GP215/GP200

SERVICE HANDBOOK

REVISION 0

Canon

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Prepared by

OFFICE IMAGING PRODUCTS TECHNICAL SUPPORT DEPARTMENT 1
OFFICE IMAGING PRODUCTS TECHNICAL SUPPORT DIVISION

CANON INC.

30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo 146 Japan

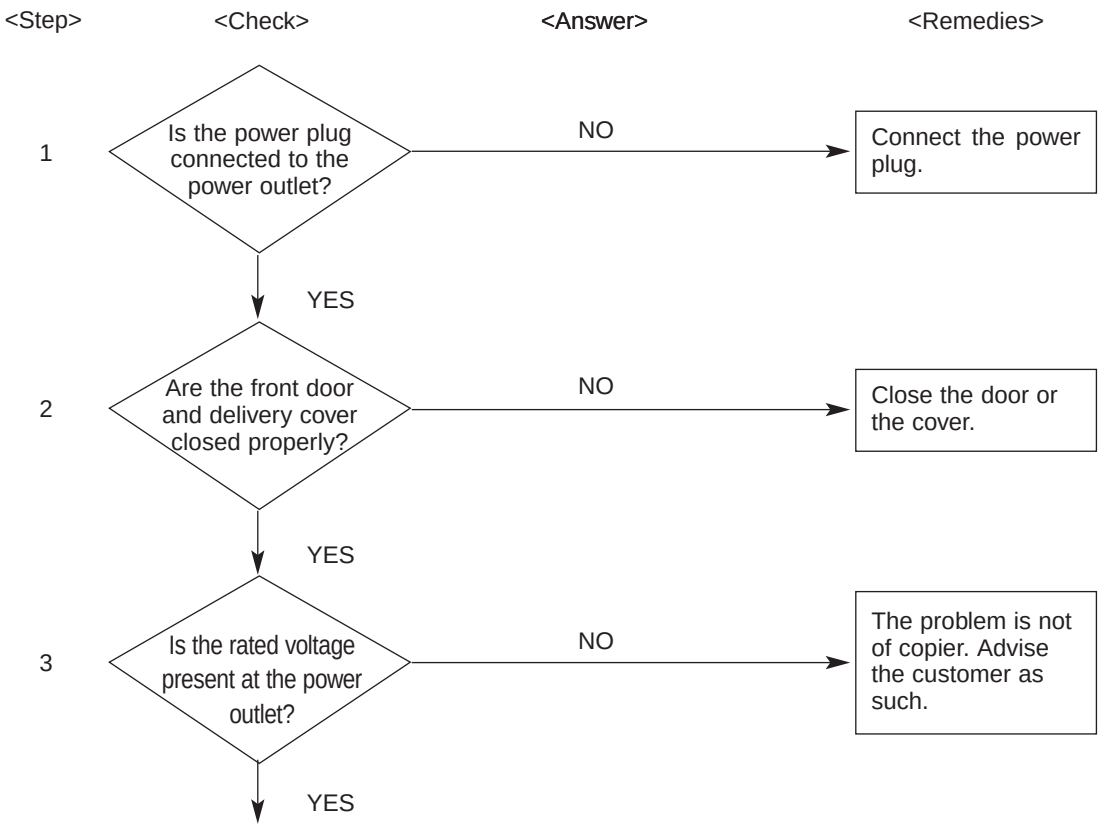
Guide To Tables

In this Handbook, work procedures are given in the form of tables instead of flow charts used generally. Familiarize yourself by studying the example below.

EX. AC power is absent.

Cause/Fault	Step	Check	Answer	Remedies
Power plug	1	Is the power plug connected to the power outlet?	NO	Connect the power plug
Covers	2	Are the front door and delivery cover closed properly?	NO	Close the door or the cover
Power source	3	Is the rated voltage present at the power outlet?	NO	The problem is not of the copier. Advise the customer as such.
	4	Is the rated voltage present between J1-1 and -2 (near cord plate)?	YES	Go to step 6.

- To find out the cause (problem part) of a single problem, refer to the item under “Cause/Fault.” For “AC power is absent,” the cause may be the power plug, covers, power source, or others.
- To find out the checks to make or remedies to provide for a single problem, refer to the “Checks” and “Remedies”; make checks, answer to the questions YES or NO, and provide remedies accordingly. If the answer is otherwise, proceed to the next step.



- Checks on the voltage using a meter call for special note; the description “Check the voltage between J109-1 (+) and J109-2 (–) on the DC controller PCB” means that the positive probe of the meter should be placed on J109-1 (+) and the negative probe, on J109-2 (–).

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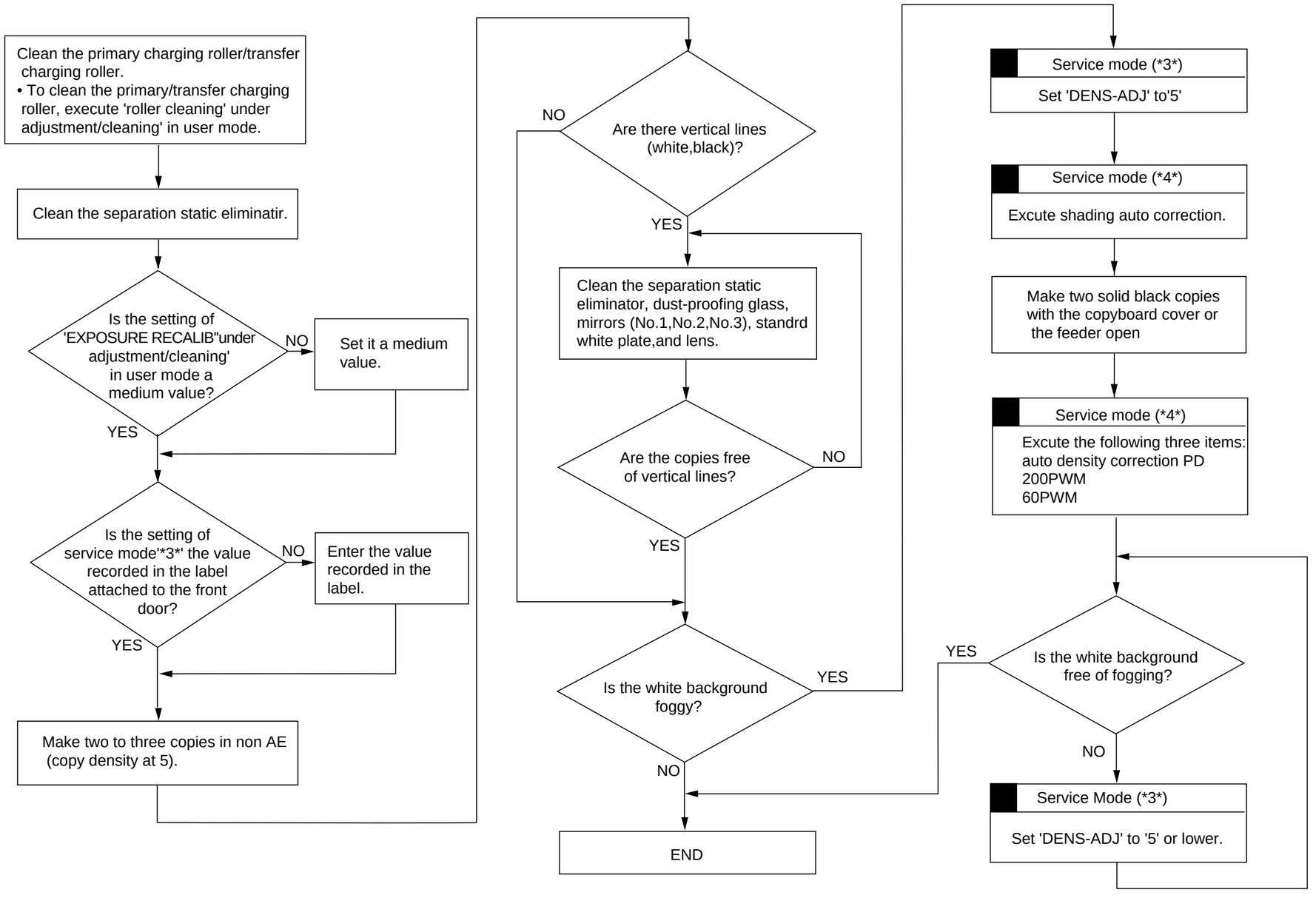
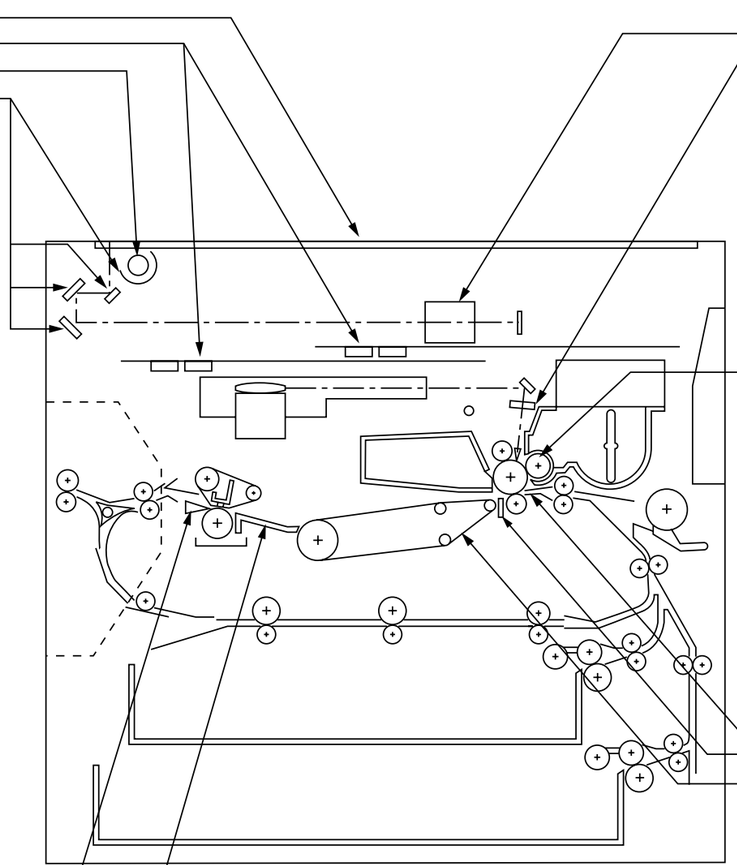
A. Image Basic Adjustment Procedure



B. Points to Note for Scheduled Servicing

Part	Tools/solvents	Work/remarks
Copyboard glass	Alcohol	Cleaning
Original saize sensor	Blower brush	Cleaning
Scanning lamp	Lint-free paper	Dry wiping
Reflecting plate No.1 through No.3 mirrors	Blower brush	As necessary, dry wiping with lint-free paper



Optical assembly

Part	Tools/solvent	Work/remarks
Lens	Blower brush	Cleaning
Dust-proofing glass	Blower brush	Cleaning

Developing assembly

Part	Tools/solvent	Work/remarks
Developing roll	Alcohol	Cleaning

Transfer/feeding assembly

Part	Tools/solvent	Work/remarks
Transfer guide	Moist cloth*	Cleaning
Static eliminator	Special brush	Cleaning
Feeding assembly base/feeding belt	Moist cloth*	Cleaning

*Make sure no droplet of water remains. Do not turn on the power until the part is completely dry.

Fixing assembly/delivery assembly

Part	Tools/solvent	Work/remarks
Separation claw	Solvent	Cleaning
Inlet guide	Solvent	Cleaning

CHAPTER 2 STANDARDS AND ADJUSTMENTS

A. Mechanical

1	Image Leading Edge Margin (REGIST; registration roller ON timing)

Select 'REGIST' (4th screen) in service mode (*3*; ADJUST) and adjust so that the image leading edge margin is 2.5 ±1.5 mm in Direct.

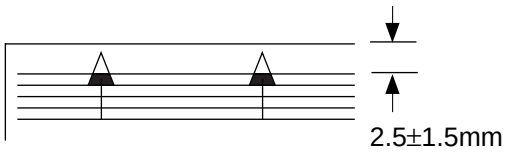


Figure 2-201

2	Left/Right Registration (front)

a. Pick-Up from the Cassette

Check to make sure that the margin on the front side is 2.5 ±1.5 mm when paper is picked up from each cassette.

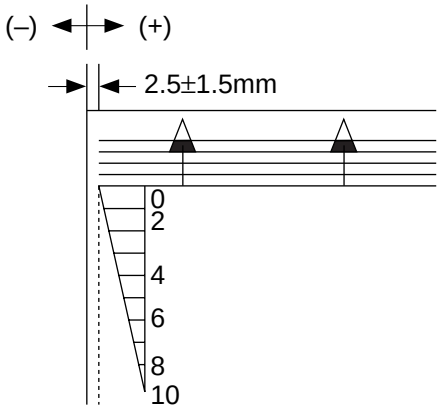
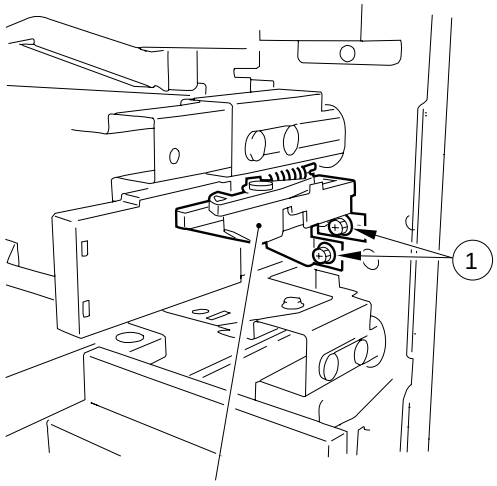


Figure 2-202

Otherwise, perform the following:

1) Slide out the cassette to be adjusted.
2) Remove the two screws ①, and remove the horizontal registration adjustment assembly.



Horizontal registration adjustment assembly

Figure 2-203

3) Loosen the hex screw, and slide the horizontal registration plate toward the rear to adjust.

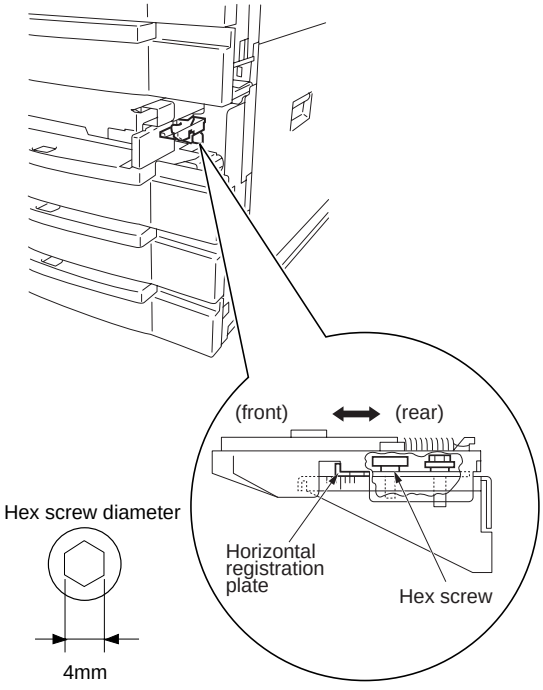


Figure 2-204

Caution:
To adjust, try so that the L-shaped notch on the inside of the horizontal plate and the appropriate scale notch match.

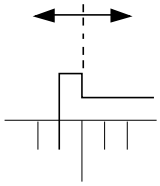


Figure 2-205

b. Pick-Up from the Multifeeder

Loosen the screw and move the tray position so that it is 2.5 ±1.5 mm in Direct.

3 Left/Right Registration (rear/front) on the 2nd Side of Two-Sided/Overlay Copies

Check to make sure that the printing position of the image on the second side of a two-sided/overlay copy is 2.5 ±2.0 mm.

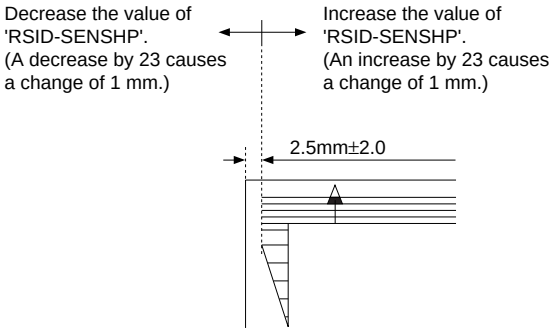


Figure 2-206

If the value is not as specified, select 'RSID-SENSHP' (4th screen) in service mode (*3*; ADJUST), and make adjustments.

- An increase by '23' of 'RSID-SENSHP' will shift the image print position to the rear by 1 mm.
  A decrease by '23', on the other hand, will shift the position to the front by 1 mm.

4 Routing the Scanner Drive Cable

Route the cable in the order indicated (① through ⑨), and adjust the mirror position as shown on the following page.

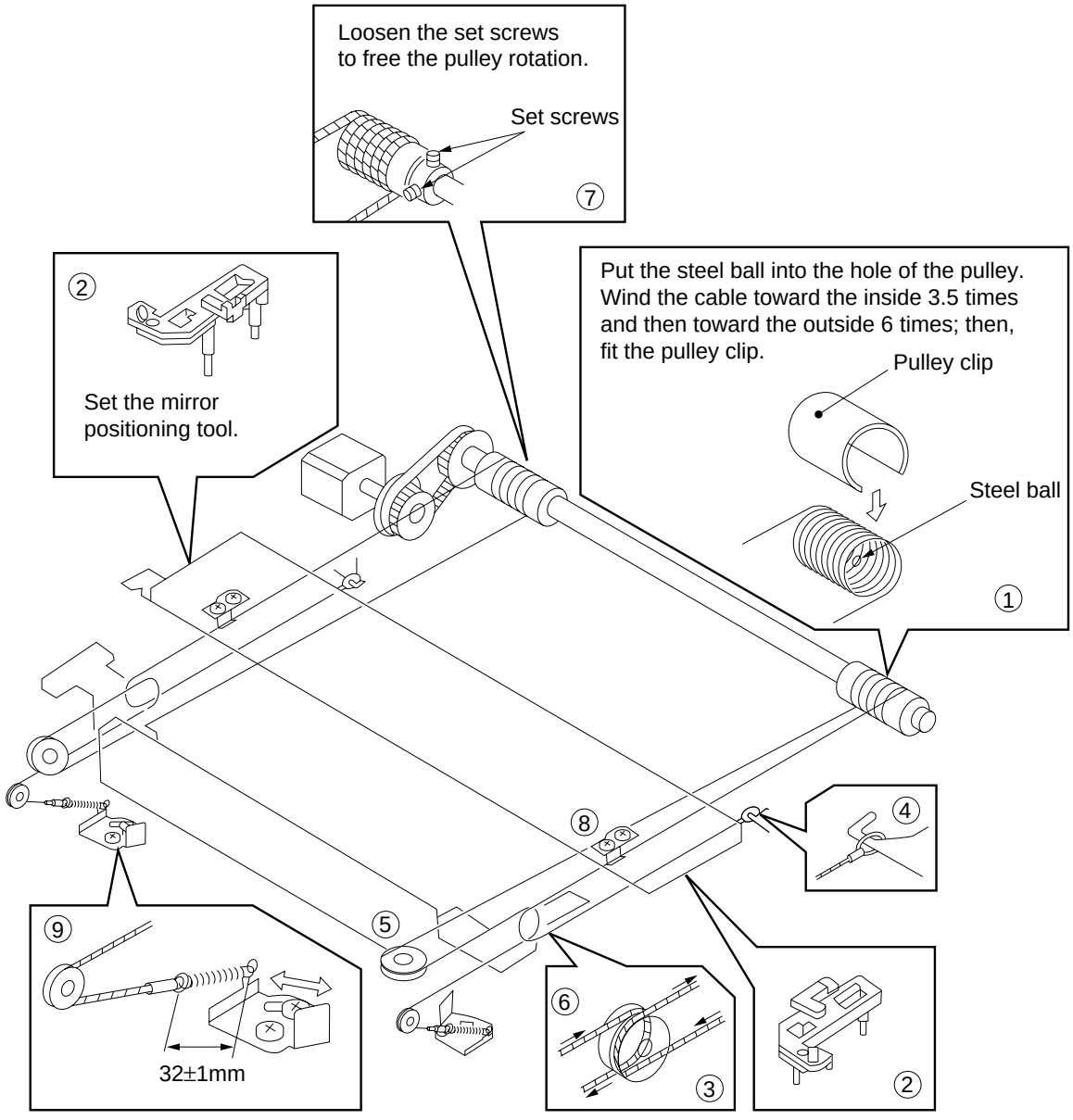
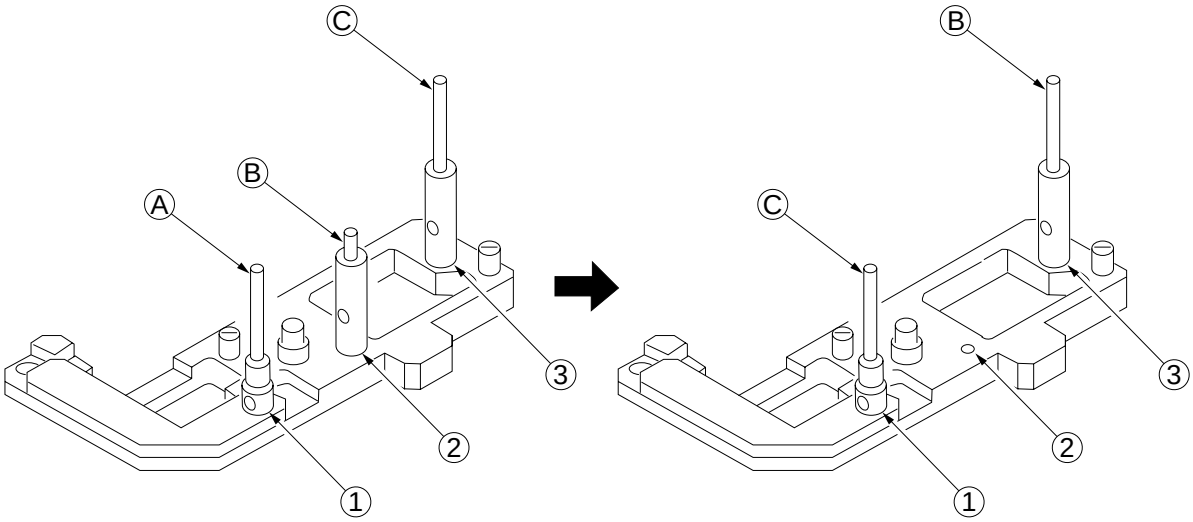


Figure 2-207

5 Adjusting the Mirror Position (optical length between No. 1 and No. 2/No. 3 mirrors)

Caution:

Use the mirror positioning tool FY9-3009-040. Use it after relocating the pins.



Initial pin positions (FY9-3009-040) Pin positions adapted to GP215/GP200

Figure 2-208

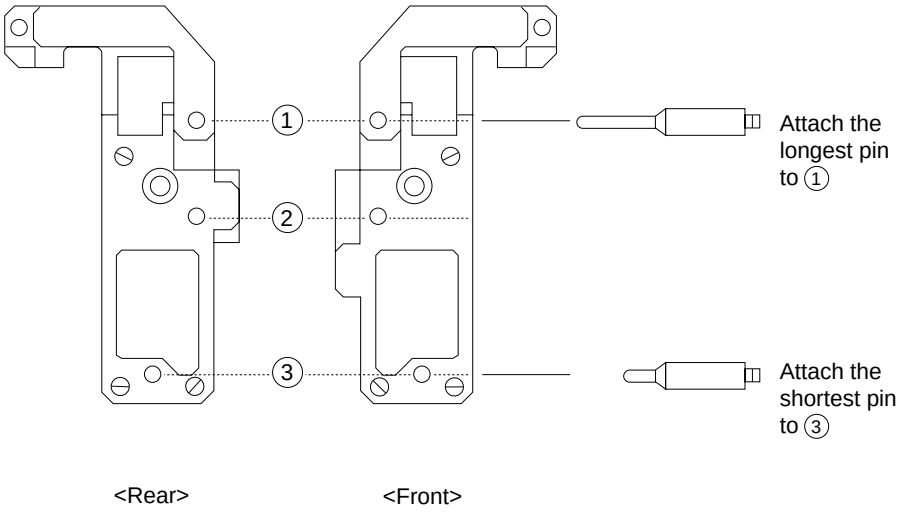


Figure 2-208-1

Note:

The pinⒶ of the mirror positioning tool (FY9-3009-040) will not be used for the machine.

1) Loosen the metal fixing of the scanner cable by turning the screw.
2) Set the mirror positioning tool (adapted as shown) to the No. 1 mirror mount and the No. 2 mirror mount.

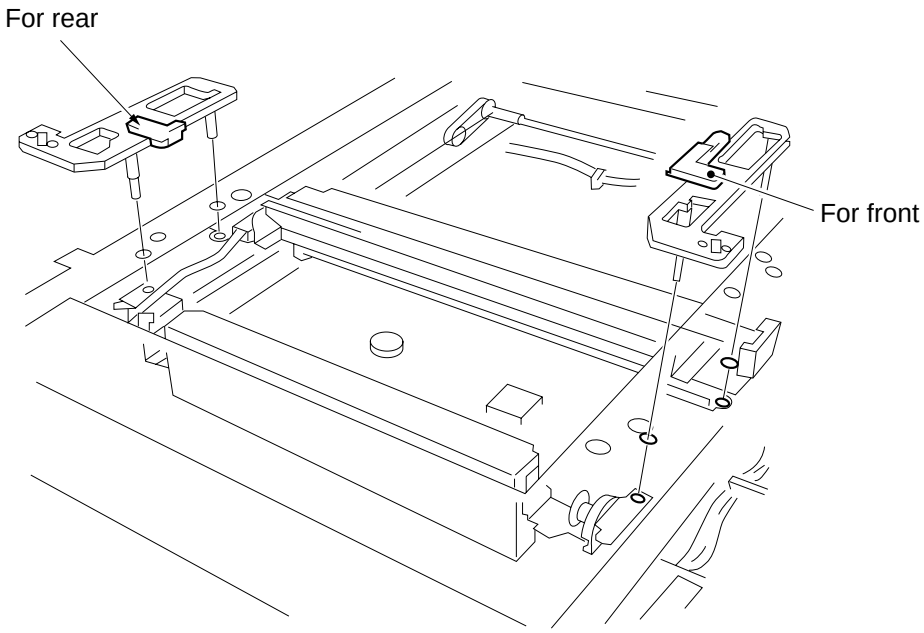


Figure 2-209

3) Install the metal fixing of the scanner cable to the No. 1 mirror mount with a screw.
4) Remove the mirror positioning tool.

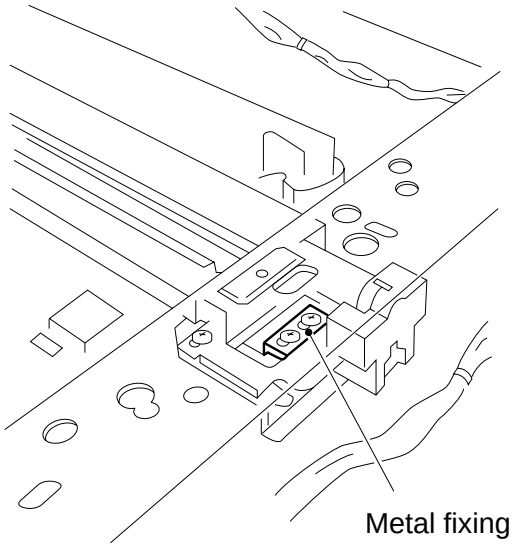


Figure 2-210

6 Installing the Scanning Lamp

Install the scanning lamp with the following in mind:

1. Make sure that the side with the manufacturer's name is toward the rear of the machine.
2. Make sure that the transparent side of the lamp faces the reflecting plate.
3. Do not touch the transparent surface.

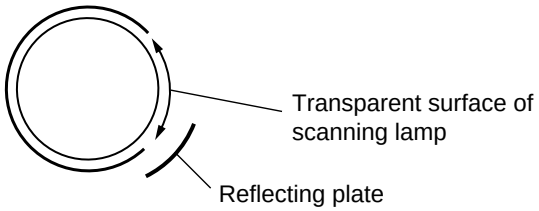


Figure 2-211

7 Positioning the Multifeeder Paper Guide Cam

Adjust so that the paper guide plate cam is as shown when the solenoid plate is in contact with the claw of the control ring.

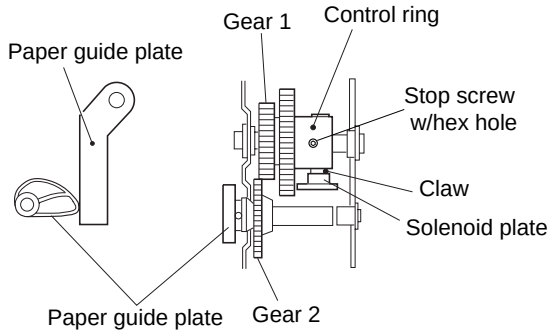


Figure 2-212

8 Attaching the Timing Belt of the Multifeeder Assembly

1) Butt the side plate of the multifeeder against both ends (section A; open condition).
2) Move the slide volume to the center (in the direction of B), and attach the timing belt to the pulley.

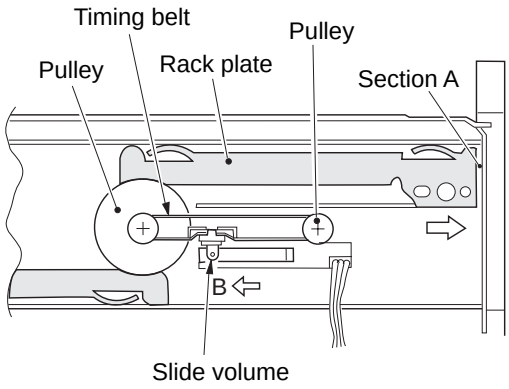


Figure 2-213

9 Installation of the Multifeeder Pick-Up Roller

Install the multifeeder pick-up roller ① so that the side with a cross ② on the collar is toward the rear.

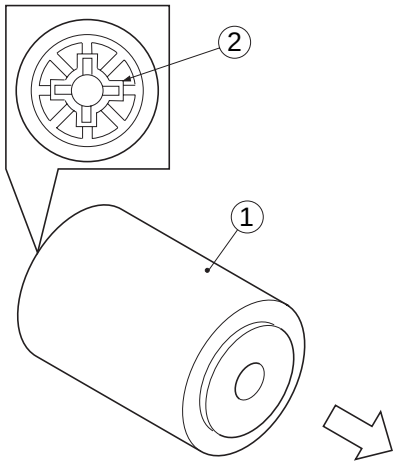


Figure 2-214

10 Positioning the Delivery Assembly Paper Deflecting Plate Solenoid (SL5)

1) Remove the delivery assembly.
2) Place the delivery assembly upright on a level surface.
3) Push in the steel core of the paper deflecting plate 1 solenoid (SL5) until it stops.
4) Loosen the adjusting screw to adjust so that the distance between the steel core E-ring of SL5 and the solenoid frame is about 0.2 mm.
5) Install the delivery assembly to end the work.

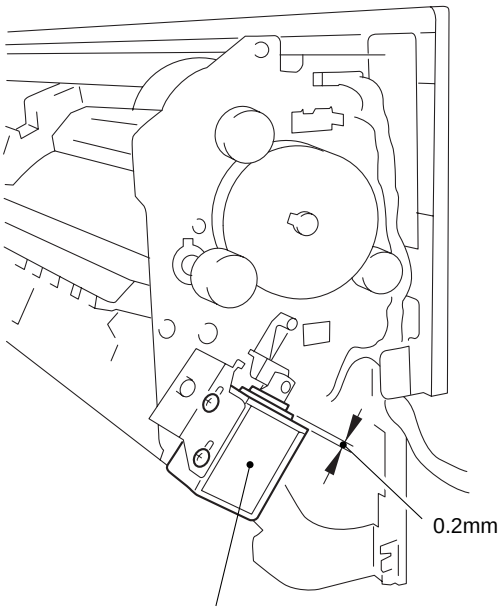


Figure 2-215

11 When Replacing the Drum Unit

When replacing the drum unit, record the date and the latest counter reading in the label shown, and attach the label to the front cover of the new drum unit.

date date Datum	counter compteur Zähler	notes note Notiz

12 Positioning the Developing Assembly Magnetic Seal

To install the magnetic seal, butt it against the opening assembly.

Check to make sure that the magnetic seal and the housing are in firm contact.

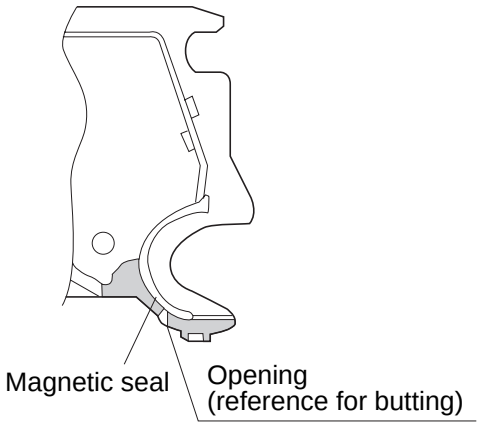


Figure 2-216

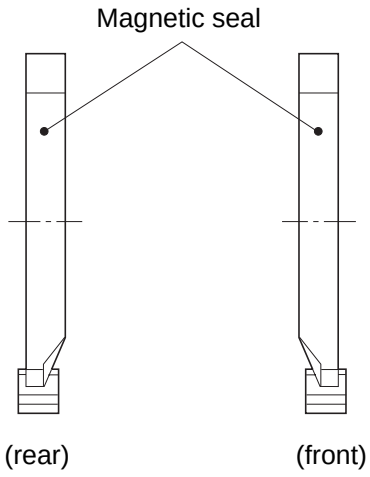


Figure 2-217

13 Installing the Developing Assembly Blade

The blade is adjusted at the factory to ensure high accuracy when the blade and the blade mount are assembled.

Do not separate the blade from its mount.

If you must replace the blade on its own, use a gap gauge (CK-0057-000) and adjust so that the gap between the blade and the developing cylinder is 0.21 ±0.03 mm.

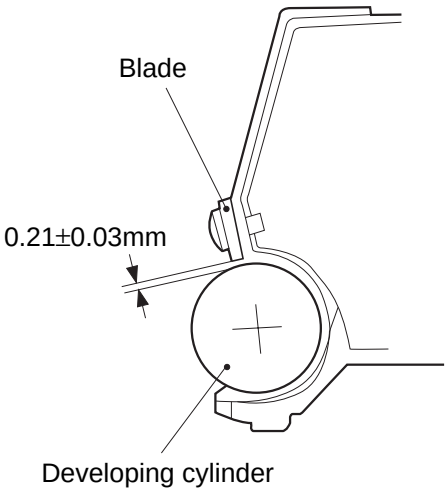


Figure 2-218

The surface of the developing cylinder is highly susceptible to scratches. Be sure to insert the gap gauge into both ends of the developing cylinder.

14 Positioning the Primary Roller Cleaning Solenoid (SL1)

Adjust so that the section shown of the primary roller cleaning solenoid (SL1) is 4.0 ±0.2 mm.

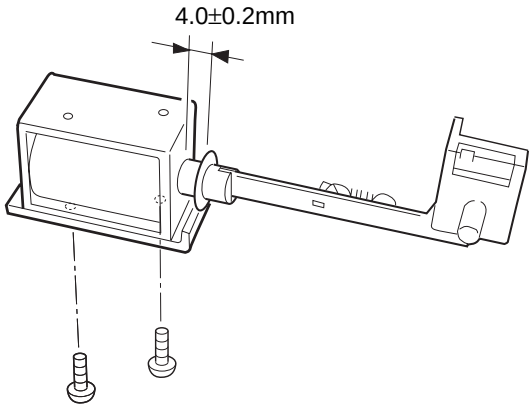


Figure 2-219

B. Electrical System

1 When Replacing major Parts

Item	Service mode	Steps
Before replacing the image processor PCB	*4* PRM_PRNT (effective only if equipped with fax function)	1) Print out all registration data (one-touch dialing, speed dialing, user data list, etc.; effective only if equipped with fax functions). 2) If the machine is equipped with fax functions, execute 'PRM_PRNT' (*4*), and take notes of the settings in user mode and others. • Executing the mode will print out the settings/values under 'ADJUST' (*3*), 'OPTOIN' (*6*), and 'COUNTER' (*6*). If the machine is not equipped with fax functions, you cannot execute 'PRM_PRNT' (*4*).
After replacing the image processor PCB	*4* RAM Clear *3* (Enter the value recorded on the label.) • Service label attached to the front door • Label attached to the image processor PCB • Label attached to the copier power supply PCB *4* Shading auto correction *4* PD density auto correction *4* 200PWM density auto correction *4* 600PWM density auto correction	1) Replace the image processor PCB. 2) Execute 'RAM clear' in service mode (*4*). 3) Start service mode (*3*), and enter the value recorded on the service label. 4) Enter the values recorded on the image processor PCB under the appropriate item (*3*) as follows: • 600PWM MIN • 600PWM MAX • 200PWM MIN • 200PWM MAX 5) Execute 'shading auto correction' in service mode (*4*). 6) Execute 'PD density auto correction', '200PWM density auto correction', and '600PWM density auto correction' in service mode. 7) Enter settings/values under 'OPTION' (*5*) and in user mode.

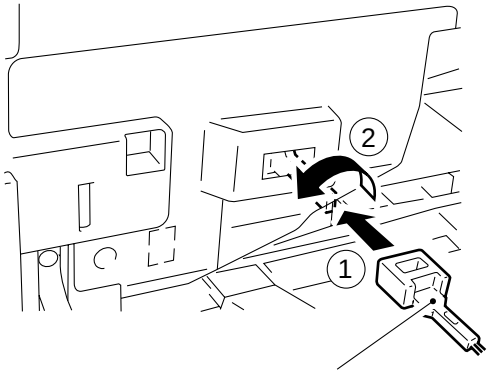
Part	Service mode	Steps
Composite power supply PCB	*3* (Enter the values recorded on the label.) *4* Shading auto correction *4* PD density auto correction *4* 200PWM density auto correction *4* 600PWM density auto correction	1) Enter the values recorded on the label attached to the composite power supply PCB under the appropriate items on the 3rd page in service mode (*3*). 2) Execute 'shading auto correction' in service mode (*4*). 3) Execute 'PD density auto correction' (*4*), '200PWM density auto correction', and '600PWM density auto correction'.
Laser scanner unit		
Laser unit		
CCD unit	*4* Shading auto correction	1) Execute 'shading auto correction' in service mode (*4*).
Analog processor PCB		
Scanning lamp	*4* Factory/R&D shading auto correction	1) Execute 'factory/R&D shading auto correction' in service mode (*4*).
DC controller PCB		
Standard white plate		
Fixing assembly	*3* FIXER-REGST *3* FILM LANK *4* FILM_COMEBACK	1) Enter the values recorded on the label attached to the fixing assembly under 'FIXER-REGST' and 'FILM_LANK' in service mode (*3*). 2) Execute 'FILM COMEBACK' (14th page of 'FUNCTION'). 2-1) Press the 'OK' key on the LCD. 2-2) Check to make sure that 'RUNNING' has ended in 'OK' and the reading of 'LEVEL' is '5' or thereabout. If the operation ended in 'NG', visually check the film for damage, and execute the mode once again. If the operation ended in 'OK', turn off and then on the main power without touching the keys on the control panel.

2 Shading Auto Correction

- There are two types of shading auto correction: for servicing and for factory/R&D. (3rd screen in *4*)
- In shading auto correction, various data items are measured, and the results are stored in RAM on the image processor PCB. (The stored data will be used as target value for shading correction executed before copying operation.)
- Use this mode for the following:
- When replacing the image processor PCB
- After executing 'RAM INIT' in service mode (*4*)
- Before executing 'copy auto density correction' in service mode (*4*)
- After replacing the composite power supply PCB
- After replacing the laser unit
- After replacing the CCD unit
- After replacing the analog processor PCB

■ **Work**

1) Open the front door, and insert the handle of the separation static eliminator cleaning brush into the fixing assembly releasing opening.



Separation static eliminator cleaning brush

Figure 2-220

2) Insert the door switch actuator into the door switch assembly.
3) Push the service switch with a hex key.
   - '$' will be indicated in the upper left corner of the LCD.
4) Press the * key twice.
   - The Service Mode Menu screen will appear.

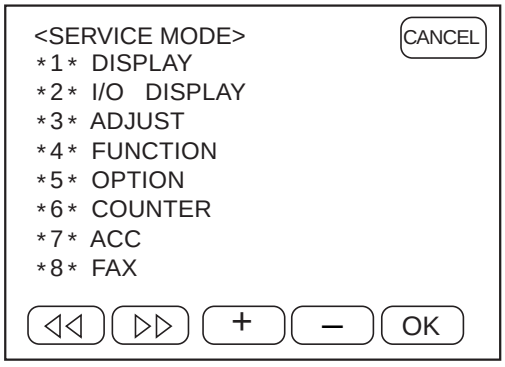


Figure 2-221

5) Press 'FUCNTION' (*4*) on the Menu screen to highlight; then, press the OK key.
6) Press the Page key [▷▷] to bring up the Shading screen (3rd screen).

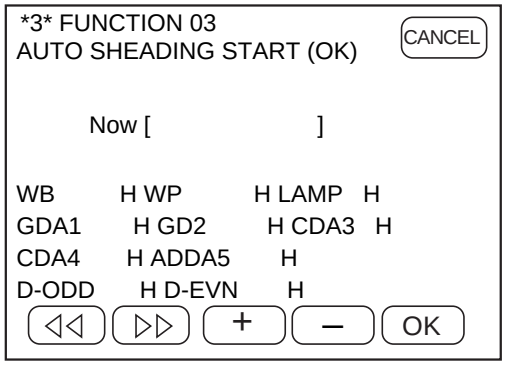


Figure 2-222

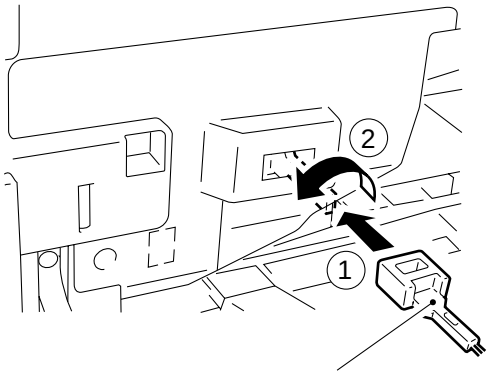
7) Press 'AUTO SHADING' on the LCD to highlight; then, press the OK key.
   - 'shading auto correction' will be executed.
8) In a while, 'Now [END]' will appear on the screen to indicate the end of shading correction.

3 Copy Density Auto Correction

- There are three types of copy density auto correction: execute the three types as a single set. (You must have executed 'shading auto correction' before executing this mode.)
  ① PD density auto correction
  ② 200PWM density auto correction
  ③ 600PWM density auto correction
- This mode is executed to correct the following:
  ① Laser characteristics
  ② Developing bias
- Execute this mode for the following:
- When replacing the laser unit
- When replacing the copier power supply PCB
- When image faults occur
- When replacing the image processor PCB

■ Operation

1) Open the front door, and insert the handle of the separation static eliminator cleaning brush into the fixing assembly releasing opening.



Separation static eliminator cleaning brush

Figure 2-223

2) Insert the door switch tool into the door switch actuator.
3) Press the service switch with a hex key.
   - '$' will appear in the upper left corner of the LCD.
4) Press the * key twice.
   - The Service Mode Menu screen will appear.

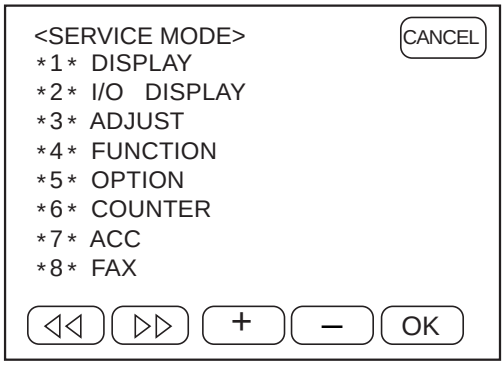


Figure 2-224

5) Press 'FUCNTION' on the Menu screen (84*) to highlight; then, press the OK key.
6) Press the Page key [▷▷] to bring up the 3rd screen.
7) Execute 'shading auto correction'. (See the descriptions for 'shading auto correction'.)
8) At the end of 'shading auto correction', press the Reset key once.
9) With the feeder or the copyboard cover open, make two solid black copies.
10) Check to make sure that '$' is indicated in the upper left corner of the LCD, and press the * key once.
    - The Service Mode Menu screen will appear. (If '$' is not indicated, press the service switch, and press the * key twice.)
11) Press 'FUNCTION' (*4*) to highlight; then, press the OK key.
12) Press the Page key [▷▷] to bring up the PD Density Auto Correction screen (4th screen).

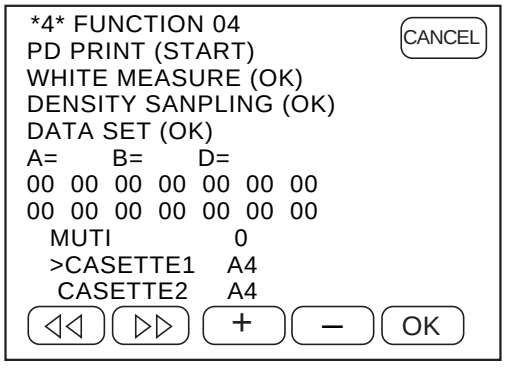


Figure 2-225

13) Select either 'MULTI', 'CASSETTE1', or 'CASSETTE2'.
(Press the appropriate item to select so that the cursor (▷▷) points to the item.)
14) Generate a PD pattern print. (Press 'PD PRINT' to highlight; then, press the Copy Start key.
• You will be using the pattern print later.
15) Place five to ten sheets of blank copy paper on the copy board, and close the feeder or the copyboard cover.

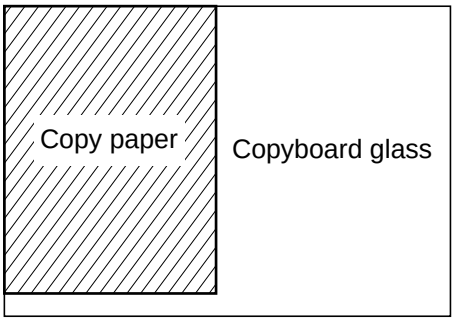


Figure 2-226

16) Press 'WHIE MEASURE' on the screen to highlight, and press the OK key.
• The scanner will move forward to read the blank copy paper.
17) Remove the blank copy paper from the copyboard glass, and place the generated pattern print on the copyboard glass against the V marking at the rear left.
(You must place the pattern print correctly, or correct adjustment will not be possible.)

■ **Place the pattern print as shown**

When the pattern print is placed reversing (left/right) its orientation, the image becomes appreciably light.

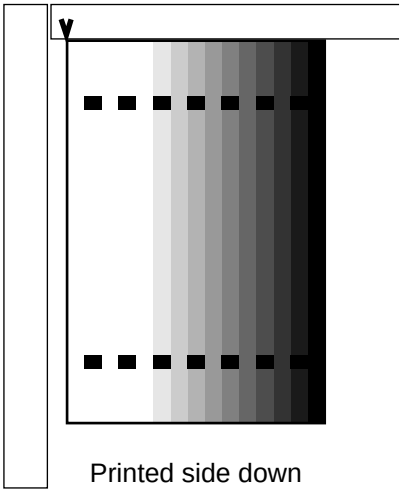


Figure 2-227

18) Press 'DENSITY SAMPLING' to highlight; then, press the OK key.
• The scanner makes 13 scans.
19) At the end of the operation, check to make sure that the values under A, B, and D on the LCD are as follows.
If the values are not as shown, start over at step 7) since the adjustment may have been wrong.

Reference:

A, B, and D are approximate values so that optimum images may still be obtained even if the values are outside the range; you may omit "temporary remedy" as long as the images are optimum.

■ For PD and 200PWM
$20 \leq A \leq 50$
$-40 \leq B \leq 40$
$0 \leq D \leq 8$

■ For 600PWM
$20 \leq A \leq 60$
$-70 \leq B \leq 20$
$0 \leq D \leq 8$

20) Check the above, and press 'DATA SET' to highlight; then, press the OK key.
• This will set the values under A, B, and D which have been measured.
21) Press the Page key, and execute '200PWM density auto adjustment'.
(Follow the same steps starting with step 9) to execute the mode.)
22) When '200PWM density auto adjustment' is over, execute '600PWM density auto adjustment'.
(Follow the same steps starting with step 9) to execute the mode.)
23) Press the Reset key twice to end service mode.

If the values under A, B, and D are not as indicated after executing 'copy density auto correction' several times and, in addition, optimum images cannot be obtained, you may perform the following as a "temporary remedy":

The temporary remedy will enable normal copying; however, since the image quality will lower, be sure to correct any fault as soon as possible, and execute 'copy density auto correction' once again.

■ **Possible Faults**
• Drum unit
• Scanning lamp
• Laser unit
• Composite power supply PCB
• Analog processor PCB
• Image processor PCB

4 Registering the Multifeeder Paper Width Basic Values

You must register the multifeeder paper width basic values whenever you have replaced the multifeeder paper width detecting VR.

1) Replace the paper width detecting VR.
2) Open the front door, and insert the handle of the separation static eliminator cleaning brush into the fixing assembly releasing assembly.
3) Insert the door switch actuator into the door switch assembly.
4) Press the service switch with a hex key.
5) Press the * key twice.
6) Press 'FUNCTION' on the screen (*4*) to highlight; then, press the OK key.
7) Press the Page key to bring up the Multifeeder Paper Width Basic Values Registration screen.

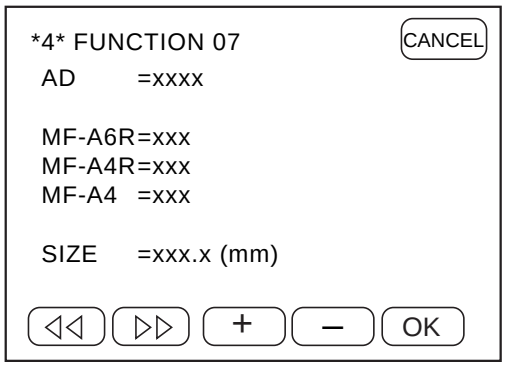


Figure 2-228

8) Set A6 paper in the multifeeder, and adjust the side guide to A6R.

