Color Printer

d-Copia 1600
d-Copia 2000

SERVICE MANUAL

Code Y105190-5

PUBLICATION ISSUED BY:

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Italy

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer’s instructions.

CAUTION

Double-pole/neutral fusing.

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Safety precautions

This booklet provides safety warnings and precautions for our service personnel to ensure the safety of their customers, their machines as well as themselves during maintenance activities. Service personnel are advised to read this booklet carefully to familiarize themselves with the warnings and precautions described here before engaging in maintenance activities.

Safety warnings and precautions

Various symbols are used to protect our service personnel and customers from physical danger and to prevent damage to their property. These symbols are described below:

DANGER: High risk of serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

WARNING: Serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

CAUTION: Bodily injury or damage to property may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

Symbols

The triangle (△) symbol indicates a warning including danger and caution. The specific point of attention is shown inside the symbol.


General warning.


Warning of risk of electric shock.


Warning of high temperature.

⃠ indicates a prohibited action. The specific prohibition is shown inside the symbol.


General prohibited action.


Disassembly prohibited.

● indicates that action is required. The specific action required is shown inside the symbol.


General action required.


Remove the power plug from the wall outlet.


Always ground the copier.

1.Installation Precautions

⚠WARNING

- Do not use a power supply with a voltage other than that specified. Avoid multiple connections to one outlet: they may cause fire or electric shock. When using an extension cable, always check that it is adequate for the rated current. .....

- Connect the ground wire to a suitable grounding point. Not grounding the copier may cause fire or electric shock. Connecting the earth wire to an object not approved for the purpose may cause explosion or electric shock. Never connect the ground cable to any of the following: gas pipes, lightning rods, ground cables for telephone lines and water pipes or faucets not approved by the proper authorities. .....

⚠CAUTION:

- Do not place the copier on an infirm or angled surface: the copier may tip over, causing injury. .....

- Do not install the copier in a humid or dusty place. This may cause fire or electric shock. .....

- Do not install the copier near a radiator, heater, other heat source or near flammable material.

  This may cause fire. .....

- Allow sufficient space around the copier to allow the ventilation grills to keep the machine as cool as possible. Insufficient ventilation may cause heat buildup and poor copying performance. .....

- Always handle the machine by the correct locations when moving it. .....

- Always use anti-toppling and locking devices on copiers so equipped. Failure to do this may cause the copier to move unexpectedly or topple, leading to injury. .....

- Avoid inhaling toner or developer excessively. Protect the eyes. If toner or developer is accidentally ingested, drink a lot of water to dilute it in the stomach and obtain medical attention immediately. If it gets into the eyes, rinse immediately with copious amounts of water and obtain medical attention. .....

- Advice customers that they must always follow the safety warnings and precautions in the copier's instruction handbook. .....

2.Precautions for Maintenance

⚠WARNING

- Always remove the power plug from the wall outlet before starting machine disassembly. .....

- Always follow the procedures for maintenance described in the service manual and other related brochures. .....

- Under no circumstances attempt to bypass or disable safety features including safety mechanisms and protective circuits. .....

- Always use parts having the correct specifications. .....
- Always use the thermostat or thermal fuse specified in the service manual or other related brochure when replacing them. Using a piece of wire, for example, could lead to fire or other serious accident. .....

- When the service manual or other serious brochure specifies a distance or gap for installation of a part, always use the correct scale and measure carefully. .....

- Always check that the copier is correctly connected to an outlet with a ground connection. .....
- Check that the power cable covering is free of damage. Check that the power plug is dust-free. If it is dirty, clean it to remove the risk of fire or electric shock. .....

- Never attempt to disassemble the optical unit in machines using lasers. Leaking laser light may damage eyesight. .....

- Handle the charger sections with care. They are charged to high potentials and may cause electric shock if handled improperly. .....

⚠CAUTION

- Wear safe clothing. If wearing loose clothing or accessories such as ties, make sure they are safely secured so they will not be caught in rotating sections. .....

- Use utmost caution when working on a powered machine. Keep away from chains and belts. .....

- Handle the fixing section with care to avoid burns as it can be extremely hot. .....
- Check that the fixing unit thermistor, heat and press rollers are clean. Dirt on them can cause abnormally high temperatures. .....

- Do not remove the ozone filter, if any, from the copier except for routine replacement. .....

- Do not pull on the AC power cord or connector wires on high-voltage components when removing them; always hold the plug itself. .....

- Do not route the power cable where it may be stood on or trapped. If necessary, protect it with a cable cover or other appropriate item. .....

- Treat the ends of the wire carefully when installing a new charger wire to avoid electric leaks. .....

- Remove toner completely from electronic components. .....

- Run wire harnesses carefully so that wires will not be trapped or damaged. .....

- After maintenance, always check that all the parts, screws, connectors and wires that were removed, have been refitted correctly. Special attention should be paid to any forgotten connector, trapped wire and missing screws. .....

- Check that all the caution labels that should be present on the machine according to the instruction handbook are clean and not peeling. Replace with new ones if necessary. .....

- Handle greases and solvents with care by following the instructions below: .....

  Use only a small amount of solvent at a time, being careful not to spill. Wipe spills off completely.
  Ventilate the room well while using grease or solvents.
  Allow applied solvents to evaporate completely before refitting the covers or turning the power switch on.
  Always wash hands afterwards.

- Never dispose of toner or toner bottles in fire. Toner may cause sparks when exposed directly to fire in a furnace, etc. .....

- Should smoke be seen coming from the copier, remove the power plug from the wall outlet immediately. .....

3.Miscellaneous

WARNING

- Never attempt to heat the drum or expose it to any organic solvents such as alcohol, other than the specified refiner; it may generate toxic gas. .....

CONTENTS

1-5 Assembly and Disassembly

1-6 Requirements on PWB Replacement

2-1 Mechanical construction

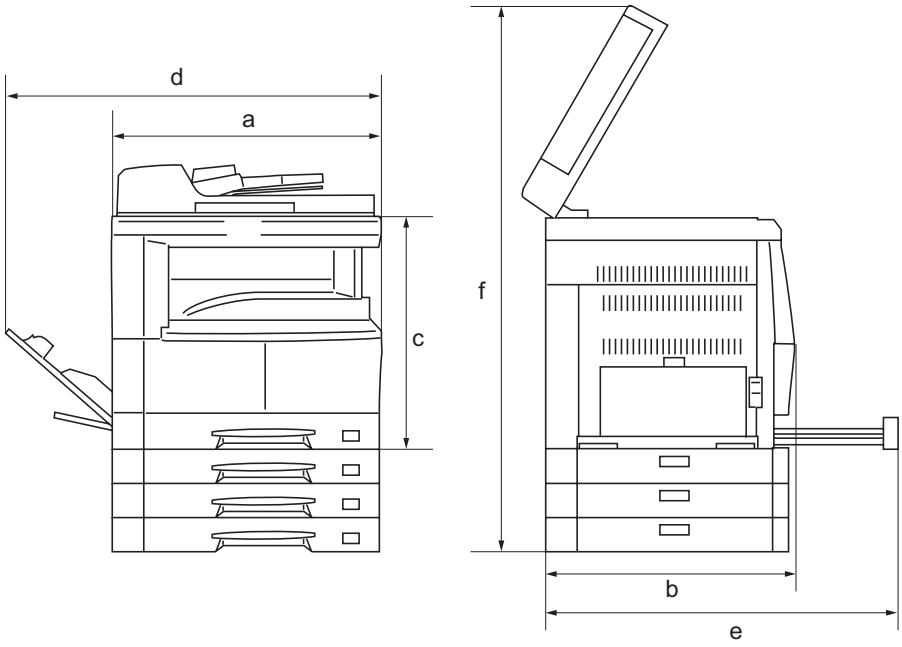
1-1-1 Specifications

Type	Desktop
Copying system	Indirect electrostatic system
Originals	Sheets, books and 3-dimensional objects (Maximum original size: A3/Ledger)
Original feed system	Fixed
Copy paper	Paper weights Drawer: 64 to 105 g/m^2 Duplex unit: 64 to 90 g/m^2 MP tray: 45 to 160 g/m^2 Paper type Drawer: Standard paper, recycled paper and color paper Duplex unit: Standard paper, recycled paper and color paper MP tray: Standard paper, recycled paper, color paper, transparencies, letterhead, vellum paper, thick paper and envelope (when using the printer function only)
Copying sizes	A3, B4, A4, A4R, B5, B5R, A5R, B6R, A6R, Ledger, Legal, Letter, Letter R, Statement, Oficio 2, Postcard, Folio, 8k, 16k and 16k R
Magnification ratios	Manual mode: 25 to 400%, 1% increments (25 to 200% with the document processor)
Copy speed	At 100% magnification in copy mode:

16ppm machine	20ppm machine
A4: 16 sheets/min.	A4: 20 sheets/min.
A4R: 13 sheets/min.	A4R: 13 sheets/min.
A3: 8 sheets/min.	A3: 10 sheets/min.
A5R: 10 sheets/min.	A5R: 10 sheets/min.
A6R: 10 sheets/min.	A6R: 10 sheets/min.
B5: 16 sheets/min.	B5: 20 sheets/min.
B5R: 13 sheets/min.	B5R: 13 sheets/min.
B4 (257 x 364 mm): 8 sheets/min.	B4 (257 x364 mm): 10 sheets/min.
Letter: 16 sheets/min.	Letter: 20 sheets/min.
Letter R: 13 sheets/min.	Letter R: 13 sheets/min.
Ledger: 8 sheets/min.	Ledger: 10 sheets/min.
Legal: 8 sheets/min.	Legal: 10 sheets/min.

First copy time	Less then 5.9 s (A4/Letter)
Warm-up time	Less then 20 s (room temperature 22°C/71.6°F, 60% RH)
Paper feed system	Automatic feed Capacity: Drawers: 300 sheets (80 g/m^2) Manual feed Capacity: MP tray: 50 sheets (A4/Letter or less) 25 sheets (A3, B4, Ledger, Legal)
Paper ejection system	In-machine ejection (face down) Capacity: 250 sheets (80 g/m^2)
Continuous copying	1 to 999 sheets
Photoconductor	OPC (drum diameter 30 mm)
Charging system	Single positive corona charging
Recording system	Semiconductor laser
Developing system	Single component developing system Toner: magnetism toner Toner replenishing: automatic from a toner container
Transfer system	Transfer roller
Separation system	Curvature separation and separation electrode
Fuser system	Heat roller Heat source: halogen heaters (120 V specifications: main 550 W, sub 400W/ 220 to 240 V specifications: main 600 W, sub 450 W) Control temperature: 170°C/338°F (180°C/356°F on and after 6th sheet) Abnormally high temperature protection device: 180°C/356°F thermostat
Charge erasing system	Exposure by cleaning lamp
Cleaning system	Cleaning blade
Scanning system	Flat bed scanning by CCD image sensor

Standard memory	Bitmap memory: 18 MB Image storage memory: 14 MB
Resolution	Reading: 600 x 600 dpi Writing: 600 x 600 dpi
Light source	Rare gas lamp
Dimensions	574 (W) x 552 (D) x 502 (H) mm 22 5/8" (W) x 21 3/4" (D) x 19 3/4" (H)



a: 574 mm/22 5/8"
b: 552 mm/21 3/4"
c: 502 mm/19 3/4"
d: 1371.5 mm/54"
e: 1272 mm/50 1/16"
f: 952.5 mm/37 1/2"

Figure 1-1-1

Weight	Approx. 39 kg/85.9 lbs
Floor requirements	827 (W) x 552 (D) mm 32 9/16" (W) x 21 3/4" (D)
Functions	Automatic paper selection, Image quality selection, Automatic magnification selection mode, zoom mode, 2-sided copy, Split copy, Margin shift, Border width, Combine mode, Collate copy, EcoPrint, Copy program and Job accounting
Power source	120 V AC, 60 Hz, 9.0 A/220 to 240 V AC, 50 Hz, 5.0 A
Options	Document processor, paper feeder, duplex unit, printer board and key counter

Printer functions

Printing speed	Same as copying speed
Resolution	300 dpi, 600 dpi, Fast 1200 mode
Standard memory	64 MB
Applicable OS	Microsoft Windows 95/98/Me/NT4.0/2000/XP Apple Macintosh OS 8.x
Interface	USB 2.0 (USB Hi-Speed)

Duplex unit

Type	Internal type
Copy paper	Paper weights: 64 to 90 g/m^2 Paper type: Standard paper, recycled paper and color paper
Paper sizes	A3, B4, A4, A4R, B5, B5R, A5R, Ledger, Legal, Letter, Letter R, Statement, Folio and Oficio 2
Power source	Electrically connected to the copier
Dimensions	368 (W) x 53 (D) x 180 (H) mm 14 1/2" (W) x 2 1/16" (D) x 7 1/16" (H)
Weight	Approx. 0.65 kg/1.4 lbs

1-1-2 Parts names

(1) Copier

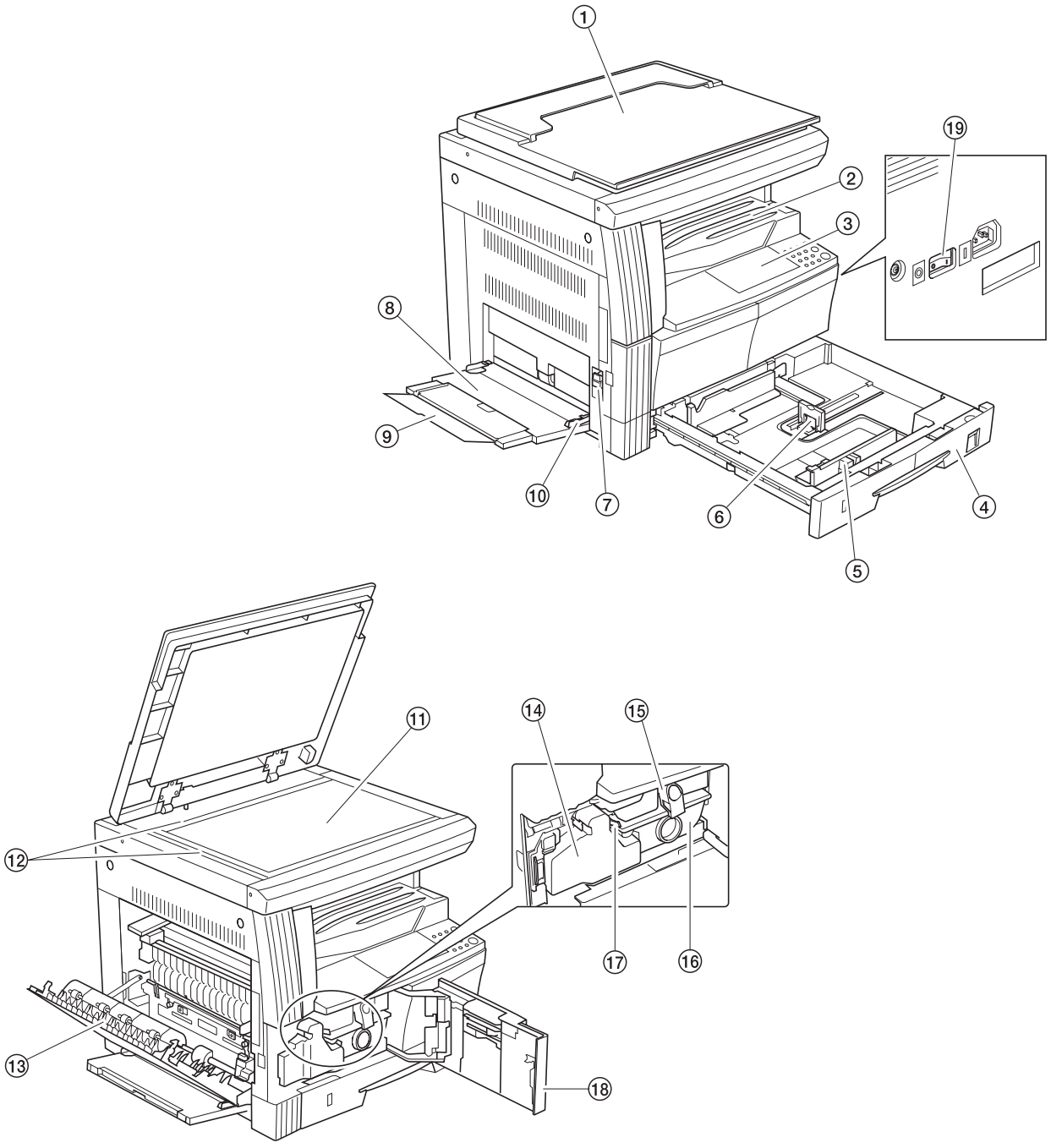
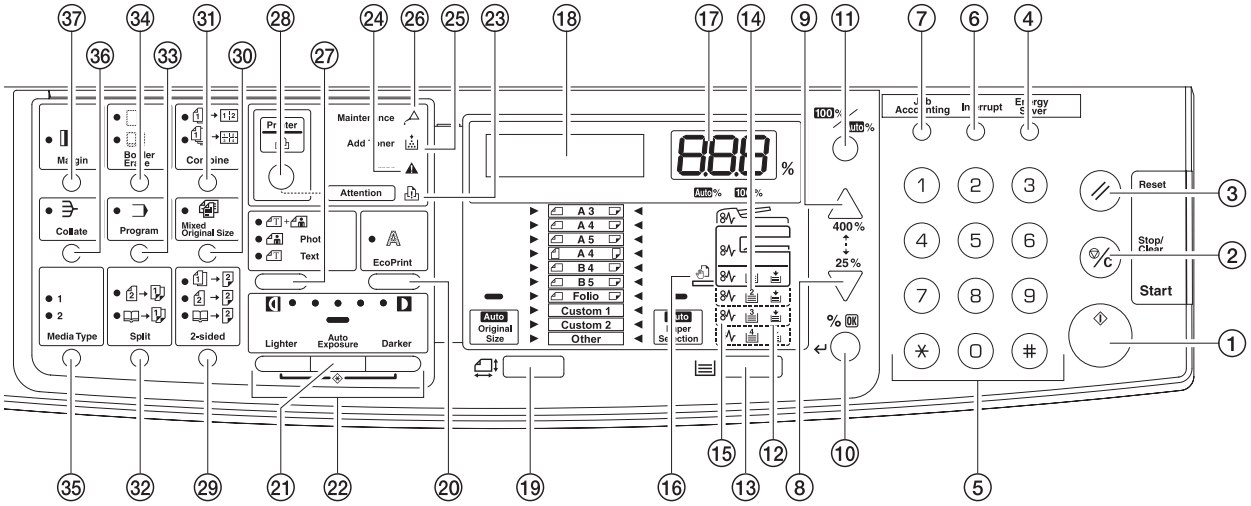


Figure 1-1-2

1. Original cover
2. Output tray
3. Operation panel
4. Drawer
5. Width guide
6. Length guide
7. Left cover handle
8. MP tray (multi-purpose tray)
9. Support tray
10. Slider
11. Contact glass
12. Original size indicator plate
13. Left cover
14. Waste toner box
15. Toner container release lever
16. Toner container
17. Cleaner rod
18. Front cover
19. Power switch

(2) Operation panel

Metric



Inch

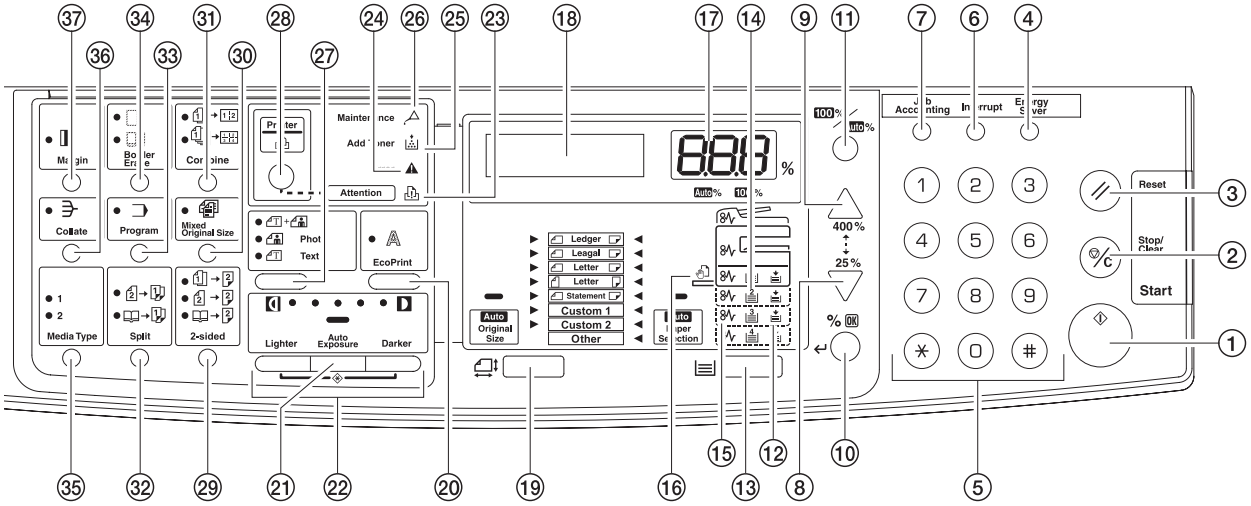


Figure 1-1-3

1. Start key (Indicator)
2. Stop/Clear key
3. Reset key
4. Energy Saver key
5. Numeric keys
6. Interrupt key
7. Job accounting key
8. Zoom (-) key
9. Zoom (+) key
10. %/OK key
11. 100%/Auto% key
12. Paper supply indicator
13. Paper Select key
14. Paper supply level indicator
15. Paper misfeed indicator
16. MP tray indicator
17. Copy quantity/magnification display
18. Message display
19. Original size Select key
20. EcoPrint key
21. Auto Exposure key
22. Exposure adjustment keys (Indicators)
23. Attention indicator
24. Memory overflow indicator
25. Add toner indicator
26. Maintenance indicator
27. Image mode selection key
28. Printer key
29. 2-sided key
30. Mixed original size key
31. Combine key
32. Split key
33. Program key
34. Border erase key
35. Media type key
36. Collate key
37. Margin key

1-1-3 Machine cross section

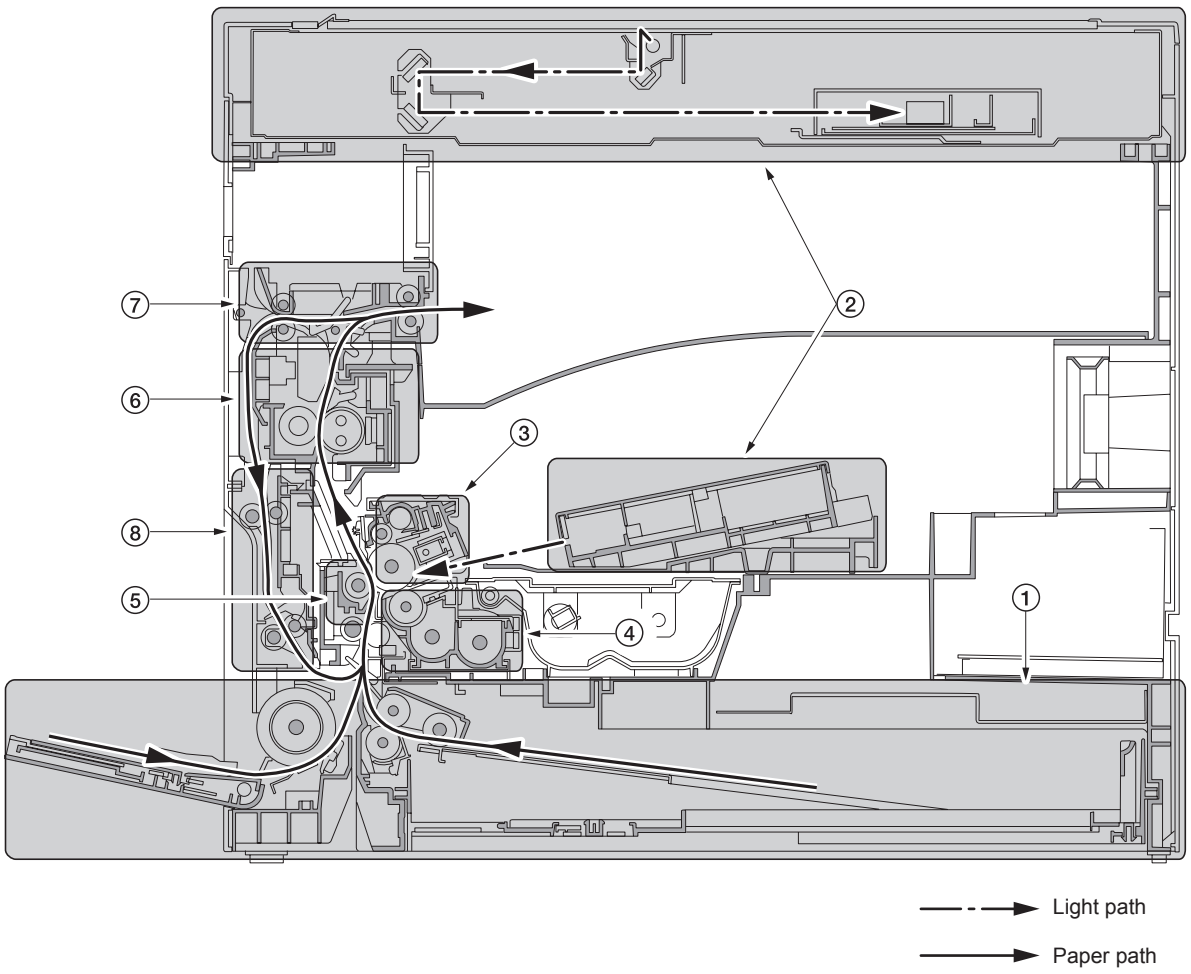


Figure 1-1-4 Machine cross section

1. Paper feed section
2. Optical section
3. Drum section
4. Developing section
5. Transfer and separation section
6. Fuser section
7. Exit and switchback section
8. Duplex section

1-2-1 Installation environment

1. Temperature: 10 to 32.5°C/50 to 90.5°F
2. Humidity: 15 to 80%RH
3. Power supply: 120 V AC, 9.0 A / 220 to 240 V AC, 5.0 A
4. Power source frequency: 50 Hz ±0.3%/60 Hz ±0.3%
5. Installation location
   Avoid direct sunlight or bright lighting. Ensure that the photoconductor will not be exposed to direct sunlight or other strong light when removing paper jams.
   Avoid extremes of temperature and humidity, abrupt ambient temperature changes, and hot or cold air directed onto the machine.
   Avoid dust and vibration.
   Choose a surface capable of supporting the weight of the machine.
   Place the machine on a level surface (maximum allowance inclination: 1°).
   Avoid air-borne substances that may adversely affect the machine or degrade the photoconductor, such as mercury, acidic of alkaline vapors, inorganic gasses, NOx, SOx gases and chlorine-based organic solvents.
   Select a room with good ventilation.
6. Allow sufficient access for proper operation and maintenance of the machine.
   Machine front: 1000 mm/39 3/8" Machine rear: 100 mm/3 15/16"
   Machine right: 300 mm/11 13/16" Machine left: 300 mm/11 13/16"

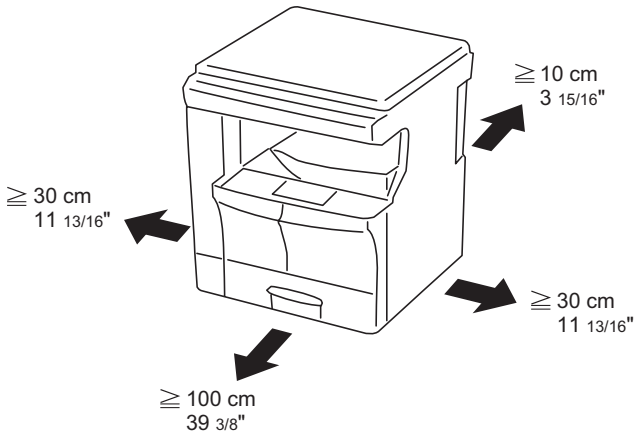
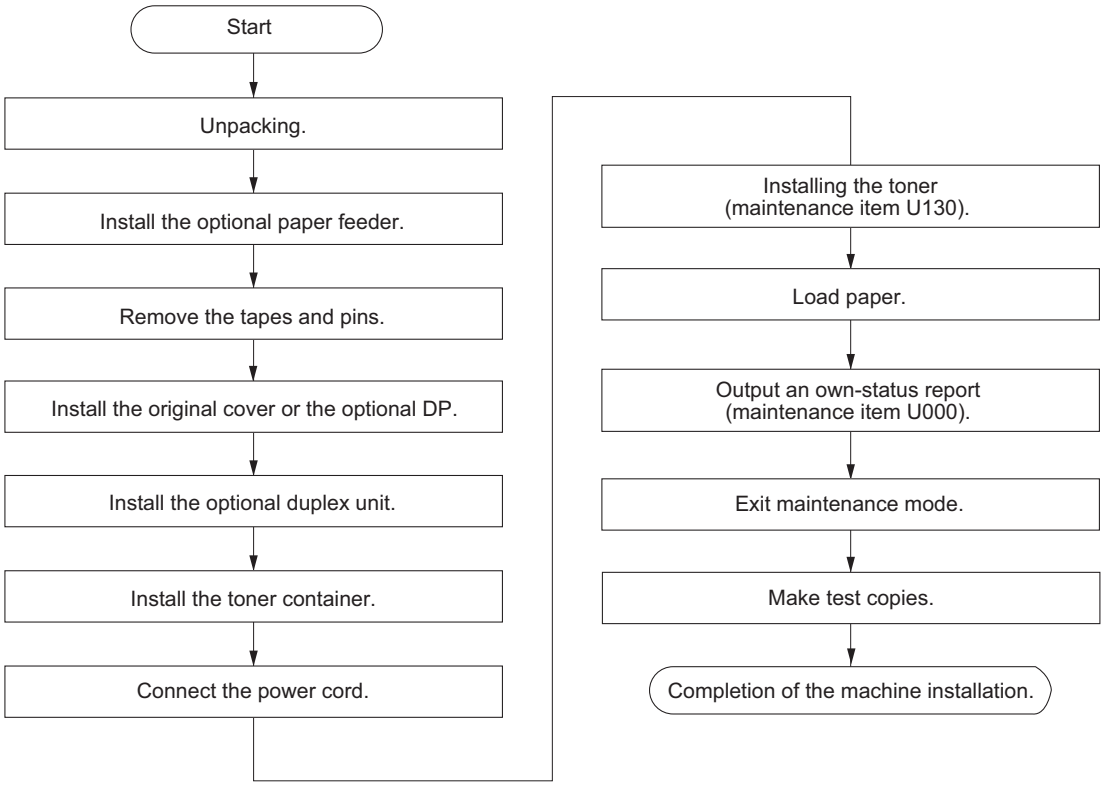


Figure 1-2-1

1-2-2 Unpacking and installation

(1) Installation procedure



Unpacking.

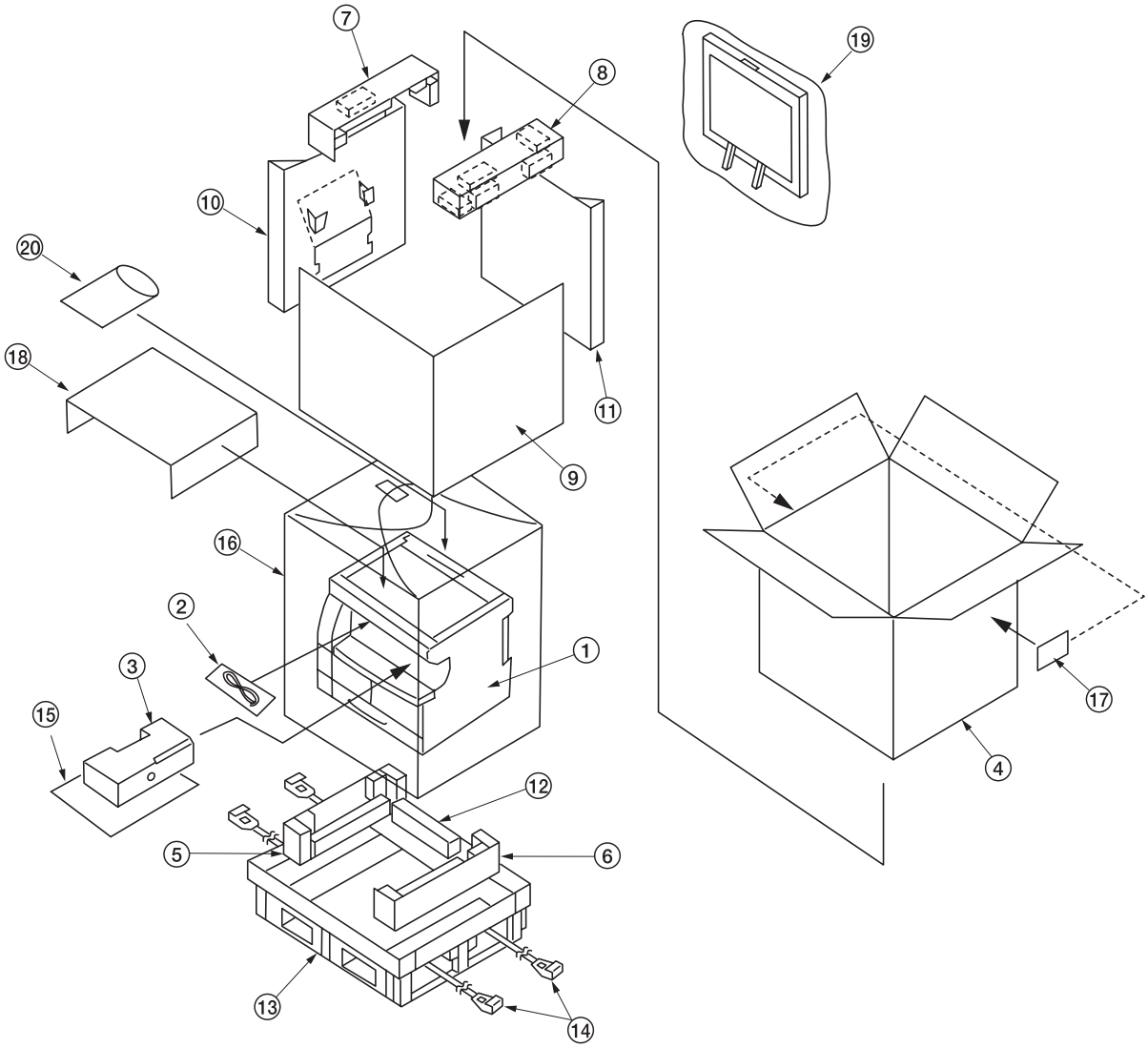


Figure 1-2-2 Unpacking

1. Copier
2. Power cord
3. Toner container
4. Outer case
5. Lower left pad
6. Lower right pad
7. Upper left pad
8. Upper right pad
9. Inner frame
10. Left spacer
11. Rear spacer
12. Rear pad
13. Skid
14. Belt
15. Eject sheet
16. Machine cover
17. Bar code labels
18. Top sheet
19. Original holder (Asia and Oceania)
20. Operation guide
    Cassette size sheet
    Paper protection bag
    Error code label
    Inspection report

Place the machine on a level surface.

Install the optional paper feeder.

1. Install the optional paper feeder as necessary .

Remove the tapes and pins.

1. Remove the eleven tapes.

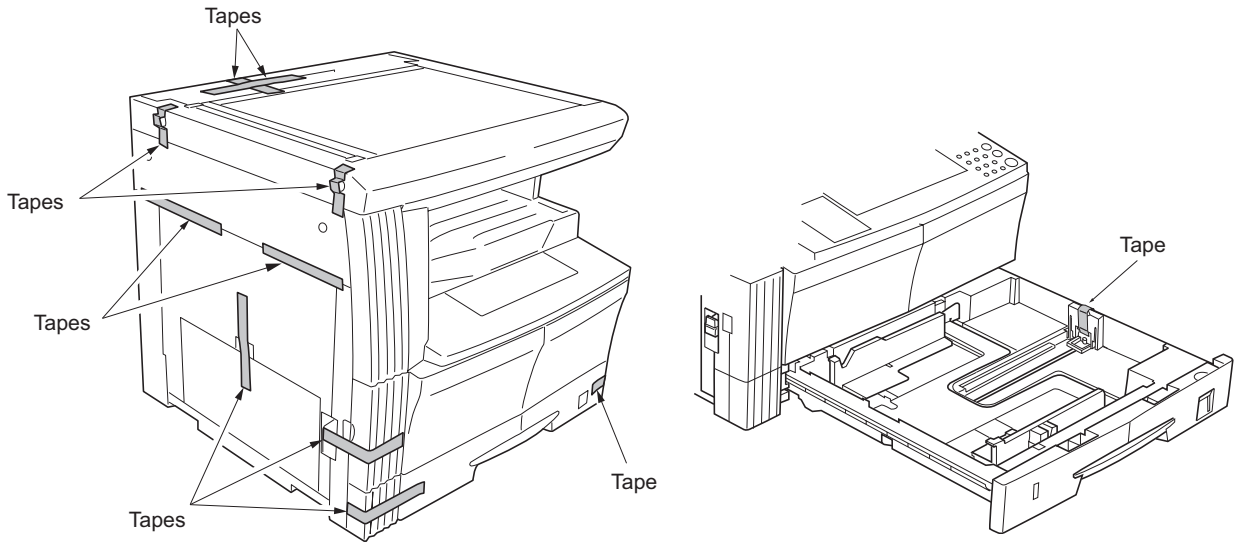


Figure 1-2-3

2. Remove the two pins for light source unit.

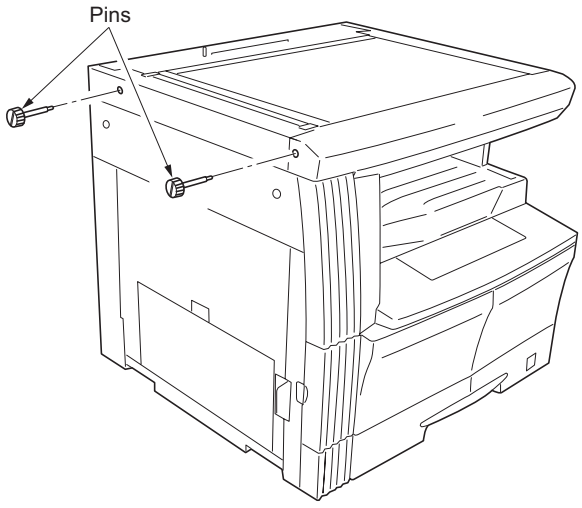


Figure 1-2-4

Install the original cover or the optional DP.

1. Install the original cover or optional DP.

Install the optional duplex unit.

1. Install the optional duplex unit as necessary.

Install the toner container.

1. Hold the new toner container vertically and tap the upper part five times or more.
2. Turn the toner container upside down and tap the upper part five times or more.
3. Shake the toner container up and down five times or more.
4. Turn the toner container upside down and shake it five times or more.
5. Hold the toner container horizontally and shake it from side to side five times or more.

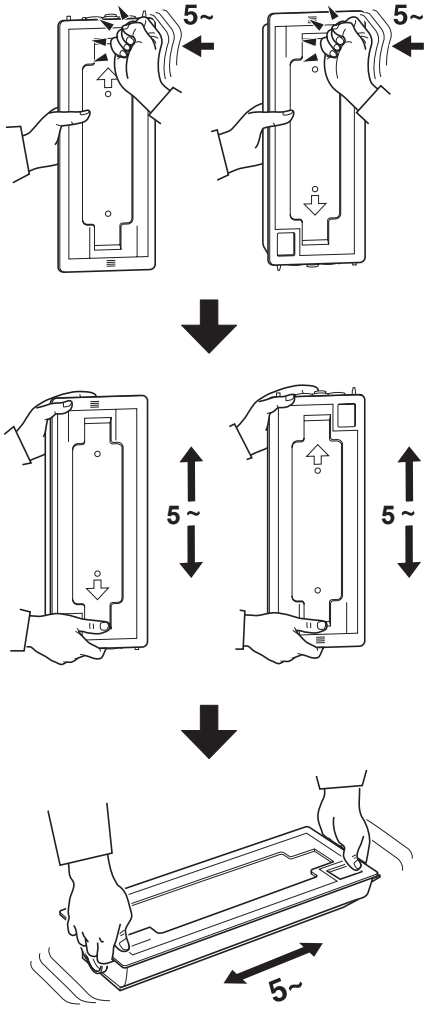


Figure 1-2-5

6. Open the front cover.
7. Turn the toner container release lever and gently push the toner container into the copier.
   Push the container all the way into the copier until it locks in place.
8. Restore the toner container release lever.
9. Close the front cover.

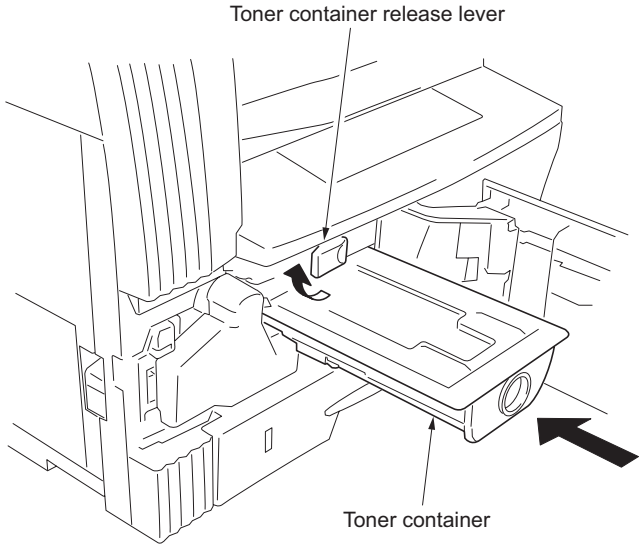


Figure 1-2-6

Connect the power cord.

1. Connect the power cord to the connector on the copier.
2. Insert the power plug into the wall outlet and turn the power switch on.

Installing the toner (maintenance item U130).

1. Enter the maintenance mode by entering "10871087" using the numeric keys.
2. Enter "130" using the numeric keys and press the start key.
3. Press the start key to execute the maintenance item.
   Installation of toner starts and "10" is indicated in the copy quantity display. Each time one minute elapses, the indicated value decrements. When the installation is complete, "Gd" will be displayed if the installation is successful or "nG" will be displayed if it has failed.
4. Press the stop/clear key.

Load paper.

1. Load paper in the drawer.

Output an own-status report (maintenance item U000).

1. Enter "000" using the numeric keys and press the start key.
2. Select "d-L" and press the start key to output a list of the current settings of the maintenance items.
3. Press the stop/clear key.

Exit maintenance mode.

1. Enter "001" using the numeric keys and press the start key.
   The machine exits the maintenance mode.

Make test copies.

1. Place an original and make test copies.

Completion of the machine installation.

1-2-3 Setting initial copy modes

Factory settings are as follows:

Maintenance item No.	Contents	Factory setting
U253	Switching between double and single counts	Double count
U254	Turning auto start function on/off	ON
U258	Switching copy operation at toner empty detection	SINGLE MODE
U260	Changing the copy count timing	After ejection
U277	Setting auto application change time	30
U342	Setting the ejection restriction	ON
U343	Switching between duplex/simplex copy mode	Simplex copy
U344	Setting preheat/energy saver mode	ENERGY STAR

1-2-4 Installing the drawer heater (option)

Drawer heater installation requires the following parts:
Drawer heater (120 V specifications: 2C960030, 220-240 V specifications: 2C960040)
One (1) M4 x 10 tap-tight S binding screw

<Procedure>

1. Remove the right cover.
2. Pull out the drawer.
3. Remove the three screws and then the front right cover.

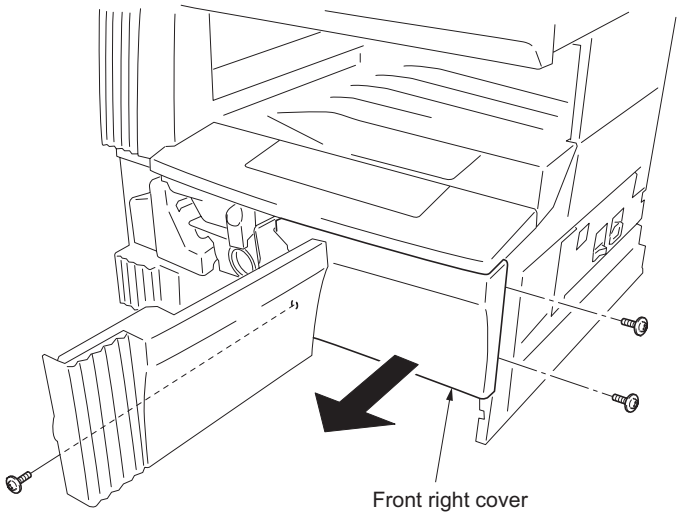


Figure 1-2-7

4. Insert the cassette heater from the bottom of the machine and attach it to the copier.
   1) Pass the connector of the cassette heater through the hole located in the right frame of the machine to pull it out.
   2) Insert the projections at the rear side of the cassette heater mounting plate into the two holes in the rear frame of the machine.
   3) Position the screw hole of the drawer heater to the screw hole of the front frame of the machine and secure the heater using the M4 x 10 Taptite S binding screw.

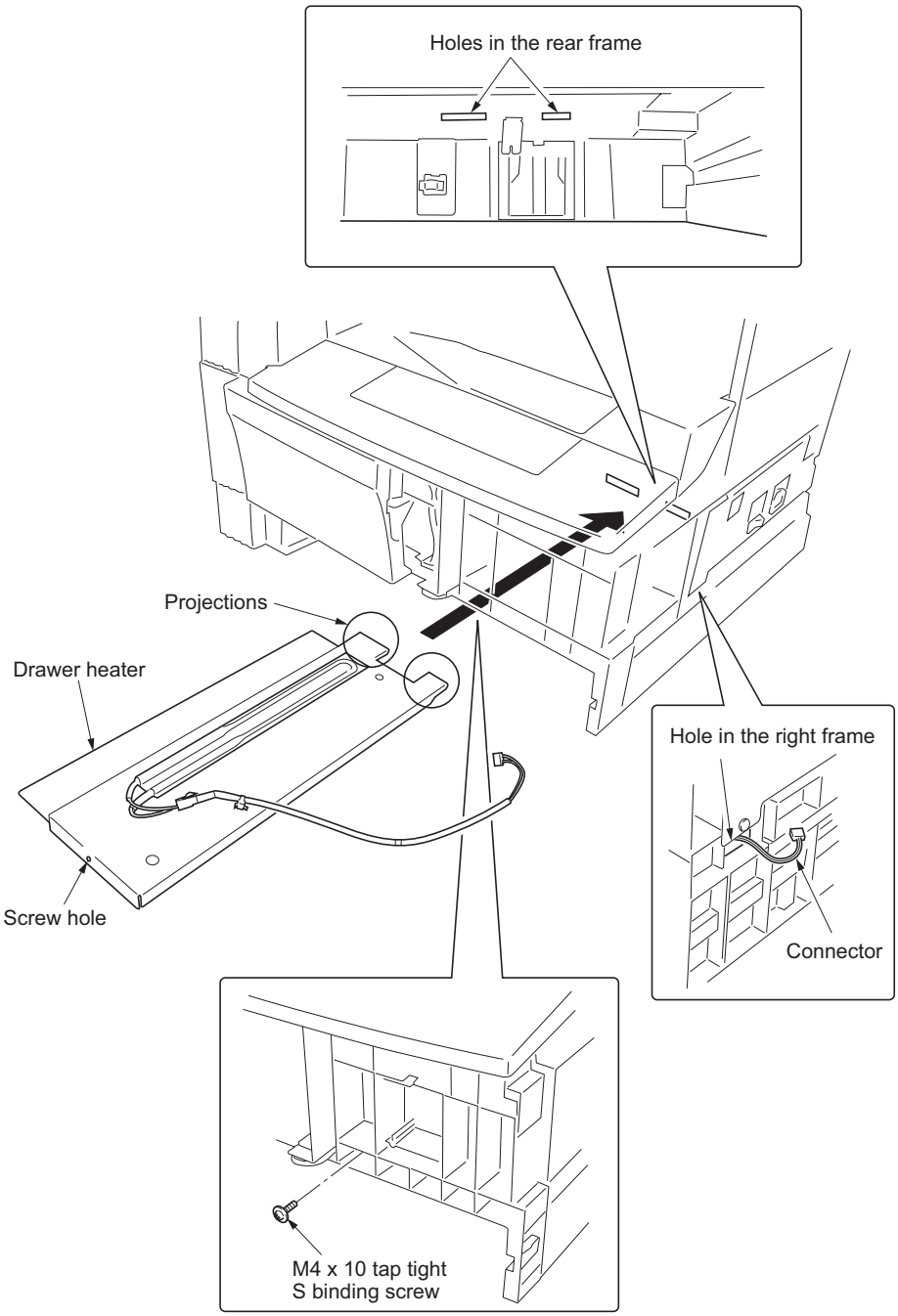


Figure 1-2-8

5. Remove the two screws and open the power source PWB in the direction indicated by the arrow.
   Take care not to open the power source PWB too much.
6. Fit the wire of the drawer heater into the groove of the frame and put it inside the power source PWB.
   Fit the wire into the groove so that the band mounted to the wire is located above the frame.

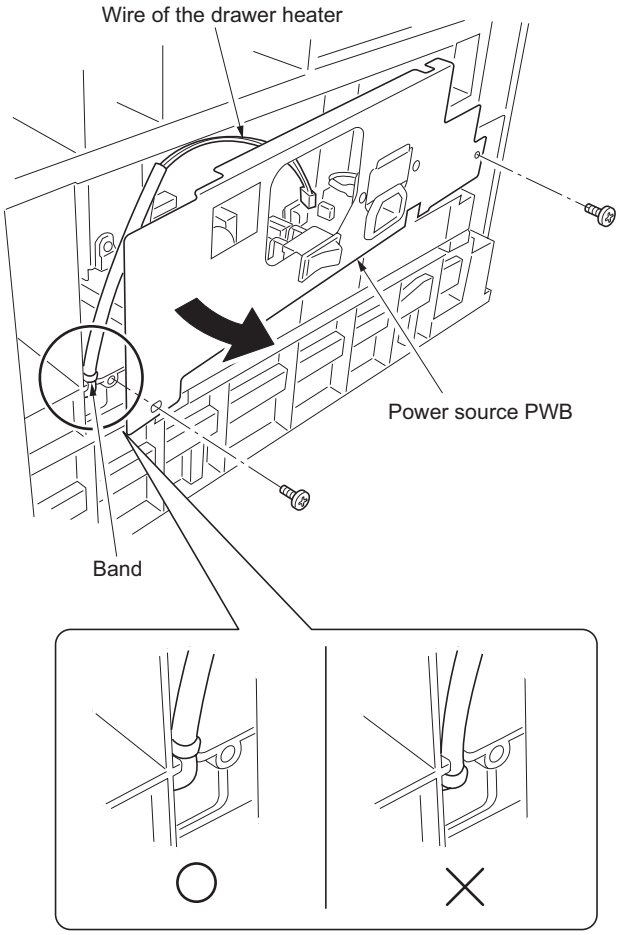


Figure 1-2-9

7. Reattach the power source PWB to its original position and connect the connector of the drawer heater to YC8 of the power source PWB.
8. Refit all the removed parts.

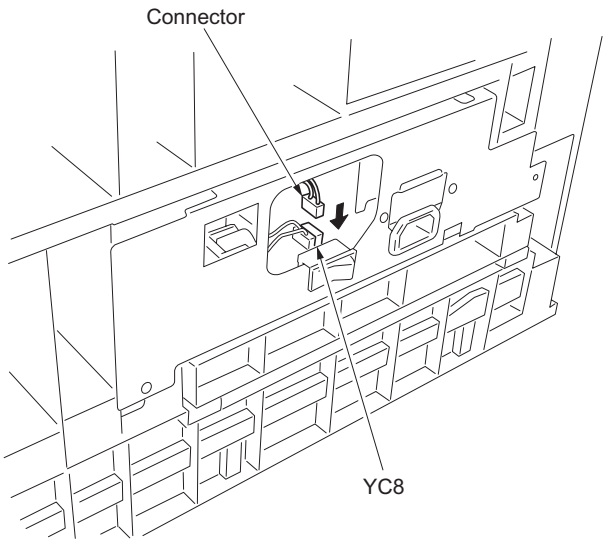


Figure 1-2-10

1-2-5 Installing the key counter (option)

Key counter installation requires the following parts:
Key counter cover
Key counter retainer
Key counter mount
Key counter assembly
Four (4) M4 x 6 bronze TP-A screws
One (1) M4 x 40 round head screw
Two (2) M3 x 6 bronze flat-head screws
One (1) M3 bronze nut
Key counter mounting plate
Key counter wire

Procedure

1. Fit the key counter socket assembly to the key counter retainer using the two screws and nut.
2. Fit the key counter mount to the key counter cover using the two screws, and attach the key counter retainer to the mount using the two screws.

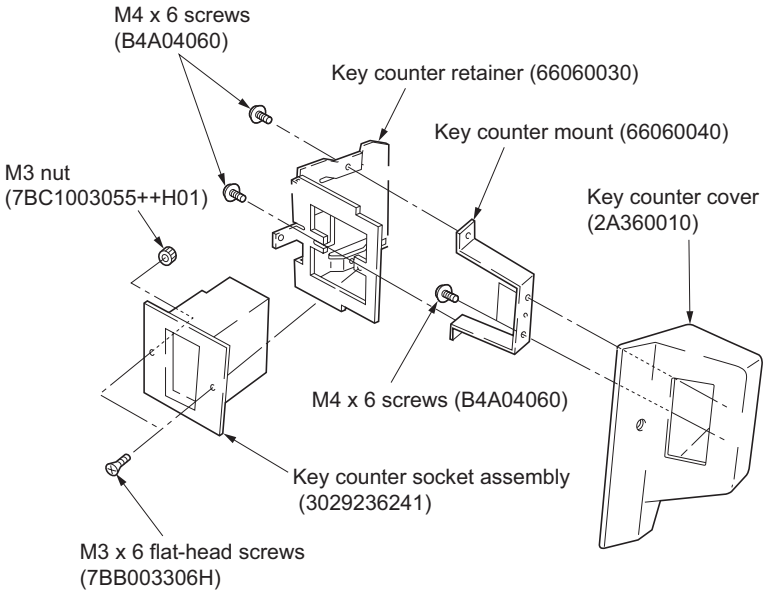


Figure 1-2-11

3. Remove the rear cover.
4. Cut out the aperture plate on the right cover using nippers.
5. Connect the 4-pin connector of the key counter wire (located at a longer distance from the tube) to YC13 on the engine PWB, pass the wire through the two clamps, and pull the other 4-pin connector out from the aperture of the right cover.
   Arrange the key counter wire behind the optical system wire as shown in the illustration.
6. Fold the 7-pin connector of the key counter wire back, pass the wire through the clamp at the upper part of the controller box, and hang it.

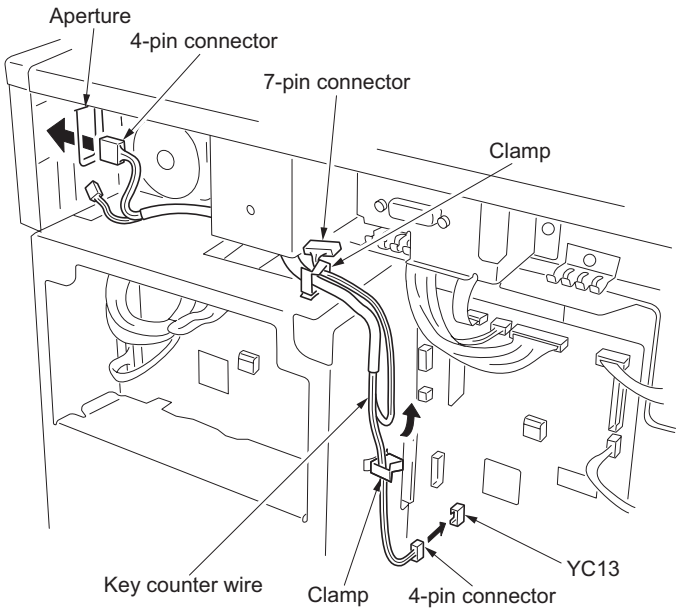


Figure 1-2-12

7. Pass the connector of the key counter through the aperture of the key counter mounting plate, and engage the projection of key counter mounting plate with the square hole of the key counter cover.

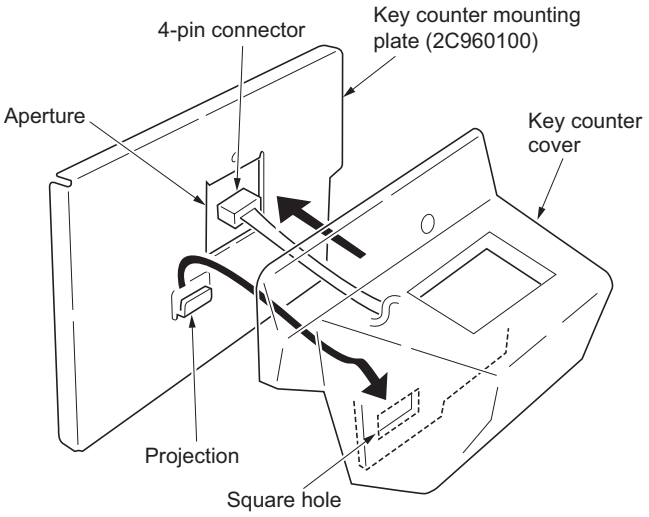


Figure 1-2-13

8. Connect the 4-pin connector of the key counter to the key counter wire.
9. Engage the projection of the key counter mounting plate with the aperture of the right cover.
10. Secure the key counter cover and the key counter mounting plate together with the copier using a M4 x 40 screw.
11. Refit the rear cover.

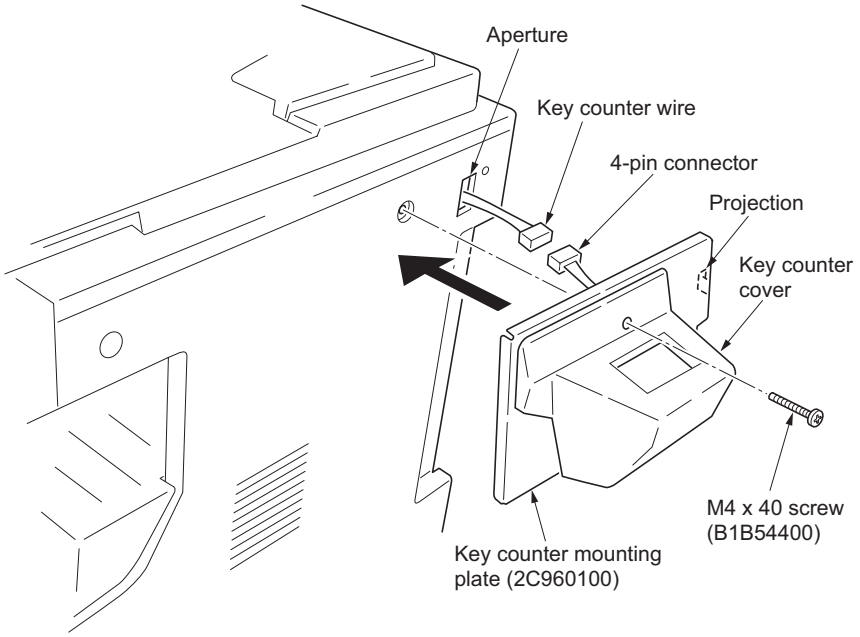


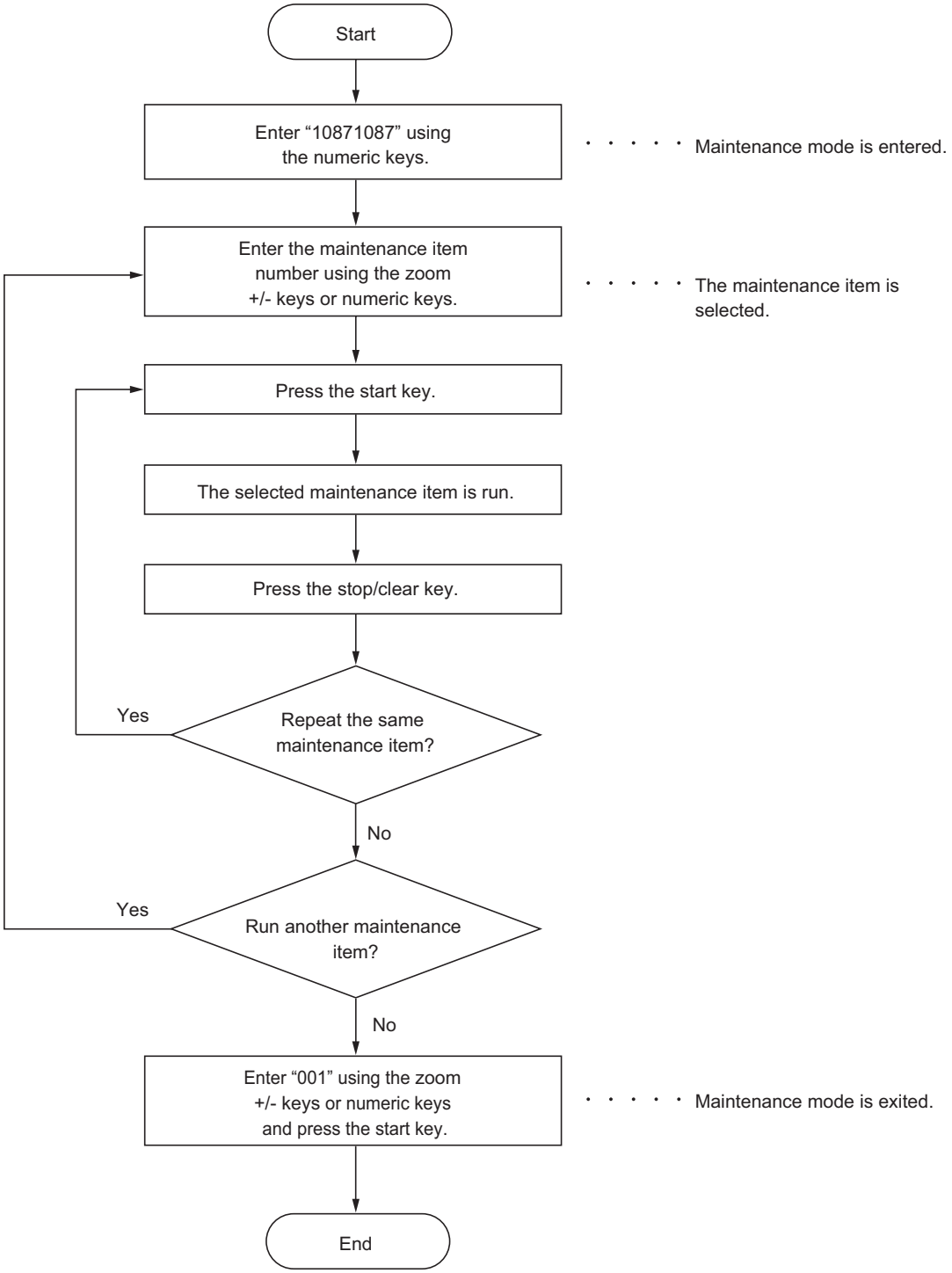
Figure 1-2-14

12. Insert the key counter into the key counter socket assembly.
13. Turn the power switch on and enter the maintenance mode.
14. Run maintenance item U204 and select “Cnt”.
15. Exit the maintenance mode.
16. Check that if the key counter is removed, “U1” is displayed in the copy quantity display.
17. Check that the counter counts up as copies are made.

