

TOSHIBA

Leading Innovation >>>

SERVICE MANUAL

MULTIFUNCTIONAL DIGITAL SYSTEMS **e-STUDIO202S**



Model: DP-2021
Publish Date: July 2008
File No. SME080001A0
R080621G0400-TTEC
Ver01_2008-09

Trademarks

- Microsoft[®], Windows[®], Windows[®] 98, Windows[®] Me, Windows[®] 2000, Windows[®] XP, Windows[®] Vista, and Internet Explorer[®] are registered trademarks or trademarks of Microsoft Corporation in the U.S.A. and other countries.
- Adobe[®], the Adobe[®] logo, Acrobat[®], the Adobe[®] PDF logo, and Reader[™] are registered trademarks or trademarks of Adobe Systems Incorporated in the United States and other countries.
- IBM, PC/AT, and PowerPC are trademarks of International Business Machines Corporation.
- All other trademarks and copyrights are the property of their respective owners.

© 2008 TOSHIBA TEC CORPORATION All rights reserved

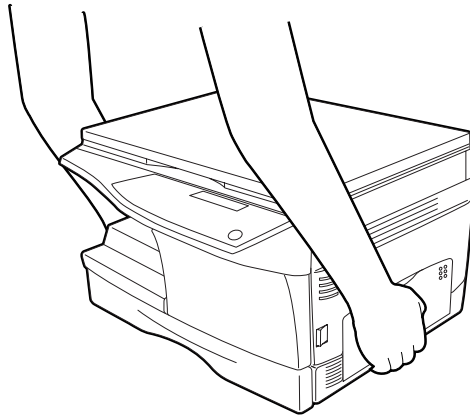
Under the copyright laws, this manual cannot be reproduced in any form without prior written permission of TOSHIBA TEC CORPORATION. No patent liability is assumed, however, with respect to the use of the information contained herein.

GENERAL PRECAUTIONS REGARDING THE INSTALLATION AND SERVICE FOR e-STUDIO202S

The installation and service should be done by a qualified service technician.

1. Transportation/Installation

- When transporting/installing the machine, be sure to use the positions as indicated below. The machine is quite heavy and weighs approximately 16.8 kg (37 lb.), therefore pay full attention when handling it.



- Be sure to use a dedicated outlet with AC120V/8A, 220-240V/5A, 230-240V/5A for its power source.
- The machine must be grounded for safety. Never ground it to a gas pipe or a water pipe.
- Select a suitable place for installation. Avoid excessive heat, high humidity, dust, vibration and direct sunlight.
- Also provide proper ventilation as the machine emits a slight amount of ozone.
- The socket-outlet shall be installed near the machine and shall be easily accessible.

2. Service of Machines

- Basically, be sure to turn the main switch off and unplug the power cord during service.
- Be sure not to touch high-temperature sections such as the exposure lamp, the fuser unit and their periphery.
- Be sure not to touch high-voltage sections such as the chargers and the high-voltage transformer. Especially, the board of these components should not be touched since the electric charge may remain in the capacitors, etc. on them even after the power is turned OFF.
- Be sure not to touch rotating/operating sections such as gears, belts, pulleys, fan, etc.
- Be careful when removing the covers since there might be the parts with very sharp edges underneath.
- When servicing the machines with the main switch turned on, be sure not to touch live sections and rotating/operating sections. Avoid exposure to laser radiation.
- Use suitable measuring instruments and tools.
- Avoid exposure to laser radiation during servicing.
 - Avoid direct exposure to the beam.
 - Do not insert tools, parts, etc. that are reflective into the path of the laser beam.
 - Remove all watches, rings, bracelets, etc. that are reflective.
- Unplug the power cable and clean the area around the prongs of the plug once a year or more. A fire may occur when dust lies on this area.

3. **Main Service Parts for Safety**

- The breaker, door switch, fuse, thermostat, thermofuse, thermistor, etc. are particularly important for safety. Be sure to handle/install them properly. If these parts are shorted circuit and/or made their functions out, they may burn down, for instance, and may result in fatal accidents. Do not allow a short circuit to occur. Do not use the parts not recommended by Toshiba TEC Corporation.

4. **Cautionary Labels**

- During servicing, be sure to check the rating plate and the cautionary labels such as “Unplug the power cord during service”, “Hot area”, “Laser warning label” etc. to see if there is any dirt on their surface and whether they are properly stuck to the machine.

5. **Disposition of Consumable Parts, Packing Materials**

- Regarding the recovery and disposal of the machine, supplies, consumable parts, packing materials, follow the relevant local regulations or rules.

6. **When parts are disassembled, reassembly is basically the reverse of disassembly unless otherwise noted in this manual or other related documents. Be careful not to reassemble small parts such as screws, washers, pins, E-rings, star washers in the wrong places.**

7. **Basically, the machine should not be operated with any parts removed or disassembled.**

8. **Precautions Against Static Electricity**

- The PC board must be stored in an anti-electrostatic bag and handled carefully using a wristband, because the ICs on it may become damaged due to static electricity.

Caution: Before using the wristband, pull out the power cord plug of the machine and make sure that there are no uninsulated charged objects in the vicinity.

CAUTION

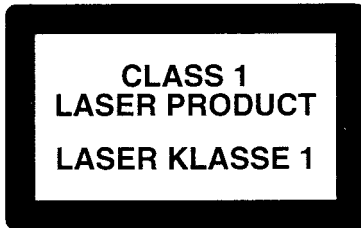
This product is a class 1 laser product that complies with 21CFR 1040 of the CDRH standard and IEC60825-1. This means that this machine does not produce hazardous laser radiation. The use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This laser radiation is not a danger to the skin, but when an exact focusing of the laser beam is achieved on the eye's retina, there is the danger of spot damage to the retina.

The following cautions must be observed to avoid exposure of the laser beam to your eyes at the time of servicing.

- 1) When a problem in the laser optical unit has occurred, the whole optical unit must be exchanged as a unit, not as individual parts.
- 2) Do not look into the machine with the main switch turned on after removing the developer unit, toner cartridge, and drum cartridge.
- 3) Do not look into the laser beam exposure slit of the laser optical unit with the connector connected when removing and installing the optical system.
- 4) The middle frame contains the safety interlock switch.

Do not defeat the safety interlock by inserting wedges or other items into the switch slot.



LASER WAVE – LENGTH : 770 – 795nm
Pulse times : 0.481m sec (20,787 rpm)
Out put power : 0.17mW ± 0.01mW

CAUTION

INVISIBLE LASER RADIATION,
WHEN OPEN AND INTERLOCKS DEFEATED.
AVOID EXPOSURE TO BEAM.

VORSICHT

UNSICHTBARE LASERSTRAHLUNG,
WENN ABDECKUNG GEÖFFNET UND
SICHERHEITVERRIEGELUNG ÜBERBRÜCKT.
NICHT DEM STRAHL AUSSETZEN.

VARO !

AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE ÄLÄ
KATSO SÄTEESEEN.

ADVARSEL

USYNLIG LASERSTRÅLNING VED ÅBNING, NÅR
SIKKERHEDSBRYDERE ER UDE AF
FUNKTION. UNDGÅ UDSÆTTELSE FOR
STRÅLNING.


VARNING !

OSYNLIG LASERSTRÅLNING NÅR DENNA DEL
ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD.
BETRAKTA EJ STRÅLEN. – STRÅLEN ÄR
FARLIG.

At the production line, the output power of the scanner unit is adjusted to 0.18 MILLI-WATT PLUS 20 PCTS and is maintained constant by the operation of the Automatic Power Control (APC). Even if the APC circuit fails in operation for some reason, the maximum output power will only be 15 MILLI-WATT 0.1 MICRO-SEC. Giving and accessible emission level of 42 MICRO-WATT which is still-less than the limit of CLASS-1 laser product.

Caution

This product contains a low power laser device. To ensure continued safety do not remove any cover or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.

	<p>Laserstrahl</p>	<p>CAUTION CLASS 3B INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.</p>	<p>ADVERSEL USYNLIG KLASSE 3B LASERSTRÅLNING NÄR DEKSEL ÄPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.</p>
		<p>VORSICHT UNSICHTBARE LASERSTRÄHLUNG DER KLASSE 3B , WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERERÜCKT. NICHT DEM STRAHL AUSSETZEN.</p>	<p>VARNING OSYNLIG LASERSTRÅLNING KL ASS 3B NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRRAR ÄR URKOPPLADE. UNDVIK EXPONERING FÖR STRÅLEN</p>
		<p>ADVARSEL USYNLIG LASERSTRÅLING AF KLASSE 3B VED ÅBNING. NÄR SIKKERHEDSÅFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.</p>	<p>VARO! AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖNTÄ LUOKAN 3B LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.</p>

>PET<



VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

VARNING - OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

**CLASS 1
LASER PRODUCT
LASER KLASSE 1**

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

The foregoing is applicable only to the 220V model, 230V model and 240V model.

CONTENTS

[1] GENERAL		
1. Major functions	1-1	
[2] SPECIFICATIONS		
1. Basic Specifications	2-1	
2. Operation specifications	2-1	
3. Copy performance	2-2	
4. GDI Printer	2-3	
5. Scan function	2-3	
[3] CONSUMABLE PARTS		
1. Supply system table	3-1	
A. North America/Brazil/Central and South America/Asia/ Saudi Arabia Subsidiary	3-1	
2. Environmental	3-2	
3. Production control number (lot No.) identification	3-2	
4. Toner cartridge replacement	3-3	
[4] EXTERNAL VIEWS AND INTERNAL STRUCTURES		
1. Appearance	4-1	
2. Internal	4-1	
3. Operation panel	4-2	
4. Motors and solenoids	4-4	
5. Sensors and switches	4-5	
6. PWB unit	4-6	
7. Cross sectional view	4-7	
[5] UNPACKING AND INSTALLATION		
1. Copier installation	5-1	
2. Cautions on handling	5-1	
3. Checking packed components and accessories	5-1	
4. Unpacking	5-2	
5. Removing protective packing materials	5-2	
6. Developer unit installation	5-2	
7. Toner cartridge installation	5-3	
8. Loading paper	5-4	
9. Power to copier	5-4	
10. Software	5-4	
11. Connecting the interface cable	5-5	
12. Interface	5-5	
A. USB	5-5	
13. Moving	5-5	
14. Scanner moisture-proof parts	5-5	
A. Components	5-5	
B. Precautions at installation	5-5	
C. Attachment method	5-5	
[6] COPY PROCESS		
1. Functional diagram	6-1	
2. Outline of print process	6-2	
3. Actual print process	6-2	
[7] OPERATIONAL DESCRIPTIONS		
1. Outline of operation	7-1	
2. Scanner section	7-2	
A. Scanner unit	7-2	
B. Optical system	7-2	
C. Drive system	7-2	
3. Laser unit	7-3	
A. Basic structure	7-3	
B. Laser beam path	7-3	
C. Composition	7-3	
4. Fuser section	7-3	
A. General description	7-4	
5. Paper feed section and paper transport section	7-4	
A. Paper transport path and general operations	7-4	
[8] DISASSEMBLY AND ASSEMBLY		
1. High voltage section	8-1	
A. List	8-1	
B. Drum replacement	8-1	
C. Disassembly procedure	8-3	
D. Assembly procedure	8-3	
E. Charger wire cleaning	8-3	
F. Charger wire replacement	8-4	
2. Operation panel section	8-4	
A. List	8-4	
B. Disassembly procedure	8-4	
C. Assembly procedure	8-5	
3. Optical section	8-5	
A. List	8-5	
B. Disassembly procedure	8-5	
C. Assembly procedure	8-6	
4. Fusing section	8-7	
A. List	8-7	
B. Disassembly procedure	8-7	
C. Assembly procedure	8-10	
5. Tray paper feed/transport section	8-10	
A. List	8-10	
B. Disassembly procedure	8-10	
C. Assembly procedure	8-15	
6. Manual paper feed section	8-15	
A. List	8-15	
B. Disassembly procedure	8-15	
C. Assembly procedure	8-17	
D. Pressure plate holder attachment	8-17	
7. Rear frame section	8-17	
A. List	8-17	
B. Disassembly procedure	8-17	
C. Assembly procedure	8-18	
8. Power section	8-18	
A. List	8-18	
B. Disassembly procedure	8-18	
C. Assembly procedure	8-18	
[9] ADJUSTMENTS		
1. Optical section	9-1	
A. Copy magnification ratio adjustment	9-1	
B. Image position adjustment	9-2	
2. Copy density adjustment	9-4	
A. Copy density adjustment timing	9-4	
B. Note for copy density adjustment	9-4	
C. Necessary tool for copy density adjustment	9-4	
D. Features of copy density adjustment	9-4	
E. Copy density adjustment procedure	9-4	
3. High voltage adjustment	9-5	
A. Main charger (Grid bias)	9-5	
B. DV bias check	9-5	
4. Automatic black level correction	9-6	
[10] SIMULATION, TROUBLE CODES		
1. Entering the simulation mode	10-1	
2. List of simulations	10-2	
3. Contents of simulations	10-3	
4. Trouble codes	10-17	
A. Trouble codes list	10-17	
B. Details of trouble codes	10-17	
[11] MAINTENANCE		
1. Maintenance table	11-1	
2. Maintenance display system	11-1	
[12] USER PROGRAMS		
1. Functions that can be set with user programs	12-1	
2. Toner save mode	12-1	
3. User programs	12-1	
[13] ELECTRICAL SECTION		
1. Block diagram	13-1	
A. Overall block diagram	13-1	
2. Actual wiring diagram	13-2	
A. MCU PWB (1/3)	13-2	
B. ADF unit (2/3)	13-3	
C. 2nd cassette unit (3/3)	13-3	
3. Signal name list	13-4	
4. Circuit diagram	13-6	
A. MCU PWB	13-6	
B. OPE PWB	13-18	
[14] FIRMWARE DOWNLOAD PROCEDURES		
1. Initial setting (Serial number setting procedures)	14-1	
2. Download procedures	14-1	
3. Version acquisition procedures	14-3	
4. EEPROM data acquisition procedure	14-4	
5. Installing procedures	14-5	

[1] GENERAL

1. Major functions

Configurations

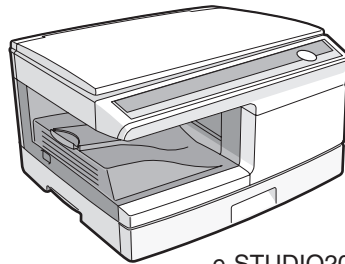
Model \ Item	CPM (A4)	PPM (A4)	SB/MB	2 Tray	ADF	R-ADF	Color Scanner	GDI printer	PCL printer	E-SORT	Duplex	Shifter	USB	RJ45	FAX
e-STUDIO202S	20CPM	15PPM	MB	Opt	Opt	×	○	○	×	×	×	×	○ (2.0)	×	×

Descriptions of items

- CPM: Copy speed (Copies Per Minute)
- PPM: Print speed (Print Per Minute)
- SB/MB: SB = Manual feed single bypass, MB = Manual feed multi-bypass
- 2 tray: Second cassette unit (MY-1034)
- ADF: Original feed unit (MR-2018)
- R-ADF: Duplex original feed unit
- Color scanner: Color scanner function
- GDI printer: GDI printer function with USB.
- PCL printer: PCL printer function with USB.
- E-SORT: Electronic sort function
- Duplex: Auto duplex copy/print function
- Shifter: Job separator function
- USB: Interface port (USB)
- RJ45: Interface port (Network)
- FAX: FAX function.

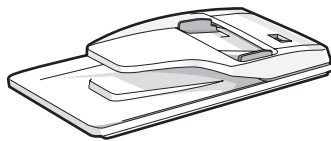
Descriptions of table

- : Standard provision
- ×: No function or no option available
- Opt: Option

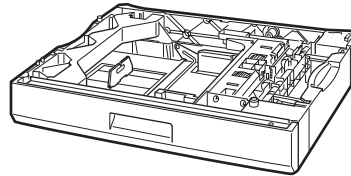


e-STUDIO202S

(Options)



MR-2018



MY-1034

[2] SPECIFICATIONS

1. Basic Specifications

Item		
Type	Desktop	
Copy system	Dry, electrostatic	
Segment (class)	Digital personal copier	
Copier dimensions	518mm (W) x 445mm (D) x 298mm (H) (20-1/2" (W) x 17-5/8" (D) x 11-3/4" (H))	
Weight (Approximately)	16.6Kg (36.5 lbs.)	Toner cartridge not included

2. Operation specifications

Section, item		Details			
Paper feed section	Paper feed system	1 tray (250 sheets) + multi-bypass (50 sheets)			
		AB system	Tray paper feed section	Paper size	A4, B5, A5 (Landscape)
	Paper weight			56 - 80g/m ²	
	Paper feed capacity			250 sheets	
	Kinds			Standard paper, specified paper, recycled paper	
	Remark			User adjustment of paper guide available	
	Multi-bypass paper feed section	Tray paper feed section	Paper size	A4, B5, A5, B6, A6 (Landscape)	
			Paper weight	56 - 128g/m ²	
			Paper feed capacity	50 sheets	
			Kinds	Standard paper, specified paper, recycled paper, OHP, Label, Envelop (Single copy)	
			Remark	User adjustment of paper guide available	
	Inch system	Tray paper feed section	Paper size	8-1/2" x 14", 8-1/2" x 11", 8-1/2" x 5-1/2" (Landscape)	
			Paper weight	15 - 21 lbs.	
			Paper feed capacity	250 sheets	
			Kinds	Standard paper, specified paper, recycled paper	
			Remark	User adjustment of paper guide available	
Multi-bypass paper feed section		Tray paper feed section	Paper size	8-1/2" x 14", 8-1/2" x 11", 8-1/2" x 5-1/2", 3-1/2" x 5-1/2" (Landscape)	
			Paper weight	15 - 34.5 lbs.	
			Paper feed capacity	50 sheets	
			Kinds	Standard paper, specified paper, recycled paper, OHP, Label, Envelop (Single copy)	
			Remark	User adjustment of paper guide available	
Paper exit section	Exit way	Face down			
	Capacity of output tray	200 sheets			
Originals	Original set	Center Registration (left edge)			
	Max. original size	A4 (8-1/2" x 14")			
	Original kinds	sheet, book			
	Original size detection	None			
Optical section	Scanning section	Scanning system	3 CCDs (RGB) sensor scanning by lighting white lamp		
		CCD sensor	Resolution	600 dpi	
		Lighting lamp	Type	CCFL	
			Voltage	560Vrms	
			Power consumption	2.8W	
	Output data	Output: R, G, B 1 or 8 bits/pixel / Input: A/D 16 bits (12 bits actual)			
	Writing section	Writing system	Writing to OPC drum by the semiconductor laser		
		Laser unit	Resolution	600 dpi	
Image forming	Photoconductor	Type	OPC (30ø)		
		Life	25K		
	Charger	Charging system	Saw-tooth charging with a grid, / (-) scorotron discharge		
		Transfer system	(+) DC corotron system		
		Separation system	(-) DC corotron system		
	Developing	Developing system	Dry, 2-component magnetic brush development system		
	Cleaning	Cleaning system	Counter blade system (Counter to rotation)		

Section, item		Details	
Fusing section	Fusing system		Heat roller system
	Upper heat roller	Type	Teflon roller
	Lower heat roller	Type	Silicon rubber roller
	Heater lamp	Type	Halogen lamp
		Voltage	220 - 240V
Power consumption		800W	
Electrical section	Power source	Voltage	220 - 240V
		Frequency	Common use for 50 and 60Hz
	Power consumption	Max.	Less than 1000W
		Average (during copying)	350Wh/H
		Average (stand-by)	80Wh/H
		Pre-heat mode	25Wh/H
		Auto power shut-off mode	8.8W or less

3. Copy performance

Section, item		Details		
Copy magnification	Fixed magnification ratios		3 Reduction + 2 Enlargement (AB system: 50, 70, 86, 100, 141, 200%) (Inch system: 50, 64, 78, 100, 129, 200%)	
	Zooming magnification ratios		25 - 400% (376 steps in 1% increments) 50 - 200% when using ADF (151 steps in 1% increments)	
Manual steps (manual, photo)			5 steps	
Copy speed	First-copy time *1 (Approximately)		8.0 seconds (When user program 24 is set to OFF) 10.7 seconds (When user program 24 is set to ON) (paper: A4 (8-1/2" x 11"), exposure mode: AUTO, copy ratio: 100%)	
		AB system A4 (Landscape)	Copy speed (CPM)	Same size 20 Enlargement 20 Reduction 20
	AB system B5 (Landscape)		Copy speed (CPM)	Same size 20 Enlargement 20 Reduction 20
			Inch system 8-1/2" x 11" (Landscape)	Copy speed (CPM)
		Max. continuous copy quantity		
	Void	Void area		Leading edge
			Trailing edge	4mm or less
			Side edge	0.5mm or more (per side)
			void area	4.5mm or less (total of both sides)
		Image loss	Leading edge	same size: 3.0mm or less (OC) / 4mm or less (ADF) Enlarge: 1.5mm or less (OC) / 3mm or less (ADF) Reduction (50%): 6.0mm or less (OC) / 8mm or less (ADF)
Warm-up time			0 sec. Immediately the ready lamp is lit.	
Power save mode reset time			0 sec. Immediately the ready lamp is lit.	
Paper jam recovery time			0 sec. * Jam recovery condition: Recovery time from 60 sec of door open.	

*1: The first-copy time is measured after the power save indicator turns off following power on, using the document glass with the polygon rotating in the copy ready state and "Selection of copy start state" set to ON in the user programs (A4 (8-1/2" x 11"), paper fed from paper tray).

The first-copy time may vary depending on machine operating conditions and ambient conditions such as temperature.

4. GDI Printer

Print speed	Max. 20ppm (excluding bypass tray, paper size A4, 8.5" x 11") (Variable depending on the PC performance)
Duplex	No
Memory	8MB
Interface	USB 2.0 (Full speed)
Emulation	GDI
Resolution	600dpi *1
Supported OS	Win 98 / Me / 2000 / XP / Vista
WHQL support	Yes *2

*1: Engine Resolution

*2: By running change

5. Scan function

Type	Flat Bed Color Scanner
Scanning system	Original table/ADF
Light source	3 CCDs (RGB) sensor scanning by lighting white lamp (2 pcs of CCFL)
Resolution	Optical: 600 x 1200dpi Setting range: 50 - 9600dpi (Preview resolution is fixed at 75dpi)
Originals	Sheet type / Book type
Output data	R, G, B 1 or 8 bits/pixel A/D 16 bits (12 bits actual)
Scan range	OC / ADF: 216mm (H) x 356mm (V) (8.5" (H) x 14.0" (V)) Original position: Left Center / ADF position: Right Center
Scan speed	OC / ADF: Max. 2.88ms/line
Protocol	TWAIN / WIA (Only XP, Vista) / STI
Interface	USB2.0 (Full speed support)
Scanner utility	Button Manager / Desktop Document Manager / Composer
Scan key/lamp	Yes
Duplex scan	No
Supported OS	Win 98 / Me / 2000 / XP / Vista
Void area	No
WHQL supported	Yes *1

*1: By running change

[3] CONSUMABLE PARTS

1. Supply system table

A. North America/Brazil/Central and South America/Asia/Saudi Arabia Subsidiary

No.	Name	Content	Life	Product name	Packing form
1	Toner cartridge (Black)	Toner (Toner: Net Weight 243g) × 10 Polyethylene bag × 10	80K (8K x 10Pcs)	PS-ZT2021 (A4 6% document)	One carton of the PS-ZT2021 includes 10 toner cartridges.
2	Developer	Developer (Developer: Net Weight 170g) × 10	250K (25K x 10Pcs)	D-2021	One carton of the D-2021 includes 10 developers.
3	Drum kit	Drum × 1 Drum fixing plate × 1	25K	OD-1200	One carton of the collective package includes 10 units of the OD-1200.

2. Environmental

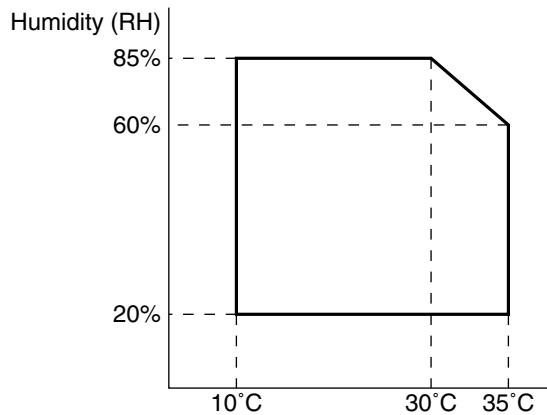
The environmental conditions for assuring the copy quality and the machine operations are as follows:

(1) Normal operating condition

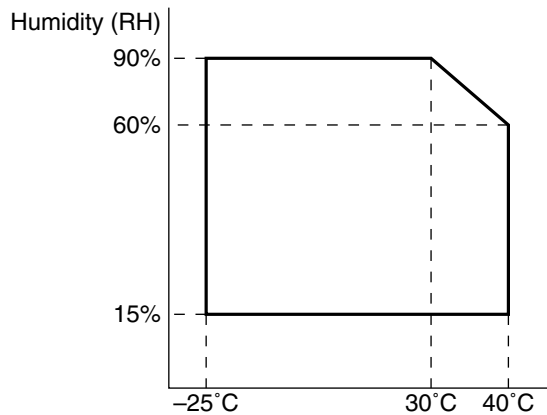
Temperature: 20 - 25°C

Humidity: 65 ± 5%RH

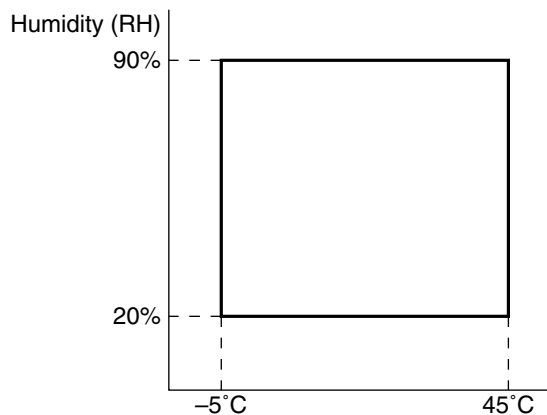
(2) Acceptable operating condition



(3) Transport condition

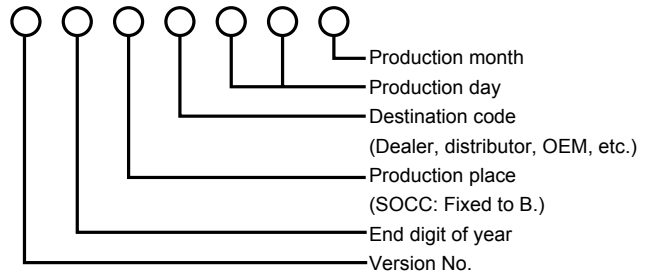


(4) Supply storage condition



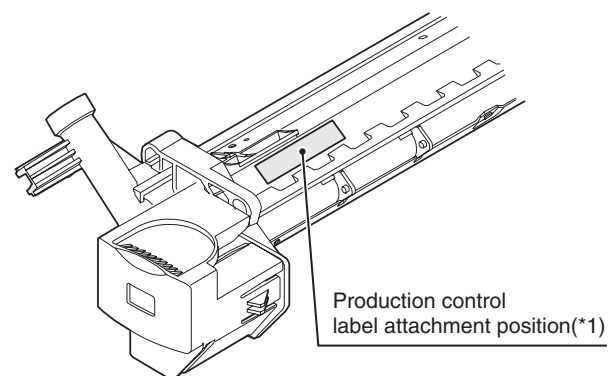
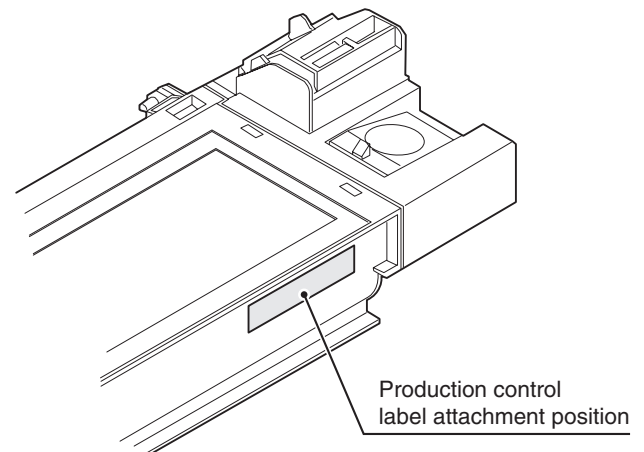
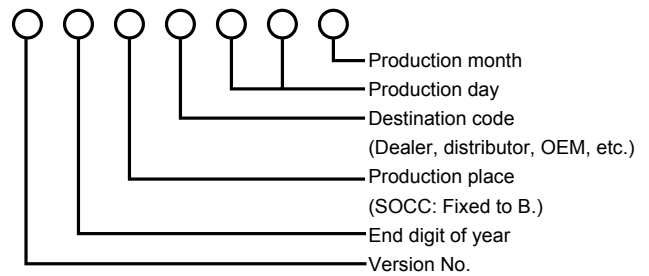
3. Production control number (lot No.) identification

<Toner cartridge>



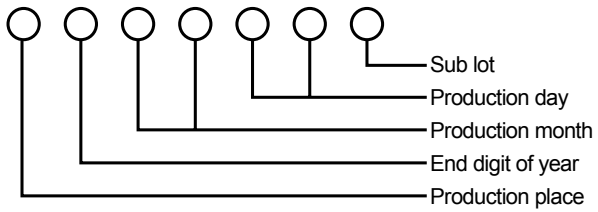
<Drum cartridge>

The label on the drum cartridge shows the date of production. (SOCC production)



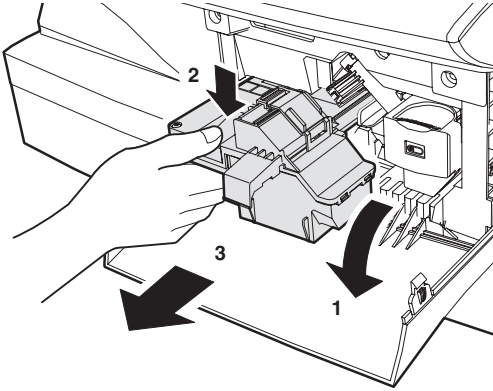
*1: The production control label is not attached to the cartridge of a China product.

<Developer>

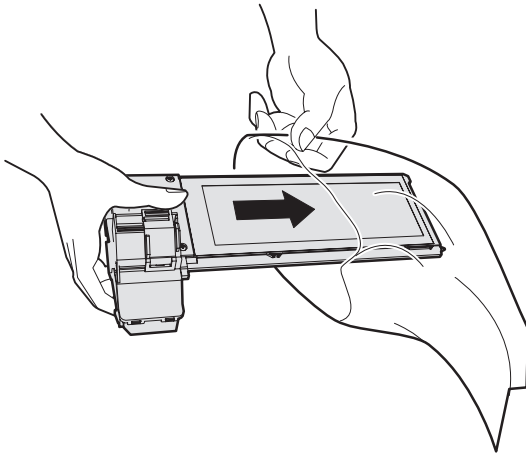


4. Toner cartridge replacement

- 1) Open the front and side cabinets of the copier.
- 2) Keep holding Toner lever, and
- 3) Carefully pull out Toner unit from the copier.



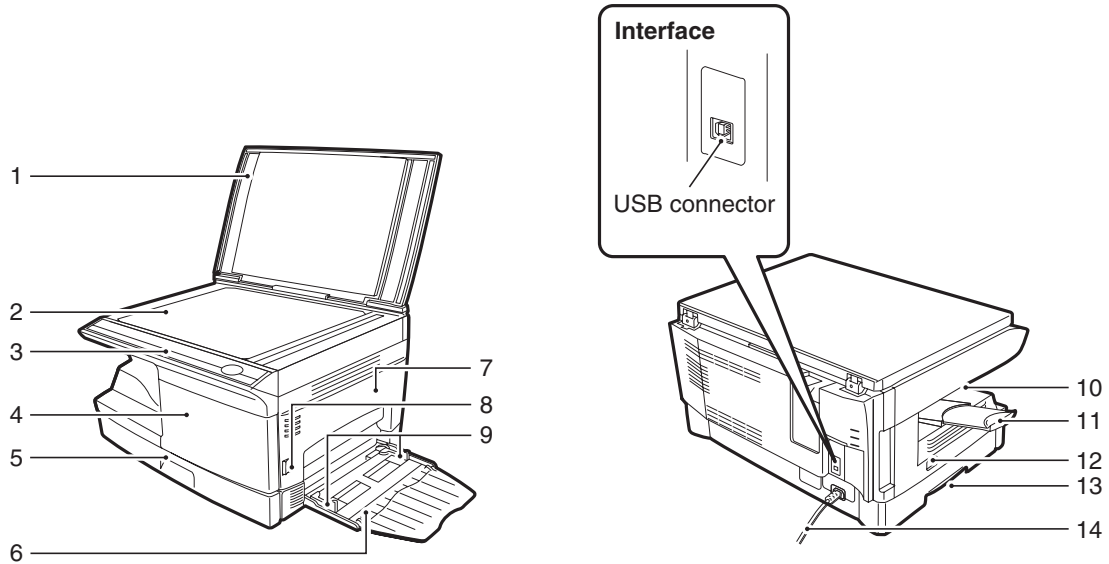
- 4) Put Toner unit in a collection bag immediately after removing it from the copier



Note: Never carry exposed Toner unit. Be sure to put it in the collection bag.

