

KONICA MINOLTA



SERVICE MANUAL

GENERAL SERVICE

Di551/Di650 Di5510/Di7210

Di5510: Europe and North America only.

2004.01

KONICA MINOLTA BUSINESS TECHNOLOGIES, INC. Ver. 1.0

There are using both Official Options name and Popular Options name in the Di551/Di650/Di5510/Di7210 Service Manual and Option Service Manual.

EDH-4, EDH-7	: RADF
FN-112, FN-6, FN-121, FN-10, FN-113, FN-122	: FNS
OT-104	: SF
C-403, C-404	: LT & LCT
Cover Inserter B, Cover Inserter E	: PI
PK-2, PK-5	: PK
ZK-2, ZK-3	: PZ
In-System Writer	: ISW

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SAFETY AND IMPORTANT WARNING ITEMS

Read carefully the Safety and Important Warning Items described below to understand them before doing service work.

IMPORTANT NOTICE

Because of possible hazards to an inexperienced person servicing this copier as well as the risk of damage to the copier, Konica Minolta Business Technologies, INC. (hereafter called the KMBT) strongly recommends that all servicing be performed only by KMBT-trained service technicians.




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

The user of this Service Manual must assume all risks of personal injury and/or damage to the copier while servicing the copier for which this Service Manual is intended.

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

Keep this Service Manual also for future service.


DESCRIPTION ITEMS FOR DANGER, WARNING AND CAUTION

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

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

 **DANGER** :Action having a high possibility of suffering death or serious injury

 **WARNING**:Action having a possibility of suffering death or serious injury

 **CAUTION** :Action having a possibility of suffering a slight wound, medium trouble, and property damage

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

 :Precaution when using the copier.

 :Prohibition when using the copier.

 :Direction when using the copier.

 General precaution

 General prohibition

 General instruction

 Electric hazard

 Do not touch with wet hand

 Unplug

 High temperature

 Do not disassemble

 Ground/Earth

SAFETY WARNINGS


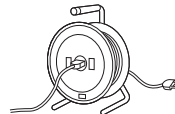

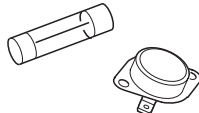

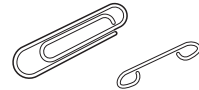

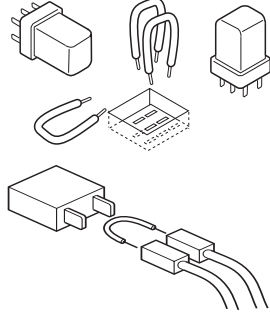



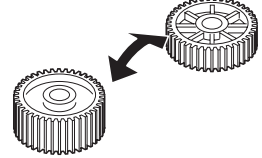


[1] MODIFICATIONS NOT AUTHORIZED BY KONICA MINOLTA BUSINESS TECHNOLOGIES, INC.

Konica Minolta brand copiers are renowned for their high reliability. This reliability is achieved through high-quality design and a solid service network.

Copier 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.

DANGER : PROHIBITED ACTIONS

• Using any cables or power cord not specified by KMBT.		
• Using any fuse or thermostat not specified by KMBT. Safety will not be assured, leading to a risk of fire and injury.		
• Disabling fuse functions or bridging fuse terminals with wire, metal clips, solder or similar object.		
• Disabling relay functions (such as wedging paper between relay contacts)		
• Disabling safety functions (interlocks, safety circuits, etc.) Safety will not be assured, leading to a risk of fire and injury.		
• Making any modification to the copier unless instructed by KMBT		
• Using parts not specified by KMBT		

[2] CHECKPOINTS WHEN PERFORMING ON-SITE SERVICE

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

1. Power Supply

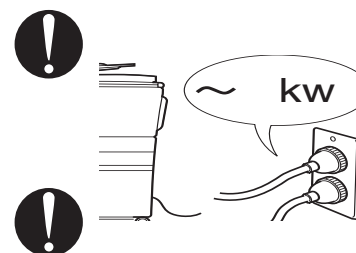
WARNING: Wall Outlet

- Check that mains 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.

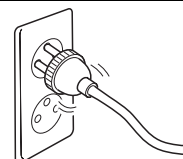
- If two or more power cords can be plugged into the wall outlet, the total load must not exceed the rating of the wall outlet.

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



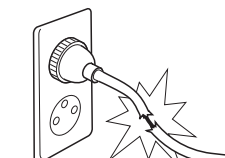
WARNING: Power Plug and Cord

- 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 KMBT. Using the damaged power cord may result in fire or electric shock.



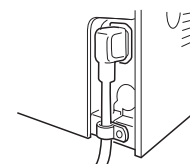
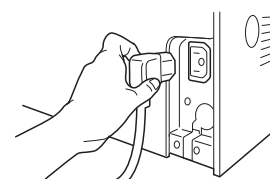
- When using the power cord (inlet type) that came with this copier, be sure to observe the following precautions:

- a. Make sure the copier-side power plug is securely inserted in the socket on the rear panel of the copier.

Secure the cord with a fixture properly.

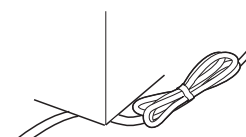
- b. If the power cord or sheath is damaged, replace with a new power cord (with plugs on both ends) specified by KMBT.

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



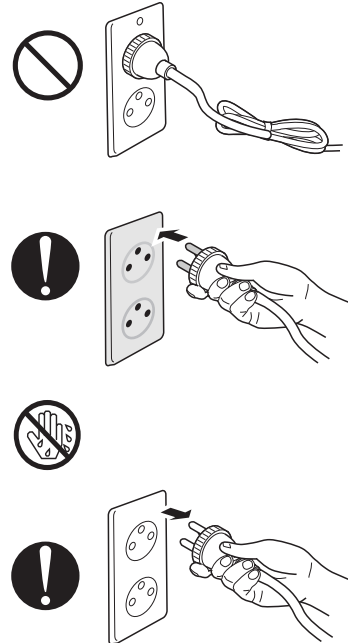
- Check whether the power cord is not stepped on or pinched by a table and so on.

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



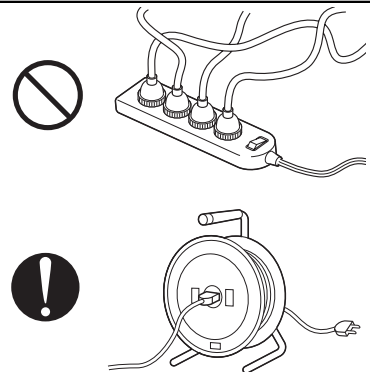
WARNING: Power Plug and Cord

- Do not bundle or tie the power cord.
Overheating may occur there, leading to a risk of fire.
- Check whether dust is collected around the power plug and wall outlet.
Using the power plug and wall outlet without removing dust may result in fire.
- Do not insert the power plug into the wall outlet with a wet hand.
The risk of electric shock exists.
- When unplugging the power cord, grasp the plug, not the cable.
The cable may be broken, leading to a risk of fire and electric shock.



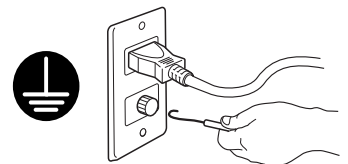
WARNING: Wiring

- Never use multi-plug adapters to plug multiple power cords in the same outlet.
If used, the risk of fire exists.
- When an extension cord is required, use a specified one.
Current that can flow in the extension cord is limited, so using a too long extension cord may result in fire.
Do not use an extension cable reel with the cable taken up. Fire may result.



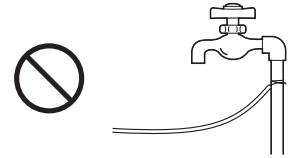
WARNING: Ground Lead

- Check whether the copier is grounded properly.
If current leakage occurs in an ungrounded copier, you may suffer electric shock while operating the copier. Connect the ground lead to one of the following points:
 - a. Ground terminal of wall outlet
 - b. Ground terminal for which Class D work has been done

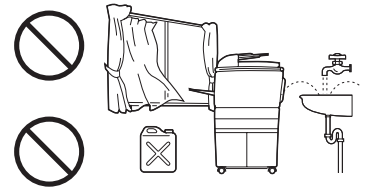


! WARNING: Ground Lead

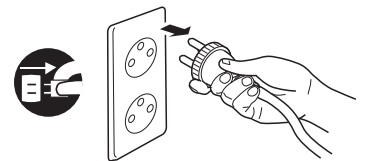
- Pay attention to the point to which the ground lead is connected.
Connecting the ground lead to an improper point such as the points listed below results in a risk of explosion and electric shock:
 - a. Gas pipe (A risk of explosion or fire exists.)
 - b. Lightning rod (A risk of electric shock or fire exists.)
 - c. Telephone line ground (A risk of electric shock or fire exists in the case of lightning.)
 - d. Water pipe or faucet (It may include a plastic portion.)

**2. Installation Requirements****! WARNING: Prohibited Installation Place**

- Do not place the copier near flammable materials such as curtains or volatile materials that may catch fire.
A risk of fire exists.
- Do not place the copier in a place exposed to water such as rain water.
A risk of fire and electric shock exists.

**! WARNING: Nonoperational Handling**

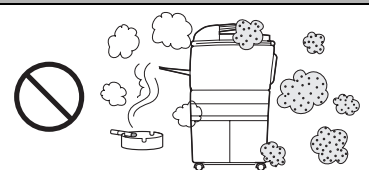
- When the copier is not used over an extended period of time (holidays, etc.), switch it off and unplug the power cord.
Dust collected around the power plug and outlet may cause fire.

**! CAUTION: Temperature and Humidity**

- Do not place the copier in a place exposed to direct sunlight or near a heat source such as a heater.
A risk of degradation in copier performance or deformation exists.
Do not place the copier in a place exposed to cool wind.
Recommended temperature and humidity are as follows:
Temperature: 10°C to 30°C
Humidity: 10% to 80% (no dew condensation)
Avoid other environments as much as possible.

**! CAUTION: Ventilation**

- Do not place the copier in a place where there is much dust, cigarette smoke, or ammonia gas.
Place the copier in a well ventilated place to prevent machine problems and image faults.

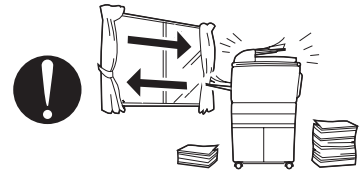


CAUTION: Ventilation

- The copier 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 copier is used in a poorly ventilated room
- When taking a lot of copies
- When using multiple copiers at the same time



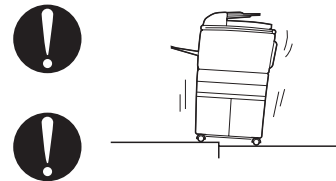
CAUTION: Vibration

- When installing the copier, read the Installation Guide thoroughly. Be sure to install the copier in a level and sturdy place.

Constant vibration will cause problems.

- Be sure to lock the caster stoppers.

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



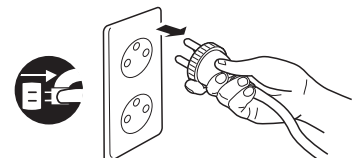
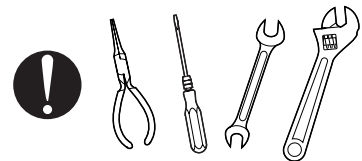
CAUTION: Inspection before Servicing

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

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

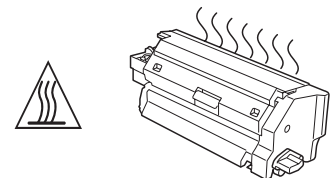
- Before conducting an inspection, be sure to disconnect the power plugs from the copier and options.

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



- The area around the fixing unit is hot.

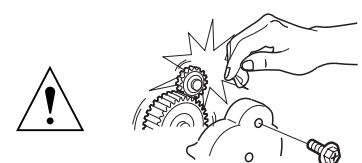
You may get burnt.



DANGER: Work Performed with the Copier Powered

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

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



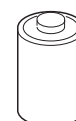
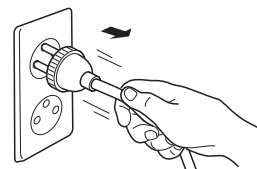
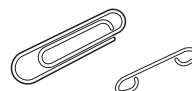
DANGER: Work Performed with the Copier Powered

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



WARNING: Safety Checkpoints

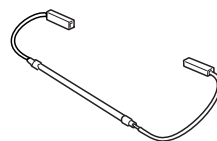
- Check the exterior and frame for edges, burrs, and other damages.
The user or CE may be injured.
- Do not allow any metal parts such as clips, staples, and screws to fall into the copier.
They can short internal circuits and cause electric shock or fire.
- Check wiring for squeezing and any other damage.
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.
- 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 copier 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 write unit incorporating a laser, make sure that the power cord has been disconnected.
The laser light can enter your eye, leading to a risk of loss of eyesight.
- Do not remove the cover of the write unit. Do not supply power with the write unit shifted from the specified mounting position.
The laser light can enter your eye, leading to a risk of loss of eyesight.
- When replacing a lithium battery, replace it with a new lithium battery specified in the Parts Guide Manual. Dispose of the used lithium battery using the method specified by local authority.
Improper replacement can cause explosion.



⚠ WARNING: Safety Checkpoints

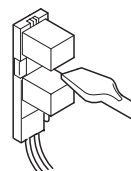
- After replacing a part to which AC voltage is applied (e.g., optical lamp and fixing lamp), be sure to check the installation state.

A risk of fire exists.



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

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



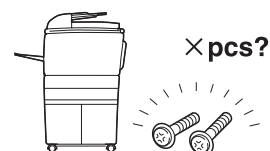
- Make sure the wiring cannot come into contact with sharp edges, burrs, or other pointed parts.

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



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

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



⚠ DANGER: HANDLING OF SERVICE MATERIALS

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

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



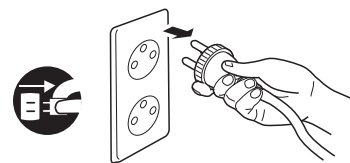
- Never throw the used cartridge and toner into fire.

You may be burned due to dust explosion.



⚠ DANGER : 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.



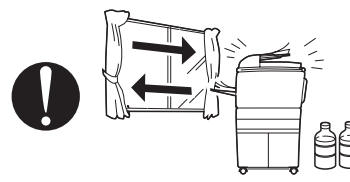
- Do not replace the cover or turn the copier ON before any solvent remnants on the cleaned parts have fully evaporated.
A risk of fire exists.



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



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



[3] MEASURES TO TAKE IN CASE OF AN ACCIDENT

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

[4] CONCLUSION

1. 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.
2. When performing service, each copier on the site must be tested for safety. The customer engineer must verify the safety of parts and ensure appropriate management of the equipment.

SAFETY INFORMATION

IMPORTANT INFORMATION

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products manufactured since August 1, 1976. Compliance is mandatory for products marketed in the United States.

This copier is certified as a “Class 1” laser product under the U.S.

Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. Since radiation emitted inside this copier is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

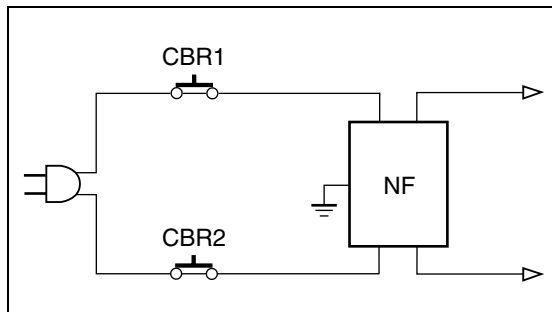
SAFETY CIRCUITS

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

- [1] Overall protection circuit
- [2] L2 and L3 (fixing 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.

[1] Overall Protection Circuit



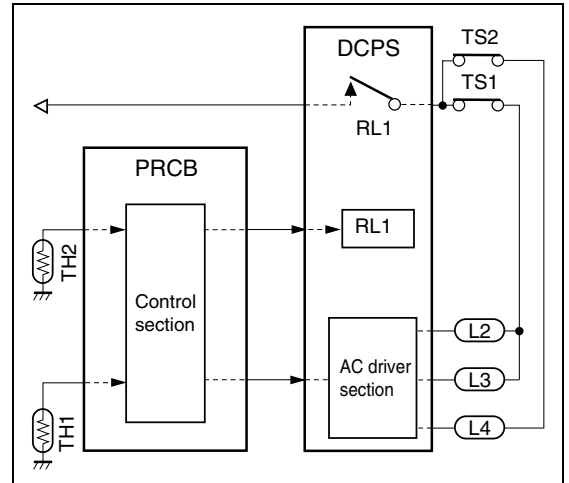
1. Protection by CBR1 and CBR2 (circuit breakers)

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.

[2] Protection by L2, L3 and L4 (fixing heater lamps) overheating prevention circuit



1. Protection by software

The output voltage from TH1 (fixing temperature sensor 1) is read by the CPU. If this voltage is abnormal, L2 (fixing heater lamp 1), L3 (fixing heater lamp 2), L4 (fixing 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.

2. Protection by the hardware circuit

The output voltages from TH1 and TH2 (fixing 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 (fixing heater lamp 1), L3 (fixing heater lamp 2), L4 (fixing heater lamp 3) and RL1 (main relay) are turned OFF in hardware means.

⚠ CAUTION:

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

Since TH1 (fixing 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.

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

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

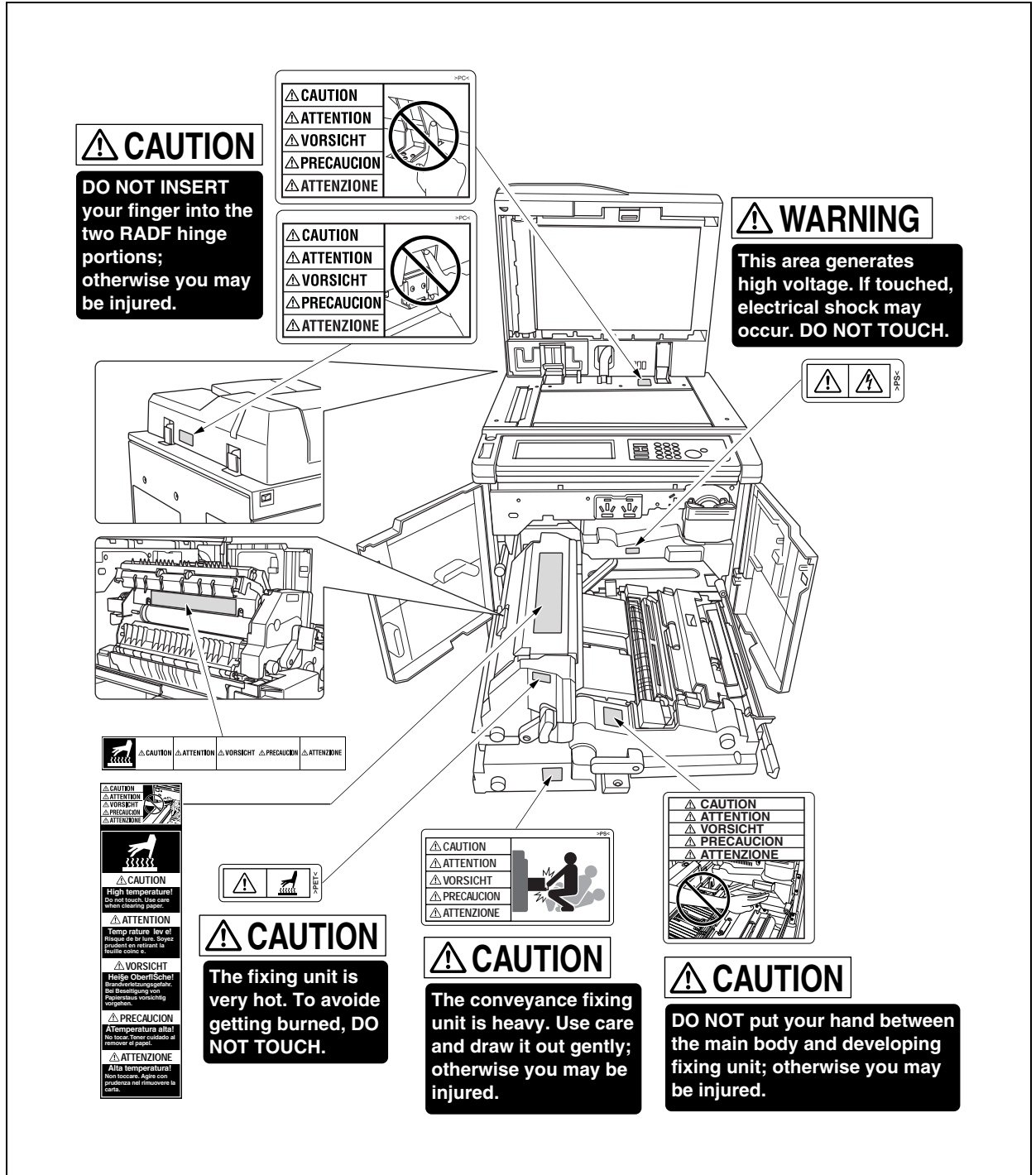
⚠ CAUTION:

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

INDICATION OF WARNING ON THE MACHINE

Caution labels shown below are attached in some areas on/in the machine.

When accessing these areas for maintenance, repair, or adjustment, special care should be taken to avoid burns and electric shock.

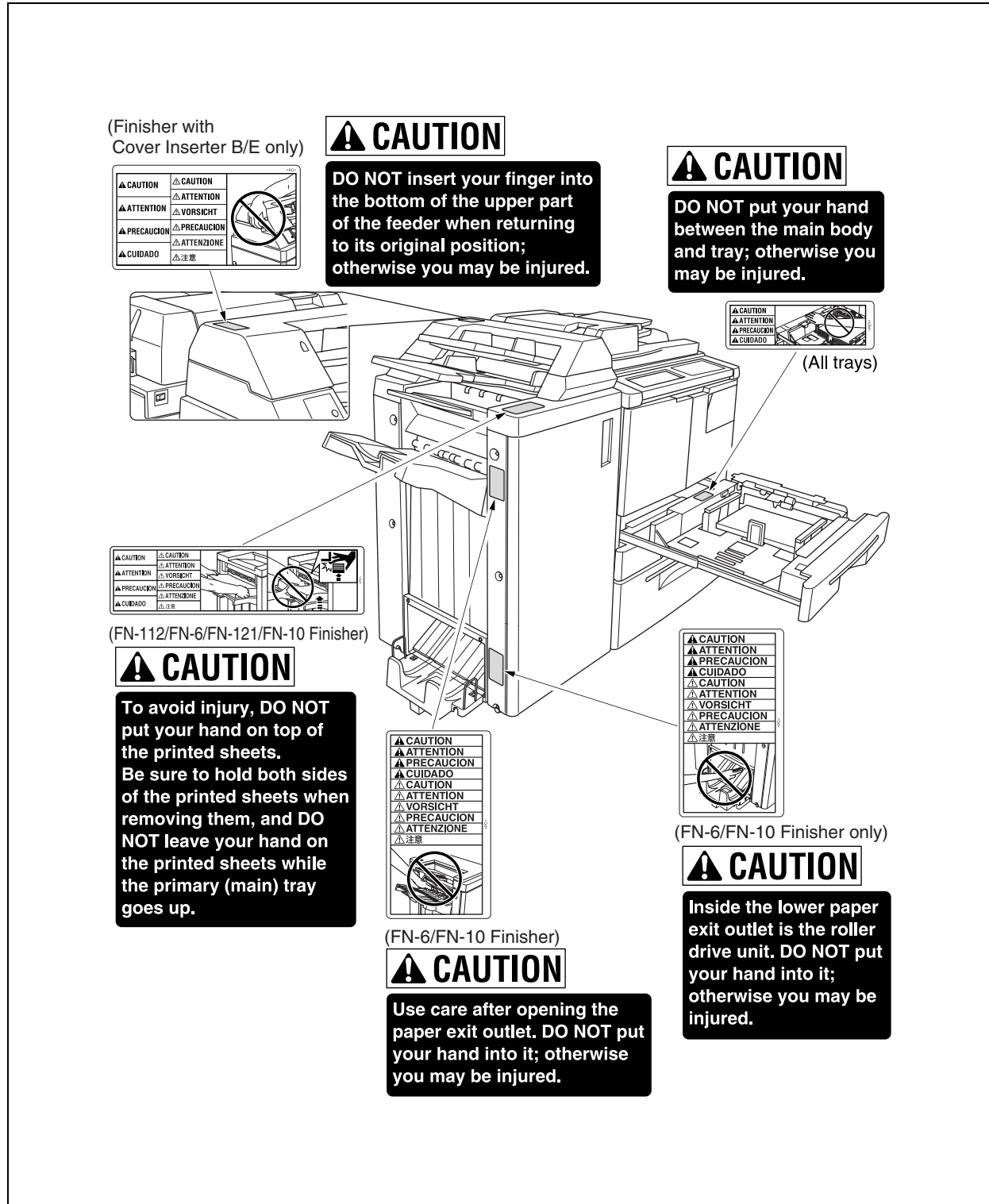


⚠ CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from.

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

In the case of the Di551/Di650

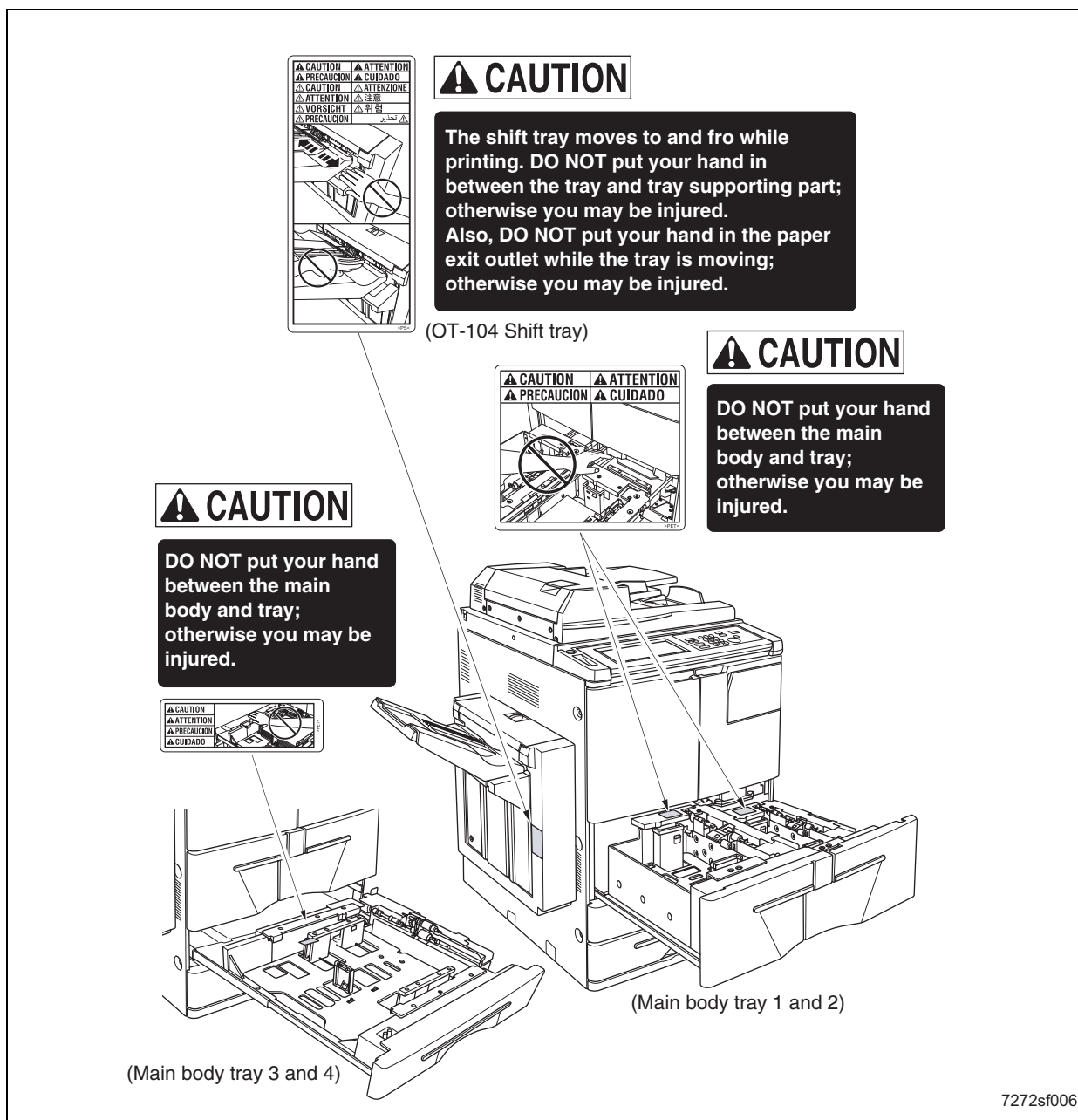


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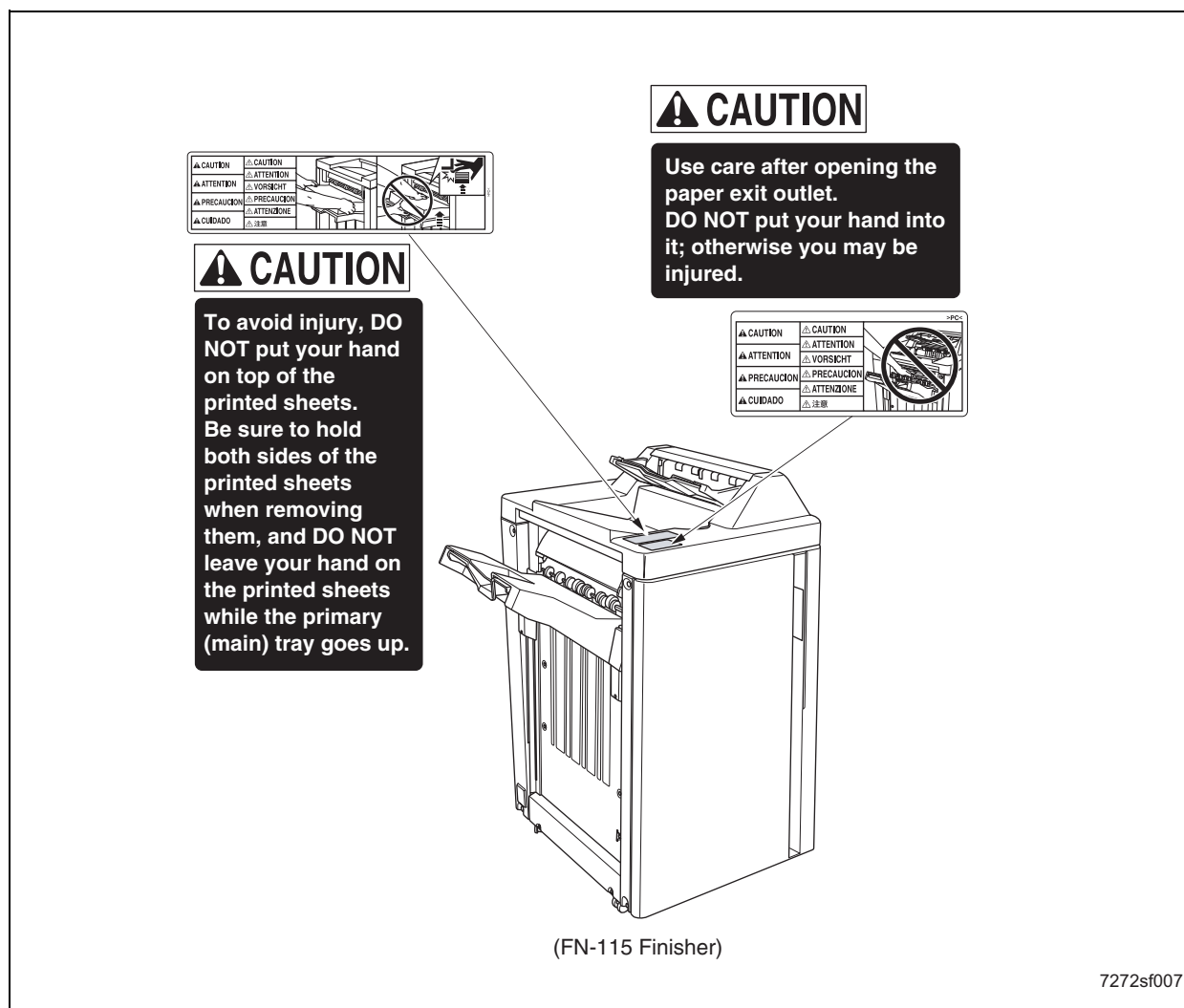
In the case of the Di5510/Di7210



⚠ CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from.

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

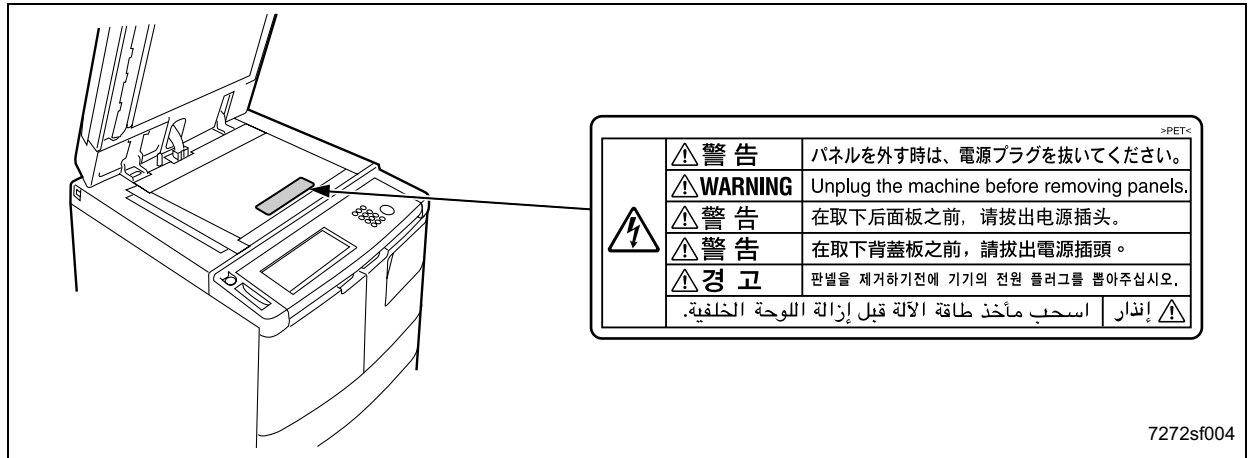


CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from.

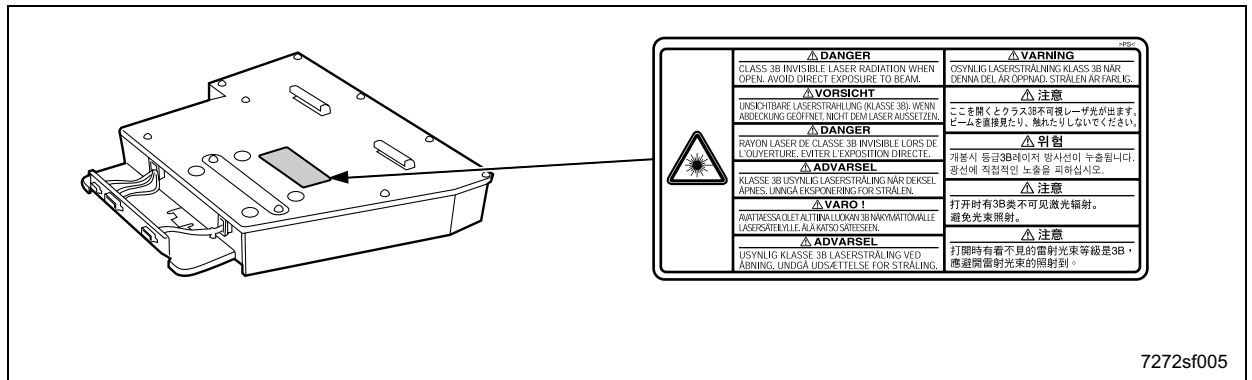
Do not remove caution labels. If any caution label has come off or soiled and therefore the caution cannot be read, contact our Service Office.

<SCANNER SECTION>

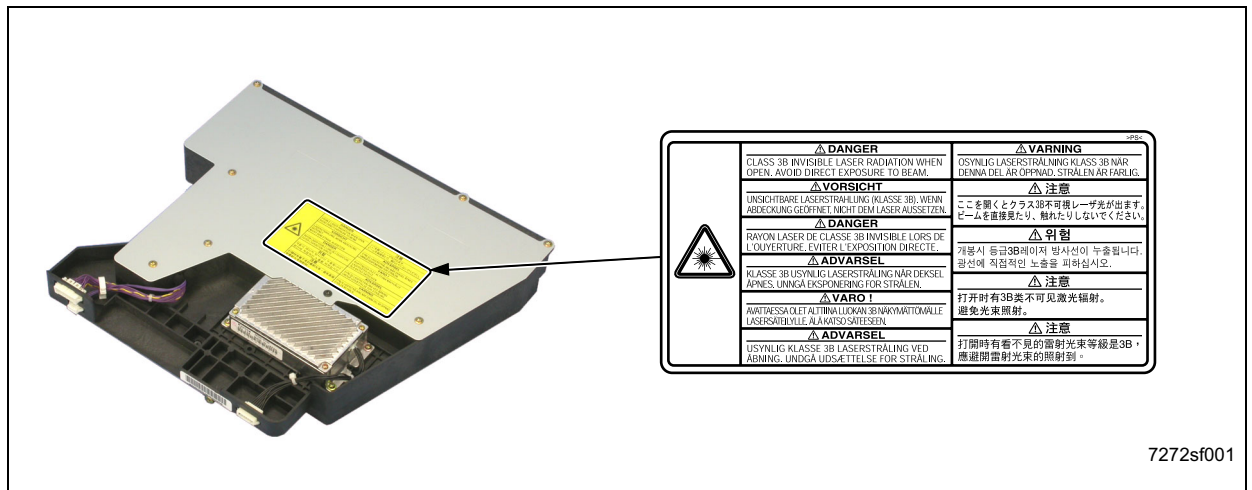


<WRITE UNIT>

In the case of the Di551/Di650

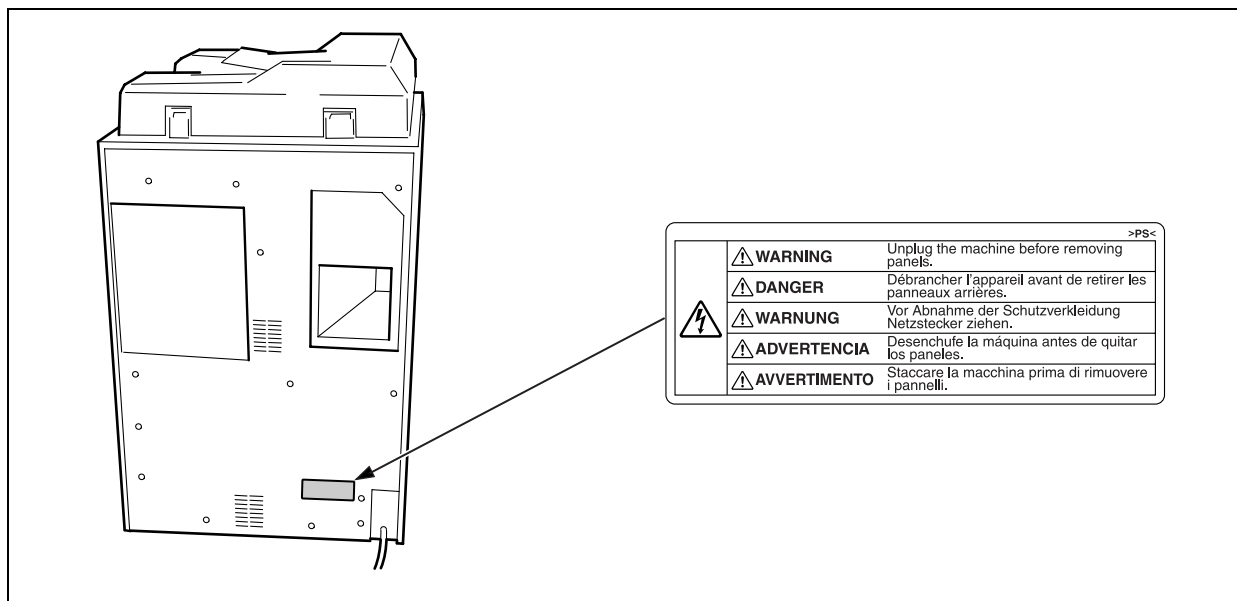


In the case of the Di5510/Di7210



SAFETY AND IMPORTANT WARNING ITEMS

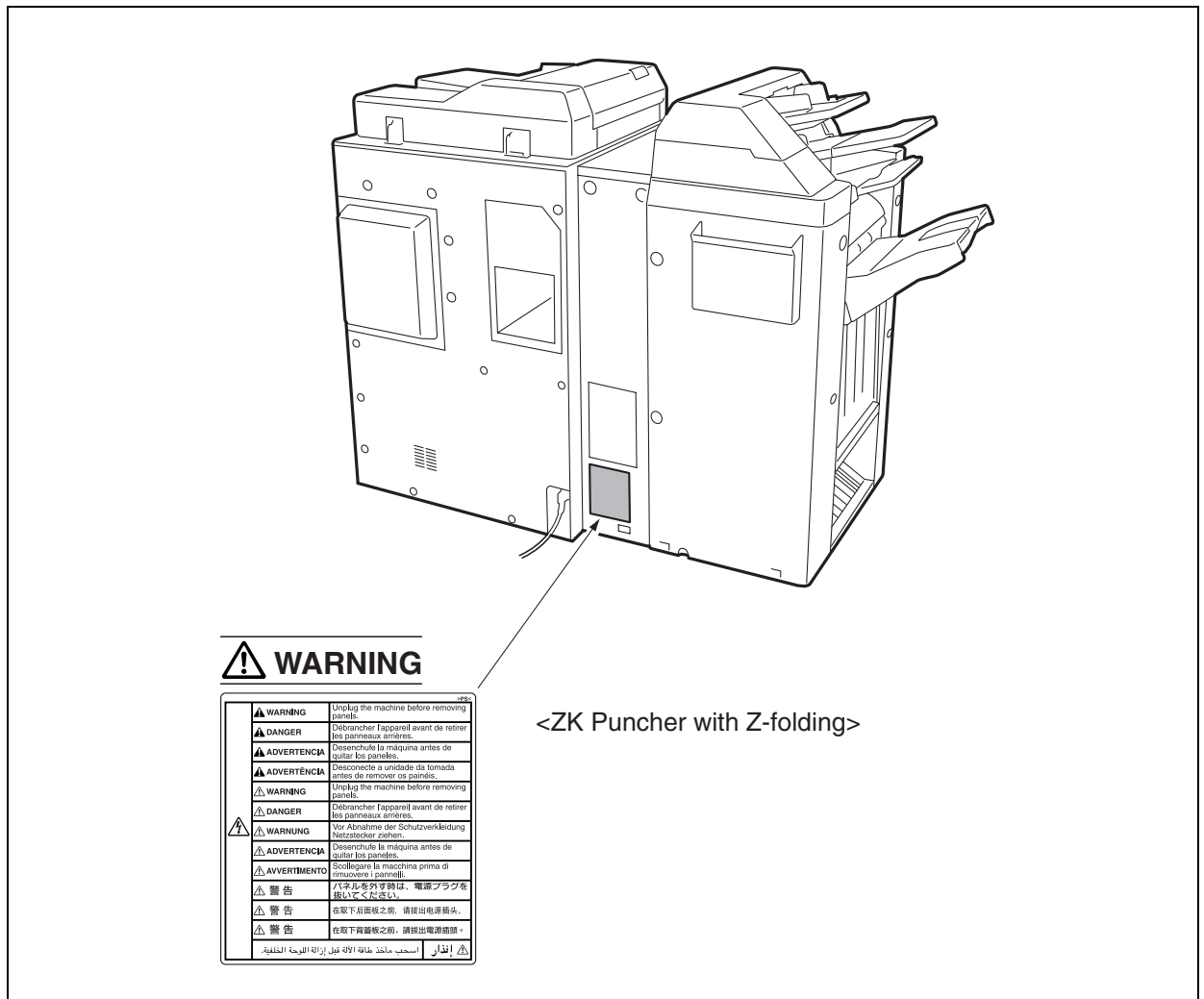
<REAR COVER>



⚠ CAUTION

You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from.

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



⚠ CAUTION

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

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LIST OF DIFFERENCE FOR Di551/Di650 AND Di5510/Di7210

Classification		Di551	Di650	Di5510	Di7210	Reason
Specification	Warm-up time	5.5 minutes max.(at 20 °C rated voltage)	6.5 minutes max.(at 20 °C rated voltage)	5 minutes max.(at 20 °C rated voltage)	6 minutes max.(at 20 °C rated voltage)	Change of fixing control temperature
	First copy out time (A4)	3.4 seconds or shorter	3.1 seconds or shorter	3.4 seconds or shorter	3.0 seconds or shorter	CPM change
	Continuous copy speed (A4)	55 copies (A4)	65 copies (A4)	55 copies (A4)	72 copies (A4)	CPM change
	Consumables	Common to Di551/Di650/Di5510/Di7210				
	Developer					
	Toner					
	Drum					
Drive Section	Liner speed	·280mm/s (standard) ·185mm/s (thick paper)	·320mm/s (standard) ·185mm/s (thick paper)	·280mm/s (standard) ·172.5mm/s (thick paper)	·345mm/s (standard) ·172.5mm/s (thick paper)	CPM change
Write Section	Polygon motor revolutions	·33,070rpm (standard) ·21,850rpm (thick paper)	·37,795rpm (standard) ·21,850rpm (thick paper)	·33,070rpm (standard) ·40,748rpm (thick paper)	·40,748rpm (standard) ·40,748rpm (thick paper)	CPM change
Paper Feed Section	Paper feed tray	500 copies x 2 1500 copies x 1	500 copies x 2 1500 copies x 1	1500 copies x 1 1000 copies x 1 550 copies x 2	1500 copies x 1 1000 copies x 1 550 copies x 2	—
External Section	Cooling for developing section	Duct	Duct	Duct + developing cooling fan	Duct + developing cooling fan	Improvement in developing suction
Fixing section	Fixing upper roller	Common to Di551/Di5510	Common to Di650/Di7210	Common to Di551/Di5510	Common to Di650/Di7210	—
	Fixing heater lamp /1					
ADU Section	ADU drive board	Exclusively for Di551	Exclusively for Di650	Common to Di5510/Di7210	Common to Di5510/Di7210	ADU linear speed change
	Transfer and separation corona unit	—	—	Included	Included	Automation of cleaning operation
Control	Image control program	Exclusively for Di551	Exclusively for Di650	Exclusively for Di5510	Exclusively for Di7210	CPM change
	Printer control program					

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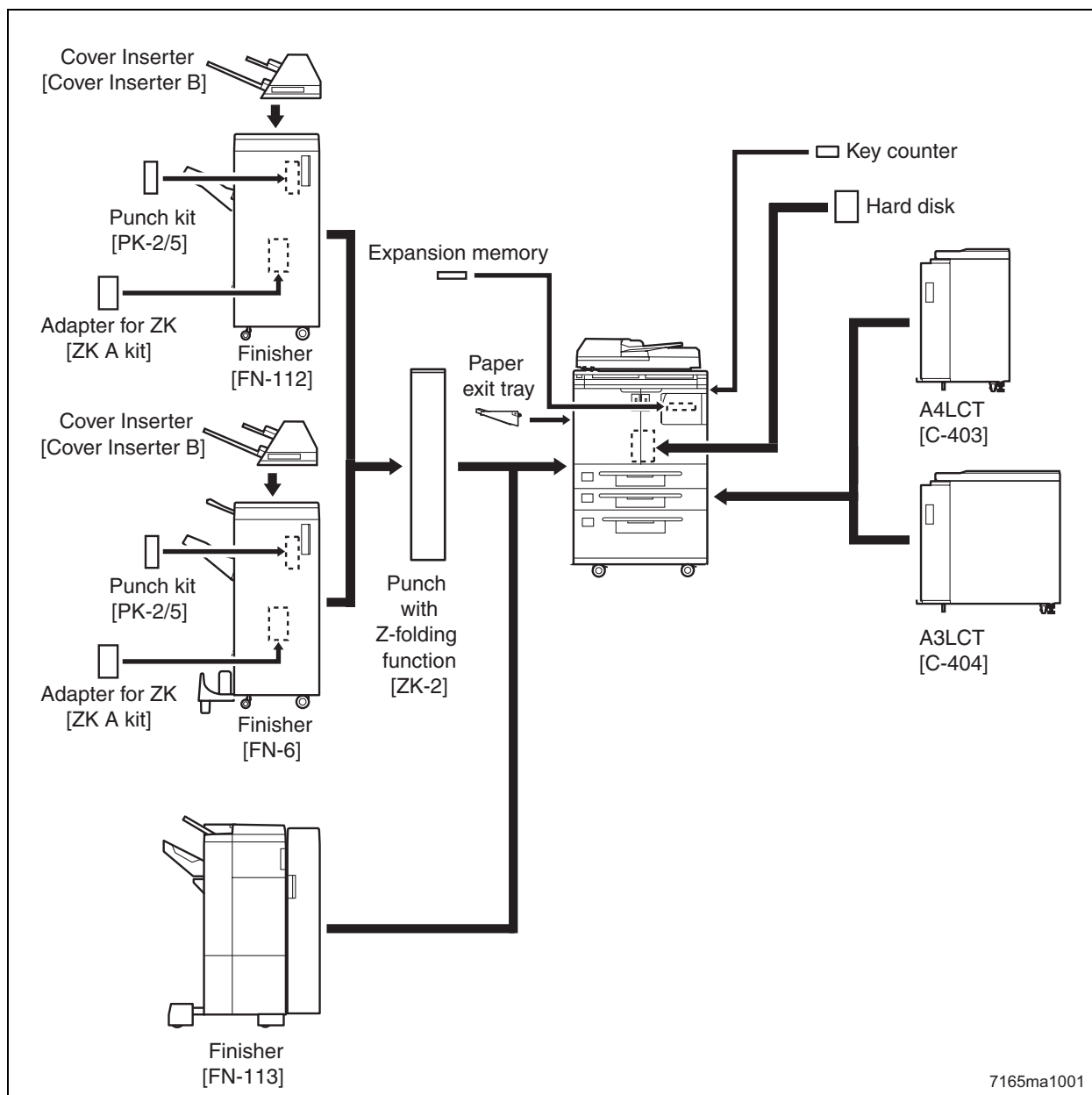


OUTLINE

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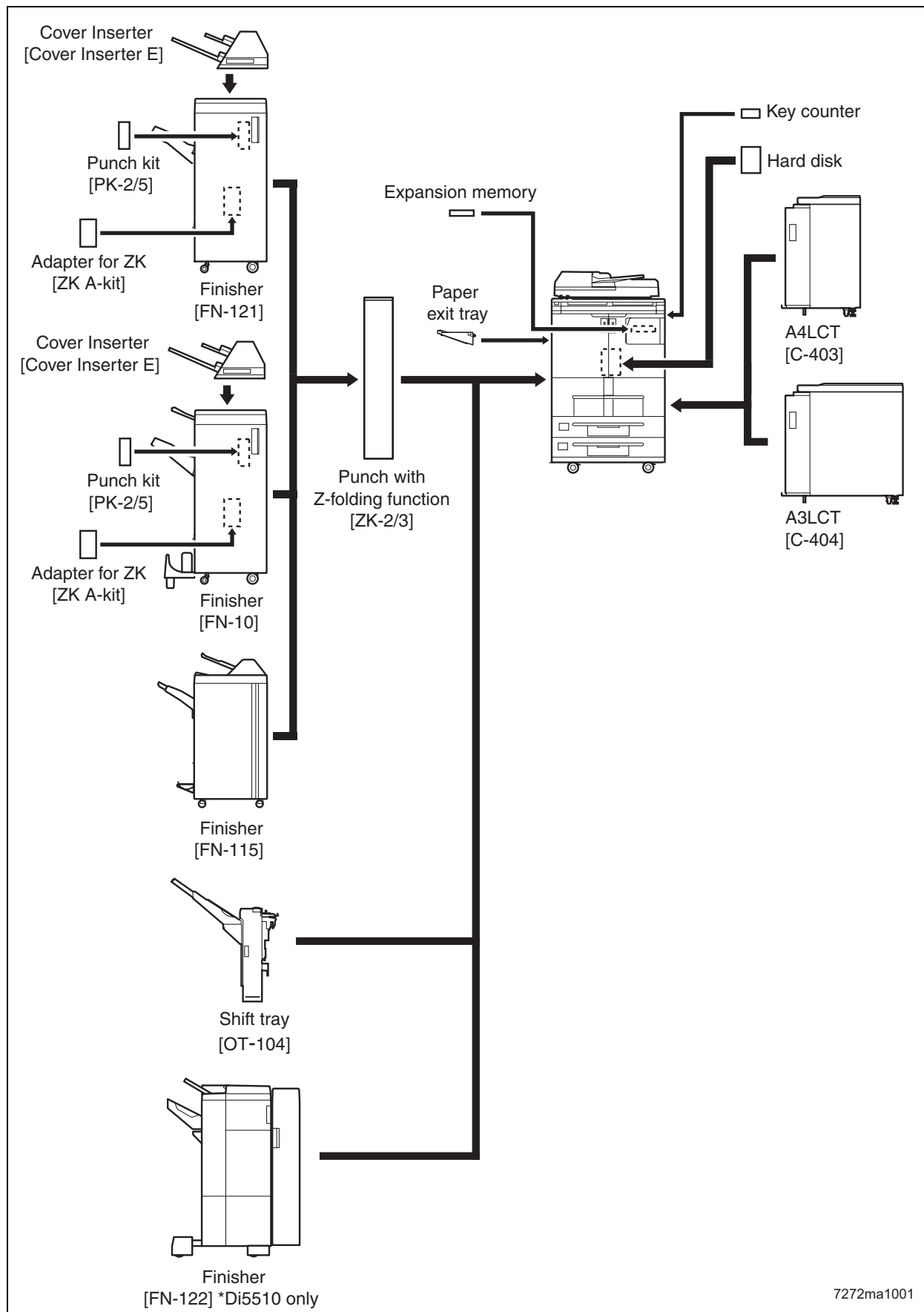
OUTLINE OF SYSTEM

In the case of the Di551/Di650



7165ma1001

In the case of the Di5510/Di7210



7272ma1001

Di551/Di650/Di5510/Di7210 PRODUCT SPECIFICATIONS

[1] 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:

Di551/Di650:

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

Di5510/Di7210:

Four stacked trays (1500 sheets: 64g/m² x 1, 1000 sheets: 64g/m² x 1, 550 sheets: 64g/m² x 2)

Common:

By-pass tray for various paper sizes (100 sheets of 80 g/m² or 20lbs paper)

C-403 (4000 sheets of 80 g/m² or 20lbs paper)*1,

C-404 (4000 sheets of 80/m² or 20lbs paper)*1

*1: Optional

Special ratio magnifications:

3 modes

Zoom magnifications:

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

Vertical magnifications:

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

Horizontal magnifications:

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

Warm-up time:

Di551	5.5 minutes max.	20 °C, rated voltage
Di650	6.5 minutes max.	
Di5510	5 minutes max.	
Di7210	6 minutes max.	

First copy out time (FCOT)

Mode	A4/8.5x11
Manual	3.4 seconds or shorter (Di551)
	3.1 seconds or shorter (Di650)
	3.4 seconds or shorter (Di5510)
	3.0 seconds or shorter (Di7210)

*Straight paper ejection, platen mode, life size, non AE or AES, without finisher, paper feed from tray 1

Continuous copy speed (life size, copies/min)

Size	cpm
A4/8.5x11	55 (Di551)
	65 (Di650)
	55 (Di5510)
	72 (Di7210)

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 320 MB (Di551/Di650), 576 MB (Di5510/Di7210)

[2] Functions

Applicable document types:

Sheets, book, solid object

Document size:

A3/11x17 max.

Copy paper size:

- Metric area
A3 to A6R, 11x17 to 8.5x11, F4
- Inch area
11x17 to 8.5x5.5, A3 to B5R, F4
- Wide paper
(Di551/Di650:314 mm x 459 mm max.)
(Di5510/Di7210:314 mm x 458 mm max.)

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

[3] Applicable Copy Paper**Plain paper:**

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

Special paper (by-pass feed only):

OHP film

Blueprint master paper

(both by-pass tray and stacked trays):

Tabs

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

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

[4] Options

LCT: C-403, C-404

Key counter

Expansion memory unit:

64MB, 128MB

256MB*1

Paper exit tray

Hard disk: HDD-2

Finisher: FN-112, FN-6, FN-121, FN-10,
FN-115, FN-113, FN-122

Shift tray: OT-104

Cover Inserter: Cover Inserter B/E

Puncher: PK-2, PK-5

Puncher with Z-folding: ZK-2, ZK-3

*1 256MB use the recommend memory

[5] Particulars of Machine**Power supply:**

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

120 VAC ±10% 60 Hz

Power consumption:

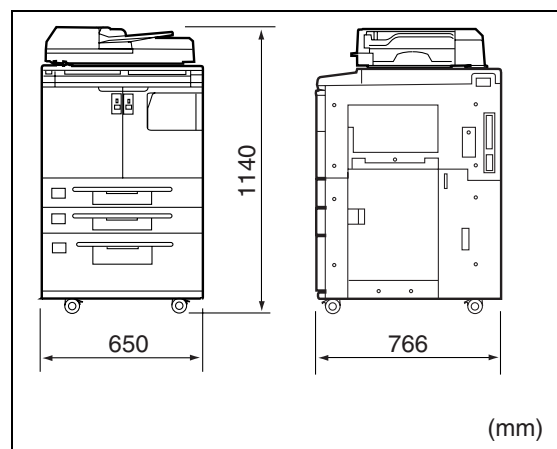
230 V Machine : 2300 W max. (full option)

120 V Machine : 1920 W max. (full option)

Weight:

Approx. 203 kg (Di551/Di650)

Approx. 216 kg (Di5510/Di7210)

External dimensions:

For Di5510/Di7210 models, the shapes of the tray are different.

[6] Maintenance and Life

Periodic maintenance: Every 250,000 copies

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

[7] Consumables

Developer: Common to Di551/Di650/Di5510/
Di7210

Toner: Common to Di551/Di650/Di5510/
Di7210

Drum: Common to Di551/Di650/Di5510/
Di7210 (φ80)

[8] Environmental Conditions

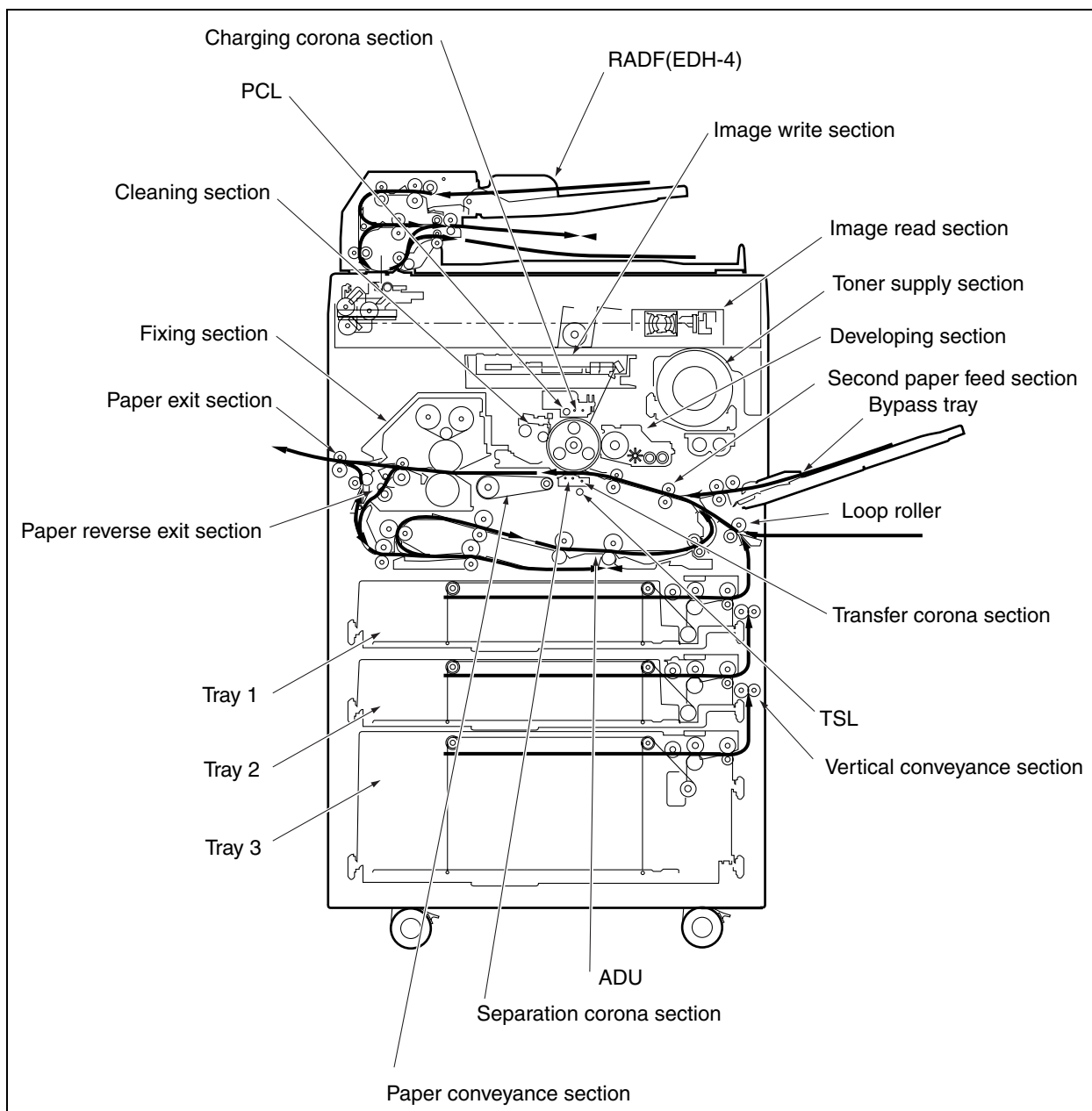
Temperature: 10°C to 30°C (50°F to 86°F)

Humidity: 10% to 80% RH

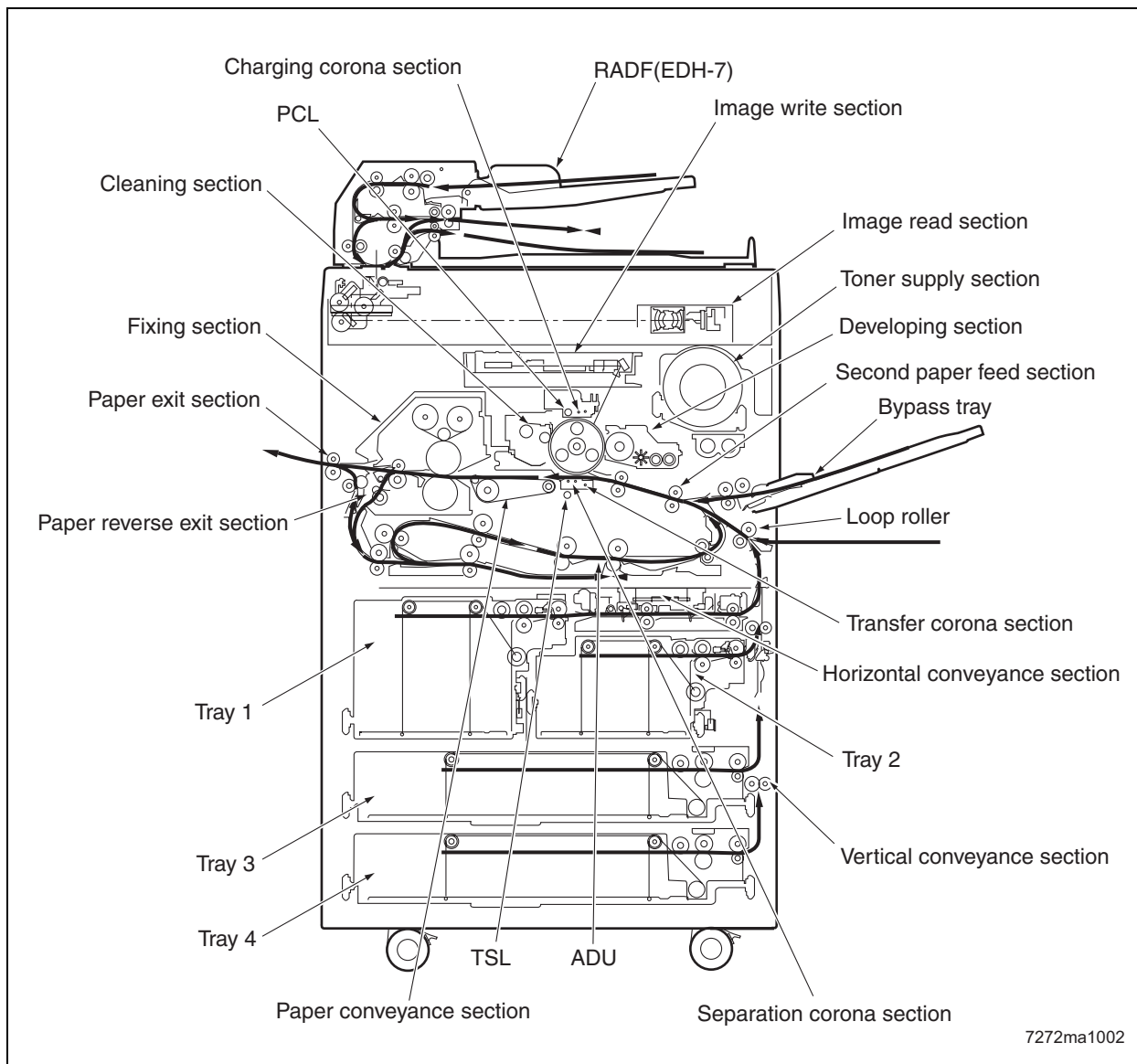
Note: The information herein may be subject to change for improvement without notice.

CENTRAL CROSS-SECTIONAL VIEW

In the case of the Di551/Di650

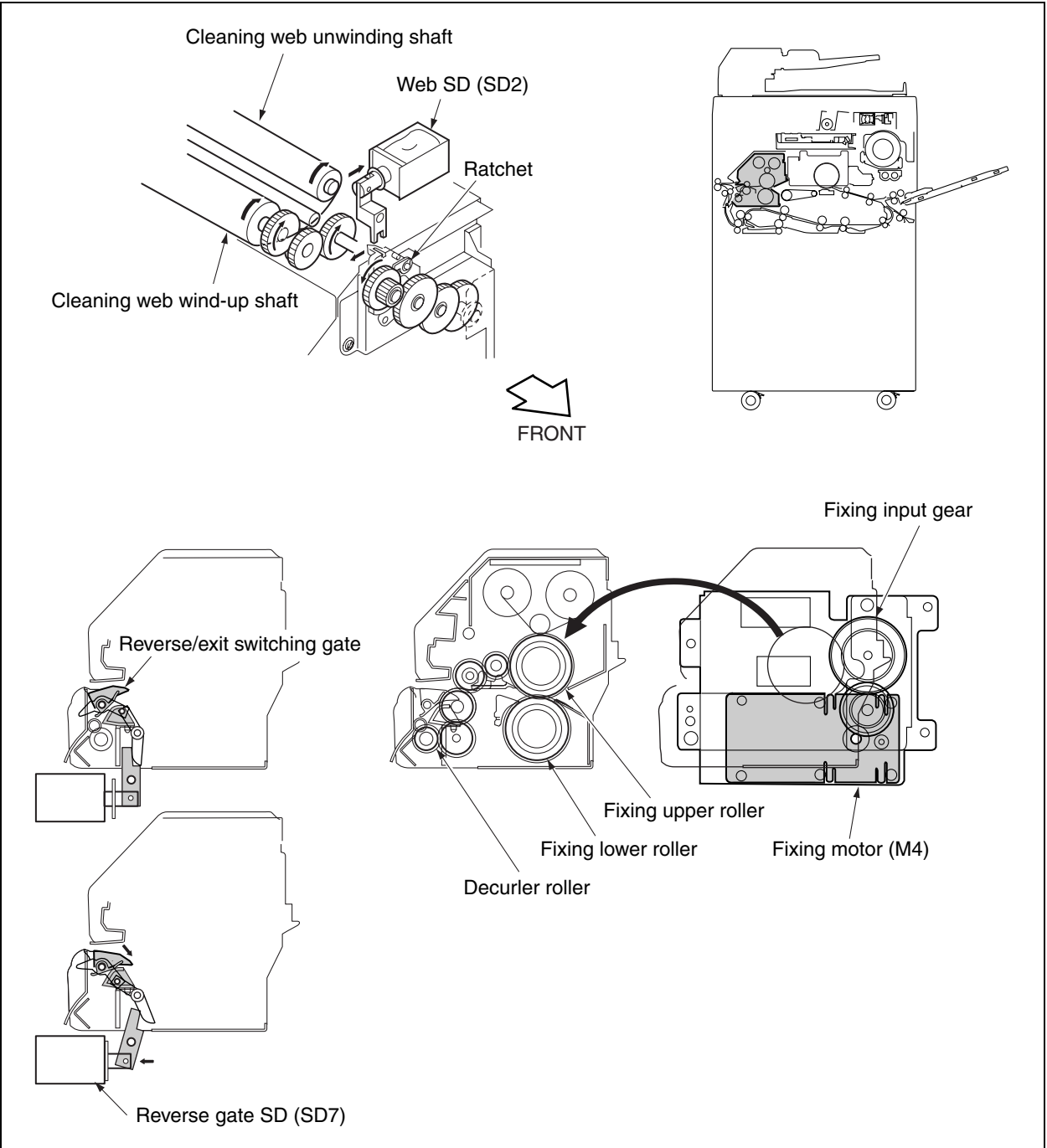


In the case of the Di5510/Di7210

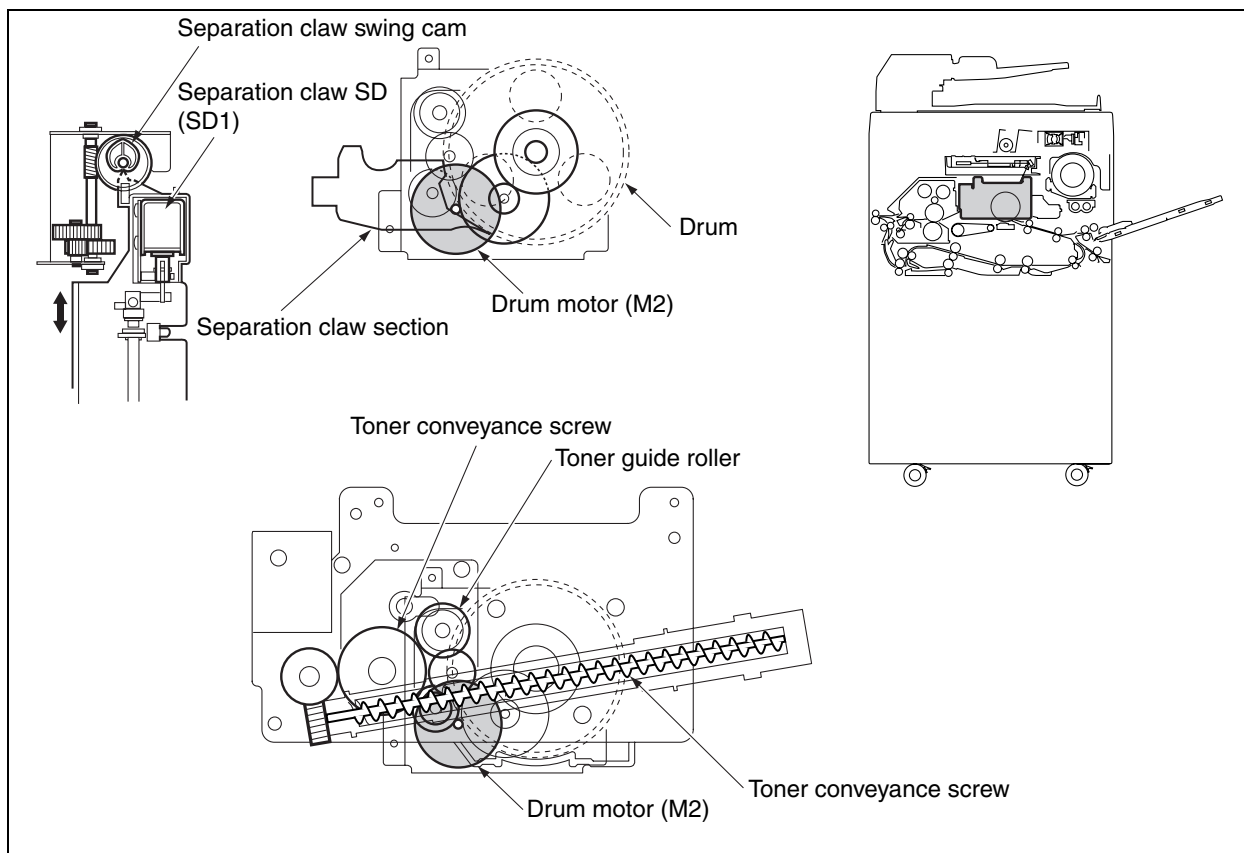


DRIVE SYSTEM DIAGRAM

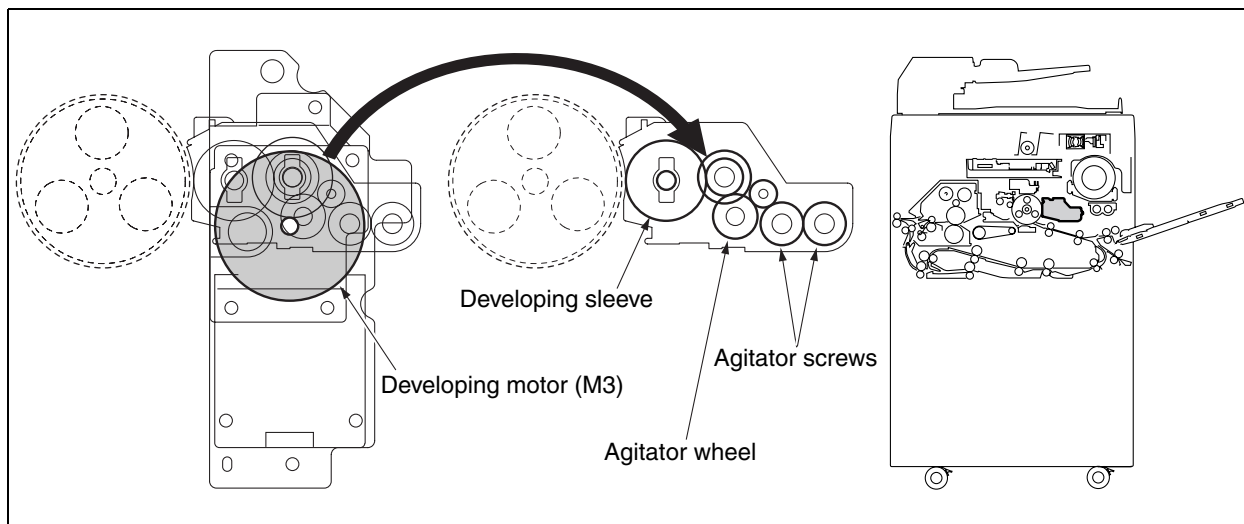
[1] Fixing/Web Drive Section



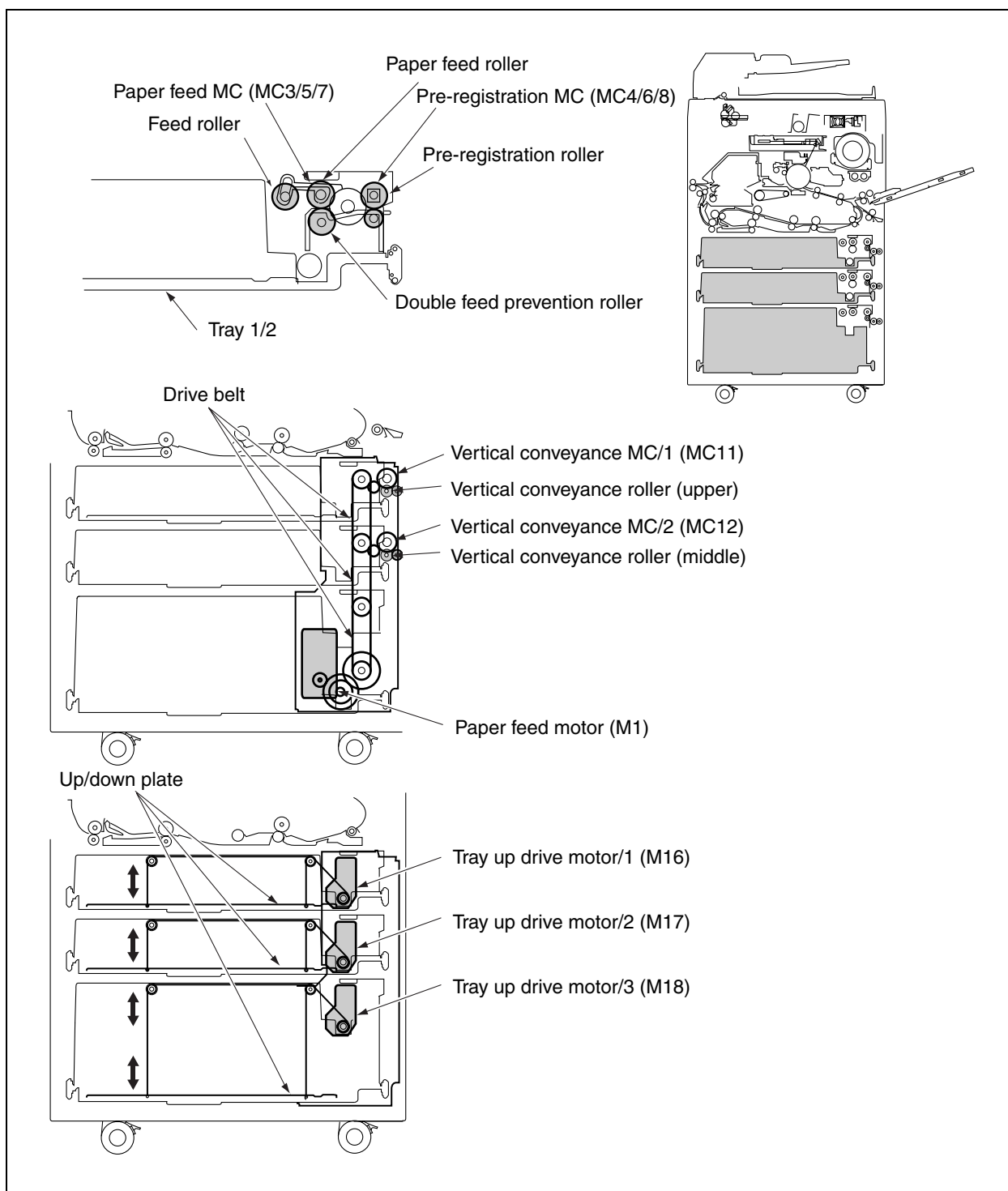
[2] Drum Drive Section



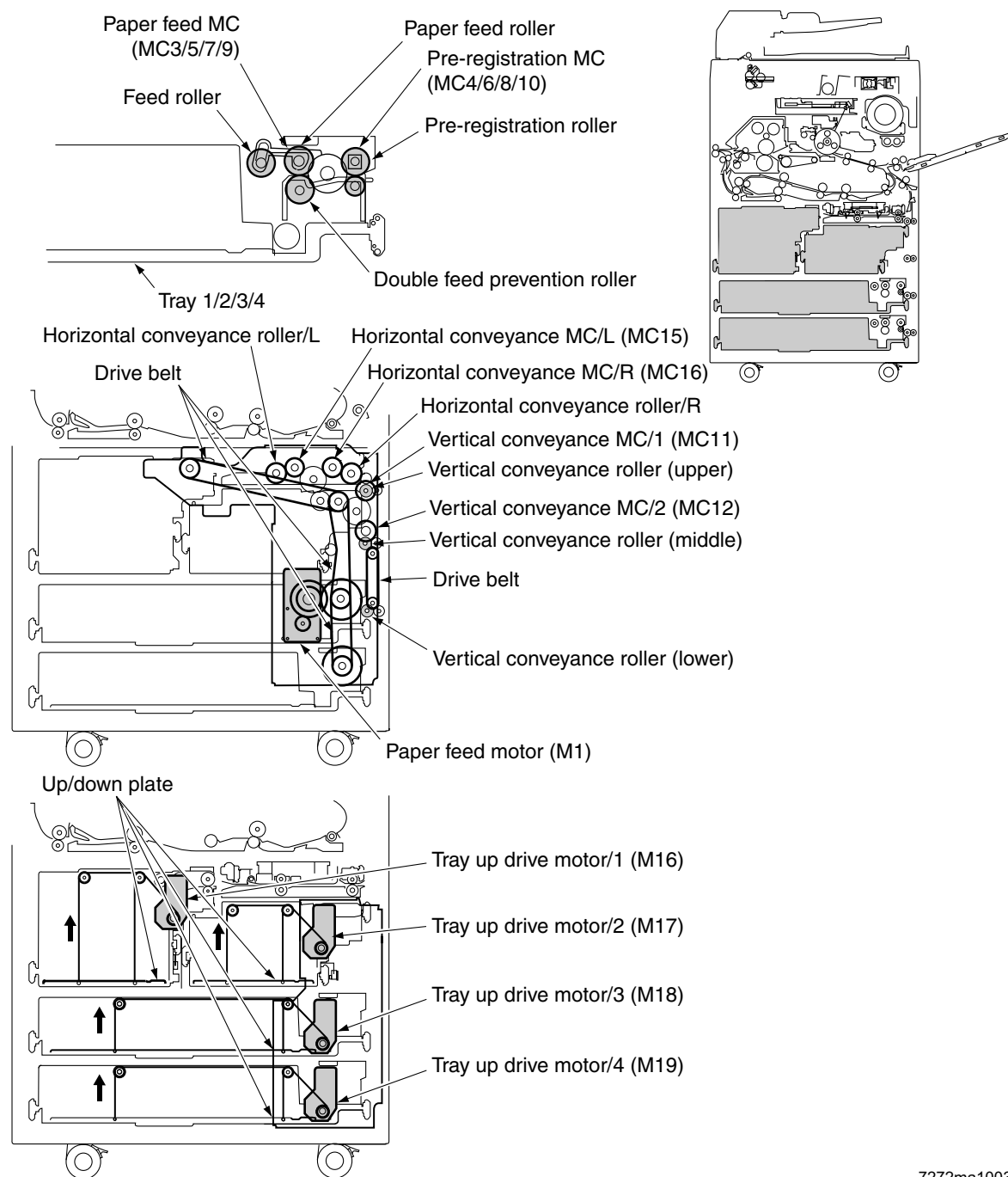
[3] Developing Drive Section



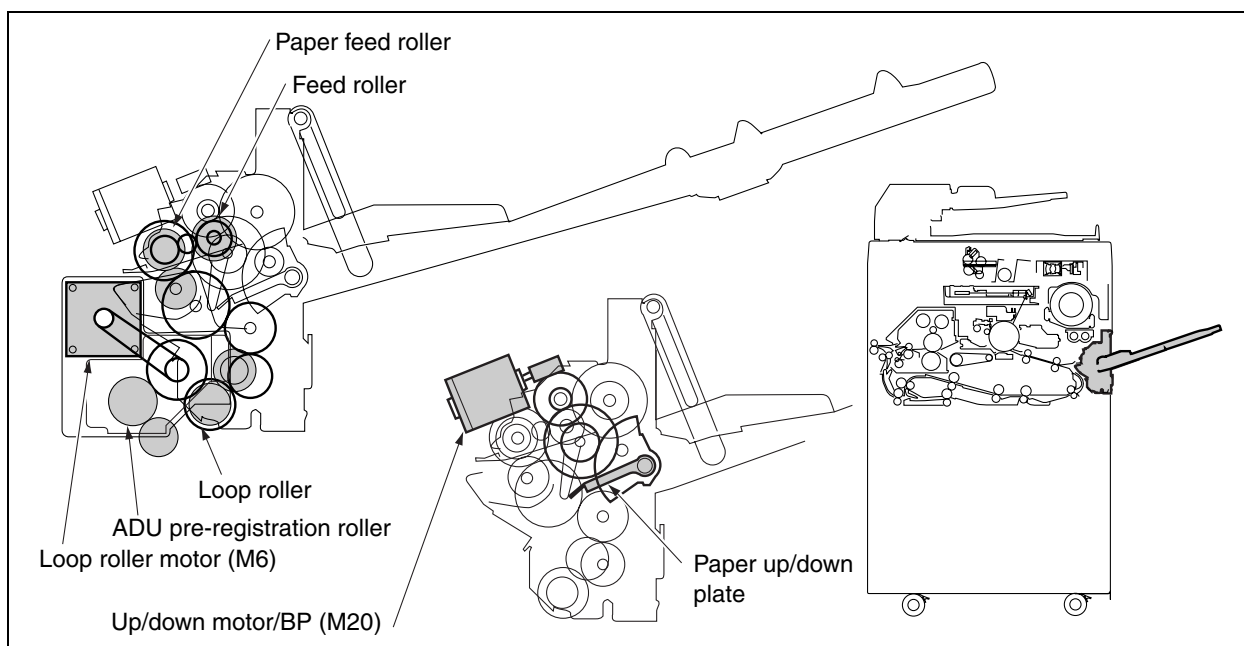
[4] Paper Feed/Vertical Conveyance/Tray Up Drive Sections In the case of the Di551/Di650