Note:
A6 is what is obtained by folding A4 paper into four; the width is 105 mm.

9) When the side guide is adjusted to A6R, the VR output value will be indicated under 'AD=xxx' on the screen.
   After checking the value, press 'MF-A6R' on the screen to highlight; then, press the OK key.
   • The value will be stored under 'MF-A6R'.
10) Likewise, set A4R paper in the multifeeder, and adjust the side guide to A4R.
11) Check that the value of 'AD' is indicated; then, press 'A4R' to highlight, and press the OK key.
   • The value will be registered under 'A4R'.
12) Set A4 paper in the multifeeder, and adjust the side guide to A4.
13) Check that the value of 'AD' is indicated; then, press 'A4' to highlight, and press the OK key.
   • The value will be stored under 'A4'.
14) Press the Reset key twice to end service mode.
15) Turn off and on the main power switch.

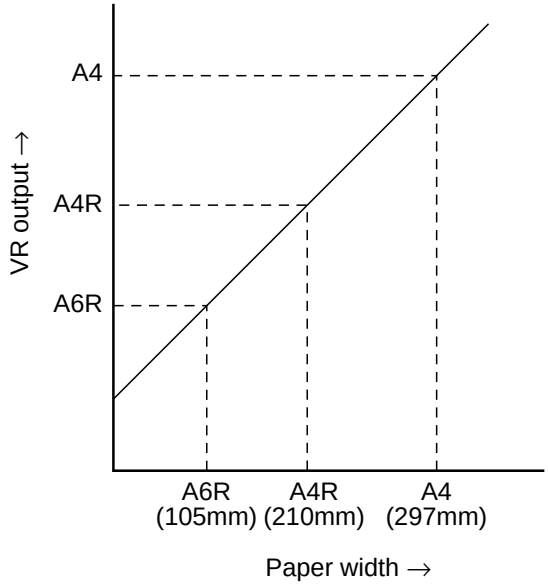
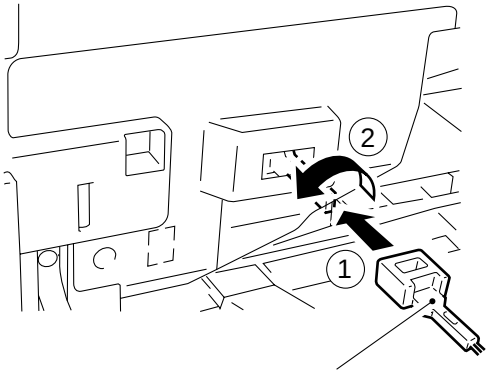


Figure 2-229

5 Shading Auto Correction

- There are two types of shading correction: for servicing and for R&D/factory. (Use the 3rd screen in *4*; do not use shading auto correction for R&D/factory.)
- In shading correction, various data items are measured, and the results are stored in RAM on the image processor PCB. (The data will be used as target values for shading correction executed before copying.)
- Execute the mode (R&D/factory) for the following:
- After replacing the standard white plate
- After replacing the scanning lamp
- After replacing the DC controller PCB

1) Open the front door, and insert the handle of the separation static cleaning brush into the fixing assembly releasing opening.



Separation static eliminator cleaning brush

Figure 2-230

2) Insert the door switch actuator into the door switch assembly.
3) Press the service switch with a hex key.
   - '$' will be indicated in the upper left corner of the LCD.
4) Press the * key twice.
   - The Service Mode Menu screen will appear.

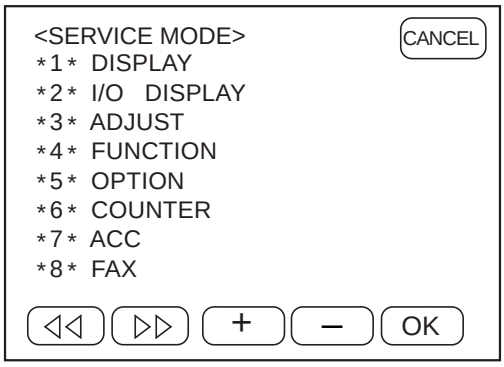


Figure 2-231

5) Press 'FUNCTION' on the Menu screen (*4*), an press the OK key.
6) Press the Page key [▷▷] to bring up the Shading screen (12 the screen).

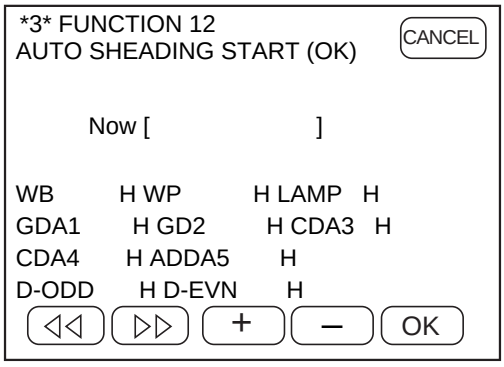


Figure 2-232

7) Place five to ten standard blank sheets of paper (FY9-3004) on the copyboard glass.

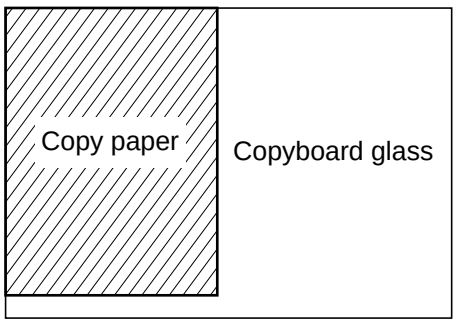


Figure 2-233

8) Press 'AUTO SHADING START' on the LCD to highlight; then, press the OK key.
   • 'shading auto correction' will be executed.
9) A beep will be sounded while the lamp is being adjusted (with the screen indicating 'LAMP LEVEL'); press the OK key when the beep stops.
   • If no beep is heard, remove the rear cover, and turn VR1 on the DC controller PCB until a beep is heard; then, press the OK key.
   If no beep is heard after turning VR1 fully clockwise, press the OK key while keeping VR1 turned fully clockwise.

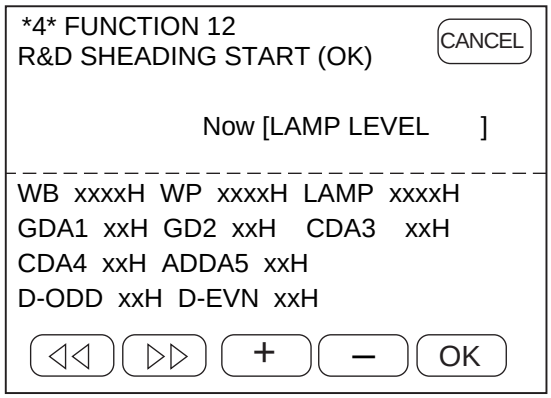


Figure 2-234

10) In a while, 'Now [END]' will appear on the screen, indicating the end of shading auto correction.

6 Updating

- Replace the ROM DIMM (double inline memory module) on the image processor or update it by downloading as discussed.
- Downloading will update the ROM DIMM; you must replace the following ROMs to update:
- IC103 (DC controller PCB)
- IC104 (DC controller PCB)

a. Replacing the ROM DIMM

1 Removing the ROM DIMM

1) Turn off the main power switch.
2) Disconnect the power cord from the power outlet.
3) Remove the copyboard glass, lens cover, and IP cover.
4) While opening the claw of the slot, lift the ROM DIMM to remove.

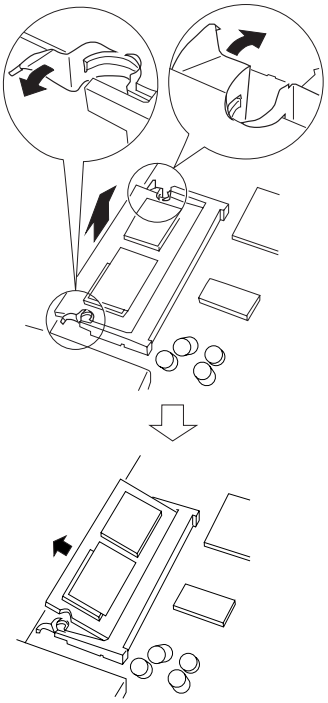


Figure 2-235

2 Installing the ROM DIMM

1) Insert the ROM DIMM into the slot at an angle.

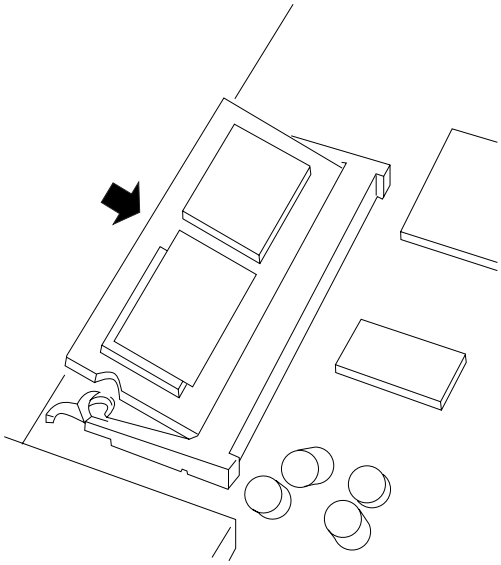


Figure 2-236

2) Shift down the ROM DIMM.
   - Shift it down in the direction of the arrow until a click is heard.

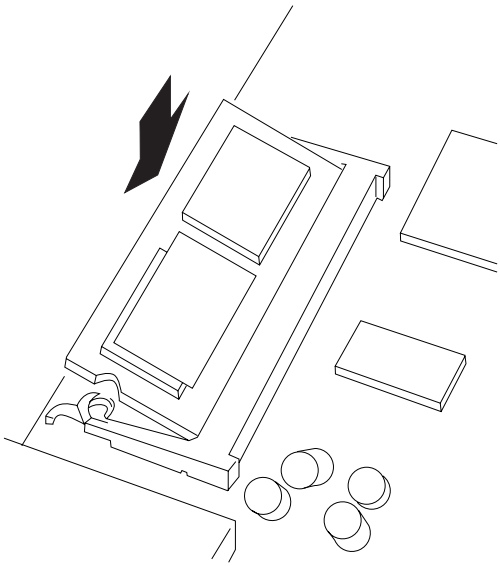


Figure 2-237

3) Install the removed covers, and connect the power cord into the power outlet; then, turn on the main power switch.

b. Downloading

■ **Tools Required**

- PC (The utility program for upgrading and the new program to be written to the ROM DIMM must have been installed in advance.)
- RS232C cable

■ **Downloading**

1) Turn off the main power switch.
2) Open the front door, and remove the connector cover for servicing; connect the copier to the PC with an RS232C cable.

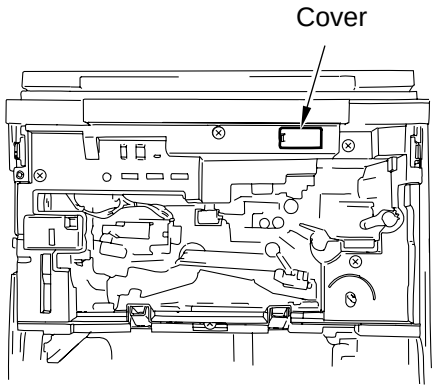


Figure 2-238

3) Insert the handle of the separation static eliminator cleaning brush into the fixing assembly releasing assembly, and insert the door switch actuator into the door switch assembly.

4) Turn on the main power switch. Then, press the service switch, and press the * key twice.
5) Press 'FUNCTION' (*4*) on the screen to highlight; then, press the OK key.

6) Press the Page key to bring up the Downloading screen.

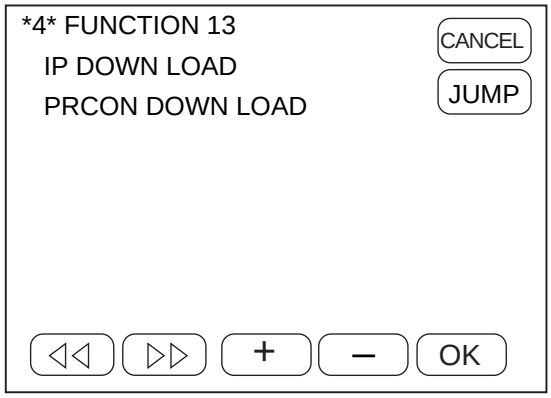


Figure 2-239

7) Press 'IP DOWNLOAD' on the screen to highlight; then, press the OK key.
   - A press on the OK key will automatically shut down and boot the power.
   - When the machine boots up, it will show the following screen to indicate that it is in downloading mode:

7 AE Adjustment

The machine's AE (auto density adjustment) mode may be either "priority on speed mode" or "priority on image quality mode." Each of these modes may be adjusted in service mode, and the concepts used for the modes are as follows:

1. Priority on Speed Mode

Use 'ABC_TBL' under 'ADJUST' in service mode (*3*).

- A lower value for 'ABC_TBL' will make the text darker; between 1 and 9.
- A higher value for 'ABC_TBL' will make the text lighter; between 1 and 9. (factory default: 3)

The adjustment will modify the density correction curve.

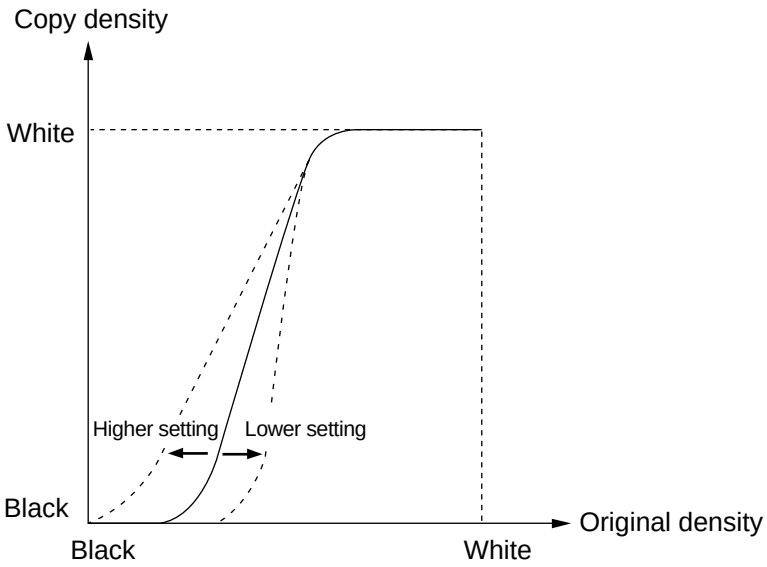


Figure 2-240

2. Priority on Image Quality Mode

a. AE_SLOP

For priority on image quality mode, an AE table is selected based on a study of the original density histogram prepared during a pre-scan.

The slice level distinguishing the data into text (black) and background (white) can be adjusted under 'AE_SLOP' in service mode (ADJUT; *3*).

AE_SLOP: A higher setting makes the images darker; between 1 and 19. (left of Figure 2-241)

b. AE_LIGHT/AE_DARK

The AE table selected as a result of a pre-scan may be corrected to suit the preference of the user.

AE_LIGHT: A higher setting emphasizes the background of the original; a lower setting, on the other hand, de-emphasize the background of the original; between 0 and 40 with the default at 20. (upper right of Figure 7-00)

AE_DARK: A higher setting will increase black; a lower setting, on the other hand, will decrease black; between 0 and 40 with the default at 20. (Figure 2-241)

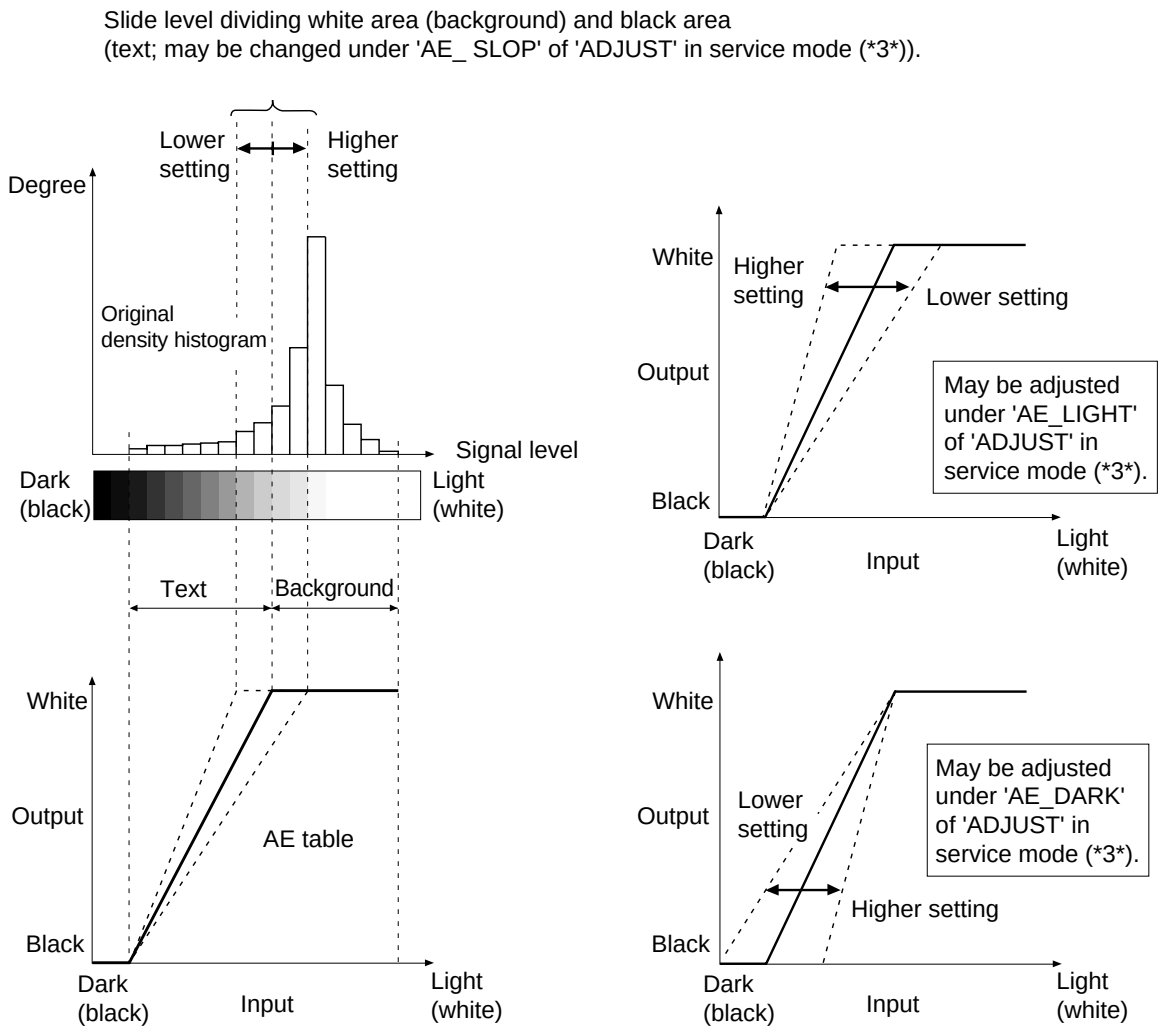


Figure 2-241

8 Checking the Photointerrupters

The photointerrupters may be checked either using a conventional tester or using service mode.

1. Using a Tester

1) Set the tester range to 12 VDC.
2) Connect the tester probe to GND (0 VDC) of the DC controller PCB.
3) Make checks as instructed.

2. Using Service Mode

1) Open the front door, and insert the door switch actuator into the door switch assembly; then, insert the handle of the static eliminator cleaning brush into the fixing assembly releasing assembly.
2) Press the service switch.
3) Press the * key twice, and press 'I/O DISPALY' (*2*) to highlight; then, press the OK key.
4) Press the Page key to select the screen showing the desired address.

No.	PS1		PS2		PS3	
Name	Scanner home position sensor (SCHP)		Fixing film sensor (FFD)		Copyboard cover open/closed sensor (CBCC)	
Tester probe	J107-A2		J109-3		J113-B9	
Service mode	—		DC PA0-bit0		DC PA0-bit1	
Make checks; normal if as indicated.	Move the scanner from home position during standby.		Move the detecting lever by hand during standby.		Open/close the copyboard cover during standby.	
	The scanner is at home position.	The scanner is not at home position.	The light-blocking plate is present.	The light-blocking plate is absent	The copyboard cover is closed.	The copyboard cover is opened.
Display reading	—	—	1	0	1	0
Tester reading	about 5 V	about 0 V	about 5 V	about 0 V	about 5 V	about 0 V

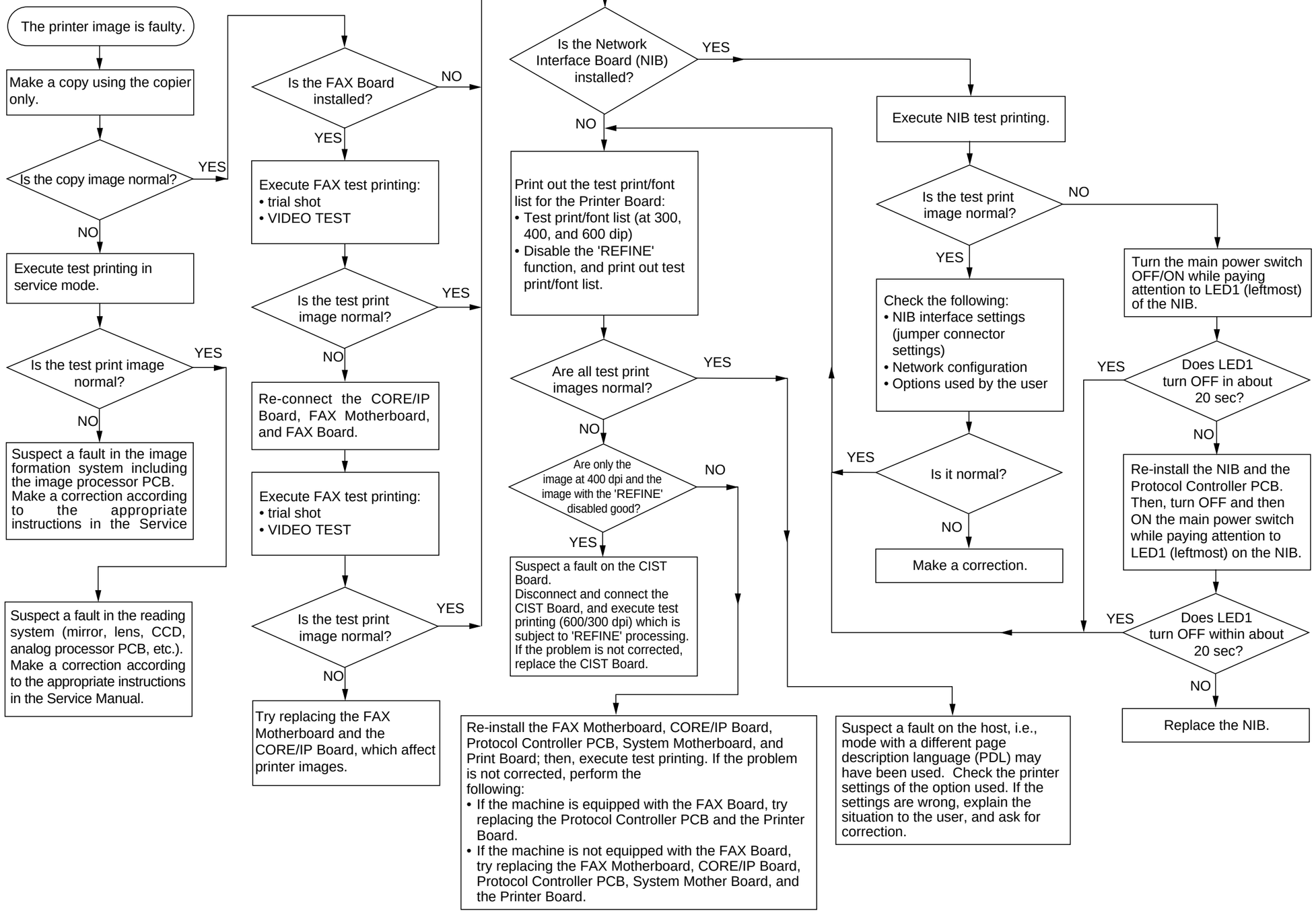
No.	PS4		PS5		PS6	
Name	Multifeeder paper sensor (MFPD)		Pre-registration paper sensor (PDP1)		Fixing assembly delivery paper sensor (PDP3)	
Tester probe	J113-A11		J113-A5		J109-6	
Service mode	DC PA0-bit2		DC PA0-bit3		DC PA0-bit5	
Make checks; normal if as indicated.	Place paper on the paper tray of the multifeeder during standby.		Open the right door during standby, and put copy paper over the pre-registration paper sensor.		Put copy paper over the delivery paper sensor during standby.	
	Paper is not placed.	Paper is placed.	Copy paper is not put over the sensor.	Copy paper is put over the sensor.	Copy paper is not put over the sensor.	Copy paper is put over the sensor.
Display reading	1	0	1	0	1	0
Tester reading	about 5 V	about 0 V	about 5 V	about 0 V	about 5 V	about 0 V

No.	PS8		PS9		PS10	
Name	Vertical path paper sensor (PDP4)		Right door open/closed sensor (RDOP)		Waste toner sensor (STDT)	
Tester probe	J113-A2		J113-A8		J113-B6	
Service mode	DC PA0-bit9		DC PA0-bit10		DC PA0-bit11	
Make checks; normal if as indicated.	Move up the sensor lever of PS8 during standby.		Open the right door during standby.		Move the sensor lever during standby.	
	The lever is moved up.	The lever is returned.	The right door is closed.	The right door is opened.	The light-blocking plate is present.	The light-blocking plate is absent.
Display reading	1	—	1	0	1	0
Tester reading	about 5 V	about 0 V	about 5 V	about 0 V	about 5 V	about 0 V

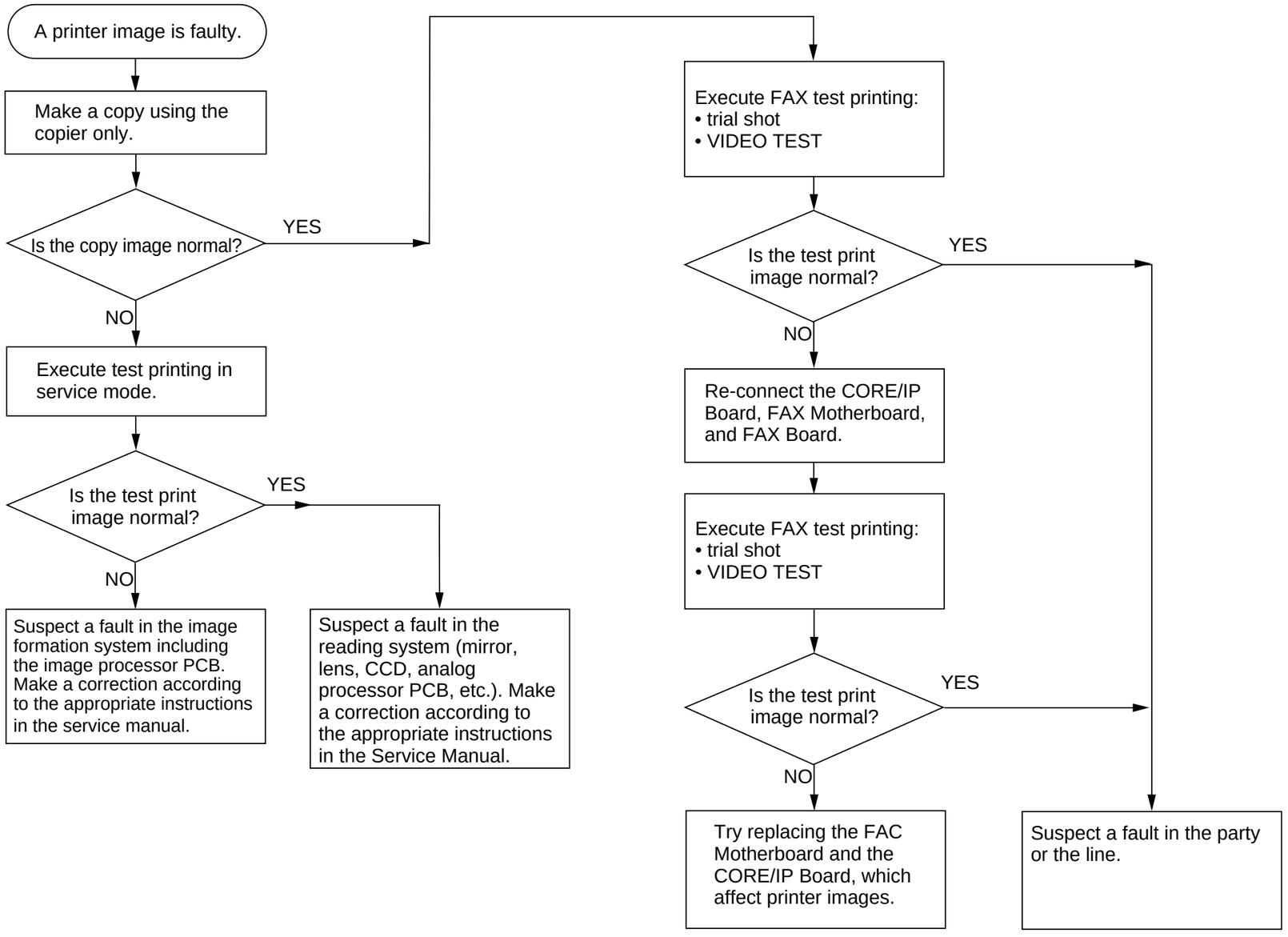
No.	PS11		PS12		PS13	
Name	Pre re-pick up paper sensor (PDP5)		Duplexing unit inlet paper sensor (PDP6)		Delivery sensor (PDP7)	
Tester probe	J103-2		J105-B2		J105-A2	
Service mode	DC PC0-bit0		DC PC0-bit1		DC PC0-bit2	
Make checks; normal if as indicated.	Move the sensor flag of PS11 during standby.		Move the sensor flag of PS12 during standby.		Move the sensor flag of PS13 during standby.	
	The sensor flag is down (the light-blocking plate is present).	The sensor flag is up (the light-blocking plate is absent).	the sensor flag is down (the light-blocking plate is present).	The sensor flag is up (the light-blocking plate is absent).	The sensor flag is down (the light-blocking plate is present).	The sensor flag is up (the light-blocking plate is absent).
Display reading	1	0	1	0	1	0
Tester reading	about 5 V	about 0 V	about 5 V	about 0 V	about 5 V	about 0 V

No.	PS14	
Name	Horizontal paper sensor (CRGPD)	
Tester probe	J114-B2	
Service mode	DC PC0-bit6	
Make checks; normal if as indicated.	Open the right door, and insert copy paper into the re-pick up paper path during standby; then, inside the copy paper toward the rear.	
	Before sliding the copy paper toward the rear.	When the copy paper is slid toward the rear.
Display reading	1	0
Tester reading	about 5 V	about 0 V

9 Isolating the PCBs (printer image fault)

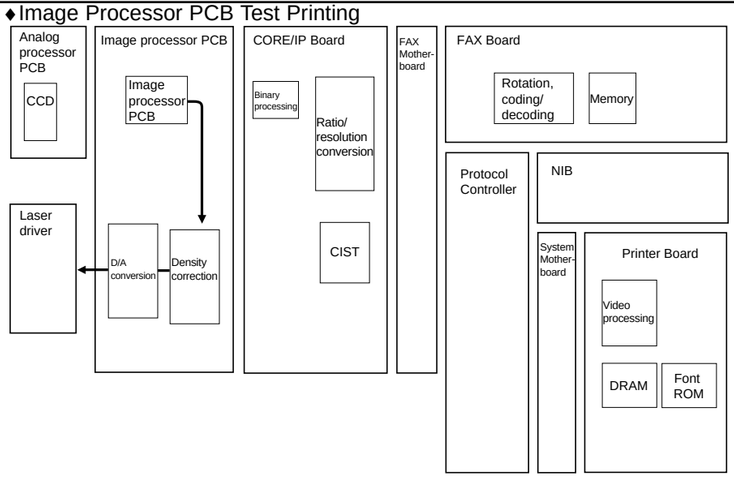


10 Isolating the PCBs (FAX image fault)

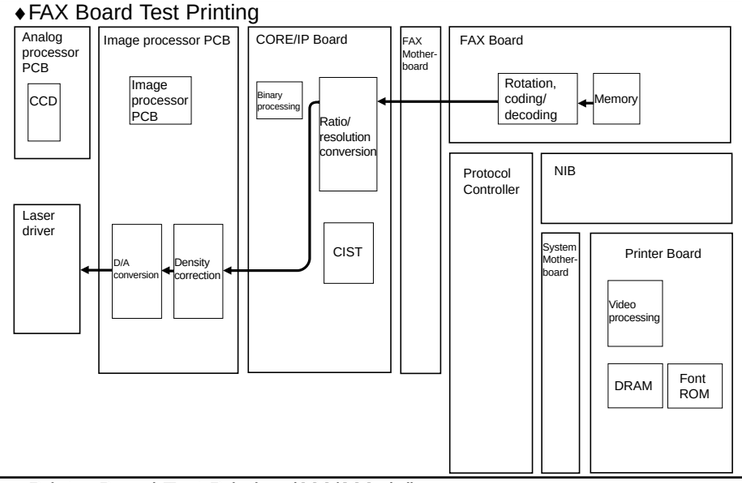


11 Test Printing

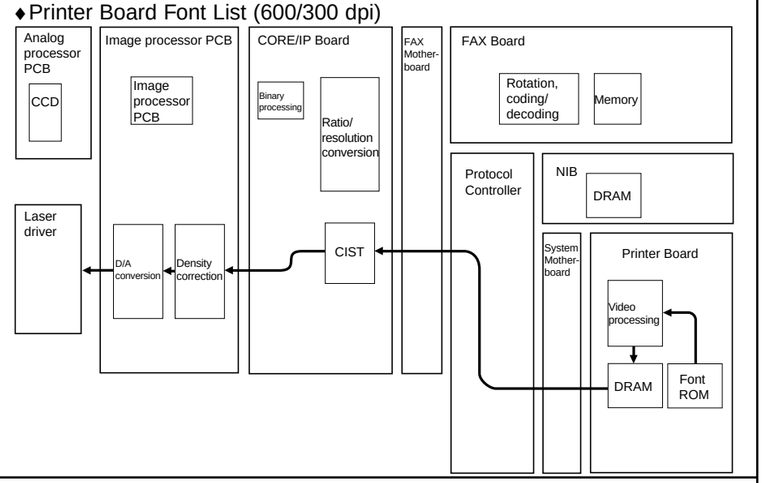
♦Image Processor PCB Test Printing



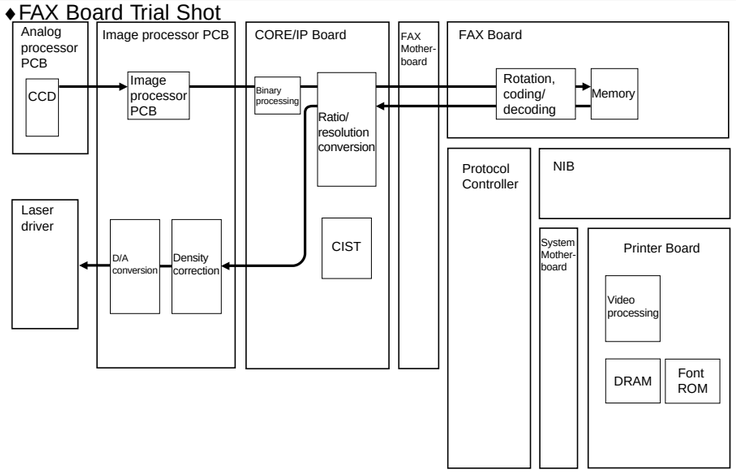
♦FAX Board Test Printing



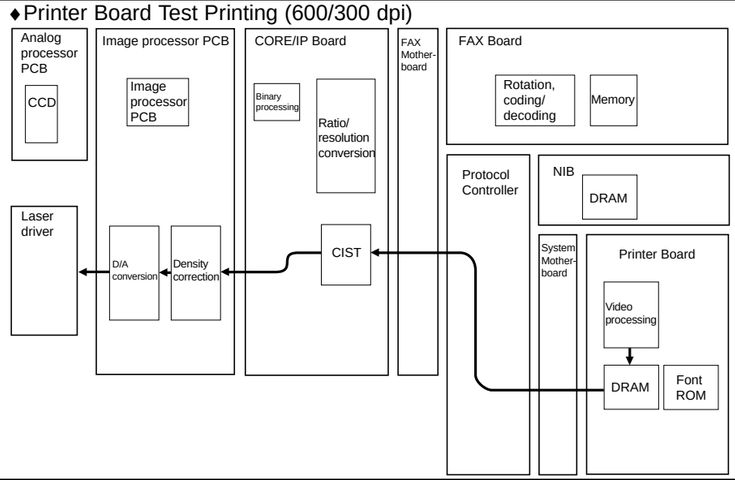
♦Printer Board Font List (600/300 dpi)



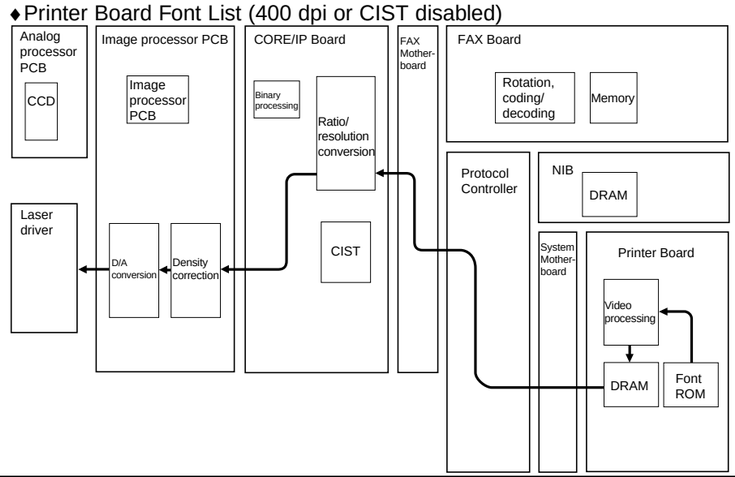
♦FAX Board Trial Shot



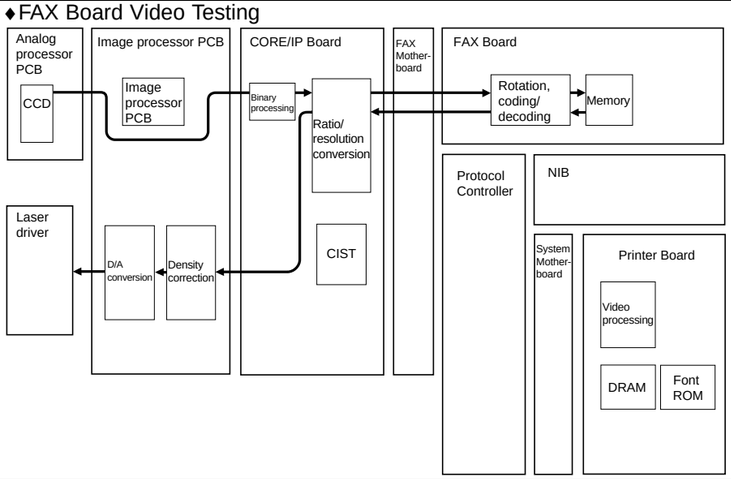
♦Printer Board Test Printing (600/300 dpi)



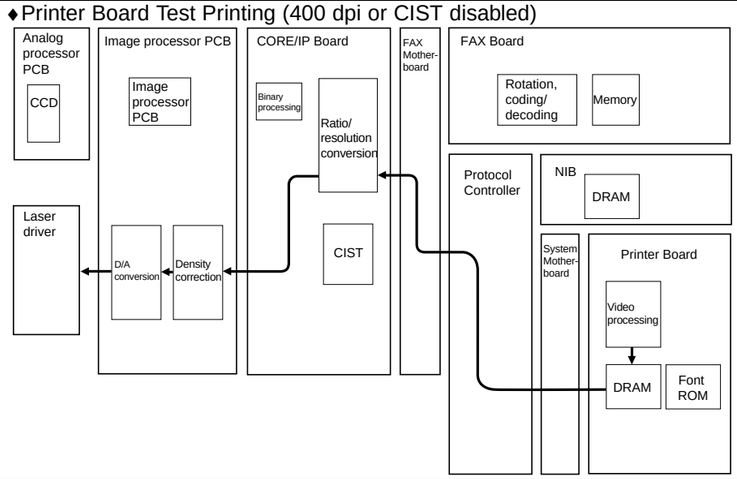
♦Printer Board Font List (400 dpi or CIST disabled)



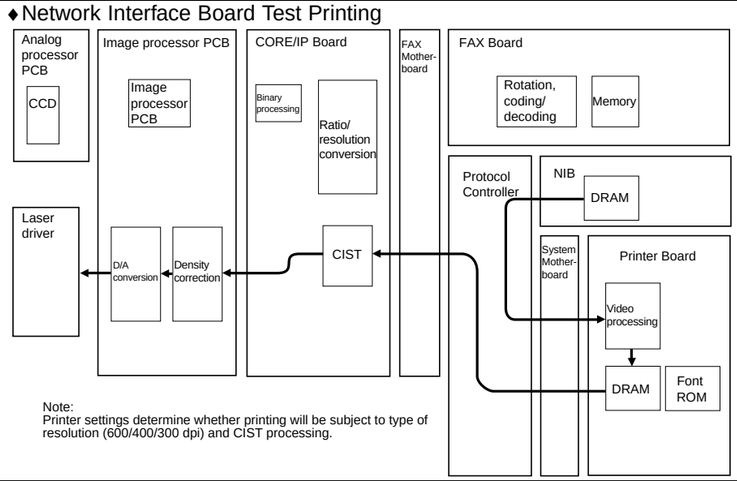
♦FAX Board Video Testing



♦Printer Board Test Printing (400 dpi or CIST disabled)



♦Network Interface Board Test Printing



Note:
Printer settings determine whether printing will be subject to type of resolution (600/400/300 dpi) and CIST processing.

CHAPTER 3 TROUBLESHOOTING IMAGE PROBLEMS

A. Initial Checks

1. Checking the Site of Installation

a. Make sure that the voltage at the power source is as rated (±10%).
b. Make sure that the site is not subject to high temperature/humidity (near a water faucet, water boiler, humidifier) and is not cold, not close to a source of fire, and not subject to dust.
c. Make sure that the site is not subject to ammonium gas.
d. Make sure that the site is free of direct rays of the sun; otherwise, curtains are provided.
e. Make sure that the room is well ventilated.
f. Make sure that the machine is kept level.
g. Make sure that the machine will also remain powered at night.

Make the above checks to see if the site meets the requirements.

2. Checking the Originals

Try to find out whether the problem is due to the type of original used or to the machine.

a. The copy density lever is set at 5 ±1.
b. Copies of originals with a reddish background (e.g., red sheets, slips) tend to have poor contrast.
c. Check the density of the originals; a diazo copy original or an original with transparency can produce copies that tend to be mistaken for “foggy copies”; and
originals prepared in light pencil tend to produce copies that tend to be mistaken for “light image copies.”

3. Checking the Copyboard Cover, Copyboard Glass, and Standard White Plate

Check the copyboard cover, copyboard glass, and standard white plate for dirt. Clean the part if soiled, and replace the part if damage is found.

4. Checking the Charging Assemblies

a. Check each of the charging assemblies for dirt. Check the charging wire/charging brush for a fault (damage, deformation).
b. Check the charging wire, grid wire, and shield plate of each charging assembly. (If necessary, dry wipe the part with lint-free paper; then, use alcohol. If the dirt cannot be removed, replace the part.)
c. Check the height of each charging wire.
d. Make sure that each charging assembly is properly set.
e. Check the charging spring (especially of the separation charging assembly) for rusting.

5. Checking the Developing Assembly

a. Check to make sure that the rolls on both ends of the developing assembly are in contact with the drum.
b. Check to make sure that the surface of the developing cylinder is covered with a uniform coating of toner.

6. Checking the Paper

a. Check if the paper is of a type recommended by Canon.
b. Check if the paper is moist.
Try making copies using fresh paper.

7. Checking the Periodically Replaced Parts

a. Check the periodically replaced parts against the Scheduled Servicing Chart, and replace those that have reached the end of their lives.

8. Others

When a machine is brought from a cold to a warm place in winter, its inside can start to suffer from condensation, leading to various problems.

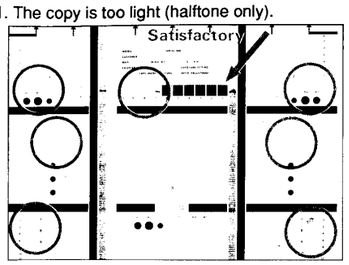
a. Condensation on the original illuminating system or the laser exposure system (glass, mirror, lens) causes light or dark images.
b. Condensation in the charging system can cause leakage.
c. Condensation in the pick-up system or on the feeding guide plate can cause feeding problems.
If condensation is noted, dry wipe the part or leave the machine powered for 10 to 20 minutes.

Caution:
If uneven density (difference in density between front and rear), light images, or fogging is noted, perform the “Image Adjustment Basic Procedure” first.

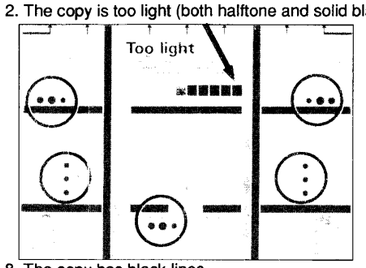
B. Image Fault Samples

Note: The samples are made artificially to provide an idea of faulty copies, and may not represent actual faults.
(The NA-3 Test Sheet was copied in DIRECT mode on A4 paper, and reduced for printing.)

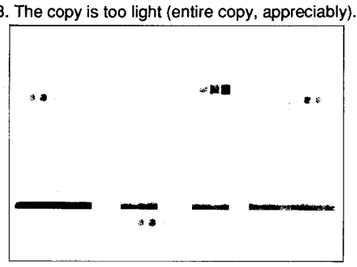
1. The copy is too light (halftone only).



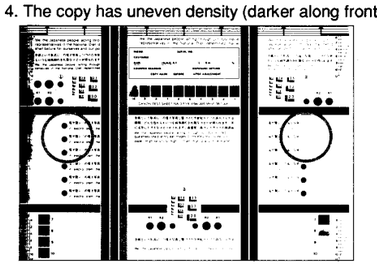
2. The copy is too light (both halftone and solid black).



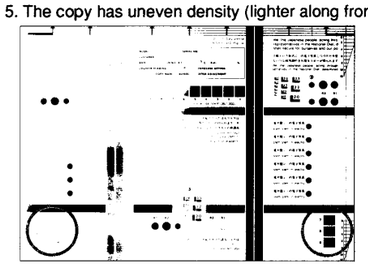
3. The copy is too light (entire copy, appreciably).



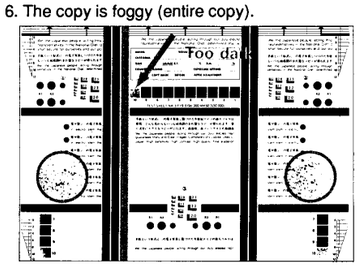
4. The copy has uneven density (darker along front).



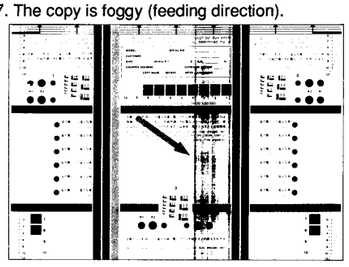
5. The copy has uneven density (lighter along front).



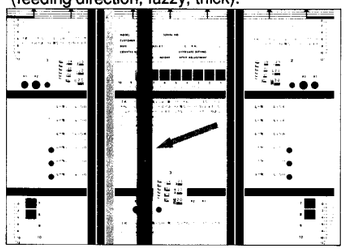
6. The copy is foggy (entire copy).



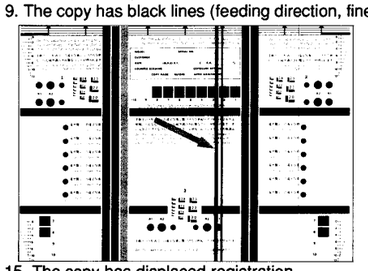
7. The copy is foggy (feeding direction).



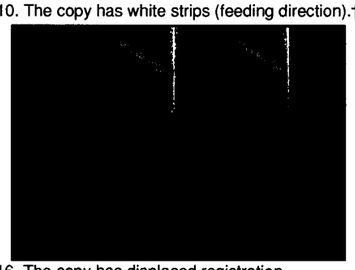
8. The copy has black lines (feeding direction, fuzzy, thick).



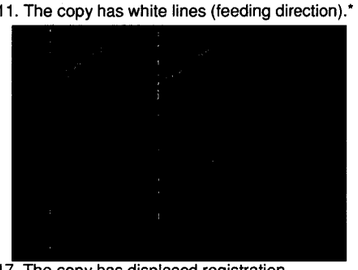
9. The copy has black lines (feeding direction, fine).



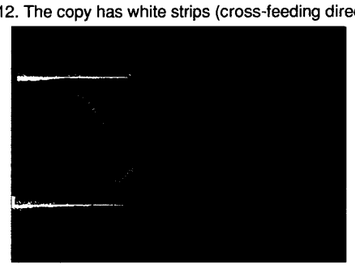
10. The copy has white strips (feeding direction).†



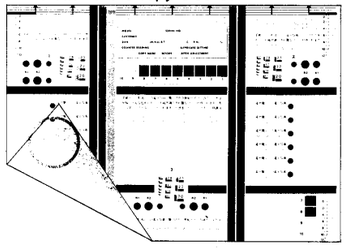
11. The copy has white lines (feeding direction).*



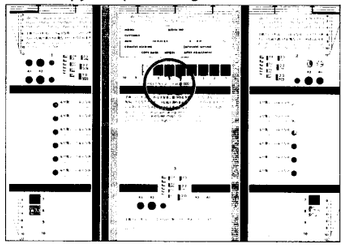
12. The copy has white strips (cross-feeding direction).



