DEVELOP

SERVICE MANUAL & OPTIONS

D 16G

4986-7991-00

INDEX (Field Service)

GENERAL

MECHANICAL/ELECTRICAL

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GENERAL

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MAINTENANCE

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TROUBLESHOOTING

GENERAL

1. SPECIFICATIONS

(1) Main Unit

Type	:	Desktop
Original scanning system	:	Scanning in main scanning direction with a 3-line color CCD sensor, and scanning in sub-scanning direction with unit scanning and sheet feed-through system
Photoconductor type	:	OPC (Organic Photoconductor)
Copying system	:	Electrostatic dry Powdered image transfer to plain paper with laser
Resolution	:	600 dpi × 600 dpi, 600 dpi × 300 dpi
Paper feed-in system	:	2-Way system (Tray1 and BypassTray) *3-Way system is possible if optional PF-125 (Tray2) is installed.
Exposure system	:	Unit scanning slit exposure
Developing system	:	FMT single component developing
Drum-charging system	:	Rotating brush with pre-charge film
Image transfer system	:	Roller transfer
Paper separation system	:	Curvature separation + Charge Neutralizing needle
Fusing system	:	Heat roller
Max. Original size	:	Up to Legal size

Copy Medium

Paper source		Tray1	Tray2	Bypass Tray
Type	Plain paper (60 to 90 g/m^2) (16 to 24 lb.)	❍	❍	❍
	Recycled paper (60 to 90 g/m^2) (16 to 24 lb.)	❍	❍	❍
	Special paper (91 to 163 g/m^2) (24 to 43 lb.)	❍	–	❍
	Transparencies	❍	–	❍
	Label sheets	❍	–	❍
	Envelopes	❍	–	❍
Dimension	Maximum (width × length)	216×356 mm	A4 L, Letter L	216×356 mm
	Minimum (width × length)	105×148 mm		105×148 mm

NOTE
The dimension forTray2 is fixed at A4L or Letter L.

Continuous copy speed (copies/min.)	:	12 copies/minute (at full size and 600 dpi × 300 dpi, with ADF)
Continuous print speed (sheets/min.)	:	More than 16 sheets/minute (with plain A4 L or Letter L paper)
Warm-up time	:	Less than 25 seconds (at a room temperature of 23 °C and at the rated voltage)
First print time	:	16 seconds or less (at full size and 600 dpi × 300 dpi, with plain A4 L or Letter L paper)
First copy time	:	13 seconds or less (at full size and 600 dpi × 300 dpi, with plain A4 L or Letter L paper) *If the Start key is pressed more than 3 seconds after opening and closing the Original Cover or Auto Document Feeder after the engine has warmed up

Zoom Ratios

		Metric Size	English Size
Fixed	Full size	×1.00	×1.00
	Enlargement	×1.15 ×1.41 ×2.00	×1.29 ×1.54 ×2.00
	Reduction	×0.81 ×0.70 ×0.50	×0.78 ×0.64 ×0.50
Variable	×0.50 to ×2.00 (in ×0.01 increments)		

Lens : Through lens (F=5.0, f=27.195)
Exposure Lamp : Cold Cathode Florescent Lamp
Fusing temperature : 200 °C

Power /Current Consumption (main unit only)

Voltage	Maximum power consumption
110 V, 120-127 V	700, 770-880 W
220-240 V	740-830 W

Power source : 110 V, 120V-127 V, 220-240 V 50/60 Hz

Main unit dimensions (including Original Cover) : Width....508 mm (20 inches)
Depth....608 mm (24 inches)
Height...408 mm (16 inches)

Main unit weight : 14.9 kg (32-3/4 lb.)

(2) GDI Printer Function

RAM : Share with copier.
Interfaces : IEEE 1284 (Parallel), USB Revision 1.1 (except for Windows 95 and Windows NT)
Printer Language : GDI
Fonts : Windows
Supported Operating Systems : Windows XP (SP1 or later)/Windows 2000 (SP3 or later)/ Windows NT Workstation Version 4.0 (SP6a or later)/Windows Me/Windows 98 (SP1)/Windows 98 Second Edition/ Windows 95 OSR
Web Browser : Internet Explorer 4.0 or later

2. PRECAUTIONS FOR INSTALLATION

2-1. Installation Site

To ensure utmost safety and avoid breakdown, the printer should NOT be used in a place:

- Where it will be subjected to extremely high or low temperature or humidity.
- Where it will be subjected to sudden fluctuations in either temperature or humidity.
- Which is exposed to direct sunlight.
- Which is in the direct air stream of an air conditioner, heater, or ventilator.
- Which has poor ventilation or is dusty.
- Which does not have a stable, level floor or where it will receive undue vibration.
- Which is near any kind of heating device.
- Which is near volatile flammables (thinner, gasoline, etc.).
- Where it may be splashed with water and electric leakage is likely to occur.
- Which puts the operator in the direct stream of exhaust from the printer.
- Where ammonia gas might be generated.

2-2. Power Source

- If any other electrical equipment is sourced from the same power outlet, make sure that the capacity of the outlet is not exceeded.
- Use a power source with little voltage fluctuation.
- Never connect by means of a multiple socket any other appliances or machines to the outlet being used for the printer.
- Ensure that the printer does not ride on the power cord or communications cable of other electric equipment, and that it does not become wedged into or underneath the mechanism.
- Make the following checks at frequent intervals:

✻ Is the power plug abnormally hot?
✻ Are there any cracks or scrapes in the cord?
✻ Has the power plug been inserted fully into the outlet?
✻ Does something, including the printer itself, ride on the power cord?

Use an outlet with a capacity of 110/120/127V, or 220-240V.

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3. PRECAUTIONS FOR USE

3-1. To Ensure the Printer is Used in an Optimum Condition

- Never place a heavy object on the printer or subject the printer to shocks.
- Insert the power plug all the way into the outlet.
- Do not attempt to remove any panel or cover that is secured while the printer is in a print cycle.
- Do not turn OFF the printer while it is in a print cycle.
- Provide good ventilation if the printer is to be used for a long time in a narrow room.
- Never use flammable sprays near the printer.
- If the printer becomes inordinately hot or produces abnormal noise, immediately turn it OFF and unplug it.
- Do not turn ON the power switch at the same time that you plug the power cord into the outlet.
- When unplugging the power cord, do not pull on the cord; hold the plug and pull it out.
- Do not bring any magnetized object near the printer.
- Do not place a vase or vessel containing water on the printer.
- Be sure to turn OFF the power switch at the end of the workday or upon power failure.
- Use care not to drop paper clips, staples, or other small pieces of metal into the printer.

3-2. Operating Environment

The operating environmental requirements of the printer are as follows.

- Temperature: 10 to 30 °C
- Humidity: 15 to 85 %
- Rate of temperature change: 10 °C/h
- Rate of humidity change: 20 %Rh/h

3-3. Power Requirements

The power source voltage requirements are as follows.

- Voltage fluctuation: AC110 V -10 %, AC127 V +6 % (Function)
  AC220-240 V ± 10 % (Function)

  AC110 V -15 %, AC127 V +6 % (Paper Feeding)
  AC220-240 V +10 %, -15 % (Paper Feeding)
- Frequency fluctuation: 50/60 Hz ± 3 Hz

4. HANDLING OF THE CONSUMABLES

Before using any consumables, always read the label on its container carefully.

- Paper can easily damp. To prevent absorption of moisture, store paper in a place with little moisture.
- Keep consumables out of the reach of children.
- Do not touch the PC Drum with bare hands.
- The same sized paper is of two kinds, short grain and long grain. Short grain paper should only be fed through the printer crosswise, while long grain paper should only be fed lengthwise. The wrapper of the paper is properly marked.
- If your hands become soiled with toner, wash them with soap and water.
- Do not throw away any used consumables. They are to be collected.
- Do not burn, bury in the ground, or throw into the water any consumables.
- Do not store consumables in a place which:

✻ Is hot and humid.
✻ Is subject to direct sunlight.
✻ Has an open flame nearby.

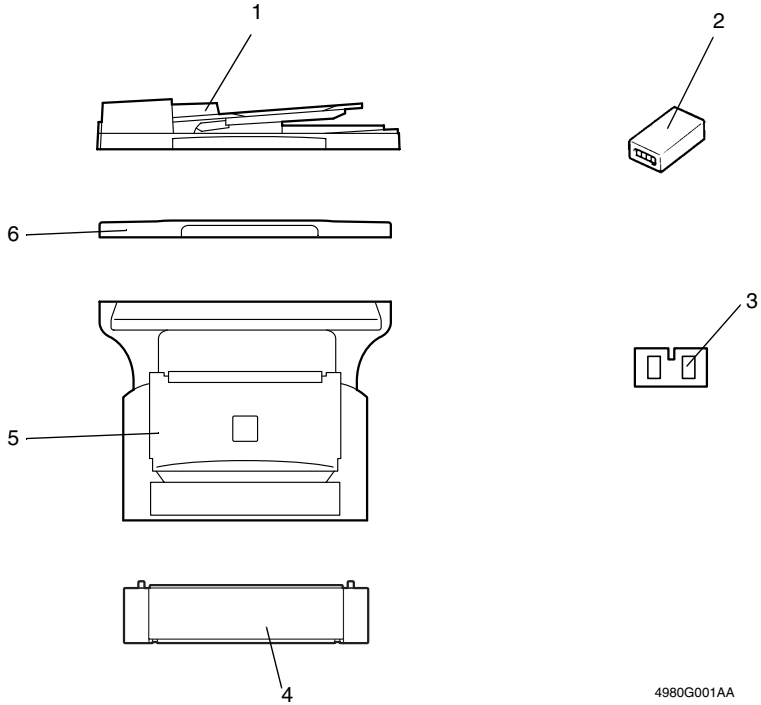
5. MISCELLANEOUS PRECAUTIONS

Use the following precautions when performing service jobs for a printer that uses a laser.

- When a service job needs to be performed in the laser beam path, such as when working around the Print Head Unit or PC Drum, be sure first to unplug the power cord of the printer from the outlet.
- If the service job requires that the power cord be left plugged in, observe the following precautions:

1. Take off your watch, ring, and any other reflective object and wear laser protective goggles.
2. Keep users away from the job site.
3. Do not bring a highly reflective tool into the laser beam path during the service job.

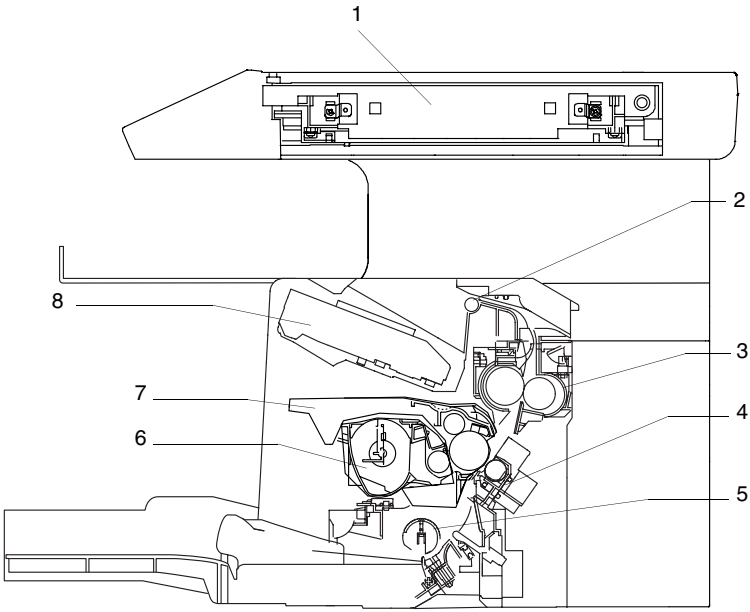
6. PARTS IDENTIFICATION



1. Automatic Document Feeder AF-11
2. Mechanical Counter
3. Expansion memory 32-5 (32 MB)
4. Paper Feed Cassette PF-125
5. Main Unit D 16G
6. Original Cover OC-7

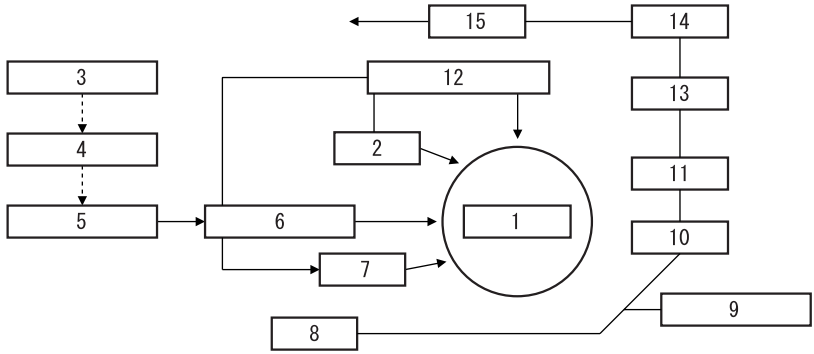
MECHANICAL/ ELECTRICAL

1. COMPONENTS LAYOUT



1: IR Unit
2: Exit Roller
3: Fusing Unit
4: Image Transfer Section
5: Paper Take-Up Roller
6: Toner Cartridge
7: Drum Cartridge
8: Print Head (PH) Unit

2. COPY PROCESS



1. PC Drum
- A photoconductive layer is formed on an aluminum tube and an electrostatic latent image is formed on this photoconductive layer.

2. PC Drum Charging
- Deposits a negative DC charge across the entire surface of the PC Drum.

3. Photoelectric Conversion
- The CCD Sensor converts the image data represented by light reflected off the original to a corresponding analog electric signal which, in turn, is output to the IR image processing section.

4. IR Image Processing
- The electric signal is converted to an 8-bit digital image signal (A/D conversion) which, in turn, goes through appropriate correction processes before being output to the PH image processing section.

5. PH Image Processing
- After going through correction processes, the digital image signal is converted to a corresponding electric signal (D/A conversion), based on which control is provided for turning ON or OFF the laser.

6. Laser Exposure
- The laser beam strikes the surface of the PC Drum, forming an electrostatic latent image.

7. Developing
- Toner negatively charged in the Developer Mixing Chamber is attracted onto the electrostatic latent image, changing it to a visible, developed image.
- A developing bias voltage (Vb) is applied to the Sleeve Roller to prevent toner from being attracted onto those areas of the PC Drum that correspond to the background areas of the original.

8. Paper Feed
- Paper is fed from Tray 1.

9. Bypass Paper Feed
- Paper is fed from the Multiple Bypass Tray.

10. Image Transfer
- A DC positive charge is applied to the Image Transfer Roller to transfer the visible image on the surface of the PC Drum onto the paper.

11. Paper Separation
- The Charge Neutralizing Plate neutralizes any charge left on the paper.

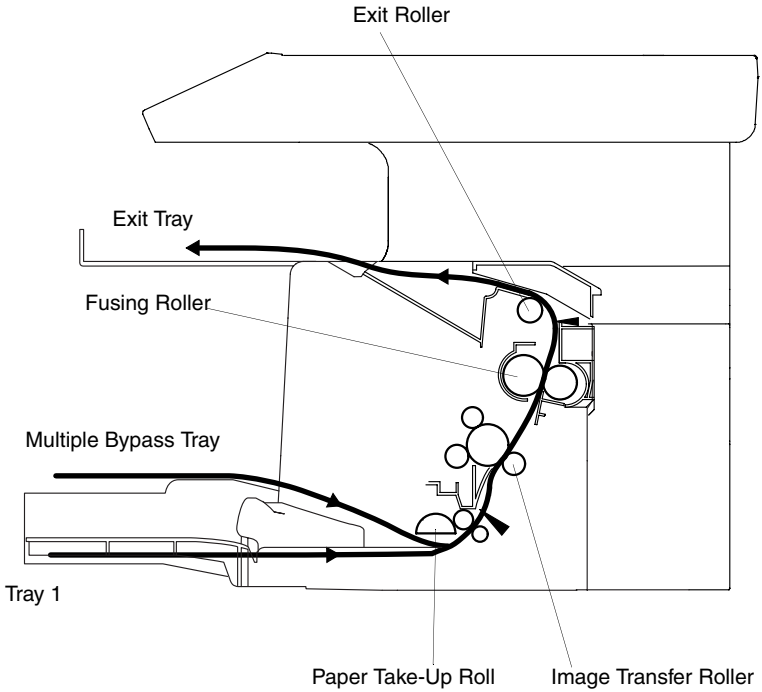
12. Recovery
- The residual toner on the surface of the PC Drum is temporarily recovered and is made into even finer particles during the print end sequence before being recovered at the Developing Unit.

13. Paper Transport
- The paper is transported onto the Fusing Unit.

14. Fusing
- The developed image is permanently fused to the paper by a combination of heat and pressure applied by the Right and Left Fusing Rollers.

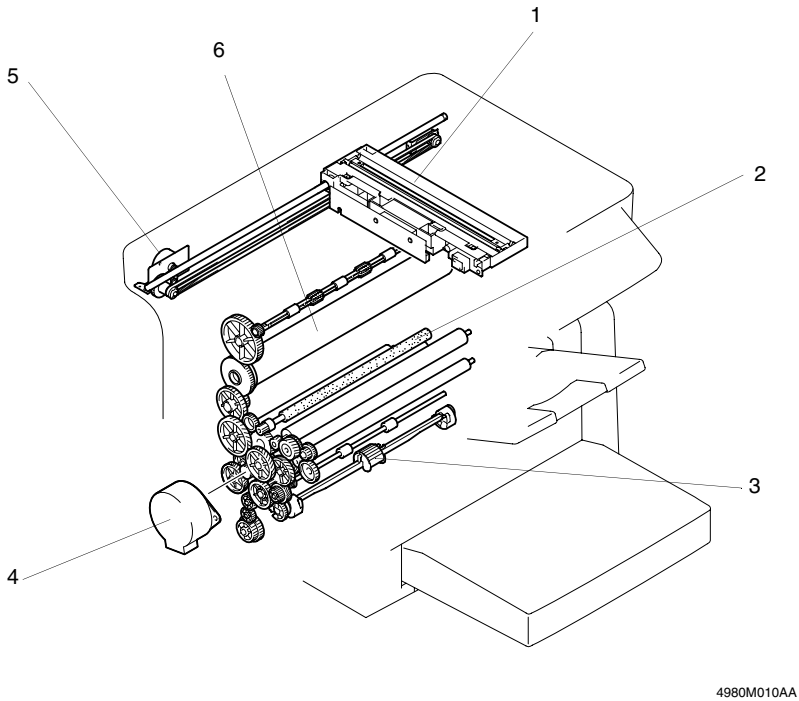
15. Paper Exit
- The paper is fed out onto the Exit Tray.

3. PAPER PATH



- The system employs a two-way paper supply system, in which paper is fed from either Tray 1 or the Multiple Bypass Tray.
- When the optional Paper Feed Cassette is mounted, the system offers a three-way paper supply system.
- The paper taken up and fed in by the Paper Take-Up Roll is transported through the printer by the Image Transfer Roller, Fusing Roller, and Exit Roller and fed out of the printer face down onto the Exit Tray.

4. DRIVE SYSTEM



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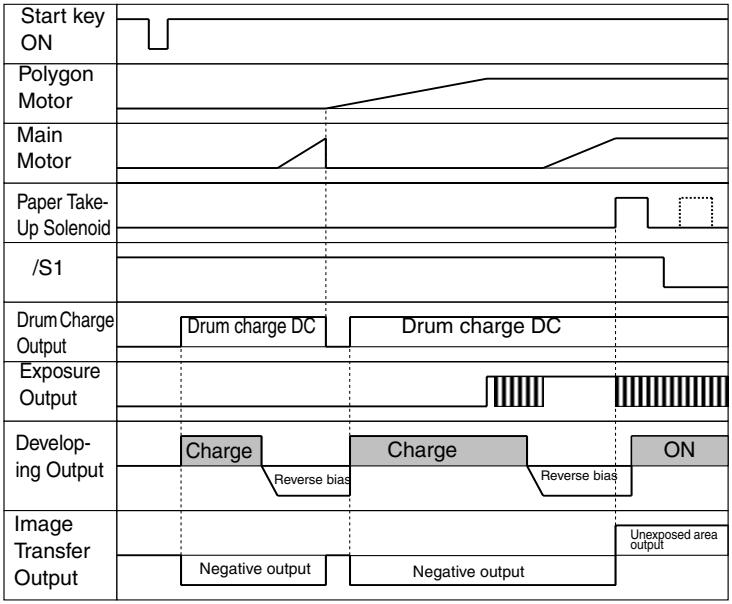
1: Scanner Unit
2: Image Transfer Roller
3: Paper Take-up Roller
4: Main Motor
5: Scanner Motor
6: Fusing Roller

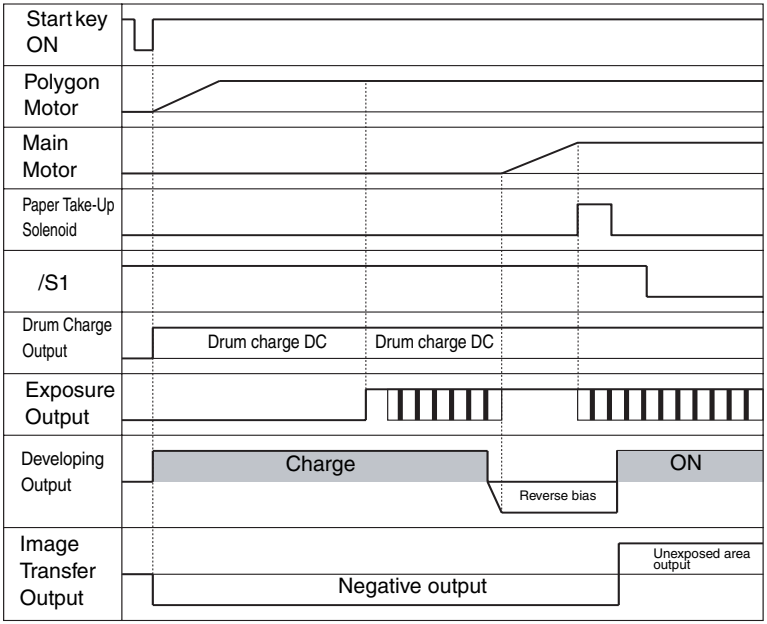
5. OPERATING SEQUENCE

5-1. Print Start Sequence

(1) When the pre-start control is not provided



(2) When the pre-start control is provided



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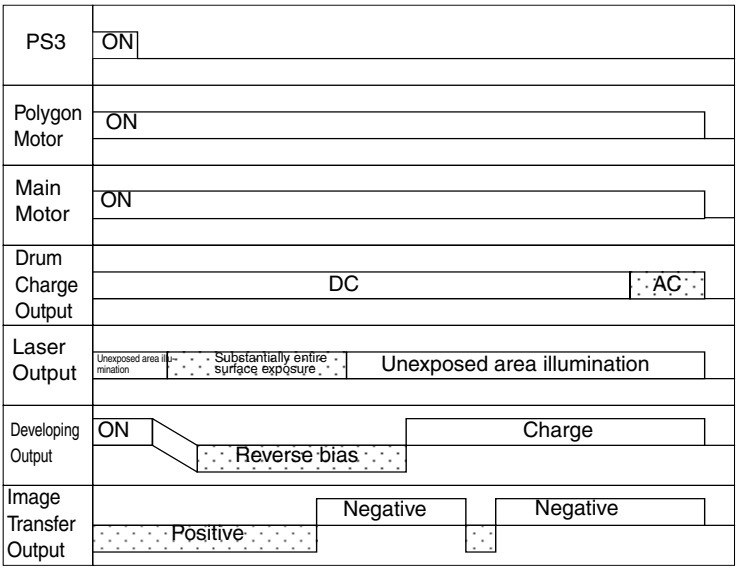
5-2. Print End Sequence



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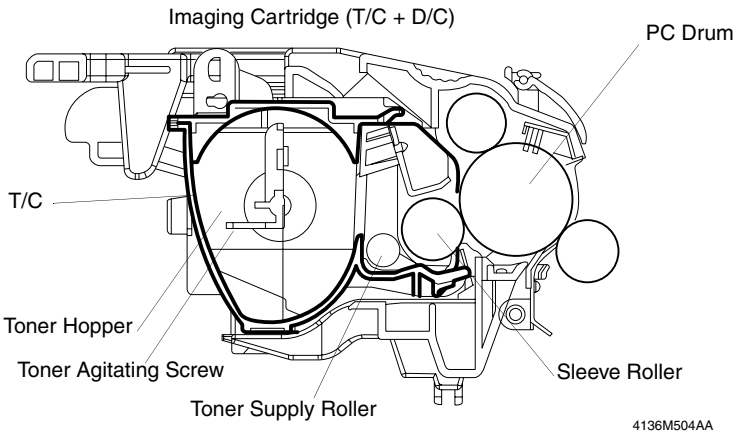
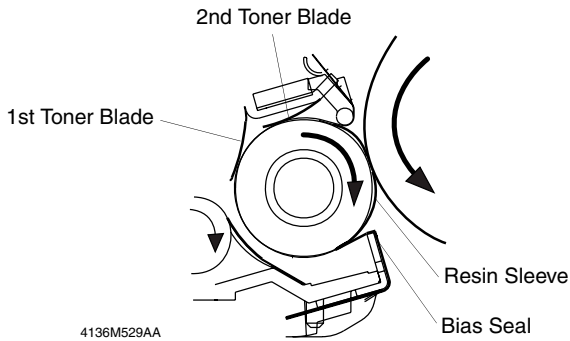
6. IC (IMAGING CARTRIDGE) SECTION

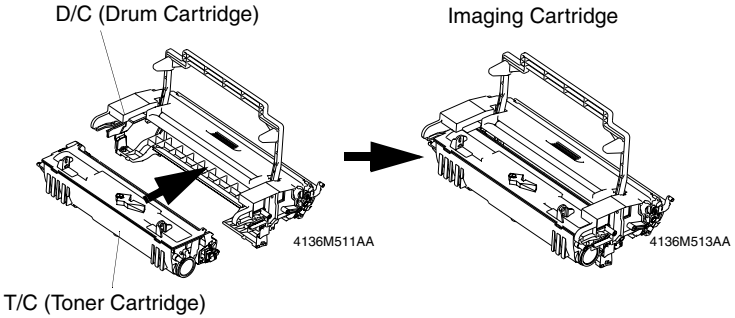
6-1. Overview

- The illustration below shows the construction of the Toner Cartridge and the Developing Unit.
- This printer adopts the single-component FMT, or Fine Micro Toning, developing system.
- The Toner Agitating Screw conveys toner in the Toner Cartridge onto the Toner Supply Roller.
- The Toner Supply Roller transports the toner to the Sleeve Roller. The Resin Sleeve of the Sleeve Roller carries the toner onto the PC Drum to form a toner image on the latent image formed on the surface of the PC Drum.





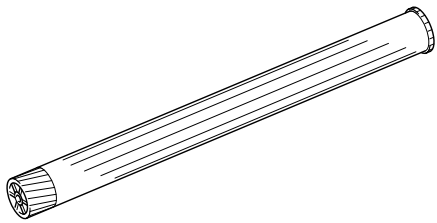
- The Imaging Cartridge consists of a T/C (Toner Cartridge) and a D/C (Drum Cartridge) (see the illustration below).



6-2. PC Drum

- The PC Drum used in this printer is the organic photoconductor (OPC) type.
- The drum consists of two layers - Charge Transport Layer (CTL) and the Charge Generating Layer (CGL) - applied to an aluminum alloy base (cylinder).

Handling Precautions:
The PC Drum of this type exhibits light fatigue after being exposed to light for a long time, which results in its sensitivity being changed. Therefore, always wrap the drum in the PC Drum Cloth or a soft cloth immediately after it has been removed from the printer. Use utmost care to prevent the surface of the PC Drum from being dirtied.



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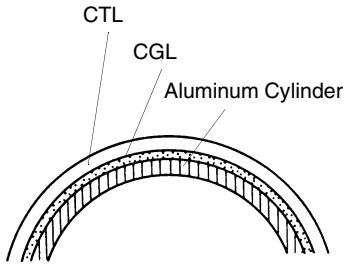

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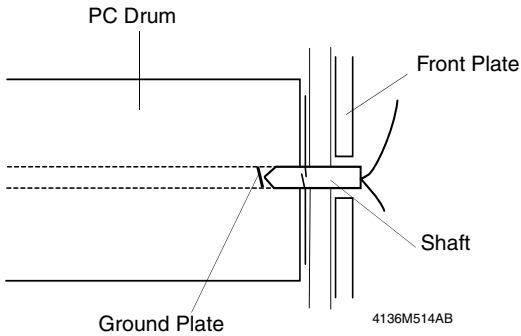
- Grounding of the PC Drum
  The ground contact point (Ground Plate) for the PC Drum is located inside the PC Drum at its front side. It is, at all times, in contact with the shaft of the front plate of the Imaging Cartridge. When the Imaging Cartridge is loaded in the printer, the set pin of the front plate of the Imaging Cartridge contacts a side plate on the printer side, thereby providing grounding. The potential on the surface of the PC Drum exposed to the laser beam is then grounded through the Ground Plate, shaft, and set pin to the frame of the printer.



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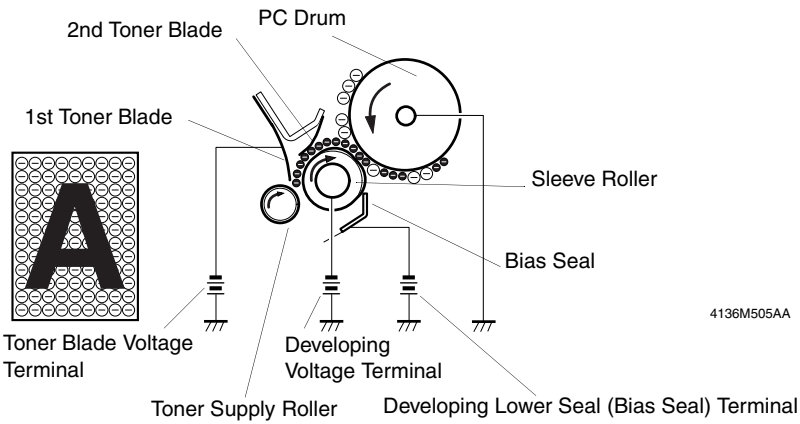
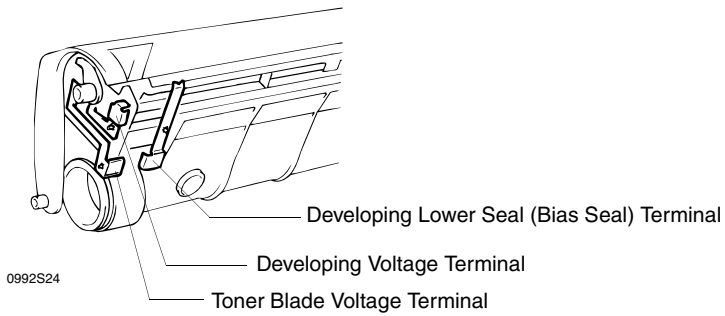
6-3. Developing System

- The 1st Toner Blade located above the Sleeve Roller spreads a thin, even coat of toner over the Sleeve Roller.
- A negative charge is applied to the 2nd Toner Blade, which negatively charges the toner.
- The Sleeve Roller is negatively charged, which retains the toner thereon.
- The toner sticks to the area on the surface of the PC Drum that has been exposed to the laser beam.
- The Bias Seal on the underside of the Sleeve Roller separates toner, which has not been attracted onto the surface of the PC Drum, from the Sleeve Roller and returns it back to the Toner Hopper. The same bias as that applied to the Sleeve Roller is applied to this Bias Seal, thereby preventing toner from falling.
- The developing bias automatically adjusts the print image density over a range of seven steps through feedback control. A bias voltage, reversed from the developing bias, is applied before a print command is issued, before predrive, and during predrive, to prevent toner from sticking to the surface of the PC Drum.





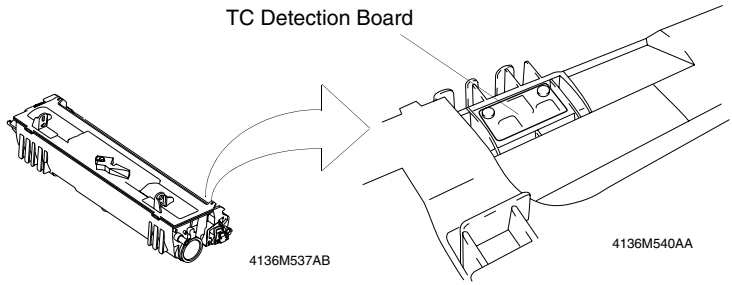
6-4. Detection of Toner Cartridge

(1) Installation detection

- The Imaging Cartridge, when loaded in position, is detected as follows. At the completion of a warm-up cycle, the IC chip built into the Toner Cartridge (TC detection board) detects electrically whether or not the cartridge is loaded in position.

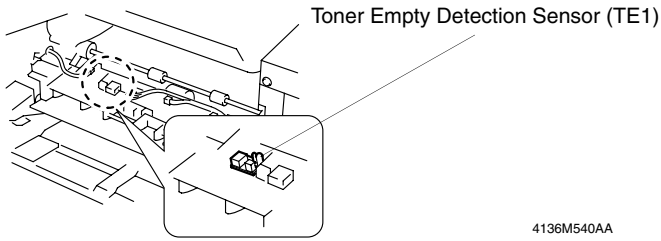
(2) Interchangeability detection

- The built-in IC chip (TC detection board) detects the applicable marketing area of the Toner Cartridge when power is turned ON or when the Front Door is opened and closed.

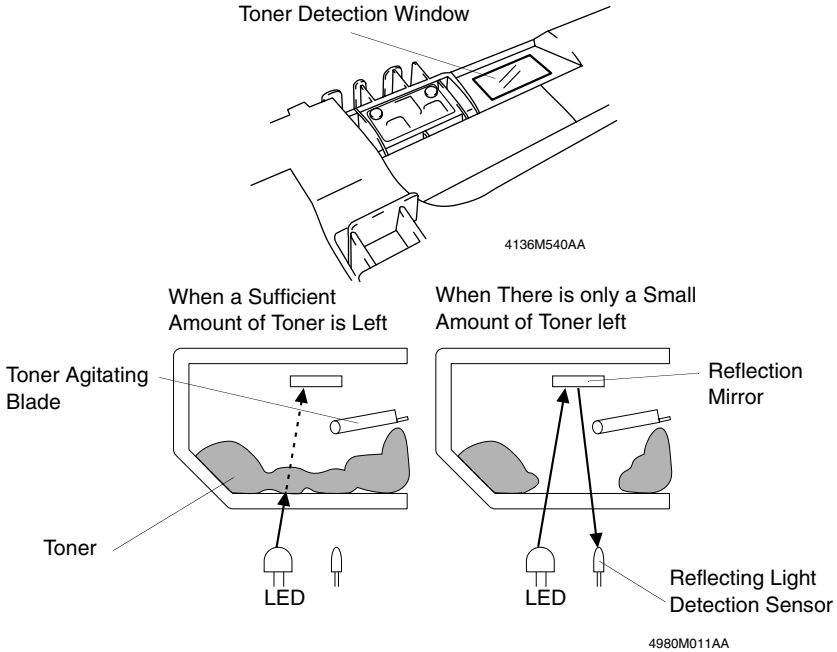


(3) Toner Near Empty and Toner Empty Detection

- The Toner Empty Detection Sensor detects the amount of toner still available for use.



- The Toner Empty Detection Sensor has an LED and a reflecting light detection sensor built into it. Light from the LED enters the toner detection window and is reflected off the Reflection Mirror located inside the Toner Cartridge. The reflecting light detection sensor detects this reflected light.