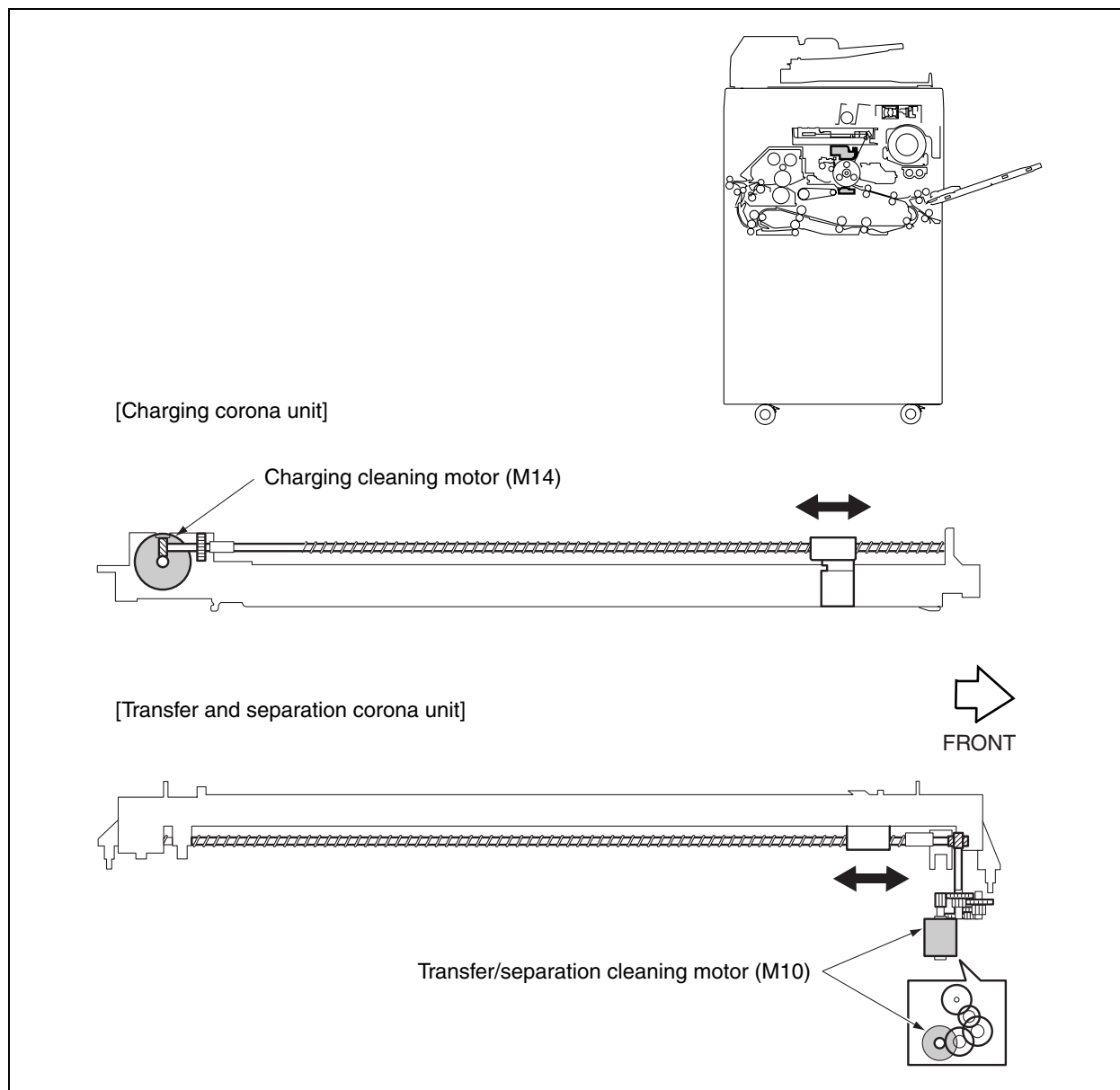


In the case of the Di5510/Di7210

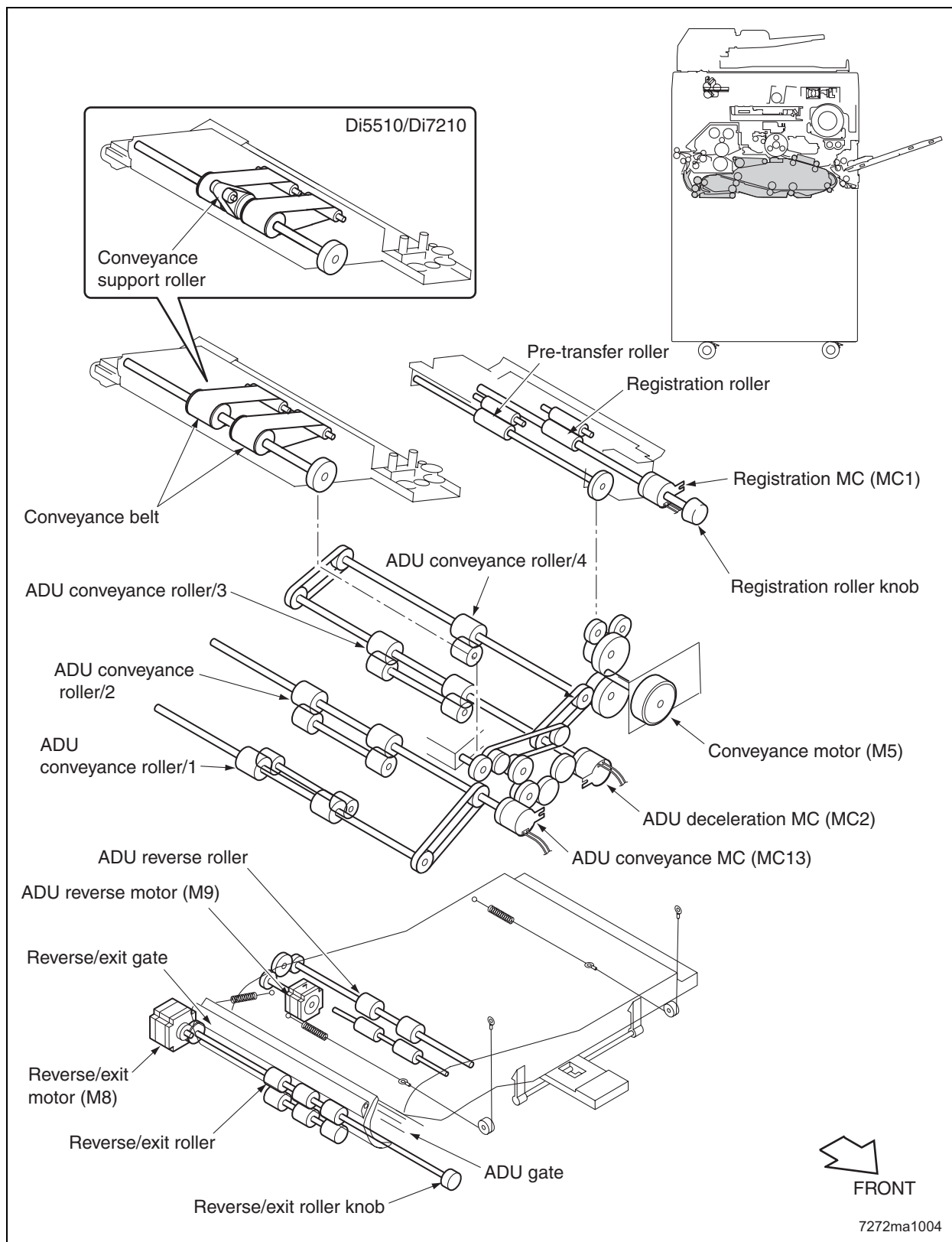


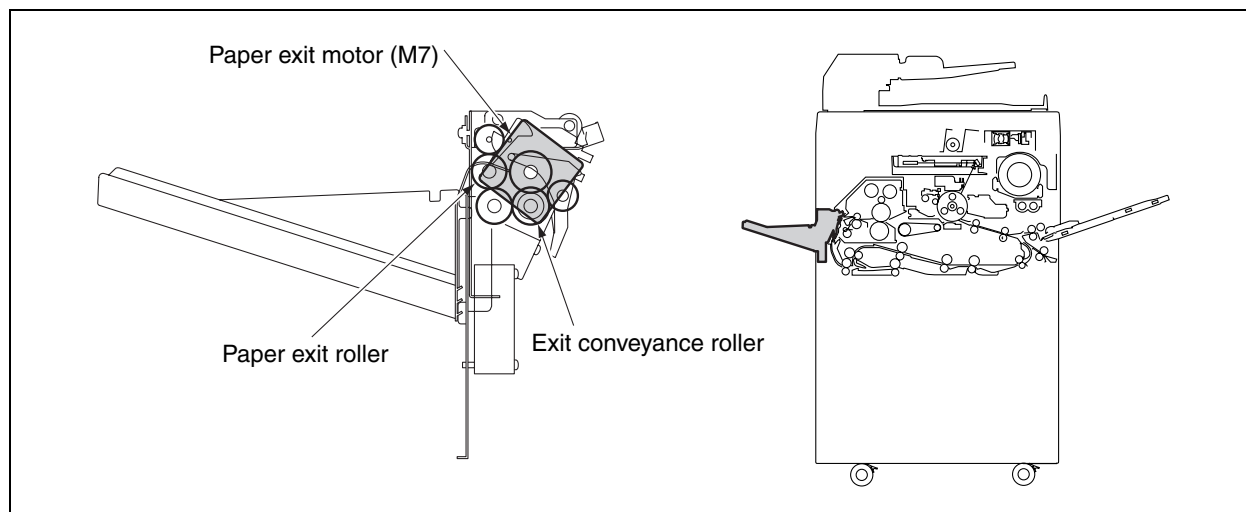
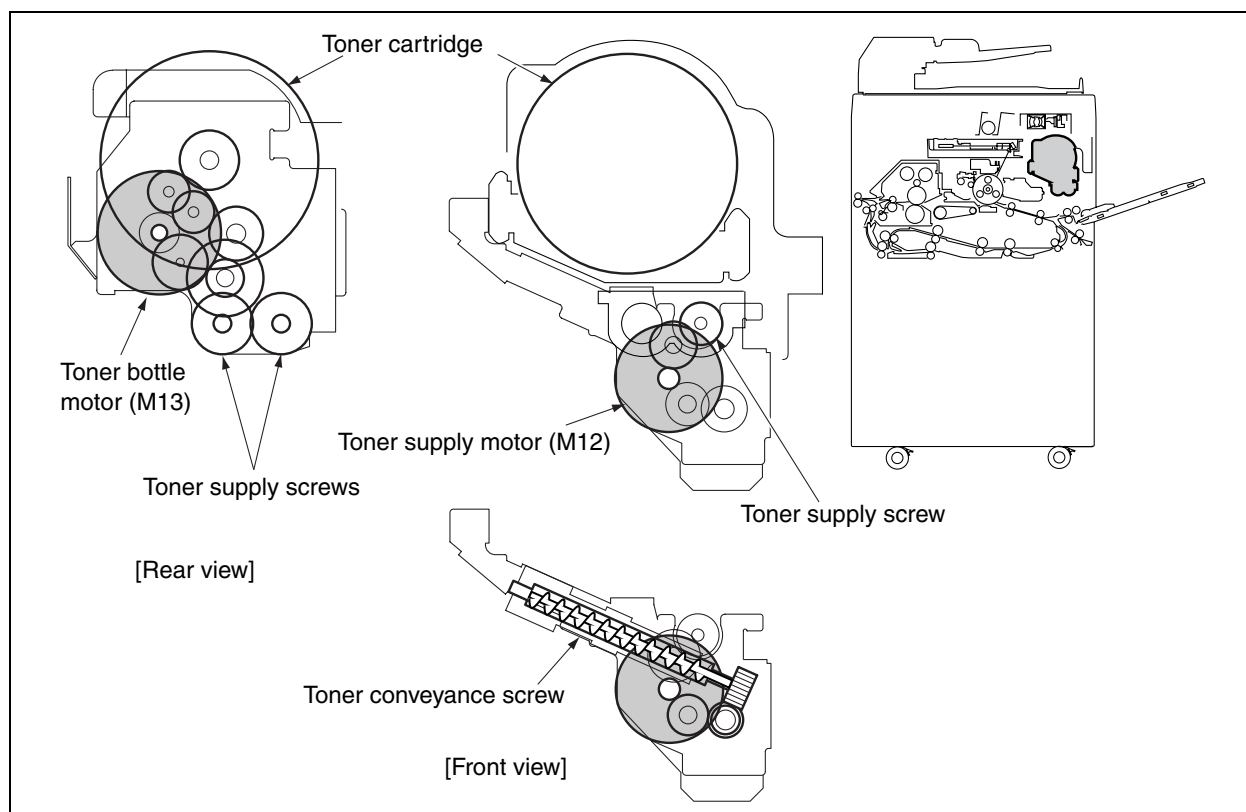
7272ma1003

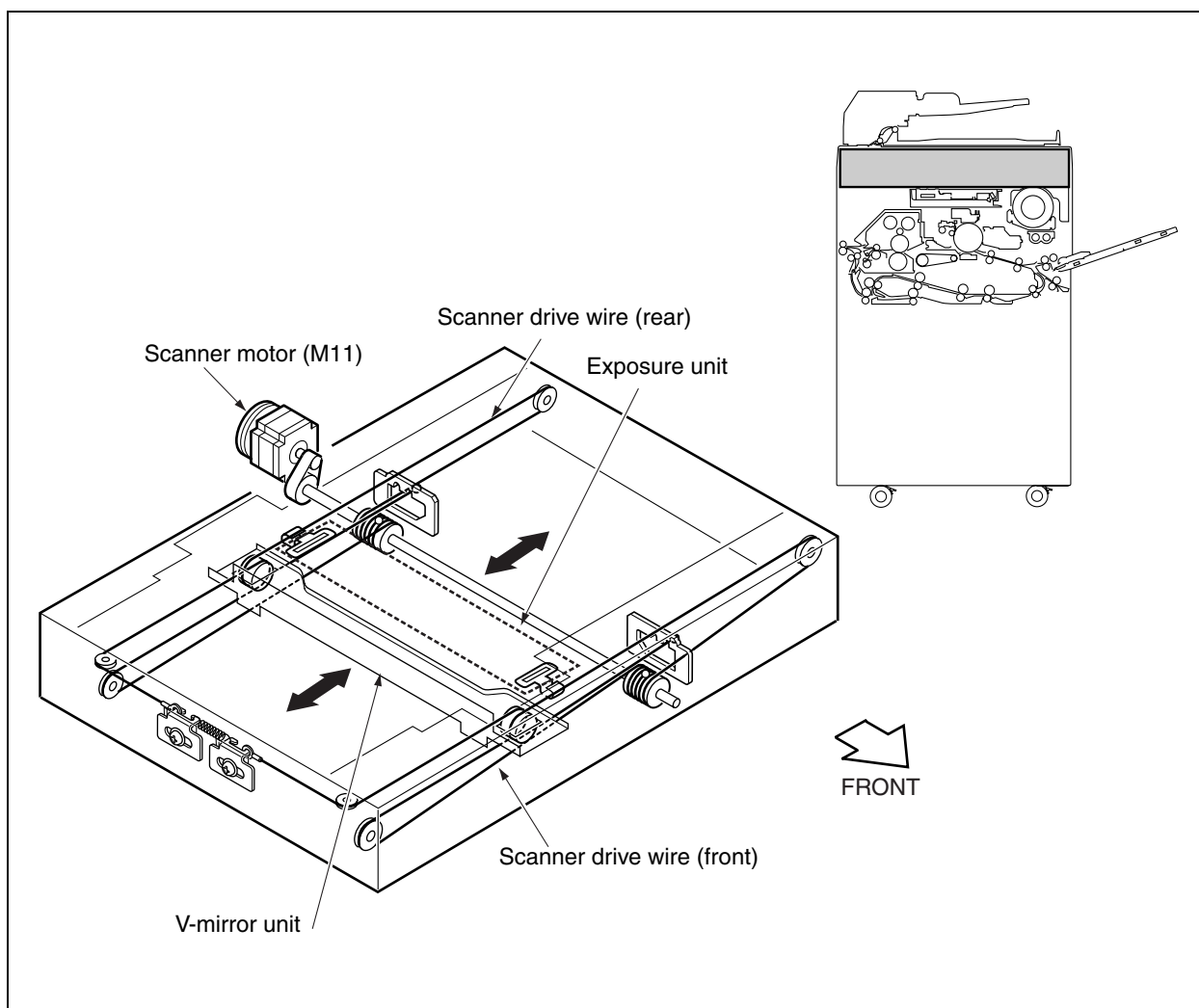
[5] By-pass Paper Feed /ADU Pre-registration Drive Section

[6] Charging and Transfer/Separation Wire Cleaning Drive Section

[7] ADU Conveyance Drive Section



[8] Paper Exit Drive Section**[9] Toner Supply Drive Section**

[10] Optics Drive Section

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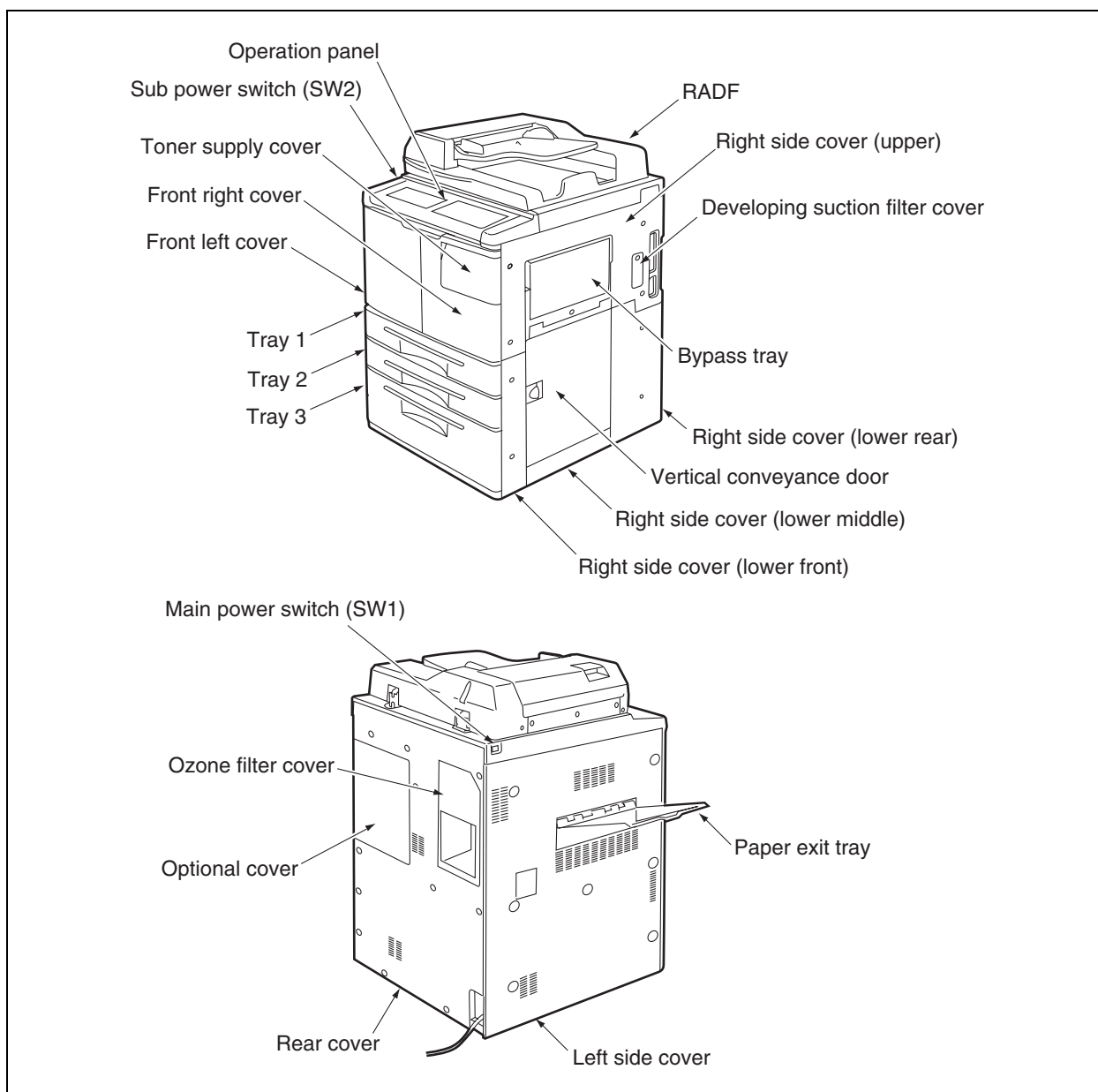
UNIT EXPLANATION

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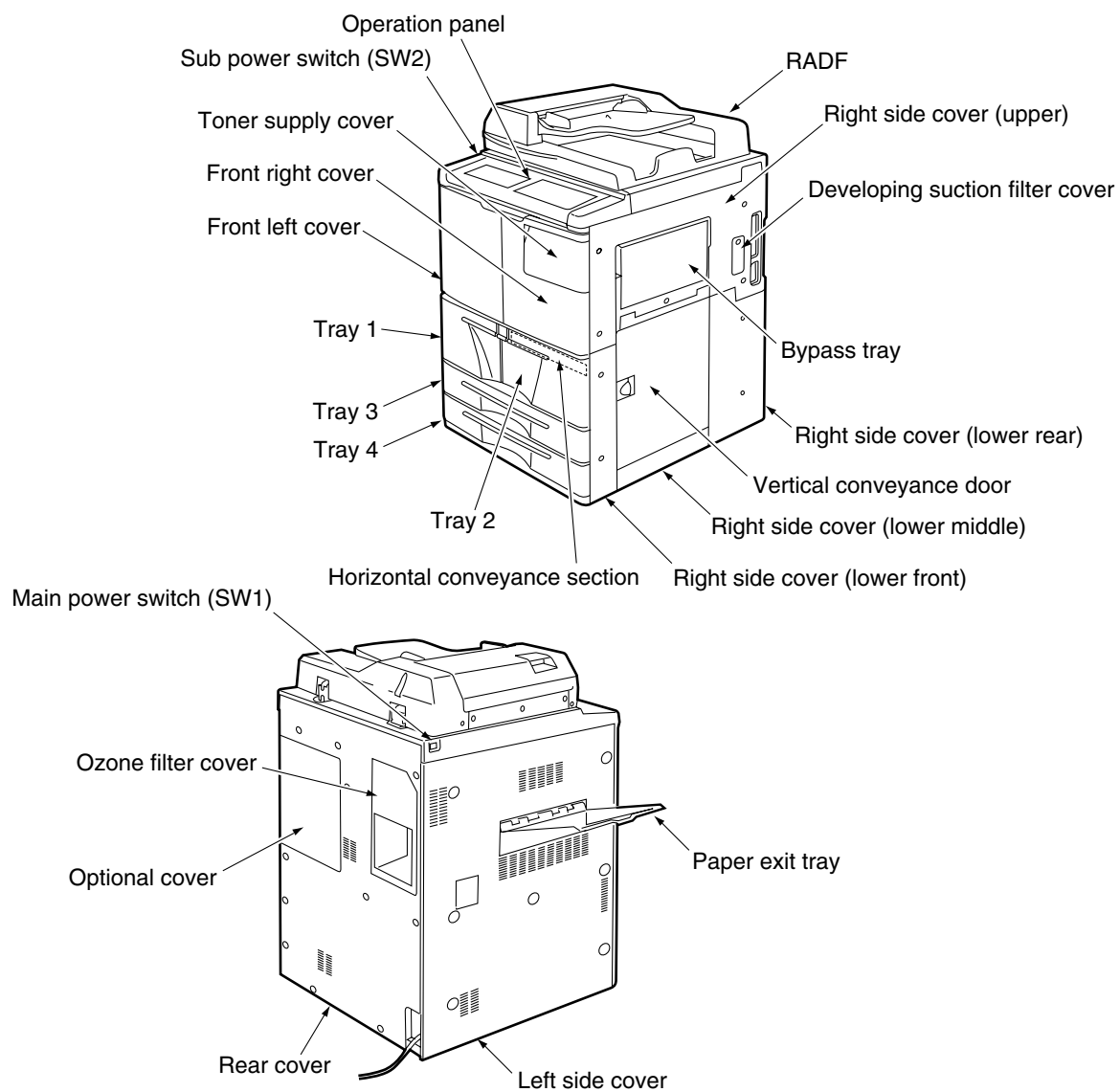
EXTERNAL SECTION

[1] Composition

In the case of the Di551/Di650



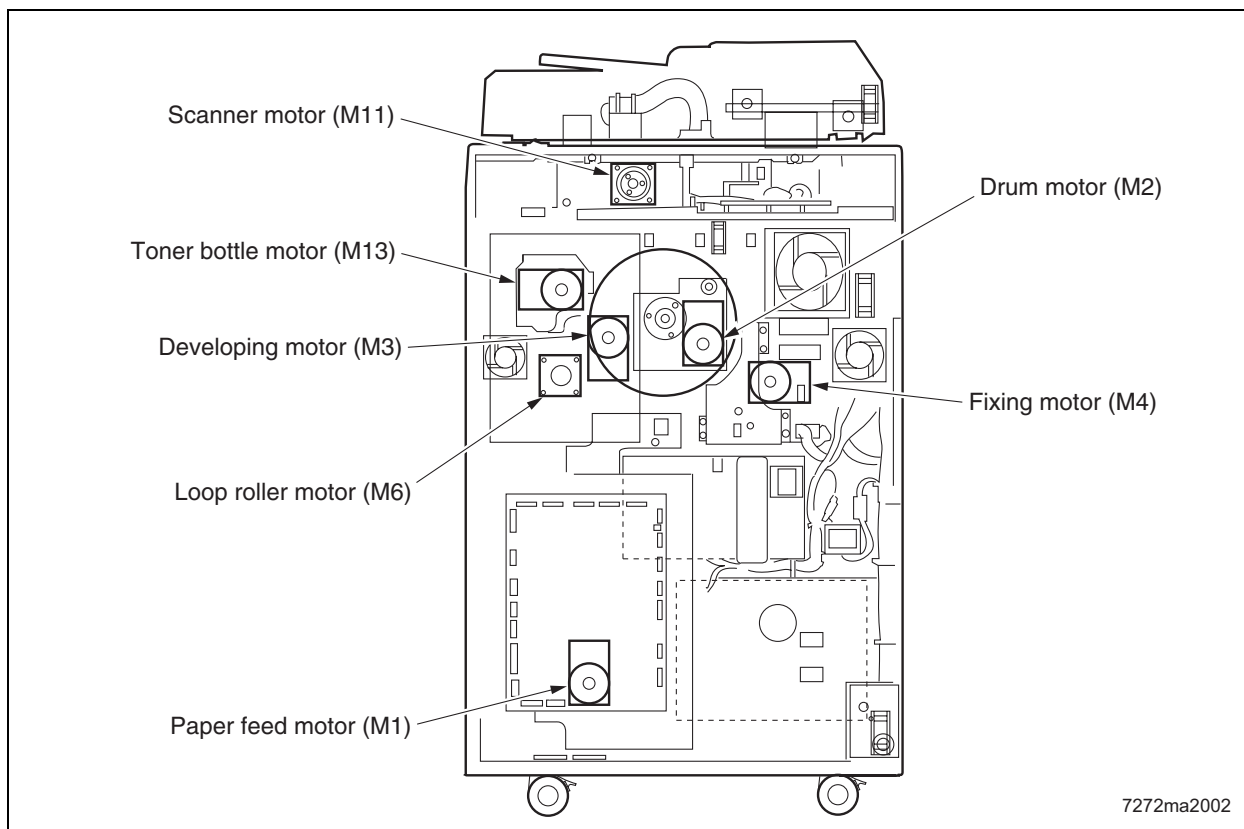
In the case of the Di5510/Di7210



7272ma2001

DRIVE SECTION

[1] Composition



[2] Mechanisms

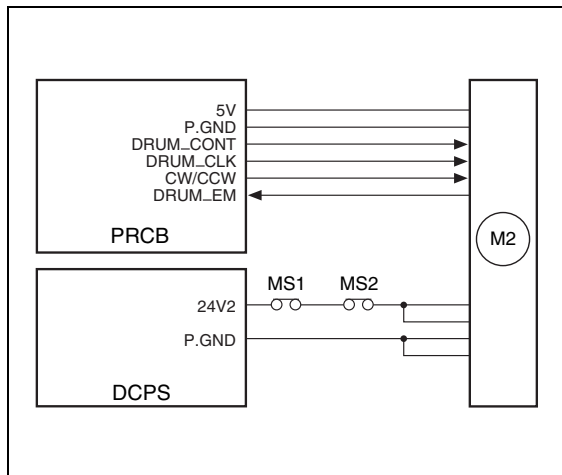
Mechanism	Driven Parts	Method
Drum drive*1	Drum, Toner guide roller, Toner conveyancescrew, and Separation claw swing	Gear drive (dedicated motor)
Developing drive*1	Developing sleeve	Gear drive (dedicated motor)
Fixing drive*1	Fixing roller (upper)	Gear drive (dedicated motor)
Paper feed drive*1	Tray 1/2/3, Vertical conveyance roller (middle/lower)	Gear drive (dedicated motor) + Belt
By-pass/loop drive*1	By-pass 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), fixing 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 (Di551/Di650)
	172.5mm/s (Di5510/Di7210)
Others	280 mm/s (Di551/Di5510)
	320 mm/s (Di650)
	345 mm/s (Di7210)

[3] 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% 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 M2)

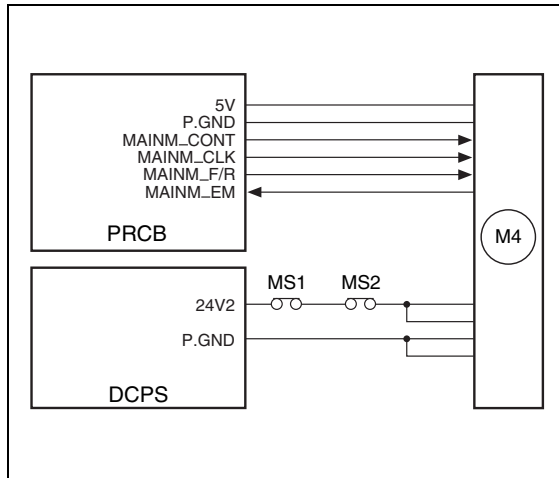
M2 (drum) rotational direction switchover signal

[L]: CW rotation

[H]: CCW rotation

- (3) DRUM_CLK (PRCB to M2)

M2 (drum) rotational speed control clock signal

[4] M4 (Fixing) Control

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

1. Operation

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

2. Signals**a. Input signal**

- (1) MAINM_EM (M4 to PRCB)

M4 (fixing) rotation error detection signal

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

[L]: Normal rotation

b. Output signals

- (1) MAINM_CONT (PRCB to M4)

M4 (fixing) ON/OFF control signal

[L]: M4 ON

[H]: M4 OFF

- (2) MAINM_F/R (PRCB to M4)

M4 (fixing) rotational direction switchover signal

[L]: CW rotation

[H]: CCW rotation

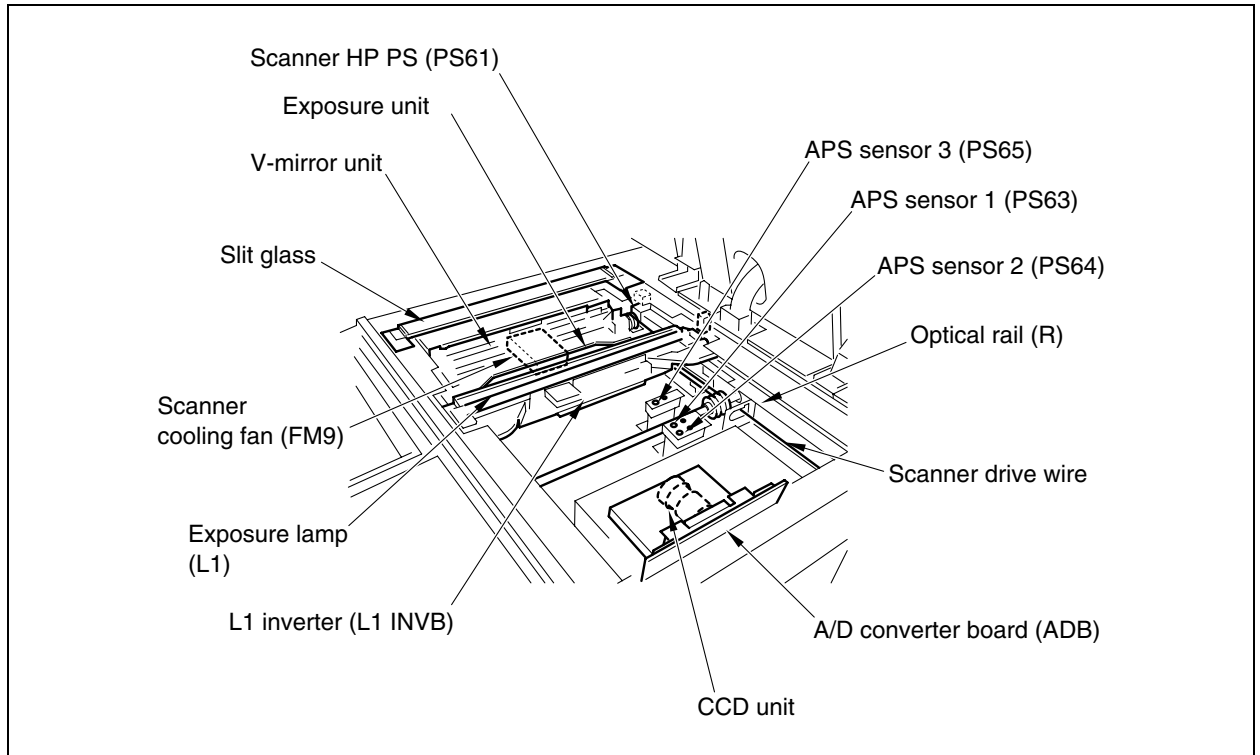
- (3) MAINM_EM (M4 to PRCB)

M4 (fixing) rotational speed control clock signal

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SCANNER SECTION

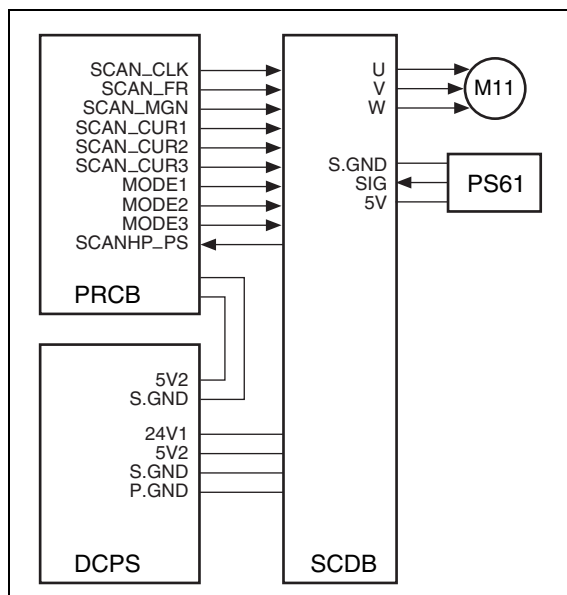
[1] Composition



[2] 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. RADF original scanning: Original is moved with light source held stationary.
Lamp power supply	Lamp cord
Scanner cooling	Cooling fan

[3] 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

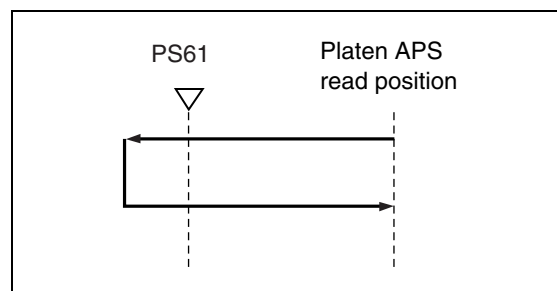
Scanning speed

Operation mode	Movement speed
Scan (1:1)	320 mm/s (Di551/Di650)
	357 mm/s (Di5510/Di7210)
Return	640 mm/s
Home position search	247 mm/s

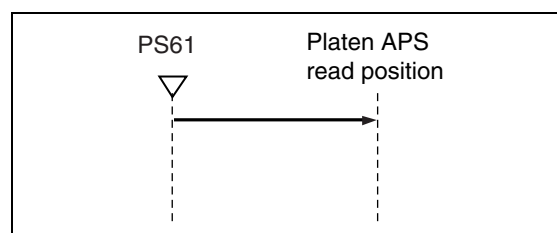
c. Exposure unit home position search

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

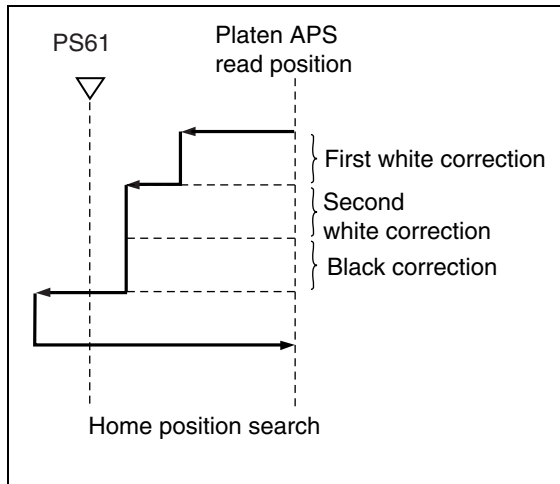
Shading correction is performed in different ways depending on whether SW2 (sub power) is ON or the START button is ON. When shading correction starts, the exposure unit is at the home position and PS61 (scanner HP) is OFF.

(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.

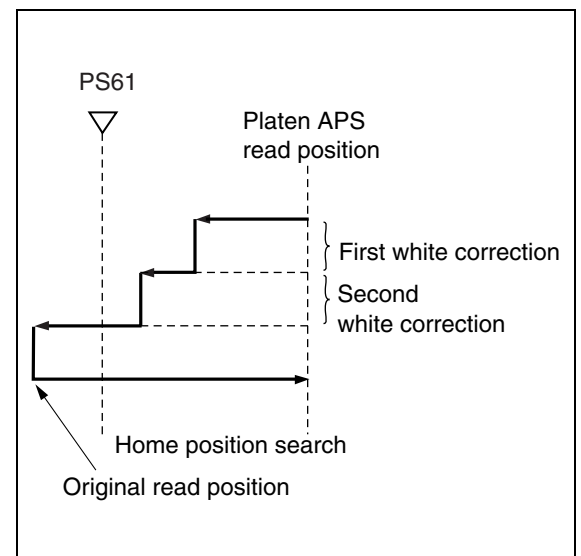


- (2) When the START button is ON
 L1 (exposure lamp) turns ON. Next, M11 (scanner) moves the exposure unit toward the paper exit side. After being driven by the specified number of steps, M11 (scanner) stops, thus reading the light reflected by the white reference plate installed underneath the glass 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 copy operation

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

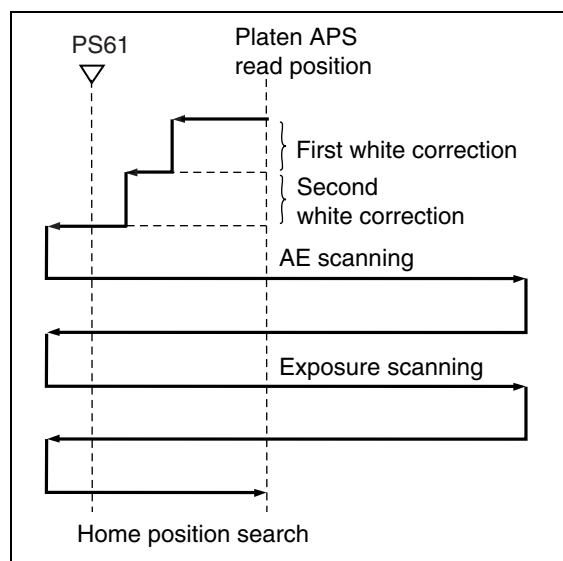
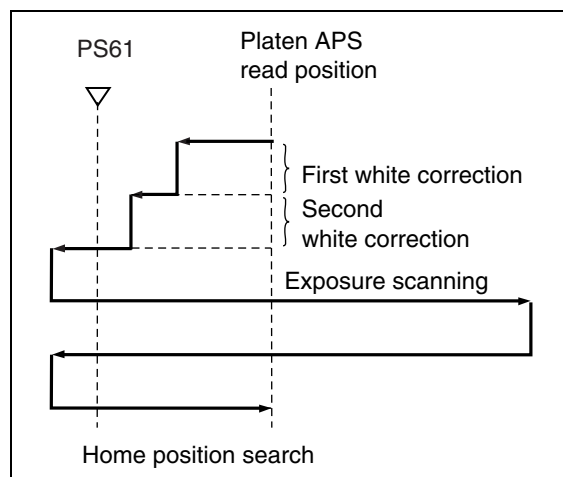
After completion of the shading correction started by pressing the START button, AE scanning is performed in the paper feed direction if the AE mode has been selected.

EE scanning distance is different between Di551/Di650 and Di5510/Di7210.

Di551/Di650: For the original paper size

Di5510/Di7210: 30mm from the leading edge of an original paper

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****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.

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

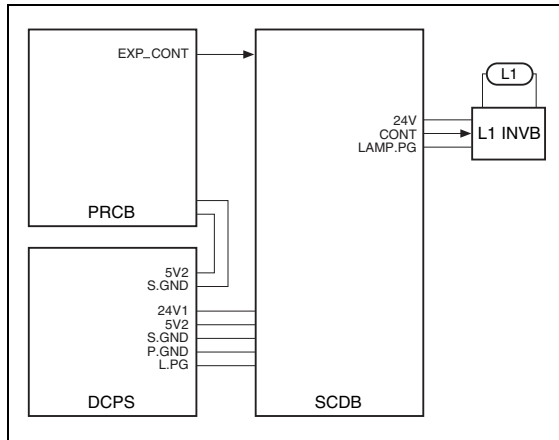
(4) SCAN_CUR1 to 3 (PRCB to SCDB)

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.

[4] Exposure control

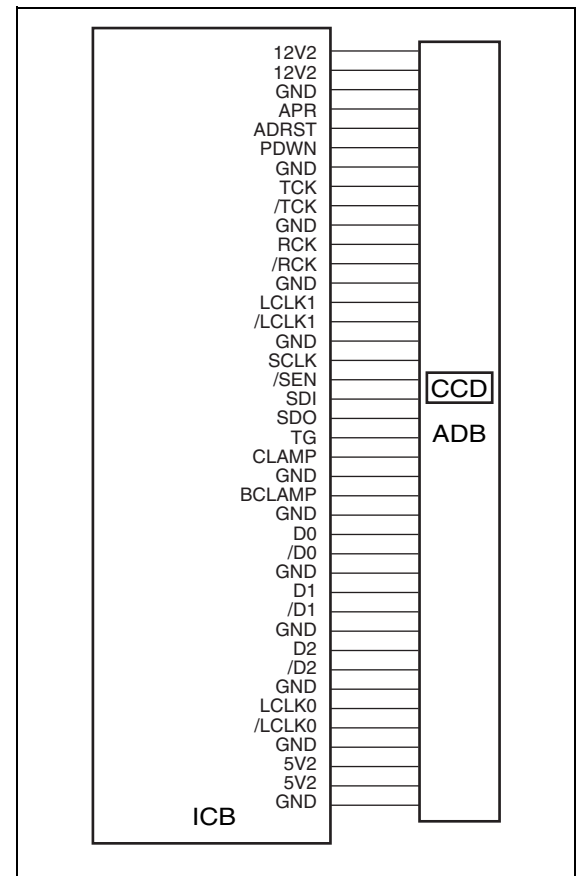
L1 (exposure lamp) is driven by L1 INVB (L1 inverter) and is controlled by PRCB (printer control board) via SCDB (scanner drive board).

1. Operation

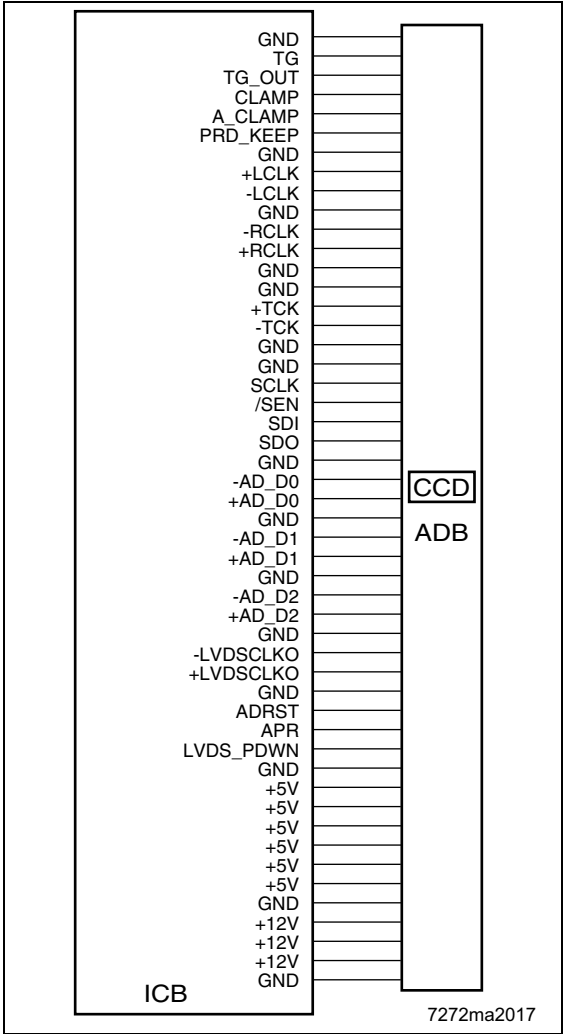
L1 (exposure lamp) is a xenon lamp driven by the inverter circuit. The xenon lamp can emit a constant light intensity and generates less heat than other lamps, so it does not require the light intensity control circuit that has been used in the existing machines, requiring no thermal protector circuit. 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

[5] Original Read Control
In the case of the Di551/Di650

In the case of the Di5510/Di7210



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:

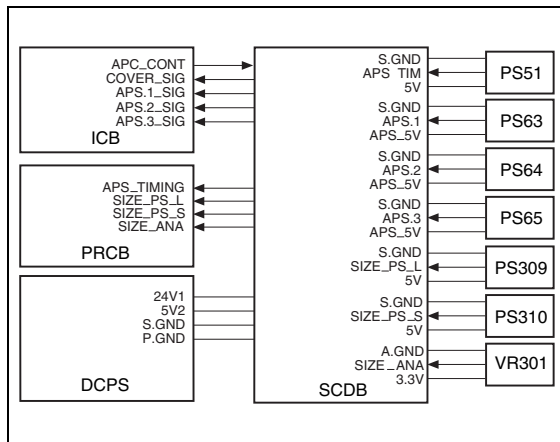
(1) Platen mode

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.

[6] 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 RADF's original size detection sensor is processed by ICB (image control board) via SCDB (scanner drive board).

1. Operation

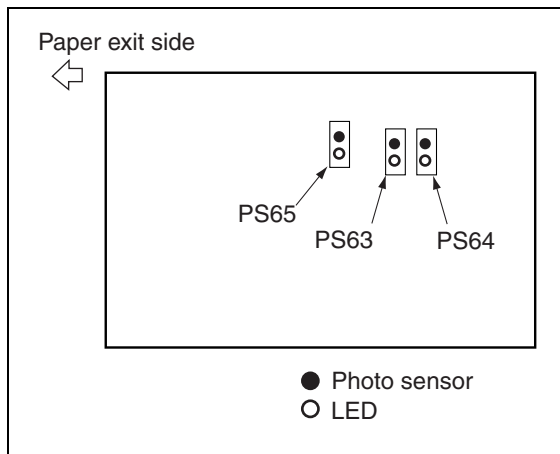
a. APS detection

(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 RADF'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.



Relationships between sensors and paper sizes are as follows:

Sensor \ Paper size	PS65	PS63	PS64
Min. size	○	○	○
B5R	●	○	○
B5	○	○	○
B4	●	●	●
A4R	●	●	○
A4	○	○	○
A3	●	●	●
8.5 x 11R	●	○	○
8.5 x 11	○	○	○
8.5 x 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 RADF mode is selected or an original is set on the RADF 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 RADF 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 RADF 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 RADF 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

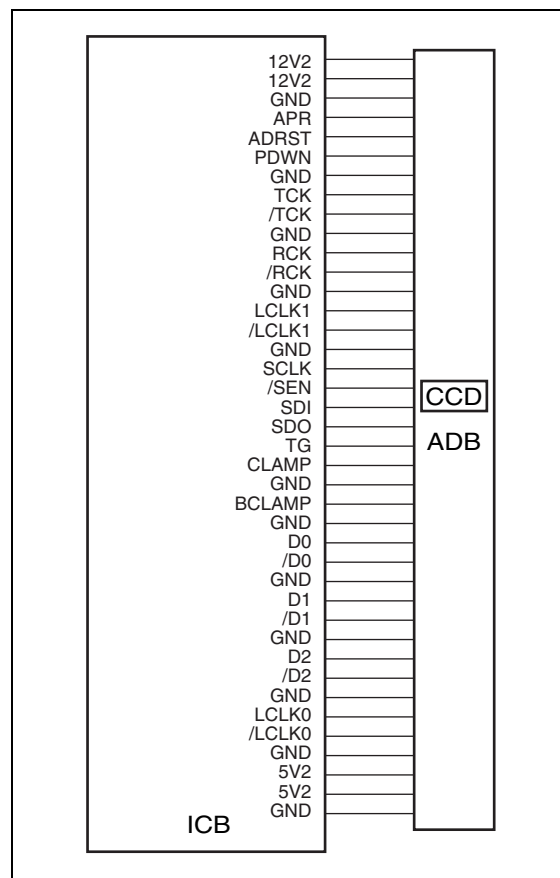
- (1) APS_TIM (PS51 to SCDB)
ADF open/close detection signal
[L]: ADF is closed.
[H]: ADF is open.
- (2) APS.1/APS.1_SIG (PS63 to SCDB to ICB)
Paper size detection signal
[L]: Paper is detected.
[H]: Paper is not detected.
- (3) APS.2/APS.2_SIG (PS64 to SCDB to ICB)
Paper size detection signal
[L]: Paper 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

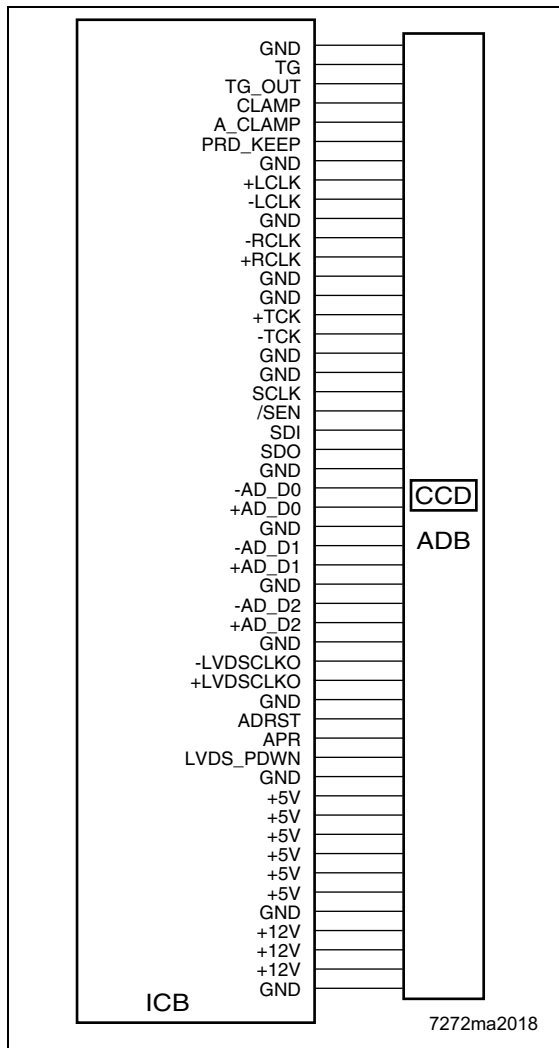
- (1) APS_CONT
This signal controls ON/OFF states of APS_5V power for driving PS63, PS64, and PS65 (APS1 to APS3).
[L]: APS_5V OFF
[H]: APS_5V ON

[7] AE Control

In the case of the Di551/Di650



In the case of the Di5510/Di7210



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. (Di551/Di650)

10 mm inside the perimeter of the scanned area within 30mm from the leading edge of an original. (Di5510/Di7210)

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

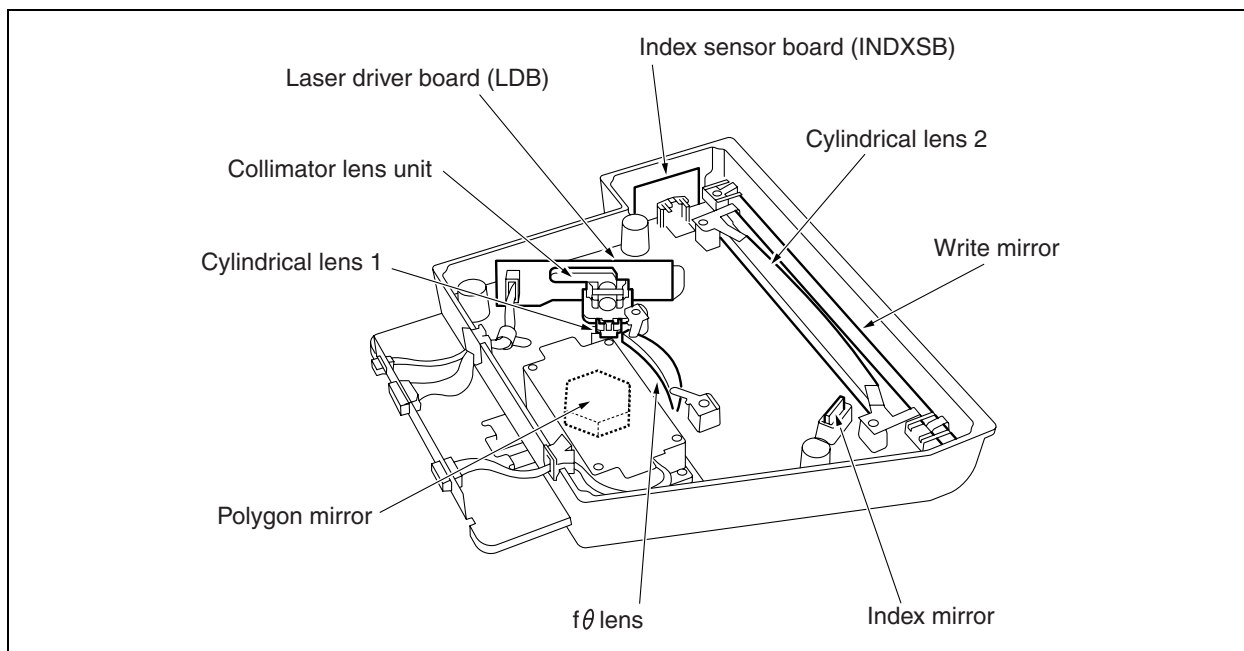
2) Sub-scanning direction

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

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WRITE UNIT

[1] Composition

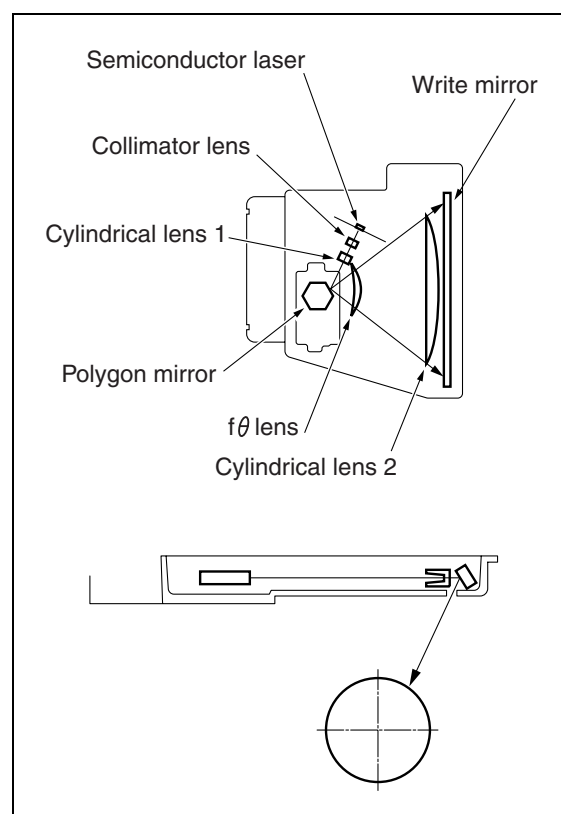


[2] Mechanisms

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

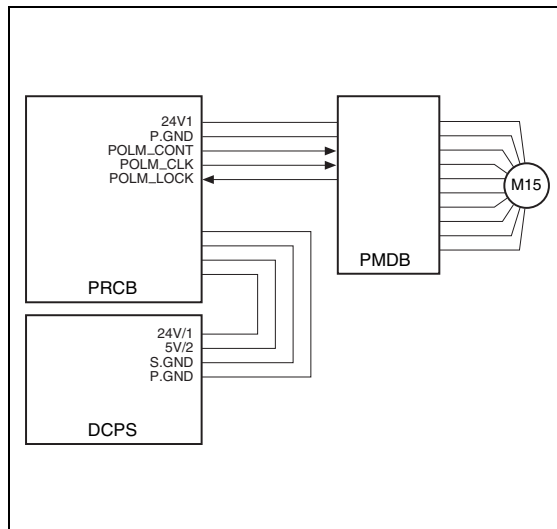
The light output from the semiconductor laser is radiated onto the OPC drum via the collimator lens, cylindrical lens 1, polygon mirror, $f\theta$ lens, cylindrical lens 2, and write mirror.



*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.

[3] 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:

In the case of the Di551/Di650

Rotational speed	Linear speed	Di551	Di650
37,795 rpm	320 mm/s	-	normal
33,070 rpm	280 mm/s	normal	-
21,850 rpm	185 mm/s	thick paper	

In the case of the Di5510/Di7210

Rotational speed	Linear speed	Di5510	Di7210
40,748 rpm	345 mm/s	-	normal
33,070 rpm	280 mm/s	normal	-
40,748 rpm	172.5 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

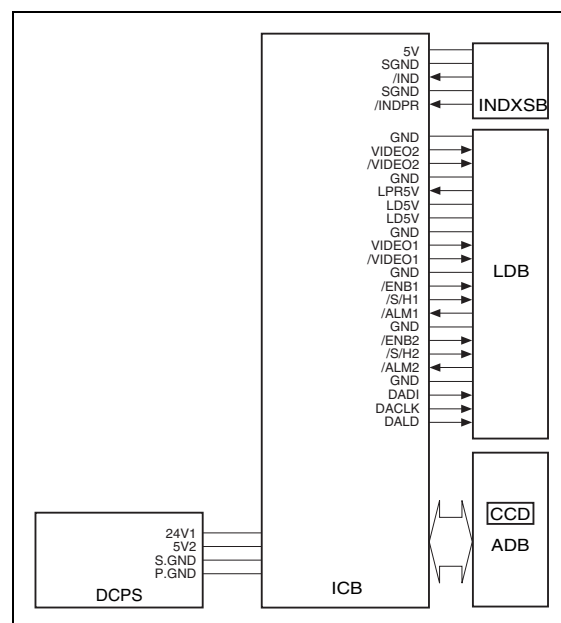
[H]: M15 OFF

(2) POLM_CLK (PRCB to PMDB)

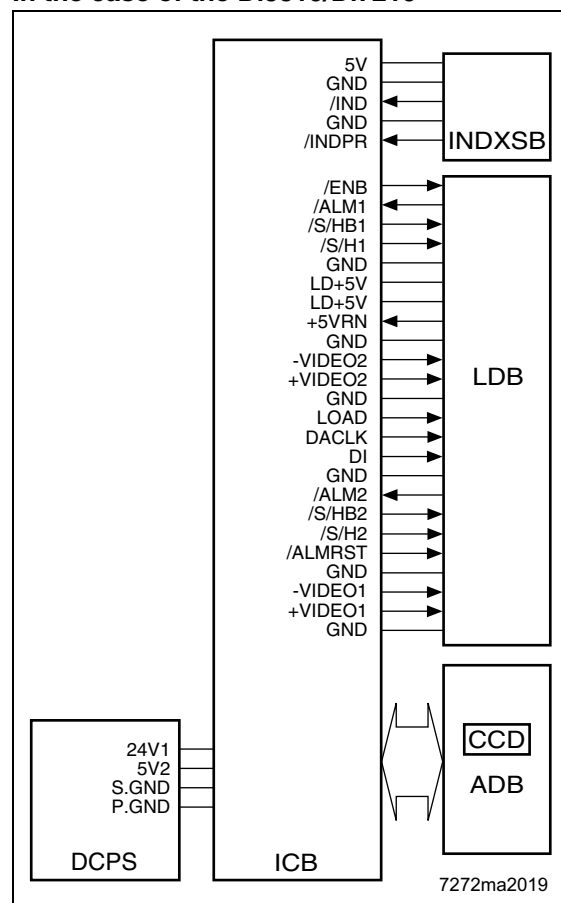
This is a reference clock signal for PLL-controlling M15 in PMDB.

[4] Image Write Control

In the case of the Di551/Di650



In the case of the Di5510/Di7210



7272ma2019

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 INDXSB (index sensor board). The ICB has an E-RDH (electronic 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) AOC (Automatic Offset Control)
The IC on the ADB (A/D converter board) 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) AGC (Automatic Gain Control)
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 ICB (image control board) sends image data on a pixel basis to LDB (laser driver board) 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) MPC (Maximum Power Control)
ICB (image control board) 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) APC (Automatic Power Control)

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

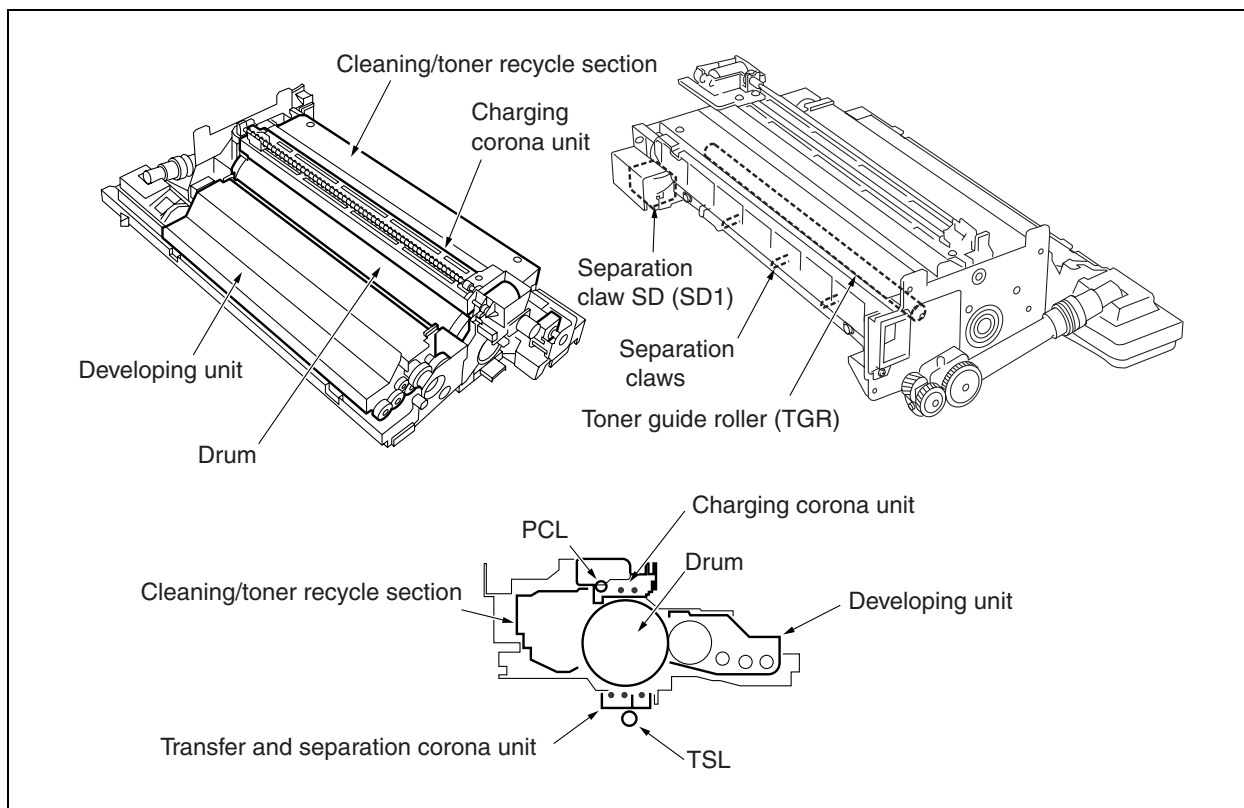
- (1) /IND (INDXSB to ICB)
This is an index signal used to detect deviation of main scanning.
- (2) /INDPR (INDXSB to ICB)
This signal monitors the INDXSB (index sensor board) power supply.
[H]: Abnormal
[L]: Normal
- (3) /ALM1 (LDB to ICB)
This signal indicates the state of the laser 1 drive current.
[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
- (7) DACLK (ICB to LDB)
LDB (laser driver board) MPC value data transmission clock signal
- (8) DADI (ICB to LDB)
LDB (laser driver board) signal for MPC
- (9) DALD (ICB to LDB)
LDB (laser driver board) MPC value memory command signal
- (10) /S/HB1 (ICB to LDB)
Sampling signal for laser bias current control (for laser 1) (Di5510/Di7210 only)
- (11) /S/HB2 (ICB to LDB)
Sampling signal for laser bias current control (for laser 2) (Di5510/Di7210 only)

DRUM UNIT

[1] Composition



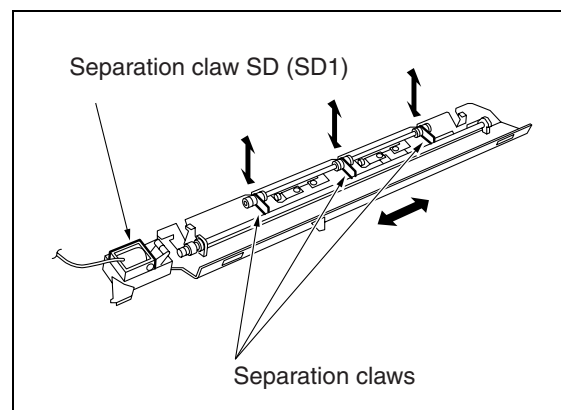
[2] Mechanisms

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

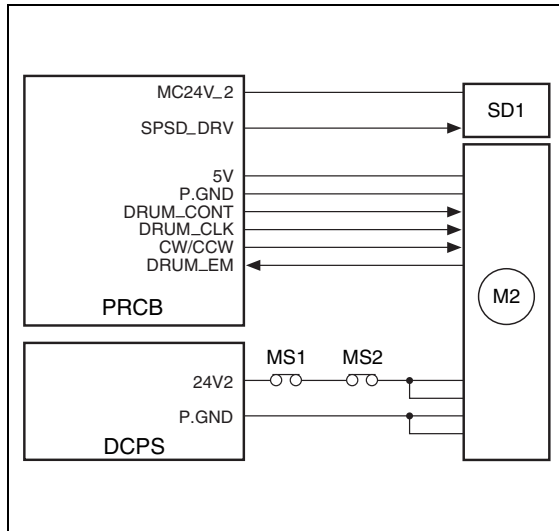
- To prevent paper jamming, three separation claws are used to separate paper from the drum forcibly. These separation claws are pressed against the drum or detached from it by turning ON/OFF the separation claw solenoid (SD1).
- To prevent a specific part of image-copied paper from being stained and 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.

[3] 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

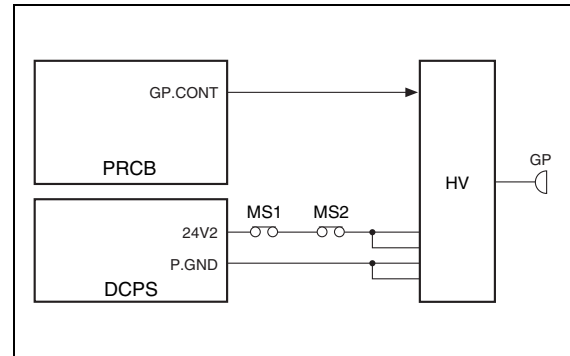
(1) SPSPD_DRV (PRCB to DCDB)

SD1 (separation claw) drive control signal

[L]: SD1 ON

[H]: SD1 OFF

[4] 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)

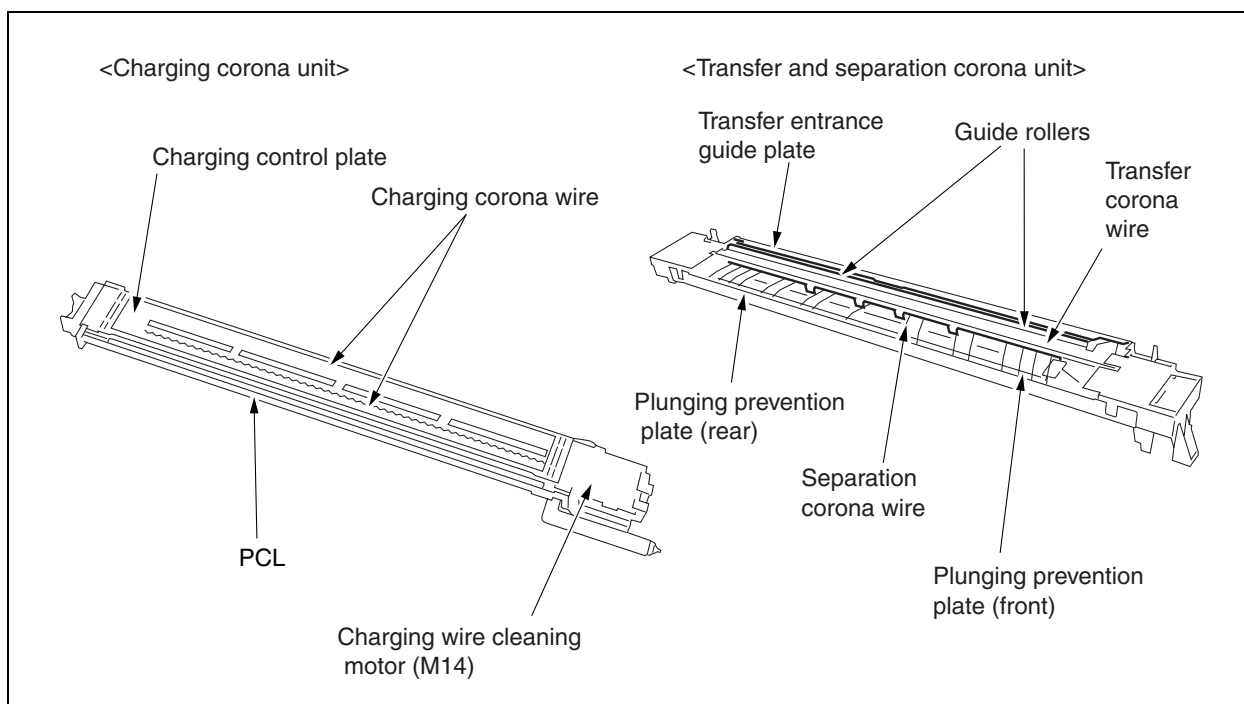
This signal controls turning ON/OFF the voltage application to the paper guide plate.

[L]: Voltage applied

[H]: Voltage not applied

CORONA UNIT SECTION

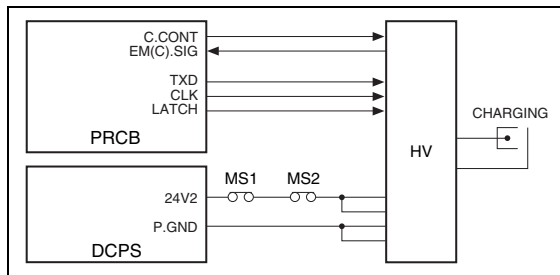
[1] Composition



[2] Mechanisms

Mechanism	Method
Charging	Scorotron (DC negative corona discharge) Discharging wire: Tungsten, 0.06 mm dia. (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 dia., with automatic wire cleaner
Separation	AC/DC corona discharge Discharging wire: Oxide film tungsten, 0.06 mm dia., with automatic wire cleaner

[3] 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

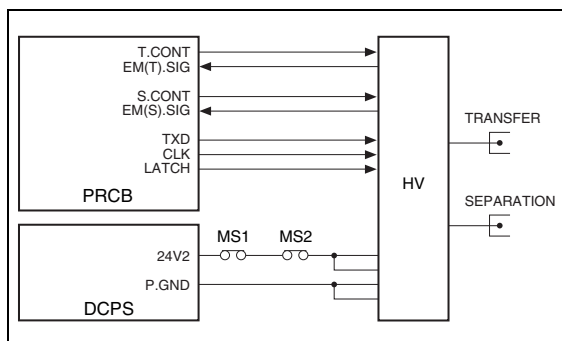
(3) CLK (PRCB to HV)

Clock signal for TXD

(4) LATCH (PRCB to HV)

Latch signal for TXD

[4] Transfer/Separation Control



The voltages applied to the transfer wire and separation wire are 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

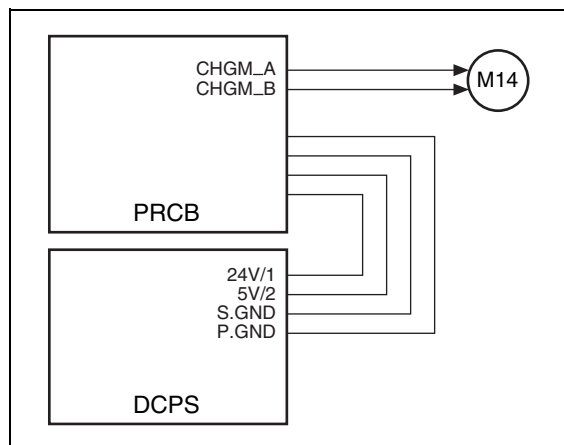
[H]: Transfer voltage OFF

(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

[5] 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 fixing 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).

