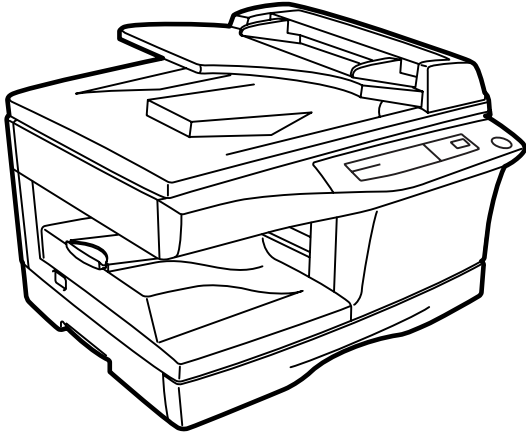


# SHARP SERVICE MANUAL

CODE: 00ZAL1250/A1E

## DIGITAL COPIER



**AL-1020**  
**AL-1200**  
**AL-1220**  
**MODEL AL-1250**

\* This Service Manual describes only the differences from the AL-1000/1010. For the common items with the AL-1000/1010, please refer to the AL-1000/1010 manual.

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●	PARTS GUIDE	

Parts marked with "▲" is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

**SHARP CORPORATION**

This document has been published to be used for after sales service only.  
 The contents are subject to change without notice.

## [1] GENERAL

### 1. General

This model is a digital personal copier produced with key words of "Comfort able copy, Clear copy, Easy copy" providing high copy performances and copy productivity.

### 2. Target User Copy Volume: Monthly Average

Copies: 400 ~ 800 (Max. 800)

Prints: 400 ~ 800 (Max. 800)

### 3. Main features

#### A. High-speed laser copying

- Since warm-up time is zero, copying can be started immediately after the power switch is turned on.
- First-copy time is only 9.6 seconds (normal mode).
- Copying speed is 10 copies/min. (AL-1020) or 12 copies/min. (AL-1220/AL-1250), which adapts to business use, allowing improvement of working efficiency.

#### B. High-quality digital image

- High-quality image copying at 600 dpi can be performed.
- In addition to the automatic exposure mode, the manual exposure can be adjusted in five steps.
- The photo mode copying function allows clear copying of delicate halftone original images such as monochrome photos and color photos.

#### C. Substantial copying functions

- Zoom copying from 50% to 200% in 1% increments can be performed.
- Continuous copying of maximum 99 sheets can also be performed.
- Automatic document feeding through the single pass feeder (SPF) can be performed.
- Toner save mode reduces toner consumption by approximately 10%.
- User programs allow setting/modification of functions for customer's needs.

#### D. Scan once/Print many

This copier is equipped with a 1-page memory buffer. This Memory allows the copier to scan an original 1 time only and make up to 99 copies. This feature allows for improved workflow, reduced operating noise from the copier and reduced wear and tear on the scanning mechanism. This feature provides for a higher reliability.

#### E. Printer feature

The AL-1250 copier can be used as a laser printer. The AL-1020 and AL-1220 copiers can be used as a laser printer by installing an optional printer upgrade kit.

#### F. Environmentally friendly design

Paper output tray is housed in the copier for space saving. Preheat mode and auto power shut-off mode are provided to reduce power consumption in standby mode.

## 4. Environmental

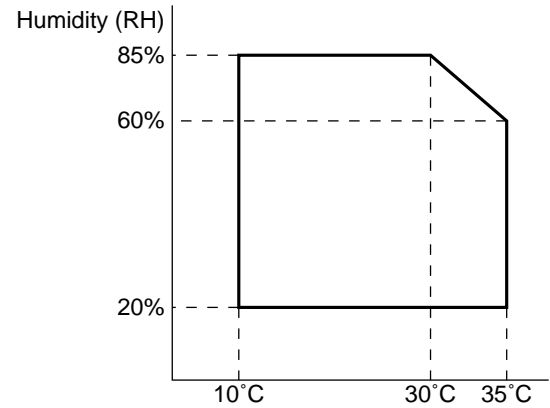
The environmental conditions for assuring the copy quality and the machine operations are as follows:

### A. Normal operating condition

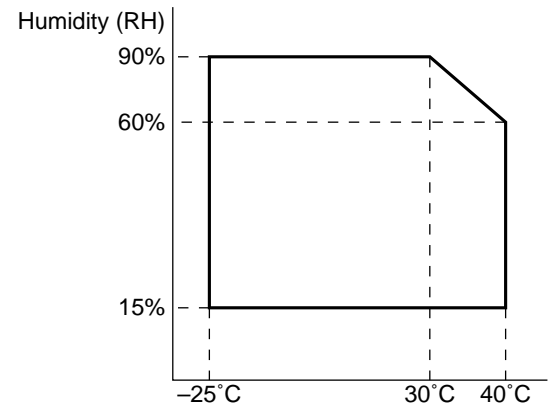
Temperature: 20°C~25

Humidity: 65 ± 5%RH

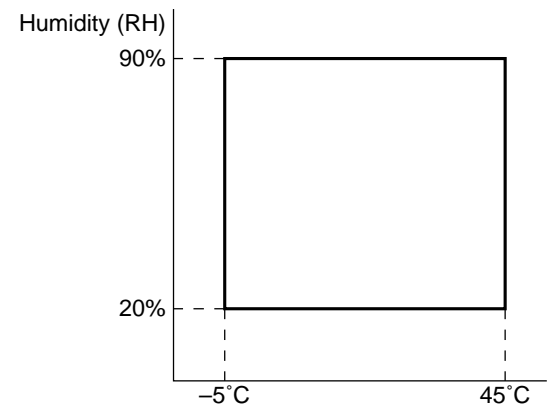
### B. Acceptable operating condition



### C. Optical condition



### D. Supply storage condition



## [2] SPECIFICATIONS

### 1. Basic specification

Item	AL-1020	AL-1220	AL-1250	AL-1200
External dimensions (W × D × H) (mm)	H379 × W518 × D477 mm	←	H464 × W518 × D477 mm	H293 × W518 × D445 mm
Weight	21.5 kg	21.5 kg	24.5 kg	18.0 kg

### 2. Operation Specification

Section item		Details	AL-1020	AL-1220	AL-1250	AL-1200
Paper feed section	Paper feed system		1 tray (250 sheet) + Multi bypass (50 sheet)	←	2 tray (250 sheet × 2) + Multi bypass (50 sheet)	1 tray (250 sheet) + Multi bypass (50 sheet)
Electrical section	Power source	Voltage	100V 110V 120/127V 230V 240V	←	←	←
		Frequency	Common use for 50 and 60 Hz	←	←	←
	Power consumption	Max	1000 W	←	←	←
		Average (during copying)	275 Wh/H *1)	285 Wh/H *1)	285 Wh/H *1)	270 Wh/H
		Average (stand-by)	70 Wh/H *1)	←	←	←
		Pre-heat mode	40 Wh/H *1)	←	←	←
Auto power shut-off mode	18 Wh/H *1)	←	←	←		
Installed memory			6 MB	←	←	Not Available

\*1) May fluctuate due to environmental conditions and the input voltage.

### 3. Copy performance

Section item		Item	AL-1020	AL-1220	AL-1250	AL-1200
Copy speed	First copy time	Tray paper feed	9.6 sec. (Pre-heat mode: 16 sec. or delow/Auto power-shut-off mode: 23 sec. or delow Feed from Tray1/Scan Once Print Many Mode: 13.9 sec	←	←	←
		Manual paper feed	Single: 10 sec./Multi: 8.0 (Pre-heat mode: 16 sec.)	←	←	←
		SPF	Optic at Scanning Position: 11.5 sec Optic at Home Position: 13.0 sec	←	←	— Not Available
AB system: A4 (Landscape)	Copy speed (CPM)	Same size	10	12	←	←
		Enlargement	10	12	←	←
		Reduction	10	11	←	←
B5 (Landscape)	Copy speed (CPM)	Same size	10	12	←	←
		Enlargement	10	12	←	←
		Reduction	10	12	←	←
Inch system 8- 1/2" × 14" (Landscape)	Copy speed (CPM)	Same size	10	10	←	←
		Enlargement	10	10	←	←
		Reduction	10	10	←	←
8 1/2" × 11" (Landscape)	Copy speed (CPM)	Same size	10	12	←	←
		Enlargement	10	12	←	←
		Reduction	10	12	←	←
Void	Void area	leading edge	1 ~ 255 4 mm	←	←	←
		Tailing edge	4 mm or less	←	←	←
		Side void area	4 mm or less (per side)	←	←	←
	Image loss	leading edge	Same size: 3.0 mm or less	←	←	←
			Enlarge (200): 1.5 mm or less	←	←	←
			Reduction (50): 6.0 mm or less	←	←	←
		Trailing edge	Same size: 4.0 mm or less	←	←	←
			Enlarge (200): 4.0 mm or less	←	←	←
			Reduction (50): 4.0 mm or less	←	←	←
		Side void area (per side)	Same size: 2.0 mm or less	←	←	←
			Enlarge (200): 2.0 mm or less	←	←	←
			Reduction (50): 2.0 mm or less	←	←	←

#### 4. GDI Printer Specification (Standard for AL-1250, Option for AL-1020/1220)

Printer speed	WPPM (TBD) (A4/8-1/2 × 11, Sharp original)
First Print time	9.6 sec (A4/8-1/2 × 11, Not include communication time to the host PC and the set up time of polygon mirror)
CPU	None
Memory	4 MB • 6 MB
Interface	IEEE1284
Emulation	Sleek type GDI
Interface Font	None
Resolution	600 dpi
Operation System Compatibility	Win 3.1, WFW 3.11, Win 95, Win 98, Win NT 4.0
Minimum System Requirements	<p>Win 3.1: 486 or better processor, 8 MB Ram (16 recommended)  30 MB of additional HD Space (+5 MB for Win 32s installation)</p> <p>Win 95: 486 or better processor, 8 MB Ram (16 recommended)  30 MB of additional HD Space.</p> <p>Win 98: 486 DX or better processor, 16 MB Ram (32 recommended)  30 MB of additional HD Space.</p> <p>NT 4.0: 486 or better processor, 8 MB Ram (16 recommended)  30 MB of additional HD Space.</p>

#### 5. Other

AL-1020	10cpm/MB/SOPM/SPF
AL-1220	12cpm/MB/SOPM/SPF
AL-1250	12cpm/MB/SOPM/SPF/GDI/2nd

\*) The above models allow to use the SOPM function from the SPF.

##### A. SOPM function

- (1) The SOPM function is effective either in the OC copy mode or in the SPF copy mode.
- (2) The SOPM in the SPF copy mode: Even when a document is set on the document table and the SPF mode lamp is lighted, the quantity display remains unchanged (does not turn to "1"). Under that condition, press the quantity set key to set the quantity.
- (3) Basic operation: The first document is read and data are stored in the memory and copies of the set quantity are made. If there is the second document, it is read and the data are stored in the memory and copies of the set quantity are made similarly. This procedure is repeated until the end of the documents.

##### B. 2nd cassette door

- (1) The sensor output when the 2nd cassette door is open is the same as that when PPD3 is ON. Therefore, when the initial operation is made (the power is turned on and the side door is opened/closed) with the 2nd door open, the JAM lamp will light up.

#### 6. AL-1200 specifications

The AL-1200 is the 12 sheets/min model of the AL-1010.

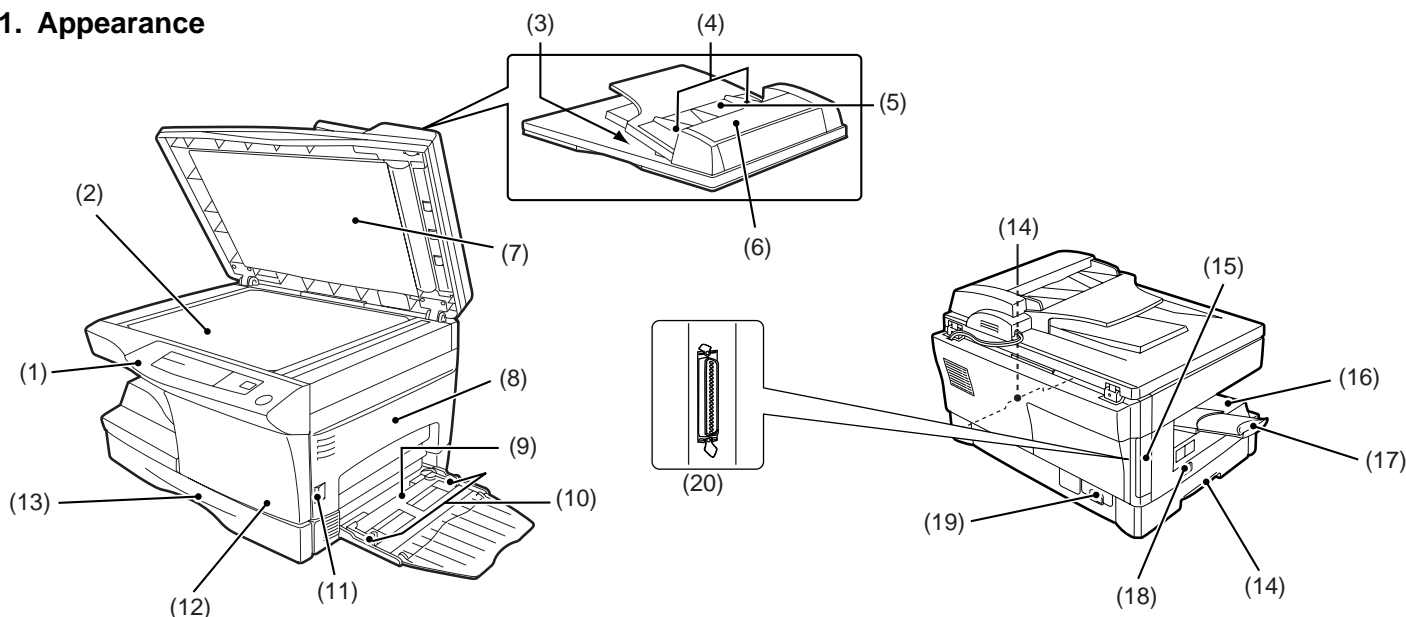
The Specifications are the same as those of the AL-1010, except for the copy speed and the average power consumption during copying (270Wh/H (\*1)).

Please refer to the Service Manual of the AL-1010.

(\*1) Depends on the operating conditions and the input voltage.

### [3] EXTERNAL VIEWS AND INTERNAL STRUCTURES

#### 1. Appearance



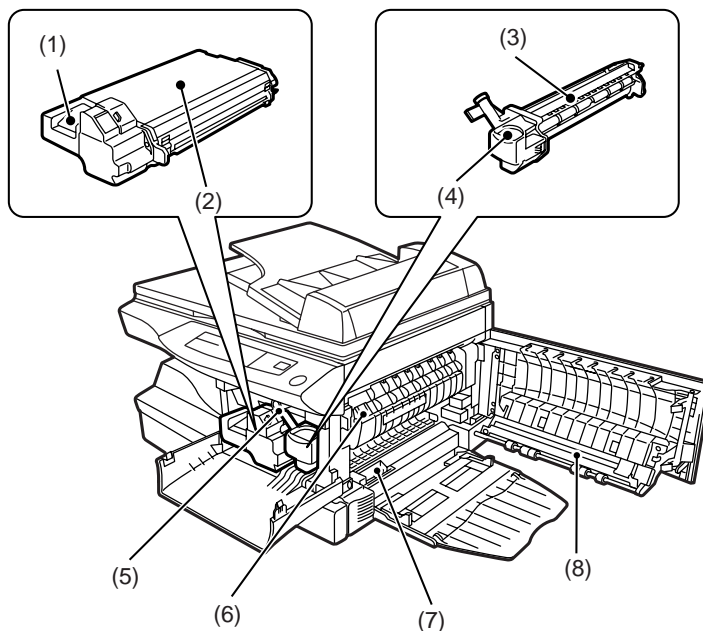
(1) Operation panel	(2) Original table	(3) SPF exit area
(4) Original guides	(5) Document feeder tray	(6) Feeding roller cover
(7) Original cover	(8) Side cover	(9) Bypass tray
(10) Bypass tray guides	(11) Side cover open button	(12) Front cover
(13) Paper tray* <sup>1</sup>	(14) Handle	(15) Cover for optional printer interface* <sup>2</sup>
(16) Paper output tray	(17) Paper output tray extension	(18) Power switch
(19) Power cord socket	(20) Parallel interface connector* <sup>3</sup>	

\*1 The AL-1250 is equipped with two paper trays.

\*2 (AL-1020/AL-1220 only) (For the AL-1020/AL-1220, a printer upgrade kit is optional.)