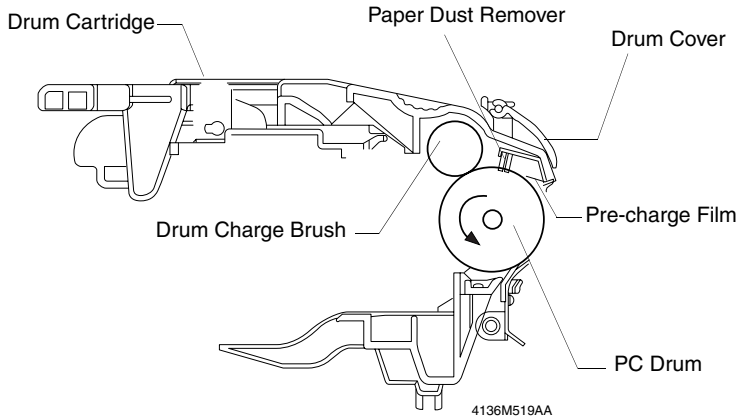
- The number of times, at which the input voltage to the reflecting light detection sensor exceeds a predetermined period of time, is counted. When this count reaches a predetermined value, a toner near empty or a toner empty condition is detected.
- The toner near empty or toner empty condition is reset when the Front Door is opened and closed.

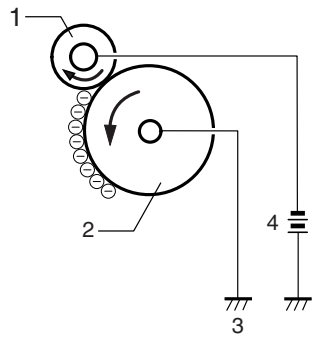
Electrical Component	Control Signal	Blocked	Unblocked	WIRING DIAGRAM
TE1	PWB-P MPJ14-2	H	L	A-5

7. DRUM CHARGE

(1) Overview

- The PC Drum is charged with static electricity before laser exposure.
- The Drum Charge Brush and the Pre-charge Film are used for charging.
- Since the Drum Charge Brush and the Pre-charge Film directly deposit charge on the PC Drum, they produce little ozone. Further the charging voltage is low and the deposited charge is even and stable across the surface of the PC Drum.
- The Pre-charge Film supplies a preliminary charge to the PC Drum prior to charging by the Drum Charge Brush, thereby increasing charging efficiency.





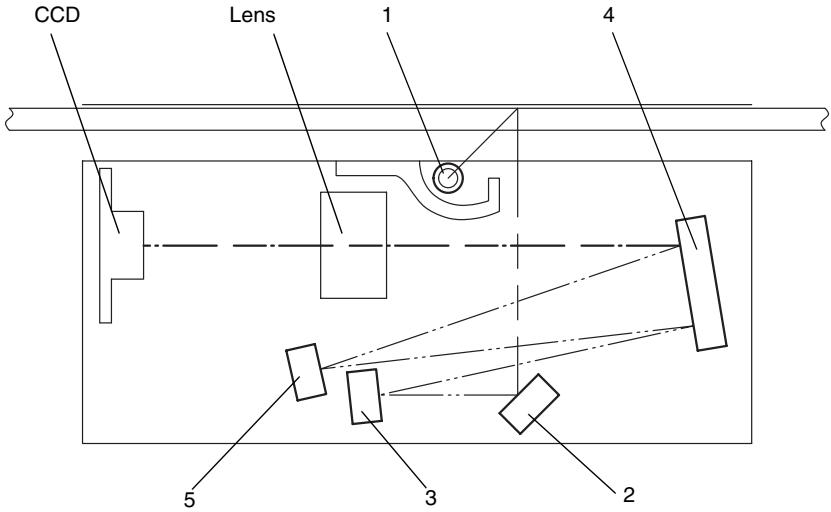
1. Drum Charge Brush
2. PC Drum
3. Ground
4. Charge Bias

8. IR SECTION

8-1. Image Data Processing

1. Photoelectric Conversion
- The CCD Sensor reads the light reflected off the original and converts the data to a corresponding analog signal.
2. A/D Conversion
- The analog signal output from the CCD Sensor is converted to a corresponding 8-bit digital signal.
3. Shading Correction
- Corrected is an error that occurs due to variations in sensitivity of each CCD chip and the light distribution varying along the length of the Exposure Lamp.
4. Gamma Correction
- The light reflection data read by the CCD Sensor is translated to corresponding image density data.
5. Zoom Processing
- The synchronous timing of the input data (write) and output data (read) is varied to decrease (reduction) or increase (enlargement) the number of data readings, thereby reducing or enlarging the image in the main and sub scanning direction.
6. Background Level Detection
- The background of the original is detected to establish a threshold value between the background and the image data.
7. Binarization
- The 8-bit image data is translated to one-bit (binary) data.
8. Data Buffer
- The binarized image data is amplified.
- The data is transmitted to the PH Section.

8-2. Exposure Components Section



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1. Exposure Lamp
- A CCFL lamp is used to illuminate the surface of the original.

2. 1st Mirror
- Reflects the light reflected off the surface of the original, directing it to the 2nd Mirror.

3. 2nd Mirror
- Reflects the light reflected off the 1st Mirror, directing it to the 3rd/5th Mirror.

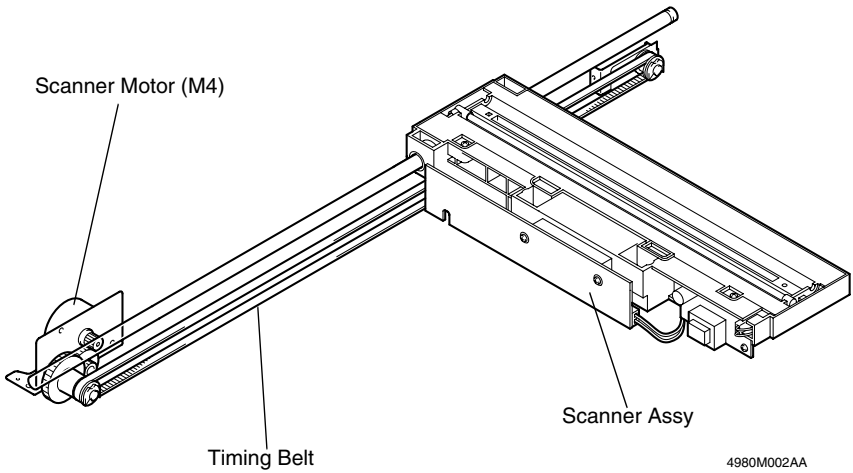
4. 3rd/5th Mirror
- Reflects the light reflected off the 2nd Mirror, directing it to the 4th Mirror.
- Reflects the light reflected off the 4th Mirror, directing it to the CCD through the Lens.

5. 4th Mirror
- Reflects the light reflected off the 3rd Mirror, directing it to the 3rd/5th Mirror.

8-3. Scanner Drive Mechanism

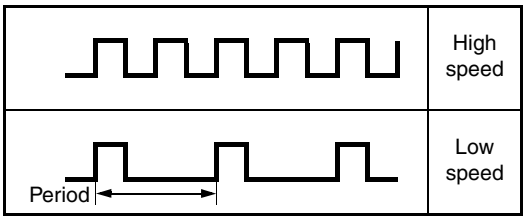
(1) Scanner Drive Mechanism

- The Scanner Motor drives the Scanner Assy through the Timing Belt.



8-4. Scanner Motor Drive Control

- The speed at which the Scanner moves (for scan and return motion) is controlled by varying the period of the motor drive pulse that is timed with the reference clock.



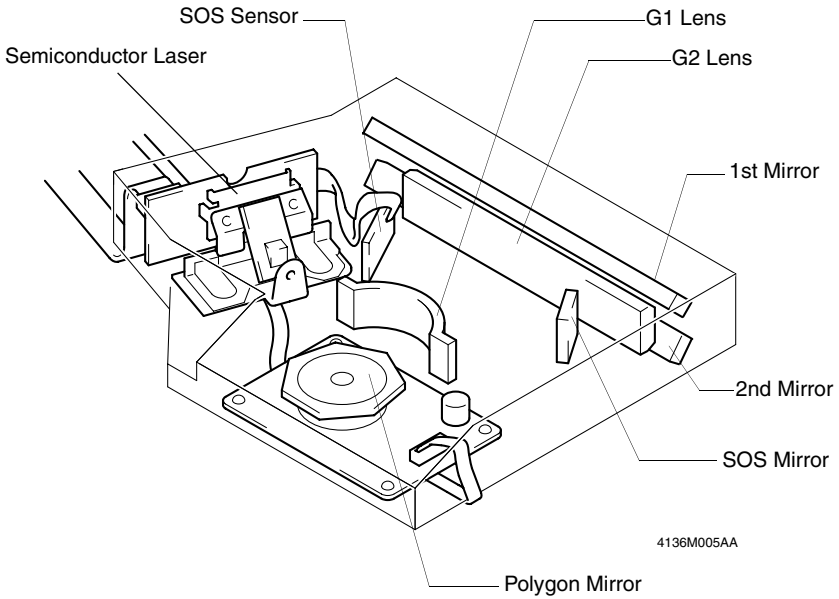
- The number of motor drive pulses as determined according to the paper size and zoom ratio controls the amount of movement of the Scanner.

Electrical Component	Control Signal	ON	OFF	WIRING DIAGRAM
M4	PWB-P P105P-1~4	Pulse output		B~C-7

9. PRINT HEAD (PH)

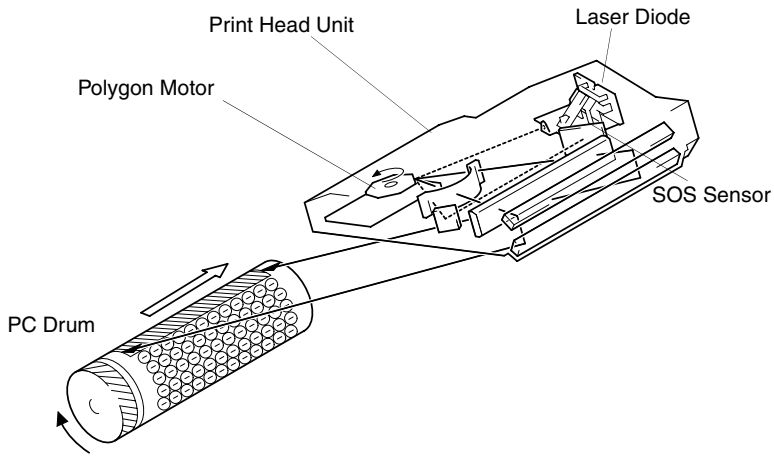
9-1. Construction

- The laser beam light emitted from the Print Head is used to scan the image as driven by the Polygon Motor.



9-2. Laser Exposure Process

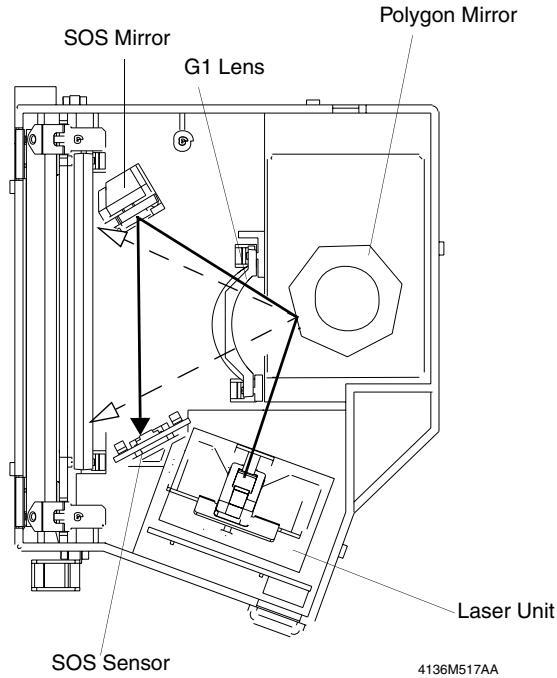
- The laser beam light emitted from the Print Head is used to create an electrostatic latent image on the surface of the PC Drum.
- The following control is provided to correctly time image printing.



- When the printer receives a PRINT signal, the Polygon Motor and the Main Motor start rotating and the paper is taken up and fed into the printer.
- The printing is started when the Controller/Mechanical Control Board sends a VIDEO signal to the Print Head a given period of time after the leading edge of the paper actuates the Paper Take-Up Switch (TOD signal).
- The print start position of a new line as shifted from the previous one is established by transmitting a VIDEO signal after the lapse of an appropriate period of time with reference to the SOS Sensor signal.
- The SOS Sensor provided in the PH ensures that the laser beam is emitted at the same timing for all lines in the main scanning direction.

9-3. Laser Emission Timing

- When a READY signal is detected a given period of time after the print command has been issued, the Controller/Mechanical Control Board outputs a laser ON signal.
- The laser ON signal makes a laser beam to be emitted and the laser beam travels to the Polygon Mirror, G1 Lens, and the SOS Mirror to eventually hit the SOS Sensor, which generates an SOS signal.
- The SOS signal determines the laser emission timing for each line in the main scanning direction.



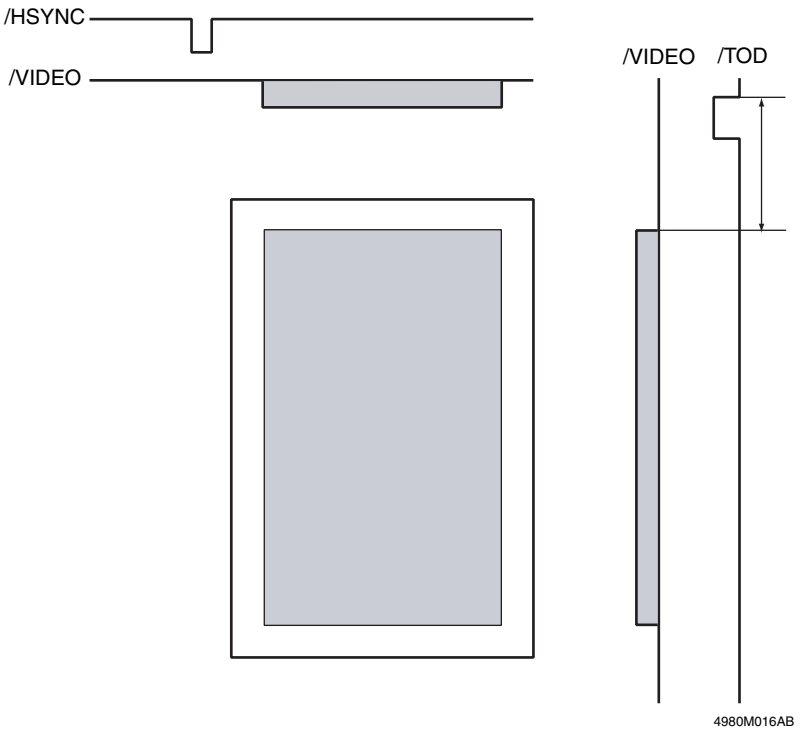
9-4. Laser Emission Area

(1) Main scanning direction

- The print start position is determined by the main scanning print start signal (/HSYNC) output from the Controller/Mechanical Control Board and the width of the paper.
- The laser emission area is determined by the paper size.

(2) Sub-scanning direction

- The print start position is determined by the sub-scanning print start signal (/TOD) output from the Controller/Mechanical Control Board and the length of the paper.
- The laser emission area is determined by the paper size.

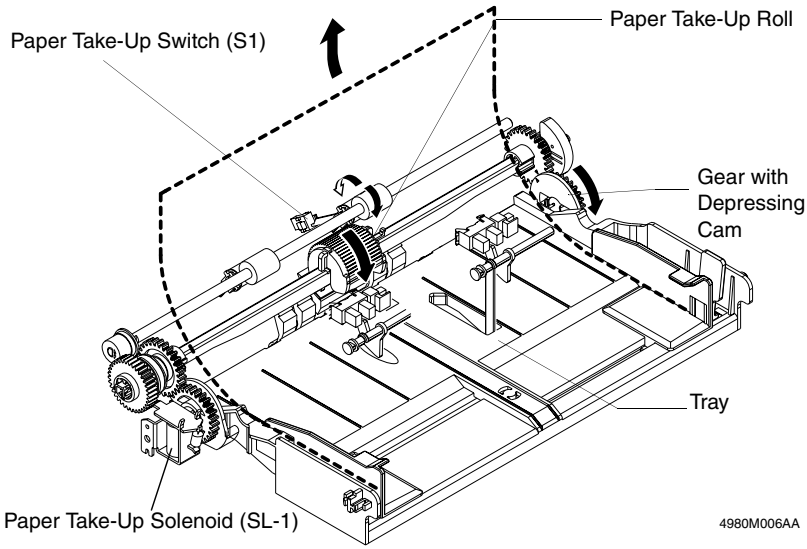


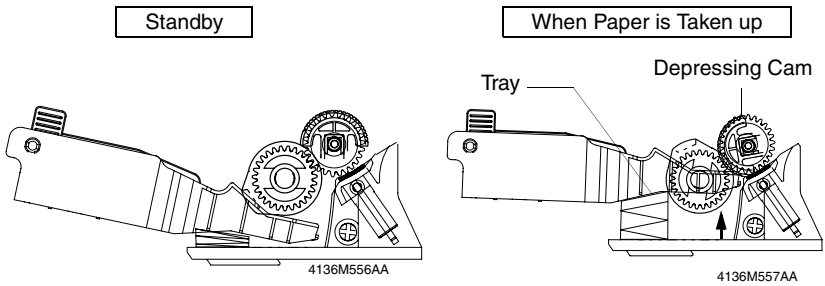
10. PAPER TAKE-UP SECTION

10-1. Tray 1

(1) Paper take-up mechanism

- When the Paper Take-Up Solenoid is energized, drive from the Main Motor is transmitted to the Paper Take-Up Roll through the Paper Take-Up Clutch, turning the Paper Take-Up Roll.
- At the same time, the Depressing Cam turns so as to raise the Paper Lifting Plate. Then, the top sheet of paper loaded in the tray is taken up and fed into the printer.
- The actual length of paper is detected based on the period of time through which the Paper Take-Up Switch remains actuated (or through which the paper moves past the switch) and the system speed. It is then determined whether or not the actual length matches the paper length specified on the controller.





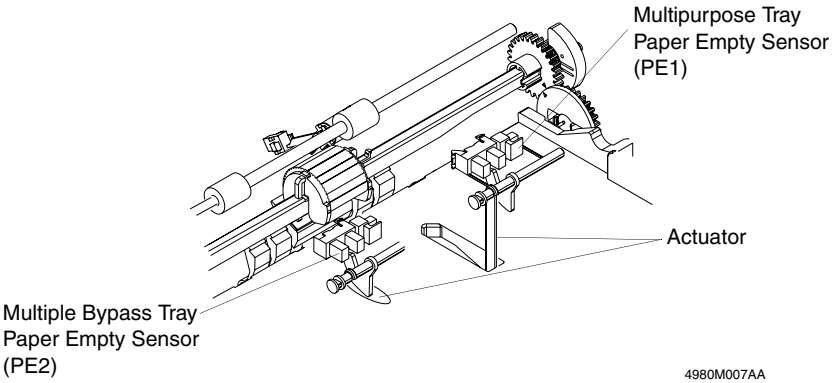
Electrical Parts	Control Signal	ON	OFF	WIRING DIAGRAM
S1	PWB-P MPJ10P-2	L	H	F-3
SL1	PWB-P MPJ3P-2	L	H	I-3

(2) Double feed preventive mechanism

- A fixed paper separator pad is used to prevent the second and subsequent sheets of paper from being taken up and fed in with the first one.

(3) Paper empty detection

- There are the Multipurpose Tray Paper Empty Sensor (PE1) and the Multiple Bypass Tray Paper Empty Sensor (PE2) provided on the upper part ofTray 1. They function to detect paper loaded in Tray 1 and the Multiple Bypass Tray, respectively.
- When there is a paper stack loaded in the tray, the actuator is raised to block the Paper Empty Sensor.
- When paper runs out, the actuator drops into the hole in the tray, unblocking the Paper Empty Sensor.



Electrical Parts	Control Signal	Blocked	Unblocked	WIRING DIAGRAM
PE1	PWB-P MPJ12P-3	L	H	A-5
PE2	PWB-P MPJ15P-3	L	H	B-5

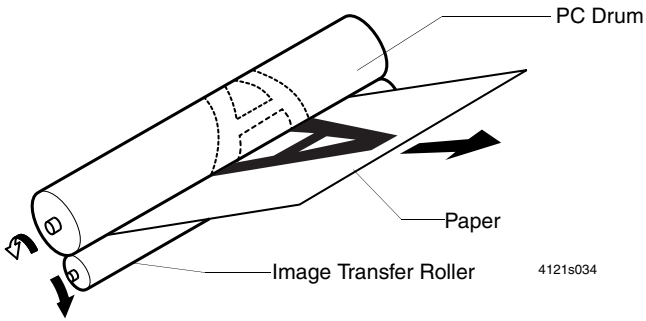
(4) Paper take-up retry function

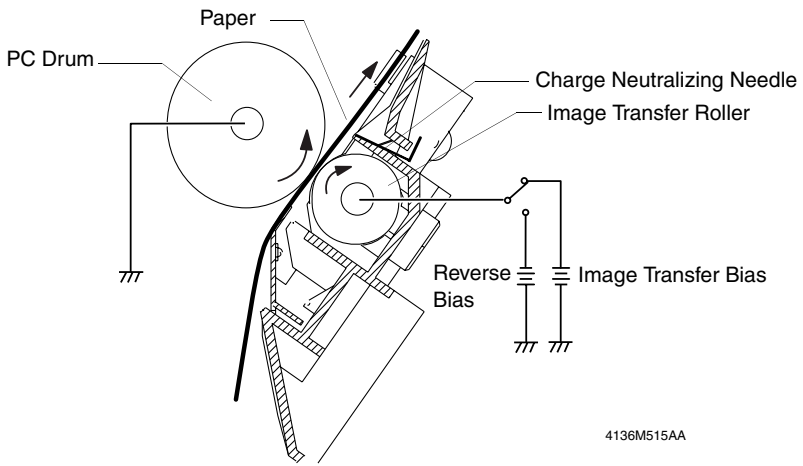
- To reduce the number of paper misfeeds as a result of a paper take-up failure, a paper take-up retry sequence is carried if the PaperTake-Up Switch is not actuated and deactuated within a predetermined period of time.
- This function is provided for paper take-up from any printer paper tray.

11. IMAGE TRANSFER

11-1. Overview

- The toner image formed on the surface of the PC Drum during the developing process is transferred onto the paper.
- This printer adopts the roller image transfer system, in which the Image Transfer Roller is used to transfer the image onto the paper.
- In the roller image transfer system, the paper is pinched between the PC Drum and the Image Transfer Roller at all times during the print cycle. This results in a very little amount of ozone being produced and there is a little chance of a double transferred image occurring.
- To clean the Image Transfer Roller, reverse bias is applied to the Image Transfer Roller.
- The cleaning sequence is carried out when the printer is started, a print command is issued, a print cycle is completed, and when the printer is started after a misfeed has been cleared.
- There is the Charge Neutralizing Needle installed for neutralizing the paper after image transfer.

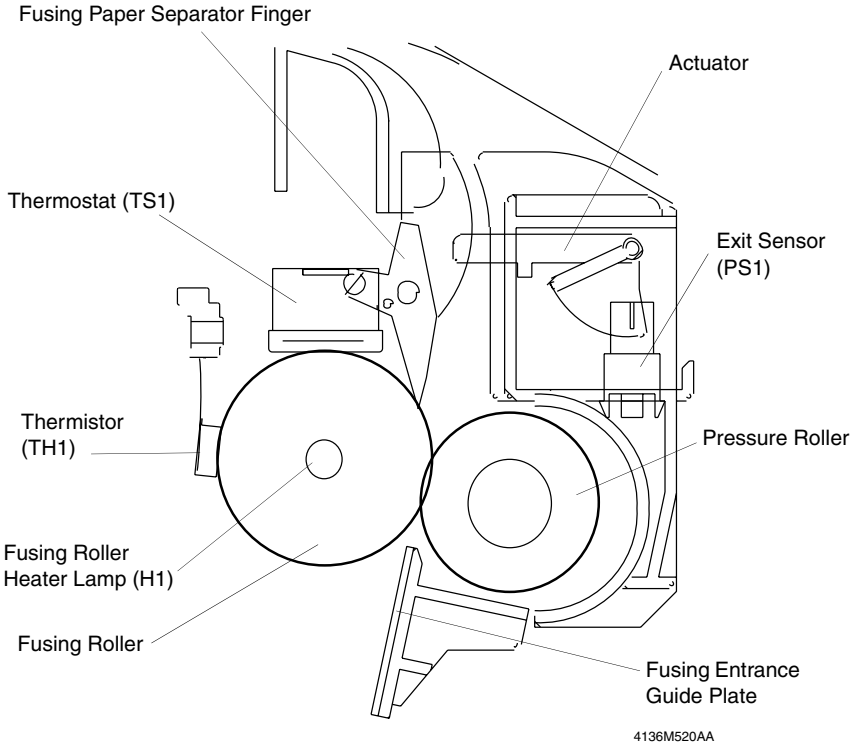




12. FUSING UNIT

12-1. Overview

- The toner image transferred onto the paper is securely fixed to the paper.
- A heated roller system is used as the fusing system. The paper, to which the toner image has been transferred, is fed between the Fusing Roller heated by the Fusing Roller Heater Lamp and the Pressure Roller. This permanently fixes the toner image in the paper.



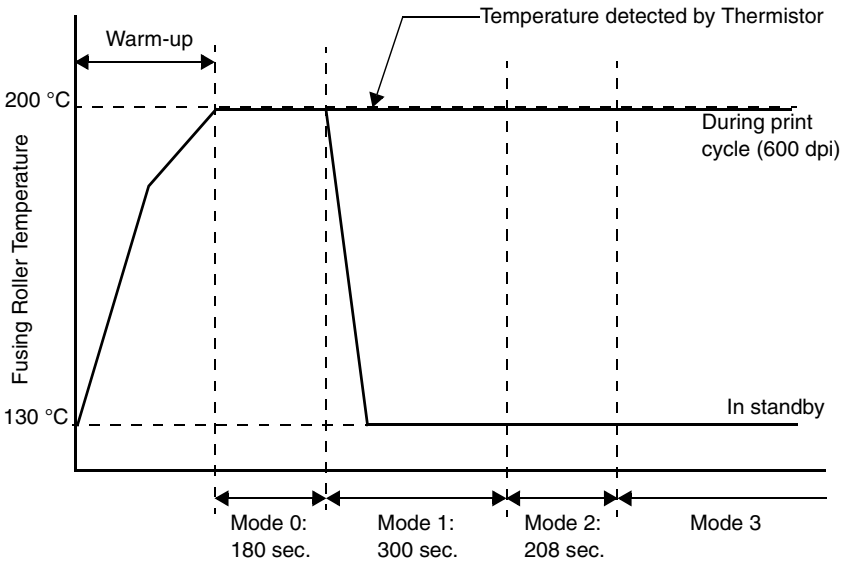
Electrical Parts	Control Signal	Blocked	Unblocked	WIRING DIAGRAM
PS1	PWB-P MPJ8P-3	L	H	F~G-2

Electrical Parts	Control Signal	Low temp. ◄► High temp.	WIRING DIAGRAM
TH1	PWB-P MPJ2P-1	Analog Input	F-2 to 3

Electrical Parts	Control Signal	ON	OFF	WIRING DIAGRAM
H1	PU-1 CN1PU-1-3	L	H	I-7

12-2. Fusing Temperature Control

(1) Temperature changes (plain paper having a length of 186 mm or more)



		Thermistor-detected temperature at temperature control start		
		Less than 50 °C	50 °C to 125 °C	125 °C or more
Mode before temperature control	Power OFF, Front Door open/close	Mode 0	Mode 0	Mode 0
	Mode 0	Mode 1	Mode 2	Mode 3
	Mode 1		Mode 1	
	Mode 2		Mode 2	Mode 3
	Mode 3			

(2) Temperature control

- The fusing temperature is increased to a predetermined level during the warm-up cycle.
- The warm-up control is provided when power is turned ON, the Front Door is opened and closed, and the Energy Save mode is canceled.
- In the standby state, the fusing temperature is set to a level (130 °C) lower than that during a print cycle, thereby cutting down power consumption.
- The temperature control mode when the control is resumed (when power is turned ON, the Front Door is opened and closed, or the Energy Save mode is canceled) is set according to the mode and the fusing temperature valid before the interruption.
- In the Energy Save mode, the Fusing Roller Heater Lamp is turned OFF to reduce power consumption.

(3) Temperature control mode

The fusing temperature is controlled during a print cycle according to the period of time elapsed from the completion of the warm-up cycle.

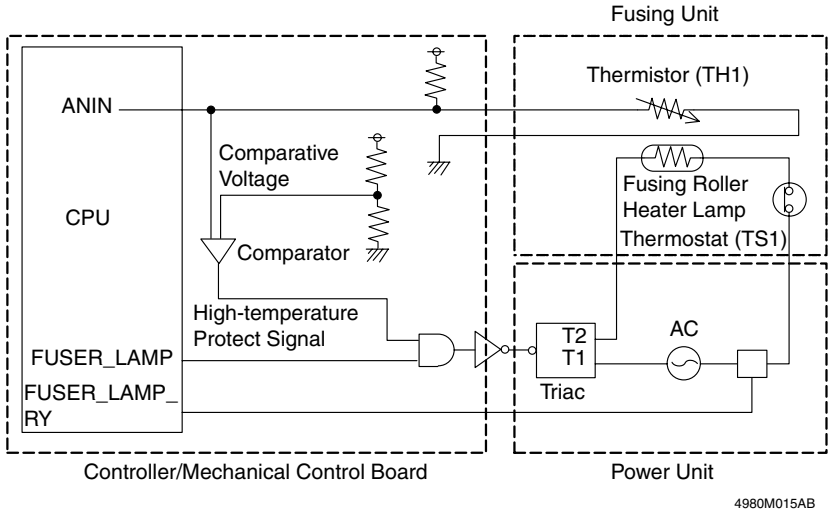
- Mode 0
  Mode 1 lasts for 3 min. If the temperature detected by the Thermistor is 50 °C or more when mode 0 is interrupted, the operation is switched to mode 1. Mode 1 starts when mode 0 is completed.
- Mode 1
  Mode 1 lasts for 5 min. During this period, the printing temperature is gradually decreased. As the printing temperature is reduced down to a predetermined level, mode 1 is completed and mode 2 starts.
- Mode 2
  Mode 2 lasts for 208 sec.
- Mode 3
  Mode 3 continues until the temperature control is interrupted (by opening and closing the Front Door, etc.).

(4) Printing temperature by paper type in different temperature control modes

<table>
<tr><th colspan="2"></th><th>Mode 0</th><th>Mode 1</th><th>Mode 2</th><th>Mode 3</th></tr>
<tr><td colspan="2">Standby</td><td>200 °C</td><td>130 °C</td><td>130 °C</td><td>130 °C</td></tr>
<tr><td rowspan="3">Plain paper</td><td rowspan="2">186 mm or more</td><td colspan="4">200 °C (standard)</td></tr>
<tr><td colspan="4">215 °C → 200 °C (set in Tech. Rep. Mode) *1</td></tr>
<tr><td>Less than 186 mm</td><td colspan="4">200 °C → 190 °C</td></tr>
<tr><td rowspan="2">Thick paper, envelopes, postcards</td><td>186 mm or more</td><td colspan="4">205 °C → 215 °C</td></tr>
<tr><td>Less than 186 mm</td><td colspan="4">205 °C</td></tr>
<tr><td colspan="2">OHP</td><td colspan="2">185 °C</td><td colspan="2">185 °C → 175 °C</td></tr>
</table>

*1: Inferior fusing performance can at times result from plain paper (having a length of 186 mm or more) with the standard fusing temperature setting (200 °C). The “FUSER TEMP Ad” setting ofTech. Rep. Choice available from theTech. Rep. Mode can therefore be used to set a higher fusing temperature.

(5) Fusing temperature protect control



<Soft protect>

- The comparator provided on the Controller/Mechanical Control Board is used as means for detecting an abnormally high temperature through software approach. If the temperature detected by the Thermistor (voltage value) is greater than the comparative temperature 235 °C (voltage value), the triac relay is turned OFF to shut down the output of the Heater Lamp.

<Hard protect>

- As a protection should there be a software failure, the Thermostat is used to shut down current to the Heater Lamp when the temperature of the Fusing Roller becomes inordinately high.

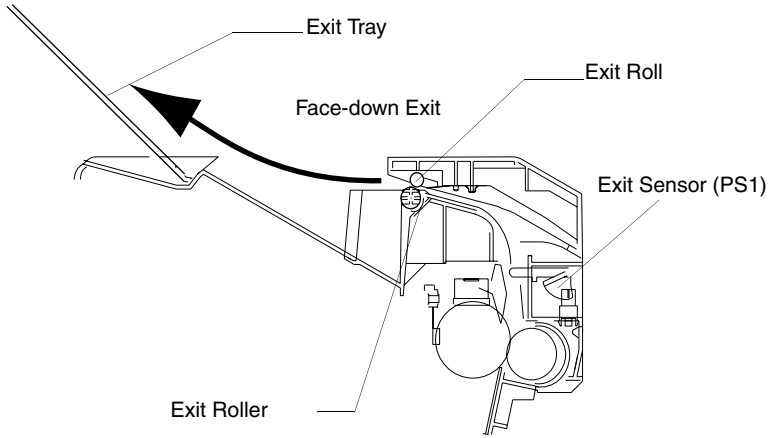
Electrical Component	Control Signal	Low temp. ◄► High temp.	WIRING DIAGRAM
TH1	PWB-P MPJ2P-1	Analog Input	F-2~3

Electrical Component	Control Signal	ON	OFF	WIRING DIAGRAM
H1	PU-1 CN1PU-1-3	L	H	I-7

13. PAPER EXIT

13-1. Paper Exit Mechanism

- The paper exit mechanism transports the paper that has been subjected to the fusing process onto the Exit Roller.
- The Exit Sensor detects not only a paper misfeed but also an open Upper Cover.

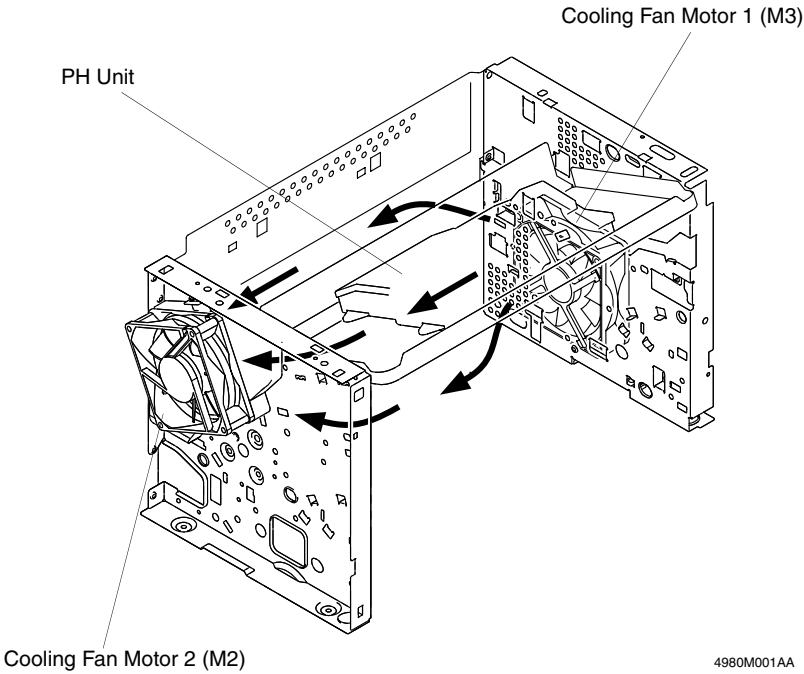


Electrical Parts	Control Signal	Blocked	Unblocked	WIRING DIAGRAM
PS1	PWB-P MPJ8P-3	L	H	F to G-2

14. MISCELLANEOUS

14-1. Cooling of the Printer Interior

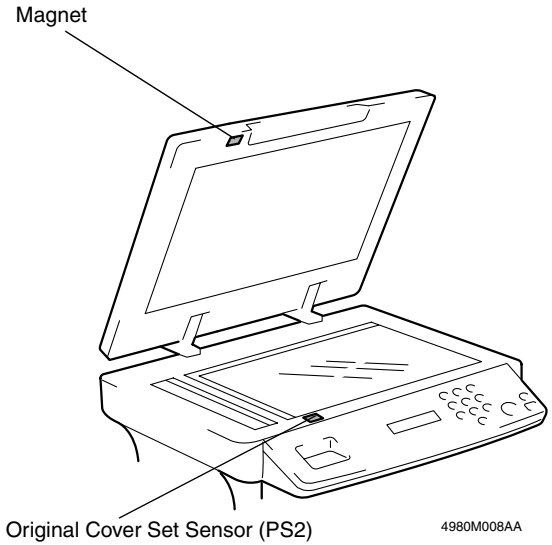
- The Cooling Fan Motors provided on the right and left frames of the printer draw outside air from the outside into the printer interior and discharge heat inside the printer out. It thereby prevents the temperature of the PH Unit and the printer interior from increasing.



