NP6512/6612/ 7120/7130/7130F

SERVICE HANDBOOK

REVISION 0

Canon

AUG. 1999

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- This service handbook covers the models shown in the following table. Be sure to have a good understanding of the difference from model to model before referring to this handbook.

Model	Type code	Default ratio	ADF as standard	Cassette
NP6512	TWA	2R2E		250 sheets
NP6612	TXA	2R2E	√	250 sheets
NP7120	PUB	2R2E		Universal
NP7120	PUC	2R2E		Universal
NP7130	NVF	3R1E		500 sheets
NP7130	PTZ	2R2E		500 sheets
NP7130F	NVH	3R1E	√	500 sheets

The notation "√" indicates that the item in question is available.

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CHAPTER 1 MAINTENANCE AND INSPECTION

A. Periodically Replaced Parts

The machine does not have parts which must be replaced on a periodical basis.

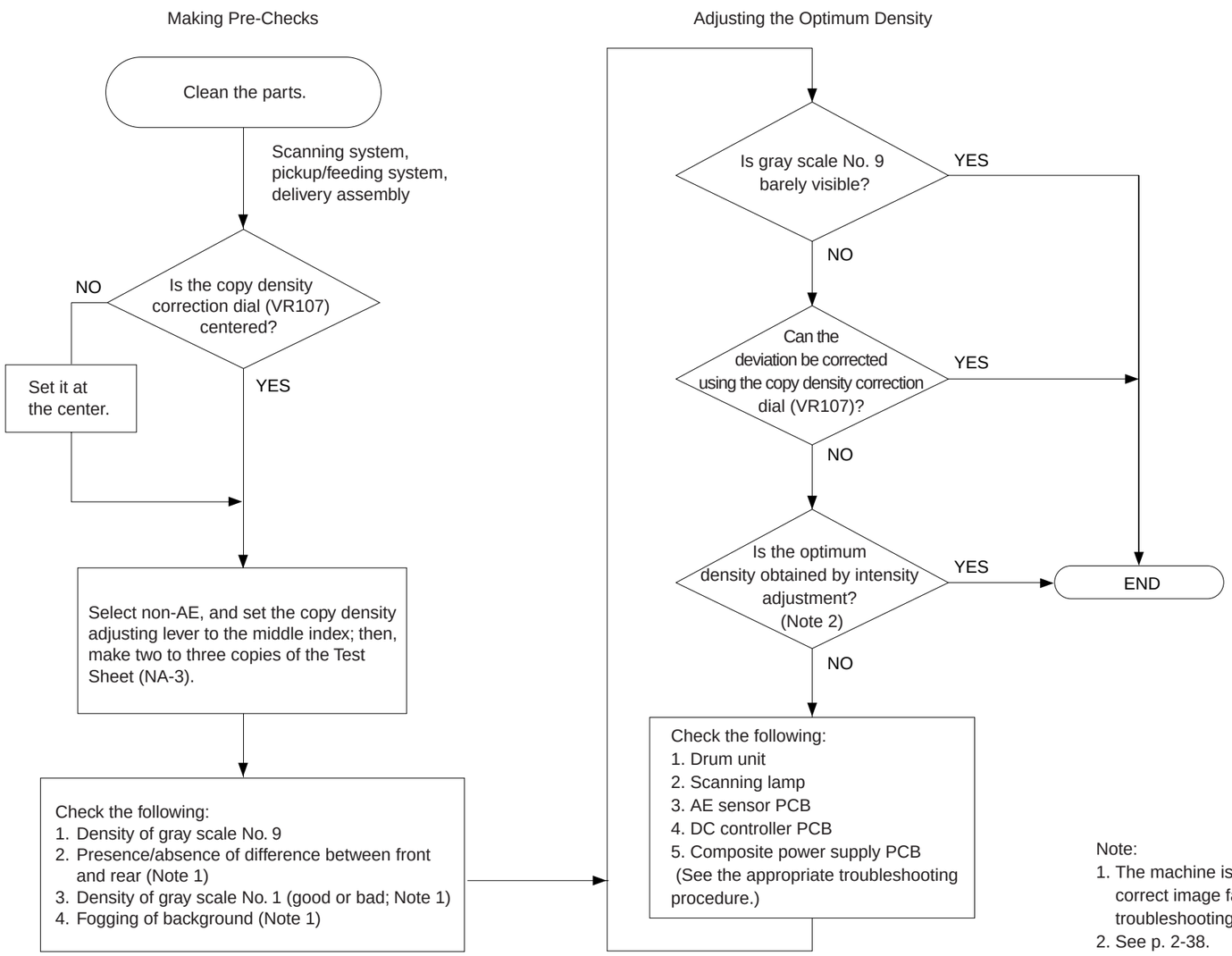
B. Durables and Consumables

The machine does not have items designated as durables or consumables.

C. Scheduled Servicing

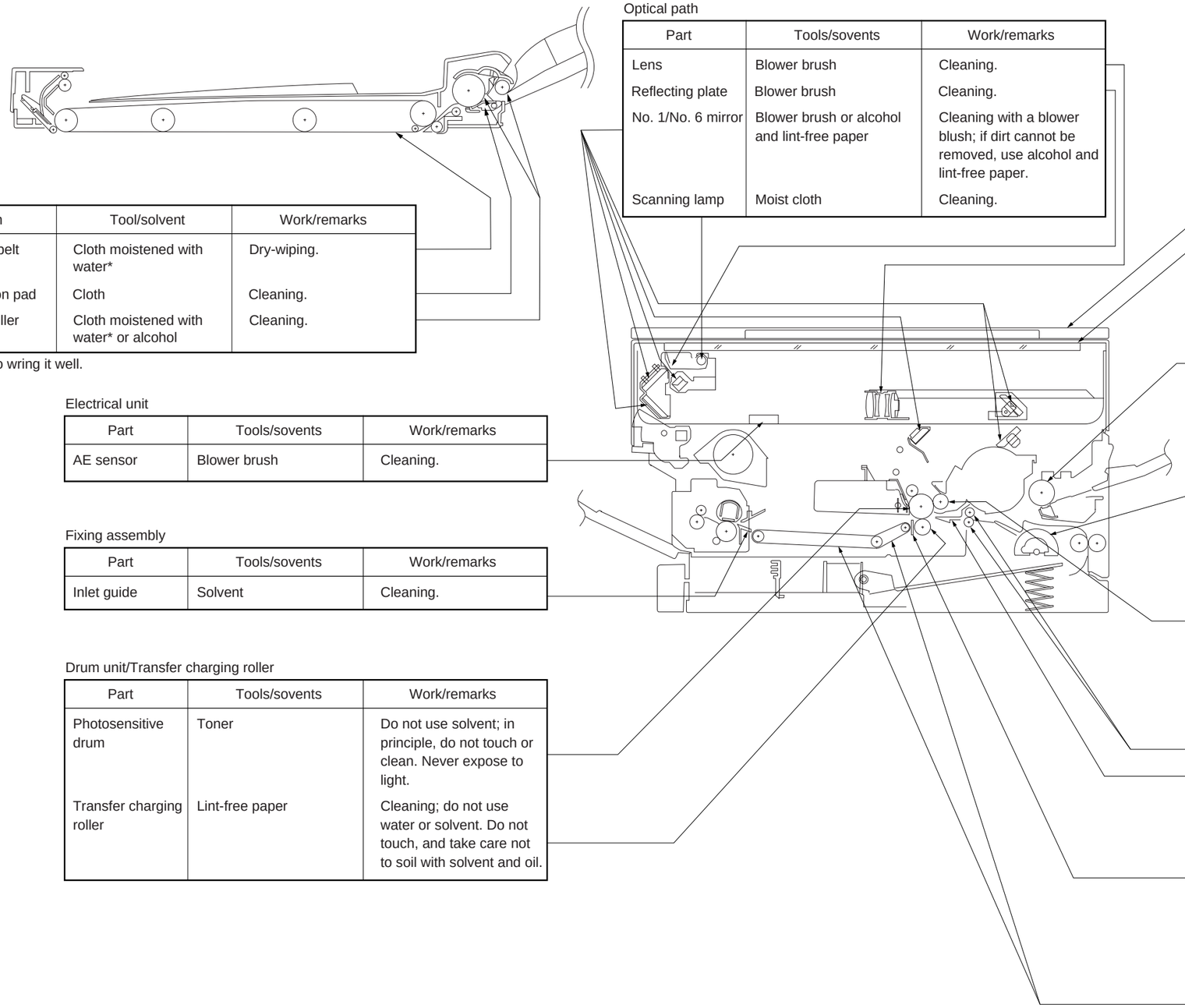
The machine does not have any parts which require scheduled servicing.

D. Image Adjustment Basic Procedure



Note:
1. The machine is not equipped with a function to correct image faults. See the appropriate troubleshooting procedure.
2. See p. 2-38.

E. Points to Note for Servicing



ADF

Item	Tool/solvent	Work/remarks
Feeding belt	Cloth moistened with water*	Dry-wiping.
Separation pad	Cloth	Cleaning.
Pickup roller	Cloth moistened with water* or alcohol	Cleaning.

*Be sure to wring it well.

Optical path

Part	Tools/sovents	Work/remarks
Lens	Blower brush	Cleaning.
Reflecting plate	Blower brush	Cleaning.
No. 1/No. 6 mirror	Blower brush or alcohol and lint-free paper	Cleaning with a blower blush; if dirt cannot be removed, use alcohol and lint-free paper.
Scanning lamp	Moist cloth	Cleaning.

Electrical unit

Part	Tools/sovents	Work/remarks
AE sensor	Blower brush	Cleaning.

Fixing assembly

Part	Tools/sovents	Work/remarks
Inlet guide	Solvent	Cleaning.

Drum unit/Transfer charging roller

Part	Tools/sovents	Work/remarks
Photosensitive drum	Toner	Do not use solvent; in principle, do not touch or clean. Never expose to light.
Transfer charging roller	Lint-free paper	Cleaning; do not use water or solvent. Do not touch, and take care not to soil with solvent and oil.

Part	Tools/sovents	Work/remarks
Copyboard cover	Alcohol	Cleaning.
Copyboard glass	Alcohol	Cleaning.

Multifeeder assembly

Part	Tools/sovents	Work/remarks
Multifeeder pickup roller	Moist cloth (well-wrung) or alcohol	Cleaning.

Cassette pickup assembly

Part	Tools/sovents	Work/remarks
Cassette pickup roller	Moist cloth (well-wrung) or alcohol	Cleaning.

Developing assembly

Part	Tools/sovents	Work/remarks
Developing cylinder	Alcohol	Cleaning.

Transfer guide assembly

Part	Tools/sovents	Work/remarks
Registration roller	Moist cloth	Cleaning.
Transfer guide	Moist cloth	Cleaning.

Static eliminator

Part	Tools/sovents	Work/remarks
Static eliminator	Special brush	Cleaning.

Feeding assembly

Part	Tools/sovents	Work/remarks
Feed belt	Moist cloth	Cleaning.

CHAPTER 2 STANDARDS AND ADJUSTMENTS

A. Mechanical

1. Copier

a. Leading Edge Non-Image Width

Make adjustments so that the leading edge non-image width is 2.0 ±1.5 mm when the Test Sheet is copied in Direct.

Caution:

If you have performed this adjustment, be sure to adjust the image leading edge margin.

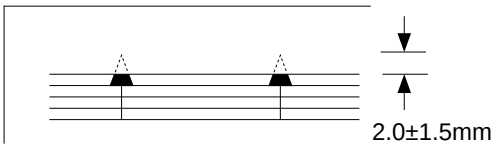


Figure 2-1

Making Adjustments

1) Select '31' in service mode.
   • The display will indicate '31'.
2) Press the Copy Start key.
   • The existing setting will flash.
3) Change the setting by the +/- key.
   • The setting may be between 0 and 99.
   • For each '1', the non-image width will change by 0.24 mm.
4) Press the AE key.
   • The setting will stop flashing and will remain on, indicating that it has been stored in memory.
5) As necessary, press the Clear/Stop key once to return to item selection; or, press it once again to end service mode.

Relationship between Setting and Leading Edge Non-Image Width

Setting	Leading edge non-image width
Higher	Increases
Lower	Decreases

Table 2-1

b. Image Leading Edge Margin (registration activation timing)

Make adjustments so that the leading edge margin is 2.5 ±1.5 mm when the Test Sheet is copied.

Caution:

Be sure to check that the leading edge non-image width is as indicated before performing this adjustment.

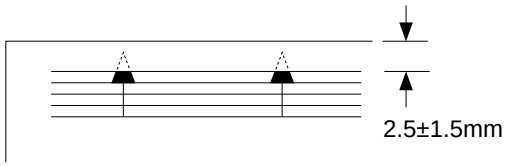


Figure 2-2

Making Adjustments

1) Select '30' in service mode.
   • The display will indicate '30'.
2) Press the Copy Start key.
   • The existing setting will flash.
3) Change the setting using the +/- key.
   • The setting may be between 0 and 99.
   • The setting will change by 0.24 mm in terms of margin for each '1'.
4) Press the AE key.
   • The setting will stop flashing and will remain on, indicating it has been stored in memory.
5) As necessary, press the Clear/Stop key once to return to item selection; or, press it once again to end service mode.

Relationship between Settings and Image Leading Edge Margin

Setting	Image leading edge margin
Higher	Decreases
Lower	Increases

Table 2-2

c. Adjusting the Mirror Position (optical length between No. 1 mirror and No. 2 mirror)

If you have replaced the scanner drive cable, you must adjust the mirror position, by changing the position of the cable retainer of the No. 1 mirror mount.

Reference:

1. As more and more copies are made, the cable tends to become slack, requiring adjustment.
2. If the optical length between the No. 1 mirror and the No. 2 mirror is not correct, the horizontal reproduction ratio will be wrong, causing poor sharpness or blurred images.

1) Fit the mirror positioning tool (FY9-3009) as shown.

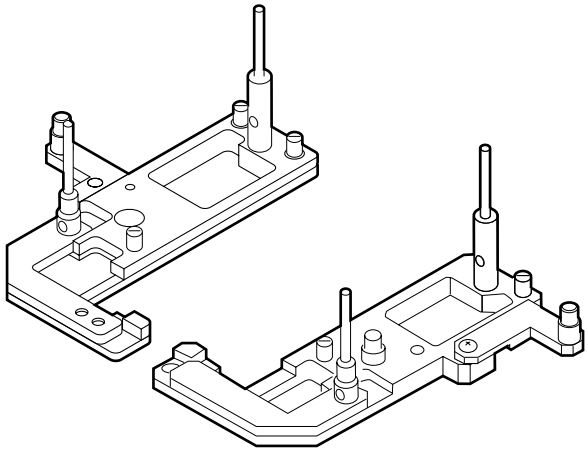


Figure 2-3

2) Remove the copyboard glass.
3) Loosen the screws used to secure the cable retainer at the rear and the front of the No. 1 mirror mount [1].

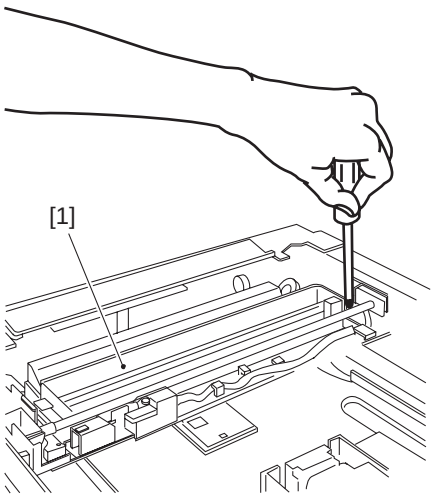


Figure 2-4

4) Turn the cable drive pulley [3] so that the three shafts [2] of the mirror positioning tool for the front and the rear may be arranged as shown.

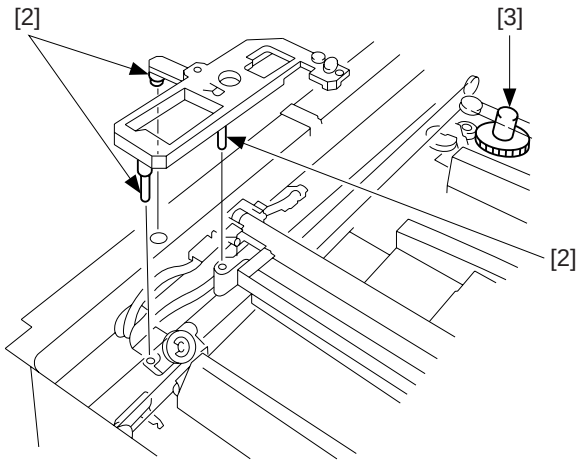


Figure 2-5 (rear)

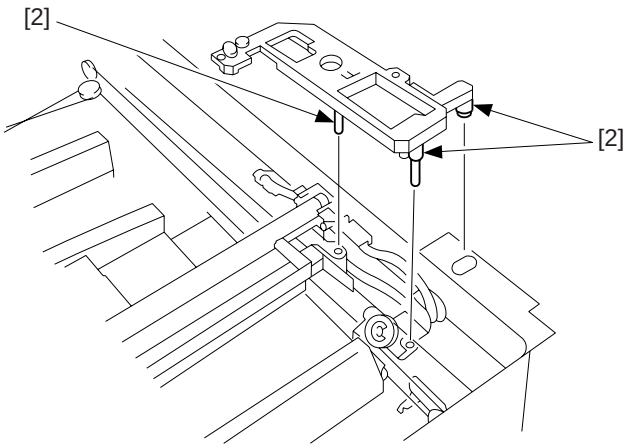


Figure 2-6 (front)

5) While keeping the condition of 4), tighten the positioning screw at the rear and the front of the No. 1 mirror mount [1].

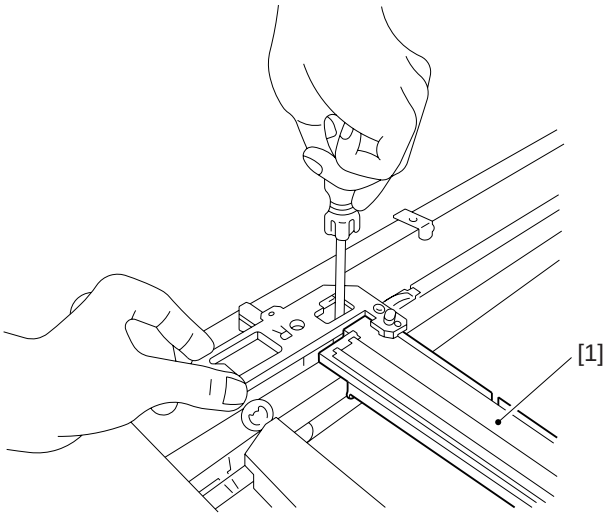


Figure 2-7 (rear)

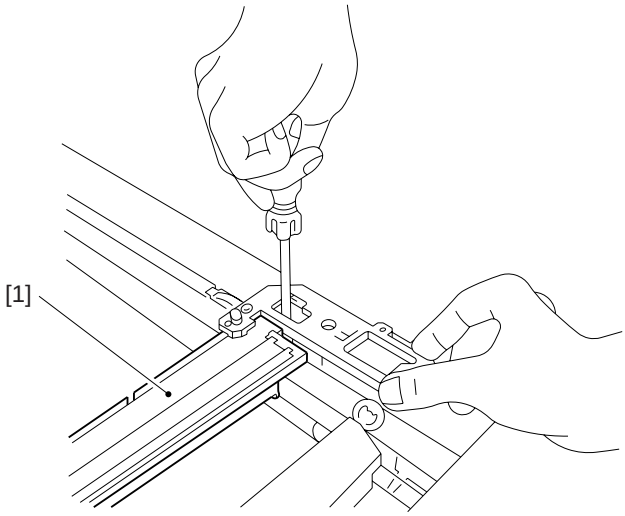


Figure 2-8 (front)

d. Checking the Force of the Cassette Spring

If the force of the spring used to hold up the holding plate of the cassette is not correct, pickup faults or the like can occur.