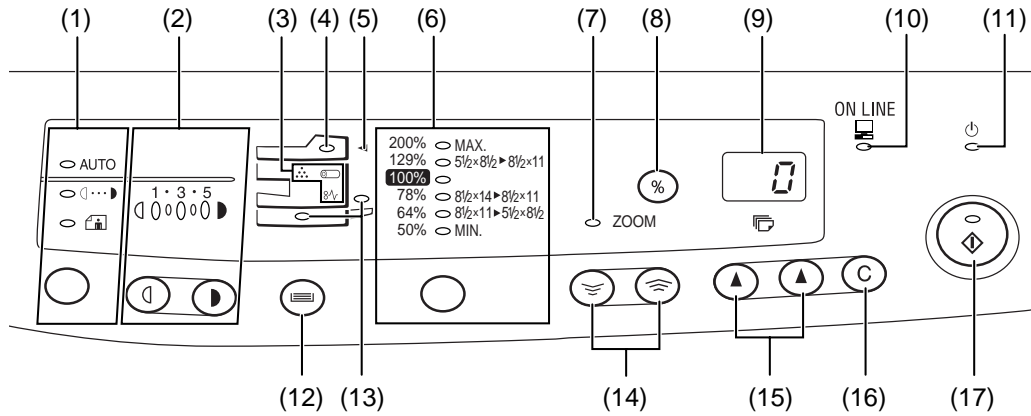
\*3 AL-1250 only

#### 2. Internal



(1) TC cartridge lock release button	(2) TD cartridge	(3) Drum cartridge
(4) Drum cartridge handle	(5) Paper feed roller	(6) Fusing unit release lever
(7) Charger cleaner	(8) Transfer charger	

### 3. Operational panel



(1)	Exposure mode selector key and indicators	(2)	Light and dark keys and exposure indicators	(3)	Alarm indicators*1
(4)	SPF indicator	(5)	SPF misfeed indicator	(6)	Copy ratio selector key and copy ratio indicators
(7)	Zoom indicator	(8)	Copy ratio display (%) key	(9)	Display
(10)	ON LINE indicator	(11)	Power save indicator	(12)	Tray select key
(13)	Paper feed location indicators	(14)	Zoom keys	(15)	Copy quantity keys
(16)	Clear key	(17)	Print key and ready indicator		

\*1

**Drum replacement required indicator**

When the drum counter reaches 17,000 copies, the indicator lights up. After 1,000 additional copies are made, the indicator starts blinking and machine will not-operate (after current job) until a new cartridge is installed.

**Misfeed indicator**

**TD cartridge replacement required indicator**

When toner density is lower than a specified level, the TONER DEVELOPER CARTRIDGE REPLACEMENT indicator lights up to warn the user.

If toner is not added after approximately 10 sheets are copied, the indicator starts blinking and machine starts to supply toner.(Toner Developer cartridg replacement indicator keeps lighting up)

If toner density is not back to specific level after two minutes, the READ indicator goes out and Toner Developer indicator starts blinking, and the copier stops.

\*2 ON: Indicates that the machine is in the energy saving (pre-heat) mode.

Blink: Indicates that the machine is in the process of resetting from the energy saving mode or just after supplying the power.

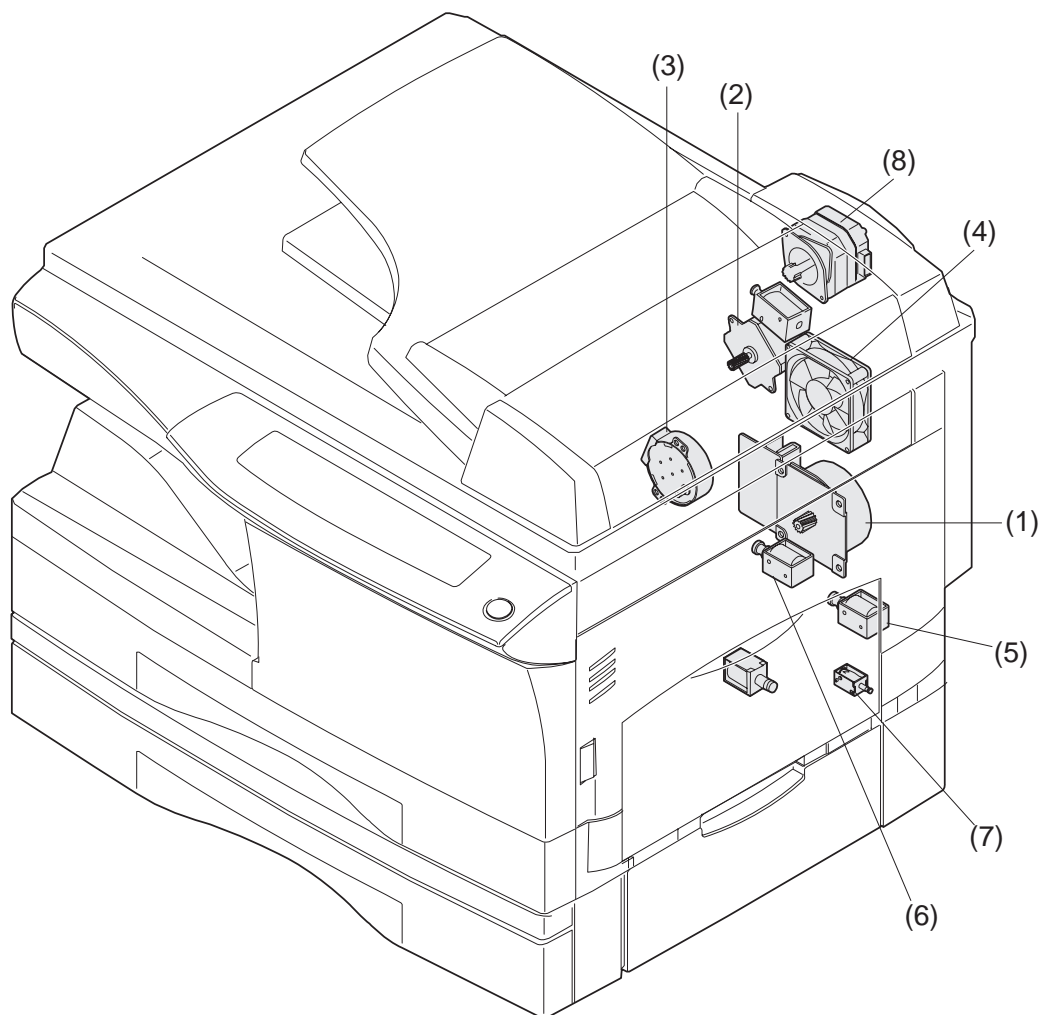
OFF: Indicates that resetting from the energy saving mode is completed and that the fusing temperature is in ready state.

The combinations of the above display lamps are as follows: (● = ON, X = OFF)

Lamp	Immediately after power ON	Ready	Copying
Pre-heat lamp	Blink	X	X
Ready lamp	●	●	X
Other lamps	●	●	●

Lamp	Energy saving mode (Pre-heating)	Energy saving mode (Auto power shut off)	Resetting from energy saving mode	Copy is started during resetting from energy saving mode
Pre-heat lamp	●	●	Blink	Blink
Ready lamp	●	X	●	X
Other lamps	●	X	●	●

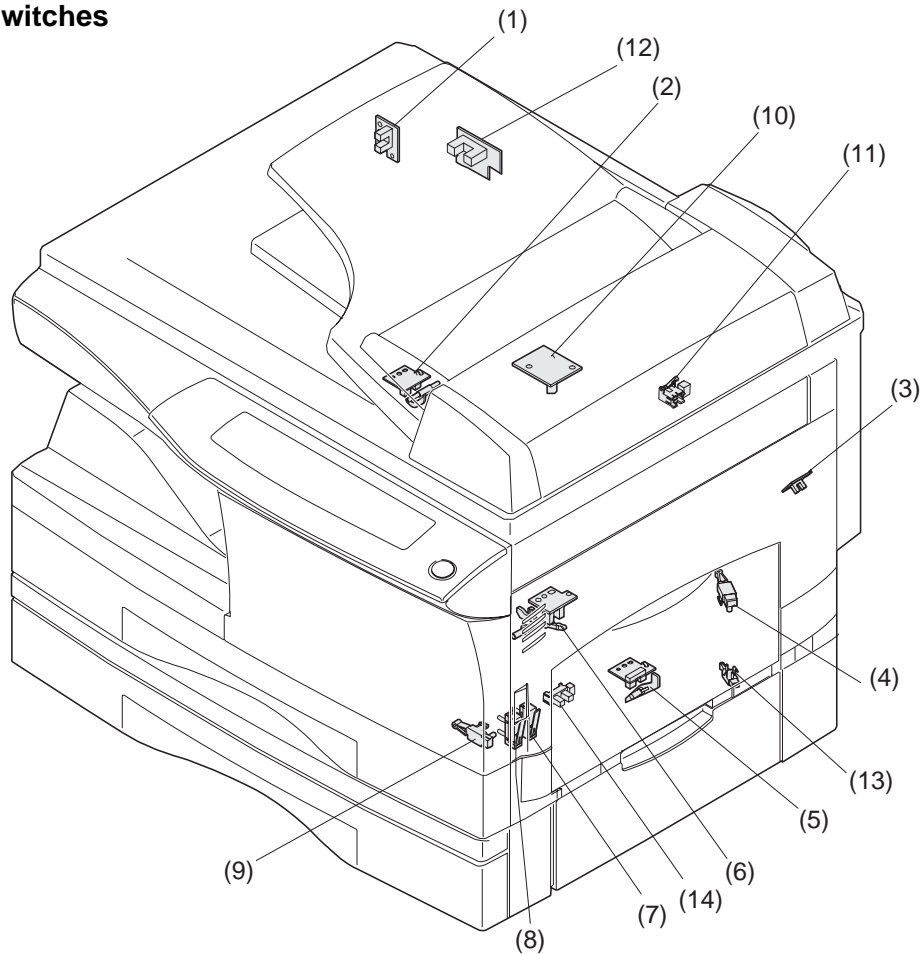
#### 4. Motors and solenoids



No.	Part name	Control signal	Function,operation
(1)	Main motor	MM	Drives the copier.
(2)	Mirror motor	MRMT	Drives the optical mirror base (scanner unit).
(3)	Toner motor	TM	Supplies toner.
(4)	Cooling fan motor	VFM	Cools the optical section.
(5)	Resist roller solenoid	RRS	Resist roller rotation control solenoid
(6)	Paper feed solenoid	CPFS1	Cassette Paper feed solenoid
(7)	Multi paper feed solenoid	MPFS	Multi manual pages feed solenoid
(8)	SPF motor	SPFM	Drives the single pass feeder

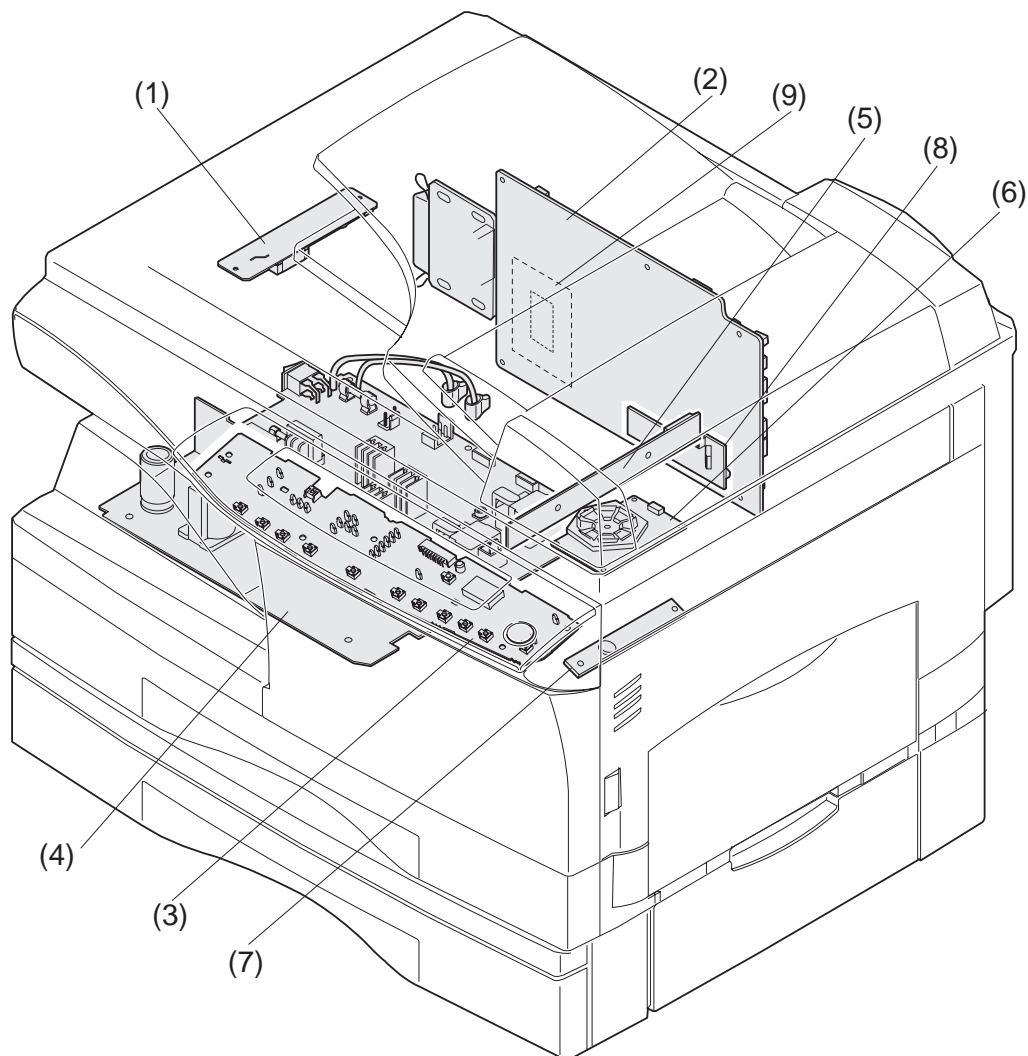


## 5. Sensors and switches



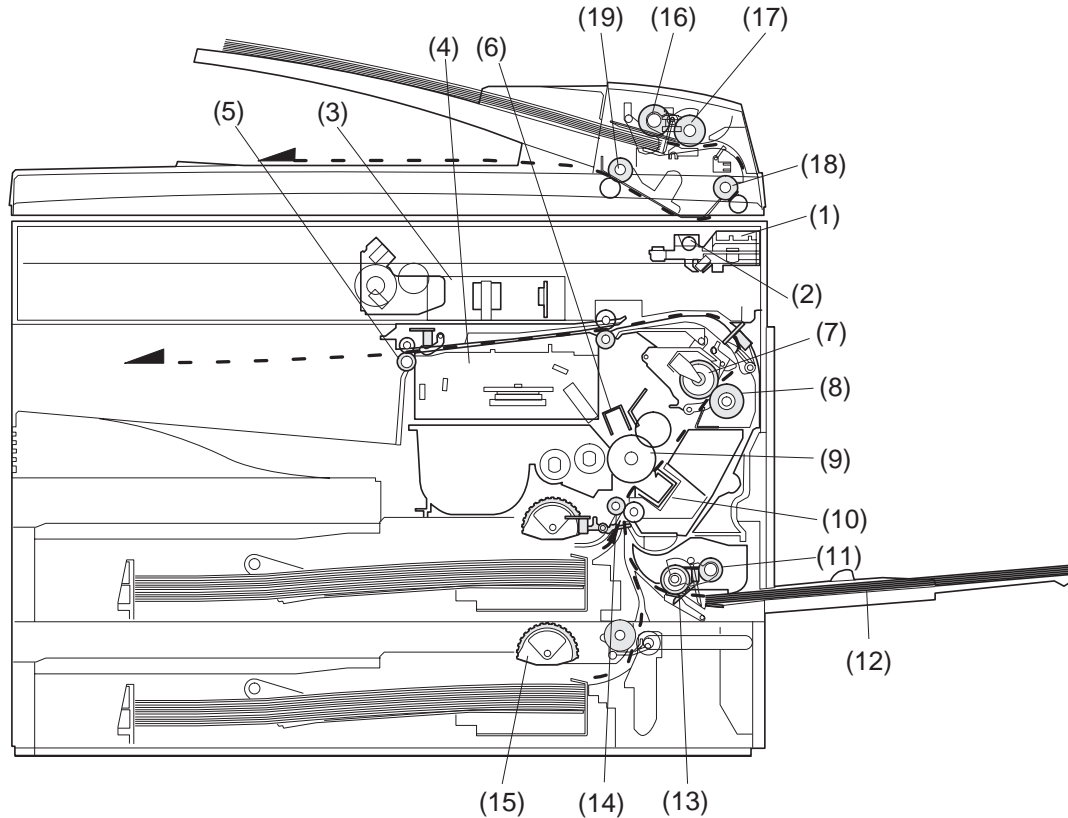
No.	Name	Signal	Type	Function	Output
(1)	Mirror home position sensor	MHPS	Transmission sensor	Mirror (scanner unit) home position detection	"H" at home position
(2)	POD sensor	POD	Transmission sensor	Paper exit detection	"H" at paper pass
(3)	PPD2 sensor	PPD2	Transmission sensor	Paper transport detection 2	"L" at paper pass
(4)	Cassette detection switch	CED1	Microswitch	Cassette installation detection	"H" at cassette insertion
(5)	Manual feed detection switch	MFD	Transmission sensor	Manual feed paper detection (single only)	"L" at paper detection
(6)	PPD1 sensor	PPD1	Transmission sensor	Paper transport detection 1	"L" at paper pass
(7)	Door switch	DSW	Micro switch	Door open/close detection (safety switch for 5V)	1 or 0V of 5V at door open
(8)	Door switch	DSW	Micro switch	Door open/close detection (safety switch for 24V)	1 or 0V of 24V at door open
(9)	Drum reset switch	DRST	Micro switch	New drum detection switch	Instantaneously "H" at insertion of new drum
(10)	SPF sensor	SPID/SD SW	Transmission sensor	Paper entry detection Cover open/close detection	"L" at paper pass
(11)	SPPD sensor	SPPD	Transmission sensor	Paper transport detection	"L" at paper pass
(12)	SDOD sensor	SDOD	Transmission sensor	SPF open/close detection Book sensor	"L" at paper pass
(13)	2nd cassette	DSW	Micro switch	2nd cassette door open detection	1 or 0V of 5V at door open
(14)	PPD3 sensor	PPD3	Transmission sensor	Paper transport detection 3	"L" at paper pass

## 6. PWB unit



No.	Name	Function
(1)	Exposure lamp inverter PWB	Exposure lamp (Xenon lamp) control
(2)	Main PWB (MCU)	Copier control
(3)	Operation PWB	Operation input/display
(4)	Power PWB	AC power input, DC voltage control, High voltage control
(5)	CCD sensor PWB	For image scanning
(6)	LSU motor PWB	For polygon motor drive
(7)	TCS PWB	For toner sensor control
(8)	LSU PWB	For laser control
(9)	Memory PWB 6MB	For memory data

## 7. Cross sectional view



No.	Part name	Function and operation
(1)	Scanner unit	Illuminates the original with the copy lamp and passes the reflected light to the lens unit (CCD).
(2)	Exposure lamp	Exposure lamp (Xenon lamp) Illuminates original
(3)	Lens unit	Scans the original image with the lens and the CCD.
(4)	LSU (Laser unit)	Converts the original image signal into laser beams and writes onto the drum.
(5)	Paper exit roller	Roller for paper exit
(6)	Main charger	Provides negative charges evenly to the drum surface.
(7)	Heat roller	Fuses toner on the paper. (Teflon roller)
(8)	Pressure roller	Fuses toner on the paper. (Silicon rubber roller)
(9)	Drum	Forms images.
(10)	Transfer unit	Transfers images onto the drum.
(11)	Pickup roller	Picks up the manual feed paper. (In multi feed only)
(12)	Manual paper feed tray	Tray for manual feed paper
(13)	Manual paper feed roller	Transport the paper from the manual paper feed port.
(14)	PS roller unit	Takes synchronization between the lead edge and the rear edge of the paper.
(15)	Paper feed roller	Picks up a sheet of paper from the cassette.
(16)	Pickup roller	Picks up documents.
(17)	Separation roller	Separates documents to feed properly.
(18)	PS roller	Feeds documents to the scanning section.
(19)	Paper exit roller	Discharges documents.

