NP6317

SERVICE HANDBOOK

REVISION 0

Canon

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CHAPTER 1 MAINTENANCE AND INSPECTION

A. 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 1-1

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

B. 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 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 1-2

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

C. 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 users 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 1-3

D. 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 vis cosity 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		△	
	Mirror 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.

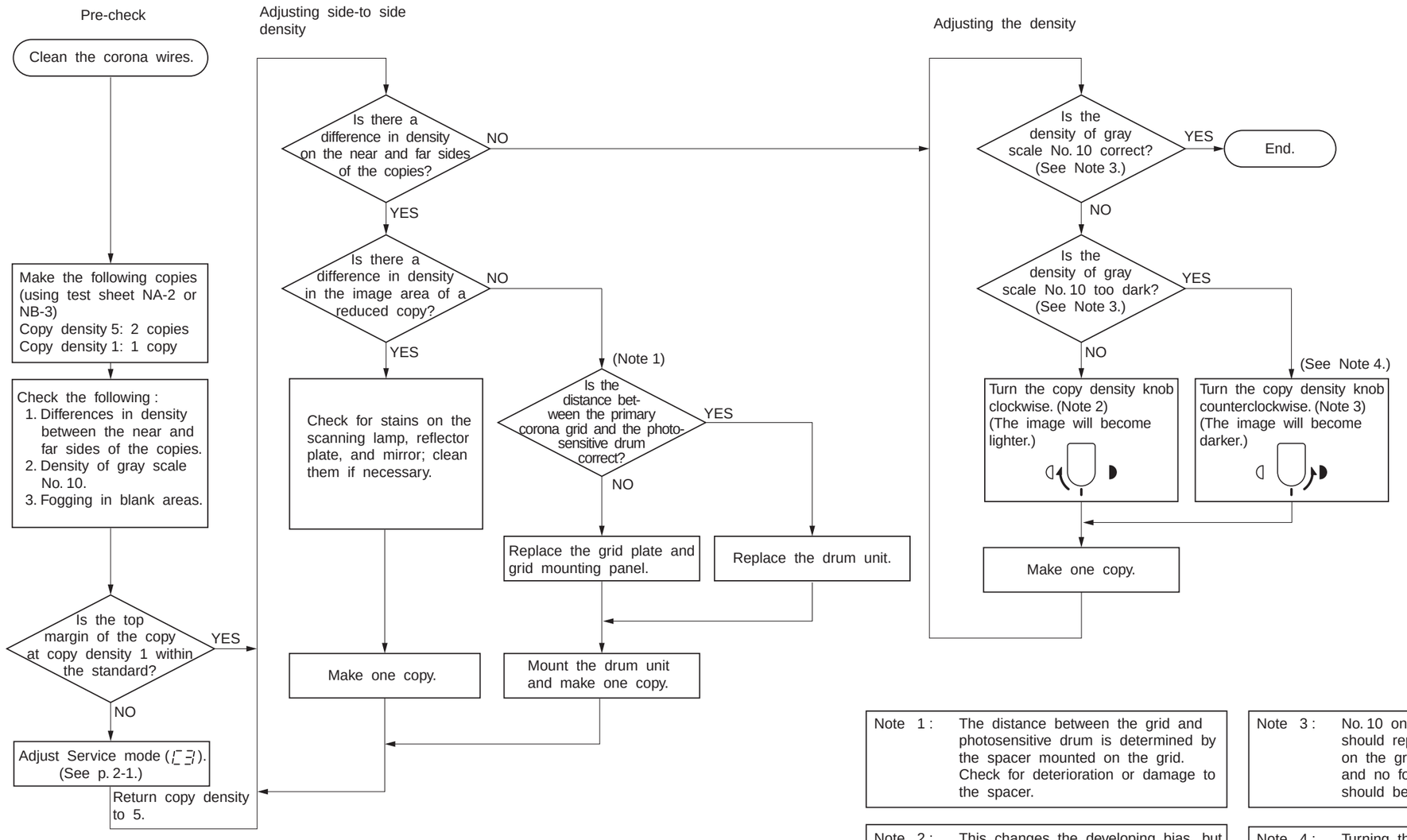
Table 1-4

Image adjustment should be performed using the following settings:

1. Manual (non AE) exposure
2. Density cursor setting : 5
3. DIRECT reproduction ratio

Adjust the image by the following procedure when the photosensitive drum has been replaced.

Make this adjustment with the upper front panel and front door installed.



Note 1 : The distance between the grid and photosensitive drum is determined by the spacer mounted on the grid. Check for deterioration or damage to the spacer.

Note 2 : This changes the developing bias, but not the intensity of the scanning lamp.

Note 3 : No. 10 on the gray scale of a copy should reproduce the density of No. 8 on the gray scale of the test sheet, and no fogging in the background should be visible.

Note 4 : Turning the copy density knob clockwise too far past the proper position will result in fogging in blank areas.

Figure 1-1

F. 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 1-2

CHAPTER 2 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).

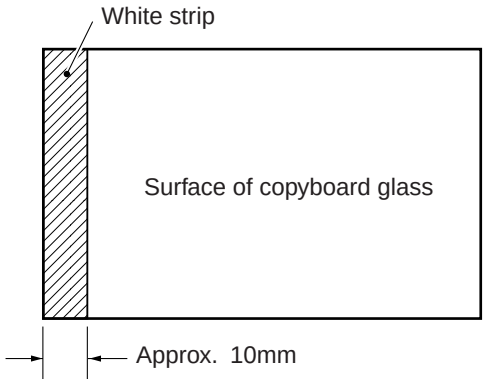


Figure 2-1

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

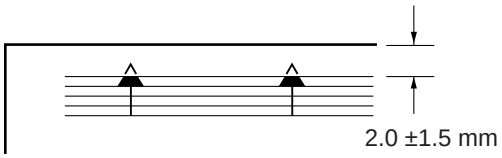


Figure 2-2

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

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.

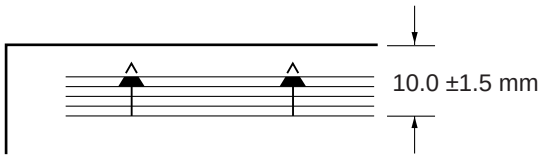


Figure 2-3

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.