1-3-1 Maintenance mode

The copier is equipped with a maintenance function which can be used to maintain and service the machine.

(1) Executing a maintenance item



(2) Maintenance mode item list

Section	Item No.	Content of maintenance item	Initial setting*
General	U000	Outputting an own-status report	-
	U001	Exiting the maintenance mode	-
	U002	Setting the factory default data	-
	U004	Checking the machine number	-
	U005	Copying without paper	-
	U019	Displaying the ROM version	-
Initialization	U020	Initializing all data	-
	U021	Initializing memories	-
Drive, paper feed and paper convey-ing system	U030	Checking motor operation	-
	U031	Checking switches for paper conveying	-
	U032	Checking clutch operation	-
	U034	Adjusting the print start timing Adjusting the leading edge registration Adjusting the center line Adjusting the trailing edge margin	 0.9/1.2/1.3/1.3/1.3/1.0 -1.0/0.4/-1.2/-1.2/-1.2/0.3 0.0
	U035	Setting folio size Length Width	 330 210
	U051	Adjusting the amount of slack in the paper	20/0/ 0/ -20/ -20/0
	U053	Performing fine adjustment of the motor speed	0.3/0/-0.5/-0.1/-1.3/-1.5/0.5 0.1/0.3/0.3
Optical	U060	Adjusting the scanner input properties	12
	U061	Turning the exposure lamp on	-
	U063	Adjusting the shading position	0
	U065	Adjusting the scanner magnification Main scanning direction Auxiliary scanning direction	 0 -10
	U066	Adjusting the scanner leading edge registration	7
	U067	Adjusting the scanner center line	-4
	U068	Adjusting the scanning position for originals from the DP	0
	U070	Adjusting the DP magnification	0/0
	U071	Adjusting the DP scanning timing	0/0/0/0
	U072	Adjusting the DP center line	0/0
	U073	Checking scanner operation	-
	U074	Adjusting the DP input light luminosity	1
	U076	Adjusting the DP automatically	-
	U087	Turning the DP scanning position adjust mode on/off	ON/35
	U088	Setting the input filter (moire reduction mode)	Off
	U089	Outputting a MIP-PG pattern	-
	U092	Adjusting the scanner automatically	-
	U093	Setting the exposure density gradient Text/text and photo/photo mode	 0/0/0
	U099	Checking the original size detection	-

*Initial setting for executing maintenance item U020

Section	Item No.	Content of maintenance item	Initial setting*
High voltage	U100	Setting the main high voltage Grid control voltage Copy interval Copy quantity Correction amount	 132 60 50 10
	U101	Setting the other high voltages	27/45/22/45/166/177/37/35 1/35/42
	U110	Checking/clearing the drum count	-
Developing	U130	Initial setting for the developing unit	-
	U144	Setting toner loading operation	Off
	U157	Checking/clearing the developing drive time	-
	U158	Checking the developing count	-
Fuser and cleaning	U161	Setting the fuser control temperature Primary stabilization fuser temperature Secondary stabilization fuser temperature Copying operation temperature 1 Copying operation temperature 2 Number of sheets for fuser control Number of sheets for fuser control (thick paper)	 140 160 170 180 5 20
	U162	Stabilizing fuser forcibly	-
	U163	Resetting the fuser problem data	-
	U167	Checking the fuser count	-
	U198	Setting the fuser phase control	Off
	U199	Checking the fuser temperature	-
Operation panel and support equipment	U200	Turning all LEDs on	-
	U202	Setting the KMAS host monitoring system	-
	U203	Operating DP separately	-
	U204	Setting the presence or absence of a key card or key counter	Off
	U207	Checking the operation panel keys	-
	U243	Checking the operation of the DP motors and solenoids	-
	U244	Checking the DP switches	-
	U245	Checking messages	-
Mode setting	U250	Setting the maintenance cycle	150000
	U251	Checking/clearing the maintenance count	0
	U252	Setting the destination	Japan
	U253	Switching between double and single counts	A3
	U254	Turning auto start function on/off	On
	U258	Switching copy operation at toner empty detection	Single mode
	U260	Changing the copy count timing	After ejection
	U265	Setting the destination specifications	0
	U277	Setting auto application change time	30
	U332	Setting the size conversion factor	1.0
	U341	Specific paper feed location setting for printing function	-

*Initial setting for executing maintenance item U020

Section	Item No.	Content of maintenance item	Initial setting*
Mode setting	U342	Setting the ejection restriction	On
	U343	Switching between duplex/simplex copy mode	Simplex copy
	U344	Setting preheat/energy saver mode	ENERGY STAR
	U345	Setting the value for maintenance due indication	-
Image processing	U402	Adjusting margins of image printing	3.0/3.0/4.0
	U403	Adjusting margins for scanning an original on the contact glass	2.0/3.0/2.0/2.0
	U404	Adjusting margins for scanning an original from the DP	2.0/3.0/2.0/2.0
	U407	Adjusting the leading edge registration for memory image printing	0.0
Other	U901	Checking/clearing copy counts by paper feed locations	-
	U903	Checking/clearing the paper jam counts	-
	U904	Checking/clearing the service call counts	-
	U905	Checking/clearing counts by the DP	-
	U908	Checking the total count	-
	U910	Clearing the black ratio data	-
	U911	Checking/clearing copy counts by paper size	-
	U920	Checking the copy counts	
	U927	Clearing the all copy counts and machine life counts	-
	U928	Checking the machine life counts	-
	U941	Setting the default magnification ratio of the default cassette	100%
	U942	Setting of amount of slack for feeding from DP	0/0
	U955	Setting operation panel type	0/0
	U990	Checking/clearing the time for the exposure lamp to light	-
	U991	Checking the scanner count	-
	U993	Outputting a VTC-PG pattern	-

*Initial setting for executing maintenance item U020

(3) Contents of maintenance mode items

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U000</td><td>
Outputting an own-status report
Description
Outputs lists of the current settings of the maintenance items, and paper jam and service call occurrences.
Purpose
To check the current setting of the maintenance items, or paper jam or service call occurrences. Before initializing the backup RAM, output a list of the current settings of the maintenance items to reenter the settings after initialization or replacement.
Method
1. Press the start key.
2. Select the item to be output using the exposure adjustment keys.
<table>
<tr><th>Display</th><th>Output list</th></tr>
<tr><td>d-L</td><td>List of the current settings of the maintenance modes</td></tr>
<tr><td>J-L</td><td>List of the paper jam occurrences</td></tr>
<tr><td>C-L</td><td>List of the service call occurrences</td></tr>
</table>
3. Press the start key. A list is output.
When A4/11" x 8 1/2" paper is available, a report of this size is output. If not, specify the paper feed location.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U001</td><td>
Exiting the maintenance mode
Description
Exits the maintenance mode and returns to the normal copy mode.
Purpose
To exit the maintenance mode.
Method
Press the start key. The normal copy mode is entered.
</td></tr>
<tr><td>U002</td><td>
Setting the factory default data
Description
Restores the machine conditions to the factory default settings.
Purpose
To move the mirror frame of the scanner to the position for transport (position in which the frame can be fixed).
Method
1. Press the start key.
2. Select "on" using the zoom +/- keys.
3. Press the start key.The mirror frame of the scanner returns to the position for transport.
Completion
The power switch turns off.
</td></tr>
</table>

Maintenance item No.	Description
U004	**Checking the machine number** **Description** Displays the machine number. **Purpose** To check the machine number. **Method** 1. Press the start key. 2. Change the indication of the copy quantity display using the exposure adjustment keys.

Exposure indicator	Copy quantity display
Exp. 1 (lit)	1st digit of machine number
Exp. 2 (lit)	2nd digit of machine number
Exp. 3 (lit)	3rd digit of machine number
Exp. 4 (lit)	4th digit of machine number
Exp. 5 (lit)	5th digit of machine number
Exp. 1 (flashing)	6th digit of machine number
Exp. 2 (flashing)	7th digit of machine number
Exp. 3 (flashing)	8th digit of machine number
Exp. 4 (flashing)	9th digit of machine number
Exp. 5 (flashing)	10th digit of machine number

Code Corresponding Table

0: 30	A: 41	K: 4B	U: 55
1: 31	B: 42	L: 4C	V: 56
2: 32	C: 43	M: 4D	W: 57
3: 33	D: 44	N: 4E	X: 58
4: 34	E: 45	O: 4F	Y: 59
5: 35	F: 46	P: 50	Z: 5A
6: 36	G: 47	Q: 51	
7: 37	H: 48	R: 52	
8: 38	I: 49	S: 53	
9: 39	J: 4A	T: 54	

Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U005</td><td>
Copying without paper
Description
Simulates the copy operation without paper feed.
Purpose
To check the overall operation of the machine.
Method
1. Press the start key.
2. Select the item to be operated using the exposure adjustment keys.
<table>
<tr><th>Display</th><th>Operation</th></tr>
<tr><td>P</td><td>Only the copier operates.</td></tr>
<tr><td>P-d</td><td>Both the copier and DP operate.</td></tr>
</table>
3. Press the interrupt key.
4. Set the operation conditions required. Changes in the following settings can be made.
Paper feed locations
Magnifications
Number of copies: continuous copying is performed when set to 250.
Copy density
Keys on the operation panel other than the energy saver (preheat) key
5. To control the paper feed pulley, remove all the paper in the drawers, or the drawers. With the paper present, the paper feed pulley does not operate.
6. Press the start key.
Copy operation is simulated without paper under the set conditions.
7. To stop continuous operation, press the stop/reset key.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

Maintenance item No.	Description
U019	**Displaying the ROM version** **Description** Displays the part number of the ROM fitted to each board. **Purpose** To check the part number or to decide if the ROM version is new from the last digit of the number. **Method** 1. Press the start key. 2. Select the item to be displayed using the image mode selection key and exposure adjustment keys.

Image mode LEDs	Exposure indicator	Copy quantity display
○ Text & Photo ○ Photo ● Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	“A” Part Code: Main PWB Change history of the main PWB Number of the main ROM Number of the main ROM sub
○ Text & Photo ● Photo ● Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit) Exp. 5 (lit) Exp. 1 (flashing)	“E” Part Code: Engine PWB Change history of the engine PWB Number of the engine ROM Number of the engine ROM sub Change history of the engine PWB BOOT Number of the engine PWB BOOT
● Text & Photo ● Photo ● Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit) Exp. 5 (lit)	“L” Part Code: Language Change history of the standard language Number of the standard language ROM Change history of the optional language Number of the optional language ROM
● Text & Photo ● Photo ☼ Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	“C” Part Code: Cassette Number of the optional first paper feeder ROM Number of the optional second paper feeder ROM Number of the optional third paper feeder ROM
● Text & Photo ☼ Photo ☼ Text	Exp. 1 (lit) Exp. 2 (lit)	“d” Part Code: DP Number of the optional DP ROM
☼ Text & Photo ☼ Photo ☼ Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit)	“P” Part Code: Printer Change history of the optional printer Number of the optional printer ROM

○ : Off, ● : On, ☼ : Flashing

When the optional equipment is not installed, non is displayed.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U020</td><td>
Initializing all data
Description
Initializes all the backup RAM on the main board to return to the original settings.
Purpose
Run as needed.
Method
1. Press the start key.
2. Select "on" using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Operation</th></tr>
<tr><td>- - -</td><td>Canceling initialization</td></tr>
<tr><td>on</td><td>Executing initialization</td></tr>
</table>
3. Press the start key. All data in the backup RAM is initialized, and the original settings for Japan specifications are set.
When initialization is complete, the machine automatically returns to the same status as when the power switch is turned on.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U021</td><td>
Initializing memories
Description
Initializes the setting data other than that for adjustments due to variations between respective machines, i.e., settings for counters, service call history and mode settings. As a result, initializes the backup RAM according to the specifications depending on the destination selected in U252.
Purpose
Used to return the machine settings to the factory settings.
Method
1. Press the start key.
2. Select "on" using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Operation</th></tr>
<tr><td>- - -</td><td>Canceling initialization</td></tr>
<tr><td>on</td><td>Executing initialization</td></tr>
</table>
3. Press the start key. All data other than that for adjustments due to variations between machines is initialized based on the destination setting. When initialization is complete, the machine automatically returns to the same status as when the power switch is turned on.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U030</td><td>
Checking motor operation
Description
Drives each motor.
Purpose
To check the operation of each motor.
Method
1. Press the start key.
2. Select the motor to be operated using the exposure adjustment keys.
<table>
<tr><th>Display</th><th>Motor</th></tr>
<tr><td>A</td><td>Drive motor (DM)</td></tr>
<tr><td>2F</td><td>Registration motor (RM)</td></tr>
<tr><td>F1</td><td>Drawer drive motor 1 (DDM1)*</td></tr>
<tr><td>F2</td><td>Drawer drive motor 2 (DDM2)*</td></tr>
<tr><td>F3</td><td>Drawer drive motor 3 (DDM3)*</td></tr>
<tr><td>EJ1</td><td>Exit motor (EM) forward rotation</td></tr>
<tr><td>EJ2</td><td>Exit motor (EM) reverse rotation</td></tr>
</table>
*: Optional.
3. Press the start key. The selected motor operates.
4. To stop operation, press the stop/reset key.
Completion
Press the stop/clear key after operation stops. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U031</td><td>
Checking switches for paper conveying
Description
Displays the on-off status of each paper detection switch on the paper path.
Purpose
To check if the switches for paper conveying operate correctly.
Method
1. Press the start key.
2. Turn each switch on and off manually to check the status. When the on-status of a switch is detected, the original size indicator corresponding to the operated switch lights.
<table>
<tr><th>Original size indicator</th><th>Switch</th></tr>
<tr><td>A3R/Ledger</td><td>Exit switch (ESW)</td></tr>
<tr><td>A4R/Legal</td><td>Registration switch (RSW)</td></tr>
<tr><td>A5R/Legal</td><td>Drawer feed switch 1 (DFSW1)*</td></tr>
<tr><td>A4/Letter-R</td><td>Drawer feed switch 2 (DFSW2)*</td></tr>
<tr><td>B4R/Letter</td><td>Feedshift switch (FSSW)</td></tr>
<tr><td>B5R/Statement</td><td>Duplex paper conveying switch (DUPPCSW)*</td></tr>
</table>
*: Optional.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

Maintenance item No.	Description
U032	**Checking clutch operation** **Description** Turns each clutch on. **Purpose** To check the operation of each clutch. **Method** 1. Press the start key. 2. Select the clutch or solenoid to be operated using the exposure adjustment keys. 3. Press the start key. The selected clutch turns on for 1 s.

Display	Clutch
P1	Paper feed clutch (PFCL)
Pb	MP paper feed clutch (MPPFCL)
F1	Drawer paper feed clutch 1 (DPFCL1)*
F2	Drawer paper feed clutch 2 (DPFCL2)*
F3	Drawer paper feed clutch 3 (DPFCL3)*

*: Optional.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

Maintenance item No.	Description
U034	**Adjusting the print start timing** **Description** Adjusts the leading edge registration, center line or trailing edge margin. **Purpose** Make the adjustment if there is a regular error between the leading edges of the copy image and original. Make the adjustment if there is a regular error between the center lines of the copy image and original. Make the adjustment if there is a regular error between the trailing edges of the copy image and original. **Method** 1. Press the start key. 2. Select the item using the image mode selection key.

Image mode LEDs (group No.)		Description
1	○ Text & Photo ○ Photo ● Text	Leading edge registration adjustment
2	○ Text & Photo ● Photo ● Text	Center line adjustment
3	● Text & Photo ● Photo ● Text	Trailing edge margin adjustment

○ : Off, ● : On

Adjustment: leading edge registration adjustment

1. Select group 1 using the image mode selection key.
2. Select the item using the exposure adjustment keys.

Exposure indicator	Description	Setting range	Initial setting	Change in value per step
Exp. 1 (lit)	Paper feed from drawer	-5.0 to 10.0	0.9	1.0 mm
Exp. 2 (lit)	Paper feed from MP tray	-5.0 to 10.0	1.2	1.0 mm
Exp. 3 (lit)	Paper feed from optional first paper feeder	-5.0 to 10.0	1.3	1.0 mm
Exp. 4 (lit)	Paper feed from optional second paper feeder	-5.0 to 10.0	1.3	1.0 mm
Exp. 5 (lit)	Paper feed from optional third paper feeder	-5.0 to 10.0	1.3	1.0 mm
Exp. 1 (flashing)	Duplex mode	-5.0 to 10.0	1.0	1.0 mm

3. Press the interrupt key.
4. Press the start key to output a test pattern.
5. Change the setting value using the zoom +/- keys.
   For output example 1, decrease the value. For output example 2, increase the value.

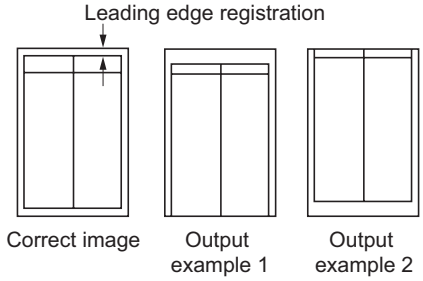


Figure 1-3-1

6. Press the start key. The value is set.

Maintenance item No.	Description
U034 (cont.)	**Caution** Check the copy image after the adjustment. If the image is still incorrect, perform the following adjustments in maintenance mode. U034 → U066 (P.1-3-19) → U071 (P.1-3-22) **Adjustment: center line adjustment** 1. Select group 2 using the image mode selection key. 2. Select the item using the exposure adjustment keys.

Exposure indicator	Description	Setting range	Initial setting	Change in value per step
Exp. 1 (lit)	Paper feed from drawer	-7.0 to 10.0	-1.0	1.0 mm
Exp. 2 (lit)	Paper feed from MP tray	-7.0 to 10.0	0.4	1.0 mm
Exp. 3 (lit)	Paper feed from optional first paper feeder	-7.0 to 10.0	-1.2	1.0 mm
Exp. 4 (lit)	Paper feed from optional second paper feeder	-7.0 to 10.0	-1.2	1.0 mm
Exp. 5 (lit)	Paper feed from optional third paper feeder	-7.0 to 10.0	-1.2	1.0 mm
Exp. 1 (flashing)	Duplex mode	-7.0 to 10.0	0.3	1.0 mm

3. Press the interrupt key.
4. Press the start key to output a test pattern.
5. Change the setting value using the zoom +/- keys.
   For output example 1, decrease the value. For output example 2, increase the value.

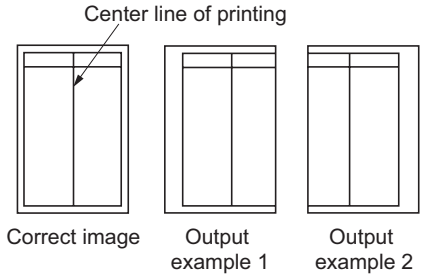


Figure 1-3-2

6. Press the start key. The value is set.

Caution
Check the copy image after the adjustment. If the image is still incorrect, perform the following adjustments in maintenance mode.

U034 → U067 (P.1-3-20) → U072 (P.1-3-23)

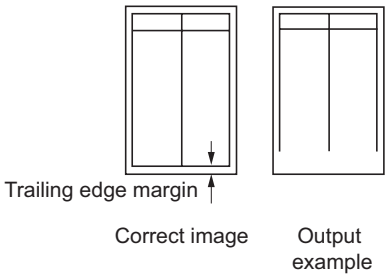
<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U034 (cont.)</td><td>
Adjustment: trailing edge margin adjustment
1. Select group 3 using the image mode selection key.
<table>
<tr><th>Description</th><th>Setting range</th><th>Initial setting</th><th>Change in value per step</th></tr>
<tr><td>Trailing edge margin adjustment</td><td>-4.0 to 10.0</td><td>0.0</td><td>1.0 mm</td></tr>
</table>
2. Press the interrupt key.
3. Press the start key to output a test pattern.
4. Change the setting value using the zoom +/- keys.
For output example, increase the value.


Figure 1-3-3
5. Press the start key. The value is set.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U035</td><td>
Setting folio size
Description
Changes the image area for copying onto folio size paper.
Purpose
To prevent the image at the trailing edge, or right or left side of the paper from not being copied by setting the actual size of the folio paper used.
Method
Press the start key.
Setting
1. Select the item to be set using the exposure adjustment keys.
2. Change the setting using the zoom +/- keys.
<table>
<tr><th>Exposure indicator</th><th>Setting</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Exp. 1</td><td>Length</td><td>330 to 356 mm</td><td>330</td></tr>
<tr><td>Exp. 2</td><td>Width</td><td>200 to 220 mm</td><td>210</td></tr>
</table>
3. Press the start key. The value is set.
Completion
Press the stop/clear key. The screen for selecting a maintenance item No. is displayed.
</td></tr>
</table>

Maintenance item No.	Description
U051	**Adjusting the amount of slack in the paper** **Description** Adjusts the amount of slack in the paper at the registration roller. **Purpose** Make the adjustment if the leading edge of the copy image is missing or varies randomly, or if the copy paper is Z-folded. **Adjustment** 1. Press the start key. 2. Select the item using the exposure adjustment keys.

Exposure indicator	Description	Setting range	Initial setting	Change in value per step
Exp. 1 (lit)	Paper feed from drawer	-50 to 127	20	0.32 mm
Exp. 2 (lit)	Paper feed from MP tray	-50 to 127	0	0.32 mm
Exp. 3 (lit)	Paper feed from optional first paper feeder	-50 to 127	0	0.32 mm
Exp. 4 (lit)	Paper feed from optional second paper feeder	-50 to 127	-20	0.32 mm
Exp. 5 (lit)	Paper feed from optional third paper feeder	-50 to 127	-20	0.32 mm
Exp. 1 (flashing)	Duplex mode	-50 to 127	0	0.32 mm

3. Press the interrupt key.
4. Place an original and press the start key to make a test copy.
5. Change the setting value using the zoom +/- keys.
   For output example 1, increase the value. For output example 2, decrease the value.
   The greater the value, the larger the amount of slack; the smaller the value, the smaller the amount of slack.

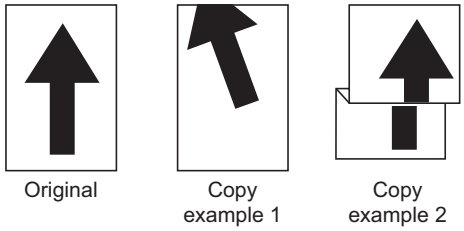


Figure 1-3-4

6. Press the start key. The value is set.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

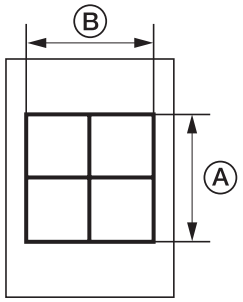
Maintenance item No.	Description
U053	**Performing fine adjustment of the motor speed** **Description** Performs fine adjustment of the speeds of the motors. **Purpose** Used to adjust the speed of the respective motors when the magnification is not correct. Also speed adjustment for each paper source can be performed in group 2. **Method** Press the start key. **Setting** 1. Select the group using the image mode selection key. 2. Select the item to be set using the exposure adjustment keys.

Image mode LEDs	Exposure indicator	Description	Setting range	Initial setting
○ Text & Photo ○ Photo ● Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit) Exp. 5 (lit) Exp. 1 (flashing) Exp. 2 (flashing)	Drive motor speed adjustment Polygon motor speed adjustment Exit motor speed adjustment Registration motor speed adjustment Exit motor speed adjustment 2 Exit motor speed adjustment 3 Exit motor speed adjustment 4	-5.0 to 5.0 -5.0 to 4.0 -5.0 to 5.0 -5.0 to 5.0 -5.0 to 5.0 -5.0 to 5.0 0.0 to 5.0	0.3 0 -0.5 -0.1 -1.3 -1.5 0.5
○ Text & Photo ● Photo ● Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit)	Motor speed adjustment (for paper feed from MP tray) Motor speed adjustment (for paper feed from optional paper feeder) Motor speed adjustment (in duplex mode)	-5.0 to 5.0 -5.0 to 5.0 -5.0 to 5.0	0.1 0.3 0.3

○ : Off, ● : On

Adjustment

1. Press the interrupt key.
2. Press the start key to output a VTC pattern.



Correct values for an A3/11" x 17" output are:
A = 300 ± 1.5 mm
B = 270 ± 1.35 mm

Figure 1-3-5

3. Change the setting value using the zoom +/- keys.
   A: Drive motor speed adjustment (unit: %)
   Increasing the setting makes the image longer in the auxiliary scanning direction, and decreasing it makes the image shorter in the auxiliary scanning direction.
   B: Polygon motor speed adjustment (unit: %)
   Increasing the setting makes the image longer in the main scanning direction and shorter in the auxiliary scanning direction; decreasing the setting makes the image shorter in the main scanning direction and longer in the auxiliary scanning direction.
4. Press the start key. The value is set.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U060</td><td>
Adjusting the scanner input properties
Description
Adjusts the image scanning density.
Purpose
Used when the entire image appears too dark or light.
Method
Press the start key.
Setting
1. Change the setting using the zoom +/- keys.
<table>
<tr><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Image scanning density</td><td>0 to 23</td><td>12</td></tr>
</table>
Increasing the setting makes the density lower, and decreasing it makes the density higher.
2. Press the start key. The value is set.
Supplement
While this maintenance item is being executed, test copying from an original is available.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
Caution
The following settings are also reset to the initial values by performing this maintenance item:
Exposure density gradient set in maintenance mode (U093)
Exposure set in the copy default item of the copier management mode
</td></tr>
<tr><td>U061</td><td>
Turning the exposure lamp on
Description
Turns the exposure lamp on.
Purpose
To check the exposure lamp.
Method
1. Press the start key. "on" appears.
2. Press the start key. The exposure lamp lights.
3. To turn the exposure lamp off, press the stop/clear key.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U063</td><td>
Adjusting the shading position
Description
Changes the shading position.
Purpose
Used when white lines continue to appear longitudinally on the image after the shading plate is cleaned. This is due to flaws or stains inside the shading plate. To prevent this problem, the shading position should be changed so that shading is possible without being affected by the flaws or stains.
Method
1. Press the start key.
2. Change the setting using the zoom +/- keys.
<table>
<tr><th>Description</th><th>Setting range</th><th>Initial setting</th><th>Change in value per step</th></tr>
<tr><td>Shading position</td><td>-5 to 5</td><td>0</td><td>0.17 mm</td></tr>
</table>
Increasing the setting moves the shading position toward the machine left, and decreasing it moves the position toward the machine right.
3. Press the start key. The value is set.
Supplement
While this maintenance item is being executed, test copying from an original is available.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

Maintenance item No.	Description
U065	**Adjusting the scanner magnification** **Description** Adjusts the magnification of the original scanning. **Purpose** Make the adjustment if the magnification in the main scanning direction is incorrect. Make the adjustment if the magnification in the auxiliary scanning direction is incorrect. **Caution** Adjust the magnification of the scanner in the following order.

U053 (P.1-3-16) → U065 (main scanning direction) → U065 (auxiliary scanning direction) → U067 (P.1-3-20) → U070 (P.1-3-21)

Method

1. Press the start key.
2. Select the item using the exposure adjustment keys.

Exposure indicator	Description	Setting range	Initial setting
Exp. 1	Scanner magnification in the main scanning direction	-25 to 25	0
Exp. 2	Scanner magnification in the auxiliary scanning direction	-25 to 25	-10

Adjustment: main scanning direction

1. Light exp. 1 using the exposure adjustment key.
2. Press the interrupt key.
3. Place an original and press the start key to make a test copy.
4. Change the setting value using the zoom +/- keys.
   For copy example 1, increase the value. For copy example 2, decrease the value.

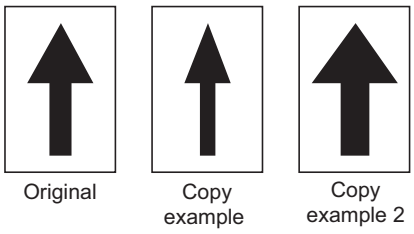


Figure 1-3-6

5. Press the start key. The value is set.

Adjustment: auxiliary scanning direction

1. Light exp. 2 using the exposure adjustment key.
2. Press the interrupt key.
3. Place an original and press the start key to make a test copy.
4. Change the setting value using the zoom +/- keys.
   For copy example 1, increase the value. For copy example 2, decrease the value.

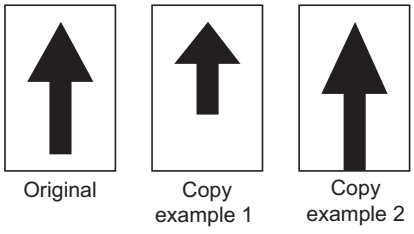


Figure 1-3-7

5. Press the start key. The value is set.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

Maintenance item No.	Description
U066	**Adjusting the scanner leading edge registration** **Description** Adjusts the scanner leading edge registration of the original scanning. **Purpose** Make the adjustment if there is a regular error between the leading edges of the copy image and original. **Caution** Before making this adjustment, ensure that the following adjustments have been made in maintenance mode U034 (P.1-3-12) → U066 → U071 (P.1-3-22) **Adjustment** 1. Press the start key.

Description	Setting range	Initial setting
Scanner leading edge registration	-32 to 20	7

2. Press the interrupt key.
3. Place an original and press the start key to make a test copy.
4. Change the setting value using the zoom +/- keys.
   For copy example 1, decrease the value. For copy example 2, increase the value.

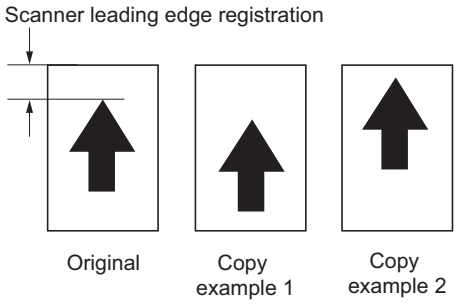


Figure 1-3-8

5. Press the start key. The value is set.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

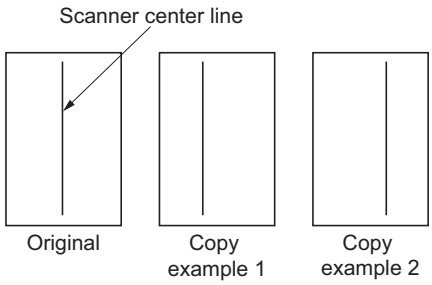
<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U067</td><td>
Adjusting the scanner center line
Description
Adjusts the scanner center line of the original scanning.
Purpose
Make the adjustment if there is a regular error between the center lines of the copy image and original.
Caution
Before making this adjustment, ensure that the following adjustments have been made in maintenance mode
U034 (P.1-3-12) → U067 → U072 (P.1-3-23)
Adjustment
1. Press the start key.
<table>
<tr><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Scanner center line</td><td>-66 to 66</td><td>-4</td></tr>
</table>
2. Press the interrupt key.
3. Place an original and press the start key to make a test copy.
4. Change the setting value using the zoom +/- keys.
For copy example 1, increase the value. For copy example 2, decrease the value.


Figure 1-3-9
5. Press the start key. The value is set.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U068</td><td>
Adjusting the scanning position for originals from the DP
Description
Adjusts the position for scanning originals from the DP.
Purpose
Used when there is a regular error between the leading edges of the original and the copy image when the DP is used.
Method
Press the start key.
Setting
1. Change the setting using the zoom +/- keys.
<table>
<tr><th>Description</th><th>Setting range</th><th>Initial setting</th><th>Change in value per step</th></tr>
<tr><td>Scanning position</td><td>-17 to 17</td><td>0</td><td>0.254 mm</td></tr>
</table>
Increasing the value moves the image backward, and decreasing it moves the image forward.
Supplement
While this maintenance item is being executed, test copying from an original is available.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

Maintenance item No.	Description
U070	**Adjusting the DP magnification** **Description** Adjusts the DP original scanning speed. **Purpose** Make the adjustment if the magnification is incorrect in the auxiliary scanning direction when the optional DP is used. **Caution** Before making this adjustment, ensure that the following adjustments have been made in maintenance mode U053 (P.1-3-16) → U065 (P.1-3-18) → U070 **Method** Press the start key. **Adjustment** 1. Select the item using the exposure adjustment keys.

Exposure indicator	Description	Setting range	Initial setting
Exp. 1	Original conveying motor speed (First side)	-25 to 25	0
Exp. 2	Original conveying motor speed (Second side)	-25 to 25	0

2. Press the interrupt key.
3. Place an original on the DP and press the start key to make a test copy.
4. Change the setting value using the zoom +/- keys.
   For copy example 1, increase the value.
   For copy example 2, decrease the value.

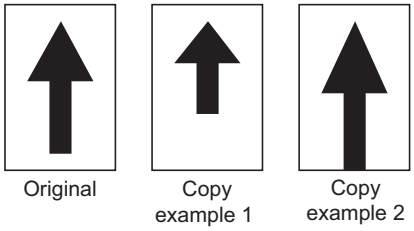


Figure 1-3-10

5. Press the start key. The value is set.

Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.

Maintenance item No.	Description
U071	**Adjusting the DP scanning timing** **Description** Adjusts the DP original scanning timing. **Purpose** Make the adjustment if there is a regular error between the leading or trailing edges of the original and the copy image when the optional DP is used. **Caution** Before making this adjustment, ensure that the following adjustments have been made in maintenance mode U034 (P.1-3-12) → U066 (P.1-3-19) → U071 **Method** Press the start key. **Adjustment** 1. Select the item using the exposure adjustment keys.

Exposure indicator	Description	Setting range	Initial setting	Change in value per step
Exp. 1	DP leading edge registration (First side)	-32 to 32	0	0.254 mm
Exp. 2	DP trailing edge registration (First side)	-42 to 32	0	0.254 mm
Exp. 3	DP leading edge registration (Second side)	-32 to 32	0	0.254 mm
Exp. 4	DP trailing edge registration (Second side)	-42 to 32	0	0.254 mm

2. Press the interrupt key.
3. Place an original on the DP and press the start key to make a test copy.
4. Change the setting value using the zoom +/- keys.
   For copy example 1, decrease the value of exp.1.
   For copy example 2, increase the value of exp.1.

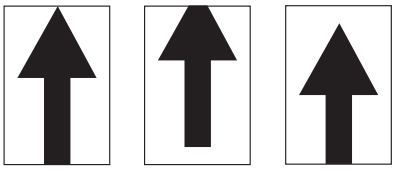


Figure 1-3-11

5. Press the start key. The value is set.

Completion
Press the stop/clear key while a selection item is displayed. The indication for selecting a maintenance item No. appears.

Maintenance item No.	Description
U072	**Adjusting the DP center line** **Description** Adjusts the scanning start position for the DP original. **Purpose** Make the adjustment if there is a regular error between the centers of the original and the copy image when the optional DP is used. **Caution** Before making this adjustment, ensure that the following adjustments have been made in maintenance mode U034 (P.1-3-12) → U067 (P.1-3-20) → U072 **Method** Press the start key. **Adjustment** 1. Select the item using the exposure adjustment keys.

Exposure indicator	Description	Setting range	Initial setting	Change in value per step
Exp. 1	DP center line (First side)	-6.6 to 6.6	0	0.1 mm
Exp. 2	DP center line (Second side)	-3.0 to 3.0	0	0.1 mm

2. Press the interrupt key.
3. Place an original on the DP and press the start key to make a test copy.
4. Change the setting value using the zoom +/- keys.
   For copy example 1, increase the value.
   For copy example 2, decrease the value.

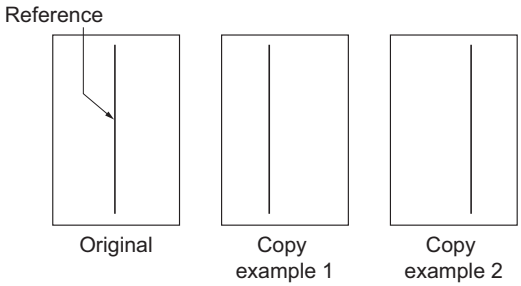


Figure 1-3-12

5. Press the start key. The value is set.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U073</td><td>
Checking scanner operation
Description
Simulates the scanner operation under arbitrary conditions.
Purpose
To check scanner operation.
Method
1. Press the start key.
2. Select the item to be changed using the exposure adjustment keys.
3. Change the setting using the zoom +/- keys.
<table>
<tr><th>Exposure indicator</th><th>Operating conditions</th><th>Setting range</th></tr>
<tr><td>Exp. 1</td><td>Magnification</td><td>25 to 400%</td></tr>
<tr><td>Exp. 2</td><td>Paper size</td><td>See below.</td></tr>
<tr><td>Exp. 3</td><td>On and off of the exposure lamp</td><td>on or off</td></tr>
</table>
Paper size for each setting
<table>
<tr><th>Setting</th><th>Paper size</th><th>Setting</th><th>Paper size</th></tr>
<tr><td>8</td><td>A4</td><td>42</td><td>A5R</td></tr>
<tr><td>9</td><td>B5</td><td>47</td><td>Folio</td></tr>
<tr><td>24</td><td>11" x 8 1/2"</td><td>52</td><td>11" x 17"</td></tr>
<tr><td>36</td><td>A3</td><td>53</td><td>11" x 15"</td></tr>
<tr><td>39</td><td>B4</td><td>55</td><td>8 1/2" x 14"</td></tr>
<tr><td>40</td><td>A4R</td><td>56</td><td>8 1/2" x 11"</td></tr>
<tr><td>41</td><td>B5R</td><td>58</td><td>5 1/2" x 8 1/2"</td></tr>
</table>
4. Press the start key. The setting is set.
5. Press the interrupt key.
6. Press the start key. Scanning starts under the selected conditions.
7. To stop operation, press the stop/clear key.
Completion
Press the stop/clear key when scanning stops. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U074</td><td>
Adjusting the DP input light luminosity
Description
Adjusts the luminosity of the exposure lamp for scanning originals from the DP.
Purpose
Used if the exposure amount differs significantly between when scanning an original on the contact glass and when scanning an original from the DP.
Method
Press the start key.
Setting
1. Change the setting using the zoom +/- keys.
<table>
<tr><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>DP input light luminosity</td><td>0 to 8</td><td>1</td></tr>
</table>
Increasing the setting makes the luminosity higher, and decreasing it makes the luminosity lower.
2. Press the start key. The value is set.
Supplement
While this maintenance item is being executed, test copying from an original is available.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

Maintenance item No.	Description
U076	**Adjusting the DP automatically** **Description** Uses a specified original and automatically adjusts the following items in the DP scanning section. Adjusting the DP magnification (U070) Adjusting the DP scanning timing (U071) Adjusting the DP center line (U072) When this maintenance item is performed, the settings in U070, U071 and U072 are also changed. **Purpose** To perform automatic adjustment of various items in the optional DP scanning section. **Method** 1. Place the specified original on the DP. 2. Press the start key. "on" appears. 3. Press the start key. Auto adjustment starts. When adjustment is complete, "Gd" appears. 4. Display each setting value after adjustment using the exposure adjustment keys.

Exposure indicator	Description
Exp. 1	Execution result
Exp. 2	DP scanning timing
Exp. 3	DP center line
Exp. 4	DP magnification

If a problem occurs during auto adjustment, "nG" is displayed and operation stops. Determine the details of the problem and either repeat the procedure from the beginning, or adjust the remaining items manually by running the corresponding maintenance items.

Completion

Press the stop/clear key after auto adjustment is complete.The indication for selecting a maintenance item No. appears.

If the stop/clear key is pressed during auto adjustment, adjustment stops and no settings are changed.

Maintenance item No.	Description
U087	**Turning the DP scanning position adjust mode on/off** **Description** Turns on or off the DP scanning position adjust mode, in which the DP original scanning position is adjusted automatically by determining the presence or absence of dust on the slit glass. Also changes the reference data for identifying dust. **Reference** In the DP original scanning position adjust mode, the presence or absence of dust is determined by comparing the scan data of the original trailing edge and that taken after the original is conveyed past the DP original scanning position. If dust is identified, the DP original scanning position is adjusted for the following originals. **Purpose** Used to prevent appearance of black lines due to dust adhering in the original scanning position on the slit glass when the DP is used. **Method** 1. Press the start key. 2. Select the item to be set using the exposure adjustment keys.

Exposure indicator	Description
Exp. 1	Setting the mode on/off
Exp. 2	Setting the reference data for identifying dust

Setting the mode on/off

1. Select "on" or "oFF" using the zoom +/- keys.

Display	Description
on	DP scanning position adjust mode on
oFF	DP scanning position adjust mode off

Initial setting: on

2. Press the start key. The setting is set.

Setting the reference data for identifying dust

Available only when the mode is turned on.

1. Change the setting using the zoom +/- keys.

Description	Setting range	Initial setting
Minimum density to be regarded as dust	10 to 95	35

Example

The figure indicates the density in 256 levels of gray (0: white, 255: black). When the setting is 35, data of the level of 35 or higher is regarded as dust and data of lower level is regarded as the background (scan data taken when there is no original).

2. Press the start key. The value is set.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U088</td><td>
Setting the input filter (moire reduction mode)
Description
Turns moire reduction mode on and off by switching the input filter on and off.
Purpose
Used to prevent regular density unevenness (moiré) on halftone image areas of the copy image in text mode and text and photo mode. Such moire is more likely to appear when an enlargement or reduction copy is made in text mode from an original containing large halftone image areas.
Method
Press the start key.
Setting
1. Select "on" or "oFF" using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>on</td><td>Moiré reduction mode</td></tr>
<tr><td>oFF</td><td>Normal copy mode</td></tr>
</table>
Initial setting: oFF
If moire on the copy image is significant, change the setting to "on". Note that when the moire reduction mode is turned on, the resolution may be slightly reduced.
2. Press the start key. The value is set. The indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U089</td><td>
Outputting a MIP-PG pattern
Description
Selects and outputs a MIP-PG pattern created in the copier.
Purpose
When performing respective image printing adjustments, used to check the machine status apart from that of the scanner with a non-scanned output MIP-PG pattern.
Method
1. Press the start key.
2. Select the MIP-PG pattern to be output using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Display</th><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Exp. 1</td><td>G-S</td><td>Gray scale</td><td>-</td><td>-</td></tr>
<tr><td>Exp. 2</td><td>0 (setting value)</td><td>Mono level</td><td>0 to 255</td><td>0</td></tr>
<tr><td>Exp. 3</td><td>FFL</td><td>256 level</td><td>-</td><td>-</td></tr>
<tr><td>Exp. 4</td><td>1-d</td><td>1-dot level</td><td>-</td><td>-</td></tr>
</table>
3. Press the interrupt key.
4. Press the start key. A MIP-PG pattern is output.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

Maintenance item No.	Description
U092	**Adjusting the scanner automatically** **Description** Makes auto scanner adjustments in the order below using the specified original. Adjusting the scanner center line (U067) Adjusting the scanner leading edge registration (U066) Adjusting scanner magnification in the auxiliary direction (U065) When this maintenance item is performed, the settings in U065, U066 and U067 are also changed. **Purpose** Used to make respective auto adjustments for the scanner. **Method** 1. Place the specified original on the contact glass. 2. Press the start key. "on" appears. 3. Press the start key. Auto adjustment starts. When adjustment is complete, "Gd" appears. 4. Display each setting value after adjustment using the exposure adjustment keys.

Exposure indicator	Description
Exp. 1	Execution result
Exp. 2	Scanner leading edge registration
Exp. 3	Scanner center line
Exp. 4	Scanner magnification in the auxiliary scanning direction

If a problem occurs during auto adjustment, "nG" is displayed and operation stops. Determine the details of the problem and either repeat the procedure from the beginning, or adjust the remaining items manually by running the corresponding maintenance items.

Completion

Press the stop/clear key after auto adjustment is complete. The indication for selecting a maintenance item No. appears.

If the stop/clear key is pressed during auto adjustment, adjustment stops and no settings are changed.

Maintenance item No.	Description
U093	**Setting the exposure density gradient** **Description** Changes the exposure density gradient in manual density mode, depending on respective image modes (text, text and photo, photo). **Purpose** To set how the image density is altered by a change of one step in the manual density adjustment. Also used to make copy image darker or lighter. **Start** 1. Press the start key. 2. Select the image mode to be adjusted using the image mode selection key.

Image mode LEDs	Description
○ Text & Photo ○ Photo ● Text	Density in text mode
○ Text & Photo ● Photo ● Text	Density in text and photo mode
● Text & Photo ● Photo ● Text	Density in photo mode

○ : Off, ● : On

Setting

1. Select the item to be set using the exposure adjustment keys.
2. Adjust the setting using the zoom +/- keys.

Exposure indicator	Description	Setting range	Initial setting
Exp. 1	Change in density when manual density is set dark	0 to 3	0
Exp. 2	Change in density when manual density is set light	0 to 3	0

Increasing the setting makes the change in density larger, and decreasing it makes the change smaller.

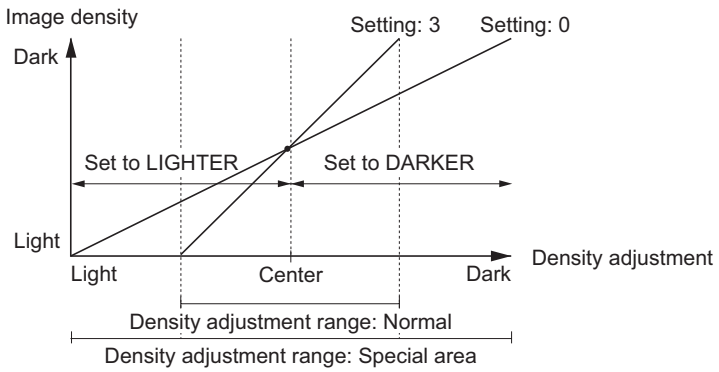


Figure 1-3-13

3. Press the start key. The value is set.

Supplement

While this maintenance item is being executed, test copying from an original is available.

Completion

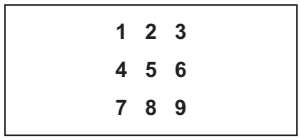
Press the stop/clear key. The indication for selecting a maintenance item No. appears.

Maintenance item No.	Description
U099	**Checking the original size detection** **Description** Displays the original width detection data and sets the original width detection threshold. **Purpose** To check the original width detection. Also to change the original size detection threshold if the size of the original on the contact glass is detected incorrectly. **Start** 1. Press the start key. 2. Select the item using the exposure adjustment keys 3. Press the start key. The machine enters the execution mode.

Display	Description
dA	Checking the original width detection data
LE	Setting or checking the original width detection threshold

Method to display the original width detection data

1. Place an original on the contact glass and turn the original detection switch on. The exposure lamp turns on and the width of the original is detected. The scanner data taken at the nine points from (1) at the machine rear to (9) at the machine front is displayed. The data is displayed within the range of 000 to 255, 000 indicating white (original present) and 255 indicating black (no original).
2. Change the point to display the detection data using the exposure adjustment keys. For the correspondence between the detection point and the exposure indicators, see Figure 1-3-14.



Point	Exposure indicator
1	exp. 1 (lit)
2	exp. 2 (lit)
3	exp. 3 (lit)
4	exp. 4 (lit)
5	exp. 5 (lit)
6	exp. 1 (flashing)
7	exp. 2 (flashing)
8	exp. 3 (flashing)
9	exp. 4 (flashing)