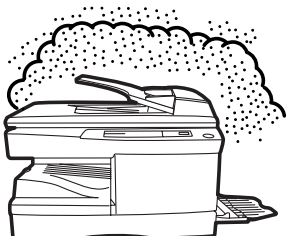
# [4] UNPACKING AND INSTALLATION

## 1. A WORD ON COPIER INSTALLATION

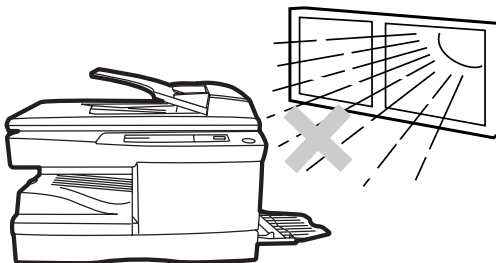
Improper installation may damage the copier. Please note the following during initial installation and whenever the copier is moved.

Do not install your copier in areas that are:

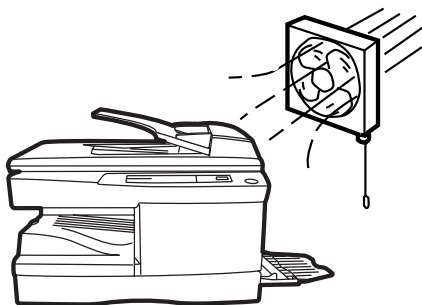
- damp, humid, or very dusty



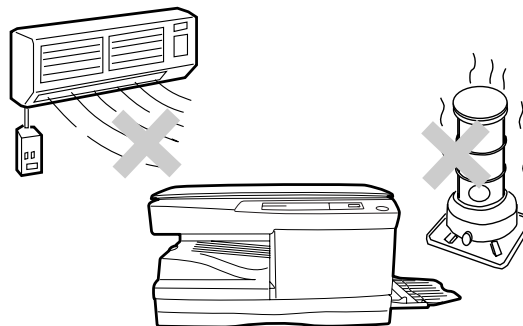
- exposed to direct sunlight



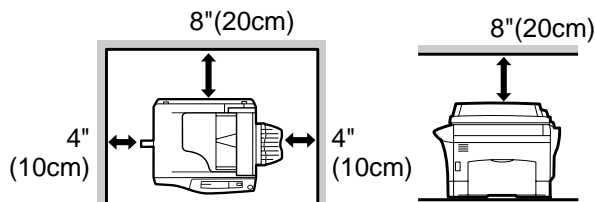
- poorly ventilated



- subject to extreme temperature or humidity changes, e.g., near an air conditioner or heater.

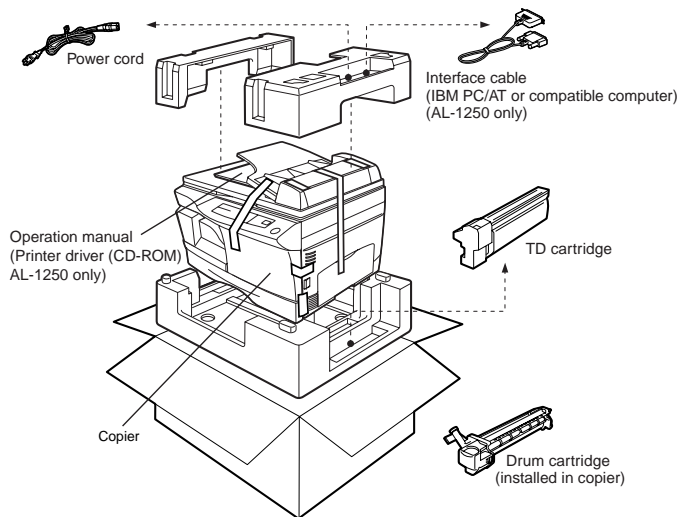


Be sure to allow the required space around the machine for servicing and proper ventilation.



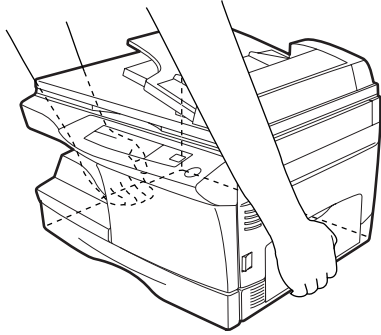
## 2. CHECKING PACKED COMPONENTS AND ACCESSORIES

Open the carton and check if the following components and accessories are included.



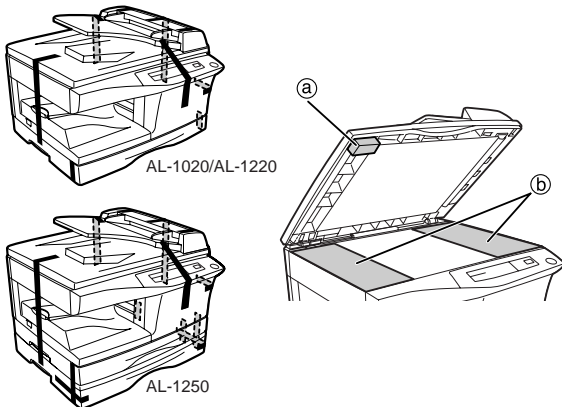
### 3. UNPACKING

Be sure to hold the handles on both sides of the copier to unpack the copier and carry it to the installation location.

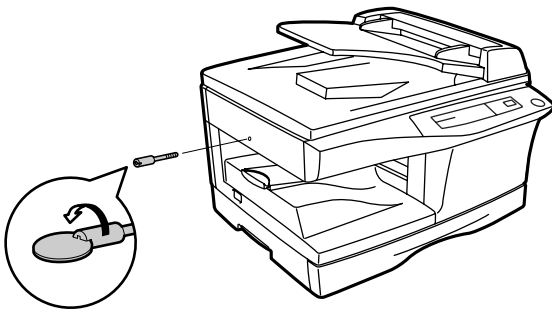


### 4. REMOVING PROTECTIVE PACKING MATERIALS

1) Remove pieces of tape and protective cover. Then open the original cover and remove protective materials (a) and (b).

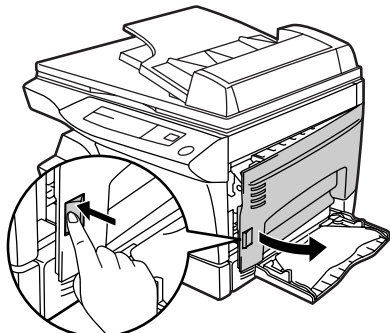


2) Use a coin (or suitable object) to remove the screw. Store the screw in the paper tray because it will be used if the copier has to be moved.

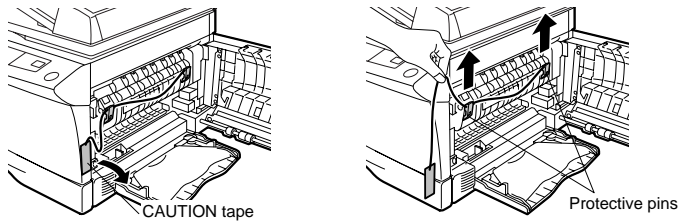


### 5. INSTALLING THE TD CARTRIDGE

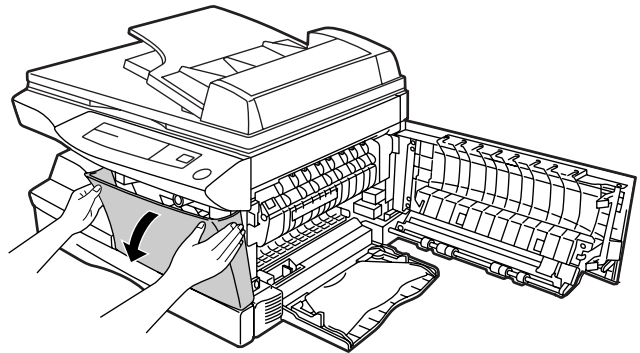
1) Open the bypass tray and then open the side cover while pressing the side cover open button.



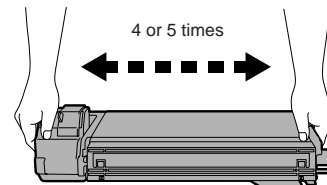
2) Remove the CAUTION tape from the front cover and remove the two protective pins from the fusing unit by pulling the strings upward one at a time.



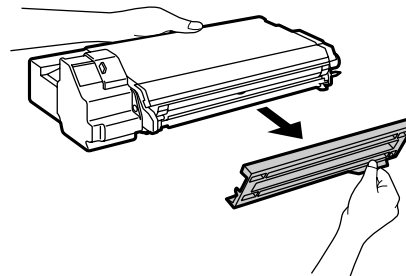
3) Push gently on both sides of the front cover to open the cover.



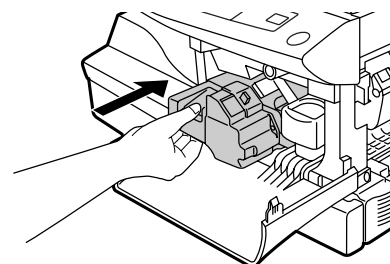
4) Remove the TD cartridge from the bag. Remove the protective paper. Hold the cartridge on both sides and shake it horizontally four or five times.



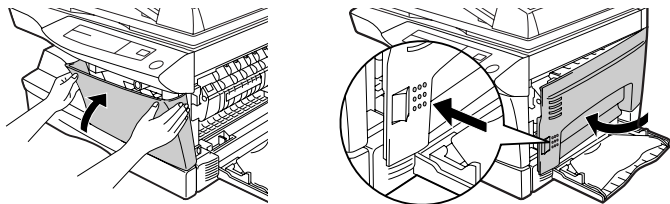
5) Hold the tab of the protective cover and pull the tab to your side to remove the cover.



6) Gently insert the TD cartridge until it locks in place.

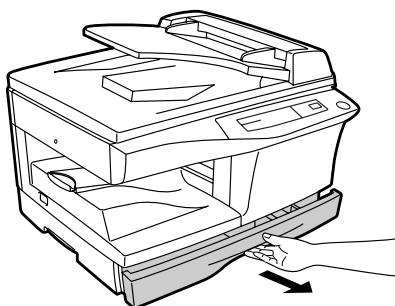


- 7) Close the front cover and then the side cover by pressing the round projections near the side cover open button.

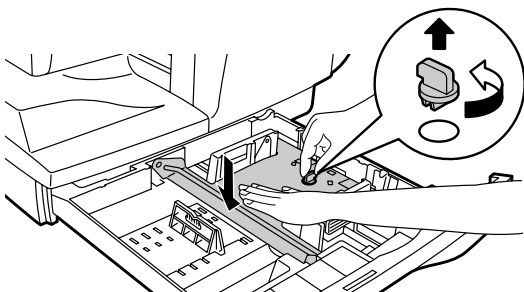


## 6. LOADING COPY PAPER (installing the paper tray)

- 1) Raise the handle of the paper tray and pull the paper tray out until it stops.

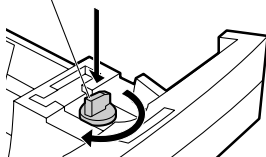


- 2) Remove the pressure plate lock. Rotate the pressure plate lock in the direction of the arrow to remove it while pressing down the pressure plate of the paper tray.

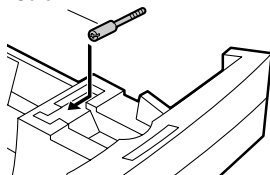


- 3) Store the pressure plate lock which has been removed in step 2 and the screw which has been removed when unpacking (see page 4-2, step 2 of REMOVING PROTECTIVE PACKING MATERIALS) in the front of the paper tray. To store the pressure plate lock, rotate the lock to fix it on the relevant location.

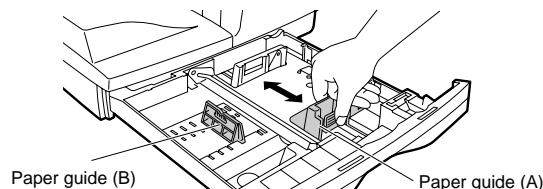
Pressure plate lock



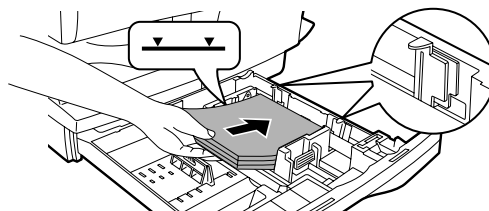
Screw



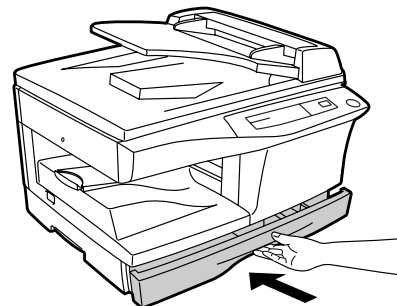
- 4) Adjust the paper guides on the paper tray to the copy paper width and length. Squeeze the lever of paper guide (A) and slide the guide to match with the width of the paper. Move paper guide (B) to the appropriate slot as marked on the tray.



- 5) Fan the copy paper and insert it into the tray. Make sure the edges go under the corner hooks.

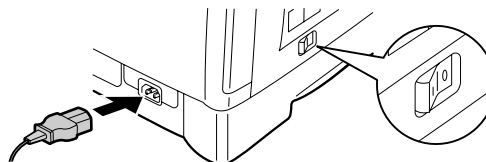


- 6) Gently push the paper tray back into the copier.



## 7. POWER TO COPIER

- 1) Ensure that the power switch of the copier is in the OFF position. Insert the attached power cord into the power cord socket at the rear of the copier.



- 2) Plug the other end of the power cord into the nearest outlet.

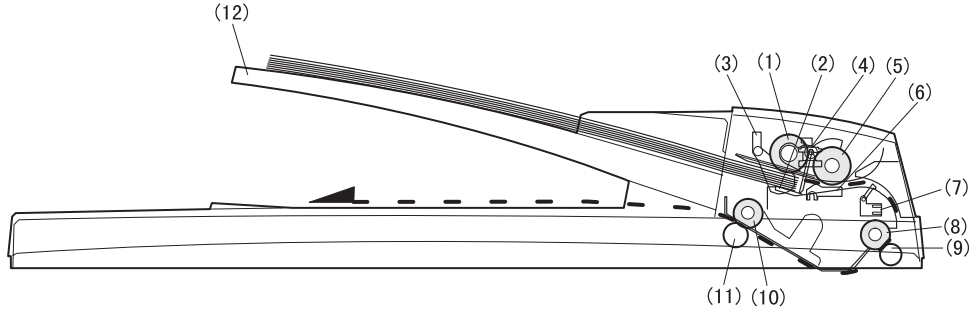
## [5] OPERATIONAL DESCRIPTIONS

### 1. SPF section

#### A. Outline

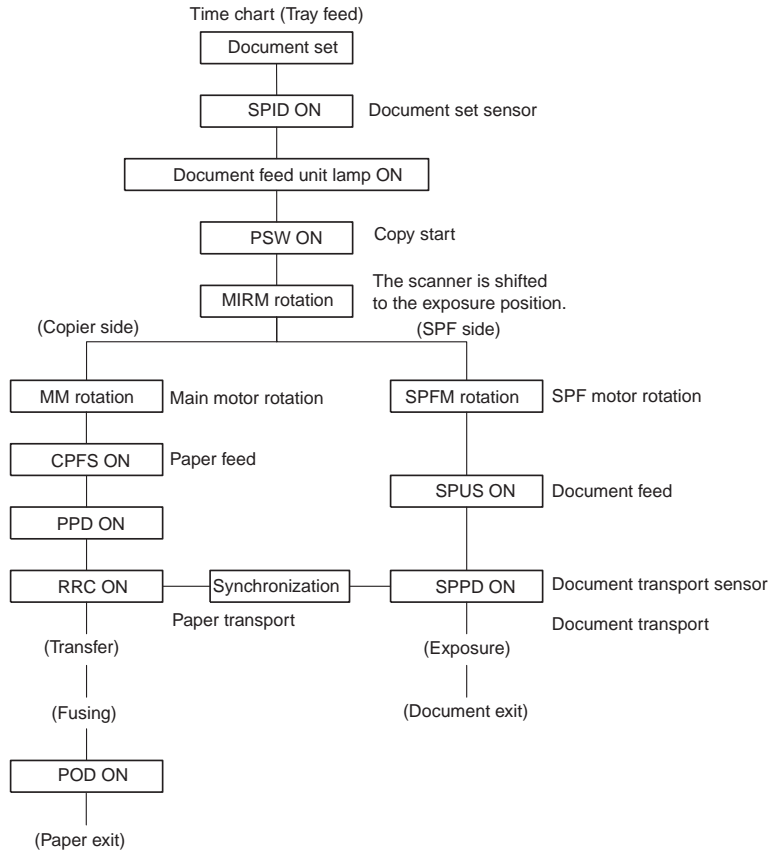
The SPF (Single Path Feeder) is installed to the AL-1000/1200 as a standard provision, and it automatically copies up to 30 sheets of documents of a same size. (Only one set of copies)