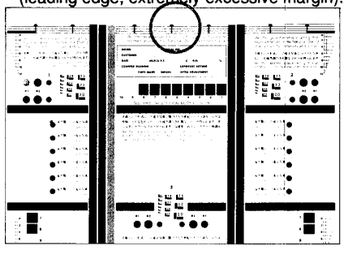
13. The back of the copy is soiled.



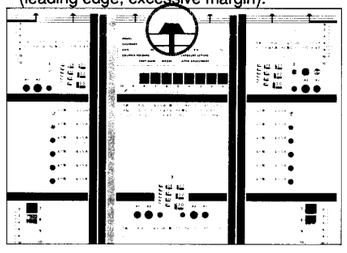
14. The copy has poor fixing.



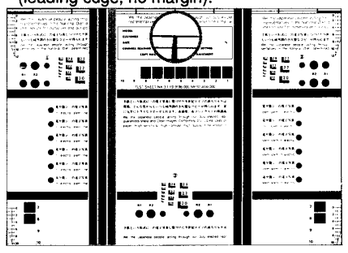
15. The copy has displaced registration (leading edge, extremely excessive margin).



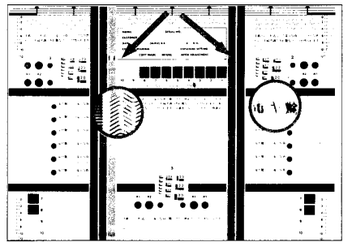
16. The copy has displaced registration (leading edge, excessive margin).



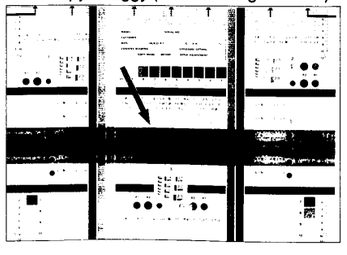
17. The copy has displaced registration (leading edge, no margin).



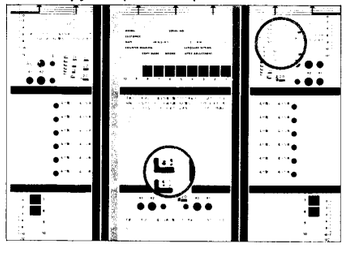
18. The copy has blurred images.



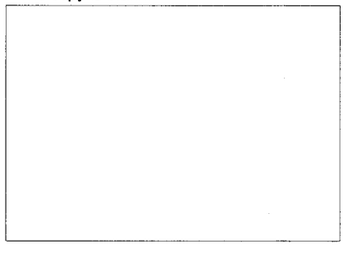
19. The copy is foggy (cross-feeding direction).



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 Image Faults

1	The copy is too light. (halftone only)

Cause	Step	Checks	Yes/No	Action
	1	Perform the Image Adjustment Basic Procedure. Is the problem corrected? Is the pattern print placed in reverse (left/right) orientation?	YES	End. The image will become appreciably light if the pattern print is placed in reverse (left/right) orientation. Be sure to place it in correct orientation.
AE adjustment (wrong)	2	Make copies in AE mode. Are the images too light?	YES	Perform AE adjustment. 1. In the case of 'Image quality priority' mode, increase the setting under 'AE_DARK' of 'ADJSUT' in service mode (*3*). 2. In the case of 'Speed priority' mode, increase the setting under 'ABC_TBL' under 'ADJSUT' in service mode (*3*).
Developing assembly (position)	3	Are the rolls of the developing assembly in firm contact with the drum?	NO	Check the developing assembly locking lever, and check the surface of the developing rolls for foreign matter (toner).
Developing assembly	4	Is the coating of toner on the developing cylinder even?	NO	Check the developing assembly.
Scanner (dirt)	5	Clean the mirror, lens, and dust-proofing glass. Is the image corrected?	YES	End.
Photosensitive drum			NO	Replace the drum unit.

2 The copy is too light. (including solid black)

Cause		Step	Checks	Yes/No	Action
		1	Perform the Image Adjustment Basic Procedure. Is the problem corrected?	YES	End. The image will become appreciably light if the pattern print is placed in reverse (left/right) orientation. Be sure to place it in correct orientation.
		2	Turn off the power switch in the middle of copying operation, and open the front door. Is the toner image on the surface of the photosensitive drum more or less normal?	NO	Go to step 9.
Transfer (fault)	Transfer roller unit	3	Is the transfer roller unit properly installed?	NO	Install the transfer roller unit securely.
		4	Does leakage occur in the transfer roller unit?	YES	Check the transfer roller unit.
		5	Is there dirt, cracks, or scratches on the transfer charging roller?	YES	Replace the transfer charging roller.
		6	Is the position and condition of the transfer charging roller pressure spring normal?	NO	Correct the position of the spring, or replace the spring.
	Copy paper	7	Try fresh copy paper. Is the image darker?	YES	1. The paper may be moist; advise the user on the correct method of storing paper. 2. Advise the user that the use of non-recommended paper may not bring about the best results.
	Transfer guide High-voltage cord, High-voltage transformer, DC controller PCB	8	Set the feeding assembly in the feeding position, and measure the resistance between the transfer guide and the mount (metal portion) of the transfer charging assembly rail. Is the resistance 0 ?	YES NO	Check if the transfer guide should be in contact with a metal portion (e.g., side plate of the feeding assembly). 1. Check the high-voltage cord for electrical continuity. 2. Check the high-voltage transformer DC controller PCB.
Development (fault)	Developing assembly	9	Is the developing assembly properly installed? (Check to make sure that the developing rolls are in firm contact with the photosensitive drum.)	NO	Re-install the developing assembly.
	Toner detecting assembly	10	Is there toner in the developing assembly?	NO	1. Check the toner sensor. 2. Check the connector and the harness for electrical continuity.
Drum unit		11	Replace the drum unit. Is the problem corrected?	YES	End.
Image processor PCB, Analog processor PCB				NO	Try replacing the image processor PCB or the analog processor PCB.

3 The copy is too light. (overall, considerably)

Cause		Step	Checks	Yes/No	Action
		1	Perform the Image Adjustment Basic Procedure. Is the problem corrected?	YES	End. The image will become appreciably light if the pattern print is placed in reverse (left/right) orientation. Be sure to place it in correct orientation.
		2	Turn off the power switch in the middle of copying, and open the front door. Is the toner image on the surface of the photosensitive drum before transfer more or less normal?	NO	Go to step 9.
Transfer (fault)	Transfer roller unit	3	Is the transfer roller unit installed securely?	NO	Install the transfer unit securely.
		4	Does leakage occur in the transfer roller unit?	YES	Check the transfer roller unit.
	High-voltage cord, Transfer roller unit	5	Is there electrical continuity from the composite power supply PCB to the transfer roller unit?	NO	1. Replace the high voltage cord. 2. Check the transfer roller unit.
	High-voltage transformer, DC controller PCB			YES	Check the composite power supply PCB and the DC controller PCB.
	Transfer guide	6	Set the feeding assembly in the feeding position, and measure the resistance between the transfer guide and the mount (metal portion) of the transfer charging assembly rail with a tester. Is the resistance 0 ?	YES	Check to see if the transfer guide should be in contact with a metal portion (e.g., side plate of the feeding assembly).
	Copy paper			NO	Try fresh copy paper or paper of a different quality.
			Is the developing assembly in firm contact with the photosensitive drum? (Check if the developing rolls are in firm contact with the photosensitive drum.)	NO	Re-install the developing assembly.
Development (fault)				YES	1. Check the developing assembly. 2. Check the developing bias.

4 The copy is foggy. (overall)

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>Yes/No</th><th>Action</th></tr>
<tr><td>Scanner (dirt)</td><td>1</td><td>Clean the scanning lamp, reflecting plate, mirror, lens, and dust-proofing glass. Is the problem corrected?</td><td>YES</td><td>End.</td></tr>
<tr><td></td><td>2</td><td>Perform the Image Adjustment Basic Procedure. Is the problem corrected?</td><td>YES</td><td>End.</td></tr>
<tr><td>AGC</td><td>3</td><td>Execute ‘FUNCTION 15’ in service mode (*4*; SERCT_GAMMA_NUM, AGC_MEASURE).
• Open the *4* FUNCTION 15 screen, and press the Copy Start key.
• Check the following:
<table>
<tr><th>SERCT_GAMMA_NUM</th><th>AGC_MEASURE</th></tr>
<tr><td>0</td><td>~–28.0uA</td></tr>
<tr><td>1</td><td>–28.1~ –36.5uA</td></tr>
<tr><td>2</td><td>–36.6~ –43.0uA</td></tr>
<tr><td>3</td><td>–43.1~</td></tr>
</table>
Is the value too different from the above?</td><td>YES</td><td>Set ‘AGS NON’ of ‘OPTION’ (*5*) TO ‘1’.
If the resulting image is good, keep the setting to ‘1’ as an emergency remedy.
However, be sure to take proper action, as there may be a problem on the image processor PCB or the DC controller PCB.</td></tr>
<tr><td>Developing assembly</td><td>4</td><td>Is the developing cylinder insulated from GND of the machine?
Turn off the main power supply, and disconnect the connector J205 on the composite power supply PCB. Check electrical continuity between the connector J205-1 on the developing assembly side and the side plate of the machine.</td><td>NO</td><td>Check the developing cylinder and the parts around the developing connector.</td></tr>
<tr><td>Developing bias</td><td rowspan="2">5</td><td rowspan="2">Replace the composite power supply PCB. Is the problem corrected?</td><td>YES</td><td>End.</td></tr>
<tr><td>DC controller PCB</td><td>NO</td><td>Replace the DC controller PCB.</td></tr>
</table>

5	**The copy has vertical fogging.**
6	**The copy has black lines. (vertical, thick, fuzzy)**

Cause	Step	Checks	Yes/No	Action
Primary charging roller	1	Clean the charging roller in user mode. Is the problem corrected?	YES	End.
Scanner (dirty)	2	Clean the mirror, lens, and dust-proofing glass. Is the problem corrected?	YES	End.
Developing assembly	3	Is the toner coating on the developing cylinder even?	NO	1. Check the edge of the developing assembly blade. 2. Dry wipe the surface of the developing cylinder.
Photosensitive drum	4	Are there scratches on the photosensitive drum in peripheral direction?	YES	Replace the drum unit.
Light (from outside)			NO	Check the photosensitive drum to see if it should be exposed to light from outside.

7 The copy has black lines. (vertical, thin)

Cause	Step	Checks	Yes/No	Action
Exposure system	1	Generate a test print using 'L-TEST2' in service mode (*4*). Does the generated copy have black lines?	NO	The scanner system may be faulty. Clean the No. 1 through No. 3 mirrors.
Primary charging assembly	2	Clean the primary charging roller in user mode. Is the problem corrected?	YES	End.
Photosensitive drum	3	Are there scratches or black lines on the surface of the photosensitive drum in peripheral direction? • Try wiping off the black lines, if any, on the photosensitive drum with cloth coated with toner to see if they disappear from copies too.	YES	Replace the drum unit. • If there are scratches, be sure to investigate the cause.
Fixing assembly	4	Are there scratches or black lines in the peripheral direction of the surface of the fixing film?	YES	Replace the fixing assembly.
			NO	Check the inlet of the fixing assembly for dirt.

8	**The copy has white spots. (vertical)**
9	**The copy has white lines. (vertical)**

Cause	Step	Checks	Yes/No	Action
Exposure system	1	Execute 'L-TEET1' in service mode (*4*). Are there white lines in the generated image?	YES	Go to step 7.
Transfer charging roller, Separation static eliminator	2	Is there dirt or foreign matter on the transfer charging roller or the separation static eliminator?	YES	Clean the transfer charging roller or the separation static eliminator. If the problem is still not corrected, replace the transfer charging assembly or the separation static eliminator.
Developing assembly	3	Is the coating of toner on the developing cylinder even?	NO	Check the edge of the developing assembly blade. If toner is not in the developing assembly, see "The ADD TONER message fails to turn ON."
Fixing assembly	4	Are there scratches on the fixing film in peripheral direction?	YES	1. Replace the fixing assembly. 2. Clean the separation claw. 3. Check the separation claw.
Fixing assembly inlet	5	Is there dirt or foreign matter on the fixing assembly inlet?	YES	Clean the area.
Photosensitive drum	6	Are there scratches on the surface of the photosensitive drum in peripheral direction?	YES	Replace the drum unit. • Be sure to find out the cause of the scratches.
Dust-proofing glass	7	Replace the dust-proofing glass. Is the problem corrected?	YES	End.
Exposure system	8	Clean the standard white plate, and No. 1, No. 2, and No. 3 mirrors. Is the problem corrected?	YES	End.
Standard white plate			NO	Change the value of 'ADJ-S' in service mode (*3*), and change the point of shading measurement.

10 The copy has white spots. (horizontal)

Cause	Step	Checks	Yes/No	Action
Developing assembly	1	Execute 'L-TEST' in service mode (*4*). Are there white spots in the images?	YES	Go to step 4.
Developing assembly	2	Is the problem noted at intervals of about 35 mm?	YES	1. Clean the developing rolls. 2. Dry wipe the surface of the developing cylinder. 3. If scratches are found on the surface of the developing cylinder, replace the developing cylinder.
Drum unit	3	Is the problem noted at intervals of about 94 mm?	YES	1. Clean the drum. 2. If there are scratches on the drum, replace the drum unit.
Copy paper	4	Try fresh copy paper. Is the problem corrected?	YES	The copy paper is moist; advise the user on the correct method of storing paper.
Transfer charging assembly	5	Are there white spots on the photosensitive drum during copying?	NO	Check the transfer charging assembly for leakage.
Developing bias			YES	Check the developing bias.
Scanning system rail, Scanner cable	6	Is the problem noted at the same location on every copy?	YES	1. Check the scanner rail for foreign matter. 2. Adjust the tension of the scanner cable.

11 The back of the copy is soiled.

Cause	Step	Checks	Yes/No	Action
	1	Turn off the main power switch while copy paper is moving through the feeding assembly. Is the back of the copy paper soiled at this time?	NO	Go to step 0.
Transfer guide bias	2	Is the voltage between the transfer guide (+) and the side plate of the machine (-) -600 V or more?	NO	1. Check the transfer guide bias. 2. Clean the transfer guide.
Developing assembly /Registration roller	3	Is the problem noted at intervals of about 50 mm?	YES	1. Clean the registration roller. 2. Clean the transfer guide. 3. Check the developing assembly for leakage of toner.
Drum cleaning assembly			NO	1. Clean the feeding assembly. 2. Check the drum cleaning assembly for leakage of waste toner.
Fixing assembly	4	Is the fixing assembly lower roller soiled?	YES	1. Clean the fixing assembly lower roller. 2. Clean the inlet guide of the fixing assembly. 3. If offset is noted, increase the setting of 'FILM-LANK' in service mode (*3*).
Transfer roller	5	Execute cleaning of the roller in user mode. Is the problem corrected?	YES	End.
	6	Make several blank copies. Is the problem corrected?	YES	End.
	7	Is the transfer roller soiled excessively?	YES	Replace the transfer roller.

12 The copy has fixing faults.

Cause	Step	Checks	Yes/No	Action
Copy paper	1	Is thick paper or other types of paper which are subject to poor fixing used?	YES	Set 'SPCL-PPR' in service mode (*5*) to '1'; then, set the following, and advise the user: 1) Select the cassette for thick paper as the special cassette. 2) Select the following icon for the selected cassette (2nd column from the right and 3rd row from top). • Thick paper icon 3) Advise the user to use and select this cassette for thick paper.
	2	Is Canon-recommended paper used?	NO	Make a check using recommended paper. If the results are good, advise the user to use recommended paper.
Fixing assembly label (FILMLANK)	3	Decrease the setting of 'FILMLANK' in service mode (*3*). Is the problem corrected?	YES	End.
Fixing assembly	4	Is the problem noted in vertical direction?	YES	Check the fixing film for scratches or wrinkles. If any, replace the fixing assembly.
Fixing heater	5	Open the MIN_TH screen in service mode (*1*), and press the Copy Start key. Thereafter, is the value of 'MAIN_TH' 200°C or more?	NO	See "The fixing heater fails to turn ON."
DC controller PCB, Thermistor			YES	Check the DC controller PCB and the thermistor.

13 The copy has a displaced leading edge.

Cause	Step	Checks	Yes/No	Action
	1	Is the feeder used?	YES	Correct the problem by referring to the Service Manual for the feeder.
Original	2	Is the original set correctly?	NO	Place the original correctly.
Pick-up roller, Feeding roller, Separation roller	3	Is the pick-up/feeding/separation roller of the cassette which suffer from a displaced leading edge at the end of its life?	YES	Check the rollers; replace any worn roller.
3 REGST	4	Execute 'REGIST' in service mode (*3*). Is the problem corrected?	YES	End.
	5	Is the problem noted on the second side of two-sided/overlay copies only?	YES	Check the lower fixing assembly.
Registration roller, Pick-up/feeding guide			NO	Check and clean the following: • Registration rolls • Pick-up/feeding guide

14 The copy has blurred images.

Cause	Step	Checks	Yes/No	Action
Scanner drive cable	1	Does the cable on the cable pulley become twisted or frayed while the scanner is moving?	YES	1. Re-route the cable. 2. Replace the cable.
Scanner rail	2	Move the No. 1 mirror mount slowly by hand. Does it move smoothly?	NO	Clean the surface of the scanner rail with alcohol; thereafter, apply a small amount of lubricatnt.
Drum drive assembly, Photosensitive drum	3	Is the problem noted at intervals of about 94 mm?	YES	1. Check the drum drive assembly. 2. Check the drum ends (in contact with the developing rolls) for scratches and foreign matter.
Developing gear	4	Is the problem noted at intervals of 35 mm?	YES	Check the developing assembly.
Drum drive assembly, Drum unit				1. Check the drum drive assembly. 2. Replace the drum unit.

15 The copy has horizontal fogging.

Cause	Step	Checks	Yes/No	Action
	1	Is the problem noted at the same location on all copies made in Direct?	YES	Go to step 4.
Scanning lamp, Composite power supply PCB	2	Does the scanning lamp flicker while the scanner is moving forward?	YES	Check the scanning lamp, composite power supply PCB (lamp ON circuit), and 2.4V power supply.
Developing assembly	3	Is the coating of toner on the surface of the developing cylinder normal?	NO	Check the developing bias.
Scanner	4	Make reduced copies, and compare them against copies made in Direct. Is the location of the problem different?	YES	Check the scanning system.
Feeding system			NO	Check the feeding system.

16 The copy has poor sharpness.

Cause	Step	Checks	Yes/No	Action
	1	Is a printed photo (consisting of dots) copied in photo mode?	YES	Advise the user that moire may occur at times.
Copyboard glass	2	Is the copyboard glass stained with oil?	YES	Clean the copyboard glass.
Scanner (dirt)	3	Clean the scanning lamp, reflecting plate, mirror, lens, and dust-proofing glass. Is the problem corrected?	YES	End.
Mirror (position)	4	Is the horizontal reproduction ratio in Direct within the specified range?	NO	Adjust the distance between the No. 1 mirror and the No. 2 mirror.
Developing bias	5	Is the developing bias generated normally?	NO	1. Replace the composite power supply PCB. 2. Replace the DC controller PCB.
Drum unit	6	Replace the drum unit. Is the problem corrected?	YES	End.
Transfer charging system			NO	Check the transfer charging system.

17 The copy is completely blank.

Cause	Step	Checks	Yes/No	Action
Developing assembly (locking)	1	Is the developing assembly locked against the photosensitive drum during copying?	NO	Check the locking mechanism of the developing assembly.
Developing assembly drive assembly	2	Is the developing assembly rotating during copying?	NO	Check the drive system of the developing assembly.
Developing assembly	3	Is toner present inside the developing assembly toner sensor assembly?	NO	See “The ADD TONER message fails to turn ON.”
	4	Execute test printing using ‘L-TEST1–7’ in service mode (*4*). Is the image on the photosensitive drum normal?	NO	Go to step 11.
Transfer charging assembly	5	Is the transfer charging assembly fully inserted?	NO	Insert it securely.
	6	Does leakage occur in the transfer charging assembly?	YES	Check the transfer charging assembly.
Transfer high-voltage cord	7	Is there an open circuit or poor contact on the transfer high-voltage cord? (The cord is the one from the transformer 502 on the composite power supply PCB.)	YES	Re-connect it; or, replace the transfer high-voltage cord.
DC controller PCB	8	Replace the DC controller PCB. Is the problem corrected?	YES	End.
Composite power supply PCB	9	Replace the composite power supply PCB. Is the problem corrected?	YES	End.
Power supply to CCD unit	10	Is the voltage of the supply power to the CCD unit (analog processor PCB) as rated?	NO	1. Check the power supply harness between the CCD unit and the composite power supply PCB; if normal, replace the CCD unit. 2. Check the composite power supply PCB.
Laser unit, Image processor PCB	11	Remove the developing assembly, and make a solid black copy. At this time, is a laser beam hitting the photosensitive drum?	NO	1. Replace the laser unit. 2. Replace the image processor PCB.
Drum unit			YES	Replace the drum unit.

18 The copy is solid black.

Cause	Step	Checks	Yes/No	Action
Scanning lamp	1	Does the scanning lamp remain ON during copying?	NO	See “The scanning lamp fails to turn ON.”
Primary charging assembly	2	Are the contact and the connection from J205-3 on the composite power supply PCB to the primary charging assembly normal?	NO	Re-connect it.
	3	Execute test printing using ‘L-TEST1–7’ in service mode (*4*). Is the image on the photosensitive drum normal at the time?	NO	Go to step 5.
DC controller PCB	4	Connect the tester probe to J102-B5 (+) on the DC controller PCB. is Is 0 V during copying?	NO	Replace the DC controller PCB.
Composite power supply PCB			YES	Replace the composite power supply PCB.
Image processor PCB	5	Execute ‘IP-CHK’ in service mode (*4*). Is ‘OK’ indicated as a result?	NO	Replace the image processor PCB.
CCD unit			YES	Replace the CCD unit.

CHAPTER 4 TROUBLESHOOTING MALFUNCTIONS

1 E000 (Fixing temperature fails to rise.)

Cause	Step	Checks	Yes/No	Action
Thermistor relay connector (J50; disconnected)	1	Clear the error using 'ERROR' in service mode (*4*). Is the connection of the connector J50 (4-wire harness under the counter mount) good?	NO	Re-connect it.
Thermistor (open circuit)	2	Let the fixing assembly to cool; then, disconnect J50, and measure the resistance of the thermistor. Is the reading as follows? J50-1/-2 (yellow line):about 1388 k J50-3/-4 (white line):about 3636 k	NO	Replace the fixing assembly.
Heater (open circuit)	3	Disconnect the connector J4 (near the door switch assembly), and check electrical continuity. Is there electrical continuity?	NO	Replace the fixing assembly.
Thermistor (poor contact)	4	Replace the fixing assembly. Is the problem corrected?	YES	End.
Fixing heater driver	5	Replace the fixing heater driver. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller DC PCB.

2 E001 (Fixing temperature is abnormally high.)

Cause	Step	Checks	Yes/No	Action
Thermistor (short circuit)	1	Clear the error using 'ERROR' in service mode (*4*). Let the fixing assembly to cool; then, disconnect J50, and measure the resistance of the thermistor. Is the reading as follows? J50-1/-2(yellow line):about 0k J50-3/-4 (white lien):about 0 k	YES	Replace the fixing assembly.
Fixing heater driver	2	Replace the fixing heater driver. Is the problem corrected?	YES	End.
DC controller PCB			YES	Replace the DC controller.

3 E002/E003 (Fixing temperature is abnormally high.)

Cause	Step	Checks	Yes/No	Action
	1	Clear the error using 'ERROR' in service mode (*4*). Is any of the following correct after the machine has booted? • The fixing heater does not turn ON. • 'E000' is indicated.	YES	See the appropriate section.
Thermistor (short circuit)	2	Is the wiring from the connector J108 on the DC controller PCB to the thermistor normal?	NO	Arrange the wiring correctly.
Fixing heater driver	3	Replace the DC controller PCB. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the fixing heater driver.

4 E007 (The fixing film has become displaced.)

Cause	Step	Checks	Yes/No	Action
Film (displacement)	1	Turn OFF/ON the main power. is the problem corrected? (Turning OFF/ON the main power automatically starts film recovery mode. If the film fails to return to the correct position, 'E007-01' will be indicated, and no recovery can be made by turning the main power supply OFF/ON.)	YES	
			NO	

5 E007-01 (The fixing film fails to return.)

Cause	Step	Checks	YES/NO	Action
Front cover (boss for engagement)	1	Turn off the main power switch. Is the boss for engagement damaged?	YES	Replace the front cover.
Roller	2	Has the lower roller, tension roller, or cleaning roller slipped off?	YES	Replace the fixing assembly.
Fixing film	3	Is the fixing film cut, bent, or torn?	YES	Replace the fixing assembly.
	4	Has the fixing assembly been used to generate 200,000 copies or more?	YES	Replace the fixing assembly.
Releasing lever	5	Is the releasing lever faulty?	YES	Replace the fixing assembly/
Fixing film detecting lever	6	Is the tension spring of the fixing film detecting lever normal? Further, does it move smoothly?	NO	Correct it.
Fixing film sensor (PS2)	7	Is the fixing film sensor (PS2) normal?	NO	Check the wiring from the DC controller PCB through the relay connector J47 to the sensor; if normal, replace the sensor.
Fixing film motor (M5)	8	Turn on the main power, and reset the error using 'ERROR' in service mode (*4*). When the main power turns off automatically thereafter, turn it on once again, and execute 'FILM COMEBACK' in service mode (*4*). Is the operation of the fixing film motor (M5) normal?	NO	Replace the fixing film motor (M5).
			YES	Replace the fixing assembly.

6 E010 (The main motor fails to lock.)

Cause	Step	Checks	Yes/No	Action
	1	Does the main motor rotate until 'E010' is indicated?	NO	Go to step 4.
Main motor (including motor driver PCB)	2	Is MLCK (main motor specific speed signal) 0 V while the main motor is rotating?	NO	Replace the main motor.
DC power supply	3	Is the voltage between the following connectors on the main motor driver normal? J150-1: 24 V J150-2: 0 V	NO	Check the wiring from J204-3 (24 V)/J204-4 (0 V) on the composite power supply PCB to the main motor; if normal, see "DC power is absent."
Main motor	4	Replace the main motor. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

7 E030 (The total copy counter fails to operate.)

Cause	Step	Checks	Yes/No	Action
	1	Does the total copy counter operate normally? Counter 1 (right side): total copy counter Counter 2 (center): printer counter	NO	See "The counter fails to operate."
DC controller PCB			YES	Replace the DC controller PCB.

8 E031 (The fax counter fails to operate.)

Cause	Step	Checks	Yes/No	Action
	1	Does the fax counter operate normally? (115/230V model only) Counter 3 (left side): fax counter	NO	"The counter fails to operate."
DC controller PCB			YES	Replace the DC controller PCB.

9 E032 (The copy data controller counter is faulty.)

Cause	Step	Checks	Yes/No	Action
Connector (poor contact)	1	Are the connectors of the communication cable between the Copy Data Controller and the copier connected properly?	NO	Connect the connector correctly.
Communication cable (open circuit)	2	Does the communication cable between the Copy Data Controller and the copier have an open circuit?	YES	Replace the communication cable.
Copy Data Controller	3	Replace the Copy Data Controller. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

10 E051 (The horizontal registration home position detection mechanism is faulty.)

Cause	Step	Checks	Yes/No	Action
	1	Is the horizontal registration sensor (PS14) normal? • Making Checks Open the right door, and insert copy paper into the pick-up feeding assembly through the lower feeding assembly. While paying attention to 'CD PC0' in service mode (*2*), move the inserted paper toward the rear. Does the value under 'DC PC0' change from '1' to '0'?	YES	Go to step 3.
Horizontal registration sensor (PS14; faulty)	2	Is the wiring from the connector J114 on the DC controller PCB to the horizontal registration sensor normal?	YES	Replace the sensor.
Horizontal registration motor connector (poor contact)	3	Is the wiring from the connector J115 on the DC controller PCB to the horizontal registration motor normal?	NO	Connect the connector correctly.
Horizontal registration motor	5	Replace the horizontal registration motor. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

11 E064 (The high-voltage output is faulty.)

Cause	Step	Checks	Yes/No	Action
Wire (biting)	1	Turn OFF/ON the power switch, and set the copy count to '1'. Is 'E064' indicated after copying?	YES	Check the harness of the DC controller PCB and the composite power supply PCB.
Composite power supply PCB	2	Set the count to '1' once again, and make a copy. Is 'E064' indicated after copying?	YES	Perform steps 3 through 6; then, replace the composite power supply PCB.
Transfer charging assembly/transfer charging roller	3	Is the contact of the transfer charging assembly/transfer charging roller faulty?	YES	Replace the transfer charging assembly/transfer charging roller.
Primary charging roller	4	Remove the drum unit, and check the primary charging roller. Is the primary charging roller or the contact faulty?	YES	Replace the drum unit.
Developing assembly	5	Remove the developing assembly, and check the developing cylinder and the contact. Is the developing cylinder or the contact faulty?	YES	Replace the developing cylinder or the developing assembly.
High-voltage cable	6	Are there scratches or tears in the high-voltage cable (primary charging, transfer charging, and developing)?	YES	Replace the high-voltage cable.

12 E100 (BD error)

Cause	Step	Checks	Yes/No	Action
J602 J603	1	Are the connectors J602 and J603 of the laser driver connected?	NO	Re-connect them.
J518			YES	Check the connection of the connector J518 on the image processor PCB; if normal, go to the next step.
J5041	2	Is the connector J5041 on the BD PCB connected?	NO	Re-connect it.
J504			YES	Check the connection of the connector J504 on the image processor PCB; if normal, go to the next step.
BD PCB (soiled photo face)	2	Clean the photo face of the BD PCB. Is the problem corrected?	YES	End.
BD PCB, Laser unit, Image processor PCB			YES	Try replacing the following parts: • BD PCB • Laser unit • Image processor PCB

13 E110 (The laser scanner motor fails to lock.)

Cause	Step	Checks	Yes/No	Action
J153	1	Is the connector J153 on the laser scanner motor driver PCB connected?	NO	Connect the connector.
	2	Perform key operation during standby. Is the sound of the rotation of the laser scanner motor heard?	YES	Go to step 4.
DC power supply	3	Is the laser scanner driver PCB supplied with power? J152-1: 24 V J152-2: 0 V	NO	Check the wiring between the connector J152 on the laser scanner driver PCB to the connector J204-5/-6 on the composite power supply PCB.
Laser scanner motor driver PCB, Laser scanner unit			YES	Try replacing the following parts: • Laser scanner driver PCB • Laser scanner unit
DC controller PCB	4	Replace the DC controller PCB. Is the problem corrected?	YES	End.
Laser scanner unit			NO	Replace the laser scanner unit.

14 E190 (RAM error)

Cause	Step	Checks	Yes/No	Action
	1	Turn OFF/ON the main power. Is the problem corrected?	YES	End.
Image processor PCB	2	Execute 'IP-CHK' in service mode (*4*). Is 'OK' indicated after execution?	NO	Replace the image processor PCB.
DC controller PCB			YES	End if the problem is corrected after turning OFF/ON the main power supply. If 'E190' is indicated, replace the DC controller PCB.

15 E191 (error in serial communication between DC controller PCB and composite power supply PCB)

Cause	Step	Checks	Yes/No	Action
	1	Turn OFF/ON the main power. Is the problem corrected?	YES	End.
Connector (poor contact)	2	Is the connection between the connector J102 on the DC controller PCB and the connector J209 on the composite power supply PCB normal?	NO	Re-connect them.
DC controller PCB, Composite power supply PCB			YES	Try replacing the following parts: • DC controller PCB • Composite power supply PCB

16 E202 (Scanner home position is not detected; no code indication is made.)

Cause	Step	Checks	Yes/No	Action
	1	Is the scanner at home position when 'E202' is indicated?	YES	See "The scanner fails to move forward/in reverse."
Scanner home position sensor (PS1)	2	Is the scanner home position sensor (PS1) normal?	NO	Check the wiring from the DC controller PCB to PS1; if normal, replace PS1.
Scanner motor		Replace the scanner motor. Is the problem corrected?	YES	End.
DC controller PCB				Replace the DC controller PCB.

17 E220 (The scanning lamp turns ON wrongly.)

Cause	Step	Checks	Yes/No	Action
	1	Does the scanning lamp turn ON?	NO	See "The scanning lamp fails to turn ON."
Scanning lamp (low intensity)	1	Are both ends of the scanning lamp black?	YES	Replace the scanning lamp. • The scanner may not be able to move forward because of low intensity.
DC controller PCB	2	Replace the DC controller PCB. Is the problem corrected?	YES	Replace the DC controller PCB.
Composite power supply PCB			NO	Check the wiring of the DC controller PCB and the composite power supply PCB; if normal, replace the composite power supply PCB.

18 E240 (error in communication between DC controller PCB and image processor PCB)

Cause	Step	Checks	Yes/No	Action
	1	Turn OFF/ON the main power. Is the problem corrected?	NO	End.
Connector (poor contact)	2	Is the connection of the connector J111 on the DC controller PCB and the connector J509 on the image processor PCB good?	YES	Connect the connector properly.
DC controller PCB	3	Replace the DC controller PCB. Is the problem corrected?	YES	End.
Image processor PCB			NO	Replace the image processor PCB.

19 E243 (error in communication between control panel and image processor PCB)

Cause	Step	Checks	Yes/No	Action
	1	Turn OFF/ON the main power supply. Is the problem corrected?	YES	End.
Connector (poor contact)	2	Is the connection of the connector J517 on the image processor PCB and the connector J905 on the control panel good?	NO	Connect the connector properly.
Control panel	3	Replace the control panel. Is the problem corrected?	YES	End.
Image processor PCB			NO	Replace the image processor PCB.

20 E261 (zero cross error)

Cause	Step	Checks	Yes/No	Action
	1	Turn OFF/ON the main power supply. Is the problem corrected?	YES	End.
Connector (poor contact)	2	Is the connection of the connector J102 on the DC controller PCB and the connector J209 on the composite power supply PCB good?	NO	Connect the connector properly.
DC controller PCB	3	Replace the DC controller PCB. Is the problem corrected?	YES	End.
Composite power supply PCB			NO	Replace the composite power supply PCB.

21 E310 (The scanning lamp is poorly adjusted.)

Cause	Step	Checks	Yes/No	Action
	1	Press the Copy Start key. Does the scanning lamp turn ON?	NO	See “The scanning lamp fails to turn ON.”
Connector (poor contact)	2	Is the wiring from the connector J112 on the DC controller PCB to the scanning lamp intensity sensor normal?	NO	Correct it.
Intensity sensor (soiled)	3	Clean the photo face of the intensity sensor. Is the problem corrected?	YES	End.
Intensity sensor	4	Replace the intensity sensor. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller

22 E710, E711, E712, E713, E716 (IPC communication error)

Cause	Step	Checks	Yes/No	Action
	1	Turn OFF/ON the main power supply. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

23 E717 (error in communication with Copy Data Controller)

Cause	Step	Checks	Yes/No	Action
	1	Clear 'E717' by executing 'ERROR' in service mode (*4*); thereafter, turn OFF/ON the main power supply. Is the problem corrected?	YES	End.
Copy Data Controller	2	Replace the Copy Data Controller. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

24 E803 (composite power supply PCB 24V output error)

Cause	Step	Checks	Yes/No	Action
	1	Turn OFF/ON the main power switch. Is the problem corrected?	YES	End.
Scanning lamp	2	Does the scanning lamp remains OFF or turns ON but is dim when the Coy Start key is pressed?	YES	• If the lamp does not turn ON, see "The scanning lamp fails to turn ON." • If the lamp turns ON, check it to see if its both ends are black; if so, replace the lamp.
DC controller PCB	3	Replace the DC controller PCB. Is the problem corrected?	YES	End.
Composite power supply PCB			NO	Replace the composite power supply PCB.

25 AC power is absent.

Cause	Step	Checks	Yes/No	Action
Error code	1	Is an error code indicated when the main power switch is turned ON?	YES	See the description for the error code indicated.
Power plug (disconnected)	2	Is the power plug connected to the power outlet?	NO	Connect the power plug.
Main power supply (absent)	3	Is the rated voltage present at the power outlet?	NO	The problem is not of the copier. Advise the user.
Wiring	4	Is the wiring from the power supply cord mount to the composite power supply PCB normal?	NO	Correct it.
Noise filter			YES	Check the fuse of the noise filter. If blown, replace the fuse.
Main power switch	5	Disconnect the power plug from the power outlet, and connect the tester probes to both terminals (fastons) of the main power switch. Is the resistance 0 when the switch is turned ON and when the switch is turned OFF?	NO	Replace the main switch.
Noise filter, AC line			YES	Check the wiring of the AC line and the connector for contact; if normal, replace the noise filter.

26 DC power is absent.

Cause	Step	Checks	Yes/No	Action
Error code	1	Turn ON the main power supply switch. Is the error code indicated?	YES	See the descriptions for the error code indicated.
AC power supply (faulty)	2	Is AC power present?	NO	See “AC power is absent.”
Wiring, DC loads	3	Turn OFF the main power switch, and disconnect all following connectors: Composite Power Supply PCB J204, J211, J213, J214, J215 ACC Power Supply J134, J142 Is the output voltage of each terminal (Table 7-00) normal?	NO	Turn OFF the power switch, connect one of the disconnected connectors, and turn ON the power switch. Repeat this for all connectors to find the connector that activates the protection circuit. Then, check the wiring from that connector and DC loads.
Fuse, Wiring	4	Is the fuse blown?	YES	Replace the fuse. Check the DC loads of the fuse in question and wiring.
Composite power supply PCB, ACC power supply			NO	Replace the composite power supply PCB or the ACC power supply PCB.

■ Composite Power Supply PCB

Connector	Pin	Output
J204	1	+24Vu
	2	0Vu
	3	+24Vu
	4	0Vu
	5	+24Vu
	6	0Vu
	7	+24Vu
	8	0Vu
	9	+24Vu
	10	0Vu
J211	1	+5V
	2	0V
	3	+5V
	4	0V
	5	+5V
	6	0V
	7	+5V
	8	0V
	9	+5V
	10	0V
J213	1	+15V
	2	+15V
	3	+15V
	4	–12V
	5	–12V
	6	–12V
J214	1	+15V
	2	0V
	3	–12V
J215	1	+7V
	2	0V

■ ACC Power Supply PCB

Connector	Pin	Output
J142	1	+24V
	2	+24V
	3	0V
	4	0V
J143	1	+24V
	2	+24V
	3	0V
	4	0V

27 The photosensitive drum fails to rotate.

Cause	Step	Checks	Yes/No	Action
	1	Is 'E010' indicated?	YES	See the descriptions for 'E010'.
Drum unit (installation)	2	Try re-inserting the drum unit. Is the problem corrected?	YES	End.
Drum drive assembly			NO	Remove the drum drive assembly, and correct or replace the parts as necessary.

28 Pick-up fails. (pick-up from the cassette)

Cause	Step	Checks	Yes/No	Action
	1	Does the "Add Paper" message fails to turn OFF?	YES	See "The Add Paper message fails to turn OFF."
Cassette (installation)	2	Slide out and then in the cassette. Is the problem corrected?	YES	End.
Pick-up roller	3	Has the pick-up roller made more copies than it its designed for?	YES	Replace the pick-up roller.
Pick-up motor	4	Replace the pick-up motor. Is the problem corrected?	YES	End.
Fuse (Fu 1601; on pick-up PCB)			NO	Check the fuse (Fu 1601) on the pick-up PCB; if normal, go to the next step.
DC controller PCB	5	Is the leading edge of the copy paper as far as the registration roller?	YES	See the registration roller fails to rotate."
DC controller PCB	6	Try replacing the DC controller PCB. Is the problem corrected?	YES	End.
Pick-up assembly			NO	Replace the pick-up assembly.

29 The lifter fails to move up.

Cause	Step	Checks	Yes/No	Action
Cassette	1	Slide out the cassette. Does the holding plate move smoothly when lifted by hand?	NO	Check the inside of the cassette for foreign matter.
Lifter position sensor	2	Is the lifter position sensor normal?	NO	Replace the lifter position sensor.
Lifter drive assembly	3	Is the lifter drive assembly normal?	NO	Correct it.
Pick-up assembly			YES	Replace the pick-up assembly.

30 Pick-up fails. (multifeeder)

Cause	Step	Checks	Yes/No	Action
Multifeeder pick-up clutch (CL2)	1	Select multifeeder pick-up, and press the Copy Start key. Does the pick-up roller of the multifeeder rotate?	NO	Check the wiring; if normal, replace CL2.
Paper guide plate cam	2	Select multifeeder pick-up, and press the Copy Start key. Does the paper guide plate spring up?	YES	Check the position of the paper guide plate cam and the separation pad; as necessary, make adjustments or replace it.
Multifeeder holding plate releasing solenoid (SL3)	3	Connect the tester probes to the connector J114-B12 (+) and the connector J14-B13 (–) on the DC controller PCB. Does the voltage change from 0 V to about 24 V when the Copy Start key is pressed?	YES	Check the wiring; if normal, replace SL3.
DC controller PCB			NO	Replace the DC controller PCB.

31 The registration roller fails to rotate.

Cause	Step	Checks	Yes/No	Action
Registration roller	1	Press the Copy Start key. Does the registration roller rotate immediately after the scanner moves forward?	YES	Check the registration roller drive assembly.
DC controller PCB	2	Does the voltage between the connector J114-B10 (+) and the connector J114-B1 (–) on the DC controller PCB change from 0 V to 24 V immediately after the scanner starts to move forward?	NO	Replace the DC controller PCB.
Registration clutch (CL1)			YES	Check the wiring from the DC controller PCB; if normal, replace CL1.

32 The scanner fails to move forward/in reverse.

Cause	Step	Checks	Yes/No	Action
Scanner drive cable	1	Is the scanner drive cable routed correctly?	NO	Re-route it.
Scanner path (foreign matter)	2	Is the scanner rail free of dirt, and does the scanner move smoothly?	NO	Check the surface of the scanner rail for foreign matter or an object that comes into contact with the scanner.
Connector (poor contact)	3	Check the wiring/connection from the connector J116 on the DC controller PCB to the scanner motor. Is it normal?	NO	Correct it.
Scanner motor (M2)	4	Replace the scanner motor. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

33 The pre-exposure lamp fails to turn ON.

Cause	Step	Checks	Yes/No	Action
Pre-exposure lamp	1	Does the voltage between the connector J107-A11 (+) and the connector J107-A12 (–) on the DC controller PCB change from 0 V to 24 V when the Copy Start key is pressed?	YES	Check the wiring from the DC controller PCB to the pre-exposure lamp; if normal, replace the pre-exposure lamp.
DC controller PCB			NO	Replace the DC controller PCB.

34 The scanning lamp fails to turn ON.

Cause	Step	Checks	Yes/No	Action
Scanning lamp	1	Are both ends of the scanning lamp black?	YES	Replace the scanning lamp.
Scanning lamp installation	2	Is the scanning lamp installed correctly?	NO	Re-install it.
Connector (poor contact)	3	Is the connection of the relay connectors J20 and J95 normal? Further, is the connection of the connector J802 on the composite power supply PCB normal?	NO	Re-connect it.
DC controller PCB	4	Replace the DC controller PCB. Is the problem corrected?	YES	End.
Composite power supply PCB			NO	Replace the composite power supply PCB.

35 The fixing heater fails to operate.

Cause	Step	Checks	Yes/No	Action
	1	Is 'E000' indicated?	YES	See the descriptions for 'E000'.
Fixing heater driver	2	Replace the fixing heater driver. Is the problem corrected?	YES	End.
Fixing assembly	3	Replace the fixing assembly. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

36 The counter fails to operate.

Cause	Step	Checks	Yes/No	Action
Counter	1	Turn OFF the main power switch, and disconnect the following connectors: is the resistance on the counter side about 480 Ω? Total copy counter (CNT1):J57 Print counter (CNT2):J93 Fax counter (CNT3):J94	NO	Replace the counter.
	2	Does the voltage of the following connectors on the DC controller PCB change from 0 V to 24 V and then to 0 V after copy paper is discharged? Total copy counter (CNT1): J107-B3 (+) J107-B4 (–) Printer counter (CNT2): J107-B5 (+) J107-B6 (–) Fax counter (CNT3): J107-B7 (+) J107-B8 (–)	YES	Replace the counter.
DC controller PCB			NO	Replace the DC controller PCB.

37 The Add Paper message fails to turn OFF.

Cause	Step	Checks	Yes/No	Action
	1	Does the lifter move up?	NO	See “The lifter fails to move up.”
Paper sensor	2	Put paper in the cassette, and check ‘P-SENS’ in service mode (*1*; 7th page). Is the value ‘0’? (upon detection, ‘1’)	YES	Check the sensor lever; if normal, replace the sensor in question.
DC controller PCB			NO	Replace the DC controller PCB.

38 The Jam message fails to turn OFF.

Cause	Step	Checks	Yes/No	Action
Jam	1	Is there paper around the sensor which has turned on? (Check by referring to the jam code in service mode (*1*; JAM).)	YES	Remove the paper.
Sensor	2	Is the sensor identified by the jam code in service mode (*1*) normal?	NO	Replace the sensor.
DC controller PCB			YES	Replace the DC controller PCB.

39 The Add Toner message fails to turn OFF.

Cause	Step	Checks	Yes/No	Action
Stirring spring	1	Remove the developing assembly. Is the spring used to stir the toner around the toner sensor (TS1) installed correctly?	YES	Re-install it.
Toner sensor	2	Try replacing the toner sensor. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

40 The fax error indicator fails to turn OFF.

Cause	Step	Checks	Yes/No	Action
Paper (absent)	1	Do all installed cassettes have paper in them?	NO	Put paper. • The fax error indicator (lamp) flashes if all installed cassettes are with paper; advise the user.
Fax	2	Is the FAX reception operation normal?	NO	Check the connection to the telephone line.
Image processor PCB	3	Replace the image processor PCB. Is the problem corrected?	YES	End.
FAX Board			NO	Replace the FAX Board.

CHAPTER 5 TROUBLESHOOTING FEEDING FAULTS

A. Copy Paper Jams

The machine allows checking the location and the type of jam occurring inside it.

Service mode screen	DISPLAY (*1*; 2nd screen)
Jam type, Sensor	4-digit number in 4th block from right of screen high-order 2 digits: type (delay, stationary, residual) low-order 2 digits: sensor

High-order 2 digits	Low-order 2 digits	sensor
01: delay 02: stationary 10: residual (at power-on)	01: pre-registration sensor 02: vertical path sensor (copier) 03: vertical path sensor (pedestal) 32: fixing assembly paper sensor 33: delivery sensor 34: delivery tray 2 paper sensor (multi 3) 35: delivery tray 3 paper sensor (multi 3) 61: multi tray 3 inlet sensor 62: lower feeding assembly inlet paper sensor 63: re-pick up sensor	PS5 PS8 Q1603 PS7 PS13 PS17 PS18 PS19 PS12 PS11
11: door open	01: front door 02: right door 03: pedestal right door	—

Ex.
0101: pre-registration delay jam
0233: delivery stationary jam

Jam code	Condition	Sensor
9009	The registration sensor identifies a jam if the size of the copy paper being fed and the size set by the cassette dial are different. • Conditions of Detection A check is made while in two-sided copying mode or in fax reception mode; no check is made in one-sided copying mode or in printer output mode.	PS5

Jams tend to be limited in terms of where they can occur inside the machine: ① pick-up assembly, ② separation/feeding assembly, ③ fixing/delivery assembly, and ④ lower feeding assembly.