Electrical Parts	Control Signal	ON	OFF	WIRING DIAGRAM
M2	PWB-P MPJ13P-1 to 4	Pulse		I-3
M3	PWB-P MPJ6P-1 to 4	Pulse		I-3

14-2. Original Cover Open/Close Detection Mechanism

- There is a magnet provided in the Original Cover, allowing the printer to detect the position of the cover whether the cover is raised or lowered.
- This magnet attracts the Original Cover Set Sensor provided on the printer side, thus activating the sensor. The printer will then detect the position of the Original Cover.



Electrical Parts	Control Signal	Blocked	Unblocked	WIRING DIAGRAM
PS2	PWB-O P701O-1 to 2	L	H	F-9

MAINTENANCE

1. MAINTENANCE SCHEDULE

- To ensure that the printer produces good printed pages and to extend its service life, it is recommended that the maintenance jobs described in this schedule be carried out as instructed.

PM Parts	Clean	Replace 1	Replace 2	Ref. Page in This Manual
Paper Take-Up Roll	When a paper take-up failure occurs	Replace when a paper take-up failure occurs		☞ E-3
Image Transfer Roller	–	50K		☞ E-4
Drum Cartridge	–	20K	16K	☞ E-7
Toner Cartridge	–	6K	4.3K	☞ E-5
Fusing Unit	–	50K		☞ E-8

✻ Replace 1: Average number of prints during continuous printing

✻ Replace 2: Average number of prints during intermittent printing (2 pages/job)

NOTES

- *K = 1,000 printed pages*
- *As a rule, the Drum Cartridge and Toner Cartridge are to be replaced by the user.*
- *The contents of the Maintenance List are subject to change without notice.*
- *For the part numbers, see Parts Manual and Parts Modification Notice.*

1-1. Guidelines for Life Specifications Values by Unit

- The life specifications value represents the number of printed pages produced or figures equivalent to it when given conditions (see the Table given below) are met. It can be more or less depending on how each individual printer is used.

Print Conditions	
Job type	2P/J
Paper size	A4 L/Letter L
B/W ratio	B/W 6 %

(1) Life Specifications Values

Unit name	Life value	Detection
Toner Cartridge	4.3 K	The remaining amount of toner is detected. A “TONER EMPTY” error is detected according to this value.

2. REPLACEMENT/CLEANING OF PARTS

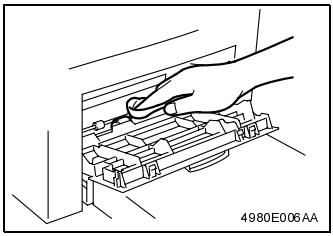
(1) Cleaning of the Paper Take-Up Roll

1. Remove the Imaging Cartridge.

☞ E-5

NOTE

- *The Imaging Cartridge is the Drum Cartridge, to which the Toner Cartridge is mounted.*

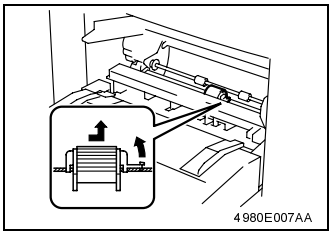


2. Using a soft cloth, wipe the surface of the Paper Take-Up Roll clean of dirt.

(2) Replacement of the Paper Take-Up Roll

1. Remove the Imaging Cartridge.

☞ E-5

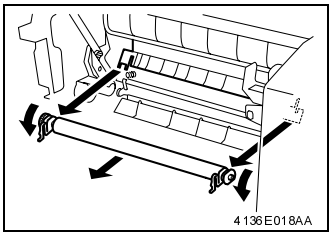


2. Remove the Paper Take-Up Roll.

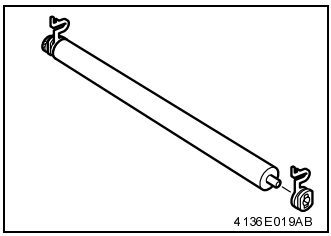
(3) Replacement of the Image Transfer Roller

1. Remove the Imaging Cartridge.

☞ E-5



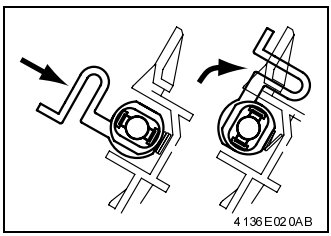
2. Place the levers of the bushings (white) on the right and left ends of the Image Transfer Roller toward this side and remove the Image Transfer Roller from the Image Transfer Roller holder.



3. Pull out the bushings on the right and left ends, and the gear, from the Image Transfer Roller removed from its holder. Install the bushings and the gear to the new Image Transfer Roller.

NOTES

- *Do not touch, or dirty with chemicals or toner, the surface of the Image Transfer Roller, as indentations in and dirt on the surface of the Image Transfer Roller adversely affect the quality of the printed image.*
- *When handling the Image Transfer Roller, hold onto the shaft and bushings of the roller.*
- *Do not place a new Image Transfer Roller directly on the floor or other surface.*

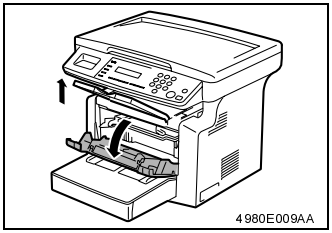


4. Insert the new Image Transfer Roller into the Image Transfer Roller holder and place the levers of the bushings into the original upward positions.

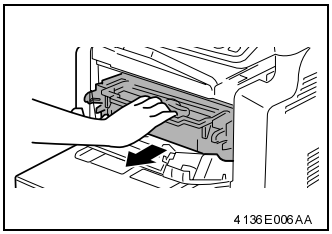
3. REPLACEMENT OF UNITS

(1) Replacement of the Toner Cartridge

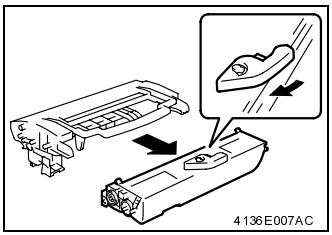
<Removal Procedures>



1. Lift up the Exit Tray and remove it.
2. Open the Front Door.



3. Remove the Imaging Cartridge.

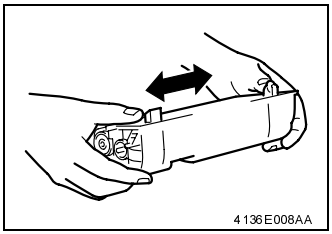


4. Pull the lever of the Toner Cartridge in the direction shown in the illustration and disconnect the Toner Cartridge from the Drum Cartridge.

NOTE

- *If the Drum Cartridge is to be placed on a floor or similar place, use care to prevent toner from scattering around.*

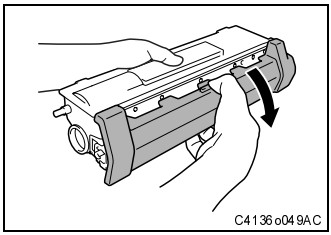
<Installation Procedures>



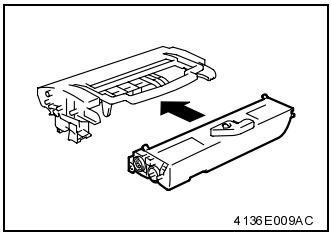
1. Take out a newToner Cartridge and shake it in the horizontal direction sufficiently so that toner is agitated.

NOTE

- *Placing the Toner Cartridge in an upright position or shaking it vigorously will spill toner.*



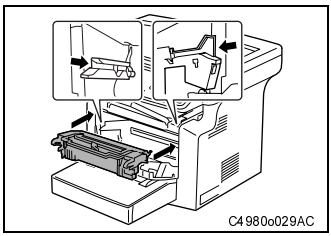
2. Remove the protective cover from the Toner Cartridge.



3. Install the new Toner Cartridge to the Drum Cartridge.

NOTE

- *Insert the Toner Cartridge along the guide provided on the Drum Cartridge side and make sure that the Toner Cartridge is not tilted when inserted.*



4. Install the Imaging Cartridge in the printer.

NOTE

- *Insert the Imaging Cartridge along the guide provided on the printer side. Ensure that the Imaging Cartridge is not slid obliquely.*

5. Close the Front Door.

Precautions for Replacing the Toner Cartridge

- *Different types of Toner Cartridges are available for different regions. Therefore, check the Toner Cartridge type before replacing it.*

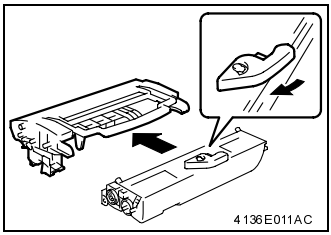
<Toner Cartridge Types for Each Region>
US & Canada:Toner Cartridge 101 C
Europe: Toner Cartridge 101 A
Other regions:Toner Cartridge 101 B

(2) Replacement of the Drum Cartridge

<Removal Procedures>

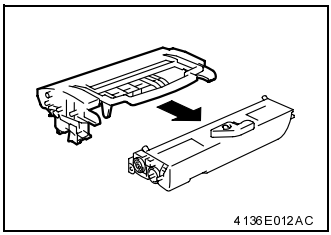
1. Remove the Imaging Cartridge.

☞ E-5



2. Pull the lever of the Toner Cartridge in the direction shown in the illustration and disconnect the Drum Cartridge.

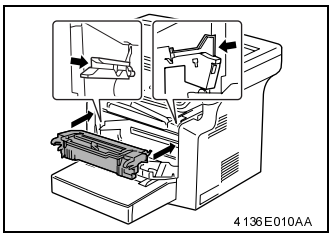
<Installation Procedures>



1. Mount the Toner Cartridge to a new Drum Cartridge.

NOTE

- *Insert the Toner Cartridge along the guide provided on the new Drum Cartridge side and make sure that the Toner Cartridge is not tilted when inserted.*



2. Install the Imaging Cartridge in the printer.

NOTE

- *Insert the Imaging Cartridge along the guide provided on the printer side. Ensure that the Imaging Cartridge is not slid obliquely.*

3. Close the Front Door.

NOTE

- *After replacing the Drum Cartridge, be sure to reset the I/C counter in the Service Mode.*

(3) Replacement of the Fusing Unit

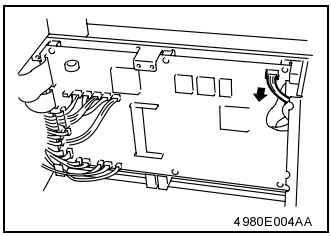
NOTE

- *Immediately after turning off the printer, the area around the Fusing Unit is extremely hot. Therefore, in order to reduce the risk of burns, wait until the unit has cooled down before performing any operation.*

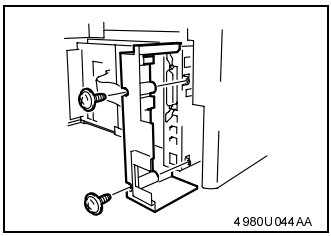
<Removal Procedures>

1. Remove the Rear Cover.

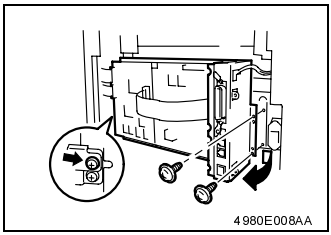
☞ D-7



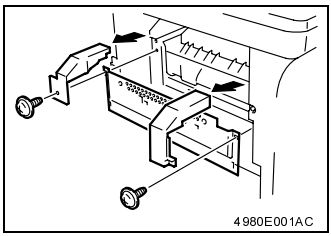
2. Unplug one connector on the Controller/Mechanical Control Board.



3. Remove the two screws, and then remove the Left Rear Cover.



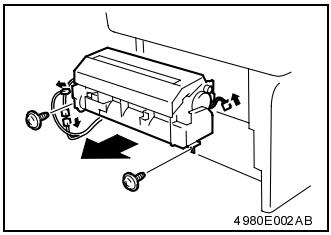
4. Remove the three screws, and then remove the Circuit Board and Metal Bracket.



5. Remove the Upper Left Cover.
6. Remove the two screws, and then remove the Upper Right Cover and Protective Metal Bracket.

NOTE

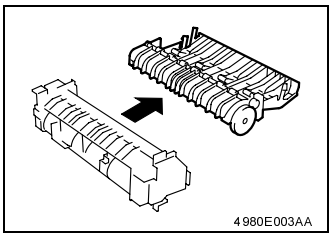
- *The Protective Metal Bracket is tightened together with the Upper Right Cover.*



7. Remove two screws, unplug three connectors, and remove the Fusing Unit.

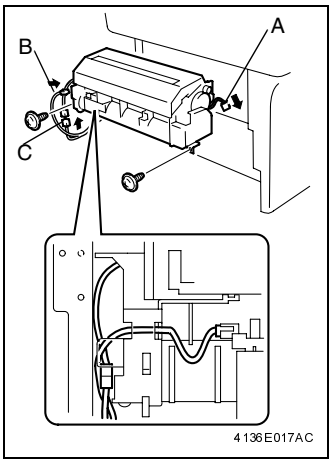
NOTE

- *The surfaces around the Fusing Unit are very hot. Use utmost care not to touch any surfaces other than the Fusing Unit.*



8. Remove the Fusing Unit.

<Installation Procedures>



1. Connect connector A.
2. Mount the Fusing Unit in the printer and secure it in position by tightening the two screws.
3. Connect connectors B and C.

NOTE

- *When installing the Fusing Unit, route the harness as shown in the illustration and make sure that no part of the harness is wedged between the Fusing Unit and printer.*

NOTE

- *When replacing a part comprising the Fusing Unit individually to correct an image problem or a defective part, see D-26 ("Disassembly of the Fusing Unit" of DIS/REASSEMBLY, ADJUSTMENT).*

DIS/REASSEMBLY, ADJUSTMENT

1. SAFETY INFORMATION

1-1. Laser Safety

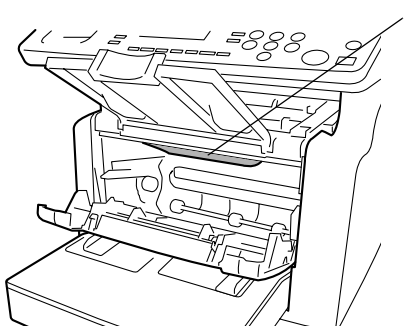
- This is a digital machine certified as a class 1 laser product. There is no possibility of danger from a laser, provided the machine is serviced according to the instruction in this manual.

1-2. Internal Laser Radiation

Semiconductor laser	
Maximum power of the laser diode	15 mW
Maximum average radiation power(*)	36.903 µW
Wavelength	770-800 nm

*:Laser Aperture of the Print Head Unit

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



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

- This machine is certified as a Class I Laser product under Radiation Performance Standard according to the Food, Drug and Cosmetic Act of 1990. Compliance is mandatory for Laser products marketed in the United States and is reported to the Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration of the U.S. Department of Health and Human Services (DHHS). This means that the device does not produce hazardous laser radiation.
- The label shown to page D-4 indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.

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

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

All Areas

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

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

Denmark

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

Halvlederlaser	
Laserdiodens højeste styrke	15 mW
Bølgelængden	770-800 nm

Finland, Sweden

VARO!
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

LOUKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

VAROITUS!
Laitteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

Puolijohdelaser	
Laserdiodin suurin teho	15 mW
Aallonpituus	770-800 nm

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

Halvledarlaser	
Den maximala effekten för laserdioden	15 mW
Våglängden	770-800 nm

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

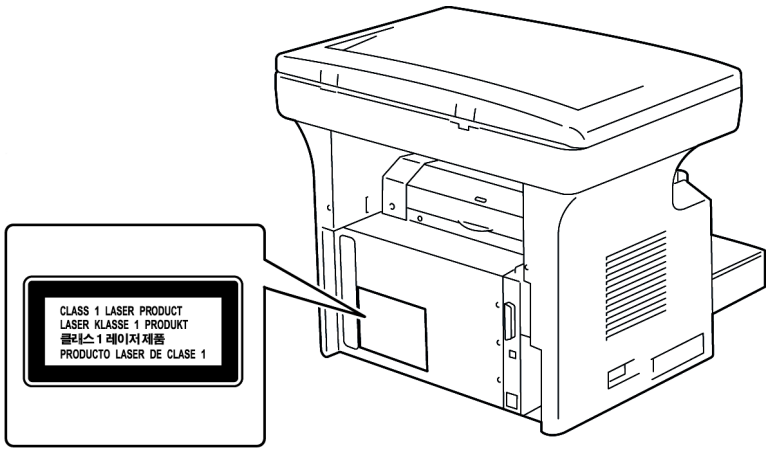
Norway

ADVERSEL
Dersom apparatet brukes på annen måte enn spesifisert i denne bruksanvisning, kan brukeren utsettes for unsynlig laserstråling som overskrider grensen for laser klass 1.

Halvleder laser	
Maksimal effekt till laserdiode	15 mW
Bølgelengde	770-800 nm

1-3. Laser Safety Label

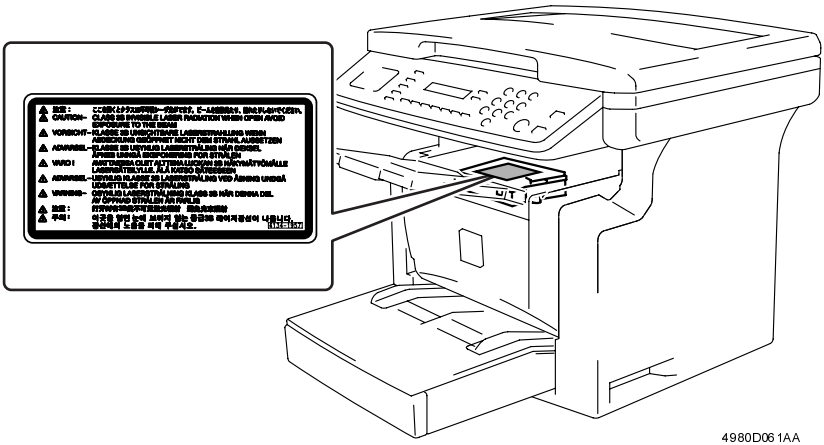
- A laser safety labels is attached to the outside of the machine as shown below.



4980D070AB

1-4. Laser Caution Label

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



4980D061AA

1-5. Precautions for Handling the Laser Equipment

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

2. PRECAUTIONS FOR DISASSEMBLY/ADJUSTMENTS

2-1. Parts That Must Not be Touched

(1) Red Painted Screws

Purpose of Application of Red Paint

Red painted screws show that the assembly or unit secured can only be adjusted or set at the factory and shall not be readjusted, set, or removed in the field.

If it becomes unavoidably necessary to disassemble any of these assemblies and units, disassembly may be done provided that the conditions permitting reassembly are met.

Note also that when two or more screws are used on the part in question, only one representative screw may be marked with red paint.

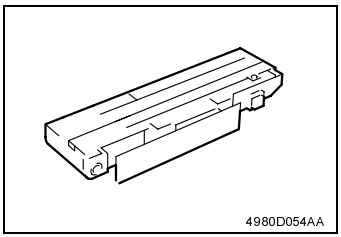
(2) Variable resistors on board

Do not turn the variable resistors on boards for which no adjusting instructions are given in ADJUSTMENT.

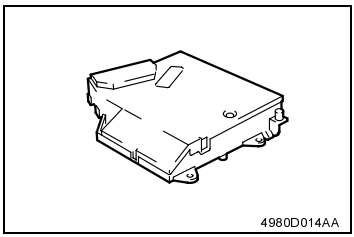
---

(3) Other Screws not Marked with Red Paint

Scanner Assy

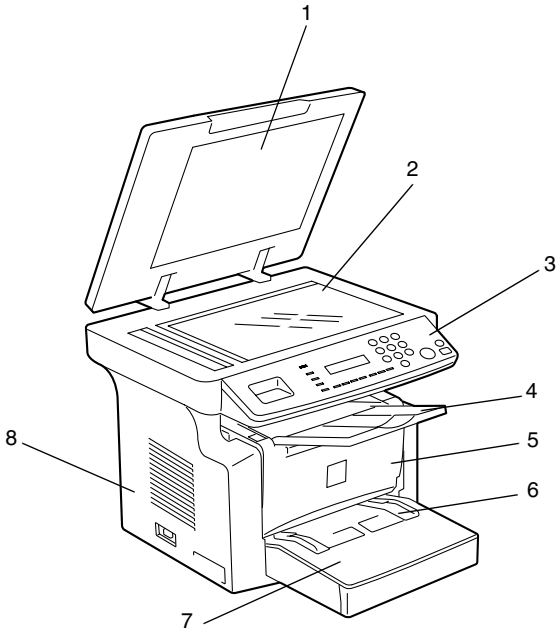


PH Unit

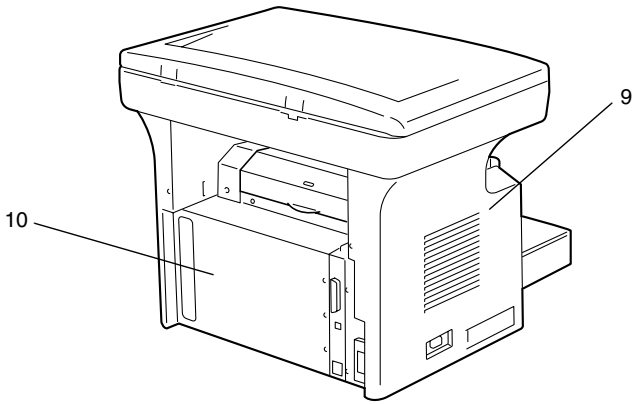


3. DISASSEMBLY/REASSEMBLY

3-1. Identification of Exterior Parts and Removal Procedures for Them



C4980o003AC



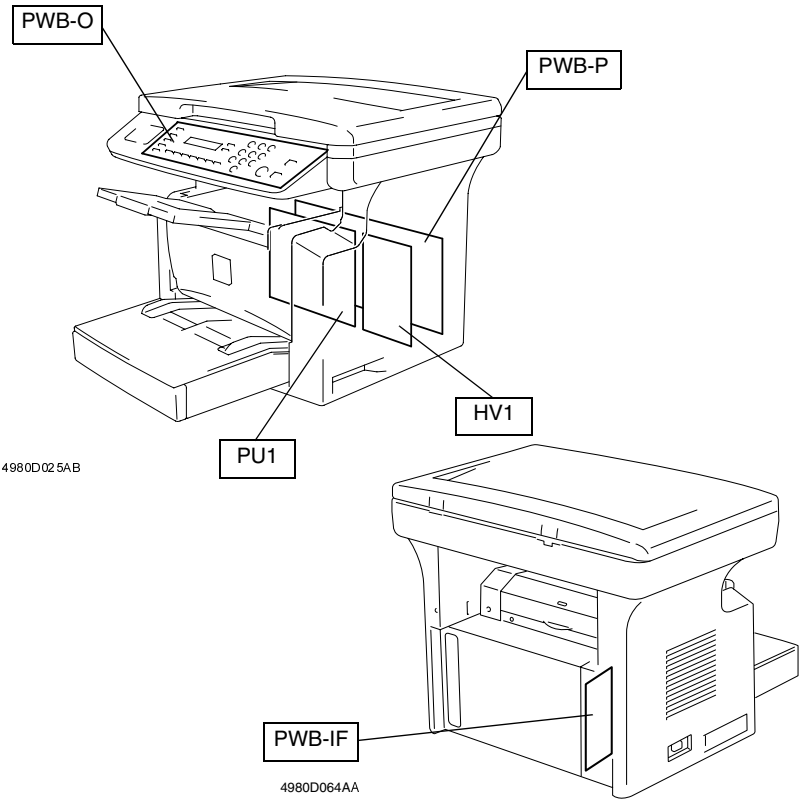
C4980o057AB

No.	Name	Removal Procedure
1	Original Cover	Open the Original Cover → Pull it straight up.
2	Upper Cover Assy. (Original Glass)	Remove the Original Cover. → Remove the Control Panel. → Remove the six screws, and remove the Upper Cover Assy. (Original Glass). ☞ D-18
3	Control Panel	Open the Original Cover. → Remove the three screws, unplug the connector and the flat cable, and remove the Control Panel. ☞ D-10
4	Exit tray	While pressing out one side, remove the Exit tray.
5	Front Door	Open the Front Door. → While pressing in one side, remove the Front Door.
6	Bypass Tray	–
7	Tray1	Hold down the main unit with one hand and pull Tray1 off toward you.
8	Left Cover	Open the Front Door. → Remove the screw, unhook the six tabs, and remove the Left Cover.
9	Right Cover	Open the Front Door. → Remove the two screws, unhook the four tabs, and remove the Right Cover.
10	Rear Cover	Remove the five screws, and remove the Rear Cover.

3-2. Removal of Circuit Boards and Other Electrical Components

NOTES

- *When removing a circuit board or other electric component, refer to the precautions for handling PWBs and follow the corresponding removal procedures.*
- *The removal procedures given in the following paragraphs omit the removal of the component in question from a connector or a PWB support.*
- *Where it is absolutely necessary to touch the ICs and other electric components on the board, be sure to ground your body.*

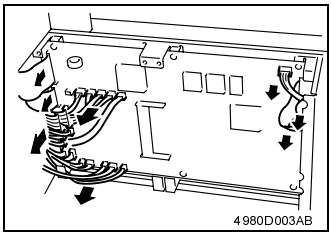


Symbol	Name	Removal Procedures
PWB-P	Controller/Mechanical Control Board	☞ D-10
PWB-O	Control Panel	☞ D-10
PWB-IF	Interface Board	☞ D-11
PU1	Power Unit	☞ D-12
HV1	High Voltage Unit	☞ D-14

(1) Removal of the Controller/Mechanical Control Board

<Removal Procedures>

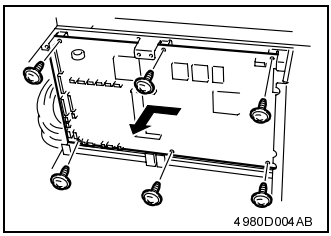
1. Remove the Rear Cover.



2. Disconnect all connectors and flat cables from the Controller/Mechanical Control Board.

NOTE

- *Use utmost care not to snap off the flat cable.*

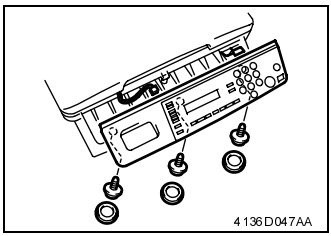


3. Remove six screws and the Controller/Mechanical Control Board.

(2) Removal of the Control Panel

1. Remove the Exit tray.

☞ D-7



2. Remove the Rubber cap, then remove the three screws, unplug one connector and one flat cable, and then remove the Control Panel.

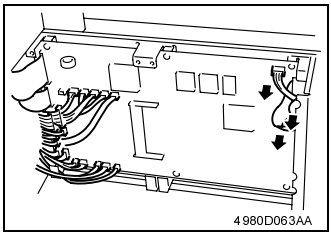
NOTE

- *Use utmost care not to snap off the flat cable.*

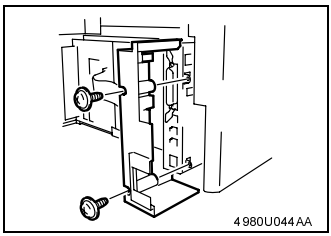
(3) Removal of the Interface Board

1. Remove the Rear Cover.

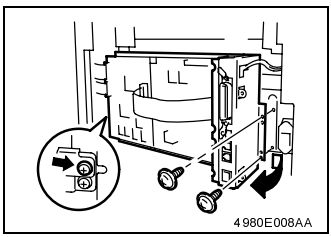
☞ D-7



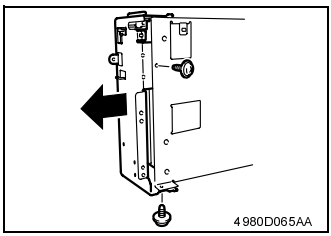
2. Unplug the three connectors on the Controller/ Mechanical Control Board.



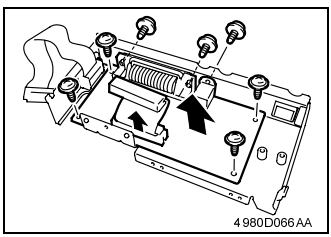
3. Remove the two screws, and then remove the Left Rear Cover.



4. Remove the three screws, and then remove the Circuit Board and Metal Bracket.



5. Remove the two screws, and then remove the Protective Metal Bracket for the Interface Board.



6. Remove the seven screws, and then remove the Interface Board.

(4) Removal of the Power Unit

1. Remove the Right Cover.

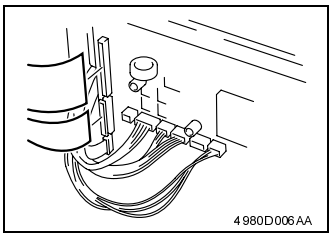
☞ D-7

2. Remove the Left Cover.

☞ D-7

3. Remove the Rear Cover.

☞ D-7



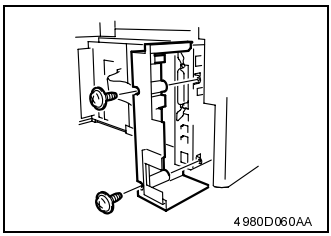
4. Unplug the two flat cables from the Controller/ Mechanical Control Board.

NOTE

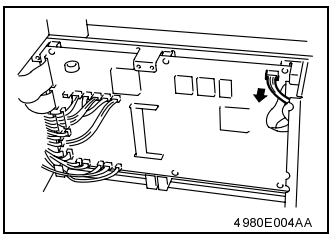
- *Use utmost care not to snap off the flat cable.*

5. Remove the IR Unit.

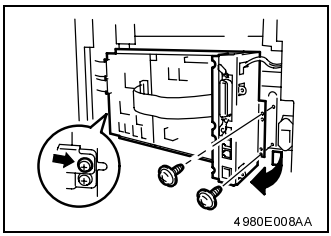
☞ D-15



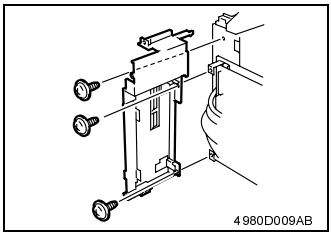
6. Remove the two screws, and then remove the Left Rear Cover.



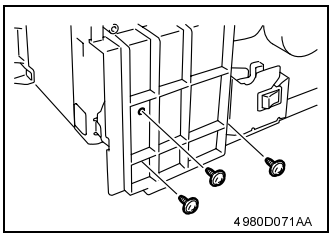
7. Unplug one connector on the Controller/Mechanical Control Board.



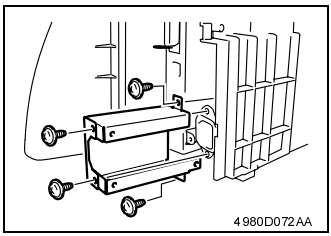
8. Remove the three screws, and then remove the Circuit Board and Metal Bracket.



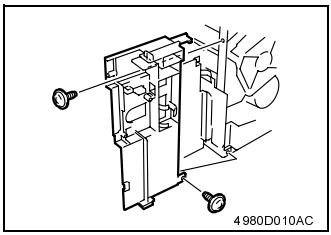
9. Remove the three screws, unhook the tab, and then remove the Left Rear Frame.



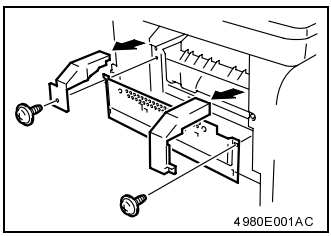
10. Remove the three screws from the Left Rear Frame.



11. Remove the four screws, and then remove the Metal Bracket.



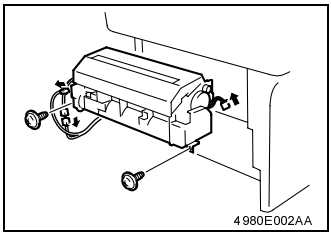
12. Remove the two screws, unhook the tab, and then remove the Left Rear Frame.



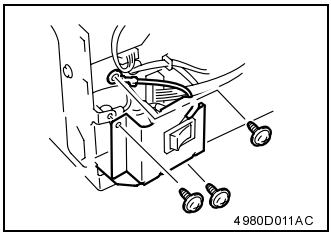
13. Remove the Upper Left Cover.
14. Remove the two screws, and then remove the Upper Right Cover and Protective Metal Bracket.

NOTE

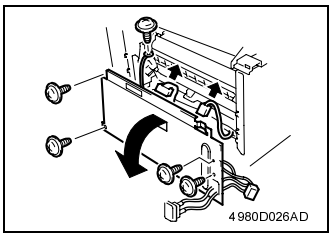
- *The Protective Metal Bracket is tightened together with the Upper Right Cover.*



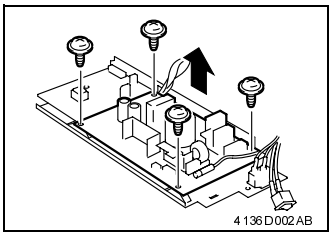
15. Remove the two screws, unplug the three connectors, and then remove the Fusing Unit Assy.



16. Remove three screws and the Power Switch stay.
17. Remove the Power Switch.



18. Remove four screws, disconnect three connectors, and remove the Power Unit Assy.

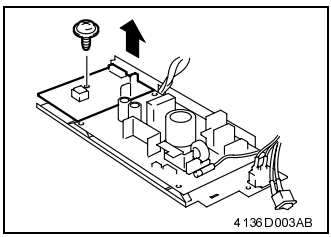


19. Remove four screws and the Power Unit.

(5) Removal of the High Voltage Unit

1. Remove the Power Unit Assy.

☞ D-12



2. Remove one screw and the High Voltage Unit.

3-3. Removal of Units

(1) Removal of the IR Unit

1. Remove the Left Cover.

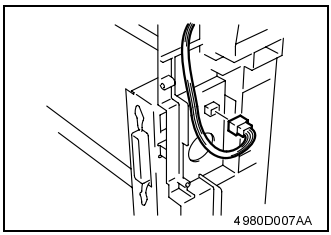
☞ D-7

2. Remove the Right Cover.

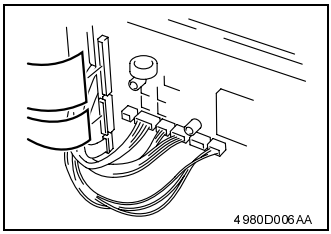
☞ D-7

3. Remove the Rear Cover.

☞ D-7



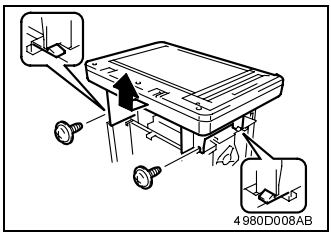
4. Unplug the connector.