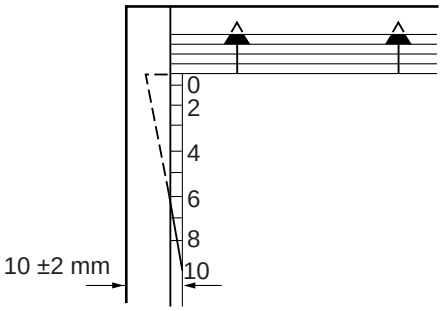


Figure 2-4

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

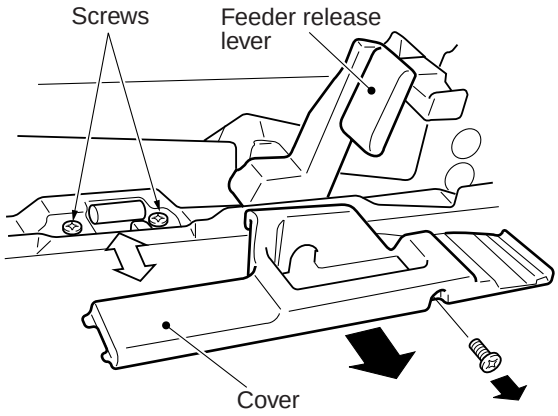


Figure 2-5

b. Multifeeder Feeding

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

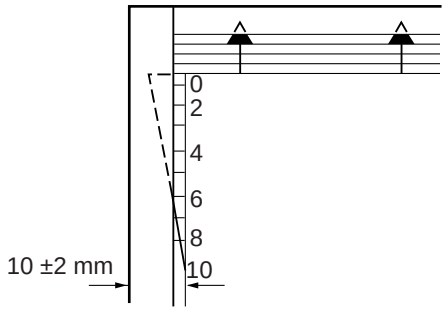


Figure 2-6

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

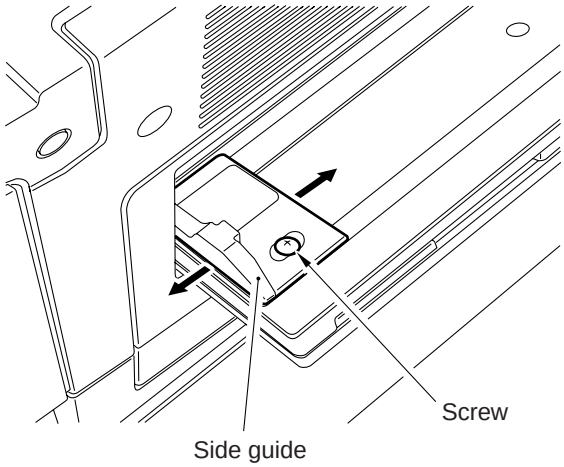


Figure 2-7

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.

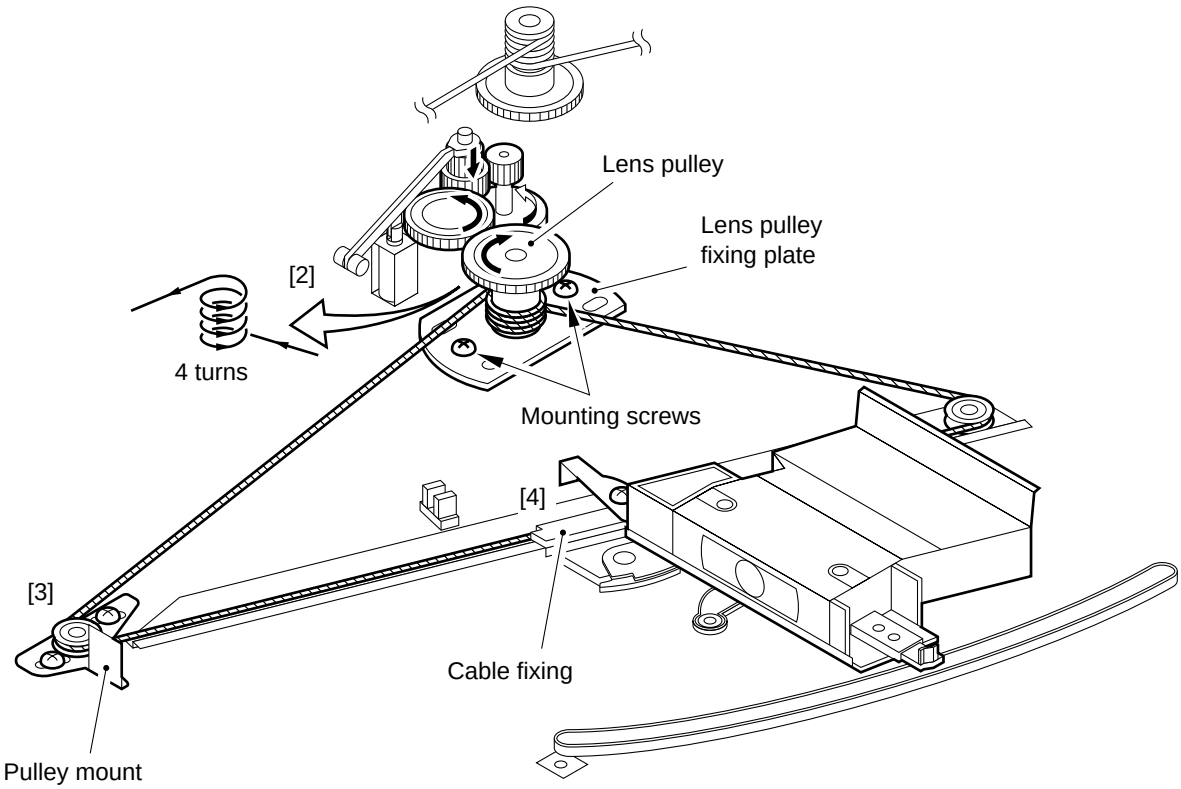


Figure 2-8

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 2-8, 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.

5. Installing the Scanner Drive Cable

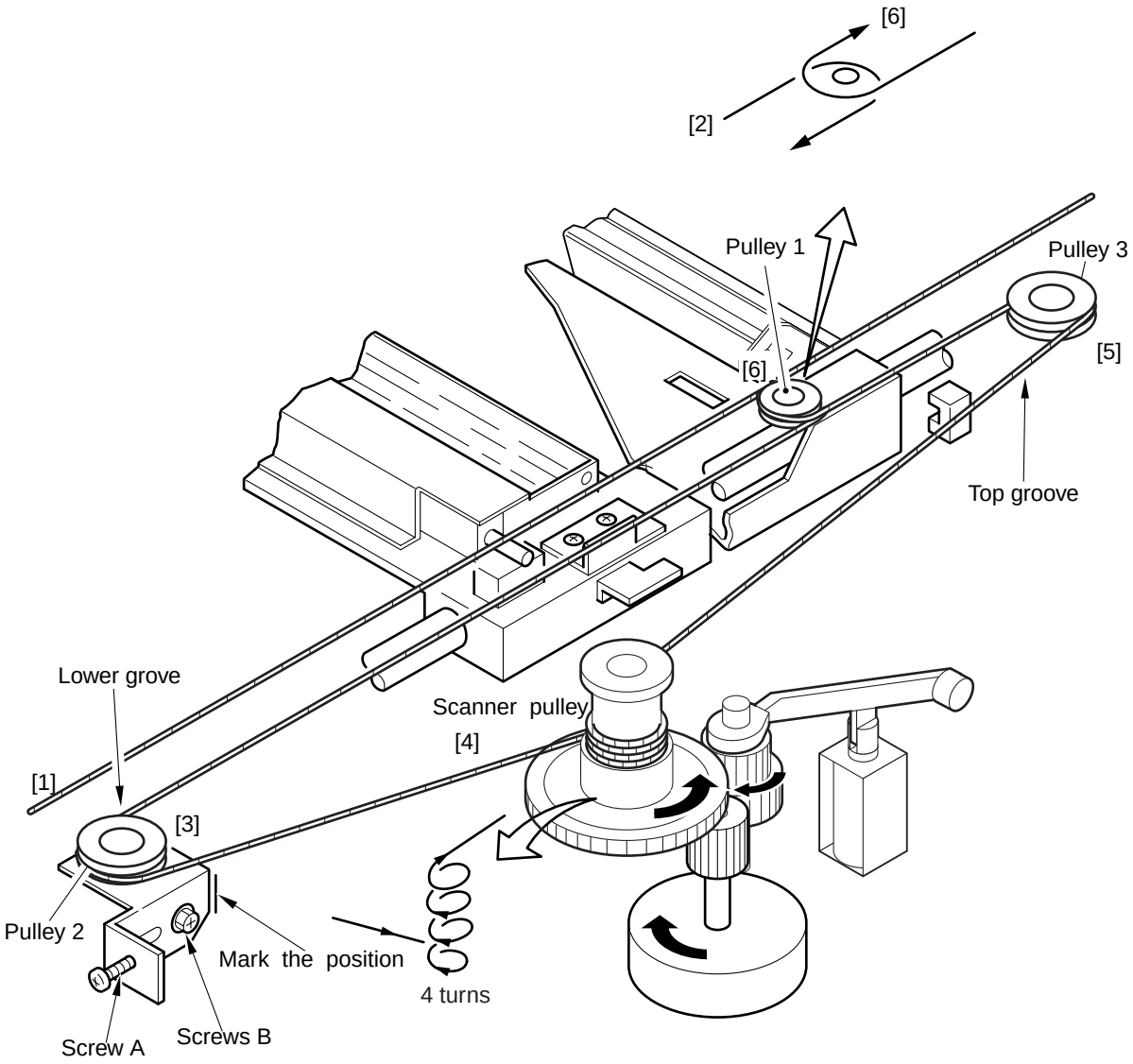


Figure 2-9

6. Adjusting the Tension of the Scanner Drive Cable

Move the mirror 1 mount to the home position (start position). As shown in Figure 2-10, 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 2-9, turn screw [A] to achieve this reading, and then tighten the screws [B].