If a fault is suspected, check the force of the spring using a spring gauge (CK-0054), and replace the spring if it is not as indicated:

Standard: 970 ±150 g

Making Measurements

Push the spring gauge against the middle of the spring as shown, and check to make sure that the reading of the spring gauge is 970 ±150 g when the holding plate is 18 mm away from the bottom of the cassette.

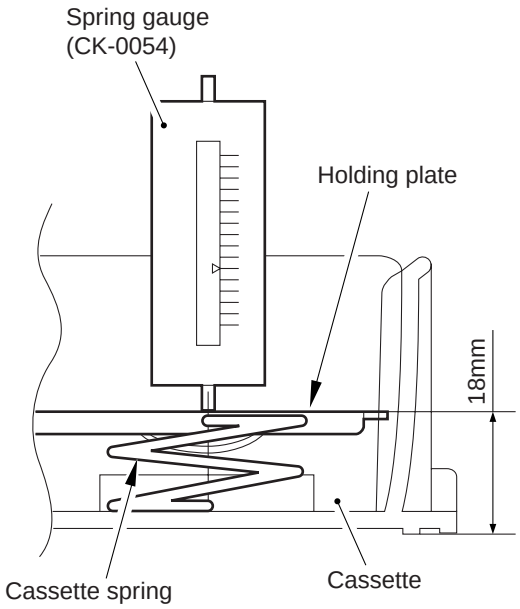


Figure 2-9

e-1. Routing the Scanner Drive Cable

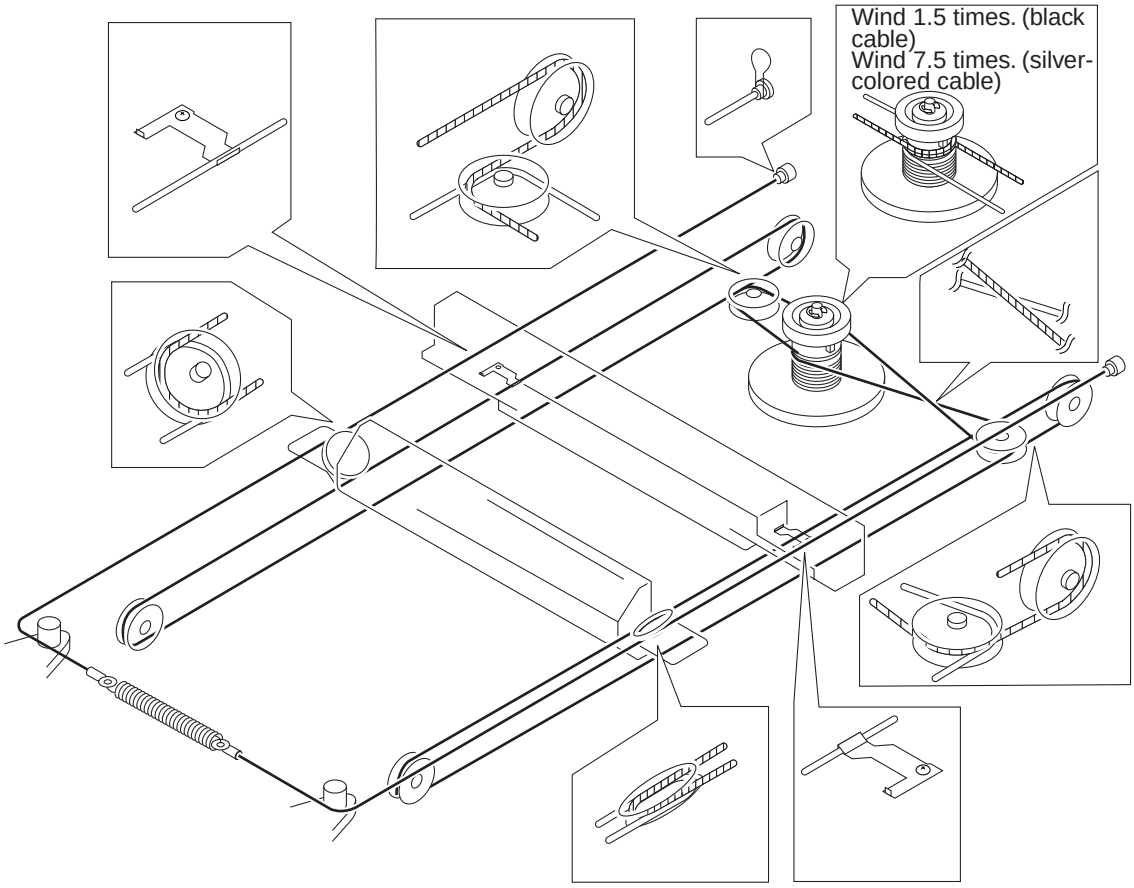


Figure 2-10

e-2. Routing the Scanner Drive Cable

1. Before Starting the Work

Prepare the following:
- Mirror positioning tool (FY9-3009)
- Cable clip (FY9-3017)
- Adhesive tape

1) Set the mirror positioning tool as shown.

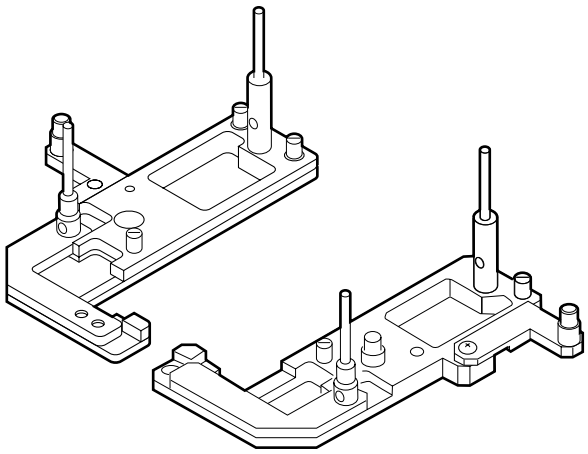


Figure 2-11

2) Prepare about five strips of adhesive tape (each one about 20 x 50 mm).
3) Remove the copyboard glass.
4) Disconnect the connectors (J101, J131) [1] from the DC controller PCB.

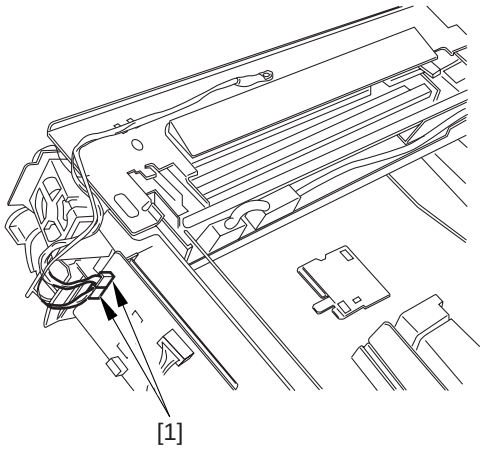


Figure 2-12

5) If the machine is equipped with an ADF, free the hook [2], and disconnect the two relay connectors [3] from the left upper stay [4].

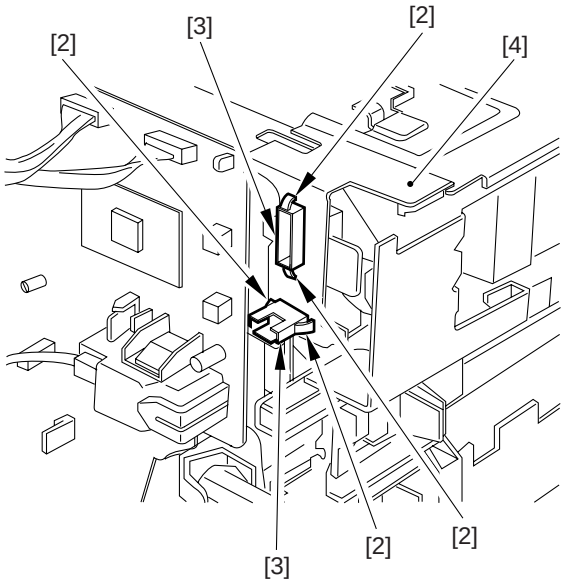


Figure 2-13

6) Remove the three screws [5], and detach the left upper stay [4].

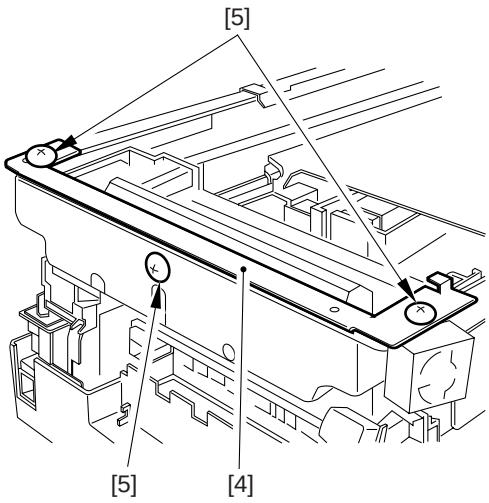


Figure 2-14

7) Remove the four screws [7], and detach the lens cover [8].

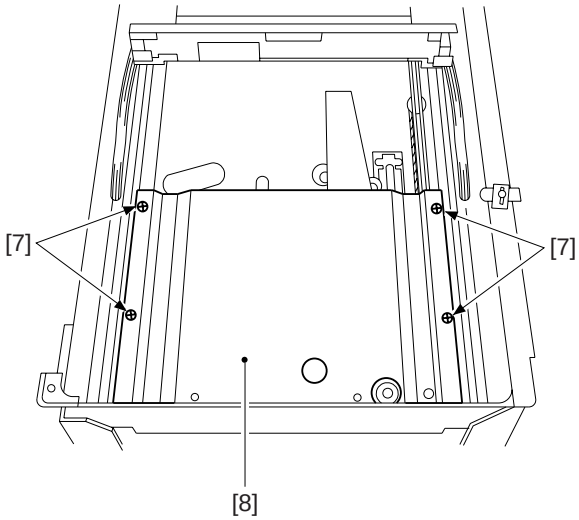


Figure 2-15

2. Routing the Reversing Cable

1) Wind the reversing cables (silver-colored) [2] on the cable drive pulley [1] 7.5 times with the longer of the two on top; then, secure it in position with a cable clip [3].

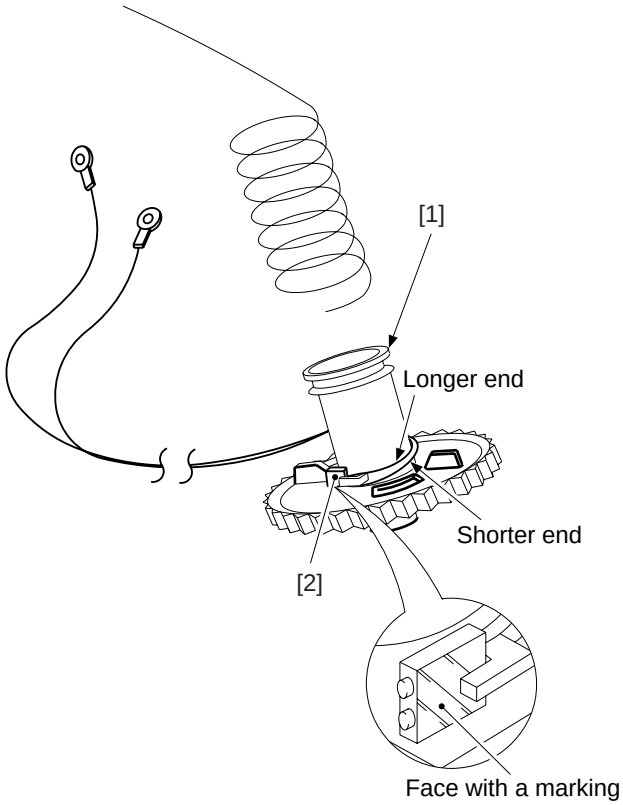


Figure 2-16

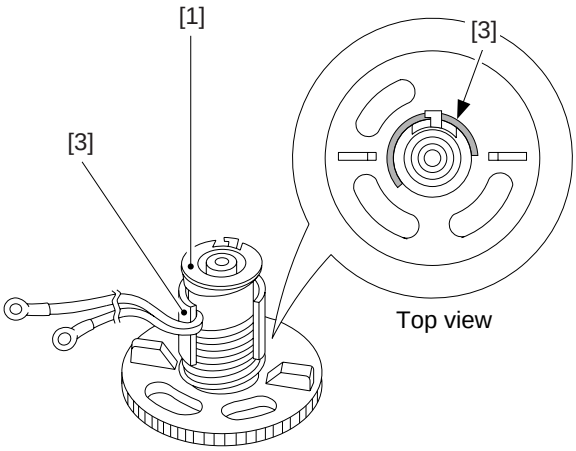


Figure 2-17

2) Put the cable drive pulley [1] into the shaft [4], and secure it in position with an E-ring [5]. When putting the cable drive pulley into the shaft, be sure that the hook is at the front.

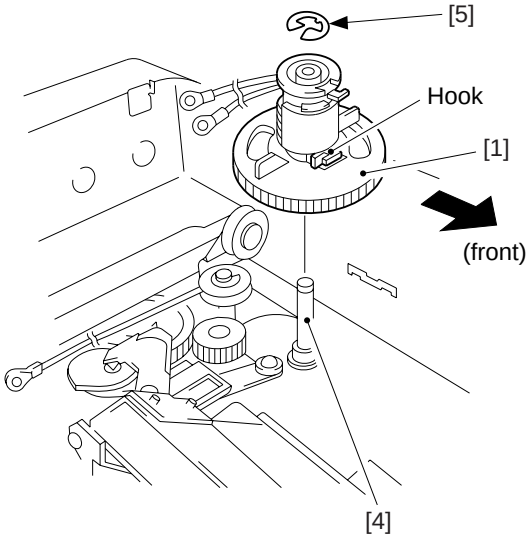


Figure 2-18

3) Hook the shorter end [6] on the pulley [7].

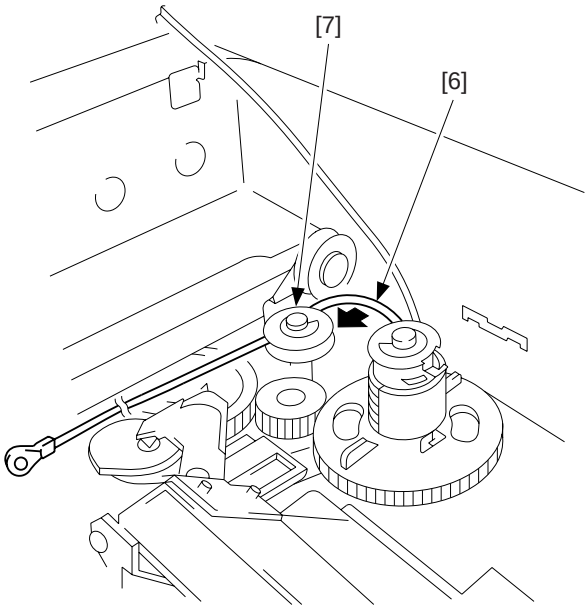


Figure 2-19

4) Lead the shorter end [6] under the No. 1 mirror mount [8] and the No. 2/3 mirror mount [9]; then, hook it on the left rear pulley [10] and the pulley [11] of the No. 2/3 mirror mount.

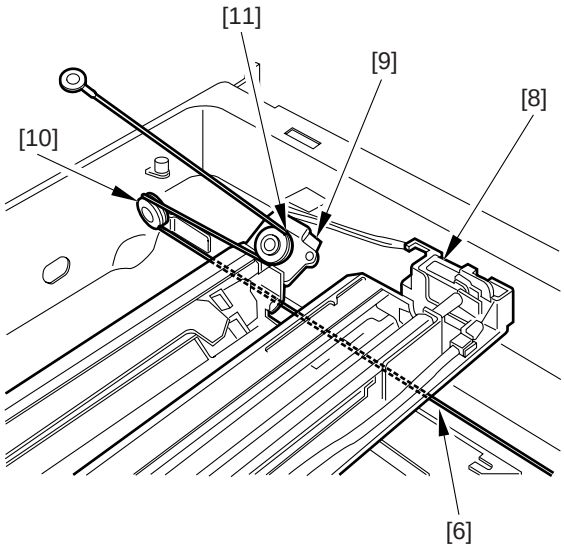


Figure 2-20

5) After fitting the shorter end [6] on the cable hook [12], secure its end with adhesive tape [13]. Be sure that the secured end of the cable is found where the hole in the left side plate and the tip of the cable matches.

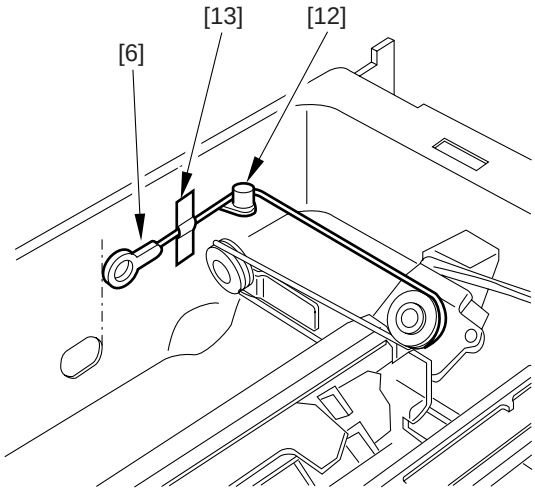


Figure 2-21

6) Lead the longer end [14] along the cable drive pulley [1], and hook it on the pulley [15] on the right front side.

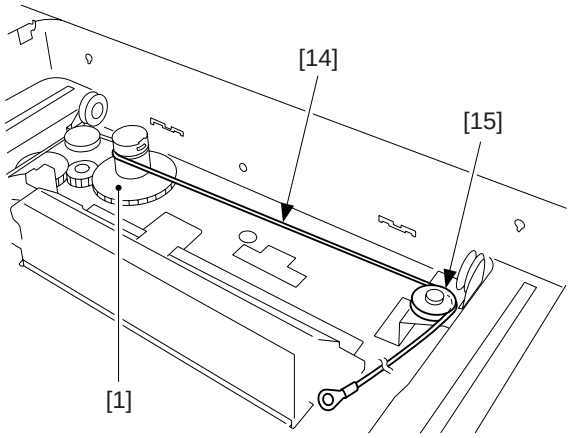


Figure 2-22

7) Lead the longer end [14] under the No. 1 mirror mount [8] and the No. 2/3 mirror mount [9]; then, hook it on the pulley [16] on the left front side and the pulley [17] of the No. 2/3 mirror mount.

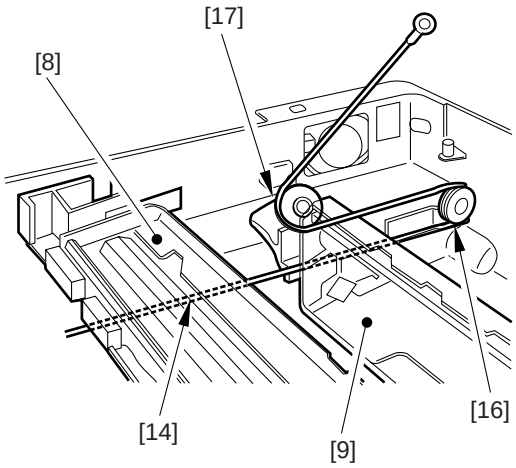


Figure 2-23

8) Hook the longer cable [14] on the cable hook [18]; then, secure its end to the left side with adhesive tape [19].
Be sure that the secured end of the cable is found where the hole in the left side plate and the tip of the cable matches.