5. Unplug the two flat cables from the Controller/ Mechanical Control Board.

NOTE

- *Be extremely careful not to break the flat cables.*



6. Remove the two screws, unhook the two tabs, and then remove the IR Unit.

(2) Removal of the PH Unit

NOTES
- *NEVER attempt to replace the PH Unit with power being supplied to the printer. Doing that could lead to exposure to the laser beam, resulting in blindness*
- *NEVER attempt to disassemble or adjust the PH Unit. Doing that could lead to exposure to the laser beam, resulting in blindness.*

1. Remove the IR Unit.

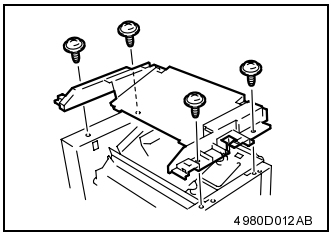
☞ D-15

2. Remove the Fusing Unit.

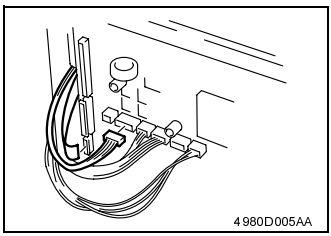
☞ E-8

3. Remove the Exit tray.

☞ D-7

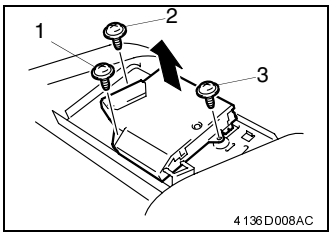


4. Remove the four screws, unhook the four tabs, and then remove the Upper Cover.



5. Disconnect one flat cable from the Controller/ Mechanical Control Board.

NOTE
- *Use utmost care not to snap off the flat cable.*

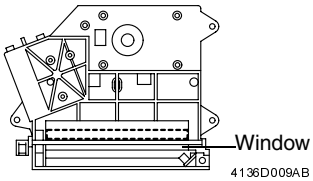


6. Remove three screws and the PH Unit.

NOTE
- *When reinstalling the PH Unit, tighten the screws in the numerical order shown in the illustration.*

Precautions for Removal/Reinstallation of the PH Unit

- *NEVER touch the window on the backside of the PH Unit. A dirty window can cause an image problem.*

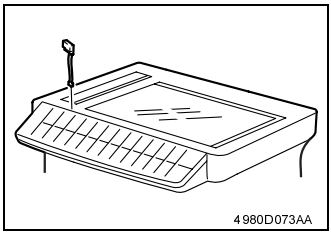


3-4. Disassembly of the Image Reading Section

(1) Removal of the Original cover set sensor

1. Remove the Original Cover.
2. Remove the Control Panel.

☞ D-7

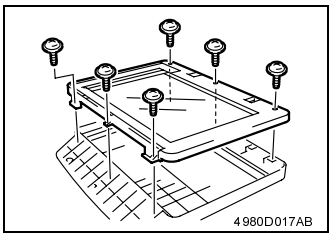


3. Remove the Original cover set sensor.

(2) Removal of the Upper Cover Assy. (Original Glass)

1. Remove the Original Cover.
2. Remove the Control Panel.

☞ D-7



3. Remove the six screws, and remove the Upper Cover Assy. (Original Glass).

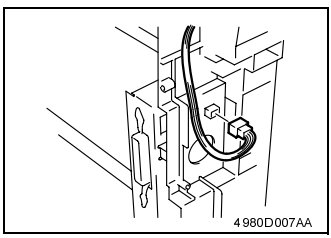
(3) Removal of the Scanner Motor

1. Remove the Original Cover.
2. Remove the Upper Cover Assy. (Original Glass).

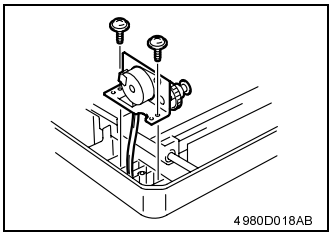
☞ D-18

3. Remove the Left Cover.

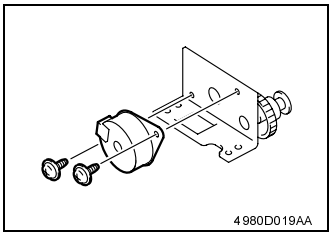
☞ D-7



4. Unplug one connector from the Scanner Motor.



5. Remove the two screws, and then remove the Scanner Motor Mounting Bracket.

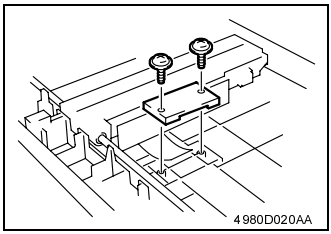


6. Remove the two screws, and then remove the Scanner Motor.

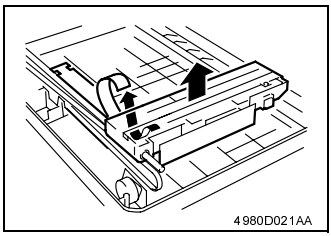
(4) Removal of the Scanner Assy.

1. Remove the Original Cover.
2. Remove the Upper Cover Assy. (Original Glass).

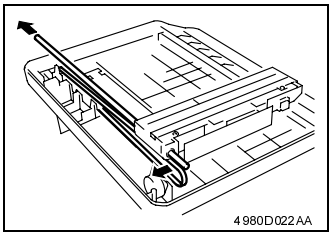
☞ D-18



3. Remove the two screws, and then remove the Flat Cable Holding Plate.



4. Unplug the flat cable.



5. Remove the Timing Belt and shaft, and then remove the Scanner Assy.

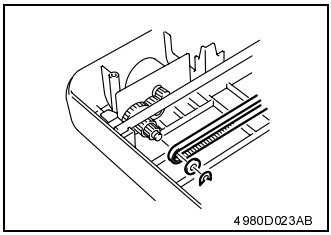
(5) Removal of the Timing Belt

1. Remove the Original Cover.
2. Remove the Upper Cover Assy. (Original Glass).

☞ D-18

3. Remove the Scanner Assy.

☞ D-19

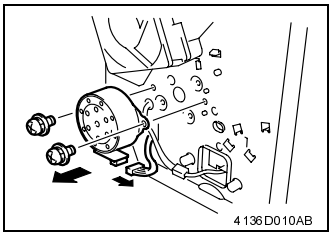


4. Remove the C-clip.
5. Remove the washer.
6. Remove the Timing Belt.

3-5. Disassembly of the Main Drive Section

(1) Removal of the Main Motor

1. Remove the Left Cover.



2. Disconnect one connector.
3. Remove two screws, two washers, and the Main Motor.

(2) Removal of the Paper Empty Sensors

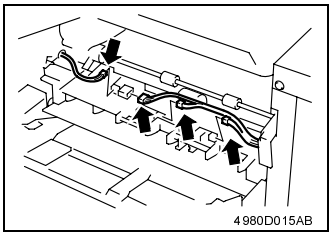
1. Remove the Imaging Cartridge.
2. Remove the Front Door.

NOTE

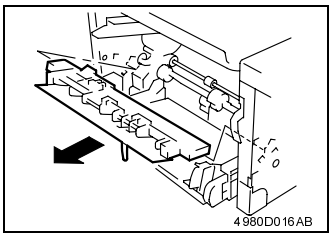
- *The Imaging Cartridge is the Drum Cartridge, to which the Toner Cartridge is mounted.*

3. Remove the Left and Right Covers.

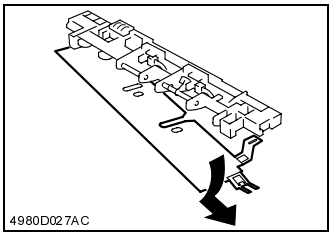
☞ D-7



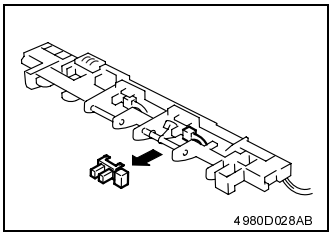
4. Remove the four connectors from the Paper Take-Up Upper Guide Assy.



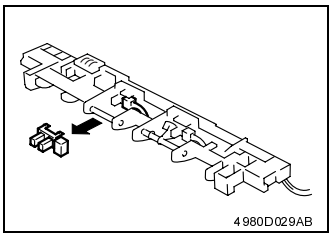
5. Unhook the two tabs, and then remove the Paper Take-Up Upper Guide Assy.



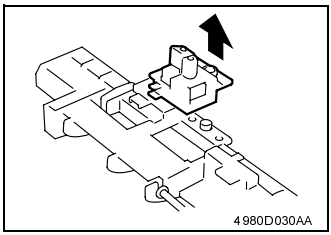
6. Unhook two tabs and remove the tray.



7. Remove the Multi purpose Tray Paper Empty Sensor.



8. Remove the Multiple Bypass Tray Paper Empty Sensor.

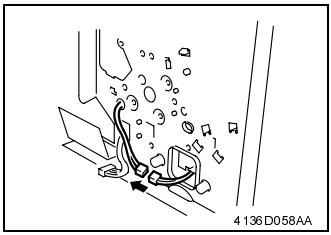


9. Remove the Toner Empty detection sensor.

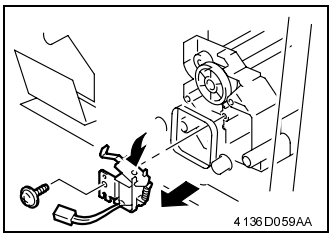
(3) Removal of the Paper Take-Up Solenoid

1. Remove the Left Cover.

☞ E-8



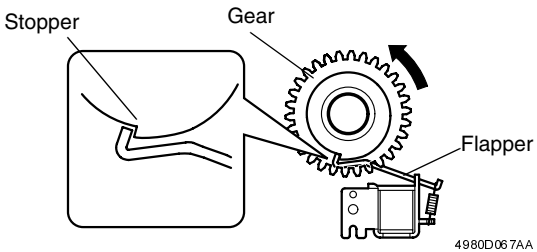
2. Disconnect one connector of the Paper Take-Up Solenoid.



3. Remove one screw and the Paper Take-Up Solenoid.

Precautions for Installation of the Paper Take-Up Solenoid

1. Mount the Paper Take-Up Solenoid and tighten one screw.
2. Turn the gear in the direction of the arrow shown below so that the flapper of the Paper Take-Up Solenoid catches the stopper of the gear.



(4) Removal of the Paper Take-Up Clutch Gear

1. Remove the Fusing Unit.

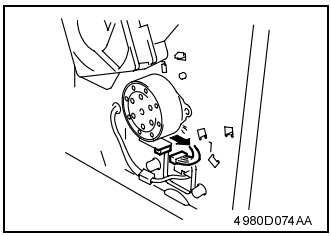
☞ E-8

2. Remove the Power Unit.

☞ D-12

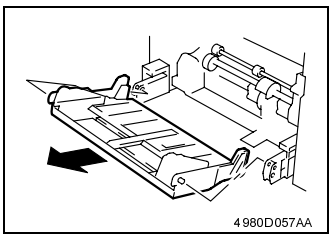
3. Remove the Paper Take-Up Upper Guide Assy.

☞ D-21

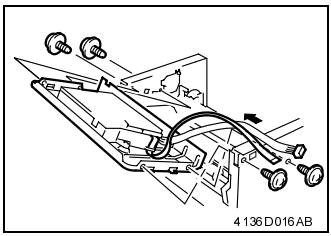


4. Disconnect one connector and remove the Cooling Fan Motor 2.
5. Disconnect one connector of the Main Motor.

☞ D-21



6. Remove the Paper Lifting Plate Assy.
7. Remove two springs.

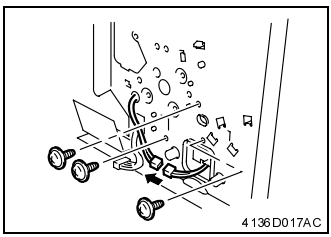


8. Disconnect one connector and one flat cable from the Controller/Mechanical Control Board.

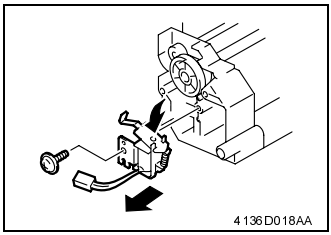
NOTE

- *Use utmost care not to snap off the flat cable.*

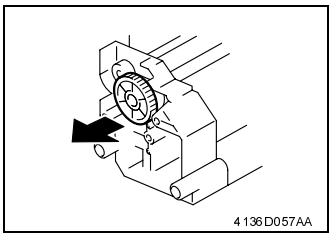
9. Remove the Top Cover, then remove four screws and the PH Base Plate Assy.



10. Disconnect one connector of the Paper Take-Up Solenoid.
11. Remove three screws and the Left Frame.



12. Remove one screw and the Paper Take-Up Solenoid.

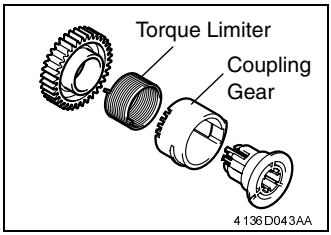


13. Unhook two tabs and remove the Paper Take-Up Clutch Gear.

(5) Removal of the Torque Limiter

1. Remove the Paper take up Clutch Gear.

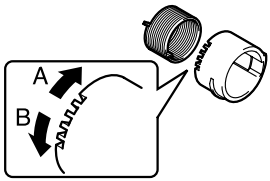
☞ D-24

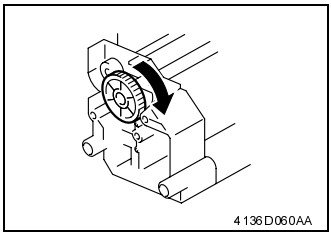


2. Unhook three tabs and take apart the Paper Take-Up Clutch Gear then, remove the Torque Limiter.

Precautions for Installation of the Torque Limiter

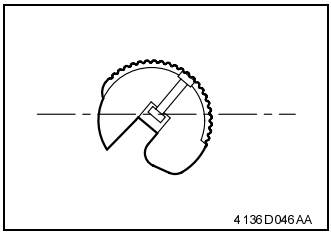
Coupling Gear has five dent for adjustment the Take-up Roller position. When Torque Limiter is replaced, adjust the set position of the Coupling Gear so that the Take-up Roller becomes level. The procedure is as follow.



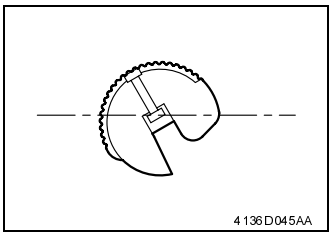


After setting replaced Paper Take-Up Clutch Gear (Torque Limiter) to the shaft, Rotate the Paper Take-Up Clutch Gear by hand (Need to be released Solenoid Flapper).

Look at the stop position of theTake-Up Roller from Clutch Gear side.



1. When the Roller is leant to clockwise, move the coupling Gear to A direction.



2. When the Roller is leant to counter clockwise, move the coupling Gear to B direction.

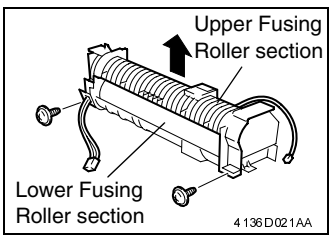
(6) Disassembly of the Fusing Unit

NOTE

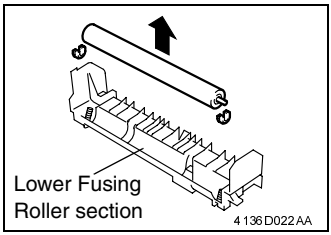
- *The Fusing Unit is extremely hot immediately after the Power Switch has been turned OFF. Allow a sufficient time to let it cool down before starting the procedure to prevent burn.*

1. Remove the Fusing Unit.

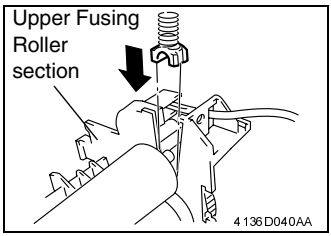
☞ D-8



2. Remove the two screws, and then the Fusing Unit is divided into the Upper Fusing Roller section and Lower Fusing Roller section.

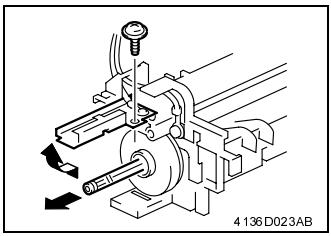


3. Remove two bushings and the Pressure Roller.



Precautions for Installation of Bushings

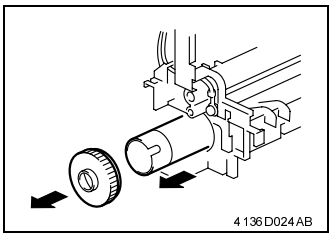
- *Make sure that the slits in the bushing are properly aligned with the rib of the Fusing Unit.*



4. Remove one screw and the terminal block.
5. Pull out the Fusing Roller Heater Lamp.

NOTES

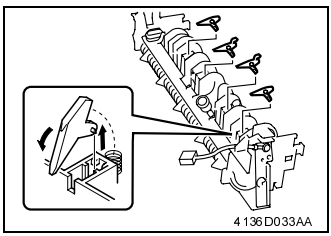
- *Do not touch the surface of the glass of the Fusing Roller Heater Lamp with bare hands.*
- *When reinstalling the Fusing Roller Heater Lamp, make sure that the side of the lamp having a voltage marking faces the gear side.*



6. Pull out the drive gear from the Fusing Roller.
7. Pull out the Fusing Roller.

NOTE

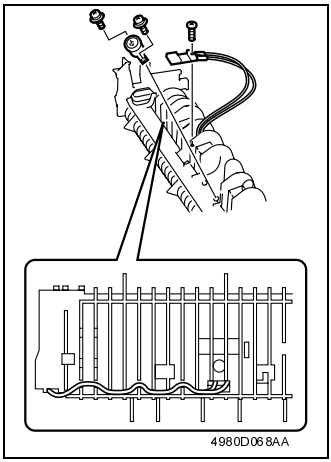
- *When removing and reinstalling the Fusing Roller, keep the Fusing Roller Paper Separator Fingers in their raised position. Use care not to damage the surface of the Fusing Roller.*



8. Remove the four Fusing Roller Paper Separator Fingers.

NOTE

- *Use care not to lose the springs.*



9. Remove one screw and the Thermistor.

NOTE

- *When reinstalling the Thermistor, route the harness as shown in the illustration.*

10. Remove two screws and the Thermostat.

4. ADJUSTMENTS

4-1. Electrical/Image Adjustment

(1) Accessing the Service Mode

1. Press the Utility key.
2. Press the following keys in order to enter the Service mode.
   Stop → 0 → 0 → Stop → 0 → 1

NOTE

- *Be sure to keep the access procedure for the Service mode from any unauthorized persons not involved with service operations.*

(2) Accessing the "ADJUST" Menu

1. Enter the Service mode.
2. Press the Zoom Select key to select the "ADJUST" menu.

(3) Printing a Test Pattern

NOTES

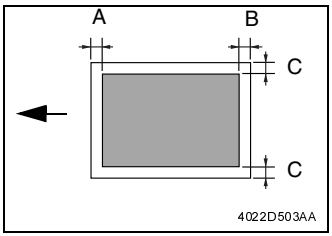
Print a test pattern when making the following adjustments.

- *Printer's main scanning & sub-scanning registration adjustments*
- *Scanner's main scanning & sub-scanning registration adjustments*
- *Scanner's zoom ratio adjustment*

1. Enter the Service mode.
2. Press the Density Select key to select the function.
3. Select "PRINT TEST PATTERN" → "TEST PATTERN 1".
4. Press the Start key to begin printing the test pattern.

(4) Margin Adjustment (Leading Edge/Trailing Edge/Both Sides)

<Requirement>



- Specify the amount erased at the leading edge (width of A), trailing edge (width of B), and both sides (width of C) of the paper.
- Default setting: 4 mm

Mode	Function Item	Setting Range
Service's Choice	Leading Edge Erase Trailing Edge Erase Vertical Edge Erase	0 to 5 1 increment = 1 mm

Perform this adjustment in the following cases.

- *When the user requests a smaller margin*

<Adjustment Procedure>

1. Enter Service's Choice in the Service mode.
2. Select "LEADING EDGE ERASE".
3. Specify the setting.

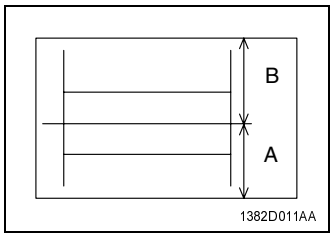
Setting Overview

To reduce the margin . . . . . Decrease the setting.
To increase the margin . . . . . Increase the setting.

4. Specify settings for the "TRAILING EDGE ERASE" and the "VERTICAL EDGE ERASE" functions in the same way.

(5) Printer's Main Scanning Registration Adjustment

<Requirement>



- Adjust the amount that widths A and B in the printed test pattern are shifted so that the following specification is met.

Specification	Mode	Function Item	Setting Range
0±2.0 mm	"ADJUST" menu	PRN MAIN REGIST	60 to 140 1 increment = 0.1 mm

Perform this adjustment in the following cases.

- *After the PH Unit has been replaced*

<Adjustment Procedure>

1. Print the test pattern.
2. Check the amount that widths A and B in the test pattern are shifted.
   If the shift is out of specification, adjust it according to the following procedure.
3. Enter the "ADJUST" menu in the Service mode.
4. Change the setting.

If the width of A is less than the width of B . . . . . Increase the setting.

If the width of B is less than the width of A . . . . . Decrease the setting.

✻ If the shift cannot be adjusted to within the specification with a single adjustment, perform the adjustment again to change the setting.

5. Press the Yes key to apply the setting.

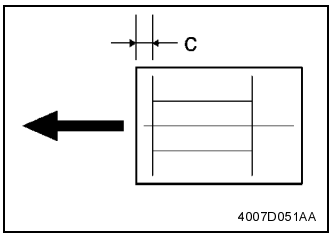
NOTE

If the Stop key is pressed, instead of the Yes key, the main screen is displayed and the setting returns to that before it was changed.

6. Print a test pattern again and check it.

(6) Printer's Sub-Scanning Registration Adjustment

<Requirement>



- Adjust the width of C in the printed test pattern so that the following specification is met.

Specification	Mode	Function Item	Setting Range
20±2.5 mm	"ADJUST" menu	PRN SUB REGIST	87 to 113 1 increment = 0.46 mm

Perform this adjustment in the following cases.

- *After the PH Unit has been replaced*
- *After the printer's main scanning registration adjustment has been performed*

<Adjustment Procedure>

1. Print the test pattern.
2. Check that the width of C in the test pattern meets the specification.
   If the width of C is out of specification, adjust it according to the following procedure.
3. Enter the "ADJUST" menu in the Service mode.
4. Change the setting.

If the width of C in the test pattern is longer than the specified width . . . . . Increase the setting.

If the width of C in the test pattern is shorter than the specified width . . . . . Decrease the setting.

✻ If the shift cannot be adjusted to within the specification with a single adjustment, perform the adjustment again to change the setting.

5. Press the Yes key to apply the setting.

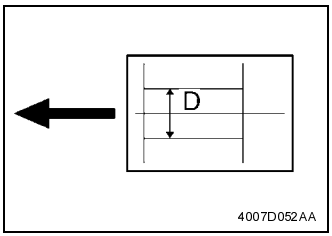
NOTE

If the Stop key is pressed, instead of the Yes key, the main screen is displayed and the setting returns to that before it was changed.

6. Print a test pattern again and check it.

(7) Scanner's Main Scanning Zoom Ratio Adjustment

<Requirement>



- After finishing the printer's main scanning & sub-scanning registration adjustments, place the printed test pattern on the Original Glass, and make a copy of it.
- Adjust the width of D in the copy of the test pattern so that the following specification is met.

Zoom Ratio	Specification	Mode	Function Item	Setting Range
Full Size (100%)	100±0.5 mm	"ADJUST" menu	CCD MAIN ZOOM	95 to 105 1 increment = 0.4%

Perform this adjustment in the following cases.

- *After the Scanner Assy. has been replaced*
- *After the printer's main scanning & sub-scanning registration adjustments have been performed*

<Adjustment Procedure>

1. Print the test pattern.
2. Enter the "ADJUST" menu in the Service mode.
3. Place the test pattern on the Original Glass and make a test copy.

NOTES

- *The test pattern should be positioned vertically.*
- *Use A4 L or Letter L paper loaded into Tray1 to make the test copy.*

4. Check that the width of D in the copy of the test pattern meets the specification.
   Calculation: (1 - Width of D in the document ÷ Width of D in the copy) × 100
   If the width of D is out of specification, adjust it according to the following procedure.
5. Change the setting.

If the width of D in the test pattern is longer than the specified width . . . . . Decrease the setting.

If the width of C in the test pattern is shorter than the specified width . . . . . Increase the setting.

✻ If the shift cannot be adjusted to within the specification with a single adjustment, perform the adjustment again to change the setting.

6. Press the Yes key to apply the setting.

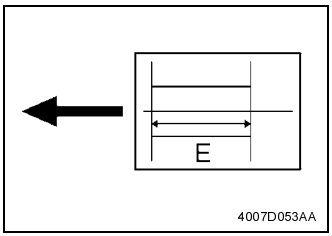
NOTE

If the Stop key is pressed, instead of the Yes key, the main screen is displayed and the setting returns to that before it was changed.

Place the test pattern on the Original Glass again, make another test copy, and check it.

(8) Scanner's Sub-Scanning Zoom Ratio Adjustment

<Requirement>



- After finishing the printer's main scanning & sub-scanning registration adjustments, place the printed test pattern on the Original Glass, and make a copy of it.
- Adjust the width of E in the copy of the test pattern so that the following specification is met.

Zoom Ratio	Specification	Mode	Function Item	Setting Range
Full Size (100%)	200±0.5 mm	"ADJUST" menu	CCD SUB ZOOM	95 to 105 1 increment = 0.4%

Perform this adjustment in the following cases.

- *After the Scanner Assy. has been replaced*
- *After the printer's main scanning & sub-scanning registration adjustments have been performed*

<Adjustment Procedure>

1. Print the test pattern.
2. Enter the "ADJUST" menu in the Service mode.
3. Place the test pattern on the Original Glass and make a test copy.

NOTES

- *The test pattern should be positioned vertically.*
- *Use A4 L or Letter L paper loaded into Tray1 to make the test copy.*

4. Check that the width of E in the copy of the test pattern meets the specification.
   Calculation: (1 – Width of E in the document ÷ Width of E in the copy) × 100
   If the width of E is out of specification, adjust it according to the following procedure.
5. Change the setting.

If the width of E in the test pattern is longer than the specified width . . . . . Decrease the setting.

If the width of C in the test pattern is shorter than the specified width . . . . . Increase the setting.

✻ If the shift cannot be adjusted to within the specification with a single adjustment, perform the adjustment again to change the setting.

6. Press the Yes key to apply the setting.

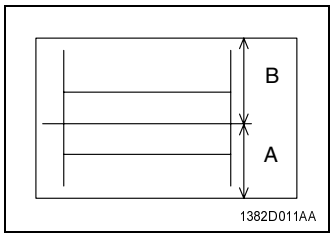
NOTE

If the Stop key is pressed, instead of the Yes key, the main screen is displayed and the setting returns to that before it was changed.

Place the test pattern on the Original Glass again, make another test copy, and check it.

(9) Scanner's Main Scanning Registration Adjustment

<Requirement>



- After finishing the printer's main scanning & sub-scanning registration adjustments, place the printed test pattern on the Original Glass, and make a copy of it.
- Adjust the width of E in the copy of the test pattern so that the following specification is met.

Specification	Mode	Function Item	Setting Range
0±2.0 mm	"ADJUST" menu	CCD MAIN REGIST	90 to 110 1 increment = 0.5 mm

Perform this adjustment in the following cases.

- *After the Scanner Assy. has been replaced*
- *After the printer's main scanning & sub-scanning registration adjustments and the scanner's main scanning zoom ratio adjustment have been performed*

<Adjustment Procedure>

1. Print the test pattern.
2. Enter the "ADJUST" menu in the Service mode.
3. Place the test pattern on the Original Glass and make a test copy.

NOTES

- *The test pattern should be positioned vertically.*
- *Use A4 L or Letter L paper loaded into Tray1 to make the test copy.*

4. Check the amount that widths A and B in the copy of the test pattern are shifted.
   If the shift is out of specification, adjust it according to the following procedure.
5. Change the setting.

If the width of A is less than the width of B . . . . . Increase the setting.

If the width of B is less than the width of A . . . . . Decrease the setting.

✻ If the shift cannot be adjusted to within the specification with a single adjustment, perform the adjustment again to change the setting.

6. Press the Yes key to apply the setting.

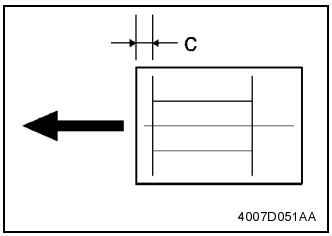
NOTE

If the Stop key is pressed, instead of the Yes key, the main screen is displayed and the setting returns to that before it was changed.

Place the test pattern on the Original Glass again, make another test copy, and check it.

(10) Scanner's Sub-Scanning Registration Adjustment

<Requirement>



- After finishing the printer's main scanning & sub-scanning registration adjustments, place the printed test pattern on the Original Glass, and make a copy of it.
- Adjust the width of C in the copy of the test pattern so that the following specification is met.

Specification	Mode	Function Item	Setting Range
20±3.0 mm	"ADJUST" menu	CCD SUB REGIST	90 to 110 1 increment = 0.5 mm

Perform this adjustment in the following cases.

- *After the Scanner Assy. has been replaced*
- *After the printer's main scanning & sub-scanning registration adjustments and the scanner's sub-scanning zoom ratio adjustment have been performed*

<Adjustment Procedure>

1. Print the test pattern.
2. Enter the "ADJUST" menu in the Service mode.
3. Place the test pattern on the Original Glass and make a test copy.

NOTES

- *The test pattern should be positioned vertically.*
- *Use A4 L or Letter L paper loaded into Tray1 to make the test copy.*

4. Check that the width of C in copy of the test pattern meets the specification.
   If the width of C is out of specification, adjust it according to the following procedure.
5. Change the setting.

If the width of C in the test pattern is longer than the specified width . . . . . Increase the setting.

If the width of C in the test pattern is shorter than the specified width . . . . . Decrease the setting.

✻ If the shift cannot be adjusted to within the specification with a single adjustment, perform the adjustment again to change the setting.

6. Press the Yes key to apply the setting.

NOTE

If the Stop key is pressed, instead of the Yes key, the main screen is displayed and the setting returns to that before it was changed.
Place the test pattern on the Original Glass again, make another test copy, and check it.

5. MISCELLANEOUS

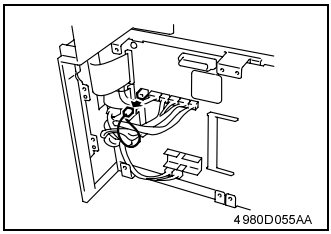
5-1. Removal of the Mechanical Counter (Option)

1. Remove the Right Cover.

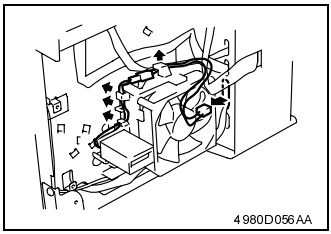
☞ D-7

2. Remove the Rear Cover.

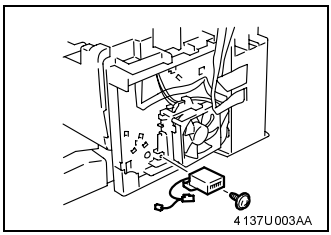
☞ D-7



3. Unplug one connector on the Controller/Mechanical Control Board.



4. Remove the Relay Harness.



5. Remove the screw, and then remove the Mechanical Counter.

5-2. Updating the Firmware

NOTES

- *The TWAIN driver must already be installed on the host computer to be used for updating the firmware.*
- *If the GDI printer or TWAIN driver is not installed, follow the procedure described below to install the driver.*
- *If the driver is already installed, skip to "Procedure for Updating the Firmware" and update the firmware.*

(1) Installing the GDI Printer/TWAIN Driver Using Plug and Play

<For Windows XP>

1. Start up the host computer, and then insert the CD-ROM into the CD-ROM drive.
2. Turn on the printer.
3. Use a USB cable to connect the printer to the host computer.
4. In the "Found New Hardware Wizard" dialog box, select "Install from a list or specific location [Advanced]", and then click the [Next] button.
5. Below "Search for the best driver in these locations.", select "Include this location in the search", and then click the [Browse] button.
6. Specify "\Corresponding_language\WinXP" on the CD-ROM, and then click the [OK] button.
7. Click the [Next] button, and then click the [Finish] button.
8. When the "Found New Hardware Wizard" dialog box appears again, repeat steps 4 through 7 to install all drivers.

<For Windows 2000>

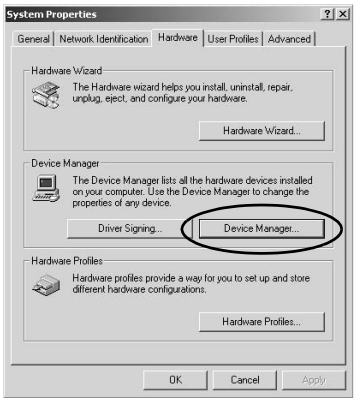
1. Start up the host computer, and then insert the CD-ROM into the CD-ROM drive.
2. Turn on the printer.
3. Use a USB cable to connect the printer to the host computer.
4. In the "Install Hardware Device Drivers" dialog box, select "Search for a suitable driver for my device (recommended)", and then click the [Next] button.
5. In the "Locate Driver Files" dialog box, select "Specify a location", and then click the [Next] button.
6. Click the [Browse...] button, specify "\Corresponding_language\Win2K" on the CD-ROM, and then click the [OK] button.
7. Click the [OK] button, and then continue following the instructions in the dialog boxes that appear until the "Completing the Found New Hardware Wizard" dialog box appears.
8. Click the [Finish] button.
9. When the "Found New Hardware Wizard" dialog box appears again, repeat steps 4 through 8 to install all drivers.

<For Windows Me/98/95>

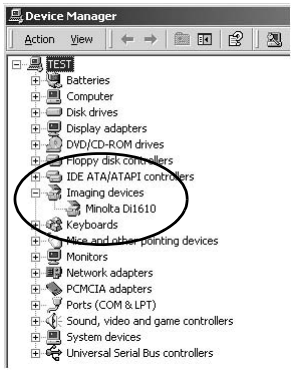
1. Start up the host computer, and then insert the CD-ROM into the CD-ROM drive.
2. Turn on the printer.
3. Use a USB cable to connect the printer to the host computer.
4. In the “Install Hardware Device Drivers” dialog box, click the [Next] button, select “Search for a suitable driver for my device (recommended)”, and then click the [Next] button again.
5. Select “Specify a location”, and then click the [Browse...] button.
6. Specify “\Corresponding_language\Win9X” on the CD-ROM, and then click the [OK] button.
7. Click the [OK] button, and then continue following the instructions in the dialog boxes that appear until the “Completing the Found New Hardware Wizard” dialog box appears.
8. Click the [Finish] button.
9. When the “Found New Hardware Wizard” dialog box appears again, repeat steps 4 through 8 to install all drivers.