Figure 1-3-14

3. Press the stop/clear key. The selected item appears.

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U099 (cont.)</td><td>
Method to set or check the original size detection threshold
1. Place an original on the contact glass and turn the original detection switch on. The original size detection starts and detection data is displayed.
2. Change the detection item using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Description</th><th>Data range</th><th>Initial setting</th></tr>
<tr><td>Exp. 1</td><td>Scanner data threshold</td><td>0 to 255</td><td>170</td></tr>
<tr><td>Exp. 2</td><td>Time between original detection switch turning on and reading-in of scanner data</td><td>0 to 100 ms</td><td>30</td></tr>
<tr><td>Exp. 3</td><td>Detected width for A4R</td><td>220/240 mm</td><td>240</td></tr>
<tr><td>Exp. 4</td><td>Detected original width</td><td>0 to 350 mm</td><td>-</td></tr>
<tr><td>Exp. 5</td><td>Original size detected by scanner data and original size sensor detection data</td><td>0 to 63*</td><td>-</td></tr>
</table>
*: See Paper size in U073 for the paper size for each setting.
3. To change the original size detection threshold, light exp. 1, 2 or 3 and change the setting using the zoom +/- keys.
4. Press the start key. The value is set.
5. Press the stop/clear key. The selected item appears.
Completion
Press the stop/clear key while a selection item is displayed. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U100</td><td>
Setting the main high voltage
Description
Changes the surface potential by changing the grid control voltage. Also performs main charging. Also changes the setting of main charging copy quantity correction.
Purpose
To set the surface potential or check main charging. Also used when reentering data after initializing the set data.
Start
1. Press the start key.
2. Select the item using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Description</th></tr>
<tr><td>Exp. 1 (lit)</td><td>Changing the grid control voltage</td></tr>
<tr><td>Exp. 2 (lit)</td><td>Turning the main charger on</td></tr>
<tr><td>Exp. 3 (lit)</td><td>Turning the main charger on and the laser scanner unit on and off</td></tr>
<tr><td>Exp. 4 (lit)</td><td>Main charging copy quantity correction, copy interval</td></tr>
<tr><td>Exp. 5 (lit)</td><td>Main charging copy quantity correction, copy quantity</td></tr>
<tr><td>Exp. 1 (flashing)</td><td>Main charging copy quantity correction, correction amount</td></tr>
</table>
Method for main charger output
1. Press the start key. The selected operation starts.
2. To stop operation, press the stop/clear key.
Setting the grid control voltage
1. Change the setting using the zoom +/- keys.
<table>
<tr><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Grid control voltage</td><td>0 to 255</td><td>132</td></tr>
</table>
Increasing the setting makes the surface potential higher, and decreasing it makes the potential lower.
Change in value per step: approximately 3.6 V
2. Press the start key. The value is set.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U100 (cont.)</td><td>
Setting the main charging copy quantity correction
1. Change the setting using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Setting</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Exp. 4 (lit)</td><td>Copy interval</td><td>1 to 255 (minute)</td><td>60</td></tr>
<tr><td>Exp. 5 (lit)</td><td>Copy quantity</td><td>1 to 255 (10 sheets)</td><td>50</td></tr>
<tr><td>Exp. 1 (flashing)</td><td>Correction amount</td><td>0 to 50 (bit)</td><td>10</td></tr>
</table>
Copy interval: Sets the time interval from the previous copying. If the time from the previous copying exceeds this preset value, the copy quantity counter will be reset.
Copy quantity: Sets the copy quantity from which copy quantity correction starts. When the copy quantity counter reaches this preset value, correction will start.
Correction amount: Sets the correction amount for copy quantity correction.
Set the values in the range from 5 to 120 minutes for copy interval, from 10 to 2,000 sheets for copy quantity, and from 5 to 50 bits for correction amount.
2. Press the start key. The value is set.
Supplement
While this maintenance item is being executed, test pattern output is available.
Completion
Press the stop/clear key when main charger output stops while a selection item is displayed. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U101</td><td>
Setting the other high voltages
Description
Changes the developing bias clock, the transfer and separation charging output timing.
Purpose
To check the developing bias clock, the transfer and separation charging output timing. Do not change the preset value.
Method
Press the start key.
Setting
1. Select the group to be set or checked using the image mode selection key.
2. Select the item to be set using the exposure adjustment keys.
<table>
<tr><th>Image mode LEDs</th><th>Exposure indicator</th><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>○ Text & Photo
○ Photo
● Text</td><td>Exp. 1 (lit)
Exp. 2 (lit)
Exp. 3 (lit)
Exp. 4 (lit)
Exp. 5 (lit)
Exp. 1 (flashing)
Exp. 2 (flashing)
Exp. 3 (flashing)</td><td>Developing bias clock frequency (copier)
Developing bias clock duty (copier)
Developing bias clock frequency (printer)
Developing bias clock duty (printer)
Transfer control voltage (large size)
Transfer control voltage (small size)
Transfer charging output OFF timing
Transfer charging output ON timing</td><td>2 to 255
1 to 99
2 to 255
1 to 99
0 to 255
0 to 255
0 to 255
0 to 255</td><td>27
45
22
45
166
177
37
35</td></tr>
<tr><td>○ Text & Photo
● Photo
● Text</td><td>Exp. 1 (lit)
Exp. 2 (lit)
Exp. 3 (lit)</td><td>Separation control voltage
Separation charging output ON timing
Separation charging output OFF timing</td><td>0 to 255
0 to 255
0 to 255</td><td>1
35
42</td></tr>
</table>
○ : Off, ● : On
3. Change the setting using the zoom +/- keys.
4. Press the start key. The value is set.
Supplement
While this maintenance item is being executed, test pattern output is available.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U110</td><td>
Checking/clearing the drum count
Description
Displays the drum counts for checking, clearing or changing a figure.
Purpose
To check the drum status. Also used to clear the count after replacing the drum during regular maintenance. Since the count was cleared before shipping, do not clear it when installing. A drum count value less than 150K, however, cannot be cleared.
Method
1. Press the start key.
2. Select the item using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Exp. 1</td><td>First 3 digits</td><td>000 to 999</td><td>000</td></tr>
<tr><td>Exp. 2</td><td>Last 3 digits</td><td>000 to 999</td><td>000</td></tr>
<tr><td>Exp. 3</td><td>Clearing the count</td><td>-</td><td>-</td></tr>
</table>
Clearing
1. Light exp. 3.
2. Press the start key. The count is cleared, and the indication for selecting a maintenance item No. appears.
Setting
1. Change the count using the numeric or zoom +/- keys.
2. Press the start key. The count is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U130</td><td>
Initial setting for the developing unit
Description
Executes toner install operation.
Purpose
To operate when installing the machine.
Method
1. Press the start key. "on" appears.
2. Press the start key.
Installation of toner starts and "10" is indicated in the copy quantity display. Each time one minute elapses, the indicated value decrements. When the installation is complete, "Gd" will be displayed if the installation is successful or "nG" will be displayed if it has failed.
3. To stop the installation in the middle, press the stop/clear key.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U144</td><td>
Setting toner loading operation
Description
Sets toner loading operation.
Purpose
To run when drum filming (background blur in paper edge section) occurs.
Method
Press the start key.
Setting
1. Select either "on" or "oFF" using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>on</td><td>Toner loaded</td></tr>
<tr><td>oFF</td><td>Toner not loaded</td></tr>
</table>
Initial setting: oFF
2. Press the start key. The setting is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U157</td><td>
Checking/clearing the developing drive time
Description
Displays the developing drive time for checking, clearing or changing a figure.
Purpose
To check the developing drive time after replacing the developer unit.
Method
1. Press the start key.
2. Select the item using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Exp. 1</td><td>First 3 digits</td><td>000 to 999</td><td>000</td></tr>
<tr><td>Exp. 2</td><td>Last 3 digits</td><td>000 to 999</td><td>000</td></tr>
<tr><td>Exp. 3</td><td>Clearing the drive time</td><td>-</td><td>-</td></tr>
</table>
Clearing
1. Light exp. 3.
2. Press the start key. The drive time is cleared, and the indication for selecting a maintenance item No. appears.
Setting
1. Change the drive time using the numeric or zoom +/- keys.
2. Press the start key. The drive time is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U158</td><td>
Checking the developing count
Description
Displays the developing count.
Purpose
To check the developing count.
Method
1. Press the start key.
2. Select the item using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Copy quantity display</th></tr>
<tr><td>Exp. 1</td><td>First 3 digits of the developing count</td></tr>
<tr><td>Exp. 2</td><td>Last 3 digits of the developing count</td></tr>
</table>
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U161</td><td>
Setting the fuser control temperature
Description
Changes the fuser control temperature.
Purpose
Normally no change is necessary. However, can be used to prevent curling or creasing of paper, or solve a fuser problem on thick paper.
Method
Press the start key.
Setting
1. Select the item to be set using the exposure adjustment keys.
2. Change the setting using the zoom +/- keys.
<table>
<tr><th>Exposure indicator</th><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Exp. 1 (lit)</td><td>Primary stabilization fuser temperature</td><td>120 to 185 (°C)</td><td>140</td></tr>
<tr><td>Exp. 2 (lit)</td><td>Secondary stabilization fuser temperature</td><td>120 to 185 (°C)</td><td>160</td></tr>
<tr><td>Exp. 3 (lit)</td><td>Copying operation temperature 1</td><td>160 to 220 (°C)</td><td>170</td></tr>
<tr><td>Exp. 4 (lit)</td><td>Copying operation temperature 2</td><td>160 to 220 (°C)</td><td>180</td></tr>
<tr><td>Exp. 5 (lit)</td><td>Number of sheets for fuser control</td><td>1 to 99</td><td>5</td></tr>
<tr><td>Exp. 1 (flashing)</td><td>Number of sheets for fuser control (thick paper)</td><td>1 to 99</td><td>20</td></tr>
</table>
Copying operation temperature 1: Temperature in copying operation at the start of copying
Copying operation temperature 2: Temperature in copying operation after the specified number of sheets for fuser control have passed
Number of sheets for fuser control: The number of sheets to be counted for switching from copying operation temperature 1 to copying operation temperature 2
The temperatures are to be set such that Secondary stabilization ≧ Primary stabilization.
3. Press the start key. The value is set.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U162</td><td>Stabilizing fuser forcibly
Description
Stops the stabilization fuser drive forcibly, regardless of fuser temperature.
Purpose
To forcibly stabilize the machine before the fuser section reaches stabilization temperature.
Method
1. Press the start key. "on" appears.
2. Press the start key. The forced stabilization mode is entered, and stabilization operation stops regardless of fuser temperature. The indication for selecting a maintenance item No. appears. To exit the forced stabilization mode, turn the power off and on.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.</td></tr>
<tr><td>U163</td><td>Resetting the fuser problem data
Description
Resets the detection of a service call code indicating a problem in the fuser section.
Purpose
To prevent accidents due to an abnormally high fuser temperature.
Method
1. Press the start key. "CLE" appears.
2. Press the start key. The fuser problem data is initialized.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.</td></tr>
<tr><td>U167</td><td>Checking the fuser count
Description
Displays the fuser count.
Purpose
To check the fuser count.
Method
1. Press the start key.
2. Select the item using the exposure adjustment keys.
<table><tr><th>Exposure indicator</th><th>Copy quantity display</th></tr><tr><td>Exp. 1</td><td>First 3 digits of the fuser count</td></tr><tr><td>Exp. 2</td><td>Last 3 digits of the fuser count</td></tr></table>Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U198</td><td>
Setting the fuser phase control
Description
Sets the use of fuser phase control to reduce electrical noise generated by the copier.
Purpose
Normally no change is necessary. If electrical noise generated by the copier causes flickering of the lights around the copier, select fuser phase control to reduces the noise.
Method
Press the start key.
Setting
1. Select either "on" or "oFF" using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>on</td><td>Fuser phase control present</td></tr>
<tr><td>oFF</td><td>Fuser phase control absent</td></tr>
</table>
Initial setting: oFF
2. Press the start key. The setting is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U199</td><td>
Checking the fuser temperature
Description
Displays the fuser temperature, the ambient temperature and the absolute humidity.
Purpose
To check the fuser temperature, the ambient temperature and the absolute humidity.
Method
1. Press the start key.
2. Display each temperature using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Description</th></tr>
<tr><td>Exp. 1</td><td>Fuser temperature (°C)</td></tr>
<tr><td>Exp. 2</td><td>Ambient temperature (°C)</td></tr>
<tr><td>Exp. 3</td><td>Absolute humidity (%)</td></tr>
</table>
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U200</td><td>
Turning all LEDs on
Description
Turns all the LEDs on the operation panel on.
Purpose
To check if all the LEDs on the operation panel light.
Method
Press the start key. All the LEDs on the operation panel light. Press the stop/clear key or wait for 10 s.
The LEDs turns off, and the indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U202</td><td>
Setting the KMAS host monitoring system
Description
Initializes or operates the KMAS host monitoring system.
This is an optional device which is currently supported only by Japanese specification machines, so no setting is necessary.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U203</td><td>
Operating DP separately
Description
Simulates the original conveying operation separately in the DP.
Purpose
To check the DP.
Method
1. Press the start key.
2. Place an original on the DP if running this simulation with paper.
3. Select the item to be operated using the exposure adjustment keys.
<table>
<tr><th>Display (exposure indicator)</th><th>Operation</th></tr>
<tr><td>d-P (exp. 1)</td><td>With paper</td></tr>
<tr><td>d-n (exp. 2)</td><td>Without paper (continuous operation)</td></tr>
<tr><td>dp2 (exp. 3)</td><td>With paper (duplex mode)</td></tr>
<tr><td>dn2 (exp. 4)</td><td>Without paper (duplex mode)</td></tr>
</table>
4. Press the start key. The operation starts.
5. To stop continuous operation, press the stop/clear key.
Completion
Press the stop/clear key when the operation stops. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U204</td><td>
Setting the presence or absence of a key card or key counter
Description
Sets the presence or absence of the optional key card or key counter.
Purpose
To run this maintenance item if a key card or key counter is installed.
Method
Press the start key.
Setting
1. Select the item using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>oFF</td><td>None</td></tr>
<tr><td>Crd</td><td>The key card is installed</td></tr>
<tr><td>Cnt</td><td>The key counter is installed</td></tr>
</table>
Initial setting: oFF
2. Press the start key. The setting is set and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U207</td><td>
Checking the operation panel keys
Description
Checks operation of the operation panel keys.
Purpose
To check operation of all the keys and LEDs on the operation panel.
Method
1. Press the start key.
2. "1" appears on the copy quantity display and the leftmost LED on the operation panel lights.
3. As the keys on the operation panel are pressed in order from the left to right, the figure shown on the copy quantity display increases in increments of 1. If there is an LED corresponding to the key pressed, the LED will light.
4. When all the keys on the operation panel have been pressed, all the LEDs light for up to 10 seconds.
5. When the LEDs go off, press the start key. All the LEDs light for 10 seconds again.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U243</td><td>
Checking the operation of the DP motors and solenoids
Description
Turns the motors and solenoids in the optional DP on.
Purpose
To check the operation of the DP motors and solenoids.
Method
1. Press the start key.
2. Select the motor or solenoid to be operated using the exposure adjustment keys.
3. Press the start key. The operation starts.
<table>
<tr><th>Display (exposure indicator)</th><th>Motor</th></tr>
<tr><td>F-0 (exp. 1)</td><td>Original feed motor (OFM)</td></tr>
<tr><td>C-0 (exp. 2)</td><td>Original conveying motor (OCM)</td></tr>
<tr><td>b-S (exp. 3)</td><td>Switchback feedshift solenoid (SBFSSOL)</td></tr>
<tr><td>P-S (exp. 4)</td><td>Switchback pressure solenoid (SBPSOL)</td></tr>
</table>
4. To turn each motor off, press the stop/clear key.
Completion
Press the stop/clear key when operation stops. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U244</td><td>
Checking the DP switches
Description
Displays the status of the switches in the optional DP.
Purpose
To check if switches in the DP operate correctly.
Method
1. Press the start key.
2. Turn each switch on and off manually to check the status. When the on-status of a switch is detected, the LEDs on the operation panel corresponding to the operated switch lights.
<table>
<tr><th>LEDs</th><th>Switch</th></tr>
<tr><td>Auto Exp.</td><td>Original set switch (OSSW)</td></tr>
<tr><td>Text & Photo</td><td>DP timing switch (DPTSW)</td></tr>
<tr><td>Photo</td><td>Original detection switch (ODSW)</td></tr>
<tr><td>Text</td><td>DP original cover switch (DPOCSW)</td></tr>
<tr><td>EcoPrint</td><td>Original switchback switch (OSBSW)</td></tr>
<tr><td>Program</td><td>Original size length switch (OSLSW)</td></tr>
</table>
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U250</td><td>
Setting the maintenance cycle
Description
Displays and changes the maintenance cycle.
Purpose
To check and change the maintenance cycle.
Method
1. Press the start key.
2. Select the item using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Exp. 1</td><td>First 3 digits</td><td>000 to 999</td><td>150</td></tr>
<tr><td>Exp. 2</td><td>Last 3 digits</td><td>000 to 999</td><td>000</td></tr>
</table>
3. Change the setting using the numeric or zoom +/- keys.
4. Press the start key. The value is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U251</td><td>
Checking/clearing the maintenance count
Description
Displays, clears and changes the maintenance count.
Purpose
To check the maintenance count. Also to clear the count during maintenance service.
Method
1. Press the start key.
2. Select the item using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Exp. 1</td><td>First 3 digits</td><td>000 to 999</td><td>000</td></tr>
<tr><td>Exp. 2</td><td>Last 3 digits</td><td>000 to 999</td><td>000</td></tr>
<tr><td>Exp. 3</td><td>Clearing the count</td><td>-</td><td>-</td></tr>
</table>
Clearing
1. Light exp. 3.
2. Press the start key. The count is cleared, and the indication for selecting a maintenance item No. appears.
Setting
1. Change the count using the numeric or zoom +/- keys.
2. Press the start key. The count is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U252</td><td>
Setting the destination
Description
Switches the operations and screens of the machine according to the destination.
Purpose
To return the destination setting to its default setting after initializing the backup RAM by running maintenance item U020.
Method
Press the start key.
Setting
1. Select the destination using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>Jpn</td><td>Metric (Japan) specifications</td></tr>
<tr><td>Inc</td><td>Inch (North America) specifications</td></tr>
<tr><td>EUP</td><td>Metric (Europe) specifications</td></tr>
<tr><td>ASA</td><td>Metric (Asia Pacific) specifications</td></tr>
<tr><td>Chn</td><td>Chinese specifications</td></tr>
</table>
2. Press the start key. The setting is set, and the machine automatically returns to the same status as when the power is turned on.
Completion
To exit this maintenance item without changing the current count, press the stop/clear key. The indication for selecting a maintenance item No. appears.
Supplement
The specified initial settings are provided according to the destinations in the maintenance items below. To change the initial settings in those items, be sure to run maintenance item U021 after changing the destination.
Initial setting according to the destinations
<table>
<tr><th>Maintenance item No.</th><th>Title</th><th>Japan</th><th>Inch</th><th>Europe Metric, Asia Pacific, China</th></tr>
<tr><td>253</td><td>Switching between double and single counts</td><td>Single</td><td>Double</td><td>Double</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U253</td><td>
Switching between double and single counts
Description
Switches the count system for the total counter and other counters.
Purpose
According to user (copy service provider) request, select if A3/11" x 17" paper is to be counted as one sheet (single count) or two sheets (double count).
Method
Press the start key.
Setting
1. Select the item using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>Sin</td><td>Single count for all size paper</td></tr>
<tr><td>-b4</td><td>Double count for B4 size or larger</td></tr>
<tr><td>-A3</td><td>Double count for A3/11" x 17" paper only</td></tr>
</table>
Initial setting: -A3
2. Press the start key. The setting is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U254</td><td>
Turning auto start function on/off
Description
Selects if the auto start function is turned on.
Purpose
Normally no change is necessary. If incorrect operation occurs, turn the function off: this may solve the problem.
Method
Press the start key.
Setting
1. Select either "on" or "oFF" using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>on</td><td>Auto start function on</td></tr>
<tr><td>oFF</td><td>Auto start function off</td></tr>
</table>
Initial setting: on
2. Press the start key. The setting is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U258</td><td>
Switching copy operation at toner empty detection
Description
Selects if continuous copying is enabled after toner empty is detected.
Method
Press the start key.
Setting
1. Select single or continuous copying using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>Sin</td><td>Enables only single copying.</td></tr>
<tr><td>Con</td><td>Enables single and continuous copying.</td></tr>
</table>
Initial setting: Sin
2. Press the start key. The setting is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U260</td><td>
Changing the copy count timing
Description
Changes the copy count timing for the total counter and other counters.
Purpose
To be set according to user (copy service provider) request. If a paper jam occurs frequently in the eject section when the number of copies is counted at the time of paper ejection, copies are provided without copy counts. The copy service provider cannot charge for such copying. To prevent this, the copy timing should be made earlier. If a paper jam occurs frequently in the paper conveying or fuser sections when the number of copies is counted before the paper reaches those sections, copying is charged without a copy being made. To prevent this, the copy timing should be made later.
Method
Press the start key.
Setting
1. Select the copy count timing using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>FEd</td><td>When secondary paper feed starts</td></tr>
<tr><td>EJE</td><td>When the paper is ejected</td></tr>
</table>
Initial setting: EJE
2. Press the start key. The setting is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U265</td><td>
Setting the destination specifications
Description
Sets whether or not to print the product name on the reports that users print.
Purpose
To be set according to user request.
Method
Press the start key.
Setting
1. Enter "0" or "2" using the zoom +/- keys.
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>0</td><td>Product name printed</td></tr>
<tr><td>2</td><td>Product name not printed</td></tr>
</table>
Initial setting: 0
2. Press the start key. The setting is set.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U277</td><td>
Setting auto application change time
Description
Sets the time that passes until the machine starts automatically printing after completing copying or operation when the machine is used as a printer.
Purpose
According to user request, changes the setting.
Method
Press the start key.
Setting
1. Change the setting using the zoom +/- keys.
<table>
<tr><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Switching time</td><td>30 to 270 (s)</td><td>30</td></tr>
</table>
The setting can be changed by 30 s per step.
2. Press the start key. The value is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U332</td><td>
Setting the size conversion factor
Description
Sets the coefficient of nonstandard sizes in relation to the A4/11" x 8 1/2" size. The coefficient set here is used to convert the black ratio in relation to the A4/11" x 8 1/2" size and to display the result in user simulation.
Purpose
To set the coefficient for converting the black ratio for nonstandard sizes in relation to the A4/11" x 8 1/2" size for copying and printing respectively.
Method
Press the start key.
Setting
1. Change the setting using the zoom +/- keys.
<table>
<tr><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Size conversion factor</td><td>0.0 to 3.0</td><td>1.0</td></tr>
</table>
2. Press the start key. The value is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U341</td><td>
Specific paper feed location setting for printing function
Description
Sets a paper feed location specified for printer output.
Purpose
To use a paper feed location only for printer output. A paper feed location specified for printer output cannot be used for copy output.
Method
Press the start key.
Setting
1. Select the paper feed location for the printer using the exposure adjustment keys.
2. Select "on" or "oFF" using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>Exp. 1</td><td>Drawer</td></tr>
<tr><td>Exp. 2</td><td>Optional first paper feeder</td></tr>
<tr><td>Exp. 3</td><td>Optional second paper feeder</td></tr>
<tr><td>Exp. 4</td><td>Optional third paper feeder</td></tr>
</table>
3. Press the start key. The setting is set. The indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U342</td><td>
Setting the ejection restriction
Description
Sets or cancels the restriction on the number of sheets to be ejected continuously. When the restriction is set, the number of sheets that can be ejected continuously to the internal eject tray will be limited to 250.
Purpose
According to user request, sets or cancels restriction on the number of sheets.
Method
Press the start key.
Setting
1. Select "on" or "oFF" using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>on</td><td>The number of sheets restricted.</td></tr>
<tr><td>oFF</td><td>The number of sheets not restricted.</td></tr>
</table>
Initial setting: on
2. Press the start key. The setting is set. The indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U343</td><td>
Switching between duplex/simplex copy mode
Description
Switches the Initial setting between duplex and simplex copy.
Purpose
To be set, according to frequency of use, to the more frequently used mode.
Method
Press the start key.
Setting
1. Select "on"or "oFF"using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>on</td><td>Duplex copy</td></tr>
<tr><td>oFF</td><td>Simplex copy</td></tr>
</table>
Initial setting: Simplex copy
2. Press the start key. The setting is set. The indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U344</td><td>
Setting preheat/energy saver mode
Description
Changes the control for preheat/energy saver mode.
Purpose
To be set according to user request.
Method
Press the start key.
Setting
1. Change the setting using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>0</td><td>ENERGY STAR</td></tr>
<tr><td>1</td><td>GEEA</td></tr>
</table>
Initial setting: ENERGY STAR
If GEEA is set, the Auto off mode setting is fixed to ON and cannot be changed. The maximum time for entering the low power mode and the off mode becomes 120 minutes.
2. Press the start key. The setting is set. The indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U345</td><td>
Setting the value for maintenance due indication
Description
Sets when to display a message notifying that the time for maintenance is about to be reached, by setting the number of copies that can be made before the current maintenance cycle ends.
When the difference between the number of copies of the maintenance cycle and that of the maintenance count reaches the set value, the message is displayed.
This maintenance mode is effective for only Japanese specification.
</td></tr>
</table>

Maintenance item No.	Description
U402	**Adjusting margins of image printing** **Description** Adjusts margins for image printing. **Purpose** Make the adjustment if margins are incorrect. **Adjustment** 1. Press the start key. 2. Select the item using the exposure adjustment keys.

Exposure indicator	Description	Setting range	Initial setting	Change in value per step
Exp. 1	Printer leading edge margin	0.0 to 10.0	3.0	0.5 mm
Exp. 2	Printer left/right margins	-3.4 to 10.0	3.0	0.5 mm
Exp. 3	Printer trailing edge margin	-5.0 to 10.0	4.0	0.5 mm

3. Press the interrupt key.
4. Press the start key to output a test pattern.
5. Change the setting value using the zoom +/- keys.
   Increasing the value makes the margin wider, and decreasing it makes the margin narrower.

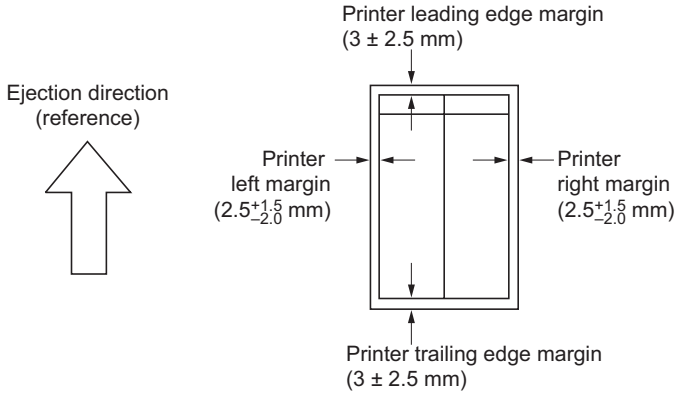
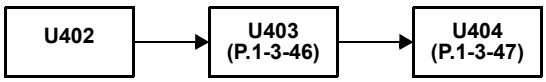


Figure 1-3-15

6. Press the start key. The value is set.

Caution
Check the copy image after the adjustment. If the image is still incorrect, perform the following adjustments in maintenance mode.



Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.

Maintenance item No.	Description
U403	**Adjusting margins for scanning an original on the contact glass** **Description** Adjusts margins for scanning the original on the contact glass. **Purpose** Make the adjustment if margins are incorrect. **Caution** Before making this adjustment, ensure that the following adjustments have been made in maintenance mode U402 (P.1-3-45) → U403 → U404 (P.1-3-47) **Adjustment** 1. Press the start key. 2. Select the item using the exposure adjustment keys.

Exposure indicator	Description	Setting range	Initial setting	Change in value per step
Exp. 1	Scanner left margin	0.0 to 10.0	2.0	0.5 mm
Exp. 2	Scanner leading edge margin	0.0 to 10.0	3.0	0.5 mm
Exp. 3	Scanner right margin	0.0 to 10.0	2.0	0.5 mm
Exp. 4	Scanner trailing edge margin	0.0 to 10.0	2.0	0.5 mm

3. Press the interrupt key.
4. Place an original and press the start key to make a test copy.
5. Change the setting value using the zoom +/- keys.
   Increasing the value makes the margin wider, and decreasing it makes the margin narrower.

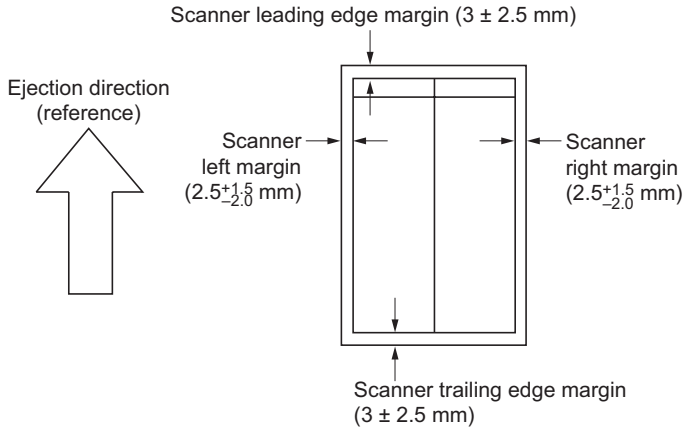


Figure 1-3-16

6. Press the start key. The value is set.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

Maintenance item No.	Description
U404	**Adjusting margins for scanning an original from the DP** **Description** Adjusts margins for scanning the original from the DP. **Purpose** Make the adjustment if margins are incorrect when the optional DP is used. **Caution** Before making this adjustment, ensure that the following adjustments have been made in maintenance mode U402 (P.1-3-45) → U403 (P.1-3-46) → U404 **Adjustment** 1. Press the start key. 2. Select the item using the exposure adjustment keys.

Exposure indicator	Description	Setting range	Initial setting	Change in value per step
Exp. 1	Left margin	0.0 to 10.0	2.0	0.5 mm
Exp. 2	Leading edge margin	0.0 to 10.0	3.0	0.5 mm
Exp. 3	Right margin	0.0 to 10.0	2.0	0.5 mm
Exp. 4	Trailing edge margin	0.0 to 10.0	2.0	0.5 mm

3. Press the interrupt key.
4. Place an original on the DP and press the start key to make a test copy.
5. Change the setting value using the zoom +/- keys.
   Increasing the value makes the margin wider, and decreasing it makes the margin narrower.

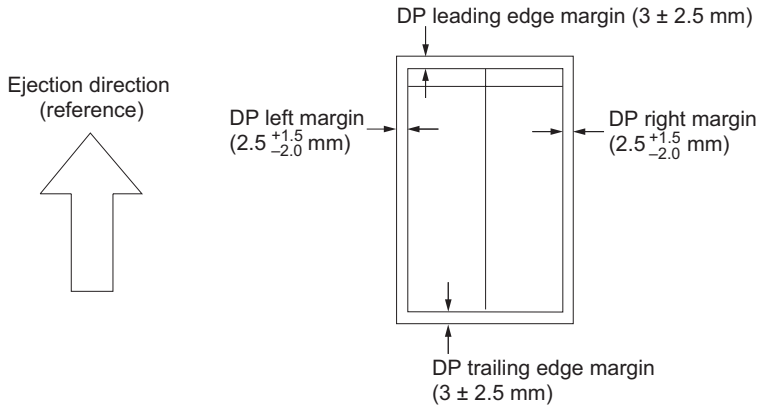


Figure 1-3-17

6. Press the start key. The value is set.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

Maintenance item No.	Description
U407	**Adjusting the leading edge registration for memory image printing** **Description** Adjusts the leading edge registration during memory copying. **Purpose** Make the adjustment if there is a regular error between the leading edges of the copy image and original during memory copying. **Caution** Before making this adjustment, ensure that the following adjustments have been made in maintenance mode U053 (P.1-3-16) → U034 (P.1-3-12) → U065 (P.1-3-18) → U066 (P.1-3-19) → U407 **Adjustment** 1. Press the start key.

Description	Setting range	Initial setting	Change in value per step
Leading edge registration for memory image printing	-10.0 to 10.0	0.0	1.0 mm

2. Press the interrupt key.
3. Place an original and press the start key to make a test copy.
4. Change the setting value using the zoom +/- keys.
   For copy example 1, increase the value.
   For copy example 2, decrease the value.

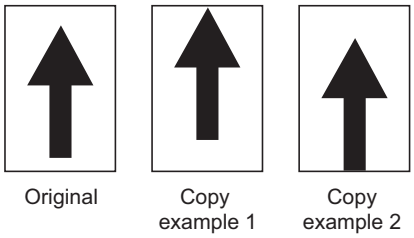


Figure 1-3-18

5. Press the start key. The value is set.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

Maintenance item No.	Description
U901	**Checking/clearing copy counts by paper feed locations** **Description** Displays or clears copy counts by paper feed locations. **Purpose** To check the time to replace consumable parts. Also to clear the counts after replacing the consumable parts. **Method** 1. Press the start key. 2. Select the paper feed location (group No.) for which the count is to be checked or cleared using the image mode selection key. 3. Select the item using the exposure adjustment keys.

Image mode LED (group No.)		Exposure indicator	Copy quantity display (count value)
1	○ Text & Photo ○ Photo ● Text	Exp. 1 Exp. 2 Exp. 3	First 3 digits of MP copy count Last 3 digits of MP copy count Clearing the count (CLE)
2	○ Text & Photo ● Photo ● Text	Exp. 1 Exp. 2 Exp. 3	First 3 digits of the drawer copy count Last 3 digits of the drawer copy count Clearing the count (CLE)
3	● Text & Photo ● Photo ● Text	Exp. 1 Exp. 2 Exp. 3	First 3 digits of the first paper feeder copy count Last 3 digits of the first paper feeder copy count Clearing the count (CLE)
4	● Text & Photo ● Photo ☼ Text	Exp. 1 Exp. 2 Exp. 3	First 3 digits of the second paper feeder copy count Last 3 digits of the second paper feeder copy count Clearing the count (CLE)
5	● Text & Photo ☼ Photo ☼ Text	Exp. 1 Exp. 2 Exp. 3	First 3 digits of the third paper feeder copy count Last 3 digits of the third paper feeder copy count Clearing the count (CLE)
6	☼ Text & Photo ☼ Photo ☼ Text	Exp. 1 Exp. 2 Exp. 3	First 3 digits of the duplex unit copy count Last 3 digits of the duplex unit copy count Clearing the count (CLE)
7	● Text & Photo ● Photo ☼ Text	Exp. 1	Clearing all counts (CLE)

○ : Off, ● : On, ☼ : Flashing

When no optional paper feed device is installed, the counts corresponding to optional paper feed devices will not appear.

Clearing copy counts by paper feed locations

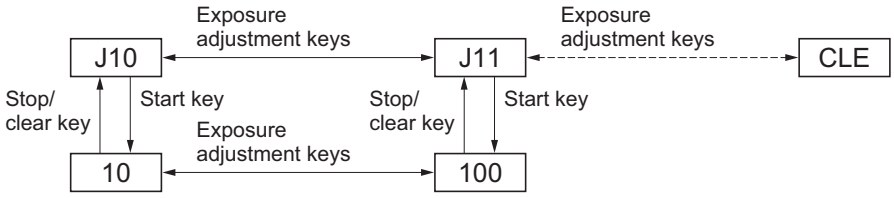
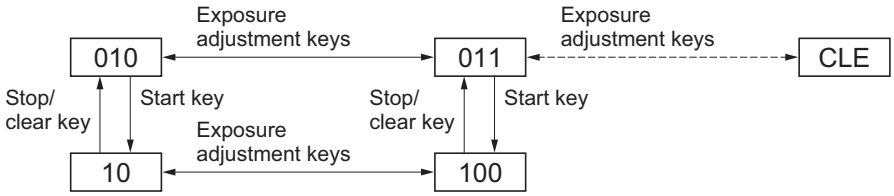
1. Select the paper feed location to clear the count.
2. Light exp. 3 using the exposure adjustment key.
3. Press the start key. The count is cleared.

Clearing copy counts for all paper feed locations

1. Select group 7.
2. Press the start key. The counts are cleared.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

Maintenance item No.	Description
U903	**Checking/clearing the paper jam counts** **Description** Displays or clears the jam counts by jam locations. **Purpose** To check the paper jam status. Also to clear the jam counts after replacing consumable parts. **Method** 1. Press the start key. 2. Display the jam code to check the count using the exposure adjustment keys. 3. Press the start key. The jam count appears. If the jam count is a 4-digit value, the first digit and the last 3 digits are displayed alternately. 4. Press the stop/clear key. The jam code appears again.  **Figure 1-3-19** **Clearing all jam counts** 1. Display "CLE" using the exposure adjustment keys. Jam counts cannot be cleared individually. 2. Press the start key. The counts are cleared. **Completion** Press the stop/clear key. The indication for selecting a maintenance item No. appears.
U904	**Checking/clearing the service call counts** **Description** Displays or clears the service call code counts by types. **Purpose** To check the service call code status by types. Also to clear the service call code counts after replacing consumable parts. **Method** 1. Press the start key. 2. Display the service call code to check the count using the exposure adjustment keys. 3. Press the start key. The service call count appears. If the service call count is a 4-digit value, the first digit and the last 3 digits are displayed alternately. 4. Press the stop/clear key. The service call code appears again.  **Figure 1-3-20** **Clearing counts by service call codes** 1. Display the service call code to clear the count. 2. Press the reset key. The count is cleared. **Clearing all service call counts** 1. Display "CLE" using the exposure adjustment keys. 2. Press the start key. The counts are cleared. **Completion** Press the stop/clear key. The indication for selecting a maintenance item No. appears.

Maintenance item No.	Description
U905	**Checking/clearing counts by the DP** **Description** Displays or clears the counts of the optional DP. **Purpose** To check the use of the DP. Also to clear the counts after replacing consumable parts. **Method** 1. Press the start key. 2. Select the count (group No.) to be checked or cleared using the image mode selection key. 3. Select the item using the exposure adjustment keys.

Image mode LED (group No.)		Exposure indicator	Copy quantity display (count value)
1	○ Text & Photo ○ Photo ● Text	Exp. 1 Exp. 2 Exp. 3	First 3 digits of the number of original replacement Last 3 digits of the number of original replacement Clearing the count (CLE)
2	○ Text & Photo ● Photo ● Text	Exp. 1 Exp. 2 Exp. 3	First 3 digits of the double-sided original feed count Last 3 digits of the double-sided original feed count Clearing the count (CLE)
3	● Text & Photo ● Photo ● Text	Exp. 1	Clearing all counts (CLE)

○ : Off, ● : On

Clearing
1. Select the count to be cleared.
2. Light exp. 3 using the exposure adjustment keys.
3. Press the start key. The count is cleared.

Clearing copy counts for all counts
1. Select group 3.
2. Press the start key. The counts are cleared.

Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U908</td><td>
Checking the total count
Description
Display the total count value.
Purpose
To check the total count value.
Method
1. Press the start key.
2. Select the item using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Copy quantity display (count value)</th></tr>
<tr><td>Exp. 1</td><td>First 3 digits of the total count</td></tr>
<tr><td>Exp. 2</td><td>Last 3 digits of the total count</td></tr>
</table>
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U910</td><td>
Clearing the black ratio data
Description
Clears the accumulated black ratio data for A4/11" x 8 1/2" sheets.
Purpose
To clear data as required at times such as during maintenance service.
Method
1. Press the start key.
2. Select "on" using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Operation</th></tr>
<tr><td>- - -</td><td>Canceling the clearing</td></tr>
<tr><td>on</td><td>Executing the clearing</td></tr>
</table>
3. Press the start key. The accumulated black ratio data is cleared.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

Maintenance item No.	Description
U911	**Checking/clearing copy counts by paper size** **Description** Displays or clears the paper feed count value by paper size. **Purpose** To check the time to replace consumable parts. Also to clear the counts after replacing the consumable parts. **Method** 1. Press the start key. 2. Select the paper size (group No.) for which the count is to be checked or cleared using the image mode selection key. 3. Select the item using the exposure adjustment keys.

Image mode LED (group No.)		Exposure indicator	Copy quantity display (count value)
1	○ Text & Photo ○ Photo ● Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	"-A3" display the A3 size First 3 digits of A3 size copy count Last 3 digits of A3 size copy count Clearing the count (CLE)
2	○ Text & Photo ● Photo ● Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	"-b4" display the B4 size First 3 digits of B4 size copy count Last 3 digits of B4 size copy count Clearing the count (CLE)
3	● Text & Photo ● Photo ● Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	"-A4" display the A4 size First 3 digits of A4 size copy count Last 3 digits of A4 size copy count Clearing the count (CLE)
4	● Text & Photo ● Photo ☼ Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	"-b5" display the B5 size First 3 digits of FOLIO size copy count Last 3 digits of FOLIO size copy count Clearing the count (CLE)
5	● Text & Photo ☼ Photo ☼ Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	"-A5" display the A5 size First 3 digits of Legal size copy count Last 3 digits of Legal size copy count Clearing the count (CLE)
6	☼ Text & Photo ☼ Photo ☼ Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	"-A6" display the A6 size First 3 digits of Letter size copy count Last 3 digits of Letter size copy count Clearing the count (CLE)
7	● Text & Photo ● Photo ☼ Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	"-Fo" display the FOLIO size First 3 digits of FOLIO size copy count Last 3 digits of FOLIO size copy count Clearing the count (CLE)
8	● Text & Photo ☼ Photo ☼ Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	"-Ld" display the Ledger size First 3 digits of Ledger size copy count Last 3 digits of Ledger size copy count Clearing the count (CLE)
9	☼ Text & Photo ☼ Photo ☼ Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	"-Lg" display the Legal size First 3 digits of Legal size copy count Last 3 digits of Legal size copy count Clearing the count (CLE)

○ : Off, ● : On, ☼ : Flashing

Maintenance item No.	Description
U911 (cont.)	

Image mode LED (group No.)		Exposure indicator	Copy quantity display (count value)
10	● Text & Photo ● Photo ☼ Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	"-Lt" display the Letter size First 3 digits of Letter size copy count Last 3 digits of Letter size copy count Clearing the count (CLE)
11	● Text & Photo ☼ Photo ☼ Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	"-St" display the Statement size First 3 digits of Statement size copy count Last 3 digits of Statement size copy count Clearing the count (CLE)
12	☼ Text & Photo ☼ Photo ☼ Text	Exp. 1 (lit) Exp. 2 (lit) Exp. 3 (lit) Exp. 4 (lit)	"-ot" display the other size First 3 digits of other size copy count Last 3 digits of other size copy count Clearing the count (CLE)
13	● Text & Photo ● Photo ☼ Text	Exp. 1 (lit)	Clearing all counts (CLE)

○ : Off, ● : On, ☼ : Flashing

Clearing copy counts by paper size

1. Select the paper size to clear the count.
2. Display "CLE" using the exposure adjustment keys.
3. Press the start key. The count is cleared.

Clearing copy counts for all paper size

1. Select group 13.
2. Press the start key. The counts are cleared.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

U920

Checking the accounting counts

Description

Checks the accounting counts.

Purpose

To check the accounting counts.

Method

1. Press the start key.
2. Select the item for which the count is to be checked using the image mode selection key.
3. Select the item using the exposure adjustment keys.

Image mode LED (group No.)		Exposure indicator	Copy quantity display (count value)
1	○ Text & Photo ○ Photo ● Text	Exp. 1 Exp. 2	First 3 digits of copy count Last 3 digits of copy count
2	○ Text & Photo ● Photo ● Text	Exp. 1 Exp. 2	First 3 digits of printer count Last 3 digits of printer count

○ : Off, ● : On

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U927</td><td>
Clearing the all accounting counts and machine life counter
Description
Clears the total count and the scanner count. The counts, however, can be cleared only one time. If either of the total count or the scanner count exceeds 1,000, this mode cannot be run.
Purpose
To start the counters with value 0 when installing the machine.
Method
1. Press the start key. If the counters have been already cleared or either of the total counter or the scanner counter exceeds 1,000, this mode cannot be run and "nG" is displayed.
2. Select "on" using the zoom +/- keys.
<table>
<tr><th>Display</th><th>Operation</th></tr>
<tr><td>- - -</td><td>Canceling the clearing</td></tr>
<tr><td>on</td><td>Executing the clearing</td></tr>
</table>
3. Press the start key. The accounting counter is cleared.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U928</td><td>
Checking the machine life count
Description
Displays the machine life counts for checking a figure.
Purpose
To check machine status.
Method
1. Press the start key.
2. Select the item using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Exp. 1</td><td>First 3 digits</td><td>000 to 999</td><td>000</td></tr>
<tr><td>Exp. 2</td><td>Last 3 digits</td><td>000 to 999</td><td>000</td></tr>
</table>
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U941</td><td>
Setting the default magnification ratio of the default cassette
Description
Sets the default magnification ratio when paper selection of copy default setting is set to the default cassette.
Purpose
To be set according to user request.
Method
Press the start key.
Setting
1. Select the magnification using the exposure adjustment keys.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>100</td><td>100% magnification</td></tr>
<tr><td>Aut</td><td>Auto magnification selection</td></tr>
</table>
Initial setting: 100% magnification
2. Press the start key. The setting is set. The indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U942</td><td>
Setting of amount of slack for feeding from DP
Description
Adjusts the amount of slack generated when the optional DP is used.
Purpose
Use this mode if an original non-feed jam, oblique feed or wrinkling of original occurs when the DP is used.
Method
Press the start key.
Setting
1. Select the item using the exposure adjustment keys.
2. Change the setting using the zoom +/- keys.
<table>
<tr><th>Exposure indicator</th><th>Description</th><th>Setting range</th><th>Initial setting</th></tr>
<tr><td>Exp. 1</td><td>Original conveying motor (OCM)
(in duplex feed)</td><td>-10 to 20</td><td>0</td></tr>
<tr><td>Exp. 2</td><td>Original feed motor (OFM)
(in simplex feed)</td><td>-10 to 20</td><td>0</td></tr>
</table>
The greater the value, the larger the amount of slack; the smaller the value, the smaller the amount of slack.
If an original non-feed jam or oblique feed occurs, increase the setting value. If wrinkling of original occurs, decrease the value.
3. Press the start key. The value is set.
Supplement
While this maintenance item is being executed, test copying from an original is available.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

Maintenance item No.	Description
U955	**Setting operation panel type** **Description** Sets the type of operation panel and LCD device. **Purpose** To set the type of operation panel and LCD device when the setting value is initialized by U020 on the machine with the operation panel for Taiwan or the LCD that displays Kanji. **Start** 1. Press the start key. 2. Select the item to be adjusted using the image mode selection key.

Image mode LEDs	Description
○ Text & Photo ○ Photo ● Text	Sets the type of operation panel
○ Text & Photo ● Photo ● Text	Sets the type of LCD device type

○ : Off, ● : On

Setting: operation panel type

1. Change the setting using the zoom +/- keys.

Display	Description
0	Off
1	Operation panel for Taiwan

Initial setting: 0

2. Press the start key. The setting is set. The indication for selecting a maintenance item No. appears.

Setting: LCD device type

1. Change the setting using the zoom +/- keys.

Display	Description
0	General LCD
1	Kanji display LCD

Initial setting: 0

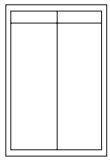
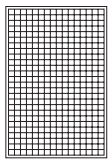
2. Press the start key. The setting is set. The indication for selecting a maintenance item No. appears.

Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

<table>
<tr><th>Maintenance item No.</th><th>Description</th></tr>
<tr><td>U990</td><td>
Checking/clearing the time for the exposure lamp to light
Description
Displays or clears the accumulated time for the exposure lamp to light.
Purpose
To check duration of use of the exposure lamp. Also to clear the accumulated time for the lamp after replacement.
Method
1. Press the start key.
2. Select the item using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Copy quantity display</th></tr>
<tr><td>Exp. 1</td><td>First 3 digits of the lamp-on time (minutes)</td></tr>
<tr><td>Exp. 2</td><td>Last 3 digits of the lamp-on time (minutes)</td></tr>
<tr><td>Exp. 3</td><td>Clearing the lamp-on time (CLE)</td></tr>
</table>
Clearing
1. Light exp. 3.
2. Press the start key. The accumulated time is cleared, and the indication for selecting a maintenance item No. appears.
Setting
1. Change the accumulated time using the numeric or zoom +/- keys.
2. Press the start key. The accumulated time is set, and the indication for selecting a maintenance item No. appears.
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
<tr><td>U991</td><td>
Checking the scanner count
Description
Display the scanner count value.
Purpose
To check the scanner count value.
Method
1. Press the start key.
2. Select the item using the exposure adjustment keys.
<table>
<tr><th>Exposure indicator</th><th>Copy quantity display (count value)</th></tr>
<tr><td>Exp. 1</td><td>First 3 digits of the scanner count</td></tr>
<tr><td>Exp. 2</td><td>Last 3 digits of the scanner count</td></tr>
</table>
Completion
Press the stop/clear key. The indication for selecting a maintenance item No. appears.
</td></tr>
</table>

Maintenance item No.	Description
U993	**Outputting a VTC-PG pattern** **Description** Selects and outputs a VTC-PG pattern created in the copier. **Purpose** When performing respective image printing adjustments, used to check the machine status apart from that of the scanner with a non-scanned output VTC-PG pattern. **Method** 1. Press the start key. 2. Select the VTC-PG pattern to be output using the exposure adjustment keys.

Display	PG pattern to be output	Purpose
0		Leading edge registration adjustment Center line adjustment
1		Lateral squareness adjustment Magnification adjustment
2		Checking the fuser performance (fuser pressure)

3. Press the interrupt key.
4. Press the start key. A VTC-PG pattern is output.

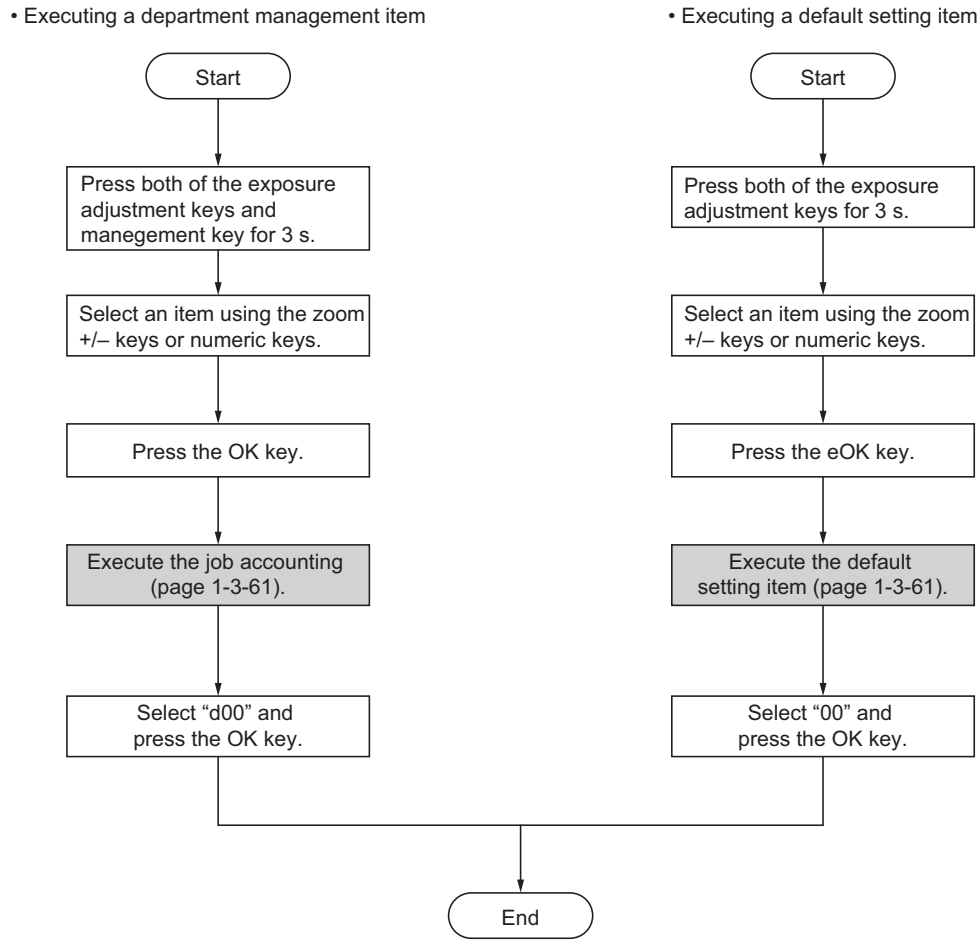
Completion

Press the stop/clear key. The indication for selecting a maintenance item No. appears.

1-3-2 Copier management

In addition to a maintenance function for service, the copier is equipped with a management function which can be operated by users (mainly by the copier administrator). In this copier management mode, settings such as default settings can be changed.

(1) Using the copier management mode



(2) Job accounting

Job accounting on/off setting

1. Select [01.JobAccounting] and press the OK key.
2. Select [ON] or [OFF] and press the OK key.

Department ID code registration

1. Select [02.Register code] and press the OK key.
2. Enter a department ID code using the numeric keys and press the OK key.
   Setting range: 0 to 99999999

Deleting department ID codes

1. Select [03.Delete code] and press the OK key.
2. Enter the department ID code to be deleted using the numeric keys
3. Select [YES] or [NO] and press the OK key.

Clearing the job accounting count

1. Select [04.Count Clear] and press the OK key.
2. Select [YES] or [NO] and press the OK key.

Outputting the job accounting list

1. Select [05.Print list] and press the OK key. If A4/11" x 8 1/2" paper is present, the list is automatically printed out. Otherwise, select the paper source and press the OK key.

(3) Default setting

User status report

Prints the details of the default settings.

1. Select [01.Copy Status] and press the OK key. If A4/11" x 8 1/2" paper is present, the list is automatically printed out.
   Otherwise, select the paper source and press the OK key.

Message language

Selects the language displayed on the message display.

1. Select [02.Language] and press the OK key.
2. Select the language and press the OK key.

Original image quality

Selects the image quality at power-on.

1. Select [03.Image Quality] and press the OK key.
2. Select [text + ph Dens.], [Photo Density] or [Text Density] and press the OK key.

Initial density

Selects the exposure mode at power-on.

1. Select [04.Initial Dens.] and press the OK key.
2. Select [Manual] or [Auto] and press the OK key.

EcoPront

Selects the EcoPrint mode at power-on.

1. Select [05.EcoPrint] and press the OK key.
2. Select [On] or [Off] and press the OK key.

Exposure steps

Sets the number of exposure steps for the manual exposure mode.

1. Select [06.Density steps] and press the OK key.
2. Select [1 step] or [0.5 step] and press the OK key.

Auto exposure adjustment

Adjusts the exposure for the auto exposure mode.

1. Select [07.Auto Density] and press the OK key.
2. Select the setting and press the OK key.
   Setting range: 1 (lightest) to 7 (darkest)

Text + photo mode exposure adjustment

Adjusts the exposure to be used when text and photo original is selected for the image mode.

1. Select [08.Text+Ph Dens.] and press the OK key.
2. Select the setting and press the OK key.
   Setting range: 1 (lightest) to 7 (darkest)

Photo exposure adjustment

Adjusts the exposure to be used when photo original is selected for the image mode.

1. Select [09.Photo Density] and press the OK key.
2. Select the setting and press the OK key.
   Setting range: 1 (lightest) to 7 (darkest)

Text exposure adjustment

Adjusts the exposure to be used when text original is selected for the image mode.

1. Select [10.Text Density] and press the OK key.
2. Select the setting and press the OK key.
   Setting range: 1 (lightest) to 7 (darkest)

Processing to reduce black streaks

Reduces black lines that may be caused when the DP is used.

1. Select [11.ReduceStreaks] and press the OK key.
2. Select [OFF], [Weak] or [Strong] and press the OK key.

Photo processing

Select the image processing method for photo originals.

1. Select [12.OptimezePhoto] and press the OK key.
2. Select [ErrorDiffusion] or [Dither Matrix] and press the OK key.
   Setting this to error diffusion when copying originals with text and photo and dithering when copying originals with mainly photos.

Back ground adjustment

The ground color adjusting after copying.

1. Select [13.OptimezBackgr] and press the OK key.
2. Select the setting and press the OK key.
   Setting range: 1 (lightest) to 5 (darkest)

Cassette selection

Select the auto paper select function based on the original size or priority cassette selection.

1. Select [14.Initial Paper] and press the OK key.
2. Select [Auto] or [DefaultCassette] and press the OK key.

Selecting paper types for automatic paper selection

Selects the cassette that is to be automatically be given priority for use.

1. Select [15.AutoSel Paper] and press the OK key.
2. Select the paper type and press the OK key.
   Plain/Transparency/Rough/Vellum/Labels/Recycled/Preprinted/Bond/Cardstock/Color (Colour)/Prepunched/Letterhead/Thick paper/Envelope/High Quality/Custom 1-8

Selected cassette

Selects the cassette that is to be automatically be given priority for use.

1. Select [16.DefaultCasset] and press the OK key.
2. Select [Cassette1], [Cassette2], [Cassette3] or [Cassette4] and press the OK key.
   Cassettes 2 to 4 will be displayed only when the optional paper feeder is installed.

Auto cassette switching

Sets whether the auto cassette switching function is available.

1. Select [17.AutoCassetSet] and press the OK key.
2. Select [Disting. paper] or [Not dist. paper] and press the OK key.
   This will be displayed when the optional paper feeder is installed.

Auto sizing

Selects whether auto magnification selection or 100% magnification is to be given priority when the sizes of the original and copy paper are different.

1. Select [18.PriorAutoZoom] and press the OK key.
2. Select [On] or [Off] and press the OK key.

Cassette paper size (cassette 1)

Sets the paper size for the cassette so that it will be automatically selected.

1. Select [19.Cassette1Size] and press the OK key.
2. Select the paper size and press the OK key.

Cassette paper size (cassette 2)

Sets the paper size for the first paper feeder so that it will be automatically selected.

1. Select [20.Cassette2Size] and press the OK key.
2. Select the paper size and press the OK key.
   This will be displayed when the optional paper feeder is installed.

Cassette paper size (cassette 3)

Sets the paper size for the second paper feeder so that it will be automatically selected.

1. Select [21.Cassette3Size] and press the OK key.
2. Select the paper size and press the OK key.
   This will be displayed when the optional paper feeder is installed.

Cassette paper size (cassette 4)

Sets the paper size for the third paper feeder so that it will be automatically selected.

1. Select [22.Cassette4Size] and press the OK key.
2. Select the paper size and press the OK key.
   This will be displayed when the optional paper feeder is installed.

MP tray paper size

Sets the paper size for the MP tray so that it will be automatically selected.

1. Select [23.MPTray Config] and press the OK key.
2. Select the paper size and press the OK key.

Custom 1 size

Sets the size of the paper to be set to the custom 1 size.

1. Select [24.Custom Size 1] and press the OK key.
2. Select the paper size and press the OK key.

Custom 2 size

Sets the size of the paper to be set to the custom 2 size.

1. Select [25.Custom Size 2] and press the OK key.
2. Select the paper size and press the OK key.

Selecting media type (cassette 1)

Sets the paper type to the cassette.

1. Select [26.Casst1MedType] and press the OK key.
2. Select the paper type and press the OK key.

Selecting media type (cassette 2)

Sets the paper type to the first paper feeder.

1. Select [27.Casst2MedType] and press the OK key.
2. Select the paper type and press the OK key.
   This will be displayed when the optional paper feeder is installed.

Selecting media type (cassette 3)

Sets the paper type to the second paper feeder.

1. Select [28.Casst3MedType] and press the OK key.
2. Select the paper type and press the OK key.
   This will be displayed when the optional paper feeder is installed.

Selecting media type (cassette 4)

Sets the paper type to the third paper feeder.

1. Select [29.Casst4MedType] and press the OK key.
2. Select the paper type and press the OK key.
   This will be displayed when the optional paper feeder is installed.

Specifying the paper weight and 2-sided copying to custom paper

Sets the paper weights and 2-sided copying to the custom 1 to 8.

1. Select [30.CustmMedType1] to [37.CustmMedType8] and press the OK key.
2. Select the paper weight and press the OK key.
   Extra Heavy/Heavy 3/Heavy 2/Heavy 1/Normal 3/ Normal 2/Normal 1/Light (Vellum)
3. Select [On] or [Off] and press the OK key.

Auto detect originals

Predetermines what paper size is selected for printing when copying an original document of non-standard sizes.

1. Select [38.Hagaki/A6RDet] and press the OK key.
2. Select [Hagaki] or [A6 R] and press the OK key.

Auto detect originals

Predetermines what paper size is selected for printing when copying an original document of non-standard sizes.

1. Select [39.B4R/Folio Det] and press the OK key.
2. Select [B4 R] or [Folio R] and press the OK key.

Auto detect originals

When the size of original document is 11" x15", the original document is automatically zoomed.

1. Select [40.11x15" Detect] and press the OK key.
2. Select [On] or [Off] and press the OK key.

Copy limit

Sets the number of copies limit for multiple copying.

1. Select [41.Copy Limit] and press the OK key.
2. Enter the setting and press the OK key.
   Setting range: 1 to 999

2-sided copy reverse-side rotation setting

Select whether or not the image on the reverse side is rotated 180 degrees in the 2-sided copy mode.

1. Select [42.Duplex 2nd] and press the OK key.
2. Select [On] or [Off] and press the OK key.

Margin shift

Sets the default setting of the margin width for the margin copying.

1. Select [43.Stitch Width] and press the OK key.
2. Select the setting and press the OK key.
   Setting range: 1 to 18 mm/0.13" to 0,75"

Border width

Sets the default setting of the border width for the border erase mode.

1. Select [44.Border Erase] and press the OK key.
2. Select the setting and press the OK key.
   Setting range: 1 to 18 mm/0.13" to 0,75"

4 in 1 layout order

Sets the layout for the order in which the originals will appear in the 4 in 1 layout mode.

1. Select [45.4 in 1 Layout] and press the OK key.
2. Select the setting and press the OK key.
   Portrait 1/Portrait 2/Landscape 1/Landscape 2

Combine mode borderline

Selects the type of borderline to be used in the layout mode.

1. Select [46.Combine Border] and press the OK key.
2. Select the [Off], [Solid] or [Dotted] and press the OK key.

Rotate collate setting

Sets whether or not to perform rotate sorting when the sort mode is selected.

1. Select [47.Rotate/Offset] and press the OK key.
2. Select [On] or [Off] and press the OK key.

Selecting auto rotation

Sets whether the automatic rotation by default.

1. Select [48.Auto Rotation] and press the OK key.
2. Select [On] or [Off] and press the OK key.

Silent mode transition time

Set the silent mode transition time after copying.

1. Select [49.Silent mode] and press the OK key.
2. Select the setting and press the OK key.
   0 sec/5 sec/10 sec/15 sec/30 sec

Auto clear setting

Sets whether the auto clear function is available.

1. Select [50.Auto Clear] and press the OK key.
2. Select [On] or [Off] and press the OK key.

Auto sleep setting

Sets whether the auto off function is available.

1. Select [51.Auto Sleep] and press the OK key.
2. Select [On] or [Off] and press the OK key.

Auto clear time

Sets the auto clear time.

1. Select [52.AutoClearTime] and press the OK key.
2. Select the setting and press the OK key.
   Setting range: 10 to 270 sec

Low power mode transition time

Sets the auto preheat time.

1. Select [53.LowPower Time] and press the OK key.
2. Select the setting and press the OK key.
   1 min/5 min/15 min/30 min/45 min/60 min/90 min/120 min/180 min/240 min

Sleep mode transition time

Sets the auto shutoff time.

1. Select [54.AutoSleep Time] and press the OK key.
2. Select the setting and press the OK key.
   1 min/5 min/15 min/30 min/45 min/60 min/90 min/120 min/180 min/240 min

Alarm

The alarm can be set to sound when errors occur.

1. Select [55.Alarm] and press the OK key.
2. Select [On] or [Off] and press the OK key.

Toner coverage report

Prints out a report that shows the number of copies made and the blackness ratio for each paper size.

1. Select [56.CoverageRepo] and press the OK key. If A4/11" x 8 1/2" paper is present, the list is automatically printed out. Otherwise, select the paper source and press the OK key.

1-4-1 Paper misfeed detection

(1) Paper misfeed indication

When a paper misfeed occurs, the copier immediately stops copying and displays the jam location on the operation panel.
Paper misfeed counts sorted by the detection condition can be checked in maintenance item U903.
To remove paper jammed in the copier, open the front cover, left cover, or pull the drawer out.
To remove original jammed in the DP, open the DP original cover.
Paper misfeed detection can be reset by opening and closing the respective covers to turn safety switch off and on.

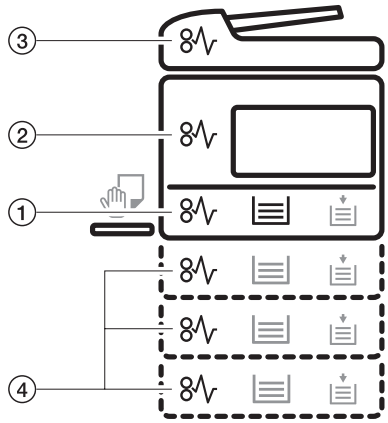


Figure 1-4-1

(1) Misfeed in the paper feed section
(2) Misfeed in the paper conveying section
(3) Misfeed in the optional DP
(4) Misfeed in the optional paper feeder

(2) Paper misfeed detection conditions

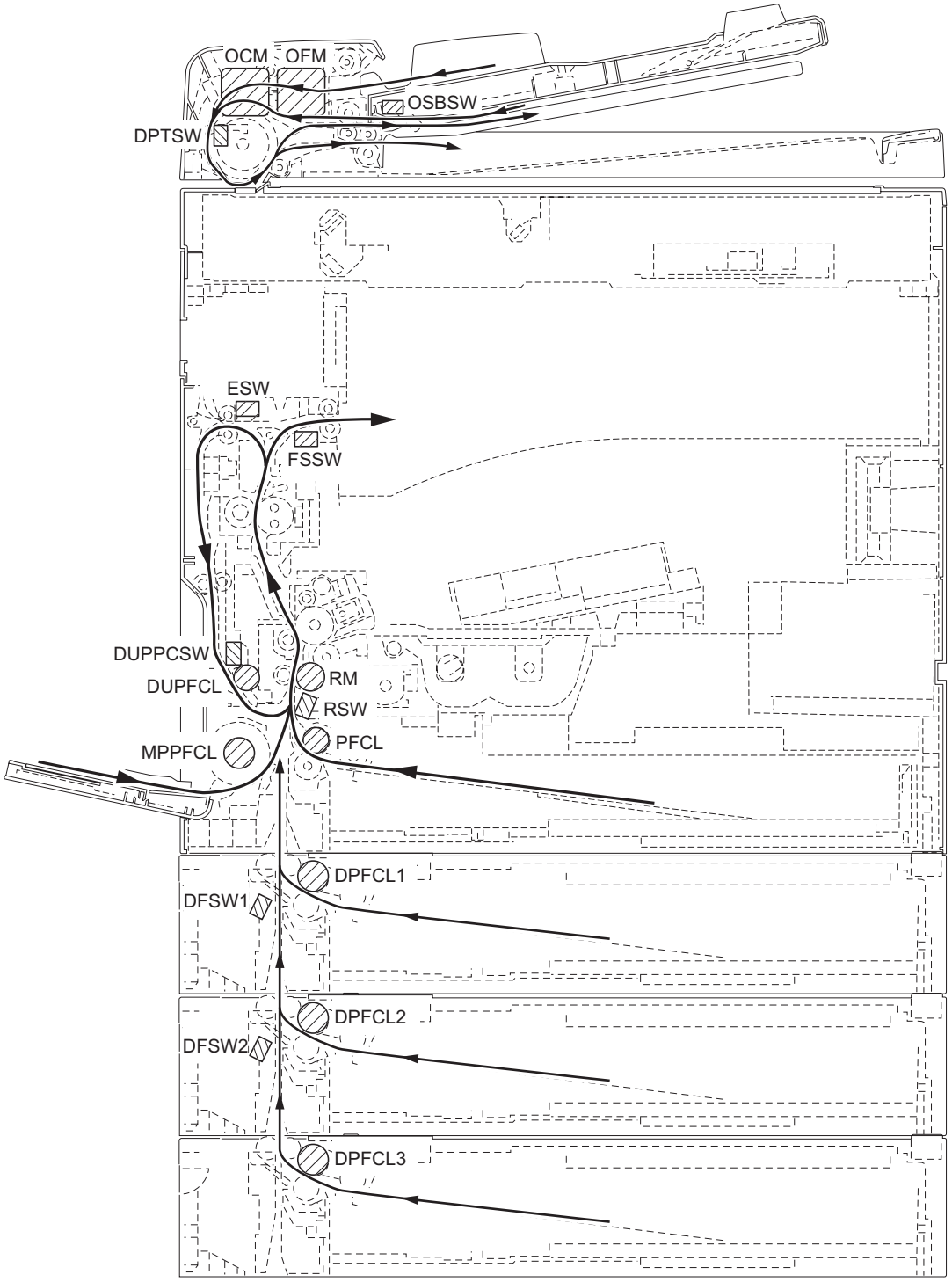


Figure 1-4-2

Section	Jam code	Description	Conditions
System	00	No paper feed	When the power switch is turned on, the machine detects activation of the registration switch (RSW), the exit switch (ESW) or the feedshift switch (FSSW).
	04	Cover open JAM	A cover open state is detected during copying.
	05	Secondary paper feed timeout	When the machine waits for secondary paper feed, 30 s or more have elapsed.
Paper feed section	10	No paper feed from the MP tray	The registration switch (RSW) does not turn on within 1680 ms of the MP paper feed clutch (MPPFCL) turning on; the clutch is then successively held off for 1 s and turned back on once, but the switch again fails to turn on within 1680 ms.
	11	No paper feed from the drawer 1	The registration switch (RSW) does not turn on within 1430 ms of the paper feed clutch (PFCL) turning on; the clutch is then successively held off for 1 s and turned back on once, but the switch again fails to turn on within 1430 ms.
	12	No paper feed from the drawer 2* (first paper feeder)	The registration switch (RSW) does not turn on within 2780 ms of the drawer paper feed clutch 1 (DPFCL1)* turning on; the clutch is then successively held off for 1 s and turned back on once, but the switch again fails to turn on within 2780 ms.
	13	No paper feed from the drawer 3* (second paper feeder)	The drawer feed switch 1 (DFSW1)* does not turn on within 2560 ms of the drawer paper feed clutch 2 (DPFCL2)* turning on; the clutch is then successively held off for 1 s and turned back on once, but the switch again fails to turn on within 2560 ms.
	14	No paper feed from the drawer 4* (third paper feeder)	The drawer feed switch 2 (DFSW2)* does not turn on within 2560 ms of the drawer paper feed clutch 3 (DPFCL3)* turning on; the clutch is then successively held off for 1 s and turned back on once, but the switch again fails to turn on within 2560 ms.
	15	Misfeed in vertical paper conveying 1	The registration switch (RSW) does not turn on within 2340 ms of drawer feed switch 1 (DFSW1)* turning on.
			The drawer feed switch 1 (DFSW1)* does not turn off within 2050 ms of drawer feed switch 2 (DFSW2)* turning on.
			The drawer feed switch 1 (DFSW1)* does not turn off within 2050 ms of drawer feed switch 2 (DFSW2)* turning off.
	16	Misfeed in vertical paper conveying 2	The drawer feed switch 1 (DFSW1)* does not turn on within 2050 ms of drawer feed switch 2 (DFSW2)* turning on.
Paper conveying section	20	Multiple sheets in the MP tray	The registration switch (RSW) does not turn off within 6320 ms of registration switch (RSW) turning on.
			The registration switch (RSW) does not turn off within 1680 ms of MP paper feed clutch (MPPFCL) turning on.
	21	Multiple sheets in the drawer 1	The registration switch (RSW) does not turn off within 6320 ms of registration switch (RSW) turning on.
			The registration switch (RSW) does not turn off within 1430 ms of paper feed clutch (PFCL) turning on.
	22	Multiple sheets in the drawer 2* (first paper feeder)	The registration switch (RSW) does not turn off within 6320 ms of registration switch (RSW) turning on.
			The registration switch (RSW) does not turn off within 2780 ms of drawer paper feed clutch 1 (DPFCL1)* turning on.

*: Optional.