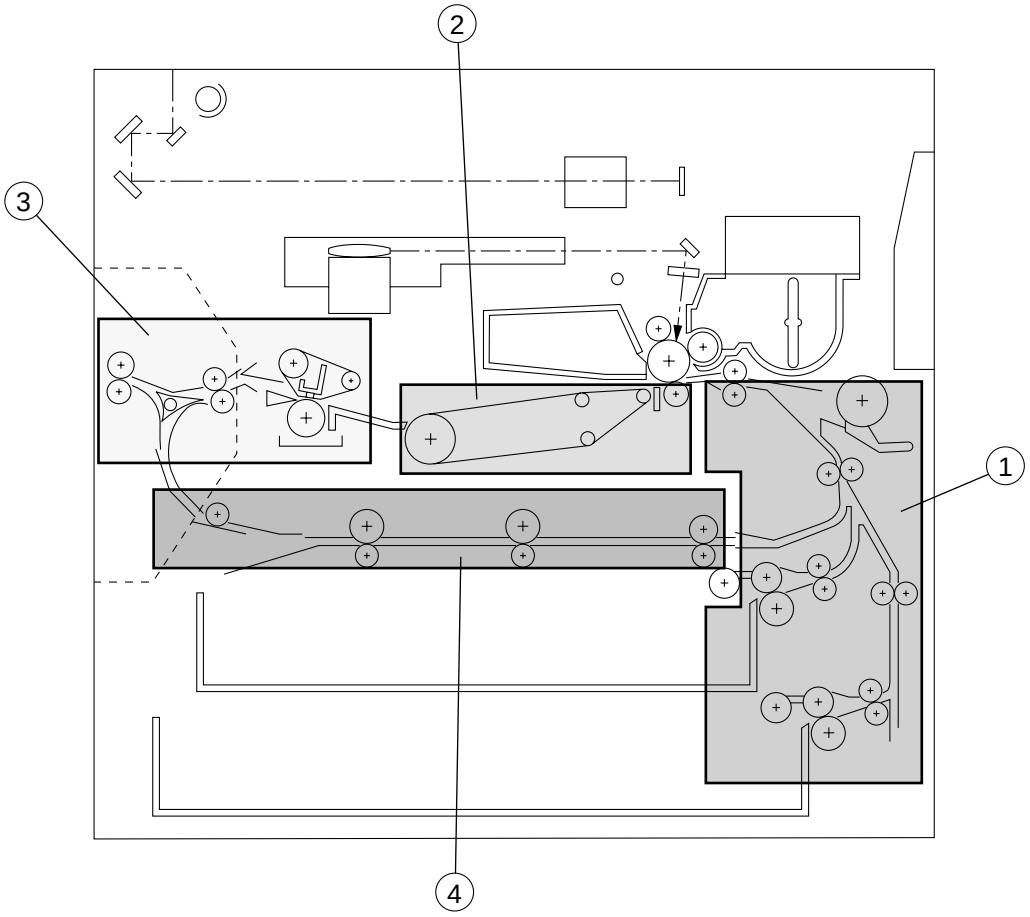


Figure 5-501

1 Pick-Up Assembly

Cause	Step	Checks	Yes/No	Action
	1	Has the paper come from a cassette?	NO	Go to step 10.
Cassette	2	Is the cassette installed in the copier properly? Further, is the dial set correctly?	NO	Install it properly.
	3	Try a different cassette. Is the problem corrected?	YES	Check the inside of the cassette for foreign matter.
Copy paper	4	Is the copy paper curled or wavy?	YES	Replace the copy paper. Advise the user on the correct method of storing paper.
	5	Try Canon-recommended paper. Is the problem corrected?	YES	Advise the user to use recommended paper.
DC controller PCB, Pick-up clutch	6	Does the pick-up roller of the selected cassette holder rotate during copying operation?	NO	2Go through the steps under “Pick-up fails.”
Pick-up roller	7	Is the pick-up roller deformed or worn?	YES	Replace the pick-up roller.
Separation roller	8	Is the separation roller of any cassette holder deformed or worn?	YES	Replace any deformed or worn separation roller.
Torque limiter			NO	Replace the torque limiter.
Feeding roller	9	Is the feeding roller of each cassette holder deformed or worn?	YES	Replace the deformed or worn feeding roller.
	10	Try manual copying. Does the multifeeder pick-up roller start to rotate?	NO	Go through the steps under “Multifeeder pick-up fails.”
Registration roller drive assembly	11	Does the registration roller operate normally?	NO	Go through the steps under “The registration roller fails to rotate.”
Registration roller, Vertical path roller	12	Clean the registration roller and the vertical path roller. Is the problem corrected?	NO	Clean the roller; if the problem is not corrected, replace the deformed or worn roller.
Copy paper	13	Try Canon-recommend paper. Is the problem corrected?	YES	Advise the user to use recommended paper.
Pick-up roller			NO	Check the pick-up roller for wear and deformation.

2 Separation/Feeding Assembly

Cause	Step	Checks	Yes/No	Action
Transfer roller	1	Is the transfer roller assembly installed securely?	NO	Check the transfer roller assembly.
Copy paper	2	Try Canon-recommended paper. Is the problem corrected?	YES	Advise the user to use recommended paper.
Feeding belt	3	Are the two feeding belts rotating properly?	NO	Check the belt pulley.
			YES	Check the feeding belt for deformation and wear.

3 Fixing/Delivery Assembly

Cause		Step	Checks	Yes/No	Action
Delivery assembly separation claw		1	Is the separation claw worn or deformed?	YES	1. Replace the separation claw. 2. If dirt is found, use solvent.
Fixing assembly	Fixing lower roller, Fixing film	2	Is the fixing lower roller or the fixing film deformed or scratched?	YES	Replace the roller/the film.
Fixing assembly	Paper guide	3	Is the paper guide soiled with toner?	YES	Use solvent.
Delivery assembly	Delivery sensor lever	4	Does the delivery sensor lever move smoothly?	NO	Adjust so that it moves smoothly.
Delivery assembly	Delivery sensor (PS13)	5	Is the operation of the delivery paper sensor normal? (See the descriptions on how to check photointerrupters.)	NO	Replace the sensor.
Delivery assembly	Delivery roller drive assembly	6	Does the delivery roller move smoothly?	NO	Check the delivery roller drive assembly.
Leading edge margin				YES	Check the leading edge of copy paper if there is a margin.

4 Lower Feeding/Re-Pick Up Assembly

Cause	Step	Checks	Yes/No	Action
Paper deflecting plate 1 drive assembly	1	Is the paper deflecting plate 1 of the delivery assembly operating?	NO	Check the paper deflecting plate 1 drive assembly.
Lower feeding assembly inlet drive assembly	2	Is the operation of the lower feeding assembly inlet motor/roller normal?	YES	Clean the lower feeding roller.
			NO	Check the drive assembly.
PS11, PS12	3	Are the operation of the lower feeding assembly inlet sensor (PS12) and the re-pick up sensor (PS11) normal?	NO	Replace PS11/PS12.
Set-back roller drive assembly	4	Is the set-back roller rotating?	NO	Check the set-back roller drive assembly.
Re-pick up drive assembly, SL4, CL5	5	Is the flapper (SL4) operating when re-pick up occurs for multiple copies? Further, is the re-pick up roller (Cl5) rotating?	NO	Check the re-pick up drive assembly.
Guide plate			YES	Check each guide for foreign matter and deformation.

B. Feeding Faults

1 Double Feeding

Cause	Step	Checks	Yes/No	Action
Separation roller	1	Is the separation roller deformed or worn?	YES	Replace the separation roller.
Torque limiter			NO	Check the torque limiter.

2 Wrinkles

Cause		Step	Checks	Yes/No	Action
Pick-up assembly		1	Turn off the power while copy paper is moving through the feeding assembly. Is the copy paper wrinkled at this time? Further, is it moving askew?	YES	Check the pick-up assembly. Check the registration roller.
Copy paper		2	Try fresh copy paper. Is the problem corrected?	YES	The copy paper may be moist; advise the user on the correct method of storing paper.
		3	Is the paper of a type recommended by Canon?	NO	Advise the user to use recommended paper.
Fixing assembly	Inlet guide	4	Check the inlet guide for foreign matter (e.g., toner)?	YES	Clean with solvent.
	Fixing film	5	Is the fixing film displaced?	YES	Make adjustments.
	Fixing assembly			NO	Replace the fixing assembly.

CHAPTER 6 ARRANGEMENT AND FUNCTIONS OF ELECTRICAL PARTS

A. Clutches and Solenoids

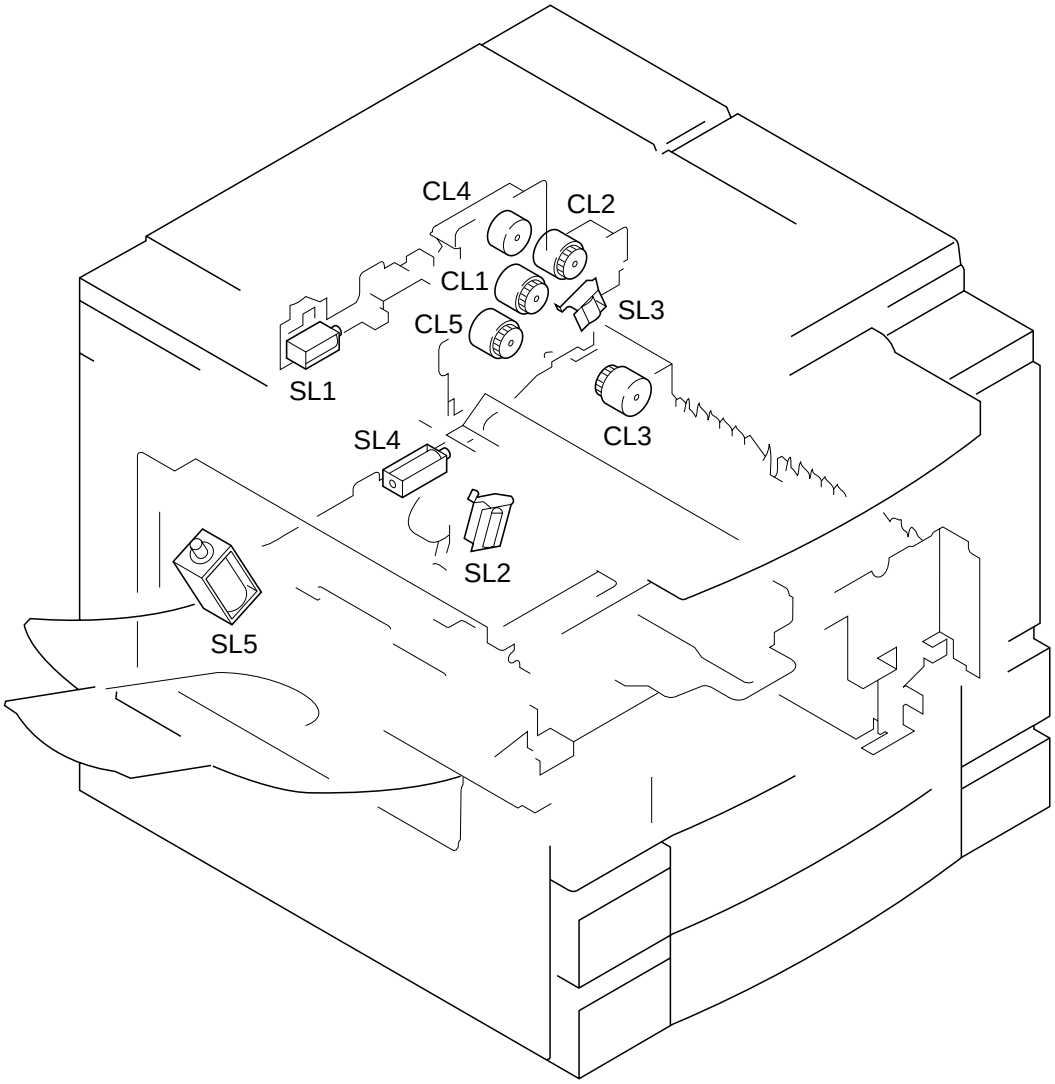
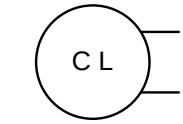


Figure 6-601

Clutches and Solenoids

Symbol	Name	Notation	Description
	Clutch	CL1 CL2 CL3 CL4 CL5	Drives the registration roller. Drives multifeeder pickup. Drives the vertical path roller. Drives the developing cylinder. Drives lower feeding assembly re-pick up.
	Solenoid	SL1 SL2 SL3 SL4 SL5	Drives primary charging roller cleaning. Moves down the pick-up roller. Releases the multifeeder holding plate. Drives the re-pick up assembly paper deflecting plate. Drives the delivery assembly paper deflecting plate.

B. Motors

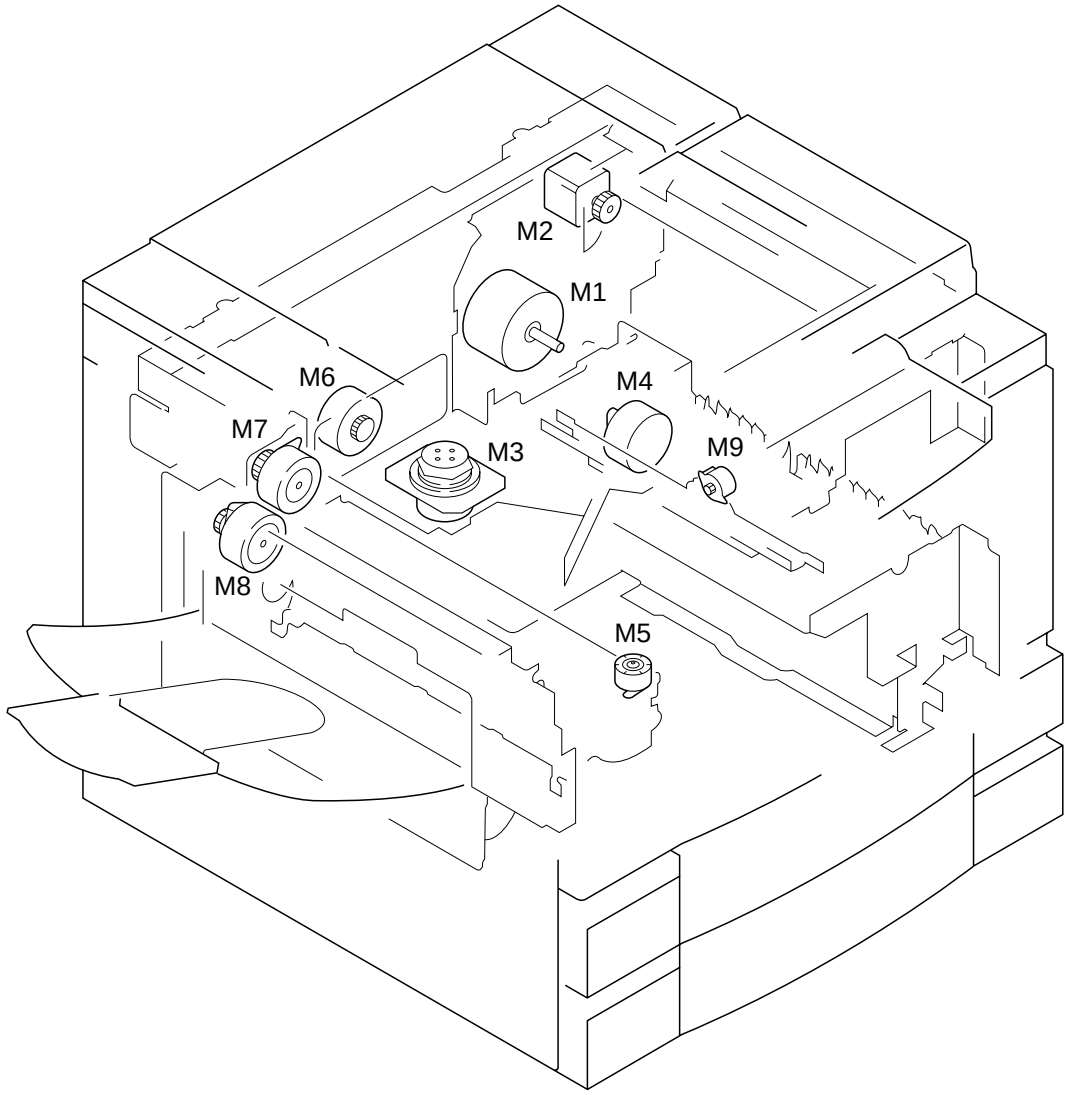


Figure 6-602

Motors

Symbol	Name	Notation	Description
M	Motor	M1	Main motor
		M2	Scanner motor
		M3	Laser scanner motor
		M4	Pick-up motor
		M5	Fixing film motor
		M6	Set-back motor
		M7	Duplexing unit inlet motor
		M8	Delivery motor
		M9	Horizontal registration sensor drive motor

C. Fans

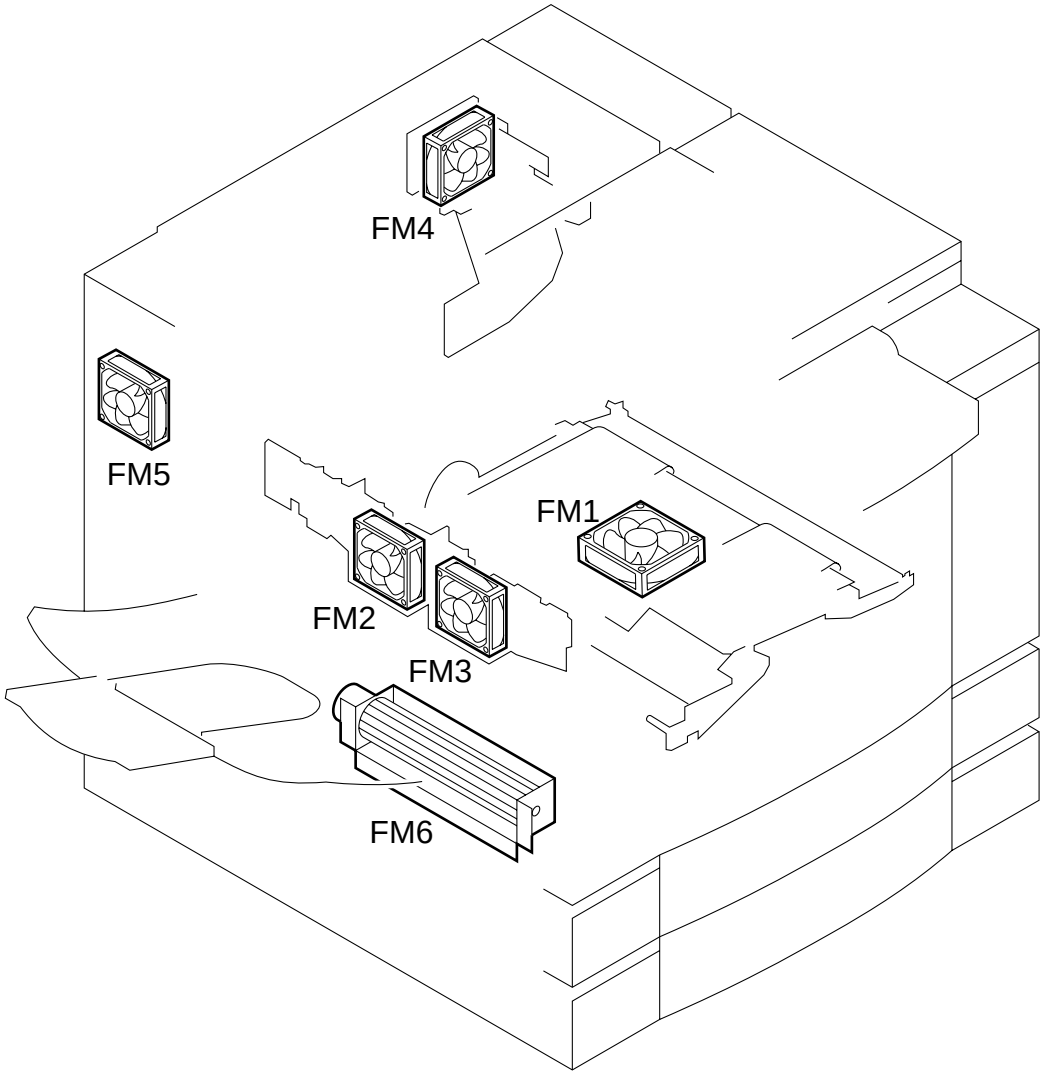
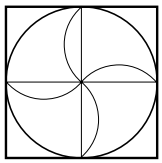


Figure 6-603

Fans

Symbol	Name	Notation	Description
	Fan	FM1 FM2 FM3 FM4 FM5 FM6	Feeding fan Delivery fan 1 (rear) Delivery fan 2 (front) Laser cooling fan Electrical unit fan Lower feed inlet fan

D. Sensors

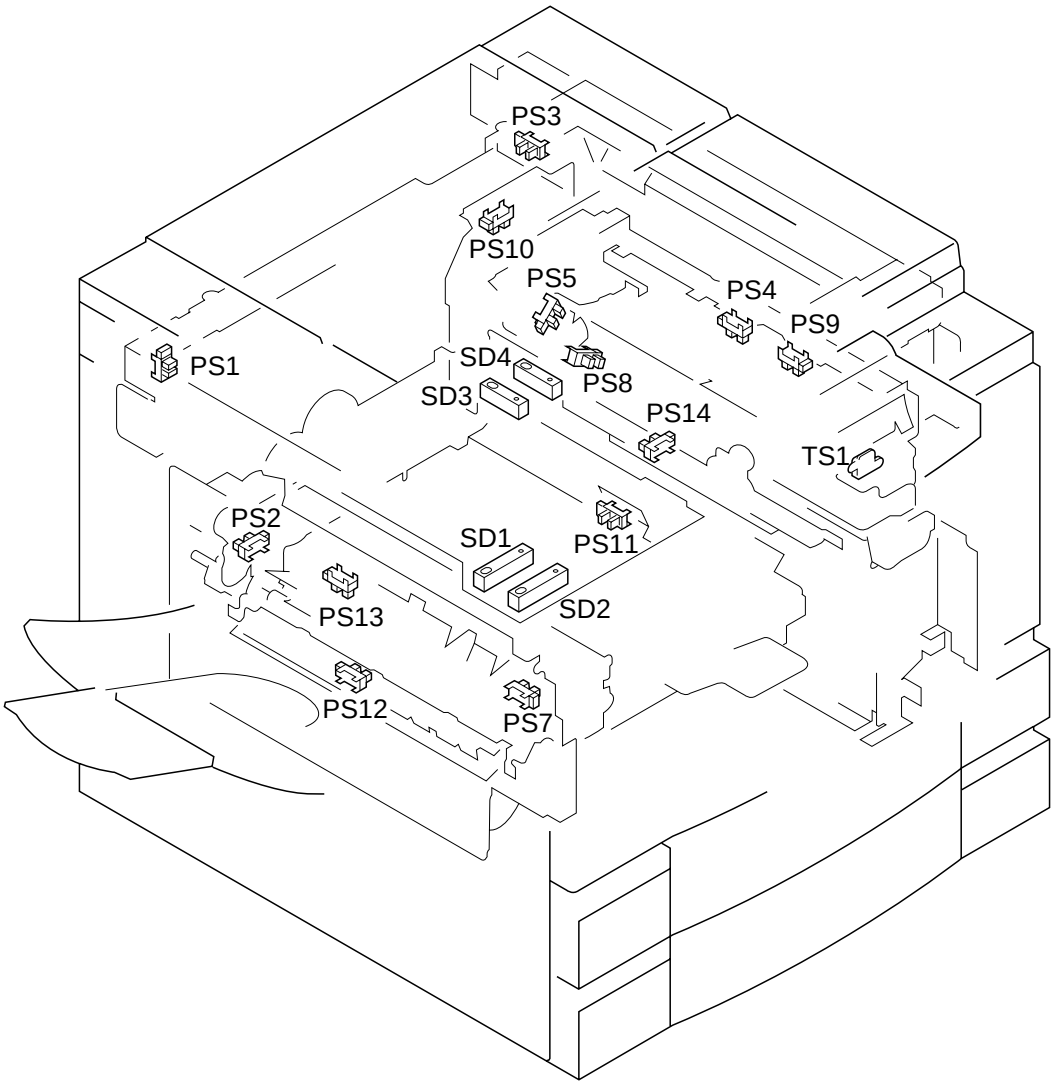
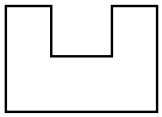


Figure 6-604

Sensors

Symbol	Name	Notation	Description
	Photointerrupter	PS1	Detects scanner home position.
		PS2	Detects displacement of the fixing film.
		PS3	Detects the open/closed state of the copy-board cover.
		PS4	Detects paper in the multifeeder.
		PS5	Detects paper in front of the registration assembly.
		PS7	Detects delivery from the fixing assembly.
		PS8	Detects paper in front of the Vertical path assembly.
		PS9	Detects the open/closed state of the right door.
		PS10	Detects waste toner.
		PS11	Detect paper in of the re-pick up assembly.
		PS12	Detects paper at the duplexing unit inlet.
		PS13	Detects delivery of paper.
		PS14	Detects paper at the horizontal registration assembly.
	Piezoelectric oscillator element	TS1	Detects the level of remaining toner.
	Reflecting type sensor	SD1	Original size sensor 1
		SD2	Original size sensor 2
		SD3	Original size sensor 3
		SD4	Original size sensor 4

E. Switches and Counters

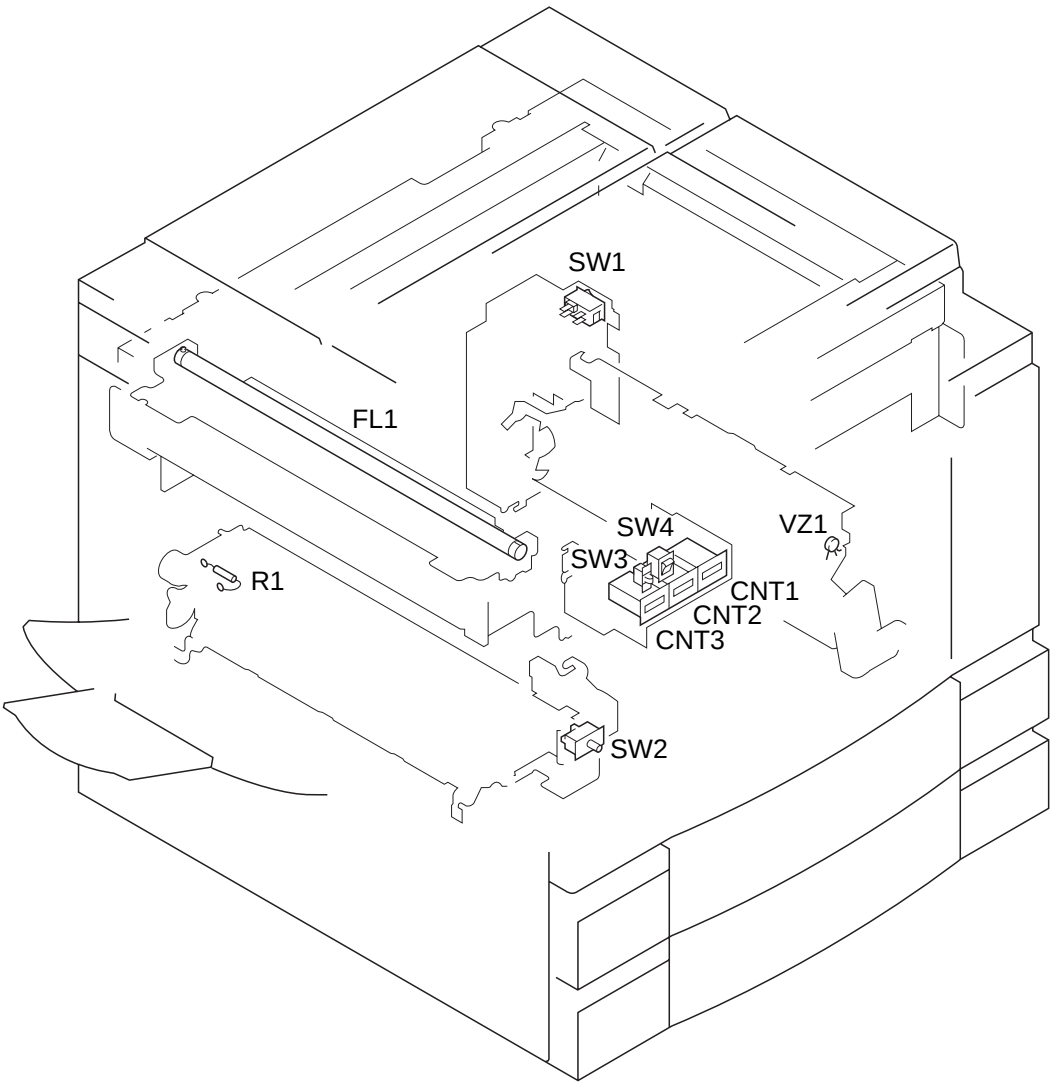


Figure 6-605

Switches, Counters, Heaters, Varistors, and Fuses

Symbol	Name	Notation	Description
	Switches	SW1	Main power switch
		SW2	Front door switch
		SW3	Power saving mode switch
		SW4	Cassette heater switch
	Counters	CNT1	Counter 1
		CNT2	Counter 2
		CNT3	Counter 3 (non-Japanese model only)
	Varistors	VZ1	Pre-registration guide varistor
	Resistor	R1	High-voltage resistor
	Scanning lamp (fluorescent lamp)	FL1	Scanning lamp

F. PCBs

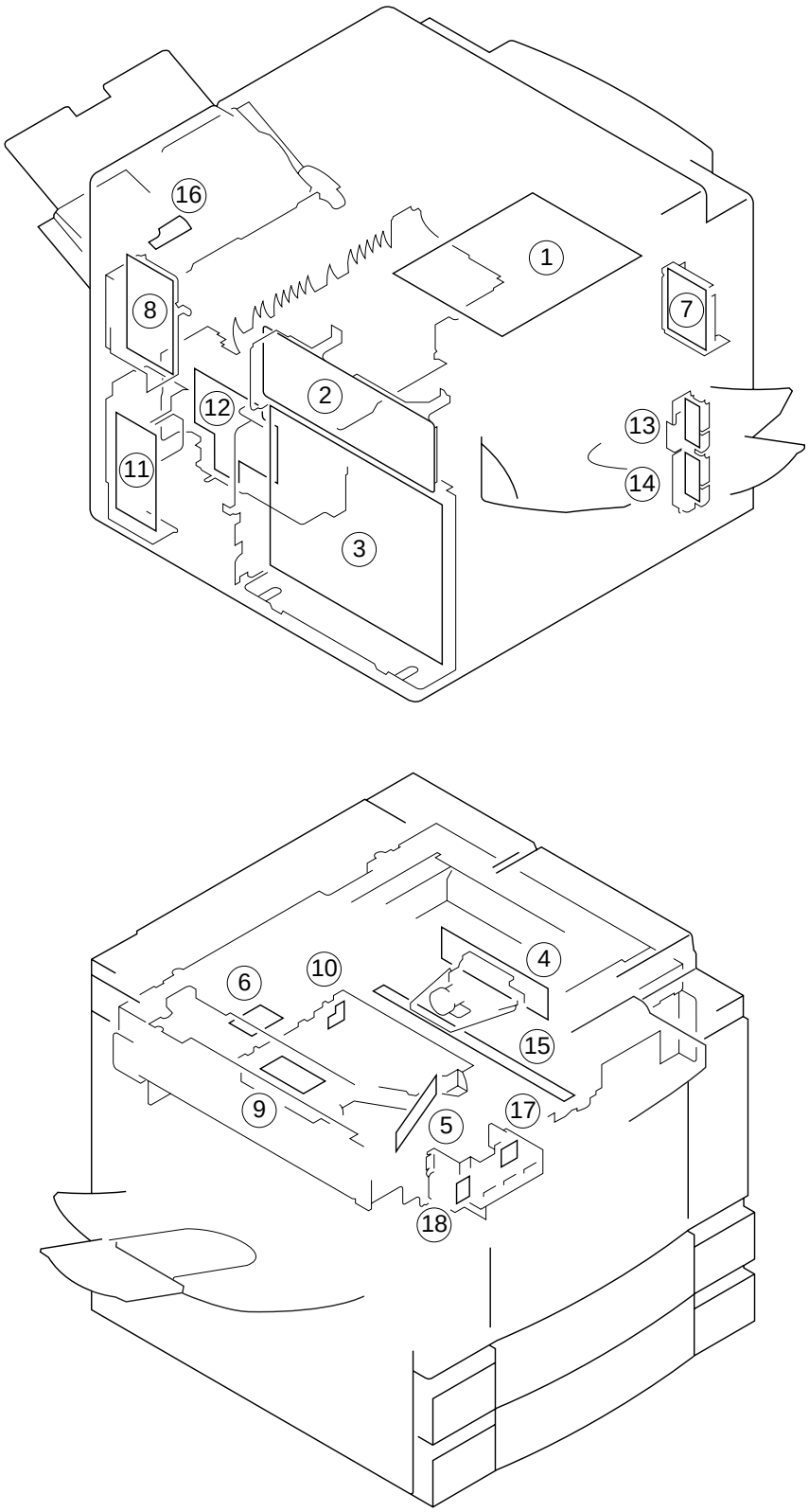


Figure 6-606

PCBs

Ref.	Name	Description
①	Image processor PCB	Processes images.
②	DC controller PCB	Controls DC loads.
③	Composite power supply PCB	Provides HVT/lamp regulator/DC power.
④	Analog processor PCB	Drives the CCD/processes analog images.
⑤	Laser driver PCB	Drives the laser unit.
⑥	Laser scanner motor driver	Drives the laser scanner motor.
⑦	Fixing heater driver	Drives the fixing heater.
⑧	Options power supply	Provides power to the sorter/RDF.
⑨	Intensity adjusting sensor	Detects the intensity of the scanning lamp.
⑩	BD PCB	Detects the laser beam.
⑪	Noise filter	Removes electrical noise from AC power.
⑫	Pick-up unit PCB	Controls the pick-up assembly sensors.
⑬	Cassette size detection (upper)	Detects the size of the upper cassette.
⑭	Cassette size detection (lower)	Detects the size of the lower cassette.
⑮	Pre-exposure lamp PCB	Removes residual charges from the photosensitive drum.
⑯	Multifeeder paper width detection PCB	Detects the width of paper in the multifeeder.
⑰	Service switch PCB	Controls the service switch.
⑱	LCD intensity adjustment PCB	Controls the LCD.

G. Fax-Related PCBs

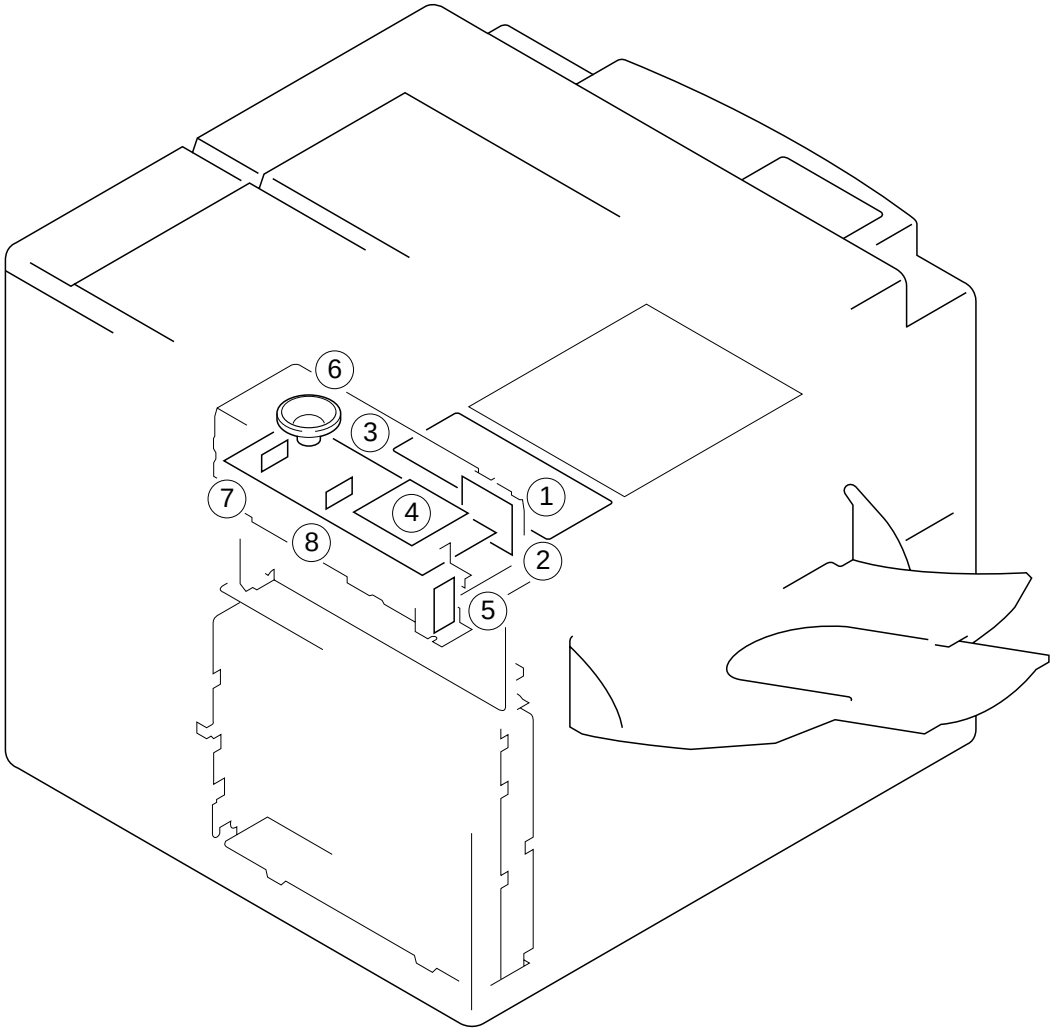


Figure 6-607

PCBs (machine equipped with fax functions)

Ref.	Name	Description
①	CORE/IP Board	Performs binary processing for fax operations, and processes ratios for fax/printer operations.
②	FAX Motherboard	Controls the bus.
③	FAX Board	Controls fax operations.
④	NCU	Control the network.
⑤	Modular Jack Board	Serves as a modular jack.
⑥	Speaker	Serves as a speaker.
⑦	Expansion memory (option)	Serves as an image memory (3MB or 9 MB).
⑧	Expansion memory (option)	Serves as a page memory (3MB).

H. Variable Resistors (VR), Light-Emitting Diodes (LED), and Check Pins by PCB

Of the variable resistors (VR), light-emitting diodes (LED), and check pins used in the machine, those needed in the field are discussed.

Caution:

1. Some LEDs emit dim light even when OFF because of leakage current; this is a normal condition and must be kept in mind.
2. VRs that may be used in the field 
   VRs that must not be used in the field 

Caution:

Those VRs and check pins not shown in any of the lists are for factory use; they require special instruments and high precision and must not be touched in the field.

1. Image Processor PCB

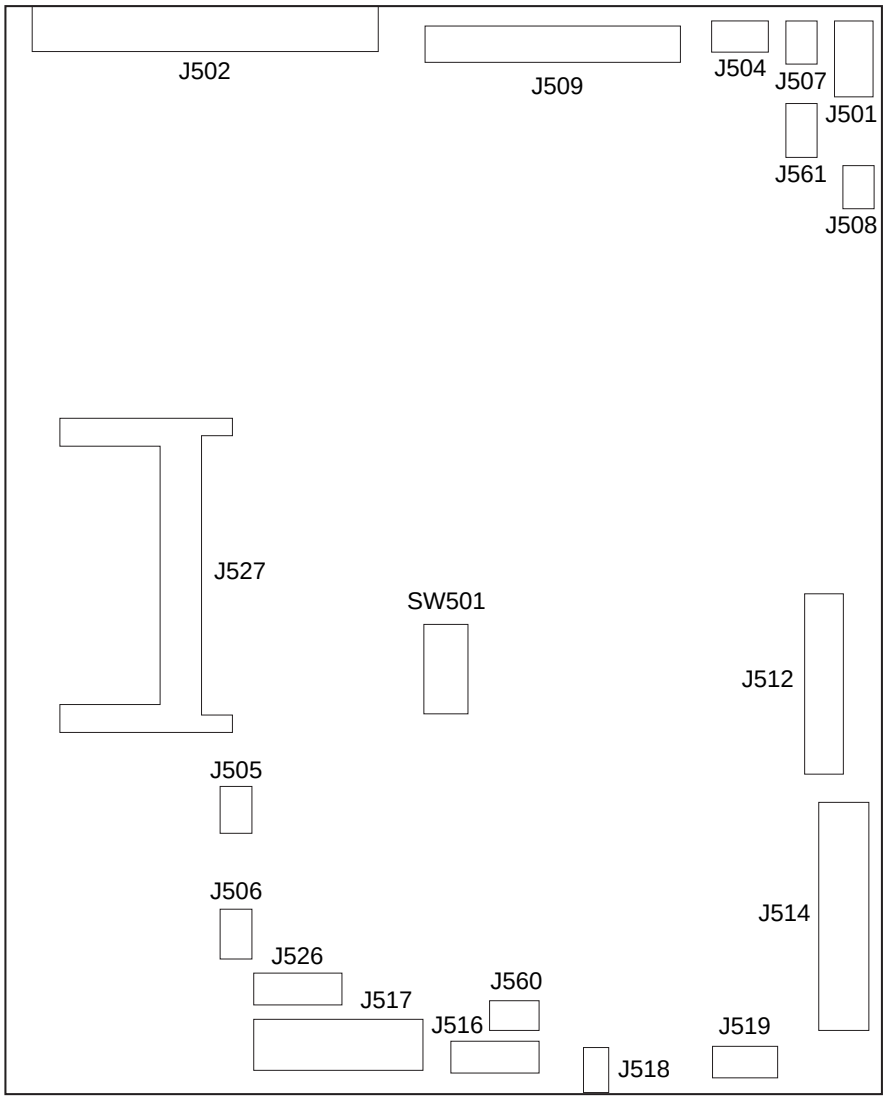


Figure 6-608

■ SW501

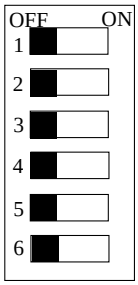
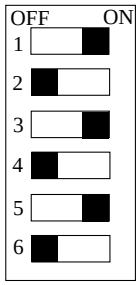
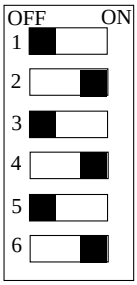
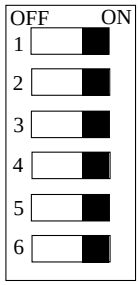
	100V AB	120V Inch	230V A	230V AB/Inch
SW501				

Table 6-601

2. DC Controller PCB

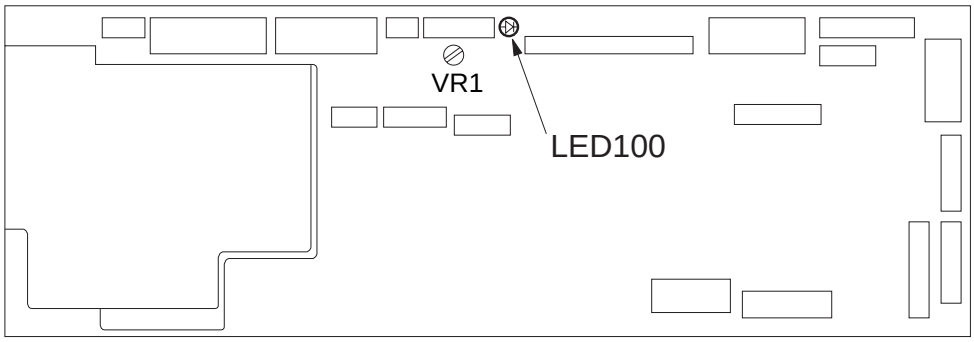


Figure 6-609

LED100: Indicates the condition of the composite power supply PCB by varying ON/OFF intervals. (For details, see service manual p. 3-74.)
VR1: Used for adjusting the intensity of the scanning lamp when executing 'factory/R&D shading' under 'FUCNTION' in service mode (*4*; FUNCTION).

3. Composite Power Supply PCB

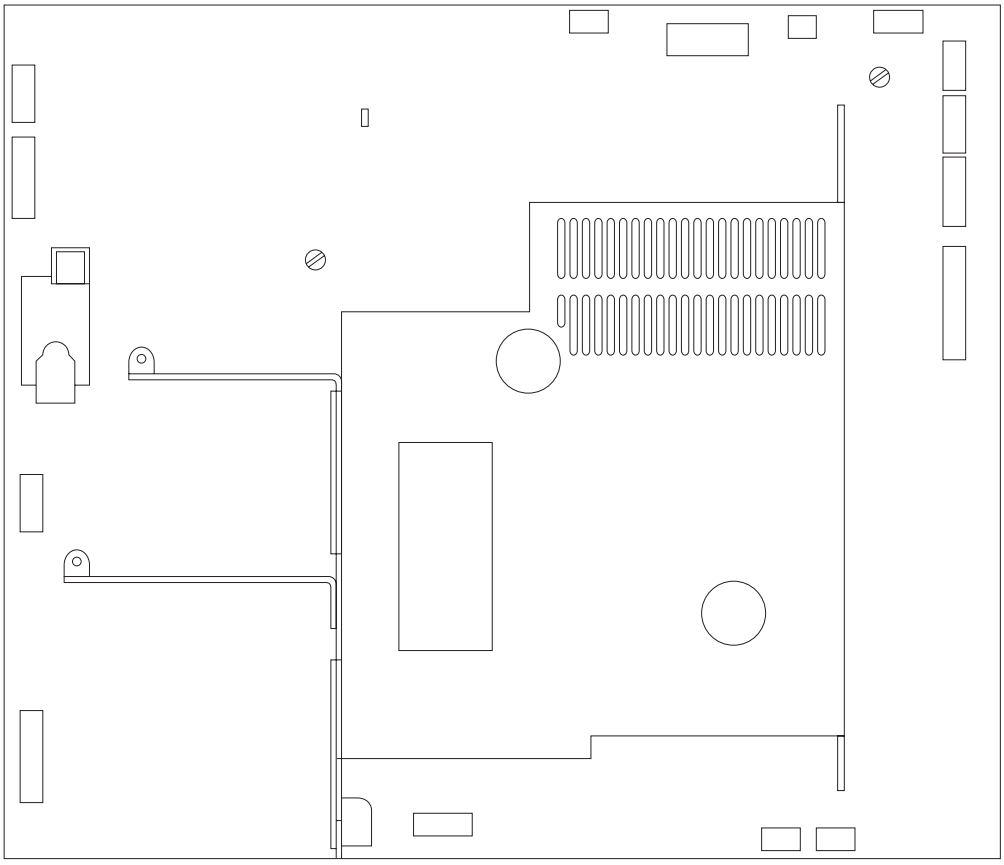


Figure 6-610

4. FAX Board/NCU

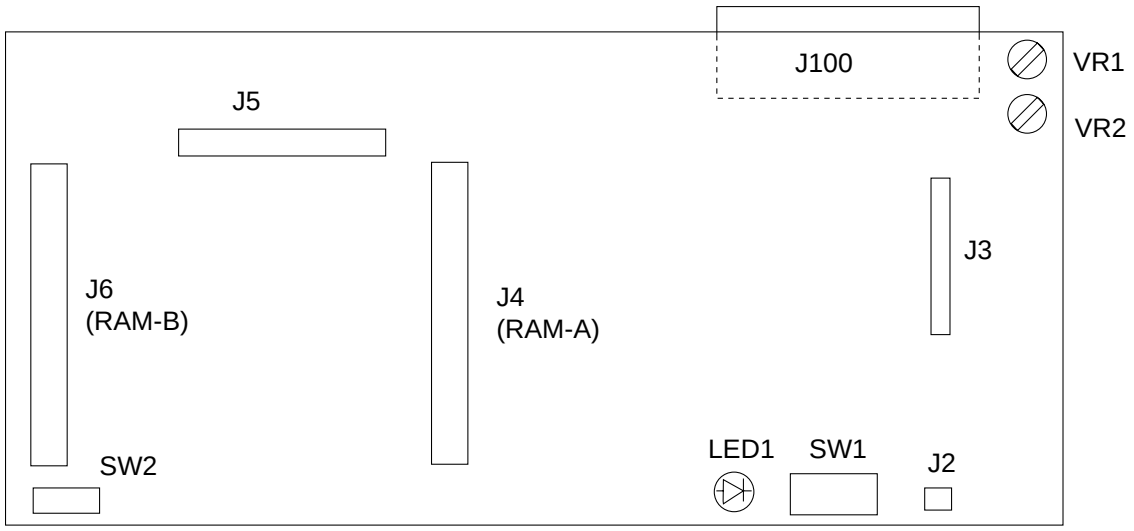


Figure 6-611

RAM-A: Used as page memory. When installed, it enables the use of Ultra Fine mode. (You must install RAM-B if you have installed RAM-A; 3 MB.)
RAM-B: Used as image memory. When installed, it increases the size of memory for transmission/reception images. (3 MB or 9 MB)

• NCU Board

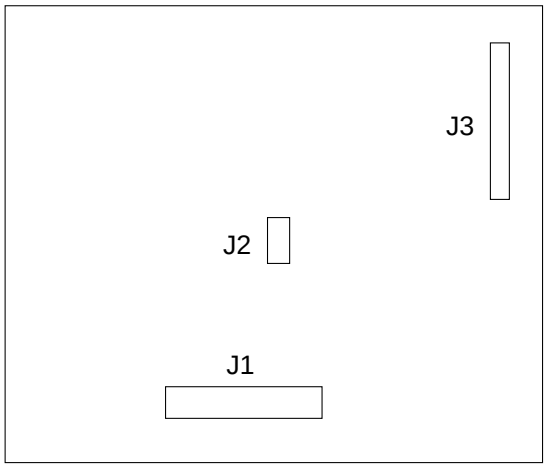


Figure 6-612

SW1: Must be used with all bits OFF.
SW2: Must be turned OFF first when installing expansion memory; then, must be turned ON after the work.
LED1: Turns ON when 5V is supplied normally.

5. CORE/IP Board

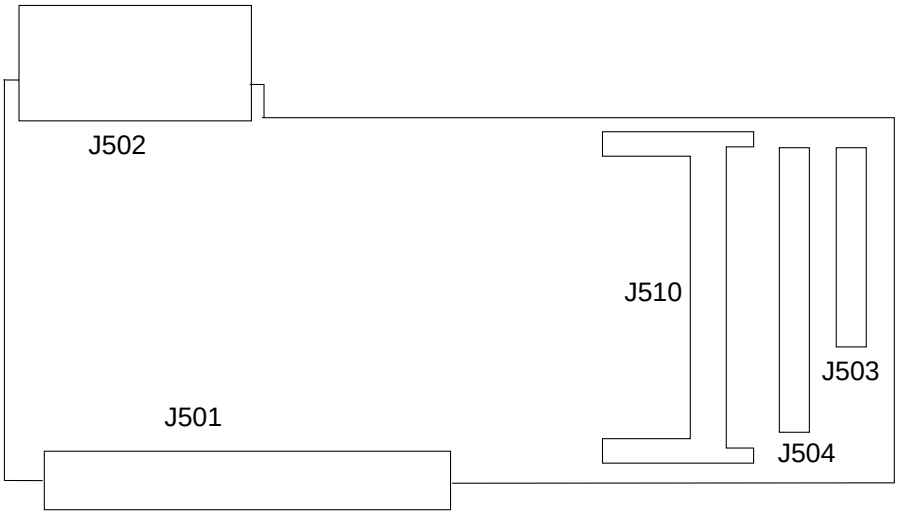


Figure 6-613

6. Protocol Controller PCB

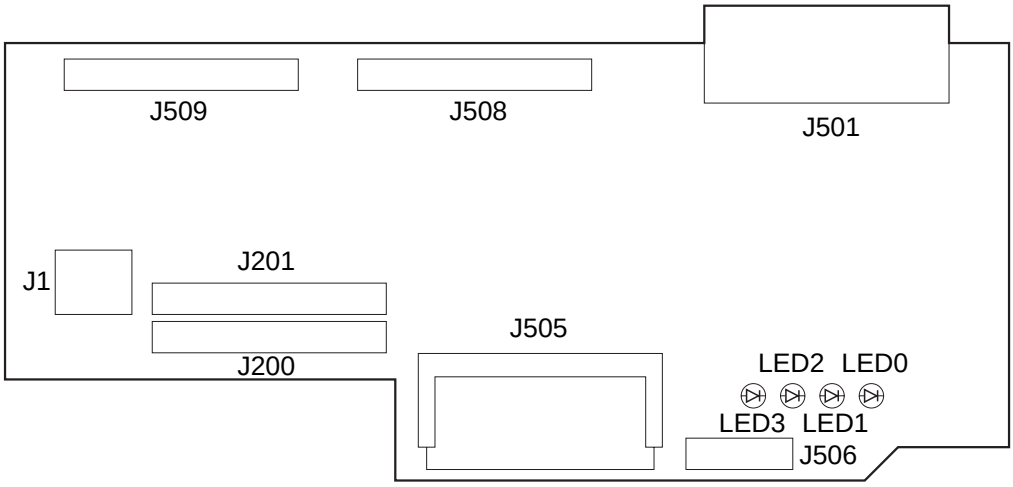


Figure 6-614

a. Guide to the LED Indications on the Protocol Controller PCB

Power-On
If all LEDs are ON, the power supply has started normally.

