NP6317

SERVICE MANUAL

REVISION 0

Canon

APR. 1999 FY8-13G5-000

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INTRODUCTION

This Service Manual contains basic data and figures for the Stapler Sorter-J1/K1/E3 needed to service the machine in the field.

Chapter 1 *General Description* introduces the copier's features and specifications, shows how to operate the copier, and explains how copies are made.
Chapter 2 *Basic Operation* provides outlines of the copier's various operational workings.
Chapter 3 *Exposure System* discusses the principles of operation used for the copier's lens drive unit and scanner drive unit. It also explains the timing at which these drive units are operated, and shows how they may be disassembled/assembled and adjusted.
Chapter 4 *Image Formation System* discusses the principles of how images are formed. It also explains the timing at which the various units involved in image formation are operated, and shows how they may be disassembled/assembled and adjusted.
Chapter 5 *Pick-Up/Feeding System* explains the principles used from when copy paper is picked up to when a copy is delivered in view of the functions of electrical and mechanical units ahd in relation to their timing of operation. It also shows how these units may be disassembled/assembled and adjusted.
Chapter 6 *Fixing System* explains the principles used to fuse toner images to tranfer media in view of the functions of electrical and mechanical units and in relation to their timing of operation. It also shows how these units may be disassembled/assembled and adjusted.
Chapter 7 *Externals/Auxiliary Mechanisms* shows the copier's external parts, and explains the principles used for the copier’s various control mechanisms in view of the functions of electrical and mechanical units and in relation to their timing of operation. It also shows how these units may be disassembled/assembled and adjusted.
Chapter 8 *Installtion* introduces requirements for the site of installation, and shows how the copier may be installed using step-by-step instructions.
Chapter 9 *Maintenance and Servicing* provides tables of periodically replaced parts and consumables/durables and scheduled servicing charts.
Chapter 10 *Troubleshooting* provides tables of maintenance/inspection, standards/adjustments, and problems identification (image fault/malfunction).

Appendix contains diagrams showing electrical parts arrangement, tables of signals, tables of special tools, tables of solvents/oils, and a general timing chart.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the from of Service Information bulletins.

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine.

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CHAPTER 1

GENERAL DESCRIPTION

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I. FEATURES

1. Copies as large as A3 in size (DIRECT) may be made, and the copyboard is of a fixed type.

- Although compact in design, the copier enables making copies as large as A3 in size in the DIRECT mode.
- The copyboard is of a fixed type so that pages of a book may be copied with much ease.

2. Zooming between 50% and 200%.

- Copies may be made in reproduction rations of between 50% and 200%, selectable in 1% increments.

3. Front loading for faster supply of paper.

- Paper is loaded from the front of the copier so that the cassette* may be replenished with paper without wasting time. The design also saves space.

* Universal and its capacity is 500 sheets.

4. Single-component fine particle toner for high resolution.

- Images are developed using the single component toner projection method. Further, the copier uses toner of extremely fine particles for enhanced image quality.

5. Multifeeder (stack bypass) pick-up.

- As many as 50 copies (80 g/m^2) may be made continuously using the multifeeding mechanism.

6. Low warm-up time

- The copier warms up in than 25 sec.

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II. SPECIFICATIONS

A. Type

Body	Desktop
Copyboard	Fixed
Light sourse	Halogen lamp
Lens	Single lens + mirror movement
Photosensitive medium	OPC

B. System

Reproduction		Indirect electrostatic method
Charging		Corona
Exposure		Slit (moving light source)
Copy density adjustment		Auto or manual
Development		Dry
Pick-up	Automatic	Exclusive cassette
	Manual	Multifeeder
Transfer		Corona
Separation		Curvature and Static eliminator
Drum cleaning		Blade
Fixing		Heat roller (900W)

C. Performance

Type of document		Sheet, Book, 3-D object (2 kg)
Document size		A3 max.
Wait time		25 sec (approx.; at 20°C)
First copy		9.4 sec (A4, AE ON/OFF, 1:1)
Continuous copying		99 copies
Type of copy paper	Cassette	A3 (max.), A6 (min.;148x105 mm)
	Multifeed tray	Plain paper (64 to 80 g/m^2), Tracing paper, Colored paper
		Plain paper (64 to 128 g/m^2), Tracing paper*, Colored paper, OHP film*, Label sheet

* Use of tracing paper may cause double feeding. If thin paper or OHP film, feed one sheet at a time.

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Two-sided copying	Multifeed tray	Plain paper (64 to 128 g/m^2), Colored paper
Overlay copying	Multifeed tray	Plain paper (64 to 128 g/m^2), Colored paper
Cassette	Claw	Provided
	Standard	60 mm deep (about 500 sheets of 80 g/m^2 paper)
	Universal	Yes
Copy tray		100 sheets (approx.; A4, 80 g/m^2)
Non-image width (1st side)	Leading edge	2.0 ±1.5 mm or less
	Left/Right	2.5 ±1.5 mm or less
Auto clear		Provided (2 min, standard)
Auto shutoff		Yes
Option		ADF-A1, MS-A1, Stapler Sorter D3, CC-V

D. Others

Power supply		Serial Numbers	
	230V 50Hz	UFW xxxxx	
	230V 50Hz	QFE xxxxx	
Power consumption	Maximum	1.5kW or less	
Noise	Copying	55 dB or less	(sound power level as prescribed by ISO)
	Standby	40 dB or less	0.05ppm or less (UL standards)
Ozone		0.05 ppm or less (UL standards)	
Dimensions	Width	610 mm	
	Depth	617 mm	
	Height	416 mm	
Weight		50 kg or less	
Operating environment	Temperature	15.0° to 30°C	
	Humidity	5% to 80%	
	Atmospheric pressure	0.6m to 1	
Others		Keep copy paper wrapped to protect against moisture.	

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Reproduction mode		Paper size	Cassette	Copies/min
DIRECT		A3 (297x420mm)	A3	9
		A4 (210x297mm)	A4	17
		B4 (257x365mm)	B4	10
		B5 (182x257mm)	B5	17
		A5R (210x149mm)	A5R	16
REDUCE	I	50%		
	II	A3 → A4	A4R	10
ENLARGE	I	A4 → A3	A3	9
	II	200%		

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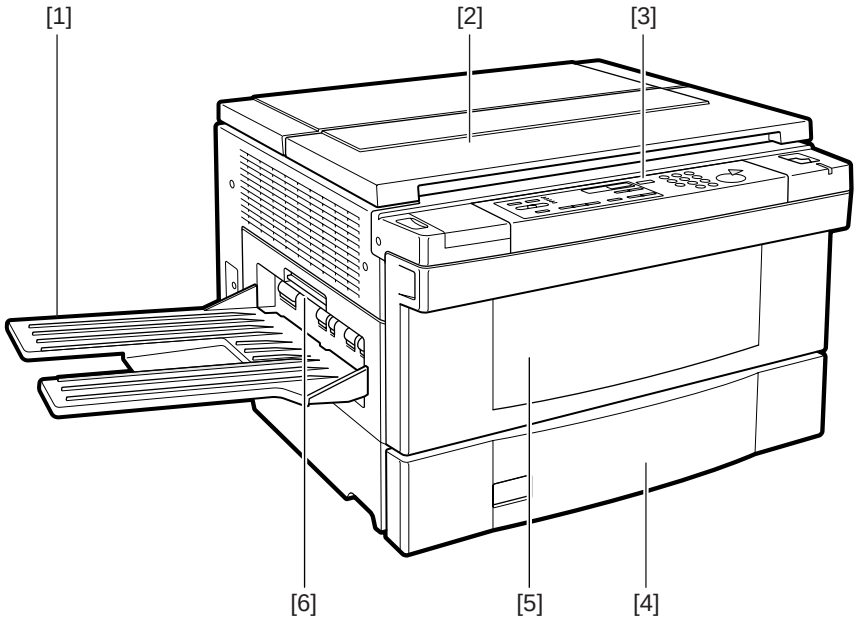
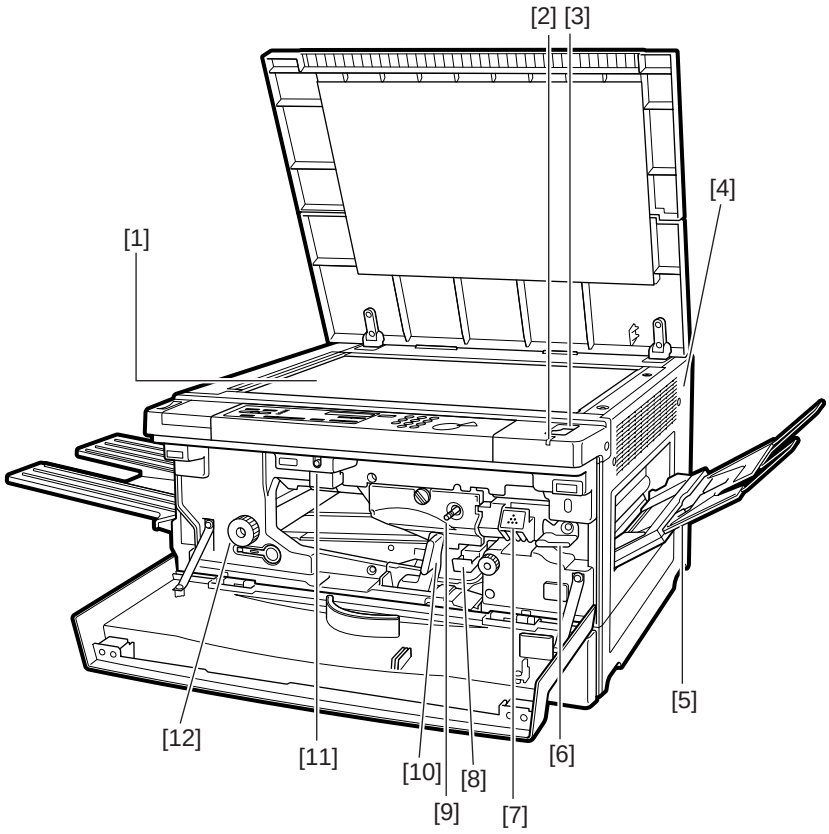
III. NAMES OF PARTS

A. External View



[1] Copy tray
[2] Copyboard cover
[3] Control panel
[4] Cassette
[5] Front cover
[6] Delivery cover

Figure 1-301



[1] Copyboard glass
[2] Power indicator
[3] Power switch
[4] Right cover
[5] Multifeeder tray
[6] Developing assembly release lever
[7] Developing assembly
[8] Transfer/separation assembly
[9] Primary corona assembly cleaner
[10] Feeder assembly release lever
[11] Copy density knob
[12] Fixing assembly knob

Figure 1-302

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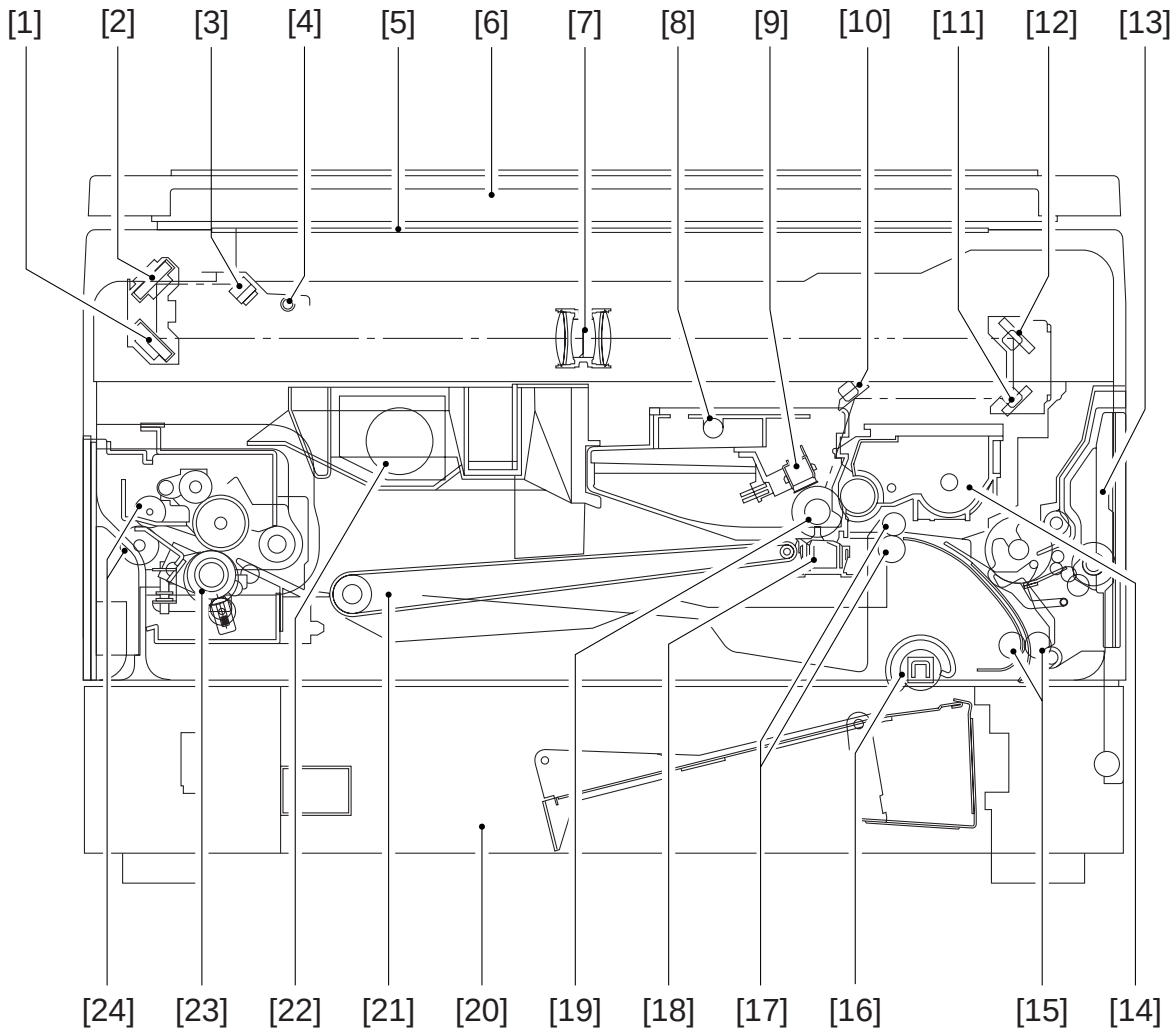
B. Cross Section



[1] No. 3 mirror
[2] No. 2 mirror
[3] No. 1 mirror
[4] Scanning lamp
[5] Copyboard glass
[6] Copyboard cover
[7] Lens
[8] Pre-exposure lamp
[9] Primary corona assembly
[10] No. 6 mirror
[11] No. 5 mirror
[12] No. 4 mirror
[13] Multifeeder tray
[14] Developing assembly
[15] Feeder roller 1
[16] Pick-up roller
[17] Registration roller
[18] Transfer corona assembly
[19] Photosensitive drum
[20] Cassette
[21] Feeder assembly
[22] Exhaust fan
[23] Fixing assembly
[24] Delivery roller

Figure 1-303

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IV. OPERATION

A. Control Panel

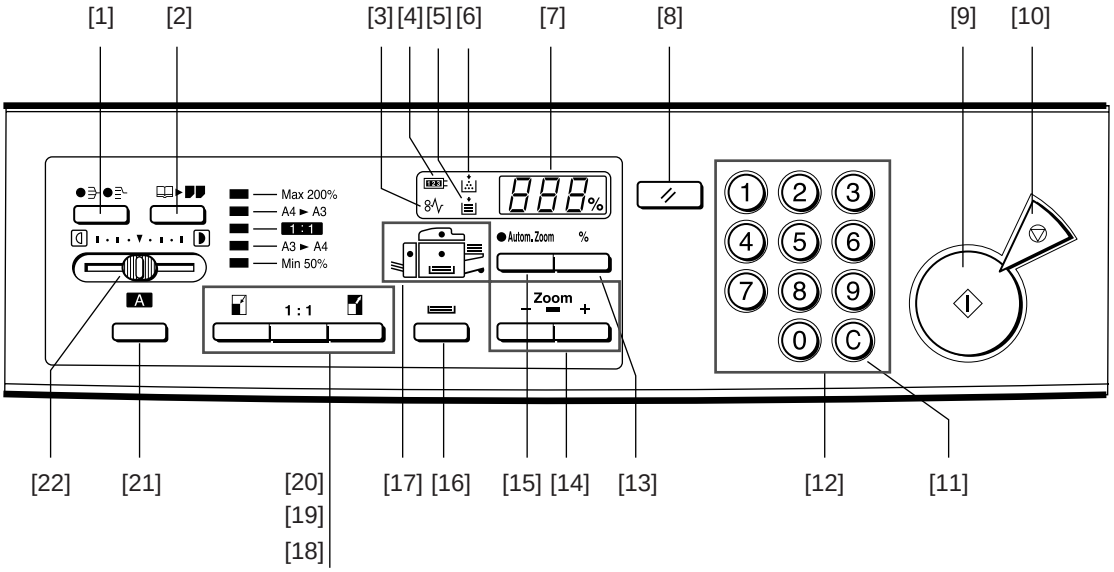

Figure 1-401

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No.	Name	Description
[1]	Sort/Group key	Press to select or cancel the Sort or Group mode. * To use the Sort or Group mode, your copier must be equipped with the optional Sorter or Stapler Sorter.
[2]	Two-Page Separation key	Press to select or cancel the Two-Page Separation mode.
[3]	Paper Jam indicator	Flashes when a paper jam occurs.
[4]	Control Card Check indicator	Flashes when the Control Card is not fully inserted.
[5]	Paper Out indicator	Flashes when there is no paper in the selected paper supply (paper cassette or stack bypass).
[6]	Toner Out indicator	Flashes when toner needs to be added.
[7]	Copy quantity/Copy ratio display	Displays the number of copies to be made, and the selected enlargement/reduction ratio. Also, when the copier is not functioning properly, the Service Call message will appear here.
[8]	Reset key	Press to return the copier to the Standard mode.
[9]	Start key	Press to begin copying.
[10]	Stop key	Press to stop the copier before copying is complete.
[11]	Clear key	Press to change the number of copies to be made to one.
[12]	Number keys	Press to input the number of copies to be made.
[13]	Percent key	Press to display the selected enlargement/reduction ratio.
[14]	Zoom keys	Press to reduce or enlarge copy images by any ratio from 50% to 200%, selectable in 1% increments.
[15]	Autom. Zoom key	Press to select or cancel Automatic Zoom. * To use Automatic Zoom, your copier must be equipped with the optional Automatic Document Feeder (ADF). When copying using the stack bypass or a universal cassette, you cannot use Automatic Zoom.
[16]	Paper Select key	Press to select the paper supply (paper cassette or stack bypass).
[17]	Paper Supply/Jam Location indicator	Lights to show the selected paper supply (paper cassette or stack bypass). If a paper jam occurs, flashes to show jam location. * This indicator will also flash to inform the user of various errors.
[18]	Enlarge key	Press to enlarge copy images using a fixed enlargement ratio.
[19]	1:1 (Direct) Copy key	Press to make copies the same size as the original.
[20]	Reduce key	Press to reduce copy images using a fixed reduction ratio.
[21]	AE (Automatic Exposure) key	Press to select or cancel Automatic Exposure Control.
[22]	Exposure lever	Use to manually adjust the lightness/darkness of copies.

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B. Daily Inspection to Be Performed by the User

Carefully instruct the user to be sure to clean the following parts of the copier once a week.

1. Primary Corona Assembly

Slide in and out the wire cleaner to clean the corona wires.

2. Copyboard Glass

Clean the copyboard glass with a moist cloth; then, wipe it dry.

3. Copyboard Cover

Clean the copyboard cover with a mild detergent solution; then, wipe it dry.

4. Transfer Corona Assembly

Remove the transfer corona assembly from the copier; then, slide the knob (wire cleaner) at the bottom of the transfer corona assembly back and forth to clean the corona wires.
Further, clean the static eliminator using the cleaning brush (accessory).

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V. IMAGE FORMATION

A. Outline

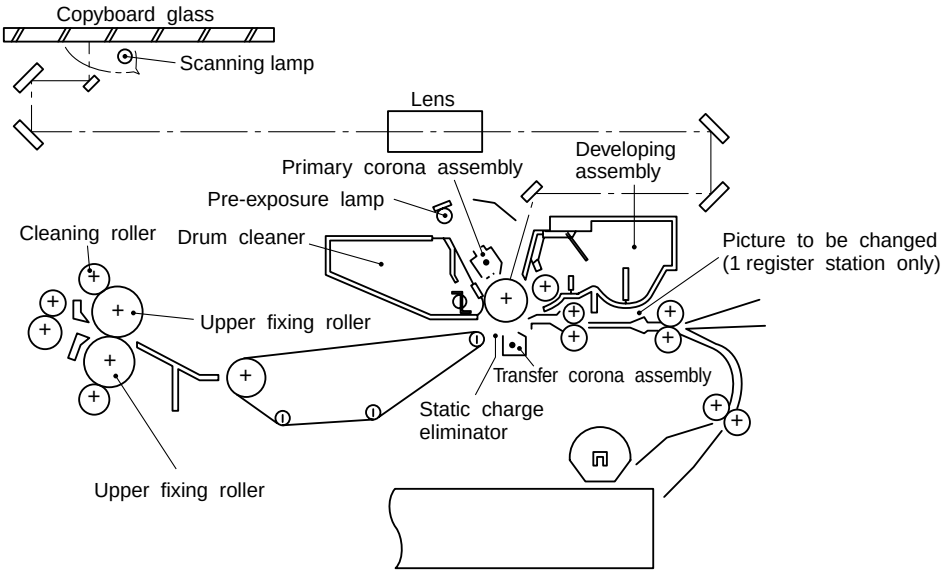

Figure 1-501

This copier consists of the units shown in Figure 1-501.
The image forming process is divided into the eight steps shown below.
Step 1: Pre-exposure
Step 2: Primary corona (negative DC)
Step 3: Image exposure
Step 4: Developing (positive plus AC)
Step 5: Transfer (negative DC)
Step 6: Separation
Step 7: Fixing
Step 8: Drum cleaning

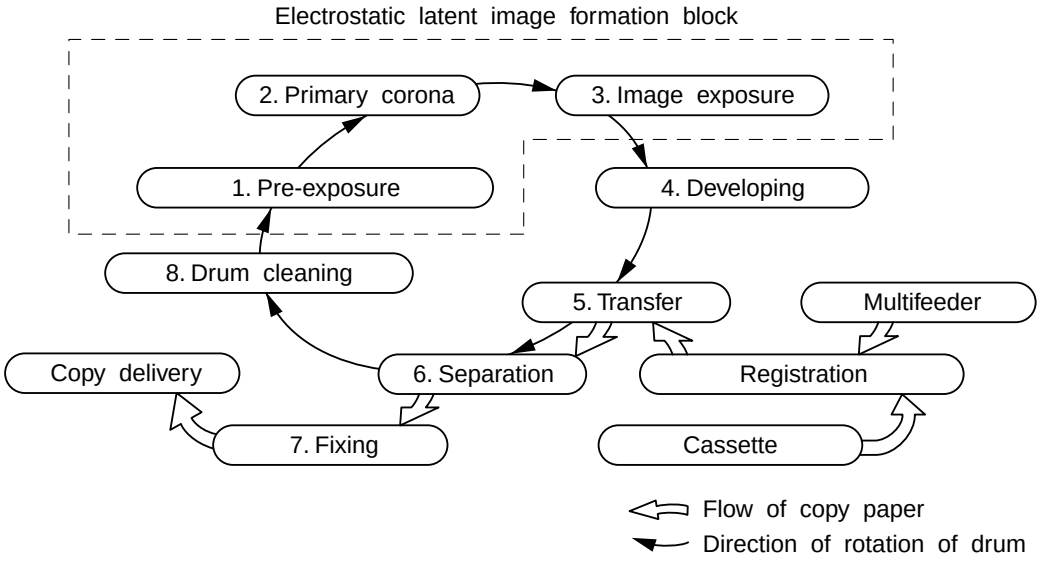

Figure 1-502

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CHAPTER 2

BASIC OPERATION

In outline diagrams, ▪▪▪ represents mechanical drive paths, and ⟶ indicates electrical signal paths.

Signals in digital circuits are identified as '1' for High and '0' for Low. The voltage of signals, however, depends on the circuit.

Nearly all operations of the product are controlled by a microprocessor; the internal workings of the processor are not relevant to the serviceman's work and, therefore, are left out of the discussions. By the same token, no repairs are prescribed for the PCBs at the user's premises; for this reason, PCBs are discussed by means of block diagrams rather than circuit diagrams.

For the purpose of explanation, discussions are divided into the following: from sensors to DC controller PCB input ports; from DC controller output ports to loads; and minor control circuits and functions.

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I. BASIC OPERATION

A. Functions

The copier can be divided into four functional sections: paper pick-up and feed system, exposure system, image formation system, and control system.

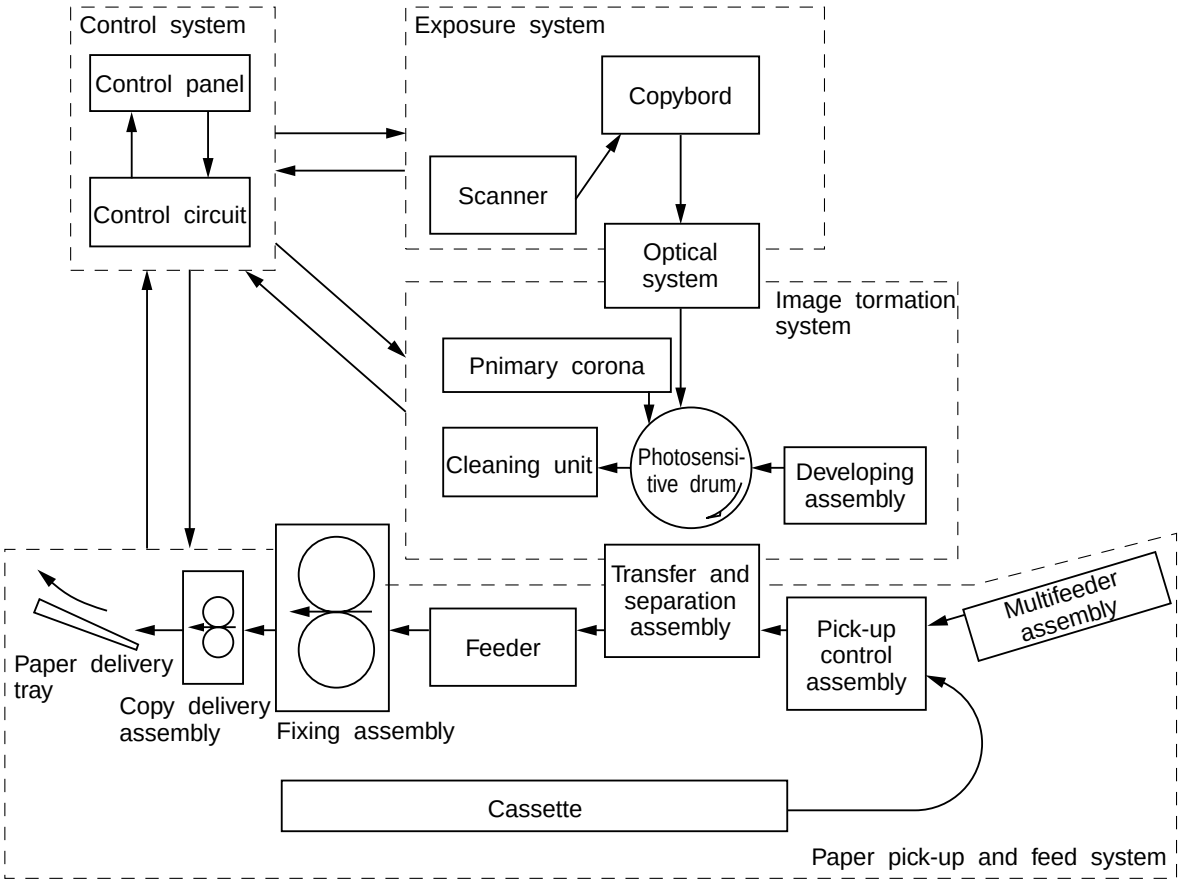

Figure 2-101

B. Outline of Electric Circuitry

The NP-6317's main mechanisms are controlled by the microprocessor, PROM, and EEPROM on the DC controller PCB.

1. Microprocessor (Q300)

- controls the copying sequence
- controls the control panel
- controls the main motor/scanner motor/mirror motor
- controls the scanning lamp/fuser lamp
- reads the analog signals

2. PROM (Q301)

- contains the sequence program

3. EEPROM (Q317)

- stores data that can be modified in the service mode (replaces conventional variable resistors and switches)

Note:
EEPROM is a type of ROM in which data may be erased or stored newly.
For this reason, the NP-6317's RAM and RAM are not backed up by a lithium battery.

Note:
The NP-6317 is equipped with an A/D converter and, therefore, its microprocessor can read analog signals.

Note:
The main motor (M1) is a brushless motor.
The scanner motor (M2) and mirror motor (M3) are stepping motors which use the oscillation frequency of the crystal oscillator on the DC controller.

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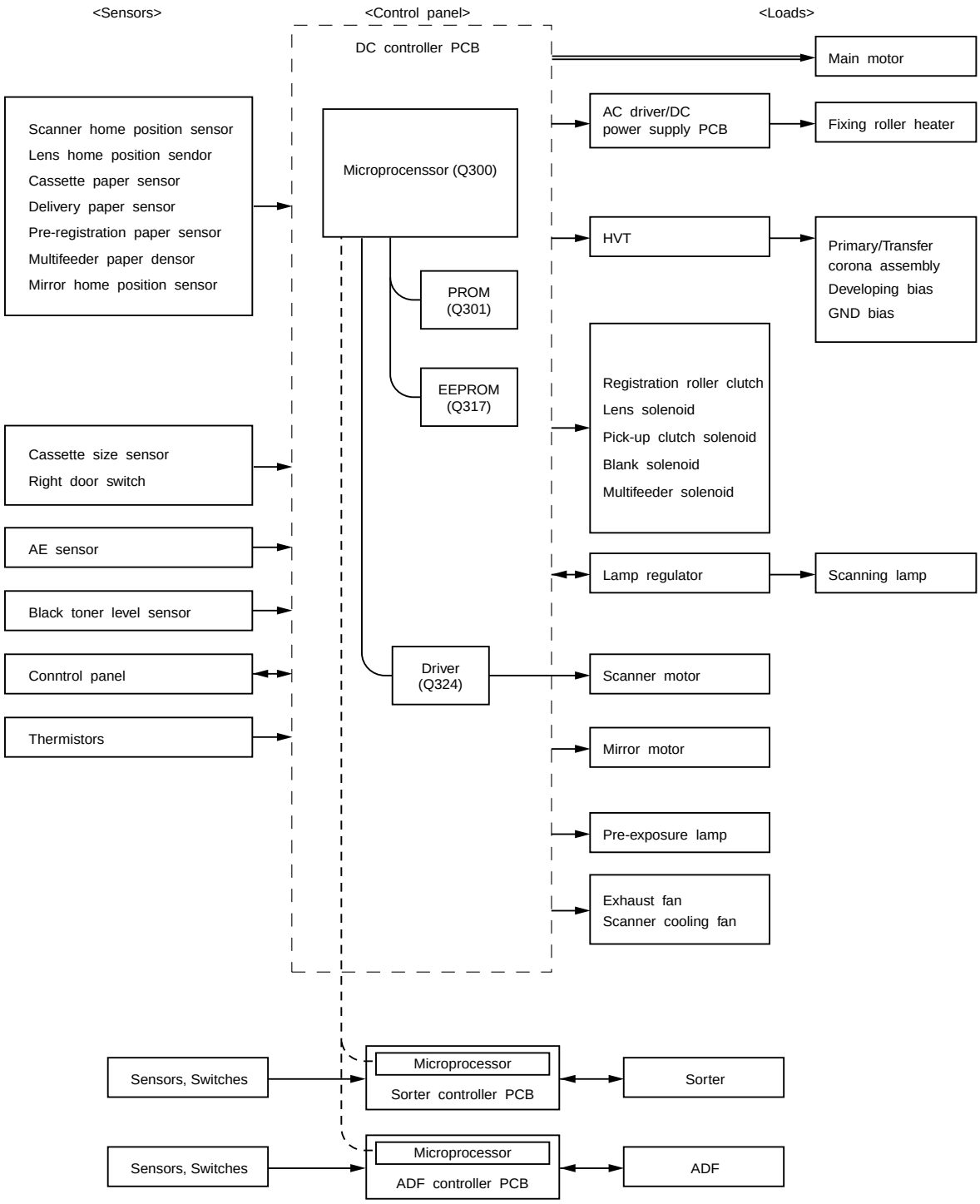

Figure 2-102

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C. Inputs to DC Controller

1. Inputs to DC Controller (1/2)

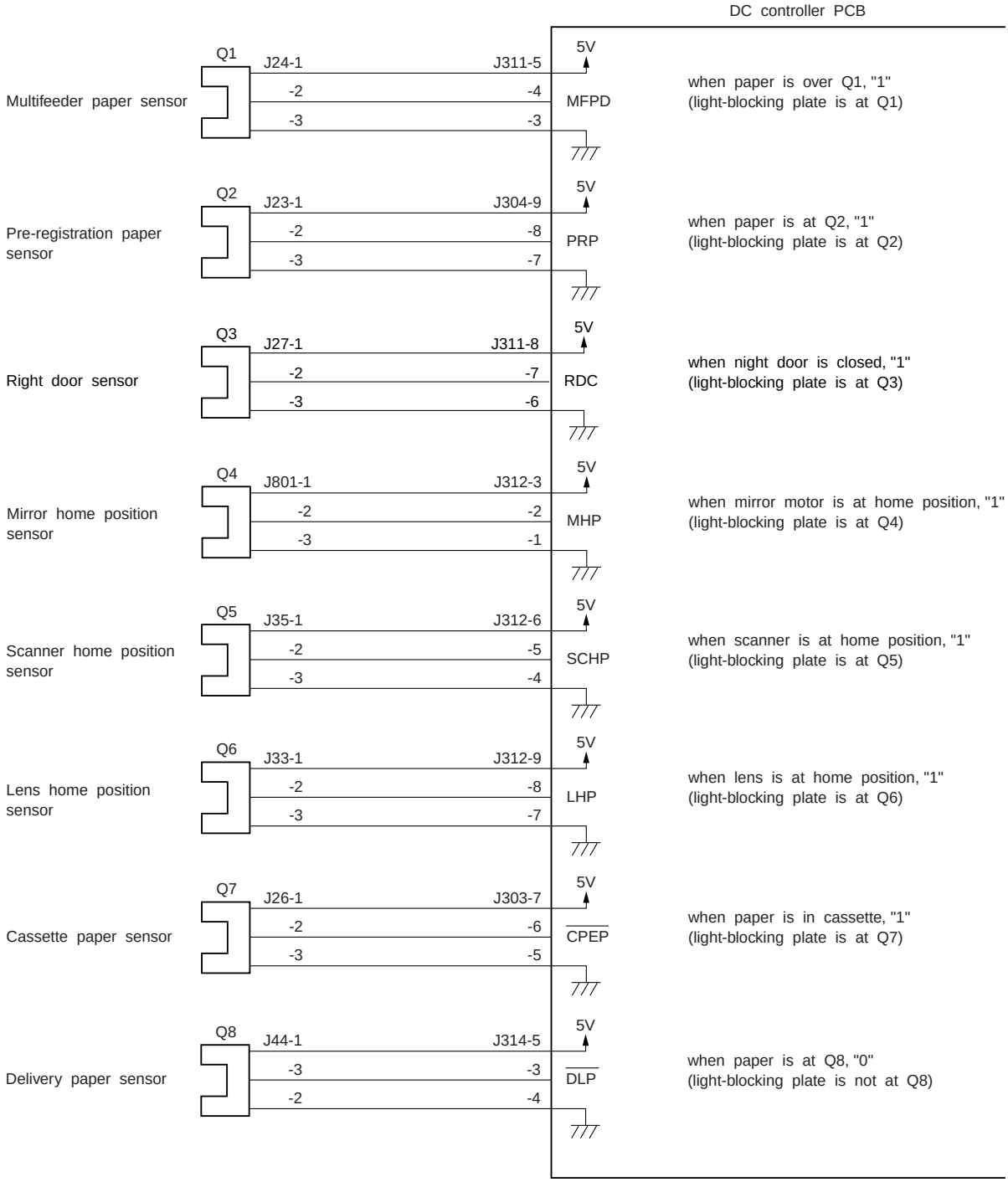

Figure 2-103

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2. Inputs to DC Controller (2/2)

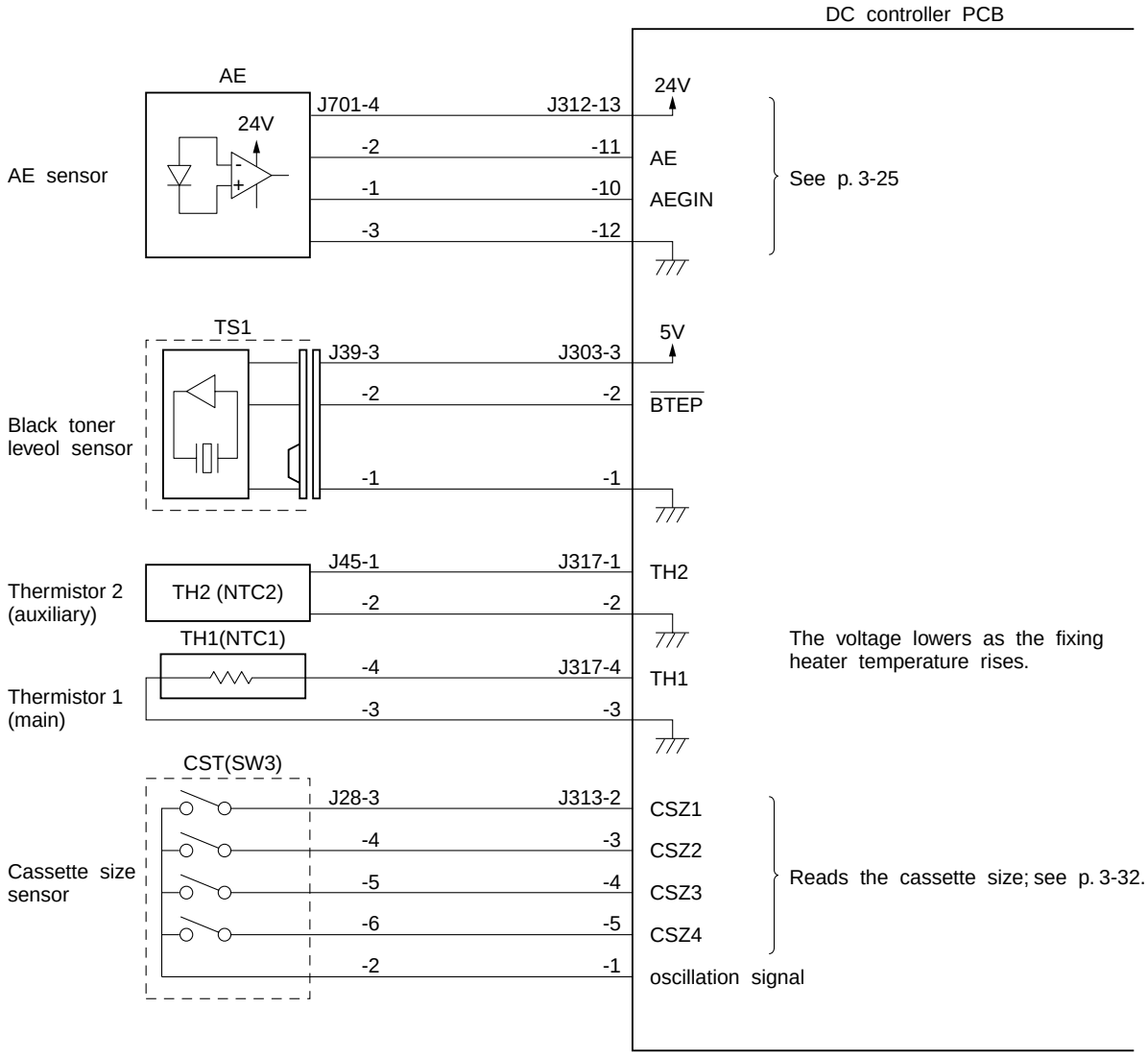

Figure 2-104

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D. DC Controller Outputs

1. DC Controller Out Puts (1/3)

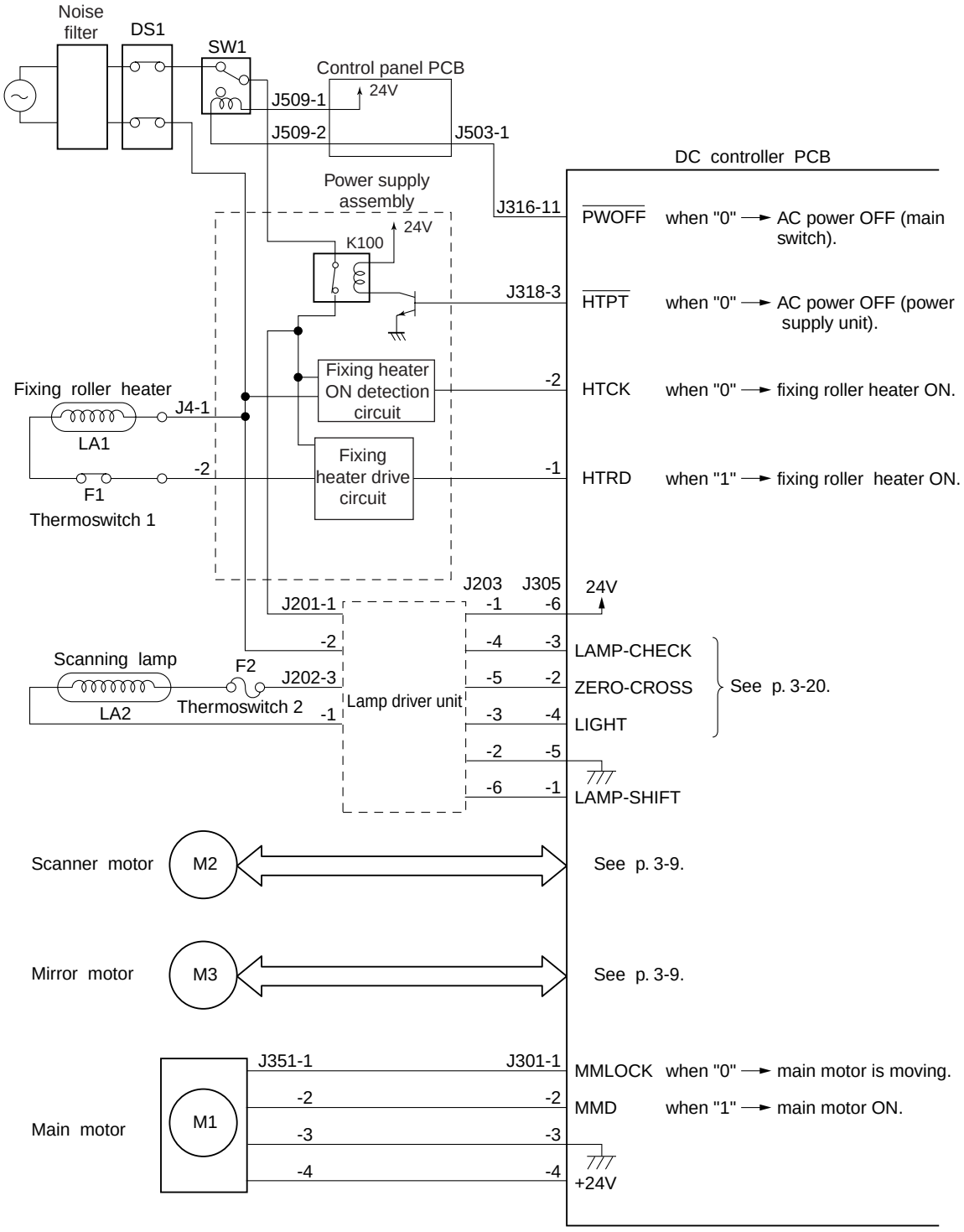

Figure 2-105

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2. DC Controller Outputs (2/3)

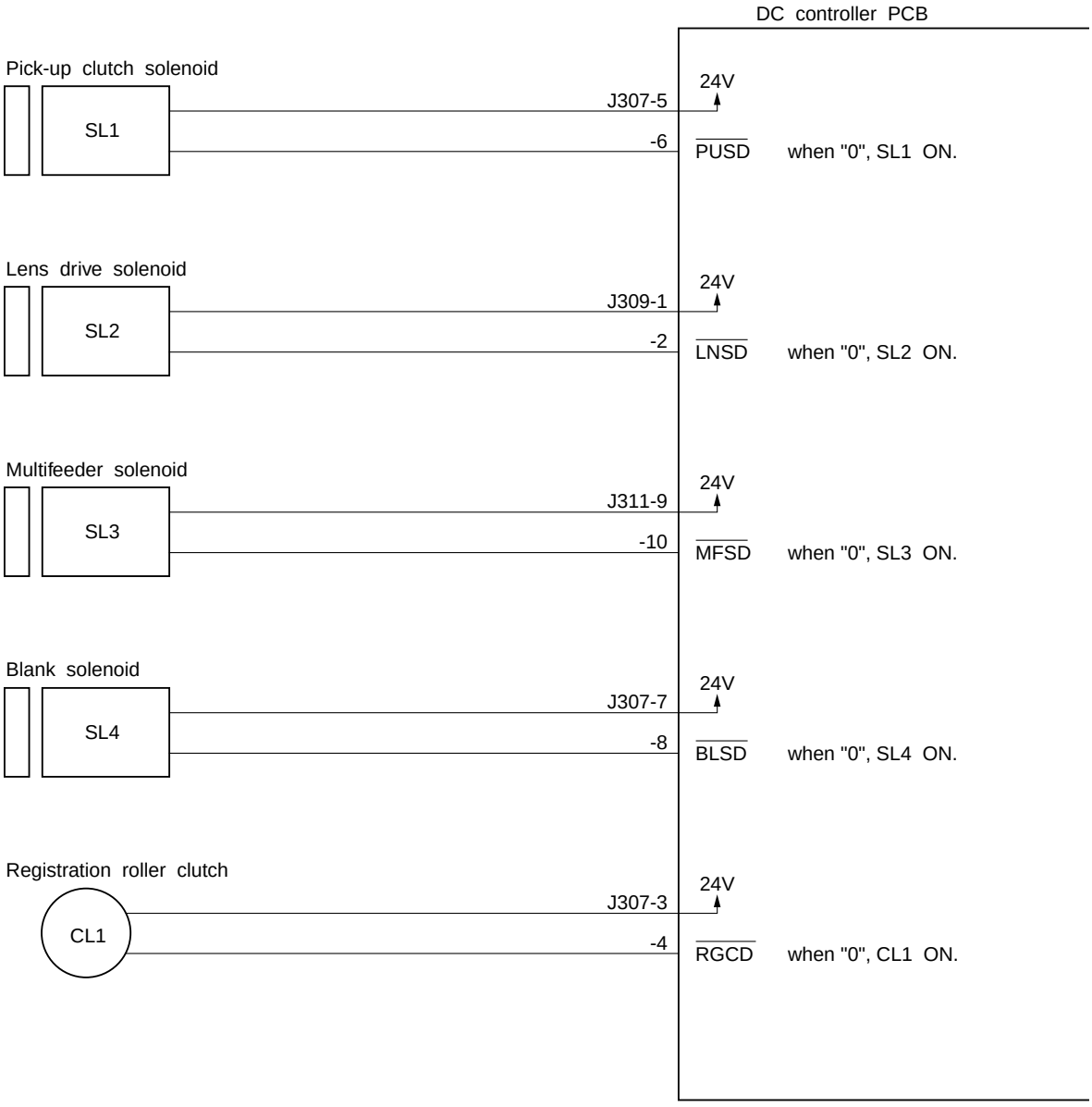

Figure 2-106

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3. DC Controller Outputs (3/3)

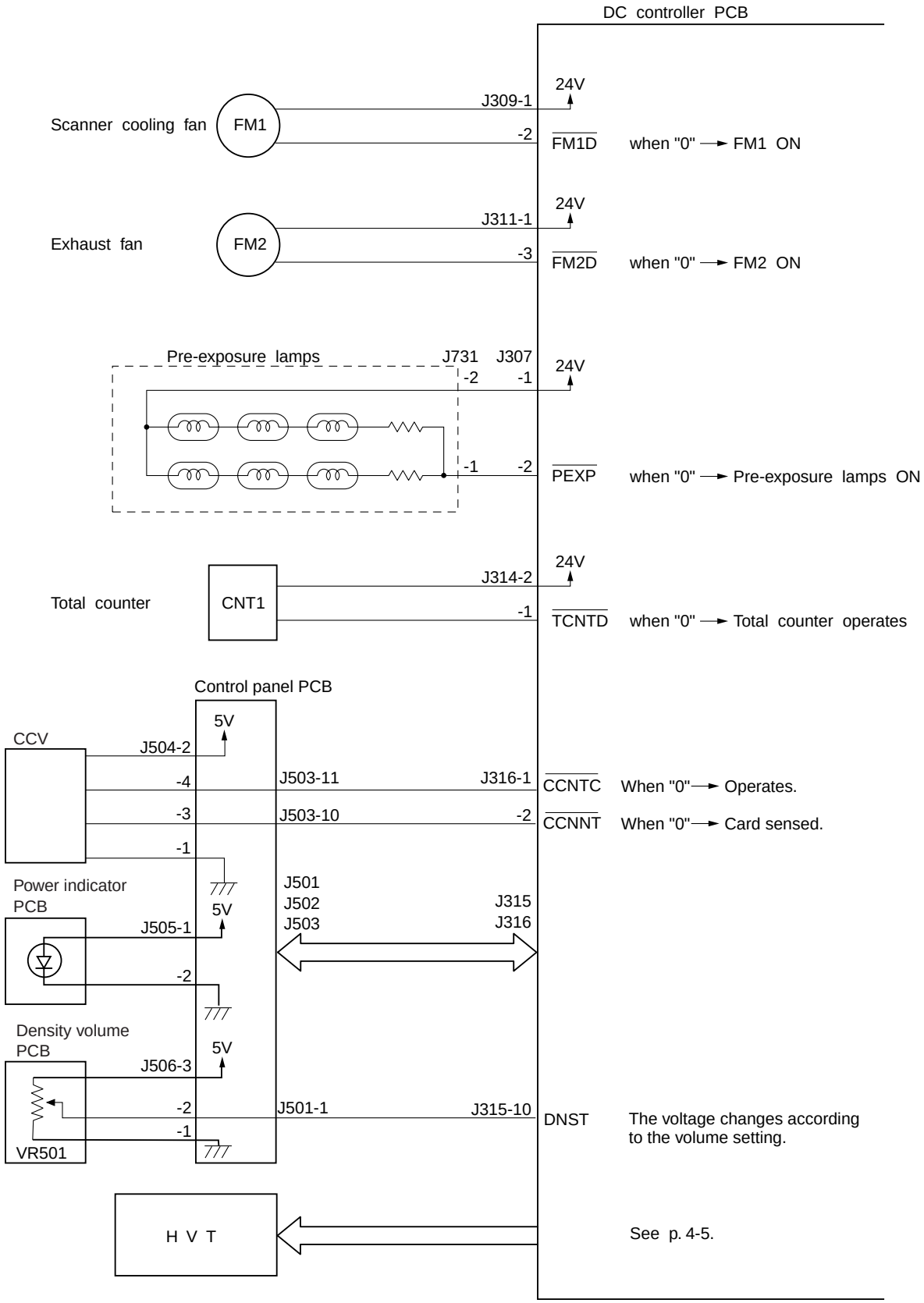

Figure 2-107

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E. Basic Sequence of Operations (Direct, Continuous Copying (2 sheets))

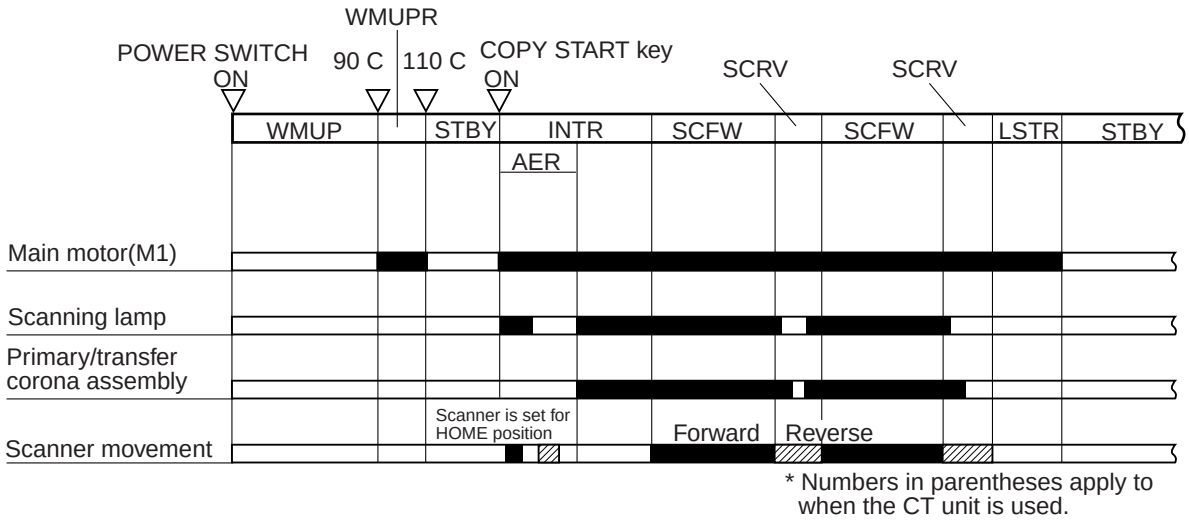

Figure 2-108

	Period	Purpose	Remarks
WMUP (Warm-up)	From switch on until the fixing roller temperature reaches 155°C.	Allows time for fixing roller to warm up.	Warm-up time varies with fixing roller temperature at power ON. When the COPY START key lights green.
WMUPR (Warm-up rotation)	Until the fixing roller temperature reaches 90°C to 110°C for the.	Keeps fixing roller temperature uniform.	• After the WMUPR period ends, the READY/ WAIT indicator changes from flashing green to green. • Even when the fixing roller has warmed up, it rotates for at least 4.2 sec.
INTR (INITIAL rotation)	About 2.2 sec after the COPY START key is pressed.	Stabilizes drum sensitivity to prepare for copying.	A PAPER FEED signal is generated to feed first sheet of copy paper.