#### B. Document transport path and basic composition

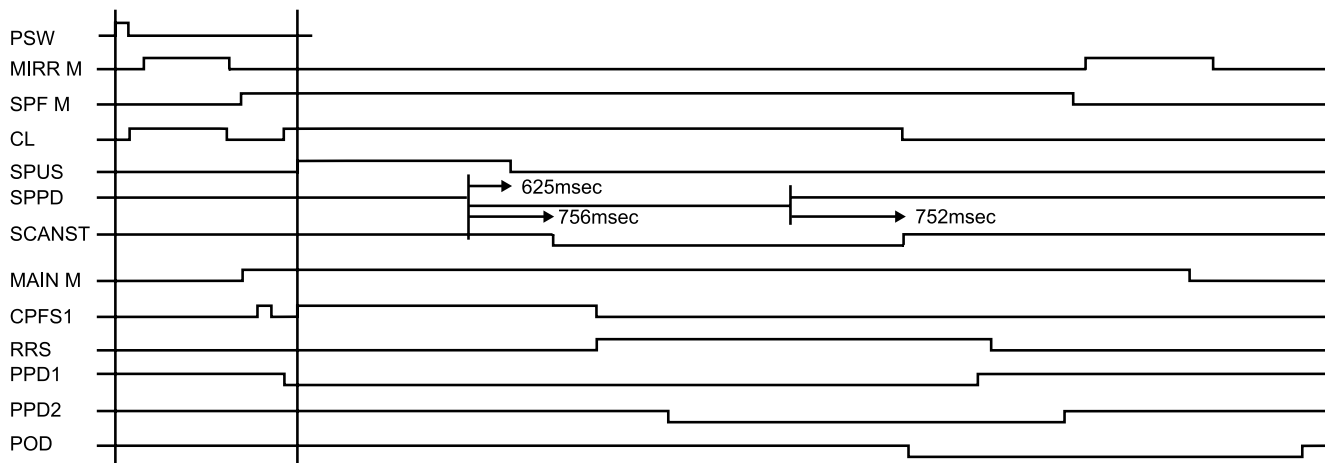


(1)	Pickup roller	(2)	Sheet of document for paper feed	(3)	Set detection ACT
(4)	Paper stopper	(5)	Document feed roller	(6)	Separation sheet
(7)	Paper entry sensor	(8)	PS roller D	(9)	Transport follower roller
(10)	Paper exit roller	(11)	Paper exit follower roller	(12)	Document tray

#### C. Operational descriptions



In the zooming mode, the magnification ratio in the sub scanning direction (paper transport direction) is adjusted by changing the document transport speed.



**D. Cases where a document jam is caused**

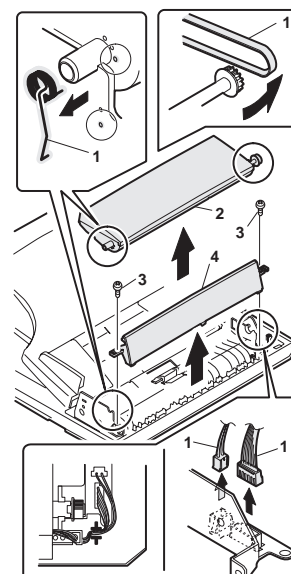
- a. When SPPD is ON (document remaining) when the power is turned on.
- b. When SPPD is not turned ON within about 1.5 sec (at 100% copy) after starting the document feed operation.
- c. When SPPD is not turned on within about 4.7 sec (at 100% copy) after turning on SPPD.
- d. When the SPF document jam release door or the OC cover is opened during document transport (SPF motor rotating).

**[6] DISASSEMBLY AND ASSEMBLY**

**1. SPF**

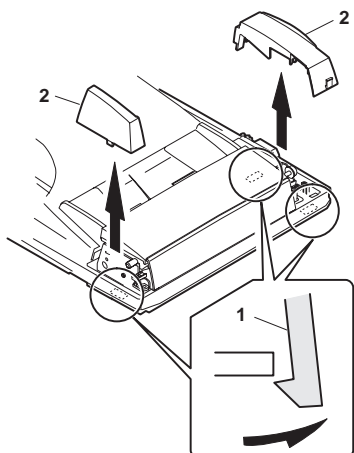
- 1) Remove the belt, the paper feed frame SP, and two harnesses.
- 2) Remove the pickup unit.

No.	Part name Ref.
A	Sensor PWB
B	Pickup solenoid
C	Clutch
D	Manual paper feed roller, pickup roller
E	Belt
F	SPF motor
G	Paper entry sensor
H	PS roller
I	Paper exit roller



**Pickup unit removal**

- 1) Remove three fixing pawls from the bottom of the machine.
- 2) Remove the front cover and the rear cover.

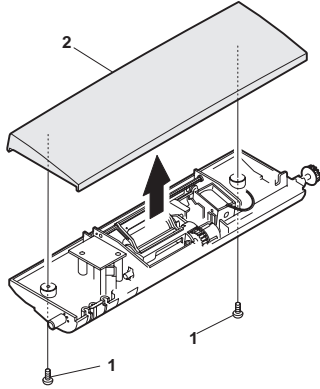


\* When installing the parts, be careful of the hole position of the paper frame SP.

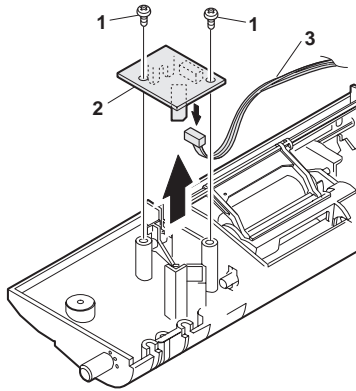


**A. Sensor PWB**

- 1) Remove two screws from the bottom of the pickup unit.
- 2) Remove the upper cover.

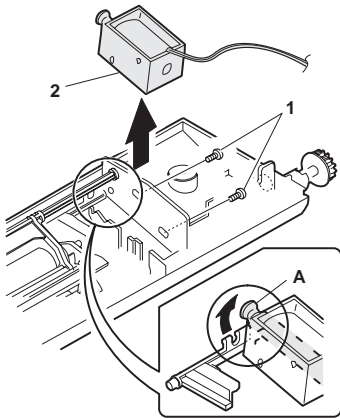


- 1) Remove two screws.
- 2) Remove the sensor PWB.
- 3) Remove the harness.



**B. Pickup solenoid**

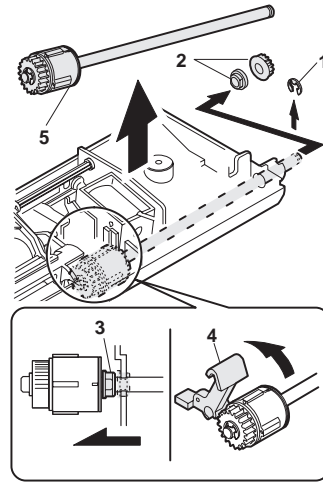
- 1) Remove two screws.
- 2) Remove the pickup solenoid



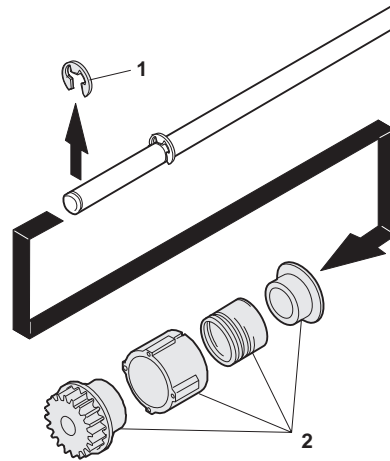
\* When installing, hang iron core A on the solenoid arm.

**C. Clutch**

- 1) Remove the E-ring.
- 2) Remove the pulley and bush.
- 3) Slide the bush in the arrow direction.
- 4) Lift the clutch, and 5) remove the clutch.

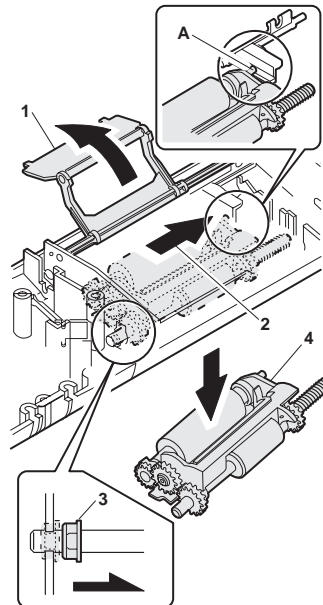


- 1) Remove the E-ring.
- 2) Remove the parts.



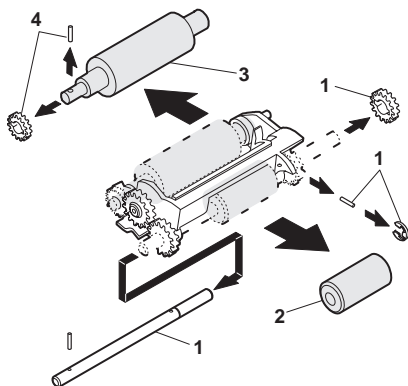
**D. Manual paper feed roller, pickup roller**

- 1) Lift the paper stopper.
- 2) Slide the takeup roller unit.
- 3) Slide the bush in the arrow direction.
- 4) Remove the takeup roller unit.



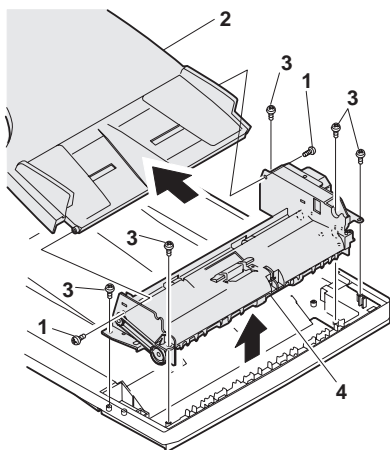
\* When installing the takeup roller, hang the projection of the takeup roller unit on the solenoid arm.

- 1) Remove the parts.
- 2) Remove the manual paper feed roller.
- 3) Remove the pickup roller.
- 4) Remove the parts.



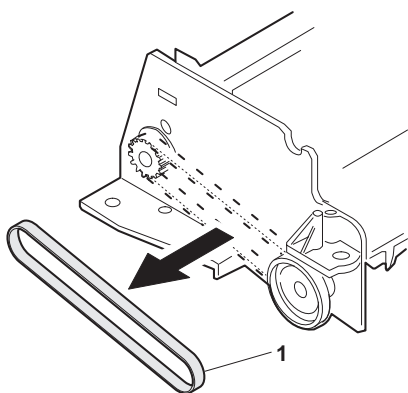
**Transport unit removal**

- 1) Remove two screws.
- 2) Remove the document tray unit.
- 3) Remove five screws.
- 4) Remove the transport unit.



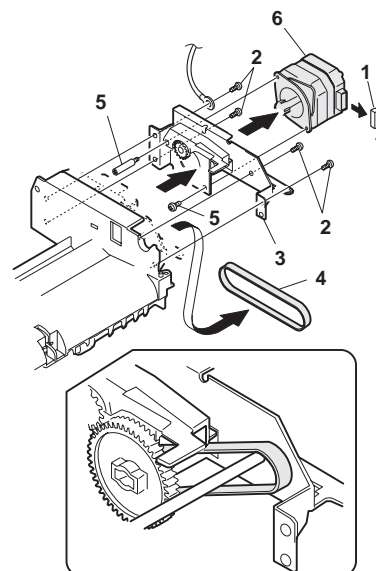
**E. Belt**

- 1) Remove the belt.



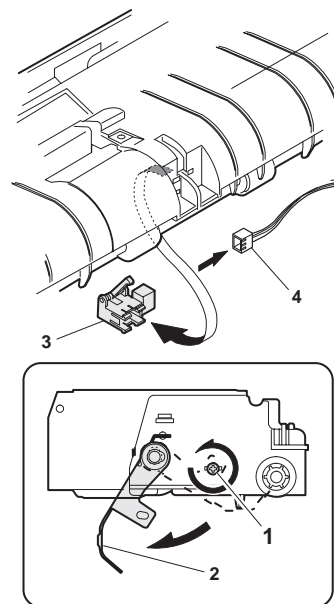
**F. SPF motor**

- 1) Remove the harness.
- 2) Remove four screws.
- 3) Remove the drive unit.
- 4) Remove the belt.
- 5) Remove two screws.
- 6) Remove the SPF motor.



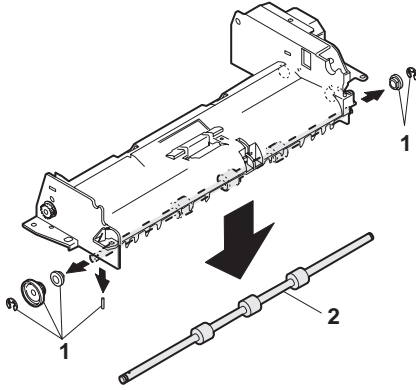
**G. Paper entry sensor**

- 1) Loosen the screw.
- 2) Open the paper exit PG.
- 3) Remove the paper entry sensor.
- 4) Remove the harness.



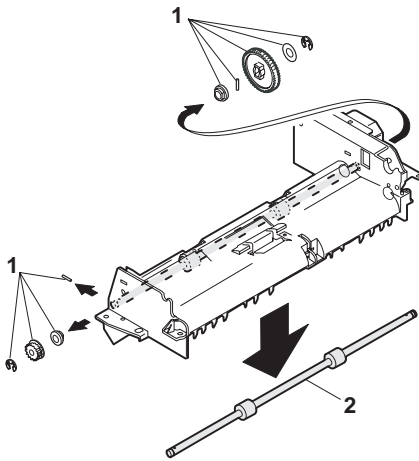
**H. PS roller**

- 1) Remove the parts.
- 2) Remove the PS roller.



**I. Paper exit roller**

- 1) Remove the parts.
- 2) Remove the paper exit roller.

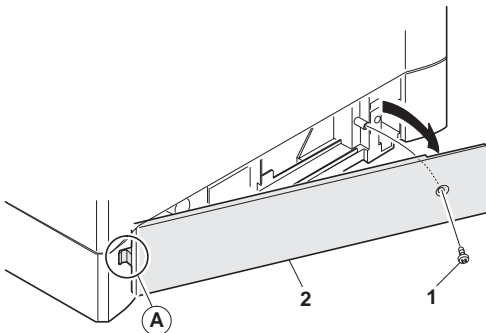


**2. 2ND CASSETTE (AL-1250 only)**

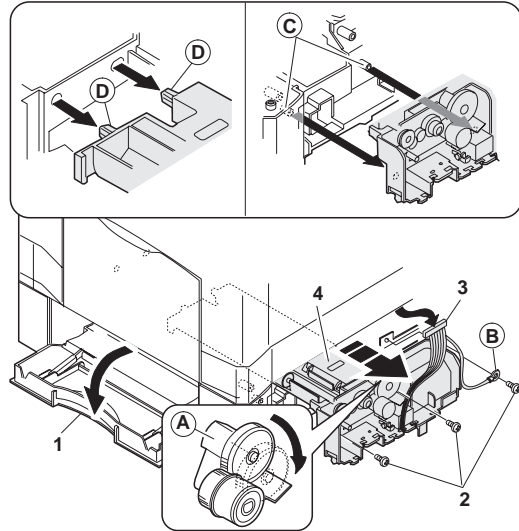
No.	Part name	Ref.
A	Paper sensor	
B	Cassette detection SW	
C	Paper feed solenoid	
D	Transport roller	
E	Paper feed clutch	
F	2nd paper feed roller	

**Paper feed unit removal**

- 1) Remove the screw.
  - 2) Remove the rear cover.
- \* When installing, engage the pawl and install the unit.



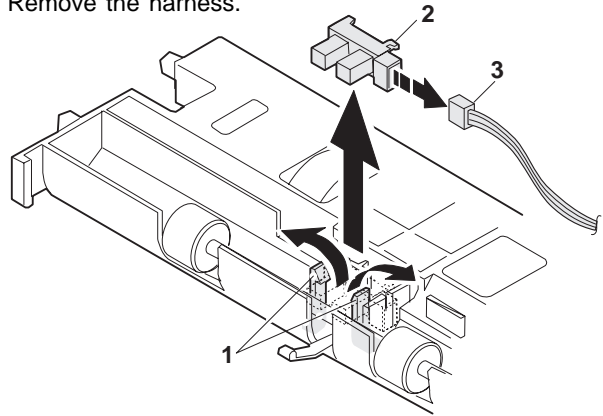
- 1) Open the right cabinet.
- 2) Remove three screws.
- 3) Remove one connector.
- 4) While tilting down the 2nd connection arm A, pull and remove the paper feed unit toward you.



- \* When installing, securely insert two bosses C on the machine side and two bosses D on the paper feed unit side. Be sure to fix the earth B.
- \* Insert the 2nd page feed.