Section	Jam code	Description	Conditions
Paper conveying section	23	Multiple sheets in the drawer 3* (second paper feeder)	The drawer feed switch 1 (DFSW1)* does not turn off within 6320 ms of drawer feed switch 1 (DFSW1)* turning on.
			The drawer feed switch 1 (DFSW1)* does not turn off within 2560 ms of drawer paper feed clutch 2 (DPFCL2)* turning on.
	24	Multiple sheets in the drawer 4* (third paper feeder)	The drawer feed switch 2 (DFSW2)* does not turn off within 6320 ms of drawer feed switch 2 (DFSW2)* turning on.
			The drawer feed switch 2 (DFSW2)* does not turn off within 2560 ms of drawer paper feed clutch 3 (DPFCL3)* turning on.
Transfer section	30	Misfeed in registration/ transfer section	The registration switch (RSW) does not turn off within 2340 ms of drawer feed switch 1 (DFSW1)* turning on.
			The registration switch (RSW) does not turn off within 2340 ms of drawer feed switch 1 (DFSW1)* turning off.
			The registration switch (RSW) does not turn off within 1760 ms of duplex paper conveying switch (DUPPCSW1)* turning on.
Fuser section	40	Misfeed in the fuser section (paper feed from MP tray)	The exit switch (ESW) does not turn on within 3020 ms of the registration motor (RM) turning on.
	41	Misfeed in the fuser section (paper feed from drawer)	The exit switch (ESW) does not turn on within 3020 ms of the registration motor (RM) turning on.
	42	Misfeed in the fuser section* (paper feed from first paper feeder)	The exit switch (ESW) does not turn on within 3020 ms of the registration motor (RM) turning on.
	43	Misfeed in the fuser section* (paper feed from second paper feeder)	The exit switch (ESW) does not turn on within 3020 ms of the registration motor (RM) turning on.
	44	Misfeed in the fuser section* (paper feed from third paper feeder)	The exit switch (ESW) does not turn on within 3020 ms of the registration motor (RM) turning on.
	45	Misfeed in the fuser section* (paper feed from duplex section)	The exit switch (ESW) does not turn on within 3020 ms of the registration motor (RM) turning on.
Exit section	50	Misfeed in the exit section	The exit switch (ESW) does not turn off within 3020 ms of the registration switch (RSW) turning off.
			The exit switch (ESW) does not turn on within 3020 ms of the registration motor (RM) turning on.
Feedshift section	52	Misfeed in the feedshift section (paper feed from MP tray)	The feedshift switch (FSSW) does not turn off within 6320 ms of feedshift switch (FSSW) turning on.
			The feedshift switch (FSSW) does not turn off within 1530 ms of paper switchback.
			The feedshift switch (FSSW) does not turn on within 1530 ms of paper switchback.
	53	Misfeed in the feedshift section (paper feed from drawer)	The feedshift switch (FSSW) does not turn off within 6320 ms of feedshift switch (FSSW) turning on.
			The feedshift switch (FSSW) does not turn off within 1530 ms of paper switchback.
			The feedshift switch (FSSW) does not turn on within 1530 ms of paper switchback.

*: Optional.

Section	Jam code	Description	Conditions
Feedshift section	54	Misfeed in the feedshift section* (paper feed from first paper feeder)	The feedshift switch (FSSW) does not turn off within 6320 ms of feedshift switch (FSSW) turning on.
			The feedshift switch (FSSW) does not turn off within 1530 ms of paper switchback.
			The feedshift switch (FSSW) does not turn on within 1530 ms of paper switchback.
	55	Misfeed in the feedshift section* (paper feed from second paper feeder)	The feedshift switch (FSSW) does not turn off within 6320 ms of feedshift switch (FSSW) turning on.
			The feedshift switch (FSSW) does not turn off within 1530 ms of paper switchback.
			The feedshift switch (FSSW) does not turn on within 1530 ms of paper switchback.
	56	Misfeed in the feedshift section* (paper feed from third paper feeder)	The feedshift switch (FSSW) does not turn off within 6320 ms of feedshift switch (FSSW) turning on.
			The feedshift switch (FSSW) does not turn off within 1530 ms of paper switchback.
			The feedshift switch (FSSW) does not turn on within 1530 ms of paper switchback.
Duplex section	60	Misfeed in duplex paper conveying section*	The duplex paper conveying switch (DUPPCSW)* does not turn off within 3280 ms of the feedshift switch (FSSW) turning on.
			The duplex paper conveying switch (DUPPCSW)* does not turn on within 3280 ms of the feedshift switch (FSSW) turning on.
			The duplex paper conveying switch (DUPPCSW)* does not turn off within 3280 ms of the feedshift switch (FSSW) turning off.
	61	Misfeed in duplex exit section*	The registration switch (RSW) does not turn on within 1760 ms of the duplex paper conveying switch (DUPPCSW)* turning on.
			The registration switch (RSW) does not turn off within 1760 ms of the duplex paper conveying switch (DUPPCSW)* turning off.
DP	70	No original feed*	During the primary feed of the second original in the single-sided or double-sided original mode, even if retry operation is performed five times, primary original feed is not performed.
	71	An original jam in the original conveying section 1*	During the secondary original feed in the single-sided or double-sided original mode, the DP timing switch (DPTSW)* does not turn off within 6500 ms of the original conveying motor (OCM)* turning on.
	72	An original size error jam*	During the secondary original feed in the single-sided or double-sided original mode, the DP timing switch (DPTSW)* does turn off within 750 ms of the original conveying motor (OCM)* turning on.
	73	An original jam in the original conveying section 2*	During scanning of the second side or reversing of the original for ejection in the double-sided original mode, the DP timing switch (DPTSW)* does not turn off within 6500 ms of the original conveying motor (OCM)* turning on.
	74	An original jam in the original conveying section 3*	During scanning of the second side or reversing of the original for ejection in the double-sided original mode, the DP timing switch (DPTSW)* does not turn on within 750 ms of the original conveying motor (OCM)* turning on.
	75	An original jam in the original switchback section*	During the switchback operation of an original in the double-sided original mode, the original switchback switch (OSBSW) *does not turn on within 1300 ms of the original conveying motor (OCM)* turning on.

*: Optional.

(3) Paper misfeeds

Copier

Problem	Causes/check procedures	Corrective measures
(1) A paper jam in the paper feed, paper conveying or exit section is indicated as soon as the power switch is turned on. Jam code 00	A piece of paper torn from copy paper is caught around registration switch, exit switch or feedshift switch.	Check visually and remove it, if any.
	Defective registration switch, exit switch or feed-shift switch.	Run maintenance item U031 and turn each switch on and off manually. Replace the corresponding switch if indication of switch is not light.
(2) A paper jam in the paper feed section is indicated during copying (no paper feed from the MP tray). Jam code 10	Paper on the MP tray is extremely curled.	Change the paper.
	Check if the MP paper feed pulley is deformed.	Check visually and replace any deformed pulley.
	Broken registration switch actuator.	Check visually and replace registration switch if its actuator is broken.
	Defective registration switch.	Run maintenance item U031 and turn registration switch on and off manually. Replace registration switch if indication of switch is not light.
	Check if the MP paper feed clutch malfunctions.	Run maintenance item U032 and select the MP paper feed clutch to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the MP paper feed clutch.	Check (see page 1-4-26).
(3) A paper jam in the paper feed section is indicated during copying (no paper feed from the drawer 1). Jam code 11	Paper in the drawer is extremely curled.	Change the paper.
	Check if the paper feed pulley, separation pulley or forward pulley is deformed.	Check visually and replace any deformed pulley.
	Broken registration switch actuator.	Check visually and replace registration switch if its actuator is broken.
	Defective registration switch.	Run maintenance item U031 and turn registration switch on and off manually. Replace registration switch if indication of switch is not light.
	Check if the paper feed clutch malfunctions.	Run maintenance item U032 and select the paper feed clutch to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the paper feed clutch.	Check (see page 1-4-26).

Problem	Causes/check procedures	Corrective measures
(4) A paper jam in the paper feed section is indicated during copying (no paper feed from the drawer 2). Jam code 12	Paper in the first paper feeder is extremely curled.	Change the paper.
	Check if the paper feed pulley, separation pulley or forward pulley in the first paper feeder is deformed.	Check visually and replace any deformed pulley.
	Broken registration switch actuator.	Check visually and replace registration switch if its actuator is broken.
	Defective registration switch.	Run maintenance item U031 and turn registration switch on and off manually. Replace registration switch if indication of switch is not light.
	Check if the drawer paper feed clutch 1 malfunctions.	Run maintenance item U032 and select the drawer paper feed clutch 1 to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the drawer paper feed clutch 1.	Check.
(5) A paper jam in the paper feed section is indicated during copying (no paper feed from the drawer 3). Jam code 13	Paper in the second paper feeder is extremely curled.	Change the paper.
	Check if the paper feed pulley, separation pulley or forward pulley in the second paper feeder is deformed.	Check visually and replace any deformed pulley.
	Broken drawer feed switch 1 actuator.	Check visually and replace drawer feed switch 1 if its actuator is broken.
	Defective drawer feed switch 1.	Run maintenance item U031 and turn drawer feed switch 1 on and off manually. Replace drawer feed switch 1 if indication of switch is not light.
	Check if the drawer paper feed clutch 2 malfunctions.	Run maintenance item U032 and select the drawer paper feed clutch 2 to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the drawer paper feed clutch 2.	Check.
(6) A paper jam in the paper feed section is indicated during copying (no paper feed from the drawer 4). Jam code 14	Paper in the third paper feeder is extremely curled.	Change the paper.
	Check if the paper feed pulley, separation pulley or forward pulley in the third paper feeder is deformed.	Check visually and replace any deformed pulley.
	Broken drawer feed switch 2 actuator.	Check visually and replace drawer feed switch 2 if its actuator is broken.
	Defective drawer feed switch 2.	Run maintenance item U031 and turn drawer feed switch 2 on and off manually. Replace drawer feed switch 2 if indication of switch is not light.
	Check if the drawer paper feed clutch 3 malfunctions.	Run maintenance item U032 and select the drawer paper feed clutch 3 to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the drawer paper feed clutch 3.	Check.

Problem	Causes/check procedures	Corrective measures
(7) A paper jam in the paper feed section is indicated during copying (misfeed in vertical paper conveying 1). Jam code 15	Broken registration switch actuator.	Check visually and replace registration switch if its actuator is broken.
	Defective registration switch.	Run maintenance item U031 and turn registration switch on and off manually. Replace registration switch if indication of switch is not light.
	Broken drawer feed switch 1 or 2 actuator.	Check visually and replace drawer feed switch 1 or 2 if its actuator is broken.
	Defective drawer feed switch 1 or 2.	Run maintenance item U031 and turn each switch on and off manually. Replace the corresponding switch if indication of switch is not light.
	Check if the paper feed clutch malfunctions.	Run maintenance item U032 and select the paper feed clutch to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the paper feed clutch.	Check (see page 1-4-26).
	Check if the drawer paper feed clutch 1, 2 or 3 malfunctions.	Run maintenance item U032 and select the each clutch to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the drawer paper feed clutch 1, 2 or 3.	Check.
(8) A paper jam in the paper feed section is indicated during copying (misfeed in vertical paper conveying 2). Jam code 16	Broken drawer feed switch 1 or 2 actuator.	Check visually and replace drawer feed switch 1 or 2 if its actuator is broken.
	Defective drawer feed switch 1 or 2.	Run maintenance item U031 and turn each switch on and off manually. Replace the corresponding switch if indication of switch is not light.
	Check if the drawer paper feed clutch 1 or 2 malfunctions.	Run maintenance item U032 and select the each clutch to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the drawer paper feed clutch 1 or 2.	Check.
(9) A paper jam in the paper conveying section is indicated during copying (multiple sheets in the MP tray). Jam code 20	Deformed guides along the paper conveying path.	Repair or replace if necessary.
	Broken registration switch actuator.	Check visually and replace registration switch if its actuator is broken.
	Defective registration switch.	Run maintenance item U031 and turn registration switch on and off manually. Replace registration switch if indication of switch is not light.
	Check if the MP paper feed clutch malfunctions.	Run maintenance item U032 and select the MP paper feed clutch to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the MP paper feed clutch.	Check (see page 1-4-26).
	Check if the right and left registration rollers contact each other.	Check visually and remedy if necessary.

Problem	Causes/check procedures	Corrective measures
(10) A paper jam in the paper conveying section is indicated during copying (multiple sheets in the drawer 1). Jam code 21	Deformed guides along the paper conveying path.	Repair or replace if necessary.
	Broken registration switch actuator.	Check visually and replace registration switch if its actuator is broken.
	Defective registration switch.	Run maintenance item U031 and turn registration switch on and off manually. Replace registration switch if indication of switch is not light.
	Check if the paper feed clutch malfunctions.	Run maintenance item U032 and select the paper feed clutch to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the paper feed clutch.	Check (see page 1-4-26).
	Check if the right and left registration rollers contact each other.	Check visually and remedy if necessary.
(11) A paper jam in the paper conveying section is indicated during copying (multiple sheets in the drawer 2). Jam code 22	Deformed guides along the paper conveying path.	Repair or replace if necessary.
	Broken registration switch actuator.	Check visually and replace registration switch if its actuator is broken.
	Defective registration switch.	Run maintenance item U031 and turn registration switch on and off manually. Replace registration switch if indication of switch is not light.
	Check if the drawer paper feed clutch 1 malfunctions.	Run maintenance item U032 and select the drawer paper feed clutch 1 to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the drawer paper feed clutch 1.	Check.
	Check if the right and left registration rollers contact each other.	Check visually and remedy if necessary.
(12) A paper jam in the paper conveying section is indicated during copying (multiple sheets in the drawer 3). Jam code 23	Deformed guides along the paper conveying path.	Repair or replace if necessary.
	Broken drawer feed switch 1 actuator.	Check visually and replace drawer feed switch 1 if its actuator is broken.
	Defective drawer feed switch 1.	Run maintenance item U031 and turn drawer feed switch 1 on and off manually. Replace drawer feed switch 1 if indication of switch is not light.
	Check if the drawer paper feed clutch 2 malfunctions.	Run maintenance item U032 and select the drawer paper feed clutch 2 to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the drawer paper feed clutch 2.	Check.

Problem	Causes/check procedures	Corrective measures
(13) A paper jam in the paper conveying section is indicated during copying (multiple sheets in the drawer 4). Jam code 24	Deformed guides along the paper conveying path.	Repair or replace if necessary.
	Broken drawer feed switch 2 actuator.	Check visually and replace drawer feed switch 2 if its actuator is broken.
	Defective drawer feed switch 2.	Run maintenance item U031 and turn drawer feed switch 2 on and off manually. Replace drawer feed switch 2 if indication of switch is not light.
	Check if the drawer paper feed clutch 3 malfunctions.	Run maintenance item U032 and select the drawer paper feed clutch 3 to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the drawer paper feed clutch 3.	Check.
(14) A paper jam in the transfer section is indicated during copying (misfeed in registration/transfer section). Jam code 30	Deformed guides along the paper conveying path.	Repair or replace if necessary.
	Broken registration switch actuator.	Check visually and replace registration switch if its actuator is broken.
	Defective registration switch.	Run maintenance item U031 and turn registration switch on and off manually. Replace registration switch if indication of switch is not light.
	Broken drawer feed switch 1 actuator.	Check visually and replace drawer feed switch 1 if its actuator is broken.
	Defective drawer feed switch 1	Run maintenance item U031 and turn drawer feed switch 1 on and off manually. Replace drawer feed switch 1 if indication of switch is not light.
	Broken duplex paper conveying switch actuator.	Check visually and replace the duplex paper conveying switch if its actuator is broken.
	Defective duplex paper conveying switch.	Run maintenance item U031 and turn duplex paper conveying switch on and off manually. Replace duplex paper conveying switch if indication of switch is not light.
(15) A paper jam in the fuser section is indicated during copying (misfeed in the fuser section). Jam code 40, 41, 42, 43, 44, 45	Check if the fuser unit front guide is deformed.	Repair or replace if necessary.
	Check if the press roller is extremely dirty or deformed.	Clean or replace if necessary.
	Check if the heat roller separation claws are dirty or deformed.	Clean or replace if necessary.
	Check if the heat roller and its separation claws contact each other.	Remedy if the separation claw springs are out of place.
	Broken exit switch actuator.	Check visually and replace the exit switch if its actuator is broken.
	Defective exit switch.	Run maintenance item U031 and turn exit switch on and off manually. Replace exit switch if indication of switch is not light.
	Check if the registration motor malfunctions.	Run maintenance item U030 and select the registration motor to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the registration motor.	Check (see page 1-4-26).

Problem	Causes/check procedures	Corrective measures
(16) A paper jam in the exit section is indicated during copying (misfeed in the exit section). Jam code 50	Broken registration switch or exit switch actuator.	Check visually and replace the registration switch or exit switch if its actuator is broken.
	Defective registration switch or exit switch.	Run maintenance item U031 and turn each switch on and off manually. Replace the corresponding switch if indication of switch is not light.
	Check if the registration motor malfunctions.	Run maintenance item U030 and select the registration motor to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the registration motor.	Check (see page 1-4-26).
(17) A paper jam in the feedshift section is indicated during copying (misfeed in the feedshift section). Jam code 52, 53, 54, 55, 56	Broken feedshift switch actuator.	Check visually and replace the feedshift switch if its actuator is broken.
	Defective feedshift switch.	Run maintenance item U031 and turn feedshift switch on and off manually. Replace feedshift switch if indication of switch is not light.
	Check if the exit motor malfunctions.	Run maintenance item U030 and select the exit motor to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the exit motor.	Check (see page 1-4-26).
(18) A paper jam in the duplex section is indicated during copying (misfeed in duplex paper conveying section). Jam code 60	Broken feedshift switch actuator.	Check visually and replace the feedshift switch if its actuator is broken.
	Defective feedshift switch.	Run maintenance item U031 and turn feedshift switch on and off manually. Replace feedshift switch if indication of switch is not light.
	Broken duplex paper conveying switch actuator.	Check visually and replace the duplex paper conveying switch if its actuator is broken.
	Defective duplex paper conveying switch.	Run maintenance item U031 and turn duplex paper conveying switch on and off manually. Replace duplex paper conveying switch if indication of switch is not light.
	Check if the exit motor malfunctions.	Run maintenance item U030 and select the exit motor to be turned on and off. Check the status and remedy if necessary.
	Electrical problem with the exit motor.	Check (see page 1-4-26).
	Check if the duplex feed clutch malfunctions.	Check visually and remedy if necessary.
	Electrical problem with the duplex feed clutch.	Check.

Problem	Causes/check procedures	Corrective measures
(19) A paper jam in the duplex section is indicated during copying (misfeed in duplex exit section). Jam code 61	Broken duplex paper conveying switch actuator.	Check visually and replace the duplex paper conveying switch if its actuator is broken.
	Defective duplex paper conveying switch.	Run maintenance item U031 and turn duplex paper conveying switch on and off manually. Replace duplex paper conveying switch if indication of switch is not light.
	Broken registration switch actuator.	Check visually and replace the registration switch if its actuator is broken.
	Defective registration switch.	Run maintenance item U031 and turn registration switch on and off manually. Replace registration switch if indication of switch is not light.
	Check if the duplex feed clutch malfunctions.	Check visually and remedy if necessary.
	Electrical problem with the duplex feed clutch.	Check.

DP

Problem	Causes/check procedures	Corrective measures
(1) An original jams when the power switch is turned on.	A piece of paper torn from an original is caught around the DP timing switch or original switchback switch.	Check visually and remove it, if any.
	Defective DP timing switch or original switchback switch.	Run maintenance item U244 and turn each switch on and off manually. Replace the corresponding switch if indication of switch is not light.
(2) An original jams in the original feed section is indicated during copying (no original feed). Jam code 70	Defective original set switch.	Run maintenance item U244 and turn original set switch on and off manually. Replace original set switch if indication of switch is not light.
	Check if the original feed motor malfunctions.	Run maintenance item U243 and select the original feed motor to be turned on and off. Check the status and remedy if necessary.
	Check if the DP paper feed pulley or DP separation pad is deformed.	Check visually and replace the deformed pulley.
(3) An original jams in the original conveying section is indicated during copying (An original jam in the original conveying section 1). Jam code 71	Broken DP timing switch actuator.	Check visually and replace DP timing switch if its actuator is broken.
	Defective DP timing switch.	Run maintenance item U244 and turn DP timing switch on and off manually. Replace DP timing switch if indication of switch is not light.
	Check if the original conveying motor malfunctions.	Run maintenance item U243 and select the original conveying motor to be turned on and off. Check the status and remedy if necessary.
(4) An original jams in the original conveying section is indicated during copying (An original size error jam). Jam code 72	Broken DP timing switch actuator.	Check visually and replace DP timing switch if its actuator is broken.
	Defective DP timing switch.	Run maintenance item U244 and turn DP timing switch on and off manually. Replace DP timing switch if indication of switch is not light.
	Check if the original conveying motor malfunctions.	Run maintenance item U243 and select the original conveying motor to be turned on and off. Check the status and remedy if necessary.
(5) An original jams in the original conveying section is indicated during copying (An original jam in the original conveying section 2). Jam code 73	Broken DP timing switch actuator.	Check visually and replace DP timing switch if its actuator is broken.
	Defective DP timing switch.	Run maintenance item U244 and turn DP timing switch on and off manually. Replace DP timing switch if indication of switch is not light.
	Check if the original conveying motor malfunctions.	Run maintenance item U243 and select the original conveying motor to be turned on and off. Check the status and remedy if necessary.
	Check if the switchback feedshift solenoid malfunctions.	Run maintenance item U243 and select the switchback feedshift solenoid to be turned on and off. Check the status and remedy if necessary.

Problem	Causes/check procedures	Corrective measures
(6) An original jams in the original conveying section is indicated during copying (An original jam in the original conveying section 3). Jam code 74	Broken DP timing switch actuator.	Check visually and replace DP timing switch if its actuator is broken.
	Defective DP timing switch.	Run maintenance item U244 and turn DP timing switch on and off manually. Replace DP timing switch if indication of switch is not light.
	Check if the original conveying motor malfunctions.	Run maintenance item U243 and select the original conveying motor to be turned on and off. Check the status and remedy if necessary.
	Check if the switchback feedshift solenoid malfunctions.	Run maintenance item U243 and select the switchback feedshift solenoid to be turned on and off. Check the status and remedy if necessary.
(7) An original jams in the original switchback section is indicated during copying (An original jam in the original switchback section). Jam code 75	Defective original switchback switch.	Run maintenance item U244 and turn original switchback switch on and off manually. Replace original switchback switch if indication of switch is not light.
	Check if the original conveying motor malfunctions.	Run maintenance item U243 and select the original conveying motor to be turned on and off. Check the status and remedy if necessary.
	Check if the switchback feedshift solenoid malfunctions.	Run maintenance item U243 and select the switchback feedshift solenoid to be turned on and off. Check the status and remedy if necessary.
(8) Original jams frequently.	An original outside the specifications is used.	Use only originals conforming to the specifications.
	The DP forwarding pulley or DP paper feed pulley is dirty with paper powder.	Clean with isopropyl alcohol.
	The DP paper feed pulley and DP separation pad do not contact correctly.	Check and remedy.

1-4-2 Self-diagnosis

(1) Self-diagnostic function

This unit is equipped with a self-diagnostic function. When a problem is detected, copying is disabled. "C" and a number between 0100 and 7810 altenates, indicating the nature of the problem. After removing the problem, the self-diagnostic function can be reset by opening and closing the front cover to turn safety switch off and on or power switch turns off and on.

(2) Self diagnostic codes

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
C0100	**Backup memory read/write problem (main PWB)** Read and write data does not match.	Defective main PWB.	Replace the main PWB and check for correct operation.
C0110	**Backup memory data problem (main PWB)** Data in the specified area of the backup memory does not match the specified values.	Problem with the backup memory data.	Turn safety switch off and back on and run maintenance item U020 to set the contents of the backup memory data again.
		Defective backup RAM.	If the C0110 is displayed after re-setting the backup memory contents, replace the main PWB.
C0150	**Backup memory read/write problem (engine PWB)** Read and write data does not match.	Defective engine PWB.	Replace the engine PWB and check for correct operation.
C0160	**Backup memory data problem (engine PWB)** Data in the specified area of the backup memory does not match the specified values.	Problem with the backup memory data.	Turn safety switch off and back on and run maintenance item U020 to set the contents of the backup memory data again.
		Defective backup RAM.	If the C0160 is displayed after re-setting the backup memory contents, replace the engine PWB.
C0170	**Accounting count problem** When the power is turned on, the total count and the scan count are abnormal both on the main PWB and the engine PWB.	Defective main PWB or engine PWB.	Replace the main PWB or engine PWB and check for correct operation.
C0180	**Machine number mismatch** When the power is turned on, the machine number does not match between the main PWB and the engine PWB.	Data damage of EEPROM.	Contact the Service Administrative Division.
C0210	**Communication problem between the main PWB and engine board PWB** When the power is turned on, the machine does not detect the low level of SBSY and the high level of SDIR for 10 seconds.	Poor contact in the connector terminals.	Check the connection of connectors YC6 on the main PWB and YC1 on the engine PWB, and the continuity across the connector terminals. Repair or replace if necessary.
		Defective main PWB or engine PWB.	Replace the main PWB or engine PWB and check for correct operation.
C0240	**Optional printer board PWB communication problem** The printer board PWB does not respond 120 s after the power is turned on.	Poor contact in the connector terminals.	Check the connection of connector. Repair or replace if necessary.
		Defective main PWB or printer board PWB.	Replace the main PWB or printer board PWB and check for correct operation.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
C0410	**Optional DP communication problem** Communication fails five times successively.	DP installed incorrectly.	Check the installation state of the DP and adjust it if it is not properly installed.
		Defective main PWB or DP driver PWB.	Replace the main PWB or DP driver PWB and check for correct operation.
C0420	**Optional first paper feeder communication problem** Communication fails five times successively.	Paper feeder installed incorrectly.	Check the installation state of the paper feeder and adjust it if it is not properly installed.
		Defective main PWB or drawer main PWB.	Replace the main PWB or drawer main PWB and check for correct operation.
C0500	**Optional second paper feeder communication problem** Communication fails five times successively.	Paper feeder installed incorrectly.	Check the installation state of the paper feeder and adjust it if it is not properly installed.
		Defective main PWB or drawer main PWB.	Replace the main PWB or drawer main PWB and check for correct operation.
C0510	**Optional third paper feeder communication problem** Communication fails five times successively.	Paper feeder installed incorrectly.	Check the installation state of the paper feeder and adjust it if it is not properly installed.
		Defective main PWB or drawer main PWB.	Replace the main PWB or drawer main PWB and check for correct operation.
C0610	**Bitmap (DIMM) problem** There is a problem with the data or address bus of the bitmap DRAM.	Defective main PWB.	Replace the main PWB and check for correct operation.
		DIMM installed incorrectly.	Check if the DIMM is inserted into the socket on the main PWB correctly.
		Defective DIMM.	Replace the DIMM and check for correct operation.
C0620	**Memory input interface problem** Reading-in of an image does not complete within 10 s of the start of image transmission.	Defective main PWB.	Replace the main PWB and check for correct operation.
C0630	**DMA problem** DMA transmission of compressed, decompressed, rotated, relocated or blanked-out image data does not complete within the specified period of time.	Defective main PWB.	Replace the main PWB and check for correct operation.
C0800	**Image processing problem** JAM05 is detected twice.	Defective engine PWB.	Replace the engine PWB and check for correct operation.
C2000	**Drive motor problem** LOCK ALM signal remains high for 1 s, 1 s after the drive motor has turned on.	Poor contact of the connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective drive motor rotation control circuit.	Replace the drive motor.
		Defective drive transmission system.	Check if the rollers and gears rotate smoothly. If not, grease the bushings and gears. Check for broken gears and replace if any.

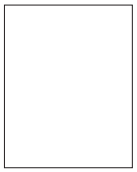
Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
C3100	**Scanner carriage problem** The home position is not correct when the power is turned on or copying the document placed on the contact glass.	Poor contact of the connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective scanner home position switch.	Replace the scanner home position switch.
		Defective engine PWB.	Replace the engine PWB and check for correct operation.
		Defective scanner motor.	Replace the scanner motor.
C3200	**Exposure lamp problem** Non-lighting of the exposure lamp is detected at the beginning of copying.	Poor contact of the connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective exposure lamp or inverter PWB.	Replace the exposure lamp or inverter PWB.
		Defective engine PWB.	Replace the engine PWB and check for correct operation.
		Incorrect shading position.	Adjust the position of the contact glass (shading plate). If the problem still occurs, replace the scanner home position switch.
C3300	**Optical system (AGC) problem** After AGC, correct input is not obtained at CCD.	Insufficient exposure lamp luminosity.	Replace the exposure lamp or inverter PWB.
		Defective engine PWB.	Replace the engine PWB and check for correct operation.
		Incorrect shading position.	Adjust the position of the contact glass (shading plate). If the problem still occurs, replace the scanner home position switch.
		Defective CCD PWB.	Replace the ISU.
C4000	**Polygon motor synchronization problem** The polygon motor does not reach the stable speed within 20 s of the START signal turning on.	Poor contact in the polygon motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective polygon motor.	Replace the LSU.
		Defective engine PWB.	Replace the engine PWB and check for correct operation.
C4010	**Polygon motor steady-state problem** The polygon motor rotation is not stable for 5 s after the polygon motor rotation has been stabilized.	Poor contact in the polygon motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective polygon motor.	Replace the LSU.
		Defective engine PWB.	Replace the engine PWB and check for correct operation.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
C4200	**BD steady-state problem** The MIC detects a BD error for 600 ms after the polygon motor rotation has been stabilized.	Defective laser diode.	Replace the LSU.
		Defective polygon motor.	Replace the LSU.
		Defective main PWB.	Replace the main PWB and check for correct operation.
		Defective engine PWB.	Replace the engine PWB and check for correct operation.
C6000	**Broken fuser heater wire** The temperature does not become 100°C/212°F even if 30 s pass before secondary stabilization. When there is no 1°C/1.8°F rise in 5 s before secondary stabilization.	Poor contact in the thermistor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Fuser thermistor installed incorrectly.	Check and reinstall if necessary.
		Fuser thermostat triggered.	Check for continuity. If none, replace the fuser thermostat.
		Fuser heater M or S installed incorrectly.	Check and reinstall if necessary.
		Broken fuser heater M or S wire.	Check for continuity. If none, replace the heater lamp.
C6020	**Abnormally high fuser unit thermistor temperature** The fuser temperature exceeds 230°C/446°F for 40 ms.	Shorted thermistor.	Measure the resistance. If it is 0 Ω, replace the thermistor.
		Broken heater control circuit on the power supply PWB.	Replace the power supply PWB and check for correct operation.
C6050	**Abnormally low fuser unit thermistor temperature** The fuser temperature remains below 90°C/194°F for 1 s.	Poor contact in the thermistor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Broken fuser thermistor wire.	Measure the resistance. If it is ∞ Ω, replace the fuser thermistor.
		Fuser thermistor installed incorrectly.	Check and reinstall if necessary.
		Fuser thermostat triggered.	Check for continuity. If none, replace the fuser thermostat.
		Fuser heater M or S installed incorrectly.	Check and reinstall if necessary.
		Broken fuser heater M or S wire.	Check for continuity. If none, replace the fuser heater M or S.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
C6400	**Zero-crossing signal problem** The engine PWB does not detect the zero-crossing signal for the time specified below. At power-on: 3 s Others: 5 s	Poor contact in the connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective power supply PWB.	Check if the zero-crossing signal is output from YC2-5 on the power supply PWB. If not, replace the power supply PWB.
		Defective engine PWB.	Replace the engine PWB if C6400 is detected while YC2-5 on the power supply PWB outputs the zero-crossing signal.
C7750	**Drum type mismatch problem A** The drum type does not mach with the software.	Defective software of the engine PWB.	Rewrite the software of the engine PWB.
		Defective engine PWB.	Replace the engine PWB and check for correct operation.
C7760	**Drum type mismatch problem B** The drum type is undefined.	Defective software of the engine PWB.	Rewrite the software of the engine PWB.
		Defective engine PWB.	Replace the engine PWB and check for correct operation.
C7800	**Broken external temperature thermistor** The input voltage is 0.5 V or less.	Poor contact in the humidity sensor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective humidity sensor.	Replace the drawer PWB and check for correct operation.
C7810	**Short-circuited external temperature thermistor** The input voltage is 4.5 V or more.	Poor contact in the humidity sensor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective humidity sensor.	Replace the drawer PWB and check for correct operation.

1-4-3 Image formation problems

(1)No image appears (entirely white).

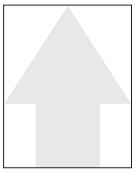


See page 1-4-21.

(2)No image appears (entirely black).

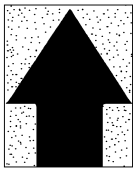
See page 1-4-21.

(3)Image is too light.



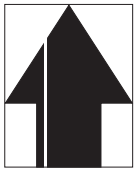
See page 1-4-22.

(4)Background is visible.



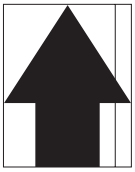
See page 1-4-22.

(5)A white line appears longitudinally.



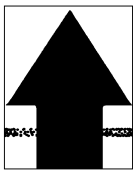
See page 1-4-22.

(6)A black line appears longitudinally.



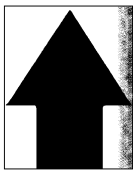
See page 1-4-22.

(7)A black line appears laterally.



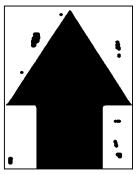
See page 1-4-23.

(8)One side of the copy image is darker than the other.



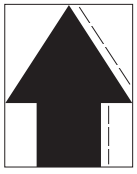
See page 1-4-23.

(9)Black dots appear on the image.



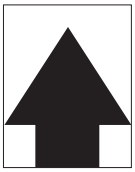
See page 1-4-23.

(10)Image is blurred.



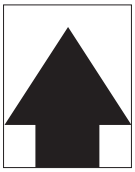
See page 1-4-23.

(11)The leading edge of the image is consistently misaligned with the original.



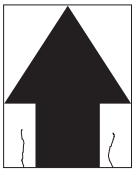
See page 1-4-24.

(12)The leading edge of the image is sporadically misaligned with the original.



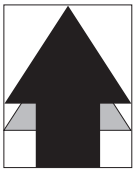
See page 1-4-24.

(13)Paper creases.



See page 1-4-24.

(14)Offset occurs.

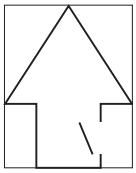


See page 1-4-24.

(15)Image is partly missing.

See page 1-4-25.

(16)Fuser is poor.

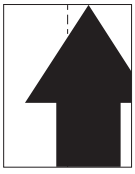


See page 1-4-25.

(17)Image is out of focus.

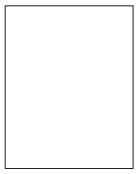
See page 1-4-25.

(18)Image center does not align with the original center.



See page 1-4-25.

(1) No image appears (entirely white).

Copy example	Causes		Check procedures/corrective measures
	No transfer charging.	The connector terminals of the high-voltage PWB make poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective engine PWB.	Replace the engine PWB and check for correct operation.
		Defective high-voltage PWB.	Replace the high voltage PWB and check for correct operation.
	No LSU laser is output.	Defective laser scanner unit.	Replace the laser scanner unit (see page 1-5-19).
		Defective main PWB.	Replace the main PWB and check for correct operation.
	No developing bias is output.	The connector terminals of the high-voltage PWB make poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective engine PWB.	Replace the engine PWB and check for correct operation.
		Defective high-voltage PWB.	Replace the high voltage PWB and check for correct operation.

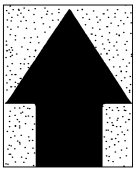
(2) No image appears (entirely black).

Copy example	Causes		Check procedures/corrective measures
	No main charging.	Broken main charger wire.	Replace the main charger unit (see page 1-5-25).
		Leaking main charger housing.	Clean the main charger wire, grid and shield.
		The connector terminals of the high-voltage PWB make poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective engine PWB.	Check if YC9-5 on the engine PWB goes low when maintenance item U100 is run. If not, replace the engine PWB.
		Defective high-voltage PWB.	Check if main charging takes place when YC1-12 on the high-voltage PWB goes low while maintenance item U100 is run. If not, replace the high-voltage PWB.
	Exposure lamp fails to light.	The connector terminals of the exposure lamp make poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective inverter PWB.	Check if the exposure lamp lights when YC1-1 and 1-6 on the inverter PWB go low while maintenance item U061 is run. If not, replace the inverter PWB.
		Defective engine PWB.	Check if YC17-1 and YC17-6 on the engine PWB goes low when maintenance item U061 is run. If not, replace the engine PWB.

(3) Image is too light.

Copy example	Causes	Check procedures/corrective measures
	Insufficient toner.	If the add toner indicator lights, replace the toner container.
	The transfer voltage is not output properly.	Clean or check the transfer roller (see page 1-5-27).
	Dirty main charger wire.	Clean the main charger wire or, if it is extremely dirty, replace the main charger unit (see page 1-5-25).
	Dirty main charger grid.	Clean the main charger grid or, if it is extremely dirty, replace the main charger unit (see page 1-5-25).

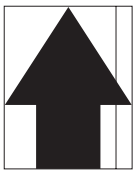
(4) Background is visible.

Copy example	Causes	Check procedures/corrective measures
	The developing bias voltage is not properly.	Replace the high voltage PWB and check for correct operation.
	Dirty main charger wire.	Clean the main charger wire or, if it is extremely dirty, replace the main charger unit (see page 1-5-25).

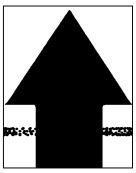
(5) A white line appears longitudinally.

Copy example	Causes	Check procedures/corrective measures
	Dirty main charger wire.	Clean the main charger wire or, if it is extremely dirty, replace the main charger unit (see page 1-5-25).
	Foreign matter in the developing unit.	Check if the magnetic brush is formed uniformly. Replace the developing unit if any foreign matter (see page 1-5-26).
	Dirty shading plate.	Clean the shading plate.

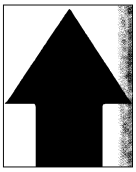
(6) A black line appears longitudinally.

Copy example	Causes	Check procedures/corrective measures
	Dirty contact glass.	Clean the contact glass.
	Dirty or flawed drum.	Clean the drum or, if it is flawed, replace the drum unit (see page 1-5-23).
	Dirty scanner mirror.	Clean the scanner mirror.
	Dirty main charger wire.	Clean the main charger wire or, if it is extremely dirty, replace the main charger unit (see page 1-5-25).

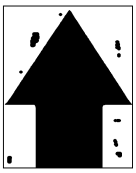
(7) A black line appears laterally.

Copy example	Causes	Check procedures/corrective measures
	Dirty contact glass.	Clean the contact glass.
	Dirty or flawed drum.	Clean the drum or, if it is flawed, replace it (see page 1-5-23).
	Dirty scanner mirror.	Clean the scanner mirror.
	Dirty shading plate.	Clean the shading plate.
	Leaking main charger housing.	Clean the main charger wire, grid and shield.

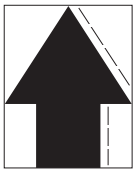
(8) One side of the copy image is darker than the other.

Copy example	Causes	Check procedures/corrective measures
	Dirty main charger wire.	Clean the main charger wire or, if it is extremely dirty, replace the main charger unit (see page 1-5-25).
	Defective exposure lamp.	Check if the exposure lamp light is distributed evenly. If not, replace the exposure lamp (see page 1-5-12).

(9) Black dots appear on the image.

Copy example	Causes	Check procedures/corrective measures
	Dirty or flawed drum.	Clean the drum or, if it is flawed, replace the drum unit (see page 1-5-23).
	Dirty contact glass.	Clean the contact glass.
	Deformed or worn cleaning blade.	Replace the drum unit (see page 1-5-23).
	Dirty drum separation claws.	Clean the drum separation claws.
	Dirty the heat roller separation claws.	Clean the heat roller separation claws.

(10) Black dots appear on the image.

Copy example	Causes	Check procedures/corrective measures
	Scanner moves erratically.	Check if there is any foreign matter on the front and rear scanner rails. If any, remove it.
	Deformed press roller.	Replace the press roller (see page 1-5-30).
	Paper conveying section drive problem.	Check the gears and belts and, if necessary, grease them.

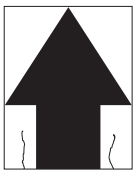
(11) The leading edge of the image is consistently misaligned with the original.

Copy example	Causes	Check procedures/corrective measures
	Misadjusted leading edge registration.	Readjust the leading edge registration (see page 1-3-12).
	Misadjusted scanner leading edge registration.	Readjust the scanner leading edge registration (see page 1-3-19).

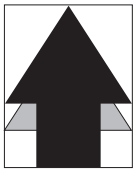
(12) The leading edge of the image is sporadically misaligned with the original.

Copy example	Causes	Check procedures/corrective measures
	Paper feed clutch, MP paper feed clutch or registration motor installed or operating incorrectly.	Check the installation position and operation of the paper feed clutch, MP paper feed clutch and registration motor. If any of them operates incorrectly, replace it.

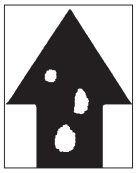
(13) Paper creases.

Copy example	Causes	Check procedures/corrective measures
	Paper curled.	Check the paper storage conditions.
	Paper damp.	Check the paper storage conditions.
	Defective pressure springs.	Replace the pressure springs.
	Defective separation.	Check the drum separation claws and heat roller separation claws.
	Dirty separation electrode.	Clean the separation electrode.

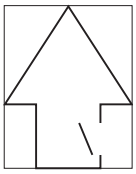
(14) Offset occurs.

Copy example	Causes	Check procedures/corrective measures
	Defective cleaning blade.	Replace the drum unit (see page 1-5-23).
	Defective fuser section.	Check the heat roller and press roller.

(15) Image is partly missing.

Copy example	Causes	Check procedures/corrective measures
	Paper damp.	Check the paper storage conditions.
	Paper creased.	Replace the paper.
	Dirty or flawed drum.	Clean the drum or, if it is flawed, replace the drum unit (see page 1-5-23).
	Dirty transfer roller.	Clean the transfer roller.

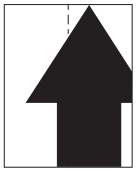
(16) Fuser is poor.

Copy example	Causes	Check procedures/corrective measures
	Wrong paper.	Check if the paper meets specifications.
	Defective pressure springs.	Replace the pressure springs.
	Flawed press roller.	Replace the press roller (see page 1-5-30).
	Defective fuser heater.	Replace the fuser heater (see page 1-5-31).

(17) Image is out of focus.

Copy example	Causes	Check procedures/corrective measures
	Defective image scanning unit.	Replace the image scanning unit (see page 1-5-18).
	Drum condensation.	Clean the drum.

(18) Image center does not align with the original center.

Copy example	Causes	Check procedures/corrective measures
	Misadjusted center line of image printing.	Readjust the center line of image printing (see page 1-3-12).
	Misadjusted scanner center line.	Readjust the scanner center line (see page 1-3-20).
	Original placed incorrectly.	Place the original correctly.

1-4-4 Electric problems

Problem	Causes	Check procedures/corrective measures
(1) The machine does not operate when the power switch is turned on.	No electricity at the power outlet.	Measure the input voltage.
	The power cord is not plugged in properly.	Check the contact between the power plug and the outlet.
	The front cover or left cover is not closed completely.	Check the front cover and left cover.
	Broken power cord.	Check for continuity. If none, replace the cord.
	Defective power switch.	Check for continuity across the contacts. If none, replace the power switch.
	Blown fuse in the power source PWB.	Check for continuity. If none, remove the cause of blowing and replace the fuse.
	Defective front or left cover safety switch.	Check for continuity across the contacts of each switch. If none, replace the switch.
	Defective power source PWB.	With AC present, check for 24 V DC at YC1-1 and 5 V DC at YC1-7 on the power source PWB. If none, replace the power source PWB.
(2) The drive motor, registration motor or exit motor does not operate	Poor contact in the connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Broken the gear.	Check visually and replace the gear if necessary.
	Defective the motor.	Run maintenance item U030 and check if the motor operates when the following terminals on the PWB goes low. If not, replace the corresponding motor. Drive motor: YC7-5 on the engine PWB Registration motor: YC2-1,2,4,5 on the registration motor PWB Exit motor: YC14-1,2,3,4 on the engine PWB
	Defective engine PWB.	Run maintenance item U030 and check if following terminals on the engine PWB goes low. If not, replace the engine PWB. Drive motor: YC7-5 on the engine PWB Registration motor: YC4-4 on the engine PWB Exit motor: YC14-1,2,3,4 on the engine PWB
(3) The scanner motor, cooling fan motor 1 or 2 does not operate.	Broken the motor coil.	Check for continuity across the coil. If none, replace the motor.
	Poor contact in the connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
(4) The paper feed clutch or MP paper feed clutch does not operate.	Broken the clutch coil.	Check for continuity across the coil. If none, replace the clutch.
	Poor contact in the connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective engine PWB.	Run maintenance item U032 and check if following terminals on the engine PWB goes low. If not, replace the engine PWB. Paper feed clutch: YC8-3 on the engine PWB MP paper feed clutch: YC8-5 on the engine PWB
(5) The cleaning lamp does not turn on.	Poor contact in the connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective cleaning lamp.	Check for continuity. If none, replace the cleaning lamp.
	Defective engine PWB.	If the cleaning lamp turns on when YC3-12,13 on the engine PWB is held low, replace the engine PWB.

Problem	Causes	Check procedures/corrective measures
(6) The exposure lamp does not turn on or off.	Poor contact in the connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective inverter PWB.	Run maintenance item U061 and check if the exposure lamp turns on with YC1-1 and YC1-6 on the inverter PWB go low. If not, replace the inverter PWB.
		If the exposure lamp does not turn off with YC1-1 and YC1-6 on the inverter PWB high, replace the inverter PWB.
	Defective engine PWB.	Run maintenance item U061 and check if YC17-1 and YC17-6 on the engine PWB goes low. If not, replace the engine PWB.
		If YC17-1 and YC17-6 on the engine PWB are always low, replace the engine PWB.
(7) The fuser heater does not turn on or off.	Broken wire in fuser heater M or S.	Check for continuity across each heater. If none, replace the heater M or S.
	Fuser thermostat triggered.	Check for continuity across thermostat. If none, remove the cause and replace the thermostat.
	Broken fuser thermistor wire.	Measure the resistance. If it is $\infty\ \Omega$, replace the fuser thermistor.
	Dirty sensor part of the fuser thermistor.	Check visually and clean the thermistor sensor parts.
(8) Main charging is not performed.	Broken main charger wire.	See page 1-4-20.
	Leaking main charger housing.	
	Poor contact in the high voltage PWB connector terminals.	
	Defective engine PWB.	
	Defective high- voltage PWB.	
(9) Transfer charging is not performed.	Poor contact in the high voltage PWB connector terminals.	See page 1-4-20.
	Defective engine PWB.	
	Defective high-voltage PWB.	
(10) No developing bias is output.	Poor contact in the high voltage PWB connector terminals.	See page 1-4-20.
	Defective engine PWB.	
	Defective high-voltage PWB.	

Problem	Causes	Check procedures/corrective measures
(11) The original size is not detected correctly.	Original is not placed correctly.	Check the original and correct if necessary.
	Poor contact in the original size detection sensor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective original detection switch.	If the level of YC18-5 on the engine PWB does not change when the original detection switch is turned on and off, replace the original detection switch.
	Defective original size detection sensor.	Check if sensor operates correctly. If not, replace it.
(12) The message requesting paper to be loaded is shown when paper is present in the drawer or MP tray.	Poor contact in the paper switch or MP paper switch connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective paper switch.	If the level of YC8-2 on the engine PWB does not change when the paper switch is turned on and off, replace the paper switch.
	Defective MP paper switch.	If the level of YC8-1 on the engine PWB does not change when the MP paper switch is turned on and off, replace the MP paper switch.
(13) The size of paper in the drawer is not displayed correctly.	Poor contact in the paper length switch connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective paper length switch.	Check if YC22-1,2,4 on the engine PWB goes low when the paper length switch is turned on. If not, replace the paper length switch.
(14) A paper jam in the paper feed, paper conveying or fuser section is indicated when the power switch is turned on.	A piece of paper torn from copy paper is caught around registration switch, exit switch or feedshift switch.	Check and remove if any.
	Defective registration switch, exit switch or feedshift switch.	Run maintenance item U031 and turn each switch on and off manually. Replace the corresponding switch if indication of switch is not light.
(15) The message requesting covers to be closed is displayed when the front cover and left cover are closed.	Poor contact in the connector terminals of safety switch.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective safety switch.	Check for continuity across each switch. If there is no continuity when the switch is on, replace it.
(16) Others.	Wiring is broken, shorted or makes poor contact.	Check for continuity. If none, repair.
	Noise.	Locate the source of noise and remove.

1-4-5 Mechanical problems

Problem	Causes/check procedures	Corrective measures
(1) No primary paper feed.	Check if the surfaces of the following rollers or pulleys are dirty with paper powder: forwarding pulley, paper feed pulley, separation pulley, registration rollers, MP paper feed pulley and MP separation pad.	Clean with isopropyl alcohol.
	Check if the forwarding pulley, paper feed pulley or separation pulley is deformed.	Check visually and replace any deformed pulleys (see pages page 1-5-3 and 5).
	Electrical problem with the following electromagnetic clutches: paper feed clutch and MP paper feed clutch.	See page 1-4-26.
(2) No secondary paper feed.	Check if the surfaces of the right and left registration rollers are dirty with paper powder.	Clean with isopropyl alcohol.
	Electrical problem with the registration motor.	See page 1-4-26.
(3) Skewed paper feed.	Width guide in a drawer installed incorrectly.	Check the width guide visually and correct or replace if necessary.
	Deformed width guide in a drawer.	Repair or replace if necessary.
	Check if a pressure spring along the paper conveying path is deformed or out of place.	Repair or replace.
(4) The scanner does not travel.	Check if the scanner wire is loose.	Reinstall the scanner wire (see page 1-5-13).
	The scanner motor malfunctions.	See page 1-4-26.
(5) Multiple sheets of paper are fed at one time.	Check if the separation pulley is worn.	Replace the separation pulley if it is worn (see page 1-5-3).
	Check if the paper is curled.	Change the paper.
(6) Paper jams.	Check if the paper is excessively curled.	Change the paper.
	Deformed guides along the paper conveying path.	Repair or replace if necessary.
	Check if the contact between the right and left registration rollers is correct.	Check visually and remedy if necessary.
	Check if the press roller is extremely dirty or deformed.	Clean or replace the press roller (seepage 1-5-30).
	Check if the contact between the heat roller and its separation claws is correct.	Repair if any springs are off the separation claws.
	Check if the contact between the exit roller and pulley is correct.	Check visually and remedy if necessary.
(7) Toner drops on the paper conveying path.	Check if the developing unit is extremely dirty.	Clean the developing unit.
(8) Abnormal noise is heard.	Check if the pulleys, rollers and gears operate smoothly.	Grease the bearings and gears.
	Check if the following electromagnetic clutches are installed correctly: paper feed clutch and MP paper feed clutch.	Correct.

1-5-1 Precautions for assembly and disassembly

(1) Precautions

Be sure to turn the power switch off and disconnect the power plug before starting disassembly.
When handling PWBs, do not touch connectors with bare hands or damage the board.
Do not touch any PWB containing ICs with bare hands or any object prone to static charge.
Use only the specified parts to replace the fuser unit thermostat. Never substitute electric wires, as the copier may be seriously damaged.

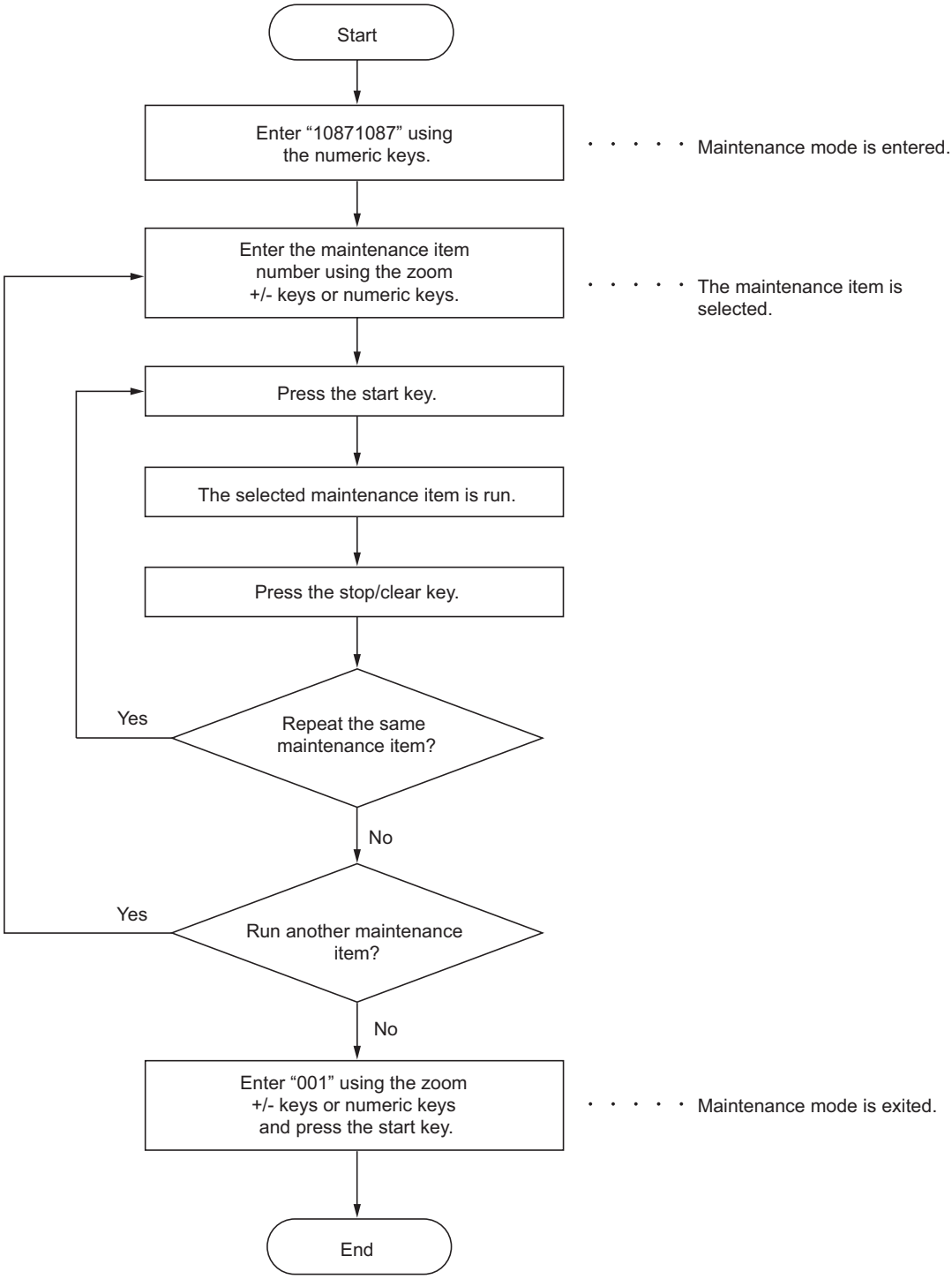
(2) Drum

Note the following when handling or storing the drum.
When removing the drum unit, never expose the drum surface to strong direct light.
Keep the drum at an ambient temperature between -20°C/-4°F and 55°C/131°F and at a relative humidity not higher than 90% RH. Avoid abrupt changes in temperature and humidity.
Avoid exposure to any substance which is harmful to or may affect the quality of the drum.
Do not touch the drum surface with any object. Should it be touched by hands or stained with oil, clean it.

(3) Toner

Store the toner in a cool, dark place. Avoid direct light and high humidity.

(4) Running a maintenance item



1-5-2 Paper feed section

(1) Detaching and refitting the separation pulley

Follow the procedure below to replace the separation pulley.

Procedure

1. Open the front cover and left cover. Remove the waste toner box.
2. Pull out the drawer.

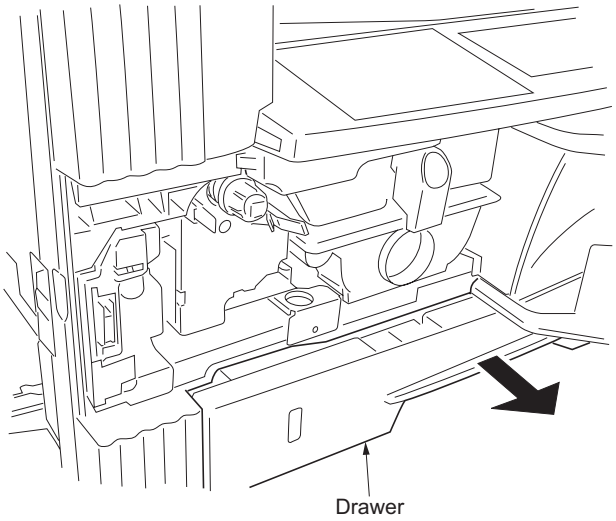


Figure 1-5-1

3. Remove the screw and then the front left lower cover.

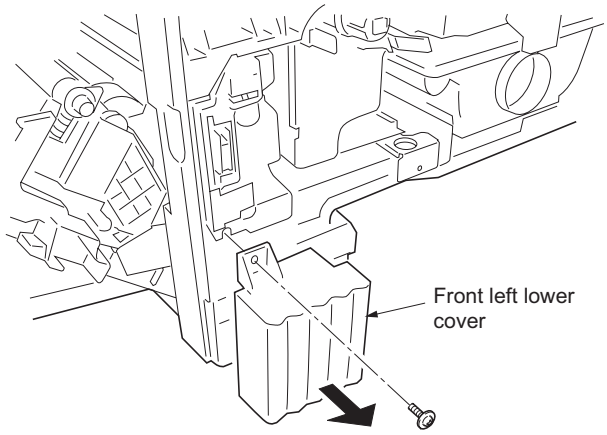


Figure 1-5-2

4. Remove the screw and then the lower paper feed unit.

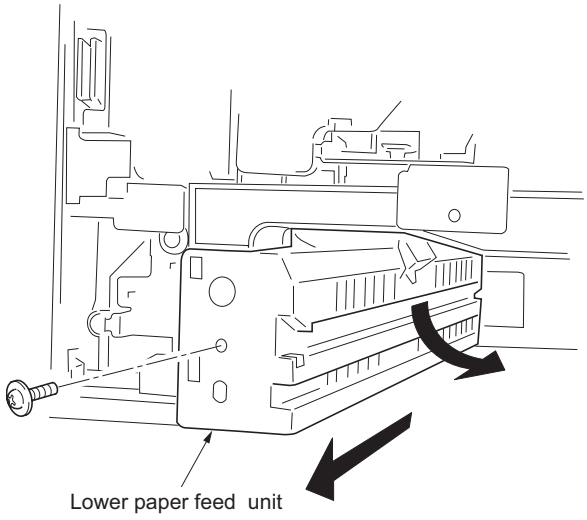


Figure 1-5-3

5. Remove the separation pulley unit from the lower paper feed unit.
6. Remove the separation pulley from the separation pulley unit.
7. Replace the separation pulley and refit all the removed parts.

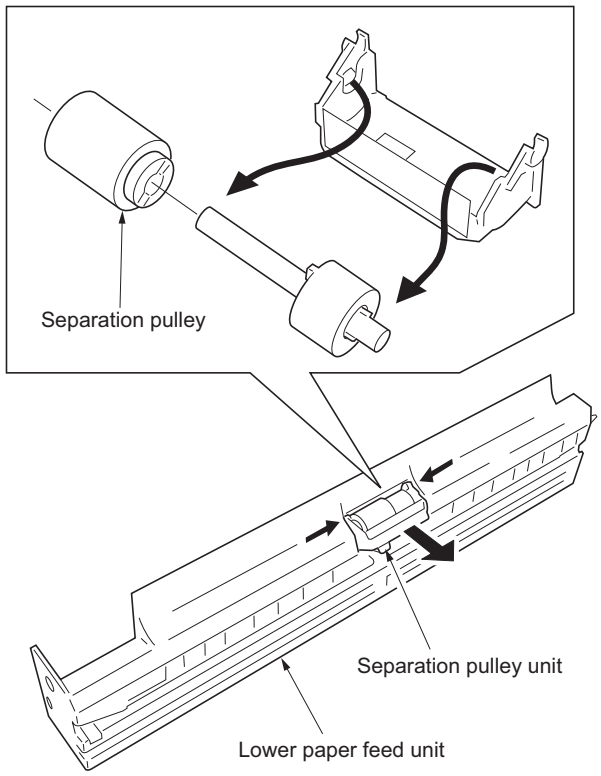


Figure 1-5-4

(2) Detaching and refitting the forwarding pulley and paper feed pulley

Follow the procedure below to replace the forwarding pulley and paper feed pulley.

Procedure

1. Remove the lower paper feed unit (see page 1-5-3).
2. Remove the drum unit (see page 1-5-23).
3. Remove the rear cover.
4. Remove the paper feed clutch, stop ring and bushing at the machine rear.