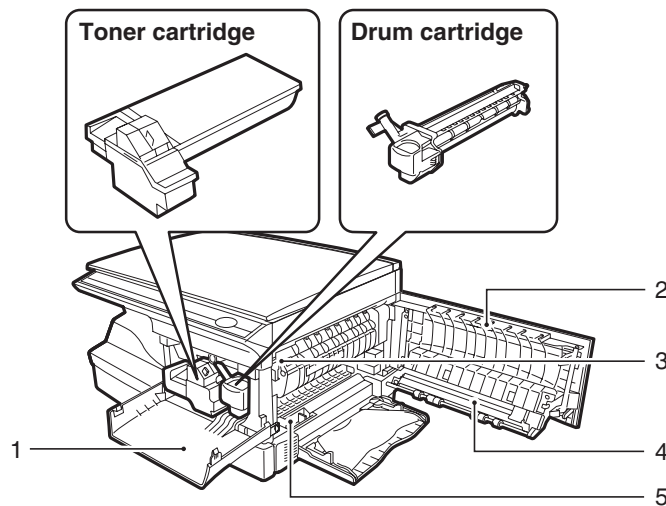
[4] EXTERNAL VIEWS AND INTERNAL STRUCTURES

1. Appearance



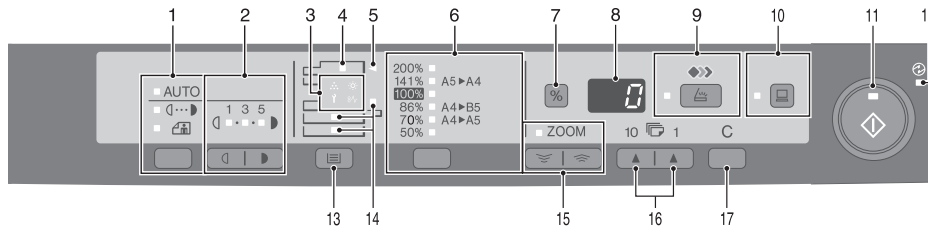
1	Original cover	2	Document glass	3	Operation panel
4	Front cover	5	Paper tray	6	Multi-bypass tray
7	Side cover	8	Side cover open button	9	Bypass tray paper guides
10	Paper output tray	11	Paper output tray extension	12	Power switch
13	Handle	14	Power cord		

2. Internal



1	Front cover	2	Side cover	3	Fusing unit release lever
4	Transfer charger	5	Charger cleaner		

3. Operation panel



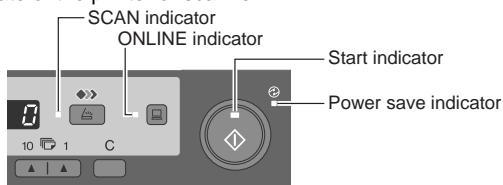
<p>1 Exposure mode selector key and indicators Use to sequentially select the exposure modes: AUTO, MANUAL or PHOTO. Selected mode is shown by a lit indicator.</p>	<p>2 Light and dark keys and indicators Use to adjust the MANUAL or PHOTO exposure level. Selected exposure level is shown by a lit indicator. Use to start and terminate user program setting.</p>
<p>3 Alarm indicators <ul style="list-style-type: none"> ⊙: Developer replacement required indicator 8√ Misfeed indicator ⋯: Toner cartridge replacement required indicator *1 ⚡ Maintenance indicator </p>	<p>4 ADF indicator (Only when the ADF is installed.)</p>
<p>5 ADF misfeed indicator (Only when the ADF is installed.)</p>	<p>6 Copy ratio selector key and indicators Use to sequentially select preset reduction/enlargement copy ratios. Selected copy ratio is shown by a lit indicator.</p>
<p>7 Copy ratio display (%) key <ul style="list-style-type: none"> • Use to verify a zoom setting without changing the zoom ratio. • Use to check the number of originals that must be returned to the document feeder tray if an original misfeed occurs while using the ADF. </p>	<p>8 Display Displays the specified copy quantity, zoom copy ratio, user program code, and error code.</p>
<p>9 SCAN key and indicator *2, *3</p>	<p>10 ONLINE key and indicator Lights up when the unit is used as a printer and scanner. *2</p>
<p>11 Start key and indicator <ul style="list-style-type: none"> • Copying is possible when the indicator is on. • Press to start copying • Use to set a user program. </p>	<p>12 Power save indicator Lights up when the unit is in a power save mode.</p>
<p>13 Tray select key Use to select a paper feed station (paper tray or multi-bypass tray).</p>	<p>14 Paper feed location indicators Light up to show the selected paper feed station.</p>
<p>15 ZOOM keys and indicator Use to select any reduction or enlargement copy ratio from 25% to 400% in 1% increments. (When the ADF is being used, the zoom copy ratio range is 50% to 200%.)</p>	<p>16 Copy quantity keys <ul style="list-style-type: none"> • Use to select the desired copy quantity (1 to 99). • Use to make user program entries. </p>
<p>17 Clear key <ul style="list-style-type: none"> • Press to clear the display, or press during a copy run to terminate copying. • Press and hold down during standby to display the total number of copies made to date. </p>	

***1: Toner cartridge replacement**

When toner density is lower than a specified level, the toner cartridge replacement indicator lights up to warn the user. If the toner cartridge is not replaced in that time, the ready lamp changes to blinking and then start to supply the toner after around 10 copies. (Cartridge replacement lamp continues to light.) If toner density is not back to specific level after two minutes, the ready indicator goes out and toner developer indicator starts blinking, and the copier stops. Also when the toner quantity is insufficient, the lamp is lighted.

***2: Indicators on the operation panel**

The ONLINE indicator and the start (⊙) indicator indicate the state of the printer or scanner.



Start indicator

- On:** Indicates the unit is ready for copying or scanning is being performed.
- Blinking:** The indicator blinks in the following situations:
- When a print job is interrupted.
 - When reserving a copy job.
 - When toner is being replenished during a copy or print job.
- Off:** The indicator is off in the following situations:
- During copying or scanning.
 - The unit is in the auto power shut-off mode.
 - When a misfeed or error has occurred.

ONLINE indicator

The ONLINE key is pressed and on line and off line are changed.

- On:** Indicates the unit is ready for printing or scanning is being performed. (On line)
- Blinking:** Printing or data is being received from a computer.
- Off:** Copying is being performed. (Off line)

Power save indicator

- On: Indicates the unit is in a power save mode.
- Blinking: Indicates that the unit is initializing (when the side cover is opened and closed or the power turned off and on).

SCAN indicator

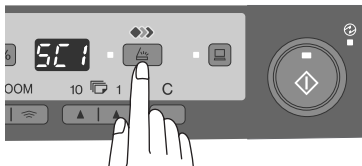
- On: The SCAN (SCAN) key has been pressed and the unit is in scanner mode.
- Blinking: A scan job is being executed from the computer, or scan data is stored in the unit's memory.
- Off: The unit is in the copy mode.

***3: Using the SCAN key to begin scanning**

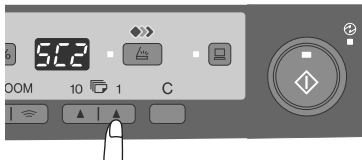
Note:

- Scanning is not possible during a copy job.
- If the SCAN (SCAN) key is pressed during a print job, the scan job will be stored.
- When scanning an original that has been placed in the ADF, only one original can be placed unless you are using Desktop Document Manager.

- 1) Press the SCAN (SCAN) key.
The unit enters scan mode.



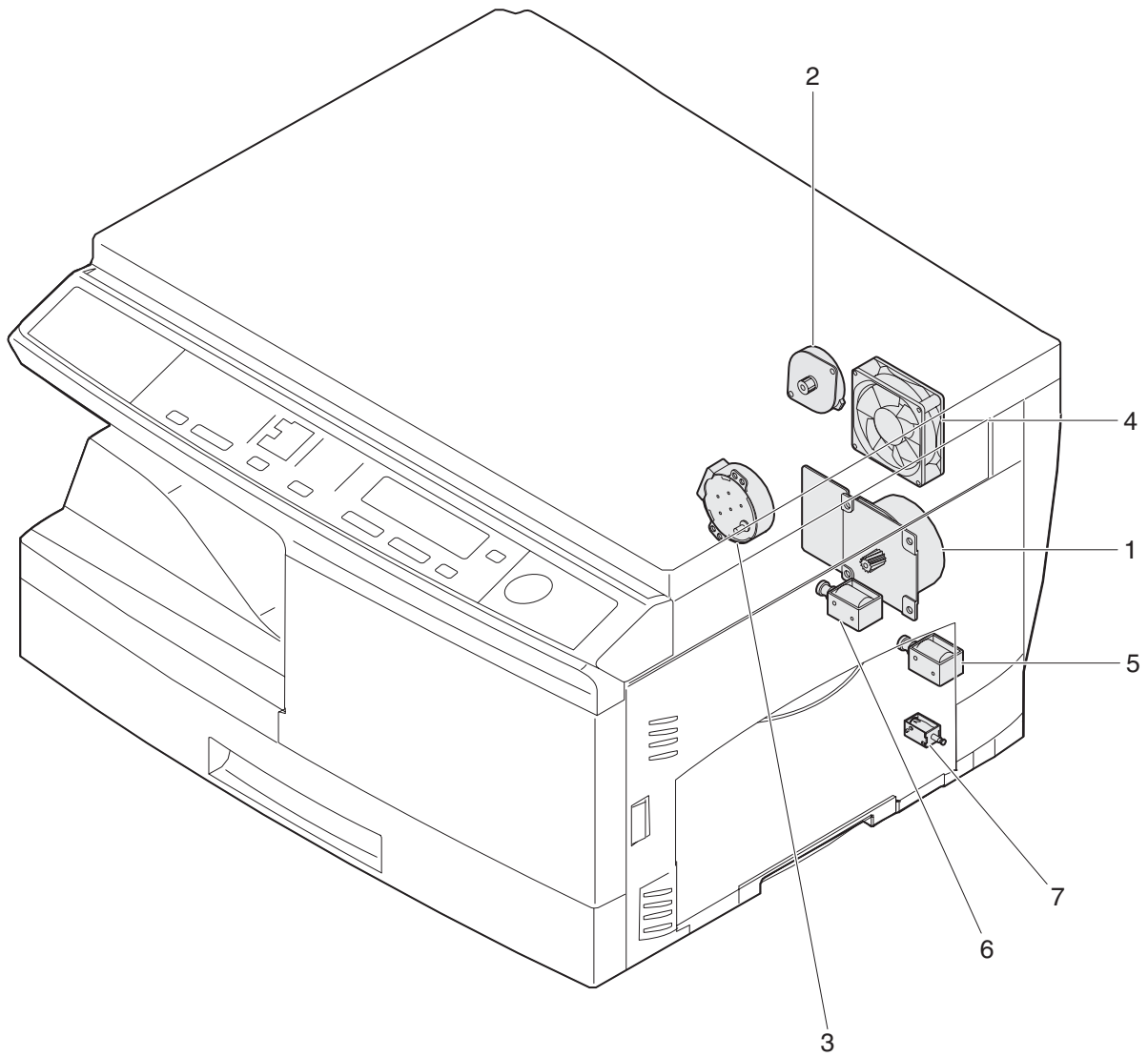
- 2) Place the original you wish to scan on the document glass/ADF.
- 3) Press the right copy quantity key to display the number of the application that you wish to use for scanning.
The application numbers are initially as follows.



Application number	Application launched
SC1	Desktop Document Manager (Full color) (if installed)
SC2	Desktop Document Manager (Monochrome) (if installed)
SC3	E-mail (your standard e-mail program in the Windows OS you are using)
SC4	Fax (if a fax program is installed)
SC5	OCR (if an OCR program is installed)
SC6	Microsoft Word (if installed)

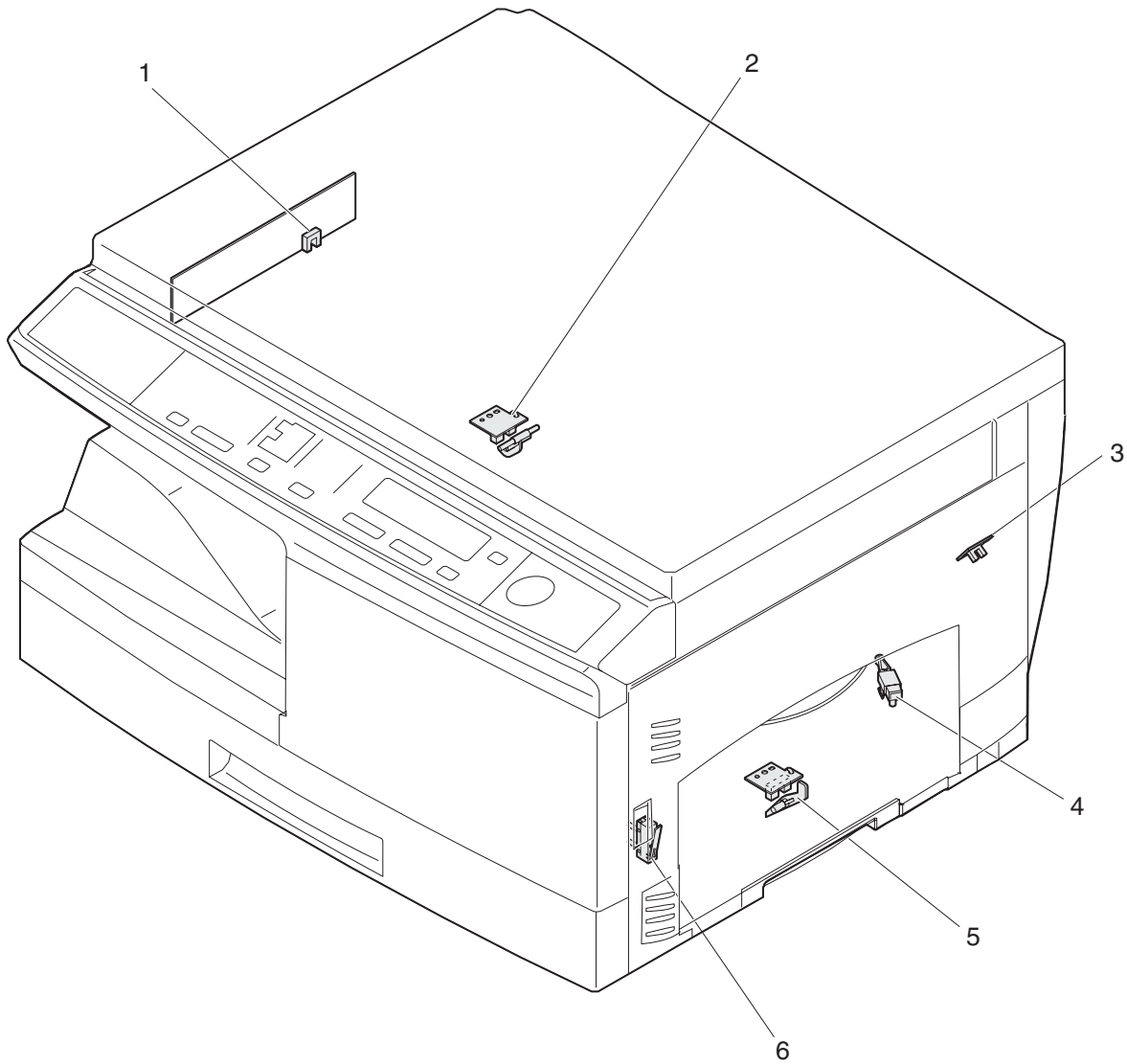
- 4) Press the start (START) key.
Scanning will start and the scanned data will be transferred to the application.

4. Motors and solenoids



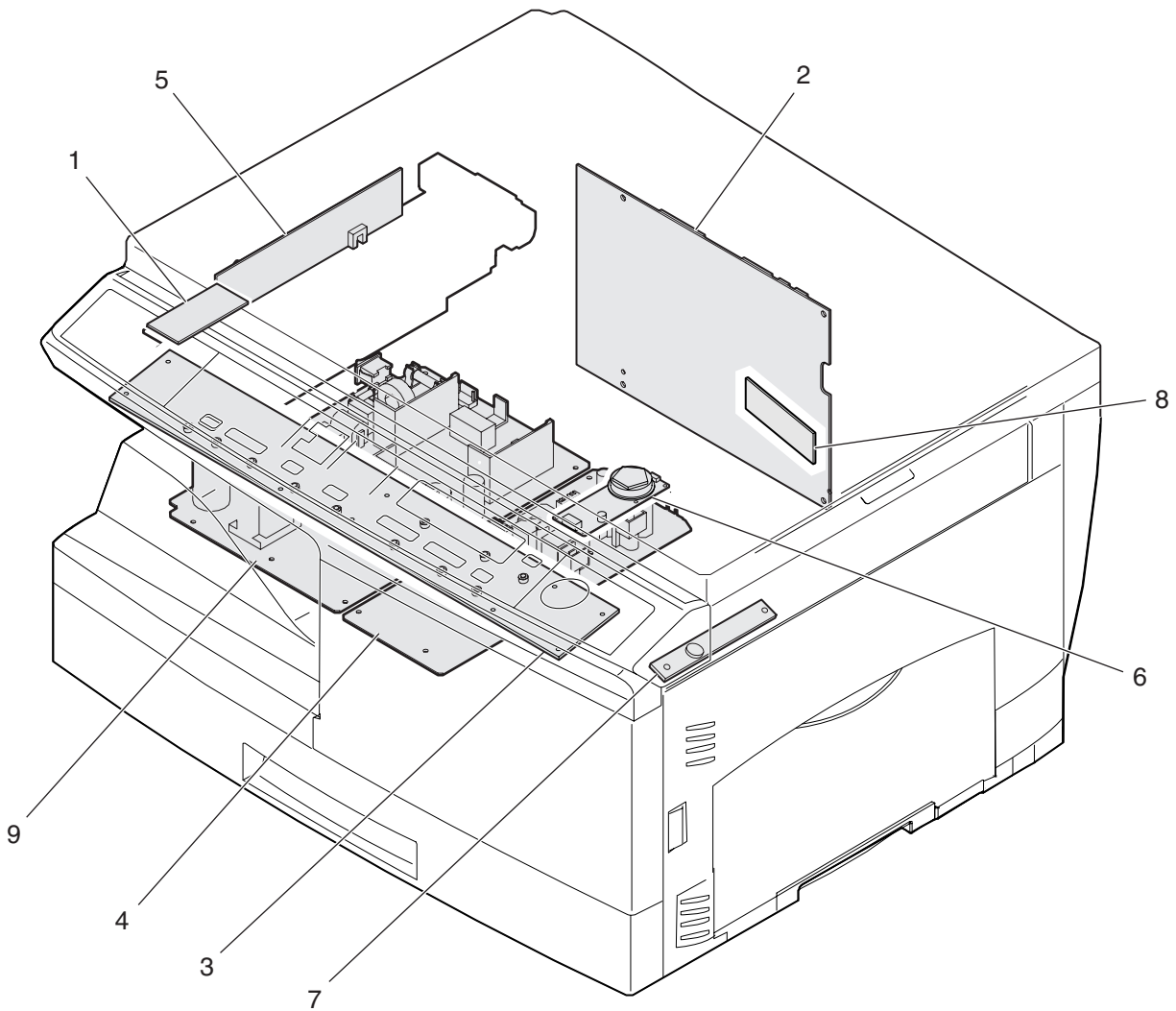
No.	Part name	Control signal	Function / Operation
1	Main motor	MM	Drives the copier.
2	Scanner motor	MRMT	Drives the optical mirror base (scanner unit).
3	Toner motor	TM	Supplies toner.
4	Cooling fan motor	VFM	Cools the optical, fusing section.
5	Resist roller solenoid	RRS	Resist roller rotation control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

5. Sensors and switches



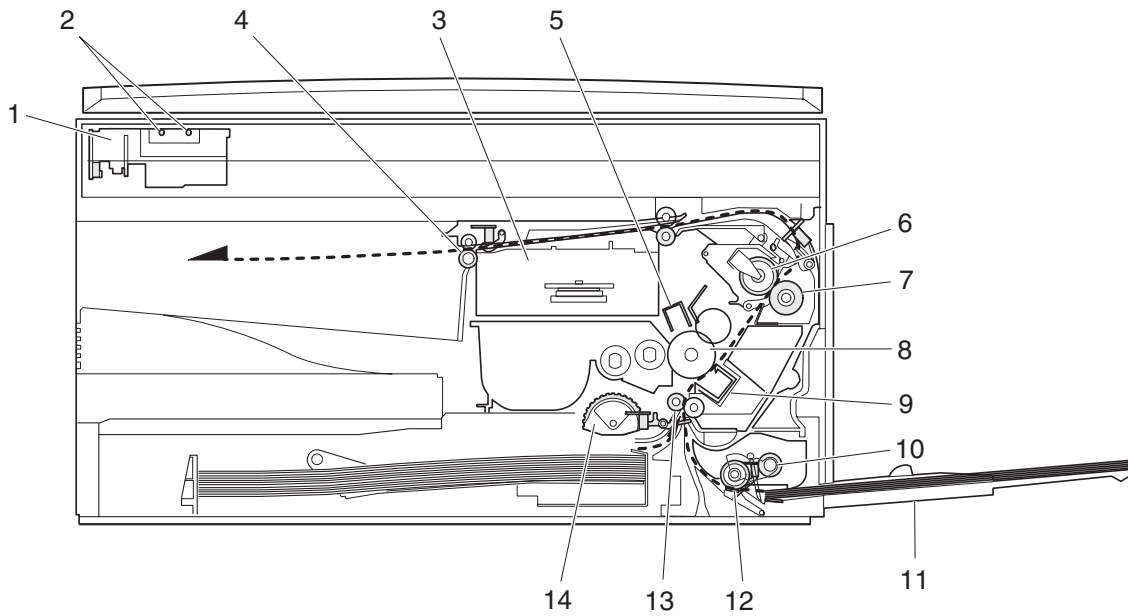
No.	Name	Signal	Type	Function	Output
1	Scanner unit home position sensor	MHPS	Transmission sensor	Scanner unit home position detection	"H" at home position
2	POD sensor	POD	Transmission sensor	Paper exit detection	"H" at paper pass
3	PPD2 sensor	PPD2	Transmission sensor	Paper transport detection 2	"L" at paper pass
4	Cassette detection switch	CED1	Micro-switch	Cassette installation detection	"H" at cassette insertion
5	PPD1 sensor	PPD1	Transmission sensor	Paper transport detection 1	"L" at paper pass
6	Door switch	DSW	Micro-switch	Door open/close detection (safety switch for 24V)	1 or 0V of 24V at door open

6. PWB unit



No.	Name	Function
1	Exposure lamp inverter PWB	Exposure lamp (CCFL) control
2	Main PWB (MCU)	Copier control
3	Operation PWB	Operation input/display
4	High voltage PWB	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	Power PWB	AC power input, DC voltage control

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 (CCFL) Illuminates original
3	LSU (Laser unit)	Converts the original image signal into laser beams and writes onto the drum.
4	Paper exit roller	Roller for paper exit
5	Main charger	Provides negative charges evenly to the drum surface.
6	Heat roller	Fuses toner on the paper. (Teflon roller)
7	Pressure roller	Fuses toner on the paper. (Silicon rubber roller)
8	Drum	Forms images.
9	Transfer unit	Transfers images onto the drum.
10	Pickup roller	Picks up the manual feed paper. (In multi feed only)
11	Manual paper feed tray	Tray for manual feed paper
12	Manual paper feed roller	Transport the paper from the manual paper feed port.
13	PS roller unit	Takes synchronization between the lead edge and the rear edge of the paper.
14	Paper feed roller	Picks up a sheet of paper from the cassette.

[5] UNPACKING AND INSTALLATION

1. Copier installation

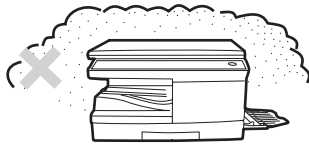
Improper installation may damage the copier. Please note the following during initial installation and whenever the copier is moved.

Caution: If the copier is moved from a cool place to a warm place, condensation may form inside the copier. Operation in this condition will cause poor copy quality and malfunctions.

Leave the copier at room temperature for at least 2 hours before use.

Do not install your copier in areas that are:

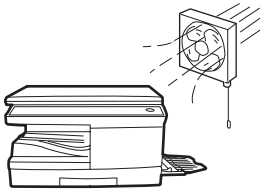
- damp, humid, or very dusty



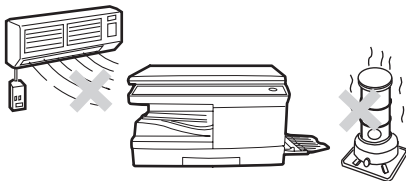
- exposed to direct sunlight



- poorly ventilated



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

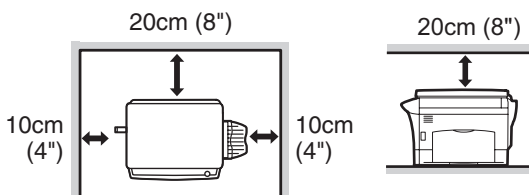


The copier shall be installed near an accessible power outlet for easy connection.

Be sure to connect the power cord only to a power outlet that meets the specified voltage and current requirements.

Also make certain the outlet is properly grounded.

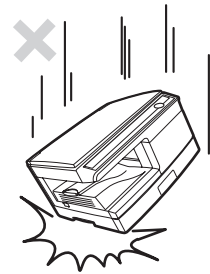
Be sure to allow the required space around the machine for servicing and proper ventilation.



2. Cautions on handling

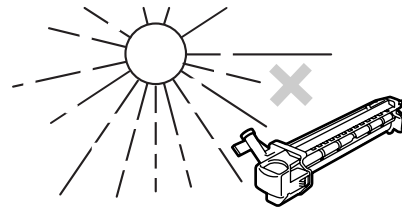
Be careful in handling the copier as follows to maintain the performance of this copier.

Do not drop the copier, subject it to shock or strike it against any object.



Do not expose the drum cartridge to direct sunlight.

Doing so will damage the surface (green portion) of the drum cartridge, causing poor print quality.



Store spare supplies such as drum cartridges and toner cartridges in a dark place without removing from the package before use.

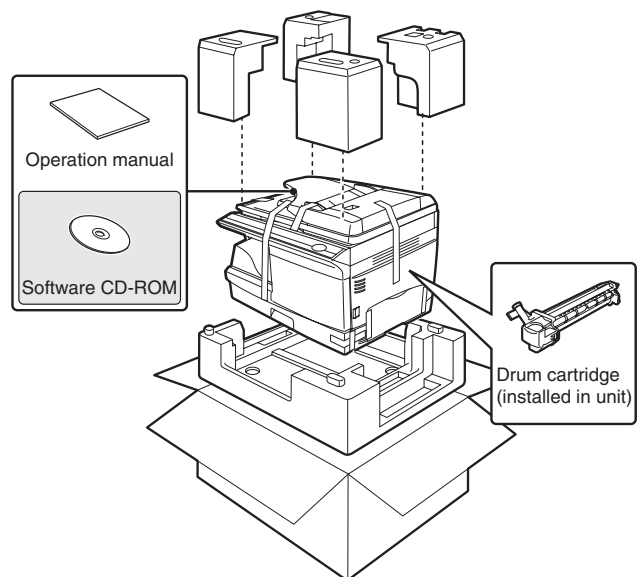
If they are exposed to direct sunlight, poor print quality may result.

Do not touch the surface (green portion) of the drum cartridge.

Doing so will damage the surface of the cartridge, causing poor print quality.

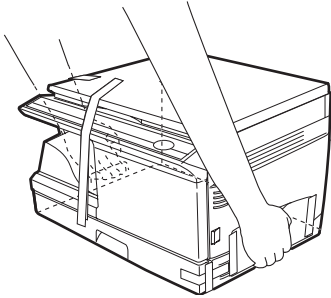
3. Checking packed components and accessories

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



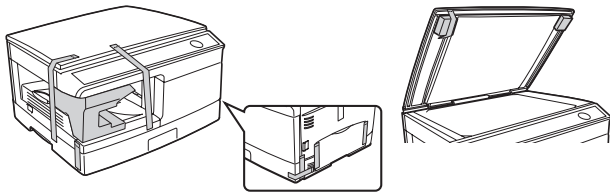
4. Unpacking

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

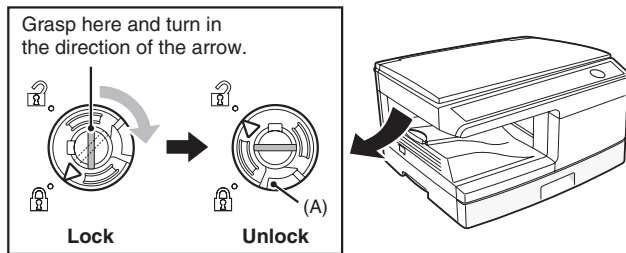


5. Removing protective packing materials

- 1) Remove all pieces of tape shown in the illustration below. Then open the original cover and remove protective materials.



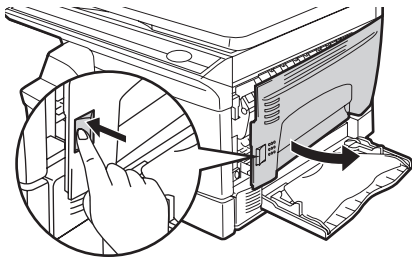
- 2) Release the scan head locking switch. The scan head locking switch is under the document glass. If the switch is locked (🔒), the unit will not operate. Unlock the switch (🔓) as shown below.



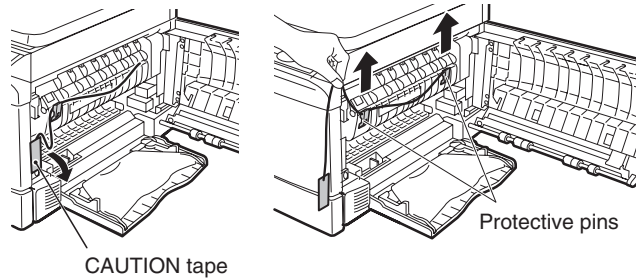
To lock the scan head locking switch, hold up the catch in illustration (A) and turn the center knob counter-clockwise 90 degrees until you hear a click.

6. Developer unit installation

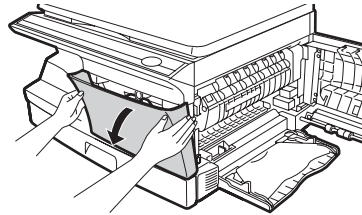
- 1) Open the multi-bypass tray, and then open the side cover.



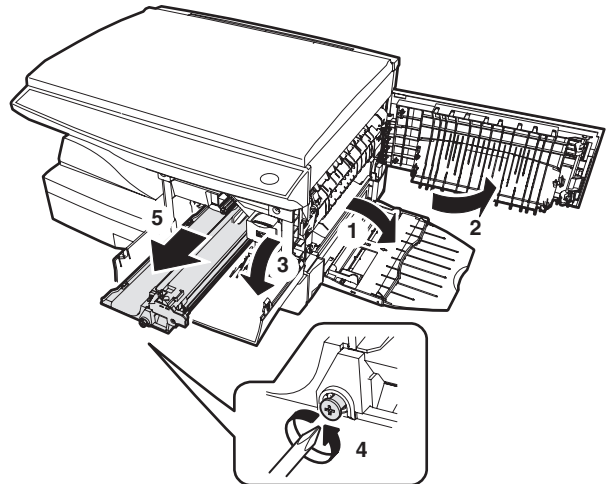
- 2) Remove the CAUTION tape from the front cover and remove the two protective pins from the fusing unit by pulling the strings upward one at a time.



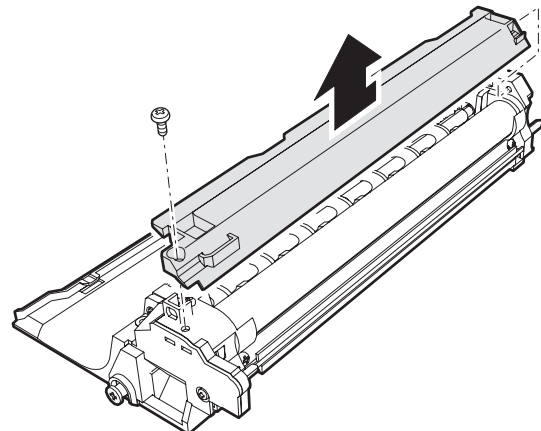
- 3) Push gently on both sides of the front cover to open the cover.