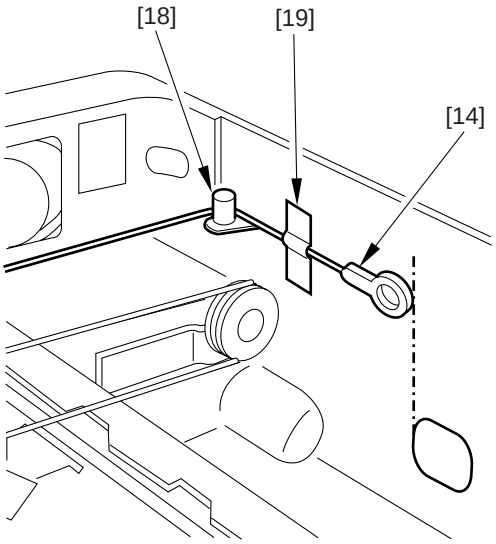


Figure 2-24

3. Routing the Forwarding Cable

1) Fit the longer end forwarding cable (black) [2] on the top hook of the cable drive pulley [1], and wind it 1.5 times. Then, secure the shorter end [3] as shown with adhesive tape [4].

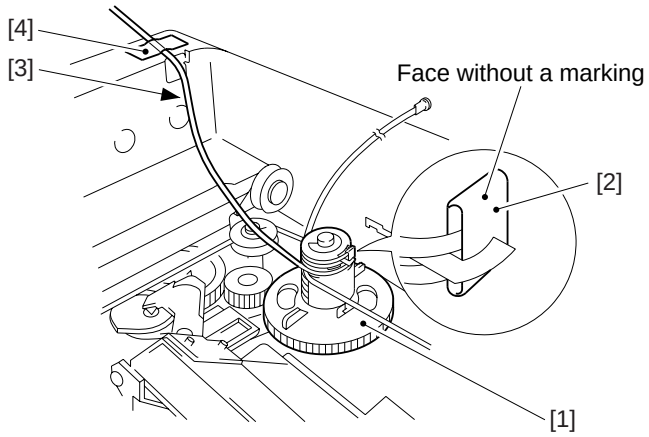


Figure 2-25

2) Lead the longer end [5] along the cable drive pulley [1] as shown, and hook it on the pulley [6] on the right front side.

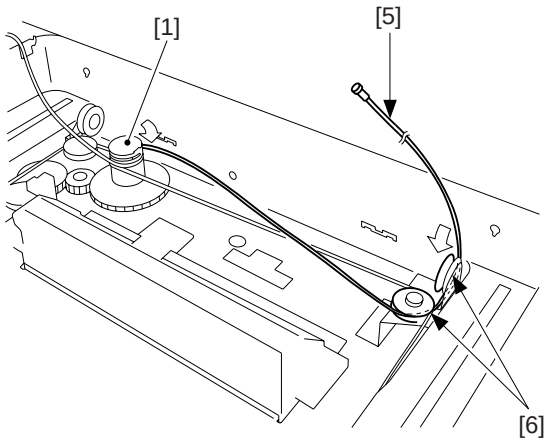


Figure 2-26

3) Lead the longer end [5] under the No. 1 mirror mount [7]; then, hook it on the pulley [8] of the No. 2/3 mirror mount, and lead it between the No. 1 mirror mount [7] and the scanning lamp [9].

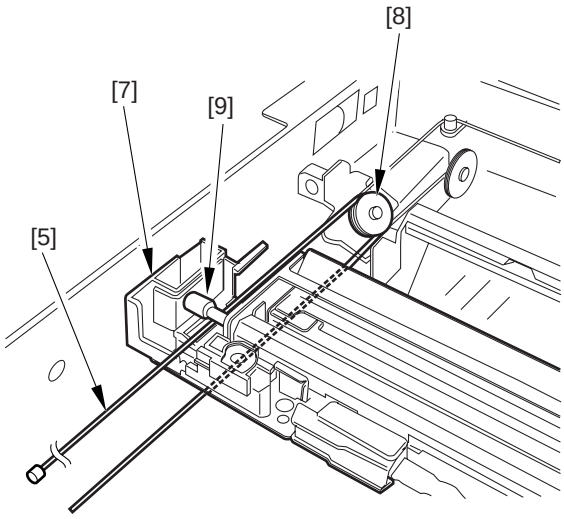


Figure 2-27

4) Hook the end of the longer end [5] on the hole [10] on the right side.

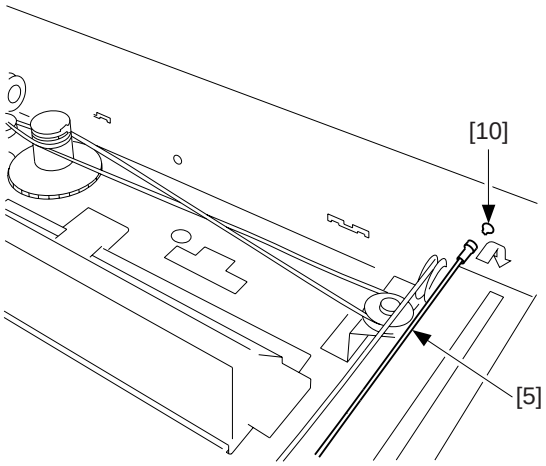


Figure 2-28

5) Free the shorter end [3], and hook it on the pulley [11] on the right rear side.

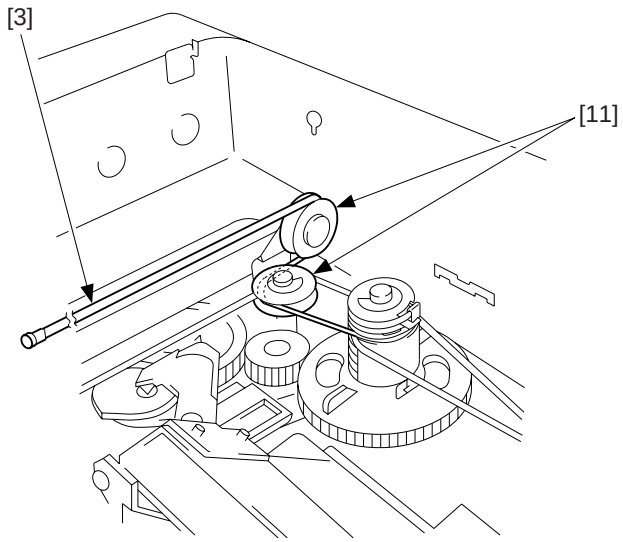


Figure 2-29

6) Lead the shorter end [3] under the No. 1 mirror mount [7], and hook it on the pulley [12] of the No. 2/3 mirror mount as shown; then, lead it between the No. 1 mirror mount [7] and the scanning lamp [9].

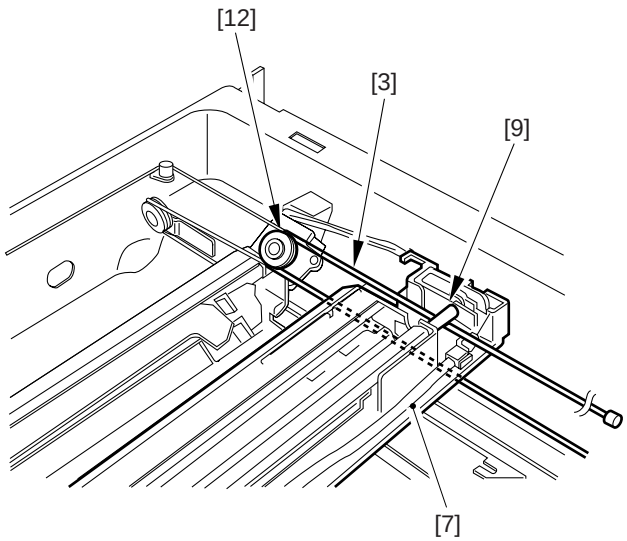


Figure 2-30

7) Hook the end of the shorter end [3] on the hole [13] on the right side.

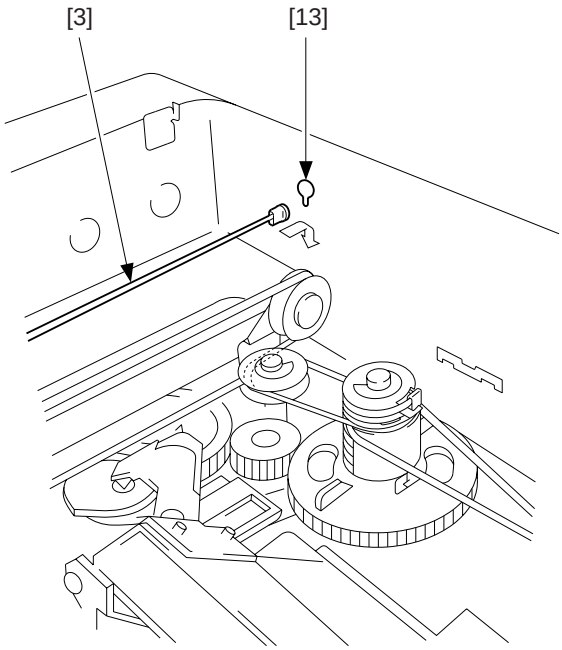


Figure 2-31

8) Free the shorter end [3] and the longer end [5] (reversing cable), and connect both with a spring [14]; then, fit the stopper [15].

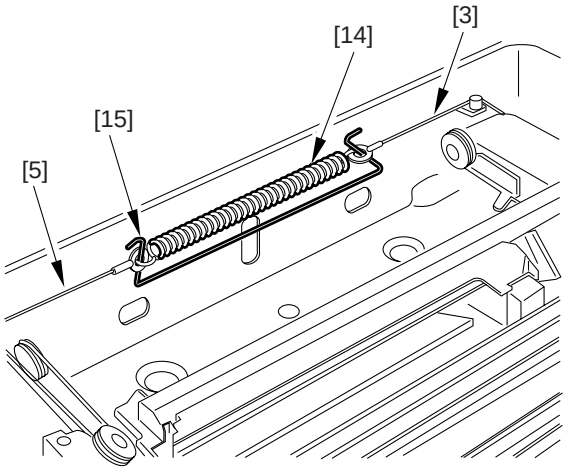


Figure 2-32

9) Detach the pulley clip [16] from the cable drive pulley [1].

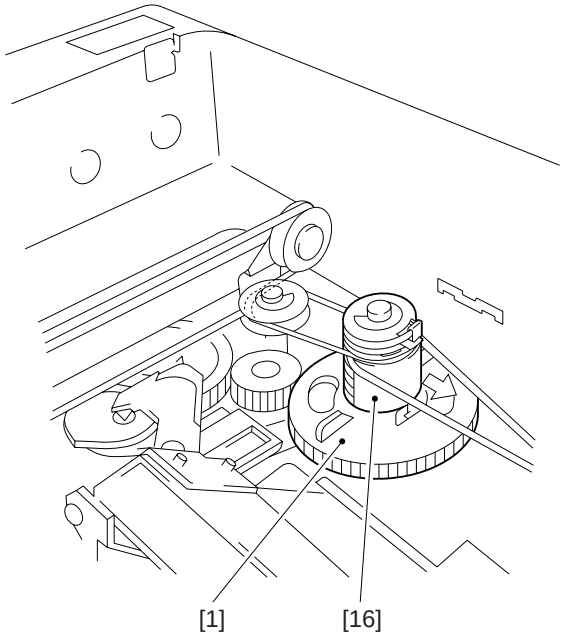


Figure 2-33

4. Positioning the No. 1 Mirror Mount

1) Fix the rear and the front of the No. 1 mirror mount [1] temporarily to the metal fixing [2] of the forwarding cable.

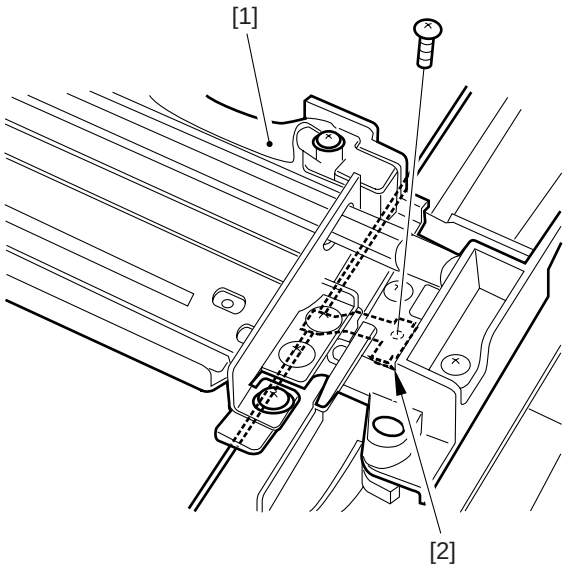


Figure 2-34 (rear)

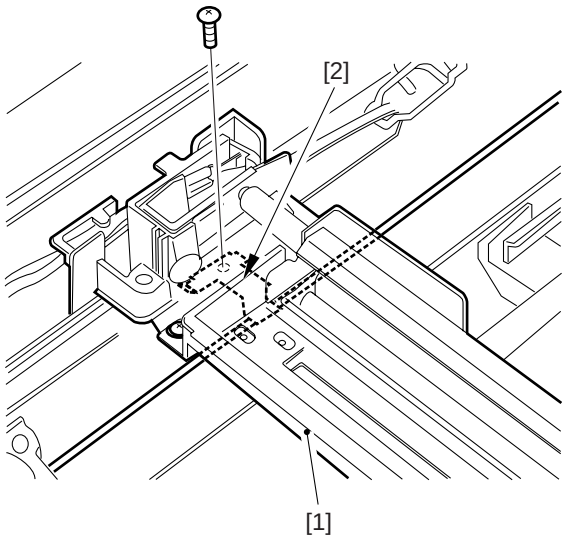


Figure 2-35 (front)

2) Turn the cable drive pulley [4] so that the three shafts [3] of the mirror positioning tool for rear and front is as shown.

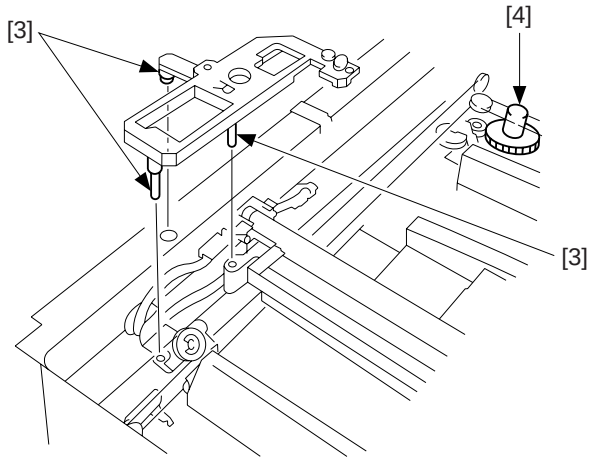


Figure 2-36 (rear)

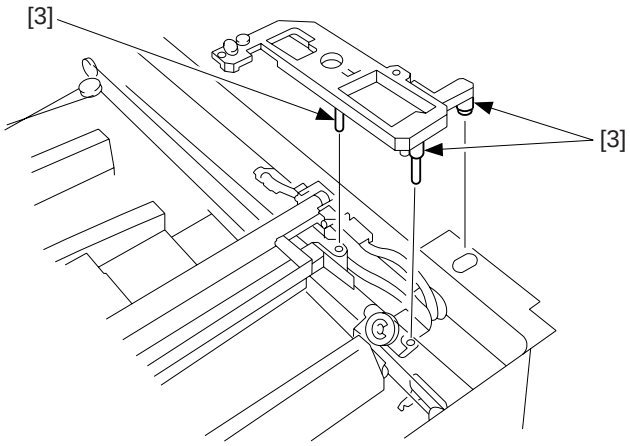


Figure 2-37(front)

3) While keeping the condition of step 2), tighten the positioning screw on the rear and front of the No. 1 mirror mount [1].

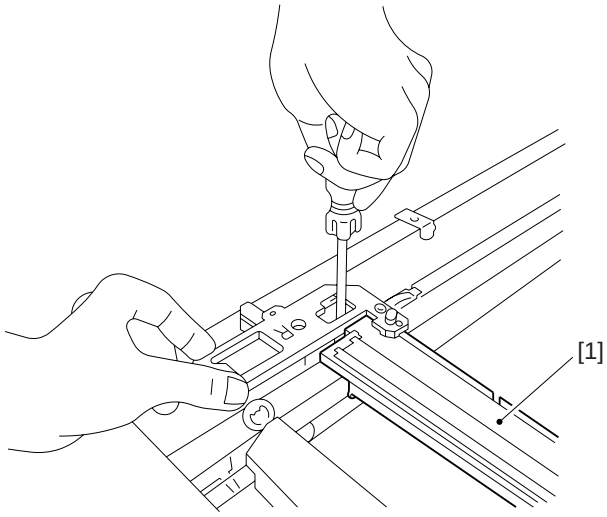


Figure 2-38 (rear)

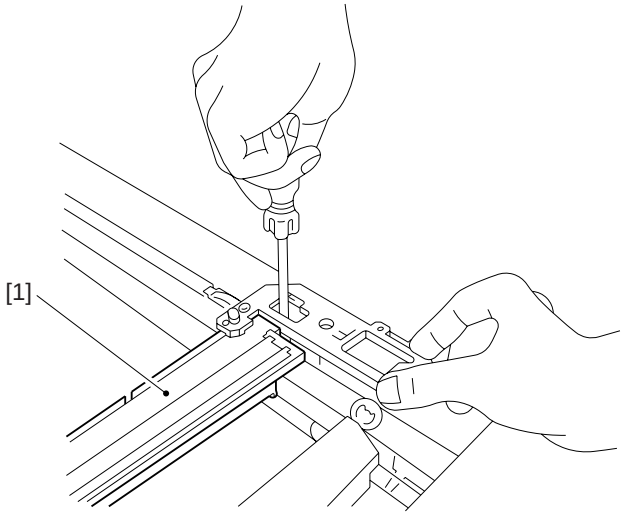


Figure 2-39 (front)

f. Point to Note When Mounting the Scanning Lamp

When mounting the scanning lamp, be sure that its logo mark (manufacturer's name) is toward the front. Further, be sure that the protrusion near its middle is as shown.

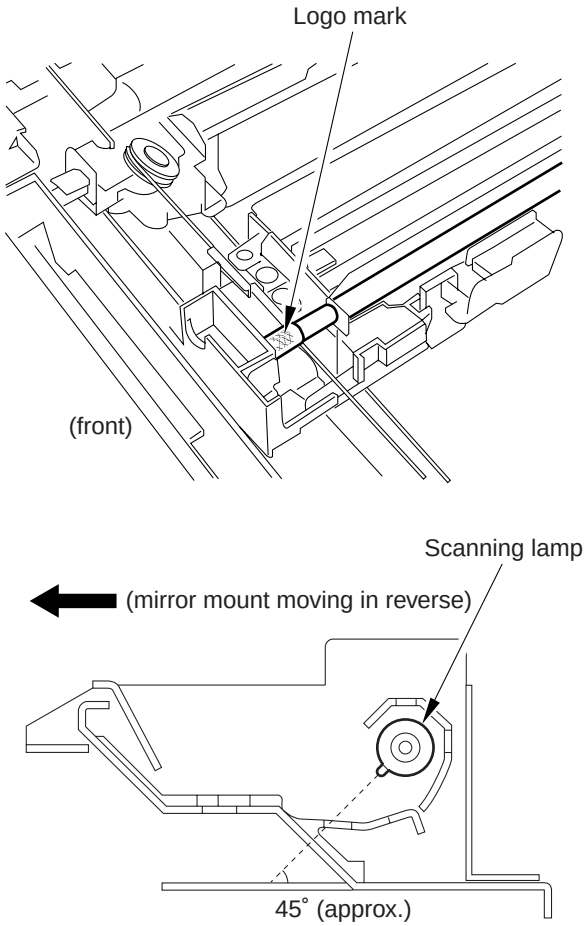


Figure 2-40

Caution:

- If you have replaced the scanning lamp, you must adjust the intensity of the lamp (p. 2-38) and perform AE adjustment.
- Do not touch the lamp when handling it.

g. Points to Note When Mounting the Fuse

When mounting the thermal fuse of the No. 1 mirror mount, be sure that the fuse is oriented as shown.