About 10 Sec Later
If the 1st (LED0) from the right is OFF, a memory check on the protocol controller PCB has ended.

About 10 Sec Later
If the 2nd (LED1) from the right is OFF, communication has started with the image processor PCB.

About 10 Sec Later
If the 3rd (LED2) is OFF, communication has started with the Printer Board (an internal check signal of the Printer Board has been received).

About 10 Sec Later
If the 4th (LED3) is OFF, communication has started with the NIB (an internal check signal of the NIB has been received; remains ON if the NIB is not installed).

b. Results of Self Diagnosis Indicated by LEDs

LED0, LED1, LED2, and LED3 flash alternately in specific combinations.

c. Downloading

At time of downloading, the LEDs repeat flashing starting with the rightmost LED.

CHAPTER 7 SERVICE MODE

A. Outline

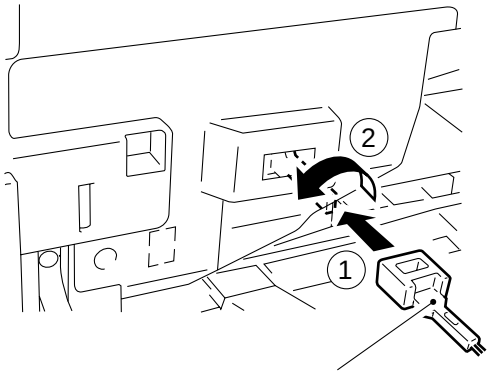
The machine's service mode is grouped into the following:

Item	Description
1 DIAPLAY	Display Mode • Indicates the values controlled by the CPU, nature of control, and version number of the ROM.
2 I/O DIAPLAY	I/O Display Mode • Indicates the elements controlled by the CPU or the input/output signals to and from options.
3 ADJUST	Adjustment Mode • Indicates items adjusted in service mode and allows changes to settings.
4 FUNCTION	Function Mode • Executes machine operations. Indicates items that may be automatically adjusted through execution from the screen.
5 OPTION	Settings Mode • Indicates items that may be changed for machine maintenance or items that may be changed to suit the needs of the user.
6 COUNTER	Counter Mode • Indicates the numbers of machine operations.
7 ACC	Options Mode • Indicates items for options, allowing changes to the settings.
8 FAX	Fax Service Mode • Indicates items to be set/changed or operated for fax functions from the screen.

B. Using Service Mode

1. Starting Service Mode

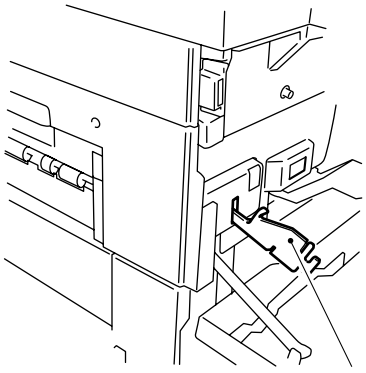
1) Open the front door, and insert the handle of the static eliminator cleaning brush into the fixing assembly releasing assembly.



Separation static eliminator cleaning brush

Figure 7-701

2) Insert the door switch actuator into the door switch assembly.
(If you want to execute a specific mode such as 'I/O display' while making copies, see the appropriate copying modes.)

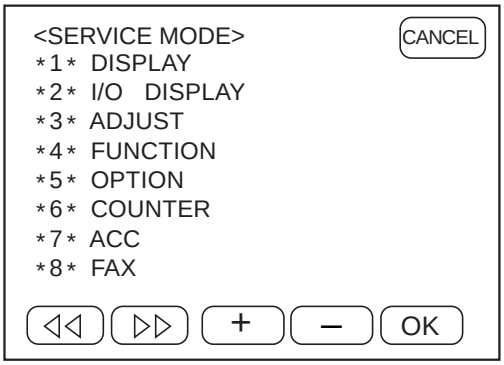


Door switch actuator

Figure 7-702

3) Press the service switch with a hex key.
   - '$' will appear in the upper left corner of the LCD, indicating that the machine has started service mode.

4) Press the * key twice.
   - The LCD changes to the Service Mode Menu screen (initial screen).



5) Press the appropriate item to highlight.
6) Press the OK key to bring up the first screen of the selected screen.

2. Keys

You will be using the following keys:

- [▷▷] : Page Forward key; press it to bring up the next page.
- [◁◁] : Page Back key; press it to bring up the previous screen.
- [OK] : OK key; press it to accept a setting or execute an item.
- [CANCEL] : Cancel key; press it to bring up the high-order menu screen.
- [+] : + key; press it to move down the levels.
- [–] :– key; press it to move up the levels.

C. Using Adjustment Mode and Settings Mode

In adjustment mode (*3*; ADJUST) and in settings mode (*5*; OPTION), the settings changed/selected on the control panel are stored in RAM on the image processor PCB and operation/control is executed according to the settings. (These settings will be stored permanently when the main power switch is turned off and on after execution.

The factory default settings of adjustment mode (*3*; ADJUST) are recorded in the label (Figure 7-00). Be sure to record any new settings if you made changes in the field. Further, you must enter the settings recorded on the label whenever you have cleared the RAM.

If you replaced the image processor PCB or the composite power supply PCB, be sure to enter the settings recorded on the respective label. (You need not do so when you have replaced only the ROM.)

MF-A6R				DVLP DC OFST				FILM LANK				
MF-A4R				H-ADJ				ABC_TBL				
MF-A4				V-ADJ				STRD_ADJ				
PRI DC (IMG)				REGIST				PPR				
PRI DC (on IMG)				RSIDE-SENSHP				W-PLT				
DVLP DC (IMG)				PVE-OFST				TRNS_1				
DVLP DC (on IMG)				IC-DENS				TRNS_2TS				
TRNS (IMG)				CST-LOOP				TRNS_2OL				
TRNS (on IMG)				MF-LOOP								
PRI AC (IMG)				DENS-ADJ								
PRI AC (on IMG)				ADJ-S								
AGS GAIN				LASER OFF								
AGS OFST				PWN 600 MIN								
PRI DC OFST				PWM 600 MAX								
PRI AC OFST1				PWM 200 MIN								
PRI AC OFST2				PWM 200 MAX								
TRNS OFST				AE-SLOP								
FL OFST				FIXER_RESIST								

Figure 7-703 (Service Label; attached behind the front door)

P6L	
P6H	
P2L	
P2H	

Figure 7-704 (Service Label; attached to the image processor PCB)

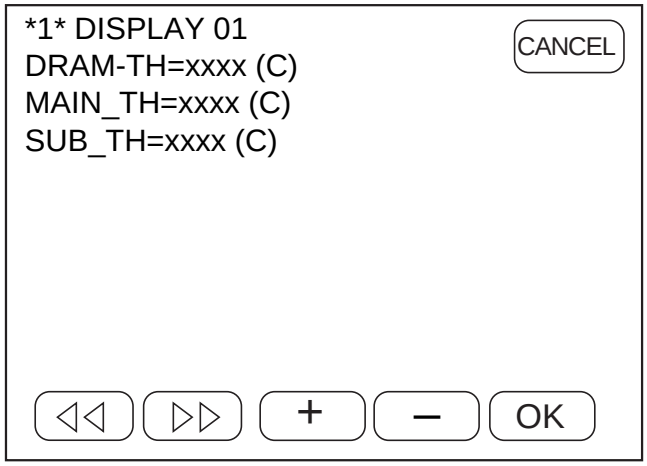
APVC GAIN	
APVC OFST	
PDC OFST	
PAC OFST1	
PAC OFST2	
ATVC OFST	
FL OFST	
DDC OFST	

Figure 7-705 (Service Label; attached to the composite power supply PCB)

D. *1* DISPALY (control display mode)

- Use this mode to display the settings controlled by the CPU or the nature of control.
- You cannot change the displayed values or settings.
- Each press on the ▷▷ key brings up the next screen; each press on the ◁◁ key, on the other hand, brings up the previous screen.
- A press on the CANCEL key will bring up the Menu screen.

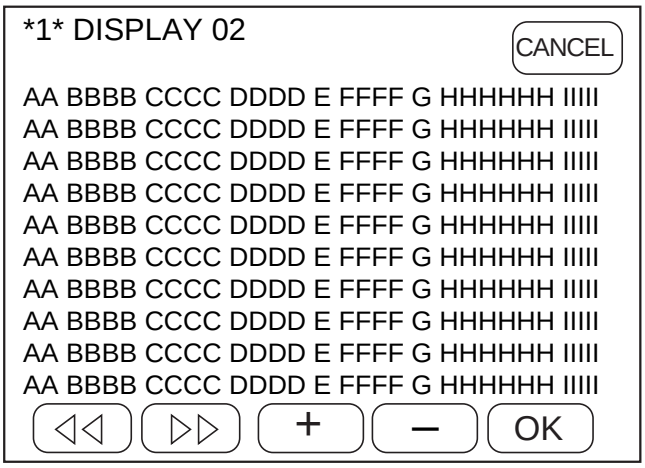
1. Temperature Indication (1st screen)



Item	Description	Remarks
DRAM_TH	Indicates the temperature around the photosensitive drum.	Unit: °C
MAIN_TH	Indicates the temperature at the middle of the fixing assembly. (output of thermistor TH1)	Unit: °C
SUB_TH	Indicates the temperature at the end of the fixing assembly. (output of thermistor TH2)	Unit: °C

2. Jam History 1 (2nd screen)

- Use this mode to display a history of jams (jam data) covering the most recent 40 jams in reversed order of occurrence.



- Press the [+] or [–] key to scan through the levels (screen Nos. 11 through 20, 21 through 30, and 31 through 40).

Item	Description	
AA	Nos. 1 through 40 (higher the number, older)	
BBBB	Date of occurrence	Ex. '0801' for August 1
CCCC	Time of occurrence	Ex. '1012' for 10:12. (Indicates the time the machine entered standby state after jam removal.)
DDDD	Time of recovery	
E	Location 0: copier 1: feeder 2: sorter	
FFFF	Jam code high-order 2 digits: jam type. low-order 2 digits: sensor detecting the jam. (For details, see the next page.)	
G	Pick-up position (See the pages that follow.)	
HHHHHH	Pick-up soft counter	
IIIII	Paper size	

Sample Display 01 0821 1430 1435 0 0101 1 06543 000A4

- 000A4: A4 paper jam
- 06543: soft counter reading of the source of paper
- 1: 1st cassette
- 0101: jam code (pre-registration sensor delay jam)
- 1435: time of recovery (14:35)
- 1430: time of occurrence (14:30)
- 0821: date of occurrence (August 21)
- 01: No.

- A jam code is a 4-digit code, the high-order 2 digits indicating the type of jam and the low-order 2 digits, the sensor which detected the jam. Set the table below for level 1 classification of the jam codes.

Jam code FF	FF
High-order 2 digits	Low-order 2 digits
01: delay 02: stationary 10: residual (at power-on)	01: pre-registration sensor (PS5) 02: vertical path sensor (PS8) 03: vertical path sensor (pedestal; Q1603) 32: fixing delivery sensor (PS7) 33: delivery sensor (PS13) 34: delivery tray 2 paper sensor (multi tray 3; PS17) 35: delivery tray 3 paper sensor (multi tray 3; PS 18) 61: Multitray 3 inlet sensor (PS12) 63: re-pick up paper sensor (PS11)
11: door open	01: front door 02: right door 03: pedestal right door
00: multi tray 12/feeder	See p. 7-51.

Pick-Up Location Codes

Code	Pick-up location
1	Cassette 1
2	Cassette 2
3	Cassette 3
4	Cassette 4
5	Cassette 5
6	Cassette 6
8	Multifeeder
9	Two-sided/overlay re-pick up

List of Jam Codes (copier-related)

Sensor / Low-order code / High-order code / Type of jam		Pre-registration sensor (PS5)	Vertical path sensor (PS8)	Pedestal vertical path sensor (Q1603)	Fixing delivery sensor (PS7)
		01	02	03	32
Delay	01	0101	0102	0103	0132
Stationary	02	0201	0202	0203	0232
Residual	10	1001	1002	1003	1032

Sensor / Low-order code / High-order code / Type of jam		Delivery sensor (PS13)	Multitray 3 delivery tray 2 paper sensor (PS17)	Multi tray 3 delivery tray 3 paper sensor (PS18)	Multitray 3 inlet sensor (PS19)
		33	34	35	61
Delay	01	0133	0134	0135	0161
Stationary	02	0233	0234	0235	0261
Residual	10	1033	1034	1035	1061

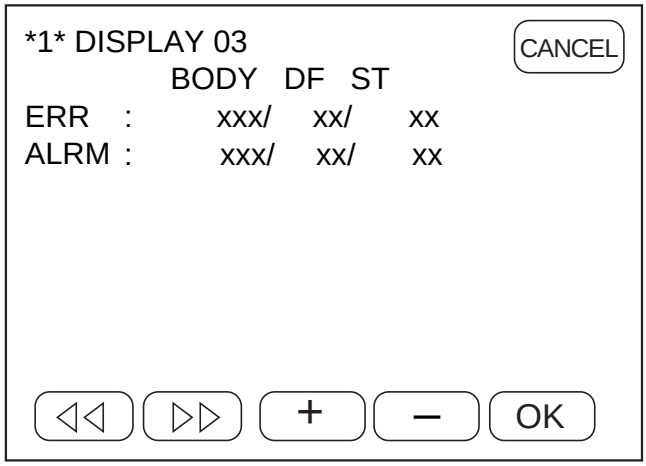
Sensor / Low-order code / High-order code / Type of jam		Duplexing unit inlet sensor (PS12)	Re-pick up sensor (PS11)
		62	63
Delay	01	0162	0163
Stationary	02	0262	0263
Residual	10	1062	1063

Door / Low-order code / High-order code / Type of jam		Front door	Right door	Pedestal right door
		01	02	03
Door open	11	1101	1102	1103

Multitray 12-/Feeder-Related Jam Codes

Unit	Jam code	Description
Multitray-12	0003	Sorter feeding delay jam
	0004	Sorter feeding stationary jam
	0006	Sorter staple jam
	0007	Sorter power-on jam
	0008	Sorter door open jam (paper present)
	0009	Sorter door open jam (paper absent)
RDF	0001	Original pulled out
	0002	Registration delay jam
	0003	Pick-up delay
	0005	Registration delay
	0011	Reversal delay 1
	0012	Reversal stationary
	0013	Reversal delay 2
	0020	Reversal paper present
	0021	Reversal pick-up delay
	0023	Reversal pick-up stationary
	0041	Delivery delay
	0042	Delivery stationary
	0081	Opened with RDF in operation
	0082	Upper cover opened during operation
	0083	Original circulation fault
	0084	Original left behind
	0088	Original left behind on copyboard glass
	0089	Re-circulating lever fault

3. Error/Alarm Indication (4th screen)

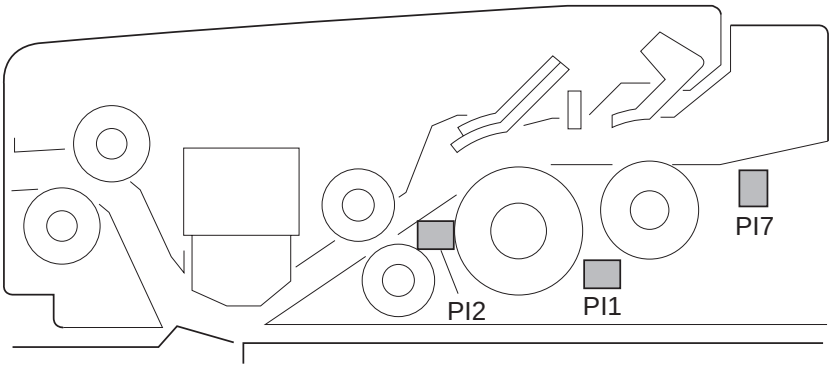


Item	Description
ERR	See the descriptions (Table7-103) for self diagnosis (E code).
ALRM	See the table below for the nature of alarm.
BODY	Refers to the copier.
DF	Refers to the feeder (ADF/RDF).
ST	Refers to the sorter.

• Copier-Related Alarm

Code	Description
001	Replace the drum unit.

- ALARM (ADF)

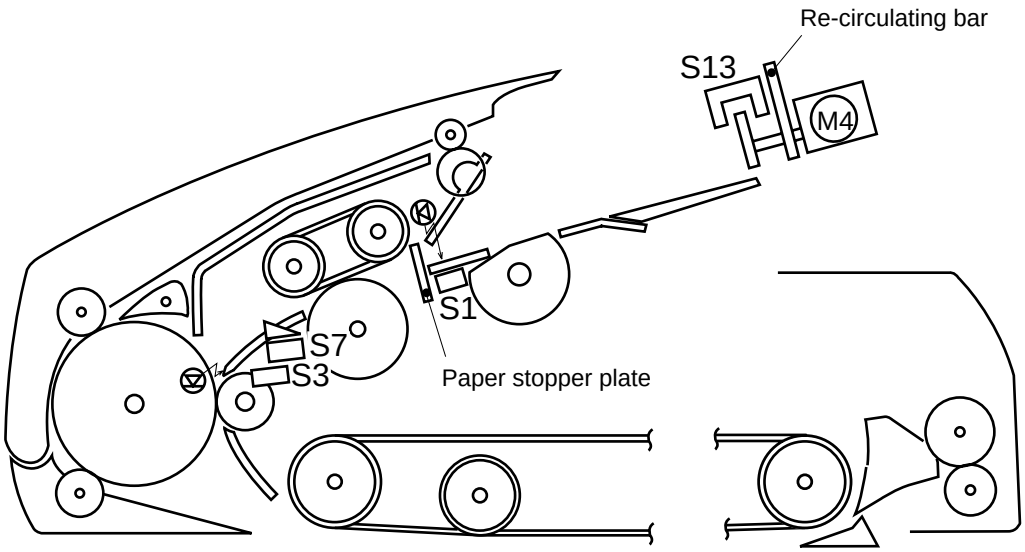


PI1: ...Original sensor
PI2: ...Registration sensor
PI7: ...Original length sensor (S)

Fault	Sensor	Condition	Code
Separation delay	PI1, PI2	Both the original sensor (PI1) and the registration sensor (PI2) do not turn on within 2 sec after the main motor (M1) has turned on.	02H
Separation	PI1, PI2	Both the original sensor (PI1) and the registration sensor (PI2) do not turn ON 2 sec after the main motor (M1) has turned ON. (1st original only)	03H
Different number of originals after jam removal	PI7	The last original is detected before feeding the number of originals identified by the jam recovery mechanism.	11H
Original pulled	PI1	The original sensor (PI1) is OFF after pick-up operation (other than the last original).	13H
Original size	PI1, PI7	The original sensor (PI1) turns OFF for such originals as may be the last original (A5R, A4, B6R, B5, STMTR, LTR), but the detected original is not the last original.	14H

Note: The number in parentheses under the Code column is in decimal notation.

• ALARM (RDF)



S1 Original tray paper sensor
S3 Registration paper sensor
S7 Pick-up sensor
S13 Re-circulation sensor

Type	Sensor	Conditions	RF operation	Code
Re-circulating lever idle swing	S13	The re-circulating lever swung idly without coming into contact with an original immediately after the re-circulating motor (M4) has started to operate.	Stops immediately upon detection.	01H
Pick-up fault	S7	The sensor (S7) does not detect the leading edge of an original 1500 ms after pick-up.	The separation belt, feeding roller, and pick-up roller stop immediately. The RDF stops after delivering the copy of the advance original.	03H

Type	Sensor	Conditions	RF operation	Code
Paper stopper plate override	S7	The original has ridden over the paper stopper plate when the original was set.	Stops immediately upon detection.	05H
Different number of originals after jam removal	S3	The number of originals on the original tray changed as follows: Number of originals copied > Number of originals set on tray See Supplement.	Stops immediately upon detection.	11H
Wrong number of originals	S3	The last original cannot be detected because the re-circulating lever does not fall through the original tray. **Reference:** Normally, the original tray holds 50 sheets of A5, STMT, A4, B5, or LTR, or 25 sheets of A3, B4, 11”x17”, or LGL.	Stops after counting the 100th original.	12H
Original forced off	S13	The re-circulating lever dropped through the original tray while an original was being processed.	Stops immediately upon detection.	13H
Wrong original size	S3	The original that has been picked up is of a non-default size.	Stops immediately upon detection.	14H
Wrong original size or mixed sizes in image composition mode (See Note 1.)	S3	① The original is of a size that image composition mode does not accommodate. ② The original is of a size different from the first original.	Stops immediately upon detection. See Supplement.	15H
Not reset when mode is changed	—	① When executing fax mode without resetting after copying mode. ② When making a copy in the middle of fax operation or when making a copy without resetting	Stops operation immediately upon detection.	21H

Note1:
To reset, remove the originals from the original tray and then open the RDF.

• Overstacking Alarm (Multitray-12)

Code	Nature	Cause	Operation	Display	Resetting
02H	Overstacking of paper	The paper being stacked during multitray operation has exceeded the capacity of a single bin.	Stops upon detection overstacking.	Indicates a message on the copier's control panel.	Remove all paper from the bin.

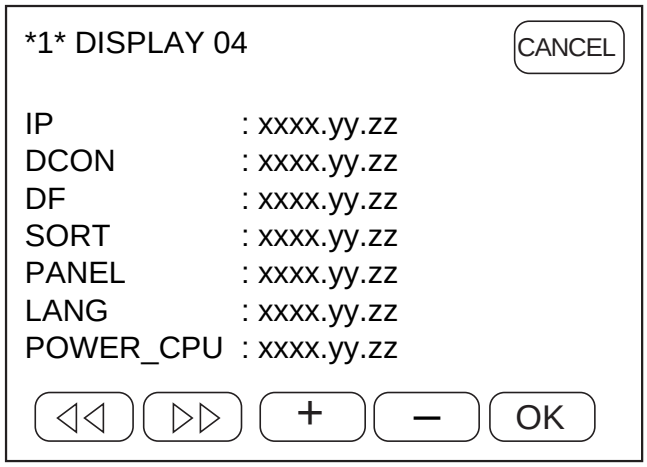
• Partial Fault Alarm (Multitray-12)

Code	Nature	Cause	Operation	Display	Resetting
10H	Partial fault	An error occurred in the bin unit feeding motor (M2), bin shift motor (M1), guide bar swing motor (M4), or stapler swing motor (M5); the same type of error has occurred after turning off and on the power.	Prohibits delivery to the sorter; however, permits delivery to the tray.	No indication.	Remove the cause of the error, and turn off and then on the power.

• Stapler Alarm (Multitray-12)

Code	Nature	Cause	Operation	Display	Resetting
02H	Staple jam	• The stapler safety sensor (MS6) has turned on for some reason. • The stapler is not securely installed. • Normal stapling operation is not possible.	Stops stapling.	• Flashes the Manual Staple key. • Indicates a message on the copier's control panel.	• Wait until the machine automatically recovers (about 1 sec after the stapler safety sensor turns off). • Open and then close the stapler cover.
03H	Stapling safety protection mechanism activation	The stapler safety sensor (MS6) has turned on during stapling operation.	Stops stapling.	No indication.	Remove the cause that turned on the stapler safety sensor (MS6); wait until the machine recovers automatically in about 1 sec after the stapler safety sensor turns off.
05H	Over stapling capacity	The volume of paper in a single bin has exceeded the maximum value (20 sheets) in stapler sort mode.	Finishes sorting but stops without stapling.	Indicates a message on the copier's control panel.	Remove all paper (stack).
06H	Full stapling capacity	The volume of paper in a single bin has reached the maximum value (20 sheets) in stapler sorter mode.	Operates normally.	No indication.	Remove all paper (stack).
07H	Mixed paper sizes	Sheets of different widths have been placed in the bin.	Finishes sorting but stops without stapling.	No indication.	Remove all paper (stack).
09H	Paper in bin	Paper is remaining inside the bin.	Indicates a message if stapler sorter mode is selected; otherwise, operates normally.	• Turns on the Manual Staple key. • Indicates a message on the copier's control panel if stapler sorter mode is selected in this condition.	Remove all paper (stack).
0AH	Staple absent	The stapler has run out of staples.	Prohibits stapling.	Indicates the Add Staple message.	Replace the staple cartridge.

4. Version Indication 1 (5th screen)

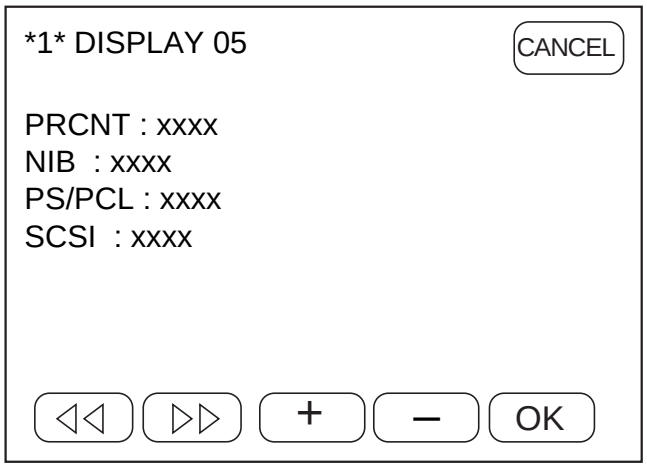


Guide to Version Numbers
xxxx: type of software
yy: version number
zz: R&D control number

Item	Description
IP	Indicates the version number of the ROM DIMM on the image processor PCB.
DCON	Indicates the version number of the EPROM (IC103, IC104) on the DC controller PCB.
DF	Indicates the version number of the ROM on the feeder (ADF, RDF) controller.
SORT	Indicates the version number of the ROM on the sorter controller PCB.
PANEL	Indicates the version number of the ROM on the CPU PCB of the control panel.
LANG	Indicates a specific language: COMMON, JAPANESE, ENGLISH, FRENCH, GERMAN, DANISH, DUTCH, FINNISH, ITALIAN, NORWEGIAN, PORTUGUESE, SPANISH, SWEDISH
POWER_CPU	Indicates the version number of the CPU on the composite power supply PCB.

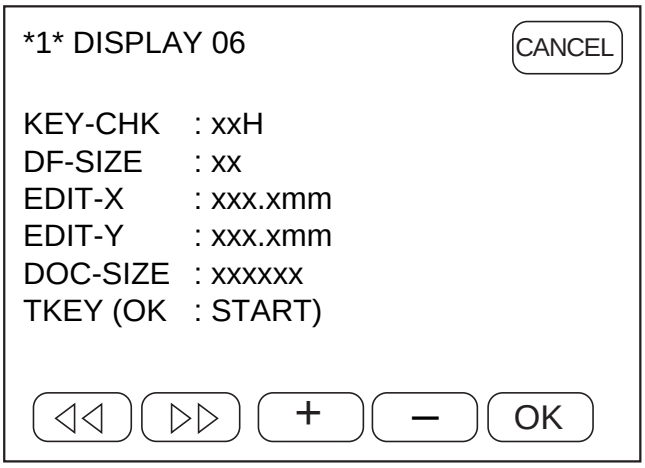
5. Version Indication 2 (5th screen)

The indication is given when an expansion board is installed and, therefore, no indication appears in the absence of such a board.



Item	Description
PRCNT	Indicates the version number of the Protocol Control PCB.
NIB	Indicates the version number of the Network Interface Board (NIB).
PS/PCL	Indicates the version number of the Printer Board (PS/PCL).
SCSI	Indicates the version number of the SCSI Board.

6. Key/Editor Indication (7th screen)



Item	Description
KWY-CHK	Indicates the code of a specific key that is being pressed (except the Reset key). (See the next page.)
DF-SIZE	Indicates the size of the original detected by the ADF or the RDF.
EDIT-X EDIT-Y	Indicates the editor input coordinates. EDIT-X: X direction EDIT-Y: Y direction
DOC-SIZE	Indicates the size of the original detected by the original size sensor.
TKEY	Touch Panel • Press 'TKEY' to highlight; then, press the OK key (All messages turn OFF.). Then, when the touch panel is pressed the area will become highlighted (reverse video). After the check, press the Reset key to end service mode.

KEK-CHK code

Key	Code
Keypad 0	30
Keypad 1	31
Keypad 2	32
Keypad 3	33
Keypad 4	34
Keypad 5	35
Keypad 6	36
Keypad 7	37
Keypad 8	38
Keypad 9	39
Start	50
Stop	51
*	2A
#	23
Clear	3A
Interrupt	53
Guide	54
User Mode	03

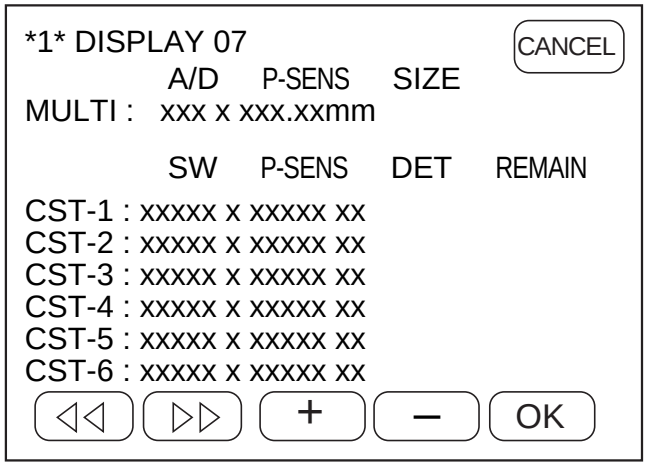
One-Touch key	Code
1	00
2	01
3	02
4	03
5	04
6	05
7	06
8	07
9	08
10	09
11	10
12	11
13	12
14	13
15	14
16	15
17	16
18	17
19	18
20	19

One-Touch key	Code
21	20
22	21
23	22
24	23
25	24
26	25
27	26
28	27
29	28
30	29
31	30
32	31
33	32
34	33
35	34
36	35
37	36
38	37
39	38
40	39

One-Touch key	Code
41	40
42	41
43	42
44	43
45	44
46	45
47	46
48	47
49	48
50	49
51	50
52	51
53	52
54	53
55	54
56	55
57	56
58	57
59	58
60	59

7. Copy Paper Size Indication

Use this mode to indicate the size of copy paper set in the multifeeder or in the cassettes and the output readings of the paper size sensors.



Item	Descriptions
MULTI	Refers to the multifeeder.
A/D	Indicates the output (analog) of the multifeeder width sensor.
P-SENS	Indicates the presence/absence of paper. 0: paper absent. 1: paper present.
SIZE	Indicates the A/D input value of the multifeeder in mm.
SW	Refers to a specific cassette (cassette size sensor output; rear to Table 0-00).
DET	Indicates the paper size.
REMAIN	Indicates the volume of paper inside the cassette: 00: full (500 sheets) 10: much 11: little (about 10 mm high) 01: little/absent
CST-1	Cassette 1
CST-2	Cassette 2
CST-3	Cassette 3
CST-4	Cassette 4
CST-5	Cassette 5
CST-6	Cassette 6

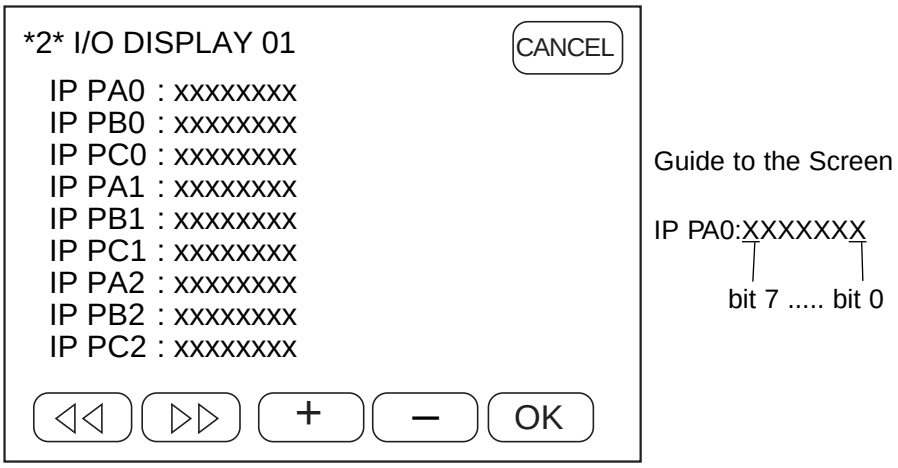
List of Cassette Sizes

Configuration	Cassette	Cassette code
AB	Cassette absent	11111
	A5	10010
	A5R	10000
	A4	10001
	A4R	10101
	A3	10100
	B5	10110
	B5R	10111
	B4	10011
	U1: FLSC OFICIO A-OFI E-OFI B-OFI A-LGL	11011
	U2 FOLIO	11010
	U3 A-FLS	11000
	SPECAL1	11101
	SPECAL2	11100
	Envelope 1	11110
Inch	Cassette absent	11111
	STMT	00010
	STMTR	00000
	LTR	00001
	A-LTR	
	LTRR	00101
	A-LTRR	
	LGL	00100
	11*17	00110
	U4 G-LTR	00111
	U5 G-LTRR	00011
	U6 G-LGL	01011
	U7 K-LGL	01010
	U8 K-LGLR	01000
	SPECAL1	01101
	SPECAL2	01100
	Envelope 2	01110

E. *2* I/O DISPLAY (I/O display mode)

- Use this mode to indicate the input/output states of the input/output ports of the CPU.
- You cannot change the indicated values/settings.
  Each press on the [▷▷] key brings up the next screen; each press on the [◁◁] key, on the other hand, brings up the previous screen.
- A press on the [CANCEL] key will bring up the Menu screen.

1. Inputs/Outputs to and from the Image Processor PCB (1st screen)

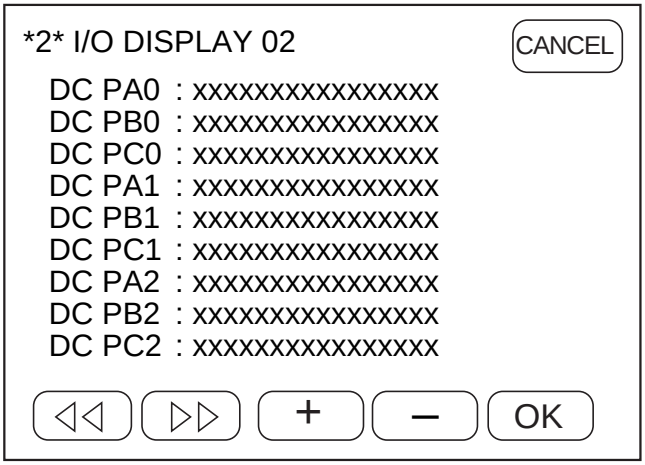


Address	bit	Indication	Signal	Jack	Logic
PA0 (input)	0 1 2 3 4 5 6 7	PCB internal signal PCB internal signal PCB internal signal PCB internal signal PCB internal signal PCB internal signal Not used. Not used.			
PB0 (input)	0 1 2 3 4 5 6 7	CORE/IP connect 1 CORE/IP connect 2 editor board connect CCF connect PCB internal signal power saving mode switch Not used. main power switch			0: not connected 1: not connected 0: connected 0: connected 0: ON 0: ON

Address	bit	Indication	Signal	Jack	Logic
PC0 (input)	0 1 2 3 4 5 6 7	DIP SW DIP SW DIP SW DIP SW DIP SW DIP SW Not used. Not used.			
PA1 (output)	0 1 2 3 4 5 6 7	LCD back light CCV count sleep mode switch PCB internal signal DIP SW DIP SW DIP SW interrupt			1: ON 1: count 0: saving mode 0: connect 0: ON 1: ON (DC controller communication)
PB1 (output)	0 1 2 3 4 5 6 7	scanner start registration roller ON PCB internal signal PCB internal signal PCB internal signal PCB internal signal PCB internal signal PCB internal signal			1: ON (DC controller communication) 1: ON (DC controller communication)
PC1	0 1 2 3 4 5 6 7	 PCB internal signal PCB internal signal PCB internal signal PCB internal signal PCB internal signal PCB internal signal			1: ON 1: ON
PA2 (output)	0 1 2 3 4 5 6 7	PCB internal signal PCB internal signal PCB internal signal PCB internal signal PCB internal signal PCB internal signal PCB internal signal PCB internal signal			

Address	bit	Indication	Signal	Jack	Logic
PB2 (output)	0 1 2 3 4 5 6 7	STOP B/H ABC OFF CS LD/RS CLK SIN/UD PRESCAN			CCD control CCD control CCD control CCD control CCD control CCD control CCD control CCD control
PC2 (output)	0 1 2 3 4 5 6 7	bias ON power SW 0 marker ON PAD OFF power SW1 area signal switching Not used.. Post ratio change reversal switching			laser control laser control for editing board for editing board laser control 1: w/ editing board installed

2. Inputs to and Outputs from the DC Controller PCB



Guide to the Screen

DC PA0:XXXXXXXXXXXXXXXX

bit 15 ..... bit 0

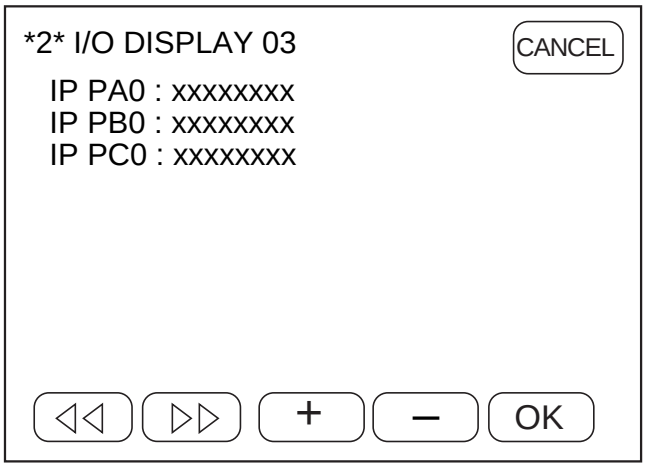
Address	bit	Indication	Signal	Jack	Logic
PA0 (input)	0		FDD	J109-3	1: film detected
	1		CBCC	J113-B9	1: closed
	2		MFPD	J113-A11	0: paper present
	3		PDP1	J113-A5	1: paper present
	4		—	—	
	5		PDP3	J109-6	1: paper present
	6		UCSPD	J114-10	1: paper not present
	7		LCSPD	J114-A11	1: paper not present
	8		VPPD	J114-A12	1: paper present
	9		PDP4	J114-A2	1: paper present
	10		RDOP	J113-A8	1: right door close
	11		WTDT	J113-B6	0: waste toner full
	12		TEP	J117-7	1: toner present
	13		MLCK	J114-B7	1: locked
	14		LOCK	J112-6	1: locked
	15		—	—	
PB0 (input)	0		CSZ10	J110-2	
	1		CSZ11	J110-3	
	2		CSZ12	J110-4	
	3		CSZ13	J110-5	
	4		CSZ14	J110-6	
	5		CSZ20	J110-8	
	6		CSZ21	J110-9	
	7		CSZ22	J110-10	
	8		CSZ23	J110-11	
	9		CSZ24	J110-12	
	10				
	11				
	12				
	13				
	14				
	15				

Address	bit	Indication	Signal	Jack	Logic
PC0 (input)	0	re-pick up unit front paper detection (PS11)	PDP5	J103-2	0: paper present
	1	duplexing unit inlet paper detection (PS12)	PDP6	J105-B2	0: paper present
	2	delivery paper detection (PS13)	PDP7	J105-A2	0: paper present
	3	bin 2 paper detection		J104-4	
	4	bin 3 paper detection		J104-5	
	5	bin 3 inlet paper detection		J104-6	
	6	horizontal registration paper detection (PS14)	CRGPD	J114-B2	
	7	bin 3 tray position detection		J104-7	1: lower feeding assembly present
	8	lower feeding assembly ID	—		1: lower feeding assembly inlet present
	9	lower feeding assembly inlet unit ID			1: Multitray 3 connected
	10	Multitray 3 ID			
	11	Not used.			
	12	Not used.			
	13	Not used.			
	14	Not used.			
	15	Not used.			
PA1 (output)	0	main motor drive	MMD	J114-B6	0: rotates
	1	laser scanner motor drive	RSMD	J112-7	1: rotates
	2	registration clutch drive	RGCD	J114-B11	0: ON
	3	multifeeder pick-up clutch	MFCD	J114-B9	0: ON
	4	vertical path roller clutch	CL3D	J114-A4	0: ON
	5	developing clutch	DVCD	J113-B14	0: ON
	6	pick-up roller DOWN solenoid	SL2D	J114-A5	0: ON
	7	multifeeder holding plate releasing solenoid	PRDSD	J114-B13	0: ON
	8	counter 1 drive	CNT1D	J107-B4	1: count
	9	counter 2 drive	CNT2D	J107-B6	1: count
	10	cassette pedestal communication signal	CHOEN	J106-11	
	11	bin 3 shift tray drive		J104-8	
	12	re-pick up paper deflecting plate solenoid	PFLD	J103-5	0: ON
	13	paper deflecting plate 2 solenoid		J104-9	0: ON
	14	delivery assembly paper deflecting plate solenoid	DFLD	J105-A5	0: ON
	15	bin 3 flapper solenoid		J104-10	
PB1 (output)	0	pick-up motor drive	A	J114-A6	
	1	pick-up motor drive	B	J114-A7	
	2	pick-up motor drive	M0	J114-A8	
	3	pick-up motor drive	M1	J114-A9	
	4	fixing film drive	A	J109-10	
	5	fixing film drive	A*	J109-11	
	6	fixing film drive	B	J109-12	
	7	fixing film drive	B*	J109-13	
	8	horizontal registration drive	A	J115-3	
	9	horizontal registration drive	A*	J115-4	
	10	horizontal registration drive	B	J115-5	
	11	horizontal registration drive	B*	J115-6	
	12	feeding fan drive	FFMD	J107-A8	
	13	exhaust fan 1 drive		J107-A9	
	14	laser cooling fan drive		J113-B3	
	15	PCB internal signal	—	—	

Address	bit	Indication	Signal	Jack	Logic
PC1 (output)	0	set-back motor drive	A	J103-6	
	1	set-back motor drive	A*	J103-7	
	2	set-back motor drive	B	J103-10	
	3	set-back motor drive	B*	J103-11	
	4	duplexing unit inlet motor drive	A	J105-B4	
	5	duplexing unit inlet motor drive	A*	J105-B5	
	6	duplexing unit inlet motor drive	B	J105-B8	
	7	duplexing unit inlet motor drive	B*	J105-B9	
	8	delivery reversing motor drive	A	J105-A6	
	9	delivery reversing motor drive	A*	J105-A7	
	10	delivery reversing motor drive	B	J105-A10	
	11	delivery reversing motor drive	B*	J105-A11	
	12	bin 3 drive motor	A	J104-11	
	13	bin 3 rive motor	A*	J104-12	
	14	bin 3 drive motor	B	J104-13	
	15	bin 3 drive motor	B*	J104-14	
PA2	0	scanner motor drive (PCB internal signal)			
	1	scanner motor drive (PCB internal signal)			
	2	scanner motor drive (PCB internal signal)			
	3	scanner motor drive (PCB internal signal)			
	4	scanner motor drive (PCB internal signal)			
	5	scanner motor drive (PCB internal signal)			
	6	scanning reference signal (PCB internal signal)			
	7	scanning reference signal (PCB internal signal)			
	8	scanning reference signal (PCB internal signal)			
	9	scanning reference signal (PCB internal signal)			
	10	Not used.			
	11	re-pick up clutch drive	CLSD	J122-6	
	12	pre-exposure lamp drive	PEXP	J107-A12	
	13	Not used.			
	14	fixing heater relay drive	HRRD	J107-B9	
	15	image processor communication signal		J111-35	
PB2 (input)	0	PCB internal signal			
	1	PCB internal signal			
	2	PCB internal signal			
	3	PCB internal signal			
	4	Not used.			
	5	Not used.			
	6	Not used.			
	7	Not used.			
	8	Not used.			
	9	Not used.			
	10	Not used.			
	11	Not used.			
	12	Not used.			
	13	Not used.			
	14	Not used.			
	15	Not used.			

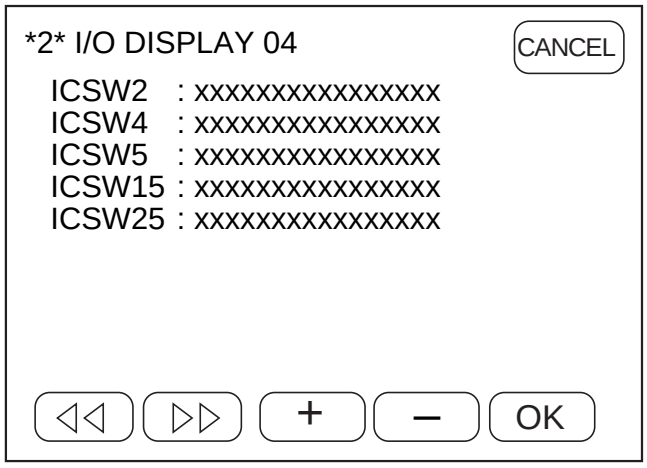
Address	bit	Indication	Signal	Jack	Logic
PC2 (output)	0	PCB internal signal			
	1	PCB internal signal			
	2	PCB internal signal			
	3	primary charging roller cleaning solenoid	PCLSD	J113-B2	0: ON
	4	counter 3 drive (115/230V model)	CNT3D	J107-B8	1: ON
	5	electrical unit fan drive (option)		J112-9	
	6	exhaust fan 1 half-speed (PCB internal signal)			
	7	laser fan half-speed (PCB internal signal)			
	8	electrical unit fan half-speed (PCB internal signal)			
	9	exhaust fan 2 drive		J107-B1	
	10	exhaust fan half-speed (PCB internal signal)			
	11	Not used.			
	12	Not used.			
	13	Not used.			
	14	Not used.			
	15	Not used.			

3. CPU Input/Output Ports of the DC Controller

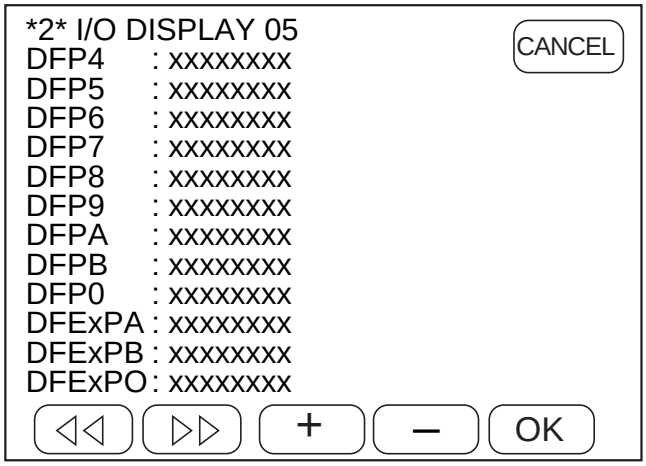


Address	bit	Indication	Signal	Jack	Logic
PA0	0	primary charging DC bias switching	HVPH	J102-B9	
	1	developing bias DC application mode	HADCH	J102-B8	
	2	transfer output mode 0	HVYM0	J102-B7	
	3	transfer output mode 1	HVTM1	J102-B6	
	4	primary charging roller ON/OFF	HVPDC	J102-B5	
	5	static eliminator ON/OFF	HVD1	J102-B4	
	6	laser scanner motor reference clock	FS	J112-8	
	7	developing AC drive	ACON	J102-B3	
PB0	0	scanner motor reference clock (PCB internal signal)			
	1	scanner motor CW/CCW rotation (PCB internal signal)			
	2	composite power supply PCB communication signal	ACK	J102-A6	
	3	zero cross	ZC	J102-A8	
	4				
	5	developing DC drive	CDON	J102-B2	
	6	Not used.			
	7	Not used.			
PC0	0	composite power supply PCB communication signal	REQ	J102-A7	
	1	Not used.	UCRMN		
	2	upper cassette paper detection 0	UCRMN LCRMN	J122-1	
	3	upper cassette paper detection 1	LCRMN	J122-2	
	4	lower cassette paper detection 0		J122-3	
	5	lower cassette paper detection 1		J122-4	
	6	Not used.			
	7	Not used.			