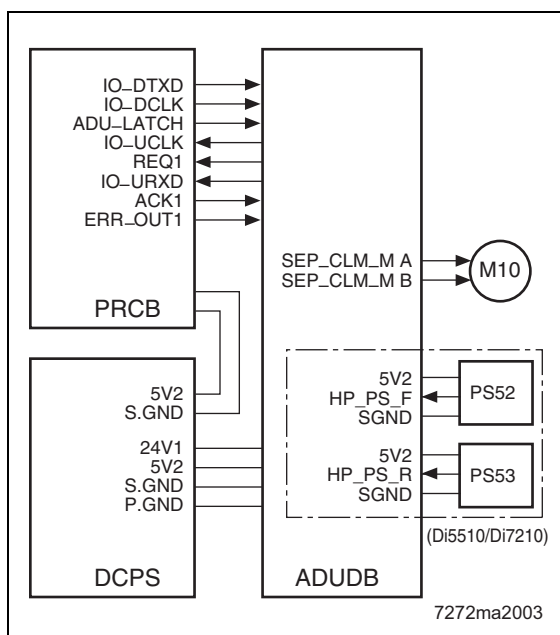
2. Signals**a. Output signal****(1) CHGM_A, B (PRCB to M14)**

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
Backwardstroke of cleaning	L	H
Stop	L	L

[6] 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 fixing 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). (Di551/Di650)

The rotational direction of M10 and the position of the cleaner are detected by turning on/off the PS52 (transfer/separation PS/F) and PS53 (transfer/separation PS/R). (Di5510/Di7210)

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
- (4) HP_PS_F (PS52 to ADUDB)
Home position detection signal of transfer/separation cleaning member
It becomes L when transfer/separation cleaning member reaches the home position.
- (5) HP_PS_R (PS53 to ADUDB)
Reverse position detection signal of transfer/separation cleaning member
It becomes L when transfer/separation cleaning member reaches the reverse position.

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)

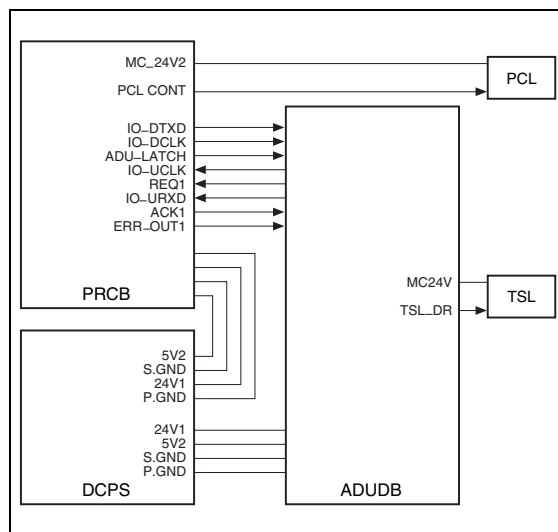
Latch signal for IO_DTXD signal

(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.

[7] PCL/TSL Control

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

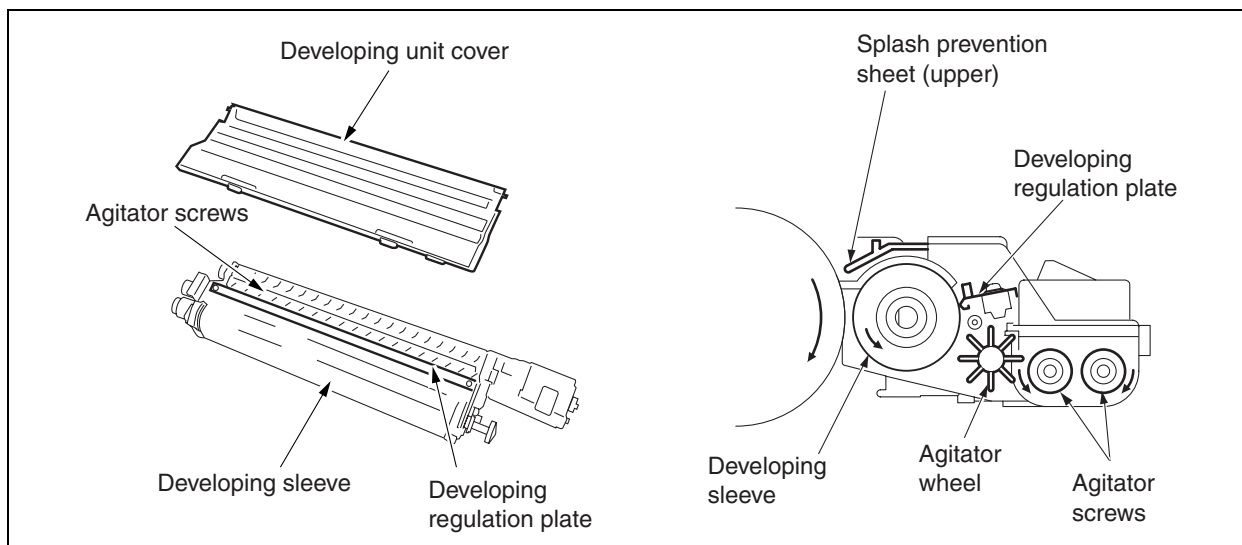
TSL ON/OFF control signal

[L]: TSL ON

[H]: TSL OFF

DEVELOPING UNIT

[1] Composition



[2] Mechanisms

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

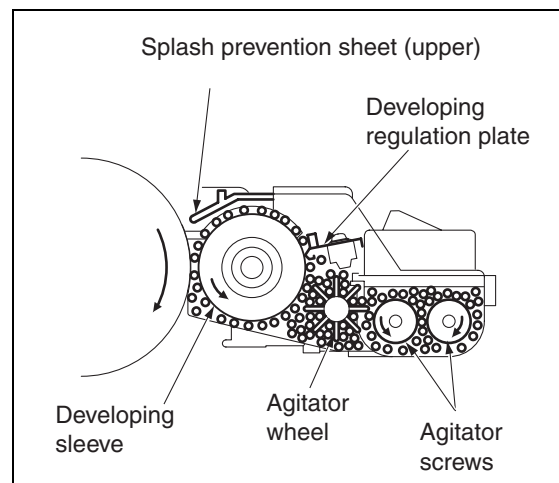
1. Developing drive

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

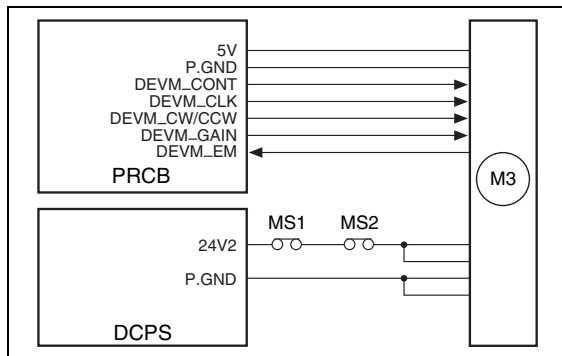
- Developing sleeve
- Agitator wheel
- Agitator screws

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.



[3] 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

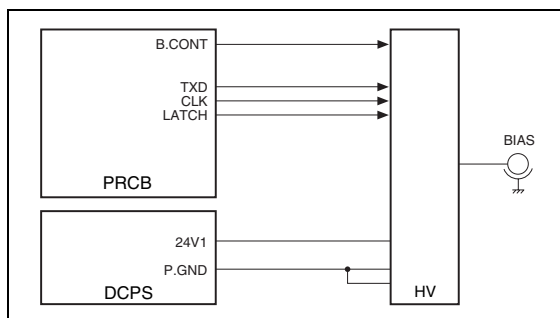
a. Input signals

- (1) DEVM_EM (M3 to PRCB)
M3 (developing) abnormality detection signal
[H] Abnormal rotation (when motor speed changes by 6.5% 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

[4] 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

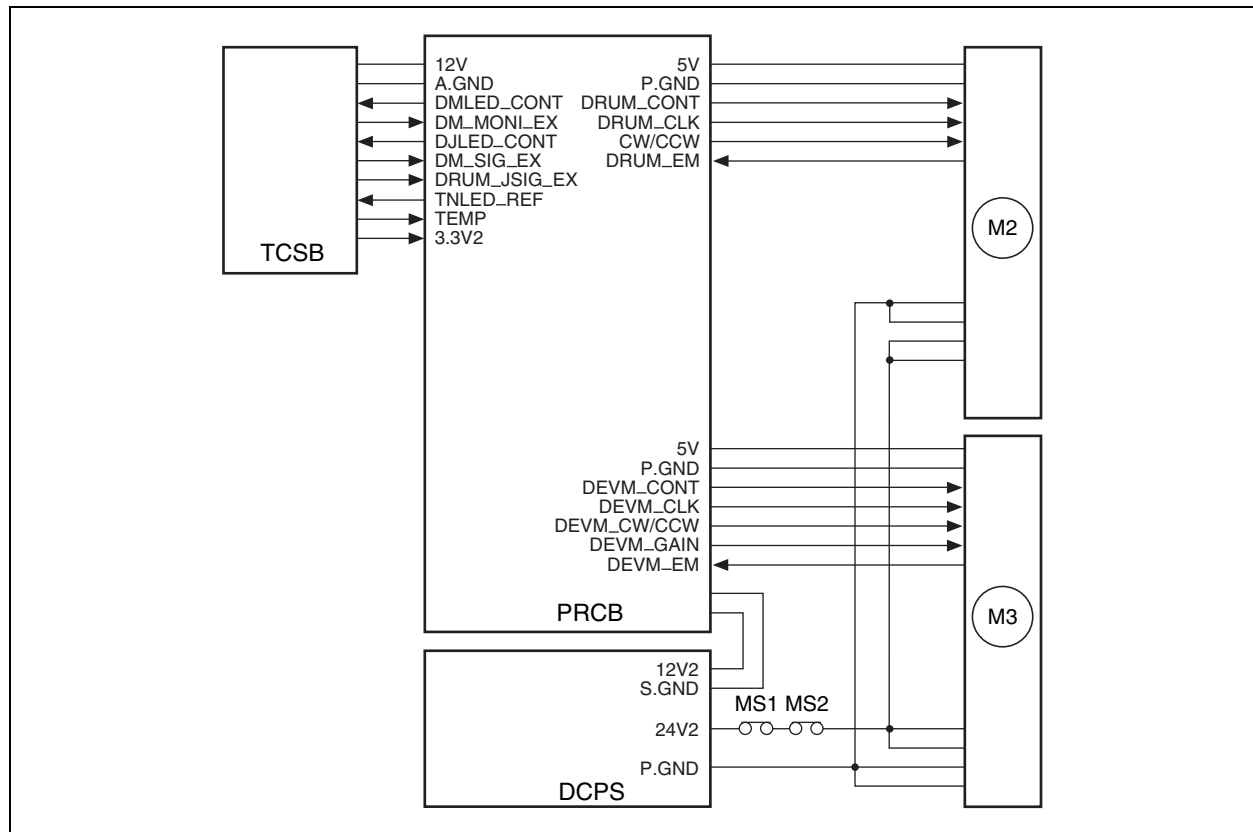
(1) B.CONT (PRCB to HV)

Developing bias output ON/OFF control signal.

[L]: Developing bias ON

[H]: Developing bias OFF

[5] Dmax Control



Dmax 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 control is to adjust the maximum density to the reference level for each machine.

a. Dmax 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, then each density is read by the Dmax 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

- When the fixing temperature is lower than 50°C at SW2 (sub power) ON
- Every 10,000 prints, upon completion of the last job.

2. Signals

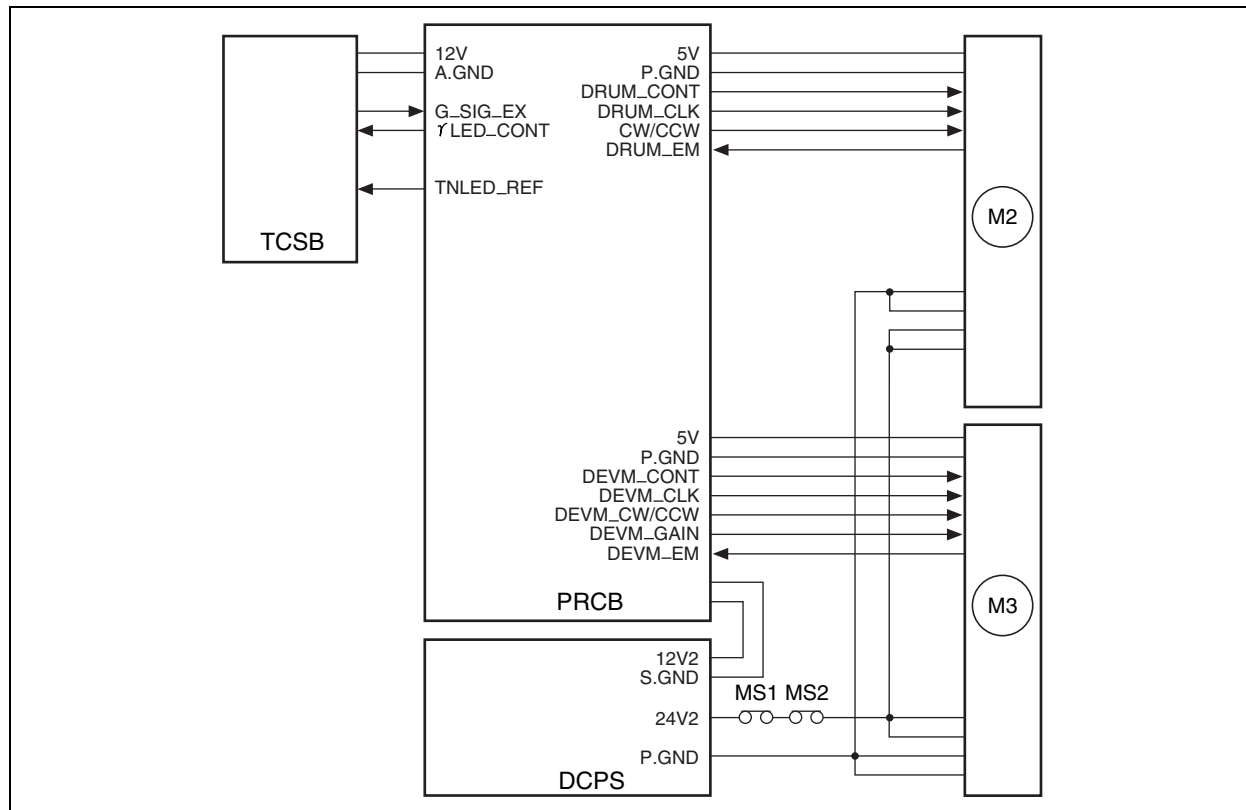
a. Input signals

- (1) DM_SIG_EX (TCSB to PRCB)
Output voltage of Dmax 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 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 correction
- (3) DRUM_JSIG_EX (TCSB to PRCB)
This signal detects a jam caused by paper wrap-
ping 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 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 MONI
signal becomes 1.9 V.
- (3) DJLED_CONT (PRCB to TCSB)
JAM LED ON/OFF control signal
[L]: LED ON
[H]: LED OFF

[6] 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.

(1) Method

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

(2) Timing

- When the fixing temperature is lower than 50°C at SW2 (sub power) ON
- 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.

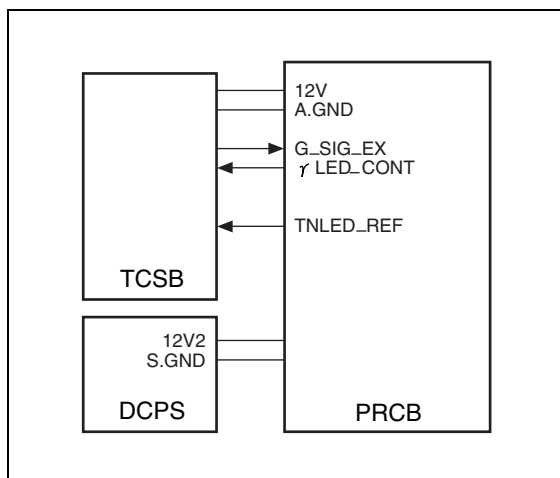
b. Output signal

(1) γ LED CONT (PRCB to TCSB)

Gradation detection LED ON/OFF control signal

[L]: LED ON

[H]: LED OFF

[7] Dot Diameter Correction Control

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

1. Operation

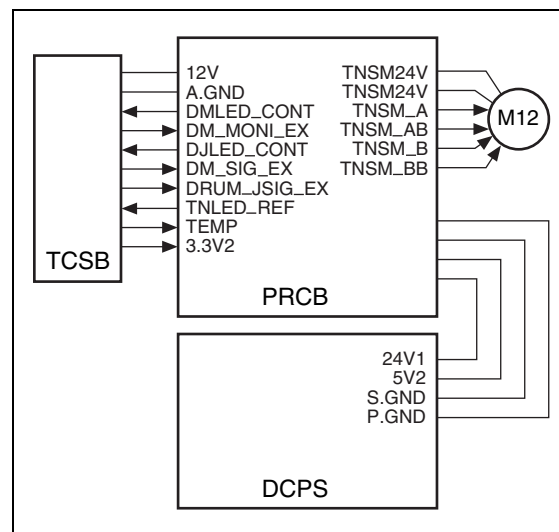
Dot diameter correction is performed to prevent the 1-dot laser beam diameter from fluctuating due to the change in developing characteristics (caused by deteriorated developer) and soil in the write unit.

(1) 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.

(2) Timing

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

[8] 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**

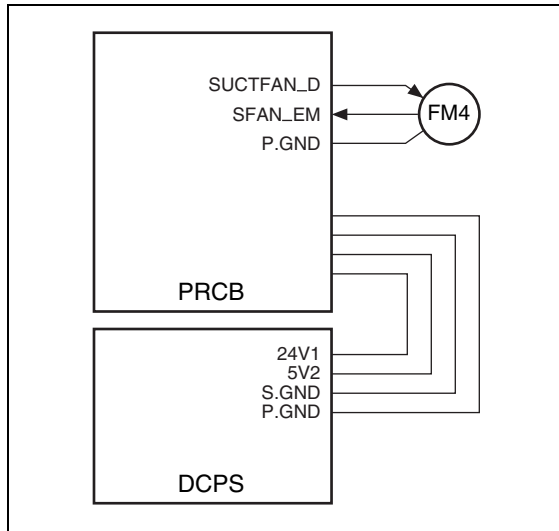
The reference patch density is detected using the patch detection method of TCSB (toner control sensor board) and the corresponding analog voltage signal is output to PRCB (printer control board), thus detecting the toner density. The PRCB compares the detected voltage with the reference value to determine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

[9] 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)**

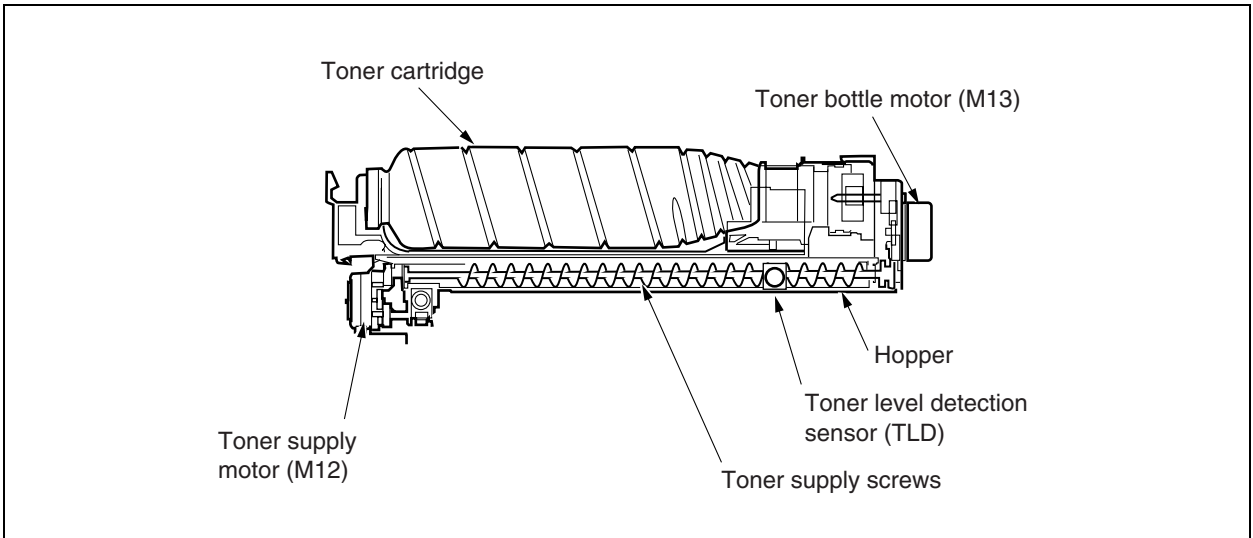
FM4 (developing suction) drive signal

[L]: FM4 OFF

[H]: FM4 ON

TONER SUPPLY UNIT

[1] Composition



[2] Mechanisms

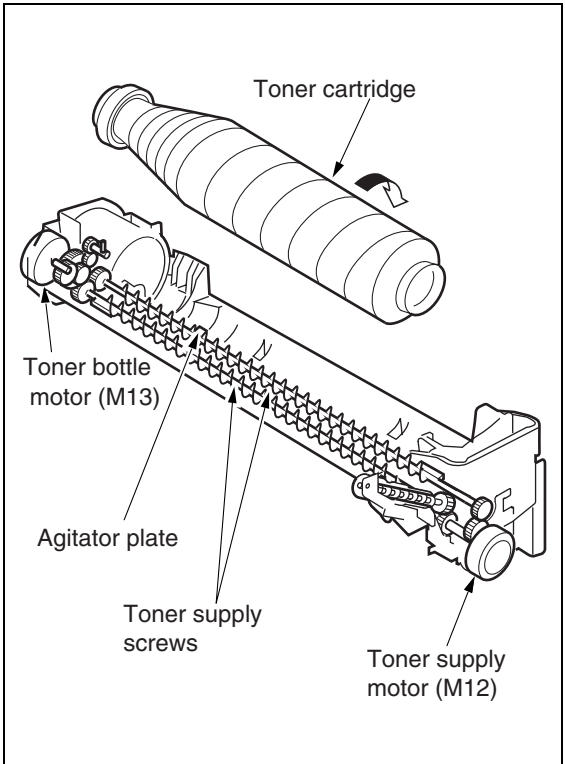
Mechanism	Method
Toner supply	Supply by screw
Toner level detection	Piezoelectric method 100 ± 25 g
Toner agitation*1	Agitator plate
Toner cartridge*2	Rotary cartridge Capacity: 1000 g
Toner leakage prevention	Toner supply shutter

*1 Toner agitation

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

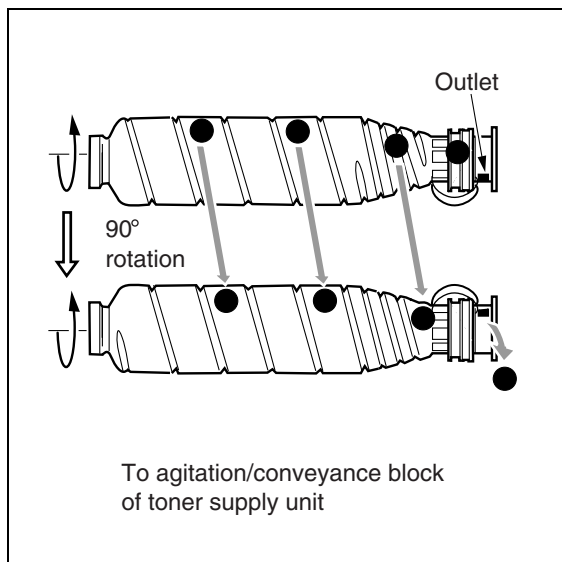
- Toner supply motor (M12): Drives the toner supply screws.
- Toner bottle motor (M13): Drives the toner cartridge.

The agitator plates prevent toner from solidifying and collecting on the toner level detection sensor (TLD).

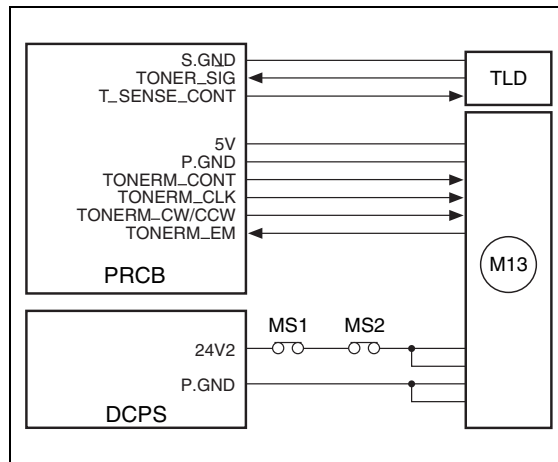


*2 Toner cartridge

When the toner cartridge rotates, toner is fed to the outlet of the cartridge through the spiral groove on the surface of the toner cartridge. When the outlet of the cartridge faces downward, toner flows out of the outlet into the agitation/conveyance section of the toner supply unit.



[3] 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 cartridge to the toner supply unit.

d. Detection of no toner state in toner cartridge

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 cartridge is assumed to be empty.

2. Signals

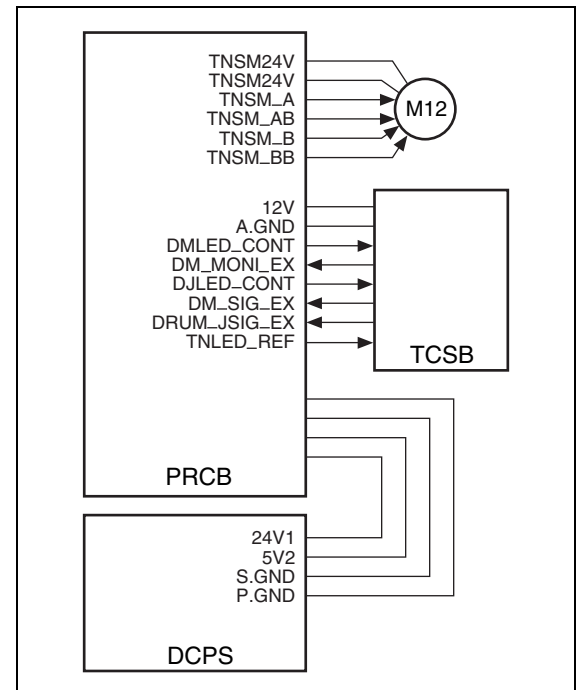
a. Input signals

- (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

[4] 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 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).

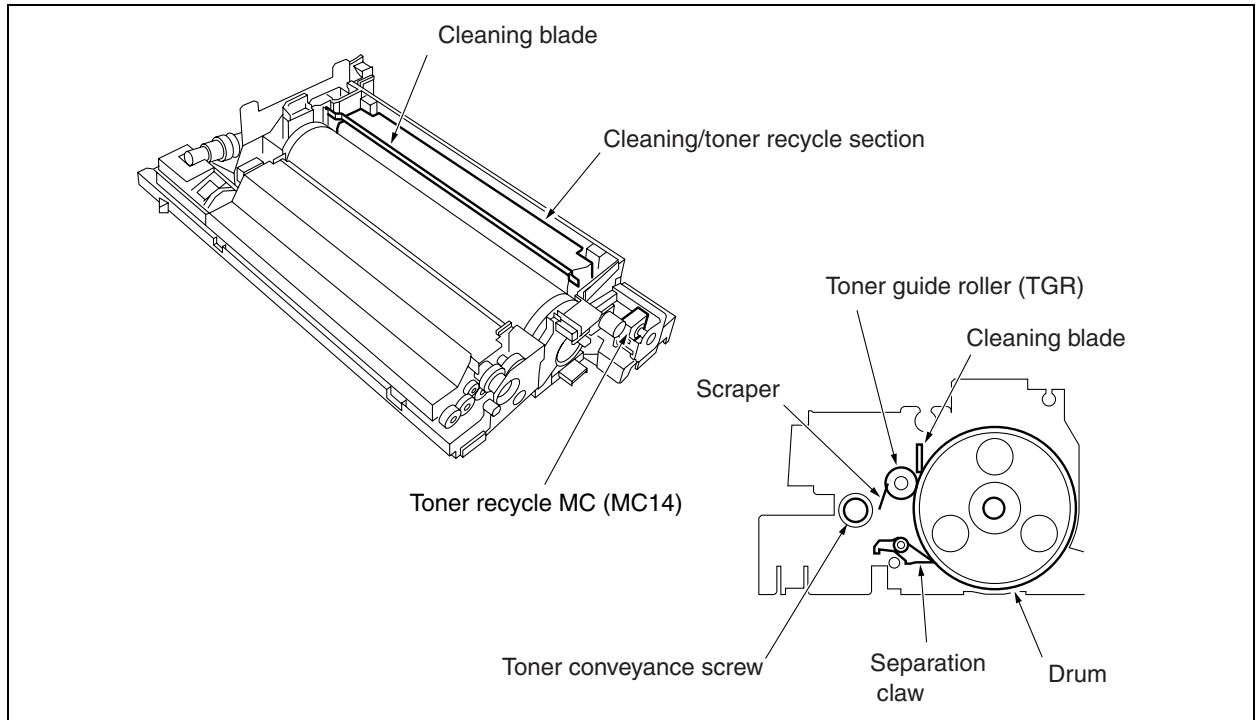
b. Toner supply

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 (sec.)
A3	1.30
B4	0.98
F4	0.98
A4	0.65
B5	0.49
B5R	0.49
A5	0.33
11 X 17	1.30
8.5 X 14	0.98
8.5 X 11	0.65
5.5 X 8.5	0.49

CLEANING/TONER RECYCLE UNIT

[1] Composition



[2] Mechanisms

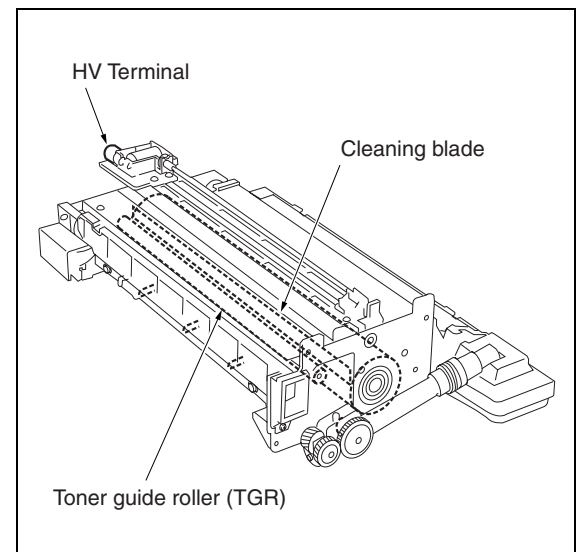
Mechanism	Method
Drum cleaning	Cleaning blade
Toner collection *1	Toner guide roller (TGR)
Toner recycle	Screw conveyance + Toner recycle MC (MC14)

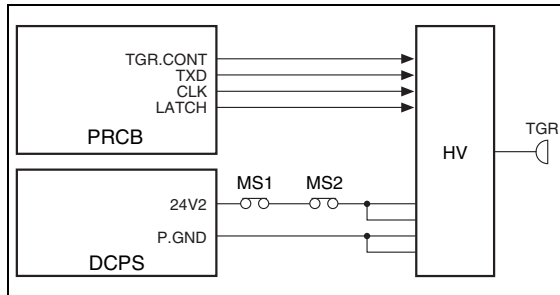
*1 Toner collection

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.



[3] TGR (Toner Guide Roller) 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.

[4] Other Control

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

a. 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, etc. When this mode is used, toner adheres on the drum and then the blade cleans the drum, preventing blade peeling.

b. 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 and then cleaned.

Di551/Di650: once every 10 copies

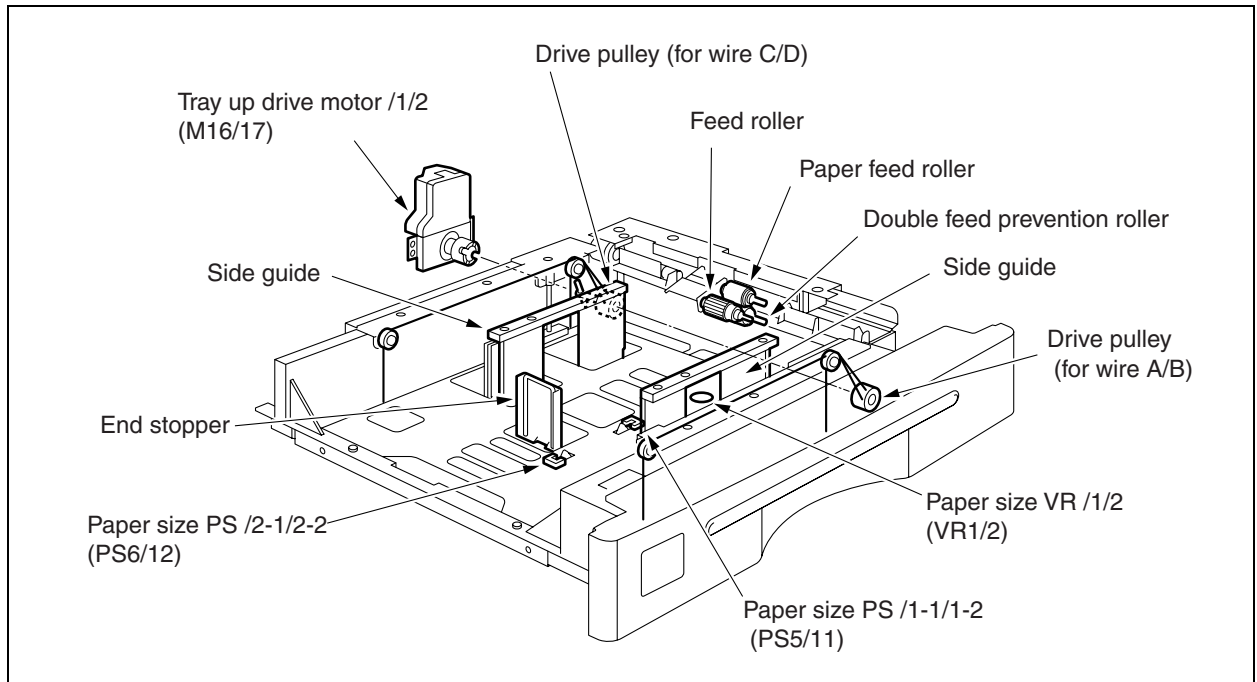
Di5510/Di7210: once every 12 copies

* Changeable with the 25-mode DIP SW

TRAY 1/2 (Di551/Di650), TRAY 3/4 (Di5510/Di7210) PAPER FEED UNIT

Caution: Tray 1/2 of Di551/Di650 and tray 3/4 of Di5510/Di7210 have the same shape and mechanism. Therefore, the explanation for only tray 1 and 2 shall be given here.

[1] Composition



[2] 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	Paper feed roller
No paper detection	Photosensor + Actuator
Paper size detection *2 (Universal)	Width: VR Length: Phtosensor + Actuators (two)
1st paper feed paper loop mechanism*3	Photosensor + Actuator + clutch

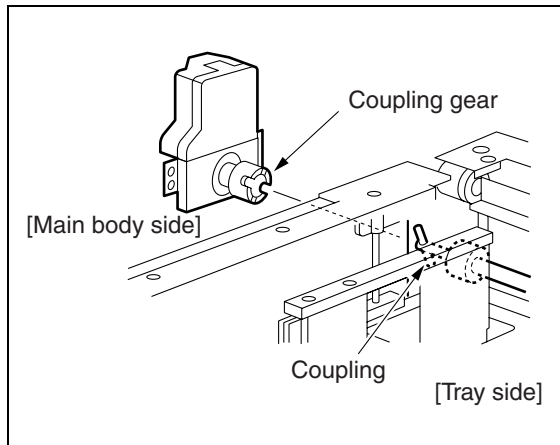
*1 Paper lift-up

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

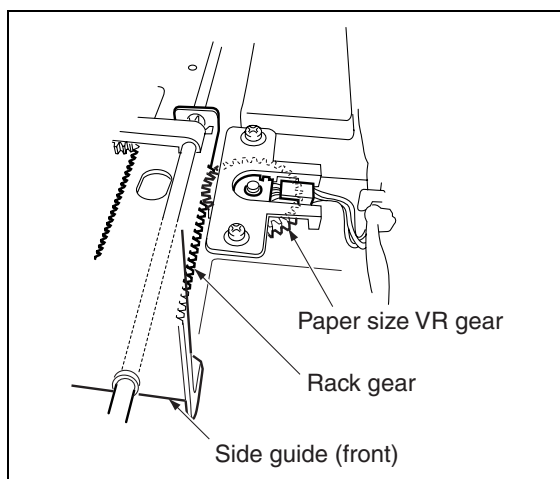
When the paper feed tray is pulled out, the coupling shaft of the tray is disengaged from the coupling gear of the tray up drive motor on the main body side, allowing the up/down plate in the tray to fall down by its own weight.



***2 Paper size detection**

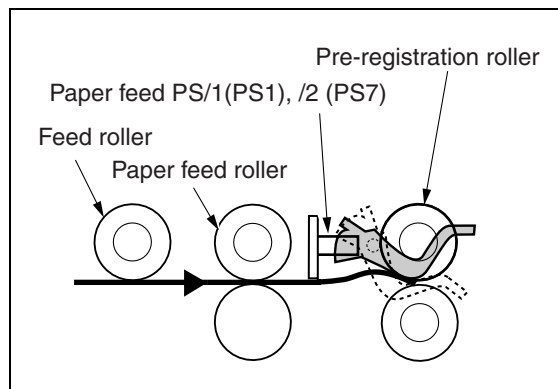
Length: When paper pushes the paper size detection actuator, the paper size PS/2-1/2-2 (PS6/PS12) and the paper size PS/1-1/1-2 (PS5/PS11) turn ON. Thus, the paper size is automatically determined according to the combination of the ON/OFF states of these PSs.

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.



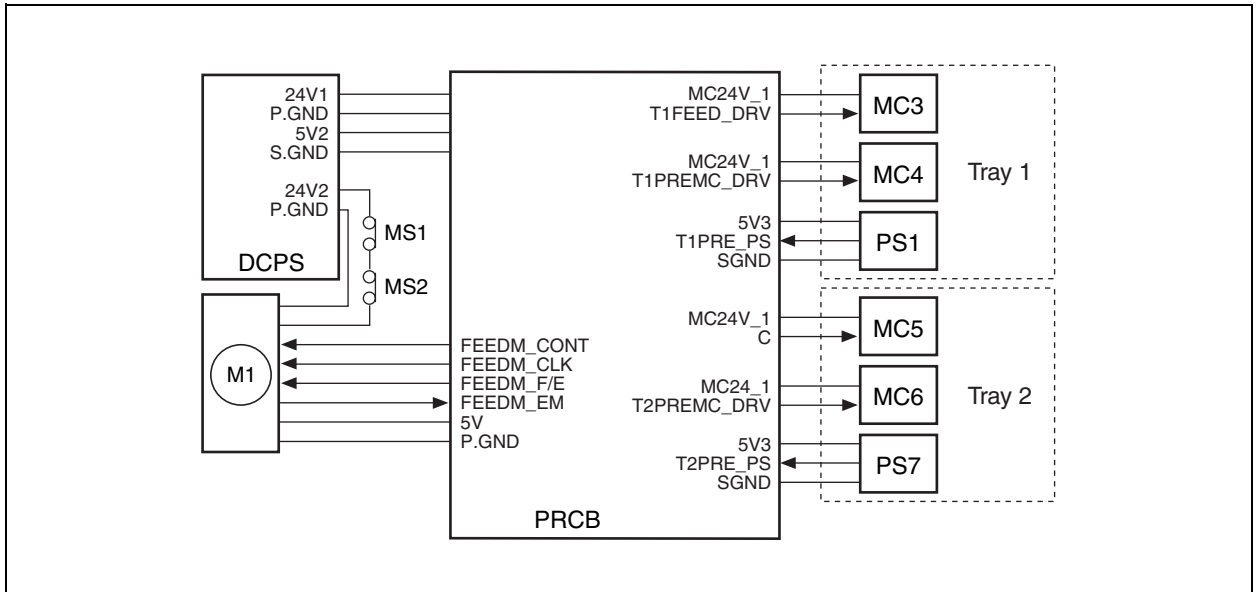
***3 First paper feed paper loop mechanism**

When paper feed starts, paper is fed to the pre-registration roller by the feed roller and paper feed 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 paper feed 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.



TONER
www.tonerplus.com.ua

[3] First Paper Feed Control



The 1st paper feed from tray 1/2 takes place as the result of the transmission of the drive force from M1 (paper feed) to each paper feed 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.

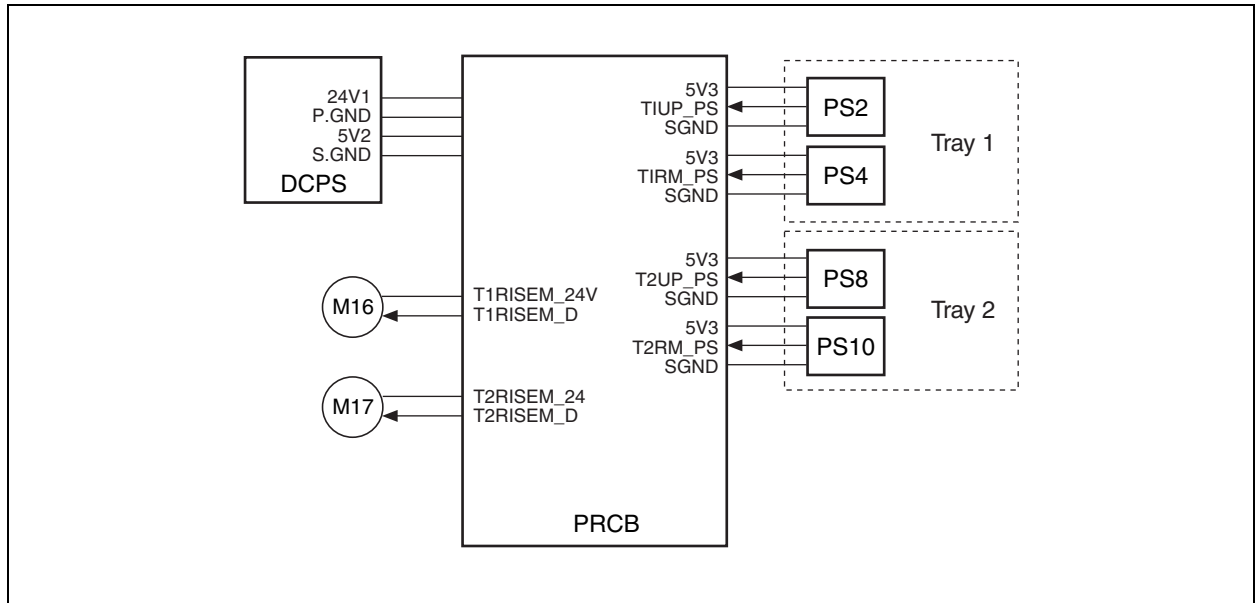
2. Signals

a. PRCB input signals

- (1) T1PRE_PS (PS1 to PRCB)
Paper passage detection signal (tray 1)
[L]: Detected.
[H]: Not detected.
- (2) T2PRE_PS (PS7 to PRCB)
Paper passage detection signal (tray 2)
[L]: Detected.
[H]: Not detected.

b. PRCB output signals

- (1) T1FEED_DRV (PRCB to MC3)
MC3 drive control signal (tray 1)
[L]: MC3 ON
[H]: MC3 OFF
- (2) T1PREMC_DRV (PRCB to MC4)
MC4 drive control signal (tray 1)
[L]: MC4 ON
[H]: MC4 OFF
- (3) T2FEED_DRV (PRCB to MC5)
MC5 drive control signal (tray 2)
[L]: MC5 ON
[H]: MC5 OFF
- (4) T2PREMC_DRV (PRCB to MC6)
MC6 drive control signal (tray 2)
[L]: MC6 ON
[H]: MC6 OFF

[4] 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 1/2 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

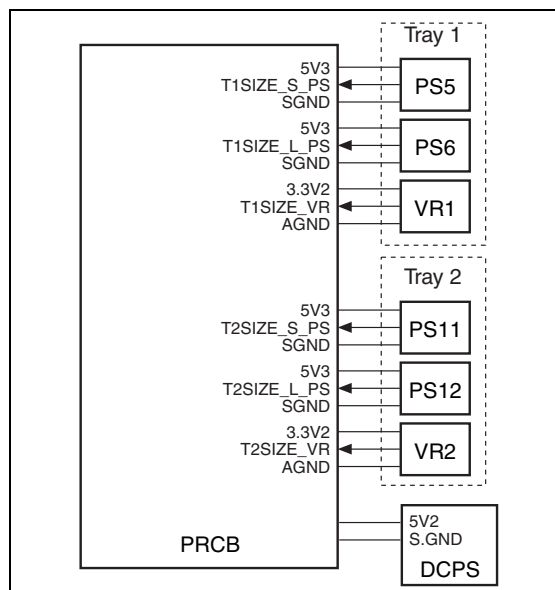
The level of paper remaining in each tray is detected according to the time that M16/17 (tray up drive/1/2) requires to lift up the up/down plate when the tray is set. This lift-up time (operation time of M16/17) is saved in the PRCB (printer control board). After this, the remaining paper is detected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

2. Signals**a. PRCB input signals**

- (1) T1UP_PS (PS2 to PRCB)
Paper upper limit detection signal (tray 1)
[L]: Not detected.
[H]: Detected.
- (2) T1RM_PS (PS4 to PRCB)
Remaining paper detection signal (tray 1)
[L]: Not detected.
[H]: Detected.
- (3) T2UP_PS (PS8 to PRCB)
Paper upper limit detection signal (tray 2)
[L]: Not detected.
[H]: Detected.
- (4) T2RM_PS (PS10 to PRCB)
Remaining paper detection signal (tray 2)
[L]: Not detected.
[H]: Detected.

b. PRCB output signals

- (1) T1RISEM_24V (PRCB to M16)
M16 ON/OFF control signal (tray 1)
- (2) T2RISEM_24 (PRCB to M17)
M17 ON/OFF control signal (tray 2)

[5] Paper Size Detection Control

The paper size in tray 1/2 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:

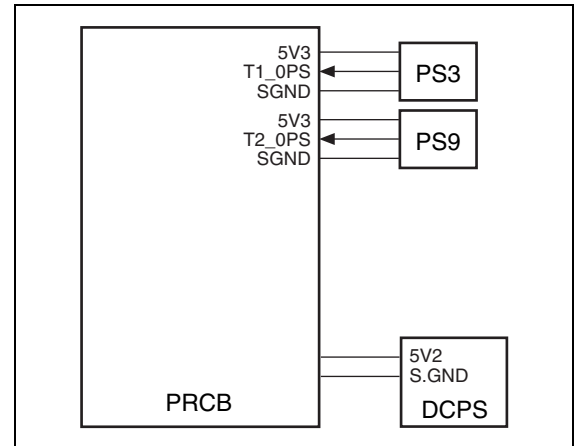
Paper size \ Sensor	8.5 x 11 or less	A4R to B5R	F4 or larger
PS5/11	OFF	ON	ON
PS6/12	OFF	OFF	ON

2. Signals

a. PRCB input signals

- (1) T1SIZE_S_PS (PS5 to PRCB)
Paper size detection signal (tray 1)
[L]: Paper does not exist.
[H]: Paper exists.
- (2) T1SIZE_L_PS (PS6 to PRCB)
Paper size detection signal (tray 1)
[L]: Paper does not exist.
[H]: Paper exists.
- (3) T2SIZE_L_PS (PS11 to PRCB)
Paper size detection signal (tray 2)
[L]: Paper does not exist.
[H]: Paper exists.
- (4) T2SIZE_S_PS (PS12 to PRCB)
Paper size detection signal (tray 2)
[L]: Paper does not exist.
[H]: Paper exists.
- (5) T1SIZE_VR (VR1 to PRCB)
Paper width detection signal (tray 1)
- (6) T2SIZE_VR (VR2 to PRCB)
Paper width detection signal (tray 2)

[6] 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).

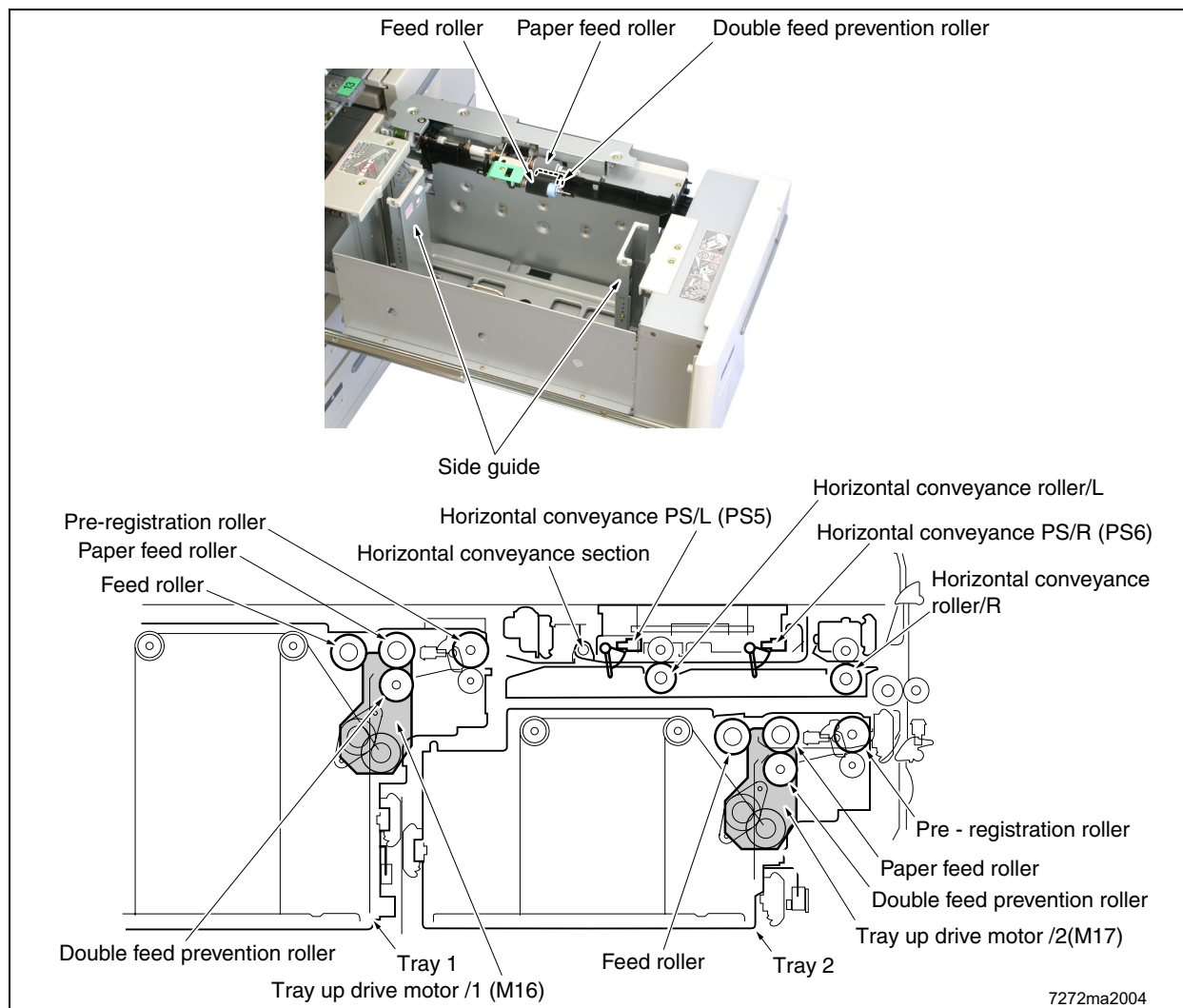
2. Signals

a. PRCB input signals

- (1) T1_0PS (PS3 to PRCB)
No paper detection signal (tray 1)
[L]: Paper does not exist in tray.
[H]: Paper exists in tray.
- (2) T2_0PS (PS9 to PRCB)
No paper detection signal (tray 2)
[L]: Paper does not exist in tray.
[H]: Paper exists in tray.

TRAY 1/2 PAPER FEED UNIT (Di5510/Di7210)

[1] Composition



Caution: Trays 1/2 have the same mechanism.

[2] 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	Paper feed roller
No paper detection	Photosensor + Actuator
1st paper feed paper loop mechanism*2	Photosensor + Actuator + clutch
Horizontal conveyance (Tray 1)	Horizontal conveyance roller /L, /R

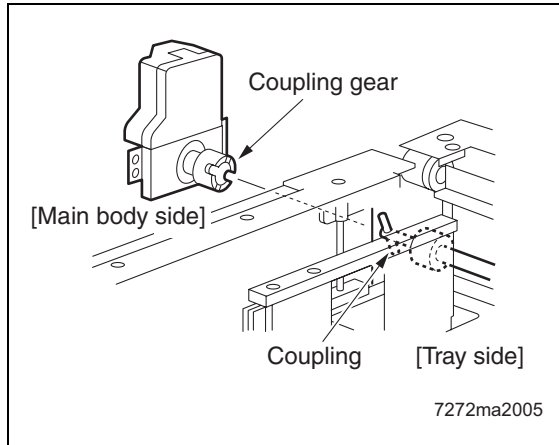
*1 Paper lift-up

a) Hoisting of up/down plate

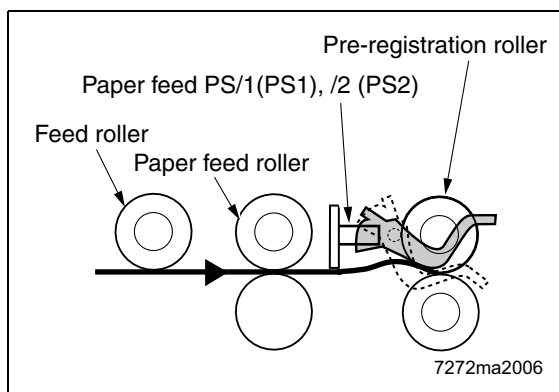
Paper feed trays are driven by wires. When a paper tray is loaded, the tray up drive motor/ 1(M16)/2(M17) rotates to wind the wires around the drive pulleys and consequently the up/down plate in the tray moves up. When the tray upper limit PS/1 (PS2)/2(PS8) detects the actuator of the roller that has been moved up by paper, the tray up drive motor/1(M16)/ 2 (M17) stops.

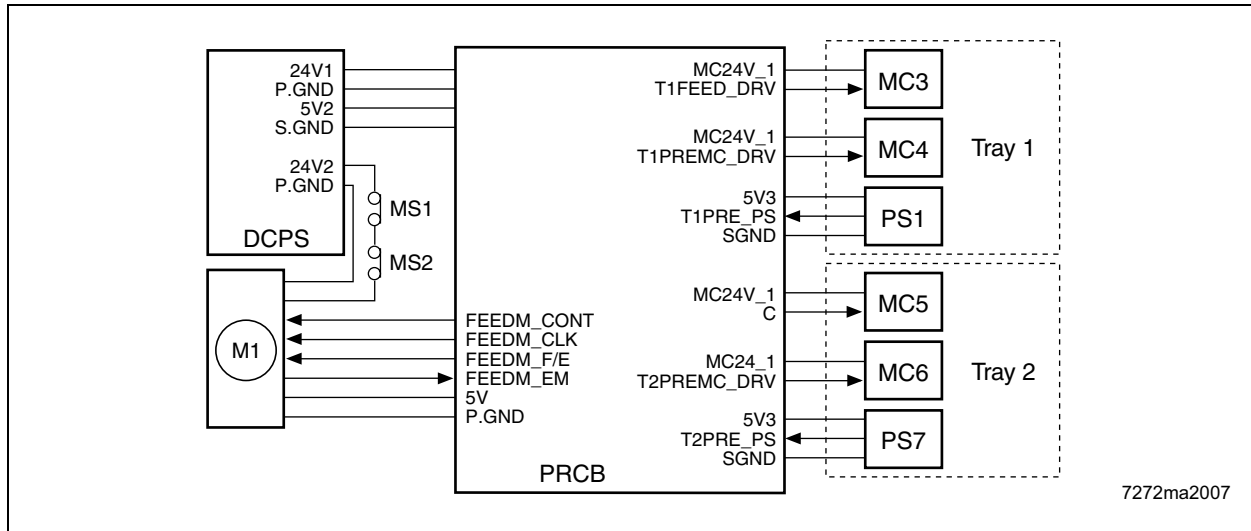
b) Lowering of tray

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 main body side, allowing the up/down plate in the tray to fall down by its own weight.

***2 First paper feed paper loop mechanism**

When paper feed starts, paper is fed to the pre-registration roller by the feed roller and paper feed 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 paper feed 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.



[3] First Paper Feed Control

The 1st paper feed from tray 1/2 takes place as the result of the transmission of the drive force from M1 (paper feed) to each paper feed 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 MC1/2)

- (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

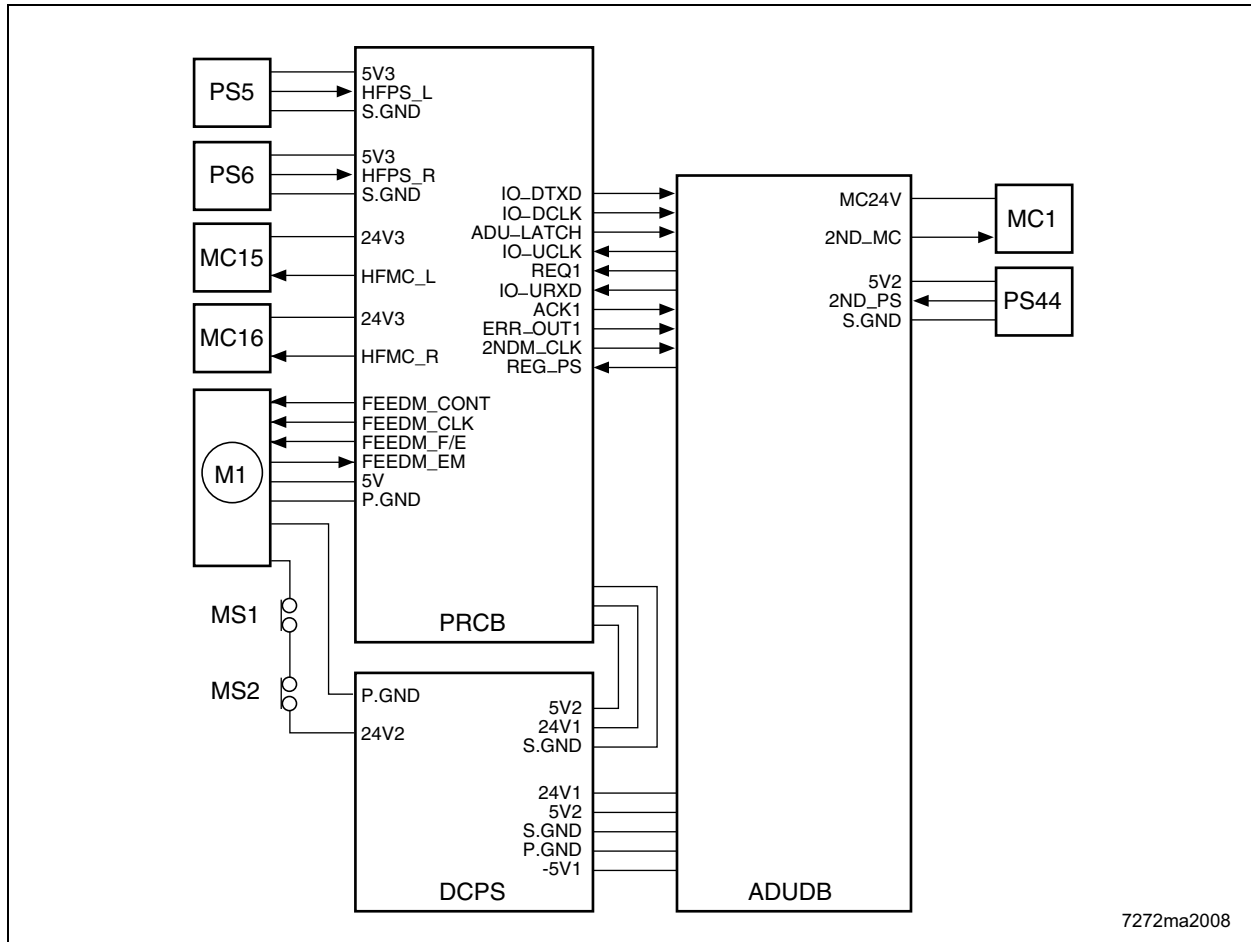
a. PRCB input signals

- (1) T1PRE_PS (PS1 to PRCB)
Paper passage detection signal (tray 1)
[L]: Detected.
[H]: Not detected.
- (2) T2PRE_PS (PS7 to PRCB)
Paper passage detection signal (tray 2)
[L]: Detected.
[H]: Not detected.

b. PRCB output signals

- (1) T1FEED_DRV (PRCB to MC3)
MC3 drive control signal (tray 1)
[L]: MC3 ON
[H]: MC3 OFF
- (2) T1PREMC_DRV (PRCB to MC4)
MC4 drive control signal (tray 1)
[L]: MC4 ON
[H]: MC4 OFF
- (3) T2FEED_DRV (PRCB to MC5)
MC5 drive control signal (tray 2)
[L]: MC5 ON
[H]: MC5 OFF
- (4) T2PREMC_DRV (PRCB to MC6)
MC6 drive control signal (tray 2)
[L]: MC6 ON
[H]: MC6 OFF

[4] Horizontal Conveyance Control (Tray 1)



The horizontal conveyance from Tray 1 is conducted by transmitting the drive force of M1 (paper feed) to the horizontal conveyance roller /L and horizontal conveyance roller /R via MC15 (horizontal conveyance MC/L) and MC16 (horizontal conveyance MC/R).

The above operations are controlled by PRCB (printer control board). Related signals are PS1 (feed /1), PS5 (horizontal conveyance /L) and PS6 (horizontal conveyance /R).

1. Operation

a. Operation of MC15 (horizontal conveyance MC/L)

- (1) ON timing for the first paper
When the restart of MC3 (feed MC/1) is turned ON.
- (2) ON timing for the second paper
After a specified time when MC1 (registration MC) is turned ON.

(3) OFF timing

After a specified time when PS44 (registration) is turned ON.

b. Operation of MC16 (horizontal conveyance MC/R)

- (1) ON timing for the first paper
After a specified time when PS6 (horizontal conveyance /R) is turned ON.
- (2) ON timing for the second paper
After a specified time when MC1 (registration MC) is turned ON.
- (3) OFF timing
After a specified time when PS6 (horizontal conveyance /R) is turned ON.

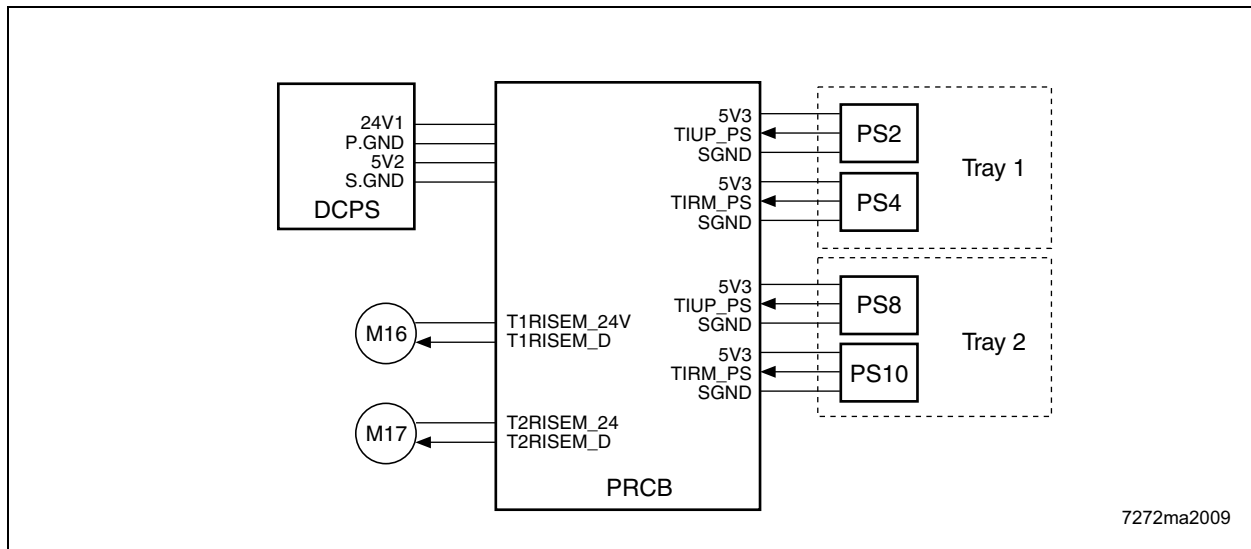
2. Signal**a. PRCB input signal**

- (1) HFPS_L (PS5 to PRCB)
Paper passage detection signal
[L]: Detected.
[H]: Not detected
- (2) HFPS_R (PS6 to PRCB)
Paper passage detection signal
[L]: Detected.
[H]: Not detected

b. PRCB output signal

- (1) HFMC_L (PRCB to MC15)
MC15 drive control signal
[L]: MC15 ON
[H]: MC15 OFF
- (2) HFMC_R (PRCB to MC16)
MC16 drive control signal
[L]: MC16 ON
[H]: MC16 OFF

[5] 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 1/2 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 operation panel in five steps. PS4/10 (remaining paper/1/2) are used to detect the remaining paper level when it lowers below about 10%.

2. Signals

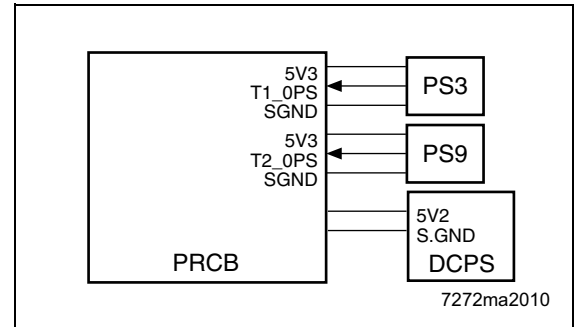
a. PRCB input signals

- (1) T1UP_PS (PS2 to PRCB)
Paper upper limit detection signal (tray 1)
[L]: Not detected.
[H]: Detected.
- (2) T1RM_PS (PS4 to PRCB)
Remaining paper detection signal (tray 1)
[L]: Not detected.
[H]: Detected.
- (3) T1UP_PS (PS8 to PRCB)
Paper upper limit detection signal (tray 2)
[L]: Not detected.
[H]: Detected.
- (4) T1RM_PS (PS10 to PRCB)
Remaining paper detection signal (tray 2)
[L]: Not detected.
[H]: Detected.

b. PRCB output signals

- (1) T1RISEM_24V (PRCB to M16)
M16 ON/OFF control signal (tray 1)
- (2) T2RISEM_24 (PRCB to M17)
M17 ON/OFF control signal (tray 2)

[6] No paper detection control



No paper in the tray is detected by PS3 (no paper /1) and PS9 (no paper /2), and which is 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

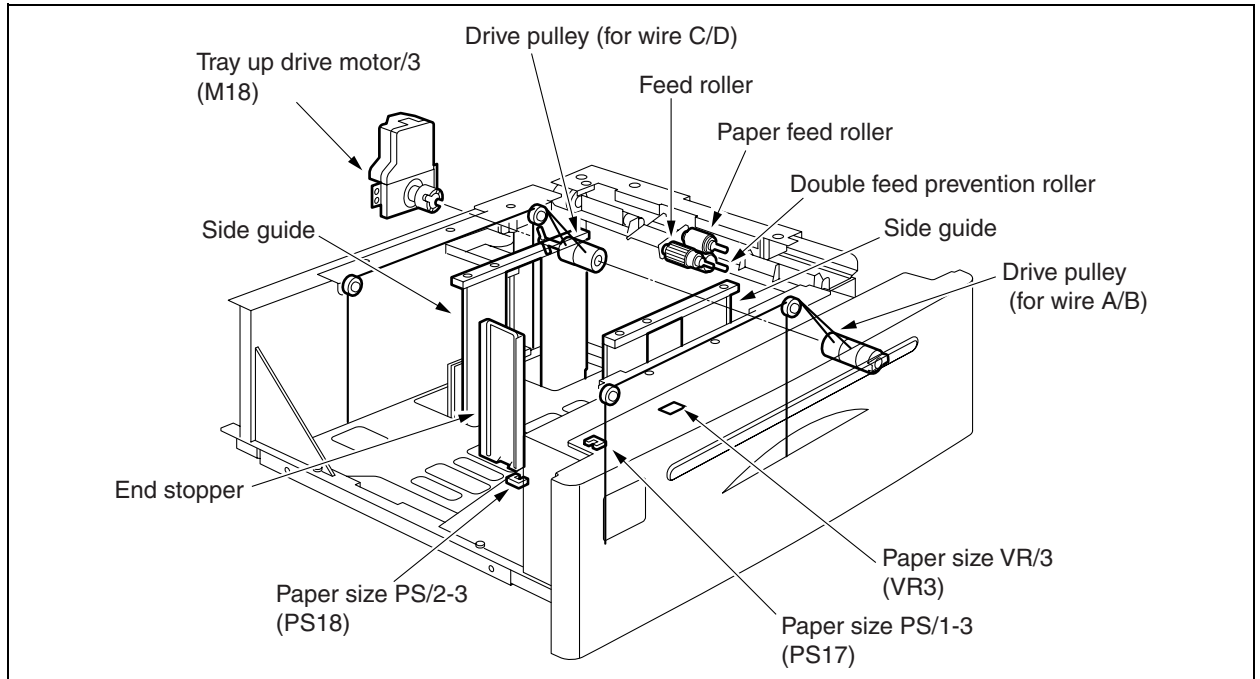
a. PRCB input signals

- (1) T1_0PS (PS3 to PRCB)
No paper detection signal (tray 1)
[L]: Paper does not exist in tray.
[H]: Paper exists in tray.
- (2) T2_0PS (PS9 to PRCB)
No paper detection signal (tray 2)
[L]: Paper does not exist in tray.
[H]: Paper exists in tray.

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TRAY 3 PAPER FEED UNIT (Di551/Di650)

[1] Composition



[2] 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	Paper feed 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 + Magnetic clutch

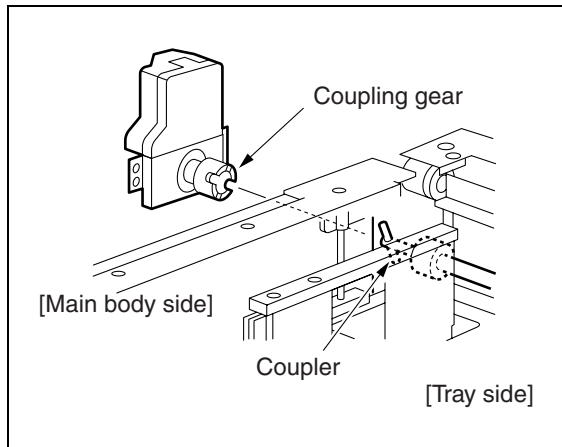
*1 Paper lift-up

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

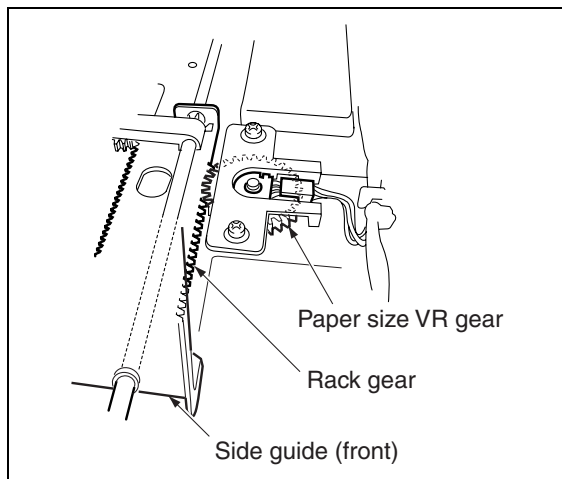
When the paper feed tray is pulled out, the coupling shaft of the tray is disengaged from the coupling gear of the tray up drive motor on the main body side, allowing the up/down plate in the tray to fall down by its own weight.



***2 Paper size detection**

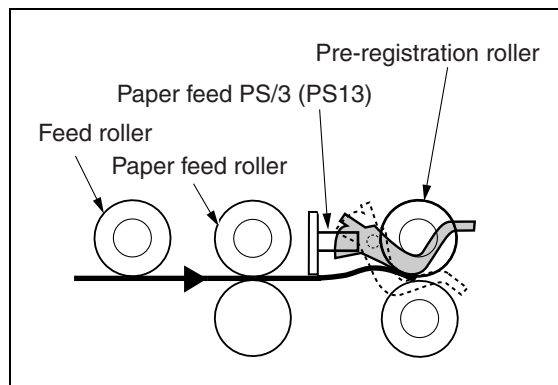
Length: When paper pushes the paper size detection actuator, the paper size PS/2-3/ (PS18) and the paper size PS/1-3 (PS17) turns ON. Thus, the paper size is automatically determined according to the combination of the ON/OFF states of this PS.

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.

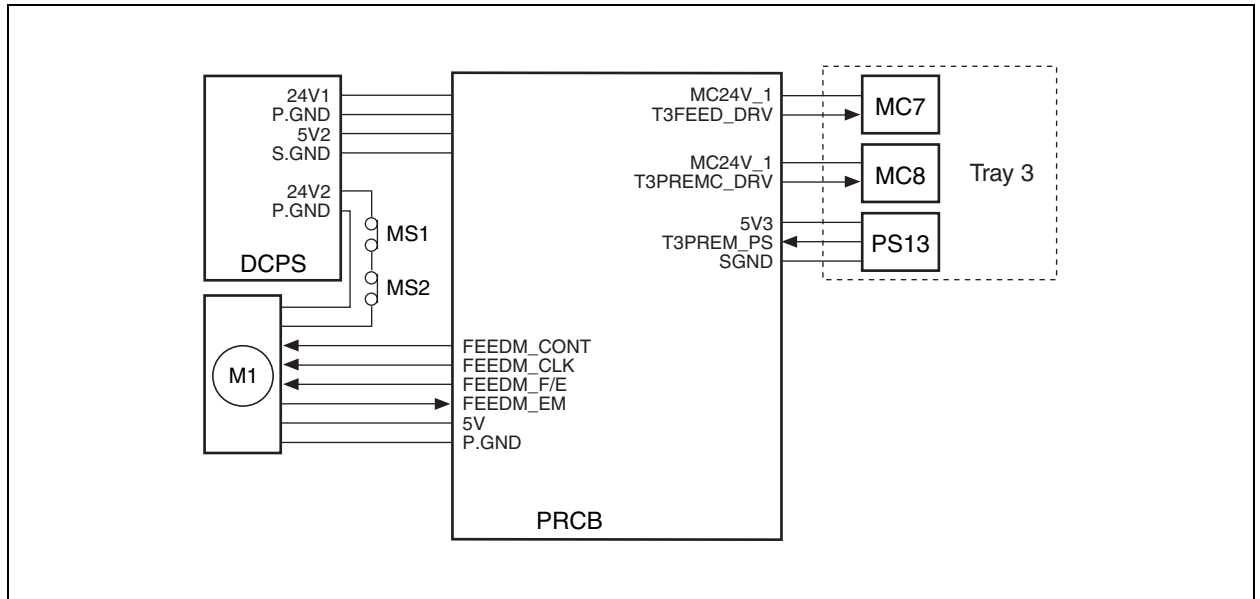


***3 First paper feed paper loop mechanism**

When paper feed starts, paper is fed to the pre-registration roller by the feed roller and paper feed rollers. The fed out paper operates the actuator of the paper feed PS/3 (PS13), turning it ON. The feed and paper feed 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.



[3] First Paper Feed Control



The 1st paper feed from tray 3 takes place as the result of the transmission of the drive force from M1 (paper feed) to each paper feed 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.

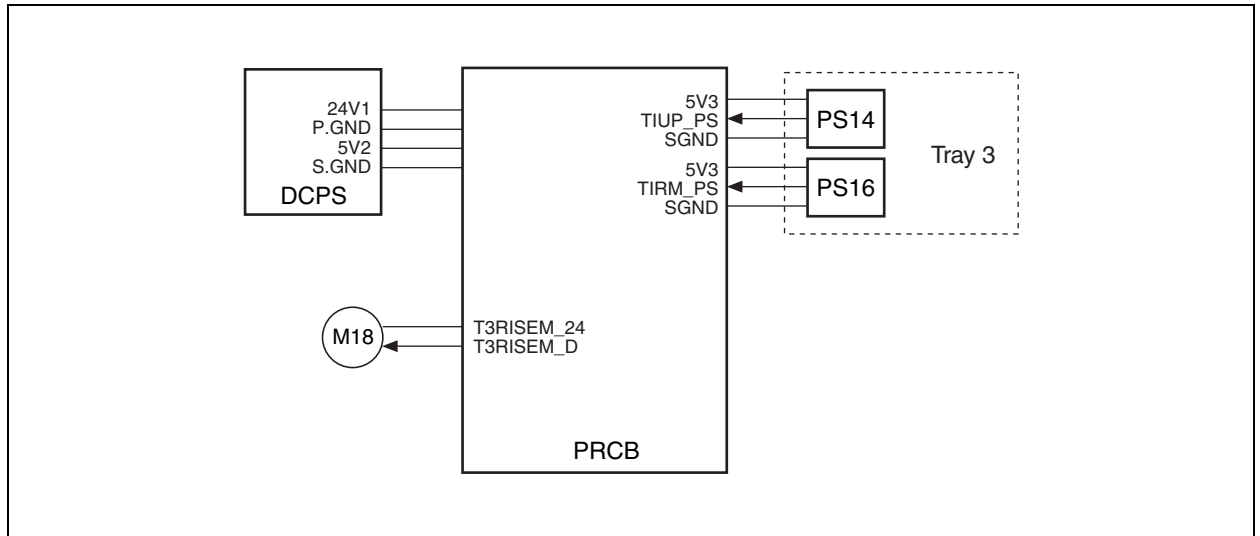
2. Signals

a. PRCB input signals

- (1) T3PREM_PS (PS13 to PRCB)
Paper passage detection signal (tray 3)
[L]: Detected.
[H]: Not detected.

b. PRCB output signals

- (1) T3FEED_DRV (PRCB to MC7)
MC7 drive control signal (tray 3)
[L]: MC7 ON
[H]: MC7 OFF
- (2) T3PREM_PS (PRCB to MC8)
MC8 drive control signal (tray 3)
[L]: MC8 ON
[H]: MC8 OFF

[4] 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 3 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 operation panel in five steps. PS16 (remaining paper/3) is used to detect the remaining paper level when it lowers below about 10%.

