

NP6030

SERVICE MANUAL

(For 220/240V)

REVISION 0 JAN. 1993

Canon
FY8-13C9-000

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I. FEATURES

1. Designed with ecological considerations

- The copier uses special rollers for charging, thereby significantly suppressing the generation of ozone — to 0.01 ppm or less (maximum of 0.02 ppm or less); this translates to 1/100 or 1/1000 when compared with conventional copiers.
- The copier moves copy paper by *center reference feeding* to ensure good transport of recycled paper.

2. State-of-the-art features for enhanced user satisfaction

- For DIRECT mode, the reproduction ratio may be fine-tuned in 0.2% increments in X or Y direction independently, providing perfect document-to-copy reproduction ratios.
- The user may take advantage of enlarge layout or reduce layout for desired copy compositions.
- For production of professional-quality documents, the copier provides cover mode—in addition, interleaf mode makes production of OHP copies very easy.
- The copier's auto paper selection and auto ratio selection mechanisms take advantage of identification of up to B5R size.

3. Others

- merely 610 mm wide, the smallest in the world for its class.
- accommodates as many as 2550 sheets of copy paper (500-sheet cassette and 50-sheet multifeeder).
- designed with a 6-way pick-up mechanism.
- 30-second wait time, the shortest in its class.
- 4.9-second first copy time.
- newly developed ultra small XY zoom lenses, capable of zooming between 49% and 204%.
- large-capacity toner hopper, limiting the need for toner replenishment.

II. SPECIFICATIONS

A. Copier

1. Type

Item	Specification
Body	Desktop
Document counter	Fixed
Light source	Halogen lamp (290 W, 100/115V; 320W, 230V)
Lens	Zoom lens
Photosensitive medium	OPC

2. System

Item		Specifications
Copying		Indirect electrostatic
Charging		Roller (direct charging)
Exposure		Slit (moving light source)
Copy density adjustment		Automatic (AE) or Manual
Development		Dry (toner projection)
Pick-up	Automatic	2, 3, 4, or 5 cassettes
	Manual	Multifeeder
Transfer		Roller
Separation		Curvature + Static eliminator
Cleaning		Blade
Fixing		Heat rollers (700W main + 600W sub, 110/115V; 750W main + 640W sub, 230V)

3. Performance

Item		Specifications
Document type		Sheet, Book, 3-D object (2 kg max.)
Document size (max.)		A3 (297 × 420 mm)/LDG (11" × 17")
Reproduction ratio		DIRECT, 4R4E, 4R3E or 2R2E (Table 1-1); zoom (49% thru 204%)
Wait time		30 sec or less (100V), 35 sec or less (115/230V) at 20°C or more
First copy		5.0 sec or less (A4, DIRECT, non-AE, pick-up from cassette 1)
Continuous copying		100 sheets max. (may be modified between 1 and 100)
Copying speed		See Table 1-2.
Copy size		Cassette: A3 (11" × 17") to A5 (STMT) Manual: A3 (11" × 17") to postcard (A6)
Copy paper type	Cassette	Plain (64 to 80 g/m ²), Tracing paper, Colored paper*
	Multifeeder	Plain paper (64 to 128 g/m ²), Tracing paper (SM1, GNT80**), Colored paper*, OHP film**/**, Postcard*, Label sheet*
	Two-sided/Overlay	Automatic Plain (64 to 80 g/m ²), Colored paper*, Postcard**
	Multifeeder	Plain (64 to 128 g/m ²), Colored paper*, Postcard
Cassette		500 sheets (w/o claw), Front loading
Delivery tray		100 sheets (approx.)
Non-image width	One-sided	2.5 ± 1.5 mm (leading/trailing edge), 2.5 ± 1.5 mm (left/right)
	Two-sided/Overlay	2.5 ± 2.0 mm (leading/trailing edge), 2.5 ± 2.0 mm (left/right)
Auto clear		Available (2 min standard; may be modified between 1 and 9 min in 1-min increments or disabled)
Auto power-off		Available (2 hr standard; may be modified between 1 and 24 hr in 1-hr increments or disabled)
Options		• Sorter-C1/Stapler Sorter-C1 • Stapler Sorter-B2 • ADF-B1 • RDF-C1 • Control Card V • Cassette Feeding Unit with Duplexing-G1 • Cassette Feeding Unit-F1 • Pedestal with Duplexing Unit-A1 • Cassette Feeding Unit-H1

* Specified by Canon.

** Correct curling before second insertion.

*** Separate sheets before placing on the manual tray to break static adhesion between sheets.

4. Others

Item		Specifications	
Operating environment	Temperature	7.5° to 32.5°C	
	Humidity	5% to 85%	
	Atmospheric pressure	0.8 to 1 atm	
Power supply		Serial number	
	100V 50/60Hz	LRBXXXXX, LRCXXXXX	
	115V	NRDXXXXX, NREXXXXX	
	230V	PRFXXXXX, PRGXXXXX RRHXXXXX, RRJXXXXX URKXXXXX, URLXXXXX DAAXXXXX, BAAXXXXX AAAXXXXX, CAAXXXXX	
Power consumption	Maximum	1.5 kW or less	
	Standby	0.18 kWh (average; reference only)	
	Continuous copying	0.80 kWh (average, A4; reference only)	
Noise	Copying	69 dB or less	sound power level under ISO standards
	Standby	41 dB or less	
Ozone (8-hr average)		0.01 ppm or less; 0.02 ppm or less	
Dimensions	Width	610 mm	
	Depth	595 mm	
	Height	535 mm, 949 mm (w/ cassette feeding unit)	
Weight		80 kg (approx.)	
Consumables	Copy paper	Keep wrapped to protect against humidity.	
	Toner	Avoid direct sunshine, and keep at 40°C, 85% or less.	

Reproduction ratios	DIRECT	1:1 ($\pm 0.5\%$)		
	EE	230 V (Europe)	115V	230V (Australia/general)
	REDUCE I	1:0.500	1:0.500	1:0.500
	REDUCE II	1:0.707	1:0.647	1:0.707
	REDUCE III	1:0.816	1:0.733	
	REDUCE IV	1:0.865	1:0.786	
	ENLARGE I	1:1.154	1:1.214	1:1.414
	ENLARGE II	1:1.224	1:1.294	1:2.000
	ENLARGE III	1:1.414	1:2.000	
	ENLARGE IV	1:2.000		
	ZOOM	49% to 204% (in 1% increments)		

Table 1-1 Default Reproduction Ratios

Reproduction ratio		Copy size	Copies	
			100V	230V
DIRECT	1:1 ($\pm 0.5\%$)	A3 (297 × 420)	18 (18)	18 (18)
		A4 (210 × 297)	30 (27)	31 (27)
		A5 (148 × 210)	30 (27)	31 (27)
		B4 (257 × 364)	20 (20)	20 (20)
		B5 (182 × 257)	30 (27)	31 (27)
		A4R (297 × 210)	23 (22)	23 (22)
		A5R (210 × 148)	30 (27)	31 (27)
		B5R (257 × 182)	26 (24)	26 (24)
REDUCE	1:0.500 ($\pm 1.0\%$)	A3 → A5R	26	26
	1:0.707 ($\pm 1.0\%$)	A3 → A4R	22	22
		B4 → B4R	24	24
	1:0.816 ($\pm 1.0\%$)	B4 → A4R	22	22
	1:0.865 ($\pm 1.0\%$)	A3 → B4	19	19
		A4 → B5	30	31
ENLARGE	1:2.000 ($\pm 1.0\%$)	A5R → A3	19	19
	1:1.414 ($\pm 1.0\%$)	A4R → A3	18	18
		B5R → B4	18	18
	1:1.224 ($\pm 1.0\%$)	A4R → B4	21	21
	1:1.154 ($\pm 1.0\%$)	B4 → A3	18	18
		B5 → A4	24	24

Table 1-2 Copying Speeds (100/230V)

Reproduction ratio		Copy size	Copies
DIRECT	1:1 (+0.5%)	LTR	30 (26)
		11 × 17	18 (17)
		LGL	20 (20)
		LTRR	25 (23)
		STMT/STMTR	30 (26)
REDUCE	1:0.786	LGL → LTRR	24
	1:0.733	11 × 17 → LGL	21
		11 × 15 → LTRR	23
	1:0.647	11 × 17 → LTRR	22
	1:0.500	11 × 17 → STMTR	25
ENLARGE	1:2.000	STMTR → 11 × 17	19
	1:1.294	LTRR → 11 × 17	18
	1:1.214	11 × 17 → STMTR	25

Table 1-2 Copying Speeds (115V)

Specifications subject to change for product improvement.

B. Cassette Feeding Unit F1 and Cassette Feeding Unit-H1

Copy paper	As per copier.
Cassette	As per copier.
Power supply	24 VDC (from copier)
Dimensions	610W × 608D × 414H mm
Weight	45.5 kg (F1)/44.0 kg (H1)

C. Cassette Feeding Unit with Duplexing-G1 and Pedestal with Duplexing-A1

Copy paper (w/ duplexing)	A3, A4, B5, A4R, B5R (plain paper, 64 to 80 g/m ² ; colored paper*)
Duplexing unit	Front loading; 50 sheets (max.; all sizes)
Cassette	As per copier.
Power supply	24 VDC (from copier)
Dimensions	610W × 608D × 414H mm
Weight	54.0 kg (G1)/52.5 kg (A10)

*Specified by Canon.

III. NAMES OF PARTS

A. Exterior View

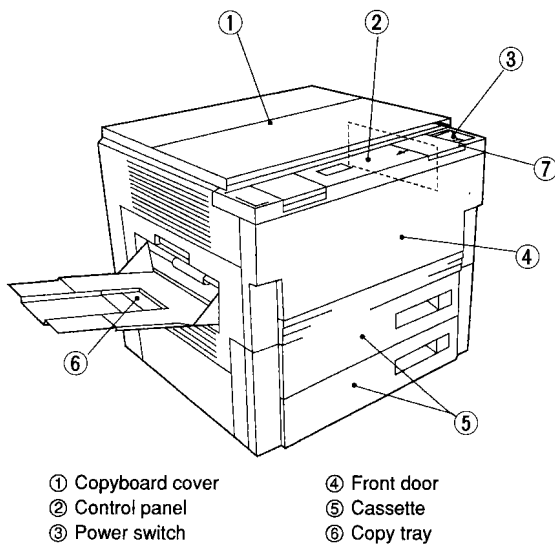


Figure 1-1

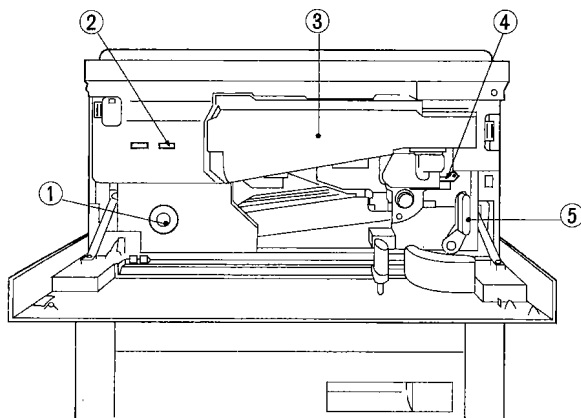
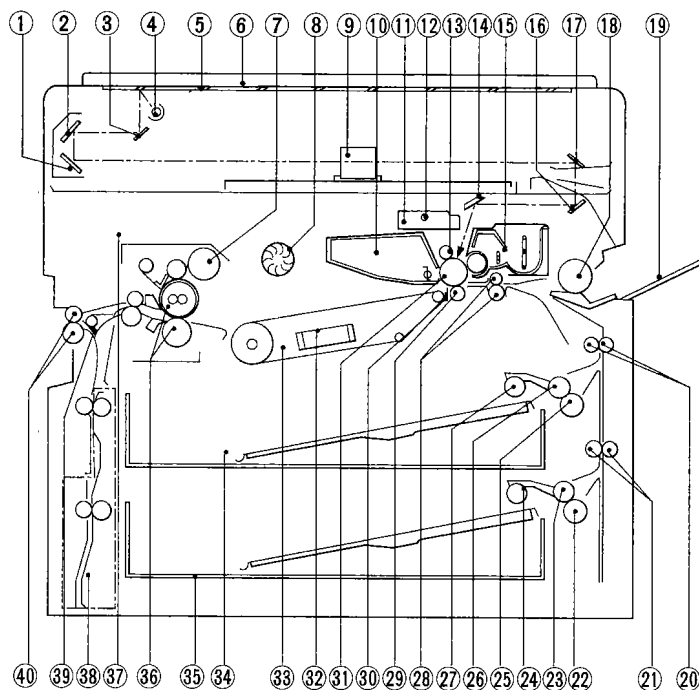


Figure 1-2

B. Cross Section

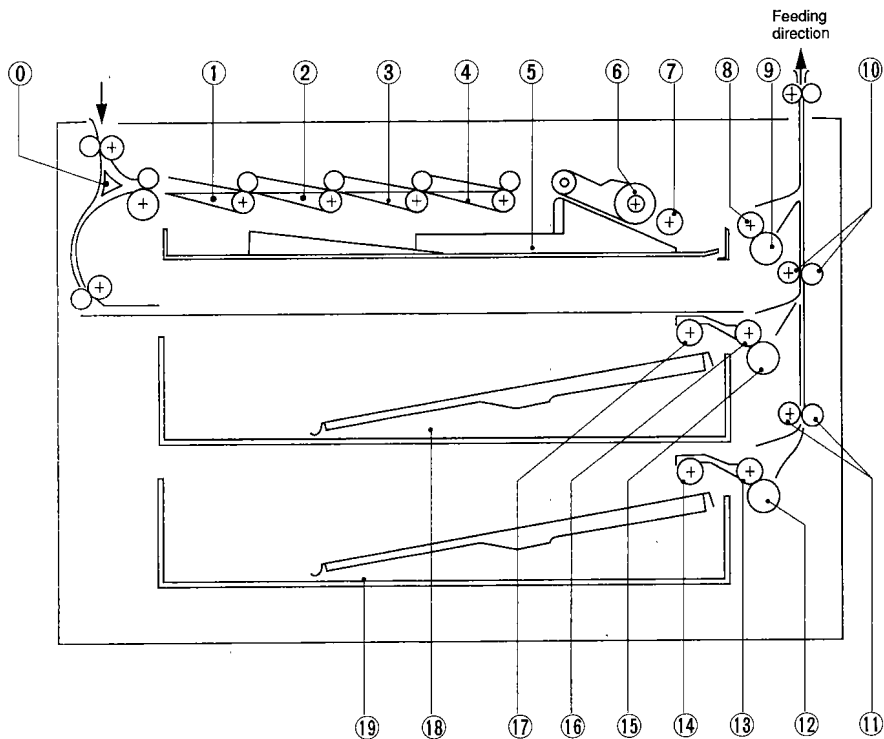
1. Copier



- | | | |
|------------------------------------|--------------------------------|--|
| ① No. 3 mirror | ⑭ No. 6 mirror | ⑳ Registration roller |
| ② No. 2 mirror | ⑮ Developing assembly | ㉑ Transfer roller |
| ③ No. 1 mirror | ⑯ No. 5 mirror | ㉒ Static eliminator |
| ④ Scanning lamp | ⑰ No. 4 mirror | ㉓ Photosensitive drum |
| ⑤ Copyboard glass | ⑱ Multifeed pick-up roller | ㉔ Feeding fan |
| ⑥ Copyboard cover | ㉒ Multifeed tray | ㉕ Feeding assembly |
| ⑦ Cleaning belt | ㉑ Vertical path roller 1 | ㉖ Cassette 1 |
| ⑧ Exhaust fan | ㉒ Vertical path roller 2 | ㉗ Cassette 2 |
| ⑨ Lens | ㉓ Cassette 2 separation roller | ㉘ Fixing roller |
| ⑩ Drum cleaning assembly | ㉔ Cassette 2 feeding roller | ㉙ Exhaust fan |
| ⑪ Pre-exposure/Blank exposure unit | ㉕ Cassette 2 pick-up roller | ㉚ Delivery vertical path assembly (option) |
| ⑫ Pre-exposure lamp | ㉖ Cassette 1 separation roller | ㉛ Delivery paper deflector |
| ⑬ Primary charging roller | ㉗ Cassette 1 feeding roller | ㉜ Delivery roller |
| | ㉘ Cassette 1 pick-up roller | |

Figure 1-3

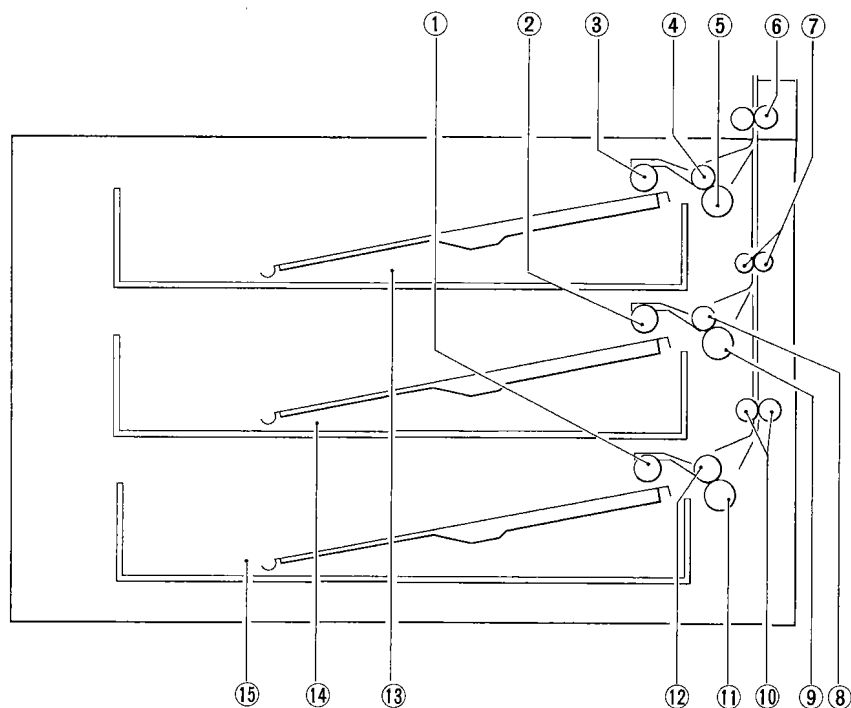
2. Cassette Feeding Unit with Duplexing-G1



- | | |
|-------------------------------|------------------------------------|
| ① No. 2 paper deflector | ⑪ Duplexing vertical path roller 4 |
| ② L paper deflector | ⑫ Duplexing vertical path roller 5 |
| ③ M paper deflector | ⑬ Cassette 5 separation roller |
| ④ S paper deflector | ⑭ Cassette 5 feeding roller |
| ⑤ SS paper deflector | ⑮ Cassette 5 pick-up roller |
| ⑥ Holding tray | ⑯ Cassette 4 separation roller |
| ⑦ Feeding roller | ⑰ Cassette 4 feeding roller |
| ⑧ Holding tray pick-up roller | ⑱ Cassette 4 pick-up roller |
| ⑨ Duplexing feeding roller | ⑲ Cassette 4 |
| ⑩ Duplexing separation roller | ⑳ Cassette 5 |

Figure 1-4

3. Cassette Feeding Unit-F1



- | | |
|--------------------------------|--------------------------------|
| ① Cassette 5 pick-up roller | ⑨ Cassette 4 separation roller |
| ② Cassette 4 pick-up roller | ⑩ Vertical path roller 5 |
| ③ Cassette 3 pick-up roller | ⑪ Cassette 5 separation roller |
| ④ Cassette 3 feeding roller | ⑫ Cassette 5 feeding roller |
| ⑤ Cassette 3 separation roller | ⑬ Cassette 3 |
| ⑥ Vertical path roller 3 | ⑭ Cassette 4 |
| ⑦ Vertical path roller 4 | ⑮ Cassette 5 |
| ⑧ Cassette 4 feeding roller | |

Figure 1-5

IV. OPERATIONS

A. Control Panel

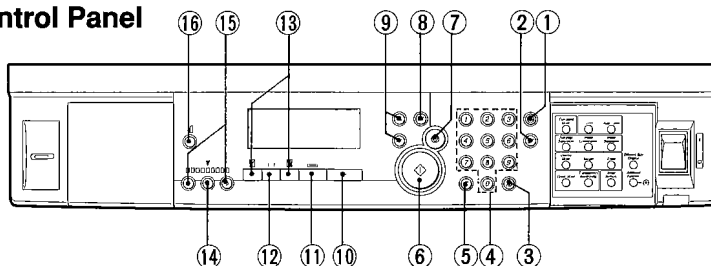


Figure 1-6

Key	Description	Remarks
① PRE-HEAT key	Press it to select or deselect pre-heat mode.	Returns to normal after deselection in 0 sec.
② INTERRUPT key	Press it to interrupt an ongoing copying cycle.	
③ ID key	Effective when ID mode is selected (by the user); Copying ready in response to a correct ID; Requests another input after copying cycle and another press on the key; As many as 50 IDs may be set.	To store an ID, press the USER key, ID key, STOP key, and USER key in sequence.
④ Numeric keypad	Use it to set the copy count, or to enter numerals when setting modes.	As high as '100' may be entered as a copy count.
⑤ CLEAR key	Press it to return the copy count to '1', or to clear numerals when setting modes.	
⑥ COPY START key	Press it to start copying operation.	Auto start mode is available.
⑦ STOP key	Press it to stop copying operation.	
⑧ OK key	Press it to acknowledge indications shown on the display.	
⑨ ☐ ☒ key	Press it to select a setting shown on the display.	
⑩ RESET key	Press it to return to the standard copy modes: DIRECT; copy count, 1; paper selection, auto.	
⑪ PAPER SELECT key	Press it to select auto paper select mode, or to select a cassette (paper feeding unit).	
⑫ DIRECT key	Press it to select DIRECT (100%) mode.	
⑬ REDUCE/ENLARGE key	Press it to select REDUCE/ENLARGE mode (default ratios).	
⑭ AE key	Press it to select or deselect AE mode.	
⑮ COPY DENSITY key	Use it to manually adjust copy density.	
⑯ SORT key	Use it to select sort, staple/sort, or group mode. Sort mode effective only when a stapler sorter or an RDF is installed; Staple/Sort mode effective only when a stapler sorter is installed; Group mode effective only when a stapler sorter or a sorter is installed.	

Table 1-3

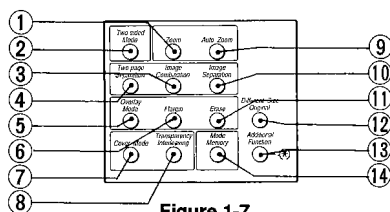


Figure 1-7

Key	Description	Remarks
① ZOOM key	Press it to select or deselect zoom mode. May be between 49% and 204% in 1% increments.	Zoom program available.
② TWO-SIDED key	Press it to select or deselect two-sided mode. One-sided to Two-sided; Page Separation; or, Two-sided to Two-sided.	
③ REDUCE LAYOUT key	Press it to select or deselect reduced layout mode. May be 2-on-1 for copying two documents on one sheet; 4-on-1 for copying four documents on one sheet.	
④ PAGE SEPARATION key	Press it to select or deselect page separation mode (either page separation or two-sided page separation).	
⑤ OVERLAY key	Press it to select or deselect overlay mode (overlay or page separation overlay).	
⑥ BIND key	Press it to select or deselect binding mode. May be adjusted between 1 and 20 mm in 1mm increments; 10 mm at time of shipment; may be left, right, top, bottom (cover/back cover shift or back cover shift).	
⑦ COVER key	Press it to select or deselect cover mode. May be cover + back cover; in addition, the presence/absence of copy images may be specified.	
⑧ OHP OVERLEAF key	Press it to select or deselect OHP interleaf mode. Allows insertion of one sheet of paper between OHPs; in addition, the presence/absence of copy images may be specified.	
⑨ AUTO RATIO key	Press it to select or deselect auto ratio mode.	
⑩ ENLARGE LAYOUT key	Press it to select or deselect enlarge layout mode. May be 1-on-2 for copying one document on two sheets; 1-on-2 for copying one two-sided document on two sheets; 1-on-2 for copying one two-sided document on two one-sided sheets; 1-on-2 for copying one two-sided document on 2 two-sided sheets. May be 1-on-4 for copying one document on four sheets; 1-on-4 for copying one one-sided document on four two-sided copies.	
⑪ FRAME ERASE key	Press it to select or deselect frame erasing mode. May be sheet frame erasing or document frame erasing (book frame erasing).	
⑫ MIXED SIZE key	Press it to select mixed size mode when using a feeder. May be A4 an A3, B5 and B4, A5 and A4R, LTR and 11"×17", LTRR and LGL, STMT and LGL, STMT and LTRR; each pair must be of the same feeding width.	
⑬ USER key	Press it to select or deselect user mode. May be used to change or adjust default settings and standard modes.	
⑭ MODE MEMORY key	Press it to select or deselect modes. May be used to store (up to 3 modes) or call up any stored modes.	Not applicable to user mode settings.

Table 1-4

B. Making Copies

- 1) Switch the copier on.
Normally, the copier's wait time is about 30 sec (at 20°C).
- 2) Open the copyboard cover, and place the document face down along the size index.
- 3) Press the DIRECT, REDUCE, ENLARGE, or ZOOM key as necessary.
- 4) If you want to specify the copy size, select the cassette containing the desired paper.
 - If necessary, pick any cassette and adjust its guide plate to suit the paper of your choice.
- 5) Press the COPY DENSITY key to adjust the copy density as necessary.
 - ① If you want a darker copy, press *darker* to move the index to the right; if you want a lighter copy, press *lighter* to move the index to the left.

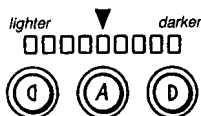


Figure 1-8

- 6) Specify the number of copies to make (1 through 100) using the numeric keypad, and make sure that the counter indicates the correct number.
 - ① If the numeric keypad does not operate or if you made a mistake, try again after pressing the CLEAR/COPY STOP key.
- 7) Press the COPY START key.
 - ① Set auto start mode as necessary.
 - ② If an RF is installed, the document pages on the document tray will be picked up automatically for copying.
 - ③ All document pages are copied automatically for the specified number.
 - ④ Once copying operation starts, keys other than the CLEAR/STOP key, RESET key, and COPY DENSITY key are disabled until the last copy is made.
 - ⑤ You can switch from automatic density adjustment to manual density adjustment even after copying operation has started; however, you cannot switch from manual adjustment to automatic adjustment.

Reference:

If you find the copies to be too dark or too light in AE mode, you can change the density with the COPY DENSITY key. Check the COPY DENSITY indicator for reference.

- ⑥ To stop the operation during continuous copying, press the CLEAR/STOP key or the RESET key. The copier stops after processing the current copy cycle.
- ⑦ After making the specified number of copies, the copier indicates the initial copy count on its display. If the copier stops in the middle of a copying run while indicating the ADD PAPER message, replenish the cassette with paper, and press the COPY START key. The copier will make the remaining number of copies.
- ⑧ If a jam occurs in the middle of a copying run, the copier stops and indicates the JAM message on its display. When the jam is removed, the copier will indicate the remaining number of copies.
- ⑨ If you leave the copier alone for about 2 min*, the copier will return to the standard modes.

* May be modified.

Note:

1. Feed postcards in vertical orientation.
2. Feed A4 label sheets in landscape orientation.

C. Auto Start

You can select auto start mode while the copier is in the wait period after power-on.

To select the mode, set a document, select copy modes, and press the COPY START key.

The WAIT indicator changes from green to orange to indicate that auto start mode has been selected; you cannot use interrupt mode.

The copier starts making copies in the specified copy modes as soon as the wait period is over.

To deselect auto start mode, press the CLEAR/STOP key or the RESET key.

D. Making Two-Sided Copies and Overlay Copies Manually

You can make two-sided or overlay copies by manually feeding sheets of paper.

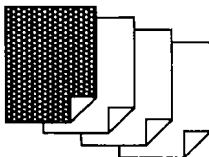
When using the function, keep the following in mind:

- ① When turning over the sheet, be careful to maintain the same orientation (front and rear).
- ② Make sure that the paper is not moist.
- ③ Make sure that the paper is not curling.
- ④ Cool the paper sufficiently after first copying; feed it for second copying only after removing the curl, if any.
- ⑤ Use paper appropriate for the job (60 to 128 g/m²).
- ⑥ If you are using postcards or thick paper (128 g/m²), be extra careful to remove all curl.

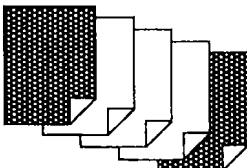
E. Using Cover Mode

If you are making copies using a DF, you can add separate sheets to serve as the front cover and back cover of the finished set of copies.

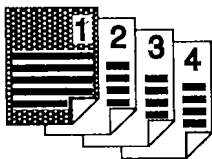
- ① Adding the Front Cover Only



- ② Adding Both Front and Back Covers



- ① Copying on the Front and Back Covers

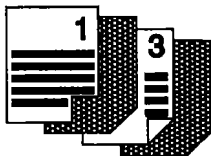


Place the sheets to serve as front or back covers on the multif feeder tray.

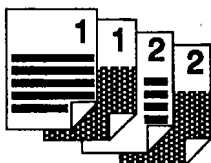
F. Using OHP Interleaf Mode

If you are making copies on OHP sheets, you can add plain sheets of paper in between OHP sheets.

① Adding Copy Paper



② Copying on Copy Paper



Set OHP sheets on the multifeder tray. You can also use the function using a DF.

G. Storing IDs

You can store 4-digit IDs so that the copier will not operate unless an appropriate ID is entered. You can store as many as 50 IDs, and generate a copy count (cumulative copy volume) for each number.

■ Storing IDs

- 1) Press the USER key, ID key, STOP key, and USER key in sequence.

Select a feature and press OK key.	☐ ☐
STORE ID NUMBERS ► COPY TOTALS	

Figure 1-9

- 2) Press the OK key.
- 3) Enter an ID number using the numeric keypad.

Enter an ID number with the Number keys.	
1)	0 0 0 0
↑	↑
Group No.	ID number

Figure 1-10

- 4) Press the OK key to acknowledge the group number; then, enter an ID number.
- 5) When you have entered all IDs, press the ID key to acknowledge the input.

■ Checking the Copy Volume

You can check the number of copies that have been made under each ID number.

- 1) Press the USER key, ID key, STOP key, and USER key in sequence.
- 2) Press the ☒ key to select 'count', and press the OK key; see Figure 1-8.
- 3) Select 'count by group', and press the OK key.

Select a feature and press ☒ key.	☒ ☒
► CHECK TOTALS CLEAR ALL TOTALS	

Figure 1-11

- 4) Press the ☒ key to display the desired group and its copy count.

Check the Copy totals.	
1)	1 2 3 4 0 0 0 1 0
	↑ Count (copy volume)

Figure 1-12

- 5) Press the OK key to return to the initial window.

Note:

You cannot reset the individual counts to '0'; to reset all counts to '0', select 'counter all clear', and press the OK key.

H. Using the User Mode

The copier provides user mode so that the user can set the following to suit his/her needs:

- settings
- adjustment/cleaning

1. Using 'Settings' in User Mode

- 1) Press the USER key.

Select a feature and press ☒ key.	☒ ☒
CUSTOM SETTINGS ► ADJUSTMENT/CLEANING	

Figure 1-13

- 2) Check to see that 'settings' is preceded by ►; THEN, PRESS THE OK KEY.

CUSTOM SETTINGS
► AUTO BLEAR TIME AUTO POWER-OFF TIME AUTO CASSETTE SWITCHING

Figure 1-14

- 3) Move ► by pressing the ☒ or ☒ key to select the desired mode; then, press the OK key.
- 4) Enter the desired setting; see Table 1-5.

2. Using 'Adjustment/Cleaning' in User Mode

- 1) Press the USER key.

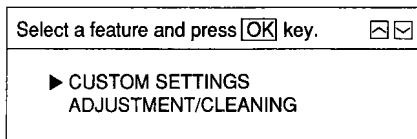


Figure 1-15

- 2) Move ▶ to 'adjustment/cleaning' by pressing the ⏩ key; then, press the OK key.

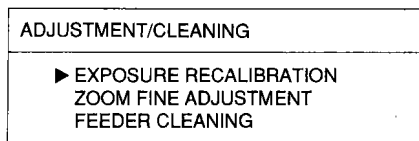


Figure 1-16

- 3) Move ▶ by pressing ⏪ or ⏩ key to select the desired mode; then, press the OK key.
- 4) Enter the desired setting; see Table 1-5.

■ Using 'Settings' and 'Adjustment/Cleaning' in User Mode

Item/Default	Description	Operation
Auto Clear; 2 min	Select it to change the auto-clear time. You can set it between 1 and 9 min in 1-min increments; set it to '0' to disable the function altogether.	1) Enter a setting using the numeric keypad, and press the OK key.
Auto Power-Off Time; 2 hr	Select it to change the auto power-off time. You can set it between 1 and 24 hr in 1-hr increments.	1) Enter a setting using the numeric keypad, and press the OK key. To deactivate the function, use service mode (S5S).
Auto Cassette Change; ON	Select or deselect the auto cassette change function; ON or OFF.	Select 'ON' or 'OFF' using the ☐ or ☐ key; then, press the OK key.
Manual Size Input; OFF	Select or deselect manual size input; ON or OFF.	Select 'ON' or 'OFF' using the ☐ or ☐ key; then, press the OK key.
Sort Single Document; ON	Select or deselect the single document sorting function; ON or OFF.	Select 'ON' or 'OFF' using the ☐ or ☐ key; then, press the OK key.
Store Standard Modes/Reset Standard Mode	Use it to store or reset the standard modes: copy density, AE; paper selection, auto; copy count, 1; delivery, non-sort copying; from 'one-sided document' to 'one-sided copy'; ratio 100%.	Set the standard modes before entering user mode; bring up the screen, and select 'store standard modes'; then, select the desired settings using ☐ or ☐ key, and press the OK key.
Density Correction	Correct 'F5 density' if copies made with the manual correction index set to the center (F5) seems somewhat darker or lighter than the document.	Press the ☐ key to obtain darker copies; press the ☐ key to obtain lighter copies; then, press the OK key.
Zoom Fine Adjust	Use it to fine-adjust if a discrepancy is noted between the size of the document and the size of the copy made in DIRECT. You can fine-tune independently in both X and Y directions.	Press the OK key to select X or Y; press the ☐ key to increase the ratio, or press the ☐ key to decrease the ratio; each scale represent 0.2%; press the USER key to acknowledge the new settings.
Feeder Cleaning	If you note black lines or dirt on the document after it has been fed through the ADF/RF, set blank copy paper on the feeder and press the OK key; the paper will be circulated, thereby cleaning the document pick-up rollers.	Set about 10 sheets of black copy paper (A4) in the ADF/RF, and press the OK key. To stop, press the CLEAR key or the STOP key.

Table 1-5

V. WARNINGS AND ACTIONS TO TAKE

A. JAM Message

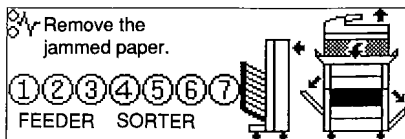


Figure 1-17

The message appears when there is a jam inside the copier. Go through the following steps to remove the jam.

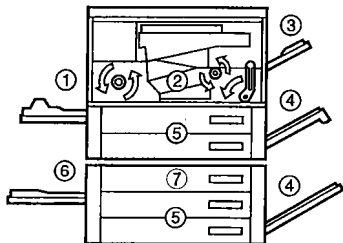


Figure 1-18

1. ① Is On (zone 1)

- 1) Open the left door, and remove the jam through the outlet of the delivery assembly as shown in Figure 1-19.

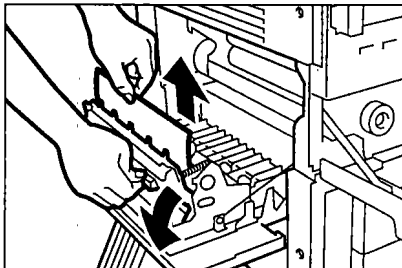


Figure 1-19

- 2) Turn the fixing knob counterclockwise to remove the jam.

2. ② Is On (zone 2)

- 1) Release the feeding assembly, and turn the registration roller to remove the jam.

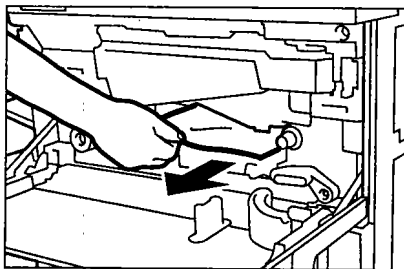


Figure 1-20

3. ③ Is On (zone 3)

- 1) Remove the copy paper from the multifeder, and remove the jam from the multifeder.
- 2) Open the copier's right door, and remove the jam while pushing the green lever as shown in Figure 1-21.

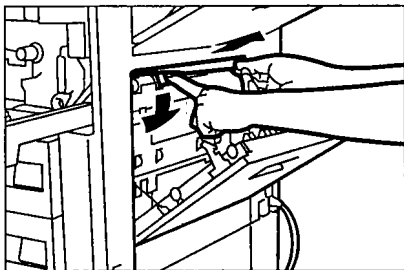


Figure 1-21

4. ④ Is On (zone 4)

- 1) Open the copier's right door, and the cassette feeding unit's right door; then, remove the jam.

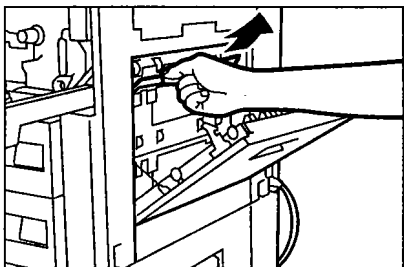


Figure 1-22

5. ⑤ Is On (zone 5)

- 1) Open the copier's right door and the cassette feeding unit's right door; then, slide out the cassette.
- 2) Remove the jam from the cassette.



Figure 1-23

6. ⑥ Is On (zone 6)

- 1) Open the cassette feeding unit's left door.
- 2) Remove the jam.

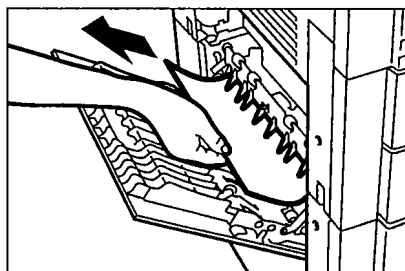


Figure 1-24

7. ⑦ Is On

- 1) Open the cassette feeding unit's right door and left door.
- 2) Slide out the duplexing assembly, and open the cover; then, remove the jam.

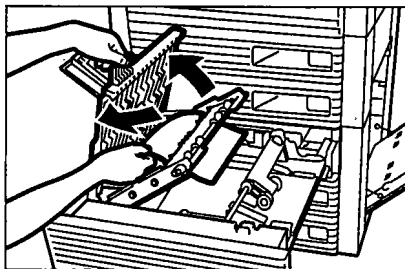


Figure 1-25

B. ADD PAPER Message

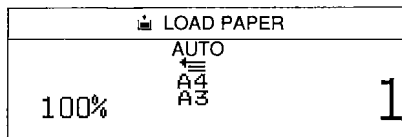


Figure 1-26

The message appears when the selected cassette is running out of paper. Replenish the cassette as follows:

1. Adding Paper

- 1) Hold the grip of the cassette, and slide it toward the front until it stops.
- 2) Take out copy paper from its package as shown in Figure 1-27.

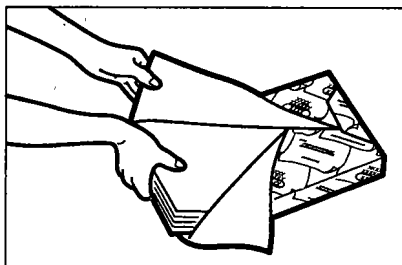


Figure 1-27

- 3) Turn over the paper, and place it butted against the right side of the cassette; the face of the paper showing in Figure 1-27 should be the bottom of the stack.

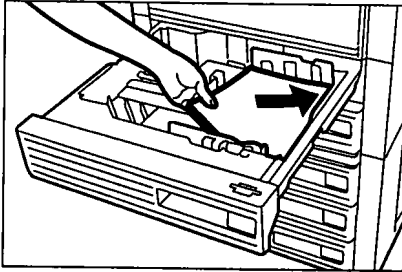


Figure 1-28

- 4) Set the cassette in the copier.

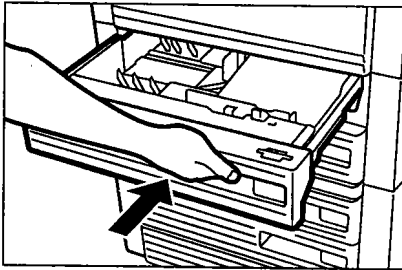


Figure 1-29

2. Changing the Cassette Size

- 1) Hold the lever as shown in Figure 1-30, and slide the length guide until it is positioned over the appropriate paper size index.

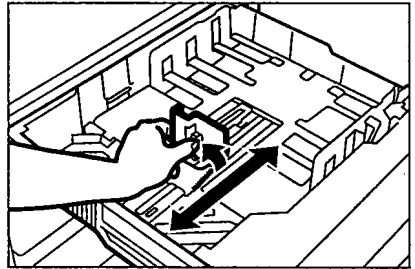


Figure 1-30

Note:

To accommodate A3, slide the length guide all the way to the left end, and shift the guide down to the right.

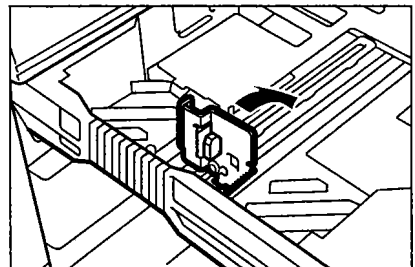


Figure 1-31

- 2) Hold the lever as shown in Figure 1-32, and slide the width guide until it is positioned over the appropriate paper size index.

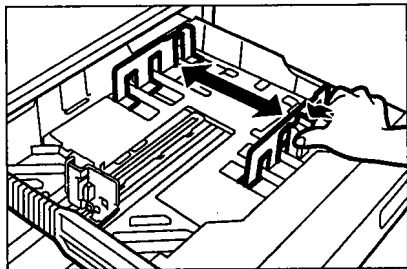


Figure 1-32

- 3) Replace the size plate with the appropriate size plate.

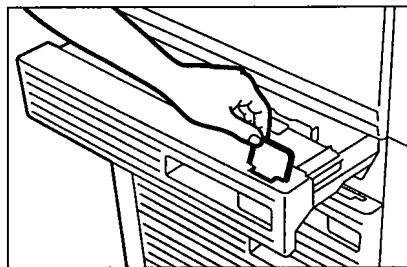


Figure 1-33

C. ADD TONER Message

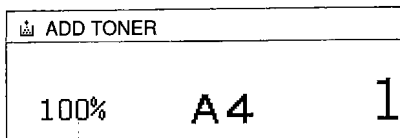


Figure 1-34

The message appears when the copier is running short of toner. Supply toner as follows:

- 1) Open the front door.
- 2) Swing out the hopper to the front.

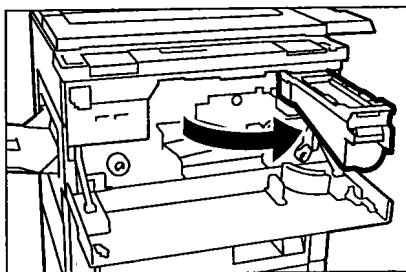


Figure 1-35

- 3) Shake the toner cartridge well end to end several times to even out the toner inside it.

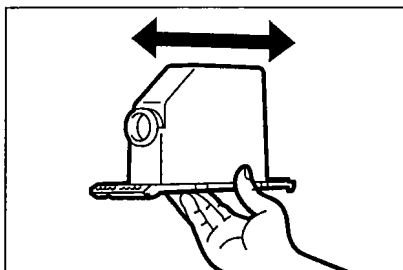


Figure 1-36

- 4) Fit the boss on the toner cartridge into the groove at the rear of the hopper, and press the cartridge until a click is heard.

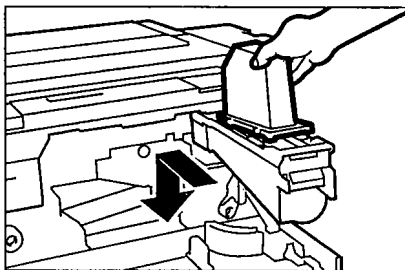


Figure 1-37

- 5) While holding the toner cartridge, pull out the black tab from the hopper to the front.

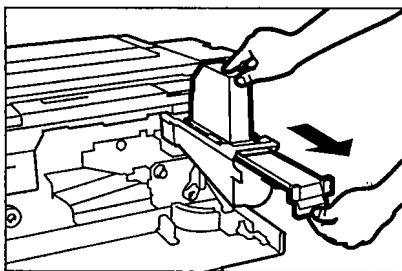


Figure 1-38

- 6) While holding the toner cartridge, pull out the gray tab to the front until it stops.
- 7) Tap lightly on the top of the toner cartridge so that all toner is transferred to the hopper.
- 8) Push the grip of the hopper toward the rear until a click is heard.
- 9) Detach the toner cartridge from the hopper.
- 10) Put the hopper back to its original position.
- 11) Close the front door.

Note:

For supplying toner at time of installation, see CHAPTER 5.

VI. ROUTINE MAINTENANCE BY THE USER

Instruct the user to clean the following parts at least once a week:

1) Copyboard Glass

Wipe it with a moist cloth; then, dry-wipe it.

2) Copyboard Cover

Wipe it with a cloth moistened with a solution of mild detergent; then, dry-wipe it.

I. IMAGE FORMATION

A. Outline

The copier uses the direct charging/transfer method, and its mechanisms are arranged as shown in Figure 2-1.

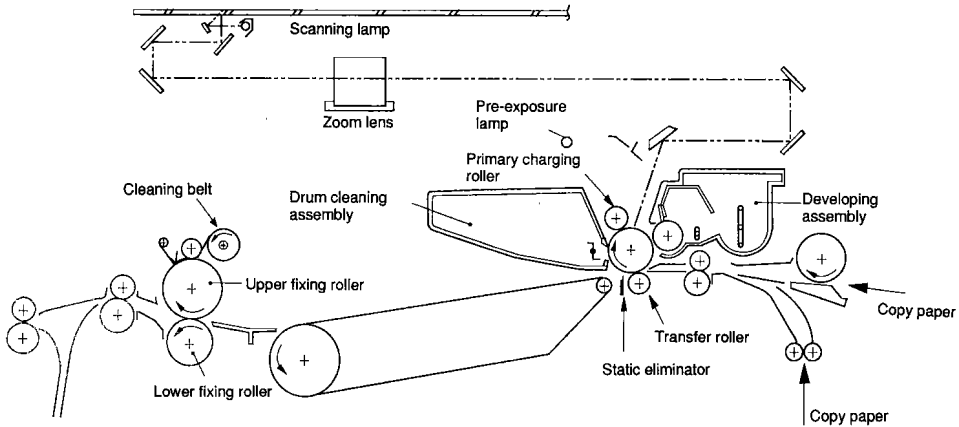


Figure 2-1

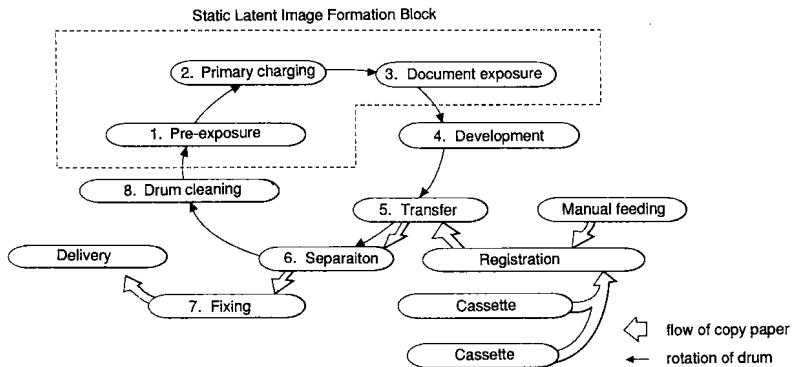


Figure 2-2

The copier's image formation process consists of the following eight steps.

- step 1 Pre-exposure
- step 2 Primary corona charging (negative DC)
- step 3 Document exposure
- step 4 Development (AC and negative DC bias)
- step 5 Transfer (negative DC)
- step 6 Separation (curvature and static eliminator)
- step 7 Fixing
- step 8 Drum cleaning

The photosensitive drum has a two-layer construction: the outside is a photo conductive layer (organic photo conductor; OPC); and the inside, a conductive aluminum base.

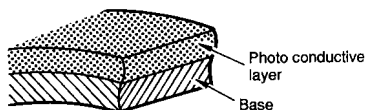


Figure 2-3

B. Static Latent Image Formation Block

The block consists of three steps. At the end of the block, negative charges on the photosensitive drum corresponding to the black areas of the document are left behind, while removing negative charges on the photosensitive drum corresponding to the white areas of the document.

The presence/absence of negative charges on the photosensitive drum forms images not visible to the human eye—therefore, the name *static latent images*.

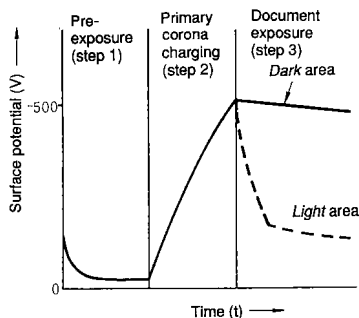


Figure 2-4

C. Pre-Exposure (step 1)

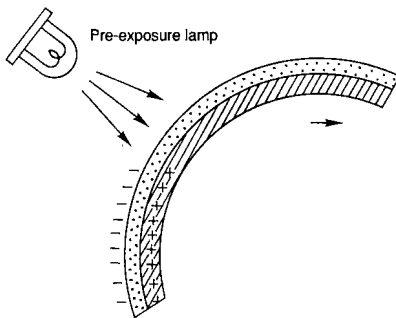


Figure 2-5

The pre-exposure lamp illuminates the surface of the photosensitive drum in preparation for primary corona charging. This removes residual charges from the surface of the photosensitive drum, ensuring even copy density.

D. Primary Corona Charging (step 2)

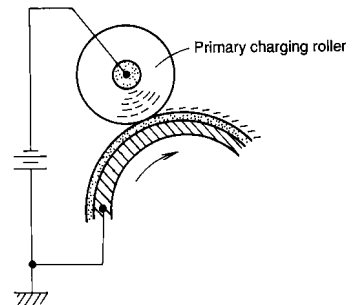


Figure 2-6

The copier uses a special roller to directly charge the photosensitive drum. This roller is made of conductive rubber, and is called *primary charging roller*. The roller requires less application voltage than corona wires, and generates virtually no ozone.

The primary charging roller is used exclusively for charging the photosensitive drum, and is independent of the transfer roller.

E. Document Exposure (step 3)

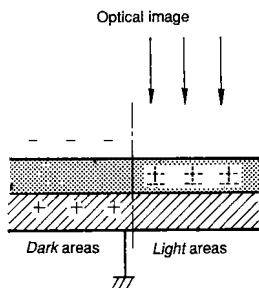


Figure 2-7

The document is exposed, and the optical image of the document is directed to the surface of the drum to neutralize the charges on the *light* areas.

F. Development (step 4)

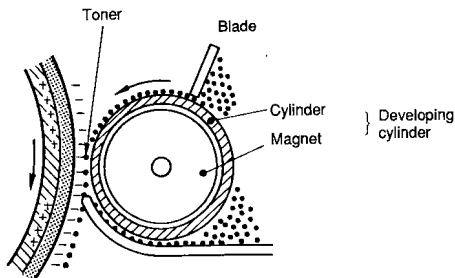


Figure 2-8

As shown in Figure 2-8, the developing assembly consists of a fixed magnet, a cylinder that rotates around the magnet, and a magnetic blade.

The copier's toner is a one-component toner consisting mainly of magnetite and resin.

The toner has insulating characteristics, so that it becomes charged to a positive potential by friction against rotating cylinder.

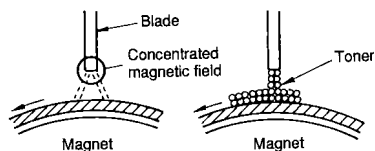


Figure 2-9

A concentrated magnetic field occurs from the magnet to the tip of the blade, and the field is used to attract the toner.

The toner within the magnetic field has strong bond to the blade, and is virtually immobile, ensuring a uniform layer of toner on the cylinder.

An AC bias and a DC bias (negative component) are applied to both developing cylinder and blade at the same time to generate developing bias. The negative component of the developing bias is greater than the positive component.

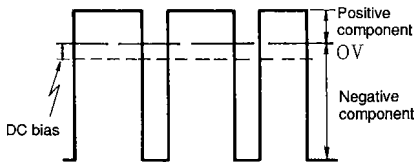


Figure 2-10

During copying operation, the toner is attracted to the photosensitive drum because of the surface potential of the drum and the developing bias (positive component), thereby turning the static latent images to visible images. Excess toner is then repelled from the photosensitive drum by the surface potential of the drum and the developing bias (negative component).

The AC bias (frequency, in particular) affects gradation of the copies; the lower the frequency, the better the gradation — but with increased likelihood of fogging. The DC bias, on the other hand, affects the density of the copies; the higher the bias (closer to 0V), the darker the copies — but with increased likelihood of fogging.

G. Transfer (step 5)

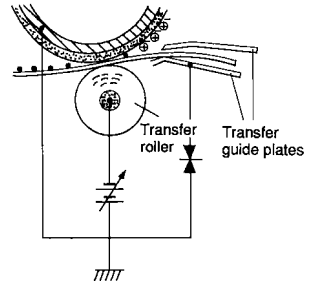


Figure 2-11

The back of copy paper is charged by the transfer roller to a negative potential to attract the positively charged toner from the photosensitive drum.

This way of transferring images is called *roller transfer*, and requires less transfer voltage compared to the corona transfer method and generates virtually no ozone.

To prevent soiling the back of copy paper or poor transfer, the transfer guide is grounded through a varistor.

Reference:

If the transfer guide was directly grounded, the charges that should be on the back of the paper would escape, leading to poor transfer. If the guide was completely separated, on the other hand, it would collect toner, ultimately soiling the back of paper.

Reference:

If the image on the photosensitive drum fails to move to the copy paper because of a jam or other faults, the transfer charging roller could become soiled with toner.

To prevent such a problem, the copier uses a positive transfer voltage during wait and initial/last rotation periods and when the scanner is moving in reverse, thereby moving the positively charged toner from the transfer roller back to the photo-sensitive drum.

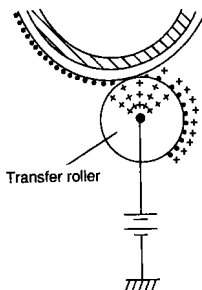


Figure 2-12

H. Separation (step 6)

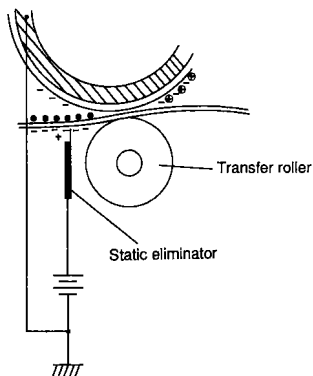


Figure 2-13

The copier uses curvature separation to separate copy paper from the photosensitive drum. Since this method relies on the body of paper, some types of paper with little body tends to resist separation. To prevent such paper from wrapping around the drum, a positive voltage is applied to the separation static eliminator, thereby weakening the bond between paper and drum to facilitate separation.

I. Fixing (step 7)

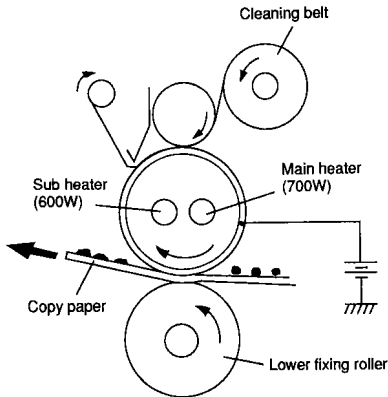


Figure 2-14

The toner image transferred to the copy paper moves between two heat rollers (halogen lamps) and becomes fused to the fibers of the paper; the upper roller is processed for a thinner coating than conventional rollers.

To prevent jams and toner offset, a cleaning belt impregnated with silicone oil is placed in contact with the upper roller. The belt is moved by a take-up mechanism, cleaning the roller while applying silicone oil at the same time.

Further, to additionally prevent toner offset, a positive DC bias is applied to the upper fixing roller, thereby repelling excessive toner to the copy paper.

J. Drum Cleaning (step 8)

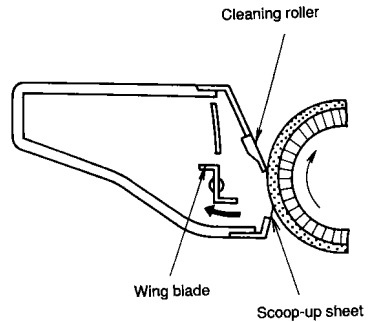


Figure 2-15

In this step, the cleaning blade scrapes the toner remaining on the surface of the photosensitive drum in preparation for the next copying cycle; the scraped toner is gathered by the scoop-up sheet, and forwarded to the rear of the copier by the wing blade.

II. AUXILIARY PROCESSES

1. Blank Exposure

Blank exposure is performed to create non-image areas on reduced copies by removing the surface potential of their corresponding areas on the photosensitive drum; the process is also performed to suit different copy sizes.

The light from the pre-exposure lamp is reflected by the reflecting plate, and directed to the photosensitive drum.

To create non-image areas between two sheets of copy paper, the light from the pre-exposure lamp is reflected by a different reflecting plate so that it is directed over the entire length of the drum.

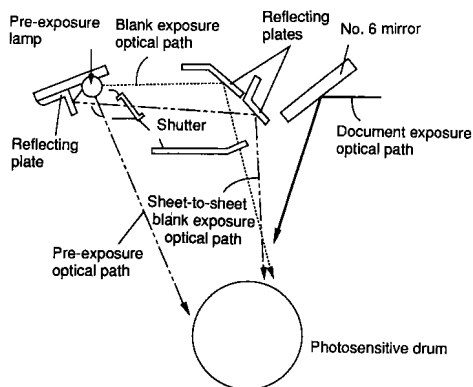


Figure 2-16

I. BASIC MECHANISMS

A. Functional Construction

The copier can be divided into the following four functional blocks: pick-up/feeding system, exposure system, image formation system, and control system.

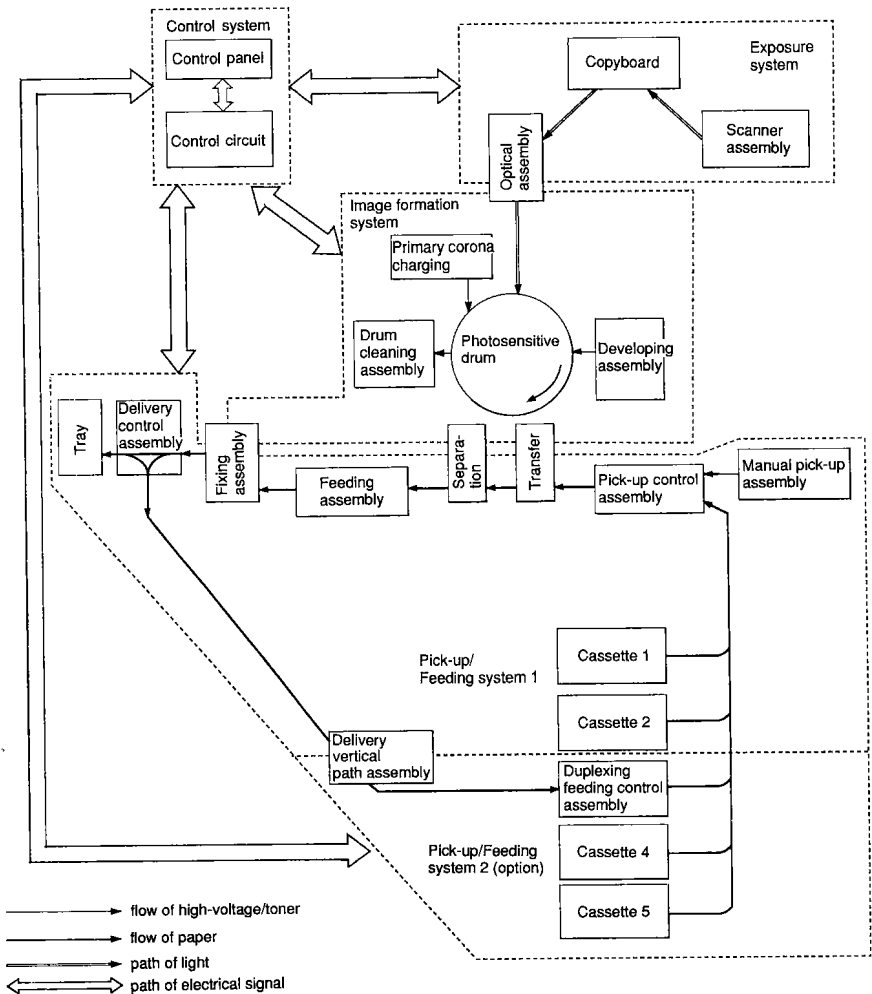


Figure 3-101

B. Outline of Electrical Circuit

The copier's main electrical mechanisms are controlled by the two microprocessors and the five LSIs on the DC controller PCB and the microprocessor on the composite power supply PCB.

The RAM (Q115) on the DC controller PCB is backed up by a lithium battery (BAT101), and is used to store important data.

The functions of each IC in the copier are as follows:

DC Controller PCB

Microprocessors

Q102 CPU (master)

- controls copying sequence
- ##### Q109 CPU (slave)
- reads analog signals
 - controls lens motor, scanner drive motor, and blank motor

ICs

Q106 (gate array)

- turns elements on and off
- serves as timer circuit for error detection circuit
- helps communication between master and slave

Q121, Q122 (gate array)

- controls communication with composite power supply PCB

Q123 (LCDC)

- controls LCD on control panel

Q120 (IPC)

- controls communication with DF, sorter, and cassette feeding unit

Composite Power Supply PCB

Microprocessors

Q401 (CPU)

- controls high voltage
- controls scanning lamp
- controls DC power supply
- controls communication with DC controller PCB

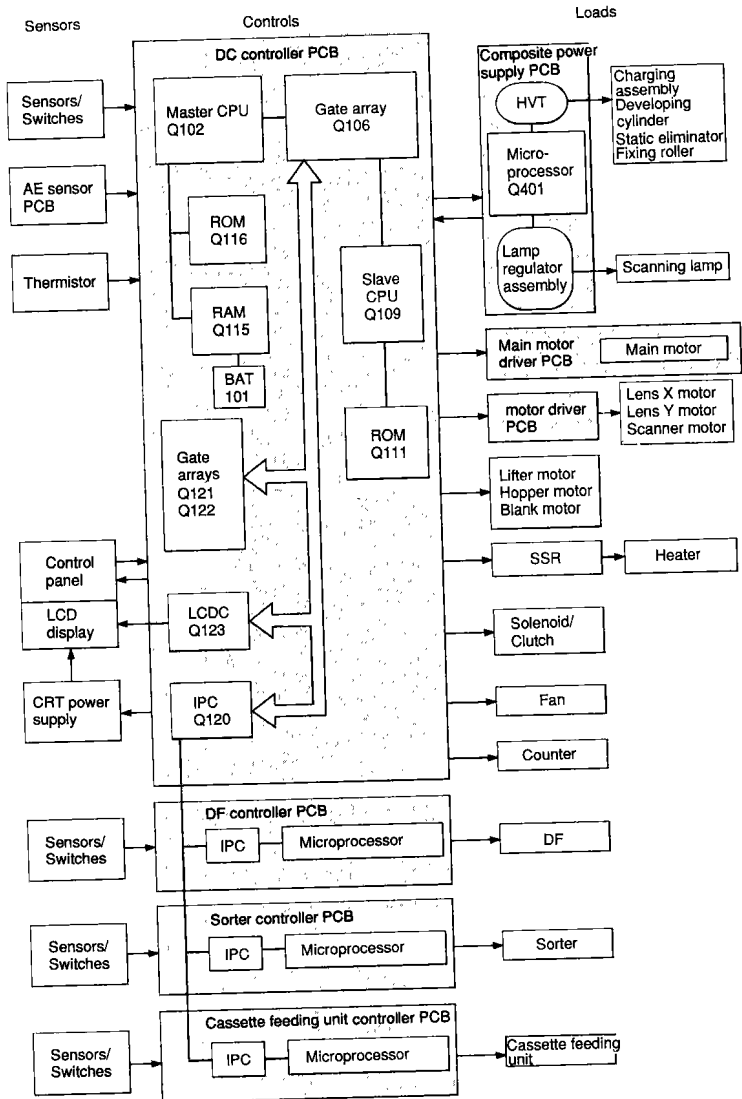


Figure 3-102

C. Inputs to DC Controller

1. Inputs to DC Controller (1/4)

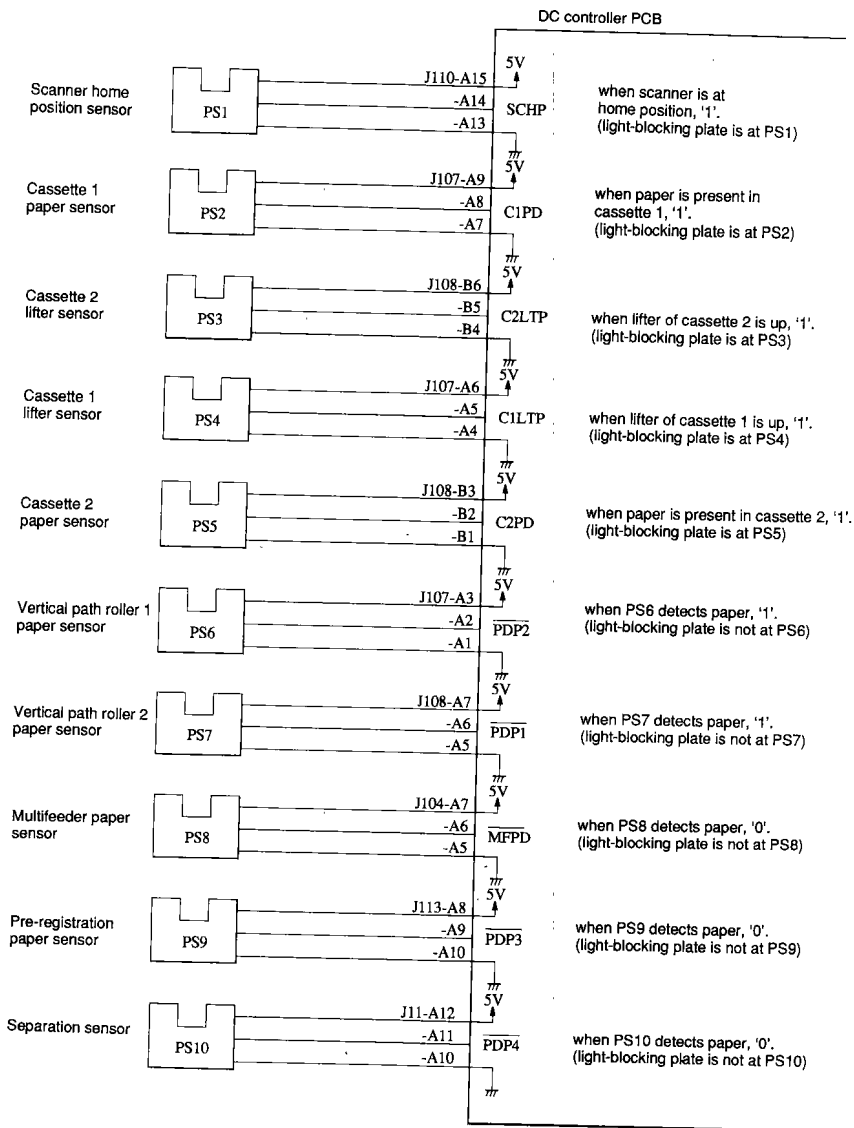


Figure 3-103

2. Inputs to DC Controller (2/4)

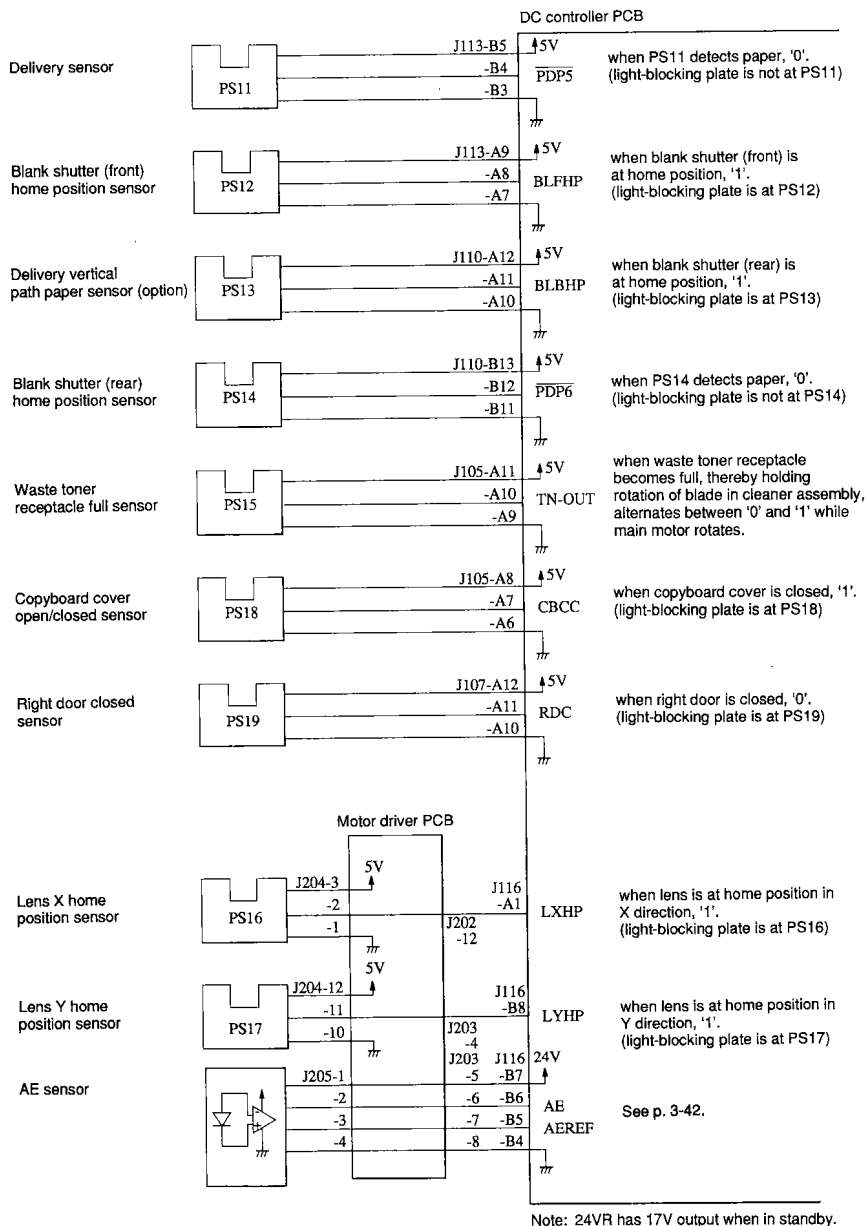


Figure 3-104

3. Inputs to DC Controller (3/4)

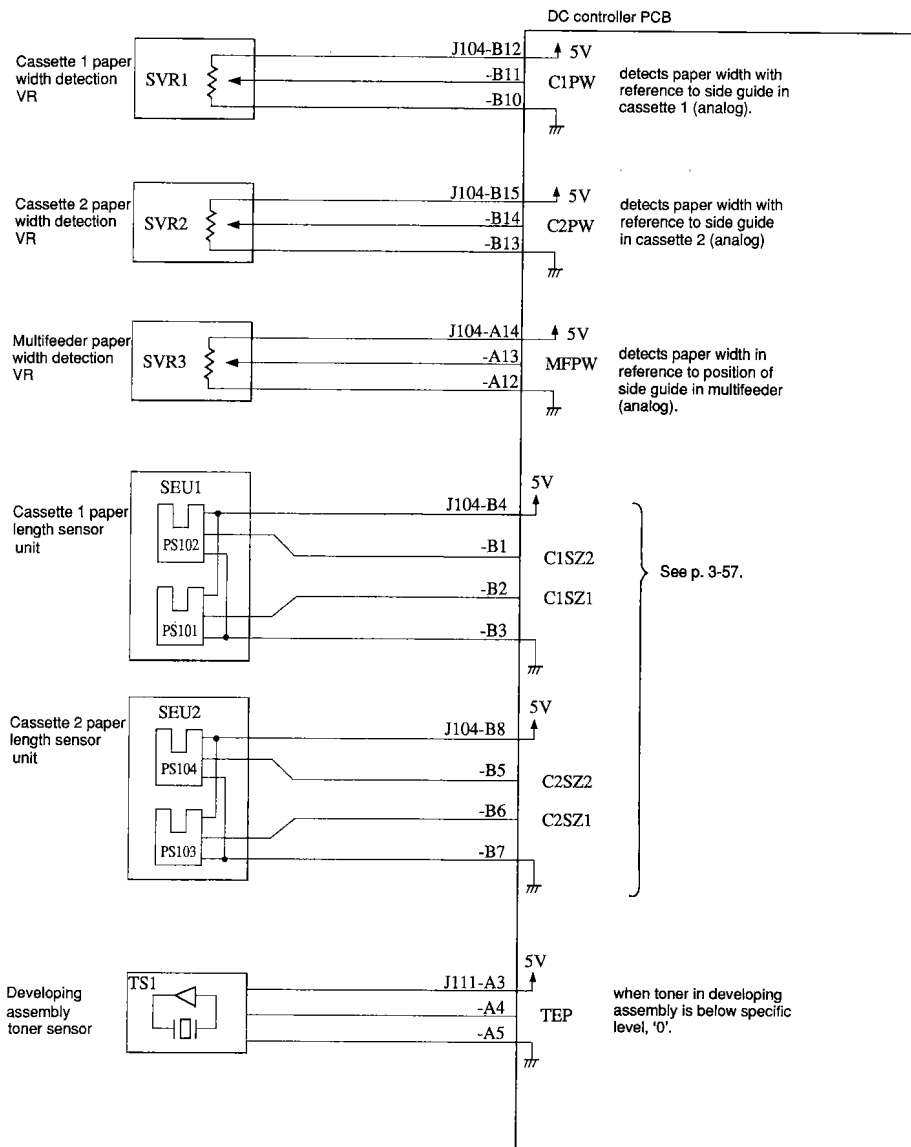


Figure 3-105

4. Inputs to DC Controller (4/4)

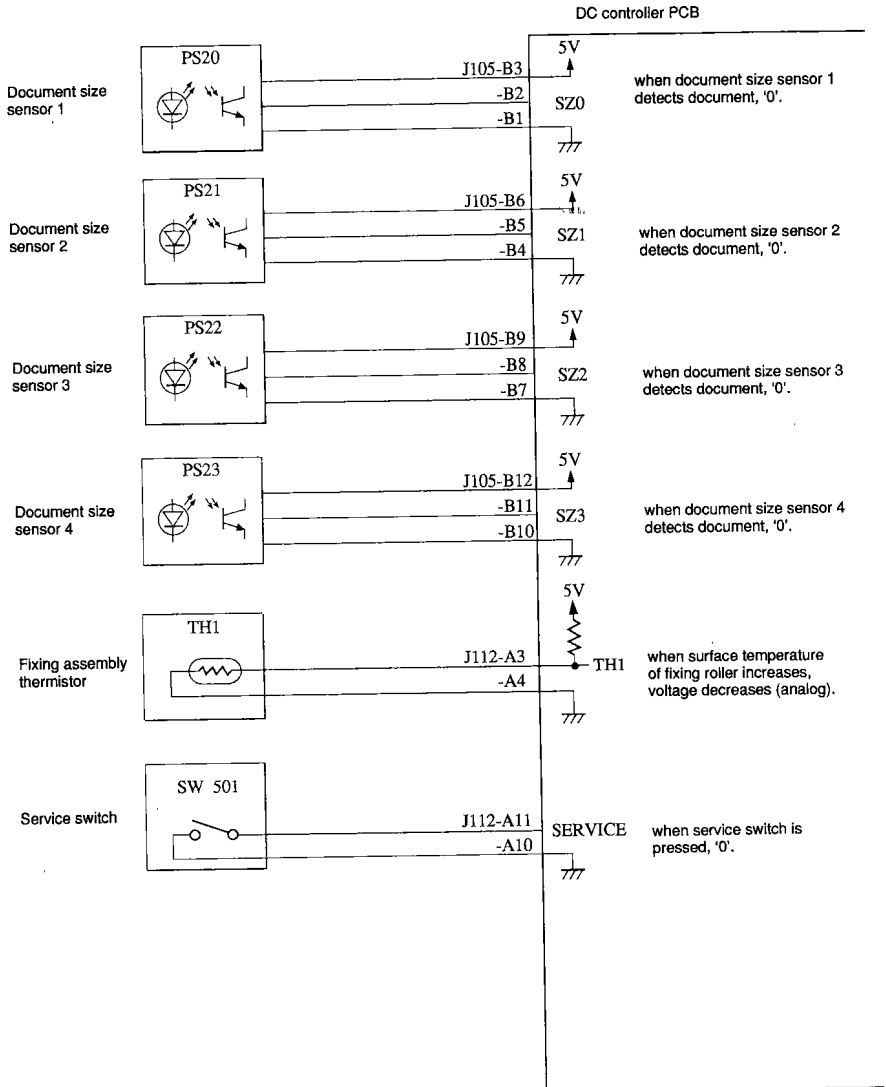


Figure 3-106

D. Outputs from DC Controller

1. Outputs from DC Controller (1/4)

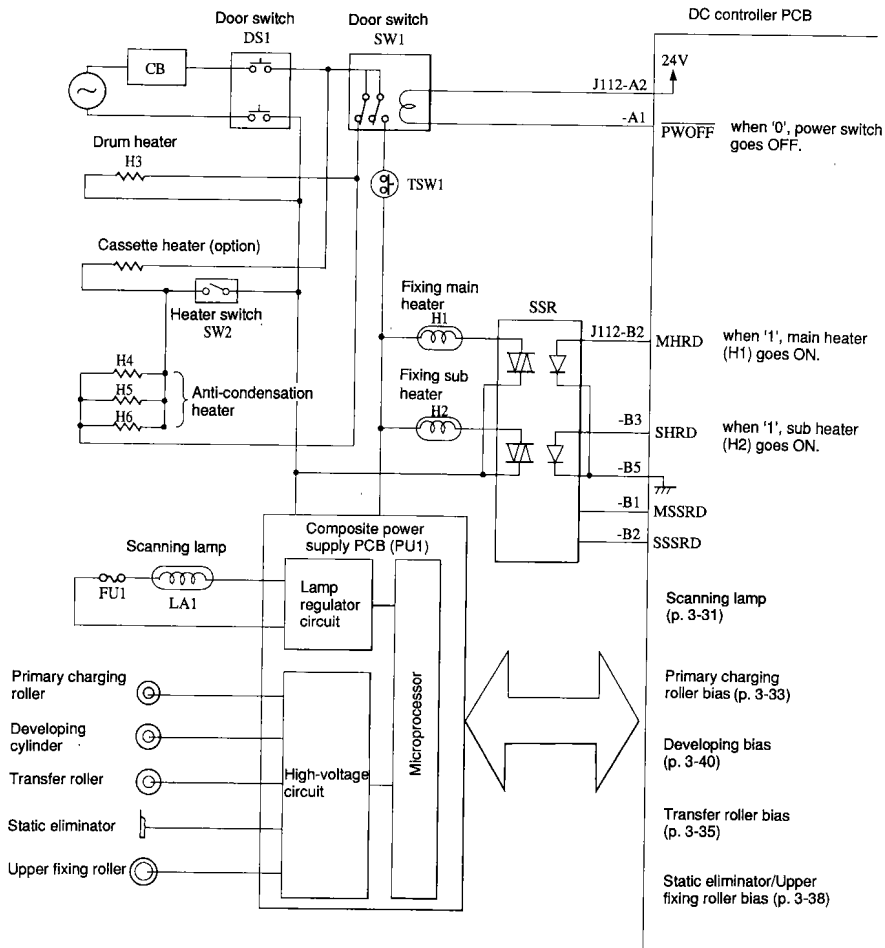


Figure 3-107

2. Outputs from DC Controller (2/4)

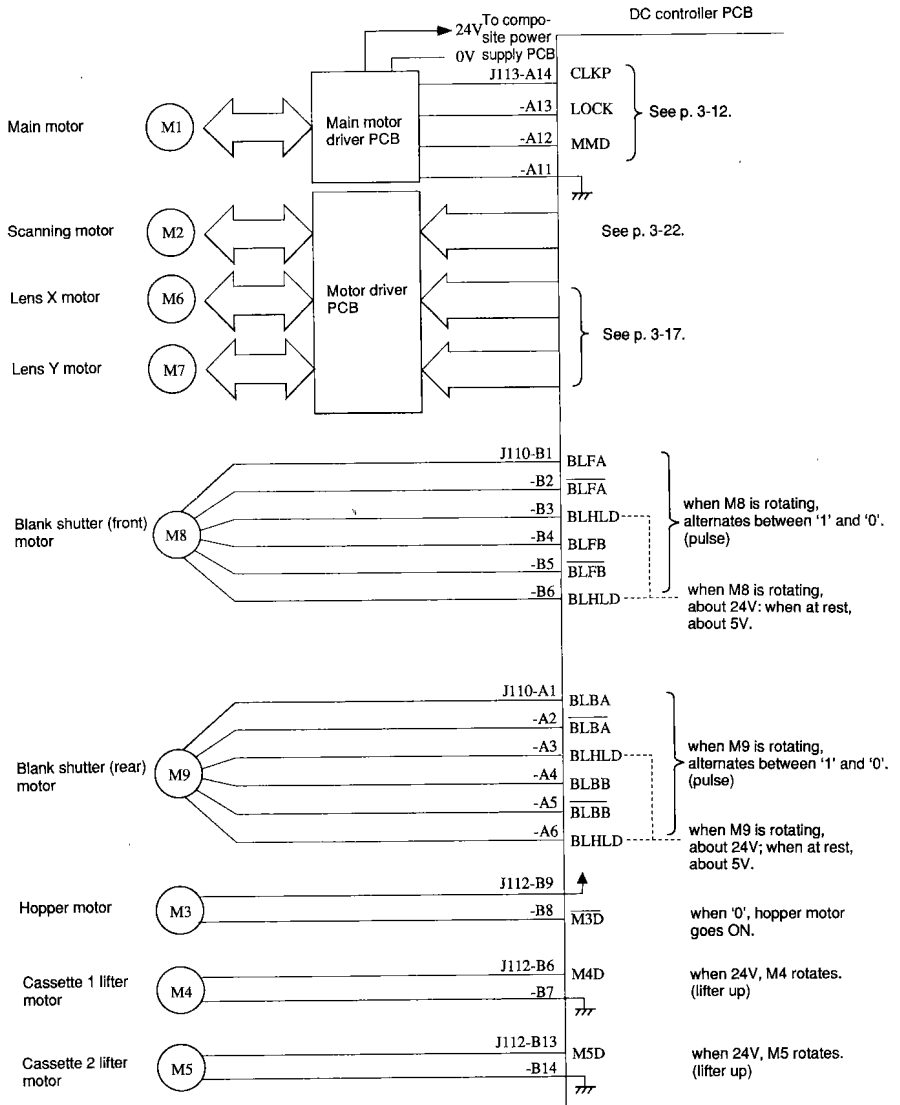


Figure 3-108

3. Outputs from DC Controller (3/4)

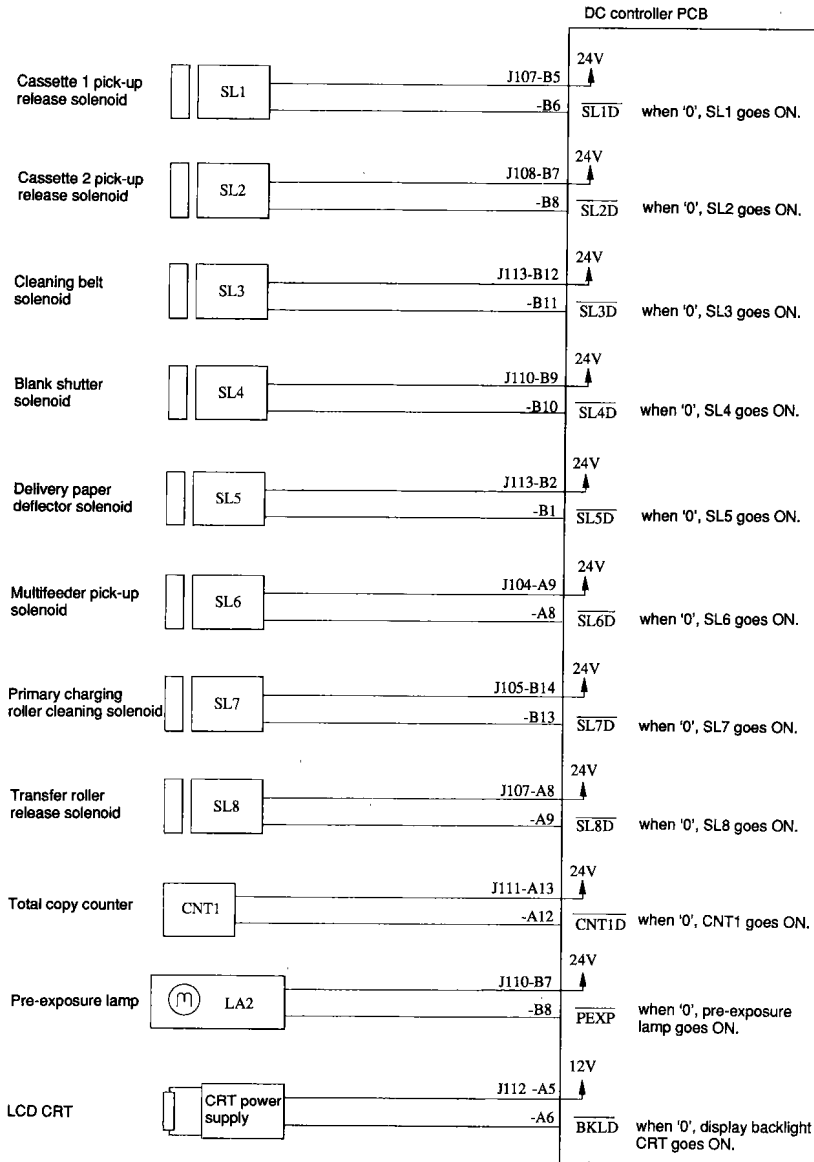


Figure 3-109

4. Outputs from DC Controller (4/4)

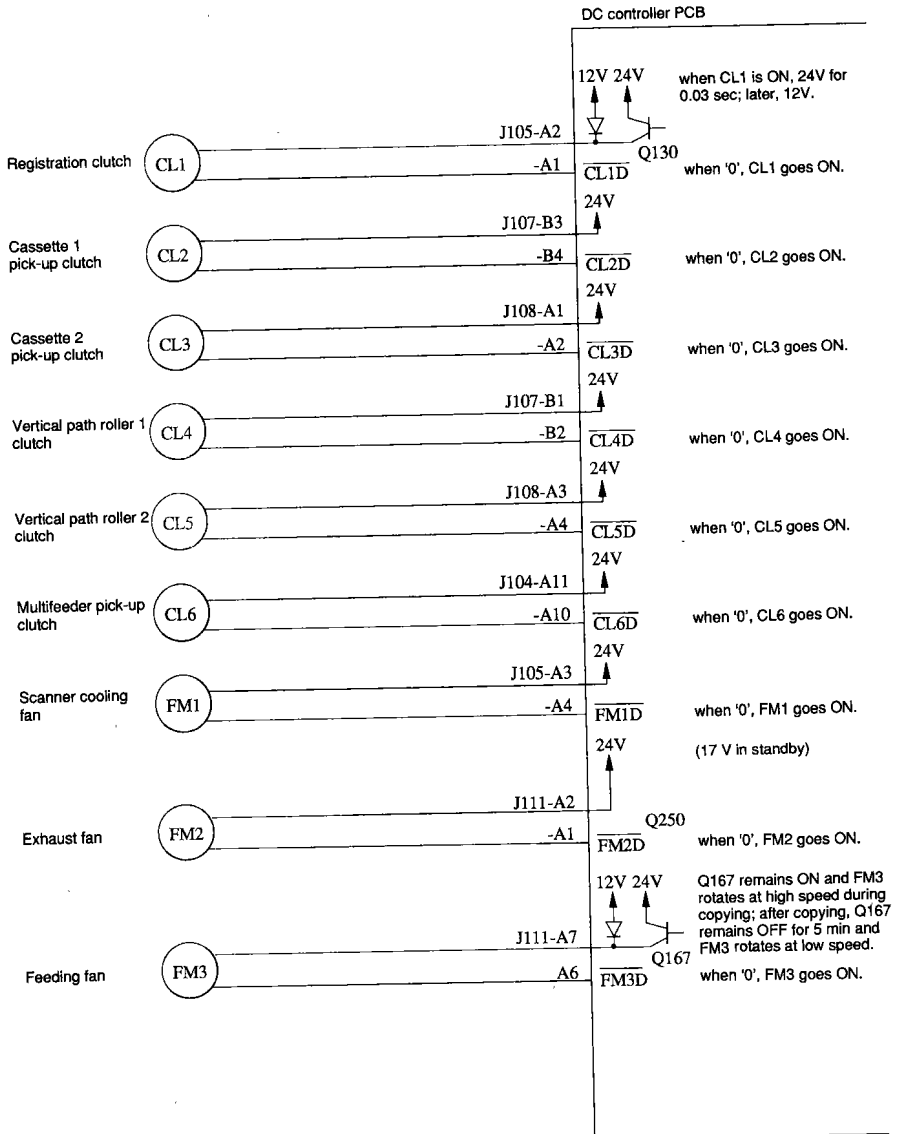


Figure 3-110

E. Controlling the Main Motor

1. Outline

Figure 3-111 shows the circuit that controls the main motor (M1), and the circuit has the following functions:

- ① turns the main motor on and off.
- ② maintains the main motor speed constant.

The main motor is a DC motor with a built-in clock pulse generator. When the motor rotates, clock signals (MMCLK) corresponding to the revolution of the motor are generated. The speed control circuit maintains the revolution of the main motor constant by matching the phases of the frequencies of these clock pulses and the reference signals.

2. Mechanism

When the main motor drive signal (M1D) from the DC controller circuit goes '1', the drive circuit of the motor driver turns on; and the condition causes the main motor to rotate at a specific speed.

When the main motor is rotating at a specific speed, the motor driver PCB sends the constant state signal (LOCK = 1) to the DC controller PCB. The LOCK signal goes '0' if the revolution of the main motor suffers a discrepancy for some reason.

If the LOCK signal remains '0' for about 2 sec, the DC controller identifies the condition as an error in the main motor, and stops the main motor while indicating 'E010' on the display.

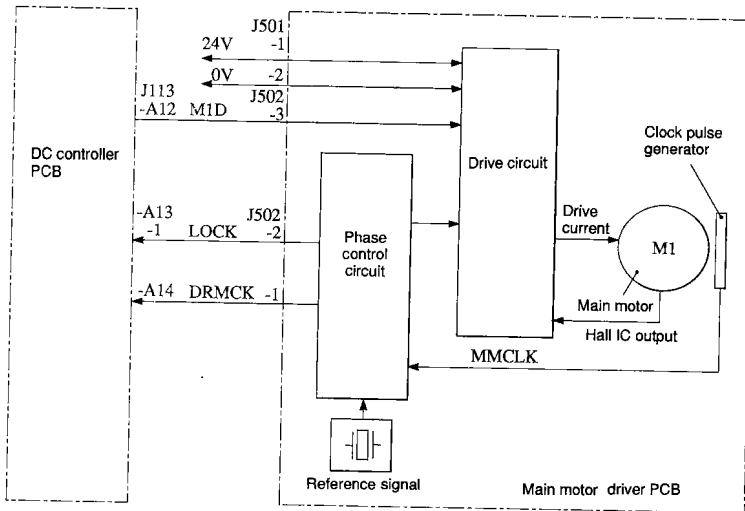
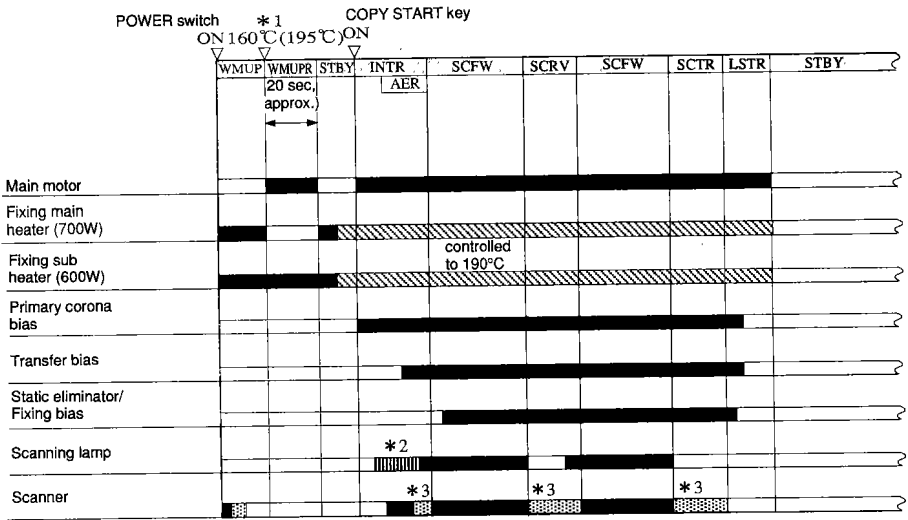


Figure 3-111

F. Basic Sequence of Operations



*1 Surface temperature of fixing roller.

*2 ON only in AE mode.

*3 Scanner reverse.