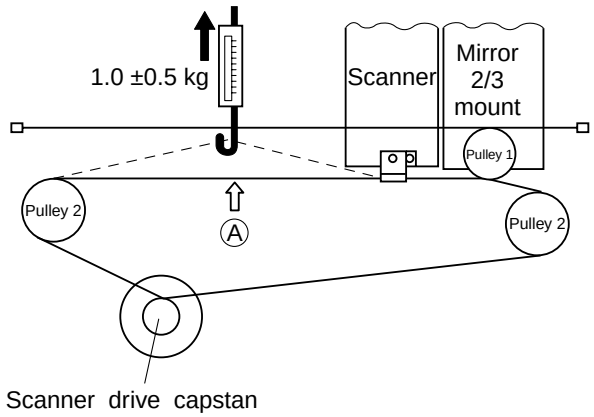


Figure 2-10 Top View

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 2-11.

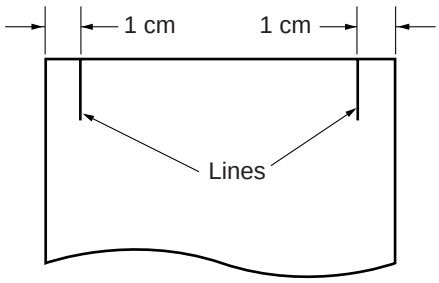


Figure 2-11

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.

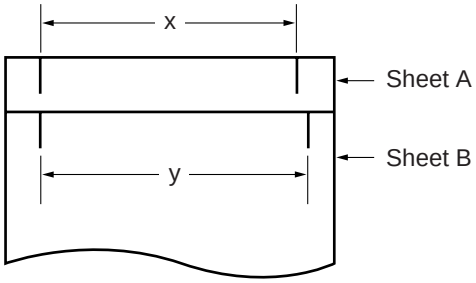


Figure 2-12

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

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.

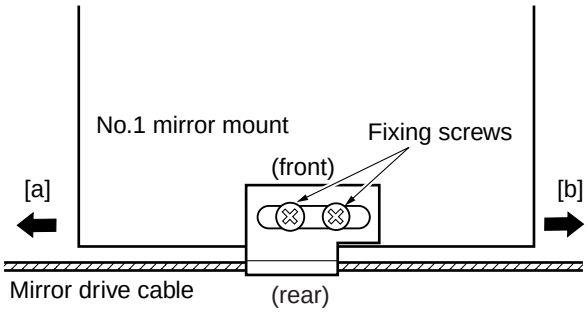


Figure 2-13 Top View

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.

8. 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, readjusting the mirror mechanical axis is not possible in the filed.

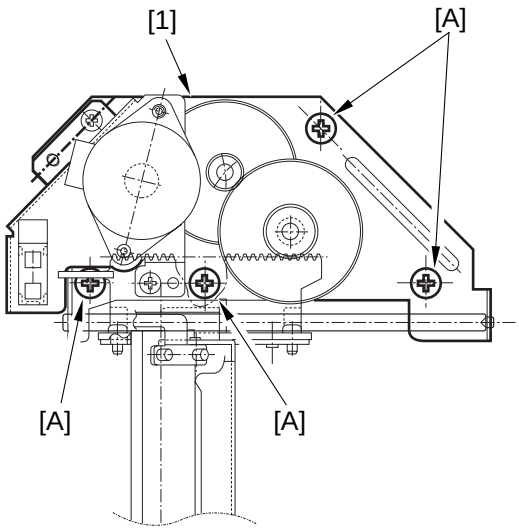


Figure 2-14

9. 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.

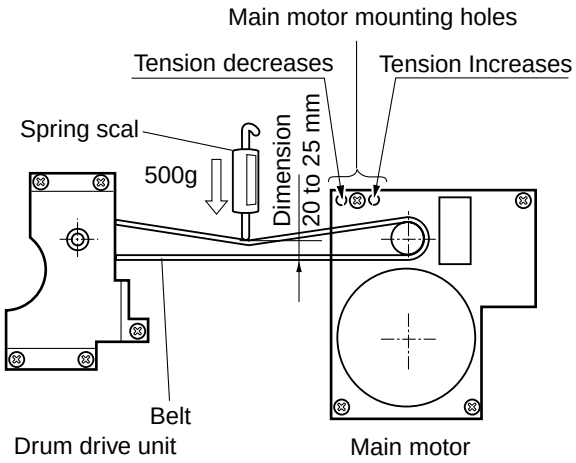


Figure 2-15

10. 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 2-16.

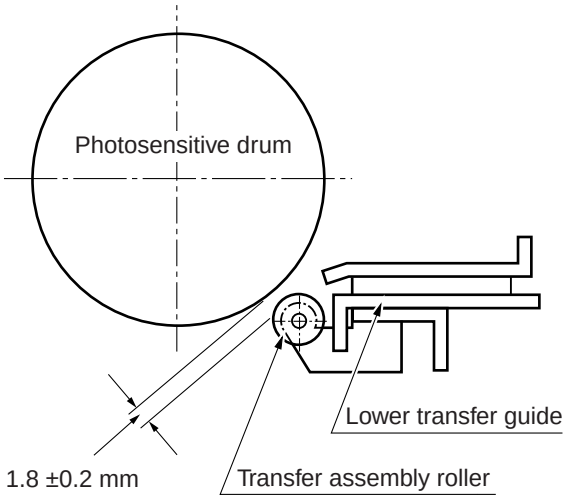


Figure 2-16

11. 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.

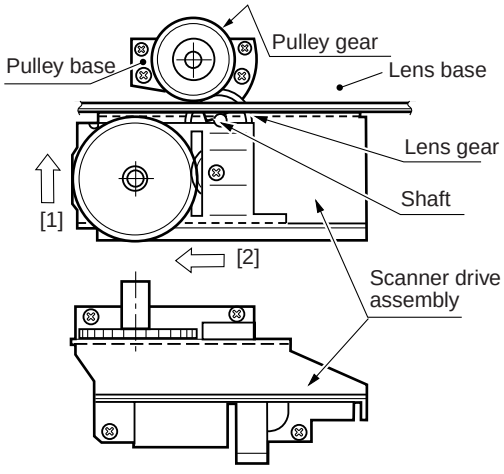


Figure 2-17

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

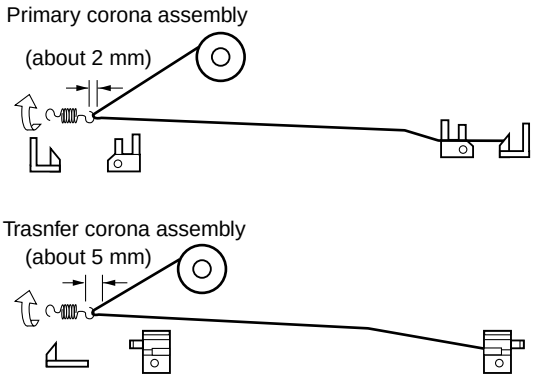


Figure 2-18

- 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.