Table 2-101a

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Period		Purpose	Remarks
AER (AE rotation)	From when the scanner moves forward about 70 mm from the end of the image until it returns to its home position.	Moves the scanner forward about 70 mm from the end of the image and measures the document density.	In the non-AE mode the scanner does not move forward or in reverse.
SCFW (Scanner forward)	When the scanner is moving forward • Travel distance changes with copy paper size.	The scanning lamp illuminates original, and the reflected optical image is transmitted to photosensitive drum through mirrors and lens array.	• A REGISTRATION signal is generated, and copy paper is fed to the transfer area. • A PAPER FEED signal is generated to feed the next sheet of copy paper.
SCRV (Scanner reverse)	While the scanner is moving in reverse. • The speed of the reverse movement is 2.5 times that of the forward movement.	The scanner is moved back to HOME position to prepare for the next copy.	
LSTR (LAST rotation)	Until the main motor stops after SCRV until the last copy ends.	Ensures full discharge of the last copy.	
STBY (Stand-by)		Waits until the COPY START key is pressed.	

Table 2-101b

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CHAPTER 3

EXPOSURE SYSTEM

1. Disconnect the power cord for safety before disassembly or reassembly work.
2. Group the screws by type (length and diameter) and location.
3. The mounting screws are equipped with washers to protect against static electricity; do not leave them behind when attaching the covers.
4. The mounting screw for the grounding wire is equipped with a washer to ensure electrical continuity; make sure that the washer is attached to the screw when removing/fitting it.
5. If possible, avoid operating the machine with any of its parts removed.
6. Unless otherwise noted, re-assembly is the reverse of disassembly.

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I. BASIC OPERATION

A. Changing the Reproduction Ratio

The reproduction ratio across the drum is varied by changing the position of the lens and the position of No. 4 and No. 5 mirrors. It is moved by the lens drive system. The reproduction ratio around the drum is varied by changing the speed of the scanner. Figure 3-101 shows how the position of the lens and mirror is varied to change the reproduction ratio across the drum.

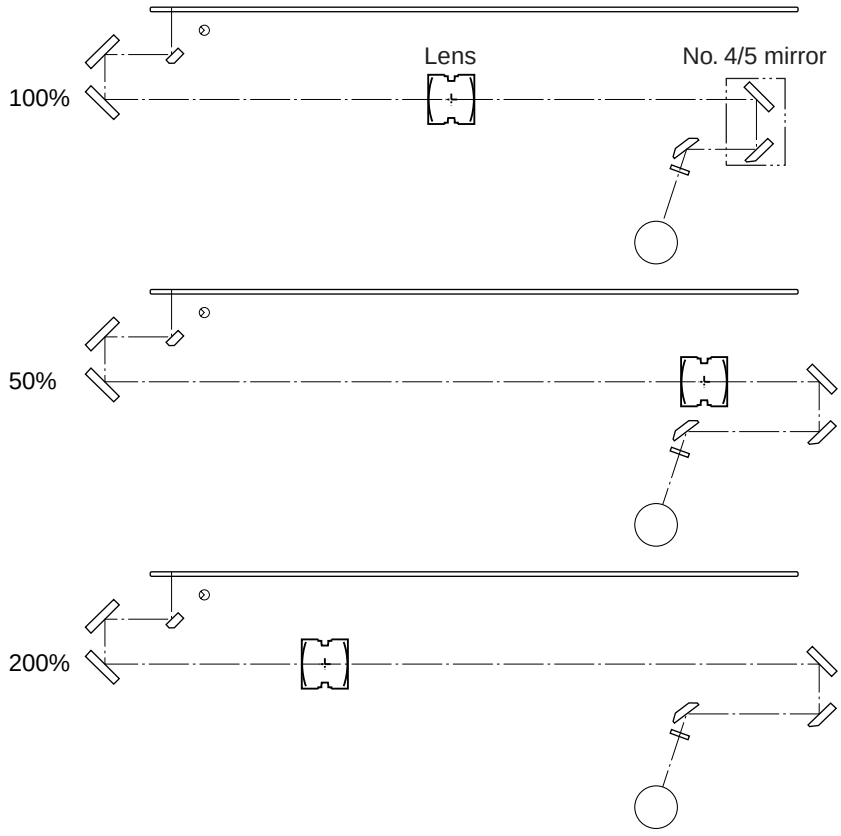

Figure 3-101

The scanner drive system changes the reproduction ratio around the drum by varying the speed at which mirror 1 moves relative to the peripheral speed of the drum. (The scanner consists of mirror 1 and the scanning lamp.)

The mirror speed is higher than the drum peripheral speed for REDUCTION and lower for ENLARGEMENT.

Note:
For DIRECT copying, the speed of the mirror is the same as the peripheral speed of the drum.

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II. LENS DRIVE SYSTEM

A. Outline

The lens is moved by the scanner motor (M2). Normally, the coupling gear is in its upper position, and connects the scanner motor to the scanner drive capstan. To move the lens, the lens solenoid (SL2) goes ON, causing the coupling gear to disengage from the scanner capstan gear and engage with the lens capstan gear. The lens is a "floating element" type. In operation, the relative position of lens elements (individual lenses) changes, and the focal length changes as a result, but the changes are intended to optimize lens sharpness for each reproduction ratio, not to make the lens function as a zoom lens. (The lens should not be dismantled.)

When the scanner motor rotates (CW), the lens will be moved to the left (for ENLARGEMENT) by the capstan and cable.

When the paper size is changed or when the copier is in the REDUCE mode, the blank exposure shutter moves in relation to the distance over which the lens travels, thereby blanking out the width corresponding to the reproduction ratio.

The DC controller indicates 'E210' on the control panel in response to an error in the lens drive system.

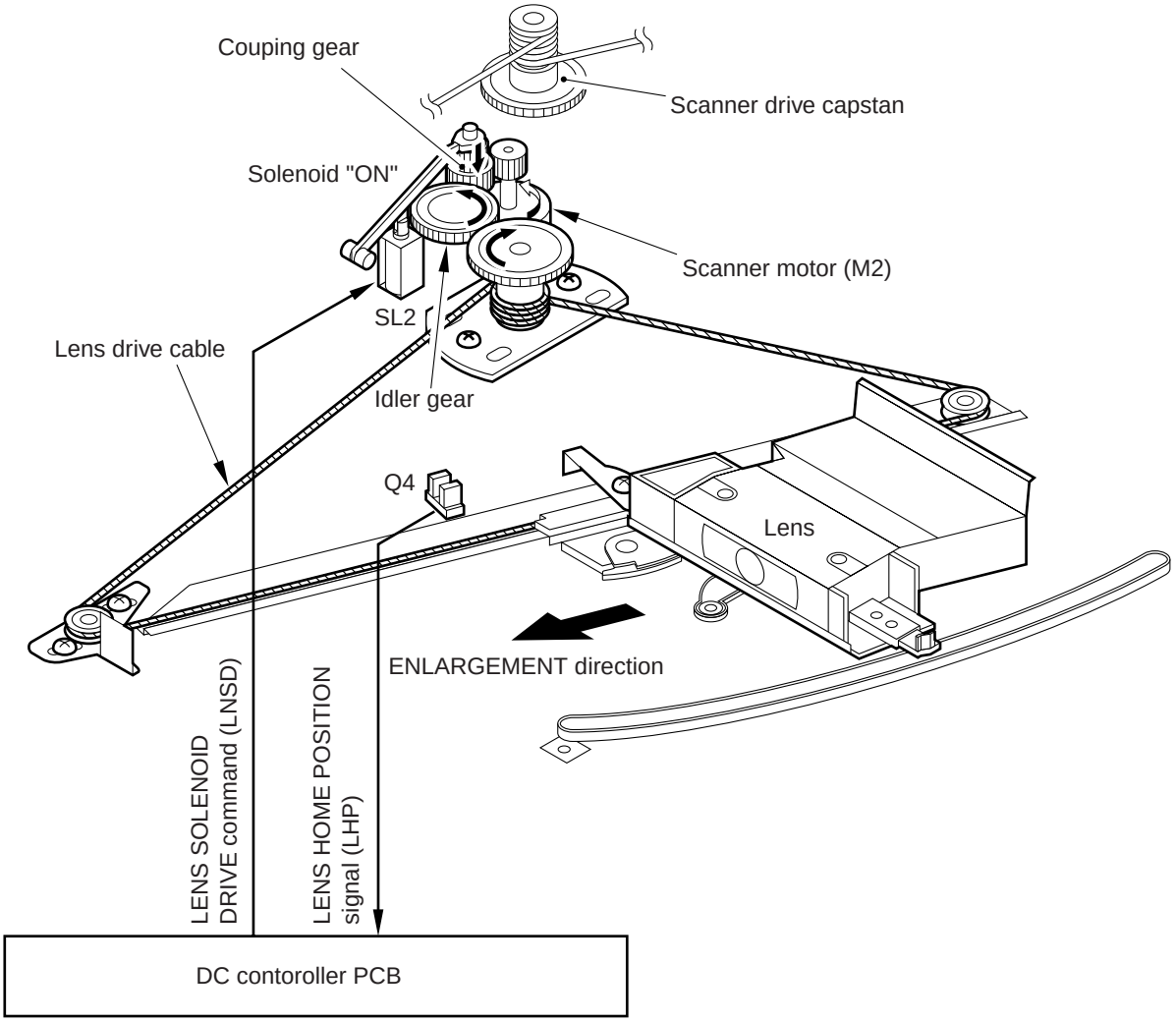

Figure 3-201

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

B. Basic Lens Drive System Operation (change of reproduction ratio)

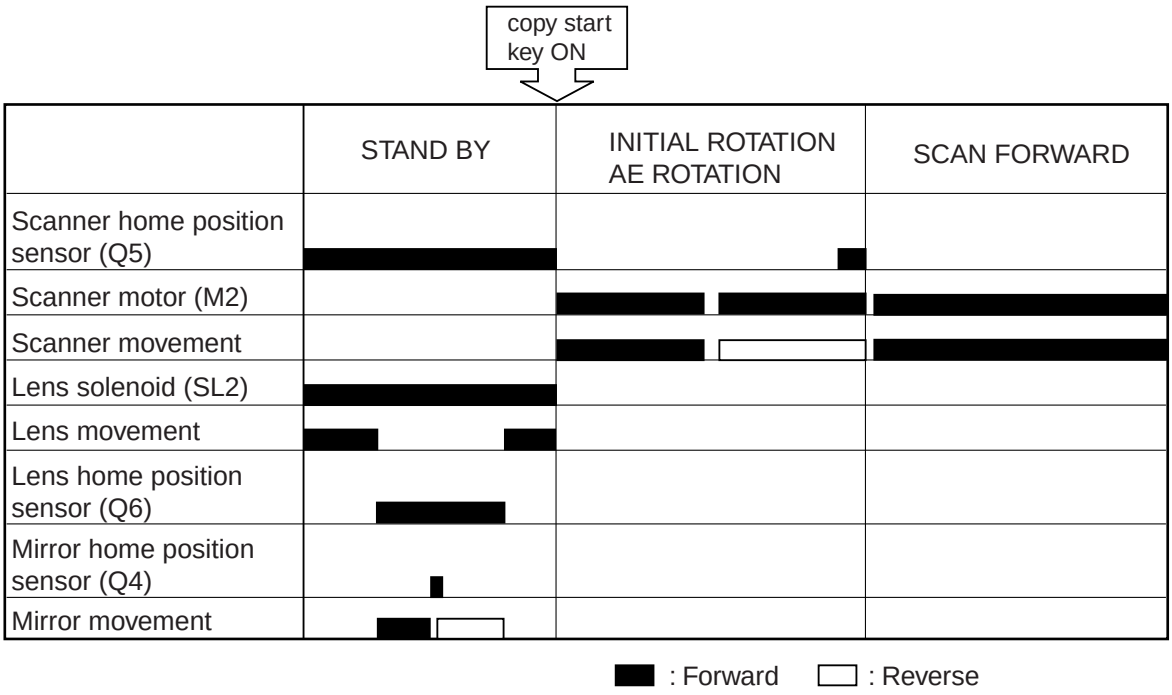

Figure 3-202

When the paper size is changed or when the copier is in the ZOOM mode, the lens first returns to the home position before moving to the position that corresponds to the cassette size and the reproduction ratio.

This operation is executed also when the ZOOM mode is switched to the DIRECT mode.

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III. SCANNER DRIVE SYSTEM

A. Outline

The scanner is driven by the scanner motor (M2). The direction of rotation of the scanner motor determines whether the scanner moves forward or backward. The forward speed of the scanner motor is continuously variable to produce the required reproduction ratio. The reverse speed is fixed regardless of the reproduction ratio (2.5 times the forward speed for DIRECT copying).

The distance that the scanner moves varies to suit the size of copy paper and the reproduction ratio.

The control panel displays 'E202' in response to an error in the scanner motor (M2) or the scanner home position sensor (Q5).

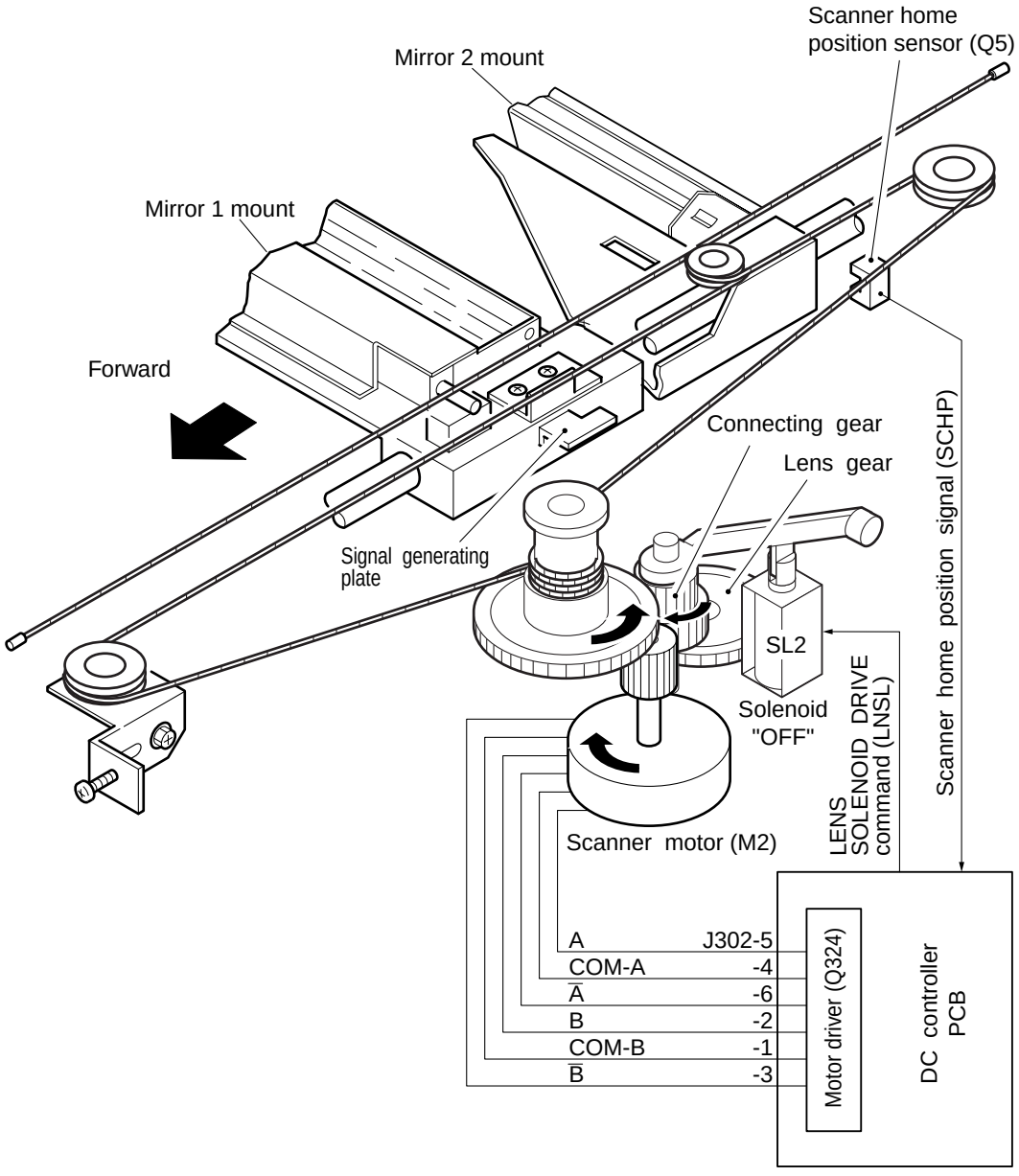


Figure 3-301

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

B. Relation Between Scanner Sensor and Signals

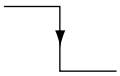
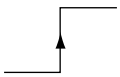
Scanner sensor	Signal name	Scanner		Meaning
		Forward	Reverse	
Scanner home position sensor (Q5)	SCHP			• Grid bias ON
				• After 0.1 sec, the scanner stops advancing.

Table 3-301

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

C. Basic Scanner Operation

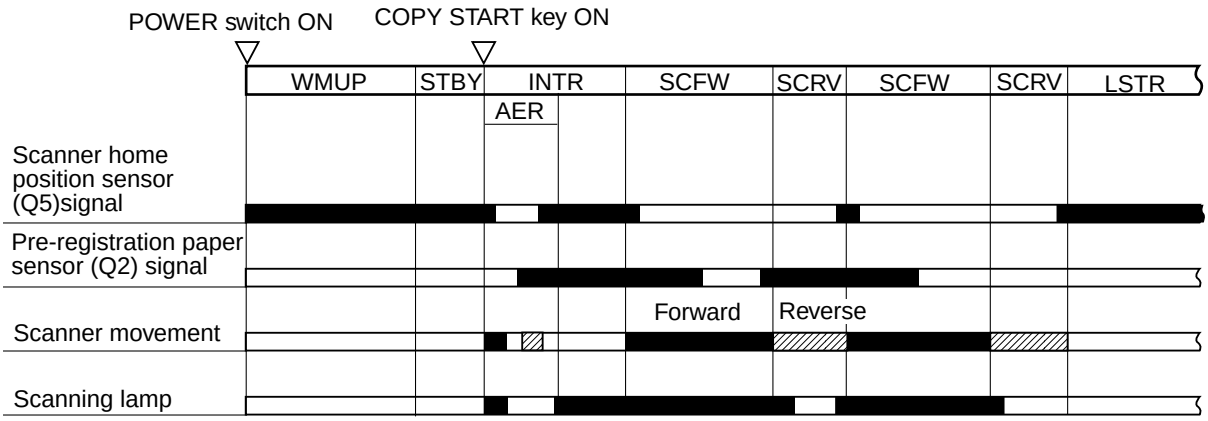


Figure 3-302

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

D. Scanner Movement for Two-Page Separation Mode (copy count "2")

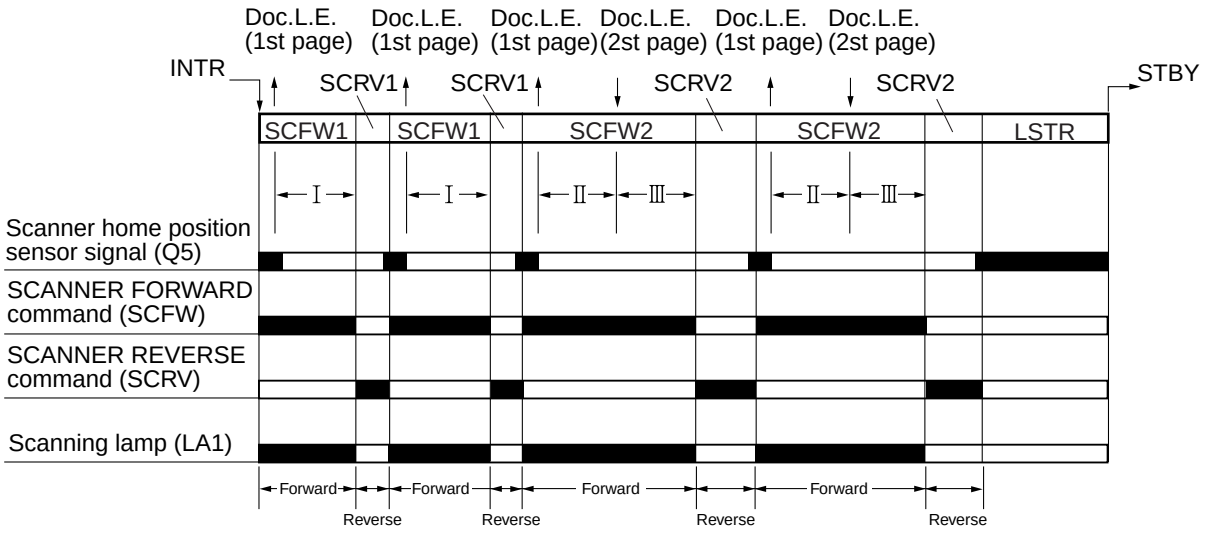


Figure 3-303

Timing of operations, i.e., I, II, and III shown in Figure 3-304, is with reference to the leading edge of the first page of the document (fall of Q3 signal).

I: The distance traveled by the scanner from the leading edge of the original is determined by the reproduction ratio and the copy paper size, just as for a normal copy.

II: This is roughly the same as I. If the forward distance traveled by the scanner is greater than 210 mm (220V, or 240V copier) the DC controller will judge that 210 mm is the leading edge of the original. If the distance that the scanner moves forward is less than 210 mm, the point at which the scanner reverses in I will be the leading edge of the second page of the document.

III: Same as I.

IV. No. 4/5 MIRROR DRIVE SYSTEM

1. Outline

The copier changes the reproduction ratio by varying the position of the No. 4/5 mirror and moving the lens. Figure 3-401 shows the positions of the mirror and the lens according to different reproduction ratios.

The mirror is driven by the mirror motor (M3), and its position is monitored by the mirror home position sensor (Q4). The mirror is positioned with reference to the number of motor pulses counted from the mirror home position.

When the power is turned on, the mirror motor (M3) continues to rotate clockwise until the mirror home position sensor (Q4) turns on. Thereafter, it rotates counterclockwise for a specific number of pulses to stop the No. 4/5 mirror at Direct position.

When a non-Direct ratio is selected during standby, both mirror and lens are driven accordingly.

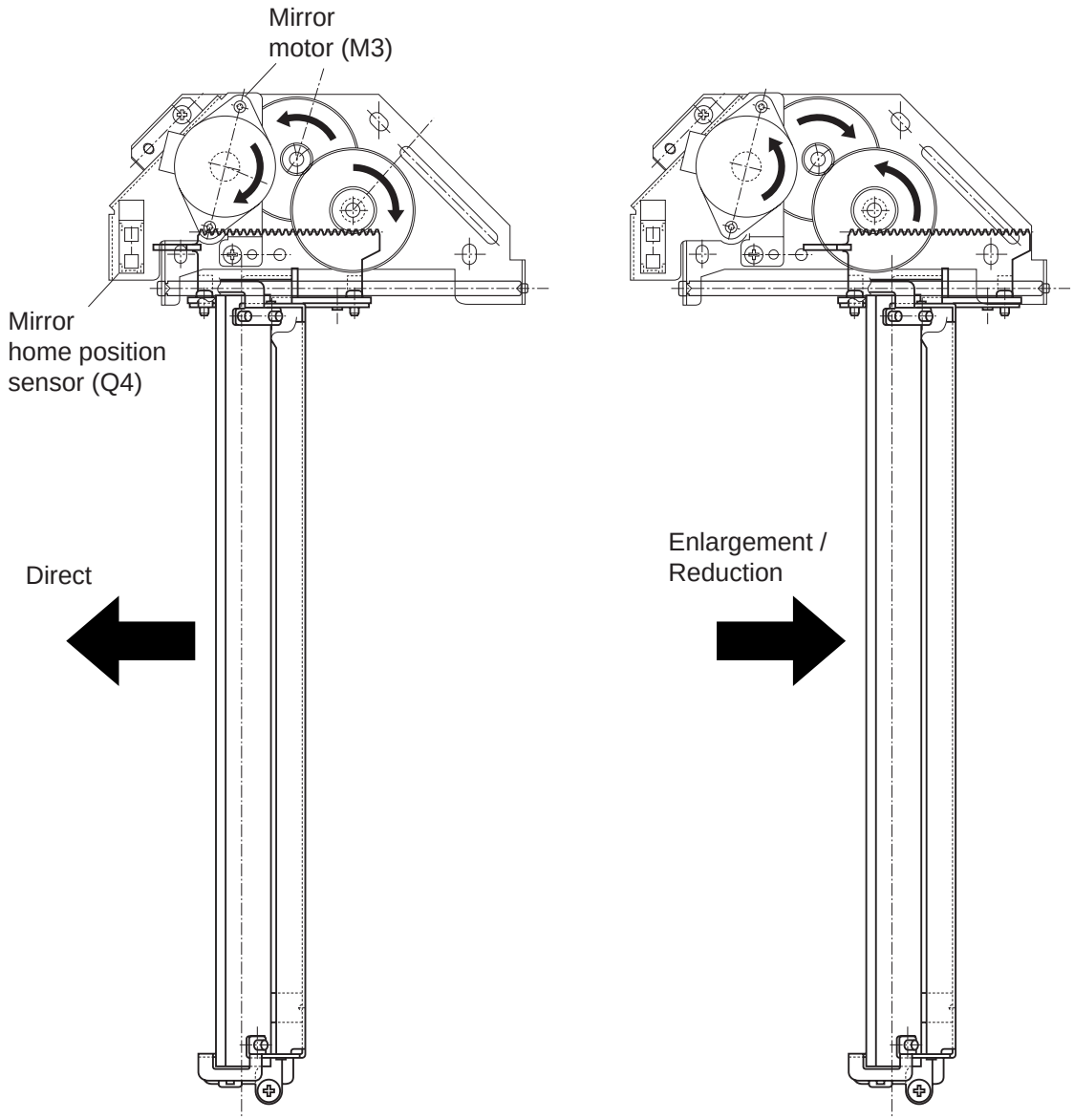


Figure 3-401

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

2. Driving the Scanner Motor (M2) and the Mirror Motor (M3)

Figure 3-402 is a block diagram showing the drive circuit used for the scanner motor (M2) and the mirror motor (M3). These motors are 4-phase stepping motors.

The pulse signals used to drive the motors (MIRRA, MIRRA*, MIRRB, MIRRB*) are generated by Q300 of the DC controller PCB; on the other hand, the motor select signal (MIRRCOM, SCNCOM) is generated by Q300 and Q303.

The motor selected by the motor select signal is controlled for direction and speed by the pulse signals from Q300.

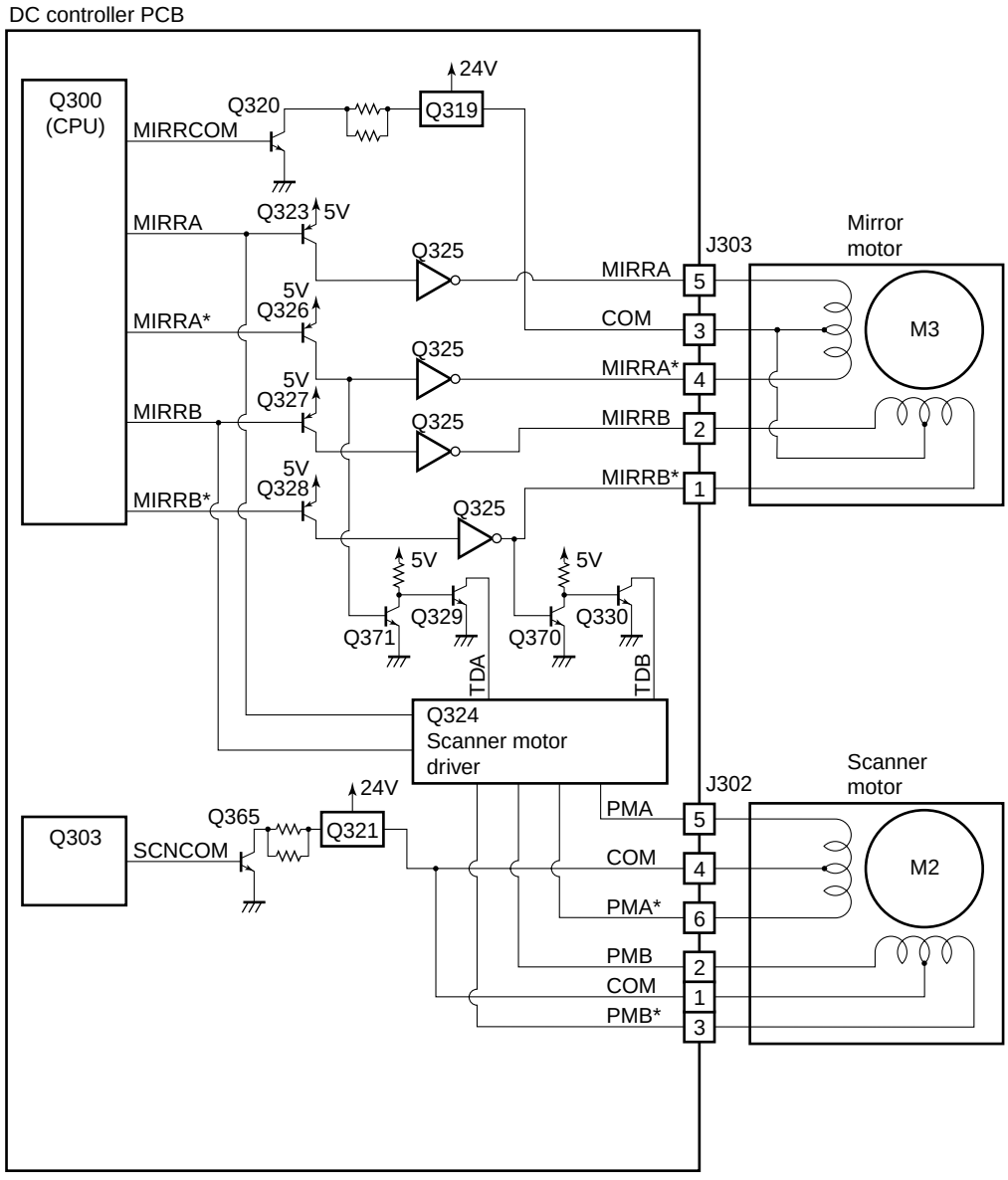


Figure 3-402

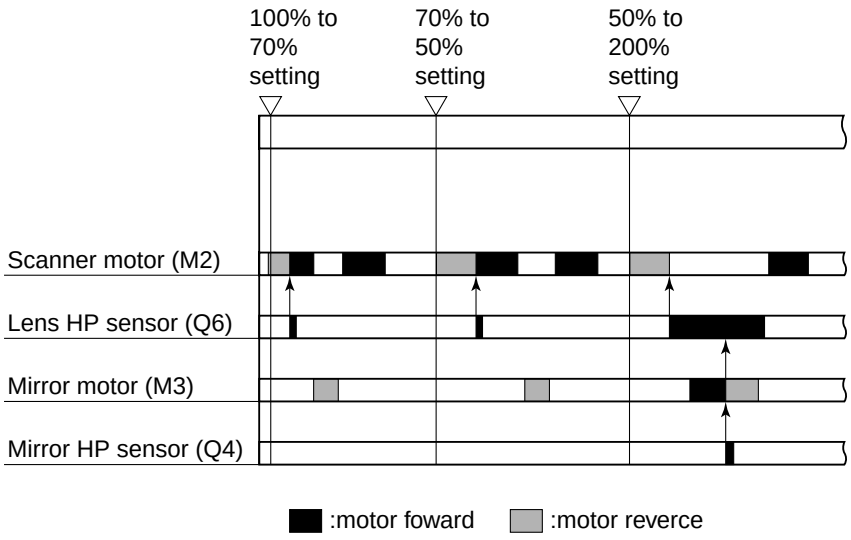


Figure 3-403

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

V. DISASSEMBLY AND ASSEMBLY

A. Lens Drive Assembly

1. Outline

The unit is adjusted at the factory with high precision using special tools. Do not remove parts or loosen screws other than those discussed.

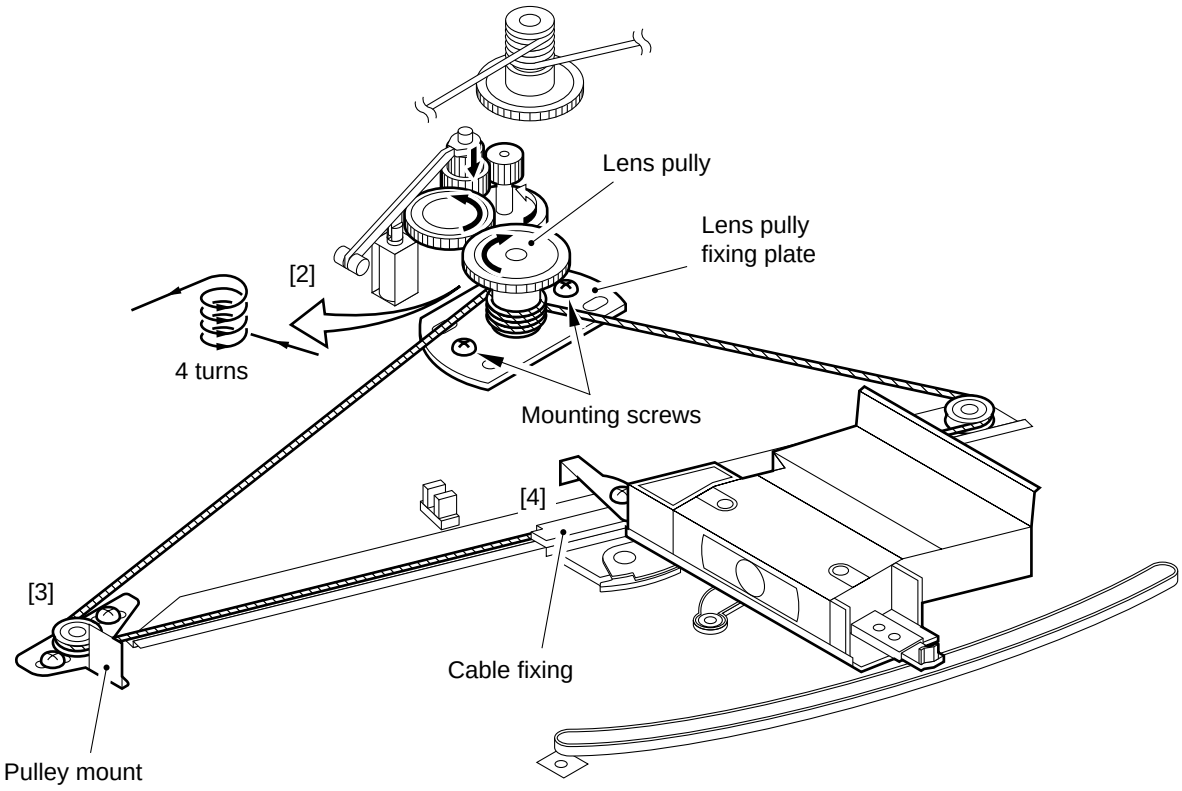
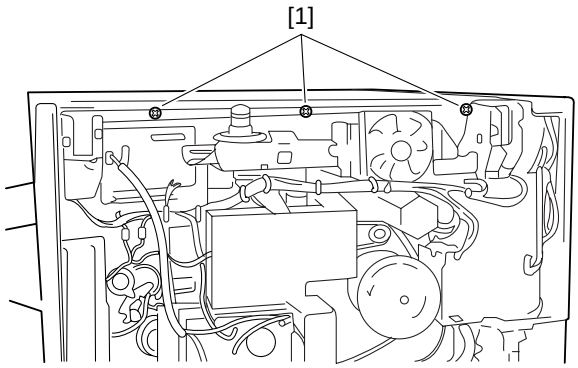


Figure 3-501

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

2. Detaching the Lens Cable

1) Detach the copyboard cover, copyboard glass, lens cover, rear cover, and upper rear cover.
2) Remove the three screws shown in Figure 3-502, and detach the upper frame.



[1] Screws

Figure 3-502

3) Mark the position of the pulley mount and the cable mount using a scriber.
4) Remove the two screws that hold the pulley mount in place.
5) Detach the cable.

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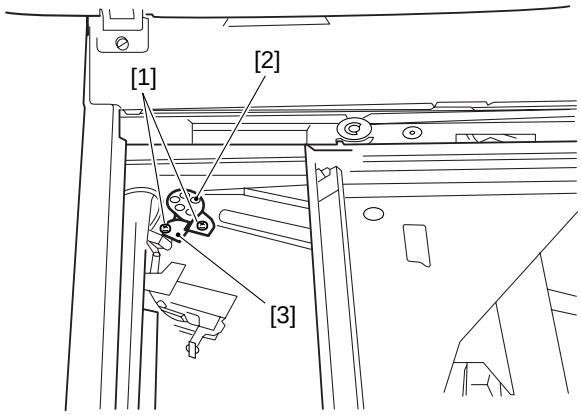
3. Routing the Lens Cable

1) Remove the two screws that hold the lens pulley mount in place, and detach the lens pulley; see Figure 3-501.



[1] Screws [2] Pulley
[3] Pulley mount

Figure 3-503

2) Wind the lens cable around the lens pulley as shown in Figure 3-504; then, fix it using two screws.
3) Shift the pulley mount to the position marked with a scriber, and fix it in place using two screws.

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B. Scanner Drive Assembly

1. Detaching the Scanner Cable

1) Mark the position of the mount, and loosen screws B (2 pcs.), which hold the mount in place.
2) Loosen screw A (1 pcs.), and detach the scanner cable.

2. Attaching the Scanner Cable

1) Route the scanner cable as shown in Figure 3-504.
2) Position the fixing plate where a mark has been put using screw A.
3) Tighten screws B.

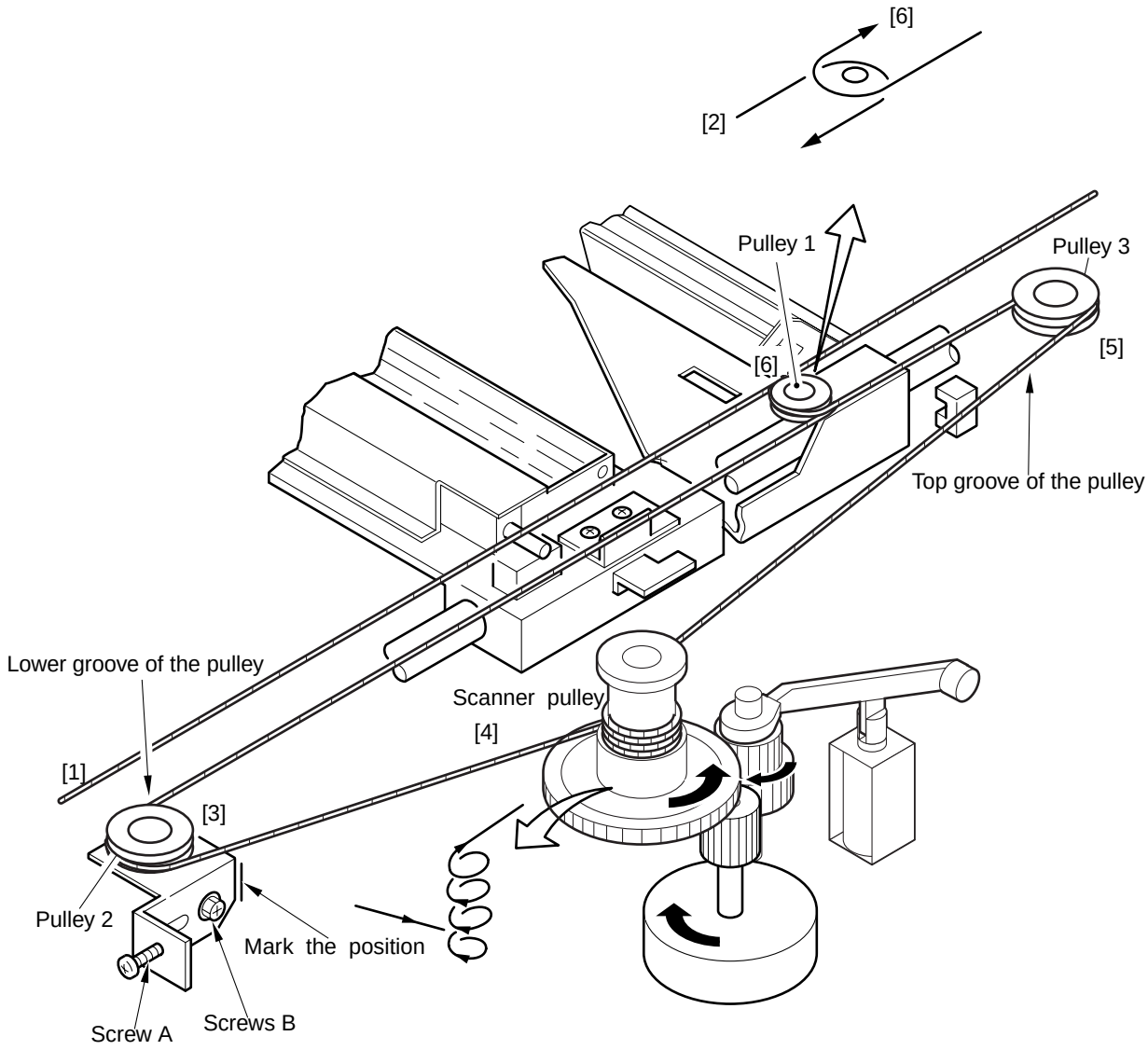

Figure 3-504 Scanner Drive Assembly

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3. Adjusting the Mirror Position (optical distance between No. 1 and No. 2 mirrors)

Adjust the position of the mirror after attaching the scanner cable.

To adjust, relocate the fixing used for the No. 1 mirror mount; loosen the two screws.

Note:

i. The cable tends to become slack as more and more copies are made, requiring adjustment.
ii. If the horizontal reproduction ratio becomes faulty because of inaccurate optical distance between the No. 1 and No. 2 mirrors, the images on copies will become out of focus.

1) Draw a line 1 cm from both ends of copy paper (A4 or A3) as shown in Figure 3-505.
2) Make a copy of the sheet on which lines have been drawn; call the copy obtained this way "sheet A."
3) Place a blank sheet of paper on the copyboard, and feed the sheet on which lines were drawn in the manual mode; call the delivered-sheet "sheet B."
   • Sheet B will show contraction by heat.
4) Put the left lines on sheet A and sheet B together, and adjust the position of the No. 1 mirror mount so that x and y in Figure 3-406 are identical.

x=y correct
x>y move the No.1 mirror mount into the direction of [a]
x<y move the No.1 mirror mount into the direction of [b]

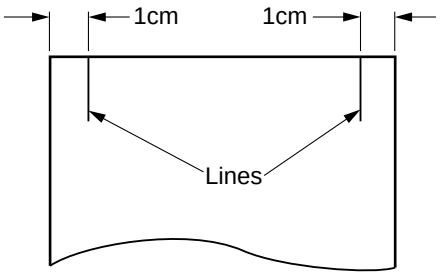


Figure 3-505

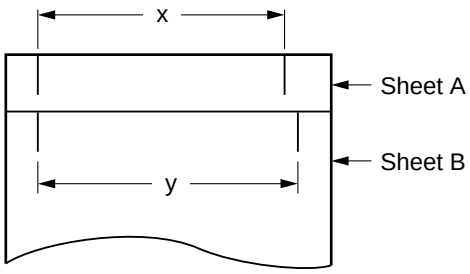


Figure 3-506

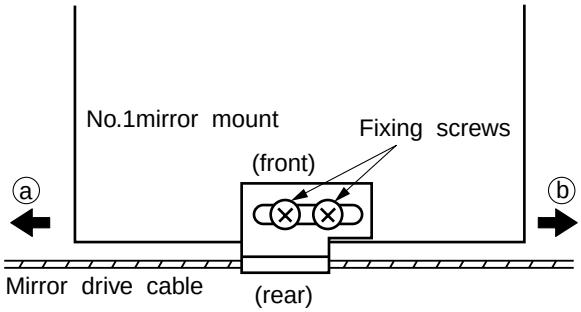


Figure 3-507

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

4. Using the Mirror Cleaning Tool

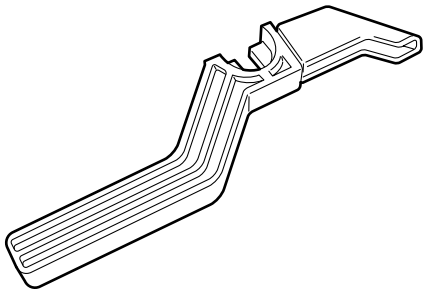


Figure 3-508

5. Cleaning the No. 6 Mirror

1) Detach the drum cartridge, developing assembly, and dustproofing glass.
2) Put the mirror cleaning tool against the mirror as shown in Figure 3-509, and clean the lens by sliding it back and forth. Use the upper registration roller as a reference for sliding back and forth.

6. Lubricating

Clean the scanner rail; then, apply lubricant evenly over it.

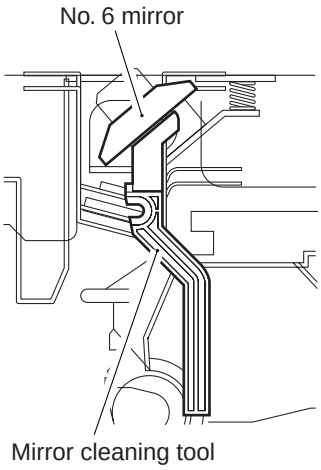


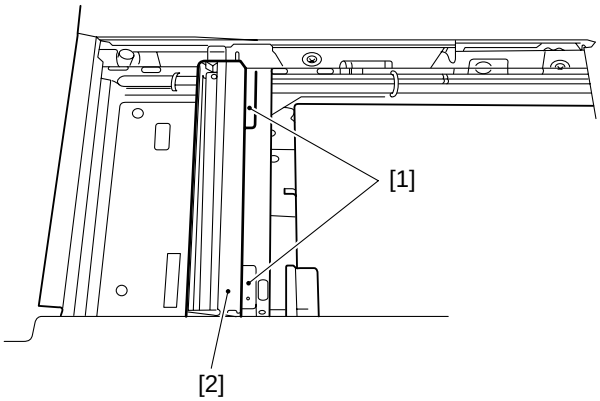
Figure 3-509

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

C. Exposure Assembly

1. Detaching the Scanning Lamp

1) Disconnect the power plug.
2) Detach the copyboard glass.
3) Remove the two screws, and detach the anti-glare plate.

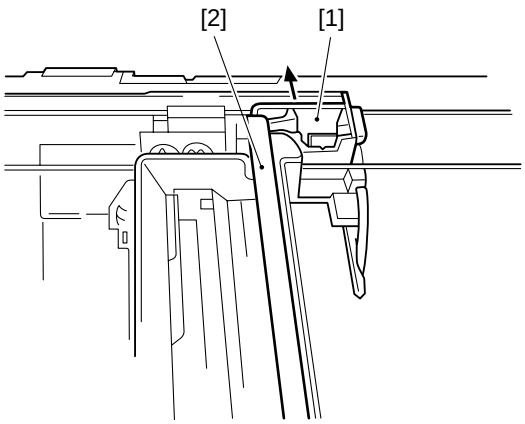


[1] Screws [2] Anti-glare plate

Figure 3-510

4) Push the lamp terminal plate (rear) into the direction of the arrow, and detach the scanning lamp.

Note:
i. Wait until the scanning lamp has cooled before starting the work.
ii. Do not leave fingerprints on the scanning lamp.
iii. Dry wipe the scanning lamp if it is soiled.



[1] Lamp terminal plate (rear)
[2] Scanning lamp

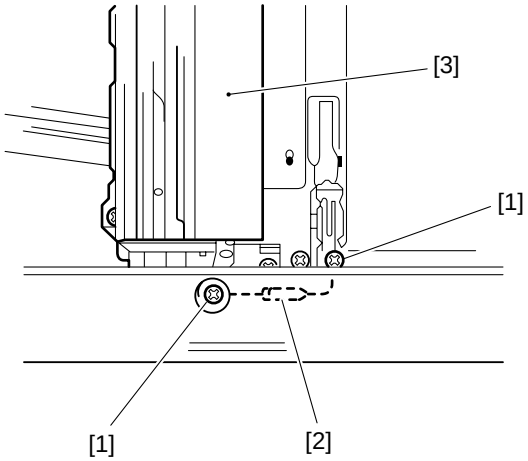
Figure 3-511

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

2. Detaching the Thermal Fuse

1) Detach the control panel and the copyboard glass.
2) Hold the rear of the No. 1 mirror mount, and move it to the right until it is positioned as shown in Figure 3-512.

Note:
When moving the No. 1 mirror mount, be sure to hold its right side.



[1] Screws [2] Thermal fuse
[3] No. 1 mirror mount

Figure 3-512

3) Remove the two screws, and detach the thermal fuse.

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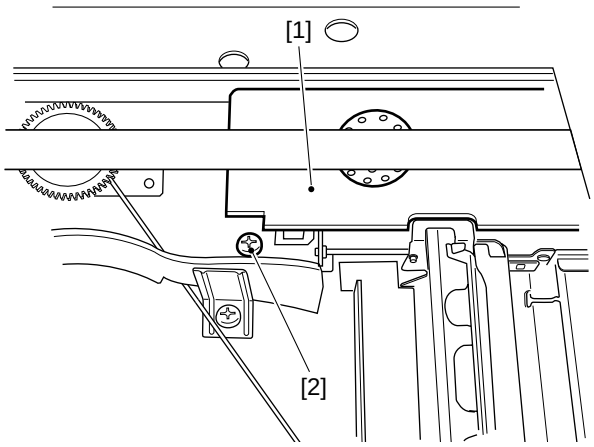
D. Blank Assembly

1. Detaching the Pre-Exposure PCB

1) Detach the rear cover.
2) Disconnect the connector (J731) from the pre-exposure PCB.
3) Hold the pre-exposure PCB using pliers, and pull it straight out taking care not to damage the PCB.

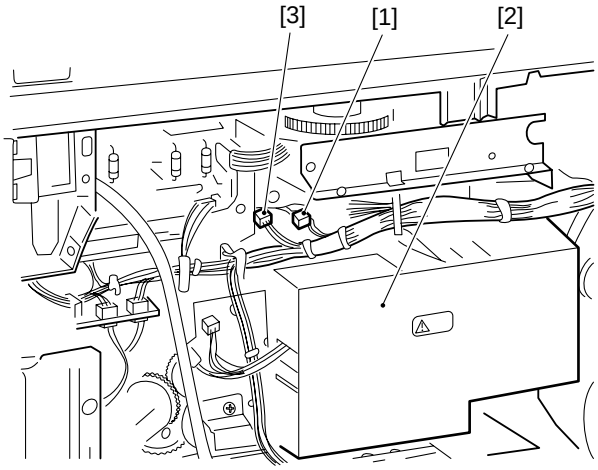
2. Detaching the Blank Assembly

1) Detach the copyboard glass, lens cover, lens motor cover, rear cover, and drum unit; then, detach the developing assembly.
2) Disconnect the connector (J731) from the pre-exposure PCB and the connector (J30) from the blank solenoid.



[1] Lens motor cover [2] Screw

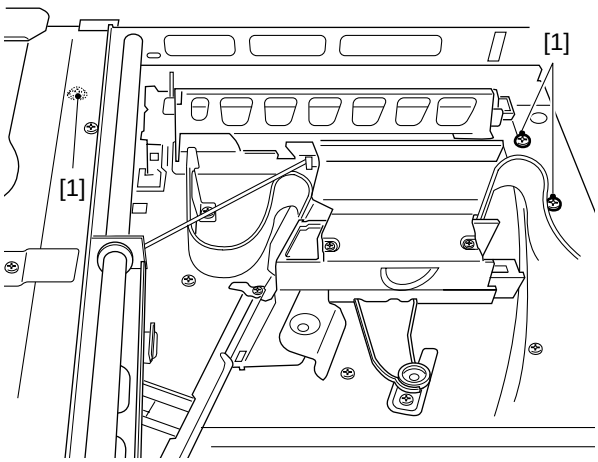
Figure 3-513



[1] Connector (J731) [2] HVT
[3] Connector (J30)

Figure 3-514

3) Holding the blank assembly on its bottom, and remove the four screws; then, pull out the pre-exposure lamp to the front.