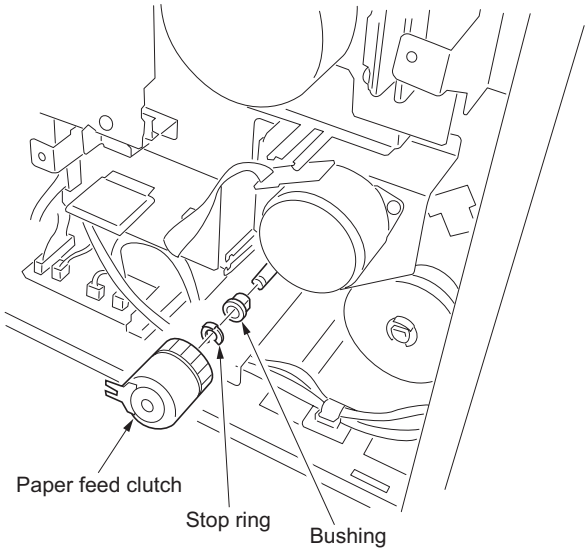


Figure 1-5-5

5. Remove the screw and then the registration guide.

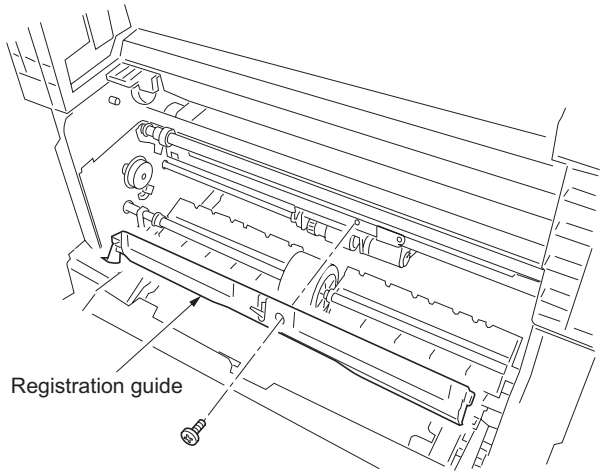


Figure 1-5-6

6. Remove the screw and then the upper paper feed unit.

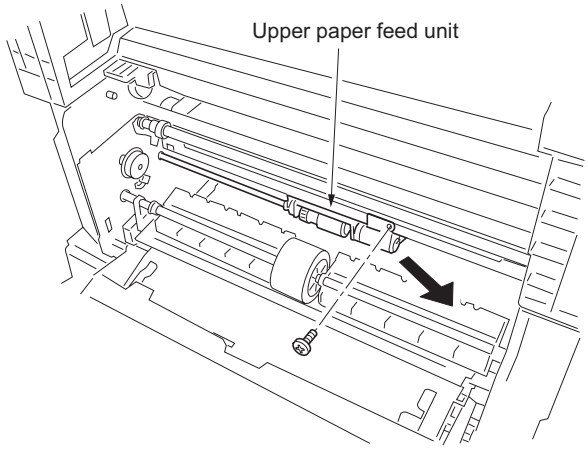


Figure 1-5-7

7. Remove the springs, stop ring and bushing and then the shaft holder from the upper paper feed unit.

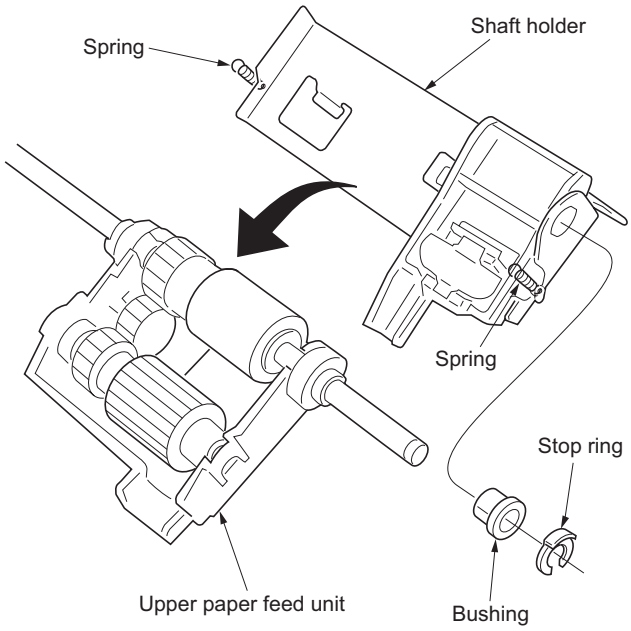


Figure 1-5-8

8. Remove the forwarding pulley from the upper paper feed unit.
9. Remove the paper feed pulley from the upper paper feed unit.
10. Replace the forwarding pulley and paper feed pulley and refit all the removed parts.

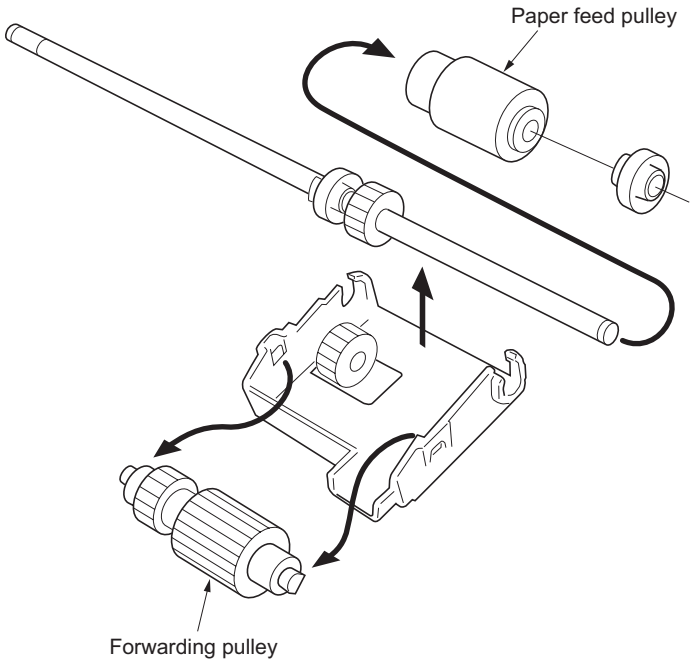


Figure 1-5-9

(3) Detaching and refitting the paper conveying unit

Follow the procedure below to maintenance of the paper feed section.

Procedure

1. Remove the drum unit (see page 1-5-23).
2. Remove the stop ring and strap from the rear side. Restore the paper conveying unit. Remove the pin and plate, and then remove the stopper from the front side.
3. Open the left cover until it is put horizontally.

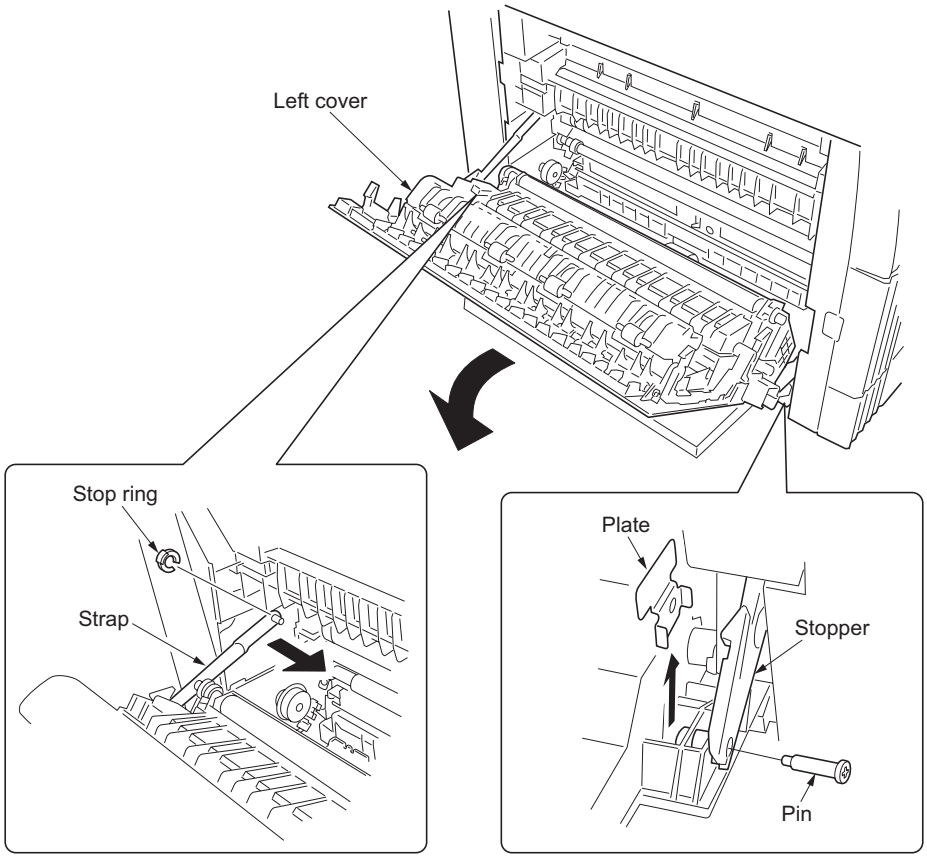


Figure 1-5-10

4. Push the fitting portions of the fixtures located on the front and rear and then remove the fixtures from the left cover.
5. Remove the left cover from the copier.

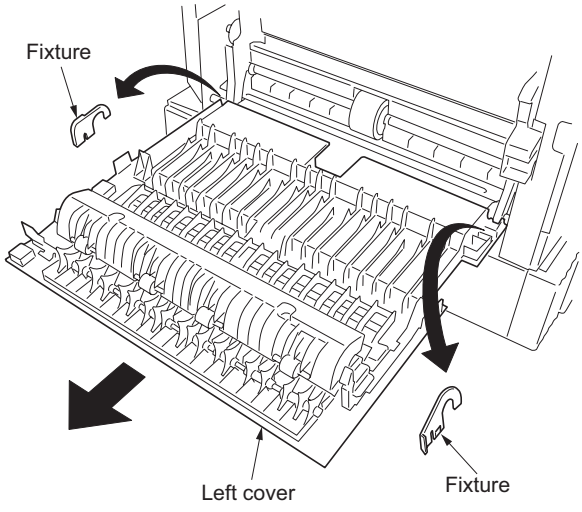


Figure 1-5-11

6. Push the fitting portions of the MP upper cover. Remove the MP upper cover from the MP unit.

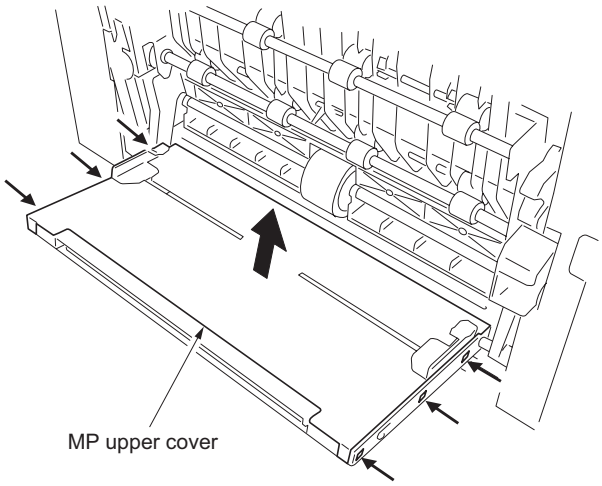


Figure 1-5-12

7. Detach the connector and remove the MP lower cover from the copier.

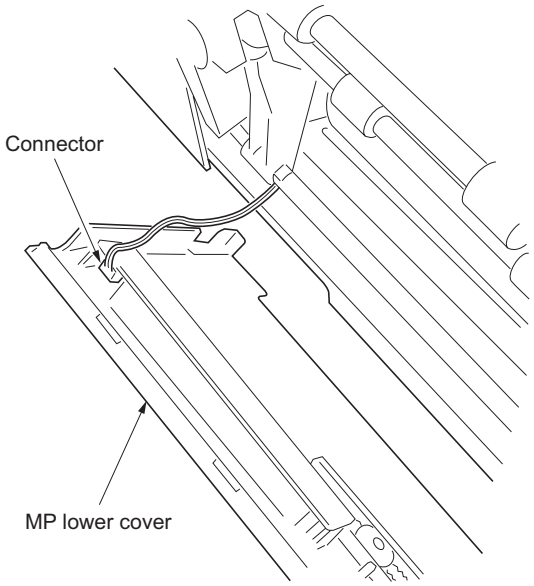


Figure 1-5-13

8. Remove the paper conveying unit from the copier.

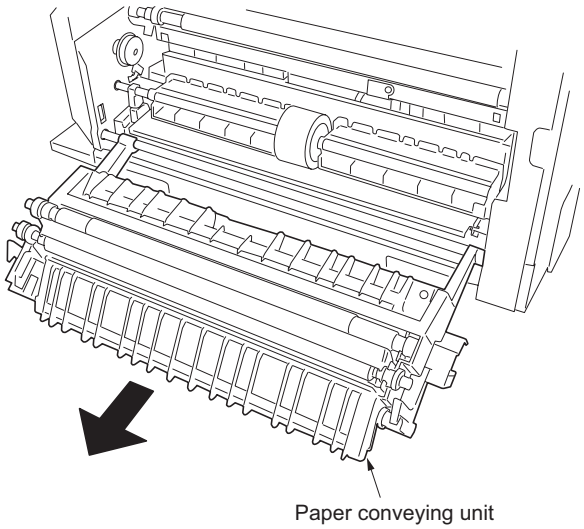


Figure 1-5-14

(4) Detaching and refitting the MP paper feed pulley and MP separation pad

Follow the procedure below to replace the MP paper feed pulley and MP separation pad.

Procedure

1. Open the front cover and remove the waste toner box. Pull out the drawer.
2. Remove the screw and then the front left lower cover.

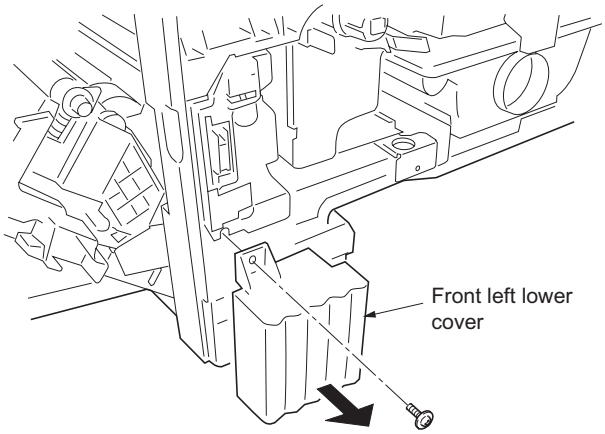


Figure 1-5-15

3. Remove the paper conveying unit (see page 1-5-7).
4. Remove the stop ring and bushing at the machine front side.

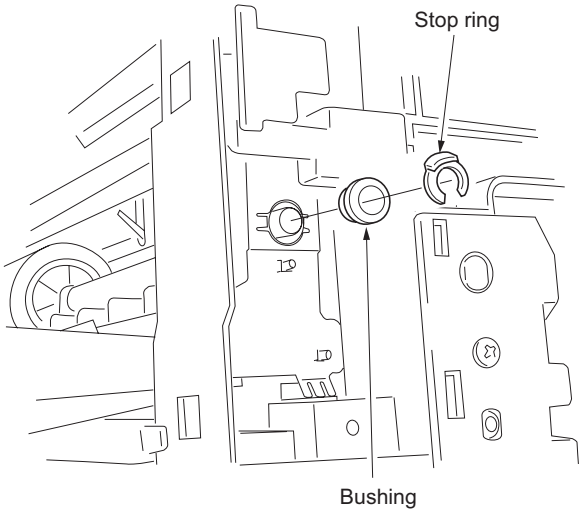


Figure 1-5-16

5. Remove the rear cover.
6. Remove the stop ring, MP paper feed clutch and bushing at the machine rear side.

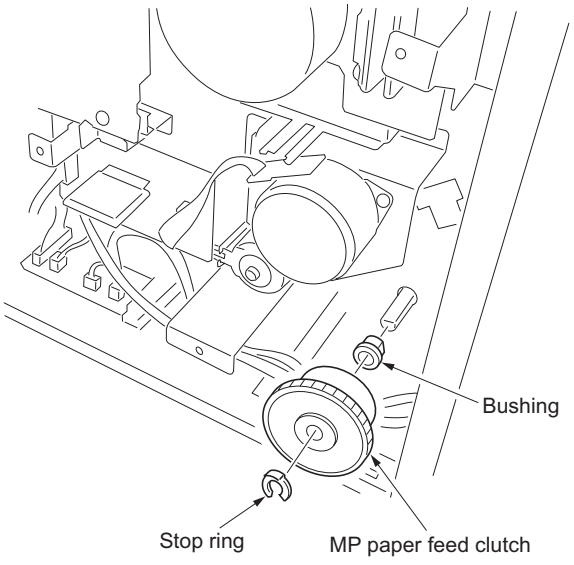


Figure 1-5-17

7. Temporarily push the MP paper feed pulley unit into the rear side to unlock the front side and then remove it from the copier.

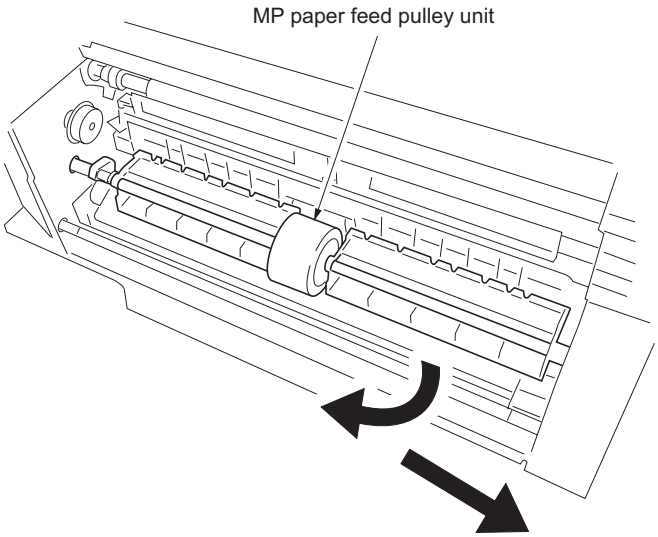


Figure 1-5-18

8. Remove the MP paper feed pulley from the MP paper feed pulley shaft.

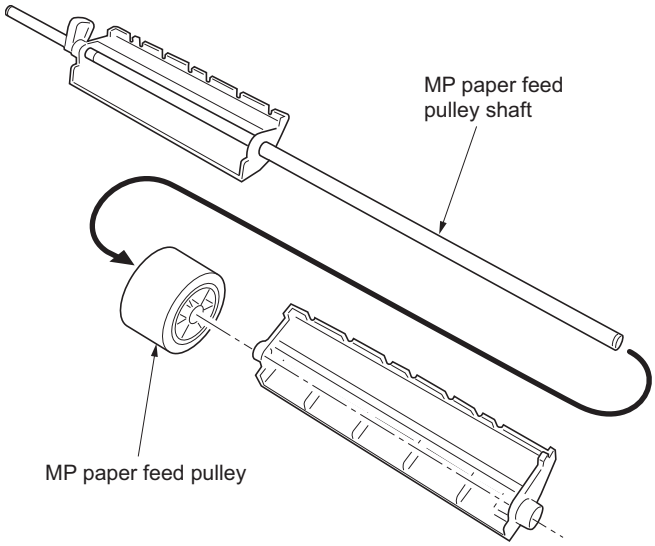


Figure 1-5-19

9. Push the fitting portions of the MP separation pad. Remove the MP separation pad from the copier.
10. Replace the MP paper feed pulley and MP separation pad and refit all the removed parts.

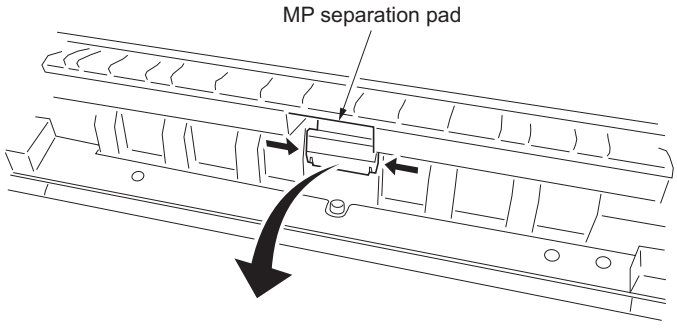


Figure 1-5-20

(5) Detaching and refitting the registration left roller

Follow the procedure below to replace the registration left roller.

Procedure

1. Remove the paper conveying unit (see page 1-5-7).
2. Remove the transfer roller (see page 1-5-27).
3. Release the stoppers at the front and rear side, and then remove the registration left roller from the paper conveying unit.
4. Replace the registration left roller and refit all the removed parts.

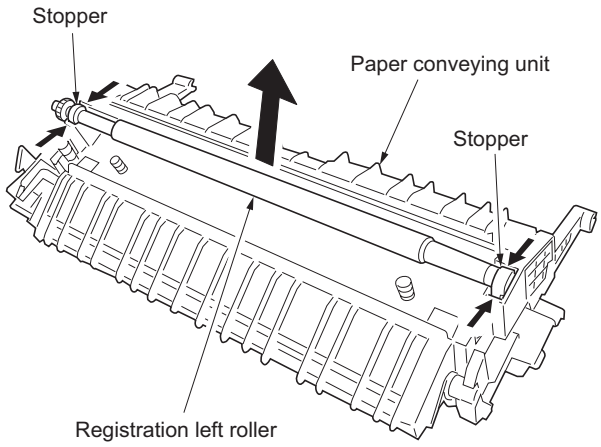


Figure 1-5-21

(6) Detaching and refitting the registration cleaner

Follow the procedure below to replace the registration cleaner.

Procedure

1. Remove the drum unit (see page 1-5-23).
2. Remove the screw and then the registration guide.

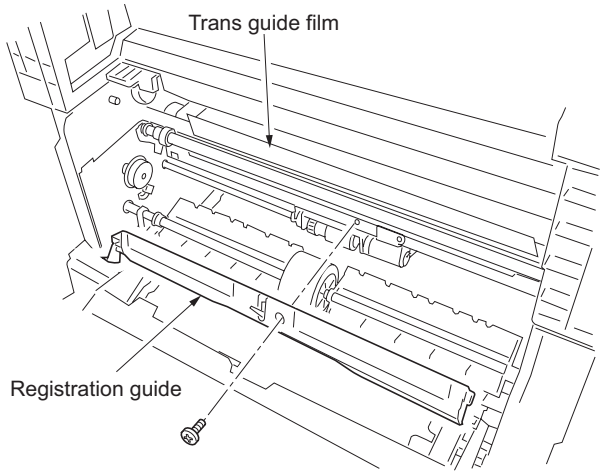


Figure 1-5-22

3. Remove the screw and then the registration cleaner.
4. Replace the registration cleaner and refit all the removed parts.

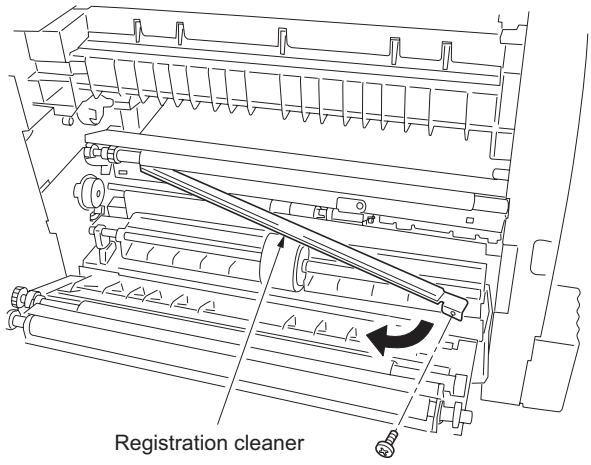


Figure 1-5-23

1-5-3 Optical section

(1) Detaching and refitting the exposure lamp

Take the following procedure when the exposure lamp is to be replaced.

Procedure

1. Remove the original cover or the DP.
2. Remove the two screws holding the upper right cover and then the cover. Remove the contact glass.

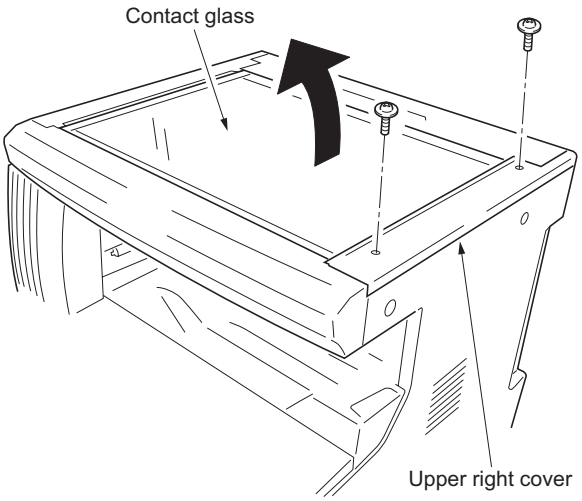


Figure 1-5-24

3. Move the mirror 1 frame to the cutouts of the machine.
   When moving the mirror 1 frame, do not touch the exposure lamp nor the inverter PWB.
4. Detach the exposure lamp connector from the inverter PWB and release the wire from three clamps.

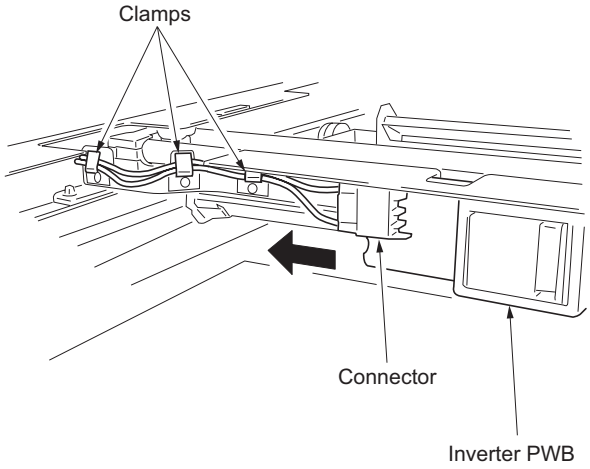


Figure 1-5-25

5. Remove the two screws holding the exposure lamp and then the lamp.
6. Replace the exposure lamp and refit all the removed parts.

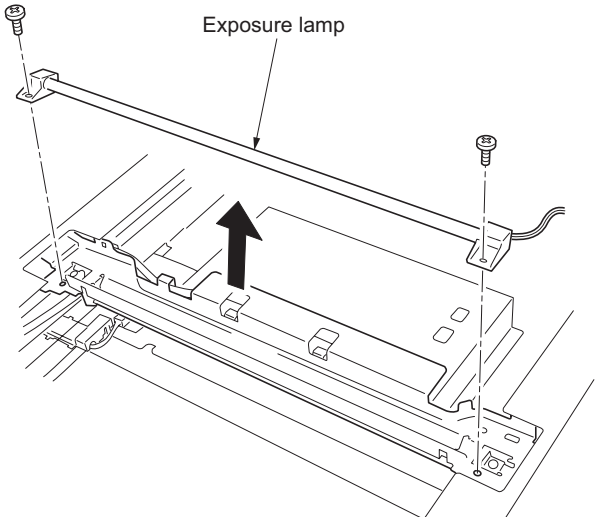


Figure 1-5-26

(2) Detaching and refitting the scanner wires

Take the following procedure when the scanner wires are broken or to be replaced.

(2-1) Detaching the scanner wires

Procedure

1. Remove the exposure lamp (see page 1-5-12).
2. Remove the two screws holding the upper rear cover and then the cover. Remove the two screws holding the middle left cover and upper left cover and then the covers.

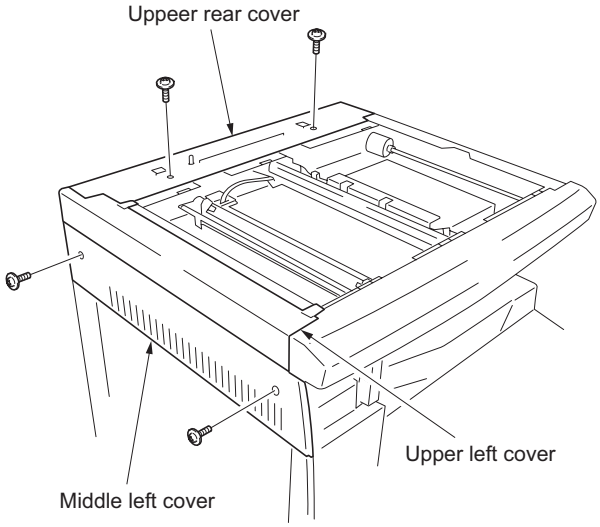


Figure 1-5-27

3. Remove the screw and then the slit retainer and slit glass. Detach the fitting portions and then remove the front scanner cover.

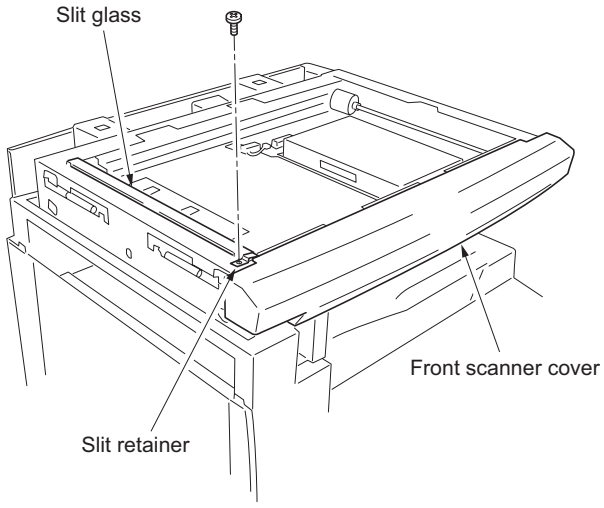


Figure 1-5-28

4. Remove the inverter wire guide and then detach the inverter wire from the inverter PWB.

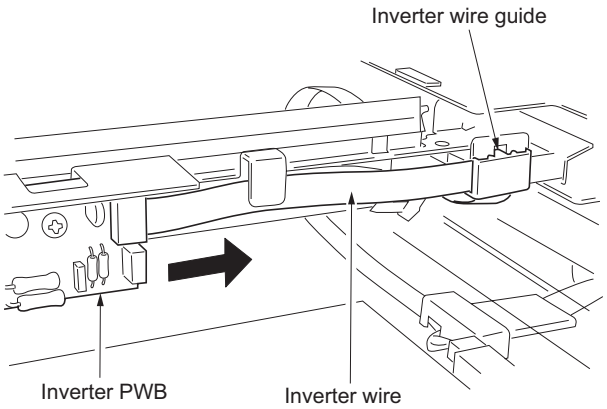


Figure 1-5-29

5. Remove the screw holding each of the front and rear wire retainers and then remove the mirror 1 frame from the scanner unit.

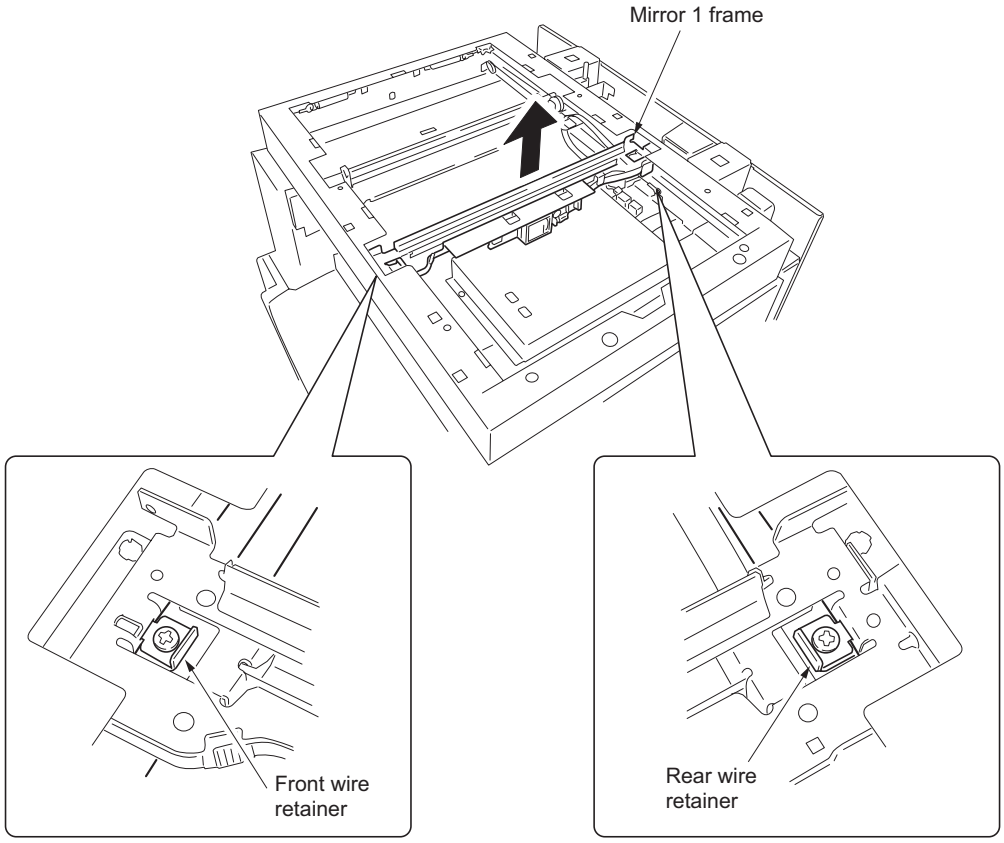


Figure 1-5-30

6. Unhook the round terminal of the scanner wire from the scanner tension spring on the left side of the scanner unit.
7. Remove the scanner wire.

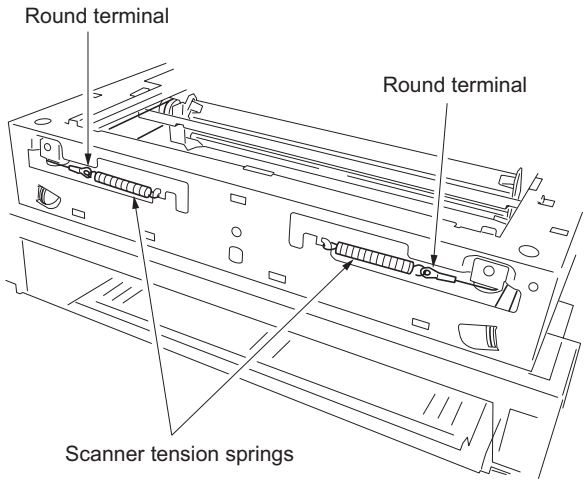


Figure 1-5-31

(2-2) Fitting the scanner wires

Caution:
When fitting the wires, be sure to use those specified below.
Machine front: (gray)
Machine rear: (black)

Fitting requires the following tools:
Two frame securing tools
Two scanner wire stoppers

Procedure

1. Remove the screw and then scanner wire drum gear at the machine rear side.

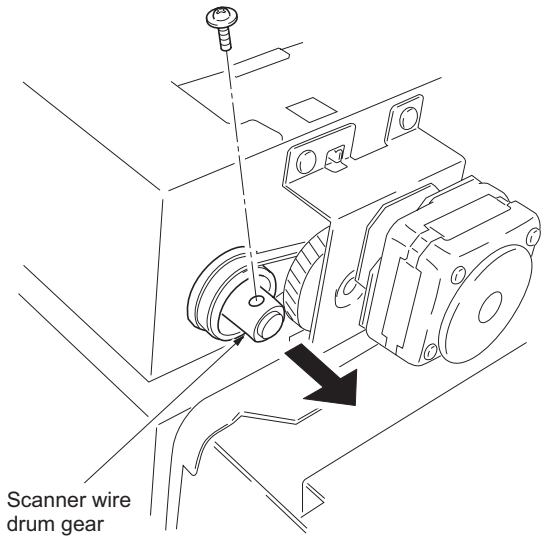


Figure 1-5-32

2. Remove the stop ring and bushing from the front of the scanner wire drum shaft.
3. Remove the scanner wire drum shaft from the scanner unit.

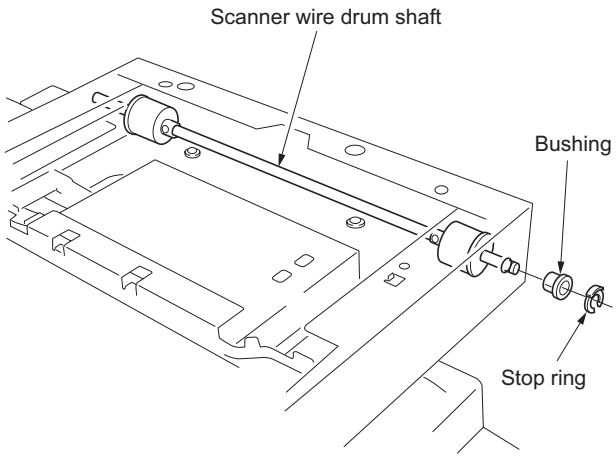


Figure 1-5-33

4. Insert the locating ball on each of the scanner wires into the hole in the respective scanner wire drum and wind the scanner wire three turns inward and four turns outward.
   With the locating ball as the reference point, wind the shorter end of each of the wires outward.
5. Secure the scanner wires using the scanner wire stoppers.

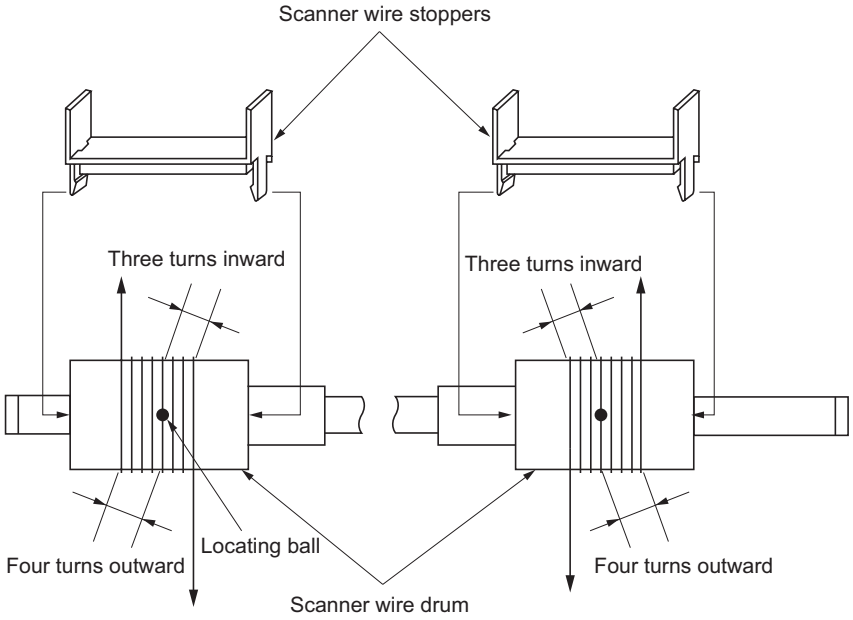


Figure 1-5-34

6. Refit the scanner wire drum shaft to the scanner unit.
7. Insert the two frame securing tools into the positioning holes at the front and rear of the scanner unit to pin the mirror 2 frame in position.

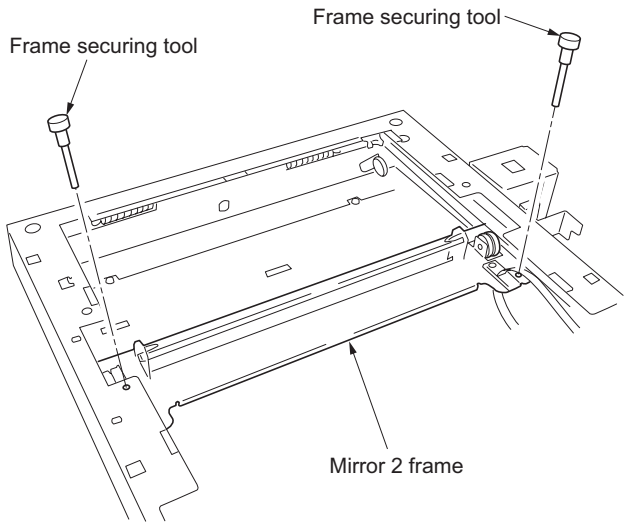


Figure 1-5-35

8. Loop the outer ends of the scanner wires around the outer grooves in the pulleys on the mirror 2 frame, winding from below to above. ..... (1)
9. Hook the round terminals onto the catches inside the scanner unit. ..... (2)
10. Loop the inner ends of the scanner wires around the grooves in the pulleys at the left of the scanner unit, winding from below to above. ..... (3)
11. Loop the scanner wires around the inner grooves in the pulleys on the mirror 2 frame, winding from above to below. ..... (4)
12. Wind the scanner wires around the grooves in the scanner wire guides at the left of the scanner unit. ..... (5)
13. Hook the round terminals onto the scanner tension springs. ..... (6)

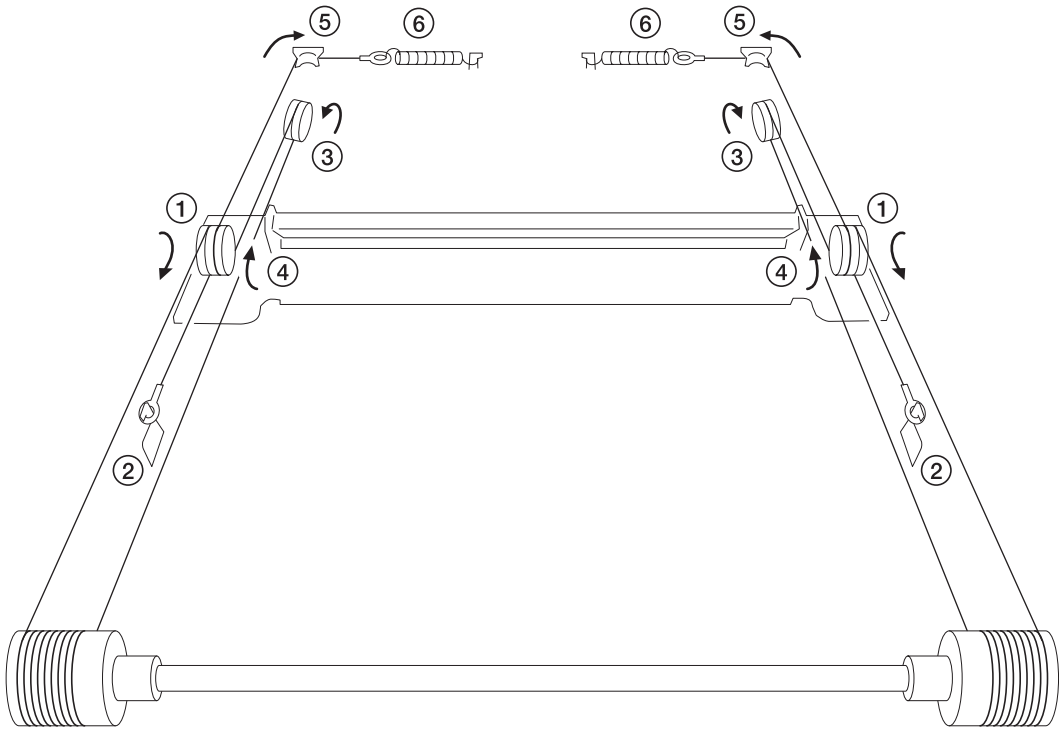


Figure 1-5-36

14. Remove the scanner wire stoppers and frame securing tools.
15. Gather the scanner wires toward the locating balls.
16. Move the mirror 2 frame from side to side to correctly locate the wires in position.
17. Put the mirror 1 frame on the scanner rail and move it toward the left side of the machine.
18. Insert the frame securing tools into the positioning holes (leftmost holes) at the front and the rear of the scanner unit and screw the mirror 1 frame while securing both the mirror 1 frame and the mirror 2 frame.
19. Remove the two frame securing tools.
20. Refit all the removed parts.

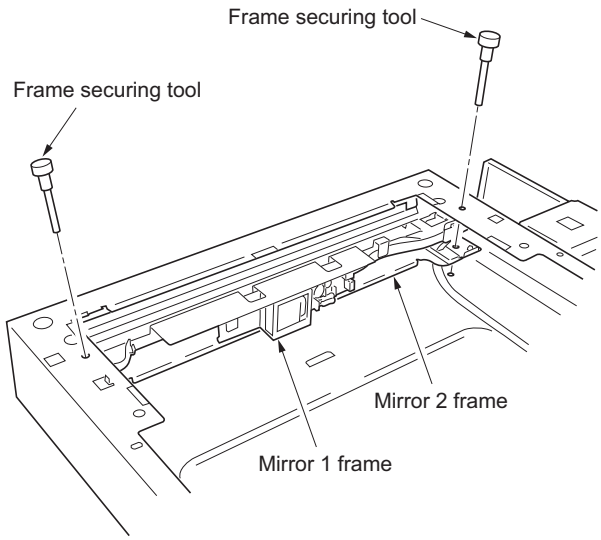


Figure 1-5-37

(3) Detaching and refitting the ISU (reference)

Take the following procedure when the ISU is to be replaced.

Procedure

Detaching the ISU

1. Remove the contact glass (see page 1-5-12).
2. Remove the four screws holding the ISU cover and then the cover.

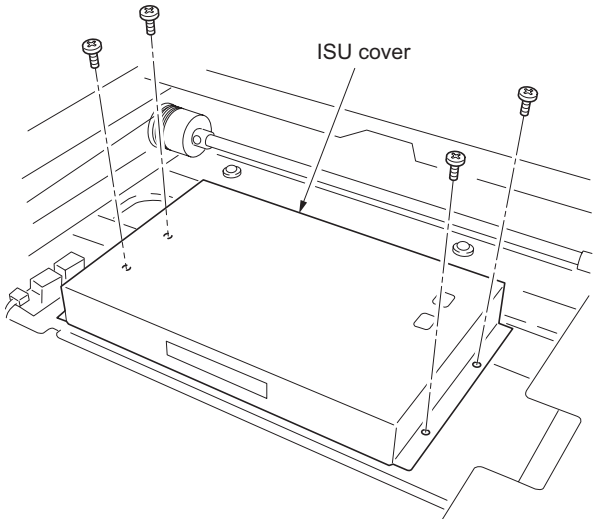


Figure 1-5-38

3. Detach the CCD wire from the CCD PWB.
4. Remove the four screws holding the ISU and then the ISU.
5. Replace the ISU.

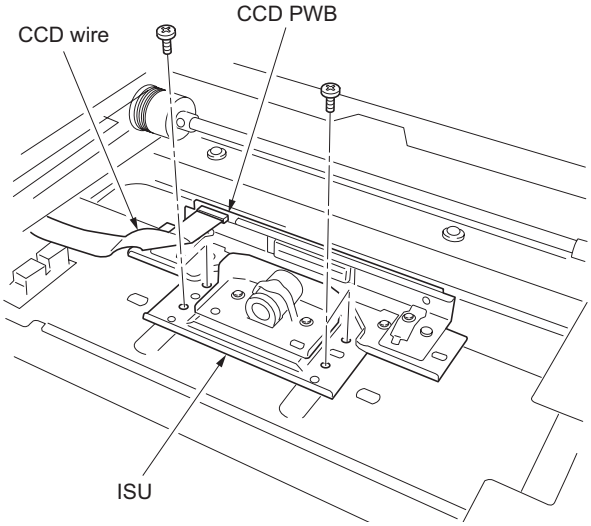


Figure 1-5-39

Refitting the ISU

1. Align the positioning holes of the ISU by pushing it a little and attach the ISU to the scanner unit.
   Attach the ISU with reference to marking "C".
2. Secure the ISU using the four screws.
3. Refit the CCD wire to CCD PWB.
4. Refit all the removed parts.

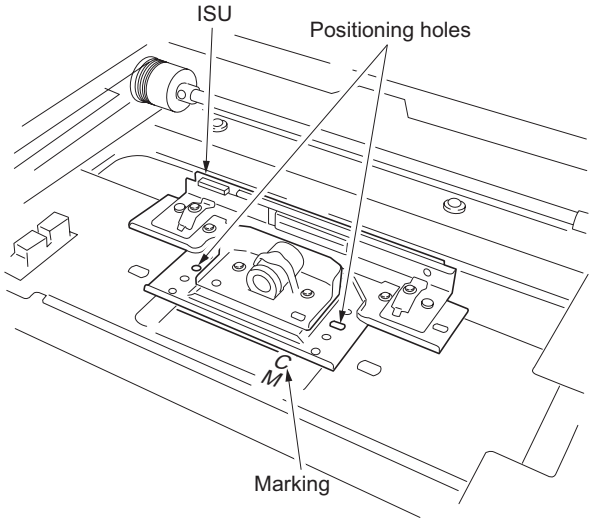


Figure 1-5-40

(4) Detaching and refitting the laser scanner unit

Take the following procedure when the laser scanner unit is to be replaced.

Procedure

1. Remove the original cover or the DP.
2. Remove the upper right cover, contact glass, upper rear cover, middle left cover, upper left cover, slit glass and front scanner cover (see page 1-5-13).
3. Remove the four screws holding the right cover and then the cover. Remove the ten screws holding the rear cover and then the cover.

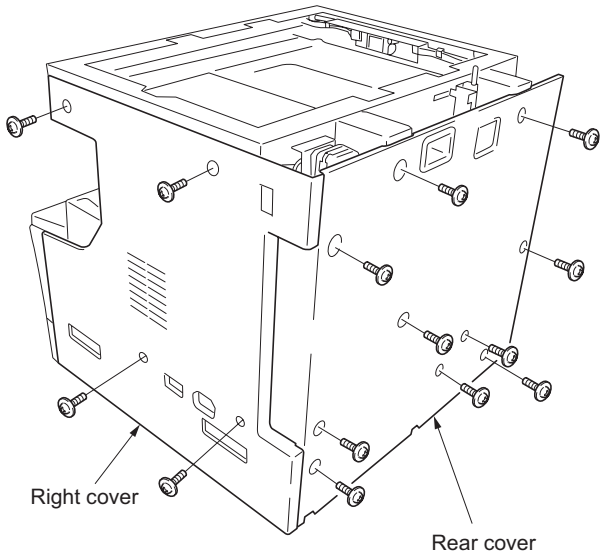
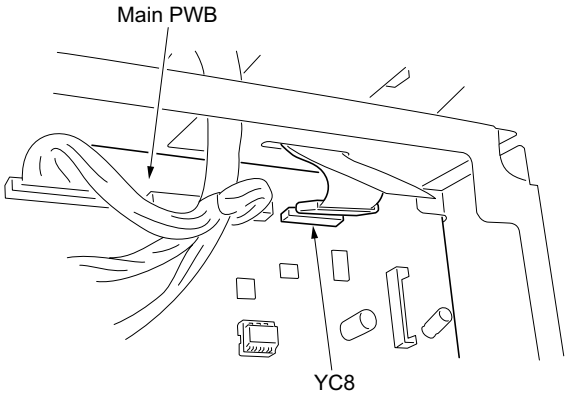


Figure 1-5-41

4. Detach the connector YC8 on the main PWB. Detach the connectors YC16, YC17,YC18 and YC19 on the engine PWB.



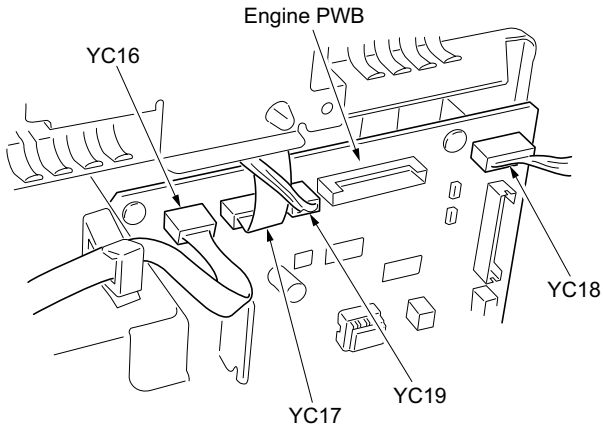


Figure 1-5-42

5. Remove the four pins holding the scanner unit and then the unit.

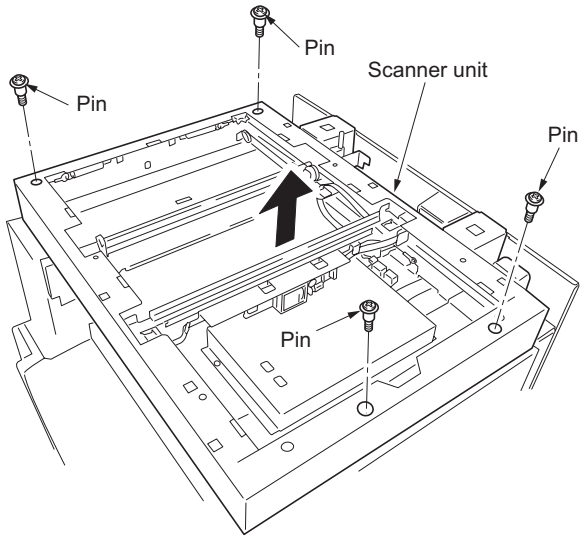


Figure 1-5-43

6. Remove the screw holding the exit cover and then the cover. Remove the two screws holding the inner rear cover and then the cover.

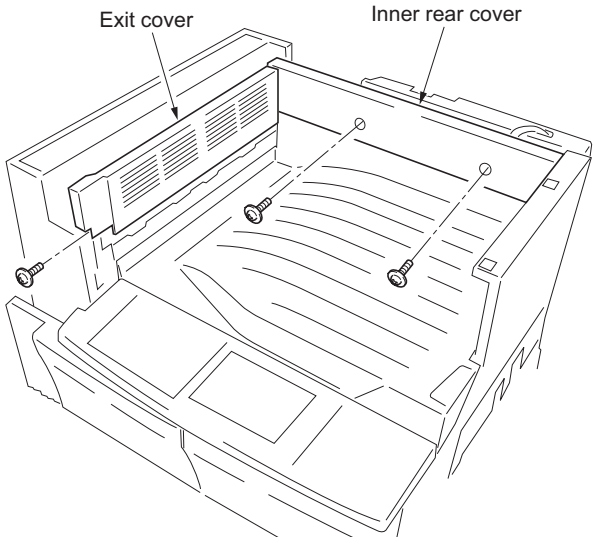


Figure 1-5-44

7. Remove the front and rear left cover.

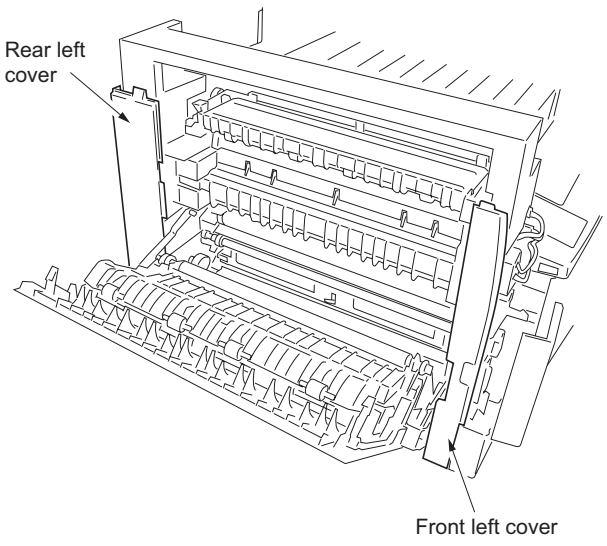


Figure 1-5-45

8. Remove the two screws holding the exit unit and then pull out the unit a little.

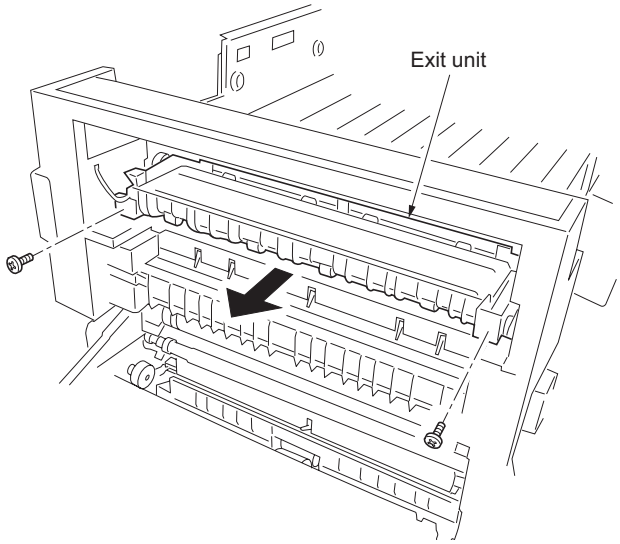


Figure 1-5-46

9. Remove the exit tray.

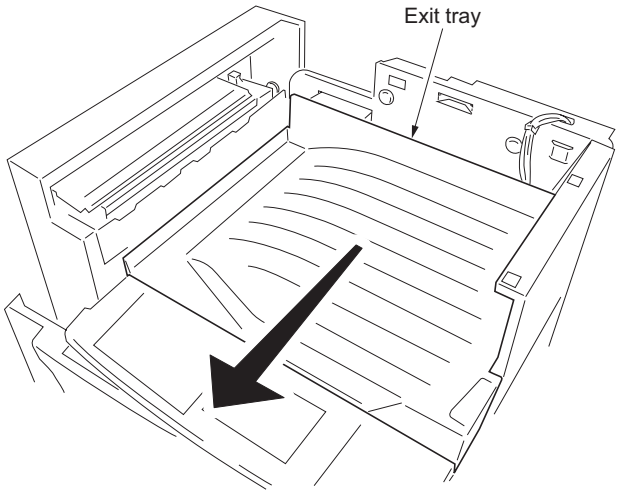


Figure 1-5-47

10. Remove the four screws and detach the two connector and then remove the laser scanner unit.
11. Replace the laser scanner unit and refit all the removed parts.

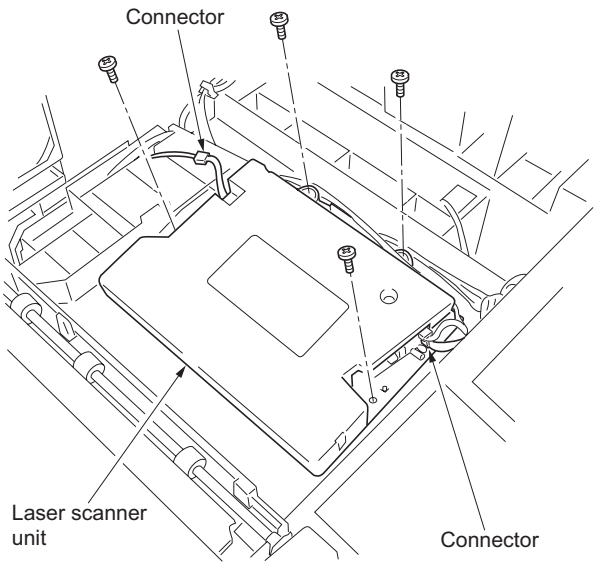


Figure 1-5-48

(5) Adjusting the longitudinal squareness (reference)

Perform the following adjustment if the copy image is longitudinally skewed (longitudinal squareness not obtained).

Caution:
Adjust the amount of slack in the paper (page 1-3-15) first. Check for the longitudinal squareness of the copy image, and if it is not obtained, perform the longitudinal squareness adjustment.
Before making the following adjustment, output a VTC-PG2 pattern in maintenance item U993 to use as the original for the adjustment.