13. Adjusting Height of the Corona Wires

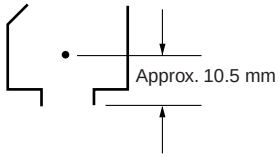
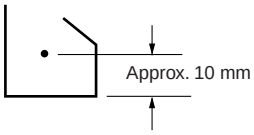
Corona assembly	Standard position	Allowable range
Primary corona assembly		±2 mm
Transfer corona assembly		±2 mm

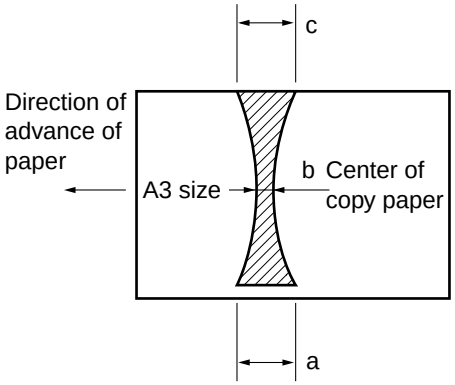
Figure 2-19

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.

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

The nip width should conform to the dimension shown in Table 2-1. 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 2-20

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 2-1

■ 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.

15. 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).

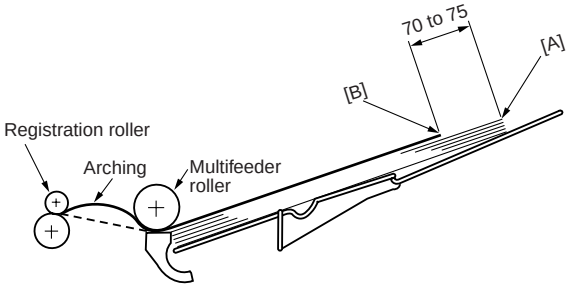


Figure 2-21

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 0.25mm).

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

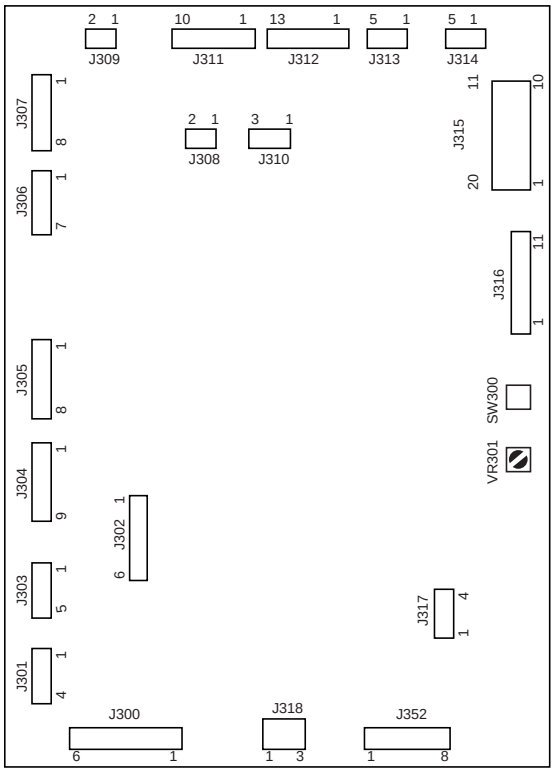


Figure 2-22

VR No	Purpose
VR301	Adjusting AE refence point

Table 2-2

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

Table 2-3

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:

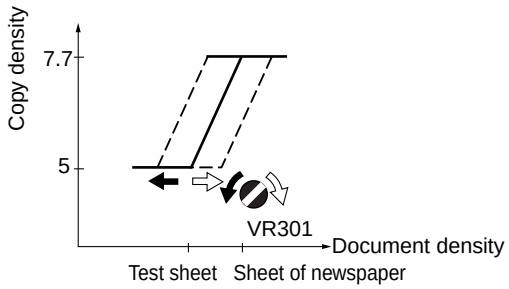


Figure 2-23

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.

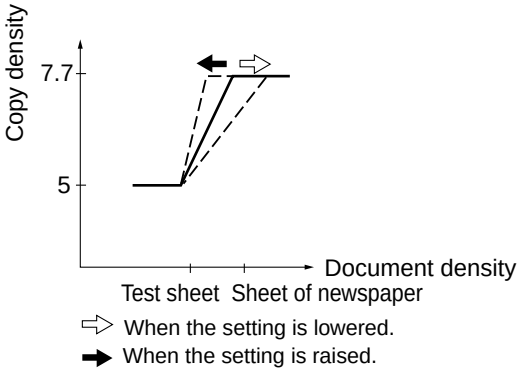


Figure 2-24

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 then 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 then 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).

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 black 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	