[1] Screws

Figure 3-515

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E. No. 4/5 Mirror Mount

The screws [A] that keeps the No. 4/5 mirror mount [1] to the lens base plate must not be loosened in the field. If they are loosened, re-adjusting the mirror mechanical axis is not possible in the filed.

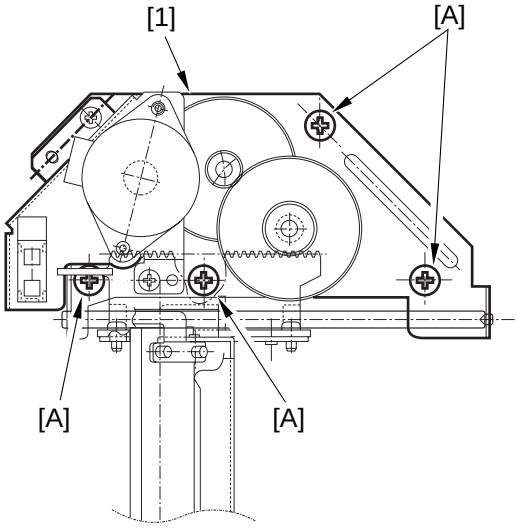

Figure 3-516

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CHAPTER 4

IMAGE FORMATION SYSTEM

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I. PROCESSES

A. Outline

The basic structure of the image formation system is as shown below.
- Scanning lamp control system
- Primary/transfer corona current and grid bias voltage control system
- Developing bias control system
- Document density measurement system
- Developing assembly/drum cleaning system
- Blanking system

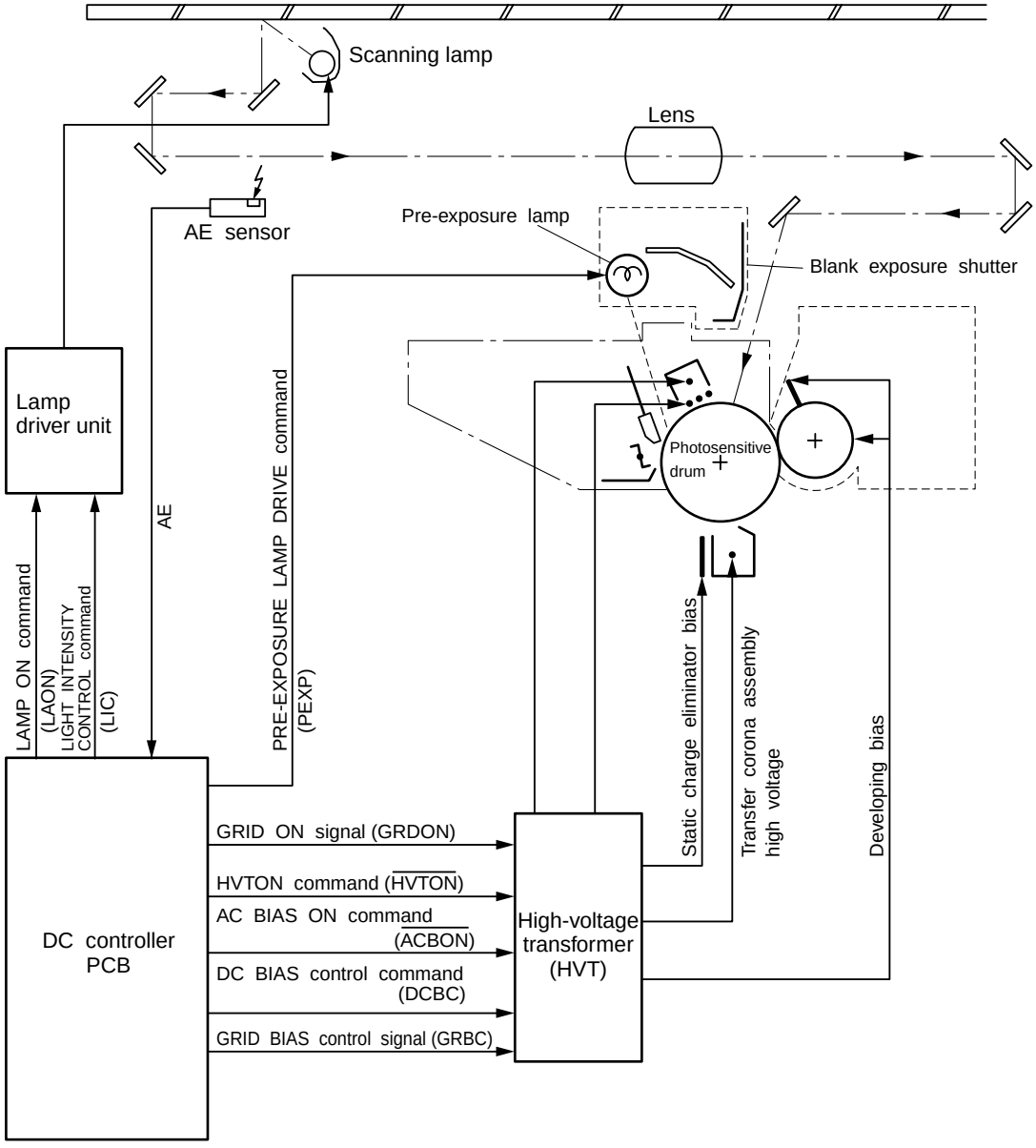

Figure 4-101

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B. Basic Operation of Image Formation System (black developing assembly, 2 copies)

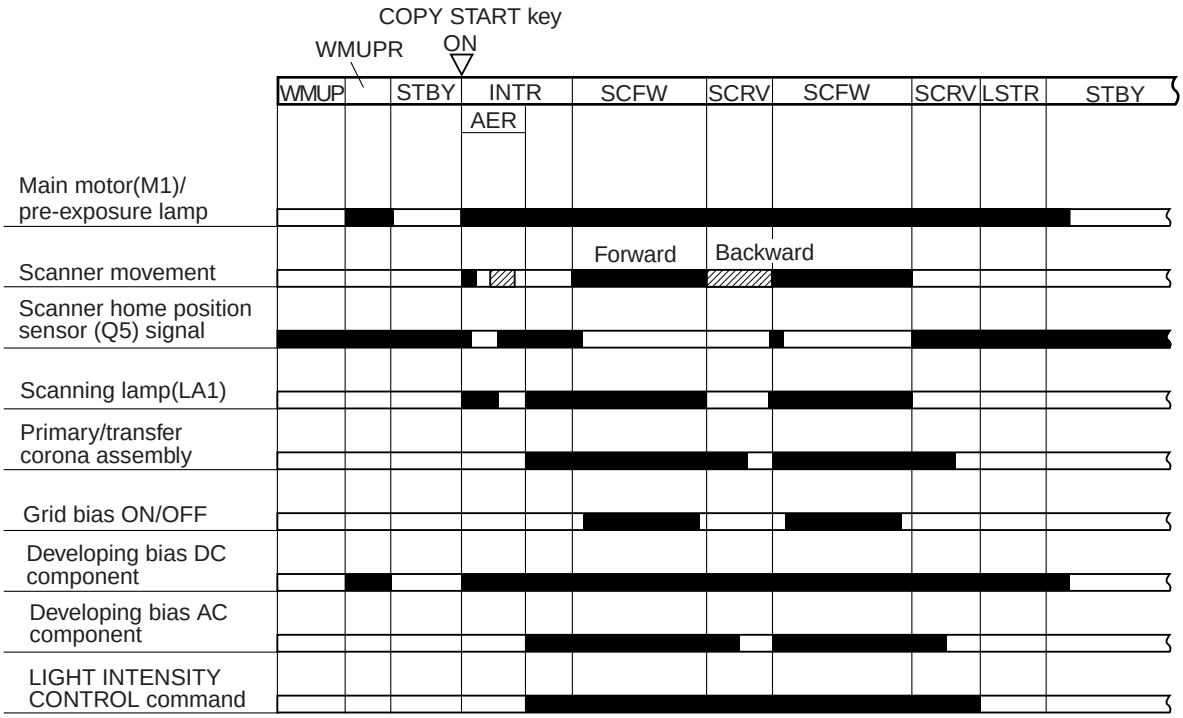

Figure 4-102

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

II. CONTROLLING THE SCANNING LAMP

A. Outline

The scanning lamp (LA1) is controlled by the DC controller PCB.
Specifically, the DC controller
- turns the scanning lamp ON and OFF.
- controls the intensity of the scanning lamp.

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B. Mechanism

1. Turning the Scanning Lamp ON and OFF

The microprocessor (Q300) on the DC controller PCB controls the lamp regulator. The scanning lamp goes ON when the scanning LAMP ON command (LOAN) is '1', and it goes OFF when the signal is '0'.

2. Controlling the Intensity of the Scanning Lamp

The intensity of the scanning lamp is controlled by the lamp shift signal.

The intensity of the scanning lamp is changed.

When the reproduction ratio is different than 100% changing the T-on time of the lamp shift signal. The T-on time of the lamp shift signals is fixed to 5ms at 100%. During AE exposure, however, the voltage (135 V) applied to the scanning lamp remains the same.

The adjusts the copy density using its development bias; see p. 10-18.

3. Error Protection

The condition of the scanning lamp is monitored using the lamp check signal.

If the lamp check signal is received by the DC controller even when the lamp is off, the error detection circuit generates the AC SHUTOFF signal to force the relay (K100) on the AC driver/DC power supply PCB to go OFF, thereby cutting AC power supply (p. 3-39). In this case, E220 error is displayed.

4. Zero-Cross Signal

The board generates the zero cross signal that the DC controller uses to control the fixing heater temperature. E261 is indicated on the control panel if an zero cross error is identified.

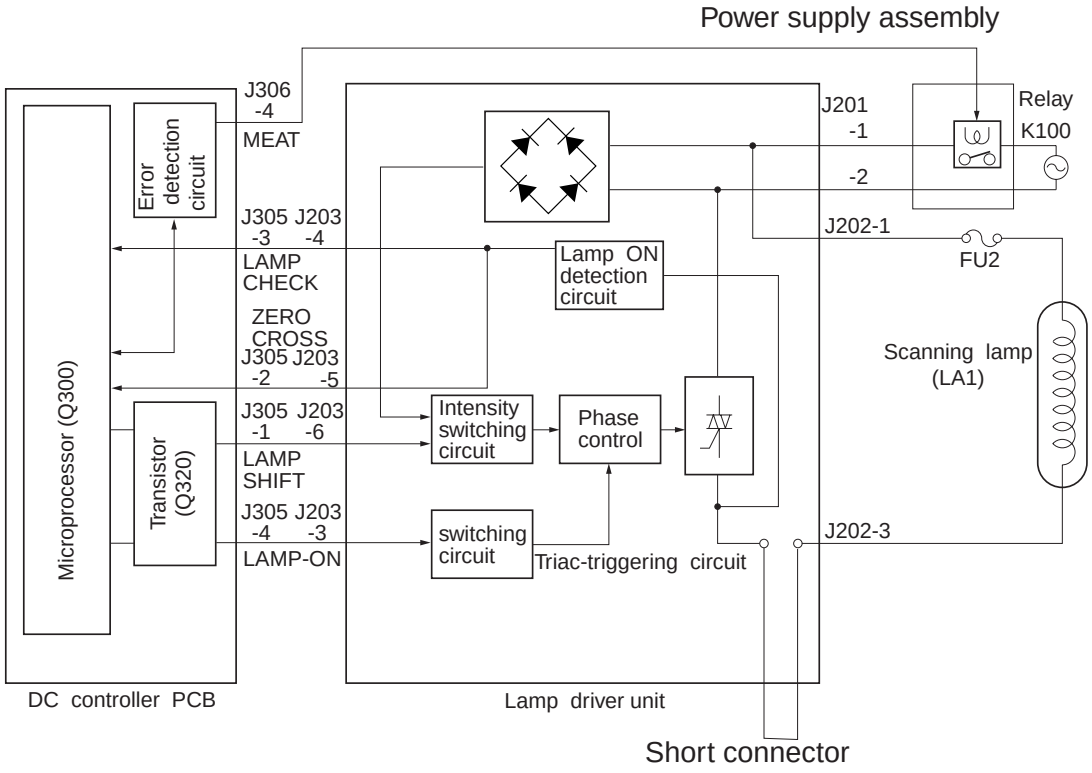

Figure 4-201

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III. PRIMARY/TRANSFER CORONA CURRENT AND GRID BIAS VOLTAGE CONTROL SYSTEM

A. Outline

The circuit shown in Figure 4-102 controls the primary/transfer coronal current and the bias voltage of the grid of the primary corona. Main functions are as follows:

1. Switching primary/transfer corona current ON/OFF
2. Maintaining primary/transfer corona current constant
3. Switching primary corona grid bias voltage
4. Switching primary corona grid bias ON/OFF

In order to eliminate the effect of changes in atmospheric conditions on the effectiveness of the corona discharge, the current to the primary corona wire is maintained constant.

The primary corona and transfer corona currents are switched ON and OFF by the HVT ON command (HVTON).

The grid bias voltage is switched by the GRID ON signal (GRDON).

B. Switching Primary/Transfer Corona Current ON/OFF

a. When $\overline{\text{HVTON}}$=1,
   - Differential amplifier goes OFF.
     - Variable pulse width oscillator goes OFF.
       - High-voltage transformer goes OFF.

b. When $\overline{\text{HVTON}}$=0,
   - Differential amplifier goes ON.
     - Variable pulse width oscillator goes ON.
       - High-voltage transformer goes ON.

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C. Maintaining Primary/Transfer Corona Current Constant

If the primary corona current is greater than the correct value due to changes in the environment, the level (analog) of the feedback signal to the differential amplifier circuit will increase and the output from the differential amplifier circuit will fall. As a result, the primary/transfer corona current will fall. Similarly, if the primary corona current is too low, it will be increased.

If the output side of the high-voltage transformer supplying the primary corona assembly should be overloaded, the current will be limited to a certain maximum.

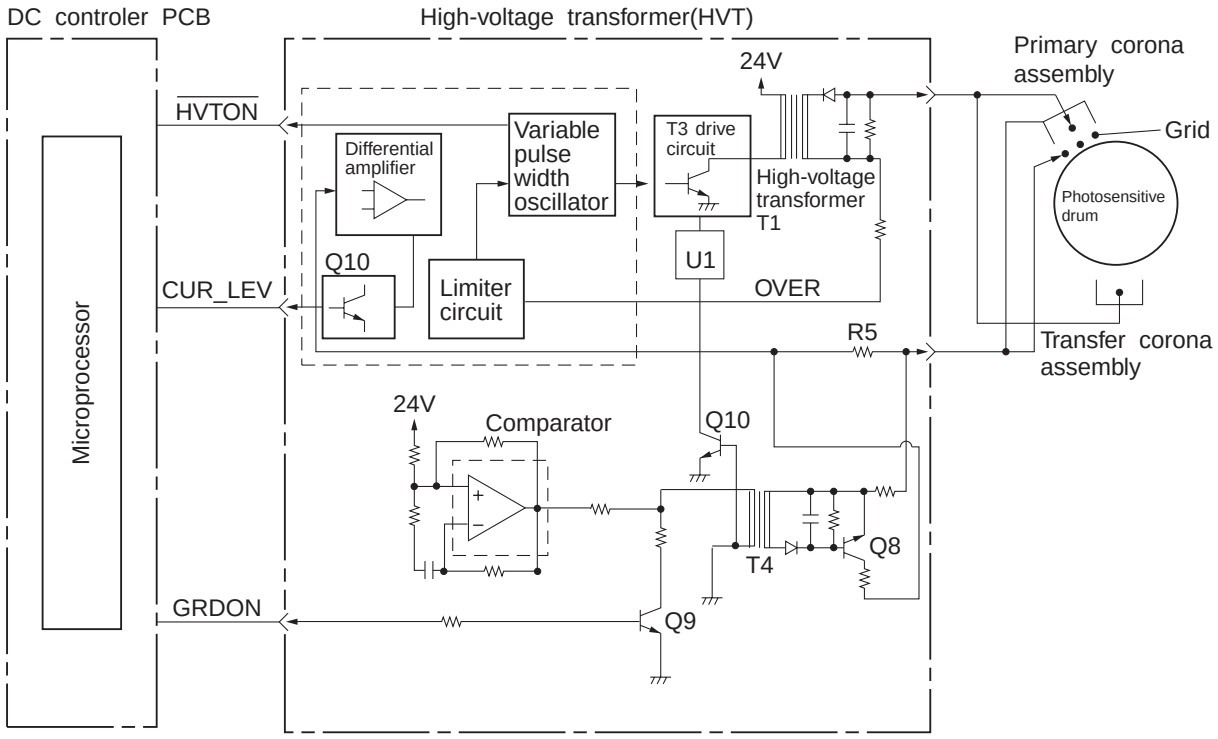

Figure 4-301

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D. Controlling Grid Bias Voltage

a. During scanning, the DC controller PCB output $\overline{\text{GRDON}}$ is '0' and CUR-LEV is '0'.
   └→ Q9 goes ON and the comparator output is '0'.
      └→ Q8 goes OFF.
         └→ Current does not flow into transformer T4, and Q10 goes ON.
            └→ Bias is applied to the grid.
               └→ The surface of the drum is charged.

   The voltage applied to the grid is fixed by the shield current.

b. When scanning is not taking place, the DC controller PCB output $\overline{\text{GRDON}}$ is '1', and CUR-LEV is '1'.
   Q9 goes OFF and the comparator circuit output is '1'.
   └→ Q8 goes ON, and current flows into T4.
      └→ Bias is not applied to the grid.

Under the above conditions, the surface of the drum is not charged; hence, toner does not adhere to it (blanking).

The timing at which the grid bias is switched may be varied using "C3" or "C6" in the service mode (leading edge non-image width adjustment).

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IV. CONTROLLING DEVELOPING BIAS

A. Outline

The circuit shown in Figure 4-402 controls the developing bias. Its main functions are as follows:

1. Switching the AC component of the developing bias ON/OFF.
2. Regulating the voltage of the DC component of the developing bias.

The copy density can be controlled by varying the voltage of the developing bias to suit the following variables:

1. Setting of the COPY DENSITY lever and recalibration dial
2. AE sensor output

The photosensitive drum gradually deteriorates with use, causing the potential (V_L) of light areas of the drum to increase, causing the copy density to be incorrect for a given setting of the copy density lever. To compensate for this, a COPY DENSITY knob, which can be turned to raise the DC bias by exactly the increase in V_L, and thus produce clear copies again.

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B. Operation

1. Switching the AC Component of the Developing Bias ON/OFF

The square wave generator operates continuously when the copier is switched ON.

a) When $\overline{\text{ACBON}}$=1

↳ AC bias switch circuit goes ON.

↳ Output from the square wave generator is cut off.

As a result, AC bias is not supplied to the developing cylinder.

b) When $\overline{\text{ACBON}}$=0

↳ The AC bias switch circuit goes OFF.

As a result, the output of the square wave oscillator goes to the T1 drive circuit. This causes the AC high-voltage transformer to generate a 1300V AC bias, which is supplied to the developing cylinder.

Also, the output of the AC high-voltage transformer is rectified and supplied to the static charge eliminator (approx. 3.2 kV).

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2. Controlling the DC Bias

The differential amplifier of Figure 4-402 operates when DCBC is 16V or below. (The range of DCBC (analog) is 6 to 16V, as set by the copy density knob or the AE system.)

↳ Differential amplifier goes ON.

↳ Variable pulse-width oscillator goes ON.

↳ DC high-voltage transformer goes ON.

The DC bias is applied to the developing cylinder.

DCBC	6V to 16V
DC component of developing bias	-500V to -0V

The copy density knob changes the DC component of the developing bias as shown in Figure 4-401.

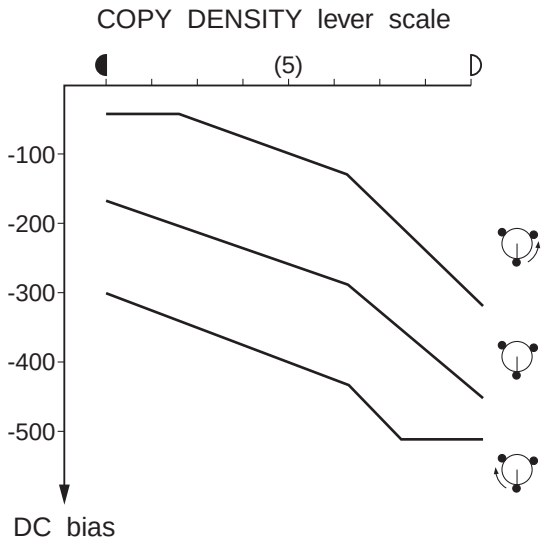

Figure 4-401 Changes in Development Bias (DC component) by COPY DENSITY Knob

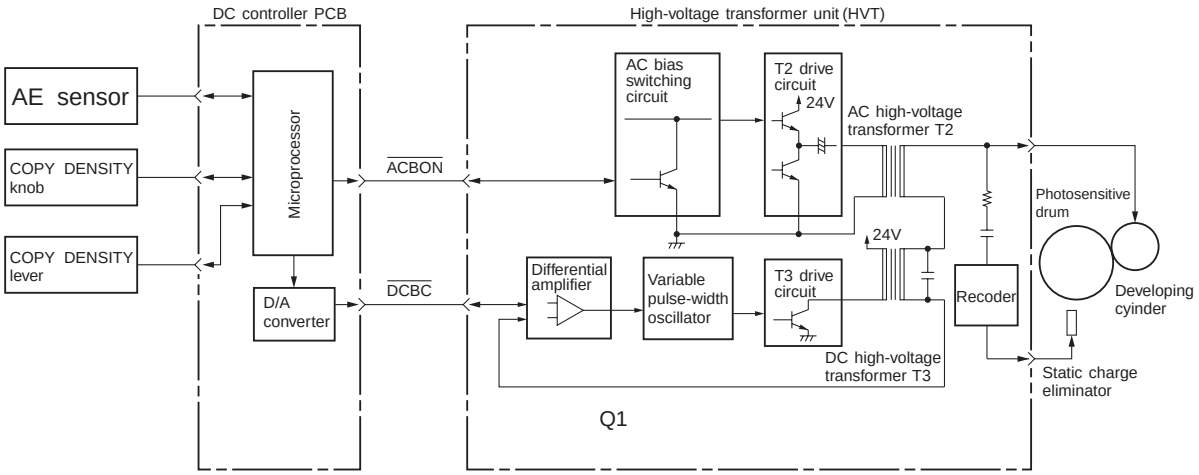

Figure 4-402

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V. DOCUMENT DENSITY MEASUREMENT SYSTEM

A. Outline

There is an automatic density adjustment (AE) system which adjusts the DC component of the developing bias to suit the density of the original. If the density of the original is more or less uniform, the AE function varies the DC component of the developing bias to suit the density of the original, so that copies of the correct density will be made.

B. Operation

The scanner moves forward approximately 70 mm past the leading edge of the original and stops momentarily. The scanning lamp goes ON for approximately 1 sec, the image density is read by the AE sensor, and the sensor output is interpreted by the DC controller. The DC controller then adjusts the DC component of the developing bias accordingly.

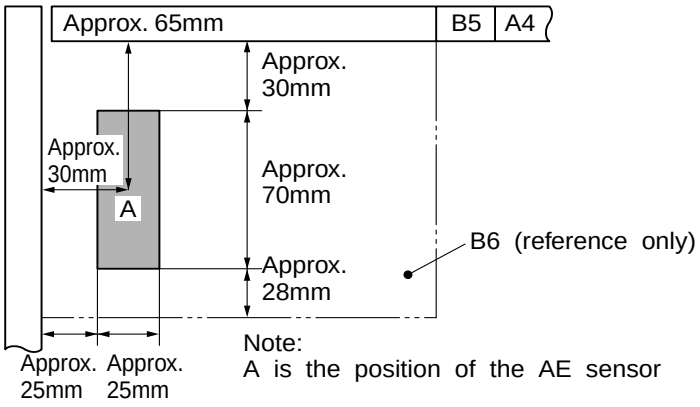

Figure 4-501

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C. Reading the Output of the AE Sensor

The AE sensor consists of a photodiode (Q702) and an operational amplifier (Q701). If the strength of light striking the photodiode is high, the output voltage (AE) of the amplifier will be small. If the amount of light is small, the output voltage will be large.

The DC controller reads the output at a certain time after the zero-cross signal (ZXDP) is received from the DC power supply.

The data representing the adjusted AE reference/slope values are written to EEPROM when 'C0' or 'C1' is used in the service mode.

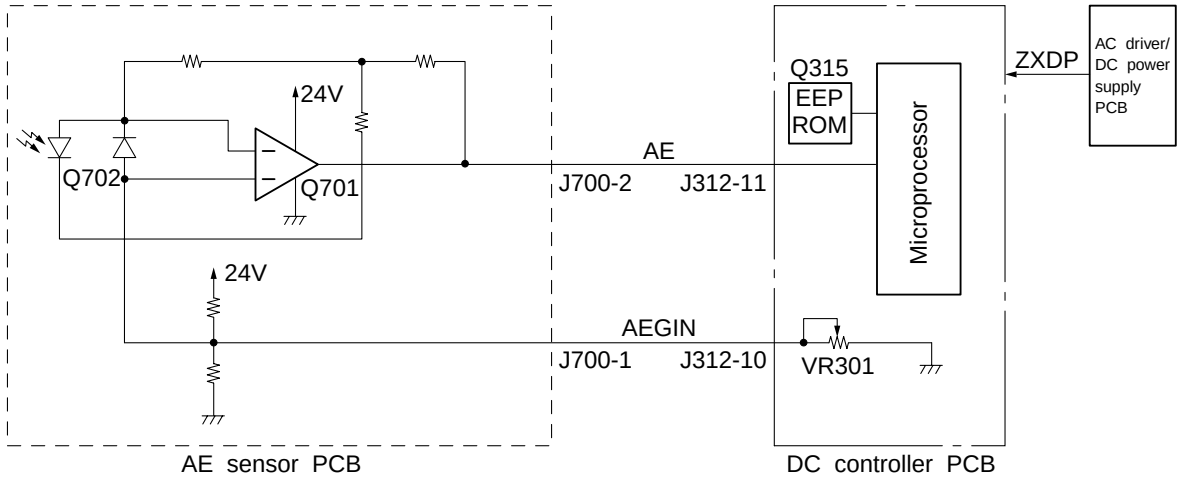

Figure 4-502

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D. Adjustment

Make the following adjustments when the AE sensor or the DC controller PCB has been replaced.

1) Remove the potentiometer cover at the back of the left cover.
2) Set the power switch ON.
   • Wait until the WAIT period has ended.
3) Place an NB-3 or NA-2 test sheet on the copyboard, and lower the copyboard cover.
4) Press switch SW 300 on the DC controller PCB.
   • "0" will appear on the COPY COUNT/RATIO indicator on the control panel.
   • If "0" does not appear, press the "0" number key on the control panel so that "0" appears.
5) Press the SORT/GROUP key on the control panel.
   • The scanner will move forward to the AE measuring position; then, the scanning lamp will go ON. (Note)
6) Adjust VR 301 on the DC controller so that "22" appears on the COPY COUNT/RATIO indicator.

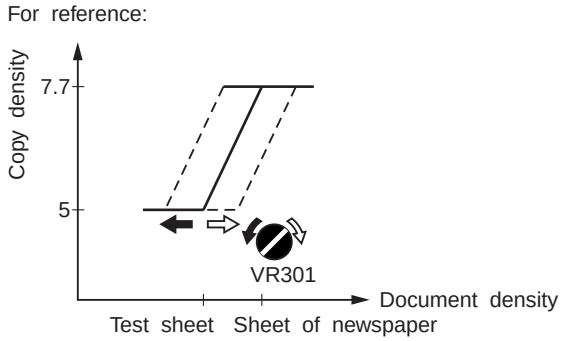

Figure 4-503

7) Press the SORT/GROUP key.
   • The scanning lamp will go OFF, and the scanner will return to the HOME position.
8) Remove the test sheet, place a sheet of newspaper on the copyboard, and lower the copyboard cover.
9) Press the SORT/GROUP key.
   • The copier will perform the same operations as described in step 5).
10) Make a note of the numerical value displayed on the COPY COUNT/RATIO indicator.
11) Press the SORT/GROUP key.
   • "0" will appear on the COPY COUNT/RATIO indicator.
12) Press the "1" number key.
   • "1" will appear on the COPY COUNT/RATIO indicator.
13) Enter the value recorded in step 10) using the numeric keypad.

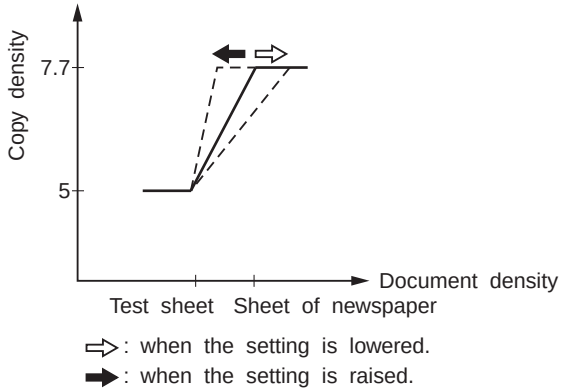

Figure 4-504

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VI. DEVELOPING ASSEMBLY/DRUM CLAENER

A. Outlines

The paddle inside the drum cleaning unit and also the developing cylinder are rotated by the main motor.

The amount of toner in the developing assembly is sensed by the black toner level sensor (TS1).

When the amount of toner falls below the required quantity, the ADD TONER indicator on the control panel will flash.

The toner collected by the cleaning blade is stored in the drum cleaning unit.

The developing assembly is pressed against the drum by a cam that presses against the developing assembly rail. (The cam is operated by the developing assembly release lever.)

B. Remaining Toner Sensor

The black developing assembly has a piezoelectric type sensor (TS1) which senses if the toner remaining in the hopper of the developing assembly is above or below the required level.

When the amount of toner in the developimg assembly is sufficient, the sensor output is '1'. When it is below the specified level, the output is '0'.

The DC controller PCB checks for 40 sec during copying if the TONER EMPTY signal (TEP) is being outputted. If the signal is outputted continuously for 40 sec, it is regarded as "TONER OUT" and the DC controller PCB makes the ADD TONER indicator flash.

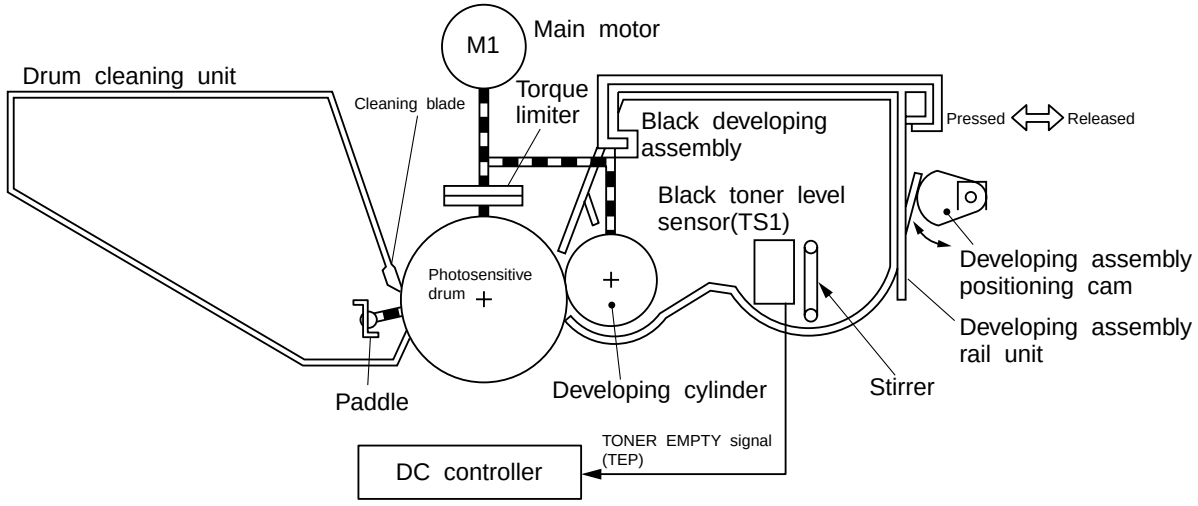

Figure 4-601

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C. Torque Limiter

There is a torque limiter in the drive train between the main motor and the drum used to stop the drum in response to a jam in the drum cleaner.

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VII. BLANKING

A. Outline

The area of the drum between the tailing edge of one copy and the leading edge of the next would normally act as an all-black area and attract toner if a preventive measure were not taken. This measure is to switch the primary corona OFF and the primary corona assembly grid bias ON.

When the copy (cassette) size is a non-default size or when the copier is in the REDUCE mode, the light from the pre-exposure lamp is directed to the photosensitive drum by way of the reflecting plate to prevent adhesion of toner; the blank exposure shutter is moved to open the exposure slit making use of the movement of the lens.

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B. Movement of the Blank Exposure Mechanism

1. When the copier is switched ON, the lens first moves in the direction of enlargement and then returns to the home position. Next, the lens moves in the direction of reduction for blank exposure up to a point that corresponds to the cassette size. At the time, the blank solenoid goes ON, and the blank exposure shutter moves in the direction of the arrow by the force of a spring.

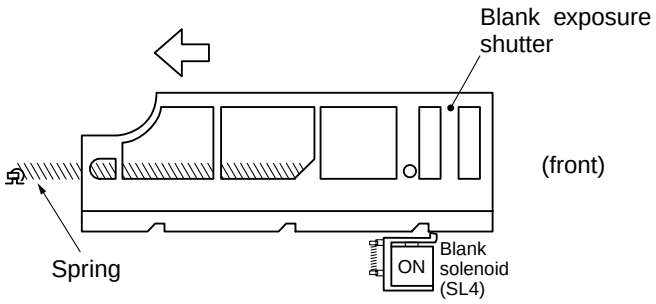

Figure 4-701

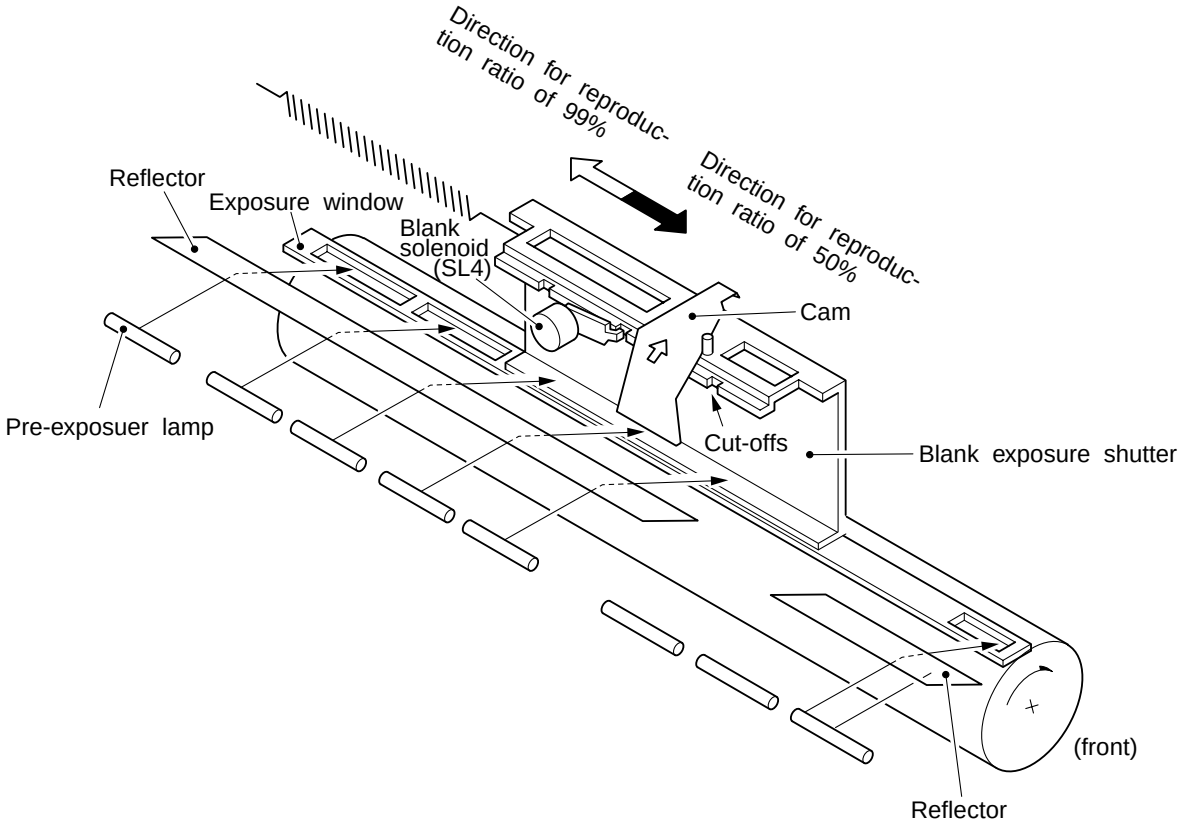

Figure 4-702

2. The blank exposure shutter is moved by the cam attached to the bottom of the lens when the lens moves to the blank exposure position, which corresponds to the cassette size.
The blank solenoid (SL4) goes OFF as soon as the blank exposure shutter has moved to a cut-out to fix the shutter in position; cut-offs are provided for each cassette size. DIRECT and ENLARGE copies are made with the mechanism in this position.

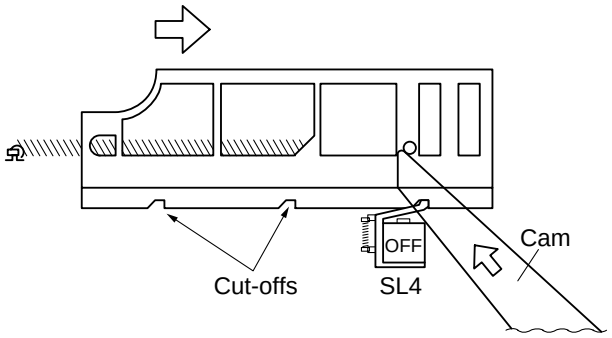

Figure 4-703

3. When the REDUCE mode is selected, the lens first returns to the home position and then moves to a position that corresponds to the selected reduction ratio. At the time, the blank exposure shutter is moved over a distance corresponding to the selected reduction ratio by the cam attached to the bottom of the lens to execute blank exposure.

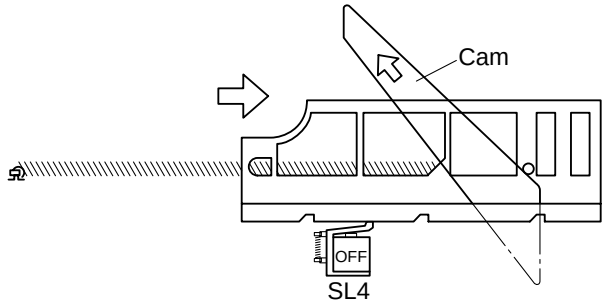

Figure 4-704

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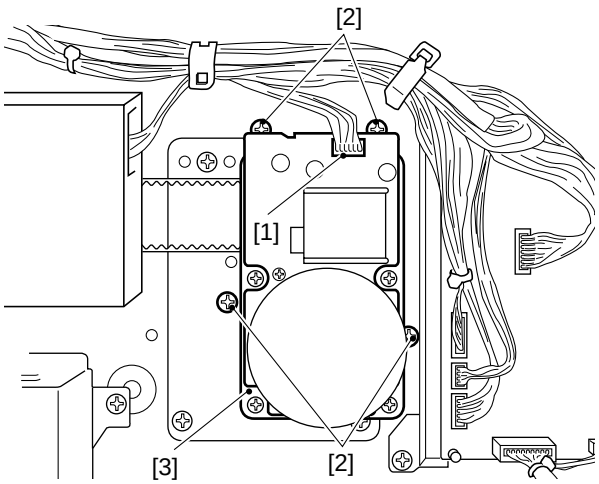
VIII. DISASSEMBLY AND ASSEMBLY

A. Main Motor Assembly

1. Detaching the Main Motor

1) Detach the rear cover.
2) Disconnect the connector (J651) from the mian motor.



[1] Connector (J651) [2] Screw
[3] Main motor

Figure 4-801

3) Remove the four screws, and detach the main motor.

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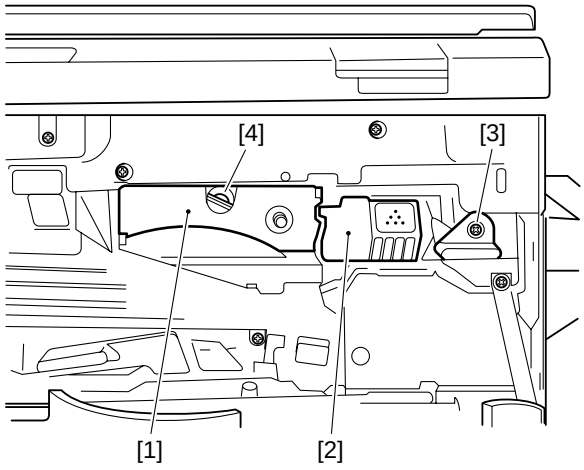
B. Corona System

1. Drum Unit

a. Detaching the Drum Unit

1) Open the front door.
2) Release the feeder assembly, and remove the screw.



[1] Drum unit
[2] Developing assembly
[3] Developing assembly release lever
[4] Screw

Figure 4-802

3) Turn the developing assembly release lever counterclockwise.
4) Pull out the drum unit to the front carefully.

Note:
Take care not to damage the drum.

Note:
The photosensitive drum is susceptible to light; exposure to even room light can lead to white spots or black lines on the copies.

As a rule, do not switch the copier ON with the drum unit detached.

Note:
Do not press the COPY START key.

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b. Cleaning

If the photosensitive drum is soiled, clean it using a flannel cloth coated with toner; do not use paper, lint-free or otherwise.

Note:
Do not use solvent or dry wipe the drum, and never use drum cleaning powder.

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C. Primary/Transfer Corona Assembly

1. Outline

The photosensitive drum is surrounded by the primary and transfer corona assemblies.

The primary corona assembly is equipped with a grid plate.

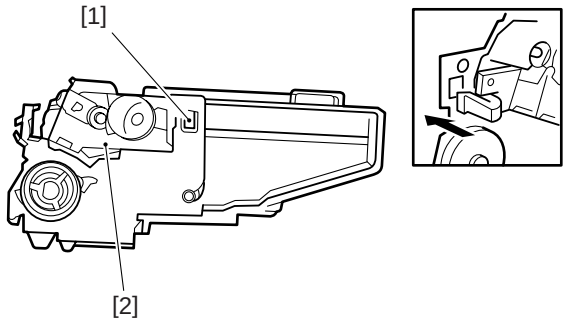
2. Disassembly/Assembly

a. Primary Corona Assembly

1) Detach the drum unit.

Note:
Do not expose the photosensitive drum to strong light; otherwise, white spots or black lines can occur on the copies.

2) Disengage the hook, and pull out the primary corona assembly from the drum unit.

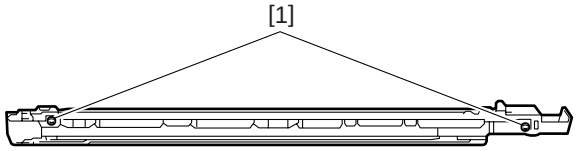


[1] Hook
[2] Primary corona assembly

Figure 4-803

b. Transfer Corona Assembly Gut Wire and Static Eliminator

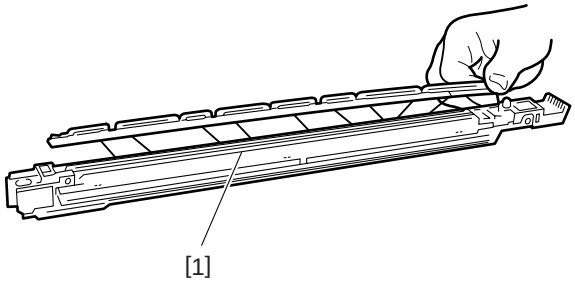
1) Detach the transfer corona assembly from the copier.
2) Remove the two screws, and detach the static eliminator, taking care so that the gut wire will not come off.



[1] Screws

Figure 4-804

3) Detach the static eliminator.



[1] Static eliminator

Figure 4-805

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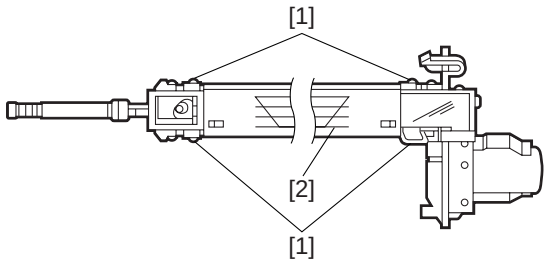
c. Attaching the Primary/Transfer Corona Assembly Wire

■ Primary Corona Assembly

1) Remove the four tension springs, and detach the grid plate.



[1] Grid Tension Screw
[2] Grid plate

Figure 4-806

■ Transfer Corona Assembly

2) Detach the gut wire from the transfer corona assembly.
3) Free the gut wire about 40 mm from the corona wire reel (0.06 mm dia.), and form a loop at its end about 2 mm in diameter.

Note:
Wind the corona wire around a hex key once and turn the hex key four to five times; then, twist it to form a loop.

4) Cut the twisted end of the corona wire to about 1 mm or less using a nipper.
5) Hook the loop of the corona wire as shown in Figure 4-807, and lead the wire along the V-groove of the height adjusting roll.
6) Hook the corona wire tension spring on the corona wire, and twist the spring three to four times as shown.

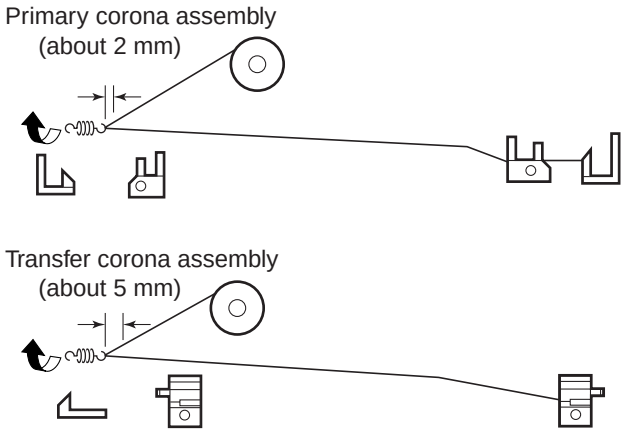


Figure 4-807

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7) Cut the excess corona wire to about 1 mm or less using a nipper.
8) Pick the end of the corona wire tension spring using tweezers and hook it on the corona terminal.

Note:

i. Make sure that the corona wire is free of breaks or twists and its gold plating has not peeled.
ii. Make sure that the corona wire is not slack; normal, if the length of the corona wire tension spring is 12 mm.
iii. Make sure that the corona wire is in the V-groove of the height adjusting roll.

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D. Development System

1. Developing Assembly

a. Construction

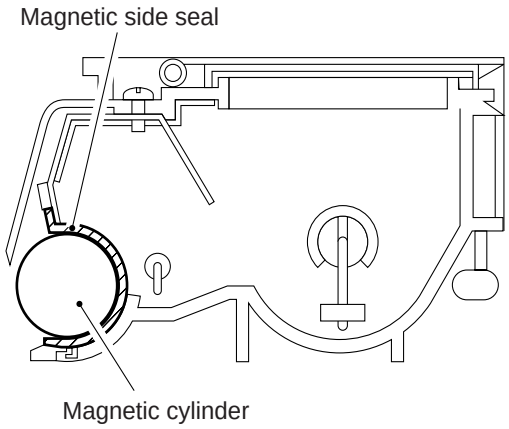
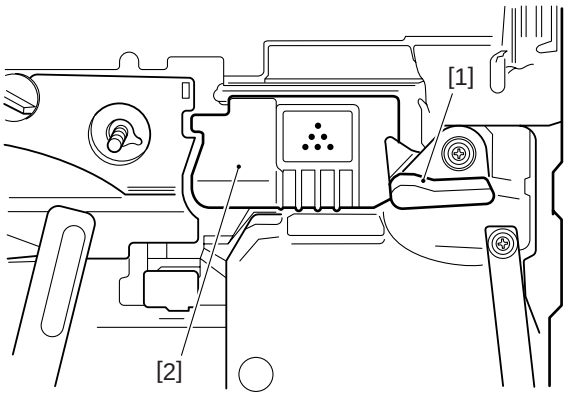


Figure 4-808

b. Detaching the Developing Assembly

1) Turn the developing assembly release lever counterclockwise.
2) Slide out the developing assembly carefully.
3) Hold the grip on the developing assembly, and take the assembly out the copier.



[1] Developing assembly release lever
[2] Developing assembly

Figure 4-809

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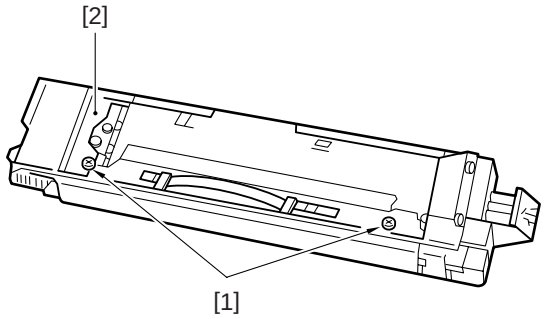
c. Detaching the Blade, Developing Cylinder, and Side Seal

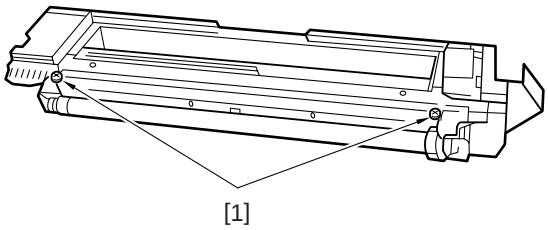
1) Detach the developing assembly from the copier.
2) Remove the screw, and detach the upper cover fixing plate.
3) Detach the top cover.
4) Remove the two screws, and detach the developing assembly upper cover.



[1] Screws
[2] Developing assembly upper cover

Figure 4-810

5) Place a newspaper on the floor, and pour out the toner from the developing assembly.
6) Remove the two screws, and detach the blade mount together with the blade.



[1] Screw

Figure 4-811

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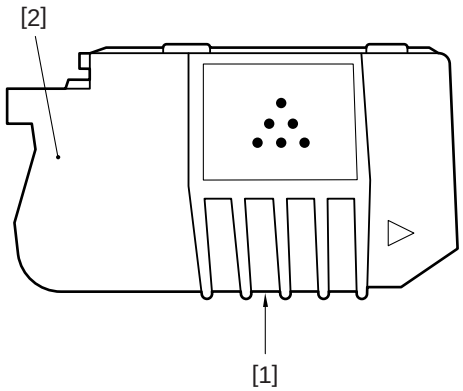
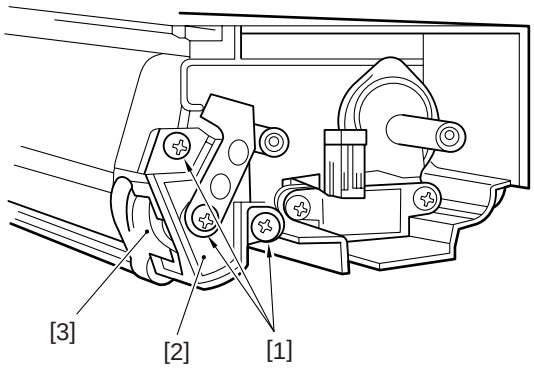
7) Disengage the hook on the bottom, and detach the grip.



[1] Hook [2] Grip

Figure 4-812

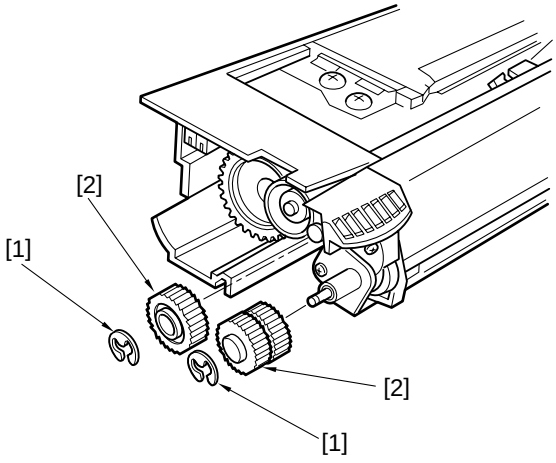
8) Remove the three screws, and detach the developing cylinder holder (front), ball bearing, and developing roll.



[1] Screws
[2] Developing cylinder holder
[3] Spacer roll

Figure 4-813

9) Remove the two E-rings, and remove the two gears.



[1] E-rings [2] Gears

Figure 4-814

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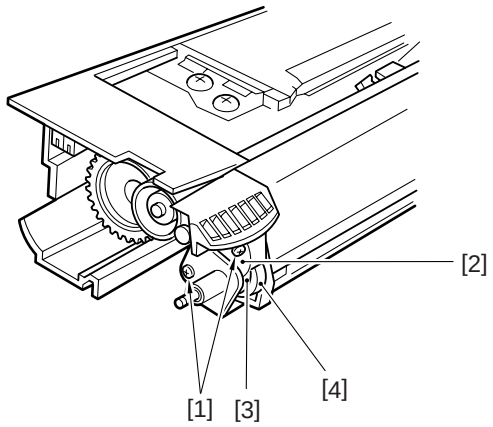
10) Remove the two screws, and detach the developing cylinder holder (rear), ball bearing, and spacer roll.