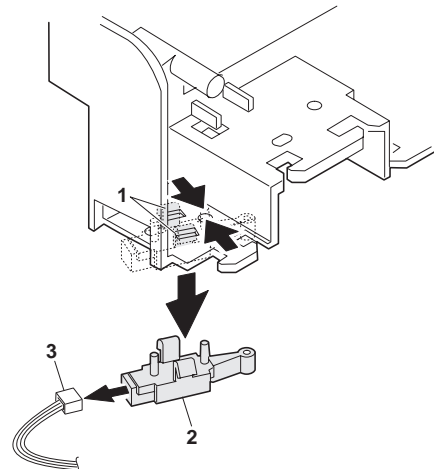
**A. Paper sensor**

- 1) Remove the pawl.
- 2) Remove the paper sensor.
- 3) Remove the harness.



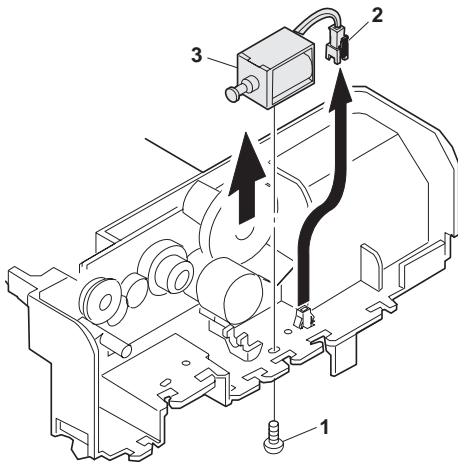
**B. Cassette detection SW**

- 1) Remove the pawl.
- 2) Remove the cassette detection SW.
- 3) Remove the harness.

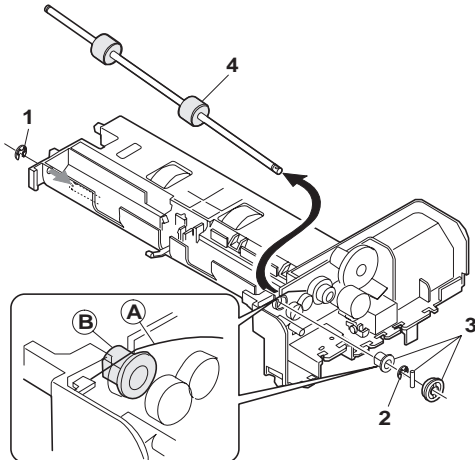


**C. Paper feed solenoid**

- 1) Remove the screw.
- 2) Remove the connector.
- 3) Remove the paper feed solenoid.

**D. Transport roller**

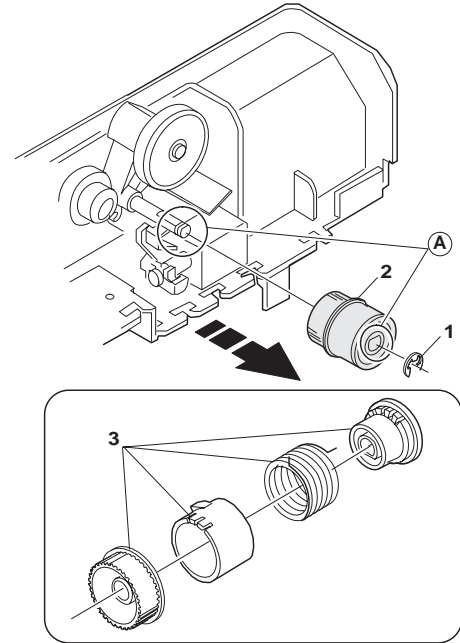
- 1) Remove two E-rings.
- 2) Remove the transport roller.



\* Install so that the earth spring A is brought into contact over bearing B.

**E. Paper feed clutch**

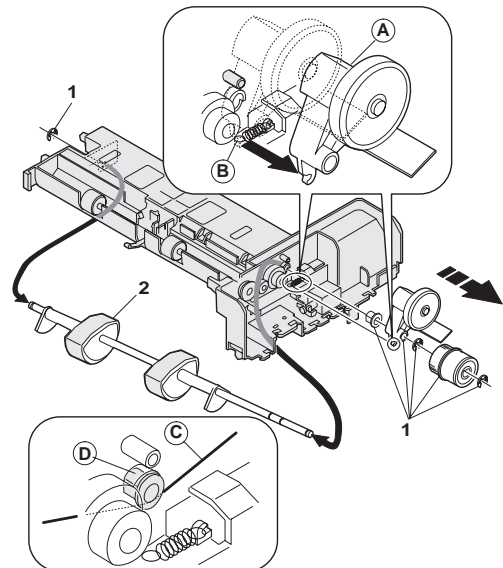
- 1) Remove the E-ring.
- 2) Remove the paper feed clutch.
- 3) Remove the parts.



\* When installing, fit the cut surface A.

**F. 2nd paper feed roller**

- 1) Remove the E-ring and the parts.
- 2) Remove the 2nd paper feed roller.



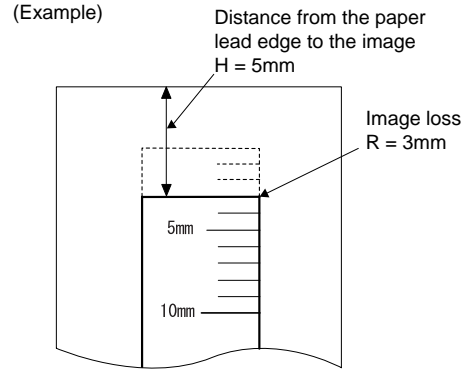
\* When installing, hang the 2nd connection arm on the 2nd connection arm SP B. Be sure to install so that the earth spring C is in contact under the bearing D.

**[7] SIMULATION TROUBLE CODE****1. Contents of simulations**

Main code	Sub code	Contents										
2	2	SPF sensor status display (Operation/Procedure) ON/OFF of the SPF sensor is displayed with the lamps on the operation panel. <table border="1" data-bbox="423 342 1393 512"> <thead> <tr> <th>Sensor name</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>Document set sensor (SPID)</td> <td>Developer cartridge replacement lamp</td> </tr> <tr> <td>SPF document transport sensor (SPPD)</td> <td>Jam lamp</td> </tr> <tr> <td>SPF cover sensor (SCOD)</td> <td>Photoconductor cartridge replacement lamp</td> </tr> <tr> <td>SPF open/close sensor (SDSW)</td> <td>SPF jam lamp</td> </tr> </tbody> </table>	Sensor name	Display lamp	Document set sensor (SPID)	Developer cartridge replacement lamp	SPF document transport sensor (SPPD)	Jam lamp	SPF cover sensor (SCOD)	Photoconductor cartridge replacement lamp	SPF open/close sensor (SDSW)	SPF jam lamp
	Sensor name	Display lamp										
	Document set sensor (SPID)	Developer cartridge replacement lamp										
	SPF document transport sensor (SPPD)	Jam lamp										
	SPF cover sensor (SCOD)	Photoconductor cartridge replacement lamp										
	SPF open/close sensor (SDSW)	SPF jam lamp										
3	SPF motor operation check (Operation/Procedure) When the start key is pressed, the SPF motor rotates for 10 sec at the speed corresponding to the currently set magnification ratio.											
4	SPF paper feed solenoid (SPUS) operation check (Operation/Procedure) When the start key is pressed, the SPF paper feed solenoid repeats ON (500 ms) and OFF (500 ms) 20 times.											
5	RSPF pressure release solenoid (SPFS) operation check (Operation/Procedure) When the start key is pressed, the RSPF document transport solenoid (SPFS) repeats ON (500 ms) and OFF (500 ms) 20 times.											
6	RSPF resist clutch (SRRC) operation check (Operation/Procedure) When the start key is pressed, the RSPF resist clutch (SRRC) repeats ON (500 ms) and OFF (500 ms) 20 times.											
7	RSPF gate solenoid (SGS) operation check (Operation/Procedure) When the start key is pressed, the RSPF gate solenoid (SGS) repeats ON (500 ms) and OFF (500 ms) 20 times.											
26	2	SPF setting (Operation/Procedure) 1. When this simulation is executed, the currently set code number of SPF is displayed. 2. Enter the code number and press the start key. The setting is changed. <table border="1" data-bbox="423 1315 1076 1453"> <thead> <tr> <th>Code number</th> <th>SPF</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Without SPF</td> </tr> <tr> <td>1</td> <td>With SPF</td> </tr> <tr> <td>2</td> <td>With RSPF</td> </tr> </tbody> </table>	Code number	SPF	0	Without SPF	1	With SPF	2	With RSPF		
	Code number	SPF										
0	Without SPF											
1	With SPF											
2	With RSPF											
3	Second cassette setting (Operation/Procedure) 1. When this simulation is executed, the currently set code number of the second cassette is displayed. 2. Enter the code number and press the start key. The setting is changed. <table border="1" data-bbox="423 1644 1076 1751"> <thead> <tr> <th>Code number</th> <th>Second cassette</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Without second cassette</td> </tr> <tr> <td>1</td> <td>With second cassette</td> </tr> </tbody> </table>	Code number	Second cassette	0	Without second cassette	1	With second cassette					
Code number	Second cassette											
0	Without second cassette											
1	With second cassette											

Main code	Sub code	Contents																								
26	43	<p>Side void amount setting (Operation/Procedure)</p> <ol style="list-style-type: none"> <li>When this simulation is executed, the currently set code number of the side void amount is displayed.</li> <li>Enter the code number and press the start key. The setting is changed.</li> </ol> <table border="1"> <thead> <tr> <th>Code number</th> <th>Setting</th> </tr> </thead> <tbody> <tr><td>0</td><td>0 mm</td></tr> <tr><td>1</td><td>0.5 mm</td></tr> <tr><td>2</td><td>1.0 mm</td></tr> <tr><td>3</td><td>1.5 mm</td></tr> <tr><td>4</td><td>2.0 mm Default</td></tr> <tr><td>5</td><td>2.5 mm</td></tr> <tr><td>6</td><td>3.0 mm</td></tr> <tr><td>7</td><td>3.5 mm</td></tr> <tr><td>8</td><td>4.0 mm</td></tr> <tr><td>9</td><td>4.5 mm</td></tr> <tr><td>10</td><td>5.0 mm</td></tr> </tbody> </table>	Code number	Setting	0	0 mm	1	0.5 mm	2	1.0 mm	3	1.5 mm	4	2.0 mm Default	5	2.5 mm	6	3.0 mm	7	3.5 mm	8	4.0 mm	9	4.5 mm	10	5.0 mm
	Code number	Setting																								
0	0 mm																									
1	0.5 mm																									
2	1.0 mm																									
3	1.5 mm																									
4	2.0 mm Default																									
5	2.5 mm																									
6	3.0 mm																									
7	3.5 mm																									
8	4.0 mm																									
9	4.5 mm																									
10	5.0 mm																									
	44	<p>SPF document rear edge detection setting (Used to erase the document rear edge shade generated in SPF reduction copy.)</p> <p>When this simulation is executed, the currently set code number is displayed. Enter the desired code number and press the START key, and the display will be changed. The document rear edge scanning area in SPF reduction (less than 100%) copy is changed.</p> <p>The code number is changeable in the range of 0 - 8. The default value is 4, and 2 mm of the document rear edge is cut. When the value is changed by 1, the area is changed by 1 mm.</p>																								
50	1	<p>Lead edge image position and paper lead edge/rear edge void adjustment (Outline)</p> <p>This adjustment is used to adjust the copy image position and lead edge/rear edge void amount on the copy paper by adjusting the image scan start position and the print start position (resist roller ON timing) at 100%. (Operation/Procedure)</p> <ol style="list-style-type: none"> <li>When this simulation is executed, the currently set value is displayed in two digits. (Center value: 50)</li> <li>When the copy mode select key is pressed, each setting mode and the display are changed. * The selected adjustment mode is indicated by the lamps as shown in the table below.</li> <li>Enter the adjustment value with the 10-key and press the start key. The set value is stored and a copy is made. (When the set value is increased by 1, the void amount is shifted by 0.1 mm.)</li> <li>When the clear key is pressed, the set value is stored and the simulation mode is terminated.</li> </ol> <table border="1"> <thead> <tr> <th>Adjustment mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr><td>Print start position</td><td>AE lamp</td></tr> <tr><td>Image lead edge void amount</td><td>TEXT lamp</td></tr> <tr><td>Image scan start position (Scanner)</td><td>PHOTO lamp</td></tr> <tr><td>Image rear edge void amount</td><td>AE, TEXT, PHOTO lamp</td></tr> <tr><td>SPF image scan start position</td><td>AE, TEXT lamp</td></tr> </tbody> </table>	Adjustment mode	Display lamp	Print start position	AE lamp	Image lead edge void amount	TEXT lamp	Image scan start position (Scanner)	PHOTO lamp	Image rear edge void amount	AE, TEXT, PHOTO lamp	SPF image scan start position	AE, TEXT lamp												
Adjustment mode	Display lamp																									
Print start position	AE lamp																									
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Image rear edge void amount	AE, TEXT, PHOTO lamp																									
SPF image scan start position	AE, TEXT lamp																									

Main code	Sub code	Contents																					
50	1	<p>(Adjustment method)</p> <ol style="list-style-type: none"> <li>Set the print start position (A: AE ON), the lead edge void amount (B: TEXT ON), the scanning start position (C: PHOTO ON) to zero and make a copy of a scale at 100%.</li> <li>Measure the image loss R (mm) of the scale. Set as <math>C = 10 \times R</math> (mm). (Example: Set to 30.) * When C is increased by 10, the image loss is decreased by 1 mm. (Default: 5)</li> <li>Measure the distance H (mm) from the paper lead edge to the image print start position. Set as <math>A = 10 \times R</math> (mm). (Example: Set to 50.) * When the value of A is increased by 10, the image lead edge is shifted toward the paper lead edge by 1 mm. (Default: 50)</li> <li>Set the lead edge void amount as <math>B = 50</math> (2.5 mm). (Default: 50) * When the value of B is increased by 10, the void is increased by about 1 mm. (For 25 or less, however, the void amount becomes zero.)</li> </ol> <p>☆ The SPF adjustment is made by adjusting the SPF image scan start position immediately after turning on the power.</p>																					
	10	<p>Center offset adjustment (Outline) The center offset position of copy image on the copy paper and that of document scan are adjusted by adjusting the scan left margin of ASIC and the print left margin register set value. (Operation/Procedure)</p> <ol style="list-style-type: none"> <li>When this simulation is executed, the currently set value is displayed.</li> <li>For a machine with a multi manual paper feed unit installed, when the copy mode select key is pressed, each set mode and display are changed. For a machine with a single manual paper feed unit installed, when the copy mode select key is pressed, each set mode and display are changed.</li> </ol> <p>☆ Machine with a multi manual paper feed unit</p> <table border="1"> <thead> <tr> <th>Adjustment mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>Print center offset (Main cassette paper feed)</td> <td>AE, main cassette lamp</td> </tr> <tr> <td>Print center offset (2nd cassette paper feed)</td> <td>AE, 2nd cassette lamp</td> </tr> <tr> <td>Print center offset (Manual paper feed)</td> <td>AE, Manual paper feed lamp</td> </tr> <tr> <td>OC/Document center offset</td> <td>AE, TEXT lamp</td> </tr> <tr> <td>SPF/Document center offset</td> <td>AE, TEXT, PHOTO lamp</td> </tr> </tbody> </table> <p>☆ Machine with a single manual paper feed unit</p> <table border="1"> <thead> <tr> <th>Adjustment mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>Print center offset (Main cassette paper feed)</td> <td>AE, Main cassette lamp</td> </tr> <tr> <td>Print center offset (Manual paper feed)</td> <td>AE lamp (Blinking)</td> </tr> <tr> <td>OC/Document center offset</td> <td>AE, TEXT lamp</td> </tr> <tr> <td>SPF/Document center offset</td> <td>AE, TEXT, PHOTO lamp</td> </tr> </tbody> </table>	Adjustment mode	Display lamp	Print center offset (Main cassette paper feed)	AE, main cassette lamp	Print center offset (2nd cassette paper feed)	AE, 2nd cassette lamp	Print center offset (Manual paper feed)	AE, Manual paper feed lamp	OC/Document center offset	AE, TEXT lamp	SPF/Document center offset	AE, TEXT, PHOTO lamp	Adjustment mode	Display lamp	Print center offset (Main cassette paper feed)	AE, Main cassette lamp	Print center offset (Manual paper feed)	AE lamp (Blinking)	OC/Document center offset	AE, TEXT lamp	SPF/Document center offset
Adjustment mode	Display lamp																						
Print center offset (Main cassette paper feed)	AE, main cassette lamp																						
Print center offset (2nd cassette paper feed)	AE, 2nd cassette lamp																						
Print center offset (Manual paper feed)	AE, Manual paper feed lamp																						
OC/Document center offset	AE, TEXT lamp																						
SPF/Document center offset	AE, TEXT, PHOTO lamp																						
Adjustment mode	Display lamp																						
Print center offset (Main cassette paper feed)	AE, Main cassette lamp																						
Print center offset (Manual paper feed)	AE lamp (Blinking)																						
OC/Document center offset	AE, TEXT lamp																						
SPF/Document center offset	AE, TEXT, PHOTO lamp																						



Main code	Sub code	Contents																		
51	2	<p>Resist amount adjustment (Outline) The contact pressure of paper onto the resist roller and the RSPF resist roller is adjusted. (Operation/Procedure)</p> <ol style="list-style-type: none"> <li>1. When this simulation is executed, the currently set value is displayed.</li> <li>2. For a machine with a multi manual paper feed unit installed, when the copy mode select key is pressed, each set mode and display are changed. For a machine with a single manual paper feed unit installed, when the copy mode select key is pressed, each set mode and display are changed.</li> </ol> <p>☆ Machine with a multi manual paper feed unit</p> <table border="1"> <thead> <tr> <th>Adjustment mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>Main cassette paper feed</td> <td>AE, main cassette lamp</td> </tr> <tr> <td>2nd cassette paper feed</td> <td>AE, 2nd cassette lamp</td> </tr> <tr> <td>Manual paper feed</td> <td>AE, manual paper feed lamp</td> </tr> <tr> <td>RSPF document feed</td> <td>AE, TEXT, PHOTO lamp</td> </tr> </tbody> </table> <p>☆ Machine with a single manual paper feed unit</p> <table border="1"> <thead> <tr> <th>Adjustment mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>Main cassette paper feed</td> <td>AE, main cassette lamp</td> </tr> <tr> <td>Manual paper feed</td> <td>AE lamp (Blinking)</td> </tr> <tr> <td>RSPF document feed</td> <td>AE, TEXT, PHOTO lamp</td> </tr> </tbody> </table>	Adjustment mode	Display lamp	Main cassette paper feed	AE, main cassette lamp	2nd cassette paper feed	AE, 2nd cassette lamp	Manual paper feed	AE, manual paper feed lamp	RSPF document feed	AE, TEXT, PHOTO lamp	Adjustment mode	Display lamp	Main cassette paper feed	AE, main cassette lamp	Manual paper feed	AE lamp (Blinking)	RSPF document feed	AE, TEXT, PHOTO lamp
Adjustment mode	Display lamp																			
Main cassette paper feed	AE, main cassette lamp																			
2nd cassette paper feed	AE, 2nd cassette lamp																			
Manual paper feed	AE, manual paper feed lamp																			
RSPF document feed	AE, TEXT, PHOTO lamp																			
Adjustment mode	Display lamp																			
Main cassette paper feed	AE, main cassette lamp																			
Manual paper feed	AE lamp (Blinking)																			
RSPF document feed	AE, TEXT, PHOTO lamp																			
	6	<p>SPF exposure correction amount adjustment (Outline) The APF exposure correction amount is adjusted by adjusting the change in Vref voltage for the OC mode. (Operation/Procedure)</p> <ol style="list-style-type: none"> <li>1. When this simulation is executed, the currently set value is displayed.</li> <li>2. Enter the adjustment value with the 10-key and press the start key. The entered value is stored and a copy is made. * When the adjustment value is changed by 1, the D/A output is changed by +1 digit (dark) for OC exposure. When it is changed by -1, the output is changed by -1 digit (light).</li> <li>3. When the clear key is pressed, the entered value is stored and the simulation mode is terminated.</li> </ol>																		
64	1	<p>Self print by the engine only (1 by 2 mode) (Outline) Used to print in the 1 by 2 mode by ignoring the state of the optical system. (Operation/Procedure)</p> <ol style="list-style-type: none"> <li>1. When this simulation is executed, warming up is made and the ready lamp is lighted.</li> <li>2. Select with the cassette select key and press the start key. Paper is fed from the selected cassette and printing is performed. In the 1 by 2 mode, one line is printed and two lines are not printed.</li> </ol>																		



## [8] USER PROGRAM

The conditions of factory setting can be changed according to the use conditions.