Table 2-4

CHAPTER 3 FUNCTION AND ARRANGEMENT OF THE ELECTRICAL PARTS

A. SENSORS, FUSES AND LAMPS

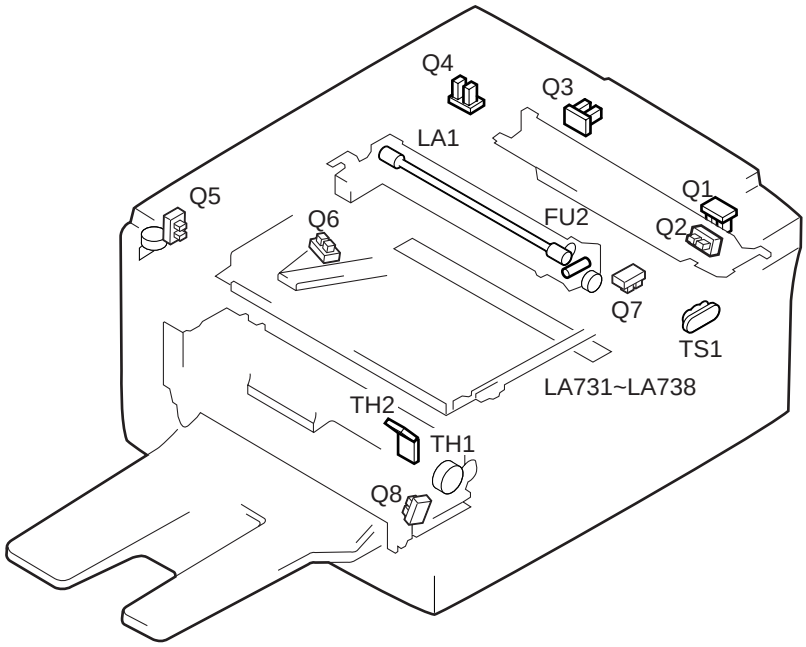


Figure 3-1

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

B. CLUTCHES, SOLENOIDS, FANS, MOTORS AND HEATERS

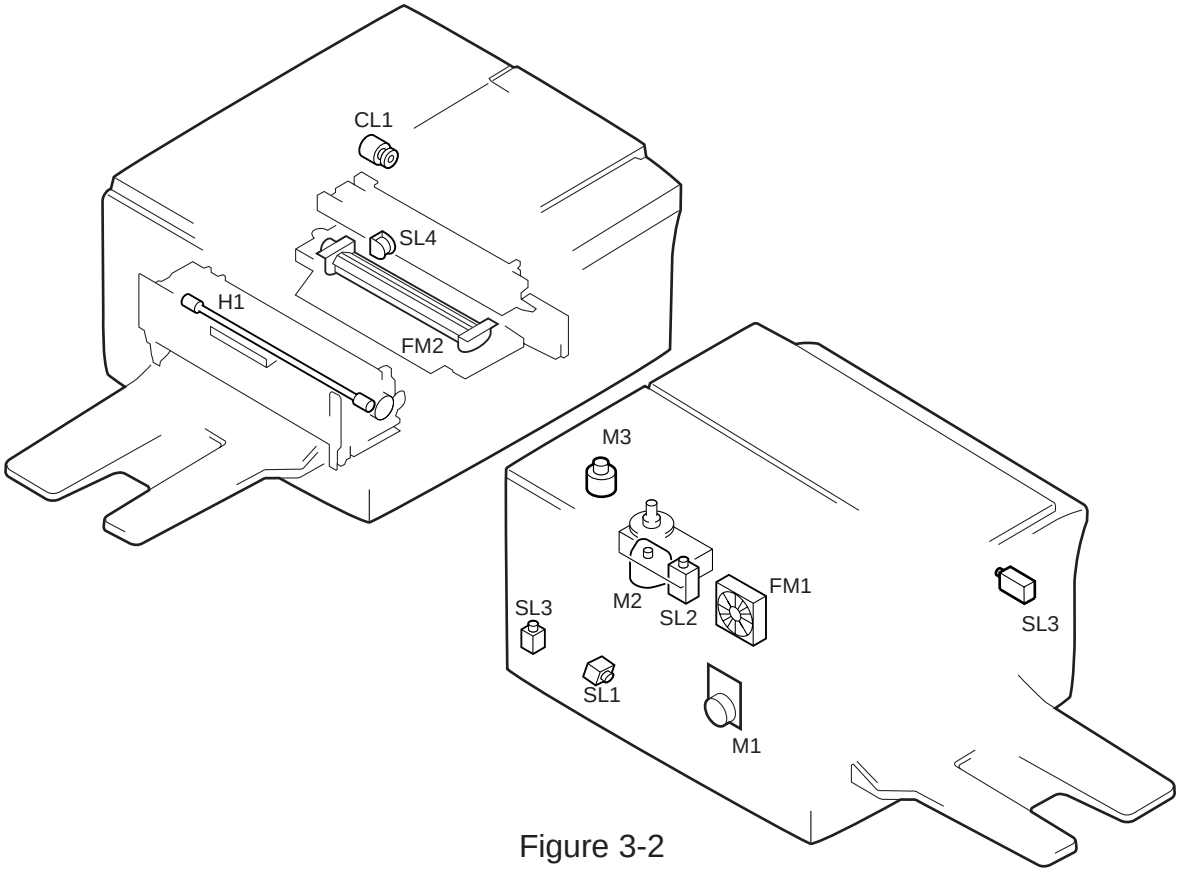


Figure 3-2

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.

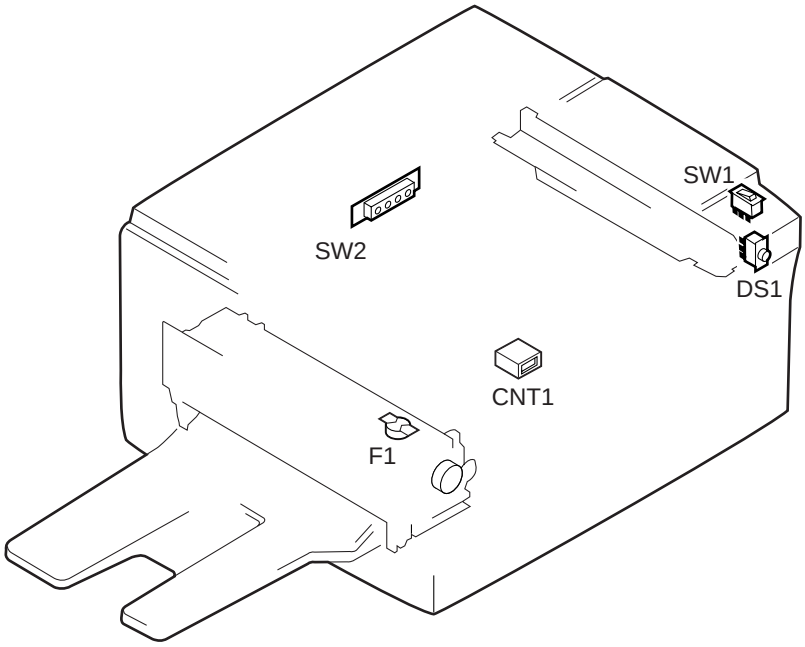


Figure 3-3

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

D. PCBS.

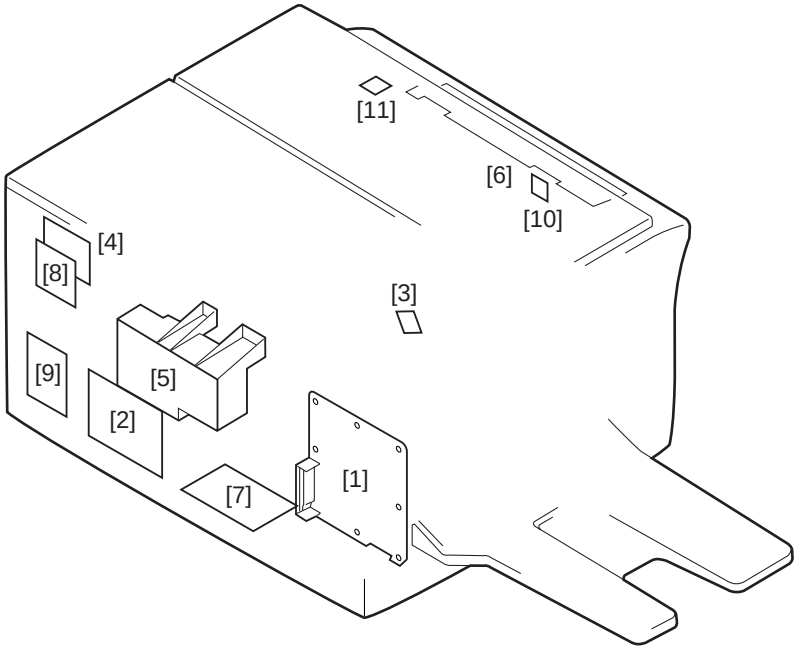


Figure 3-4

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	Indicates power on

CHAPTER 4 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

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.

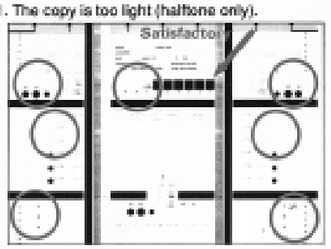
Note:

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.

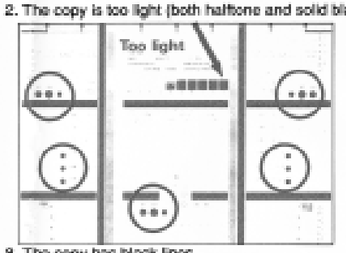
B. Image Fault Samples

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.

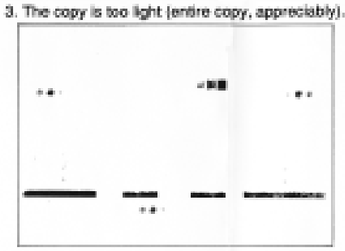
1. The copy is too light (halftone only).



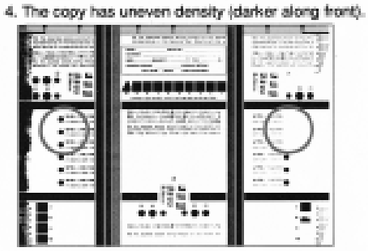
2. The copy is too light (both halftone and solid black).



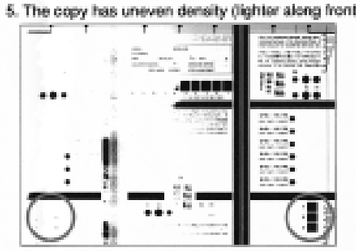
3. The copy is too light (entire copy, appreciably).