[1] Screws
[2] Developing cylinder holder
[3] Ball bearing [4] Spacer roll

Figure 4-815

11) Detach the developing cylinder and side magnetic seal.

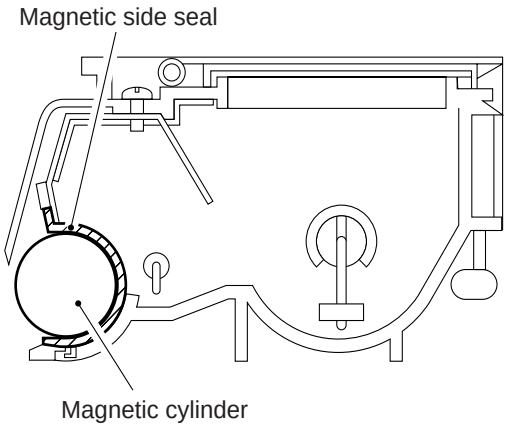


Figure 4-816

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d. Cleaning the Side Magnetic Seal and the Blade

1) Clean the surface on which the side magnetic seal will be hooked using alcohol.
2) Fix the side magnetic seal at the position shown in Figure 4-819.

Note:
Put the hook of the magnetic side seal on its side on plastic marking so that the magnetic side seal is firmly in the correct position.

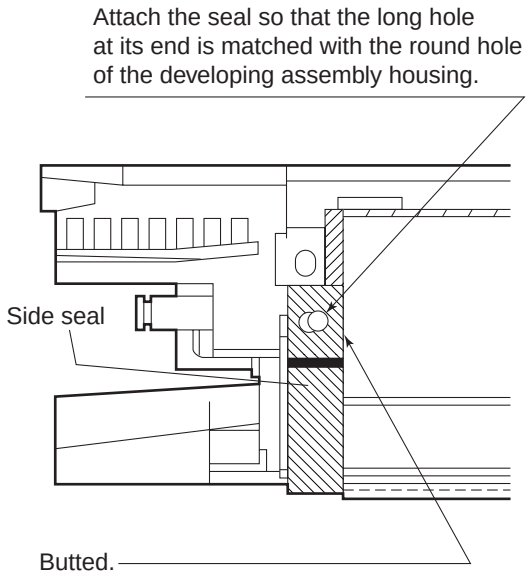


Figure 4-817

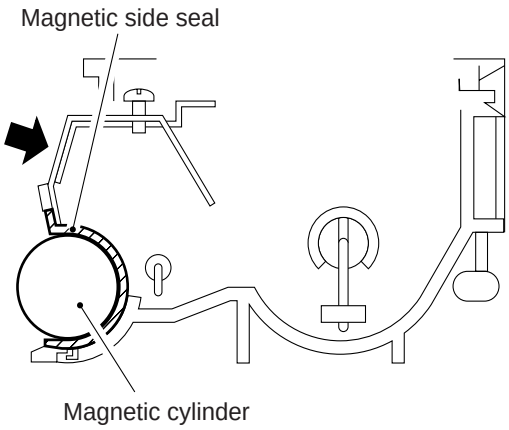


Figure 4-818

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

3) Attach all parts that have been detached except the blade.
Make sure that the gear is assembled with the longer tooth in the groove.

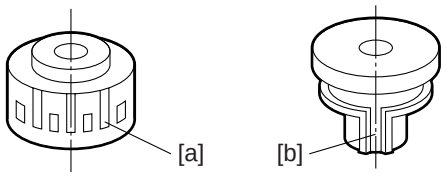


Figure 4-819

4) Force the blade mount against the developing assembly in the direction of the arrow, and tighten the two screws.

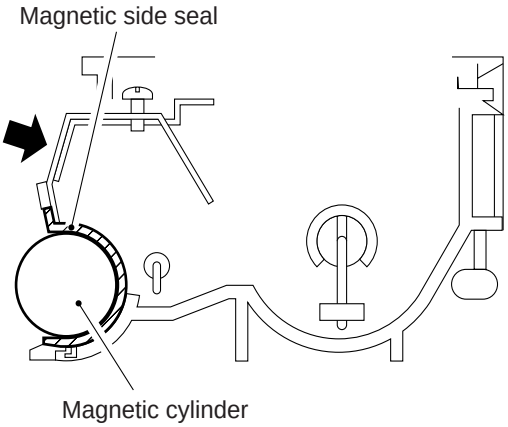


Figure 4-820

5) Loosen the four screws that hold the blade on the blade mount, and tighten them back.

Note:
Do not loosen the screws excessively, or the blade may come off the positioning pin found at the center.

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

CHAPTER 5

PICK-UP/FEEDING SYSTEM

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

I. PAPER PICK-UP ASSEMBLY AND FEEDER

A. Outline

When the pick-up clutch solenoid (SL1) engages, main motor (M1) turns the roller, feeding a sheet of copy paper to the registration rollers. The number of rotations of the pick-up roller varies with the length of the copy paper.

The copy paper is fed by the registration rollers so that its leading edge is in line with the leading edge of the toner image on the photosensitive drum. It then passes through the transfer, separation, feed, fixing and delivery stages to the copy tray.

The copy paper is sensed by paper sensor (Q2 and Q5). If it does not reach or pass the sensors within the specified period, the DC controller PCB judges that a jam has occurred and causes the JAM indicator on the control panel to flash.

The cassette paper sensor (Q11) senses whether there is paper in the cassette. If there is not, the CASSETTE PAPER EMPTY signal (CPEP) goes '0', causing the ADD PAPER indicator on the control panel to go ON.

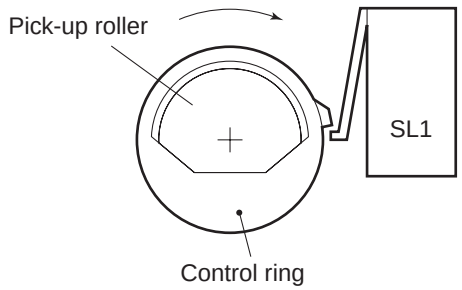


Figure 5-101

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

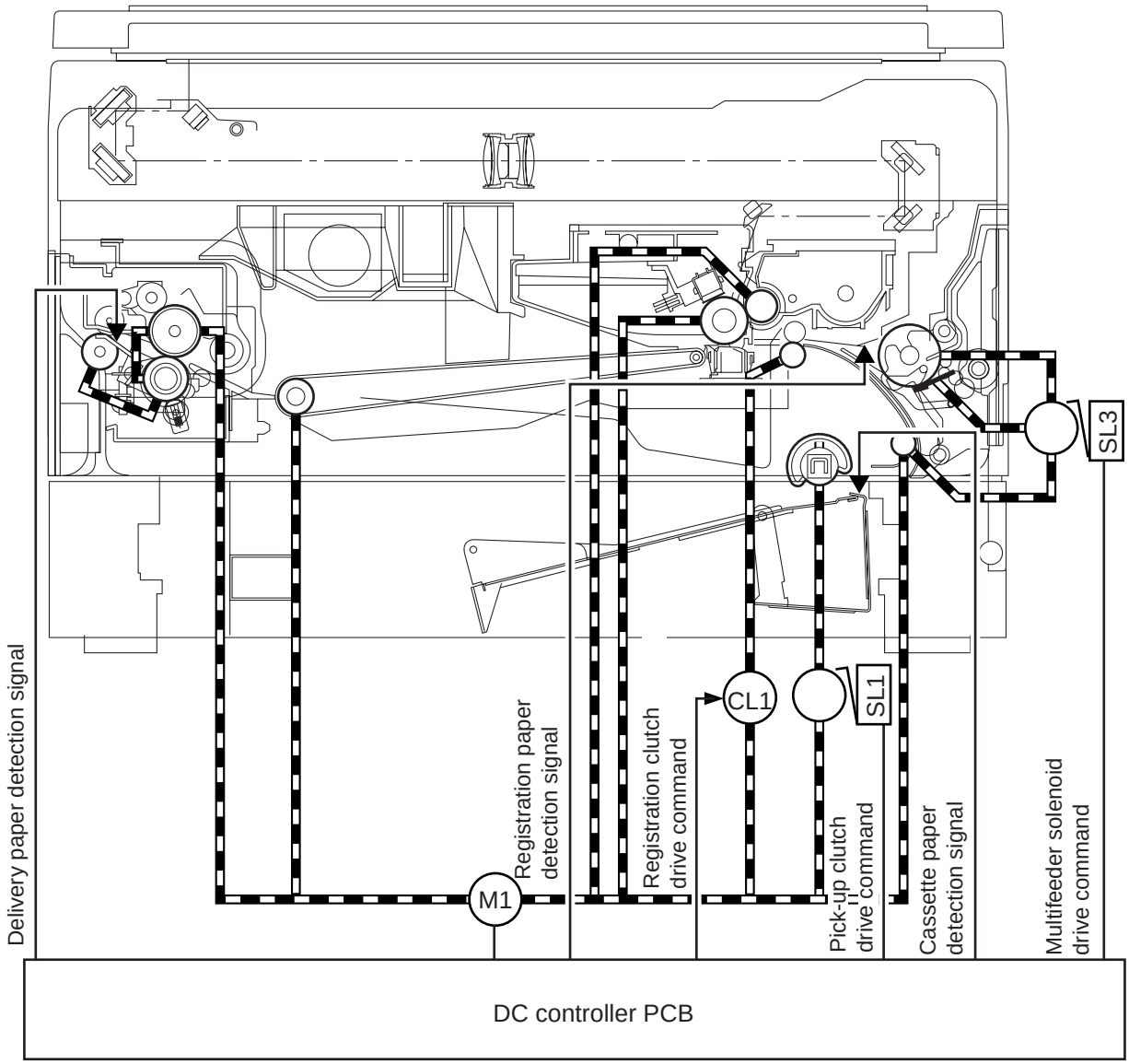


Figure 5-102

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

B. Pick-up and Feeder Operation

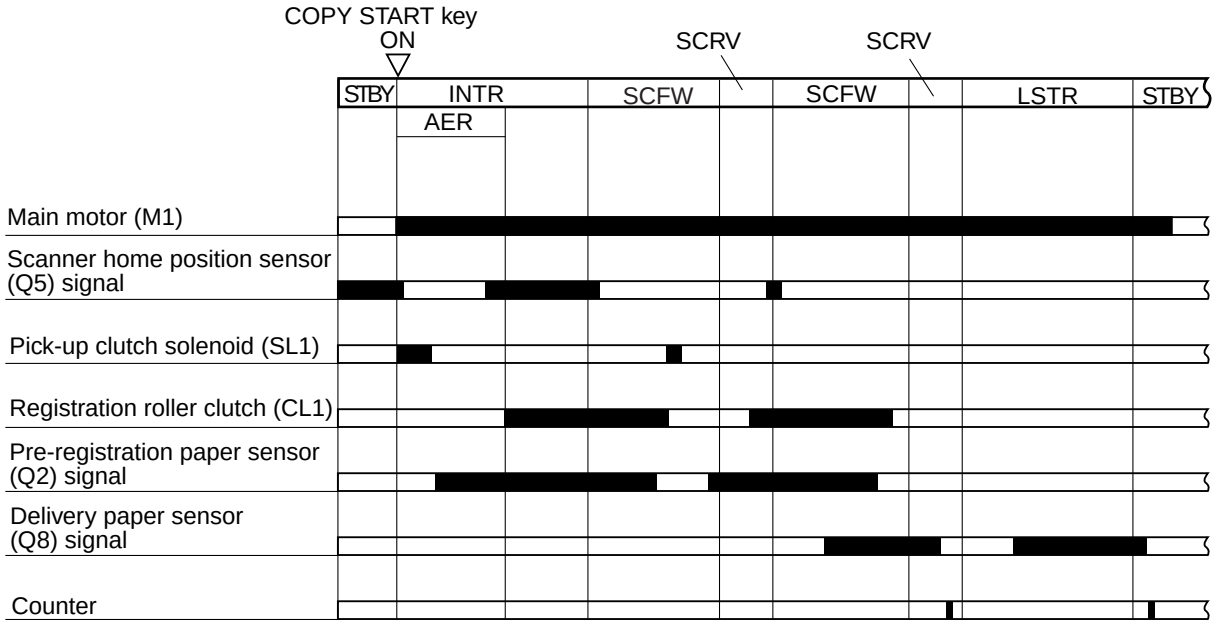


Figure 5-103

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

C. Identifying the Paper Size

The presence/absence of a cassette in the cassette holder and the size thereof are identified by four switches (CST1 through CST4) provided in the cassette holder. Based on the combinations of the switches which have been actuated, the microprocessor recognizes the presence/absence of a cassette as shown in Tables 5-101 and 5-102 and, at the same time, determines where to reverse the scanner and how to control the blank shutter.

0: SW is OFF
1: SW is ON

NO cassette	0	0	0	0
A4	1	0	0	0
A3	1	1	0	0
A4R	1	1	1	0
A5R	1	1	1	1
Universal	0	1	1	1

Table 5-101

In case of the universal cassette (U), the cassette size is selected by service mode No. 23 according to Table 5-102:

Service 23	Size
0	B4
1	B5
2	B5R
3	LETTER
4	LETTER R
5	LEGAL
6	STMT R

Table 5-102

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

D. Pick-Up from the Multifeeder

The multifeeder pick-up roller and holding plate are driven by the main motor (M1). The presence/absence of paper is monitored by the multifeeder paper sensor (Q1).

When the Copy Start key is pressed, the multifeeder solenoid (SL3) turns on temporarily, causing the claw 1 to disengage from the control ring. When the multifeeder pick-up roller rotates, the holding plate starts to move up; the pick-up roller continues to rotate even after the multifeeder solenoid turns off.

A specific time (Note 1) after the leading edge of paper has reached the pre-registration sensor, the multifeeder solenoid turns on once again, causing the claw 2 to engage with the control ring gear and, ultimately, stopping the control ring.

The multifeeder solenoid turns off once again as soon as the registration roller starts to rotate. This causes the claw 2 to disengage from the control ring gear. When the multifeeder pick-up roller rotates, the holding plate starts to move down. When the control ring makes a full turn, the claw 1 engages with the control ring to stop the ring.

Note 1:
May be varied using 'C4' of service mode.

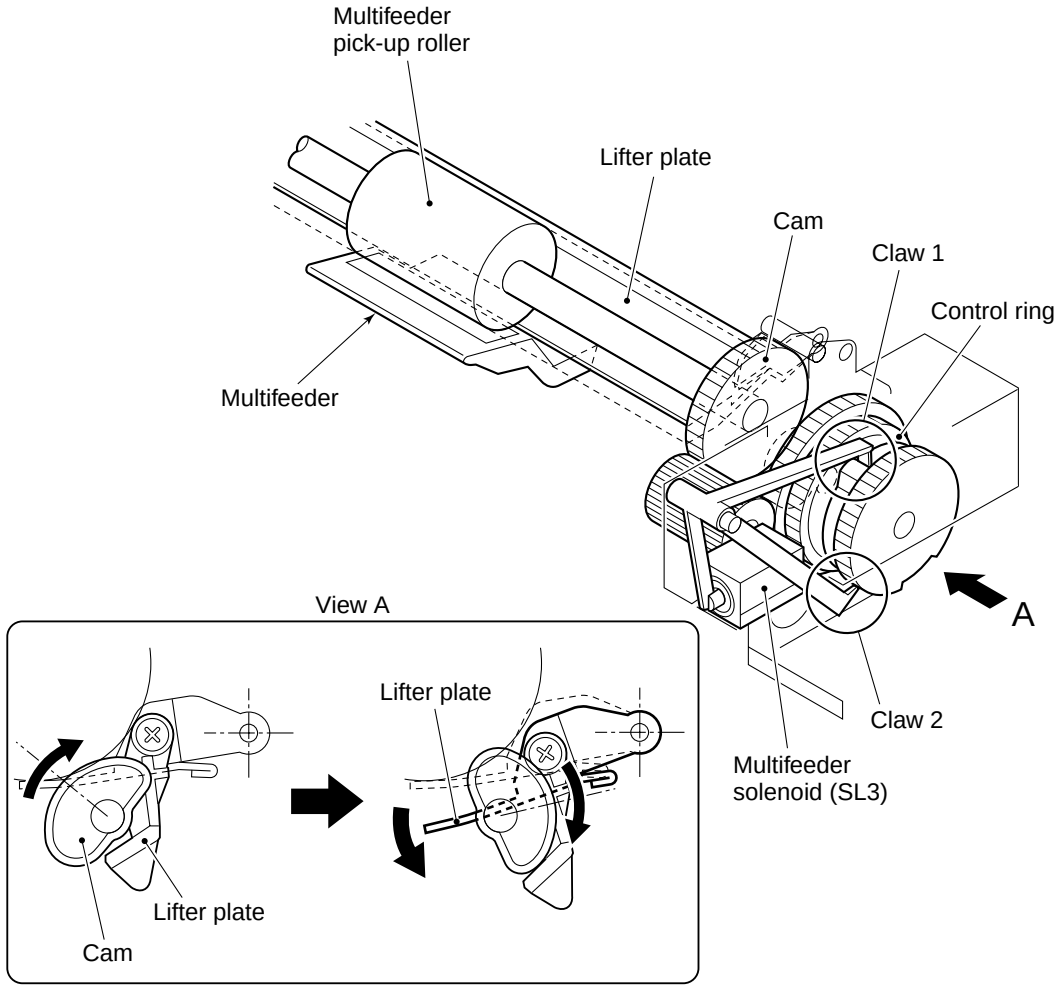


Figure 5-104

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

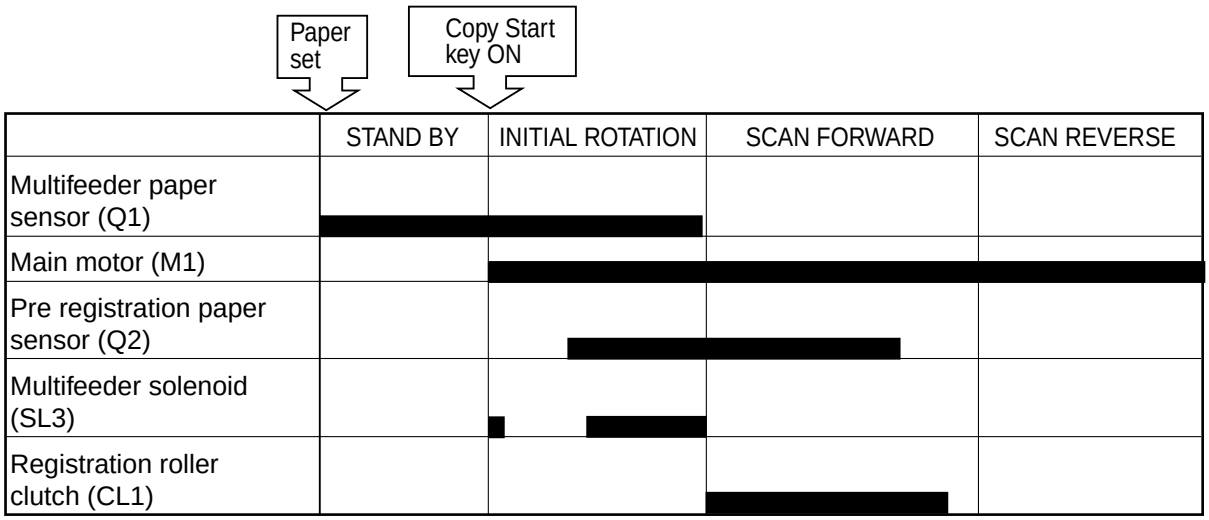


Figure 5-105

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

II. JAM DETECTION

The copier has two sensors to sense whether copy paper is being fed normally.

- Pre-registration paper sensor (Q2)
- Delivery paper sensor (Q8)

A paper jam is identified by the microprocessor by reading signals from the sensors at predetermined times. In relation to the presence/absence of paper at a sensor at that time, it identifies if paper is moving through the copier correctly.

If a jam occurs, the copier memorizes the number of copies that are still to be made and also the copier settings. This information is stored in the copier, even if the power is cut off by opening the front door as when resetting the copier.

The microprocessor identifies a jam in any of the following four cases. Also, the microprocessor judges that there is a jam if one of the sensors detects paper when the power is switched ON.

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

A. Pick-up Assembly Delay Jam

If the copy paper does not reach the paper sensor of the pick-up assembly within a specified period after paper pick-up starts, the microprocessor will judge that a pick-up delay jam has occurred, and immediately stop the operation of the copier. Also, the JAM indicator on the control panel will flash and a segment of the PAPER SELECT/JAM indicator will go ON.

1. Multifeeder

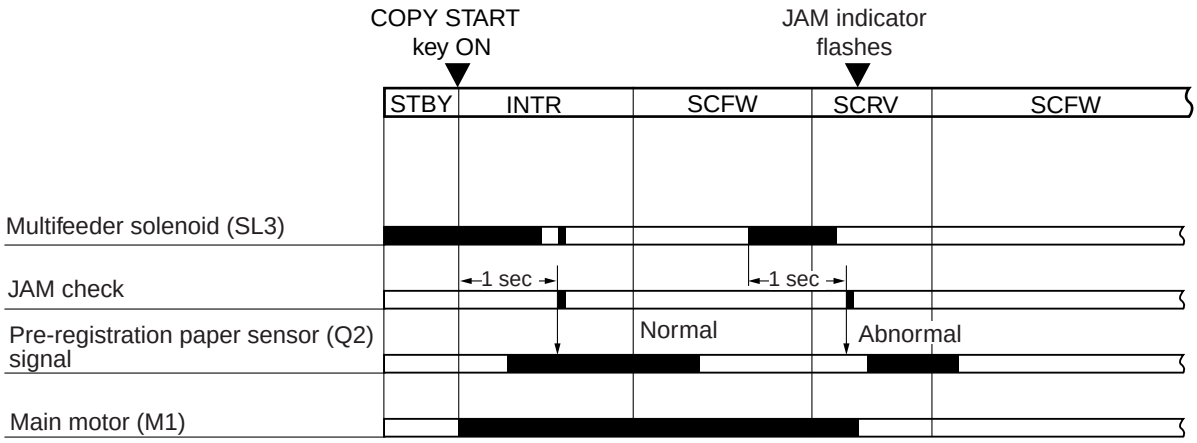


Figure 5-201 (multifeeder pick-up assembly delay jam)

2. Cassette

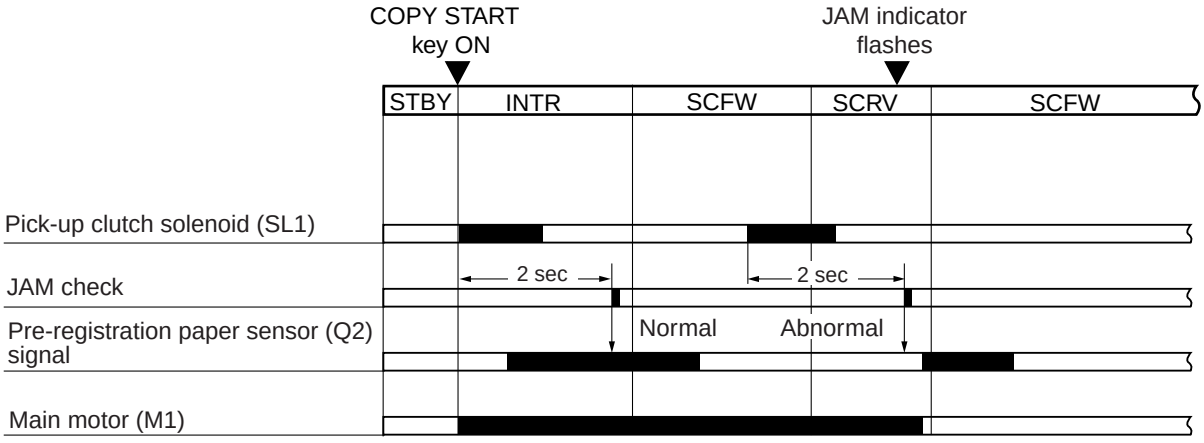


Figure 5-202 (cassette pick-up assembly delay jam)

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

B. Delivery Assembly Stationary Jam

If the copy does not pass the delivery assembly paper sensor within the specified period after the registration roller clutch (CL1) operates, the microprocessor will judge that a delivery unit stationary jam has occurred, and immediately stop the operation of the copier. Also, the JAM indicator on the control panel will flash and a segment of the PAPER SELECT/JAM indicator will go ON.

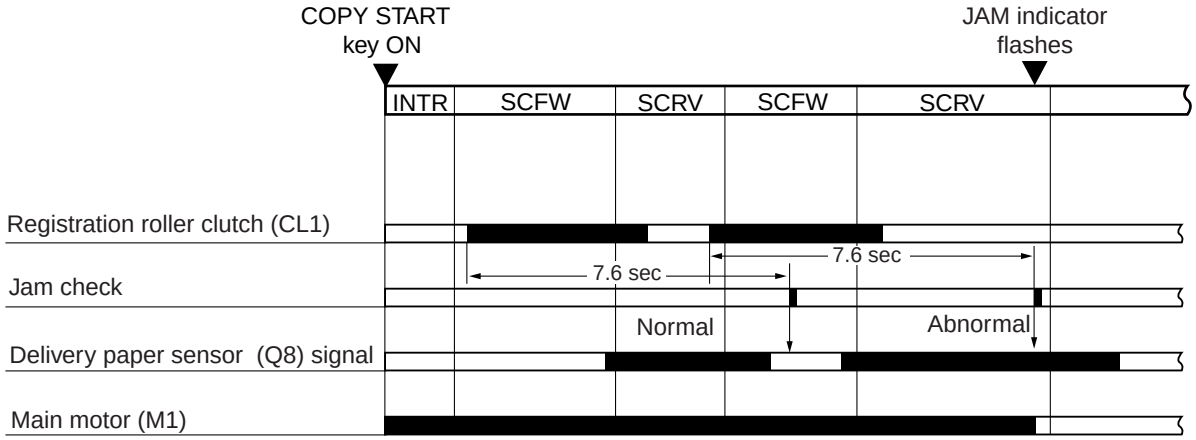


Figure 5-203 Delivery Assembly Stationary Jam (A4 size)

C. Delivery Assembly Delay Jam

If the copy paper does not reach the delivery assembly paper sensor (Q8) within the specified period after the registration roller clutch (CL1) has operated, the microprocessor will judge that a delivery assembly delay jam has occurred, and immediately stop the operation of the copier. Also, the JAM indicator on the control panel will flash and a segment of the PAPER SELECT/JAM indicator will light.

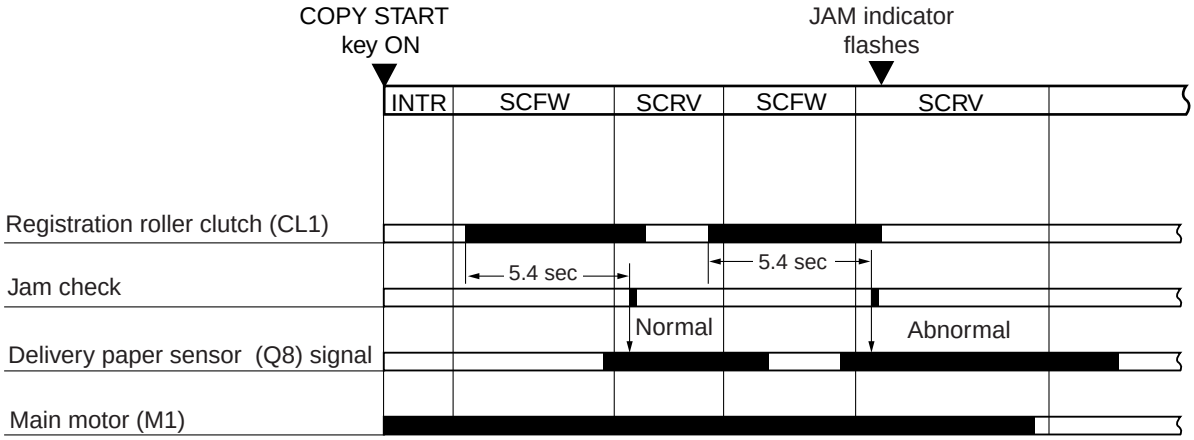


Figure 5-204 Delivery Assembly Stationary Jam (A4 size)

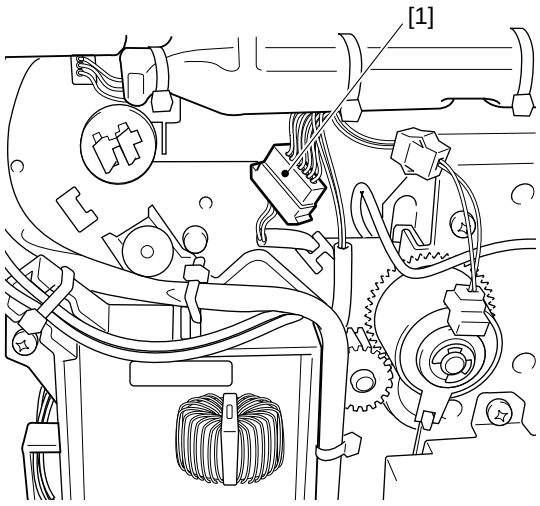
CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

III. FEEDER SYSTEM

A. Pick-up Assembly

1. Detaching the U Guide Plate

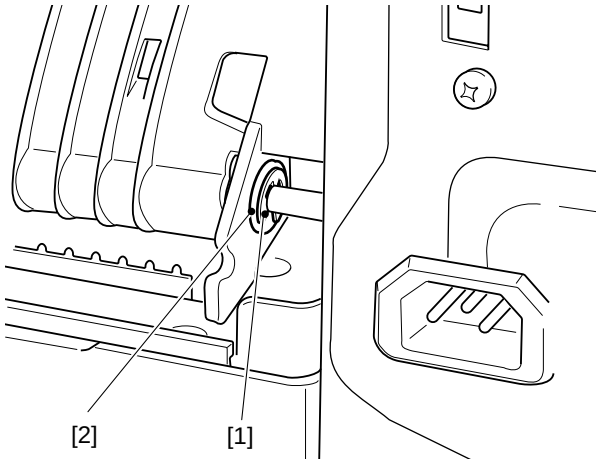
1) Detach the inside cover, right cover, and rear cover; then, detach the right door.
2) Disconnect the connector.



[1] Connector

Figure 5-301

3) Remove the pick-up roller assembly.
4) Remove the E-ring and slide the bush.

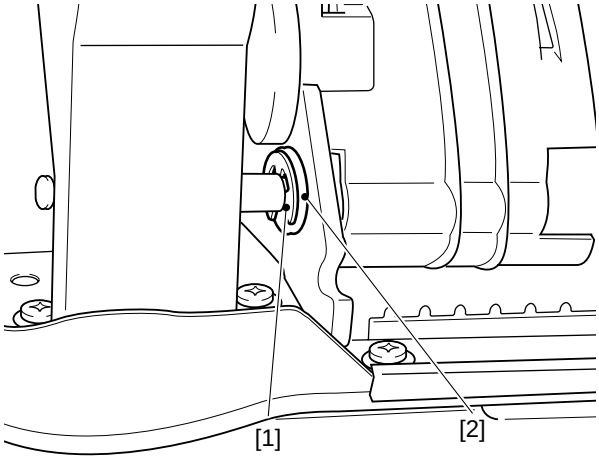


[1] E-ring [2] Bush

Figure 5-302

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

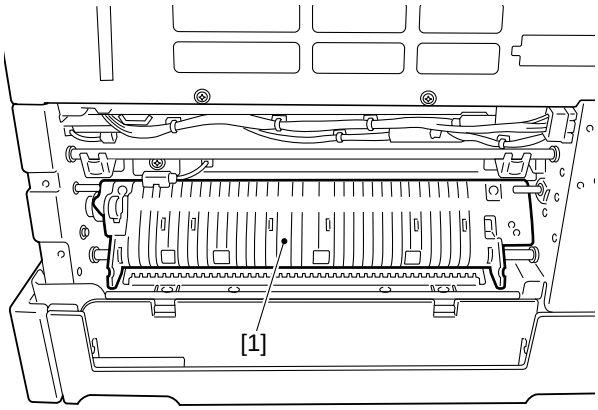
5) Remove the E-ring and slide the bush.



[1] E-ring [2] Bush

Figure 5-303

6) Detach the U guide plate.



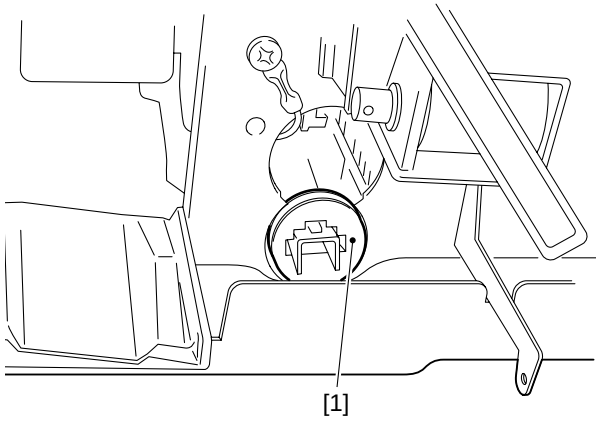
[1] U guide plate

Figure 5-304

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

2. Detaching the Pick-up Roller Assembly

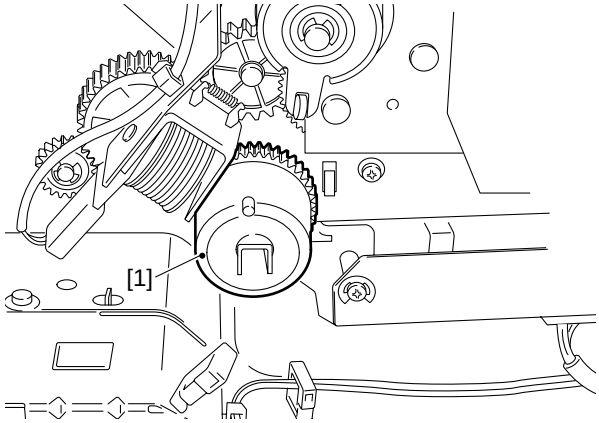
1) Detach the cassette, the inner cover, the rear cover and the right cover.
2) Detach the pick-up roller bushing found at the front.



[1] Bushing

Figure 5-305

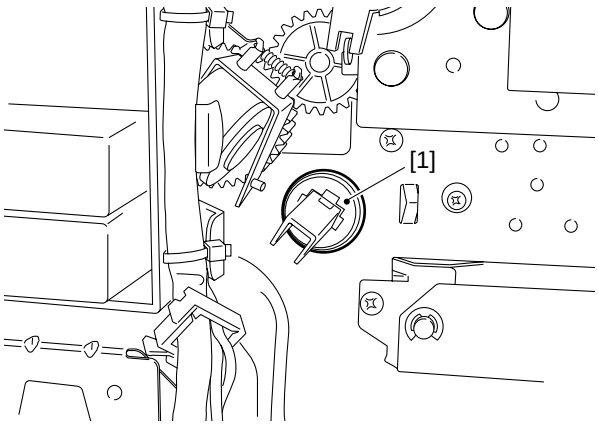
3) Remove the power supply unit and the noise filter.
4) Detach the control ring from the pick-up roller shaft.



[1] Control ring

Figure 5-306

5) Detach the pick-up roller bushing found at the rear.

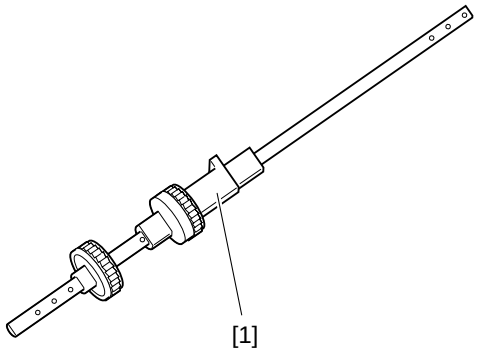


[1] Bushing

Figure 5-307

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

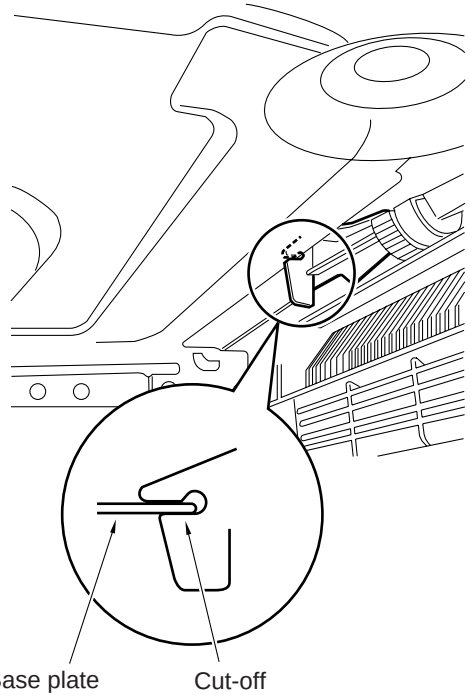
6) Shift the pick-up roller assembly to the rear, and detach the pick-up roller shaft from the front door cassette area.



[1] Pick-up roller assembly

Figure 5-308

Note:
When attaching the pick-up roller assembly, the cut-off of the sliding bush must match the base plate.



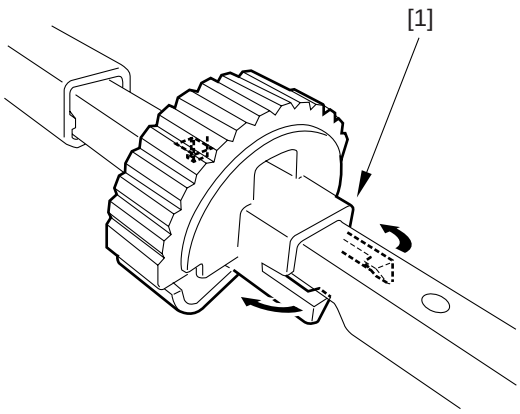
[1] Cut-off [2] Base plate

Figure 5-309

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

3. Front Pick-Up Roller

1) Remove the pick-up roller assembly.
2) Remove the front pick-up roller.

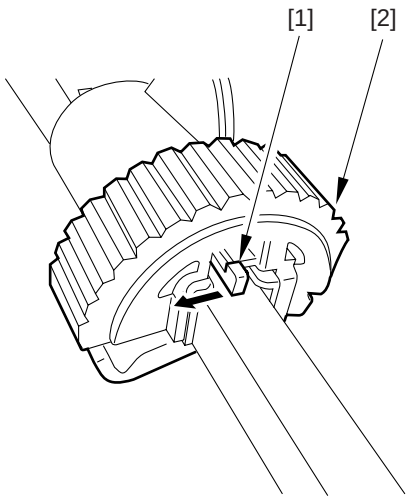


[1] Front pick-up roller

Figure 5-310

4. Detach the Rear Pick-up Roller from the Sliding Bush

1) Remove the pick-up roller assembly.
2) Bend the rib of the pick-up roller.
3) Pull the pick-up roller out of the support.



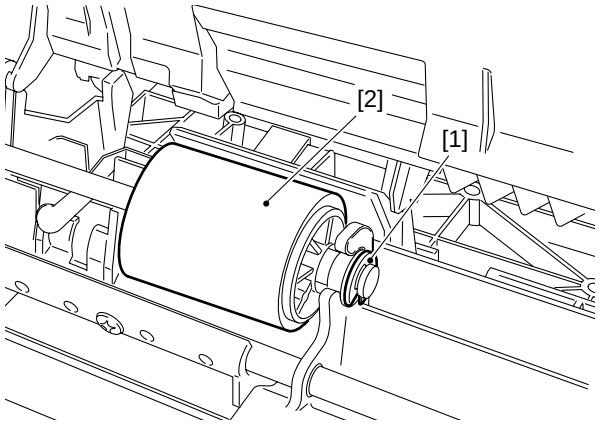
[1] Rib [2] Pick-up roller

Figure 5-311

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

5. Detaching the Multifeeder Roller

1) Detach the right door.
2) Remove the E-ring and remove the multifeeder roller together with its shaft.

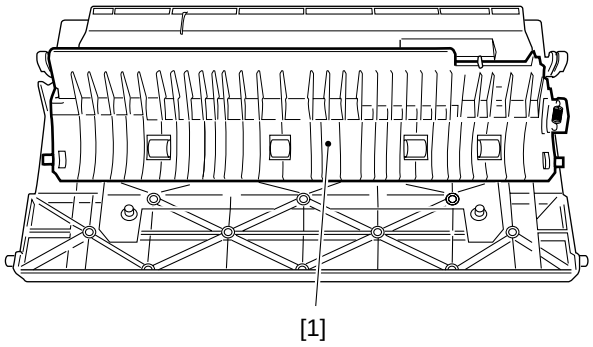


[1] E-ring [2] Multifeeder roller

Figure 5-312

6. Detaching the Multifeeder Pad

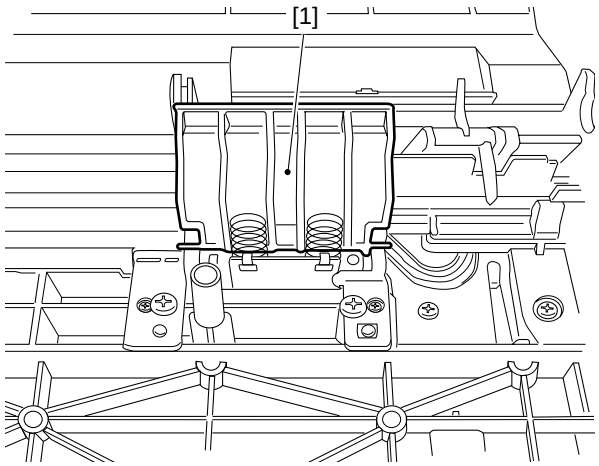
1) Detach the right door.
2) Remove the multifeeder roller.
3) Detach the feed guide.



[1] Feed guide

Figure 5-313

4) Remove the multifeeder pad from the bush.



[1] Mutlifeeder pad

Figure 5-314

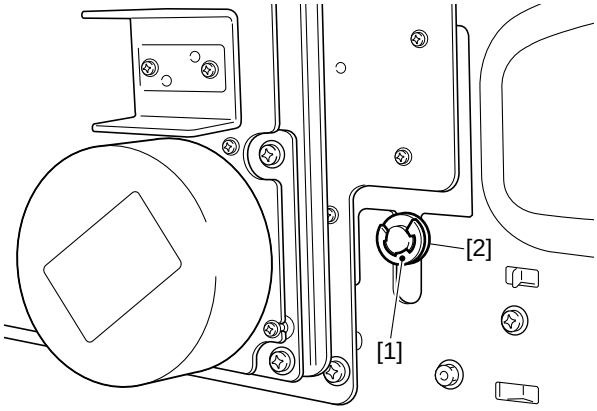
CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

B. Feeder Assembly

1. Feeder Assembly

Note:
Make sure that the drum unit transfer corona assembly and developing assembly have been detached before detaching the feeder assembly.

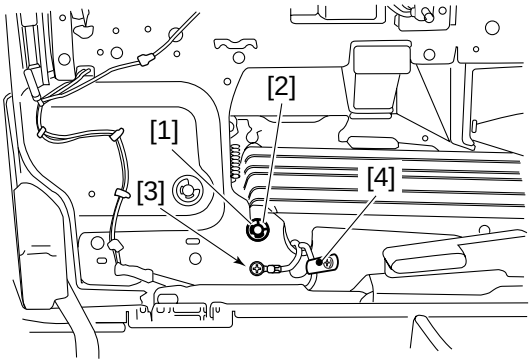
1) Release the feeder assembly
2) Detach the DC contoroller PCB.
3) Remove the E-ring, and detach the bushing



[1] E-ring [2] Bushing

Figure 5-315

4) Detach the inside cover, and remove the E-ring; then, detach the bushing.
5) Disconnect the connector, and detach the grounding wire (1 screw); then, detach the cord mount (1 screw).

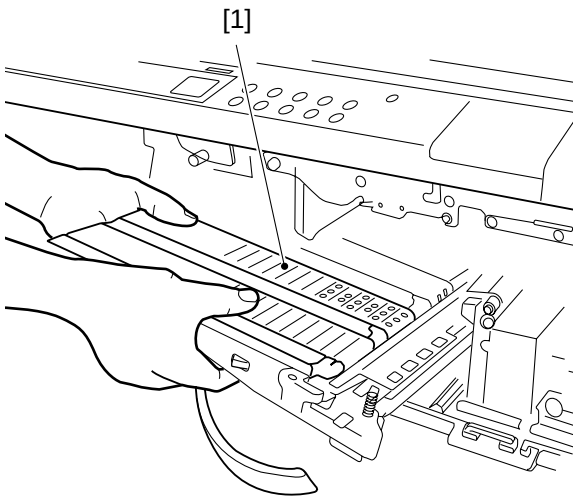


[1] E-ring [2] Bushing
[3] Grounding wire [4] Cord mount

Figure 5-316

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

6) Hold the side of the feeder assembly closer to the fixing assembly, and pull it out toward the front slowly as if to lift it.



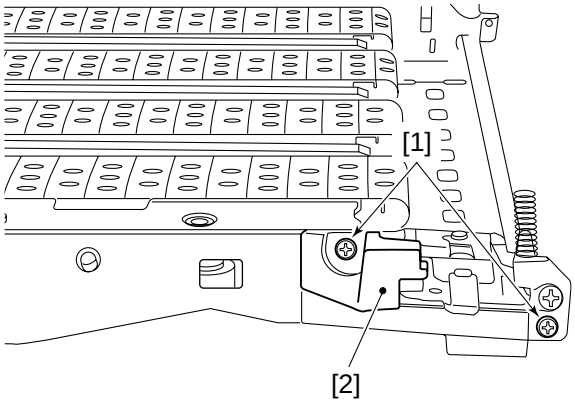
[1] Feeder assembly

Figure 5-317

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

2. Feeder Belt

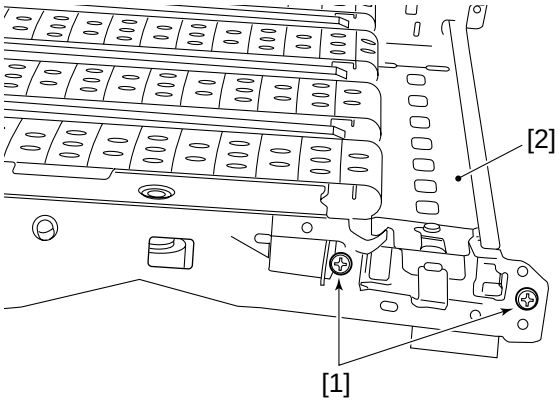
1) Detach the feeder assembly.
2) Remove the two screws, and detach the rail cover found at the front.



[1] Screws [2] Rail cover

Figure 5-318

3) Remove the two screws found at the front that hold the corona assembly rail in place.

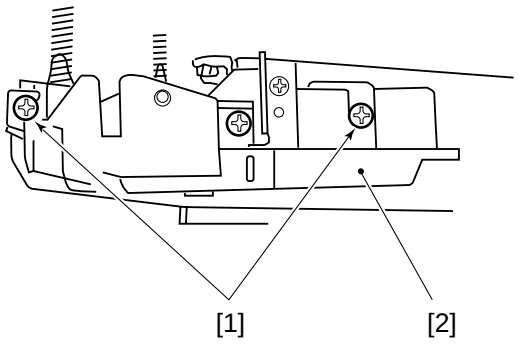


[1] Screws
[2] Corona assembly rail

Figure 5-319

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

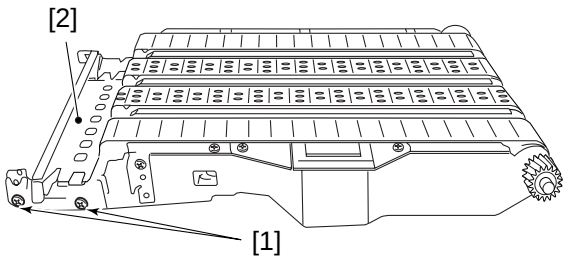
4) Remove the two screws, and detach the terminal holder found at the rear.



[1] Screws [2] Terminal holder

Figure 5-320

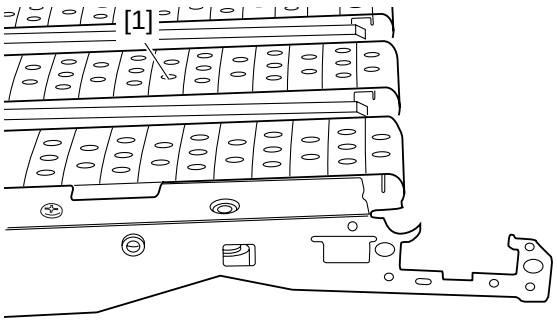
5) Remove the two screws found at the rear, and detach the corona assembly rail.



[1] Screws
[2] Corona assembly rail

Figure 5-321

6) Detach the feeder belt.



[1] Feeder belt

Figure 5-322

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

CHAPTER 6

FIXING SYSTEM

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

I. BASIC OPERATIONS

A. Outline

The upper and lower rollers of the fixing assembly are driven by the main motor (M1).

The upper roller is heated by a single heater (H1: 900W). When the surface temperature of the roller rises, the resistance of the thermistors (TH1/TH2) falls, so the voltage of the signal FIXING ROLLER SURFACE TEMPERATURE signal (MAIN-TH/AUX-TH) also falls.

Whether the voltage of TH1 (analog) is above or below a certain level at a given time determines if the microprocessor of the DC controller causes the HEATER DRIVE command (HTRD) to go '1' or '0'.

The copier is provided with the following three protection mechanisms:

- The microprocessor monitors the voltage of TH1 and TH2 and indicates 'E000' or 'E001' in response to an error, i.e., ACOFF goes '0' to turn the relay (K100) OFF, thereby cutting the AC power to the fixing heater.
- The fixing roller error detection circuit monitors the voltage of TH1 and TH2 and, when it drops below 0.9V (equivalent of 215°C), turns HTRD OFF.
- The microprocessor monitors the signal of HTON. When the HTON signal is ON while the HTRD signal is OFF, the microprocessor cuts the AC power.
- The thermal switch (F1) goes OFF when the temperature of its inside rises to 230°C to cut off the power to the fixing heater.

Note:

The thermal switch (TS1) cannot be used after its contact has opened: the contact will not return to its normal state at room temperature.