Figure 3-112

	Period	Description	Remarks
WMUP (warm-up)	From when the copier is switched on until the temperature of the fixing roller reaches 160°C.	Waits for the fixing roller to warm up.	The warm-up time varies depending on the temperature of the fixing roller.
WMUPR (warm-up rotation)	About 2 sec after the temperature of the fixing roller has reached 160°C. (However, about 20 sec if the room temperature is 10°C or less.)	Evens out the temperature of the fixing roller.	After WMUPR, the indication on the display changes from 'auto start available' to the standard modes.
INTR (initial rotation)	For at least 1.5 sec after the COPY START key is pressed.	Stabilizes the sensitivity of the drum in preparation for copying operation.	
AER (AE rotation)	Until the scanner returns to the home position after having moved about 90 mm.	Moves the scanner forward/in reverse about 90 mm to measure the density of the document.	Control is executed only in the AE mode.
SCFW (scanner forward)	While the scanner is moving forward. • The forward travel distance varies depending on the selected size of the paper and the reproduction ratio. • The forward travel speed varies depending on the selected reproduction ratio.	Illuminates the document by the scanning lamp, and the reflected optical image is directed to the photosensitive drum through the mirror and the lens.	
SCRV (scanner reverse)	While the scanner is moving in reverse.	Returns the scanner to the home position in preparation for the next copying cycle.	The registration signal is generated to move the copy paper to the transfer assembly.
LSTR (last rotation)	From the end of SCRV until the copy paper moves past the delivery sensor.	Clean the surface of the photosensitive drum statically.	Discharges the last copy paper.
STBY (standby)	From the end of LSTR until the COPY START key is pressed or the copier is switched off.	Waits for a press on the COPY START key or other operation keys.	- In 2 min after the end of LSTR, the display changes to indicate the standard modes. - If auto start is selected, i.e., if a document is placed and the COPY START key is pressed during WMUP, the copier starts making copies after WMUP.

Table 3-101

II. EXPOSURE SYSTEM

A. Changing the Reproduction Ratios

The reproduction ratio across the photosensitive drum is varied by the lens drive system and that around the drum, by the scanner drive system.

A zoom lens is used in the lens drive system, and the reproduction ratio across the photosensitive drum is varied by changing the position and the focal distance of the lens as shown in Figure 3-201.

The scanner drive system drives the No. 1 mirror faster (reduction) or slower (enlargement) than the rotation of the photosensitive drum (peripheral speed) to vary the reproduction ratio around the drum.

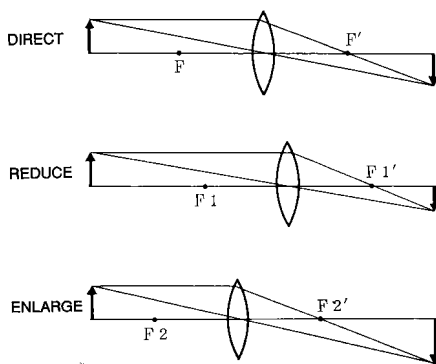


Figure 3-201

B. Lens Drive System

1. Outline

Figure 3-202 shows how copy paper is picked up and fed in conventional copiers; Figure 3-203, on the other hand, shows how copy paper is picked up and fed in the copier.

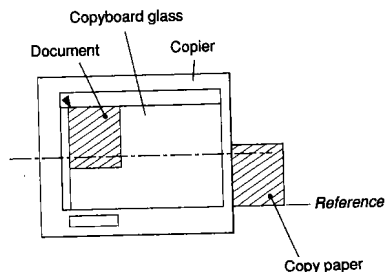


Figure 3-202 (conventional copier; top view)

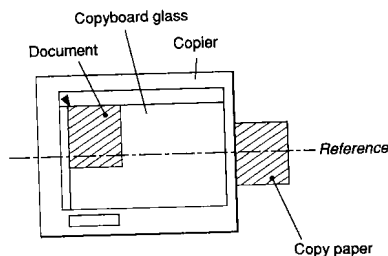


Figure 3-203 (NP6030; top view)

In conventional copiers, copy paper is picked up and fed with reference to the front side of the machines, and this arrangement is called *front reference*.

The NP6030, on the other hand, uses an arrangement called *center reference*, in which copy paper is picked up and fed with reference to the center of its feeding path.

2. Moving the Lens

The copier picks up and feeds copy paper by center reference, and you will set documents on its copyboard along its rear end. For this reason, the lens is moved in Y (vertical) direction even in DIRECT mode if the width of the copy paper is different from the width of the document.

Using the Copyboard

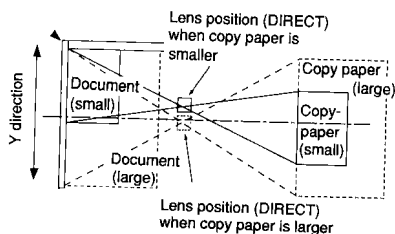


Figure 3-204 (top view)

The RF and ADF pick up and feed documents by center reference; therefore, the lens is not moved in Y (vertical) direction in DIRECT mode as long as the copy size is the same as the document size; see Figure 3-205. In non-DIRECT mode or if the copy size and the document size are different, the lens is moved in Y (vertical) direction to ensure that the image to be placed on the copy paper is handled in the same way as it is handled when the copyboard is used.

Using the RF or ADF

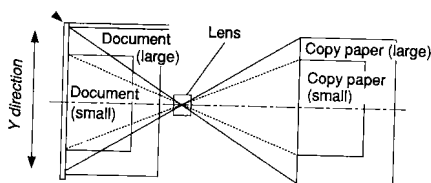


Figure 3-205 (top view)

3. Moving the Lens

- a. Moving the Lens in Y (vertical) Direction
The copier's lens is attached to the lens base. The mount is moved in Y (vertical) direction by rotating the lens Y motor (M7).
- b. Moving the Lens in X (horizontal) Direction
The lens is moved in X (horizontal) direction by rotating the lens X motor (M6) attached to the back of the lens base.

4. Lens Motor Control Circuit

The lens X motor (M6) and the lens Y motor (M7) are 2-phase stepping motors. Since both motors are controlled in the same way, the explanations that follow will be limited to the lens X motor.

The DC motor controls the motors by generating two motor drive pulse signals (LEXA, LEXB). The direction of rotation of the lens X motor (M6) is switched by changing the timing at which the motor drive signals (LEXA, LEXB) are generated.

To hold the lens X motor still, the lens X motor hold signal (LEXHLD) is generated to apply a lower voltage to the motor by way of applying brakes.

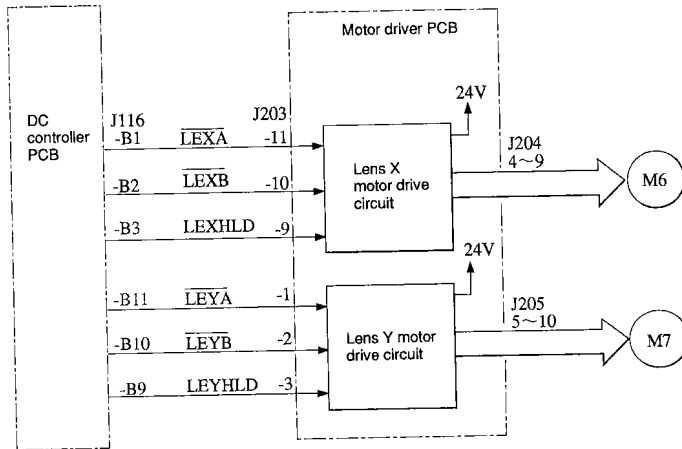


Figure 3-206

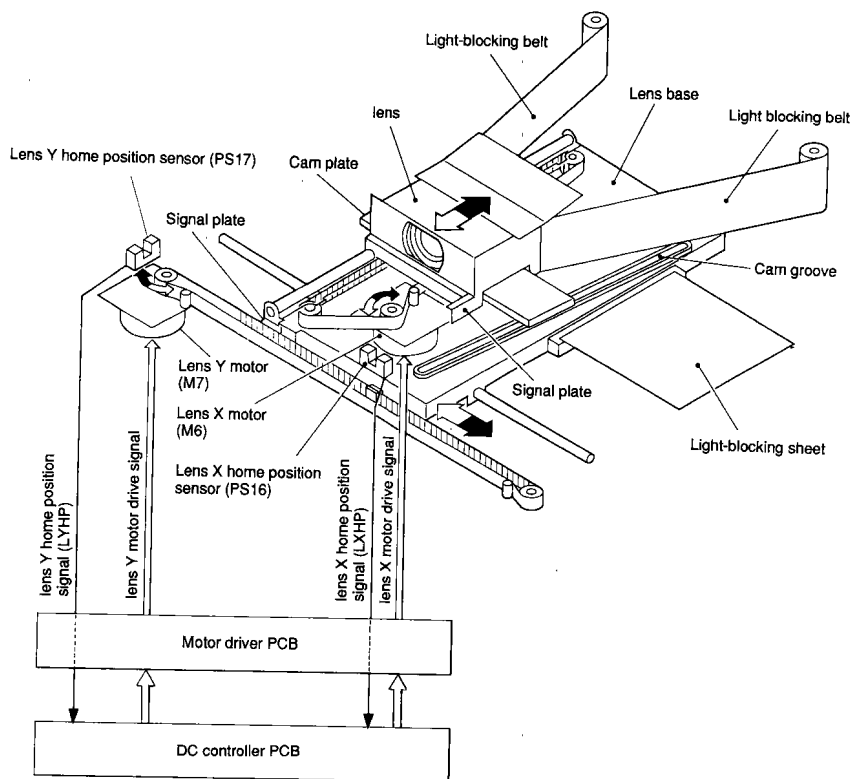


Figure 3-207

5. Moving the Lens

• At Power-On

When the copier is switched on, the lens X motor (M6) starts to rotate to move the lens in the direction of the lens X home position sensor (PS16). Then, the lens Y motor (M7) starts to rotate to move the lens Y in the direction of the lens Y home position sensor (PS17). When the signal plate attached to the lens housing blocks the lens X home position sensor (PS16), the X motor starts to rotate in reverse; when the signal plate attached to the lens base blocks the lens Y home position sensor (PS17), the lens Y motor (M7) starts to rotate in reverse.

Both motors stop when the lens is positioned for DIRECT mode and A4 copy width; see I of Figure 3-208.

• Sequence of Lens Movement

• During Copying Operation

The microprocessor slave (Q109) remembers the lens DIRECT position and the A4 copy width position. If a non-DIRECT ratio is selected, the microprocessor immediately sends drive pulses to the X motor (M6)/Y motor (M7) to change the position of the lens; see II in Figure 3-208. The lens Y motor (M7) starts to move after the document size and the copy size have been identified following a press on the COPY START key; see III in Figure 3-208.

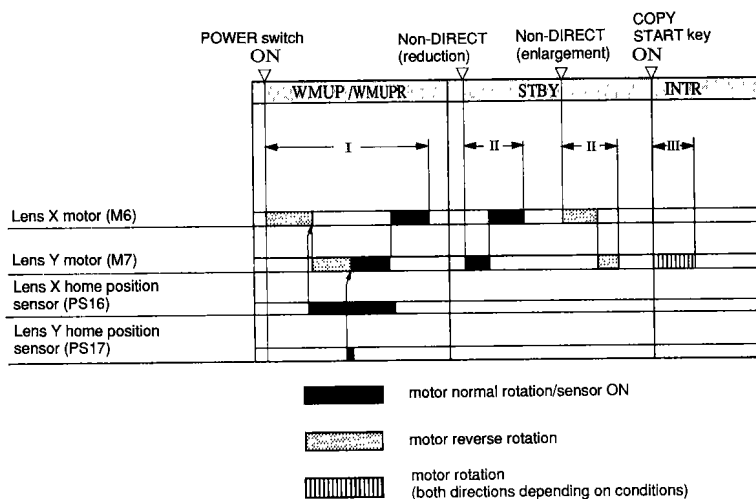


Figure 3-208

6. Focusing

The copier's zoom lens unit consists of multiple lenses, and the lenses are focused on images by the cam plate attached inside the zoom lens unit.

The cam plate moves along the cam groove in the lens base to change the intervals between the multiple lenses for correct focusing.

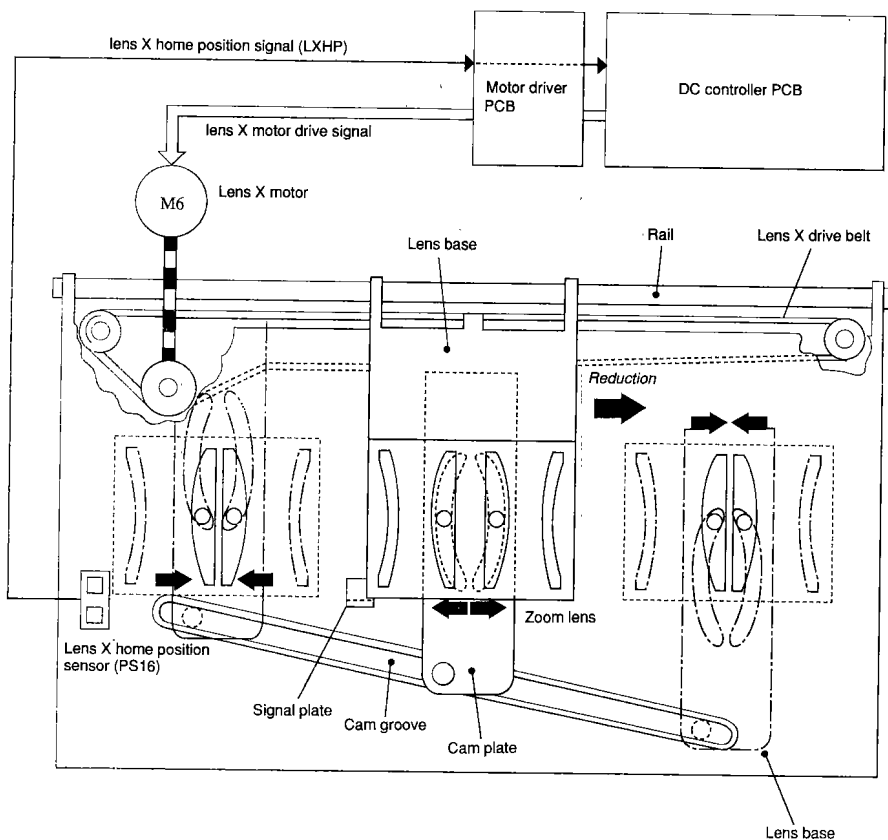


Figure 3-209

C. Scanner Drive System

1. Outline

The scanner system is driven by the scanner motor (M2). The scanner motor changes its direction of rotation to move the scanner forward and in reverse. When the scanner is moving forward, the revolution of the motor changes continuously to suit the selected reproduction ratio; however, when the scanner is moving in reverse, the revolution of the motor is constant regardless of the selected reproduction ratio — about three times as high as when the scanner is moving forward.

The distance over which the scanner moves varies depending on the length of the copy paper and the selected reproduction ratio.

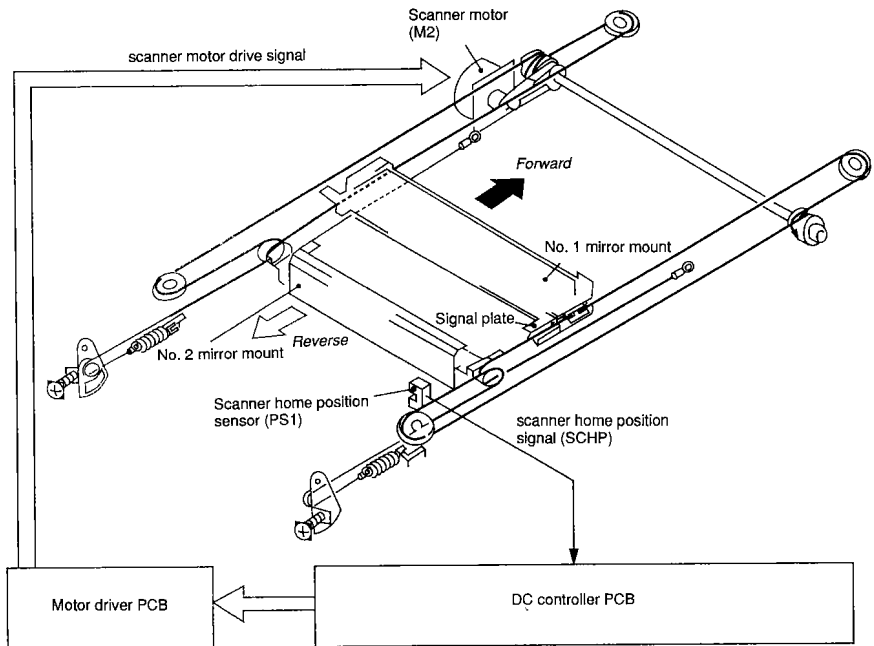


Figure 3-210

2. Scanner Motor Control Circuit

The scanner motor (M2) is a 5-phase stepping motor, and is controlled by the 5-phase 10 motor drive signals (SCT1 through SCT10) generated by the DC controller. The direction and speed of the scanner motor (M2) are controlled by changing the

timing at which these 10 motor drive signals (SCT1 through SCT10) are generated.

The motor is kept still by the scanner motor hold signal (SCMHLD), which generates a lower voltage used to apply brakes to the motor.

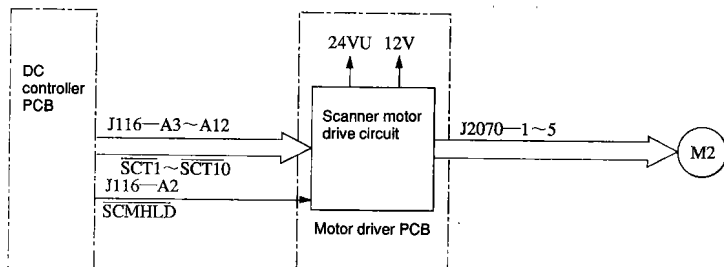


Figure 3-211

3. Relationship between Scanner Sensor and Signals

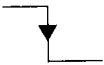
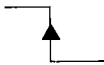
Scanner sensor	Signal	Scanner		Description
		Forward	Reverse	
Scanner home position	SCHP			• registration clutch on
				• 0.1 sec later, scanner stops moving in reverse

Table 3-201

4. Basic Sequence of Scanner Movement (non-DIRECT)

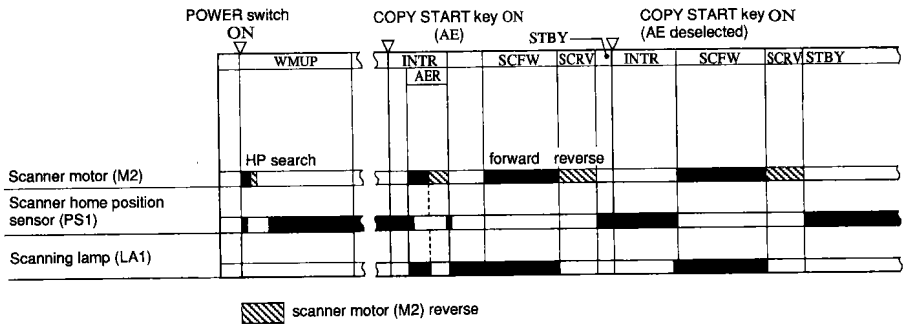


Figure 3-212

5. Sequence of Scanner Movement in Page Separation Mode (2 copies)

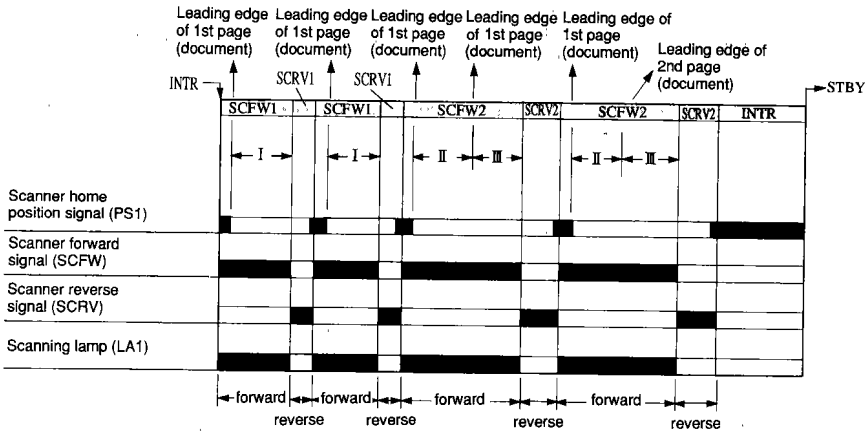


Figure 3-213

I, II, and III in Figure 3-213 are controlled with reference to the leading edge of the first document page (falling edge of PS1).

- I: The distance over which the scanner moves from the leading edge of the document is determined by the reproduction ratio and the cassette size as in normal copying operation.
- II: The period is similar to I; however, if the scanner must move forward more than 210 mm, the 210mm point will be identified as the leading edge of the second document page. If the distance is less than 210 mm, the point at which the scanner reverses in I will be identified as the leading edge of the second document page.
- III: Same as I.

Reference:

The (maximum) distance over which the scanner moves from the leading edge of a document* is 432 mm; the distance, further is also affected by the selected reproduction ratio.

When making 200% copies, the scanner moves as long as 216 mm.

*Point to be reached by the scanner after having moved 10 mm from the falling edge of PS1.

Reference:

If more than two modes are selected, the scanner is controlled based on the smallest document size identified.

If any of the following modes is selected, the scanner is controlled based on the document size.

Mode	Reference document size
Feeder (RF, ADF)	document size identified by the feeder.
Document frame erasing	document size specified by the user.

Table 3-202

D. Controlling the Identification of Document Size

1. Outline

The copier provides auto paper selection, auto ratio selection, reduce layout mode, and enlarge layout mode, and all these modes are dependent on the identification of document size.

The presence/absence of a document and its size, if any, are identified by the four document size sensors shown in Figure 3-214; when the copyboard cover is brought down, the presence of a document is checked by each of the sensors, and the size is

identified as one of the default sizes — A3, B4, A4, or B5.

Each document size sensor consists of a LED and a phototransistor; the LED emits light against the document, and the reflected light is detected by the phototransistor for output to the DC controller circuit.

The size of documents picked up from the DF (option) is checked by the DF itself, and the data is sent to the copier. When the DF is used, the copier executes auto paper selection, auto ratio selection, reduce layout, and enlarge layout modes based on the data sent from the DF.

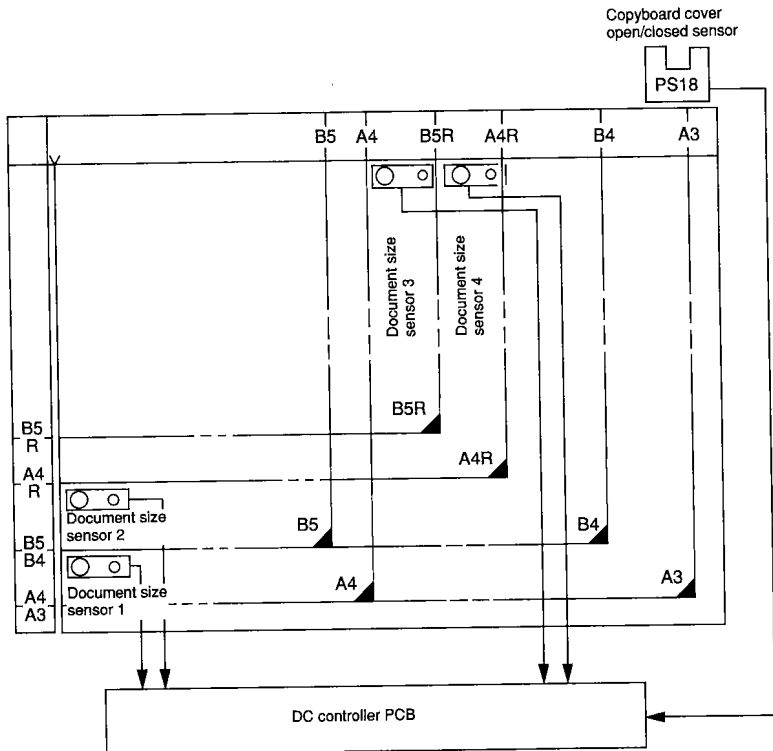


Figure 3-214

2. Mechanism

When the copyboard cover is brought down to about 30° or less, i.e., the light-blocking plate blocks PS18, the copyboard cover open/closed sensor (PS18) attached at the copier's rear goes ON.

The DC controller reads the output level of each size sensor at intervals of about 0.1 sec for 15 sec or until the COPY START key is pressed after PS18 has gone ON. If no change occurs in the output level, the DC controller PCB identifies the presence of a document at the respective sensor position, thereby identifying the document size (Table 3-203).

This way of identifying the size of documents enables identifying the size of even an extremely dark document.

The sensor output level, however, does not change for the following:

- A3 dark document
- book document (changes are difficult to detect because of the thickness)

Reference:

The copier could wrongly identify the size of documents a and b above.

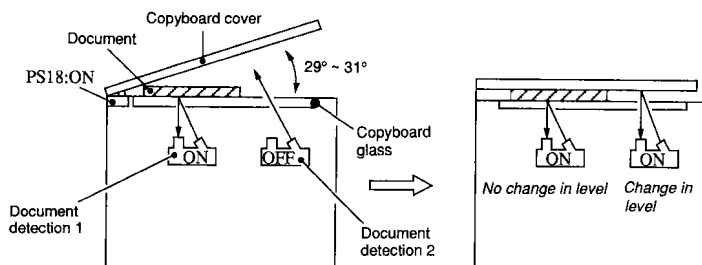


Figure 3-215

3. Identifying the Document Size

The DC controller PCB identifies the different sizes of documents based on the outputs of the document sensors; see Table 3-203.

No: the sensor outputs occurring when the copyboard cover is brought down between 15° and 30° and 15 sec thereafter are the same, i.e., a document is identified.

Yes: the sensor output occurring when the copyboard cover is brought down between 15° and 30° and when the copyboard cover is completely in contact with the copyboard are different, i.e., no document is identified.

Size	Document size sensor			
	1	2	3	4
A3	No	No	No	No
B4	Yes	No	No	No
A4R	Yes	Yes	No	No
A4	No	No	Yes	Yes
B5	Yes	No	Yes	Yes
B5R	Yes	Yes	No	Yes
XX	Yes	Yes	Yes	Yes

Table 3-203 (A/B Documents)

4. Identifying the Size of Documents by the DF

a. Outline

The DF (option) identifies the sizes of documents as follows in response to a command from the copier.

- ① If all the cassettes are of the AB type, the copier instructs the DF to identify AB sizes.
- ② If all the cassettes are of the INCH type, the copier instructs the DF to identify INCH sizes.

If the document and the copy paper are of different size types, however, the copies may not carry all the image of the document.

In addition, the DF used for the copier sets document on the copyboard glass by center reference; therefore, different sides will miss images in book mode.

Example 1

A4 document, LTR sheet

- Book mode
- DF mode

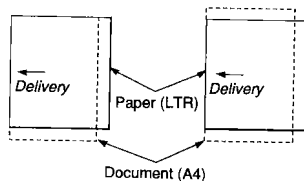


Figure 3-216

- In the case of an A4 document and a LTR copy, the copies may not show the bottom of the document in book mode and both bottom and top of the document in DF mode.

Example 2

A4 document, LTR sheet (enlargement, DF mode)

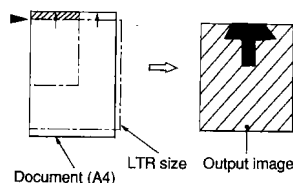


Figure 3-217

- Since the document is identified as LTR and enlargement is with reference to the point indicated by ►, the shaded area will not show on the copies.

Example 3

LTR document, A4 copy (enlargement, DF mode)

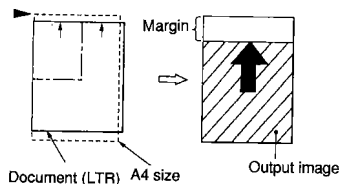


Figure 3-218

- Since the document is identified as A4 and enlargement is with reference to the point indicated by ►, the margin at the top of the copies increases.

III. IMAGE FORMATION SYSTEM

A. Outline

Figure 3-301 is a diagram of the copier's image formation system, which has the following functions:

- controls the scanning lamp
- controls the primary charging roller bias
- controls the transfer roller bias
- controls the static eliminator/fixing roller bias
- controls the developing bias
- controls the blank exposure lamp

The copier has a microprocessor (Q401) on its composite power supply PCB to perform the foregoing controls.

The microprocessor master (Q102) on the DC controller PCB and the microprocessor (Q401) on the composite power supply PCB exchange data using an 8-bit data line, 3-bit command line, and 2-bit communication check line.

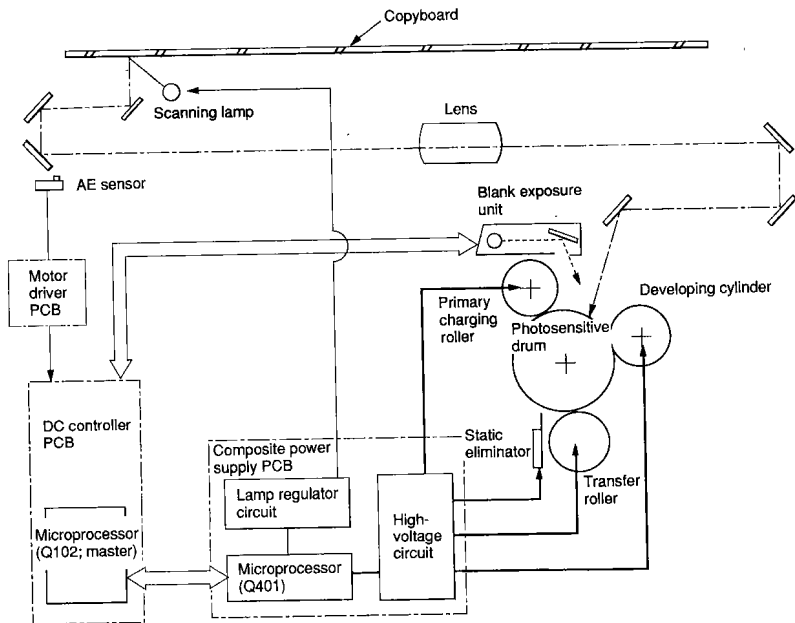


Figure 3-301

C. Controlling the Scanning Lamp Intensity

1. Outline

Figure 3-303 shows the circuit that controls the intensity of the scanning lamp, and the circuit has the following functions:

- turns on and off the scanning lamp.
- checks if the scanning lamp is on or off.
- controls the intensity of the scanning lamp.

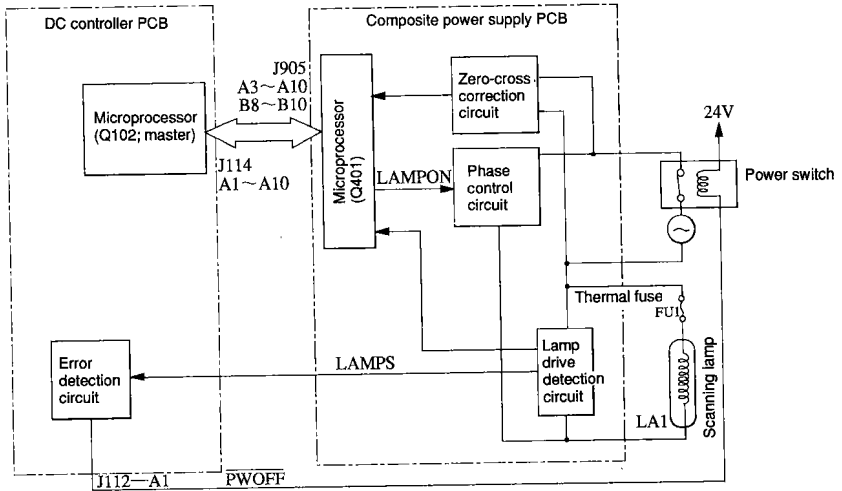


Figure 3-303

2. Turning On and Off the Scanning Lamp and Controlling the Light Intensity

The microprocessor master (Q102) on the DC controller PCB causes the microprocessor (Q401) on the compound power supply PCB to generate the LAMPON signal (pulse), thereby turning on the scanning lamp.

The intensity of the scanning lamp is varied between 58 and 75 V by changing the timing at which the LAMPON signal is generated.

- Scanning Lamp Drive Voltage at 75 V

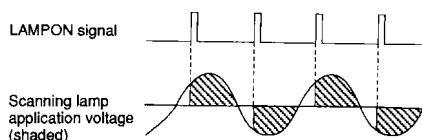


Figure 3-304

- Scanning Lamp Drive Voltage at 58 V

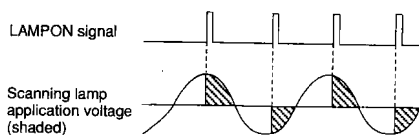


Figure 3-305

3. Detecting the Activation of the Scanning Lamp

When the scanning lamp (LA1) is on, the lamp drive detection circuit remains on to send the LAMPS signal to the error detection circuit on the DC controller.

The DC controller PCB uses the LAMPS signal to check the condition of the scanning lamp; if it identifies an error, it indicates 'E220' on the display or executes error auto power-off.

4. Automatic Control of Scanning Lamp Intensity (ALVC)

To correct changes in the copy quality caused by deterioration or wear of the photosensitive drum, the copier automatically corrects the drive voltage for the scanning lamp (ALVC control).

5. Protection Mechanism

The copier is equipped with a thermal fuse to prevent malfunction of the scanning lamp.

If a short circuit or some factor causes overheating around the scanning lamp (about 104°C or more), the thermal fuse (FU1) blows to cut the supply power to the scanning lamp.

D. Controlling the Primary Charging Roller Bias

1. Outline

Figure 3-306 shows the circuit that controls the application voltage for the primary charging roller, and the circuit has the following functions:

- turns on and off the primary charging roller bias.
- maintains the voltage of the primary roller bias.
- switches the application voltage for the primary roller bias.
- corrects the application voltage level for the primary charging roller bias and the scanning lamp drive voltage level.

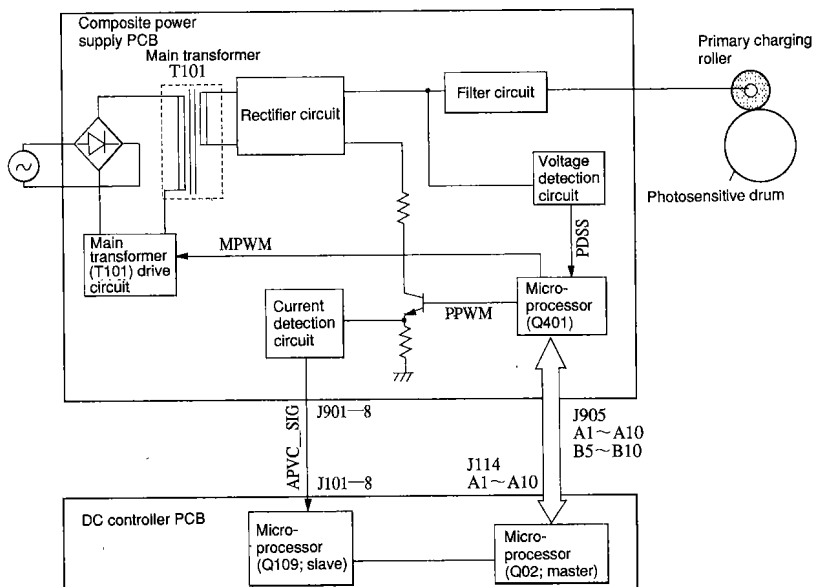


Figure 3-306

2. Turning On and Off the Primary Roller Bias

Under the control of the microprocessor master (Q102) on the DC controller PCB, the microprocessor (Q401) on the composite power supply PCB generates the PPWM signal (pulse). The signal causes the secondary side of the main transformer (T101) to turn on, thereby generating a primary charging roller bias.

The main transformer (T101) is driven by the drive signal (MPWM) from the microprocessor (Q401). In addition to the foregoing functions, the main transformer is used to take care of the DC power supply and to serve as the transformer for other high-voltage loads.

3. Maintaining the Voltage of the Primary Charging Roller Bias

While a bias voltage is applied to the primary charging roller, the microprocessor (Q401) on the composite power supply PCB takes in the PDSS signal (analog) from the voltage detection circuit, and controls the PPWM signal so that the output voltage remains constant.

4. Switching the Primary Charging Roller Bias Application Voltage

The copier applies a cleaning bias to the transfer roller to clean the transfer roller during initial rotation (INTR) and while the roller is over the gap between two sheets of paper.

To ensure better cleaning by the cleaning bias and to prevent residual memory on the drum by the bias at the same time, a primary charging roller bias is applied during initial rotation and while the roller is over the gap between two sheets of paper.

5. Correcting the Application Voltage Level for the Primary Charging Roller Bias and the Scanning Lamp Drive Voltage Level

Changes in the static latent image cause changes in the copy images, and these changes are usually triggered by the following:

- change in the sensitivity of the drum
- change in the degree of charging by the primary charging roller

The above changes, in turn, are caused by changes in the site environment (temperature, humidity) or deterioration, wear, and dirt on related parts.

You may suspect the above when the copier's light area potential (V_L) and dark area potential (V_D) increases. To prevent the problem, the copier corrects the primary charging roller bias application voltage level (APVC control) and, at the same time, corrects the scanning lamp drive voltage level (ALVC control), thereby ensuring a constant light area voltage (V_L) and dark area voltage (V_D) at all times.

These correction mechanisms are started under the following conditions and timing:

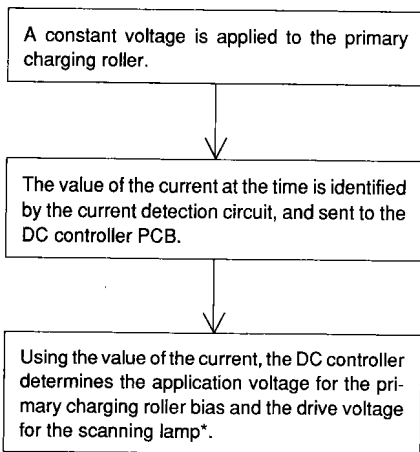
Conditions

- when the temperature of the fixing assembly is 100°C while the main switch is on.
- during APVC_MR (service mode, S4S).

Timing

- during WMUPR

Flow



- * The DC controller controls the voltages based on correction table for the drive voltage/application voltage and the return current it has stored in advance in its memory.

E. Controlling the Transfer Roller Bias

1. Outline

The copier uses a direct charging method, in which charging rollers are used for transfer. Its bias control, therefore, is different from conventional machines which use corona charging for transfer.

The copier uses the following three types of transfer roller biases:

1) Transfer Bias

This bias is identical to the transfer bias used by conventional machines, and is a negative voltage (constant voltage, DC).

2) Cleaning Bias

In machines using a direct charging method, jams can cause the toner on the photosensitive drum to transfer and adhere to the transfer roller.

To eliminate such toner, the copier applies a positive voltage (constant voltage, DC), thereby returning the toner to the drum.

Cleaning Bias Output Timing

- during initial rotation after a press on the COPY START key
- during last rotation, as necessary
- during TRR_CL (service mode, S4S)

3) Reference Bias

Changes in the environment or deterioration of the transfer roller can change the resistance of the transfer roller and affect transfer efficiency.

To prevent changes in the copy image caused by changes in transfer efficiency, the copier corrects the application voltage level for the transfer bias.

The reference bias (constant current, DC) is applied to determine the correction value each time the COPY START key is pressed.

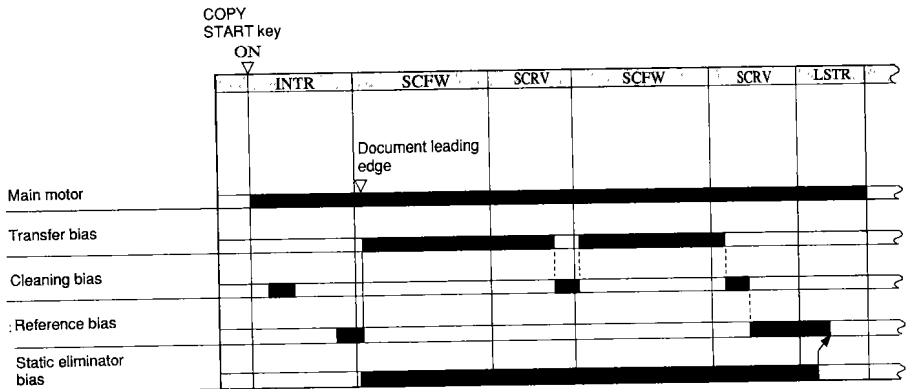


Figure 3-307

Figure 3-308 shows the circuit used to control the foregoing three types of biases, and the circuit has the following functions:

- turns on and off the transfer roller bias.
- controls the bias constant voltage for transfer.
- corrects the bias voltage level for transfer.
- detects error in the transfer bias.

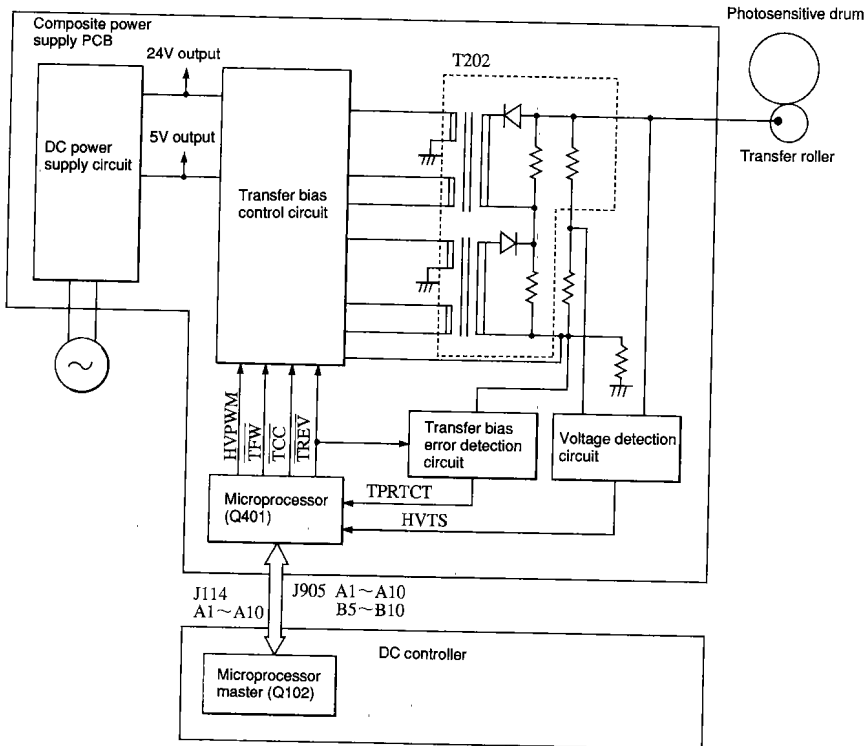


Figure 3-308

2. Turning On and Off the Transfer Roller Bias

The microprocessor master (Q102) on the DC controller PCB controls the microprocessor (Q401) on the composite power supply PCB to send four signals to the transfer bias control circuit, and the combinations of these four signals are used to determine which bias should be applied.

	HVPWM	TFW	TREV	TCC
Transfer bias	ON (pulse)	ON	OFF	OFF
Cleaning bias	OFF	OFF	ON	OFF
Reference bias	OFF	ON	OFF	ON

Table 3-301

3. Controlling the Transfer Bias Constant Voltage

The microprocessor (Q401) on the composite power supply PCB reads in the HVTS signal (analog) while the transfer bias output is generated, and controls the HVPWM signal so that the application voltage remains constant.

4. Correcting the Transfer Bias Voltage Level (ATVC control)

The copier automatically corrects the transfer bias application voltage level, thereby correcting changes in the transfer efficiency caused by changes in the environment or deterioration of the transfer roller (ATVC) control.

The copier applies the reference bias during initial rotation (negative DC constant current).

The microprocessor (Q401) reads in the voltage from the voltage detection circuit.

The microprocessor (Q401) determines the transfer bias application voltage based on the voltage data.

The copier applies the transfer bias at the determined application voltage during transfer.

The above control is executed once during the initial rotation period that is initiated after the COPY START key is pressed. For this reason, the application voltage never fluctuates during copying operation.

F. Controlling the Static Eliminator Bias and Fixing Bias

1. Outline

Figure 3-309 shows the circuit that controls the static eliminator and the fixing bias, and the circuit has the following functions:

- turns on and off the static eliminator bias and the fixing bias.
- switches the voltage for the static eliminator bias and the fixing bias.

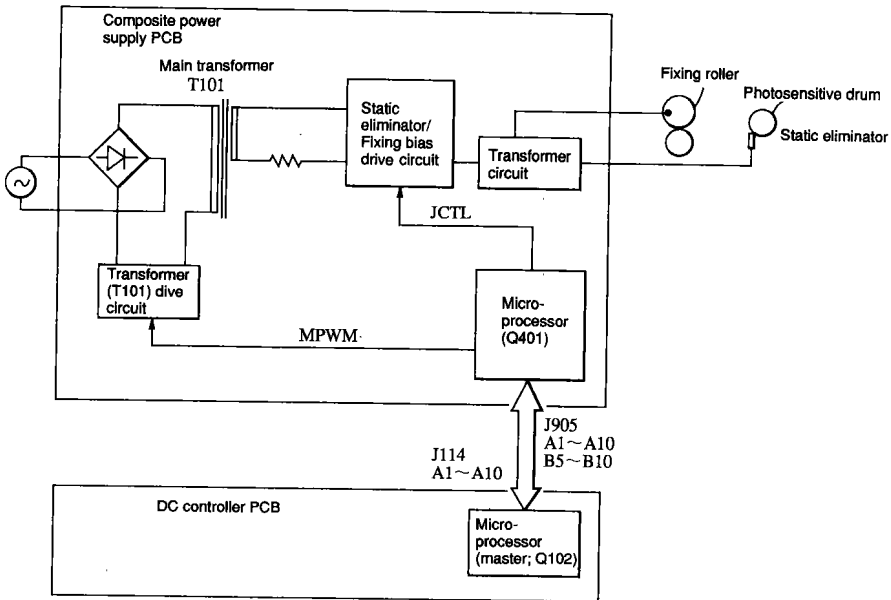


Figure 3-309

2. Turning On and Off the Static Bias and Fixing Bias and Switching the Level

The microprocessor master (Q102) on the DC controller PCB controls the microprocessor (Q401) on the composite power supply PCB to generate the JCTL signal (analog). The signal causes the secondary side of the main transformer (T101) to turn on, thereby applying the static eliminator bias and the fixing bias.

The application voltage level to the static eliminator is switched by changing the voltage of the JCTL signal. Table 3-302 shows the conditions under which the application voltage is switched and the corresponding application voltages.

Condition	Application voltage
1st side of one-sided/ two-sided copying and overlay copy	3.0K V (approx.)
2nd side of two-sided and overlay copy	4.0K V (approx.)

Table 3-302

The main transformer (T101) is driven by the drive signal (MPWM) generated by the microprocessor (Q401). In addition to the foregoing functions, the main transformer (T101) is used to serve the DC power supply and as the transformer for other high-voltage loads.

The microprocessor master (Q102) on the DC controller PCB and the microprocessor (Q401) on the composite power supply PCB exchange data on an 8-bit signal line and a 3-bit command line.

3. Preventing Separation Failure (thin paper)

Depending on the site of installation, thin paper can fail to separate from the photosensitive drum. To prevent such a problem, the copier is equipped with a mechanism that keeps the application voltage to the static eliminator at 4.0 kV at all times (Service Mode; * 5 * SPCL_PPR).

G. Controlling the Developing Bias

1. Outline

Figure 3-310 shows the circuit that controls the developing bias, and the circuit has the following functions:

- turns on and off the developing bias AC component.
- turns on and off the developing bias DC component.
- controls the developing bias DC component.
- maintains the developing bias DC component.

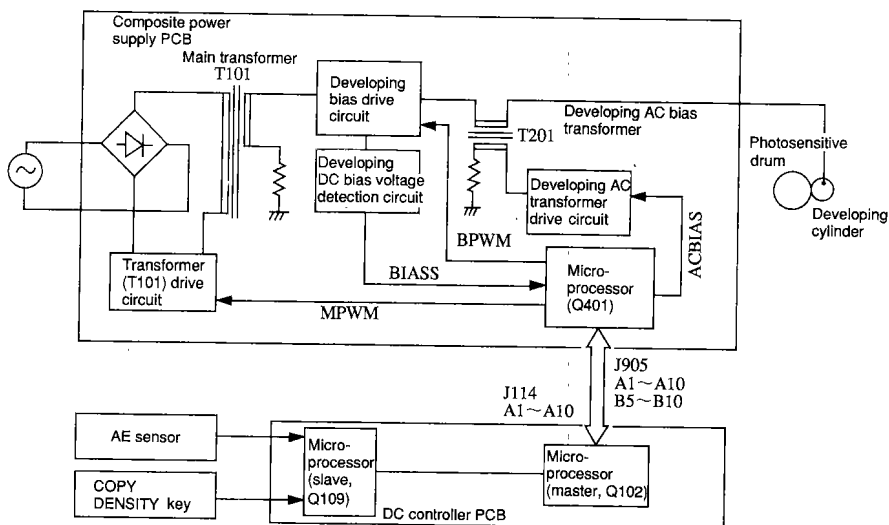


Figure 3-310

2. Turning On and Off the Developing Bias DC Component and Maintaining a Constant Voltage

The microprocessor master (Q102) on the DC controller PCB controls the microprocessor (Q401) on the composite power supply PCB to generate the BPWM signal (pulse). The signal causes the secondary side of the main transformer (T101) to turn on, thereby applying the developing bias DC component.

The microprocessor reads the BIAS (analog) signal from the developing DC bias voltage detection circuit while the developing bias DC component is being applied, and maintains the output voltage constant.

The main transformer (T101) is driven by the drive signal (MPWM) from the microprocessor (Q401). In addition to the foregoing functions, the main transformer (T101) is used to serve the DC power supply and as the transformer for other high-voltage loads.

3. Controlling the Developing Bias DC Component Voltage Level

The copier changes the voltage level of the developing bias DC component to suit the following:

- setting of the COPY DENSITY key
- output of the AE sensor

The developing bias DC component is varied between -60 and -600 V by changing the timing at which the BPWM signal is generated.

4. Turning On and Off the Developing Bias AC Component

The microprocessor master (Q102) on the DC controller PCB controls the microprocessor (Q401) on the composite power supply PCB to generate the ACBIAS signal (pulse). The signal causes the developing bias AC component transformer (T201) to turn on, thereby adding the AC bias of the developing bias to the DC bias for application.

- application frequency: 1800 Hz (approx.)
- application voltage: 1300 Vp-p

H. Measuring the Document Density

1. Outline

The copier is equipped with an automatic exposure (AE) adjustment mechanism that controls the DC component of the developing bias to suit the density of the document. Since the AE mechanism varies the DC component of the developing bias according to the density of the document, you can obtain copies free of fogging as long as the document is more or less uniform in density.

The DC component controlled by the AE mode is indicated in the COPY DENSITY indicator on the copier's control panel.

2. Mechanism

The scanning lamp (LA1) is turned on at a specific intensity during initial rotation (INTR), and the scanner is moved forward by about 27 mm to expose the document.

While the scanning lamp is held in position, the light reflected by a specific area (Figure 3-311) is detected by the AE sensor (photodiode), and the output is sent to the DC controller PCB.

Based on the input, the DC controller PCB in turn computes the optimum value for the developing bias to be used during copying operation, and sends the result to the microprocessor (Q401). Figure 3-312 shows the variation of the developing bias DC component caused by changes in the density of a document.

The graph is based on an intensity by which copies may be made of newspapers or the Test Sheet without fogging.

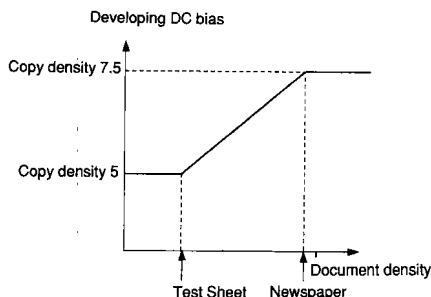
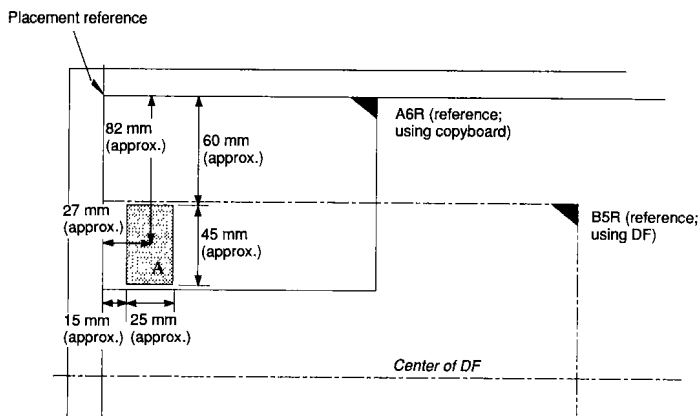


Figure 3-312



Note: A indicates the position of the AE sensor.

Figure 3-311

3. AE Adjustment

You can adjust the copier's AE mechanism for the following in service mode:

- automatic (✕ 4 ✕)

- scanning lamp drive voltage for AE exposure

(✕ 3 ✕)

- development DC bias for newspapers in AE mode

(✕ 3 ✕)

Item	Function	Description	Remarks
✕ 4 ✕ AE_ADJ	AE scan intensity automatic adjustment		Automatically adjusted so that the copy density is 5 when a document is copied under 'AE_ADJ'.
✕ 3 ✕ AE_LIGHT	AE scan adjustment		① If the setting is lowered in service mode, AE copies will become darker. ② If the setting is raised in service mode, AE copies will be lighter.
✕ 3 ✕ AE_SLOP	AE slope		① If the setting is increased in service mode, newspaper copies will be lighter. ② If the setting is decreased in service mode, newspaper copies will be darker.

I. Developing Assembly and Drum Cleaner

1. Outline

The copier's developing assembly and the developing rail may be locked or released together manually by using the lock lever.

The developing cylinder, the stirring rod inside the developing assembly, and the blade inside the drum cleaner are rotated by the drive of the main motor (M1).

The level of toner is monitored by the toner absent signal (TEP) from the toner sensor inside the developing assembly.

The waste toner collected by the cleaning blade is stored inside the drum cleaner container, and the level of waste toner inside the container is detected by the waste toner full sensor (PS15).

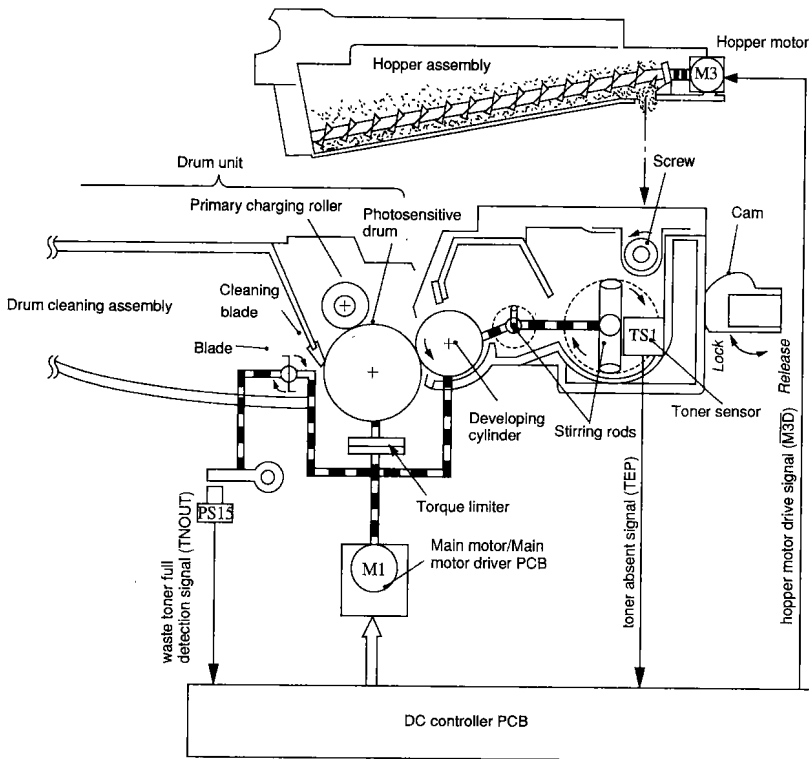


Figure 3-313

2. Detecting the Level of Toner and Controlling Supply

The level of toner inside the developing assembly is monitored by the toner sensor (TS1). The toner is a piezoelectric type, and generates the toner absent signal (TEP=0) when the level of toner falls below a specific value.

If TEP=0 remains for 1 sec or more, the DC controller rotates the hopper motor (M3) to supply toner.

The hopper motor drive signal ($\overline{M3D}$) is generated in 5-sec cycles; M3D=1 for 1 sec, and M3D=0 for 4 sec.

The hopper motor (M3) is stopped when the toner absent signal (TEP) goes 1.

If the toner absent signal ($\overline{TEP}$) does not go '1' within 25 sec after the supply operation has been started, the DC controller PCB identifies the condition as the absence of toner and indicates the 'ADD TONER' message on the display.

Reference:

The detection unit of the toner sensor used inside the developing assembly is a piezoelectric oscillator which oscillates at several kHz in the absence of toner, causing the sensor output to go '0'. When toner is present, the weight of the toner prevents the oscillation, causing the sensor output to go '1'.

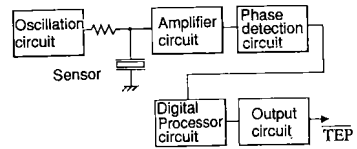


Figure 3-314

3. Monitoring Waste Toner

The waste toner scraped off by the cleaning blade is forwarded deep inside the cleaner container by the waste toner blade inside the drum cleaner.

The coupling shown in Figure 3-315 is forced against the blade drive by a spring to transmit drive from the main motor (M1), thereby rotating the waste toner blade.

When the cleaner container becomes full of waste toner, the rotation of the waste toner blade starts to drag, moving the coupling back and forth across its axis; this causes the coupling to push and release the waste toner sensor lever and the waste toner sensor (PS10) to go on and off.

The DC controller PCB monitors the state of the waste toner sensor (PS10) for about 2 sec at intervals of 0.02 sec after the main motor has turned on. If it detects the activation of the sensor 25 times or more during the period, it assumes that the cleaner container has become full of waste toner.

If this happens during the standby period, the copier indicates the **EMPTY WASTE TONER** message on the display. Instruct the user to make a service call if this message appears.

About 200 copies may still be made after the message appears, but it is best to replace the drum unit as soon as possible.

Reference:

The cleaner container becomes full of waste toner when about 60,000 copies are made of 6% documents.

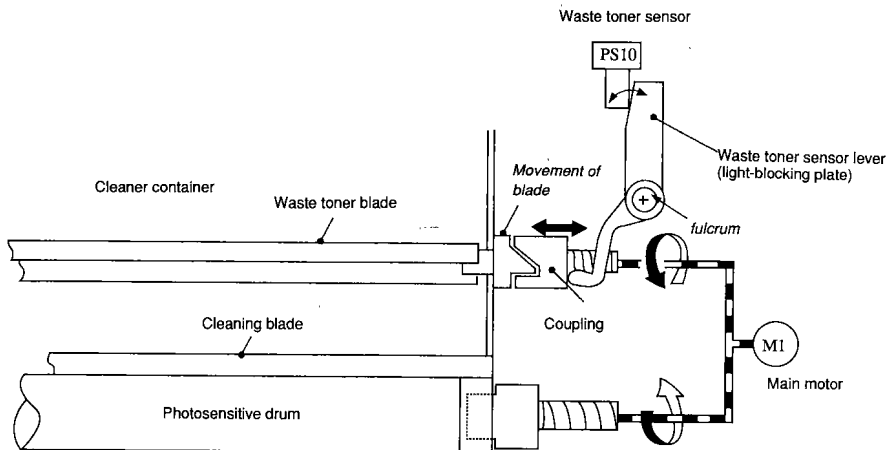


Figure 3-315

J. Blank Exposure Control

1. Outline

The copier is not equipped with LEDs or lamp to be used exclusively for blank exposure. For this reason, blank exposure for non-image areas and for gaps between sheets is executed by directing the light of the pre-exposure lamp to the photosensitive drum by way of a reflecting plate.

The copier's area of blank exposure is controlled by one open/close shutter and three slide shutters.

- Open/Close Shutter

The open-close shutter is found in the optical path for total blank exposure, and is operated by the shutter solenoid (SL4). The timing at which the open-close shutter solenoid (SL4) turns on and off is varied to suit the gaps between two sheets and create margins along the leading and trailing edges of the copies.

- Slide Shutters

The three slide shutters are found in the optical path for size blank exposure, and are positioned by two stepping motors.

The slide shutters are used to create margins on the left and right sides of the copies and to blank out the non-image areas on reduced copies.

2. Controlling the Blank (slide) Shutter Motors

The blank shutters (front and rear) are driven by two 2-phase stepping motors (one each). When the copier is switched on, the blank (slide) shutter motor (M8, M9) rotates to return the blank shutter to its home position. Thereafter, the motor rotates in response to the drive pulses from the DC controller PCB to move the blank shutter to a specific position to suit the selected reduction ratio, cassette size, and modes.

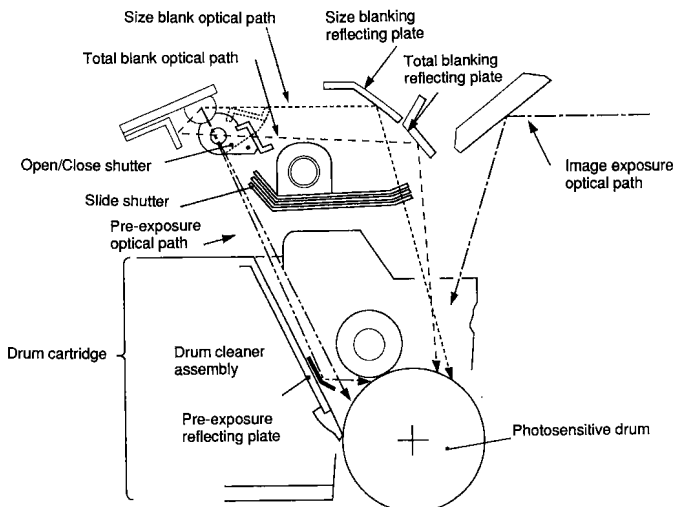


Figure 3-316

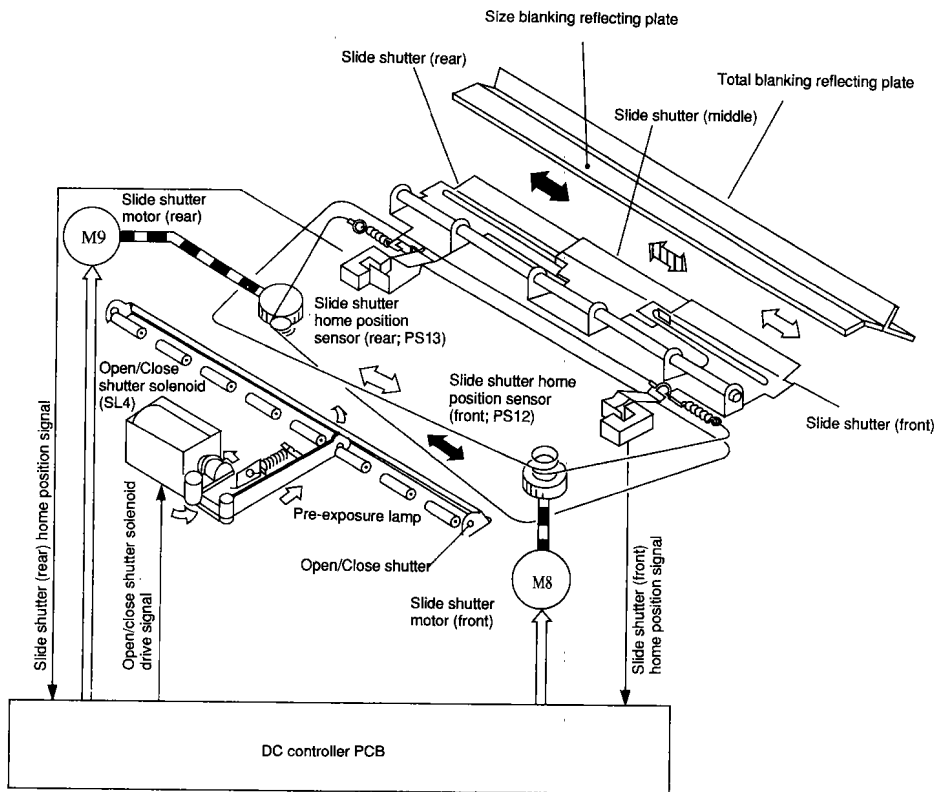


Figure 3-317

K. Controlling the Primary Charging Roller Cleaning Mechanism

1. Outline

The copier's primary charging roller is equipped with an automatic cleaning mechanism.

The automatic cleaning mechanism cleans the primary charging roller under the following conditions:

- when the temperature of the fixing assembly is 100°C or less at power-on.
- during 'PRR_CL' in service mode (☒ 4 ☒).

2. Cleaning the Primary Charging Roller

The primary charging roller is cleaned by turning on the primary charging roller solenoid (SL7) when the primary charging roller is rotating (WMUPR) while forcing the cleaning pad against the roller.

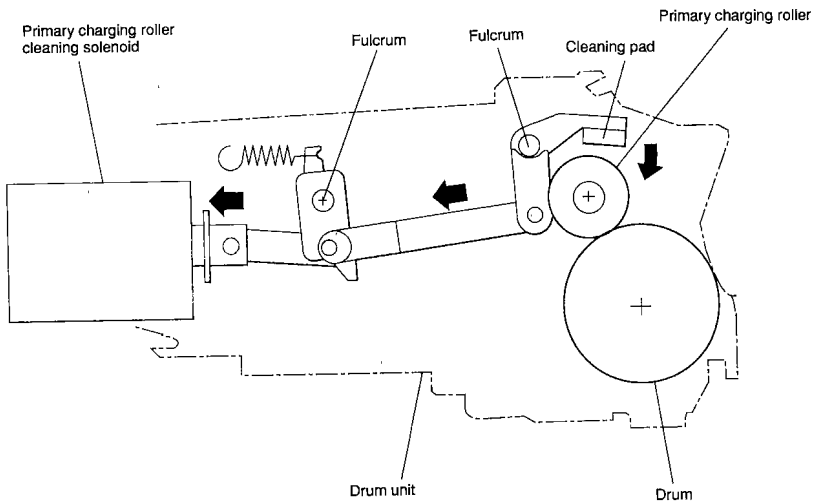


Figure 3-318

L. Locking and Releasing the Transfer Roller

- during initial multiple rotation (WMUPR)
- during last rotation after 50 copies (cumulative)

1. Outline

The copier's transfer roller is equipped with a locking/releasing mechanism.

The locking/releasing mechanism locks or releases the transfer roller under the following conditions to prevent adhesion of toner on the roller.

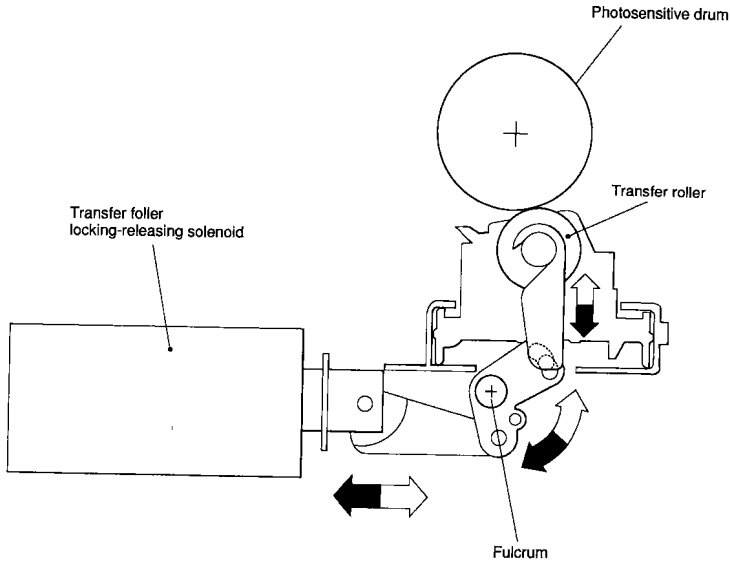


Figure 3-319

M. Detecting an Error in the Composite Power Supply PCB

1. Outline

The copier is equipped with a composite power supply, and a microprocessor (Q401) is attached to the composite power supply PCB. The DC controller PCB and the composite power supply PCB communicate with each other using an 8-bit data line and a 3-bit command line. In addition, a 2-bit communication check line, 3-bit error data transmission line, and a signal line used to turn on LED 101 (DC controller) are also provided. When any of the following errors is detected, the DC controller PCB indicates an error code on the control panel using the error data transmission line or turns on or flashes a LED to indicate the presence of an error.

• Leakage of Transfer Bias

When the error detection circuit for the transfer bias turns on and generates the TPRTCT signal to the microprocessor (Q401), the microprocessor sends a 3-bit error data signal to the DC controller PCB for indication of 'E065'; see Figure 3-308.

• Fault in Communication between DC Controller PCB and Composite Power Supply PCB

If an error occurs in the communication between the DC controller PCB and the composite power supply PCB, the microprocessor (Q401) sends a 3-bit error data signal to the DC controller PCB to indicate 'E244' and, at the same time, to flash the LED on the DC controller PCB at intervals of 5 sec; see Figure 3-303.

If an error associated with 'E244' is detected, the DC controller PCB causes all outputs to turn off in 5 sec; however, the LED on the DC controller PCB continues to flash.

• Short Circuiting in the DC Power Supply Circuit

If the composite power supply PCB detects an over current because of an error in DC loads or biting of a wire, the condition is indicated by flashing a LED at intervals of 2 sec; see Table 3-303.

• Error in High-Voltage Output Data

When the difference between the setting and the actual control value of the signals associated with high voltage generated by the microprocessor (Q401) on the composite power supply PCB, the microprocessor (Q401) sends a 3-bit error data signal to the DC controller PCB to indicate 'E064'.

2. Identifying an Error by LEDs

You can identify errors according to how the LED on the DC controller PCB remains on or flashes.

LED mode	Copier condition	Error
on for 0.5 sec/off for 0.5 sec	normal	
on for 5 sec/off for 5 sec	error in communication between composite power supply PCB and DC controller PCB	• faulty harness • faulty microprocessor
on for 2 sec/off for 2 sec	low-voltage shorting	• faulty harness • faulty DC load • faulty microprocessor
remains on	error	• faulty LED drive circuit on composite power supply PCB • faulty microprocessor
remains off	error	• faulty LED drive circuit on composite power supply PCB • disconnected LED connector or poor contact (J114 on DC controller PCB or J905 on composite power supply PCB) • faulty microprocessor

Table 3-303

IV. PICK-UP/FEEDING SYSTEM

A. Outline

The copier uses center reference, in which copy paper is fed in the middle of the pick-up/feeding path. The copier's pick-up system consists of the upper and lower cassettes and a multifeeder.

The copy paper picked up from the cassettes or the multifeeder is controlled so that it is matched to the leading edge of the image on the photosensitive drum, and is forwarded to the transfer, separation, feeding, and fixing assembly to reach the copy tray.

A total of five sensors are provided to monitor the movement of copy paper; see Table 3-401

No.	Name
PS6	vertical path roller 1 paper sensor
PS7	vertical path roller 2 paper sensor
PS9	pre-registration paper sensor
PS10	separation sensor
PS11	delivery paper sensor

Table 3-401

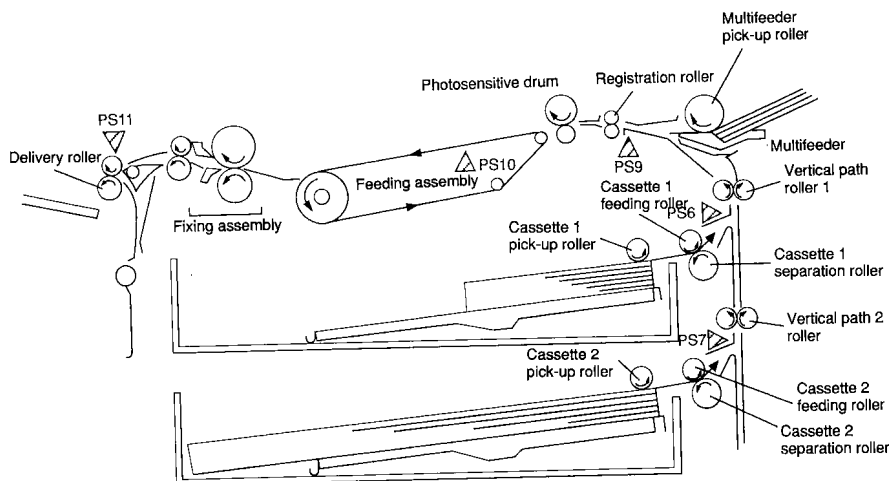


Figure 3-401

B. Pick-Up from Cassette

1. Pick-Up Mechanism

The copy paper inside the cassette is lifted by the lifter so that it remains in contact with the pick-up roller.

When the pick-up roller (CL2 or CL3) turns on, the pick-up roller starts to rotate to feed the paper. Thereafter, the pick-up roller release solenoid (SL1 or SL2) turns on to move the pick-up roller from the paper.

The copy paper then moves between the feeding roller and the separation roller, which ensure that no more than one sheet of paper is fed at a time. The paper is then moved to the registration roller by the vertical path roller.

The registration roller is used to control the paper so that its leading edge matches the leading edge of the image on the photosensitive drum; see p. 3-64.

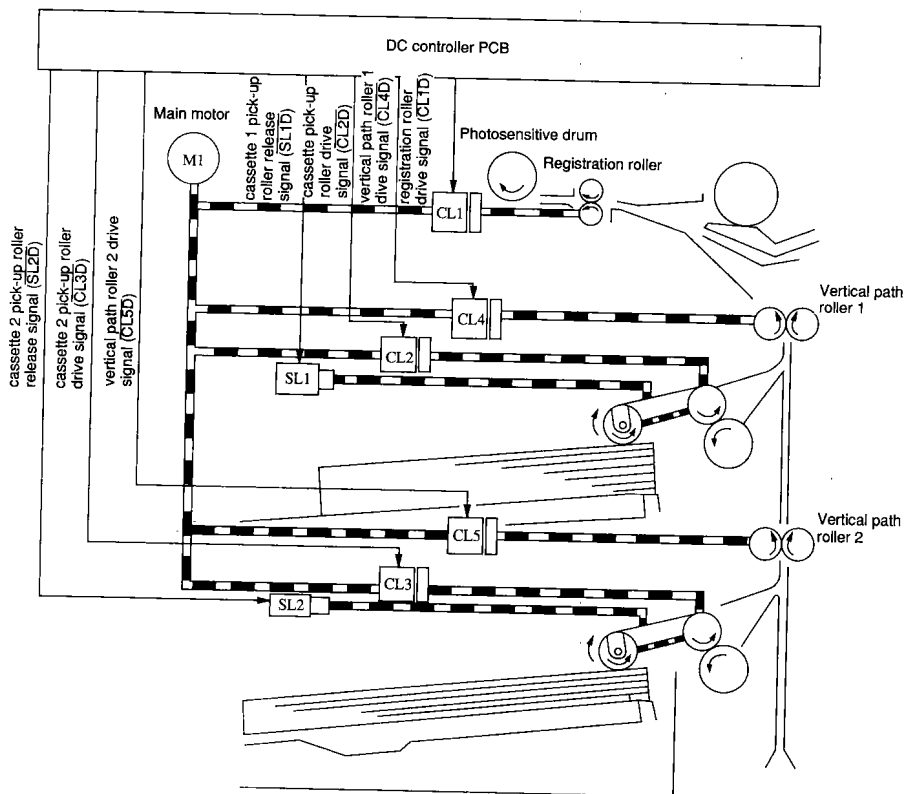


Figure 3-402

2. Sequence of Pick-Up Operations

- from cassette 1, A4, 2 copies, continuous

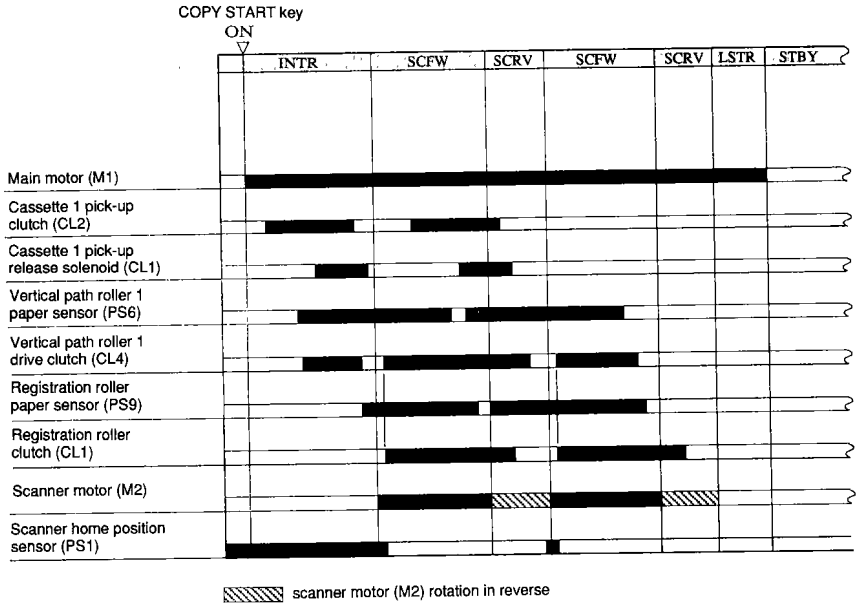


Figure 3-403

C. Cassette Lifter

When the cassette is slid inside the copier, the pick-up roller lowers, and the light-blocking plate leaves the lifter position sensor (PS3, PS4). The condition turns on the lifter motor (M4, M5) to raise the lifter; the motor stops when the top sheet of the stack of paper on the lifter reaches the lifter position sensor (PS3, PS4).

When the cassette runs out of copy paper, and the paper detecting spacer attached to the pick-up roller shaft drops, the paper detecting lever leaves the paper sensor (PS2, PS5); as a result, the 'ADD PAPER' message is indicated on the control panel.

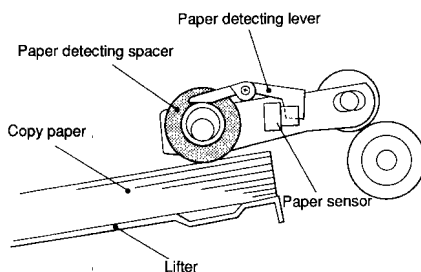


Figure 3-404

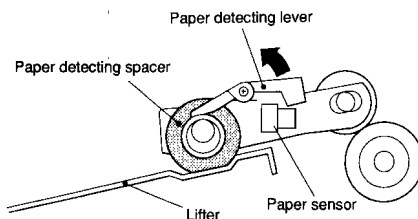


Figure 3-405

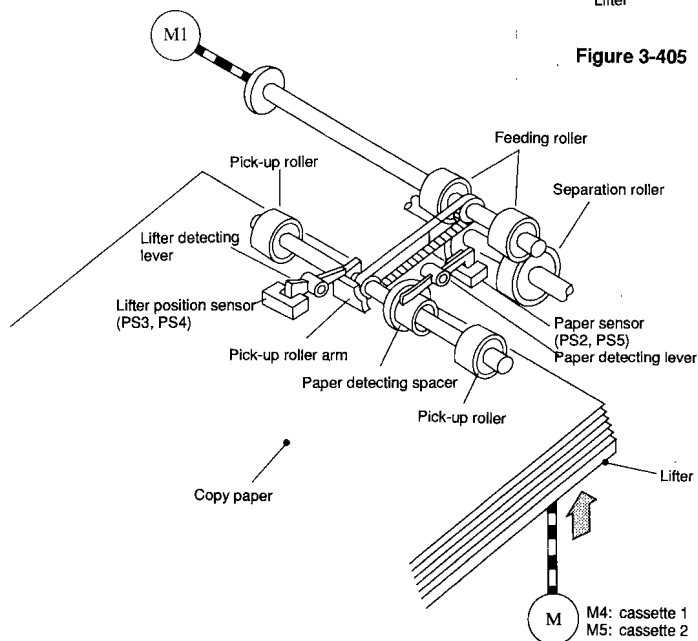


Figure 3-406

D. Identifying the Copy Paper Size

1. Outline

The size of the copy paper inside the cassette is identified by the paper size sensors attached to the rear of the cassette holder.

When the cassette is slid into the copier, the sensors are pushed by the bosses on the cassette, thereby enabling identification of the width and length of the paper. Based on the combination of width and length, the copier recognizes the size of the paper and, at the same time, determines the point of scanner reversal and the intensity of blank exposure.

The bosses used to press the paper size sensors operate in conjunction with the guide plate inside the cassette; to change the arrangement, simply set the guide plate to suit the paper size.

2. Identifying the Copy Size

The copy paper length sensors are two photo interrupters, whose output combinations are used to identify the length of the paper.

The copy paper width sensor is a variable resistor, whose output resistance is used to identify the width of the paper.

Figure 3-407 shows the relationship between the paper widths and the outputs of the variable resistor. You must enter the default setting whenever you have replaced the sensors or the DC controller PCB. (See the SERVICE HANDBOOK.)

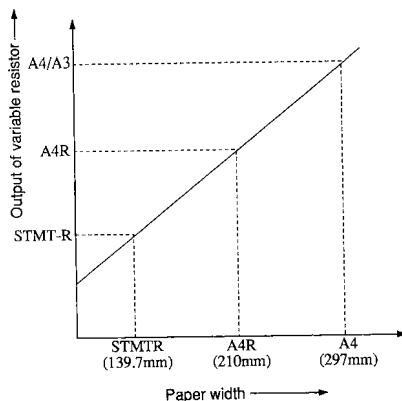


Figure 3-407

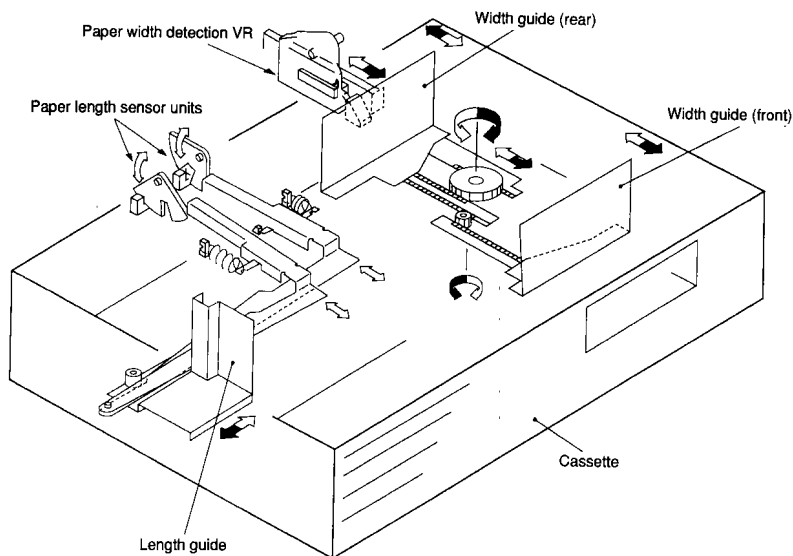


Figure 3-408

3. Mark on Width Guide Rail

The width guide rail found inside the cassette has holes to serve as a reference for determining paper sizes, and the holes are marked A through M as shown in Table 3-402.

You may refer to the holes if the user reports skew movement of copy paper. Use the holes to decide whether the cassette is correctly set to suit the copy paper used.

Note:

Do not disclose the information to the user.

Mark	Paper	Remarks
A	STMT-R	
B	A5-R	
C	B5-R	
D	KLGL-R	
E	GLTR-R	
F	G-LGL	G3
G	A4-R	
H	LGL/LTR-R	
I	FLSC	G2
J	B4/B5	
K	G-LTR	G1
L	11" x 17"/LTR	G4
M	A3/A4	

(For G1 through G4, see Table 3-404.)

Table 3-402

4. Paper Sizes

The microprocessor of the DC controller PCB decides on one of the following paper sizes in response to the paper width and length inputs.

Paper width sensor (edge level, mm)	Paper length sensor		PS102/PS104	PS101/PS103	PS102/PS104	PS101/PS103	PS102/PS104	PS101/PS103	PS102/PS104	PS101/PS103
	Signal		SZ2	SZ1	SZ2	SZ1	SZ2	SZ1	SZ2	SZ1
	ON/OFF		0	0	0	1	1	0	1	1
	A4		—		A3		—		—	
288.5	(G4)		—		11"x17"		—		—	
273.7	(G1)		—		—		—		—	
261.8	B5		—		B4		—		—	
238.0	STMT		LTRR		LGL		(G2)		—	
212.9	A5		A4R		—		(G3)		—	
206.6	G-LTRR		—		—		—		—	
196.6	K-LGLR		—		—		—		—	
186.0	B5R		—		—		—		—	
165.2	A5R		—		—		—		—	
144.1	STMTR		—		—		—		—	

Table 3-403

Table 3-404 shows the paper sizes identified by the copier; specify appropriate sizes in service mode.

√ stands for a size set at the factory.

Group	Size	
G1	√	G-LTR K-LGL
G2	√	FOOLSCAP OFFICIO E-OFFI A-LGL A-OFFI
G3	√	G-LGL FOLIO AUS-FLS
G4	√	LTR A-LTR

Table 3-404

• Acceptable papers

Paper	Notation	Size (vertical x horizontal; mm)
A3	A3	$(297\pm1) \times (420\pm1)$
A4R	A4R	$(210\pm1) \times (297\pm1)$
A4	A4	$(297\pm1) \times (210\pm1)$
A5	A5	$(210\pm1) \times (148.5\pm1)$
A5R	A5R	$(148.5\pm1) \times (210\pm1)$
B4	B4	$(257\pm1) \times (364\pm1)$
B5R	B5R	$(182\pm1) \times (257\pm1)$
B5	B5	$(257\pm1) \times (182\pm1)$
11"x17"	11x17	$(279\pm1) \times (432\pm1)$
LETTER R	LTRR	$(216\pm1) \times (297\pm1)$
LETTER	LTR	$(297\pm1) \times (216\pm1)$
STATEMENT	STMT	$(216\pm1) \times (139.5\pm1)$
STATEMENT R	STMTR	$(139.5\pm1) \times (216\pm1)$
LEGAL	LGL	$(216\pm1) \times (356\pm1)$
KOREAN LEGAL	K-LGL	$(265\pm1) \times (190\pm1)$
KOREAN LEGAL R	K-LGLR	$(190\pm1) \times (265\pm1)$
FOOLSCAP	FLSC	$(216\pm1) \times (330\pm1)$
AUSTRALIAN FOOLSCAP	A-FLS	$(206\pm1) \times (337\pm1)$
OFICIO	OFI	$(216\pm1) \times (317\pm1)$
EQUADORAN OFICIO	E-OFI	$(220\pm1) \times (320\pm1)$
BOLIVIAN OFICIO	B-OFI	$(216\pm1) \times (355\pm1)$
ARGENTINE LETTER	A-LTR	$(280\pm1) \times (220\pm1)$
ARGENTINE LETTER-R	A-LTRR	$(220\pm1) \times (280\pm1)$
GOVERNMENT LETTER	G-LTR	$(267\pm1) \times (203\pm1)$
GOVERNMENT LETTER-R	G-LTRR	$(203\pm1) \times (267\pm1)$
ARGENTINE LEGAL	A-LGL	$(220\pm1) \times (340\pm1)$
GOVERNMENT LEGAL	G-LGL	$(203\pm1) \times (330\pm1)$
FOLIO	FOLI	$(216\pm1) \times (317\pm1)$
ARGENTINE OFFICIO	A-OFI	$(220\pm1) \times (340\pm1)$

Table 3-405

5. Storing the Paper Width Default Setting

See page 3-170.

E. Multifeeder

1. Outline

The multifeeder picks up paper from the stack placed on the tray, and is capable of continuous feeding.

The presence/absence of paper on the tray is checked by the multifeeder paper sensor (PS8). The paper guide plate is used to force the paper

placed on the tray against the pick-up roller. The pick-up roller starts to rotate when the drive of the main motor (M1) reaches it by way of a clutch.

The pick-up roller and the separation pad operate together to ensure that no more than one sheet of paper is fed to the registration roller.

The above series of operations is repeated for each pick-up.

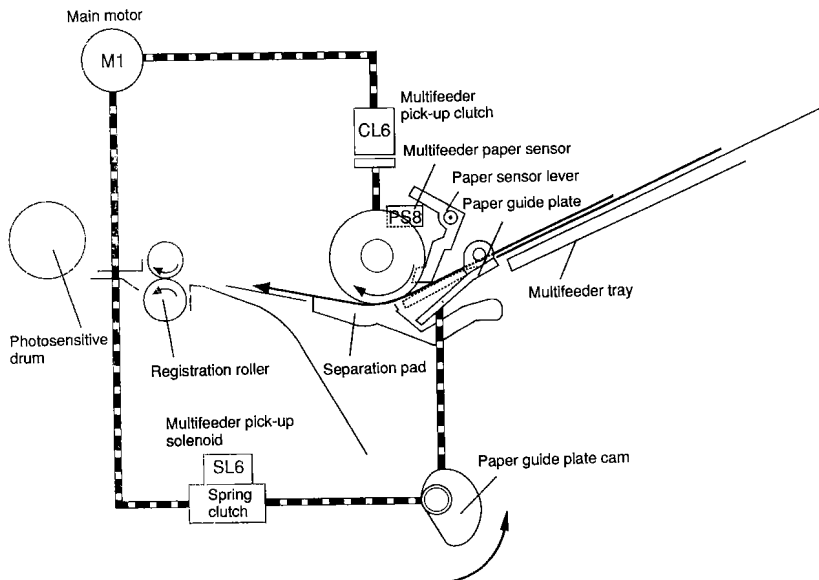


Figure 3-409

2. Identifying the Size of the Paper on the Multifeeder Tray Guide

A variable resistor is used to identify the width of the paper placed on the multifeeder tray. When the user sets the slide guide to suit the width of the paper, the variable resistor operates in conjunction with the movement of the slide guide.

The width identified in this way is used to control the lens and blank exposure. The length of the paper placed on the multifeeder tray, on the other hand, is identified based on the time the pre-registration sensor (PS9) remains on.

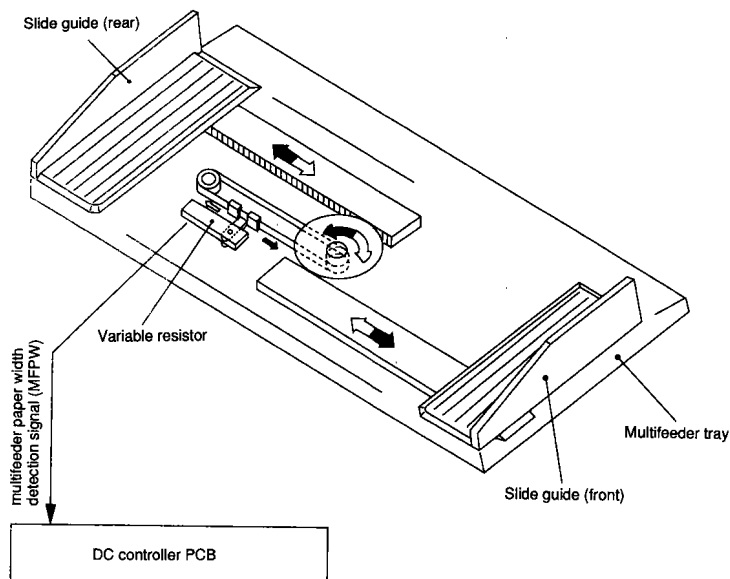
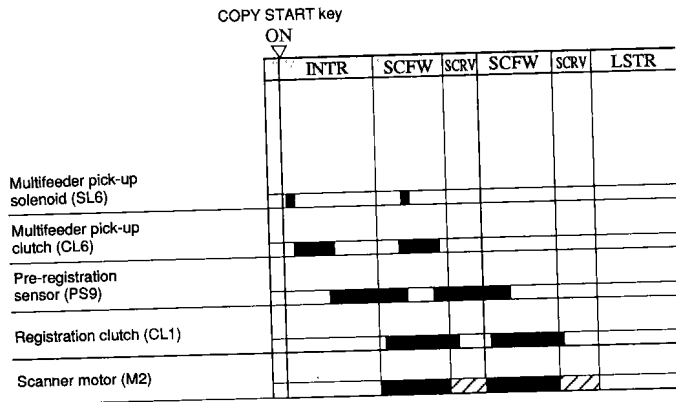


Figure 3-410

3. Sequence of Pick-Up Operations (multifeeder)



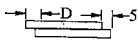
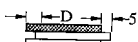
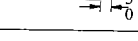
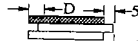
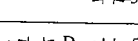
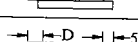
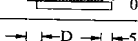
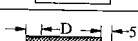
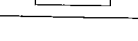
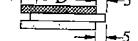
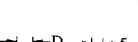
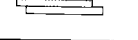
▨ Scanner motor rotation in reverse
(scanner reverse movement)

Figure 3-411

F. Controlling the Registration Clutch

The registration clutch (CL1) is used to ensure that the copy paper and the image on the drum match at a specific position.

Unless binding mode is selected, the registration clutch (CL1) is controlled so that the leading edge of the copy paper matches the leading edge of the drum.

Selected mode		Paper timing	Shift (mm)	Paper on copy tray
one-sided document → one-sided copy		B		
one-sided documents ↓ two-sided copy	copying on 1st side	A	may be set to between 0 and 20 mm; the diagrams represent when the shift is set to 5 mm.	
	copying on 2nd side	B		
two-sided document ↓ two-sided copy	copying on 1st side	A		
	copying on 2nd side	B		
two-sided document ↓ one-sided copies	copying on 1st side	B		
	copying on 2nd side	B		
page separation (one-sided copying)	copying on 1st side (left)	B		
	copying on 2nd side (right)	B		
page separation ↓ two sided copy	copying on 1st side (left)	A		
	copying on 2nd side (right)	B		
one-sided documents ↓ overlay copy	copying on 1st side	B		
	copying on 2nd side	B		
two-sided document ↓ overlay cover	copying on 1st side	B		
	copying on 2nd side	B		
page separation ↓ overlay copy	copying on 1st side (left)	B		
	copying on 2nd side (right)	B		

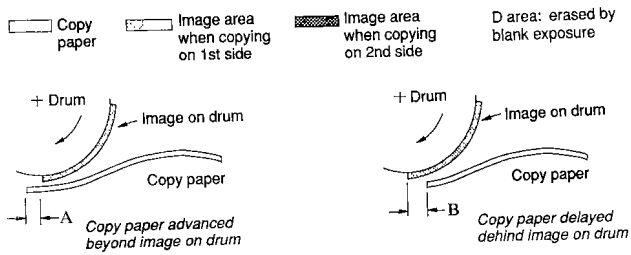


Figure 3-412

G. Fixing and Delivery Assemblies

1. Outline

The upper, lower, and delivery rollers are driven by the main motor (M1).