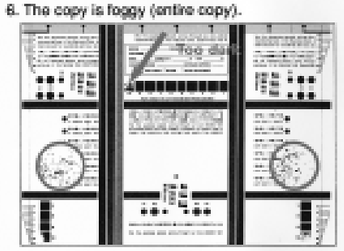
4. The copy has uneven density (darker along front).



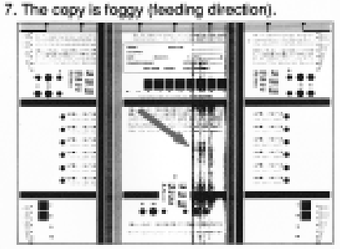
5. The copy has uneven density (lighter along front).



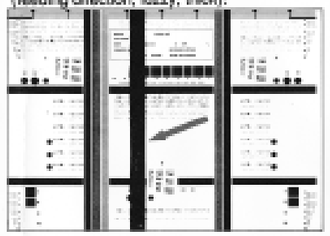
6. The copy is foggy (entire copy).



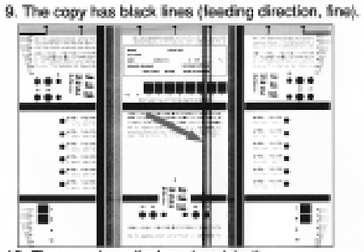
7. The copy is foggy (feeding direction).



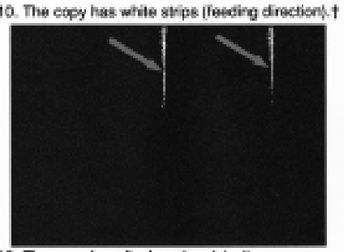
8. The copy has black lines (feeding direction, fuzzy, thick).



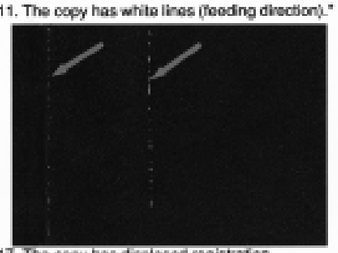
9. The copy has black lines (feeding direction, fine).



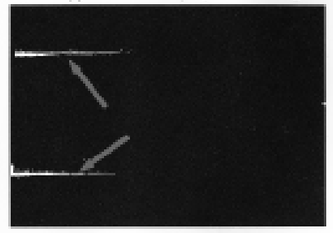
10. The copy has white strips (feeding direction).†



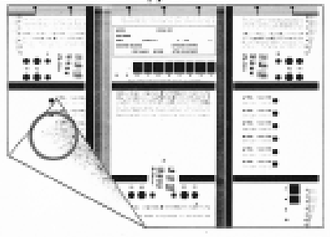
11. The copy has white lines (feeding direction).*



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



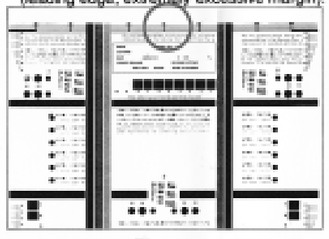
13. The back of the copy is soiled.



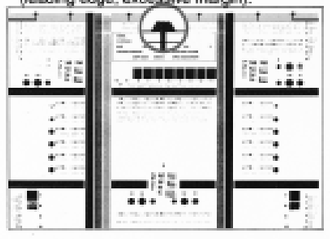
14. The copy has poor fixing.



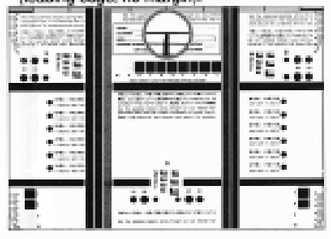
15. The copy has displaced registration (leading edge, extremely excessive margin).



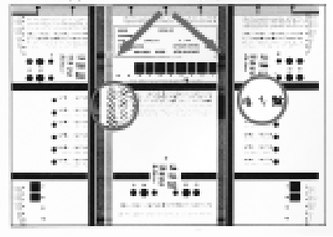
16. The copy has displaced registration (leading edge, excessive margin).



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



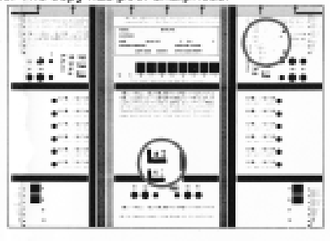
18. The copy has blurred images.



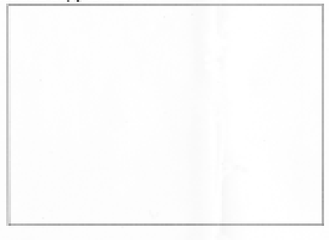
19. The copy is foggy (cross-feeding direction).



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.

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.

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.

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.

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.

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.

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.

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).

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.

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.

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.

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 and the service mode C7, C8, C10 and C11.
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).

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."

CHAPTER 5 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.

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.

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.

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.

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.

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.

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>

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.

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.

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.

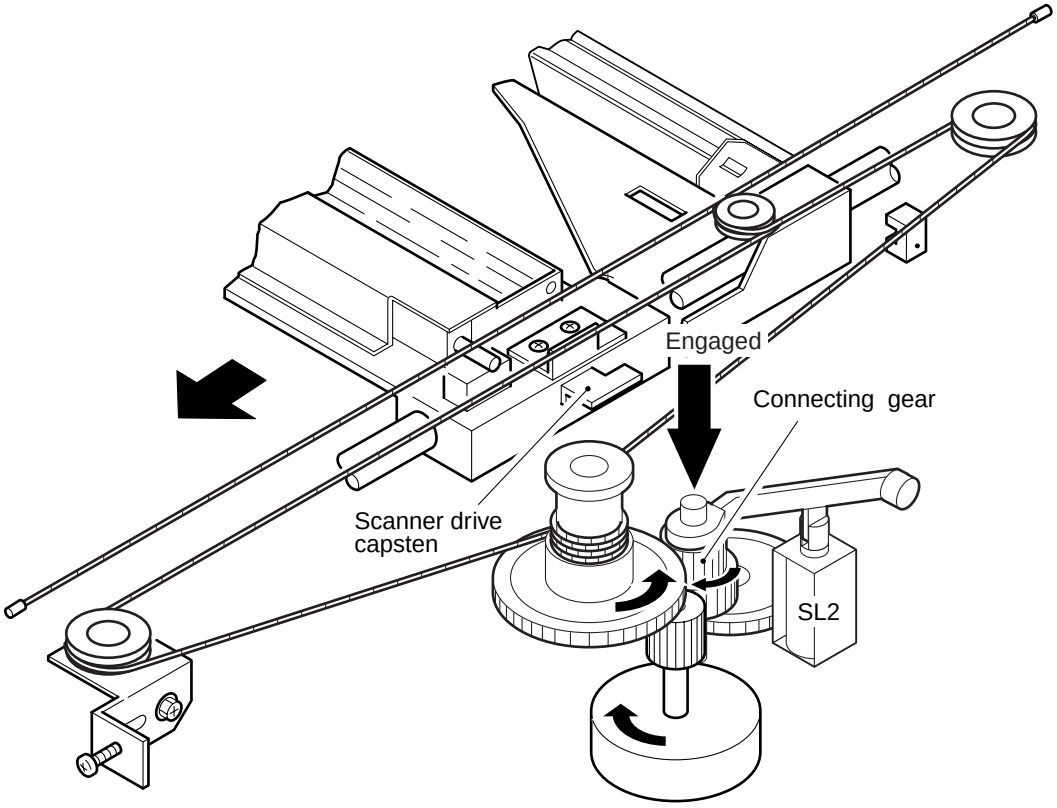


Figure 5-1

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.