5-3. Procedure for Updating the GDI Firmware

1. Turn on the printer.
2. Start up the host computer (Windows 98 or later).
3. Copy the “Update Software” folder and “Update” file to drive C. (Copy them into the highest directory on drive C.)
4. Use a USB cable to connect the printer to the host computer. (Wait until the hardware is detected.)
5. Display the “System Properties” dialog box (“Properties” for “My Computer”), click the “Hardware” tab, click the [Device Manager] button, select “Imaging devices”, and then check that “Develop D 16G” has been added.



4980D045AA

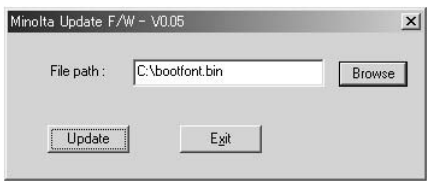


4980D046AA

6. Double-click “Update” file in the “Update Software” folder.
   The “Develop Update F/W-V1.XX” dialog box appears.

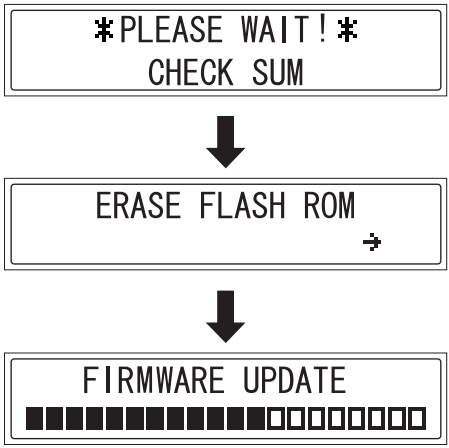
4980D047AA

7. Click the [Browse] button, and then select “Update” file, which was copied onto drive C in step 3.



4980D048AA

8. Click the [Update] button. The transfer of firmware data begins. (Wait until the transfer of data is finished.)
9. Check the firmware update status in the display.



4980D050AB

NOTE

- *Do not turn the printer off or on while the screen shown above is displayed.*

10. Check that the following message appears in the display to indicate that the updating of the firmware is complete.

4980D051AB

11. Click the [OK] button, and then quit the “Develop Update F/W-V1.XX” application.

4980D049AA

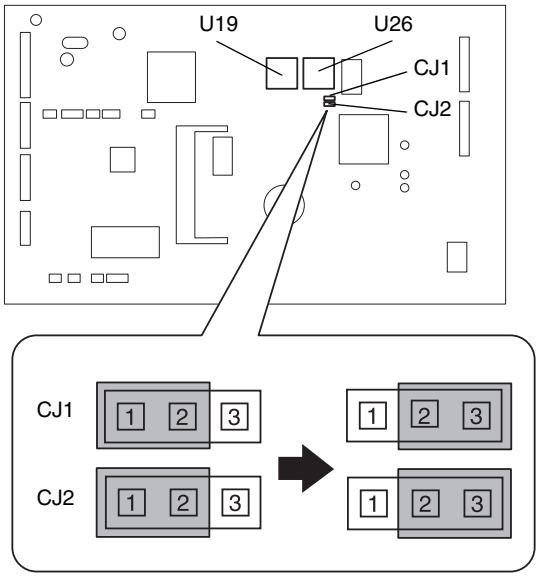
12. Turn the printer off, then on again.

5-4. Remedy for a Failed Updating of the Firmware

1. Turn off the printer.
2. Remove the USB cable connecting the printer to the host computer.
3. Remove the Rear Cover.

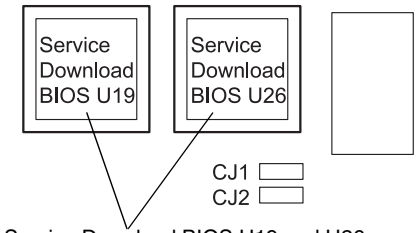
☞ D-7

4. Change the settings for jumper switches CJ1 and CJ2 on the Controller/Mechanical Control Board from “1-2” to “2-3”.



4980D052AA

5. Attach Service Download BIOS U19 and U26 to memory sockets U19 and U26 on the Controller/Mechanical Control Board.



Service Download BIOS U19 and U26
(Parts No. : 4980-1157-xx)

4980D069AA

6. Use a USB cable to connect the printer to the host computer.
7. Start up the host computer.

8. Turn on the printer. The following message appears in the display.

4980D053AA

9. Perform steps 6 through 10 of “Procedure for Updating the GDI Firmware” to update the firmware.
10. Check that the following message appears in the display to indicate that the updating of the firmware has been completed correctly.

4980D051AB

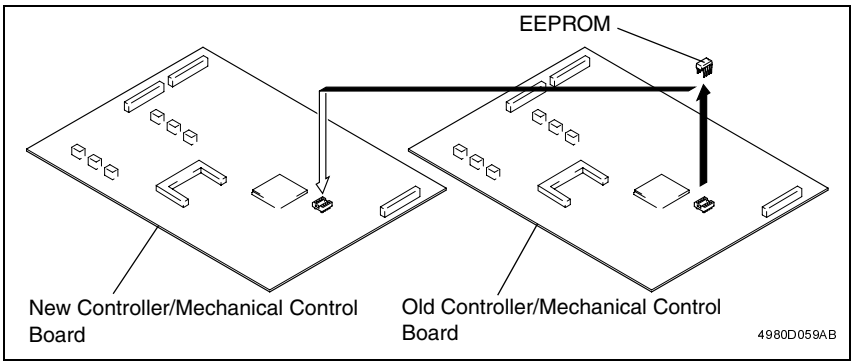
11. Turn off the printer.
12. Change the settings for jumper switches CJ1 and CJ2 on the Controller/Mechanical Control Board from “2-3” to “1-2”. (Return them to their default settings.)
13. Remove Service Download BIOS U19 and U26 from memory sockets U19 and U26 on the Controller/Mechanical Control Board.
14. Turn on the printer.

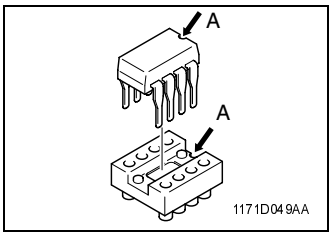
5-5. Moving the EEPROM

NOTE

- *After the Controller/Mechanical Control Board (PWB-P) is replaced, be sure to move the EEPROM form the old Controller/Mechanical Control Board to the new one.*

Remove the EEPROM (U39) from the old Controller/Mechanical Control Board, and then attach it to the new Controller/Mechanical Control Board.





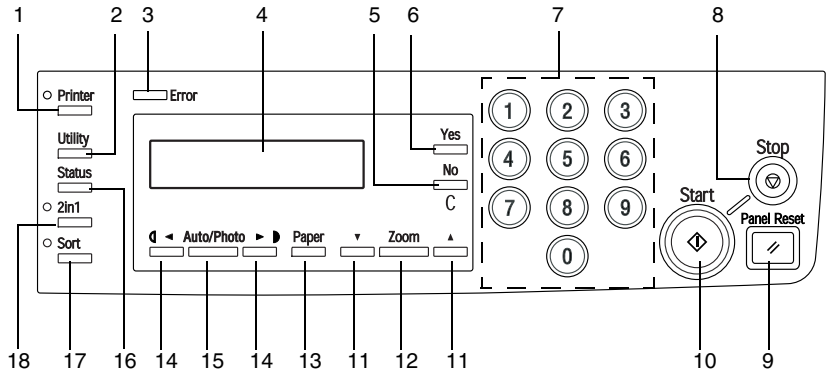
NOTE

- *Be sure to install the EEPROM (U39) so that notch A faces the correct direction.*

CONTROL PANEL/SERVICE MODE DESCRIPTIONS

1. CONTROL PANEL DESCRIPTIONS

1-1. Names of Control Panel Parts and Their Functions



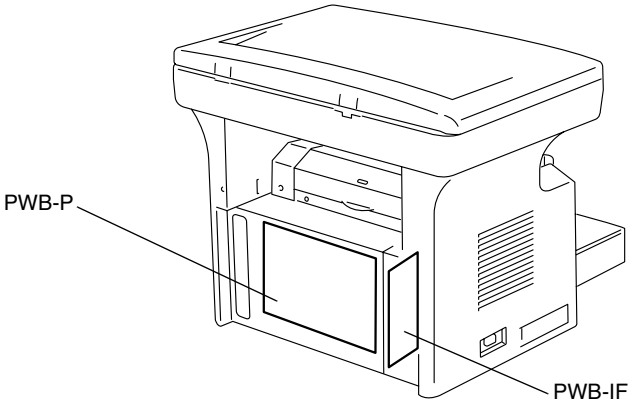
4980S001AA

No.	Key Name	Function
1	Printer key	Press to enter Printer mode.
2	Utility key	Press to enter Utility mode.
3	Error lamp	The indicator lights up if an error or malfunction occurs.
4	Display	Shows the number of copies to be made, the zoom ratio, and other settings.
5	No/C key	• Press to reset the number of copies to “1”. • Press to clear various settings. • Press to return to the previous screen. • Press to specify various settings.
6	Yes key	• Press to apply the specified setting. • Press to specify various settings.
7	10-Key Pad	Use to type in the number of copies to be made and any other numeric data.
8	Stop key	• Press to stop the print operation. • Press to stop the scan operation. • The indicator lights up in orange when the machine is paused or while copying.
9	Panel Reset key	Press to reset all copy functions to their default settings.
10	Start key	• Press to start a scanning operation. • Press to start a print operation. • Press to specify various settings.

No.	Key Name	Function
11	▲ / ▼ key	• Press to change the zoom ratio between ×0.50 and ×2.00 in ×0.01 increments. • Press to show the various settings and information. • Press to specify various settings.
12	Zoom key	Press to select a zoom ratio from the preset fixed ratios.
13	Paper key	Press to select the paper in the desired paper tray.
14	< / > key	• Press to adjust the image density. • Press to specify various settings.
15	Auto/Photo key	Press to change the image density mode.
16	Status key	Press to display each counter value.
17	Sort key	Press to select the “Sort” function.
18	2in1 key	Press to select the “2in1” copy function.

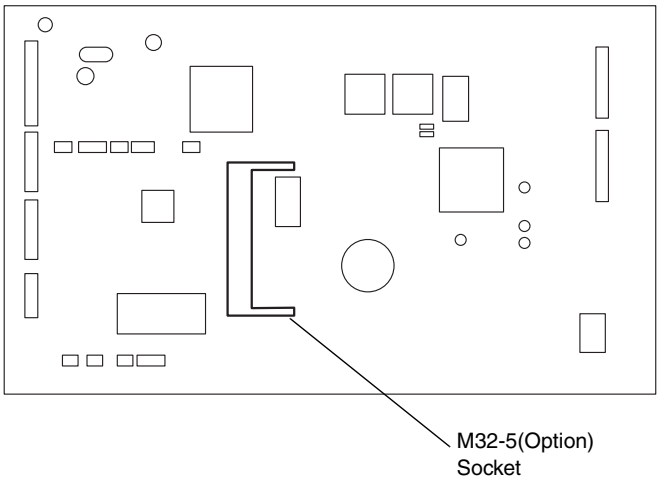
2. FUNCTIONS OF SWITCHES AND PARTS ON PWBs

2-1. Circuit Board Locations



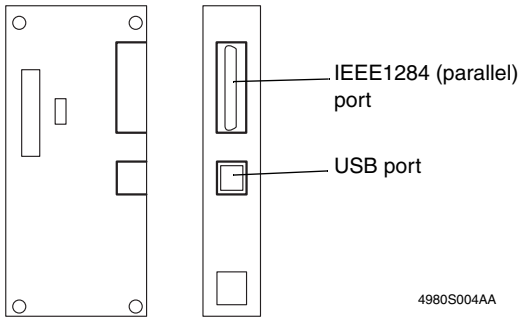
4980S002AA

2-2. PWB-P (Controller/Mechanical Control Board)



4980S003AB

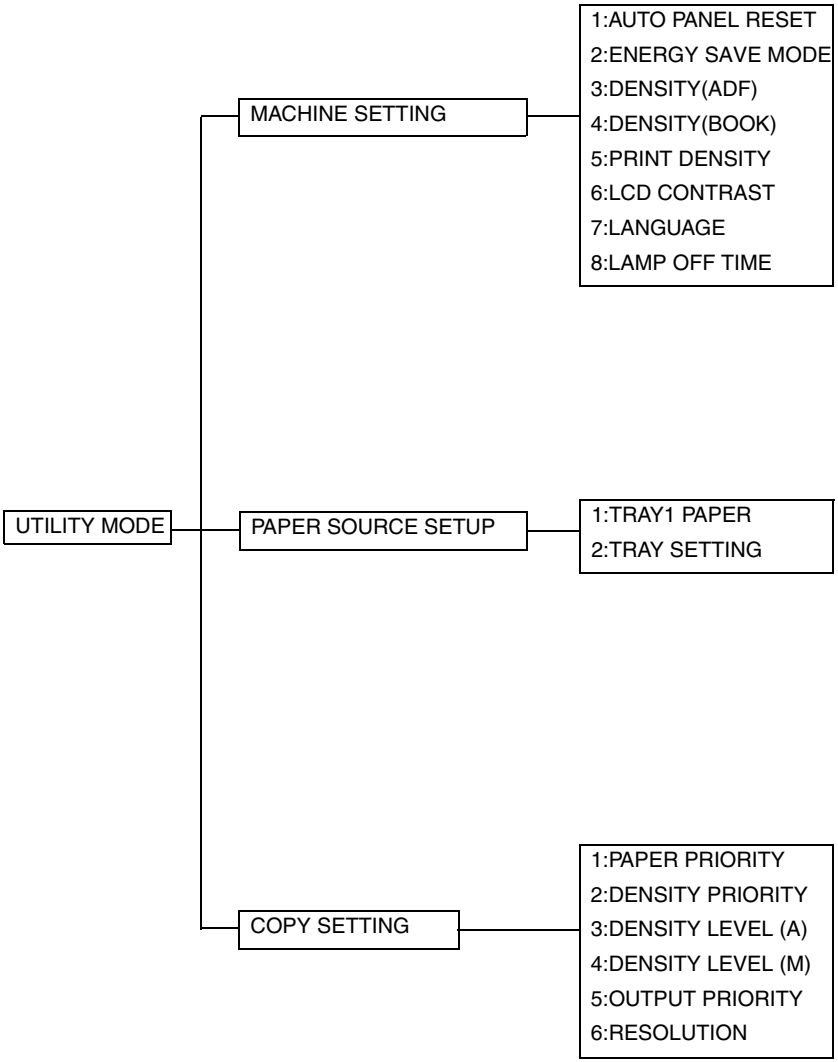
2-3. PWB-IF (Interface Board)



3. UTILITY MODE

- This mode is used to set various machine functions.

3-1. Utility Mode Function Tree



3-2. Utility Mode Setting Procedure

<Procedure>

1. Press the Utility key.
2. The first Utility mode screen appears.

<Exiting Procedure>

- Press the Panel Reset key.

<Changing the Settings for Utility Mode Functions>

1. Press the Zoom Select key, Density Select key or the 10-Key Pad to select the desired function.
2. Press the Zoom Select key, Density Select key or the 10-Key Pad to select the desired setting.
3. Press the Yes key to apply the setting.
4. To return to the previous screen, press the No/C key.

(1) Machine Setting

- Various settings for the machine's operating environment can be specified.

No.	Function	Purpose	Setting Details/Precautions
1	AUTO PANEL RESET	To specify the time until the auto panel reset operation is performed after a copy cycle has been completed or after the last key operation.	• The default setting is 1 minute. • OFF • ON: 0.5 **1** 2 3 4 5
2	ENERGY SAVE MODE	To specify the time until the machine enters Energy Save mode after a copy cycle has been completed or after the last key operation.	• The default setting is 15 minutes. The length of time can be set between 1 and 240 minutes.
3	DENSITY (ADF)	To specify the scanning density when using the Automatic Document Feeder. ***NOTE*** • *In order to reduce the appearance of spots in copies, the Automatic Document Feeder density level is set for lighter copies as a default.*	• The default setting is "MODE1". • **MODE 1**: For a lighter copy density in order to reduce the appearance of spots in copies • MODE 2: For printing copies with the same density as the document

No.	Function	Purpose	Setting Details/Precautions
4	DENSITY (BOOK)	To specify the scanning density when using the Original Glass.	• The default setting is "MODE1". • **MODE1:** For printing copies with the same density as the document • MODE2: For a lighter copy density in order to reduce the appearance of spots in copies
5	PRINT DENSITY	To specify the default print density.	• The default setting is "0". The setting range is -3 to +3.
6	LCD CONTRAST	To specify the brightness of the display.	• The default setting is "0". The setting range is -1 to +2.
7	LANGUAGE	To specify the language of screens.	• The default setting is "ENGLISH". • The language settings are divided into Type 1 and Type 2. The Type 1 languages are the standard. <Available Languages> Type1 **ENGLISH** GERMAN FRENCH ITALIAN DANISH DUTCH SPANISH NORWEGIAN SWEDISH FINNISH TURKISH PORTUGUESE Type2 **ENGLISH** GERMAN FRENCH CZECH HUNGARIAN POLISH ROMANIAN LITHUANIAN SLOVAKIAN
8	LAMP OFF TIME	To specify the time until the Exposure Lamp goes off.	• The default setting is "MODE1". • **MODE1:** When four hours have passed since the last operation was performed • MODE2: When the machine enters Energy Save mode

(2) Paper Source Setting

- Various settings for the paper tray can be specified.

No.	Function	Purpose	Setting Details/Precautions
1	TRAY1 PAPER	To specify the type and size of paper loaded into Tray1.	• The default settings are "PLAIN" in addition to "A4 L" or "LT". <Procedure> 1. Select the paper type. **PLAIN** OHP CARD ENVELOPE 2. Select the paper size. A5 B5 A4 FLS 16K HL LT LG ***NOTE*** *If "OHP" is selected as the paper type, only "A4" and "LT" are available as paper sizes.* 3. To specify a custom paper size, type in the size.
2	TRAY SETTING	To specify whether or not auto tray switching is enabled for each paper tray.	• The default setting is "CONTINUOUS". FIXED **CONTINUOUS**

(3) Copy Setting

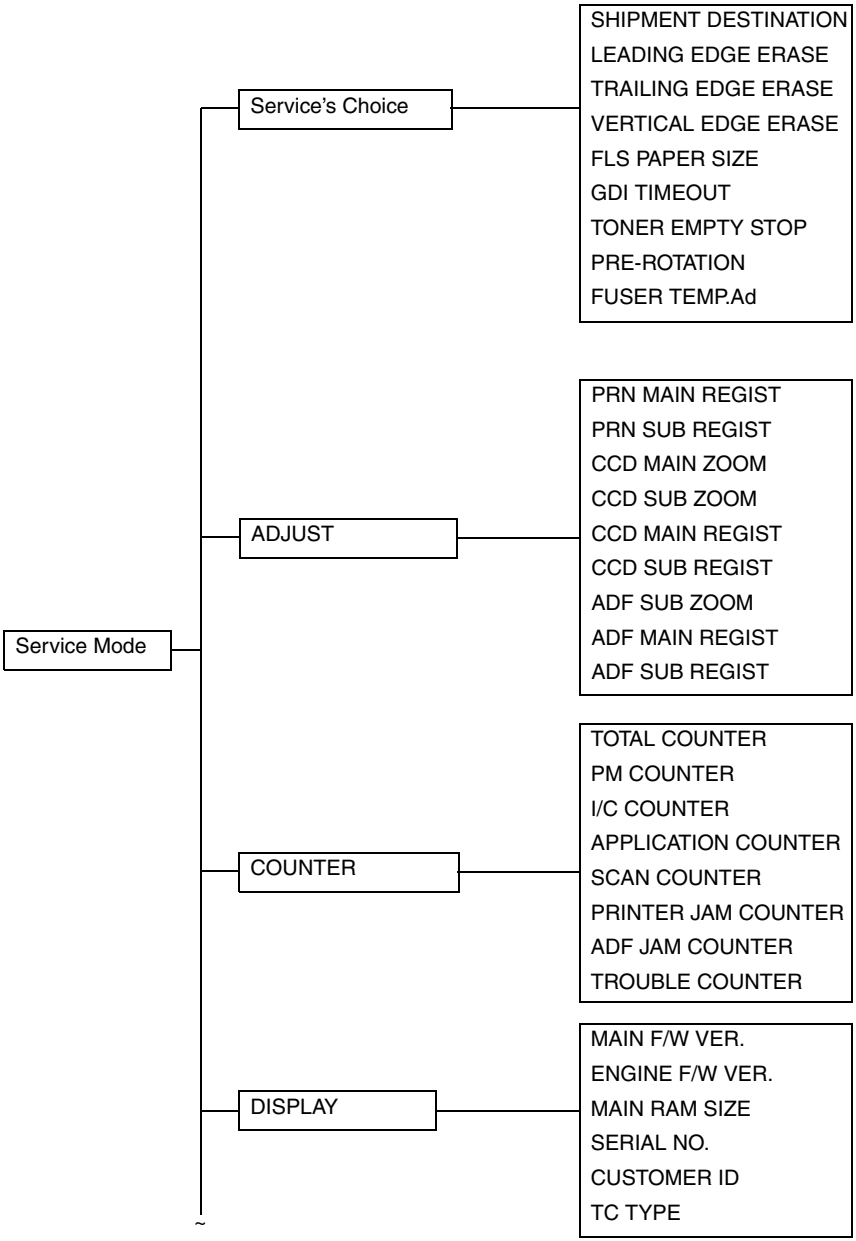
- The default settings for each copy function can be specified.

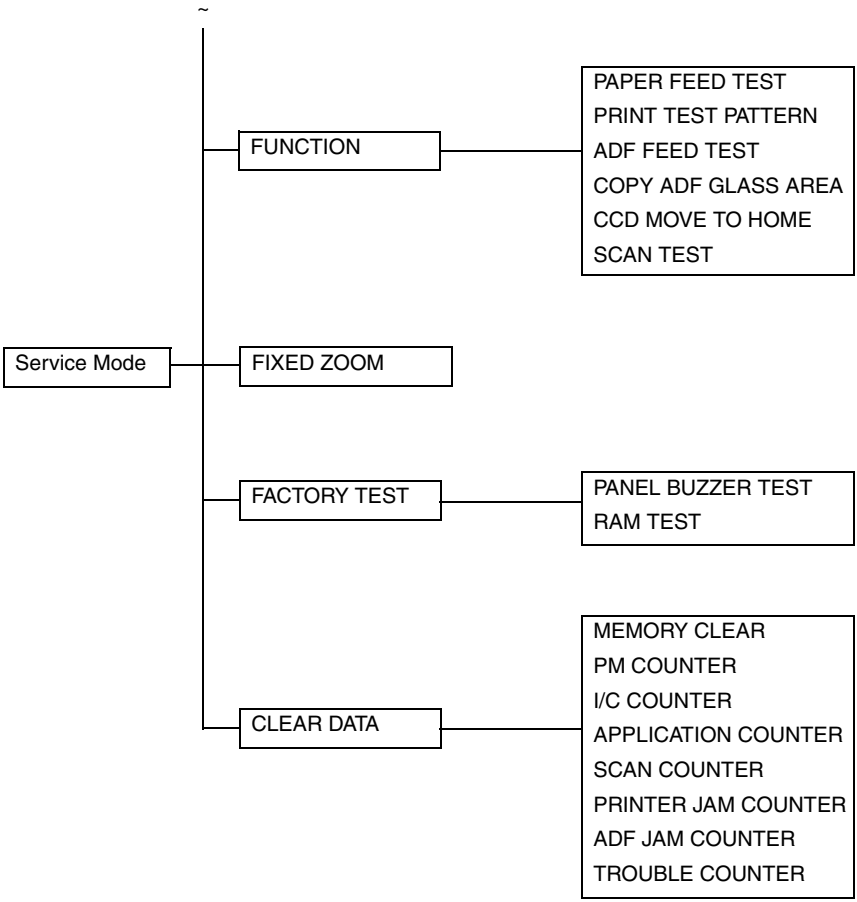
No.	Function	Purpose	Setting Details/Precautions
1	PAPER PRIORITY	To specify the paper tray that is given priority.	• The default setting is "TRAY1". **TRAY1** TRAY2
2	DENSITY PRIORITY	To specify the image density setting that is selected when the machine is turned on or the Panel Reset key is pressed.	• The default setting is "AUTO". **AUTO** MANUAL PHOTO
3	DENSITY LEVEL (A)	To specify the default density level when the Auto setting is selected.	• The default setting is "NORMAL (0)". The setting range is -1 to +1.
4	DENSITY LEVEL (M)	To specify the default density level when manually setting the image density.	• The default setting is "NORMAL (0)". The setting range is -4 to +4.
5	OUTPUT PRIORITY	To specify the default finishing setting.	• The default setting is "NON". **NON** SORT
6	RESOLUTION	To specify the scanning resolution.	The default setting is "600 × 300". **600×300** 600×600

4. SERVICE MODE

- This mode is used to check, specify, adjust and register service functions.

4-1. Service Mode Function Tree




~
Service Mode
FUNCTION
PAPER FEED TEST
PRINT TEST PATTERN
ADF FEED TEST
COPY ADF GLASS AREA
CCD MOVE TO HOME
SCAN TEST
FIXED ZOOM
FACTORY TEST
PANEL BUZZER TEST
RAM TEST
CLEAR DATA
MEMORY CLEAR
PM COUNTER
I/C COUNTER
APPLICATION COUNTER
SCAN COUNTER
PRINTER JAM COUNTER
ADF JAM COUNTER
TROUBLE COUNTER

4-2. Service Mode Setting Procedure

NOTE

- *Be sure to keep the access procedure for the Service mode from any unauthorized persons not involved with service operations.*

<Procedure>

1. Press the Utility key.
2. Press the following keys in order to enter the Service mode.
   Stop → 0 → 0 → Stop → 0 → 1
3. The first Service mode screen appears.

<Exiting Procedure>

- Press the Panel Reset key.

<Changing the Settings for Service Mode Functions>

1. Press the Zoom Select key to select the desired function.
2. Press the Zoom Select key, Density Select key or the 10-Key Pad to select the desired setting.
3. Press the Yes key to apply the setting.
4. To return to the previous screen, press the No/C key.

NOTE

- *In order for the settings for the Service mode functions to be changed, the machine must be turned off, then on again.*

4-3. Service Mode Functions

(1) Service's Choice

- Various machine service functions can be specified.

Function	Purpose	Setting Details/Precautions
SHIPMENT DESTINATION	To switch the fixed zoom ratios and paper sizes according to the selected marketing area.	• The default setting is either "METRIC" or "INCH". METRIC INCH
LEADING EDGE ERASE	To change the laser emission timing to adjust the width of the image area that is erased at the leading edge. ✻ When the PH unit has been replaced	• The default setting is "4mm". 0mm 1mm 2mm 3mm **4mm** 5mm
TRAILING EDGE ERASE	To change the laser emission timing to adjust the width of the image area that is erased at the trailing edge. ✻ When the PH unit has been replaced	• The default setting is "4mm". 0mm 1mm 2mm 3mm **4mm** 5mm
VERTICAL EDGE ERASE	To change the laser emission timing to adjust the width of the image area that is erased on both sides (CD direction). ✻ When the PH unit has been replaced	Select the value for the width erased in the CD direction. (The default setting is "4mm".) 0mm 1mm 2mm 3mm **4mm** 5mm
FLS PAPER SIZE	To specify the paper size for foolscap. ✻ When the FLS paper size has been changed ✻ Upon setup	• The default setting is "330∗210". 330∗203 **330∗210** 330∗216 337∗206
GDI TIMEOUT	To specify the time for GDI timeout	• The default setting is "6" (60 seconds). 0 (5sec.) 1 (10sec.) 2 (20sec.) 3 (30sec.) 4 (40sec.) 5 (50sec.) **6 (60sec.)**
TONER EMPTY STOP	To select if copy operations are stopped when the toner becomes empty.	• The default setting is "ON". **ON** OFF • If "OFF" is selected, operations are not stopped when the toner becomes empty.

Function	Purpose	Setting Details/Precautions
PRE-ROTATION	To select if the pre-rotation operation for the Fusing Roller is performed when the Start key is pressed.	• The default setting is “OFF”. **ON** OFF • If “OFF” is selected, the length of time until the first copy can be printed is shorter.
FUSER TEMP.Ad	To specify the fusing temperature when using plain paper (more than 186 mm). ✻ When a fusing failure has occurred	• The default setting is “0”. **0(Standard)** 1(Higher)

(2) Adjust

Function		Purpose	Setting Details/Precautions
PRN MAIN REGIST	TEST COPY	To vary and adjust the print start position in the main scanning direction. ✻ If the image on the copy deviates in the CD direction ✻ When the PH unit has been replaced	Press the Start key to begin printing the test page.
	ADJUST		The setting range is 60 to 140. (1 increment = 0.1 mm)
PRN SUB REGIST	TEST COPY	To vary and adjust the print start position in the sub-scanning direction. ✻ If the image on the copy deviates in the FD direction ✻ When the PH unit has been replaced	Press the Start key to begin printing the test page.
	ADJUST		The setting range is 87 to 113. (1 increment = 0.46 mm)
CCD MAIN ZOOM	TEST COPY	To adjust for variations in the accuracy of IR parts and their mounting accuracy by varying the scanning zoom ratio in the main scanning direction. ✻ When the Timing Belt has been replaced ✻ When the Scanner Assy. has been replaced	Press the Start key to begin printing the test page.
	ADJUST		The setting range is 95 to 105. (1 increment = 0.4%)
CCD SUB ZOOM	TEST COPY	To adjust for variations in the accuracy of IR parts and their mounting accuracy by varying the scanning zoom ratio in the sub-scanning direction. ✻ When the Scanner Assy. has been replaced	Press the Start key to begin printing the test page.
	ADJUST		The setting range is 95 to 105. (1 increment = 0.4%)
CCD MAIN REGIST	TEST COPY	To adjust for variations in the accuracy of IR parts and their mounting accuracy by varying the scanning start position in the main scanning direction. ✻ When the Upper Cover Assy. (Original Glass) has been replaced ✻ When the Scanner Assy. has been replaced	Press the Start key to begin printing the test page.
	ADJUST		The setting range is 90 to 110. (1 increment = 0.5 mm)

Function		Purpose	Setting Details/Precautions
CCD SUB REGIST	TEST COPY	To adjust for variations in the accuracy of IR parts and their mounting accuracy by varying the scanning start position in the sub-scanning direction. ✻ When the Upper Cover Assy. (Original Glass) has been replaced ✻ When the Scanner Assy. has been replaced	Press the Start key to begin printing the test page.
	ADJUST		The setting range is 90 to 110. (1 increment = 0.5 mm)
ADF SUB ZOOM	TEST COPY	To adjust for variations in the accuracy of all parts and their mounting accuracy by varying the scanning zoom ratio in the sub-scanning direction when using the Automatic Document Feeder. ✻ When the Upper Cover Assy. (Original Glass) has been replaced	Press the Start key to begin printing the test page.
	ADJUST		The setting range is 95 to 105. (1 increment = 0.4%)
ADF MAIN REGIST	TEST COPY	To adjust for variations in the accuracy of all parts and their mounting accuracy by varying the scanning start position in the main scanning direction when using the Automatic Document Feeder. ✻ When the Upper Cover Assy. (Original Glass) has been replaced	Press the Start key to begin printing the test page.
	ADJUST		The setting range is 90 to 110. (1 increment = 0.5 mm)
ADF SUB REGIST	TEST COPY	To adjust for variations in the accuracy of all parts and their mounting accuracy by varying the scanning start position in the sub-scanning direction when using the Automatic Document Feeder. ✻ When the Upper Cover Assy. (Original Glass) has been replaced	Press the Start key to begin printing the test page.
	ADJUST		The setting range is 90 to 110. (1 increment = 0.5 mm)
SERIAL NO.		To specify the 8-digit serial number. • Once the serial number is specified, “SERIAL NO.” does not appear in the “ADJUST” menu.	–
CUSTOMER ID		To specify the customer ID. • Once the customer ID is specified, “CUSTOMER ID” does not appear in the “ADJUST” menu.	• The default setting is “0” (Develop). **0 (Develop)** 1 (OEM1) 2 (Generic)

<table>
<tr><th>Function</th><th>Purpose</th><th>Setting Details/Precautions</th></tr>
<tr><td>TC TYPE</td><td>To specify the type of Toner Cartridge that should be installed in the main unit.

• Once the type of Toner Cartridge is specified, “TC TYPE” on the “ADJUST” menu cannot be set again.

<Types of Toner Cartridges>
• ME: Toner Cartridge 101 A
• Others: Toner Cartridge 101 B
• MC: Toner Cartridge 101 C</td><td>• The default setting differs depending on the marketing area.

<table><tr><th>Toner Cartridge Type</th><th>Setting</th></tr><tr><td>(No Toner Cartridge)</td><td>0</td></tr><tr><td>(Not Used)</td><td>1</td></tr><tr><td>A</td><td>2</td></tr><tr><td>B</td><td>3</td></tr><tr><td>(Not Used)</td><td>4</td></tr><tr><td>C</td><td>5</td></tr><tr><td>(Not Used)</td><td>6</td></tr><tr><td>(Not Used)</td><td>7</td></tr><tr><td>(Not Used)</td><td>8</td></tr><tr><td>(Not Used)</td><td>9</td></tr><tr><td>(Not Used)</td><td>10</td></tr><tr><td>(Not Used)</td><td>11</td></tr></table></td></tr>
</table>

Precautions for making test copies with functions from the “ADJUST” menu

- The test pattern should be positioned vertically.
- Use paper loaded into Tray1 to make the test copy.

(3) Counter

- The counter values can be displayed.

Function	Purpose	Setting Details/Precautions
TOTAL COUNTER	To display the total number of pages used.	COPY: Number of copies printed PRINT: Number of computer printouts printed • Test prints made in Service mode to check the operation are not counted.
PM COUNTER	To display the number of times that PM parts are used.	• To clear the counter data, use the functions on the "CLEAR DATA" menu of Service mode.
I/C COUNTER	To display the total number of times that the Drum Cartridge has been used.	• To clear the counter data, use the functions on the "CLEAR DATA" menu of Service mode.
APPLICATION COUNTER	To display the number of pages used with each application.	COPY PRINT: Number of copies printed FAX RX PRINT: (Not Used) REPORT PRINT: (Not Used) PC PRINT: Number of computer printouts printed FAX TX PAGE: (Not Used) MAIL TX PAGE: (Not Used) • To clear the counter data, use the functions on the "CLEAR DATA" menu of Service mode.
SCAN COUNTER	To display the number of scans made.	MONOCHROME: Number of monochrome scans COLOR: Number of color scans • Scans made while making copies are not counted. • To clear the counter data, use the functions on the "CLEAR DATA" menu of Service mode.
PRINTER JAM COUNTER	To display the number of misfeeds that occurred while printing.	• To clear the counter data, use the functions on the "CLEAR DATA" menu of Service mode.

Function	Purpose	Setting Details/Precautions
ADF JAM COUNTER	To display the number of misfeeds that occurred while using the Automatic Document Feeder.	• To clear the counter data, use the functions on the "CLEAR DATA" menu of Service mode.
TROUBLE COUNTER	To display the number of times each error was detected.	C0045:Fuser fan error C0210:Transfer voltage error C0500:Fuser Warm up error C0510:Fuser temperature low C0520:Fuser overheat C0650:Home sensor error / Scanner motor error C1200:ASIC memory abnormal C1300:Polygon mirror motor error C133B:Communication with option error C133C:Modem error C133D:ROM checksum error C13F0:Laser error C1468:EEPROM error C14A3:IR lamp malfunction • To clear the counter data, use the functions on the "CLEAR DATA" menu of Service mode.