The copier heats the upper roller using two fixing heaters (H1, 700 W; H2, 600 W), and the surface temperature of the roller is monitored by a thermistor (TH1).

Based on the fixing temperature signal (TH1, analog), the DC controller PCB turns on and off the fixing heater drive signal (MHRD, SHRD).

The copier uses center reference for feeding paper, and the coating of its upper fixing roller is thinner than the coatings of conventional rollers. The temperature and the area of heating during copying operation vary according to the following:

- copy paper size (width)
- copies made in continuous mode
- ambient temperature
- mode

The delivery assembly is equipped with a delivery flapper. In two-sided/overlay copy mode (only when duplexing unit is in use), the DC controller PCB generates the delivery paper deflector solenoid drive signal (SL5D) to drive the delivery paper deflector to divert the paper to the duplexing unit.

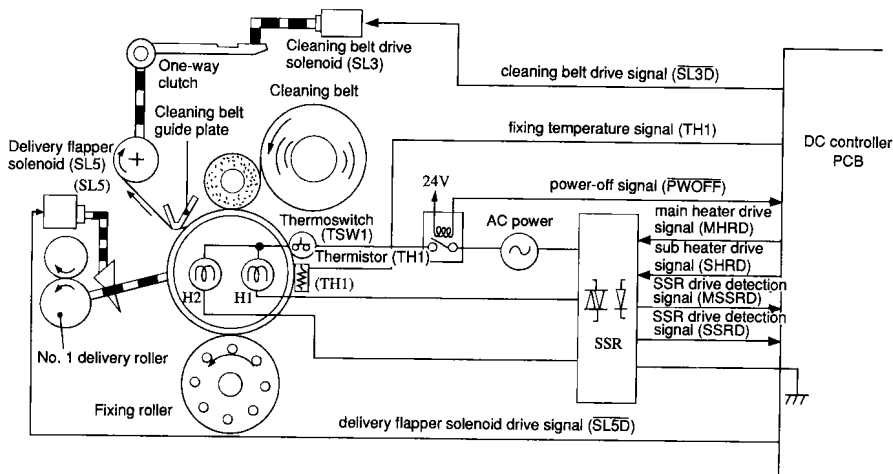


Figure 3-413

2. Controlling the Area Heated by the Fixing Roller

The upper fixing roller is heated by two heaters; main heater (H1) and sub heater (H2).

The copier uses two halogen lamps as its main heater (H1) and sub heater (H2) with different intensity distributions; see Figure 3-414.

Depending on the width of the copy paper, the periods in which these two heaters remain on are varied to ensure that the surface temperature of the fixing roller remains uniform and the ends of the roller does not overheat.

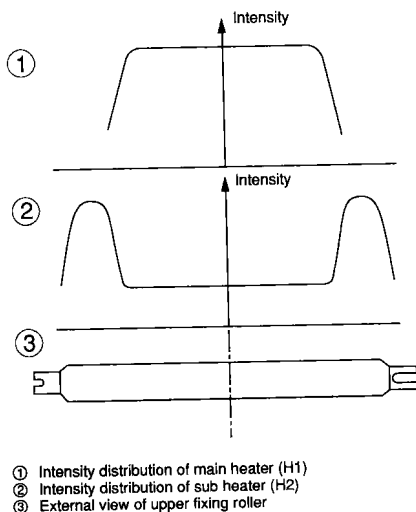


Figure 3-414

3. Controlling the Temperature of the Fixing Roller in Continuous Copying Mode

The coating of the copier's upper fixing roller is thinner than the coating of conventional rollers; for this reason, making small-size copies in continuous mode could cause the ends of the roller to overheat. To prevent such a problem, the copier controls the target temperature according to the number of copies being made. (For specifics, see *Sequence of Fixing Operations at Normal Temperature.*)

4. Low-Temperature Mode/Thick Paper Mode

• Low-Temperature Mode

To prevent faulty fixing under low-temperature conditions, the copier is provided with low-temperature mode. The copier automatically enters the mode if the ambient temperature sensor on the DC controller identifies the ambient temperature as being 10°C or less, thereby changing the control mechanism for the fixing roller temperature. (For specifics, see *Sequence of Fixing Operations at Low-Temperature mode/Thick Paper Mode.*)

• Thick Paper Mode

The copier is also provided with thick paper mode to improve fixing on thick paper or any other paper types that fail to provide good fixing. You can set thick paper mode in service mode (⊗) 5 (⊗); see the SERVICE HANDBOOK. When you set the mode, the copier controls the fixing roller temperature in the same way as low-temperature mode even if the ambient temperature sensor (TH2) on the DC controller PCB registers 10°C or more. (For specifics, see *Sequence of Fixing Operations at Normal Temperature.*)

Sequence of Fixing Operations at Normal Temperature

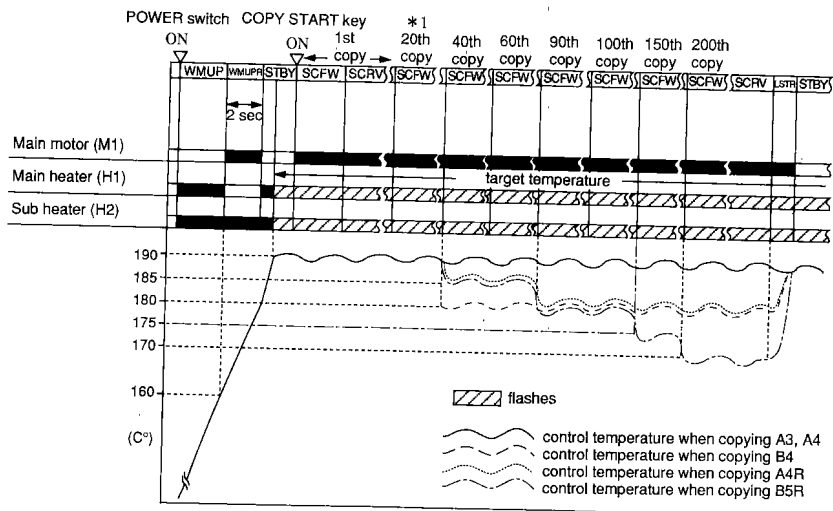


Figure 3-415

Note:

The counts shown in the chart will be added to obtain a cumulative count if the COPY START key is pressed within 1 min after copying operation is finished; however, this does not apply if the copy paper size is changed.

Sequence of Fixing Operations in Low-Temperature Mode/Thick Paper Mode

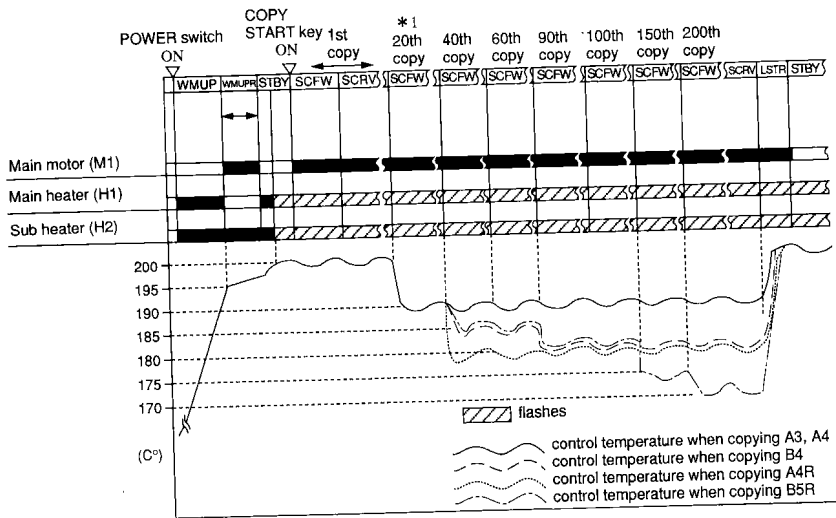


Figure 3-416

Note:

The counts shown in the chart will be added to obtain a cumulative count if the COPY START key is pressed within 1 min after copying operation is finished; however, this does not apply if the copy paper size is changed.

5. Protection Mechanisms

The copier prevents malfunction of the fixing heater using the following three factors:

- signal from thermistor
- signal from SSR
- state of thermoswitch

a. Protection by Signal from Thermistor

The DC controller PCB monitors the voltage of the thermistor (TH1), and indicates an error code when it detects overheating.

If the temperature of the fixing roller monitored by the thermistor (TH1) increase to 220°C, the DC controller indicates 'E001' on the control panel and stops copying operation.

If the temperature of the fixing roller monitored by the thermistor (TH1) exceeds 220°C for some reason, the DC controller generates the error auto power-off signal (PWOFF) to switch off the copier.

b. Protection by Signal from SSR

If the fixing heater continues to remain on because of a shorted SSR, the DC controller PCB generates the error auto power-off signal (PWOFF) to switch the copier off.

The copier's SSR used to drive the fixing heater sends the SSR drive detection signal (MSSRD, SSSRD) to the DC controller PCB while the SSR is on. The DC controller PCB monitors the heater drive signal (MHRD, SHRD) and the SSR drive detection signal (MSSRD, SSSRD) simultaneously. If the SSR drive detection signal (MSSRD) is '1' while the main heater drive signal (MHRD) is '0', the DC controller PCB identifies the condition as an error in the SSR, and indicates 'E004' on the control panel and, about 2 sec later, generates the error auto power-off signal (PWOFF) to switch off the copier.

c. Protection by Thermoswitch

The thermoswitch (TS1) turns off when its internal temperature exceeds 208°C to cut off the power to the fixing heater.

About 1.5 sec after the thermoswitch has turned off, the error auto power-off signal (PWOFF) is generated to switch off the copier.

Reference:

Once its contact has opened, the thermoswitch (TS1) will not return to normal state even after the temperature returns to normal. The switch may be used after cooling it to 0°C or less.

d. Resetting the Copier after Activation of a Protection Mechanism

To reset the copier after the auto power-off signal (PWOFF) has been generated, remove the cause and switch on the copier.

If 'E001', 'E002', or 'E003' is indicated, remove the cause, and execute 'ERROR' in service mode.

Reference:

You can set *auto power-off* in user mode, which switches off the copier after a specific period of time. To prevent confusion, auto power-off triggered by the activation of a protection mechanism is referred to as *error auto power-off*.

6. Driving the Fixing Cleaning Belt

The cleaning belt used to clean the upper fixing roller is driven by the cleaning belt drive signal (SL3D) generated by the DC controller PCB; the cleaning belt drive solenoid (SL3) is turned on and off in response to the state ('0' or '1') of the cleaning belt drive signal, and the cleaning belt is taken up about 0.04 mm for each activation of the cleaning belt drive solenoid.

The cleaning belt guide plate is used to increase the area over which the cleaning belt is in contact with the upper fixing roller, thereby enhancing cleaning efficiency.

The activation of the cleaning belt drive solenoid (SL3) is timed to the arrival of the copy paper at the separation sensor (PS10); the frequency of activation, further, depends on the length of the copy paper.

Length of paper	Frequency of solenoid activation
less than 216 mm	once
216 mm or more	twice

Table 3-406

The DC controller PCB keeps count of how many times the cleaning belt drive solenoid (SL3) has turned on, and it indicates the 'REPLACE CLEANING BELT' message on the display when the solenoid has turned 250,000 times. Instruct the user to make a service call when the message appears. You can check and reset the counter in service mode.

Activation of Cleaning Belt Solenoid

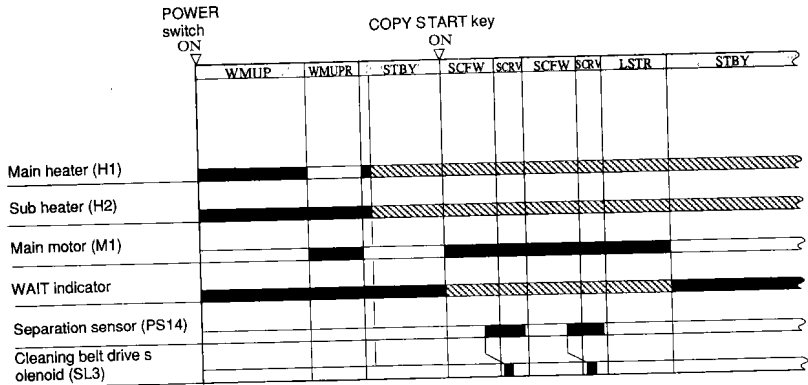


Figure 3-417

7. Fixing Roller Bias

A positive DC bias (about 700 V) is applied to the metal core of the upper fixing roller during copying operation.

The bias serves to reduce offset of toner to the fixing roller.

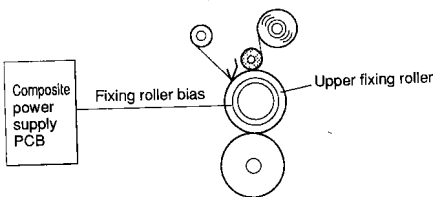


Figure 3-418

H. Detecting Jams

The copier has the following six paper sensors to monitor the movement of copy paper.

- vertical path roller 1 paper sensor (PS6)
- vertical roller 2 paper sensor (PS7)
- pre-registration sensor (PS9)
- separation sensor (PS10)
- delivery sensor (PS11)
- delivery vertical path paper sensor (PS14)

Jams are identified based on the presence/absence of paper over specific sensors at such times as stored in the memory of the microprocessor.

The copier is capable of retaining such data as the remaining number of copies to make at time of a jam and copy modes; such data remain even when the copier is turned off as when its front door is opened.

The microprocessor has the following jam detection sequence; in addition, it identifies a jam when its sensors detect paper at power-on.

When a jam is identified, the DC controller PCB immediately stops the copier's operation and cuts off the power to the fixing heaters (H1, H2); at the same time, it flashes the JAM indicator and the JAM LOCATION indicator on the control panel.

If a jam has activated the jam detection mechanism, the copier will not count the jam as one of the copies it has made.

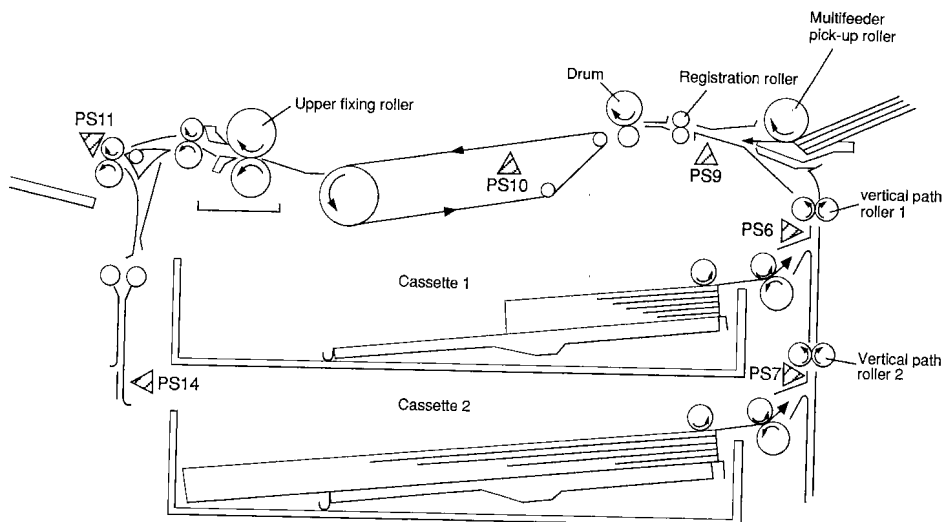
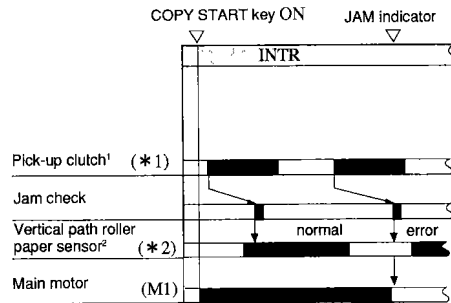


Figure 3-419

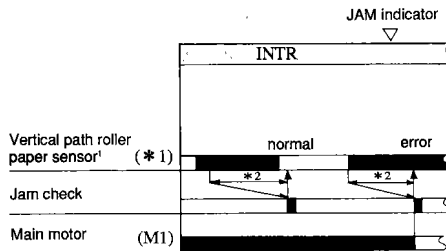
① Pick-Up Delay Jam



- *1: pick-up from cassette 1cassette 1 pick-up clutch (CL2)
 pick-up from cassette 2cassette 2 pick-up clutch (CL3)
 pick-up from multifedermultifeder pick-up clutch (CL6)
 *2: pick-up from cassette 1vertical path roller 1 paper sensor (PS6)
 pick-up from cassette 2vertical path roller 2 paper sensor (PS7)
 pick-up from multifederpre-registration sensor (PS9)

Figure 3-420

② Pick-Up Stationary Jam



- *1: pick-up from cassette 1:vertical path roller 1 paper sensor (PS6)
 pick-up from cassette 3:vertical path roller 2 paper sensor (PS7)
 pick-up from multifeder:pre-registration sensor (PS9)
 *2: varies depending on the length of paper.

Figure 3-421

③ Separation Sensor Delay Jam

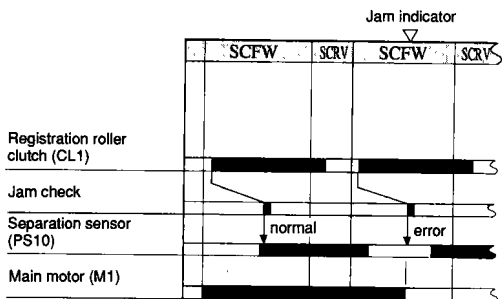


Figure 3-422

④ Separation Sensor Stationary Jam

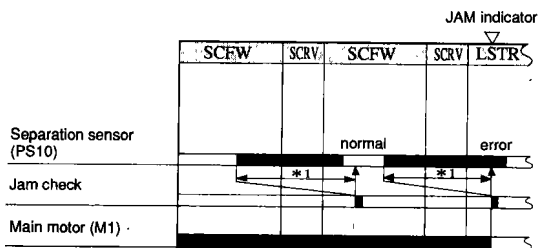


Figure 3-423

⑤ Delivery Sensor Delay Jam

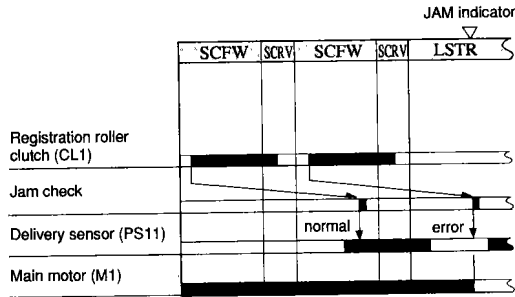
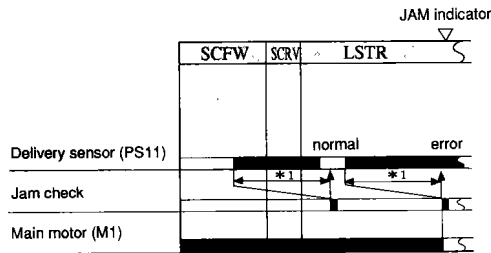


Figure 3-424

⑥ Delivery Sensor Stationary Jam



*1: Varies depending on the length of paper.

Figure 3-425

I. Fans

The copier has three fans. Figure 3-407 shows the function, attached filter, and direction of each fan; Figure 3-428, on the other hand, shows the timing at which each fan is activated.

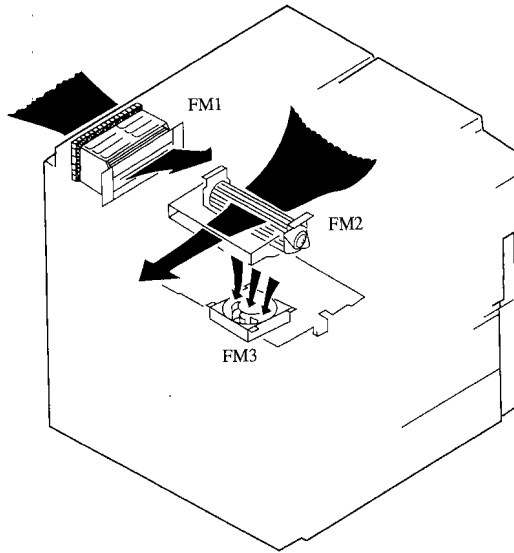
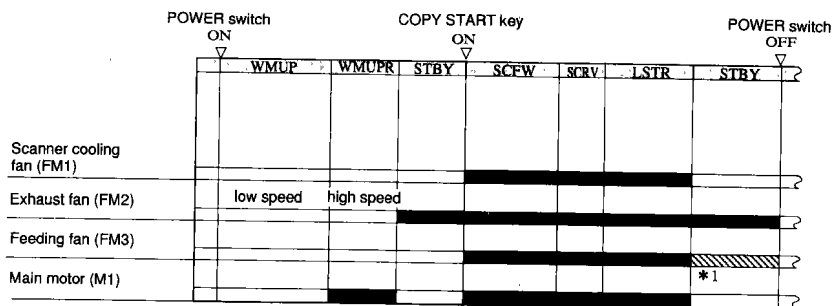


Figure 3-428

No.	Name	Direction	Filter	Description
FM1	Scanner cooling fan	Blowing	air	cools the scanner.
FM2	Exhaust fan	Drawing	none	cools the inside of the machine. creates an air current to block out dust.
FM3	Feeding fan	Drawing	none	draws copy paper to the feeding belt.

Table 3-407

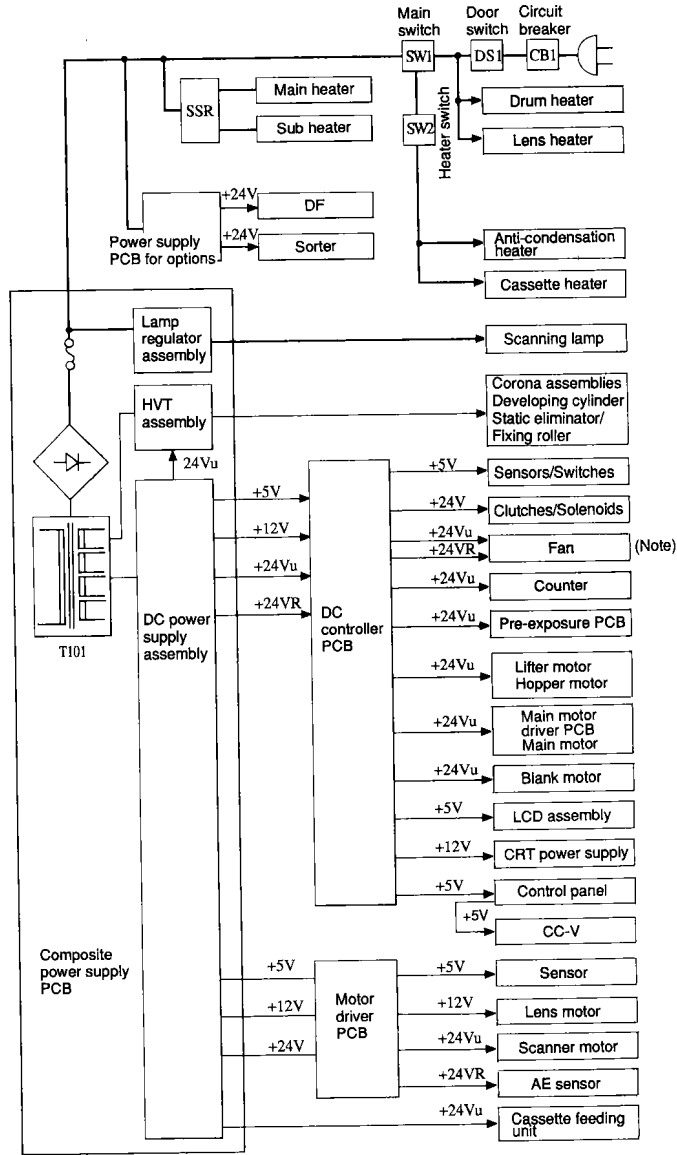


*1: turns off if STBY continues for 5 min.

Figure 3-429

V. POWER SUPPLY

A. Outline of Power Supply System



Note: +24 VR if exhaust fan.

Figure 3-501

B. Power Supply Circuit

AC power is supplied to the composite power supply PCB and other loads when the door switch (DS1) and POWER switch are turned on. For auto power-off, the DC controller circuit turns off the POWER switch.

The composite power supply PCB is used to provide +24 VR, +24 VU, +12 V, and +5 V. The +24 VR output assumes +17 V during the standby period. However, the output is kept at +24 V when loads are operated in service mode.

The power supply PCB for options provide 24V power to the DF and sorter.

The DC power supply to the DC controller circuit is cut when the door switch or the POWER switch is turned off; a lithium battery (BAT101) is used to back up the RAM on the DC controller PCB.

Reference:

The tolerances applicable to DC power during copying operation are as follows:

- +24 VR $\pm 3\%$
- +24 VU $\pm 10\%$
- +12V $\pm 5\%$
- +5 V $\pm 5\%$

Note:

Replace the lithium battery only with the one listed in the Parts Catalog.

Use of a different battery may present a risk of fire or explosion.

The battery may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, or dispose of it in fire.

Keep the battery out of reach of children and discard any used battery promptly.

C. Protection Mechanism for Power Supply Circuit

Both composite power supply PCB and power supply PCB for options are equipped with an overcurrent detection circuit which becomes activated to stop the output when a short circuit occurs because of an error.

When the output is stopped, open the front door to turn off the door switch; then, correct the load, and turn on the door switch once again to return the output. Do not, however, repeat shorting and resetting operations; otherwise, the built-in fuse can blow.

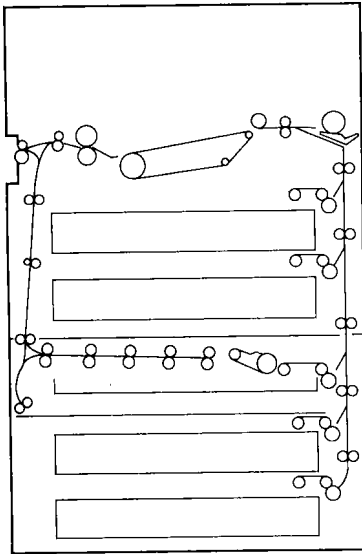
VI. CASSETTE FEEDING UNIT

A. Outline

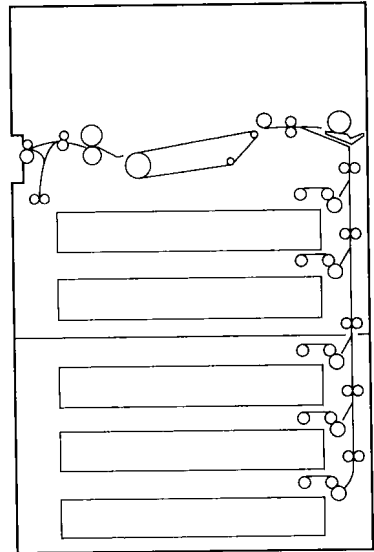
The copier is designed to accommodate any of four types of cassette feeding units: duplexing double-cassette feeding unit, duplexing one-cassette feeding unit, three-cassette feeding unit, and one-cassette feeding unit.

Here, discussions are limited to the duplexing two-cassette feeding unit and three-cassette feeding unit.

Figure 3-601 shows two diagrams of the copier placed on a duplexing two-cassette feeding unit and a three-cassette feeding unit.



Duplexing Two-Cassette Feeding Unit



Three-Cassette Feeding Unit

Figure 3-601

B. Outline of Electrical Circuitry

The same controller PCB is used to control the duplexing two-cassette feeding unit and the three-cassette feeding unit.

On the controller PCB, specific connectors must be used to control pick-up and feeding operations from each cassette holder.

The delivery vertical path assembly attached at time of installing the duplexing two-cassette feeding unit is controlled by the copier's DC controller PCB.

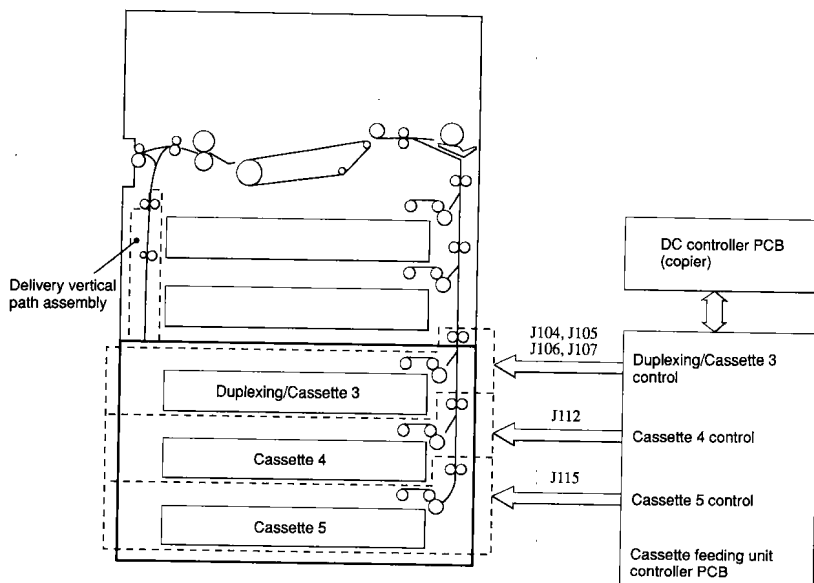


Figure 3-602

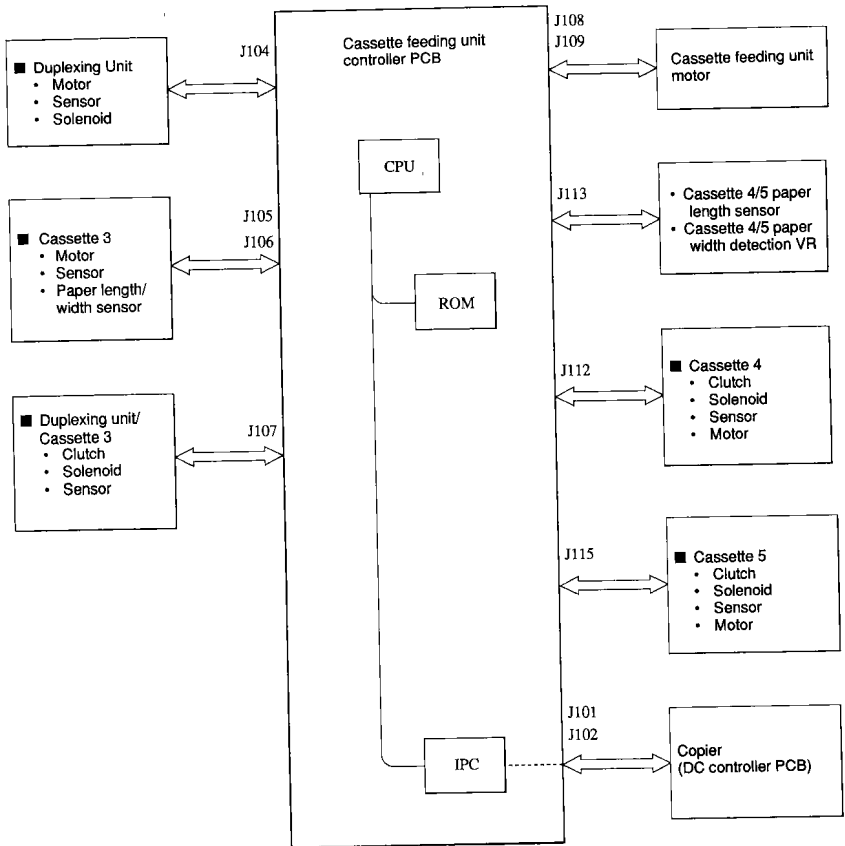


Figure 3-603

C. Inputs to and Outputs from the Cassette Feeding Unit Controller

Inputs/Outputs of Cassette Feeding Unit Controller (J108, J113)

- Duplexing Two-Cassette/Three-Cassette Feeding Unit Common Connectors

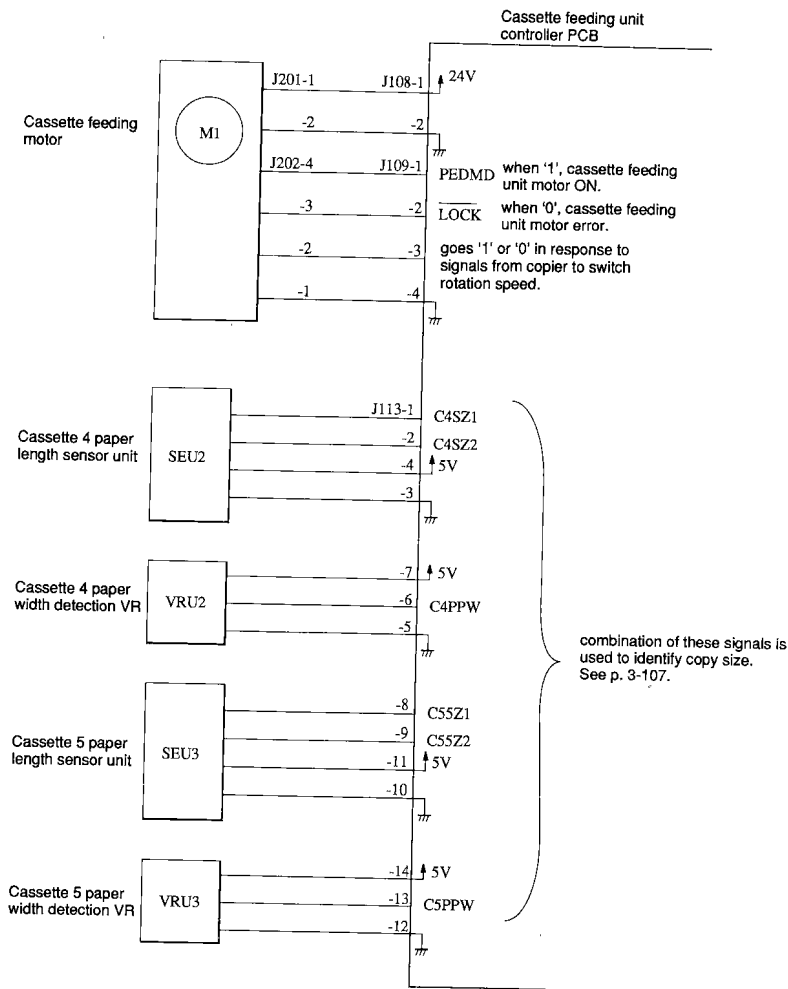


Figure 3-604

Inputs/Outputs of Cassette Feeding Unit Controller (J112)

- Duplexing Two-Cassette/Three-Cassette Feeding Unit Common Connectors

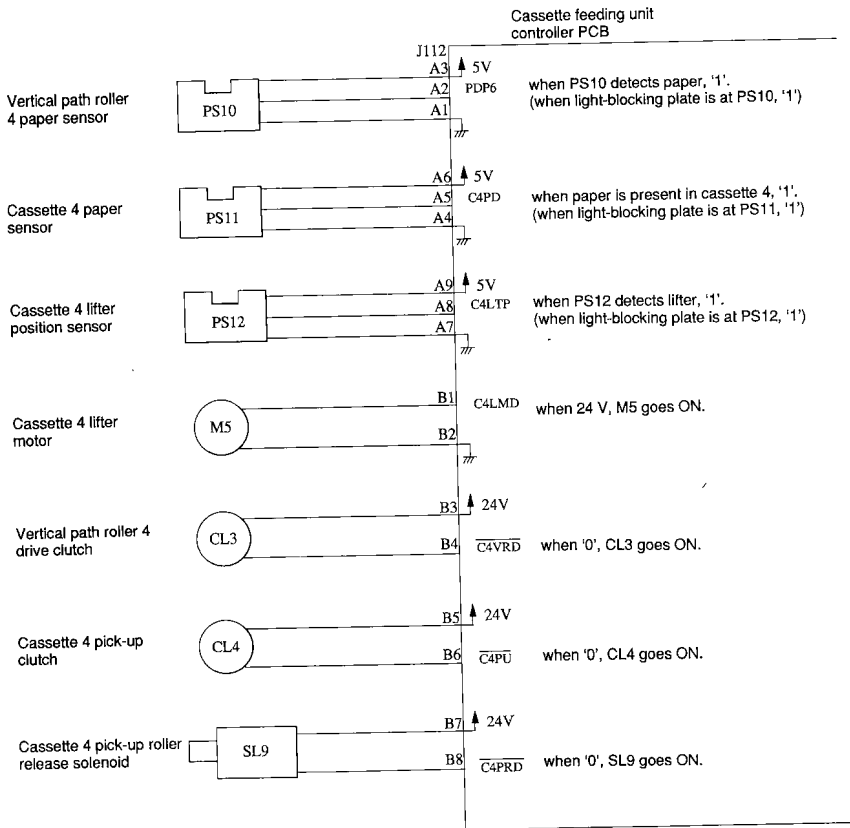


Figure 3-605

Inputs/Outputs of Cassette Feeding Unit Controller (J114)

Duplexing Two-Cassette/Three-Cassette Feeding Unit Common Connectors

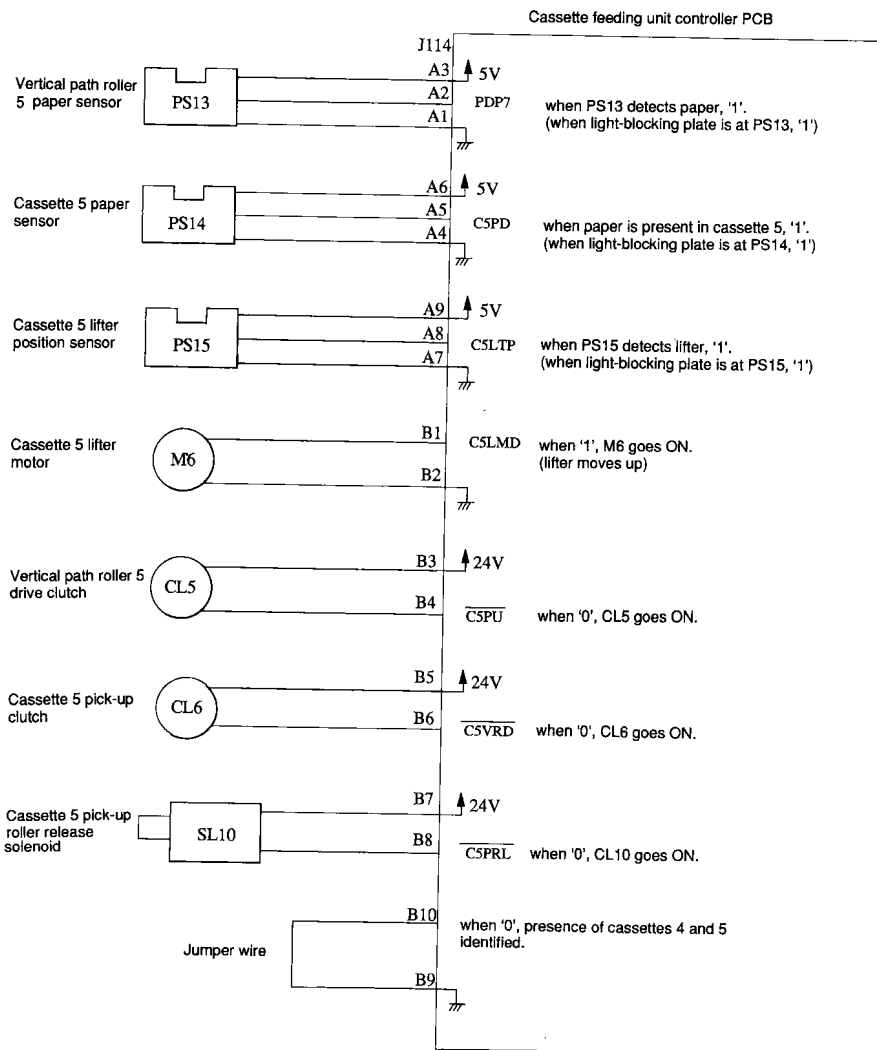


Figure 3-606

Inputs/Outputs of Cassette Feeding Unit Controller (J103)
 • Duplexing Two-Cassette Feeding Unit Special Connector

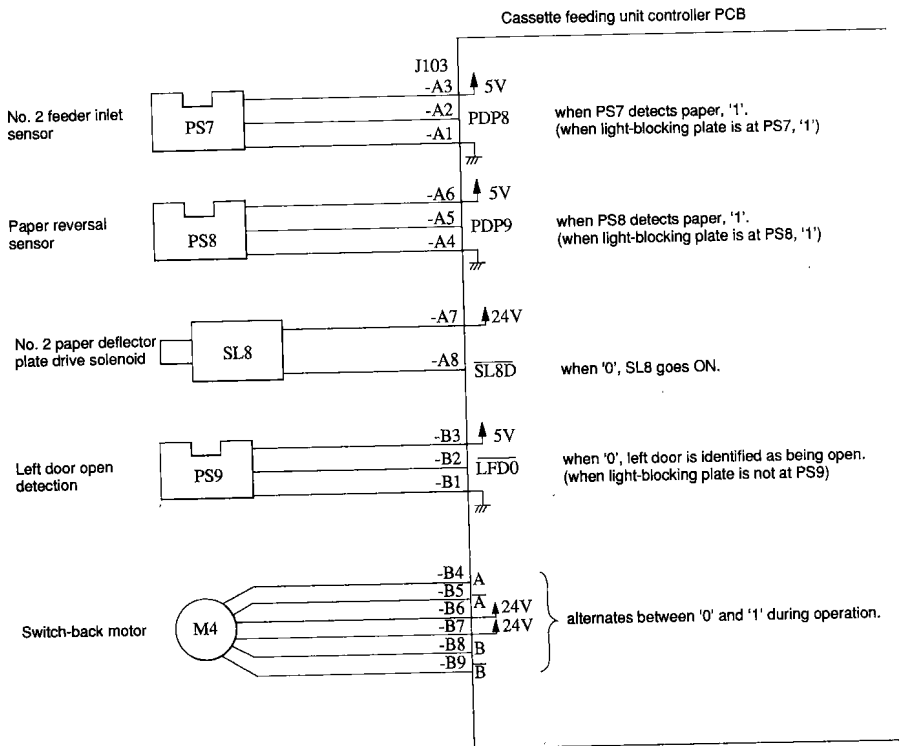


Figure 3-607

Inputs/Outputs of Cassette Feeding Unit Controller (J104)
 • Duplexing Two-Cassette Feeding Unit Special Connector

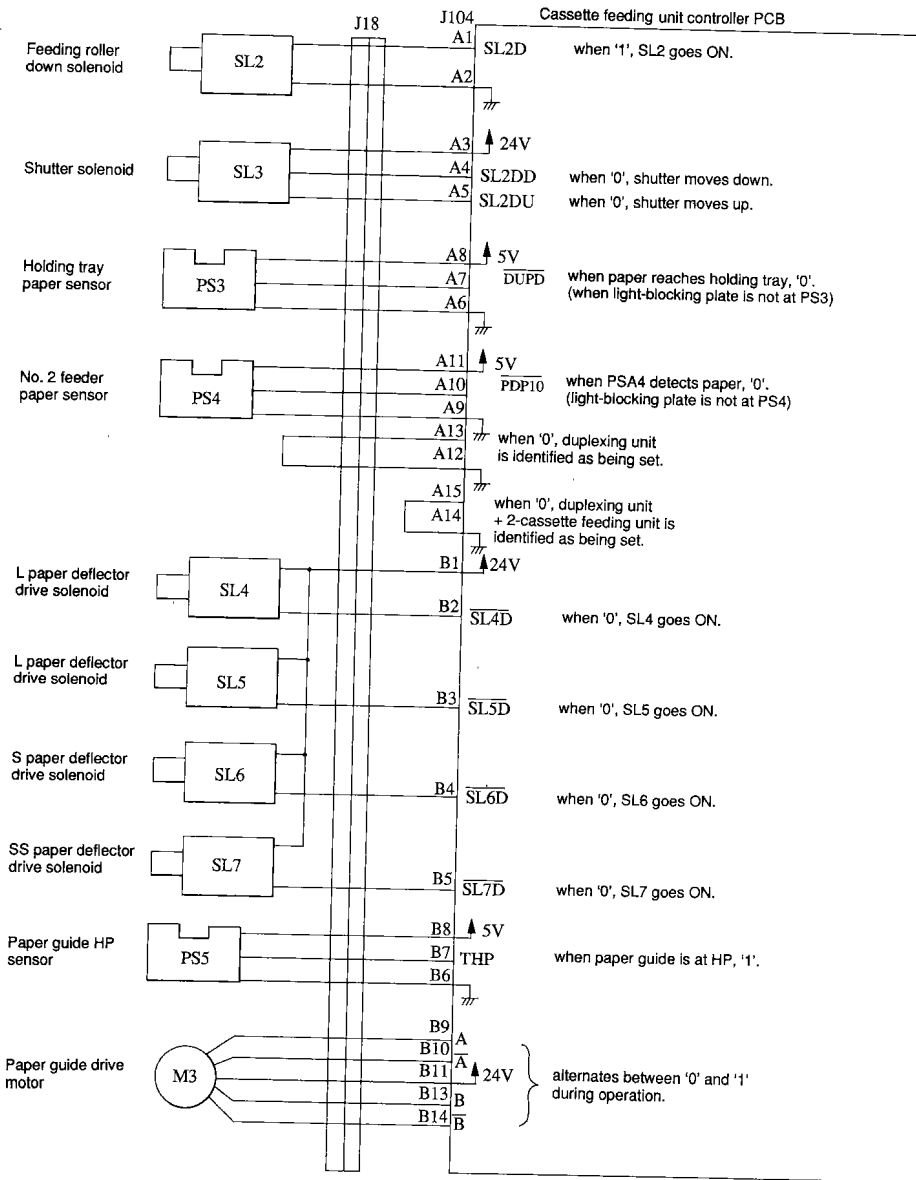


Figure 3-608

Inputs/Outputs of Cassette Feeding Unit Controller (J107)

- Duplexing Two-Cassette/Three-Cassette Feeding Unit Common Connectors

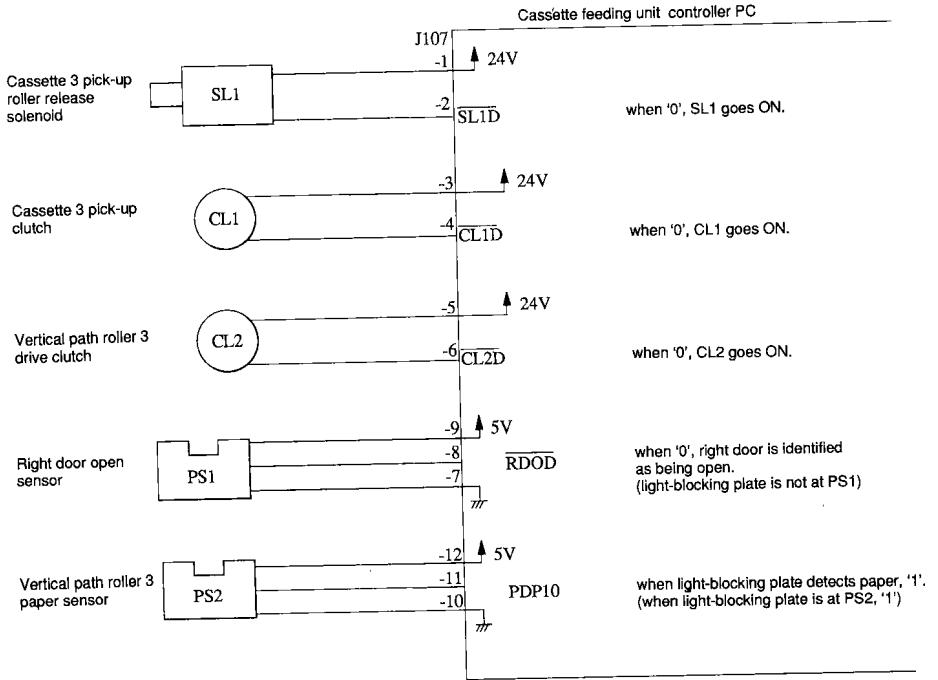


Figure 3-609

Inputs/Outputs of Cassette Feeding Unit Controller (J105, J106)
 • Three-Cassette Feeding Unit Special Connector

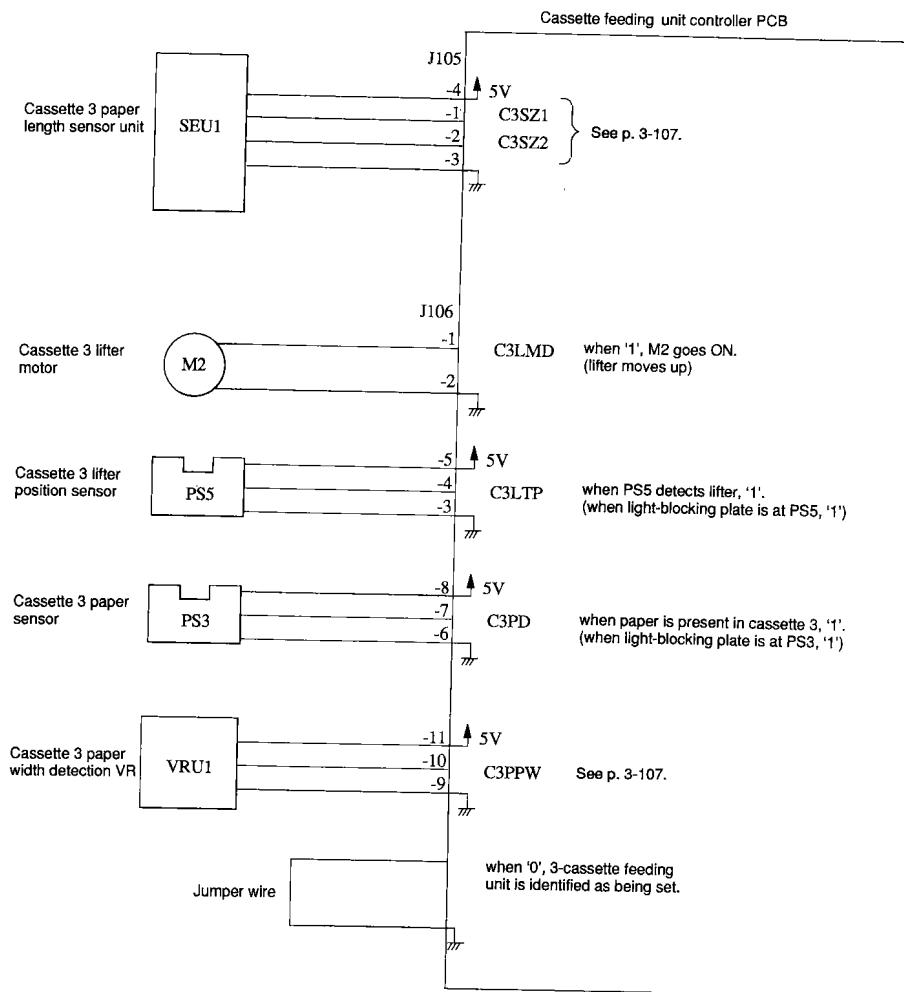


Figure 3-610

D. Cassette Feeding Unit Motor Control Circuit

1. Outline

Figure 3-611 shows the circuit that controls the cassette feeding motor (M1), and the circuit has the following functions:

- ① turns on and off the cassette feeding motor.
- ② maintains the cassette feeding unit motor constant.

The cassette feeding unit motor (M1) is a DC motor with a built-in clock pulse generator. When the motor rotates, clock pulses (MMCLK) corresponding to the revolution of the motor are generated. The speed control circuit maintains the revolution of the cassette feeding unit motor (M1) by matching the frequency of these clock pulses and the frequency of the reference signals.

2. Mechanism

When the cassette feeding motor dive signal (PEDMD) from the cassette feeding unit controller circuit goes '1', the motor driver drive circuit turns on, thereby rotating the cassette feeding unit motor at a specific speed.

The motor driver PCB sends the constant speed signal (LOCK=1) to the cassette feeding controller PCB while the cassette feeding motor is rotating at a specific speed; the LOCK signal goes '0' if the rotation of the motor suffers from fluctuations for some reason.

When the LOCK signal goes '0', the copier stops operation, and indicates 'E901' on its control panel.

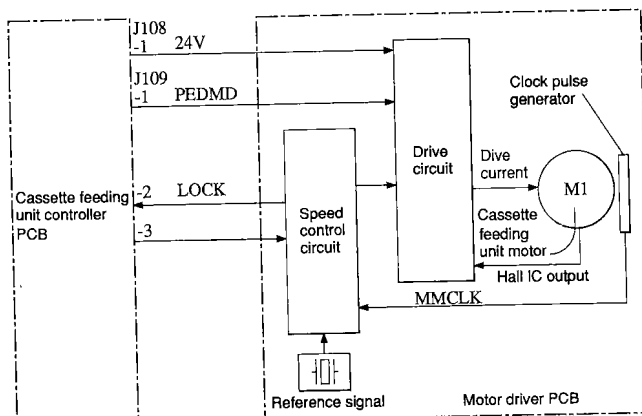


Figure 3-611

E. Duplexing Unit

1. Outline of the Duplexing Unit

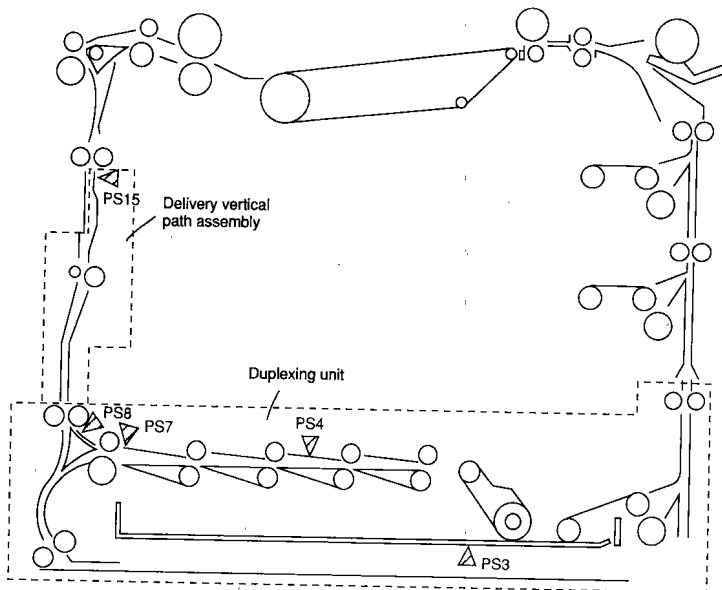


Figure 3-612

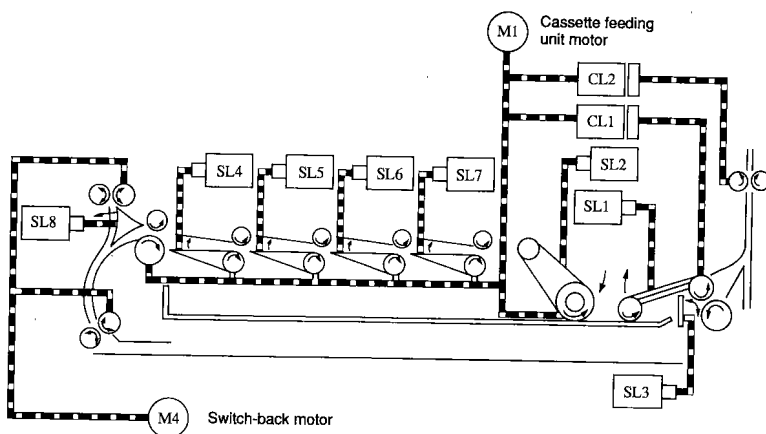


Figure 3-613

2. Mechanism of Holding Tray

a. Outline

The copy paper from the cassette or the multifeeder is sent to the delivery vertical path assembly by the No. 1 paper deflector after fixing; the paper is then sent to the No. 2 feeding assembly inside the cassette feeding unit.

In the No. 2 feeding assembly, the four paper deflectors are used to change the paper path to suit the length of the copy paper, thereby correctly stacking sheets of paper on the holding tray.

b. Overlay Copying (1st copying)

The paper path for the first copying when making an overlay copy is formed by driving the copier's No. 1 paper deflector and the cassette feeding unit's No. 2 paper deflector.

The pick-up roller inside the duplexing unit moves up, and the stop plate shifts up to wait for the paper.

When the paper reaches the holding tray, the feeding roller moves down to butt the paper against the stop plate. When the last sheet has been stacked, the stop plate shifts down, and the pick-up roller moves down to the top sheet of the stack.

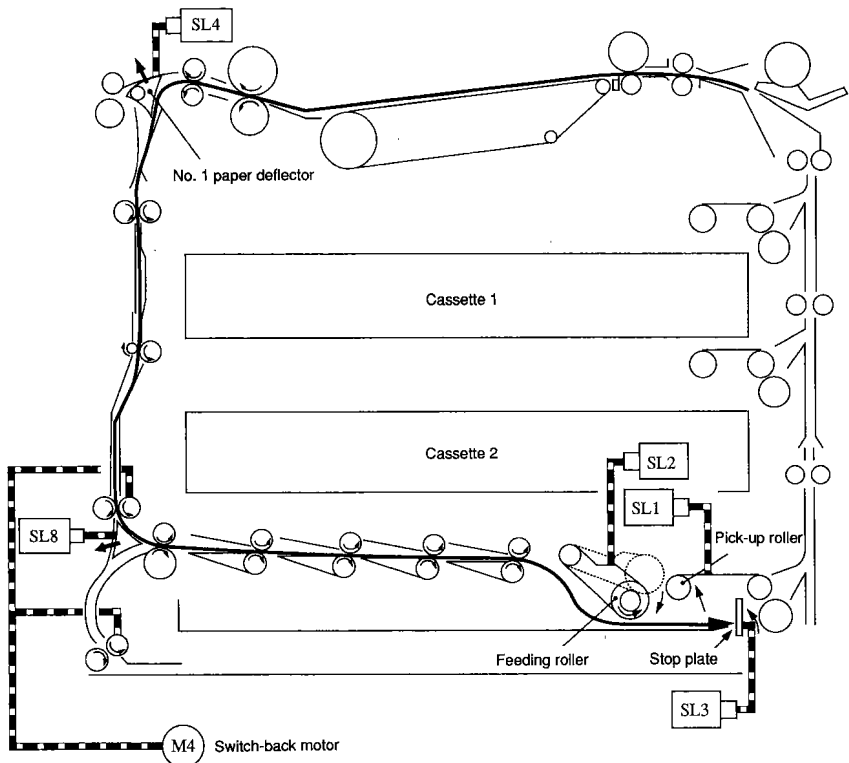
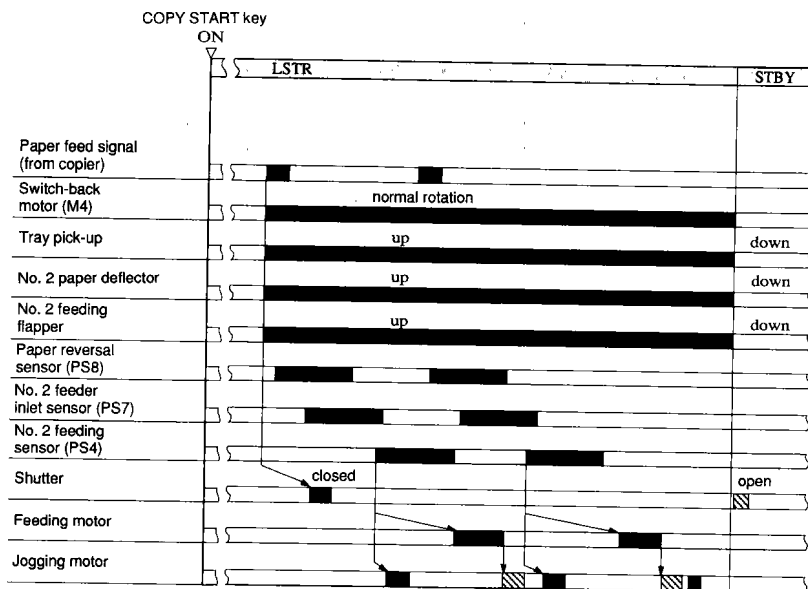


Figure 3-614



d. Two-Sided Copying (1st side)

When copying on the first side of a two-sided copy, the copier's No. 1 paper deflector shifts up to move the paper to the paper reversing assembly.

As soon as the reversing roller starts to move in reverse, the pick-up roller moves up and the stop plate shifts up to wait for the paper.

When the paper reaches the holding tray, the feeding roller moves down to butt the paper against the stopplate. When the last sheet has been stacked, the stopper plate shifts down and the pick-up roller moves down to the top sheet of the stack.

e. Making Two-Sided Copies (1st side)

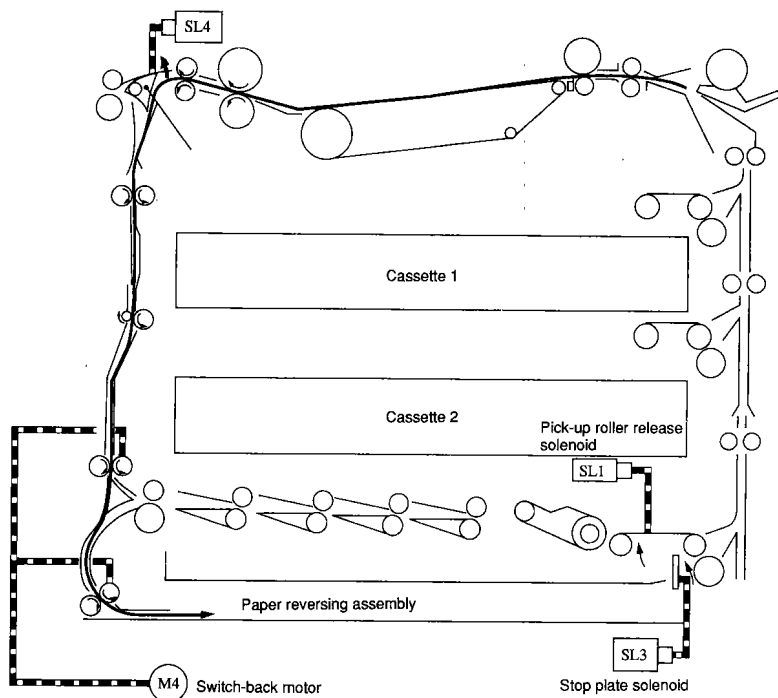


Figure 3-616

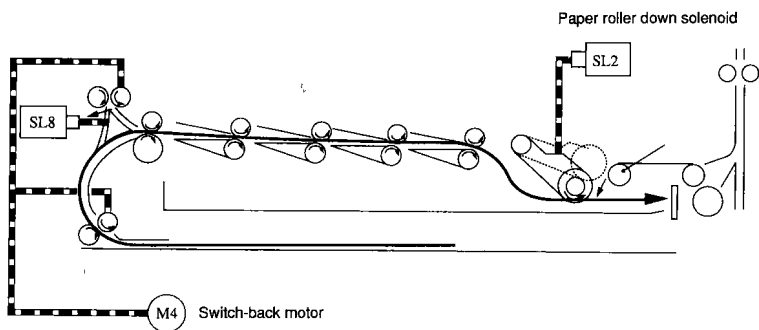


Figure 3-617

f. Sequence of Operations (1st side of two-sided copy)

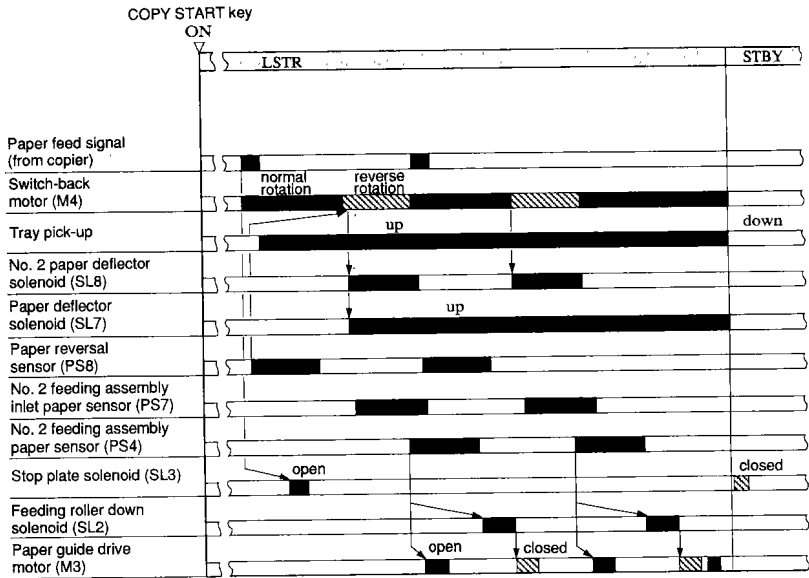


Figure 3-618

g. Changing the Paper Path in the No. 2

Feeding Assembly

When copying on the first side of a two-sided or overlay copy, the paper path in the No. 2 feeding assembly is changed to suit the copy size.

As many as five paths may be formed using four paper deflectors.

Each paper deflector is driven by its respective solenoid.

Ref. No.	Copy length	Copy size	Paper deflector drive solenoid			
			SL4	SL5	SL6	SL7
①	443.83mm 390.57mm	11" x 17" A3	ON	OFF	OFF	OFF
②	368.92mm 315.66mm	B4 LGL	OFF	ON	OFF	OFF
③	299.58mm 246.32mm	A4R LTR-R B5R	OFF	OFF	ON	OFF
④	231.54mm 178.28mm	LTR A4 B5	OFF	OFF	OFF	ON
⑤	163.50mm 128.15mm	A5 STMT	OFF	OFF	OFF	OFF

Table 3-601

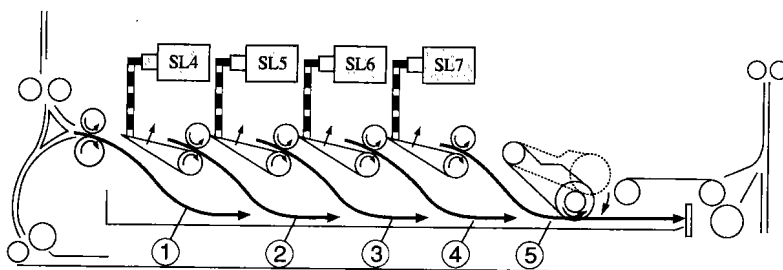


Figure 3-619

h. Paper Guide

- Outline

The paper guide is used to guide the side of the stack of copy paper placed on the holding tray, thereby preventing skew movement or jams.

The paper guide is moved so that it butts against the edge of the stack of copy paper each time a sheet is fed.

- Mechanism of Paper Guide

When the COPY START key is pressed in two-sided/overlay mode, the paper guide drive motor (M3) starts to rotate in reverse to move the paper guide into the direction of the arrow.

The motor stops when the light-blocking plate of the paper guide blocks the home position sensor (PS5).

Next, the cassette feeding unit's controller PCB generates pulses corresponding to the copy size to the motor (M3).

The motor (M3), in response, moves the paper guide to suit the copy size. The motor (M3) then starts to rotate in reverse to stop the paper guide at a point about 6 mm from the edge of the copy paper (one side) to wait for the copy paper.

When the copy paper reaches the holding tray, the motor (M3) starts to rotate in normal direction, moving the guide plate by 6 mm, and in reverse, moving the guide plate by 6 mm again, while keeping the sheets in order.

When the last copy reaches the holding plate, the motor (M3) rotates in normal and reverse directions to wait for copying on the second side.

While the second side is being processed, the motor (M3) remains stationary, standing by for copying on the first side in the next copying cycle.

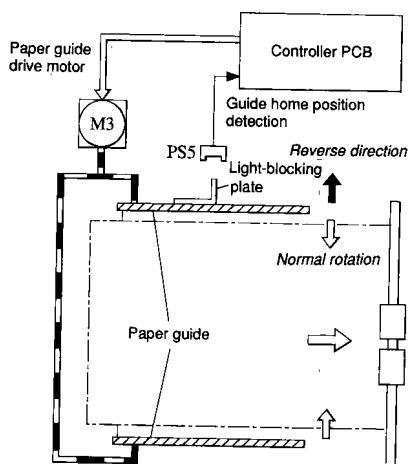


Figure 3-620 Tray (top view)

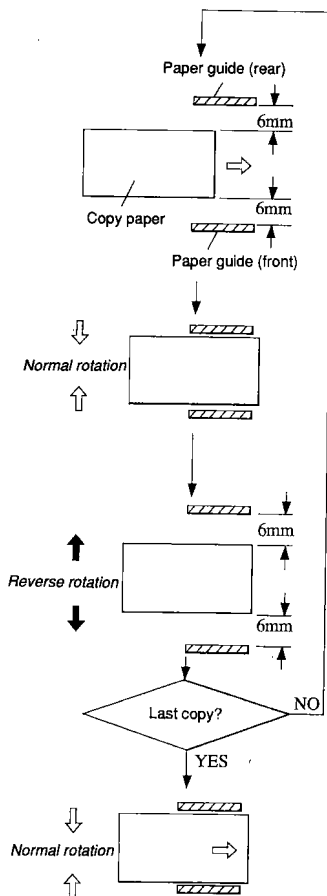


Figure 3-621 Keeping the Sheets in Order

3. Pick-Up from Holding Tray

a. Outline

When making a two-sided/overlay copy, copy paper is picked up from the holding tray.

When the COPY START key is pressed, the two-sided pick-up clutch (CL1) turns on, thereby transmitting the drive of the cassette feeding motor

(M1) to the pick-up roller to pick up copy paper. After pick-up, the pick-up roller moves from the paper by the work of the pick-up roller release solenoid (SL1).

The feeding roller and the separation roller work together to ensure that no more than one sheet of paper is fed to the copier's vertical path assembly.

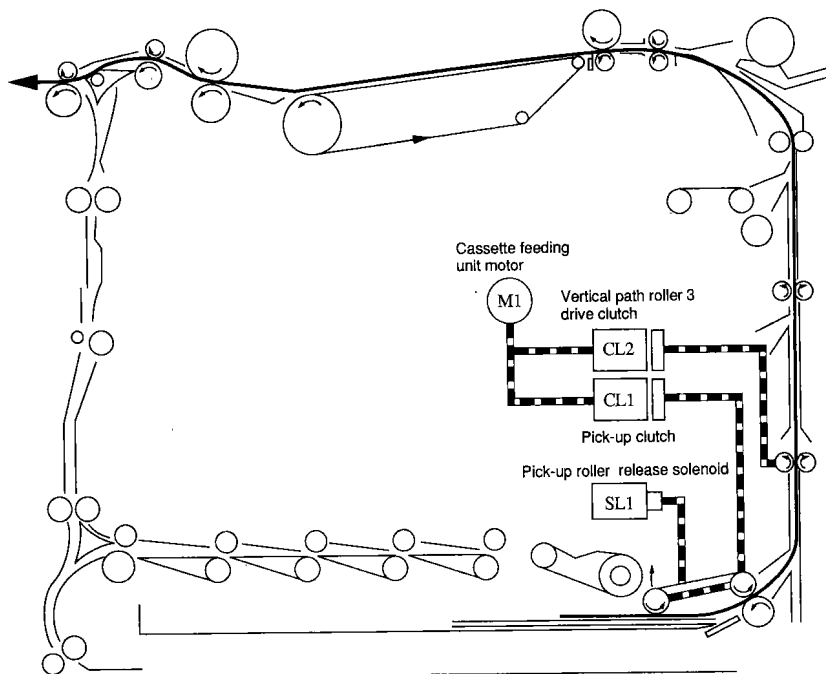


Figure 3-622

b. Sequence of Operations

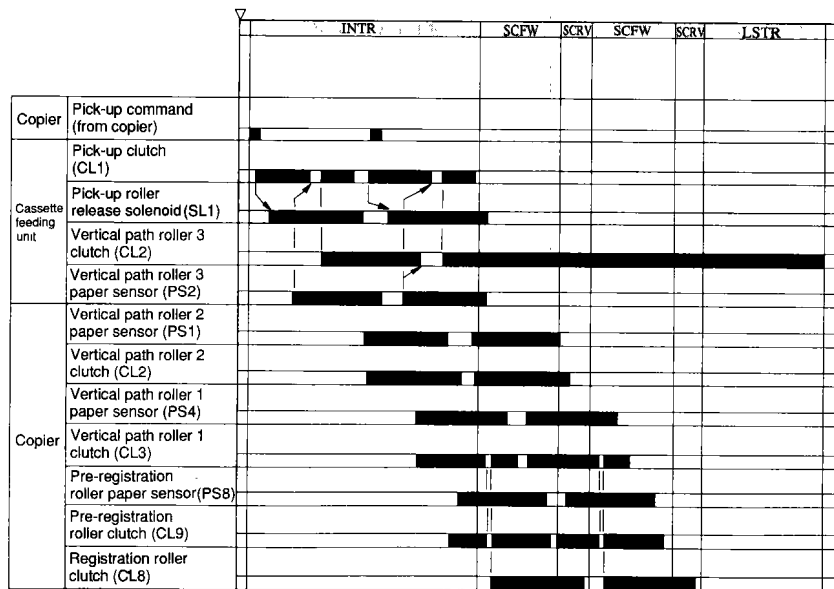


Figure 3-623

F. Pick-Up from Cassette

1. Operation

The copy paper inside the cassette is lifted by the lifter and remains in contact with the pick-up roller.

When the pick-up clutch (CL1, CL4, CL6) turns on, the pick-up roller starts to rotate to feed copy

paper. Then, the pick-up roller release solenoid (SL1, SL9, SL10) turns on to move the pick-up roller from the paper.

The copy paper is then sent to the paper path by the work of the feeding roller and the separation roller; thereafter, the copy paper is moved inside the copier by the vertical path roller.

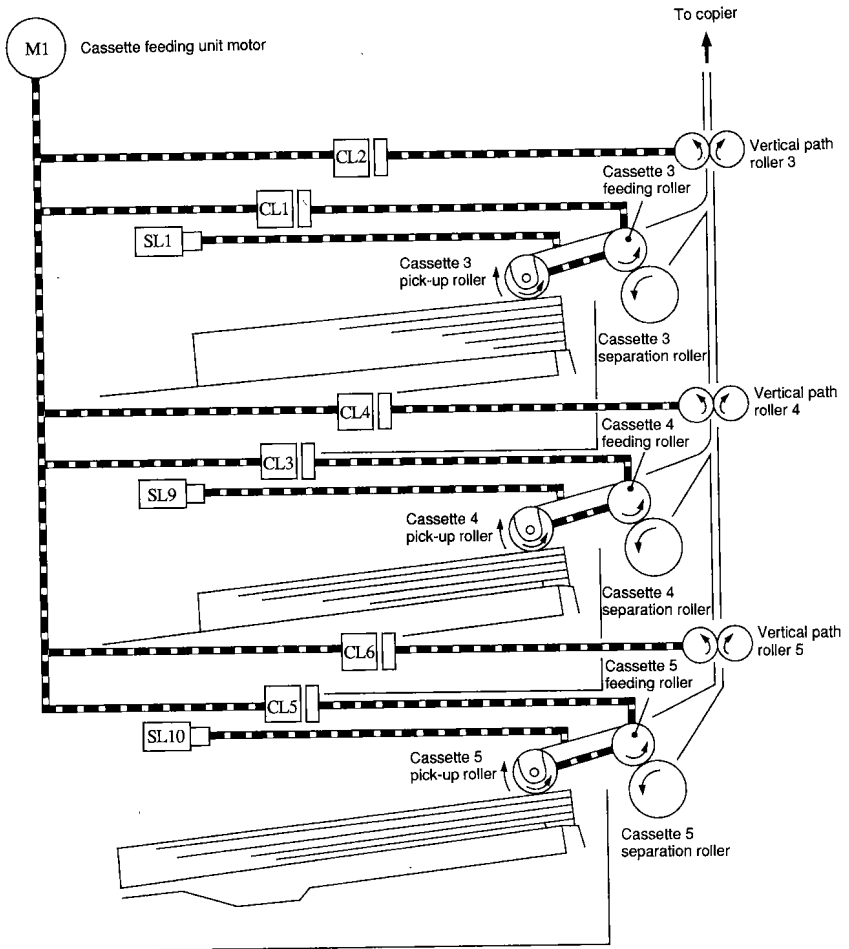


Figure 3-624 (Three-Cassette Feeding Unit)

2. Sequence of Pick-Up Operations

① Cassette 3, A4, 2 Copies

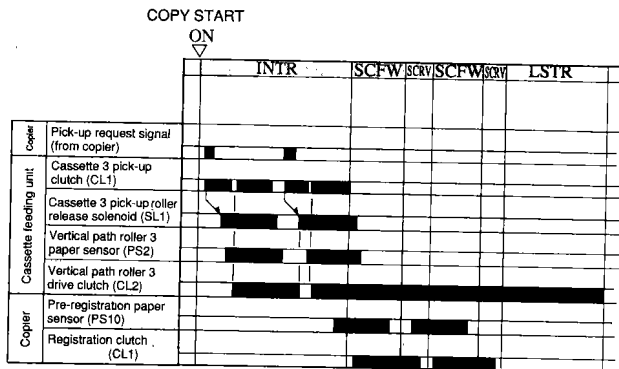


Figure 3-625

② Cassette 4, A4, 2 Copies

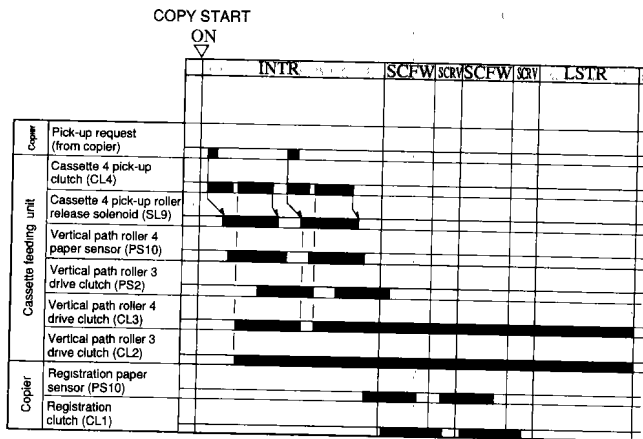


Figure 3-626

③ Cassette 5, A4, 2 Copies

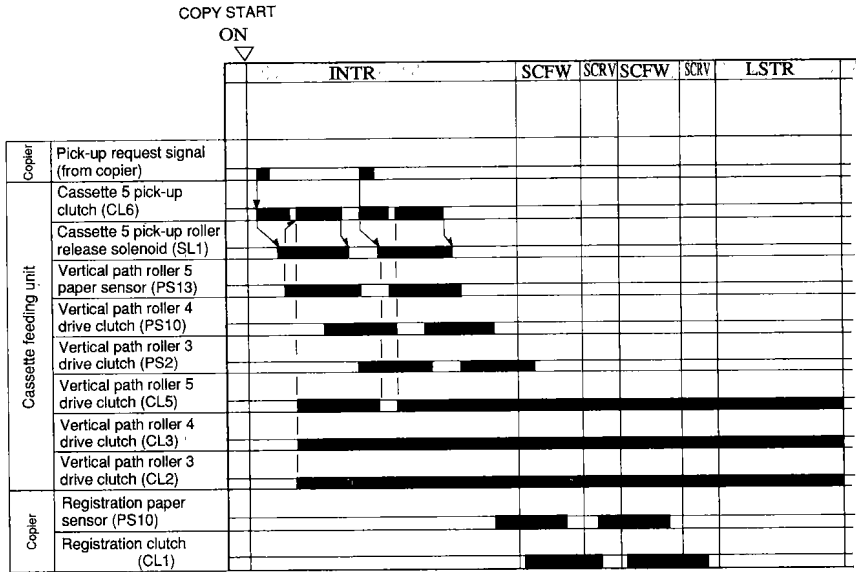


Figure 3-627

3. Movement of Cassette Lifter

When the cassette is slid into the copier, the pick-up roller lowers, and the light-blocking plate leaves the lifter position sensor (PS5, PS12, PS15), causing the lifter motor (M2, M5, M6) to turn on and the lifter to move up. The lifter motor stops when the lifter position sensor (PS5, PS12, PS15) detects the top sheet of the paper stack on the lifter.

When copy paper runs out and the paper detecting spacer attached to the pick-up roller shaft drops, the paper detecting lever leaves the paper sensor (PS3, PS11, PS14), causing the copier to indicate the ADD PAPER message on its display.

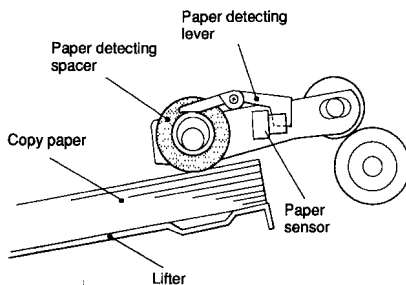


Figure 3-628

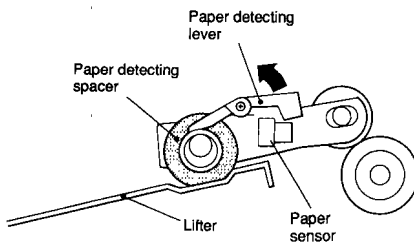


Figure 3-629

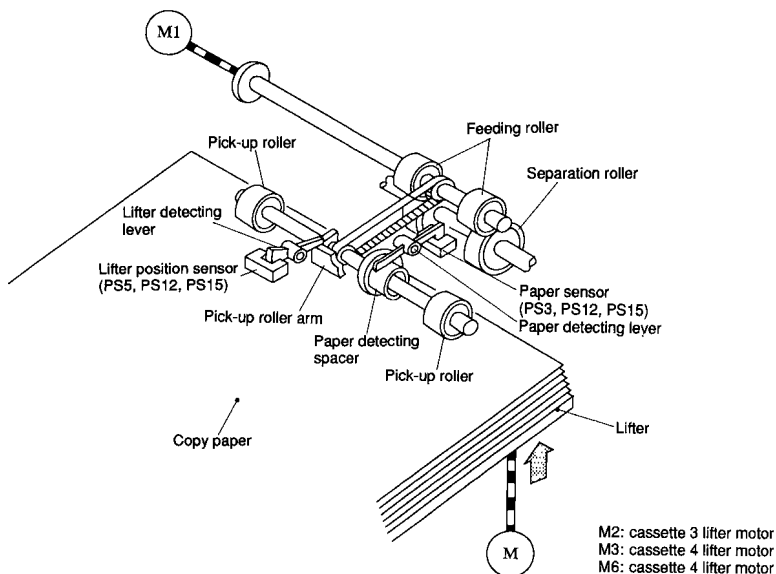


Figure 3-630

4. Identifying the Size of Copy Paper

a. Outline

The size of the copy paper inside the cassette is identified by the paper size sensors attached to the rear of the cassette holder.

When the cassette is slid inside the cassette holder, the paper size sensors are pushed by the bosses on the cassette, thereby generating outputs to represent the width and the length of the copy paper. Based on the combinations of the width and the length outputs, the copier identifies the size of the copy paper and, at the same time, decides on when to reverse the scanner and how to control blank exposure.

The bosses that press the paper size sensors are linked to the guide inside the cassette, and are positioned when the guide is moved to suit the copy paper.

b. Identifying the Size of Copy Paper

The copy paper length sensor consists of two photointerrupters, and the length of copy paper is identified based on the combination of the outputs of the two.

The copy paper width sensor, on the other hand, is a variable resistor, and the width of copy paper is identified based on the resistance generated by the resistor.

Figure 3-631 shows the relationship between the paper width and the output of the variable resistor. For this reason, you must enter the default settings whenever you have replaced the sensors or the DC controller PCB.

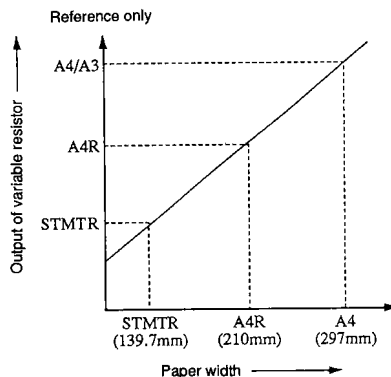


Figure 3-631

c. Paper Sizes

The microcomputer decides on a specific paper size according to the following table using the inputs of paper width and length.

Paper width sensor (slice level; mm)	Paper length sensor		PS106/PS109/PS110		PS105/PS107/PS109		PS106/PS109/PS110		PS105/PS107/PS109	
	Signal		SZ2	SZ1	SZ2	SZ1	SZ2	SZ1	SZ2	SZ1
	ON/OFF		0	0	0	1	1	0	1	1
288.5	A4		—		A3		—		—	
273.7	(G4)		—		11"x17"		—		—	
261.8	(G1)		—		—		—		—	
238.0	B5		—		B4		—		—	
212.9	STMT		LTRR		LGL		(G2)		—	
206.6	A5		A4R		—		(G3)		—	
196.6	G-LTRR		—		—		—		—	
186.0	K-LGLR		—		—		—		—	
165.2	B5R		—		—		—		—	
144.1	A5R		—		—		—		—	
	STMTR		—		—		—		—	

Table 3-602

Table 3-603 shows paper sizes grouped for identification and that can be set in service mode. The sizes with an asterisk represent default settings used at time of shipment from the factory.

Group	Size	
G1	*	G-LTR K-LGL
G2	*	FOOLSCAP OFFICIO E-OFFI A-LGL A-OFFI
G3	*	G-LGL FOLIO AUS-FLS
G4	*	LTR A-LTR

Table 3-603

• Paper Sizes That May Be Used for the Copier

Paper	Notation	Size (vertical × horizontal; mm)
A3	A3	(297±1) × (420±1)
A4R	A4R	(210±1) × (297±1)
A4	A4	(297±1) × (210±1)
A5	A5	(210±1) × (148.5±1)
A5R	A5R	(148.5±1) × (210±1)
B4	B4	(257±1) × (364±1)
B5R	B5R	(182±1) × (257±1)
B5	B5	(257±1) × (182±1)
11"×17"	11×17	(279±1) × (432±1)
LETTER R	LTRR	(216±1) × (297±1)
LETTER	LTR	(297±1) × (216±1)
STATEMENT	STMT	(216±1) × (139.5±1)
STATEMENT R	STMTR	(139.5±1) × (216±1)
LEGAL	LGL	(216±1) × (356±1)
KOREAN LEGAL	K-LGL	(265±1) × (190±1)
KOREAN LEGAL R	K-LGLR	(190±1) × (265±1)
FOOLSCAP	FLSC	(216±1) × (330±1)
AUSTRALIAN FOOLSCAP	A-FLS	(206±1) × (337±1)
OFICIO	OFI	(216±1) × (317±1)
EQUADORAN OFICIO	E-OFI	(220±1) × (320±1)
BOLIVIAN OFICIO	B-OFI	(216±1) × (355±1)
ARGENTINE LETTER	A-LTR	(280±1) × (220±1)
ARGENTINE LETTER-R	A-LTRR	(220±1) × (280±1)
GOVERNMENT LETTER	G-LTR	(267±1) × (203±1)
GOVERNMENT LETTER-R	G-LTRR	(203±1) × (267±1)
ARGENTINE LEGAL	A-LGL	(220±1) × (340±1)
GOVERNMENT LEGAL	G-LGL	(203±1) × (330±1)
FOLIO	FOLI	(216±1) × (317±1)
ARGENTINE OFFICIO	A-OFI	(220±1) × (340±1)

Table 3-604

G. Detecting Jams

The copier is equipped with the following sensors to check the presence/absence and the movement of copy paper:

- vertical path roller 3 paper sensor (PS2)
- vertical path roller 4 paper sensor (PS10)
- vertical path roller 5 paper sensor (PS13)
- No. 2 feeder inlet paper sensor (PS7; duplexing unit)
- paper reversal sensor (PS8; duplexing unit)
- No. 2 paper sensor (PS4; duplexing unit)

The presence/absence of paper is checked by the presence/absence of paper over the sensors at such times as instructed by the microprocessor on the cassette feeding unit controller PCB.

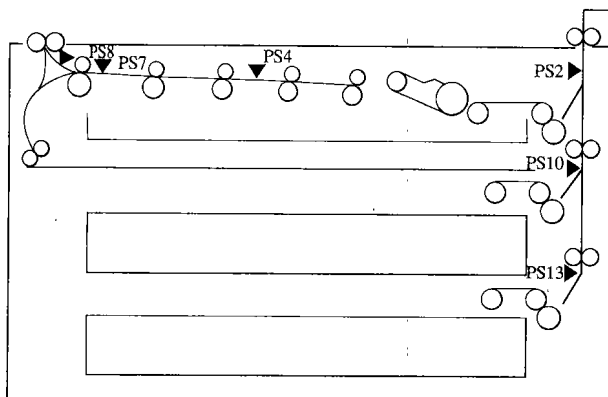
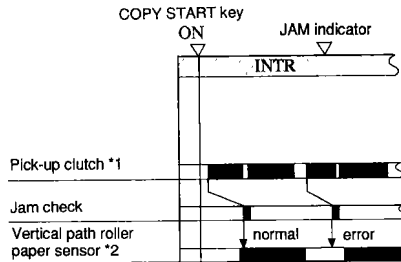


Figure 3-632

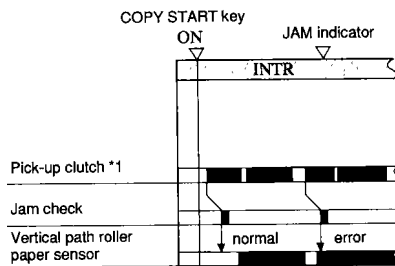
① Pick-Up Delay Jam



- *1 cassette 3 pick-up clutch (CL1)
holding tray pick-up clutch (CL1)
cassette 4 pick-up clutch (CL4)
cassette 5 pick-up clutch (CL6)
- *2 vertical path roller 3 paper sensor (PS2)
vertical path roller 4 paper sensor (PS10)
vertical path roller 5 paper sensor (PS13)

Figure 3-633

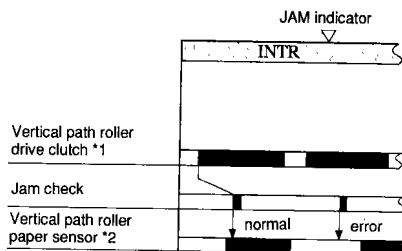
② Pick-Up Timing Jam



- *1 cassette 3 pick-up clutch (CL1)
holding tray pick-up clutch (CL1)
cassette 4 pick-up clutch (CL4)
cassette 5 pick-up clutch (CL6)
- *2 vertical path roller 3 paper sensor (PS2)
vertical path roller 4 paper sensor (PS10)
vertical path roller 5 paper sensor (PS13)

Figure 3-634

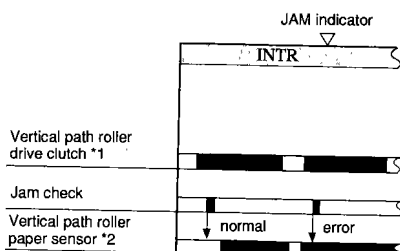
③ Vertical Path Roller 3, 4 Paper Sensor Delay Jam



- *1 vertical path roller 5 drive clutch (CL5)
vertical path roller 4 drive clutch (CL3)
- *2 vertical path roller 4 paper sensor (PS10)
vertical path roller 3 paper sensor (PS2)

Figure 3-635

④ Vertical Path Roller 3, 4 Paper Sensor Timing Jam



- *1 vertical path roller 5 drive clutch (CL5)
vertical path roller 4 drive clutch (CL3)
- *2 vertical path roller 4 paper sensor (PS10)
vertical path roller 3 paper sensor (PS2)

Figure 3-636

⑤ Vertical Path Roller 3 Stationary Jam

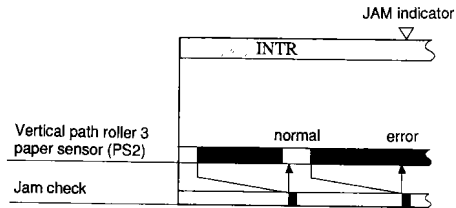


Figure 3-637

⑥ Two-Sided (first side), Paper Reversal Sensor (PS8) Delay Jam

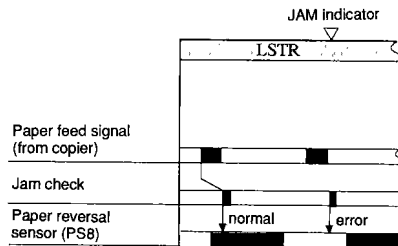


Figure 3-638

⑦ Two-Sided (first side), No. 2 Feeder Inlet Paper Sensor (PS7) Delay Jam

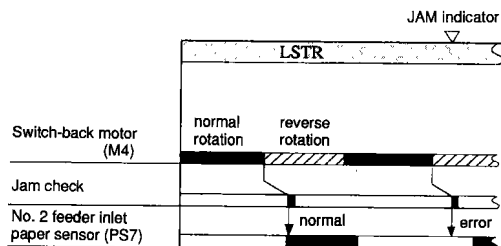


Figure 3-639

⑧ Overlay (first), No. 2 Feeder Inlet Paper Sensor (PS7) Delay Jam

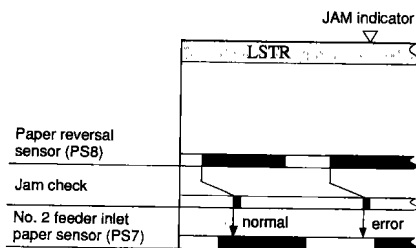


Figure 3-640

⑨ No. 2 Feeder Paper Sensor (PS4) Delay Jam

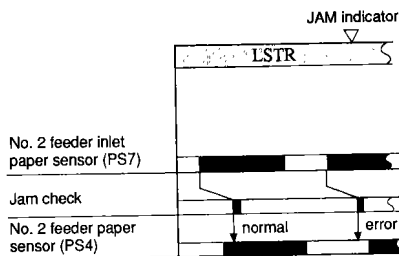


Figure 3-641

⑩ No. 2 Feeder Paper Sensor (PS4) Stationary Jam

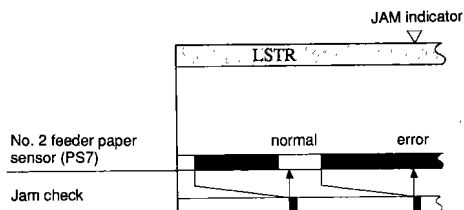


Figure 3-642

VII. SERVICE MODE

A. Outline

The copier's service mode is classified into the following six:

Item	Display	Description
* 1 *	DISPLAY	control display mode
* 2 *	I/O DISPLAY	I/O display mode
* 3 *	ADJUST	adjustment mode
* 4 *	FUNCTION	operation/inspection mode
* 5 *	OPTION	specifications settings mode
* 6 *	COUNTER	counter mode

Table 3-701

Each mode in turn has several items you can select; refer to the message display as you make adjustments.