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.

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. 2-18.)	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. 2-18.)	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.

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. 2-18.) • 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. 2-18.) • 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.

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 "$\Omega \times 1$" 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.

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 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.

CHAPTER 6 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.

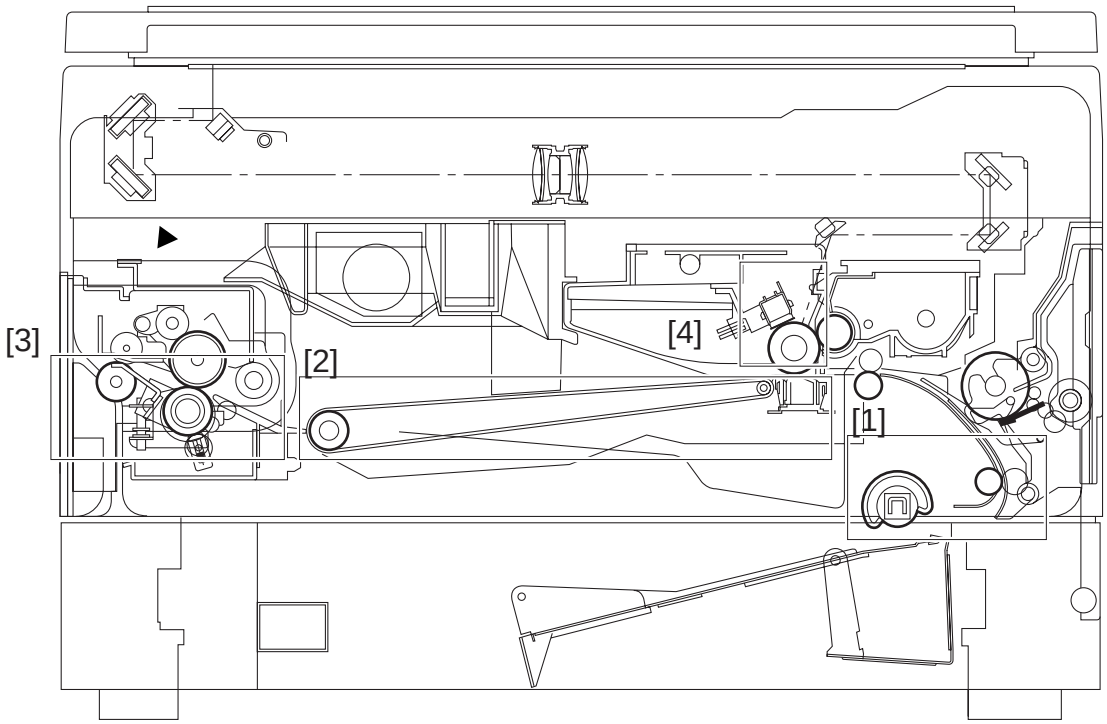


Figure 6-1

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.

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.

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.
Static charge eliminator, high-voltage transformer	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.
			No	Check if voltage is being supplied to the static charge eliminator.

B. 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.

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).

CHAPTER 7 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. 2-13)."

<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.

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 7-2.
C13	Nip area cycle starting.	—	—	Fixing nip	For checkimg 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 7-3.
C24	Lamp brightness 50% adjusting.	100 to 185	124		For adjusting exposure lamp (LA1).
C25	Lamp brightness 200% adjusting.	100 to 185	145		For adjust the exposure lamp (LA1).

Table 7-1

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

Table 7-2

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

Table 7-3

CHAPTER 8 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 quenerated continuously for 0.1 sec or more when the counter is not being driven.

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.

Note:

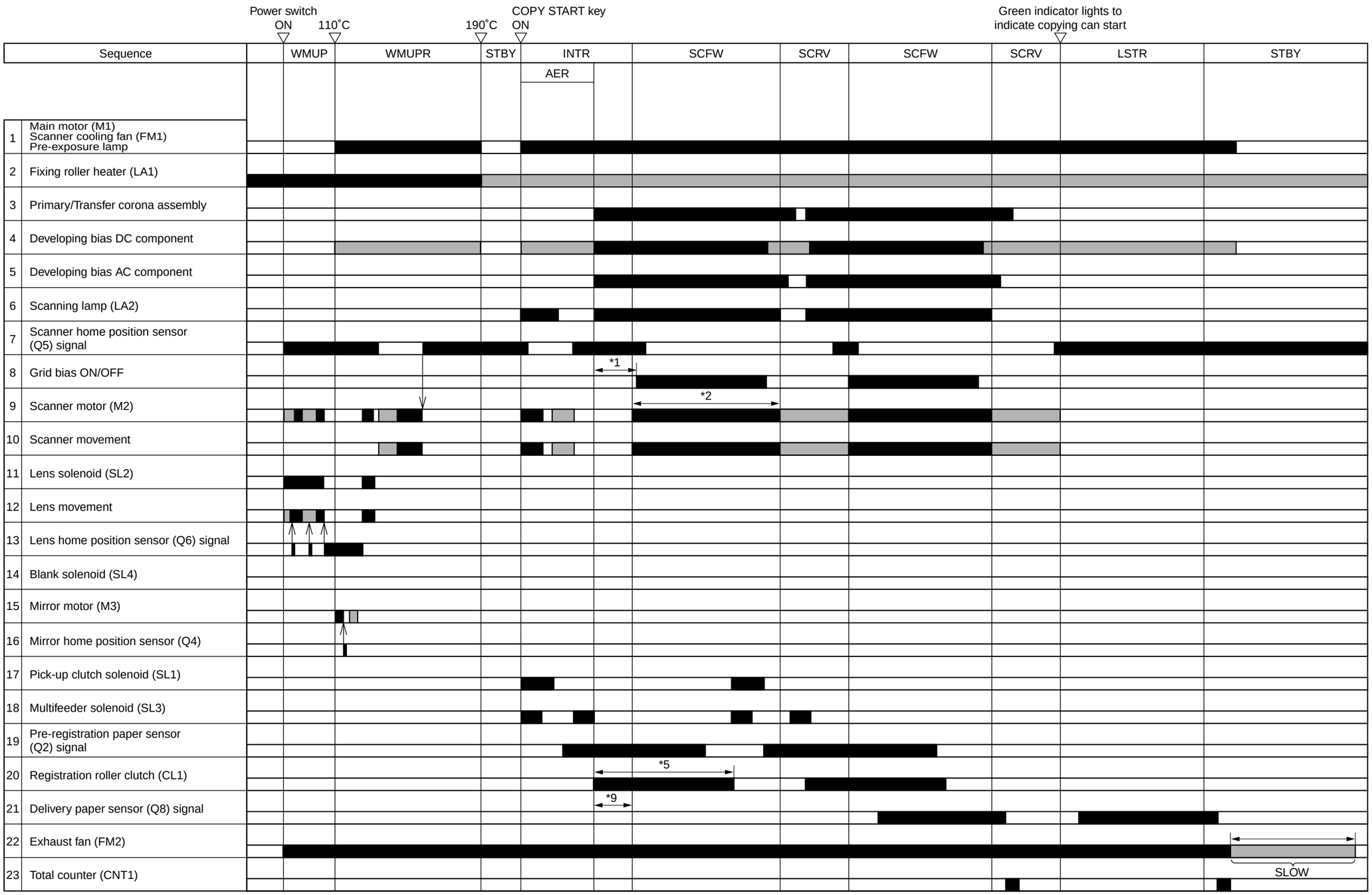
After self diagnosis has been executed, the copier may be reset by switching if OFF and then ON unless 'E000', 'E001', 'E002', 'E003' or 'E004' is indicated on the display.

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.

