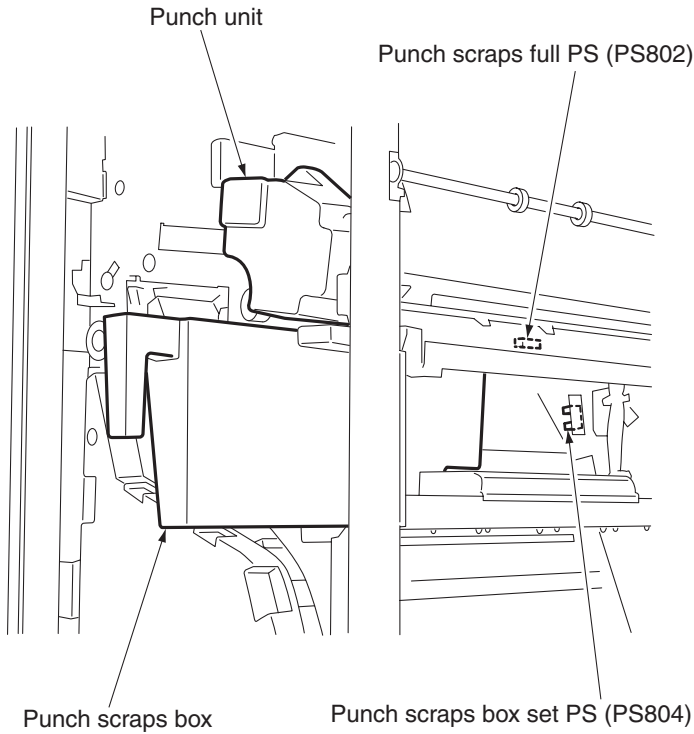
[H]: Not connected

4 OUT-1 to 10 (PKDB to finisher CB)

Status informing signal from PK to finisher CB

Punch waste box section

Composition



Mechanisms

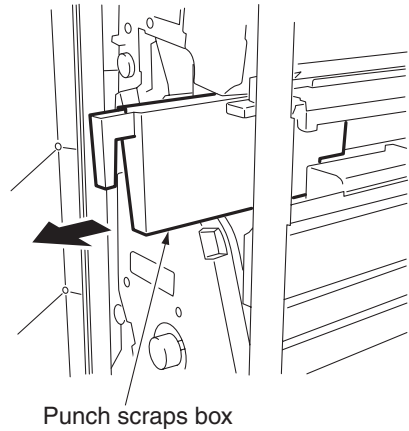
Mechanism	Method
Alarm clear *1	Punch waste box

*1 Alarm clear

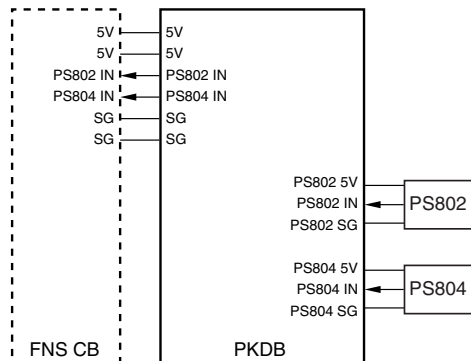
Punch waste are collected in the punch waste box.

When the punch waste box is full or it is removed, the related message appears on the control panel of the MFP.

To remove the punch waste box, open the front door of the finisher and pull forward.



Punch waste conveyance control



Punch waste are collected in the punch waste box.

Related signals are PS802 (punch waste full) and PS804 (punch waste box set).

1 Operation

a Punch waste full detection

PS802 (punch waste full) detects whether the punch waste box is full.

When the punch waste box becomes full, PS802 turns on to send the “punch waste full” signal to the MFP.

Upon receipt of this signal, the MFP displays a related message on the control panel.

b Punch waste box detection

PS804 (punch waste box set) detects whether the punch waste box is attached.

If the punch waste box is not attached, PS804 turns off to send the “punch waste box not attached” signal to the MFP.

Upon receipt of this signal, the MFP displays a related message on the control panel.

2 Signals

a Input signals

1 PS804IN (PS804 to PKDB to finisher CB)

Punch waste box existence detection signal

[L]: Punch waste box is not set

[H]: Punch waste box is set

2 PS802IN (PS802 to PKDB to finisher CB)

Punch waste box full detection signal

[L]: Punch waste box is full

[H]: Punch waste box is not full

3 Punch kit disassembly/assembly

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This section explains how to disassemble and reassemble the MFP. When disassembling and reassembling the MFP, follow the precautions given below.