2. Signals

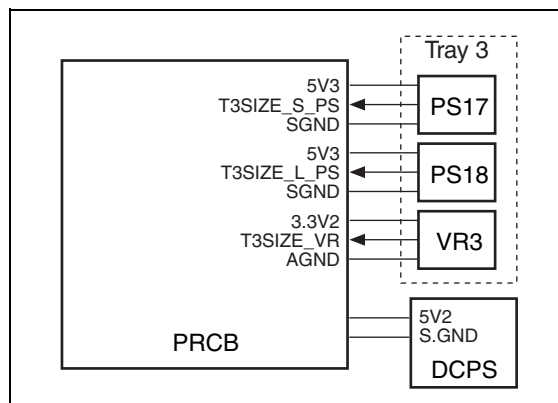
a. PRCB input signals

- (1) T3UP_PS (PS14 to PRCB)
Paper upper limit detection signal
[L]: Not detected.
[H]: Detected.
- (2) T3RM_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

[5] Paper Size Detection Control



The paper size in tray 3 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:

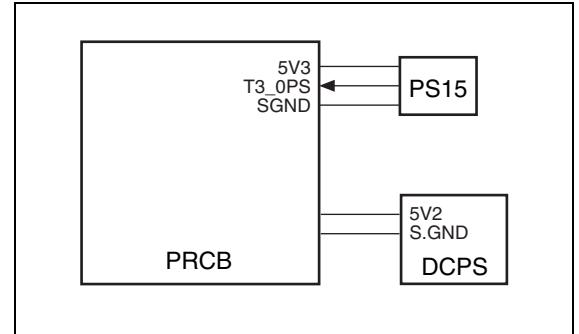
Paper size \ Sensor	8.5 x 11 or less	A4R to B5R	F4 or larger
PS17	OFF	ON	ON
PS18	OFF	OFF	ON

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

[6] 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

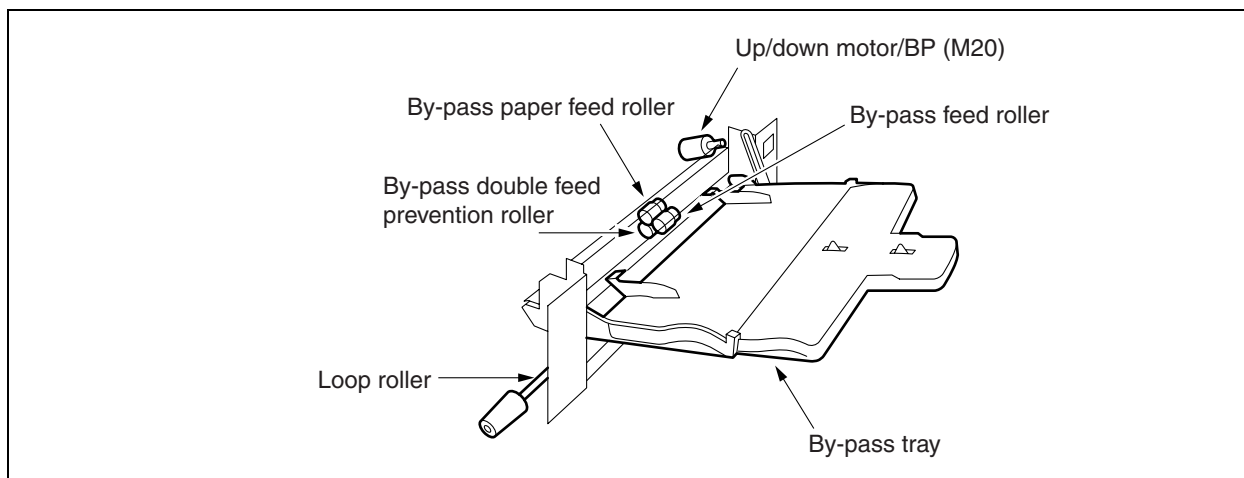
a. PRCB input signals

- (1) PS15 (PS15 to PRCB)
No paper detection signal
[L]: Paper does not exist in tray.
[H]: Paper exists in tray.

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BY-PASS TRAY

[1] Composition

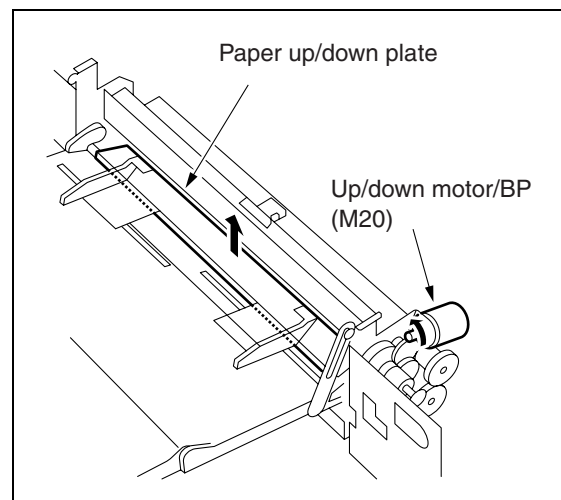


[2] Mechanisms

Mechanism	Method
First paper feed	By-pass 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

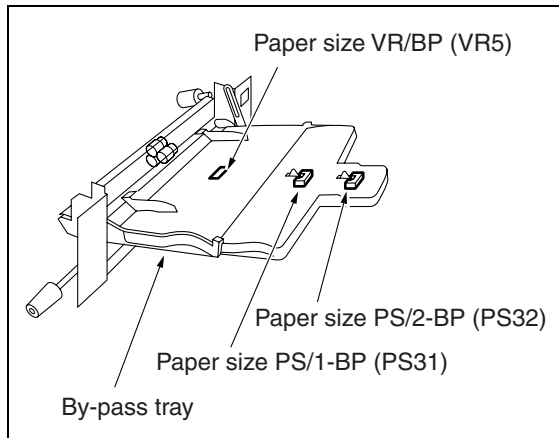
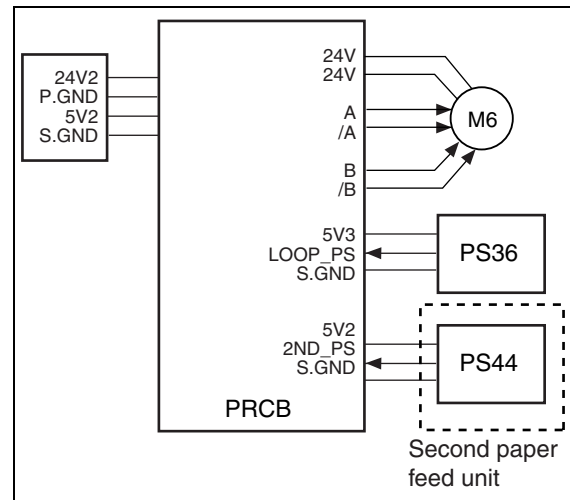
The up/down motor/BP (M20) drives the paper up/down plate via gears. Paper is automatically pushed up to the paper feed position, when the print start button is pressed. When paper is removed or exhausted M20 will drive down the up/down plate.



***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)

**[3] First Paper Feed Control**

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

1. Operation

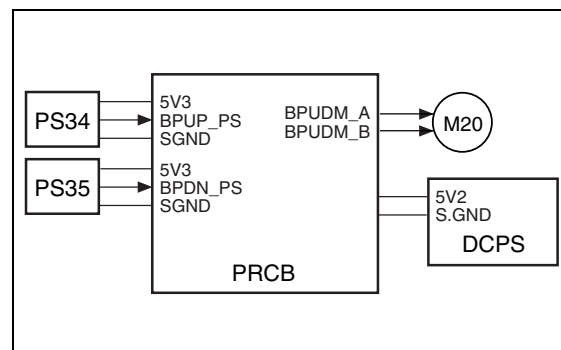
- (1) When printing of the first copy starts
M6 (loop) is turned ON at the timing that is determined by the P counter (that starts when printing starts), thus starting feed of paper.
M6 is stopped temporarily after lapse of a specified time from turning ON of PS44 (registration) by the leading edge of paper, a loop is formed by registration rollers, and the paper is fed to the transfer unit.
- (2) 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

[4] Paper Up/Down Control

Paper in the by-pass tray 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

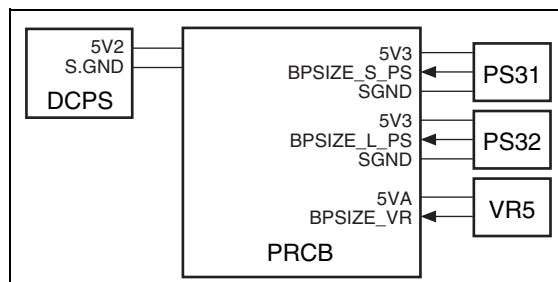
a. PRCB input signals

- (1) BPUP_PS (PS34 to PRCB)
Paper upper limit position detection signal (by-pass tray)
[L]: Not detected.
[H]: Detected.
- (2) BPDN_PS (PS35 to PRCB)
Paper lower limit position detection signal (by-pass tray)
[L]: Not detected.
[H]: Detected.

b. PRCB output signal

- (1) BPUDM_A, B (PRCB to M20)
M20 drive control signal

[5] Paper Size Detection Control



The size of paper in the by-pass tray 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). The by-pass tray 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.

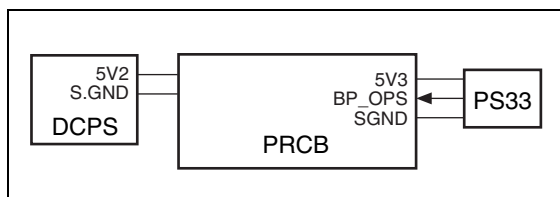
The relationships between the sensors and paper sizes (lengths) are as follows:

Paper size Sensor	8.5 x 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

[6] 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

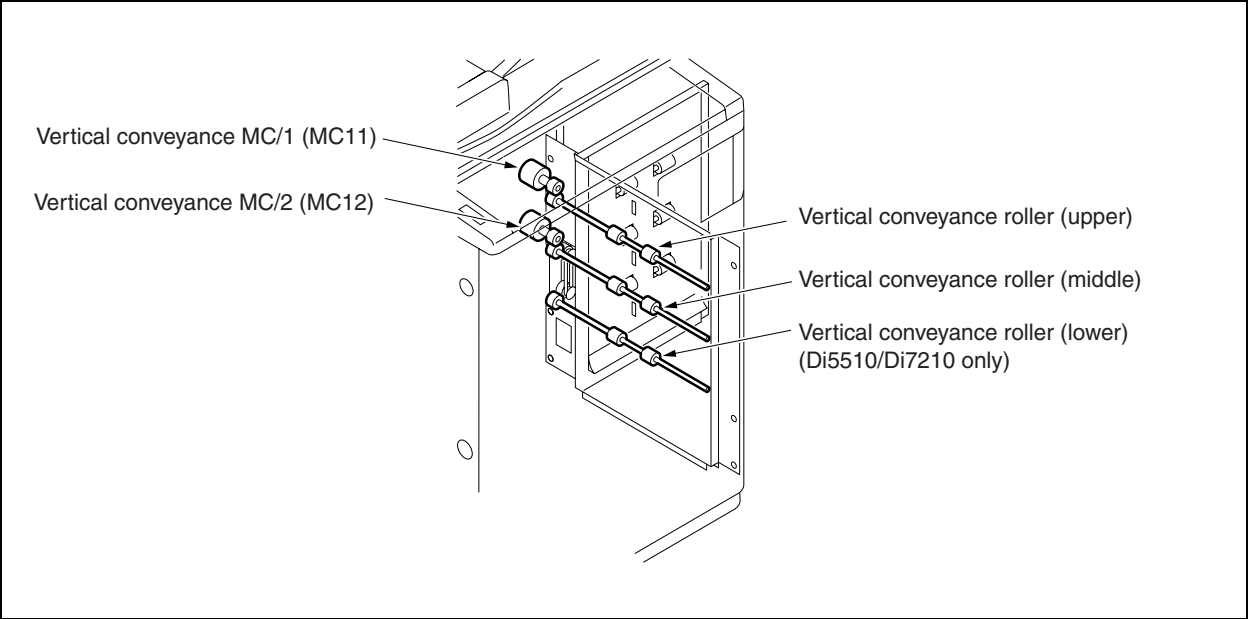
[L]: Paper does not exist.

[H]: Paper exists.

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VERTICAL CONVEYANCE SECTION

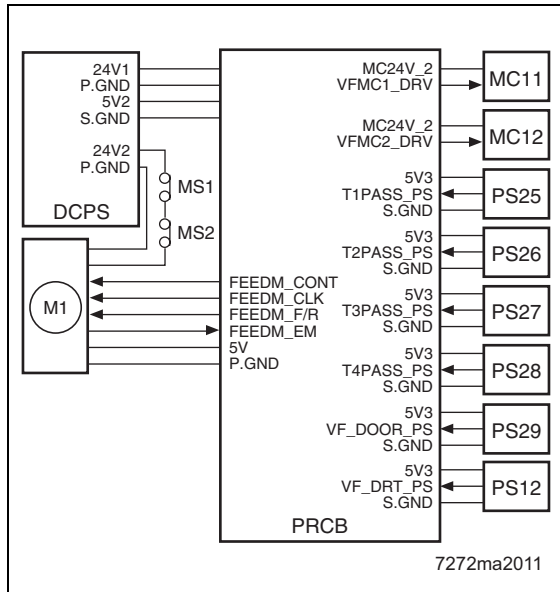
[1] Composition



[2] Mechanisms

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

[3] 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 (middle) via MC11 (vertical conveyance MC/1) and MC12 (vertical conveyance MC/2). And, the vertical conveyance roller (lower) is driven by the vertical conveyance roller (middle) via the timing belt.

The above parts are controlled by PRCB (printer control board). Related signals are PS25 to PS28 (vertical conveyance / 1 to 3), PS29 (vertical conveyance door open/close) and PS12 (vertical conveyance door open/close /U).

1. Operation

Paper fed from tray 1 (Di551/Di650) or tray 1 or 2 (Di5510/Di7210) is then fed to the second paper feed unit directly without passing through vertical conveyance rollers. When paper is fed from tray 2 or 3 (Di551/Di650) or tray 3 or 4 (Di5510/Di7210), 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 2 or 3 (Di551/Di650) or tray 3 or 4 (Di5510/Di7210) 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.

The paper feed standby position for tray 4 is set to the position where the PS28 (vertical conveyance /4) is turned ON. (Di5510/Di7210)

2. Signals

a. PRCB input signals

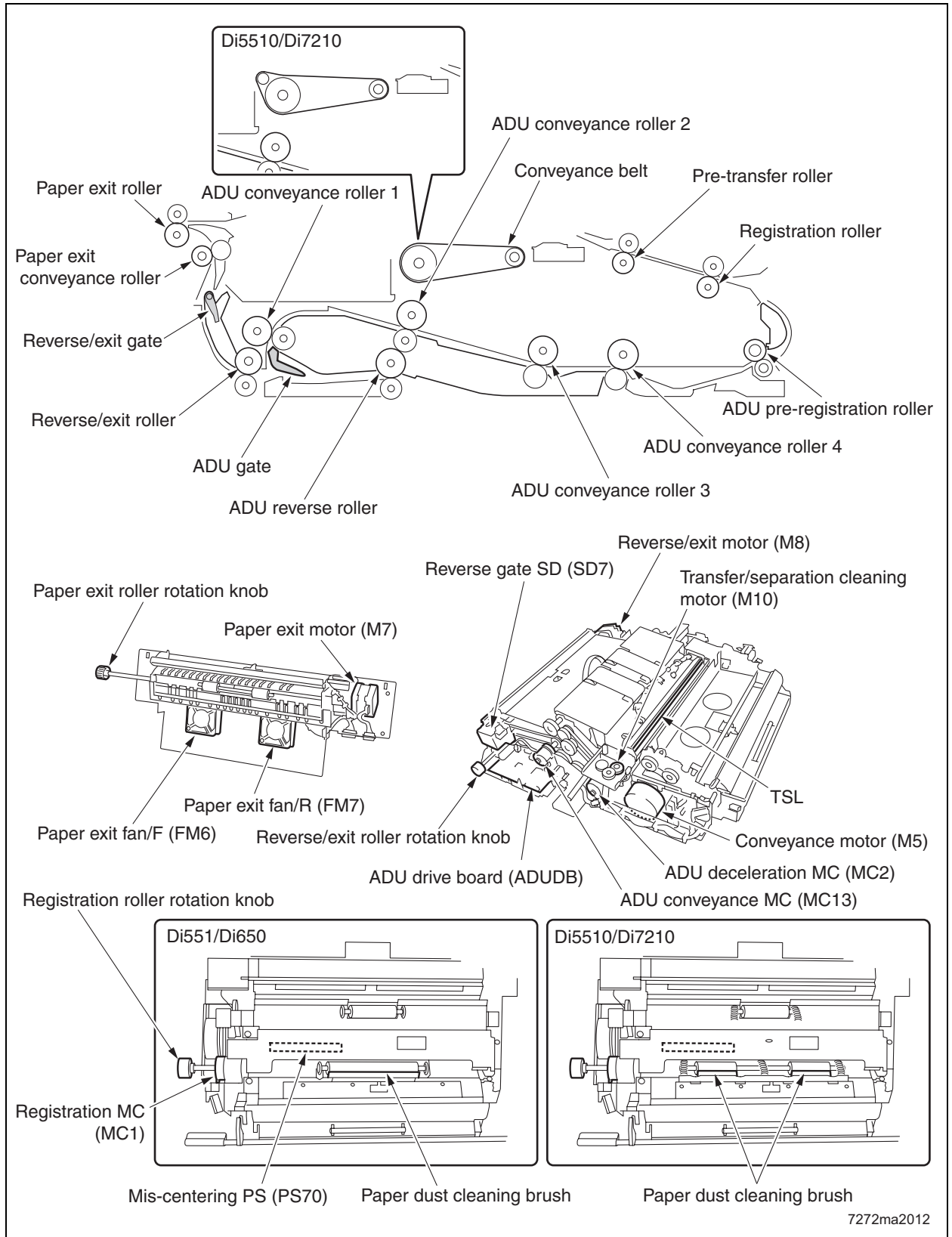
- (1) T1PASS_PS (PS25 to PRCB)
Paper passage detection signal (for tray 1)
[L]: Not detected.
[H]: Detected.
- (2) T2PASS_PS (PS26 to PRCB)
Paper passage detection signal (for tray 2)
[L]: Not detected.
[H]: Detected.
- (3) T3PASS_PS (PS27 to PRCB)
Paper passage detection signal (for tray 3)
[L]: Not detected.
[H]: Detected.
- (4) T4PASS_PS (PS28 to PRCB)
Paper passage detection signal (for tray 4)
[L]: Not detected.
[H]: Detected.
- (5) VF_DOOR_PS (PS29 to PRCB)
Vertical conveyance section open/close detection signal
[L]: Open
[H]: Closed
- (6) VF_DRT_PS (PS12 to PRCB)
Vertical conveyance section open/close detection signal
[L]: Open
[H]: Closed

b. PRCB output signals

- (1) VPMC1_DRV (PRCB to MC11)
MC11 drive control signal
[L]: MC11 ON
[H]: MC11 OFF
- (2) VPMC2_DRV (PRCB to MC12)
MC12 drive control signal
[L]: MC12 ON
[H]: MC12 OFF

ADU

[1] Composition



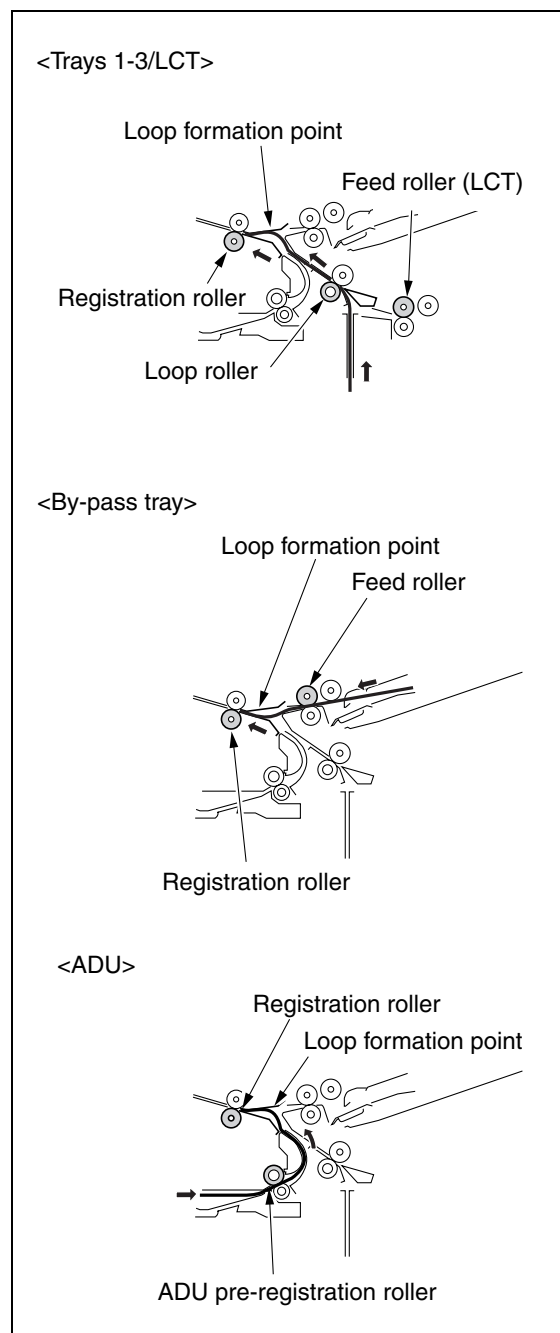
[2] Mechanisms

Mechanisms	Method
Second paper feed paper loop *1	Loop roller (trays 1-3/LCT), Feed roller (by-pass tray), 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 1-3, LCT paper feed
Loop roller
- By-pass tray
By-pass feed roller
- ADU
ADU pre-registration roller

***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.

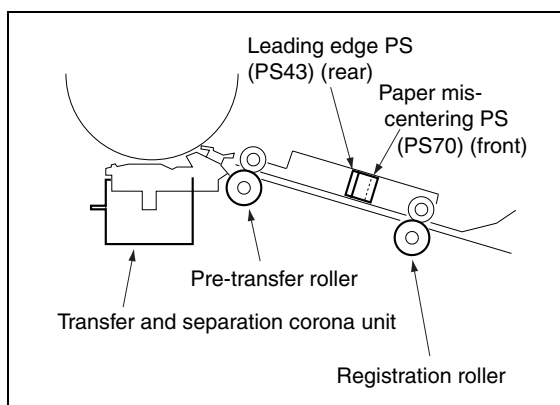
The paper position information detected by PS43 and PS70 is processed by the image processor to correct the image write position in such a manner that the document (scanned image) position match the copy paper position.

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.

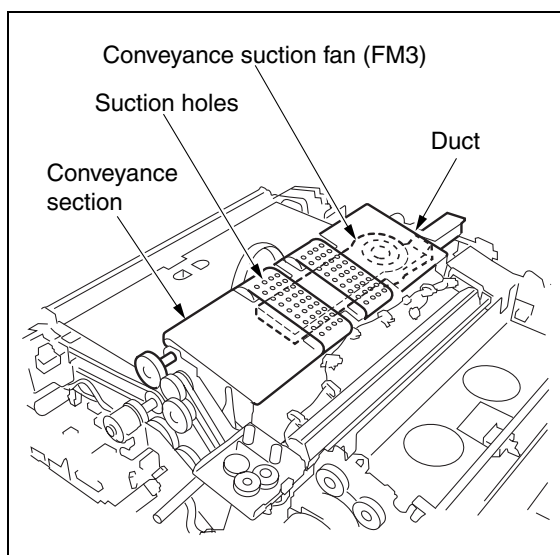
*3 Second paper feed auxiliary mechanism

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

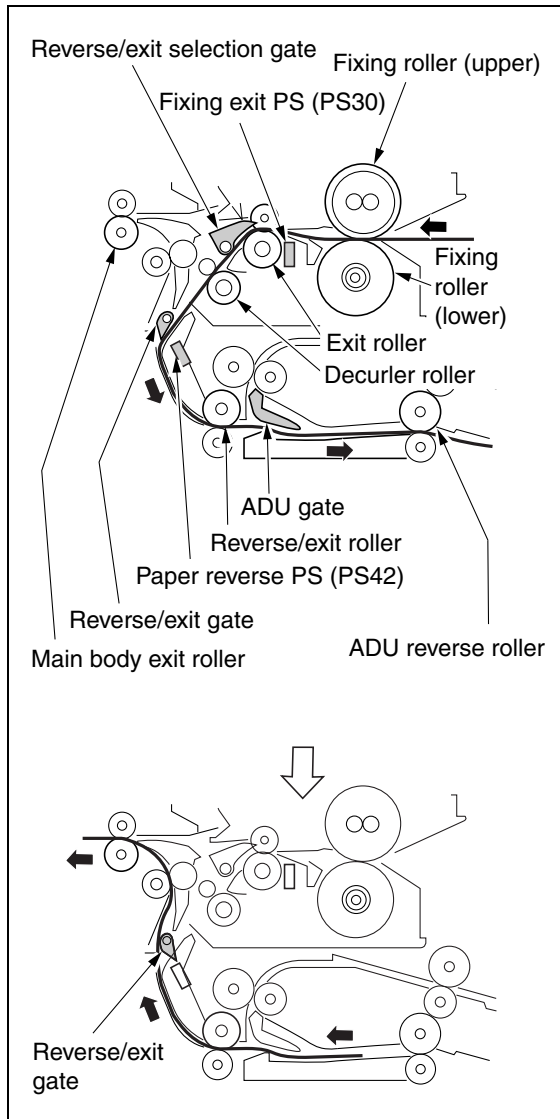
The reverse/exit selection gate in the fixing unit determines whether the paper is to be ejected straight or reversed and ejected. The paper gate is operated by the reverse gate SD (SD7) installed in the ADU.

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

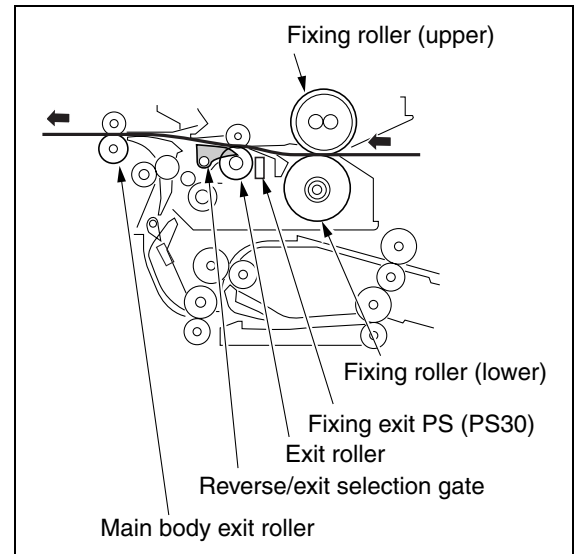
Normally, the reverse/exit selection gate opens when the reverse gate SD (SD7) is turned OFF. The paper fed by the exit roller in the fixing unit is fed, through the path under the reverse/exit selection gate, to the reverse/exit section in the ADU by the decurler roller. Normally, the reverse/exit gate 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 fixing unit. However, since the reverse/exit gate is closed, the paper is fed to the main body exit roller via the path outside this gate. Thus, the paper is ejected with the print side down.



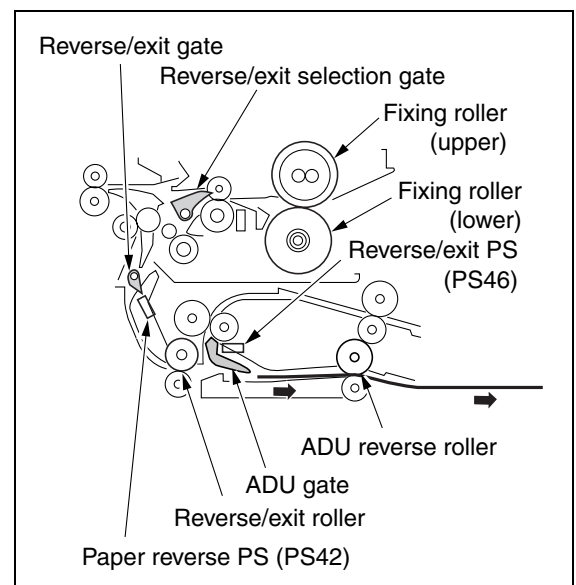
b. Straight ejection

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.

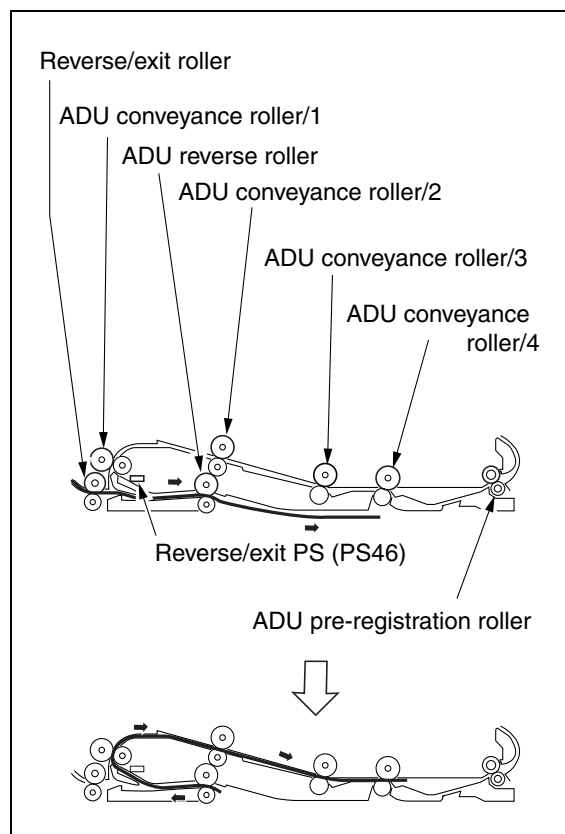


*6 Non-stack paper feed mechanism

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.

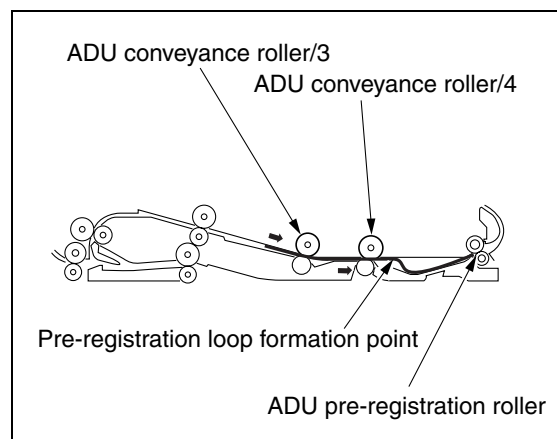
The reversed paper is fed by ADU conveyance rollers 1-4.



*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.

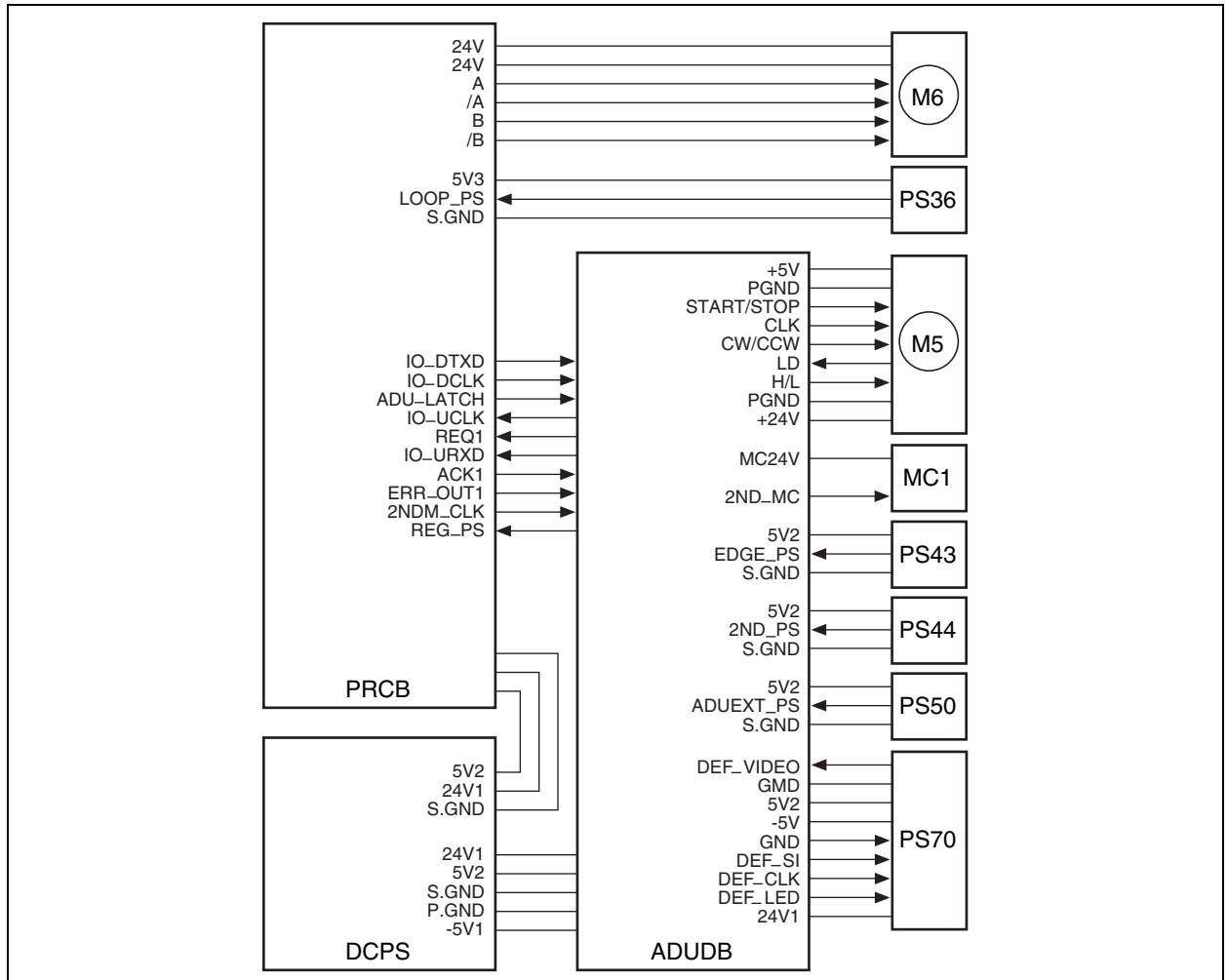


*8 Thick paper conveyance mechanism

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 (Di551/Di650)
	172.5 mm/s (Di5510/Di7210)
Others	280 mm/s (Di551/Di5510)
	320 mm/s (Di650)
	345 mm/s (Di7210)

[3] 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 paper feed 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 LCT. It is not used for the paper fed from the bypass tray or 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 paper feed 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) EDGF_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.

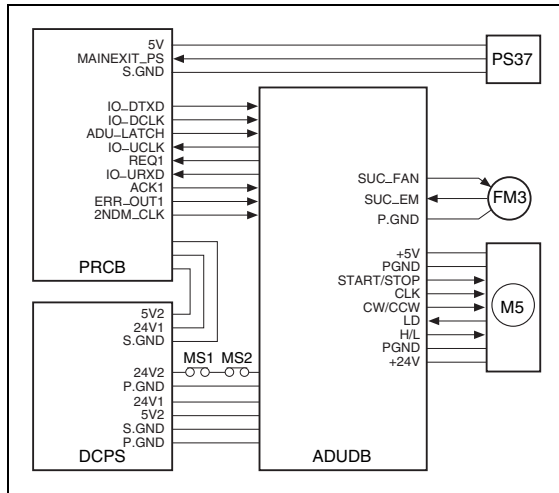
b. Output signals

- (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
- (10) B, /B (PRCB to M6)
M6 (loop roller) B-phase drive control pulse signal



[4] Paper Conveyance Control



The paper fed from the second paper feed section is fed to the fixing 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 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

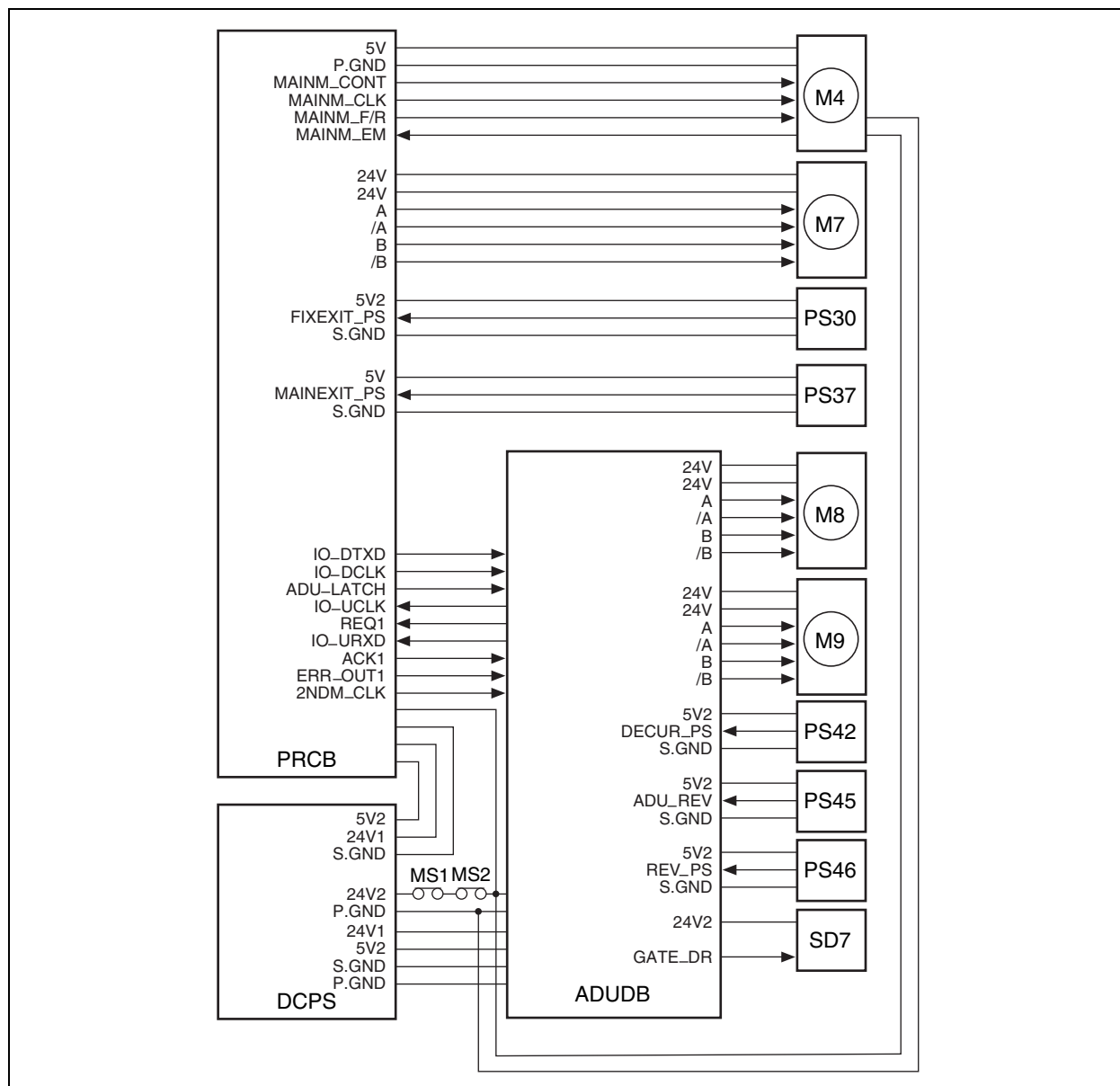
a. Input signals

- (1) MAINEXIT_PS (PS37 to PRCB)
Main body exit section paper passage detection signal
[L]: Detected.
[H]: Not detected.
- (2) SUC_EM (FM3 to ADUSDB)
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

[5] Paper Reverse and Exit Control



The reserve/exit selection gate in the fixing unit determines whether the paper fed from the fixing 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 (fixing) 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 main body 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 (fixing 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 (fixing) control

M4 (fixing) 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 (fixing) 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 (fixing).

(3) ADU 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 fixing 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 (fixing 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 conse-

quently 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) ADU conveyance

The operation performed from the moment PS30 (fixing 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 that of 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 fixing unit by the exit roller is ejected by the main body 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 main body 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 FNS is provided, M7 is always rotating at a high speed.

2. Signals

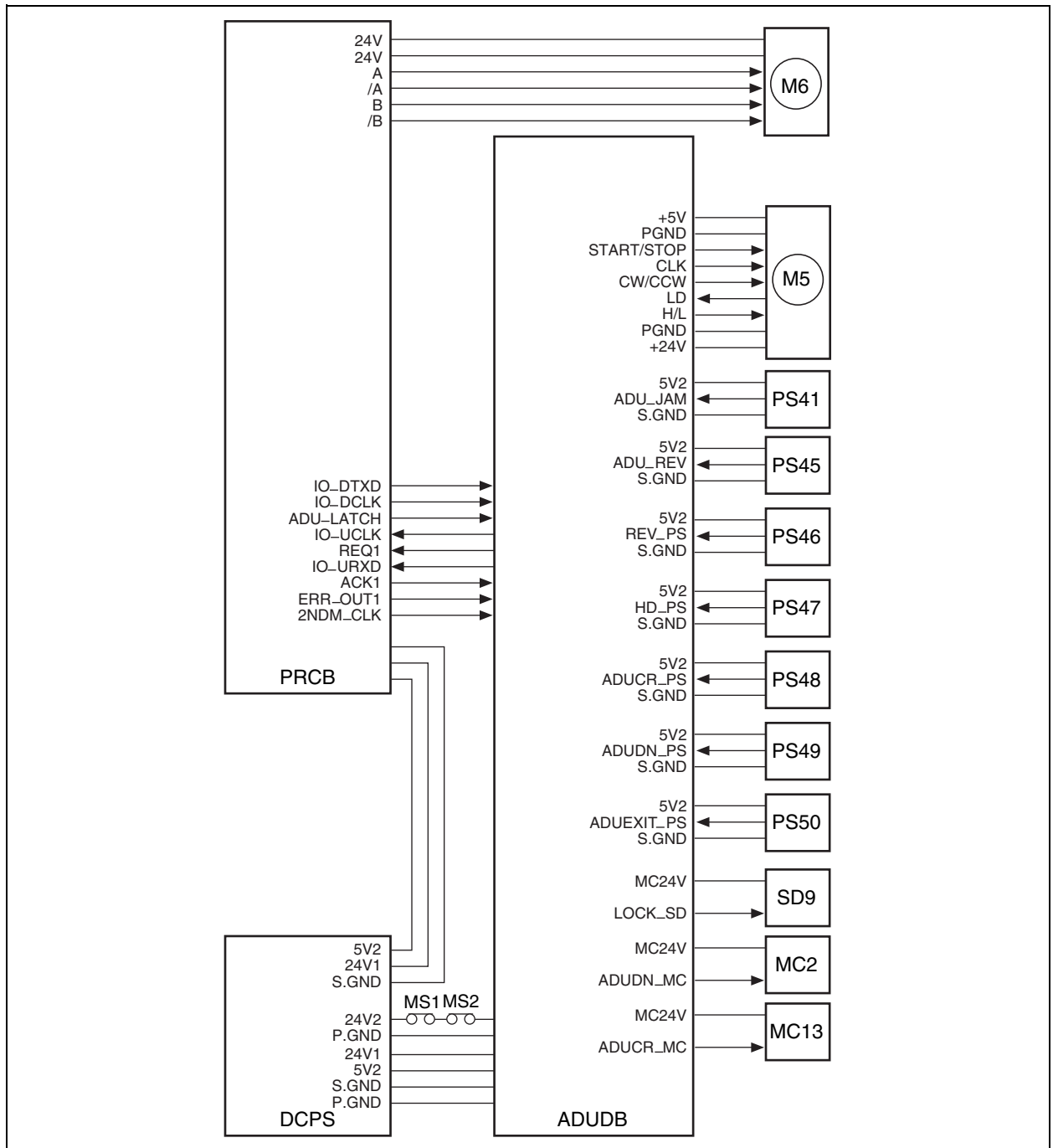
a. Input signals

- (1) FIXEXIT_PS (PS30 to PRCB)
Detection signal of paper passage at fixing 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

[6] ADU 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. ADU 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. ADU 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. ADU 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

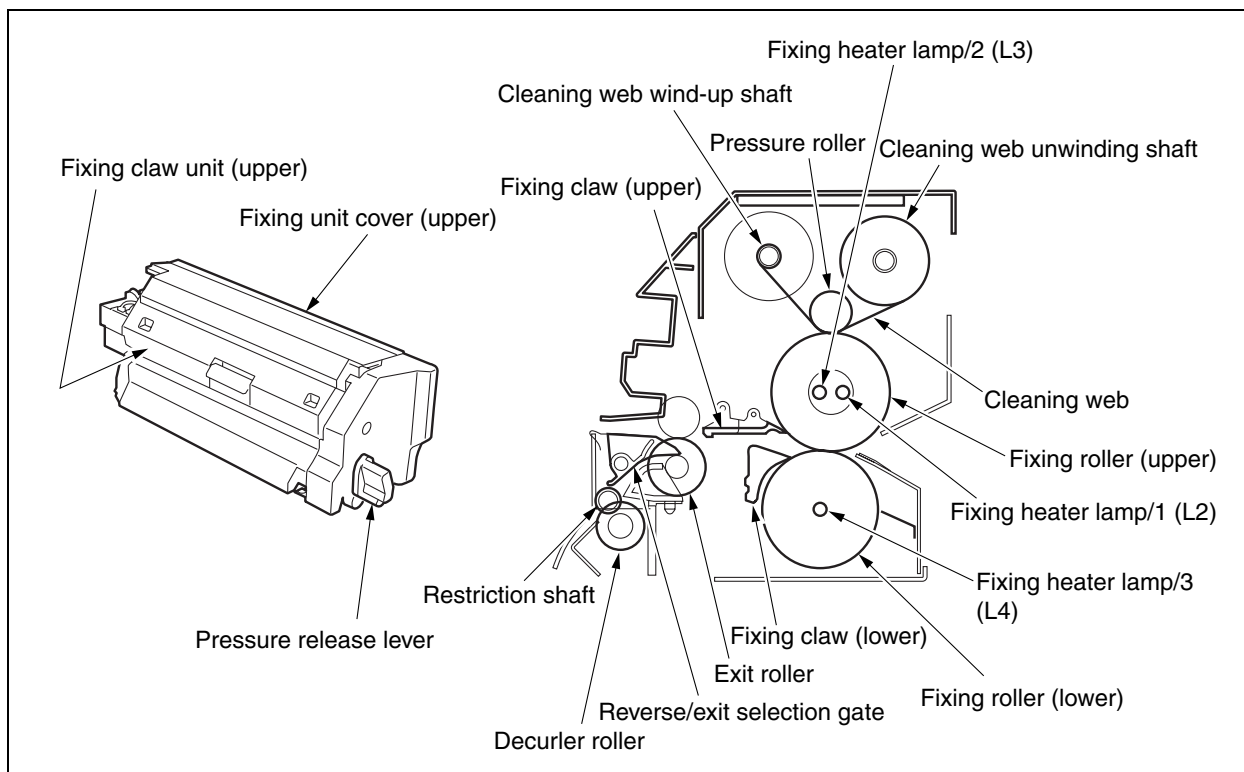
- (1) ADU_JAM (PS41 to ADUSDB)
Detection signal of paper passage from exit of ADU conveyance roller 1
[L]: Detected.
[H]: Not detected.
- (2) HD_PS (PS47 to ADUDB)
ADU handle position detection signal
[H]: Handle is released.
- (3) ADUCR_PS (PS48 to ADUDB)
Detection signal of paper passage from exit 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

FIXING UNIT

[1] Composition



[2] Mechanisms

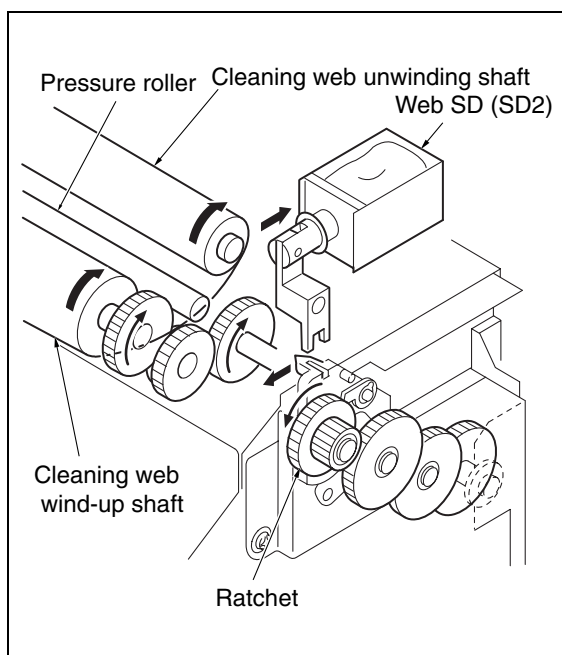
Mechanism	Method
Fixing	Pressure + Heat roller
Heat source *1	Heater lamp(Upper rollers: Two, Lower roller: One)
Cleaning *2	Upper roller: Cleaning web (containing silicon oil)
Upper roller	Aluminum + Teflon coating
Lower roller	Silicon rubber + PFA tube
Separation	Separation claws (six upper and three 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 Fixing heater lamps

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

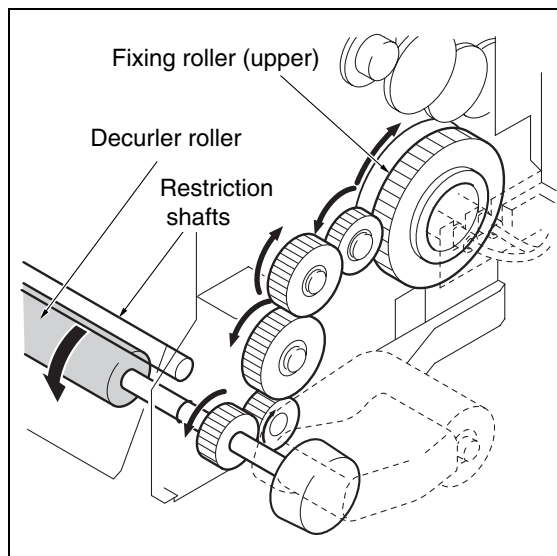
*2 Cleaning

Cleaning web is used to clean the fixing upper roller. The web SD (SD2) in the main body 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 fixing roller (upper) by the pressure roller.



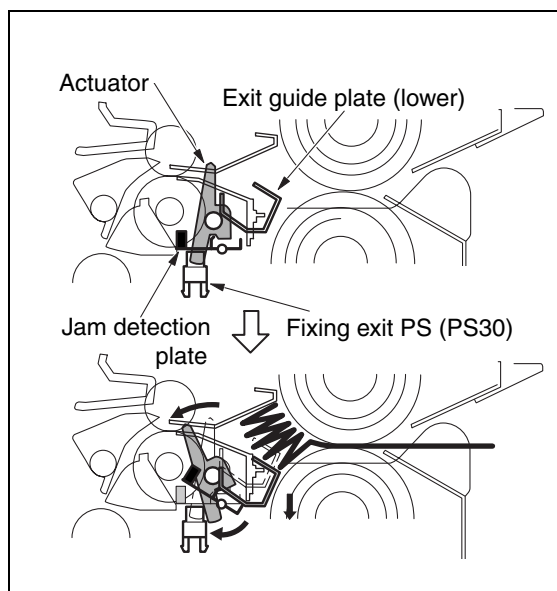
*3 Decurler

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 fixing roller (upper) via gears.

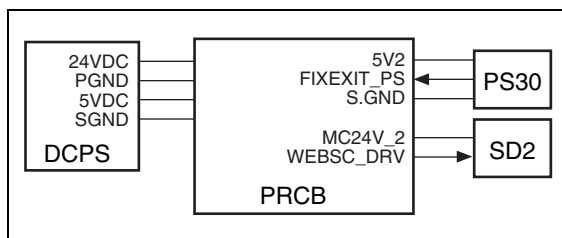


*4 Jam detection

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



[3] M16 (Web Drive) Control



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

1. Operation

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

Fixing 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.

2. Signals

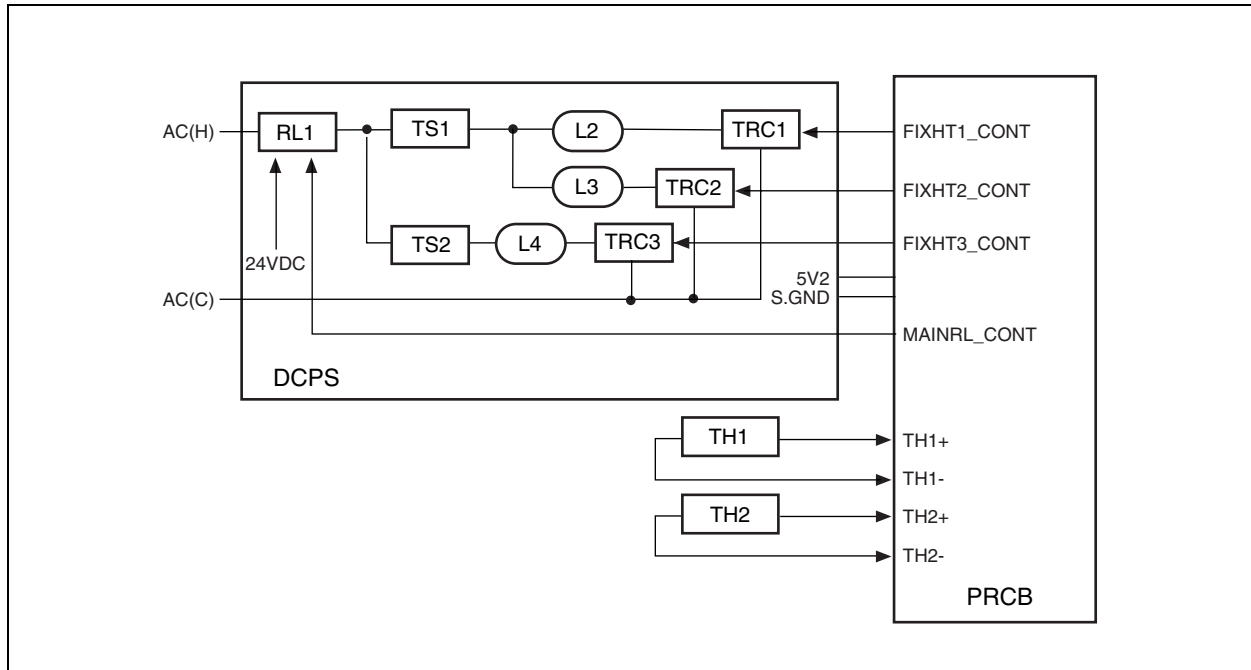
a. PRCB input signal

- (1) FIXEXIT_PS (PS30 to PRCB)
Detection signal of passage of paper at fixing 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

[4] Fixing Temperature Control



The fixing roller (upper) is heated by L2 (fixing heater lamp 1) and L3 (fixing heater lamp 2) and the fixing roller (lower) is heated by L4 (fixing heater lamp 3). The PRCB (printer control board) detects the temperature of the fixing roller (upper) using TH1 (fixing temperature sensor/1) TH2 (fixing 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 fixing heater lamp circuit in DCPS as soon as the SW2 (sub power) is turned ON, holding L2 (fixing heater lamp/1), L3 (fixing heater lamp/2), and L4 (fixing heater lamp/3) lit until the fixing 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 fixing rollers from rising abnormally. TS1 (thermostat/U) and TS2 (thermostat/L) are used for the fixing roller (upper/lower). As these thermostat are of the noncontact type, those do not touch the fixing 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)

Fixing roller (upper) temperature detection signal

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

(2) TH2+,- (TH2 to PRCB)

Fixing roller (upper) temperature detection signal

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

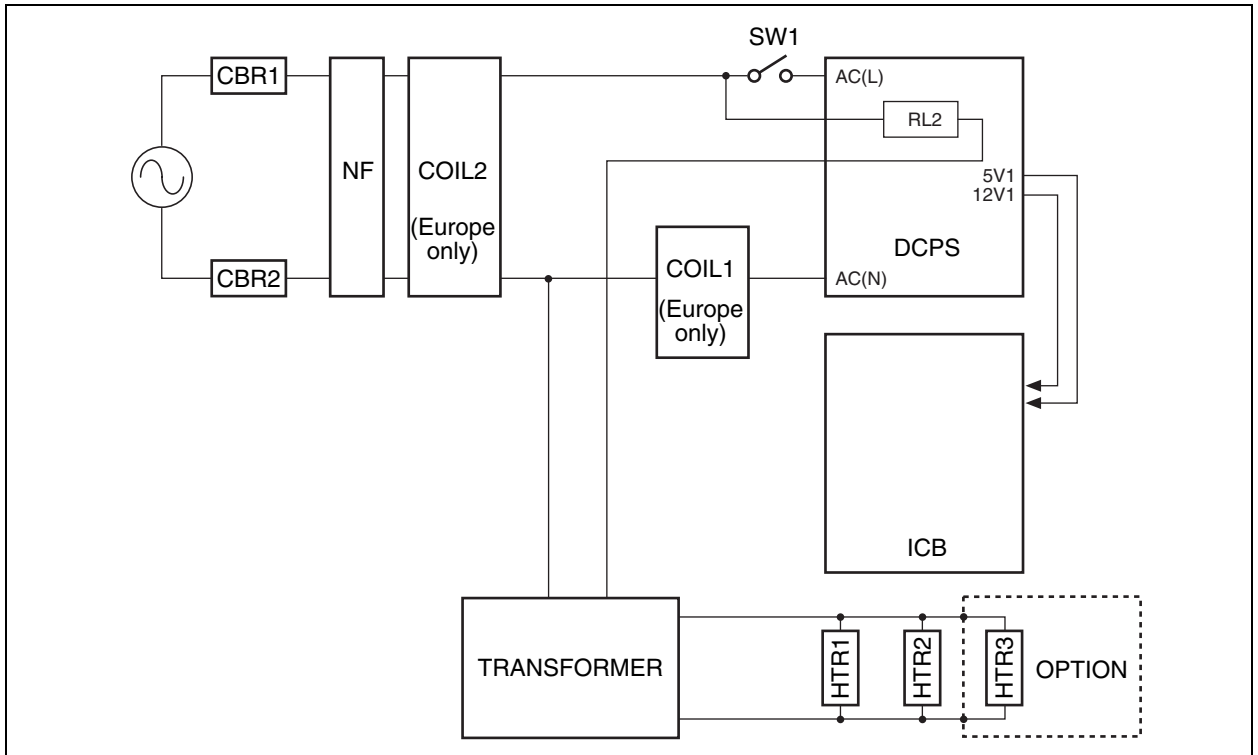
b. PRCB output signals

- (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

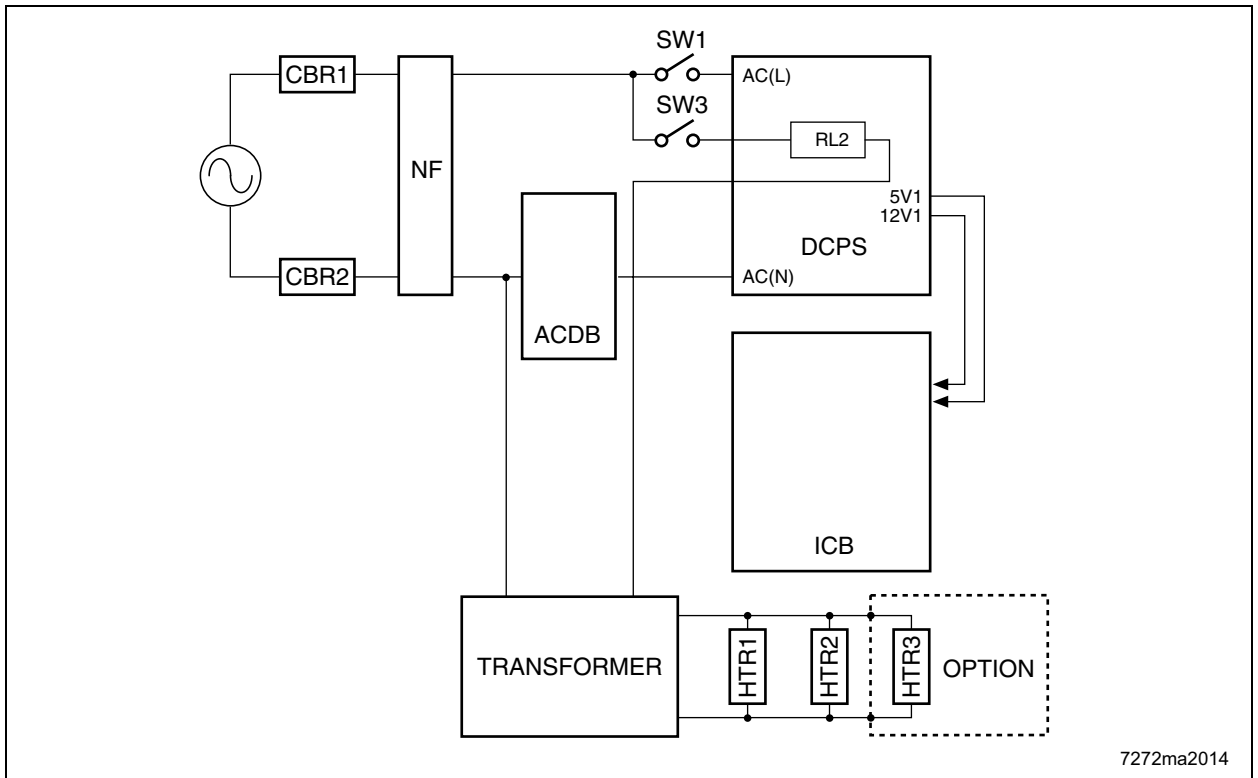
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OTHER KINDS OF CONTROL

- [1] **Parts Energized when SW1 (Main Power) is OFF**
In the case of the Di551/Di650



In the case of the Di5510/Di7210



7272ma2014

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.

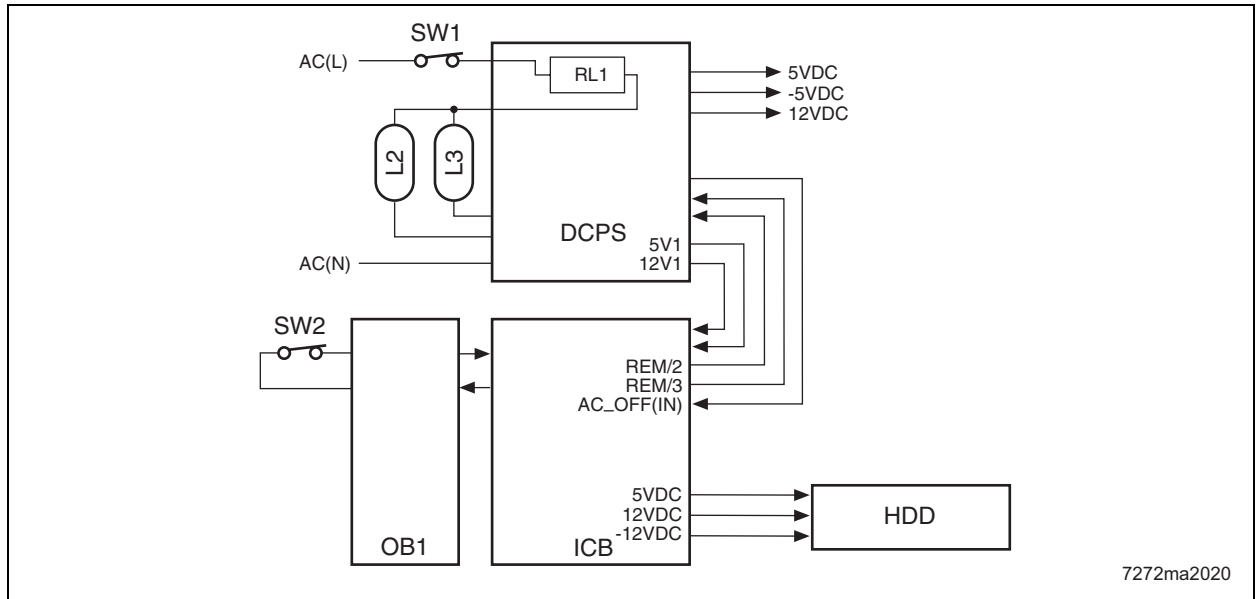
c. DCPS (DC power supply unit)

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 in synchronization with ON or OFF operation of SW1 (main power). (Di551/Di650)

HTRs 1 to 3 are energized by turning ON/OFF SW3 (heater switch). (Di5510/Di7210)

[2] Parts that Operate when SW1 (Main Power)/SW2 (Sub 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), HDD. 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) AC_OFF (IN) (DCPS to ICB)

AC input OFF detection signal (for data evacuation to HDD)

[L]: When AC power is turned ON.

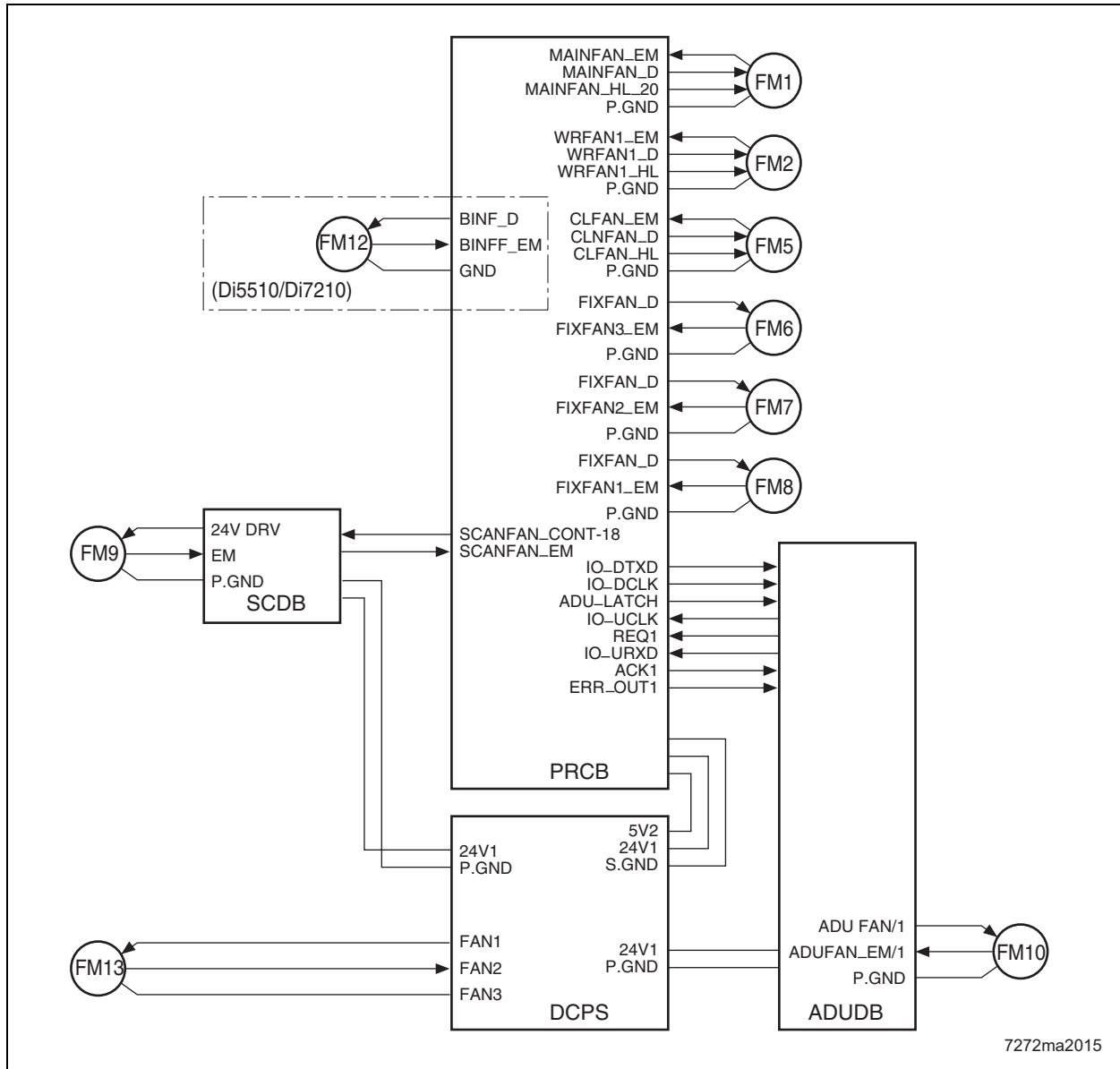
[H]: Until DC power output is stopped after AC power is turned OFF.

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

[3] Cooling Fan Control



FM1 (main body cooling/1), FM2 (write section 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

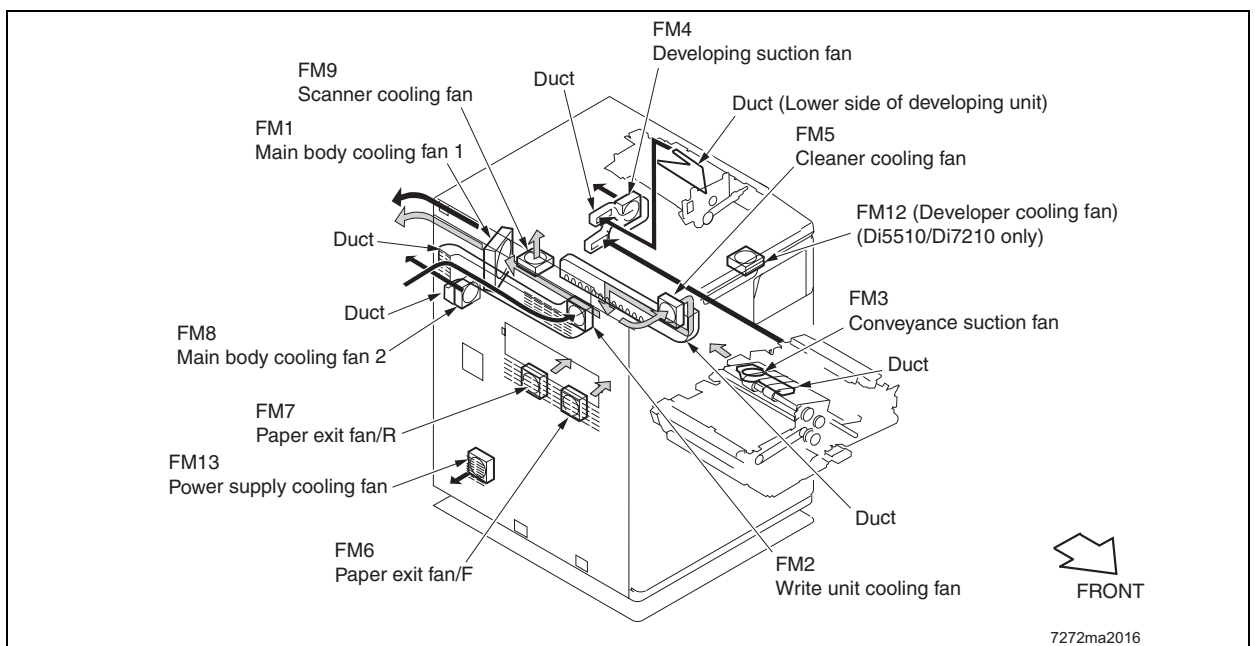
A 24 VDC motor is used for each cooling fan.

a. FM1 (main body 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 coping, 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.
- (2) 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. FM12 (Developer cooling) (Di5510/Di7210)**
- (1) ON timing
Turned ON when the copying is started.
- (2) OFF timing
Turned OFF when M7 (paper exit) is turned ON.
- i. Fan air flow**



2. Signals

a. Input signals

- (1) MAINFAN_EM (FM1 to PRCB)
FM1 (main body 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.
- (10) SCANFAN_EM (SCDB to PRCB)
FM9 (scanner cooling) abnormality detection signal
[L]: FM9 is normal.
[H]: FM9 is abnormal.

(11) BINFF_EM

FM12 (developer cooling) abnormality detection signal

[L]: FM12 is normal

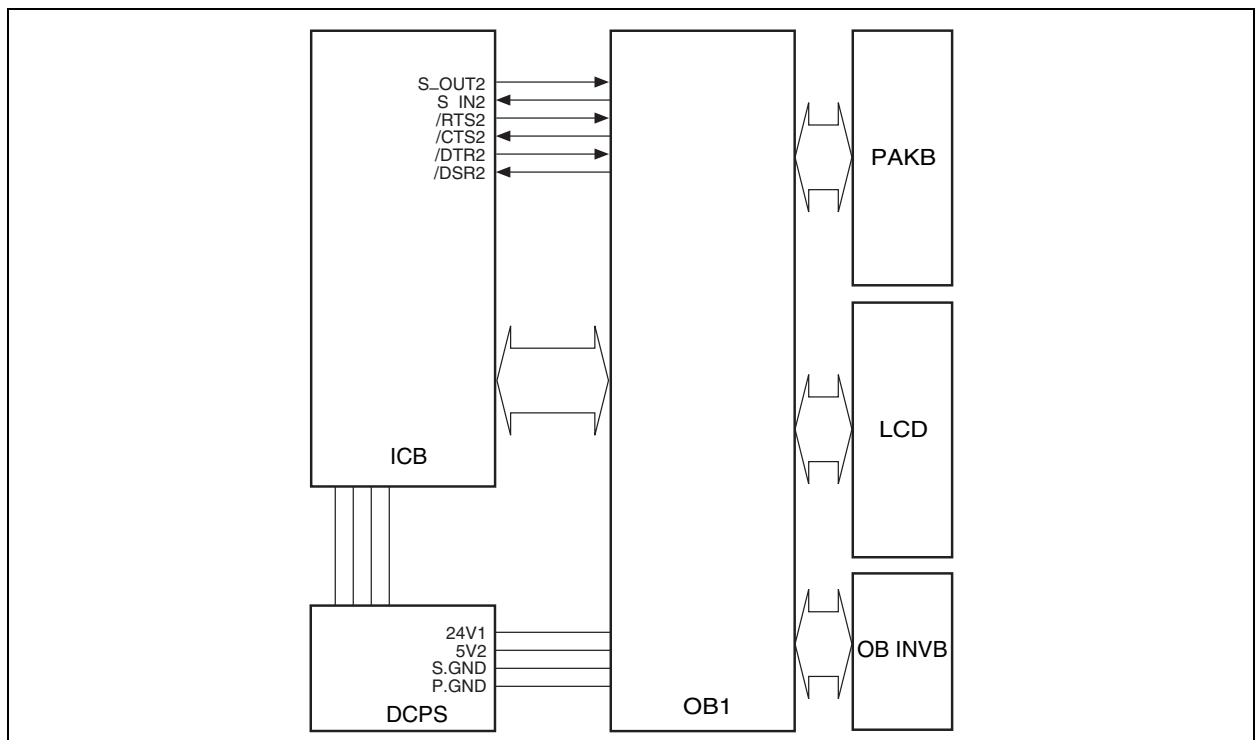
[H]: FM12 is abnormal

b. Output signals

- (1) MAINFAN_D (PRCB to FM1)
FM1 (main body cooling/1) ON/OFF control signal
[L]: FM1 ON
[H]: FM1 OFF
- (2) MAINFAN_HL_20 (PRCB to FM1)
FM1 (main body 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 (write section 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

- (10) 24V DRV (SCDB to FM9)
FM9 (scanner cooling) ON/OFF control signal
[L]: FM9 ON
[H]: FM9 OFF
- (11) ADU FAN/1 (ADUSDB to FM10)
FM10 (ADU reverse motor cooling) ON/OFF control signal
[L]: FM10 ON
[H]: FM10 OFF
- (12) FAN1 (DCPS to FM13)
[L]: FM13 ON
[H]: FM13 OFF
- (13) SCANFAN_CONT-18 (PRCB to SCDB)
FM9 (scanner cooling) ON/OFF control signal
[L]: FM9 ON
[H]: FM9 OFF
- (14) BINF_D
FM12 (developer cooling) ON/OFF control signal
[L]: FM12 ON
[H]: FM12 OFF

[4] Operation Panel Control



The operation 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 operation 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).

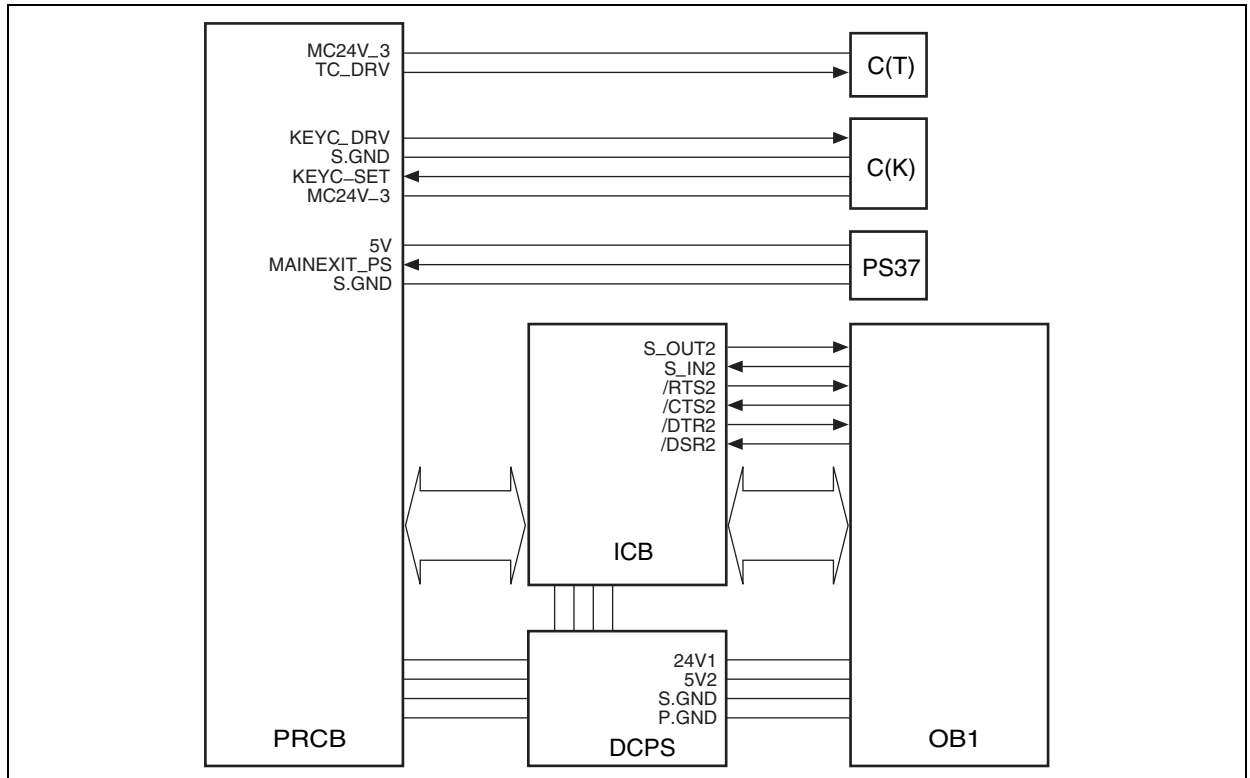
2. Signals**a. Input signals**

- (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).

[5] 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.