Make sure that the fuse is in contact with the reflecting plate.

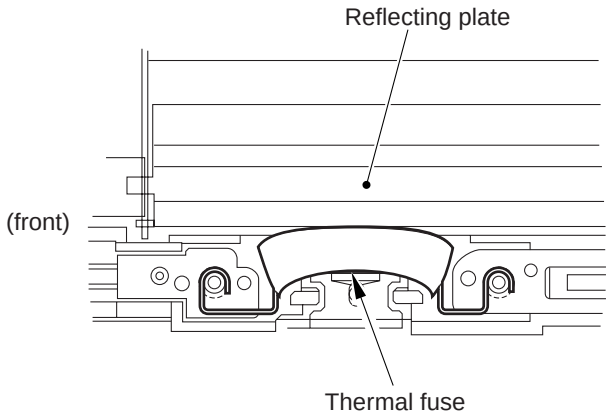


Figure 2-41

B. ADF

1. Adjusting the Original Stop Position

Adjust the original stop position in the following order:

1. Correcting original skew
2. Adjusting the rear/front original stop position
3. Adjusting the original leading edge stop position

2. Correcting Original Skew

1) Obtain a sheet of A4 or LTR white copy paper, and draw two lines as indicated.
   • The sheet will be used as a test sheet.

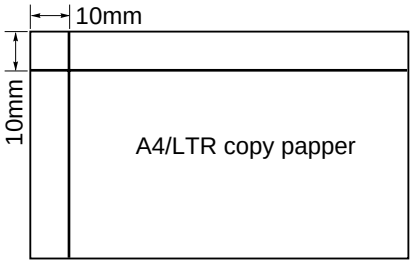


Figure 2-42

2) Turn on the machine, and place the test sheet prepared in step 1) on the original tray.

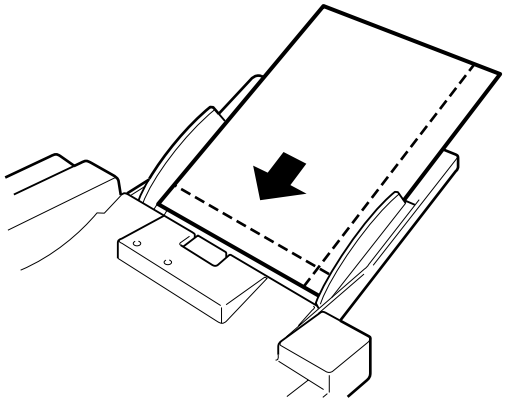


Figure 2-43

3) Press the Copy Start key to make a copy.
4) Check to make sure that the difference between L1 and L2 on the copy is 1.8 mm (standard) or less.

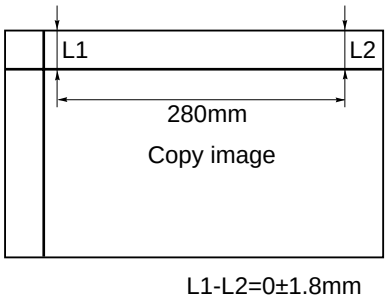


Figure 2-44

5) If the difference is not as specified, turn the adjusting screw found to the side of the left hinge unit to make adjustments.

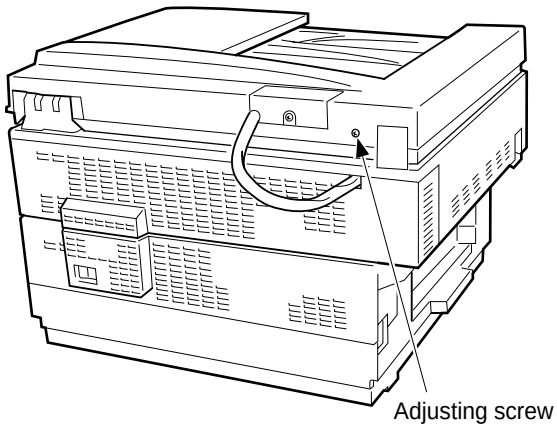


Figure 2-45

Relationship between Adjusting Screw and L1/L2

Direction of turn	Relationship between L1 and L2
Clockwise	L1 > L2
Counterclockwise	L1 < L2

Table 2-3

3. Adjusting the Rear/Front Original Stop Position

You must first correct original skew before adjusting the rear/front original stop position.

1) Obtain a sheet of A4 or LTR white copy paper, and draw two lines as indicated.
   • The sheet will be used as a test sheet.

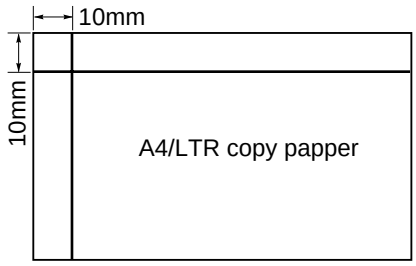


Figure 2-46

2) Remove the original tray cover from below the original tray.

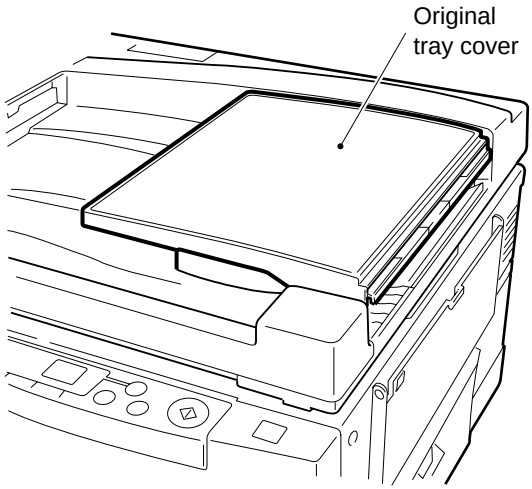


Figure 2-47

3) Turn on the machine, and place the test sheet prepared in step 1) on the original tray.

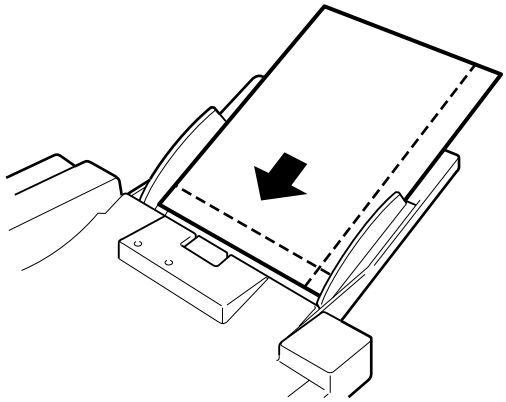


Figure 2-48

4) Press the Copy Start key to make a copy.
5) Check to make sure that the distance L3 on the copy image indicated is 10 ±2.5 mm (standard) or less.

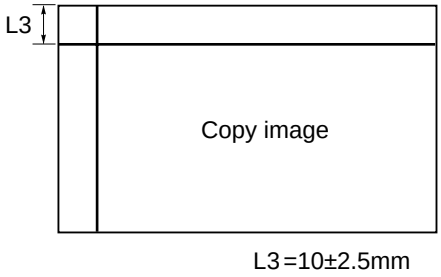


Figure 2-49

6) If the distance is not as specified, loosen the pinion gear positioning screw under the original tray, and adjust the position of the pinion gear.

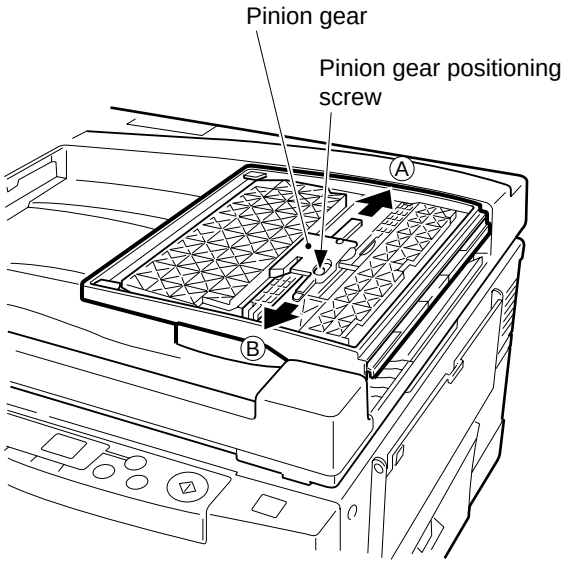


Figure 2-50

Relationship between Pinion Gear Position and L3

Direction of pinion gear	L3
A	Increases
B	Decreases

Table 2-4

4. Adjusting the Original Leading Edge Stop Position

You must first correct original skew and adjust the rear/front original stop position before adjusting the original leading edge stop position.

1) Obtain a sheet of A4 or LTR white copy paper, and draw two lines as indicated.
   • The sheet will be used as a test sheet.

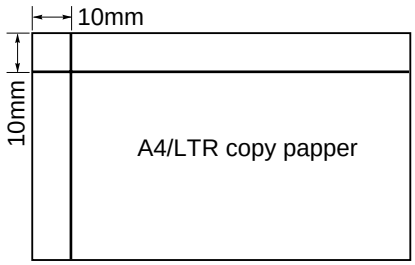


Figure 2-51

2) Remove the screw, and remove the ADF controller cover.

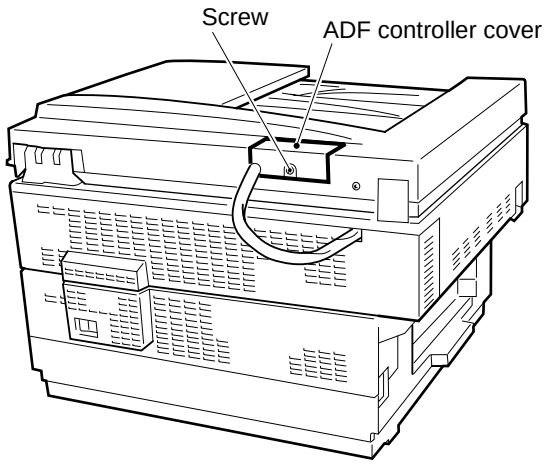


Figure 2-52

3) Turn on the machine, and place the test sheet prepared in step 1) on the original tray.

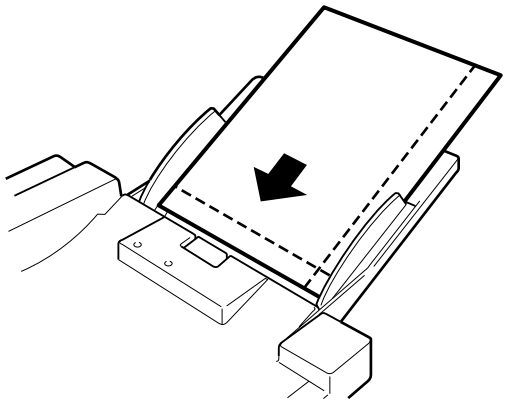


Figure 2-53

4) Press the Copy Start key to make a copy.
5) Check to make sure that the distance L4 on the copy image indicated is 10 +2.0, -2.5 mm (standard) or less.

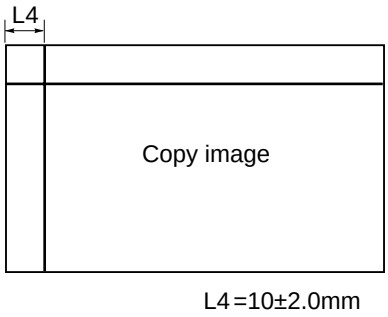


Figure 2-54

6) If the distance is not as specified, shift bit 1 of the DIP switch (SW1) on the ADF controller PCB to ON, and place an A4 or LTR white copy paper on the original tray.

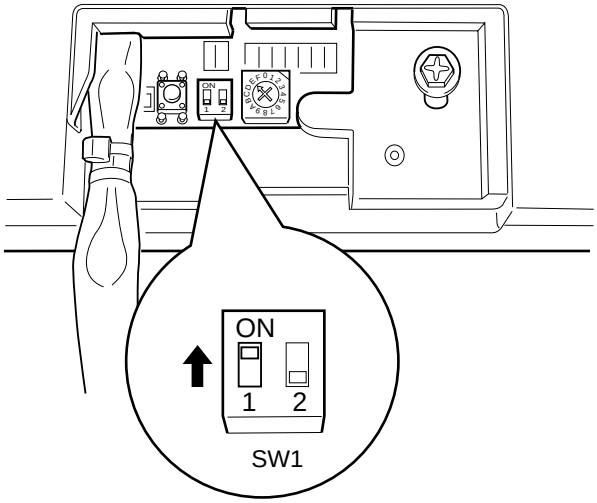


Figure 2-55

7) Press the push switch (PSW) on the ADF controller PCB.
   • The copy paper will be picked up from the original tray and stopped on the copyboard glass.

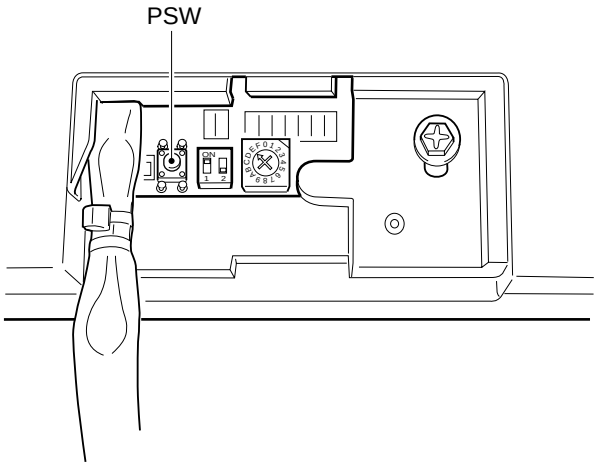


Figure 2-56

8) Use the rotary switch (SW2) on the ADF controller PCB to adjust the original leading edge stop position.
Moving the rotary switch by a single notch changes the original stop position by about 0.3 mm.
Press the push switch (PSW) after deciding on a position to discharge the copy paper and store the optimum value.

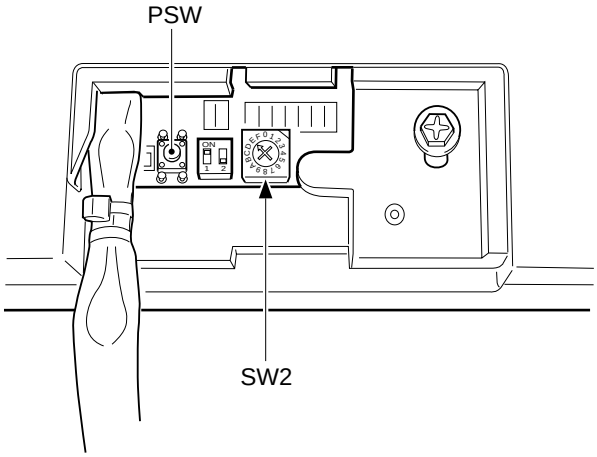


Figure 2-57

Relationship between Rotary Switch Direction and Original Position

Direction of rotary switch	Position (shift) of original
Clockwise	Toward leading edge
Counterclockwise	Toward trailing edge

Table 2-5

Example:

If L4 is 13 mm,

You must shift the original stop position toward the leading edge by 3 mm.

1) Place a sheet of A4 or LTR white copy paper on the original tray.
2) Shift bit 1 of the DIP switch (SW1) on the ADF controller PCB to ON; then, push the push switch (PSW) to pick up the copy paper.

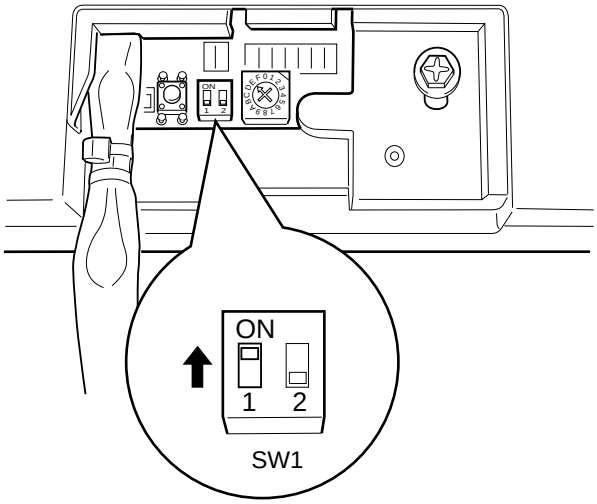


Figure 2-58

3) Turn the rotary switch (SW2) on the ADF controller PCB clockwise by 10 notches.

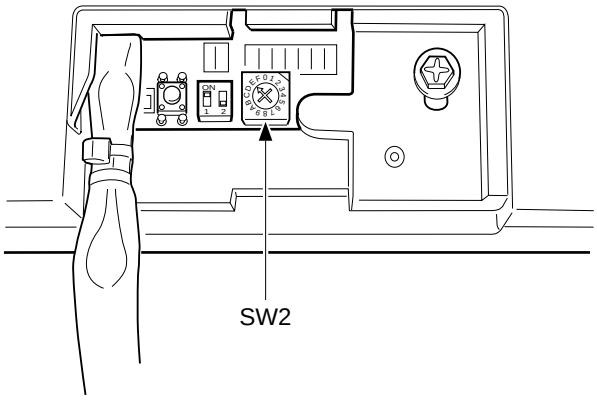


Figure 2-59

4) Press the push switch (PSW) on the ADF controller PCB.
   • The copy paper on the copyboard will be discharged, and the optimum value will be stored.

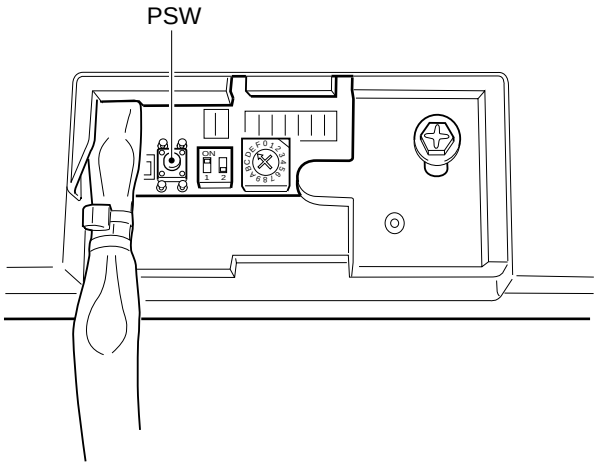


Figure 2-60

C. Electrical

1. After Replacing the Major Parts

Parts	Work
Scanning lamp	1. Scanning lamp intensity adjustment (LAMP_ADJ) 2. AE adjustment
AE sensor PCB	1. AE adjustment
Composite power supply PCB*1	(1. Scanning lamp intensity adjustment (LAMP_ADJ)) (2. AE adjustment) 3. Voltage correction for APVC measurement (PW_OFST) 4. Current correction for APVC measurement (IP_ADJ)
Pre-exposure lamp	1. Pre-exposure lamp output adjustment (PREX_LP)
DC controller PCB	1. Scanning lamp intensity adjustment (LAMP_ADJ) 2. AE adjustment 3. Leading edge non-image width adjustment (LE_BLANK) 4. Image leading edge margin adjustment (REGIST) 5. Primary charging output voltage correction (PRIMARY) 6. APVC measurement current correction (IP_OFST) 7. Voltage correction for measurement of APVC (PW_OFST) 8. Current correction for measurement of APVC (IP_ADJ) 9. Ratio fine adjustment (LENS_ADJ) 10. Pre-exposure lamp output adjustment (PREX_LP)
Drum unit	1. Primary charging output voltage correction (PRIMARY) 2. APVC measurement current correction (IP_OFST)
ADF controller PCB	1. Original leading edge stop position adjustment

*1: If you have replaced the composite power supply PCB, check copy images using the Test Sheet; if (and only if) an image fault is found, adjust the intensity of the scanning lamp and execute AE adjustment.