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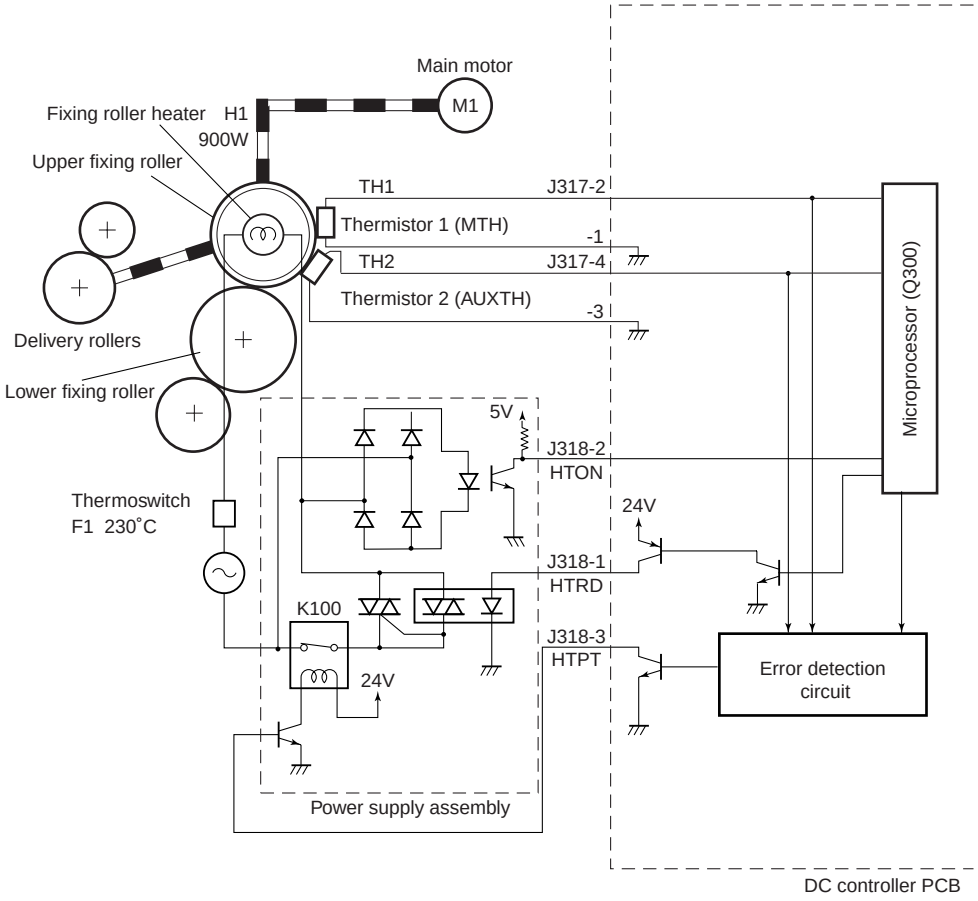

Figure 6-101

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B. Operation of Fixing Assembly Temperature Control System

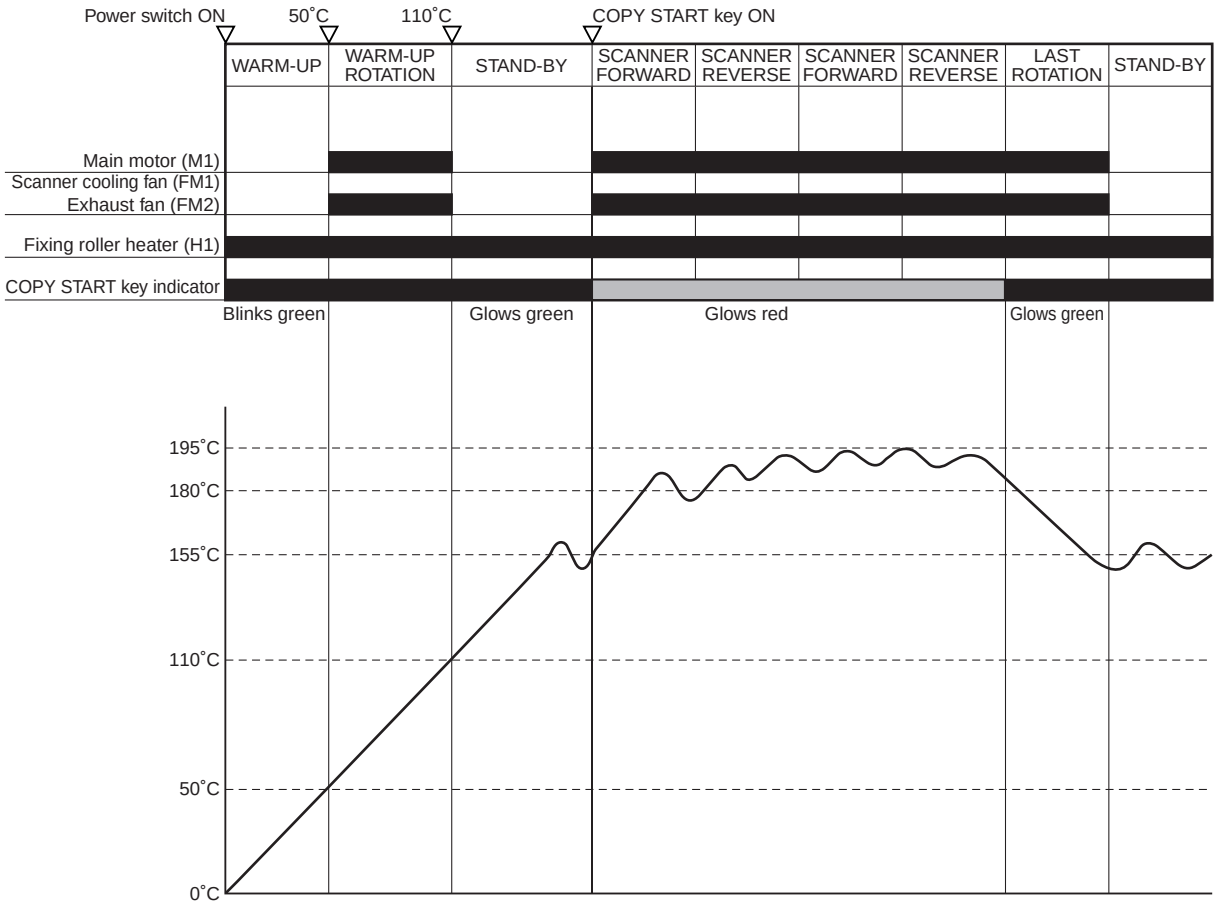

Figure 6-102

Note:
When the preheat mode starts in response to a press on the STANDBY key, the fixing temperature is controlled to 155°C.

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III. DISASSEMBLY AND ASSEMBLY

A. Fixing Assembly

1. Construction

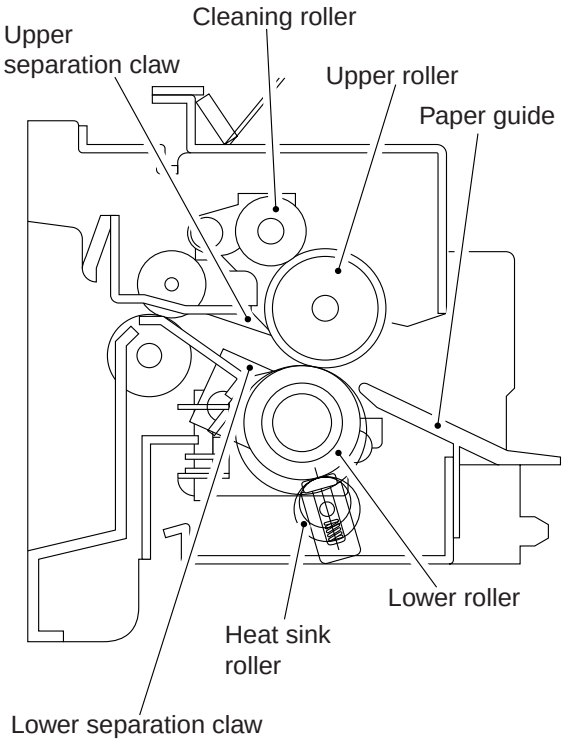
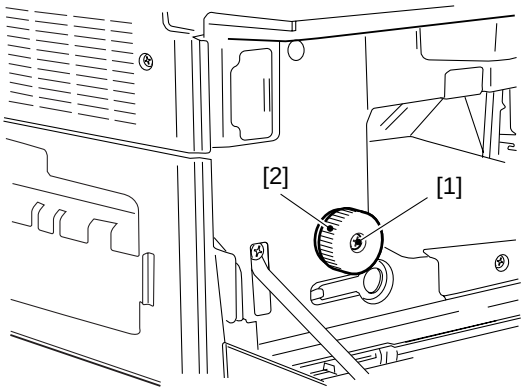


Figure 6-201

2. Detaching the Fixing Assembly

1) Remove the screw, and detach the fixing assembly knob.

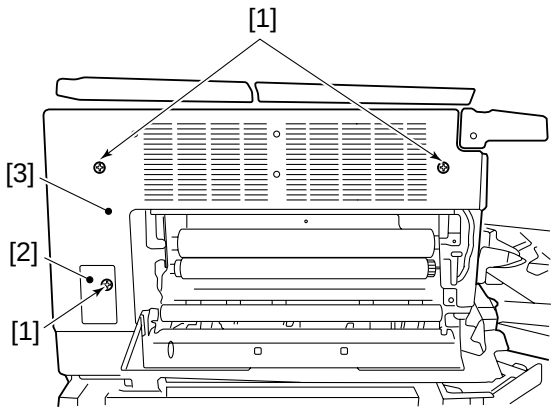


[1] Screw
[2] Fixing assembly knob

Figure 6-202

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

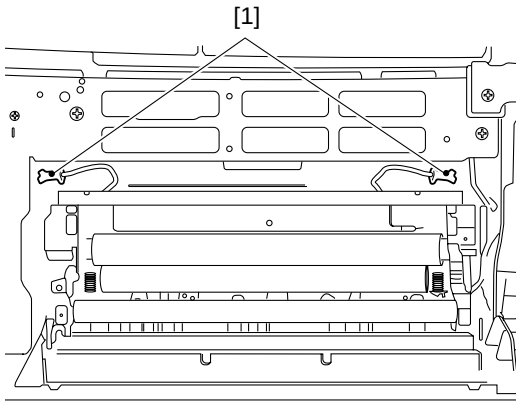
2) Remove the three screws, and detach the blanking plate and the left cover.



[1] Screws [2] Blanking plate
[3] Left cover

Figure 6-203

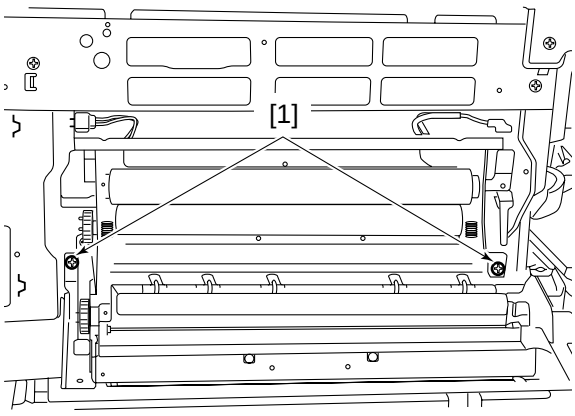
3) Disconnect the three connectors.



[1] Connectors

Figure 6-204

4) Remove the two screws, and slide out the fixing assembly.



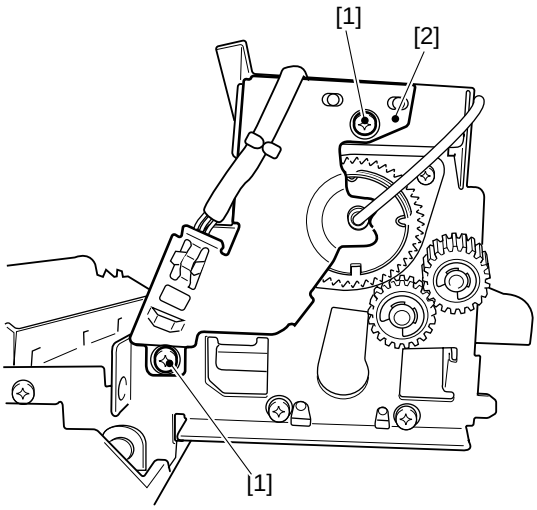
[1] Screws

Figure 6-205

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

3. Detaching the Upper Fixing Roller, Heater, and Lower Fixing Roller

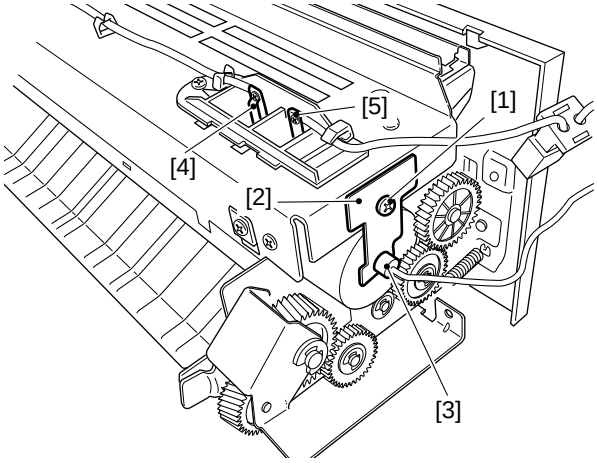
1) Detach the fixing assembly from the copier.
2) Pull out faston A (See Figure 6-207), and remove the two screws; the heater mount plate (front) can be detached in this condition.



[1] Screw
[2] Heater mount plate (front)

Figure 6-206

3) Pull faston B, and remove the mounting screw from the heater mount plate found at the rear; then, pull out the heater mount plate (rear) and the heater carefully.

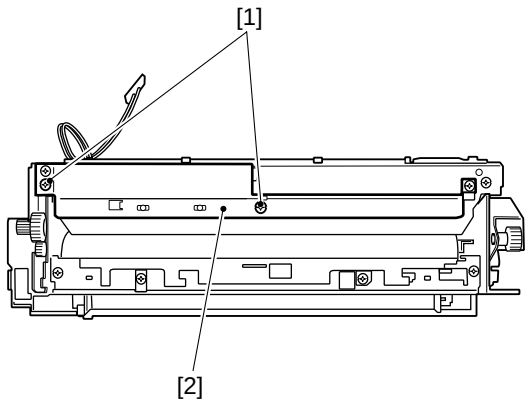


[1] Screw
[2] Heater mount plate (rear)
[3] Heater [4] Faston A
[5] Faston B

Figure 6-207

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

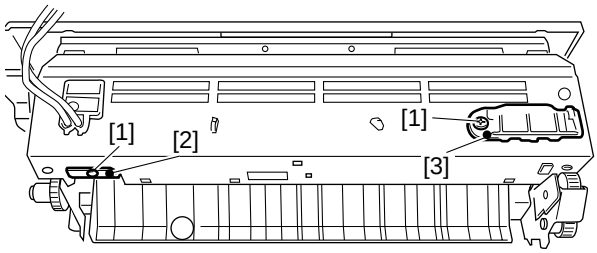
4) Remove the two screws, and detach the thermistor cover.



[1] Screws [2] Thermistor cover

Figure 6-208

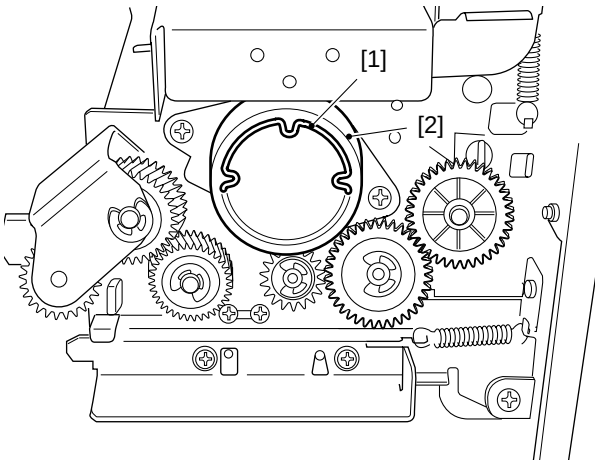
5) Remove the screw, and detach the thermistor mount.
6) Remove the screw, and detach the thermal switch mount.



[1] Screw
[2] Thermistor mount
[3] Thermal switch mount

Figure 6-209

7) Remove the C-ring at the rear, and detach the gear.

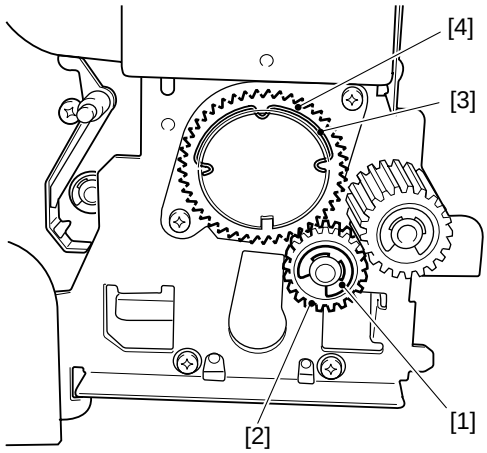


[1] C-ring [2] Gear

Figure 6-210

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

8) Remove the E-ring, and detach gear A.
9) Remove the C-ring, and detach two gears B.

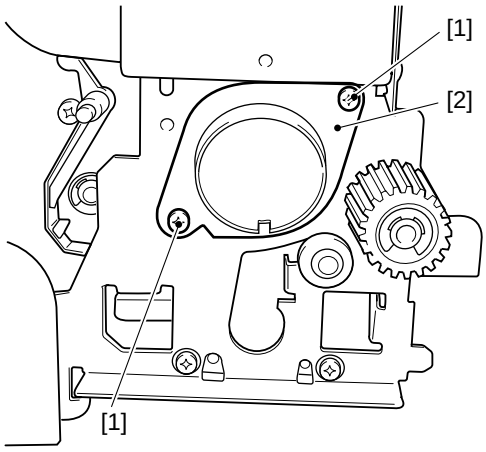


[1] E-ring [2] Gear A
[3] C-ring [4] Gear B

Figure 6-211

10) Remove the two screws, and detach the bushing.

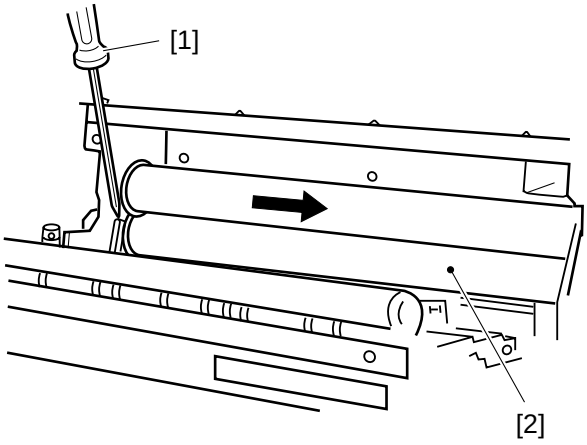
Note:
The bushing is pushed up from below. If it is difficult to detach, try pushing the upper fixing roller to the bottom to facilitate detachment.



[1] Screw [2] Bushing

Figure 6-212

11) Push the pressure spring of the lower fixing roller using a screwdriver, and detach the upper fixing roller.
12) Detach the lower fixing roller.



[1] Screwdriver [2] Lower roller

Figure 6-213

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

4. Attaching the Heater and Upper Fixing Roller

Attach the heater and the upper fixing roller as in detaching them but in reverse order while noting the following:

a. Heater

i. Do not touch the surface of the heater.
ii. Make sure that the end showing the manufacturer's name is to the front.

b. Upper Fixing Roller

i. Wrap the roller with copy paper to prevent soiling or scarring its surface.
ii. Make sure that the end with two C-rings is to the rear.
iii. Make sure that the two identical gears are used at the front.

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5. Adjusting the Nip Width (tightening the pressure adjusting nut)

If the nip width is not as shown in Figure 6-214, turn the bolt to adjust it.

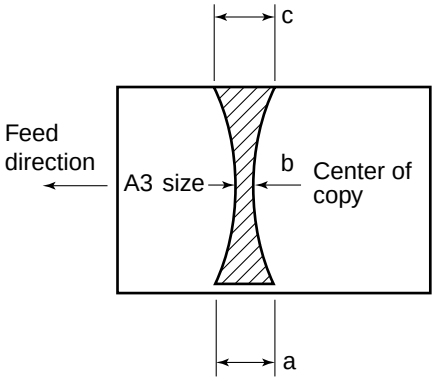

Figure 6-214

Note:
a and c represent points 10 mm from each end.

Dimension	Measure after the upper and lower rollers have heated up.
b	4.5 ±0.5 mm
|a-c|	0.5 mm or less

Table 6-201

a. Measuring the Nip Width

If the roller is not heated, wait for 15 min. after the WAIT indicator has changed to green; then, make 20 copies before taking measurements.

b. Measuring Procedure

1) Open the copyboard cover and make a A3-size solid black copy.
2) Set the solid black copy to the multi feeder.
3) Select service mode C13.
   3-1) Detach the VR cover from the rear of the left cover.
   3-2) Press the service switch (SW300) on the DC controller PCB.
   3-3) Select service mode C13 using 10-key or the zoom key.
4) Press the COPY START key.
   • The solid black paper is automatically picked up from the multifeeder.
   • Then the solid black paper is stopped at the fixing roller and, after a specific period, is delivered.

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6. Mounting the Thermistors

Make sure that the sensor face of the thermistor is in even contact with the surface of the upper fixing roller.

Note:
The position of the thermistor need not be adjusted; if the contact is not even, make sure that the thermistor spring is not deformed.

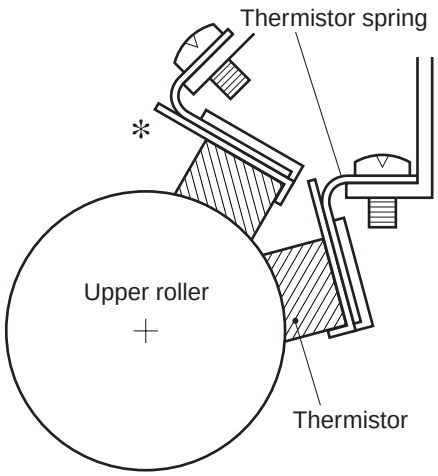

Figure 6-215

7. Attaching the Thermoswitch

Make sure that the sensor face of the thermoswitch is in even contact with the surface of the upper fixing roller.

Note:
The position of the thermoswitch need not be adjusted; if the contact is not even, make sure that the thermoswitch spring is not deformed.

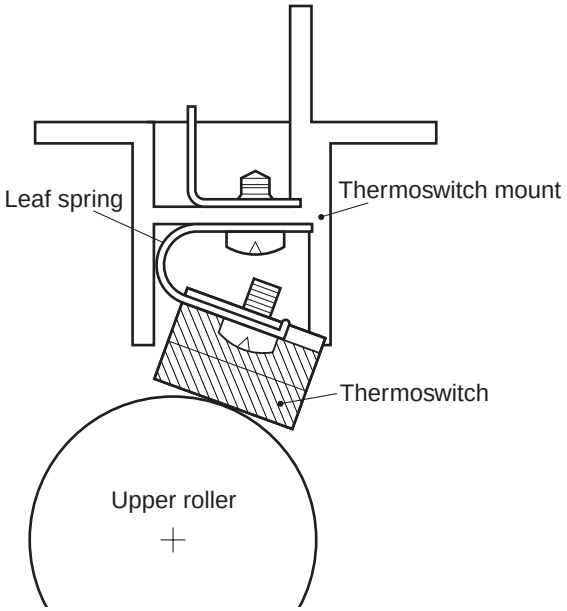

Figure 6-216

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8. Position of Paper Guide

The position of the paper guide is adjusted by the paper guide mount. For this reason, the position of the paper guide need not be adjusted.

Note:
If the paper guide mount has been detached, the position of the paper guide must be adjusted. To avoid this, do not loosen the screw on the paper guide: if necessary, mark the position on the fixing assembly mount using a scriber.

Note:
To adjust the position of the paper guide, place the fixing assembly on a desk, and move the paper guide so that the position is as shown Figure 6-217.

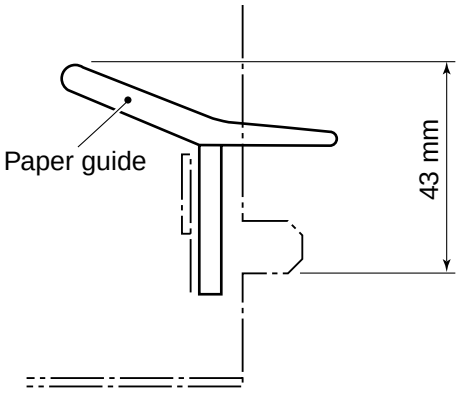
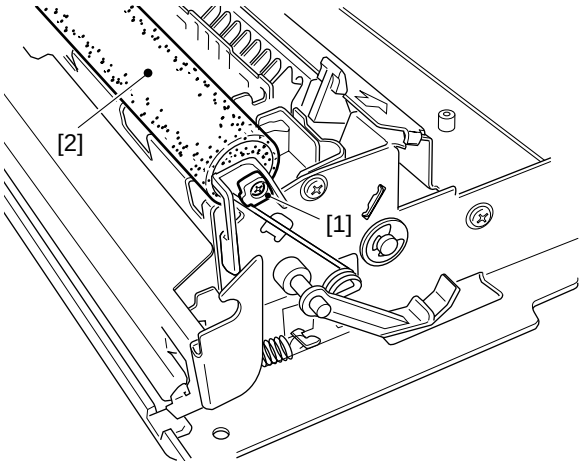


Figure 6-217

9. Detaching the Clearing Roller

1) Open the delivery assembly.
2) Release the spring from the hook [1].
3) Detach the cleaning roller [2].



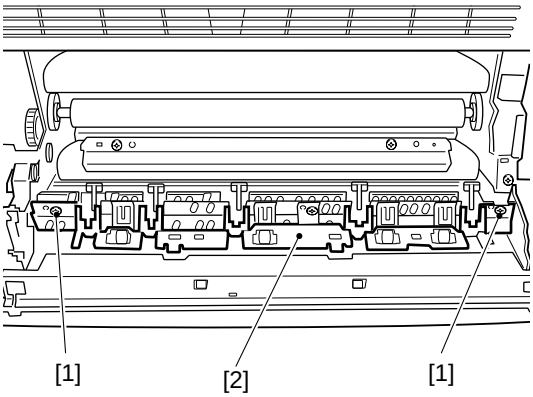
[1] Hook [2] Cleaning roller

Figure 6-218

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

10. Detaching the Upper Separation Claw

1) Open the delivery assembly.
2) Detach the cleaning roller.
3) Remove the three screws, and detach the upper separation claw assembly.



[1] Screw
[2] Upper separation claw assembly

Figure 6-219

4) Remove the spring, and detach the upper separation claw.

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11. Attaching the Upper Separation Claw

Attach the upper separation claw as detaching it but in reverse order with the following in mind.

a. Make sure that the boss on the upper separation claw is in contact with the mount as shown in Figure 6-220.

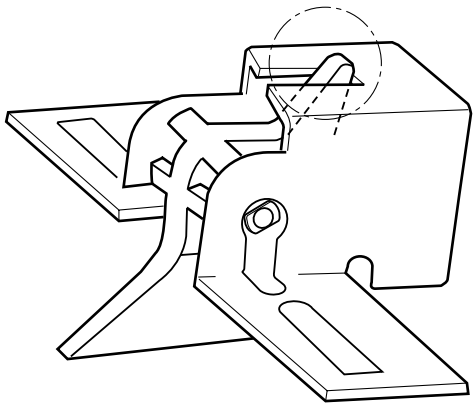

Figure 6-220

b. Make sure that the upper separation claw assembly is fully toward the rear. If a scratch is noted on the upper fixing roller, move the upper separation claw assembly about 4 mm toward the front.

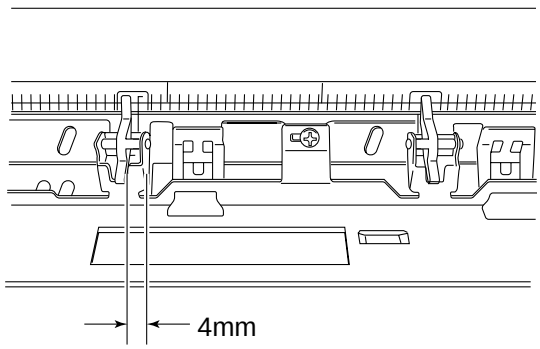

Figure 6-221

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

12. Detaching the Lower Separation Claw

1) Open the delivery unit.
2) Slide the lower separation guide plate [1] to remove.

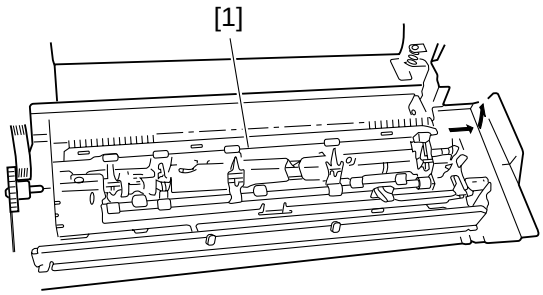

Figure 6-222

3) Remove the spring, and remove the lower separation claw.

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CHAPTER 7

EXTERNALS/AUXILIARY MECHANISMS

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

I. POWER SUPPLY

A. AC Driver DC Power Supply

1. Outline

The AC driver/DC power supply PCB is supplied with AC power when the door switch (DS1) and the power switch (SW1) go ON.

On the other hand, the DC power supply supplies the main body with 24 VDC and 5 VDC.

24 VDC is used to drive the scanner motor (M2), main motor (M1), mirror motor (M3) fans and solenoids as well as high-voltage transformer (HVT); 5 VDC is used by the sensors and ICs on the DC controller PCB.

2. DC Power Supply Circuit

The 24 VDC output voltage is generated by a S.M.P.S*. The 5V is derived by a step-down circuit from the 24V DC output.

The S.M.P.S. and the step-down circuit are provided with an overcurrent and overvoltage protection mechanisms and are used to maintain the output voltage stable against line load variations.

3. AC Drive Circuit

The DC power supply/AC drive PCB has an AC driver circuit and, based on the signals from the DC controller PCB, controls the SSRs and relays on the DC power supply/AC drive PCB to drive AC loads.

If the DC controller PCB detects an error, the ACOFF signal is generated to turn the relay (SK101) on the DC power supply/AC drive PCB OFF, thereby shutting off the power to the LDN and the fixing heater.

When the power is shut off, switch the copier OFF, and identify the cause; then, switch the copier OFF.

Note that repeated short-circuiting and resetting can cause the built-in fuse to blow.

* S.M.P.S.; Switching mode power supply.

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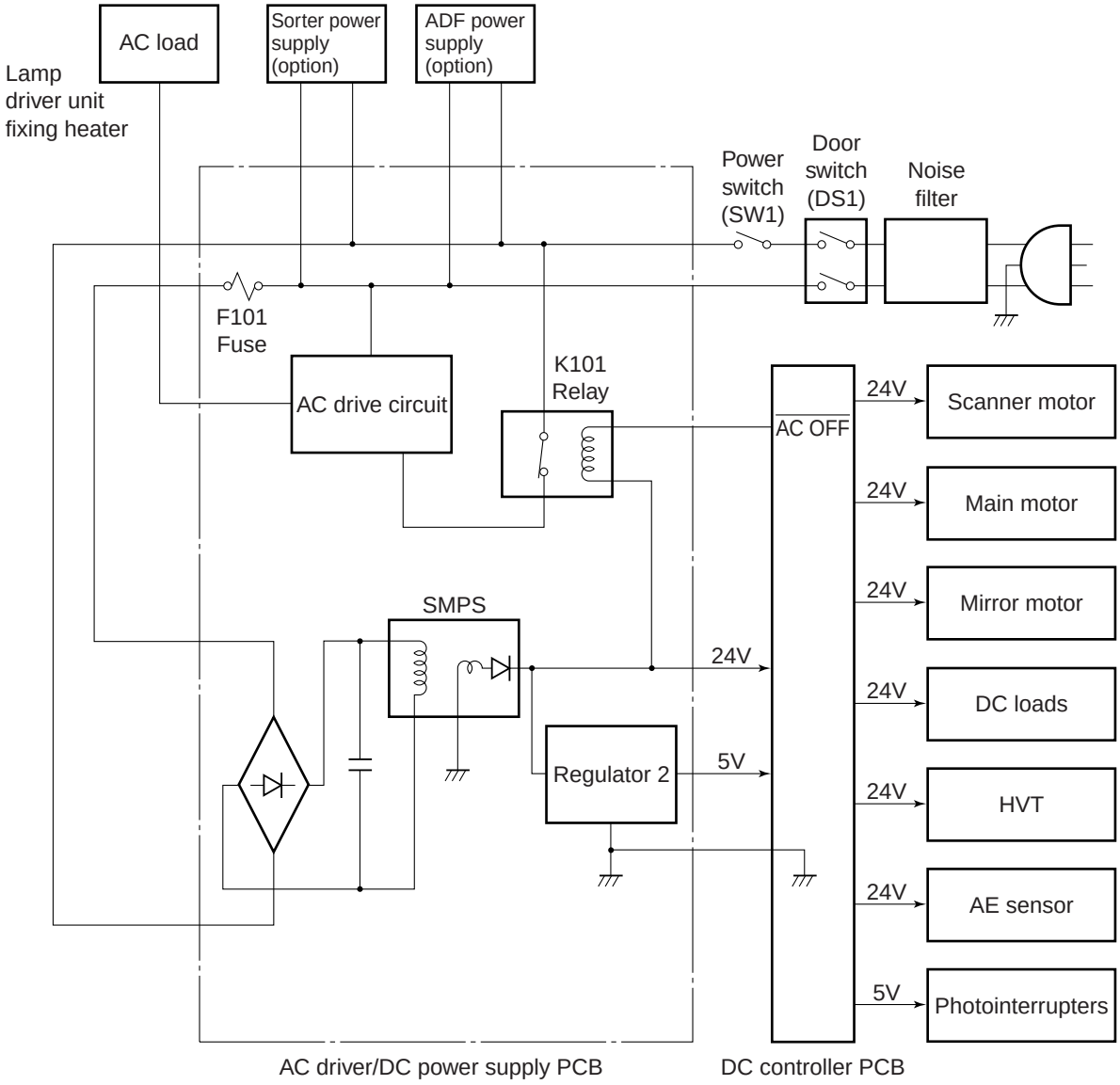

Figure 7-101

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

II. DISASSEMBLY AND ASSEMBLY

This section explains mechanical characteristics and describes how to disassemble/assemble the machine.

Be sure to observe the following whenever disassembling/assembling the machine:

1. ⚠ Disconnect the power plug before starting the work.
2. Unless otherwise shown, assemble the parts by reversing the steps given to disassemble them.
3. Identify each screw by type (length, diameter) and location.

4. A washer is used for one of the mounting screws on the rear cover to protect against static electricity; be sure to use the washer when assembling the part.
5. A washer is used for some mounting screws (for grounding wire, varistor) to ensure correct electrical continuity; be sure to use the washer when assembling the part.
6. As a rule, do not operate the machine while any of its parts are removed.
7. When sliding out the duplexing unit or the fixing assembly, be sure to turn off the front door switch or the power switch.

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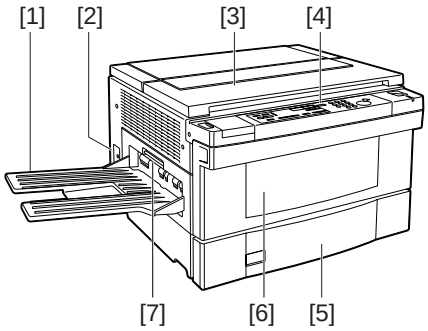
A. External Covers

Detach the covers as necessary when cleaning, checking, or repairing the inside of the machine. Covers that can be detached by mere removal of the fixing screws are omitted from the discussions.



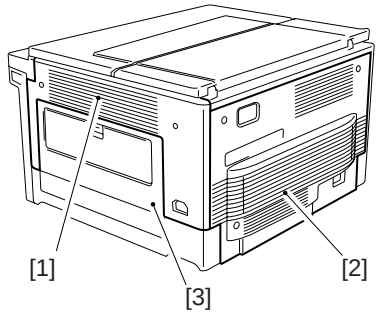
[1] Copy tray [2] PCB cover
[3] Copyboard cover [4] Control panel
[5] Cassette [6] Front door
[7] Left door

Figure 7-201

Note:
On the back side of the PCB cover, there is an inscription that reads "VR300," intended to indicates the presence of VR300 on the DC controller PCB. However, the VR300 does not exist on the DC controller PCB.

1. Detaching the Inside Cover

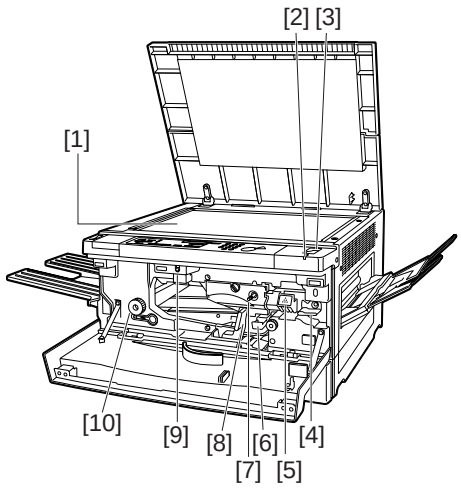
1) Remove the two screws that hold the front cover in place.
2) Remove the screw, and detach the fixing assembly knob.
3) Remove the knob by pulling out it.
4) Remove the four mounting screws, and detach the inside cover.



[1] Right cover [2] Rear cover
[3] Right door

Figure 7-202

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)



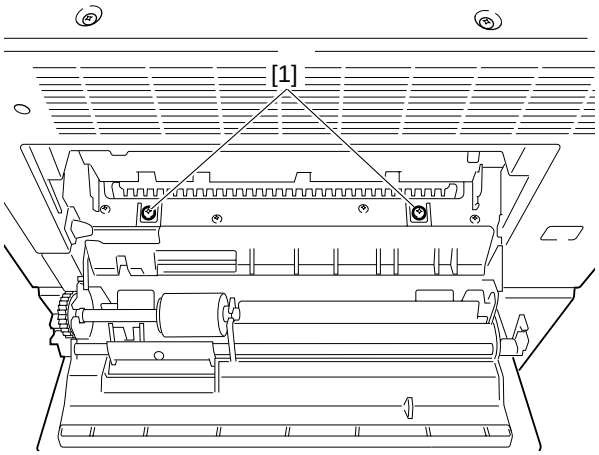
[1] Copyboard glass [2] Power indicator
[3] Power switch
[4] Developing assembly release lever
[5] Developing assembly
[6] Stack eliminating charger
[7] Primary charger wire cleaner
[8] Feeder assembly release lever
[9] Copy density knob
[10] Inner cover

Figure 7-203

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

2. Detaching the Right Door

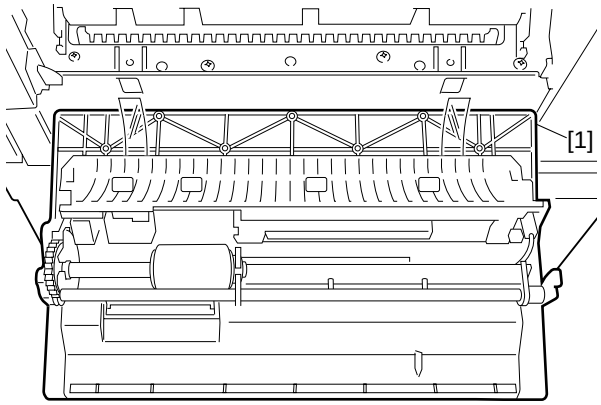
1) Open the right door.
2) Remove the two screws.



[1] Screws

Figure 7-204

3) Detach the right door as if to lift it out of the cut-offs.



[1] Right door

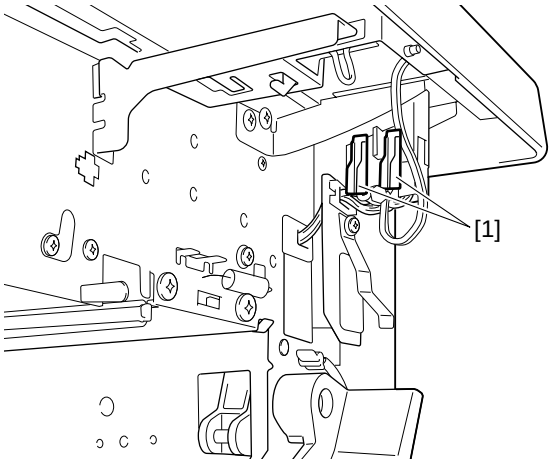
Figure 7-205

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

B. Control Panel

1. Detaching the Control Panel

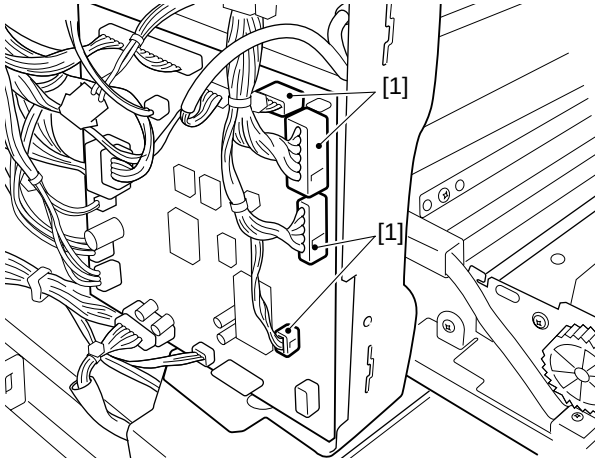
1) Detach the inside cover and the left cover.
2) Disconnect the fasteners.



[1] Fasteners

Figure 7-206

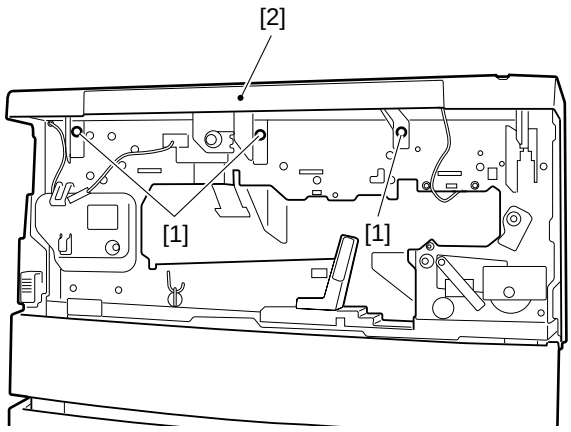
3) Disconnect four connectors from DC controller PCB.



[1] Connectors

Figure 7-207

4) Remove the five screws, and lift the control panel toward the front to detach.



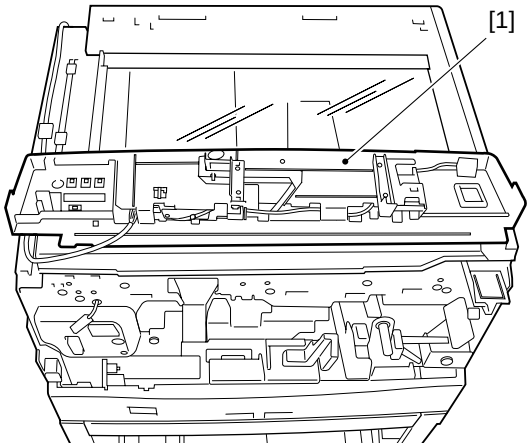
[1] Screws [2] Control panel

Figure 7-208

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

5) Lift the control panel to the front, and turn it over.

Note:
Do not force the control panel, or the harness connected to it may snap off.



[1] Control panel

Figure 7-209

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

C. Copyboard Cover

1. Replacing the Copyboard Sheet

The copyboard sheet is attached to the copyboard cover using adhesive tape and can be detached by pulling at its corner.

After replacement, make sure to even out the sheet for even contact.

D. Fans

1. Outline

The copier is equipped with two fans to circulate the air inside the machine, thereby preventing the machine from overheating.

Each fan serves the following function.

Scanner cooling fan (FM1): cools the scanner.
Exhaust fan (FM2): discharges air to the outside.

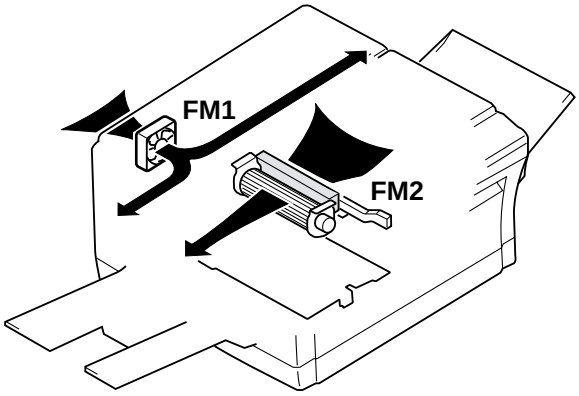
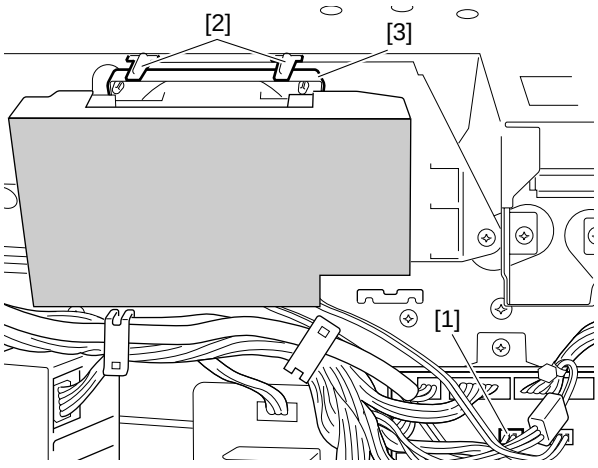


Figure 7-210

2. Scanner Cooling Fan (FM1)

1) Detach the rear cover and the upper rear cover.
2) Disconnect the connector (J308) from the DC controller PCB.
3) Detach the scanner cooling fan by releasing the fasteners.



[1] Connector (J308) [2] Fasteners
[3] Scanner cooling fan

Figure 7-211

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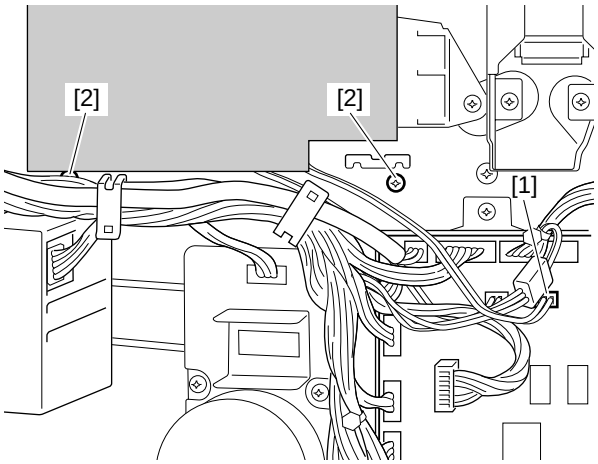
3. Exhaust Fan (FM2)

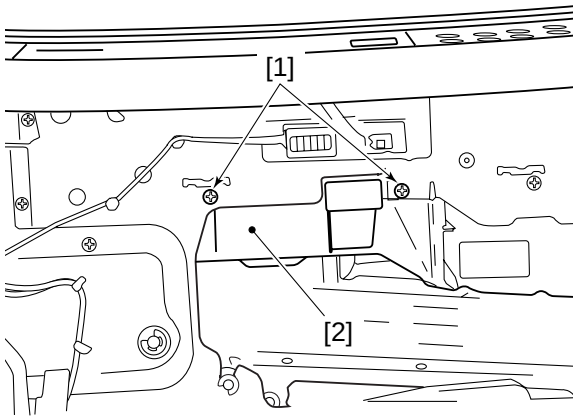
1) Open the front door, and detach the drum unit.
2) Detach the rear cover.
3) Disconnect the connector (J310) from the DC controller PCB, and remove the two screws.



[1] Connector [2] Screw

Figure 7-212

4) Detach the ozone filter and the inside cover; then, lower the feeder assembly.
5) Hold the exhaust fan assembly on its bottom, and remove the two screws; then, pull the assembly to the front.



[1] Screws [2] Exhaust fan

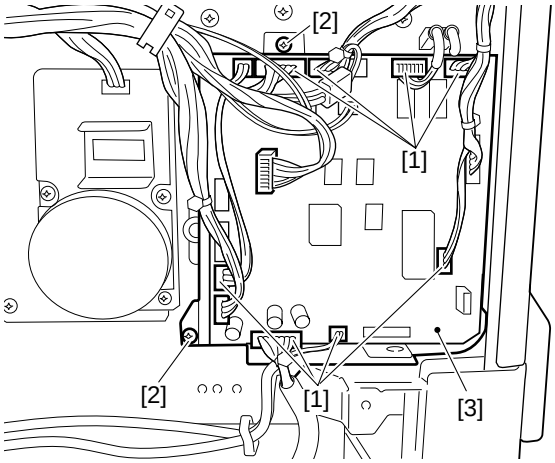
Figure 7-213

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

E. PCBs

1. DC Controller PCB

1) Remove the rear cover.
2) Disconnect all connectors on the DC controller PCB.
3) Remove the two screws; then, remove the DC controller PCB together with its mount.

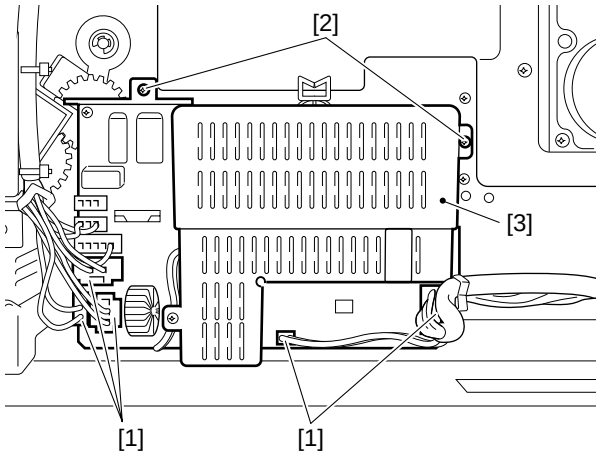


[1] Connectors [2] Screw
[3] DC controller PCB

Figure 7-214

2. Power Supply Unit

1) Remove the rear cover.
2) Disconnect all connectors on the power supply unit.
3) Remove the two screws; then, remove the power supply unit.



[1] Connectors [2] Screws
[3] Power supply unit

Figure 7-215

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CHAPTER 8

INSTALLATION

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

I. LOCATION

The location of the copier should be chosen based on the following considerations. If possible, make a visit to the user for a study of the site before delivery of the copier.

a. The ambient temperature should be between 15° and 35°C and the humidity, 10% to 80%. Avoid locations near water faucets, humidifiers, water boilers, and refrigerators.
b. Avoid locations near open fire or subject to dust or ammonia fumes and direct rays of the sun. Provide curtains over the windows if necessary.
c. Choose a well-ventilated place.
d. Make sure all feet of the copier will be in contact with the pedestal.
e. Allow at least 10 cm from any wall to provide access.

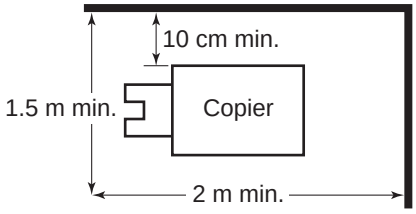

Figure 8-101

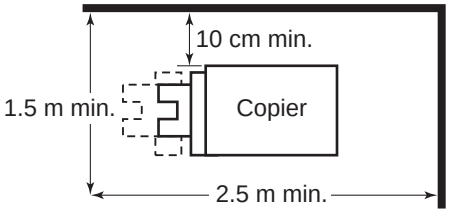

Figure 8-102 (with sorter)

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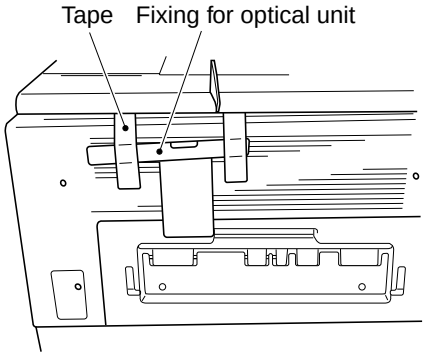
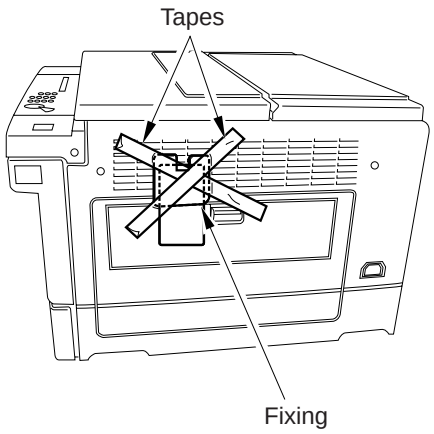
II. UNPACKING AND INSTALLING THE COPIER

When a piece of metal is moved from a cold place to a warm place, droplets of water form on its surface. This phenomenon is known as "condensation" and affects the performance of machines. The simplest way to eliminate condensation in the copier, any machines for that matter, is to leave it alone until it warms to room temperature (at least one hour).

A. Unpacking

Step	Work	Remarks
1	Open the shipping carton.	
2	Place your hands beneath the front and rear of the base plate of the copier (on skids); then raise the copier and place it on a pedestal or a desk.	
3	Open the cardboard box, and take out the parts and accessories.	Check that the following are available: • Copy tray • OPERATOR'S MANUAL • Drum unit • Power cable
4	Remove all tape, and open the cassette. Remove the cushion blocks from inside the cassette.	
5	Remove the tapes that secure the optical unit in place (outside the left cover), and slide the fixing to the right and pull it out.	
6	Remove the tapes that secure the No. 4/5 mirror mount in place (outside of the right cover), and slide the fixing to the right and pull it out.	

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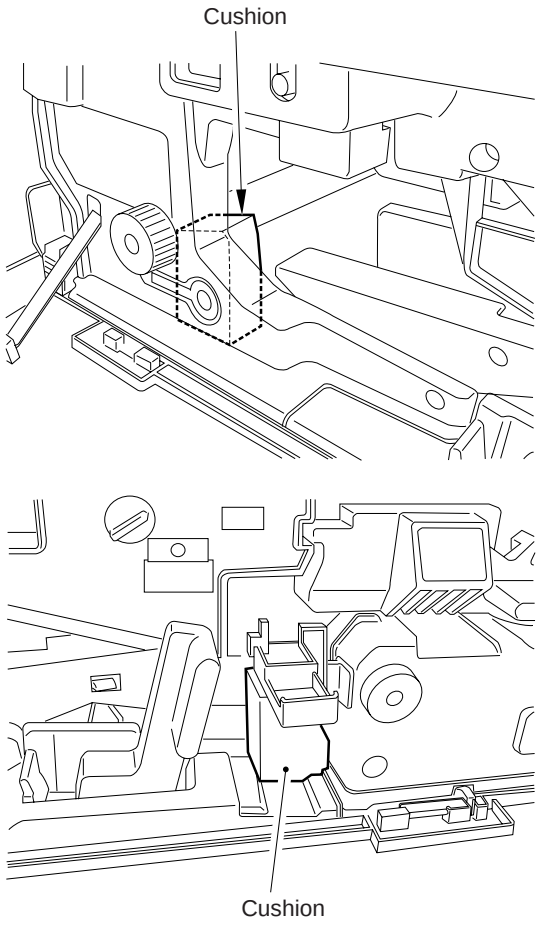
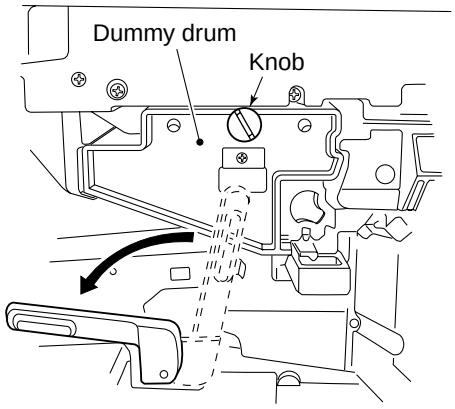
Step	Work	Remarks
7	Open the front cover, and disengage the developing assembly, and remove it from the copier.	Check that the developing cylinder is free of scratches.
8	Remove the cushion blocks from the feeder assembly and fixing assembly.	
9	Disengage the feeder assembly, remove the knob, and remove the dummy drum. Keep the knob for later use.	