(1) 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>

a. Copy quantity display counter on OB

Displays the count of ejected papers

b. C (K)

This counter counts in sync with the paper exit counter.

c. 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

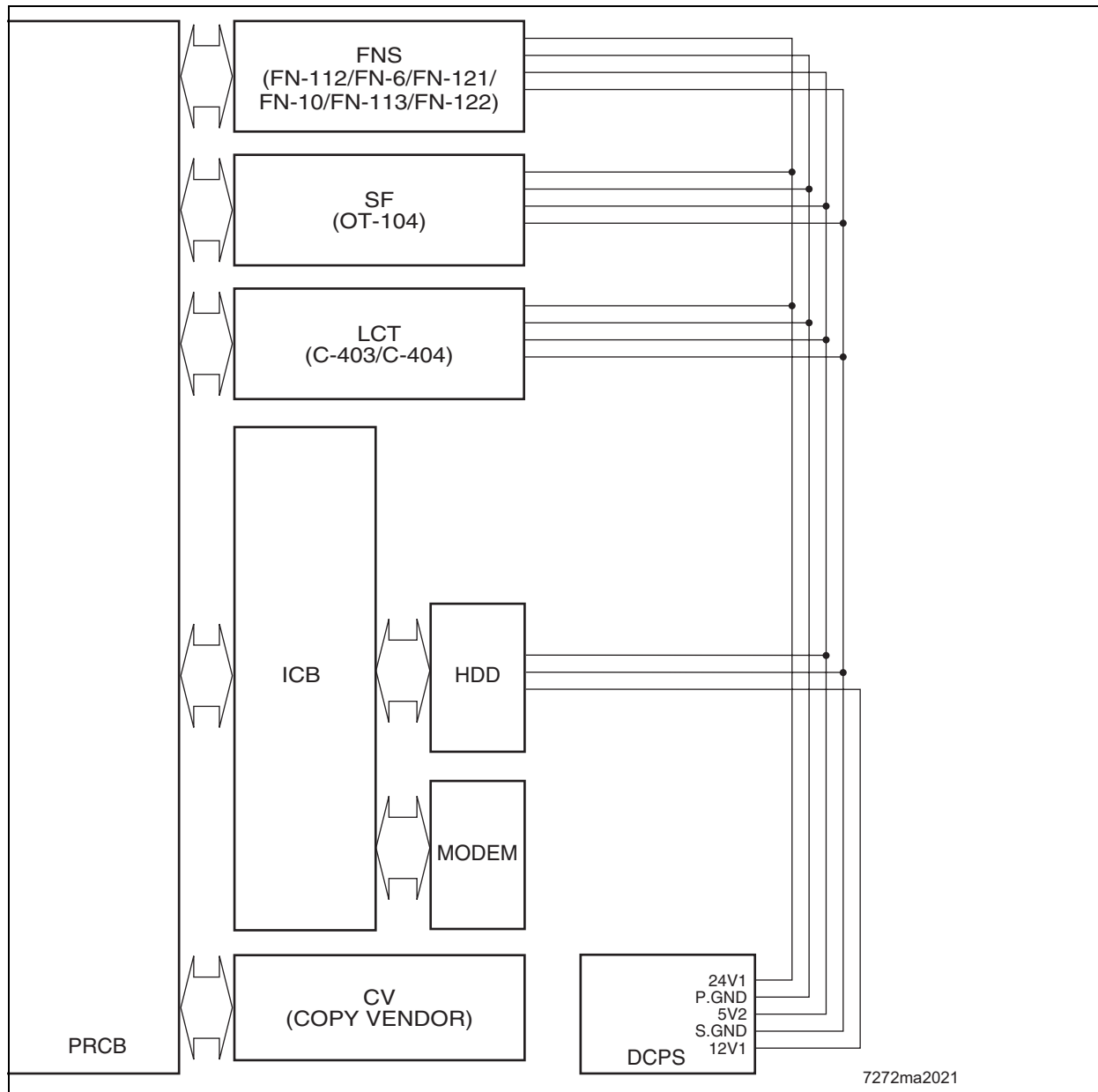
[L]: C (T) ON

(2) KEYC_DRV (PRCB to C (K))

C (K) drive control signal

[L]: C (K) ON

[6] Option Control



Options such as LCT and FNS are controlled by the PRCB (printer control board).

1. Operation

FNS incorporates CB which exchanges only control data with PRCB (printer control board) of the main body. LCT, FNS, 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 main body 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	-	-

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DISASSEMBLY/ASSEMBLY

This section explains how to disassemble and reassemble the machine. When disassembling and reassembling the machine, follow the precautions given below.

1. Be sure the power cord has been unplugged from the wall outlet.
2. The disassembled parts must be reassembled following the disassembly procedure in reverse unless otherwise specified.
3. Care should be taken not to lose small parts. Care should also be taken not to install small parts in wrong places.
4. Do not operate the machine before installing all the disassembled parts completely.
5. Removal of some screws is prohibited in this section. Never loosen them.

EXTERNAL SECTION

[1] Replacing the Ozone Filter

In the case of the Di551/Di650

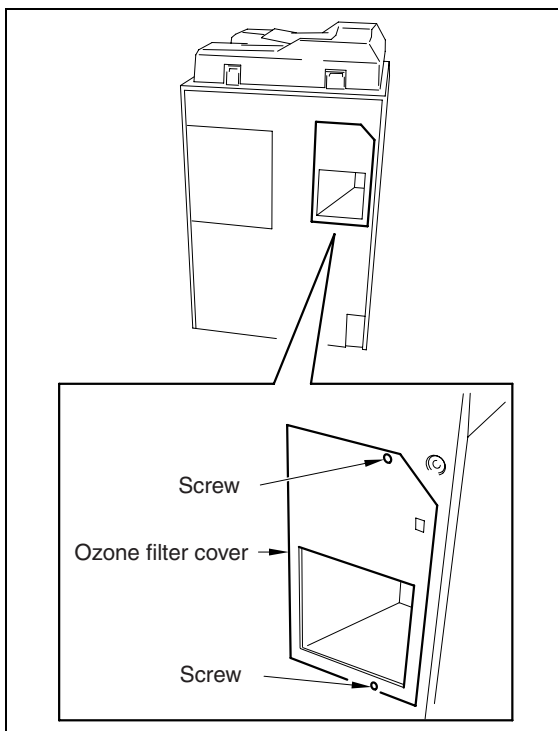
⚠ Caution:

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

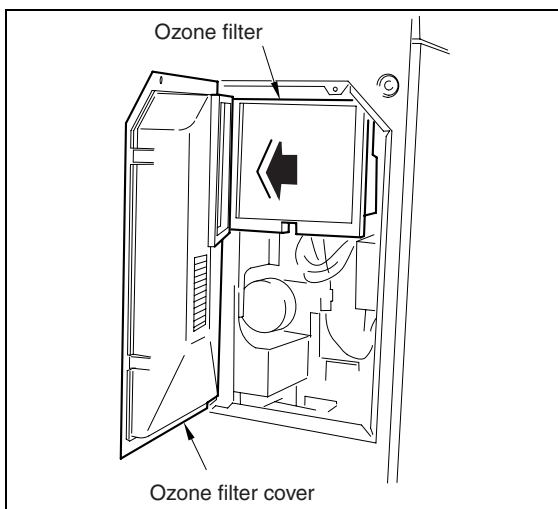
Caution: When replacing the ozone filter, insert it in the opening in the main body as far as it will go.

a. 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.

In the case of the Di5510/Di7210

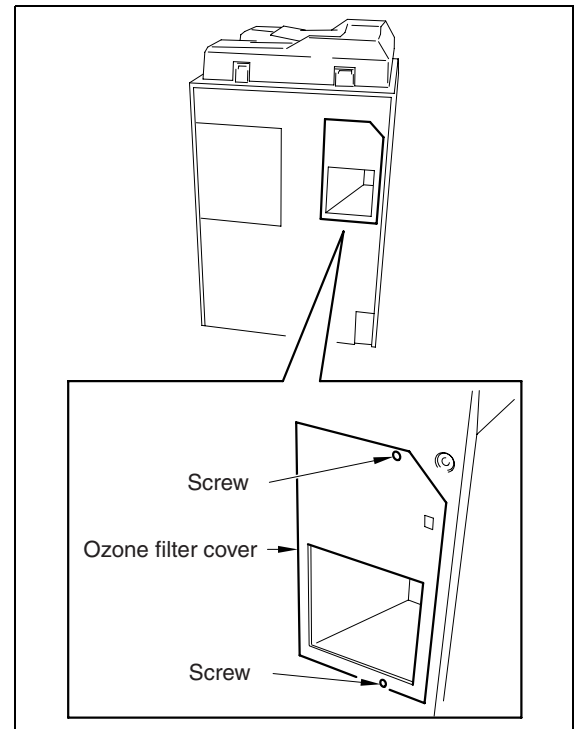
⚠ Caution:

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

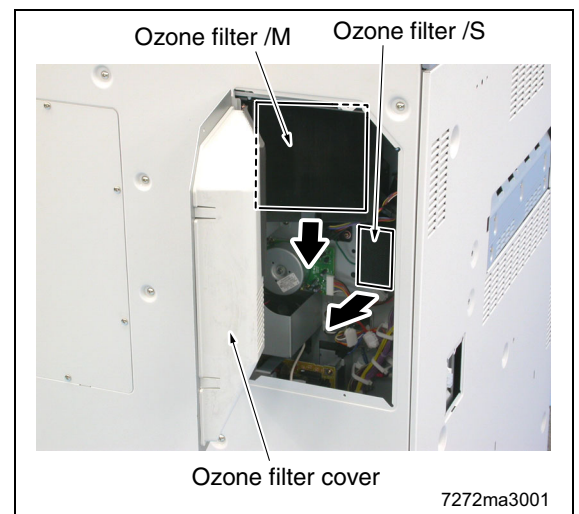
Caution: When replacing the ozone filter /M and /S, insert it in the opening in the main body as far as it will go.

b. Procedure

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



- (2) Replace the ozone filter /M and /S.



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

[2] Replacing the Developing Suction Filter

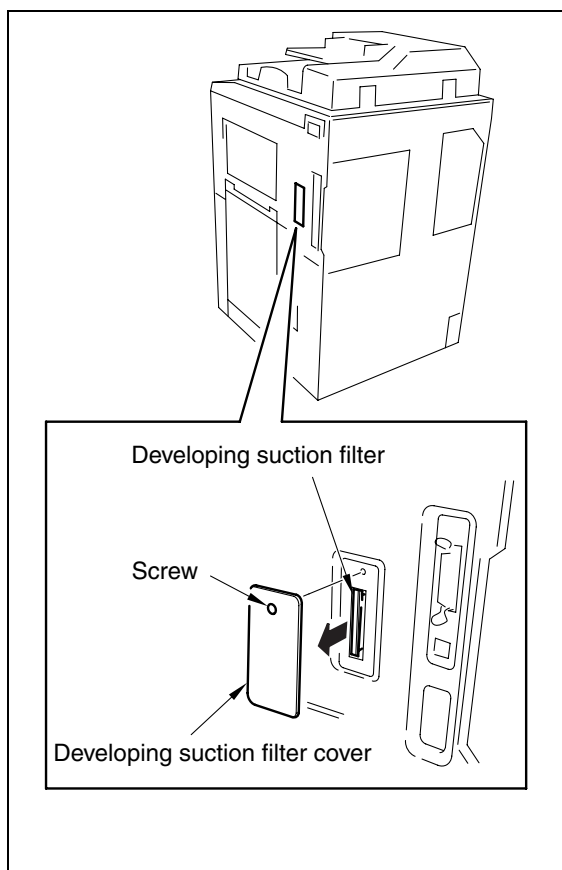
⚠ Caution:

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

Caution: When replacing the developing suction filter, insert it in the opening in the main body as far as it will go.

a. 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 machine.

[3] Removing and Reinstalling the External Covers

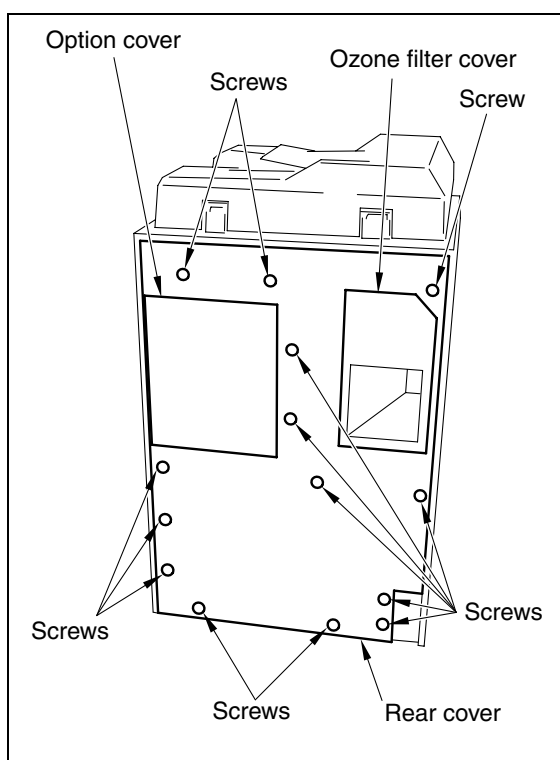
⚠ Caution:

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

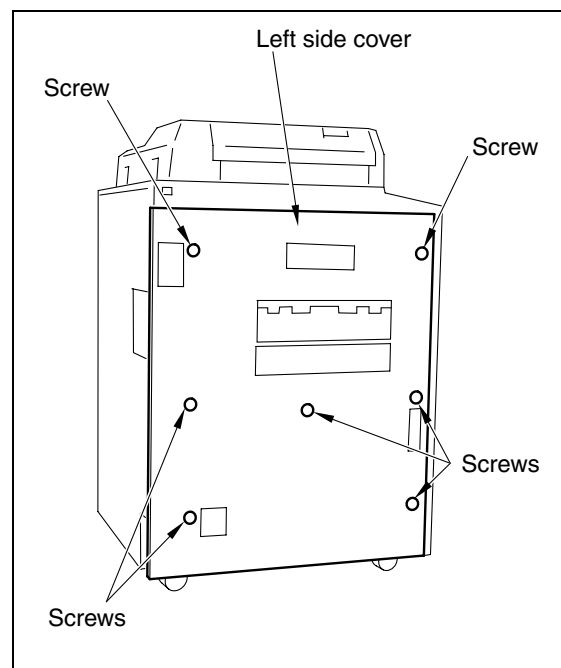
a. Procedure

- (1) Remove fourteen screws to detach the rear cover.

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



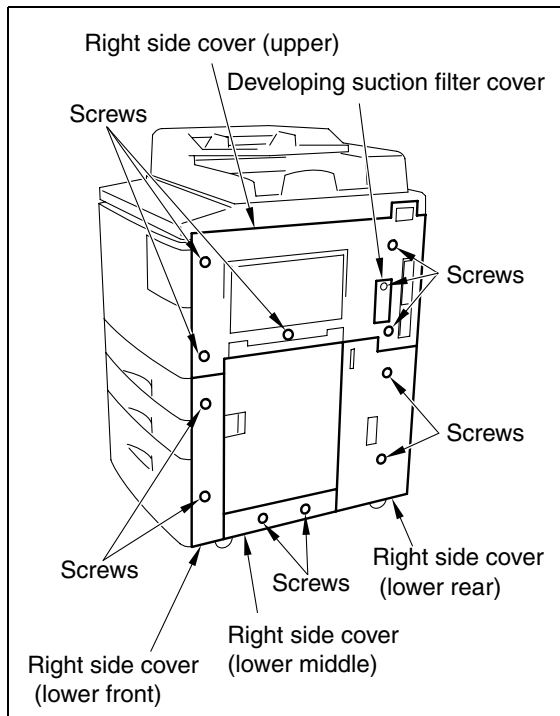
- (2) Remove seven screws to detach the left side cover.



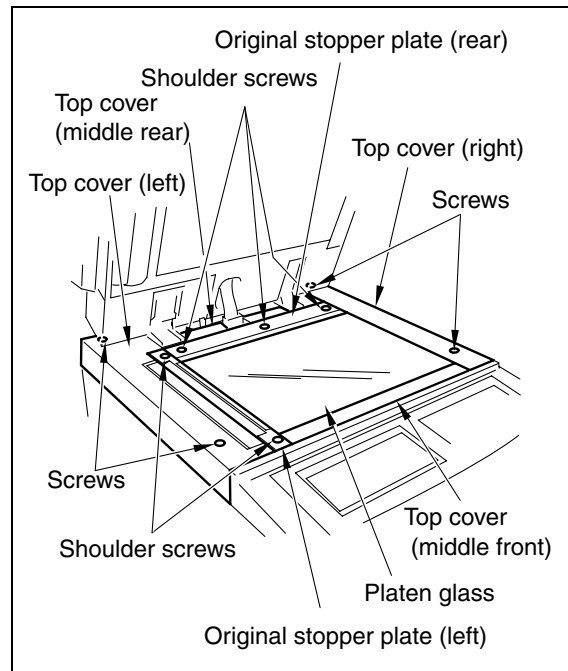
- (3) Loosen one screw and remove the developing suction filter cover.
- (4) Loosen five screws and detach the right side cover (upper).

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).

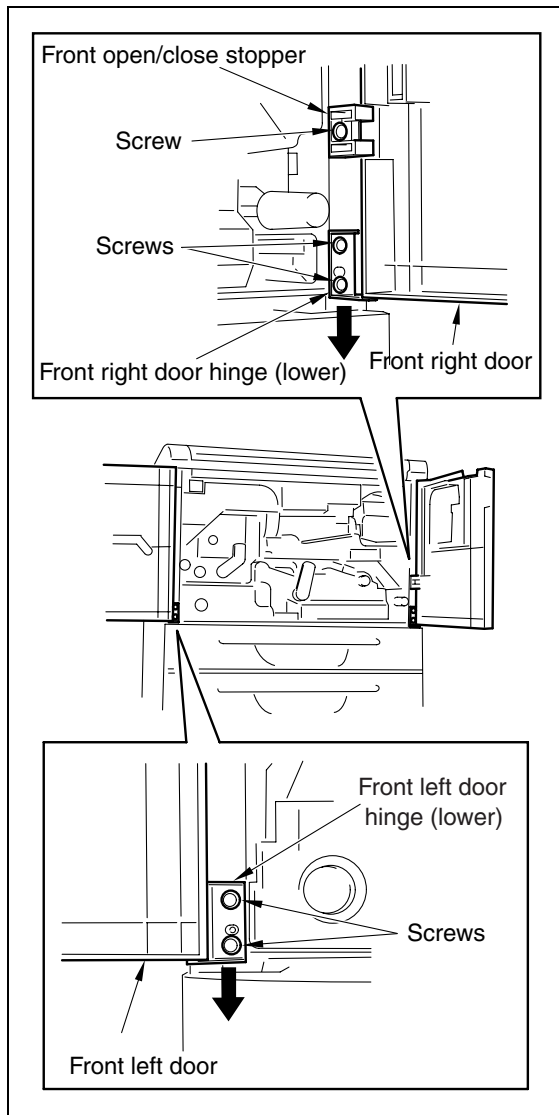


- (14) Remove the top cover (middle front) and top cover (middle rear).



- (8) Open the RADF.
- (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 platen glass.
- (12) Remove two screws to detach the top cover (left).
- (13) Remove two screws to detach the top cover (right).

- (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.

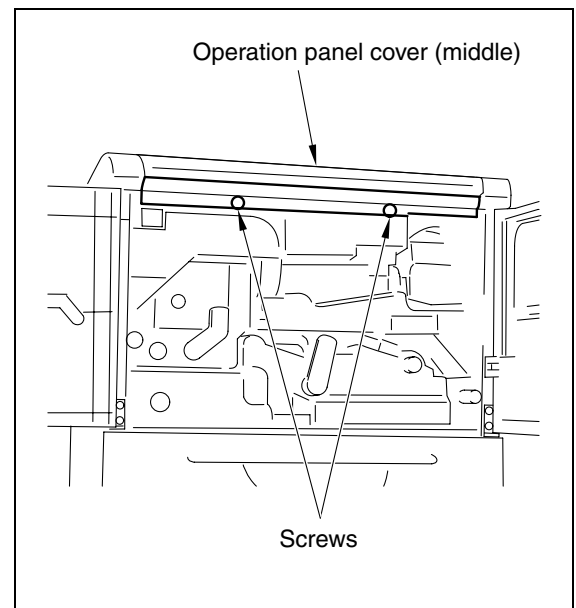
[4] Changing the Operation Panel Attachment Angle and Removing/Reinstalling

⚠ Caution:

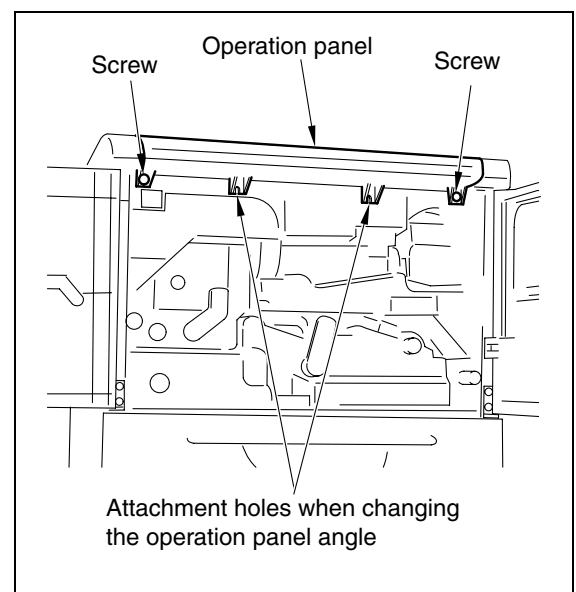
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

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



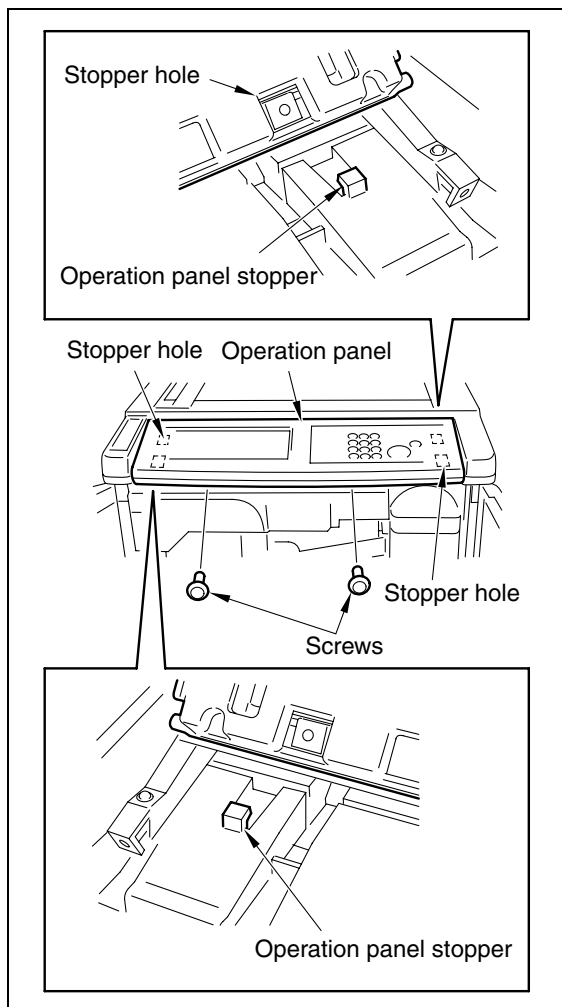
- (3) Remove two screws to unlock the operation panel.



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

Caution1: To remove the operation panel, skip this step and proceed to step (5).

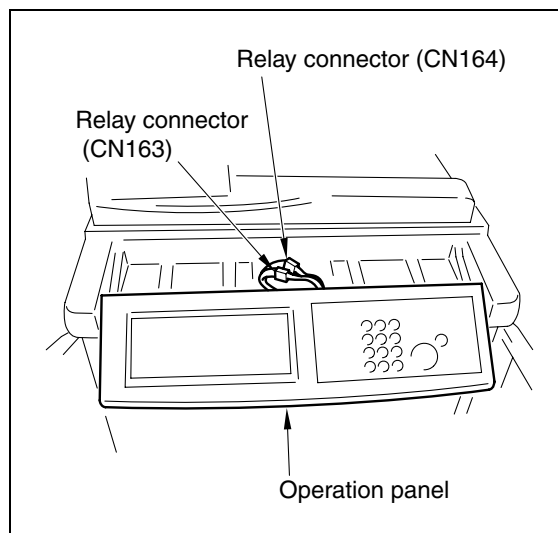
Caution2: When the attachment angle of the operation panel is changed, the operation panel cover and two screws will become unnecessary.



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

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

- (6) Remove the operation panel.



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

[5] Resetting the Circuit Breaker**⚠ Caution:**

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

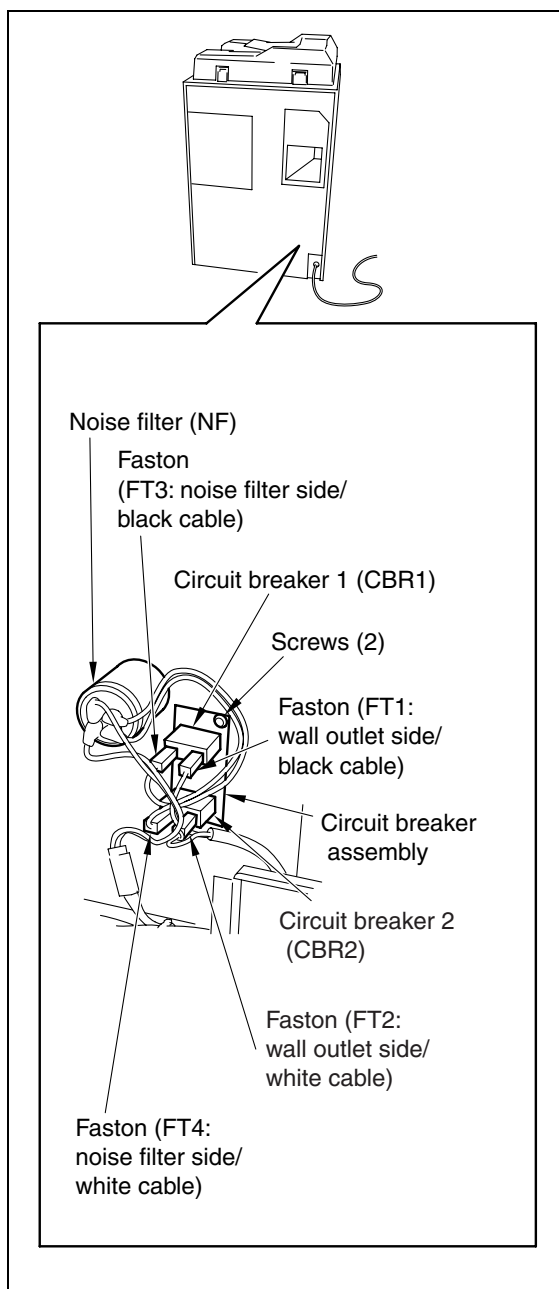
⚠ Caution:

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

a. 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.



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DRIVE SECTION

[1] Removing and Reinstalling the Drum Motor(M2)

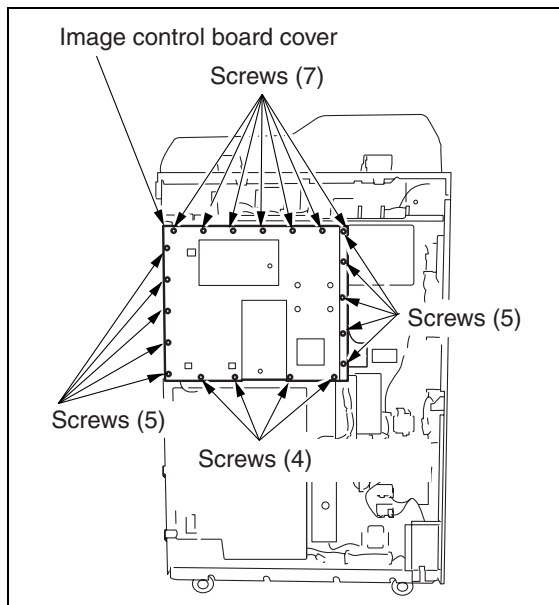
⚠ Caution:

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

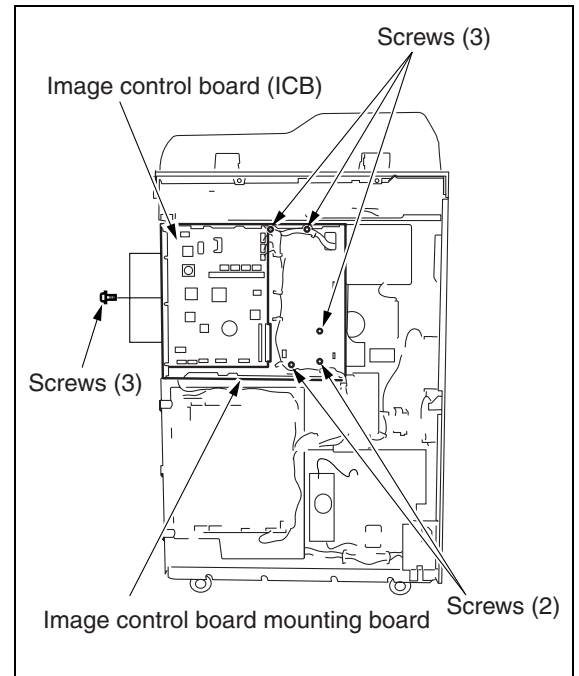
Caution: Be sure to draw the drum unit out of the main body before removing or reinstalling the drum drive motor. If you fail to draw out the drum unit, the cleaning blade may be damaged because the drum rotates when installing or removing the flywheel or gear.

a. Procedure

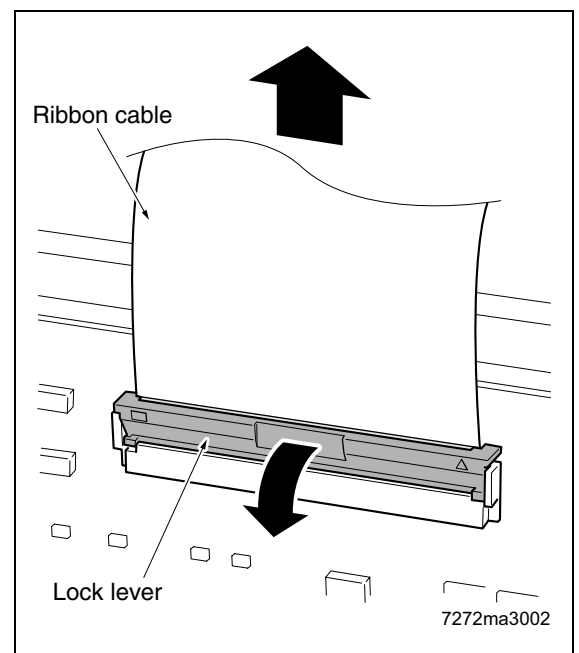
- (1) Draw the drum unit out of the main body. (See "DRUM UNIT.")
- (2) Remove the rear cover. (See "EXTERNAL SECTION.")
- (3) Remove the developing suction cover and right cover (top). (See "EXTERNAL SECTION.")
- (4) Remove twenty-one screws and remove the image control board cover.



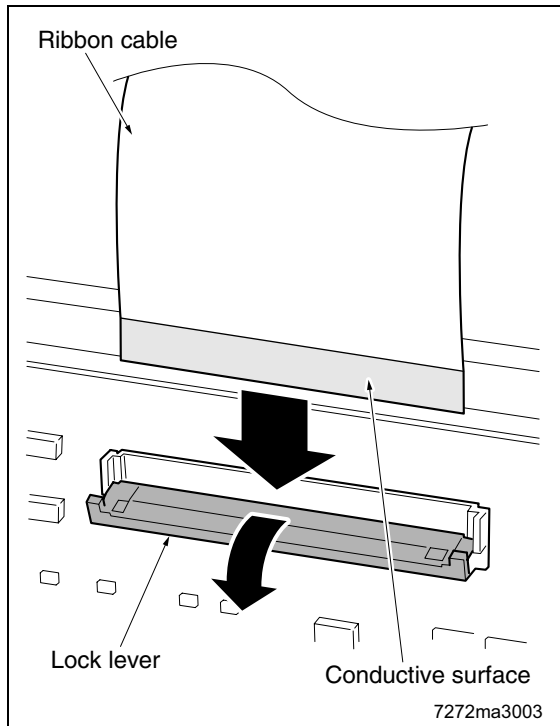
- (5) Remove five screws at the rear and three screws on the right side and remove all connectors from the image control board (ICB).



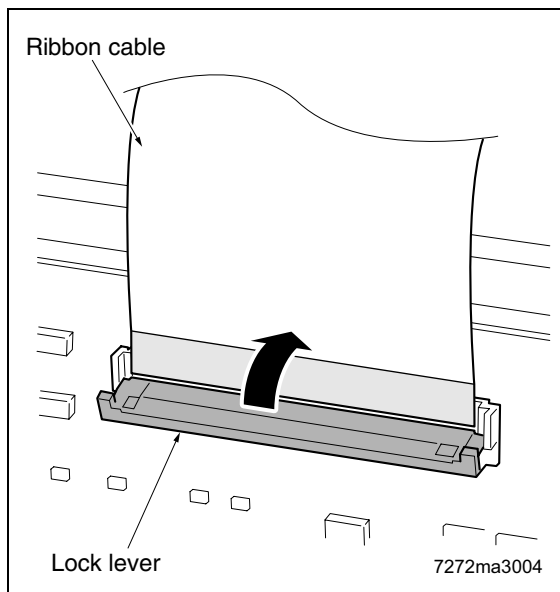
Caution: When removing CN110 ribbon cable, pull and recline the lock lever frontward, release the lock, and then pull out the ribbon cable.



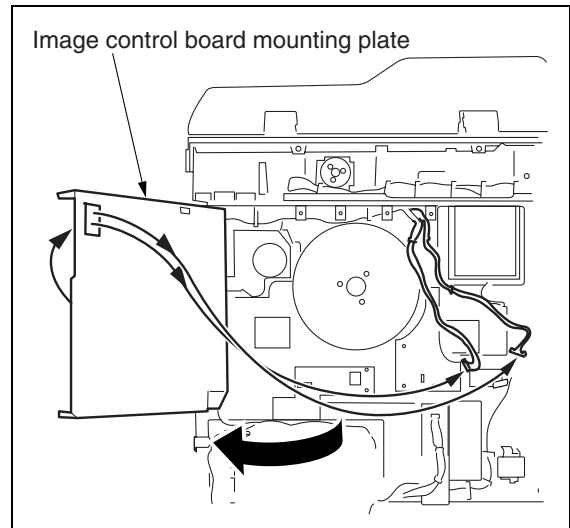
When installing the ribbon cable, pull and recline the lock lever frontward, be sure to insert it fully to the end of the connector so that the conductive surface of the ribbon cable is positioned in the opposite side.



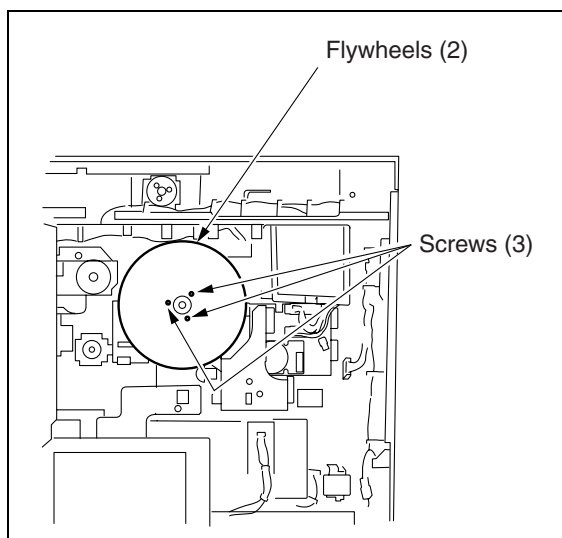
Subsequently, set back the lock lever in original position and lock the ribbon cable.



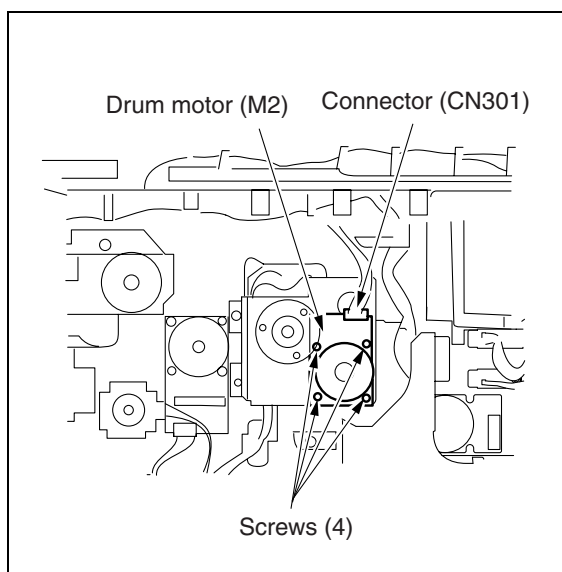
- (6) Remove each cable from wire guide.
- (7) Remove one cable from the scanner board and two cables from the write unit, draw then through the hole and open the image control board mounting plate.



- (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.

[2] Removing and Reinstalling the Fixing Input Gear

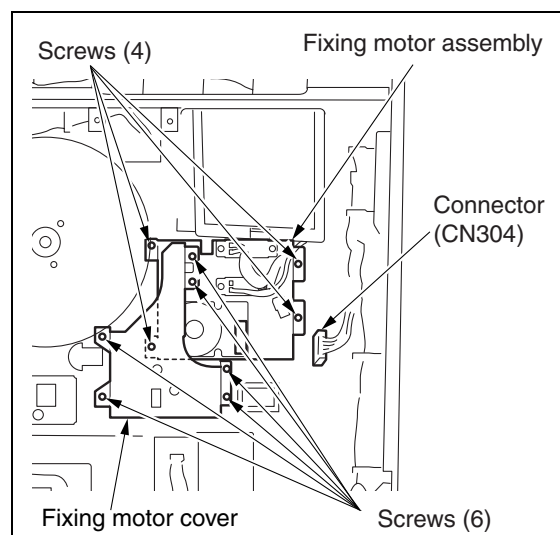
⚠ Caution:

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

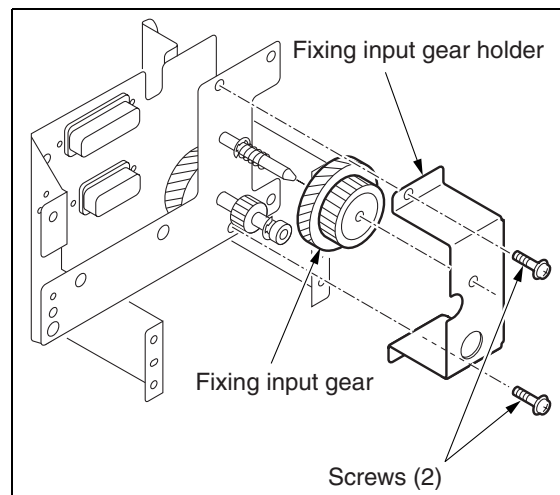
a. Procedure

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

Caution: Hold the fixing motor assembly with your hand because it is connected to the main body with cable.



- (4) Remove two screws to remove the fixing input gear holder.
- (5) Pull out the fixing input gear from the shaft.



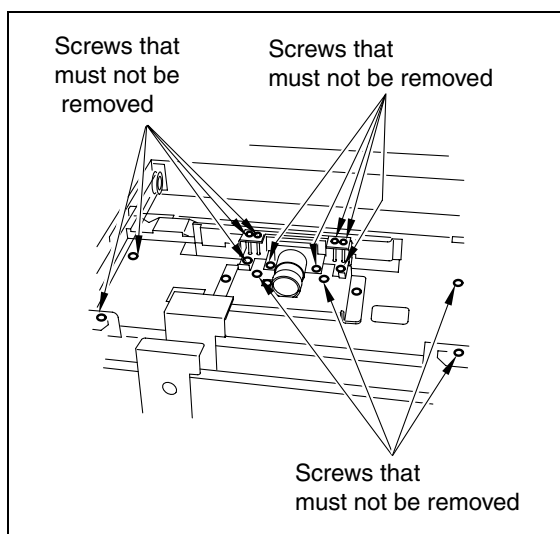
- (6) Reinstall the above parts following the removal steps in reverse.

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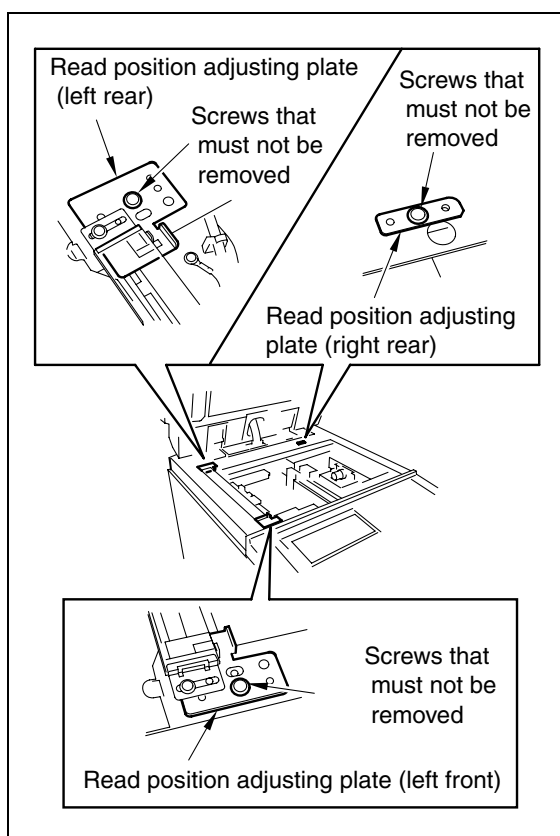
SCANNER SECTION

[1] Screws that Must not be Removed

a. 14 screws securing the CCD unit



b. Read position adjusting plate screw (1 each)



[2] Removing and Reinstalling the CCD Unit

⚠ Caution:

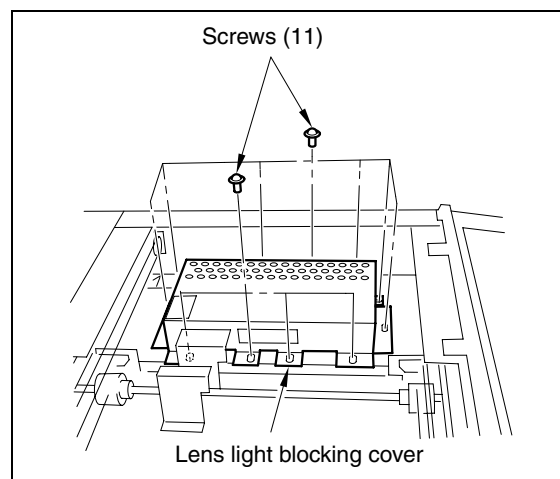
Be sure the power cord has been unplugged from the wall outlet.

Caution1: Be sure to adjust the image after installing the CCD unit (See "ADJUSTMENT.")

Caution2: When disconnecting or reconnecting connectors from / to the AD converter board, be careful not to place any stress on the board.

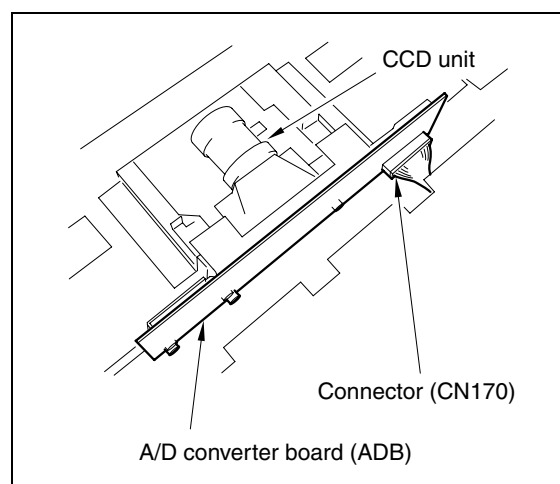
a. Procedure

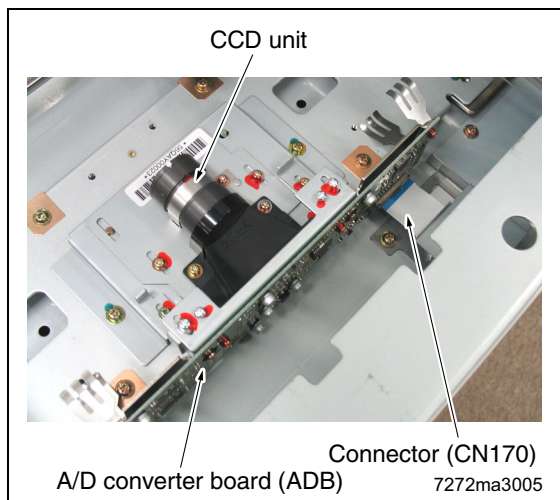
- (1) Remove the right side cover (top), left side cover, original stopper plates (left and rear), platen glass and top cover (right, left, front center, and rear center). (See "EXTERNAL SECTION.")
- (2) Remove eleven screws to remove the lens light blocking cover.



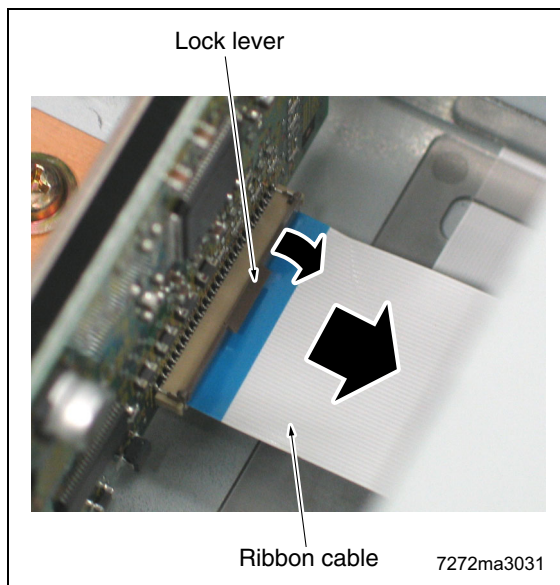
- (3) Remove the connector (CN170) from the A/D converter board (ADB).

In the case of the Di551/Di650

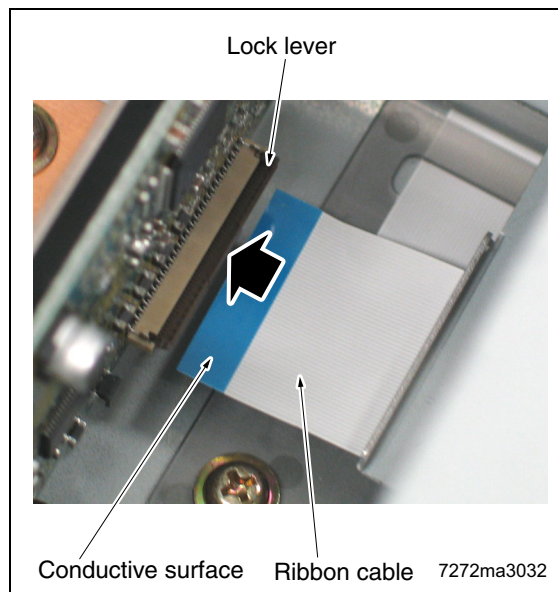


In the case of the Di5510/Di7210

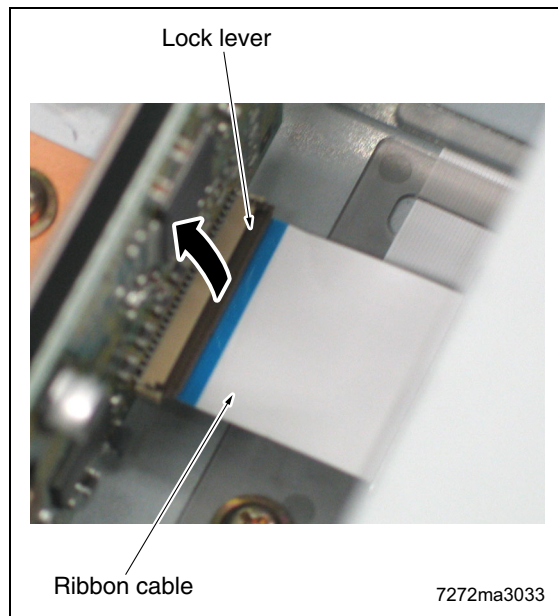
Caution: When removing CN170 ribbon cable, pull and recline the lock lever frontward, release the lock, and then pull out the ribbon cable.



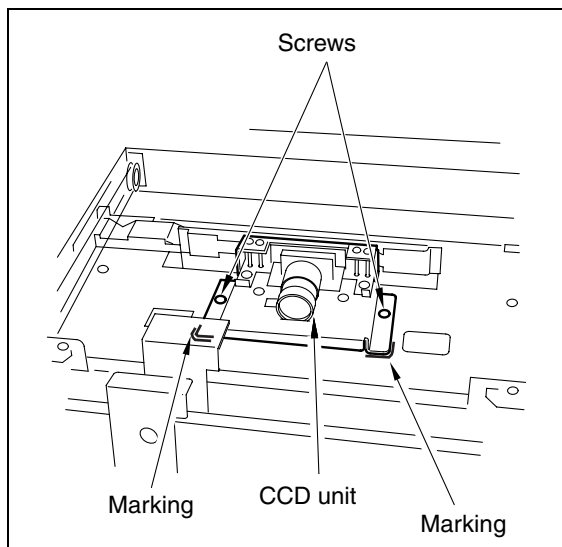
When installing the ribbon cable, pull and recline the lock lever frontward, be sure to insert it fully to the end of the connector so that the conductive surface of the ribbon cable is positioned in the opposite side.



Subsequently, set back the lock lever in original position and lock the ribbon cable.



- (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.

[3] Replacing the Exposure Lamp

⚠ Caution1:

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

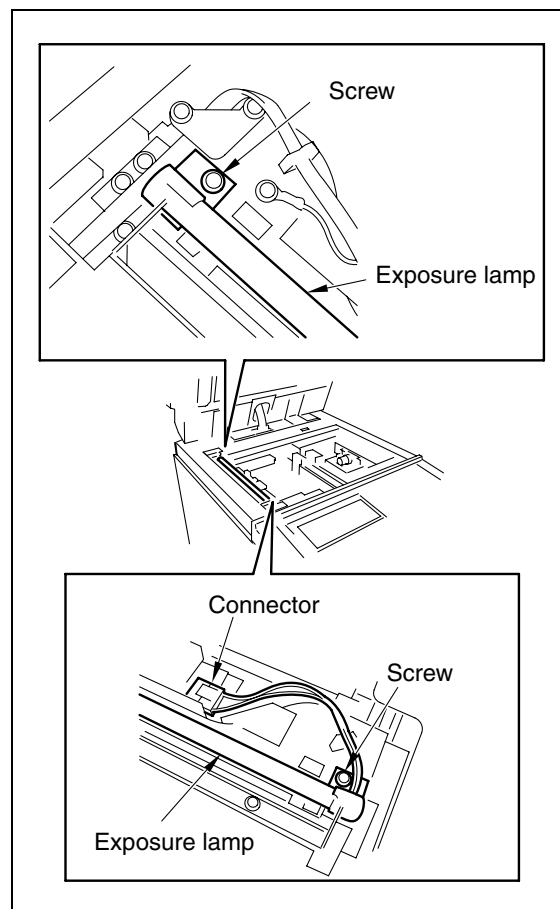
⚠ Caution2:

Do not touch the exposure lamp with bare hands.

Caution: Be sure to check the image after installing the exposure lamp. (See "ADJUSTMENTS.")

a. Procedure

- (1) Remove the original stopper plates (left and rear), platen glass and top cover (right, middle front, and middle rear). (See "EXTERNAL SECTION.")
- (2) Move the exposure unit to the notch in the main body 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.

[4] Removing and Reinstalling the Exposure Unit

⚠ Caution:

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

Caution1: When installing the exposure unit, use the optics unit positioning jig.

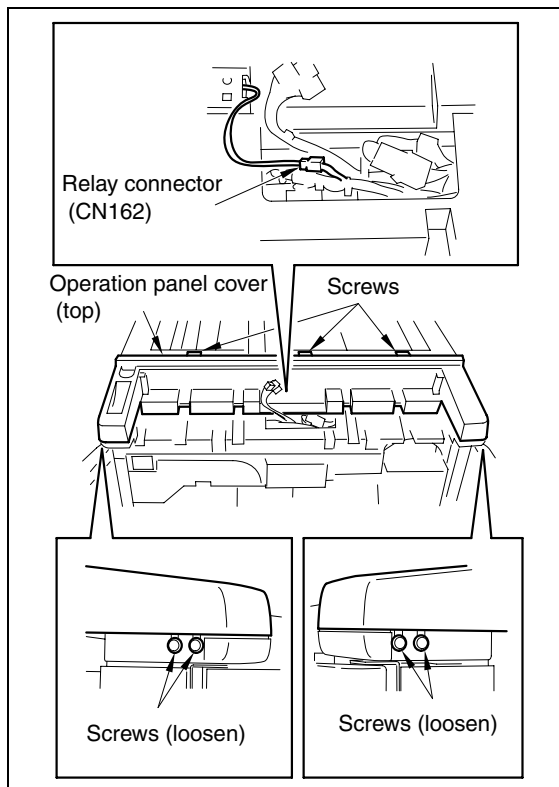
Caution2: Be sure to perform image adjustment after installing the exposure unit. (See "ADJUSTMENT.")

a. Procedure

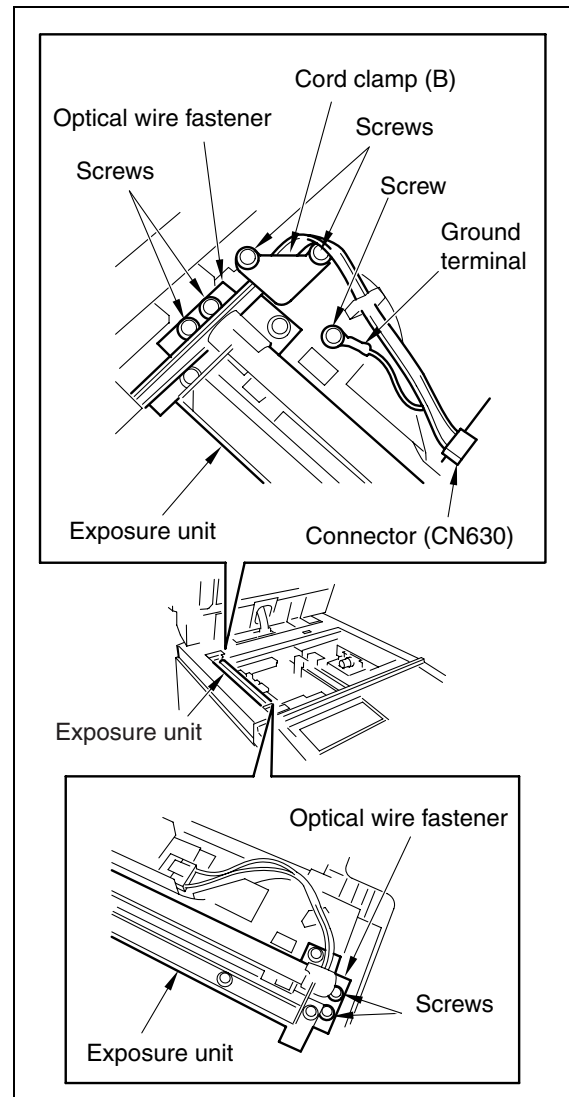
- (1) Remove the right side cover (top), left side cover, original stopper plates (left and rear), platen glass and top cover (right, left, front center, and rear center). (See "EXTERNAL SECTION.")
- (2) Remove the operation panel. (See "EXTERNAL SECTION.")
- (3) Remove the relay connector (CN162).

Caution: Each relay 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 operation panel cover (top).
- (5) Remove three screws and remove the operation unit cover (top).

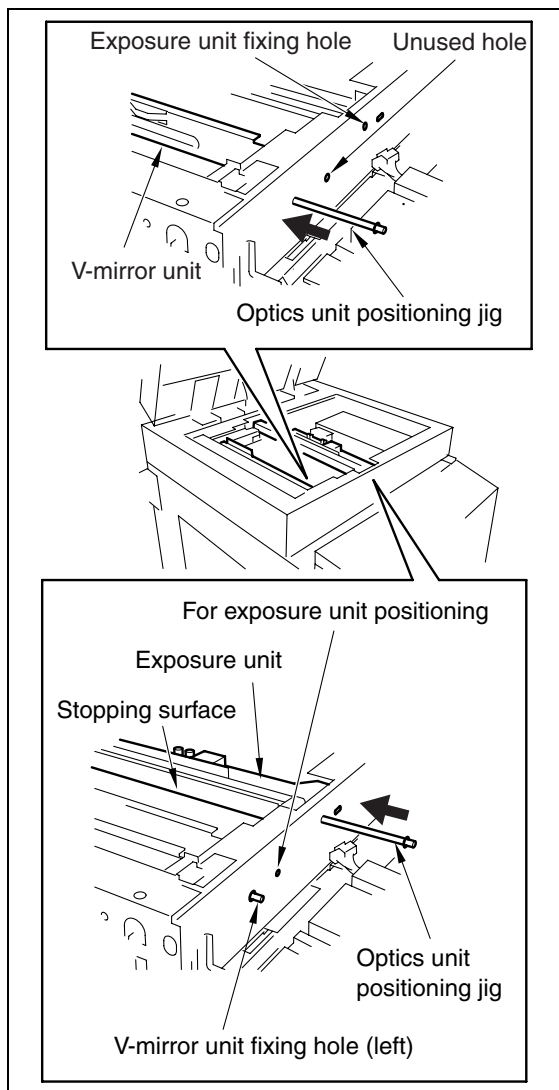


- (6) Move the exposure unit to the notch in the main body frame on the paper exit side.
- (7) Remove two screws to detach the cord clamp (B).
- (8) Remove one screw to remove the ground terminal.
- (9) Disconnect the connector (CN630).
- (10) Remove four screws to detach the exposure unit.



b. Installation procedure

- (1) Move the V-mirror unit toward the paper exit side, then insert the optics positioning jigs from the front to secure the V-mirror unit. Ensure that the optics positioning jigs pass through the V-mirror unit.
- (2) Insert the optics positioning jigs 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 jig.



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

[5] Installing the Optics Wire**⚠ Caution:**

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

Caution1: 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.

Caution2: When re-tensioning or replacing the optics wire, be sure to use the optics positioning jig.

Caution3: Be sure to perform image adjustment after replacing or re-installing the wire (See "ADJUSTMENT.")

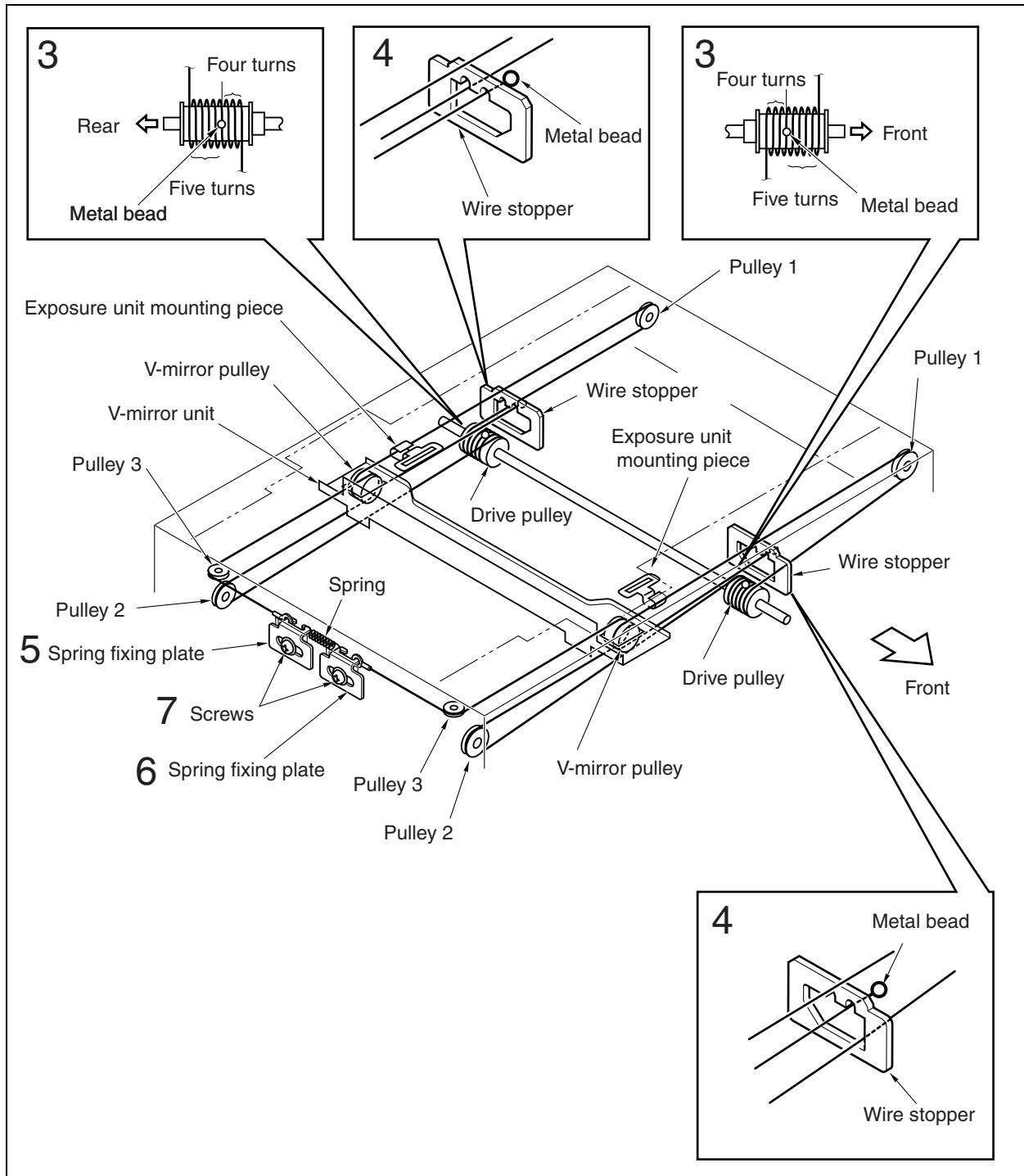
a. Procedure

- (1) Remove the exposure unit.
- (2) Move the V-mirror unit toward the paper exit side then insert the optics positioning jigs from the front to secure the V-mirror unit. Ensure that the optics positioning jigs 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.

Caution1: 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.

Caution2: 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.

- (4) 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.

- 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 fixing plate. At this time, secure the spring fixing plate temporarily with one screw.

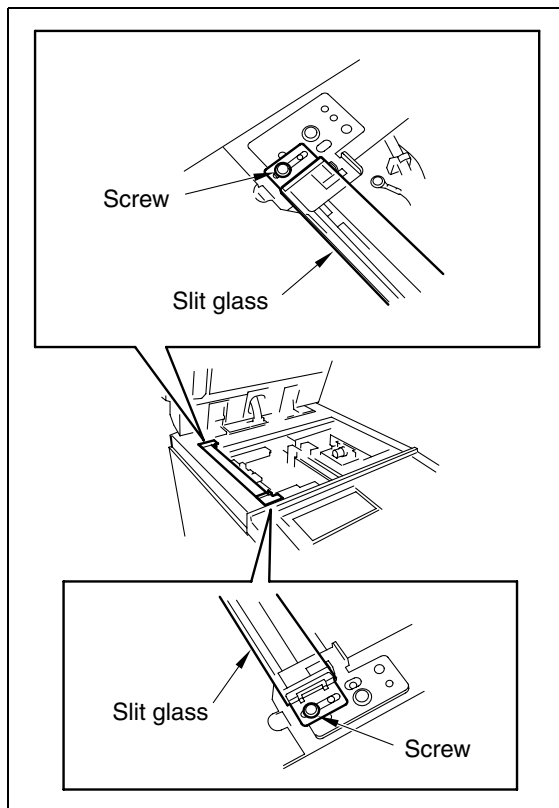
- Install the other wire following the same procedure.
- Loosen each screw that was tightened temporarily, install the spring on the spring fixing plate, and tighten each screw.

[6] Cleaning the Slit Glass and Platen Glass

⚠ Caution:

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

- (1) Remove the original stopper plates (left and rear), platen glass, and top cover (right, left, front center, and rear center). (See "EXTERNAL SECTION.")
- (2) Remove two screws to detach the slit glass.
- (3) Place the removed slit glass and platen glass on a rag and clean with isopropyl alcohol and waste.



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

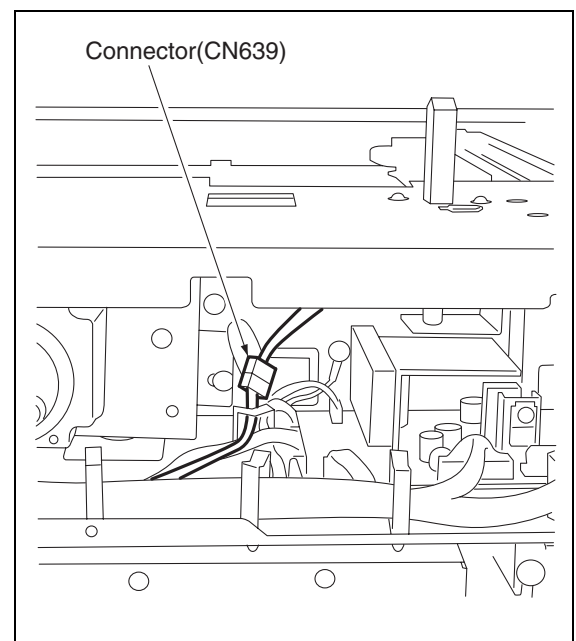
[7] Replacing the Scanner Motor (M11)

⚠ Caution:

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

a. Procedure

- (1) Remove the RADF unit, original stopper plates (left and rear), platen glass, and top cover (right, left, front center, and rear center). (See "EXTERNAL SECTION.")
- (2) Remove one connector (CN639) from the APS timing PS (PS51).

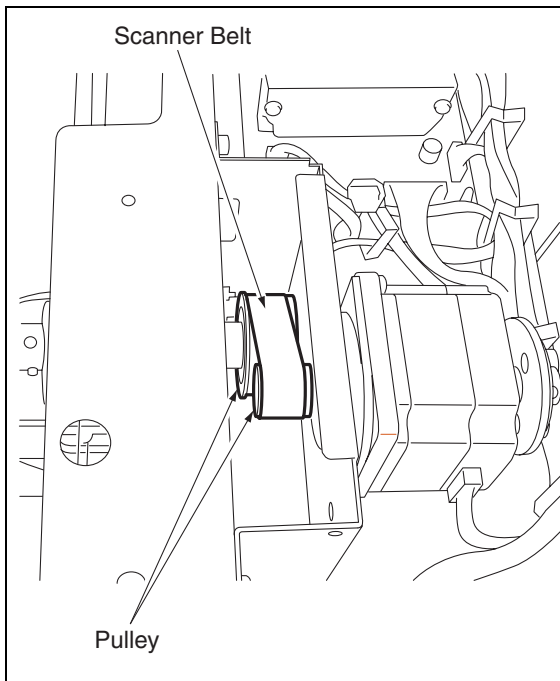


- (3) Remove the hinge mounting plate (rear side) from the scanner unit. (12 screws)
- (4) Remove four screws from the scanner motor (M11), then remove the scanner belt and the scanner motor.

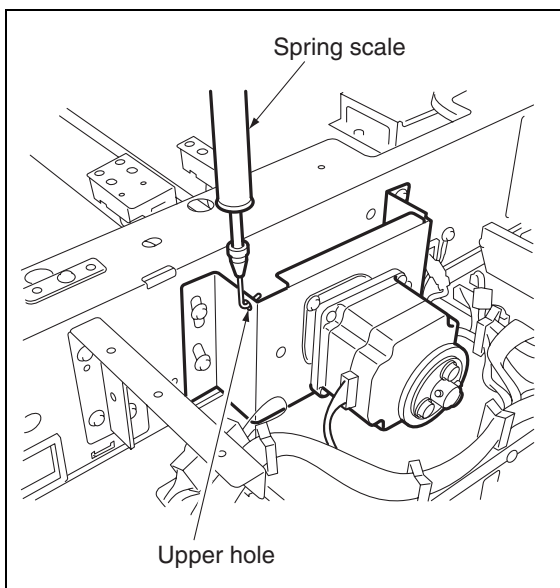
- (5) Install the scanner motor (M11) and the scanner belt. Tighten the scanner motor loosely with four screws.

Caution1: 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.

Caution2: Tighten the motor by first tightening the screw and then give it one turn to loosen slightly.

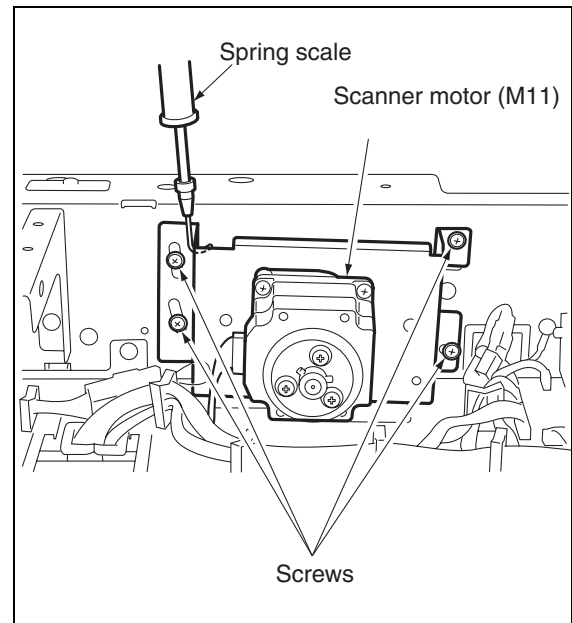


- (6) Hook the spring scale on the upper hole of the scanner motor (M11).



- (7) Pull the spring scale upward, and tighten the scanner motor (M11) tightly with the tension pressure of $2 \pm 0.2\text{kgf}$. (Use four screws)

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



- (8) Make sure that the belt is not slacked off after marking an adjustment.
 (9) Insert the connector to the scanner motor (M11).
 (10) Follow the disassembly procedures in reverse order to install.

WRITE SECTION

[1] Removing and Reinstalling the Write Unit

In the case of the Di551/Di650

⚠ Warning:

- (1) Do not energize the write unit when it is not in the correct position.
- (2) Never remove the write unit cover and the polygon unit cover.
- (3) Never look directly into the laser beam. It can cause blindness.
- (4) Never remove the write unit for at least two minutes after turning OFF the main switch.

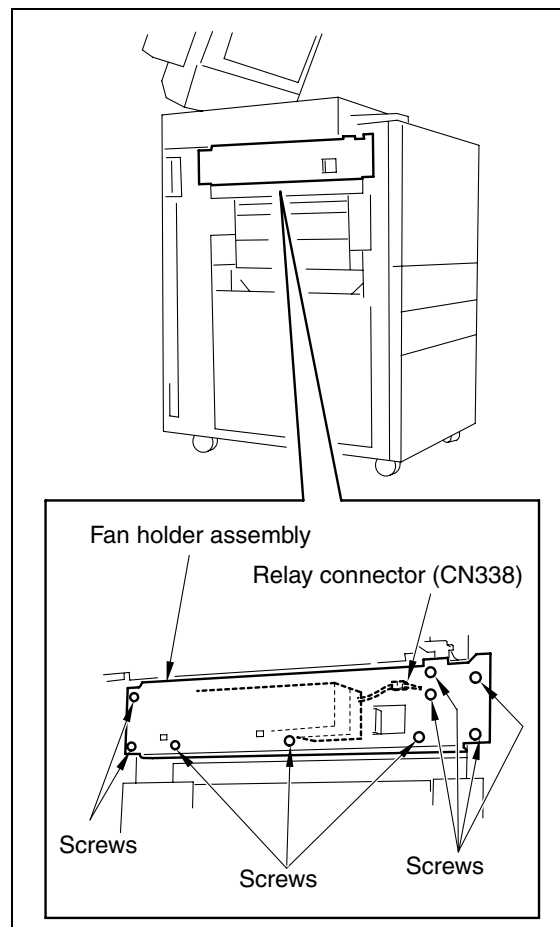
⚠ Caution:

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

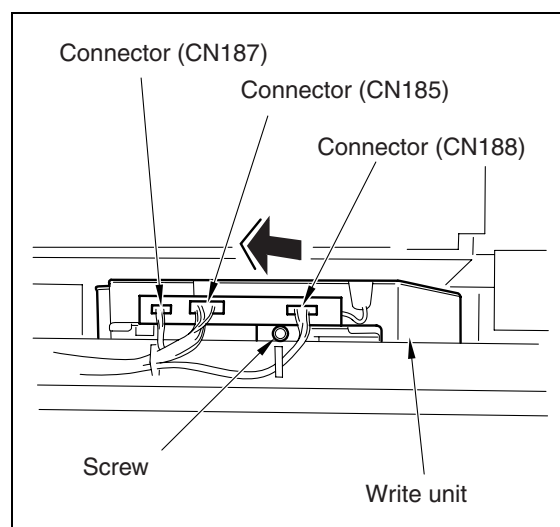
a. Procedure

- (1) Remove the left side cover. (See "EXTERNAL SECTION.")
- (2) Remove nine screws to detach the fan holder assembly.
- (3) Remove the relay connector (CN338).

Caution: Each relay 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).
- (5) Loosen the screw to draw out and remove the write unit.



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

In the case of the Di5510/Di7210**⚠ Warning:**

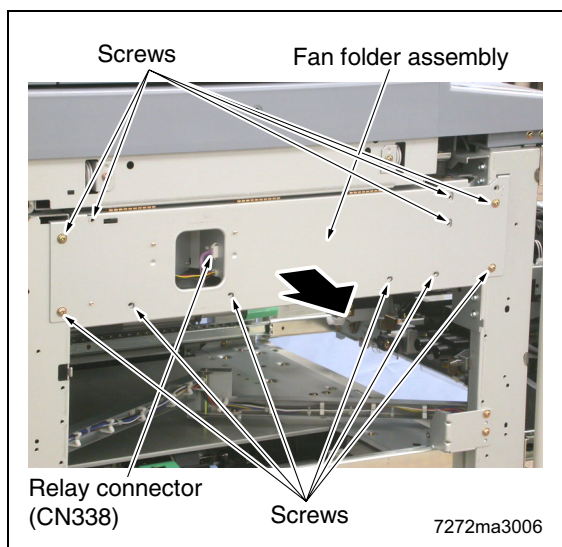
- (1) **Do not energize the write unit when it is not in the correct position.**
- (2) **Never remove the write unit cover and the polygon unit cover.**
- (3) **Never look directly into the laser beam. It can cause blindness.**
- (4) **Never remove the write unit for at least two minutes after turning OFF the main switch.**

⚠ Caution:

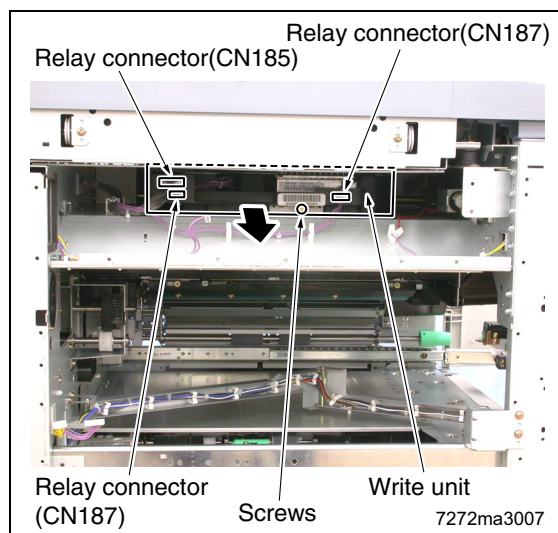
Be sure the power cord has been unplugged from the wall outlet.

b. Procedure

- (1) Remove the left side cover. (See "EXTERNAL SECTION.")
- (2) Remove the relay connector (CN338).
- (3) Remove eleven screws to detach the fan holder assembly.



- (4) Remove the three connectors (CN185, 187, 188).
- (5) Loosen the screw to draw out and remove the write unit.



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

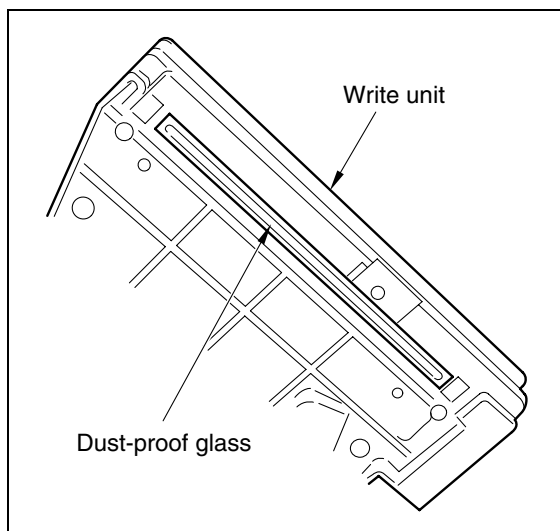
[2] Cleaning the Dust-proof Glass

⚠ Caution:

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

a. Procedure

- (1) Remove the write unit.
- (2) Clean the dust-proof glass at the bottom of the write unit with waste and blower brush.



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

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DRUM UNIT

[1] Removing and Reinstalling the Drum Unit

⚠ Caution:

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

Caution1: Be sure to put a drum cover over the removed drum unit and store the drum unit in a dark place.

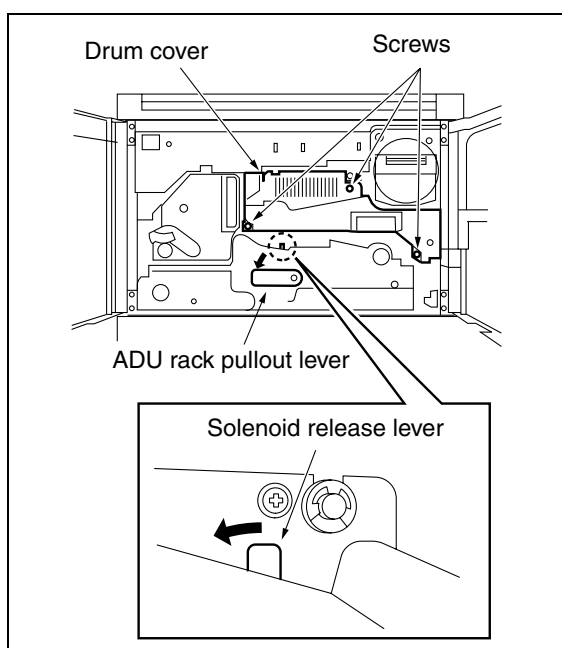
Caution2: When installing or removing the drum unit, do not rotate it in the direction opposite to the specified one. Rotating the drum unit in the opposite direction during copy operation could damage the cleaning blade.

Caution3: When installing or removing the drum unit, take care not to touch the separation claw.

Caution4: When installing a new drum, be sure to enter mode 25 and select "Copy Count by Parts to be Replaced" to reset OPC drum counter.

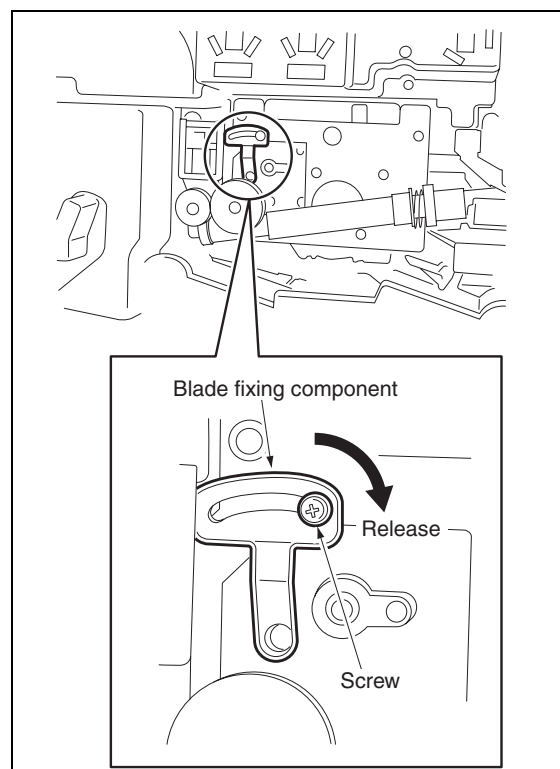
a. Procedure

- (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.