### 1. Functions which can be set with the user program




Function	Contents	Factory setting
Auto clear.	<ul style="list-style-type: none"> <li>When a certain time is passed after completion of copying, this function returns to the initial state automatically. The time to reach the initial state can be set in the range of 30 sec to 120 sec by the unit of 30 sec. This function can be disabled.</li> </ul>	60 sec
Pre-heat.	<ul style="list-style-type: none"> <li>When the copier is left unused with the power ON, the power consumption is automatically reduced to about 40Wh/H (* Note). The time to start this function can be set in the range of 30 sec to 90 sec by the unit of 30 sec. This function cannot be disabled.</li> <li>When this function is operated, the pre-heat lamp on the operation panel lights up. To return to the initial state, press any key on the operation panel. (When the COPY button is pressed, a copy is made after returning to the initial state.)</li> </ul>	90 sec
Auto shut off passing time.	<ul style="list-style-type: none"> <li>When the copier is left unused with the power ON, the power consumption is automatically reduced to about 18Wh/H (* Note). The time to start this function can be set in the range of 2 min to 120 min.</li> <li>When this function is operated, all the lamps except for the pre-heat lamp on the operation panel turn off. To return to the initial state, press the COPY button.</li> </ul>	5 min
Stream feeding.	After completion of copying with the automatic document feeder (SPF), when documents are set while the SPF indicator is blinking (for about 5 sec), the documents are automatically fed.	Set
Auto shut off setting	<ul style="list-style-type: none"> <li>Used to set or cancel this function.</li> </ul>	Set

\*Note: The power consumption values in pre-heat and auto shut off may be varied depending on the use conditions.

### 2. Change the setting.

Example: Changing the time to operate the auto shut off function (Change from 60 sec to 90 sec)

#### 1) Press the right and the left exposure adjustment keys simultaneously to start setting.

- Keep pressing the keys for five sec.
- Display lamps ( , ,  blink simultaneously and “-” is displayed on the copy quantity display.

#### 2) Select the function code with the 10-digit key (copy quantity set key).

- The number of the selected function blinks on the digit of 10 on the copy quantity display.
- For auto clear, select “1.”
- For setting, refer to the following function codes.

Function name	Function code
Auto clear	1
Pre-heat	2
Auto shut off passing time	3
Stream feeding	4*
Auto shut off setting	5

**[Cancel]** If a wrong code is entered, press the clear key and enter the correct function code.

#### 3) Press the COPY button.

- The number blinking on the digit of 10 of the copy quantity display is lighted.
  - The number of the current set code blinks on the digit of 1.
- #### 4) Select the setting code with 1-digit key (copy quantity set key).
- To set to 90 sec, select “3.”
  - For setting, refer to the following set codes.

Function name	Set code	Function name	Set code	Function name	Set code	Function name	Set code	Function name	Set code
Auto clear	0 (Cancel)	Pre-heat	0 (30 sec)	Auto shut off	0 (2 min)	Stream feeding	0 (Cancel)	Auto shut off setting	0 (Cancel)
	1 (30 sec)		1 (60 sec)		*1 (5 min)		*1 (Setting)		*1 (Setting)
	*2 (60 sec)		*2 (90 sec)		2 (15 min)				
	3 (90 sec)				3 (30 min)				
	4 (120 sec)				4 (60 min)				
				5 (120 min)					

\* : Factory setting

- The number of the selected set code blinks on the digit of 1 of the copy quantity display.




**[Cancel]** When a wrong number of the function code is set, press the clear key and perform the procedure again from 2.

#### 5) Press the COPY button.

- The number blinking on the digit of 1 of the copy quantity display is lighted up. This means the setting is completed.

**[Note]** To set another function, press the clear key after completion of this operation and perform the procedure from 2.

#### 6) Press either one of exposure adjustment keys ( or ) to complete the setting.

- Display lamps ( , ,  ) go off and the copy quantity display returns to the normal state.

### 3. AE level adjustment (OC mode)

**[Input method]**

When the PHOTO lamp lights up, press and hold the density select key for 5 sec, and the AUTO mode lamp will blink and the adjusted level will be displayed on the exposure level display.

**[Adjustment]**

For adjustment, press the density adjustment key too select the density in 5 steps.

**[Terminating method]**

Press the density select key, and the model display will turn from blinking to lighting to terminate the AE level adjustment.

### 4. AE level adjustment (SPF mode)

**[Input method]**

While the SPF mode lamp is lighting, when the PHOTO mode lamp lights up, press and hold the density select key for 5 sec, and the AUTO mode lamp will blink and the adjusted level will be displayed on the exposure level display.

**[Adjustment]**

For adjustment, press the density adjustment key to select the density in 5 steps.

**[Terminating method]**

When the density select key is pressed, the mode display will turn from blinking to lighting to terminate the AE level adjustment.

### 5. Toner save mode setup and cancel

**[Input method]**

When the TEST mode lamp lights up, press and hold the density select key for 5 sec, and the PHOTO mode lamp will turn from blinking to lighting and the adjusted level will be displayed on the exposure level display.

**[Setup/Cancel]**

Press the left key: Level "1" ON, toner save mode setup Press the right key: Level "5" ON, toner save mode cancel.

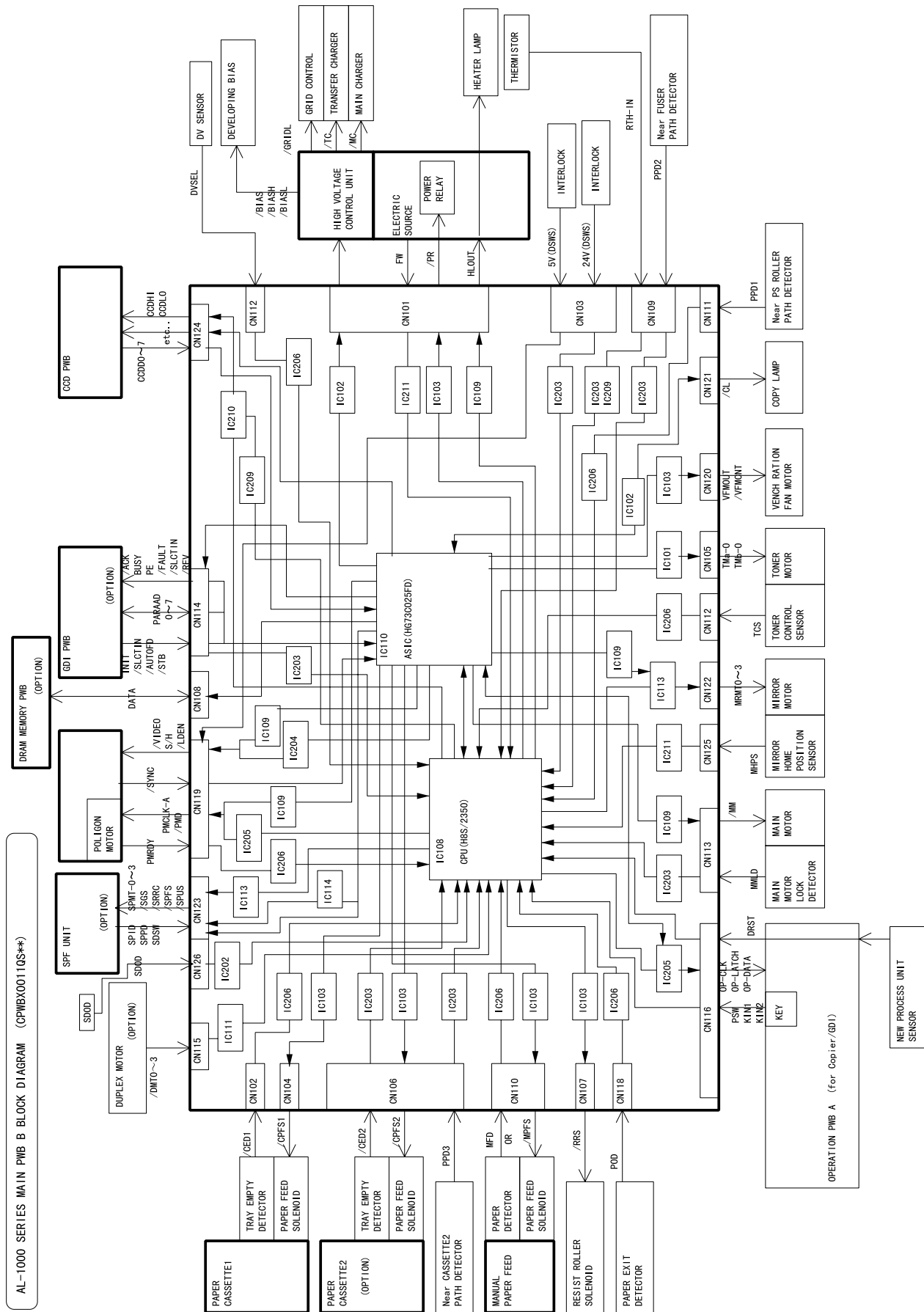
**[Terminating method]**

When the density select key is pressed, the mode display turns from blinking to lighting to terminate setup.

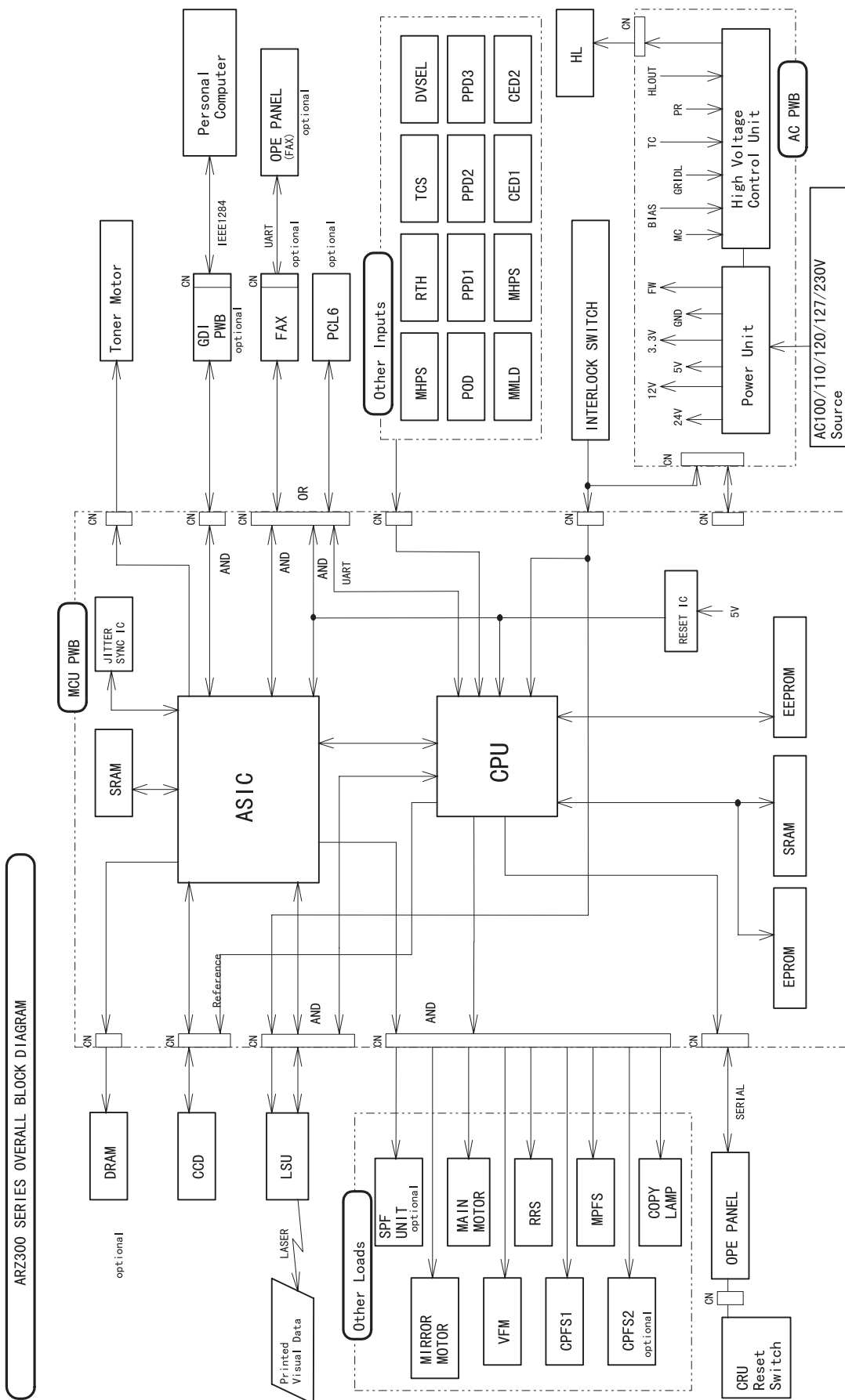
# [9] ELECTRICAL SECTION

## 1. Block diagram

### A. Overall block diagram



B. Main PWB block diagram



## 2. Circuit descriptions

### A. Main PWB (MCU)

#### (1) CPU signal table

The additional signal is as follows:

Pin No.	Signal name	In/Out	During operation
109	SIN3	Input	Sensor input 3

The signals of function change are as follows:

Pin No.	Signal name	In/Out	During operation
119	MRMT3	Motor output	Mirror motor/SPF motor control signal
120	MRMT2	Motor output	Mirror motor/SPF motor control signal
121	MRMT1	Motor output	Mirror motor/SPF motor control signal
122	MRMT0	Motor output	Mirror motor/SPF motor control signal

#### (2) ASIC signal table

The additional signal is as follows:

Pin No.	Signal name	In/Out	Connection	Descriptions
201	SGS	Output	TR array IC	SPF gate solenoid control signal. "H": Gate solenoid ON
202	SRRC	Output	TR array IC	SPF resist roller clutch control signal. "H": Clutch ON
203	SPUS	Output	TR array IC	SPF pickup solenoid control signal. "H": Solenoid ON
208	SPFS	Output	TR array IC	SPF paper feed solenoid control signal. "H": Solenoid ON
209	SMSEL	Output	TR array IC	SPF/mirror motor relay switch signal. "L": Mirror motor, "H": SPF motor
227	CPFS2	Output	TR array IC	2nd cassette paper feed solenoid control signal. "H": Solenoid ON