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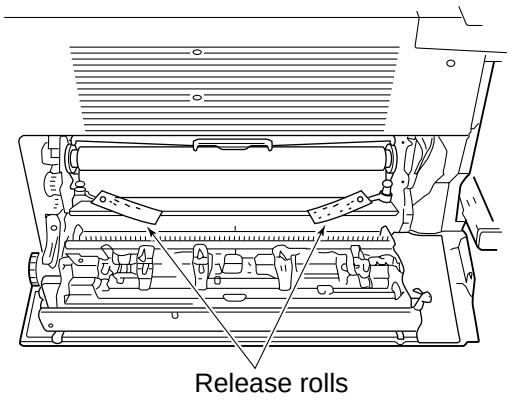
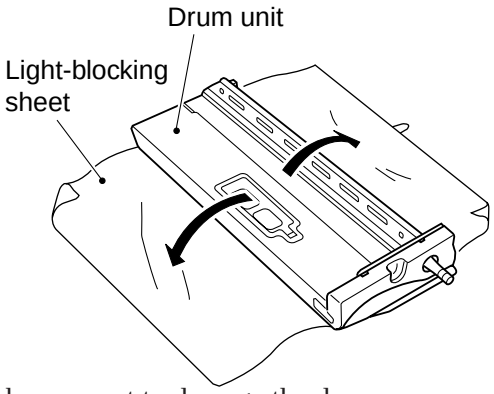
Step	Work	Remarks
10	Open the delivery cover, and remove the two fixing roller release rolls; then, close the delivery cover.	

B. Mounting the Drum

The photosensitive drum is susceptable to light; if exposed to room light, it can cause white spots or black lines on the copy images. As such, be quick in performing the following work.

Step	Work	Remarks
1	Take out the drum unit from the box, and remove the light-blocking sheet.	 Take care not to damage the drum.
2	Set the drum unit in the copier, and fix it in place using the knob that held the dummy drum.	Slide the drum unit straight along the rails into the copier.
3	Move the grip to clean the corona wire of the drum unit two to three times.	
4	Set the developing assembly in the copier, and engage it.	The front cover may be left open.

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C. Checking the Operation

Step	Work	Remarks
1	Turn the door switch ON using the door switch actuator.	
2	Connect the power plug, and shift the POWER switch to "ON".	Check that the ADD PAPER and CASSETTE OUT indicators go ON and the WAIT indicator lights red.
3	Set the cassette size to suit the needs of the user.	See p. 8-8.
4	Put copy paper in the cassette, and set the cassette in the copier.	• Check that the ADD PAPER indicator goes OFF. • Press the keys, except the COPY START key, on the control panel, and check that each operation is correct.
5	Set the copy tray on the copier.	
6	Open the copyboard cover, and remove the protection seal and the cushions.	
7	Record the reading of the copy counter.	
8	After making any copies of the following, the COPY START key goes red. [1] making 7 continuous copies on A3 [2] making 9 continuous copies on A4 [3] making 5 single copies on A3 [4] making 5 single copies on A4	Check the following: • No abnormal sound is heard. • The ADD TONER indicator starts to flash when the Copy key on the control panel turns red at the end of copying for any of the following: [1] making 7 continuous copies on A3 [2] making 9 continuous copies on A4 [3] making 5 single copies on A3 [4] making 5 single copies on A4
9	Check that the counter operates properly.	Check that the reading has increased by 2 from the reading recorded in step 7.

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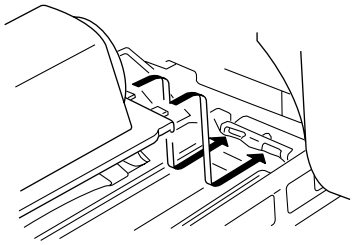
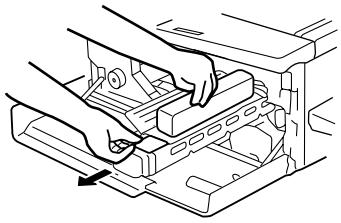
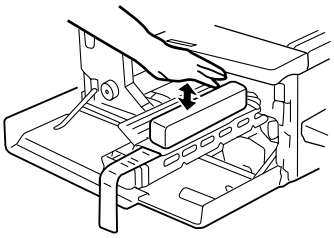
D. Adding Toner

Step	Work	Remarks
1	Remove the door switch actuator.	
2	Disengage the developing assembly, and slide it until it stops.	
3	Shake the toner cartridge well.	
4	Open the developing assembly lid, and fit the boss on the rear end of the toner cartridge into the hole of the plate on the rear end of the developing assembly; thereafter, pull the toner cartridge to the front somewhat so that it comes into contact with the boss found on the left side of the front.	
5	Hold the toner cartridge, and pull on the seal to the front until it stops.	
6	Tap lightly on the top of the toner cartridge until all toner has fallen into the developing assembly.	
7	Remove the toner cartridge, and keep it in an empty box.	
8	Close the developing assembly lid, and slide the assembly inside until it stops.	
9	Turn the developing assembly lever clock-wise to engage it.	
10	Close the front cover.	
11	Set a blank sheet of paper (A3/11"x17") on the copyboard after the COPY START key goes green, and make six to ten copies.	The operation causes the toner inside the developing assembly to be stirred.

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E. Checking the Image

Step	Work	Remarks
1	Place the Test Sheet on the copyboard, and check the image.	Check that copies are made without a problem and the non-image width along the leading edge is correct; otherwise, make adjustments. Non-image width: 2.0mm (approx.) for leading edge 2.5mm (approx.) on left/right side
2	Feed paper in the manual mode.	Make two-sided and overlay copies, and check that the operation is correct; otherwise, make adjustments.
3	Clean up the area around the copier, and fill out the Service Sheet.	

When all above work is finished, install the options (ADF-A1, MS-A1, Stapler Sorter-D3, and Control Card V), if any, and the document holder.

■ Points to Note for Photosensitive Drum After Installation

The photosensitive drum is susceptible to light and, if exposed to light, can cause white spots or black lines on the copy image; take note of the following:

- Limit the removal of jams within five minutes; and
- Keep the drum wrapped in the light-blocking sheet (from drum unit) or fresh copy paper and place it in a dark place whenever it is removed from the copier.

Do not touch the drum; if its surface is soiled, wipe off the dirt using a flannel cloth coated with toner. Do not use paper, lint-free or otherwise, or never use a dry cloth or solvent.

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F. Universal Cassette Code Setting "123"

1. By means of this program, it is possible to set the paper size to universal cassette code.
2. Active service program by pressing "Sorter" key.
3. The "0to6" or "ZOOM+/-" keys set the paper size to universal cassette code.
4. The universal paper size code is indicated on the control panel display ("0 to 6").

Display	Size	Remarks
0	B4	Default setting
1	B5	
2	B5R	
3	LETTER	
4	LETTER R	
5	LEGAL	
6	STMT R	

Note:

The settings in the above table are enabled when the knob selector in the cassette is in "U" position.

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III. RELOCATING THE COPIER

Perform the following when relocating the copier by truck or other means of transportation.

Step	Work	Check	Remarks
1	Remove the drum unit.		Put the drum unit in a separate box for transport.
2	Fix the scanner, and mirror carriage in place.		Fix the No. 4/5 mirror in place.
3	Tape the corona assembly release lever in place against vibration.		
4	Tape the front door and delivery assembly.		
5	Place a sheet of A3 paper on the copyboard glass, and tape the copyboard cover.		

Table 8-501

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IV. INSTALLING THE CONTROL CARD-V

1) Detach the control panel.
2) Remove the slot cover [1] and the screw [2].

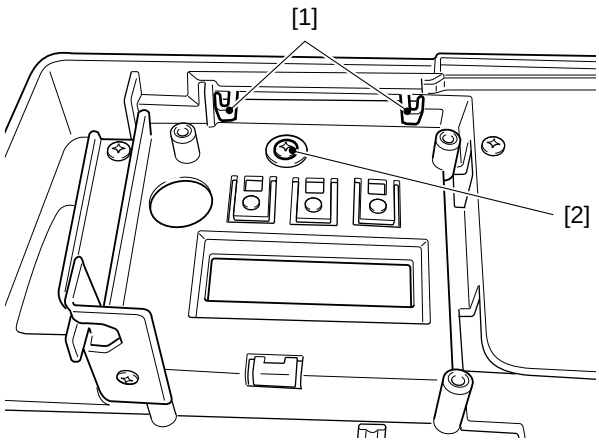

Figure 8-601

3) Set the control card main unit [1] and fix it to the control panel with four screws [2].

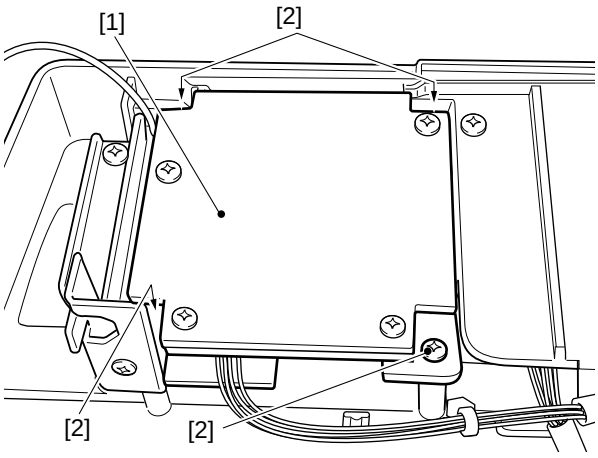

Figure 8-602

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

4) Disconnect the shorting connector [1].

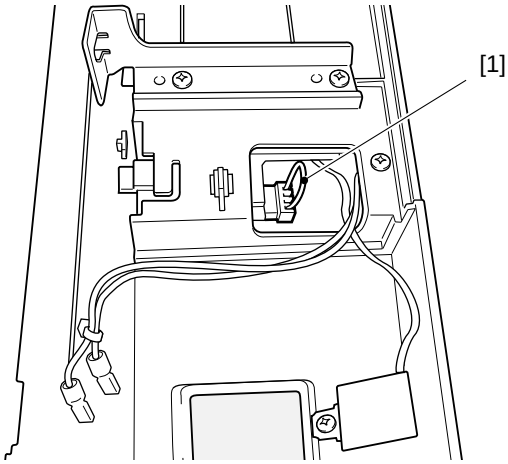

Figure 8-603

5) Connect the relay cable [1] to the control card connector [2] and the control panel PCB connector [3].

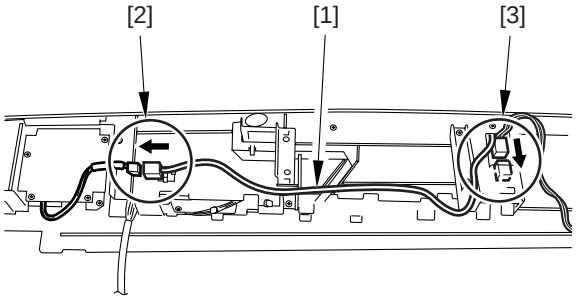

Figure 8-604

6) Route the cable [1] as shown in Figure 8-605.

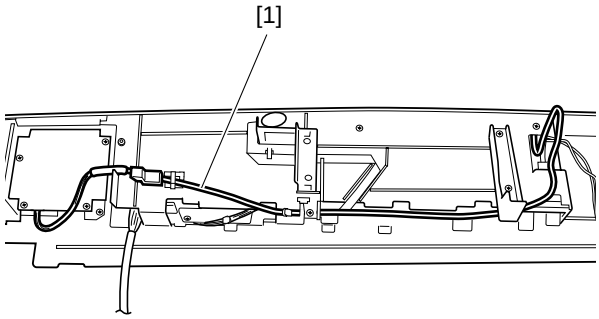

Figure 8-605

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

7) Fix the grounding wire [1] to the support plate [2].

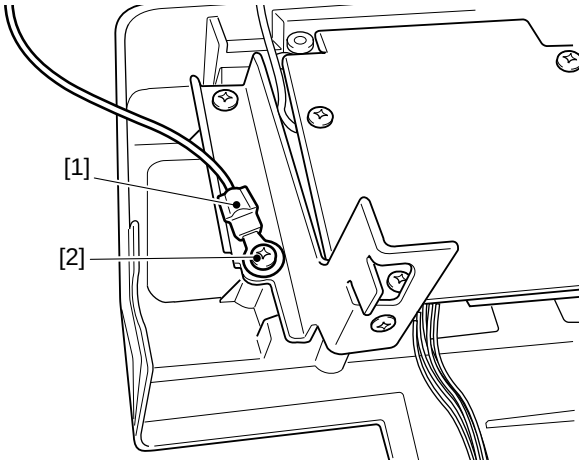

Figure 8-606

8) Attach the control panel sheet [1] to the control panel.

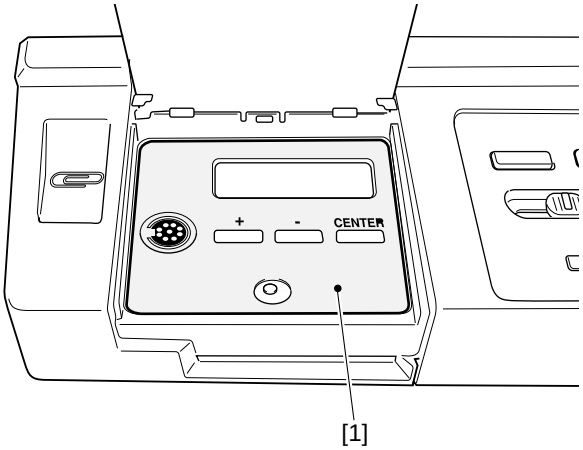

Figure 8-607

9) Attach the control panel to the main body.

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CHAPTER 9

MAINTENANCE AND SERVICING

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

I. PERIODICALLY REPLACED PARTS

To maintain the copier at its peak performance, the parts listed in the following chart must be replaced periodically. Although the deterioration of a part may not be visible, it can seriously hamper the performance of the copier if not replaced on schedule.

Parts should be replaced during the regular service visit that is closest to the end of the service life of the part.

as of March 1999

No.	Description	Part No.	Quantity	Repacement	Remarks
1	Ozone filter	FF2-5595-00P	1	60,000	Or 1year
2	Optical fan filter	FA0-0339-00P	1	60,000	
3	Static charge eliminator	FF1-9438-070	1	60,000	
4	Transfer corona wire	FY3-0040-000	AR	60,000	
5	Developing cylinder spacer roller	FS2-6019-000	2	300,000	

Table 9-101

Note:

The above values are estimates and are subject to change depending on future data.

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II. DURABLE PARTS

The values shown in the table below indicate the expected average life (number of copies) of parts which may require replacement at least once during the warranty period due to deterioration or damage but which can be simply replaced in order to restore the performance of the copier.

as of March 1999

No.	Description	Part No.	Quantity	Service life (number of copies)	Remarks
1	Oil-applying roller (fixing assembly)	FA5-1952-000	1	30,000	
2	Scanner drive cable	FC2-9799-00P	1	100,000	
3	Scanning lamp (scanner)	FH7-3114-000	1	100,000	
4	Paper pick-up roller (pick-up assembly)	FC2-9750-00P	2	100,000	
5	Upper fixing roller bearing (fixing assembly)	FS1-1240-000	2	100,000	
6	Pre-exposure lamp	FG2-3009-00P	1	200,000	
7	Upper fixing roller (fixing assembly)	FC2-8962-00P	1	200,000	
8	Lower fixing roller (fixing assembly)	FC2-9774-00P	1	200,000	
9	Upper separation claw (fixing assembly)	FB1-0301-000	5	200,000	
10	Lower separation claw (fixing assembly)	FA2-9037-000	5	200,000	
11	Multi feeder roller	FB1-8581-000	1	90,000	Must be replaced at the same time
12	Pad (multi feeder)	FF3-3698-00P	1	90,000	
13	Thermistor assembly	FF3-2855-00P	1	100,000	
14	Heat sink roller	FB3-4494-00P	1	100,000	

Table 9-201

Note:
The above values are estimates and are subject to change depending on future data.

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III. BASIC PROCEDURE FOR PERIODIC SERVICING

Note:

i. Perform periodic servicing after every 15,000 copies, as a general rule.
ii. Before making a service call, check the service log and take along any replacement parts that are likely to be needed:

No.	Procedure	Check	Remarks
1	Note the operator's comments.	Condition of copier	
2	Record the counter reading.	Number of miscopies	
3	Make DIRECT and two-page overlay test copies.	a. Image density b. Dirty background c. Clarity of letters d. Leading edge blank area e. Left and right margins f. Fixing, synchronizing, and soiling of back g. Unusual noise h. Operation of counter	Standard: 2.0 ±1.5 mm (DIRECT) Standard: 10.0 ±2.0 mm (DIRECT), front side
4	Clean the corona assemblies.		Dry Wipe using lint-free paper; then clean using alcohol.
5	Clean separation feeder assemblies.		
6	Clean fixing and delivery assemblies. • Paper guide plate • Separation claws (upper and lower)		Alcohol
7	Perform the periodic servicing appropriate to the number of copies. (See p. 6-4.)		
8	Clean the copyboard cover and the copyboard glass.		
9	Check the amount of waste toner.		
10	Make test copies.		
11	Make sample copies.		
12	Select sample copies to keep for the user's record. Clean up around the copier.		
13	Record the final counter value.		
14	Fill in the service sheet and check out with the person in charge.		

Table 9-301

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

IV. PERIODIC SERVICING SCHEDULE

Note:
Do not use solvents or oils other than those specified.

△: Clean ●: Replace ×: Lubricate □: Adjust ◎: Check

Unit	Description	Periodic servicing		Remarks
		Every * 15,000 copies	Every 30,000 copies	
External	Copyboard glass	△		Clean with alcohol.
	Ozone filter			Replace yearly.
Scanner drive assembly	Scanner rails		×	Clean with alcohol then apply high viscosity lubricating oil (TKN-0451).
Feeder	Transfer guide	△		
	Feeder belt	△		Damp cloth
	Feeder frame	△		
Optical path	Scanning lamp reflector		△	Clean with a blower brush. If very dirty, clean with alcohol. Clean mirror 6 with the mirror cleaning tool.
	Scanning lamp side reflector		△	
	Mirrors 1 to 6		△	
	Lens		△	
	Dustproofing glass	△		
Corona assemblies	Primary corona assembly	△		Dry wipe using lint-free paper; then clean using alcohol.
	Primary corona wire	△		
	Transfer corona assembly	△		
	Transfer corona wire	△		
	Static charge eliminator	△		Damp cloth
Developing assembly	Spacer rollers (front and rear)		△	Clean with alcohol.
Fixing assembly	Upper fixing roller	△		Clean with cleaning oil.
	Lower fixing roller	△		
	Paper guide plate	△		Clean with MEK.
	Separation claws (upper and lower)	△		
Drum unit	Lower face of drum unit	△		

* Items to be cleaned every 15,000 copies or every 6 months, whichever comes first.

Table 9-401

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CHAPTER 10

TROUBLESHOOTING

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

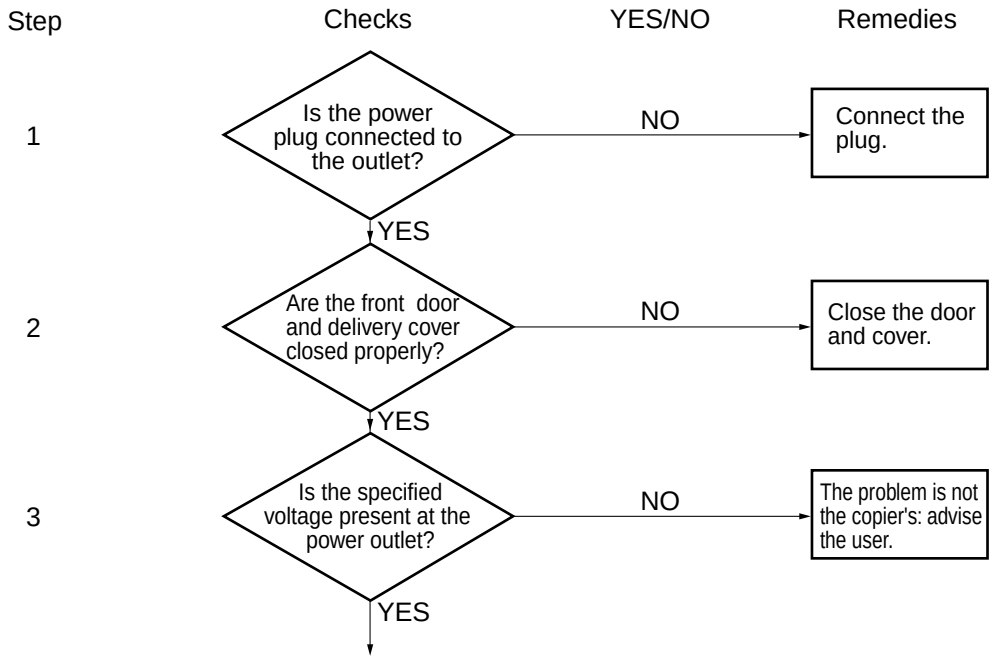
Guide to Troubleshooting Tables

The troubleshooting procedures in this manual are prepared in the form of tables, rather than flow charts. Study the following for an idea of how to consult the tables.

EX. AC power is absent.

Cause/Fault	Step	Checks	YES/NO	Remedies
Power plug	1	Is the power plug connected to the outlet?	NO	Connect the plug.
Covers	2	Are the front door and delivery cover closed property?	NO	Close the door and cover.
Main power	3	Is the specified voltage present at the power outlet?	NO	The problem is not the copier's; advise the user.
	4	Is the specified voltage present between J1-1 and J1-2? (J1 is located near the power supply cord mount.)	YES	Go to step 6.

- To find out the cause (faulty part) of a single problem, see the Cause/Fault column. In the case of "AC power is absent," you will learn that the power plug may not be connected, the covers may not be closed properly, or the main power may be absent.
- To find out checks to make or remedies to provide for a single problem, see the Remedy column as guided by YES/NO to the checks; or, move to the next step as necessary.



- The instruction "Measure the voltage between J109-1 (+) and J109-2 (-) on the DC controller PCB" asks you to connect the meter's positive probe (+) to J109-1 and negative probe to J109-2 (-).

I. MAINTENANCE AND INSPECTION

A. Basic Image Adjustment Procedure

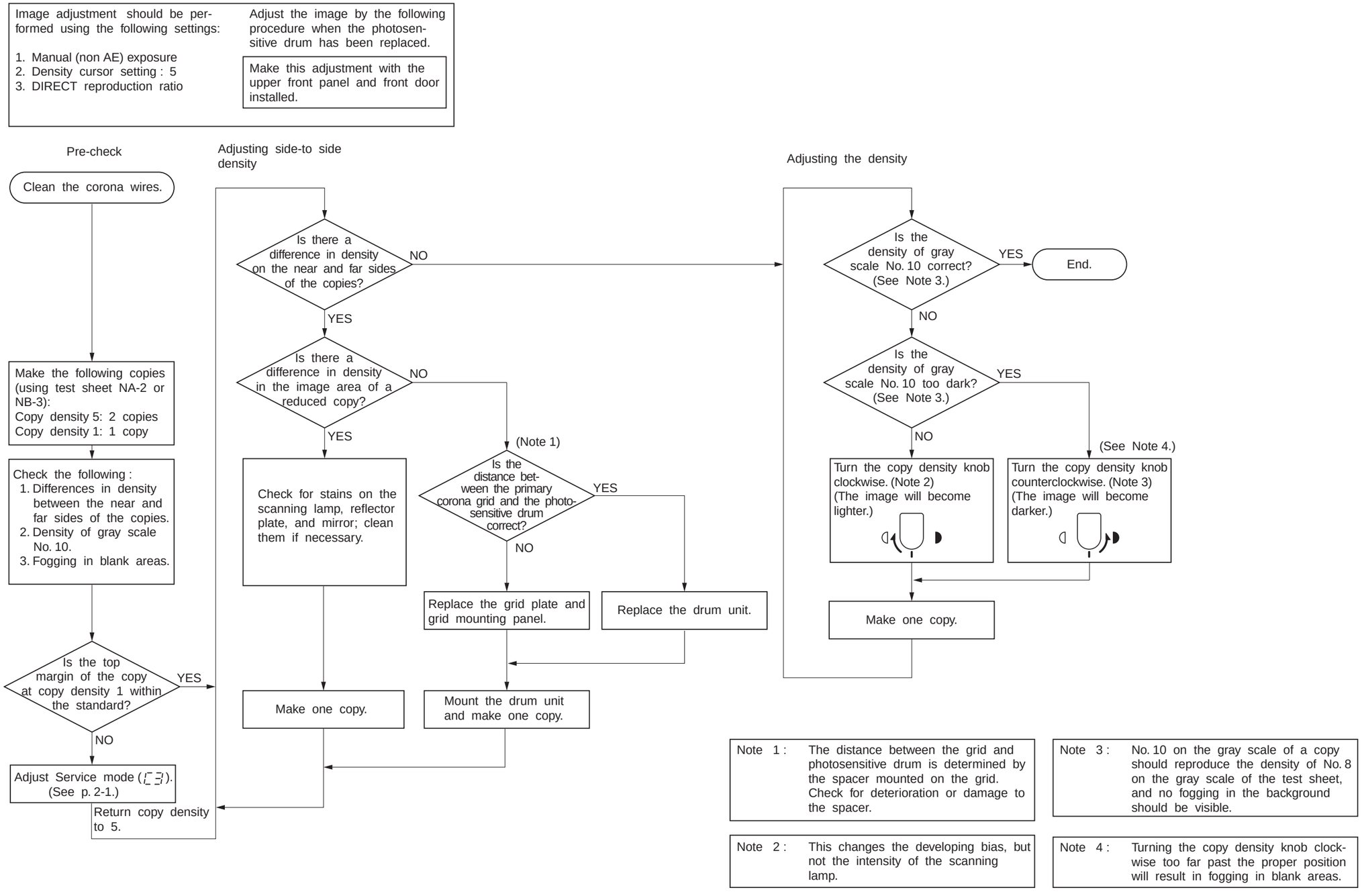


Figure 10-101

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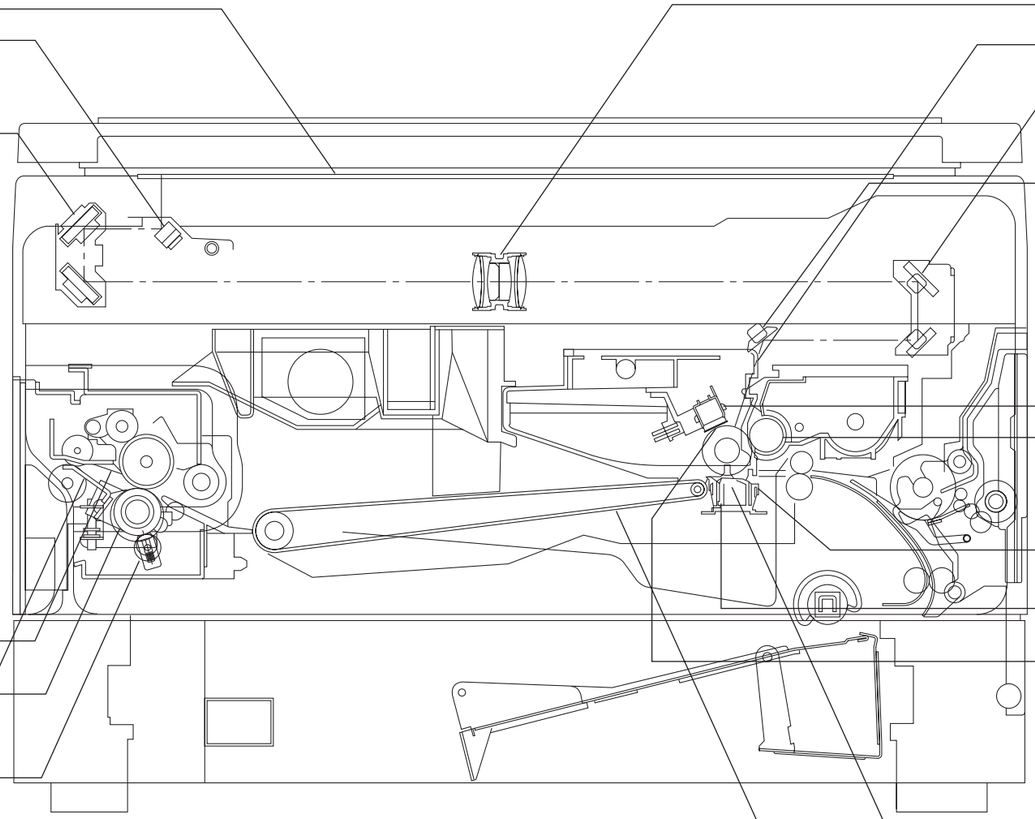
B. Points to Check for Periodic Maintenance

Copyboard/Scanner

Location	Tool/Cleaner	Action/Remarks
Copyboard glass	Alcohol	Cleaning
Reflectors	Blower brush	Cleaning
Mirrors 1, 2 and 3	Blower brush or alcohol and lint-free paper	Clean with a blower brush. If dirt cannot be removed with a blower brush, clean with alcohol.

Optical path

Location	Tool/Cleaner	Action/Remarks
Lens	Blower brush or alcohol and lint-free paper	Clean with a blower brush. If dirt cannot be removed with a blower brush, clean with alcohol.
Dust-proofing glass		
Mirror 4/5 carriage		
Mirror 6	Mirror creaning tool	Cleaning



Corona assemblies

Location	Tool/Cleaner	Action/Remarks
Developing rollers	Alcohol	Cleaning
Primary corona assembly	Alcohol and lint-free paper	Wipe with a dry cloth; then, clean with lint-free paper moistened with alcohol.
Transfer corona assembly		
Static charge ellminator	Blower brush	
Primary corona grid	Blower brush	Cleaning

Fixing assembly and Paper pick-up assembly

Location	Tool/Cleaner	Action/Remarks
Separation claws	MEK	Cleaning
Upper fixing roller, lower fixing roller	Cleaning oil (TKN-0464)	Cleaning
Paper guide plate	MEK	Cleaning
Heat sink roller	Cleaning oil (TKN-0464)	Cleaning

Separation and transfer assemblies

Location	Tool/Cleaner	Action/Remarks
Transter guide	Damp cloth	Cleaning
Feeder belt, Feeder assembly		

Figure 10-102

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II. STANDARDS AND ADJUSTMENT

A. Mechanical

1. Leading Edge Non-Reproduced Area

There is a white strip on the bottom of the copyboard glass in the position shown in the figure below. If bias is being applied to the grid of the primary corona while the scanner is passing over the white strip, the leading edge of the copy will be reproduced blank. If the leading edge non-image width is outside the standards, adjust the timing at which the grid bias goes from OFF to ON in the service mode (C3).

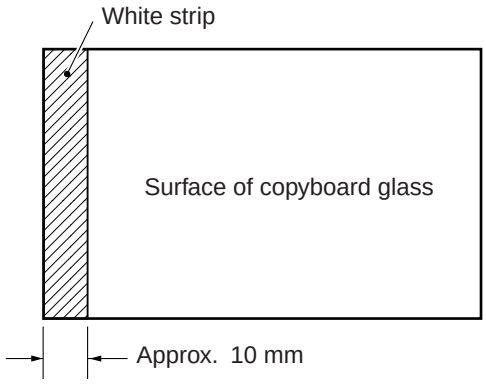

Figure 10-201

The standard leading edge non-reproduced area on a DIRECT copy of the test sheet is 2.0 ±1.5 mm.

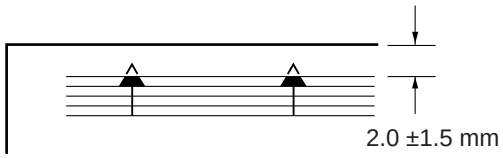

Figure 10-202

A higher setting (C3) increases the leading edge non-image width; in units of 0.25 mm.

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2. Leading Edge Registration

Make adjustments in the service mode (C2) so that the distance shown is 10.0 ±1.5 mm when the test sheet is copied in DIRECT.

Note:
Adjust the leading edge non-reproduced area before making this adjustment.

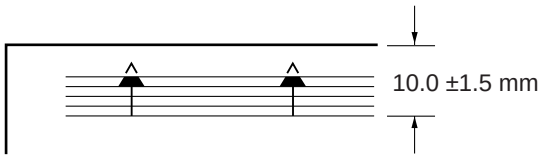

Figure 10-203

A higher setting in the service mode (C2) increases the leading edge margin.

3. Side-to-Side Registration

a. Cassette Feeding

The standard near side registration on a DIRECT copy of the test sheet is 10.0 ±2 mm.

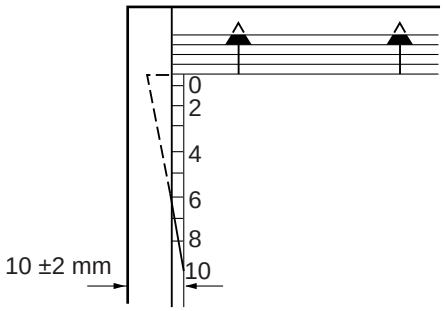

Figure 10-204

Loosen the two screws, and adjust the latch assembly for the cassette found on the back of the bottom plate by sliding it.

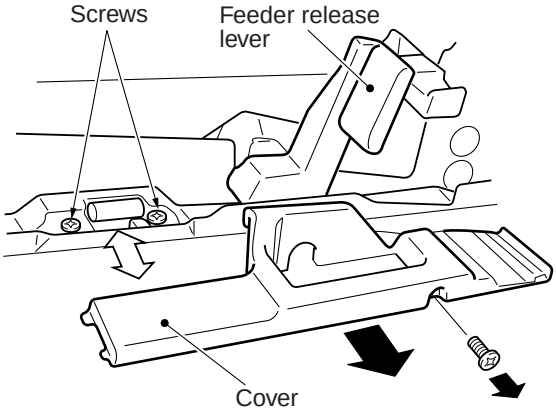

Figure 10-205

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b. Multifeeder Feeding

The standard near side registration on a DIERCT copy of the test sheet is 10.0 ±2 mm.

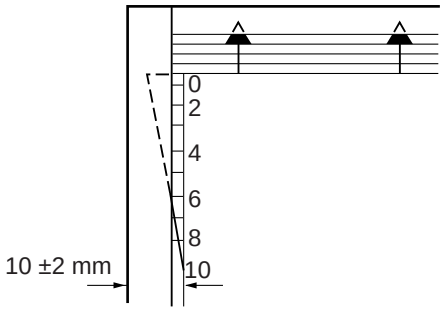

Figure 10-206

Loosen the screw, and adjust the multifeeder side guide by sliding it. Then, tighten the screw.

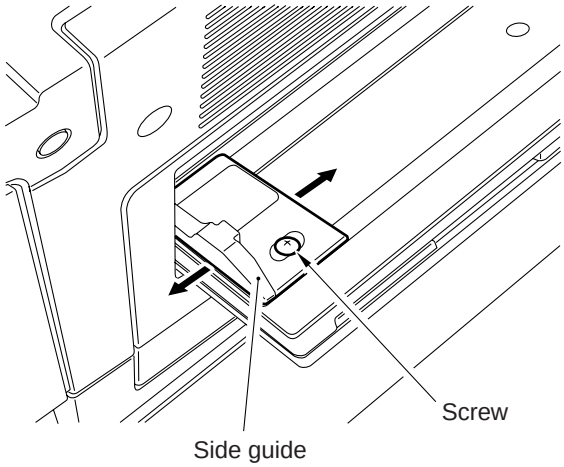

Figure 10-207

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4. Installing the Lens Drive Cable

This unit has been accurately adjusted at the factory with special gauges. Do not remove parts other than those shown below, nor loosen any other screws.

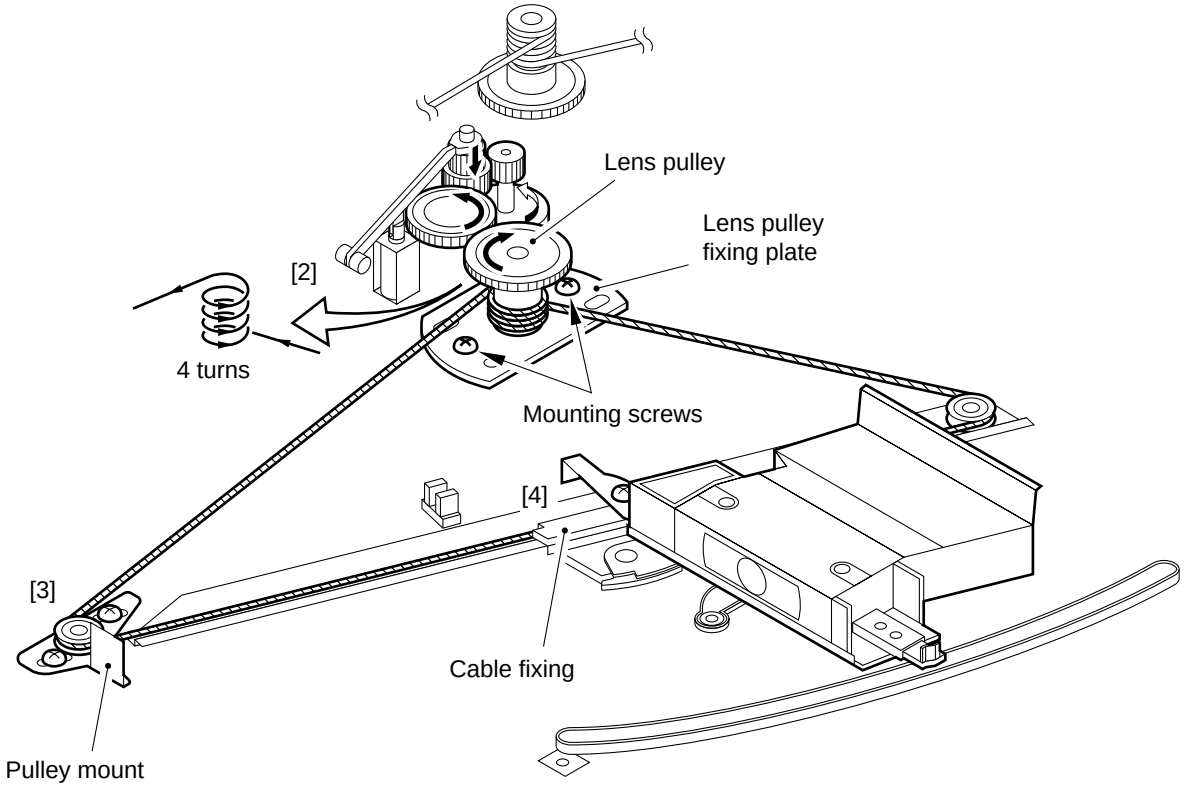

Figure 10-208

a. Removing the Lens Cable

1) Remove the two screws and remove the lens cover.
2) Mark the positions of the pulley fixing base and the wire fixing piece with a scriber.
3) Remove the two screws keeping the pulley fixing base.
4) Remove the cable.

b. Attaching the Lens Cable

1) Remove the two screws keeping the lens pulley fixing plate, and remove the lens pulley.
2) Wind the lens cable around the lens pulley as shown in Figure 10-206, and secure it with the two fixing screws.
3) Shift the pulley fixing base to the position of the scriber mark; then, fix it with the two fixing screws.

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5. Installing the Scanner Drive Cable

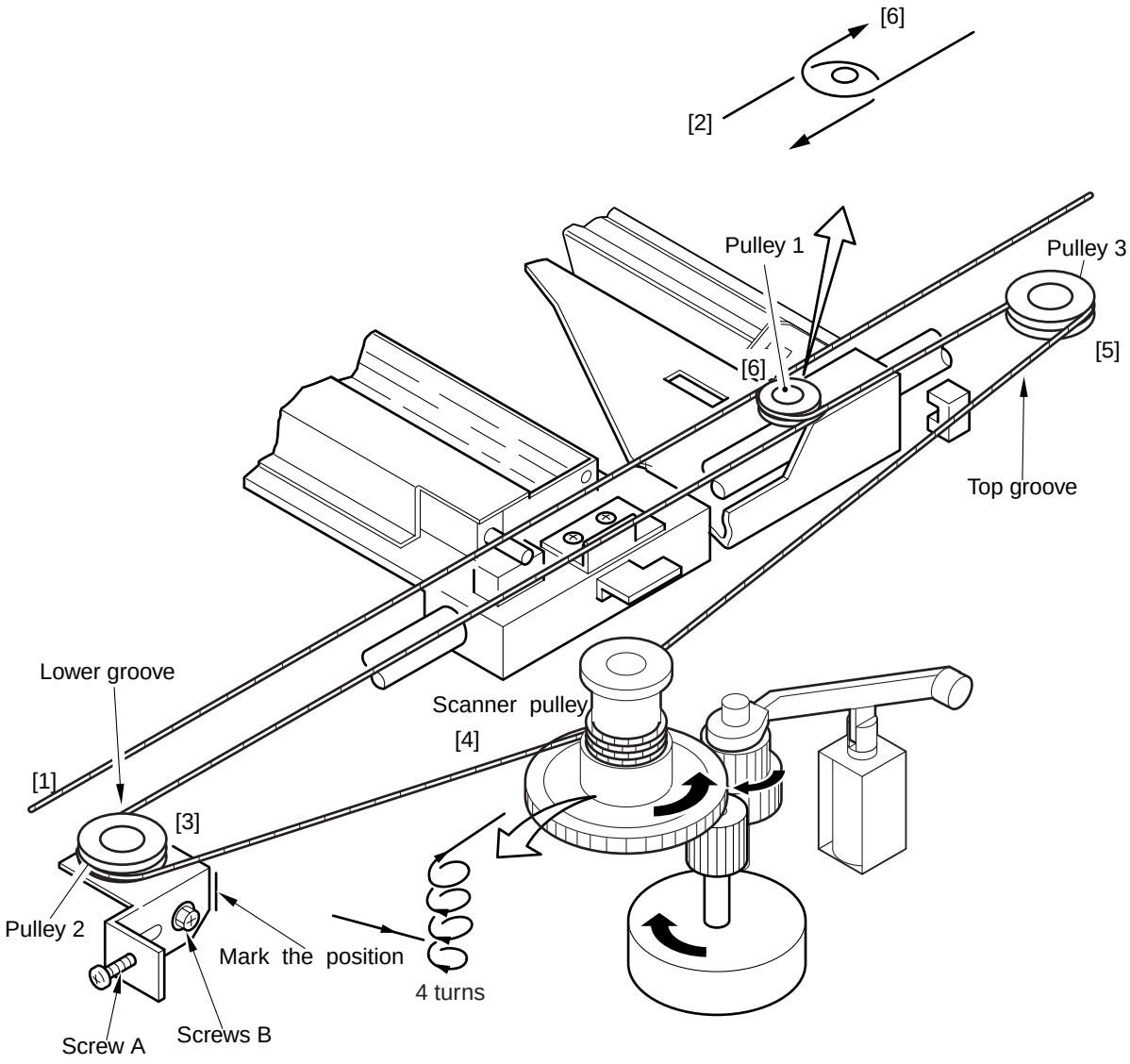

Figure 10-209

6. Adjusting the Tension of the Scanner Drive Cable

Move the mirror 1 mount to the home position (start position). As shown in Figure 10-210, pull at point [A] (approximate center) of the free cable with a spring gauge so that the cable lengths touch each other. If the reading on the spring balance is not about 1.0 ±0.5 kg, loosen the screws [B] of Figure 10-213, turn screw [A] to achieve this reading, and then tighten the screws [B].

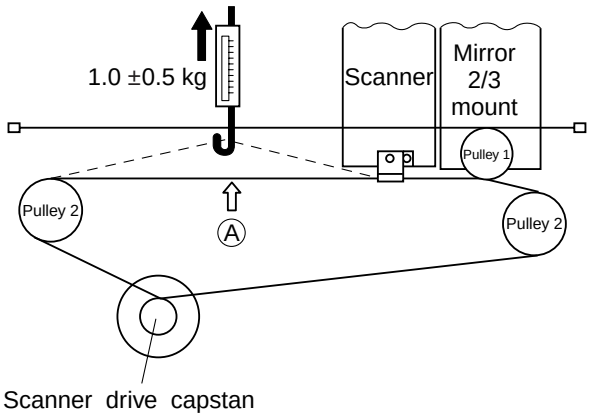

Figure 10-210 Top View

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7. Adjusting the Position of the Mirrors and Lens

a. Adjusting the Position of the No.1 Mirror Mount (length of optical path between mirrors 1 and 2)

Adjust the tension of the scanner drive cable before making this adjustment. Adjust the position of the scanner (mirror 1) by altering the tension of the scanner drive cable. (Loosen the cap screws.)

For reference:

1. The cable will stretch after a large number of copies have been made, making readjustment necessary.
2. An incorrect distance between mirror 1 and mirror 2 will cause an incorrect side-to-side reproduction ratio and poor focus, resulting in poor sharpness and fuzziness in the copy image.

1) Draw lines 10 mm from each edge of a piece of copy paper (A3), as shown in Figure 10-211.

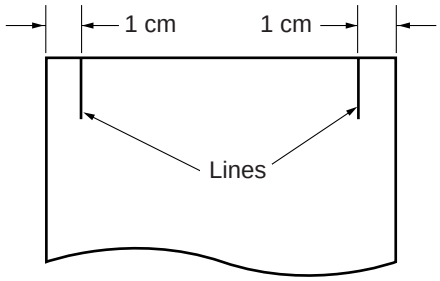

Figure 10-211

2) Make a copy of the paper with the lines marked on it. (A)
3) Place a blank sheet of paper on the copyboard and feed the marked sheet of paper into the copier. (Use manual feed.) (B)
   • Passing the sheet through the copier indicates the amount of shrinkage due to heat.
4) Align the lines on the left side of the copy sheet (A) and the sheet passed through the copier (B). If the lines on the right do not match, adjust the position of the scanner so that the dimensions x and y equal.

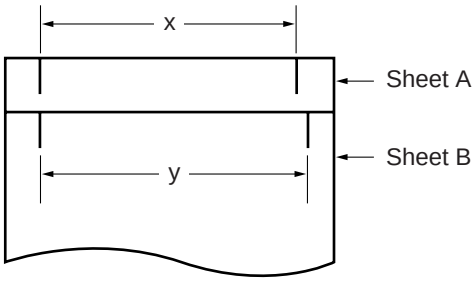

Figure 10-212

x=y Correct
x>y Move the scanner in direction a.
x<y Move the scanner in direction b.

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For reference:

If the distance between the mirrors is short, the image will be enlarged. If the distance is long, the image will be reduced.

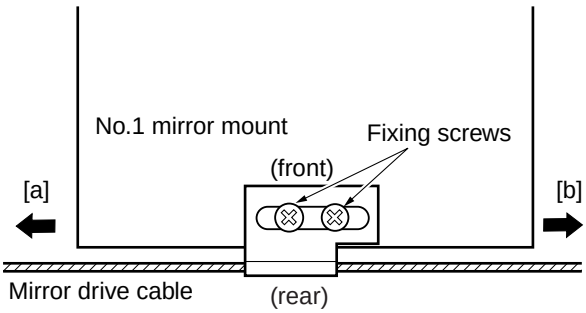

Figure 10-213 Top View

CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

b. Adjusting the Direct Copy Ratio (lens position)

1) Make a Direct copy.
2) Check the copy ratio. If the copy ratio is not appropriate, perform the following steps:
3) Enter service mode C10 (lens home position adjustment).
4) Try increasing or decreasing the value using the +/- keys. The (-) key moves the lens position for enlargement (0.113%).
5) Exit from the service mode; and then turn the main switch to OFF/ON.
6) Make a Direct copy.
7) Check the copy ratio. If the copy ratio is appropriate, go to c. "Adjusting Focus (No. 4 and 5 mirror position)."
   If the copy ratio is not appropriate, repeat step 4) and later.

c. Adjusting the Focus (No. 4 and 5 mirror position)

1) Make a Direct copy.
2) Check the copy ratio. If the copy ratio is not appropriate, perform the following steps:
3) Enter service mode C11 (mirror home position sensor adjustment).
4) Try increasing or decreasing the value using the +/- keys. The (-) key moves the mirror position to the right by 0.05 mm (i.e., increases the optical path length by 0.1 mm).
5) Exit from the service mode; and then turn the main switch to OFF/ON.
6) Make a direct copy.
7) Check the copy ratio. If the copy ratio is appropriate, go to d. "Adjusting the Lens and Mirror Position (50%)."
   If the copy ratio is not appropriate, repeat step 4) and later.

d. Adjusting the Lens and Mirror Position (50%)

1) Make a 50% copy.
2) Check the copy ratio. If the copy ratio is not appropriate, perform the following steps:
3) Enter service mode C7 (copy ratio adjustment (50%)).
4) Try increasing or decreasing the value using the +/- keys. The (-) key moves the mirror and lens position for enlargement (0.037%).
5) Exit from the service mode; and then turn the main switch to OFF/ON.
6) Make a 50% copy.
7) Check the copy ratio. If the copy ratio is appropriate, go to e. "Adjusting the Lens and Mirror Position (200%)."
   If the copy ratio is not appropriate, repeat step 4) and later.

e. Adjusting the Lens and Mirror Position (200%)

1) Make a 200% copy.
2) Check the copy ratio. If the copy ratio is not appropriate, perform the following steps:
3) Enter service mode C8 (lens ratio adjustment (200%)).
4) Try increasing or decreasing the value using the +/- keys. The (-) key moves the mirror and lens position for enlargement (0.15%).
5) Exit from the service mode, and then turn the main switch to OFF/ON.
6) Make a 200% copy.
7) Check the copy ratio; if the copy ratio is appropriate, finish the adjustment. If the copy ratio is not appropriate, repeat step 4) and later.

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8. Adjusting the Tension of the Belt

The main motor drives the drum via a timing belt.

Adjust the tension of the belt by selecting the mounting hole of the main motor so that when the center of the timing belt is pushed down with a force of 500g, the distance between the two runs of the belt is between 20 and 25 mm.

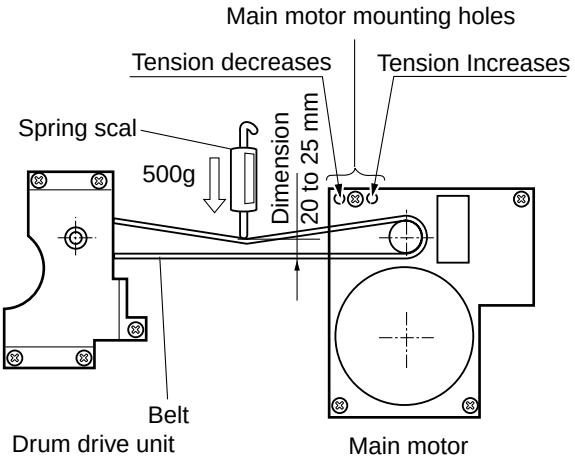

Figure 10-214

9. Installation Position of the Transfer Guide

When installing the transfer guide, ensure that the clearance between the transfer assembly roller and the photosensitive drum is about 1.8 ±0.2 mm, as shown in Figure 10-215.

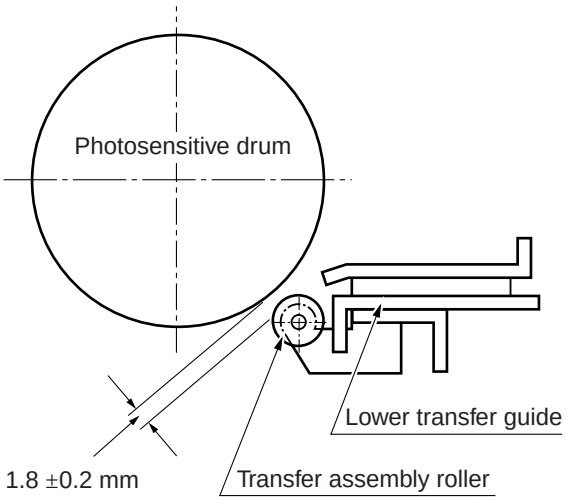

Figure 10-215

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10. Installation Position of the Scanner Drive Assembly

Loosen the four screws of the scanner drive assembly; then, while pushing the scanner drive assembly against the rear plate (direction of arrow [1]), move it in the direction of the manual feed tray (direction of arrow [2]) so that it touches the pulley base and the lens gear. In this condition, tighten the screws, and confirm that there is play between the lens gear and the gear of the lens drive capstan.