Table 2-6

2. Adjusting the Intensity of the Scanning Lamp

You must perform this adjustment whenever you have replaced any of the following:

- DC controller PCB
- Composite power supply PCB (See p. 2-37.)
- Scanning lamp

Caution:

If you have performed this adjustment, be sure to perform AE adjustment.

Making Adjustments

- If you have replaced the DC controller PCB or the composite power supply PCB,

1) Select '38' in service mode.
   - The display will indicate '38'.
2) Press the Copy Start key.
   - The existing setting will flash.
3) Enter the value recorded on the service label using the +/- key.
4) Press the AE key to store the new setting.

- If you have replaced the scanning lamp,

1) Set the Density correction dial (VR107) to the middle.

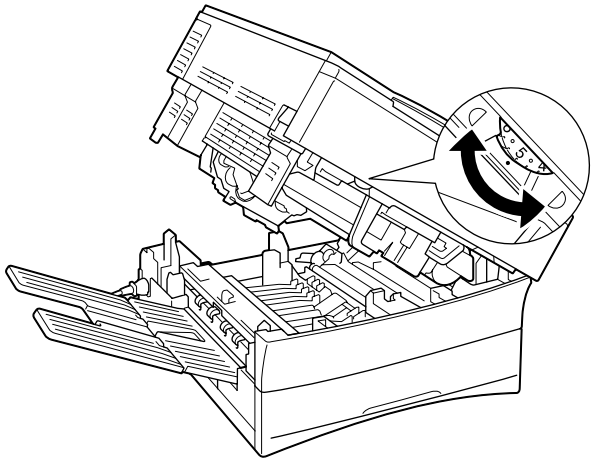


Figure 2-61

2) Turn off the AE mechanism, and set the Copy Density Adjustment lever on the control panel to the middle.
3) Place the Test Sheet on the copyboard.
4) Select '38' in service mode.
   - The display will indicate '38'.
5) Press the Copy Start key.
   - The existing setting will flash.

6) Change the setting using the +/- key until gray scale No. 9 is barely visible by way of adjusting the intensity of the scanning lamp.
   • The setting may be between 0 and 99.
   • For each '1', the lamp supply voltage will change about 0.15 V (for 120V model) or about 0.30 V (for 220/240V model).
   • A higher setting will decrease the intensity of the lamp, thereby making copies darker.
   • A lower setting will increase the intensity of the lamp, thereby making copies lighter.

3. AE Adjustment

Perform this adjustment if you have replaced any of the following:

- DC controller PCB
- Composite power supply PCB (See p.2-37)
- AE sensor PCB
- Scanning lamp

Making Adjustments

Preparatory Work

- Obtain a newspaper which is more or less even in density. (Avoid ones with photos or large text characters.)
- Obtain five sheets of white sheets of paper
- Make sure that the intensity of the scanning lamp has been adjusted when you have replaced the scanning lamp.
- Set the density correction dial (VR107) to the middle setting.

1) Select '40' in service mode.
   - The display will indicate '40'.
2) Press the Copy Start key.
   - The scanner will move forward, and the scanning lamp will turn on.
3) Turn VR103 on the DC controller PCB fully clockwise.

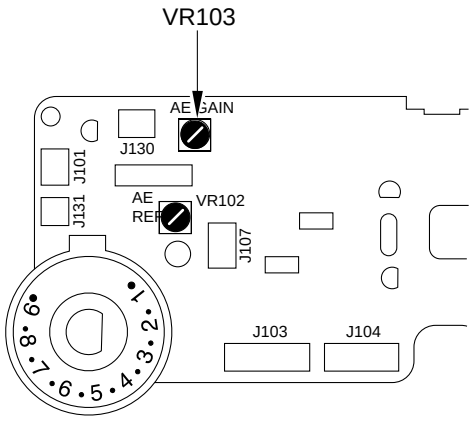


Figure 2-62

4) Place a newspaper on the copyboard, and close the copyboard cover.
5) Turn VR102 so that the reading in the display is 'A3' through 'Ad'.

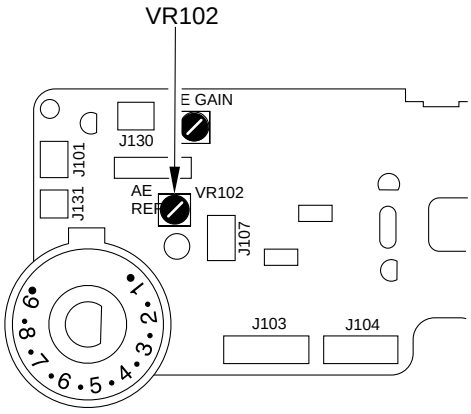


Figure 2-63

6) Remove the newspaper from the copyboard, and place five sheets of copy paper on the copyboard glass in its place; then, close the copyboard cover.
7) Turn VR103 on the DC controller PCB so that the reading on the control panel is '52' through '5c'.

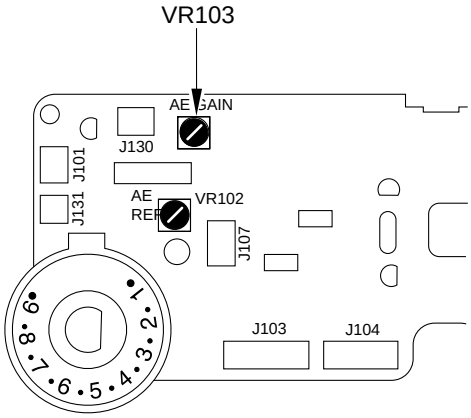


Figure 2-64

8) Repeat steps 4) through 7) so that the values of both VR102 and VR103 are target values.

Caution:

If you cannot set VR102 and VR103 to the target values at the same time, turn VR103 fully counterclockwise, and go back to step 4) and make adjustments once again.

9) Make a copy, and check to make sure that the density of characters is adequate.
   • If the copy is foggy or its characters are too light, go back to step 1) and start over.
   • If there is no change after adjustment for a second time, use the density correction dial (VR107).

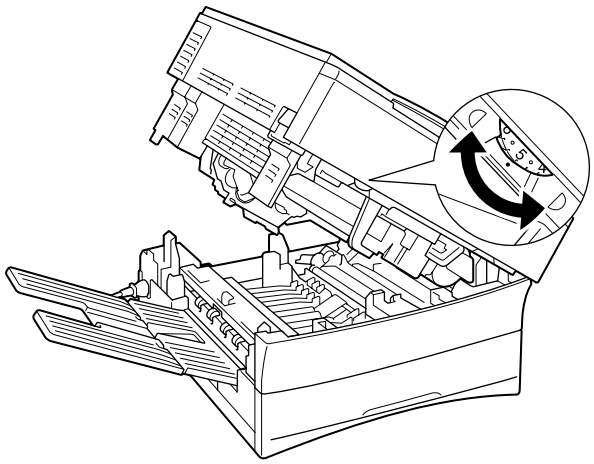


Figure 2-65

4. Primary Charging Output Voltage Correction (PRIMARY)

Perform this adjustment whenever you have replaced any of the following:
- DC controller PCB
- Drum unit

Making Adjustments
- If you have replaced the DC controller PCB,

1) Select '32' in service mode.
   - The display will indicate '32'.
2) Press the Copy Start key.
   - The existing setting will flash.
3) Enter the value of 'PRIMARY' recorded on the service label using the +/- key.
4) Press the AE key to store the new value.

- If you have replaced the drum unit, execute ‘Installation/drum unit replacement mode’ (U7) in the user mode.

5. APVC Measurement Current Correction (IP_OFST)

Perform this adjustment whenever you have replaced any of the following:
- DC controller PCB
- Drum unit

Making Adjustments
- If you have replaced the DC controller PCB,

1) Select '33' in service mode.
   - The display indicate '33'.
2) Press the Copy Start key.
   - The existing setting will flash.
3) Enter the value of 'IP_OFST' recorded on the service label using the +/- key.
4) Press the AE key to store the new value.

- If you have replaced the drum unit, execute ‘Installation/drum unit replacement mode’ (U7) in the user mode.

6. Voltage Correction for Measurement of APVC (PW_OFST)

Perform this adjustment if you have replaced any of the following:
- DC controller PCB
- Composite power supply PCB

Making Adjustments

1) Select '34' in service mode.
   - The display will indicate '34'.
2) Press the Copy Start key.
   - The existing setting will flash.
3) Enter the value of 'PW_OFST' recorded on the service label using the +/- key.
4) Press the AE key to store the new value.
5) Execute 'U7' in user mode (installation/drum replacement mode).

- If you have replaced the composite power supply PCB,

1) Select '34' in service mode.
   - The display will indicate '34'.
2) Press the Copy Start key.
   - The existing setting will flash.
3) Enter the value of 'PW_OFST' indicated on the new composite power supply PCB using the +/- key.

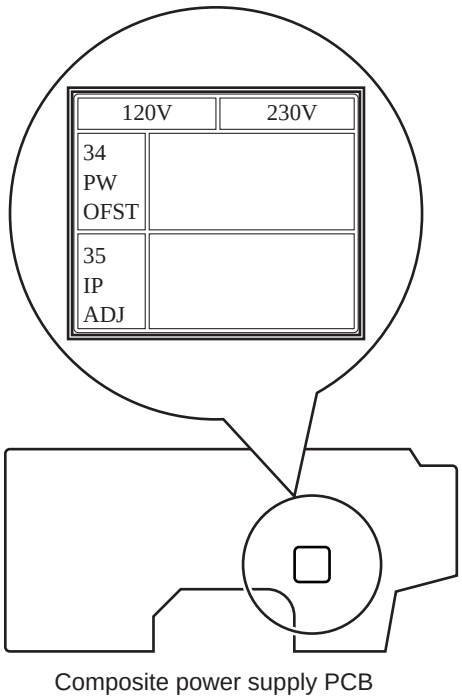


Figure 2-66

4) Press the AE key to store the value.
5) Record the new value on the service label.
6) Execute 'U7' in user mode (installation/drum replacement mode).

7. Current Correction for Measurement of APVC (IP_ADJ)

Perform this adjustment whenever you have replaced any of the following parts:

- DC controller PCB
- Composite power supply PCB

Making Adjustments

- If you have replaced the DC controller PCB,

1) Select '35' in service mode.
   - The display will indicate '35'.
2) Press the Copy Start key.
   - The existing setting will flash.
3) Enter the value of 'IP_ADJ' recorded on the service label using the +/- key.
4) Press the AE key to store the new setting.

- If you have replaced the composite power supply PCB,

1) Select '35' in service mode.
   - The display will indicate '35'.
2) Press the Copy Start key.
   - The existing setting will flash.
3) Enter the value of 'IP_ADJ indicated on the new composite power supply PCB using the +/- key.

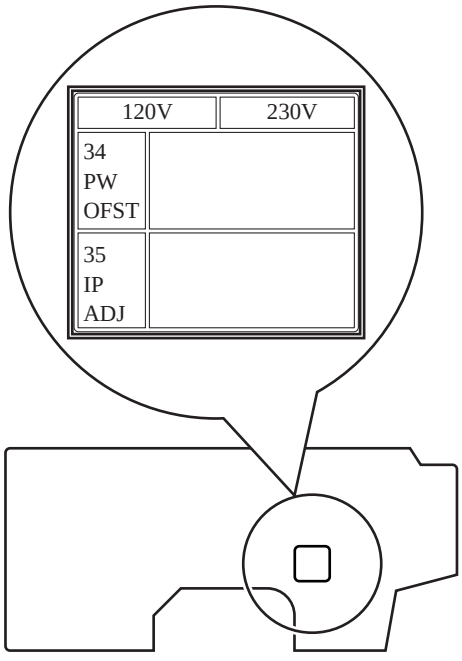


Figure 2-67

4) Enter the AE key to store the new setting.
5) Record the new value on the service label.

8. Ratio Fine Adjustment (LENS_ADJ)

Perform this adjustment whenever you have replaced the following:
- DC controller PCB

Making Adjustments
- When you have adjusted the DC controller PCB,

1) Select '36' in service mode.
   - The display will indicate '36'.
2) Press the Copy Start key.
   - The existing setting will flash.
3) Enter the value of 'LENS_ADJ' indicated on the service label using the +/- key.
4) Press the AE key to store the new value.

9. Pre-Exposure Lamp Output Adjustment (PREX_LP)

Perform this adjustment whenever you have replaced any of the following:
- DC controller PCB
- Pre-exposure lamp

Making Adjustments
- If you have replaced the DC controller PCB,

1) Select '37' in service mode.
   - The display will indicate '37'.
2) Press the Copy Start key.
   - The existing setting will flash.
3) Enter the value of 'PREX_LP' recorded on the service label using the +/- key.
4) Press the AE key to store the new value.
5) Execute 'U7' in user mode (installation/drum replacement mode).

- If you have replaced the pre-exposure lamp,

1) Select '37' in service mode.
   - The display will indicate '37'.
2) Press the Copy Start key.
   - The existing setting will flash.
3) Enter the value of 'PREX_LP' recorded on the label attached to the new pre-exposure lamp using the +/- key.
4) Press the AE key to store the new value.
5) Execute 'U7' in user mode (installation/drum replacement mode).

10. Checking the Photointerrupters

1) Set the meter range to 12 VDC.
2) Connect the - probe [1] of the meter to the grounding terminal [2].

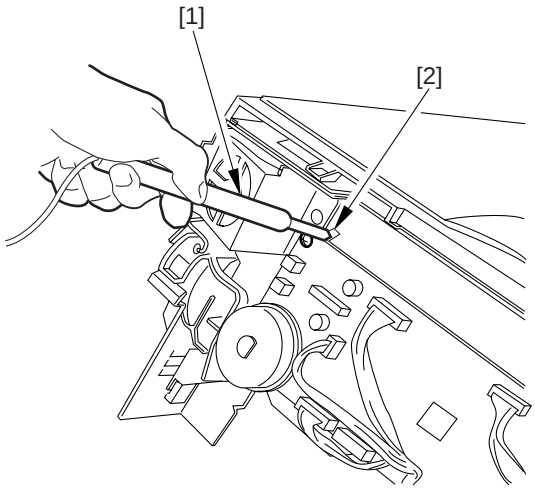


Figure 2-68

3) Make checks as instructed.

Reference:

The photointerrupers other than those shown in Table 2-9 are connected in a matrix, hence the omission from the table.

Sensor	Connector	Checks		Voltage (approx.)
PS1 Scanner home position sensor (SCHP)	J101-3	During standby, move the scanner by hand.	When the light-blocking plate is at PS1, When the light-blocking plate is not at PS1,	5V 0V
PS2 Lens home position sensor (LHP)	J109-10	During standby, move the lens mount by hand.	When the light-blocking plate is at PS2, When the light-blocking plate is not at PS2,	5V 0V
PS4 Vertical path roller paper sensor (PDP)	J132-5	During standby, move the detecting lever by hand.	When the light-blocking plate is at PS4, When the light-blocking plate is not at PS4,	5V 0V
Q751 Pre-registration roller paper sensor (RPD)	J108-1	During standby, move the detecting lever by hand.	When the light-blocking plate is at Q751, When the light-blocking plate is not at Q751,	0V 5V

Table 2-9

CHAPTER 3 ARRANGEMENT AND FUNCTIONS OF ELECTRICAL PARTS

A. Sensors and Solenoids

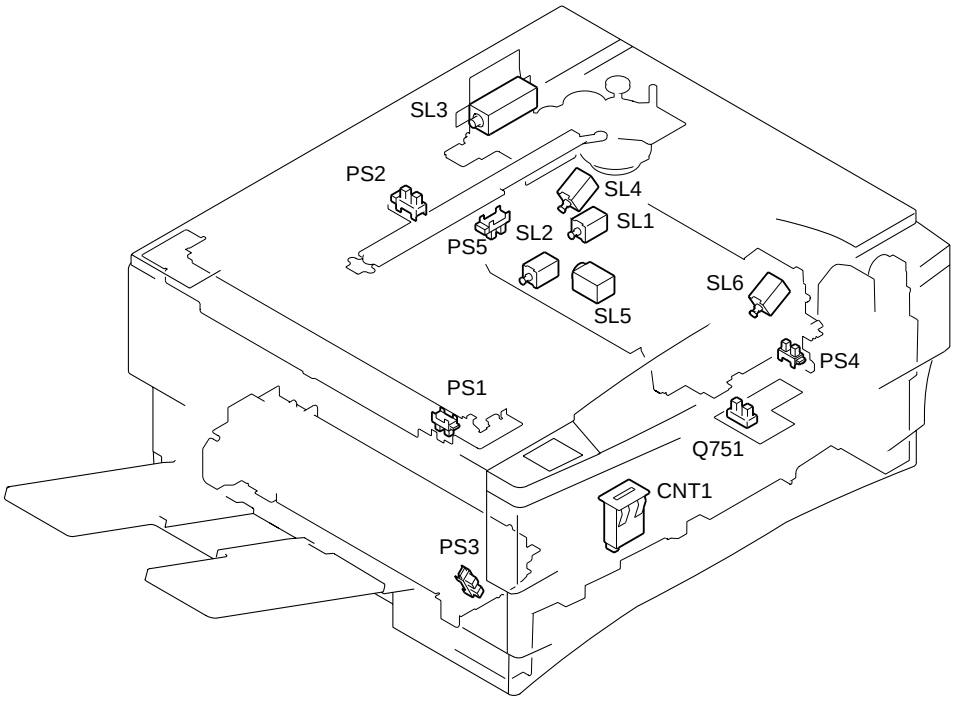


Figure 3-1

Symbol	Name	Notation	Description	Remarks
PS	Photointerrupters	PS1	Scanner home position detection	
		PS2	Lens home position detection	
		PS3	Delivery assembly paper detection	
		PS4	Vertical path assembly paper detection	
		PS5	Waste toner detection	
		Q751	Pre-registration roller paper detection	
CNT	Counter	CNT1	Total copy counter	
SL	Solenoid	SL1	Pickup clutch solenoid	
		SL2	Registration clutch solenoid	
		SL3	Lens solenoid	
		SL4	Multifeeder pickup solenoid	
		SL5	Cassette pickup solenoid	
		SL6	Primary charging roller cleaning solenoid	