#### (3) Input signal table

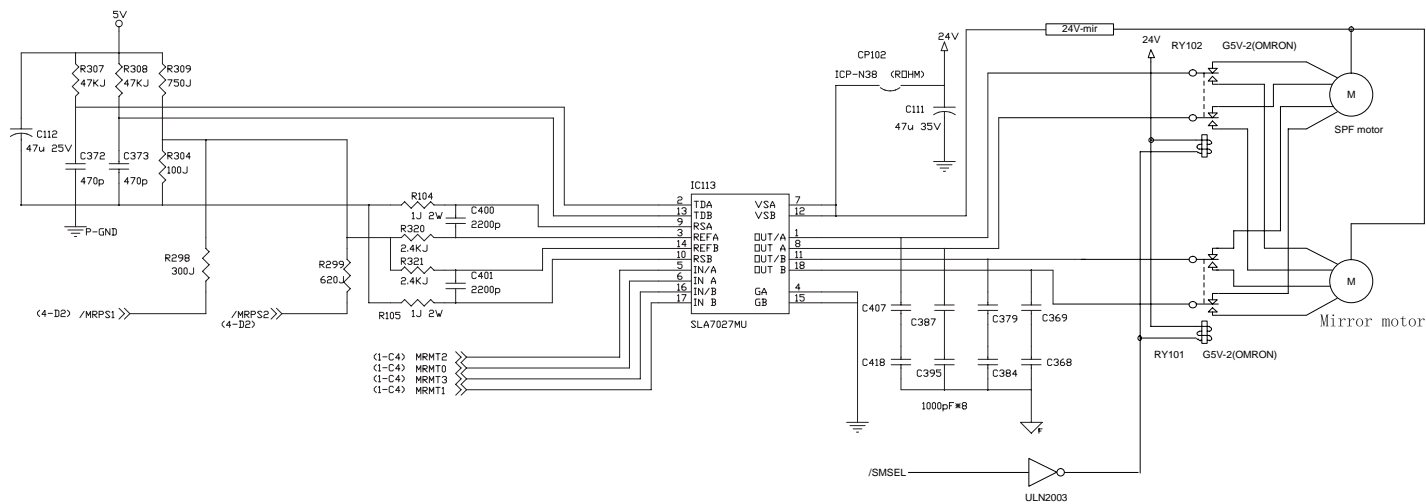
The additional signals are as follows:

	Signal name	Descriptions
SPF	SPID	SPF paper entry detection signal
	SPPD	SPF paper transport detection signal
	SDOD	SPF open/close detection signal
	SDSW	SPF cover open/close detection signal
2nd	CED2	2nd cassette section cassette presence detection
	PPD3	2nd cassette section paper transport detection

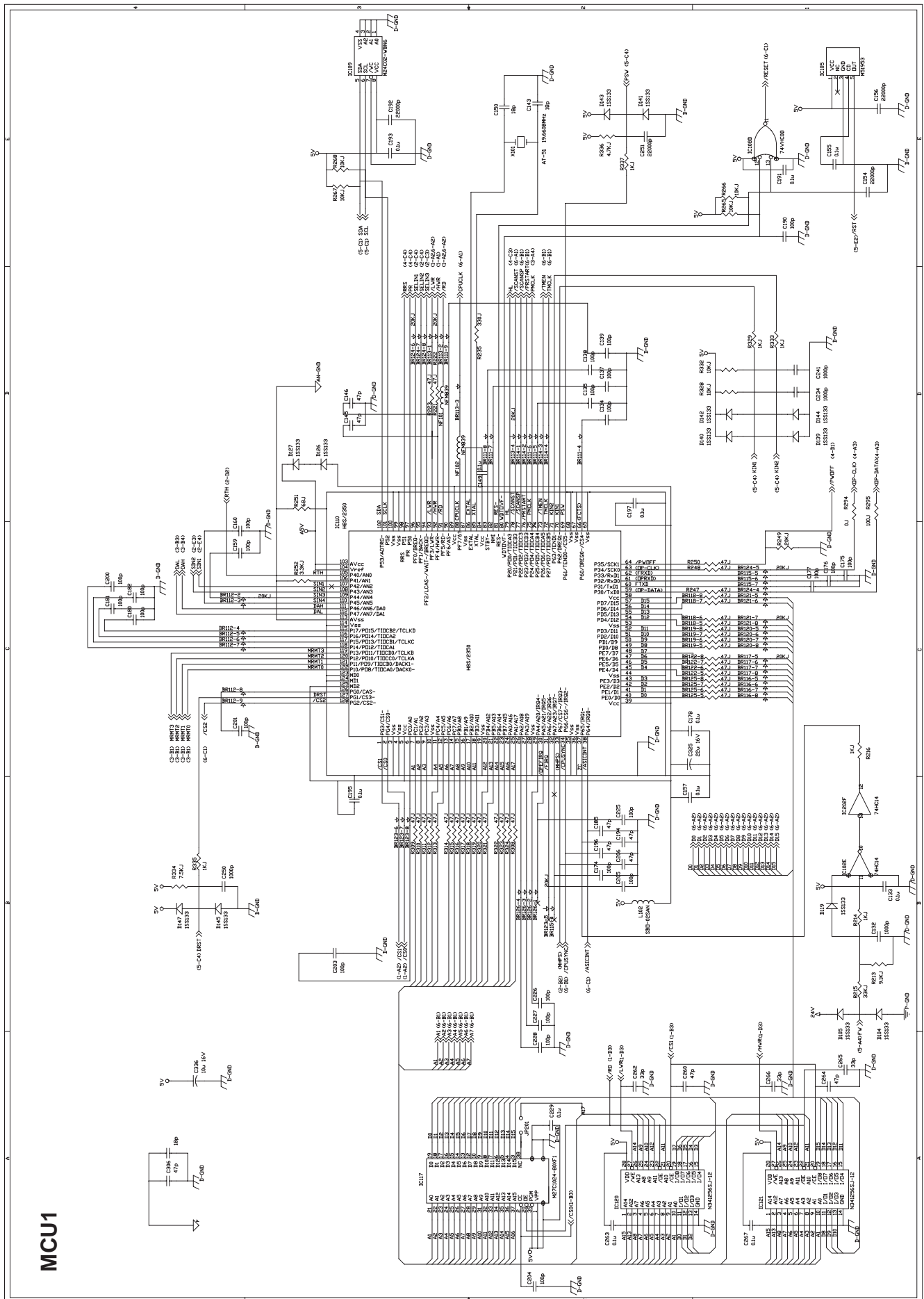
(4) Mirror motor circuit

The mirror motor is a stepping motor. Its driver is IC113 constant-current chopper control IC (SLA7024). For control, the CPU outputs a drive signal to IC113 to drive the mirror motor by 1-2 phase excitement.

The SPF motor and the mirror motor are switched with relays RY1 and RY2. The switching signal is SMSEL-. When SMSEL- is LOW, a current flows through the SPF motor. When it is HIGH, a current flows through the mirror motor.