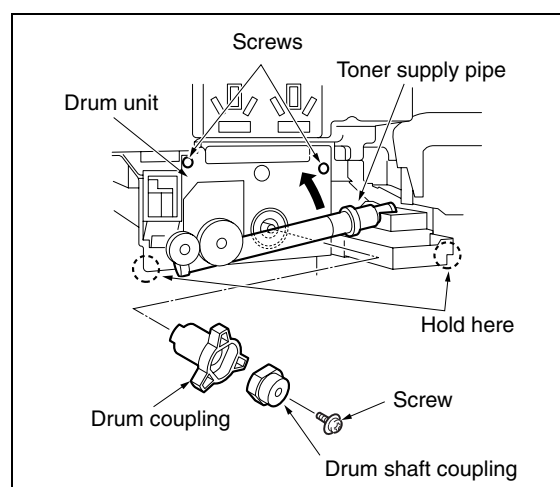


- (4) Loosen one screw and slide the blade fixing component in the direction of the arrow until it stops to release the crimp of the cleaning blade.

- (5) Loosen the screw of the blade fixing 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 "[2] Installing the Coupling."

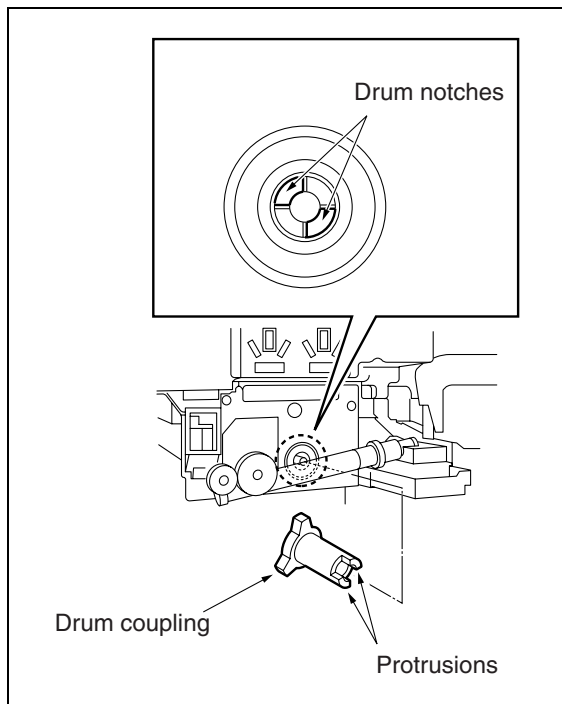
[2] Installing the Coupling

⚠ Caution:

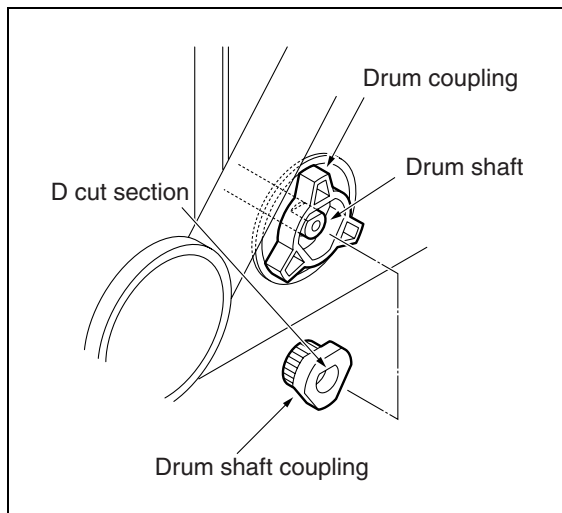
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

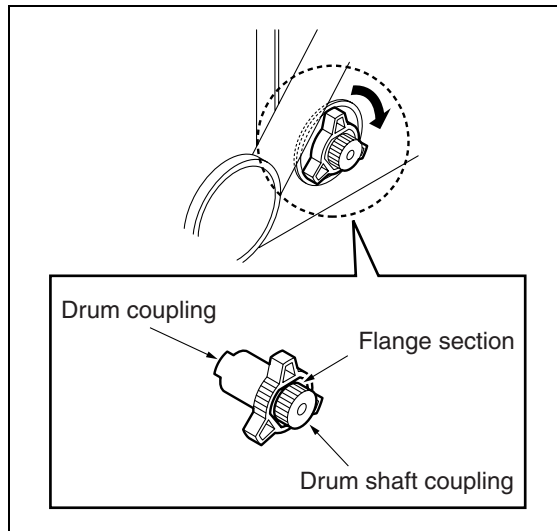
- (1) Clean the outer surface of the drum coupling and drum shaft coupling with isopropyl alcohol and waste.
- (2) Insert the drum coupling aligning the protrusions on the drum coupling with the notches in the drum.



- (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 screw.

[3] Removing, Cleaning, and Reinstalling the Drum

⚠ Caution:

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

Caution1: Be careful not to touch the drum or the cleaning blade with bare hands, or damage them.

Caution2: When leaving the drum, be sure to put the drum cover over the drum and store it in a dark place.

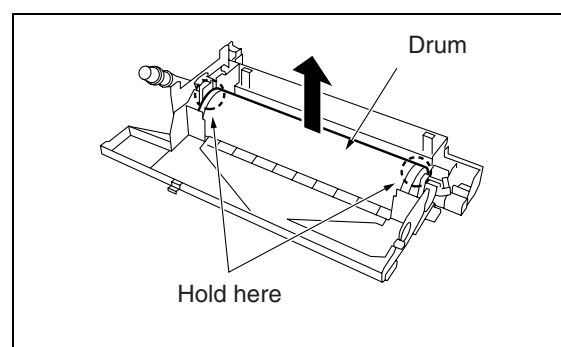
Caution3: When reinstalling the drum, cleaning blade, and toner guide roller, apply setting powder to the entire surface of the drum and also to the cleaning blade regardless of whether the parts are new or old.

Caution4: After applying setting powder to the drum, perform the following before installing the drum unit in the main body.

- 1) 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).
- 2) When installing a new drum, be sure to enter mode 25 and select "Copy Count by Parts to be Replaced" to reset drum counter. (See "ADJUSTMENT.")

a. Procedure

- (1) Remove the drum unit from the main body.
- (2) Remove the charging corona unit, developing unit, cleaning blade, and toner guide roller from the drum unit. (See "CHARGING CORONA UNIT SECTION," "DEVELOPING UNIT," and "CLEANING/TONER RECYCLE SECTION.")
- (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 waste.



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

[4] Removing and Reinstalling the Separation Claws and Separation Claw Solenoid

⚠ Caution:

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

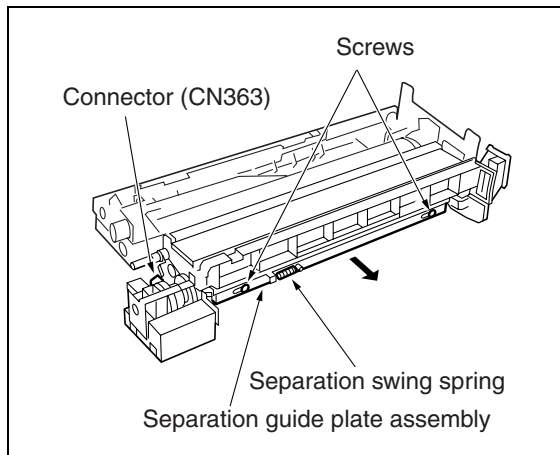
Caution1: Take care not to damage the drum when removing the separation claws.

Caution2: Note the orientation and position of the separation claws when reinstalling them.

Caution3: Do not touch the cleaning blade and drum with bare hands.

a. Procedure

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



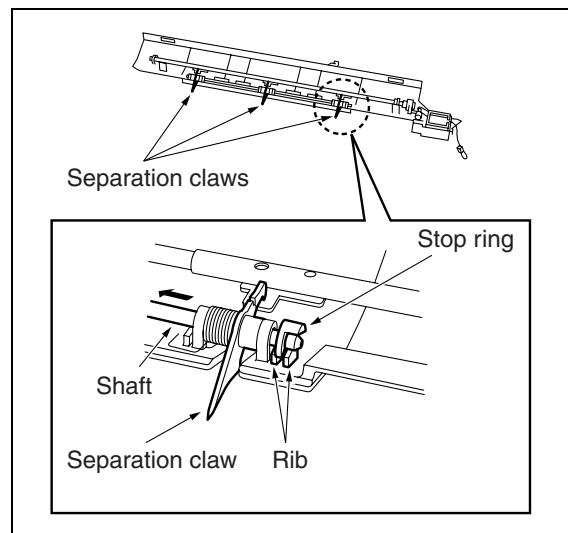
- (5) Remove the stop ring, slide the shaft, and remove the three separation claws.

Caution1: Clean the shaft with isopropyl alcohol and a waste when installing.

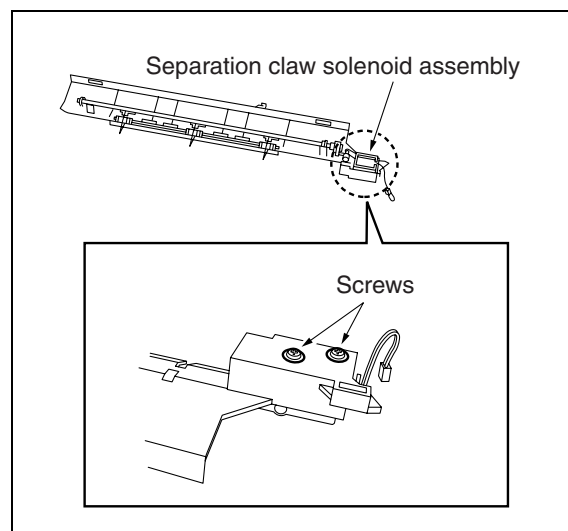
The separator claws cannot move smoothly if they are installed with toner remaining on the shaft.

Caution2: When installing, insert the retaining ring between the ribs.

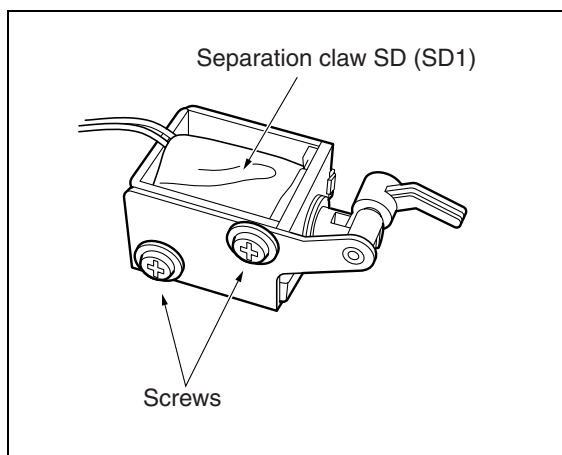
Caution3: After installing the separation claws, check that they move smoothly.



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

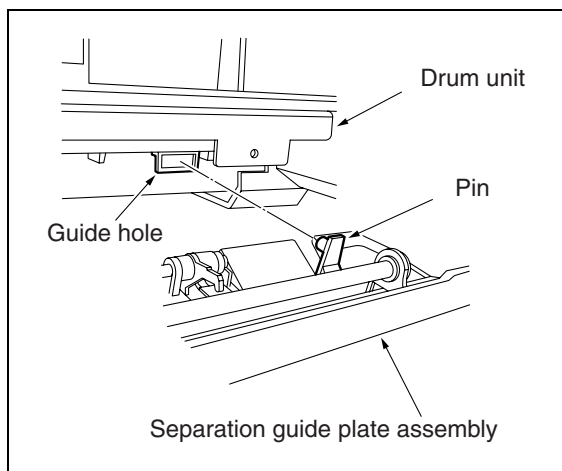


- (7) Remove two screws and detach the separation claw SD (SD1).



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

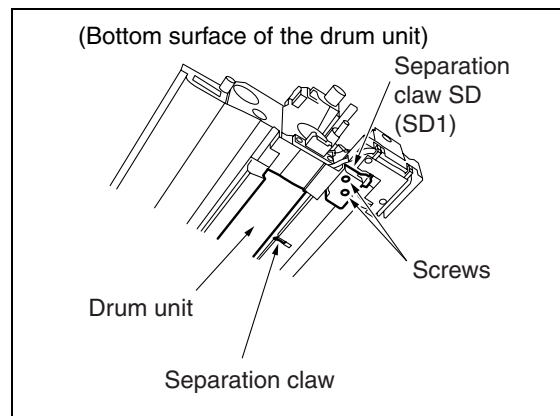
Caution: When installing the separation claw unit, match the pin and guide hole shown in the figure.



[Reference]

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.



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

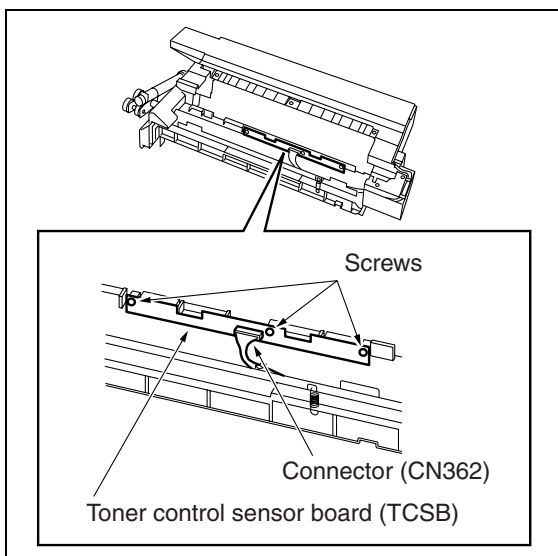
[5] Removing and Reinstalling the Toner Control Sensor Board

⚠ Caution:

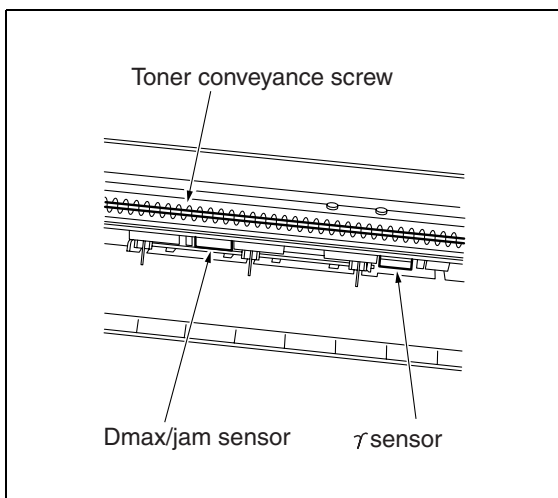
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Remove the drum unit from the main body.
- (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/jam sensor at the front and the γ sensor at the back) using a blower brush, isopropyl alcohol, and waste.



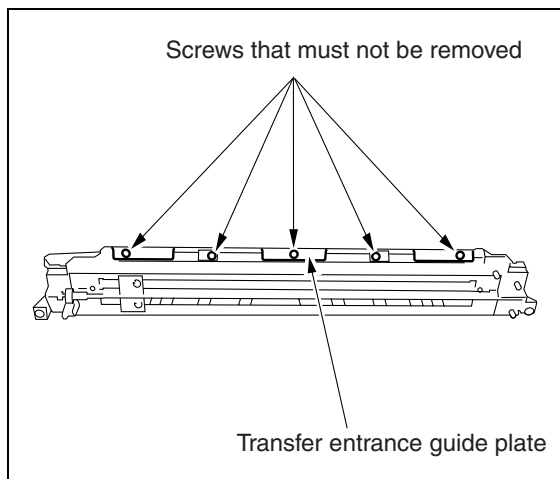
- (7) Reinstall the above parts following the removal steps in reverse.

Caution: When installing the toner control sensor board, tighten the screws pulling it up until stoppers.

CORONA UNIT

[1] Screws that Must not be Removed

- a. 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.

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

[2] Removing and Reinstalling the Charging Corona Unit

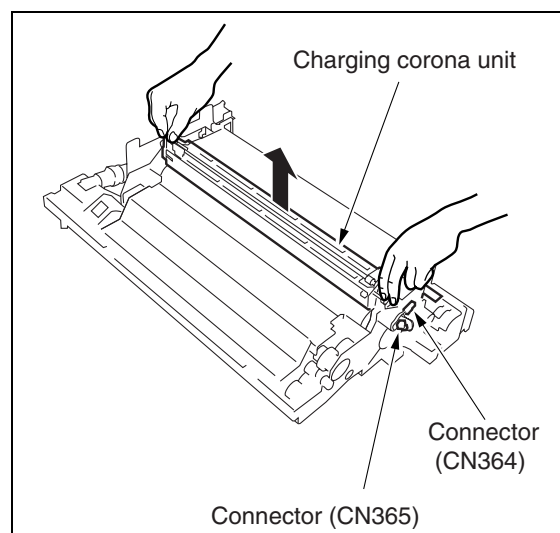
⚠ Caution:

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

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

a. Procedure

- (1) Remove the drum unit from the main body. (See "DRUM UNIT.")
- (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.

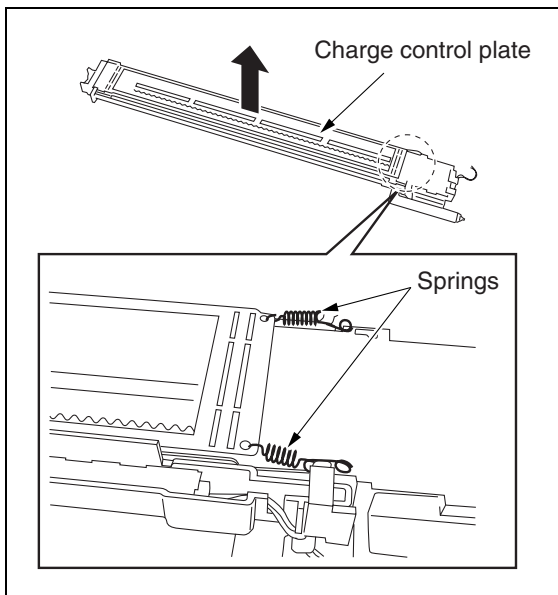
[3] Removing and Reinstalling the Charge Control Plate

⚠ Caution:

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

a. 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.

[4] Replacing the Charging Wires

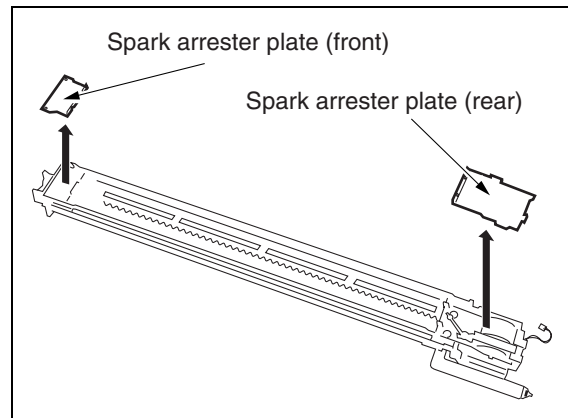
⚠ Caution:

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

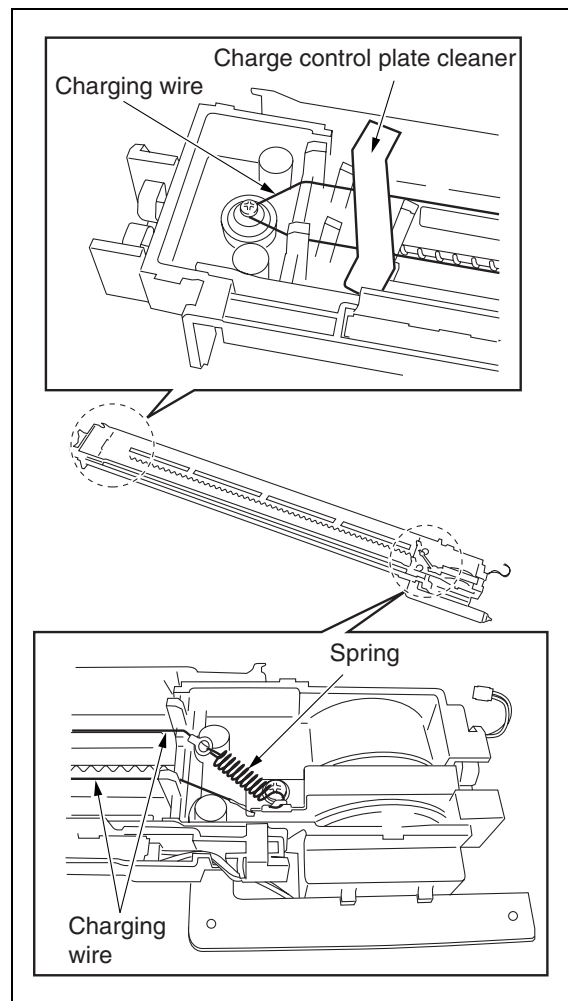
a. Procedure

- (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.

[5] Removing and Reinstalling the Charging Wire Cleaning Unit

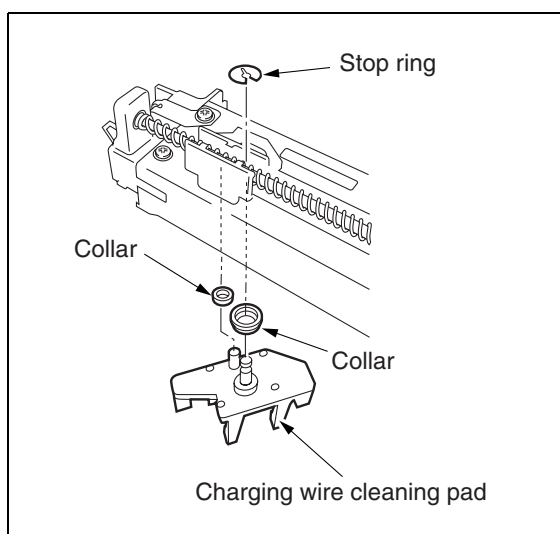
⚠ Caution:

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

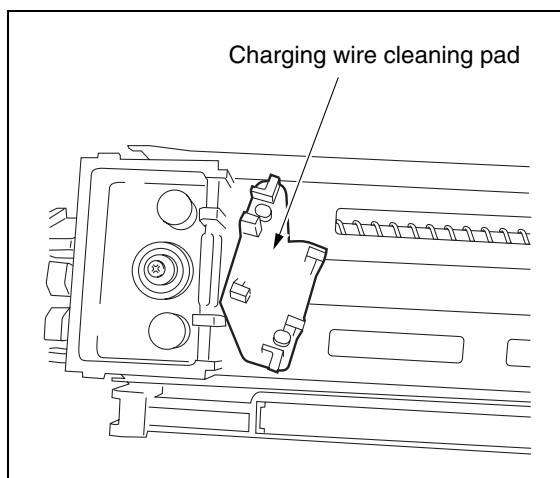
a. Procedure

- (1) Remove the charging wire.
- (2) Remove the stop ring and remove the charging wire cleaning pad.

Caution1: When removing the charging wire cleaning pad, be careful not to drop the two collars.



Caution2: When installing the charging wire cleaning pad, install the pad in the orientation shown below. Also, do not forget to attach the two collars.



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

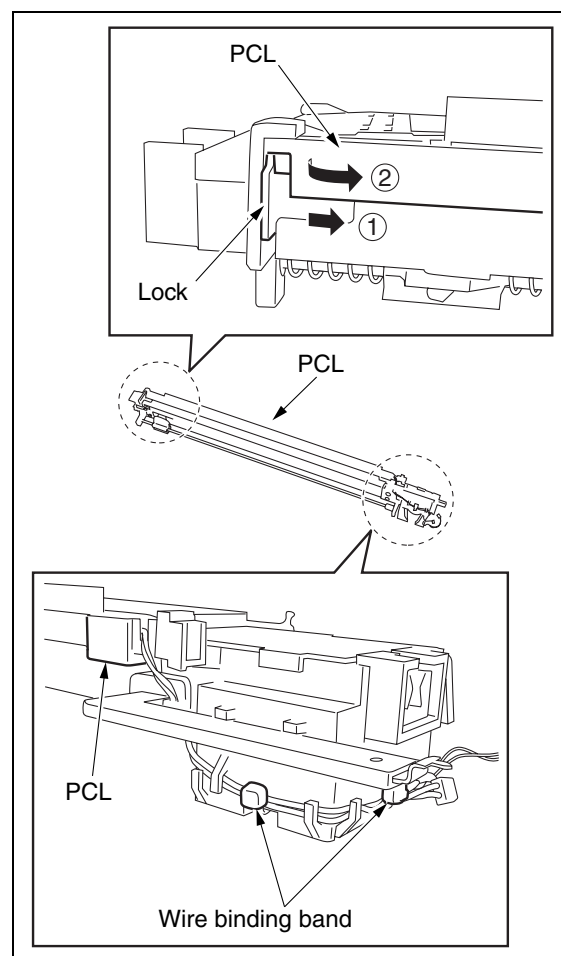
[6] Removing and Reinstalling the PCL

⚠ Caution:

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

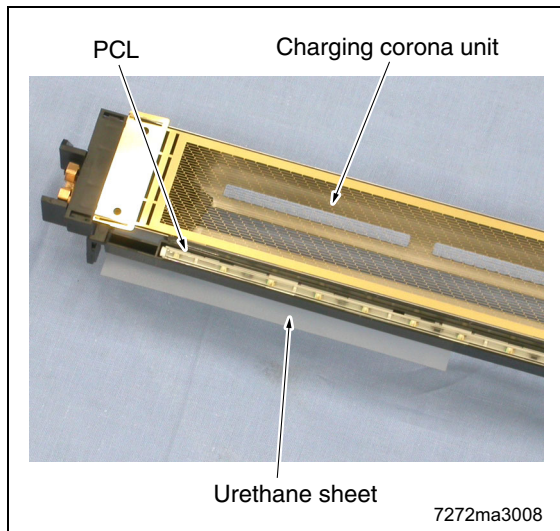
a. Procedure

- (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.

Caution: When the urethane sheet is peeled off from PCL, be sure to paste it again.
(Di5510/Di7210)



[7] Cleaning the Charging Corona Unit/ PCL

⚠ Caution:

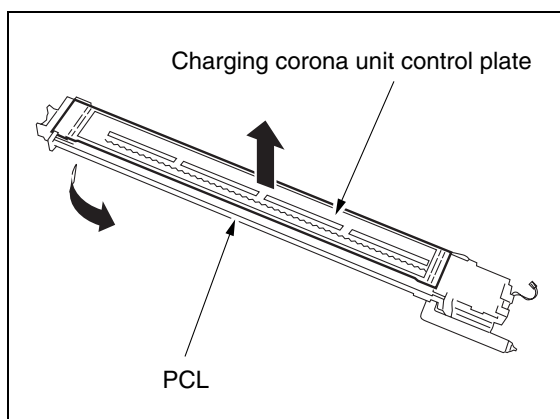
Be sure the power cord has been unplugged from the wall outlet.

a. 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 waste moistened with isopropyl alcohol. 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 waste moistened with isopropyl alcohol.



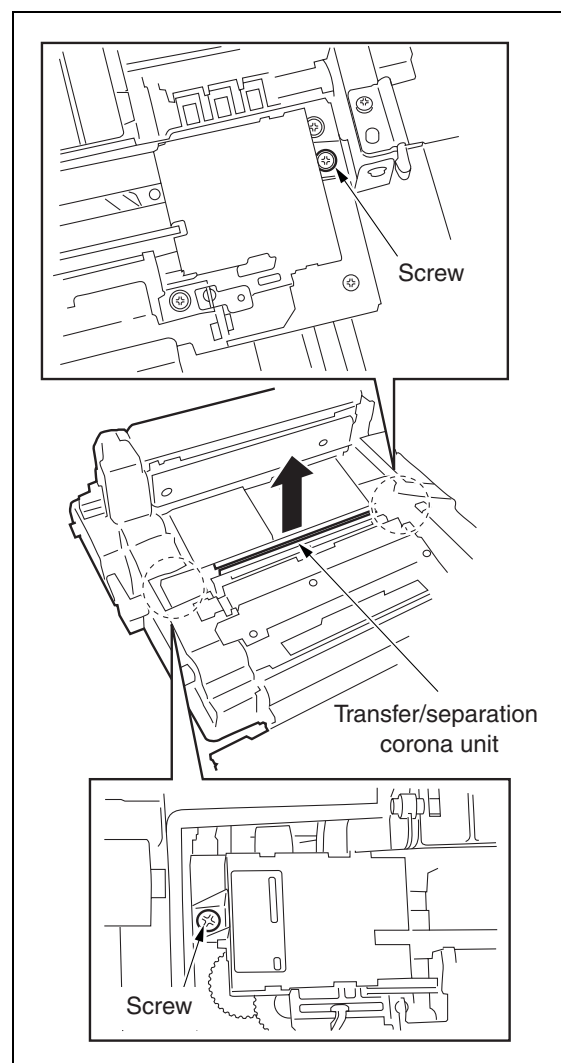
[8] Removing and Reinstalling the Transfer/Separation Corona Unit

⚠ Caution:

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

a. Procedure

- (1) Draw the ADU frame from the main body. (See "ADU UNIT.")
- (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.

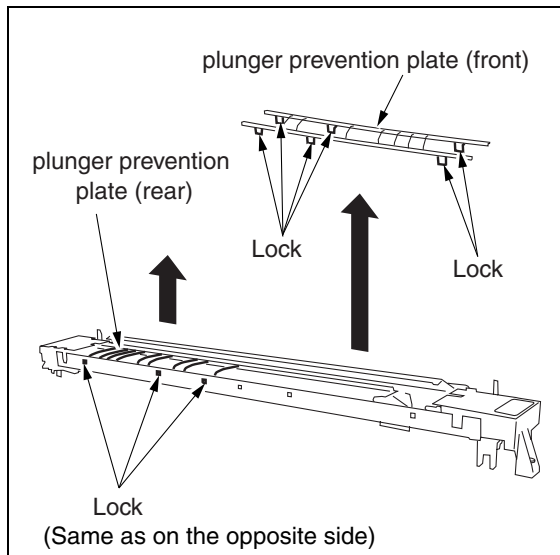
[9] Removing and Reinstalling the Plunger Prevention Plate

⚠ Caution:

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

a. Procedure

- (1) Draw the ADU frame from the main body. (See "ADU UNIT.")
- (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.

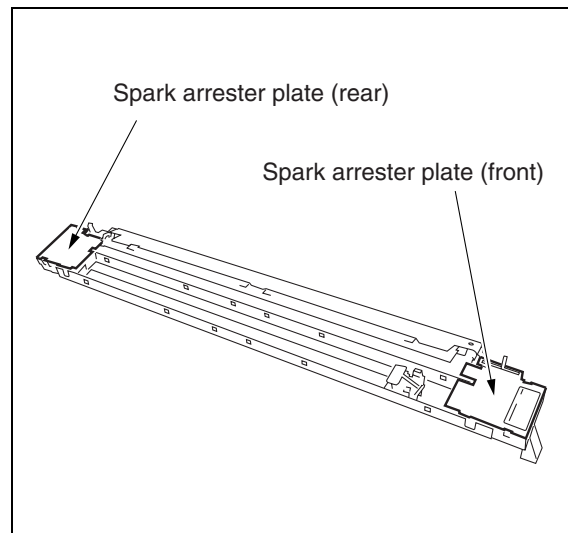
[10] Replacing the Transfer/Separation Wires and Transfer/Separation Wire Cleaning Block

⚠ Caution:

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

a. Procedure

- (1) Draw the ADU frame from the main body. (See "ADU UNIT.")
- (2) Remove the transfer/separation corona unit.
- (3) Remove the plunger prevention plate.
- (4) Remove the spark arrester plates (front and rear).

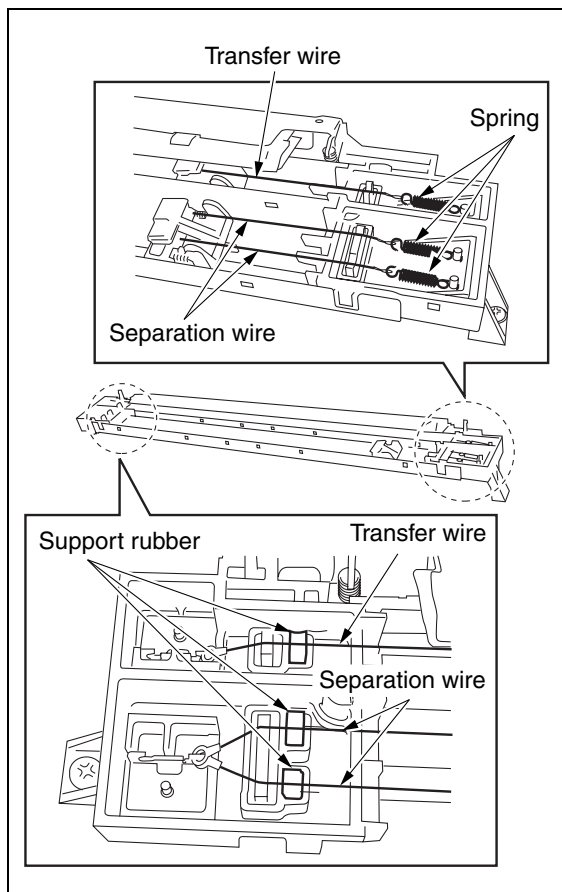


- (5) Remove the springs of wires (one each).

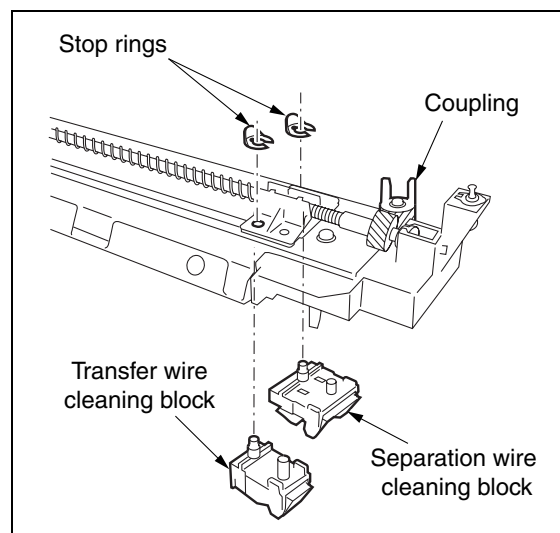
Caution: When installing the springs, bend the edge of each spring inside.

- (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 stop 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.

[11] Removing and Reinstalling the TSL Unit

⚠ Caution:

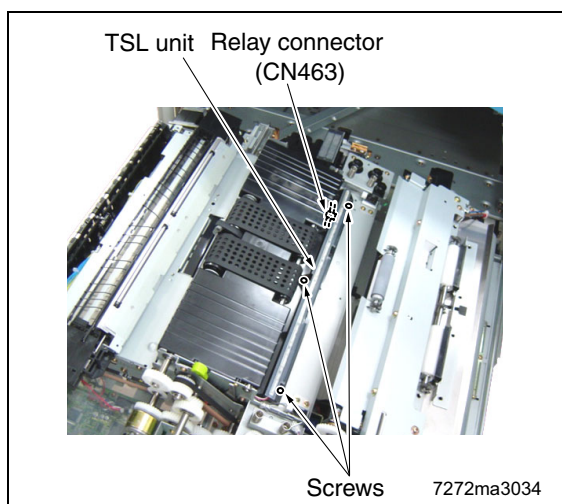
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw the ADU frame from the main body. (See "ADU UNIT.")
- (2) Remove the transfer/separation corona unit.
- (3) Remove the relay connector (CN463).

Caution: A relay 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.



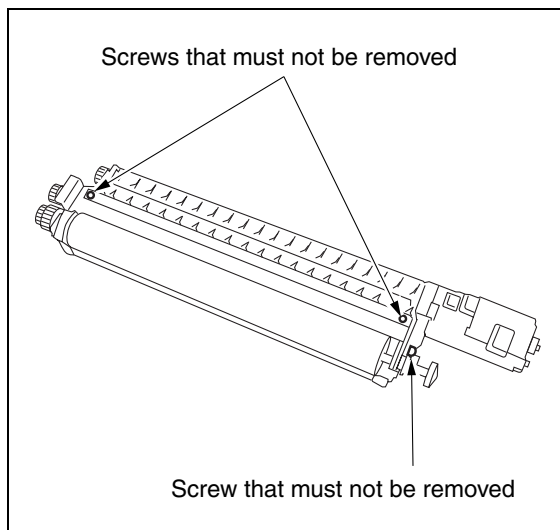
- (5) Reinstall the above parts following the removal steps in reverse.

DEVELOPING UNIT

[1] Screws that must not be Removed

a. Procedure

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



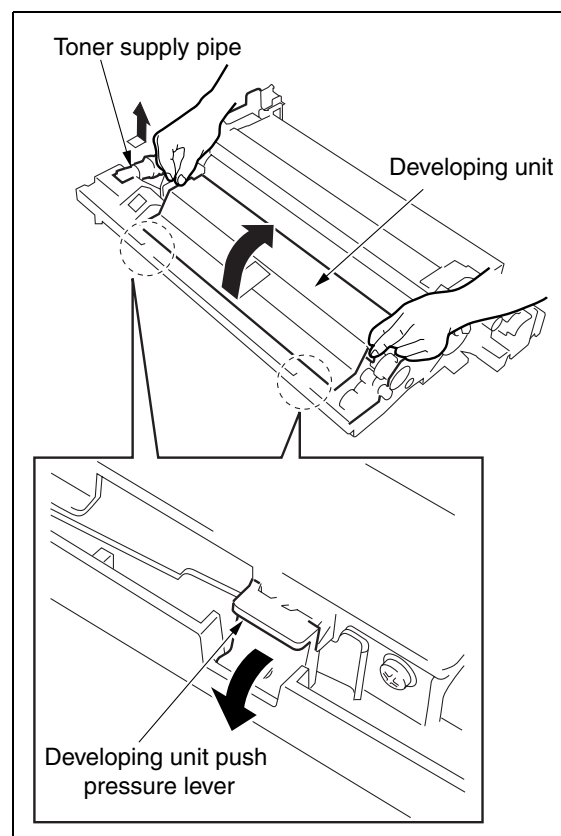
[2] Removing and Reinstalling the Developing Unit

⚠ Caution:

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

a. Procedure

- (1) Draw out the drum unit from the main body. (See "DRUM UNIT.")
- (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.

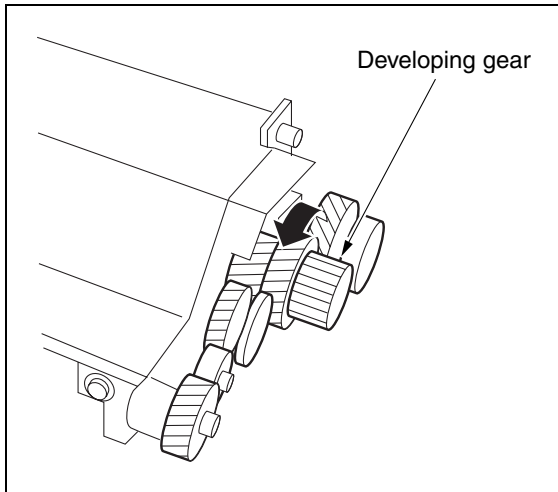
[3] Replacing the Developer

Caution1: When replacing the developer in the developing unit, take care not to allow dirt to get into it.

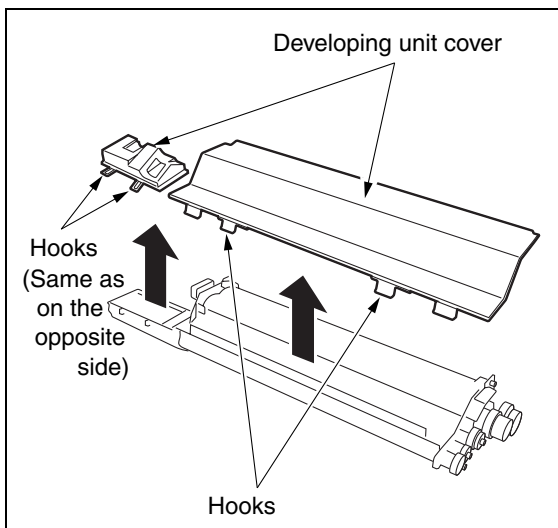
Caution2: To rotate the developing sleeve, rotate the developing gear counterclockwise.

Caution3: Never rotate the developing gear clockwise.

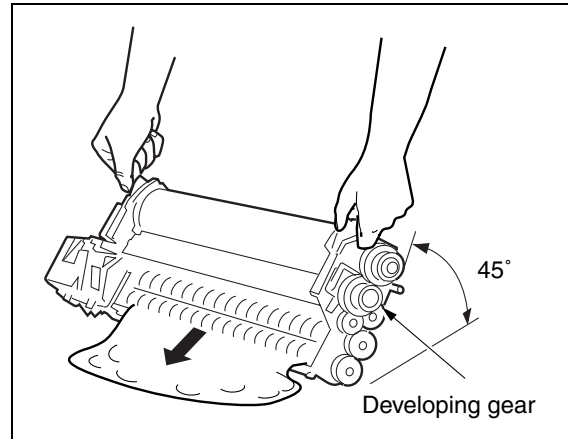
Caution4: When installing a new developer, be sure to enter mode 25 and select "Copy Count by Parts to be Replaced" to reset developer counter.

**a. Procedure**

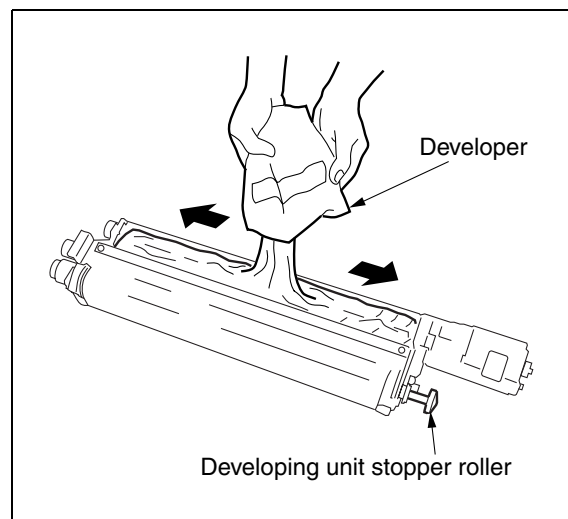
- (1) Draw out the drum unit from the main body. (See "DRUM UNIT.")
- (2) Remove the developing unit from the drum unit.
- (3) Release the hook of the developing unit cover and remove it upward.



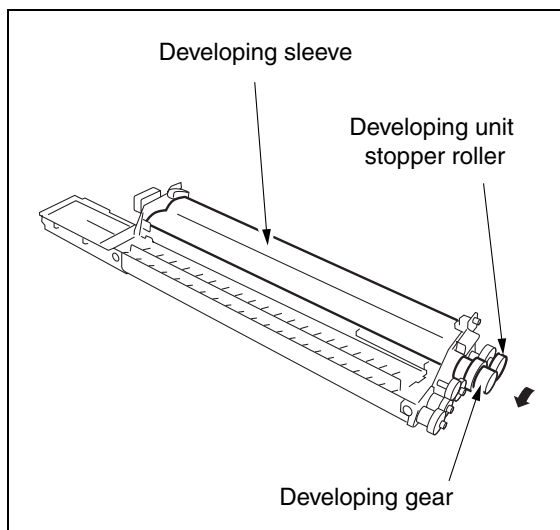
- (4) Tilt the developing unit about 45° and rotate the developing gear counterclockwise to discharge all of the developer adhering to the inside of the developing unit and magnet roller.



- (5) Supply fresh developer evenly from the top of the agitator 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).

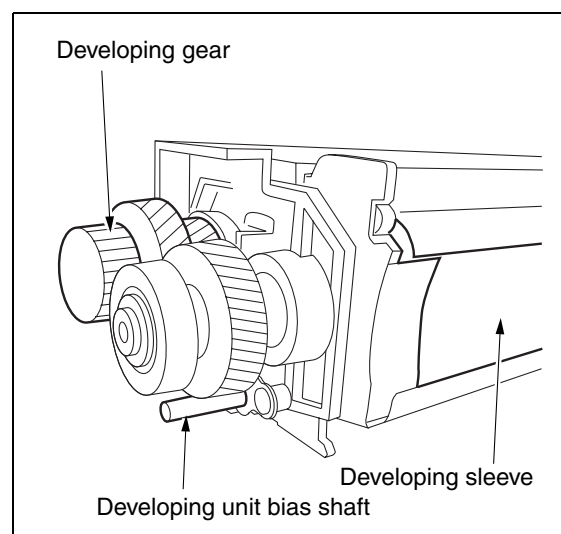
[4] Cleaning the Developing Unit Bias shaft

⚠ Caution:

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

a. Procedure

- (1) Draw out the drum unit from the main body. (See "DRUM UNIT.")
- (2) Remove the developing unit from the drum unit.
- (3) Wipe the dirt on the developing unit bias shaft with waste.



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

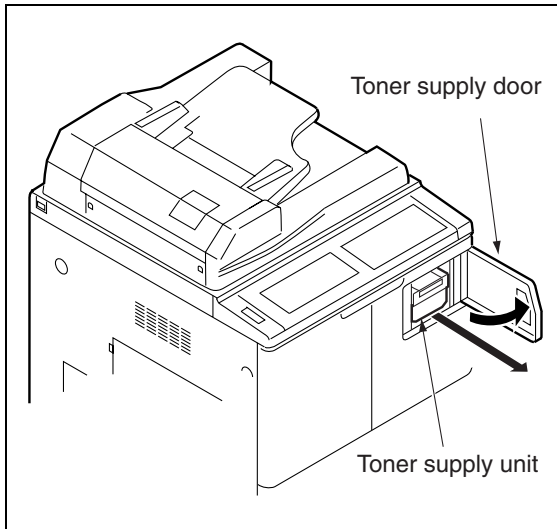
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TONER SUPPLY UNIT

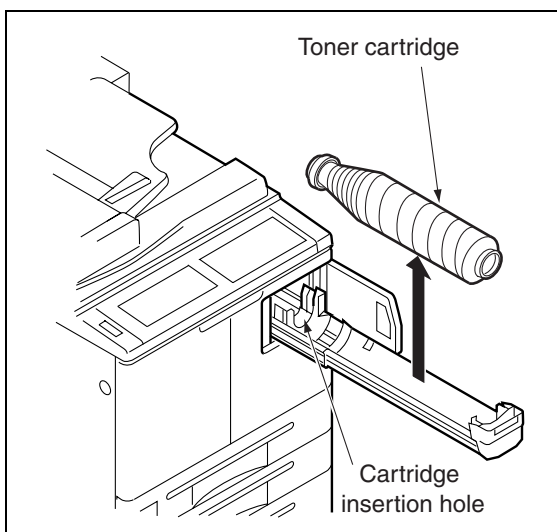
[1] Replacing and Cleaning the Toner Cartridge

a. Procedure

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



- (2) Remove the toner cartridge.
- (3) After removing the toner cartridge, clean the area around the toner cartridge insertion hole with a waste.



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

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CLEANING/TONER RECYCLE UNIT

[1] Removing and Reinstalling the Cleaning Blade

⚠ Caution:

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

Caution1: Be sure to replace the following parts at the same time:

- Cleaning blade
- Toner guide roller (TGR)

Caution2: Do not touch the edges of the cleaning blade with bare hands.

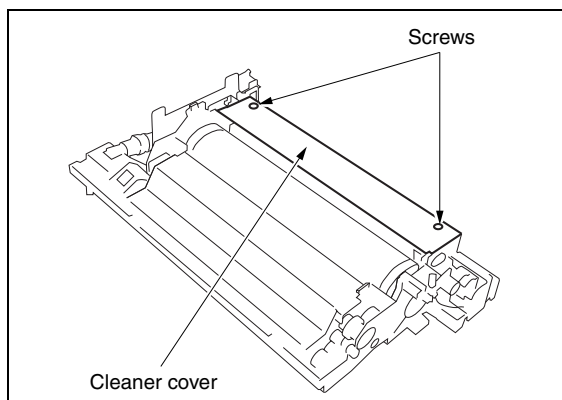
Caution3: When reinstalling the cleaning blade, apply setting powder to the entire surface of the drum and cleaning blade regardless of whether the drum and cleaning blade are new or old.

Caution4: When you have applied setting powder to the drum, perform the following before installing the drum unit on the main body:

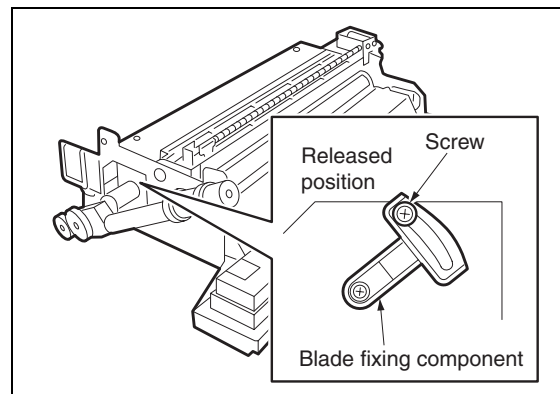
- 1) To ensure accurate toner concentration, wipe scattered setting powder off the γ sensor and Dmax/JAM sensor on the toner control sensor board with a rag moistened with alcohol.
- 2) With the charging corona unit and developing unit removed, turn the drum once (to prevent setting powder from scattering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

a. Procedure

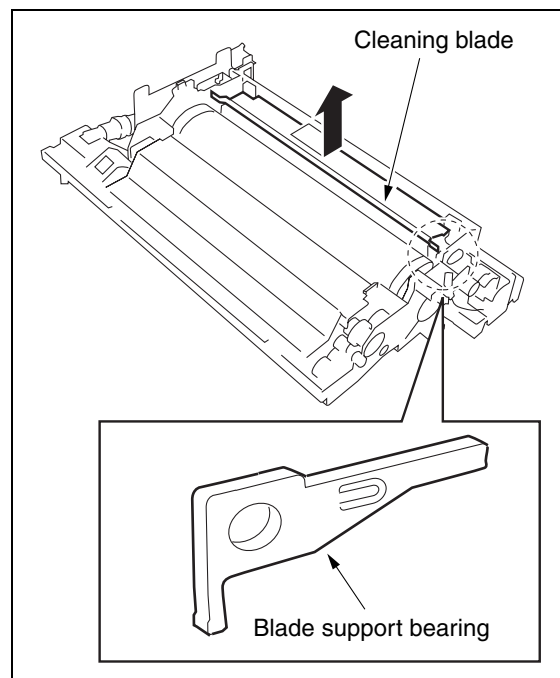
- (1) Remove the drum unit. (See "DRUM UNIT.")
- (2) Remove the charging corona unit. (See "CHARGING CORONA UNIT.")
- (3) Remove the developing unit. (See "DEVELOPING UNIT.")
- (4) Remove two screws to remove the cleaner cover.



- (5) Check that the blade fixing component is released. If it is not, release it referring to "DRUM UNIT."



- (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 36 mode. (To prevent the blade from peeling.)

[2] Removing and Reinstalling the Toner Guide Roller (TGR)

Caution:

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

Caution1: Be sure to replace the following parts at the same time:

- Cleaning blade
- Toner guide roller

Caution2: Do not touch the edges of the cleaning blade with bare hands.

Caution3: 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.

Caution4: 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.

Caution5: Do not touch the toner guide roller brush with bare hands. Also, do not directly contact the rollers to any object.

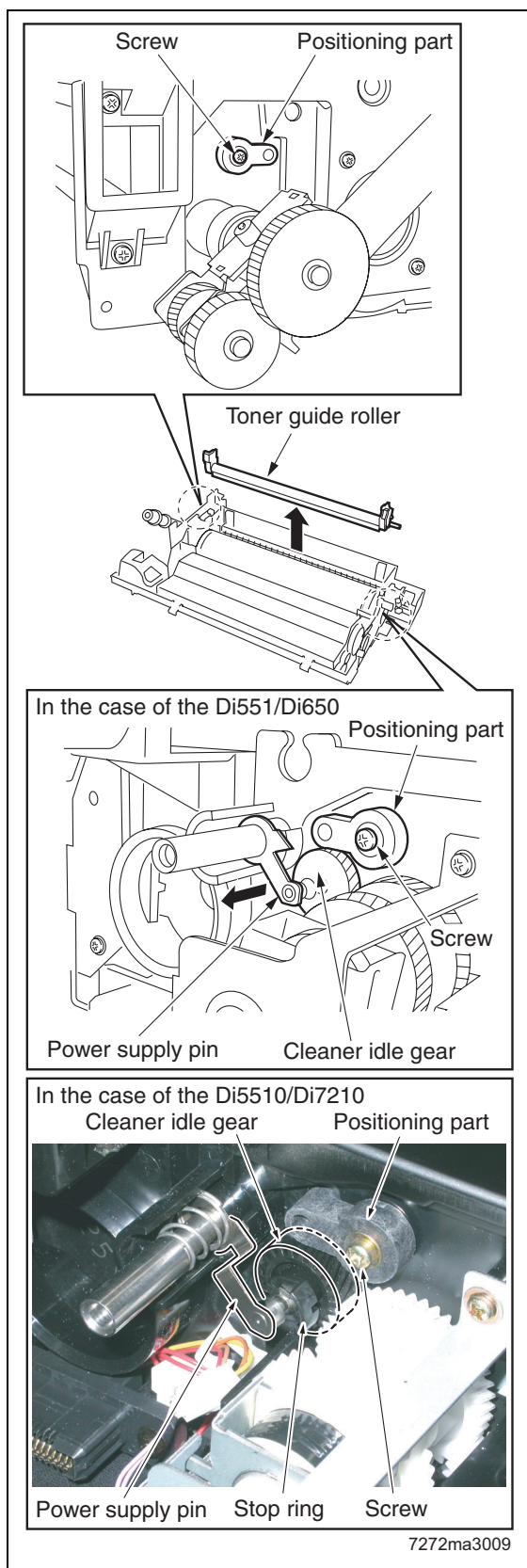
Caution6: After replacing the toner guide roller, be sure to apply electricity lubricant on the edge of the guide roller shaft (on power supply pin side).

Caution7: When installing a toner guide roller, be sure to enter mode 25 and select "Copy Count by Parts to be Replaced" to reset toner collection roller assembly counter.

a. Procedure

- (1) Remove the drum unit. (See "DRUM UNIT.")
- (2) Remove the charging corona unit. (See "CHARGING CORONA UNIT.")
- (3) Remove the cleaning blade.
- (4) Release the power supply pin in contact with the toner guide roller shaft.
- (5) Remove the stop ring.
- (6) Remove the cleaner idle gear.
- (7) Remove the screws securing the front and rear positioning parts.

- (8) Remove the toner guide roller.



- (9) Reinstall the above parts following the removal steps in reverse.

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PAPER FEED UNITS OF TRAYS 1 AND 2 (Di551/Di650)

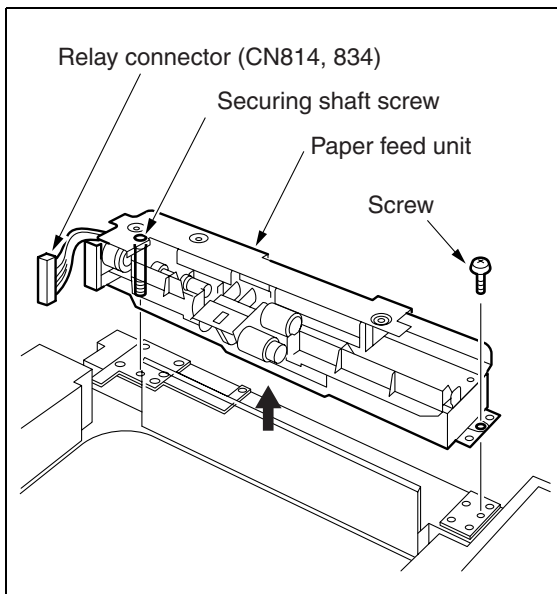
[1] Removing and Reinstalling the Paper Feed Unit

⚠ Caution:

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

a. Procedure

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



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

[2] Removing and Reinstalling the Paper Feed Trays 1 and 2

⚠ Warning:

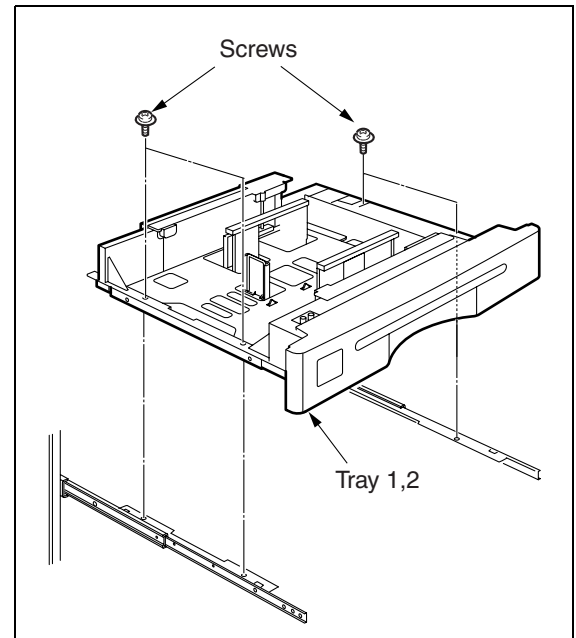
When removing the tray, stand in a proper position so that you do not hurt your back and waist. If the tray contains paper, remove all paper before removing the tray.

⚠ Caution:

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

a. Procedure

- (1) Draw out paper feed tray 1 or 2.
- (2) Remove the paper feed unit.
- (3) Remove four screws and remove tray 1 or 2 by lifting.

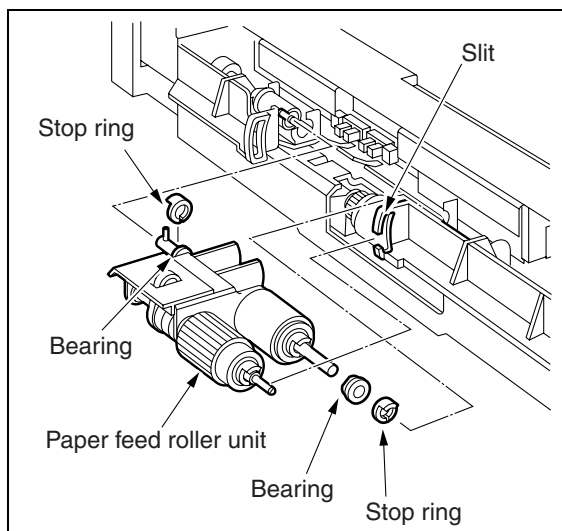


- (4) Reinstall the above parts following the removal steps in reverse.

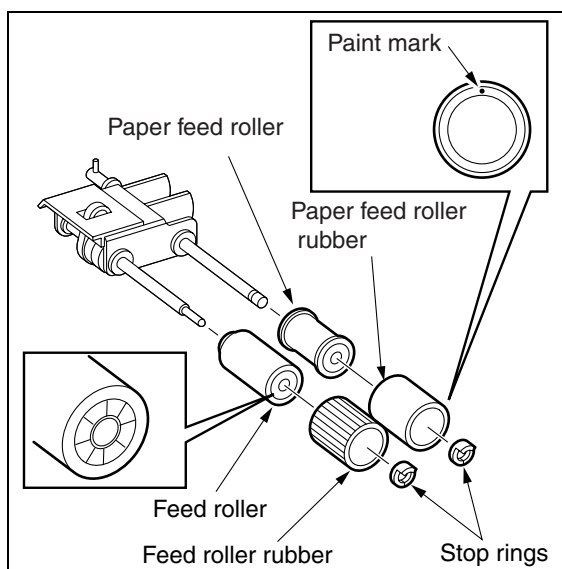
[3] Removing and Reinstalling the Paper Feed Roller and Feed Roller Rubber

a. Procedure

- (1) Remove the paper feed unit.
- (2) Remove the two stop rings and slide the two bearings outward.
- (3) Release the feed roller axis from the holder slit to detach the paper feed roller unit.



- (4) Remove the two stop rings from the paper feed roller unit to detach the paper feed roller and feed roller.
- (5) Remove the rubber from each roller.



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

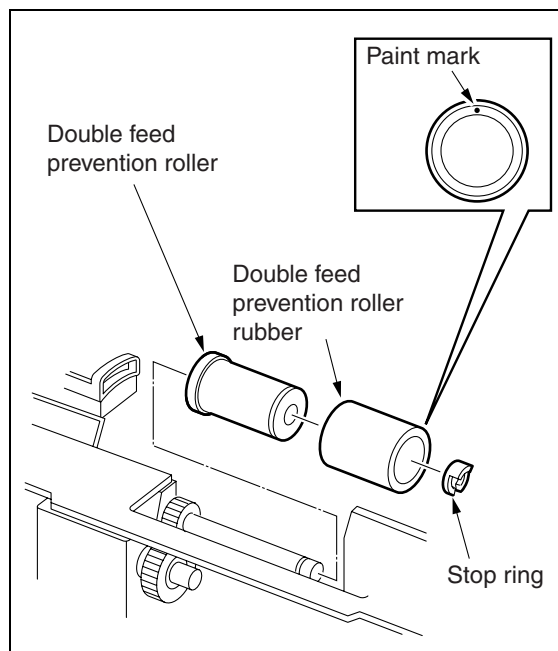
Caution1: When reinstalling the rollers, pay attention to their orientation.

Caution2: Check that no grease or the like remains on each roller.

[4] Removing and Reinstalling the Double Feed Prevention Roller Rubber

a. Procedure

- (1) Remove the paper feed unit.
- (2) Remove the paper feed roller unit.
- (3) Remove the stop ring to detach the double feed prevention roller.
- (4) Remove the double feed prevention roller rubber from the roller.



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

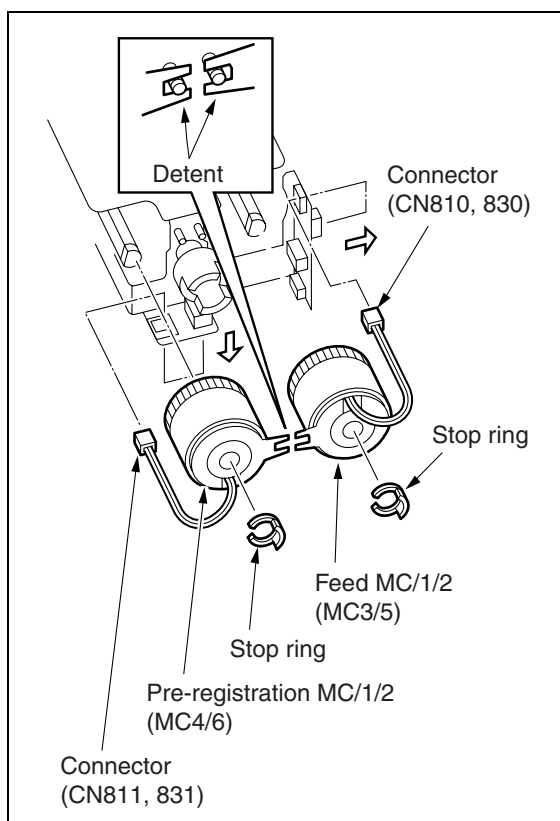
Caution1: When reinstalling the double feed prevention roller, pay attention to their orientation.

Caution2: Check that no grease or the like remains on the double feed prevention roller.

[5] Replacing the Pre-registration and Feed Clutches (MCs)

a. Procedure

- (1) Remove the paper feed unit.
- (2) Remove the four connectors (CN810, 811, 830, 831).
- (3) Remove the stop 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.

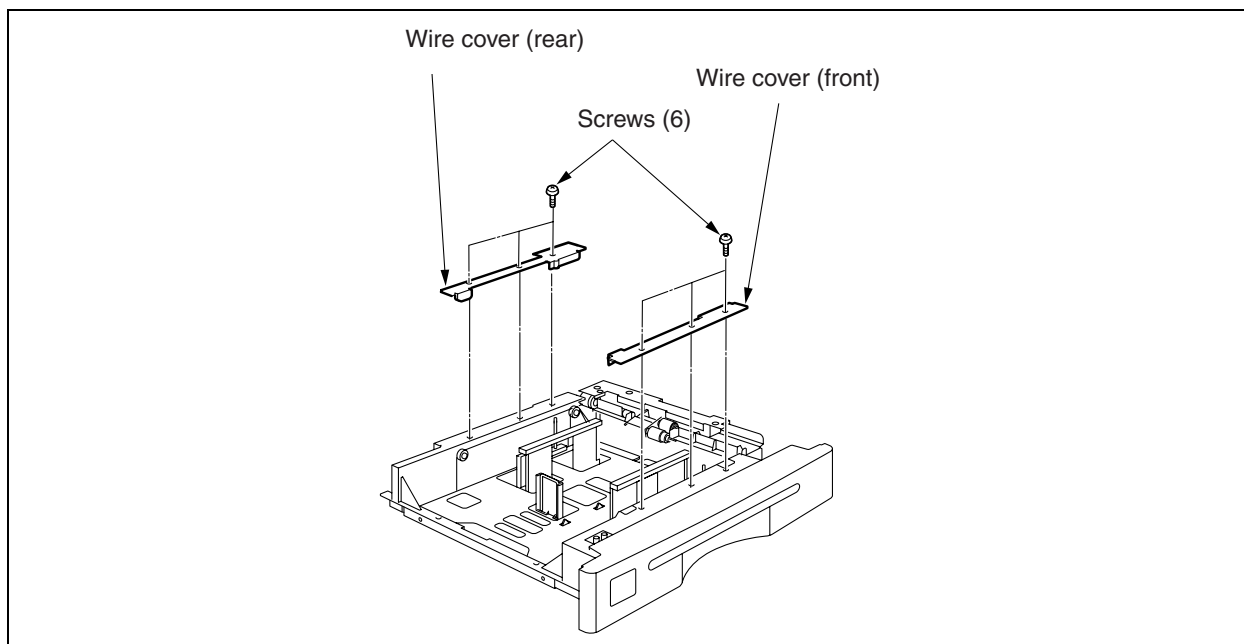
[6] Replacing the Wires

Caution1: After replacing or reinstalling the wires, manually rotate the up/down drive shaft to check that the tray moves up and down smoothly.

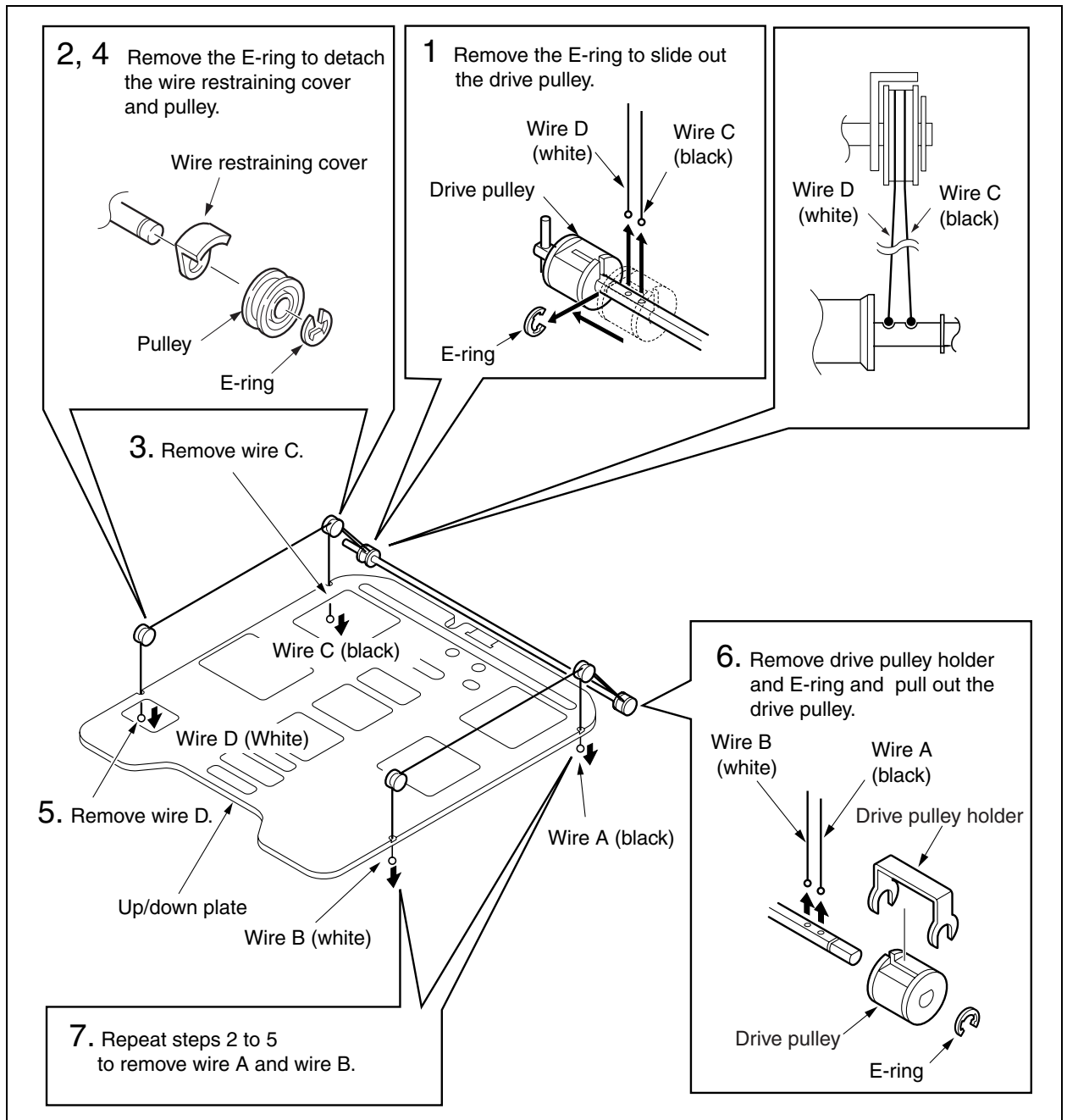
Caution2: Be sure to install the wires so that they do not cross or ride over each other.

<Removing Wires>

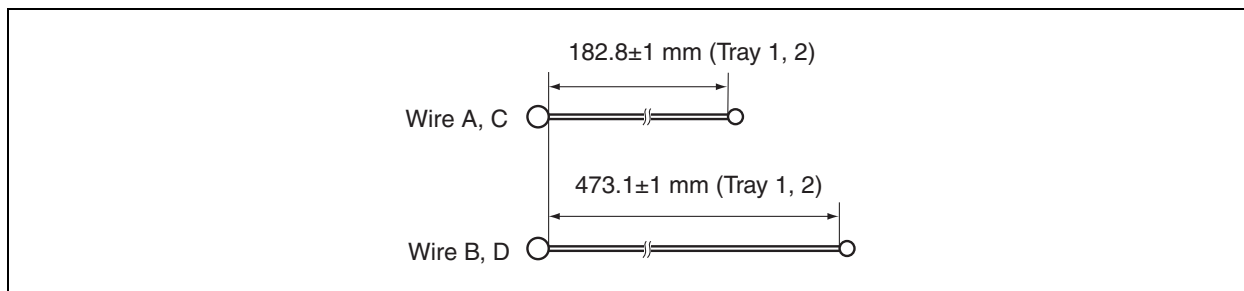
- (1) Remove the paper feed unit.
- (2) Remove three screws to remove the wire cover(front) and wire cover (rear).



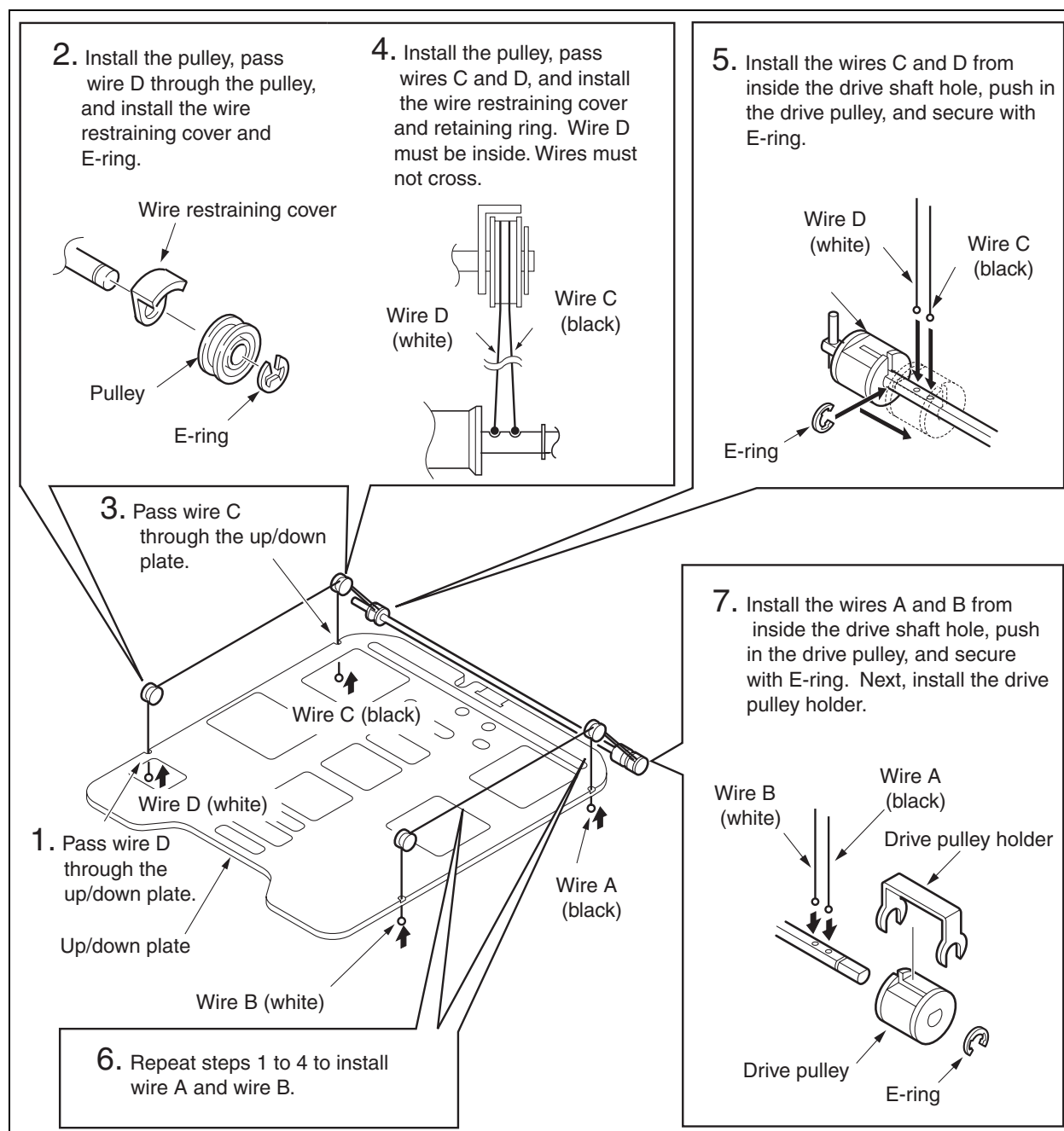
(3) Remove the front and rear wires according to steps 1 to 7 below.



<Wire Lengths>



<Installing Wires>



PAPER FEED UNITS OF TRAYS 1 AND 2 (Di5510/Di7210)

⚠ Caution:

Trays 1 and 2 have the same shape and mechanism.

[1] Removing and Reinstalling the Paper Feed Unit

The contents here shall be in accordance with the "[1] Removing and Reinstalling the Paper Feed Unit" of PAPER FEED UNITS OF TRAY 1 and 2 (Di551/Di650).

[2] Removing and Reinstalling the Paper Feed Tray 1

⚠ Warning:

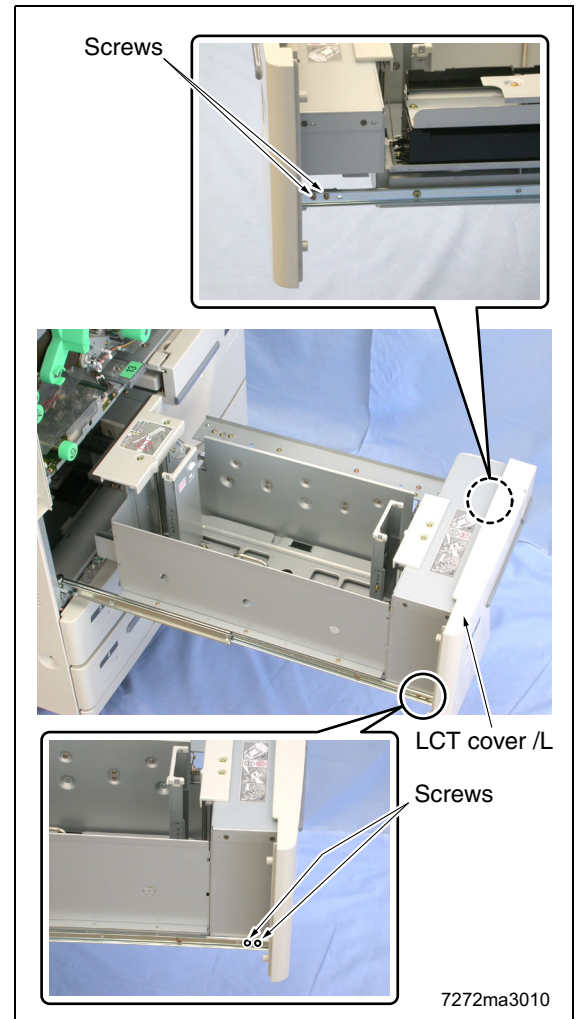
When removing the tray, stand in a proper position so that you do not hurt your back and waist. If the tray contains paper, remove all paper before removing the tray.

⚠ Caution:

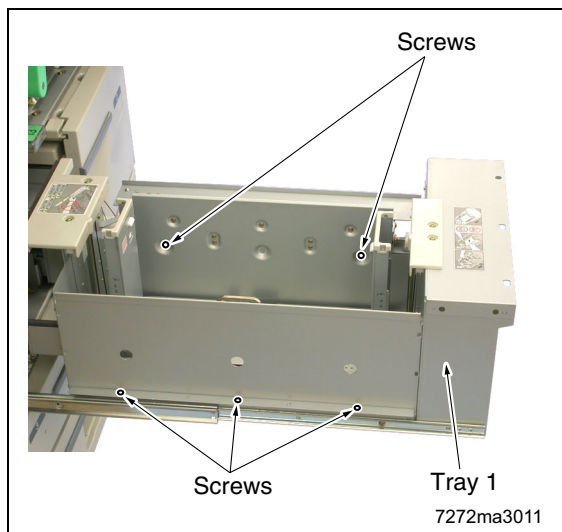
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out paper feed tray 1.
- (2) Remove the paper feed unit.
- (3) Remove four screws and remove the LCT cover /L.



- (4) Remove five screws to detach the tray 1 by lifting.