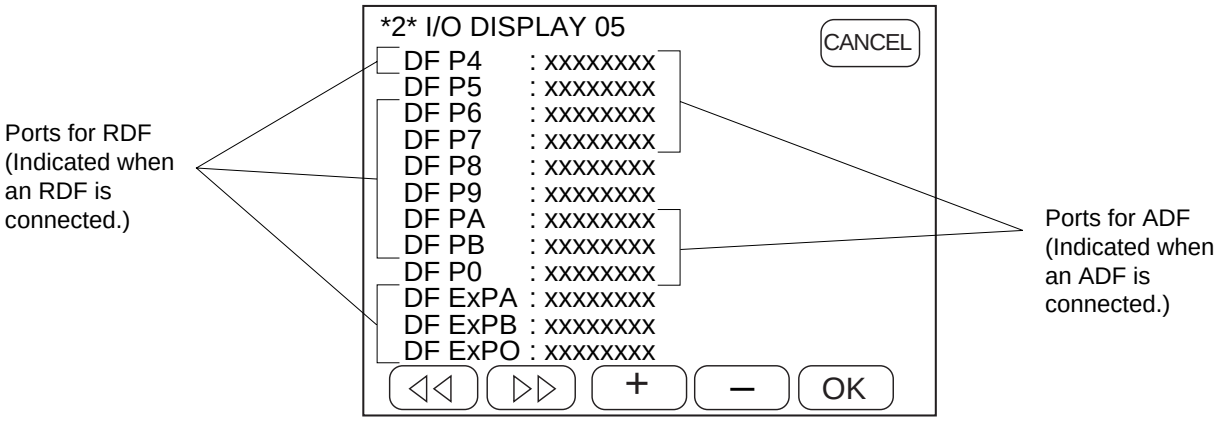
4. Gate Array Input/Output of the DC Controller PCB



5. Input/Output Port 1 of the Feeder



Guide to the Screen



a. Input/Output Ports of the RDF (1/2)

Address	bit	Indication	Signal	Jack	Logic
DFP4 (output)	0	stopper plate solenoid (SL1)	STPSL	J5-10	1: ON
	1	paper deflecting plate solenoid (SL3)	DFSLD	J4-2	1: ON
	2	stamping solenoid (SL4)	STSLD	J14-5	1: ON
	3	Not used.			
	4	Not used.			
	5	Not used.			
	6	Not used.			
	7	Not used.			
DFP6	0	pick-up roller sensor (S5)	PUSP	J5-2	1: paper present
	1	delivery sensor 1 (S6)	PSP3	J9-6	1: paper present
	2	pick-up sensor (S7)	PDP1	J9-9	1: paper present
	3	Not used.			
	4	PCB internal signal			
	5	PCB internal signal			
	6	Not used.			
	7	Not used.			
DFP7	0	original sensor (S1)	DEP1	J5-1	1: paper present
	1	registration sensor (S3)	PDP2	J9-20	1: paper present
	2	original width detecting VR	DMPW	J8-8	A/D value stored in adjustment mode
	3	Not used.			
	4	reversal sensor (S8)	RVPD	J9-12	1: paper present
	5	delivery sensor 2 (S12)	PDP4	J8-2	1: paper present
	6	original tray paper sensor (LED1)			1: light ON
	7	registration sensor (LED2)			1: light ON
DFP8	0	belt motor clock sensor (S10)	BMCLK	J9-18	alternates 1 and 0 during rotation
	1	feeding motor clock sensor (S9)	FMCLK	J9-15	alternates 1 and 0 during rotation
	2	registration roller clock sensor (S11)	RRCLK	J5-5	alternates 1 and 0 during rotation
	4	PCB internal signal			
	4	PCB internal signal			
	5	Not used.			
	6	Not used.			
	7	Not used.			
DFP9	0	copier communication signal			
	1	copier communication signal			
	2	copier communication signal			
	3	Not used.			
	4	copier communication signal			
	5	Not used.			
	6	Not used.			
	7	Not used.			

a. Input/Output Ports of the RDF (2/2)

Address	bit	Indication	Signal	Jack	Logic
DFPA	0	PCB internal signal			
	1	Not used.			
	2	PCB internal signal			
	3	belt motor drive signal			1: ON (PCB internal signal)
	4	PCB internal signal			
	5	feeding motor drive signal			1: ON (PCB internal signal)
	6	PCB internal signal			
	7	pick-up motor			1: ON (PCB internal signal)
DFPB	0	PCB internal signal			1: belt motor CW rotation
	1	PCB internal signal			1: pick-up motor CW rotation
	2	PCB internal signal			
	3	original detection LED	DSD	J8-4	1: ON
	4	PCB internal signal			
	5	brake	BKD	J6-2	1: ON
	6	clutch	CLD	J13-2	1: ON
	7	paper retaining solenoid (SL2)	WSLD	J5-12	1: ON
DF ExPA	0	push switch (SW1)	SW1		1: pressed
	1	push switch(SW2)	SW2		1: pressed
	2	push switch (SW3)	SW3		1: pressed
	3	re-circulation sensor (S13)	LDD	J14-1	1: paper present
	4	upper cover switch (MS2)	UPCC1	J3-2	1: closed
	5	RDF switch (MS1)	RFC	J2-6	1: closed
	6	PCB internal signal			
	7				
DF ExPB	0	LED (PCB internal signal)			
	1	LED (CPB internal signal)			
	2	Not used.			
	3	Not used.			
	4	Not used.			
	5	Not used.			
	6	Not used.			
	7	Not used.			
DF ExPO	0	DDIP SW1			1: ON
	1	DIP SW2			1: ON
	2	DIP SW3			1: ON
	3	DIP SW4			1: ON
	4	DIP SW5			1: ON
	5	DIP SW6			1: ON
	6	DIP SW7			1: ON
	7	DIP SW8			1: ON

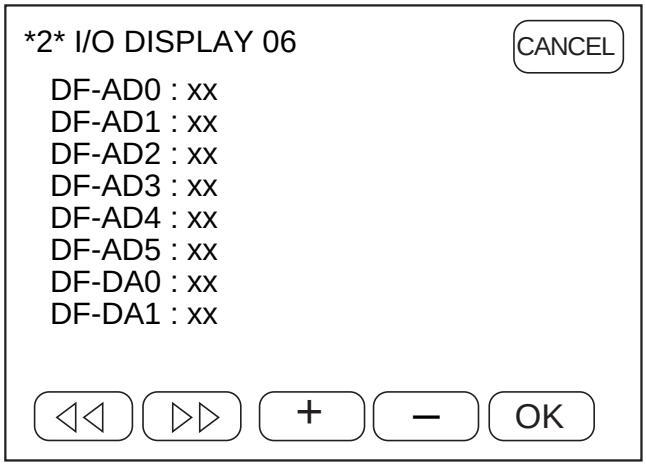
b. Input/Output Ports of the ADF (1/2)

Address	bit	Indication	Signal	Jack	Logic
DFP4	0	PCB internal signal			
	1	ADF open/closed sensor (PI6)	ADFC	J4-3	1: ADF closed
	2	original sensor (PI1)	PDP1	J5-12	1: paper present
	3	registration sensor (PI2)	PDP2	J5-9	1: paper present
	4	cover open/closed sensor (PI3/4)			0: open
	5	delivery sensor (PI5)	PDP3	J6-6	1: paper present
	6	LED1			
	7	LED2			
DFP5	0	LED3			
	1	LED4			
	2	PCB internal signal			
	3	PCB internal signal			
	4	PCB internal signal			
	5	PCB internal signal			
	6	PCB internal signal			
	7	PCB internal signal			
DFP6	0	main motor drive A			0: PCB internal signal
	1	main motor drive A*			0: PCB internal signal
	2	main motor drive B			0: PCB internal signal
	3	main motor drive B*			0: PCB internal signal
	4	motor current control			1: PCB internal signal
	5	paper stopper plate solenoid (SL1)	SPSLD	J8-1	0: ON
	6	stamping solenoid (SL2)	SMSLD	J6-7	0: ON
	7	PCB internal signal			
DFP7	0	original leading edge signal		J2-5	communication signal
	1	PCB internal signal			
	2	original indicator LED drive (LED4)			1: ON
	3	Not used.			
	4	Not used.			
	5	PCB internal signal			
	6	PCB internal signal			
	7	PCB internal signal			
DFPA	0	DIP SW 1			
	1	DIP SW 2			
	2	DIP SW 3			
	3	DIP SW 4			
	4	DIP SW 5			
	5	DIP SW 6			
	6	push switch 2			0: ON
	7	push switch 1			0: ON

b. Input/Output Port of the ADF (2/2)

Address	bit	Indication	Signal	Jack	Logic
DFPB	0	PCB internal signal			
	1	PCB internal signal			
	2	PCB internal signal			
	3	PCB internal signal			
	4	PCB internal signal			
	5	PCB internal signal			
	6	PCB internal signal			
	7	PCB internal signal			
DFP0	0	original width detection 2	SW72	J7-2	
	1	original width detection 1	SW71	J7-3	
	2	original width detection 3	SW73	J7-4	
	3	original width detection 4	SW74	J7-5	
	4	original length detection 1 (PI9)	DLDL	J5-2	
	5	original length detection 1 OPI8)	DLDM	J5-3	
	6	original length detection 1 (PI7)	DLDS	J5-4	
	7	PCB internal signal			

6. Input/Output Port 2 of the Feeder



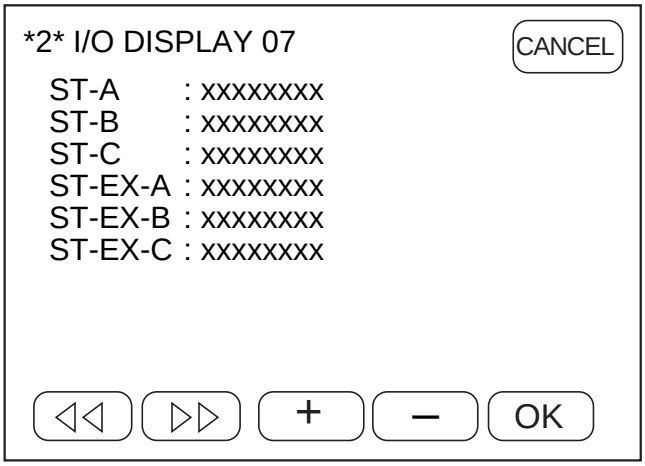
a. RF Input/Output Ports

Address	Indication	Signal	Jack	Logic
DF-AD0	Original sensor (S1)	DEP1	J5-7	In hexadecimal notation.
DF-AD1	Registration sensor (S3)	PDP2	J9-20	In hexadecimal notation.
DF-AD2	Original width volume (VR1)	DMPS	J8-8	In hexadecimal notation.
DF-AD3	Not used			
DF-AD4	Not used			
DF-AD5	Not used			
DF-DA0	Original tray sensor LED1 ON signal			
DF-DA1	Registration sensor LED3 ON signal			

b. ADF Input/Output Port

Address	Indication	Signal	Jack	Logic
DF-AD0	Not used			
DF-AD1	Not used			
DF-AD2	Not used			
DF-AD3	Not used			
DF-AD4	Not used			
DF-AD5	Not used			
DF-DA0	Not used			
DF-DA1	Not used			

7. Input/Output Port 1 of the Sorter



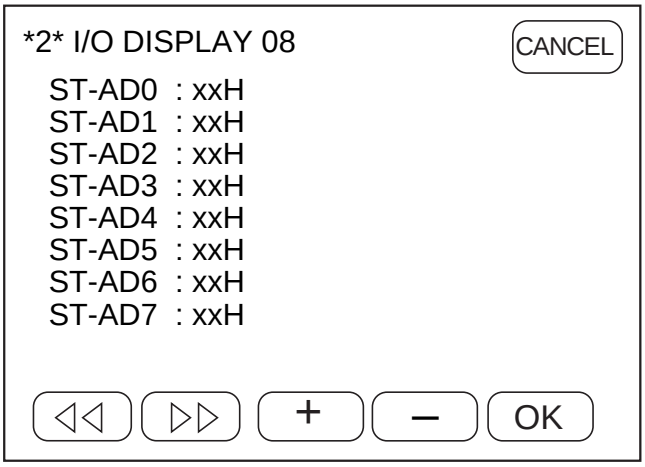
a. Multi-Output Tray-1/2 Input/Output Ports (1/2)

Address	Bit	Indication	Signal	Jack	Logic
ST-A	0	Guide bar motor drive signal 1			Pulse signal
	1	Guide bar motor drive signal 2			Pulse signal
	2	Guide bar motor drive signal 2			Pulse signal
	3	Guide bar motor drive signal 4			Pulse signal
	4	Guide bar motor drive signal ON signal			1: motor ON.
	5	Stapler motor drive signal 1			1: motor CW.
	6	Stapler motor drive signal 2			1: motor CCW.
	7	Stapler swing motor drive signal			1: motor ON.
ST-B	0	Sorter feeding motor drive signal			Pulse signal
	1	Tray feeding motor drive singal			Pulse singal
	2	Not used			
	3	Add Staple LED ON/OFF	STEMP	J9-5	0: ON.
	4	Stapler LED ON/OFF	SPLOK	J9-4	0: ON.
	5	Not used			
	6	Paper on tray indicator	TRIND	J15-1	1: ON.
	7	PCB internal signal			
ST-C	0	Not used			
	1	PCB internal signal			
	2	Bin feeding motor clock (PI2)	BFMC	J8-2	Pulse input
	3	Not used			
	4	Tray feeding motor clock (PI6)	TFMC	J11-11	Pulse input
	5	Lead cam HP sensor (PI1)	LCHP	J8-4	1: Lead cam horizontal.
	6	PCB internal signal			
	7	Bin unit delivery sensor (P3)	BPDY	J9-1	0: paper detected
ST-EX-A	0	Not used			
	1	Not used			
	2	Not used			
	3	Not used			
	4	Not used			
	5	Not used			
	6	Not used			
	7	Not used			
ST-EX-B	0	Stapler cover open/closed detection (MS5)	SPLON	J17-2	1: Open.
	1	Joint sensor (MS3)	TOP	J3-3	1: Released.
	2	Stapler safety sensor (MS6)	SPLSFT	J17-4	1: Safety switch ON.
	3	Stapler position sensor (PI4)	SPLPD	J17-3	0: At HP.
	4	Tray position detection (PI12)	TRP	J12-7	1: At HP.
	5	Guide bar HP sensor (PI5)	GBHP	J4-6	1: At HP.
	6	Stapler HP sensor (MS4)	SPUHP	J17-3	1: At HP.
	7	Stapling HP sensor (MS7)	SPLHP	J7-8	1: At HP.

a. Multi-Output Tray-1/2 Input/Output Ports (2/2)

Address	Bit	Indication	Signal	Jack	Logic
ST-EX-C	0	Not used			
	1	PCB internal signal			
	2	PCB internal signal			
	3	Tray B paper detection (PI11)	TBPD	J12-4	1: Paper present.
	4	Tray A paper detection (PI10)	TAPD	J12-1	1: Paper present.
	5	Tray B discharge paper detection (PI9)	TBP	J11-14	1: Paper detected.
	6	Tray A delivery detection (PI8)	TAP	J11-8	1: Paper detected.
	7	Tray feeding assembly inlet slot sensor (PI7)	TFPD	J11-5	1: Paper detected.

8. Input/Output Port 2 of the Sorter



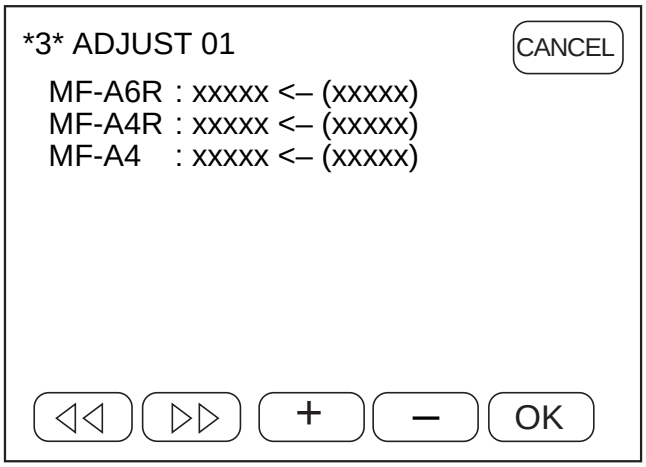
b. Multi-Output Tray 1/2 Input/Output Ports

Address	Indication	Signal	Jack	Logic
ST-AD0	24V monitor			
ST-AD1	Bin paper sensor (PT1)	BPDN	J4-4	Analog input
ST-AD2	Not used			
ST-AD3	For factory/R&D			
ST-AD4	Staple key	MNSPT	J9-6	0: Key ON.
ST-AD5	Push SW (SW2)			0: SW2 pressed.
ST-AD6	Push SW (SW1)			0: SW1 pressed.
ST-AD7	Staple absent			1: Staple absent.

F. *3* ADJUST (adjustment mode)

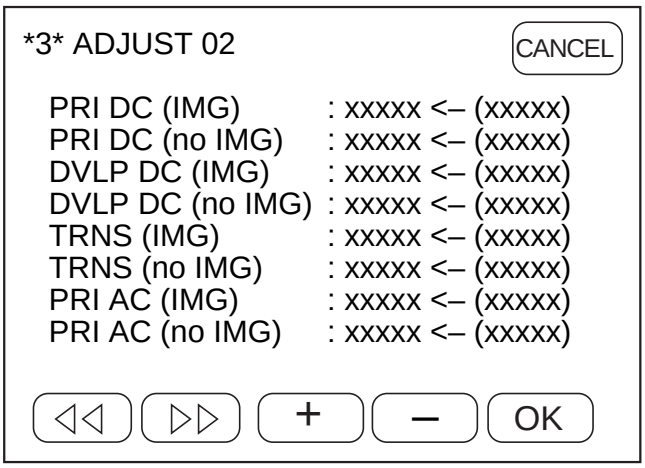
- Use this mode to fine-adjust or set back-up data needed for copying operations.
- Each press on the [▷▷] key brings up the next screen; each press on the [◁◁] key, on the other hand, brings up the previous screen.
- Press the item you want to adjust or set (notation) to highlight.
- Use the keypad to enter numbers.
- Press the [OK] key to accept the selected setting.
- Record all new settings on the service label.
- When done, turn off and then on the main power switch.

1. Fine-Adjusting and Entering the Multifeeder Paper Width Basic Setting



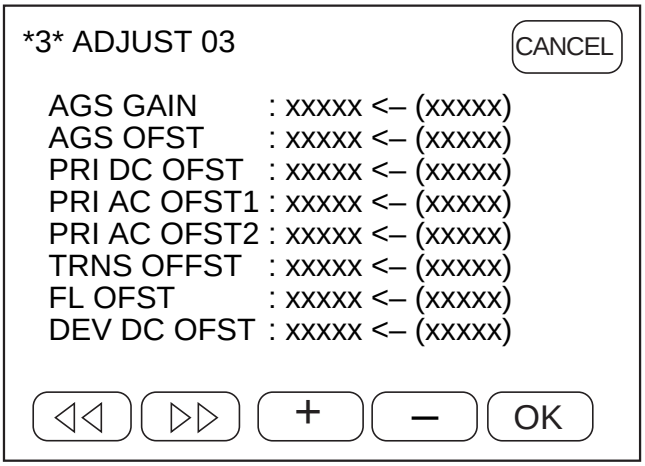
Item	Description	Remarks	Settings
	Use it to fine-adjust or enter the multi-feeder paper width basic setting.	If you have replaced the image processor PCB, be sure to enter the value recorded on the service label. For how to enter a new value after replacement of the paper width sensor, see p. 2-15.	0~65535
MF-A6R	MF-A6R: Indicates the stored A6R (105mm) value of the multifeeder paper width sensor.		
MF-A4R	MF-A4R: Indicates the stored A4R (210mm) value of the multifeeder paper width sensor.		
MF-A4	MF-A4: Indicates the stored A3 (297mm) value of the multifeeder paper width sensor.		

2. Primary Charging Roller/Transfer Charging Roller/Developing Bias



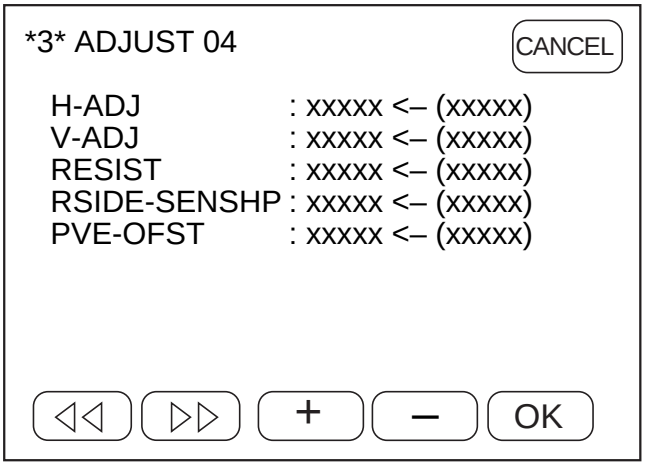
Item	Description	Remarks	Settings
PRI DC (IMG)	Indicates the primary charging DC output effective when an image is exposed.	If you have replaced the image processor PCB, be sure to enter the value recorded on the service label.	
PRI DC (no IMG)	Indicates the primary charging DC output between sheets.		
DVLP DC (IMG)	Indicates the developing DC output while an image is exposed.		
DVLP DC (no IMG)	Indicates the developing DC output between sheets.		0~65535
TRNS (IMG)	Indicates the transfer charging DC output while an image is exposed.		
TRNS (no IMG)	Indicates the transfer charging DC output between sheets.		
PRI AC (IMG)	Indicates the primary charging AC output while an image is exposed.		
PRI AC (no IMG)	Indicates the primary charging AC output between sheets.		

3. Back-Up Data for the Composite Power Supply PCB

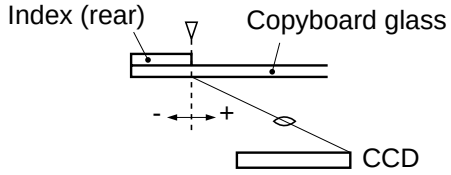
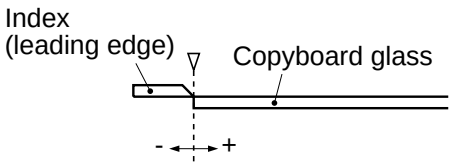


Item	Description	Label*	Remarks	Settings
AGS GAIN	Indicate APVC gain.	APVC GAIN	If you have replaced the composite power supply PCB, be sure to enter the value recorded on the label attached to the composite power supply PCB. (see P7-3)	0~255
AGS OFST	Indicates APVC offset.	APVC OFST		
PRI DC OFST	Indicates primary charging DC offset.	PDC OFST		
PRI AC OFST1	Indicate primary charging AC offset 1.	PAC OFST1		
PRI AC OFST2	Indicates primary charging AC offset 2.	PAC OFST2		
TRSN OFFST	Indicates transfer charging offset.	ATVC OFST		
FL OFST	Indicates scanning lamp offset.	FL OFST		
DEV DC OFST	Indicates developing bias DC component offset.	DDC OFST		

* Service Label; attached to the composite power supply PCB

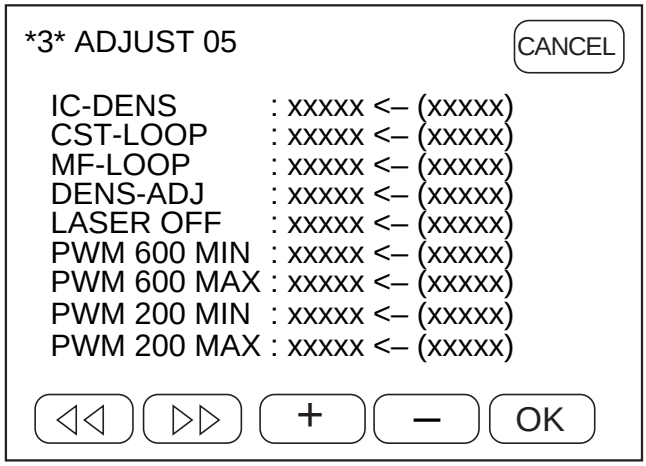


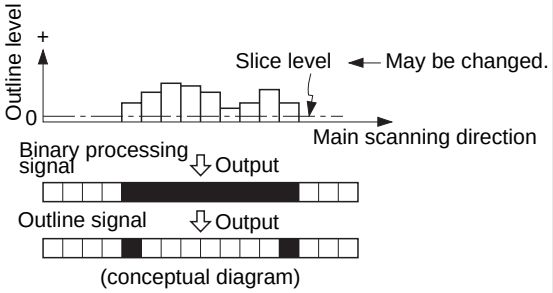
4. Registration-Related Items

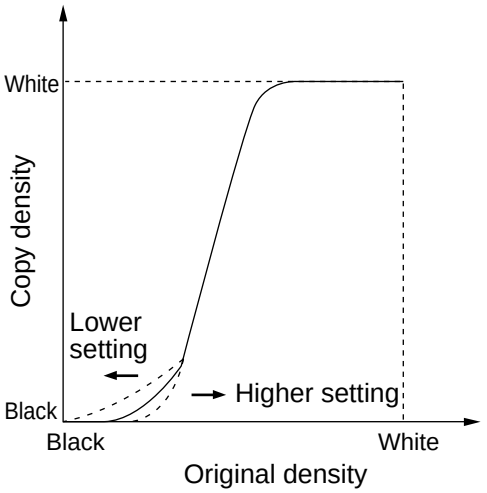
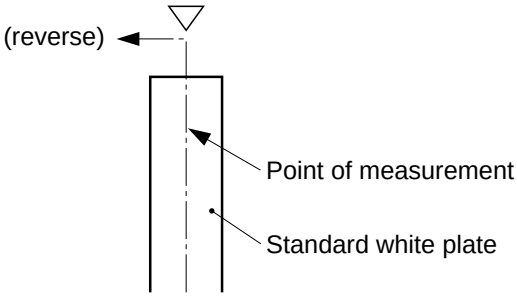
Item	Description	Settings	Remarks
H-ADJ	Use it to fine-adjust the CCD reading start position (main scanning direction; book mode)  A higher setting shifts the read start position to the right.	0~500	unit:1mm (approx.; at 23)
V-ADJ	Use it to adjust the image reading start position (sub scanning direction).  A higher setting delays the registration ON timing.	0~1000	unit: 1mm (approx.; at 23)
RESIST	Use it to adjust the registration clutch ON timing (leading edge margin).	0~1000	Standard: 2.5 ±1.0 mm

Item	Description	Settings	Remarks
RSIDE-SENSHP	Use it to make adjustments if images on paper picked up from the lower feeding assembly (2nd side of overlay/two-sided copies) are often displaced to the rear or front. • If the displacement is to the rear, decrease the value (in units of 23, a single unit being equivalent to 1 mm). • If the displacement is to the front, increase the value (in units of 23, a single unit being equivalent to 1 mm).	0~65535 Within ±46 (23x2) of the factory adjustment value.	
PVE-OFST	Use it to correct offset from the laser center. • If you have initialized the RAM or replaced the image processor PCB, enter the value recorded on the service label.	–200~+200	

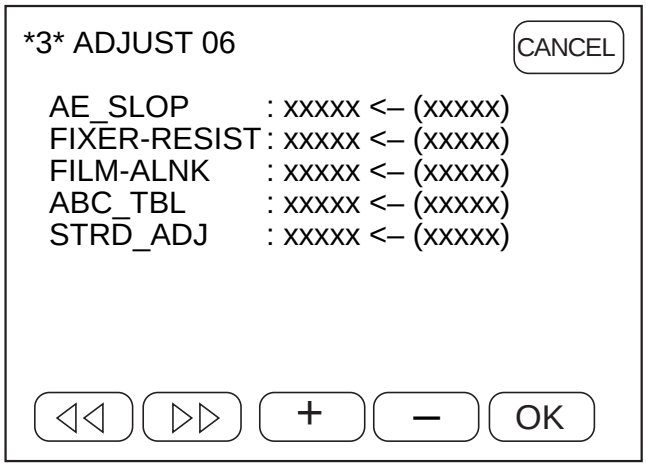
5. Scanner-, Cassette-, and Laser-Related Items

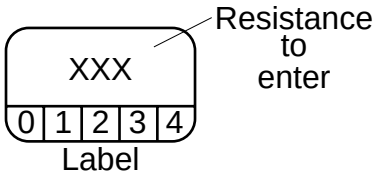
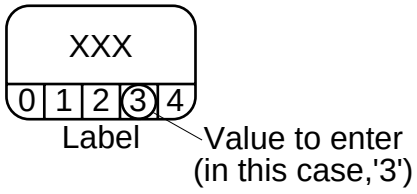


Item	Description	Settings	Remarks
IC-DENS	Use it to adjust the original slice level in image create mode (with the Image Editing Board installed).  (conceptual diagram)	50~200	
CST-LOOP	Use it to adjust arching (cassette pick-up; for factory use).	0~65535	
MF-LOOP	Use it to adjust arching (multifeeder pick-up; for factory use).	0~65535	

Item	Description	Settings	Remarks
DENS-ADJ	Use it to make adjustments if the copy image is foggy as a result of executing copy density auto correction. 	1~9	
ADJ-S	Use it to fine-adjust the point at which data for shading correction is measured on the standard white plate. • The adjustment is in units of 1/12 mm (about 0.083 mm). • The presence of scratches on the standard white plate can cause noticeable white, vertical lines on copies. If such is the case, shift the point of measurement in ADJ-S. 	50~80	
LASER-OFF	Use it to adjust the laser OFF timing (trailing edge).	0~65535	
PWM 600 MIN PWM 600 MAX PWM 200 MIN PWM 200 MAX	Use it to enter laser basic values. Label on the image processor PCB P6L xx —> Enter under 'PWM600MIN'. P6H xx —> Enter under 'PWM600MAX'. P2L xx —> Enter under 'PWM20MIN'. P2H xx —> Enter under 'PWM200MAX'.	0~65535	If you have initialized the RAM or replaced the image processor PCB, enter the value recorded on the label attached to the image processor PCB.

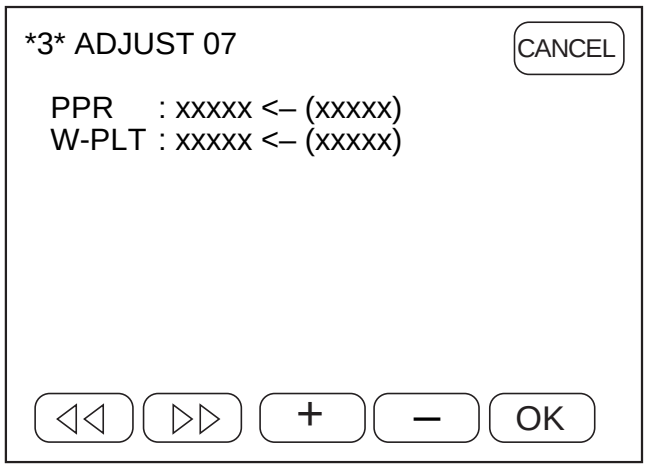
6. Adjusting the AE/Fixing Assembly Settings



Item	Description	Settings	Remarks
AE-SLOP	When copying in AE mode with priority on image quality, some types of originals generate light images. If such is the case, use this mode to adjust the copy image density.	1~19	See p.2-21.
FIXER-RESIST	Use it to enter the resistance of the fixing assembly. • If you have replaced the fixing assembly, enter the value recorded on the label attached to the fixing assembly. 		
FILM LANK	Use it to enter the film thickness rank (fixing temperature control value). • If you have replaced the fixing assembly, enter the value recorded on the label attached to the fixing assembly, thereby setting the fixing temperature control value. 	0~4	Enter a value higher than the recorded value by 1 to 2 if shiny lines (vertical) occur on solid black copies.

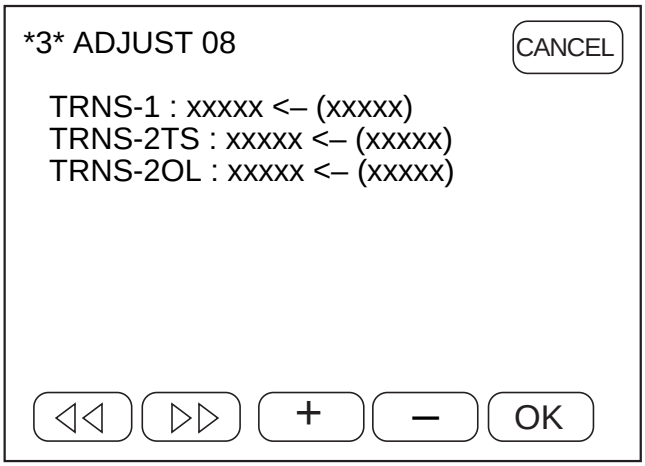
Item	Description	Settings	Remarks
ABC_TBL	Use it to decrease the setting if the text density is too low (light image) when executing AE mode with priority on speed.	0~00009	See p. 2-20.
STRD_ADJ	Use it to adjust the scanner stop position in ADF-F1 stream reading mode. • Make adjustments if the copy image is too light in stream reading mode using the ADF-F1.	0~140	
AE_LIGHT	Use it to decrease the setting if the background of the original is too conspicuous when using AE mode with priority on image quality mode.	0~40	See p.2-21.
AE_DARK	Use it to increase the setting if the text density is too low (light image) when executing AE mode with priority on image quality.	0~40	See p.2-21.

7. Shading Back-Up Data



Item	Description	Settings	Remarks
PPR	Indicates the standard white paper data (density data of the standard white paper).	0~65535	If you have initialized the RAM or replaced the image processor PCB, be sure to enter the value recorded on the service label.
W-LTP	Indicates the standard white plate data (density data of the standard white plate).	0~65535	

8. Adjusting the Transfer Charging Roller Bias



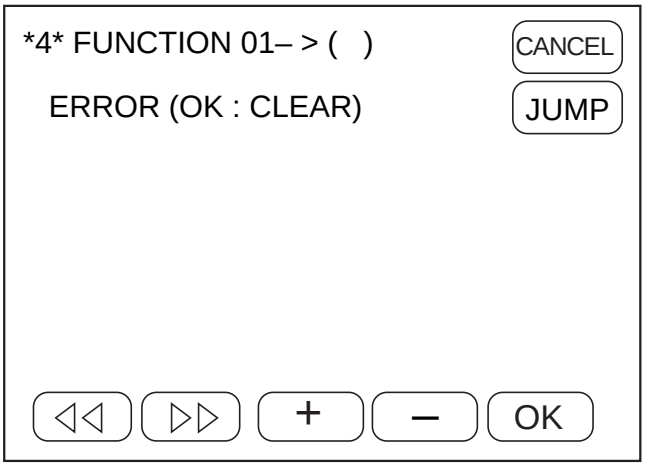
Item	Description	Settings	Remarks
TRNS-1	Use it to adjust the transfer roller bias occurring when copying on the 1st side.	0~10	Make adjustments if image faults occur because of an incorrect transfer roller bias. Guide • If fogging caused by stray toner occurs in the trailing edge margin, increase the value. • If the density grows higher (darker) at intervals of about 94 mm when copying an entirely halftone image, decrease the value.
TRNS-2TS	Use it to adjust the transfer roller bias occurring when copying on the 2nd side of a two-sided copy.	0~10	
TRNS-2OL	Use it to adjust the transfer roller bias occurring when copying on the 2nd side of an overlay copy.	0~10	

Note:
Settings are between 0 and 10; however, a value higher than 10 may be entered. (Any such number will be treated as ‘5’ for control.)

G. *4* FUNCTION (function mode)

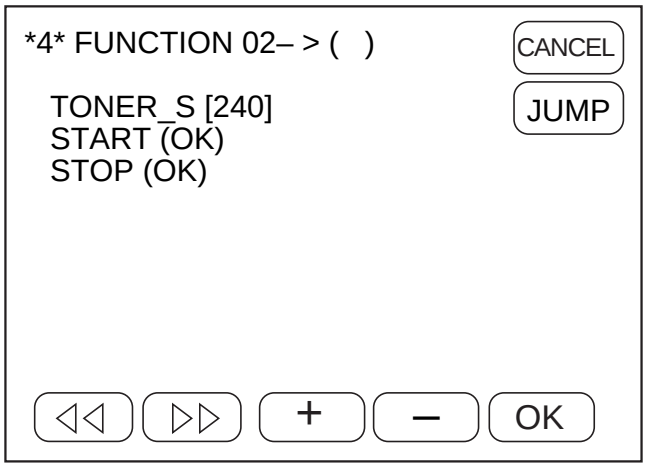
- Use this mode to operate the machine under a specific set of settings or execute auto adjustment. (Check to make sure that the machine is in standby mode before executing any item.)
- Each press on the [▷▷] key brings up the next screen; each press on the [◁◁] key, on the other hand, brings up the previous screen.
- Press the item (notation) for operation or auto adjustment to highlight.
- Press the [OK] key to execute the selected item.
- Press the [CANCEL] key to return to the Menu screen.
- A press on the [JUMP] and a key on the keypad put the corresponding number into the parentheses '*4* FUNCTION1 –> ( )'; a press on the [JUMP] key then causes a leap to the corresponding page.

1. Clearing Errors



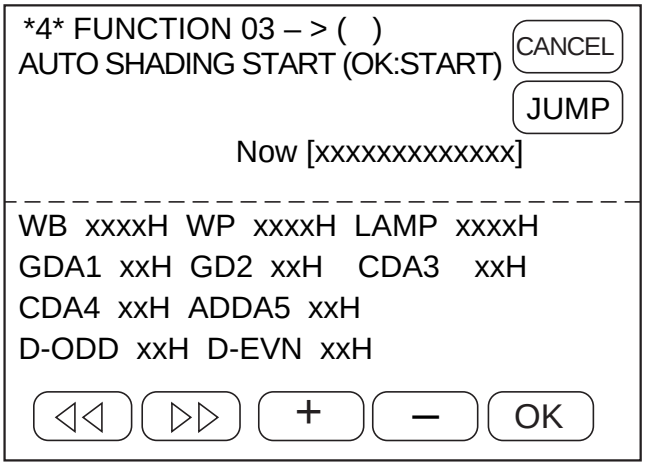
Item	Description	Reference page
Clearing E000, E001, E003, E004, E007-01, or E717	To clear an error indication, press 'ERROR' on the screen to highlight; then, press the OK key, and turn OFF/ON the main power switch.	

2. Stirring the Toner



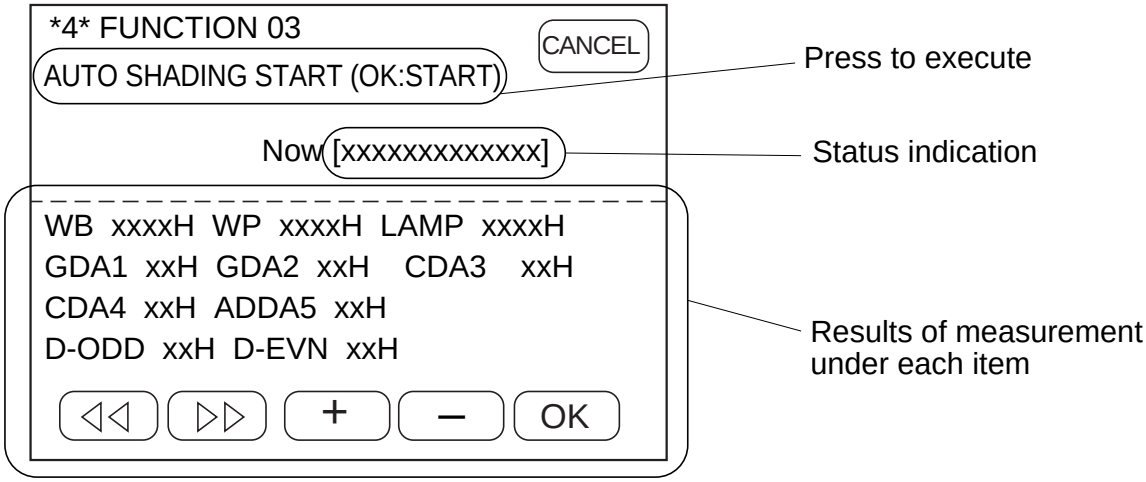
Item	Description	Reference page
Stirring toner inside the developing assembly at installation	Press 'START' on the screen to highlight; then, press the OK key to start stirring the toner inside the developing assembly. At the same time, 'TONER_S' [240] (in sec) starts to increment; the operation stops at [0]. To stop in the middle, press 'STOP' to highlight, and press the OK key to stop.	

3. Shading Auto Correction



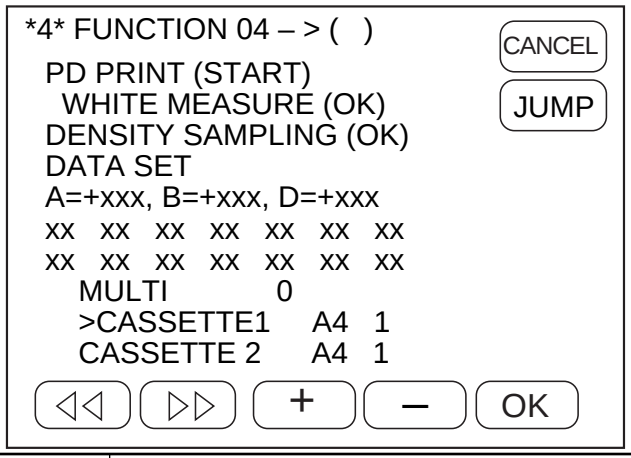
Item	Operation	Reference page
Shading auto correction (for servicing in the field)	1) Press 'AUTO SHADING START' on the screen to highlight; then, press the OK key. 2) The notation 'END' indicates the end of the operation.	

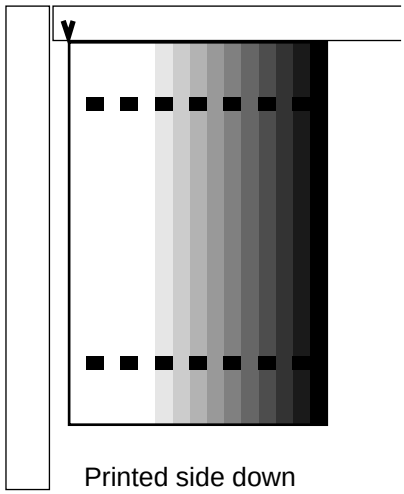
Guide to the Screen



4. PD Density Auto Correction

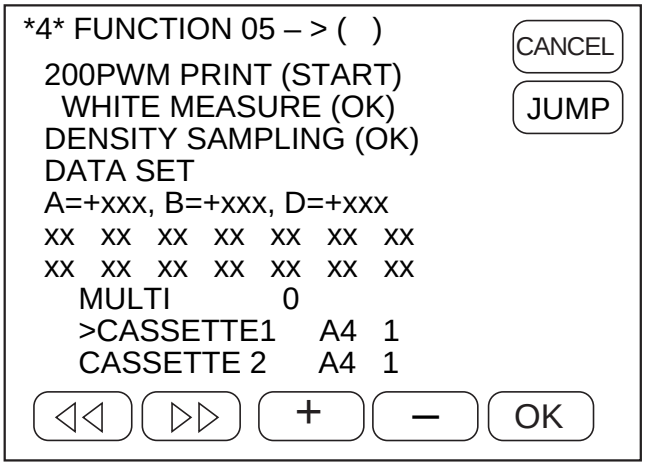
- This mode must be executed in combination with 200PWM density auto correction and 600PWM density auto correction.

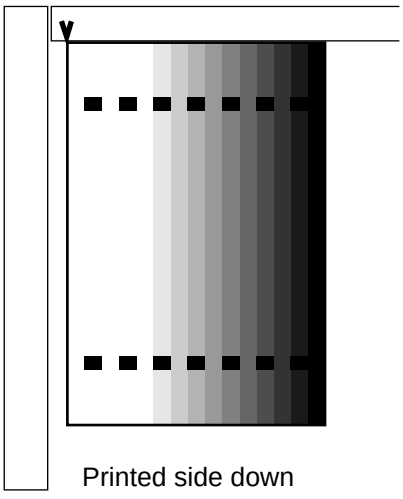


Item	Description	Reference page
PD density auto correction	1) Press 'PD PRINT' to highlight; then, press the Copy Start key. • A 15-gradation test pattern will be generated. 2) Place a blank sheet of paper (the whitest of all used by the user; no color copier paper allowed) on the copyboard glass; then, press 'WHITE MEASURE' to highlight, and press the OK key. • The scanner makes a single scan. 3) Replace the paper with the test pattern generated previously; then, press 'DESNITY MEASURE' to highlight, and press the OK key.  Printed side down 4) Check the values under A, B, and D: 20≤A≤50 –40≤B≤40 0≤D≤8 5) If the values are as indicated, press 'DAT SET' to highlight, and press the OK key.	See p.2-13

5. 200PWM Density Auto Correction

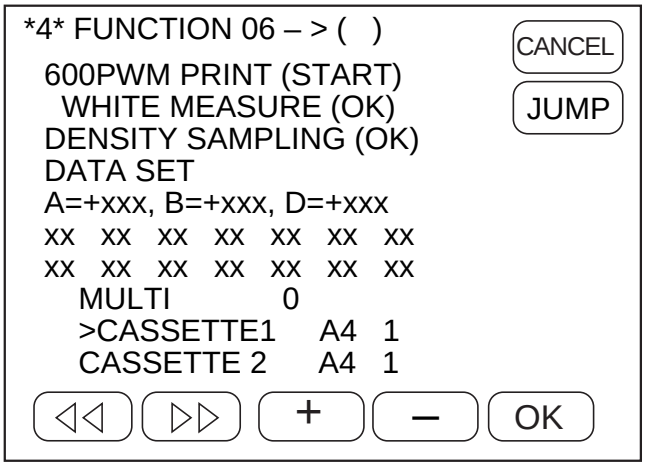
- You must execute this mode in combination with PD density auto correction and 600PWM density auto correction.

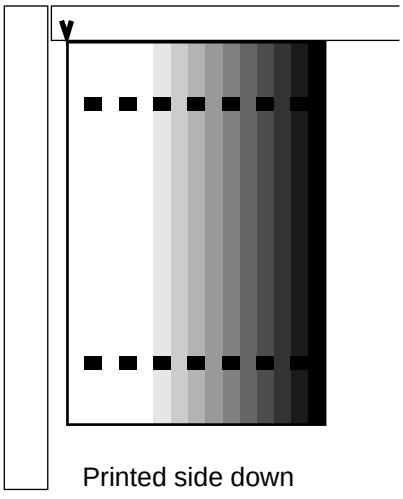


Item	Description	Reference page
200PWM density auto correction	1) Press '200PWM PRIT' to highlight, and press the Copy Start key. • A 15-gradation test pattern will be generated. 2) Place a black sheet of paper (whitest of all used by the user; no color copy paper allowed) on the copyboard glass; press 'WHITE MEASURE' to highlight, and press the OK key. • The scanner makes a single scan. 3) Replace the paper with the test pattern generated previously; press 'DENSITY MEAUSRE' to highlight, and press the OK key.  Printed side down 4) Check the value of A, B, and D. Insert 5) If the values are as indicated, press 'DATA SET' to highlight, and press the OK key.	

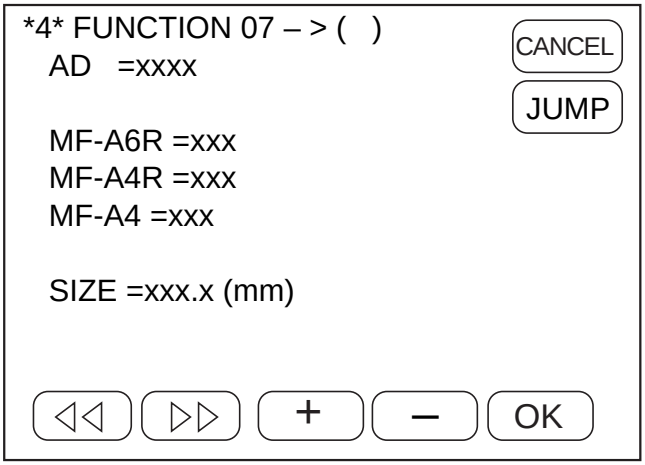
6. 600PWM Density Auto Correction

- This mode must be executed in combination with PD density auto correction and 200PWM density auto correction.



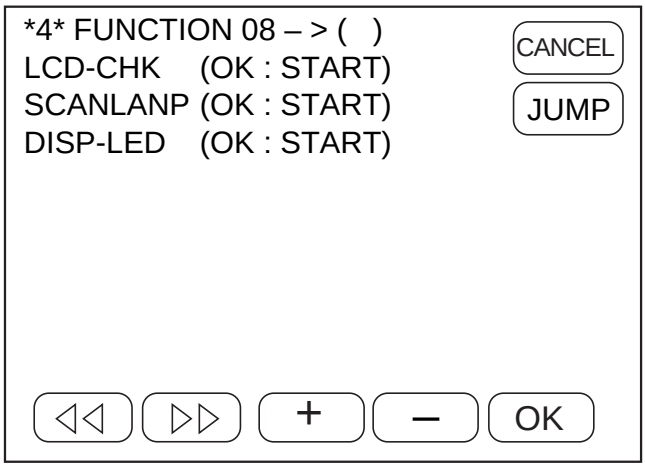
Item	Description	Reference page
600PWM density auto correction	1) Press '600PWM PRINT' to highlight, and press the Copy Start key. • A 15-gradation test pattern will be generated. 2) Place a blank sheet of paper (whitest of all used by the user; no color copy paper allowed) on the copyboard glass; press 'WHITE MEASURE' to highlight, and press the OK key. • The scanner makes a single scan. 3) Replace the paper with the test pattern generated previously; press 'DENSITY MEASURE' to highlight, and press the OK key.  Printed side down 4) Check the value of A, B, and D. Insert 5) If the values are as indicated, press 'DATA SET' to highlight, and press the OK key.	