B. Using Service Mode

- 1) Open the front door, and insert the door switch actuator. If you want to make checks while making copies (I/O display mode, for example), set the desired copy modes.
- 2) Press the service mode switch (SW 501) using a hex key.
 - The copier shows 'S' on its display to indicate that it has entered service mode.

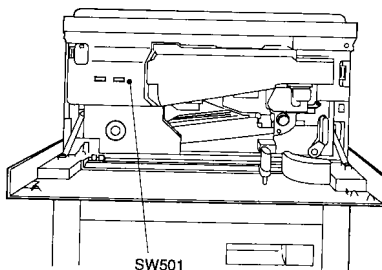


Figure 3-701

- 3) Enter the number of the desired mode (Table 3-701) using the $\boxed{\times}$ key and the numeric keypad; for example, $\boxed{\times} \rightarrow \boxed{3} \rightarrow \boxed{\times}$.
- 4) Press the $\boxed{\square}$ or $\boxed{\square}$ key to select the screen.
- 5) Make checks or adjustments.
- 6) Clear service mode.
 - Press the RESET key (O) once to leave the mode.
 - Press the RESET key once again to clear service mode.
 - Note that service mode will be cleared when you switch off the copier or disconnect its power plug; however, opening the right door, delivery door, cassette feeding unit right door or left door will not cancel service mode.

C. Using Adjustment Mode and Specifications Settings Mode

Using adjustment mode and specifications settings mode, you can activate the copier's functions using the RAM on the DC controller PCB without resorting to variable resistors or switches.

Figure 3-702 is a copy of the label attached behind the copier's front cover. At the factory, each copier is adjusted, and the settings used are recorded in this label.

It is important that you record new settings on the label whenever you have replaced the DC controller PCB or reset the RAM or set new settings; be sure to record the same settings on the label attached to the RAM on the DC controller PCB.



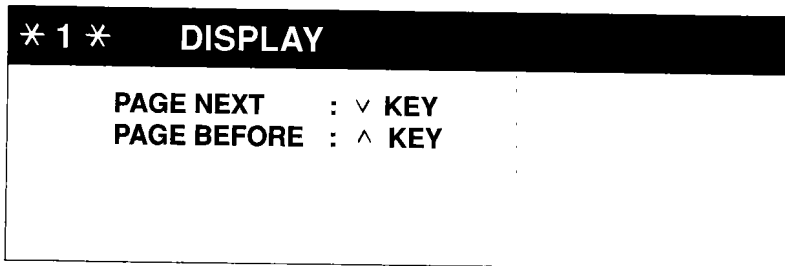
Figure 3-702

	TYP				TYP		
LIGHT_5				BK_BELT			
AE_SLOP				MF_LNGTH			
AE_LIGHT				BOOK_EPA			
REGIST				DOC_STOP			
LE_BLANK				C1_STMTR			
FR_BLANK				C1_A4R			
BK_BLANK				C2_STMTR			
TE_BLANK				C2_A4R			
BIAS				C3_STMTR			
TRN_1				C3_A4R			
TRN_2DUP				C4_STMTR			
TRN_2OVL				C4_A4R			
APVC_STD				C5_STMTR			
ATVC_STD				C5_A4R			
PWR_OFST				MF_A6R			
LMPVTUNE				MF_A4R			
				MF_A4			

Figure 3-702a

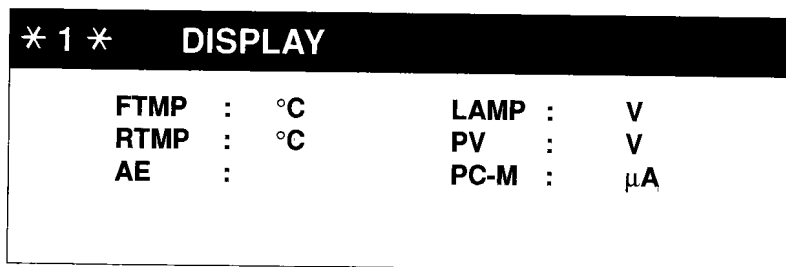
D. Control Display Mode (⌘ 1 ⌘)

- Select the screen using the ☐ or ☐ key.



Screen 3-1

- Screen No. 1



Screen 3-2

Item	Description	Remarks
FTMP	surface temperature of the upper fixing roller (output of thermistor TH1)	°C
RTMP	temperature inside the machine (output of the thermal sensor on the DC controller PCB)	°C
AE	output of the AE sensor	0 to 255
LAMP	drive voltage for the scanning lamp	V
PV	application voltage for the primary charging roller	V
PC_M	primary application current for APVC control	μA

Table 3-702

• Screen No. 2

* 1 * DISPLAY	
DCMET_1	:
DCMET_2	:
DCMET_3	:
DCMET_4	:

Screen 3-3

Item	Description	Remarks
DCMET1	output of document size sensor 1	Turn on the copyboard cover open/close sensor (PS18) with the copyboard cover open; the output of the sensor detecting a document should change from '1' to '0'.
DCMET2	output of document size sensor 2	
DCMET3	output of document size sensor 3	
DCMET4	output of document size sensor 4	

Table 3-703

AB

INCH

A

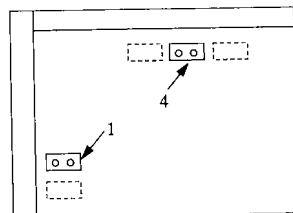
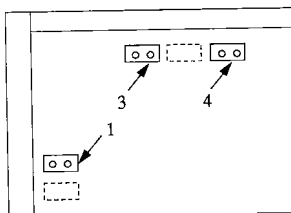
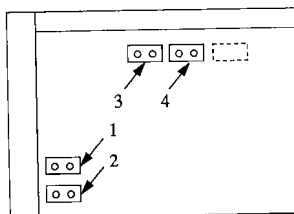


Figure 3-703

• Screen No. 3

* 1 * DISPLAY		
B_JAM1 :	B_ER1 :	A
B_JAM2 :	B_ER2 :	
B_JAM3 :	B_ER3 :	
B_ALRM :		

Screen 3-4

Item	Description	Remarks
B_JAM1 B_JAM2 B_JAM3	indicates three histories of jam locations: B_JAM1: most recent B_JAM2: second recent B_JAM3: third recent	See Table 3-705.
B_ER1 B_ER2 B_ER3	indicates three histories of the results of copier self diagnosis: B_ER1: most recent B_ER2: second recent B_ER3: third recent	See p. 3-173.
B_ALRM	indicates copier wrings.	See Table 3-706.
A	indicates types of E002.	See table 3-706a.

Table 3-704

• Details of Copier Jam Codes

Item	Description	Sensor
0001	vertical path 1 delay jam (cassette 1 pick-up delay)	PS6
0002	vertical path 2 delay jam (cassette 2 pick-up delay)	PS7
0004	pre-registration roller delay jam	PS9
0008	separation delay jam	PS10
0010	delivery delay jam	PS11
0020	delivery vertical jam delay jam	PS14
0100	vertical path 1 stationary jam (cassette 1 pick-up stationary)	PS6
0200	vertical path 2 stationary jam (cassette 2 pick-up stationary)	PS7
0400	pre-registration roller stationary jam	PS9
0800	separation stationary jam	PS10
1000	delivery stationary jam	PS11
2000	delivery vertical path stationary jam	PS14

Table 3-705

• Details of Copier Alarm Codes

Display	Description
0001	cassette 1 lifter fails to move up.
0002	cassette 2 lifter fails to move up.

Table 3-706

• Details of E002 (temperature)

Display in Service Mode	Temperature (measured)
1	40 to 75
2	75 to 100
3	100 to 120
4	120 to 140
5	140 to 160
6	160 to 170
7	170 to 180
8	180 to 185
9	185 to 190

• Screen No. 4

* 1 * DISPLAY			
		PEDI	DF
JAM	:	AA / DD	/ GG
ERR	:	BB / EE	/ HH
AKRM	:	CC / FF	/ II
			JJ

Screen 3-5

Item	Description	Remarks
JAM	gives a jam description.	
	AA PEDI: jam in cassette feeding unit (Table 3-708)	
	DD DF: jam in document pick-up system (Table 3-711)	
	GG SORT: jam in sorter (Table 3-714)	
ERR	gives results of self diagnosis (E)	
	BB PEDI: self diagnosis of cassette feeding nit (Table 3-709)	
	EE DF: self diagnosis of document pick-up system (Table 3-712)	
	HH SORT: self diagnosis of sorter (Table 3-715)	
ALRM	gives a warning description.	
	CC PEDI: warning description for cassette feeding unit (Table 3-710)	
	FF DF: warning description for document pick-up system (Table 3-713)	
	II SORT: warning description for sorter (Table 3-716)	
	JJ SORT: warning description for sorter (Table 3-717)	

Table 3-707

• Details of Cassette Feeding Unit Jam Codes (AA)

Display No.	Description	Sensor
01	cassette 5 pick-up delay	PS13
02	cassette 5 pick-up timing	
03	cassette 4 pick-up delay	PS10
04	cassette 4 pick-up timing	
05	cassette 3/duplexing unit delay	PS2
06	cassette 3/duplexing unit timing	
11	vertical path roller 4 delay	PS10
12	vertical path roller 4 timing	
13	vertical path roller 3 delay	PS2
14	vertical path roller 3 timing	
15	vertical path roller 3 stationary	
41	paper reversal sensor delay	PS8
42	No. 2 feeder inlet timing	PS7
43	No. 2 feeder inlet delay	
44	No. 2 feeder inlet stationary	
47	No. 2 feeder delay	PS4/PS7
48	No. 2 feeder stationary	PS4
49	No. 2 feeder timing	
82	No. 2 feeder inlet stationary	
84	No. 2 feeder stationary	

Table 3-708

• Details of Cassette Feeding Unit Error Codes (BB)

Display No.	Description
01	E901 ON signal
02	E902 ON signal

Table 3-709

• Details of Cassette Feeding Unit Warnings (CC)

Display No.	Description
01	cassette 3, 4, and 5 lifter fails to move up.

Table 3-710

• Details of DF Jam Codes (DD)

Display No.	Description	Model
01	document pulled out at time of pick-up	RF-ADF
02	delay jam by pick-up sensor	RF-ADF
03	delay jam by registration sensor	RF-ADF
05	stationary jam by registration sensor	ADF
06	double feeding by registration sensor	RF-ADF
08	document leading edge not detected by registration sensor at time of pick-up	RF
09	registration sensor does not turn on	ADF
11	delay jam 1 by reversal sensor	RF
12	stationary jam by reversal sensor	RF
13	delay jam 2 by reversal sensor	RF
20	initial stationary jam by reversal sensor	RF
21	reversal pick-up delay jam by registration sensor	RF
23	reversal pick-up stationary jam by registration sensor	RF
41	delay jam by delivery sensor	RF-ADF
42	stationary jam by delivery sensor	RF-ADF
81	open	RF-ADF
82	pick-up tray or upper cover open	RF-ADF
83	delivery document not detected by document sensor	RF-ADF
84	document detected by sensor at time of pick-up	RF-ADF
85	jam unique to test mode	ADF
88	document detected when first document is picked up	RF-ADF
89	recycle lever malfunctions while document is recirculated (2nd or later)	RF
8A	feeding fault when documents of mixed sizes exist	ADF
8B	last document trailing edge sensor remains on	ADF

Table 3-711

• Details of DF Error Codes (EE)

Display No.	Description
01	E401 On signal
02	E402 ON signal
03	E403 ON signal
04	E404 ON signal
11	E411 ON signal

Table 3-712 DF ERR

• Details of DF Warnings (FF)

Display No.	Description
01	idle rotation of the recycle lever
02	document not detected by document edge sensor
03	separation fails at time of document pick-up
04	skew movement at time of document pick-up
05	document rides over the paper stop plate at time of document pick-up
11	number of documents different after jam removal
12	number of documents excessive
13	document pulled out

The above signals are sent to the copier when the DF identifies incorrect placement of documents.

Table 3-713 DF Alarms

• Details of Sorter Jam Codes (GG)

Display No.	Description
03	paper sensor delay jam
04	paper sensor stationary jam
05	paper sensor timing jam
06	stapler staple jam
07	paper detected by sensor at power-on
08	joint switch or cover switch turns off during copying operation

Table 3-714

• Details of Sorter Error Codes (HH)

Display No.	Description
10	E510 ON signal
30	E530 On signal
31	E531 ON signal
40	E540 ON signal
41	E541 ON signal

Table 3-715 Sorter ERR

• Details of Sorter Warnings (II)

Display No.	Description
01	paper feeding unit power-off
02	stack excess

Table 3-716 Sorter Tray Alarm

• Details of Sorter Warnings (JJ)

Display No.	Description
01	staple down
02	staple jam
05	stapling capacity excess
06	stapling capacity full
07	mixed paper sizes (horizontal)
08	staple unit absent
09	stapled paper in bin
0A	no staple

Table 3-717 Sorter Stapling Alarms

• Screen No. 5

* 1 * DISPLAY	
Q116	: AA • BB • CC • DD
Q109	: EE • FF
DF	: EE • FF
SORT	: EE • FF
PEDI	: EE • FF

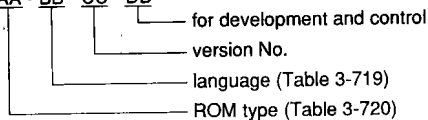
Screen 3-6

Item	Description
Q116	indicates the version of the ROM on the DC controller PCB.
Q109	indicates the version of Q109 on the DC controller PCB.
PEDI	indicates the version of the ROM on the cassette feeding unit controller PCB.
DF	indicates the version of the ROM on the RF or ADF controller PCB.
SORT	indicates the version of the ROM on the sorter controller PCB.

Table 3-718

• Guide to Version Notation (Q116)

Q116: AA • BB • CC • DD



• Guide to Version Notation (Q109, DF, SORT, PEDI)

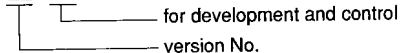
Q109:

DF

SORT

PEDI

EE • FF



• Types of Languages

No.	Language	No.	Language
10	Japanese	70	Finnish
20	English	80	Italian
30	French	90	Norwegian
40	German	A0	Portuguese
50	Danish	B0	Spanish
60	Dutch	C0	Swedish

Table 3-719

• Type of ROMs

No.	Type
10	Master ROM (fixed)

Table 3-720

• Screen No. 6

* 1 * DISPLAY

KEY_CHK :

DF_SIZE :

Screen 3-7

Item	Description	Remarks
KEY_CHK	checks the keys on the control panel.	Table 3-722
DF_SIZE	indicates the document size identified by the RF or ADF.	Table 3-723

Table 3-721

Display code	Key name	Display code	Key name
000	SORTER key	023	keypad 8
001	COPY DENSITY key (lighter)	024	keypad 9
002	AE key	025	CLEAR key
003	COPY DENSITY key (darker)	026	keypad 0
004	REDUCE key	027	ID key
005	DIRECT key	028	PRE-HEAT key
006	ENLARGE key	029	ZOOM key
007	PAPER SELECT key	030	AUTO RATIO key
009	 key	031	TWO-SIDED key
010	 key	032	PAGE SEPARATION key
012	OK key	033	OVERLAY key
013	STOP key	034	REDUCE LAYOUT key
014	START key	035	BIND key
015	INTERRUPT key	036	FRAME ERASE key
016	keypad 1	037	COVER key
017	keypad 2	038	MODE MEORY key
018	keypad 3	039	 key
019	keypad 4	045	DOCUMENT MIXED SIZE key
020	keypad 5	046	ENLARGE LAYOUT key
021	keypad 6	047	OHP INTERLEAF key
022	keypad 7		

The table does not list the RESET key, as a press on the key changes the screen.

Table 3-722 (key codes)

① Size Identification (AB, feeding direction only, non-default size absent)

Display code	Document size (mm)		Slice level (mm)	
			ADF-B1	RF-C1
17	A5	145 × 210	165 196 234 277 314 347 377 400	175 203 250 290 323 359 384 415
1	B5	182 × 257		
3	A4	210 × 297		
4	B5R	257 × 182		
6	A4R	297 × 210		
2	FOOLSCAP	330 × 216		
5	B4	364 × 257		
23	COMPUTER	381 × 279		
7	A3	420 × 297		

Table 3-723a

② Size Identification (INCH, feeding direction only, non-default size absent)

Display code	Document size (mm)		Slice level (mm)	
			ADF-B1	RF-C1
9	STMT	140 × 216	172 235 305 347 369 407	163 260 310 351 376 427
11	LTR	216 × 279		
14	LTRR	279 × 216		
2	FOOLSCAP	330 × 216		
13	LGL	356 × 216		
23	COMPUTER	381 × 279		
15	11 × 17	432 × 279		

Table 3-723b

• Screen No. 7

✱ 1 ✱ **DISPLAY**

WIDE SW SIZE

MULTI :
CST_1 :
CST_2 :

Screen 3-8

Item	Description	Remarks
MULTI CST_1 CST_2	indicates the paper size sensor output and the size of the copy paper in each of the cassettes and the multifeeper. MULTI: multifeeper CST-1: cassette 1 CST-2: cassette 2 WIDE: output of paper width sensor (analog) SW: output of paper length sensor ('1', '0') SIZE: paper width (mm)	

Table 3-725

• Screen No. 8

* 1 *	DISPLAY
	WIDE SW SIZE
CST_3	
CST_4	
CST_5	

Screen 3-9

Item	Description	Remarks
CST_3 CST_4 CST_5	indicates the paper size sensor output and the size of the copy paper in each of the cassettes. CST-3: cassette 3 CST-4: cassette 4 CST-5: cassette 5 WIDE: output of paper width sensor (analog) SW: output of paper length sensor ('1', '0') SIZE: paper width (mm)	

Table 3-727

Note:

In the case of a duplexing/two-cassette feeding unit, CST-4 represents the upper cassette in the cassette feeding unit and CST-5, the bottom cassette.

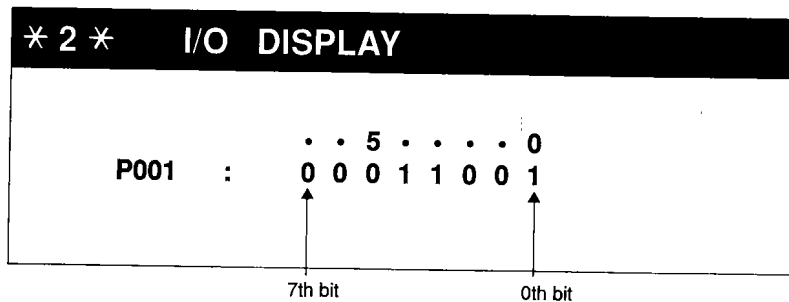
E. I/O Display Mode ()

- Select the screen using the  or  key.
- You can check the 8-bit inputs/outputs of each port.

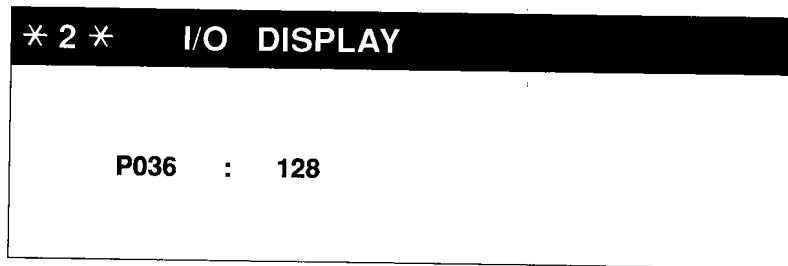
Each address is assigned the following tasks:

- P001 thru P018: ports of master CPU (Q102; PA0 thru PC5)
- P019 thru P024: indicates the state of the control panel key switches arranged in a matrix
- P025 thru P029: indicates the state of control panel LEDs
- P030 thru P042: ports of slave CPUY (Q109; P0 thru P7, AD0 thru AD7)
- P043 thru P055: DF-related
- P056 thru P068: sorter-related
- P069 thru P088: cassette feeding unit-related

• I/O Display (example)



Screen 3-10



Screen 3-11

Address	bit	Description	Signal	Jack No.	Remarks
P001 (input)	0	right door open/closed sensor (PS19) signal	RDC	J107-A11	1: door open
	1	multifeeder paper sensor (PS8) signal	MFPD	J104-A6	0: paper present
	2	cassette 1 paper sensor (PS2) signal	C1PD	J107-A8	1: paper present
	3	cassette 2 paper sensor (PS5) signal	C2PD	J108-B2	1: paper present
	4	cassette 1 lifter sensor (PS4) signal	C1LTP	J107-A5	0: cassette 1 lifter up
	5	cassette 2 lifter sensor (PS3) signal	C2LTP	J108-B5	0: cassette 2 lifter up
	6	—	—	—	—
	7	control card detected	CCDT	J109-B3	0: control card present
P002 (output)	0	cassette 1 pick-up release solenoid (SL1) drive signal	SL1D	J107-B6	1: SL1 ON
	1	cassette 2 pick-up release solenoid (SL2) drive signal	SL2D	J108-B8	1: SL2 ON
	2	cassette 1 pick-up clutch (CL2) drive signal	CL2D	J107-B4	1: CL2 ON
	3	cassette 2 pick-up clutch (CL3) drive signal	CL3D	J108-A2	1: CL3 ON
	4	vertical path 1 clutch (CL4) drive signal	CL4D	J107-B2	1: CL4 ON
	5	vertical path 2 clutch (CL5) drive signal	CL5D	J108-A4	1: CL5 ON
	6	multifeeder pick-up solenoid (SL6) drive signal	SL6D	J104-A8	1: SL6 ON
	7	multifeeder pick-up clutch (CL6) drive signal	CL6D	J104-A10	1: CL1 ON
P003 (output)	0	registration roller clutch (CL1) drive signal	CL1D	J105-A1	1: CL1 ON
	1	registration roller clutch (CL1) application voltage switch	—	J105-A2	1: 24V 0: 12V
	2	cassette 1 lifter motor (M4) drive signal	M4D	J112-B6	1: M4 ON
	3	cassette 2 lifter motor (M5) drive signal	M5D	J113-B13	1: M5 ON
	4	fixing main heater (H1) drive signal	MHRD	J112-B2	1: H1 ON
	5	fixing sub heater (H2) drive signal	SHRD	J112-B3	1: H2 ON
	6	cleaning belt solenoid (SL3) drive signal	SL3D	J113-B11	1: SL3 ON
	7	hopper motor (M3) drive signal	M3D	J112-B8	1: M3 ON

Address	bit	Description	Signal	Jack No.	Remarks
P004 (input)	0	vertical path roller 1 paper sensor (PS6) signal	PDP1	J107-A2	1: paper present
	1	vertical path roller 2 paper sensor (PS7) signal	PDP2	J108-A6	1: paper present
	2	pre-registration paper sensor (PS9) signal	PDP3	J113-A9	1: paper present
	3	separation sensor (PS10) signal	PDP4	J111-A11	0: paper present
	4	delivery sensor (PS11) signal	PDP5	J113-B4	0: paper present
	5	delivery sensor (PS11) signal	PDP5	J113-B4	0: paper present
	6	duplexing unit inlet paper sensor (PS14) signal	PDP6	J110-B12	0: paper present
	7	high-voltage CPUACK	—	J114-A9	0: ACK
P005 (output)	0	transmission signal (data line) from DC controller PCB to composite power supply	HVDATA0	J114-A1	—
	1		HVDATA1	J114-A2	—
	2		HVDATA2	J114-A3	—
	3		HVDATA3	J114-A4	—
	4		HVDATA4	J114-A5	—
	5		HVDATA5	J114-A6	—
	6		HVDATA6	J114-A7	—
	7		HVDATA7	J114-A8	—
P006 (output)	0	transmission signal from master CPU to slave CPU	DPREQ	—	—
	1	—	—	—	—
	2	high-voltage CPUREQ	HVREQ	J114-A10	—
	3	transmission signal (command line) from DC controller PCB to composite power supply PCB	HVCMD0	J114-B1	—
	4		HVCMD1	J114-B2	—
	5		HVCMD2	J114-B3	—
	6	—	—	—	—
	7	back-light (cathode ray tube) drive signal	BKLD	J112-A6	1: ON

Address	bit	Description	Signal	Jack No.	Remarks
P007 (input)	0	copyboard cover open/closed sensor (PS18) signal	CBCC	J105-A7	1: cover closed
	1	waste toner full sensor (PS15) signal	TN_OUT	J105-A10	0: alternates between 1 and 0 when full
	2	transmission signal (error command) from composite power supply PCB to DC controller PCB	ECMD2	J114-B4	1: door open
	3		ECMD1	J114-B5	0: paper present
	4		ECMD0	J114-B6	1: paper present
	5	—	—	—	—
	6	—	—	—	—
	7	DPACK	DPACK	—	—
P008 (output)	0	scanner cooling fan (FM) drive signal	$\overline{\text{FMID}}$	J105-A4	0: FM1 ON
	1	main motor (M1) drive signal	MID	J113-A12	1: M1 ON
	2	pre-exposure lamp (LA2) drive signal	$\overline{\text{PEXP}}$	J110-B8	1: LA2 ON
	3	exhaust fan (FM2) drive signal	$\overline{\text{FM2D}}$	J111-A1	1: FM2 ON
	4	feeding fan (FM3) drive signal	$\overline{\text{FM3D}}$	J111-A7	1: FM3 ON
	5	transmission signal from scanner motor to slave CPU	SCMD	—	1: M2 ON
	6	—	—	—	—
	7	delivery flapper solenoid (SL5) drive signal	$\overline{\text{SL5D}}$	J113-B1	1: SL5 ON
P009 (input/ output)	0	scanner home position sensor (PS1) signal	SCHP	J110-A14	1: at HP
	1	scanning lamp (LA1) drive detection signal	LAMPD	J114-B9	1: LA ON
	2	auto power-off open circuit detection	PWOFFD	J112-A1	1: open 0: OK
	3	main motor PLL lock detection	LOCK	J113-A13	0: lock
	4	main motor SSR drive detection signal	MSSRD	J112-B1	H: drive L: OK
	5	sub heater SSR drive detection signal	SSSRD	J112-B4	H: drive L: OK
	6	main counter open circuit detection	CNT1BD	J112-A12	H: open L: ON
	7	option counter open circuit	CNT2BD	J113-B10	H: open L: ON

Address	bit	Description	Signal	Jack No.	Remarks
P010 (input)	0	document size sensor 1 (PS20) signal	SZ1	J105-B2	L: document present
	1	document size sensor 2 (PS21) signal	SZ2	J105-B5	L: document present
	2	document size sensor 3 (PS22) signal	SZ3	J105-B8	L: document present
	3	document size sensor 4 (PS23) signal	SZ4	J105-B11	L: document present
	4	—	—	—	—
	5	—	—	—	—
	6	—	—	—	—
	7	developing assembly toner sensor (TS1) signal	TEP	J111-A4	0: toner absent
P011 (output)	0	blank shutter solenoid (SL4) drive signal	SL4D	J110-B10	1: SL4 ON
	1	document size sensor ON/OFF	DSIZEON	J105-B3	1: ON
	2	—	—	—	—
	3	—	—	—	—
	4	counter drive signal	CNT1D	J11-A12	1: count up
	5	option counter drive signal	CNT2D	J113-B10	1: count up
	6	control card	CCD	J109-A13	0: control card absent
	7	auto power-off drive signal	PWOFF	J112-A1	1:
P012 (input/output)	0	primary charging roller cleaning solenoid (SL7) drive signal	SL7D	J105-B13	1: SL7 ON
	1	transfer roller lock/release solenoid (SL8) drive signal	SL8D	J111-A9	1: SL8 ON
	2	—	—	—	—
	3	—	—	—	—
	4	cassette feeding unit control signal 0	PDCNT0	J113-A1	—
	5	cassette feeding unit control signal 1	PDCNT1	J113-A2	—
	6	cassette feeding unit control signal 2	PDCNT2	J113-A3	—
	7	watch dog (PCB signal)	WTDG	—	:

Address	bit	Description	Signal	Jack No.	Remarks
P013 (input)	0	—	—	—	—
	1	cassette 1 paper length sensor (SEU1) signal	C1SZ1	J104-B2	0: PS102 ON
	2		C1SZ2	J104-B1	0: PS101 ON
	3	—	—	—	—
	4	cassette 2 paper length sensor (SEU2) signal	C2SZ1	J104-B6	0: PS104 ON
	5		C2SZ2	J104-B5	0: PS103 ON
	6	service switch (SSW) signal	SERVICE	J112-A11	0: service switch ON
	7	—	—	—	—
P014	0	oscillation signal 0	DIGIT0	J109-A2	—
	1	oscillation signal 1	DIGIT1	J109-B14	—
	2	oscillation signal 2	DIGIT2	J109-A3	—
	3	oscillation signal 3	DIGIT3	J109-B13	—
	4	oscillation signal 4	DIGIT4	J109-A4	—
	5	oscillation signal 5	DIGIT5	J109-B12	—
	6	—	—	—	—
	7	—	—	—	—
P015 (input/ output)	0	drive signal 0	LDATA0	J109-A9	control panel LED drive signal
	1	drive signal 1	LDATA1	J109-B7	
	2	drive signal 2	LDATA2	J109-A10	
	3	drive signal 3	LDATA3	J109-B6	
	4	drive signal 4	LDATA4	J109-A11	
	5	drive signal 5	LDATA5	J109-B5	
	6	drive signal 6	LDATA6	J109-A12	
	7	drive signal 7	LDATA7	J109-B4	
P016 (input)	0	key read signal 0	RETURN0	J109-A5	reads key inputs of control panel keys
	1	key read signal 1	RETURN1	J109-B11	
	2	key read signal 2	RETURN2	J109-A6	
	3	key read signal 3	RETURN3	J109-B10	

Address	bit	Description	Signal	Jack No.	Remarks
P016 (input)	4	key read signal 4	RETURN4	J109-A7	reads key inputs of control panel keys
	5	key read signal 5	RETURN5	J109-B9	
	6	key read signal 6	RETURN6	J109-A8	
	7	key read signal 7	RETURN7	J109-B8	
P017	0	—	—	—	—
	1	—	—	—	—
	2	—	—	—	—
	3	—	—	—	—
	4	—	—	—	—
	5	—	—	—	—
	6	—	—	—	—
	7	—	—	—	—
P018	0	—	—	—	—
	1	—	—	—	—
	2	—	—	—	—
	3	—	—	—	—
	4	—	—	—	—
	5	—	—	—	—
	6	—	—	—	—
	7	—	—	—	—
P019 (input)	0	SORTER key	—	—	1: ON
	1	COPY DENSITY key (lighter)	—	—	1: ON
	2	AE key	—	—	1: ON
	3	COPY DENSITY key (darker)	—	—	1: ON
	4	REDUCE key	—	—	1: ON
	5	DIRECT key	—	—	1: ON
	6	ENALRGE key	—	—	1: ON
	7	PAPER SELET key	—	—	1: ON

Address	bit	Description	Signal	Jack No.	Remarks
P020 (input)	0	RESET key	—	—	1: ON
	1	 key	—	—	1: ON
	2	 key	—	—	1: ON
	3	—	—	—	—
	4	OK key	—	—	1: ON
	5	STOP key	—	—	1: ON
	6	START key	—	—	1: ON
	7	INTERRUPT key	—	—	1: ON
P021 (input)	0	numeric keypad [1]	—	—	1: ON
	1	numeric keypad [2]	—	—	1: ON
	2	numeric keypad [3]	—	—	1: ON
	3	numeric keypad [4]	—	—	1: ON
	4	numeric keypad [5]	—	—	1: ON
	5	numeric keypad [6]	—	—	1: ON
	6	numeric keypad [7]	—	—	1: ON
	7	numeric keypad [8]	—	—	1: ON
P022 (input)	0	numeric keypad [9]	—	—	1: ON
	1	CLEAR key	—	—	1: ON
	2	numeric keypad [0]	—	—	1: ON
	3	ID key	—	—	1: ON
	4	PRE-HEAT key	—	—	1: ON
	5	ZOOM key	—	—	1: ON
	6	AUTO RATIO key	—	—	1: ON
	7	TWO-SIDED key	—	—	1: ON
P023 (input)	0	PAGE SEPARATE key	—	—	1: ON
	1	OVERLAY key	—	—	1: ON
	2	REDUCE LAYOUT key	—	—	1: ON
	3	BIND key	—	—	1: ON

Address	bit	Description	Signal	Jack No.	Remarks
P023 (input)	4	FRAME ERASE key	—	—	1: ON
	5	COVER key	—	—	1: ON
	6	MODE MEMORY key	—	—	1: ON
	7	USER MEMORY (asterisk) key	—	—	1: ON
P024 (input)	0	—	—	—	—
	1	—	—	—	—
	2	—	—	—	—
	3	—	—	—	—
	4	—	—	—	—
	5	DOCUMENT MIXED SIZE key	—	—	0: LED ON
	6	ENLARGE LAYOUT key	—	—	0: LED ON
	7	OHP INTERLEAF key	—	—	0: LED ON
P025 (input)	0	SORT LED	—	—	0: LED ON
	1	F1 LED	—	—	0: LED ON
	2	F2 LED	—	—	0: LED ON
	3	F3 LED	—	—	0: LED ON
	4	F4 LED	—	—	0: LED ON
	5	F5 LED	—	—	0: LED ON
	6	F6 LED	—	—	0: LED ON
	7	START key LED (red 1)	—	—	0: LED ON
P026 (input)	0	F7 LED	—	—	0: LED ON
	1	F8 LED	—	—	0: LED ON
	2	F9 LED	—	—	0: LED ON
	3	AE LED	—	—	0: LED ON
	4	START key LED (green 1)	—	—	0: LED ON
	5	START key LED (green 2)	—	—	0: LED ON
	6	INTERRUPT key	—	—	0: LED ON
	7	START key LED (red 2)	—	—	0: LED ON

Address	bit	Description	Signal	Jack No.	Remarks
P027 (input)	0	—	—	—	—
	1	ZOOM key LED	—	—	0: LED ON
	2	AUTO RATIO key LED	—	—	0: LED ON
	3	TWO-SIDED key LED	—	—	0: LED ON
	4	PAGE SEPARATE key LED	—	—	0: LED ON
	5	OVERLAY key LED	—	—	0: LED ON
	6	REDUCE LAYOUT key LED	—	—	0: LED ON
	7	PRE-HEAT key LED	—	—	0: LED ON
P028 (input)	0	BIND key LED	—	—	0: LED ON
	1	FRAME ERASE key LED	—	—	0: LED ON
	2	COVER key LED	—	—	0: LED ON
	3	MEMORY key LED	—	—	0: LED ON
	4	USER MODE key LED	—	—	0: LED ON
	5	ENLARGE LAYOUT key LED	—	—	0: LED ON
	6	OHP INTERLEAF key LED	—	—	0: LED ON
	7	—	—	—	—
P029	0	DOCUMENT SIZE MIXED LED	—	—	0: LED ON
	1	—	—	—	—
	2	—	—	—	—
	3	—	—	—	—
	4	—	—	—	—
	5	—	—	—	—
	6	—	—	—	—
	7	—	—	—	—
P030 (input)	0	lens x motor (M6) drive signal	LEXA	J116-B1	alternates between 1 and 0 during rotation
	1		LEXB	J116-B2	
	2	lens y motor (M7) drive signal	LEYA	J116-B11	
	3		LEYB	J116-B10	

Address	bit	Description	Signal	Jack No.	Remarks
P030 (input)	4	blank shutter (front) motor (M8) dive signal	BLFA	J110-B1	alternates between 1 and 0 during rotation
	5		BLFB	J110-B4	
	6	blank shutter (rear) motor (M9) dive signal	BLBA	J110-A1	
	7		BLBB	J110-A4	
P031 (output)	0	scanner motor (M2) drive signal	SCT1	J116-A12	alternates between 1 and 0 during rotation
	1		SCT2	J116-A11	
	2		SCT3	J116-A10	
	3		SCT4	J116-A9	
	4		SCT5	J116-A8	
	5		SCT6	J116-A7	
	6	scanner motor (M2) excitation signal	SCMHL	—	always 0 while power is on
	7	scanner home position sensor (PS1) signal	SCHP	J110-A14	1: at HP
P032 (input)	0	—	—	—	—
	1	—	—	—	—
	2	scanner motor start (signal from master; PCB signal)	SCMD	—	—
	3	lens home position sensor (PS16) signal	LXHP	J116-A1	1: at HP
	4	lens Y home position sensor (PS17) signal	LYHP	J116-B8	1: at HP
	5	blank shutter (front) home position sensor (PS12) signal	BLFHP	J110-A8	1: at HP
	6	blank shutter (rear) home position sensor (PS13) signal	BLBHP	J110-A11	1: at HP
	7	DPRAMREQ (from master)	DPREQ	—	—
P033 (output)	0	image exposure signal	—	—	—
	1	lens Y motor (M7) hold signal	LEYHLD	J116-B9	1: 24V 0: 5V
	2	blank shutter motor (M8, M9) hold signal	BLHLD	—	1: hold
	3	blank shutter solenoid (SL4)	SL4D	J110-B10	1: SL4 ON
	4	scanner motor current down signal	SCMHL	J116-A2	

Address	bit	Description	Signal	Jack No.	Remarks
P033 (output)	5	scanner motor latch pulse (PCB signal)	OMLATCH	—	—
	6	DPRAMACK (to master CPU; PCB signal)	DPACK	—	—
	7	master counter clock (to master CPU; PCB signal)	CLOCK	—	—
P034 (output)	0	scanner motor (M2) drive signal	SCT7	J116-A6	alternates between 0 and 1 during rotation
	1		SCT8	J116-A5	
	2		SCT9	J116-A4	
	3		SCT10	J116-A3	
	4	RD (to dual port RAM)	$\overline{\text{SRD}}$	—	—
	5	WR (to dual port RAM)	$\overline{\text{SWR}}$	—	—
	6	WAIT	—	—	—
	7	lens X motor (M6) hold signal	LEXHLD	J116-B3	analog value
P035	—	fixing thermistor (TH1) signal	TH1	J112-A3	analog value
P036	—	APVC current value	—	J901-8	analog value
P037	—	AE sensor signal	AE	J116-B6	analog value
P038	—	lamp regulator voltage signal (composite power supply PCB)	LAMPS	J114-B9	analog value
P039	—	cassette 1 paper width detection VR (SVR1) signal	C1PW	J104-B11	analog value
P040	—	cassette 2 paper width detection VR (SVR2) signal	C2PW	J104-B14	analog value
P041	—	multifeeder paper width detection VR (SVR3) signal	MFPW	J104-A13	analog value
P042	—	ambient sensor signal	LASIG	—	analog value

• ADF-B1

Address	bit	Description	Signal	Jack No.	Remarks
P043	0	cover open/closed sensor (MS2) signal	UPCC	J3-2	0: open
	1	ADF open/closed sensor (MS1) signal	DFC	J2-3	0: open
	2	LED 1 drive signal (PCB signal)	—	—	0: ON
	3	LED 2 drive signal (PCB signal)	—	—	0: ON
	4	pick-up roller sensor (S3) signal	PUSP	J8-7A	1: detected
	5	pick-up sensor (S5) signal	PDP1	J9-1	1: detected
	6	delivery sensor (S1) signal	PDP2	J10-2	1: detected
	7	LED3 drive signal (PCB signal)	—	—	0: ON
P044	0	document set LED drive signal	PSD	J8-4B	1: ON
	1	pick-up motor (M2) drive signal	PUMD	J7-1	1: ON
	2	delivery motor (M3) drive signal	DMD	J6-1	1: ON
	3	belt motor clock pulse	—	—	1: ON
	4	belt feed motor (M1) drive signal	BMD	J5-1	1: ON
	5	brake (BK) drive signal	BKD	J4-1	1: ON
	6	paper holding plate solenoid (SL1) drive signal	WGTSLD	J9-7	1: ON
	7	stop plate solenoid (SL2) drive signal	STPSLD	J12-1	1: ON
P045	0	communication signal	—	—	—
	1	communication signal	—	—	—
	2	communication signal	—	—	—
	3	delivery motor clock pulse signal	—	—	—
	4	PCB signal	—	—	—
	5	PCB signal	—	—	—
	6	communication signal	—	—	—
	7	communication signal	—	—	—
P046	0		—	—	—
	1		—	—	—
	2		—	—	—

• ADF-B1

Address	bit	Description	Signal	Jack No.	Remarks
P046	3	—	—	—	—
	4	—	—	—	—
	5	—	—	—	—
	6	—	—	—	—
	7	—	—	—	—
P047	0	—	—	—	—
	1	—	—	—	—
	2	—	—	—	—
	3	—	—	—	—
	4	—	—	—	—
	5	—	—	—	—
	6	—	—	—	—
	7	—	—	—	—
P048	—	—	—	—	—
P049	—	document stop position adjustment VR	—	—	in hexadecimal notation
P050	—	DIP switches 3, 4	—	—	
P051	—	DIP switches 1, 2; push switch	—	—	
P052	—	2-to-1 paper gap adjustment VR	—	—	
P053	—	serial communication detection	—	—	
P054	—	last document trailing edge sensor (S8) signal	DEP	J8-3B	
P055	—	document detection sensor (S6) signal	DEP	J11-2	

• RF-C1

Address	bit	Description	Signal	Jack No.	Remarks
P043	0	recycle motor drive signal	RMD	J8-6	1: ON
	1	document set indicator LED drive signal	DSD	J8-4	1: ON
	2	clutch drive signal	CCD	J13-2	1: ON
	3	brake drive signal	BKD	J6-2	1: ON
	4	stop plate solenoid drive signal	STPSLD	J5-4	1: ON
	5	paper deflector solenoid drive signal	DFSLD	J4-2	1: ON
	6	PC signal	—	—	—
P044	7	—	—	—	—
	0	—	—	—	—
	1	belt motor clock pulse	—	TP1-1	—
	2	belt motor direction switch signal	—	—	—
	3	belt motor drive signal	—	—	—
	4	feeder motor drive signal	FMD	TP2-4	—
	5	feeder motor short brake signal	—	—	—
P045	6	pick-up motor drive signal	PUMD	J12-1	1: ON
	7	paper holding plate solenoid drive signal	WSLD	J5-2	1: ON
	0	communication signal	—	—	—
	1	communication signal	—	—	—
	2	PCB signal	—	—	—
	3	belt motor clock sensor signal	BMCLK	J9-23	—
	4	PCB signal	—	—	—
	5	PCB signal	—	—	—
P046	6	PCB signal	—	—	—
	7	PCB signal	—	—	—
	0	reversal sensor signal	PDP5	J9-17	1: paper present
	1	pick-up roller sensor signal	PUSP	J9-8	1: pick-up roller HP
	2	pick-up sensor signal	PDP1	J9-14	1: paper present

• RF-C1

Address	bit	Description	Signal	Jack No.	Remarks
P046	3	delivery sensor signal	PDP2	J9-11	1: paper present
	4	recycle sensor signal	LDD	J8-2	0: recycle lever on document
	5	LED1 drive signal	—	—	—
	6	LED2 drive signal	—	—	—
	7	LED3 drive signal	—	—	—
P047	0	DIP switch setting	—	—	—
	1	DIP switch setting	—	—	—
	2	DIP switch setting	—	—	—
	3	DIP switch setting	—	—	—
	4	DIP switch setting	—	—	—
	5	DIP switch setting	—	—	—
	6	DIP switch setting	—	—	—
	7	editor set signal	—	J10-3	0: editor set
P048	—	—	—	—	hexadecimal notation
P049	—	registration sensor signal	PDP3	J9-25	
P050	—	—	—	—	
P051	—	document sensor signal	DEP1	J5-5	
P052	—	push switch	—	—	
P053	—	RF switch signal	RFC	J2-6	
P054	—	upper cover sensor signal	UPCC1	J9-30	
P055	—	—	—	—	

• Stapler Sorter-C1

Address	bit	Description	Signal	Jack No.	Remarks
P056	0	—	—	—	—
	1	stapling HP sensor (P112)	SPL-HP	J11-3	1: stapling home position
	2	stapler unit swing sensor (MS9) signal	SWG SET	J8-5	1: at HP or stapling position
	3	stapler cover open/closed sensor (MS5) signal	SPLOPN	J10-3	1: stapler cover open
	4	guide bar HP sensor (P15) signal	SGBHP	J12-6	1: at HP
	5	reed cam HP sensor (P15) signal	LCHP	J14-5	1: at HP
	6	—	—	—	—
	7	—	—	—	—
P057	0	guide bar swing motor (M3) phase A excitation signal	MA	J13-3.5	alternates between 1 and 0 while motor is in operation
	1	guide bar swing motor (M3) phase B excitation signal	MB	J13-4.6	
	2	guide bar swing motor (M3) drive signal	MON	J13-2	1: motor ON
	3	stapler motor (M4) normal rotation signal	SPLMFW	—	0: normal rotation
	4	stapler motor (M4) reverse rotation signal	SPLMFV	—	0: reverse rotation
	5	switch-back path solenoid (SL1) drive signal	PSLD	J7-8	0: SL2 ON
	6	paper path switch solenoid (SL2) drive signal	PSLD	J7-8	0: SL2 ON
	7	paper holding solenoid (SL30) drive signal	PHSLD	J5-2	0: SL3 ON
P058	0	motor switch signal	—	—	—
	1	stapling ready indicator drive signal	SPLOK	J8-4	1: LED ON
	2	bin sensor LED drive signal	BPD	J12-2	—
	3	motor clock signal	—	—	—
	4	stapler unit swing motor (M5) drive signal	SWGMD	J9-1	1: M5 ON
	5	feeder motor clock sensor (P16) signal	FMCLK	J5-4	—

Address	bit	Description	Signal	Jack No.	Remarks
P058	6	—	—	—	—
	7	feeder motor (M1) brake signal	—	—	1: M1 stop
P059	0	stapling position sensor signal	—	—	1: paper present reserved
	1	—	SPD	—	—
	2	manual staple key signal	—	J8-4	0: switch ON
	3	non-sort paper sensor signal	MNSPL	—	0: paper present
	4	sort paper sensor signal	NSPEXT	J7-5	0: paper present
	5	bin unit HP sensor signal	SPEXT	J7-2	1: bin unit at HP
	6	joint sensor signal	BHP	J14-2	0: sorter release
	7	reset signal	SOP	J2-2	—
P060	0	stapler set sensor signal	—	—	0: at stapling position
	1	—	SPL_SET	J10-6	—
	2	—	—	—	—
	3	—	—	—	—
	4	—	—	—	—
	5	—	—	—	—
	6	—	—	—	—
	7	—	—	—	—
P061	—	DIP switch 3, 4	—	—	hexadecimal notation
P062	—	DIP switch 1, 2	—	—	
P063	—	shift tet switch up/down	—	—	
P064	—	jumper 1, 2	—	—	
P065	—	staple sensor	—	—	
P066	—	—	—	—	
P067	—	bin paper sensor	—	—	
P068	—	24V power supply board	—	—	

• Stapler Sorter-B2

Address	bit	Description	Signal	Jack No.	Remarks
P056	0	stapler door open signal	SPLOPN	J3-7	1: open
	1	joint switch open signal	SOP	J3-5	1: open
	2	reed cam switch sensor signal	LCHP	J8-2	—
	3	staple absent LED drive signal	HKEMP	J7-10	0: staple absent
	4	shift HP signal	—	—	1: HP
	5	guide bar HP signal	SGBHP	J4-6	1: HP
	6	stapling timing sensor signal	SPLACT	J7-4	—
	7	stapler HP signal	SPLHP	J7-1	1: HP
P057	0	guide bar motor drive signal	$\overline{B}$	—	alternates between 1 and 0 during operation
	1	guide bar motor drive signal	B	—	
	2	guide bar motor drive signal	$\overline{A}$	—	
	3	guide bar motor drive signal	A	—	
	4	guide bar motor drive signal	—	—	1: ON
	5	watchdog	—	—	—
	6	manual stapling LED drive signal	SPLOK	J7-9	0: ON
	7	staple motor drive signal	SPLMD	J3-2	1: ON
P058	0	communication signal	—	—	—
	1	communication signal	—	—	—
	2	bin shift up signal	—	—	1: up
	3	bin shift down signal	—	—	1: down
	4	communication signal	—	—	—
	5	feeder motor clock pulse	FMCLK	J8-5	—
	6	communication signal	—	—	—
	7	feeder motor drive signal	FMD	J6-2	1: ON
P059	—	—	—	—	—
P060	—	—	—	—	hexadecimal notation
P061	—	—	—	—	

Address	bit	Description	Signal	Jack No.	Remarks
P062	—	—	—	—	hexadecimal notation
P063	—	staple absent detection adjustment VR	—	—	
P064	—	24V monitor	—	—	
P065	—	bin paper sensor signal	BPD	J4-4	
P066	—				
P067	—	staple absent current (high current area)	—	—	
P068	—	staple absent current (low current area)	—	—	

• Cassette Feeding Unit

Address	bit	Description	Signal	Jack No.	Remarks
P069 (output)	0	switch-back motor drive signal (duplexing unit)	A	J103-B4	alternates between 1 and 0 during rotation
	1	switch-back motor drive signal (duplexing unit)	B	J103-B8	
	2	switch-back motor drive signal (duplexing unit)	A	J103-B5	
	3	switch-back motor drive signal (duplexing unit)	B	J103-B9	
	4	paper guide motor drive signal (duplexing unit)	A	J104-B9	alternates between 1 and 0 during rotation
	5	paper guide motor drive signal (duplexing unit)	B	J104-B13	
	6	paper guide motor drive signal (duplexing unit)	A	J104-B10	
	7	paper guide motor drive signal (duplexing unit)	B	J104-B14	
P070 (output)	0	pick-up roller 3 release solenoid drive signal	C3RR	J107-4	1: ON
	1	pick-up roller 4 release solenoid drive signal	C4RRL	J112-B8	1: ON
	2	pick-up roller 5 release solenoid drive signal	C5RRL	J114-B8	1: ON
P070 (input)	3	cassette feeding motor constant speed signal	PLOCK	J108-2	0: constant speed
	4	cassette 4 paper length sensor signal 1	C4SZ1	J113-2	1: PS101 ON
	5	cassette 4 paper length sensor signal 2	C4SZ2	J113-1	1: PS102 ON
	6	cassette 5 paper length sensor signal 1	C5SZ1	J113-9	1: PS101 ON
	7	cassette 5 paper length sensor signal 2	C5SZ2	J113-8	1: PS102 ON
P071 (input)	0	—	—	—	—
	1	signal for communication with copier	FEED-STOP	J102-4	—
	2	signal for communication with copier	FEED-START	J102-5	—
	3	paper reversal detection signal	PDP9	J103-A5	0: paper detected
	4	holding tray paper present signal		J104-A7	0: paper present

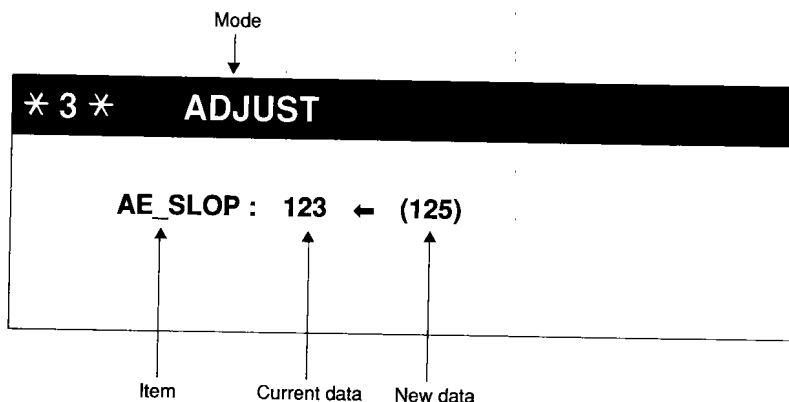
Address	bit	Description	Signal	Jack No.	Remarks
P071 (input)	5	cassette 3 paper detection signal	C3PD	J105-7	1: paper present
	6	cassette 4 paper detection signal	C4PD	J112-A5	1: paper present
	7	cassette 5 paper detection signal	C5PD	J114-A5	1: paper present
P072 (output)	0	L paper deflector drive signal (duplexing unit)	LSLD	J104-B2	1: ON
	1	M paper deflector drive signal (duplexing unit)	MSLD	J104-B3	1: ON
	2	S paper deflector drive signal (duplexing unit)	SSLD	J104-B4	1: ON
	3	SS paper deflector drive signal (duplexing unit)	SSSLD	J104-B5	1: ON
	4	stopper plate solenoid drive signal (duplexing unit)	SL3DU	J104-A5	1: stopper up
	5	stopper plate solenoid drive signal (duplexing unit)	SL3DD	J104-A4	1: stopper down
	6	cassette feeding unit speed switch signal	—	J108-3	1: low speed (switches automatically to suit copier model)
	7	cassette feeding unit motor drive signal	PEDMD	J108-1	1: ON
P073 (output)	0	cassette 3 lifter motor drive signal	C3LMD	J106-1	1: ON
		feeding roller down solenoid drive signal (duplexing unit)	RDSD	J104-A2	
	1	cassette 4 lifter motor drive signal	C4LMD	J112-B1	1: ON
	2	cassette 5 lifter motor drive signal	C5LMD	J114-B2	1: ON
	3	No. 2 paper deflector drive signal (duplexing unit)	SL8D	J103-A8	1: ON
	4	—	—	—	—
	5	—	—	—	—
	6	—	—	—	—
	7	—	—	—	—

Address	bit	Description	Signal	Jack No.	Remarks
P074 (input)	0	cassette 3 paper width detection VR signal	C3PPW	J106-10	—
	1	cassette 4 paper width detection VR signal	C4PPW	J113-6	—
	2	cassette 5 paper width detection VR signal	C5PPW	J113-13	—
	3	cassette 3 lifter position signal	C3LTP	J105-4	0: detected
		paper guide HP signal (duplexing unit)	PGHP	J104-B7	
	4	cassette 4 lifter position signal	C4LTP	J112-A8	0: detected
	5	cassette 5 lifter position signal	C5LTP	J114-A8	0: detected
	6	—	—	—	—
	7	—	—	—	—
P075 (input)	0	—	—	—	—
	1	paper reversal sensor signal (duplexing unit)	PDP9	J103-A5	0: paper detected
	2	No. 2 feeder inlet sensor signal (duplexing unit)	PDP8	J103-A2	0: paper detected
	3	vertical path roller 3 paper detection signal	PDP12	J107-11	1: paper present
	4	vertical path roller 4 paper detection signal	PDP6	J112-A2	0: paper present
	5	vertical path roller 5 paper detection signal	PDP7	J114-A2	0: paper present
	6	No. 2 feeder paper sensor signal (duplexing unit)	PDP	J104-A10	0: paper present
	7	holding tray paper sensor signal (duplexing unit)	—	J104-A7	0: paper present
P076 (input)	0	cassette 3 paper length sensor signal 1	C3SZ1	J105-2	1: PS101 ON
	1	cassette 3 paper length sensor signal 2	C3SZ2	J105-1	1: PS102 ON
	2	—	—	—	—
	3	—	—	—	—
	4	right door close sensor signal	RDOD	J107-8	0: open
	5	left door close sensor signal (duplexing/cassette feeding unit)	LFD0	J103-B2	0: open
	6	duplexing unit insertion detection signal (duplexing unit)	—	J104-A13	0: connected
	7	—	—	—	—

Address	bit	Description	Signal	Jack No.	Remarks
P077 (output)	0	vertical path roller 3 drive signal	CL2D	J107-6	1: ON
	1	vertical path roller 4 drive signal	C4VRD	J112-B6	1: ON
	2	vertical path roller 5 drive signal	C5VRD	J114-B6	1: ON
	3	cassette 3 pick-up signal	CL1D	J107-4	1: ON
	4	cassette 4 pick-up signal	C5PU	J114-B4	1: ON
	5	cassette 5 pick-up signal	C4PU	J112-B4	1: ON
	6	—	—	—	—
	7	watchdog signal	—	—	—

F. Adjustment Mode (3)

- Select the screen using the  or  key.
- Enter the setting using the numeric keypad, or increase/decrease the setting using the ENLARGE/REDUCE key.
- Reverse the +/- notation using the ID key.
- Press the OK key to acknowledge the setting.

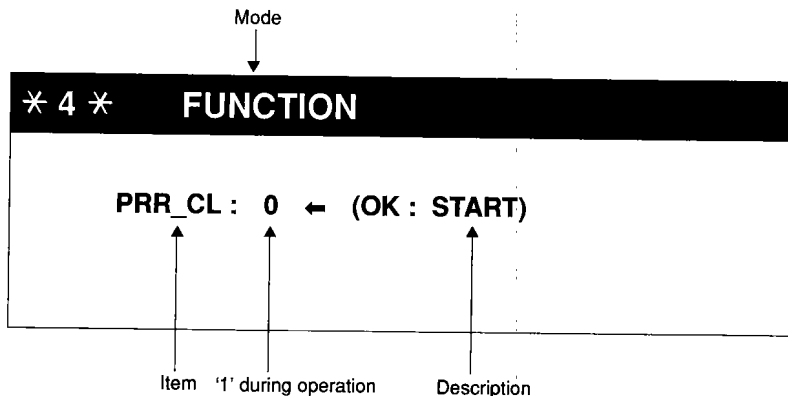


Item	Description	Settings	Remarks
LIGHT_5	for factory adjustment	—	—
AE_SLOP	for adjusting the DC bias for newspapers in AE mode	0 to 255	See P. 3-164.
AE_LIGHT	for adjusting the scanning lamp drive voltage in AE mode	0 to 17	See P. 3-164.
REGIST	for adjusting the leading edge margin (registration)	-127 to 127	See Service Handbook P. 2-1.
LE_BLANK	for adjusting the leading edge non-image width (blank)	-127 to 127	See Service Handbook P. 2-1.
FR_BLANK	for adjusting the front margin	0 to 255	See Service Handbook P. 2-1.
BK_BLANK	for adjusting the rear margin	0 to 255	See Service Handbook P. 2-1.
TE_BLANK	for adjusting the trailing edge non-image width (blank)	-127 to 127	See Service Handbook P. 2-1.
PRIMARY	for adjusting the primary application voltage correction value	-127 to 127	enter the value shown on the label in the drum kit
BIAS	for adjusting the developing bias (DC component)	-25 to 25	See P. 3-168.
TRN_1	for factory adjustment	—	—
TRN_2DUP	for factory adjustment	—	—
TRN_2OVL	for factory adjustment	—	—

Item	Description	Settings	Remarks
APVC_STD	for factory adjustment	—	—
ATVC_STD	for factory adjustment	—	—
IP_OFST	for adjusting the measurement current correction value for APVC	—	enter the value shown on the label in the drum kit
PWR_OFST	for high-voltage output correction value	-30 to 30	enter the value shown in the label on the PCB
LMPVTUNE	for factory adjustment	—	—
BK_BELT	for factory adjustment	—	—
MF_LNGTH	for factory adjustment	—	—
BOOK_ERA	for adjusting the book erase width	15 to 34	See p. 3-168.
DOC_STOP	for adjusting the document stop position (RF in use)	-7 to 7	See p. 3-169.
C1_STMTR	for adjusting the paper width detection width reference point 1 (cassette 1)	0 to 255	enter a setting using the numeric keypad
C1_A4R	for adjusting the paper width detection width reference point 2 (cassette 2)	0 to 255	enter a setting using the numeric keypad
C2_STMTR	for adjusting the paper width detection width reference point 1 (cassette 1)	0 to 255	enter a setting using the numeric keypad
C2_A4R	for adjusting the paper width detection width reference point 2 (cassette 2)	0 to 255	enter a setting using the numeric keypad
C3_STMTR	for adjusting the paper width detection width reference point 1 (cassette 1)	0 to 255	enter a setting using the numeric keypad
C3_A4R	for adjusting the paper width detection width reference point 2 (cassette 2)	0 to 255	enter a setting using the numeric keypad
C4_STMTR	for adjusting the paper width detection width reference point 1 (cassette 1)	0 to 255	enter a setting using the numeric keypad
C4_A4R	for adjusting the paper width detection width reference point 2 (cassette 2)	0 to 255	enter a setting using the numeric keypad
C5_STMTR	for adjusting the paper width detection width reference point 1 (cassette 1)	0 to 255	enter a setting using the numeric keypad
C5_A4R	for adjusting the paper width detection width reference point 2 (cassette 2)	0 to 255	enter a setting using the numeric keypad
MF_A6R	for adjusting the paper width detection reference point 1 (multifeeder)	0 to 255	enter a setting using the numeric keypad
MF_A4R	for adjusting the paper width detection reference point 2 (multifeeder)	0 to 255	enter a setting using the numeric keypad
MF_A4	for adjusting the paper width detection reference point 3 (multifeeder)	0 to 255	enter a setting using the numeric keypad

G. Operation/Inspection Mode ($\boxed{*}$ $\boxed{4}$ $\boxed{*}$)

- Select the screen using the $\boxed{\Delta}$ or $\boxed{\nabla}$ key.
- Press the OK key to start the operation.
- Make sure that the copier is in standby state when executing each item of operation.

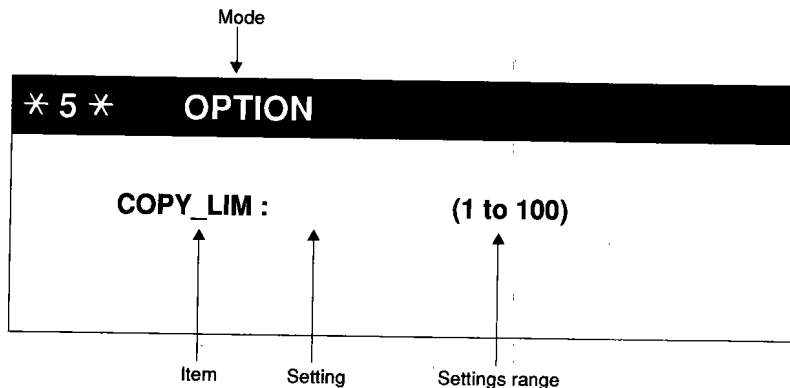


Item	Description	Operation/Remarks
TONER_S	Use it to supply toner at time of installation.	Press the $\boxed{ID}$ key and the $\boxed{OK}$ key in sequence to supply the developing assembly with toner from the hopper; about 6 min. The operation stops automatically. The mode ignores the signal from the developing assembly toner sensor; if you inadvertently executed the operation, switch off the copier immediately.
APVC_MR	Use it to measure the APVC at time of installation.	Press the OK key to execute multiple initial rotation (WMUPR), thereby measuring the APVC.
BK_ROT	Use it to rotate the developing assembly idly.	Press the OK key to rotate the developing assembly idly for about 6 min.
ERROR	Use it to clear E000, E001, E002, or E003.	To clear an E indication, press the OK key: the E indication is cleared and the copier is switched off.
DISP_LED	Use it to check the indicators on the control panel.	Press the OK key to cause all LEDs on the control panel to turn off; 3 sec.
LCD_CHK	Use it to check the indicators on the LCD.	Press the OK key to cause all indicators on the LCD to turn on and turn off 3 sec. later.
SCANLAMP	Use it to check the scanning lamp.	Press the OK key to cause the scanning lamp to remain on for 3 sec.
PRE_EXP	Use it to check the pre-exposure lamp.	Press the OK key to cause the pre-exposure lamp to turn on for 3 sec.
HPPR_MTR	Cause it to check the operation of the hopper motor.	Press the OK key to rotate the hopper motor to rotate for 3 sec.

Item	Description	Operation/Remarks
AE_ADJ	Use it to adjust AE.	See p. 3-165.
PRR_CL	Use it to clean the primary charging roller.	Press the OK key to rotate the main motor, thereby butting the cleaning pad against the primary charging roller to clean the roller.
TRR_CL	Use it to clean the transfer roller.	
NIP	Use it to adjust the fixing roller nip.	See Service Handbook P. 2-10.
BLNKTST	Use it to check the operation of the blank motor.	Place three or more sheets of A3 copy paper on the multifeder tray, and open the copyboard cover. Press the OK key and then the COPY START key to move the blank shutter and make three copies.
C1_STMTR	Use it to execute paper width detection reference point 1 (cassette 1).	See p. 3-170.
C1_A4R	Use it to execute paper width detection reference point 2 (cassette 1).	See p. 3-170.
C2_STMTR	Use it to execute paper width detection reference point 1 (cassette 2).	See p. 3-170.
C2_A4R	Use it to execute paper width detection reference point 2 (cassette 2).	See p. 3-170.
C3_STMTR	Use it to execute paper width detection reference point 1 (cassette 3).	See p. 3-170.
C3_A4R	Use it to execute paper width detection reference point 2 (cassette 3).	See p. 3-170.
C4_STMTR	Use it to execute paper width detection reference point 1 (cassette 4).	See p. 3-170.
C4_A4R	Use it to execute paper width detection reference point 2 (cassette 4).	See p. 3-170.
C5_STMTR	Use it to execute paper width detection reference point 1 (cassette 5).	See p. 3-170.
C5_A4R	Use it to execute paper width detection reference point 2 (cassette 5).	See p. 3-170.
MF_A6R	Use it to execute paper width detection reference point 1 (cassette 6).	See p. 3-170.
MF_A4R	Use it to execute paper width detection reference point 2 (cassette 6).	See p. 3-170.
MF_A4	Use it to execute paper width detection reference point 3 (cassette 6).	See p. 3-170.
RAM_INIT	Use it to initialize the RAM (Q115) on the DC controller PCB.	Press the OK key to initialize the RAM.

H. Machine Specifications Settings Mode (* 5 *)

- Select the screen using the ☐ or ☐ key.
- Enter the new setting using the numeric keypad.
- Press the OK key to acknowledge the setting.

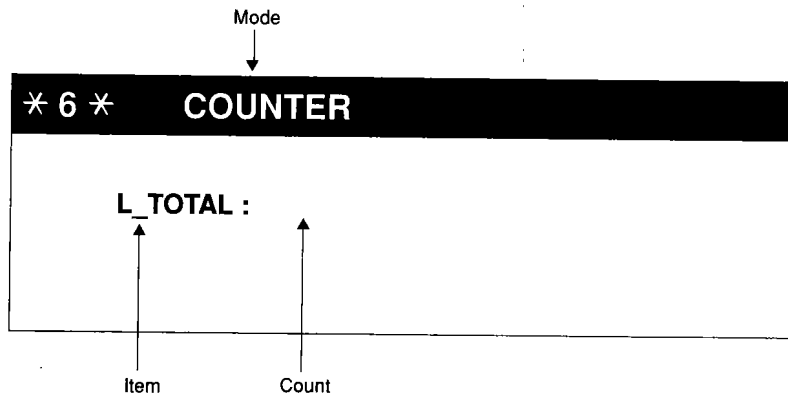


Item	Description	Settings	Remarks
SHUT_OFF	Use it to select or deselect the auto power-off function.	You can deactivate the auto power-off function.	0: select function 1: deselect function
DENS_IND	Use it to switch the density notation (9 or 17).	You can select either 9-level or 17-level notation for the LED.	0: 9-level notation 1: 17-level notation
SIZE_DET	Use it to select or deselect the size detection function.	You can deactivate the document size detection function.	0: select function 1: deselect function
COPY_LIM	Use it to change the copy count upper limit.	You can change the copy count upper limit between 1 and 100.	1 to 100
U_NOTATI	Use it to change the notation for U size paper.	You can select or deselect paper name indication for U size paper.	0: U1 thru U4 1: paper size name
M_NOTATI	Use it to select the method of selecting paper size from the multifeeder.	You can select any paper size regardless of the position of the side guide plate of the multifeeder.	1: enable selection

Item	Description	Settings	Remarks																	
SPCL_PPR	Use it to select special paper mode.	You can change the control temperature for fixing and the output of the static eliminator; see p. 3-39.	<table><tr><th>Setting</th><th>Control temperature</th><th>Bias</th></tr><tr><td>0</td><td>normal mode</td><td rowspan="3">As normally executed.</td></tr><tr><td>1</td><td>thick paper mode</td></tr><tr><td>2</td><td>thick paper mode (multifeeder only)</td></tr><tr><td>3</td><td>normal mode</td><td rowspan="3">If pick-up is from the multifeeder, the output of the static eliminator is applied to the overlay/two-sided output.</td></tr><tr><td>4</td><td>thick paper mode</td></tr><tr><td>5</td><td>thick paper mode (multifeeder only)</td></tr></table>	Setting	Control temperature	Bias	0	normal mode	As normally executed.	1	thick paper mode	2	thick paper mode (multifeeder only)	3	normal mode	If pick-up is from the multifeeder, the output of the static eliminator is applied to the overlay/two-sided output.	4	thick paper mode	5	thick paper mode (multifeeder only)
			Setting	Control temperature	Bias															
			0	normal mode	As normally executed.															
			1	thick paper mode																
			2	thick paper mode (multifeeder only)																
			3	normal mode	If pick-up is from the multifeeder, the output of the static eliminator is applied to the overlay/two-sided output.															
			4	thick paper mode																
5	thick paper mode (multifeeder only)																			
CST_GRP1	Use it to select the notation for U size paper (GRP1).	You can select the notation to represent the GP1 paper size.	0: G_LTR 1: K_LGL																	
CST_GRP2	Use it to select the notation for U size paper (GRP2).	You can select the notation to represent the GRP2 paper size.	0: FOOLSCAP 1: OFFICIO 2: E_OFFICIO 3: A_LGL 4: A_OFFICIO																	
CST_GRP3	Use it to select the notation to represent the U size paper (GRP3).	You can select the notation to represent the GRP3 paper size.	0: G_LGL 1: FOLIO 2: AUS FLS																	
CST_GRP4	Use it to select the notation to represent the U size paper (GRP4).	You can select the notation to represent the GRP4 paper size.	0: LTR 1: A_LTR																	
WEB	Use it to select how the cleaning belt should be moved.	You can double the activation of the cleaning belt solenoid.	0: default 1: double																	

I. Counter Mode (* 6 *)

- Select the screen using the  or  key.
- You can clear the counter by pressing the CLEAR key while holding down on the service mode switch (Figure 3-701); make sure that the screen is displayed.



Item	Description	Remarks
L_TOTAL	total copy count of large size copies	The count is increased at time of delivery.
L_MULT1	copy count of large size copies (pick-up from multifeeder)	
L_CST1	copy count of large size copies (pick-up from cassette 1)	
L_CST2	copy count of large size copies (pick-up from cassette 2)	
L_CST3	copy count of large size copies (pick-up from cassette 3)	
L_CST4	copy count of large size copies (pick-up from cassette 4)	
L_CST5	copy count of large size copies (pick-up from cassette 5)	
L_OVERLAY	copy count of large size copies (2nd copying on overlay copy)	
L_2_SIDE	copy count of large size copies (2nd side on two-sided copy)	
L_DF	document count of large size copies	The count is increased at time of document pick-up.
S_TOTAL	total copy count of small size copies	The count is increased at time of delivery.
S_MULT1	copy count of small size copies (pick-up from multifeeder)	
S_CST1	copy count of small size copies (pick-up from cassette 1)	
S_CST2	copy count of small size copies (pick-up from cassette 2)	
S_CST3	copy count of small size copies (pick-up from cassette 3)	

Item	Description	Remarks
S_CST4	copy count of small size copies (pick-up from cassette 4)	The count is increased at time of delivery.
S_CST5	copy count of small size copies (pick-up from cassette 5)	
S-OVERLAY	copy count of small size copies (2nd copying on overlay copy)	
S_2_SIDE	copy count of small size copies (2nd side on two-sided copy)	
S_DF	document count of small size copies	The count is increased at time of document pick-up.
SERVICE1	service copy counter 1	The count is increased at time of pick-up.
SERVICE2	service copy counter 2	
WEB	number of cleaning belt activations*.	The count is increased each time the cleaning belt solenoid (SL3) turns on.

* The "REPLACE BELT" message is indicated on the control panel at 250,000.

J. Adjustment

1. AE Adjustment

You must make the adjustments indicated by a check mark (○) in Table 3-203 whenever you have replaced the scanning lamp, AE sensor, or DC controller PCB; perform the adjustments indicated by △ as necessary.

Before making any adjustments, execute 'AE_ADJ' (⊗ 4 ⊗) ; automatic adjustment; p. 3-165). If it still fails after several attempts (density F5 and F9 LEDs flash) or if the copy of the Test Sheet made in AE mode are too dark or too light, execute 'AE_LIGHT' (⊗ 3 ⊗) ; p. 3-166).

Note:

These adjustments must be made in the order given.

No.	Item	After replacement of AE sensor	After replacement of DC controller PCB
1	⊗ 4 ⊗ AE_ADJ	○	○
2	⊗ 3 ⊗ AE_LIGHT	△	△
3	⊗ 3 ⊗ AE_SLOP	△	△

Table 3-203

- In 'AE_ADJ', the AE slope will not be under automatic control, but instead it will be set to its default setting. To adjust the AE slope, execute 'AE_SLOP' (⊗ 3 ⊗) ; p. 3-167) after making the above adjustments.

• **AE_ADJ** (; **AE scanning intensity automatic adjustment**)

- 1) Open the front door, and insert the door switch actuator into the door switch; then, place the Test Sheet NA2 or NB3 on the copyboard, and close the copyboard cover.
 - Wait until WAIT is over.
- 2) Press the service mode switch (SW501) using a hex key.
 - The copier shows the S mark on its display to indicate that it has entered service mode.
- 3) Press the   and  keys on the control panel in sequence.
 - The copier enters FUNCTION mode.
- 4) Select 'AE_ADJ' using the  or  key.

- 5) Press the  key.

- The scanning lamp turns on, and the scanner moves to the AE position.
- The copier executes an AE scan to automatically determine the light intensity for AE scanning.
- Thereafter, the scanner returns to the home position, and the scanning lamp turns off.

Reference:

The copier varies the lamp intensity for AE scanning to vary the output of the AE sensor during AE scanning.

The copier automatically determines the lamp intensity for AE scanning so that the output of the AE sensor will be equivalent to manual copy density 5 when the document (Test Sheet) on the copyboard glass is copied.

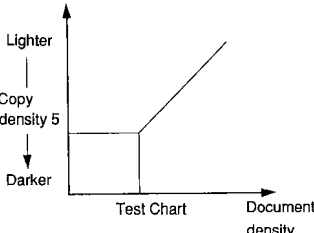
Item	Function	Description	Remarks
   AE_ADJ	AE scan light intensity adjustment		The intensity is automatically adjusted so that copies of a document will be adjusted to copy density 5 for execution of 'AE_ADJ'. Note: If AE adjustment is not correct, density indicator LEDs F5 and F9 flash; try executing the adjustment once again.

Table 3-204

• **AE_LIGHT** (; **AE scanning light intensity**)

- 1) Open the front door, and insert the door switch actuator into the door switch.
 - Wait until WAIT is over.
- 2) Press the service mode switch (SW501) using a hex key.
 - The copier shows the S mark on its display to indicate that it has entered service mode.

- 3) Press the , , and  keys on the control panel in sequence.
 - The copier enters ADJUST mode.
- 4) Select 'AE_LIGHT' using the  or  key.
- 5) Make the adjustments shown in Table 3-205.

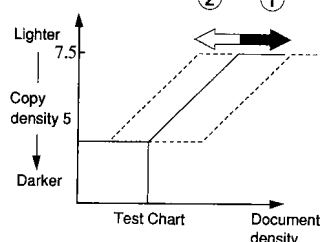
Item	Function	Description	Remarks
   AE_LIGHT	AE scan light intensity adjustment		① If the setting is lowered in service mode, AE copies will be lighter. ② If the setting is raised in service mode, AE copies will be darker.

Table 3-205

• **AE_SLOP** (⊗ 3 ⊗ ; AE slope)

- 1) Open the front door, and insert the door switch actuator into the door switch.
 - Wait until WAIT is over.
- 2) Press the service mode switch (SW501) using a hex key.
 - The copier shows the S mark on its display to indicate that it has entered service mode.

- 3) Press the ⊗, 3, and ⊗ keys on the control panel in sequence.
 - The copier enters ADJUST mode.
- 4) Select 'AE_SLOP' using the ⊗ or ⊗ key.
- 5) Make the adjustments shown in Table 3-206.

Item	Function	Description	Remarks
⊗ 3 ⊗ AE_LIGHT	AE slope		① If the setting is raised in service mode, copies of newspapers will be lighter. ② If the setting is lowered in service mode, copies of newspapers will be darker.

Table 3-206

2. Book Frame Erase Width ($\boxed{\times}$ $\boxed{3}$, $\boxed{\times}$ BOOK_ERA)

In this mode, you will set how much of the center of a document should be erased when book erasing mode is selected.

You can change the width represented by x in Figure 3-704.

You cannot set how much of the sides of a document should be erased in this mode.

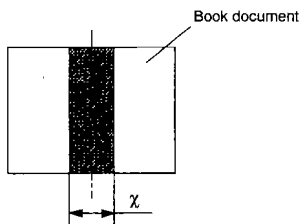


Figure 3-704

3. Developing Bias ($\boxed{\times}$ $\boxed{3}$, $\boxed{\times}$; BIAS)

Perform the Image Adjustment Basic Procedure.

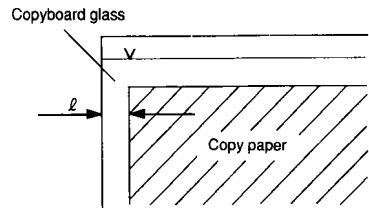
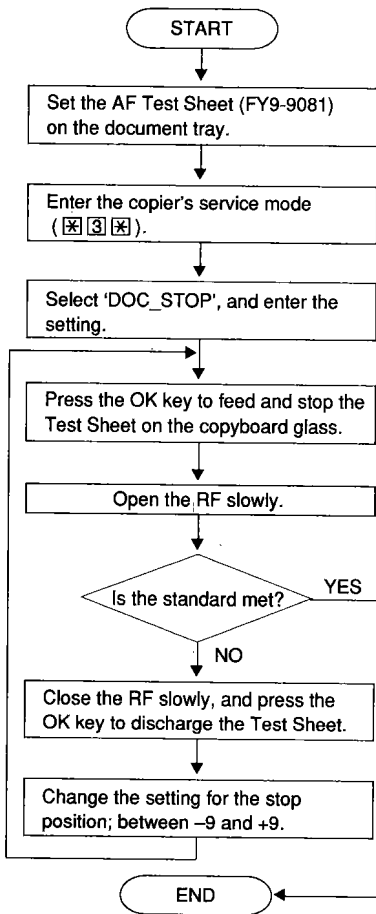
- 1) Enter service mode ($\boxed{\times}$ $\boxed{3}$ $\boxed{\times}$), and select "BIAS" using the $\boxed{\Delta}$ or $\boxed{\nabla}$ key; for example, BIAS: X $\leftarrow$ ()
- 2) Enter a setting using the numeric keypad, or increase/decrease the setting using the ENLARGE/REDUCE key.

To change the $\pm$ notation, press the $\boxed{ID}$ key; then, press the $\boxed{OK}$ key to acknowledge the setting.

- Each increment of 1 represents about 5 V in terms of the output of the developing bias DC component.
- Increasing the setting decreases the output of the developing bias DC component; on the other hand, decreasing the setting increases the output of the developing bias DC component.
- The setting may be between -15 and $+15$.

- 1) Enter service mode ($\boxed{\times}$ $\boxed{3}$ $\boxed{\times}$), and select 'BOOK_ERA' using the $\boxed{\Delta}$ or $\boxed{\nabla}$ key; for example, BOOK_ERA: 100 $\leftarrow$ ()
- 2) Enter a setting using the numeric keypad, or increase/decrease the setting using the ENLARGE/REDUCE key. Then, press the $\boxed{OK}$ key to acknowledge the setting. Each increment of 1 represents 0.1 mm in book frame erasing mode.

4. Document Stop Position w/ RF in Use ($\times$ 3, $\times$; DOC_STOP)



Standard:
stop position $l = 8 \pm 1$ mm

Standard
stop position $l = 8 \pm 1$ mm

Figure 3-705

- Increasing the setting moves the document stop position to the left in increments of 0.33 mm.

5. Cassette/Multifeeder Paper Width Default Setting ($\boxed{\times}$ $\boxed{4}$ $\boxed{\times}$)

You must enter the paper width default settings if

- you have replaced the paper detection VR of the copier or the cassette feeding unit, including the multifeeder.
- you have adjusted the registration for the cassette front and rear.

For cassettes 1 through 5, you must enter settings for 'STMTR' and 'A4R' for each cassette; for multifeeder, you must enter settings for 'A6R', 'A4R', and 'A4'.

a. Cassettes 1 through 5

- 1) Open the front door, and insert the door switch actuator into the door switch.
- 2) Press the service mode switch using a hex key to enter service mode.
- 3) Select 'STMTR' in service mode ($\boxed{\times}$ $\boxed{4}$ $\boxed{\times}$) to enter the paper width default setting for a specific cassette.

Example

C1 _ STMTR: _ 0 _ (OK: SET)

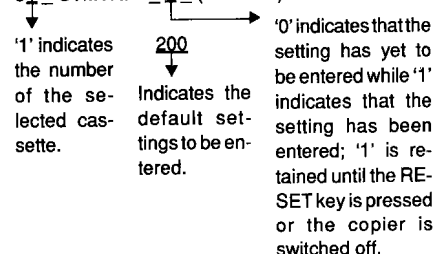


Figure 3-248

- 4) Slide out the cassette for which the default setting is to be entered, and set the paper guide plate inside the cassette for 'STMTR'.
- 5) Slide the cassette back into the copier.
- 6) Check the default setting shown in the display on the control panel.

Example

C1 _ STMTR: _ 0 _ (OK: SET)

15

Figure 3-249

- 7) Press the $\boxed{OK}$ key. The display replaces '0' with '1' to indicate that the default setting for 'STMTR' has been stored.

Example

C1 _ STMTR: _ 0 _ (OK: SET)

15

Figure 3-250

- 8) Press the $\boxed{\times}$ key. 'A4R' (paper width default setting) appears on the screen.

Example

C1 _ A4R: _ 0 _ (OK: SET)

115

Figure 3-251

- 9) Slide out the cassette for which the default setting is to be entered, and set the paper guide plate inside the cassette for 'A4R'.
- 10) Slide the cassette back into the copier.
- 11) Check the default setting shown in the display on the control panel.

Example

C1 _ A4R: _ 0 _ (OK: SET)

115

Figure 3-252

- 12) Press the $\boxed{OK}$ key. The display replaces '0' with '1' to indicate that the default setting for 'A4R' has been stored.

Example

C1 _ A4R: _ 1 _ (OK: SET)

115

Figure 3-253

b. Multifeeders

- 1) Open the front door, and insert the door switch actuator into the door switch.
- 2) Press the service mode switch using a hex key to enter service mode.

- 3) Select 'MF_A6R' (paper width default setting) in service mode ($\boxed{\times}$ $\boxed{4}$ $\boxed{\times}$).

Example

MF _ A6R: _ 0 _ (OK: SET)
 ↓
 45
 ↓
 Indicates the setting
 to be stored.

Figure 3-254

- 4) Move the manual guide plate on the multifeder to suit A6R (105 mm).

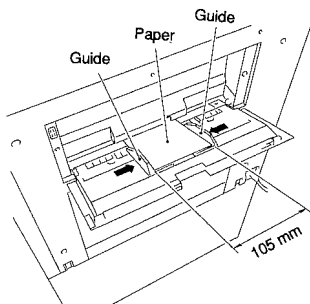


Figure 3-255

Example

MF _ A6R: _ 0 _ (OK: SET)
 28

Figure 3-256

- 5) Press the $\boxed{OK}$ key. The display replaces '0' with '1' to indicate that the default setting for 'A6R' has been indicated.

Example

MF _ A6R: _ 1 _ (OK: SET)
 28

Figure 3-257

- 6) Press the $\boxed{\times}$ key. 'MF_A4R' (paper width default setting) appears on the display.

Example

MF _ A6R: _ 0 _ (OK: SET)
 28

Figure 3-258

- 7) Move the manual guide plate of the multifeder to suit A4R (210 mm).

Example

MF _ A4R: _ 0 _ (OK: SET)
 143

Figure 3-259

- 8) Press the $\boxed{OK}$ key. The display replaces '0' with '1' to indicate that the default setting for 'A4R' has been stored.

Example

MF _ A4R: _ 1 _ (OK: SET)
 143

Figure 3-260

- 9) Press the $\boxed{\times}$ key. 'A4' (paper width default setting) appears on the display.

Example

MF _ A4R: _ 0 _ (OK: SET)
 143

Figure 3-261

- 10) Move the manual guide plate of the multifeder to suit A4 (297 mm).

Example

MF _ A4R: _ 0 _ (OK: SET)
 237

Figure 3-262

- 11) Press the **OK** key. The display replaces '0' with '1' to indicate that the default setting has been stored.

Example

MF_A4R: _ 1 _ (OK: SET)

237

Figure 3-263

Note:

Record all new settings in the Service Label. If you have replaced the DC controller PCB, do not perform the work, but instead enter the setting recorded in the Service Label in service mode (**ⓧ** **3** **ⓧ**).

Reference:

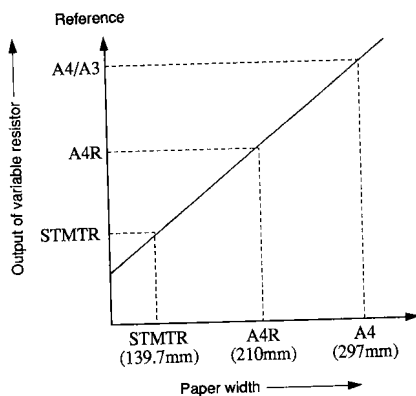


Figure 7-264

VIII. SELF DIAGNOSIS

The microprocessor on the copier's DC controller PCB is provided with a mechanism that checks

the condition of the machine, sensors in particular; when it has found a fault and identified an error, it indicates an error code on the display or activates error auto power-off or error shut-off.

A. Copier's Self Diagnosis Mechanism

Code	Cause	Description
E000	- thermistor (TH1; off contact, poor contact, open circuit) - heater (H1, H2; open circuit) - thermoswitch (TS1; open circuit) - SSR (faulty) - DC controller PCB (faulty)	The temperature of the upper fixing roller does not reach 40°C within 27 sec after power-on; see Notes 1 and 2. If 'E000' is detected, the POWER switch is turned off and all power supply is cut in 2 sec.
E001	- thermistor (TH1; short circuit) - SSR (faulty) - DC controller PCB (faulty)	The temperature of the upper fixing roller exceeds 220°C; see Notes 1 and 2. When 'E001' is detected, the POWER switch is turned off and all power supply is cut off in 2 sec.
E002	- thermistor (TH1; poor contact, open circuit) - heater (H1, H2; open circuit) - thermoswitch (TS1; open circuit) - SSR (faulty) - DC controller PCB (faulty)	- The temperature does not reach 75°C within 20 sec after it has reached 40°C. - The temperature does not reach 100°C within 14 sec after it has reached 75°C. - The temperature does not reach 120°C within 12 sec after it has reached 75°C. - The temperature does not reach 140°C within 12 sec after it has reached 120°C. - The temperature does not reach 160°C within 12 sec after it has reached 140°C. - The temperature does not reach 170°C within 8 sec after it has reached 160°C. - The temperature does not reach 180°C within 8 sec after it has reached 170°C. - The temperature does not reach 185°C within 7 sec after it has reached 180°C. - The temperature does not reach 190°C within 7 sec after it has reached 185°C. Notes 1, 2: When 'E002' is detected, the POWER switch is turned off and all power is cut in 2 sec.
E003		The fixing temperature lowers to 100°C or less after it has reached the specified temperature. Notes 1, 2: When 'E003' is detected, the POWER switch is turned off and all power is cut in 2 sec.

Code	Cause	Description
E004	• SSR (short circuit; error) • heater (H1, H2; open circuit) • thermoswitch (TS1; open circuit)	The activation of the SSR is detected while the heater (H1, H2) is OFF at power-on. When 'E004' is detected, the POWER switch is turned off and all power is cut in 2 sec.
E010	• main motor (faulty) • main motor driver PCB (faulty) • DC controller PCB (faulty)	Inputs of 2 pulses or more are not received within 1 sec after the main motor drive signal has been generated.
E030	• counter (open circuit) • DC controller PCB	A check is made immediately before the counter turns on or off. (normal if the counter drive signal is '0' when the counter is on; normal if the signal is '1' when the counter is on.)
E031	• option counter (open circuit) • DC controller PCB	A check is made immediately before the counter turns on or off. (normal if the counter drive signal is '0' when the counter is on; normal if the signal is '1' when the counter is on.)
E064	• composite power supply PCB (faulty) • DC controller PCB (faulty) • wiring (short circuit)	There is a large difference between the output of the microprocessor (Q401) on the composite power supply PCB and the return signal.
E065	• composite power supply PCB (faulty) • DC controller PCB (faulty) • wiring (short circuit)	The microprocessor (Q401) on the composite power supply PCB detects high-voltage leakage.
E202 Note 3	• scanner home position sensor (PS1; faulty) • scanner motor (M2; faulty) • motor driver PCB (faulty)	• The scanner home position signal (SCHP) does not go '1' within 10 sec after the POWER switch or the door switch is turned on. • The scanner takes 10 sec or more to make a round trip (SCFW+SCREV).
E203	• scanner home position sensor (PS1) • DC controller PCB (faulty)	The scanner home position signal (SCHP) is generated 2 pulses or more within 0.5 sec when the scanner motor turns on.
E204 Note 3	• scanner home position sensor (PS1; faulty) • motor driver PCB (faulty)	The home position signal does not turn off after the scanner has started to move forward.

Code	Cause	Description
E210	• lens X home position sensor (PS16; faulty) • lens X drive motor (M6; faulty) • DC controller PCB (faulty)	• The lens home position signal (LXHP) is not generated within 9 sec after the lens motor has started to rotate in response to the activation of the POWER switch or the door switch. • The lens home position signal (LXHP) does not turn off within 1 sec after it has been generated.
E212	• lens Y home position sensor (PS17; faulty) • lens Y drive motor (M7; faulty) • DC controller PCB (faulty)	• The lens home position signal (LYHP) is not generated within 9 sec after the lens motor has started to rotate in response to the activation of the POWER switch or the door switch. • The lens home position signal (LYHP) does not turn off within 1 sec after it has been generated.
E220	• scanning lamp • composite power supply PCB • DC controller PCB	• The scanning lamp does not turn on 0.5 sec after the DC controller PCB has generated the scanning lamp drive signal. When 'E220' is detected, the POWER switch is turned off and all power is cut in 2 sec.
E224	• blank shutter motor (m8, M9; faulty) • blank shutter home position sensor (PS12, PS13; faulty)	The blank shutter home position signal (BLFHP, BLBHP) is not generated within 7 sec after the POWER switch has been turned on. • The blank shutter home position signal (BLFHP, BLBHP) does not turn off within 1 sec after it has been generated.
E240	• DC controller PCB	• There is an error in the communication between the microprocessor master (Q102) and microprocessor slave (Q109).
E244	• DC controller PCB (faulty) • composite power supply PCB (faulty) • harness (composite power supply PCB to/from DC controller PCB; faulty)	The communication between the microprocessor (Q401) on the composite power supply PCB and the DC controller PCB is absent for 5 sec or more.
E710	• DC controller PCB (faulty)	Q115 on the DC controller PCB cannot be initialized at time of power-on.
E711	• DC controller PCB (faulty)	Q115 on the DC controller PCB fails at power-on.
E712	Feeder Error • RF controller PCB (faulty) • connector (poor connection) • power supply PCB for options (faulty)	The IC for communication on the RF controller PCB has failed.

Code	Cause	Description
E716	Cassette Feeding Unit Error • cassette feeding unit control-ler PCB (faulty) • connector (poor connection) • 24V power supply PCB (faulty)	The IC for communication on the cassette feeding unit PCB has failed; a communication error has occurred.
E800	• auto power-off (open circuit) • DC controller	An open circuit in the auto power-off circuit has been detected.

Note:

1. To reset the copier after its self diagnosis mechanism has been activated, switch the copier off and then on. If 'E000', 'E001', 'E002', or 'E003' is indicated, you must select 'ERROR' in service mode (☐ 4 ☐), and press the OK key. This is to prevent the user from casually resetting the copier when the thermistor may be faulty; otherwise, the roller inside the fixing assembly would become overheated and damaged.
2. If a problem associated with 'E000', 'E001', 'E002', or 'E003' has been detected, the copier indicates an error code and, at the same time, forces itself off about 20 sec later.
3. You can check problems associated with 'E202' or 'E204' under 'ERR' in service mode (☐ 1 ☐).

B. Error Auto Power-Off (copier)

The copier activates error auto power-off under the conditions given in the following table.

Main cause	Timing
E000, E001, E002, E003, E004, E220 (E code on display)	2 sec after detection of E000, E001, E002, E003, or E220
E000, E001, E002I, or E003 without resetting (E code on display)	about 20 sec after power-on
scanning lamp (no E code on display)	
thermal fuse (FU1; no E code on display)	

C. Error Auto Shut-Off (copier)

The copier activates error auto power-off under the conditions given in the following display.

Main cause	Timing
E244 (E code on display)	5 sec after detection of E244

Reference:

- Auto Power-Off
You can select *auto power-off* in user mode so that the mode will be activated to switch off the copier.
- Error Auto Power-Off
The copier's protection mechanism (self diagnosis, for example) will be activated to shut off the copier.
- Error Auto Shut-Off
The copier's protection mechanism (self diagnosis, for example) will be activated to switch off all outputs; although the POWER switch remains on, the indicators on the control panel will turn off.

D. Self Diagnosis (Cassette Feeding Unit)

Code	Cause	Description
E901	• cassette feeding unit motor (M1; faulty) • cassette feeding unit controller PCB (faulty)	Inputs of the motor clock signal are not received within 1 sec after the cassette feeding unit motor drive signal has been generated.
E902	• paper guide home position sensor (PS5; faulty) • paper guide drive motor (faulty) • cassette feeding unit controller PCB (faulty)	• If the home positions sensor (PS5) is off, → The home position sensor signal (PGHP) is not generated after driving the paper guide drive motor toward the home position for 1200 pulses. • If the home position sensor (PS5) is on, → The home position sensor signal (PGHP) does not turn off after the paper guide driving the paper guide drive motor from the home position for 100 pulses.