Procedure

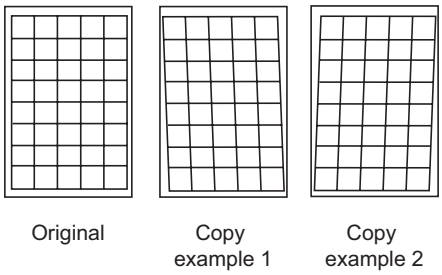
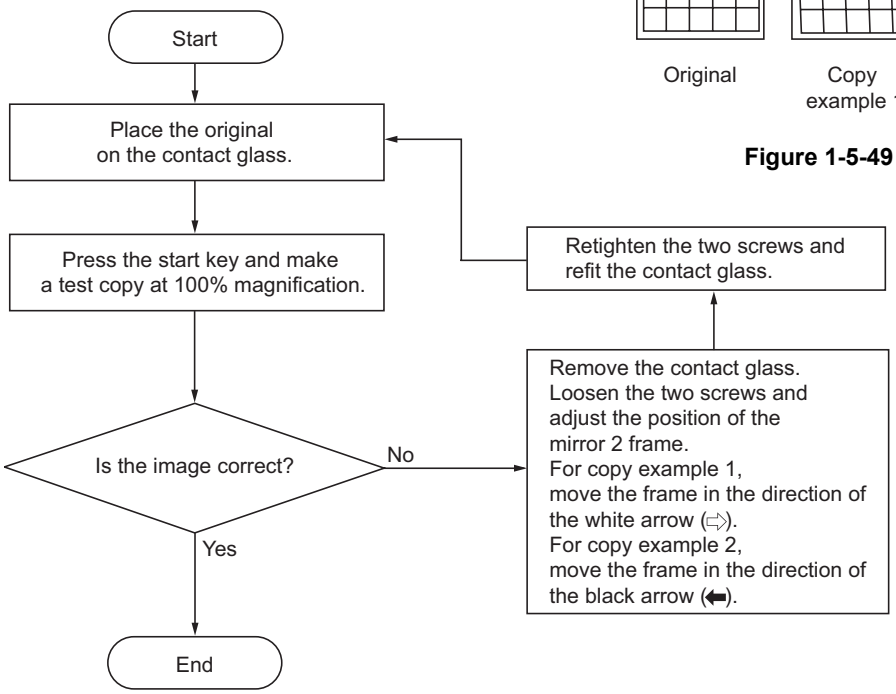


Figure 1-5-49



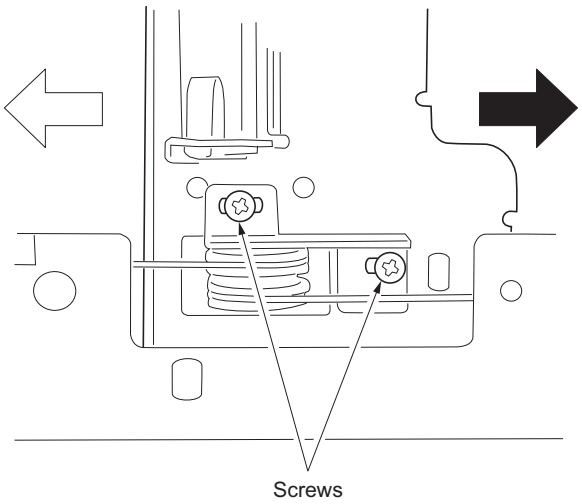


Figure 1-5-50

1-5-4 Drum section

(1) Detaching and refitting the drum unit

Follow the procedure below to replace the drum unit.

Cautions:
Avoid direct sunlight or strong light when detaching and refitting the drum unit.
Never touch the drum surface when holding the drum unit.

Procedure

1. Open the front cover and left cover. Remove the waste toner box and toner container.
2. Remove the inner cover.
3. Remove the screw holding the developing release lever.
4. Pull the developing release lever and then release the developing unit.

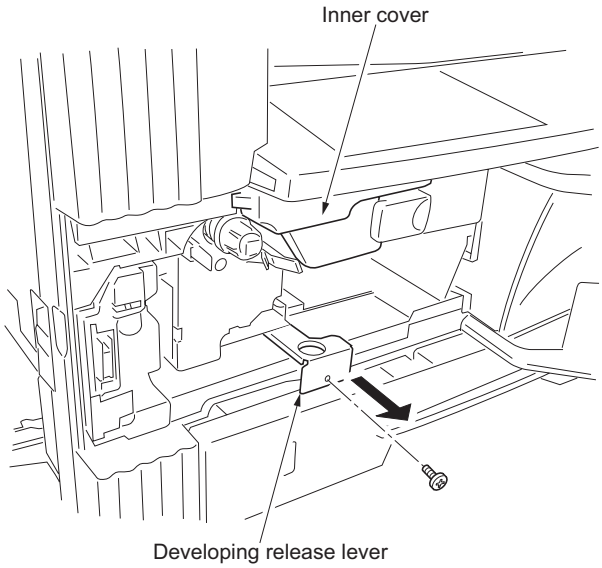


Figure 1-5-51

5. Remove the screw and detach the connector and then remove the drum unit from copier.
6. Replace the drum unit and refit all the removed parts.

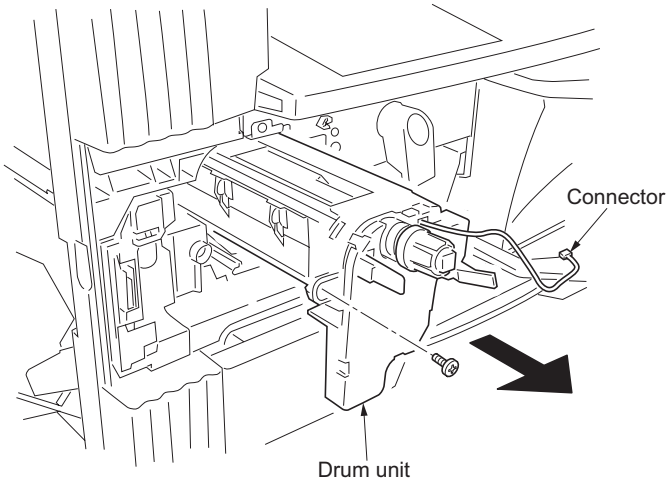


Figure 1-5-52

(2) Detaching and refitting the drum separation claws

Follow the procedure below to replace the drum separation claws.

Procedure

1. Remove the drum unit (see page 1-5-23).
2. Push the drum separation claws with the minus driver from the top of the corner hole and remove the claws.
3. Replace the drum separation claws and refit all the removed parts.

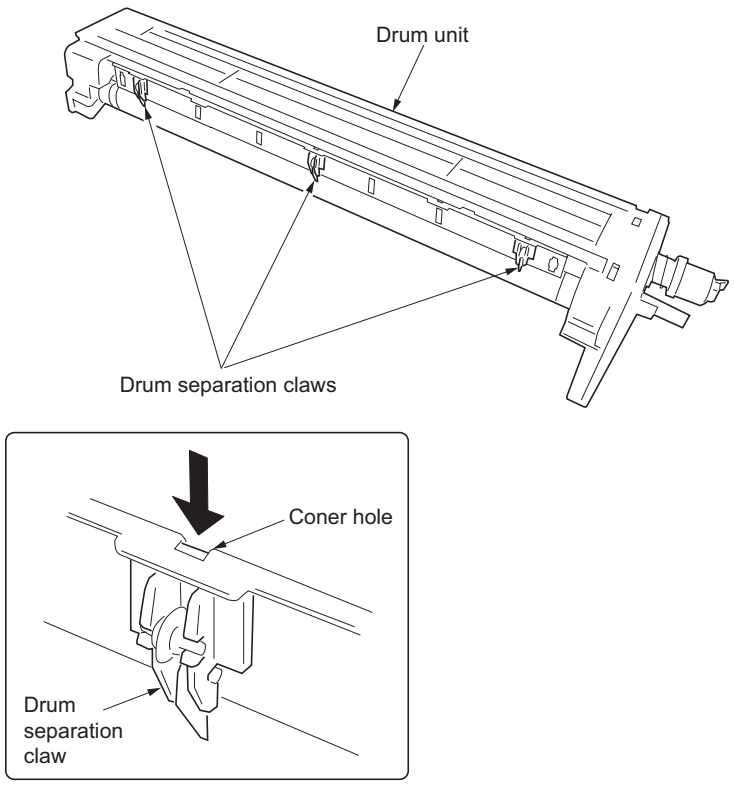


Figure 1-5-53

(3) Detaching and refitting the main charger unit

Follow the procedure below to replace the main charger unit.

Procedure

1. Open the front cover.
2. While lifting the main charger unit toward the upper right, remove the unit from the copier.
3. While pressing the main charger release lever in the direction indicated by the arrow at the removal stopper position to release the removal stopper, remove the main charger unit from the copier.
4. Replace the main charger unit and refit all the removed parts.

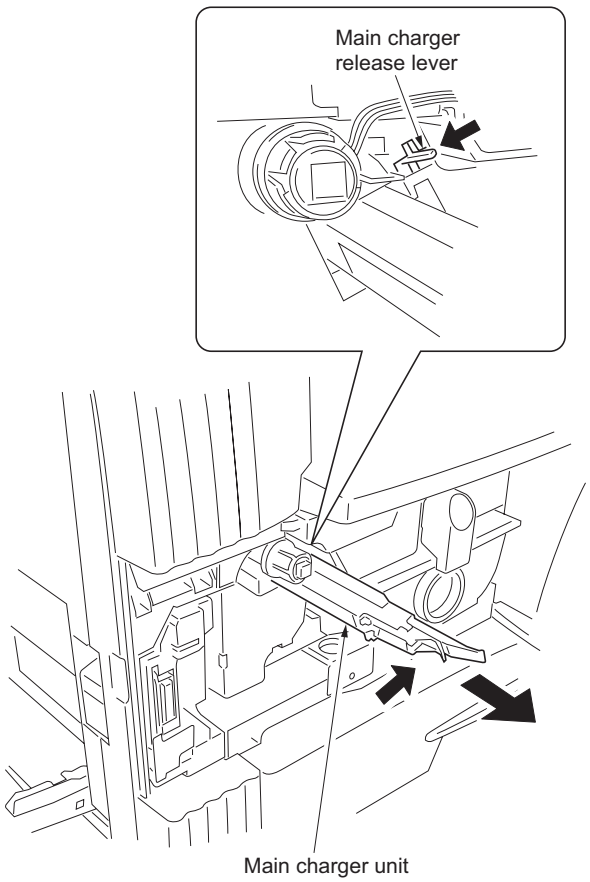


Figure 1-5-54

1-5-5 Developing section

(1) Detaching and refitting the developing unit

Follow the procedure below to replace the developing unit.

Procedure

1. Remove the drum unit (see page 1-5-23).
2. While lifting the developing unit a little, remove the unit from the copier.
3. Replace the developing unit and refit all the removed parts.

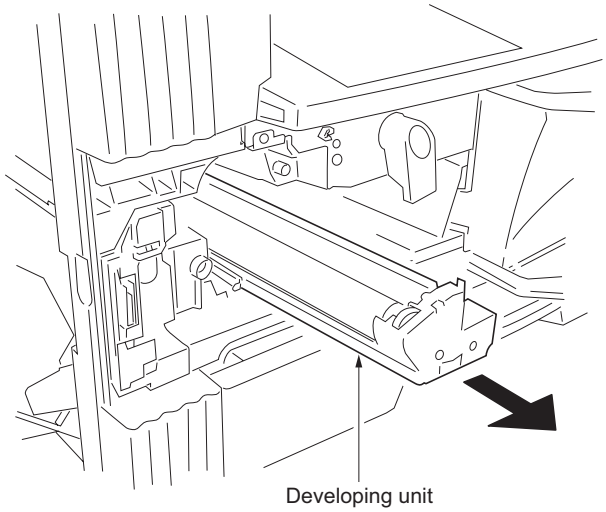


Figure 1-5-55

1-5-6 Transfer section

(1) Detaching and refitting the transfer roller

Follow the procedure below to replace the transfer roller.

Procedure

1. Remove the paper conveying unit (see page 1-5-7).
2. Remove the screw holding each of the front and rear release lever stoppers and then the stoppers from the release lever shaft.

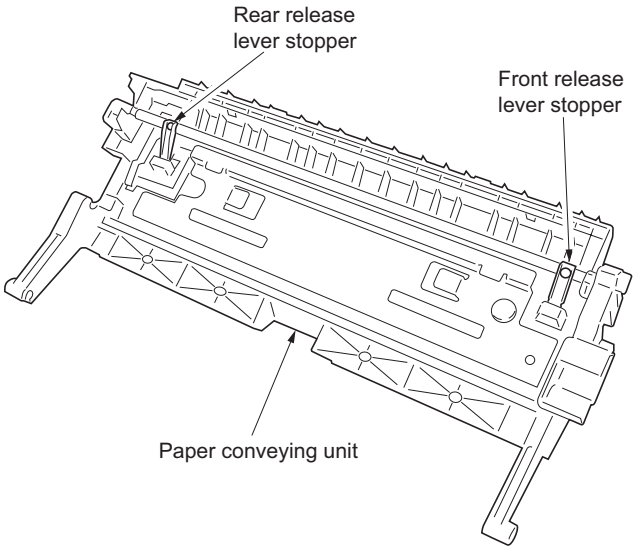


Figure 1-5-56

3. Detach the fitting portions located on the front and rear and then remove the transfer roller from the paper conveying unit.
4. Replace the transfer roller and refit all the removed parts.

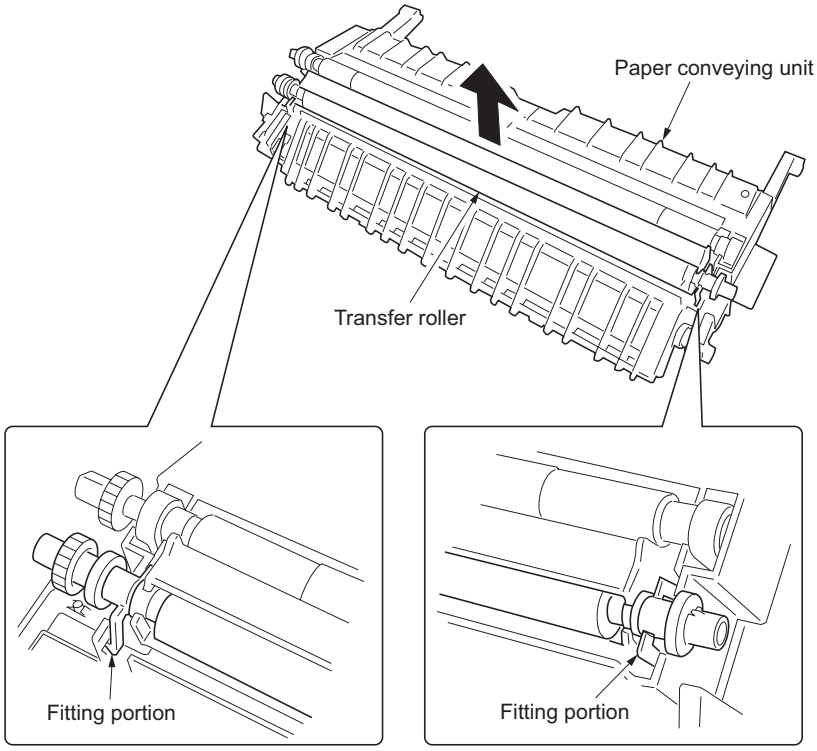


Figure 1-5-57

1-5-7 Fuser section

(1) Detaching and refitting the fuser unit

Follow the procedure below to replace the fuser unit.

Procedure

1. Open the front cover and left cover and then remove the inner cover.
2. Insert a flat-blade screwdriver or the like through the groove at the left side of the machine and unlock the engaged portion of front left cover 1 to remove it.

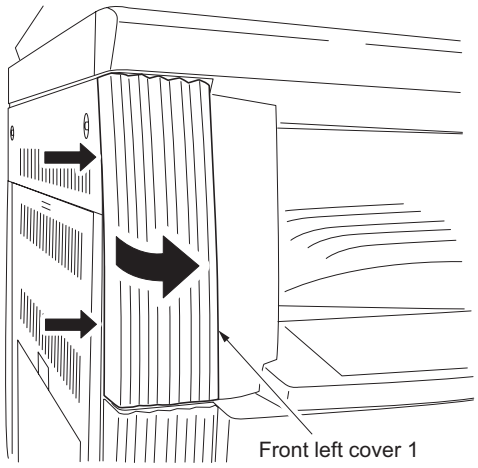


Figure 1-5-58

3. Remove the screw and then remove the front left cover 2.

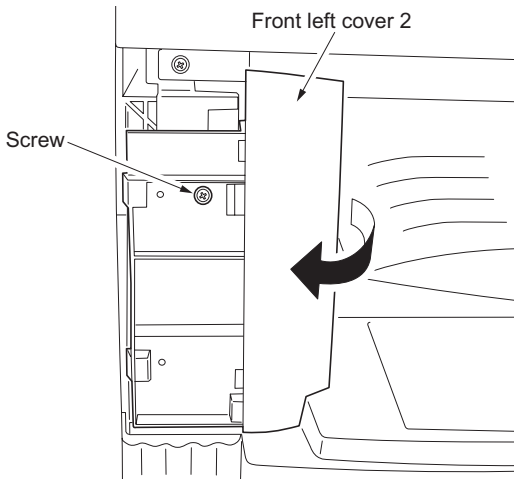


Figure 1-5-59

4. Remove the screw and then remove the stopper and spacer.
   When attaching the spacer, place the fuser unit on the original step.

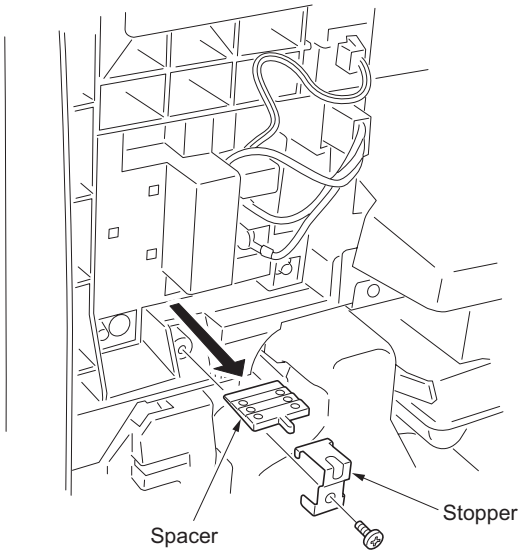


Figure 1-5-60

5. Remove the screw and detach the two connectors and then remove the fuser unit from copier.
6. Replace the fuser unit and refit all the removed parts.

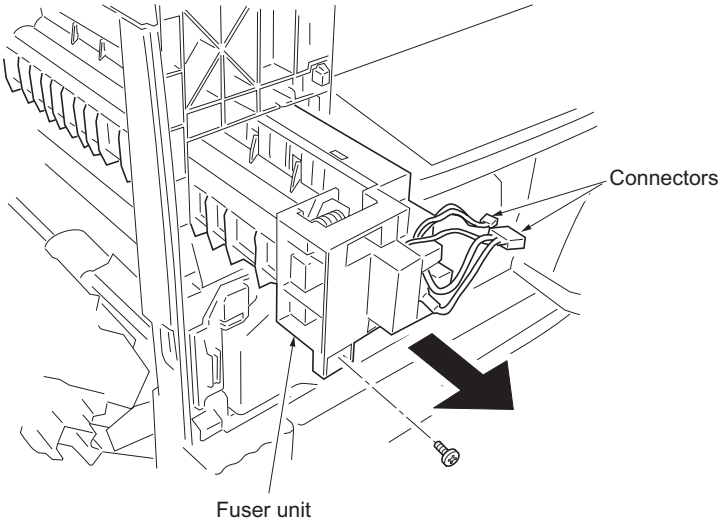


Figure 1-5-61

(2) Detaching and refitting the press roller

Follow the procedure below to replace the press roller.

Procedure

1. Remove the fuser unit (see page 1-5-28).
2. Remove the two screws and then separate the fuser right unit and left unit.

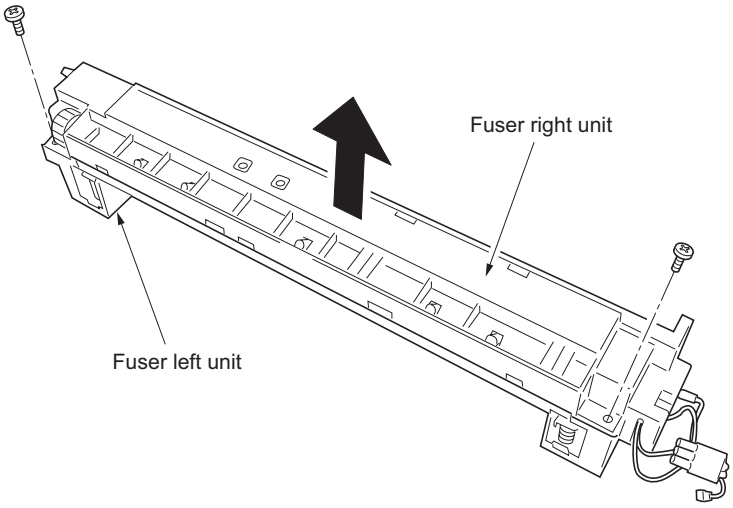


Figure 1-5-62

3. Remove the three screws holding the press roller guide from fuser right unit.

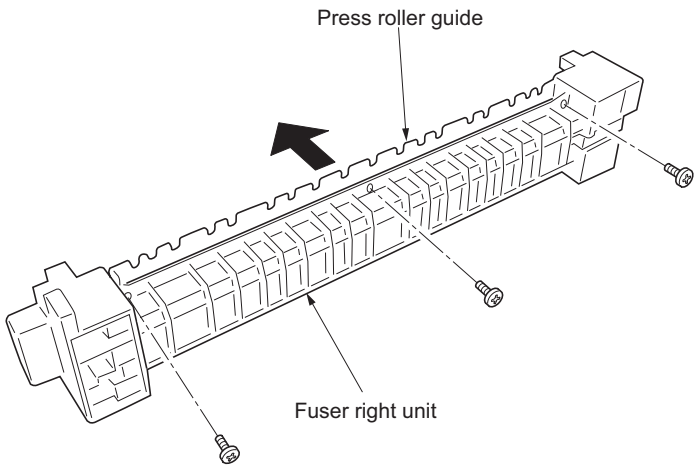


Figure 1-5-63

4. Remove the press roller from the fuser right unit.
5. Replace the press roller and refit all the removed parts.

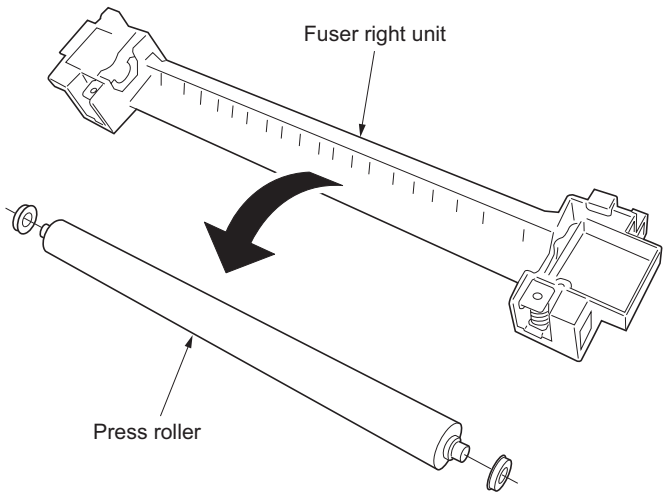


Figure 1-5-64

(3) Detaching and refitting the fuser heater M and S

Follow the procedure below to replace the fuser heater M and S.

Procedure

1. Remove the fuser unit and separate the fuser right unit and left unit (see pages 1-5-28, 30).
2. Remove the two screws holding each of the fuser heater M and S on the front and rear of the fuser left unit.

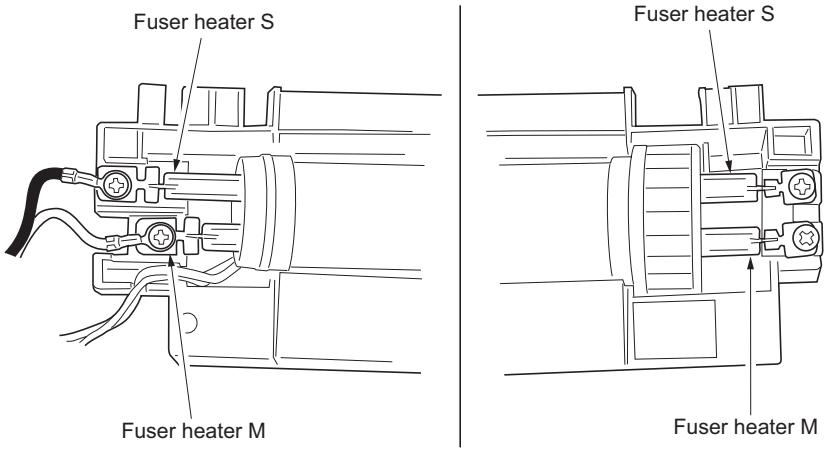


Figure 1-5-65

3. Pull out the fuser heater M and S from the fuser left unit.
4. Replace the fuser heater M and S, and refit all the removed parts.

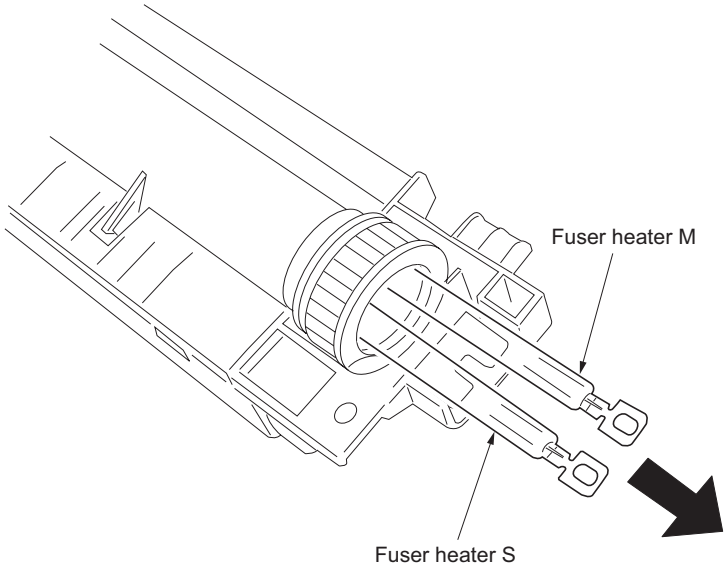


Figure 1-5-66

(4) Detaching and refitting the heat roller separation claws

Follow the procedure below to replace the heat roller separation claws.

Procedure

1. Remove the fuser unit and separate the fuser right unit and left unit (see page 1-5-28, 30).
2. Detach the fitting portions and then remove the heat roller guide from the fuser left unit.

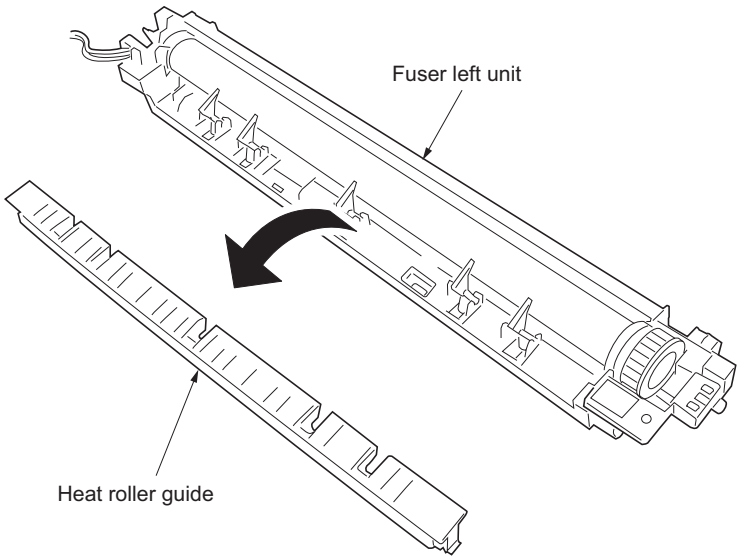


Figure 1-5-67

3. Remove the heat roller separation claws from the fuser left unit.
4. Replace the heat roller separation claws and refit all the removed parts.

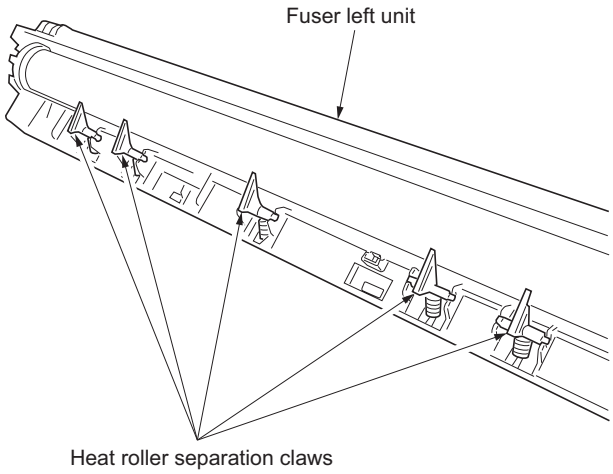


Figure 1-5-68

(5) Detaching and refitting the heat roller

Follow the procedure below to replace the heat roller.

Procedure

1. Remove the fuser unit and separate the fuser right unit and left unit (see pages 1-5-28, 30).
2. Remove the heat roller separation claws. (see page 1-5-32).
3. Pull out the heat roller bushing from the fuser left unit and then remove the heat roller.
4. Replace the heat roller and refit all the removed parts.

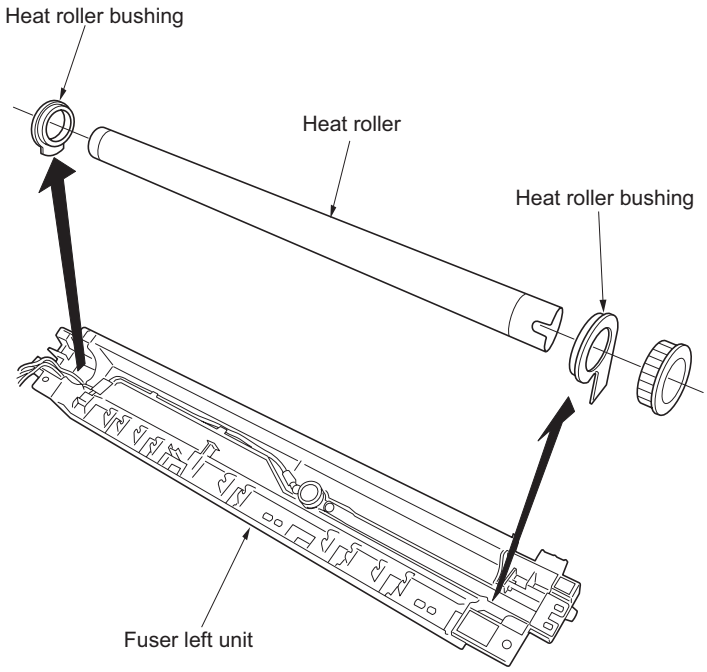


Figure 1-5-69

(6) Detaching and refitting the fuser thermostat

Follow the procedure below to replace the fuser thermostat.

Procedure

1. Remove the fuser unit and separate the fuser right unit and left unit (see page 1-5-28, 30).
2. Remove the heat roller (see page 1-5-33).
3. Remove the two screws holding the fuser thermostat and then the thermostat.
4. Replace the fuser thermostat and refit all the removed parts.

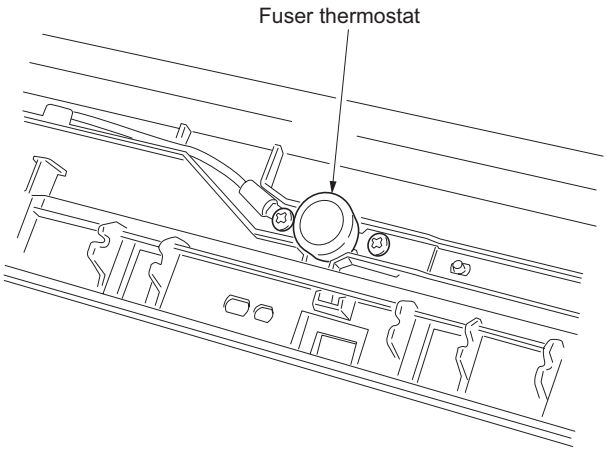


Figure 1-5-70

(7) Detaching and refitting the fuser thermistor

Follow the procedure below to replace the fuser thermistor.

Procedure

1. Remove the fuser unit and separate the fuser right unit and left unit (see page 1-5-28, 30).
2. Remove the heat roller (see page 1-5-33).
3. Remove the screw holding the fuser thermistor and then the thermistor.
4. Replace the fuser thermistor and refit all the removed parts.

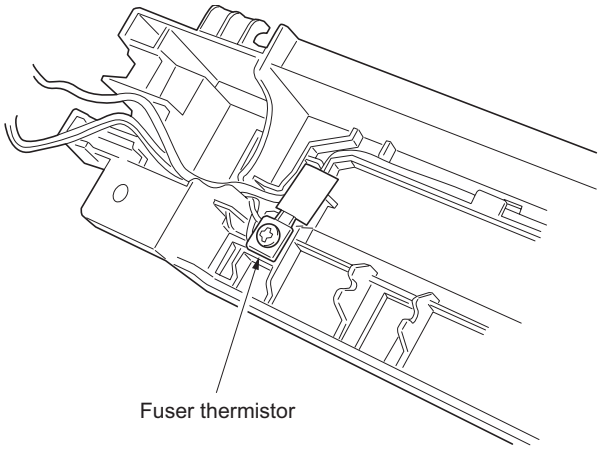


Figure 1-5-71

(8) Adjusting the fuser unit height (adjusting lateral squareness)

Follow the procedure below if the drum is not parallel to the fuser unit and therefore paper is not fed straight to the fuser section and the trailing edge of image on either the front or rear side becomes longer.

Procedure

1. Remove the front left cover 1 and 2 (see page 1-5-28).
2. Remove the screw and then remove the stopper.
3. Loosen the screw holding the fuser unit.

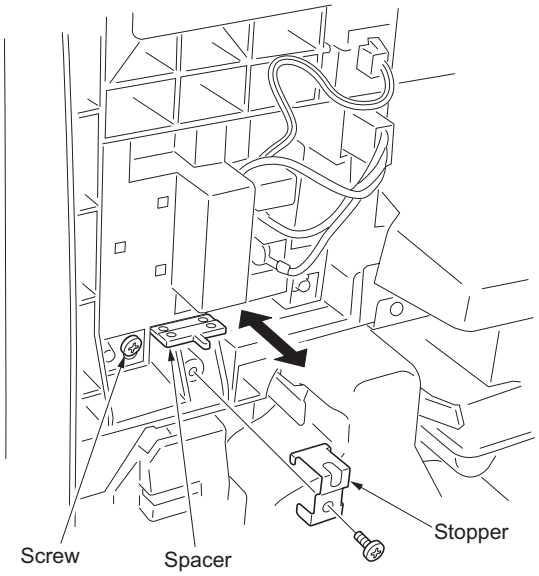


Figure 1-5-72

4. In the case of copy example 1 (the trailing edge of image of the machine rear side becomes longer): Place the fuser unit on the third step from the bottom of the spacer to adjust the spacer position (height adjustment of +0.5 mm).
   In the case of copy example 2 (the trailing edge of image of the machine front side becomes longer): Place the fuser unit on the first step from the bottom of the spacer to adjust the spacer position (height adjustment of -0.5 mm).

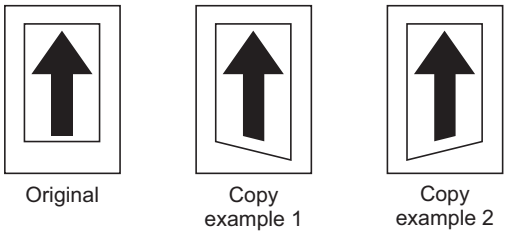
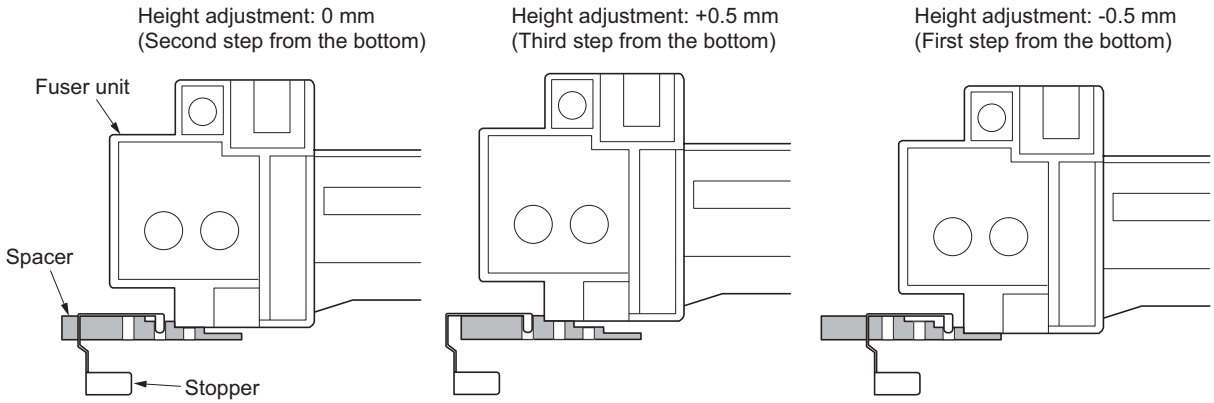


Figure 1-5-73



[Cross section viewing from the right side of the machine]

Figure 1-5-74

5. Retighten the screw holding the fuser unit and refit the stopper.
6. Refit all the removed parts.

1-6-1 Upgrading the firmware on the main PWB

Follow the procedure below to upgrade the firmware on the main PWB, engine PWB or language software.

Firmware upgrading requires the following tools:
Flash DIMM

Procedure

1. Run maintenance mode U019 to check the version of the ROM.
2. Turn the power switch off and disconnect the power plug.
3. Remove the rear cover and change the jumper switch position on the main PWB to the right side.
4. Insert the DIMM into the DIMM slot on the main PWB. Insert the power plug and turn the power switch on.
5. Upgrading firmware starts and the status is displayed on the operation panel.
6. When the upgrade operation is complete, the checksum will be displayed and a beep indicating the completion will sound.
7. Turn the power switch off and disconnect the power plug, remove the DIMM from the main PWB, and return the jumper switch to its original position. Reattach the rear cover to its original position.
8. Insert the power plug and turn the power switch on.
9. Run maintenance mode U019 to check that the version of the ROM has changed.

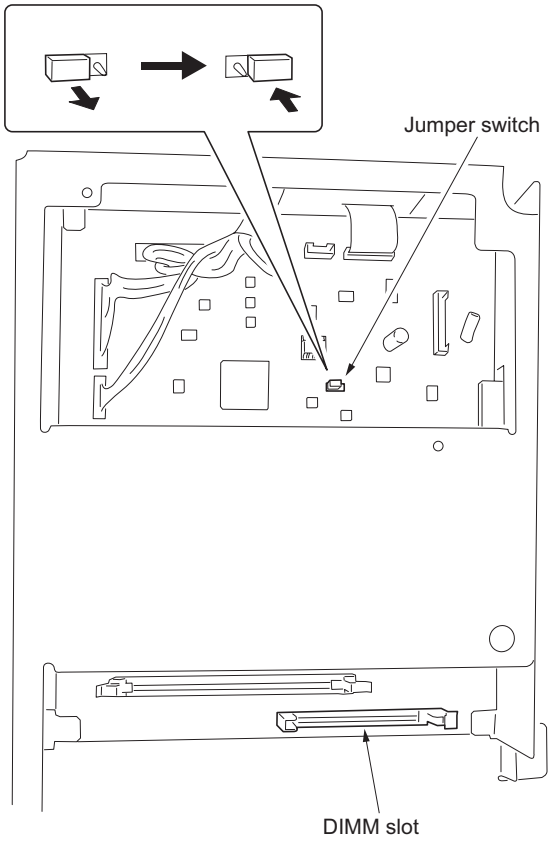


Figure 1-6-1

1-6-2 Adjustment-free variable resistors (VR)

The variable resistors listed below are set at the factory prior to shipping and cannot be adjusted in the field.
High-voltage PWB: VR201, VR202, VR301
Drum unit zener PWB: VR1

1-6-3 Remarks on PWBs replacement

Confirm the version of the firmware and upgrade the version in up-to-date state when replacing PWBs.
When replacing the engine PWB or main PWB, remove the EEPROM from the engine PWB or main PWB that has been removed and then reattach it to the new engine PWB or main PWB.

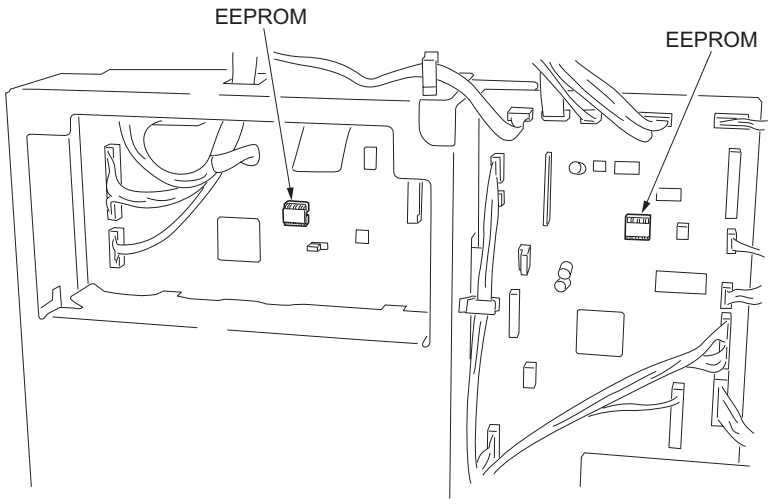


Figure 1-6-2

2-1-1 Paper feed section

The paper feed section conveys paper from the drawer or MP tray to the left and right registration rollers, at which point secondary feed takes place and the paper travels to the transfer section in sync with the printing timing.
Drawer can hold up to 300 sheets of paper. Paper is fed from the drawer by the rotation of the forwarding pulley and paper feed pulley. The separation pulley prevents multiple sheets from being fed at one time, via the torque limiter.
The MP tray can hold up to 50 sheets of paper. Paper is fed from the MP tray by the rotation of the MP paper feed pulley.

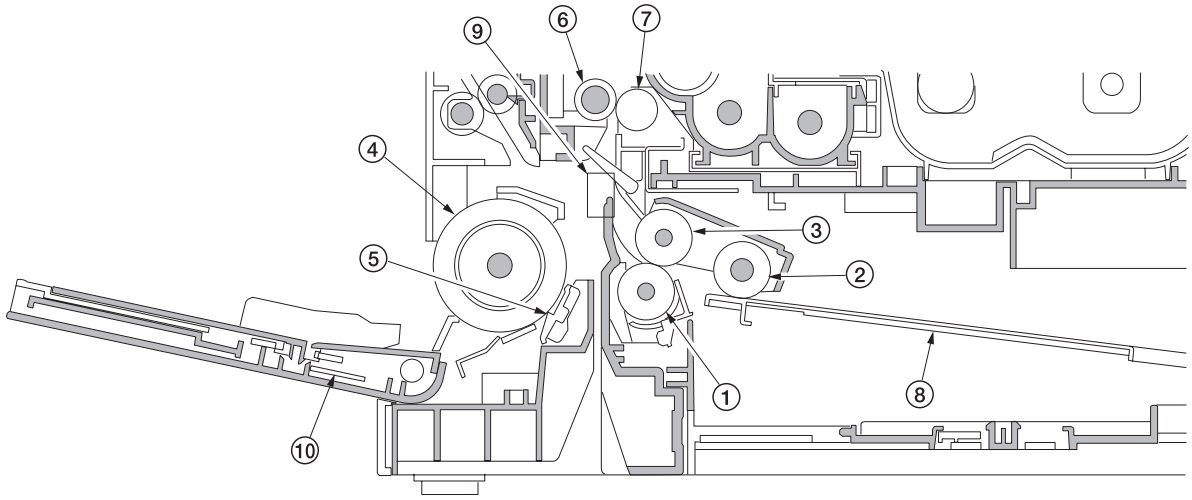


Figure 2-1-1 Paper feed section

(1) Separation pulley
(2) Forwarding pulley
(3) Paper feed pulley
(4) MP paper feed pulley
(5) MP separation pad
(6) Left registration roller
(7) Right registration roller
(8) Drawer lift
(9) Registration switch (RSW)
(10) MP paper width switch (MPPWSW)

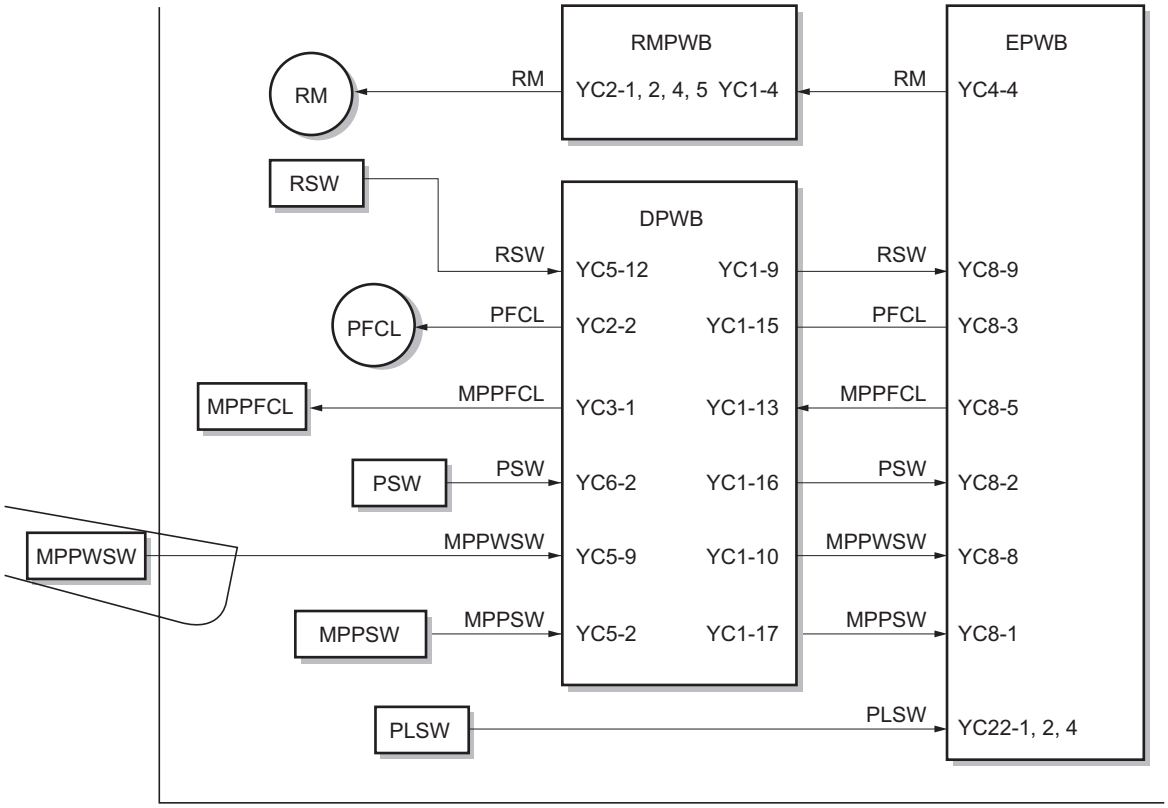


Figure 2-1-2 Paper feed section block diagram

2-1-2 Optical section

The optical section consists of the scanner, mirror frames and the image scanning unit for scanning and the laser scanner unit for printing.

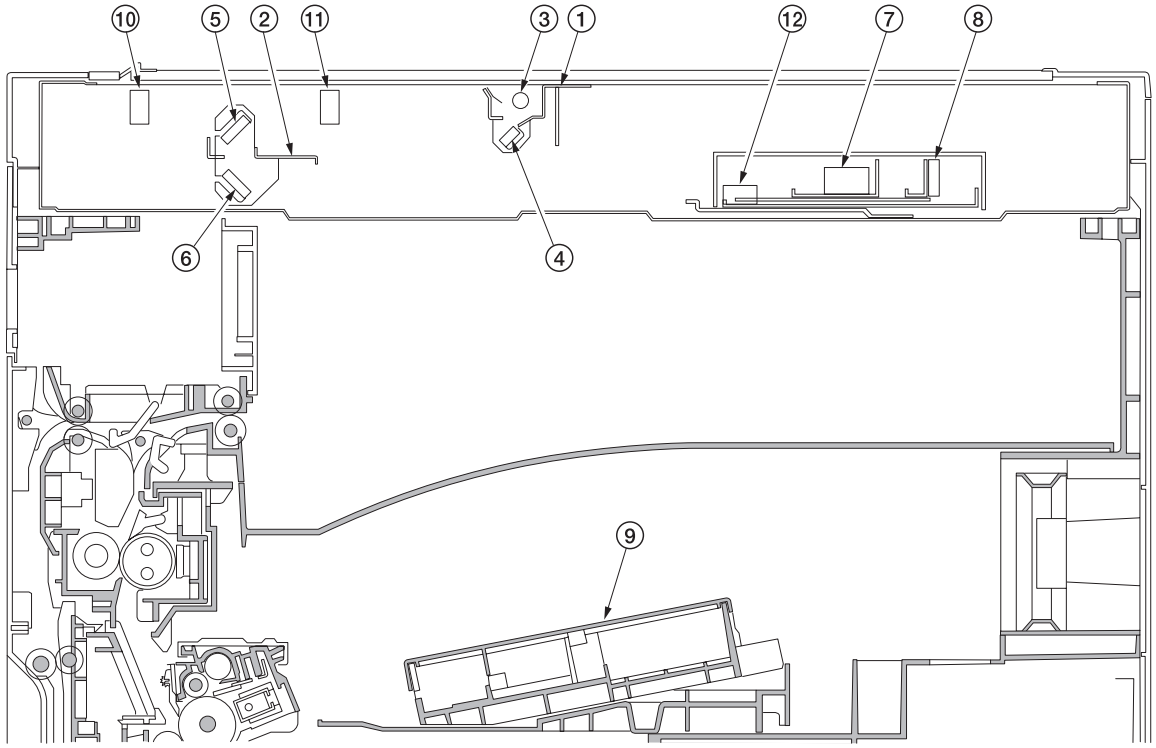


Figure 2-1-3 Optical section

(1) Mirror 1 frame
(2) Mirror 2 frame
(3) Exposure lamp (EL)
(4) Mirror 1
(5) Mirror 2
(6) Mirror 3
(7) Image scanning unit (ISU)
(8) CCD PWB (CCDPWB)
(9) Laser scanner unit (LSU)
(10) Scanner home position switch (SHPSW)
(11) Original detection switch (ODSW)
(12) Original size detection sensor (OSDS)

(1) Original scanning

The original image is illuminated by the exposure lamp (EL) and scanned by the CCD PWB (CCDPWB) in the image scanning unit via the three mirrors, the reflected light being converted to an electrical signal.
The scanner and mirror frames travel to scan on the optical rails on the front and rear of the machine to scan from side to side. The speed of the mirror frames is half the speed of the scanner. When the DP is used, the scanner and mirror frames stop at the DP original scanning position to start scanning.

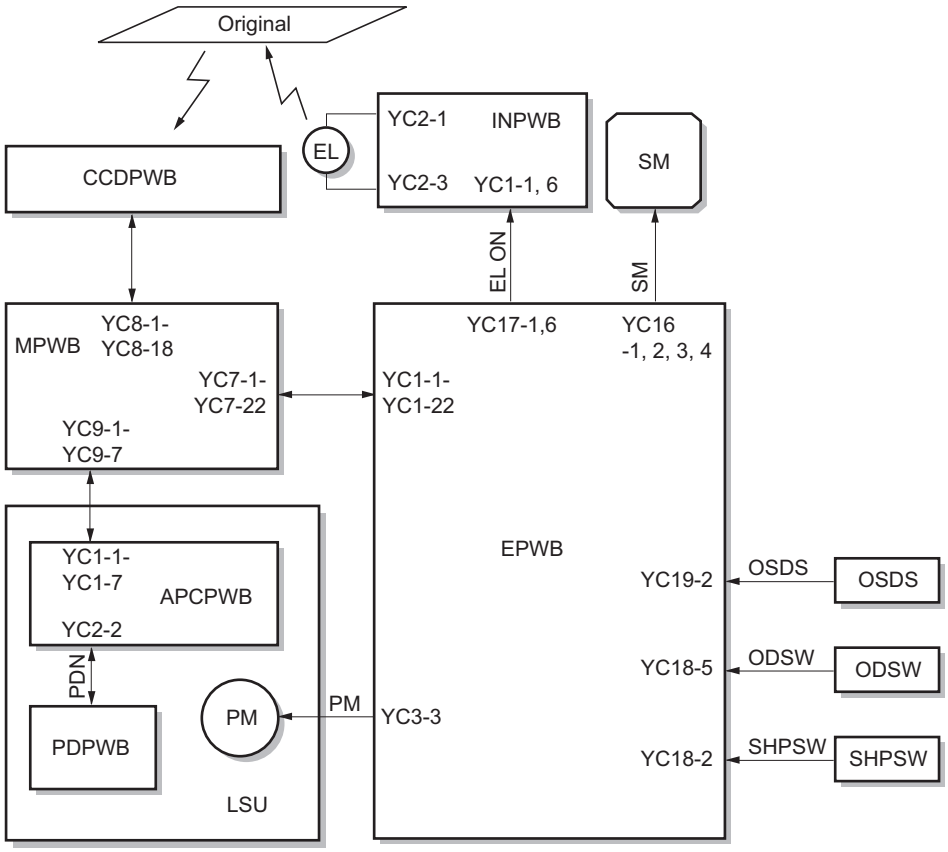


Figure 2-1-4 Optional section block diagram

(2) Image printing

The image data scanned by the CCD PWB (CCDPWB) is processed on the main PWB (MPWB) and transmitted as image printing data to the laser scanner unit . By repeatedly turning the laser on and off, the laser scanner unit forms a latent image on the drum surface.

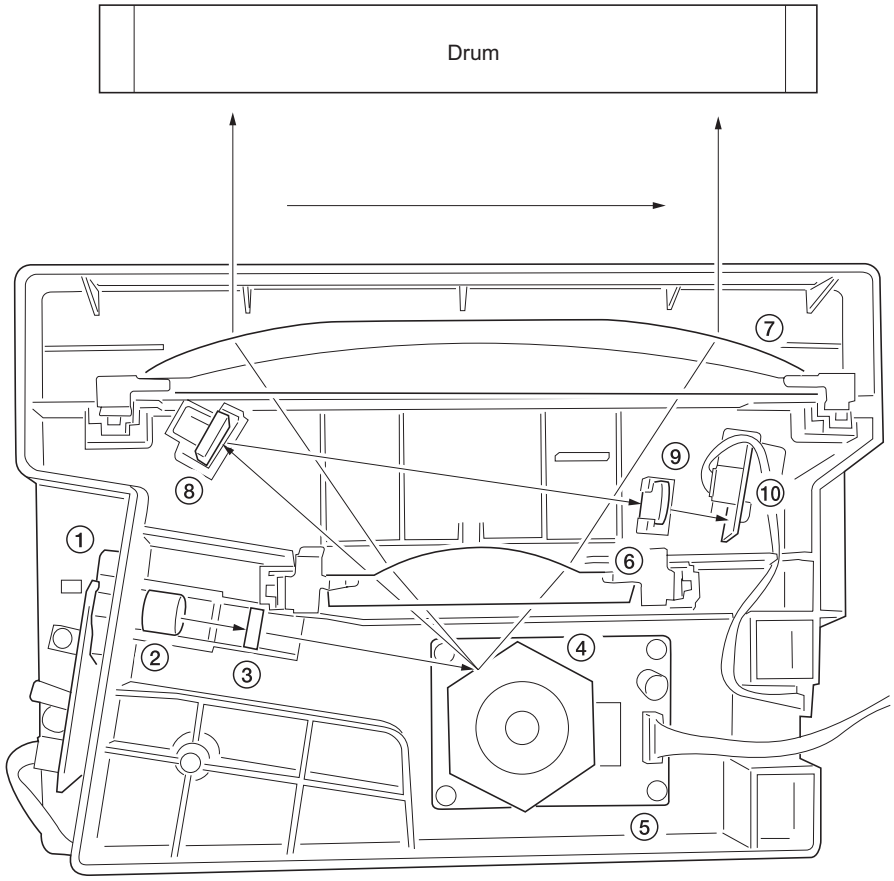


Figure 2-1-5 Laser scanner unit

1: Laser diode: Generates the laser beam which forms a latent image on the drum.
2: Collimator lens: Collimates the diffused laser beam emitted from the laser diode to convert it into a cylindrical beam.
3: Cylindrical lens: Shapes the collimated laser beam to suit the printing resolution.
4: Polygon mirror: Six-facet mirror that rotates at approximately 23619 rpm with each face reflecting the laser beam toward the drum for one main-direction scan.
5: Polygon motor: Drives the polygon mirror.
6: Fθ lens: Corrects for non-linearity of the laser beam scanning speed on the drum surface, keeps the beam diameter constant and corrects for the vertical alignment of the polygon mirror to ensure that the focal plane of the laser beam is on the drum surface.
7: Fθ lens: Corrects for non-linearity of the laser beam scanning speed on the drum surface, keeps the beam diameter constant and corrects for the vertical alignment of the polygon mirror to ensure that the focal plane of the laser beam is on the drum surface.
8: PD sensor mirror: Reflects the laser beam to the PD sensor to generate the main-direction (horizontal) sync signal.
9: Cylindrical correcting lens: Corrects for the deviation of the laser beam reflected by the PD sensor mirror to the PD sensor.
10: PD sensor: Detects the beam reflected by the PD sensor mirror, outputting a signal to the main PWB (MPWB) to provide timing for the main-direction sync signal.

The dimensions of the laser beam are as shown in Figure 2-1-6.

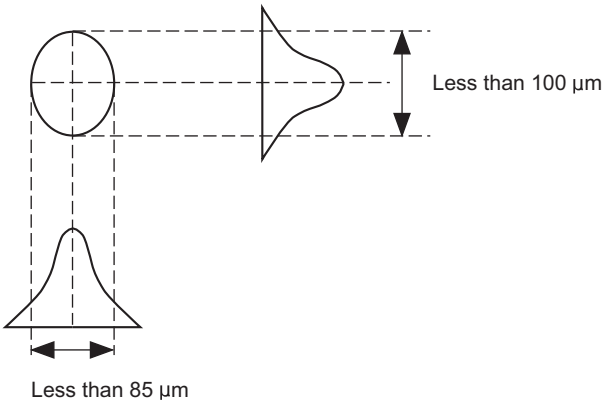


Figure 2-1-6

Scanning in the main direction is provided by the rotating polygon mirror, while scanning in the auxiliary direction is provided by the rotating drum, forming a static latent image on the drum.
The static latent image of the letter “A”, for example, is formed on the drum surface as shown in Figure 2-1-7. Electrical charge is dissipated on the area of the drum surface irradiated by the laser.
The focal point of the laser beam is moved line by line, and adjacent lines slightly overlap each other.

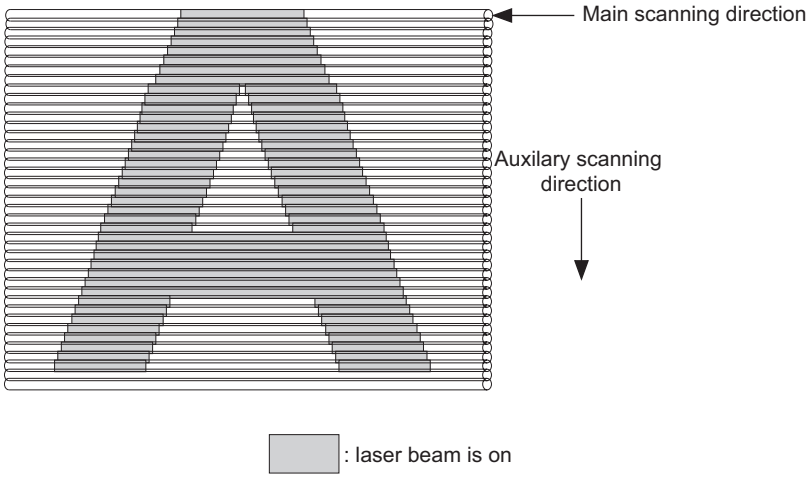


Figure 2-1-7

2-1-3 Drum section

The drum section consists of the drum, main charger section, cleaning section and cleaning lamp.
The main charger section consists of main charger wire, main charger grid and main charger shield, and the drum is charged by a high voltage applied to the main charger wire. In addition, this section is equipped with a manual main charger cleaner that is used for cleaning the main charger wire.
The cleaning section consists of the cleaning blade and cleaning roller that removes residual toner from the drum surface after the transfer process, and the cleaning spiral that carries the residual toner back to the waste toner box.
The cleaning lamp (CL) consists of LEDs which remove residual charge from the drum surface.