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

[3] Removing and Reinstalling the Paper Feed Tray 2

⚠ Warning:

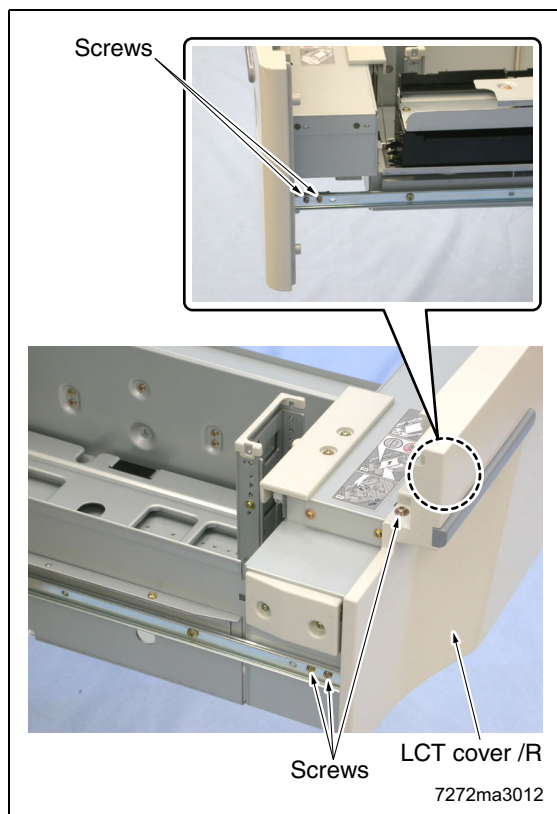
When removing the tray, stand in a proper position so that you do not hurt your back and waist. If the tray contains paper, remove all paper before removing the tray.

⚠ Caution:

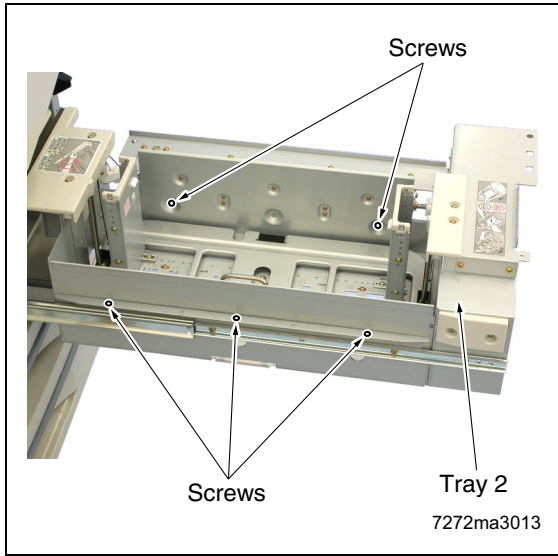
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out paper feed tray 2.
- (2) Remove the paper feed unit.
- (3) Remove five screws and remove the LCT cover /R.



- (4) Remove five screws to detach the tray 2 by lifting.

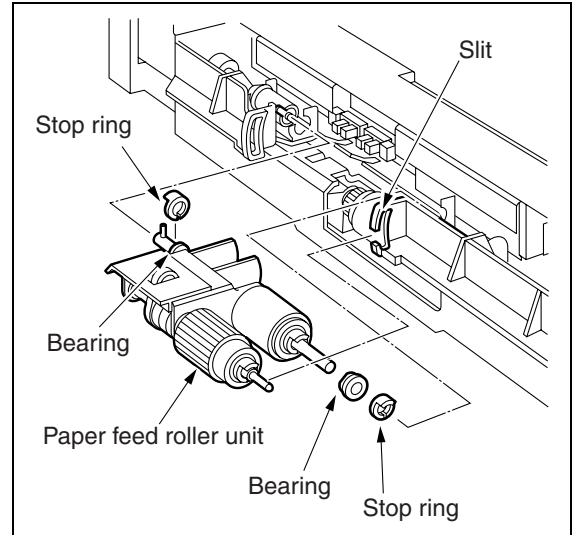


- (5) Reinstall the above parts following the removal steps in reverse.

[4] Removing and Reinstalling the Paper Feed Roller and Feed Roller Rubber

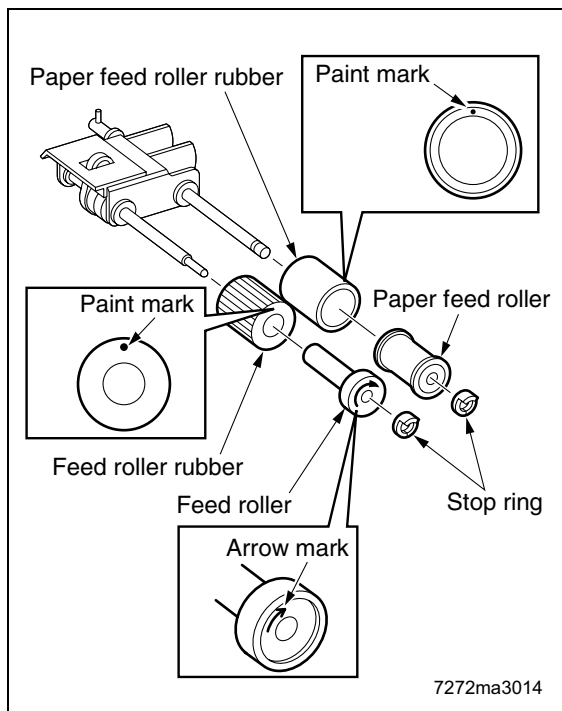
a. Procedure

- (1) Remove the paper feed unit.
- (2) Remove the two stop rings and slide the two bearings outward.
- (3) Release the feed roller axis from the holder slit to detach the paper feed roller unit.



- (4) Remove the two stop rings from the paper feed roller unit to detach the paper feed roller and feed roller.

- (5) Remove the rubber from each roller.



[5] Removing and Reinstalling the Double Feed Prevention Roller Rubber

The contents here shall be in accordance with the "[4] Removing and Reinstalling the Double Feed Prevention Roller Rubber" of PAPER FEED UNITS OF TRAY 1 AND 2 (Di551/Di650).

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

Caution1: When reinstalling the rollers, pay attention to their orientation.

Caution2: Check that no grease or the like remains on each roller.

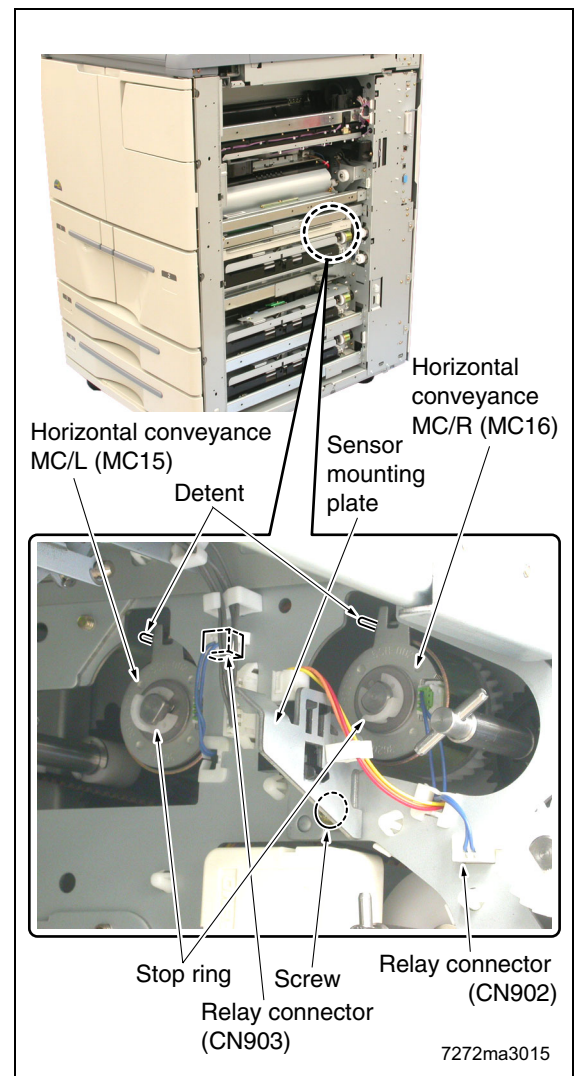
[6] Replacing the Pre-registration and Feed Clutches (MCs)

The contents here shall be in accordance with the "[5] Replacing the Pre-registration and Feed Clutches (MCs)" of PAPER FEED UNITS OF TRAY 1 and 2 (Di551/Di650).

[7] Replacing the Horizontal Conveyance MC/L and /R

a. Procedure

- (1) Remove the vertical conveyance section. (See "VERTICAL CONVEYANCE SECTION")
- (2) Draw out the horizontal conveyance section and tray 2.
- (3) Remove two relay connectors (CN902, 903).
- (4) Remove a screw to detach the sensor mounting plate.
- (5) Remove a stop ring for each, detach the horizontal conveyance MC/L (MC15) and horizontal conveyance MC/R (MC16).



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

Caution: When installing, align the projections with the detent guides.

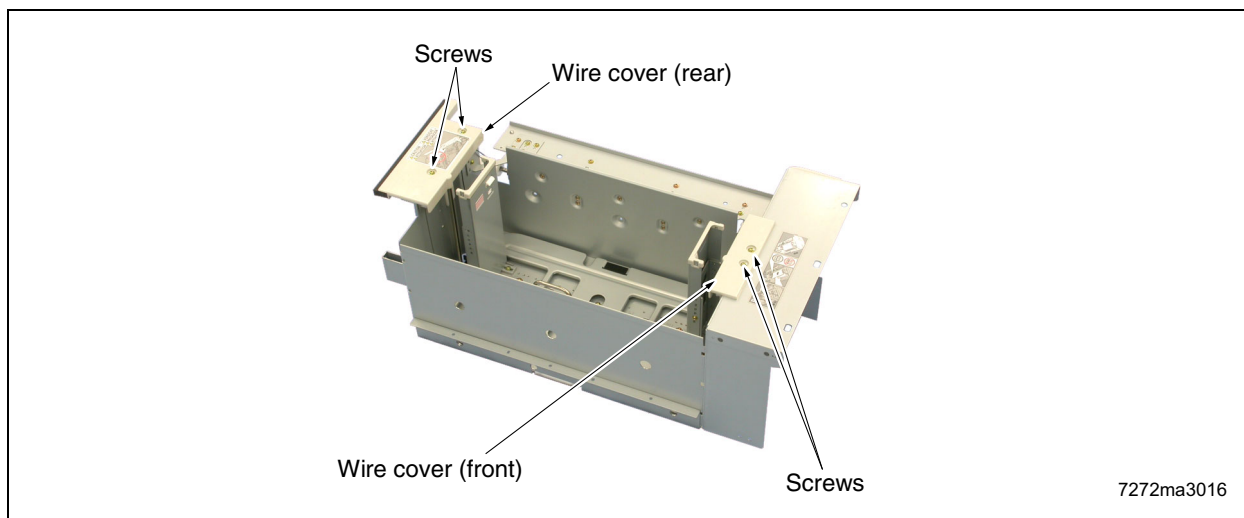
[8] Replacing the Wires

Caution1: After replacing or reinstalling the wires, manually rotate the up/down drive shaft to check that the tray moves up and down smoothly.

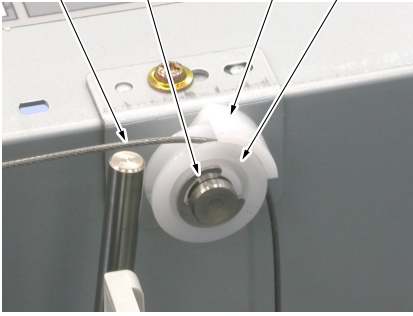
Caution2: Be sure to install the wires so that they do not cross or ride over each other.

<Removing Wires>

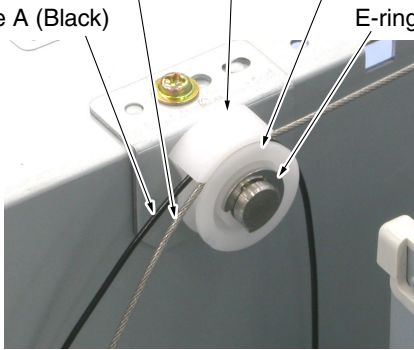
- (1) Remove the paper feed unit.
- (2) Remove two screws for each to remove the wire cover (front) and wire cover (rear).



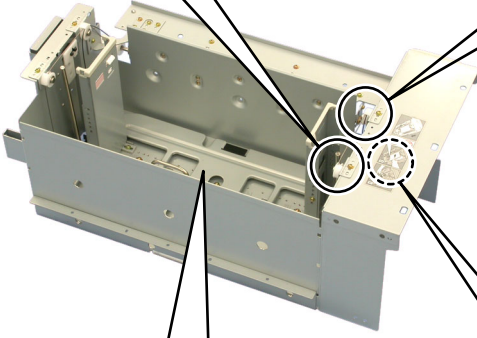
(3) Remove the wires A and B according to steps 1 to 10 of the figure below.



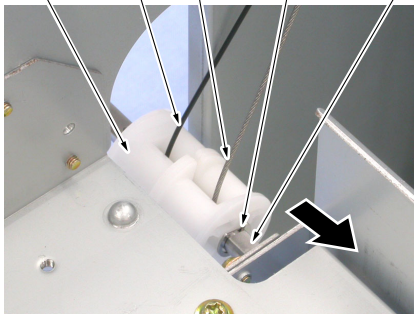
6. Remove the E-ring.
7. Remove the pulley and wire restraining cover to release the wire B (white).



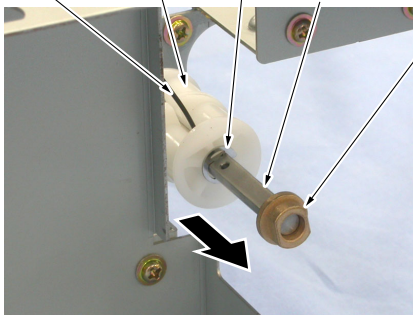
4. Remove the E-ring.
5. Remove the pulley and wire restraining cover to release the wire A (black) and B(white).



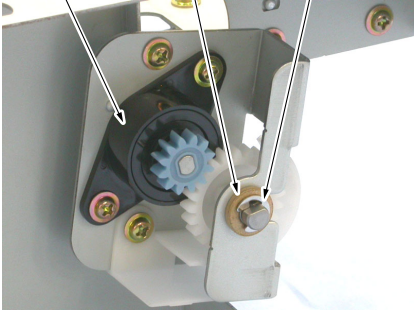
8. Pull out and remove the wire B (white) toward the bottom side of the up/down plate.
10. Pull out and remove the wire B (white) toward the bottom side of the up/down plate.



3. Remove the E-ring, slide the drive pulley in ward, and remove the wire B (white) from the drive shaft.

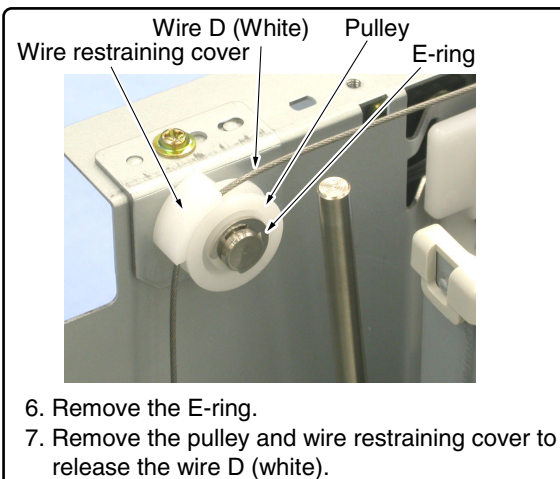
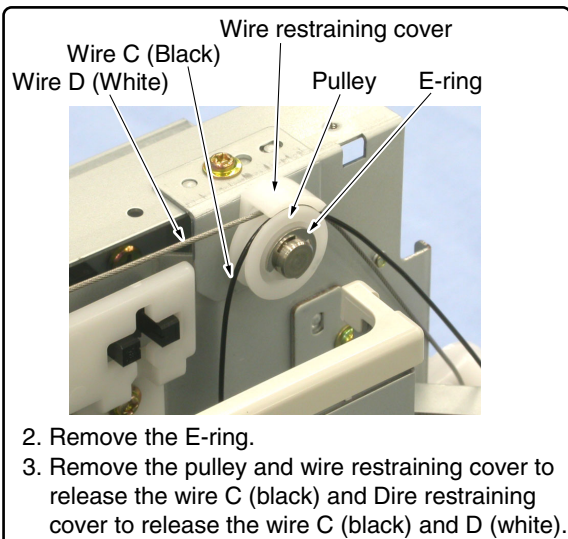


2. Remove the bearing.
9. Remove the E-ring, slide the drive pulley outward, and remove the wire A (black) from the drive shaft.

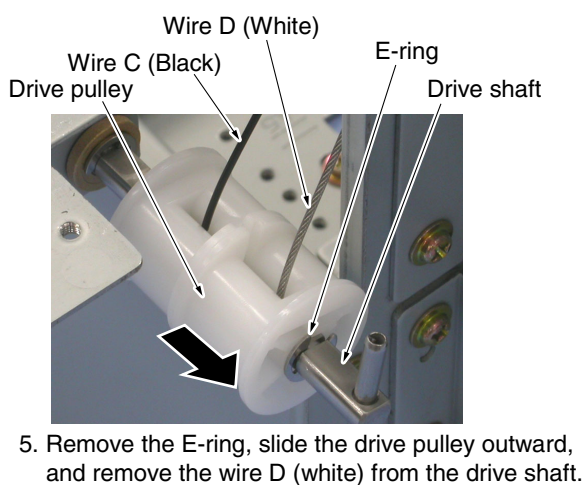
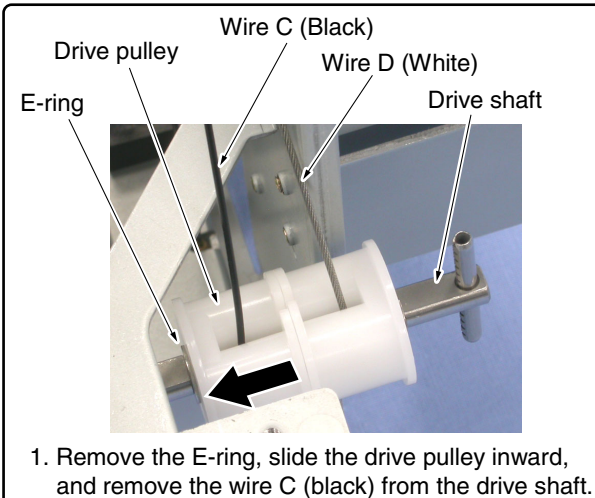
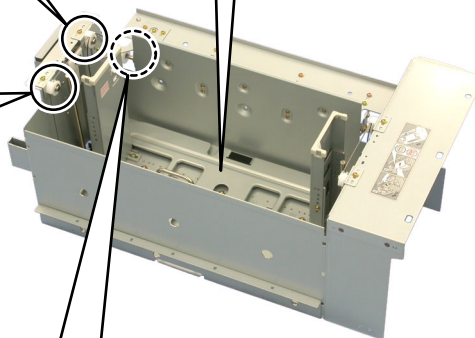


1. Remove the E-ring and bearing to detach the gear assembly.

- (4) Remove the wires C and D according to steps 1 to 8 of the figure below.

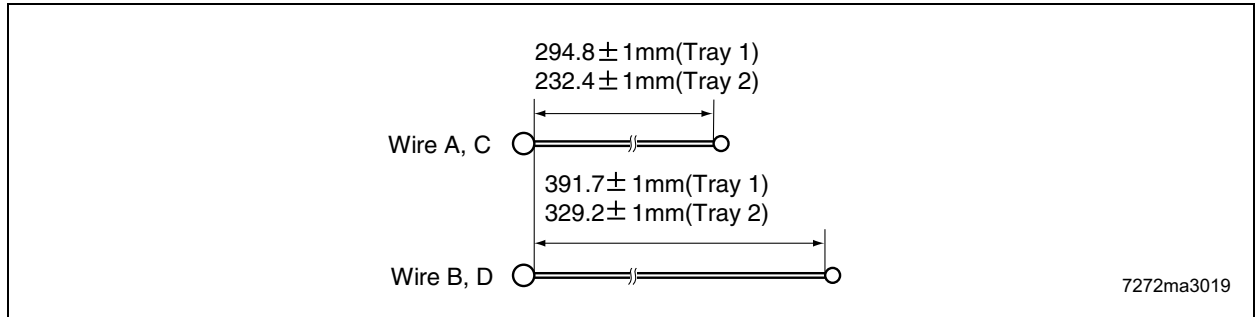


4. Pull out and remove the wire C (black) toward the bottom side of the up/down plate.
8. Pull out and remove the wire D (white) toward the bottom side of the up/down plate.



7272ma3018

<Wire Lengths>



<Installing Wires>

Reinstall the wires following the removal steps in reverse.

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PAPER FEED UNIT OF TRAY 3 (Di551/Di650)

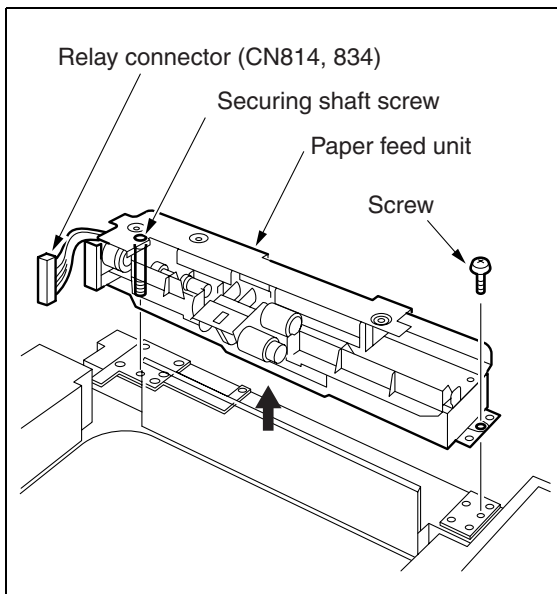
[1] Removing and Reinstalling the Paper Feed Unit

⚠ Caution:

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

a. Procedure

- (1) Draw out paper feed tray 3.
- (2) Loosen the securing shaft screw, and remove one screw.
- (3) Disconnect the relay connector (CN854) and remove the paper feed unit by lifting.



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

[2] Removing and Reinstalling Paper Feed Tray 3

⚠ Warning:

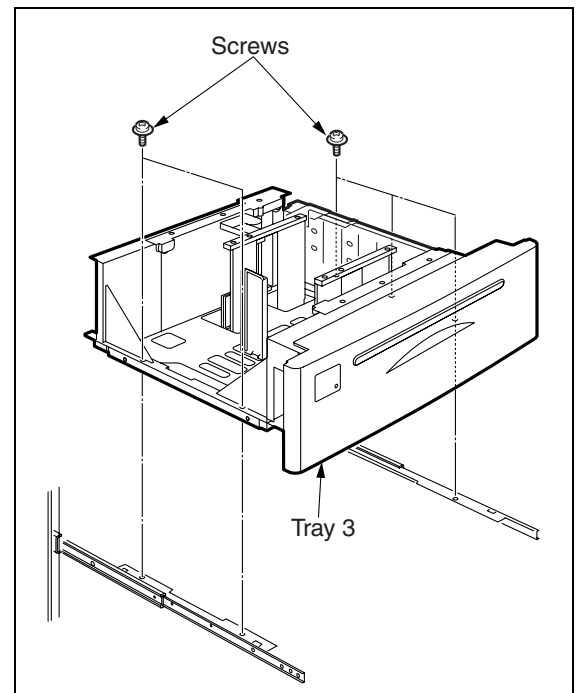
When removing the tray, stand in a proper position so that you do not hurt your back and waist. If the tray contains paper, remove all paper before removing the tray.

⚠ Caution:

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

a. Procedure

- (1) Draw out paper feed tray 3.
- (2) Remove the paper feed unit.
- (3) Remove four screws and remove tray 3 by lifting.

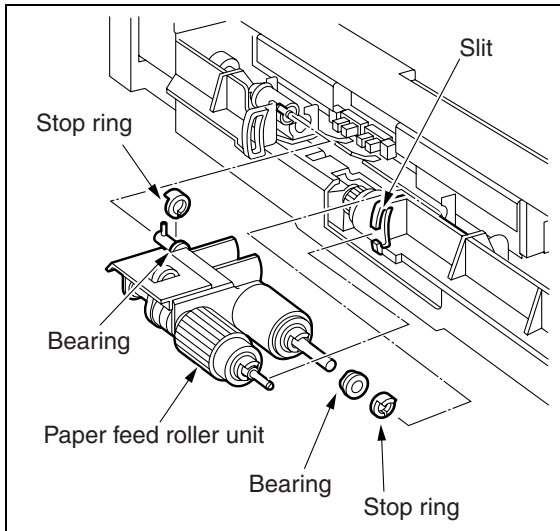


- (4) Reinstall the above parts following the removal steps in reverse.

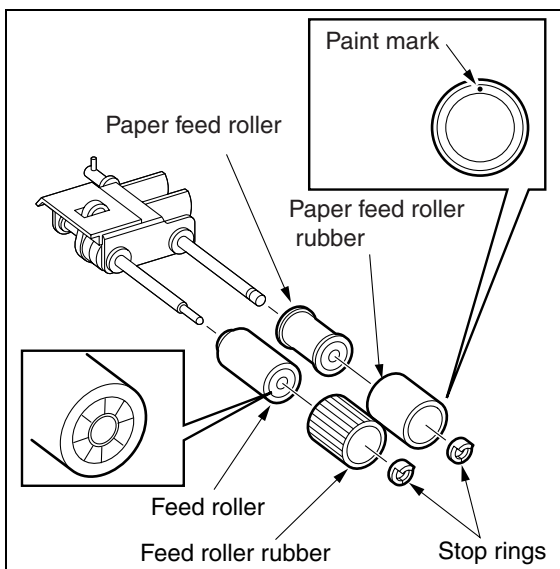
[3] Removing and Reinstalling the Paper Feed Roller and Feed Roller Rubber

a. Procedure

- (1) Remove the paper feed unit.
- (2) Remove two stop rings and slide the two bearings outward.
- (3) Release the feed roller axis from the holder slit to detach the paper feed roller unit.



- (4) Remove two stop rings from the paper feed roller unit to detach the paper feed roller and feed roller.
- (5) Remove the rubber from each roller.



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

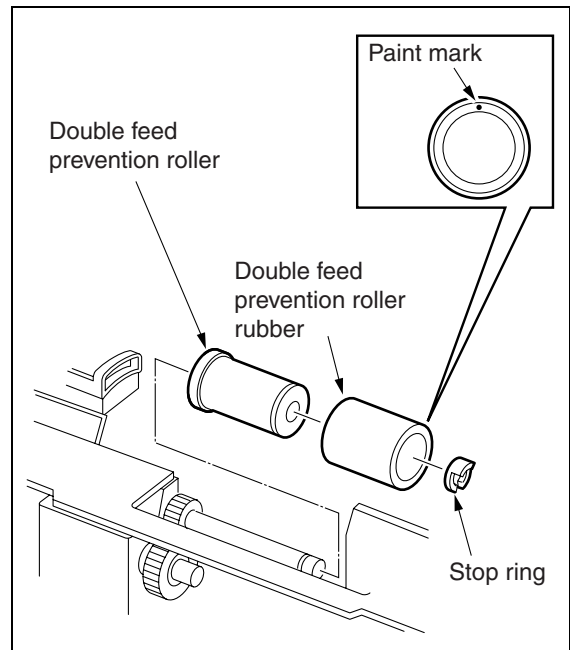
Caution1: When reinstalling the rollers, pay attention to their orientation.

Caution2: Check that no grease or the like remains on each roller.

[4] Removing and Reinstalling the Double Feed Prevention Roller Rubber

a. Procedure

- (1) Remove the paper feed unit.
- (2) Remove the paper feed roller unit.
- (3) Remove the stop ring to detach the double feed prevention roller.
- (4) Remove the double feed prevention roller rubber from the roller.



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

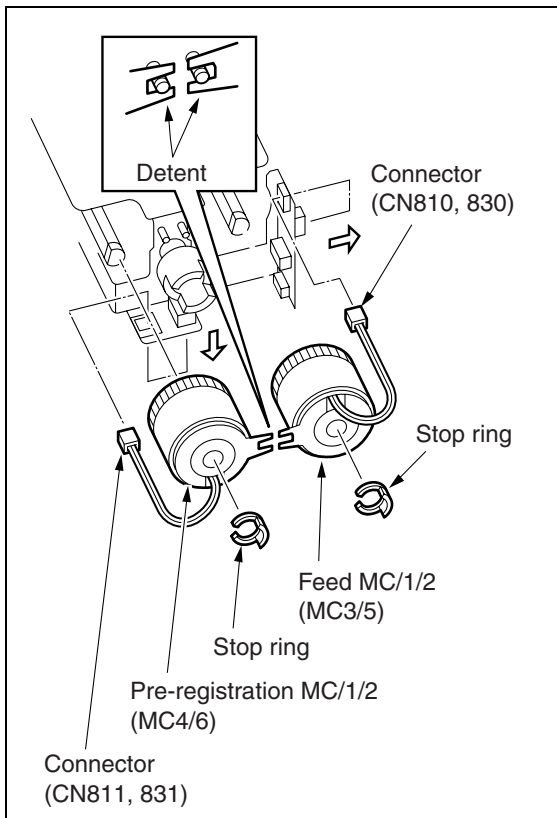
Caution1: When reinstalling the double feed prevention roller, pay attention to their orientation.

Caution2: Check that no grease or the like remains on the double feed prevention roller.

[5] Replacing the Pre-registration and Feed Clutches (MCs)

a. Procedure

- (1) Remove the paper feed unit.
- (2) Remove two connectors (CN850, 851).
- (3) Remove two stop 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.

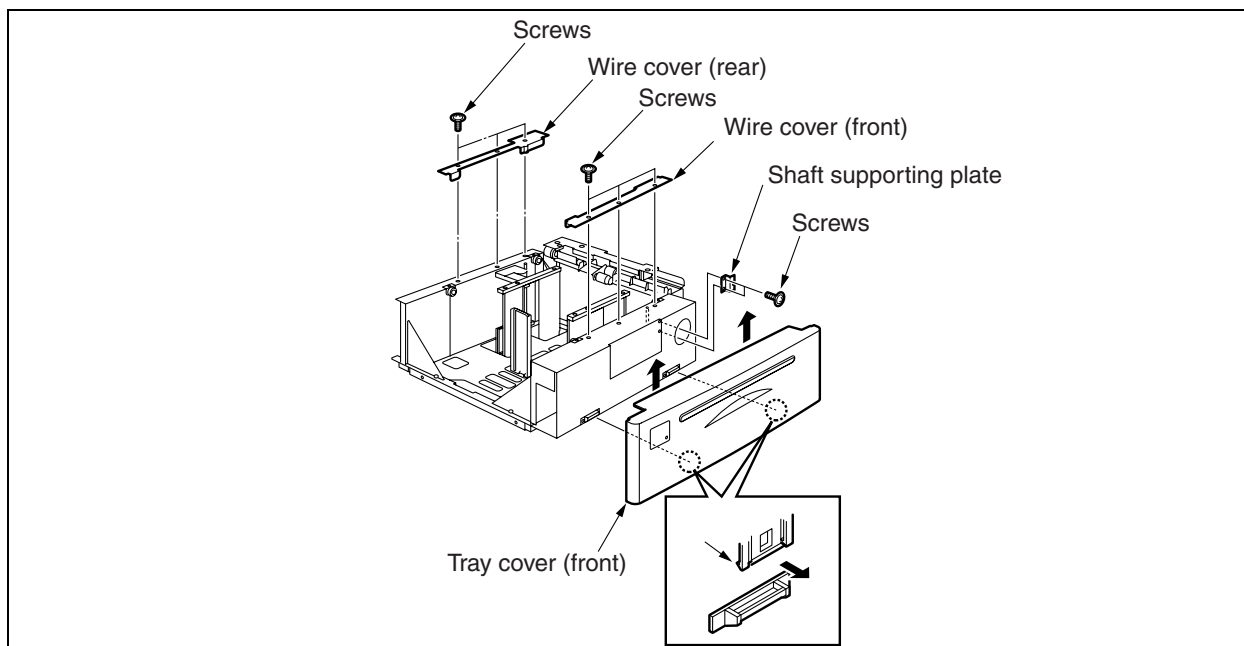
[6] Replacing the Wires

Caution1: After replacing or reinstalling the wires, manually rotate the up/down drive shaft to check that the tray moves up and down smoothly.

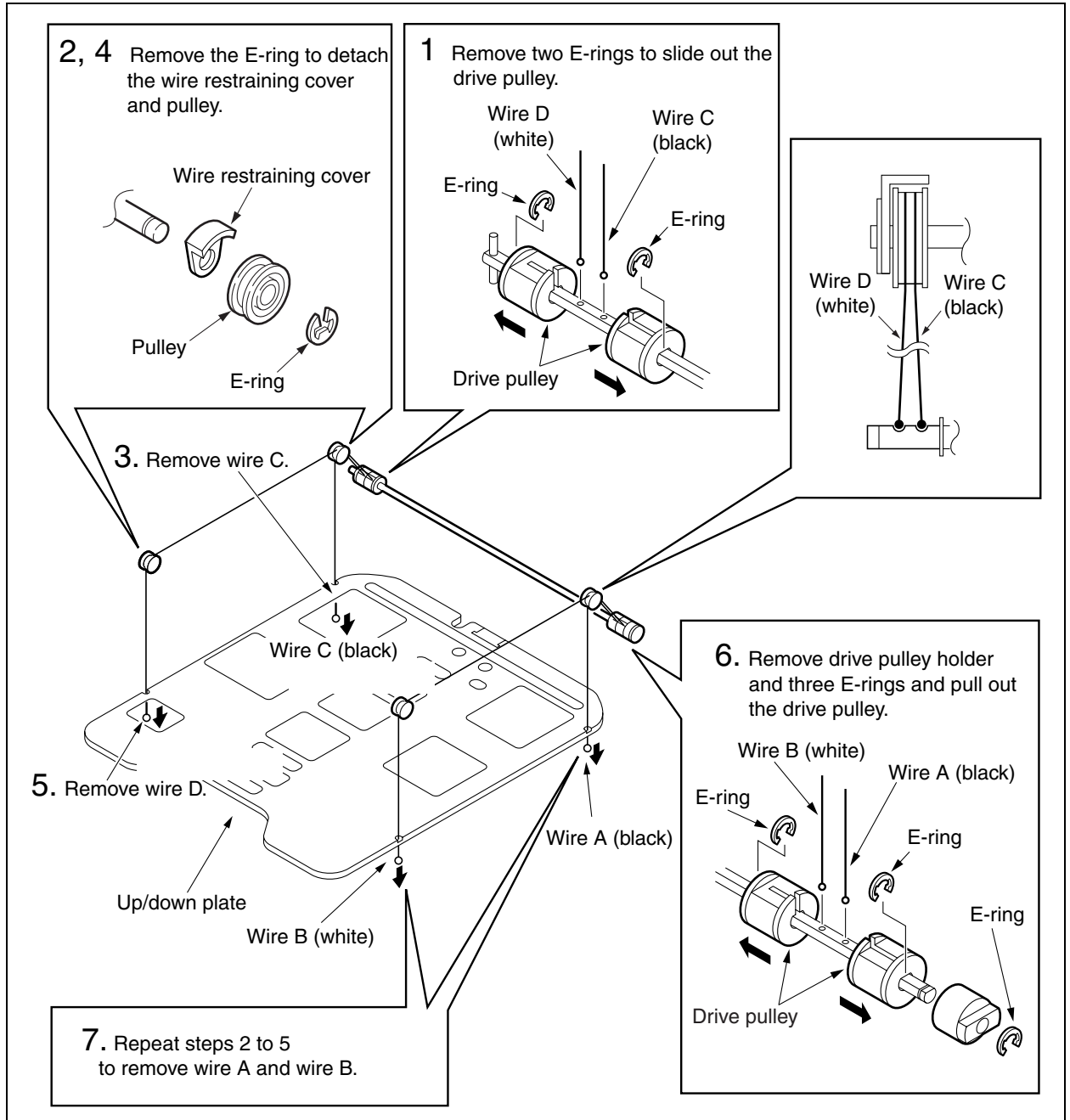
Caution2: Be sure to install the wires so that they do not cross or ride over each other.

<Removing Wires>

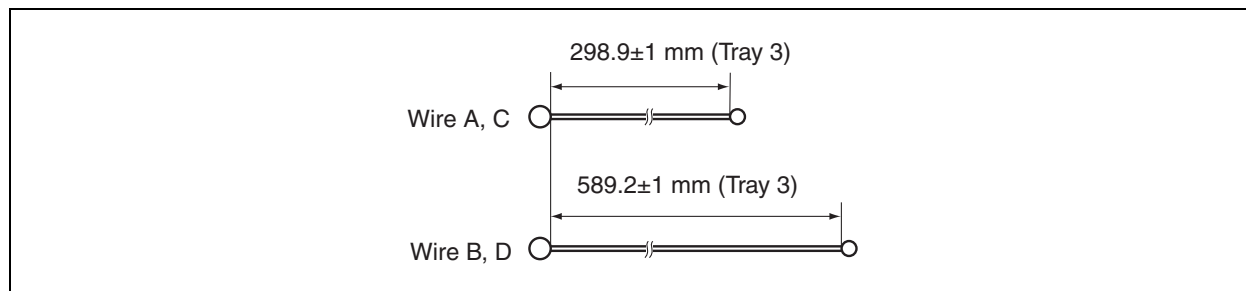
- (1) Remove the paper feed unit.
- (2) Remove two claws to remove the tray front cover.
- (3) Remove two screws to remove shaft supporting plate.
- (4) Remove three screws to remove the wire cover(front) and wire cover (rear).



(5) Remove the front and rear wires according to steps 1 to 7 below.

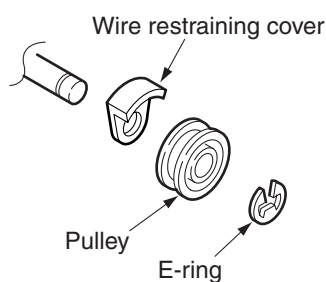


<Wire Lengths>

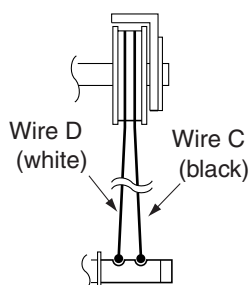


<Installing Wires>

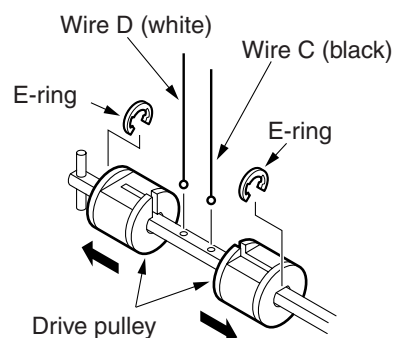
2. Install the pulley, pass wire D through the pulley, and install the wire restraining cover and E-ring.



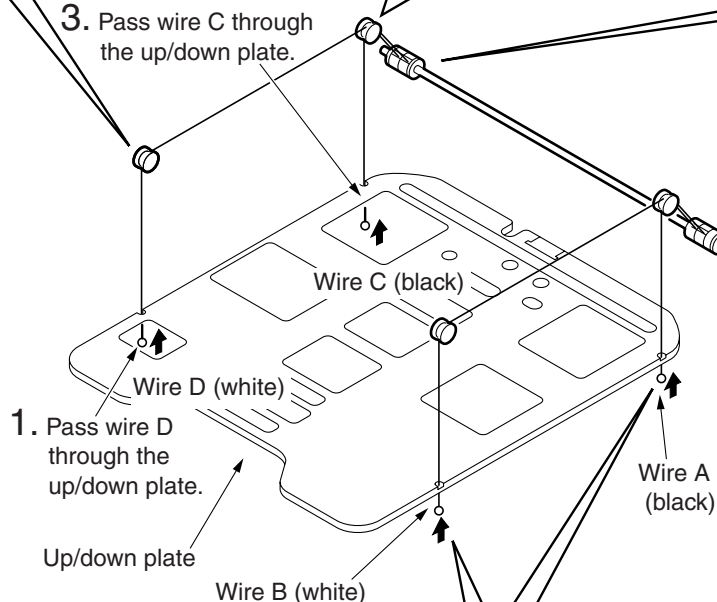
4. Install the pulley, pass wires C and D, and install the wire restraining cover and retaining ring. Wire D must be inside. Wires must not cross.



5. Install the wires C and D from inside the drive shaft hole, push in the drive pulley, and secure with E-rings.



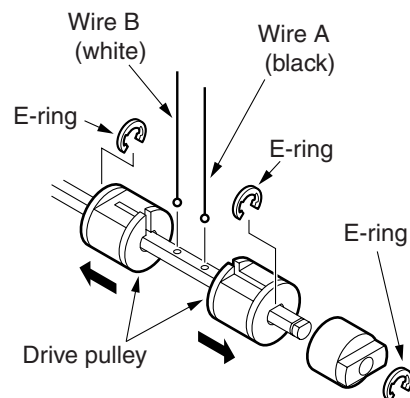
3. Pass wire C through the up/down plate.



1. Pass wire D through the up/down plate.

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.



PAPER FEED UNITS OF TRAYS 3 AND 4 (Di5510/Di7210)

⚠ Caution:

Trays 3 and 4 have the same shape and mechanism.

[1] Removing and Reinstalling the Paper Feed Unit

The contents here shall be in accordance with the "[1] Removing and Reinstalling the Paper Feed Unit" of PAPER FEED UNITS OF TRAY 1 AND 2 (Di551/Di650).

[2] Removing and Reinstalling the Paper Feed Tray 3 and 4

⚠ Warning:

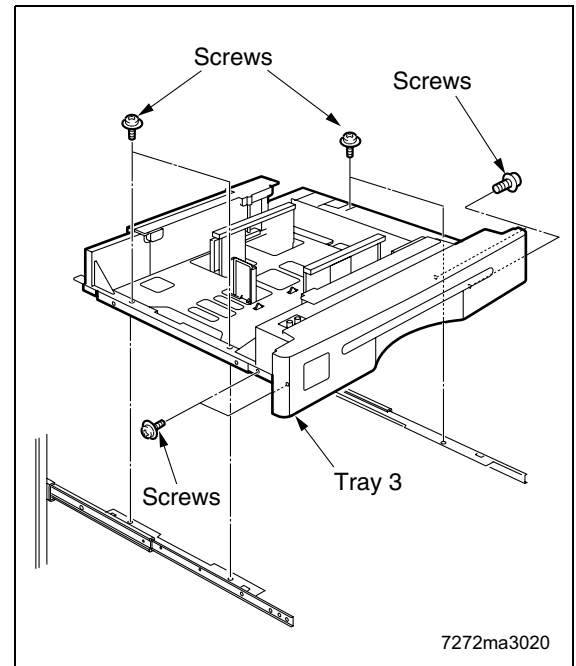
When removing the tray, stand in a proper position so that you do not hurt your back and waist. If the tray contains paper, remove all paper before removing the tray.

⚠ Caution:

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

a. Procedure

- (1) Draw out paper feed tray 3.
- (2) Remove the paper feed unit.
- (3) Remove eight screws and detach the tray 3 by lifting.



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

[3] Removing and Reinstalling the Paper Feed Roller and Feed Roller Rubber

The contents here shall be in accordance with the "[4] Removing and Reinstalling the Paper Feed Roller and Feed Roller Rubber" of PAPER FEED UNITS OF TRAY 1 AND 2 (Di5510/Di7210).

[4] Removing and Reinstalling the Double Feed Prevention Roller Rubber

The contents here shall be in accordance with the "[4] Removing and Reinstalling the Double Feed Prevention Roller Rubber" of PAPER FEED UNITS OF TRAY 1 AND 2 (Di551/Di650).

[5] Replacing the Pre-registration and Feed Clutches (MCs)

The contents here shall be in accordance with the "[5] Replacing the Pre-registration and Feed Clutches (MCs)" of PAPER FEED UNITS OF TRAY 1 and 2 (Di551/Di650).

[6] Replacing the Wires

The contents here shall be in accordance with the "[6] Replacing the Wires" of PAPER FEED UNITS OF TRAY 1 and 2 (Di551/Di650).

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BY-PASS FEED TRAY

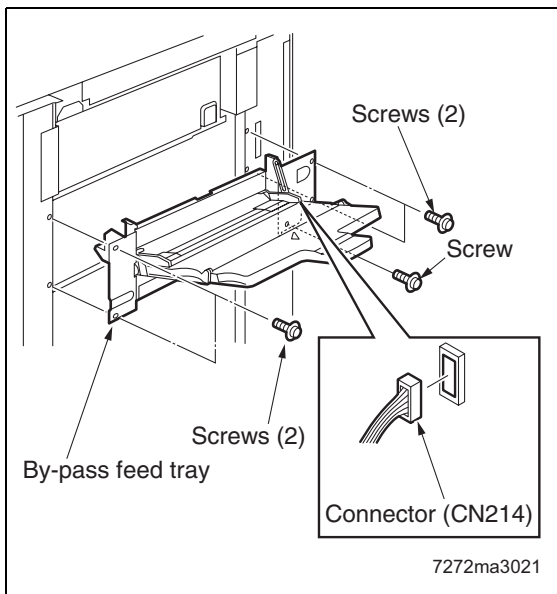
[1] Removing and Reinstalling the by-pass Feed Tray

⚠ Caution:

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

a. Procedure

- (1) Remove the developing suction filter cover and right side cover (upper). (See "EXTERNAL SECTION.")
- (2) Remove the connector (CN214).
- (3) Remove five screws to remove the by-pass feed tray.

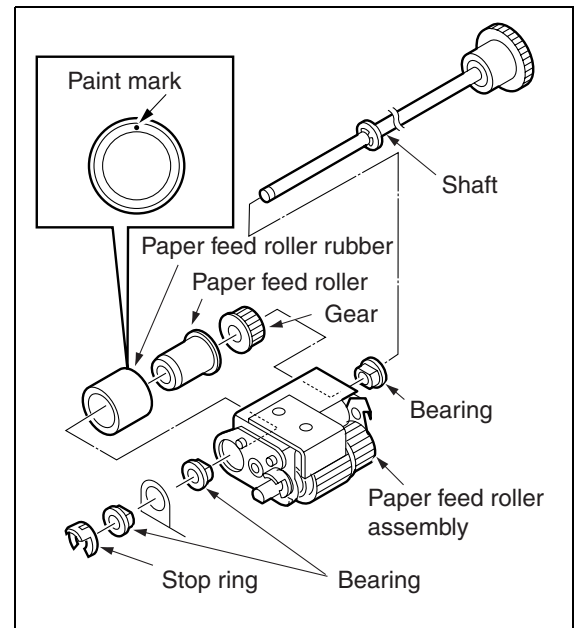


- (4) Reinstall the above parts following the removal steps in reverse.

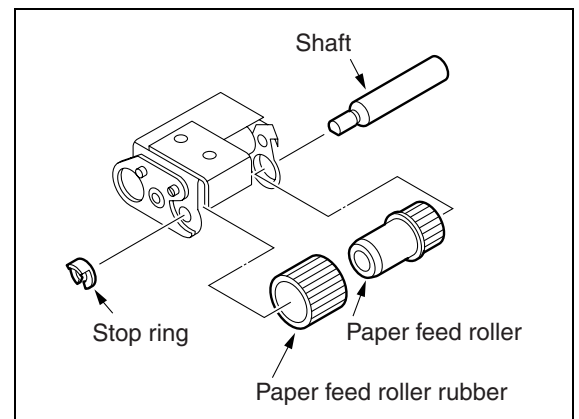
[2] Replacing the Paper Feed Roller/ Paper Feed Roller Rubber

a. Procedure

- (1) Remove the by-pass feed tray.
- (2) Remove the stop ring and bearing and pull out the shaft from the paper feed roller.
- (3) Remove the two bearings and one gear and remove the paper feed roller rubber from the paper feed roller.



- (4) Remove the stop ring from the paper feed roller assembly to pull out the shaft and remove the paper feed roller rubber from the paper feed roller.



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

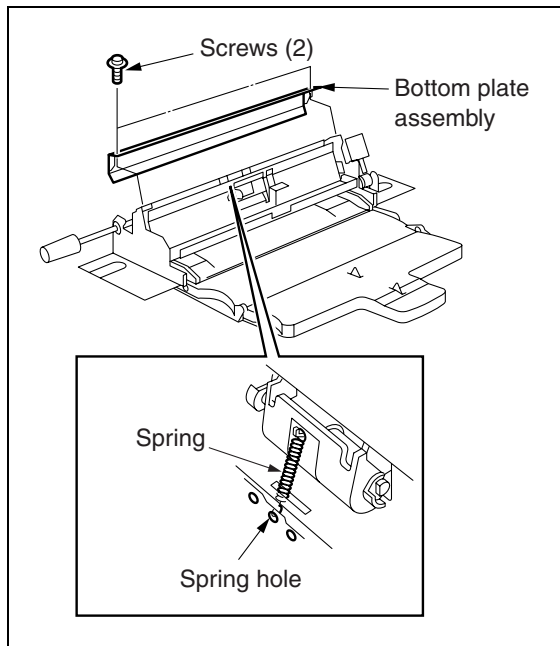
Caution1: Check that the orientation of the roller is correct when installing.

Caution2: Check that no grease or the like remains on the roller.

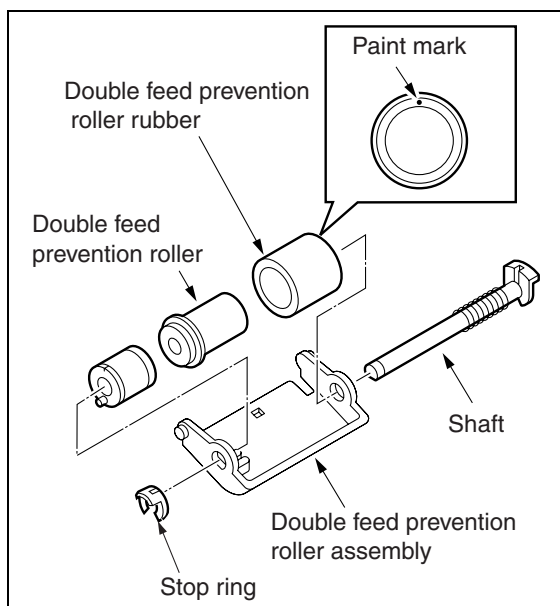
[3] Replacing the Double Feed Prevention Roller Rubber

a. Procedure

- (1) Remove the by-pass feed tray and place the tray upside down.
- (2) Remove two screws to remove the bottom plate assembly.
- (3) Remove the spring.



- (4) Remove the double feed prevention roller assembly from the by-pass feed tray unit.
- (5) Remove the stop ring to pull out the shaft and remove the double feed prevention roller rubber from the double feed prevention roller.



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

Caution1: Check that the orientation of the double feed prevention roller is correct when installing.

Caution2: Check that no grease or the like remains on the double feed prevention roller.

Caution3: There are three spring holes. Insert the spring in the middle hole.

VERTICAL CONVEYANCE SECTION

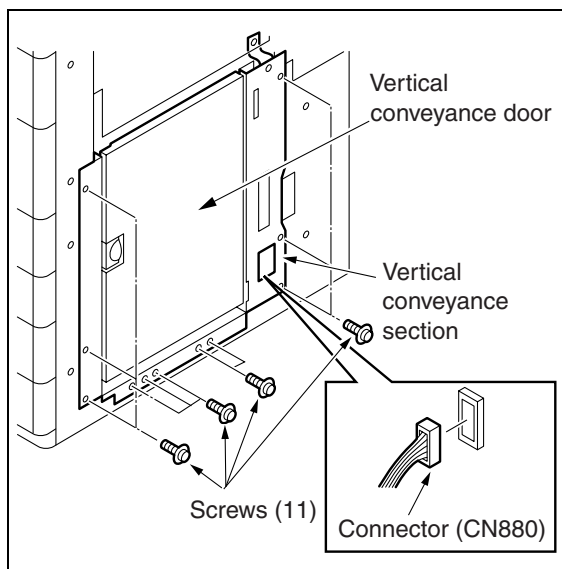
[1] Removing and Reinstalling the Vertical Conveyance Section

⚠ Caution:

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

a. Procedure

- (1) Remove all right side covers. (See "EXTERNAL SECTION.")
- (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.

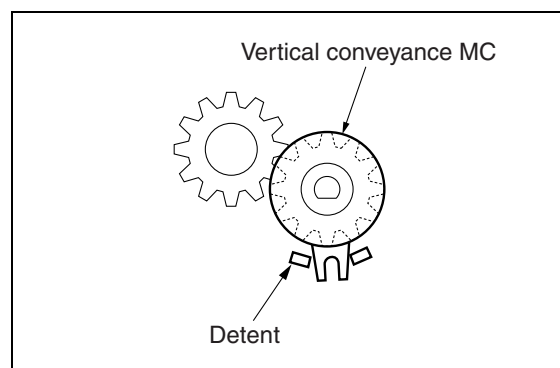
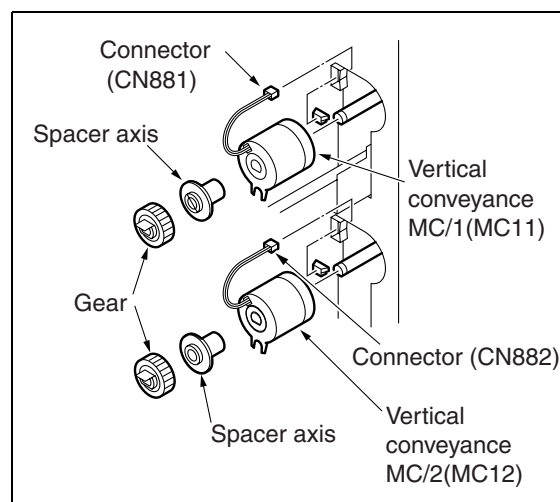
[2] Removing and Reinstalling the Vertical Conveyance MC (MC11, MC12)

⚠ Caution:

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

a. 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.

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ADU UNIT

[1] Drawing out and Reinstalling the ADU Stand

⚠ Warning:

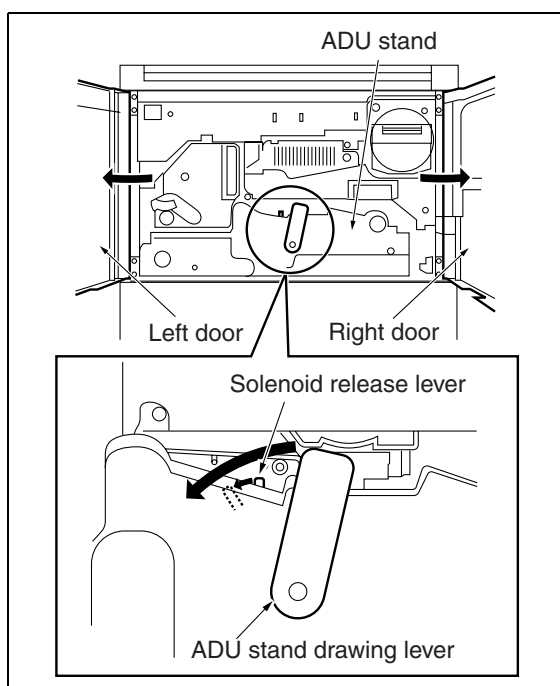
The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Caution:

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

a. 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 drawing lever to the left.
- (3) Grip the ADU stand drawing lever and draw out the ADU stand.



- (4) To reinstall the ADU stand, push in the ADU stand and then turn the ADU stand drawing lever upright.

[2] Cleaning the Paper Dust Removing Brush

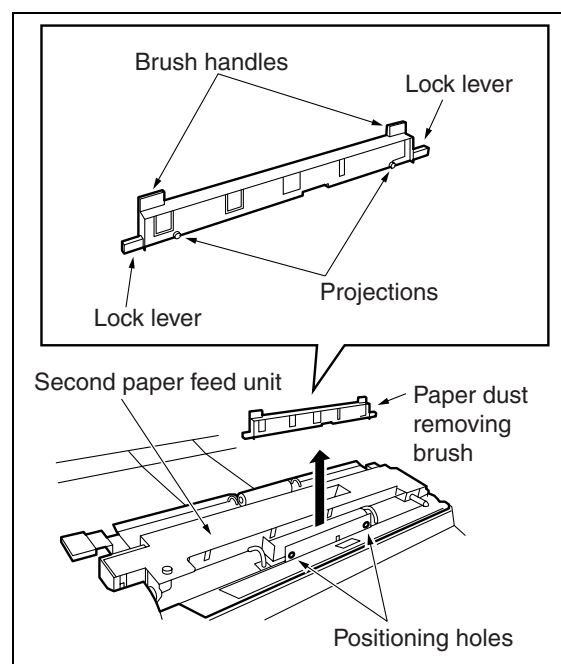
In the case of the Di551/Di650

⚠ Caution:

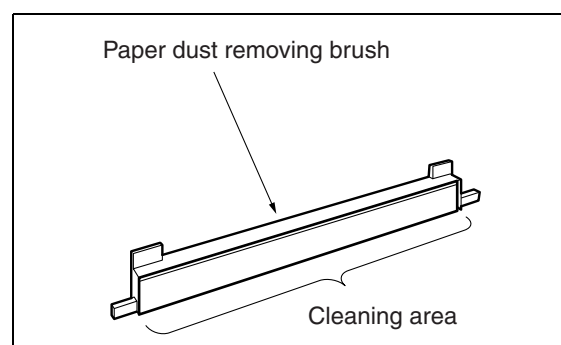
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out the ADU stand from the main body.
- (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.



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

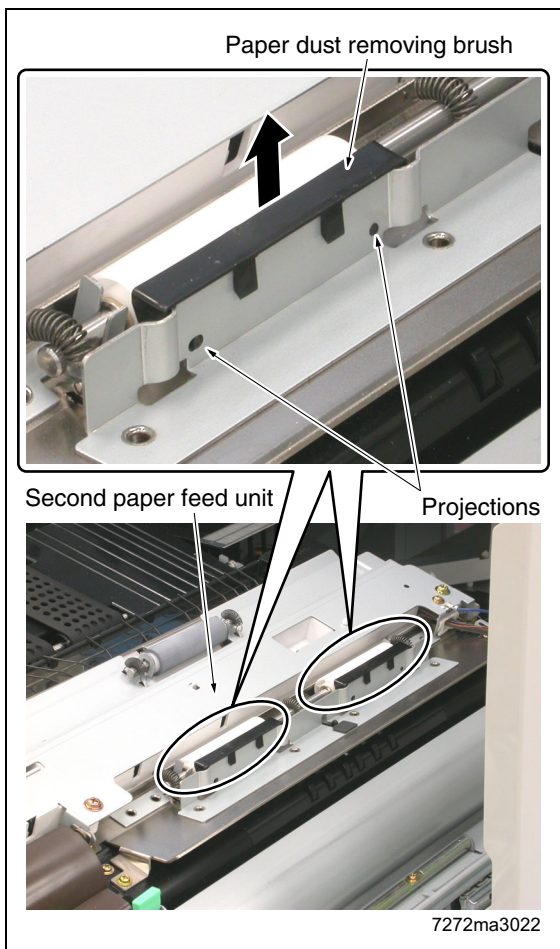
Caution: When installing, align the projection on the paper dust removing brush with the positioning hole on the second paper feed unit.

In the case of the Di5510/Di7210**⚠ Caution:**

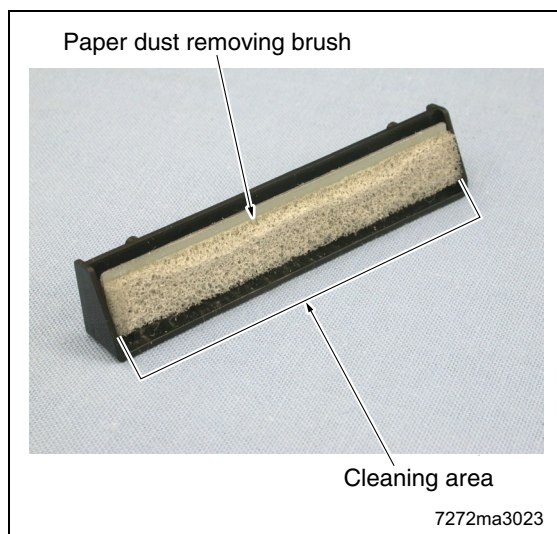
Be sure the power cord has been unplugged from the wall outlet.

b. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Push two projections for each to release the lock and remove the paper dust removing brush.



- (3) Using a blower brush, clean the paper dust removing brush.



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

Caution: When installing, align the projections on the paper dust removing brush with the positioning holes on the second paper feed unit.

[3] Cleaning the Paper Mis-centering PS (PS70)/Leading Edge PS (PS43)

⚠ Warning:

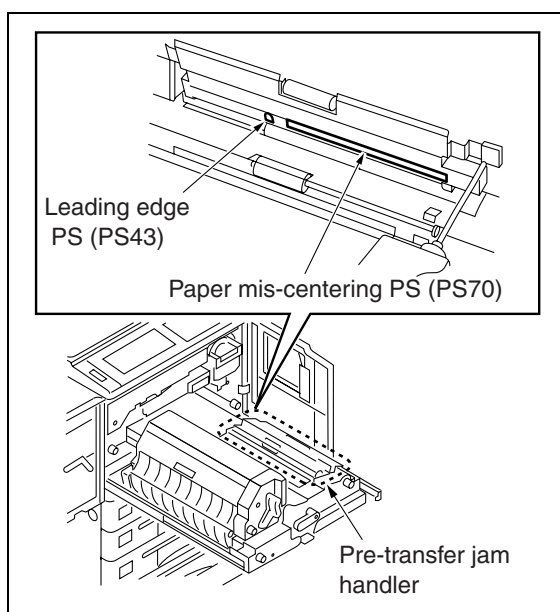
The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Caution:

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

a. Procedure

- (1) Draw out the ADU stand from the main body.
- (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 isopropyl alcohol or waste.



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

[4] Removing and Reinstalling the Registration MC (MC1)

⚠ Warning:

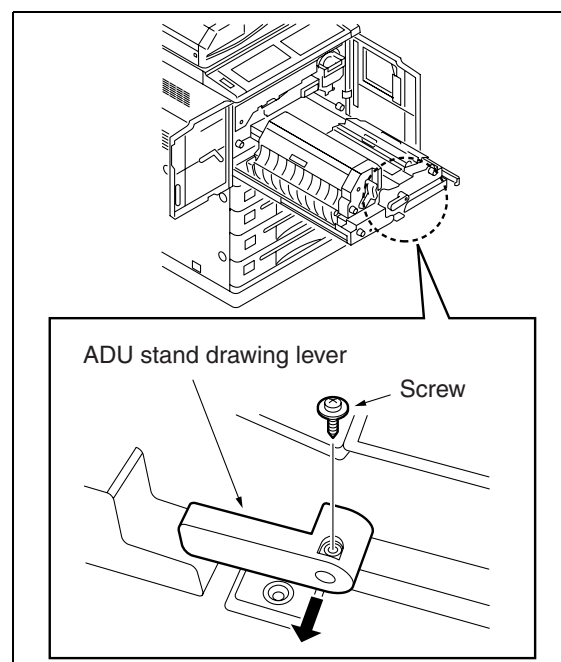
The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Caution:

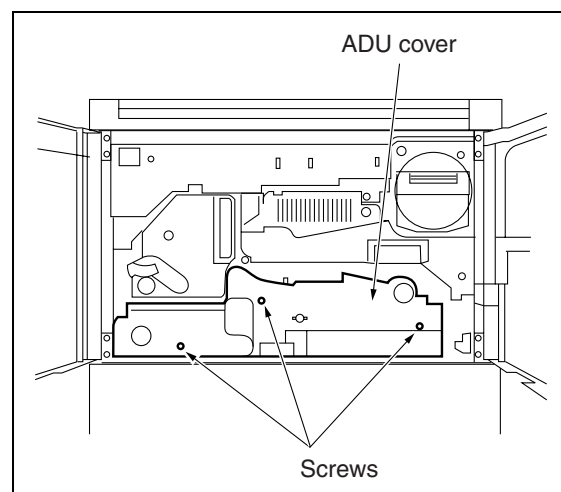
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

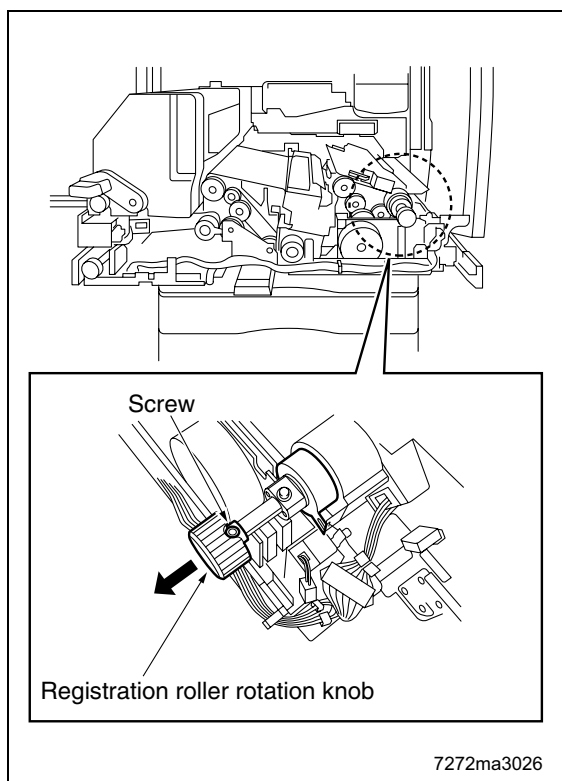
- (1) Draw out the ADU stand from the main body.
- (2) Remove one screw to remove the ADU stand drawing lever.



- (3) Remove three screws to remove the ADU cover.

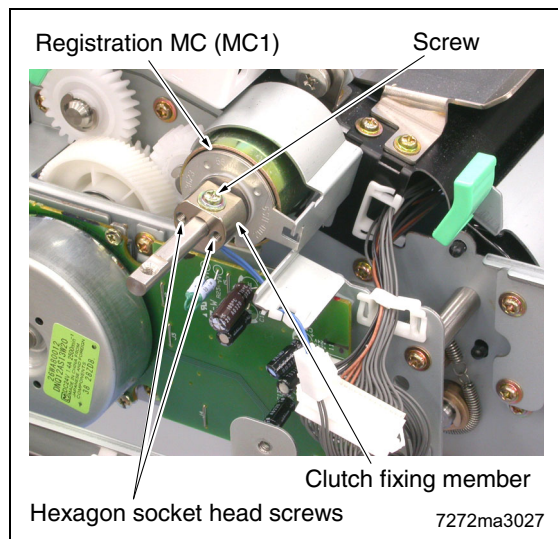


- (4) Remove one screw and remove the registration roller rotation knob.



- (8) Detach the registration MC (MC1).

Caution: When reinstalling, be sure the detent of the clutch is in the clutch cover groove.



- (9) Reinstall the above parts following the removal steps in reverse.

- (5) Disconnect the relay connector (CN422).

Caution: A relay 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) Loosen two hexagon socket head screws.
 (7) Remove the screw to detach the clutch fixing member.

[5] Removing and Reinstalling the Second Paper Feed Unit

⚠ 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 drawn out.

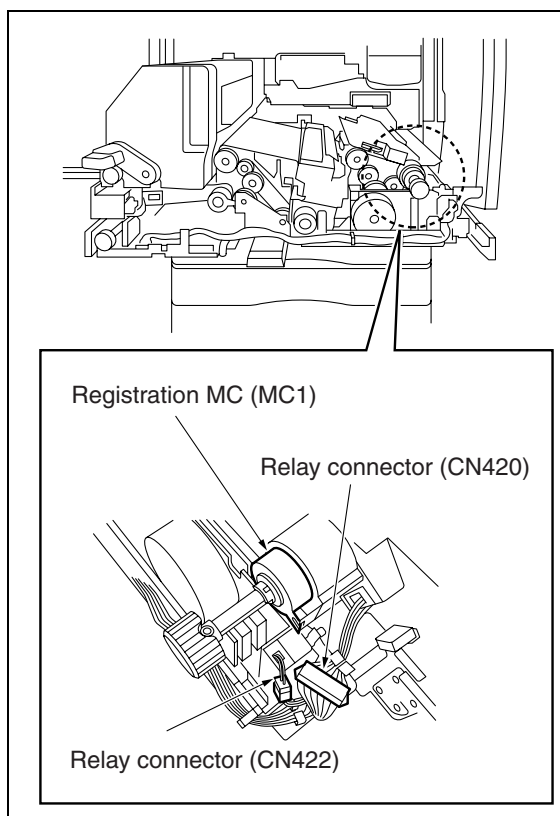
⚠ Caution:

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

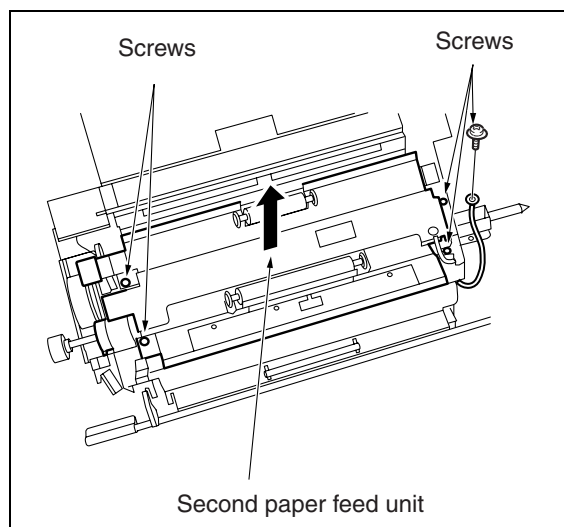
a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Detach the ADU cover.
- (3) Disconnect the two relay connectors (CN420, 422), and disconnect the relay connector from the wiring harness.

Caution: Each relay 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.

[6] Cleaning the Registration PS (PS44)

⚠ Warning:

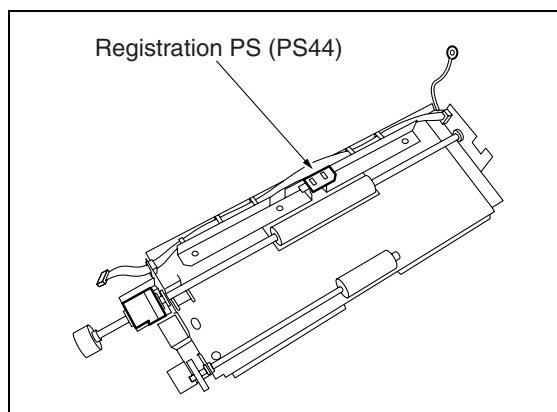
The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Caution:

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

a. Procedure

- (1) Draw out the ADU stand from the main body.
- (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.

[7] Removing and Reinstalling the Registration Roller

In the case of the Di551/Di650

⚠ 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 drawn out.

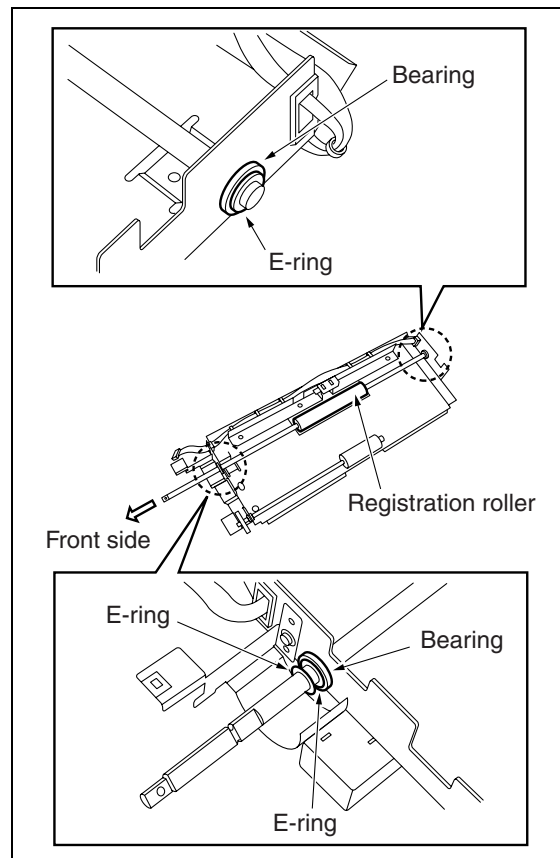
⚠ Caution:

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

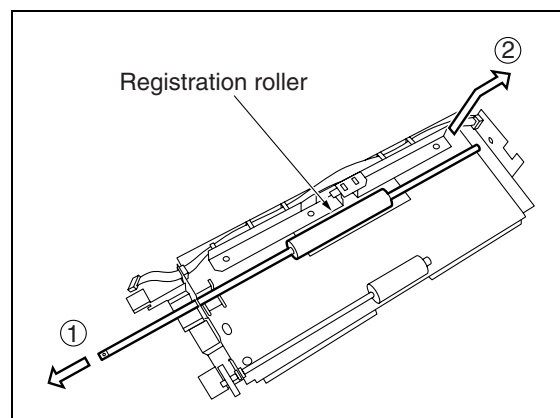
a. Procedure

- (1) Draw out the ADU stand from the main body.
- (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 at the left and the other at 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.

In the case of the Di5510/Di7210**⚠ 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 drawn out.

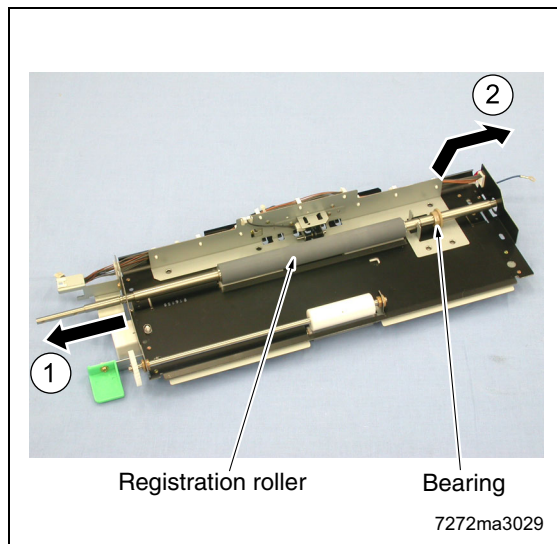
⚠ Caution:

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

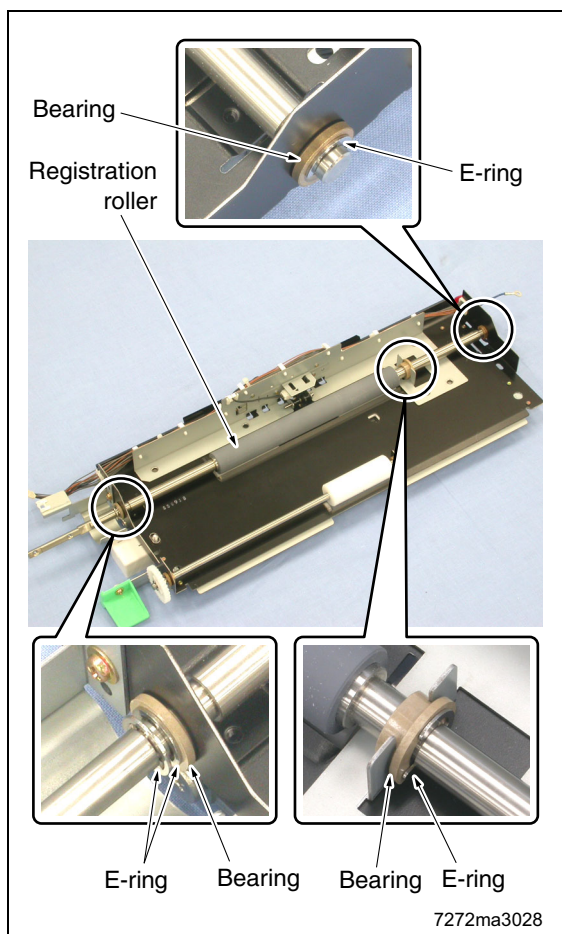
b. Procedure

- (1) Draw out the ADU stand from the main body.
- (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 two E-rings on the front of the registration roller.
- (6) Remove the two E-rings at the rear of the registration roller.
- (7) Remove the two bearings (one at the left and the other at the right) from the registration roller.

- (8) Slide the registration roller to the front, then remove it by lifting the rear end.
- (9) Remove the bearing from the registration roller.



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



[8] Removing and Reinstalling the Pre-transfer Roller

⚠ Warning:

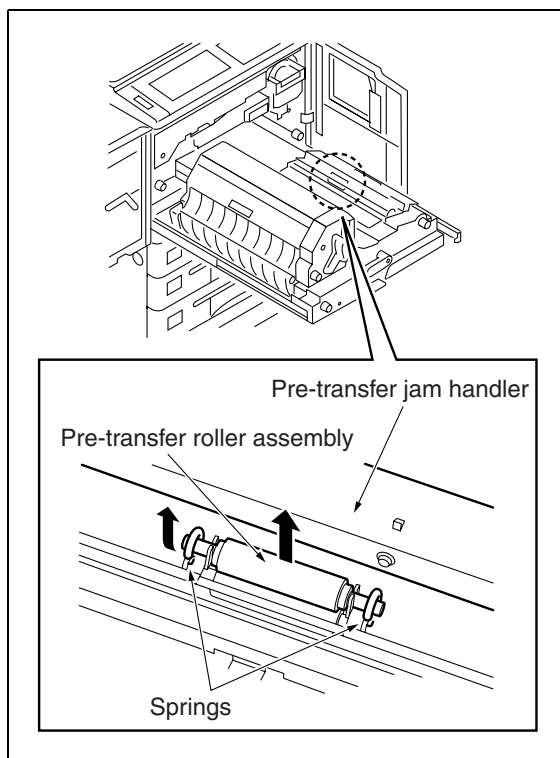
The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Caution:

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

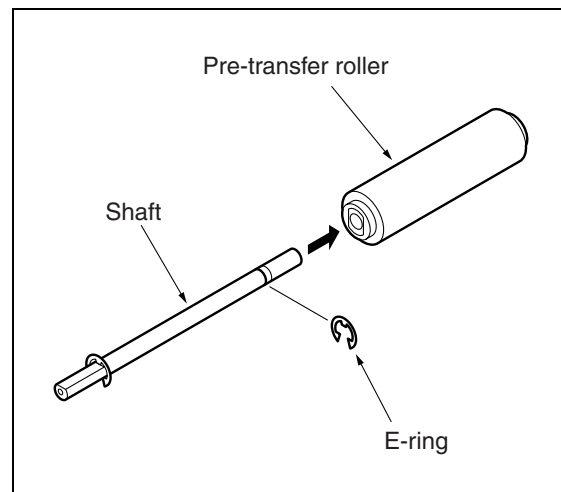
a. Procedure

- (1) Draw out the ADU stand from the main body.
- (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.

[9] Cleaning the ADU Paper Reverse PS (PS45)/Reverse/Exit PS (PS46)

⚠ Warning:

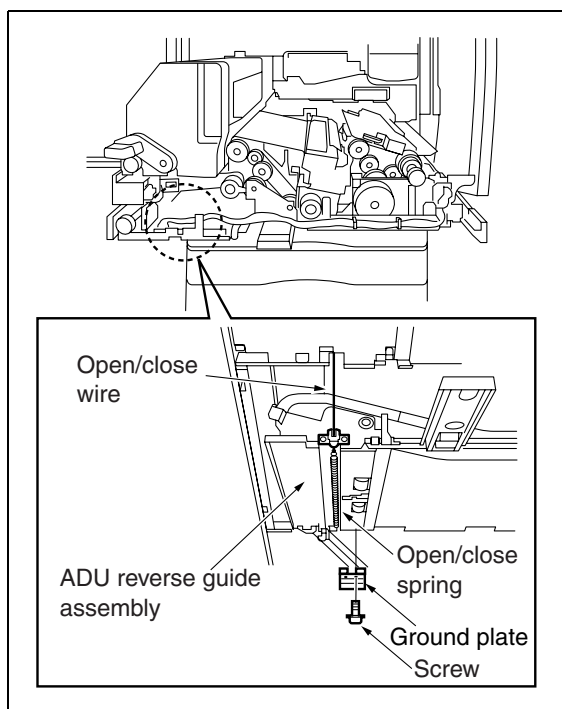
The interlock which is turned OFF when the front right or left door opens or closes should never be turned ON forcibly with the ADU stand drawn out.