CAUTION

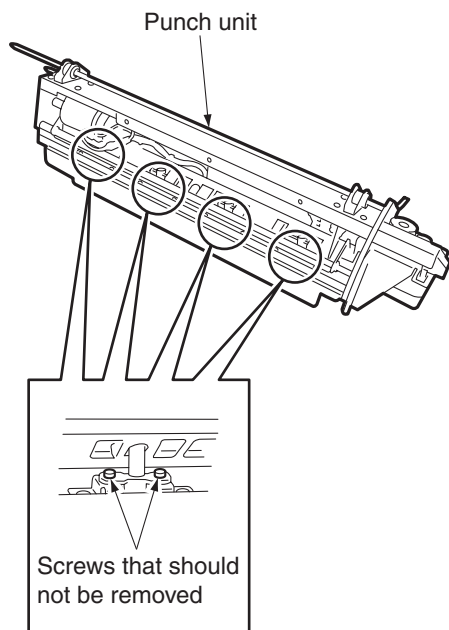
- Be sure the power cord has been unplugged from the wall outlet.
- The disassembled parts must be reassembled following the disassembly procedure in reverse unless otherwise specified.
- Care should be taken not to lose small parts. Care should also be taken not to install small parts in wrong places.
- Do not operate the MFP before installing all the disassembled parts completely.
- Removal of some screws is prohibited in this section. Never loosen them.

Punch section

Screws that should not be removed

CAUTION

The following screws should not be removed. If you do, punching cannot be done as designed.



Replacing the punch unit

CAUTION

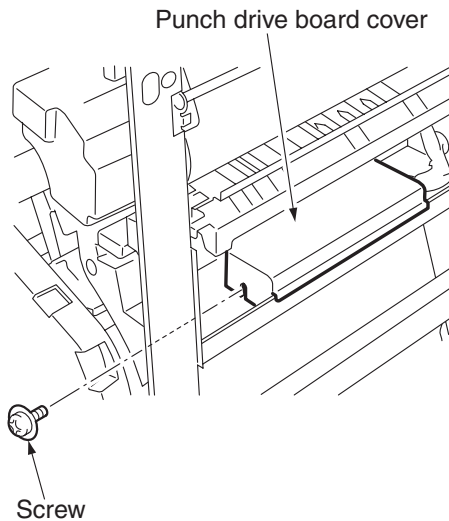
Be sure to unplug the power cord of the MFP from the wall outlet.

Procedure

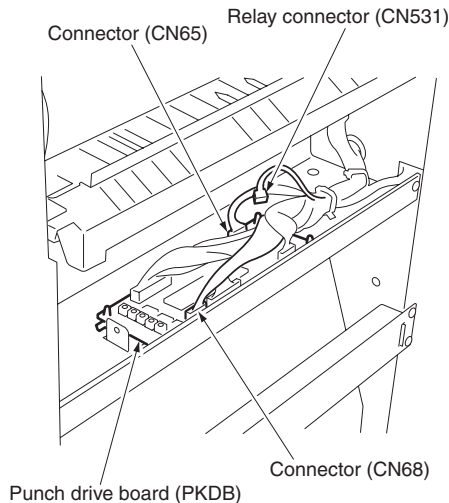
- 1 Remove the punch waste box.



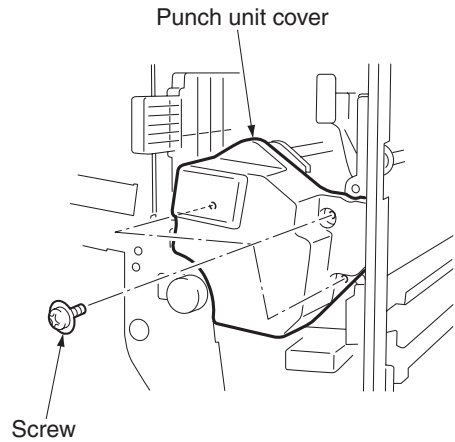
- 2 Remove the punch drive board cover by removing one screw.



- 3 Disconnect two connectors (CN65, 68) and one inline connector (CN531) from the punch drive board (PKDB).

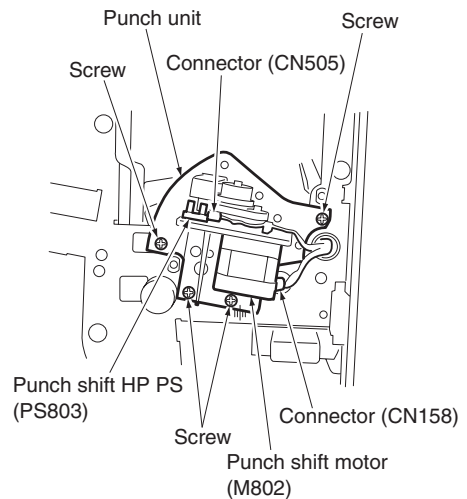


- 4 Remove three screws to remove the punch unit cover.



- 5 Disconnect two connectors (CN158, 505).

- 6 Remove the punch unit from finisher by removing four screws.



- 7 Reinstall the above parts following the removal steps in reverse.

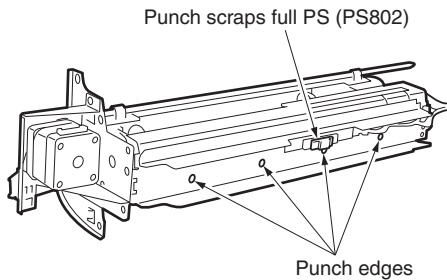
Cleaning the punch edges and punch waste full PS (PS802)

CAUTION

Be sure to unplug the power cord of the MFP from the wall outlet.

Procedure

- 1 Remove the punch unit.
- 2 Use a blower brush to remove paper dust and punch waste from the punch edges and punch waste full PS (PS802).



- 3 Reinstall the above parts following the removal steps in reverse.

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