B. Switches

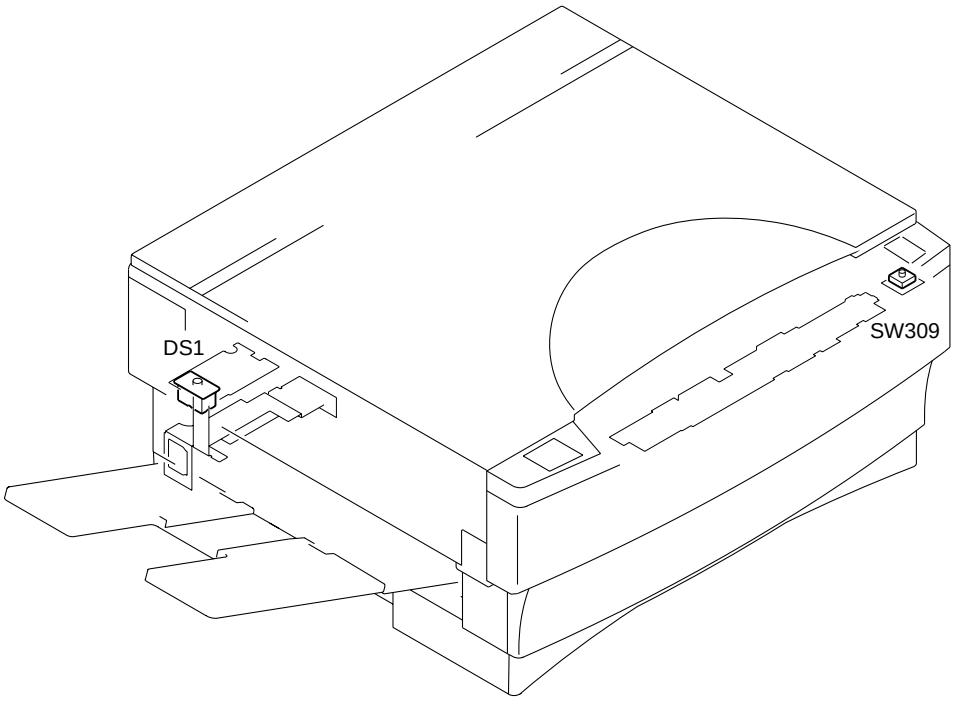
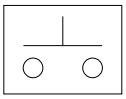


Figure 3-2

Symbol	Name	Notation	Description	Remarks
	Switch	DS1 SW309	Door switch Power switch	

C. Lamp, Heater, Motor, Etc.

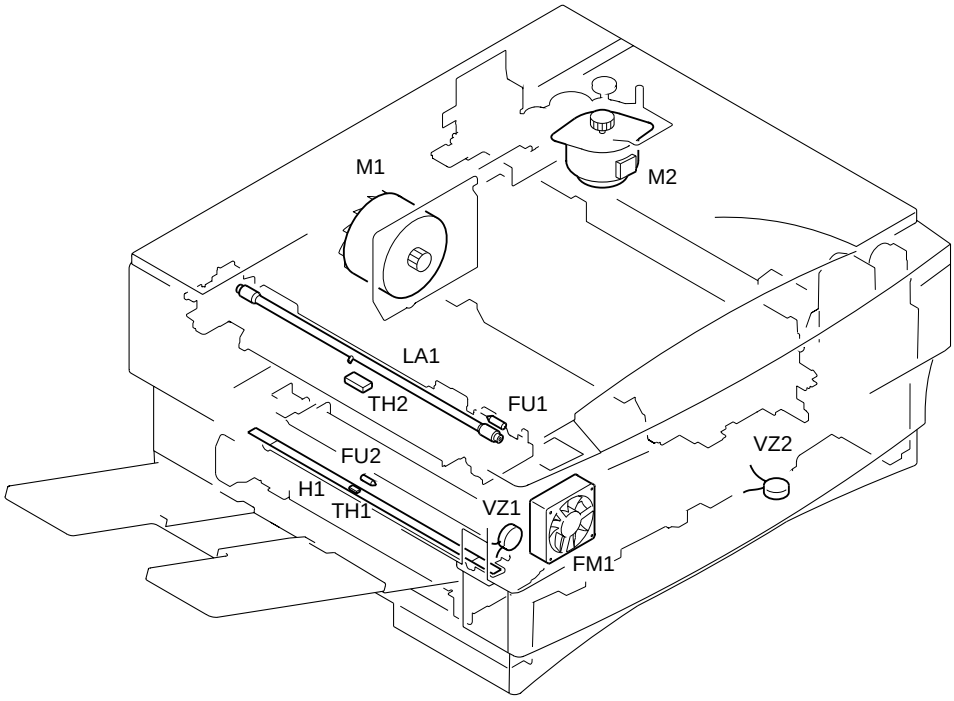


Figure 3-3

Symbol	Name	Notation	Description	Remarks
	Lamp	LA1	Scanning lamp	
	Heater	H1	Fixing heater	
M	Motor	M1 M2	Main motor Scanner/lens drive motor	
	Fan motor	FM1	Scanner cooling fan	
	Thermistor	TH1 TH2	Fixing heater temperature detection Scanner temperature detection	
	Thermal fuse	FU1 FU2	Lamp overheating detection Fixing heater overheating detection	
	Varistor	VZ1 VZ2	Fixing film varistor Transfer guide varistor	

D. PCBs

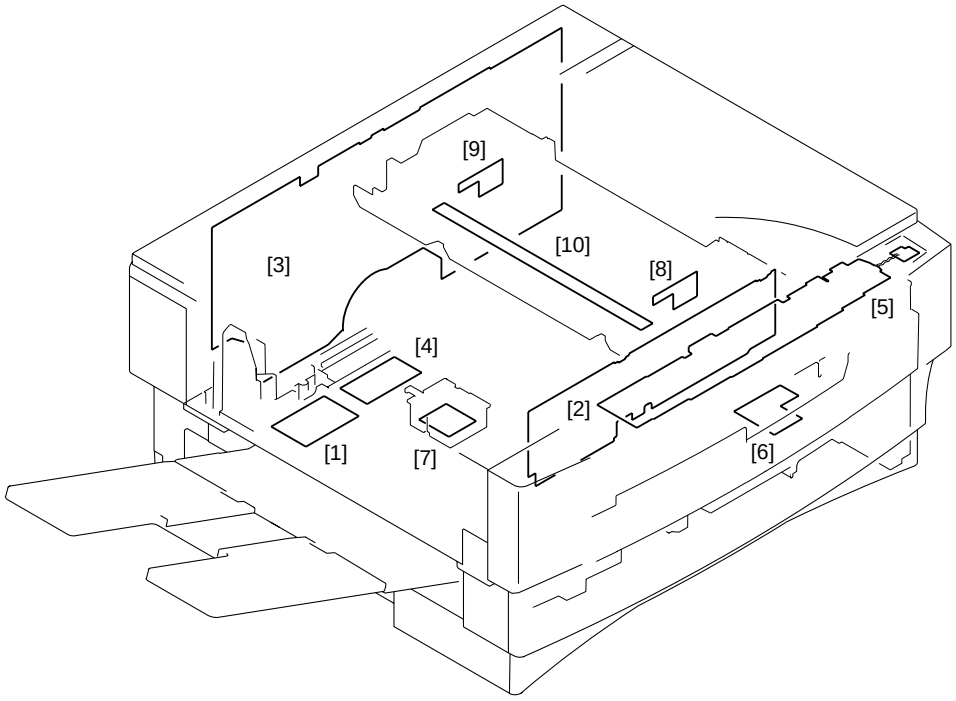


Figure 3-4

Ref.	Name	Description
[1]	Noise filter PCB	Removes noise from the power supply.
[2]	DC controller PCB	Controls sequence of operations.
[3]	Composite power supply PCB	Supplies DC power, generates high voltage, and controls the scanning lamp.
[4]	High-voltage contact PCB	Makes an electrical connection between the machine top and bottom.
[5]	Control panel PCB	Provides copying insurrections/indications.
[6]	Sensor PCB	Detects paper in front of the registration roller.
[7]	AE sensor PCB	Detects the density of originals.
[8]	Blanking PCB (front)	Used for blanking exposure.
[9]	Blanking PCB (rear)	Used for blanking exposure.
[10]	Pre-exposure PCB	Used for pre-exposure.

E. ADF

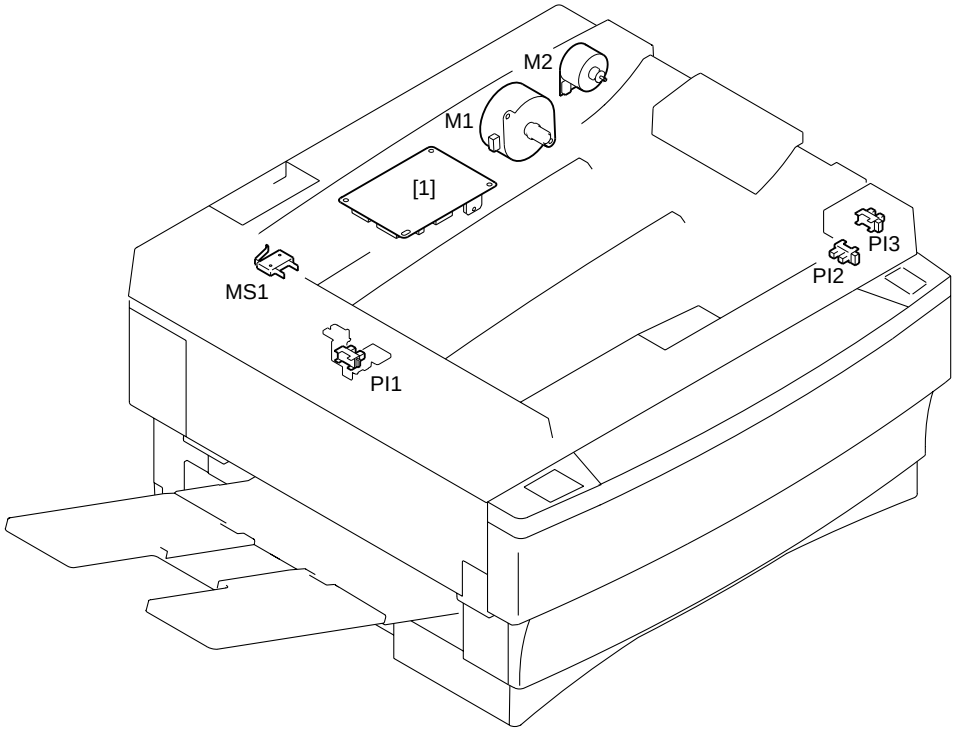


Figure 3-5

Symbol	Name	Notation	Description	Remarks
PS	Photointerrupter	PI1 PI2 PI3	Delivery paper detection Resistration roller paper detection Original placement detection	
	Microswitch	MS1	ADF open/close switch	
M	Motor	M1 M2	Belt motor Pickup motor	
[1]	ADF controller PCB		Controls sequence of operations	

F. Variable Resistors (VR) and Check Pins by PCB

Of the variable resistors (VR) and check pins, those needed in the field are discussed herein. Those not found in the discussions are for the factory only, requiring special tools and adjustment to an extremely accuracy. Do not touch them in the field.

Caution:
VRs that may be used in the field .....
VRs that must not be used in the field .....

1. DC Controller PCB

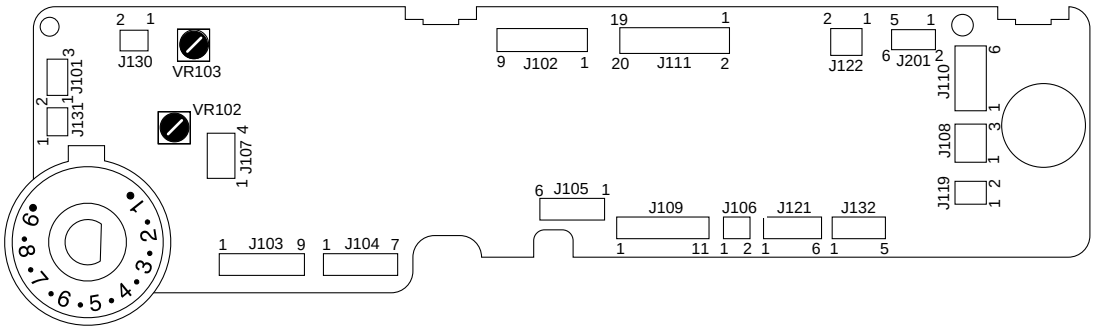


Figure 3-6

2. Composite Power Supply PCB

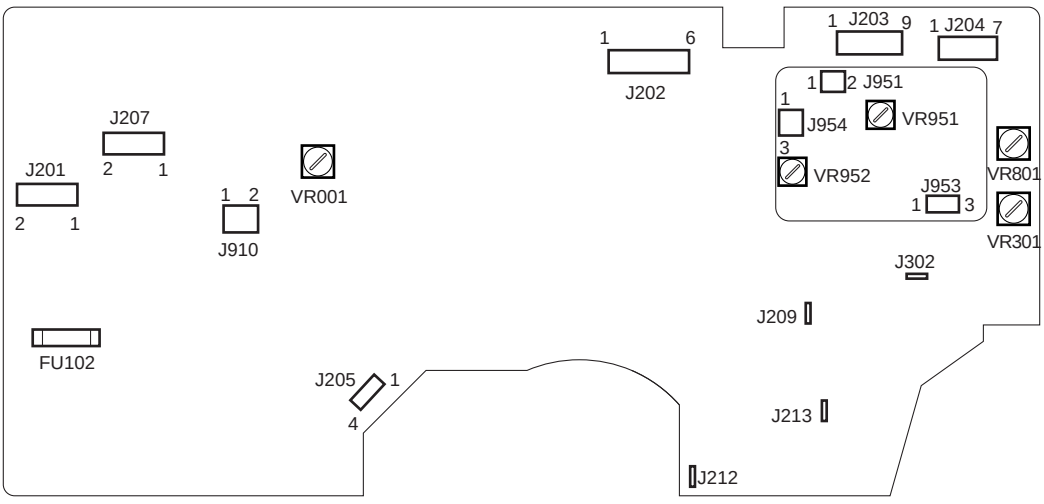


Figure 3-7

3. ADF Controller PCB

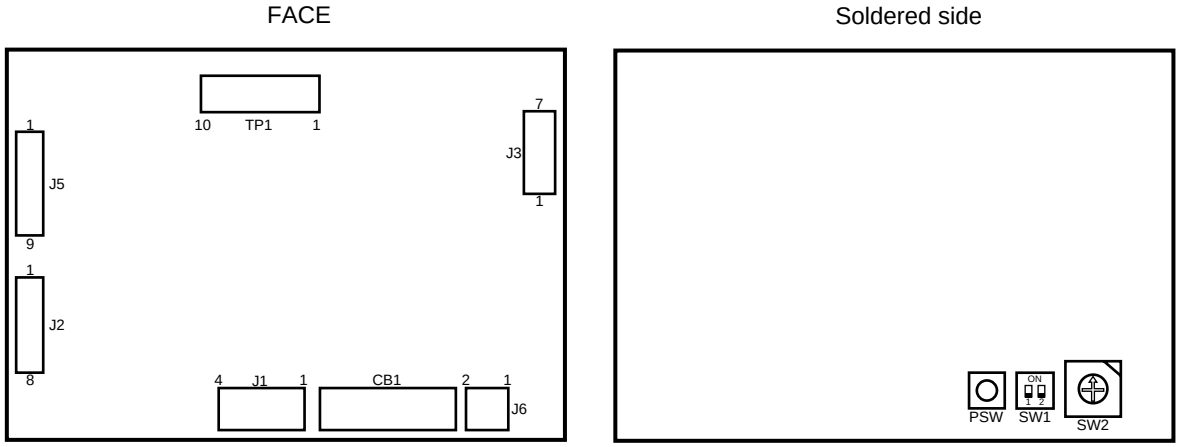


Figure 3-8

CHAPTER 4 SERVICE MODE

A. Outline

The machine's service mode is divided into the following four types:

Notation	Item
30	Adjustment mode
40	Operation/inspection mode
50	Machine settings mode
60	Counter mode

Table 4-1

B. Using Service Mode

1. Starting Service Mode

1) Open the machine's top unit, and remove the two screws [1]; then, detach the front upper cover [2].

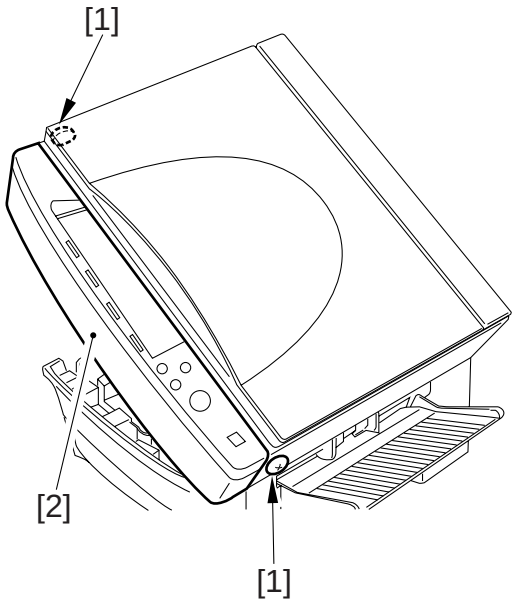


Figure 4-1

Caution:

A flexible cable for the control panel is connected to the front upper cover. Disconnect the cable from the DC controller.

2) Close the machine's top unit, and connect the flexible cable from the control to the DC controller PCB; then, turn on the power switch.
3) Short JP103 and JP104 on the DC controller PCB with a screwdriver.
   • The display will indicate 'F'.

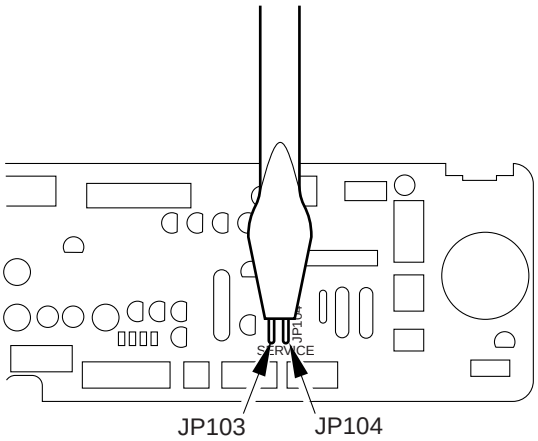


Figure 4-2

4) While the display indicates 'F', stop shorting JP103 and JP104.

2. Ending Service Mode

1) Press the Clear/Stop key.

3. Selecting an Item

1) While the display is indicating 'F', press the +/- key to select the item to check or adjust.
   • The 10s digit will flash.
2) Press the Copy Start key to start the item.

4. Clearing the Error Code from Memory

If 'E000', 'E001', 'E002', or 'E003' is indicated, remove the cause of the error, and clear the memory.

1) Turn on the power while shorting JP103 and JP104 on the DC controller PCB with a screwdriver.
   • The display will indicate 'F'.

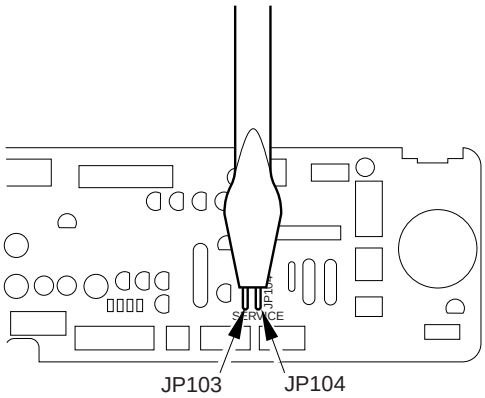


Figure 4-3

2) Turn off and then on the power switch to check the copying operation.

Caution:

When a fault associated with 'E000', 'E001', 'E002', or 'E003' is detected, the power will automatically turn off. It will still turn off even when turned on without removing the fault.
To find out which code turned off the power, disconnect J207 from the composite power supply PCB, and turn on the power.
Figure 4-4 shows the label attached behind the front upper cover. At the factory, each individual machine is adjusted, and its adjustment values are recorded on the label.
If you have entered any new value in the field, be sure to record it on the label. If you have replaced the DC controller PCB, be sure to enter the values recorded on the label in service mode.
If you have replaced the drum unit, composite power supply PCB, or pre-exposure PCB, on the other hand, be sure to enter the values recorded on the label of the appropriate part. Then, record these values on the service label.