E. Self Diagnosis (RF/ADF)

Code	Cause	Description
E400	• data communication with copier. (error)	The data communication is monitored at all times; the error is identified if the communication with the copier is absent for 5 sec or more.
E401	• pick-up motor (fails to rotate) • pick-up roller sensor (faulty)	A flag is attached to the shaft of the pick-up motor, and the rotation of the pick-up motor is monitored with the flag blocking the roller sensor; the error is identified if PS3 does not turn on and off twice or more within 1 sec.
E402	• belt motor (fails to rotate) • belt motor clock sensor (faulty)	The belt clock pulses within 200 msec are below the specified number.
E403	• feeder motor (fails to rotate) • feeder motor clock sensor (faulty)	The feeder motor clock pulses within 200 msec are below the specified number.
E404	• delivery motor (fails to rotate) • delivery motor clock sensor (faulty)	The delivery motor clock pulses within 200 msec are below the specified number.
E411	• document detection (faulty) • registration sensor (faulty) • document edge sensor (faulty)	The output of the sensor is 2.3 V or more in the absence of paper.

Note:

To reset the copier after activation of the self diagnosis mechanism, switch the copier off and then on. You can still continue to make copies even when the RF is out of order; simply open the RF, and set the documents on the copyboard glass.

F. Self Diagnosis (sorter)

Code	Cause	Description
E500	The CPU or the communications IC on the sorter controller is not operating normally.	An error is detected in the communication between the sorter and the copier.
E510	The feeder motor fails to rotate.	The clock signal from the motor is off for 250 msec or more.
E530	The stapler guide bar swing motor fails to rotate.	The home position sensor does not turn off after generation of 2560 pulses of the motor drive signal.
E531	The stapler unit swing motor fails to rotate.	• The stapler unit swing sensor does not turn off within 500 msec after generation of the motor drive signal. • The sensor does not turn on again within 1000 msec after the stapler unit swing sensor has turned off.
E540	The bin shift motor fails to rotate.	• The reed cam home position sensor does not turn off within 2000 msec after generation of the motor drive signal. • The reed cam home position sensor does not turn on once again within 2000 msec after it has turned off.
E541	• Bin motor (faulty) • Reed cam drive gear (faulty mounting)	The reed cam position sensor does not turn on within 1.0 sec after it has turned off.

■ Resetting after Detection of an Error

If the copier is making copies,

- ① The copier indicates the 'JAM' message.
- ② When you reset the copier, it will indicate the 'TURN POWER OFF AND ON' message.
- ③ When you turn off and then on the copier, it runs a self check; if the result is good, it will be reset. Otherwise, the copier enters down state*, indicating 'E5XX' in its display.

If the copier is not making copies,

- ① The copier indicates the 'TURN POWER OFF AND ON' message.
- ② When you turn off and then on the copier, it runs a self check; if the result is good, it will be reset. Otherwise, the copier enters down state*, indicating 'E5XX' in its display.

• Down State Operations

- ① The copier indicates 'E5XX'.
- ② You can continue to make copies after detaching the sorter*; you will not, however, be able to use modes that call for sorter functions.
- ③ If you select modes that call for a sorter, the copier indicates the 'MODE NOT AVAILABLE' message.

Note:

You can reset the copier while it is in down state if the result of its self check is good after you have turned off and on the copier.

- * State in which the copier indicates an E code.
- ** Simply turn off the joint sensor; you need not disconnect the power plug.

I. EXTERNALS

A. External Covers

Note:

The number in parentheses indicates the number of mounting screws used.

Detach the covers as necessary when cleaning, inspecting, or repairing the inside of the copier.

Covers that can be detached by mere removal of mounting screws are left out of the discussions.

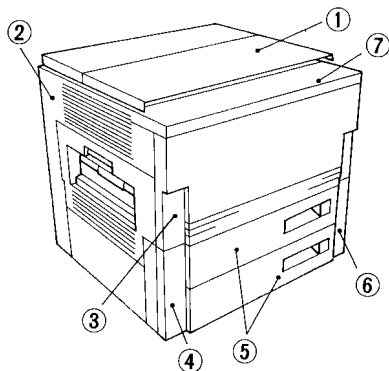


Figure 4-100

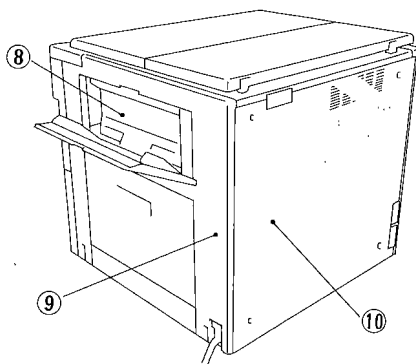


Figure 4-101

- | | |
|------------------------|-------------------------|
| ① Copyboard cover | ⑥ Front right cover (2) |
| ② Left cover (2) | ⑦ Control panel |
| ③ Front door | ⑧ Multifeder cover (2) |
| ④ Front left cover (2) | ⑨ Right cover (5) |
| ⑤ Cassette | ⑩ Rear cover (4) |

B. Control Panel

1. Detaching the Control Panel

- 1) Open the front cover.
- 2) Remove the two screws ① and two pins ②; then, detach the front cover.

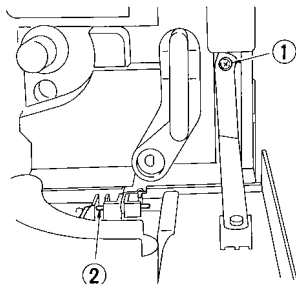


Figure 4-102

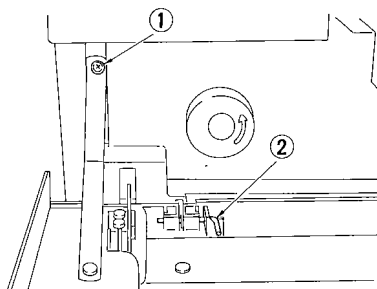


Figure 4-103

- 3) Open the hopper.
- 4) Remove the three screws, and detach the fixing knob ④; then, detach the left inside cover.

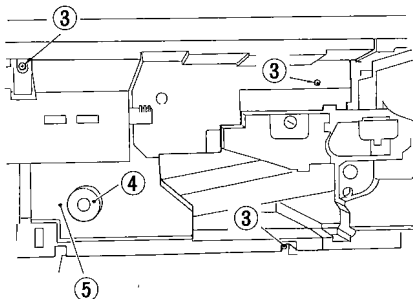


Figure 4-104

- 5) Detach the feeding assembly release lever ⑥, connector cover ⑦, and registration knob ⑧; then, remove the two screws ⑨, and detach the right inside cover.

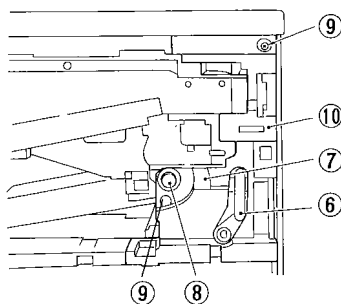


Figure 4-105

- 6) Detach the harness ⑫ from the harness retainer.

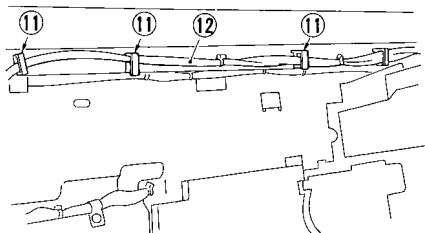


Figure 4-106

- 7) Disconnect the four connectors ⑬.

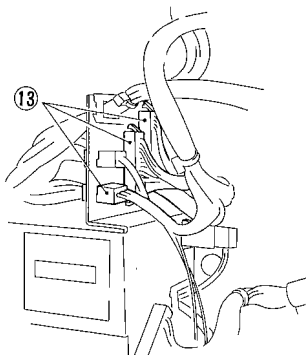


Figure 4-107

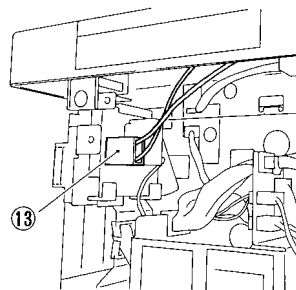


Figure 4-108

- 8) Remove the three screws ⑭.

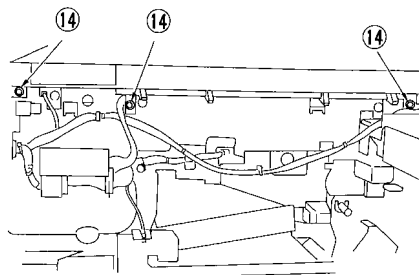


Figure 4-109

- 9) Remove the magnet plate retainer, and detach the control panel ⑯.

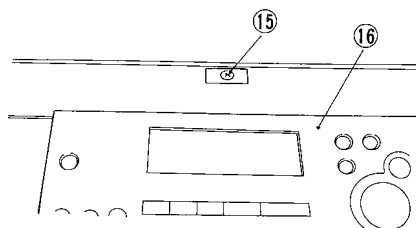


Figure 4-110

C. Copyboard Cover

1. Replacing the Copyboard Sheet

The copyboard sheet is attached to the copyboard cover using adhesive tape. Simply pull on its corners to detach.

After placing a new copyboard sheet, lightly press on the sheet so that its entire area is in firm contact with the copyboard.

D. Fans

1. Outline

The copier is equipped with three fan motors to operate the fans used to circulate the air and prevent overheating inside the copier.

The function of each of these fans is as follows:

scanner cooling fan (FM1):	cools the scanner.
exhaust fan (FM2):	discharges the air to the outside of the machine.
feeding fan (FM3):	moves copy paper.

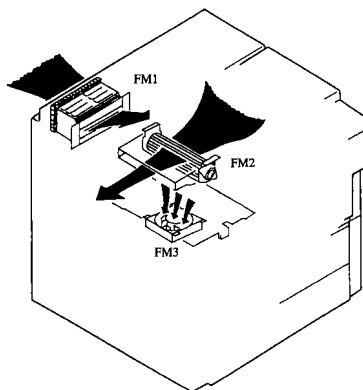


Figure 4-111

2. Detaching the Scanner Cooling Fan

- 1) Detach the rear cover.
- 2) Disconnect the connector (①; J36).
- 3) Detach the harness ③ from the harness retainer ②.
- 4) Remove the four mounting screws ④, and detach the scanner cooling fan ⑤.

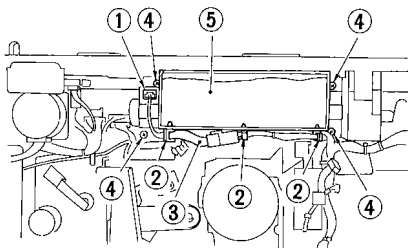


Figure 4-112

- 3) Detach the fixing assembly.
- 4) Remove the two screws ②, and detach the fan ③ together with the duct into the direction of delivery.

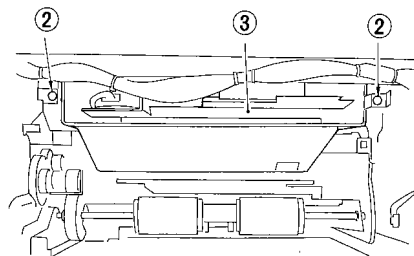


Figure 4-114

4. Feeding Fan

See p. 4-35.

3. Detaching the Exhaust Fan

- 1) Detach the left inside cover.
- 2) Disconnect the connector ①, and put the connector inside the machine.

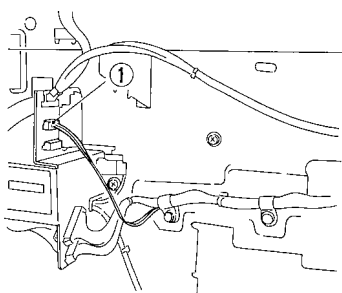


Figure 4-113

II. DRIVE SYSTEM

A. Lens Drive Assembly

1. Detaching the Lens Y Drive Motor

- 1) Detach the copyboard glass.
- 2) Move the No. 1 mirror mount to the right end of the scanner rail.

Note:

Be sure to hold the center of the No. 1 mirror mount when moving it.

- 3) Mark the position ② of the Y belt gear support ① at the front using a scribe.

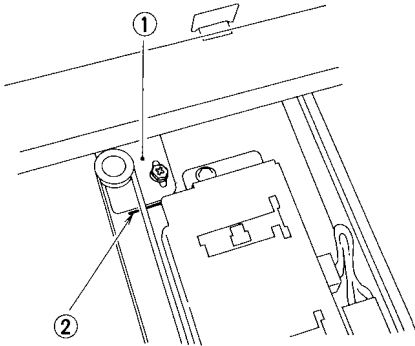


Figure 4-200

- 4) Loosen the screw ③ on the Y belt gear support to loosen the Y drive belt.

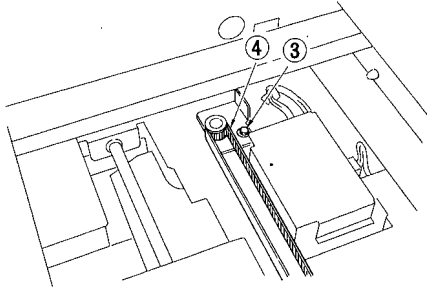


Figure 4-201

- 5) Detach the Y drive belt from the Y motor gear.
- 6) Disconnect the connector (⑤; J42).
- 7) Remove the two mounting screws ⑥, and detach the lens Y drive motor together with the support ⑦.

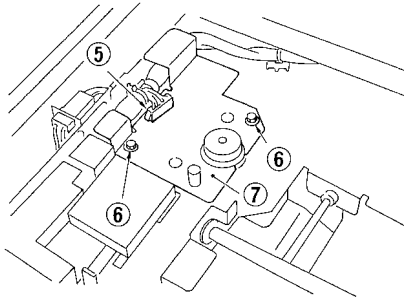


Figure 4-202

- 8) Remove the two mounting screws ⑧, and detach the motor from the support.

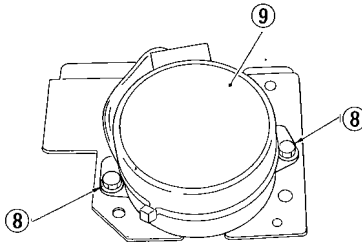


Figure 4-203

2. Detaching the Lens Base

- 1) Detach the copyboard cover.
- 2) Remove the screw, and detach the lens hood ②.

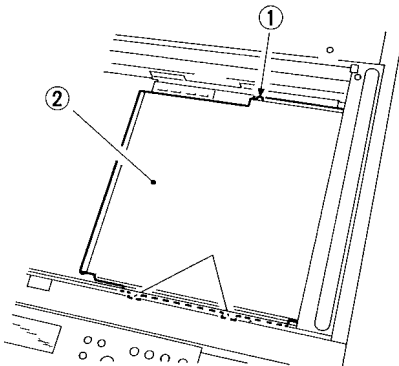


Figure 4-204

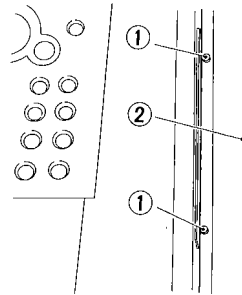


Figure 4-205

- 3) Detach the lens Y drive belt ③ from the belt joint ④.

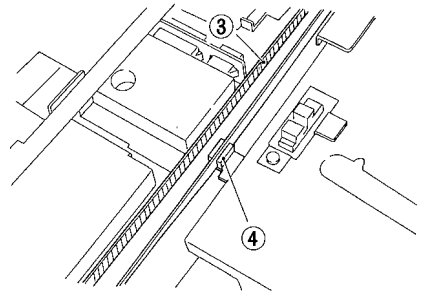


Figure 4-206

- 4) Remove the screw ⑤, and detach the light-blocking belt retainer (⑥; on lens mount).

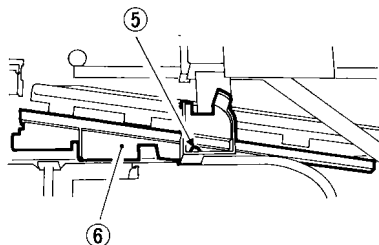


Figure 4-207

- 5) Remove the screw ⑨, and detach the light-blocking belt (rear; ⑩); tape the detached light-blocking belt mount to the lens base for the time being.

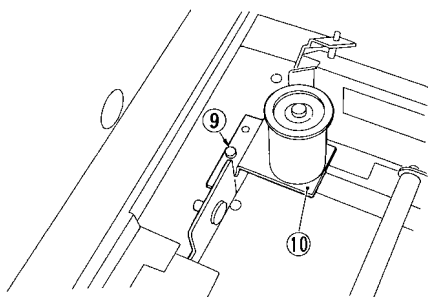


Figure 4-208

- 6) Remove the screw ⑪, and detach the light-blocking belt mount (front; ⑫); tape the detached light-blocking belt mount to the lens base for the time being.

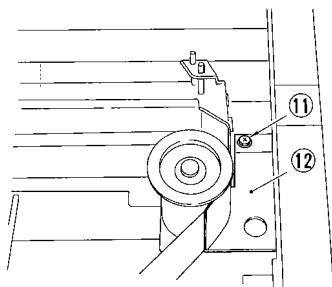


Figure 4-209

- 7) Lift the lens base ⑬, and detach the bushing from the rail ⑮.

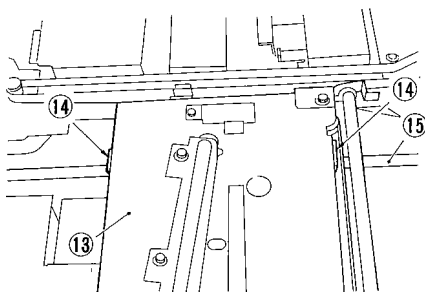


Figure 4-210

8) Disconnect J90 ⑮, J89 ⑰, and J13 ⑱.

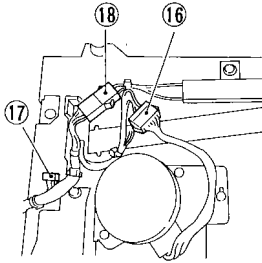


Figure 4-211

3) Remove the two screws ④, and detach the motor ⑤ from the motor mount.

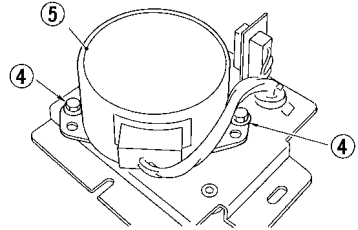


Figure 4-213

3. Detaching the Lens X Drive Motor

- 1) Detach the lens base.
- 2) Remove the two screws ③, and detach the motor mount ①.

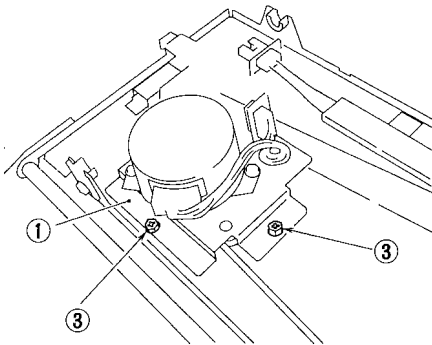


Figure 4-212

4. Attaching the Lens X Drive Belt

Move the lens X drive motor ② into the direction of the arrow to make adjustments; push the lens X drive belt ① at the point shown in Figure 4-214 with a 4-mm spring gauge until the reading of the gauge is 30 ± 10 g.

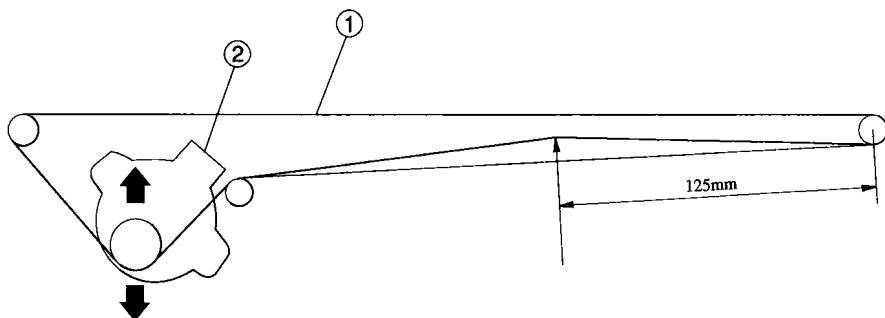
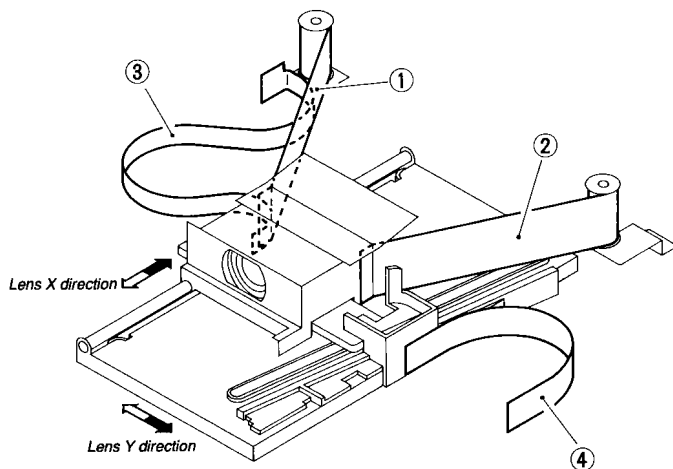


Figure 4-214

5. Attaching the Light-Blocking Belt



① Light-blocking belt 1
② Light-blocking belt 2

③ Light-blocking belt 3
④ Light-blocking belt 4

Figure 4-215

6. Replacing the Light-Blocking Belt

- 1) Wind the belt ① clockwise around the bobbin ②; then, fix it in position using tape.

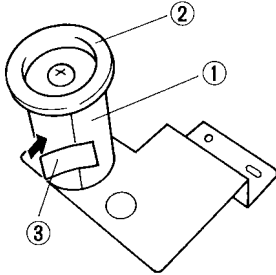


Figure 4-216

- 2) Fix the light-blocking belt mount to the lens mount.
- 3) Give the bobbin about half a turn in both clockwise and counterclockwise directions, and release it, thereby freeing the spring inside the bobbin.
- 4) Turn the bobbin 2 to 2.5 times clockwise, and detach the tape; then, pull out the end of the belt.
- 5) Attach the end of the belt to the lens using two clips.

B. Scanner Drive Assembly

1. Detaching the Scanner Drive Motor

- 1) Detach the rear cover.
- 2) Disconnect J207 ① from the motor driver.

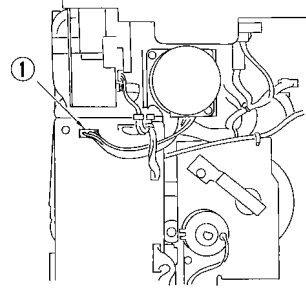


Figure 4-1217

- 3) Remove the four screws ②, and detach the scanner drive motor ③.

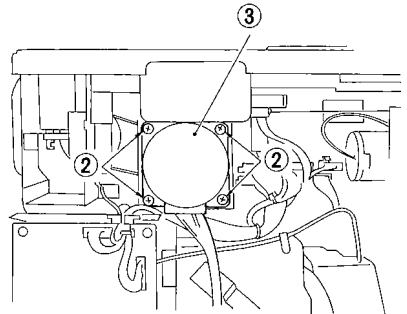


Figure 4-218

2. Diagram of the Scanner Drive Cable

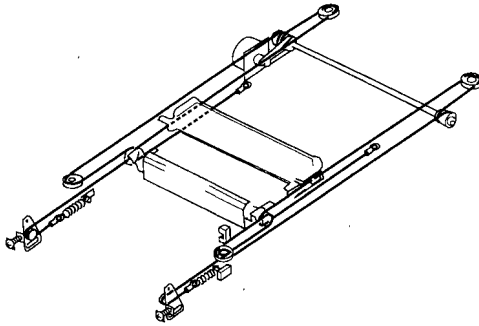


Figure 4-219

3. Detaching the Scanner Drive Cable

- 1) Detach the copyboard cover, right cover, left cover, upper rear cover, and rear cover.
- 2) Detach the copyboard glass.
- 3) Detach the control panel.
- 4) Remove the two screws ①, and detach the power switch mount ②.

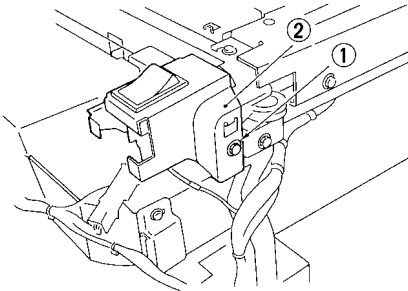


Figure 4-220

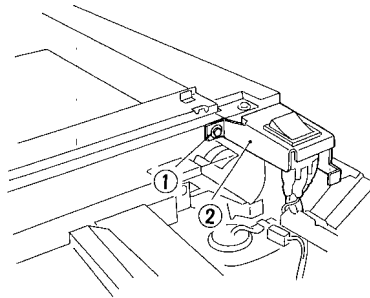


Figure 4-221

- 5) Detach the pulley cover ③.

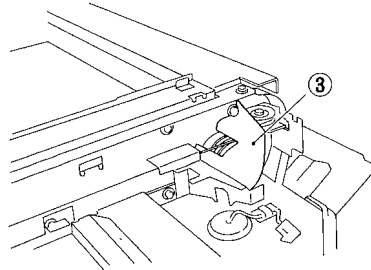


Figure 4-222

- 6) Remove the four screws ④, and detach the upper left stay ⑤.

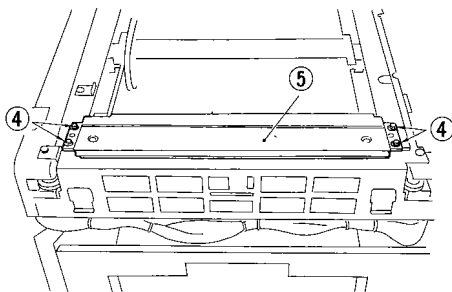


Figure 4-223

- 9) Disconnect the connector ⑧, and remove the screw ⑨; then, detach the copyboard support ⑩.

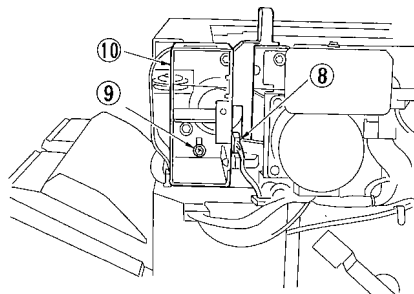


Figure 4-225

- 7) Detach the scanner cooling fan.
8) Remove the three screws ⑥, and detach the front glass support ⑦.

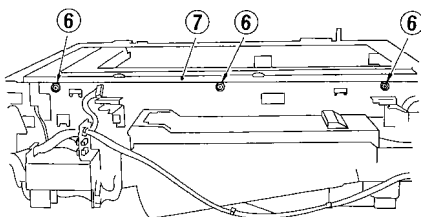


Figure 4-224

- 10) Remove the four screws ⑪, and detach the rear glass support ⑫.

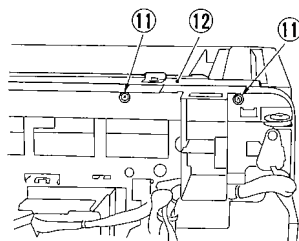


Figure 4-226

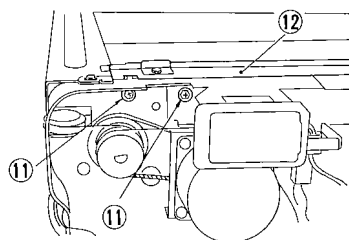


Figure 4-227

- 11) Mark the position of the pulley plate ⑬ on the side plate (both front and rear).

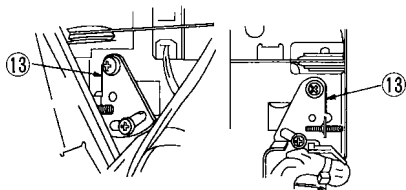


Figure 4-228

- 12) Move the No. 1 mirror mount in the forward direction, and match the angular hole in the side plate and the cable fixing screw ⑭. Then, remove the two cable fixing screws ⑭, and separate the No. 1 mirror mount and the scanner cable (both front and rear).

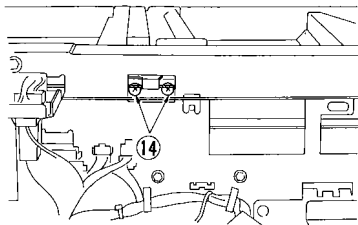


Figure 4-229

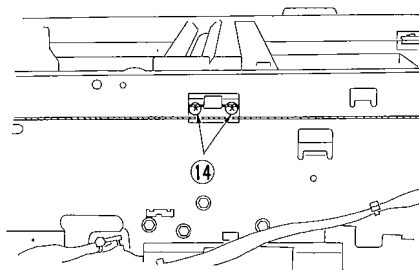


Figure 4-230

- 13) Loosen the pulley plate fixing screw ⑮; then, loosen the tension screw ⑯, and loosen the scanner cable (both front and rear).

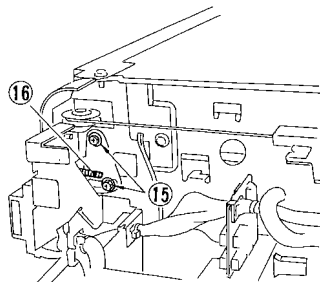


Figure 4-231

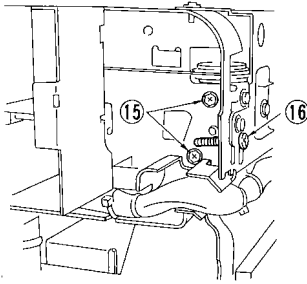


Figure 4-232

- 14) Detach the scanner cable (both front and rear).

4. Stringing the Scanner Cable

Note:

You will need the mirror positioning tool (FY9-3002-000) when stringing the scanner cable.

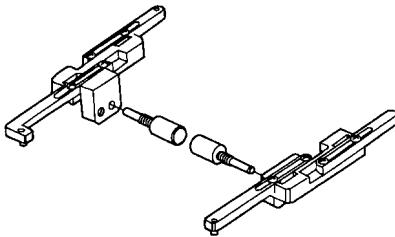


Figure 4-233

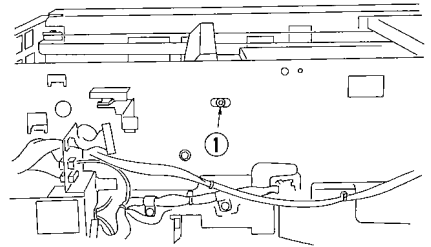


Figure 4-234

- 2) Insert a binding screw (②; M4) into the screw hole in the pulley shaft, and fix the No. 2 mirror mount to the side plate (both front and rear).

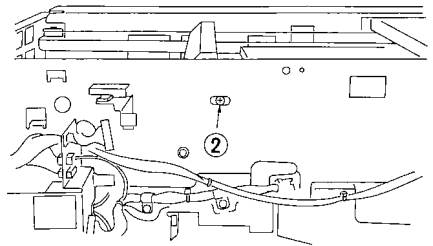


Figure 4-235

- 3) Engage the scanner cable on the pulleys and hooks as shown in Figure 4-236.

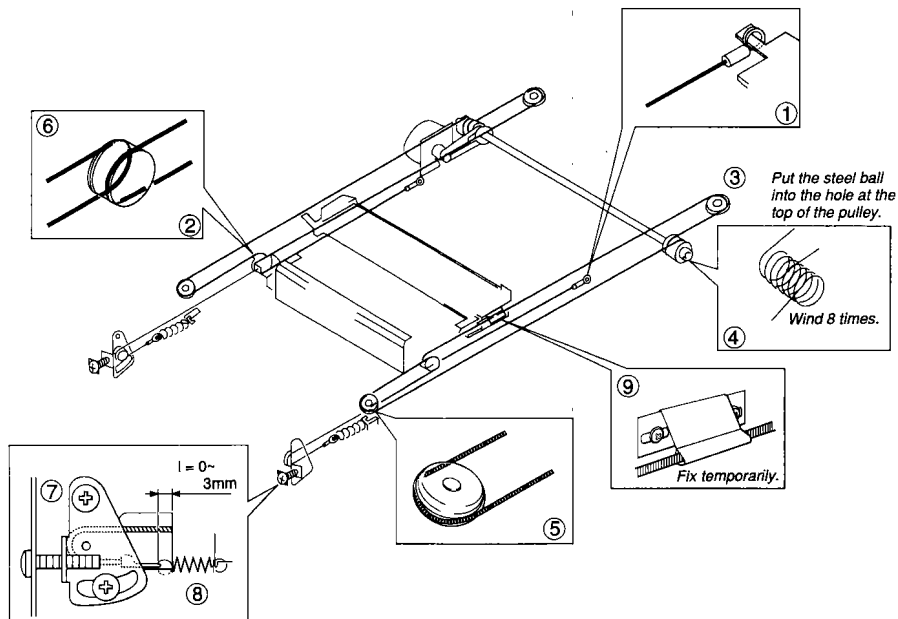


Figure 4-236

- 4) Remove the binding screw used in step 2) (both front and rear).

- 5) Fit the mirror positioning tool between the No. 1 mirror mount and the No. 2 mirror mount (both front and rear); then, insert the tool pin into the mirror positioning tool and the lens mount rail.

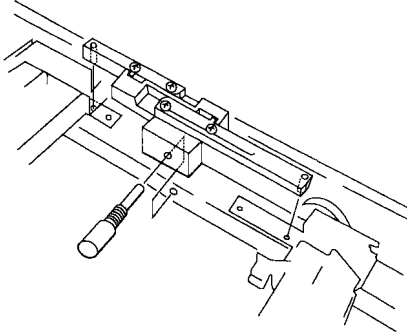


Figure 4-237

- 6) Attach the scanner cable plate to the No. 1 mirror mount through the angular hole in the side plate using two screws ① (both front and rear).

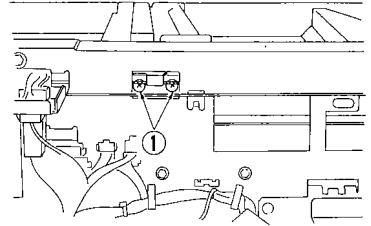


Figure 4-239

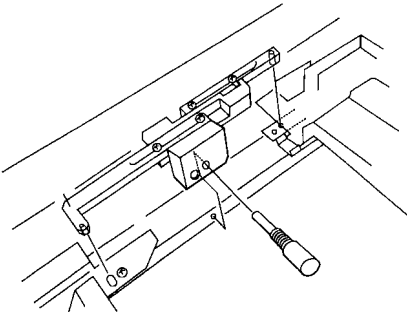


Figure 4-238

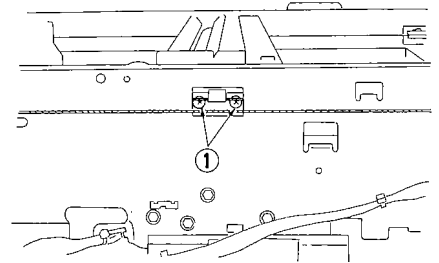


Figure 4-240

Note:

If the pin does not come off smoothly after the work, check the gap between the No. 2 mirror mount and mirror positioning tool; then, retighten the No. 1 mirror mount once again.

5. Detaching the Main Motor

- 1) Detach the rear cover.
- 2) Disconnect J501 ① and J502 ②.

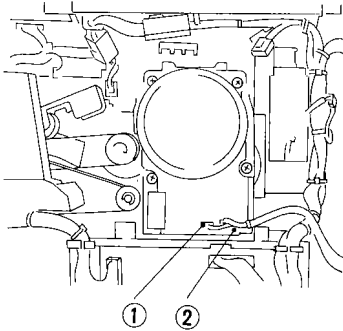


Figure 4-241

- 3) Remove the four screws ③, and detach the main motor ④.

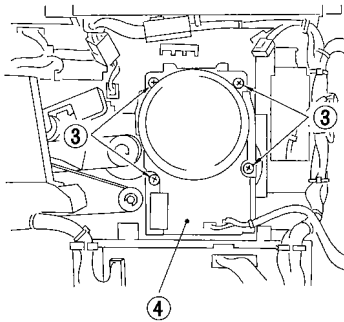


Figure 4-242

6. Detaching the Registration Clutch

- 1) Detach the rear cover.
- 2) Disconnect J30 ①.

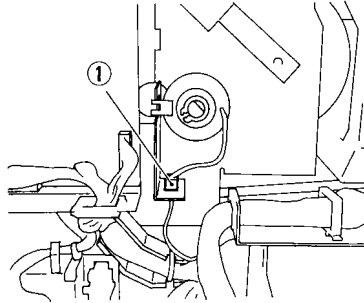


Figure 4-243

- 3) Remove the C-ring ②, and detach the registration clutch ③ from the registration roller shaft.

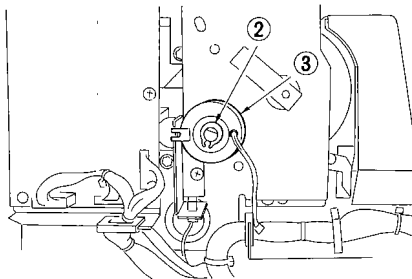


Figure 4-244

7. Detaching the Mirror Guide

- 1) Detach the copyboard glass.
- 2) Detach the lens hood.
- 3) Remove the screw, and detach the mirror guide ②.

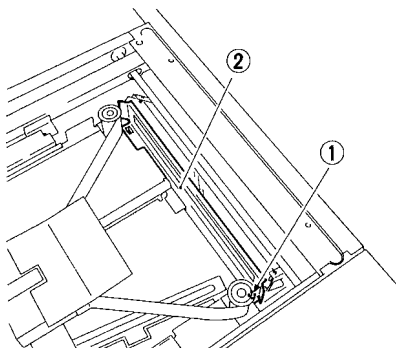


Figure 4-245

8. Detaching the Main Drive Assembly

- 1) Detach the drum kit and the developing assembly.
- 2) Detach the rear cover.
- 3) Detach the pick-up assembly.
- 4) Detach the motor driver PCB.
- 5) Remove the faston ①.

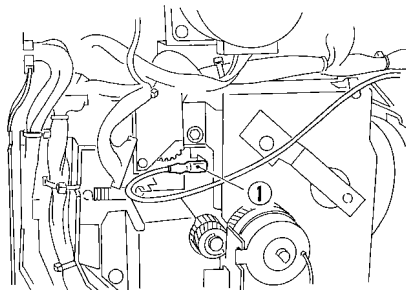


Figure 4-246

- 6) Remove the two screws ②, and slide the high-voltage terminal ③ up to detach; be sure to release the feeding assembly in advance.

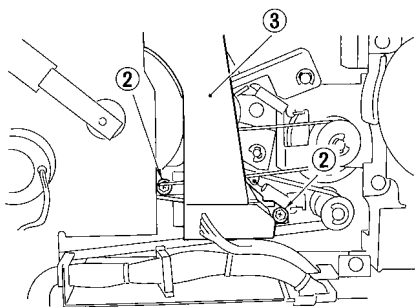


Figure 4-247

- 7) Detach the registration clutch.

- 8) Disconnect the two connectors ④, and detach the harness ⑦ from the edge saddle ⑧.

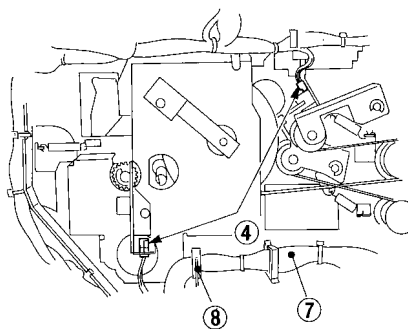


Figure 4-248

- 9) Remove the five screws ⑤, and detach the timing belt from pulley A and pulley B (Figure 4-250); then, detach the main drive assembly ⑥.

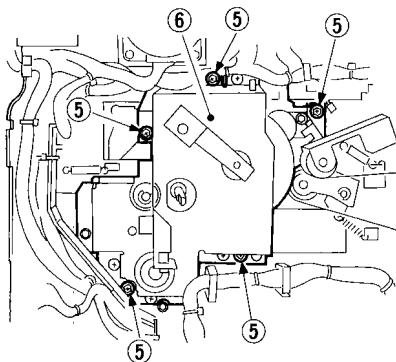


Figure 4-249

9. Attaching the Drive Belt

Attach the drive belt routing it over the gear and roller as shown in Figure 4-250.

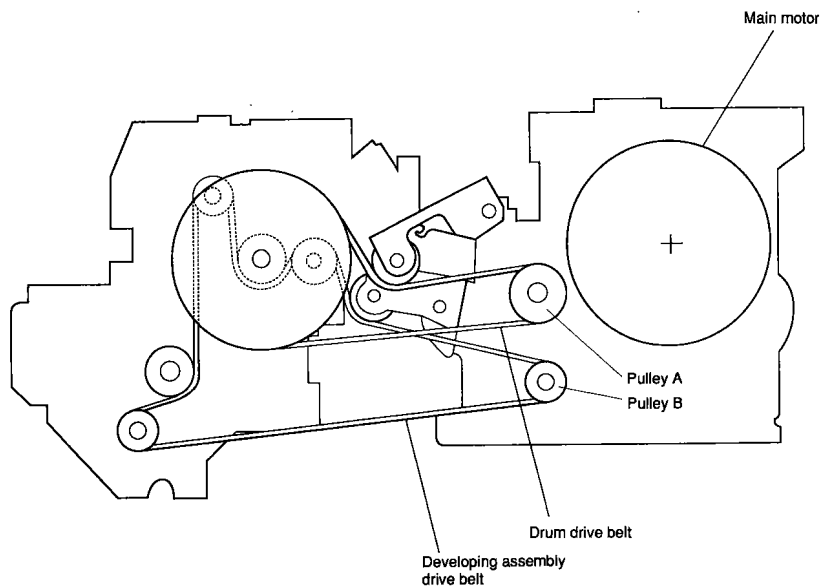


Figure 4-250

10. Detaching the Cleaning Belt Drive Assembly

- 1) Detach the rear cover.
- 2) Disconnect J80 ①.

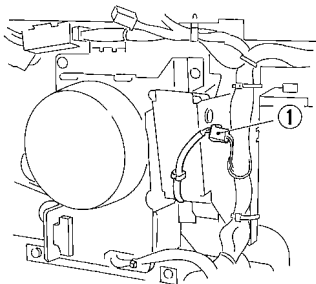


Figure 4-251

- 3) Remove the screw ②, and detach the cleaning belt drive assembly ③.

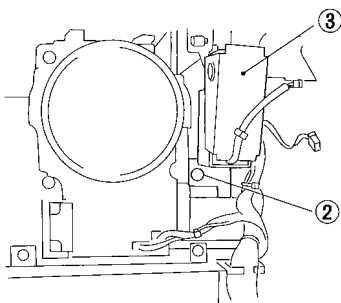
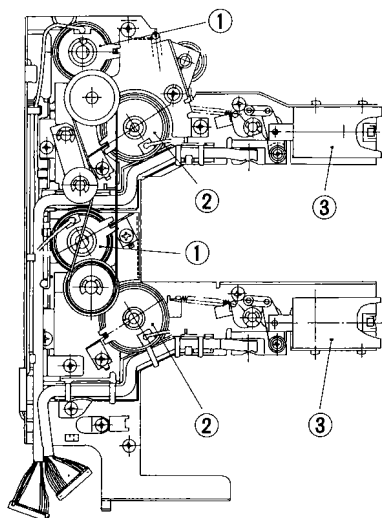


Figure 4-252

III. PICK-UP/FEEDING SYSTEM

A. Pick-Up Assembly

1. Construction



- ① Vertical path roller clutch ③ Pick-up roller release solenoid
② Pick-up roller clutch

Figure 4-300 (rear view)

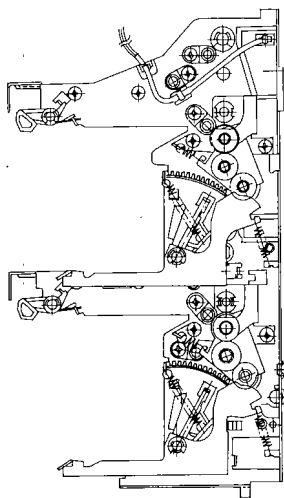
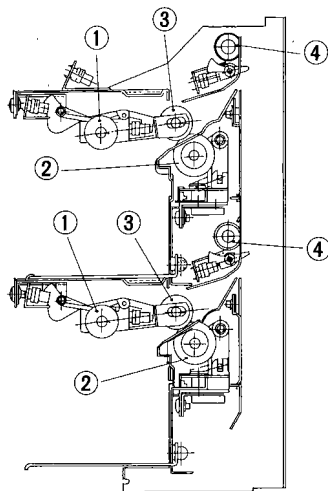


Figure 4-301 (front view)



- ① Pick-up roller ③ Feeding roller
② Separation roller ④ Vertical path roller

Figure 4-302 (cross section)

2. Detaching the Pick-Up Assembly

- 1) Detach the cassette from the copier.
- 2) Detach the multifeeders inside cover and right cover.
- 3) Detach the front right cover.
- 4) Disconnect the two connectors ① from the lifter motor.
- 5) Remove the four screws ②, and detach the cassette lifter motor assembly ③.

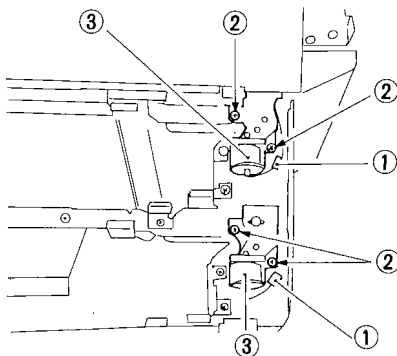


Figure 4-303

- 6) If you are using a cassette feeding unit, open the unit's right door, and remove the screw ④ and the leaf spring ⑤; then, shift the registration guide ⑧ to the outside.

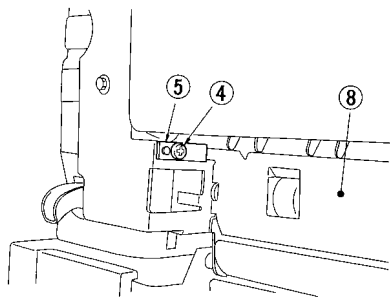


Figure 4-304

- 7) Disconnect the three connectors from the pick-up assembly.
- 8) Remove the six screws ⑦, and detach the pick-up assembly.

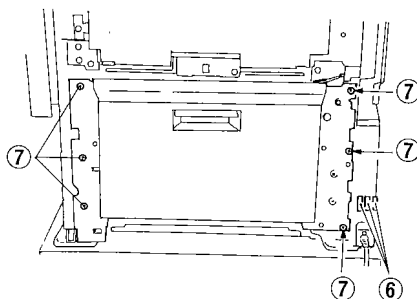


Figure 4-305

Note:

Be sure to hold the side plate of the pick-up assembly when detaching or attaching the pick-up assembly.

3. Detaching the Pick-Up Roller

- 1) Detach the pick-up assembly.
- 2) Remove the stop ring (①; plastic), and pull out the pick-up roller ② together with its collar.

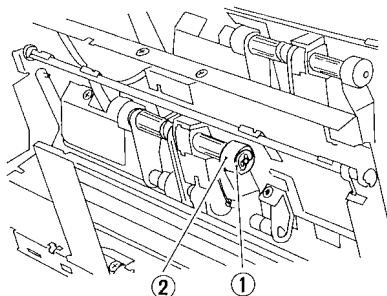


Figure 4-306

4. Points to Note When Attaching the Pick-Up Roller

- a. When attaching the pick-up roller ① to the pick-up assembly, make sure that the round mark ② on its rubber portion is toward the copier's front.

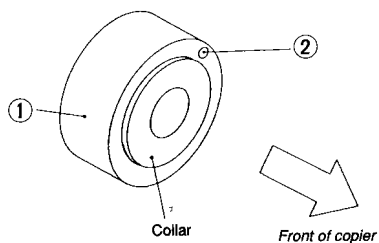


Figure 4-307

Different pick-up rollers are used for the front and rear; use a silver-colored roller for the front and brass-colored roller for the rear.

- b. Do not detach the rubber portion of the pick-up roller from the collar.

5. Detaching the Feeding Roller

- 1) Detach the pick-up assembly.
- 2) Remove the screw ①, and detach the pick-up assembly inlet guide ②.

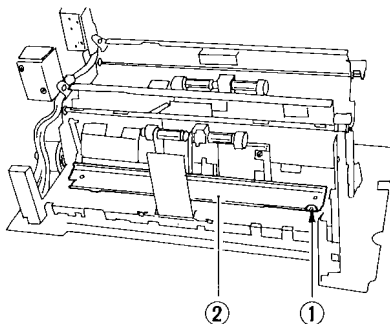


Figure 4-308

- 3) Remove the stop ring ③, and detach the pick-up roller ④ from the rear.

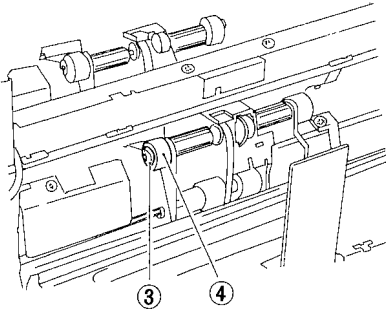


Figure 4-309

- 4) Remove the screw ⑤, and detach the pick-up roller arm bushing ⑥.

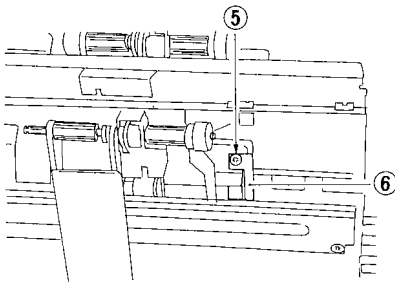


Figure 4-310

- 5) Disconnect the connector ⑦, and remove the stop ring ⑧ from the feeding roller.
- 6) Detach the pick-up roller arm ⑨ from the plate.

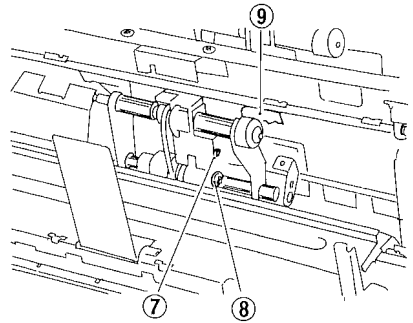


Figure 4-311

- 7) Pull out the pick-up roller unit ⑩ and the feeding roller ⑪ at the same time.

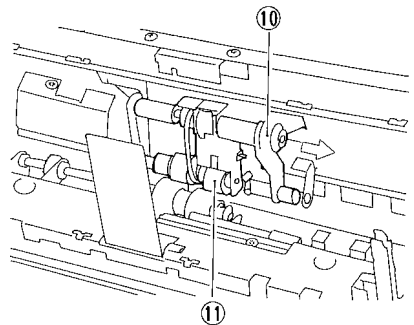
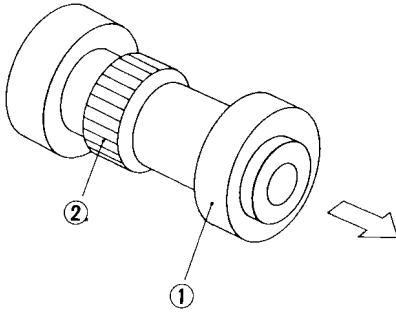


Figure 4-312

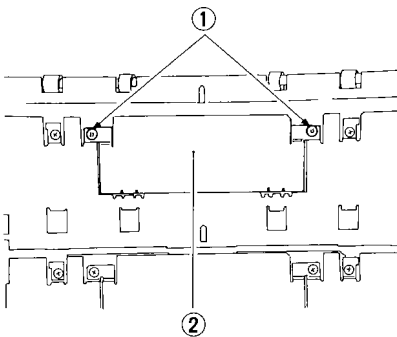
Reference:

When attaching the feeding roller ⑦ to the pick-up assembly, make sure that the gear ② attached to the feeding roller is to the rear of the copier.

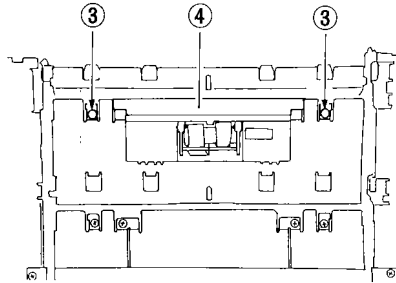
**Figure 4-313**

6. Detaching the Separation Roller Assembly

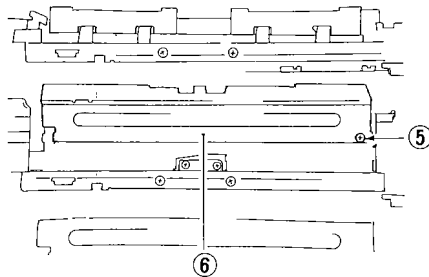
- 1) Detach the pick-up assembly.
- 2) Remove the two screws ①, and detach the vertical path guide ②.

**Figure 4-314**

- 3) Remove the two screws ③, and detach the pick-up lower guide ④.

**Figure 4-315**

- 4) Remove the screw ⑤, and detach the pick-up assembly inlet guide ⑥.

**Figure 4-316**

- 5) Remove the spring ⑦ and the two screws ⑧.

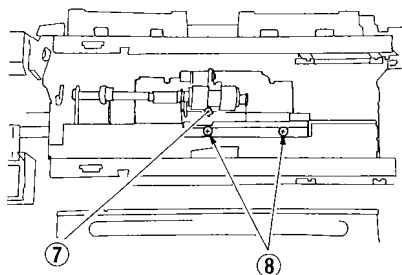


Figure 4-317

- 6) Detach the separation unit ⑨ from the right door side.

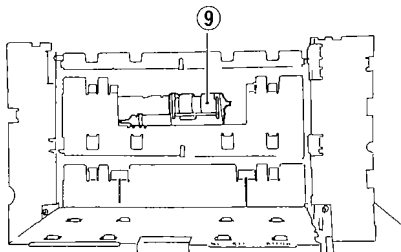


Figure 4-318

- 7) Remove the two stop rings ⑩ from both left and right.
8) Pull out the separation roller shaft ⑪, and detach the separation roller ⑫.

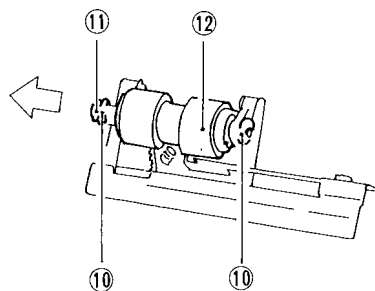


Figure 4-319

Reference:

When attaching the separation roller ① to the pick-up assembly, be sure that the D-cut is toward the front of the copier as shown in Figure 4-320.

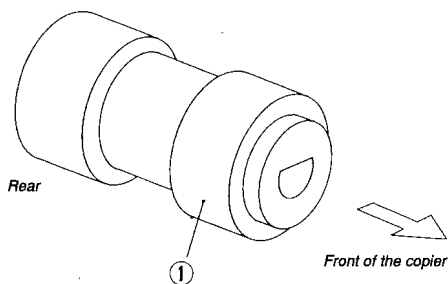
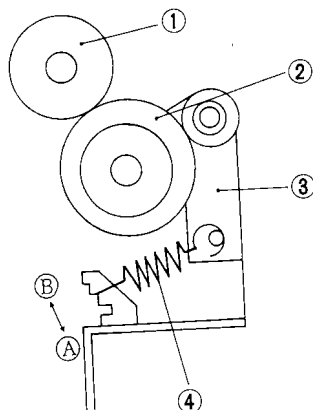


Figure 4-320

7. Adjusting the Pressure of the Separation Roller

When double feeding or pick-up failure occurs at time of pick-up, adjust the position of the pressure roller of the separation roller.

- ① If double feeding occurs, move the spring in the direction of A.
- ② If pick-up failure occurs, move the spring in the direction of B.



- | | |
|---------------------|-------------------|
| ① Feeding roller | ③ Pressure lever |
| ② Separation roller | ④ Pressure spring |

Figure 4-321

8. Positioning the Pick-Up Roller Release Solenoid (SL1, SL2; pick-up assembly)

Attach the solenoid so that the pick-up roller arm

- ① shown in Figure 4-323 butts against the upper stay ② when the plunger of the solenoid is pushed in.

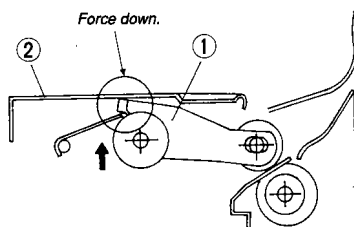


Figure 4-322

9. Releasing the Lifter

If the lifter is up, push the lifter release arm ① to shift down the lifter.

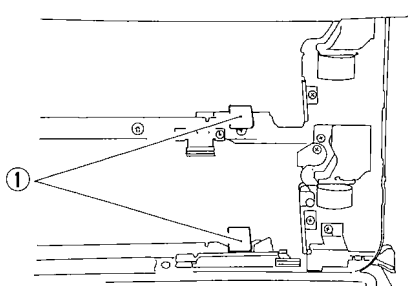


Figure 4-323

10. Adjusting the Registration (left/right)

- 1) Detach the front lower cover.
- 2) Loosen the screw ① to adjust the position of the cassette hook plate ②; make sure it is 0 ± 1.5 mm.

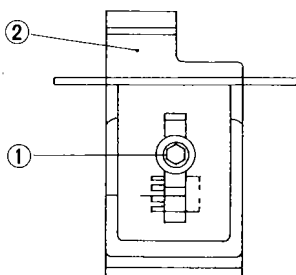


Figure 4-324

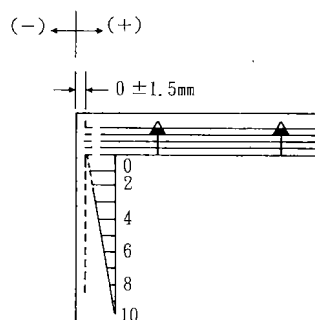


Figure 4-325

- 3) After adjusting the position, be sure to enter the paper width default setting for the cassette; see the SERVICE HANDBOOK.

B. Multifeeder

1. Detaching the Multifeeder

- 1) Detach the right cover and the multifeeder inside cover.
- 2) Disconnect the connector ①.
- 3) Remove the four screws ②, and detach the multifeeder ③.

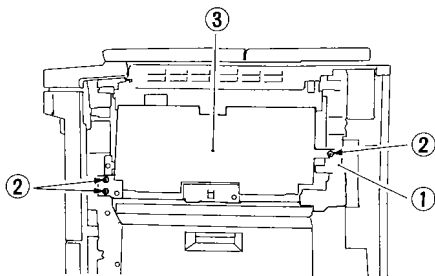


Figure 4-326

2. Detaching the Pick-Up Roller and Separation Pad (multifeeder)

- 1) Detach the multifeeder.
- 2) Remove the stop ring ①.

- 3) While pushing down the separation pad ②, detach the pick-up roller ③.

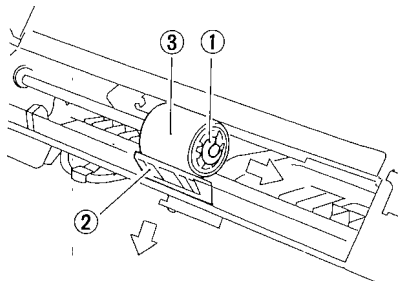


Figure 4-327

- 4) Lift the multifeeder tray.
- 5) Remove the screw ④, and detach the separation pad assembly ⑤.

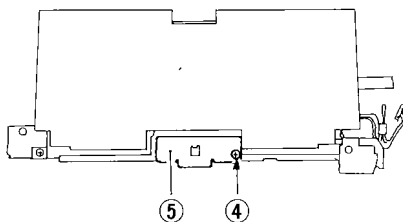


Figure 4-328

Reference:

When attaching the multifeeder pick-up roller ①, orient it so that the cross mark ② on the collar is toward the rear.

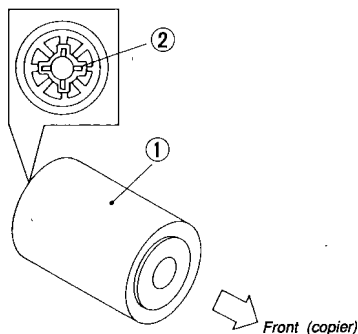


Figure 4-329

3. Adjusting the Pressure of the Separation Pad

When double feeding or pick-up failure occurs frequently, adjust the position of the pressure spring of the separation pad.

- ① if double feeding is frequent, move the spring holder toward B.
- ② if pick-up failure is frequent, move the spring holder toward A.

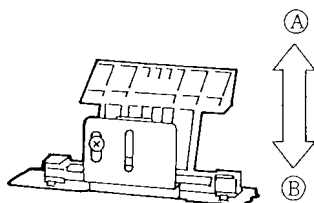


Figure 4-330

4. Adjusting the Left/Right Registration

If the left-right registration of the multifeeder is wrong, loosen the screw ① to adjust the position of the tray.

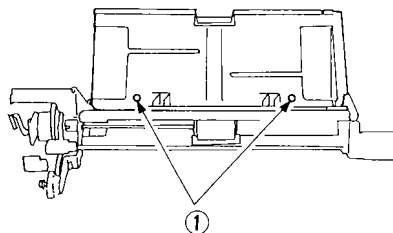


Figure 4-331

5. Adjusting the Position of the Paper Guide Cam (multifeeder)

Adjust the engagement of the 26T gear 1 and the 26T gear 2 so that the paper guide and the paper guide cam are as shown in Figure 4-332 when the solenoid plate is in contact with the claw of the control ring.

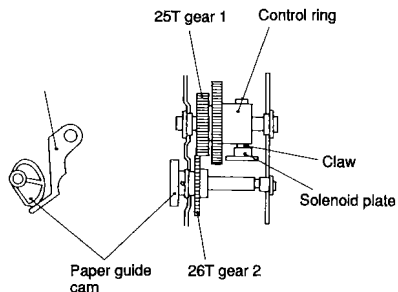


Figure 4-332

6. Attaching the Timing Belt (multifeeder)

Butt the rack plate of the multifeeder against A (open position).

Move the slide control in the direction of B, and attach the timing belt on the pulley.

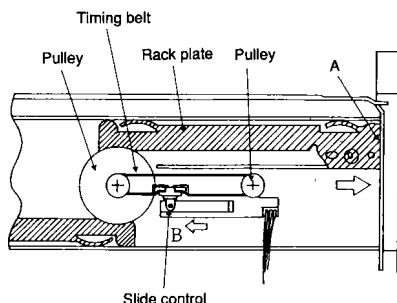


Figure 4-333

C. Registration Roller Assembly

1. Detaching the Registration Roller

- 1) Open the front cover.
- 2) Release the feeding assembly.
- 3) Detach the transfer corona assembly.
- 4) Detach the inside left cover and inside right cover.
- 5) Detach the developing assembly and drum unit.
- 6) Detach the rear cover.
- 7) Detach the registration roller clutch.
- 8) Detach the main drive assembly.
- 9) Disconnect the connector ①, and remove the screw ② (varistor).

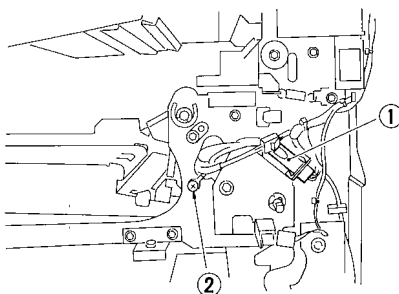


Figure 4-334

- 10) Remove the bushing ③ (screw), and detach the transfer guide ④.

Note:

- During the work, pay attention to the spring at the rear of the feeding assembly.
- If removal is difficult, loosen the bushing ③ at the rear of the copier to facilitate the work.

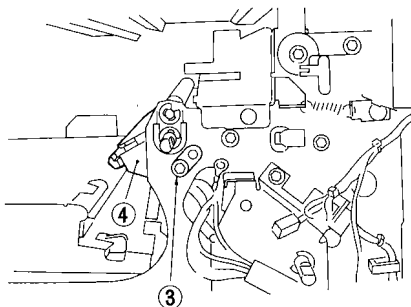


Figure 4-335

- 11) Remove the shaft retaining spring ⑤, two E-rings ⑥, and two bushings ⑦ (front, rear).

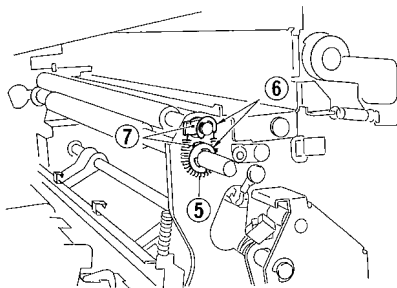


Figure 4-336

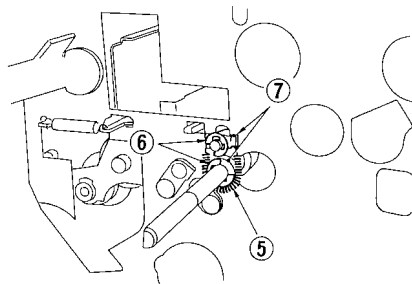


Figure 4-337

- 12) Detach the registration roller ⑧.

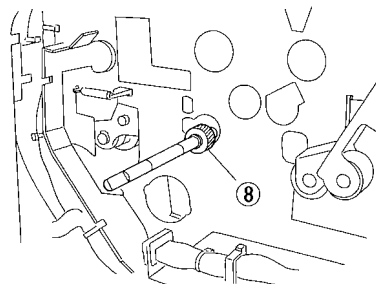


Figure 4-338

D. Feeding Assembly

1. Feeding Assembly

Note:

When detaching the feeding assembly, be sure to detach the drum unit, transfer corona assembly, developing assembly, and fixing assembly first.

- 1) Disconnect J67 ①.

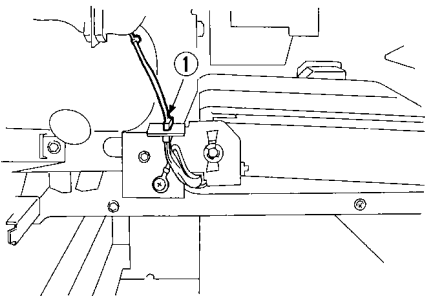


Figure 4-339

- 2) Remove the screw ③, and detach the bushing support ④.

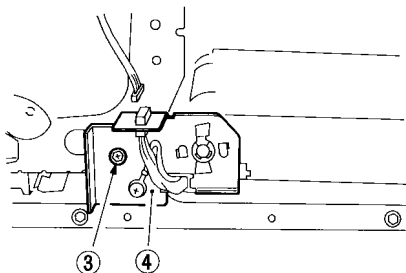


Figure 4-340

- 3) While paying attention to the spring at the rear of the feeding assembly ⑤, pull out the feeding assembly.

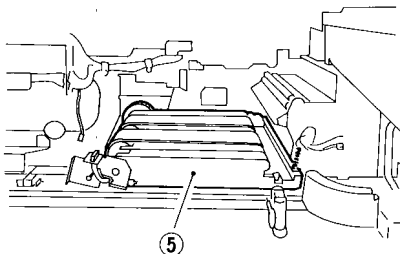


Figure 4-341

2. Detaching the Feeding Belt

- 1) Detach the feeding assembly.
- 2) Remove the three screws ①, and detach the terminal mount ②.

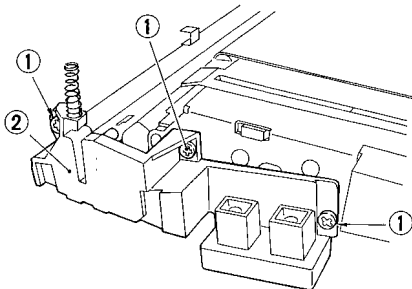


Figure 4-342

- 3) Remove the three screws ③, and detach the solenoid arm; then, detach the transfer corona rail ④.

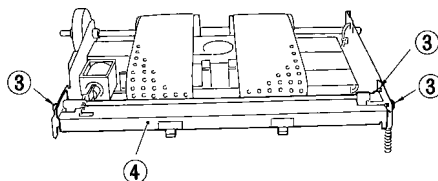


Figure 4-343

- 4) Remove the two spacers ⑤.

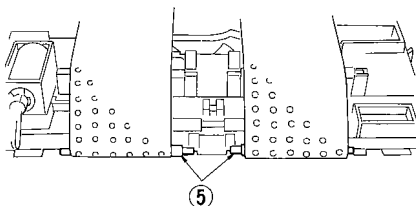


Figure 4-344

- 5) Detach the feeding belt ⑥.

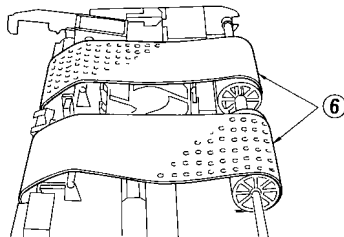


Figure 4-345

3. Detaching the Feeding Fan

- 1) Detach the feeding assembly.
- 2) Detach the feeding belt.
- 3) Disconnect J68 ①, and disengage the hook assembly ②; then, detach the feeding fan ③.

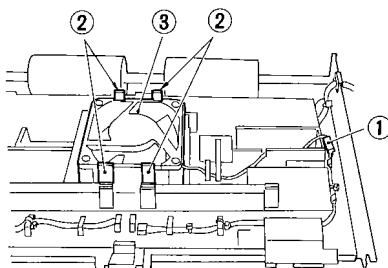


Figure 4-346

4. Adjusting the Position of the Transfer Roller Release Solenoid

Set the spring on the release link (rear); move the solenoid ② into the direction of the arrow ③, and screw it in position so that l is 6.0 ± 0.2 mm when the release link is pulled in the direction of the arrow ④.

After adjustment, make sure that the solenoid shaft and the release link (front, rear) move smoothly.

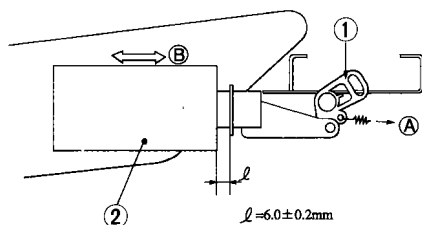


Figure 4-347

E. Delivery Assembly

1. Detaching the Delivery Assembly

- 1) Open the delivery assembly.
- 2) Detach the connector cover ①.

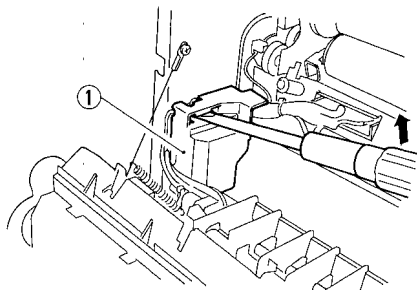


Figure 4-348

- 3) Disconnect the connector ②, and remove the grounding wire fixing screw ③.
- 4) Remove the wire fixing screw (④; rear).

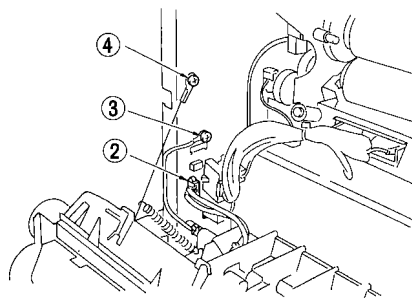


Figure 4-349

- 5) Remove the wire fixing screw (⑤; front).
- 6) Remove the screw (⑦), and detach the support shaft plate (⑥) of the feeding assembly; then, detach the delivery assembly.
Take care not to drop the delivery assembly.

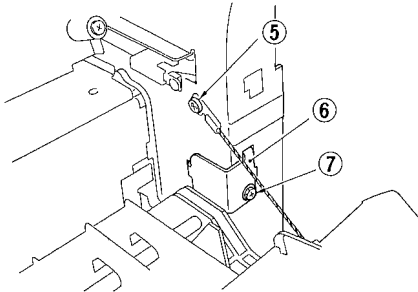


Figure 4-350

2. Detaching the Upper Separation Claw

- 1) Open the delivery assembly.
- 2) Remove the screw (①), and detach the insulating cover (②).

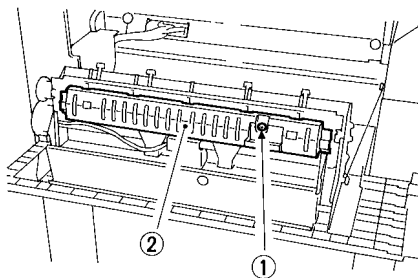


Figure 4-351

- 3) Remove the two screws, and detach the upper separation claw unit (④).

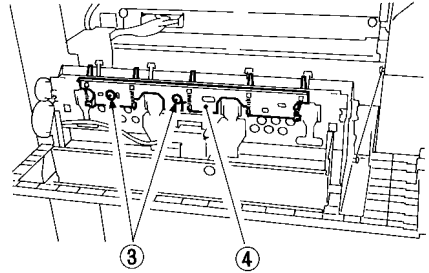


Figure 4-352

- 4) Remove the spring (⑤), and detach the upper separation claw (⑥).

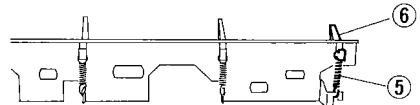


Figure 4-353

Note:

When attaching the upper separation claw unit, be sure to keep it toward the front.

3. Detaching the Lower Separation Claw

- 1) Open the delivery assembly.
- 2) Remove the four springs ① for the lower separation claw.

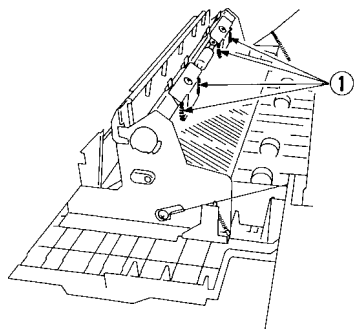


Figure 4-354

- 3) Remove the two screws ②, and detach the lower separation claw support ③.

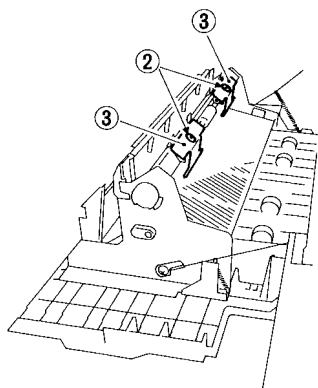


Figure 4-355

- 4) Detach the four separation claws ④.

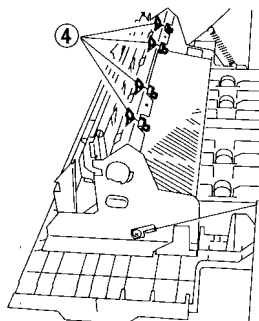


Figure 4-356

4. Adjusting the Position of the Paper Deflector Drive Solenoid (SL4; delivery assembly)

Make sure that the spacer at the end of the shaft of the paper deflector shown in Figure 4-358 comes into contact with the long hole in the side plate of the delivery assembly.

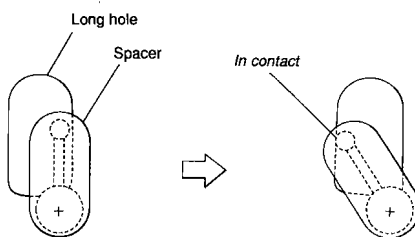


Figure 4-357

IV. EXPOSURE SYSTEM

A. Scanner System

1. Detaching the Scanning Lamp

- 1) Disconnect the power plug.
- 2) Detach the copyboard glass.
- 3) Remove the screw ①, and detach the reflecting plate ②.

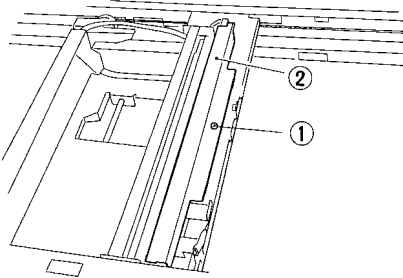


Figure 4-400

- 4) Turn a flat-bladed screwdriver into the direction of the arrow ① to open the terminal plate in the direction of the arrow ②; then, detach the scanning lamp.

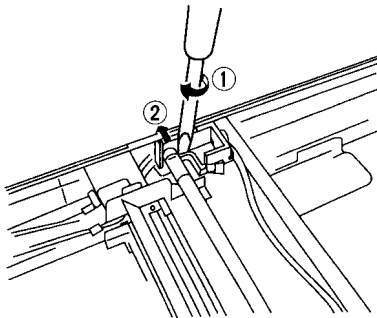


Figure 4-401

Note:

1. Do not start the work until the scanning lamp has cooled.
2. Do not leave fingerprints on the scanning lamp.
3. If the surface of the scanning lamp is soiled, dry wipe it.

2. Orientation of the Lamp

Orient the boss in the center of the lamp ① in the direction of the arrow, i.e., the direction in which the mirror mount moves in reverse; on the longer side, make sure that the logo is toward the front.

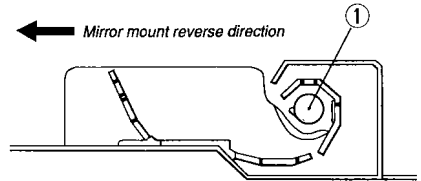


Figure 4-402

Note:

When handling the lamp, take care not to touch it.

3. Detaching the Thermal Fuse

- 1) Detach the copyboard glass.
- 2) Remove the screw ①, and detach the attraction plate ②.

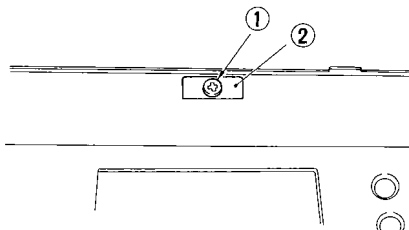


Figure 4-403

- 3) Hold the No. 1 mirror mount ③ around its center, and move it to the right until it is positioned as shown in Figure 4-404.

Note:

When moving the No. 1 mirror mount, be sure to hold it at its center; do not touch the lamp or reflector.

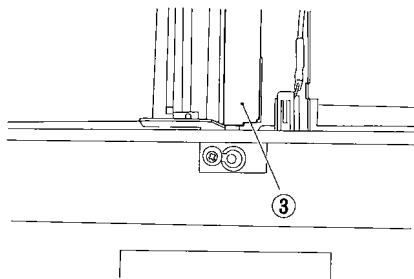


Figure 4-404

- 4) Remove the two screws ④, and detach the thermal fuse ⑤.

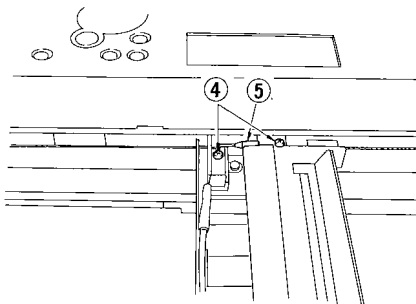


Figure 4-405

4. Detaching the Blank Exposure Assembly

- 1) Open the front door, and detach the inside left cover.
- 2) Detach the developing assembly and drum unit.
- 3) Disconnect J91 ① and J95 ②.
- 4) Remove the two screws ③, and detach the harness retainer.

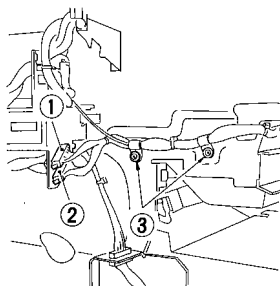


Figure 4-406

- 5) Remove the two screws ④.

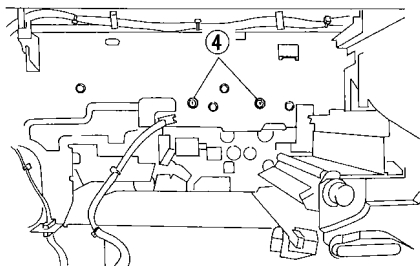


Figure 4-407

- 6) Pull out the blank exposure assembly ⑤ toward the front slowly.

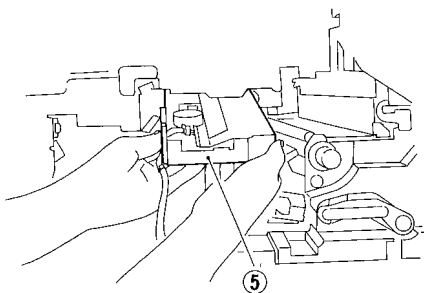


Figure 4-408

5. Detaching the Blank Exposure Lamp

- 1) Detach the blank exposure assembly.
- 2) Remove the two screws ①, and detach the blank upper plate ②.

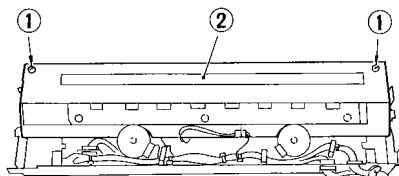


Figure 4-409

- 3) Disconnect J93 ③ and J94 ④.

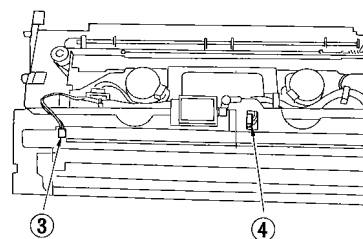


Figure 4-410

- 4) Remove the three screws ⑤, and detach the blank exposure lamp ⑥.

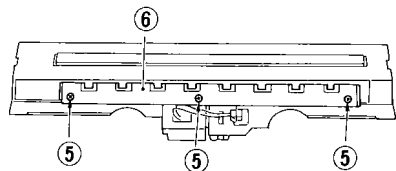


Figure 4-411

- 4) Remove the three screws ④, and disconnect the connector ⑥; then, pull out the blank shutter solenoid ⑤ upward.

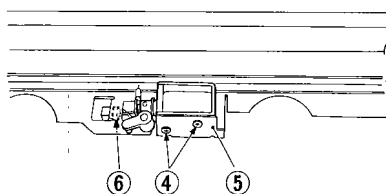


Figure 4-413

6. Detaching the Blank Shutter Solenoid

- 1) Detach the blank exposure assembly.
- 2) Detach the upper blank plate, and disconnect J93 and J94; see 5. "Detaching the Blank Exposure Lamp."
- 3) Remove the screw ① and the spring ②; then, detach the link arm ③ from the blank shutter.

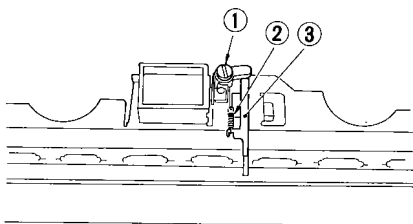


Figure 4-412

7. Adjusting the Position of the Blank Shutter Solenoid

Adjust the position of the solenoid so that the bottom A is 7.7 ± 0.5 mm on both sides when the solenoid is moved to its direction of activation.

After adjustment, make sure that the solenoid moves smoothly.

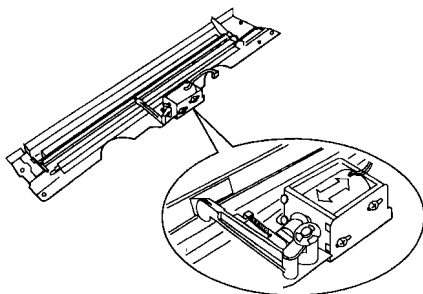


Figure 4-414a

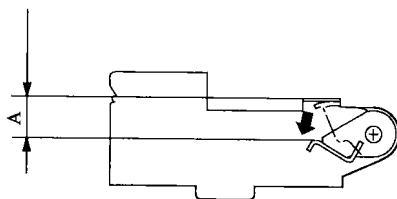


Figure 4-414b

8. Detaching the Blank Motor

- 1) Detach the blank exposure assembly.
- 2) Detach the blank upper plate, and disconnect J93 and J94; see p. 4-41.
- 3) Disconnect the J92 ① and J96 ②.

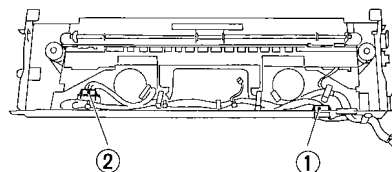


Figure 4-415

- 4) Remove the four screws ③, and pull out the blank motor ④ upward.

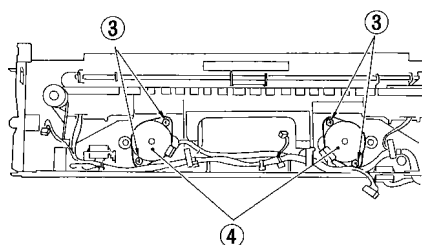


Figure 4-416

9. Attaching the Blank System Cable

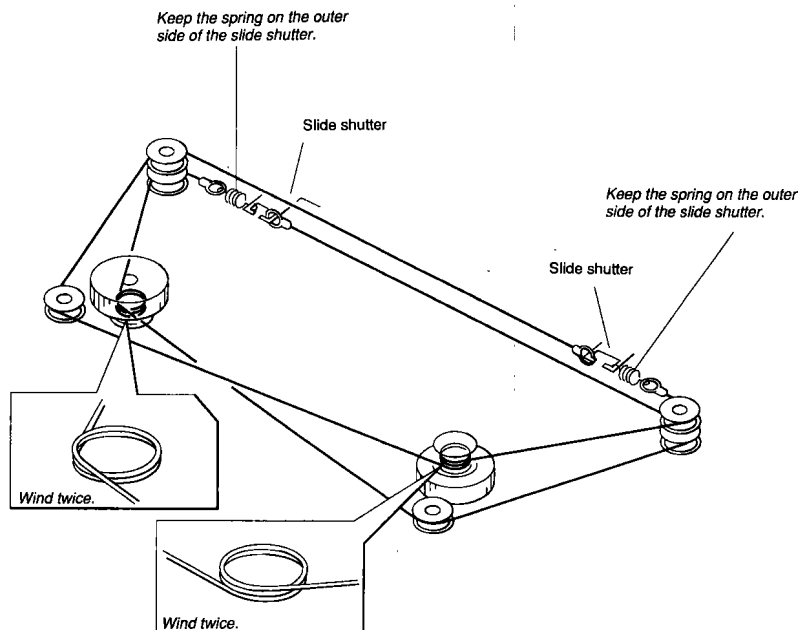


Figure 4-417

V. CORONA SYSTEM

A. Drum Unit

1. Detaching the Drum Unit

- 1) Open the front door.
- 2) Turn the developing assembly release lever ① counterclockwise.

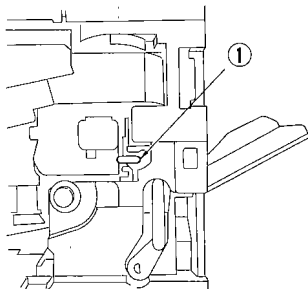


Figure 4-500

- 3) Open the hopper, and release the feeding assembly.
- 4) Detach the knob ②.
- 5) Slide out the drum unit ③ slowly to the front.

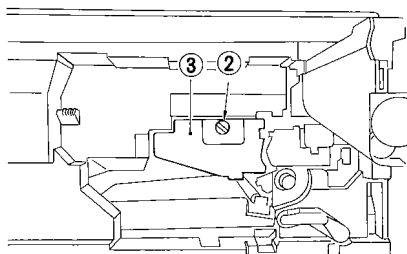


Figure 4-501

Note:

Take care not to damage the photosensitive drum.

Note:

The photosensitive drum is highly susceptible to light; exposure to room light can affect it enough to produce white spots or black lines on the copies.

As a rule, do not switch on the copier with the drum unit detached; otherwise, the registration roller and transfer guide interfere with each other and, if the registration roller rotates during WMUPR, it can damage the registration roller.

2. Cleaning

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

Note:

Do not dry wipe the photosensitive drum or use a solvent; do not use cleaning powder.

B. Primary Corona Assembly

1. Detaching the Primary Corona Assembly

- 1) Detach the drum unit from the copier.
- 2) Slide the lock ① on the top of the drum unit into the direction of the arrow.

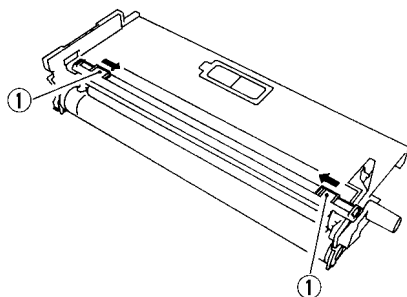


Figure 4-502

- 3) Turn the primary corona assembly ② into the direction of the arrow, and detach it together with the holder.

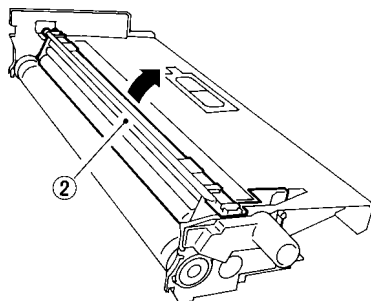


Figure 4-503

2. Cleaning the Cleaning Pad and the Primary Corona Roller

- 1) Detach the primary corona assembly.
- 2) Place the primary corona assembly as shown in Figure 4-504, and clean the cleaning pad ③ using a cotton wad ④ or folded lint-free paper.

Note:

- As a rule, dry wipe the parts; do not use water, alcohol, or solvent.
- When dry wiping the part, make sure strokes are in the same direction only.

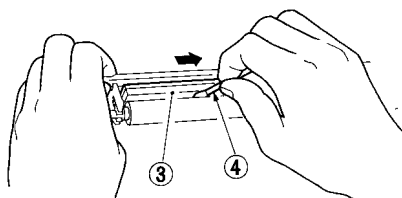


Figure 4-504

- 3) While rotating the primary charging roller ④, clean it using lint-free paper ⑥.

Note:

- As a rule, dry wipe the parts; do not use water, alcohol, or solvent.
- When dry wiping the part, make sure strokes are in the same direction only.

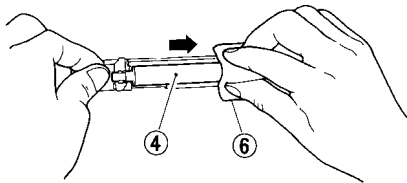


Figure 4-505

3. Replacing the Primary Charging Roller and the Cleaning Pad

- 1) Detach the primary corona assembly.
- 2) Detach the primary charging roller ④ and the cleaning pad ⑤.

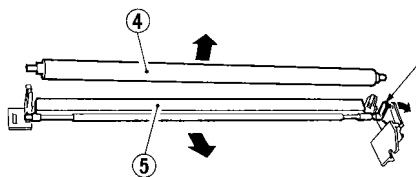


Figure 4-506

- 3) Attach the new cleaning pad ⑤ to the primary charging roller holder.



Figure 4-507

- 4) Hook the spring on the edge of the cleaning pad; hook the end of the spring on a, pick b with tweezers and turn it in the direction of the arrow to hook it on c.

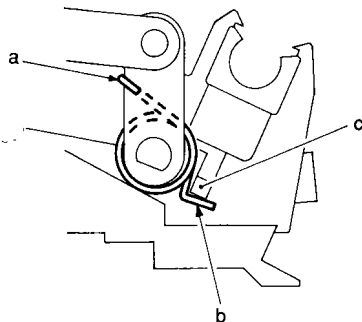


Figure 4-508

- 5) Attach the new charging roller.
- 6) Attach the primary corona assembly ⑥ to the drum kit.

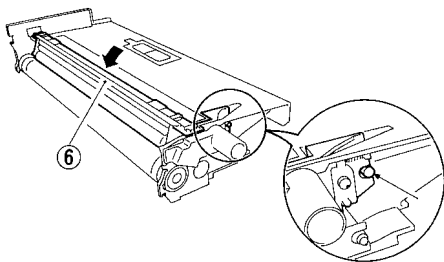


Figure 4-509

C. Transfer Corona Assembly

1. Detaching the Transfer Corona Assembly

- 1) Open the front door.
- 2) Release the feeding assembly.
- 3) Remove the screw ①, and detach the corona assembly retainer ②.

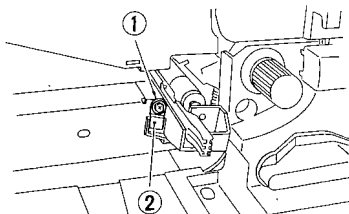


Figure 4-510

- 4) While lifting the transfer roller cover, pull out the transfer corona assembly ③ toward the front.

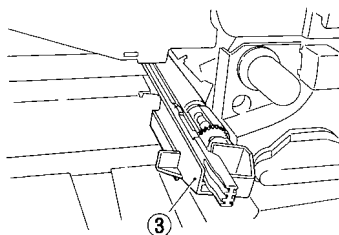


Figure 4-511

Note:

When detaching and attaching the transfer corona assembly, be sure to lift the roller cover so that the transfer roller and roller cover will not come into contact.

2. Detaching the Transfer Roller

- 1) Detach the transfer corona assembly.
- 2) Detach the bushing covers front ① and rear ②.

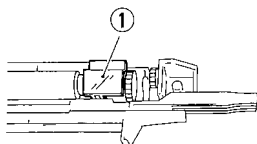


Figure 4-512

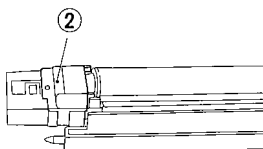


Figure 4-513

- 3) Detach the arms front ③ and rear ④.

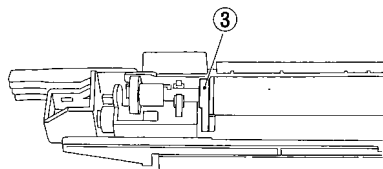


Figure 4-514

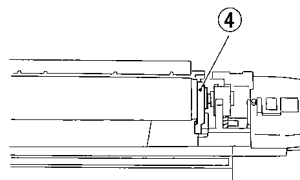


Figure 4-515

- 4) Detach the transfer roller ⑤ by moving it upward.

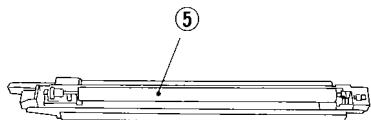


Figure 4-516

Note:

Do not touch the surface of the roller.

Further, take care not to leave dirt on the roller.

VI. DEVELOPING ASSEMBLY

1. Detaching the Developing Assembly

- 1) Open the copier's front cover.
- 2) Detach the connector cover ①.

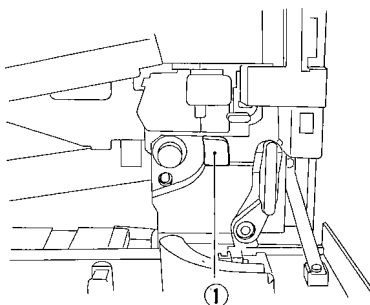


Figure 4-600

- 3) Disconnect J34 ②.
- 4) Turn the pressure lever ③ counterclockwise to release it.
- 5) Pull the developing assembly ⑤ slowly toward the front.

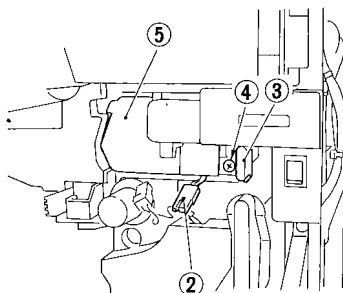


Figure 4-601

2. Detaching the Blade

- 1) Detach the developing assembly from the copier.
- 2) Remove the two screws ①, and detach the developing cover ②.