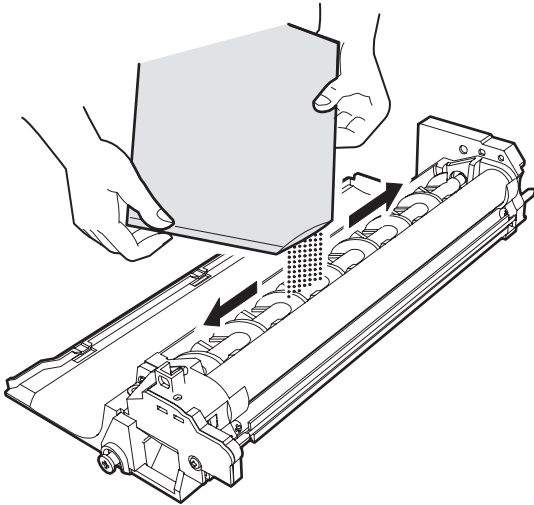
- 4) Remove the locking tape of the developer unit.
- 5) Remove the screw which is fixing the copier and Developer unit.
- 6) Remove Developer unit slowly from the copier.



- 7) Remove the screw (1 pc).
- 8) Remove Upper developer unit.

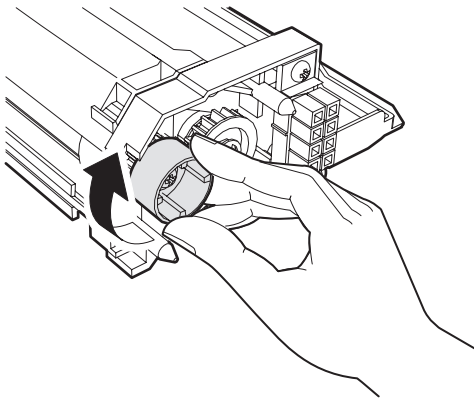


- 9) Shake the aluminum bag to stir developer.
- 10) Supply developer from the aluminum bag to the top of the MX roller evenly.

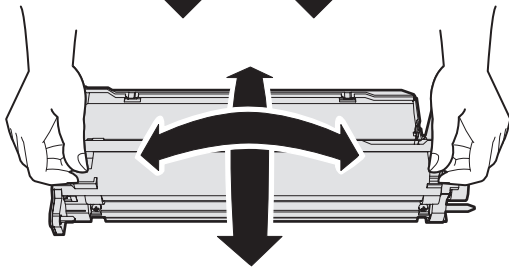


Note: Be careful not to splash developer outside Developer unit.

- 11) Attach Upper developer unit and fix it with a screw.
- 12) Rotate the MG roller gear to distribute developer evenly.



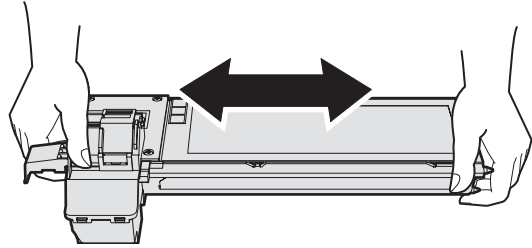
Note: Never rotate the gear in the reverse direction.
 Note: When carrying Developer unit, do not tilt it extremely as shown with the arrow in the figure below. (Prevention of splash of developer)



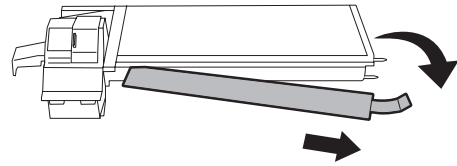
- 13) Insert Developer unit carefully into the copier.
 Note: Quick insertion may result in splash of developer. Be sure to insert carefully.
- 14) Confirm that Developer unit is completely inserted to the bottom of the machine, fix Developer unit and the machine with a screw.
- 15) Completion of Developer unit installation

7. Toner cartridge installation

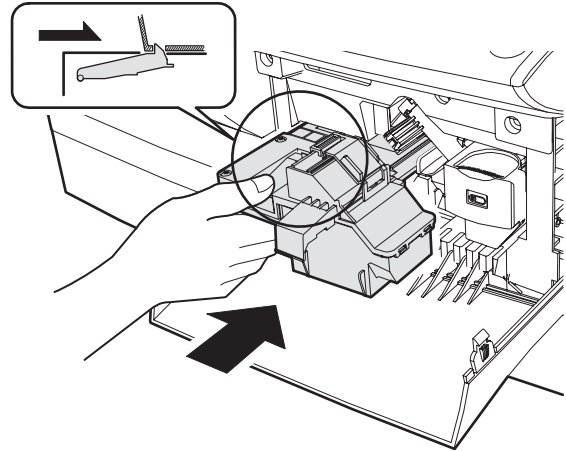
- 1) To prevent against uneven distribution of toner, hold Toner unit with both hands and shake it several times horizontally.



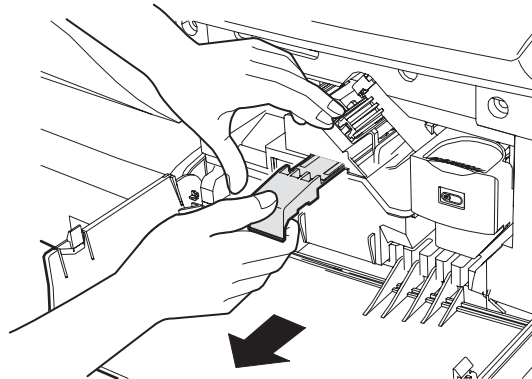
- 2) Hold the section of Toner unit shown in the figure below, remove the packing tape, and remove the cushion.
- 3) Pull out the cushion in the arrow direction.



- 4) Insert Toner unit carefully into the copier.
- 5) Insert until the hook is engaged with the copier as shown in the figure below.



- 6) Pull out the shutter in the arrow direction.

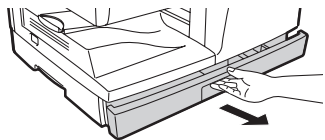


Note: Do not hold and carry the shutter. Otherwise the shutter may drop and Toner unit may drop.

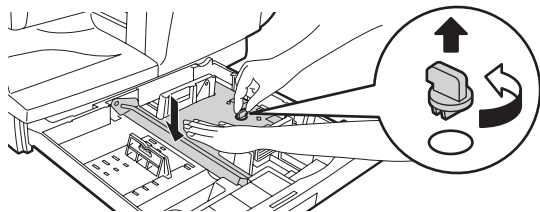
- 7) Completion of Toner unit installation
 Close the front and side cabinets.

8. Loading paper

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

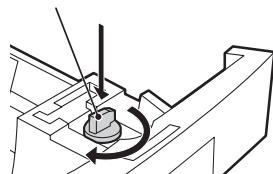


- 2) Remove the pressure plate lock. Rotate the pressure plate lock in the direction of the arrow to remove it while pressing down the pressure plate of the paper tray.

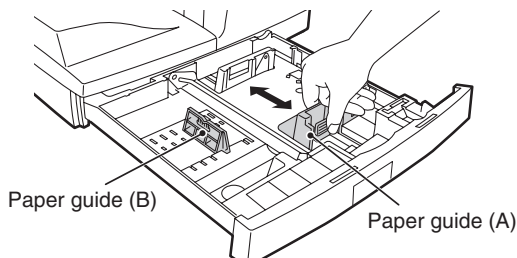


- 3) Store the pressure plate lock which has been removed in step 2). To store the pressure plate lock, rotate the lock to fix it on the relevant location.

Pressure plate lock

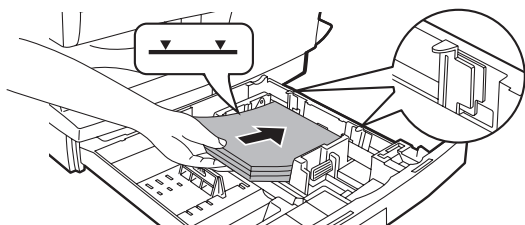


- 4) Adjust the paper guides on the paper tray to the copy paper width and length. Squeeze the lever of paper guide (A) and slide the guide to match with the width of the paper. Move paper guide (B) to the appropriate slot as marked on the tray.



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

Note: Do not load paper above the maximum height line (▼▼). Exceeding the line will cause a paper misfeed.



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

9. Power to copier

Ensure that the power switch of the unit is in the OFF position. Plug the other end of the power cord into the nearest outlet. Turn the power switch on the left side of the unit to the "ON" position. The start (⊕) indicator will light up and other indicators which show the initial settings of the operation panel will also light up to indicate the ready condition.

10. Software

The CD-ROM that accompanies the machine contains the following software:

MFP driver

Printer driver

The printer driver enables you to use the printer function of the machine.

The printer driver includes the Print Status Window. This is a utility that monitors the machine and informs you of the printing status, the name of the document currently being printed, and error messages.

Please note that the Print Status Window does not operate when the machine is used as a network printer.

Scanner driver*

The scanner driver allows you to use the scanning function of the machine with TWAIN-compliant and WIA-compliant applications.

Desktop Document Manager*

Desktop Document Manager is an integrated software environment that makes it easy to manage documents and image files, and launch applications.

Button Manager*

Button Manager allows you to use the scanner menus on the machine to scan a document.

*: The scanning feature can only be used with computers that are connected to the machine by a USB cable.

Before installation

Hardware and software requirements

Check the following hardware and software requirements in order to install the software.

Computer type	IBM PC/AT or compatible computer equipped with a USB 2.0/1.1*1
Operating system*2 *3	Windows 98, Windows Me, Windows 2000 Professional*4, Windows XP Professional*4, Windows XP Home Edition*4, Windows Vista*4
Display	1024 x 768 dots (XGA) display with 16bit
Hard disk free space	150 MB or more
Other hardware requirements	An environment on which any of the operating systems listed above can fully operate

*1: Compatible with Windows 98, Windows Me, Windows 2000 Professional, Windows XP Professional, Windows XP Home Edition or Windows Vista preinstalled model standardly equipped with a USB port.

*2: Printing is not available in MS-DOS mode.

*3: The machine does not support printing from a Macintosh environment.

*4: Administrator's rights are required to install the software using the installer.

Installation environment and usable software

The following table shows the drivers and software that can be installed for each version of Windows and interface connection method.

Cable	Operating system	Printer driver	Scanner driver	Button Manager	Desktop Document Manager
USB	Windows 98/Me/2000/XP/Vista	Available*1		Available	

*1: The printer driver that is installed will vary depending on the type of connection between the machine and your computer.

Install the software according to the Operation Manual.

11. Connecting the interface cable

Connecting a USB cable

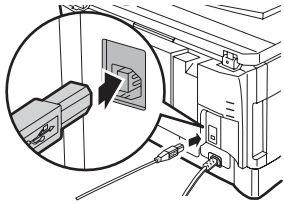
Follow the procedure below to connect the machine to your computer.

A USB cable for connecting the machine to your computer is not included with the machine. Please purchase the appropriate cable for your computer.

Caution:

- USB is available with a PC/AT compatible computer that was originally equipped with USB and had Windows 98, Windows Me, Windows 2000 Professional, Windows XP Professional, Windows XP Home Edition or Windows Vista preinstalled.
- Do not connect the USB cable before installing the printer driver. The USB cable should be connected during installation of the printer driver.

- 1) Insert the cable into the USB connector on the machine.



- 2) Insert the other end of the cable into your computer's USB port.

12. Interface

A. USB

Connector

4-pin ACON UBR23-4K2200

Type-B connector

Cable

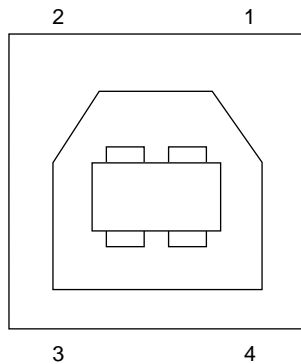
Shielded twisted pair cable

(2 m (6 feet) Max.: high-speed transmission equivalent)

Pin configuration

The pin numbers and signal names are listed in the following table.

Pin No.	Signal name
1	+5V
2	-DATA
3	+DATA
4	GND



13. Moving

Moving instructions

When moving the unit, follow the procedure below.

Note: When moving this unit, be sure to remove the toner cartridge in advance.

- 1) Turn the power switch off and remove the power cord from the outlet.
- 2) Open the side cover and front cover, in that order. Remove the toner cartridge and close the front cover and side cover, in that order.

To open and close the side cover and front cover, and to remove the toner cartridge.

- 3) Raise the handle of the paper tray and pull the paper tray out until it stops.
- 4) Push the center of the pressure plate down until it locks in place and lock the plate using the pressure plate lock which has been stored in the front of the paper tray.
- 5) Push the paper tray back into the unit.
- 6) Lock the scan head locking switch.

Note: When shipping the unit, the scan head locking switch must be locked to prevent shipping damage.

- 7) Close the multi-bypass tray and the paper output tray extension, and attach the packing materials and tape which were removed during installation of the unit.
- 8) Pack the unit into the carton.

14. Scanner moisture-proof parts

If the machine is installed in a highly humid environment, you can alleviate dew condensation inside the scanner by installing the scanner moisture-proof parts described below.

A. Components

Scanner moisture-proof parts

	Name	Part code	Qty
1	Scanner condensation prevention mylar		3
2	Optical right hole mylar B		2
3	Scanner motor metal plate cushion		2
4	Scanner upper surface cushion		1
5	Scanner motor lower mylar		1
6	Scanner UPG mylar J3		1
7	Fan housing cushion		1

B. Precautions at installation

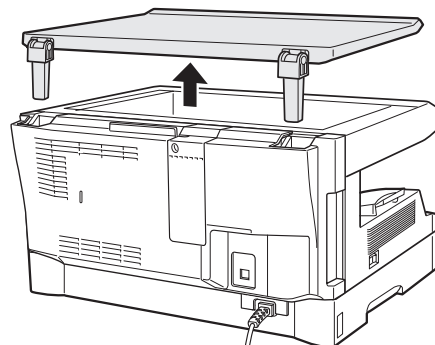
Clean the position where each cushion/mylar is attached with industrial alcohol before the work.

C. Attachment method

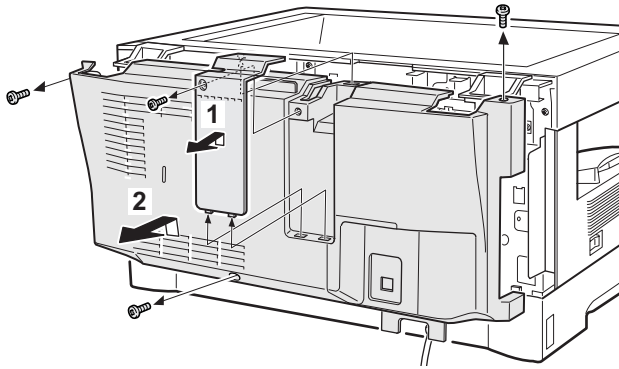
Turn the main switch to the "OFF" position and remove the power plug from the outlet.

- 1) Remove the document cover.

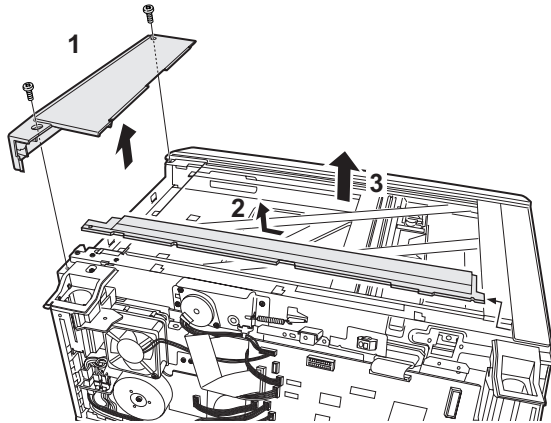
Remove the document cover from the copier.



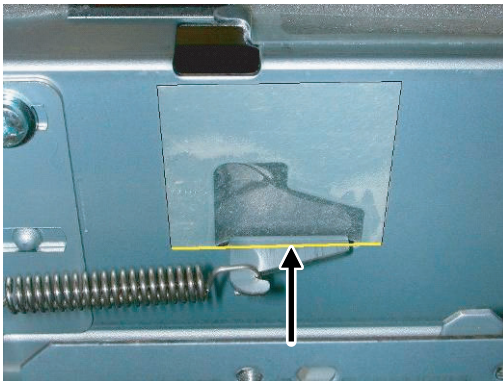
- 2) Remove the rear cabinet.
Remove the four screws and then remove the rear cabinet.



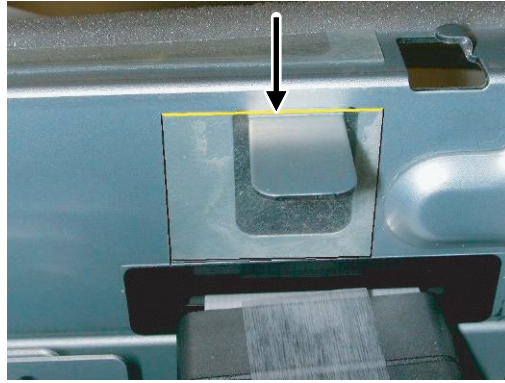
- 3) Remove the rear cover for the document glass.
 - <1> Remove the two screws and then remove the right glass holder.
 - <2> Slide the rear cover for the document glass to remove it.
 - <3> Remove the table glass.



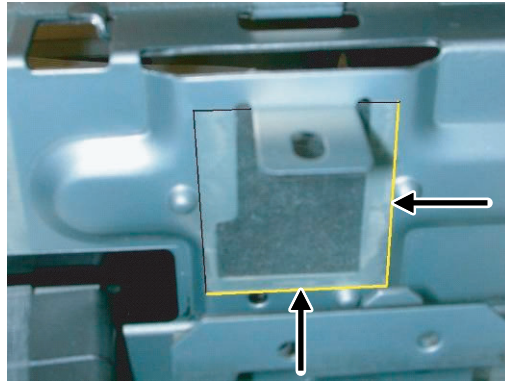
- 4) Attach the Scanner condensation prevention mylar at the 3 positions on the rear side of the main unit as described below.
Note: The hole should be covered with the mylar.
Align the edge of the mylar to the R part (the yellow line in the diagram below) so that the hole of the metal plate is covered as much as possible.



Align the edge of the mylar to the R part (the yellow line in the diagram below) so that the hole of the metal plate is covered as much as possible.



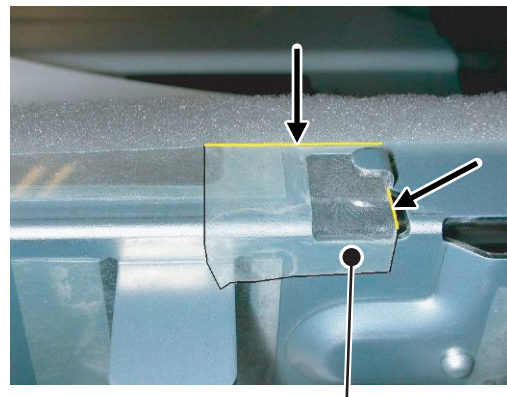
Attach along the edge of the projection (the yellow line in the diagram below).



- 5) Attach the Optical right hole mylar B at the 2 positions shown in the diagrams below which are at the top of the rear side of the main unit.

Note: The holes should be covered with the mylar.
Attach along the edge of the cushion (the yellow line in the diagram below).

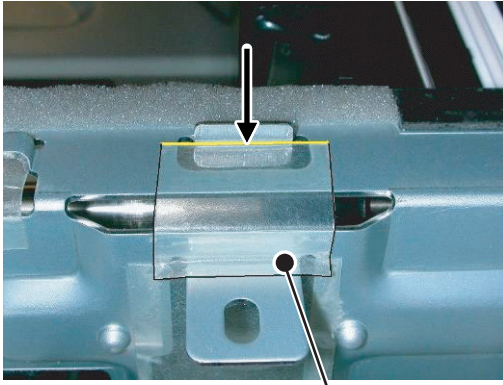
Align with the inside line of the bent part (the yellow line in the diagram below).



Stick the excessive part on the side.

Align with the raised part (the yellow line in the diagram below).

Match the center of the mylar (in the horizontal direction) to the center of the raised part.

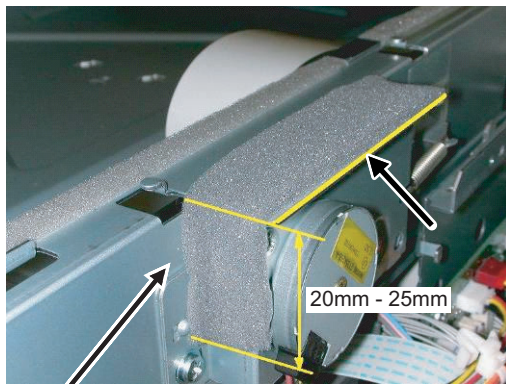


Stick the excessive part on the side.

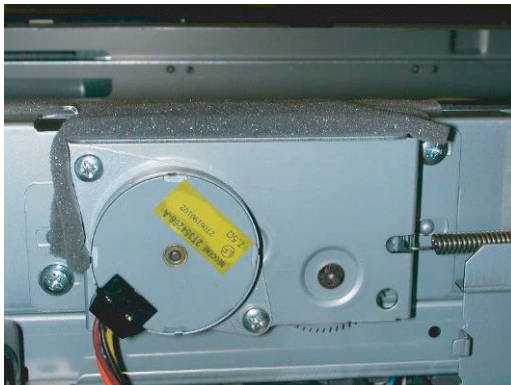
- 6) Attach the Scanner motor metal plate cushion at 1 position on the attachment plate of the motor on the rear side of the main unit.

Note: The hole on the top of the motor unit should be covered with the mylar.

Align the edge of the metal plate and the edge of the cushion (the yellow line in the diagram below).

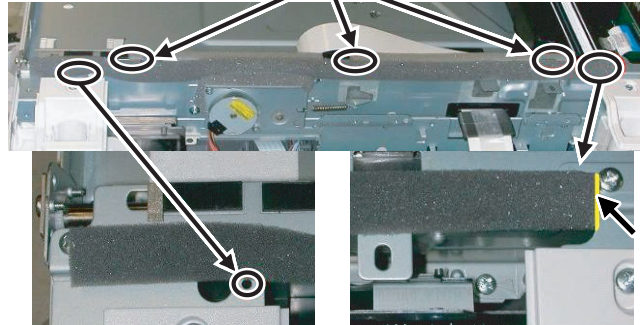
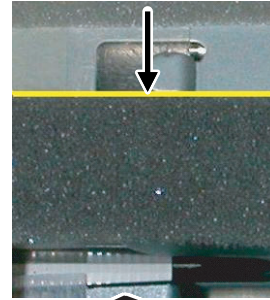


Press and attach the cushion aligning it to the metal plate so that there will be no gap between them.



- 7) Attach the Scanner upper surface cushion on the top and the rear side at the rear side of the main unit.

Align the cushion with the side of the raised part (the yellow line in the diagram below).



Do not cover this hole.

Align the edge of the cushion with the edge of the metal plate.

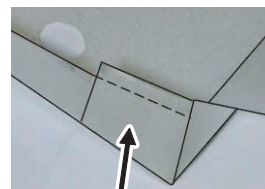
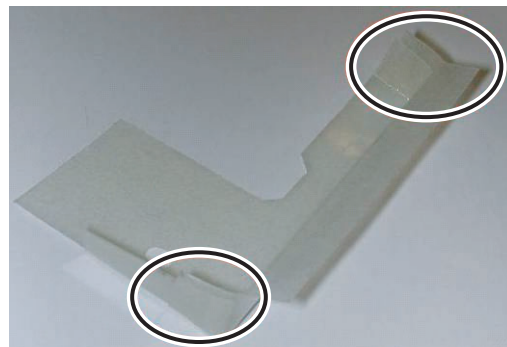
Bend the part which is sticking out to the rear side of the scanner and attach to the surface.



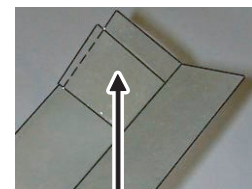
Press the cushion at the steps shown in the diagram so that there will be no gap.

Press the cushion to make sure all the holes are covered.

- 8) Bend the edge of the Scanner motor lower mylar and stick together.



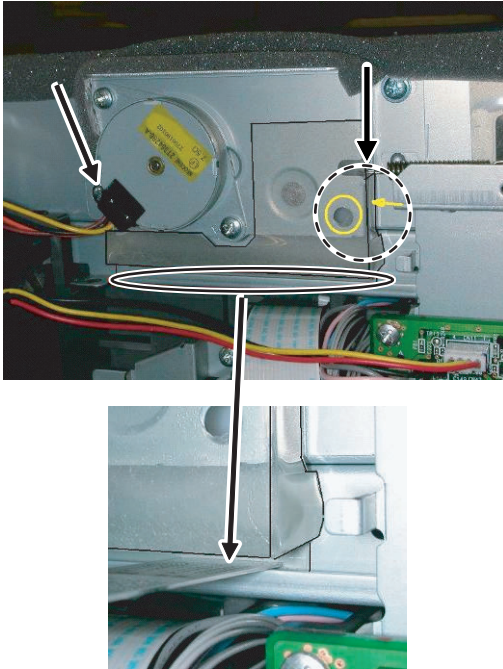
Stick together.



Stick together.

- 9) Attach the Scanner motor lower mylar at 1 position under the motor attachment plate on the rear side of the main unit.

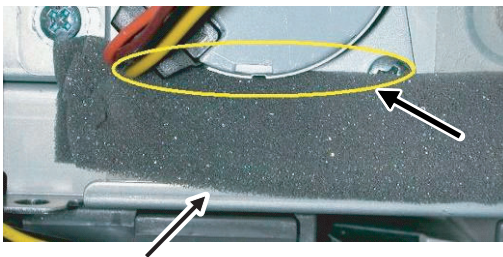
Note: The mylar should cover the hole under the motor unit.
 Attach matching the hole (the yellow mark in the diagram) and along with the side edge (the yellow arrow in the diagram).
 Disconnect the motor harness from the connector and take off the snap band from the hole.



Press the mylar with a sharp-pointed stick or something so that it is stuck correctly.

- 10) Attach the Scanner motor metal plate cushion covering the bottom part of the Scanner motor lower mylar.

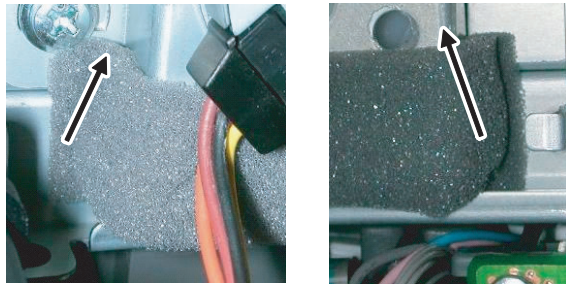
Note: The hole under the motor unit should be covered.
 Attach the cushion to cover the gap between the mylar and the metal plate (the yellow mark).



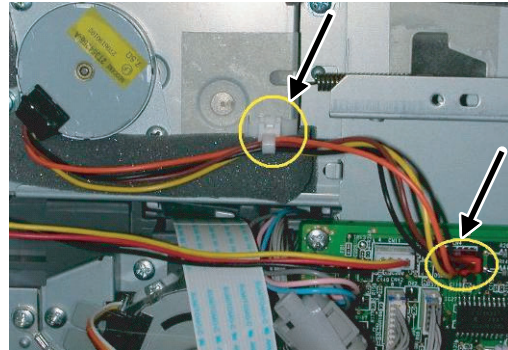
Stick the lower part of the cushion to the mylar, too.



Press the cushion with a sharp-pointed stick or something to fill the gap between the mylar and the metal plate.



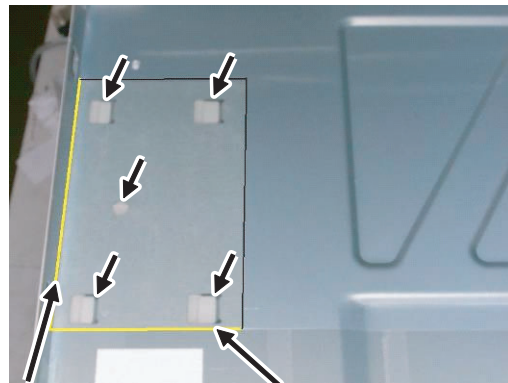
- 11) Attach the motor connector and the snap band to the original position.



- 12) Attach the Scanner UPG mylar J3 to cover the hole on the right side of inside of the scanner.

Note: The mylar should cover the hole shown by the arrow in the diagram.

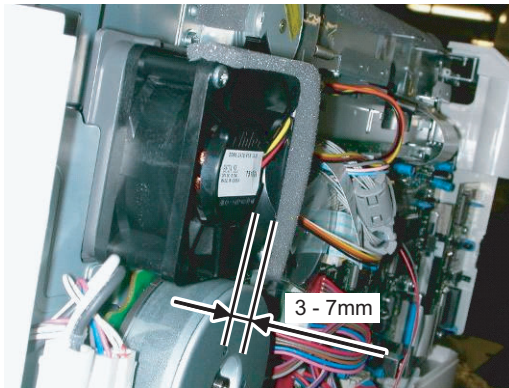
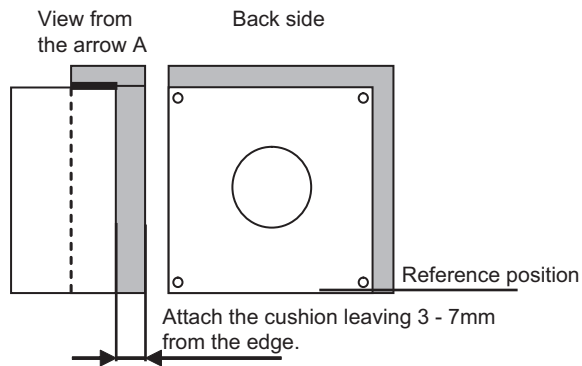
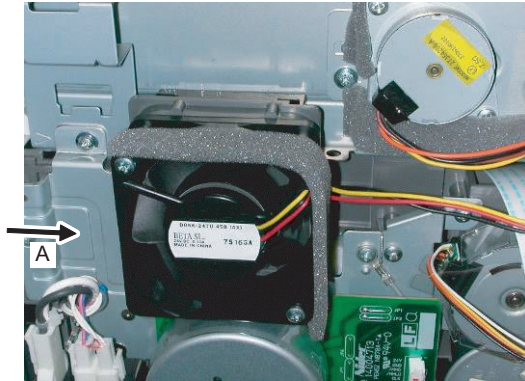
Attach along with the bent part of the metal plate and align the edge of the mylar with the line shown in the diagram (the yellow line in the diagram).



13) Attach the Fan housing cushion to the cooling fan at the position shown in the diagram below.

Cover the top and the right side of the fan housing when you see the fan housing from the backside of the machine.

Note: Please make sure the double-sided tape is not exposed where the cushion is sticking out from the edge of the fan housing.

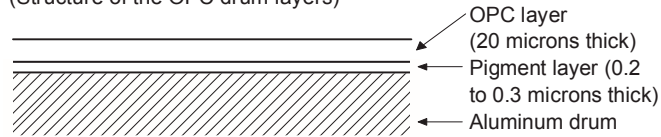


Attach the cushion leaving 3 - 7mm from the edge so that the gap between the Fan housing cushion and the filter of the rear cabinet is filled for sure.

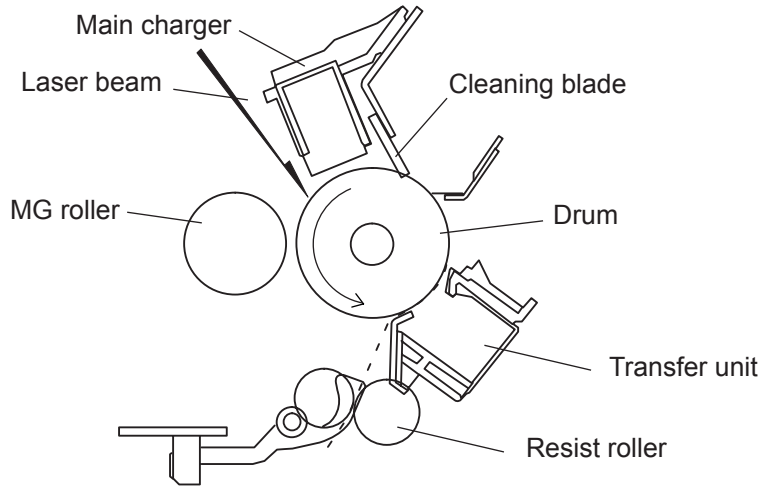
14) Attach the parts removed in the items 1), 2), and 3).