NOTE

The following counters continue counting even while operations are performed in Service mode.

- *PM COUNTER*
- *IC COUNTER*
- *PRINTER JAM COUNTER*
- *ADF JAM COUNTER*
- *TROUBLE COUNTER*

(4) Display

- Various information can be displayed.

Function	Purpose	Setting Details/Precautions
MAIN F/W VER.	To display the version of the main firmware.	
ENGINE F/W VER.	To display the version of the engine firmware.	
MAIN RAM SIZE	To display the size of the main memory.	
SERIAL NO.	To display the serial number of the main unit.	
CUSTOMER ID	To display the customer ID for the main unit.	
TC TYPE	To display the type of Toner Cartridge that should be installed in the main unit.	

(5) Function

- The service functions (paper feed test and image printing) can be checked and adjusted.

Function		Purpose	Setting Details/Precautions
PAPER FEED TEST		To check the paper feeding in the paper take-up/transport sections without printing on the paper. ✻ When a paper misfeed occurs	<Procedure> 1. Select the paper tray. 2. Press the Start key to begin testing paper feeding. 3. Press the Stop key to stop testing paper feeding.
PRINT TEST PATTERN	TEST PATTERN 1	To print the test pattern for adjusting the image. ✻ If there is tilt or when registration or zoom ratio adjustments are performed	<Procedure> 1. Select the paper tray. 2. Select the test pattern type. 3. Press the Start key to print the test pattern.
	TEST PATTERN 2	To print the test pattern for halftones and gradations. ✻ When checking density and pitch irregularities ✻ When checking reproducibility of gradations	<Procedure> 1. Select the paper tray. 2. Select the test pattern type. 3. Press the Start key to print the test pattern.
ADF FEED TEST		To check the paper feeding in the paper take-up/transport sections in the Automatic Document Feeder. ✻ When a document misfeed occurs	<Procedure> 1. Load paper into the Automatic Document Feeder. 2. Press the Start key to begin testing paper feeding. 3. Press the Stop key to stop testing paper feeding.

Function	Purpose	Setting Details/Precautions
COPY ADF GLASS AREA	To check for dirt in the scanning section of the Automatic Document Feeder. ✻ If spots appear in the copies	<Procedure> 1. Load A4 L or Letter L paper into Tray1. 2. Press the Start key to start the “COPY ADF GLASS AREA” function. 3. Two copy samples are fed out. 4. Check that no spots appear in the copy samples. 5. Press the Stop key to stop the “COPY ADF GLASS AREA” function.
CCD MOVE TO HOME	To move the scanner to its home position in order to secure the scanner. ✻ When transporting the machine	***NOTE*** • *When transporting the machine, be sure to move the scanner to its home position and secure it with the stopper at the bottom left of the IR.*
SCAN TEST	To check the lighting of the Exposure Lamp and the movement of the scanner. ✻ If the scanner malfunctions	<Procedure> 1. Press the Start key to begin the scanner test. 2. Press the Stop key to stop the scanner test.

(6) Fixed Zoom Change

- The fixed zoom ratios can be changed.

<Procedure>

1. Select the fixed zoom ratio that you wish to change.
2. Use the 10-Key Pad to type in the desired fixed zoom ratio.

Default fixed zoom ratios and setting ranges according to marketing area

<Metric>

Setting Name	Initial fixed zoom ratio	Setting Range
Reduction 2	70%	51% to 70%
Reduction 1	81%	71% to 99%
Expansion 1	115%	101% to 140%
Expansion 2	141%	141% to 199%

<Inch>

Setting Name	Initial fixed zoom ratio	Setting Range
Reduction 2	64%	51% to 64%
Reduction 1	78%	65% to 99%
Expansion 1	129%	101% to 153%
Expansion 2	154%	154% to 199%

<OEM1 Inch>

Setting Name	Initial fixed zoom ratio	Setting Range
Reduction 2	64%	51% to 64%
Reduction 1	77%	65% to 99%
Expansion 1	129%	101% to 154%
Expansion 2	155%	155% to 199%

(7) Factory Test

- Operation tests can be performed during manufacturing.

Function	Purpose	Setting Details/Precautions
PANEL BUZZER TEST	To check the operation of the display and all indicators and buttons.	
RAM TEST	To test reading and writing of the memory.	

(8) Clear Data

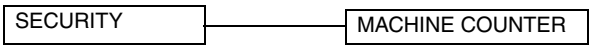
- Each type of data can be cleared.

Function	Purpose	Setting Details/Precautions
MEMORY CLEAR	To clear the settings for the functions listed at the right and return the functions to their default settings.	• All functions of the Utility mode • All functions in the "Services Choice" menu of the Service mode • All functions in the "ADJUST" menu of the Service mode (except "SERIAL NO.", "CUSTOMER ID" and "TC TYPE") • All "FIXED ZOOM" settings in the Service mode • All Security mode settings in the Service mode ***NOTE*** • *After the "MEMORY CLEAR" function is performed, turn the machine off, then on again.*
PM COUNTER	To clear the PM COUNTER value.	
I/C COUNTER	To clear the I/C COUNTER value.	
APPLICATION COUNTER	To clear the APPLICATION COUNTER value.	
SCAN COUNTER	To clear the SCAN COUNTER value.	
PRINTER JAM COUNTER	To clear the PRINTER JAM COUNTER value.	
ADF JAM COUNTER	To clear the ADF JAM COUNTER value.	
TROUBLE COUNTER	To clear the TROUBLE COUNTER value.	

5. SECURITY MODE

- This mode is used to set various security functions.

5-1. Security Mode Function Tree



5-2. Security Mode Setting Procedure

NOTE

- *Be sure to keep the access procedure for the Security mode from any unauthorized persons not involved with service operations.*

<Procedure>

1. Display the Service mode screen.

☞ S-11

2. Press the Stop key, then the 9 key.
3. The Security mode screen appears.

<Exiting Procedure>

- Press the Panel Reset key.

(1) Security

Function	Purpose	Setting Details/Precautions
MACHINE COUNTER	To enable or disable copying depending on whether or not the Mechanical Counter is installed.	• The default setting is "ENABLE". **ENABLE** DISABLE ***NOTE*** • *If "ENABLE" is selected, copying is possible even if the Mechanical Counter is not installed.*

TROUBLESHOOTING

1. INTRODUCTION

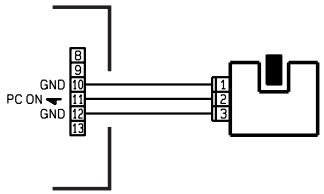
- This chapter contains the items required or used when troubleshooting various printer problems.

1-1. Electric Components Check Procedures

- The following procedures can be used to check to see if an electric component is fully operational when a paper misfeed or a malfunction occurs in the printer.

(1) Sensors

Step	Check	Result	Action
1	Does the input signal to the Controller/Mechanical Control Board go from HIGH to LOW, or vice versa, when the sensor is blocked?	NO	Replace the sensor.
		YES	Replace the Controller/Mechanical Control Board.



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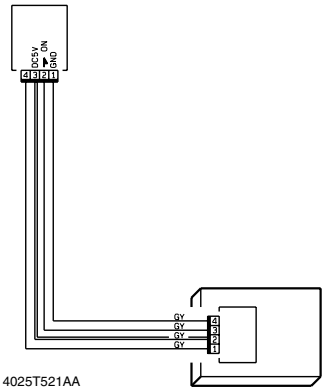

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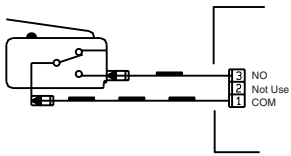
(2) Switches

Step	Check	Result	Action
1	Does the input signal (NO) to the Controller/Mechanical Control Board go from LOW to HIGH when the switch is actuated?	NO	Replace the switch.
		YES	Replace the Controller/Mechanical Control Board.



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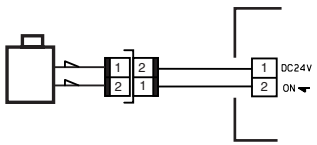
(3) Solenoids

Step	Check	Result	Action
1	Does the output signal from the Controller/Mechanical Control Board go from HIGH to LOW when the solenoid is energized?	NO	Replace the Controller/Mechanical Control Board.
		YES	Replace the solenoid.



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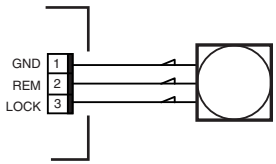
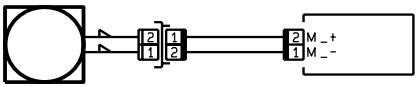
(4) Motors

Step	Check	Result	Action
1	Is the LOCK signal of the Controller/Mechanical Control Board HIGH when the printer is in the standby state?	NO	Replace the Controller/Mechanical Control Board. Replace the motor.
2	Does the REM signal of the Controller/Mechanical Control Board go from HIGH to LOW when the motor is energized?	YES	Replace the motor.
		NO	Replace the Controller/Mechanical Control Board.



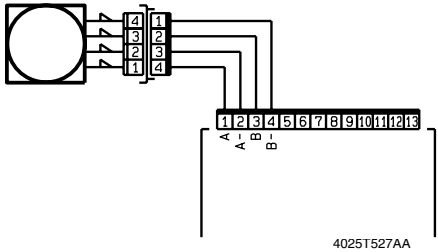
4025T526AA

Step	Check	Result	Action
1	Does the input signal to the Controller/Mechanical Control Board go from HIGH to LOW when the motor is energized? (The input signal varies depending on the direction of rotation.)	YES	Replace the motor.
		NO	Replace the Controller/Mechanical Control Board.



4025T525AA

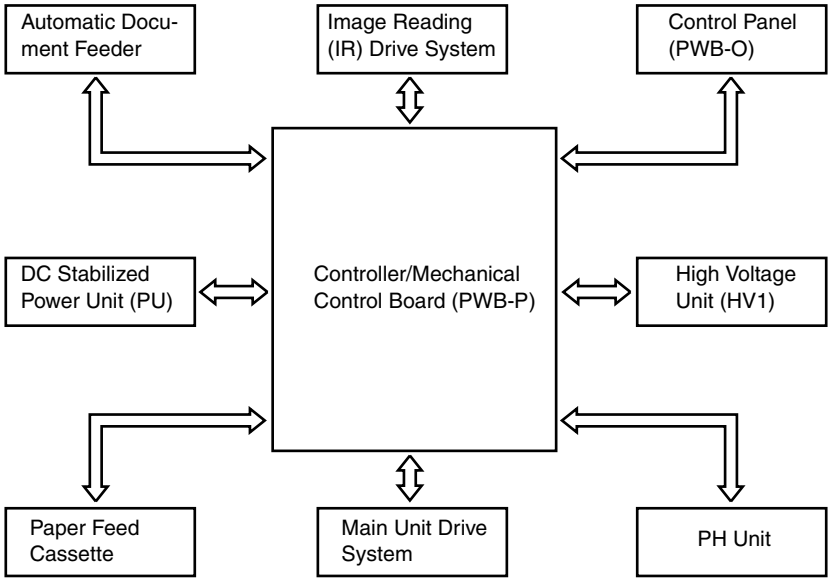
Step	Check	Result	Action
1	Are the hookup connector of the motor and print jack on the Controller/Mechanical Control Board connected properly?	YES	Replace the motor or the Controller/ Mechanical Control Board.
		NO	Connect the connector or the print jack properly.



4025T527AA

1-2. Overall Control Configuration

- Understanding the overall control configuration will help perform the troubleshooting procedures for paper misfeeds, malfunctions, and image problems.



2. PAPER MISFEED

2-1. Initial Check Items

- When a paper misfeed occurs in the printer, first make the following initial checks.

Check	Action
Does the paper meet product specifications?	Replace paper.
Is the paper curled, wavy, or damp?	Replace paper. Instruct user in correct paper storage.
Is the paper transport path deformed, dirty, or obstructed with foreign matter?	Clean the paper path and replace if necessary.
Are the Paper Separator Fingers dirty, deformed, or worn?	Replace Fusing Unit.
Is the roller dirty, deformed, or worn?	Clean the roller and replace if necessary.
Are Edge Guides at correct position to accommodate paper?	Slide the Edge Guides up against the edges of the paper stack.
Does the actuator operate correctly when checked?	Correct or replace the actuator.

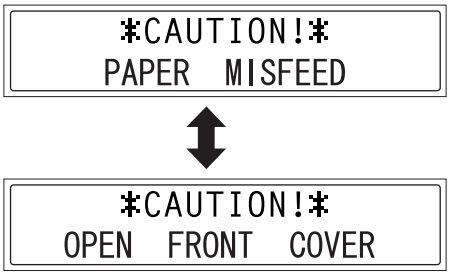
Precautions for Clearing Misfeed

- *Reset the misfeed condition by opening and closing the Front Door after the misfeed has been cleared.*

2-2. Paper Misfeed Displays

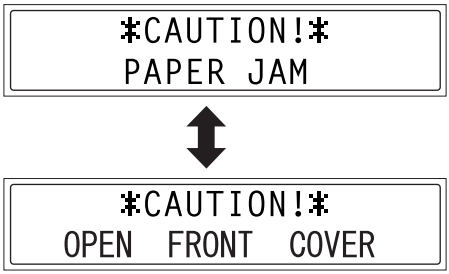
- The Error indicator lights up and a message appears in the display when a paper misfeed occurs.

<Paper Take-Up Section Misfeed>



4980P555DA

<Transport Section Misfeed>

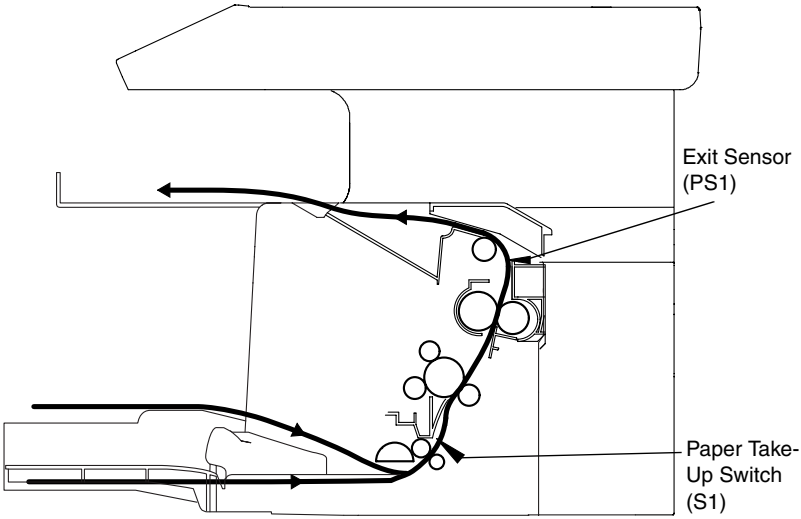


4980P502DA

<Procedure for cancelling the misfeed display>

1. Open the appropriate covers, remove the misfed paper and any remaining paper, and then close the covers.
2. Open, then close the Front Door.

2-3. Locations of Misfeed Detection Sensors



4980M005AA

2-4. Misfeed Detection Timing and Troubleshooting Procedures

(1) Paper Take-Up/Transport Misfeed

<Detection Timing>

Type	Description
MP tray Pick-up Jam	The Paper Take-Up Switch does not turn on after the predetermined period of time has elapsed after paper take-up began.
2nd tray Pick-up Jam	
Bypass tray Pick-up Jam	
Separator Jam	The Exit Sensor is not blocked after the predetermined period of time has elapsed after the Paper Take-Up Switch is turned on. The Paper Take-Up Switch is not turned off after the predetermined period of time has elapsed after the Paper Take-Up Switch is turned on.

<Troubleshooting Procedures>

Relevant Electrical Parts	
Paper Take-Up Switch (S1) Exit Sensor (PS1) Paper Take-Up Solenoid (SL1)	Controller/Mechanical Control Board (PWB-P)

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Initial checks	☞ T-6	–	–
2	SL1 solenoid check	☞ T-2	PWB-P MPJ3P-2	I-6 to 7
3	S1 switch check	☞ T-2	PWB-P MPJ10P-2	G-8 to 9
4	PS1 sensor check	☞ T-1	PWB-P MPJ8P-3	E to F-7 to 8
5	Replace PWB-P.	–	–	–

(2) Fusing/Exit Misfeed

<Detection Timing>

Type	Description
Fuser Jam	The Exit Sensor is not unblocked after the predetermined period of time has elapsed after the Paper Take-Up Switch is turned on.
Remains paper Jam 1	If all of the following conditions are met • The Front Door or Exit Cover is opened, then closed. (Or the machine is turned on.) • The Paper Take-Up Switch is turned on or the Exit Sensor is blocked.
Remains paper Jam 2	
Paper exit jam	The Exit Sensor is unblocked slower than the predetermined period of time after the Paper Take-Up Switch is turned on.

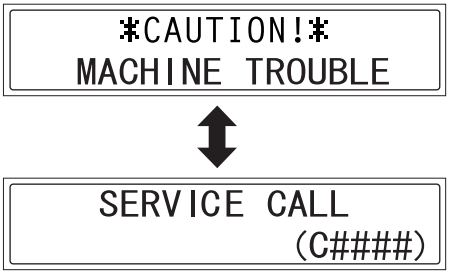
<Troubleshooting Procedures>

Relevant Electric Parts	
Paper Take-Up Switch (S1) Exit Sensor (PS1)	Controller/Mechanical Control Board (PWB-P)

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Initial check items	☞ T-6	–	–
2	S1 switch check	☞ T-2	PWB-P MPJ10P-2	G-8 to 9
3	PS1 sensor check	☞ T-1	PWB-P MPJ8P-3	E to F-7 to 8
4	Replace PWB-P.	–	–	–

3. MALFUNCTIONS/WARNING

- The CPU performs a self-diagnosis on the condition of the unit, and if a malfunction is detected, the warning appears alternately with the error code in the display.



4980P550DA

<Procedure for cancelling a malfunction display>

- Cancel the malfunction display by turning the machine off, then on again.

3-1. List of Malfunctions

Malfunction Code	Malfunction Name	Description
C0045	Fuser fan motor error	• The LOCK signal remains HIGH or LOW continuously for a predetermined period of time while the Cooling Fan Motor remains energized.
C0210	H. V. abnormal	• The Drum Charge Monitor Voltage (HVC_MON) signal falls outside a predetermined range at any time after the lapse of a predetermined period of time after the Power Switch has been turned ON. • The Image Transfer Voltage Monitor signal (T_MON_V) and Image Transfer Current Monitor signal (T_MON_I) fall outside a corresponding predetermined range.

Malfunction Code	Malfunction Name	Description
C0500	Fuser warm up error	• The voltage of the Thermistor remains low for a predetermined period of time when a warm-up cycle is started. • The temperature detected by the Thermistor remains lower than a reference value for a predetermined period of time for the period of time that begins 5 sec. after, and ends 9 sec. after, the start of the warm-up cycle (where the temperature detected by the Thermistor is 80 °C or less). • The temperature detected by the Thermistor does not increase for a 3-sec. period or more for the period of time that begins after the lapse of a predetermined period of time after the Fusing Roller Heater Lamp has been turned ON and ends when the lamp is turned OFF. • The Fusing Roller Heater Lamp remains ON for a 30-sec. period or more (except during the period through which the Main Motor remains energized).
C0510	Fuser temperature low	• The temperature detected by the Thermistor remains lower than the set temperature continuously for a predetermined period of time while the fusing temperature control is being provided. (The set temperatures are as follows: 140 °C during a print mode at 600 dpi; 70 °C during the standby mode.)
C0520	Fuser overheat	• The temperature detected by the Thermistor remains higher than 235 °C for a predetermined period of time while the fusing temperature control is being provided.
C0650	Scanner home sensor error	• The Scanner Home Position Sensor is not detected within the predetermined period of time after the Scanner Motor has started turning.
C1200	ASIC memory abnormal	• An error occurred while writing to or reading the SRAM on the Control Board (PWB-C).
C1300	Polygon mirror motor error	• The LOCK signal is not detected within a predetermined period of time that begins 1 sec. after the Polygon Motor has been energized. • No new LOCK signal is detected for a 1-sec. period that begins 1.5 sec. after the first LOCK signal was detected. • The LOCK signal is not detected for a continuous 0.5-sec. period in a state in which the Polygon Motor runs stably. • The LOCK signal remains ON for a continuous 5-sec. period or more when the Polygon Motor remains deenergized.
C133B	Communication with option error	• Communication could not be established with the Controller Control Board within 5 seconds while printing.

Malfunction Code	Malfunction Name	Description
C133D	ROM checksum error	• A malfunction occurred in the ROM.
C13F0	Laser error	• The laser output exceeds the upper limit value. • The laser output remains lower than the lower limit value.
C1468	EEPROM error	• An EEPROM not written with initial data was detected.
C14A3	IR lamp malfunction	• The luminosity level of the Exposure Lamp is not stabilized within the predetermined period of time.

3-2. Malfunction Detection Timing and Troubleshooting Procedures

(1) C0045: Fuser fan motor error

<Detection Timing>

Description
• The LOCK signal remains HIGH or LOW continuously for a predetermined period of time while the Cooling Fan Motor remains energized.

<Troubleshooting Procedures>

Relevant Electric Parts	
Cooling Fan Motor (M2)	Controller/Mechanical Control Board (PWB-P) Power Unit (PU1)

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Check the Motor connectors for connection and correct as necessary.	–	–	–
2	Check the fan for possible overload and correct as necessary.	–	–	–
3	M2 operation check	☞ T-3	PWB-P MPJ13P-1 to 3 (pulse)	G to H-5 to 6
4	M3 operation check	☞ T-3	PWB-P MPJ6P-1 to 3 (pulse)	E-9 to 10
5	Replace PWB-P.	–	–	–

(2) C0210: H.V. abnormal

<Detection Timing>

Description
• The Drum Charge Monitor Voltage (HVC_MON) signal falls outside a predetermined range at any time after the lapse of a predetermined period of time after the Power Switch has been turned ON. • The Image Transfer Voltage Monitor signal (T_MON_V) and Image Transfer Current Monitor signal (T_MON_I) fall outside a corresponding predetermined range.

<Troubleshooting Procedures>

Relevant Electric Parts	
Fusing Unit	Controller/Mechanical Control Board (PWB-P)

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Replace Fusing Unit.	–	–	–
2	Replace PWB-P.	–	–	–

(3) C0500: Fuser warm up error

<Detection Timing>

Description
• The voltage of the Thermistor remains low for a predetermined period of time when a warm-up cycle is started. • The temperature detected by the Thermistor remains lower than a reference value for a predetermined period of time for the period of time that begins 5 sec. after, and ends 9 sec. after, the start of the warm-up cycle (where the temperature detected by the Thermistor is 80 °C or less). • The temperature detected by the Thermistor does not increase for a 3-sec. period or more for the period of time that begins after the lapse of a predetermined period of time after the Fusing Roller Heater Lamp has been turned ON and ends when the lamp is turned OFF. • The Fusing Roller Heater Lamp remains ON for a 30-sec. period or more (except during the period through which the Main Motor remains energized).

<Troubleshooting Procedures>

Relevant Electric Parts	
Fusing Unit Thermistor (TH1) Fusing Roller Heater Lamp (H1)	Controller/Mechanical Control Board (PWB-P) Thermostat (TS1) Power Unit (PU1)

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Replace Thermistor (TH1).	–	–	–
2	Replace Fusing Roller Heater Lamp (H1).	–	–	–
3	Replace Thermostat (TS1).	–	–	–
4	Replace Fusing Unit.	–	–	–
5	Replace Controller/Mechanical Control Board (PWB-P).	–	–	–
6	Replace Power Unit (PU1).	–	–	–

(4) C0510: Fuser temperature low

<Detection Timing>

Description
• The temperature detected by the Thermistor remains lower than the set temperature continuously for a predetermined period of time while the fusing temperature control is being provided. (The set temperatures are as follows: 140 °C during a print mode at 600 dpi; 70 °C during the standby mode.)

<Troubleshooting Procedures>

Relevant Electric Parts	
Fusing Unit Thermistor (TH1) Fusing Roller Heater Lamp (H1)	Controller/Mechanical Control Board (PWB-P) Thermostat (TS1) Power Unit (PU1)

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Replace Thermistor (TH1).	–	–	–
2	Replace Fusing Roller Heater Lamp (H1).	–	–	–
3	Replace Thermostat (TS1).	–	–	–
4	Replace Fusing Unit.	–	–	–
5	Replace Controller/Mechanical Control Board (PWB-P).	–	–	–
6	Replace Power Unit (PU1).	–	–	–

(5) C0520: Fuser overheat

<Detection Timing>

Description
• The temperature detected by the Thermistor remains higher than 235 °C for a predetermined period of time while the fusing temperature control is being provided.

<Troubleshooting Procedures>

Relevant Electric Parts	
Fusing Unit Thermistor (TH1) Fusing Roller Heater Lamp (H1)	Controller/Mechanical Control Board (PWB-P) Thermostat (TS1) Power Unit (PU1)

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Replace Thermistor (TH1).	–	–	–
2	Replace Fusing Roller Heater Lamp (H1).	–	–	–
3	Replace Thermostat (TS1).	–	–	–
4	Replace Fusing Unit.	–	–	–
5	Replace Controller/Mechanical Control Board (PWB-P).	–	–	–
6	Replace Power Unit (PU1).	–	–	–

(6) C0650: Scanner home sensor error

<Detection Timing>

Description
• The Scanner Home Position Sensor is not detected within the predetermined period of time after the Scanner Motor has started turning.

<Troubleshooting Procedures>

Relevant Electrical Components	
Scanner Motor (M4)	Controller/Mechanical Control Board (PWB-P)

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	M4 operation check	☞ T-3	–	–
2	Replace PWB-P.	–	–	–

(7) C1200: ASIC memory abnormal

<Detection Timing>

Description
• An error occurred while writing to or reading the SRAM on the Control Board (PWB-C).

<Troubleshooting Procedures>

Relevant Electrical Components	
Controller/Mechanical Control Board (PWB-P)	

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Turn the copier off, then on again.	–	–	–
2	Check the connection of the memory on the PWB-P, and then correct it if necessary.	–	–	–
6	Replace PWB-P.	–	–	–

(8) C1300: Polygon mirror motor error

<Detection Timing>

Description
• The LOCK signal is not detected within a predetermined period of time that begins 1 sec. after the Polygon Motor has been energized. • No new LOCK signal is detected for a 1-sec. period that begins 1.5 sec. after the first LOCK signal was detected. • The LOCK signal is not detected for a continuous 0.5-sec. period in a state in which the Polygon Motor runs stably. • The LOCK signal remains ON for a continuous 5-sec. period or more when the Polygon Motor remains deenergized.

<Troubleshooting Procedures>

Relevant Electric Parts	
PH Unit Flat cable	Controller/Mechanical Control Board (PWB-P)

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Check cables for connection and correct as necessary.	–	–	–
2	Replace PH Unit.	–	–	–
3	Replace PWB-P.	–	–	–

(9) C133B: Communication with option error

<Detection Timing>

Description
• Communication could not be established with the Controller Control Board within 5 seconds while printing.

<Troubleshooting Procedures>

Relevant Electrical Components	
Controller/Mechanical Control Board (PWB-P)	

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Replace PWB-P.	–	–	–

(10) C133D: ROM checksum error

<Detection Timing>

Description
• A malfunction occurred in the ROM.

<Troubleshooting Procedures>

Relevant Electrical Components	
Controller/Mechanical Control Board (PWB-P)	

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Replace PWB-P.	–	–	–

(11) C13F0: Laser error

<Detection Timing>

Description
• The laser output exceeds the upper limit value. • The laser output remains lower than the lower limit value.

<Troubleshooting Procedures>

Relevant Electric Parts	
PH Unit Flat cable	Controller/Mechanical Control Board (PWB-P)

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Check cables for connection and correct as necessary.	–	–	–
2	Replace PH Unit.	–	–	–
3	Replace PWB-P.	–	–	–

(12) C1468: EEPROM error

<Detection Timing>

Description
• An EEPROM not written with initial data was detected.

<Troubleshooting Procedures>

Relevant Electric Parts	
Controller/Mechanical Control Board (PWB-P)	

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Unplug, then plug in the power cord, and turn off the copier, then turn it on again.	–	–	–
2	Check the connection of the EEPROM on the PWB-P, and then correct it if necessary.	–	–	–
3	Replace PWB-P.	–	–	–
4	Replace EEPROM.	–	–	–

(13) C14A3: IR lamp malfunction

<Detection Timing>

Description
• The luminosity level of the Exposure Lamp is not stabilized within the predetermined period of time.

<Troubleshooting Procedures>

Relevant Electric Parts	
IR Unit	Controller/Mechanical Control Board (PWB-P)

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electric Parts)
1	Check the connection of the connectors, and then correct them if necessary.	–	–	–
3	Replace PWB-P.	–	–	–
4	Replace the Scanner Assy.	–	–	–

4. MALFUNCTIONS RELATED TO POWER SUPPLY

4-1. Power is not Turned ON.

Relevant Electric Parts	
Controller/Mechanical Control Board (PWB-P)	Power Unit (PU1)

Step	Check	Wiring Diagram (Location)	Result	Action
1	Is the power cord plugged into the power outlet?	–	NO	Plug the power cord into the power outlet.
2	Is the power cord connected properly to the printer?	–	NO	Plug the power cord into the printer.
3	Is the Power Switch turned ON?	–	NO	Turn ON the Power Switch.
4	Are the fuses (F101 and F102) on the Power Unit conducting?	–	NO	Replace Power Unit (PU1).
		–	YES	Replace Controller/Mechanical Control Board (PWB-P).

5. IMAGE QUALITY PROBLEMS

5-1. Troubleshooting Image Quality Problems

- This chapter is divided into two parts: “Initial Checks” and “Troubleshooting for Specific Image Quality Problems”.
- If an image quality problem occurs, first go through the “Initial Checks” and, if the cause is still not identified, continue to “Troubleshooting for Specific Image Quality Problems”.

5-2. Initial Checks

- Determine if the failure is attributable to a basic cause or causes.

Section	Step	Check	Result	Action
Installation site	1	The installation size complies with the requirements specified in “PRECAUTIONS FOR INSTALLATION” contained in the “GENERAL” section.	NO	Change the installation site.
Paper	2	The paper meets product specifications.	NO	Instruct the user to use recommended paper that meets product specifications.
	3	The paper is damp.	YES	Change the paper. Instruct the user on the correct methods for storing paper.
Original document	4	The document is not flat.	YES	Correct the document.
	5	Copies of a faint document (written in light pencil, etc.) are being made.	YES	Instruct the user to use a document with an appropriate image density.
	6	Copies of a highly transparent document (OHP transparencies, etc.) are being made.	YES	Instruct the user on how to copy transparent documents.
	7	The Original Glass is dirty or scratched.	YES	Clean or replace the Original Glass.
PM parts	8	PM parts relating to image formation have reached the end of cleaning/ replacement cycles.	YES	Clean or replace the PM parts.
Adjustments	9	There are adjustments that can improve image quality problems by being performed again.	YES	Perform the adjustment again.

5-3. Troubleshooting for Specific Image Quality Problems

- Determine if the failure is attributable to the input system (Image Reading Section) or the output system (Engine section).

<table>
<tr><th>Check</th><th>Result</th><th>Cause</th></tr>
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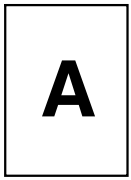
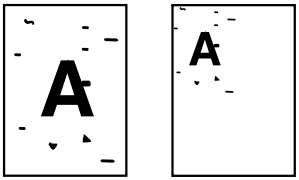
 
1177T03YA</td><td>Full-size copy Reduced copy
 
1177T04YA</td><td>Input (image reading) system</td></tr>
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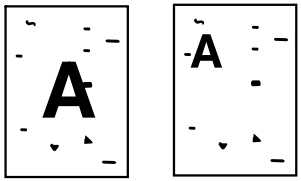
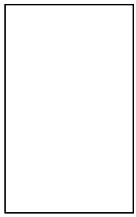
 
1177T05YA</td><td>Output (printer) system</td></tr>
</table>

(1) Image reading system: Blank or black prints

<Sample of Image Quality Problem>



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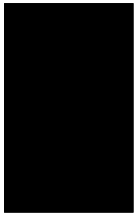

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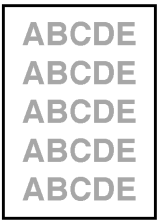
<Troubleshooting Procedures>

Step	Check	Result	Action
1	Are there no bent connector pins on the cables connecting the control boards, are all connectors correctly plugged in, and are no cables broken?	NO	Correctly plug in the connectors. Replace connection cables.
2	Does the Exposure Lamp light up?	NO	Replace the Scanner Assy.

(2) Image reading system: Low image density

<Sample of Image Quality Problem>



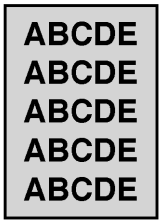
4011T003AA

<Troubleshooting Procedures>

Step	Check	Result	Action
1	Is the surface of the Original Glass dirty?	YES	Clean it.
2	Are the Shading Sheet or back surface of the Original Glass dirty?	YES	Clean them.
3	Are the mirror or lens dirty?	YES	Clean them. Replace the Scanner Assy.
4	Is the Exposure Lamp dirty?	YES	Clean it. Replace the Scanner Assy.
5	Are there no bent connector pins on the cables connecting the control boards, are all connectors correctly plugged in, and are no cables broken?	NO	Correctly plug in the connectors. Replace connection cables.

(3) Image reading system: Foggy background or rough image

<Sample of Image Quality Problem>



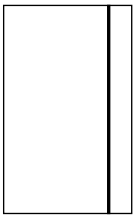
4011T004AA

<Troubleshooting Procedures>

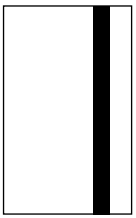
Step	Check	Result	Action
1	Does sunlight or any other extraneous light enter the machine?	YES	Protect the copier from extraneous light.
2	Is the document damaged or dirty?	YES	Replace the document.
3	Is the Original Pad dirty?	YES	Clean it.
4	Does the Original Cover not lie flat?	YES	If the Original Cover is deformed or the hinges are damaged, replace the Original Cover.
5	Is the surface of the Original Glass dirty?	YES	Clean it.
6	Are the Shading Sheet or back surface of the Original Glass dirty?	YES	Clean them.
7	Are the mirror or lens dirty?	YES	Clean them. Replace the Scanner Assy.
8	Is the Exposure Lamp dirty?	YES	Clean it. Replace the Scanner.
9	Are there no bent connector pins on the cables connecting the control boards, are all connectors correctly plugged in, and are no cables broken?	NO	Correctly plug in the connectors. Replace connection cables.

(4) Image reading system: Black streaks or bands

<Sample of Image Quality Problem>



4011T017AA



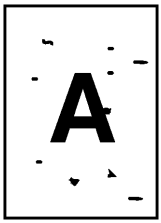
4011T023AA

<Troubleshooting Procedures>

Step	Check	Result	Action
1	Is the document damaged or dirty?	YES	Replace the document.
2	Is the Original Pad dirty?	YES	Clean it.
3	Does the Original Cover not lie flat?	YES	If the Original Cover is deformed or the hinges are damaged, replace the Original Cover.
4	Is the surface of the Original Glass dirty?	YES	Clean it.
5	Are the Shading Sheet or back surface of the Original Glass dirty?	YES	Clean them.
6	Are the mirror or lens dirty?	YES	Clean them. Replace the Scanner Assy.
7	Is the Exposure Lamp dirty?	YES	Clean it. Replace the Scanner Assy.
8	Are there no bent connector pins on the cables connecting the control boards, are all connectors correctly plugged in, and are no cables broken?	NO	Correctly plug in the connectors. Replace connection cables.