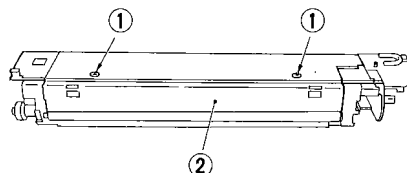


Figure 4-602

- 3) Place a newspaper on the floor or desk, and empty the developing assembly of toner.
- 4) Remove the two screws ③, and detach the blade ④ together with its mount.

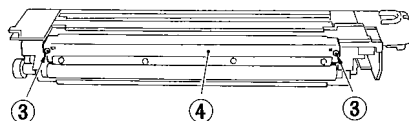


Figure 4-603

Note:

Do not detach the blade on its own in the field; it will have to be attached with very high precision. Instead, detach it only together with its mount.

3. Detaching the Developing Cylinder and the Magnetic Seal

- 1) Detach the developing assembly from the copier.
- 2) Detach the blade.

Note:

Do not detach the blade on its own in the field; it will have to be attached with very high precision. Instead, detach it only together with its mount.

- 3) Remove the screw ①, and detach the front cover ②.

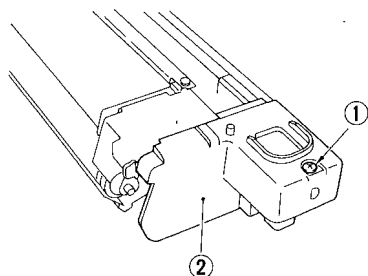


Figure 4-604

- 4) Remove the screw ③, and detach the polarity positioning plate.

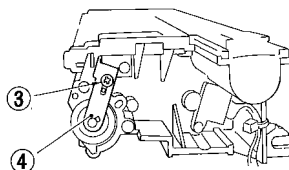


Figure 4-605

- 5) Remove the C-ring and two screws; then, detach the butting spacer ⑤ and the spacer case ⑥.

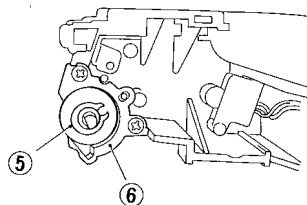


Figure 4-606

- 6) Remove the two screws ⑦, and detach the gear mount ⑧.

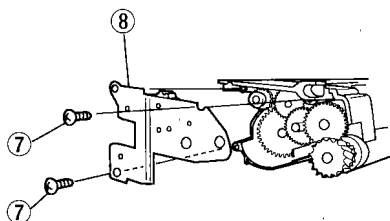


Figure 4-607

- 8) Detach the developing cylinder ⑬.

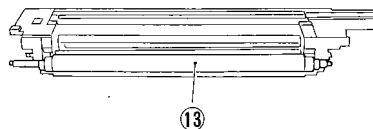


Figure 4-609

- 7) Remove the two E-rings, and detach the gear ⑨ and the gear ⑩.
Remove the two screws, and detach the butting spacer ⑪ and the spacer case ⑫.

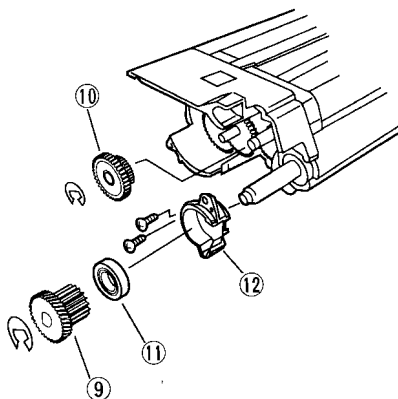


Figure 4-608

- 9) Detach the magnetic seal ⑭ (both ends).

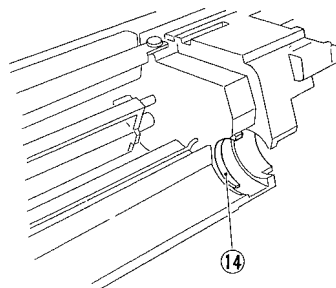


Figure 4-610

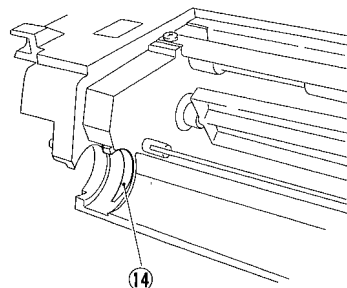


Figure 4-611

4. Attaching the Magnetic Seal and the Blade

- 1) Clean the area over which the magnetic seal will be attached with alcohol.
- 2) Attach the magnetic seal as shown in Figure 4-612. Make sure the correct seals are used for the front and the rear; they have different shapes. Further, make sure that the magnetic seal is in firm contact with the container.

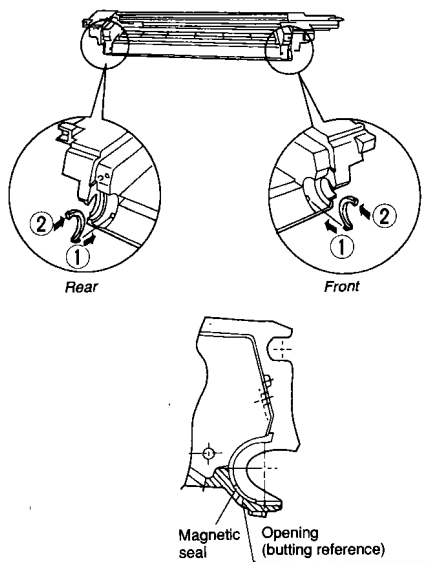


Figure 4-612

- 3) Attach all parts except the blade and developing assembly cover.

- 4) Push the blade mount against the developing assembly, and fix it in place using two screws. When attaching the blade, place paper ① on the developing cylinder for protection; push A while tightening the screw.

Reference:

The distance S—B is 230 ± 30 mm.

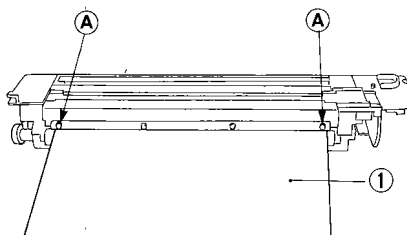


Figure 4-613

5. Attaching the Polarity Positioning Plate

Attach the polarity positioning plate as shown in Figure 4-614

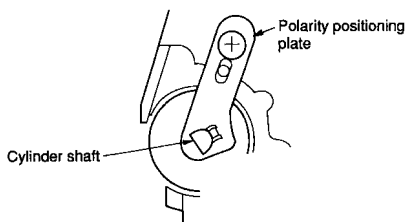
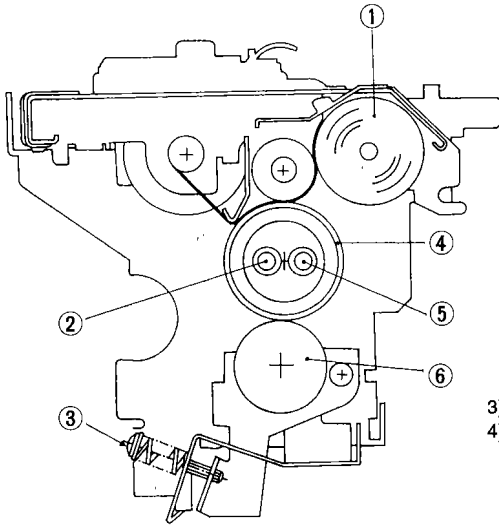


Figure 4-614

VII. FIXING SYSTEM

A. Fixing Assembly

1. Construction



- | | |
|----------------------------|-----------------------|
| ① Fixing cleaning assembly | ④ Upper fixing roller |
| ② Sub heater | ⑤ Main heater |
| ③ Pressure adjusting screw | ⑥ Lower fixing roller |

Figure 4-700

2. Detaching the fixing Assembly

- 1) Open the copier's front cover.
- 2) Remove the screw, and detach the fixing assembly knob ①.

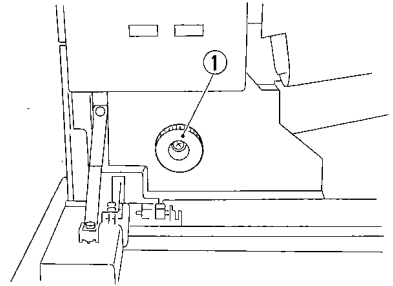


Figure 4-701

- 3) Open the delivery assembly.
- 4) Detach the connector cover ②; use a flat-blade screwdriver as shown in Figure 4-702.

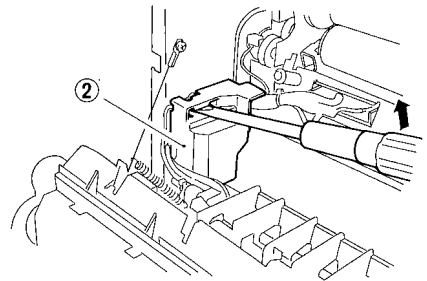


Figure 4-702

- 5) Disconnect J3 ③, J76 ④, and J77 ⑤.

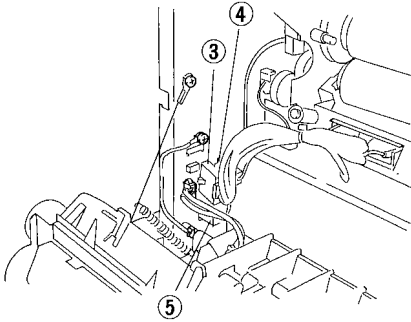


Figure 4-703

- 6) Remove the two screws ⑥, and detach the fixing assembly ⑦ in the direction of delivery. At the time, take care not to damage the delivery separation claw.

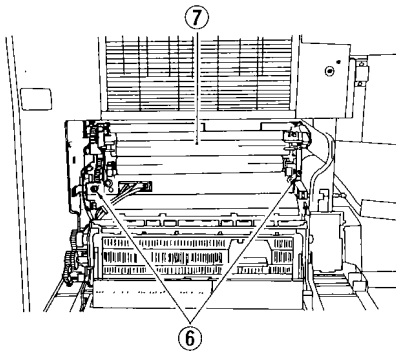


Figure 4-704

3. Detaching the Fixing Cleaning Belt

- 1) Detach the fixing assembly from the copier.
- 2) Remove the two screws ①, detach the fixing cleaner assembly ②.

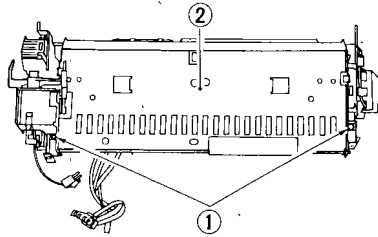


Figure 4-705

- 3) Insert a flat-blade screwdriver ③ into the stop plate ④, and release the pressure on the fixing cleaning belt.

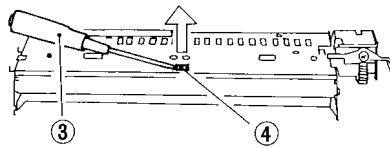


Figure 4-706

- 4) Turn the cleaning belt set shaft ⑤ of the fixing cleaner assembly clockwise, and detach the fixing cleaning belt ⑥.

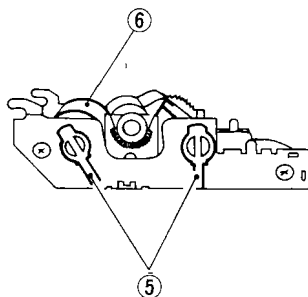


Figure 4-707

4. Attaching the Fixing Cleaning Belt

The feed shaft, take-up shaft, and cleaning belt are constructed as a single entity.

To attach the fixing cleaning belt, go through the foregoing steps but in reverse order.

- Wind the cleaning belt around the take-up shaft two to three times. Make sure that the area it comes into contact with the roller is impregnated with oil.

Note:

Check that the fixing cleaning belt is not askew and is free of slack and wrinkling.

- After attaching the cleaning belt, insert a flat-blade screwdriver into the fixing assembly drive shaft, and turn it counterclockwise until the belt is taut.

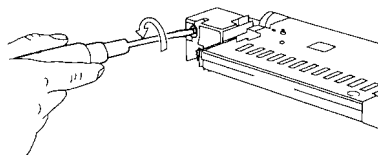


Figure 4-708

Reference:

The fixing cleaner assembly is located above the fixing assembly, and cleans the upper roller by bringing a belt impregnated with silicone oil into contact.

The cleaning belt is 15 m in length; a red band is printed on the belt 2.5 m from its end.

Note:

Be sure to clear the setting of 'WEB' in counter mode (service mode) whenever you have replaced the fixing cleaning belt.

5. Detaching the Fixing heater

- 1) Detach the fixing assembly from the copier.
- 2) Remove the two screws ①, and detach the fixing cleaning assembly ②.

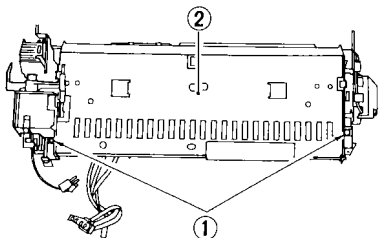


Figure 4-709

- 3) Detach the cord cover ③ from the thermoswitch assembly.

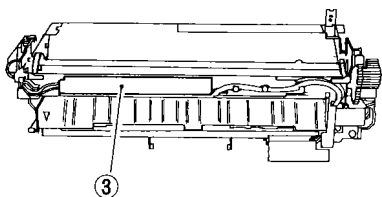


Figure 4-710

- 4) Pull out the two fastons ④ for the heater; they are found on the left when you face the thermoswitch.

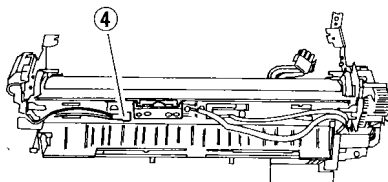


Figure 4-711

- 5) Turn over the fixing assembly, and detach the cord cover ⑤ from the bottom of the fixing assembly.

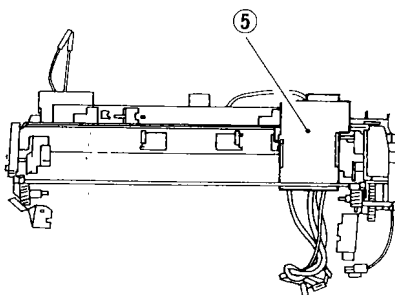


Figure 4-712

- 6) Pull out the fasten ⑥ from the bottom of the fixing assembly.
- 7) Remove the screw ⑦, and detach the round terminal ⑧.

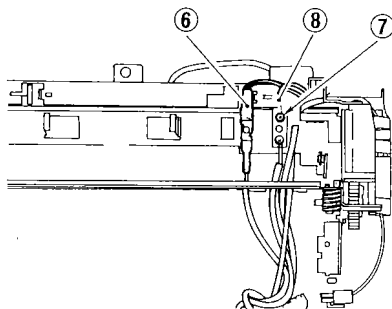


Figure 4-713

- 8) Remove the screw ⑨, and detach the two cord covers ⑩.

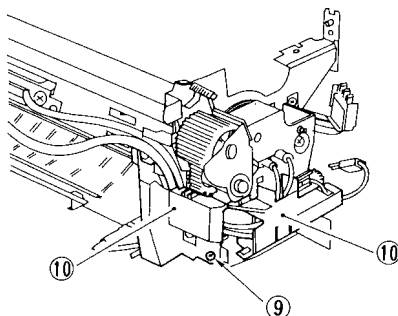


Figure 4-714

- 9) Remove the screw, and detach the front cord cover ⑫.

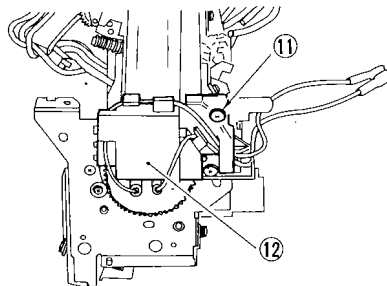


Figure 4-715

- 10) Remove the screw ⑬, and detach the heater mount ⑭ (front).

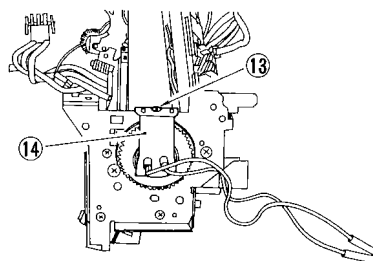


Figure 4-716

- 11) Remove the three screws ⑮, and detach the metal plate ⑰ and heater mount ⑯ (rear).

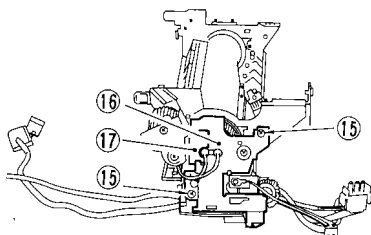


Figure 4-717

- 12) Pull out the two fixing heaters ⑰ slowly toward the front.

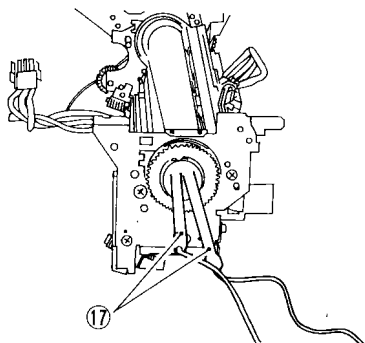


Figure 4-718

6. Detaching the Fixing Roller

- 1) Detach the fixing assembly from the copier.
- 2) Detach the fixing cleaner assembly.
- 3) Detach the fixing heater.
- 4) Remove the screw ①, and detach the thermistor mount ②.
- 5) Remove the two screws, and detach the thermoswitch mount ④.
- 6) Detach the paper guide ⑤ from the fixing assembly.

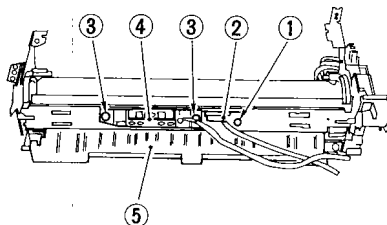


Figure 4-719

- 7) Remove the C-ring ⑥ at the front, and detach the gear ⑦.

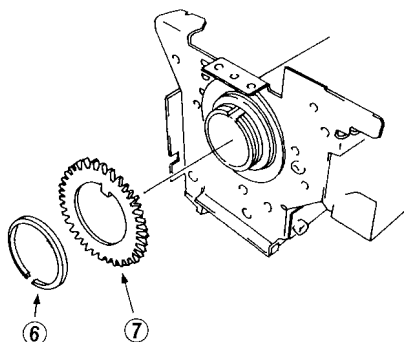


Figure 4-720

- 8) Remove the C-ring at the rear and the bias ring ⑨; then, detach the gear ⑩.

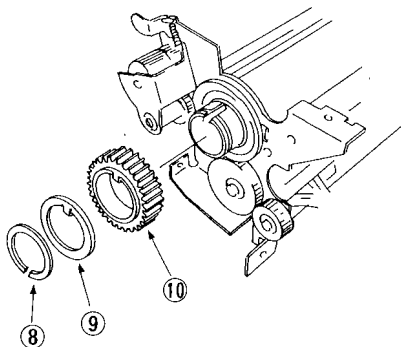


Figure 4-721

- 10) Remove the screw ⑭.
- 11) Detach the bearing ⑮ and insulating bush ⑯.

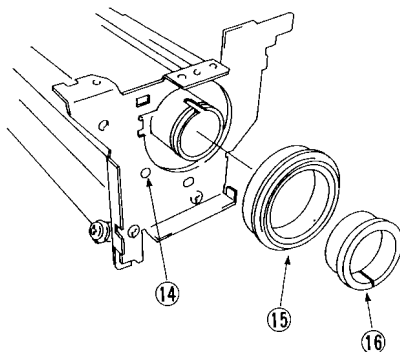


Figure 4-723

- 9) Remove the two screws ⑫ attached to the lower stay ⑪; fit the screws into the screw holes ⑬ (both sides), and release the pressure of the lower roller.

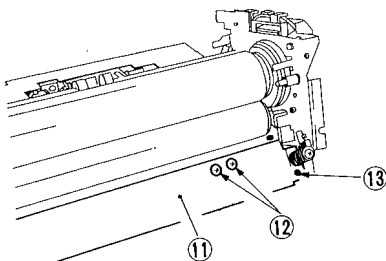


Figure 4-722

- 12) Pull out the upper fixing roller ⑰ to the front.

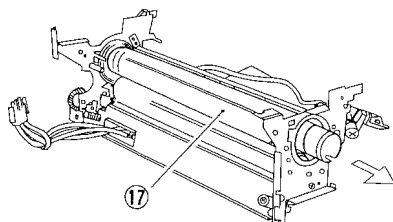


Figure 4-724

- 13) Lift the lower fixing roller ⑮ up together with the bearing.

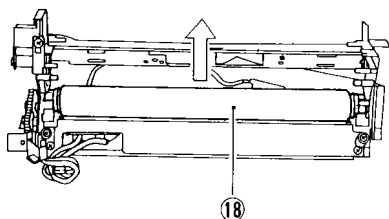


Figure 4-725

7. Attaching the Upper Fixing Roller and the Heater

a. Points to Note When Attaching the Upper Fixing Roller

- ① If possible, wrap the roller in copy paper to protect its surface from dirt and scratches.
- ② Attach the insulating bush while orienting it as shown in Figure 4-726.

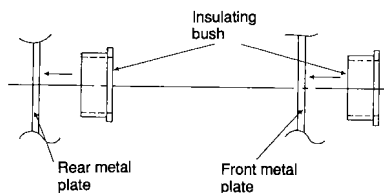


Figure 4-726

- ③ Attach the upper fixing roller so that the longer of its bushing ① is toward the rear.



Figure 4-727

b. Points to Note When Attaching the Heater

- ① Do not touch the surface of the heater.
- ② The sub heater is identified one of its terminals; one of its terminals is a round terminal ②. Both ends of the main heater are fastons.

Main Heater

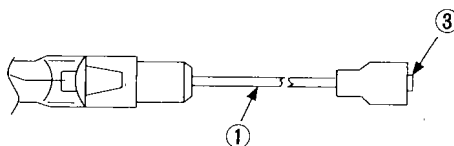


Figure 4-728

Note:

The side with the longer lead wire 1 is to the front of the copier.

Sub Heater

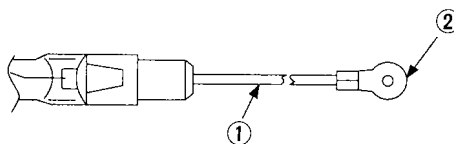


Figure 4-729

Note:

The round terminal should face the rear of the copier; the faston, front.

- ③ Attach the main heater of the right (pick-up) side, and the sub heater to the left (delivery) side; all viewed from the front of the fixing assembly.

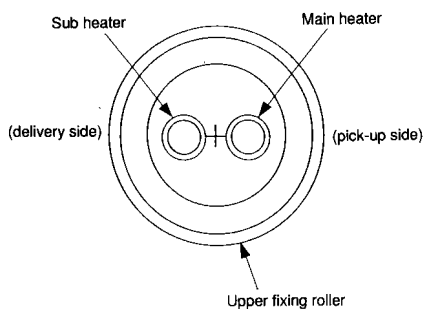


Figure 4-730

8. Adjusting the Nip (tightening the pressure adjusting nut)

The nip width should be as indicated in Table 4-1; if it is not as specified, turn the bolt to adjust.

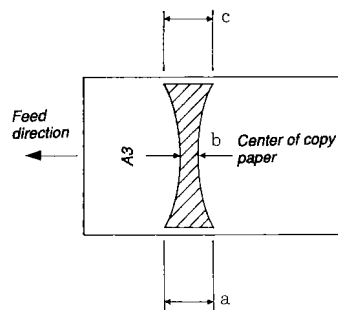


Figure 4-731

Note:

a and c represent points 10 mm from both ends of copy paper.

Notation	Taken when upper/lower roller is sufficiently heated.	
b	64g paper	6.5 ± 0.5 mm
	80g paper	6.0 ± 0.5 mm
	tracing paper	5.5 ± 0.5 mm
a-c	0.5 mm or less	

Table 4-1

a. Measuring the Nip

Wait for 15 minutes after the copier has completed its warm-up period; then, make 20 A4 copies before taking measurements:

- 1) Set A4 or A3 copy paper in the multifeeper.
- 2) Open the copyboard cover.
- 3) Enter service mode ($\text{[X]} \text{[4]} \text{[X]}$), and select 'NIP' using the [] or [] key.
- 4) Press the [OK] key and then the COPY START key to start copying operation.
The multifeeper picks up the paper, and a copy is discharged; Figure 4-731.

Reference:

The paper stops halfway through the fixing rollers; it is then discharged fully about 10 seconds later.

- 5) Measure the nip.

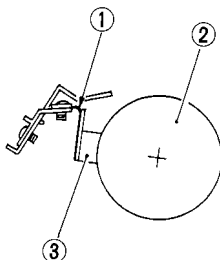
9. Attaching the Thermistor

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

Further, make sure that the lead wire from the thermistor is not excessively taut.

Reference:

You need not adjust the position of the thermistor; if the contact is not even, check to see if the thermistor spring is deformed.



- ① Thermistor spring ③ Thermistor
② Upper fixing roller

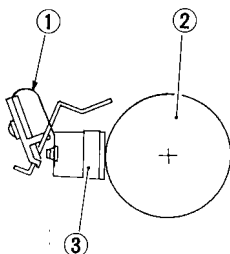
Figure 4-732

10. Attaching the Thermoswitch

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

Reference:

You need not adjust the position of the thermoswitch; if the contact is not even, check to see if the thermoswitch is not deformed.



- ① Thermoswitch spring ③ Thermoswitch
② Upper fixing roller

Figure 4-733

11. Position of the Paper Guide

The position of the paper guide is determined by the position of the paper guide mount. For this reason, you need not adjust the position of the paper guide.

Note:

If you have detached the paper guide mount, you will have to adjust the position of the paper guide; do not loosen the screw on the paper guide. If you have loosened it, refer to the scale on the fixing assembly.

12. Adjusting the Position of the Cleaning Belt Drive Solenoid

Attach the solenoid so that the solenoid arm (2) butts against (a) when the plunger (1) of the cleaning belt drive solenoid is pushed by a finger.

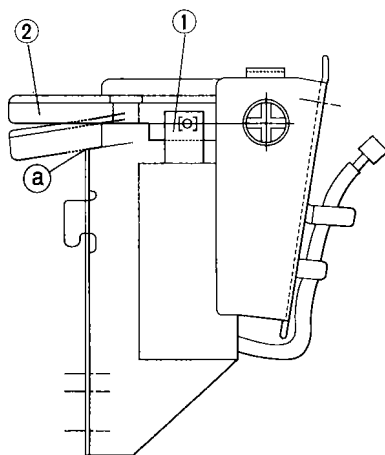


Figure 4-734

VIII. ELECTRICAL

A. Detaching the DC Controller PCB

1. Detaching the DC Controller PCB

- 1) Disconnect the connector from the DC controller PCB.
- 2) Remove the two screws, and detach the DC controller PCB together with its mount.

Note:

The DC controller PCB has a built-in battery (BAT101), and shorting across the terminals of the battery can cause overheating; take full note of the following:

2. Points to Note When Replacing the DC Controller PCB

- When sending the DC controller PCB to the workshop or factory, keep the PCB intact with its mount and in a conducting bag. Make sure that one side of the conducting bag is transparent so that the face of the PCB shows through the bag.
- You must always make adjustments in service mode or enter necessary settings in service mode or user mode.
- The settings to be entered in service mode are recorded on the Service Label found on both sides of the front door and the Drum Label on the drum.

B. Composite Power Supply PCB

1. Detaching the Composite Power Supply PCB

- 1) Detach the DC controller PCB; see A. "Detaching the DC Controller PCB."
- 2) Disconnect all connectors from the composite power supply PCB.
- 3) Remove the two screws, and pull out the composite power supply PCB to the front together with its mount.

Note:

When pulling out the mount, take care so that it will not become trapped by the main motor drive belt. Further, do not hold the heat radiating plate.

2. Points to Note When Handling the Composite Power Supply PCB and the Power Supply PCB for Options

- After replacing the composite power supply PCB, be sure to enter the settings on the label attached to the composite power supply PCB in service mode (Service Mode * 3 *); 'PWR_OFST' and 'ATVC_STD'.
- Some capacitors on the PCB at times retain charges when the copier is switched off. For this reason, it is important that you never short across the terminals of capacitors after detaching the

IX. THREE-CASSETTE FEEDING UNIT

A. Detaching the Three-Cassette Feeding Unit from the Copier

- 1) Disconnect the copier's power plug.
- 2) Disconnect the cassette feeding unit's connector ① from the copier.

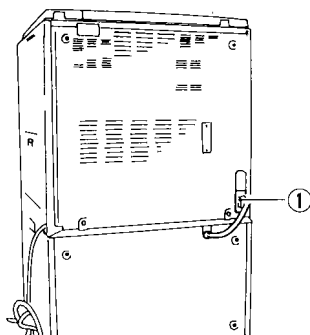


Figure 4-900

- 3) Open the cassette feeding unit's right door.
- 4) Remove the two screws ②, and detach the leaf spring ③.

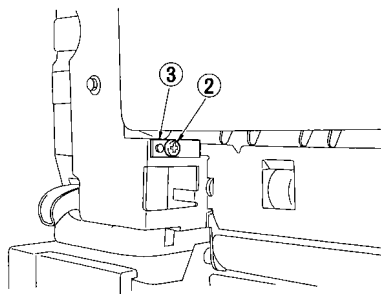


Figure 4-901

- 5) Hold the copier's four grips, and detach the copier from the cassette feeding unit.

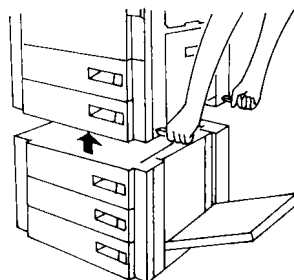
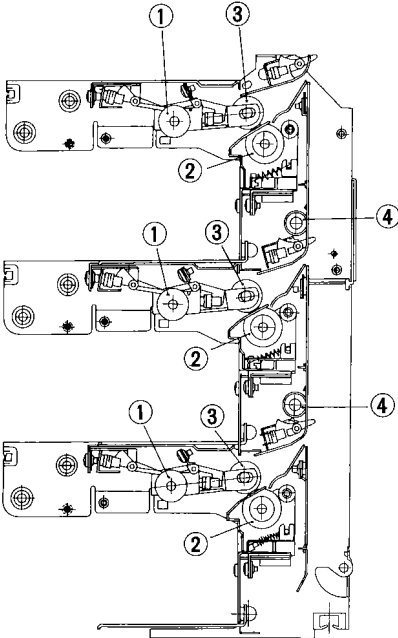


Figure 4-902

B. Pick-Up Assembly

1. Construction



- ① Pick-up roller ③ Feeding roller
- ② Separation roller ④ Vertical path roller

Figure 4-903 (cross section)

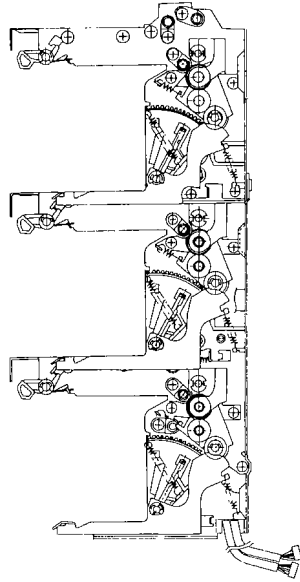
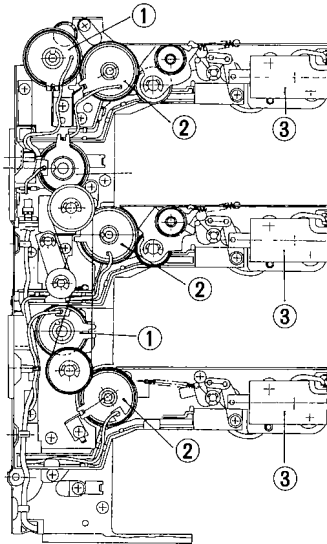


Figure 4-904 (front view)



- ① Vertical path roller clutch ③ Pick-up roller release solenoid
 ② Pick-up roller clutch

Figure 4-905 (rear view)

2. Detaching the Pick-Up Assembly

- 1) Slide out the cassettes from the cassette feeding unit.

Note:

Do not try to detach the pick-up assembly while a cassette is inside; otherwise, the lifter would become trapped, preventing the detachment of both cassette and pick-up assembly.

- 2) Detach the lower right cover.
- 3) Shift the lifter release arm ① in the direction of the arrow to lower the lifter.

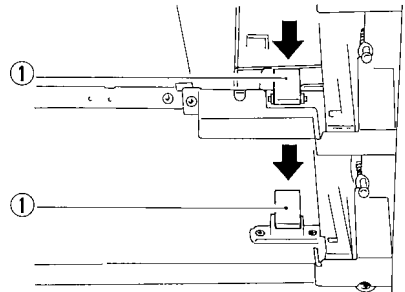


Figure 4-906

- 4) Detach the front left cover and front right cover.
- 5) Detach the front center cover and right cover.

- 6) Disconnect the five connectors ② of the lifter motor.
- 7) Remove the six screws ③, and detach the cassette lifter motor assembly ④.

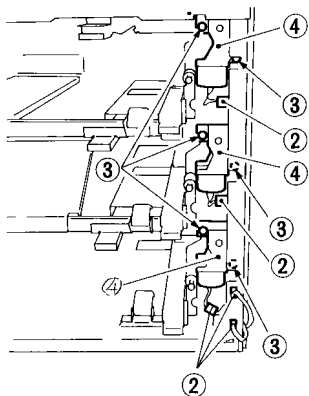


Figure 4-907

- 8) Remove the two screws ⑤, and detach the leaf spring ⑥.

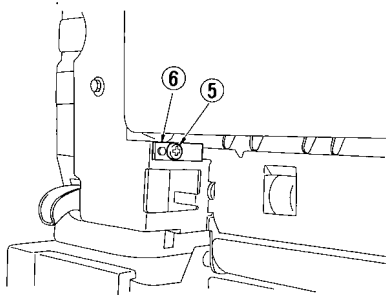


Figure 4-908

- 9) Disconnect the six connectors ⑦.
- 10) Remove the eleven screws ⑧, and detach the pick-up assembly reinforcement plate ⑨ and pick-up assembly.

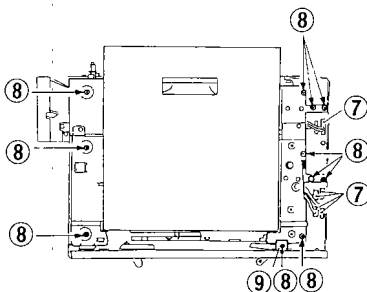


Figure 4-909

3. Detaching the Pick-Up Roller, Feeding Roller, and Separation Roller

You can detach the cassette feeding unit's pick-up roller, feeding roller, and separation roller in the same way as detaching each of these rollers from the copier; see A. "Pick-Up Assembly" of III. "PICK-UP/FEEDING SYSTEM."

4. Positioning the Pick-Up Roller Release Solenoid (pick-up assembly)

Attach the solenoid so that the pick-up roller arm ① butts against the upper stay ② when the plunger of the solenoid is pushed in.

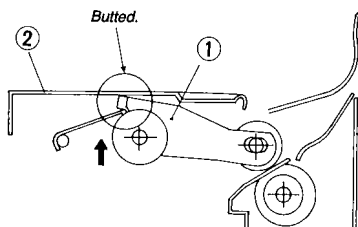


Figure 4-910

5. Adjusting the Left/Right Registration

- 1) Detach the front right cover, front center cover, and front left cover.
- 2) Loosen the screw ①, and adjust the position of the cassette hook plate ② so that the left/right registration is 0 ± 1.5 mm.

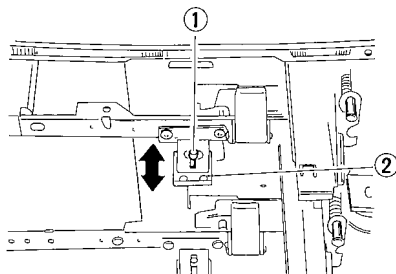


Figure 4-911

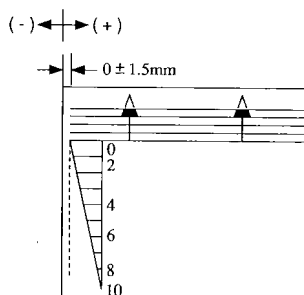


Figure 4-912

C. Detaching the Cassette Feeding Unit Motor Drive Assembly

- 1) Detach the rear cover.
- 2) Disconnect the three connectors ①.
- 3) Remove the three screws ②, and detach the cassette feeding unit motor drive assembly ③.

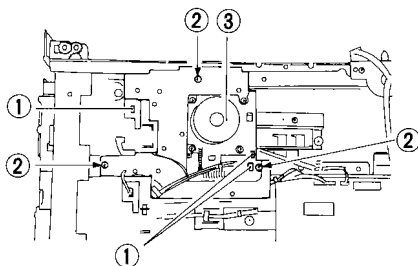


Figure 4-913

X. DUPLEXING TWO-CASSETTE FEEDING UNIT

A. Detaching the Duplexing Cassette Feeding Unit from the Copier

- 1) Disconnect the copier's power plug.
- 2) Disconnect the cassette feeding unit's connector ① from the copier.

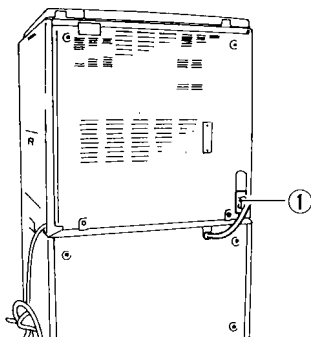


Figure 4-1000

- 3) Open the cassette feeding unit's right door.
- 4) Remove the three screws ②, and detach the leaf spring ③.

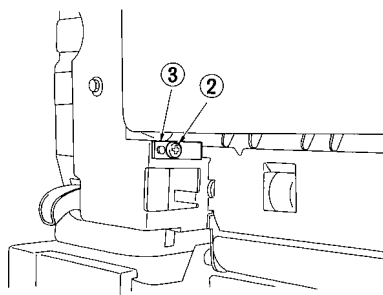


Figure 4-1001

- 5) Open the delivery vertical path assembly.
- 6) Hold the copier's four grips, and detach the copier from the cassette feeding unit.

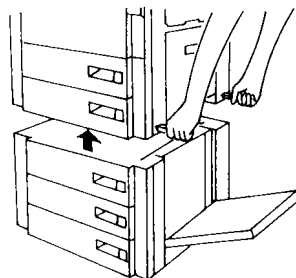


Figure 4-1002

B. Pick-Up Assembly

1. Detaching the Pick-Up Assembly

- 1) Slide out the cassettes from the cassette feeding unit.
- 2) Slide out the holding unit about 10 cm.

Note:

Do not try to detach the pick-up assembly with the holding tray or cassette inside; otherwise, the lifter would become trapped, preventing the detachment of both pick-up assembly and cassette.

- 3) Shift the lifter release arm ① in the direction of the arrow to shift down the lifter.

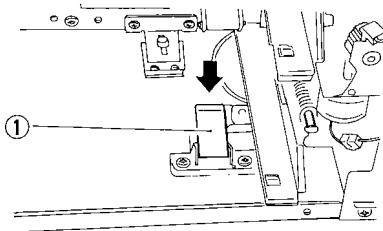


Figure 4-1003

- 4) Detach the front right cover.
- 5) Detach the right cover.
- 6) Disconnect the three connectors of the lifter motor.

- 7) Remove the four screws ③, and detach the cassette lifter motor assembly ④.

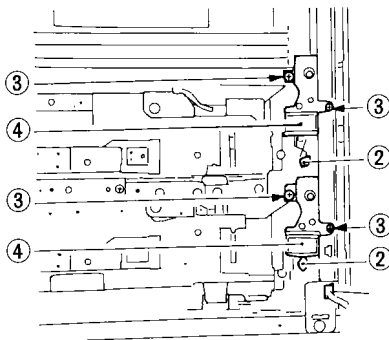


Figure 4-1004

- 8) Remove the screw ⑤, and detach the leaf spring ⑥.

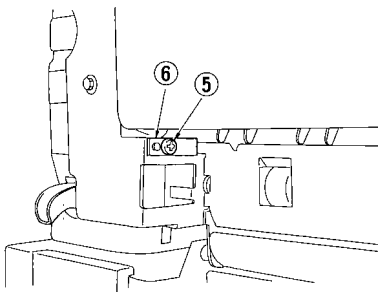


Figure 4-1005

- 9) Disconnect the five connectors ⑧.
- 10) Detach the copier's right cover.
- 11) Remove the eleven screws ⑨, and detach the pick-up assembly reinforcement plate and pick-up assembly.

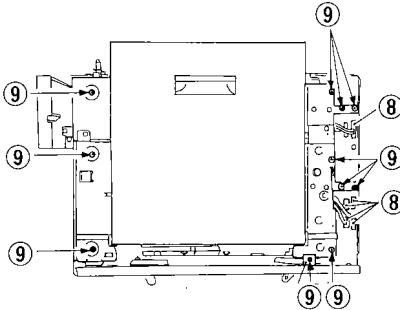


Figure 4-1006

Note:

After attaching the pick-up assembly to the copier, make sure that the feet of the fixing assembly is under the lifter release arm.

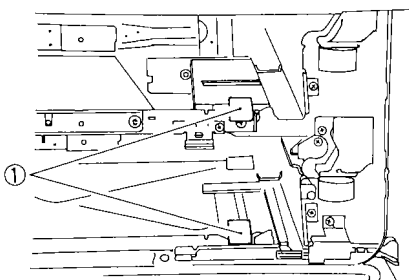


Figure 4-1007

2. Detaching the Pick-Up Roller, Feeding Roller, and Separation Roller

You can detach the cassette feeding unit's pick-up roller, feeding roller, and separation roller in the same way as detaching each of these rollers from the copier; see A "Pick-Up Assembly" of III. "PICK-UP/FEEDING SYSTEM."

However, you must go through the following steps to detach the feeding roller from the holding tray assembly:

- 1) Detach the pick-up assembly.
- 2) Remove the screw ①, and detach the pick-up roller arm bushing ②.

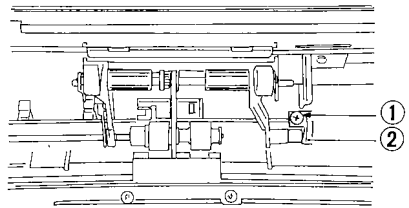


Figure 4-1008

- 3) Remove the stop ring ③ from the feeding roller.
- 4) Detach the belt ④ from the pulley.

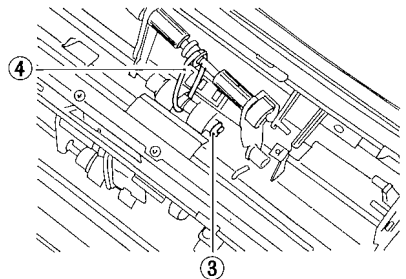


Figure 4-1009

- 5) Detach the feeding roller ⑤.

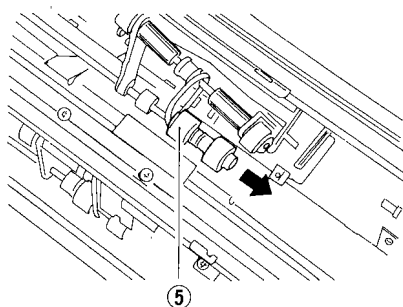


Figure 4-1010

3. Adjusting the Left/Right Registration for Pick-Up from a Cassette

- 1) Detach the front right cover.
- 2) Loosen the screw ①, and adjust the position of the cassette plate ② so that the left/right registration is 0 ± 1.5 mm.

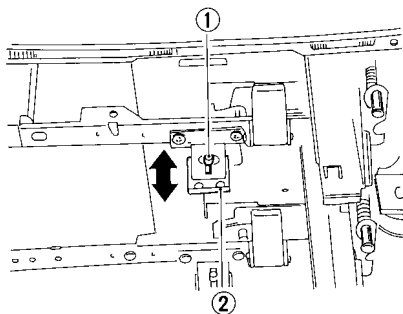


Figure 4-1011

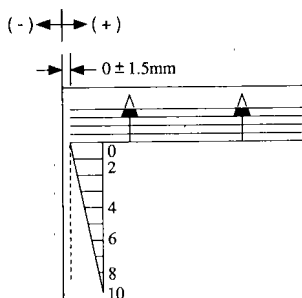


Figure 4-1012

4. Positioning the Pick-Up Roller Release Solenoids (pick-up assembly)

Attach the solenoid so that the pick-up roller arm ① butts against the upper stay ② when the plunger of the solenoid is pushed in.

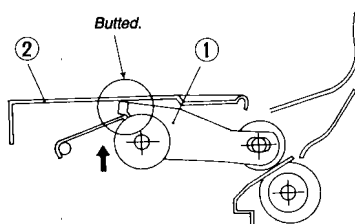


Figure 4-1013

C. Holding Tray Unit

1. Detaching the Holding Tray Unit

- 1) Slide out the cassettes.
- 2) Detach the front left cover and front right cover.
- 3) Remove the screw, and detach the stopper plate ② (left, right).

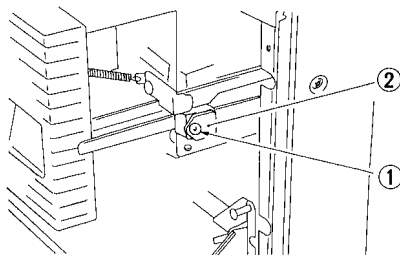


Figure 4-1014

2. Adjusting the Home Position of the Paper Guide

- 1) Select A4R or LTRR, and copy on the first side of a two-sided copy.
- 2) Slide out the holding tray to the front.
- 3) Measure the distance L of the paper guide ①.

A4R = 210 ± 0.3 mm

Letter-R = 216 ± 0.3 mm

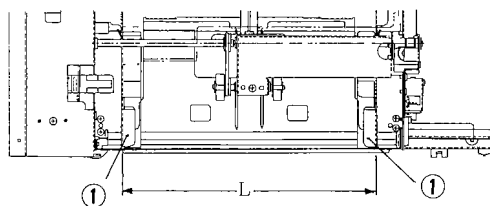


Figure 4-1016

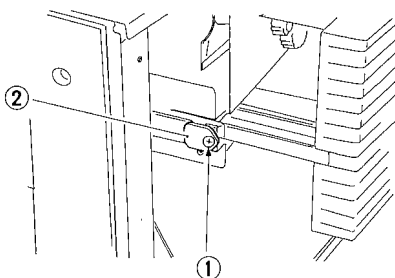


Figure 4-1015

- 4) If the measurement is not as specified, detach the front cover of the holding tray.

- 4) Slide out the holding tray unit to the front.

- 5) Loosen the screw ②, and turn the adjusting screw ③ to adjust the position of the paper guide home position sensor.

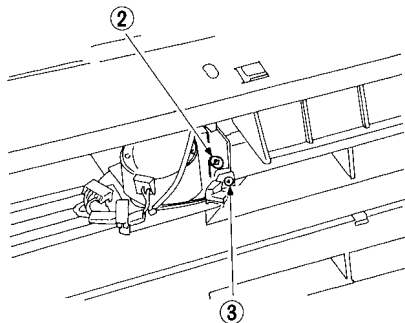


Figure 4-1017

3. Adjusting the Left/Right Registration for the Holding Tray Assembly

- 1) Pull out the holding tray unit.
- 2) Open the No. 2 feeding assembly.
- 3) Loosen the screw ①, and adjust the position of the paper guide so that it is 0 ± 2.0 mm.

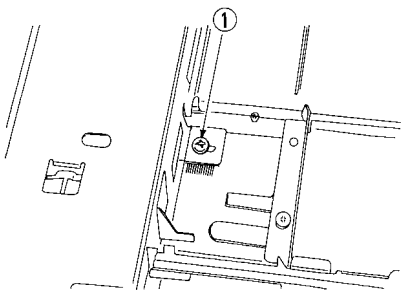


Figure 4-1018

Note:

Be sure to have finished adjusting the left-right registration for the cassette before starting the registration.

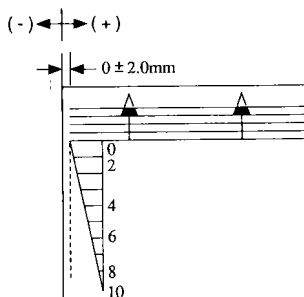


Figure 4-1019

4. Adjusting the Position of the Paper Roller Down Solenoid

Let the paper feeding roller drop on its own weight to the bottom of the holding tray.

In this condition, fix the solenoid ③ so that the distance between the lever ① and the arm ② is 1.5 ± 0.5 mm when the plunger of the solenoid is pushed.

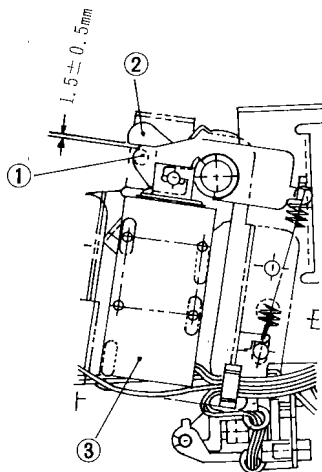


Figure 4-1020

5. Adjusting the Position of the Shutter Solenoid

Fix the solenoid ③ in position so that the gap between the shutter plate ① and the pin ② is 0.5 mm when the plunger of the solenoid is pushed.

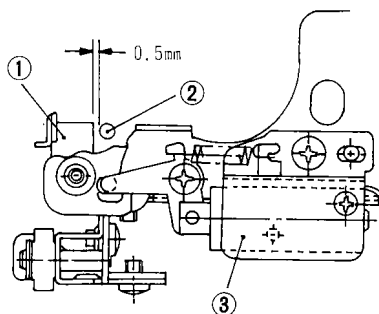


Figure 4-1021

6. Attaching the Timing Belt for the Paper Guide

Attach the gear ① with the paper guide opened fully.

Attach the timing belt on the gear ① and the pulley ②.

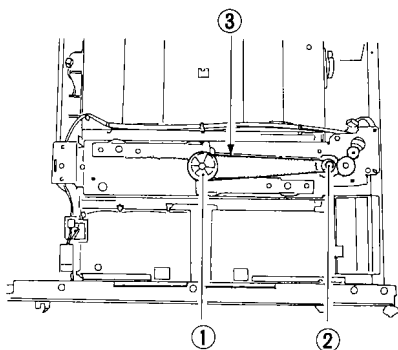


Figure 4-1022

7. Adjusting the Tension of the Paper Feeding Roller Drive Belt

Fix the idler ① in place while pushing it in the direction of the arrow with a force of 250 g.

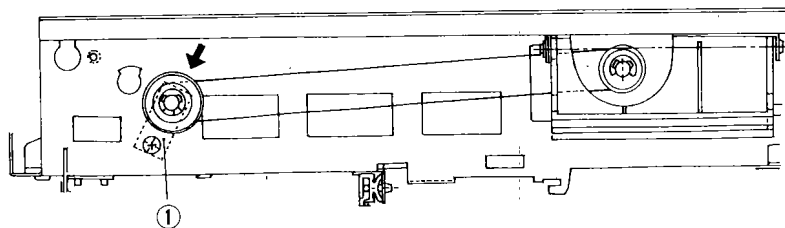


Figure 4-1023

8. Adjusting the Tension of the No. 2 Feeding Assembly Drive Belt

Fix the tension mount ① in place while pushing it in the direction of the arrow with a force of 450 ± 50 g.

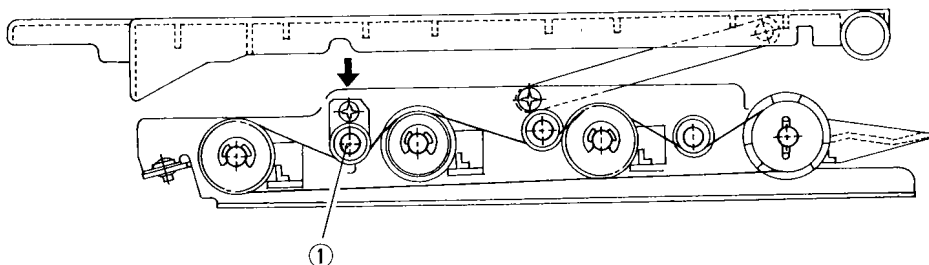


Figure 4-1024

D. Delivery Vertical Path Roller Assembly

1. Detaching the Delivery Vertical Path Roller Assembly

- 1) Detach the copier's upper left cover.
- 2) Detach the claw ① of the cassette feeding unit's left door, and detach the left door cover ②.

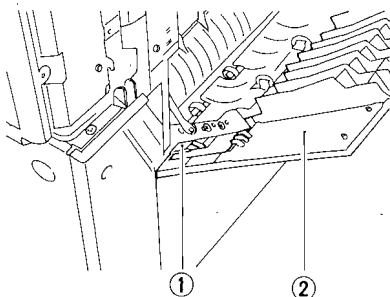


Figure 4-1025

- 3) Open the copier's front door and delivery door.
- 4) Detach the connector cover.
- 5) Disconnect the connector ③ for the delivery vertical path sensor.

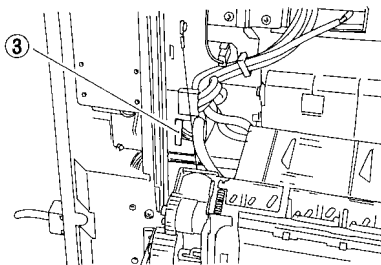


Figure 4-1026

- 6) Remove the clip used to keep the delivery vertical path roller assembly in place (left, right).

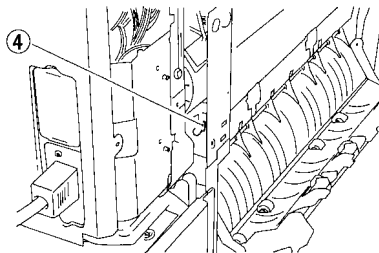


Figure 4-1027

- 7) Detach the delivery vertical path assembly ⑤ while pulling it down.

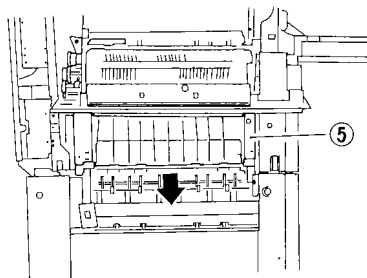


Figure 4-1028

2. Attaching the Delivery Vertical Path Roller Assembly

- 1) Open the reversing unit ① on the left side of the cassette feeding unit. (Open the reversing unit by hooking fingers on its both sides.)

Note:

When opening the reversing unit, do not touch the center of the guide.

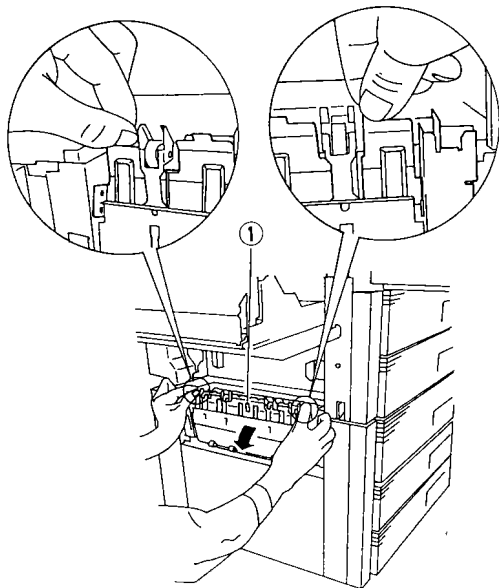


Figure 4-1029

- 2) Bring the timing belt ③ on the side of the delivery vertical path roller assembly ② to face the front, and insert the delivery vertical path unit from the bottom of the delivery assembly ④.

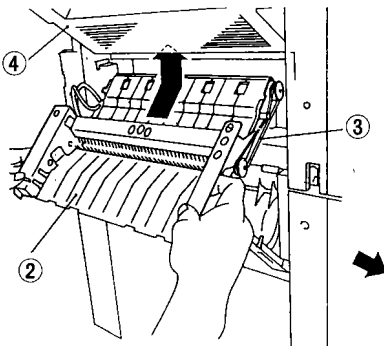


Figure 4-1030

Note:

Work while taking care so that the bottom of the roller assembly will not come into contact with the leaf spring ⑤ of the reversing unit spacer.

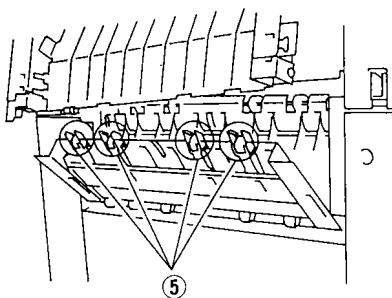


Figure 4-1031

- 3) Engage the claw ⑦ found at the top of the duplexing inlet guide of the cassette feeding unit with the cut-out ⑥ found at the front and rear of the bottom of the delivery vertical path roller assembly.

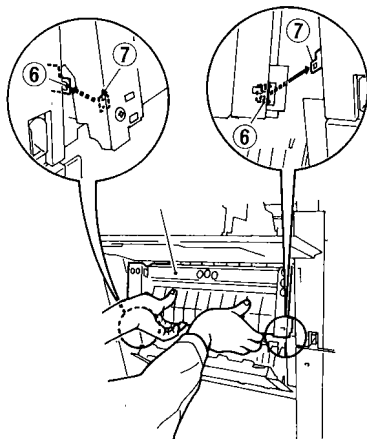


Figure 4-1032

At the time, make sure that the timing belt in front of the vertical path roller assembly does not interfere with the claw ⑥ found at the front. Further, make sure that the timing belt ⑨ is securely hooked on the gear.

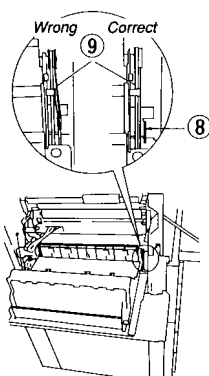


Figure 4-1033

- 4) Fit the two positioning spacers ⑪ in the two holes of the claws ⑩ of the delivery vertical path roller assembly; then, fix the vertical path unit in place.

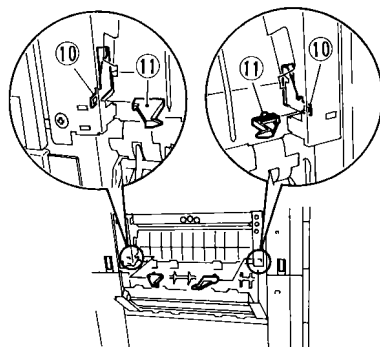


Figure 4-1034

- 5) Connect the connector to the delivery vertical path paper sensor.
6) Attach the connector cover.
7) Attach the door cover to the left door of the cassette feeding unit.

E. Reversing Unit

1. Detaching the Reversing Unit

- 1) Detach the cover from the cassette feeding unit's left door.
- 2) Detach the cassette feeding unit's left cover.
- 3) Disconnect the two connectors ①.
- 4) Remove the three screws ②, and detach the reversing unit.

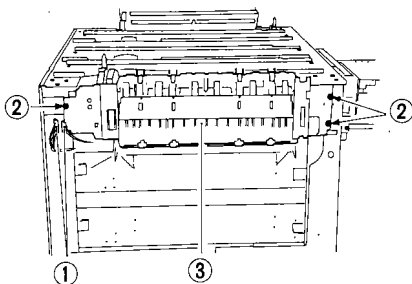


Figure 4-1035

2. Points to Note When Attaching the Reversing Unit

Attach the reversing unit as shown in the foregoing steps but in reverse.

After attaching the reversing unit, however, make sure that the reversing overlay unit plate is below the delivery vertical path assembly.

3. Adjusting the Position of the No. 2 Paper Deflector Drive Solenoid

Adjust the position of the solenoid so that the flapper lever ① butts against the reversing outer guide ② when the plunger of the solenoid is pushed in.

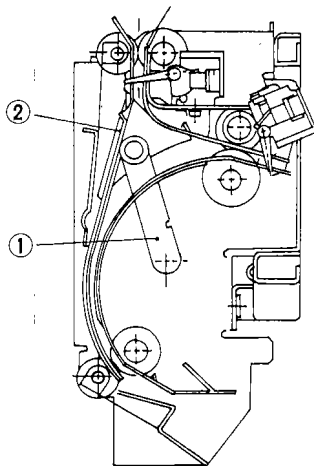


Figure 4-1036

F. Detaching the Cassette Feeding Unit Motor Drive Assembly

- 1) Pull out the holding unit to the front.
- 2) Detach the rear cover.
- 3) Detach the drive belt ①.
- 4) Disconnect the two connectors ②.
- 5) Remove the three screws, and detach the cassette feeding unit motor drive assembly.

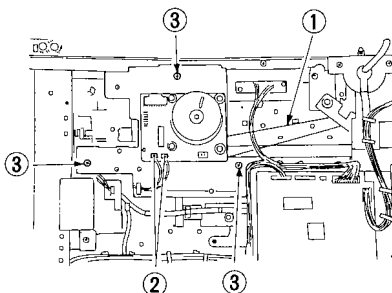


Figure 4-1037

I. SELECTING THE SITE

Keep the following in mind when selecting the site of installation. If possible, visit the user's prior to the delivery of the copier.

1. The electrical outlet must provide 100 ± 10 V, 15 A or more, and allow grounding of the copier.
2. The temperature of the site must be between 7.5° and 30°C and humidity, 10% and 80%; in particular, avoid areas near water faucets, water boilers, humidifiers, and refrigerators.
3. Avoid areas near open fires or areas subject to dust or ammonium gas. Make sure the site is free of direct rays of the sun; otherwise, provide curtains.
4. Make sure that the room is well ventilated.
5. Make sure the floor is level so that all feet of the copier or the pedestal will remain in contact with the floor.
6. Keep the copier at least 10 cm from all walls, and allow for enough space for machine operation.

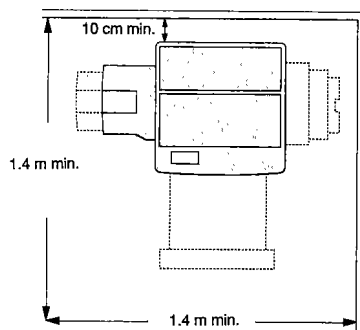


Figure 5-1

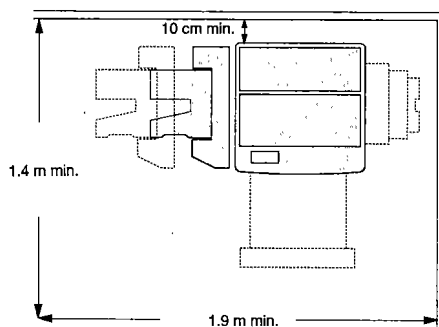
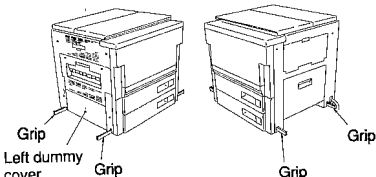
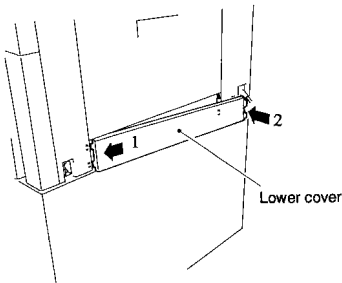


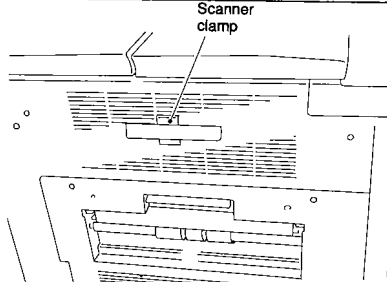
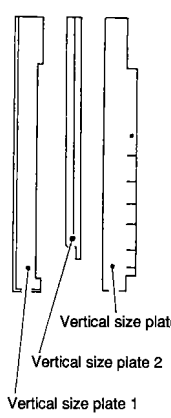
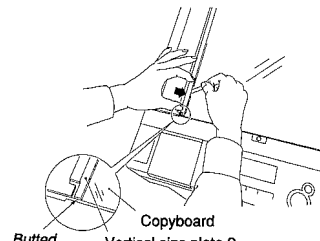
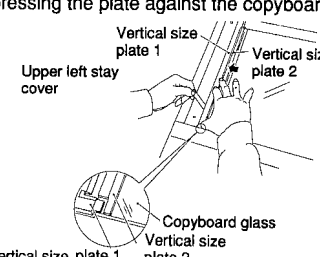
Figure 5-2 (with sorter)

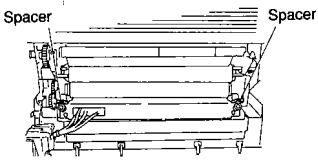
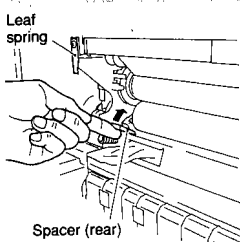
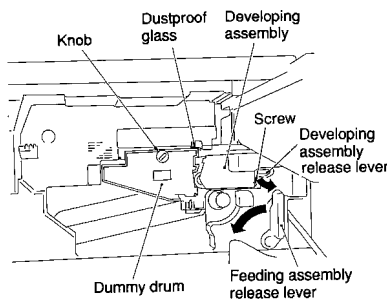
II. UNPACKING AND INSTALLING THE COPIER

When metal parts are moved from a cold place to a warm place, droplets of water often form on their surfaces. This phenomenon is called *condensation*, and can trigger various problems—in the case of a copier, condensation can cause blank copies. To avoid such problems, keep the copier inside its shipping box for at least one hour before installation if it has been brought from a cold place.

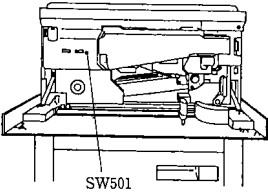
A. Unpacking and Removing Clamps

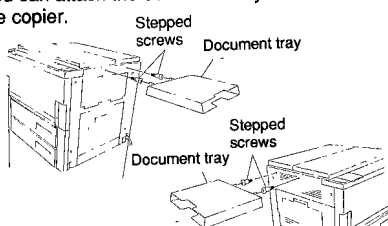
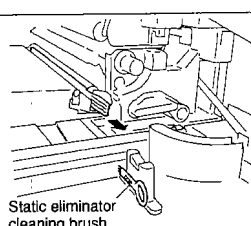
Step	Work	Remarks
1	Open the shipping box.	Make sure that two cassettes are set in the copier.
2	Remove the plastic cover, and lift the copier by its grips to place it on the pedestal; work in a group of three or more. Note: See the INSTALLATION PROCEDURE that comes with the pedestal or the cassette feeding unit used.	
3	Open the cardboard box, and take out its contents.	Make sure that none of the following is missing: • Copy tray • Work Instructions • Drum unit • Grounding wire • Toner cartridge • Lower right cover • Document tray screw (2) • Document tray • Vertical size plate (3 in a set)
4	Remove all exterior tape; slide out the cassettes, and remove all shock absorbers from the cassettes; then, set the cassettes in the copier.	Make sure that the Cassette Size Label is in cassette 1.
5	If you are not using a cassette feeding unit or a duplexing cassette feeding unit, attach the lower right cover. If you are using any of the cassette feeding units, you will not need the lower right cover.	

Step	Work	Remarks
6	Remove the tape from the scanner clamp found on the outside of the left cover; slide the clamp to the right, and pull it to the front to detach. Keep the clamp for possible relocation of the machine.	 Scanner clamp
7	Open the copyboard cover, and remove the protection sheet. Attach the vertical size plate to the copyboard glass. Note: If you are attaching a document feeder, use the vertical size plate that comes with the feeder.  Vertical size plate 3 Vertical size plate 2 Vertical size plate 1	1) Place vertical size plate 2 butted against the left end of the copyboard glass, and set it as shown below. While holding vertical size plate 2, remove the tape behind it and attach the plate.  Butted. Copyboard Vertical size plate 2 2) Attach vertical size plate 1 on the upper left stay cover. When attaching the plate, place it as shown below; butt it against the upper left stay cover, and remove the tape from behind while pressing the plate against the copyboard.  Vertical size plate 1 Upper left stay cover Copyboard glass Vertical size plate 2 3) Place vertical size plate 3 on the two plates that have been attached.

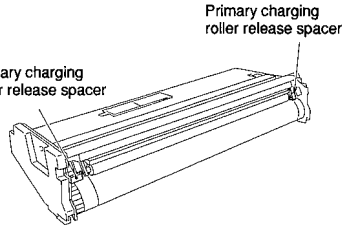
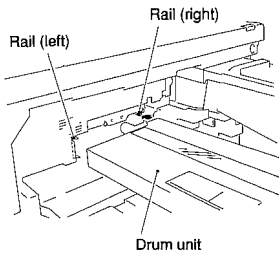
Step	Work	Remarks
8	Open the front cover, and open the delivery assembly.	 Spacer Spacer Note: When detaching the spacer at the rear, pay attention to the leaf spring of the fixing unit.  Leaf spring Spacer (rear)
9	Push up the spacer (front, rear) of the fixing roller in the direction of the arrow indicated in the drawing on the right until a click is heard.	
10	Remove the spacer. • You will not use the spacer.	
11	Close the delivery assembly.	
12	Release the developing assembly.	
13	Open the hopper to the front, release the feeding assembly; then, detach the knob, and detach the dummy drum from the copier. Thereafter, return the hopper to its original position.	 Knob Dustproof glass Developing assembly Screw Developing assembly release lever Dummy drum Feeding assembly release lever
14	Detach the connector cover and disconnect the connector; then, detach the developing assembly. Check the developing cylinder for scratches and dirt.	
15	Attach the developing assembly; then, connect the connector, attach the connector cover, and fit the screw.	
16	Lock the developing assembly.	
17	Make sure that the feeding assembly is released.	

B. Power-On/Warm-Up

Step	Work	Remarks
1	Connect the power plug.	Note: Make sure that the power supply is 100 $\pm$ 10 V and 15 A or more.
2	Insert the door switch actuator to turn on the power.	- Check that the ADD PAPER message comes on. - Press the numeric keypad and CLEAR key to make sure that the correct copy count is indicated.
3	Supply toner to the hopper according to the instructions on the Toner Supply Label attached behind the front door.	
4	Set the hopper.	Note: If the hopper is properly set in the copier, toner will not be supplied to the developing assembly, thereby locking the hopper motor.
5	Push the service mode switch (SW501) using a hex key. Select 'TONER_S' in service mode () () 4 () () , and press the  key and  key in sequence.	The copier operates about 6 min, during which toner is supplied from the hopper to the developing assembly. Be sure to finish steps 7 and 8 during the period. Note: Do not switch off the copier or remove the door switch actuator while the copier is operating.  SW501

Step	Work	Remarks				
6	Fit the stepped screws as shown in the drawing on the right, and attach the document tray.	You can attach the document tray to either side of the copier. 				
7	Attach the copy tray to the delivery assembly.					
8	Check that the operation in step 6 has been completed; then, release the developing assembly.					
9	Open the hopper.					
10	Pull out the static eliminator, and clean it using a cleaning brush; then, set the eliminator back into its original position.					
11	Set the drum unit.	See C. "Attaching the Drum Unit."				
12	Select 'APVC_MR' in service mode (ⓧ 4 ⓧ); then, press the [OK] key.	The copier executes initial rotation, and takes APVC measurements. Note: If you fail to execute 'APVC_MR' after attaching the drum unit, the primary corona voltage and scanning lamp drive voltage will not be controlled correctly.				
13	Press the RESET key once to enter service mode (ⓧ 3 ⓧ); select 'PRIMARY' and 'IP_OFST', and enter the settings recorded on the Drum Label. <table border="1" data-bbox="159 1209 308 1291"><tr><td>PRIMARY</td><td>xx</td></tr><tr><td>IP_OFST</td><td>yy</td></tr></table>	PRIMARY	xx	IP_OFST	yy	Entering the Settings Enter service mode (ⓧ 3 ⓧ), and select 'PRIMARY' using the [✓] key; PRIMARY: 00←[00]. Enter the setting indicated on the label using the numeric keypad; PRIMARY: 00←[xx]. Press the [OK] key to acknowledge the setting; PRIMARY: xx←[xx]. Press the KEY TO SELECT 'IP_OFST', and operate as above.
PRIMARY	xx					
IP_OFST	yy					
14	Set the settings in user mode and under 'OPTION' in service mode to suit the user's needs.	Set the settings under 'OPTION' in service mode (ⓧ 5 ⓧ).				
15	Set the hopper and feeding assembly, and lock the developing assembly.					

C. Attaching the Drum Unit

Step	Work	Remarks									
1	Take out the drum unit from its box, and detach the light-blocking sheet.										
2	Remove the primary charging roller release spacers.	 Primary charging roller release spacer Pay attention not to damage the surface of the drum or not to touch the primary charging roller.									
3	Set the drum unit in the copier, and fix it in place using the knob used to hold the dummy drum in place.	 Rail (left) Rail (right) Drum unit Be sure to insert the drum unit straight along the rail in the copier.									
4	Record the necessary information on the Label, and attach it to the drum unit cover.	<table border="1"> <tr> <td>date</td><td>counter</td><td>notes</td></tr> <tr> <td>date Datum</td><td>compteur Zähler</td><td>note Notiz</td></tr> <tr> <td></td><td></td><td></td></tr> </table>	date	counter	notes	date Datum	compteur Zähler	note Notiz			
date	counter	notes									
date Datum	compteur Zähler	note Notiz									

D. Checking the Images and Operations

Step	Work	Checks/Remarks
1	Remove the door switch actuator, and close the front door.	
2	Change the cassette size to suit the needs of the user. Switch the side guide to suit the paper size; then, put copy paper in the cassette, and adjust the rear guide to suit the end of the paper.	
3	Detach the cassette size plate from each cassette, and attach the correct Size Label for the new cassette sizes; return the size plate to its original position.	
4	Set the cassette in the copier.	Make sure that the ADD PAPER message goes off. • Press the keys except for the COPY START key on the control panel to check that all operations are correct.
5	Set the Test Sheet on the copyboard, and check the copy images.	• Make sure there is no abnormal sound. • Check the copy image for each default reproduction ratio. • Make sure that the specified number of copies is made. • If the copy image is not satisfactory, perform the Image Adjustment Basic Procedure.
6	Make copies in manual mode.	Make sure that the copy operations are normal.
7	Check the external covers for scratches and deformations.	
8	Clean up the site.	
9	Move the machine to the specified location.	Make sure that the machine is more or less level.
10	Record necessary information in the Service Sheet.	

Start installing options after completing all above installation work.

■ Points to Note When Handling the Photosensitive Drum after Installation

The copier's photosensitive drum is highly susceptible to light; mere exposure to room light can affect the drum enough to produce white spots or black lines on the copies. Keep the following in mind:

- Do not spend more than 5 min when removing jams.
- After detaching the drum unit from the copier during servicing work, be sure to protect it in the light-blocking sheet that came with the drum or fresh copy paper, and place the drum in a dark place.

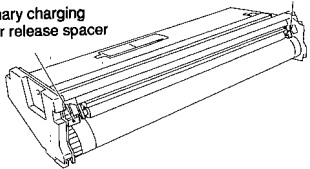
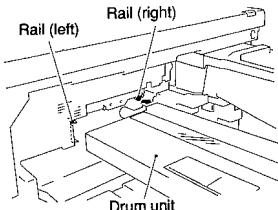
Do not touch the photosensitive drum or primary charging roller.

If you have soiled the surface of the drum inadvertently, wipe it using a flannel cloth coated with toner; do not use paper, lint-free or otherwise.

Do not dry wipe or use solvent to clean the drum.

III. REPLACING THE DRUM UNIT

Go through the following steps when replacing the drum unit.

Step	Work	Remarks									
1	Switch off the copier, and open the front door; then, detach the drum unit.										
2	Take out the drum unit from the box, and detach the light-blocking sheet.										
3	Detach the primary charging roller release spacer.	Primary charging roller release spacer  Pay attention not to damage the surface of the drum and not to touch the primary charging roller.									
4	Set the drum unit in the copier, and fix it in place using the knob used to hold the old drum unit in place.	Rail (left) Rail (right)  Drum unit Be sure to insert the drum unit straight along the rail in the copier.									
5	Record the necessary information in the Label, and attach the label to the drum unit cover.	<table><tr><td>date date</td><td>counter compteur</td><td>notes note</td></tr><tr><td>Datum</td><td>Zähler</td><td>Notiz</td></tr><tr><td></td><td></td><td></td></tr></table>	date date	counter compteur	notes note	Datum	Zähler	Notiz			
date date	counter compteur	notes note									
Datum	Zähler	Notiz									
6	Insert the door switch actuator, and switch on the copier.										
7	After the warm-up period is over, press the service mode switch (SW501) using a hex key to enter service mode (⊗ 3 ⊗), and select 'PRIMARY' and 'IP_OFST', and enter the settings recorded on the drum Label. Drum Label <table><tr><td>PRIMARY</td><td>xx</td></tr><tr><td>IP_OFST</td><td>yy</td></tr></table>	PRIMARY	xx	IP_OFST	yy	Entering the Settings Enter service mode (⊗ 3 ⊗), and select 'PRIMARY' using the ⊗ key; PRIMARY; 00←[00]. Enter the setting indicated on the label using the numeric keypad; PRIMARY; 00←[xx]. Press the [OK] key to acknowledge the setting; PRIMARY; xx←[xx]. Press the KEY TO SELECT 'IP_OFST', and operate as above.					
PRIMARY	xx										
IP_OFST	yy										
8	Select 'APVC_MR' in service mode (⊗ 4 ⊗), and press the OK key.	Note: If you fail to execute 'APVC_MR' after replacing the drum unit, the primary corona voltage and scanning lamp drive voltage will not be controlled correctly.									
9	Detach the door switch actuator, and close the front door.										

IV. RELOCATING THE COPIER

When relocating the copier after installation by truck or other means of transportation, perform the following work:

Step	Work	Checks	Remarks
1	Move the lens to the DIRECT position.		The DIRECT position of the lens refers to where the lens stops after warm-up following power-on.
2	Take out the drum unit.	Keep the drum unit in a box for transport.	
3	Fix the scanner in place.		
4	Tape the corona assemblies and feeding assembly release lever in place so that they will not be displaced by vibration.		
5	Tape the front door and delivery assembly in place.		
6	Place one sheet of A3 copy paper on the copyboard glass, and tape the copyboard cover.		

V. CONTROL CARD V

- 1) Switch off the copier, and open the front door.
- 2) Detach the control panel.
- 3) Detach the control card slot face plate ①.
- 4) Detach the screw ② from the face plate.

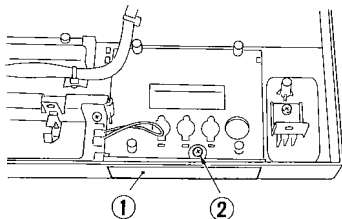


Figure 5-3

- 5) Peel off the protection sheet from the transparent sheet.
- 6) Place the transparent sheet ③ behind the display.

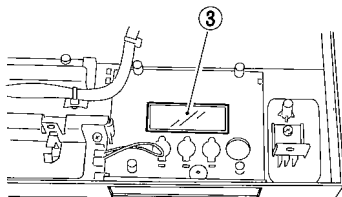


Figure 5-4

- 7) Peel off the protection sheet from the display of Control Card V.
- 8) Fix Control Card V ⑤ to the control panel using the four screws ④ that come with Control Card V.

Note:

Be sure to lead the harness of Control Card V and the grounding wire ⑦ under Control Card V as shown in Figure 5-5. Otherwise, they can come into contact with the scanner cable.

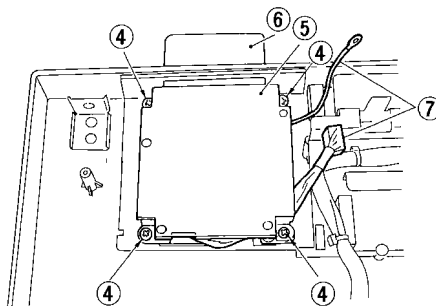


Figure 5-5

Further, make sure that the connector ⑧ for the printer is centered over the hole.

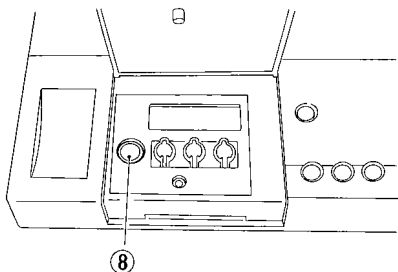


Figure 5-6

- 9) Attach the control guide ⑨ of Control Card V to the copier's control panel.

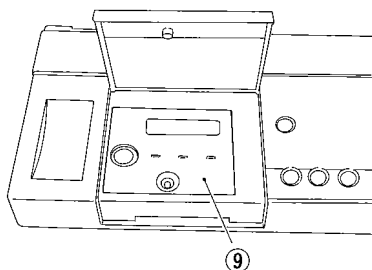


Figure 5-7

- 10) Disconnect the shorting connector ⑩

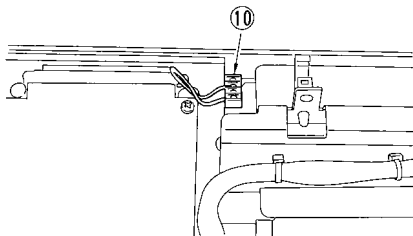


Figure 5-8

- 11) Connect the 4P connector ⑪ of Control Card V and the 4P connector on the control panel.

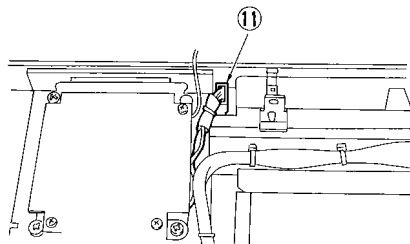


Figure 5-9

- 12) Attach the control panel; and make sure that the scanner cable is not in contact with the harness.
13) Fix the grounding wire ⑫ of Control Card V to the control panel mount ⑭ using the screw ⑬ that comes with Control Card V.

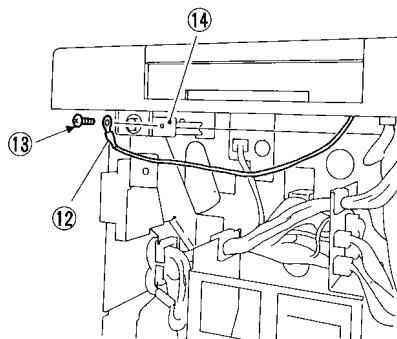


Figure 5-10

- 14) Switch on the copier, and check the operation of Control Card V.

VI. INSTALLING THE COUNTER FOR OPTIONS

- 1) Open the front door, and detach the inside left cover.
- 2) Connect the copier's cable ③ to the connector (②; J65) on the options counter PCB ①.

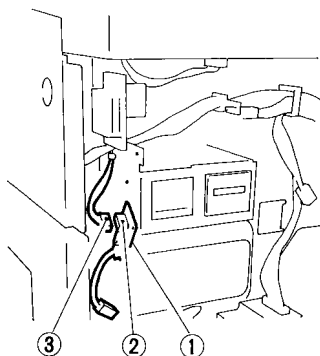


Figure 4-11

- 3) Attach the options counter PCB ① to the copier using two locking supports ④.

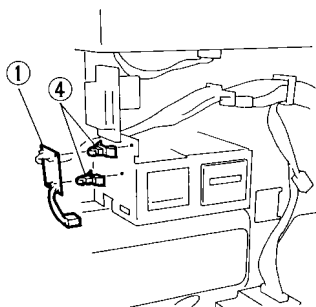


Figure 4-12

- 4) Lead the cable ⑤ of the options counter through the hole in the mount; then, fix the connector ⑥ in place.

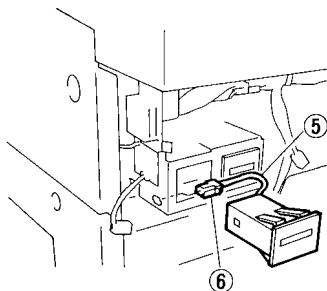


Figure 4-13

- 5) Push in the options counter ⑦ into the hole in the mount, and fix it in place.

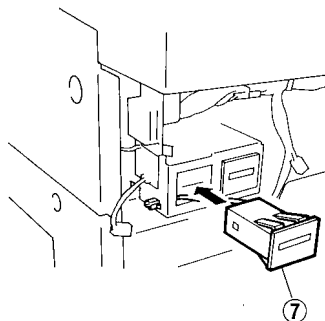


Figure 4-14

- 6) Connect the cable from the options counter PCB ① to the connector on the options counter.

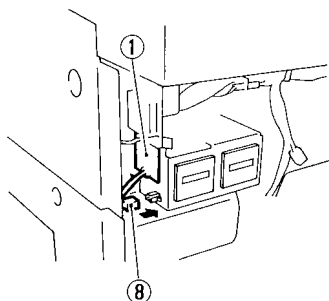


Figure 4-15

- 7) Set the DIP switch (SW9) on the options counter PCB for appropriate counter modes.

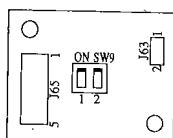


Figure 4-16

DIP SW		Copy modes for count-up
1	2	
ON	ON	counts are taken when large-size copies are made
OFF	ON	counts are taken when small-size copies are made
ON	OFF	counts are taken when two-sided copies are made (at time of delivery)

Table 4-1

I. PERIODICALLY REPLACED PARTS

Some parts of the copier must be replaced on a periodical basis to ensure a specific level of machine performance; they must be replaced even in the absence of exterior wear or damage. Schedule the replacement so that they coincide with a service visit.

A. Periodically Replaced Parts

As of Dec. 1992

No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
1	Static eliminator	FF5-1460	1	60,000	
2	Scanner cooling fan filter	FC1-4217-000	1	180,000	or 1 yr

Note:

The values are estimates only and subject to change based on future data.

II. DURABLES

Some parts of the copier may have to be replaced over the period of machine warranty because of wear or damage; replace them when they prove to be faulty.

A. Copier

As of Dec. 1992

No.	Parts name			Parts No.	Qty	Life (copies)	Remarks
1	Transfer roller			FG5-1756-000	1	60,000	
2	Scanning lamp (100/115 V)			FH7-3242-000	1	100,000	
	Scanning lamp (220/240 V)			FH7-3244-000	1	100,000	
3	Pick-up roller (rear)			FF5-1220-000	2	120,000	copies processed
4	Pick-up roller (front)			FF5-1221-000	2	120,000	copies processed
5	Separation roller			FB1-7060-000	2	120,000	copies processed
6	Feeding roller			FB1-7061-000	2	120,000	copies processed
7	Manual feed separation pad			FB1-8578-000	2	120,000	copies processed
8	Fixing cleaning belt			FA3-8908-000	1	200,000	
9	Upper fixing roller			FB1-7956-000	1	200,000	
10	Lower fixing roller			FB1-7957-000	1	200,000	
11	Upper fixing separation claw			FB1-7075-000	5	200,000	
12	Lower fixing separation claw			FA2-9037-000	4	200,000	
13	Insulating bush (fixing assembly)			FB1-6823-000	2	200,000	
14	Front blank exposure lamp PCB			FG5-1788-000	1	200,000	
15	Fixing heater	Main	100V	FH7-4350-000	1	300,000	
			115V	FH7-4352-000			
			220/240V	FH7-4354-000			
		Sub	100V	FH7-4356-000	1	300,000	
			115V	FH7-4358-000			
			220/240V	FH7-4360-000			
16	Thermistor			FH7-7285-000	1	300,000	
17	Developing cylinder			FB1-8119-000	1	300,000	

Note:

The values are estimates only and subject to change based on future data.

B. Duplexing Two-Cassette Feeding Unit

As of Dec. 1992

No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
1	Pick-up roller (rear)	FF5-1220-000	2	120,000	copies processed
2	Pick-up roller (front)	FF5-1221-000	2	120,000	copies processed
3	Separation roller	FB1-7061-000	2	120,000	copies made
4	Feeding roller	FB1-7060-000	2	120,000	copies processed

Note:

The values are estimates only and subject to change based on future data.

C. Three-Cassette Feeding Unit

As of Dec. 1992

No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
1	Pick-up roller (rear)	FF5-1220-000	3	120,000	copies processed
2	Pick-up roller (front)	FF5-1221-000	3	120,000	copies processed
3	Separation roller	FB1-7061-000	3	120,000	copies made
4	Feeding roller	FB1-7060-000	3	120,000	copies processed

Note:

The values are estimates only and subject to change based on future data.

III. SCHEDULED SERVICING

Note:

1. As a rule, provide scheduled servicing every 200,000 copies.
2. Check the Service Record before setting off for a visit; take parts if replacement is expected.

No.	Work	Checks	Remarks
1	Meet the person in charge	Check the general condition.	
2	Record the copy count.	Check faulty copies.	
3	Make test copies. • DIRECT, REDUCE, EN-LARGE page separation	Check the following: a. image density b. dirt on white background c. clarity of characters d. leading edge non-image width e. left/right margin f. fixing, registration, dirt on back of copy g. abnormal noise h. counter operation	standard: 2.5 ± 1.5 mm (DIRECT/one side) standard: 2.5 ± 1.5 mm (DIRECT/one side)
4	Clean the static eliminator and feeding assembly.		Clean the static eliminator using the brush that comes with the copier.
5	Clean the fixing assembly and delivery assembly. • paper guide • separation claw (upper, lower) • static eliminating brush		solvent solvent
6	Provide scheduled servicing to suit the number of copies made; see p. 6-1.		
7	Clean the copyboard cover and copyboard glass.		
8	Make test copies.		
9	Make sample copies.		
10	Put sample copies in order, and clean up the site of installation.		
11	Record the final copy count.		
12	Enter necessary information in the Service Record.		

IV. TABLE OF SCHEDULES SERVICING

Note:

Do not use solvents or oils other than those specified herein.