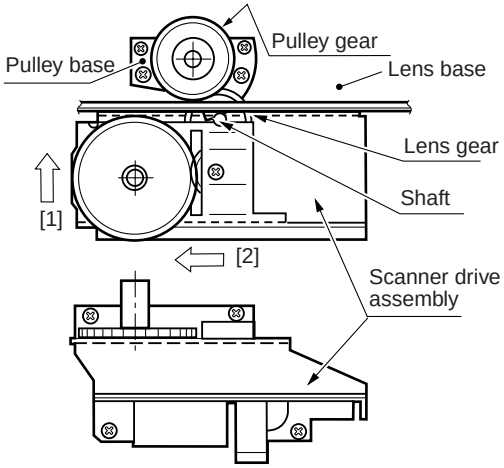


Figure 10-216

11. Installing the Corona Wires in the Primary and Transfer Corona Assemblies

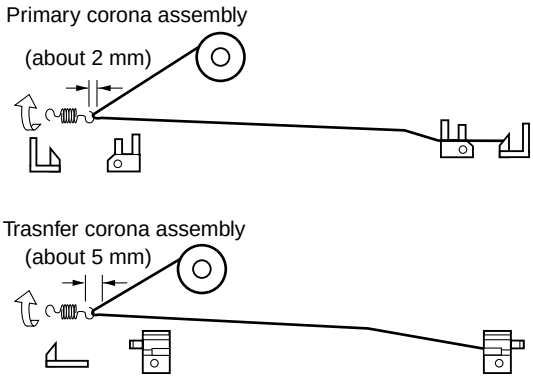


Figure 10-217

- The corona wire must not be bent or twisted, and the gold plating must not be peeling off.
- The corona wire must not be slack. (The length of the corona wire tension spring should be about 12 mm.)
- The corona wire must be in the V groove of the height adjusting piece.

12. Adjusting Height of the Corona Wires

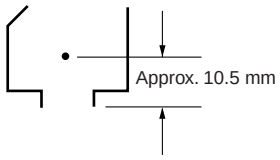
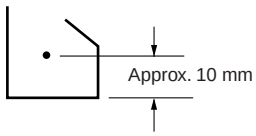
Corona assembly	Standard position	Allowable range
Primary corona assembly		±2 mm
Transfer corona assembly		±2 mm

Figure 10-218

Note:

The height (position) of the corona wire of the primary and transfer corona assemblies can be adjusted by turning the screw at the back of the corona wire.
Turning the screw once causes the height of the corona wire to change by about 0.7 mm.

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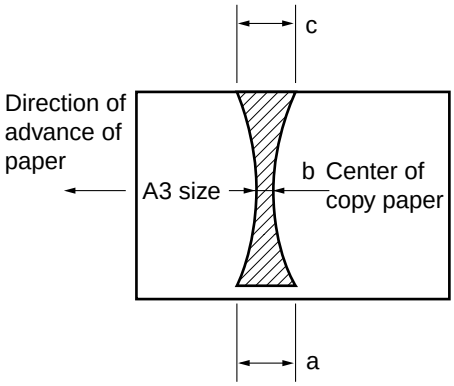
13. Adjusting the Fixing Assembly Roller Pressure (adjusting the nip width)

The nip width should conform to the dimension shown in Table 10-201. Adjust the nip width with the bolts if it is out of standard.



Note:
a and c are 10 mm from both edges of the copy paper.

Figure 10-219

Dimension	Measure after the upper and lower rollers have been adequately heated. (10 blank copies)
b	5.0 ±0.5 mm
|a-c|	0.5 mm or less

Table 10-201

■ Measuring the Nip Width
If the rollers are cool, leave the copier ON. Wait for 15 minutes; then make 20 copies, and measure the nip width.

Measuring Procedure
1) Open the copyboard cover and make an A3 size solid black copy.
2) Set the solid black copy to the multifeeder.
3) Select the service mode C13.
   3-1) Detach the VR cover from the rear of the left cover.
   3-2) Press the service switch (SW300) on the DC controller PCB.
   3-3) Select the service mode C13 using the 10-key or the zoom key.
4) Press the COPY START key.
   • The solid black paper is automatically picked up from the multifeeder.
   • Then the solid black paper is stopped at the fixing roller and, after a specific period, is delivered.

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14. Degree of Arching (multifeeder)

Make the following adjustments if the copy paper picked up from the multifeeder moves askew or wrinkles are noted on the leading edge of the copy paper; the adjustments are made by changing the degree of arching of the copy paper between the multifeeder pick-up roller and the registration roller.

1) Set 50 sheets of A4 paper (80 g/m^2) on the multifeeder tray.
2) Press the PAPER SELECT key on the control panel to select the multifeeder.
3) Press the COPY START key.
4) Check that the leading edge of the copy paper butts against registration roller and arches; at the time, turn the copier OFF.
5) Measure the distance between A (trailing edge of the second sheet) and B (trailing edge of the first sheet).

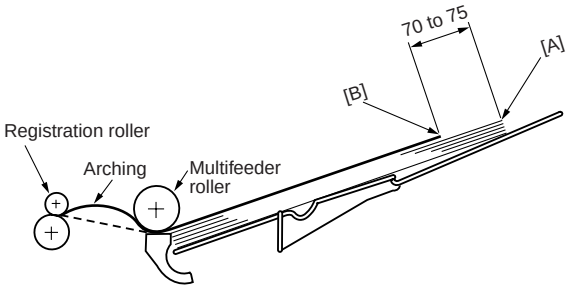

Figure 10-220

6) Turn the copier ON, and select C4 in the service mode.
7) Enter a setting so that the measurement between A and B (step 5) is between 70 and 75 mm.

Note:

A higher setting increases the measurement, i.e., the multifeeder clutch OFF timing is delayed (in units of 0.25 mm).

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B. Electrical

1. List of PCBs/VRs/LEDs/Check Pins

Variable resistors, LEDs and check pins which are used for adjustments in the field are listed below.

VRs and check pins not listed here are used only for factory adjustments, which require special tools and measuring instruments, as well great care and precision. Do not attempt to adjust such parts.

Notes:

1. Leakage current may flow through some LEDs and cause them to glow dimly even though they are supposed to be OFF.
2. VRs which can be adjusted in the field ..... ⊘.
   VRs which should not be adjusted in the field ..... ⊘.

a. DC Controller PCB

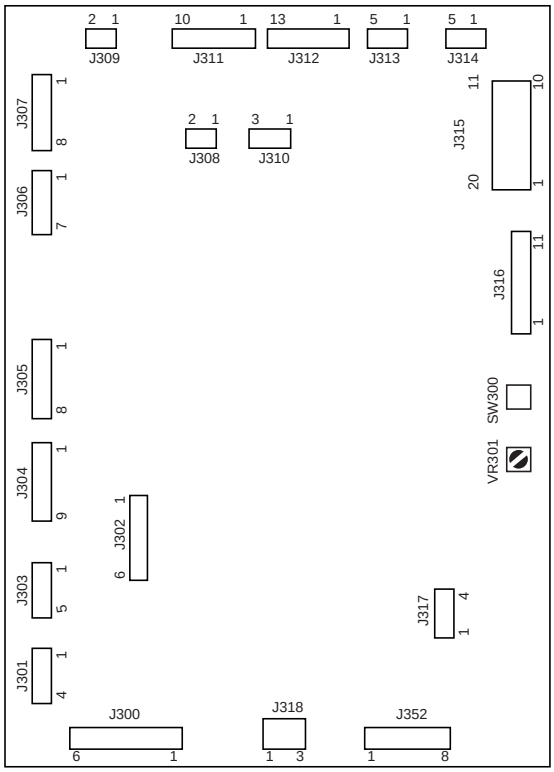

Figure 10-221

VR No	Purpose
VR301	Adjusting AE refence point

Table 10-202

SW No	Purpose
SW300	Press to enter or leave the SERVICE mode.

Table 10-203

2. AE Adjustment

Make the following adjustments when the AE sensor or the DC controller PCB has been replaced.

1) Remove the potentiometer cover at the back of the left cover.
2) Set the power switch ON.
   • Wait until the WAIT period has ended.
3) Place an MB-3 or MA-2 test sheet on the copyboard, and lower the copyboard cover.
4) Press switch SW300 on the DC controller PCB.
   • "0" will appear on the COPY COUNT/RATIO indicator on the control panel.
   • If "0" does not appear, press the "0" number key on the control panel so that "0" appears.
5) Press the SORT/GROUP key on the control panel.
   • The scanner will move forward to the AE measuring position; then, the scanning lamp will go ON. (Note)
6) Adjust VR301 on the DC controller so that "19" appears on the COPY COUNT/RATIO indicator.

For reference:

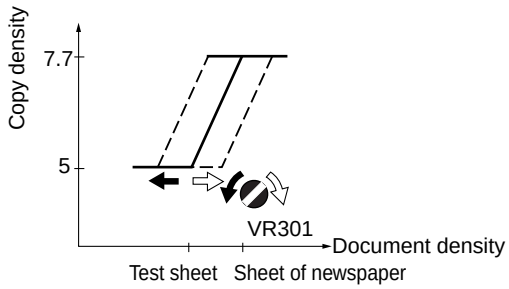

Figure 10-222

7) Press the SORT/GROUP key.
   • The scanning lamp will go OFF, and the scanner will return to the home position.
8) Remove the test sheet, place a sheet of newspaper on the copyboard, and lower the copyboard cover.
9) Press the SORT/GROUP key.
   • The copier will perform the same operations as described in step 5).
10) Make a note of the numerical value displayed on the COPY COUNT/RATIO indicator.
11) Press the SOR+T/GROUP key.
   • "0" will appear on the COPY COUNT/RATIO indicator.
12) Press the "1" number key.
   • "1" will appear on the COPY COUNT/RATIO indicator.
13) Enter the value recorded in step 10) using the NUMERIC keypad.

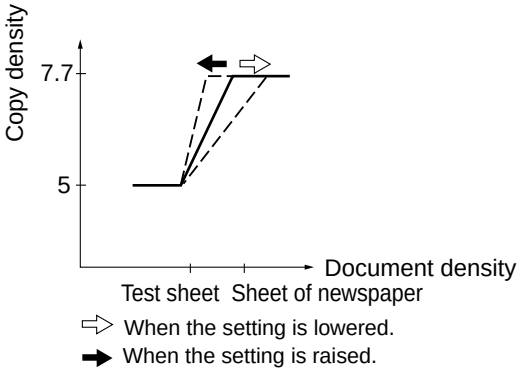

Figure 10-223

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3. Lamp Brightness Adjustment (50%, 200%)

Before adjusting the lamp brightness (50%, 200%), adjust the optimum exposure in the direct reproduction ratio (F5, w/o AE, copy density knob is centered, using the NA3 chart). Then, perform the adjustment below.

a. Adjusting the Lamp Brightness (50%)

1) Make a 50% copy.
2) Check the exposure; if it is not satisfactory, perform the following:
3) Enter service mode C24.
4) Modify the value using the +/- keys (increasing the value makes the copy density lighter; standard value is 110 to 120, variation of ten steps is equivalent to approximately one step of F of the exposure lever on the control panel).
5) Make a 50% copy; if the copy density is not yet satisfactory, repeat steps 3) to 4).

b. Adjusting the Lamp Brightness (200%)

1) Make a 200% copy.
2) Check the exposure; if the density is not satisfactory, perform the following:
3) Enter service mode C25.
4) Modify the value by +/- keys (increasing the value makes the copy density lighter, standard value is 140 to 170, variation of ten steps is equivalent to approximately one step of F of the exposure lever on the control panel).
5) Make a 200% copy; if the copy density is not yet satisfactory, repeat steps 3) to 4).

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4. Checking Photointerrupters

No.	Q1	Q2	Q3
Purpose	Multifeeder paper sensor (MFPD)	Pre-registration paper sensor (PDP1)	Right door sensor (RDC)
(+) lead (-) lead	J311-5 J311-4	J304-8 J304-7	J311-7 J311-6
Check; operation is normal if the meter needle swings to the right	With the copier in STANDBY, raise and lower the arm manually. • Arm raised: voltage approx. 0.6V • Arm lowered: voltage approx. 0V	With the copier in STANDBY, raise and lower the arm manually. • Arm raised: voltage approx. 5V • Arm lowered: voltage approx. 0V	Open and close the right door. • When opening the door: voltage approx. 0V • When closing the door voltage approx. 5V
No.	Q4	Q5	Q6
Purpose	Mirror home position sensor (MHP)	Scanner home position sensor (SCHP)	Lens home position sensor (LHP)
(+) lead (-) lead	J312-2 J312-1	J312-5 J312-4	J312-8 J312-9
Check; operation is normal if the meter needle swings to the right	Move the mirror carriage. • When the light-blocking plate is in Q4: voltage approx. 5V • When the light-blocking plate is not in Q4: voltage approx. OV	With the copier in STANDBY, move the scanner by hand. • Scanner in HOME position: voltage approx. 5V • Scanner not in HOME position: voltage approx. 0V	With the copier in STANDBY: insert a sheet of copy paper into the Q4 section. • With paper in Q4: voltage approx. 5V • With no paper in the Q4: voltage approx. 0V
No.	Q7	Q8	
Purpose	Cassette paper sensor (CPEP)	Delivery paper sensor (PDP2)	
(+) lead (-) lead	J303-6 J303-5	J314-5 J314-6	
Check; operation is normal if the meter needle swings to the right	Remove the cassette with the copier in STANDBY, move the arm up and down manually. • Arm raised: voltage approx. 0.6V • Arm lowered: voltage approx. 0V	Remove the delivery cover; with the copier in STANDBY, raise and lower the arm manually. • Arm raised: voltage approx. 0V • Arm lowered: voltage approx. 0.6V	

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III. IMAGE TROUBLESHOOTING

A. Initial Check

1. Checking the Installation Environment

a. The line voltage should be within 10% of the voltage on the rating plate.
b. The copier should not be installed in a hot or humid location (such as near a water faucet or humidifier), a cold area, near an open flame, or in a dusty location.
c. Do not install the copier in a location where ammonia gas is generated. (diazo copiers, etc.)
d. Do not install the copier in direct sunlight. If such a location is unavoidable, install curtains or other means to block out sunlight.
e. Install the copier in a well-ventilated location.
f. Install the copier where it can be set level.

2. Checking the Original

Determine if the trouble is due to the original or a malfunction of the copier.

a. The copy density lever should normally be set to 4.5 ±1.5.
b. Check if the original has a background color, such as yellow, which causes poor contrast.
c. Check the density of the original.

Examples:

Originals which are diazo copies or transparent originals: Copies are likely to be mistakenly judged as being foggy.
Pencil originals: Copies are likely to be mistakenly judged as having a light image.

3. Checking the Copyboard Cover or the Copyboard Glass

If the cover or glass is dirty, clean it with a mild detergent or with alcohol. If there is damage, replace the damaged part.

4. Checking Corona Assemblies

a. Check for dirt on the corona assemblies or abnormalities (such as scratches) on the corona wires.
b. Clean the corona wires and wire shield plates of each corona assembly. (Replace the wires if the dirt cannot be removed.)
c. Ensure that each corona assembly is installed correctly.
d. Make sure that the corona wire tension springs are not rusted.

5. Checking the Transfer Feed Guides

If the transfer guides or feed guides are dirty, clean them with a moist cloth.

6. Checking the Fixing Assembly

7. Checking the Static Charge Eliminator Space 1

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8. Check the Copy Paper

a. Is copy paper recommended by Canon being used?
b. Has the copy paper absorbed moisture?
   Open a now package of copy paper and make copies, then compare the copies.

9. Others

When a copier is brought in to a warm room from a warehouse or other cold area in winter, particularly when it is being installed, condensation may form inside the copier and cause various problems.

Examples of problems:

a. The copy image may become light due to condensation in the scanner (lens, mirrors, etc.)
b. The drum may be cold (the electrical resistivity of the OPC will be high), causing the contrast to be low.
c. Current leakage from the coronas may occur.
d. Paper may jam or fail to be fed satisfactorily due to condensation on the pick-up and delivery guide plate.
e. The friction of the lower manual feed paper pick-up roller may be reduced, resulting in unsatisfactory paper pick-up.

If condensation occurs in the copier, switch the copier ON and leave it to stand for 10 to 20 minutes.

If a cartridge in its original sealed wrapping is taken from a cold place to a warm place and then immediately unwrapped, condensation may form on it, resulting in image problems. To prevent this, instruct the customer to leave the cartridge sealed in the room for a sufficient period to allow it to reach the temperature of the room (between one and two hours) before unwrapping it.

Note:
When detects such as uneven density (differences in the density on the near and far sides of the copy), lightness or fogging occur first make the adjustments outlined in Basic Image Adjustment Procedures.

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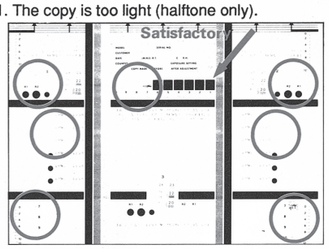
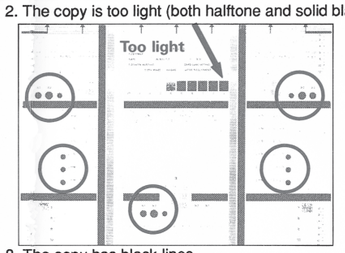
B. Image Fault Samples

NOTE: The samples are created intentionally. The NA-3 Test Sheet was copied in the direct mode in A3 and printed with a reduction of about 19%; actual images may be somewhat different.

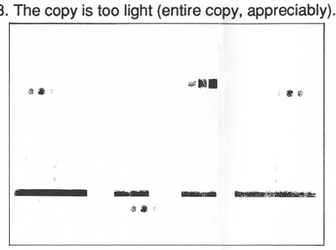
1. The copy is too light (halftone only).



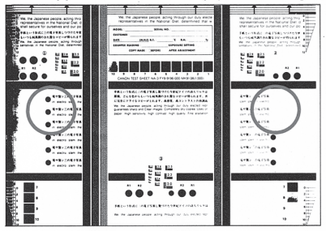
2. The copy is too light (both halftone and solid black).



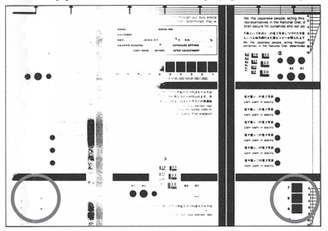
3. The copy is too light (entire copy, appreciably).



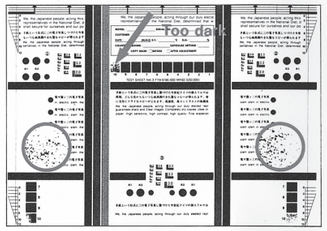
4. The copy has uneven density (darker along front).



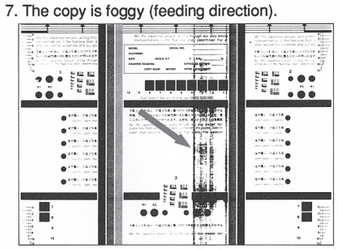
5. The copy has uneven density (lighter along front).



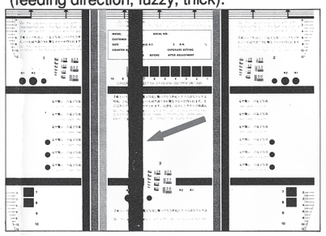
6. The copy is foggy (entire copy).



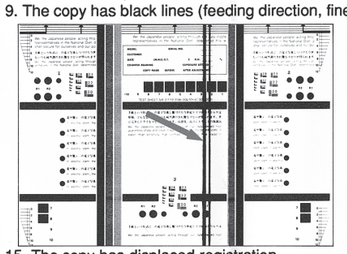
7. The copy is foggy (feeding direction).



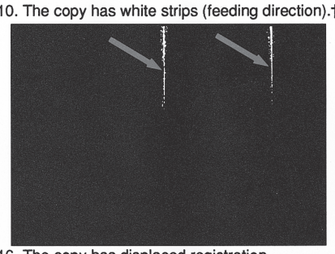
8. The copy has black lines (feeding direction, fuzzy, thick).



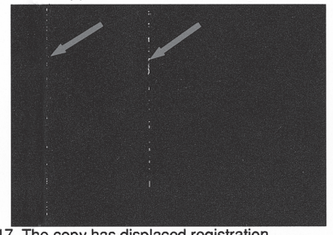
9. The copy has black lines (feeding direction, fine).



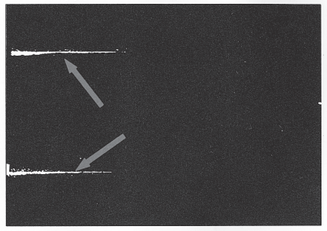
10. The copy has white strips (feeding direction).†



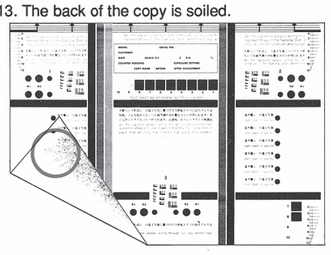
11. The copy has white lines (feeding direction).*



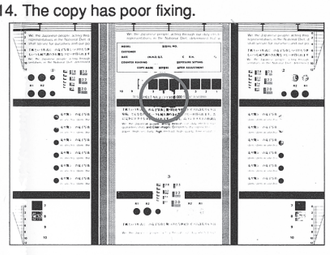
12. The copy has white strips (cross-feeding direction).



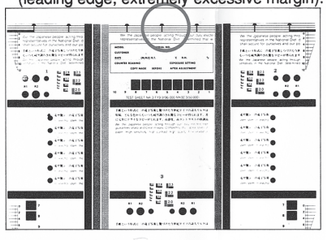
13. The back of the copy is soiled.



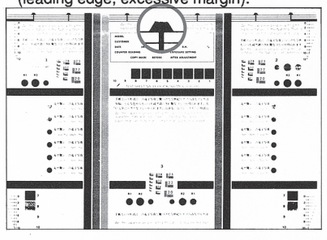
14. The copy has poor fixing.



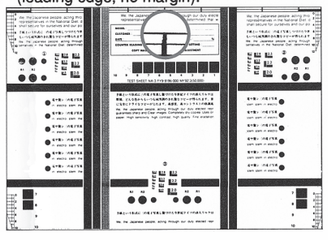
15. The copy has displaced registration (leading edge, extremely excessive margin).



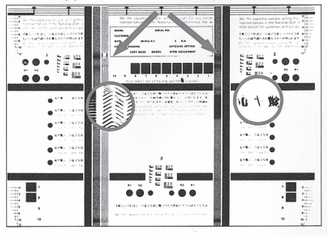
16. The copy has displaced registration (leading edge, excessive margin).



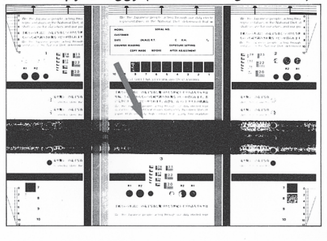
17. The copy has displaced registration (leading edge, no margin).



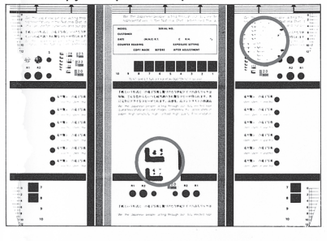
18. The copy has blurred images.



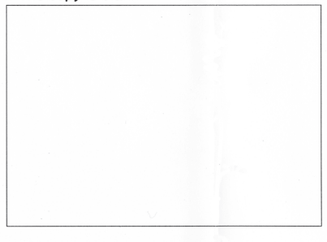
19. The copy is foggy (cross-feeding direction).



20. The copy has poor sharpness.



21. The copy is blank.



22. The copy is solid black.

* Copies made with the copyboard lifted; faults may also appear on normally made copies.

† Strips may vary in width.

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C. Troubleshooting of Image Faults

1. Light image (halftone areas only)

Cause/Problem area	Procedure	Check	Result	Action
	1	Does the image quality improve after the basic adjustment procedure is followed?	Yes	End.
AE adjustment	2	Is the image lighter is when a copy is made using AE?	Yes	Perform AE adjustment.
Black developing assembly	3	Is the image lighter when a copy is made using a black developing assembly?	Yes	Check that J39-1 and J39-4 of the black developing assembly are connected by a jumper wire. If they are not, connect them.
Lens, dustproofing glass	4	Is the image quality improved after the lens, dust proofing glass, and mirror are cleaned?	Yes	End.
Photosensitive drum			No	Replace the drum unit.

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2. Light image (even in dark areas)

3. Light image (very light overall)

Cause/Problem area		Procedure	Check	Result	Action
		1	Does the image quality improve after the basic adjustment procedure is followed?	Yes	End.
		2	Switch the copier OFF during copying and open the front door. Does the toner image on the surface of the photosensitive drum (prior to transfer) appear normal?	No	Perform step 6 and subsequent steps.
Developing defect	Transfer corona assembly	3	Are the corona and grid wires of the transfer corona assembly installed correctly, and is the corona wire height normal?	No	1. Install the corona wires correctly. 2. Adjust the height of the corona wires. 3. Clean the corona wires. 4. Install the corona assembly securely.
	Copy paper	4	Does the image become darker when fresh copy paper is used?	Yes	1. The paper may have absorbed moisture, so instruct the user about the correct method of storing paper. 2. Explain to the user that if paper not recommended by Canon is being used, the image quality may be slightly poorer.
	• Lower transfer assembly guide plate • Varistor	5	Is the resistance between the metal part of the lower transfer guide and the feeder 0Ω?	Yes	1. Check if the lower transfer assembly guide plate is touching the spring of the feeder wait. 2. Replace the varistor.
	• High-voltage transformer • DC controler PCB			No	Check the high-voltage transformer and the DC controller PCB.
Faulty transfer	Developing unit pressure applying mechanism	6	Is the developing roller of the developing assembly pressing against the photosensitive drum?	No	Check the pressure applying mechanism of the developing assembly.
	Amount of toner in developing assembly	7	Is the surface of the developing cylinder coated uniformly with toner?	No	1. If the problem is the black developing assembly, see sub-section "ADD TONER indicator does not go ON." 2. If the problem is in the CT unit, replace the CT unit.
	Developing bias			Yes	Check if the developing bias is being supplied to the developing cylinder.

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4. Uneven density (front side dark)

5. Uneven density (front side light)

Cause/Problem area	Procedure	Check	Result	Action
Primary corona wire height	1	Does the image quality improve after the basic adjustment procedure is followed?	Yes	End.
Developing assembly	2	Is the spacer roller of the developing assembly pressing against the photosensitive drum?	No	Check the pressure applying mechanism of the developing assembly.
Dirt on the scanner	3	Does the image improve after the scanning lamp, reflectors, side reflectors, lens and dust-proofing glass are cleaned?	Yes	End.
Pre-exposure lamp unit	4	Does the pre-exposure lamp go ON during copying?	No	1. Replace the pre-exposure lamp unit. 2. Replace the DC controller PCB.
Developing assembly	5	Is the surface of the developing cylinder coated uniformly with toner density?	No	1. Clean the edge of the blade of the developing assembly. 2. If the problem is in the black developing assembly, wipe the surface of the developing cylinder with a dry cloth. 3. If the problem is in the CT unit, try putting the CT unit in the storage box and shaking it vigorously. If the image does not improve, replace the CT unit
Corona assembly and copy paper			Yes	1. Clean all the corona wires once more; then recheck the position of each corona wire. 2. Try changing the copy paper.

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6. Fogging (overall)

Cause/Problem area	Procedure	Check	Result	Action
	1	Does the image quality improve after the basic adjustment procedure is followed?	Yes	End.
Dirt on the scanner	2	Does the image improve after the scanning lamp, reflectors, mirrors, lens and dust-proofing glass are cleaned?	Yes	End.
Pre-exposure lamps	3	Does the pre-exposure lamp go ON during copying?	No	1.Replace the pre-exposure lamp unit. 2.Replace the DC controller PCB.
DC controller PCB	4	Set the meter to the 30VDC range and measure the voltage between J307-6 (+) and J307-7 (-) of the DC controller PCB. Is the voltage 10V or less during copying and approx. 16V at other times?	No	Replace the DC controller PCB.
High-voltage transfomer	5	Is the voltage between J307-5 (+) and J307-7 (-) of the DC controller PCB approx. 0.6V during copying and approx. 14V at other times?	Yes	1.Replace the high-voltage trans former. 2.Replace the drum unit.
DC controller PCB			No	Replace the DC controller PCB.

7. Fogging in paper feed direction

8. Dark lines (broad lines in paper feed direction)

Cause/Problem area	Procedure	Check	Result	Action
Primary corona assembly	1	Does the image quality improve after the primary corona wires, grid wires, and corona frame are cleaned?	Yes	End.
Scanner	2	Does the image quality improve when the scanning lamp, reflectors, lens, mirrors, and dust-proofing glass are cleaned?	Yes	End.
Pre-exposure lamps	3	Is the pre-exposure lamp brighter after it is cleaned?	Yes	End.
Feed roller			No	Clean the feed roller below the developing unit.

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9. Dark lines (thin lines in paper feed direction)

Cause/Problem area	Procedure	Check	Result	Action
	1	Press the COPY START key and switch the copier OFF to stop the paper on the feeder. Are there black lines on the copy image before the paper passes through the fixing assembly?	No	Check from step 3.
Photosensitive drum	2	Are there any scratches or black lines around the circumference of the photosensitive drum? (In the case of black lines on the drum surface, do the black lines on copies disappear when the lines are gently wiped off the drum surface with a piece of flannel?)	Yes	Replace the drum unit. (If there are scratches, find out what is causing them before replacing the drum unit.)
Developing system, Exposure system			No	Check the developing system and exposure system.
Fixing assembly	3	Are there any scratches or black lines around the circumference of the upper fixing roller?	Yes	1. Replace the upper fixing roller. 2. Check and clean the separation claws and fixing blade.
			No	Check for dirt at the inlet of the fixing assembly.

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10. White strips (in paper feed direction)

11. Narrow white lines (in paper feed direction)

Cause/Problem area	Procedure	Check	Result	Action
Fixing assembly	1	Press the COPY START key with the copyboard cover open, then switch the copier OFF to stop the copy paper on the feeder. Are there any white strips or narrow white lines on the copy image before the paper passes through the fixing assembly?	No	1. Clean the upper and lower inlet guides of the fixing assembly. 2. Check the upper fixing roller. 3. Check and clean the separation claws and fixing blade.
Primary corona assembly	2	Does the image improve after the corona wires, grid plate and frame of the primary corona assembly are cleaned?	Yes	Wipe the corona wires with dry lint-free paper; then, clean them with alcohol. If the dirt will not come off, replace the corona wires.
Developing assembly	3	Is the surface of the developing cylinder coated uniformly with toner?	No	1. If the trouble is in the black developing assembly, check the edge of the blade. If there is no toner in the developing assembly, see the sub-section "ADD TONER indicator does not go ON." 2. If the trouble is in the CT unit, try putting the CT unit in the storage box and shaking it vigorously. If the image does not improve, replace the CT unit.
Copy paper	4	Does the image improve when fresh copy paper is used?	Yes	The paper may be absorbing moisture, so instruct the user about the correct method of storing paper.
Photosensitive drum	5	Are there any scratches around the circumference of the photosensitive drum?	Yes	Replace the drum unit. (Find out the causes of the scratches on the drum.)
Light from outside			No	Check if outside light is striking the photosensitive drum.
Transfer corona assembly	6	Does the image improve after the corona wires and frame of the transfer corona assembly are cleaned?	Yes	End.
Static charge eliminator			No	Clean the static charge eliminator.

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12. White strips (in cross feed direction)

Cause/Problem area	Procedure	Check	Result	Action
Developing assembly	1	Do the white strips occur at intervals of approx. 63mm? (scratches on developing cylinder)	Yes	1. Clean the developing cylinder spacer rollers. 2. Clean the surface of the developing cylinder. 3. If there are scratches on the surface of the developing cylinder, replace the cylinder or the CT unit.
Photosensitive drum	2	Do the white strips occur at intervals of approx. 94mm? (scratches on the photosensitive drum)	Yes	1. Clean the drum. 2. If the drum is scratched, replace it.
Copy paper	3	Does the image become darker when fresh copy paper is used?	Yes	The paper may be absorbing moisture, so instruct the use about the correct method of storing paper.
Scanner rail, Scanner cable	4	Do the white strips occur on the same part of each copy?	Yes	1. Check the scanner rail for foreign matter adhering to it. 2. Adjust the tension of the scanner drive cable.
Dirt on the corona wires			No	Clean each corona assembly (wires and frame).

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13. Toner marks on back of copy paper

Cause/Problem area	Procedure	Check	Result	Action
	1	Press the COPY START key, and switch the copier OFF while the copy paper is on the feeder. Are there any toner marks on the back of the copy paper?	No	Check from step 3.
Developing assembly	2	Do the toner marks occur at intervals of approx. 50mm?	Yes	1. Clean the registration rollers and transfer assembly guide. 2. Check if toner is leaking from the developing assembly.
Fixing assembly	3	Are the upper and lower fixing rollers dirty?	Yes	1. Clean the upper and lower fixing rollers. 2. Check if the oiling roller is soiled with toner.
			No	If the roller is very dirty, replace it. Clean the copy delivery rollers, separation claws, and fixing assembly paper guide.

14. Faulty fixing

Cause/Problem area	Procedure	Check	Result	Action
Upper and lower developing rollers	1	Is faulty fixing occurring in the feed direction of the paper?	Yes	Check for scratches on the upper and lower fixing rollers.
Fixing roller heater (H1)	2	Does the fixing roller heater (H1) go ON immediately after the copier is switched ON?	No	Refer to the sub-section "Fixing roller heater does not operate."
Lower fixing roller pressure	3	Is the nip width within the standard?	No	Adjust the lower fixing roller pressure.
Copy paper			Yes	Check if the recommended paper is being used. If the results are satisfactory when the recommended paper is used, instruct the user to use it.

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15.

16. Faulty leading edge registration

17.

Cause/Problem area	Procedure	Check	Result	Action
Original	1	Is the original set correctly?	No	Set the original correctly.
Copy paper	2	Is copy paper recommended by Canon being used?	No	Check if the recommended paper is being used. If the results are then satisfactory, recommend that the customer use it.
Pick-up roller	3	Is the pick-up roller soiled by paper dust, etc.?	Yes	1. Clean the pick-up roller. 2. Check the total number of sheets picked up by the pick-up roller. If it has reached 100,000, replace the pick-up roller.
Registration adjustment	4	Does the copy improve when registration is adjusted? (leading edge blank area)	Yes	End.
Registration rollers, Registration roller clutch	5	Set the meter to the 30VDC range and measure the voltage between J308-3 (+) and J308-4 (-) of the DC controller PCB. Is the voltage 24V or less during copying and approx. 0V at other times?	Yes	1. Check the registration rollers for deformation and wear. 2. Check the wiring from the DC controller PCB to the registration roller clutch. If it is normal, replace the registration roller clutch.
DC controller PCB			No	Replace the DC controller PCB.

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18. Blurred image

Cause/Problem area	Procedure	Check	Result	Action
Scanner drive cable	1	Does the cable overlap as it winds around the drive capstan while the scanner is moving? Is the tension of the cable alternately too slack and too tight?	Yes	1. Re-tension the cable. 2. Replace the drive cable if it is twisted or frayed.
Scanner system rail	2	Does the scanner move smoothly when it is pushed gently by hand?	No	Clean the scanner rails with alcohol; then, apply a small quantity of low-viscosity lubricating oil.
Scanner drive system	3	Is the gear of the scanner drive system missing?	Yes	Replace the gear.
Photosensitive drum	4	Does the blurring occur at intervals of approx. 95mm?	Yes	1. Check the drum drive gear. 2. Check the ends of the drum (where the spacer rollers contact it) for scratches or projections.
Developing gear	5	Does the blurring occur at intervals of approx. 63mm?	Yes	Check the developing assembly.
Drum drive system			No	Check the drum drive unit.

19. Broad dark lines in cross feed direction

Cause/Problem area	Procedure	Check	Result	Action
	1	Are the dark lines always in the same position when DIRECT copies are made?	Yes	Check from step 4.
Scanning lamp regulator	2	Does the scanning lamp flicker when the scanner is moving forward?	Yes	Check the scanning lamp and lamp regulator.
Black developing unit and CT unit	3	Is there any difference in the broad dark lines on a black copy compared with on a color copy?	Yes	Check the toner coating on the developing cylinder of the developing assembly in which the trouble occurs.
Scanner blurring	4	Does the position of the dark lines change on a REDUCTION copy as compared with a DIRECT copy?	Yes	Check the scanner.
Paper feeder blurring			No	Check the paper feeder.

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20. Unsharp (Unforcussed) image

Cause/Problem area	Procedure	Check	Result	Action
Original	1	Is the original lying flat on the glass?	No	1. Check if the copyboard copy is wrapped. 2. Explain to the user how to place the original on the copyboard.
Copyboard glass	2	Is any oil or other substance adhering to the copyboard glass?	Yes	Clean the copyboard glass.
Lens drive assembly	3	Set the power switch OFF and then ON again. Does the lens move smoothly?	No	Check the lens drive unit.
Mirror position	4	Is the horizontal reproduction ratio within the standard for a DIRECT copy?	No	Adjust the distance between the No.1 mirror mount and the mirror 2 mount.
Dirt on the scanner			Yes	Clean the scanning lamp, reflectors, mirrors, lens, and dust-proofing glass.

21. Blank image

Cause/Problem area	Procedure	Check	Result	Action
Drum unit	1	Is the drum unit inserted?	No	Insert the drum unit.
Developing assembly	2	Is the developing assembly inserted?	No	Insert the developing assembly.
Drum drive unit	3	Does the photosensitive drum rotate during copying?	No	1. Check if the photosensitive drum rotates smoothly. 2. Check the drum drive unit.
DC controller PCB	4	Set the meter to the 30VDC range and measure the voltage between J307-1 (+) (GRDON) and J307-7 (-) of the DC controller PCB. Is the voltage approx. 15V when the scanner is advancing and 0V at other times?	No	Replace the DC controller PCB.
High-voltage transformer (HVT)			Yes	Replace the high-voltage transformer (HVT).

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22. Black image

Cause/Problem area	Procedure	Check	Result	Action
	1	Does the scanning lamp go ON during copying?	No	Check according to "Scanning lamp does not go ON."

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IV. OPERATION TROUBLESHOOTING

A. Troubleshooting of Malfunction

1. "E000, E003 and E004" indication

Cause/Problem area	Procedure	Check	Result	Action
	1	Cancel the indication. Open the front cover and delivery assembly door; then, insert a door switch actuator into the door switch, and wedge paper into the delivery paper sensor. Does the fixing roller heater go ON immediately after power is switched ON? (Check visually.)	No	Refer to the sub-section "Fixing roller heater does not operate."
Thermistors	2	Does the problem disappear when the thermistors (TH1/2) are replaced?	No	Replace the DC controller PCB.
			Yes	End.

2. "E001" indication

Cause/Problem area	Procedure	Check	Result	Action
	1	Cancel the E001 indication. Does the fixing roller heater (H1) go ON immediately after power is switched ON?	No	Refer to the sub-section "Fixing roller heater does not operate."
Thermistor (TH1)	2	Does the problem disappear when the main thermistor (TH1) is replaced?	Yes	End.
DC controller PCB			No	Replace the DC power supply PCB or DC controller PCB.
AC driver/DC Power supply PCB				

3. "E030" indication

Cause/Problem area	Procedure	Check	Result	Action
	1	Does the total counter operate normally?	No	Refer to the subsection "Counter does not operate."
DC controller PCB			Yes	Replace the DC controller PCB.

4. "E202" indication

Cause/Problem area	Procedure	Check	Result	Action
	1	Set the power switch OFF, remove the copyboard glass, and move the scanner fully to the right manually. Switch the power ON. Does the scanner reverse?	No	Refer to the sub-section "Scanner does not move."
	2	Set the power switch OFF and move the scanner fully to the left manually. Switch the power ON. Does the scanner advance very slightly after the lens moves?	No	Refer to the sub-section "Scanner does not move."
Scanner home position sensor (Q5)	3	Is the scanner home position sensor (Q5) normal?	No	Check the wiring from the DC controller PCB to Q5. If it is normal, replace the scanner home position sensor (Q5).
DC controller PCB			Yes	Replace the DC controller PCB.

5. "E208" indication

Cause/Problem area	Procedure	Check	Result	Action
Mirror home position sensor (Q4)	1	Check Q4. Is Q4 normal?	No	Replace Q4.
Mirror motor (M3)	2	Press the zoom key within 50%/200%. Does the mirror carriage move?	Yes	Replace the DC controller PCB.
			No	Replace the mirror motor.

6. "E210" indication

Cause/Problem area	Procedure	Check	Result	Action
	1	Switch the power ON. Does the lens move to the left?	Yes	Check from step 2.
			No	Refer to the sub-section "Lens does not move."
Lens home position sensor (Q4)	2	Is the lens home position sensor (Q4) functioning normally? (See p. 2-10.)	No	Check the wiring between the DC controller PCB and Q4. If it is normal, replace Q4.
DC controller PCB			Yes	Replace the DC controller PCB.

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7. "E220" indication

Cause/Problem area	Procedure	Check	Result	Action
Scanning lamp (LA1)	1	Check the scanning lamp (LA1) does not light when copying.	Yes	Refer to the sub-section "Scanning lamp does not light."
Lamp regulator	2	Check if the scanning lamp (LA1) lights when copier is in standby.	Yes	Replace the DC controller PCB.
DC controller PCB			No	Replace the lamp regulator.

8. "E261" indication

Cause/Problem area	Procedure	Check	Result	Action
Power unit	1	Does the problem disappear when the power unit is replaced?	Yes	End.
DC controller PCB			No	Replace the DC controller PCB.

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9. "E400" indication

Cause/Problem area	Procedure	Check	Result	Action
	1	Does the problem disappear when the power is switched OFF and then ON again?	Yes	End. (Check the wiring between the DC controller and the ADF controller.)
Circuit breaker (CB2)	2	Does the problem disappear when circuit beaker CB2 on the ADF controller PCB is pressed?	Yes	End. (Be sure to determine why CB2 went OFF.)
	3	Set the meter to the 12VDC range; then, connect the (+) lead to J10-3 and the (-) lead to J10-2 of the ADF controller PCB. Is the voltage approx. 5V?	Yes	Check from step 6.
3-terminal (5V) power supply	4	Set the meter to the 30VDC range; then, connect the (+) lead to J9-1 and the (-) lead to J9-2 of the ADF controller PCB. Is the voltage approx. 24V?	Yes	Check the continuity through the circuit beaker (CB2). If it is normal, replace the 3-terminal (5V) power supply.
ADF power supply	5	Set the meter to the 30VDC range; then, connect the (+) lead to J70-2 and the (-) lead to J70-4. Is the voltage approx. 24V?	No	Replace the ADF power supply PCB.
Wiring			Yes	Check the wiring from the ADF power supply to the ADF controller.
DC controller PCB	6	Does the problem disappear when the DC controller PCB or ADF controller PCB is replaced?	Yes	End.
ADF controller PCB			No	Replace the cable between the DC controller PCB and the ADF controller PCB.

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10. "E500" indication

Cause/Problem area	Procedure	Check	Result	Action
Wiring	1	Does the problem disappear when the power is switched OFF and then ON again?	Yes	End. (Check the wiring between the DC controller PCB and the sorter controller PCB.)
Circuit breaker (CB1)	2	Does the problem disappear when circuit breaker CB1 on the sorter controller PCB is reset?	Yes	End. (Be sure to determined the reason why CB1 tripped.)
	3	Set the meter to the 30VDC range; then, connect the (+) lead to J2-1 and the (-) lead to J2-3 of the sorter PCB. Is the voltage approx. 24V?	Yes	Check from step 6
Fuse	4	Is the fuse on the sorter power supply PCB normal?	No	Replace the fuse
Sorter power supply PCB	5	Set the meter to an AC range high enough for measuring line voltage. Connect the (+) lead to J106-1 and the (-) lead to J106-2. Is the prescribed voltage supplied?	Yes	Replace the sorter power supply PCB.
			No	Check the wiring between the sorter power supply PCB and the AC driver PCB.
Cable between the sorter power supply PCB and the AC driver	6	Set the meter to the x10kΩ range. Is there continuity between the sorter controller PCB and the DC controller PCB?	Yes	Check if the cable between the sorter controller PCB and the DC controller PCB is connected correctly. If it is normal, replace the sorter controller PCB.
Communications cable			No	Replace the communications cable.
DC controller PCB, Sorter controller PCB	7	Does the problem disappear when the DC controller PCB or the sorter controller PCB is replaced?	Yes	End.

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11. "E802" (main switch auto shut-off mechanism)

Cause/Problem area	Procedure	Check	Result	Action
Main switch (SW1)	1	Try operating the main switch by hand. Does it operate normally?	No	Replace the main switch.
Wiring	2	Check the wiring from the DC controller PCB (J316-1 and -2) to the control panel. Is it normal?	No	Correct the wiring.
Control panel PCB	3	Is there electrical continuity from J503-1 to J509-2 on the control panel PCB?	No	Replace the control panel PCB.
Wiring	4	Is the wiring from J509 of the control panel PCB to the main switch normal?	No	Correct the wiring.
DC controller PCB			Yes	Replace the DC controller PCB.

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12. AC power is not supplied

Cause/Problem area	Procedure	Check	Result	Action
Power plug	1	Is the power cord plugged into the outlet?	No	Plug it in.
Door switches	2	Are the front door and the delivery assembly closed completely?	No	Close the door and the delivery assembly.
Line power	3	Is line voltage being supplied to the power outlet?	No	Explain to the user that the problem is not in the copier.
	4	Is line voltage present between J1-1 and J1-2?	Yes	Check from step 6.
Noise filter	5	Check the voltage between J101 and J102. Is the voltage standard?	Yes	Check the wiring between J103 and J103-2/J104 and J103-1. If normal, replace the noise filter.
Power cord			No	Check the power cord.
Door switch (DS1)	6	Check the continuity between the terminals of the door switch (DS1). Is the resistance 0Ω when the actuator is pressed, and infinite when the actuator is released?	No	Replace the door switch (DS1).
Power switch (SW1)	7	Check the continuity between the terminals of the power switch (SW1). Is the resistance 0Ω when the switch is "ON" and infinite when "OFF"?	No	Replace the power switch (SW1).
Wiring			Yes	Check the AC power line wiring and connectors.

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13. DC power is not supplied

<table>
<tr><th>Cause/Problem area</th><th>Procedure</th><th>Check</th><th>Result</th><th>Action</th></tr>
<tr><td>Overcurrent protection circuit</td><td>1</td><td>Does the problem disappear when the copier is switched OFF and the ON again?</td><td>Yes</td><td>End. (Be sure to find out why the protection circuit operated.)</td></tr>
<tr><td>AC power supply</td><td>2</td><td>Is AC line voltage present between terminals J103-1 and J103-2?</td><td>No</td><td>See sub-section "AC power is not supplied."</td></tr>
<tr><td>Short connector</td><td>3</td><td>Are the following connector pins connected properly?
J100-4 and J100-5, J100-1 and J100-2</td><td>No</td><td>Replace the power supply assembly.</td></tr>
<tr><td>Fuse (F100)</td><td>4</td><td>Has a fuse (F100) on the power supply assembly blown?</td><td>Yes</td><td>Remove the cause of the fuse blowing; then, replace the power supply assembly.</td></tr>
<tr><td>Power supply assembly</td><td rowspan="2">5</td><td rowspan="2">Are the following output voltages present at the various connectors on the power supply assembly shown below?
<table><tr><th>Range to which meter is set</th><th>Position to which (+) lead is connected</th><th>Position to which (-) lead is connected</th><th>Meter indication</th></tr><tr><td>50VDC</td><td>J101-1</td><td>J101-6</td><td>24V</td></tr><tr><td>50VDC</td><td>J101-2</td><td>J101-6</td><td>24V</td></tr><tr><td>10VDC</td><td>J101-3</td><td>J101-6</td><td>5V</td></tr></table></td><td>No</td><td>Replace the power supply assembly.</td></tr>
<tr><td>DC controller PCB</td><td>Yes</td><td>Replace the DC controller PCB.</td></tr>
</table>

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14. Drum does not rotate

Cause/Problem area	Procedure	Check	Result	Action
Drum unit	1	Is the drum unit properly installed?	No	Insert properly.
Torque limiter	2	Is copy paper or foreign matter jammed between the drum and the cleaning unit?	Yes	Remove the foreign matter.
Drive belt	3	Is the drive belt installed correctly?	No	Install the belt correctly.
Drum drive unit			Yes	Remove and check the drum drive unit. Repair or replace the unit.

15. Paper is not picked up from cassette

Cause/Problem area	Procedure	Check	Result	Action
	1	Does the indicator remain ON?	Yes	Refer to the sub-section "Indicator does not go OFF."
Drive belt	2	Is the drive belt installed correctly?	No	Install the belt correctly.
	3	Is the leading edge of the copy paper reaching the registration rollers?	Yes	Refer to the sub-section "Registration rollers do not rotate."
Pick-up rollers	4	Open the right door and press the lever of the right door sensor (Q3) by hand. Do the paper pick-up rollers rotate when the COPY START key is pressed? (visual check)	Yes	Check or replace the pick-up rollers.
Spring clutch	5	Does the pick-up clutch solenoid (SL1) operate when the COPY START key is pressed?	Yes	Check the position of the solenoid. If it is normal, check the spring clutch and control ring. Replace any necessary parts.
Pick-up clutch solenoid (SL1)	6	Switch the copier OFF and disconnect connector J307 on the DC controller PCB. Set the meter to the 1kΩ range, and measure the resistance between J307-5 and J307-6 (attached to solenoid wiring). Is resistance approx. 165Ω?	No	Check the wiring from the pick-up clutch solenoid (SL1) to the DC controller PCB. If it is normal, replace SL1.
DC controller PCB			Yes	Replace the DC controller PCB.

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16. Paper is not picked up from multifeeder

Cause/Problem area	Procedure	Check	Result	Action
Sensor arm	1	Is the arm of the pre-registration paper sensor (Q2) broken? Does it move smoothly?	No	Replace the sensor arm.
Pre-registration paper sensor (Q2)	2	Is the pre-registration paper sensor (Q2) functioning normally?	No	Replace pre-registration paper sensor (Q2).
Multifeeder solenoid (SL3)	3	Disconnect J311 on the DC controller PCB. Set the meter to the 1kΩ range. Connect the leads to J311-9 and J311-10 of part of J311 connected to the wiring. Is the resistance approx. 145Ω?	No	Check the wiring from J312 to SL3. If it is normal, replace the multifeeder clutch (SL3).
	4	Is the leading edge of the copy paper reaching the registration rollers?	Yes	Refer to the sub-section "Registration rollers do not turn."
Gears	5	Are all drive gears from the main motor (M1) to the pre-registration rollers normal?	No	Re-install or replace the gears.
DC controller PCB			Yes	Replace the DC controller PCB.

17. Registration rollers do not rotate

Cause/Problem area	Procedure	Check	Result	Action
Belts and gears	1	Are the belts and gears from the main motor (M1) to the registration roller clutch (CL1) normal?	No	Re-install or replace any belts or gears.
Registration roller clutch (CL1)	2	Disconnect J307 on the DC controller PCB. Set the meter to the 1kΩ range. Connect the leads to J307-3 and J307-4 of part of J307 connected to the wiring. Is the registance approx. 120Ω?	No	Check the wiring from J307 to CL1. If it is normal, replace the registration roller clutch (CL1).
DC controller PCB	3	Connect J307 to the DC controller PCB. Set the meter to the 30VDC range. Connect the (+) lead to J307-3 and the (-) lead to J307-4. Press the COPY START key. Does the voltage change from 0V to about 24V?	No	Replace the DC controller PCB.
			Yes	Do the registration rollers or drive gears interfere with other parts? Remove parts from the vicinity.

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18. Scanner does not move

Cause/Problem area	Procedure	Check	Result	Action
Drive cable	1	Is the scanner drive cable installed correctly?	No	Install the cable correctly.
Foreign object in the path of the scanner	2	Switch the copier OFF, hold the back of the scanner and move it back and forth. Does it move smoothly?	No	Check for dirt or foreign matter on the scanner rails or some object that is touching the scanner. If necessary, clean, lubricate or repair.
Gears	3	Is the scanner drive capstan engaged with the interruption gear? (See Figure 10-401.)	No	Check if the spring that lifts the interruption gear, the interruption gear, or the scanner drive capstan is damaged. Adjust or replace any parts necessary.
Scanner motor (M2)	4	Switch the power OFF and disconnect connector J302 on the DC controller PCB. Set the meter to the 100Ω range and measure the registance between the connectors shown below. Is the registance Ω? J302-1 (COMB)-J302-2(B) →6Ω J302-1 (COMB)-J302-3(B) →6Ω J302-4 (COMA)-J302-5(A) →6Ω J302-4 (COMA)-J302-6(A) →6Ω	No	Check the wiring from J302 to the scanner motor (M2). If it is normal, replace the scanner motor.
DC power supply PCB	5	Set the meter to the 50VDC range. Connect the (+) lead to J300-1 and the (-) lead to J300-3, and the (+) lead to J300-2 and the (-) lead to J300-3, of the DC controller PCB. Is the voltage approx. 24V?	No	Check the wiring from the DC controller PCB to the DC Power supply PCB. If it is normal, see "DC power not being supplied."
DC controller PCB	6	Does the problem disappear when the DC controller PCB is replaced?	Yes	End.