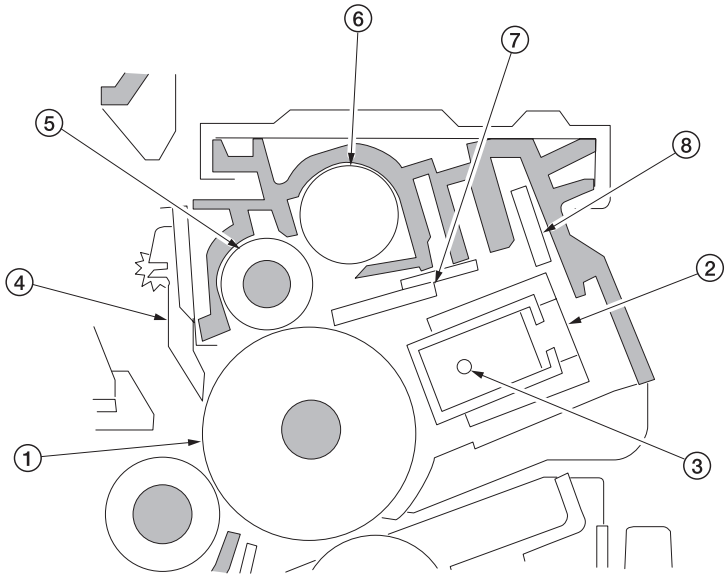


Figure 2-1-8 Drum section

(1) Drum
(2) Main charger unit
(3) Main charger wire
(4) Drum separation claw
(5) Cleaning roller
(6) Cleaning spiral
(7) Cleaning blade
(8) Cleaning lamp (CL)

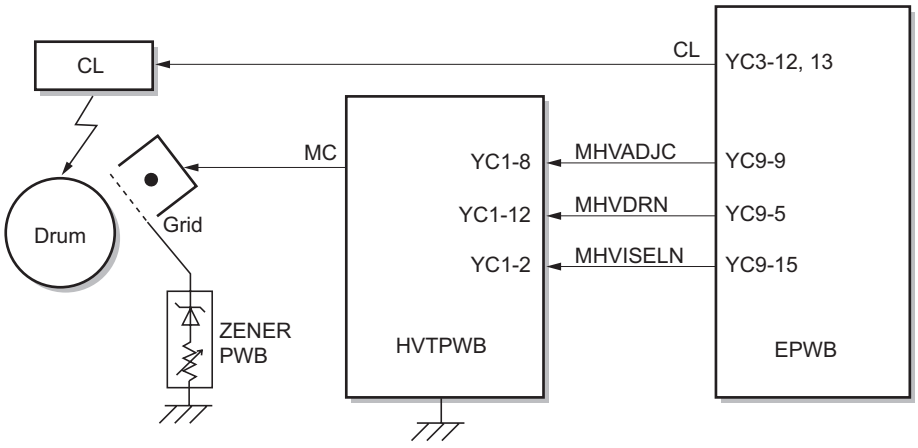


Figure 2-1-9 Drum section block diagram

2-1-4 Developing section

The developing section consists of the developing unit and the toner container.
The developing unit consists of the developing roller where a magnetic brush is formed, the doctor blade and the developing spirals that agitate the toner.
Also, the toner container sensor (TCS) checks whether or not toner remains in the toner container.

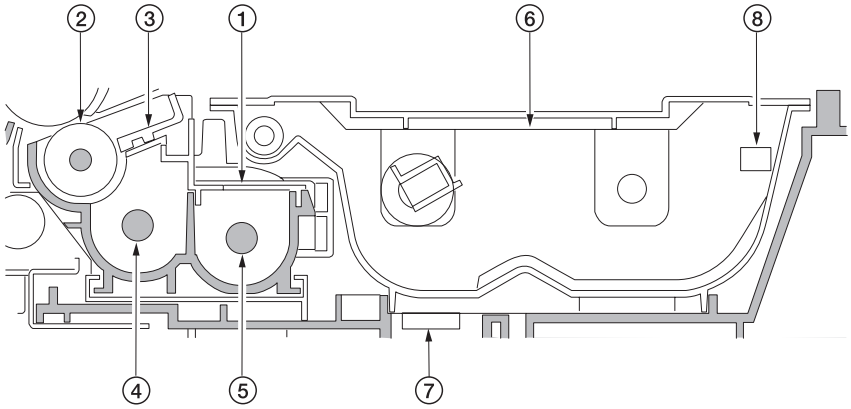
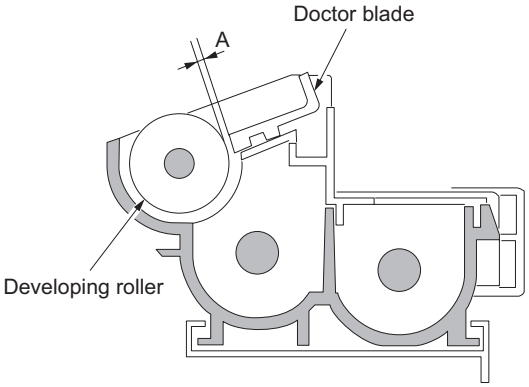


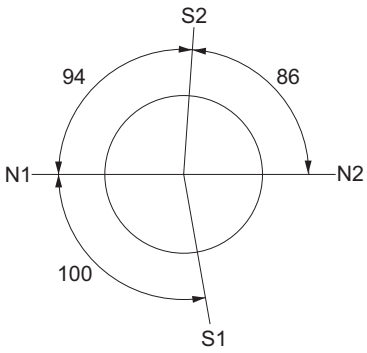
Figure 2-1-10 Developing section

(1) Developing unit
(2) Developing roller
(3) Doctor blade
(4) Left developing spiral
(5) Right developing spiral
(6) Toner container
(7) Toner container sensor (TCS)
(8) Toner container detection switch (TCDSW)

(1) Formation of magnetic brush

The developing roller consists of a magnet roller with four poles and a sleeve roller. Rotation of the sleeve roller around the magnet roller entrains toner, which in turn forms a magnetic brush at pole N1 on the magnet roller. The height of the magnetic brush is regulated by the doctor blade; the developing result is affected by the position of the poles on the magnet roller and the position of the doctor blade.
A developing bias voltage generated by the high-voltage PWB (HVTPWB) is applied to the developing roller to provide image contrast.





A: Distance between the doctor blade and developing roller; 0.3 ± 0.05 mm

N1:870 x 10^{-4}T
N2:400 x 10^{-4}T
S1:725 x 10^{-4}T
S2:910 x 10^{-4}T

Figure 2-1-11 Forming a magnetic brush

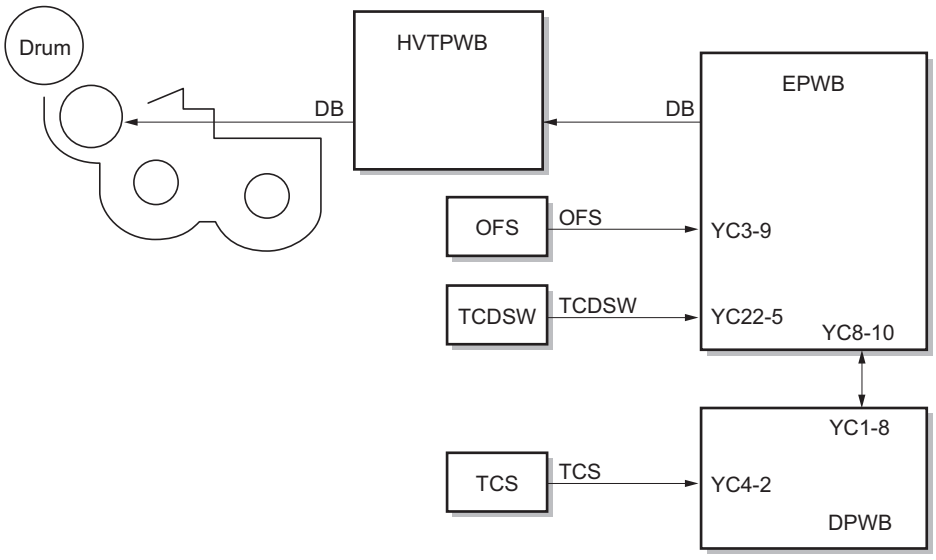


Figure 2-1-12 Developing section block diagram

(2) Single component developing system

This machine uses the single component developing system, and reversal processing is performed with a + charged drum and a + charged magnetic toner.

With the single component developing system, toner is electrically charged by friction with the developing sleeve and + charged when it passes through the magnetic toner blade. The toner that has passed through the magnetic toner blade forms a uniform layer on the developing sleeve. When the toner layer comes to the location where the developing sleeve is the nearest to the drum, toner moves between the drum and the developing sleeve by an electric field of the magnetic pole. Then, when the developing sleeve rotates and passes through the nearest location to the drum, on the portion of the drum that has been exposed to light, toner is attracted toward the drum by potential difference between the developing bias and the drum surface and development is performed. On the other hand, on the portion of the drum that has not been exposed to light, toner is attracted toward the sleeve and development is not performed. When toner comes to an area where the gap between the drum and the developing sleeve is large, an electric field disappears and toner does not leave the developing sleeve. Development is complete.

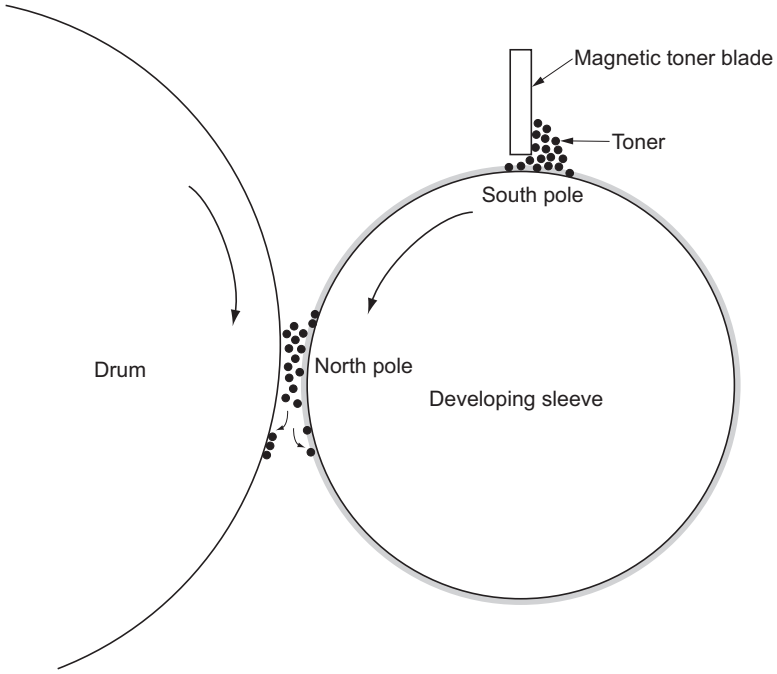


Figure 2-1-13 Single component developing system

2-1-5 Transfer and separation sections

The transfer and separation sections consists of the transfer roller, separation electrode and drum separation claws. A high voltage generated by the high-voltage PWB (HVTPWB) is applied to the transfer roller for transfer charging. Paper after transfer is separated from the drum by applying separation bias that is output from the high-voltage PWB (HVTPWB) to the separation electrode.

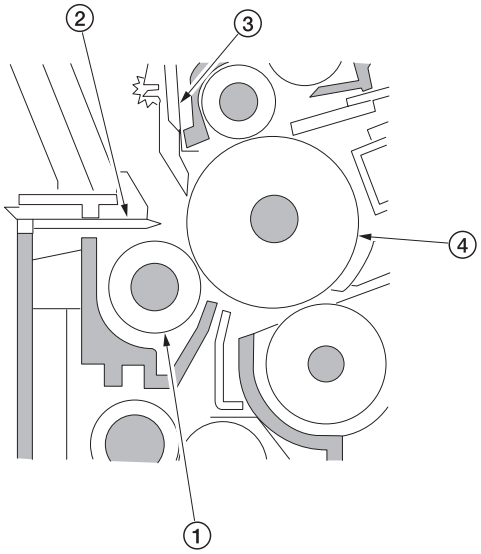


Figure 2-1-14 Transfer and separation sections

(1) Transfer roller
(2) Separation electrode
(3) Drum separation claw
(4) Drum

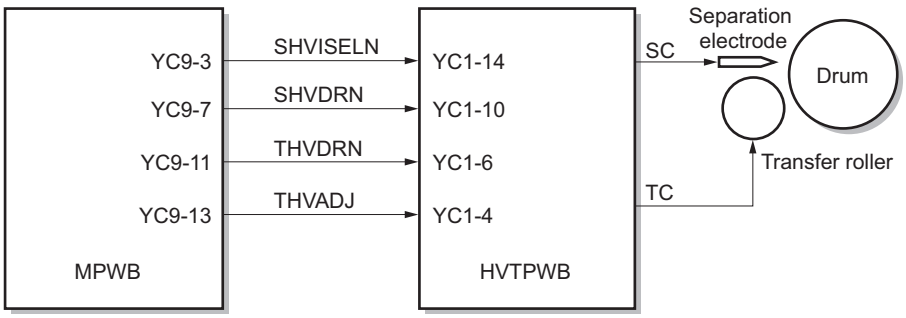


Figure 2-1-15 Transfer and separation sections block diagram

2-1-6 Fuser section

The fuser section consists of the parts shown in figure. When paper reaches the fuser section after the transfer process, it passes between the press roller and heat roller, which is heated by fuser heaters M or S (FH-M or FH-S). Pressure is applied by the fuser unit pressure springs so that the toner on the paper is melted, fused and fixed onto the paper. The heat roller is heated by fuser heaters M or S (FH-M or FH-S) inside it; its surface temperature is detected by the fuser thermistor (FTH) and is regulated by the fuser heaters turning on and off.
If the fuser section becomes abnormally hot, fuser thermostat (FTS) operates shutting the power to the fuser heaters off. When the fuser process is completed, the paper is separated from the heat roller by its separation claws and is conveyed from the copier to exit and switchback section.

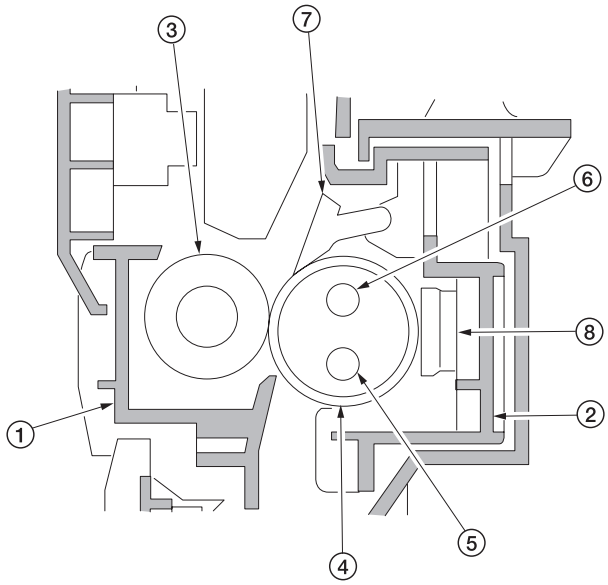


Figure 2-1-16 Fuser section

(1) Left fuser unit
(2) Right fuser unit
(3) Press roller
(4) Heat roller
(5) Fuser heater M (FH-M)
(6) Fuser heater S (FH-S)
(7) Heat roller separation claw
(8) Fuser thermostat (FTS)

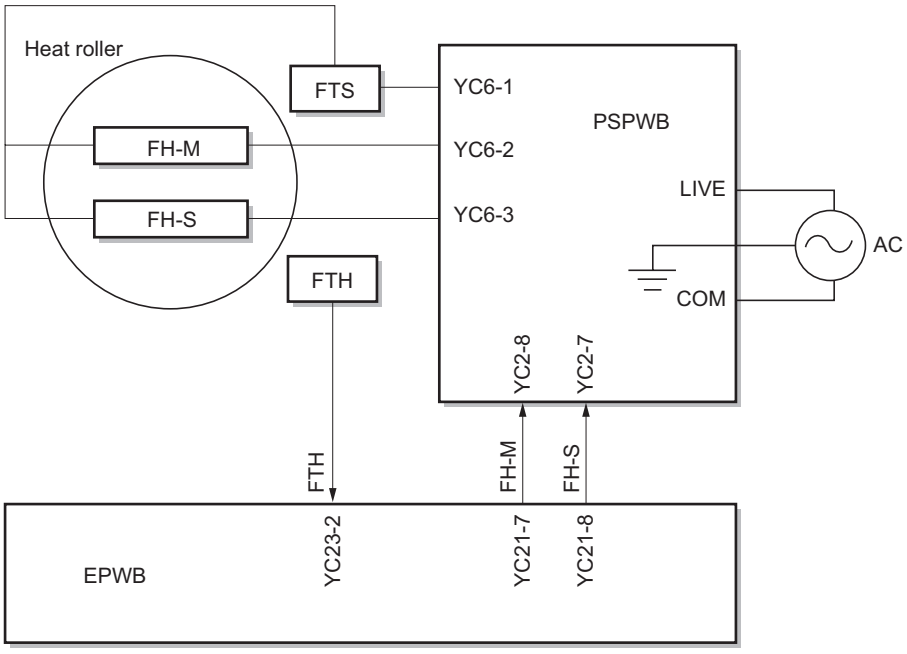


Figure 2-1-17 Fuser section block diagram

2-1-7 Exit and switchback sections

The exit and switchback sections exit paper on which fuser has ended with the exit roller that is rotated by forward rotation of the exit motor.
In duplex copying, paper is turned over by reverse rotation of the exit motor.

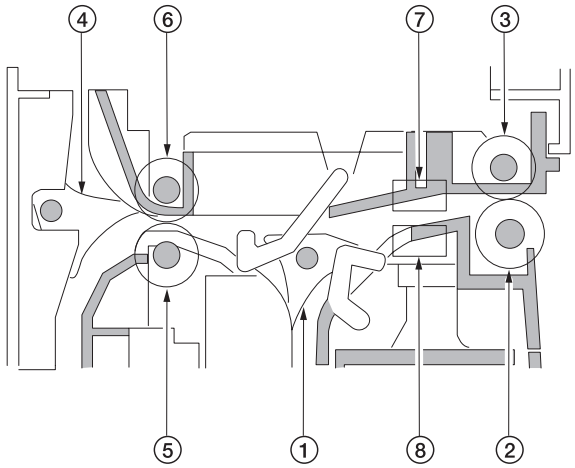


Figure 2-1-18 Exit and switchback sections

(1) Feedshift guide
(2) Exit roller
(3) Exit pulley
(4) Feedshift guide
(5) Switchback roller
(6) Switchback pulley
(7) Exit switch (ESW)
(8) Feedshift switch (FSSW)

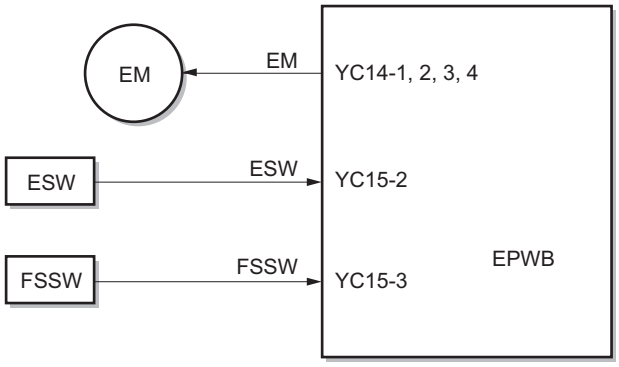


Figure 2-1-19 Exit and switchback sections block diagram

2-1-8 Duplex section

In duplex mode, after copying on to the reverse face of the paper, the paper is reversed in the switchback section and conveyed to the duplex unit. The paper is then conveyed to the copier paper feed section by the upper and lower duplex feed rollers.

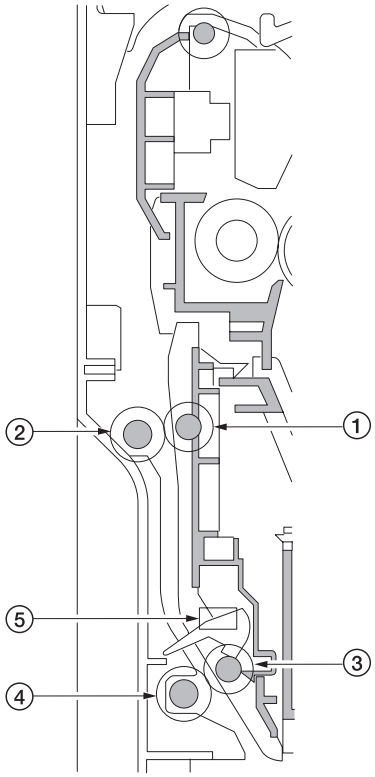


Figure 2-1-20 Duplex section

(1) Duplex feed pulley
(2) Upper duplex feed roller
(3) Duplex feed pulley
(4) Lower duplex feed roller
(5) Duplex paper conveying switch (DPPCSW)

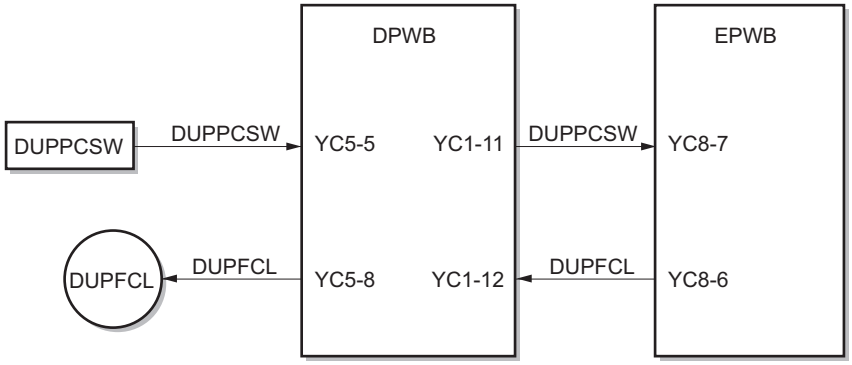


Figure 2-1-21 Duplex section block diagram

(1) Paper conveying operation in duplex copying

Paper of which copying onto the reverse side is complete is conveyed to the switchback section, the exit motor switches from forward rotation to reverse rotation to switch the exit roller to reverse rotation, and the paper conveying direction is reversed. Paper that has been switched back is conveyed to the duplex unit via the exit roller and the switchback roller. Paper that has been conveyed to the duplex unit is conveyed to the paper feed section again by rotation of the upper duplex feed roller and the lower duplex feed roller and copying onto the front side is performed.

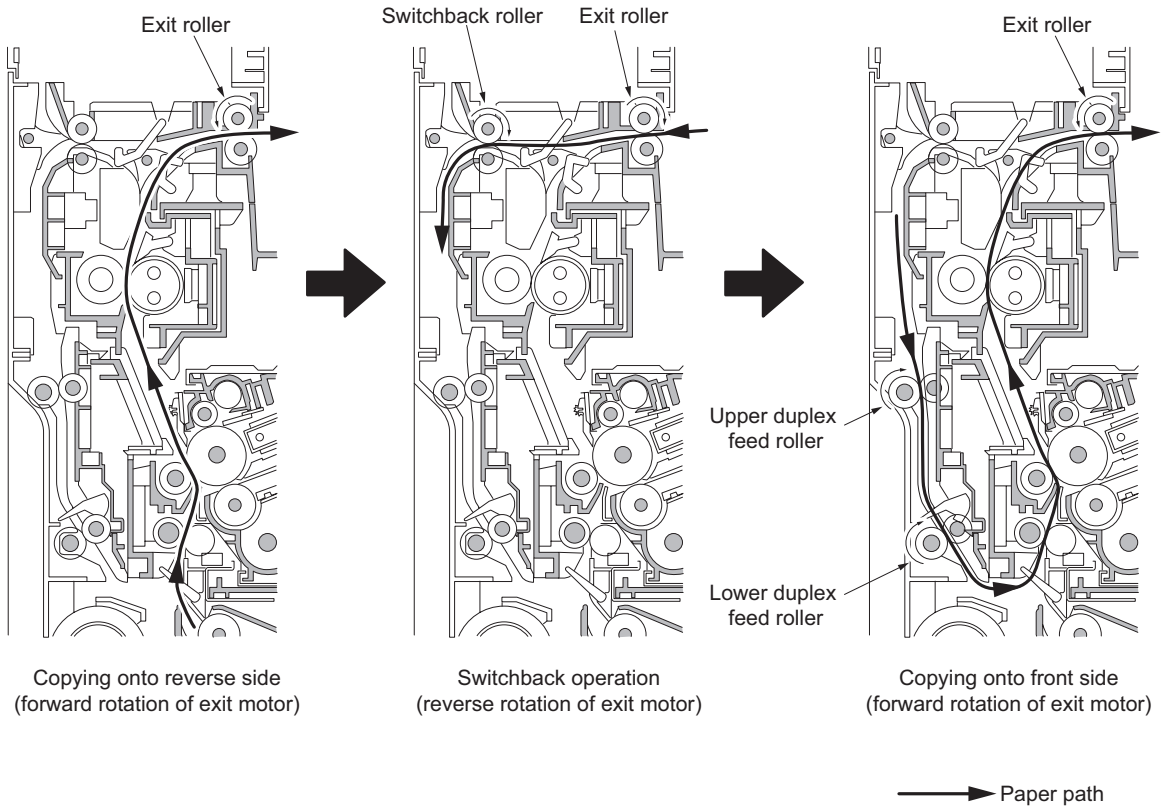


Figure 2-1-22

2-2-1 Electrical parts layout

(1) PWBs

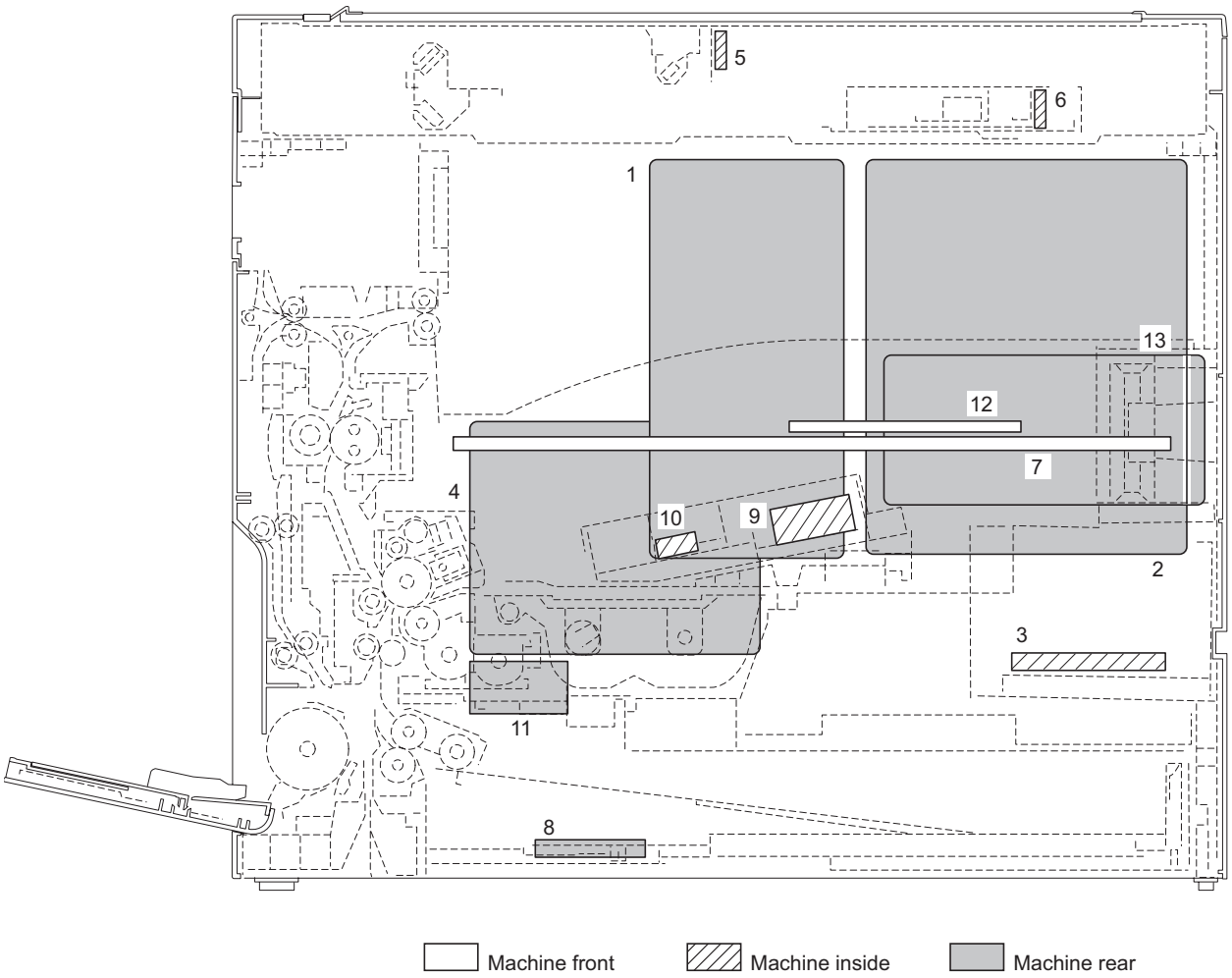


Figure 2-2-1 PWBs

1. Engine PWB (EPWB)..... Controls the other PWBs, electrical components and optional devices.
2. Main PWB (MPWB) ..... Controls the operation panel and laser scanner unit.
3. Power source PWB (PSPWB) ..... Generates +24 V DC and 5V DC; controls the fuser heater.
4. High-voltage PWB (HVTPWB)..... Main charging. Generates high voltages for transfer and high voltages for separation.
5. Inverter PWB (INPWB) ..... Controls the exposure lamp.
6. CCD PWB (CCDPWB)..... Reads the image off originals.
7. Operation unit PWB (OPWB)..... Consists of the operation keys and display LEDs.
8. Drawer PWB (DPWB)..... Controls the electrical components.
9. APC PWB (APCPWB) ..... Generates and controls the laser light.
10. PD PWB (PDPWB) ..... Controls horizontal synchronizing timing of laser beam.
11. Registration motor PWB (RMPWB) ..... Controls the registration motor.
12. LCD PWB (LCDPWB)..... Controls the display of LCD.
13. Printer board PWB (PRNPWB)..... Controls the printer functions.

(2) Switches and sensors

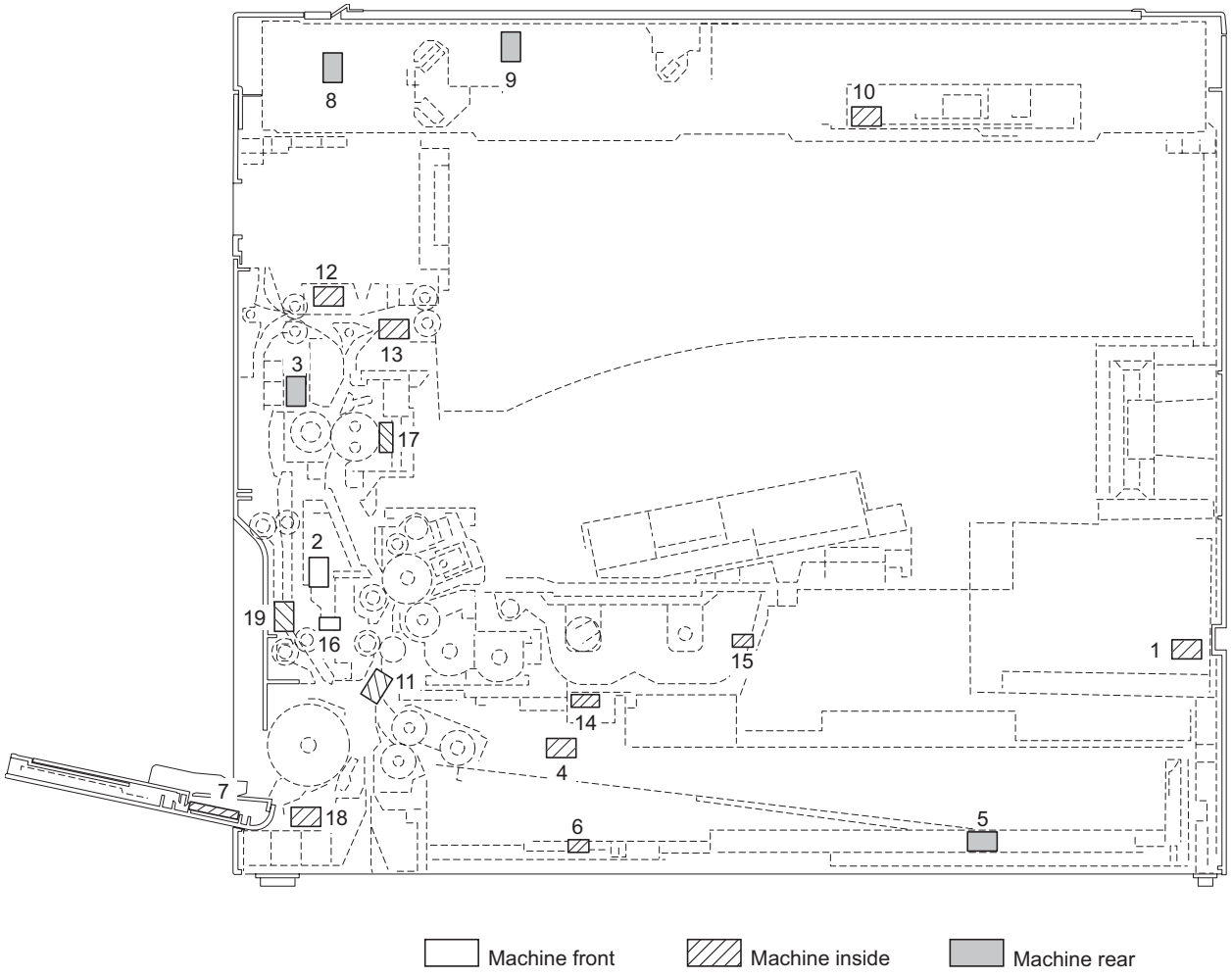


Figure 2-2-2 Switches and sensors

1. Power switch (MSW)..... Turns the AC power on and off.
2. Front cover safety switch (FCSSW)..... Breaks the safety circuit when the front cover is opened.
3. Left cover safety switch (LCSSW) ..... Breaks the safety circuit when the left cover is opened.
4. Paper switch (PSW)..... Detects the presence of paper in the drawer.
5. Paper size length switch (PLSW)..... Detects the length of paper in the drawer.
6. Paper size width switch (PWSW)..... Detects the width of paper in the drawer.
7. MP paper size width switch (MPPWSW)..... Detects the width of paper on the MP tray.
8. Scanner home position switch (SHPSW)..... Detects the optical system in the home position.
9. Original detection switch (ODSW) ..... Operates the original size detection sensor.
10. Original size detection sensor (OSDS) ..... Detects the size of the original.
11. Registration switch (RSW)..... Controls the secondary paper feed start timing.
12. Exit switch (ESW) ..... Detects a paper misfeed in the fuser section.
13. Feedshift switch (FSSW) ..... Detects a paper misfeed in the switchback section in a duplex copy.
14. Toner container sensor (TCS)..... Detects the quantity of toner in a toner container.
15. Toner container detection switch (TCDSW) ..... Detects the presence of the toner container.
16. Overflow sensor (OFS) ..... Detects when the waste toner box is full.
17. Fuser thermistor (FTH) ..... Detects the heat roller temperature.
18. MP paper switch (MPPSW) ..... Detects the presence of paper on the MP tyay.
19. Duplex paper conveying switch (DUPPCSW)*..... Detects a paper misfeed in the duplex unit.

*: Optional

(3) Motors

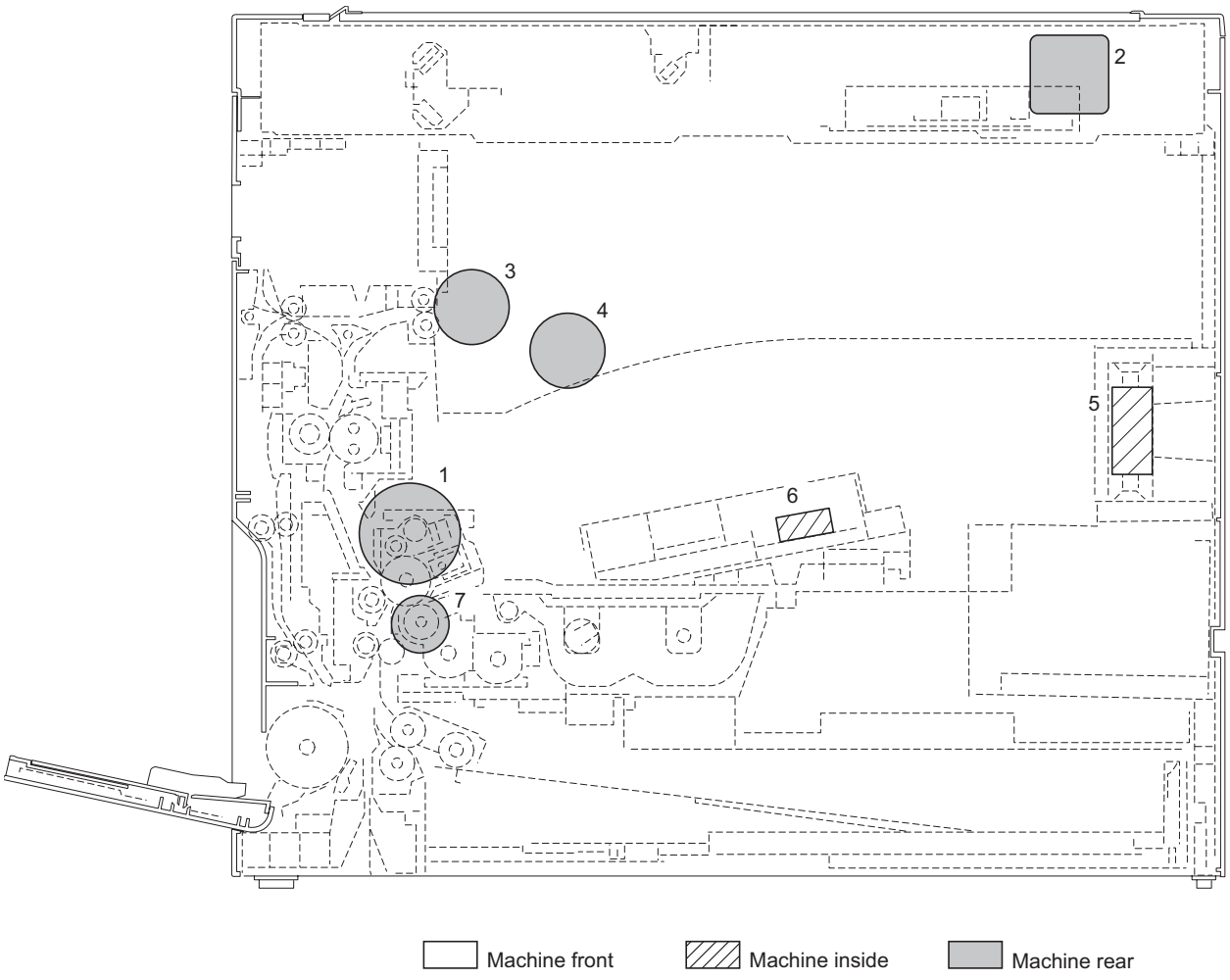


Figure 2-2-3 Motors

1. Drive motor (DM) ..... Drives the machine.
2. Scanner motor (SM)..... Drives the optical system.
3. Exit motor (EM)..... Drives the exit section.
4. Cooling fan motor 1 (CFM1) ..... Cools the machine interior.
5. Cooling fan motor 2 (CFM2) ..... Cools the machine interior.
6. Polygon motor (PM)..... Drives the polygon mirror.
7. Registration motor (RM)..... Drives the registration roller.

(4) Other electrical components

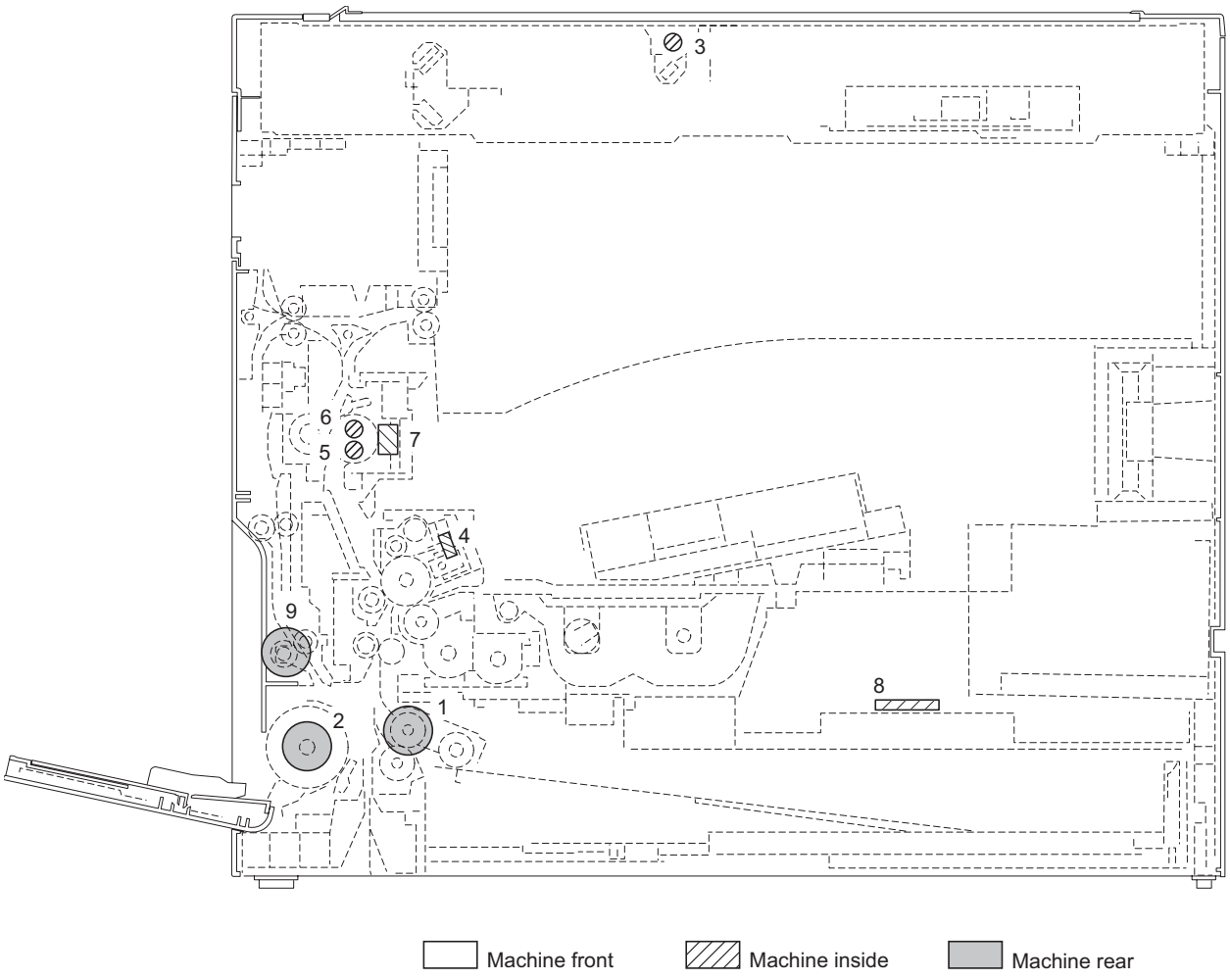


Figure 2-2-4 Other electrical components

1. Paper feed clutch (PFCL) ..... Primary paper feed from the drawer.
2. MP paper feed clutch (MPPFCL) ..... Primary paper feed from the MP tray.
3. Exposure lamp (EL) ..... Exposes originals.
4. Cleaning lamp (CL) ..... Removes residual charge from the drum surface.
5. Fuser heater M (FH-M) ..... Heats the heat roller.
6. Fuser heater S (FH-S) ..... Heats the heat roller.
7. Fuser thermostat (FTS)..... Prevents overheating in the fuser section.
8. Drawer heater (DH)* ..... Dehumidifies the drawer section.
9. Duplex feed clutch (DUPFCL)* ..... Controls the drive of the duplex feed roller.

*: Optional

2-3-1 Power source PWB

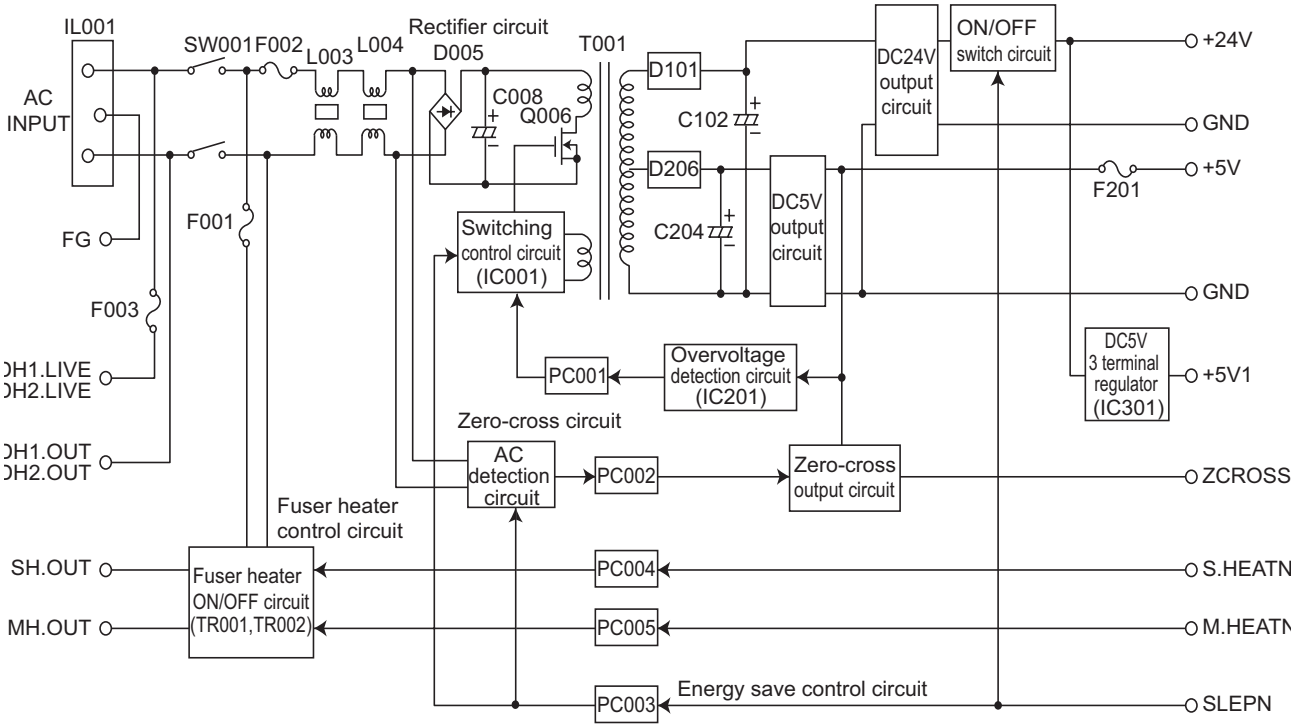


Figure 2-3-1 Power source PWB block diagram

The power source PWB (PSPWB) is a switching regulator that converts an AC input to generate 24 V DC and 5 V DC. It includes a rectifier circuit, a switching regulator circuit, a 24 V DC output circuit, a 5 V DC output circuit, overvoltage detection circuit, zero-cross circuit and a fuser heater control circuit.

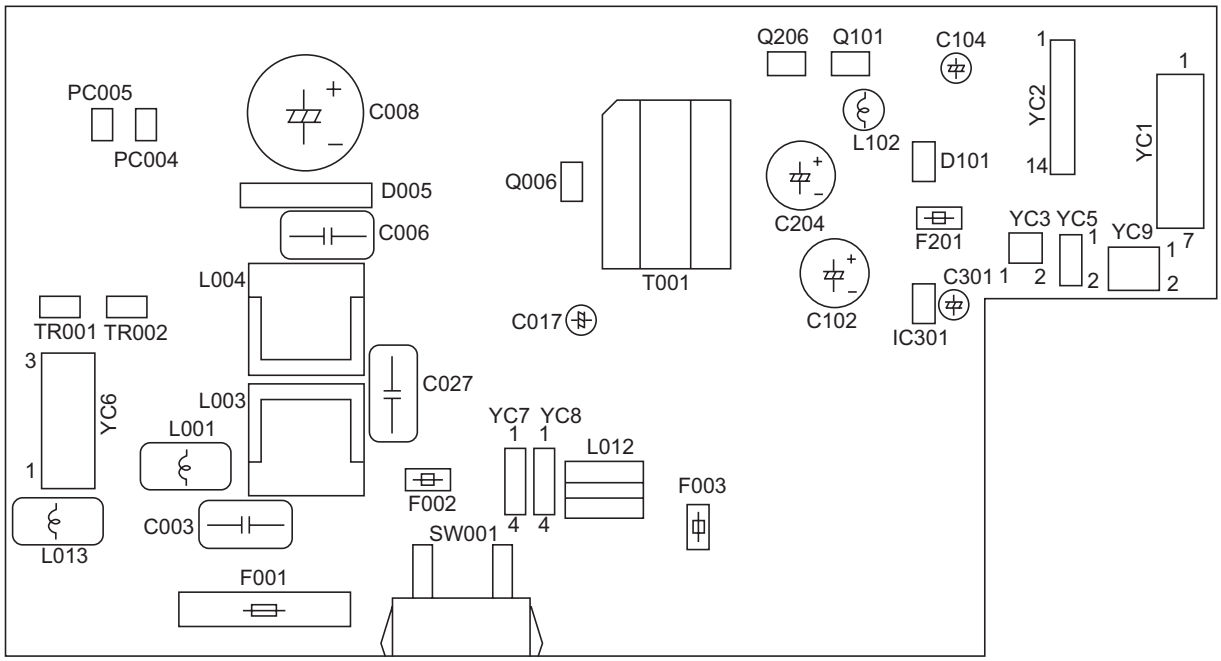


Figure 2-3-2 Power source PWB silk-screen diagram

Connector	Pin No.	Signal	I/O	Description
IL001	1	AC-L	I	AC supply (LIVE)
Connected to the AC power plug	2	FG	-	Ground
	3	AC-N	I	AC supply (NEUTRAL)
YC1	1	+24 V1	O	DC power supply for LCSSW
Connected to the engine PWB and left cover safety switch	2	NC	-	Not used
	3	+24 V2	I	24 V DC power supply
	4	+24 V4	O	24 V DC power supply for EPWB
	5	PGND	-	Ground
	6	SGND	-	Ground
	7	+5 V	O	5 V DC power supply for EPWB
YC2	1	+5 V	O	5 V DC power supply for EPWB
Connected to the engine PWB	2	SGND	-	Ground
	3	+24 V2	I	24 V DC power supply
	4	SGND	-	Ground
	5	ZCROSS	O	Zero-cross signal
	6	SLEPN	I	Power source sleep signal
	7	S.HEATN	I	FH-S on/off
	8	M.HEATN	I	FH-M on/off
	9	COUNTN	I	Counter control signal
	10	PGND	-	Ground
	11	PGND	-	Ground
	12	+24 V1	O	24 V DC power supply for EPWB
	13	+24 V1	O	24 V DC power supply for EPWB
	14	+24 V	O	24 V DC power supply for EPWB

Connector	Pin No.	Signal	I/O	Description
YC5	1	+5 V1	O	5 V DC power supply for FCSSW
Connected to the front cover safety switch	2	NC	-	Not used
	3	+5 V3	I	5 V DC power supply
YC6	1	H.LIVE	O	AC power supply for FH-M/S (LIVE)
Connected to the fuser heater M/S	2	MH.OUT	O	AC power supply for FH-M
	3	MH.OUT	O	AC power supply for FH-S
YC7	1	DH2.LIVE	O	AC power supply for drawer heater of the paper feeder (LIVE)
Connected to the optional paper feeder	2	NC	-	Not used
	3	NC	-	Not used
	4	DH2.OUT	O	AC power supply for drawer heater of the paper feeder
YC8	1	DH1.LIVE	O	AC power supply for drawer heater (LIVE)
Connected to the optional drawer heater	2	NC	-	Not used
	3	NC	-	Not used
	4	DH1.OUT	O	AC power supply for drawer heater
YC9	1	+24 V1	O	24 V DC power supply for paper feeder
Connected to the optional paper feeder	2	PGND	-	Ground

2-3-2 Main PWB

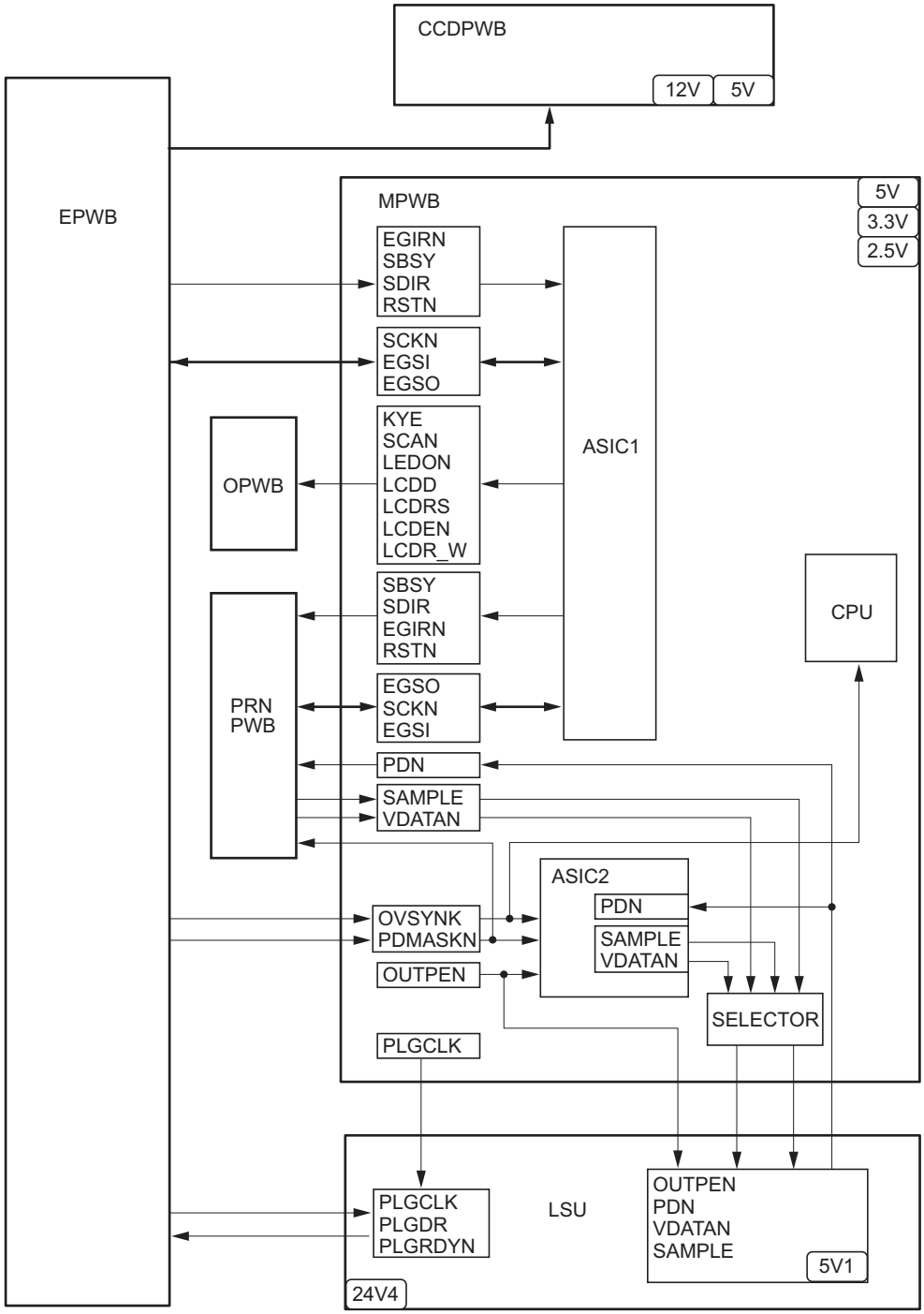


Figure 2-3-3 Main PWB block diagram

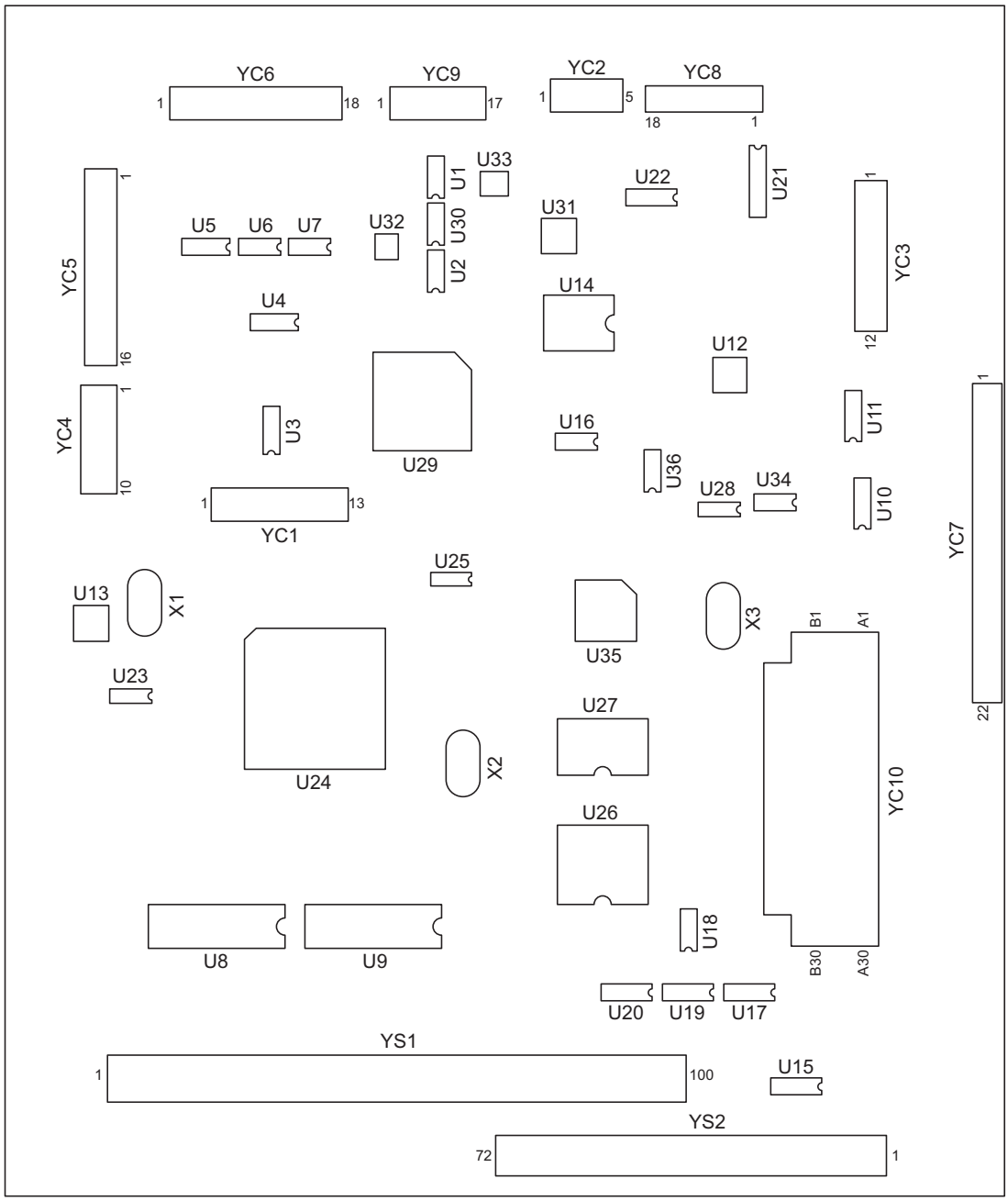


Figure 2-3-4 Main PWB silk-screen diagram

Connector	Pin No.	Signal	I/O	Description
YC4	1	+5 V	O	5 V DC power supply for OPWB
Connected to the operation unit PWB	2	BUZERDRN	O	OPWB buzzer signal
	3	SCAN7N	O	Key switch scan signal 7
	4	SCAN6N	O	Key switch scan signal 6
	5	SCAN5N	O	Key switch scan signal 5
	6	SCAN4N	O	Key switch scan signal 4
	7	SCAN3N	O	Key switch scan signal 3
	8	SCAN2N	O	Key switch scan signal 2
	9	SCAN1N	O	Key switch scan signal 1
	10	SCAN0N	O	Key switch scan signal 0
YC5	1	SGND	-	Ground
Connected to the LCD PWB	2	+3.3V	O	3.3 V DC power supply for LCDPWB
	3	+3.3V	O	3.3 V DC power supply for LCDPWB
	4	LCDRS	O	LCDRS signal
	5	LCDR_W	O	LCDR_W signal
	6	LCDEN	O	LCDEN signal
	7	LCDD0	O	LCD display data signal 0
	8	LCDD1	O	LCD display data signal 1
	9	LCDD2	O	LCD display data signal 2
	10	LCDD3	O	LCD display data signal 3
	11	LCDD4	O	LCD display data signal 4
	12	LCDD5	O	LCD display data signal 5
	13	LCDD6	O	LCD display data signal 6
	14	LCDD7	O	LCD display data signal 7
	15	SGND	-	Ground
	16	SGND	-	Ground
YC6	1	LED0	O	LED lighting selection signal 0
Connected to the operation unit PWB	2	LED1	O	LED lighting selection signal 1
	3	LED2	O	LED lighting selection signal 2
	4	LED3	O	LED lighting selection signal 3
	5	LED4	O	LED lighting selection signal 4
	6	LED5	O	LED lighting selection signal 5
	7	LED6	O	LED lighting selection signal 6
	8	LED7	O	LED lighting selection signal 7
	9	LED8	O	LED lighting selection signal 8
	10	LED9	O	LED lighting selection signal 9
	11	LED10	O	LED lighting selection signal 10
	12	LED11	O	LED lighting selection signal 11
	13	LED12	O	LED lighting selection signal 12
	14	KEY0	I	Key switch return signal 0
	15	KEY1	I	Key switch return signal 1
	16	KEY2	I	Key switch return signal 2
	17	KEY3	I	Key switch return signal 3
	18	KEY4	I	Key switch return signal 4
YC7	1	+12 V	I	12 V DC power supply from EPWB
Connected to the engine PWB	2	OVSYNC	I	Original scanning interval signal
	3	RSTN	I	Reset signal
	4	EGRN	I	Engine communication EGRN signal
	5	SDIR	I	Engine communication SDIR signal
	6	SBSY	I	Engine communication SBSY signal
	7	PDMASKN	I	Printing image interval signal
	8	EGSI	O	Engine serial communication transmission