APPENDIX
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.

<MULTI FEED>

(A4, 2 copies, multifeed)

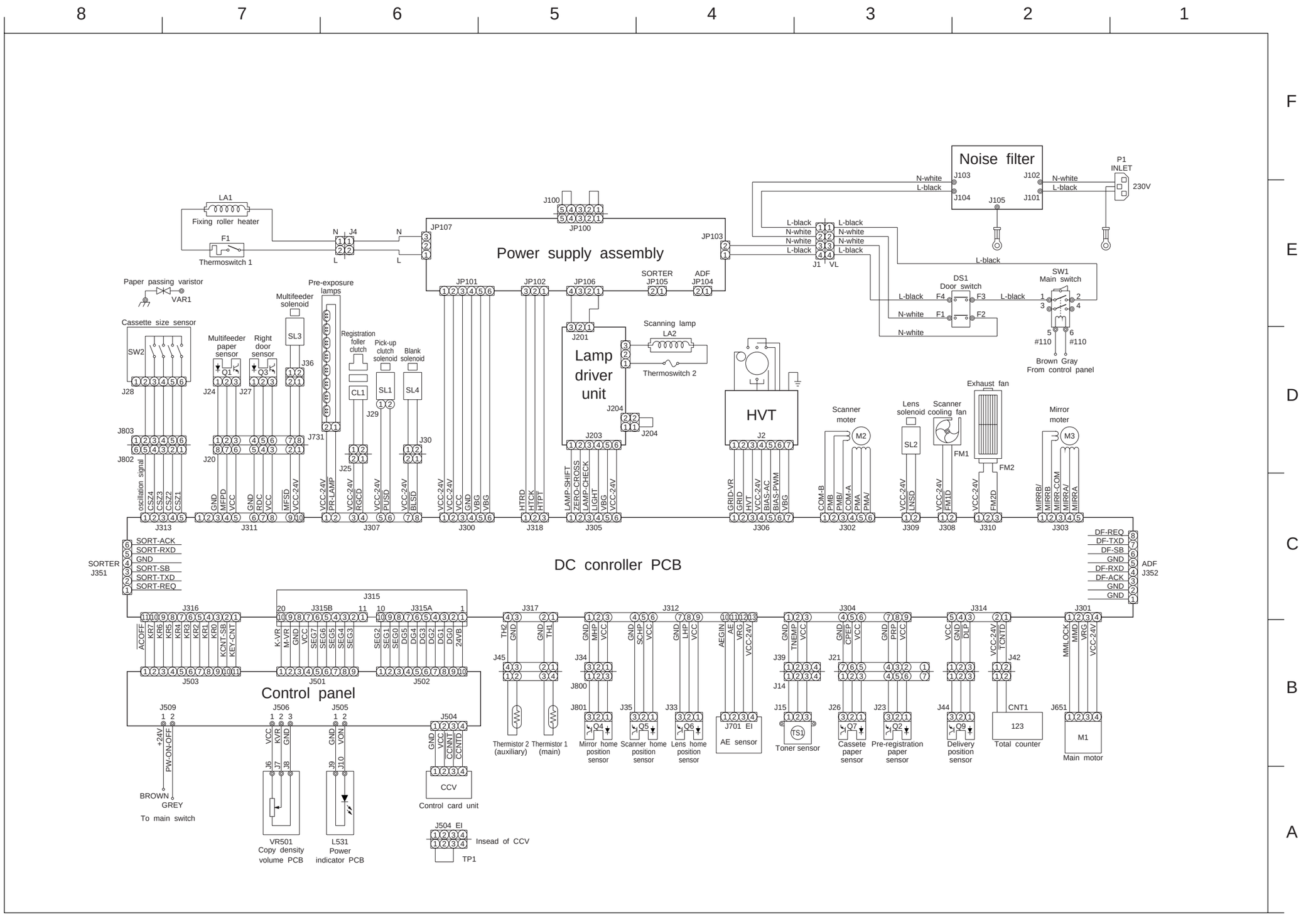


B. LIST OF SIGNALS/ABBREVIATIONS

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


8
7
6
5
4
3
2
1
F
E
D
C
B
A
Noise filter
P1
INLET
230V
N-white
L-black
J103
J104
J105
J102
J101
LA1
Fixing roller heater
F1
Thermoswitch 1
N
J4
L
J100
JP100
JP107
Power supply assembly
JP103
JP101
JP102
JP106
SORTER
JP105
ADF
JP104
J1
VL
DS1
Door switch
F4
F3
F1
F2
SW1
Main switch
#110
Brown Gray
From control panel
Paper passing varistor
VAR1
Cassette size sensor
SW2
J28
Multifeeder
paper
sensor
Right
door
sensor
J24
J27
Multifeeder
solenoid
SL3
J36
Pre-exposure
lamps
Registration
foller
clutch
CL1
Pick-up
clutch
solenoid
SL1
Blank
solenoid
SL4
J29
J30
J25
J731
J803
J802
J20
J201
Lamp
driver
unit
Scanning lamp
LA2
Thermoswitch 2
J204
HVT
J2
Exhaust fan
FM1
FM2
Scanner
moter
M2
Lens
solenoid
SL2
Scanner
cooling fan
Mirror
moter
M3
oscillation signal
CSZ4
CSZ3
CSZ2
CSZ1
GND
MFPD
VCC
RDC
MFSD
VCC-24V
PR-LAMP
RGCD
PUSD
BLSD
HTRD
HTCK
HTPT
LAMP-SHIFT
ZERO-CROSS
LAMP-CHECK
LIGHT
VBG
GRID-VR
GRID
HVT
BIAS-AC
BIAS-PWM
COM-B
PMB
PMB/
COM-A
PMA
PMA/
LNSD
FM1D
FM2D
MIRRB/
MIRRB
MIRR-COM
MIRRA/
MIRRA
J313
J311
J307
J300
J318
J305
J306
J302
J309
J308
J310
J303
SORTER
J351
SORT-ACK
SORT-RXD
GND
SORT-SB
SORT-TXD
SORT-REQ
DC conroller PCB
ADF
J352
DF-REQ
DF-TXD
DF-SB
DF-RXD
DF-ACK
J315
J316
J315B
J315A
J317
J312
J304
J314
J301
ACOFF
KRF
KR6
KR5
KR4
KR3
KR2
KR1
KR0
KCNT-SB
KEY-CNT
K-VR
M-VR
SEG7
SEG6
SEG5
SEG4
SEG3
SEG2
SEG1
SEG0
DG5
DG4
DG3
DG2
DG1
DG0
24VB
TH2
TH1
MHP
SCHP
LHP
AEGIN
AE
VRG
TNEMP
CPEP
PRP
DLP
CNTD
MMLOCK
MMD
J503
J501
J502
J45
J34
J800
J801
J35
J33
J39
J14
J15
J21
J26
J23
J42
J44
J651
CNT1
Control panel
J509
J506
J505
J504
+24V
PW-ON-OFF
BROWN
GREY
To main switch
VCC
KVR
GND
J6
J7
J8
VR501
Copy density
volume PCB
GND
VON
J9
J10
L531
Power
indicator PCB
CCV
CONNT
CCNTD
Control card unit
J504 EI
Insead of CCV
TP1
Thermistor 2
(auxiliary)
Thermistor 1
(main)
Mirror home
position
sensor
Scanner home
position
sensor
Lens home
position
sensor
J701 EI
AE sensor
Toner sensor
Cassete
paper
sensor
Pre-registration
paper
sensor
Delivery
position
sensor
Total counter
Main motor
Q4
Q5
Q6
Q7
Q2
Q9
TS1
123
M1

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)

E. SPECIFICATIONS

1. Type

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

2. 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)

3. 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.

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

4. 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.	

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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