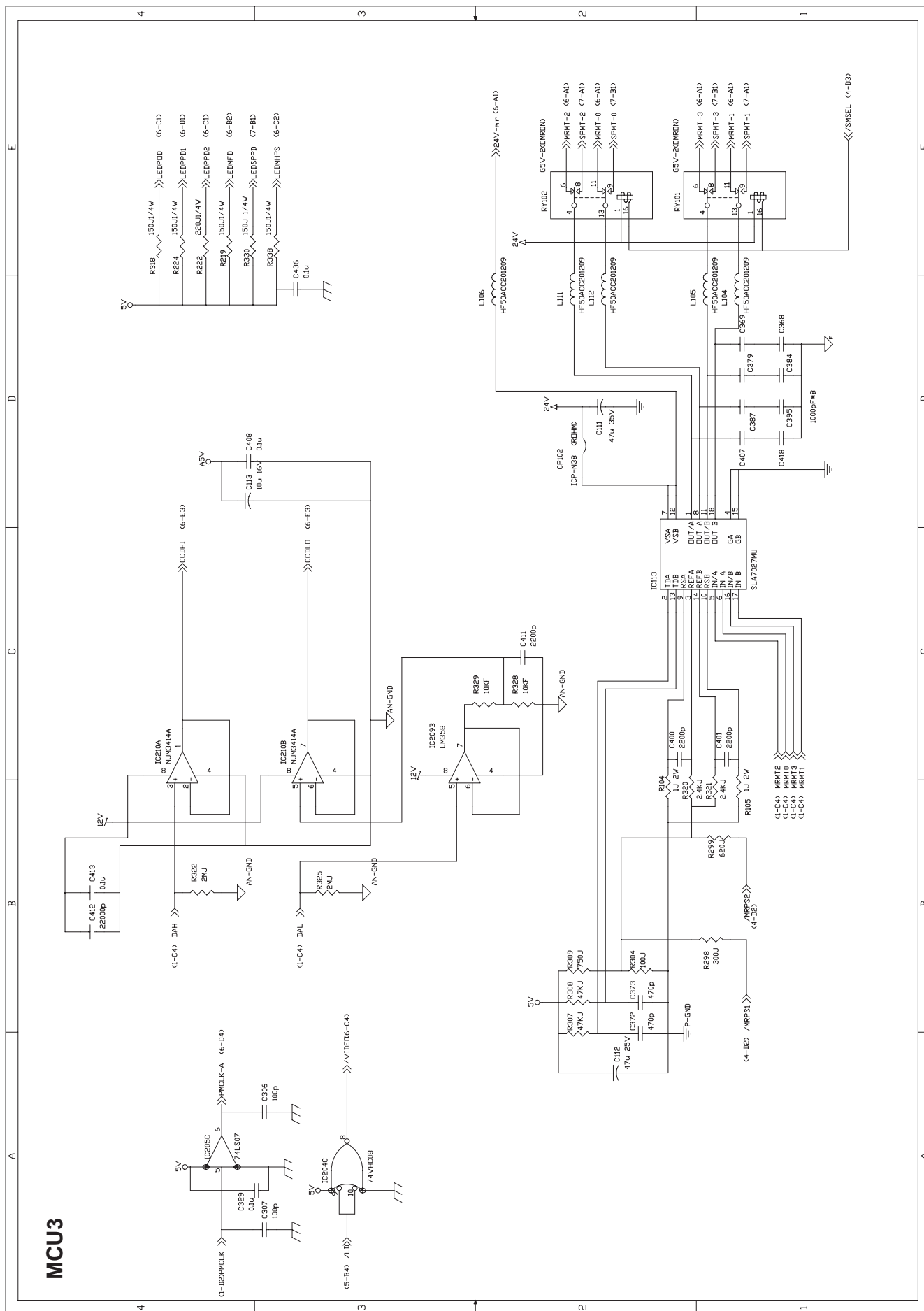
[10] CIRCUIT DIAGRAM

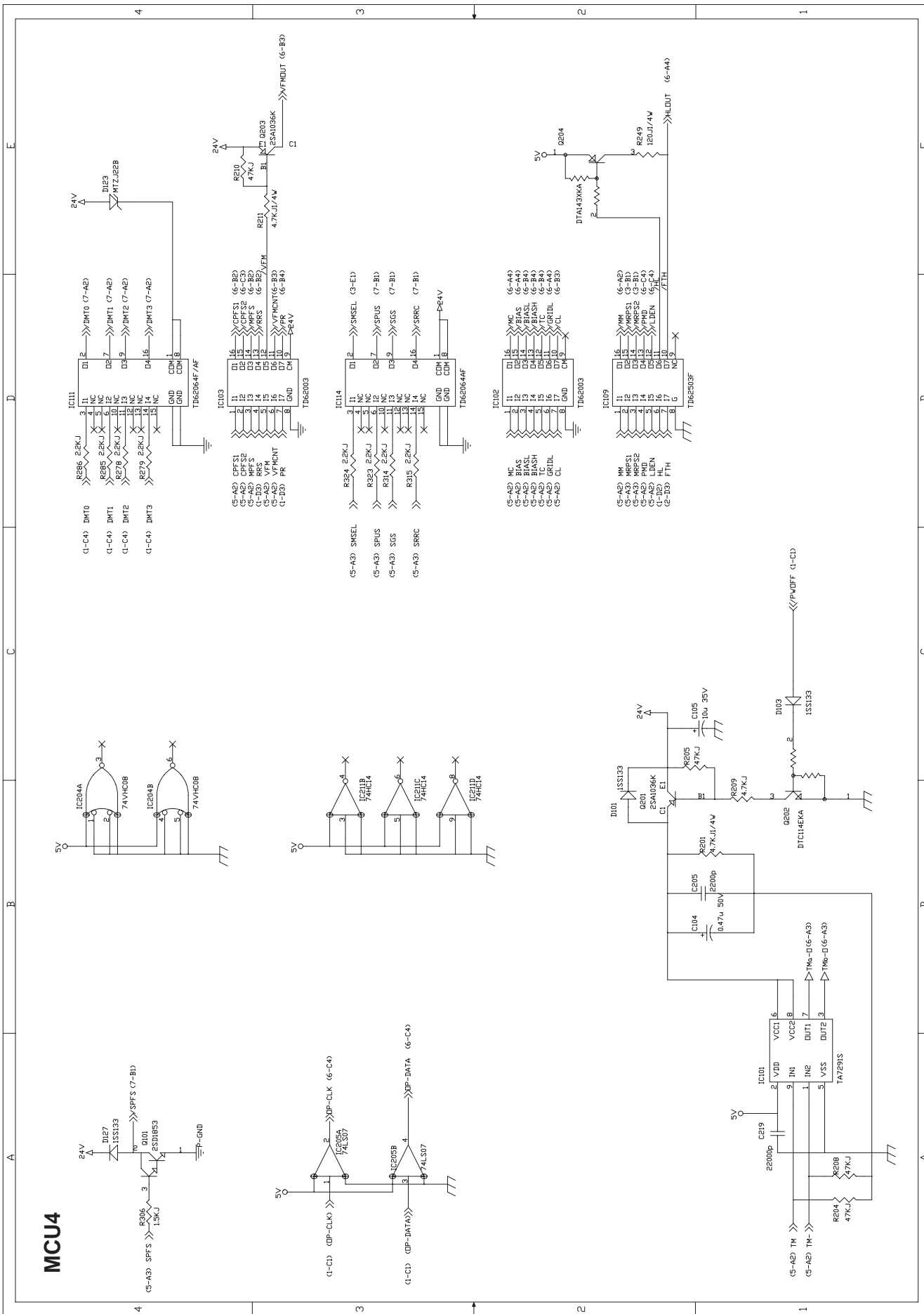


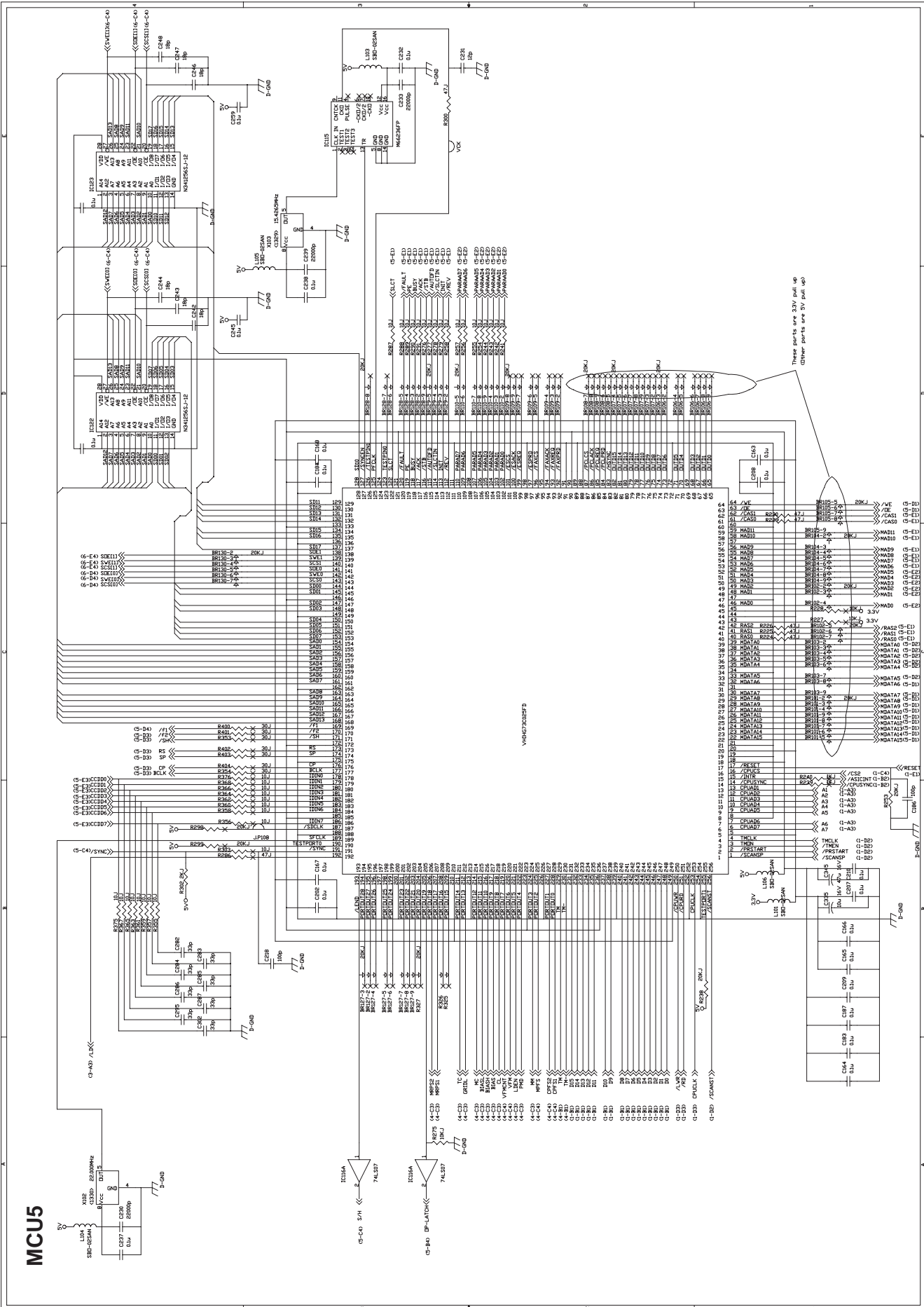
MCU1



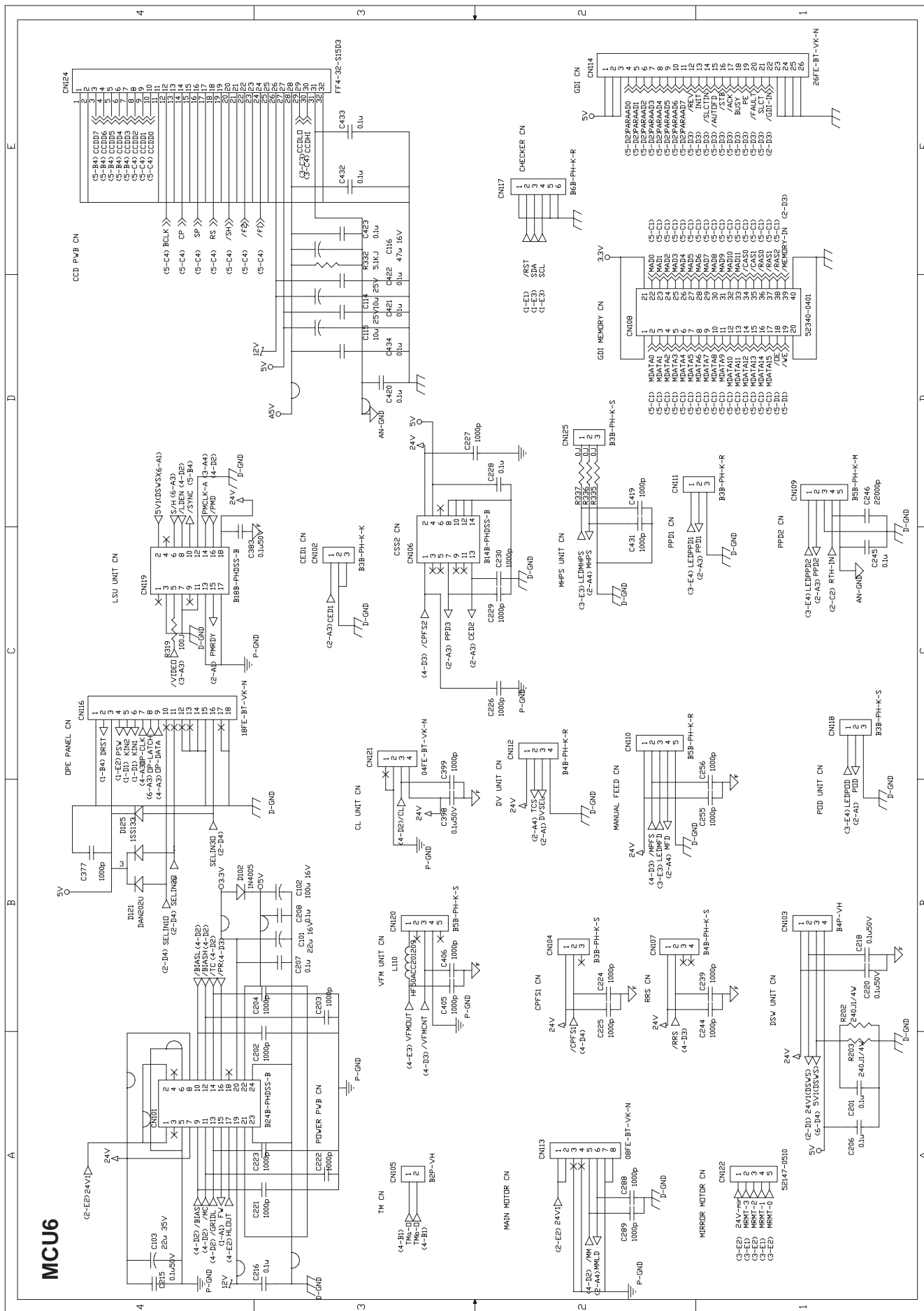




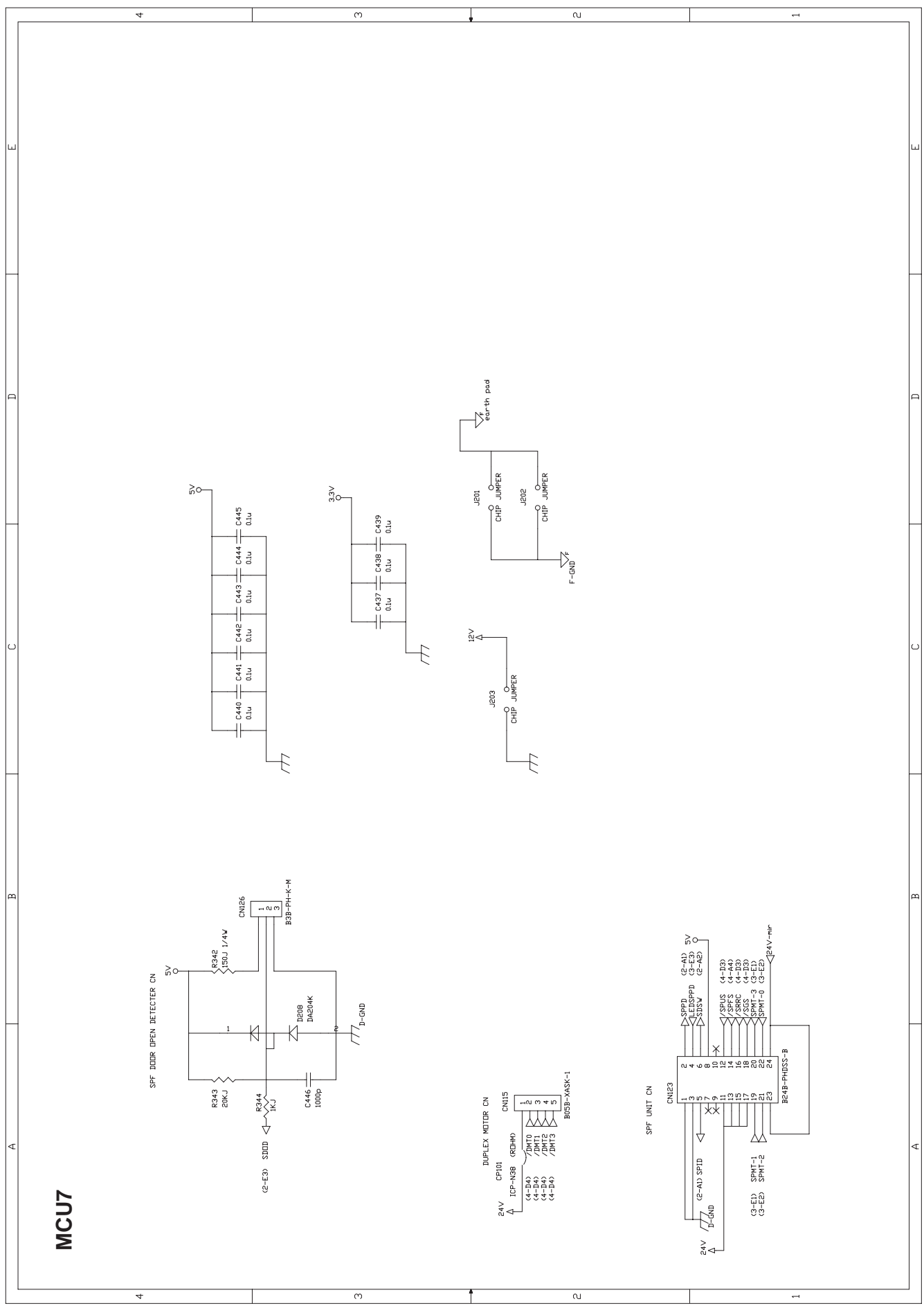
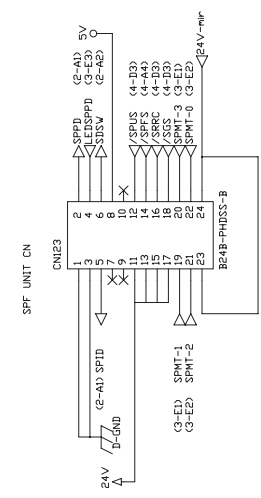
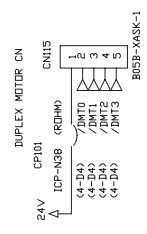
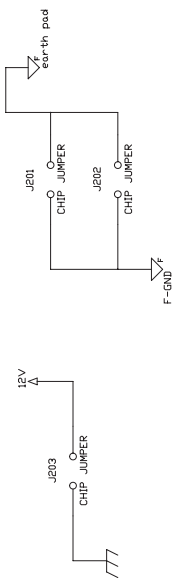
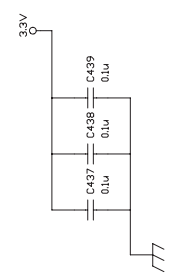
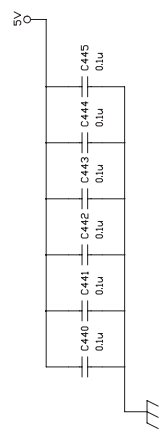
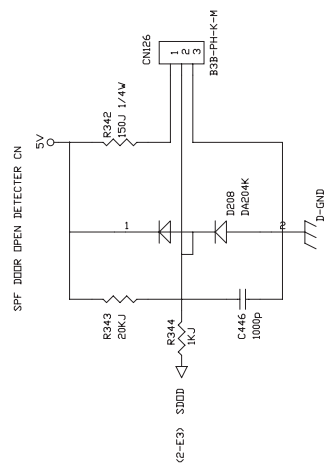




MCU5



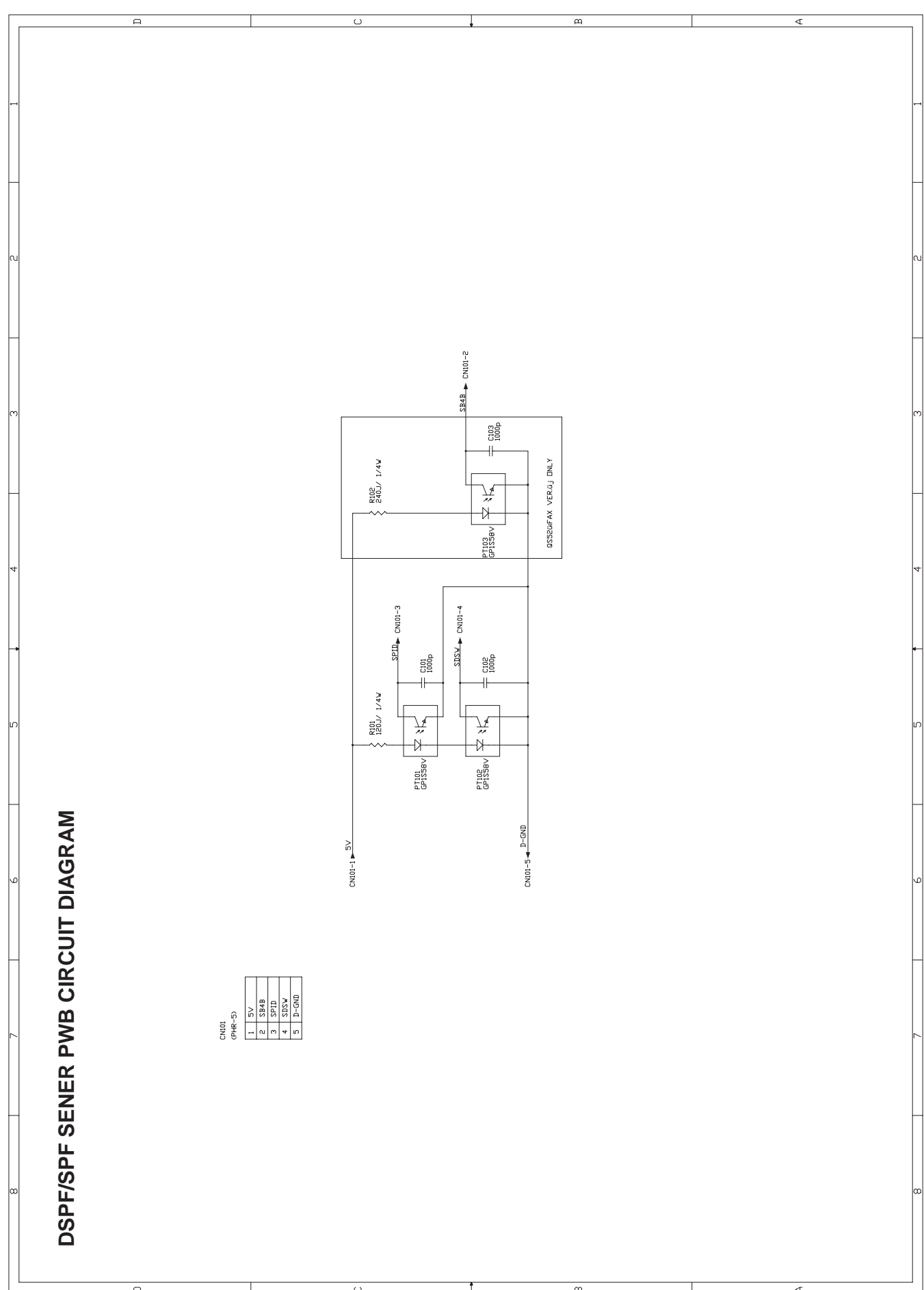
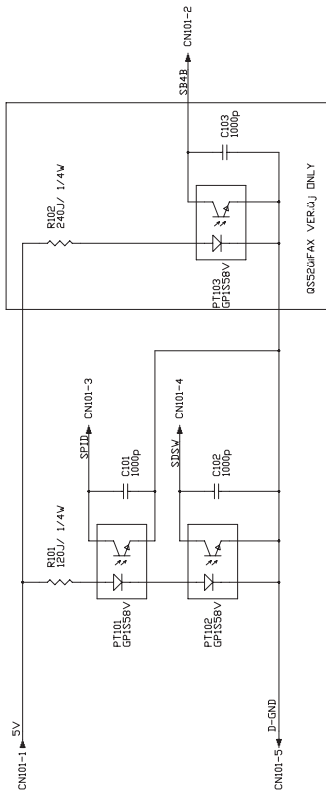
# MCU7



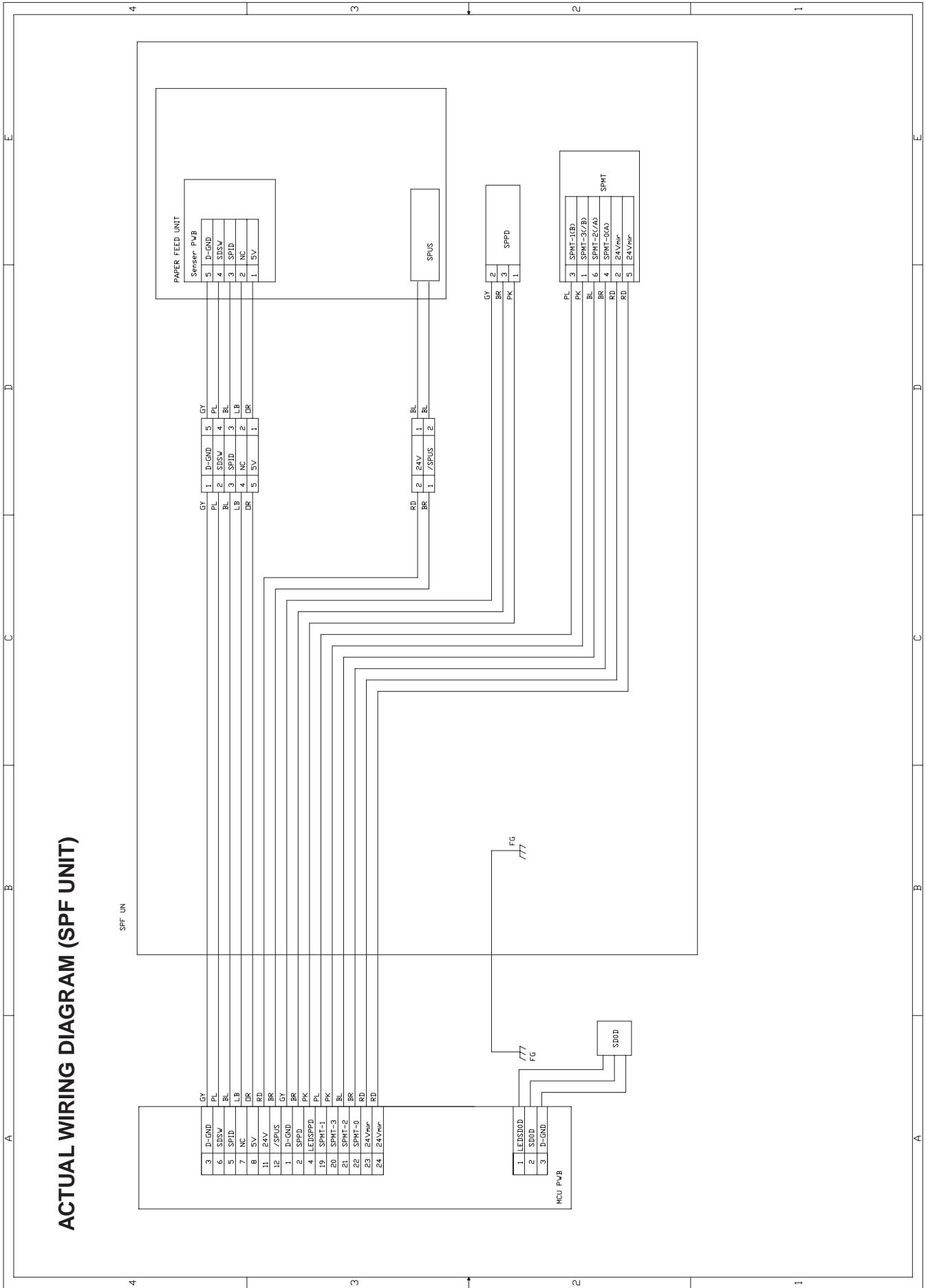
# DSPF/SPF SENER PWB CIRCUIT DIAGRAM

CN01  
(PHR-5)

1	5V
2	SB4B
3	SP1D
4	S3SV
5	D-GND



# ACTUAL WIRING DIAGRAM (SPF UNIT)



# ACTUAL WIRING DIAGRAM (2ND CASSETTE UNIT)