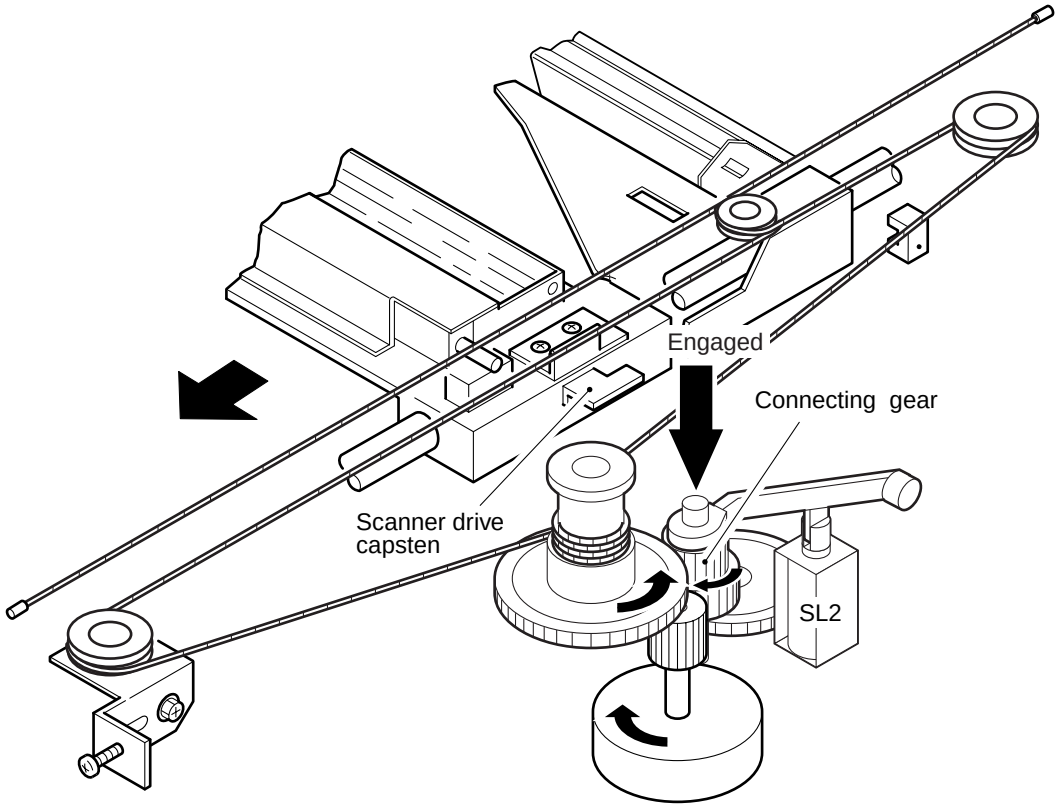

Figure10-401

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19. Pre-exposure lamp does not light

Cause/Problem area	Procedure	Check	Result	Action
Pre-exposure lamp PCB	1	Set the meter to the DC 30V range. Connect the leads to J307-1 (+) and J307-2 (-). Press the Start key. Is the voltage approx. 24V?	Yes	Replace the pre-exposure lamp PCB.
DC controller PCB			No	Replace the DC controller PCB.

20. Scanning lamp does not light

Cause/Problem area	Procedure	Check	Result	Action
Lamp	1	Is the lamp installed correctly?	No	Re-installed the lamp.
Thermal fuse (FU2)	2	Check the continuity of the thermal fuse (FU2). (Connect the leads to both ends of the fuse.) Is there continuity?	No	Replace the thermal fuse (FU2). Note: There may be trouble with the lamp not lighting normally, the fuse being installed in the wrong position, or the cooling fan not operating, so be sure to check operation after replacing the fuse.
Broken lamp filament	3	Disconnect connector J204 (2P) from the lamp regulator. Set the meter to the 1kΩ range. Connect the leads to the lamp terminals. Does the needle move?	No	Replace the lamp.
DC controller PCB	4	Set the meter to the 50VDC range. Connect the (+) lead to J305-4 and the (-) lead to J305-5; then, press the COPY START key. Does the voltage change from about 5V to about 0V when the lamp goes ON?	No	Replace the DC controller PCB.
Lamp regulator	5	Does the lamp go ON where the lamp regulator is replaced?	Yes	End.
Wiring			No	Check the AC wiring from the power switch to the lamp regulator and lamp, and check the DC wiring from the DC controller to the lamp ragulator.

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21. Fixing roller heater does not operate

Cause/Problem area	Procedure	Check	Result	Action
	1	Disconnect connector J106 (3P) from the AC driver/DC power supply PCB. Set the meter to the 1kΩ range. Connect the leads to J106-1 and J106-3. Does the needle move?	Yes	Go to step 3.
Thermoswitch (F1)	2	Remove the fixing assembly. Connect the leads to both ends of thermoswitch (F1). Does the needle move?	No	Replace the thermoswitch (F1). Note: There may be trouble with the heater going on, a faulty SSR, or the thermoswitch installed improperly, so be sure to check after replacing the thermoswitch (F1). Also be sure to check for damage to the fixing rollers or the separation claws.
Heater (LA1)	3	Connect the leads to the heater terminals. Does the needle move?	No	Check the installation of the heater (LA1). If it is normal, replace the heater.
AC line			Yes	Check the AC wiring inside the fixing assembly.
DC controller PCB	4	Set the meter to the 10VDC range. Connect the (+) lead to J318-1 and the (-) lead to J300-6. Switch the power ON. Is the voltage approx. 5V?	No	Replace the DC controller PCB.
Power supply assembly			Yes	Replace the AC driver/DC power supply PCB.

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22. Lens does not move

Cause/Problem area	Procedure	Check	Result	Action
Lens solenoid (SL2)	1	Switch the power OFF and remove the rear cover. Set the power switch ON. Does the lens solenoid (SL2) go ON?	No	Check the wiring from the DC controller PCB to the lens solenoid (SL2). If it is normal, replace SL2.
Lens drive cable pulley, Rails	2	Switch the power OFF. Move the lens in the ENLARGEMENT and REDUCTION directions by hand. Does the lens move smoothly?	No	Check the lens drive cable and capstan, and rails. If necessary, clean or re-install the wire.
Scanner motor (M2)	3	See step 4 of "Scanner does not move." See step 5 of "Scanner does not move."	—	—
Power supply assembly				
DC controller PCB	4	See step 6 of "Scanner does not move."	—	—

23. Counter does not operate

Cause/Problem area	Procedure	Check	Result	Action
Counter	1	Switch the power OFF. Disconnect J314 on the DC controller PCB. Set the meter to the 1kΩ range and connect the leads to J314-1 and J314-2 of the part of J134 connected to the wiring. Does the needle move?	No	Check the wiring betweeen the DC controller PCB and the counter. If it is normal, replace the counter.
Counter	2	Connect J314 to the DC controller PCB and set the switch ON. Set the meter to the 30VDC range and connect the (+) lead to J314-2 and the (-) lead to J314-1. Press the COPY START key. Does the voltage change from approx. 0V to approx. 24V?	Yes	Replace the counter.
DC controller PCB			No	Replace the DC controller PCB.

24. indicator does not go ON

Cause/Problem area	Procedure	Check	Result	Action
Cassette size sensor PCB	1	Does the indicator remain OFF when the cassette is removed?	Yes	Check the wiring from the DC controller PCB to the cassette size sensor PCB. If it is normal, replace the cassette size sensor PCB.
Multifeeder paper sensor (Q1) Cassette paper sensor (Q7)	2	Is the multifeeder paper sensor (Q1) or cassette paper sensor (Q7) performing normally? (See p. 10-20.)	No	Check the wiring from the DC controller PCB to Q1 or Q7. If it is normal, replace Q1 or Q7.
Control panel	3	Does the trouble diappear if the controll panel is replaced?	Yes	End.
DC controller PCB			No	Replace the DC controller PCB.

25. indicator does not go OFF

Cause/Problem area	Procedure	Check	Result	Action
Cassette	1	Is the cassette pushed fully into the holder?	No	Push the cassette in fully.
Multifeeder paper sensor (Q1) Cassette paper sensor (Q7)	2	Is the multifeeder paper sensor (Q1) or cassette paper sensor (Q7) functioning normally? (See p. 10-20.)	No	Check the wiring from the DC controller PCB to Q1 or Q7. If it is normal, replace Q1 or Q7.
DC controller PCB			Yes	Replace the DC controller PCB.

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26. 8 indicator does not go ON

Cause/Problem area	Procedure	Check	Result	Action
	1	Does the copying operation stop when a jam occurs?	Yes	Continue from step 3.
Jam sensor	2	Are the following sensors functioning normally? (See p. 10-20.) • Pre-registration paper sensor (Q2) • Delivery paper sensor (Q8)	No	Replace the jam sensor.
DC controller PCB			Yes	Replace the DC controller PCB.
Control panel	3	Does the trouble disappear when the control panel is replaced?	Yes	End.
DC controller PCB			No	Replace the DC contorller PCB.

27. 8 indicator goes ON when paper feeding is normal

Cause/Problem area	Procedure	Check	Result	Action
Jam sensor	1	Are the following sensors functioning normally? (See p. 10-20.) • Pre-registration paper sensor (Q2) • Delivery paper sensor (Q8)	No	Replace the jam sensor.
DC controller PCB			Yes	Replace the DC controller PCB.

28. indicator does not GO on when there is no toner

Cause/Problem area	Procedure	Check	Result	Action
Connector connection	1	Is the connector J39 of the pin inside the upper front cover connected?	No	Connect J39 securely.
Black toner level sensor (TS1)	2	Set the meter to the 12VDC range. Connect the (+) lead to J304-2 (BTEP) and the (-) lead to J304-1 (GND) on the DC controller PCB. Is the voltage approx. 0V?	No	Check the wiring from the DC controller PCB to TS1 and check the movement of the stirring rod inside the black developing assembly. If these are normal, replace the black toner level sensor (TS1).
Control panel	3	Does the problem disappear when the control panel is replaced?	Yes	End.
DC controller PCB			No	Replace the DC controller PCB.

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29. indicator does not go OFF when there is toner during black copying

Cause/Problem area	Procedure	Check	Result	Action
DC controller PCB	1	Does the indicator come back ON when the power switch is set OFF, and then ON again?	Yes	Replace the DC controller PCB.
DC controller PCB	2	Turn the power OFF, and disconnect J39. Turn the power ON, and press the COPY START key to make copies of the following: [1] making 7 continuous copies on A3 [2] making 9 continuous copies on A4 [3] making 5 single copies on A3 [4] making 5 single copies on A4 Press the COPY START key once again. Does the indicator go red when any of the above has been made?	Yes	Replace the DC controller PCB.
Stirring rod gear	3	Does the stirring rod inside the developing assembly operate normally?	No	Check the stirring rod and gear.
Black toner level sensor			Yes	Replace the black toner level sensor (TS1).

30. 123 indicator does not go ON

Cause/Problem area	Procedure	Check	Result	Action
	1	Was the shorting connector for J504 disconnected when the control card unit was installed?	No	Disconnect the shorting connector, and connect the connector of the control card unit.
Wiring	2	Set the power switch OFF; then, disconnect J316 on the DC controller PCB. Set the meter to the "Ω × 1" range. Connect the leads to J316-1 and J504-4 on the part of J316 connected to the wiring. Does the meter indicate 0W?	No	Check the wiring between the control card V unit and the DC controller PCB.
Control panel	3	Does the problem disappear when the control panel is replaced?	Yes	End.
DC controller			No	Replace the DC controller PCB.
Card sensor PCB	4	Does the problem disappear when the card sensor PCB in the Control Card V unit is replaced?	Yes	End. • There may be a problem with the relay on the card sensor PCB.
Controller PCB			No	Replace the controller PCB of the Control Card V unit.

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31. 123 indicator does not go OFF

Cause/Problem area	Procedure	Check	Result	Action
Control Card unit power supply	1	Is anything displayed on the control card display?	No	Disconnect the shorting. Either 24VDC or GND is not connected to the control card unit.
Operation	2	Is a department card being used?	No	Explain to the user that the indicator will not go OFF unless a card other than a department card is inserted.
	3	Take the card out completely; then, insert it once again. Does "-EE-" appear on the control card display?	No	Continue with step 7.
Card	4	Is there dirt on the card PCB, or is it broken, etc.?	Yes	Use another card.
Card sensor PCB			No	Replace the control card controller PCB.
Controller PCB	5	Does the display in step 4 flash?	No	Replace the control card controller PCB.
	6	Borrow the upper limit setting card from the user and check the departmental upper limit flashing in step 5. Has the number of copies reached the upper limit?	Yes	Is the Control Card V normal? • Use another card or change the upper limit.
Controller PCB			No	Replace the control card controller PCB.
Wiring	7	Set the power switch OFF. Put a test control counter into the socket. Disconnect J314 from the DC controller. Set the meter to the $\Omega \times 1$ range. Connect the leads to J316-1 and J504-4, and J316-2 and J504-3. Does the meter indicate 0Ω?	No	Check the wiring between the socket and the DC controller PCB.
DC controller PCB			Yes	Replace the DC controller PCB.

V. TROUBLESHOOTING FEEDING PROBLEMS

A. Paper Jams

The main areas in this copier where jams could occur are as follows:

[1] Paper pick-up area
[2] Separation and feeder area
[3] Fixing and delivery assembly area
[4] Drum cleaner area

Troubleshooting of paper jamming is described here for each of the above areas.

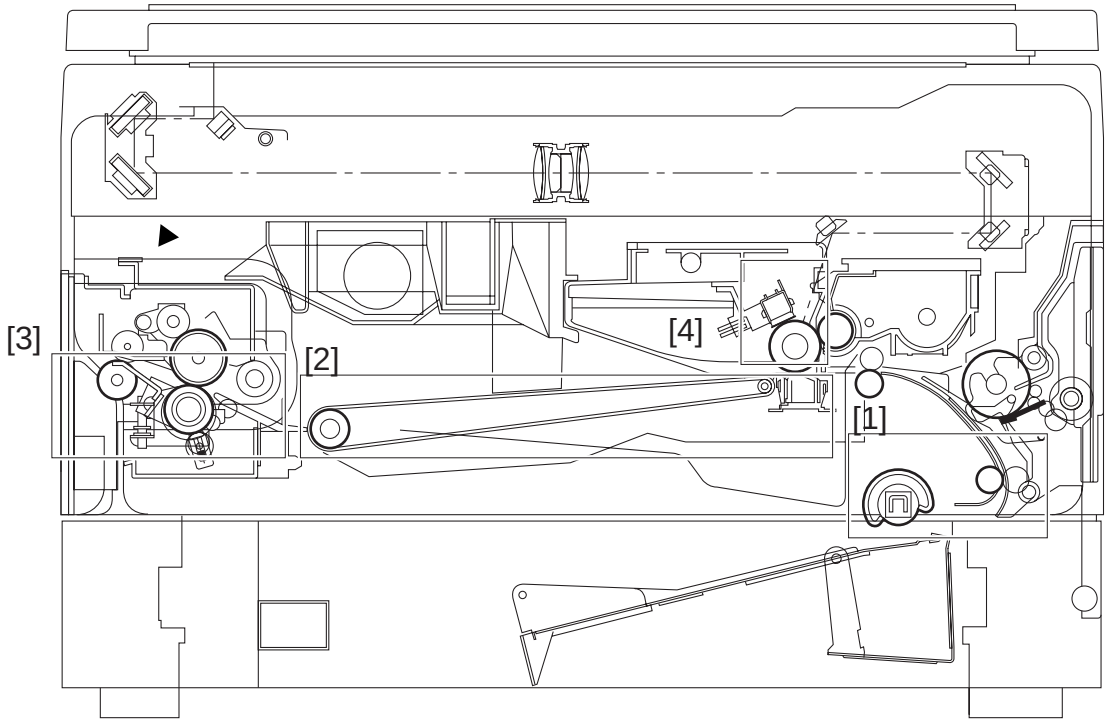

Figure 10-501

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1. Jamming in the paper pick-up area

Cause/Problem area	Procedure	Check	Result	Action
Cassette	1	Is the cassette pushed fully into the copier?	No	Push the cassette in fully.
	2	Does the problem disappear when a different casssette is used?	Yes	1. Check the paper hold-down tabs. 2. Check the strength of the paper-lifting springs.
Copy paper	3	Is the copy paper curled or creased?	Yes	1. Change the copy paper. 2. Instruct the user about the correct method of storing paper.
DC controller PCB, Pick-up roller clutch	4	Does the pick-up roller rotate during the copying cycle?	No	Refer to the sub-section "Paper is not picked up."
Pick-up roller	5	Are the pick-up roller shoes deformed or worn?	Yes	Replace the pick-up rollers.
Pre-registration paper sensor (Q2)	6	Is the pre-registration paper sensor (Q2) correctly?	No	Replace the pre-registration paper sensor (Q2).
Feed roller and paper guide plate			Yes	1. Check each feed roller for wear and deformation. 2. Check the paper guide plate for burrs or deformation.

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2. Jamming in the separation and feeder assembly area

Cause/Problem area	Procedure	Check	Result	Action
	1	Does the leading edge of the copy paper pass through the registration rollers?	Yes	Continue with step 5.
Registration roller clutch (CL1)	2	Does the registration roller clutch (CL1) operate correctly?	No	Check the registration roller clutch (CL1).
Registration roller	3	Are the registration rollers worn, deformed, or dirty?	Yes	If they are dirty, clean them with alcohol. If they are deformed.
	4	Are the reataining spring at the ends of the registration rollers installed correctly?	No	Install the springs correctly.
			Yes	Check the transfer guide for foreign matter and deformation.
Paper guide wire	5	Is the paper guide wire of the transfer corona assembly installed correctly?	No	Install the wire correctly.
Feeder belt	6	Does the feeder belt move properly?	No	Check the feeder belt, roller, and pulleys.
			Yes	Replace the DC controller PCB.

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3. Jamming in the fixing and paper delivery assembly area

Cause/Problem area		Procedure	Check	Result	Action
Delivery assembly separation claws		1	Are the separation claws worn or deformed?	Yes	1. Replace the separation claws. 2. If the separation claws are dirty, clean them with MEK.
Delivery assembly	Upper and lower fixing rollers	2	Is the upper or lower fixing roller deformed or scratched?	Yes	Replace the upper and lower fixing rollers (both at the same time).
	Paper guide plate	3	Is toner, etc., adhering to the paper guide?	Yes	Clean the paper guide plate with MEK.
		4	Is the height of the paper guide plate correct?	No	Adjust the height of the paper guide plate.
	Nip width	5	Is the roller pressure (nip width) within the standard?	No	Adjust the nip width.
Fixing assembly	Delivery paper sensor arm	6	Does the delivery sensor arm move smoothly?	No	Adjust the arm so that it moves smoothly.
	Delivery paper sensor (Q5)	7	Is the delivery paper sensor correctly (See p. 2-10.)	No	Replace the delivery paper sensor (Q5).
	Delivery roller drive assembly	8		No	Check the delivery roller drive assembly.
Leading edge blank area				Yes	Check if there is a leading edge blank area (10 ±1.5 mm) on the leading edge of the copy paper.

4. Jamming around the drum cleaning unit area

Cause/Problem area	Procedure	Check	Result	Action
Copy paper	1	Does jamming occur when thin paper is used?	Yes	Explain to the user that thin paper is likely to jam.
	2	Did a jam occur when a 2-sided or overlay copy was being made?	Yes	Instruct the user to remove curling from the copy paper before using it.
Static charge eliminator, High-voltage transformer			No	Check if voltage is being supplied to the static charge eliminator.

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VI. INCORRECT PAPER FEED OPERATION

1. Copy paper

Cause/Problem area	Procedure	Check	Result	Action
Cassette	1	Is the copy paper positioned correctly under the hold-down tabs?	No	Set the copy paper correctly.
	2	Push the copy paper down in the cassette and release it. Does it rise smoothly?	No	1. Check the width of the copy paper. 2. Check the position of the side panels of the cassette. 3. Measure the strength of the paper-lifting springs. If it is weak, replace them.
Copy paper	3	Is paper recommended by Canon being used?	No	Suggest that the user use paper recommended by Canon.
Hold-down tabs			Yes	Check if the hold-down tabs are deformed.

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2. Wrinkles

Cause/Problem area		Procedure	Check	Result	Action
Pick-up assembly		1	Switch the power OFF while the copy paper is passing along the feeder. Are there any wrinkles in the copy paper at this point? Is the paper skewed?	Yes	1. Check the pick-up assembly. 2. Check the registration rollers.
Copy paper		2	Does the trouble disappear when new copy paper is used?	Yes	The paper may be absorbing moisture. Instruct the user in the correct paper storage method.
Fixing assembly	Paper guide	3	Is any foreign matter such as toner adhering to the paper guide?	Yes	Clean the paper guide with MEK.
		4	Is the height of the paper guide correct?	No	Adjust the height of the paper guide.
	Roller pressure	5	Is the roller pressure (nip width) within the standard?	No	Adjust the nip width.
	Upper and lower fixing rollers			Yes	Replace the upper and lower fixing rollers (both at the same time).

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VII. FUNCTION AND ARRANGEMENT OF THE ELECTRICAL PARTS

A. Sensors, Fuses and Lamps

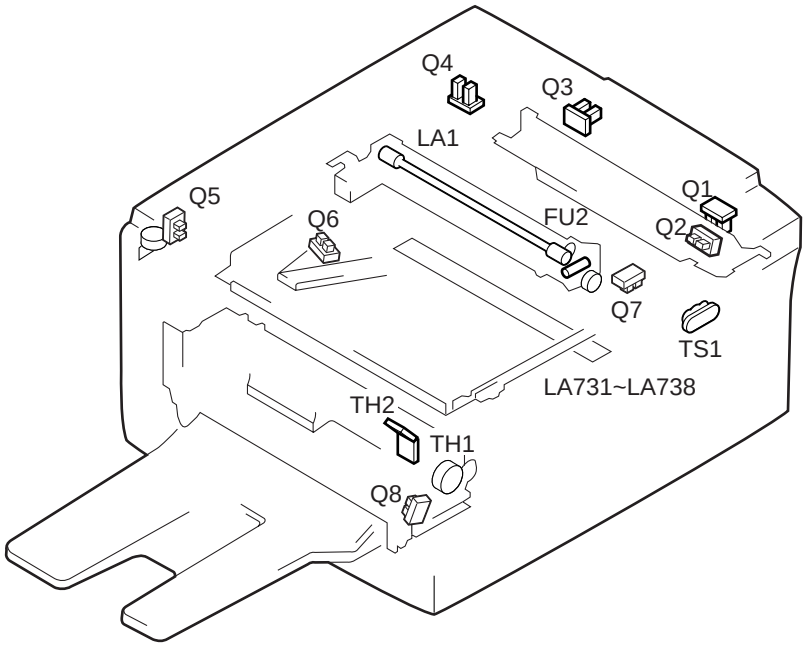
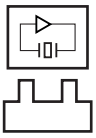
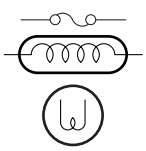


Figure 10-701

Symbol	Name	Code	Function
	Black toner level sensor	TS1	Senses the toner in the development assembly
	Photointerrupter	Q1	Multifeeder paper sensor
		Q2	Pre-resistrarion paper sensor
		Q3	Right door sensor
		Q4	Mirror home position sensor
		Q5	Scanner home position sensor
		Q6	Lens home position sensor
		Q7	Cassette paper sensor
		Q8	Delivery paper sensor
	Thermistor	TH1	Upper fixing roller temperature sensor 1 (main)
		TH2	Upper fixing roller temperature sensor 2 (auxiliary)
	Thermoswitch	F2	Scanning lamp over temperature protector
	Lamp	LA2	Scanning lamp
		LA731	Pre-exposure lamp
		|	|
		LA738	Pre-exposure lamp

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B. Clutches, Solenoids, Fans, Motors and Heaters

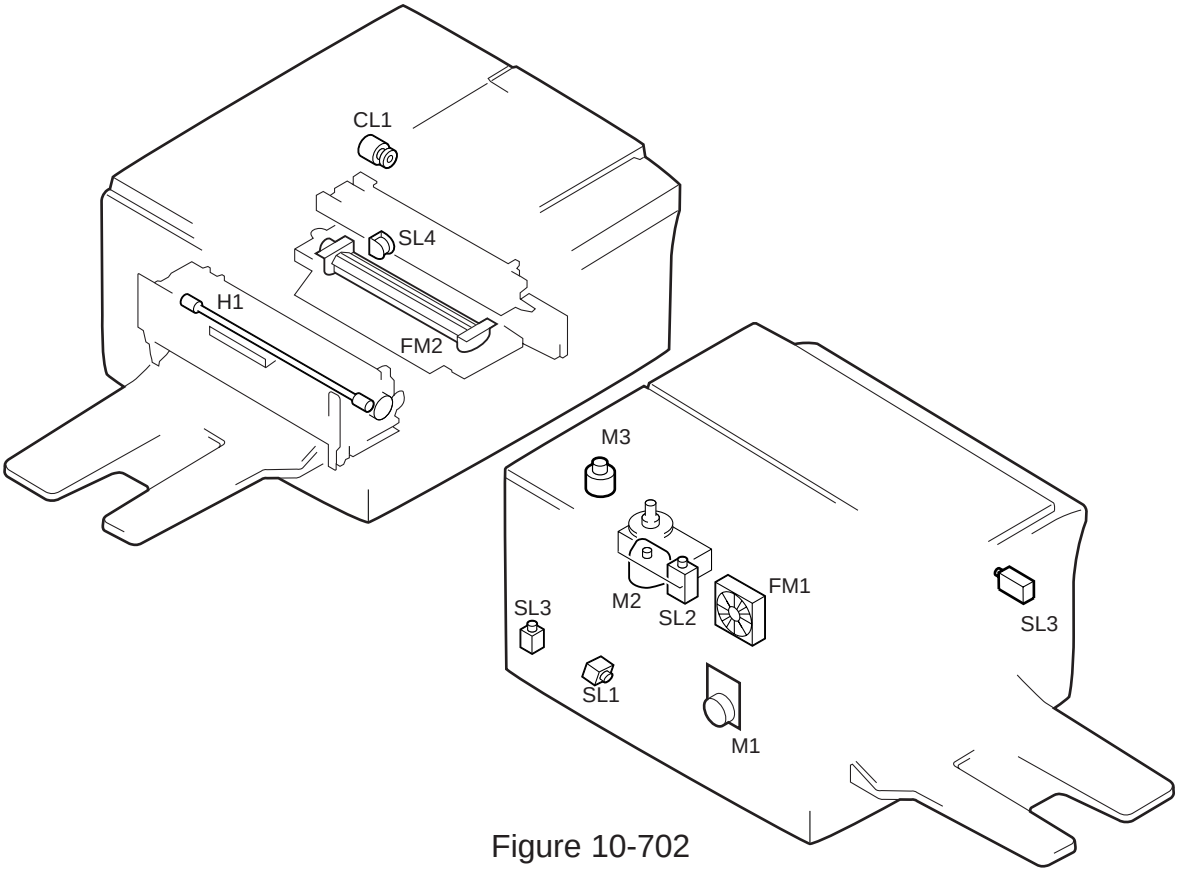

Figure 10-702

Symbol	Name	Code	Function
CL	Clutch	CL1	Registration roller clutch
SL	Solenoid	SL1	Pick-up roller clutch solenoid
		SL2	Lens drive solenoid
		SL3	Multifeeder solenoid
		SL4	Blank solenoid
M	Motor	M1	Main motor
		M2	Scanner motor
		M3	Mirror motor
	Fan unit	FM1	Scanner cooling fan
		FM2	Exhaust fan
	Heater	LA1	Fixing roller heater

C. Switches, Circuit Breakers, Counters, Etc.

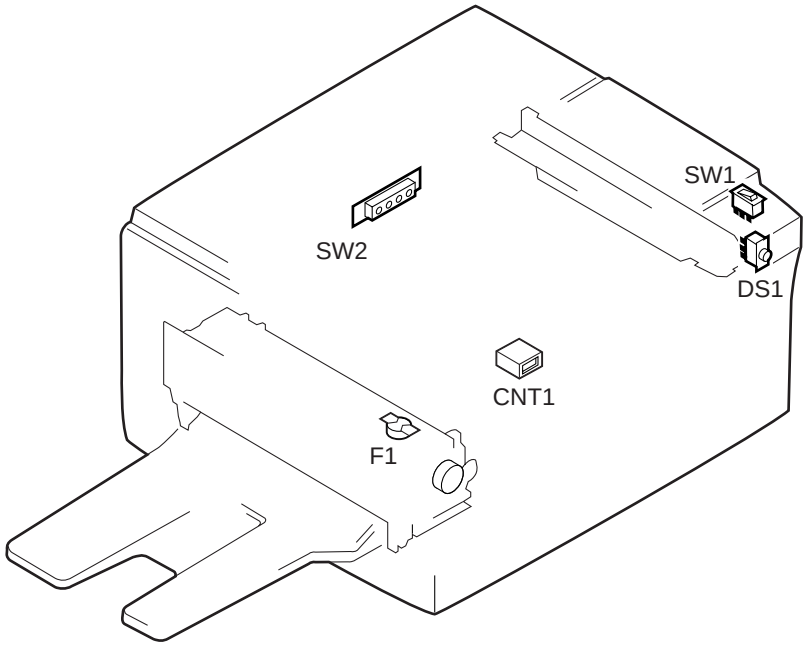

Figure 10-703

Symbol	Name	Code	Function
	Switch	SW1	Power switch
	Microswitch	SW2	Cassette size sensor
		DS1	Front door switch
	Thermoswitch	F1	Fixing assembly over temperature protector
CNT	Counter	CNT1	Total counter

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D. PCBs

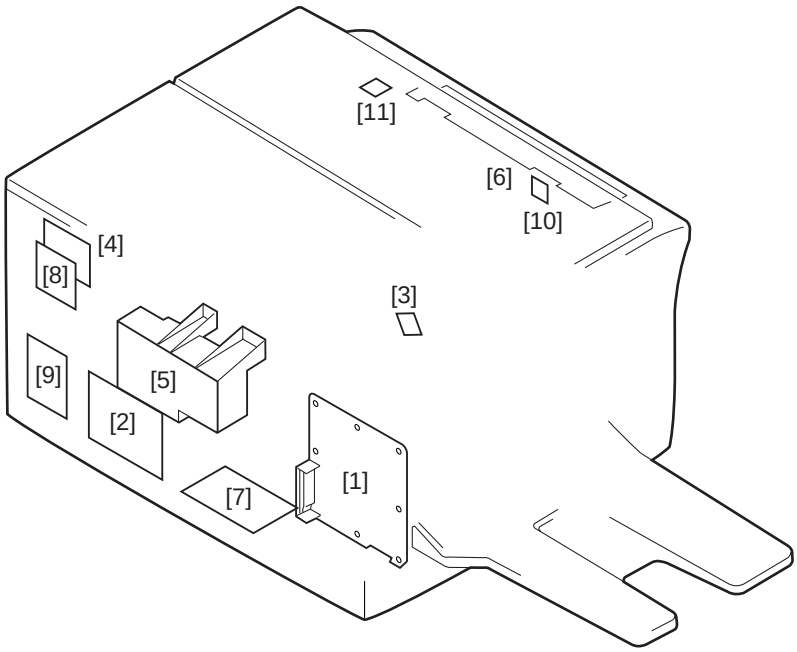

Figure 10-704

Symbol	Name	Function
[1]	DC controller PCB	Controlling operations
[2]	Power supply assembly	Powering the fixing roller heater and supplying DC power to the copier
[3]	AE sensor PCB	Measuring the document density
[4]	Lamp regulator PCB	Contolling scanning lamp voltage
[5]	High voltage transformer PCB	Supplying high voltage for primary and transfer assemblies and developing bias
[6]	Control panel PCB	Controlling the control panel
[7]	DC power supply PCB (for sorter)	Supplying power to the sorter
[8]	DC power supply PCB (for ADF)	Supplying power to the ADF
[9]	Noise filter PCB	Preventing noise
[10]	Copy density volume PCB	Controlling copy density
[11]	Power indicator PCB	Indicating power

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VIII. SERVICE MODE

A. Outline

The NP6317's service mode allows the following:
- checking the operation of some switches and LEDs
- changing data in EEPROM
- operating some functions

B. Using the Service Mode

1) Detach the VR cover from the rear of the left cover.
2) Check that the COPY START key is glowing green.
3) Press the service switch (SW300) on the DC controller PCB.
4) Check that 'C0' is indicated.
5) Enter the No. of the desired service mode using the NUMERIC keypad on the control panel.
   - For example, the display indicates 'C3' in response to a press on '3'.
6) Press the SORT/GROUP key.
7) Operate as follows as necessary.

<Mode No. C0, C12, C17 and C22>
A press on the SORT/GROUP key executes the selected mode; a second press stops the execution.

<Mode No. C1 through C11 and C15, C21, C23, C24, C25>
Change the setting using the numeric keypad, and press the SORT/GROUP key; the setting will be stored in EEPROM.

<Mode No. C13>
Refer to "Adjusting the fixing roller pressure (p. 10-13)."

<Mode No. C18>
Press the AE key twice, and check 'CEE' is indicated on the control panel; then, press the SORT/GROUP key.

8) Press the service switch (SW300) to leave the service mode.

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C. Guide to Service Mode

	SERVICE PROGRAMS				
Display	Function	Range	Default	Note	Note
C0	Auto exposure sensor monitoring.	—	—		
C1	Auto exposure adjusting.	0 to 50	25	0.10 Volt/step	
C2	Register A-side adjusting.	0 to 63	32	0.25 mm/step	
C3	Blank A-side adjusting.	0 to 63	32	0.25 mm/step	
C4	Curve adjusting.	0 to 63	32	0.25 mm/step	
C5	Register B-side adjusting.	0 to 63	32	0.25 mm/step	
C6	Blank B-side adjusting.	0 to 63	32	0.25 mm/step	
C7	Lens focus 50% adjusting.	0 to 65	—	0.0037 %/step	A higher setting changes the lens focus parameter.
C8	Lens focus 200% adjusting.	0 to 65	—	0.15 %/step	A higher setting changes the lens focus parameter.
C9	Fuser temperature adjusting.	130 to 230	180	[°C]	
C10	Lens home-position sensor adjusting.	0 to 63	32	0.113 %/step	A higher setting changes the lens position enlargement.
C11	Mirror home-position sensor adjusting.	0 to 255	95	0.05 mm/step	
C12	Cassette sensor monitoring.			Display code	See Table 10-802.
C13	Nip area cycle starting.	—	—	Fixing nip	For checking fixing pressure after fixing roller replacement.
C15	Default auto exposure re/setting.	0/1	1	Enable/diable	
C16	Copier configuration monitoring.	0 to 5	0	Factory only	
C17	Control panel LEDs checking.	—	—	Turn all LEDs on.	
C18	EEPROM memory initializing.	—	—		
C21	Automatic shut-off setting.	0/1	1	Enable/disable	
C22	Main switch shut-off check	—	—	shut-off copier	Used to test the main shut off switch.
C23	Universal cassette code setting.	0 to 6	0	For U cassette	For setting the universal cassette size, see Table 10-803.
C24	Lamp brightness 50% adjusting.	100 to 185	124		For adjusting the exposure lamp (LA1).
C25	Lamp brightness 200% adjusting.	100 to 185	145		For adjusting the exposure lamp (LA1) .

Table 10-801

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Size	code
No cassette	0
A4	8
A3	12
A4 R	14
A5 R	15
Universal	7

Table 10-802

Size	Code
B4	0
B5	1
B5 R	2
LETTER	3
LETTER R	4
LEGAL	5
STMT R	6

Table 10-803

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IX. SELF DIAGNOSIS

The DC controller PCB has a microprocessor that diagnoses the functions of the copier (particularly the sensors) at appropriate intervals. If this microprocessor detects an abnormality, it will display the type of the abnormality on the indicator on the control panel.

The table below shows the various fault codes, their meaning, and the corresponding detection timing.

Example of E000 code indication:

E⇔000 light alternately.

Code displayed	Main cause	Fault criteria
E000	Fixing roller heater (LA1) low temperature error	• If the temperature difference between the thermistors 1 and 2 is 60°C or higher. • If the fixing asssembly temperature is lower than 50°C after 15 sec from the power-on.
E001	Thermistor1 (TH1), Power supply assembly, Fixing roller heater (LA1), or DC controller PCB	If the tempereture remains 220°C or higher for 0.1 sec or longer.
E002	Fixing roller heater (LA1) low temperature error: Thermistor, fixing roller heater, AC driver, power supply assembly, DC controller PCB, thermoswitch (F1), auxiliary thermistor (TH2)	If warm-up is not over after 60 sec from when the temperature reached 50°C.
E003	Fixing roller heater (LA1) low temperature error: Thermistor (TH1), fixing roller heater, power supply assembly, DC controller PCB, thermoswitch (F1), auxiliary thermistor (TH2)	If fixing unit temperature drops below 50°C when the copier is in stand by or copying.
E004	Fixing heater ON timing error: Triac (U104) on power supply assembly	If the C HEAT CHECK signal is on while the HEAT ON signal is off.
E010	Main motor error: Main motor (M1), DC controller PCB	If the main motor speed feedback signal does not appear after 2 sec from the main motor.
E030	Counter (CNT1), DC controller PCB	If the break signals is generated continuously for 0.1 sec or more when the counter is not being driven.

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Code displayed	Main cause	Fault criteria
E202	Scanner home position sensor (Q5), scanner motor (M2), or DC controller PCB	1. If the scanner is not at the home position (SCHP=0) when the COPY START key is pressed. If the scanner does not return to the home position (SCHP remains 0) within 15 sec (A4 size) after it starts to reverse. 2. If the scanner is in the home position (SCHP=1) when the COPY START key is pressed. • If the scanner does not leave the home position (SCHP remains 1) within 1.5 sec after it starts to advance. • If the scanner does not return to the home position (SCHP remains 0) within 1 sec after it leaves the home position (SCHP=0).
E208	Mirror error: Mirror home position sensor (Q4), mirror motor (M3), DC controller PCB	If the No. 4 and No. 5 mirrors do not reach home position after 8 sec from driving starts.
E210	Lens home position sensor (Q6), DC controller PCB	• If the lens does not return to the home position (LHP remains 0) within 2.5 sec • If LHP remains 1 for at least 4 sec.
E220	Lamp drive unit, Scanning lamp (LA2)	At the lamp ON timing, LAON=1 is not true. At the lamp OFF timing, LAON=0 is not true.
E245	DC controller PCB	If the data in EEPROM has been rewritten more than specified.
E261	Power supply assembly, DC controller PCB	If the main frequency is out of the allowed range.
E400	ADF controoler PCB, ADF power supply, or DC controller PCB	If ADF remains 0 for 12 sec or longer.
E500	Sorter controller PCB, Sorter power supply PCB, or DC controller PCB	• If the copier does not communicate with the sorter for at least 12 sec. • If the SORTER STANDBY signal does not return within 35 sec after the BCR signal is outputted.
E802	Main switch (SW1), or DC controller PCB	If the AC power is not off when the DC controller PCB generates the ACCOFF signal.

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Note:

After self diagnosis has been executed, the copier may be reset by switching if OFF and then ON unless 'E000', 'E001', 'E002', 'E003' or 'E004' is indicated on the display.

This consideration is made to prevent the user from resetting the copier when the fixing assembly has a serious fault (open thermistor or others) that can damage the assembly.

Reset the copier as follows if 'E000', 'E001', 'E002', 'E003' or 'E004' is indicated:

1) Detach the switch cover (one screw).
2) Shift the main switch (SW1) to ON and continuously hold the main switch down so that the main power does not turn OFF.
3) Press the service switch (SW300) on the DC controller PCB once.
4) Shift the main switch to OFF.
5) Attach the switch cover.

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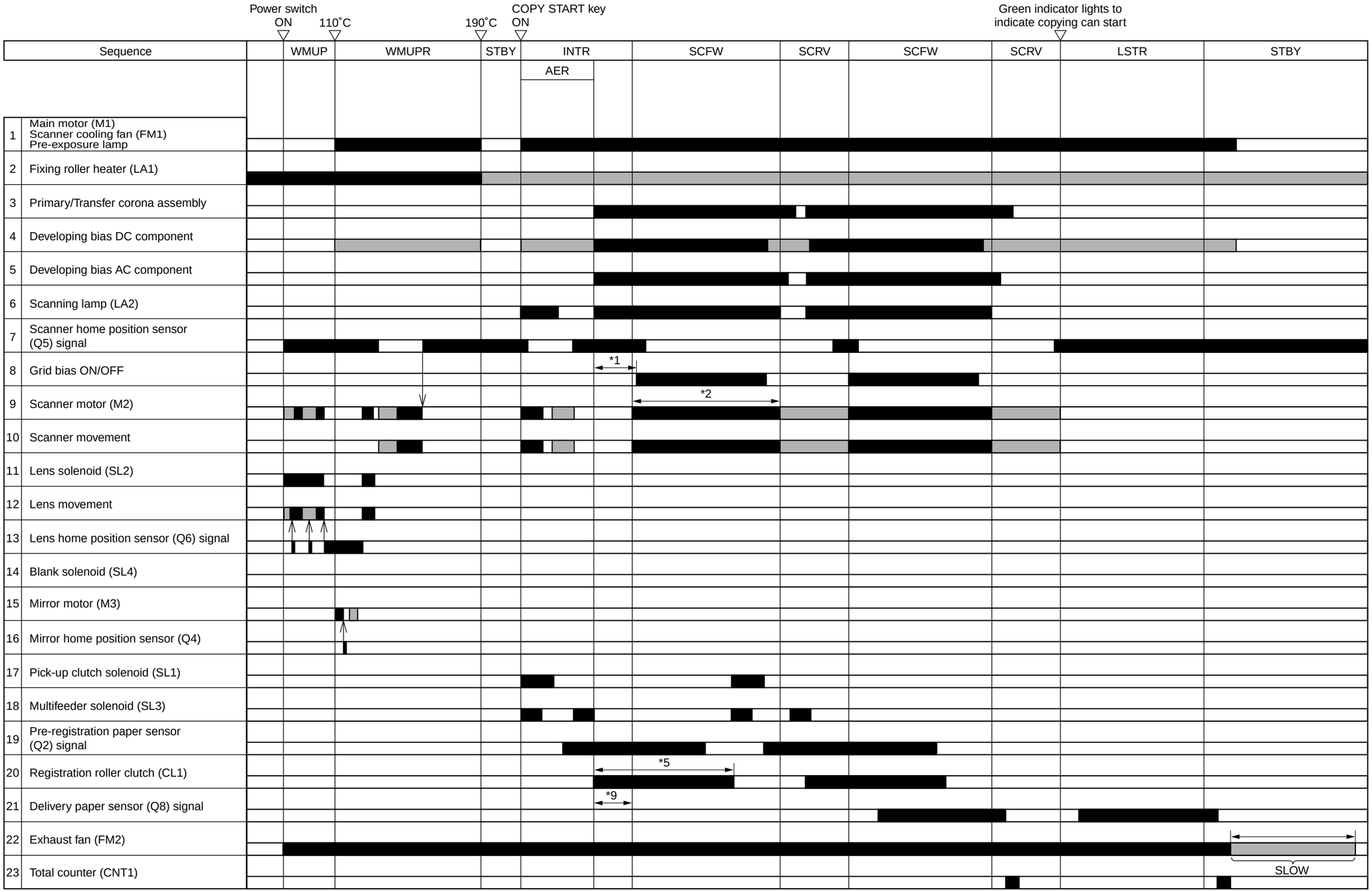
APPENDIX

 CANON NP6317 REV.0 APR. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

A. GENERAL TIMING CHART

(A4, AE, 2 copies)



*1 Varies depending on the reproduction ratio and the setting of 'leading edge (C3)' in the service mode.
*2 Varies depending on the cassette size and the selected reproduction ratio.
*3 Varies depending on the reproduction ratio.
*5 Varies depending on the paper size.
*7 Rotates at lower speed for 30 sec.
*8 Used only when the multifeeder is in use.
*9 Varies depending on the setting of 'leading edge non-image width' in the service mode.

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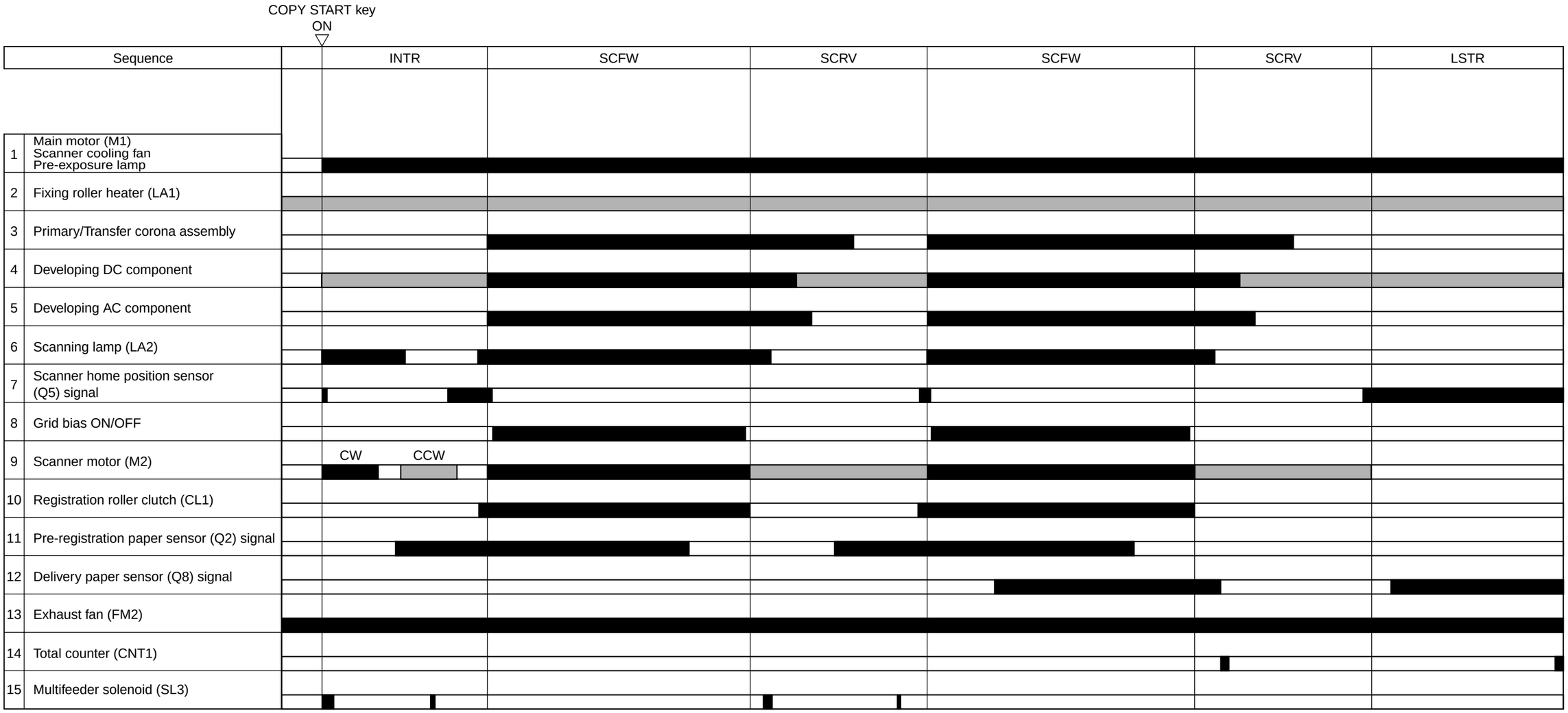
<MULTI FEED>

(A4, 2 copies, multifeed)



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B. LIST OF SIGNALS/ABBREVIATIONS

The following is a list of signals and abbreviations used in this document and the circuit diagrams:

Note:
The abbreviations in parentheses are electrical signals but are analog, which cannot be expressed in terms of '1' and '0'. Others are digital signals, which can be expressed as being either '1' or '0'.

ACOFF	AC OFF command
AE	AE signal
AEGIN	AE GAIN signal
BLSD	BLANK SOLENOID drive command
BTEP	BLACK TONER LEVEL signal
CCNNT	CONTROL CARD detection siganl
CCNTD	CONTROL CARD drive command
C-HEAT-CHECK	
CPEP	CASSETTE PAPER detection signal
CSZ1	CASSETTE SIZE 1 signal
CSZ2	CASSETTE SIZE 2 signal
CSZ3	CASSETTE SIZE 3 signal
CSZ4	CASSETTE SIZE 4 signal
DLP	DELIVERY PAPER detection signal
FM1D	FAN MOTOR drive command 1
FM2D	FAN MOTOR drive command 2
HTRD	HEATER DRIVE command
LAMP-CHECK	LAMP ON CHECK detection signal
LAMP-SHIFT	LAMP SHIFT command
LHP	LENS HOME POSITION detection signal
LIGHT	LIGHT ON command
LNSD	LENS SOLENOID drive command
MFPD	MULITIFEEDER PAPER detection signal
MFSD	MULITIFEEDER SOLENOID drive signal
MHP	MIRROR HOME POSITION detection signal
MMD	MAIN MOTOR drive command
MMLOCK	MAIN MOTOR LOCK detection signal
PEXP	PER-EXPOSURE LAMP drive command
PRP	PAPER REGISTRATION detection signal
PUSD	PICK-UP SOLENOID drive command
RDC	RIGHT DOOR CLOSED detection signal
RGCD	REGISTRATION CLUTCH drive command
SCHP	SCANNER HOME POSITION detection signal
TCNTD	TOTAL COUNTER drive command
TH1	THERMISTOR 1 signal
TH2	THERMISTOR 2 signal
ZERO-CROSS	ZERO CROSS signal

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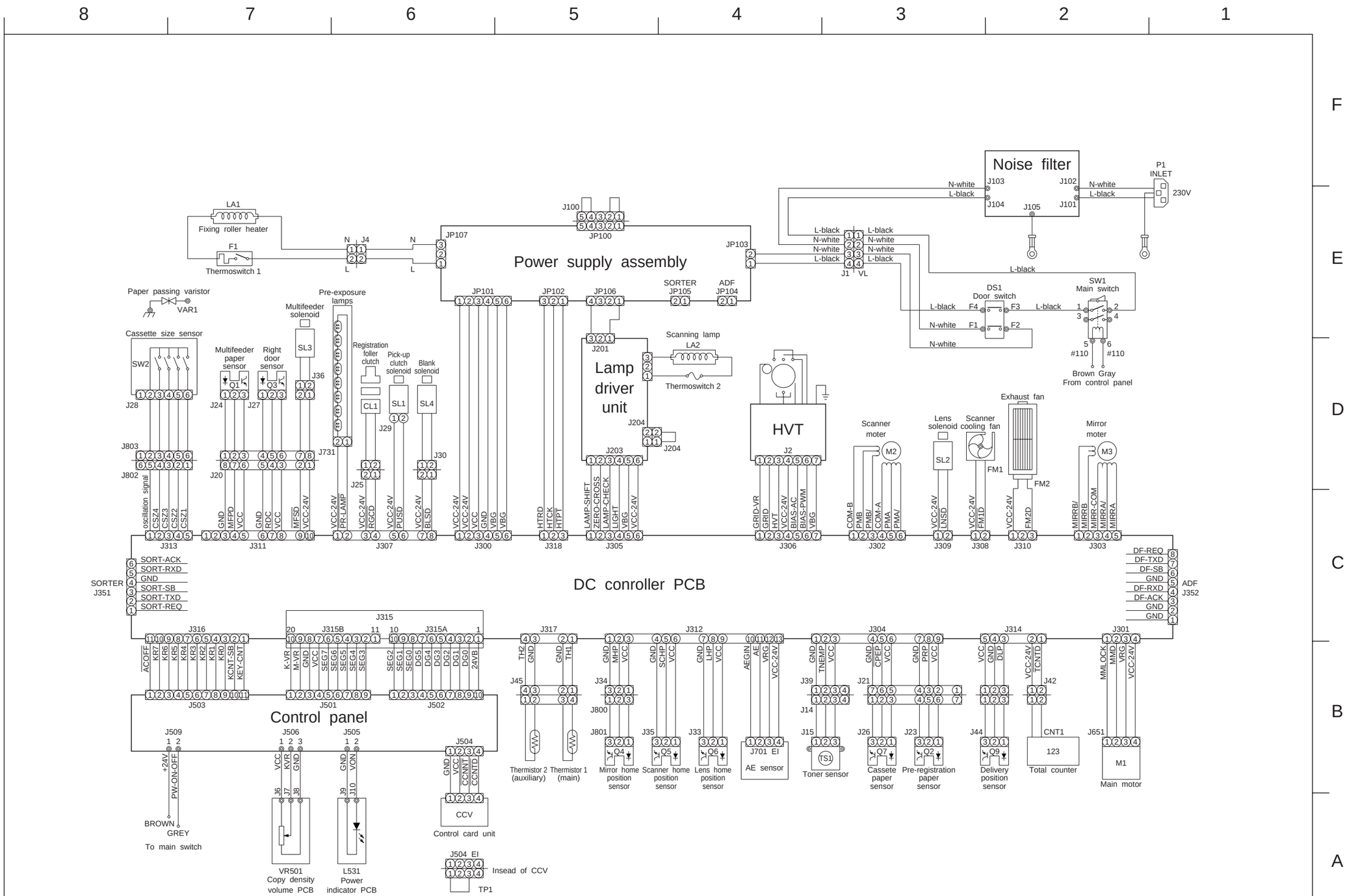

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D. SOLVENTS AND OILS LIST

No.	Name	Uses	Composition	Remarks
1	Alcohol	Cleaning; e.g., glass, plastic, rubber (external covers).	Fluorine-family hydrogen carbon, alcohol, surface activating agent	• Do not bring near fire. • IPA (isopropyl alcohol)
2	Lubricant	Driving parts, friction parts (lead cam)	Silicone oil	• FY9-6008 (10g)

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