[6] COPY PROCESS

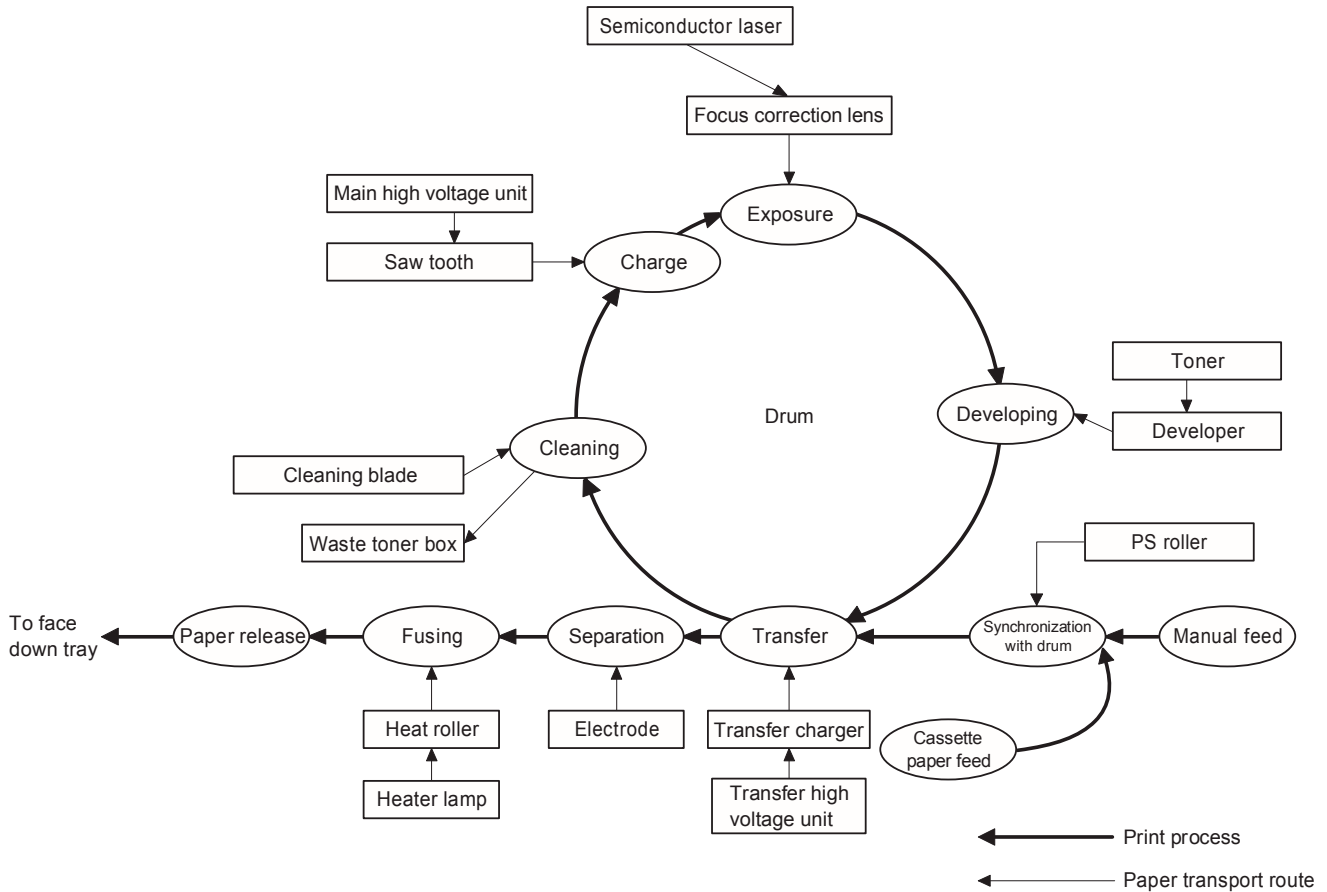
An OPC drum is used for the photoconductor.
 (Structure of the OPC drum layers)



1. Functional diagram



(Basic operation cycle)



2. Outline of print process

This printer is a non-impact printer that uses a semiconductor laser and electrostatic print process. This printer uses an OPC (Organic Photo Conductor) for its photoconductive material.

First, voltage from the main corona unit charges the drum surface and a latent image is formed on the drum surface using a laser beam. This latent image forms a visible image on the drum surface when toner is applied. The toner image is then transferred onto the print paper by the transfer corona and fused on the print paper in the fusing section with a combination of heat and pressure.

Step-1: Charge

Step-2: Exposure

* Latent image is formed on the drum.

Step-3: Developing

Latent image formed on the drum is then changed into visible image with toner.

Step-4: Transfer

The visible image (toner image) on the drum is transferred onto the print paper.

Step-5: Cleaning

Residual toner on the drum surface is removed and collected by the cleaning blade.

Step-6: Optical discharge

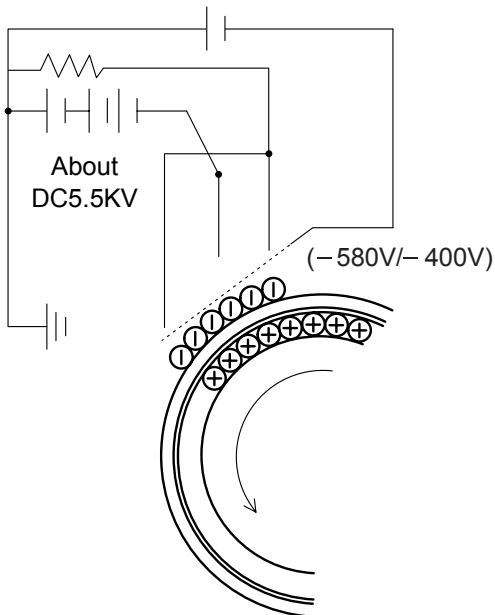
Residual charge on the drum surface is removed, by semiconductor laser beam.

3. Actual print process

Step-1: DC charge

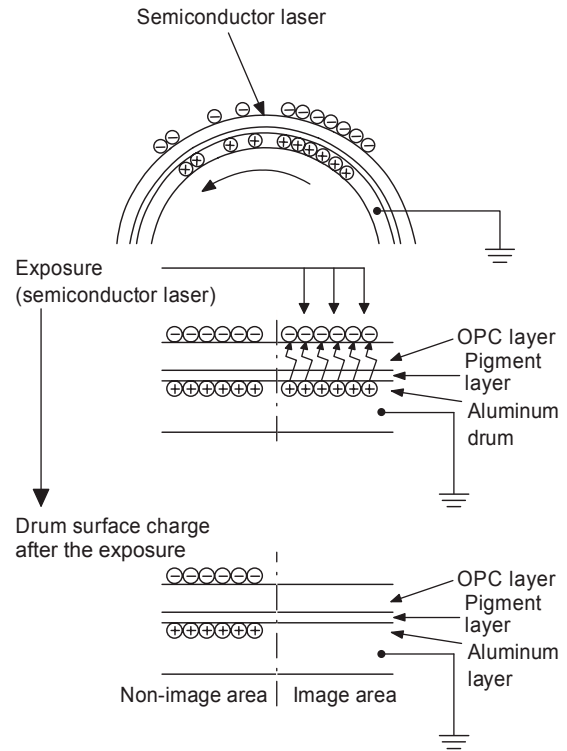
A uniform negative charge is applied over the OPC drum surface by the main charging unit. Stable potential is maintained by means of the Scorotron charger.

Positive charges are generated in the aluminum layer.



Step-2: Exposure (laser beam, lens)

A Laser beam is generated from the semiconductor laser and controlled by the print pattern signal. The laser writes onto the OPC drum surface through the polygon mirrors and lens. The resistance of the OPC layer decreases for an area exposed by the laser beam (corresponding to the print pattern signal). The beam neutralizes the negative charge. An electrostatic latent image is formed on the drum surface.

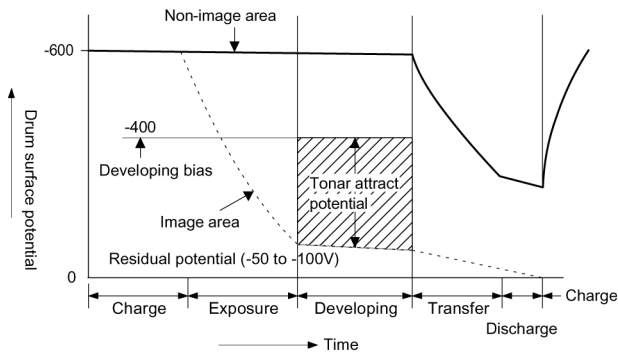
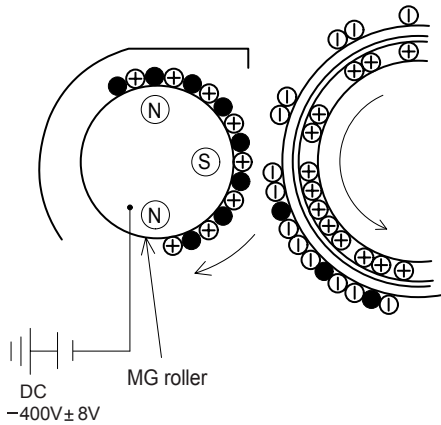


Step-3: Developing (DC bias)

A bias potential is applied to the MG roller in the two component magnetic brush developing method, and the toner is charged negative through friction with the carrier.

Non-image area of the drum surface charged with negative potential repel the toner, whereas the laser exposed portions where no negative charges exist, attract the toner. As a result, a visible image appears on the drum surface.

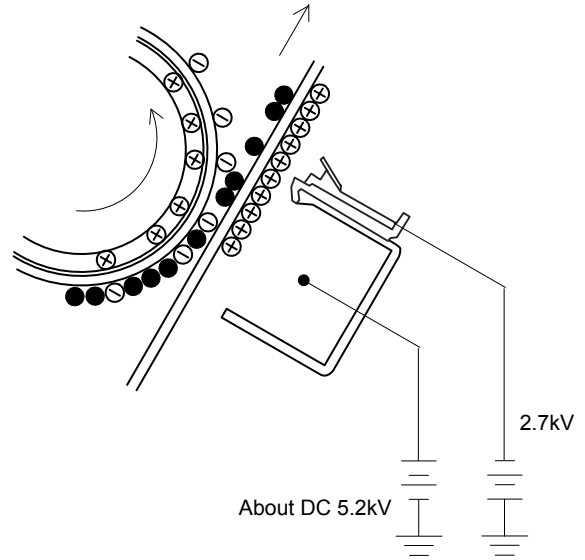
- ⊕ :Carrier (Magnetized particle)
- :Toner (Charge negative by friction)
- (N) (S) Permanent magnet (provided in three locations)



Toner is attracted over the shadowed area because of the developing bias.

Step-4: Transfer

The visible image on the drum surface is transferred onto the print paper by applying a positive charge from the transfer corona to the backside of the print paper.

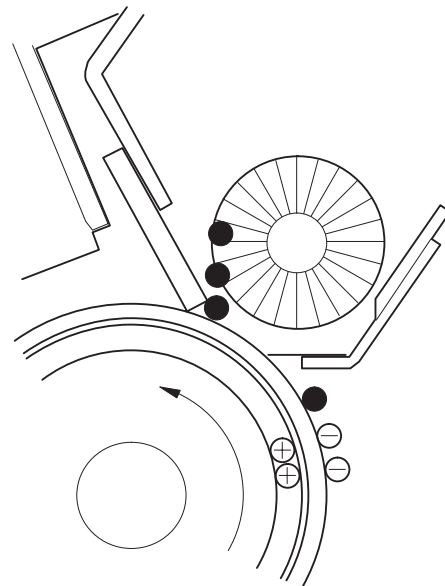


Step-5: Separation

Since the print paper is charged positively by the transfer corona, it is discharged by the separation corona. The separation corona is applied negative charge.

Step-6: Cleaning

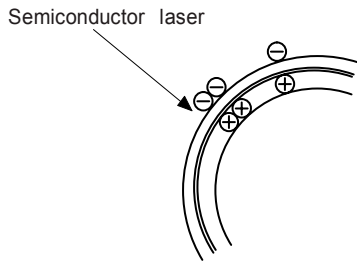
Toner remaining on the drum is removed and collected by the cleaning blade. It is transported to the waste toner collecting section in the cleaning unit by the waste toner transport roller.



Step-7: Optical discharge (Semiconductor laser)

Before the drum rotation is stopped, the semiconductor laser is radiated onto the drum to reduce the electrical resistance in the OPC layer and eliminate residual charge, providing a uniform state to the drum surface for the next page to be printed.

When the electrical resistance is reduced, positive charges on the aluminum layer are moved and neutralized with negative charges on the OPC layer.



Charge by the Scorotron charger

Function

The Scorotron charger functions to maintain uniform surface potential on the drum at all times. It controls the surface potential regardless of the charge characteristics of the photoconductor.

Basic function

A screen grid is placed between the saw tooth and the photoconductor. A stable voltage is added to the screen grid to maintain the corona current on the photoconductor.

As the photoconductor is charged by the saw tooth from the main corona unit, the surface potential increases. This increases the current flowing through the screen grid. When the photoconductor potential nears the grid potential, the current turns to flow to the grid so that the photoconductor potential can be maintained at a stable level.

Process controlling

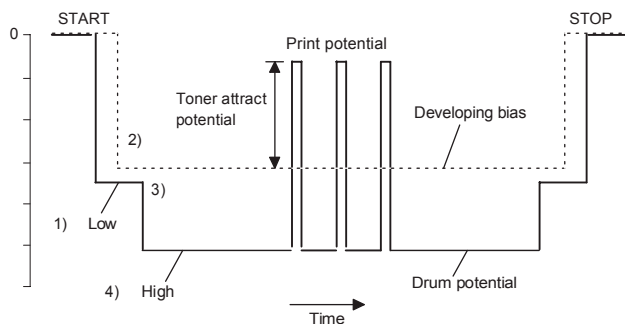
Function

The print pattern signal is converted into an invisible image by the semiconductor laser using negative to positive (reversible) developing method. Therefore, if the developing bias is added before the drum is charged, toner is attracted onto the drum. If the developing bias is not added when the drum is charged, the carrier is attracted to the drum because of the strong electrostatic force of the drum.

To avoid this, the process is controlled by adjusting the drum potential and the grid potential of the Scorotron charger.

Basic function

Voltage added to the screen grid can be selected, high and low. To make it easily understood, the figure below shows voltage transition at the developer unit.



Start

- 1) Because the grid potential is at a low level, the drum potential is at about -400V. (Carrier may not be attracted though the carrier is pulled towards the drum by the electrostatic force of -400V.
- 2) Developing bias (-400V) is applied when the photoconductor potential is switched from LOW to HIGH.
- 3) Once developing bias (-400V) is applied and the photoconductor potential rises to HIGH, toner will not be attracted to the drum.

Stop

The reverse sequence takes place.

Retaining developing bias at an abnormal occurrence

Function

The developing bias will be lost if the power supply was removed during print process. In this event, the drum potential slightly abates and the carrier makes deposits on the drum because of strong static power. To prevent this, the machine incorporates a function to retain the developing bias for a certain period and decrease the voltage gradually against possible power loss.

Basic function

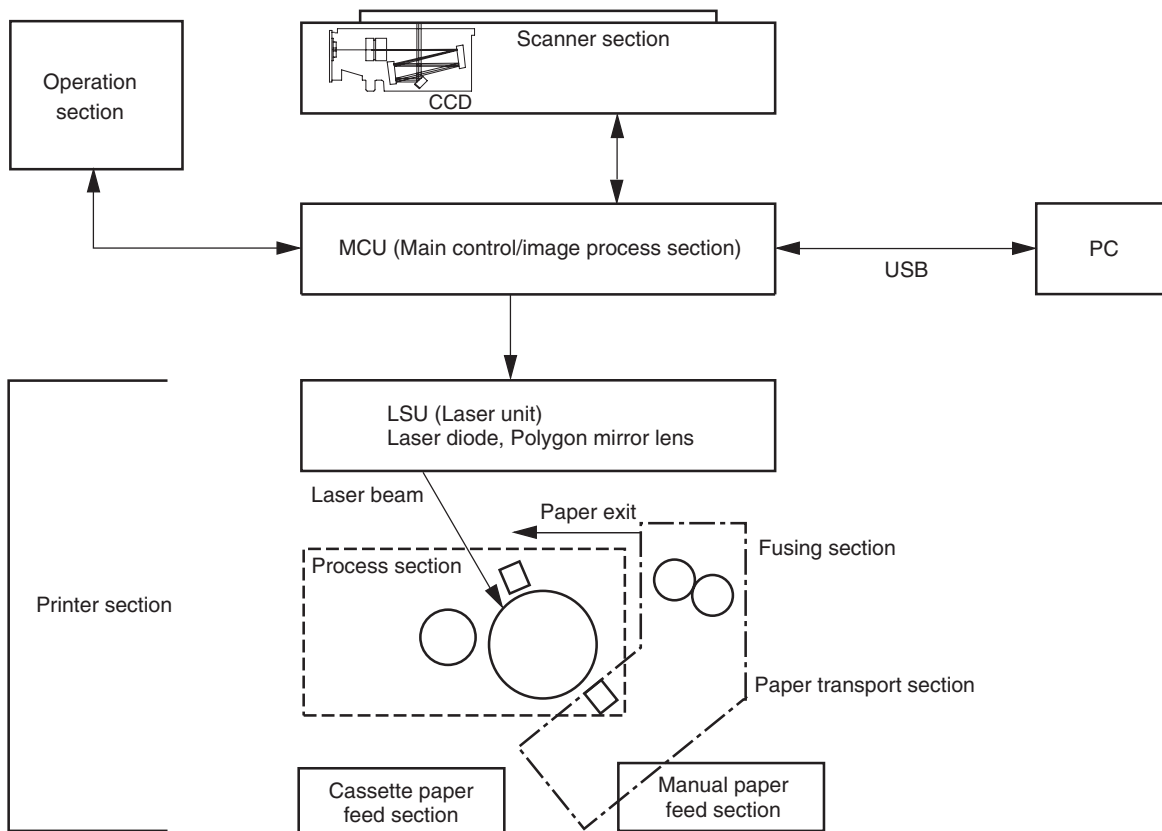
Normally, the developing bias voltage is retained for a certain time before the drum comes to a complete stop if the machine should stop before completing the normal print cycle. The developing bias can be added before resuming the operation after an abnormal interruption. Therefore, carrier will not make a deposit on the drum surface.

[7] OPERATIONAL DESCRIPTIONS

1. Outline of operation

The outline of operation is described referring to the basic configuration.

(Basic configuration)



(Outline of copy operation)

Setting conditions

- 1) Set copy conditions such as the copy quantity and the copy density with the operation section, and press the COPY button. The information on copy conditions is sent to the MCU.

Image scanning

- 2) When the COPY button is pressed, the scanner section starts scanning of images. The light from the copy lamp is reflected by the document and passed through the lens to the CCD.

Photo signal/Electric signal conversion

- 3) The image is converted into electrical signals by the CCD circuit and passed to the MCU.

Image process

- 4) The document image signal sent from the CCD circuit is processed under the revised conditions and sent to the LSU (laser unit) as print data.

Electric signal/Photo signal (laser beam) conversion

- 5) The LSU emits laser beams according to the print data. (Electrical signals are converted into photo signals.)
- 6) The laser beams are radiated through the polygon mirror and various lenses to the OPC drum.

Printing

- 7) Electrostatic latent images are formed on the OPC drum according to the laser beams, and the latent images are developed to be visible images (toner images).
- 8) Meanwhile the paper is fed to the image transfer section in synchronization with the image lead edge.
- 9) After the transfer of toner images onto the paper, the toner images are fused to the paper by the fusing section. The copied paper is discharged onto the exit tray.

(Outline of printer operation)

The print data sent from the PC are passed through the NIC PWB (in case of network connection) and the MCU to the LSU. The procedures after that are the same as above 5) and later.

(Outline of scanner operation)

The scan data are passed through the MCU to the PC according to the conditions requested by the operations with the operation panel.

2. Scanner section

A. Scanner unit

The scanner unit in the digital copier scans images.

It is composed of the optical unit and the drive unit. The optical unit performs scanning in the main scan direction with the light receiving elements (color CCD). The drive unit performs scanning in the sub scanning direction by moving the optical unit.

B. Optical system

Two white lamps are used as the light source.

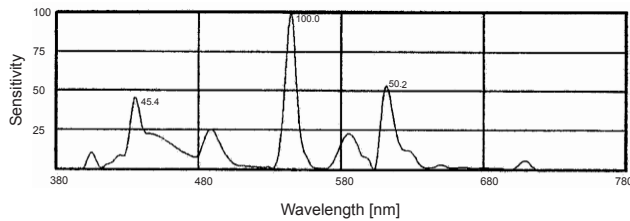
Light radiated from the light source is applied to the document on the document table. The reflected light from the document is reflected 4 times by No. 1 - No. 3 mirrors and passed through the reduction lens to form images on the light-receiving surface of 3-line CCD.

The light-receiving surface of the color CCD is provided with 3 line scanning sections for RGB. Separate images scanned in each color section are overlapped to complete color scanning. (When PC scanning)

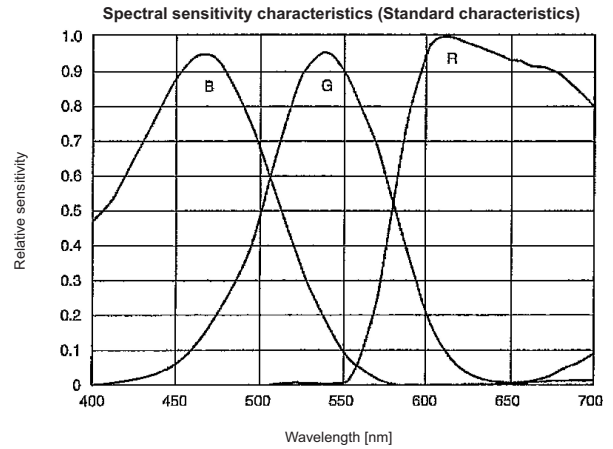
The resolution is 600dpi.

When copying, only the green component is used to print with the printer.

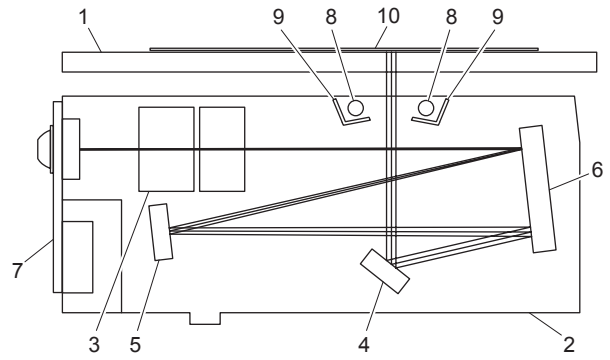
The color component for printing can be switched to red or blue by the service simulation.



(Spectrum characteristics of the lamp)



(Spectrum characteristics of the color CCD)



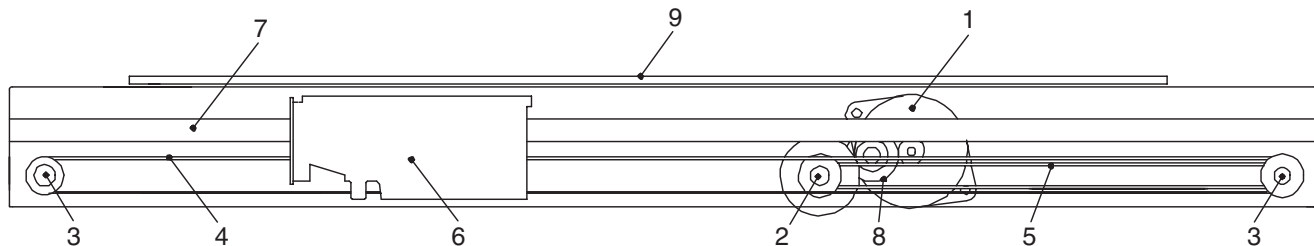
(Optical unit)

1	Table glass	2	Optical unit	3	Lens
4	Mirror 1	5	Mirror 2	6	Mirror 3
7	CCD PWB	8	Lamp	9	Reflector
10	Original				

C. Drive system

The drive system is composed of the scanner motor, the pulley gear, the idle pulley, the idle gear, the belt 473, the belt 190, and the shaft.

The motor rotation is converted into reciprocated movements of the belt 473 through the idle gear, the pulley gear, the belt 190, and the idle pulley to drive the optical unit.



1	Scanner motor	2	Pulley gear	3	Idle pulley
4	Belt 473	5	Belt 190	6	Optical unit
7	Shaft	8	Idle gear	9	Table glass

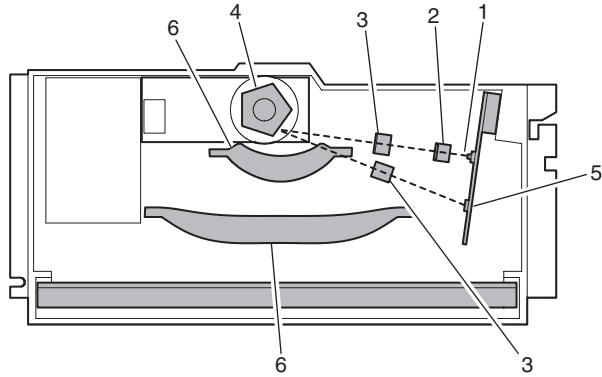
3. Laser unit

The image data sent from the MCU (image process circuit) is sent to the LSU (laser unit), where it is converted into laser beams.

A. Basic structure

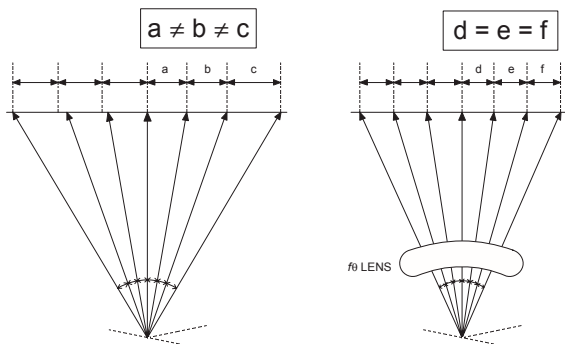
The LSU unit is the writing section of the digital optical system. The semiconductor laser is used as the light source, and images are formed on the OPC drum by the polygon mirror and f θ lens, etc.

The laser beams are passed through the collimator lens, the cylindrical lens, the polygon mirror, the f θ lens, and the mirror to form images on the OPC drum in the main scanning direction. The laser emitting PWB is provided with the APC (auto power control) in order to eliminate fluctuations in the laser power. The BD PWB works for measurement of the laser writing start point.

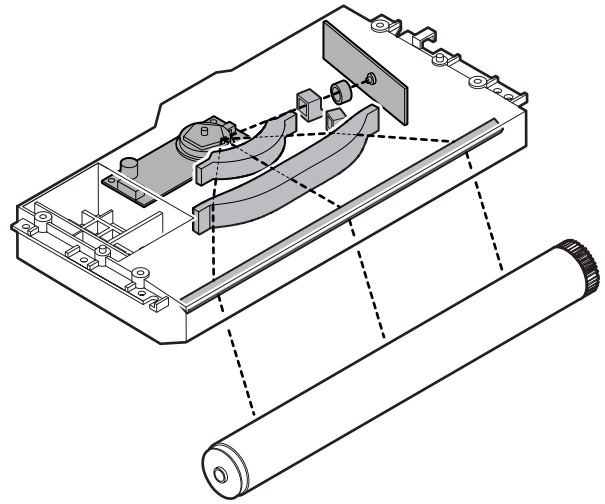


No	Component	Function
1	Semiconductor laser	Generates laser beams.
2	Collimator lens	Converges laser beams in parallel.
3	Cylinder lens	Takes the focus.
4	Polygon mirror, polygon motor	Reflects laser beams at a constant rpm.
5	BD (Lens, PWB)	Detects start timing of laser scanning.
6	f θ lens	Converges laser beams at a spot on the drum. Makes the laser scanning speeds at both ends of the drum same as each other. (Refer to the figure below.)

Makes the laser scanning speeds at both ends of the drum same as each other.



B. Laser beam path



C. Composition

Effective scanning width: 216mm (max.)

Resolution: 600dpi

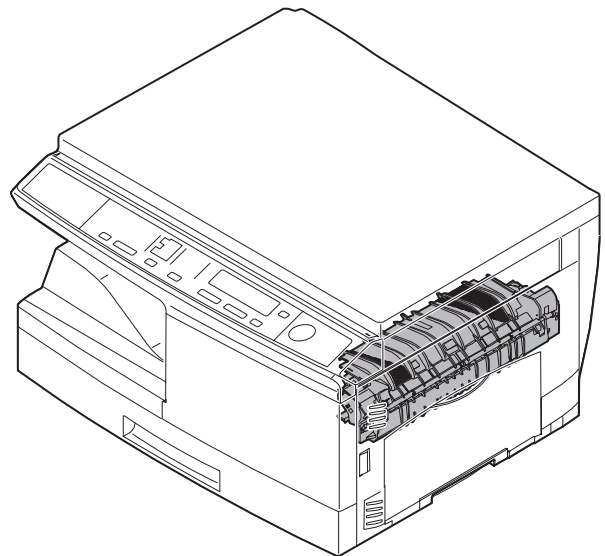
Beam diameter: 75 μ m in the main scanning direction, 80 μ m in the sub scanning direction

Image surface power: 0.18 \pm 0.01mW (Laser wavelength 770 - 795nm)

Polygon motor section: Brushless motor 20.787rpm

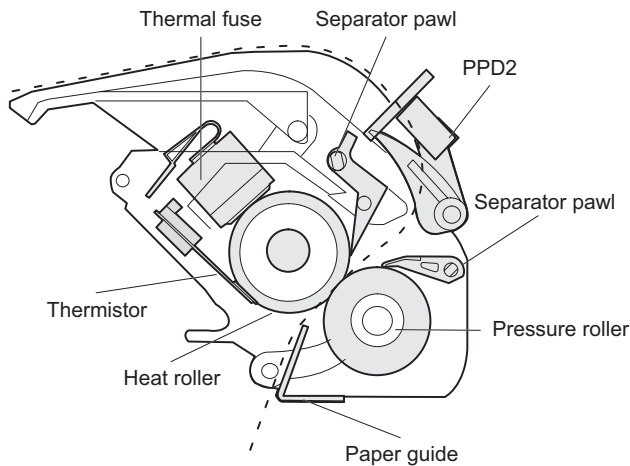
No. of mirror surfaces: 5 surfaces

4. Fuser section

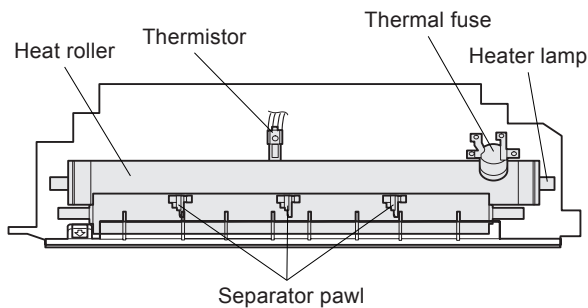


A. General description

General block diagram (cross section)



Top view



(1) Heat roller

A Teflon roller is used for the heat roller and a silicone rubber roller is used for the lower heat roller for better toner fusing performance and paper separation.

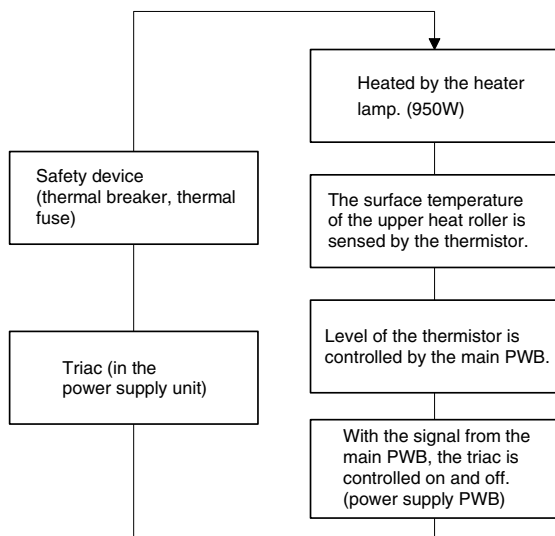
(2) Separator pawl

Three separator pawls are used on the upper heat roller. The separator pawls are Teflon coated to reduce friction with the roller and prevent a smear on the paper caused by the separator pawl.

(3) Thermal control

1) The heater lamp, thermistor, main PWB, DC power supply PWB, and triac within the power supply unit are used to control the temperature in the fuser unit.

To prevent against abnormally high temperature in the fuser unit, a thermal breaker and thermal fuse are used for safety purposes.



2) The surface temperature of the upper heat roller is set to 160 - 200°C. The surface temperature during the power save mode is set to 100°C.

3) The self-check function comes active when one of the following malfunctions occurs, and an "H" is displayed on the multi-copy window.

- When the heat roller surface temperature rises above 240°C.
- When the heat roller surface temperature drops below 100°C during the copy cycle.
- Open thermistor
- Open thermal fuse
- When the heat roller temperature does not reach 190°C within 27 second after supplying the power.

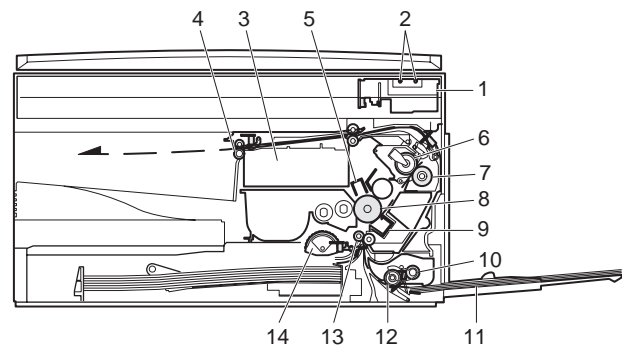
(4) Fusing resistor

This model is provided with a fusing resistor in the fusing section to improve transfer efficiency.

Since the upper heat roller is conductive, when using copy paper that contains moisture and the distance between the transfer unit and the fusing unit is short, the transfer current may find a path to ground via the copy paper, the upper heat roller and the discharging brush.