30	REGIST				
31	LE_BLANK				
32	PRIMARY				
33	IP_OFST				
34	PW_OFST				
35	IP_ADJ				
36	LENS_ADJ				
37	PREX_LP				
38	LAMP_ADJ				

FB5-2777

Figure 4-4

C. Adjustment Mode (30)

1) Press the +/- key to select an item, and press the Copy Start key.
   • The existing setting of the item will flash.
2) Press the +/- key to change the settings.
3) Press the AE key to store the new setting.
   • The setting will stop flashing and remain on.
   • A press on the Copy Start key will start copying operation.
4) As necessary, press the Clear/Stop key to return to item selection.

Caution:

If you have changed the setting of '34' or '37', be sure to execute 'U7' in user mode (installation/drum replacement mode).

Notation	Item	Settings	Description
30	Leading edge margin adjustment (REGIST)	0-99	A higher setting will delay the copy paper in relation to the image, reducing the margin. Unit: 0.24 mm
31	Leading edge non-image width adjustment (LE_BLANK)	0-99	A higher setting will increase the leading edge non-image width. Unit: 0.24 mm
32	Primary charging output voltage correction (PRIMARY)	0-30	Use it to correct the output voltage determined by APVC. (If you have replaced the drum unit, be sure to enter the value recorded on the label.)
33	APVC measurement current correction (IP_OFST)	0-99	Correct the current value for APVC measurement. (If you have replaced the drum unit, be sure to enter the value recorded on the label.)
34	APVC measurement voltage correction (PW_OFST)	0-30	Use it to correct the level of voltage applied during APVC measurement. (If you have replaced the composite power supply PCB, enter the value recorded on the PCB.)
35	APVC measurement current correction (IP_ADJ)	0-30	Use it to correct the level of current measured during APVC measurement. (If you have replaced the composite power supply PCB, enter the value recorded on the PCB.)
36	Ratio fine adjustment (LENS_ADJ)	0-30	Use it to correct the lens position. (Do not use it in the field.)
37	Pre-exposure lamp output adjustment (PREX_LP)	0-99	Use it to adjust the intensity of the pre-exposure lamp. (If you have replaced the pre-exposure lamp, enter the value recorded on the label attached to the lamp PCB.)
38	Lamp intensity adjustment (LAMP_ADJ)	0-99	Use it to adjust the intensity of the scanning lamp. Unit: 0.15 V (approx.; 120 V) 0.30 V (approx.; 220/240 V)

Table 4-2

D. Operation/Inspection Mode (40)

1) Select an appropriate item using the +/- key; then, press the Copy Start key to execute it.
   • The item is flashed.
   • If the mode is designed to stop automatically, item selection will automatically return at the end.
   • As necessary, press the Clear/Stop key to return item selection.

Notation	Item	Description
40	AE adjustment mode	The main motor rotates, and the scanner moves forward. The halogen lamp will turn on, and the reading of the AE sensor will appear in the display.
41	Toner supply mode	The developing assembly is supplied with toner. (If you have replaced the developing assembly, execute this mode so that toner will be supplied from the toner cartridge to the developing assembly.) • In about 10 to 60 sec, the operation will stop automatically.
42	Back-up RAM clear	(1) Press the +/- key to select '42'. • '4' will flash in the 10s digit. (2) Press the Copy Start key. • '42' will flash. (3) Press the AE key. • The display will indicate 'EE'. (4) Press the Copy Start key. • '4' in the 10s digit will flash. (5) Turn off and then on the power switch. • The back-up RAM will be cleared, and the settings will be returned to defaults. Reference: If you have to stop the RAM clear mechanism, press the Clear/Stop key before starting step (4). The RAM will be cleared when step (4) is executed.

Table 4-3

E. Machine Settings Mode (50)

1) Press the +/- key to select an item, and press the Copy Start key.
   • The setting will flash.
2) Press the +/- key to change the setting.
3) Press the AE key to store the new setting.
   • The setting will stop flashing, and remain on.
4) As necessary, press the Clear/Stop key to return to item selection.

Notation	Item	Description
50	Copy count upper limit setting	The upper limit may be between 1 and 100. Setting: 0 to 99 (If set to '0', however, the upper limit will be 100.)
51	Density adjustment mode at power-on	Select AE mode or manual mode for density adjustment at power-on: • 0: AE • If other than '0', manual mode.

Table 4-4

F. Counter Mode (60)

1) Press the +/- key to select an item, and press the Copy Start key.
   • The counter reading will be indicated.
2) As necessary, press the Clear/Stop key to return to item selection.

Notation	Item	Description
60	Counter for the drum unit currently in use	Unit: 1000 (sheets)
61	Counter for the most recent drum unit	Unit: 1000 (sheets)
62	Counter for the second most recent drum unit	Unit: 1000 (sheets)

Table 4-5

Reference:

When '74' (installation toner stirring mode under 'U7'' of user mode) is executed, the counter reading entered under '73' (preceding mode) will be entered to item 60. The counter readings so far retained will shift to represent their respective previous drum units.

(In other words, the count reading entered when executing 'U7' will be for item 60; count reading for item 60 will be for item 61; count reading for item 61 will be for item 62; count reading for item 62 will be deleted.)

CHAPTER 5 SELF DIAGNOSIS

A. Self Diagnosis

The microprocessor on the machine's DC controller PCB is equipped with a self diagnostic mechanism that checks the condition of the machine (particularly, sensors) and indicates an error code in the count/ratio indicator on the control panel upon detection of a fault.

In the case of 'E001', 'E0' and '01' are flashed alternately.

Code	Cause	Description
E000	• The thermistor (TH1) is faulty. • The fixing heater (H1) is faulty. • The thermal fuse (FU2) has blown. • The DC controller PCB is faulty. • The composite power supply PCB is faulty.	• The temperature detected by the thermistor (TH1) does not reach 65°C 1.5 sec after the Copy Start key has been pressed. • The temperature detected by the thermistor (TH1) does not reach 150°C 4 sec after the Copy Start key has been pressed.
E001	• The thermistor (TH1) is faulty. • The DC controller PCB is faulty. • The composite power supply PCB is faulty.	• The temperature detected by the thermistor (TH1) exceeds 230°C. • The temperature detected by the thermistor (TH1) exceeds by 30°C or more. • The temperature detected by the thermistor (TH1) registers an increase of 100°C or more within 1 sec. • The temperature detected by the thermistor (TH1) registers an increase of 40°C or more after it has reached 100°C during standby.
E002	• The thermistor (TH1) is faulty. • The fixing heater (H1) is faulty. • The thermal fuse (FU2) has blown. • The DC controller PCB is faulty. • The composite power supply PCB is faulty.	• The temperature detected by the thermistor (TH1) has exeeded 150°C during copy operation and maximum power is applied for 10 to 14 sec thereafter.
E003	• The thermistor (TH1) is faulty. • The fixing heater (H1) is faulty. • The thermal fuse (FU2) has blown. • The DC controller PCB is faulty. • The composite power supply PCB is faulty.	• The temperature detected by the thermistor (TH1) drops to and remains 150°C or lower after it has reached 160°C.
E010	• The main motor (M1) is fault. • The DC controller PCB is faulty.	• The rotation of the main motor deviates (indicated by MLOCK=0) for 1 sec or more while the main motor drive signal (MMD=1) is being generated.
E030	• The counter has an open circuit.	• The counter drive signal is not generated when the counter is driven. • The counter drive signal is not '0' when the counter is not driven.

Code	Cause	Description
E064	• The composite power supply PCB is faulty. • The DC controller PCB is faulty.	• The actual output value of the composite power supply high voltage is different from the setting value twice in succession.
(E202) The keys on the control panel are locked with error code indication.	• The scanner home position sensor (PS1) is faulty. • The scanner/lens drive motor (M2) is faulty. • The DC controller PCB is faulty.	• The scanner home position is not detected within 10 sec after the scanner has turned on. • The scanner does not leave the home position after it has turned on.
E210	• The lens home position sensor (PS2) is faulty. • The scanner/lens drive motor (M2) is faulty. • The lens cable is faulty. • The DC controller PCB is faulty.	• The lens hoe position is not detected after the lens has moved the maximum travel distance. • The lens does not leave the home position after it has turned on.
E220	• The scanning lamp (LA1) is faulty. • The DC controller PCB is faulty. • The composite power supply PCB is faulty.	• The lamp ON detection signal is not detected for 1 sec or more in the presence of the scanning lamp On signal. • The lamp ON detection signal is detected for 1 sec or more in the absence of the scanning lamp ON signal.
E240	• The DC controller PCB is faulty. • The composite power supply PCB is faulty.	• A fault in the communication between DC controller PCB and composite power supply PCB is detected.
E261	• The frequency of the power supply is faulty. • The composite power supply PCB is faulty.	• The interval between zero-cross signals is in excess of the allowed interval.
E400	• Data communication between the copier and the ADF (faulty)	• The communication with the copier is interrupted for 5 sec or more; the communication is monitored at all times.
E803	• The DC controller PCB is faulty. • The composite power supply PCB is faulty.	• During a copying run, the +24 V power deviates from the control value by ±20%.

Caution:

1. If the self-diagnosis has turned on, turn off the power switch to reset the machine.
   In the case of 'E000', 'E001', 'E002', or 'E003', however, the machine must be reset as follows: this consideration is to prevent feeding power to the fixing heater otherwise occurring if the thermistor has an open circuit:
2. In the case of 'E000', 'E001', 'E002', 'E003', or 'E220', the machine will turn off in 1.5 sec for 'E000' through 'E003' and in 2 sec for 'E220'.
3. In the case of 'E000', 'E001', 'E002', or 'E003', perform the following steps:
   1) Turn off the power switch, and short circuit JP103 and JP104 on the DC controller PCB with a screwdriver or the like.
      • The count/ratio indicator on the control panel turns on 'F'.

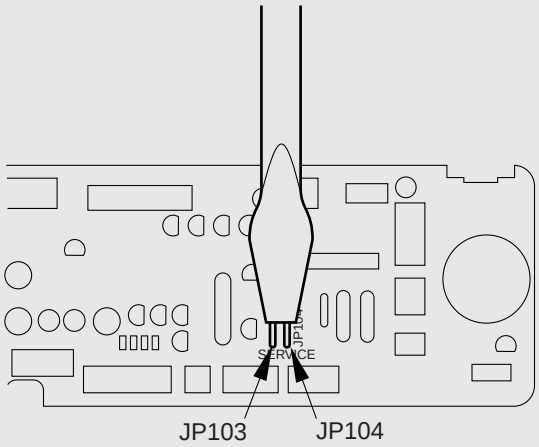


Figure 5-1

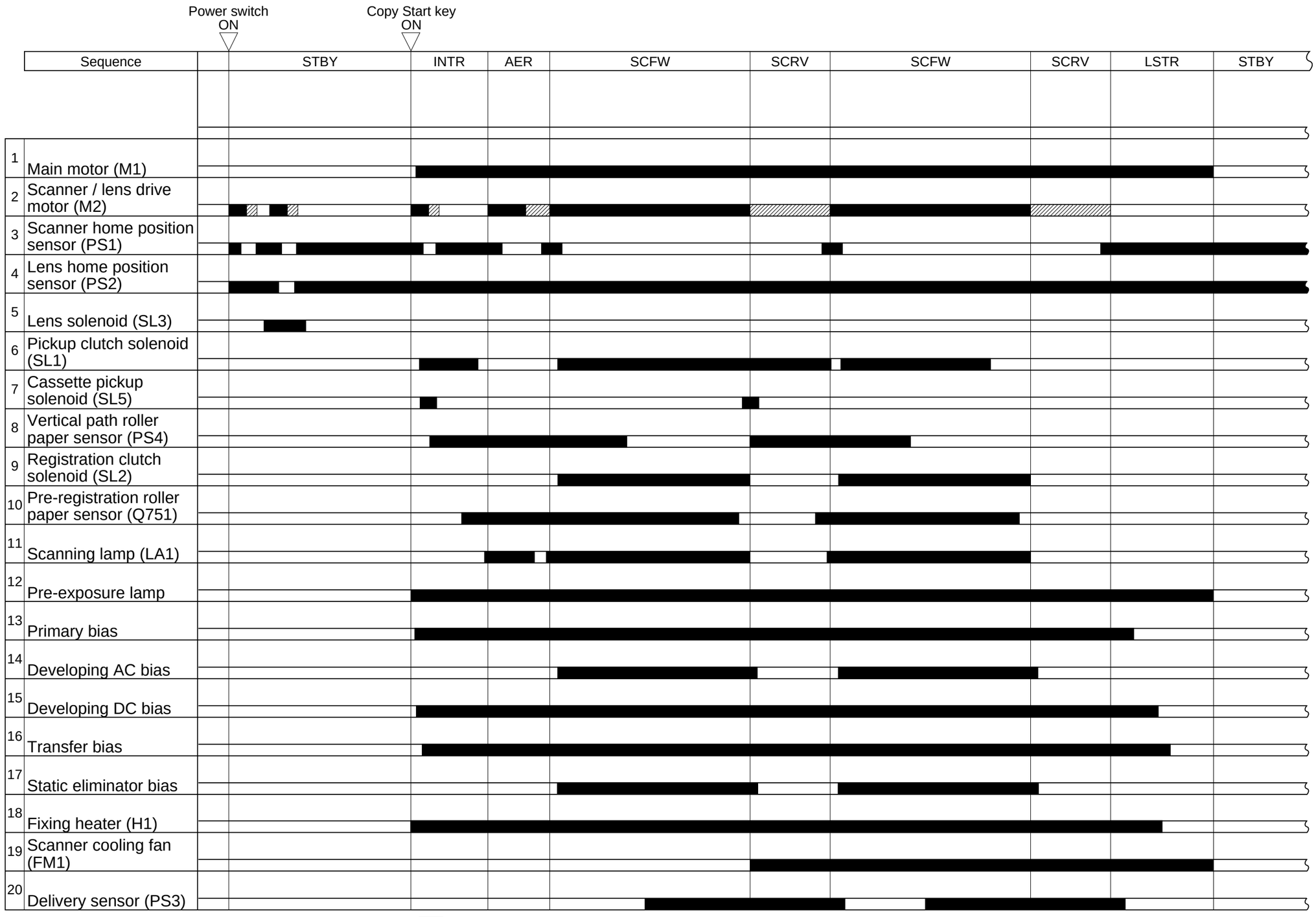
   2) When 'F' has turned on, stop shorting circuit JP103 and JP104.
   3) Turn off and then on the machine.

APPENDIX

A. General Timing Chart

1. Copyboard Type

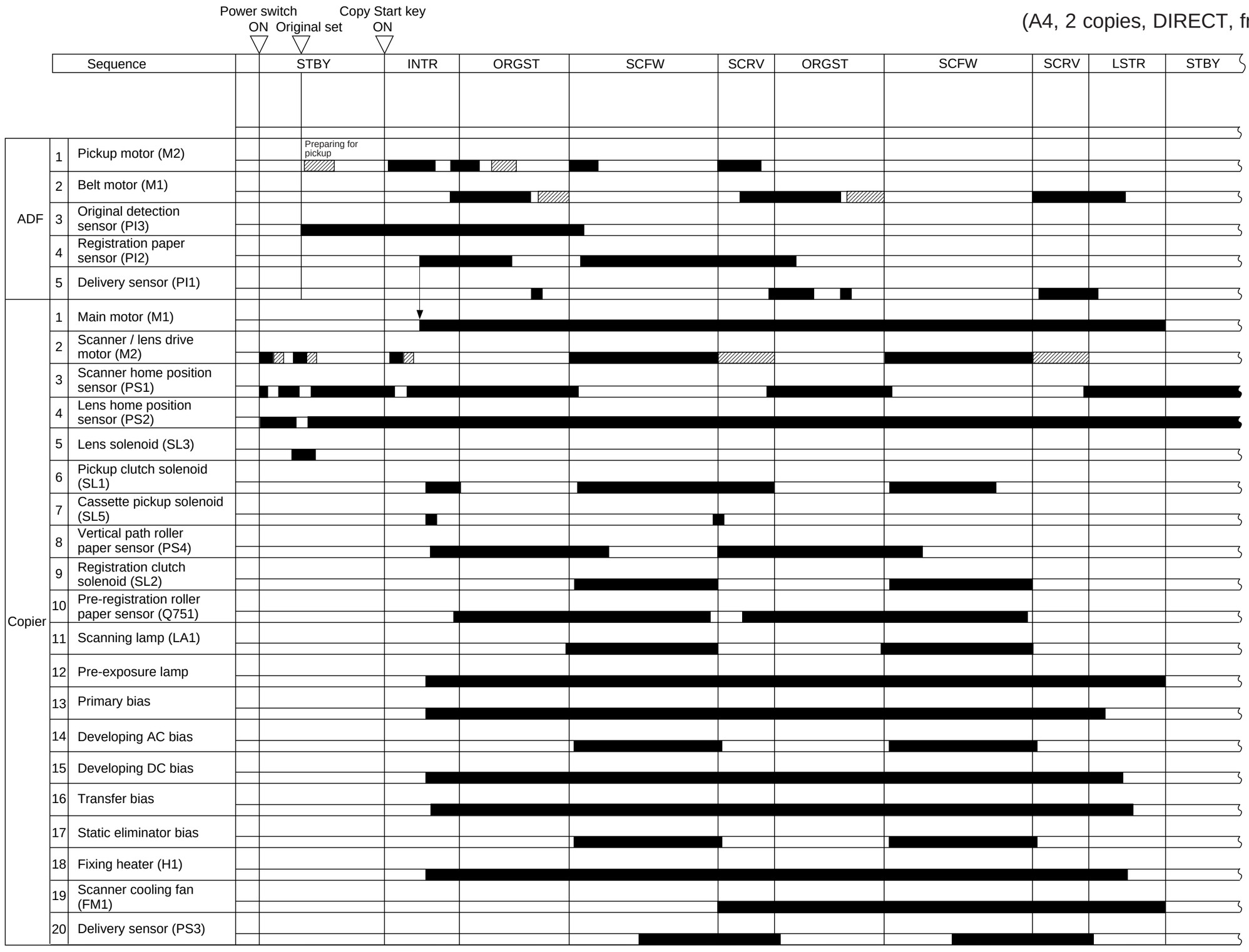
(A4, 2 copies, DIRECT, from cassette)



▨ : Scanner/lens drive motor (reverse)

2. ADF Type

(A4, 2 copies, DIRECT, from cassette)



: Scanner/lens drive motor (reverse)/Pickup motor (reverse)/Belt motor (reverse)

B. Signals and Abbreviations

What follows below is a list of signals and abbreviations used in the chapters of the manual and circuit diagrams.
The abbreviations within parentheses represent analog signals, which cannot be expressed in terms of ‘1’ or ‘0’.