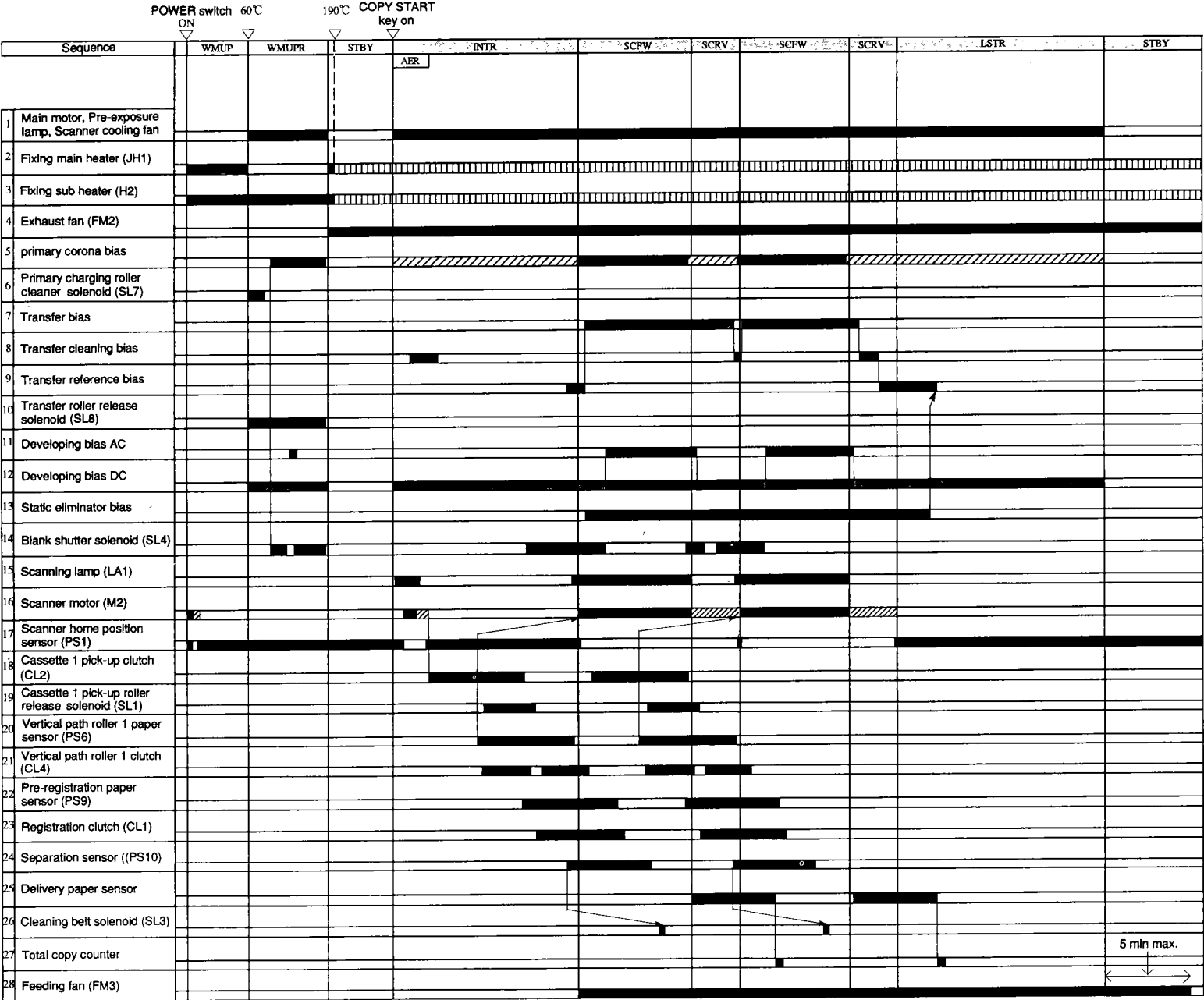
A. Copier

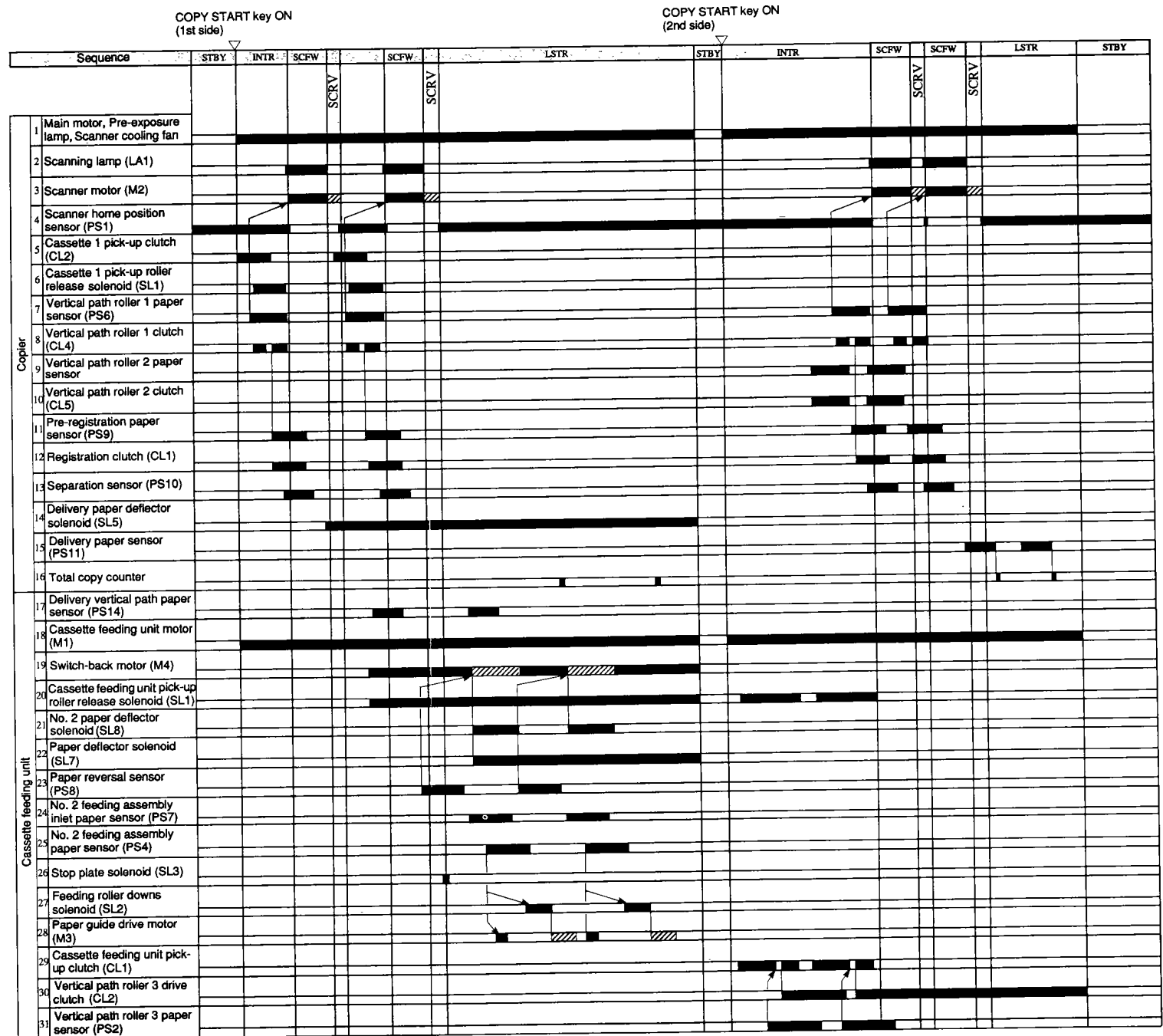
△ : Clean ● : Replace ☆ : Oil □ : Adjust ◎ : Inspect or Clean

Unit	Item	every 20,000	every 60,000	every 180,000	every year	Remarks
Externals	Copyboard glass	△				Use alcohol.
Scanner drive assembly	Scanner rail		△			Use alcohol.
Feeding assembly	Transfer guide assembly	△				Use a cloth moistened with water.
	Feeding belt	△				
	Feeding assembly mount	△				
Optical path assembly	Scanning reflector	△				Use a blower brush; if necessary, use alcohol.
	Scanning side reflector	△				
	No. 1 through No. 6 mirrors	△				
	Lens	△				
	Dustproof glass	△				
	Document size identification unit	△				
	Scanner cooling fan filter			●	●	Replace every 180,000 copies or 1 yr.
Corona assembly	Static eliminator	△	●			
Fixing assembly	Upper fixing roller	△				Use cleaning oil.
	Lower fixing roller	△				
	Separation claw (upper, lower)	△				Use solvent.
	Paper guide	△				

A. GENERAL TIMING CHART

A4, 2 copies, DIRECT, one-sided, pick-up from cassette 1





ACBIAS AC DEVELOPING BIAS DRIVE command
 AE AE SENSOR OUT PUT signal
 AEREF AE SENSOR REFERENCE signal
 BIASS DEVELOPING BIAS VOLTAGE DETECTION signal
 BLB-A BLANK MOTOR (BACK) DRIVE PULSE command A
 BLB-B BLANK MOTOR (BACK) DRIVE PULSE command B
 BLBHP BLANK SHUTTER (BACK) HOME POSITION signal
 BLF-A BLANK MOTOR (FRONT) DRIVE PULSE command A
 BLF-B BLANK MOTOR (FRONT) DRIVE PULSE command B
 BLFHP BLANK SHUTTER (FRONT) HOME POSITION signal
 BLHLD BLANK MOTOR HOLD command
 BPWM DEVELOPING BIAS DC COMPONENT DRIVE command
 C1LTP CASSETTE 1 LIFTER POSITION signal
 C1PD CASSETTE 1 PAPER DETECTION signal
 C1PW CASSETTE 1 PAPER WIDTH SIZE signal
 C1SZ1 CASSETTE 1 PAPER LENGTH SIZE signal 1
 C1SZ2 CASSETTE 1 PAPER LENGTH SIZE signal 2
 C2LTP CASSETTE 2 LIFTER POSITION signal
 C2PD CASSETTE 2 PAPER DETECTION signal
 C2PW CASSETTE 2 PAPER WIDTH SIZE signal
 C2SZ1 CASSETTE 2 PAPER LENGTH SIZE signal 1
 C2SZ2 CASSETTE 2 PAPER LENGTH SIZE signal 2
 C3LMD CASSETTE 3 LIFTER MOTOR DRIVE command
 C3LTP CASSETTE 3 LIFTER POSITION signal
 C3PD CASSETTE 3 PAPER DETECTION signal
 C3PPW CASSETTE 3 PAPER WIDTH SIZE signal

C3RP CASSETTE 3 PICK-UP ROLLER RELEASE SOLENOID DRIVE command
 C3SZ1 CASSETTE 3 PAPER LENGTH SIZE signal 1
 C3SZ2 CASSETTE 3 PAPER LENGTH SIZE signal 2
 C4LMD CASSETTE 4 LIFTER MOTOR DRIVE command
 C4LTP CASSETTE 4 LIFTER POSITION signal
 C4PD CASSETTE 4 PAPER DETECTION signal
 C4PPW CASSETTE 4 PAPER WIDTH SIZE signal
 C4PRL CASSETTE 4 PICK-UP ROLLER RELEASE SOLENOID DRIVE command
 C4PU CASSETTE 4 PICK-UP ROLLER CLUTCH DRIVE command
 C4SZ1 CASSETTE 4 PAPER LENGTH SIZE signal 1
 C4SZ2 CASSETTE 4 PAPER LENGTH SIZE signal 2
 C4VRD VERTICAL PASS ROLLER 4 CLUTCH DRIVE command
 C5LMD CASSETTE 5 LIFTER MOTOR DRIVE command
 C5LTP CASSETTE 5 LIFTER POSITION signal
 C5PD CASSETTE 5 PAPER DETECTION signal
 C5PPW CASSETTE 5 PAPER WIDTH SIZE signal
 C5PRL CASSETTE 5 PICK-UP ROLLER RELEASE SOLENOID DRIVE command
 C5PU CASSETTE 5 PICK-UP ROLLER CLUTCH DRIVE command
 C5SZ1 CASSETTE 5 PAPER LIFTER SIZE signal 1
 C5SZ2 CASSETTE 5 PAPER LIFTER SIZE signal 2
 C5VRD VERTICAL PASS ROLLER 5 CLUTCH DRIVE command
 CBCC COPYBOARD COVER CLOSED command
 CL1D CASSETTE 3 PICK-UP ROLLER CLUTCH DRIVE command
 CL1D REGISTRATION ROLLER CLUTCH DRIVE command
 CL2D VERTICAL PASS ROLLER 3 CLUTCH DRIVE command
 CL2D CASSETTE 1 PICK-UP ROLLER CLUTCH DRIVE command
 CL3D CASSETTE 2 PICK-UP ROLLER CLUTCH DRIVE command

B. LIST OF SIGNALS/COMMAND

1. Signals and Command

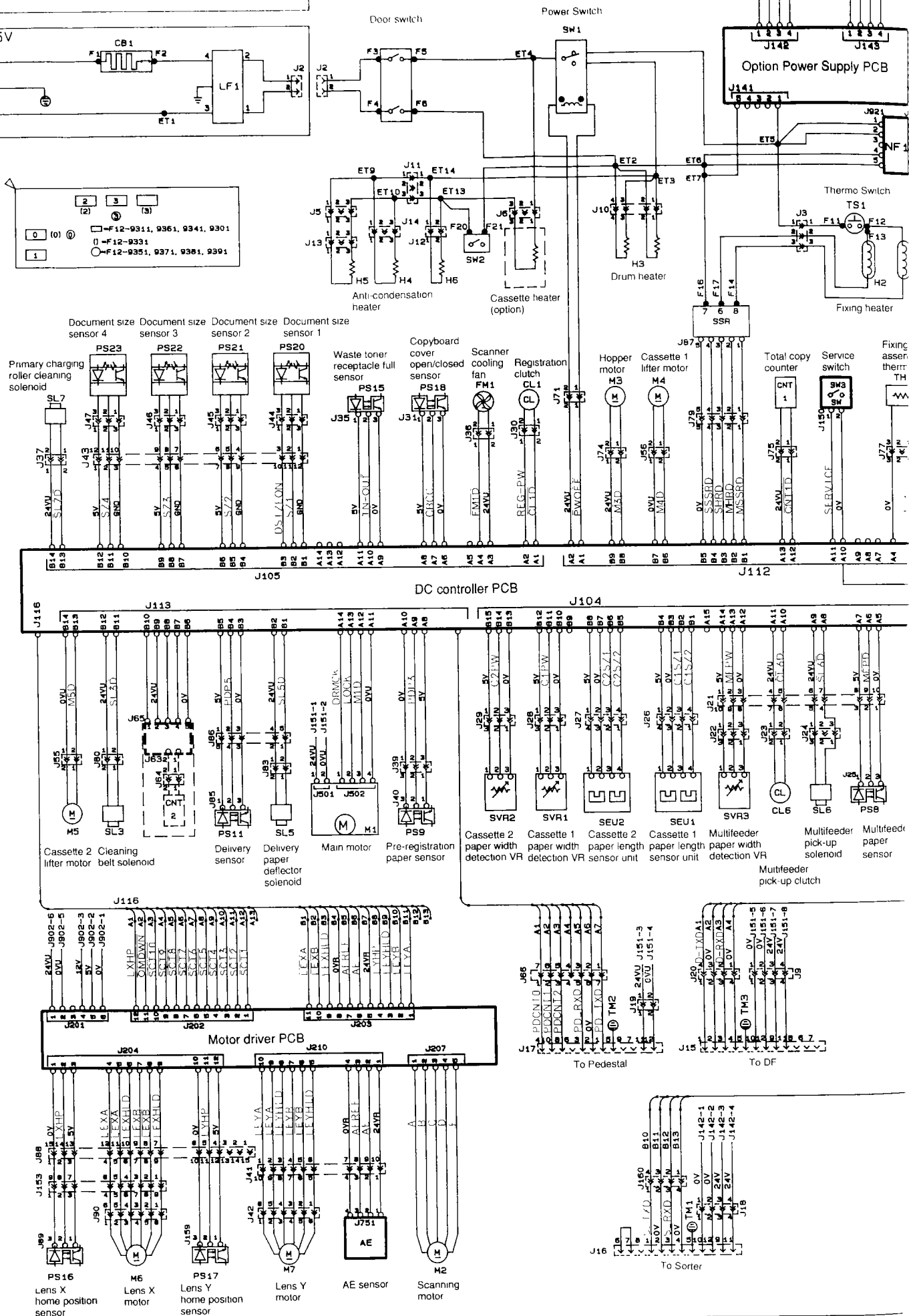
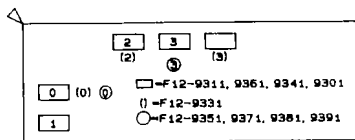
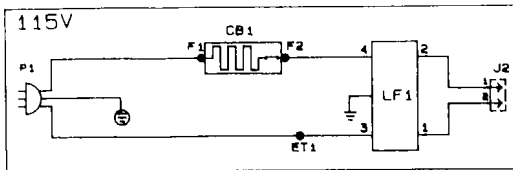
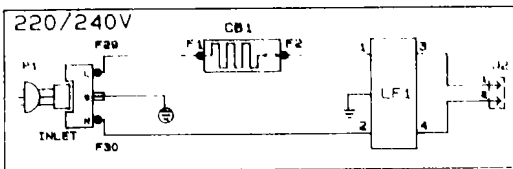
CL4D VERTICAL PASS ROLLER 1 CLUTCH DRIVE command
 CL5D VERTICAL PASS ROLLER 2 CLUTCH DRIVE command
 CL6D MULTIFEED ROLLER CLUTCH DRIVE command
 CL9D DEVELOPING CLUTCH DRIVE command
 DRMCK MAIN MOTOR CLOCK signal
 CNT1D TOTAL COUNTER DRIVE command
 CS1 COUNTER DRIVE SWITCHING signal 1
 CS2 COUNTER DRIVE SWITCHING signal 2
 FM1D SCANNER COLLING (FM1) DRIVE command
 FM2D EXHAUST FAN (FM2) DRIVE command
 FM3D FEEDER FAN (FM4) DRIVE command
 HVLIMIT STATIC ELIMINATOR BIAS LEAKAGE DETECTION signal
 HVPWM HIGH VOLTAGE TRANSFORMER DRIVE PULSE command
 HVTS TRANSFER BIAS VOLTAGE DETECTION signal
 JCTL STATIC ELIMINATOR BIAS SWITCHING command
 LEXA LANS X MOTOR DRIVE PULSE command A
 LEXB LANS X MOTOR DRIVE PULSE command B
 LEXHLD LENS X MOTOR HOLD command
 LEYA LENS Y MOTOR DRIVE PULSE command A
 LEYB LENS Y MOTOR DRIVE PULSE command B
 LEYHLD LENS Y MOTOR HOLD command
 LFDO LEFT DOOR OPEN signal
 LOCK MAIN MOTOR LOCK signal
 LSLD PAPER DEFLECTOR L SOLENOID DRIVE command
 LXHP LENS X HOME POSITION signal
 LYHP LENS Y HOME POSITION signal
 MPWM MAIN TRANSFORMER DRIVE PULSE command
 M3D HOPPER MOTOR DRIVE command
 M4D CASSETTE 1 LIFTER MOTOR DRIVE command
 M5D CASSETTE 2 LIFTER MOTOR DRIVE command
 MFPD MULTIFEEDER PAPER DETECTION signal
 MFPW MULTIFEEDER PAPER WIDTH SIZE signal
 MHRD MAIN HEATER DRIVE command

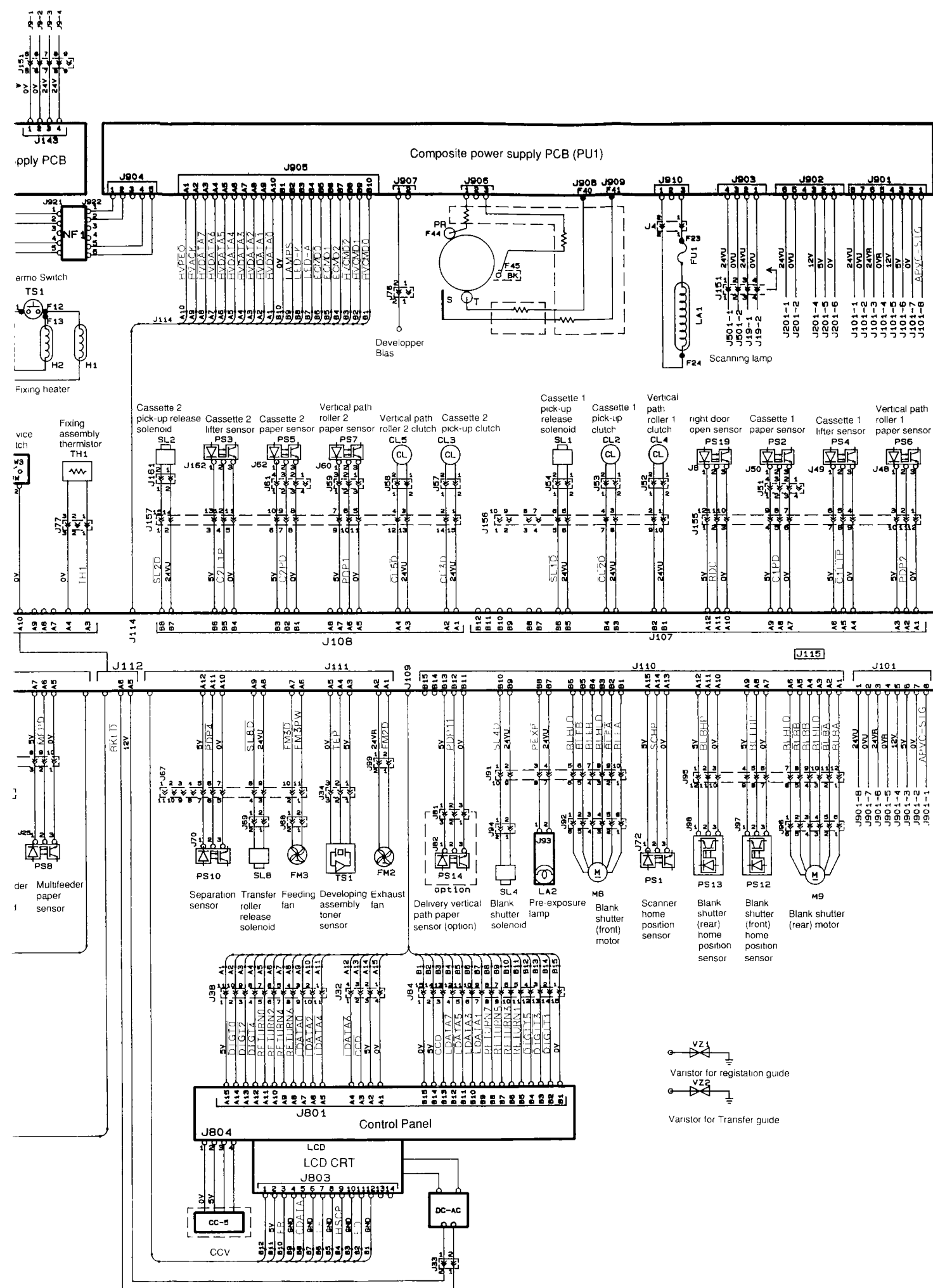
MMCLK	MAIN MOTOR CLOCK signal
M1D	MAIN MOTOR DRIVE command
MSLD	PAPRE DIFLECTOR M SOLENOID DRIVE command
MSSRD	MAIN SSR DRIVE COMMAND
PDP1	PAPER DETECTION signal 1
PDP2	PAPER DETECTION signal 2
PDP3	PAPER DETECTION signal 3
PDP4	PAPER DETECTION signal 4
PDP5	PAPER DETECTION signal 5
PDP6	PAPER DETECTION signal 6
PDP7	PAPER DETECTION signal 7
PDP8	PAPER DETECTION signal 8
PDP9	PAPER DETECTION signal 9
PDP10	PAPER DETECTION signal 10
PDP11	PAPER DETECTION signal 11
PDP12	PAPER DETECTION signal 12
PDP6	PAPER DETECTION signal 6
PEDMD	PEDISTAL MOTOR DRIVE command
PEXP	PRE-CONDITIONNIG EXPOSURE LAMP LIT command
PLOCK	PEDESTAL MOTOR LOCK signal
PRDOO	PEDESTAL RIGHT DOOR OPEN signal
PWOFF	POWER SWITCH OFF command
RDC	RIGHT DOOR OPEN signal
RDSO	PAPER FEED ROLLER DOWN SOLENOID DRIVE command
SCDP	SCANNER ATLEADING EGDE OPSISION signal
SCFW	SCANNER FORWARD command
SCMD	SCANNER MOTOR DRIVE command
SCMHL	SCANNER MOTOR HOLD command
SCRC0	REPRODUCTION RATIO SELECT command 0
SDRC1	REPRODUCTION RATIO SELECT command 1
SCT1 ~ 10	SCANNER MOTOR DRIVE PULSE command
SERVICE	SERVICE MODE SWITCH signal
SHRD	SUB HERTER DRIVE command
SL1D	CASSETTE 1 PICK-UP ROLLER RELEASE SOLENOID DRIVE command
SL2D	CASSETTE 2 PICK-UP ROLLER PRLEASE SOLENOID DRIVE command
SL3D	CLEANING BELT SOLENOID DRIVE command
SL3D	PAPER STOP PLATE DOWN command

SL3DU	PAPER STOP PLATE UP command
SL4D	BLANK SHUTTER SOLENOID DRIVE command
SL5D	PAPER DIFLECTOR SOLENOID DRIVE command
SL6D	MUTIFEED ROLLER SOLENOID DRIVE command
SL7D	PRIMARY CHARGING ROLLER CLEANING SOLENOID DRIVE command
SL8D	PAPER DIFLECTOR 2 SOLENOID DRIVE command
SL8D	TRANSFER CHARGING ROLLER RELEASE SOLENOID DRIVE command
SSLD	PAPER DIFLECTOR S SOLENOID DRIVE command
SSSLD	PAPER DIFLECTOR SS SOLONOID DRIVE command
SSSRD	SUB SSR DRIVE command
SZ1	DOCUMENT SIZE DETECTION signal 1
SZ2	DOCUMENT SIZE DETECTION signal 2
SZ3	DOCUMENT SIZE DETECTION signal 3
SZ4	DOCUMENT SIZE DETECTION signal 4
T-CC	TRANSFER BIAS (2) DRIVE command
T-FW	TRANSFER BIAS (1) DRIVE command
T-PRCT	TRANSFER BIAS ERROR DETECTION signal
T-REV	TRANSFER BIAS (3) DRIVE command
TEP	TONER EMPTY signal
TH1	FIXING THERMISTOR signal
TN-OUT	TONER OUT signal

2. List of Abbreviations

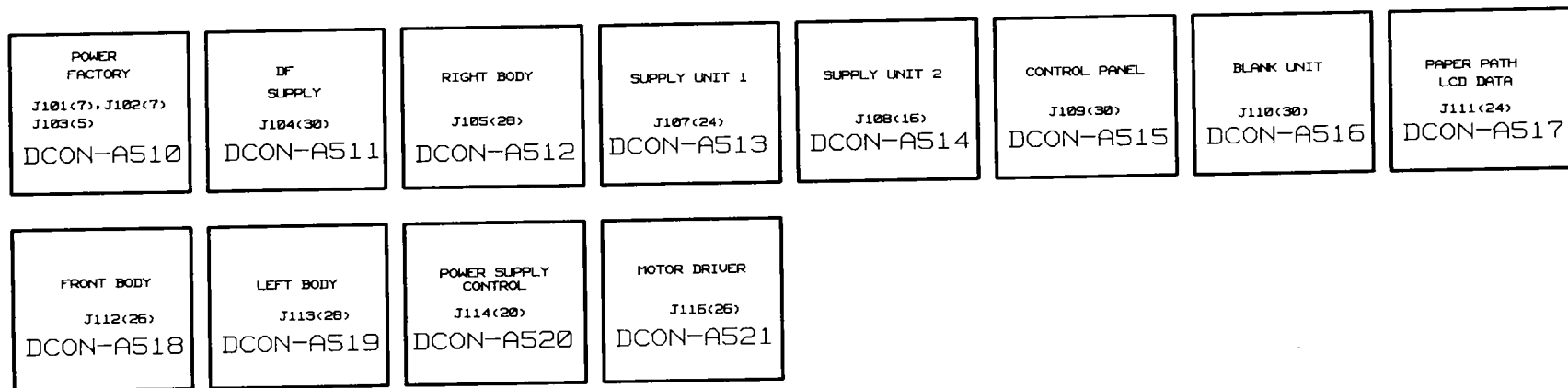
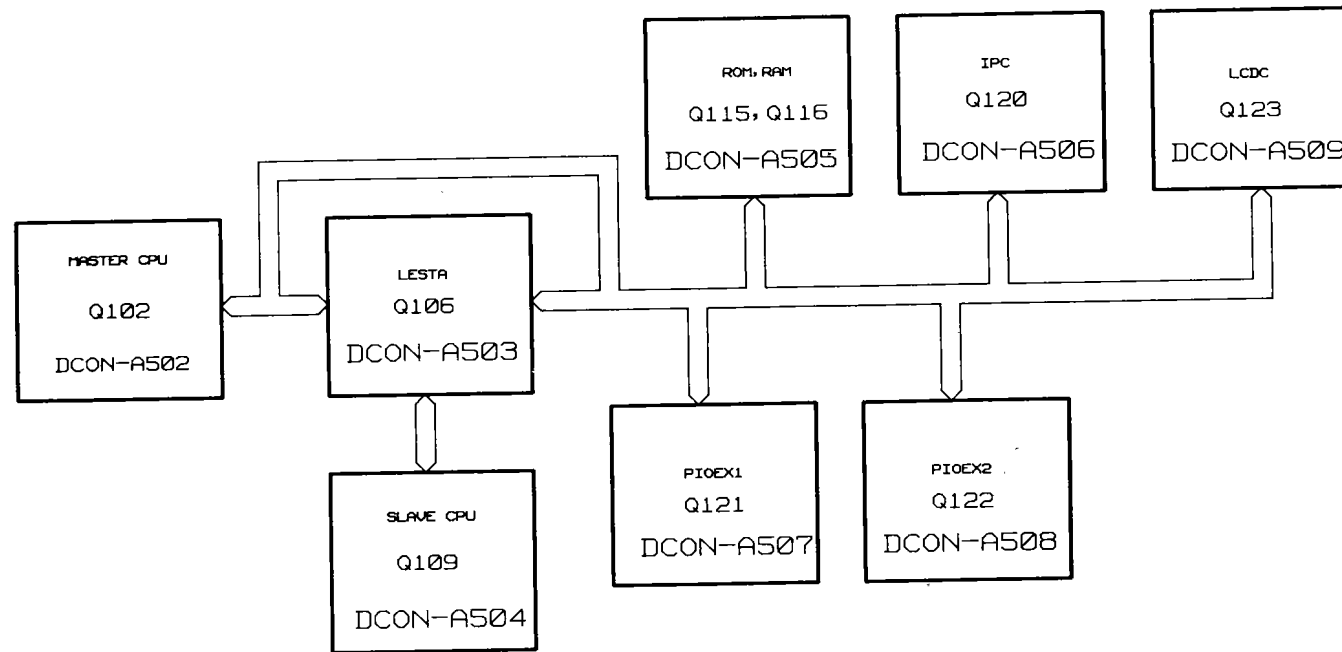
AER	AE ROTATION
FEDR	FEED ROTATION
INTR	INTIAL ROTATION
LSTR	LAST ROTATION
SCFW	SCANNER FORWARD
SCRV	SCANNER REVERSE
STBY	STANDBY
WMUP	WARM UP
WMUPR	WARM UP ROTATION





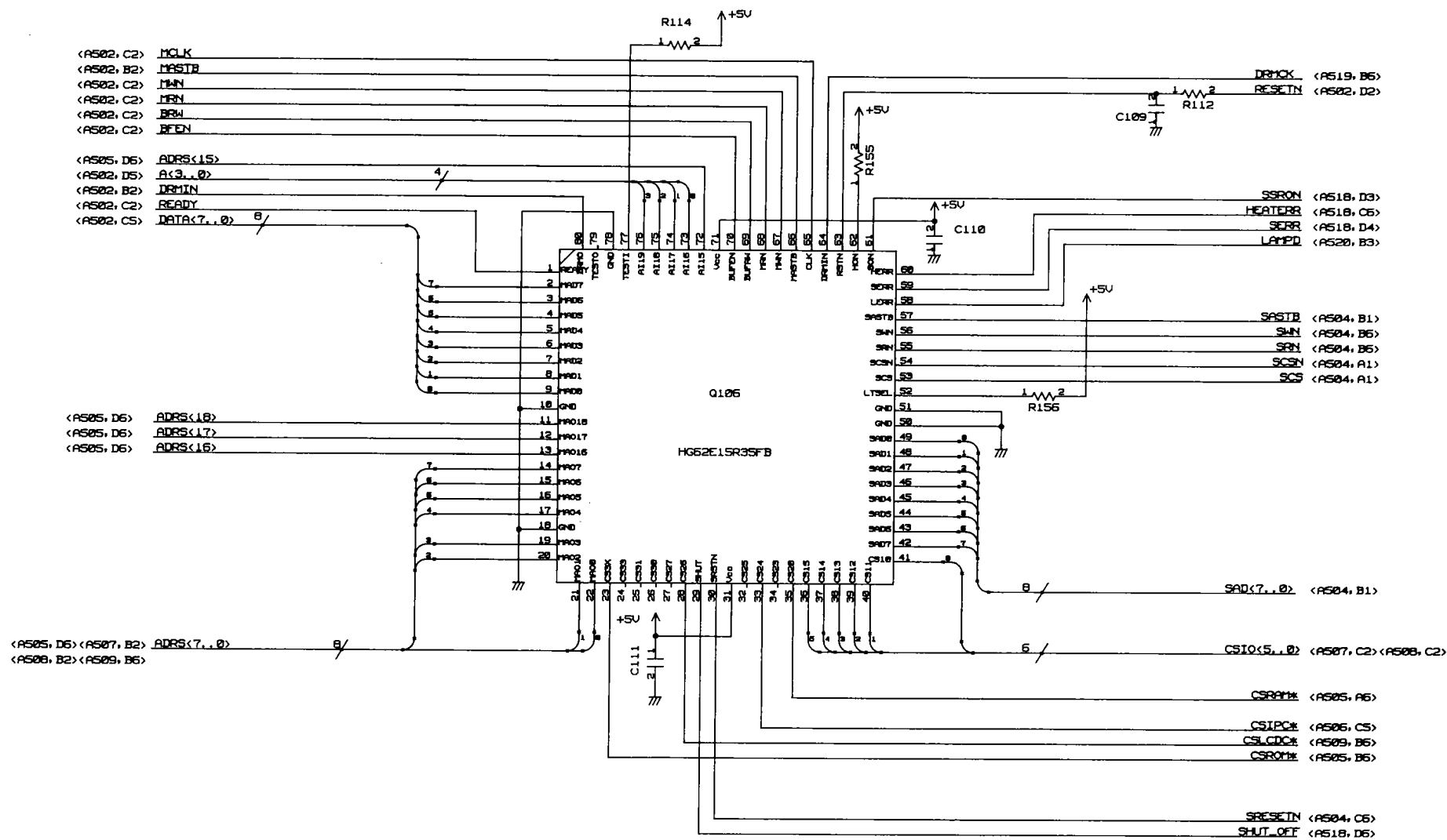
D. DC CONTROLLER CIRCUIT DIAGRAM

DC CONTROLLER (A501)

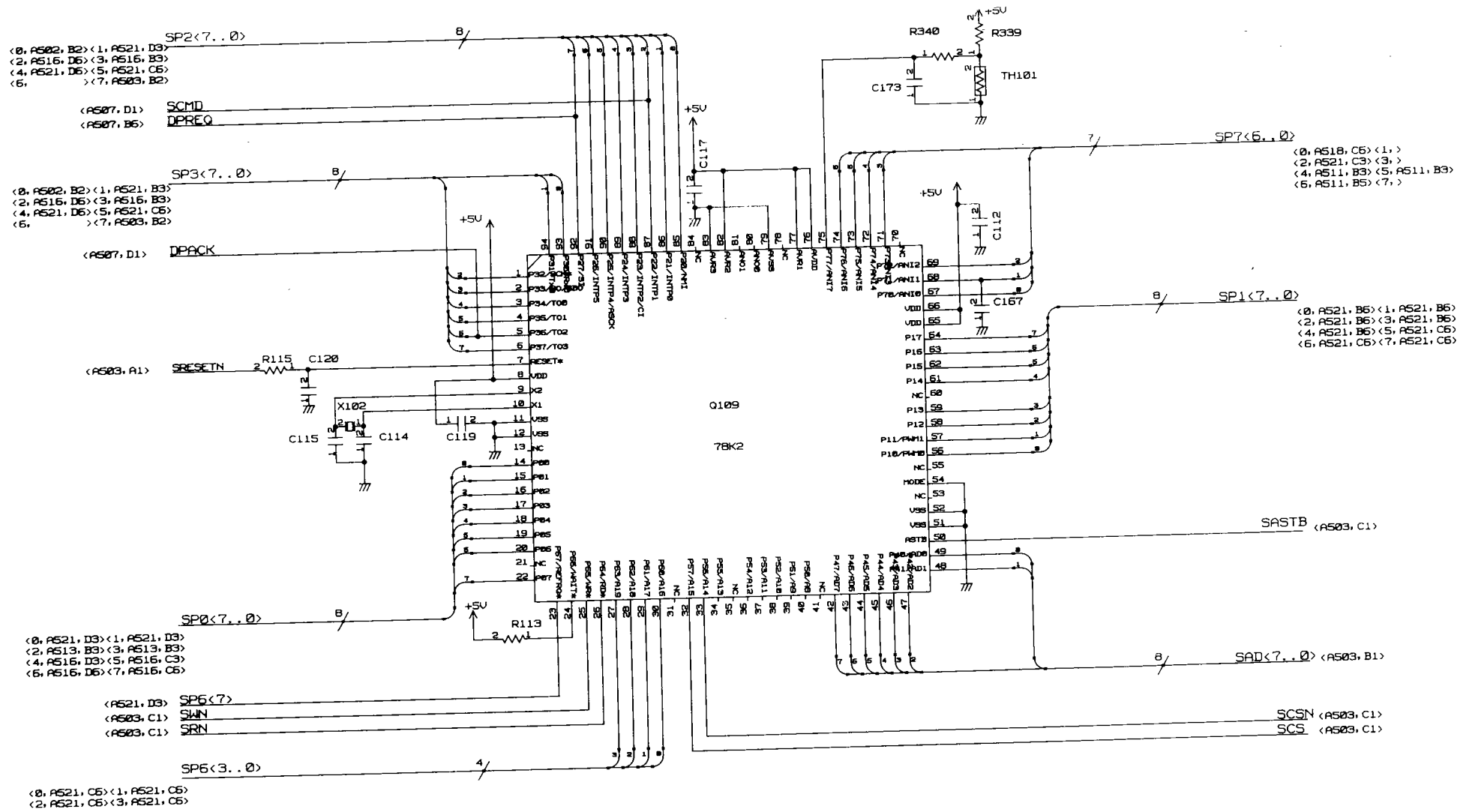


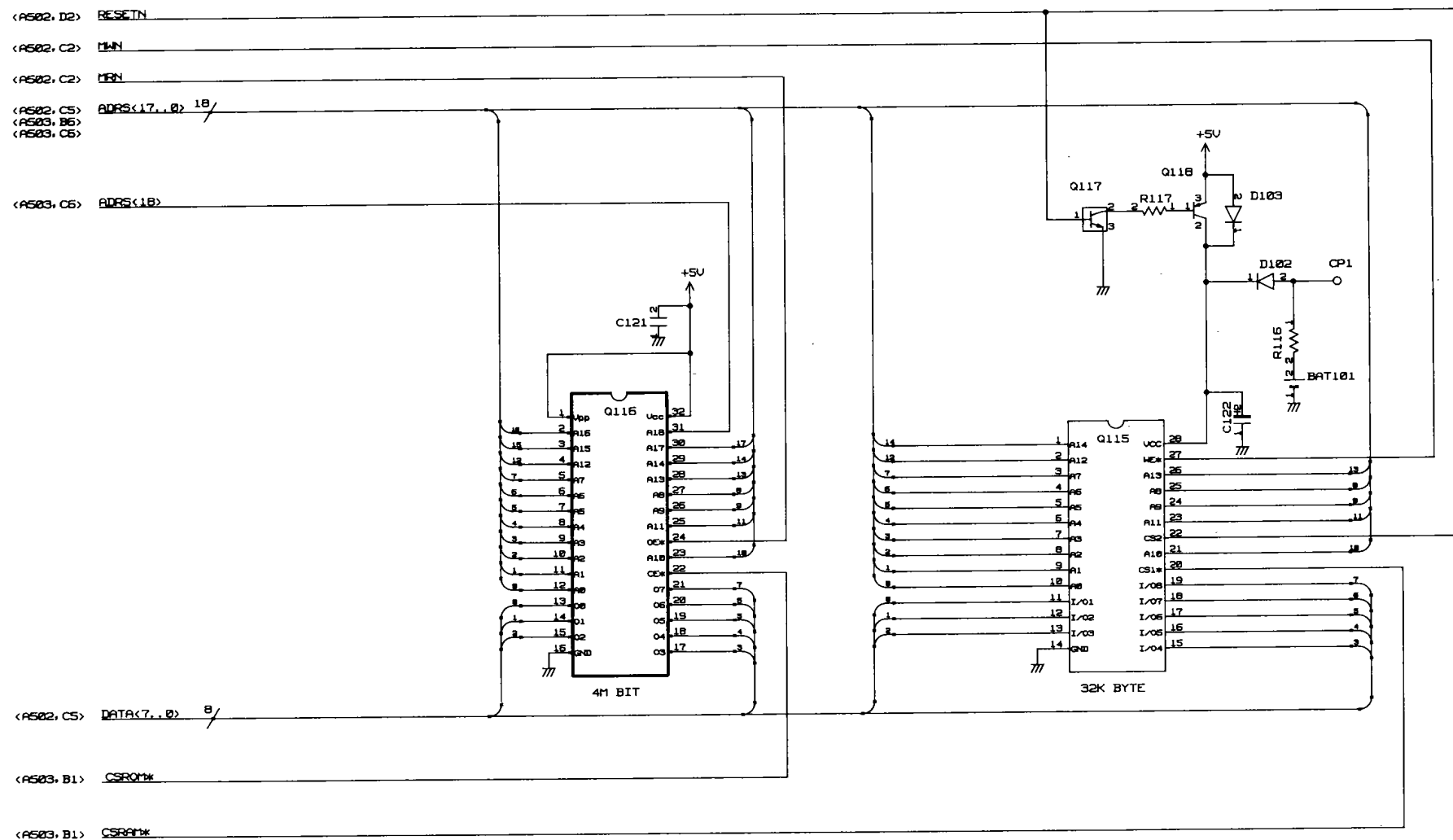
A-8



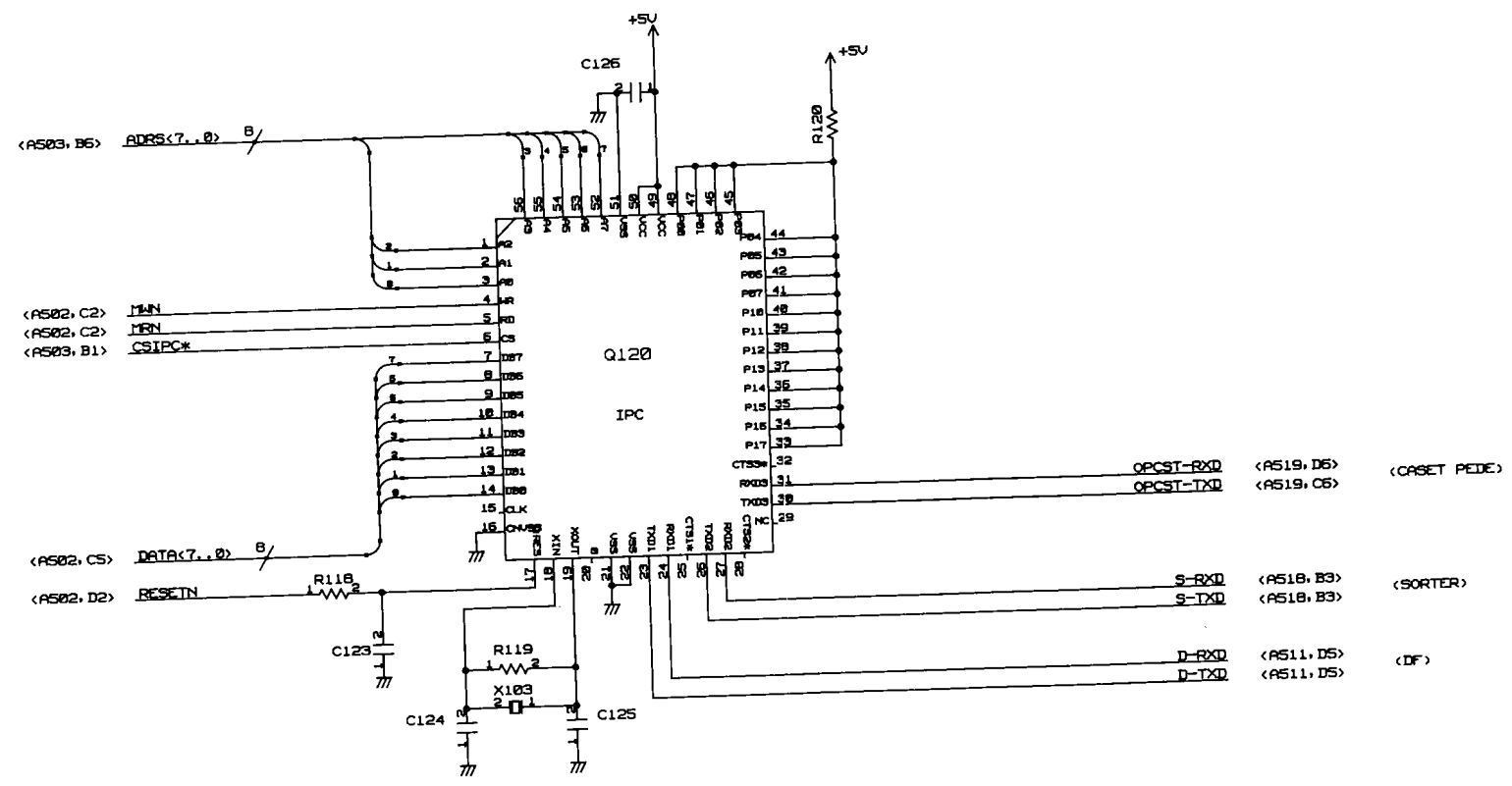


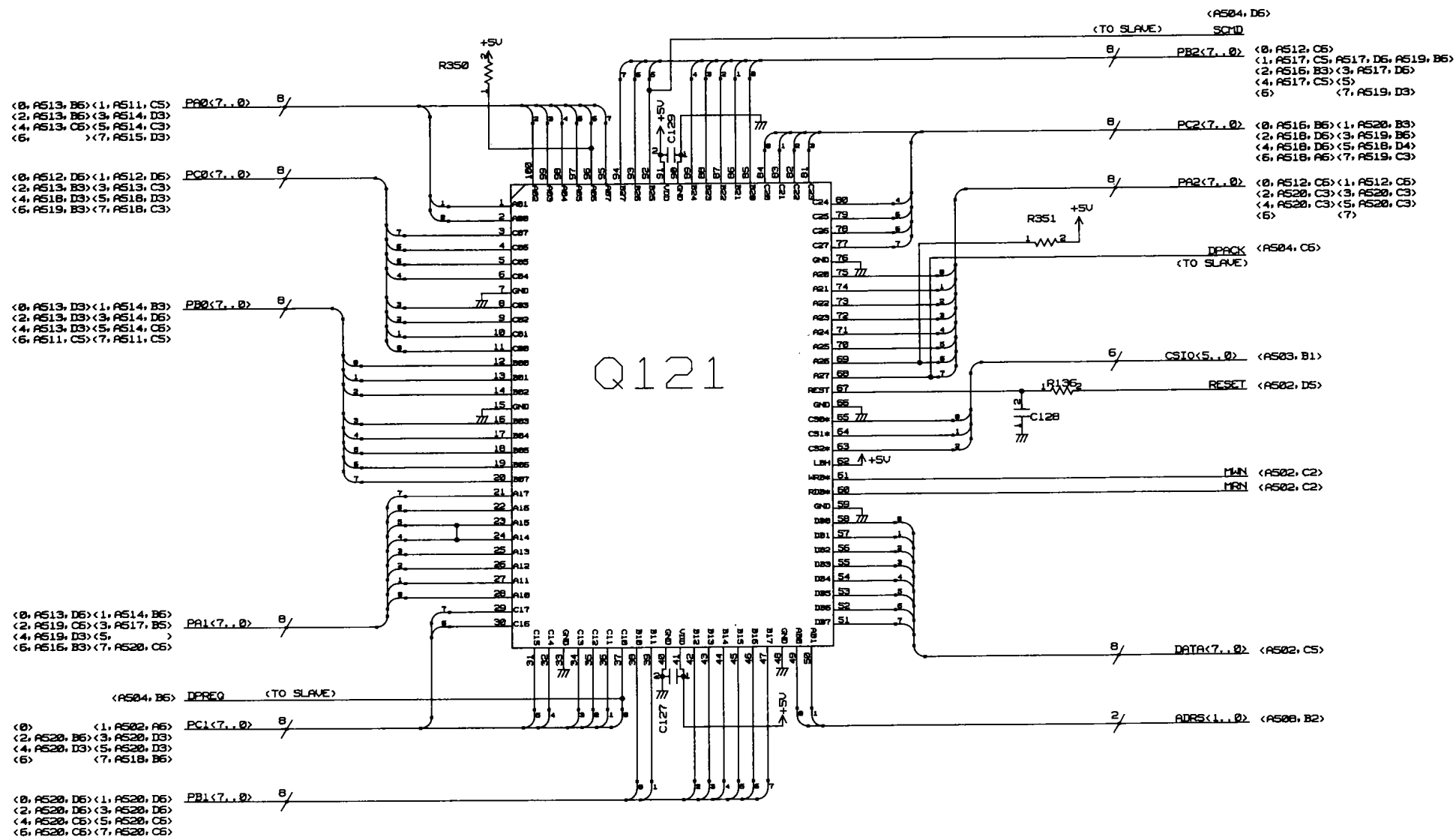
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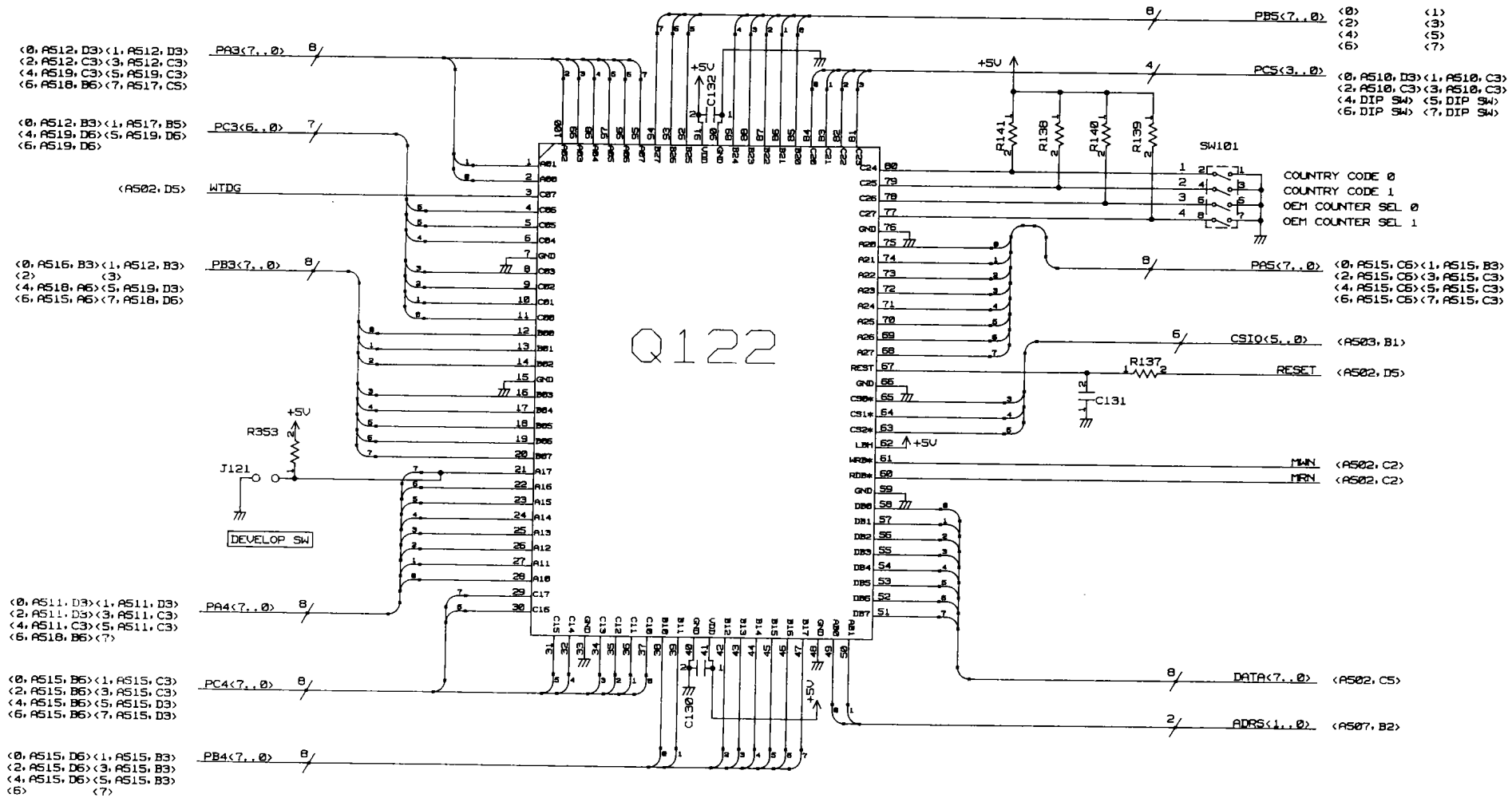


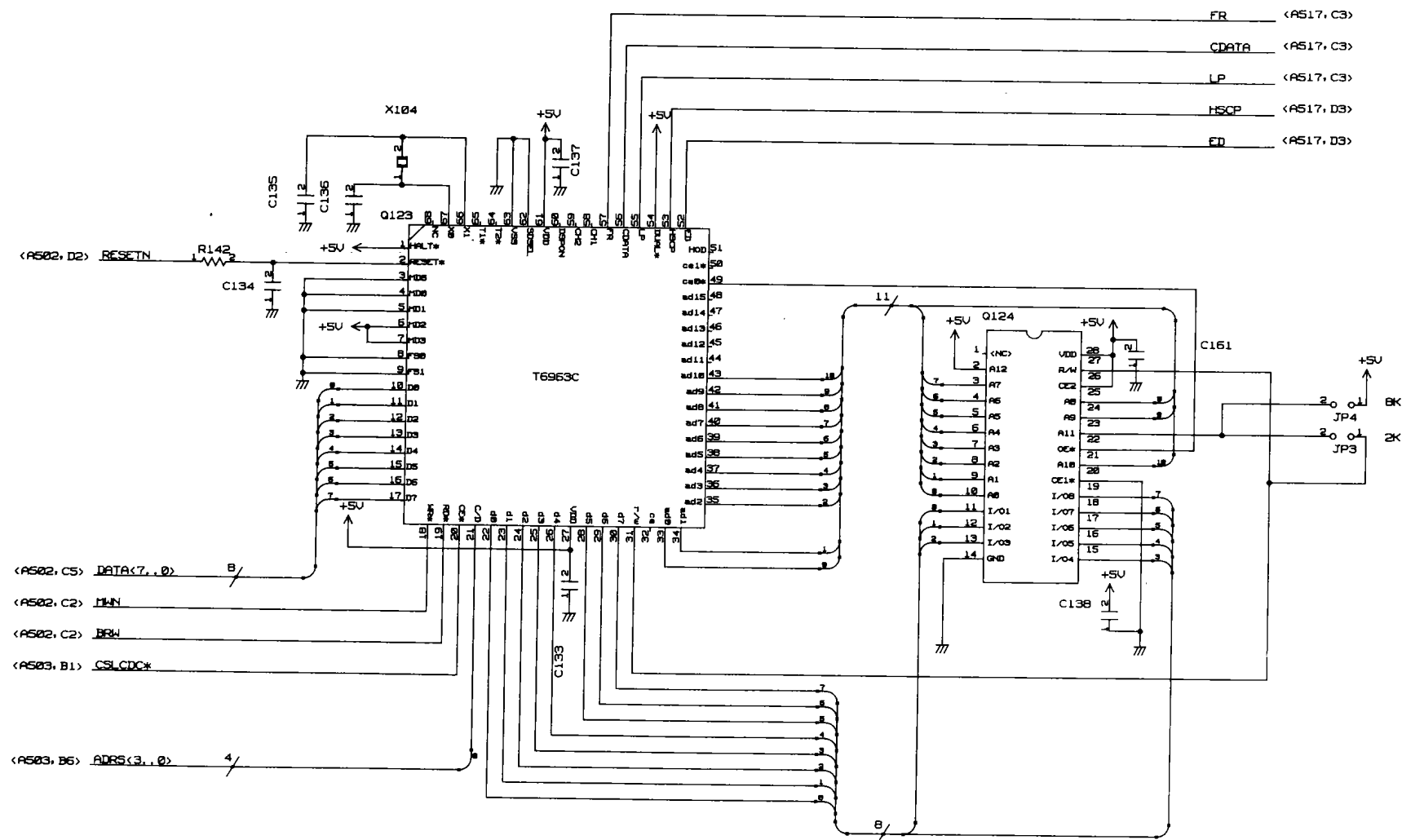
DC CONTROLLER (A506)



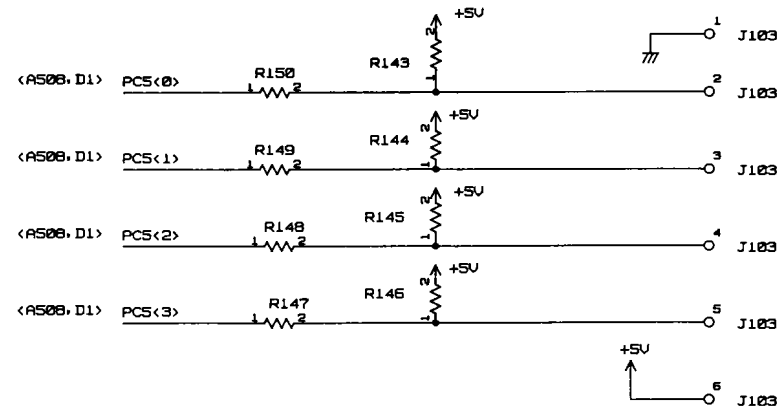
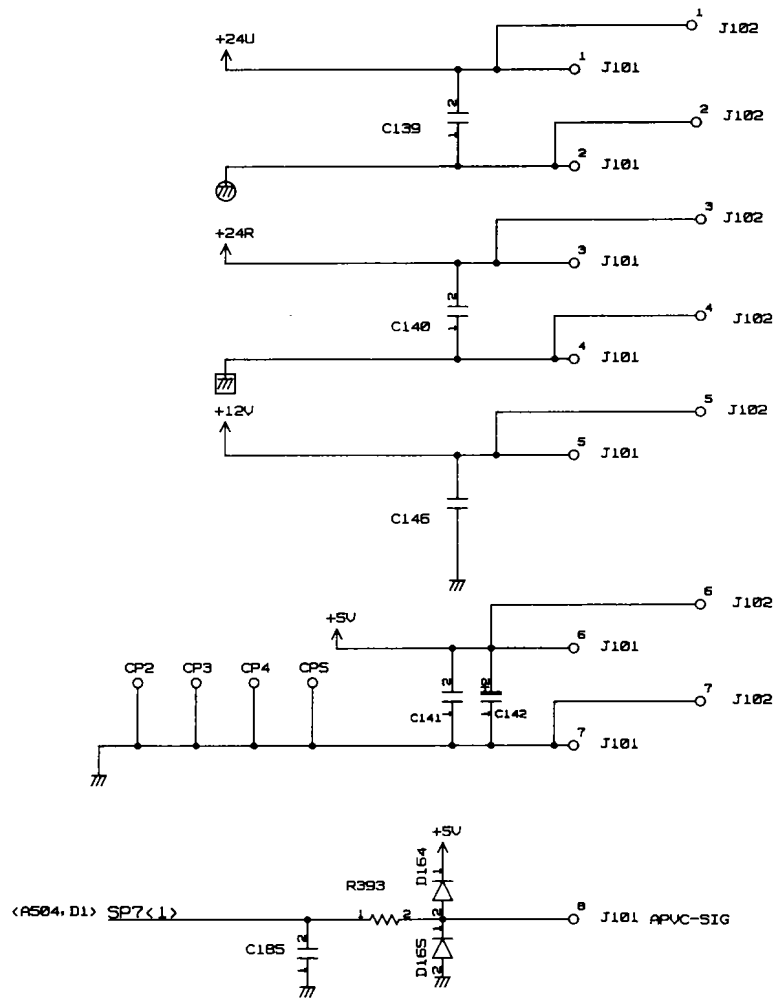


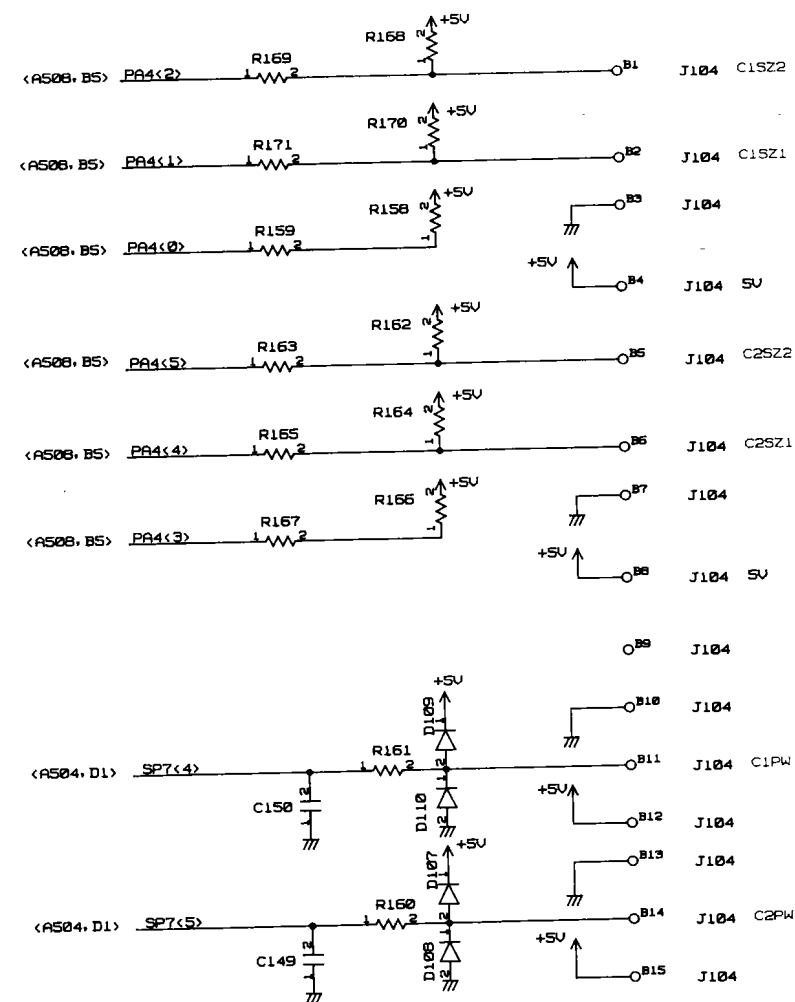
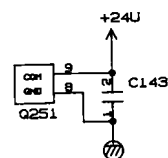
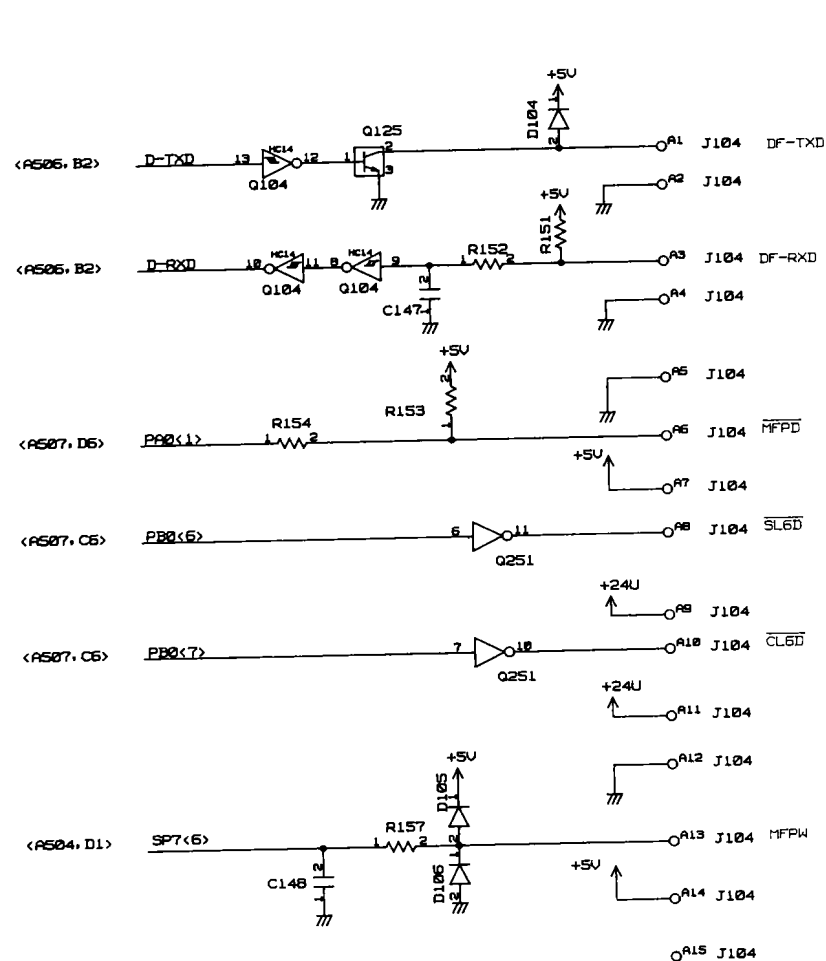
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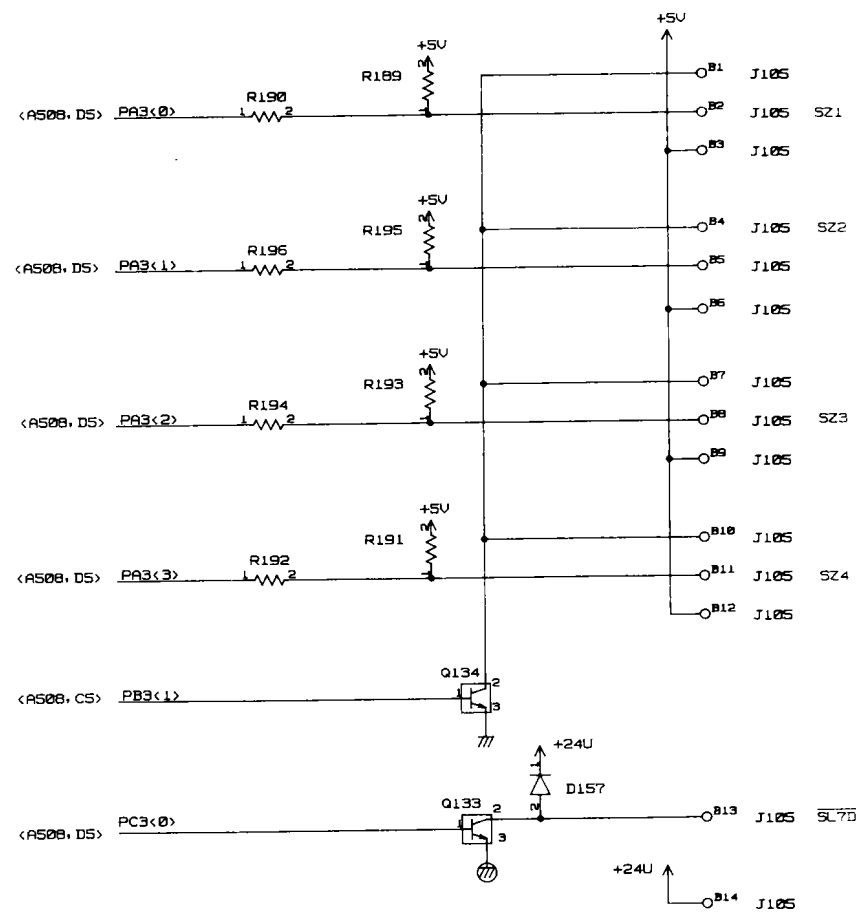
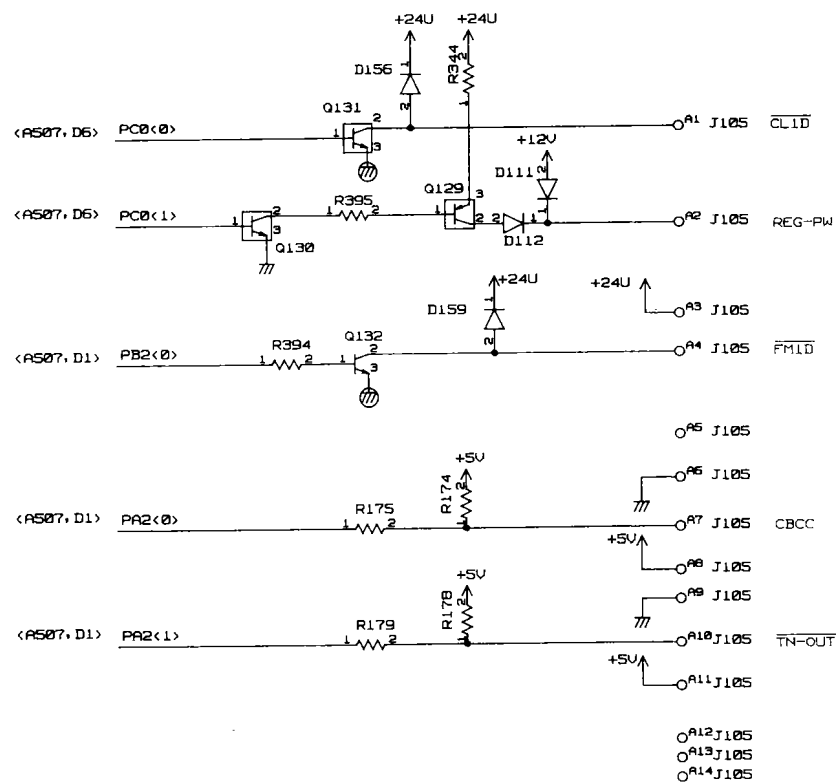


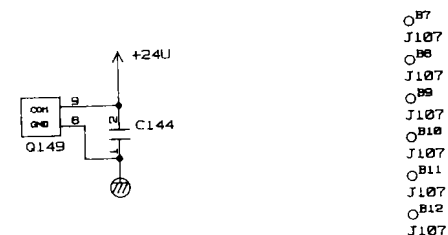
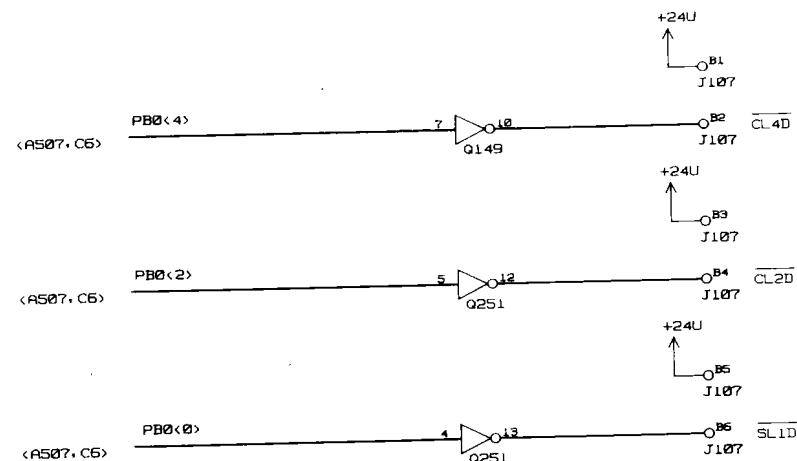
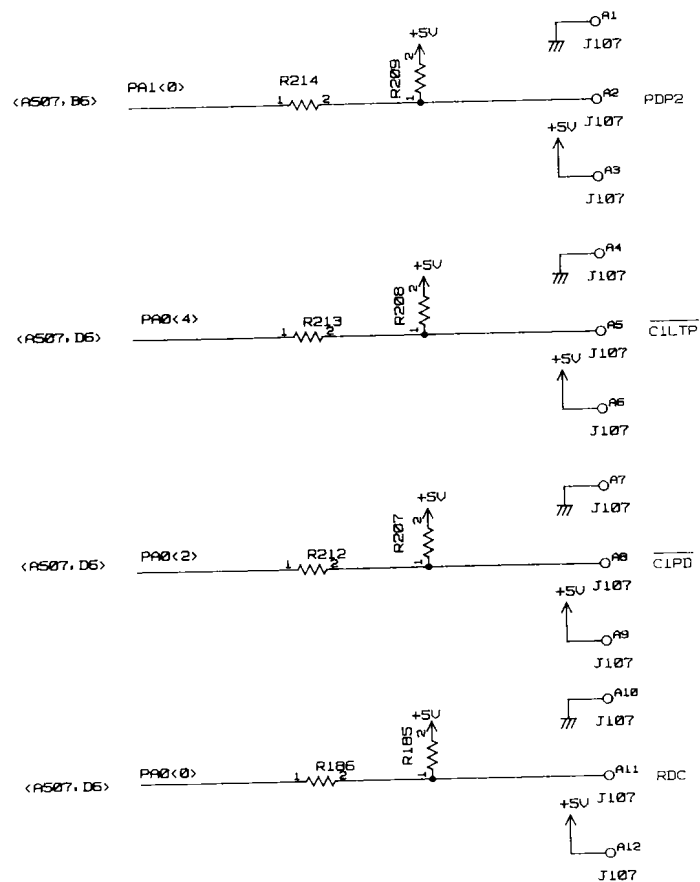
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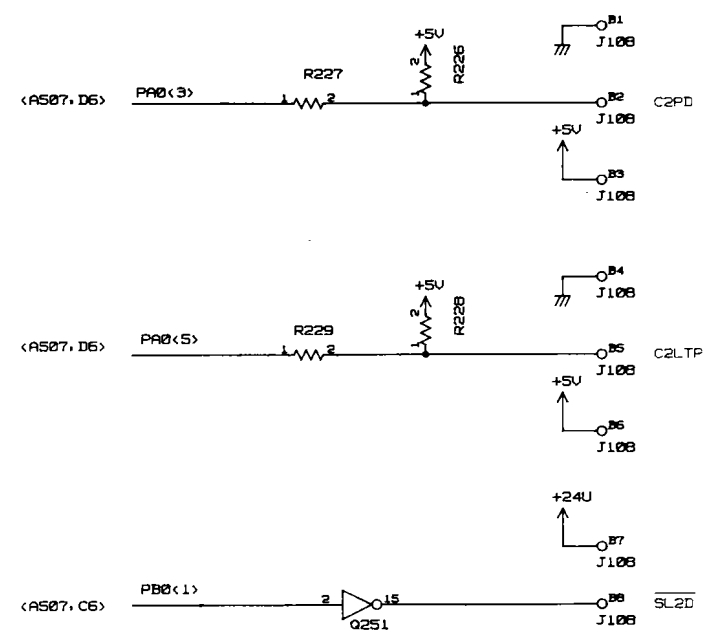
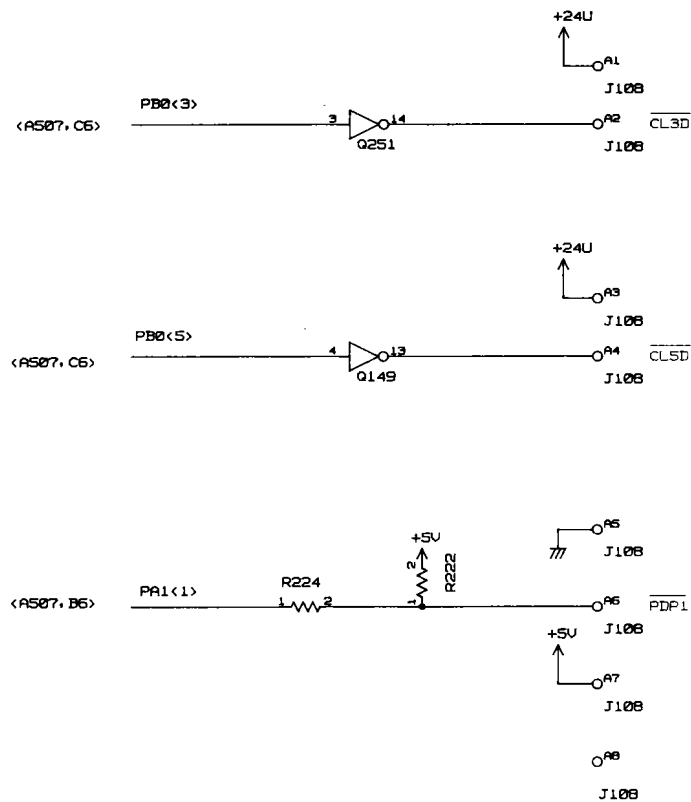


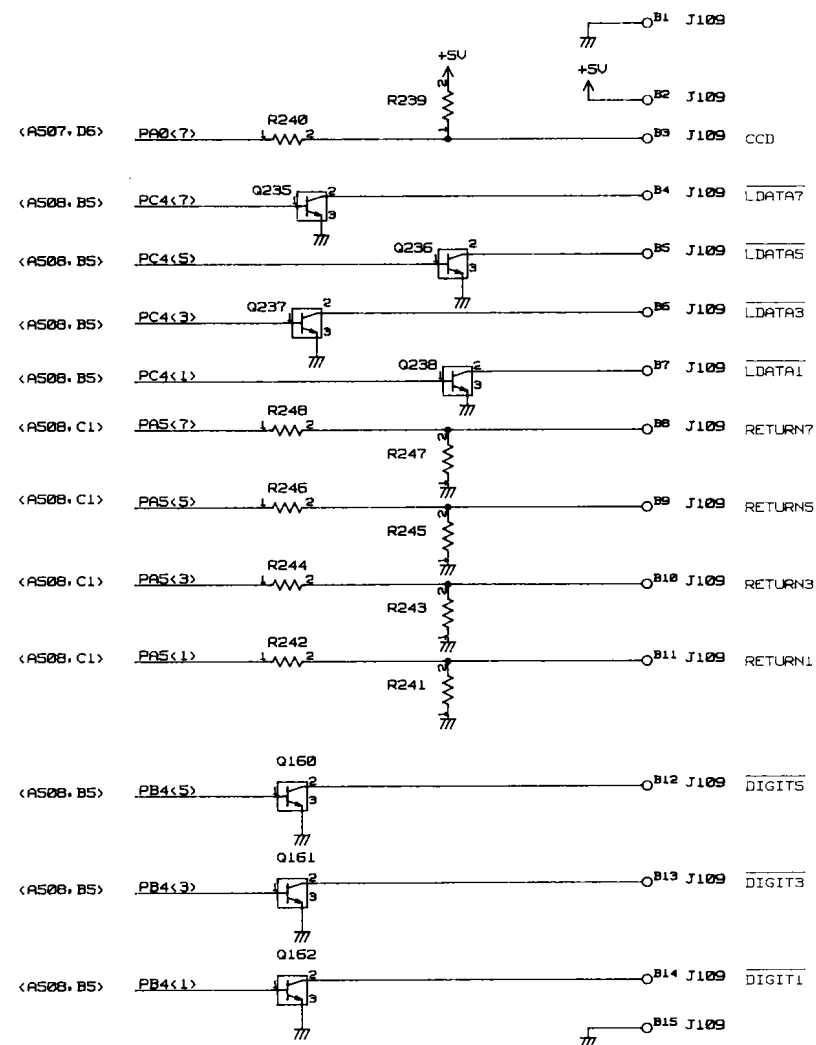
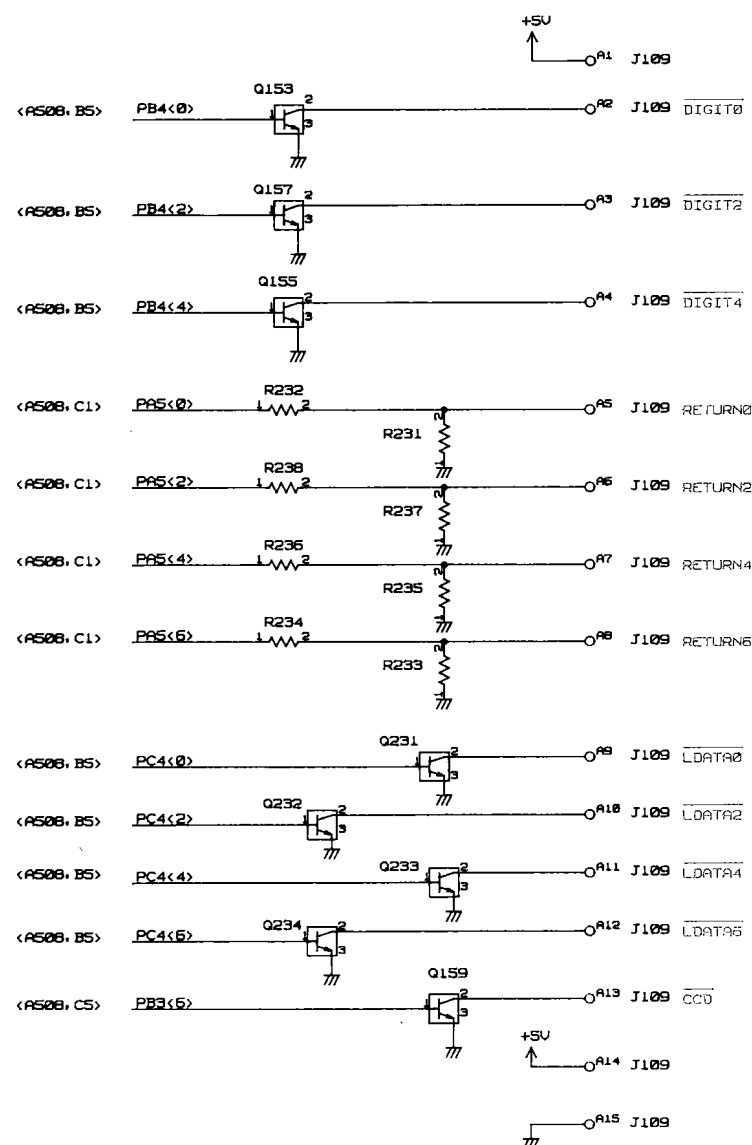
DC CONTROLLER (A512)



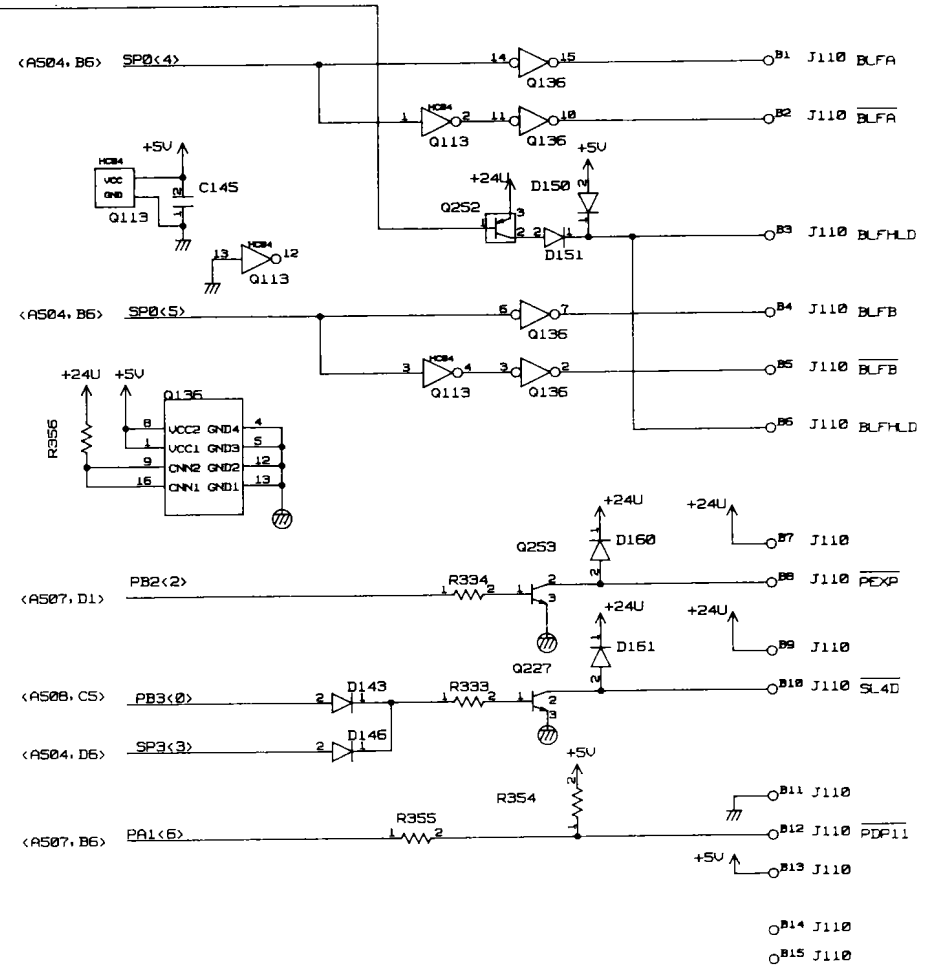
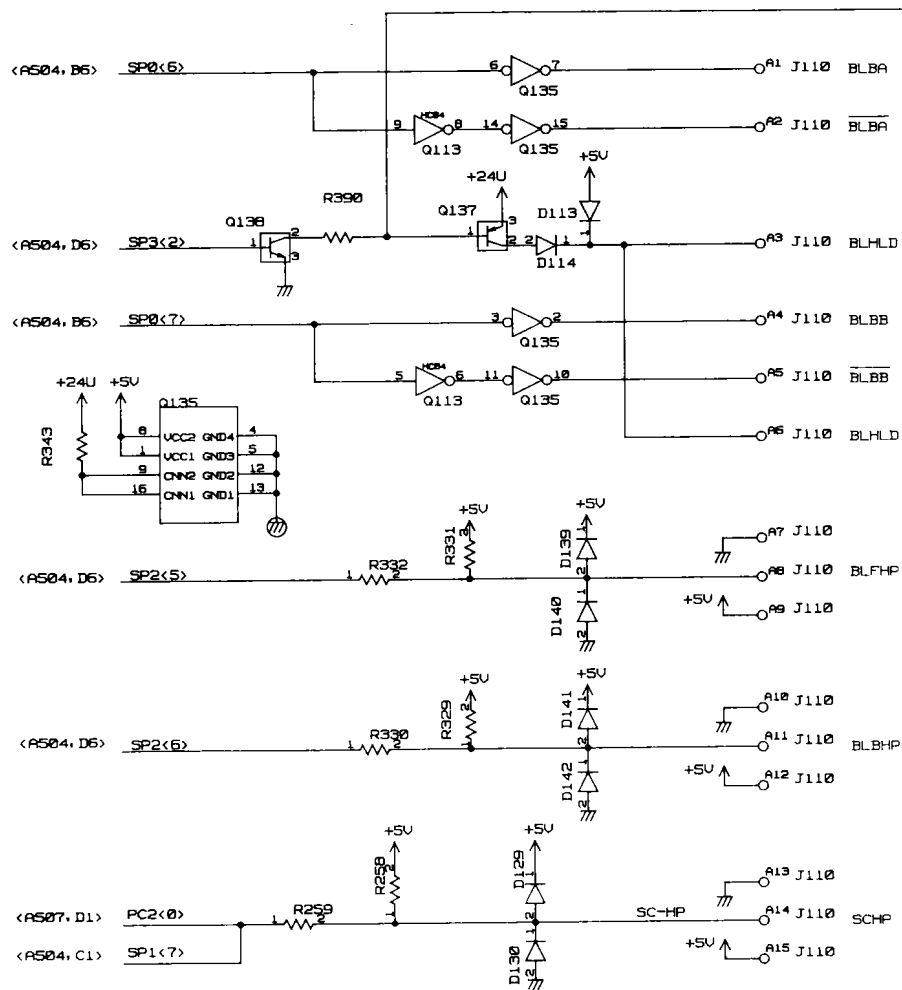


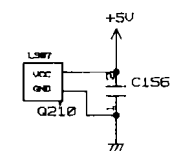
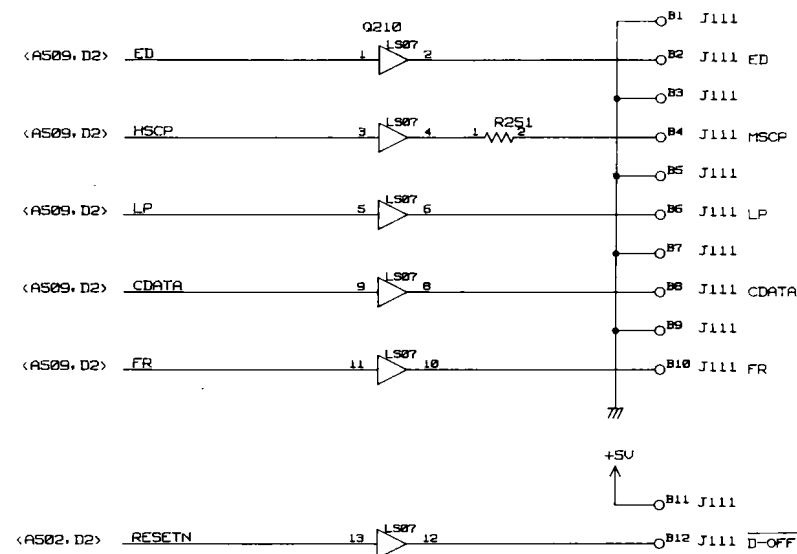
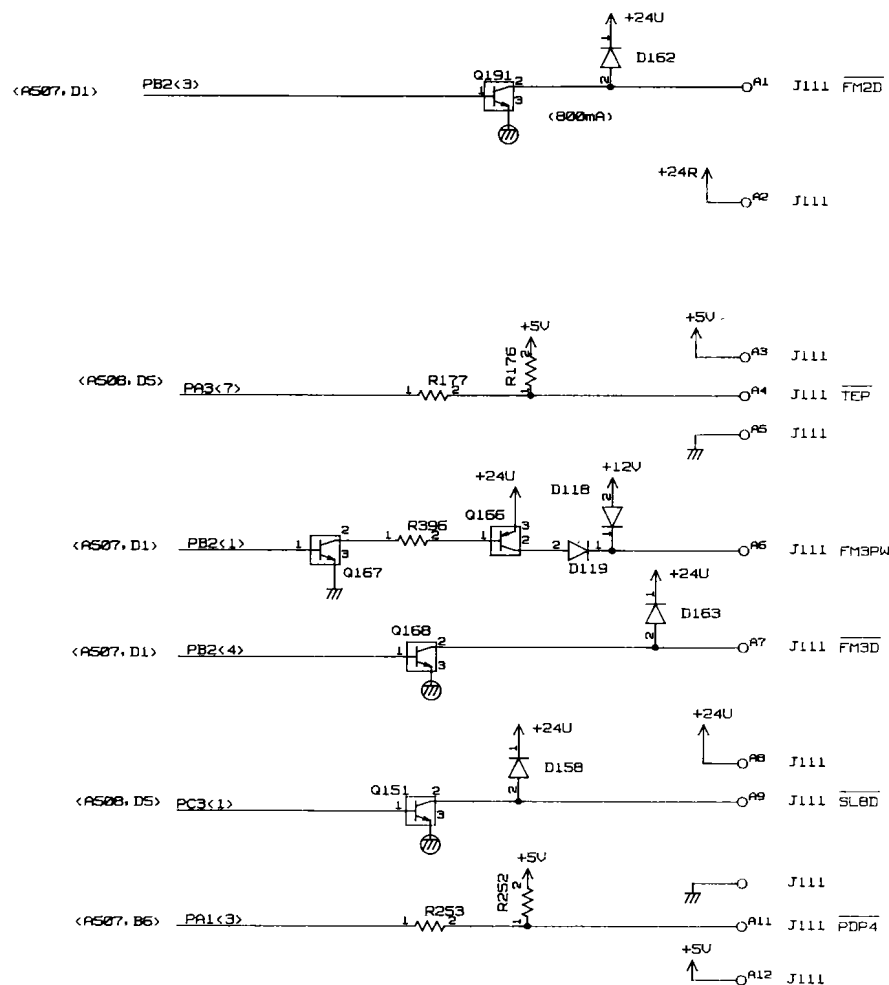
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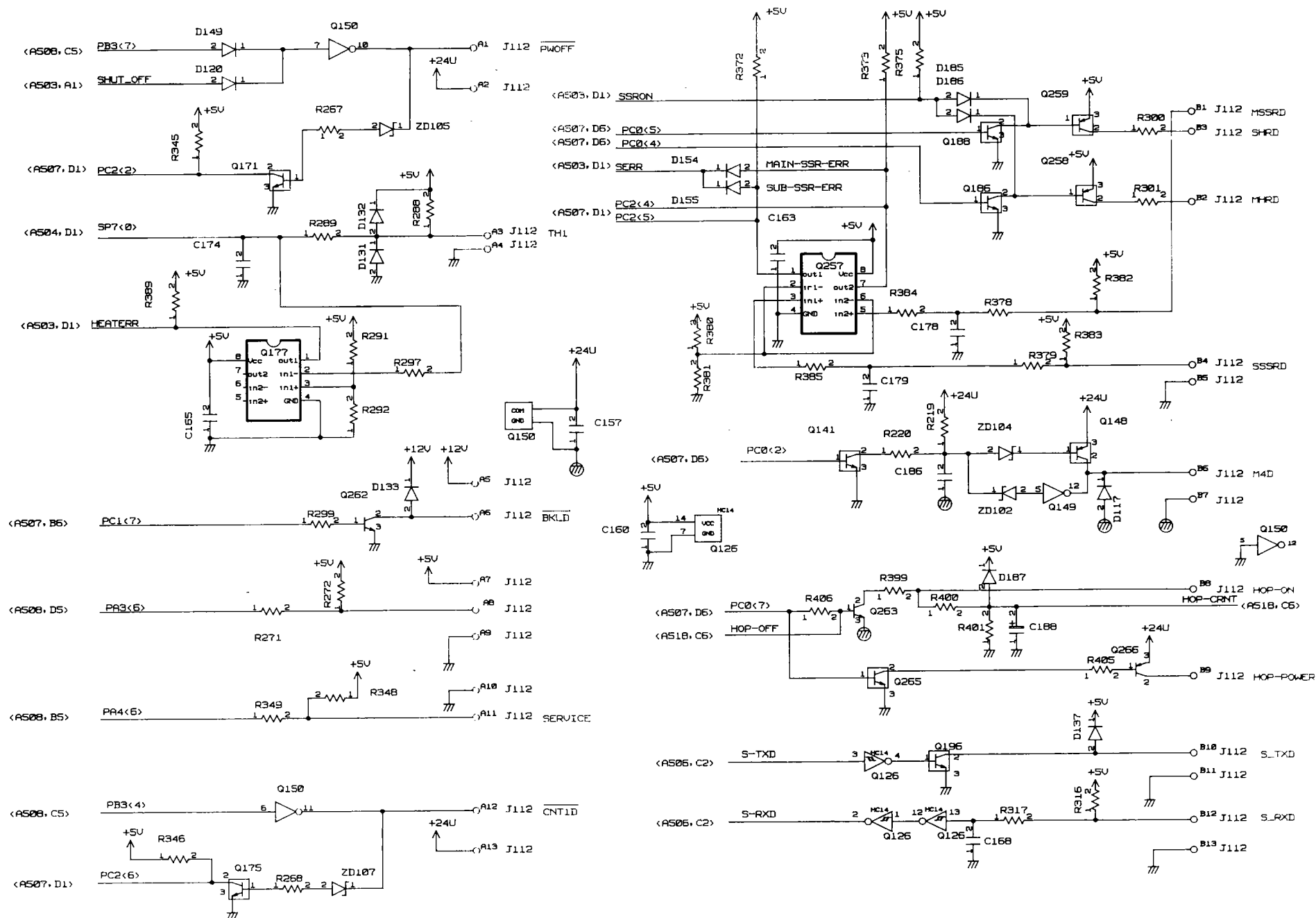