5. Paper feed section and paper transport section

A. Paper transport path and general operations



1	Scanner unit	8	Drum
2	Copy lamp	9	Transfer unit
3	LSU (Laser unit)	10	Pickup roller
4	Paper exit roller	11	Manual paper feed tray
5	Main charger	12	Manual paper feed roller
6	Heat roller	13	PS roller unit
7	Pressure roller	14	Paper feed roller

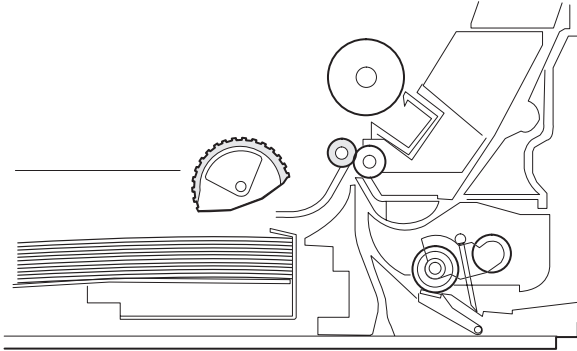
Paper feed is made in two ways; the tray paper feed and the manual paper feed. The tray is of universal-type, and has the capacity of 250 sheets.

The front loading system allows you to install or remove the tray from the front cabinet.

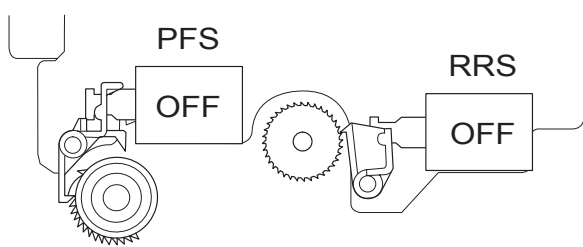
The general descriptions on the tray paper feed and the manual paper feed operation are given below.

(1) Cassette paper feed operation

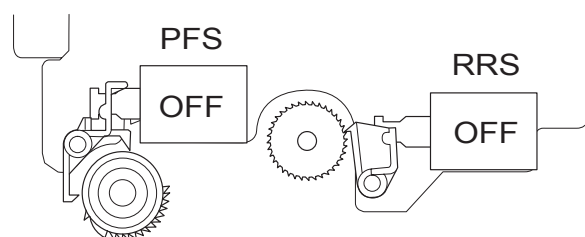
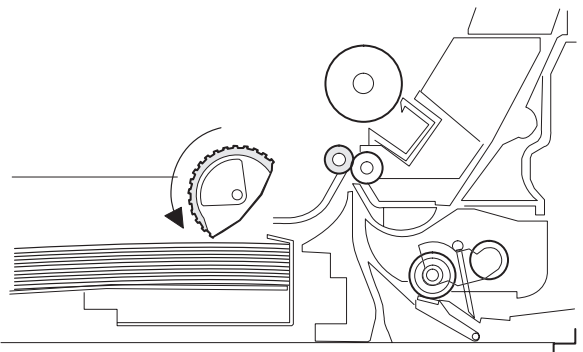
- 1) The figure below shows the positions of the pick-up roller, the paper feed clutch sleeve, and the paper feed latch in the initial state without pressing the COPY button after lighting the ready lamp.
The paper feed latch is in contact with the projection of the clutch sleeve.



- 2) When the COPY button is pressed, the main drive motor starts rotating to drive each drive gear.
The pick-up drive gear also is driven at that time. Since, however, the paper feed latch is in contact with the projection of the clutch sleeve, rotation of the drive gear is not transmitted to the pick-up roller, which does not rotate therefore.

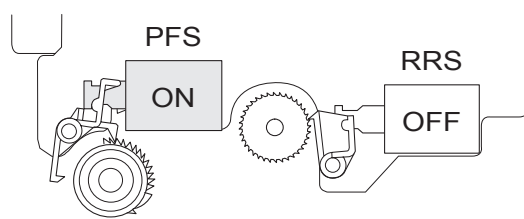
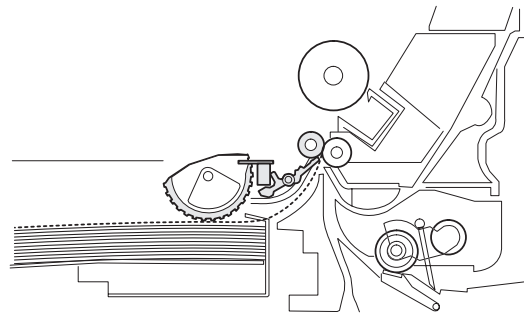


- 3) After about 0.1 sec from when the main motor start rotating, the tray paper feed solenoid (PFS) turns on for a moment.
This disengages the paper feed latch from the projection of the clutch sleeve, transmitting rotation of the pick-up drive gear to the paper feed roller shaft, rotating the pick-up roller to feed the paper.

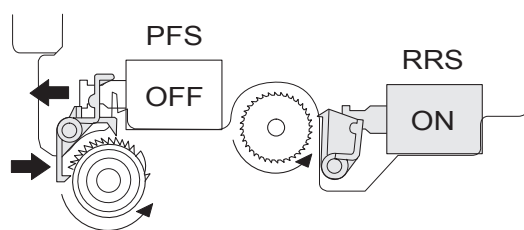
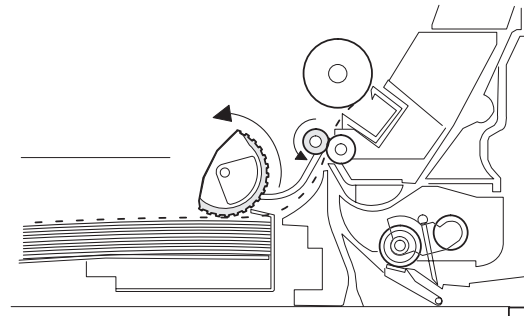


- 4) After more than half rotation of the pick-up roller, the paper feed latch is brought in contact with a notch on the clutch sleeve, stopping rotation of the pick-up roller.

- 5) At this time, the paper is fed passed the paper entry detection switch (PPD1), and detected by it. After about 0.15 sec from detection of paper by PPD1, the tray paper feed solenoid (PFS) turns on so that the clutch sleeve projection comes into contact with the paper feed latch to stop the pick-up roller.
Then the pick-up roller rotates for about 0.15 sec so that the lead edge of the paper is evenly pressed on the resist roller, preventing against skew feeding.



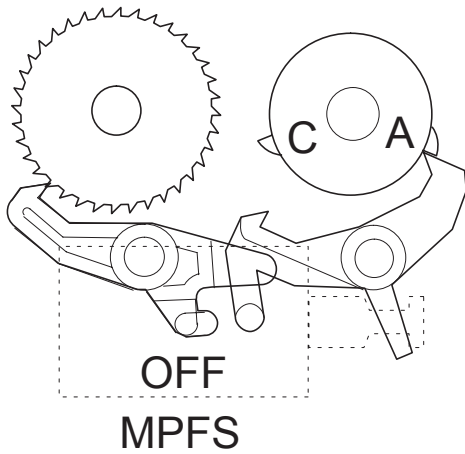
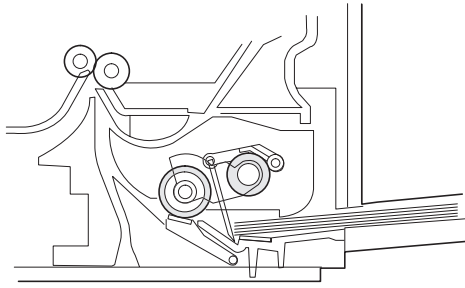
- 6) To release the resist roller, the tray paper feed solenoid and the resist solenoid are turned on by the paper start signal to disengage the resist start latch from the clutch sleeve, transmitting rotation of the resist drive gear to the resist roller shaft.
Thus the paper is transported by the resist roller.
- 7) After the resist roller starts rotating, the paper is passed through the pre-transfer guide to the transfer section. Images are transferred on the paper, which is separated from the OPC drum by the drum curve and the separation section.



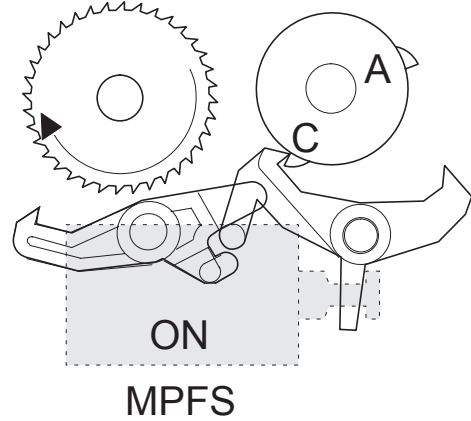
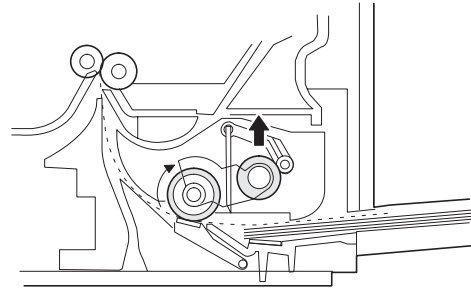
- 8) The paper separated from the drum is passed through the fusing paper guide, the heat roller (fusing section), POD (paper out detector) to the copy tray.

(2) Manual multi paper feed operation

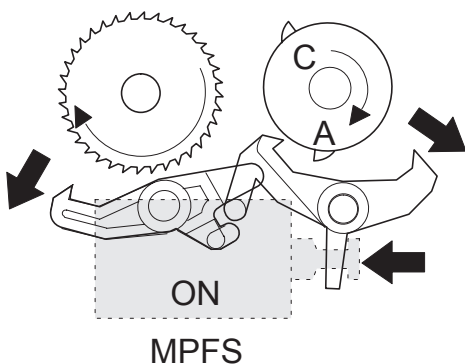
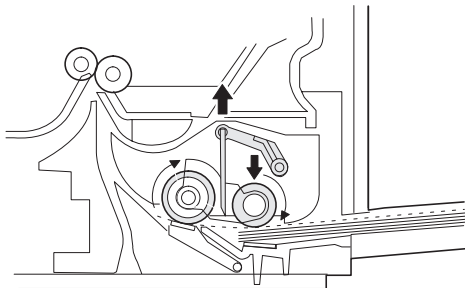
- 1) Before paper feed operation, the manual paper feed solenoid (MPFS) is turned OFF as shown in the figure below.



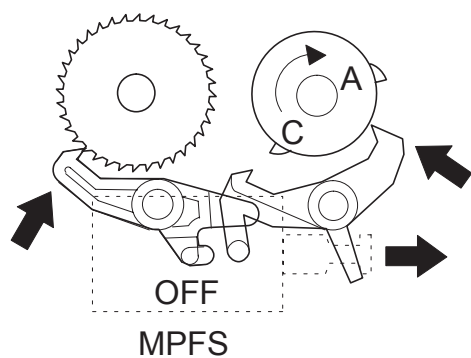
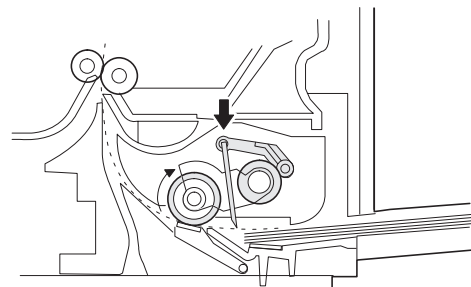
- 3) When pawl C of the manual paper feed clutch sleeve is engaged with the manual feed latch, the manual feed stopper falls and the manual take-up roller rises. At that time, the manual paper feed roller is rotating.



- 2) When the PRINT button is pressed, the manual paper feed solenoid (MPFS) turns on to disengage the manual paper feed latch.
A from the manual paper feed clutch sleeve A, rotating the manual paper feed roller and the manual take-up roller. At the same time, the manual paper feed stopper opens and the manual take-up roller is pressed to the surface of the paper to start paper feeding.



- 4) The lead edge of the transported paper is pressed on the resist roller by the transport roller. Then the paper is stopped temporarily to allow synchronization with the lead edge of the image on the OPC drum.
From this point, the operation is the same as the paper feed operation from the tray. (Refer to 7-5 - 8.)
- 5) The solenoid turns off to close the gate and return to the initial state.



(3) Conditions of occurrence of paper misfeed

a. When the power is turned on:

PPD or POD is ON when the power is turned on.

b. Copy operation

a	PPD1 jam	PPD1 does not turn off within 4 sec after turning on the resist roller.
b	PPD2 jam	PPD2 is off immediately after turning on the resist roller.
		PPD2 does not turn off within 1.2 sec after turning off the resist roller.
c	POD jam	POD does not turn on within 2.9 sec after turning on the resist roller.
		POD does not turn off within 1.5 sec - 2.7 sec after turning off PPD2.

[8] DISASSEMBLY AND ASSEMBLY

Before disassembly, be sure to disconnect the power cord for safety.

1. Do not disconnect or connect the connector and the harness during the machine is powered. Especially be careful not to disconnect or connect the harness between the MCU PWB and the LSU (MCU PWB: CN119) during the machine is powered. (If it is disconnected or connected during the machine is powered, the IC inside the LSU will be destroyed.)
2. To disconnect the harness after turning on the power, be sure to turn off the power and wait for at least 10 sec before disconnection. (Note that a voltage still remains immediately after turning off the power.)

The disassembly and assembly procedures are described for the following sections:

1. High voltage section
2. Operation panel section
3. Optical section
4. Fusing section
5. Tray paper feed/transport section
6. Manual paper feed section
7. Rear frame section
8. Power section

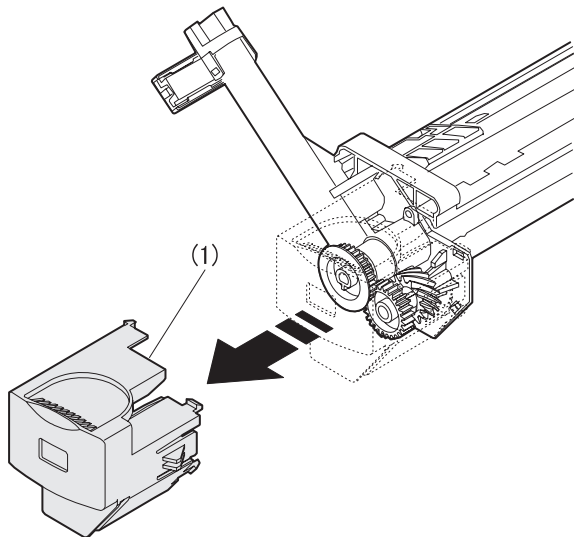
1. High voltage section

A. List

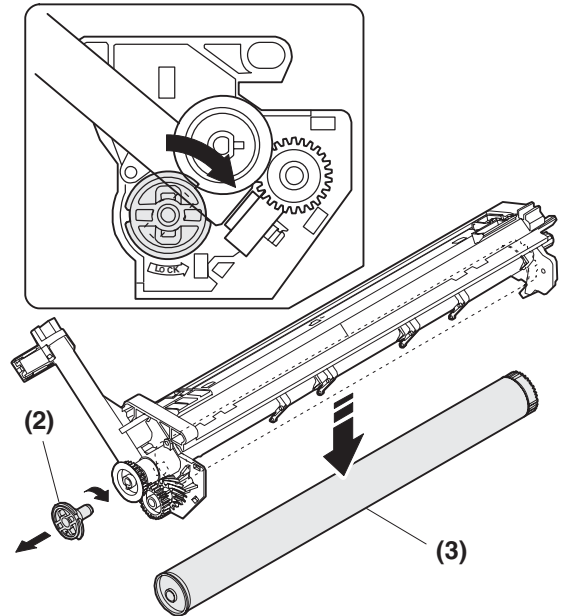
No.	Part name	Ref.
1	Drum	
2	Transfer charger unit	
3	Charger wire	

B. Drum replacement

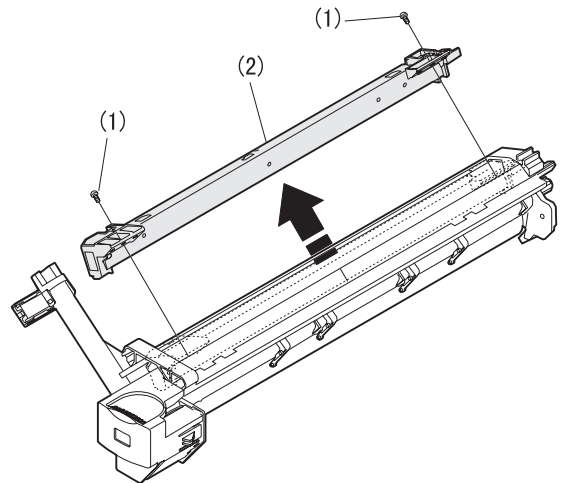
- 1) Remove the drum cover. (4 Lock Tabs)



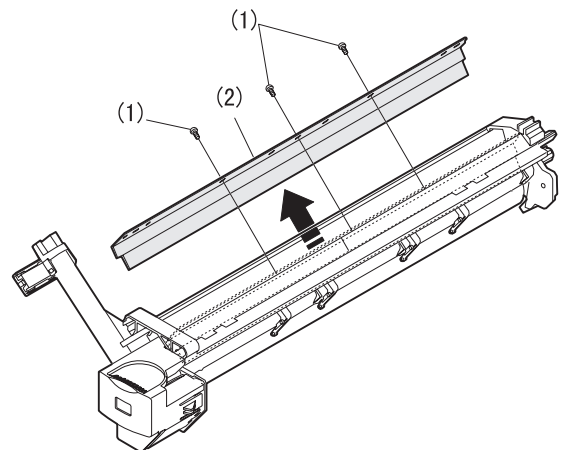
- 2) Remove the drum fixing plate and the photoconductor drum. (Note) Dispose the drum fixing plate which was removed.



- 3) Check the cleaning blade and the red felt for no damage.
 - If there is any damage, execute all procedures from item 5) and later.
 - If there is no damage, execute the procedure of item 12).
- 4) Remove the main charger. (Cleaning the screen grid and the sawteeth.)

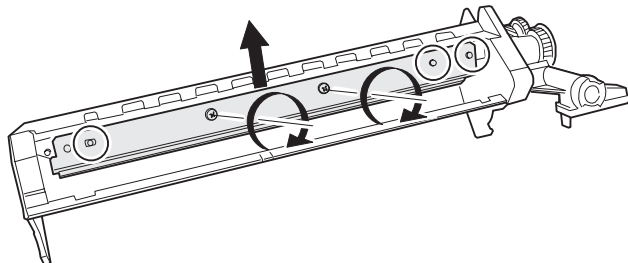


- 5) Remove the cleaning blade. Note: Dispose the cleaning blade which was removed.

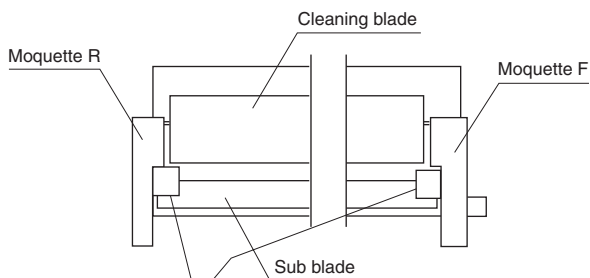
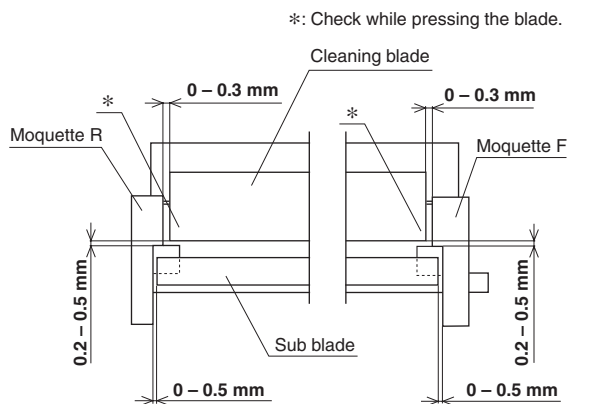


- 6) Clean the cleaning section and the waste toner pipe to remove waste toner completely with a vacuum cleaner.
- 7) Remove the felt and duplex tape completely.
Note: Be careful not to scratch or bend the sub blade.
- 8) Attach the cleaning blade.
Securely insert the plate section of the cleaning blade into the unit and fix it with a screw.

Do not touch the cleaning blade rubber with your hand.
When attaching the cleaning blade, press the cleaning blade in the arrow direction and attach.



- 9) Attach the felt.



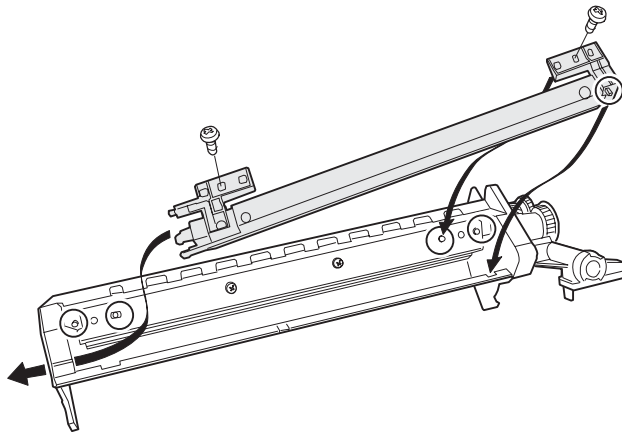
Be careful not to allow the moquette to cover the sub blade.

Example of NG

- Attach the moquet with slightly pressing section A of the cleaning blade.
Do not touch the tip of the cleaning blade.
Do not put the moquet under the cleaning blade.
Do not put the moquet on the sub blade.
Do not press the sub blade with the moquet.

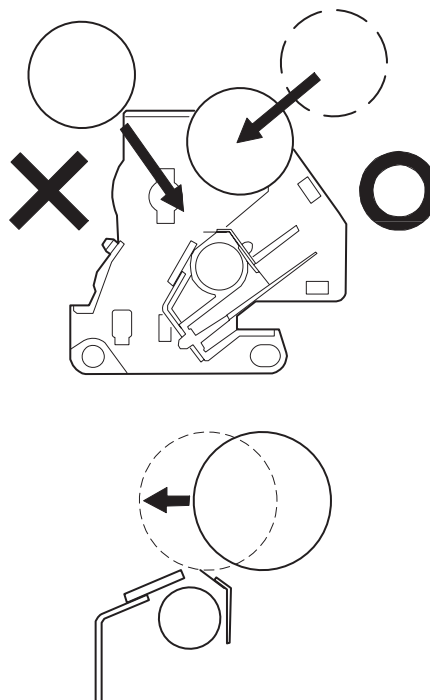
- 10) Attach the main charger.

Securely set the MC holder on the projection of the process frame.
Securely insert two projections of the MC holder into the groove in the process frame.
When attaching the MC holder ass'y, be careful not to make contact with the cleaning blade.



- 11) Attach the drum fixing plate and the photoconductor drum.

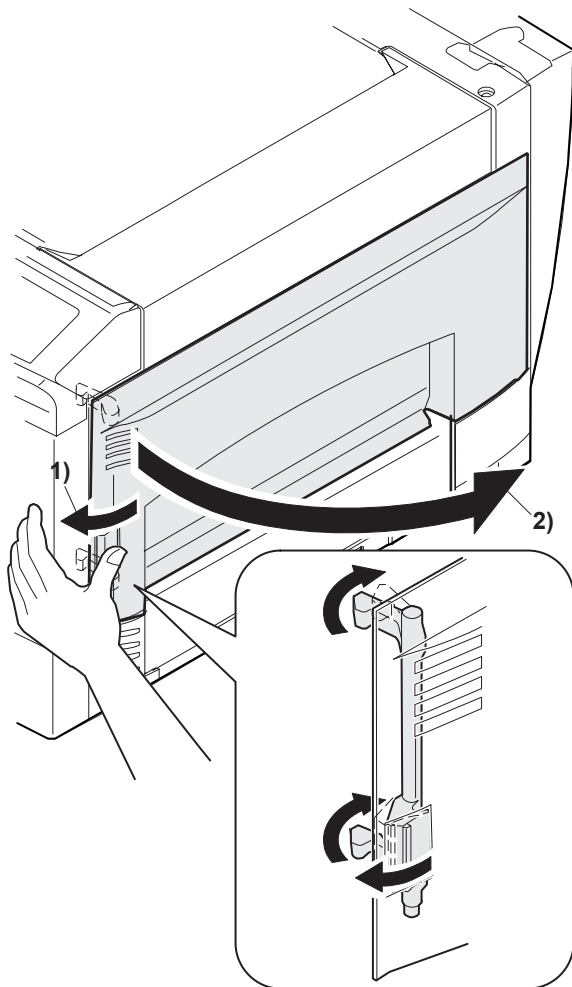
Apply grease to the inside of the photoconductor drum. (Dia. 2)



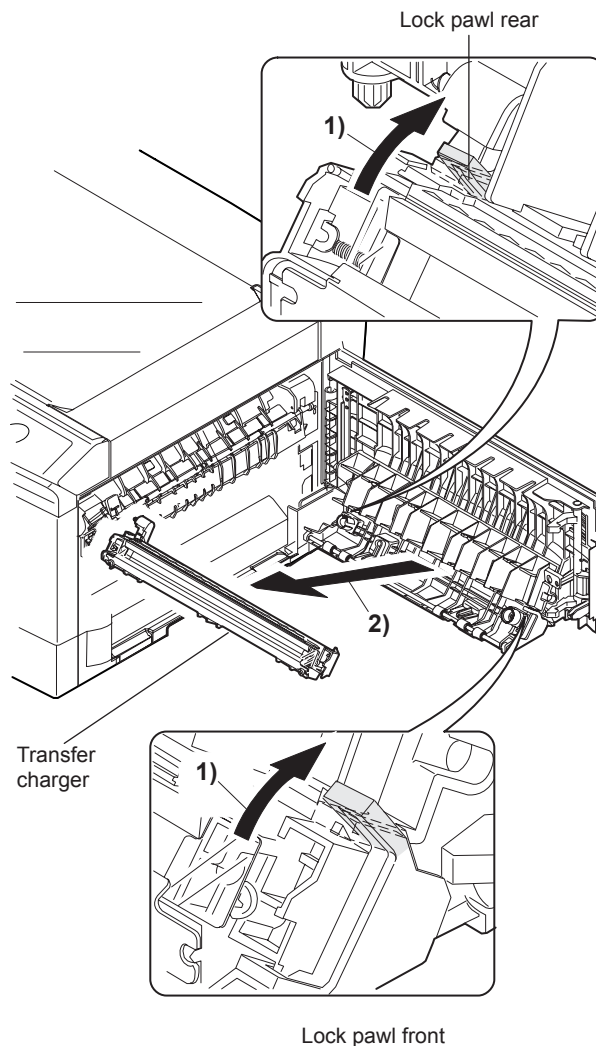
- Attach the drum from (b). (Prevention against the sub blade edge breakage)
Attach the drum so that its position with the sub blade is as shown.

C. Disassembly procedure

- 1) Press the side cover open/close button and open the side cover.



- 2) Push up the lock pawls (2 positions) of the side cover, and remove the transfer charger.

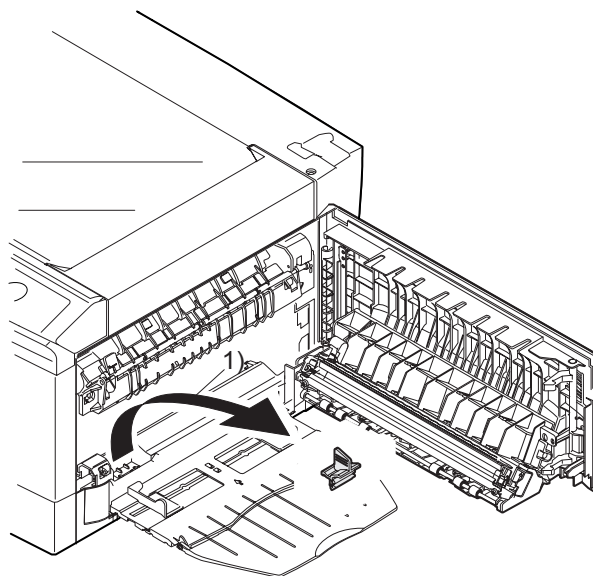


D. Assembly procedure

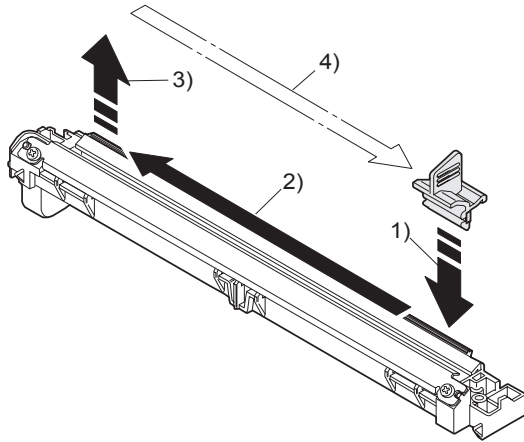
For assembly, reverse the disassembly procedure.

E. Charger wire cleaning

- 1) Remove the charger cleaner from the manual paper feed unit.



- 2) Set the charger cleaner to the transfer unit, and move it reciprocally a few times in the direction of the arrow shown in the figure below.



F. Charger wire replacement

- 1) Remove the TC cover and remove the screw.
- 2) Remove the spring and remove the charger wire.
- 3) Install a new charger wire by reversing the procedures (1) and (2).

At that time, be careful of the following items.

- The rest of the charger wire must be within 1.5mm. Refer to Fig.1
- The spring hook section (charger wire winding section) must be in the range of the projection section.
- Be careful not to twist the charger wire.

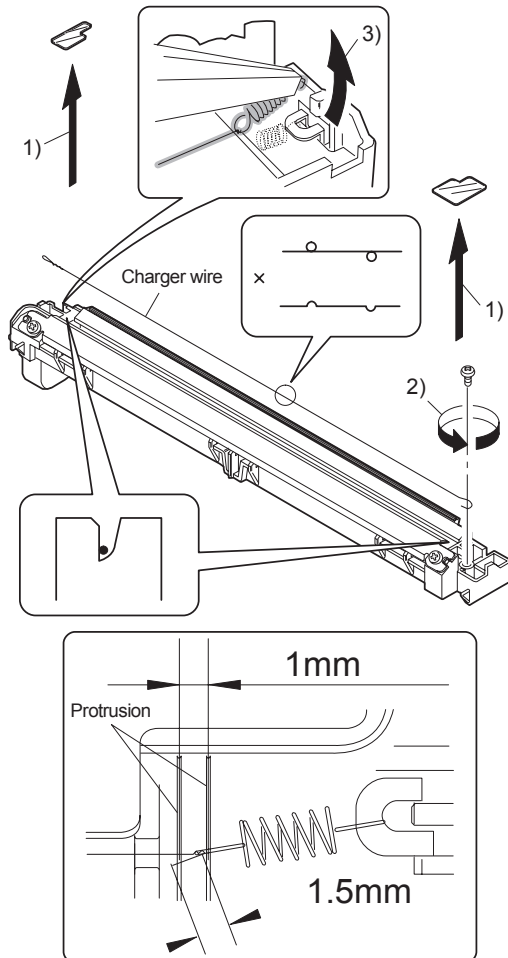


Fig.1

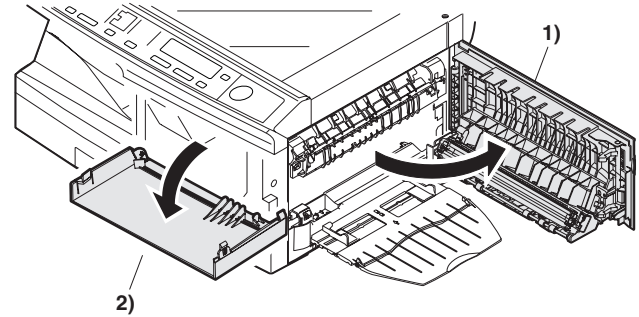
2. Operation panel section

A. List

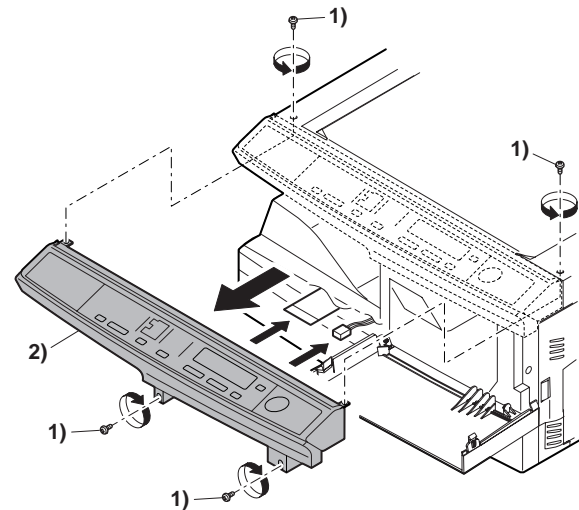
No.	Part name	Ref.
1	Operation panel unit	
2	Operation PWB	

B. Disassembly procedure

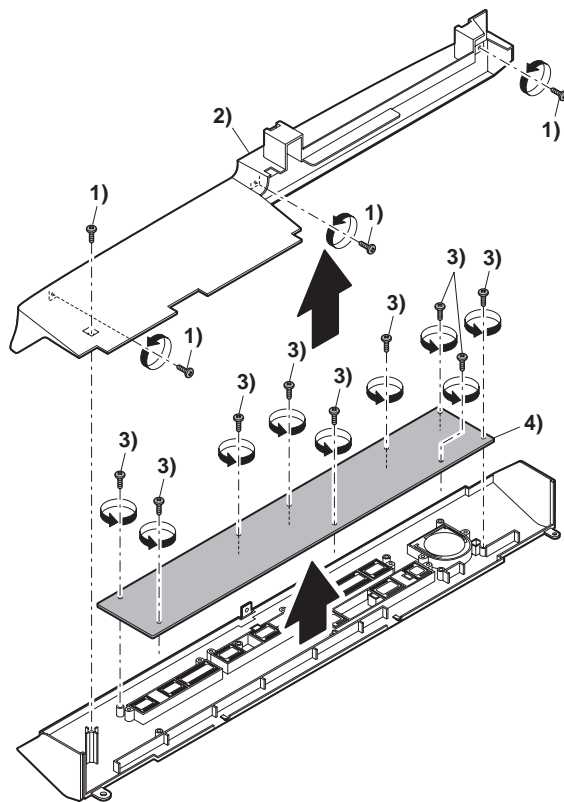
- 1) Open the side door, and Open the front cover.