7. Registering the Multifeeder Paper Width



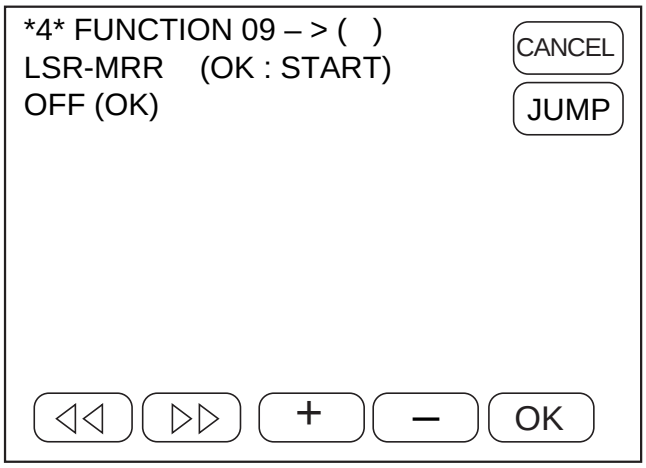
Item	Description	Reference page
Multifeeder paper width basic value registration	1) Place an A6R sheet* in the multifeeder, and adjust the side guide to A6R. *A6 is what you obtain folding A4 into four, with its width being 105 mm. 2) Check the screen to make sure that the VR output is indicated under 'AD=xxx' as soon as the side guide is adjusted to A6R. Then, press 'MF-A6R' to highlight, and press the OK key. • The value will be stored under 'MF-A6R'. 3) Likewise, place and A4R sheet in the multifeeder, and adjust the side guide to A4R. 4) Check to make sure that the AD value has been indicated; then, press 'A4R' to highlight, and press the OK key. • The value will be stored under 'A4R'. 5) Then, place an A4 sheet of paper in the multifeeder, and adjust the side guide to A4. 6) Check to make sure that the AD value has been indicated; then, press 'A4;' to highlight, and press the OK key. • The value will be stored under 'A4'. 7) Press the Reset key twice to end service mode. 8) Turn off and then on the main power switch.	See P.2-15

8. Checking the Control Panel Indications



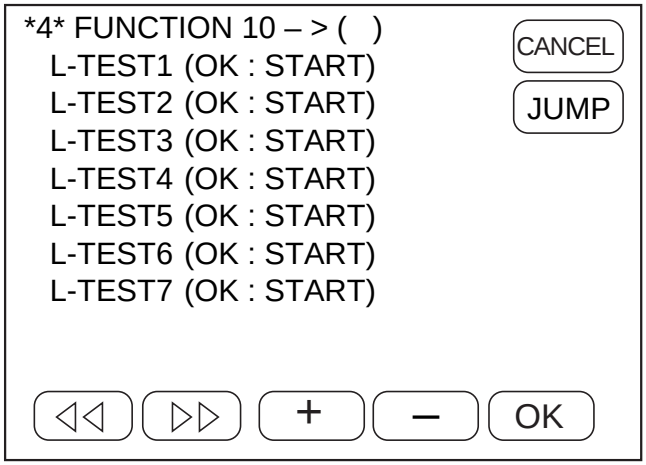
Item	Description	Reference page
LCD-CHK • checking for missing dots on LCD	1) Press 'LCD-CHK' to highlight. 2) Press the OK key. • The entire face of the LCD reverses (white video; keys and notations disappear). 3) Press the area where the OK key was shown. • The entire face of the LCD reverses (black video). 4) Press the area where the OK key was shown. • The LCD will return to normal state.	
SCAN_LAMP • checking activation of scanning lamp	1) Press 'SCAN_LAM' to highlight. 2) Press the OK key. • The scanning lamp will turn on. 3) Press the OK key. • The scanning lamp will turn off.	
DISP-LED • checking control panel LEDs	1) Press 'DISP-ED' to highlight. 2) Press the OK key. • The LEDs on the control panel will turn on. 3) Press the OK key. • The LEDs on the control panel will turn off.	

9. Laser



Item	Description	Reference page
LSR-MRR • checking laser scanner motor operation OFF • stopping operation	1) Press 'LSR-MMR' to highlight; then, press the OK key. • The laser scanner motor will start to rotate. 2) Press 'OFF' to highlight; then, press the OK key to stop the laser scanner motor.	See p.2-15

10. Test Print



Item	Description	Reference page
Test print output	Select the desired test print (press the item to high-light); then, press the OK key. L-TEST1: solid black test print L-TEST2: halftone test print L-TEST3: blank test print L-TEST4: 17-gradation test print L-TEST5: grid test print L-TEST6: vertical line test print L-TEST7: horizontal line test print	

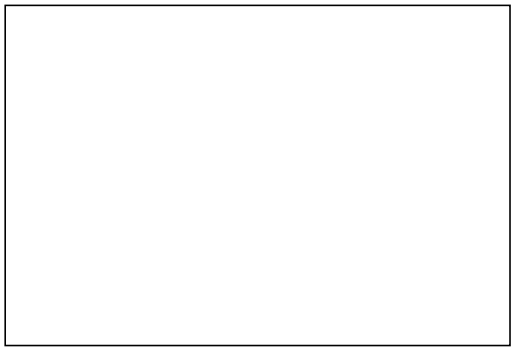
① **L-TEST1: solid black test print**

- Use it to check white spots or white lines.
- If white spots are noted, suspect dirt on the transfer charging roller or the separation static eliminator.
- If white lines are noted, suspect shading faults because of dirt on the standard white plate.

② **L-TEST2: halftone test print**

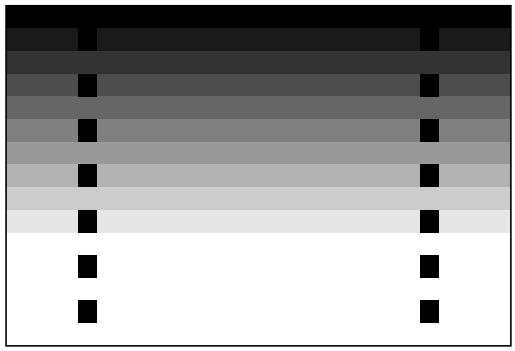
- Use it to check for transfer faults, black lines, white lines, or uneven intervals.
- If transfer faults are noted (vertical white spots), suspect dirt on the transfer charging roller or the separation static eliminator.
- If black lines are noted, suspect scratches on the drum or dirt on the primary charging roller.

③ **L-TEST3: blank test print**



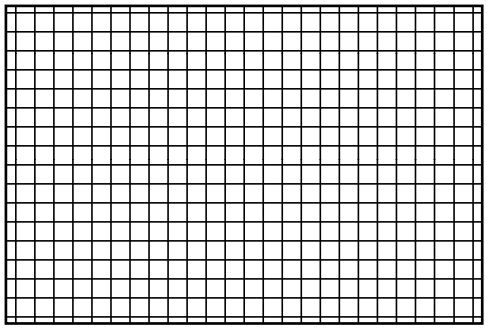
- Use it to check for fogging.
- If fogging is noted, suspect a fault in the photosensitive drum, developing system, or laser system.

④ **17-gradation test print**



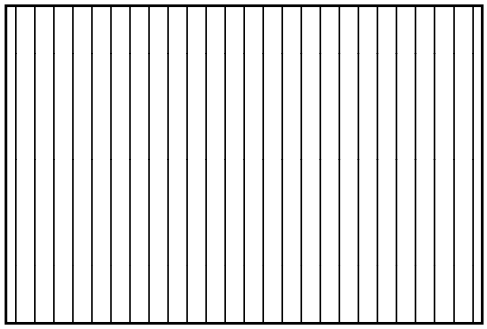
- Use it to check gradation and check for fogging, white lines, and uneven (left/right) density.
- If gradation is not good, suspect a fault in the laser system.
- If fogging is noted, suspect a fault in the photosensitive drum, developing assembly, or laser system.
- If white bands are noted, suspect a fault in the developing system or dirt on the transfer charging roller.
  If white lines are noted, suspect a shading fault because of dirt on the standard white plate.
- If uneven density (left/right) is noted, suspect dirt on the primary charging roller or a fault in the developing system.

⑤ L-TEST5: grid test print



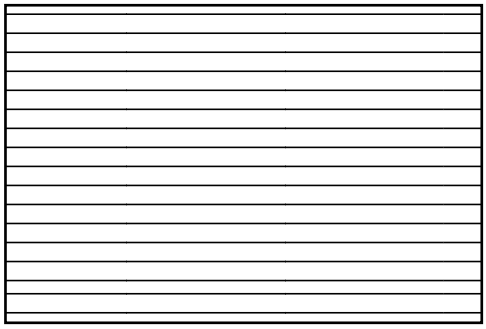
- Use it to check straight line and angles.
- If a discrepancy is noted, suspect a displaced laser beam or a fault in beam detection.

⑥ L-TEST6: vertical line test print



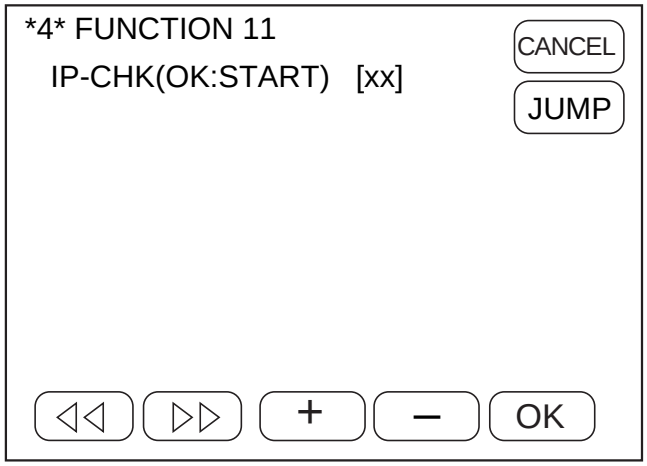
- Use it to check straight lines.
- If a discrepancy is noted, suspect a displaced laser beam or a fault in beam detection.

⑦ L-TST7: horizontal line test print



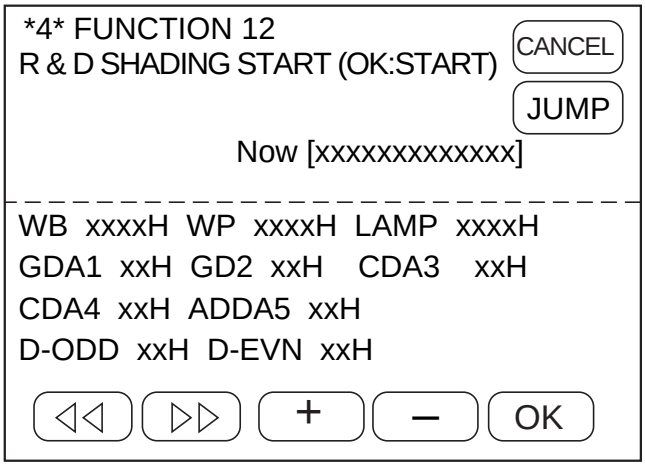
- Use it to check straight lines.
- If a discrepancy is noted, suspect a displaced laser beam or a fault in beam detection.

11. Checking the Image Processor PCB



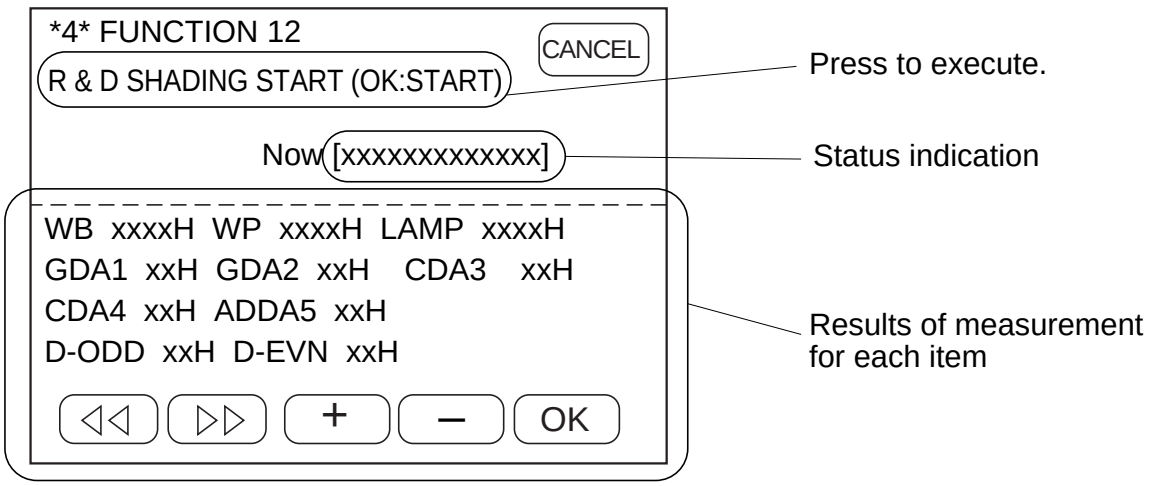
Item	Description	Reference page
Image processor PCB self check	1) Press 'IP-CHK' to highlight. 2) Press the OK key to start a check on the image processor PCB. • 'OK' or 'NG' will be indicated; if 'NG', replace the image processor PCB.	

12. Shading Adjustment (for R&D/factory)

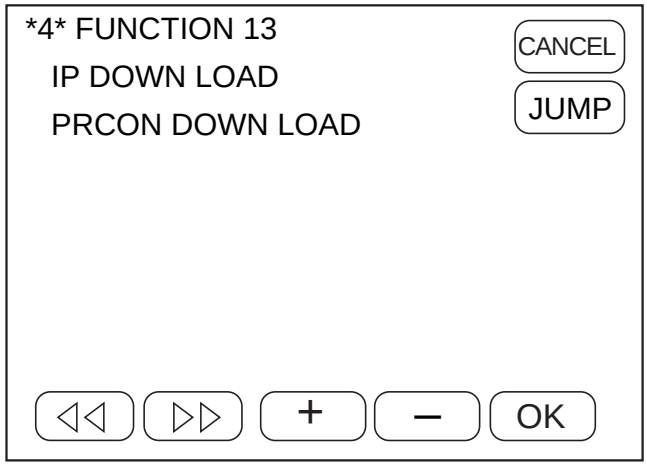


Item	Description	Reference page
R&D/factory shading auto correction	1) Place the standard white paper on the copyboard glass. 2) Press 'AUTO SHADING START' on the screen to highlight; then, press the OK key. 3) When a beep is sounded, press the OK key. ('LAMP LEVEL' will be indicated on the screen while the lamp is being adjusted.) If no beep is heard, turn VR1 on the DC controller PCB so that a beep will be heard; then, press the OK key. 4) End the operation when 'END' appears on the screen.	

Guide to the Screen

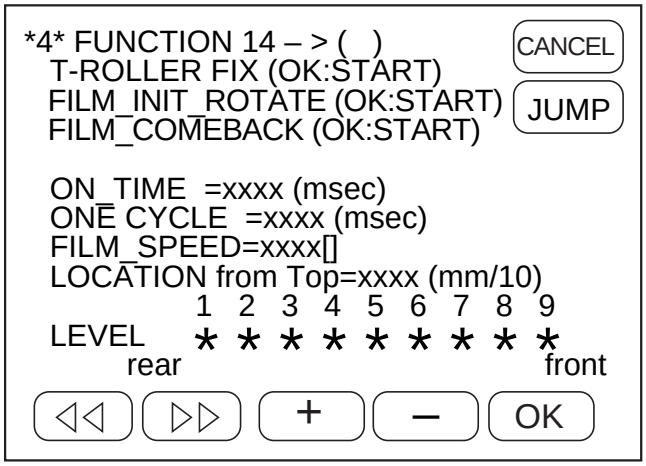


13. Downloading Mode (updating FLASH ROM)



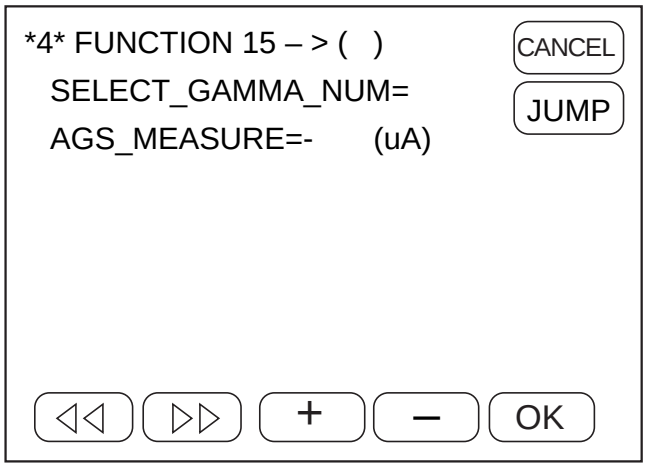
Item	Description	Reference page
FLASH ROM updating mode IP DOWNLOAD: • for updating FALSH ROM on image processor PCB PRCON DOWNLOAD: • for updating FLASH ROM on protocol controller	1) Perform the following in advance: ① Turn off the main power switch. ② Open the front door, and remove the connector cover for servicing; then, connect the copier to a PC with an RS232C cable. ③ Insert the handle of the static eliminator cleaning brush into the fixing assembly releasing assembly; then, turn on the main power switch. ④ Press the service switch, and press the * key twice; select 'FUCNTION '(*4*) so that the Downloading screen will appear. 2) Press 'IP DOWNLOAD' or 'PRCON DOWNLOAD' to highlight; then, press the OK key. • The power will automatically be removed and then will be supplied. • The following screen will appear to indicate that the system is ready to accept downloading: IP FDIMM download program 3) Operate according to the instructions on the PC screen.	

14. Adjusting the Fixing Film

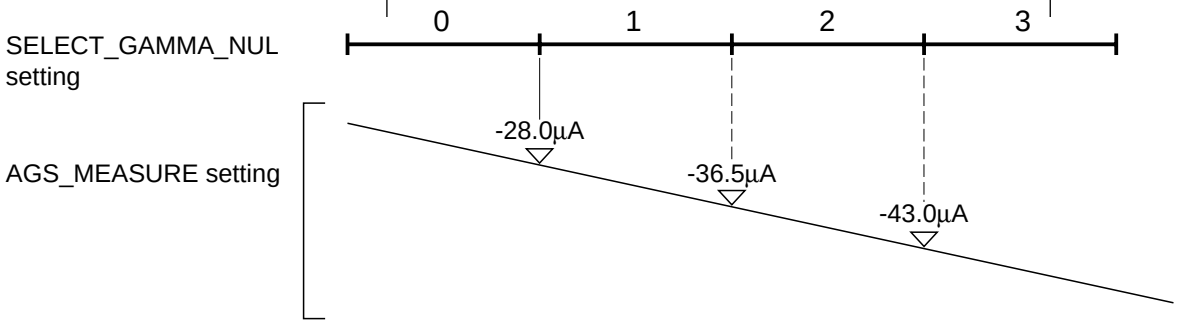


Item	Description	Reference page
T-ROLLER FIX • fixing tension roller fixing mode (Use it to mechanically adjust the pressure of the fixing film drive roller.) Execute it as part of adjustment performed after replacing the film.	In this mode, the fixing film is rotated idly with the fixing tension roller being held in place after returning the film to an appropriate position (same as in FILMCOMEBACK). While the fixing film is rotated idly, the speed of displacement to the rear/front of the film is measured, and the result is indicated under ‘ FILM SPEED’ on the control panel.	
FILM_INIT_ROTATE • fixing film initial rotation mode (Use it after replacement of the fixing film or the fixing assembly.)	In this mode, the fixing film will automatically stop at a specific position, indicating the position under ‘LOCATION from Top’ and ‘LEVEL’ as it rotates.	
FILM_COMEBACK • fixing film displacement recovery mode (Use it if ‘E007’ is indicted when the fixing film has become displaced for some reason.)	In this mode, the film is returned to its proper position. The operation ends when the film has returned to the proper position or after a specific period of time has passed. (The rough adjustment range is not reached in 30 sec; or, the fine-adjustment range is not reached in 60 sec.)	
ON-TIME	Indicates the period during which the fixing film sensor has been ON.	
ONE CYCLE	Indicates the time taken by the fixing film to make a complete rotation.	
FILM_SPEED	Indicates the measured film speed.	
LOCATION from TOP	Indicates the position of the rear end of the fixing film from the V-cut.	
LEVEL	Indicates the position of the fixing film (4 or 5 is optimum).	

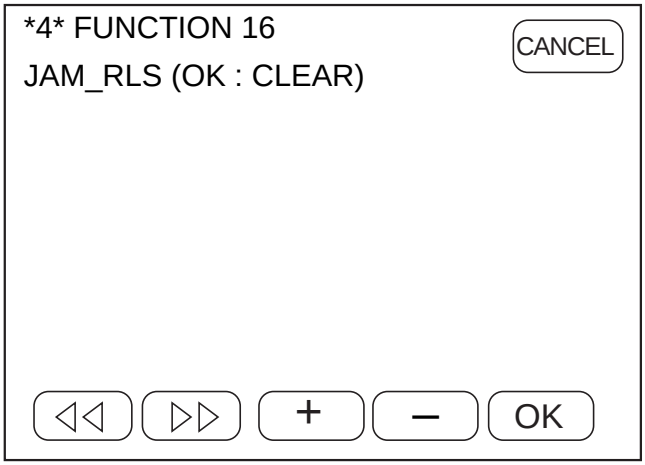
15. Measuring the Drum Resistance



Item	Description	Reference page
Photosensitive drum resistance measurement	1) Brig up the screen, and press the Copy Start key. • The resistance of the photosensitive drum will be measured, and the result will be indicated. • Execute this mode before changing 'AGSNON' of 'OPTION' in service mode (*5*) to '0' so that the measurement may be used as a reference. • For a guide, see the diagram below.	

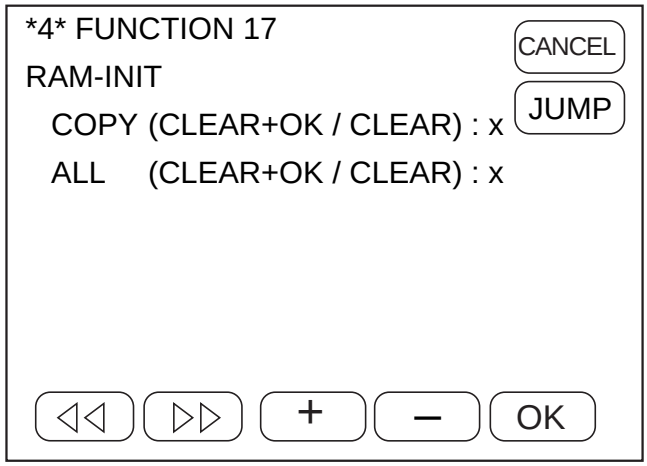


16. Resetting the Jam History



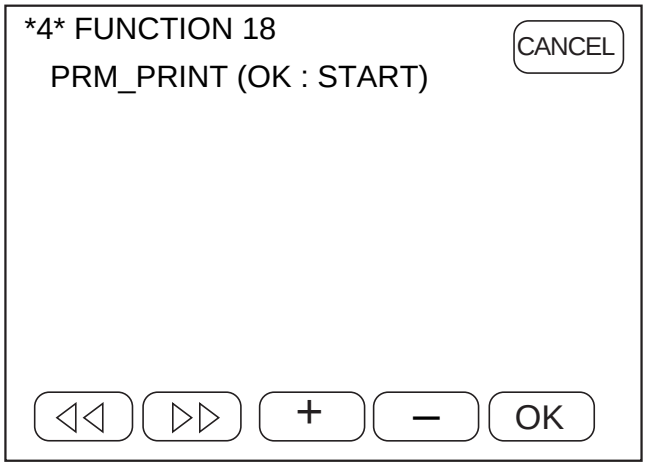
Item	Description	Reference page
Resetting jam history	Use this mode to collectively reset the jam histories shown under 'DISPLAY' in service mode (*1*). Press 'JAM_RLS' to highlight; then, press the OK key.	

17. Initializing the Memory (RAM)



Item	Description	Reference page
Initializing RAM	Press the appropriate item to highlight; then, press the Clear key, and press the OK key. COPY: Select it to initialize the data needed for the copier's service mode (*3*, *5*, *6*) and various copying modes to initial values. ALL: Select it to collectively initialize the above data. (Executing this item will initialize the back-up data of both fax and copier.)	

18. Printing the Parameters

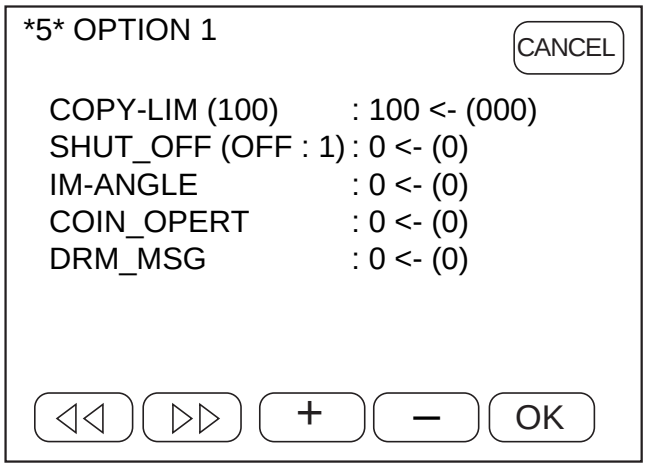


Item	Description	Reference page
Use it to print out the contents of service mode *3*, *5*, and *6*; however, the machine must be installed with a FAX Board.	1) Press 'PRM_PRINT' to highlight; then, press the OK key. *3*: ADJUST *5*: OPTION *6*: COUNTER The machine must be equipped with fax functions.	

H. *5* OPTIN (settings mode)

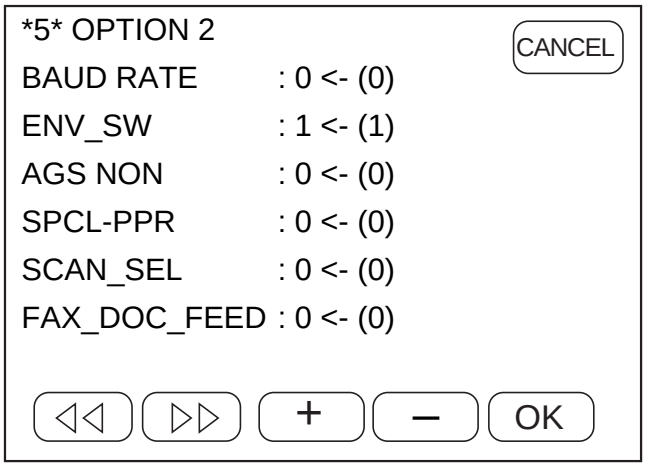
- Use this mode to set/change various machine settings (specifications).
- Each press on the [▷▷] key brings up the next screen; each press on the [◁◁] key, on the other hand, brings up the previous screen.
- Press the desired item (notation on the screen) to highlight.
- Use the keypad to enter numbers.
- A press on the [OK] key will permanently store the entered value.
- When done, be sure to turn off and then on the main power switch.

1. Setting the Copy Count and Shut-Off Slant Mode



Item	Function	Description
COPY-LIM	Use it to change the upper limit imposed on the copy count.	You may change the upper limit imposed on the copy count between 1 and 100 (copies).
SHUT_OFF	Use it to enable/disable the sleep function.	You may disable the auto shift function (time) to sleep state.
IM-ANGLE	Use it to switch slant mode.	Copies made in slant mode may become jagged; change the setting of this mode from '0' to '1' if such a problem is noted.
COIN_OPERT	Coinvender switching	Select '1' to support a coin vender.
DRM_MSG	Use this to switch the "Replace Drum" message.	0: Will not indicate the Replace Drum message on the control panel. (default in 230V model) 1: Will indicate the Replace Drum message. (default in 120V model)

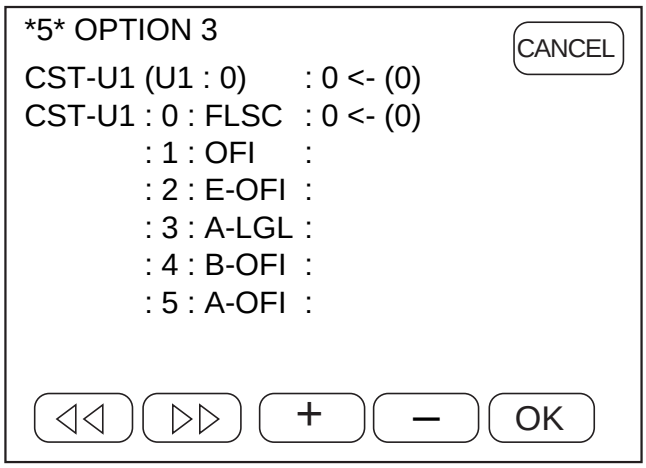
2. Switching the Baud Rate, Drum Resistance Measurements, and Thick Paper Mode



Item	Function	Description
BAUD RATE	Use it to change the communication speed of the RS232C interface for servicing.	0: 19200 baud 1: 9600 baud
ENV_SW	• Be sure to set it to '1' if you have selected a cassette exclusively for envelopes. The switch determines whether the machine should recognize an envelope cassette.	0: If the paper size dial of the cassette is set to the envelope index, the cassette will not be identified as an envelope cassette. 1: If the paper size dial of the cassette is set to the envelope index, the cassette will be identified as an envelope cassette. Default:1
AGS NON	Use it to specify whether the density correction curve should be modified based on the results of measuring the resistance of the photosensitive drum.	0: change the density correction curve based on the results of measuring the resistance of the photosensitive drum. 1: do not change the density correction curve. **Guide** If the results of making adjustments according to the Basic Image Adjustment Procedure are not good, execute the 15th screen (*4*). If the indicated value is far off the target value, set the item in this mode to '1' so normal images may be obtained. However, if such a problem occurs, you must suspect a fault in the image processor PCB, DC controller PCB, or composite power supply PCB.

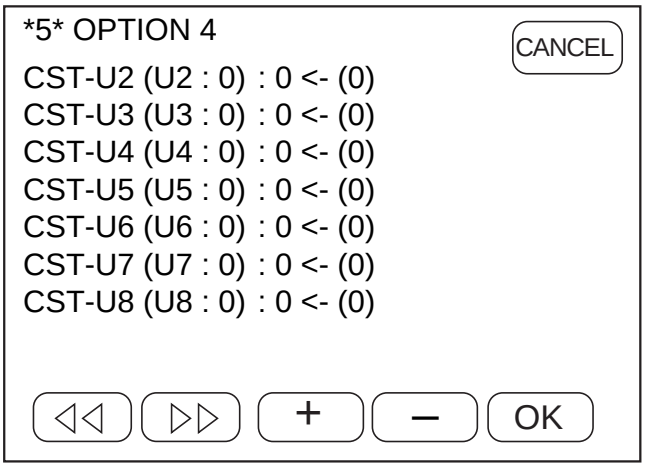
Item	Function	Description
SPCL-PPR	Use it to change thick paper mode.	0: The thick paper mode remains off. 1: Switching the fixing temperature, the thick paper mode is supported. 2: The fixing temperature is switched so that paper thicker than that supported under '1' may be supported. However, for '1' and '2' , the icon for the special cassette must be registered using 'ADDITIONAL FUNCTION' (i.e., the third icon from the middle row).
SCAN_SEL	Use it if parts of an image are missing in main scanning direction on large-size papers when using the feeder and copying a non-default original.	0: Nomal copying mode. 7: Priority on paper mode* *Center reference output prevents missing images.
FAX_DOC_FEED	use it to switch reading patterns for RDF-G1 fax originals.	0: The topmost page of the stack of originals will be picked up and read first and discharged on the right. 1: The bottommost page of the stack of originals will be picked up and read first and returned to the original tray (same way as copying).

3. Setting the Mode of Notation for the U1 Cassette (universal 1 cassette)



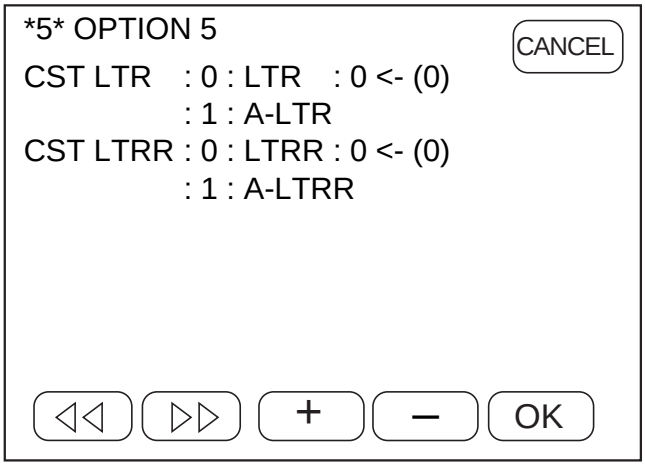
Item	Function	Description
CST-U1	Use it to turn on and off the U-size cassette paper name.	0: If the paper size dial of the cassette is set to U1, 'U1' will be indicated on the LCD. 1: If the paper size dial of the cassette is set to U1, the abbreviation selected in the following item will be indicated on the LCD.
CST-U1: 0:FLSC 1:OFI 2:E-OFI 3:A-LGL 4:B-OFI 5:A-OFI	Use it to specify the U1-size cassette paper name (abbreviation).	If '1' is set for the previous item, one of the following may be selected for indication: 0: 'FLSC', standing for FOOLSCAP. 1: 'OFFI', standing for OFICIO. 2: 'OFI', standing for Ecuadorian OFICIO. 3: 'LGL', standing for Argentine LEGAL. 4: 'OFFI', standing for Bolivian OFICIO. 5: 'OFFI', standing for Argentine OFICIO.

4. Setting the Mode of Notation for the U2 through U8 Cassettes (universal cassettes 2 through 8)



Item	Function	Description
CST-U2 CST-U3 CST-U4 CST-U5 CST-U6 CST-U7 CST-U8	Use it to turn on/off the U-size cassette name.	0: If the paper size dial of the cassette is set to U2 through U8, 'U1–U8' will be indicated on the LCD. 1: If the paper size dial of the cassette is set to U2 through U8, the following will be indicated: Paper Notation U2: FOLIO .....FOLIO U3: A-FLS.....FLS U4: G-LTR .....LTR U5: G-LTRR.....LTRR U6: G-LGL .....LGL U7: K-LGL .....LGL U8: K-LGLR.....LGLR

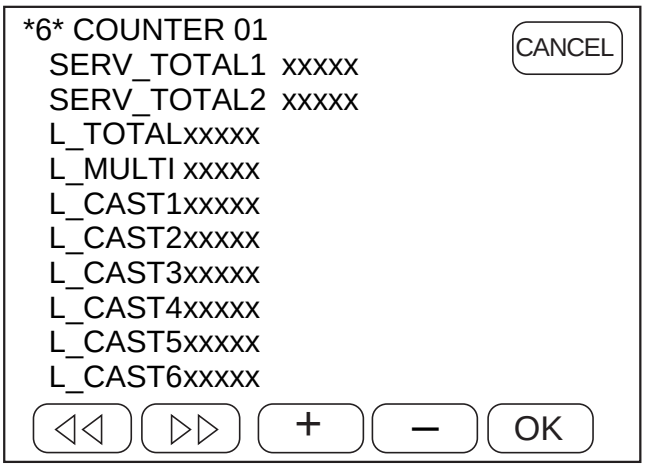
5. Setting the Mode of Notation for the LTR/LTRR Cassette



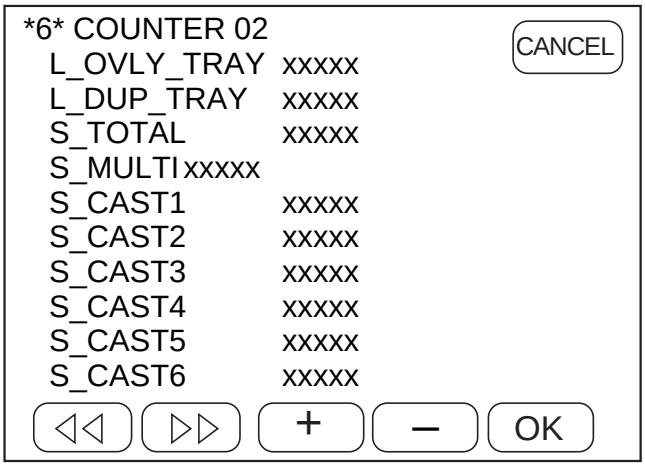
Item	Function	Description
CST-LTR	Use it to select the paper name notation for the LTR-size cassette.	0: If the paper size dial of the cassette is set to LTR, 'LTR' will be indicated on the LCD. 1: If the paper size dial of the cassette is set to LTR, 'LTR' will be indicated to stand for Argentine LETTER.
CST-LTRR	Use it to select the paper name notation for the LTRR-size cassette.	0: If the paper size dial of the cassette is set to LTR, 'LTRR' will be indicated on the LCD. 1: If the paper size dial of the cassette is set to LTRR, 'LTRR' will be indicated to stand for Argentine LETTER-R.

I. *6* COUNTER (counter mode)

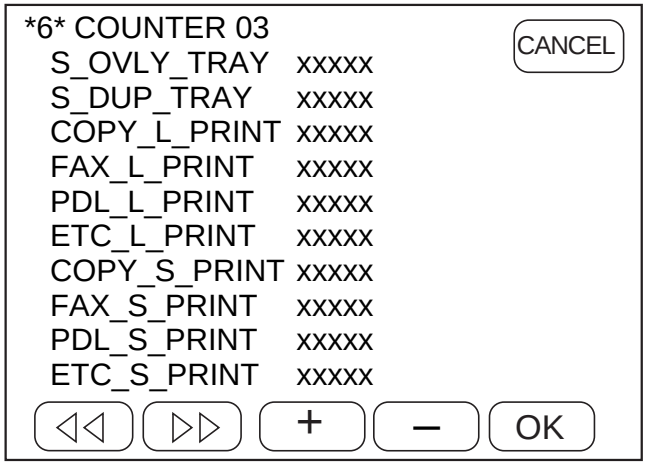
- Use this mode to find out the numbers of specific operations the machine has performed.
- Each press on the [▷▷] key brings up the next screen; each press on the [◁◁] key, on the other hand, brings up the previous screen.
- A press on the [CANCEL] key will bring back the Menu screen.
- To clear the counter reading, press the item to highlight; then, press the [OK] key.
  When a dialog box appears asking you whether to clear the counter reading, press the OK key to reset the counter reading to '0'.



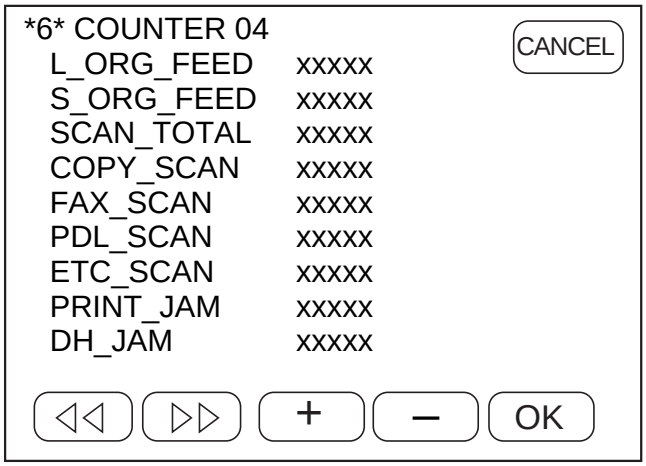
Indication	Description
SERV_TOTAL 1	Indicates the servicing total copy count 1.
SERV_TOTAL 2	Indicates the servicing total copy count 2.
L_TOTAL	Indicates the large-size copy/print count.
L_MULTI	Indicates the large-size copy count from the multifeeder.
L_CAST1	Indicates the large-size copy count from the cassette 1.
L_CAST2	Indicates the large-size copy count from the cassette 2.
L_CAST3	Indicates the large-size copy count from the cassette 3.
L_CAST4	Indicates the large-size copy count from the cassette 4.
L_CAST5	Indicates the large-size copy count from the cassette 5.
L_CAST6	Indicates the large-size copy count from the cassette 6.



Indication	Description
L_OVLY_TRAY	Indicates the large-size overlay copy 2nd side pick-up count.
L_DUP_TRAY	Indicates the large size two-sided copy 2nd side pick-up count.
S_TOTAL	Indicates the small-size copy/print count.
S_MULTI	Indicates the small-size multifeeder pick-up count.
S_CAST1	Indicates the small size copy count from the cassette 1.
S_CAST2	Indicates the small-size copy counter from the cassette 2.
S_CAST3	Indicates the small-size copy counter from the cassette 3.
S_CAST4	Indicates the small-size copy counter from the cassette 4
S_CAST5	Indicates the small-size copy counter from the cassette 5.
S_CAST6	Indicates the small-size copy counter from the cassette 6.



Indication	Description
S_OVLY_TRAY	Indicates the small-size overlay copy 2nd side count.
S_DUP_TRAY	Indicates the small-size two-sided 2nd side count.
COPY_L_PRINT	Indicates the large-size copy cont.
FAX_L_PRINT	Indicates the large-size fax print count.
PDL_L_PRINT	Indicates the large-size printer print count.
ETC_L_PRINT	Indicates the large-size print count by other system.
COPY_S_PRINT	Indicates the small-size copy count.
FAX_S_PRINT	Indicates the small-size copy count.
PDL_S_PRINT	Indicates the small-size printer print count.
ETC_S_PRINT	Indicates the small-size print count by other system.



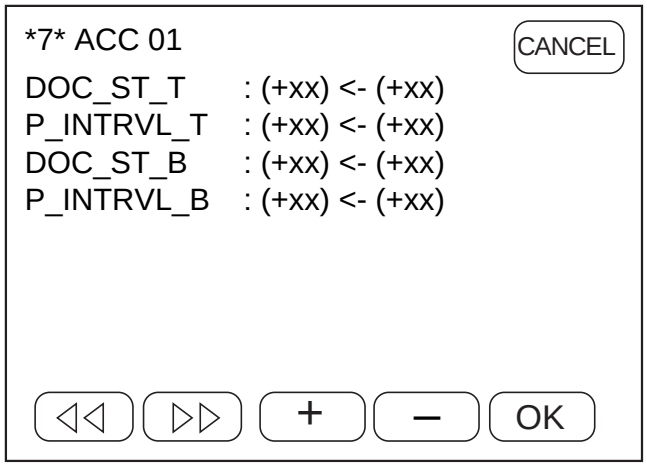
Indication	Description
L_ORG_FEED	Indicates the large-size original pick-up count.
S_ORG_FEED	Indicates the small-size original pick-up count.
SCAN_TOTAL	Indicates the total scan count.
COPY_SCAN	Indicates the scan count for copier mode.
FAX_SCAN	Indicates the scan count for fax mode.
PDL_SCAN	Indicates the scan count for printer mode.
ETC_SCAN	Indicates the scan count for other system.
PRINT_JAM	Indicates the print jam count.
DH_JAM	Indicates the feeder jam count.

J. *7* ACC (accessory mode)

- Use this mode to adjust/operate options.
- Each press on the [▷▷] key brings up the next screen; each press on the [◁◁] key, on the other hand, brings up the previous screen.
- Press the item to adjust/operate to that it becomes highlighted.
- Use the keypad to enter numerals.
- A press on the [OK] key will permanently store the value.
- After operation, turn off and then on the rear main power switch.

1. Adjusting the Original Stop Position for the RDF

- This screen is effective only when an RDF is installed.



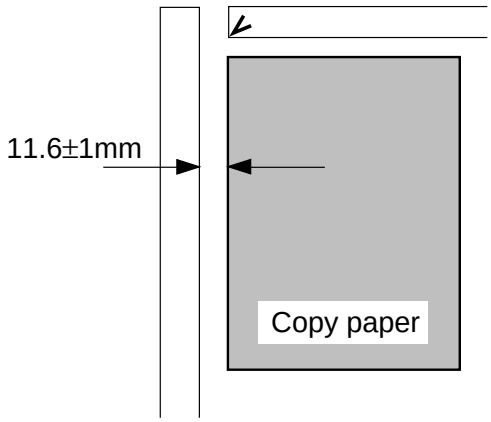
Item	Function	Description
DOC_ST_T	Use it to adjust the original stop position for upper separation pick-up.	
P_INTRVL_T	Use it to adjust the original stop position for upper separation pick-up in 2-on-1 mode.	
DOC_ST_B	Use it to adjust the original stop position for lower separation pick-up.	
P_INTRVL_B	Use it to adjust the original stop position for lower separation pick-up in 2-on-1 mode.	

When this mode is selected, the sheets set on the RF's original tray will be picked up and stopped on the copyboard glass. Check how they are stopped, and make adjustments so that they are stopped correctly.

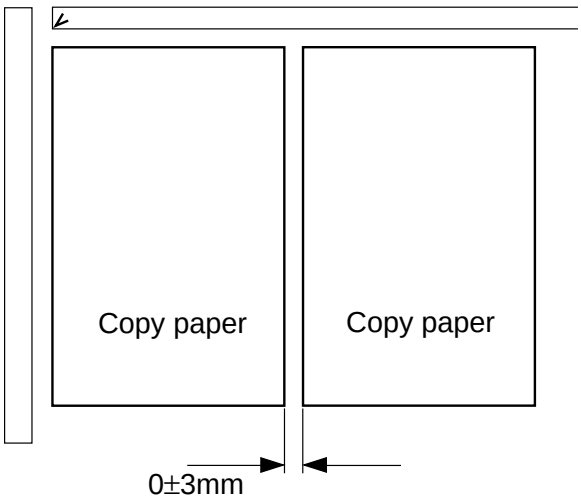
■ **Making Adjustments**

1) Start service mode.
2) Select the appropriate item.
   - Press the appropriate item to highlight.
3) Place copy paper on the RF's original tray as follows:
   - In the case of 'DOC_ST_T' or 'DOC_ST_B, place one A3 sheet of copy paper.
   - In the case of 'P_INTRVL_T' or 'P_INTRVL_B', place two A4 sheets of copy paper.
4) Enter a setting on the keypad.
   - In the case of 'DOC_ST_T' or 'DOC_ST_B',
     A higher setting will result in a shift to the trailing edge.
     A lower setting will result in a shift to the leading edge.
   - In the case of 'P_INTRVL_T' or 'P_INTRVL_B',
     A higher setting will increase the sheet-to-sheet distance.
     A lower setting will decrease the sheet-to-sheet distance.
5) Press the OK key.
   - The sheet on the original tray will be picked up and stopped on the copyboard glass.
6) Open the RF slowly, and check where the paper has been stopped.Thereafter, close the RF without removing the paper. (See below for standards.)

'DOC_ST_T' or 'DOC_ST_B'



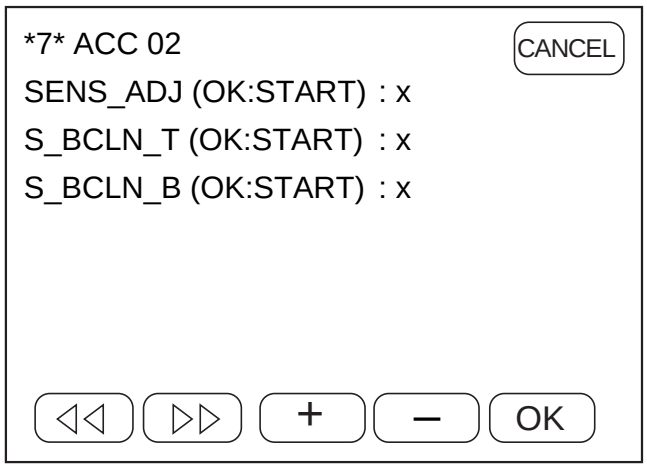
'P_INTRVL_T' or 'P_INTRVL_B'



7) Press the OK key.
   - The sheet on the copyboard glass will be discharged to the RF's original tray. (However, in the case of 'DOC-STP-T' and 'P_INTRVL_T', the sheet will be discharged to the RF's original delivery tray.)
8) To end the work, press the Reset key twice to leave service mode.

2. Adjusting the RDF Sensor/Cleaning the Belt

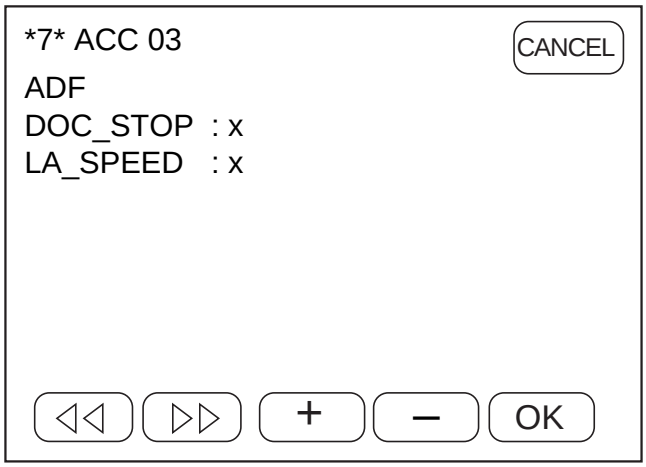
- This screen is effective only when an RDF is installed.



Item	Function	Description
SENS_ADJ	Use it to execute auto sensitivity adjustment for the RDF sensor. • Original sensor (S1) • Registration sensor (S3)	1) Press 'SENS_SDJ' to highlight. 2) Without any original on the RF's original tray, press the OK key. • '1' will appear under 'SENS_ADJ', indicating taht automatic adjustment is being executed. • If '1' remains for 30 sec or more, suspect a fault in the original tray sensor (S1), registration sensor (S3), or RF controller. 3) If '0' appears under 'SENS_ADJ', indicating that the adjustment is over, press the Reset key twice to leave service mode. (The foregoing adjustment is the same as using SW3 on the RF controller PCB.)
S_BCLN_T	Use it to execute cleaning of the separation belt for upper separation.	1) Press the appropriate item ('S_BCLN_T' or 'S_BCLN_B') to highlight. 2) Set a sheet of copy paper whose center has been moistened with alcohol on the RDF's tray. 3) Press the OK key. • The sheet of copy paper will be picked up and the separation belt will be rotated idly. 4) Press the OK key to end the operation. 5) Open the RF's top cover, and remove the sheet of copy paper. Then, close the RF's top cover. The foregoing adjustment is the same as using bit 6 of DIPS1 on the RF controller PCB.
S_BCLN_B	Use it to clean the separation belt for lower separation.	

3. Adjusting the ADF

- This screen is effective only when an ADF is installed.



Item	Function	Description
DOC_STOP	Use it to adjust the original stop position for the ADF.	Compare copies made with an original on the copyboard glass and copies made using the ADF; use this item so that the leading edge registration is correct. (This is the same as adjusting the original leading edge registration using SW3 on the ADF controller PCB.) • A higher setting will increase the non-image width.
LA_SPEED	Use it to adjust the original feeding speed.	A higher setting increases the feeding speed, contracting the image in feeding direction. A lower setting decreases the feeding speed, extending the image in feeding direction.

CHAPTER 8 SELF DIAGNOSIS

The machine is equipped with a self diagnostic mechanism that checks its condition (sensors, in particular) and indicates a code on the control panel upon detection of an error.