Connector	Pin No.	Signal	I/O	Description
YC7	9	SCKN	O	Engine communication clock signal
Connected to the engine PWB	10	EGSO	I	Engine serial communication reception
	11	PLGCLK	O	PM clock signal
	12	SGND	-	Ground
	13	OUTEPN	I	Laser diode output signal
	14	+5 V	I	5 V DC power supply from EPWB
	15	+5 V	I	5 V DC power supply from EPWB
	16	+5 V	I	5 V DC power supply from EPWB
	17	SGND	-	Ground
	18	SGND	-	Ground
	19	SGND	-	Ground
	20	+5 V3	I	5 V DC power supply from EPWB
	21	PGND	-	Ground
	22	+24 V	I	24 V DC power supply from EPWB
YC8	1	CCDO	-	Ground
Connected to the CCD PWB	2	CCDON	I	CCDPWB image scanning signal
	3	CCDE	-	Ground
	4	CCDEN	I	CCDPWB image scanning signal
	5	+5 V	O	5 V DC power supply for CCDPWB
	6	SGND	-	Ground
	7	+12 V	O	12 V DC power supply for CCDPWB
	8	SGND	-	Ground
	9	CCDCLK	O	CCDCLK signal
	10	SGND	-	Ground
	11	CCDCLKN	O	CCDCLKN signal
	12	SGND	-	Ground
	13	RS	O	CCDPWB RS signal
	14	SGND	-	Ground
	15	CP	O	CCDPWB CP signal
	16	SGND	-	Ground
	17	SH	O	CCDPWB SH signal
	18	SGND	-	Ground
YC9	1	PDN	I	Laser sync signal
Connected to the APC PWB	2	SGND	-	Ground
	3	OUTPEN	O	Laser diode output signal
	4	SAMPLEN	O	Laser light signal
	5	VDON	O	Image differential signal (negative)
	6	VDOP	O	Image differential signal (positive)
	7	+5 V3	O	5 V DC power supply for APCPWB

2-3-3 Engine PWB

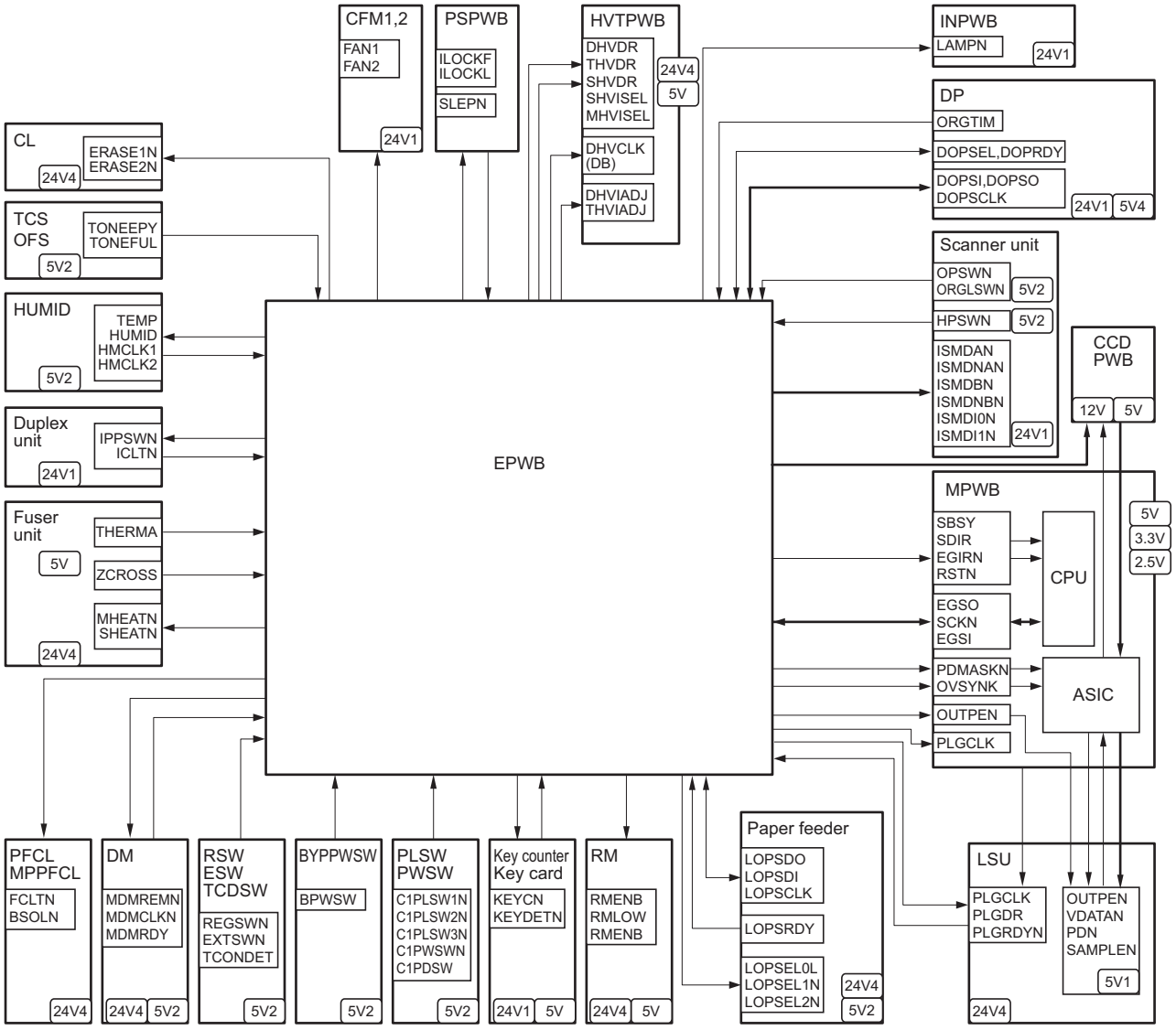


Figure 2-3-5 Engine PWB block diagram

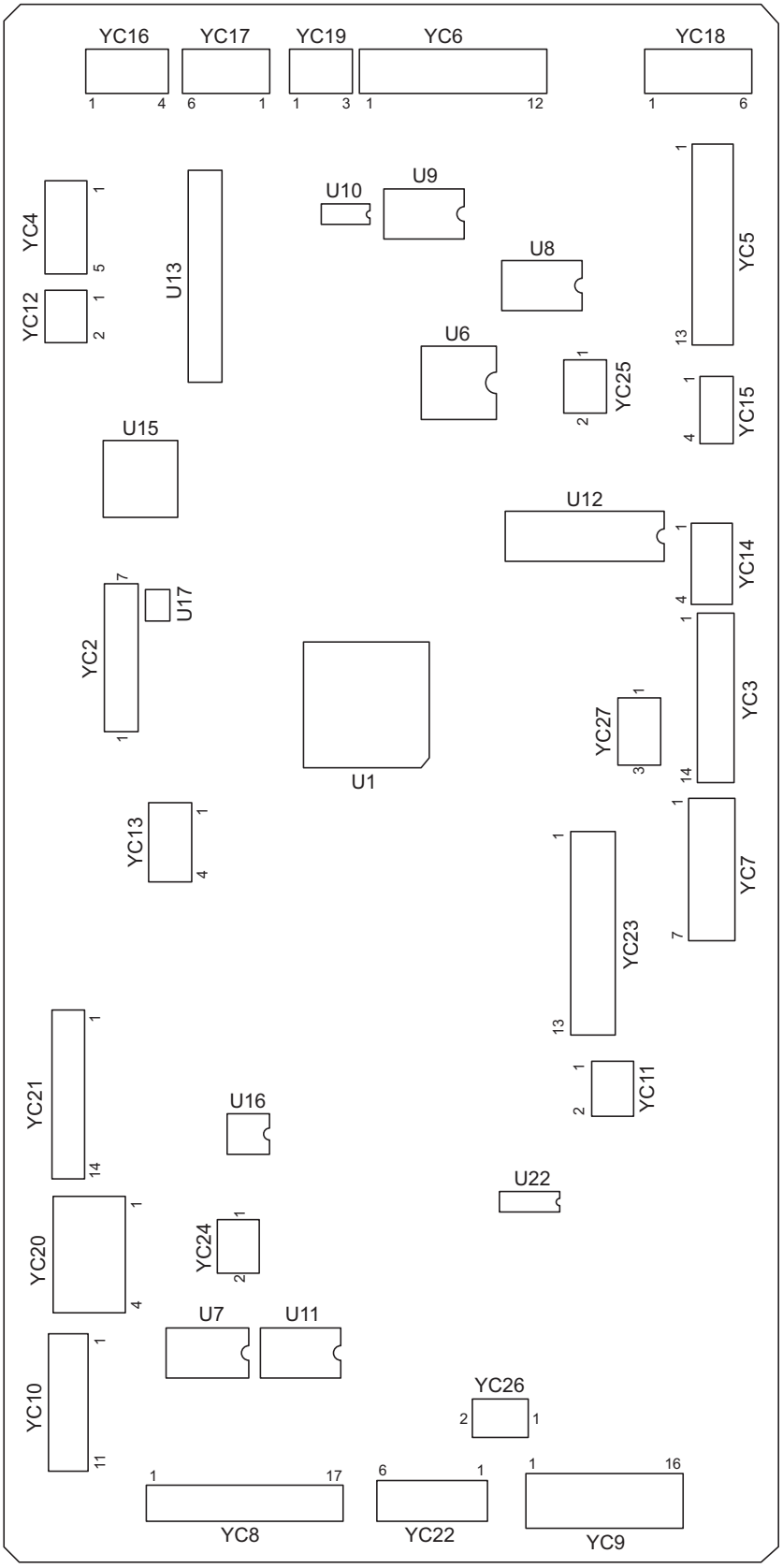


Figure 2-3-6 Engine PWB silk-screen diagram

Connector	Pin No.	Signal	I/O	Description
YC1	1	+12 V	O	12 V DC power supply for MPWB
Connected to the Main PWB	2	OVSYNC	O	Original scanning interval signal
	3	RSTN	O	Reset signal
	4	EGRN	O	Engine communication EGRN signal
	5	SDIR	O	Engine communication SDIR signal
	6	SBSY	O	Engine communication SBSY signal
	7	PDMASKN	O	Printing image interval signal
	8	EGSI	I	Engine serial communication reception
	9	SCKN	I	Engine communication clock signal
	10	EGSO	O	Engine serial communication transmission
	11	PLGCLK	I	PM clock signal
	12	SGND	-	Ground
	13	OUTEPN	O	Laser diode output signal
	14	+5 V	O	5 V DC power supply for MPWB
	15	+5 V	O	5 V DC power supply for MPWB
	16	+5 V	O	5 V DC power supply for MPWB
	17	SGND	-	Ground
	18	SGND	-	Ground
	19	SGND	-	Ground
	20	+5 V3	O	5 V DC power supply for APCPWB/PDPWB
	21	PGND	-	Ground
	22	+24 V	O	24 V DC power supply for MPWB
YC3	1	PLGCLKN	O	PM clock signal
Connected to the polygon motor, cleaning lamp, cooling fan motor 1 and overflow sensor	2	PLGRDYN	I	PM rotation sync signal
	3	PLGDRN	O	PM on/off
	4	PLGGND	-	Ground
	5	PLG +24 V4	O	24 V DC power supply for PM
	6	FAN1DRN	O	CFM1 on/off
	7	+24V1	O	24 V DC power supply for CFM1
	8	TONEGND	-	Ground
	9	TONEFUL	I	OFS on/off
	10	TONE +5 V2	O	5 V DC power supply for OFS
	11	ERASE +24 V4	O	24 V DC power supply for CL
	12	ERASE3N	O	CL on/off (3)
	13	ERASE2N	O	CL on/off (2)
YC4	1	+5 V	O	5 V DC power supply for RM
Connected to the registration motor PWB	2	RMLOW	O	RM Low signal
	3	RMCLK	O	RM clock signal
	4	RMENB	O	RM on/off
	5	SGND	-	Ground
YC6	1	ORGTIMN	I	DP original scanning interval signal
Connected to the optional DP	2	DOPRDY	I	DP READY signal
	3	DOPSEL	O	DP SEL signal
	4	SGND	-	Ground
	5	DOPCLK	O	DP clock signal
	6	DOPSDI	I	DP serial communication reception
	7	DOPSDO	O	DP serial communication transmission
	8	+5 V4	O	5 V DC power supply for DP
	9	PGND	-	Ground
	10	PGND	-	Ground
	11	+24V1	O	24 V DC power supply for DP
	12	+24V1	O	24 V DC power supply for DP

Connector	Pin No.	Signal	I/O	Description
YC7	1	+24V4	O	24 V DC power supply for DM
Connected to the drive motor	2	PGND	-	Ground
	3	SGND	-	Ground
	4	+5 V	O	5 V DC power supply for DM
	5	REM	O	DM on/off
	6	RDY	I	DM rotation sync signal
	7	CLK	O	DM clock signal
YC8	1	BPPESW	I	MPPSW on/off
Connected to the drawer PWB	2	C1PDSWN	I	PSW on/off
	3	FCLTN	O	PFCL on/off
	4	+24V1	O	24 V DC power supply for DPWB
	5	BPSOLN	O	MPPFCL on/off
	6	ICLTN	O	DUPFCL on/off
	7	IPPSWN	I	DUPPCSW on/off
	8	BPWSW	I	MPPWSW on/off
	9	REGSWN	I	RSW on/off
	10	TONEPY	I	TCS on/off
	11	SGND	-	Ground
	12	+5 V2	O	5 V DC power supply for DPWB
	13	C1PWSWN	I	PWSW on/off
	14	HUMIDC	I	HUMSENS analog signal
	15	HMCLK2	O	HUMSENS clock signal (2)
	16	HMCLK1	O	HUMSENS clock signal (1)
	17	TEMP	I	HUMSENS analog signal
YC9	1	DHVCLK	O	Developing bias clock signal
Connected to the high voltage PWB	2	+5 V	O	5 V DC power supply for HVTPWB
	3	SHVISELN	O	Separation high-voltage switch signal
	4	PGND	-	Ground
	5	MHVDRN	O	Main charging high-voltage on/off
	6	PGND	-	Ground
	7	SHVDRN	O	Separation high-voltage on/off
	8	PGND	-	Ground
	9	MHVADJ	O	Main charging high-voltage adjust signal
	10	PGND	-	Ground
	11	THVDRN	O	Transfer high-voltage on/off
	12	+24 V4	O	24 V DC power supply for HVTPWB
	13	THVADJ	O	Transfer high-voltage adjust signal
	14	+24 V4	O	24 V DC power supply for HVTPWB
	15	MHVISELN	O	Main charging high-voltage switch signal
	16	+24 V4	O	24 V DC power supply for HVTPWB
YC10	1	LOPSRDY	I	Paper feeder READY signal
Connected to the optional paper feeder	2	LOPSEL2	O	Paper feeder SEL2 signal
	3	LOPSEL1	O	Paper feeder SEL1 signal
	4	LOPSEL0	O	Paper feeder SEL0 signal
	5	LOPSCLK	O	Paper feeder clock signal
	6	LOPSDI	I	Paper feeder serial communication reception
	7	LOPSDO	O	Paper feeder serial communication transmission
	8	SGND	-	Ground
	9	+5 V2	O	5 V DC power supply for the paper feeder
	10	SGND	-	Ground
	11	+5 V2	O	5 V DC power supply for the paper feeder

Connector	Pin No.	Signal	I/O	Description
YC11	1	+24 V4	O	24 V DC power supply for CFM2
Connected to the cooling fan motor 2	2	FAN2DRN	O	CFM on/off
YC13	1	+24 V1	O	24 V DC power supply for key counter
Connected to the key counter	2	KEYCN	O	Key counter count signal
	3	SGND	-	Ground
	4	KEYENBN	I	Key counter set signal
YC14	1	COMDA	O	EM control signal (A)
Connected to the exit motor	2	COMDNB	O	EM control signal (_B)
	3	COMDNA	O	EM control signal (_A)
	4	COMDB	O	EM control signal (B)
YC15	1	PGND	-	Ground
Connect to the exit switch and feedshift switch	2	EXTSMN	I	ESW on/off
	3	SEPSWN	I	FSSW on/off
	4	+5 V2	O	5 V DC power supply for ESW/FSSW
YC16	1	ISMDA	O	SM control signal (A)
Connected to the scanner motor	2	ISMDNB	O	SM control signal (_B)
	3	ISMDNA	O	SM control signal (_A)
	4	ISMDB	O	SM control signal (B)
YC17	1	LAMPN	O	EL on/off
Connected to the inverter PWB	2	PGND	-	Ground
	3	+24 V1	O	24 V DC power supply for inverter PWB
	4	+24 V1	O	24 V DC power supply for inverter PWB
	5	PGND	-	Ground
	6	LAMPN	O	EL on/off
YC18	1	+5 V2	O	5 V DC power supply for SHPSW
Connected to the original detection switch and scanner home position switch	2	HPSWN	I	SHPSW on/off
	3	SGND	-	Ground
	4	+5 V2	O	5 V DC power supply for ODSW
	5	OPSWN	I	ODSW on/off
	6	SGND	-	Ground
YC19	1	+5 V2	O	5 V DC power supply for OSDS
Connected to the original size detection sensor	2	ORGLSWN	I	OSDS on/off
	3	SGND	-	Ground
YC20	1	+5 V	I	5 V DC power supply from PSPWB
Connected to the power source PWB	2	SGND	-	Ground
	3	PGND	-	Ground
	4	+24 V4	I	24 V DC power supply from PSPWB
YC21	1	+24 V	I	24 V DC power supply from PSPWB
Connected to the power source PWB	2	+24 V1	I	24 V DC power supply from PSPWB
	3	+24 V1	I	24 V DC power supply from PSPWB
	4	PGND	-	Ground
	5	PGND	-	Ground
	6	COUNTN	-	Not used

Connector	Pin No.	Signal	I/O	Description
YC21	7	MHEATN	O	FH-M on/off
Connected to the power source PWB	8	SHEATN	O	FH-S on/off
	9	SLEPN	O	Power source sleep signal
	10	ZCROS	S	O Zero-cross signal
	11	SGND	-	Ground
	12	+24 V2	I	LCSSW on/off
	13	SGND	-	Ground
	14	+5 V3	I	FCSSW on/off
YC22	1	C1PLSW3N	I	PLSW on/off
Connected to the paper size length switch and toner container detection switch	2	C1PLSW2N	I	PLSW on/off
	3	SGND	-	Ground
	4	C1PLSW1N	I	PLSW on/off
	5	TCONDET	I	TCDSW on/off
	6	SGND	-	Ground
YC23	2	THERMA	I	FTH analog signal
Connected to the fuser thermistor	3	THERMA +5 V	O	5 V DC power supply for FTH
YC24	1	+24 V4	O	24 V DC power supply for RMPWB
Connected to the registration motor PWB	2	PGND	-	Ground

2-3-4 Operation unit PWB

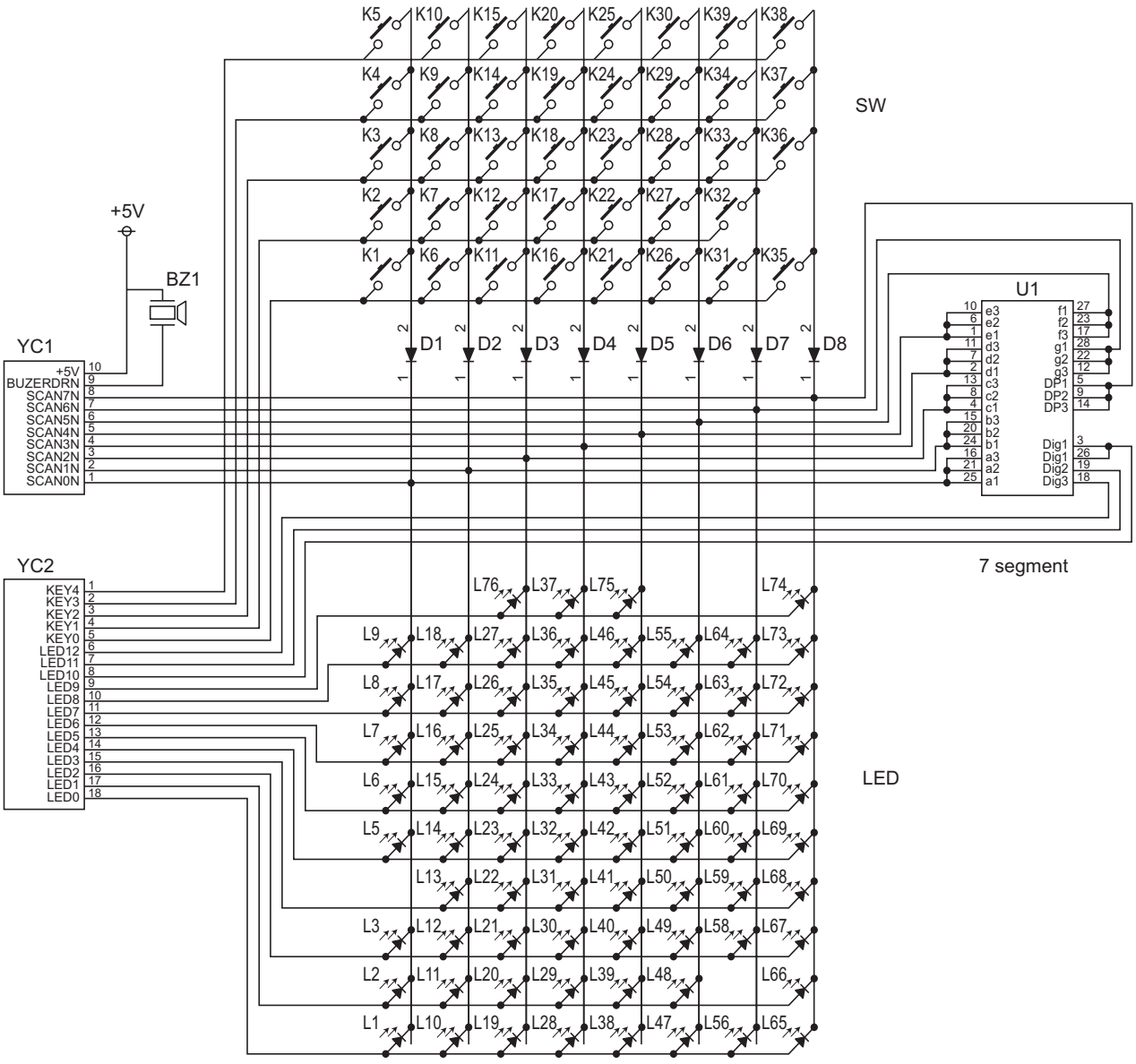


Figure 2-3-7 Operation unit PWB block diagram

The operation unit PWB (OPWB) consists of key switches, LEDs, 7 segment LED and buzzer. The lighting of LEDs is determined by scan signals (SCAN0 to SCAN7) and LED lighting selection signals (LED0 to LED12) from the main PWB (MPWB). The key switches operated are identified by the scan signals (SCAN0 to SCAN7) and the return signals (KEY0 to KEY4).

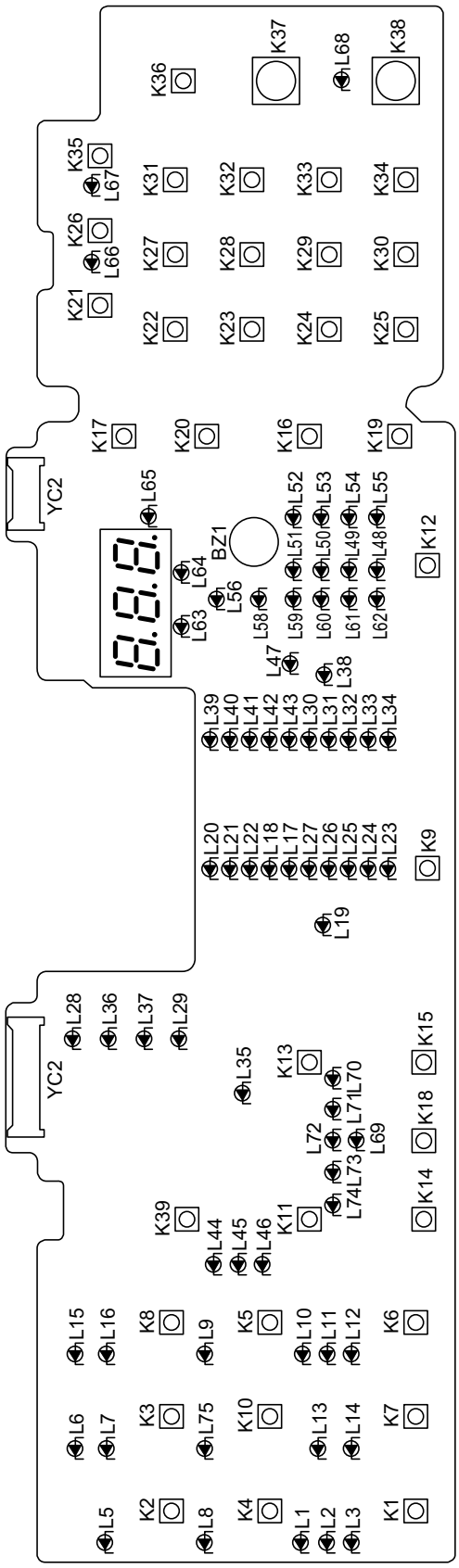


Figure 2-3-8 Operation unit PWB silk-screen diagram

Connector	Pin No.	Signal	I/O	Description
YC1	1	SCAN0N	I	Key switch scan signal 0
Connected to the main PWB	2	SCAN1N	I	Key switch scan signal 1
	3	SCAN2N	I	Key switch scan signal 2
	4	SCAN3N	I	Key switch scan signal 3
	5	SCAN4N	I	Key switch scan signal 4
	6	SCAN5N	I	Key switch scan signal 5
	7	SCAN6N	I	Key switch scan signal 6
	8	SCAN7N	I	Key switch scan signal 7
	9	BUZERDRN	I	OPWB buzzer signal
	10	+5 V	I	5 V DC power supply from MPWB
YC2	1	KEY4	O	Key switch return signal 4
Connected to the main PWB	2	KEY3	O	Key switch return signal 3
	3	KEY2	O	Key switch return signal 2
	4	KEY1	O	Key switch return signal 1
	5	KEY0	O	Key switch return signal 0
	6	LED12	I	LED lighting selection signal 12
	7	LED11	I	LED lighting selection signal 11
	8	LED10	I	LED lighting selection signal 10
	9	LED9	I	LED lighting selection signal 9
	10	LED8	I	LED lighting selection signal 8
	11	LED7	I	LED lighting selection signal 7
	12	LED6	I	LED lighting selection signal 6
	13	LED5	I	LED lighting selection signal 5
	14	LED4	I	LED lighting selection signal 4
	15	LED3	I	LED lighting selection signal 3
	16	LED2	I	LED lighting selection signal 2
	17	LED1	I	LED lighting selection signal 1
	18	LED0	I	LED lighting selection signal 0

2-3-5 CCD PWB

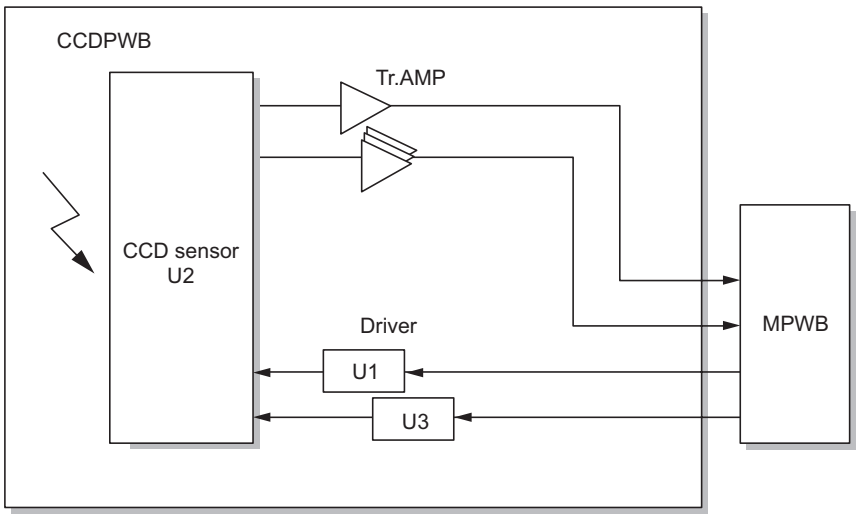


Figure 2-3-9 CCD PWB block diagram

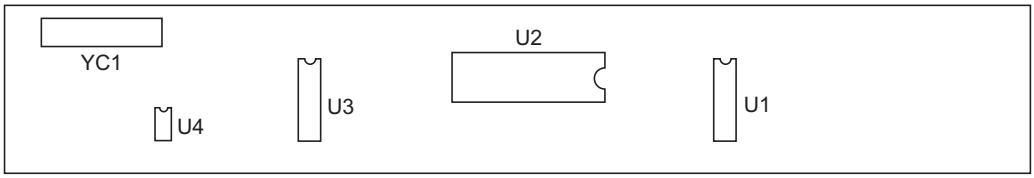
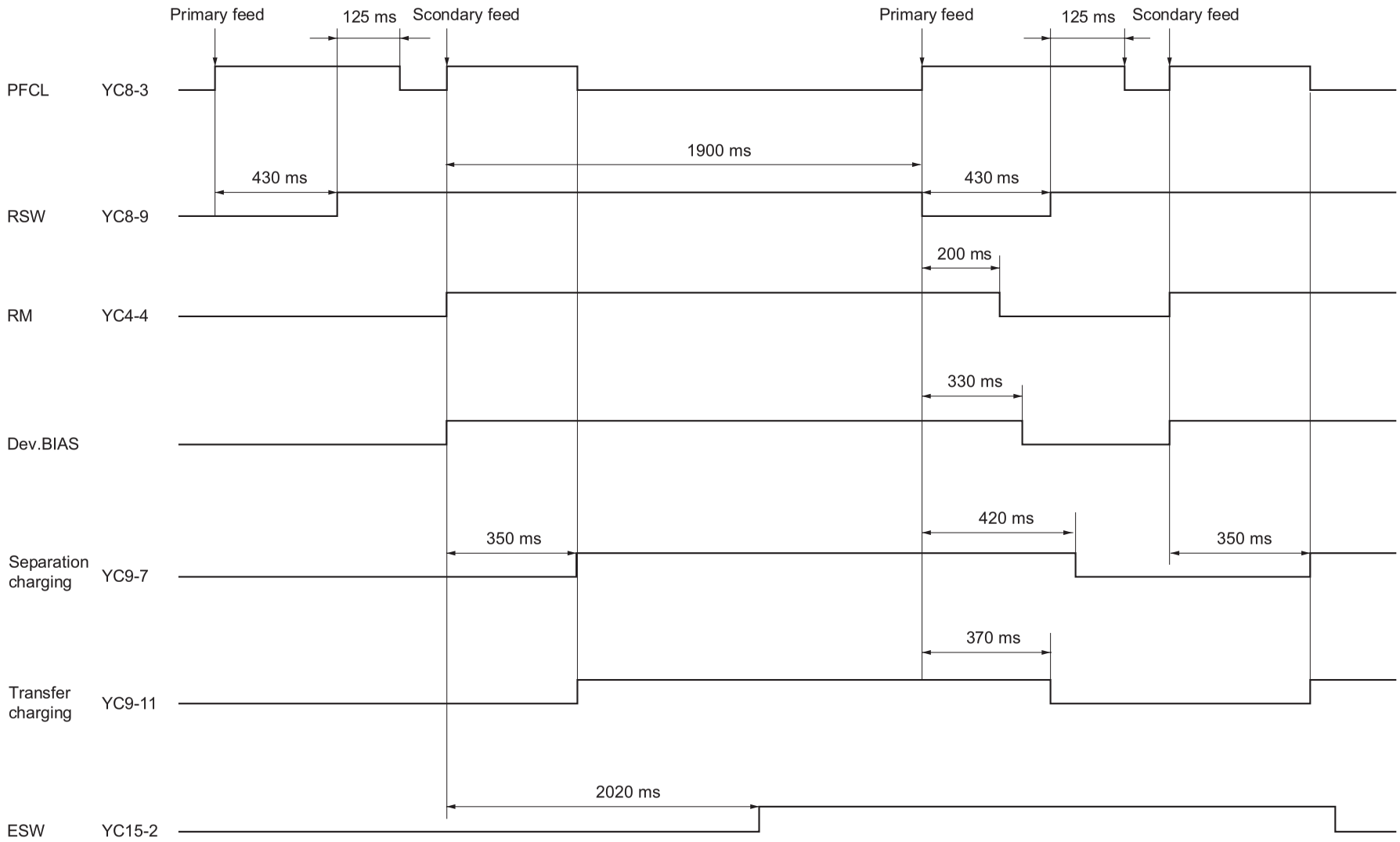


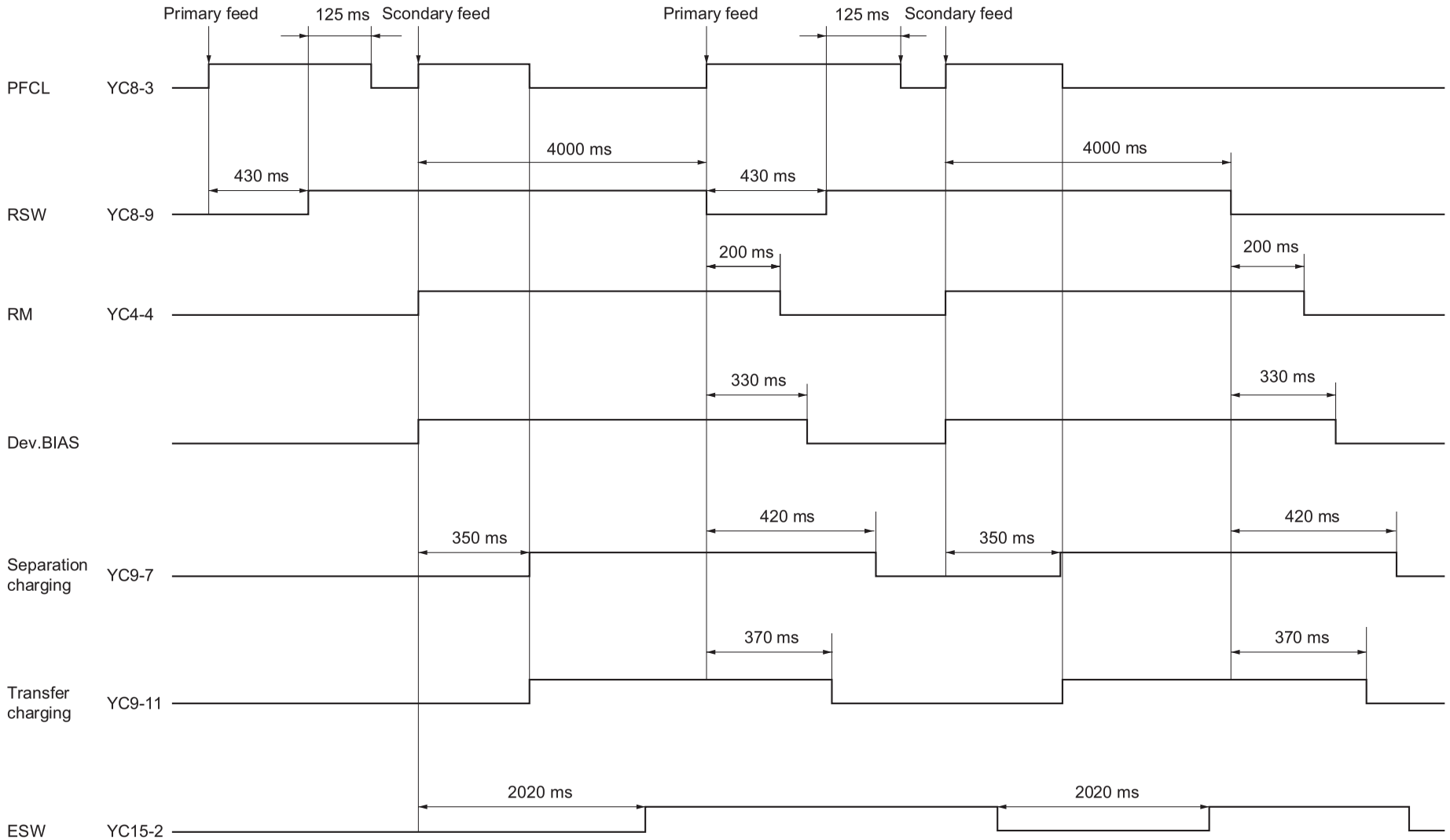
Figure 2-3-10 CCD PWB silk-screen diagram

Connector	Pin No.	Signal	I/O	Description
YC1	1	SGND	-	Ground
Connected to the main PWB	2	SH	I	MPWB SH signal
	3	SGND	-	Ground
	4	CP	I	MPWB CP signal
	5	SGND	-	Ground
	6	RS	I	MPWB RS signal
	7	SGND	-	Ground
	8	CCDCLKN	I	CCDCLKN signal
	9	SGND	-	Ground
	10	CCDCLK	I	CCDCLK signal
	11	SGND	-	Ground
	12	+12 V	I	12 V DC power supply from MPWB
	13	SGND	-	Ground
	14	+5 V	I	5 V DC power supply from MPWB
	15	CCDEN	O	CCDPWB image scanning signal
	16	CCDE	-	Ground
	17	CCDON	O	CCDPWB image scanning signal
	18	CCDO	-	Ground

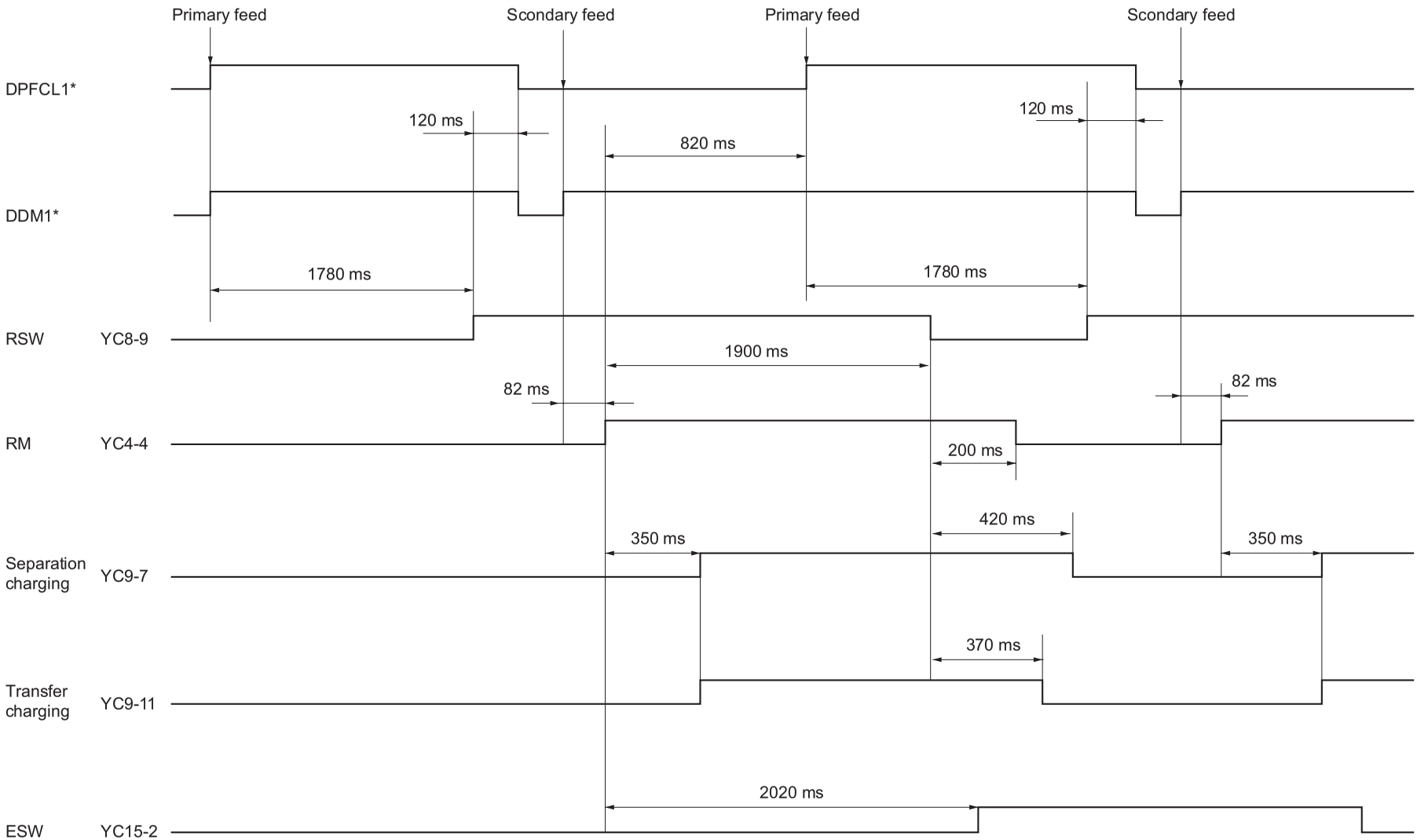
Timing chart No.1 Paper feed from drawer, single-side mode, original size A4/11" x 8 1/2", two sheets



Timing chart No.2 Paper feed from drawer, single-side mode, original size A3/11" x 17", two sheets

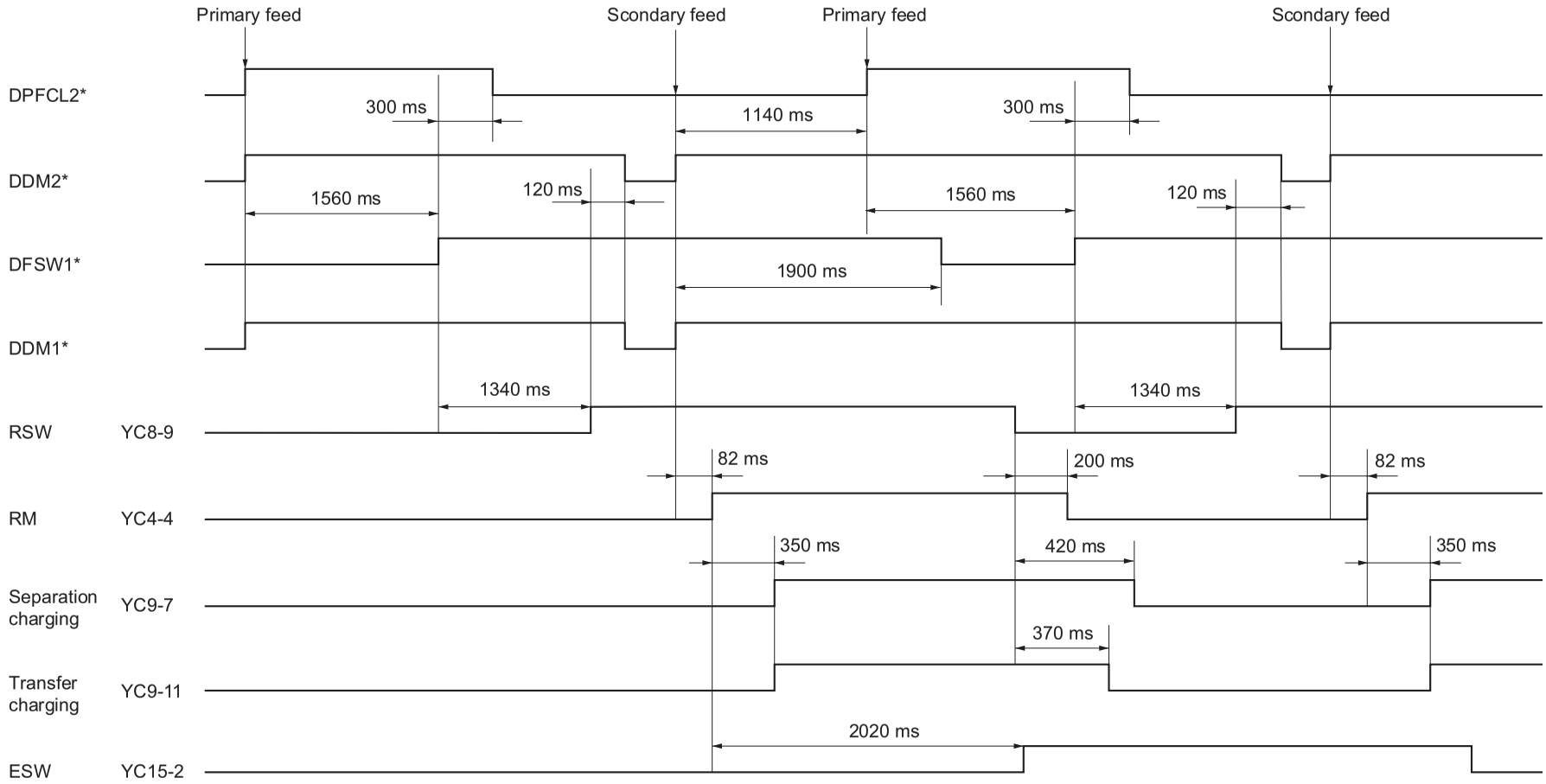


Timing chart No.3 Paper feed from optional first paper feeder, single-side mode, original size A4/11" x 8 1/2", two sheets



*: Optional

Timing chart No.4 Paper feed from optional second paper feeder, single-side mode, original size A4/11" x 8 1/2", two sheets



*: Optional

Maintenance parts list

Maintenance part name			Fig. No.	Ref. No.
Name used in service manual	Name used in parts list			
Paper feed pulley	PULLEY, PAPER FEED		5	39
Separation pulley	PULLEY, SEPARATION		5	40
Forwarding pulley	PULLEY, LEADING FEED		5	41
MP paper feed pulley	PARTS,BYPASS PULLEY,SP		6	19
MP separation pad	PARTS,BYPASS PAD,SP		6	15
Left registration roller	ROLLER REGIST LEFT		4	1
Right registration roller	RIGHT ROLL REGIST		5	9
Registration cleaner	PARTS,REGIST CLEANER,ASSY		5	27
Slit glass	CONTACT GLASS ADF		8	27
Contact glass	PARTS, CONTACT GLASS, M(SP)		8	A01
Contact glass	PARTS, CONTACT GLASS, I(SP)		8	A01
Mirror 1	MIRROR A		8	37
Mirror 2 and mirror 3	MIRROR B		8	4
Lens	LENS		-	-
Reflector	REFLECTOR SCANNER		8	12
Exposure lamp	LAMP SCANNER YG		8	10
Front scanner rail	FRONT RAIL SCANNER		-	-
Rear scanner rail	REAR RAIL SCANNER		-	-
Original size detection sensor	SENSOR ORIGINAL		8	55
Laser scanner unit	PARTS, LSU ASS'Y, SP		12	1
Transfer roller	ROLLER TRANSFER		4	21
Separation electrode	PLATE STA ELIMINATION		4	28
Developing unit	PARTS, DV-410, SP		9	A01
Drum unit	SET MK-410		9	5
Fuser unit	PARTS, FK-410(A), SP		10	A01
Fuser unit	PARTS, FK-410(E), SP		10	A01
Fuser unit	PARTS, FK-410(TW), SP		10	A01
Heat roller	ROLLER HEAT		10	26
Press roller	ROLLER PRESS		10	6
Heat roller separation claw	SEPARATOR ASSY		10	24
Exit roller	ROLLER EXIT INNER		7	17
Exit pulley	PULLEY EJECT		7	46
Switchback roller	ROLLER FEED SHIFT		7	18
Switchback pulley	PULLEY FEED SHIFT		7	19

Periodic maintenance procedures

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Test copy and test print	Perform at the maximum copy size	Test copy	Every service		

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Paper feed section	Paper feed pulley	Check or replace	-	Clean with the alcohol.	P.1-5-5
	Separation pulley	Check or replace	-	Clean with the alcohol.	P.1-5-3
	Forwarding pulley	Check or replace	-	Clean with the alcohol.	P.1-5-5
	MP paper feed pulley	Clean or replace	Every 150,000 counts	Clean with the alcohol.	P.1-5-9
	MP separation pad	Check or replace	-	Clean with the alcohol.	P.1-5-9
	Left registration roller	Clean or replace	Every 150,000 counts	Clean with alcohol or a dry cloth.	P.1-5-11
	Right registration roller	Clean	Every 150,000 counts	Clean with alcohol or a dry cloth.	
	Registration cleaner	Clean or replace	Every 150,000 counts	Vacuum.	P.1-5-11

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Optical section	Slit glass	Clean	Every 150,000 counts	Clean with a dry cloth.	
	Contact glass	Clean	Every 150,000 counts	Clean with alcohol and then a dry cloth.	
	Mirror 1	Clean	-	Clean with a wet cloth and then a dry cloth only if vertical black lines appear on the copy image.	
	Mirror 2 and mirror 3	Clean	-	Clean with a wet cloth and then a dry cloth only if vertical black lines appear on the copy image.	
	Lens	Clean	-	Clean with a dry cloth only if vertical black lines appear on the copy image.	
	Reflector	Clean	-	Clean with a dry cloth only if vertical black lines appear on the copy image.	
	Exposure lamp	Check or replace	-	Replace if an image problem occurs or after the exposure lamp does not turn on.	P.1-5-12
	Optical rail	Check or grease	-	Check noise and shifting and then apply scanner rail grease EM-50L.	
	Original size detection sensor	Check or clean	-	Clean with alcohol or a dry cloth.	
	Laser scanner unit	Check or clean	Every 150,000 counts	Clean the slit glass with alcohol.	

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Transfer and separation section	Transfer roller	Clean	Every 150,000 counts	Vacuum or clean with a dry cloth.	P.1-5-27
	Separation electrode	Check or clean	-	Clean with the equipped brush.	

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Developing section	Developing unit	Check or replace	-	Replace if the problem occurs.	P.1-5-26

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Drum section	Drum unit	Check or replace	Every 150,000 counts	Replace if the problem occurs.	P.1-5-23

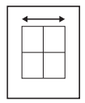
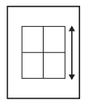
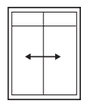
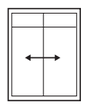
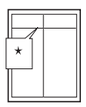
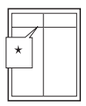
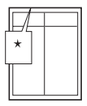
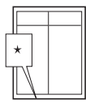
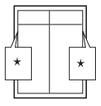
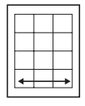
Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Fuser section	Fuser unit	Check or replace	-	Replace if the problem occurs.	P.1-5-28
	Heat roller	Clean	Every 150,000 counts	Clean with alcohol or a dry cloth.	P.1-5-33
	Press roller	Clean	Every 150,000 counts	Clean with alcohol or a dry cloth.	P.1-5-30
	Heat roller separation claw	Clean or replace	Every 150,000 counts	Clean with alcohol. Replace if it is being lacking, deformed or rubbing.	P.1-5-32

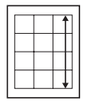
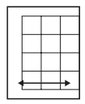
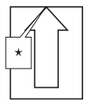
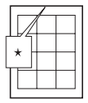
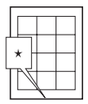
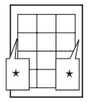
Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Exit section	Exit roller	Check or clean	-	Clean with alcohol.	
	Exit pulley	Check or clean	-	Clean with alcohol.	
	Switchback roller	Check or clean	-	Clean with alcohol.	
	Switchback pulley	Check or clean	-	Clean with alcohol.	

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Covers	Covers	Clean	Every service	Clean with alcohol or a dry cloth.	

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Other	Image quality	Check and adjust	Every service		

Chart of image adjustment procedures

Adjusting order	Item	Image	Description	Maintenance mode		Original	Page	Remarks
				Item No.	Exposure indicator			
①	Adjusting the magnification in the main scanning direction (printing adjustment)		Polygon motor speed adjustment	U053	Exp.2 (light)	U053 test pattern	P.1-3-16	
②	Adjusting the magnification in the auxiliary scanning direction (printing adjustment)		Drive motor speed adjustment	U053	Exp.1 (light)	U053 test pattern	P.1-3-16	
③	Adjusting the center line of the MP tray (printing adjustment)		Adjusting the LSU print start timing	U034	Exp.2 (light)	U034 test pattern	P.1-3-13	
④	Adjusting the center line of the drawers (printing adjustment)		Adjusting the LSU print start timing	U034	Exp.1 (light)	U034 test pattern	P.1-3-13	To make an adjustment for duplex copying, select "exp.1 (flashing)".
⑤	Adjusting the leading edge registration of the MP tray (printing adjustment)		Registration motor turning on timing (secondary paper feed start timing)	U034	Exp.2 (light)	U034 test pattern	P.1-3-12	
⑥	Adjusting the leading edge registration of the drawer (printing adjustment)		Registration motor turning on timing (secondary paper feed start timing)	U034	Exp.1 (light)	U034 test pattern	P.1-3-12	To make an adjustment for duplex copying, select "exp.1 (flashing)".
⑦	Adjusting the leading edge margin (printing adjustment)		LSU illumination start timing	U402	Exp.1 (light)	U402 test pattern	P.1-3-45	
⑧	Adjusting the trailing edge margin (printing adjustment)		LSU illumination start timing	U402	Exp.3 (light)	U402 test pattern	P.1-3-45	
⑨	Adjusting the left and right margins (printing adjustment)		LSU illumination start/end timing	U402	Exp.2 (light)	U402 test pattern	P.1-3-45	
⑩	Adjusting magnification of the scanner in the main scanning direction (scanning adjustment)		Data processing	U065	Exp.1 (light)	Test chart	P.1-3-18	No adjustment for copying using the DP.

Adjusting order	Item	Image	Description	Maintenance mode		Original	Page	Remarks
				Item No.	Exposure indicator			
⑪	Adjusting magnification of the scanner in the auxiliary scanning direction (scanning adjustment)		Original scanning speed	U065 U070	Exp.2 (light) -	Test chart	P.1-3-18 P.1-3-21	U065: For copying an original placed on the contact glass U070: For copying originals from the DP.
⑫	Adjusting the center line (scanning adjustment)		Adjusting the original scan data (image adjustment)	U067 U072	- -	Test chart	P.1-3-20 P.1-3-23	U067: For copying an original placed on the contact glass U072: For copying originals from the DP.
⑬	Adjusting the leading edge registration (scanning adjustment)		Original scan start timing	U066 U071	- -	Test chart	P.1-3-19 P.1-3-22	U066: For copying an original placed on the contact glass U071: For copying originals from the DP.
⑭	Adjusting the leading edge margin (scanning adjustment)		Adjusting the original scan data (image adjustment)	U403 U404	Exp.2 (light) Exp.2 (light)	Test chart	P.1-3-46 P.1-3-47	U403: For copying an original placed on the contact glass U404: For copying originals from the DP.
⑮	Adjusting the trailing edge margin (scanning adjustment)		Adjusting the original scan data (image adjustment)	U403 U404	Exp.4 (light) Exp.4 (light)	Test chart	P.1-3-46 P.1-3-47	U403: For copying an original placed on the contact glass U404: For copying originals from the DP.
⑯	Adjusting the left and right margins (scanning adjustment)		Adjusting the original scan data (image adjustment)	U403 U404	Exp.1 (light) /Exp.3 (light) Exp.1 (light) /Exp.3 (light)	Test chart	P.1-3-46 P.1-3-47	U403: For copying an original placed on the contact glass U404: For copying originals from the DP.

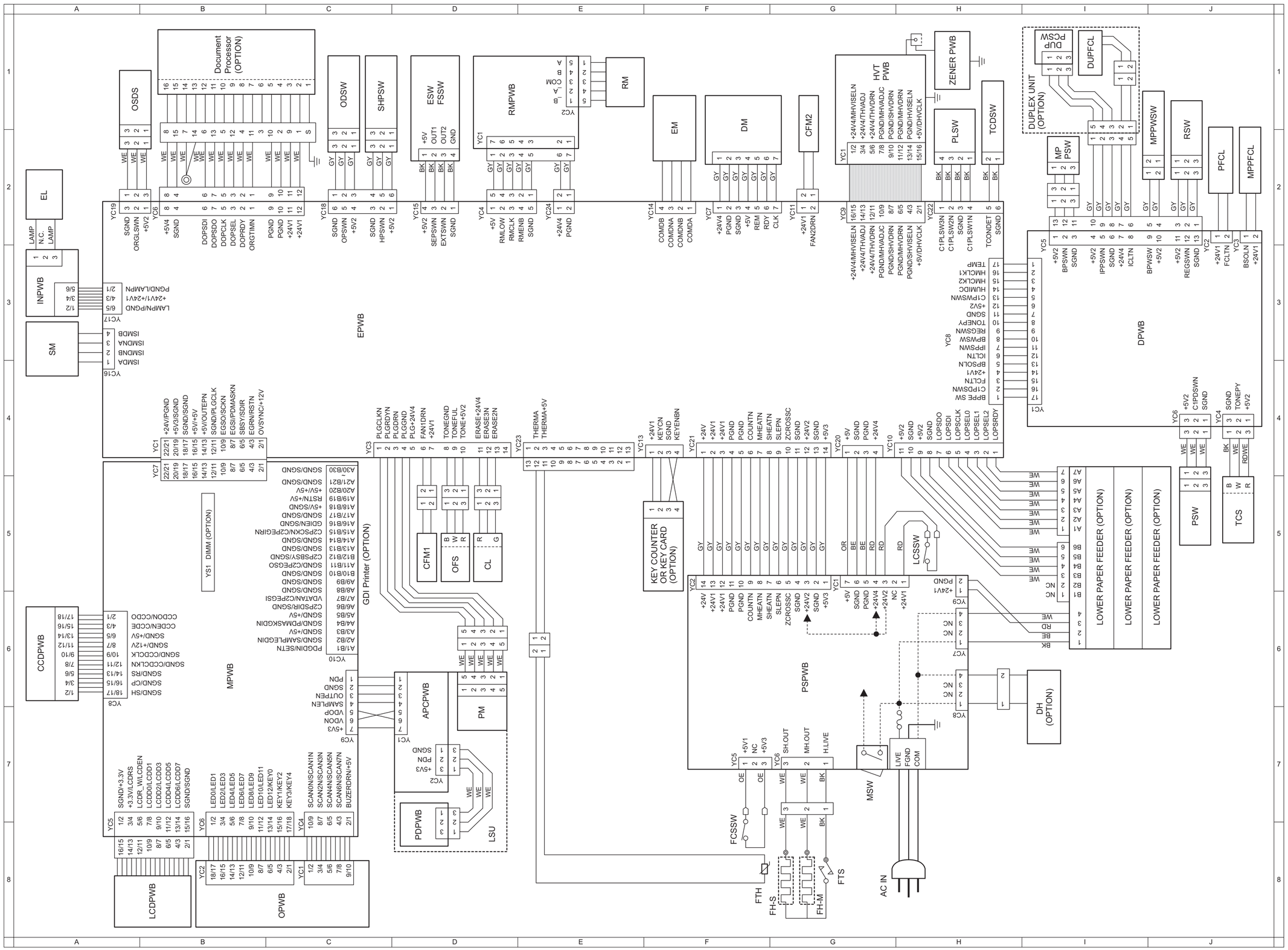
When maintenance item U092 (Adjusting the scanner automatically) is run using the specified original, the following adjustments are automatically made:
Adjusting the scanner center line (U067)
Adjusting the scanner magnification in the main scanning direction (U065)
Adjusting the scanner leading edge registration (U066)
Adjusting the scanner magnification in the auxiliary scanning direction (U065)

When maintenance item U076 (Adjusting the DP automatically) is run using the specified original, the following adjustments are automatically made:
Adjusting the DP magnification (U070)
Adjusting the DP scanning timing (U071)
Adjusting the DP center line (U072)

Image quality

Item	Specifications
100% magnification	Copier: ±0.8% Using DP: ±1.5%
Enlargement/reduction	Copier: ±1.0% Using DP: ±1.5%
Lateral squareness	Copier: ±1.5 mm/375 mm Using DP: ±3.0 mm/375 mm
Margins	A: 2.5+1.5/-2.0 mm B: 3.0 ± 2.5 mm C: 2.5+1.5/-2.0 mm D: 3.0 ± 2.5mm
Leading edge registration	Drawer: ±2.5 mm Bypass: ±2.5 mm Duplex copying: ±2.5 mm
Skewed paper feed (left-right difference)	Drawer: 1.5 mm or less Bypass: 1.5 mm or less Duplex copying: 2.0 mm or less
Lateral image shifting	Drawer: ±2.0 mm Bypass: ±2.0 mm Duplex copying: ±3.0 mm
Curling	Simplex copying: 10.0 mm or less Duplex copying: 10.0 mm or less

General wiring diagram



UPDATING STATUS

DATE	UPDATED PAGES	PAGES	CODE
02/2006	1ST EDITION	213	Y105190-5