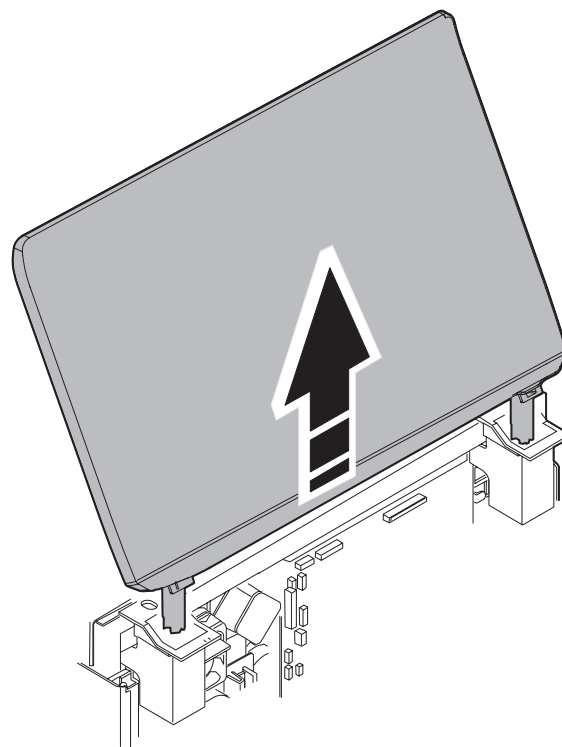
- 2) Remove the screws (4 pcs.), the harness, and the operation panel unit.



- 3) Remove four screws, and remove the operation cabinet.
- 4) Remove four screws, and remove the operation PWB.



- 2) Remove two screws, and remove the earth wire.
- 3) Disconnect the connector.
- 4) Remove the original cover.



C. Assembly procedure

For assembly, reverse the disassembly procedure

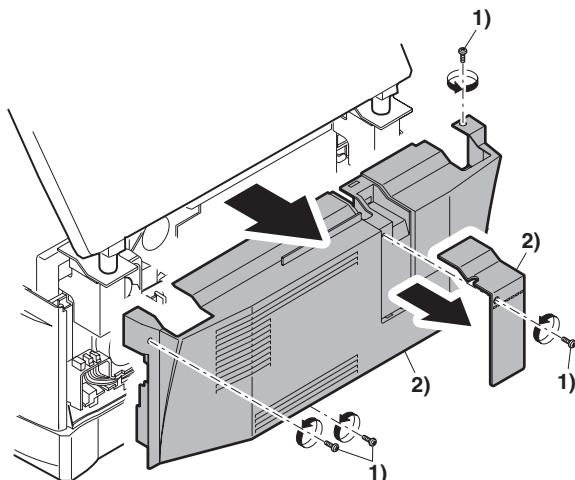
3. Optical section

A. List

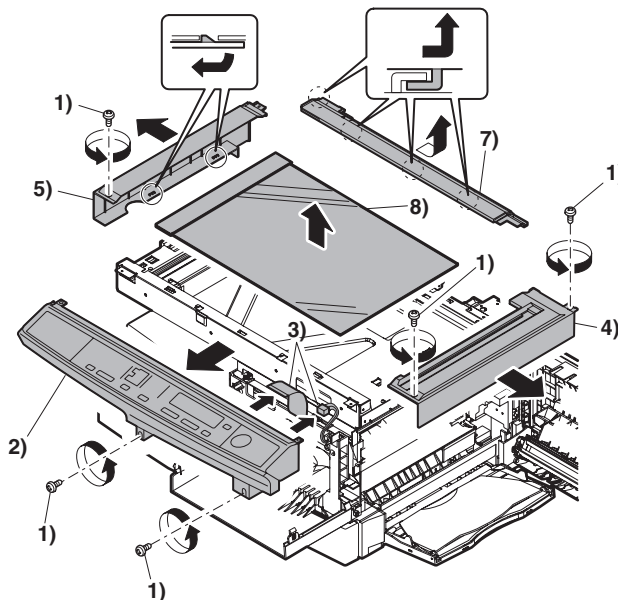
NO.	Part name Ref.
1	Copy lamp unit
2	Copy lamp
3	Lens unit

B. Disassembly procedure

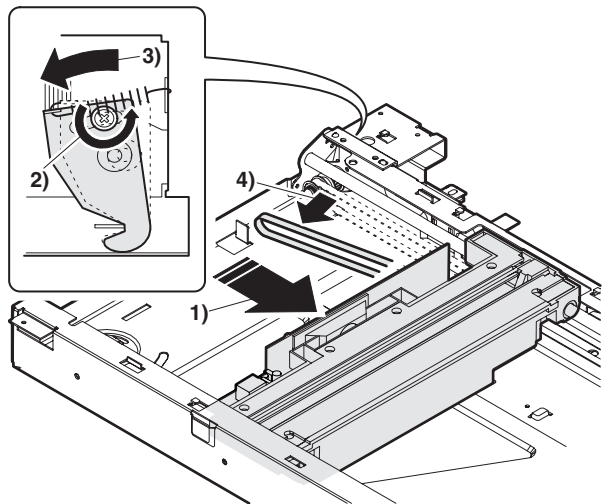
- 1) Remove four screws, and remove the rear cabinet and the rear cabinet cover.



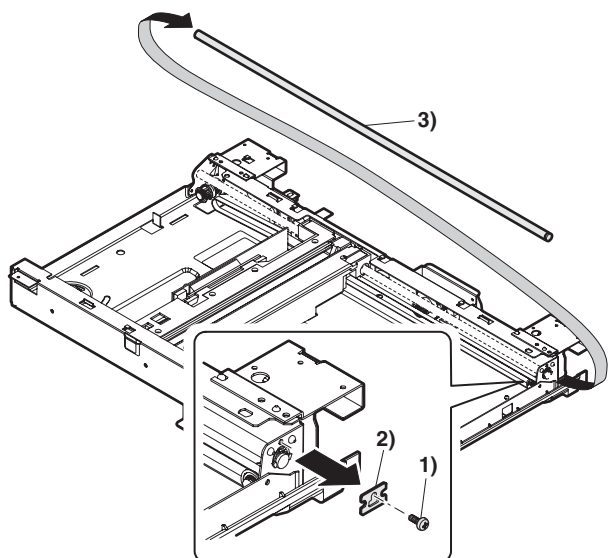
- 5) Remove five screws. Remove the operation unit, and disconnect the connector.
- 6) Remove the right cabinet.
- 7) Remove the left cabinet.
- 8) Remove the screw, and remove the rear cover.
- 9) Remove the table glass.



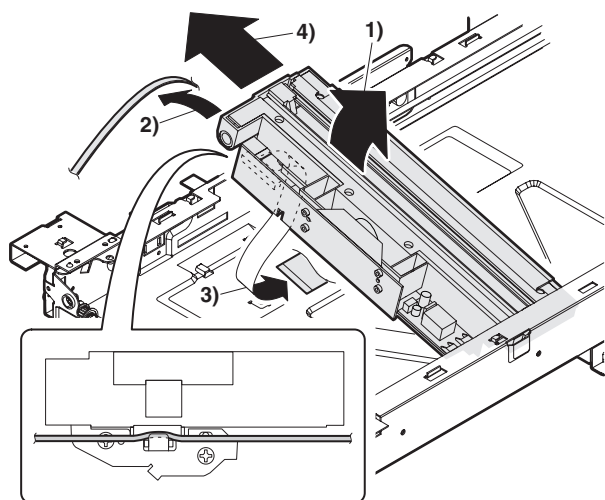
- 10) Move the carriage to the position indicated on the figure.
- 11) Loosen the screw which is fixing the tension plate.
- 12) Move the tension plate in the arrow direction to release the tension, and remove the belt.



- 13) Remove the screw, and remove the rod stopper.
- 14) Remove the rod.



- 15) Lift the rear side of the carriage, remove the belt and the connector, and remove the carriage.

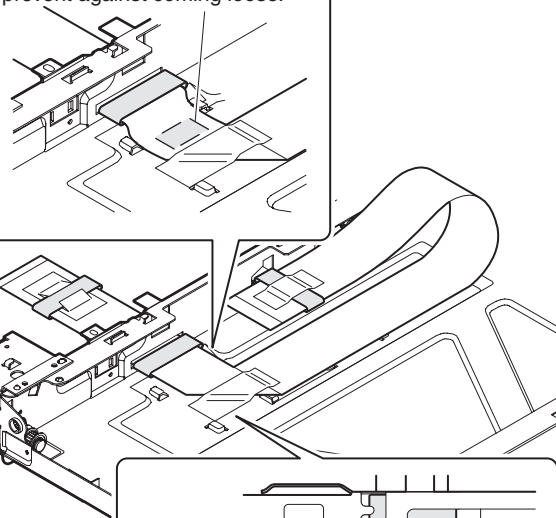


C. Assembly procedure

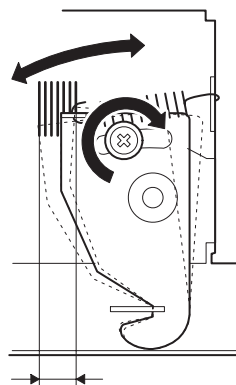
CCD core

- 1) Pass the core through the CCD-MCU harness.
- 2) Insert the CCD-MCU harness into the CCD PWB connector of the carriage unit.
- 3) Move the core which was passed through the CCD-MCU harness near the CCD PWB connector as shown in the figure below, and fix it with a filament tape (19mm wide, 40mm long). For the attachment reference, refer to the figure below. Clean and remove oil from the attachment section.
- 4) Attach the CCD-MCU harness to the duplex tape on the back of the carriage unit.
- 5) Attach the PWB holder to the position specified in the figure below.
- 6) Pass the core through the FFC and the PWB holder, and fix the core.

Note: Attach the FFC to the base plate securely with duplex tape to prevent against coming loose.



Note: Attach the FFC to fit with the marking line. Marking line



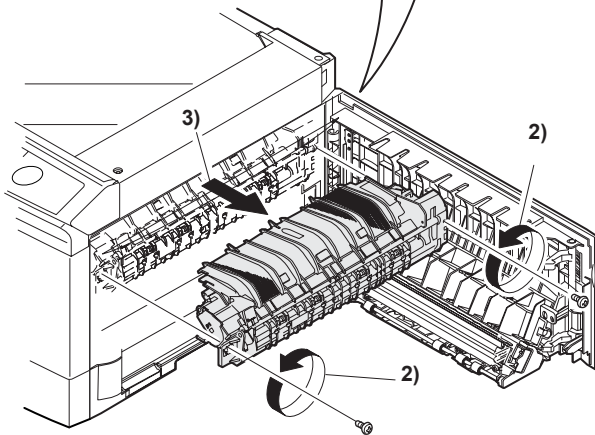
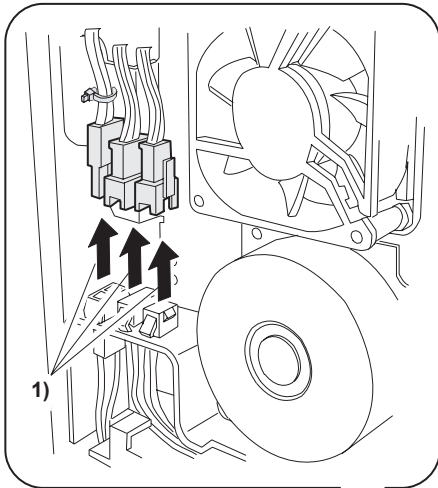
4. Fusing section

A. List

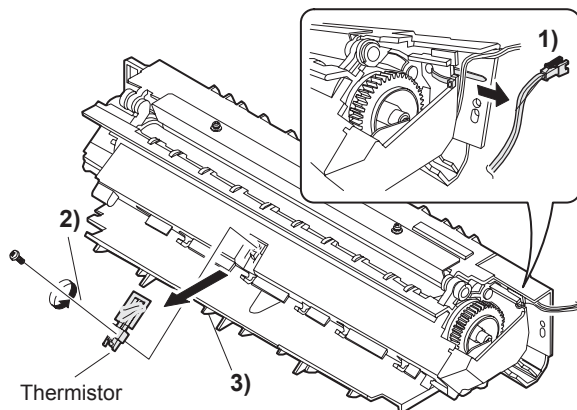
No.	Part name	Ref.
1	Thermistor	
2	PPD2 sensor	
3	Heater lamp	
4	Pressure roller	
5	Heat roller	

B. Disassembly procedure

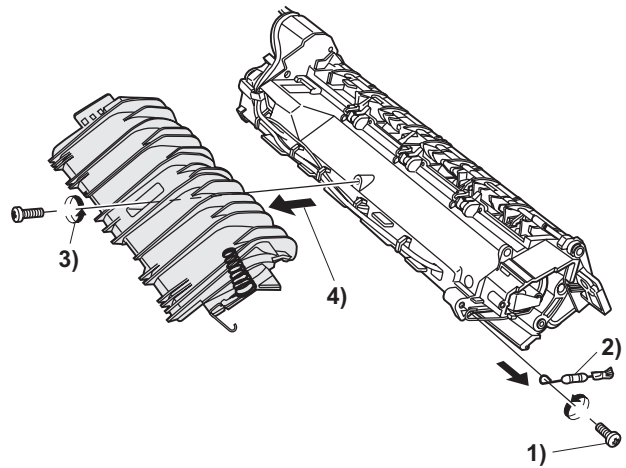
- 1) Remove the connectors (3 pcs.) of the rear cabinet.
- 2) Open the side cover, remove two screws, and remove the fusing unit.



- 3) Cut the binding band, remove the screw, and remove the thermistor.

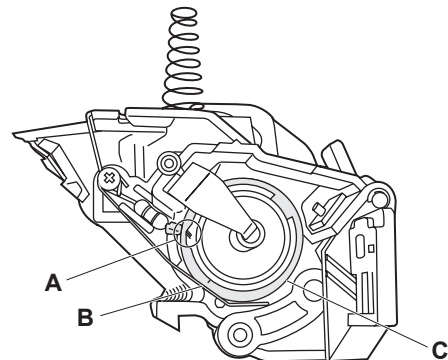


- 4) Remove the screw and remove the resistor.
Remove the screw and remove the U-turn guide.



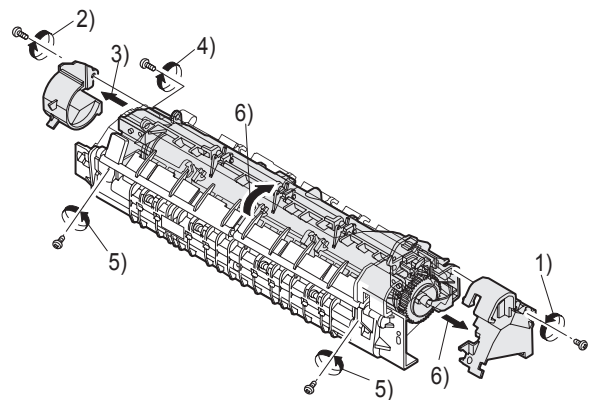
Note: When installing the resistor, check to confirm that the discharge brush section (A) is in contact with the upper heat roller.

Also check to confirm that the fusing lower earth spring (B) does not extend over the fusing bearing (C) after tightening the screw.

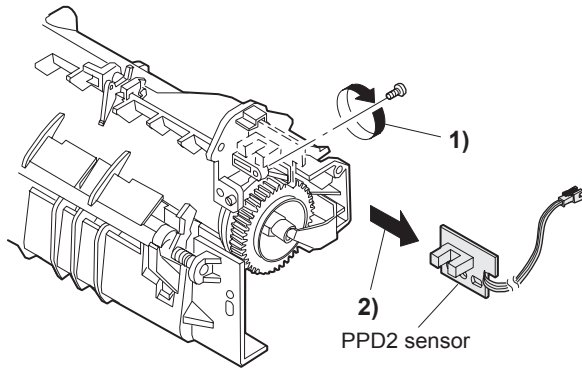


Pressure roller section disassembly

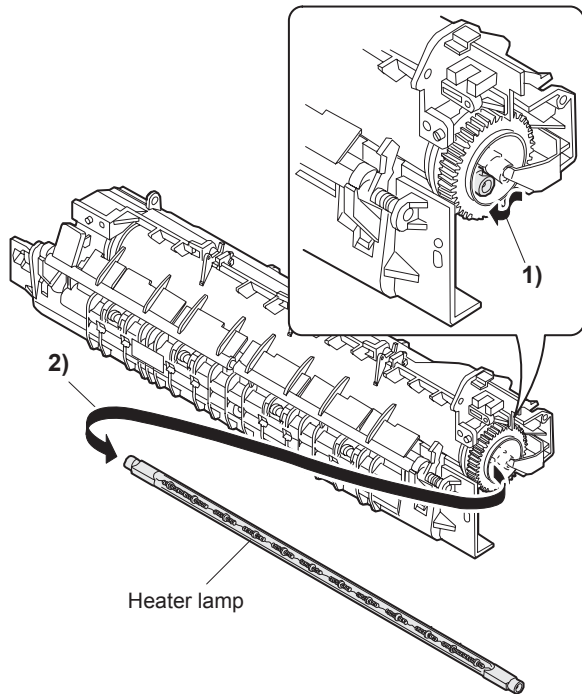
- 5) Remove the three screws, remove the fusing cover lower on the right side, and open the heat roller section.



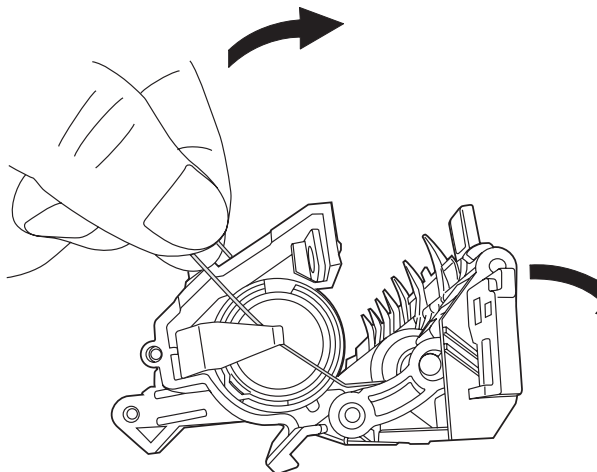
6) Remove the screw and remove the PPD2 sensor.



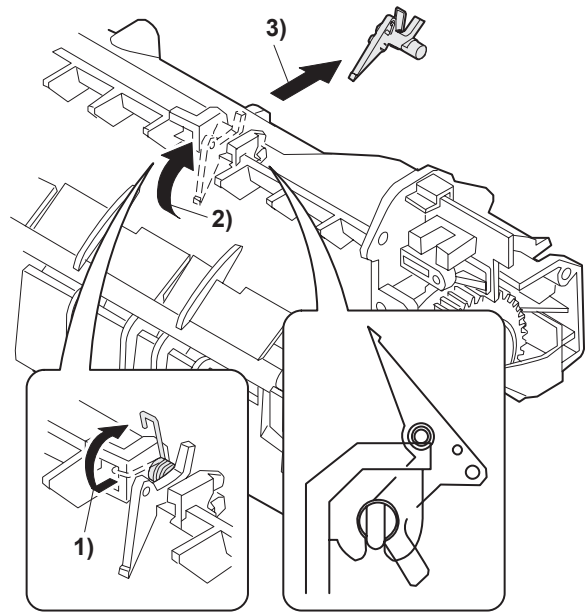
7) Remove the plate spring on the right and remove the heater lamp.



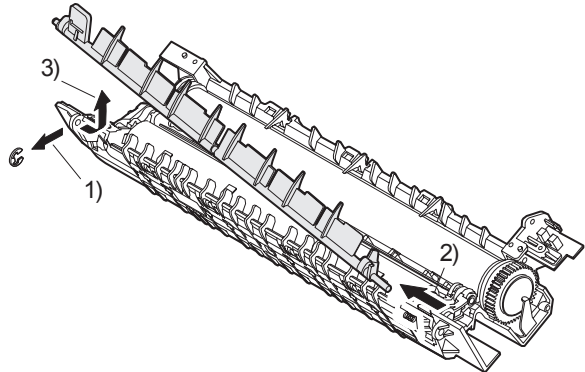
8) When opening the fusing unit, slide the fusing lower earth spring in the arrow direction, and open the unit.
 If the fusing unit is opened without sliding the fusing lower earth spring, the fusing lower earth spring is deformed.
 If the fusing lower earth spring is once deformed, the earth function may not work properly. Replace the deformed spring with a new one.



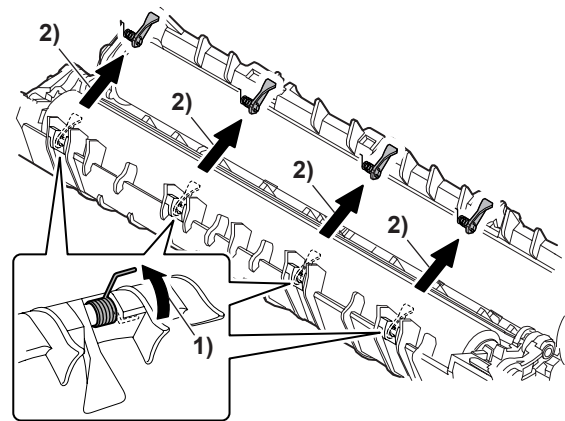
9) Remove the spring, and remove the upper separation pawls (3 pcs.).



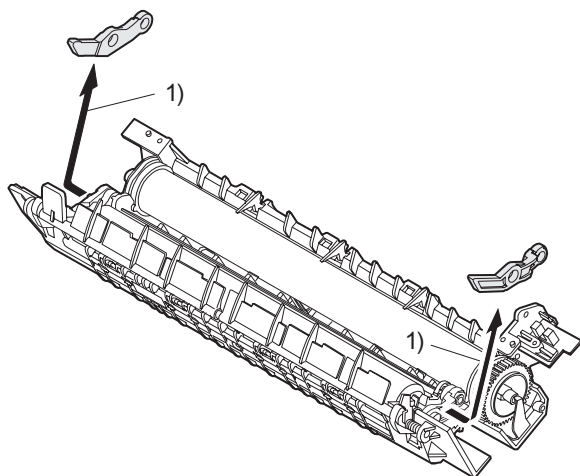
10) Remove the E-ring and remove the reverse gate.



11) Remove the spring, and remove the lower separation pawls (4 pcs.).

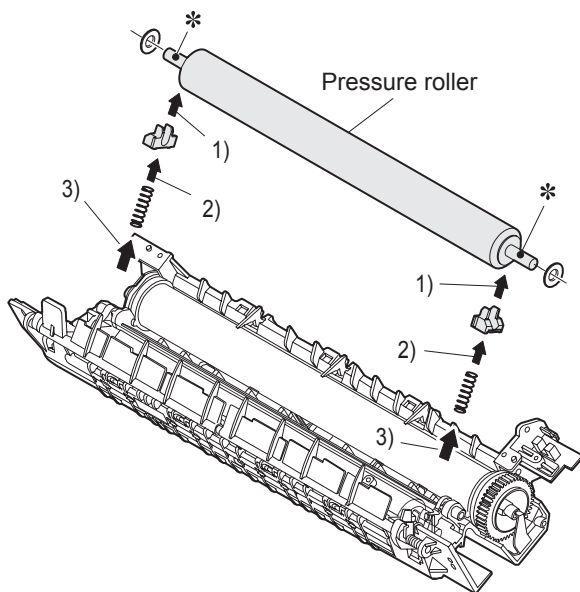


12) Remove the pressure release levers on the right and the left sides.



13) Remove the pressure roller, the pressure bearing, and the spring.

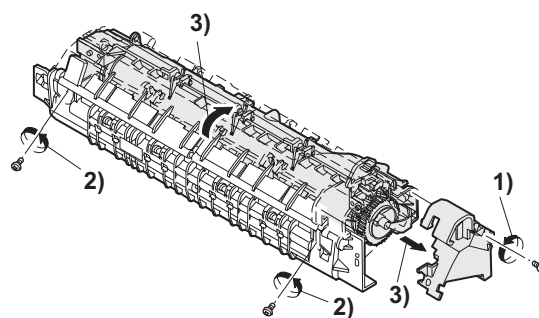
Note: Apply grease to the sections specified with an asterisk (*).
Grease: "JFE552"



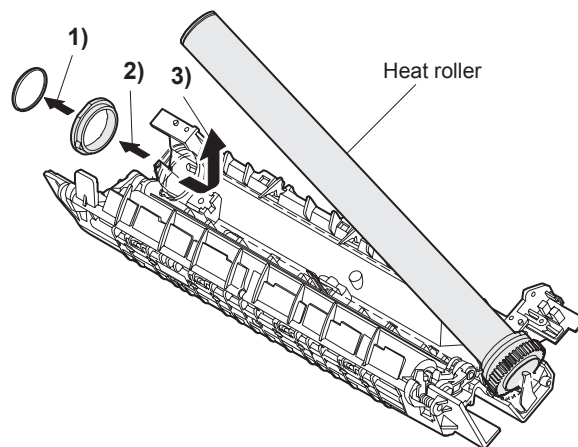
Heat roller disassembly

(Continued from procedure (4).)

5) Remove screws, remove the fusing cover, and open the heat roller section.

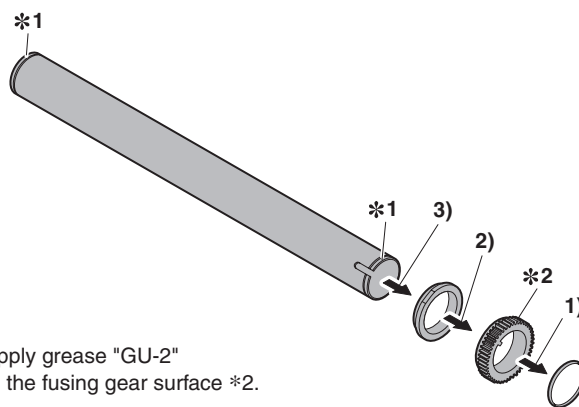


6) Remove the C-ring and the fusing bearing, and remove the heat roller.



7) Remove the parts from the heat roller.

Note: Apply grease to the sections specified with *1.
Grease: "JFE552"

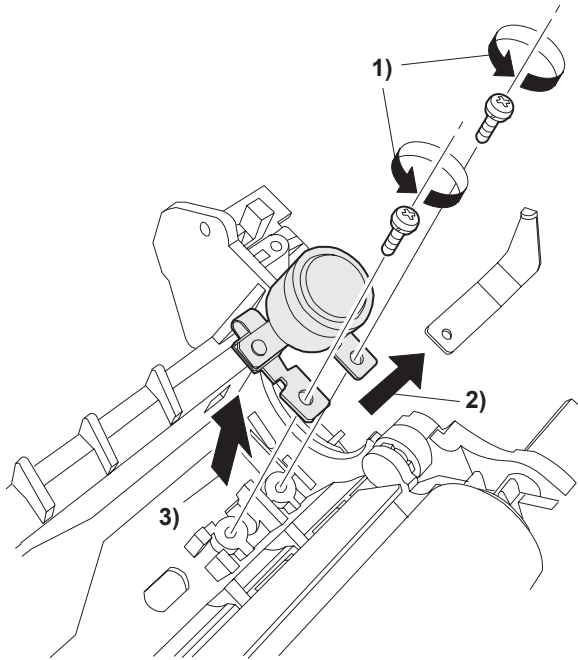


Apply grease "GU-2"
to the fusing gear surface *2.

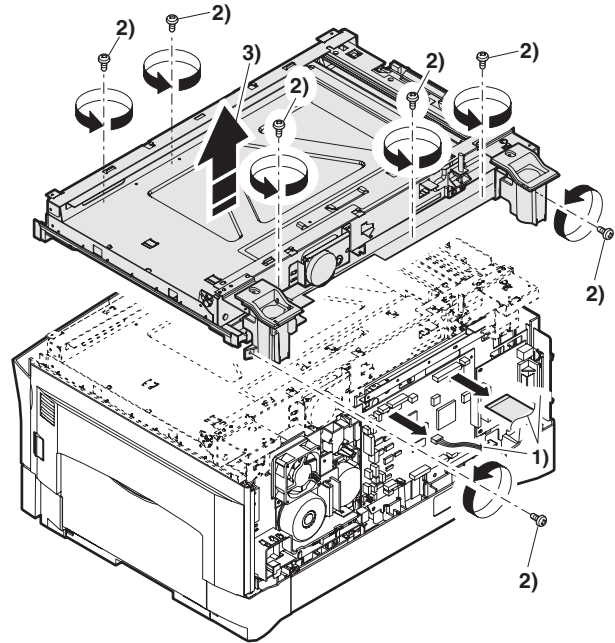
8) Remove two screws and remove the thermo unit.

Note: The set temperature of the thermostat differs from that of the current model.

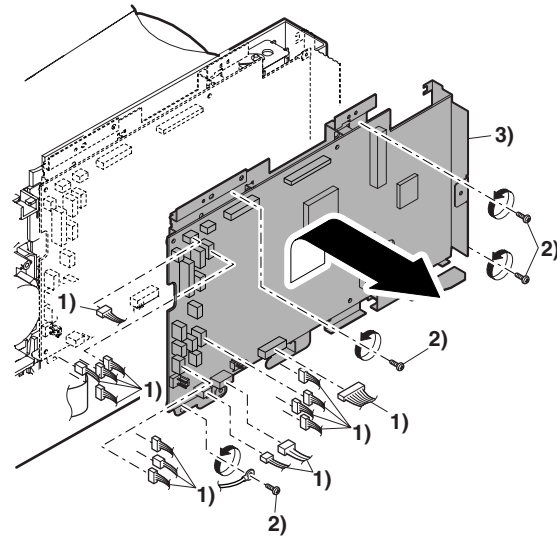
	Temperature
Current model	210°C
e-STUDIO202S	230°C



4) Remove the fan duct.



5) Remove each connector and four screws, and remove the MCU PWB.



C. Assembly procedure

For assembly, reverse the disassembly procedure.

5. Tray paper feed/transport section

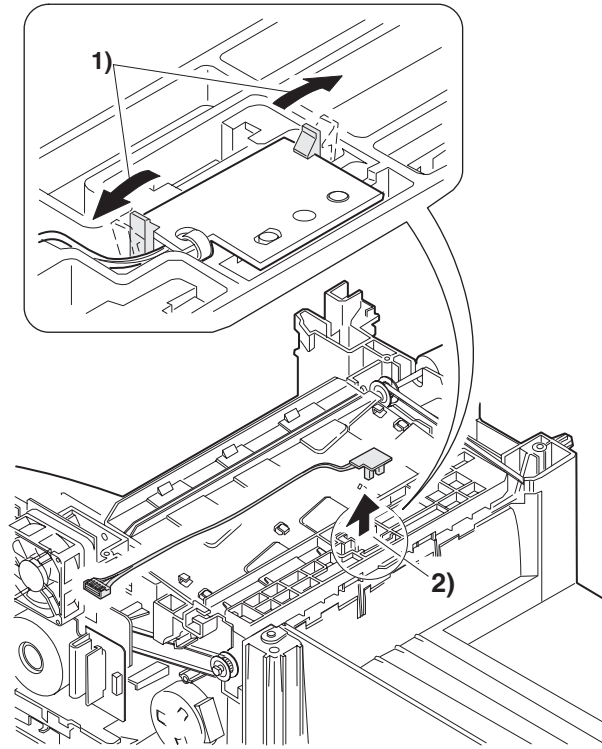
A. List

No.	Part name	Ref.
1	PPD1 sensor PWB	
2	LSU unit	
3	Intermediate frame unit	
4	Paper feed roller	

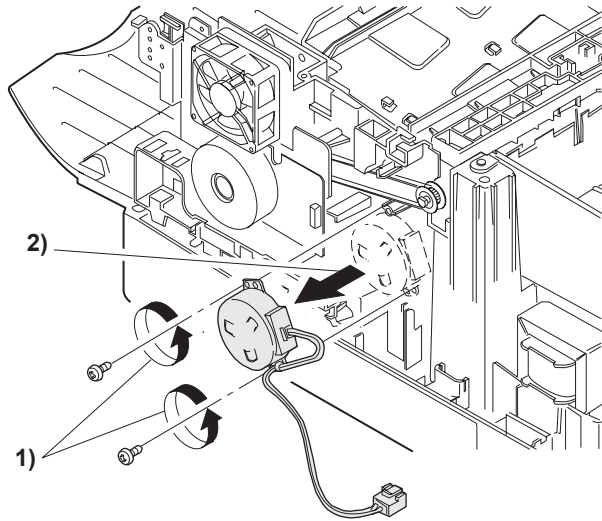
B. Disassembly procedure

- 1) Remove two screws, and remove the hinge guide R.
- 2) Disconnect the connector. (2 positions)
- 3) Remove five screws, and remove the scanner unit.