(5) Image reading system: Black spots

<Sample of Image Quality Problem>



4011T521AA

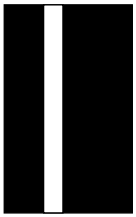
<Troubleshooting Procedures>

Step	Check	Result	Action
1	Is the document damaged or dirty?	YES	Replace the document.
2	Is the Original Pad dirty?	YES	Clean it.
3	Is the Original Glass dirty?	YES	Clean it.
4	The problem has been eliminated after performing step 3.	NO	Replace the Scanner Assy.

(6) Image reading system: Blank streaks or bands

<Sample of Image Quality Problem>

4011T015AA



4011T020AA

<Troubleshooting Procedures>

Step	Check	Result	Action
1	Is the document damaged or dirty?	YES	Replace the document.
2	Is the Original Pad dirty?	YES	Clean it.
3	Does the Original Cover not lie flat?	YES	If the Original Cover is deformed or the hinges are damaged, replace the Original Cover.
4	Is the surface of the Original Glass dirty?	YES	Clean it.
5	Are the Shading Sheet or back surface of the Original Glass dirty?	YES	Clean them.
6	Are the mirror or lens dirty?	YES	Clean them. Replace the Scanner Assy.
7	Is the Exposure Lamp dirty?	YES	Clean it. Replace the Scanner Assy.
8	Are there no bent connector pins on the cables connecting the control boards, are all connectors correctly plugged in, and are no cables broken?	NO	Correctly plug in the connectors. Replace connection cables.

(7) Image reading system: Uneven image

<Sample of Image Quality Problem>

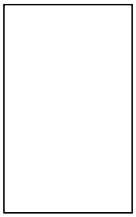
4011T528AA

<Troubleshooting Procedures>

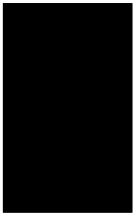
Step	Check	Result	Action
1	Is the Scanner Motor drive being transmitted?	NO	Correct drive coupling mechanisms. Replace it.
2	Is the harness of the Exposure Lamp catching?	YES	Correct it.
3	Is there enough slack in the Timing Belt?	NO	Correct it. Replace the Timing Belt.
4	Are the Scanner Rails scratched or dirty?	YES	Clean them.
5	Are there no bent connector pins on the cables connecting the control boards, are all connectors correctly plugged in, and are no cables broken?	NO	Correctly plug in the connectors. Replace connection cables.
6	The problem has been eliminated after performing step 5.	NO	Replace the Scanner Assy. Replace the IR Unit.

(8) Printer system: Blank or black prints

<Typical Faulty Images>



4011T035AA



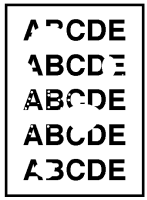
4011T036AA

<Troubleshooting Procedures>

Step	Check	Result	Action
1	Is a printed page blank?	YES	Check PH Unit connectors for proper connection.
2	Is the coupling of the drive mechanism of the Imaging Cartridge properly connected?	NO	Check coupling of drive mechanism for connection and correct as necessary, or replace Imaging Cartridge (Drum Cartridge, Toner Cartridge).
3	Is the drum charge voltage contact point or PC Drum ground contact point of the Imaging Cartridge properly connected?	NO	Check, clean, or correct contact point.
4	Is the High Voltage Unit (HV1) connector connected properly?	NO	Connect it properly.
5	Is the problem eliminated when step 4 was checked?	NO	Replace High Voltage Unit (HV1).
			Replace Controller/Mechanical Control Board (PWB-P).
			Replace PH Unit.

(9) Printer system: Blank spots

<Typical Faulty Image>



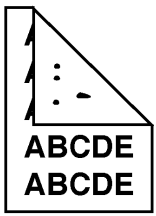
4011T008AA

<Troubleshooting Procedures>

Step	Check	Result	Action
1	Is paper damp?	YES	Replace paper for one just unwrapped.
2	Is the PC Drum scratchy?	YES	Replace Drum Cartridge.
3	Is there foreign matter on paper path?	YES	Remove foreign matter.
4	Is Image Transfer Roller dirty or scratchy? (3)	YES	Replace Image Transfer Roller.
			Replace High Voltage Unit (HV1).
			Replace Controller/Mechanical Control Board (PWB-P).

(10) Printer system: Smears on back

<Typical Faulty Image>



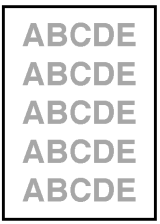
4011T009AA

<Troubleshooting Procedures>

Step	Check	Result	Action
1	Is there foreign matter on paper path?	YES	Remove foreign matter.
2	Is Fusing Roller dirty or scratchy?	YES	Replace Fusing Unit (Fusing Roller).
3	Is Image Transfer Roller dirty or scratchy?	YES	Replace Image Transfer Roller.

(11) Printer system: Low image density

<Typical Faulty Image>



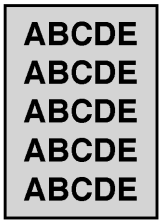
4011T003AA

<Troubleshooting Procedures>

Step	Check	Result	Action
1	Is paper damp?	YES	Replace paper for one just unwrapped.
2	Is there toner left in Toner Cartridge?	NO	Replace Toner Cartridge.
3	Is PC Drum faulty (life)?	YES	Replace Drum Cartridge.
4	Is developing bias faulty?	YES	Replace High Voltage Unit (HV1). Replace Controller/Mechanical Control Board (PWB-P).
5	Is image transfer faulty?	YES	Replace Image Transfer Roller.
			Replace High Voltage Unit (HV1).
			Replace Controller/Mechanical Control Board (PWB-P).

(12) Printer system: Foggy background

<Typical Faulty Image>



4011T004AA

<Troubleshooting Procedures>

Step	Check	Result	Action
1	Is PC Drum scratchy?	YES	Replace Drum Cartridge.
2	Is developing bias contact terminal in good contact with the mating part?	NO	Clean contact terminal or check terminal position.
3	Is PH window dirty?	YES	Clean.
4	Is the problem eliminated after checks have been made up to step 3?	NO	Replace High Voltage Unit (HV1).
			Replace Controller/Mechanical Control Board (PWB-P).

(13) Printer system: Blank streaks or bands

<Typical Faulty Images>

4011T015AA

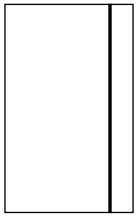
4011T020AA

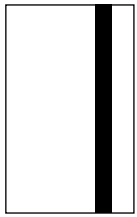
<Troubleshooting Procedures>

Step	Check	Result	Action
1	Is Image Transfer Roller dented, scratchy, or dirty?	YES	Replace Image Transfer Roller.
2	Is PC Drum scratchy or dirty?	YES	Replace Drum Cartridge.
3	Is Fusing Roller scratchy or dirty?	YES	Replace Fusing Unit (Fusing Roller).
4	Is PH window dirty?	YES	Clean.
5	Is the problem eliminated after checks have been made up to step 4?	NO	Replace Controller/Mechanical Control Board (PWB-P).

(14) Printer system: Black streaks or bands

<Typical Faulty Images>


4011T017AA

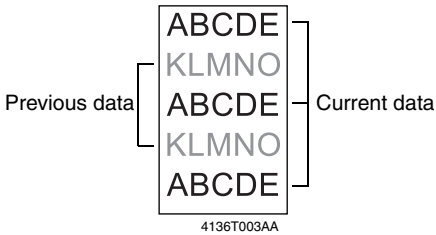

4011T023AA

<Troubleshooting Procedures>

Step	Check	Result	Action
1	Is paper path dirty with toner?	YES	Clean.
2	Is PC Drum scratchy or dirty?	YES	Replace Drum Cartridge.
3	Is Fusing Roller scratchy or dirty?	YES	Replace Fusing Unit (Fusing Roller).
4	Is the problem eliminated after checks have been made up to step 3?	NO	Replace Controller/Mechanical Control Board (PWB-P).

(15) Printer system: Offset image

<Typical Faulty Image>



4136T003AA

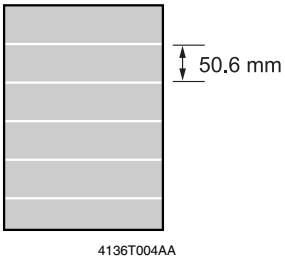
<Troubleshooting Procedures>

Step	Check	Result	Action
1	Is Fusing Roller faulty?	YES	Replace Fusing Unit (Fusing Roller).
2	Is Image Transfer Roller faulty?	YES	Replace Image Transfer Roller.

(16) Printer system: Uneven image

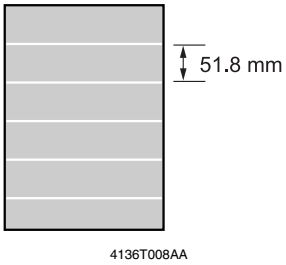
<Typical Faulty Images>

51-mm-pitch uneven image



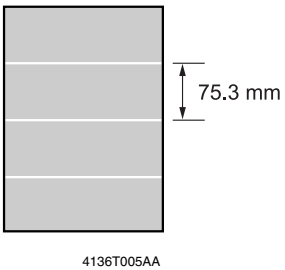
4136T004AA

51.8-mm-pitch uneven image



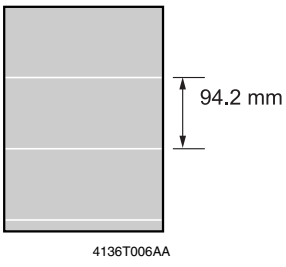
4136T008AA

75.3-mm-pitch uneven image



4136T005AA

94.2-mm-pitch uneven image



4136T006AA

<Troubleshooting Procedures>

Step	Check	Cause	Result	Action
1	Is uneven image at a pitch of 50.6 mm?	Image Transfer Roller is scratchy or dirty.	YES	Replace Image Transfer Roller.
2	Is uneven image at a pitch of 51.8 mm?	Flexible Sleeve is scratchy or dirty.	YES	Replace Toner Cartridge.
3	Is uneven image at a pitch of 75.3 mm?	Pressure Roller is scratchy or dirty.	YES	Replace Fusing Unit.
4	Is uneven image at a pitch of 94.2 mm?	PC Drum is scratchy or dirty.	YES	Replace Drum Cartridge.
		Fusing Roller is scratchy or dirty.	YES	Replace Fusing Unit.

DEVELOP

Printed in Germany

AF-11

Service Manual

CONTENTS

TROUBLESHOOTING

GENERAL

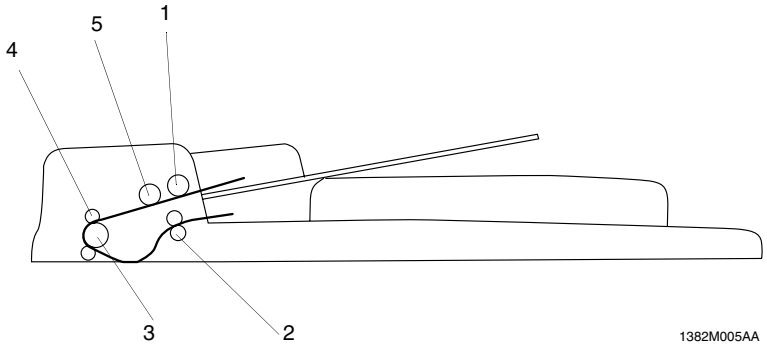
1. SPECIFICATIONS

Name	:	Automatic Document Feeder
Installation method	:	Inserted at upper-rear side of main unit
Original type	:	Plain paper: 35 to 128 g/m^2 (9 to 34 lb.)
Detectable Original sizes	:	A5 L, B5 L, A4 L, Legal L, Letter L, Invoice L Custom size width: 138 to 216 mm; length: 130 to 356 mm
Paper capacity	:	Maximum 50 sheets (80 g/m^2) (21 lb.)
Registration	:	Center
Original loading orientation	:	Face up
Productivity	:	12 sheets/minute (with plain A4 L or Letter L paper)
Original feeding Mode	:	Standard mode
Power source	:	DC 24 V, DC 5 V (supplied by main unit)
Power consumption	:	Less than 30 W
Dimension	:	W: 497 mm (19-1/2 in.) × D: 355 mm (14 in.) × H: 80 mm (3-1/4 in.)
Weight	:	3.2 kg (7 lb.)
Operating environment	:	Same as the copier

Original types	Possible problems
Originals bound with staples or paper clips	Incorrect paper take-up, damaged originals or drive malfunctions due to jammed paper clips
Originals bound with glue	Incorrect paper take-up or damaged originals
Folded, torn or extremely wrinkled originals	Incorrect paper take-up or damaged originals
Curled originals (more than 10 mm from front edge)	Paper misfeeds due to folded or skewed originals

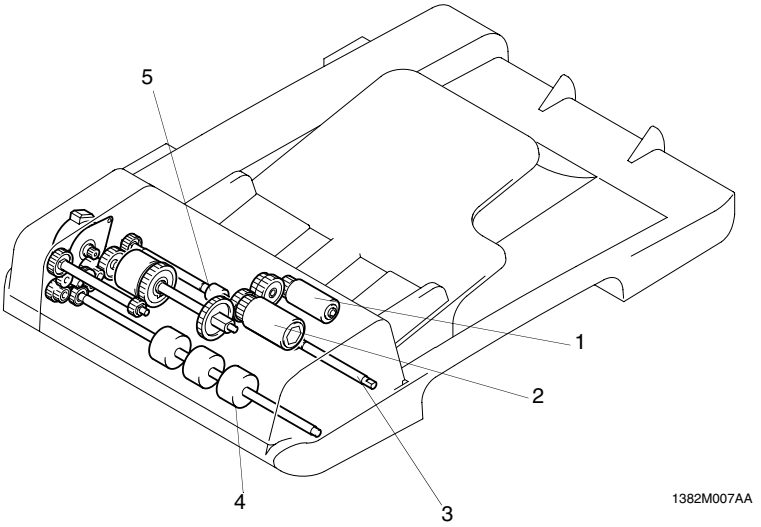
MECHANICAL/ ELECTRICAL

1. COMPONENTS LAYOUT



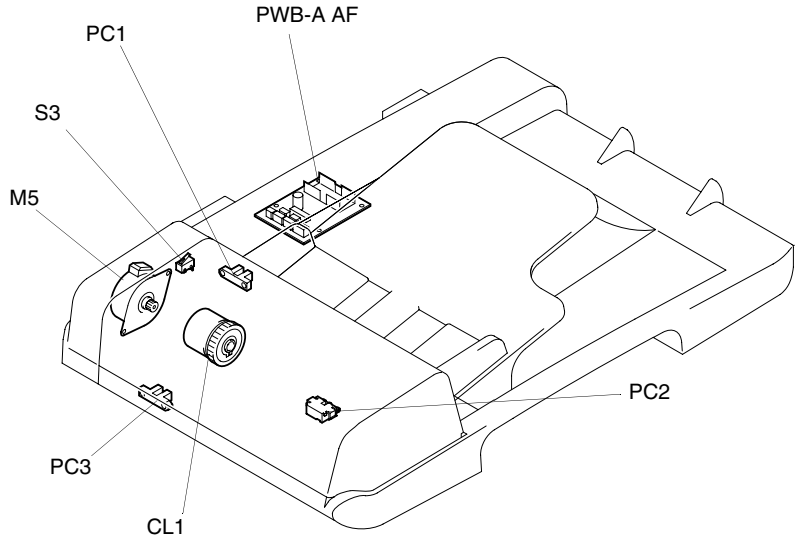
1: Pick-up Roller
2: Exit Roller
3: Transport Roller
4: Transport Roll
5: Take-up Roller

2. DRIVE SYSTEM



1: Pick-up Roller
2: Take-up Roller
3: Document Feed Shaft
4: Transport Roller
5: Exit Roller

3. ELECTRICAL PARTS LAYOUT



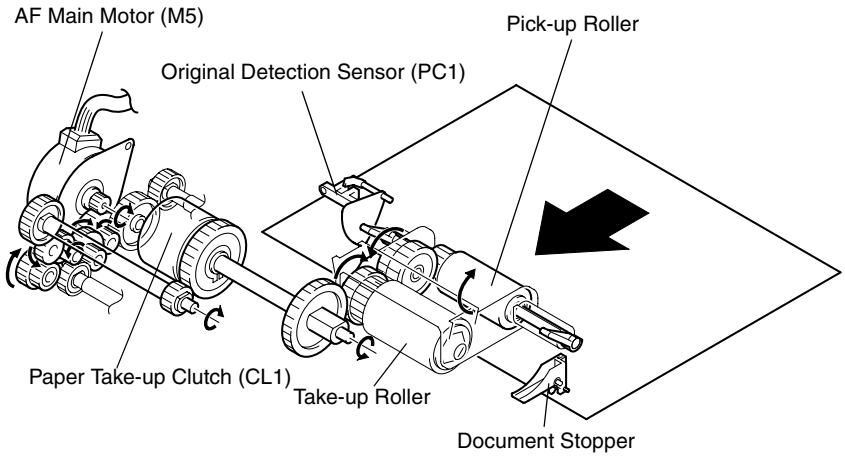
1382M006AA

PWB-A AF	:	AF Control Board	M5	:	AF Main Motor
PC2	:	Paper take-Up Sensor	S3	:	AF door set switch
CL1	:	Paper take-Up clutch	PC1	:	Original detection Sensor
PC3	:	Leading Edge Detection Sensor			

3-1. Document Take-up Mechanism

(1) Document Take-up Mechanism

- The Original Detection Sensor detects a document that has been properly loaded in the Document Feeder.
- The Document Stopper establishes the leading edge position of the document loaded in the Document Feeder. The stopper is lowered in the standby state and raised when the document is taken up and fed in.
- The Document Stopper is raised and lowered in synchronism with the raising and lowering motion of the Pick-up Roller.
- The Pick-up Roller and Take-up Roller turn to take up and feed the original properly.
- The Pick-up Roller transports the original up to the Take-up Roller.
- The AF Main Motor drives the Pick-up Roller and Take-up Roller through a gear train and the Paper Take-up Clutch.



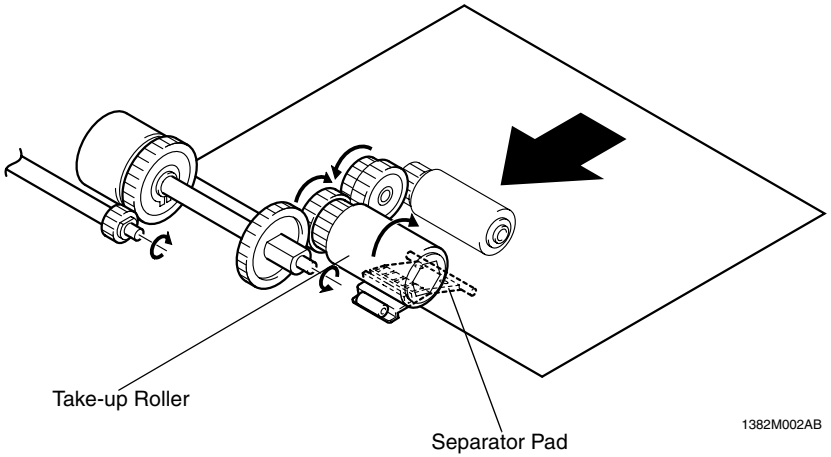
1382M001AC

Electrical Component	Control Signal	ON	OFF	WIRING DIAGRAM
M5	PWB-A AF PA01OA AF-1~4	Pulse output		F~G-2~3
CL1	PWB-A AF PA07A AF-2	L	H	F-2~3

Electrical Component	Control Signal	Blocked	Unblocked	WIRING DIAGRAM
PC1	PWB-A AF PA02A AF-1	L	H	E-2~3

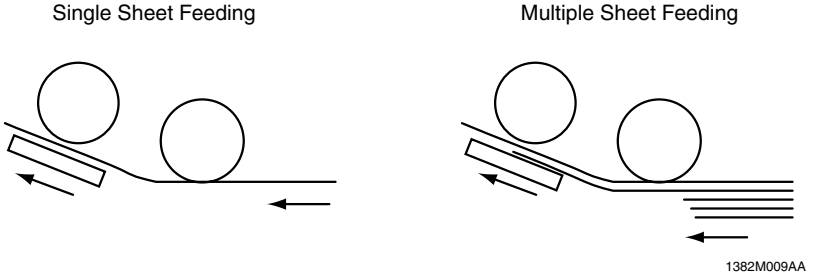
(2) Document Separation Mechanism

- Double feeding of paper is prevented using coefficient of friction between the Take-up Roller and Separator Pad.



Single sheet feeding : The coefficient of friction on the front side of the paper fed between the Take-up Roller and Separator Pad is equal to that on the backside of the paper. This allows the Take-up Roller to transport the paper.

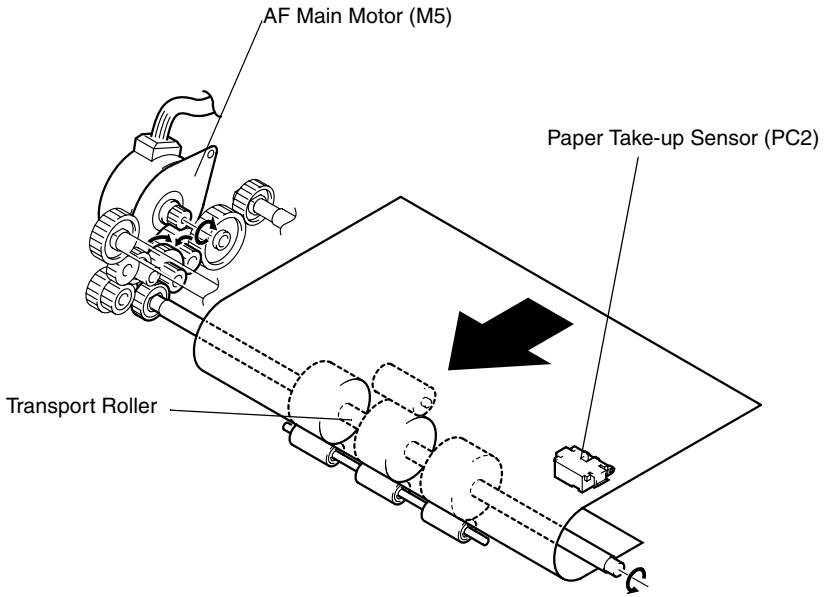
Multiple sheet feeding : The coefficient of friction between the paper and Separator Pad is greater than that between sheets of paper. This allows only the first sheet of paper to be transported by the Take-up Roller.



3-2. Document Transport/Exit Mechanism

(1) Document transport mechanism

- The original that has been taken up blocks the Paper Take-up Sensor. The Transport Roller turns to transport the original up to the document scanning position of the printer.
- The AF Main Motor drives the Transport Roller through a gear train.

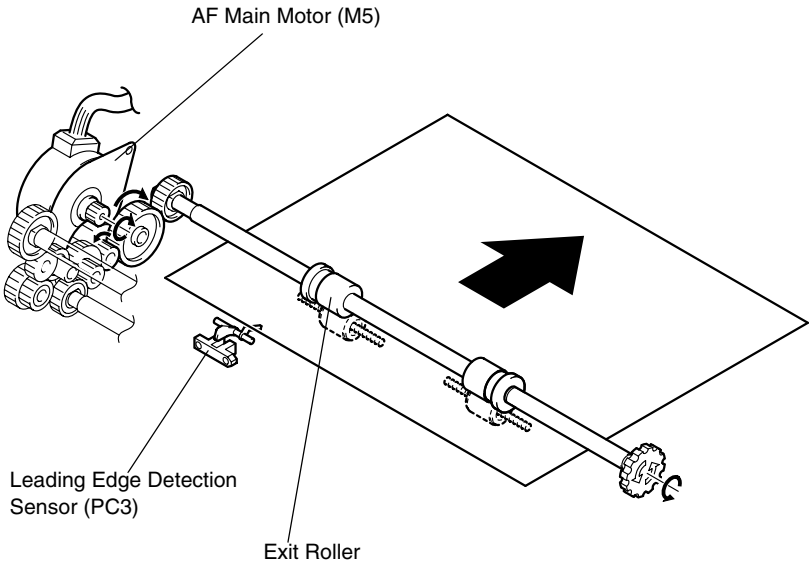


Electrical Component	Control Signal	ON	OFF	WIRING DIAGRAM
M5	PWB-A AF PA01OA AF-1~4	Pulse output		F~G-2~3

Electrical Component	Control Signal	Blocked	Unblocked	WIRING DIAGRAM
PC2	PWB-A AF PA06A AF-1	L	H	D~E-2~3

(2) Document exit mechanism

- The Exit Roller turns to feed the original out of the Document Feeder. During this sequence, the original blocks the Leading Edge Detection Sensor and is fed onto the Document Exit Tray.
- The AF Main Motor turns the Exit Roller through a gear train.



1382M004AC

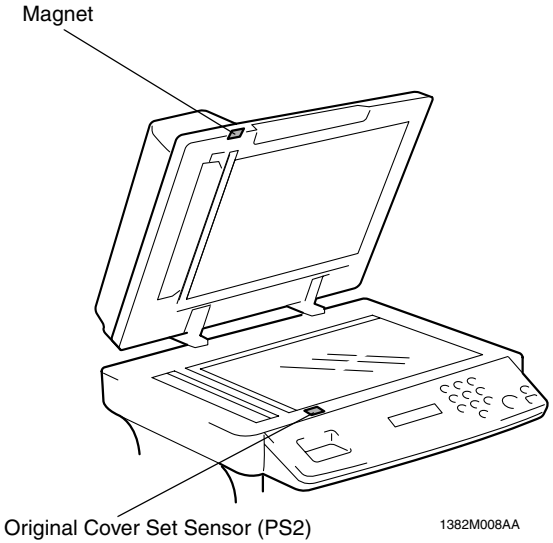
Electrical Component	Control Signal	ON	OFF	WIRING DIAGRAM
M5	PWB-A AF PA01OA AF-1~4	Pulse output		F~G-2~3

Electrical Component	Control Signal	Blocked	Unblocked	WIRING DIAGRAM
PC3	PWB-A AF PA03A AF-1	L	H	D-2~3

3-3. Miscellaneous

(1) Document Feeder raised/lowered position detection mechanism

- There is a magnet provided in the Document Feeder, allowing the printer to detect the position of the Document Feeder whether the Document Feeder is raised or lowered.
- This magnet attracts the Original Cover Set Sensor provided on the printer side, thus activating the sensor. The printer will then detect the position of the Document Feeder.



Electrical Component	Control Signal	Blocked	Unblocked	WIRING DIAGRAM
PS2	PWB-O P701O-1~2	L	H	F-9

DIS/REASSEMBLY, ADJUSTMENT

1. MAINTENANCE SCHEDULE

- To ensure that the printer produces good printed pages and to extend its service life, it is recommended that the maintenance jobs described in this schedule be carried out as instructed.

PM Parts	Clean	Replace	Ref. Page in This Manual
Paper Take-Up Roll	10K	–	☞ D-2
Pick-Up Roller			☞ D-3
Regist Roller			☞ D-4
Exit Roller			☞ D-4
Paper Separator Pad		50K	☞ D-5

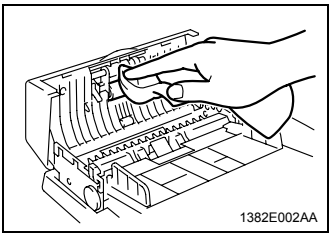
NOTES

- *K = 1,000 printed pages*
- *As a rule, the Drum Cartridge and Toner Cartridge are to be replaced by the user.*
- *The contents of the Maintenance List are subject to change without notice.*
- *For the part numbers, see Parts Manual and Parts Modification Notice.*

2. REPLACEMENT/CLEANING OF PARTS

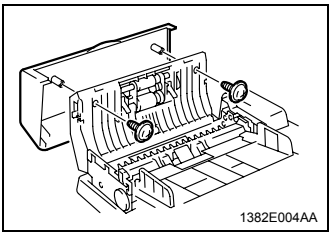
(1) Cleaning of the Paper Take-Up Roll

1. Open the Document Feeder Cover.

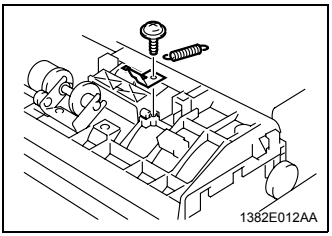


2. Using a soft cloth, wipe clean the surface of the Paper Take-Up Roller.

(2) Replacement of the Paper Take-Up Roll



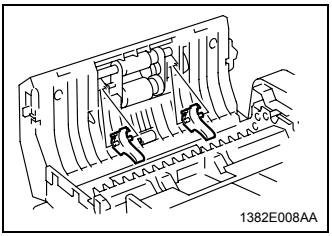
1. Open the Document Feeder Cover.
2. Remove the two screws, and then remove the Document Feeder Cover.



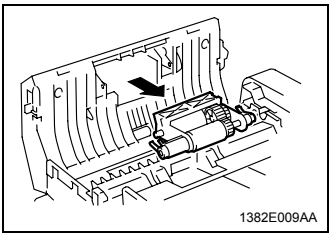
3. Remove the screw, and then remove the mounting plate and spring.

NOTE

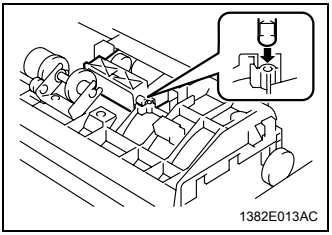
- *Be extremely careful not to lose the spring.*



4. Remove the two Document Stoppers.

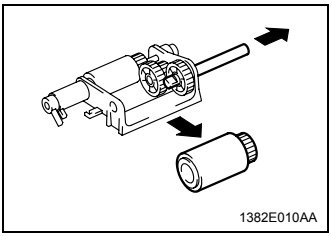


5. Remove the Pick-Up Roller/Paper Take-Up Roller Assy.



NOTE

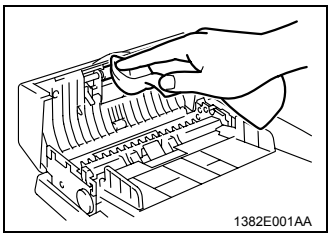
- *When installing the Pick-Up Roller/Paper Take-Up Roller Assy., make sure that the notch in the shaft of the Paper Take-Up Roller is positioned on the top.*



6. Remove the Paper Take-Up Roller.

(3) Cleaning of the Pick-Up Roller

1. Open the Document Feeder Cover.

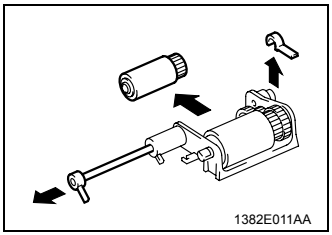


2. Using a soft cloth, wipe clean the surface of the Pick-Up Roller.

(4) Removal of the Pick-Up Roller

1. Remove the Pick-Up Roller/Paper Take-Up Roller Assy.

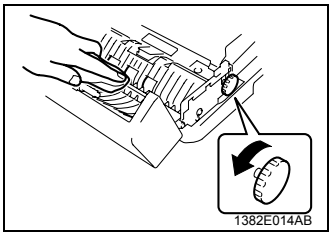
☞ D-2



2. Remove the Pick-Up Roller.

(5) Cleaning of the Registration Rollers

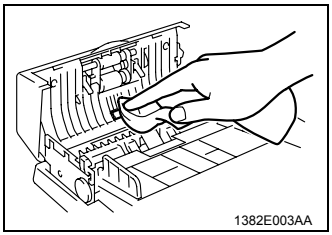
1. Open the Document Feeder Cover.



2. While turning the Document Feed Knob in the direction shown in the illustration, use a soft cloth to wipe clean the Registration Rollers.

(6) Cleaning of the Transport Roller

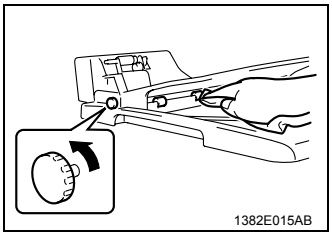
1. Open the Document Feeder Cover.



2. Using a soft cloth, wipe clean the surface of the Transport Roller.

(7) Cleaning of the Exit Roller

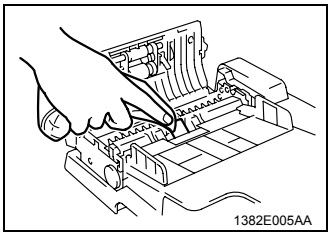
1. Open the Document Feeder Cover.



2. While turning the Document Feed Knob in the direction shown in the illustration, use a soft cloth to wipe clean the Exit Roller.

(8) Cleaning of the Paper Separator Pad

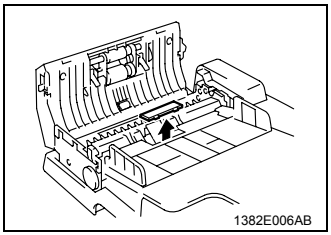
1. Open the Document Feeder Cover.



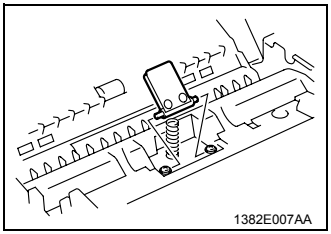
2. Using a soft cloth, wipe clean the surface of the Paper Separator Pad.

(9) Removal of the Paper Separator Pad

1. Open the Document Feeder Cover.



2. Remove the Paper Separator Cover.



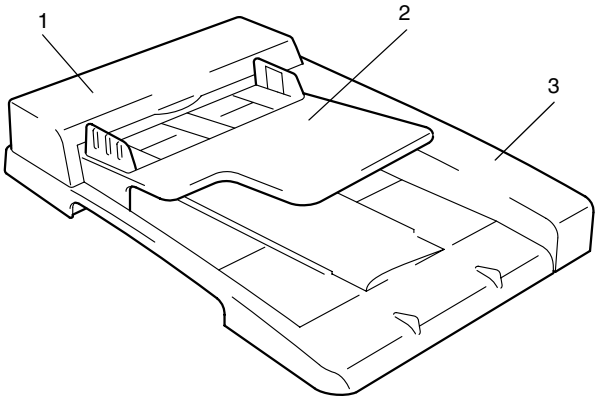
3. Loosen the two screws, and then remove the Paper Separator Pad.

NOTE

- *Be extremely careful not to lose the spring on the Paper Separator Pad.*

3. DISASSEMBLY/REASSEMBLY

3-1. Names/Removal of External Parts



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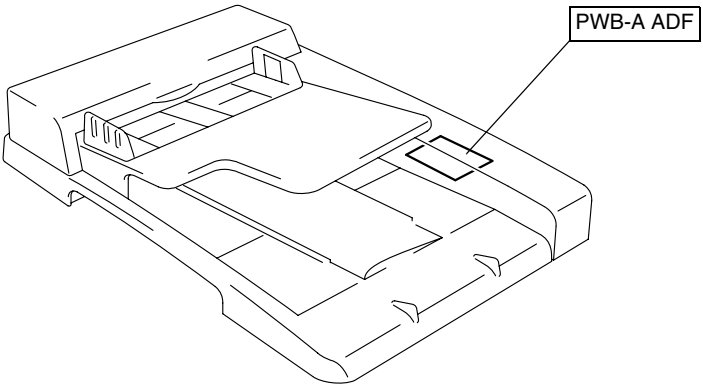
No.	Name	Removal Procedure
1	Document Feeder Cover	Open the Document Feeder Cover. → Remove the two screws. → Remove the Document Feeder Cover.
2	Document Feeder Tray	Open the Document Feeder Cover. → Remove the Rear Cover. → Remove the screw, and then remove the Document Feed Knob. → Remove the two screws. → Remove the Document Feeder Tray.
3	Rear Cover	Remove the screw. → Remove the Rear Cover.