⚠ Caution:

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

a. Procedure

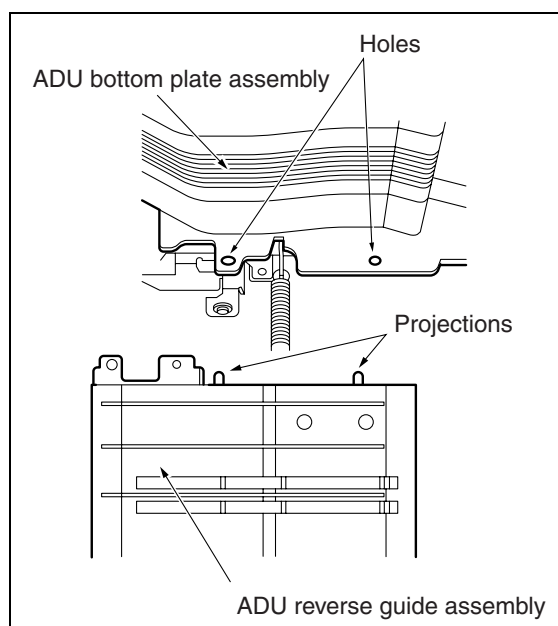
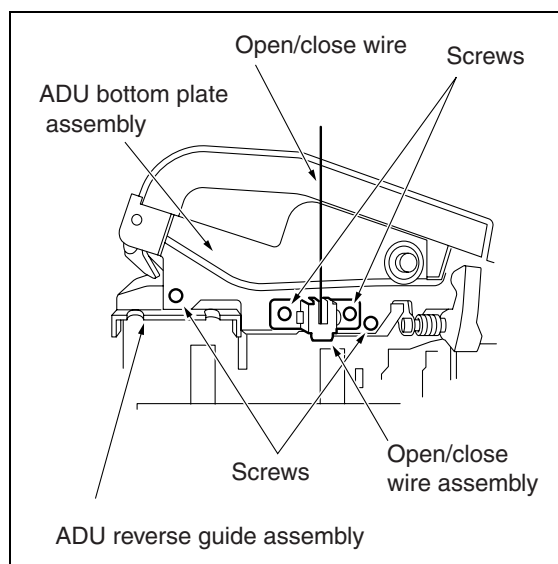
- (1) Draw out the ADU stand from the main body.
- (2) Remove the fixing unit. (See "FIXING UNIT.")
- (3) Remove the ADU cover.
- (4) Remove one screw to remove the ground plate.
- (5) Remove the open/close spring from the paper exit side open/close wire.



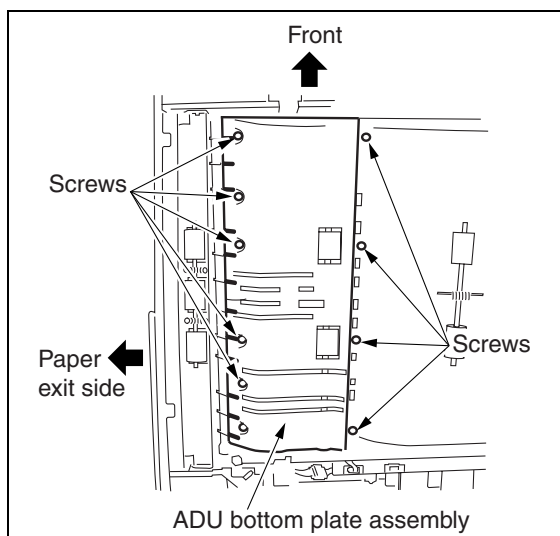
- (6) Remove two screws to remove the open/close wire assembly.

- (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.

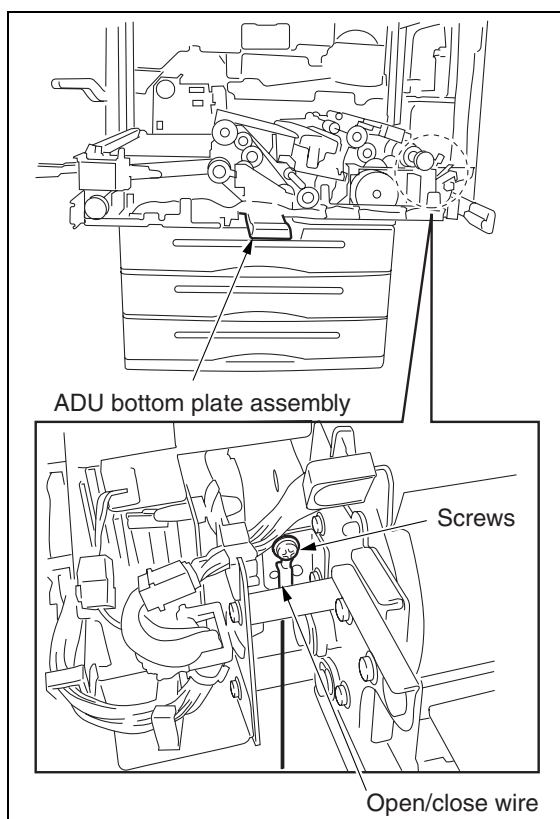


- (8) Remove the nine screws illustrated from the bottom of the ADU stand.

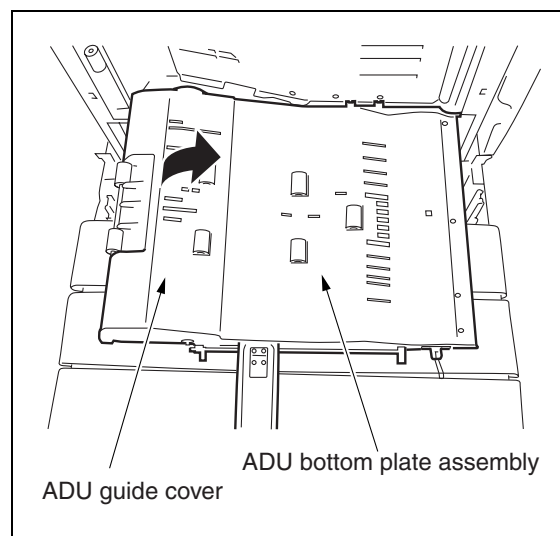


- (9) Remove one screw while holding the ADU bottom plate assembly to remove the paper feed side open/close wire.

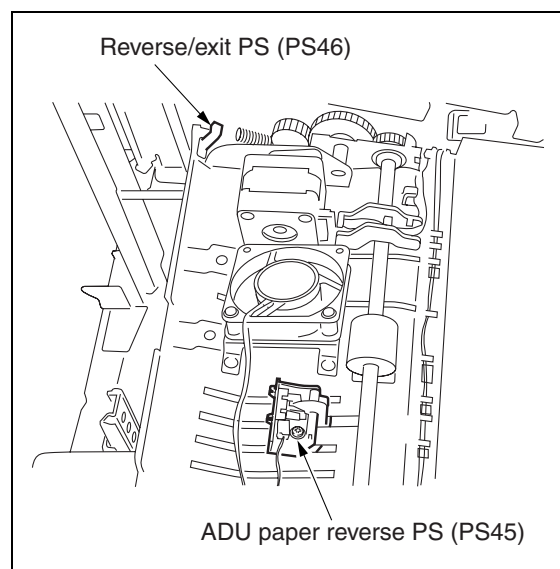
Caution: Be sure to hold ADU bottom plate assembly when removing the screws because the ADU bottom plate assembly becomes free when the paper feed side open/close wire is removed.



- (10) Lower the ADU bottom plate assembly straight down and remove the ADU guide cover.



- (11) Clean the ADU paper reverse PS (PS45) and reverse/exit PS (PS46) with a blower brush.



- (12) Reinstall the above parts following the removal steps in reverse.

[10] Removing and Reinstalling the ADU 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 drawn out.

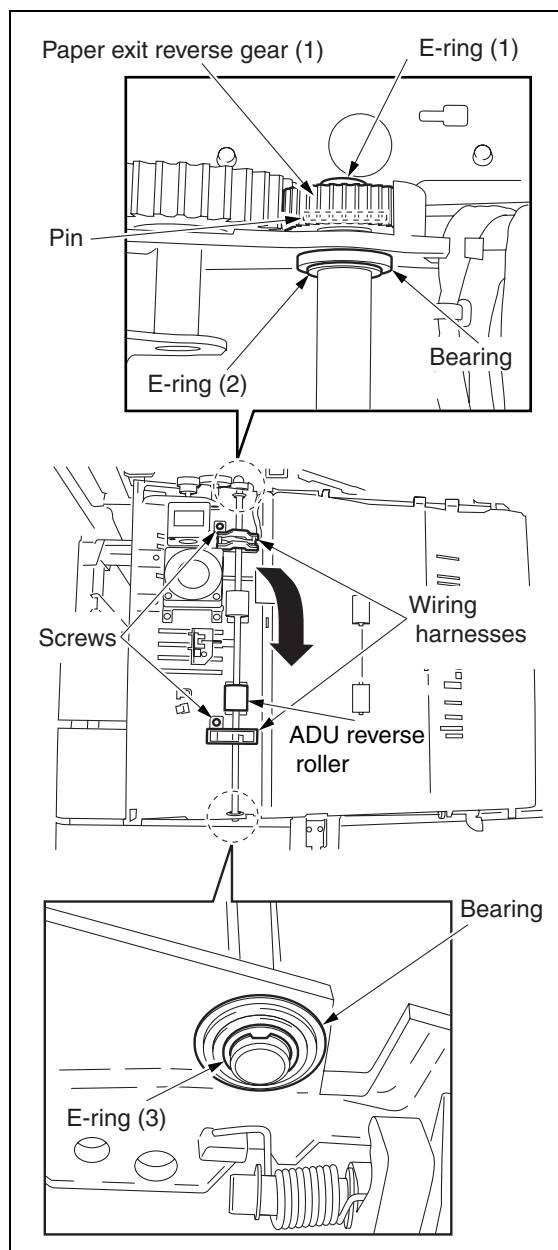
⚠ Caution:

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

a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Remove the fixing unit. (See "FIXING UNIT.")
- (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.

[11] 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 drawn out.

⚠ Warning:

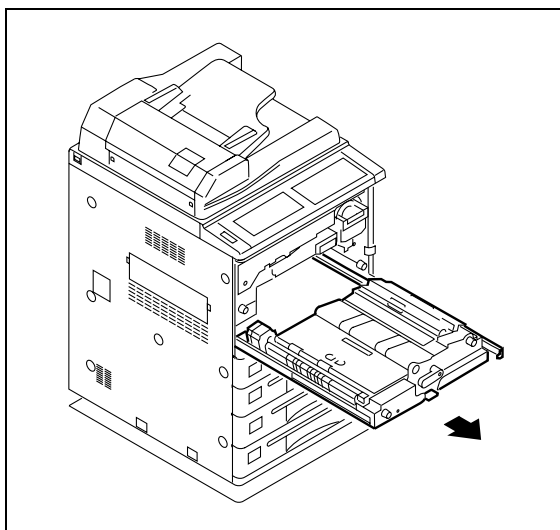
Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

⚠ Caution:

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

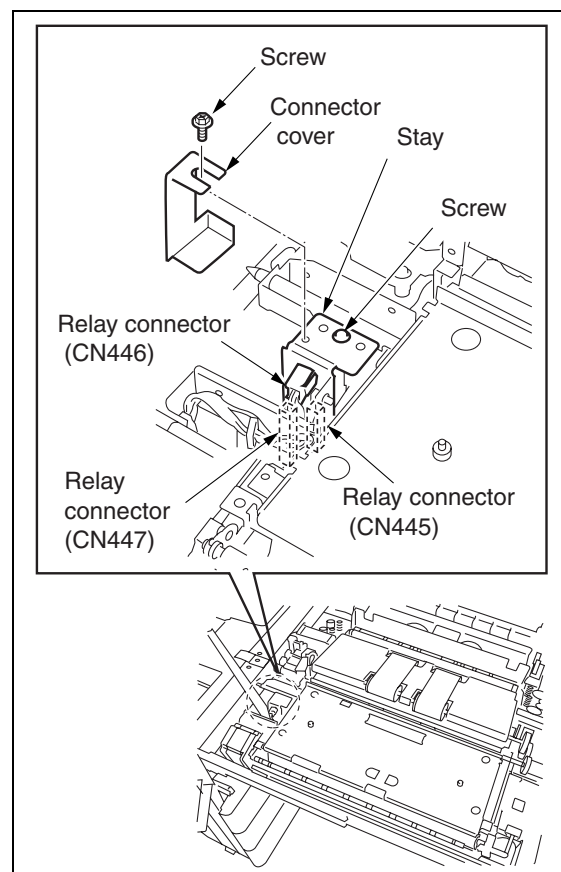
a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Remove the fixing unit. (See "FIXING UNIT.")
- (3) Remove the transfer/separation corona unit. (See "CORONA UNIT.")
- (4) Remove the second paper feed unit.
- (5) Remove the front right door and the front left door. (See "EXTERNAL SECTION.")



- (8) Disconnect the three relay connectors (CN445, 446, 447).

Caution: Disconnect each connector on the ADU stand.

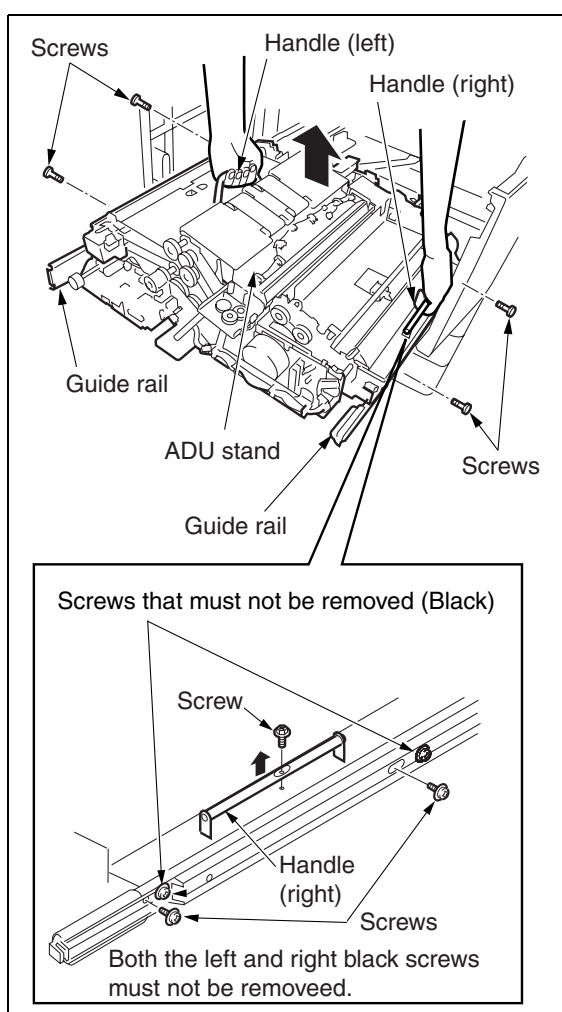


- (6) Remove one screw (in the case of the Di551/Di650) or loosen one screw (in the case of the Di5510/Di7210) to detach the connector cover.
- (7) Remove the screw to loosen the stay.

- (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 fixing unit. Then, they lift up the ADU stand.



- (12) Reinstall the above parts following the removal steps in reverse.

[12] 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 drawn 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.

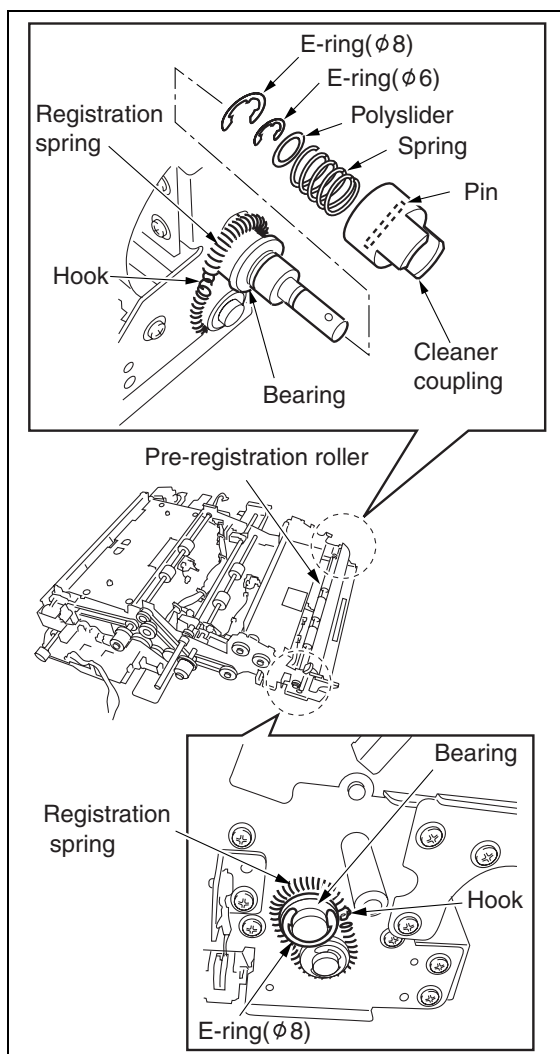
a. Procedure

- (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.

[13] 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 drawn out.

⚠ Warning:

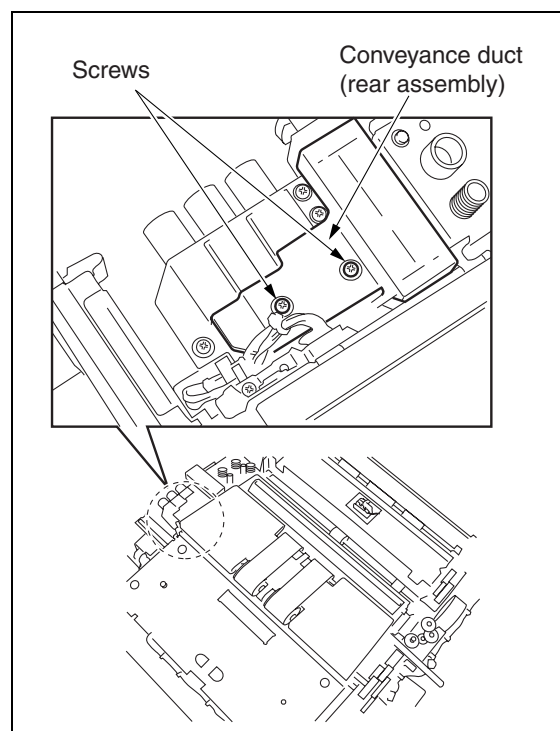
Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

⚠ Caution:

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

a. Procedure

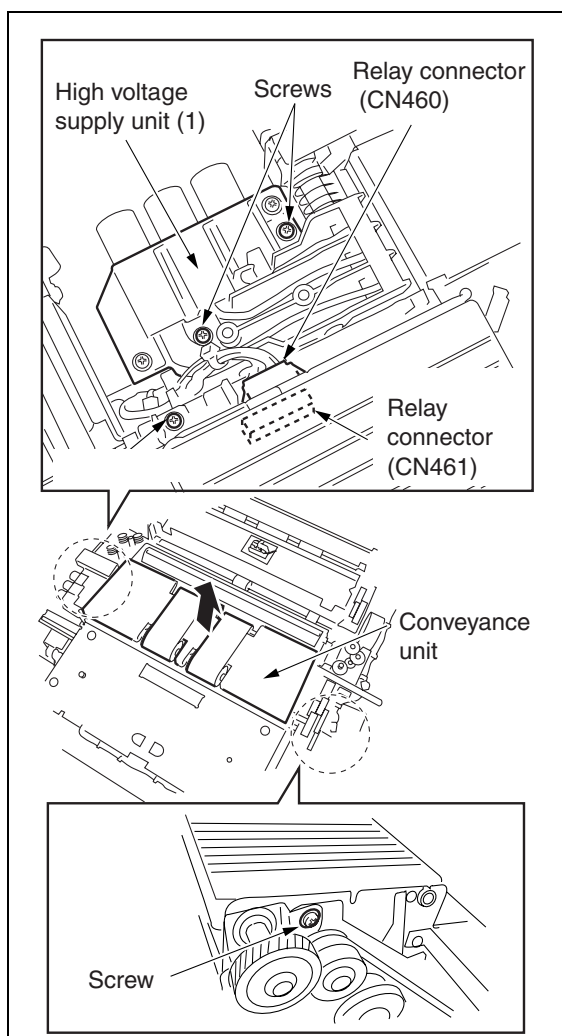
- (1) Draw out the ADU stand from the main body.
- (2) Remove the fixing unit. (See "FIXING UNIT.")
- (3) Remove the transfer/separation corona unit. (See "CORONA UNIT SECTION.")
- (4) Remove the second paper feed unit.
- (5) Remove the ADU stand.
- (6) Remove two screws to detach the conveyance duct (rear assembly).



- (7) Remove two screws to release the high voltage supply unit (1).
 (8) Disconnect the two connectors (CN460, 461).

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

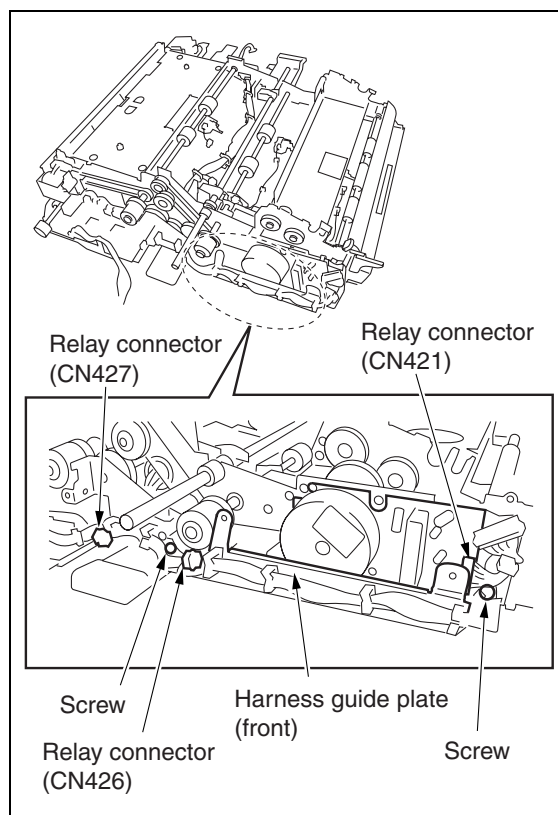
- (9) Remove two screws to remove the conveyance unit.



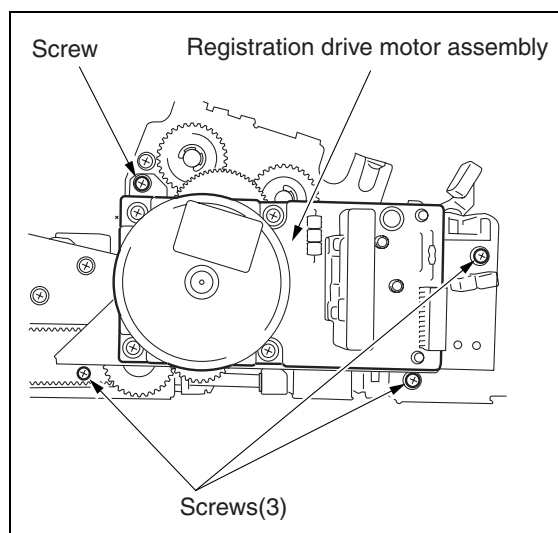
- (10) Disconnect the three connectors (CN421, 426, 427).

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

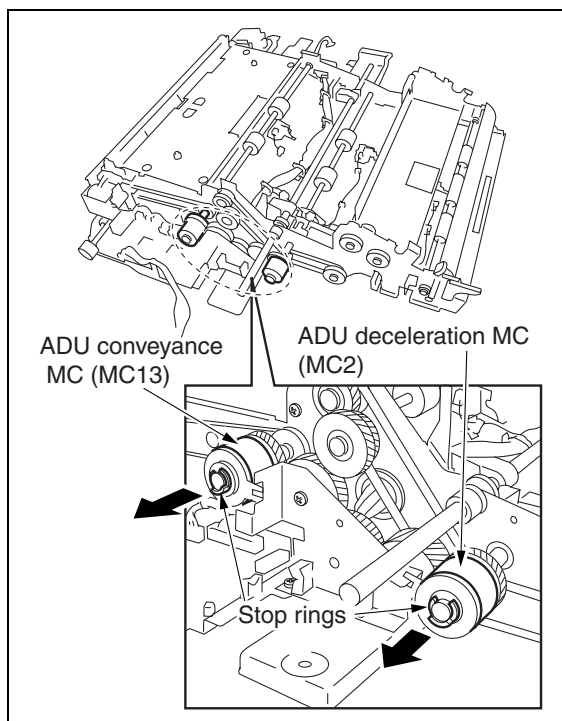
- (11) Remove two screws to remove the harness guide plate (front).



- (12) Remove four screws to detach the registration drive motor assembly.

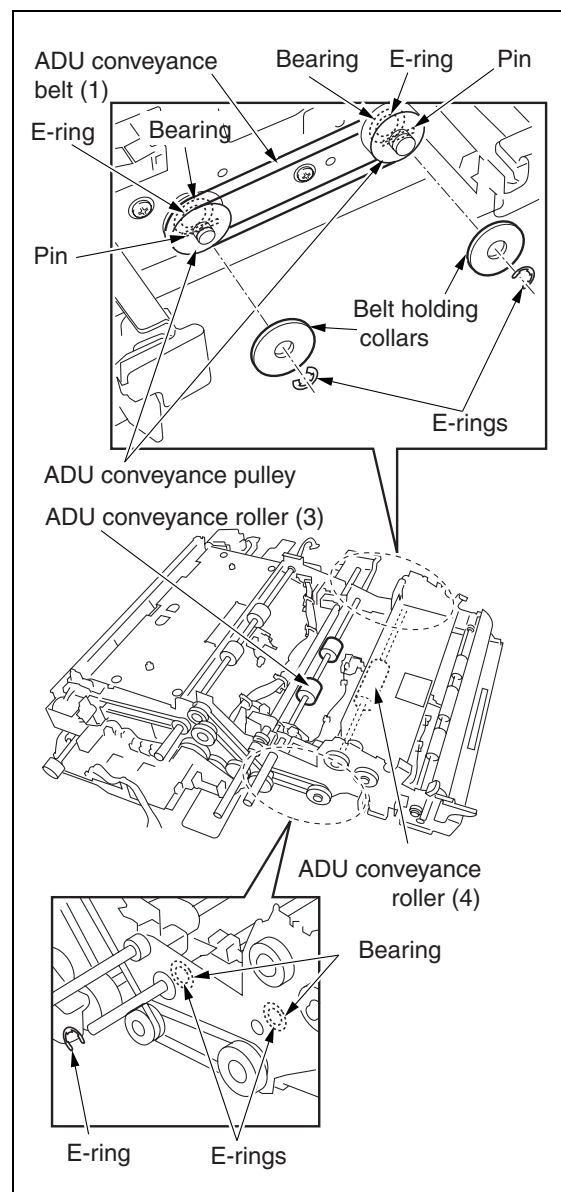


- (13) Remove the stop rings to remove the ADU deceleration MC (MC2) and ADU conveyance MC (MC13).



- (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.

[14] 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 drawn out.

⚠ Warning:

Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

⚠ Caution:

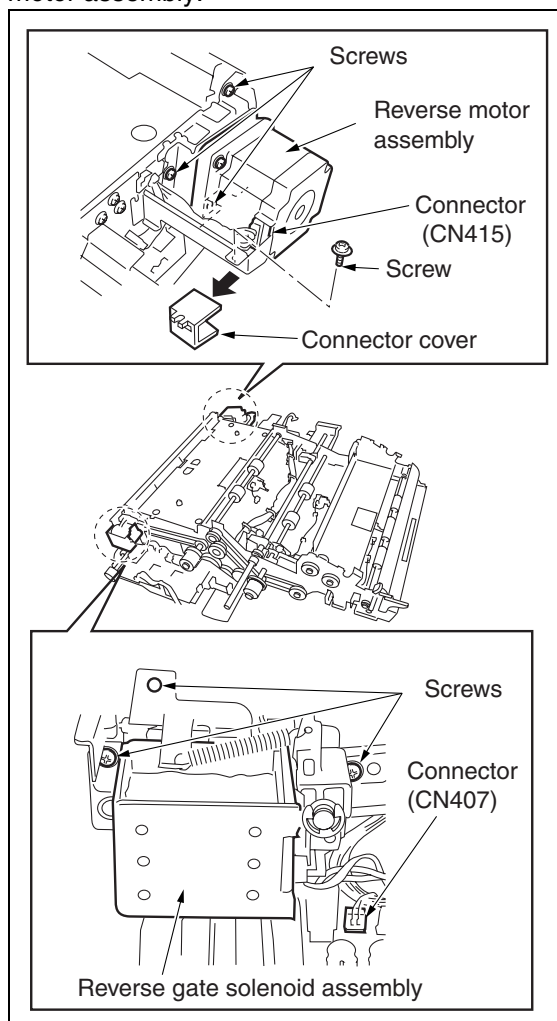
Be sure the power cord has been unplugged from the wall outlet.

a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Remove the fixing unit. (See "FIXING UNIT.")
- (3) Remove the transfer/separation corona unit. (See "CORONA UNIT.")
- (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) Disconnect the connector (CN415).

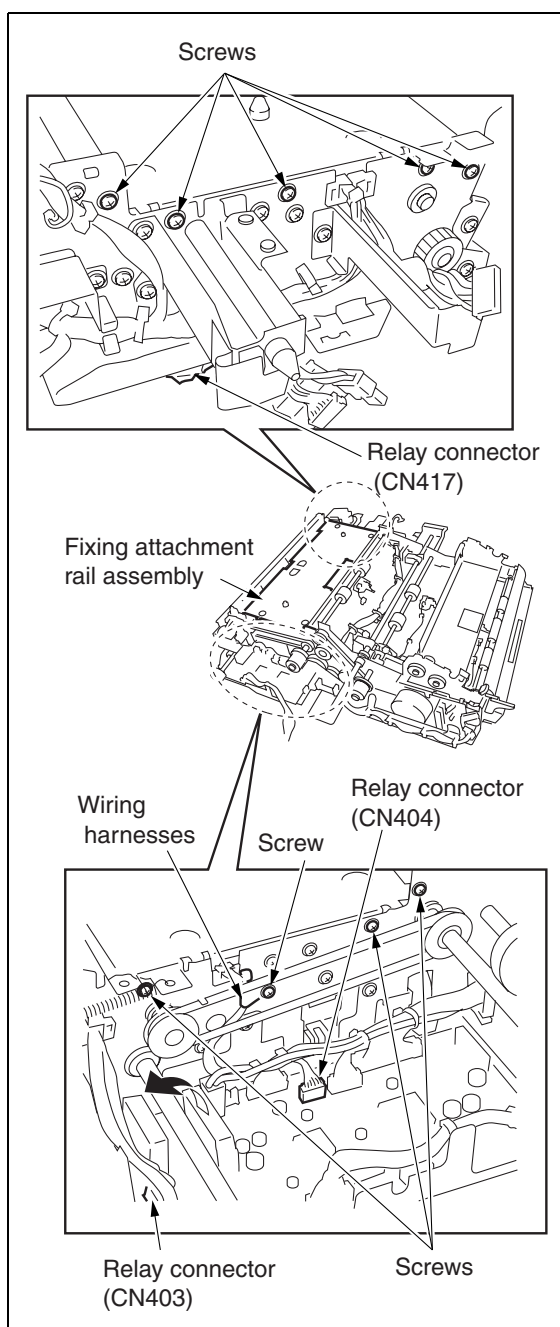
- (12) Remove three screws to detach the reverse motor assembly.



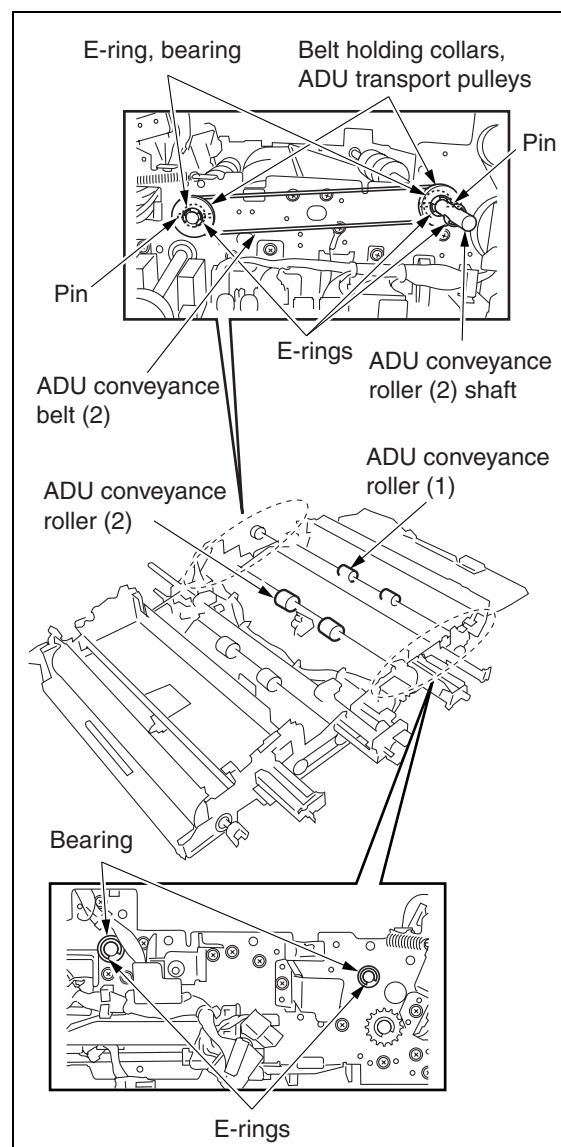
- (13) Disconnect the two connectors (CN403, 404).
 (14) Disconnect the connector (CN417).

Caution: Each relay 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 fixing 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.

[15] 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 drawn out.

⚠ Warning:

Removal and reinstallation of the ADU stand involve carrying a heavy load so it should be performed by two persons.

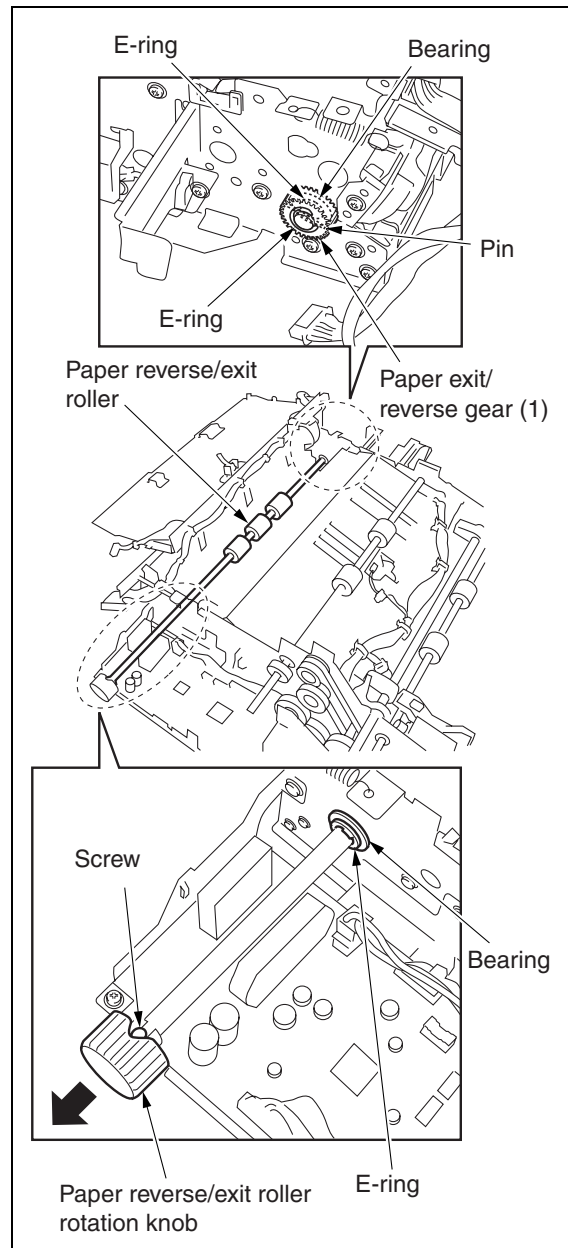
⚠ Caution:

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

a. Procedure

- (1) Draw out the ADU stand from the main body.
- (2) Remove the fixing unit. (See "FIXING UNIT.")
- (3) Remove the transfer/separation corona unit. (See "CORONA UNIT.")
- (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.

FIXING UNIT

[1] Removing and Reinstalling the Fixing Unit

⚠ Warning:

Do not touch the fixing unit immediately after turning OFF the main power switch because it is very hot and you may suffer burns. Wait until the fixing unit has cooled down sufficiently before working on it.

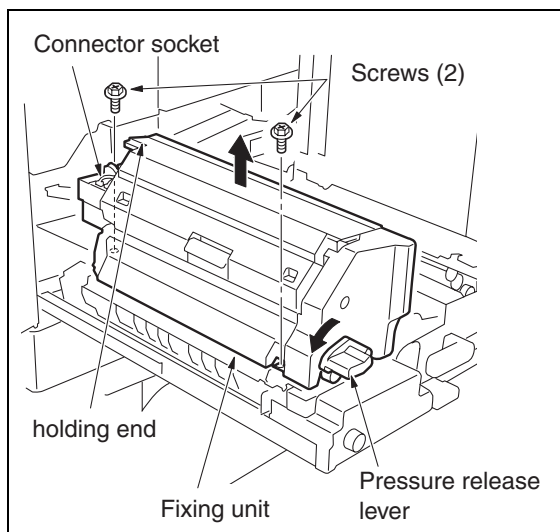
⚠ Caution:

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

a. Procedure

- (1) Draw out the ADU stand. (See "ADU UNIT.")
- (2) Turn the pressure release lever counterclockwise to release the pressure.
- (3) Remove two screws and remove the fixing unit 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 fixing unit, turn the pressure release lever clockwise and return it to the original position.

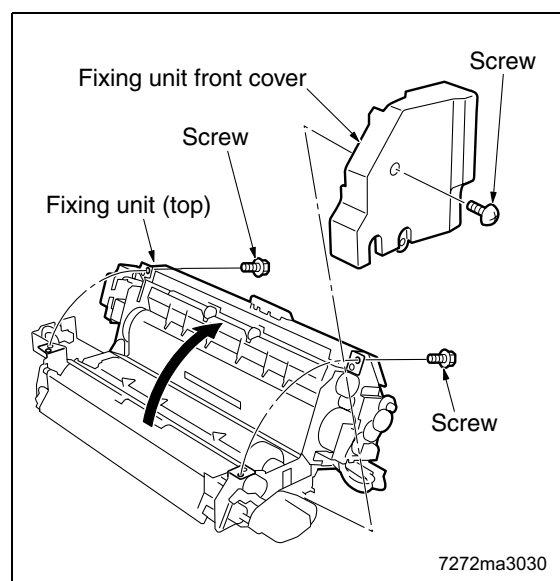
[2] Removing and Reinstalling the Fixing Unit (Top)

⚠ Caution:

Before opening the fixing unit (top), check that the pressure release lever is turned counterclockwise and the bottom roller pressure is released.

a. Procedure

- (1) Remove the fixing unit.
- (2) Remove one screw to detach the fixing unit front cover.
- (3) Remove two screws to open the fixing unit (top).

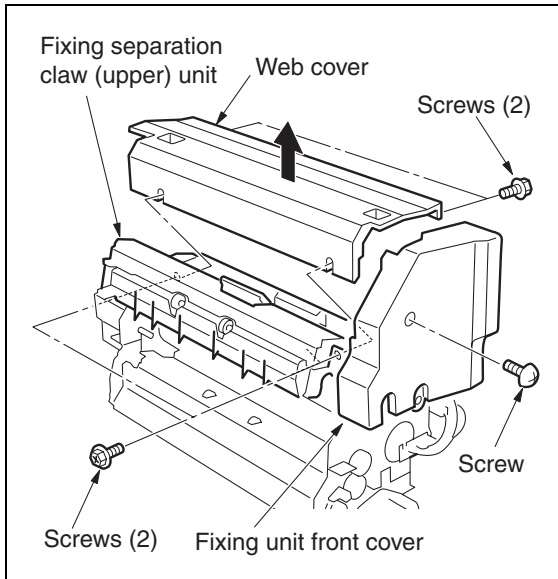


- (4) Reinstall the above parts following the removal steps in reverse.

[3] Removing and Reinstalling the Web Cover

a. Procedure

- (1) Remove the fixing unit.
- (2) Remove the fixing unit front cover.
- (3) Open the fixing separation claw (upper) unit and remove two screws inside.
- (4) Remove two screws to detach the web cover.

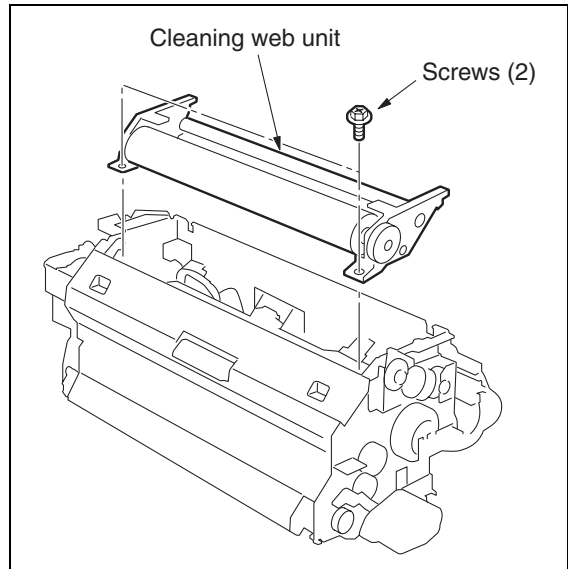


- (5) Reinstall the above parts following the removal steps in reverse.

[4] Removing and Reinstalling the Cleaning Web

a. Procedure

- (1) Draw out the ADU stand. (See "ADU UNIT.")
- (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.

Caution1: When reinstalling, make sure the cleaning web does not sag.

Caution2: When reinstalling, wind it until the red line of the cleaning web is fully wound to the take-up shaft.

Caution3: After replacing the cleaning web, make sure to reset the count value of the fixing unit cleaning web by "Copy Count by Parts to be Replaced (Fixed Parts)" in the 25 mode.

[5] Replacing the Fixing Heater Lamps (L2, L3)

⚠ Caution:

Do not touch the fixing heater lamp with bare hands.

Caution1: Install the heater lamp with the manufacturer's mark facing the rear.

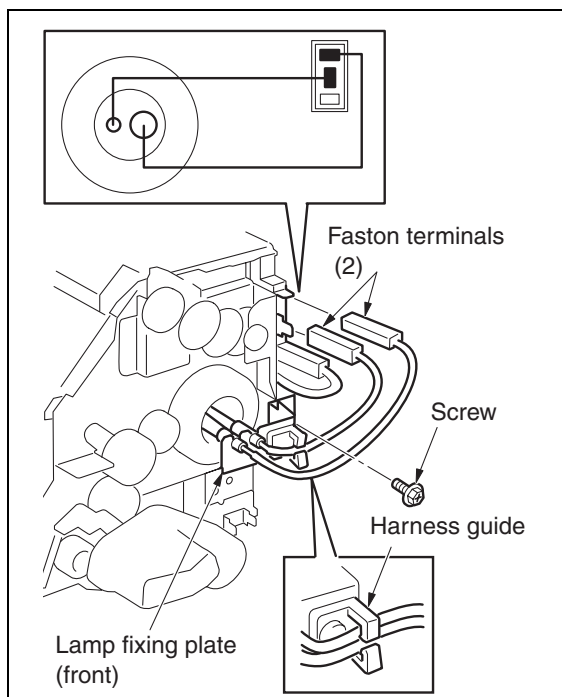
Caution2: The heater lamp should not touch the inner surface of the upper roller.

Caution3: 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.

a. Procedure

- (1) Remove the fixing unit.
- (2) Remove the fixing unit front cover.
- (3) Remove the screw at the front to remove the lamp fixing plate (front).
- (4) Remove the front lamp harness from the harness guide to remove the two Faston terminals.

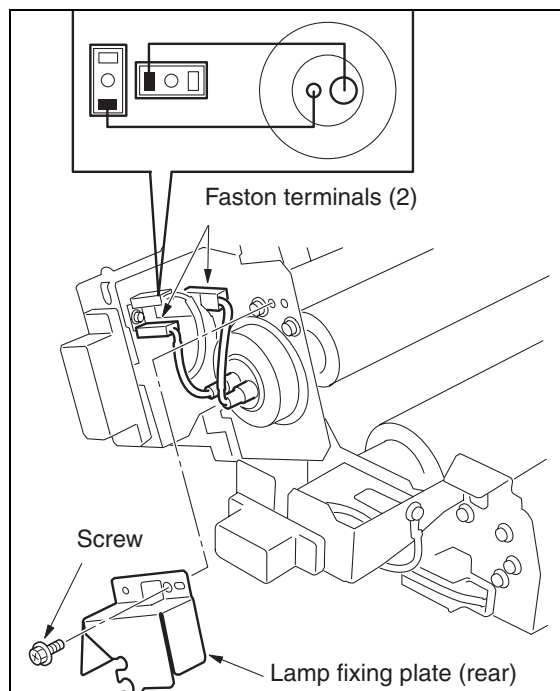
Caution: When removing the Faston terminals, be sure to hold the connector. Connector cannot be removed by pulling on the harness.



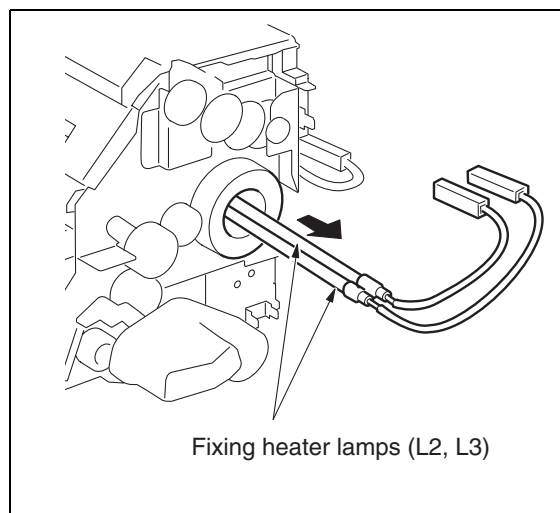
- (5) Open the fixing unit (top).
- (6) Remove the screw at the far side to remove the lamp fixing plate (rear).

- (7) Remove the two Faston terminals of the far side lamp.

Caution: When removing the Faston terminals, be sure to hold the connector. Connector cannot be removed by pulling on the harness.



- (8) Pull out the fixing heater lamps (L2, L3) from the front side of the fixing 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 fixing plate is different from that in the rear lamp fixing plate. The lamp cannot be installed properly if it is facing the opposite direction.

[6] Replacing the Fixing Heater Lamp(L4)

⚠ Caution:

Do not touch the fixing heater lamp with bare hands.

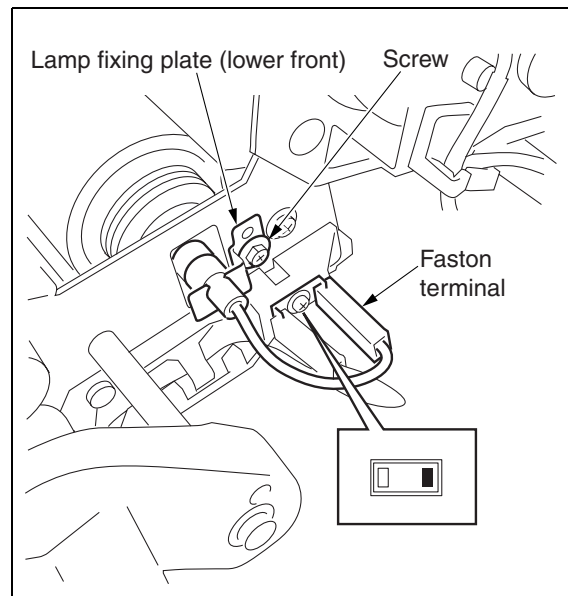
Caution1: Install the heater lamp with the manufacturer's mark facing the rear.

Caution2: The heater lamp should not touch the inner surface of the upper roller.

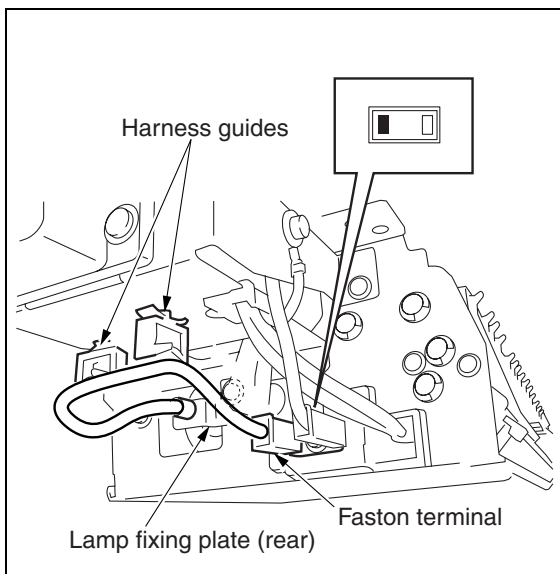
Caution3: When replacing the heater lamp, be sure to insert the lamp end in the lamp terminal securely. Also, check that the Faston terminals are connected properly.

a. Procedure

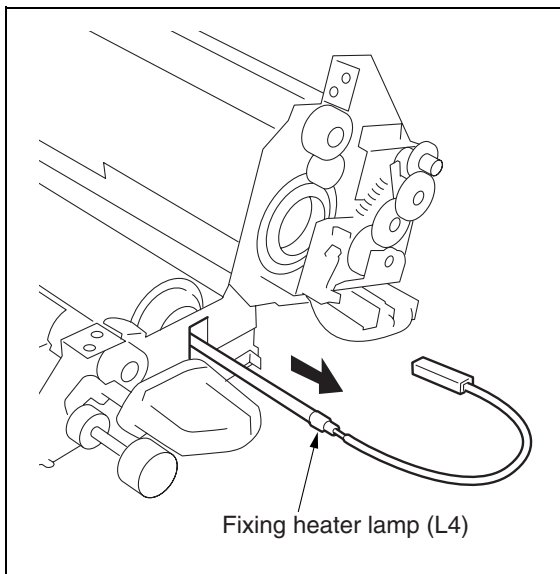
- (1) Open the fixing cover (upper).
- (2) Remove the screw at front to remove the lamp fixing plate (lower front).
- (3) Remove the Faston terminal.



- (4) Remove the rear lamp harness from the two harness guide to remove the Faston terminal.



- (5) Pull out the fixing heater lamp (L4) from the front side of the fixing lower roller.



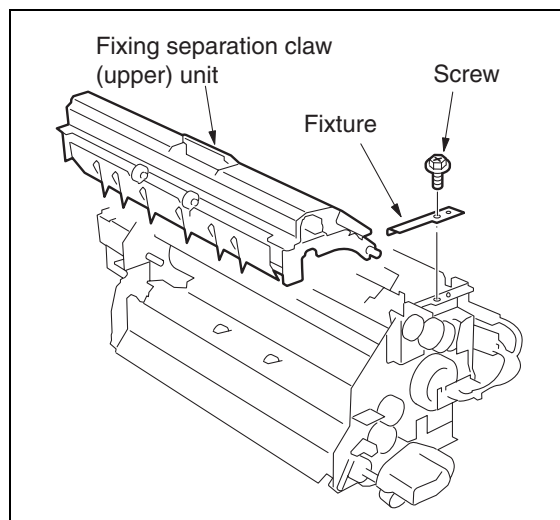
- (6) Reinstall the above parts following the removal steps in reverse.

Caution: When installing the lamp, pay attention to its orientation. The lamp cannot be installed properly if it is facing the opposite direction.

[7] Removing and Reinstalling the Fixing Separation Claw (Upper) Unit and Fixing Separation Claws (Upper)

a. Procedure

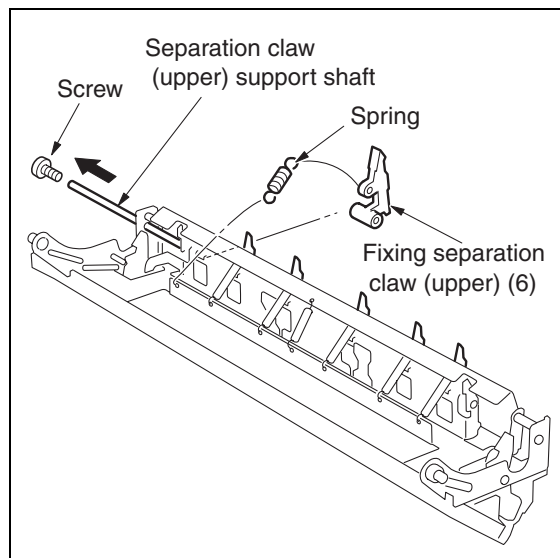
- (1) Remove the fixing unit.
- (2) Remove the fixing unit front cover.
- (3) Remove the web cover.
- (4) Remove the screw to detach the fixture.
- (5) Remove the fixing separation claw (upper) unit



- (6) Remove the screw to remove the upper separation claw support shaft from the fixing separation claw (upper) unit.

Caution: Be careful when removing the shaft because it bends easily.

- (7) Remove six springs attached to the fixing separation claw (upper) unit.
- (8) Remove six fixing separation claws (upper).



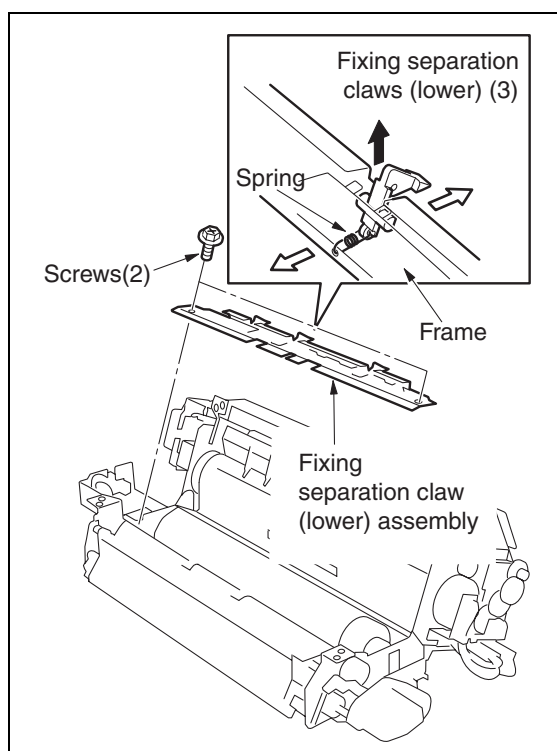
- (9) Reinstall the above parts following the removal steps in reverse.

Caution: After installing the fixing separation claw (upper), move the upper claws with your finger and check that they return with the force of the spring.

[8] Removing and Reinstalling the Fixing Separation Claw (Lower) Unit and Fixing Separation Claws (Lower)

a. Procedure

- (1) Remove the fixing unit.
- (2) Open the fixing unit (upper).
- (3) Remove two screws to detach the fixing separation claw (lower) assembly.
- (4) Remove the three springs from the three fixing separation claws (lower).
- (5) Slide the frame holding the fixing separation claws (lower) and remove the three claws.



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

Caution: After installing the fixing separation claw (lower), check that the frame moves smoothly.

[9] Removing and Reinstalling the Fixing Upper Roller and Fixing Drive Gear

a. Procedure

- (1) Remove the fixing unit.
- (2) Remove the fixing unit front cover.
- (3) Remove the fixing separation claw (upper) unit.
- (4) Open the fixing unit (top).
- (5) Remove the fixing heater lamps (L2, L3).
- (6) Remove the two C-rings, fixing drive gear, gear, two bearings, two washers (Di5510/Di7210: one washer) and two insulating sleeves from the fixing upper roller.
- (7) Remove the fixing upper roller from the frame.

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

Caution1: Before reinstalling the insulating sleeve, coat the inside with Tri-flow.

Caution2: Reinstall the bearings and insulating sleeves with the collars facing the directions shown in the figure.

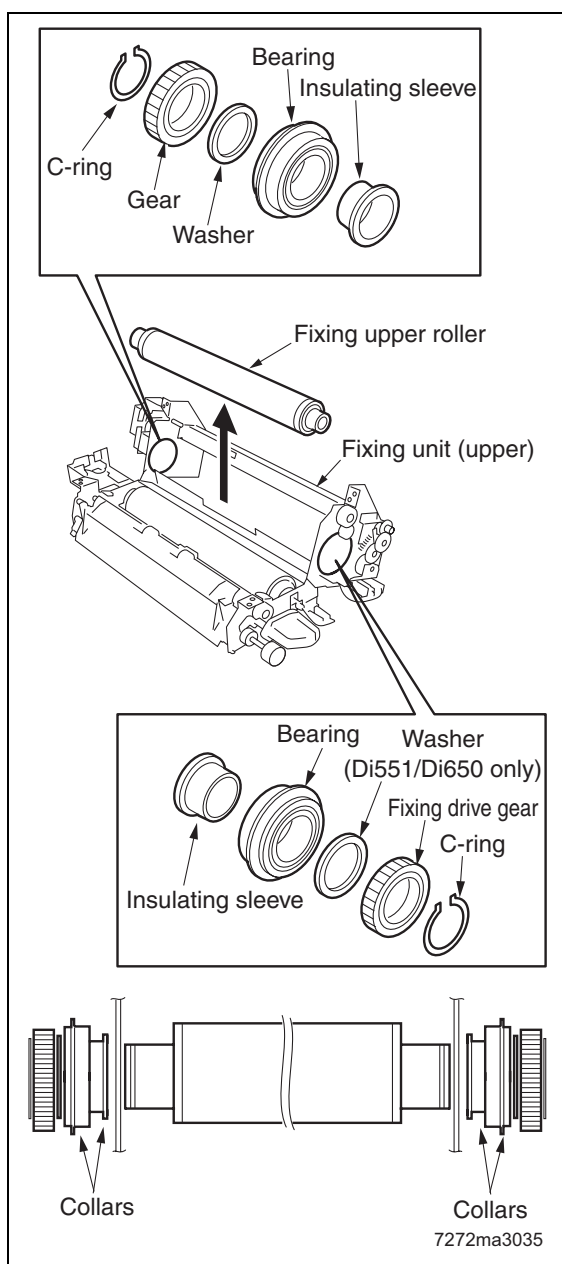
Caution3: When reinstalling the fixing upper roller, the Lot No. or the grooves located on the circumference of the roller edge should be directed toward the front side.

And, refer to the following list for checking the type of the fixing upper rollers.

	Number of grooves on the circumference of the roller edge
Di551/Di5510	2
Di650/Di7210	None (only Lot No.)

Caution4: The fixing drive gear of Di551/Di650 is different from that of Di5510/Di7210.

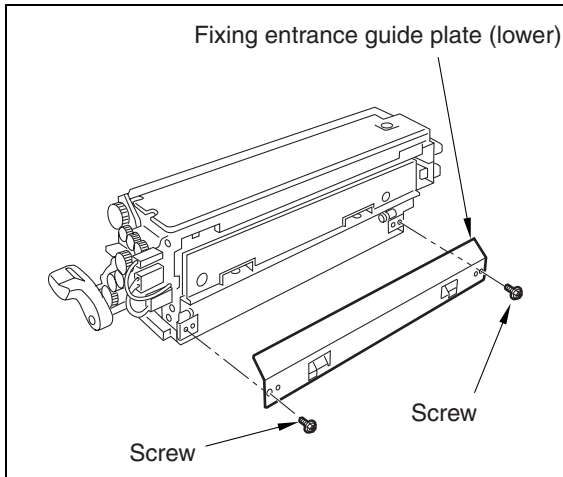
The fixing drive gear of Di5510/Di7210 is designated for periodical replacement parts.



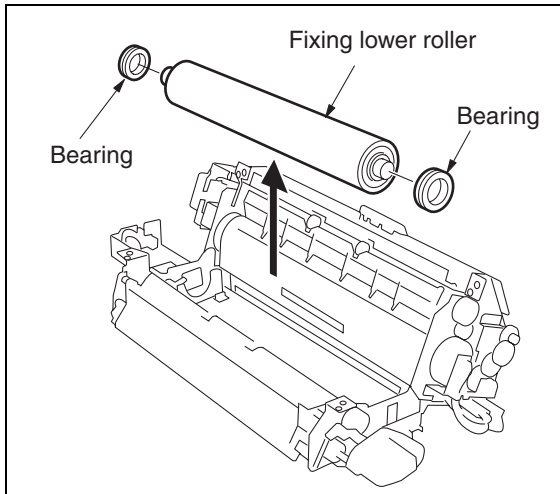
[10] Removing and Reinstalling the Fixing Lower Roller

a. Procedure

- (1) Remove the fixing unit.
- (2) Remove two screws to remove the fixing entrance guide plate (lower)



- (3) Remove the fixing separation claw (lower) unit.
- (4) Remove the fixing lower roller upward.
- (5) Remove two bearings from the fixing lower roller.



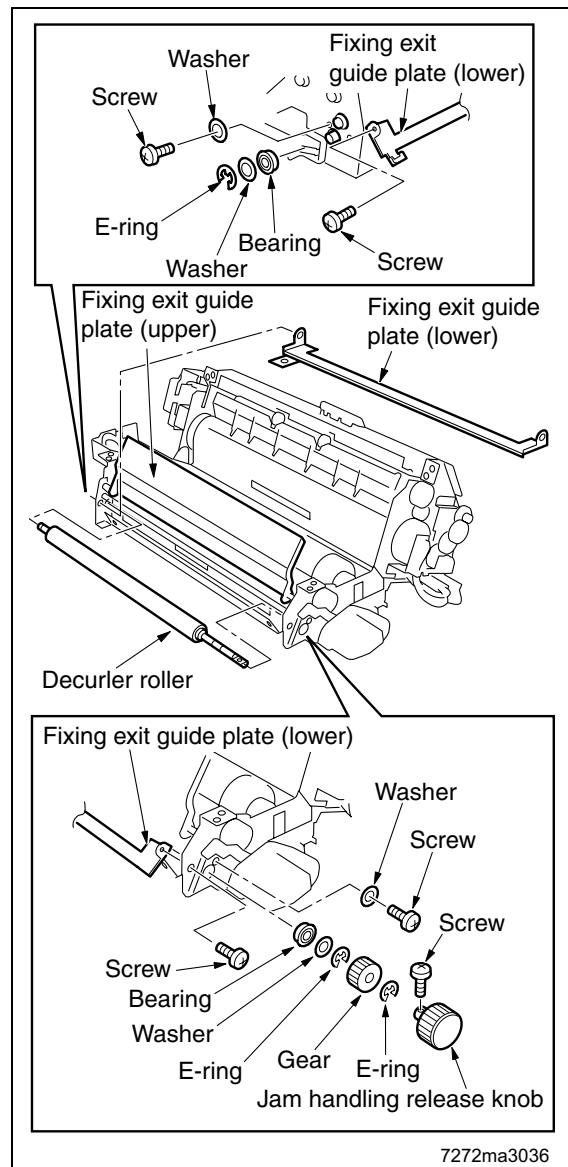
- (6) Reinstall the above parts following the removal steps in reverse.

Caution: The fixing entrance guide plate (lower) should be pressed against the fixing upper roller bearing when installing.

[11] Removing and Reinstalling the Decurler roller

a. Procedure

- (1) Remove the fixing unit.
- (2) Open the fixing unit (top).
- (3) Lift the fixing exit guide plate (upper) and remove two screws to remove the fixing 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, two washers, one screw, and bearing in this order.
- (6) From the rear side, remove one E-ring, two washers, one screw, and bearing in this order and then remove the decurler roller from the frame.



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

Caution: When reinstalling, check that the gear is installed correctly.

[12] Removing and Reinstalling the Fixing Temperature Sensors 1 and 2

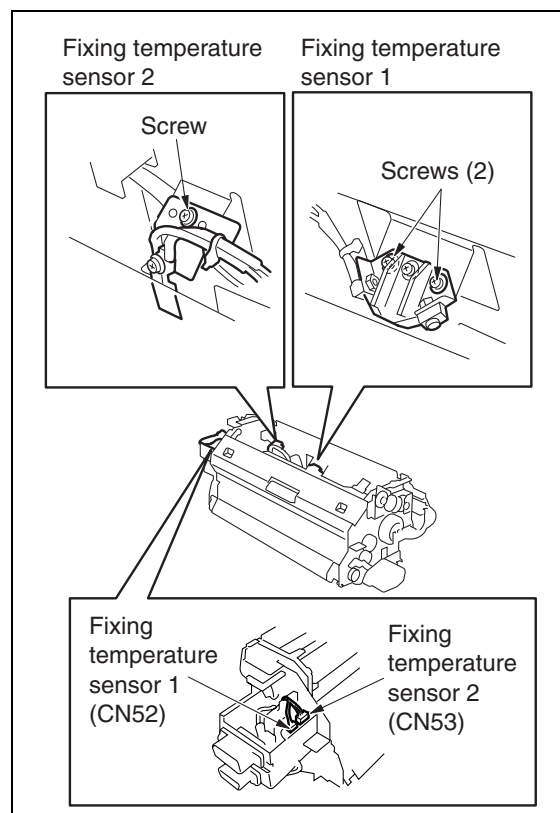
Caution1: After reinstalling fixing temperature sensor 2, make sure that the sensor touches the fixing upper roller.

Caution2: Make sure the sensor wires do not touch the fixing upper roller.

Caution3: When reinstalling fixing temperature sensor 1, adjust its position using the positioning jig (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.

a. Removal procedure

- (1) Remove the fixing unit.
- (2) Remove the web cover.
- (3) Remove the cleaning web.
- (4) Disconnect the two relay connectors (fixing temperature sensor 1, CN52; fixing temperature sensor 2, CN53) and release the sensor wires from the cable guides.
- (5) Remove two screws to detach fixing temperature sensor 1.
- (6) Remove one screw to detach fixing temperature sensor 2.

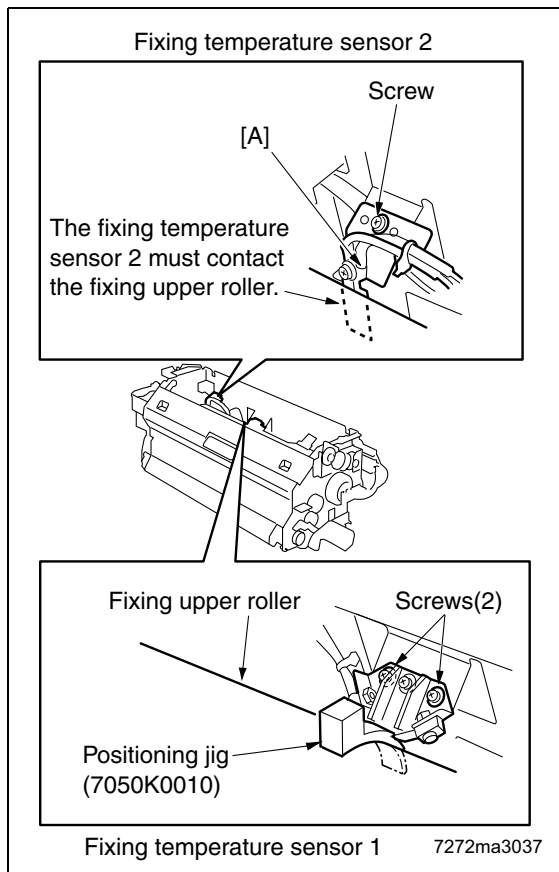


b. Reinstallation procedure

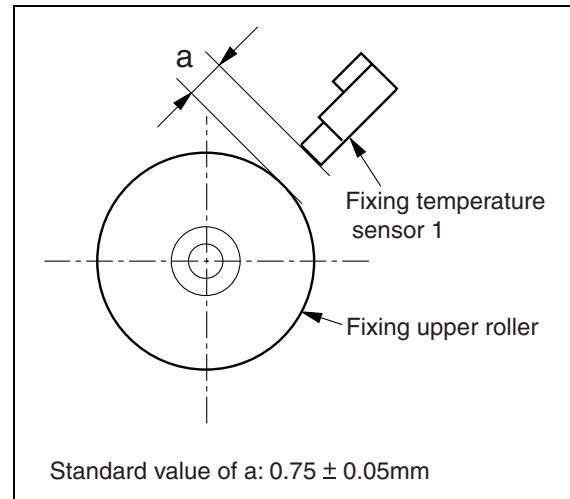
- (1) Secure fixing temperature sensor 2 to the fixing plate with a screw.

Caution: Be careful not to apply a pressure to the sensor welding portion [A].

- (2) Make sure that fixing temperature sensor 2 touches the fixing upper roller. If they do not touch each other, be sure to bring the sensor in contact with the roller.
- (3) Set a fixing temperature sensor positioning jig between fixing temperature sensor 1 and fixing upper roller, and secure fixing temperature sensor 1 with two screws so that the distance between the sensor and roller is equal to the thickness of the jig.



- a) Set the distance "a" between the fixing temperature sensor 1 and fixing upper roller so that it is equal to the thickness of the positioning jig.



- (4) Apply screw lock agent to the two screws securing fixing temperature sensor 1.
- (5) Secure the wires of fixing temperature sensors 1 and 2 in the wire guides and connect their connectors.
- (6) Reverse the removal procedure to reinstall other parts.

[13] Removing and Reinstalling the Thermostat/U (TS1)

⚠ Caution:

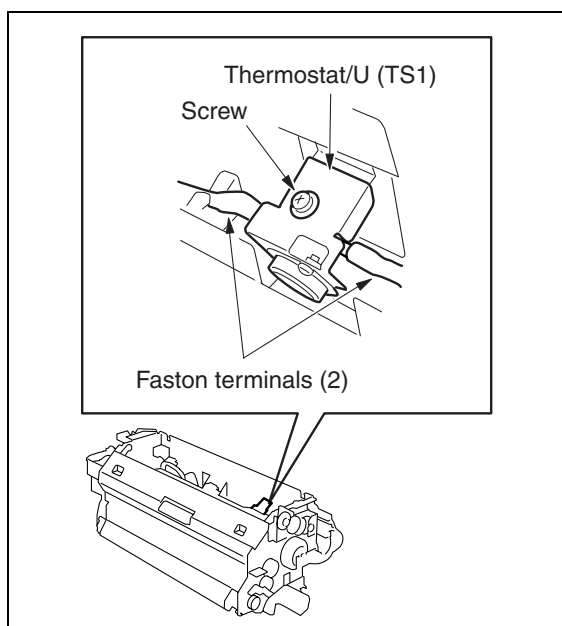
This is an important safety part. (P/N: SP00-0020) Be sure to observe the following cautions and steps when removing or reinstalling.

Caution1: After reinstalling the thermostat/U, make sure that its wires do not touch the fixing upper roller.

Caution2: When reinstalling the thermostat/U, adjust its position using the positioning jig (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.

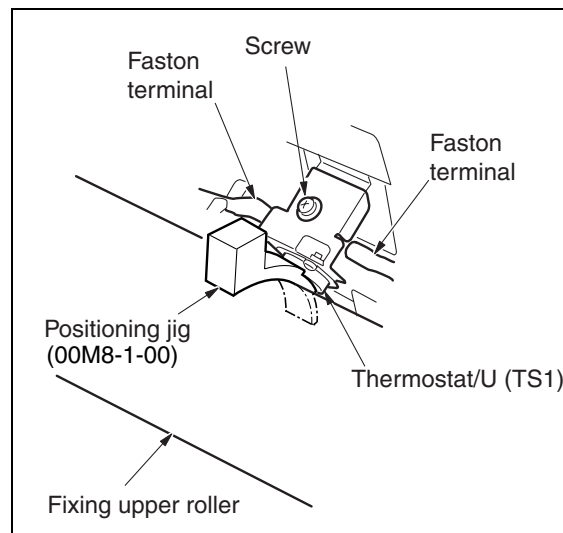
a. Removal procedure

- (1) Remove the fixing unit.
- (2) Remove the web cover.
- (3) Remove the cleaning web.
- (4) Remove one screw and two Faston terminals to detach the thermostat/U.

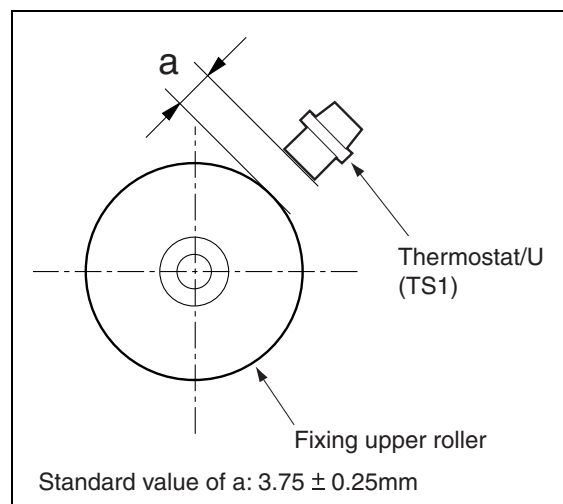


b. Reinstallation procedure

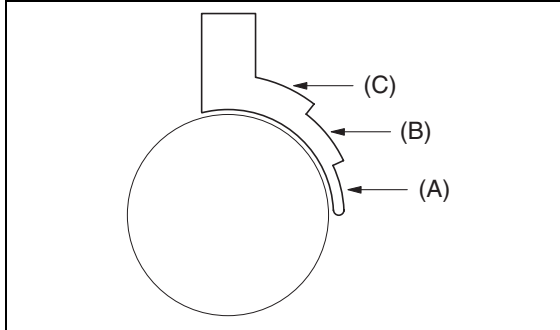
- (1) Connect two Faston terminals to the thermostat/U.
- (2) Set a thermostat positioning jig (00M8-1-00) between the thermostat/U and fixing upper roller and secure the thermostat/U with one screw so that the distance between the roller and thermostat/U is equal to the thickness of the jig.



- a) Set the distance "a" between the thermostat/U and fixing upper roller so that it is equal to the thickness (B) of the positioning jig.



- b) When making the adjustment, make sure that the thermostat/U does not ride on the positioning jig (C).



- (3) Apply screw lock agent to the screw securing the thermostat/U.
- (4) Reverse the removal procedure to install other parts.

[14] Removing and Reinstalling the Thermostat/L (TS2)

⚠ Caution:

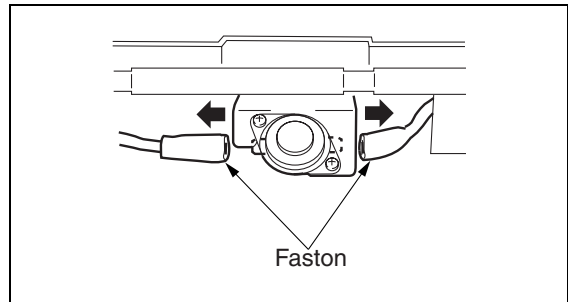
This is an important safety part. (P/N : SP00-0010) Be sure to observe the following cautions and steps when removing or reinstalling.

Caution1: After reinstalling the thermostat/L, make sure that its wires do not touch the fixing lower roller.

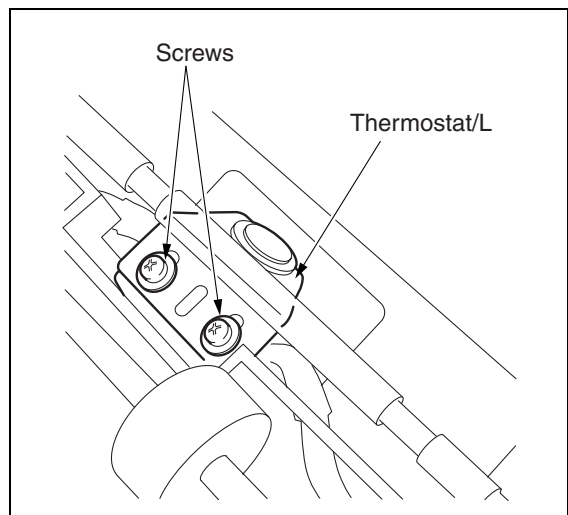
Caution2: When reinstalling the thermostat/L, adjust its position using the positioning jig (56AEJG011) and secure it with screws. Be sure to apply screw lock agent to the screws. This adjustment should be made in a pressured state.

a. Removal procedure

- (1) Remove the fixing lower roller.
- (2) Close the fixing cover (top).
- (3) Remove the two Faston terminals of the thermostat/L through the fixing entrance side.

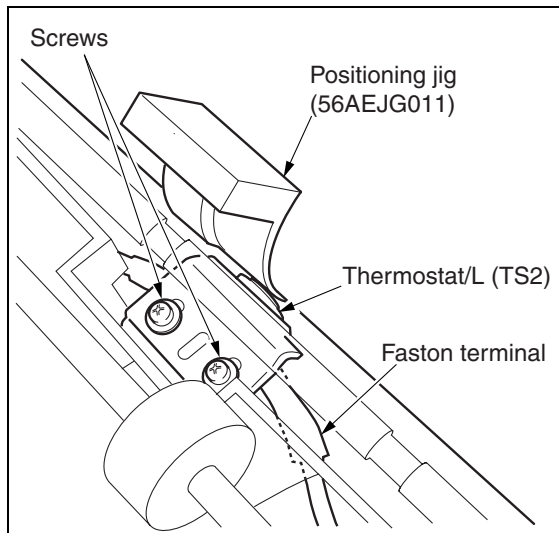


- (4) Open the fixing cover (top).
- (5) Remove two screws to remove the thermostat/L.

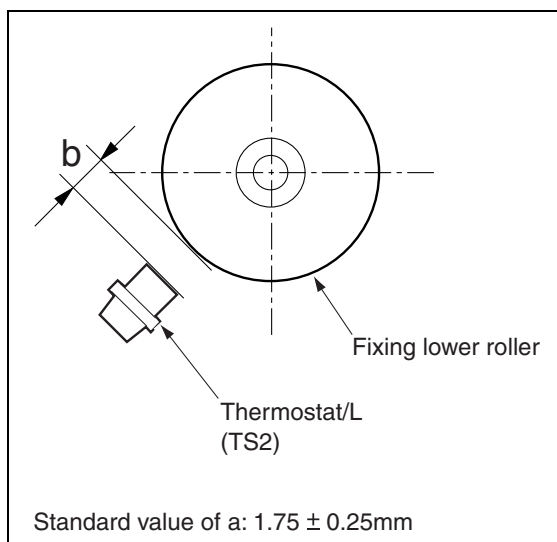


b. Reinstallation procedure

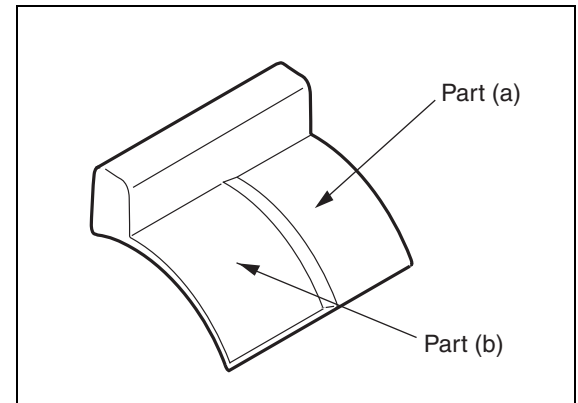
- (1) Set a part (a) thermostat/L positioning jig (56AEJG011) between the thermostat/L and the fixing lower roller, and secure the thermostat/L with two screws so that the distance between the thermostat/L and roller is equal to the thickness of the jig.



- a) Set the distance "b" between the thermostat/L and the fixing lower roller so that it is equal to the thickness of the positioning jig.



- b) After setting the distance "b", remove the thermostat/L positioning jig, and make sure that the part (b) thermostat/L positioning jig cannot be inserted in a space between the fixing 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.

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