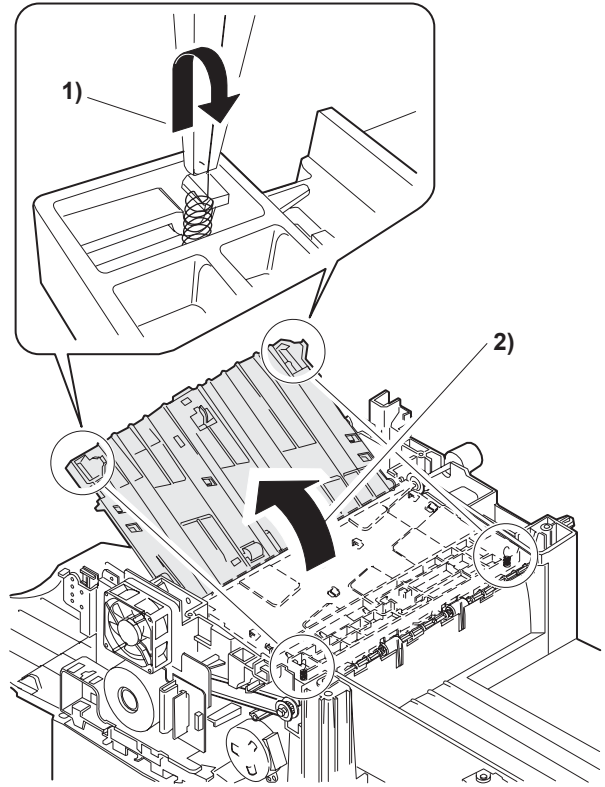
6) Remove the PWB insulation mylar and remove the paper transport detection sensor (PPD2).



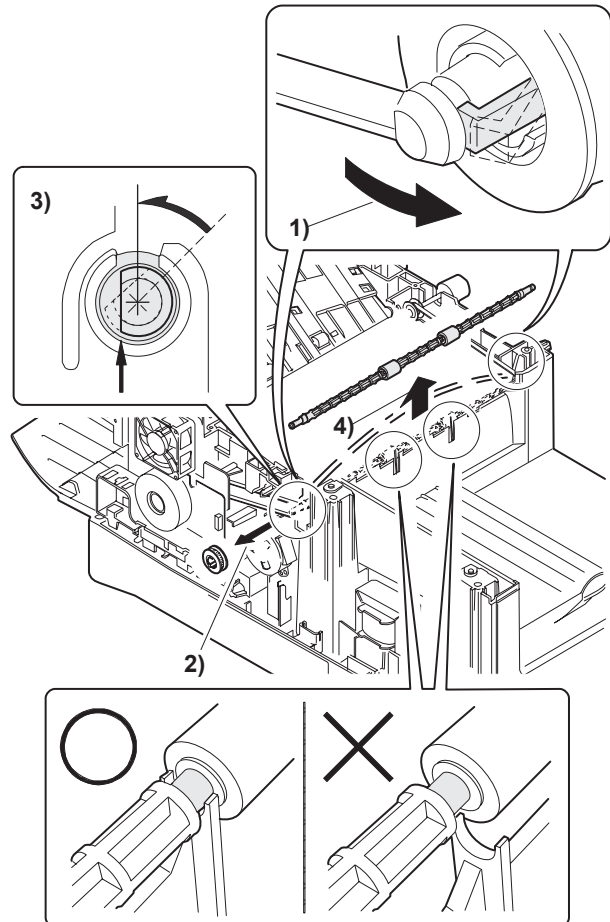
7) Remove two screws and remove the toner motor.



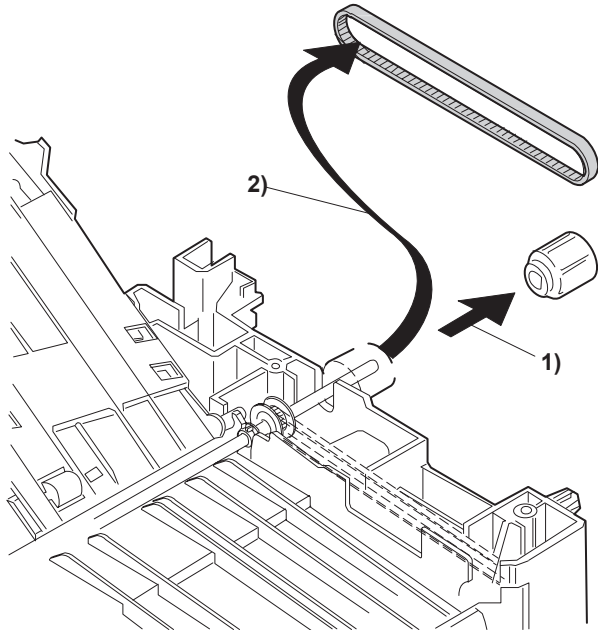
8) Remove two springs and open the intermediate frame unit.



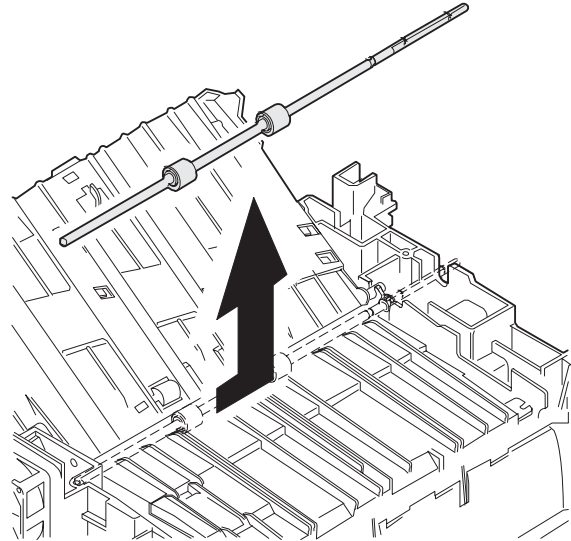
9) Remove the pulleys on the both sides and remove the paper exit roller.



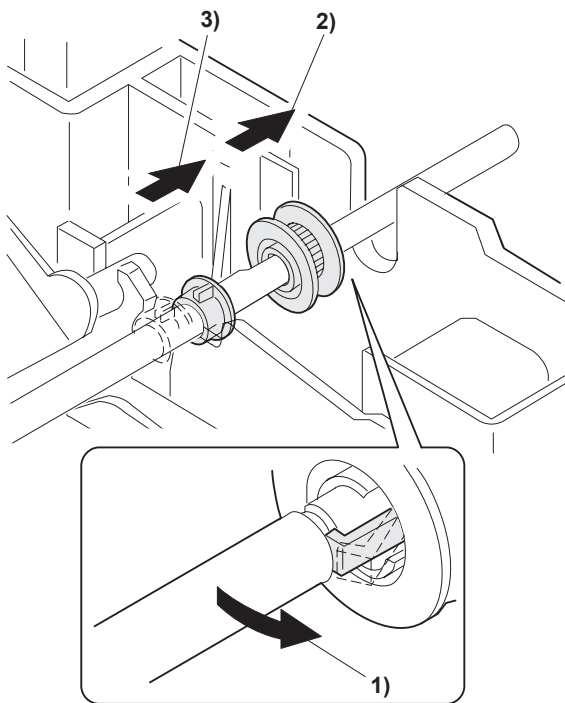
10) Pull out the paper exit roller knob and remove the belt.



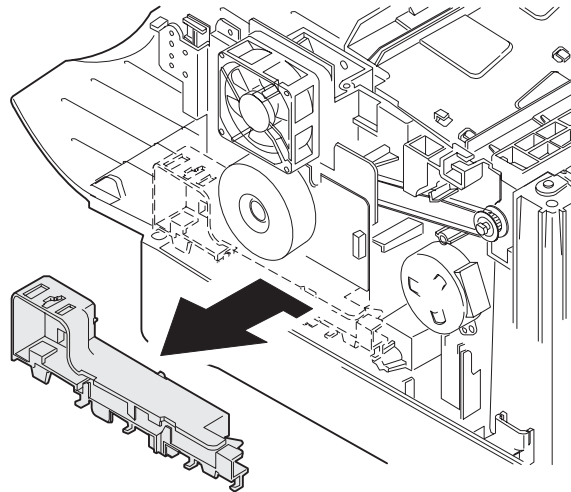
12) Remove the paper exit roller.



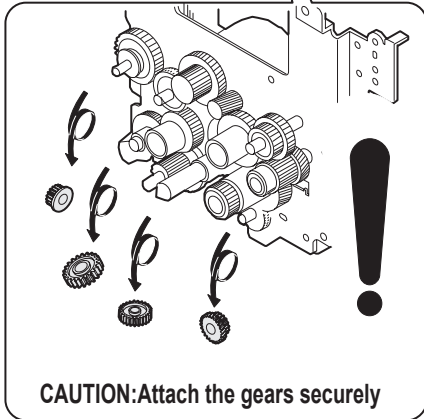
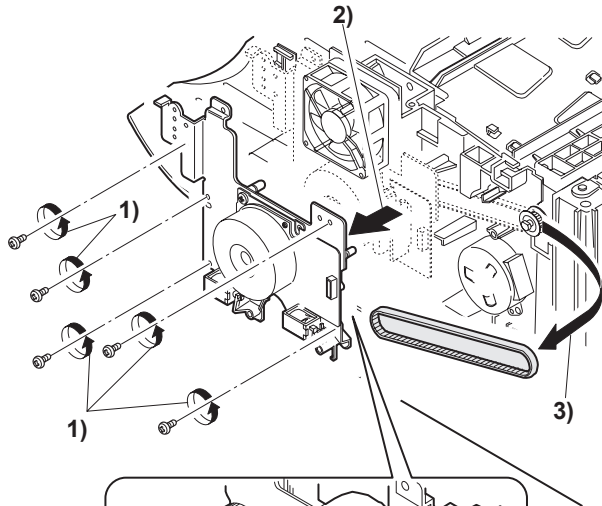
11) Release the belt pulley lock and remove the belt pulley bearing.



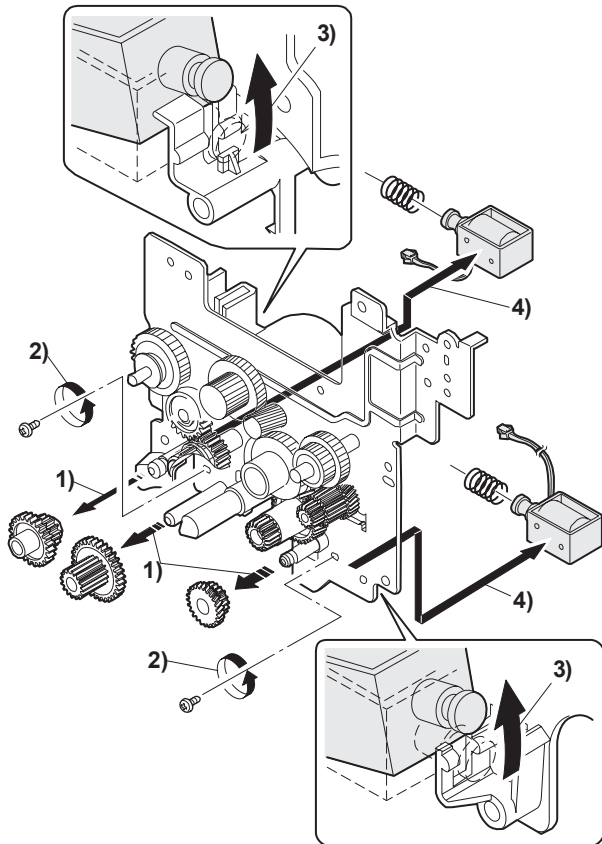
13) Remove the harness guide.



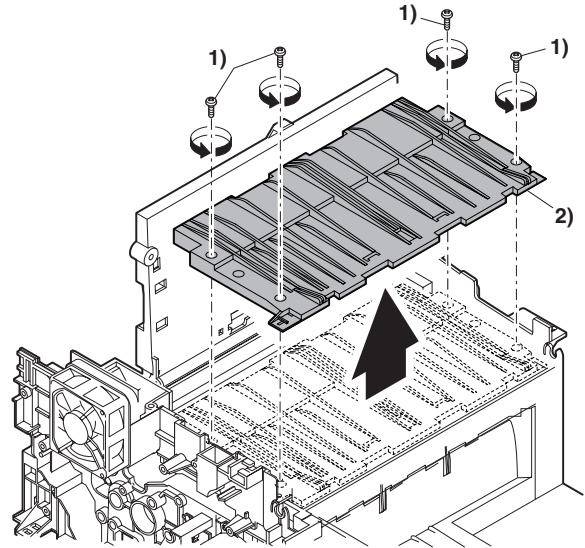
14) Remove five screws and remove the main drive plate and the belt.



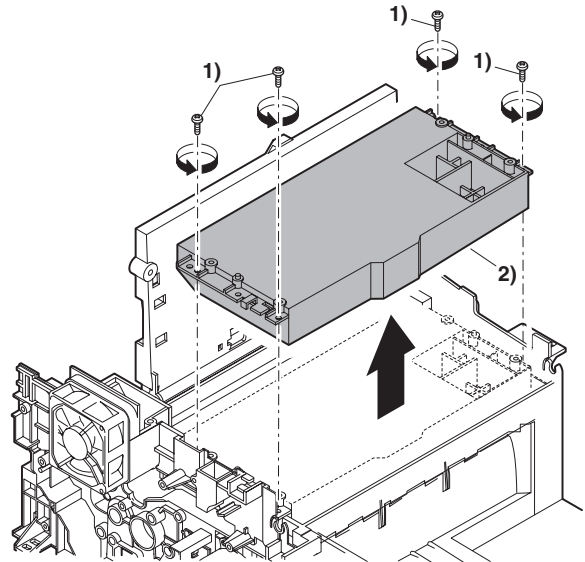
15) Remove the parts as shown below, and remove the pressure release solenoid and the paper feed solenoid.



16) Remove four screws, and remove the paper guide unit.



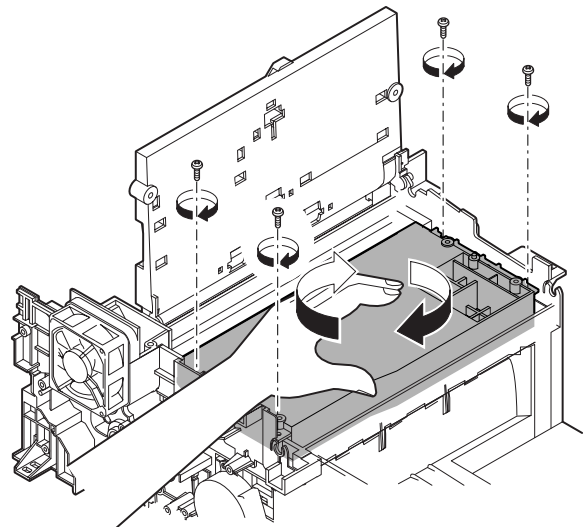
17) Remove four screws, and remove the LSU unit.



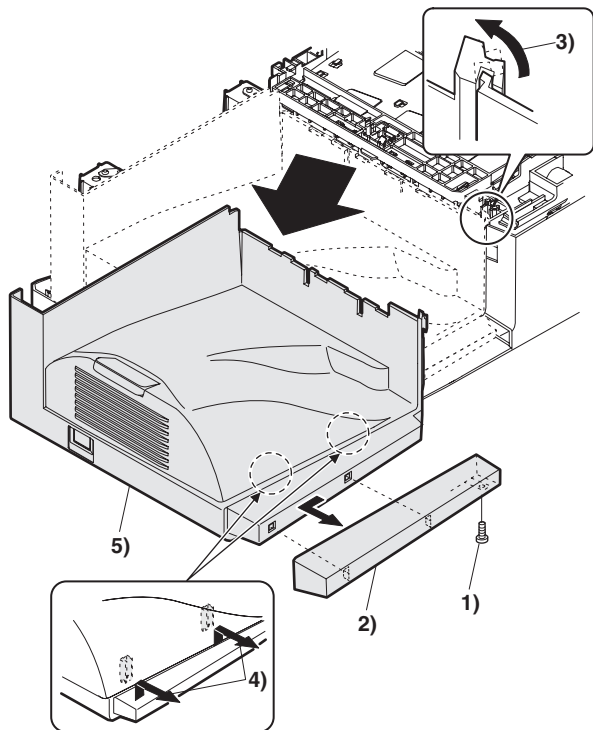
[Note for assembling the LSU]

When installing the LSU, turn the LSU clockwise and fix with screws in order to provide an attachment backlash in the proper direction.

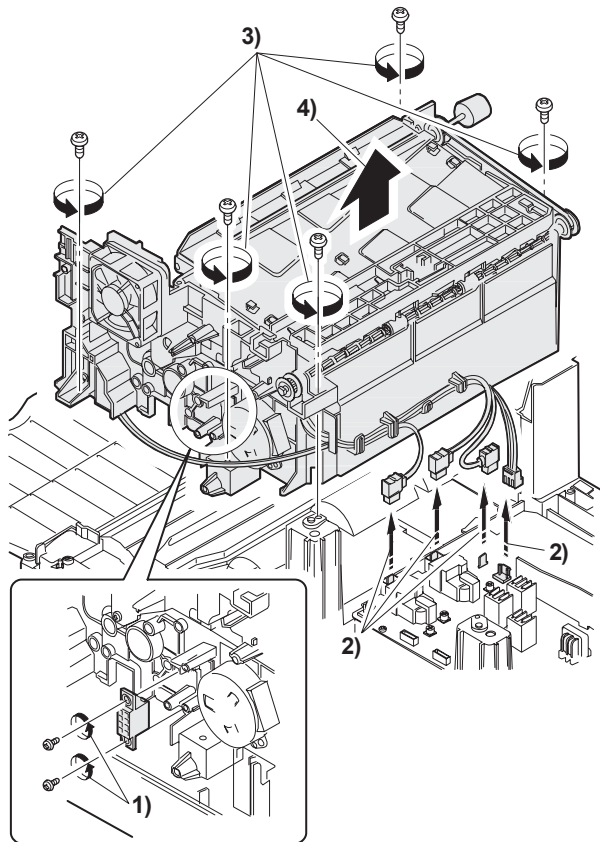
Observe the following sequence of fixing screws.



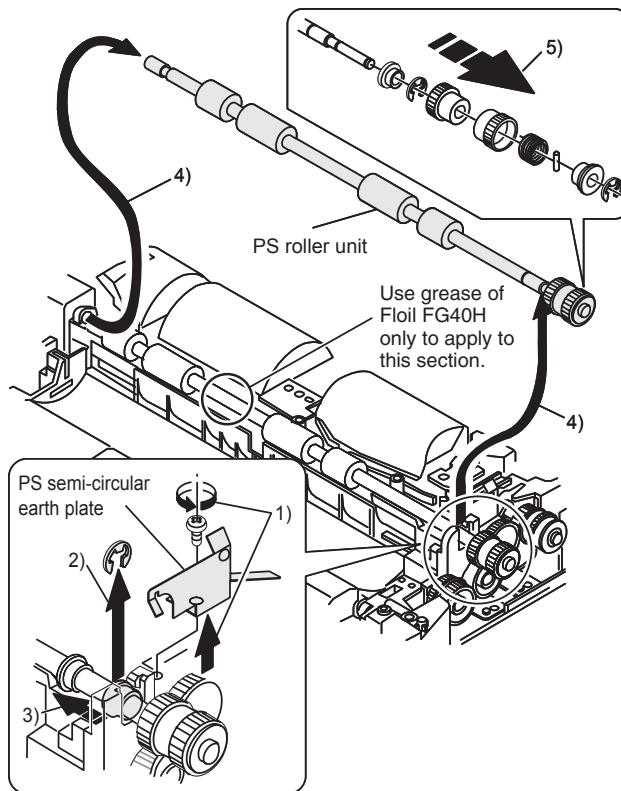
- 18) Remove the screw, slide the left cabinet to the left to detach it. Remove each pawl, and remove the paper exit tray.



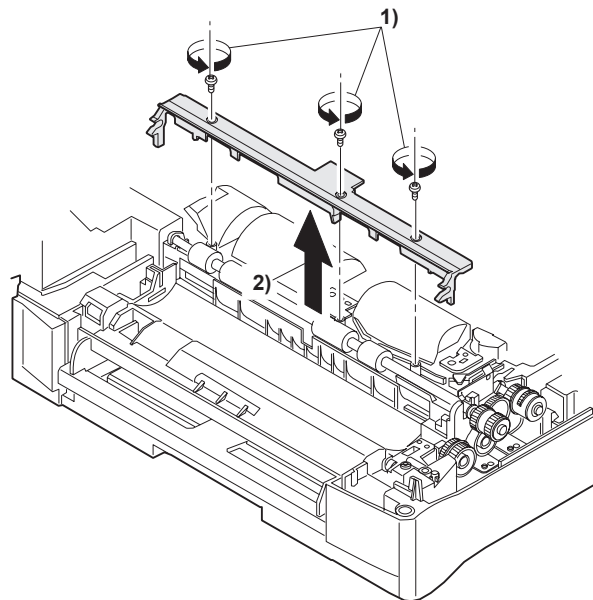
- 19) Remove two screws and remove the fusing connector.
20) Remove five screws and the connector, and lift the intermediate frame unit to remove.



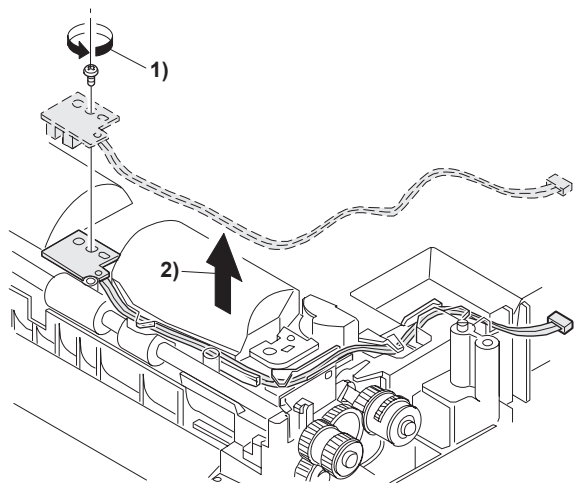
- 21) Remove the screw and the E-ring, and remove the PS semi-circular earth plate and the PS roller unit.
22) Remove the E-ring and remove the spring clutch from the PS roller unit.



- 23) Remove three screws and remove the TC front paper guide.

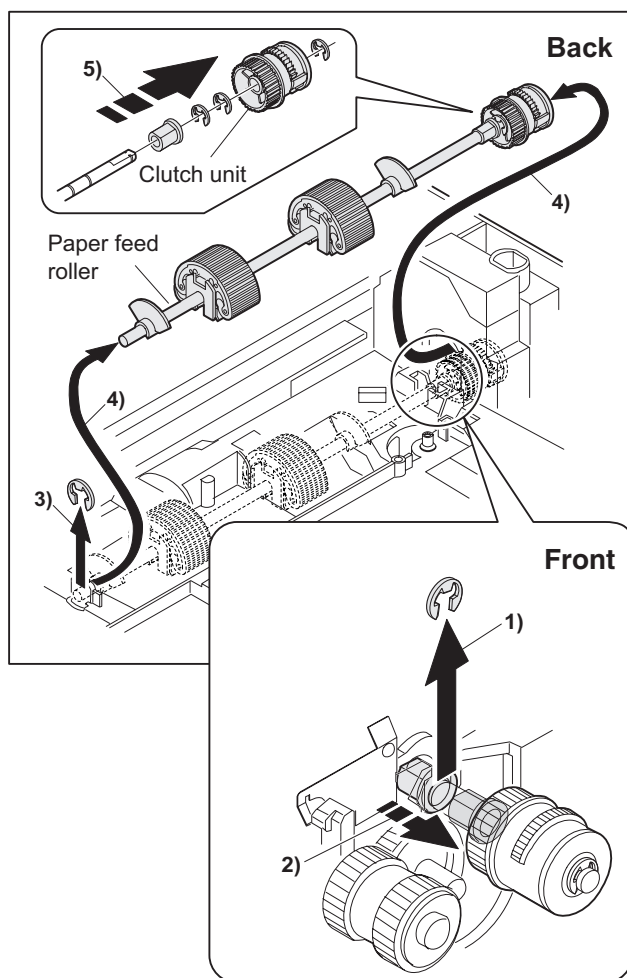


24) Remove the screw and the connector, and remove the PPD1 sensor PWB.



25) Remove two E-rings and remove the paper feed roller.

26) Remove three E-rings and remove the clutch unit.



6. Manual paper feed section

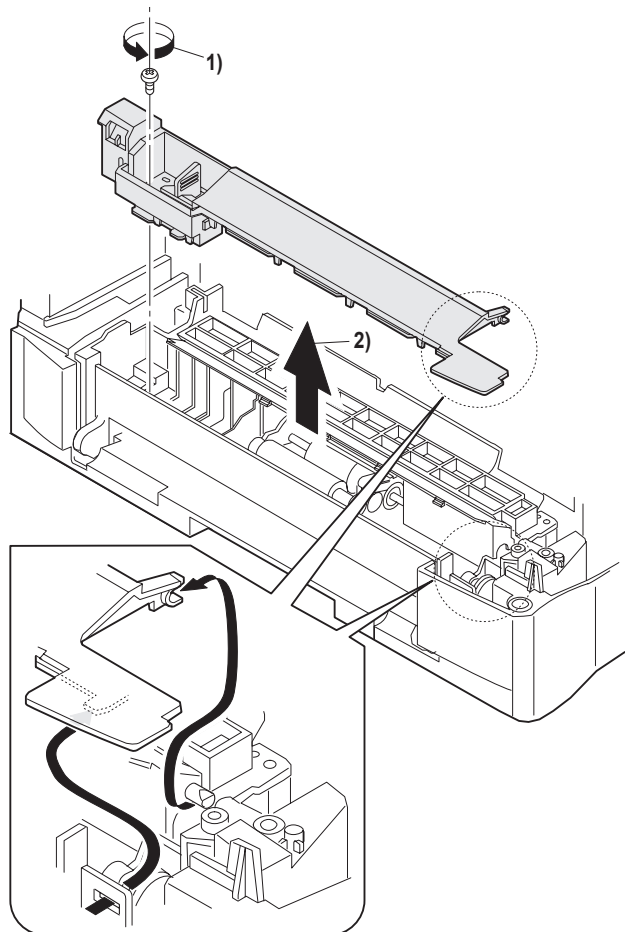
A. List

No.	Part name	Ref.
1	Manual transport roller	
2	Cassette detection switch	
3	PPD1 sensor PWB	
4	Side door detection unit	

B. Disassembly procedure

Multi unit

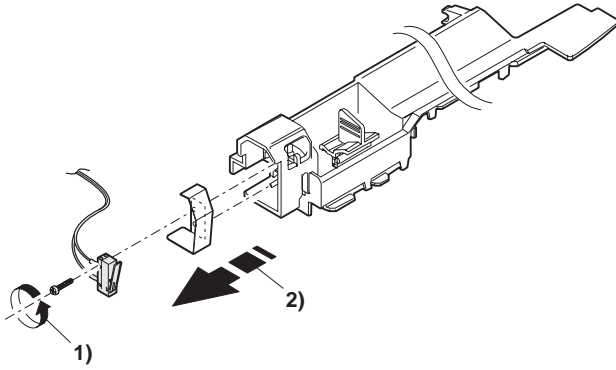
1) Remove the screw and remove the multi upper cover.



C. Assembly procedure

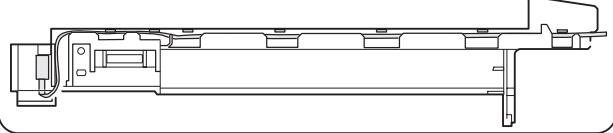
For assembly, reverse the disassembly procedure.

2) Remove the screw and remove the side door detection unit.

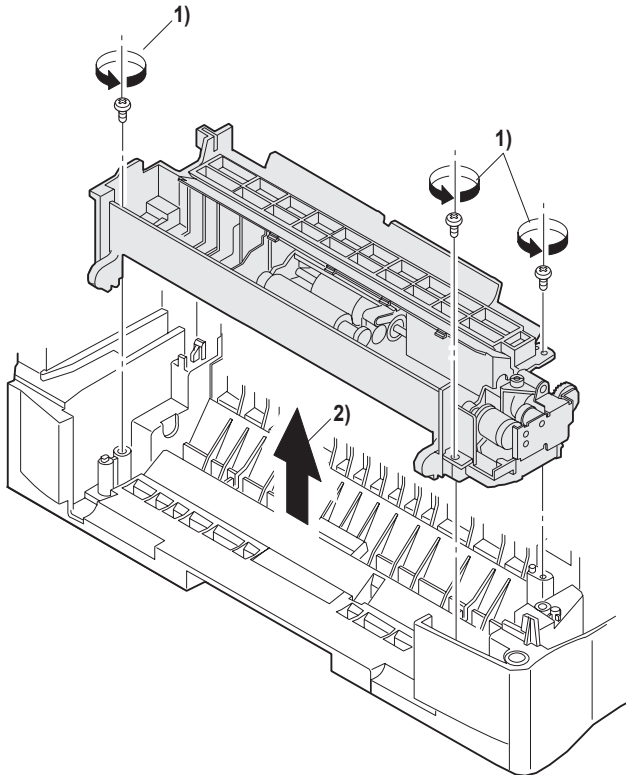


Back

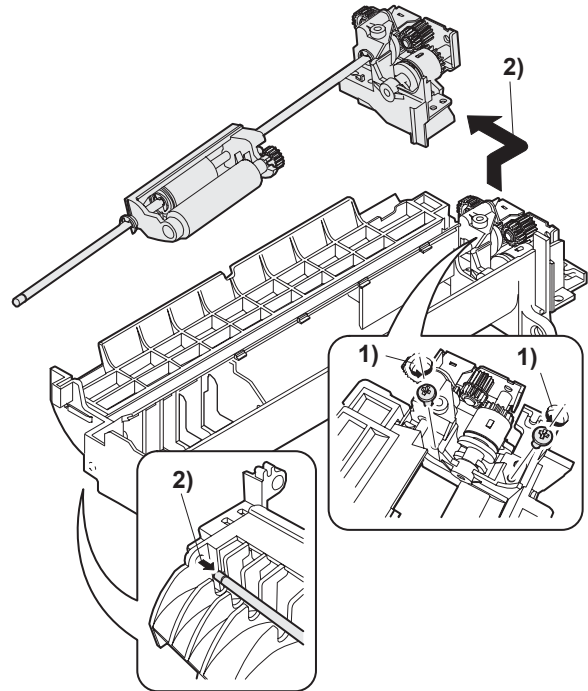
Wire treatment



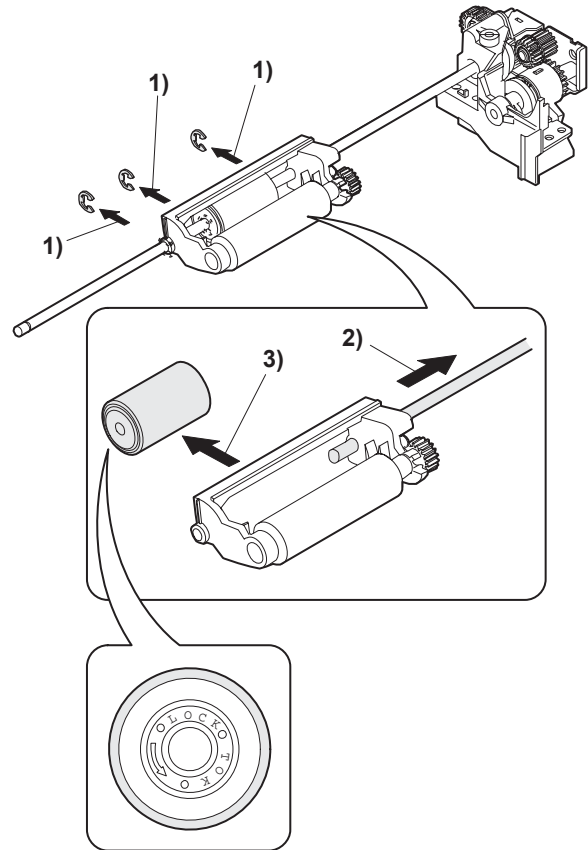
3) Remove three screws and remove the multi paper feed upper frame.