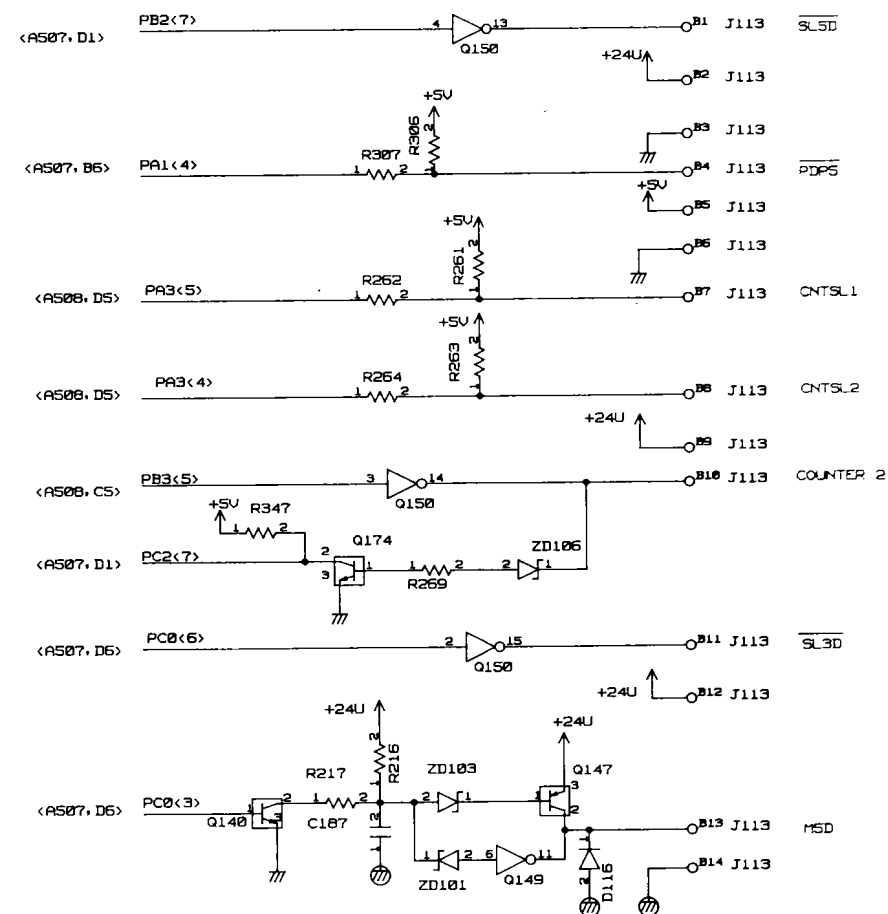
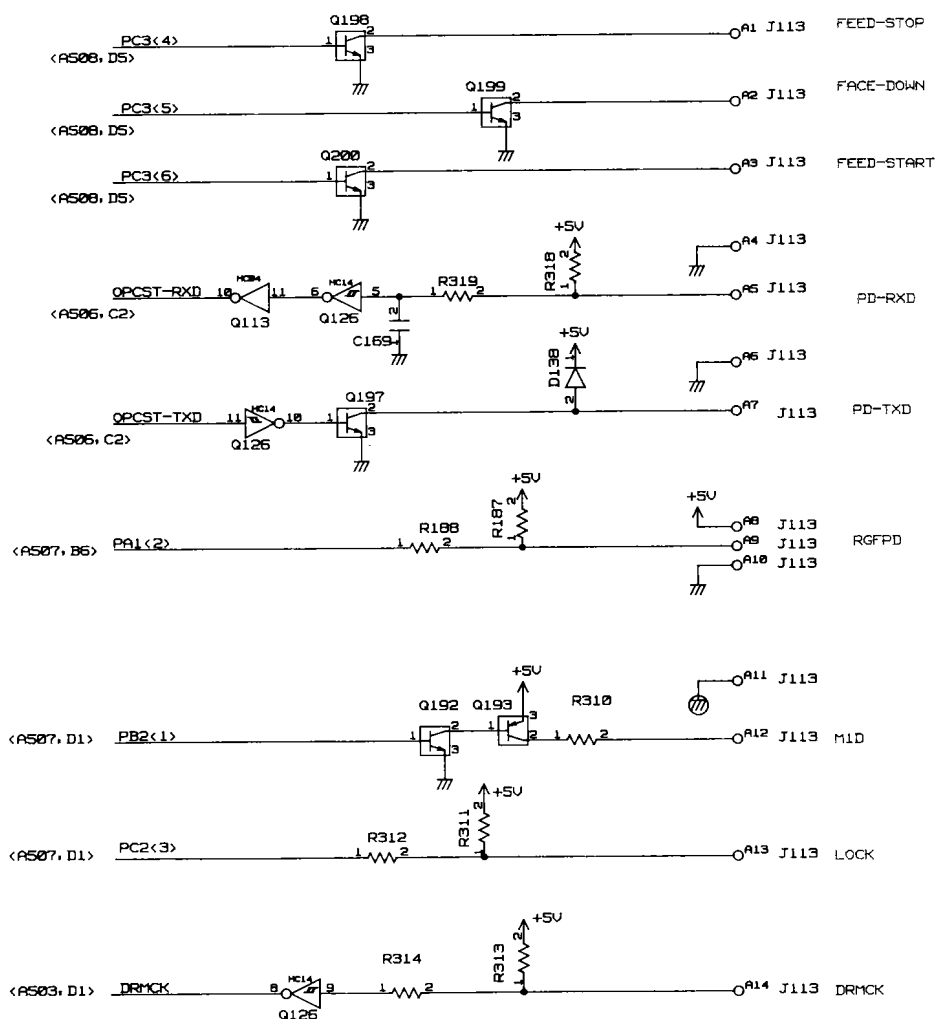
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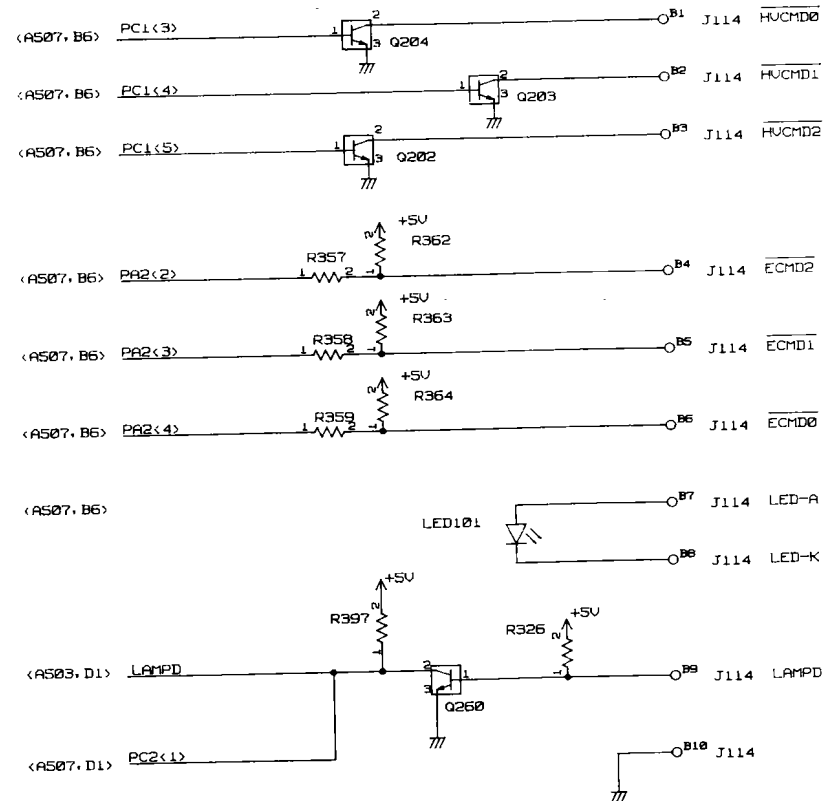
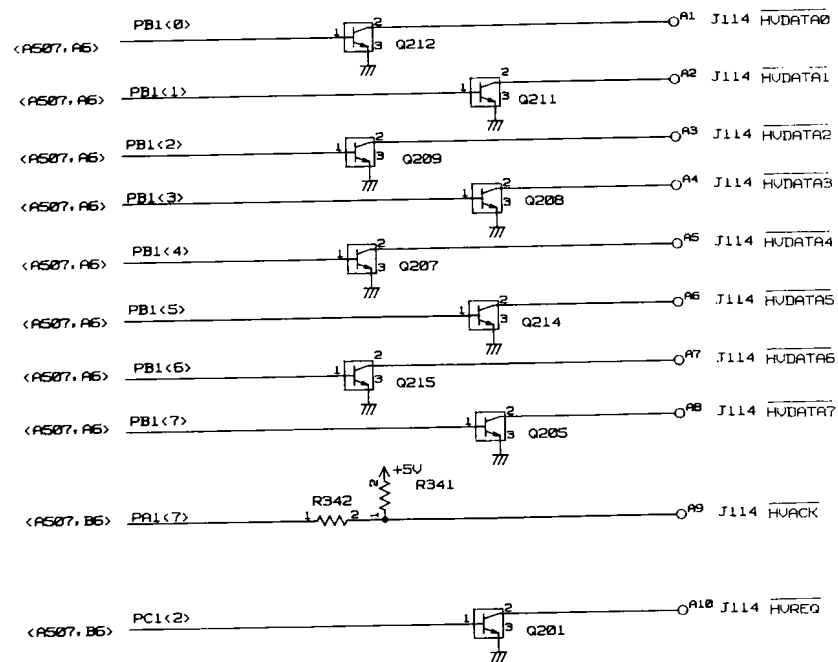


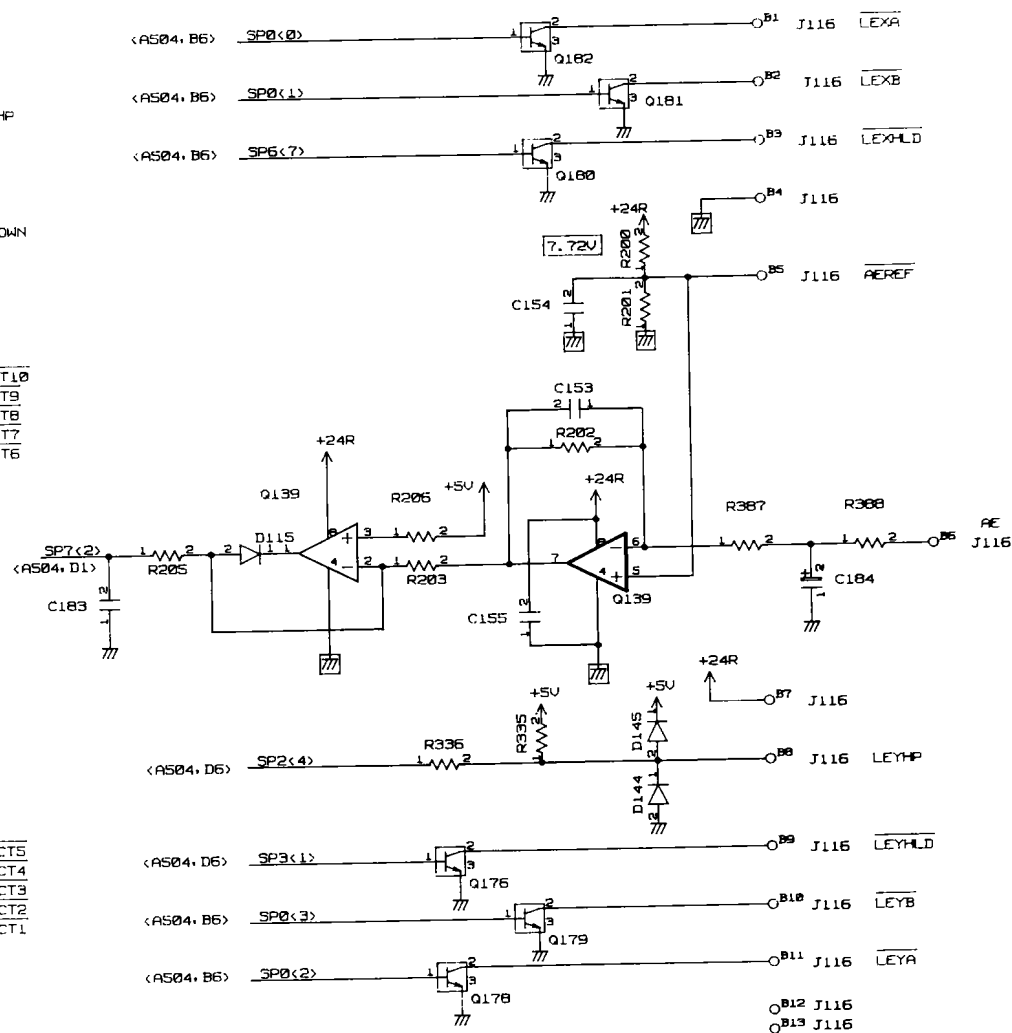
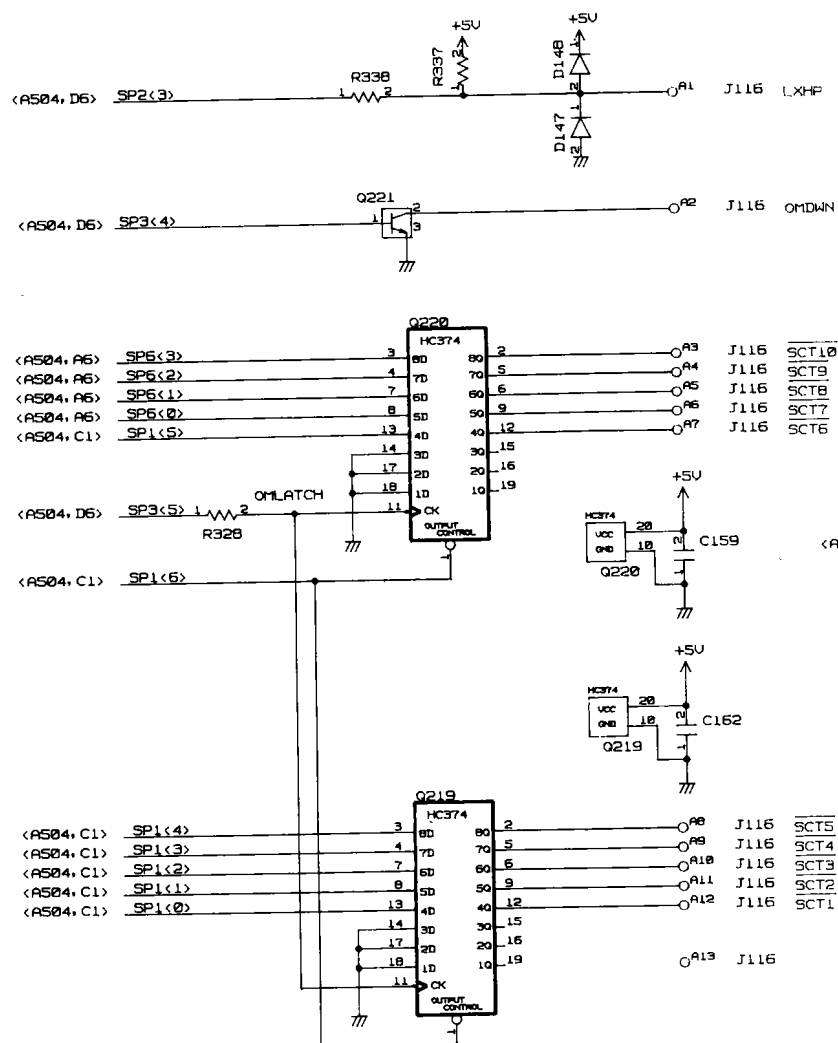


DC CONTROLLER (A518)



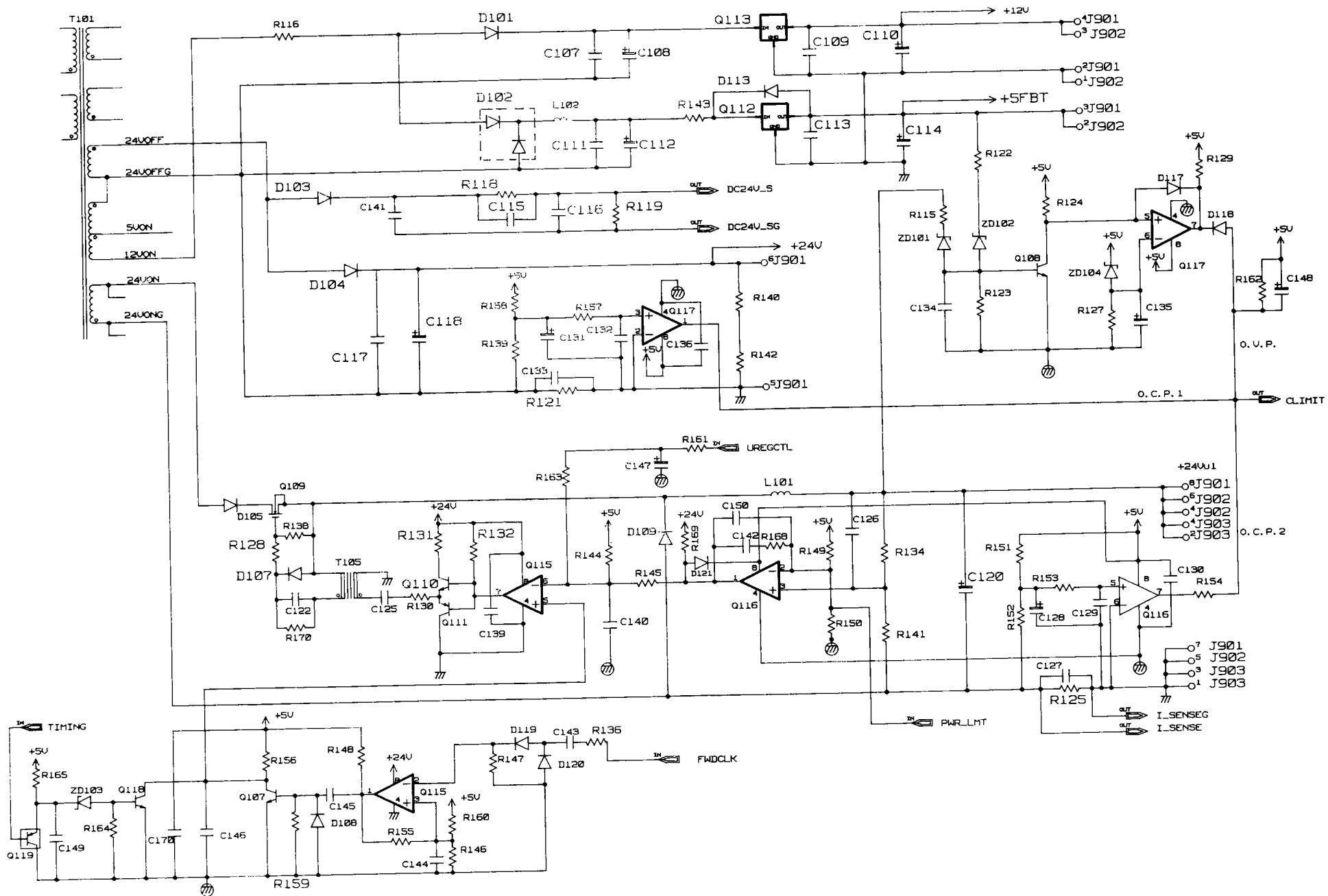




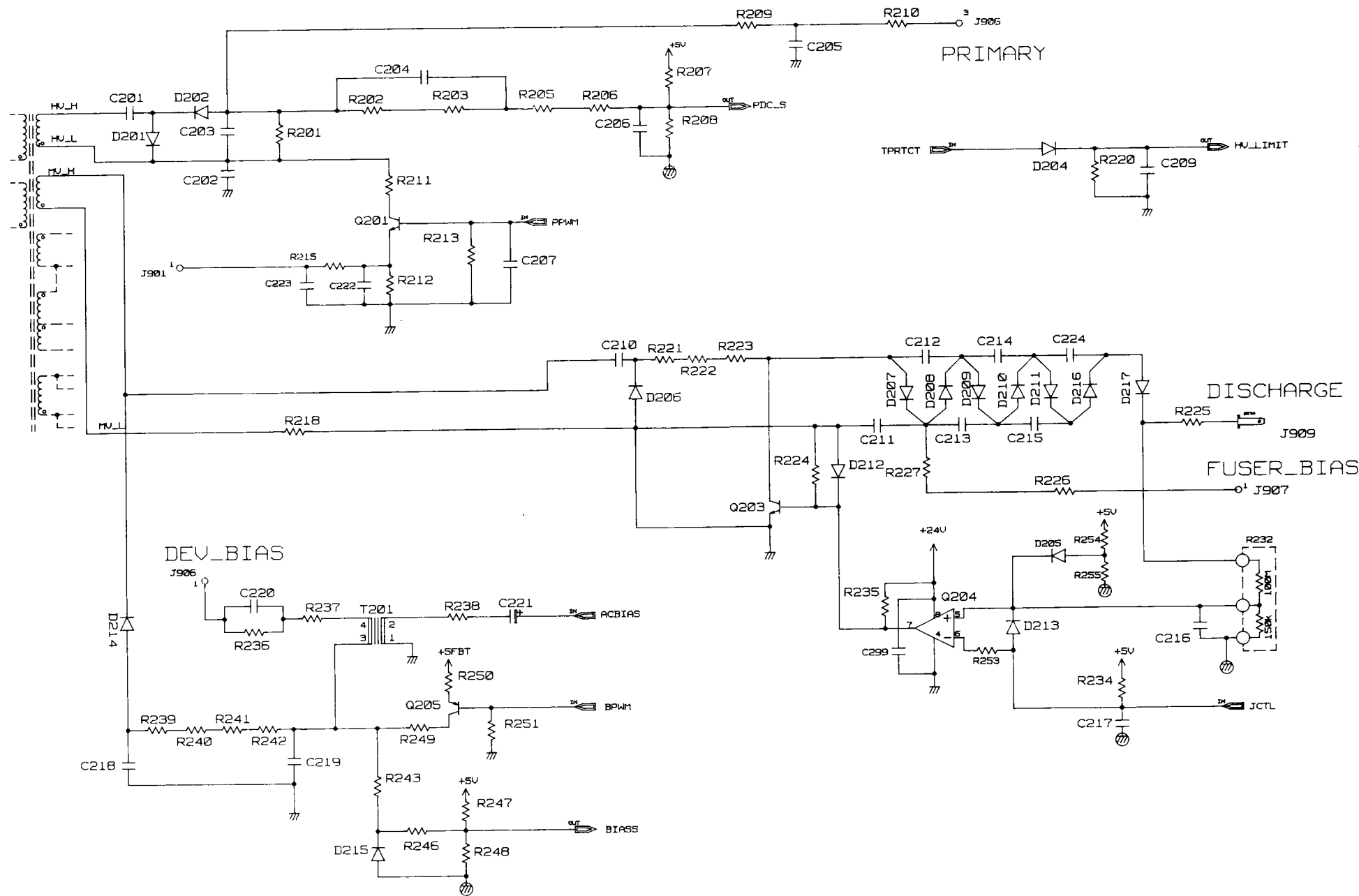


COMPOSITE POWER SUPPLY (1/7)

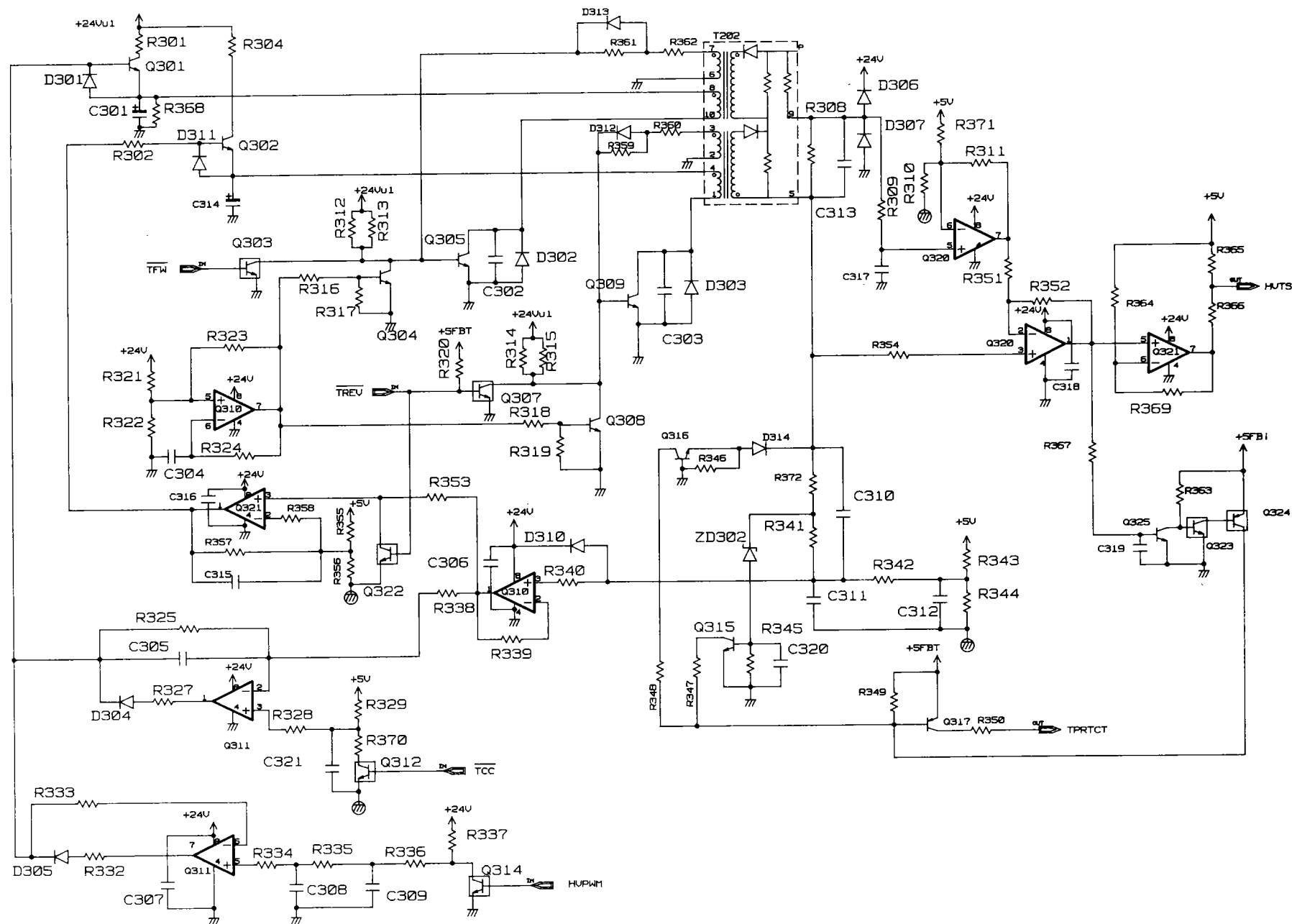




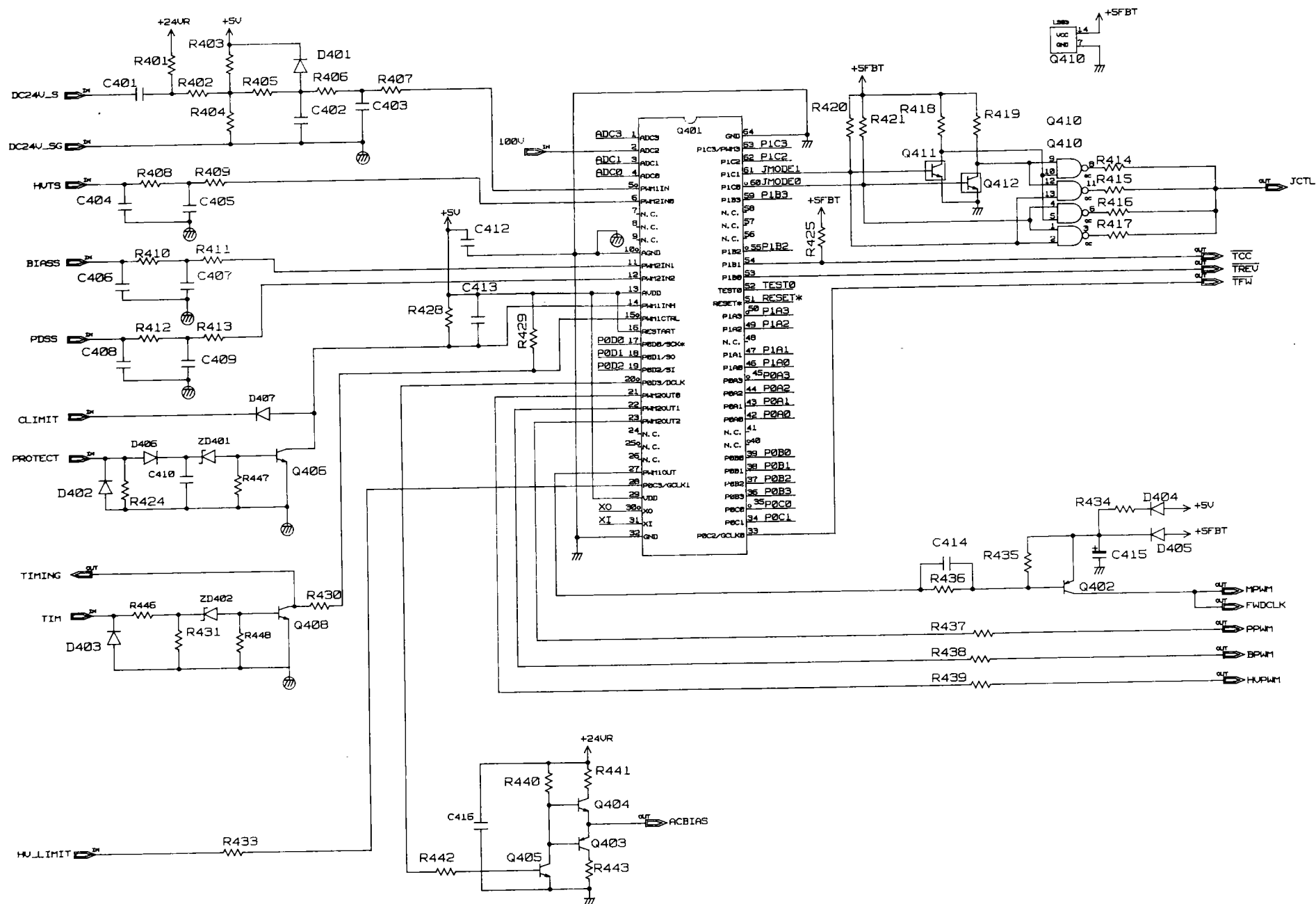
COMPOSITE POWER SUPPLY (3/7)

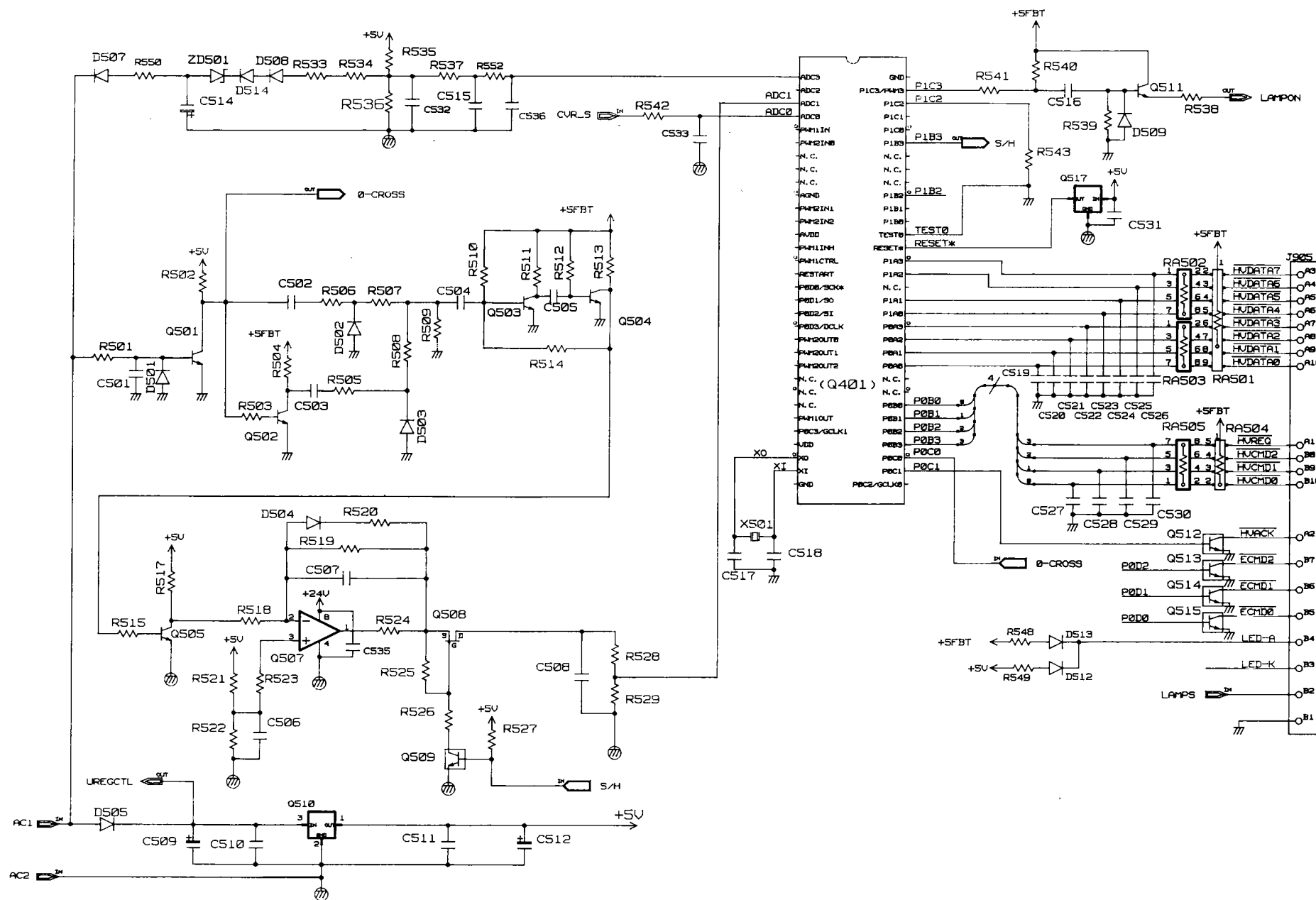


COMPOSITE POWER SUPPLY (4/7)

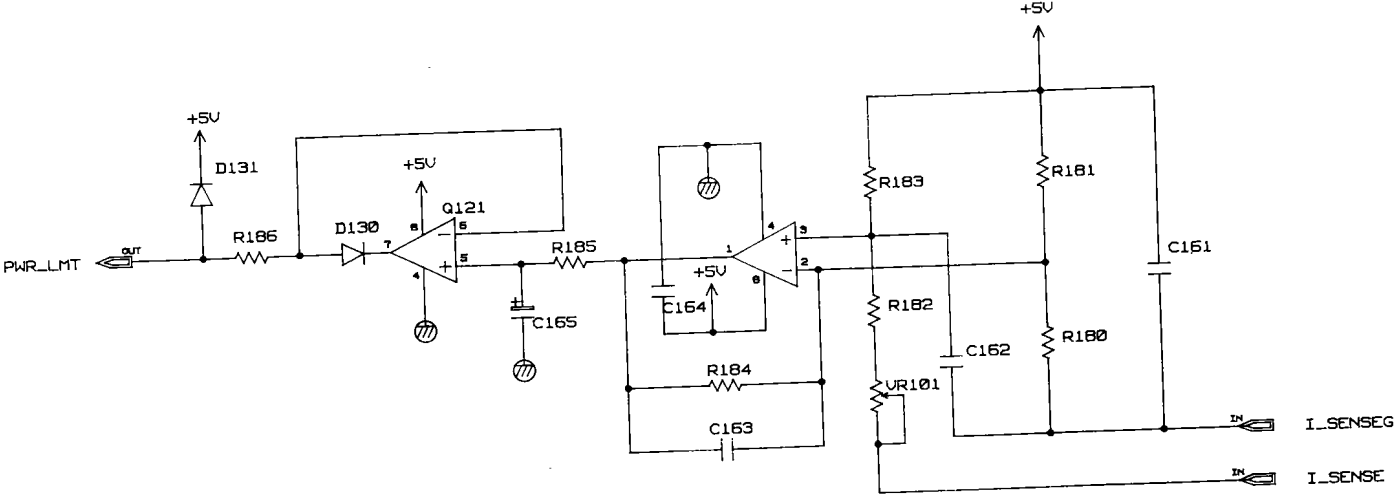


COMPOSITE POWER SUPPLY (5/7)



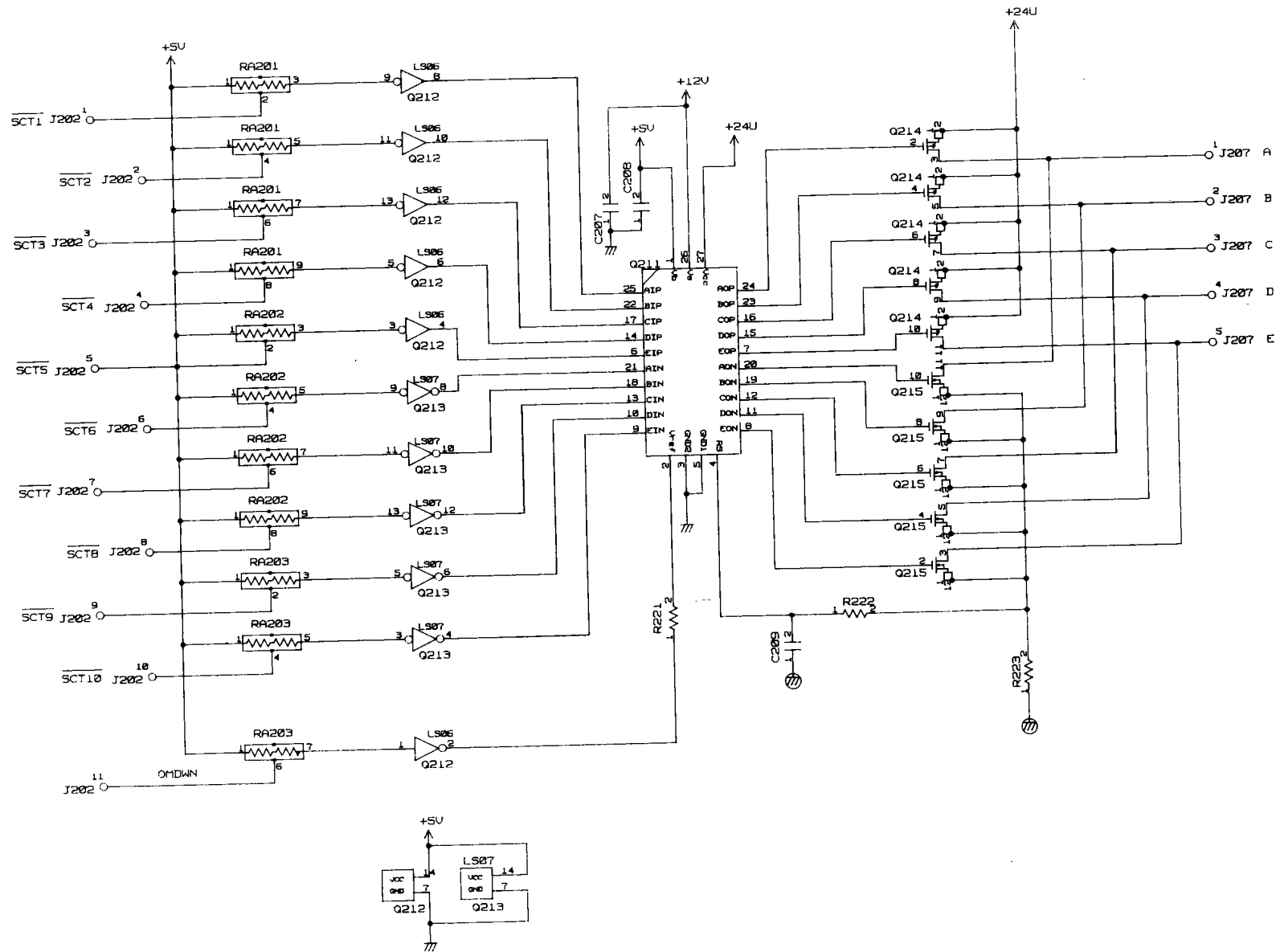


COMPOSITE POWER SUPPLY (7/7)

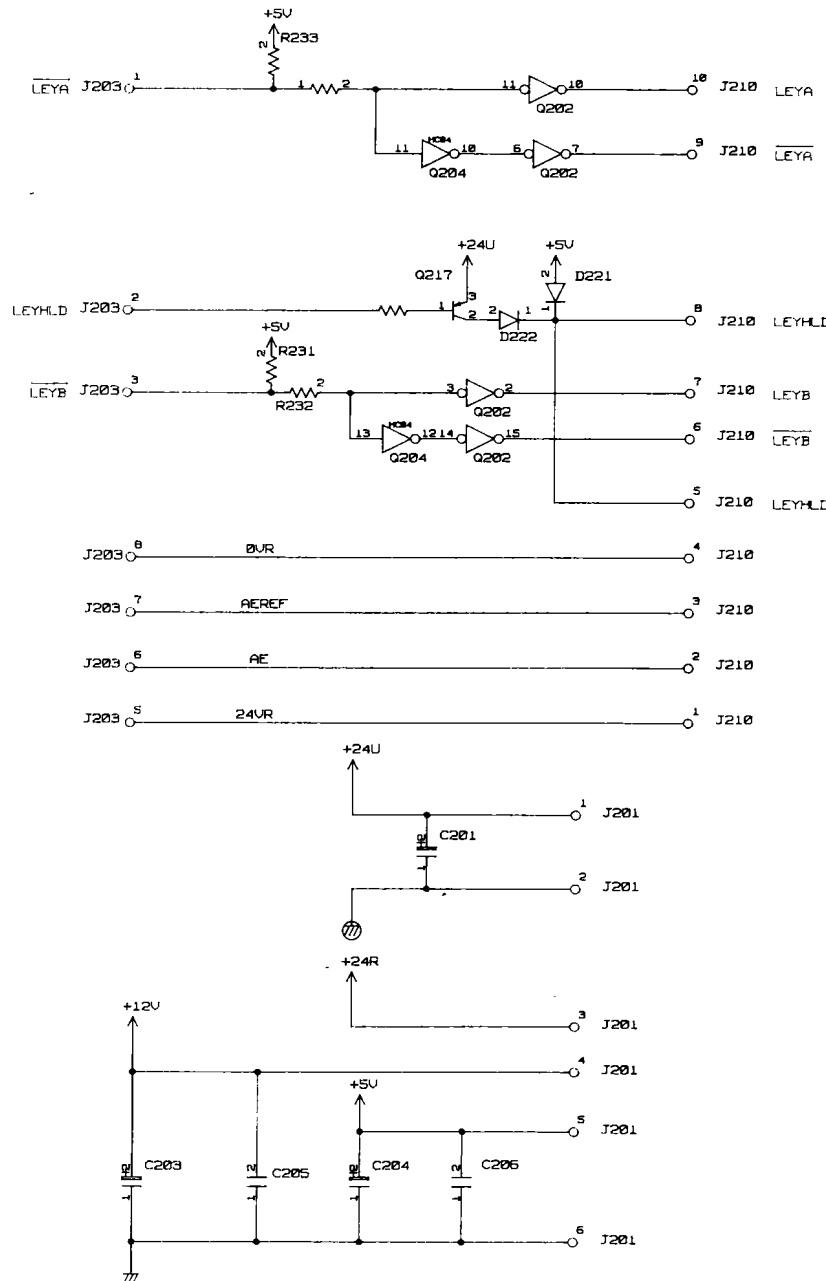
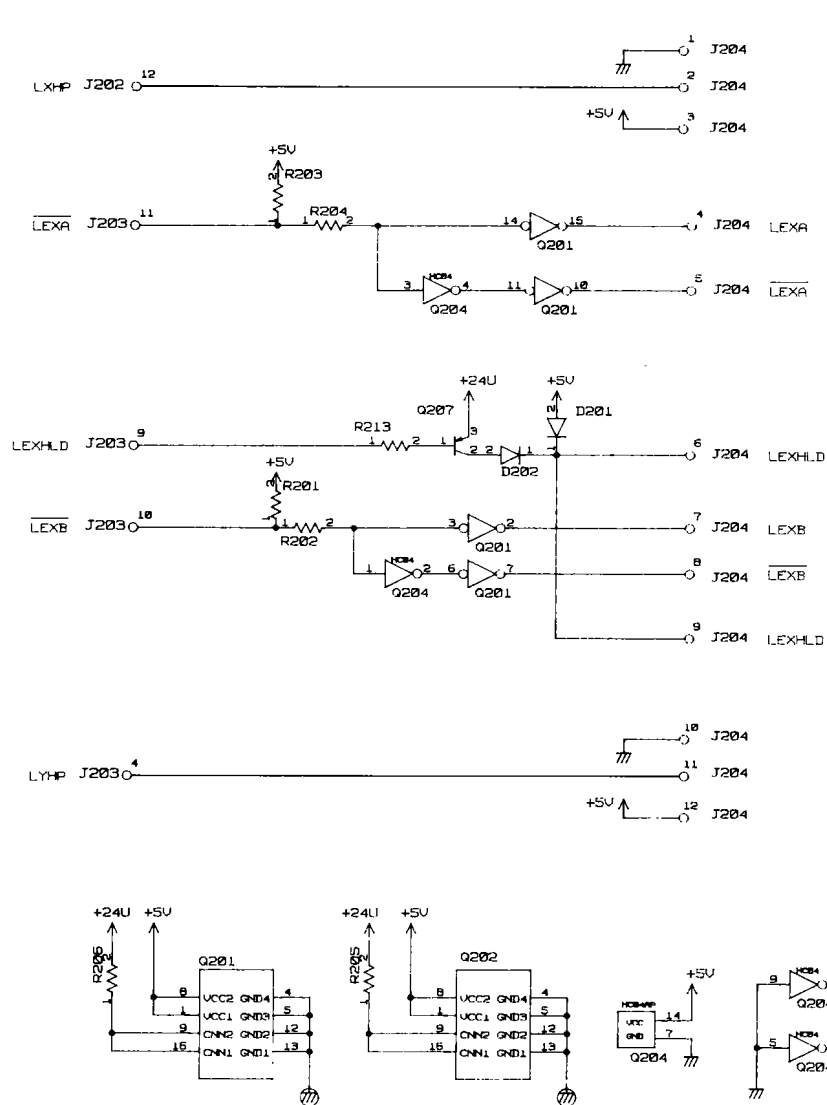


F. MOTOR DRIVER PCB CIRCUIT DIAGRAM

MOTOR DRIVER PCB (1/2)

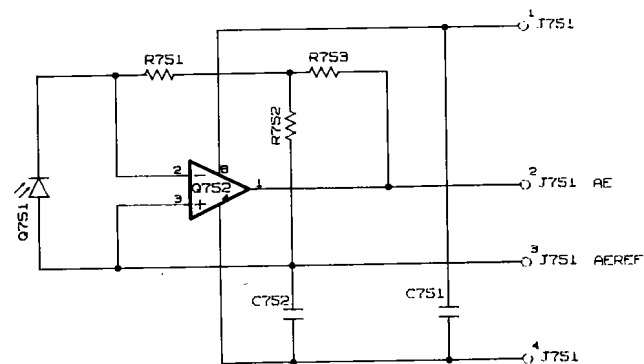


MOTOR DRIVER PCB (2/2)



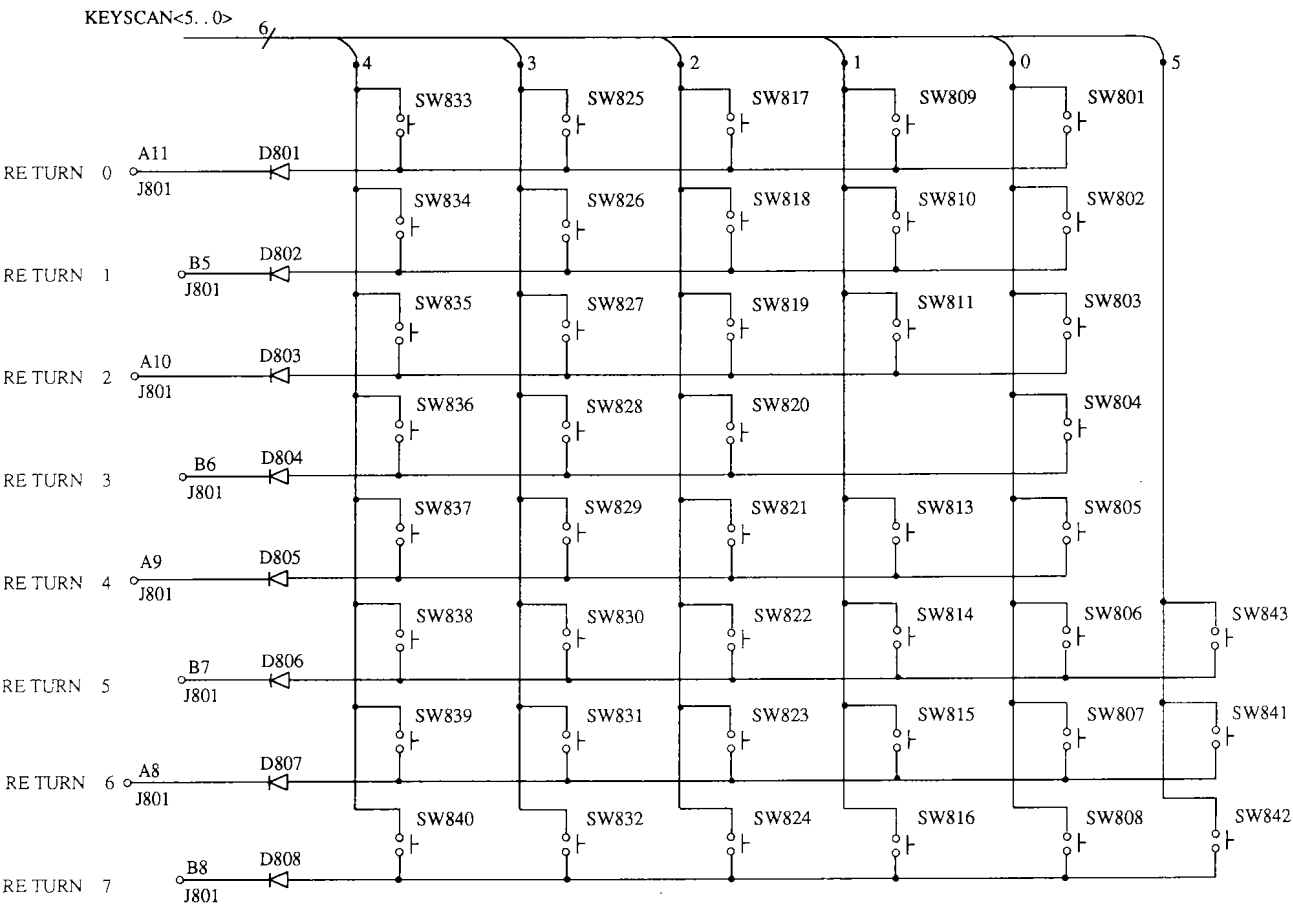
G. AE SENSOR PCB CIRCUIT DIAGRAM

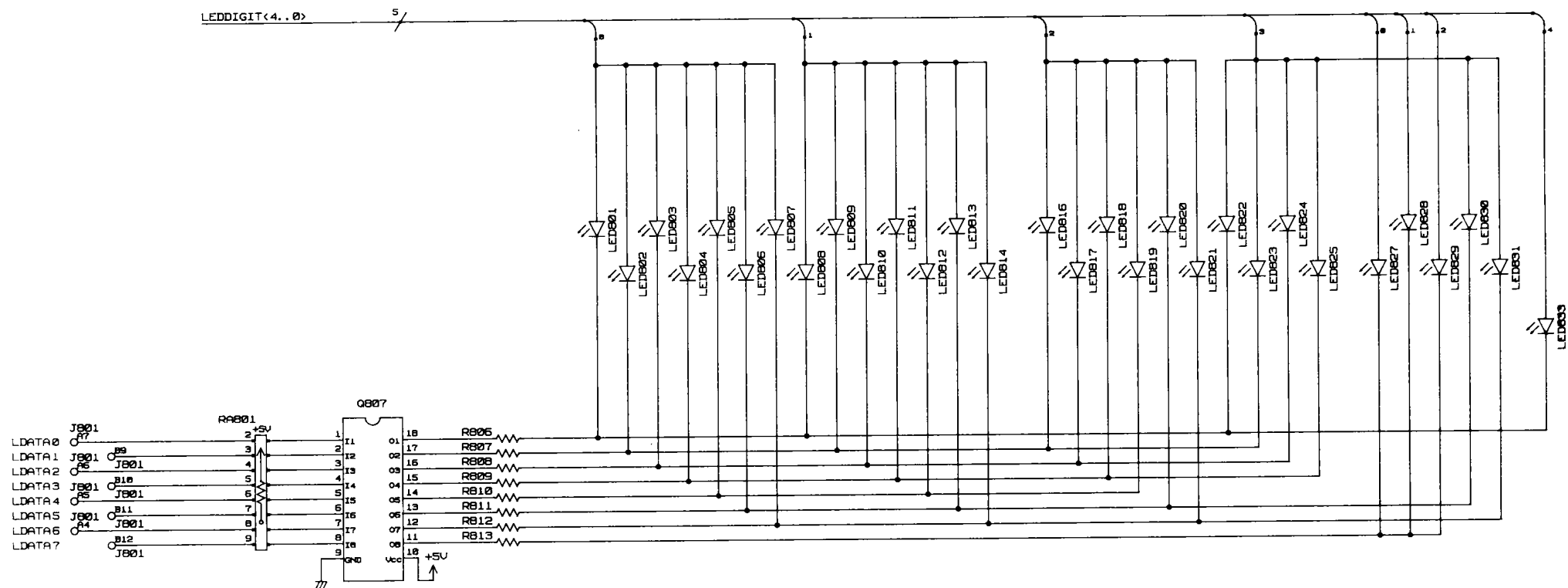
AE SENSOR PCB



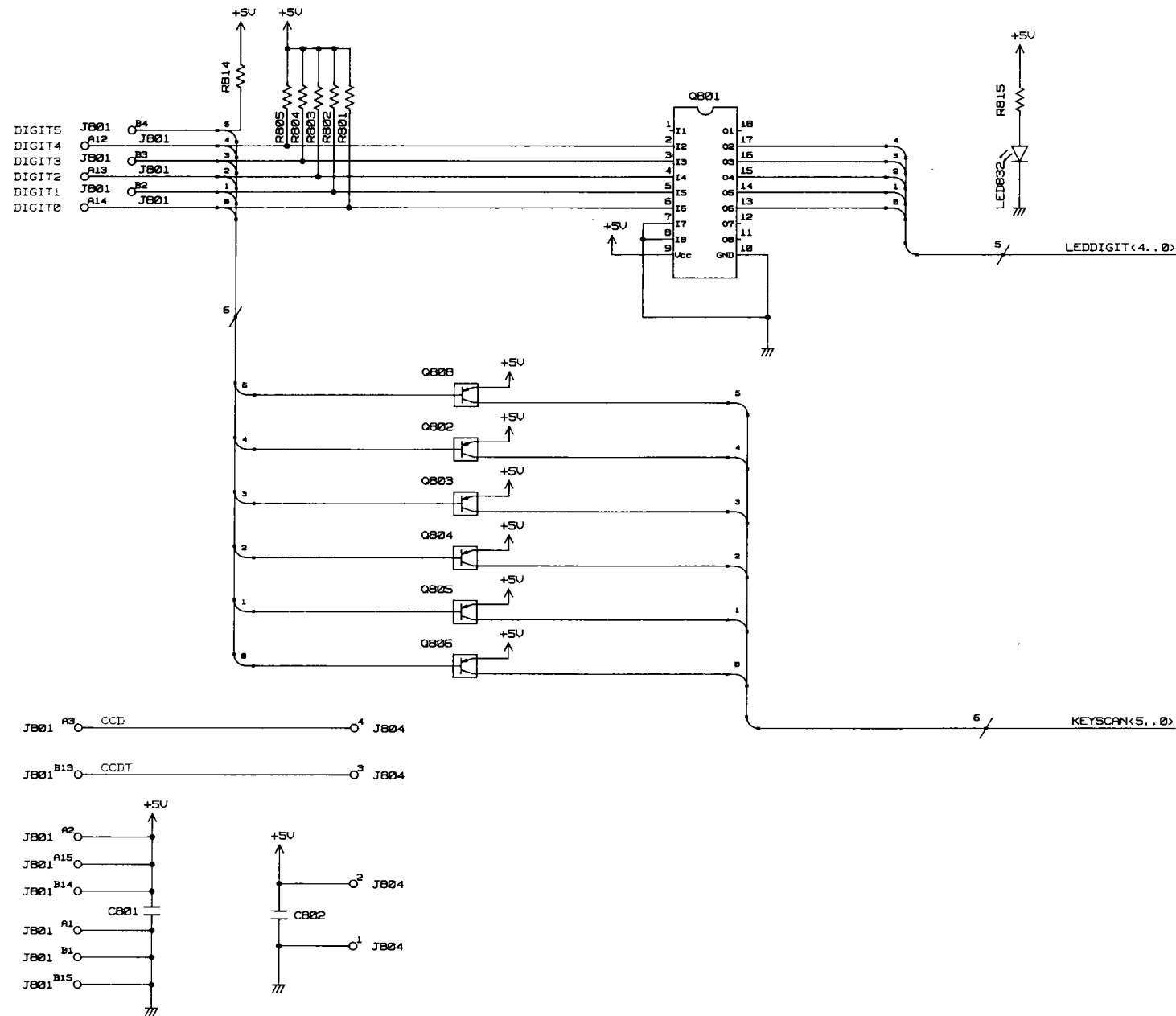
H. OPELATION PANEL CIRCUIT DIAGRAM

OPERATION PANEL (1/3)

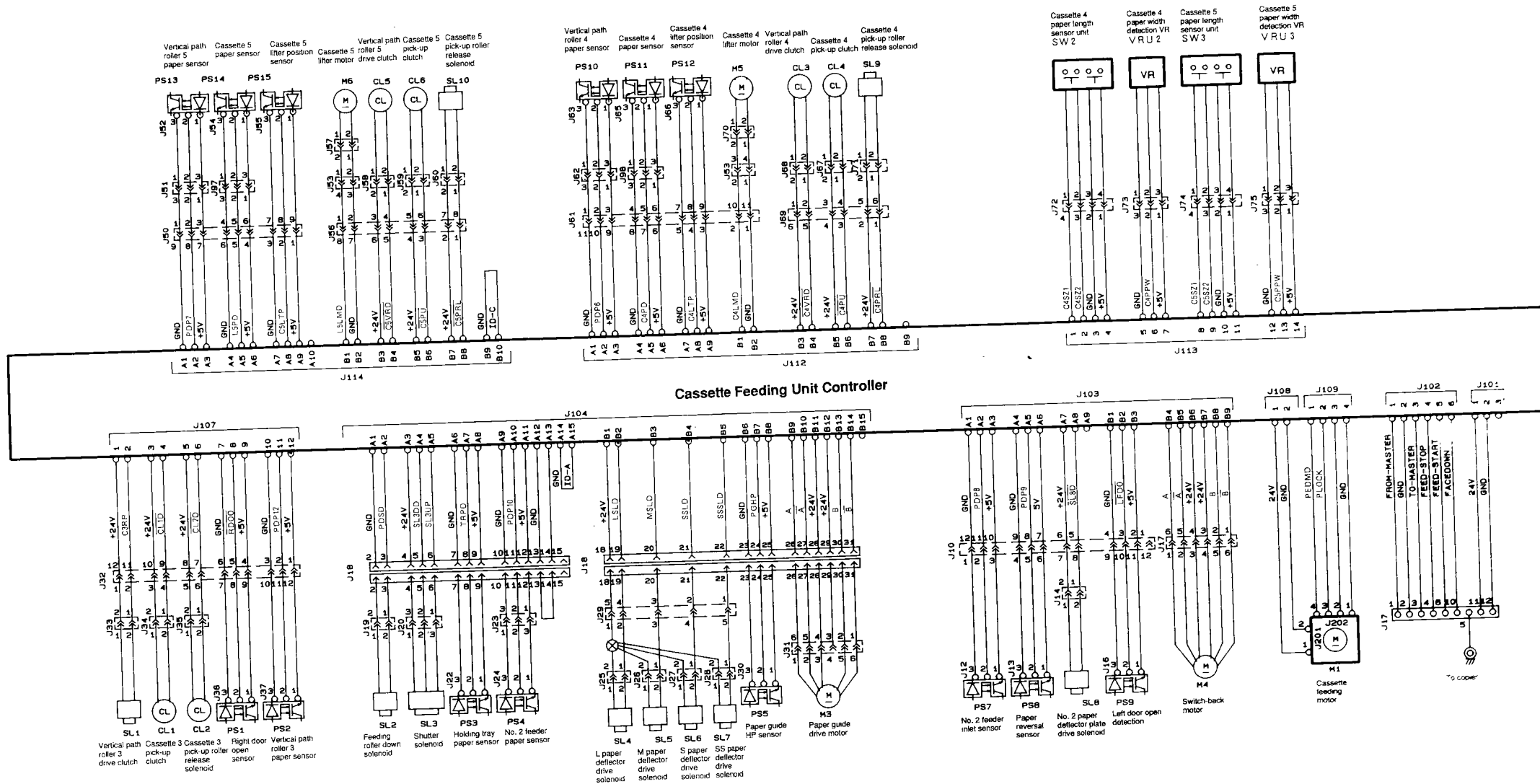




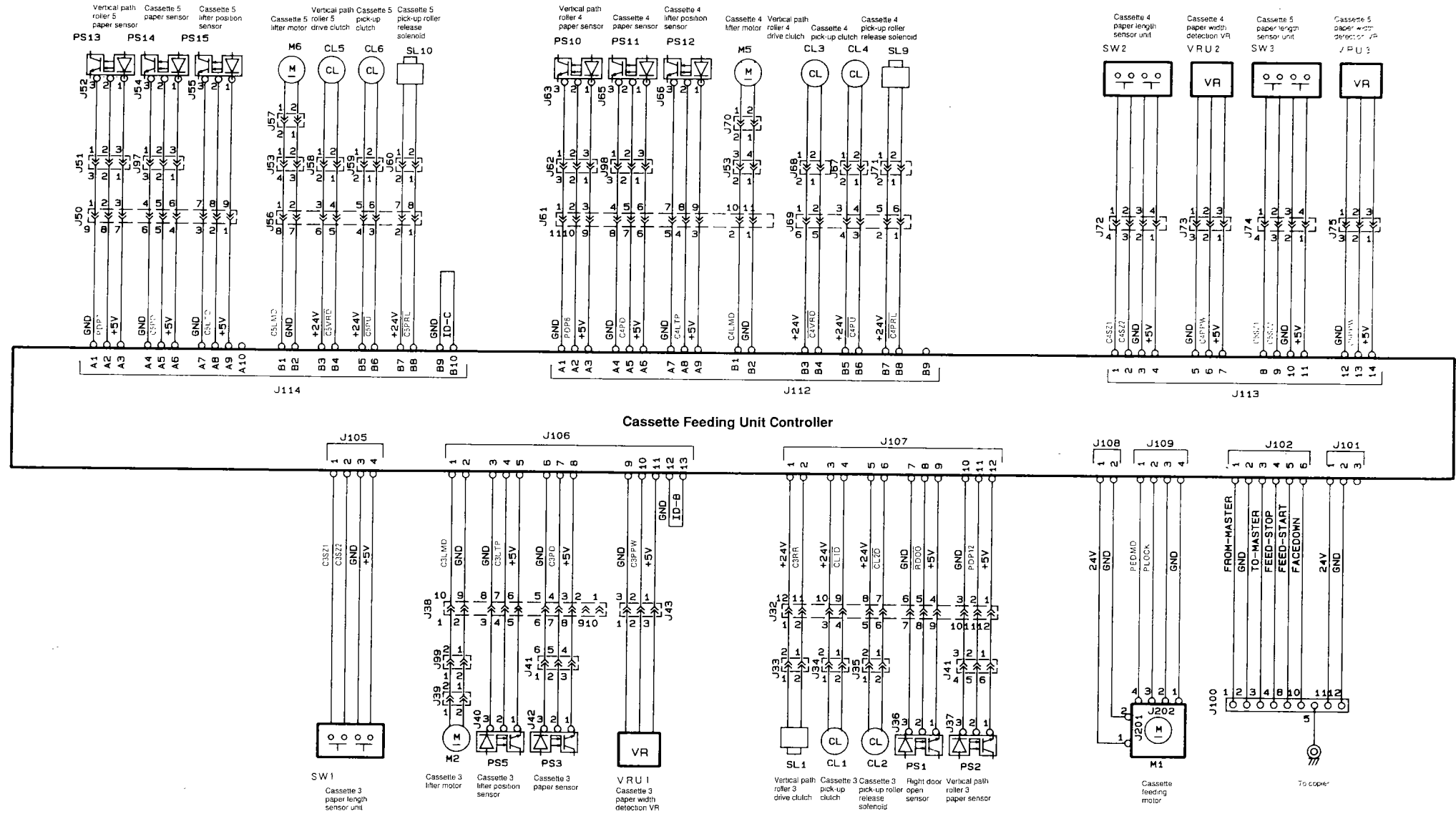
OPERATION PANEL (3/3)



I. CASSETTE FEEDING UNIT CONTROLLER

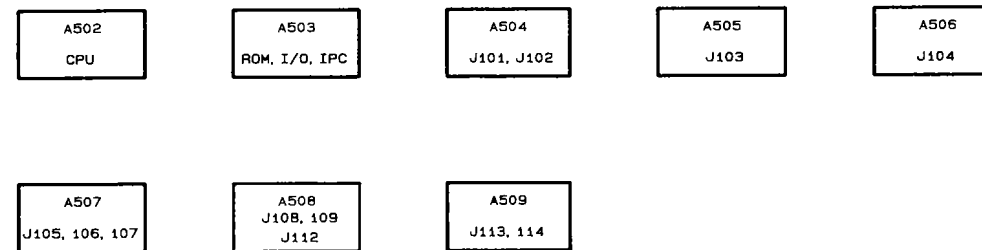


J. CASSETTE FEEDING UNIT CONTROLLER

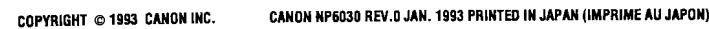


K. CASSETTE FEEDING UNIT CONTROLLER CIRCUIT DIAGRAM

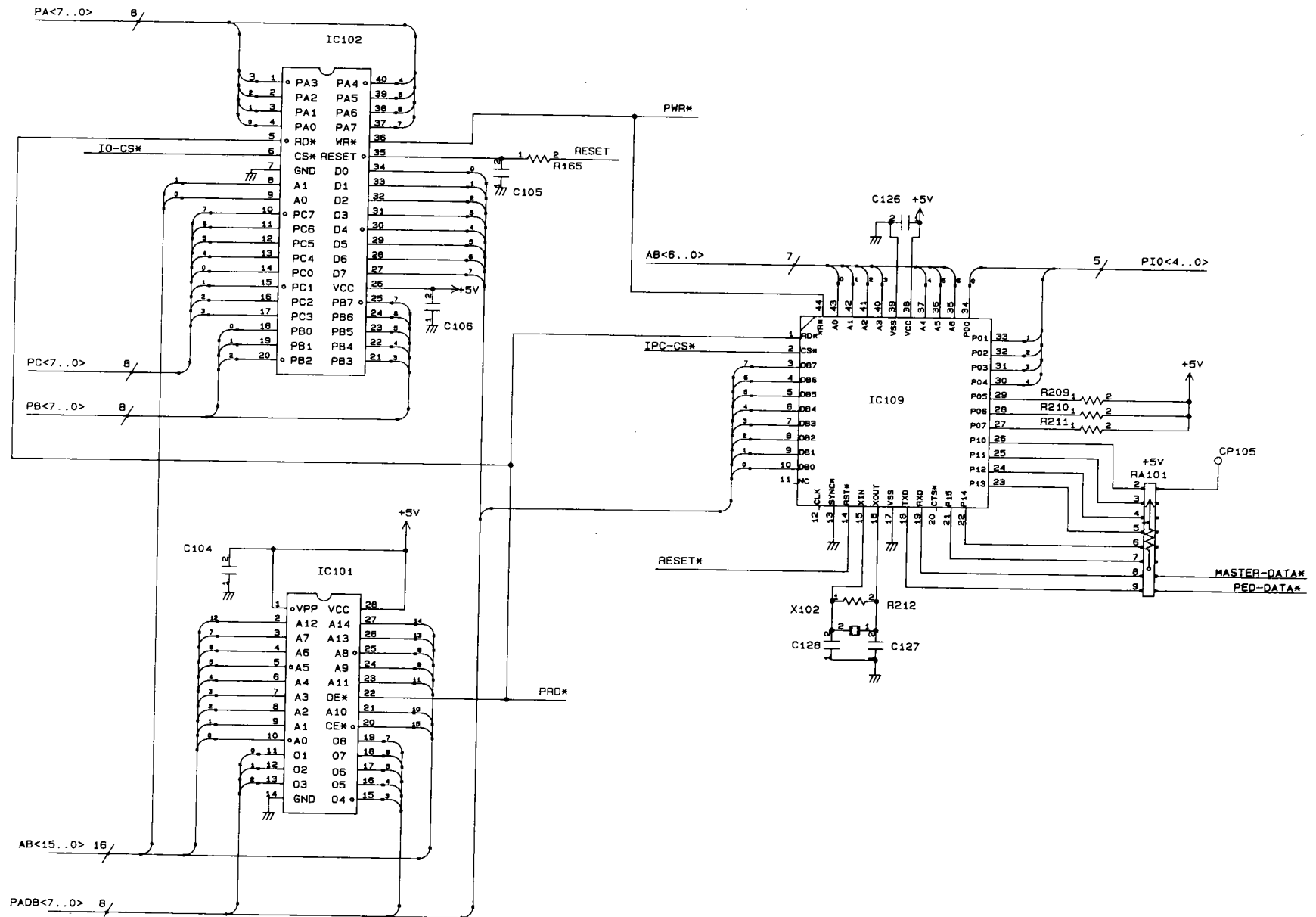
CASSETTE FEEDING UNIT CONTROLLER (A501)



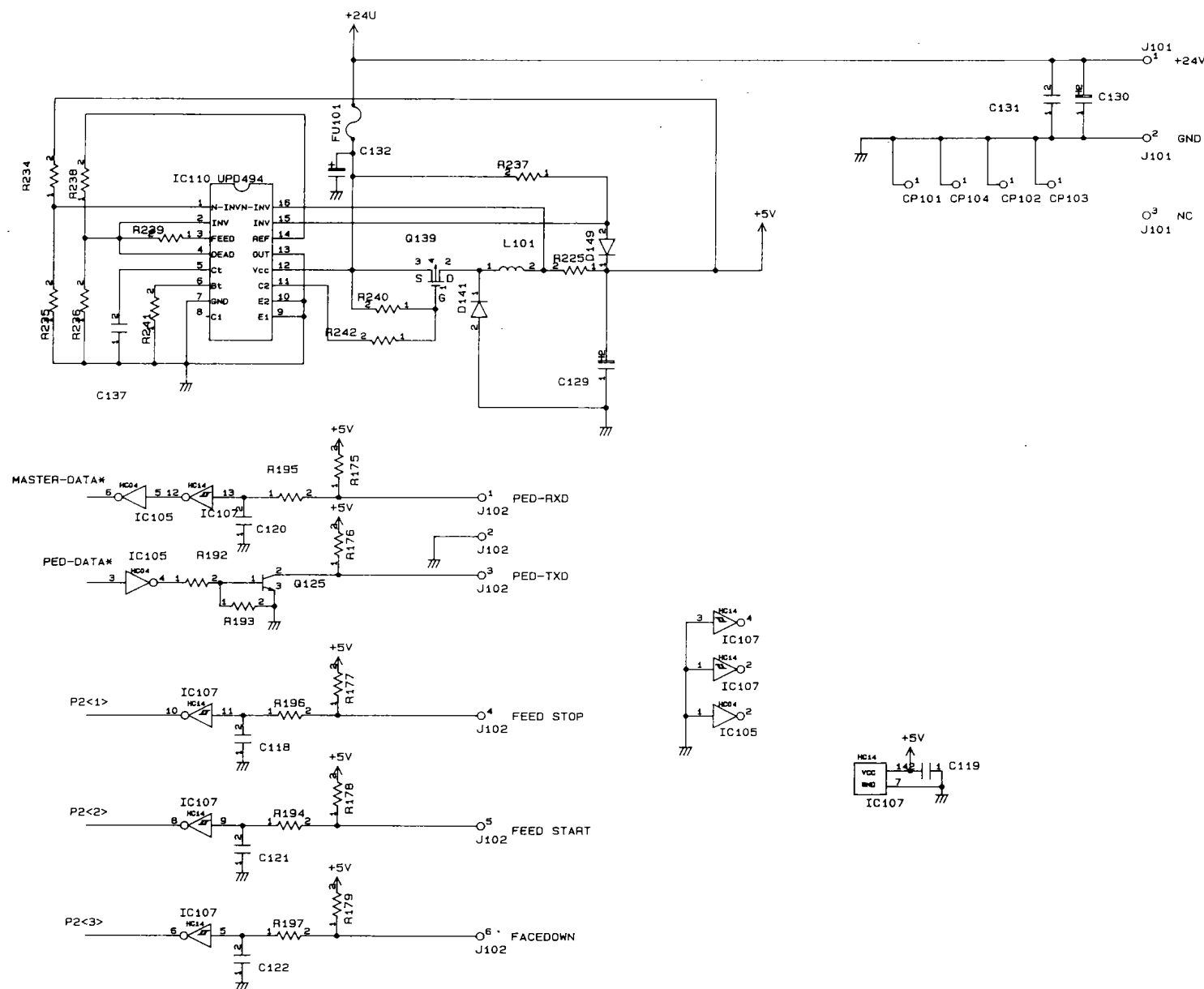
A-44

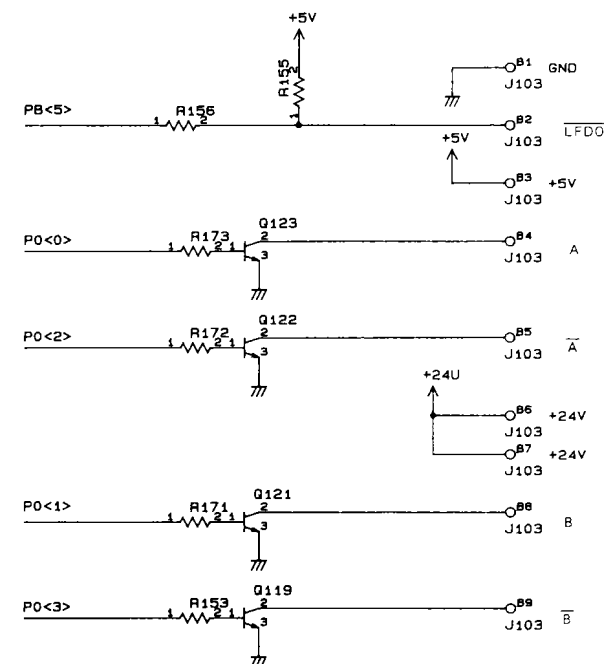
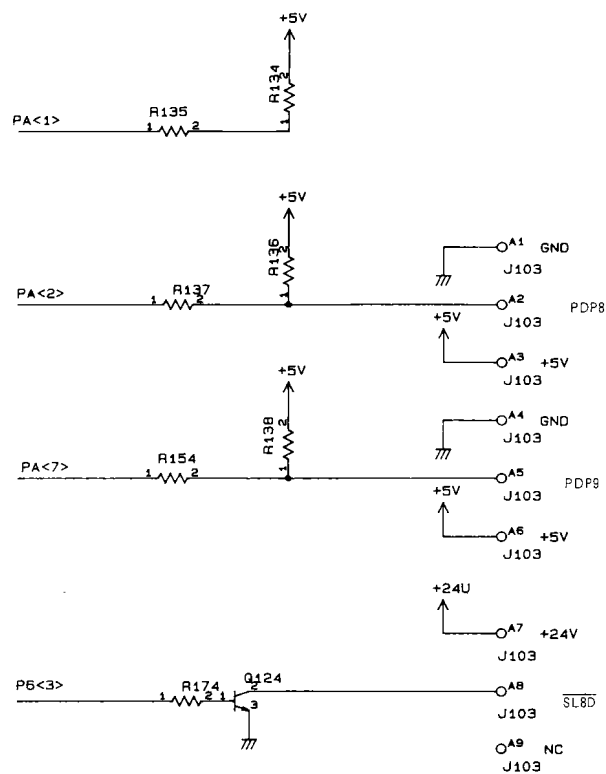


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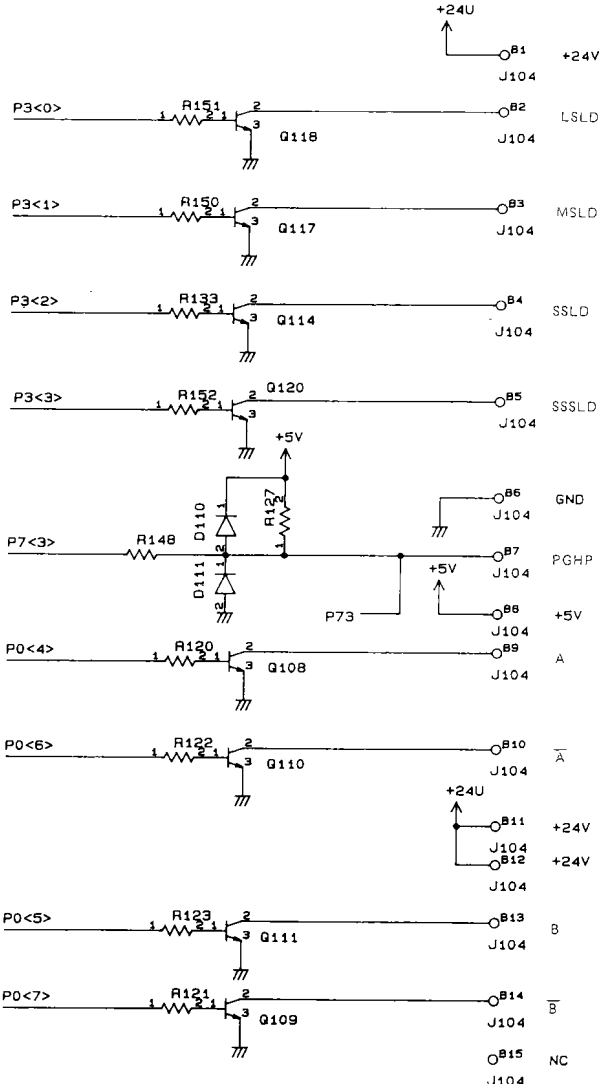
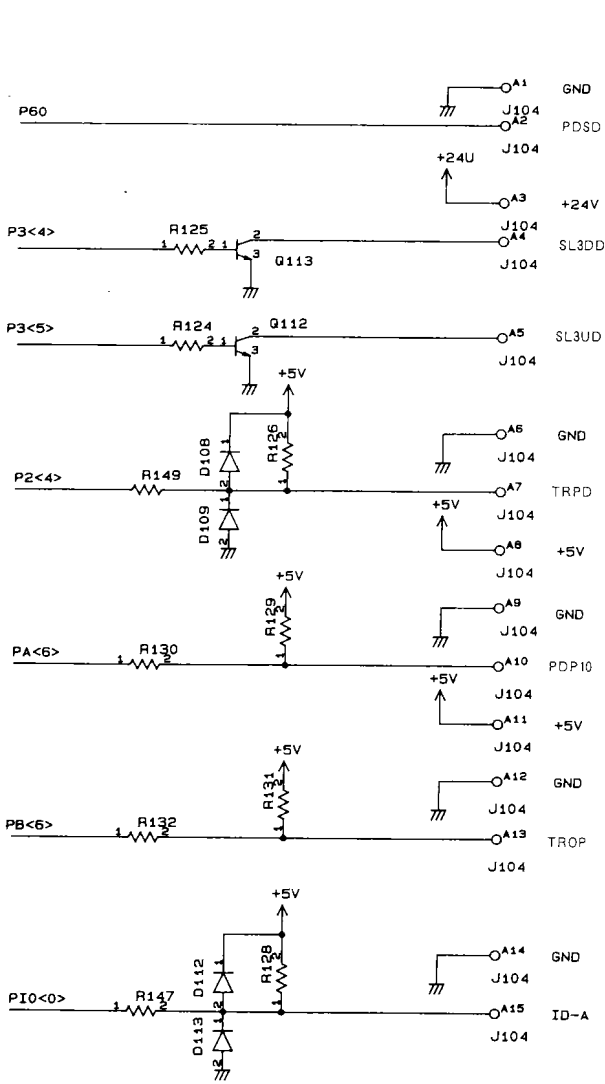


CASSETTE FEEDING UNIT CONTROLLER (A504)

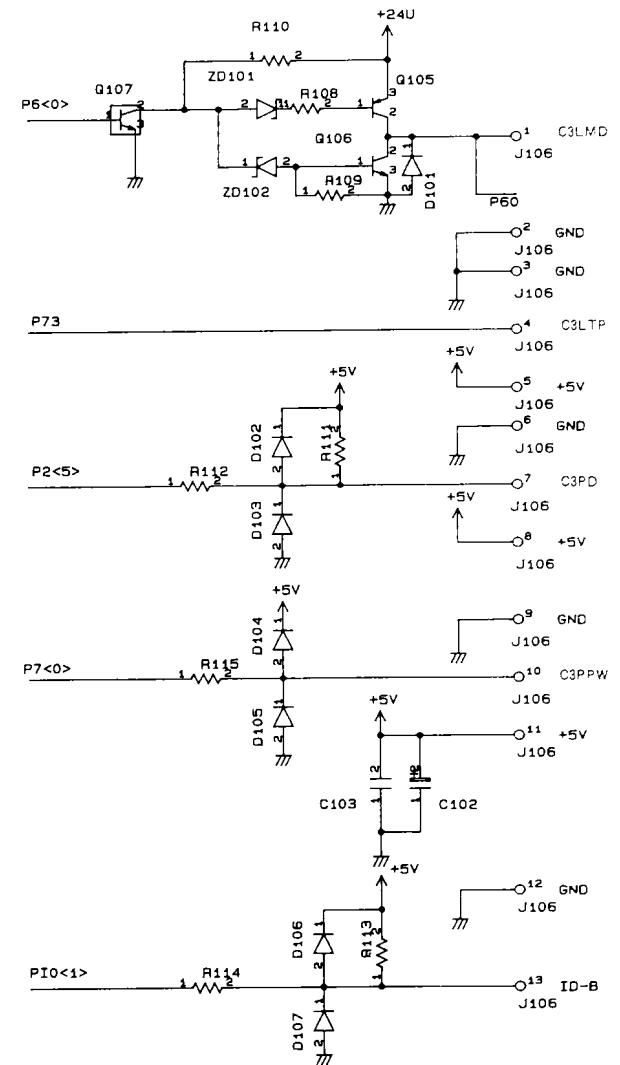
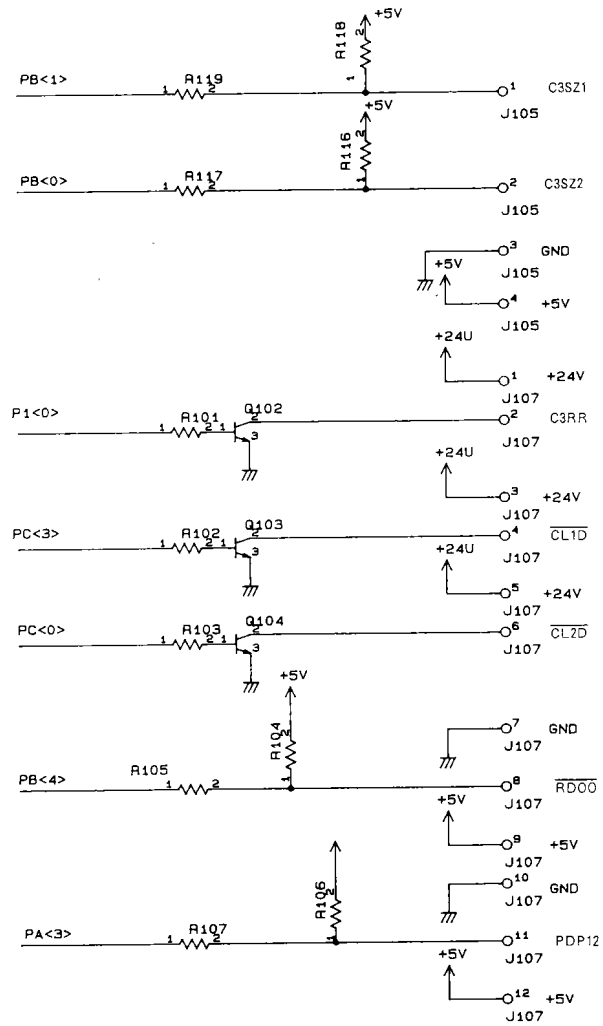




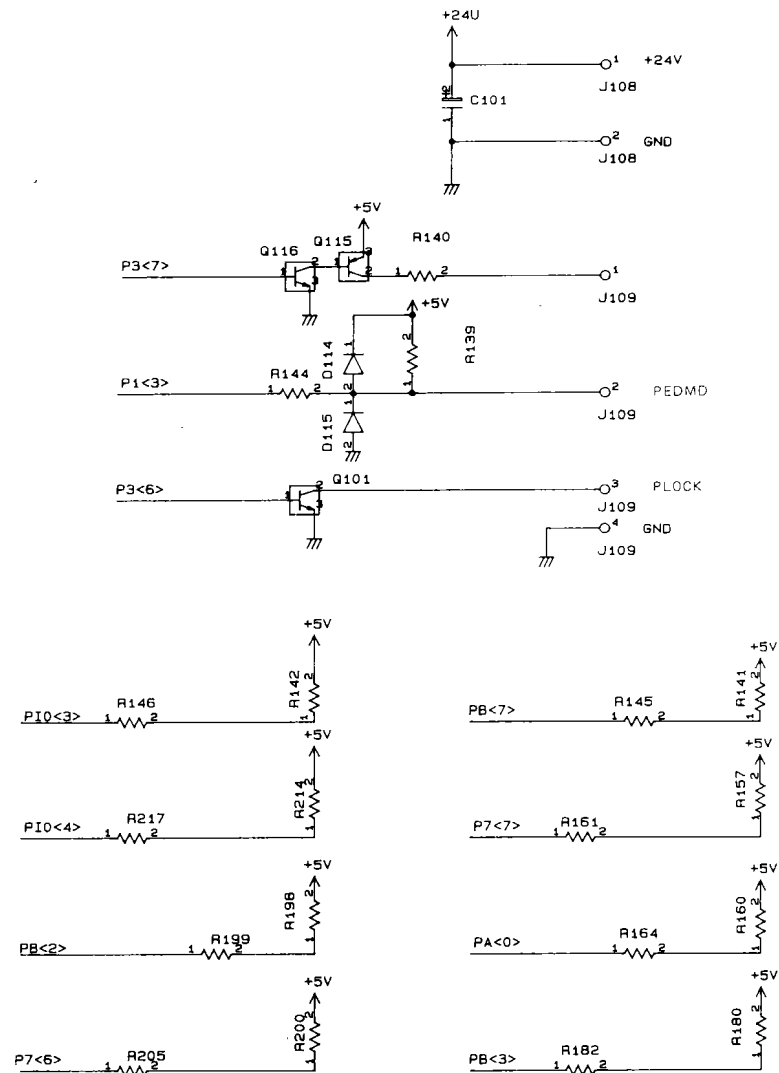
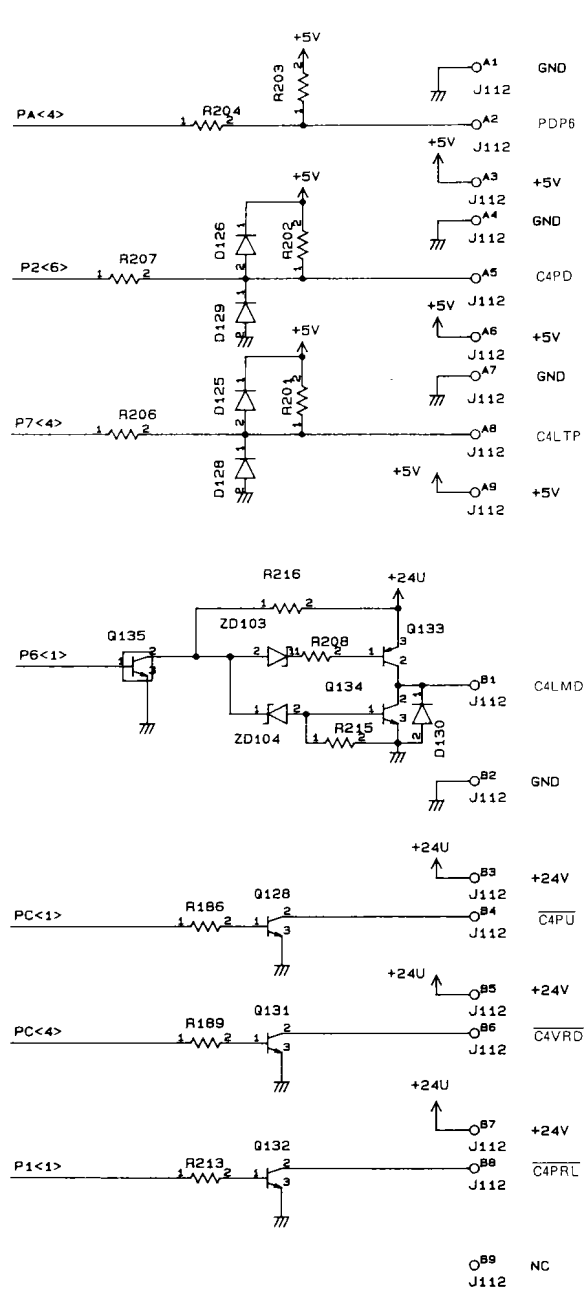
CASSETTE FEEDING UNIT CONTROLLER (A506)



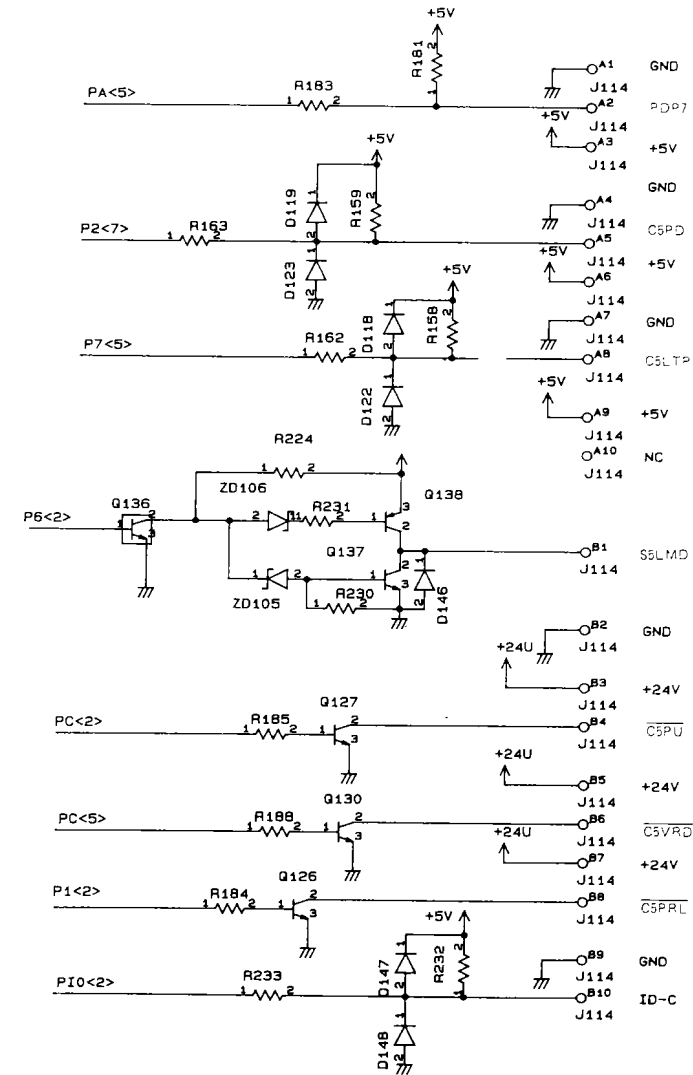
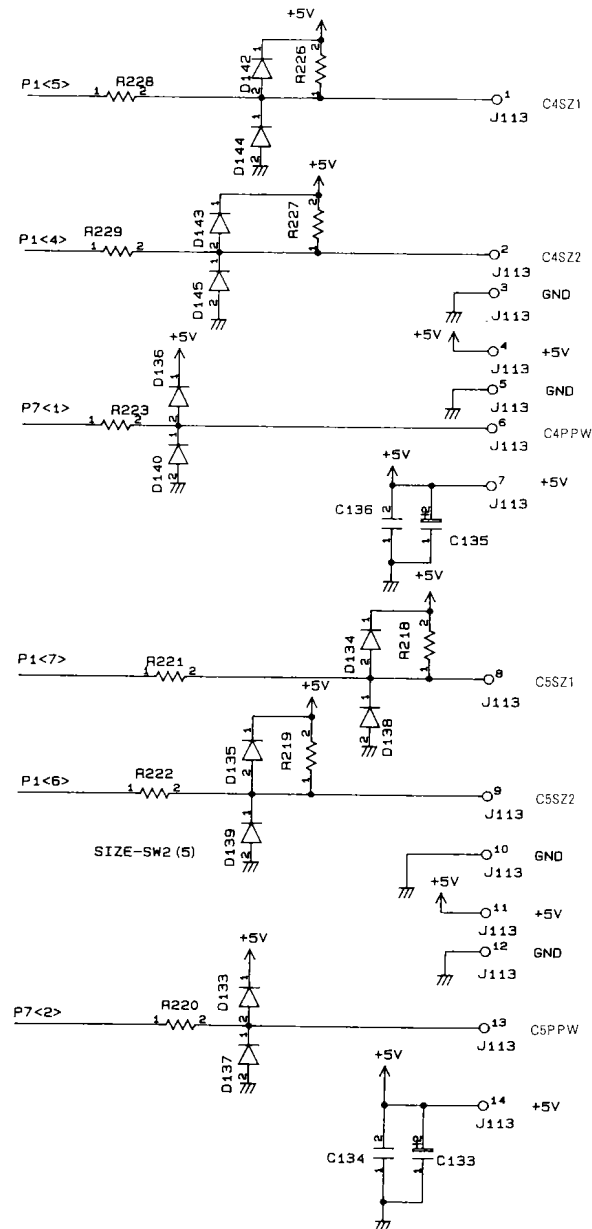
CASSETTE FEEDING UNIT CONTROLLER (A507)



CASSETTE FEEDING UNIT CONTROLLER (A508)

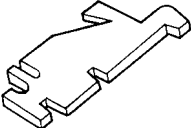
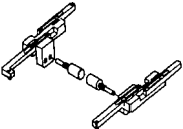


CASSETTE FEEDING UNIT CONTROLLER (A509)



L. SPECIAL TOOLS TABLE

See the table below for a list special tools used to service the copier in addition to the standard tools set.

No.	Tool name	Tool No.	Shape	Code*	Description
1	Door Switch	TKN-0093		A	
2	Mirror Positioning Tool (front, rear)	FY9-3002-000		B	Use it to adjust the distance between No. 1 and No. 2 mirrors.

M. SOLVENTS/OILS TABLE

No.	Material name	Uses	Composition	Remarks
1	Ethyl alcohol (Ethanol) Isopropyl alcohol (Isopropanol)	Cleaning: e.g., glass, plastic, rubber parts; external covers	C_2H_5O $(CH_3)_2CHOH$	• Do not bring near fire. • Procure locally. • Isopropyl alcohol may be substituted.
2	MEK	Cleaning: e.g., metal; oil or toner dirt	$CH_3COC_2H_5$ Methylethyl ketone	• Do not bring near fire. • Procure locally.
3	Heat-resistant grease	Lubricating: fixing drive assemblies	Lithium soap (mineral oil family) Molybdenum bisulfate	• CK-0427 (500 g/can)
4	Lubricating oil	Lubricating: scanner rail, spring clutch	Mineral oil (paraffin family)	• CK-0451 (100 cc)
5	Lubricating oil	Lubricating: pick-up assembly roller bushing (FS2-1005-000)	Mineral oil (paraffin family)	• CK-0524 (100 cc)
6	Lubricating oil	Lubricating: drive and friction parts	Silicone oil	• CK-05512 (20 g)