A. Copier

Code	Main cause	Description
E000	The fixing temperature fails to rise. • Thermistor (TH1; poor contact, open circuit) • Heater driver (faulty) • DC controller PCB	• The main thermistor (TH1) detects less than 50°C for 200 ms 1 sec after voltage has been applied to the heater. • The main thermistor (TH1) detects less than 90°C for 200 ms 2 sec after voltage has been applied to the heater. • The sub thermistor (TH2) detects less than 90°C for 200 ms 4 sec after voltage has been applied to the heater.
E001	The fixing temperature rises abnormally. • Thermistor (TH1, TH2; short circuit) • DC controller PCB (faulty)	• The main thermistor (TH1) detects more than 250°C for 200 ms during copying operation. • The sub thermistor (TH2) detects more than 260°C for 200 ms during copying operation. • The main thermistor (TH1) detects a temperature in excess of a specific temperature by 30°C or more for 200 ms during copying operation. • The thermistor (TH1, TH2) detects an increase in temperature of 40°C or more during standby. • The main thermistor (TH1) detects an increase in temperature of 100°C or more in 1 sec. • The main thermistor (TH1) detects in increase in temperature of 100°C or more in 1 sec.
E002	The fixing temperature fails to reach a specific value. • Thermistor (TH1, TH2; off contact, poor contact, open circuit) • Fixing heater (open circuit; cracking) • Fixing heater drive circuit (faulty)	• The main thermistor detected less than 105°C for 200 ms 1 sec after it has detected 90°C. • The main thermistor (TH1) detected less than 120°C for 200 ms 1 sec after it has detected 105°C. • The main thermistor detected less than 120°C for 200 ms after it has detected 105°C. • The main thermistor (TH1) detects less than 135°C for 200 ms 1 sec after it has detected 120°C. • The main thermistor (TH1) detects less than 150°C for 200 ms 1 sec after it has detected 135°C.

Code	Main cause	Description
E003	The fixing temperature drops abnormally. • Thermistor (TH1, TH2; off contact, poor contact, open circuit) • Fixing heater (open circuit, cracking) • Fixing heater drive circuit (faulty) • DC controller PCB (faulty)	• The main thermistor (TH1) detects less than 150°C for 200 ms after it has detected 150°C. • The sub thermistor (TH2) detects less than 150°C for 200 ms after it has detected 150°C.
E007	The fixing film has become displaced. • Fixing film (wrong position, tear) • Tension roller (wrong position, wrong operation) • Fixing film motor (faulty) • Fixing film sensor (faulty)	• The output of the fixing film sensor continues to be ‘1’ or ‘0’ for 2.1 sec or more.
E007 -01	The fixing film has become fully displaced. • Fixing film (recovery mechanism fault)	• The displacement is not corrected after executing film recovery mode which turns on when the main power is tuned off and on in response to ‘E007’.
E010	The main motor fails to lock. • Main motor (M1; faulty) • DC controller PCB (faulty)	• The main motor does not lock for 10 sec after it is started. • The value is outside a specific range, and the main motor does not lock for 3 sec.
E030	The total counter fails to operate. • Total counter (CNT1,CNT2; open circuit) • DC controller PCB (faulty)	• A check is made immediately before the counter turns on and off. (Normal, if the counter drive signal is ‘0’ when the counter turns on.)
E031	The option counter fails to operate. • Option counter (CNT3; open circuit) • DC controller PCB (faulty)	• A check is made immediately before the counter turns on and off. (Normal, if the counter drive signal is ‘0’ when the counter turns on.)
E032	The copy data controller counter is faulty. • Communication (counter data between Copy Data Controller and copier) • DC controller PCB (faulty)	• The count data is not detected by the Copy Data Controller within a specific period of time after the copier has generated the copy start signal.
E051	The horizontal registration home position detection mechanism fails. • Horizontal registration sensor (PS14; faulty) • Horizontal registration motor (M9; faulty) • DC controller PCB (faulty)	• The home position is not detected after generation of the horizontal registration drive signal.

Code	Main cause	Description
E064	The high-voltage (primary charging, transfer charging, developing) output is faulty. • Composite power supply PCB (faulty) • DC controller PCB (faulty) • Wiring (faulty; short circuit, open circuit)	• The difference between the high-voltage control signal and the actual high-voltage output is more than a specific value. • Any of the primary charging roller, transfer charging roller, and developing bias has an output error.
E100	A BD error has occurred. • Laser unit (faulty) • BD PCB (faulty) • Laser driver PCB (faulty) • Image processor PCB (faulty)	• The BD signal is not generated within 2 sec after the laser has been turned on. • The BD signal cycle has a discrepancy.
E110	The laser scanner motor fails to lock. • Laser scanner motor (M3; faulty) • Laser scanner driver PCB (faulty) • DC controller PCB (faulty)	• A specific speed is not reached after the laser scanner motor drive signal has been generated. • The speed deviates after it has reached a specific speed.
E190	The RAM has an error.	
E191	An error has occurred in serial communication between the DC controller PCB and the composite power supply PCB.	• The communication data is not updated for 8 sec or more. • The check sum of the communication data is different for three times in a row.
E202 • No code indication. • Keys on control panel locked.	The scanner home position cannot be detected. • Scanner home position sensor (PS1; faulty) • Scanner motor (Faulty) • DC controller PCB (faulty)	• The scanner does not return to home position after it has started to move.
E220	• Scanning lamp (error activation) • Scanning lamp (faulty) • Composite power supply PCB (faulty) • DC controller PCB (faulty)	• Activation of the lamp has been detected during standby. • Deactivation of the lamp has been detected during copying.
E240	An error in the communication with the DC controller PCB has occurred. • DC controller PCB (faulty) • Image processor PCB (faulty)	• An error has been detected in the communication between the DC controller PCB an the image processing PCB.

Code	Main cause	Description
E243	An error has occurred in communication with the control panel. • Control panel CPU (error) • Image processor PCB (faulty)	An error has been detected in the communication between the CPU on the control panel and the image processor PCB.
E261	There in an error in the zero cross signal. • Power supply frequency (fluctuation) • Composite power supply PCB (faulty)	The intervals of zero cross signals are outside the allowed range.
E301	The intensity of the scanning lamp is not correctly adjusted. • Intensity sensor (faulty) • Scanning lamp (faulty) • DC controller PCB (faulty)	
E710	An error in IPC communication has occurred.	• BS does not go '1' for 3 sec.
E711	An error in IPC communication has occurred.	• DT has been written in the error register four times.
E712	An error in communication with the feeder has occurred.	• The communication has been interrupted.
E713	An IC error has occurred (sorter).	• The communication has been interrupted.
E716	An error has occurred in communication with the pedestal.	• The communication has been interrupted.
E717	An error has occurred in communication with the Copy Data Controller.	The communication has been interrupted.
E803	An error has occurred in the output voltage of the composite power supply PCB. Both ends of the fluorescent lamp has blackened because of deterioration.	The output voltage (+24Vu or +24VR) of the composite power supply PCB has an error.

Action to Take in Response to Error Codes

- When the self diagnosis function has turned ON and an error code has been indicated, you can reset the machine by turning its power switch OFF once.
  E000, E001, E002, E003, E004, and E007–01, and E717 is not reset by turning OFF the power switch; this is to prevent the user from casually resetting the machine, since such could sometimes damage the machine.

Resetting

1) Start service mode by pressing the service switch and then pressing the * key twice.
2) Press 'FUCNTION' on the LCD to highlight; then, press the OK key.
3) Press 'ERROR' on the LCD to highlight; then, press the OK key.

- This will automatically remove and then supply power.
- In the case of 'E202', the keys on the control panel will be locked without indicating an error code; use 'ERR' under 'DISPLAY' in service mode (*1*) if this is the case.
- In the case of 'E007', turning off and then on the main power switch will activate film recovery mode ('FILM_COMEBACK' in service mode *4*), thereby resetting the machine after returning the film to its correct position.
  If the film fails to return to the correct position after executing this recovery mode, 'E007-01' will be indicated. If this happens, replace the fixing assembly or take appropriate measures, return the film to its correct position, and execute 'ERROR' in service mode (*4*).
  Note that 'E007-01' in service mode will be indicated as 'E007', omitting the last two digits under 'ERR' of 'DISPLAY' in service mode (*1*).
  After the film has returned to normal position following the execution of 'FILMCOMEBACK', be sure to turn OFF and then ON the main power supply without touching the other keys.

B. Self Diagnosis of the RDF-G1

Code	Main cause	Description
E400	• Data communication with copier (faulty)	• The communication is monitored at all times. This error is identified when the communication with the copier is disrupted for 5 sec or more.
E401	• Pick-up motor (M1; fails to rotate) • Pick-up roller sensor (S5; faulty)	• A flag is installed on the shaft of the pick-up motor (M1), and the rotation of M1 is monitored in reference to the flag blocking the pick-up roller sensor (S5). This error is identified when S5 does not turn on and off twice or more within 1 sec.
E402	• Belt motor (M3; fails to rotate) • Belt motor clock sensor (S10; faulty)	• The number of belt clock pulses for 200 ms is below a specific value.
E403	• Feeder motor (M2; fails to rotate) • Feeder motor clock sensor (S9; faulty)	• The number of feeding motor clock pulses for 200 ms is below a specific value.
E411	• Original tray paper sensor (S1; faulty) • Registration sensor (S3; faulty)	• The sensor output is 2.3 V or more in the absence of paper.

C. Self Diagnosis of the ADF-F1

Code	Main cause	Description
E422	• Data communication with the copier (faulty)	• Communication with the copier has been disrupted for 5 sec or more during stand-by. • Communication with the copier has been disrupted for 0.5 sec or more during operation.

Caution:

1. Turn off the copier's power switch once if the self diagnosis mechanism has turned on.
2. You may continue to make copies even when the RDF is out of order; open the RDF, and place originals on the copyboard glass.

D. Self Diagnosis of the Pedestal

Code	Main cause	Description
E716	The pedestal has an error. • Pedestal controller PCB (faulty) • Connector (poor contact) • 24V power supply (faulty)	The communication IC (Q101) on the pedestal controller PCB has gone out of order.
E901	• Pedestal motor (M20; faulty) • Pedestal controller PCB (faulty)	• The rotation speed fails to reach a specific value within 10 sec after the pedestal motor has turned on. • The rotation speed has deviated from a specific value for 3 sec or more while the motor is rotating.

E. Self Diagnosis of the Multi Output Tray -C1

Code	Main cause	Description
E422	The shift tray home position sensor fails.	• The home position detection signal does not turn on within 5 sec during shift tray home position search.

F. Self Diagnosis of the Multi Output Tray-12

Code	Main cause	Description
E500	The CPU (Q7) on the tray controller PCB or the communication IC (Q11) is not operating normally.	An error has occurred in the communication between the multi tray and the copier.
E510	• The bin unit feeding motor (M2) fails to rotate. • The bin unit feeding motor clock sensor (PI2) has a fault.	The bin unit feeding motor clock sensor (PI2) does not receive clock signals 4.0 sec or more after the bin unit feeding motor drive signal (BFMD) has been generated.
E515	• The tray feeding motor (M6) fails to rotate. • The tray feeding motor clock sensor (PI6) has a fault.	The tray feeding motor clock sensor (PI6) does not receive clock signals for 1 sec or more after the tray feeding motor drive signal (TFMD) has been generated.
E521	• The tray shift motor (M7) fails to rotate. • The tray position sensor (PI12) has a fault.	The tray position sensor (PI12) does not turn on or off 2.5 sec or more after the tray shift motor drive signal has been generated.
E530	The guide bar drive motor (M4) fails to rotate.	The guide bar home position sensor (PI5) does not turn on or off 2.5 sec or more after the guide bar swing motor drive signal has been generated.

Code	Main cause	Description
E531	• The stapler motor (M3) does not rotate. • The stapler swing motor (M5) doe not rotate.	• The state of the stapling home position sensor (MS7) does not change within 1 sec after the stapler motor (M3) CW rotation signal has been generated and the state of the stapling home position sensor (MS7) does not change within 1 sec after the stapler motor CCW rotation signal has been generated thereafter. • The stapler position sensor (PI4) does not turn off within 1 sec after the stapler swing motor (M5) has been generated.
E540	• The bin shift motor (M1) does not rotate.	• The lead cam home position sensor (PI1) does not turn off within 1 sec after the bin shift motor drive signal has been generated. • PI1 does not turn on within 1 sec after PI1 has turned off.
E713	The IC (Q7) on the tray controller PCB or the communication IC (Q11) does not operate normally.	An error has occurred in the communication between the multi tray and the copier.

Operation in Response to an Error

1 The copier's message display indicates "TURN ON POWER."
2 When the copier's power has been turned off and then on, the copier will reset the error if the results of self diagnosis it has run are good. (It will indicate an error code if any error is detected.)

Copier Operation with an Error Code On

1 The copier indicates 'E5XX' or 'E713'.
2 The copier allows making copies when the multitray is detached from it*.
3 The copier will indicate a message if modes requiring the use of the multi tray is selected.
*Turn off the joint sensor (MS3; feeding the multitray from the copier); you need not disconnect the communication connector connecting to the copier.

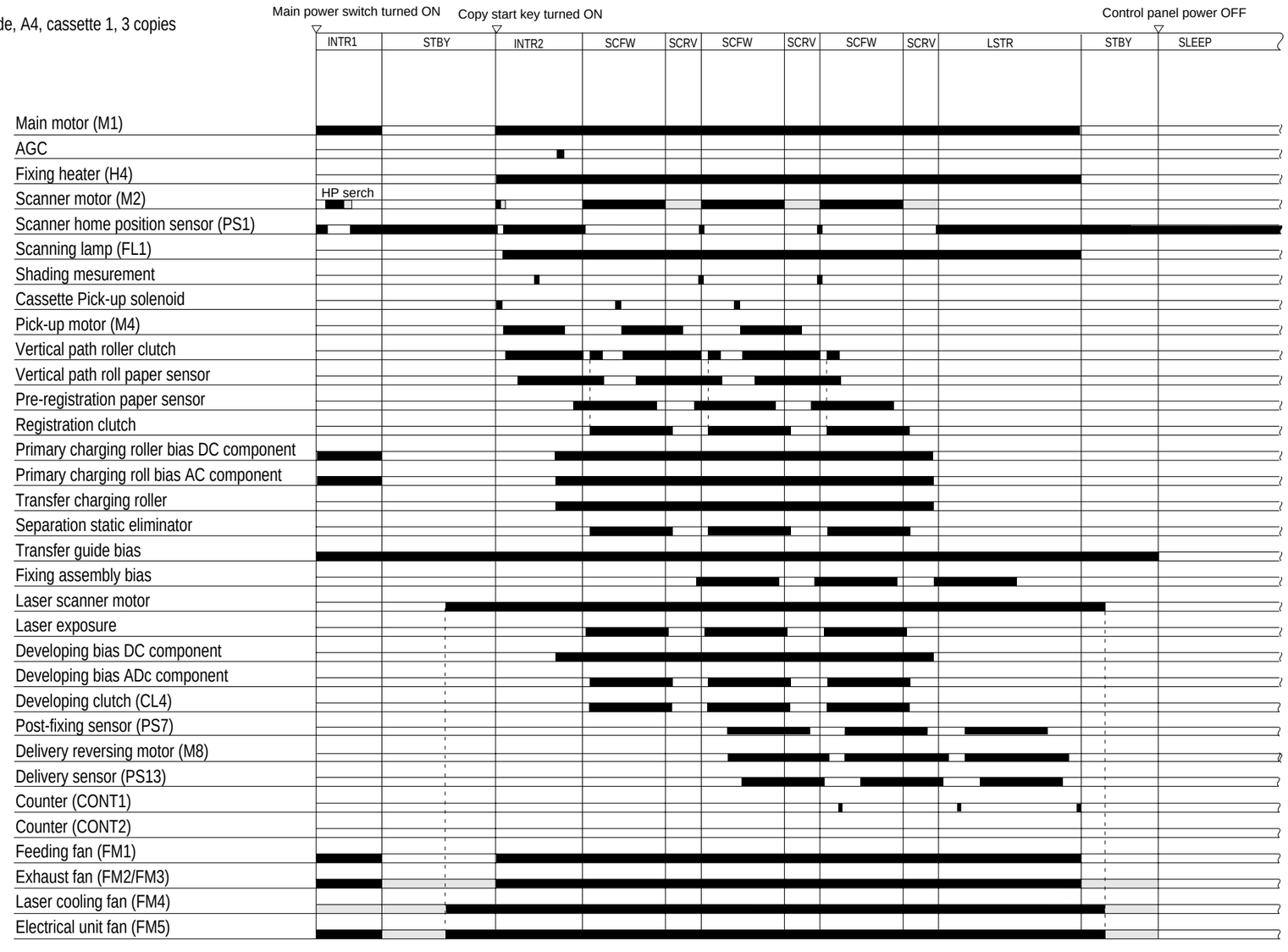
APPENDIX

A. GENERAL TIMING CHART

• copier mode, A4, cassette 1, 3 copies

General Timing Chart

• copier mode, A4, cassette 1, 3 copies



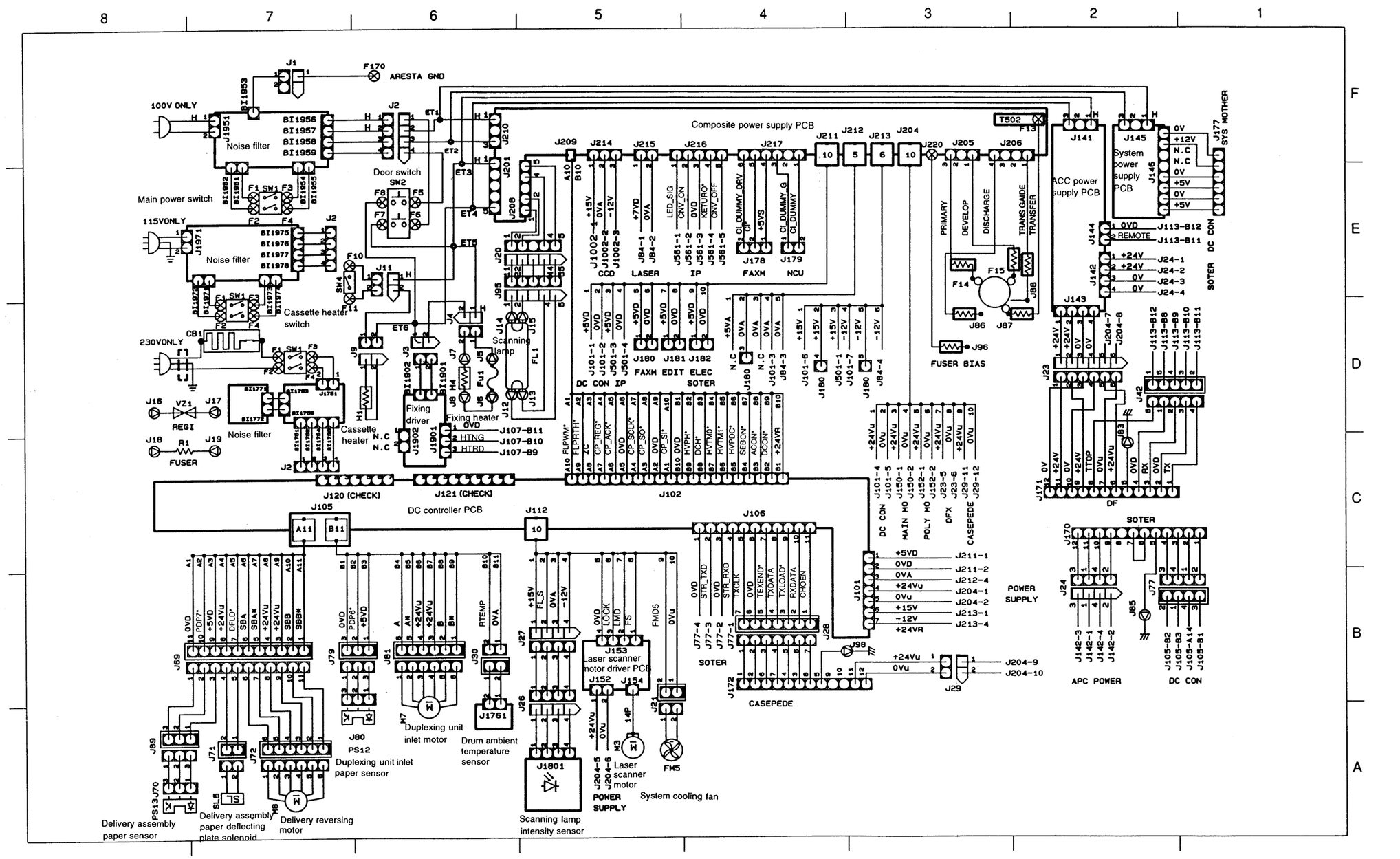
B. SIGNALS AND ABBREVIATIONS

1. Signals

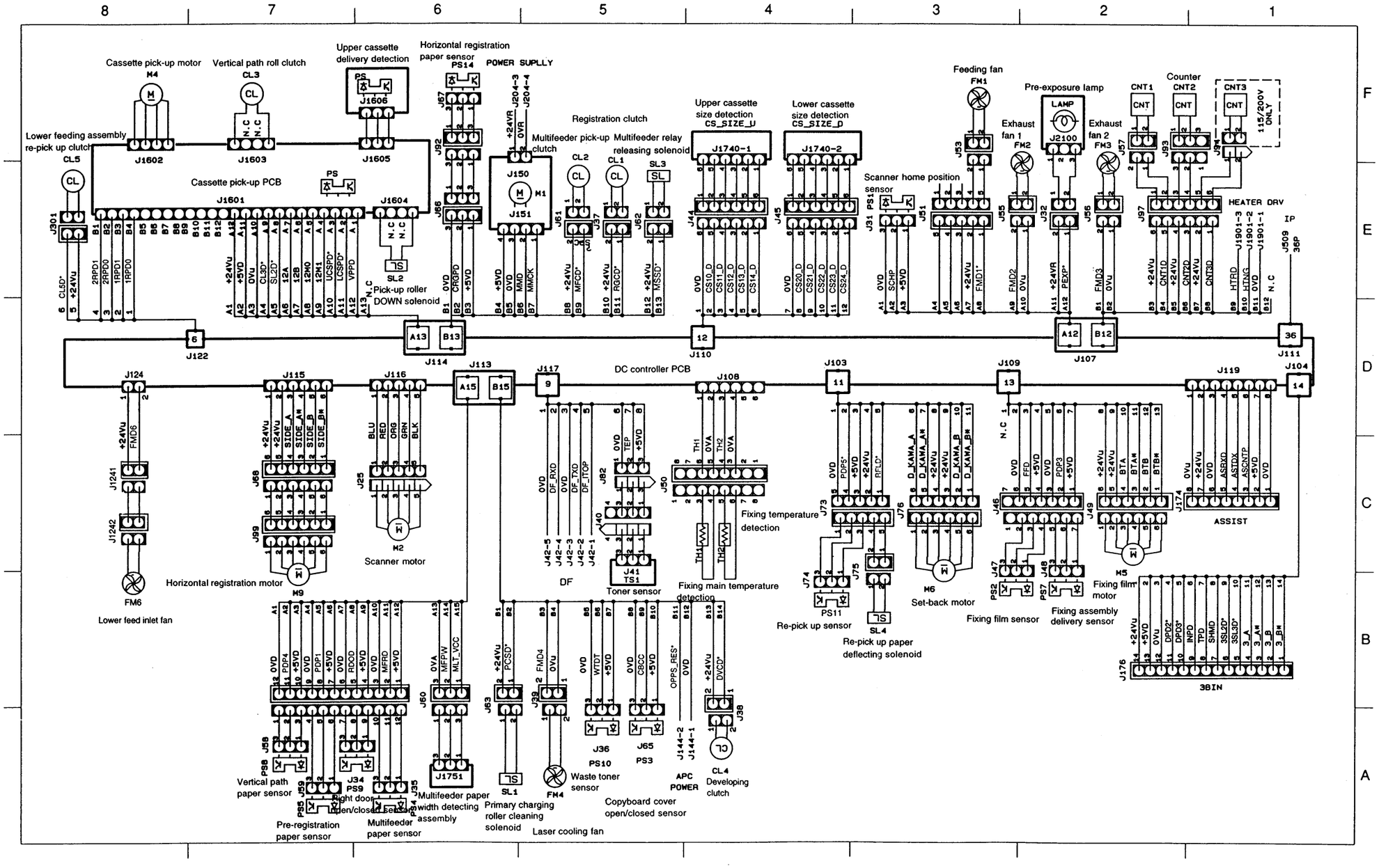
1RPD0	UPPER CASETTE PAPER DETECTION 0 signal
1RPD1	UPPER CASETTE PAPER DETECTION 1 signal
2RPD0	LOWER CASETTE PAPER DETECTION 0 signal
3RPD1	LOWER CASETTE PAPER DETECTION 1 signal
ACON	AC DEVELOPING BIAS DRIVE command
APCON	AUTO POWER CONTROL ON command
ASCNTP	ASSIST COUNTER PULSE signal
ASRXD	ASSIST RECEPTION DATA signal
ASTDX	ASSIST TRANSMISSION DATA signal
BD	BEAM DETECT signal
BKLTON	BACK LIGHT ON signal
CBCC	COPYBOARD COVER CLOSED signal
CCV CONNECT	CONTROL CARD CONNECT signal
CCV COUNT	CONTROL CARD COUNTER PULSE signal
CI	CALLING INDICATOR signal
CL3D	VERTICAL PATH ROLLER CLUTCH 3 DRIVE command
CL5D	ROLLER CLUTCH 5 DRIVE command
CNT1D	COUNTER DRIVE 1 command
CNT2D	COUNTER DRIVE 2 command
CNT3D	COUNTER DRIVE 3 command
CS10_D	UPPER CASETTE SIZE DETECTION signal 0
CS11_D	UPPER CASETTE SIZE DETECTION signal 1
CS12_D	UPPER CASETTE SIZE DETECTION signal 2
CS13_D	UPPER CASETTE SIZE DETECTION signal 3
CS14_D	UPPER CASETTE SIZE DETECTION signal 4
CS20_D	LOWER CASETTE SIZE DETECTION signal 0
CS21_D	LOWER CASETTE SIZE DETECTION signal 1
CS22_D	LOWER CASETTE SIZE DETECTION signal 2
CS23_D	LOWER CASETTE SIZE DETECTION signal 3
CS24_D	LOWER CASETTE SIZE DETECTION signal 4
DCH	DC DEVELOPING BIAS DRIVE command
DCON	DC DEVELOPING BIAS DRIVE command
DFLD	DELIVERY DEFLECTION SOLENOID DRIVE signal
DSZ1	DOCUMENT SIZE DETECTION signal 1
DSZ2	DOCUMENT SIZE DETECTION signal 2
DSZ3	DOCUMENT SIZE DETECTION signal 3
DSZ4	DOCUMENT SIZE DETECTION signal 4
DVCD	DEVELOPING CLUTCH DRIVE signal
FFD	FIXING FILM DETECTION command
FL_S	FLUORESCENT LAMP INTENSITY signal
FLPRTH	FLUORESCENT LAMP PRE THERMISTOR signal
FLPWM	FLUORESCENT LAMP PWM DRIVE command
FLTH	FLUORESCENT LAMP THERMISTOR signal
FMD 1	FAN1 (FM1) DRIVE command
FMD 2	EXHAUST FAN2 (FM2) DRIVE command
FMD 3	EXHAUST FAN3 (FM3) DRIVE command
FMD 4	FAN4 (FM4) DRIVE command
FMD 5	FAN5 (FM5) DRIVE command
FMD 6	FAN6 (FM6) DRIVE command
FS	FS signal
HTNG	HEATER NG signal
HTRD	HEATER DRIVE command
HVTM0	HIGH VOLTAGE TRANSFER MODE 0
HVTM1	HIGH VOLTAGE TRANSFER MODE 1
LCSPD	LOWER CASETTE PAPER DETECTION signal
LED ON	PILOT LED DRIVE command
LMD	LAZER SCANNER MOTOR DRIVE command
LOCK	LAZER SCANNER MOTOR LOCK signal
LOW DETECT	ONE TOUCH DIAL LOW DETECTION signal
LSRD	LASER DRIVE command
MFCK	MULTIFEEDER CLUTCH DRIVE signal
MFPD	MULTIFEEDER PAPER DETECTION signal
MFPW	MULTIFEEDER PAPER WIDTH signal
MMCK	MAIN MOTOR CLOCK signal
MMD	MAIN MOTOR DRIVE command
MRSD	MULTIFEED ROLLER SOLENOID DRIVE command
PCSD	PRIMARY CHARGING ROLLER CLEANING SOLENOID DRIVE command
PDP1	PAPER DETECTION signal 1
PDP3	PAPER DETECTION signal 3
PDP4	VERTICAL PATH PAPER DETECTION signal 4
PDP5	PAPER DETECTION signal 5
PDP6	PAPER DETECTION signal 6
PDP7	PAPER DETECTION signal 7
PEXP	PRE-CONDITIONING EXPOSURE LAMP LIT command
RDOD	RIGHT DOOR OPEN DETECTION signal
RFLD	REPICK UP ROLLER SECTION SOLENOID DRIVE signal
RGCD	REGIST CLUTCH DRIVE signal
RTEMP	DRUM TEMPERATURE DETECTION signal
SCHP	SCANNER HOME POSITION signal
SEBON	SEPARATION STATIC ELIMINATOR ON command
SH	SAMPLE HOLD signal
SL2D	SOLENOID DRIVE signal 2
SRGPD	SIDE REGISTRATION PAPER DETECTION signal
SW ON	ANTI-CONDENSATION HEATER SWITCH DRIVE command
SW0	LIGHT INTENSITY SW0
SW1	LIGHT INTENSITY SW1
TEP	TONER EMPTY signal
TH1	FIXING THERMISTOR 1 signal
TH2	FIXING THERMISTOR 2 signal
UCSPD	UPPER CASETTE PAPER DETECTION signal
UP DETECT	ONT TOUCH DIAL UP DETECTION signal
VPPD	CASETTE CERTICAL PATH PAPER DETECTION signal
WTDT	WASTE TONER DETECTION signal

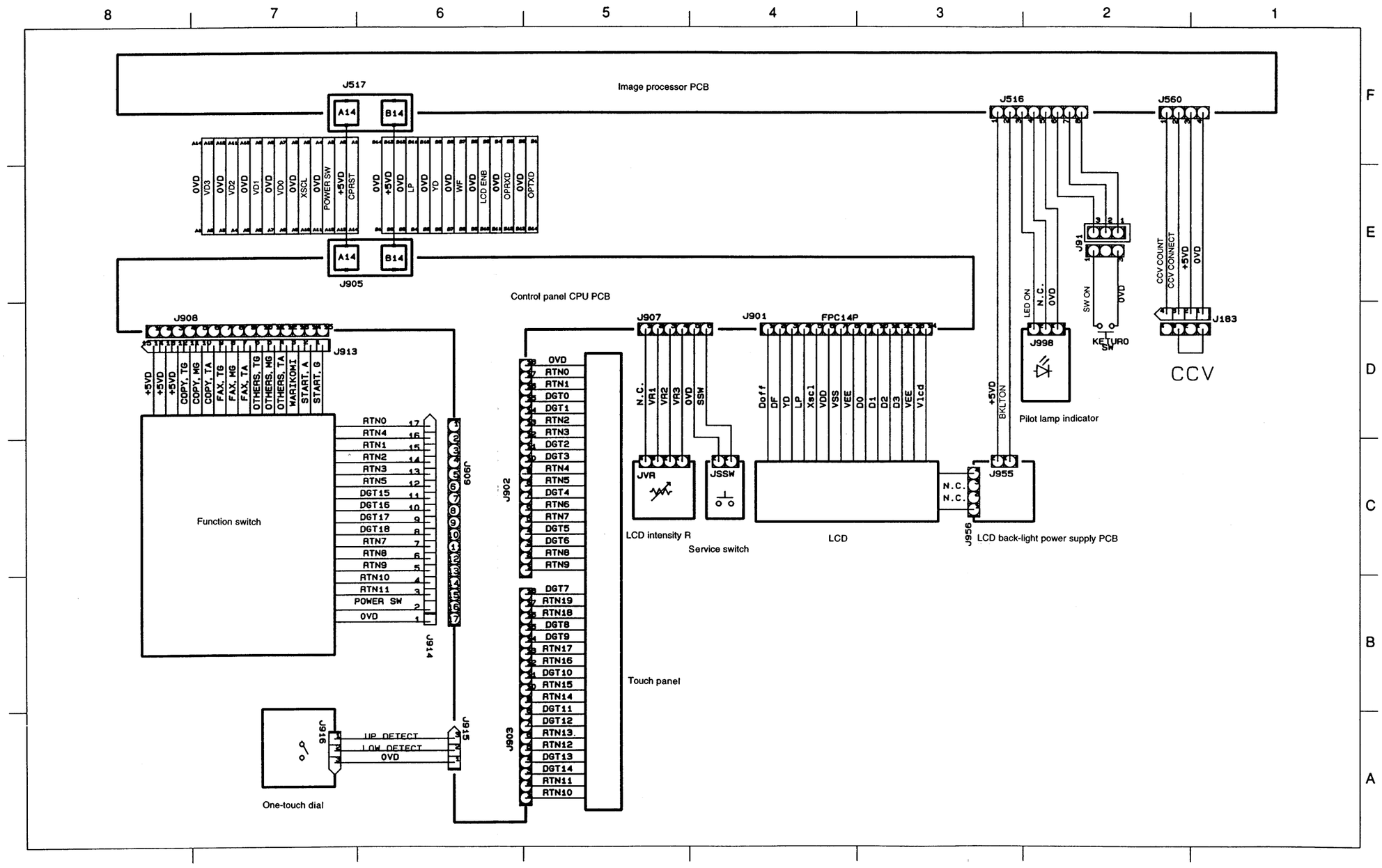
C. GENERAL CIRCUIT DIAGRAM

General Circuit Diagram (1/4)

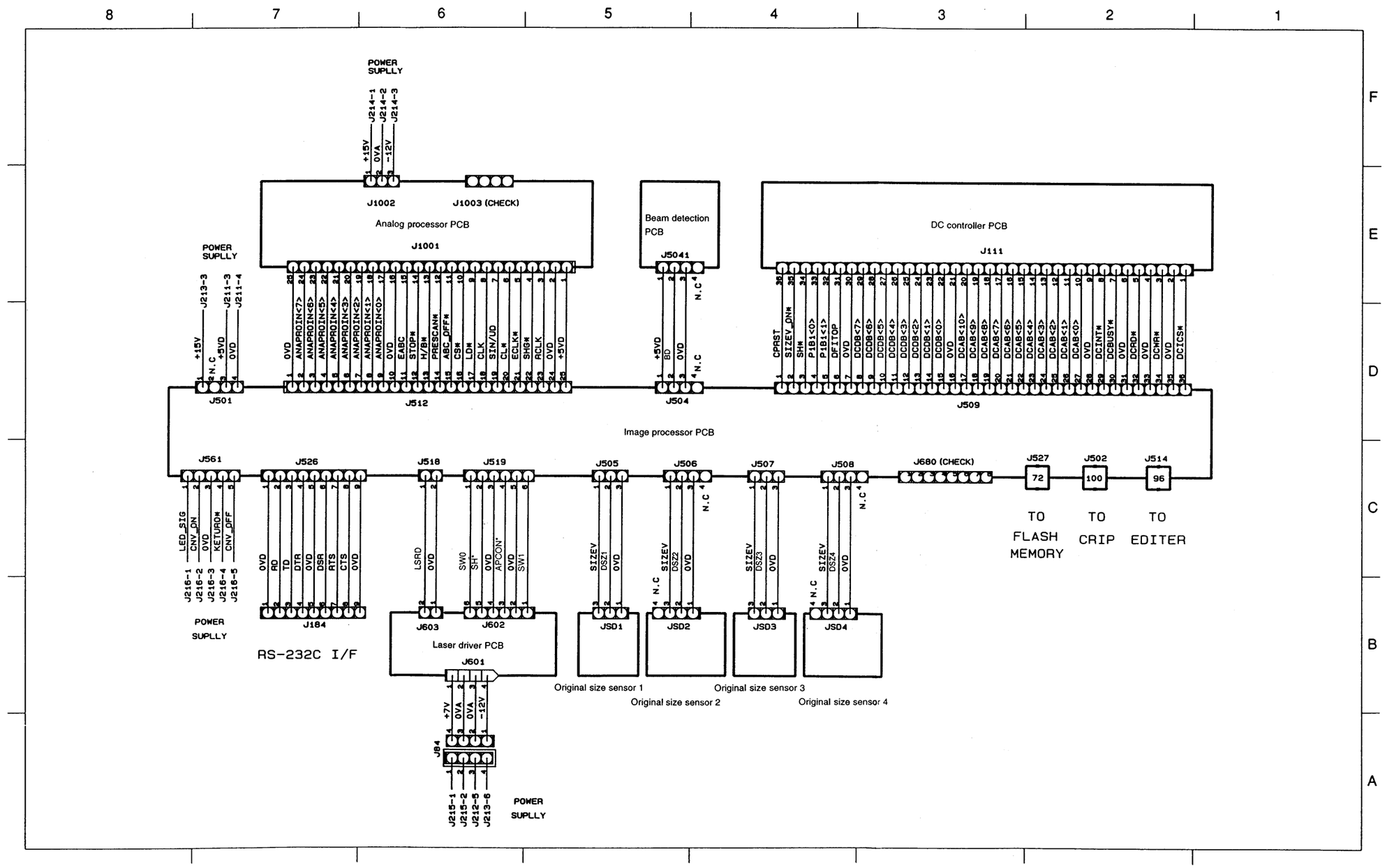


General Circuit Diagram (2/4)




8
7
6
5
4
3
2
1
F
E
D
C
B
A
Image processor PCB
J517
A14
B14
0VD VD3 0VD VD2 0VD VD1 0VD VD0 0VD XSCL 0VD POWER SW +5VD CPRST
0VD +5VD 0VD LP 0VD YD 0VD WF 0VD LCD ENB 0VD OPRXD 0VD OPTXD
J905
Control panel CPU PCB
J908
J913
+5VD +5VD +5VD COPY, TG COPY, MG COPY, TA FAX, TG FAX, MG FAX, TA OTHERS, TG OTHERS, MG OTHERS, TA MARIKOMI START, A START, G
Function switch
RTN0 17
RTN4 16
RTN1 15
RTN2 14
RTN3 13
RTN5 12
DGT15 11
DGT16 10
DGT17 9
DGT18 8
RTN7 7
RTN8 6
RTN9 5
RTN10 4
RTN11 3
POWER SW 2
0VD 1
J914
J909
J902
J907
0VD RTN0 RTN1 DGT0 DGT1 RTN2 RTN3 DGT2 DGT3 RTN4 RTN5 DGT4 RTN6 RTN7 DGT5 DGT6 RTN8 RTN9
DGT7 RTN19 RTN18 DGT8 DGT9 RTN17 RTN16 DGT10 RTN15 RTN14 DGT11 DGT12 RTN13. RTN12 DGT13 DGT14 RTN11 RTN10
J903
Touch panel
J901
FPC14P
N.C. VR1 VR2 VR3 0VD SSW
Doff DF YD LP Xscl VDD VSS VEE D0 D1 D2 D3 VEE Vlcd
JVR
LCD intensity R
JSSW
Service switch
LCD
J956
N.C.
N.C.
J955
LCD back-light power supply PCB
J916
UP DETECT
LOW DETECT
0VD
J915
One-touch dial
J516
+5VD BKLTON
J998
LED ON N.C. 0VD
Pilot lamp indicator
J91
SW ON 0VD
KETURO SW
J560
CCV COUNT CCV CONNECT +5VD 0VD
J183
CCV

General Circuit Diagram (4/4)



D. SPECIFICATIONS

1. Type

Item	Specifications
Body	Desktop
Copyboard	Fixed
Light source	Fluorescent lamp
Lens	Lens array
Photosensitive medium	OPC

2. System

Item		Specifications
Copying		Indirect electrophotographic
Charging		AC roller charging
Exposure		Spot laser
Copy density adjustment		Automatic or manual
Development		Dry, single component toner projection
Pick-up	Automatic	2 cassettes
	Manual	Multifeeder (about 5 mm deep)
Transfer		Roller charging
Separation		Static (static eliminator) + curvature
cleaning		Blade
Fixing		SURF

3. Performance

			120V		230V
Types of originals			Sheet, book, 3-D object (2 kg max.)		
Maximum size of original			A3, (11 × 17) max.		
Reproduction ratio	Direct		1:1±0.5%		
	Reduce Ⅰ		1:0.250		
	Reduce Ⅱ		1:0.500		
	Reduce Ⅲ		1:0.611	1:0.647	–
	Reduce Ⅳ		1:0.707	1:0.737	–
	Reduce Ⅴ		1:0.816	1:0.786	–
	Enlarge Ⅰ		1:1.214		1:1.414
	Enlarge Ⅱ		1:1.294		–
	Enlarge Ⅲ		1:2.000		
	Enlarge Ⅳ		1:4.000		–
	Enlarge Ⅴ		1:8.000		–
	Zoom		1: 0.250 to 8.000 (25% to 800%, in 1% increments)		
Wait time			• 8.6 sec or less (20°C) from main power-on to start of copying • 7.9 sec or less from control panel power-on (sleep) to start of copying (fax model)		
First copy			GP215: 9.2 sec or less (shortest mode)		
Continuous copying			100 copies		
Copy size	Cassette pick-up		A3 (297 × 420 mm; max.) / 11” × 17” (279 × 432mm:max) A5 (STMT; min.)		
	Multifeeder		A3 (297 × 431.8 mm; max.) / 11” × 17” (279 × 432mm:max) Postcard (A6 vertical)		
Paper source			500 sheets in each cassette, 50 sheets in multifeeder (80 g/m^2 paper)		
Types of copy paper	Cassette		Plain paper (64 to 80 g/m^2), tracing paper (SM1, GNT80**), colored paper*, recycled paper (64 to 80 g/m^2), envelope (COM10, Monarch, DL, C5, B5, No. 4)		
	Multifeeder		Plain paper (64 to 128 g/m^2), tracing paper (GNT80**), transparency*, postcard, label sheet, recycled paper (64 to 80 g/m^2), envelope		
	Two-sided/ overlay copying	Automatic Multi-feeder	Plain paper (64 to 80 g/m^2)		
			Plain paper (64 to 128 g/m^2) (no overlay copying)		

*Canon recommended paper.
*May be used but may not feed as expected.

Cassette	Claw	Non
	Regular/universal	55 mm (max.) stacking height (about 500 sheets of 80 g/m^2 paper)
Multifeeder tray		50 sheets (80 g/m^2)
Delivery tray		100 sheets (approx.; 80 g/m^2)
Non-image width	Leading/trailing edge	2.5 mm in Direct
	Left/right	2.5 mm in Direct
Auto clear		Provided
Auto shut-off		Provided (2-min standard, may be varied between 0 an 9 min in 1-min increments)
Option	Feeder	ADF·F1 RF·G1
	Sorter	Multi-Output Tray -C1 Multi-Output Tray -B2
	Pedestal	Cassette Feeding Unit-L1 Cassette Feeding Unit-M1
	Others	Handset-A1 Control Card V Film Projector

4. Others

<table>
<tr><td rowspan="3">Operating environment</td><td>Temperature</td><td>7.5° to 32.5°C</td></tr>
<tr><td>Humidity</td><td>5% to 85%</td></tr>
<tr><td>Atmospheric pressure</td><td>0.8 to 1.0 atm</td></tr>
<tr><td rowspan="3">Power supply</td><td rowspan="2">120V</td><td>Serial number</td></tr>
<tr><td>GP200: NFY xxxx
GP200F:NFZ xxxx</td></tr>
<tr><td>220 / 240V</td><td>GP215:UBY xxxx, QFY xxxx, SFY xxxx, TFY xxxx, UFY xxxx.
GP215F:UBZ xxxx, QFZ xxxx, SFZ xxxx, TFZ xxxx, UFZ xxxx.</td></tr>
<tr><td rowspan="4">Power consumption</td><td>Maximum</td><td>1.5 kW or less</td></tr>
<tr><td>Standby</td><td>0.080 kWh (reference only)</td></tr>
<tr><td>Continuous copying</td><td>0.750 kWh (reference only)</td></tr>
<tr><td>Quick start mode (SLEEP 1)</td><td>0.045 kWh (reference only)</td></tr>
<tr><td></td><td>Power saving mode (SLEEP 2)</td><td>0.003 kWh (reference only)</td></tr>
<tr><td rowspan="2">Noise</td><td>Copying</td><td>66 dB or less (sound power level)</td></tr>
<tr><td>Standby</td><td>40 dB or less (sound power level)</td></tr>
<tr><td colspan="2">Ozone</td><td>0.01 ppm or less (average); 0.02 ppm or less (max.)</td></tr>
<tr><td rowspan="3">Dimensions</td><td>Width</td><td>585 mm (pedestal, copyboard cover)</td></tr>
<tr><td>Depth</td><td>700 mm (pedestal, ADF)</td></tr>
<tr><td>Height</td><td>571 mm (pedestal, RDF)</td></tr>
<tr><td colspan="2">Weight</td><td><table><tr><th></th><th>GP215</th></tr><tr><td>Body only (w/ copyboard cover)</td><td>72.4kg</td></tr><tr><td>w/ ADV</td><td>77.1kg</td></tr><tr><td>w/ RDF</td><td>84.7kg</td></tr></table></td></tr>
<tr><td>Consumables</td><td>Copy paper Toner</td><td>Keep copy paper wrapped to protect against humidity.</td></tr>
</table>

5. Copying Speed

Reproduction ratio		Size	Copy paper size	Copies/min
Direct		A3 (297 × 420mm) A4 (210 × 297mm) A4R (297 × 210mm) A5 (148.5 × 210mm) A5R (210 × 148.5mm) B4 (267 × 364mm) B5 (182 × 257mm) B5R (257 × 182mm)	A3 A4 A4R A5 A5R B4 B5 B5R	12 21 16 22 22 13 22 18
Reduce	II	A3 → A5	A5R	20
	III	A3 → B5	B5R	18
	IV	A3 → A4 B4 → B5	A4R B5R	15 18
	V	B4 → A4 B5 → A5	A4R A5	16 22
	VI	A3 → B4 A5 → B5	B4 B5	13 22
Enlarge	II	A5 → A3	A3	12
	III	A4 → A3 B5 → B4	A3 B4	12 14
	IV	A4 → B4 A5 → B5	B4 B5	14 22
	V	B4 → A3 B5 → B4	A3 B4	12 14

Copying Speed (copier only)

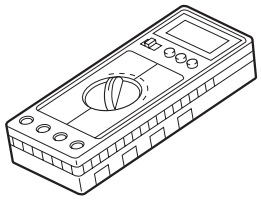
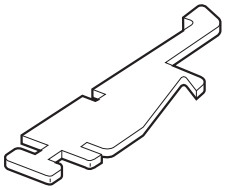
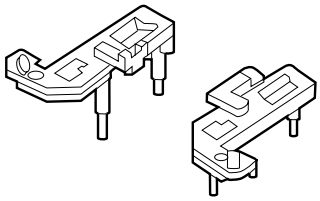
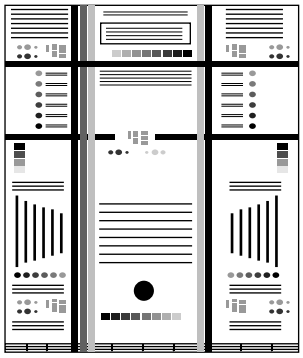
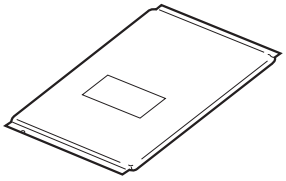
Ratio	Size	Copies/min
DIRECT	LTR	20
	11×17	11
	LGL	14
	LTRR	17
	STMT	22
	STMTR	20
REDUCE	LGL → LTRR	17
	11×17 → LGL	15
	11×17 → LTRR	16
	11×15 → LTRR	16
ENLARGE	LGL → 11×17	12
	LTR·R → 11×17	12
	STMTR → 11×17	12

Copying Speed (copier only)

Specifications subject to chanfge for product improvement.

E. LIST OF SPECIAL TOOLS

The following are special tools used to service to copier : use them in addition the standard set of tools.

No.	Tool Name	Tool No.	Shape	Rank	Remarks
1	Digital Multimeter	FY9-2002-000		A	Use it to check the power
2	Door switch actuator	TKN-0093		A	
3	Mirror positioning tool (front, rear)	FY9-3009-040		B	For adjusting the distance between No.1 and No.2 mirror mounts.
4	NA-3 Test sheet	FY9-9196-000		A	use it to adjust/check images.
5	Standard White paper	FY9-3004-000		B	For shading correction (20 sheets/pack)

*Consult the following for a stocking idea.

A : Each service person is expected to carry one.

B : Each group of five service persons is expected to carry one.

C : Each workshop is expected carry one.

F. SOLVENTS/OILS

No.	Name	Use	Composition	Description
1	Ethl alchol (Ethanol) Isopropyl alchol (Isopropanol)	Cleaning: copyboard glass, mirror, etc.	$C_2 H_5 OH$ $(CHZ_3)_2 CHOH$	• Do not bring near fire. • Procure locally • Isopropyl alcohol may be substituted
2	MEK	Cleaning e.g., metal;oil or toner dirt	$CH_3 \cdot CO \cdot C_2H_5$ Methylethyl ketone	• Do not bring near fire. • Procure locally
3	Heat-resistant grease	Lubricating: fixing drive assemblies	Lithium soap (mineral oil family) Molybdenum bisulfate	Tool No.: CK-0427 (500g can) (Equivqlent grease can be used, but should be able to withstand 200°C for extended periods of time.)
4	Lubricating oil (low viscosity)	Lubricating: Scanner rail, etc.	Mineral oil (paraffin family)	• ISO VG 68 Oil CK-0451 (100cc) • MOBIL Vactraoil NO.2
5	Lubrication oil (low viscosity)	Lubricating: pick-up assembly roller bushing (FS2-1005-000)	Mineral oil (paraffin family)	• ISO VG 220 Oil CK-0524 (100cc)
6	Lubrication oil	Lubricating: drive and friction parts	Silicone oil	Tool No.: CK-0551 (20g)

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