3-2. Removal of Circuit Boards

NOTE

- *When removing a circuit board, refer to the precautions for handling printed circuit boards and follow the corresponding removal procedures.*
- *The following removal procedures omit the removal of the applicable component from connectors and circuit board supports.*
- *When it is necessary to touch ICs and other electrical components on the circuit board, be sure to first ground yourself.*



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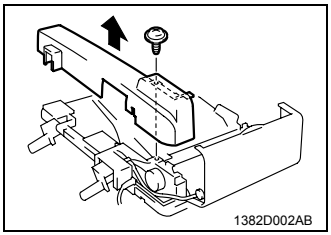
Symbol	Name	Removal Procedure
PWB-A ADF	Automatic Document Feeder Control Board	☞ D-7

(1) Removal of the Automatic Document Feeder Control Board



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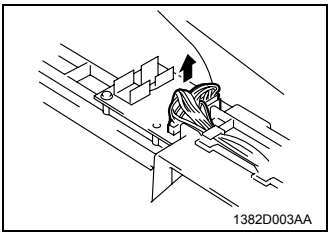
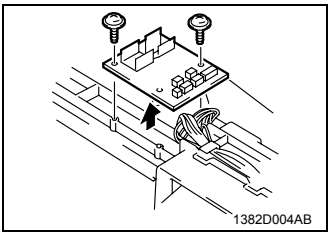
1. Remove the screw, unhook the six tabs, and then remove the Rear Cover.



2. Unplug all connectors connected to the circuit board.



3. Remove the two screws, and then remove the Automatic Document Feeder Control Board.

3-3. Disassembly

(1) Removal of the Automatic Document Feeder Main Motor

1. Remove the Rear Cover.

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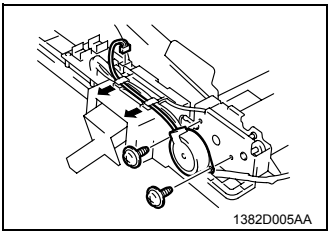


2. Unplug the connector on the Automatic Document Feeder Control Board.
3. Remove the two screws, and then remove the Automatic Document Feeder Main Motor.

4. ADJUSTMENTS

4-1. Electrical/Image Adjustment

(1) Accessing the Service Mode

1. Press the Utility key.
2. Press the following keys in order to enter the Service mode.
   Stop → 0 → 0 → Stop → 0 → 1

NOTE

- *Be sure to keep the access procedure for the Service mode from any unauthorized persons not involved with service operations.*

(2) Accessing the "ADJUST" Menu

1. Enter the Service mode.
2. Press the ▲ or ▼ key to select the "ADJUST" menu.

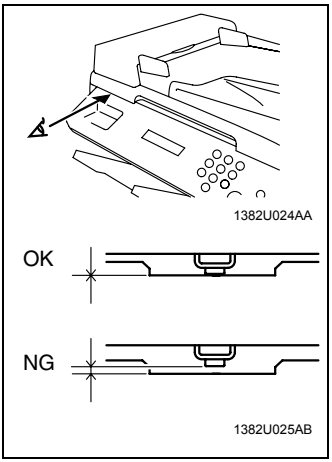
(3) Printing a Test Page

NOTE

- *Print a test page when making the following adjustments.*
- *Leading edge tilt adjustment*
- *Automatic Document Feeder sub-scanning zoom ratio adjustment*
- *Automatic Document Feeder main scanning & sub-scanning registration adjustments*

1. Enter the Service mode.
2. Press the ▲ or ▼ key to select the function.
3. Select "PRINT TEST PATTERN" → "TEST PATTERN 1".
4. Press the Start key to begin printing the test page.

(4) Height Adjustment

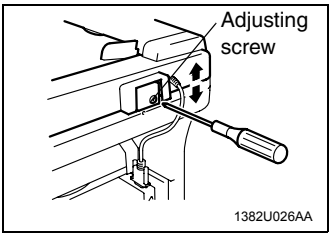


1. Check the gap between the Original Glass and the spacer on the Automatic Document Feeder.

NOTE

- *Be sure to open, then close the Automatic Document Feeder, and then check during pre-lighting of the scanner.*

2. If there is a gap, perform the adjustment described in step 3.



3. Turn the adjusting screw in the hinge of the Automatic Document Feeder until the spacer contacts the Original Glass.

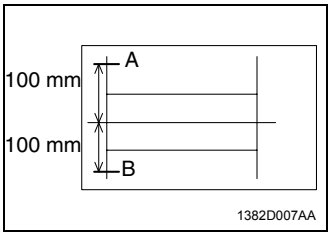
Screw rotation direction

Clockwise: Raises the Automatic Document Feeder.

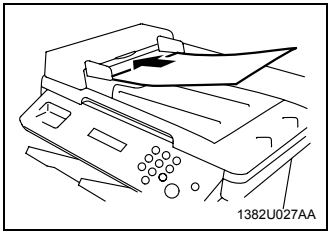
Counterclockwise: Lowers the Automatic Document Feeder.

(5) Leading Edge Tilt Adjustment

1. Print the test pattern.



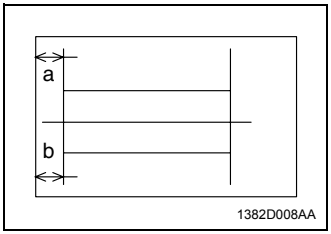
2. Draw lines 100 mm (A and B) from the center of the test pattern, as shown in the illustration.



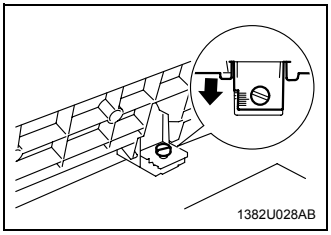
3. Load the test pattern into the Automatic Document Feeder, and then print five single-sided copies.

NOTE

- *The test pattern should be positioned vertically.*



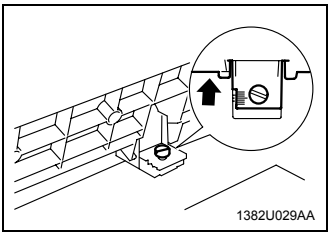
4. Measure the lengths a and b on the copies of the test pattern and, if there is a large shift, adjust it according to the following procedure.
   Standard values of a and b = ± 1.0 mm



<If A is longer than B>
Using a coin, loosen the shoulder screw shown in the illustration, and then slide the scale on the Automatic Document Feeder toward you.

NOTE

- *After finishing the adjustment, be sure to tighten the loosened shoulder screw.*



<If A is shorter than B>

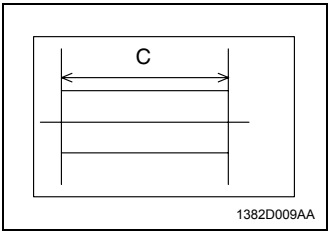
Using a coin, loosen the shoulder screw shown in the illustration, and then slide the scale on the Automatic Document Feeder away from you.

NOTE

- *After finishing the adjustment, be sure to tighten the loosened shoulder screw.*

(6) Automatic Document Feeder Sub-Scanning Zoom Ratio Adjustment

<Reference>



- Adjust the length of C in the copy of the test pattern so that the following specification is met.

Zoom Ratio	Specification	Mode	Function	Setting Range
Full Size (100%)	200 ± 0.5 mm	"ADJUST" menu	ADF SUB ZOOM	95 to 105 1 increment = 0.4%

<Adjustment Procedure>

1. Print the test pattern.
2. Enter the "ADJUST" menu in the Service mode.
3. Load the test pattern into the Automatic Document Feeder and make a test copy.

NOTE

- *The test pattern should be positioned vertically.*
- *Use A4 L or Letter L paper loaded into Tray 1 to make the test copy.*

4. If the length of C in the copy of the test pattern is not the same as the length of C in the test pattern, adjust it according to the following procedure.
5. Change the setting.

If the width of C in the test pattern is longer than the specified width . . . . .

Decrease the setting.

If the width of C in the test pattern is shorter than the specified width . . . . .

Increase the setting.

✻ If the shift cannot be adjusted to within the specification with a single adjustment, perform the adjustment again to change the setting.

6. Press the Yes key to apply the setting.

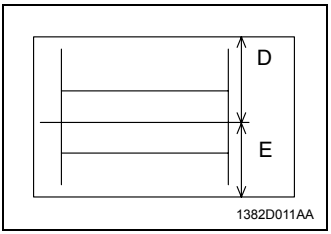
NOTE

If the Stop key is pressed, instead of the Yes key, the main screen is displayed and the setting returns to that before it was changed.

Load the test pattern into the Automatic Document Feeder again, make another test copy, and check it.

(7) Automatic Document Feeder Main Scanning Registration Adjustment

<Reference>



- Adjust the amount that widths D and E in the copy of the test pattern are shifted so that the following specification is met.

Specification	Mode	Function	Setting Range
0 ± 2.0 mm	"ADJUST" menu	ADF MAIN REGIST	90 to 110 1 increment = 0.5 mm

NOTE

- *Perform this adjustment after the Automatic Document Feeder sub-scanning zoom ratio adjustment.*

<Adjustment Procedure>

1. Print the test pattern.
2. Enter the "ADJUST" menu in the Service mode.
3. Load the test pattern into the Automatic Document Feeder and make a test copy.

NOTE

- *The test pattern should be positioned vertically.*
- *Use A4 L or Letter L paper loaded into Tray 1 to make the test copy.*

4. Fold the copy of the test pattern in half, and then check if the fold aligns with the center-line.
   If they are not aligned, adjust it according to the following procedure.
5. Change the setting.

If D is shorter . . . . . Decrease the setting.

If E is shorter . . . . . Increase the setting.

✻ If the shift cannot be adjusted to within the specification with a single adjustment, perform the adjustment again to change the setting.

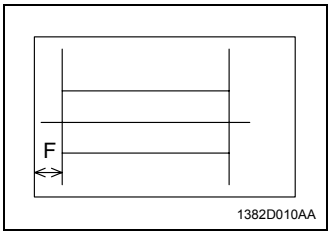
6. Press the Yes key to apply the setting.

NOTE

If the Stop key is pressed, instead of the Yes key, the main screen is displayed and the setting returns to that before it was changed.
Load the test pattern into the Automatic Document Feeder again, make another test copy, and check it.

(8) Automatic Document Feeder Sub-Scanning Registration Adjustment

<Reference>



- Adjust the width of F in the copy of the test pattern so that the following specification is met.

Specification	Mode	Function	Setting Range
20 ± 3.0 mm	"ADJUST" menu	ADF SUB REGIST	90 to 110 1 increment = 0.5 mm

Perform this adjustment in the following cases.

- After the Scanner Assy. has been replaced
- After the printer's main scanning & sub-scanning registration adjustments and the scanner's sub-scanning zoom ratio adjustment have been performed

<Adjustment Procedure>

1. Print the test pattern.
2. Enter the "ADJUST" menu in the Service mode.
3. Load the test pattern into the Automatic Document Feeder and make a test copy.

NOTE

- *The test pattern should be positioned vertically.*
- *Use A4 L or Letter L paper loaded into Tray 1 to make the test copy.*

4. Check that the width of F in copy of the test pattern meets the specification.
   If the width of F is out of specification, adjust it according to the following procedure.
5. Change the setting.

If the width of F in the test pattern is longer than the specified width . . . . .

Increase the setting.

If the width of F in the test pattern is shorter than the specified width . . . . .

Decrease the setting.

✻ If the shift cannot be adjusted to within the specification with a single adjustment, perform the adjustment again to change the setting.

6. Press the Yes key to apply the setting.

NOTE

If the Stop key is pressed, instead of the Yes key, the main screen is displayed and the setting returns to that before it was changed.
Load the test pattern into the Automatic Document Feeder again, make another test copy, and check it.

TROUBLESHOOTING

1. INTRODUCTION

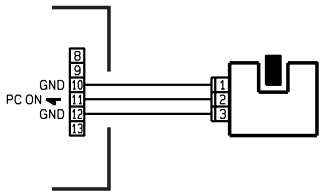
- This chapter contains the items required or used when troubleshooting various printer problems.

1-1. Electric Components Check Procedures

- The following procedures can be used to check to see if an electric component is fully operational when a paper misfeed or a malfunction occurs in the printer.

(1) Sensors

Step	Check	Result	Action
1	Does the input signal to the Controller/Mechanical Control Board go from HIGH to LOW, or vice versa, when the sensor is blocked?	NO	Replace the sensor.
		YES	Replace the Controller/Mechanical Control Board.



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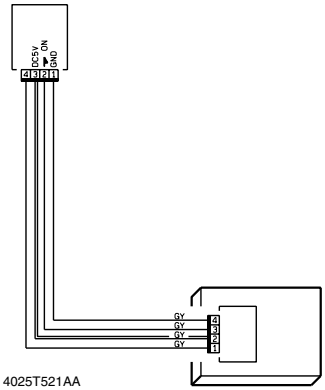

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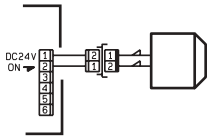
(2) Clutches

Step	Check	Result	Action
1	Does the output signal of the Controller/Mechanical Control Board go from HIGH to LOW when the clutch is energized?	NO	Replace the Controller/Mechanical Control Board.
		YES	Replace the clutch.



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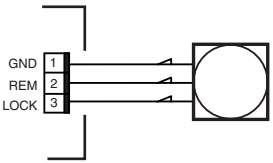
(3) Motors

Step	Check	Result	Action
1	Is the LOCK signal of the Controller/Mechanical Control Board HIGH when the printer is in the standby state?	NO	Replace the Controller/Mechanical Control Board. Replace the motor.
2	Does the REM signal of the Controller/Mechanical Control Board go from HIGH to LOW when the motor is energized?	YES	Replace the motor.
		NO	Replace the Controller/Mechanical Control Board.



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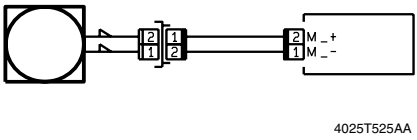
Step	Check	Result	Action
1	Does the input signal to the Controller/Mechanical Control Board go from HIGH to LOW when the motor is energized? (The input signal varies depending on the direction of rotation.)	YES	Replace the motor.
		NO	Replace the Controller/Mechanical Control Board.



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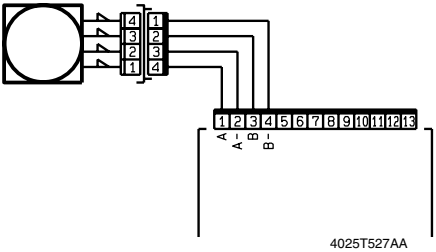
Step	Check	Result	Action
1	Are the hookup connector of the motor and print jack on the Controller/Mechanical Control Board connected properly?	YES	Replace the motor or the Controller/ Mechanical Control Board.
		NO	Connect the connector or the print jack properly.



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2. PAPER MISFEED

2-1. Initial Check Items

- When a paper misfeed occurs in the printer, first make the following initial checks.

Check	Action
Does the paper meet product specifications?	Replace paper.
Is the paper curled, wavy, or damp?	Replace paper. Instruct user in correct paper storage.
Is the paper transport path deformed, dirty, or obstructed with foreign matter?	Clean the paper path and replace if necessary.
Is the roller dirty, deformed, or worn?	Clean the roller and replace if necessary.
Are Edge Guides at correct position to accommodate paper?	Slide the Edge Guides up against the edges of the paper stack.
Does the actuator operate correctly when checked?	Correct or replace the actuator.

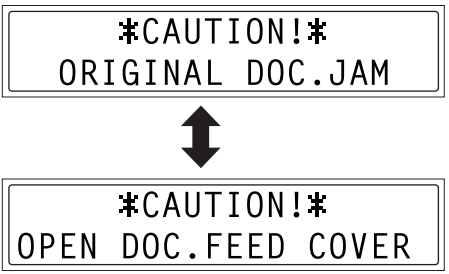
Precautions for Clearing Misfeed

- *Reset the misfeed condition by opening and closing the Front Door after the misfeed has been cleared.*

2-2. Paper Misfeed Displays

- The Error indicator lights up and a message appears in the display when a paper misfeed occurs.

<Automatic Document Feeder Misfeed>



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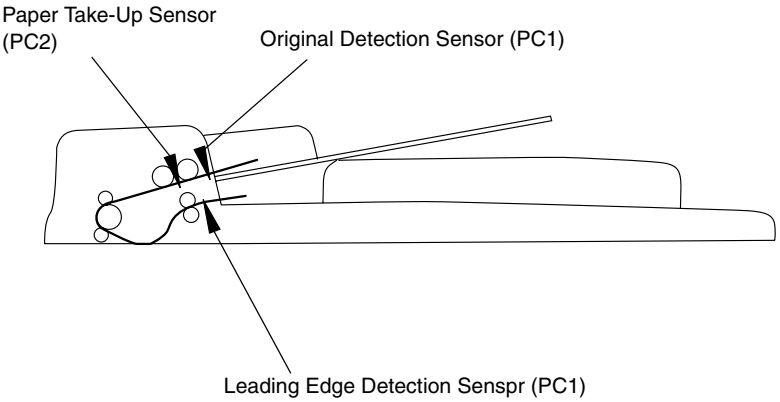
<Procedure for canceling the misfeed display>

1. Open the appropriate covers, remove the misfed paper and any remaining paper, and then close the covers.
2. Open, then close the Front Door.

2-3. Locations of Misfeed Detection Sensors



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2-4. Misfeed Detection Timing and Troubleshooting Procedures

(1) The Original misfeeds

<Detection Timing>

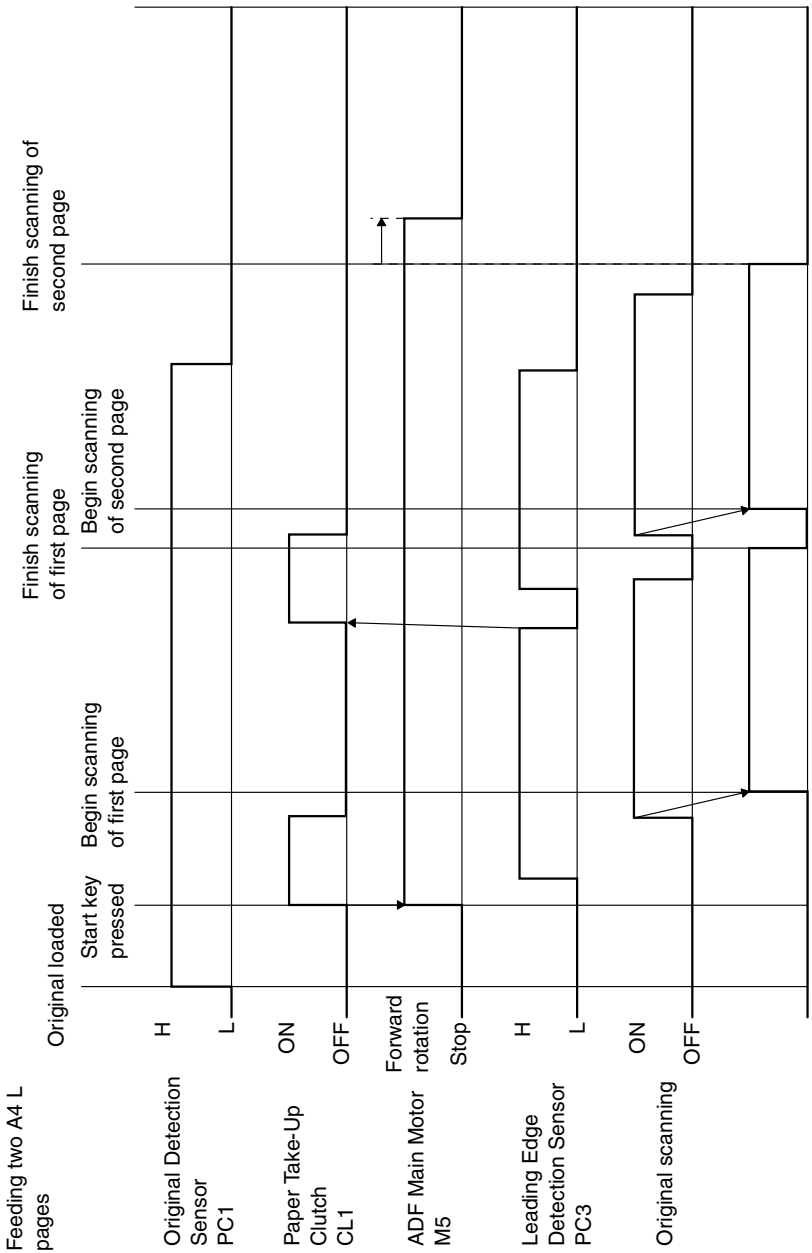
Type	Description
ADF Jam	• The Paper Take-Up Sensor is not unblocked after the predetermined period of time has elapsed after document feeding began. • The Paper Take-Up Sensor is not blocked after the predetermined period of time has elapsed after the Paper Take-Up Sensor is unblocked. • The Exit Sensor is not unblocked after the predetermined period of time has elapsed after the Paper Take-Up Sensor is unblocked. • The Exit Sensor is not blocked after the predetermined period of time has elapsed after the Paper Take-Up Sensor is blocked.
ADF remains paper jam	If all of the following conditions are met • The Automatic Document Feeder is in standby. • The Document Feeder Cover is closed. • The Original Detection Sensor is blocked. • Either the Paper Take-Up Sensor or the Leading Edge Detection Sensor or both sensors are blocked.

<Troubleshooting Procedures>

Relevant Electrical Parts	
Original Detection Sensor (PC1) Paper Take-Up Sensor (PC2) Leading Edge Detection Sensor (PC3)	Automatic Document Feeder Control Board (PWB-A ADF)

Step	Action	Ref. Page	WIRING DIAGRAM	
			Control Signal	Location (Electrical Component)
1	Initial checks	☞ T-4	–	–
2	PC1 sensor check	☞ T-1	PWB-A ADF PA02A ADF-1	C~D-4~5
3	PC2 sensor check	☞ T-1	PWB-A ADF PA06A ADF-1	D~E-4~5
4	PC3 sensor check	☞ T-1	PWB-A ADF PA03A ADF-1	I-6~7
5	Replace PWB-A ADF.	–	–	–

3. TIMING CHART



PF-125

Service Manual

CONTENTS

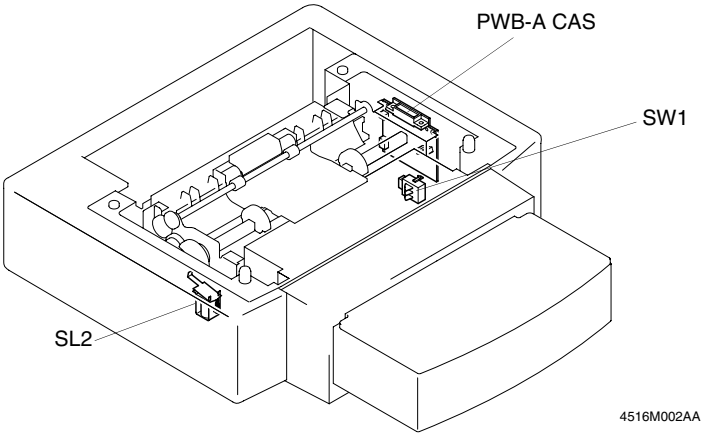
GENERAL

1. SPECIFICATIONS

Name	:	2nd Paper Feed Cassette
Type of paper	:	Plain and recycled paper: 60 to 90 g/m^2 (16 to 24 lb.)
Media sizes	:	A4 L and Letter L
Paper capacity	:	Maximum 500 sheets (80 g/m^2) (21 lb.)
Registration	:	Center
Power source	:	DC 24 V, DC 5 V (supplied by main unit)
Power consumption	:	Less than 7 W
Dimension	:	W:401 mm (15-3/4 in.) × D:615 mm (24-1/4 in.) × H:138 mm (5-1/2 in.)
Weight	:	4.3 kg (9-1/2 lb.)
Environment	:	Same as the copier

MECHANICAL/ ELECTRICAL

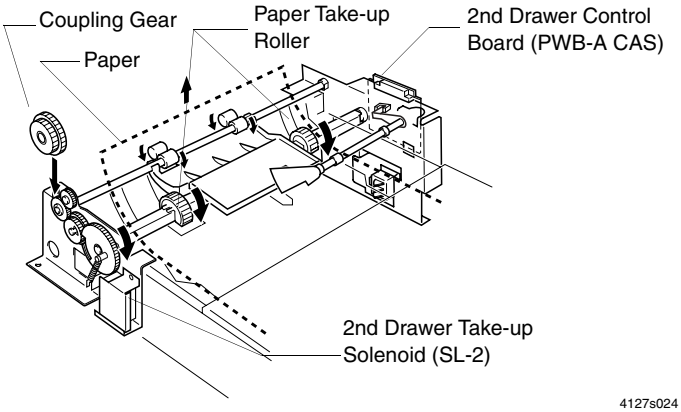
1. COMPONENTS LAYOUT



SW1 : Cassette type Detecting Switch SL2 : 2nd Drawer Take-up solenoid
PWB-A CAS : 2nd Drawer Control Board

1-1. Paper Take-up Mechanism

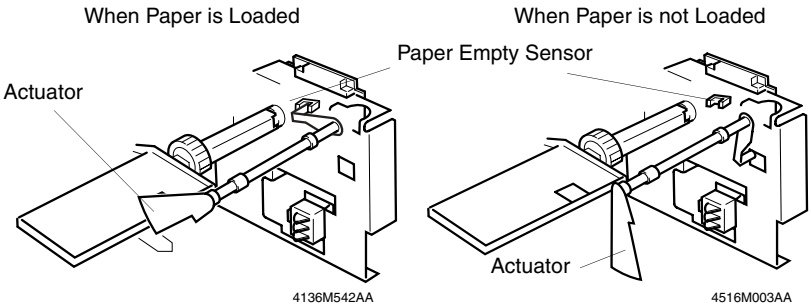
- Because of no drive motor installed for the Paper Feed Cassette, drive from the Main Motor (M1) of the printer is transmitted to the cassette by way of a drive coupling gear for paper take-up and transport.
- Except that the Paper Separator Fingers are used for paper separation, the paper take-up mechanism is the same as that for Tray 1.
- The paper separation mechanism uses the Paper Separator Fingers provided in the cassette and the elasticity the paper has in its own right. It ensures that only one sheet of paper is taken up at one paper take-up sequence.
- The Paper Take-up Solenoid is controlled from the printer side by way of the control board of the optional Paper Feed Cassette.



Electrical Component	Control Signal	ON	OFF	WIRING DIAGRAM
SL2	PWB-A CAS MPJ22A CAS-2	L	H	E~F-5

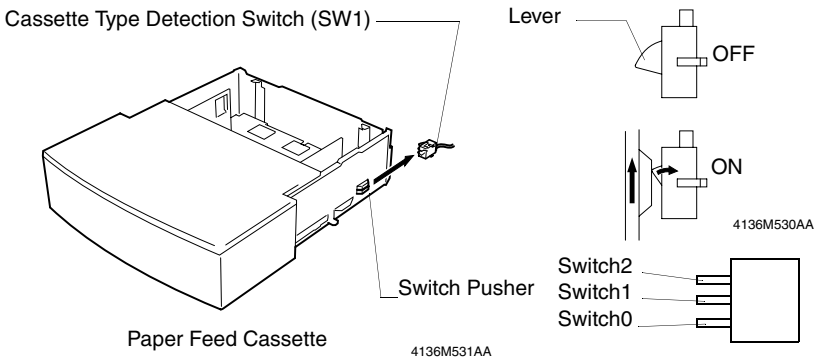
1-2. Paper Empty Detection

- There is a Paper Empty Sensor provided on the 2nd Drawer Control Board. It detects a paper empty condition of the cassette.
- When paper is loaded, the actuator is raised and blocks the sensor.
- If there is no paper loaded, the actuator drops in the hole in the Paper Lifting Plate, thus unblocking the sensor.



1-3. Cassette Type Detection

- The Paper Feed Cassette is provided with the Cassette Type Detection Switch.
- When the cassette is inserted into the printer, the switch pusher provided on the right-hand side of the cassette pushes the lever according to the paper size, turning ON the switch.
- The Cassette Type Detection Switch consists of three switches.
  The combination of these switches that turn either ON or OFF allows the printer to determine the cassette type (paper size).



Cassette Type Detection Switch Conditions

Cassette Type	Switch0	Switch1	Switch2
A4 L	OFF	OFF	ON
Letter L	OFF	ON	OFF

Electrical Component	Control Signal	ON	OFF	WIRING DIAGRAM
SW1	PWB-A CAS MPJ23A CAS-1,2,4	L	H	D~E-5

DIS/REASSEMBLY, ADJUSTMENT

1. MAINTENANCE SCHEDULE

- To ensure that the printer produces good printed pages and to extend its service life, it is recommended that the maintenance jobs described in this schedule be carried out as instructed.

PM Parts	Clean	Replace		Ref. Page in This Manual
		Continuous	Making one printed page per job	
Paper Take-Up Roll	When a paper take-up failure occurs	When a paper take-up failure occurs		☞ D-2

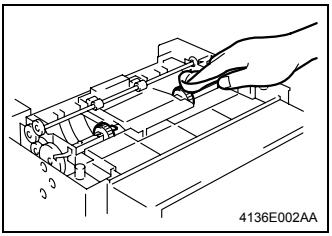
NOTES

- *K = 1,000 printed pages*
- *The contents of the Maintenance List are subject to change without notice.*
- *For the part numbers, see Parts Manual and Parts Modification Notice.*

2. REPLACEMENT/CLEANING OF PARTS

(1) Cleaning of the Paper Take-Up Roll

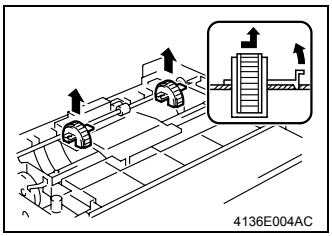
1. Raise the main unit to separate it from the Paper Feed Cassette.



2. Using a soft cloth, wipe clean the surface of the Paper Take-Up Roller.

(2) Replacement of the Paper Take-Up Roll

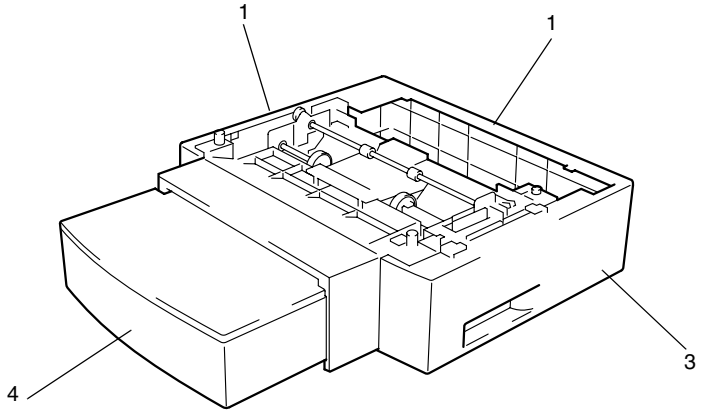
1. Raise the main unit to separate it from the Paper Feed Cassette.



2. Remove the Paper Take-Up Roller at the two points indicated.

3. DISASSEMBLY/REASSEMBLY

3-1. Identification of Exterior Parts and Removal Procedures for Them

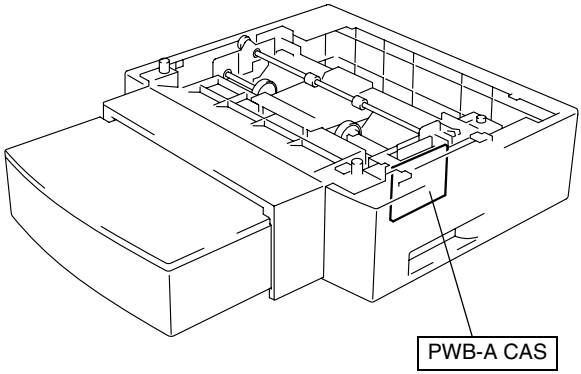


No.	Name	Removal Procedure
1	Rear Cover	Remove the five screws. → Remove the Rear Cover.
2	Right Cover	Remove the Rear Cover. → Remove the Right Cover.
3	Tray 2	Hold down the Paper Feed Cassette with one hand and remove Tray 1.
4	Left Cover	Remove the Rear Cover. → Remove the Left Cover.

3-2. Removal of Circuit Boards

NOTE

- *When removing a circuit board, refer to the precautions for handling printed circuit boards and follow the corresponding removal procedures.*
- *The following removal procedures omit the removal of the applicable component from connectors and circuit board supports.*
- *When it is necessary to touch ICs and other electrical components on the circuit board, be sure to first ground yourself.*



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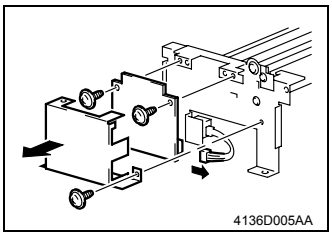
Symbol	Name	Removal Procedure
PWB-A CAS	Paper Feed Cassette Control Board	☞ D-4

(1) Removal of the Paper Feed Cassette Control Board

1. Remove the Paper Feed Cassette Paper Take-Up Unit.

☞ D-5



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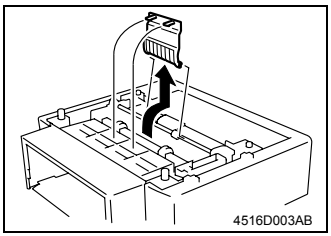
2. Remove the screw, and then remove the cover.
3. Remove the two screws, unplug the connector, and then remove the Paper Feed Cassette Control Board.

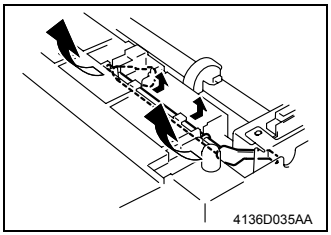
3-3. Disassembly

(1) Removal of the Paper Feed Cassette Paper Take-Up Unit

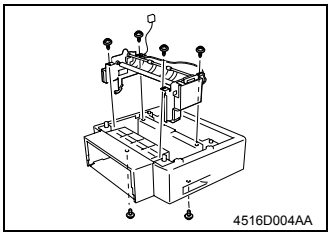
1. Raise the main unit to separate it from the Paper Feed Cassette.



2. Unhook the two tabs, and then remove the cover.



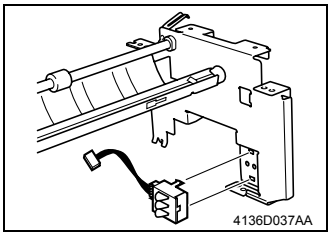
3. Remove the actuator.



4. Remove the six screws, unplug the two connectors, and then remove the Paper Feed Cassette Paper Take-Up Unit.

(2) Removal of the Paper Size Detecting Switch

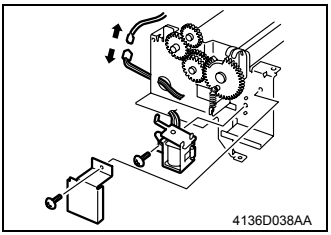
1. Remove the Paper Feed Cassette Paper Take-Up Unit.



2. Unplug the connector, and then remove the Paper Size Detecting Switch.

(3) Removal of the Paper Feed Cassette Paper Take-Up Solenoid

1. Remove the Paper Feed Cassette Paper Take-Up Unit.



2. Remove the screw, and then remove the cover.
3. Remove the screw, unplug the connector, and then remove the Paper Feed Cassette Paper Take-Up Solenoid.