1. Signals

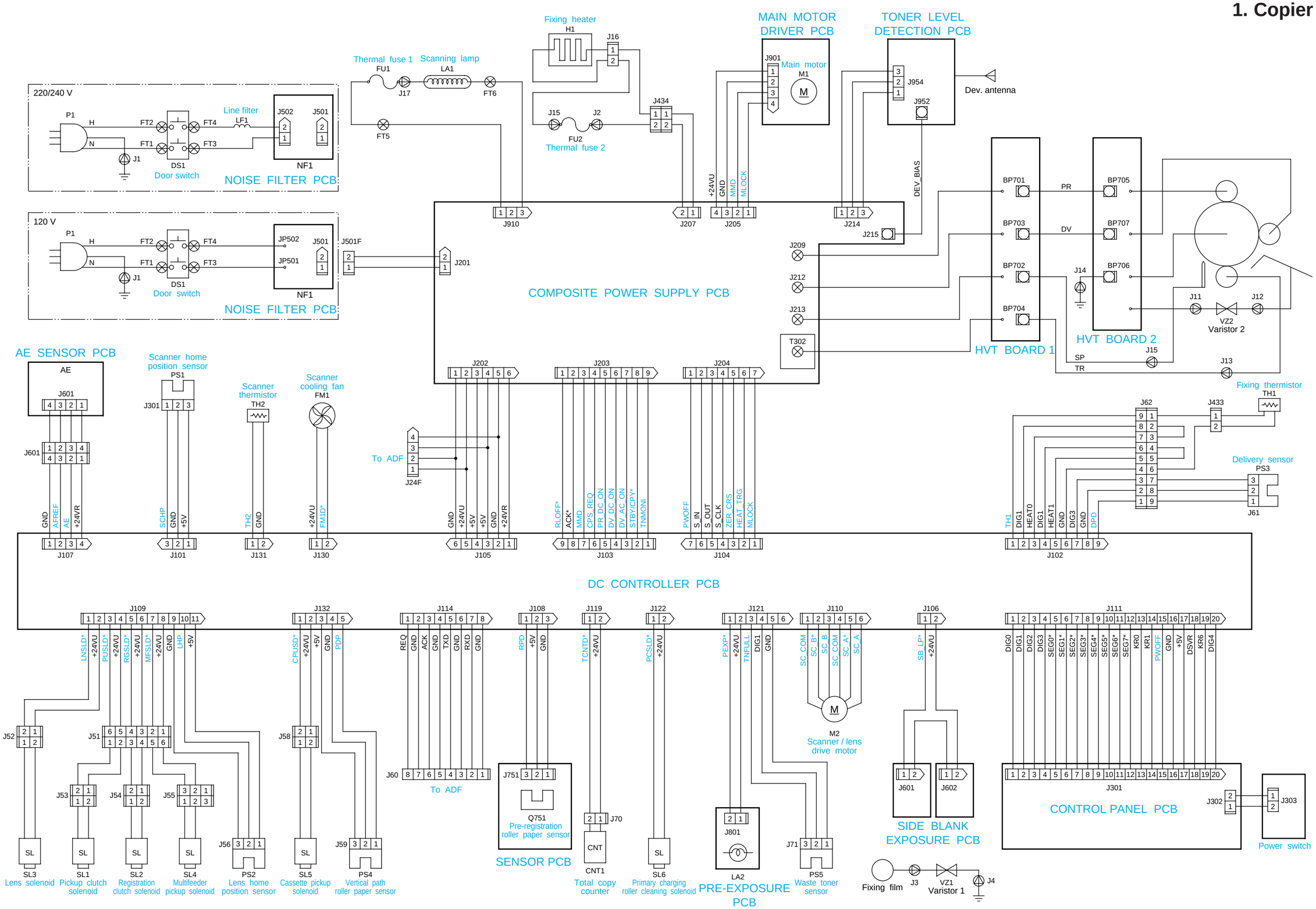
ACBIAS	AC BIAS OSCILLATION signal
[AE]	AE SENSOR OUTPUT signal
AEREF	AE SENSOR REFERENCE signal
BIAS_PWM	DC BIAS CONTROL signal
BIAS_S	DC BIAS MONITOR signal
CLK32K	TRANSFORMER CONTROL signal
CPUSD	CASSETTE PICKUP SOLENOID DRIVE signal
DPD	DELIVERY PAPER DETECTION signal
DV_AC_ON	DEVELOPING AC BIAS ON signal
DV_DC_ON	DEVELOPING DC BIAS ON signal
FM1D	SCANNER COOLING FAN DRIVE signal
HEAT_ERR	FIXING HEATER ERROR signal
HEAT_OFF	FIXING HEATER OFF signal
HEAT_PWM	FIXING HEATER DUTY signal
HEAT_TRG	FIXING HEATER DRIVE signal
LAMP_DETECT	LAMP ACTIVATION DETECTION signal
LAMP_ON	SCANNING LAMP ACTIVATION signal
LHP	LENS HOME POSITION signal
LNSLD	LENS SOLENOID DRIVE signal
MFSLD	MULTIFEEDER PICKUP SOLENOID DRIVE signal
MLOCK	MAIN MOTOR CONSTANT SPEED signal
MMCLK	MAIN MOTOR CLOCK PULSE signal
MMD	MAIN MOTOR DRIVE signal
P_C_S	DC BIAS CURRENT DETECTION signal
PCSLD	DC VOLTAGE MONITOR signal
PDC_PWM	DC BIAS CONTROL signal
PDC_S	DC VOLTAGE MONITOR signal
PDP	VERTICAL PATH ROLLER PAPER DETECTION signal
PEXP	PRE-EXPOSURE LAMP CONTROL signal
PR_DC_ON	PRIMARY CHARGING DC BIAS ON signal
PUSLD	PICKUP CLUTCH SOLENOID DRIVE signal
PWM_1KHz	SCANNING LAMP INTENSITY ADJUSTMENT signal
PWOFF	POWER SWITCH OFF signal
RGSLD	REGISTRATION CLUTCH SOLENOID DRIVE signal
RLOFF	RELAY DRIVE signal
RPD	PRE-REGISTRATION ROLLER PAPER DETECTION signal
SB_LP	SIDE BLANK EXPOSURE LAMP ON signal
SC_A	SCANNER MOTOR PULSE signal A
SC_B	SCANNER MOTOR PULSE signal B
SC_COM	SCANNER MOTOR DRIVE signal
SCHP	SCANNER HOME POSITION signal
TCNTD	TOTAL COPY COUNTER DRIVE signal
T_FEEDBACK	TRANSFER BIAS VOLTAGE DETECTION signal
T_FW_DRV	TRANSFER DC BIAS CONTROL signal
T_FW_ON	TRANSFER DC BIAS ON signal
T_FW_S	TRANSFER CURRENT DETECTION signal
TNFULL	WASTE TONER DETECTION signal
TNMONI	TONER LEVEL signal
T_REV_ON	TRANSFER POSITIVE DC BIAS ON signal
[TH1]	FIXING THERMISTOR signal
[TH2]	SCANNER THERMISTOR signal

2. Abbreviations

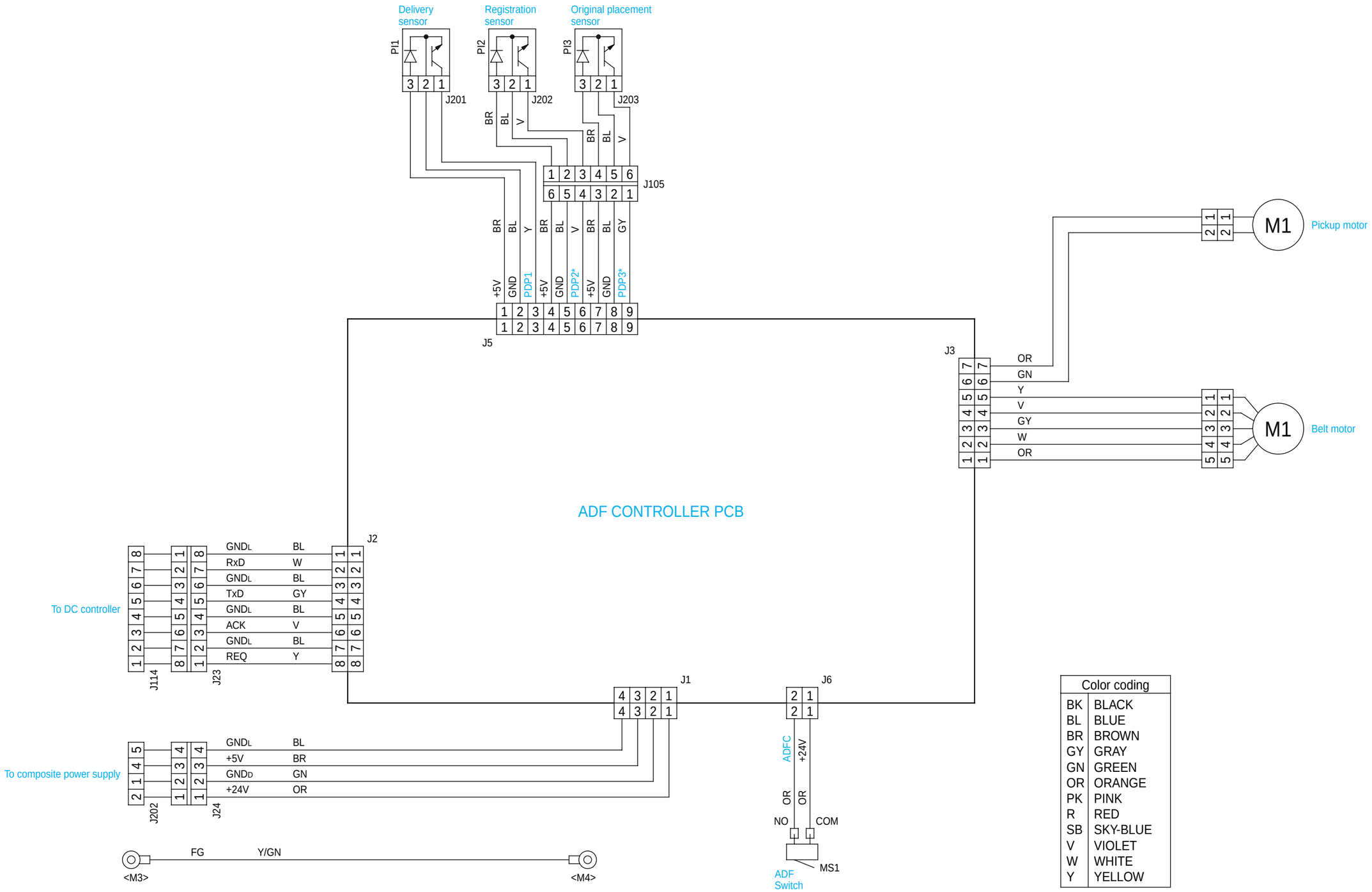
AER	AE (MEASUREMENT) ROTATION
INTR	INITIAL ROTATION
LSTR	LAST ROTATION
SCFW	SCANNER FORWARD
SCRV	SCANNER REVERSE
STBY	STANDBY

C. General Circuit Diagram

1. Copier



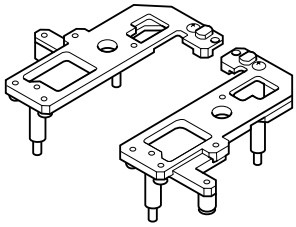
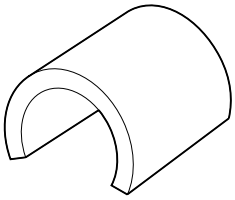
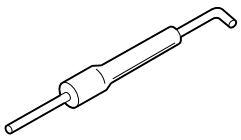
2. ADF



Color coding	
BK	BLACK
BL	BLUE
BR	BROWN
GY	GRAY
GN	GREEN
OR	ORANGE
PK	PINK
R	RED
SB	SKY-BLUE
V	VIOLET
W	WHITE
Y	YELLOW

D. Special Tools

You will need the following special tool(s) in addition to the standard tools set when servicing the machine.

No	Tool	Tool No.	Shape	Rank*	Remarks
1	Mirror positioning tool (pair for front and rear)	FY9-3009		B	For adjusting the distance between the No.1 and No.2 mirrors.
2	Wire clip	FY9-3017		B	For fixing the scanner wire in place while adjusting its tension.
3	Spring gauge	CK-0054		B	For checking the cassette spring pressure Range of measurements: 0 to 1,500g

*Rank:

A: Each service person is expected to carry one.
B: Each five or so service persons is expected to carry one.
C: Each workshop is expected to carry one.

E. Solvents/Oils

No.	Name	Uses	Composition	Remarks
1	Alcohol	Cleaning: e.g., glass, plastic, rubber parts; external covers	Hydrocarbon (fluorine family) Alcohol Surface active agent	• Do not bring near fire. • Procure locally. • Isopropyl alcohol may be substituted.
2	Solvent	Cleaning: e.g., metal; oil or toner dirt	Hydrocarbon (fluorine/chlorine family) Alcohol	• Do not bring near fire. • Procure locally.
3	Lubricating oil	Lubricating spring clutch	Mineral oil (paraffin family)	• CK-0451 (100cc)
4	Lubricating oil	Lubricating drive and friction parts, scanner rail	Silicone oil	• CK-0551 (20g)

F. Specifications

1. Copier

a. Type

Item	Descriptions
Body	Desk top
Copyboard	Fixed
Source of light	Halogen lamp (80 V/110 W for 120V-model; 150 V/160 W for 220/240 V-model)
Lens	Fixed focal point lens
Photosensitive medium	OPC drum (24-mm dia.)

Table A-1

b. Mechanisms

Item	Descriptions
Reproduction	Indirect static reproduction
Charging	Roller (direct charging)
Exposure	Slit (moving light source)
Copy density adjustment	Auto or manual
Development	Dry (toner projection)
Pickup	Cassette (1 pc.) Multifeeder
Separation	Curvature separation + static eliminator
Fixing	Flat heater
Cleaning	Blade
Original orientation	Center reference (copyboard)

Table A-2

c. Performance

Item	Descriptions
Original type	Sheet, book, 3-D object (2kg max.)
Maximum original size	A4 (297 × 210 mm)/LGL (216 × 356 mm)
Reproduction ratio	Inch/AB-configuration: 2R2E Inch-configuration: 3R1E
Zoom	70% to 141% (in 1% increments)
Wait time	0 sec (at 20°C room temperature)
First copy time	10 sec or less (at 20°C room temperature; Direct, non-AE, from the cassette)
Continuous copying	100 (max.)
Copy size	A4/LGL (297 × 210 mm/216 × 356 mm max.) Business card (90 × 55 mm, min.)
Copy paper type	Cassette: Plain paper (64 to 80 g/m^2), tracing paper (SM-1, A4R/B5R), colored paper, recycled paper (64 to 80 g/m^2; A4R/B5R), eco paper (80 g/m^2; A4R) Manual Feeder: Plain paper (52 to 128 g/m^2), tracing paper (SM-1, GNT-80[*1]; A4R/B5R), transparency[*1,*3] (A4R/LTRR[*2]), colored paper, business card (200 g/m^2 or less), label sheet[*1] (A4R/LTRR), recycled paper (64 to 80 g/m^2; A4R/B5R), eco paper (80 g/m^2; A4R), postcard[*2] Double-Sided/Overlay Copying[*4]: Plain paper (64 to 128 g/m^2), colored paper, business card (200 g/m^2 or less), recycled paper (64 to 80 g/m^2; A4R/B5R), eco paper (80 g/m^2; A4R), postcard
Cassette	With claws Universal cassette (250 sheets of 80 g/m^2 paper; A4/LGL to A5/STMT) 250-sheet cassette (250 sheets of 80 g/m^2) 500-sheet cassette (500 sheets of 80 g/m^2)
Multifeeder tray	5 mm deep (approx.; 50 sheets of 80 g/m^2)
Copy tray	100 sheets (A4; 80 g/m^2)
Non-image width	Leading edge: 2.0 ±1.5 mm (Direct; 4.0 mm or less otherwise) Left/right: 0.0 +2.0, -0.0 mm (0 +4.0, -0.0 mm for LTR)
Auto power-off	Provided (5 min, approx.; fixed)[*5]

Table A-3

*1. Applies only to single pickup if the multifeeder is used.
*2. Applies only to vertical feeding.
*3. Upon delivery, be sure to remove each from the copy tray.
*4. Be sure to remove any curling before feeding for a second time.
*5. If stopped because paper ran out during copying operation, 1 hr.

d. Others

Item	Descriptions
Operating condition Temperature Humidity Atmospheric pressure	 7.5°C to 32.5°C/45.5°F to 90.5°F 5% to 85% RH 607.95 to 1013.25 hPa (0.6 to 1 atm)
Power source	120 V 60 Hz 220/240 V 50 Hz
Serial number	NVFxxxxx PTZxxxxx NVHxxxxx PUBxxxxx PUCxxxxx TWAxxxxx TXAxxxxx
Maximum power consumption	0.9 kW or less Standby: 1.2 W (approx.; about 5 min; reference only) Copying: 0.4 kWh (approx.; reference only)
Noise	Standby: - (sound power level by ISO) Copying: 66 dB or less (sound power level by ISO)
Ozone	0.01 ppm or less (average; 0.02 ppm or less, max.)
Dimensions (WxDxH)	Copyboard Type 484.9 × 448.2 × 297.5 mm*1/329.0 mm*2 19.1 in. × 17.6 in. × 11.7 in.*1/13.0 in.*2 ADF Type 484.9 × 448.2 × 358.3 mm*1/389.8 mm*2 19.1 in. × 17.6 in. × 14.1 in.*1/15.3 in.*2
Weight (including the cassette)	Copyboard Type 20.6 kg*1/45.3 lb*1, 22.5 kg*2/49.5 lb*2 ADF Type 24.4 kg*1/53.7 lb*1, 26.3 kg*2/57.9 lb*2
Consumables	Copy paper: Keep wrapped, and protect against humidity. Toner: Avoid direct sunlight, and store at 40°C/104°F, 85% or less.

Table A-4

*1. 250-sheet cassette type
*2. 500-sheet cassette type

e. Default Ratios

Item	2R2E (Inch/AB-configuration)	3R1E (Inch-configuration)
Direct	1:1.000	1:1.000
Reduce I	1:0.707	1:0.707
Reduce II		1:0.786
Reduce III	1:0816	
Reduce IV		1:0.860
Enlarge I	1:1.154	
Enlarge II	1:1.414	1:1.414

Table A-5

f. Copying Speed

Copying speed at Direct	Reproduction ratio	Copy size	Number of copies (Multifeeder*1) (copies/min)
13	Direct	LTRR	13 (9)
		LGL	11 (8)
		STMTR	13 (9)
	Reduce I (70.7%)	MIN	13 (9)
	Reduce II (78.6%)	LGL → LTRR	13 (9)
	Reduce IV (86.0%)	MARJIN	13 (9)
	Enlarge II (141.4%)	MAX	10 (9)
12	Direct	A4R	12 (9)
		B5R	12 (9)
		A5R	12 (9)
	Reduce I (70.7%)	A4R → A5R	12 (9)
	Reduce III (81.6%)	B5R → A5R	12 (9)
	Enlarge I (115.4%)	B5R → A4R	12 (9)
	Enlarge II (141.4%)	A5R→ A4R	10 (9)

Table A-6

*1. The number of copies starting with the pickup operation that follows the delivery of the 19th copy in a continuous copying job.

The specifications are subject to change for product improvement.

2. ADF

Item	Descriptions
Original pickup	Auto pickup/delivery
Original orientation	Face-down
Original position	Center reference
Original separation	Top separation
Original type	Single-sided (50 to 128 g/m^2) A5 (STMT) to A4R (LTRR), LGL Length: 139.7 to 355.6 mm (feeding direction) Width: 139.7 to 215.9 mm
Stack	30 sheets (80 g/m^2 or less; about 3 mm in height)
Original processing mode	Single-sided original to single-sided copy
Original size detection	Yes (in feeding direction)
Mixed original sizes	No
Original detection	Yes
Original feeding speed	446 mm/sec
Communication with host	IPC
Dimensions	Width: 474 mm/18.7 in. (659 mm/25.9 in. with the tray open) Depth: 394 mm/15.5in. Height: 74 mm/2.9 in. (216 mm/8.5 in. with the tray open)
Weight	5 kg/11 lb (approx.)
Power source	24 VDC and 5 VDC (from the host)
Maximum power consumption	40 W or less
Operating environment	Temperature: same as the host Humidity: same as the host

Table A-7

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