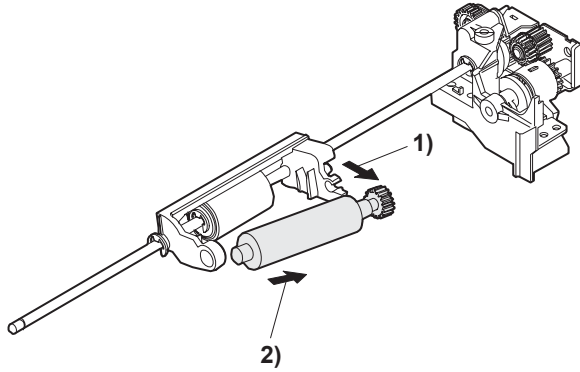
4) Remove two screws and remove the multi feed bracket unit from the multi paper feed upper frame.



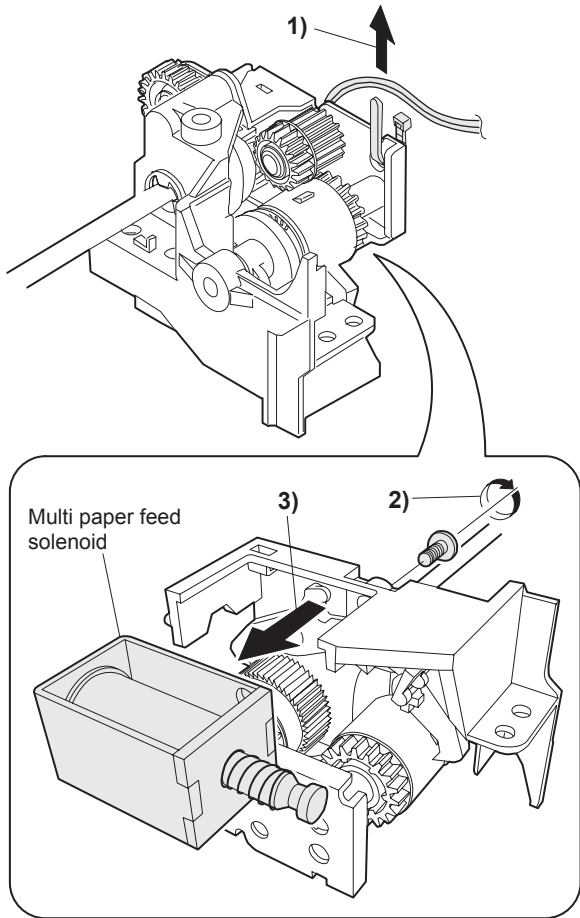
5) Remove three E-rings and remove the manual paper feed roller B9.



6) Remove the pick-up roller.



7) Cut the binding band and remove the multi paper feed solenoid.

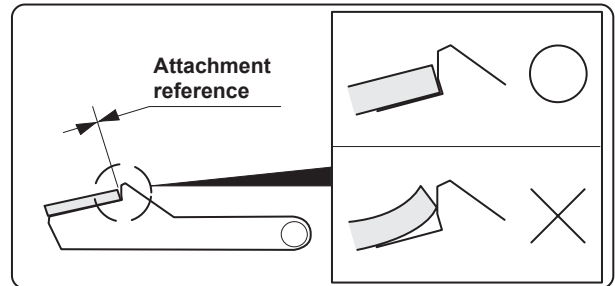
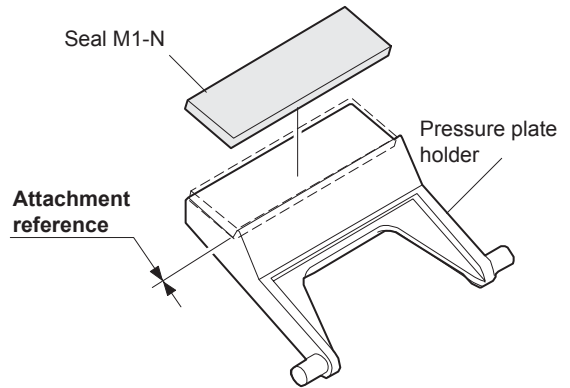


C. Assembly procedure

For assembly, reverse the disassembly procedure.

D. Pressure plate holder attachment

1) Attach the pressure plate holder so that the resin section is not covered with the seal M1-N.



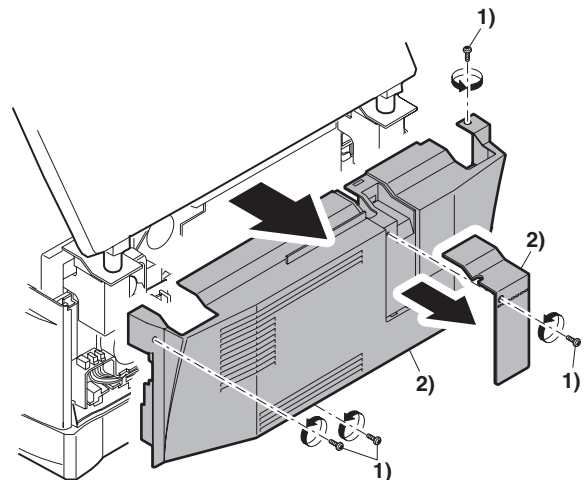
7. Rear frame section

A. List

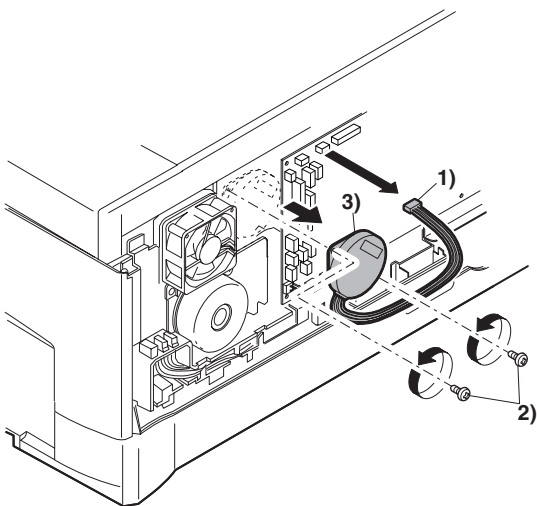
No.	Part name	Ref.
1	Scanner motor	
2	Main motor	
3	Exhaust fan motor	
4	NIC PWB	
5	Main PWB	

B. Disassembly procedure

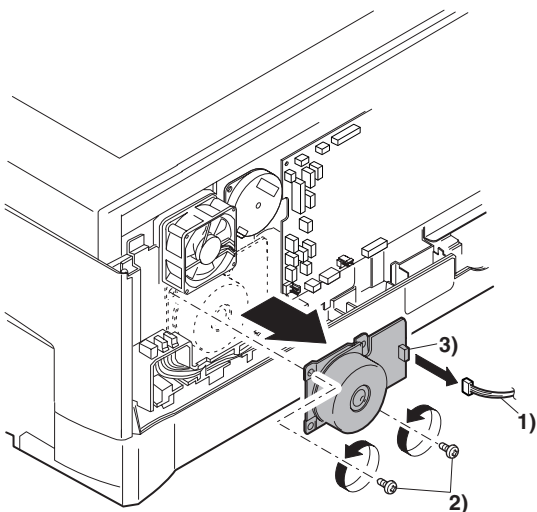
1) Remove four screws, and remove the rear cabinet and the rear cabinet cover.



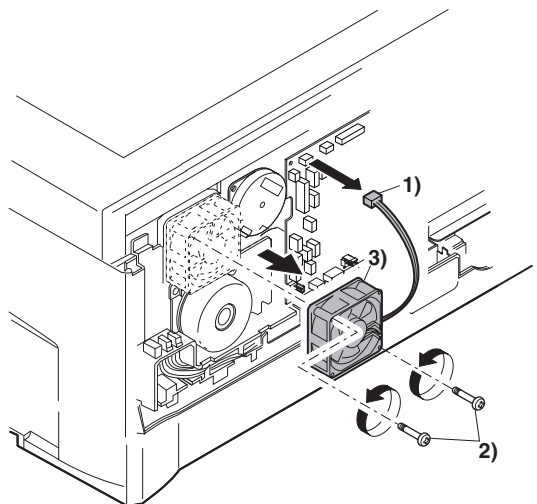
- 2) Disconnect the connector.
- 3) Remove two screws, and remove the scanner motor.



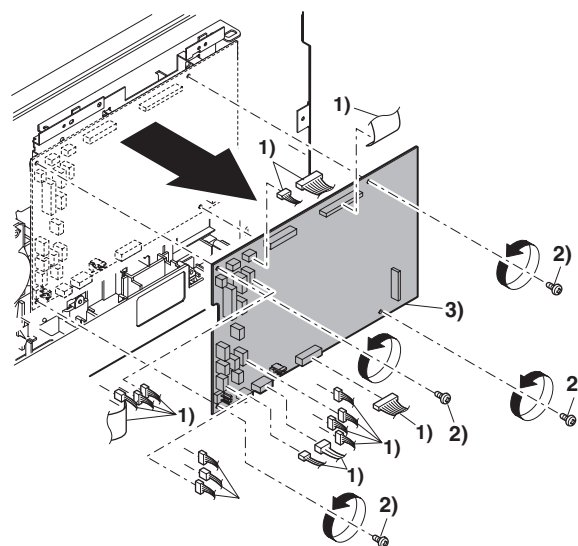
- 4) Remove two screws and one harness, and remove the main motor.



- 5) Remove two screws and one connector, and remove the exhaust fan motor.



- 6) Disconnect the connectors.
- 7) Remove the five screws, and remove the MCU PWB.



C. Assembly procedure

For assembly, reverse the disassembly procedure.

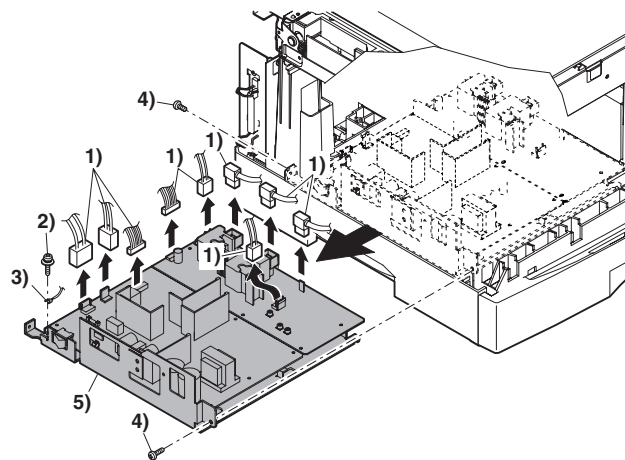
8 Power section

A. List

No.	Part name	Ref.
1	Power PWB	

B. Disassembly procedure

- 1) Disconnect each connector.
- 2) Remove the screw, and remove the earth line.
- 3) Remove two screws, and remove the power PWB unit.



Caution: Be careful not to touch the sharp edge on the circumference of the metal frame for the power supply.

C. Assembly procedure

For assembly, reverse the disassembly procedure.

[9] ADJUSTMENTS

1. Optical section

A. Copy magnification ratio adjustment

The copy magnification ratio must be adjusted in the main scanning direction and in the sub scanning direction. To adjust, use SIM 48-1.

(1) Outline

The main scanning (front/rear) direction magnification ratio adjustment is made manually.

The adjustment is made by manual key operations.

The magnification ratio in the sub scanning direction is adjusted by changing the carriage (scanner) scanning speed.

(2) Main scanning direction magnification ratio adjustment

a. Cases when the adjustment is required

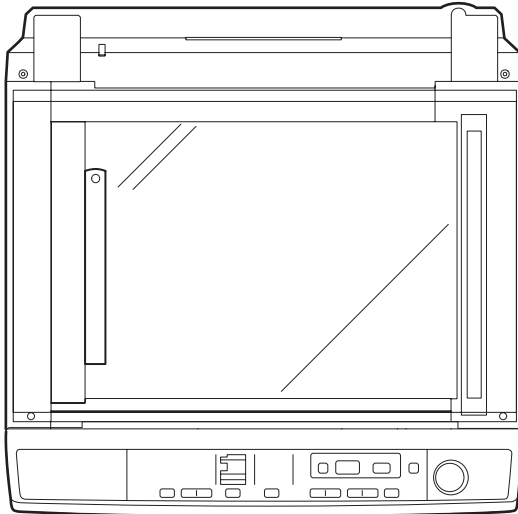
- 1) When the main PWB is replaced.
- 2) When the EEPROM in the main PWB is replaced.
- 3) When "U2" trouble occurs.
- 4) When repairing or replacing the optical section.

b. Necessary tools

- Screwdriver (+)
- Scale

c. Adjustment procedure

- 1) Set the scale vertically on the document table. (Use a long scale for precise adjustment.)

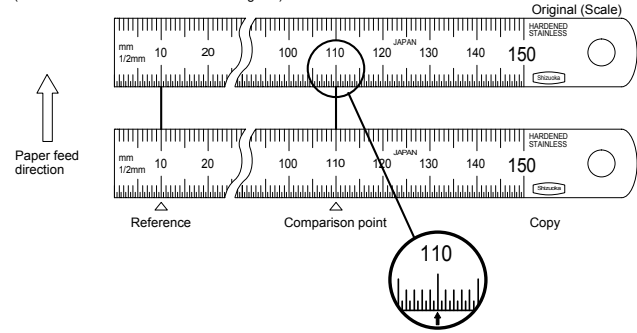


- 2) Set the copy magnification ratio to 100%.
- 3) Make a copy on A4 or 8-1/2" x 11" paper.
- 4) Measure the length of the copied scale image.

- 5) Calculate the main scanning direction magnification ratio.

$$\text{Main scanning direction magnification ratio} = \frac{\text{Copy image dimensions}}{\text{Original dimension}} \times 100 (\%)$$

(When a 100mm scale is used as the original.)



- 6) Check that the copy magnification ratio is within the specified range. If it is not within the specified range, perform the following procedures.
- 7) Execute SIM 48-1 to select the main scanning direction copy magnification ratio adjustment mode.

To select the adjustment mode, use the copy mode select key.

If the magnification ratio is not in the specified range (100 ± 1.0%), manually adjust as follows.

Adjustment mode	Lighting lamp	Default
Main scanning direction magnification ratio adjustment	TEXT lamp ON	50
Sub scanning direction magnification ratio adjustment	PHOTO lamp ON	50

- 8) Enter the new set value of main scanning direction copy magnification ratio with the copy quantity set key, and press the START button.
- 9) Change the set value and repeat the adjustment until the ratio is within the specified range.
When the set value is changed by 1, the magnification ratio is changed by 0.1%.

(3) Sub scanning direction copy magnification ratio

a. Cases when the adjustment is required

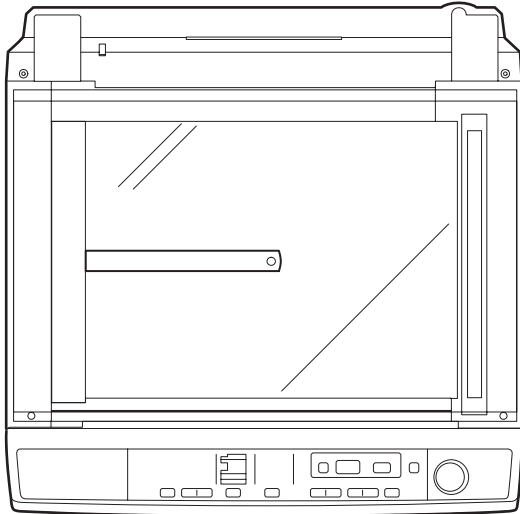
- 1) When the scanner unit drive section is disassembled or the part is replaced.
- 2) When the main PWB is replaced.
- 3) When the EEPROM in the main PWB is replaced.
- 4) When "U2" trouble occurs.

b. Necessary tools

- Scale

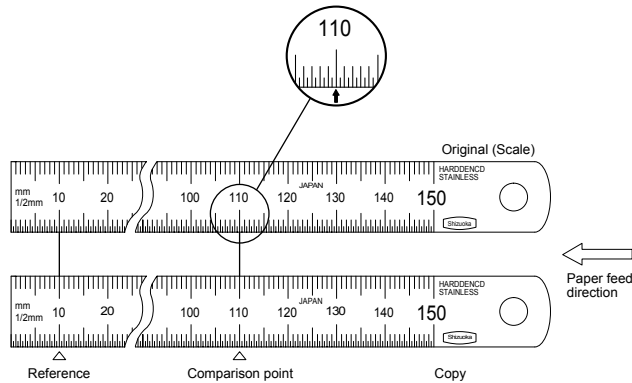
c. Adjustment procedure

- 1) Set the scale on the document table as shown below. (Use a long scale for precise adjustment.)



- 2) Set the copy magnification ratio to 100%.
- 3) Make a copy on A4 or 8-1/2" x 11" paper.
- 4) Measure the length of the copied scale image.
- 5) Calculate the sub scanning direction copy magnification ratio using the formula below.

$$= \frac{\text{Copy image dimensions}}{\text{Original dimension}} \times 100 (\%)$$



- 6) Check that the actual copy magnification ratio is within the specified range. (100 ± 1.0%).
If it is not within the specified range, perform the following procedures.
- 7) Execute SIM 48-1 to select the sub scanning direction copy magnification ratio adjustment mode.
To select the adjustment mode, use the copy mode select key. (PHOTO lamp ON)
- 8) Enter the new set value of sub scanning direction copy magnification ratio with the copy quantity set key, and press the START button.

Repeat procedures 1) - 8) until the sub scanning direction actual copy magnification ratio in 100% copying is within the specified range.

When the set value is changed by 1, the magnification ration is changed by 0.1%.

B. Image position adjustment

There are following five kinds of image position adjustments, which are made by laser control except for the image scan start position adjustment. For the adjustments, SIM 50-01, 50-06 and 50-10 are used.

No.	Adjustment item	Simulation
1	Print start position (Main cassette paper feed)	50 - 01
2	Print start position (2nd cassette paper feed)	50 - 01
3	Print start position (Manual paper feed)	50 - 01
4	Image lead edge void amount	50 - 01
5	Image scan start position	50 - 01
6	Image rear edge void amount (Main cassette paper feed)	50 - 01
7	Image rear edge void amount (Manual paper feed)	50 - 01
8	Front surface document scan position	50 - 06
9	Rear edge void amount (ADF)	50 - 06
10	Center offset	50 - 10

To select the adjustment mode with SIM 50-01, use the copy mode select key.

The relationship between the adjustment modes and the lighting lamps are as shown in the table below.

Adjustment mode	Lamp ON
Print start position (Main cassette paper feed)	AE, main cassette lamp
☆ Print start position (2nd cassette paper feed)	AE, 2nd cassette lamp
Print start position (Manual paper feed)	AE, manual paper feed lamp
Image lead edge void amount	AE, main cassette lamp
Image scan start position	PHOTO, main cassette lamp
Image rear edge void amount (Main cassette paper feed)	AE, TEXT, PHOTO, main cassette lamp
Image rear edge void amount (Manual paper feed)	AE, TEXT, manual paper feed lamp

☆ : Supported for the installing model and skipped for non-installing mode.

To select the adjustment mode with SIM 50-10, use the copy mode select key.

The relationship between the adjustment modes and the lighting lamps are as shown in the table below.

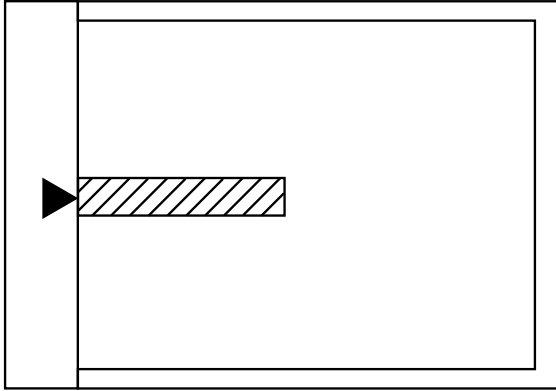
Machine with the multi manual paper feed unit

Adjustment mode	Lamp ON
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
☆ Second side center offset (Main cassette paper feed)	TEXT, main cassette lamp

☆ : Supported for the installing model and skipped for non-installing mode.

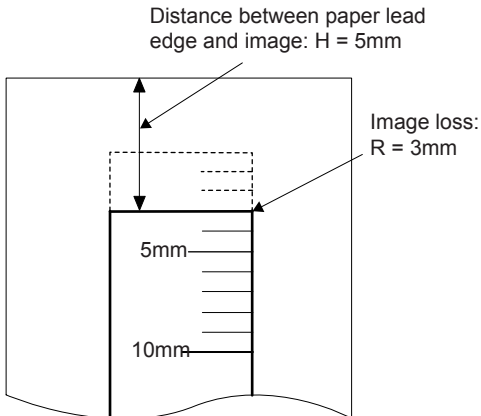
(1) Lead edge adjustment

- 1) Set a scale to the center of the paper lead edge guide as shown below, and cover it with B4 or 8-1/2" x 14" paper.



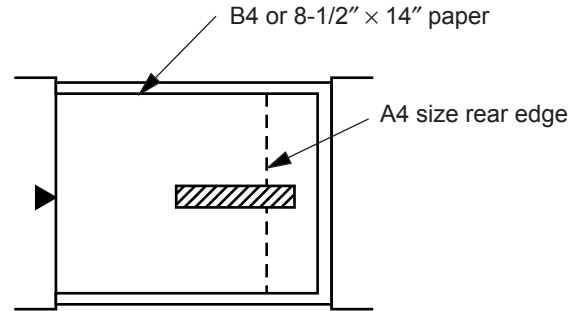
- 2) Execute SIM 50-01
- 3) Set the print start position (AE, main cassette lamp ON) (A), the lead edge void amount (TEXT, main cassette lamp ON) (B), and the scan start position (PHOTO, main cassette lamp ON) (C) to 0, and make a copy of a scale at 100%.
- 4) Measure the image loss amount (R mm) of the scale image.
Set $C = 10 \times R$ (mm). (Example: Set the value of C to 30.)
When the value of C is increased by 10, the image loss is decreased by 1mm. (Default: 50)
- 5) Measure the distance (H mm) between the paper lead edge and the image print start position.
Set $A = 10 \times H$ (mm). (Example: Set the value of A to 50.)
When the value of A is increased by 10, the image lead edge is shifted to the paper lead edge by 1mm. (Default: 50)
- 6) Set the lead edge void amount to $B = 50$ (2.5mm).
When the value of B is increased by 10, the void amount is increased by about 1mm. For 25 or less, however, the void amount becomes zero. (Default: 50)

(Example)

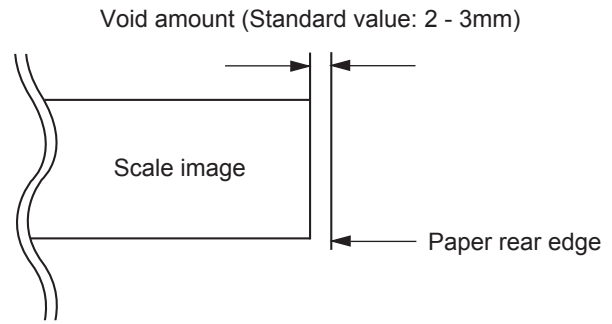


(2) Image rear edge void amount adjustment

- 1) Set a scale to the rear edge section of A4 or 11" x 8-1/2" paper size as shown in the figure below, and cover it with B4 or 8-1/2" x 14" paper.



- 2) Execute SIM 50-01 to select the image rear edge void amount adjustment mode.
The set adjustment value is displayed on the copy quantity display.
- 3) Make a copy and measure the void amount of image rear edge.

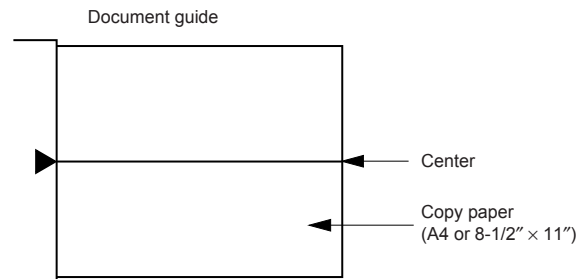


- 4) If the measurement value is out of the specified range, change the set value and repeat the adjustment procedure.
The default value is 50.

Note: The rear edge void cannot be checked with the first sheet after entering the simulation mode, the first sheet after turning off/on the power, or the first sheet after inserting the cassette. Use the second or later sheet to check the rear edge void.

(3) Center offset adjustment

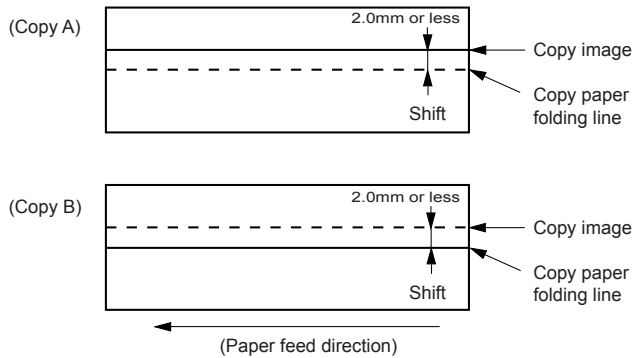
- 1) Set the self-made test chart for the center position adjustment so that its center line is aligned with the center mark of the document guide.
- Test chart for the center position adjustment.
Draw a line at the center of A4 or 8-1/2" x 11" paper in the paper transport direction.



- 2) Execute SIM 50-10 to select the print center offset (cassette paper feed) adjustment mode.
The set adjustment value is displayed on the copy quantity display.

- 3) Make a copy and check that the copied center line is properly positioned.

The standard value is $0 \pm 2\text{mm}$ from the paper center.



- 4) If the measured value is out of the specified range, change the set value and repeat the adjustment procedure.
 - When the set value is increased by 1, the copy image is shifted by 0.1mm toward the rear frame.
 - For the manual paper feed, change the manual paper feed adjustment mode and perform the similar procedures.
 - Since the document center offset is automatically adjusted by the CCD which scan the reference lines (F/R) on the back of document guide, there is no need to adjust manually.

2. Copy density adjustment

A. Copy density adjustment timing

The copy density adjustment must be performed in the following cases:

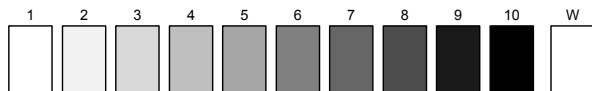
- When maintenance is performed.
- When the developing bias/grid bias voltage is adjusted.
- When the optical section is cleaned.
- When a part in the optical section is replaced.
- When the optical section is disassembled.
- When the OPC drum is replaced.
- When the main control PWB is replaced.
- When the EEPROM on the main control PWB is replaced.
- When the memory trouble (U2) occurs.

B. Note for copy density adjustment

- 1) Arrangement before execution of the copy density adjustment
 - Clean the optical section.
 - Clean or replace the charger wire.
 - Check that the voltage at the high voltage section and the developing bias voltage are in the specified range.

C. Necessary tool for copy density adjustment

- KODAK GRAY SCALE (Test chart)
- B4 (14" x 8-1/2") white paper
- The user program AE setting should be "3."



D. Features of copy density adjustment

For the copy density adjustment, the image data shift function provided in the image process LSI is used.

List of the adjustment modes

Auto Mode	Brightness 1 step only
Manual Mode	Brightness 5 steps. Adjustment of only the center brightness is made.
Photo Mode	Brightness 5 steps. Adjustment of only the center brightness is made.
Manual T/S mode	Brightness 5 steps. Adjustment of only the center brightness is made.
T/S Auto mode	Brightness 1 step only

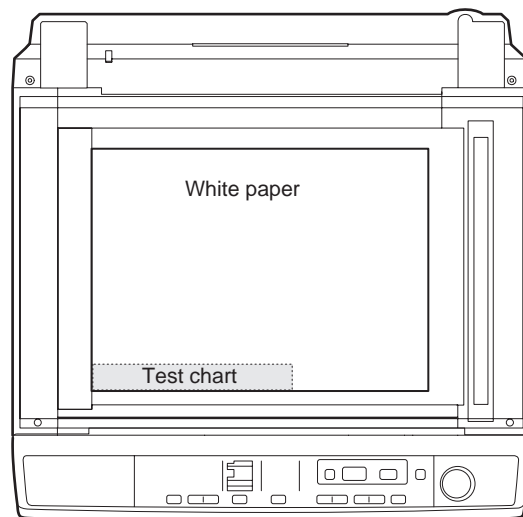
E. Copy density adjustment procedure

Use SIM 46-1 to set the copy density for each copy mode.

For selection of modes, use the copy mode select key.

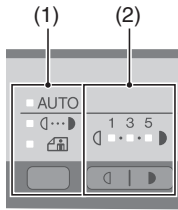
(1) Test chart (KODAK GRAY SCALE) setting

- 1) Place the test chart so that its edge is aligned with the A4 (Letter) reference line on the document table. Then place a A4 (14" x 8-1/2") white paper on the test chart and close the document cover.



(2) Perform the adjustment in each mode.

- Execute SIM 46-1.
- Select the mode to be adjusted with the exposure mode select key. Set the exposure level to 3 for all adjustment. (Except for the auto mode.)



- (1) Mode select key/display lamp
 (2) Exposure level select key/display lamp

Adjustment mode	Exposure mode display lamp	Gray chart adjustment level
Auto mode	Auto lamp ON	"3" is slightly copied.
Manual mode	Manual lamp ON	"3" is slightly copied.
Photo mode	Photo lamp ON	"3" is slightly copied.
Manual T/S mode	Manual lamp/Photo lamp ON	"3" is slightly copied.
Auto T/S mode	Auto lamp/Photo lamp ON	"3" is slightly copied.

- Make a copy.
 Check the adjustment level (shown in the above table) of the exposure test chart (KODAK Gray Scale).

	KODAK Gray Scale adjustment level										
Nontoner save mode	1	2	3	4	5	6	7	8	9	10	W
	Not copied.			Slightly copied.							
Toner save mode	1	2	3	4	5	6	7	8	9	10	W
	Not copied.			Slightly copied.							

(When too bright): Decrease the value displayed on the copy quantity display.

(When too dark): Increase the value displayed on the copy quantity display.

* The value can be set in the range of 1 - 99.

3. High voltage adjustment

A. Main charger (Grid bias)

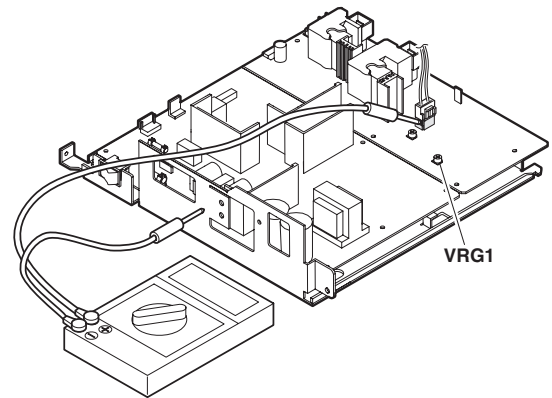
Note:

- Use a digital multi meter with internal resistance of 10MΩ or more measurement.
- After adjusting the grid LOW output, adjust the HIGH output. Do not reverse the sequence.

Procedures

- Set the digital multi meter range to DC700V.
- Set the positive side of the test rod to the connector CN11-3 (GRID) of high voltage section of the power PWB and set the negative side to the frame ground (power frame).
- Execute SIM 8-2. (The main charger output is supplied for 30 sec in the grid voltage HIGH output mode.)

- Adjust the control volume (VRG1) so that the output voltage is $580 \pm 12V$.



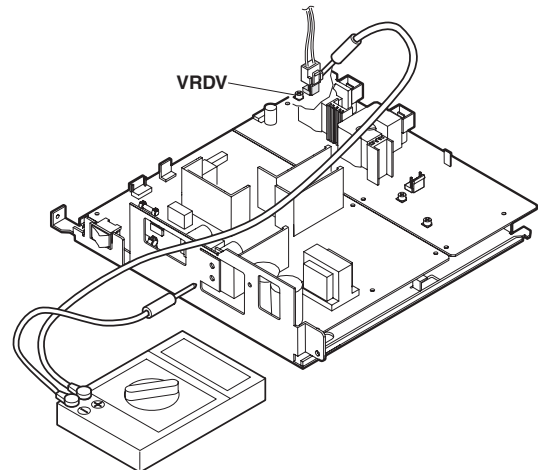
Caution: Be careful not to touch the sharp edge on the circumference of the metal frame for the power supply.

B. DV bias check

- Note:
- A digital multi meter with internal resistance of 1GΩ must be use for correct check.
 - The adjustment volume is locked, and no adjustment can be made.

Procedures

- Set the digital multi meter range to DC500V.
- Set the positive side of the test rod to the connector CN-10-1 (DV BIAS) and set the negative side to the frame ground (power frame).
- Execute SIM 8-1 to output the developing bias for 30sec, and check that the output is $-400 \pm 8V$.



Caution: Be careful not to touch the sharp edge on the circumference of the metal frame for the power supply.

4. Automatic black level correction

a. Cases when the adjustment is required

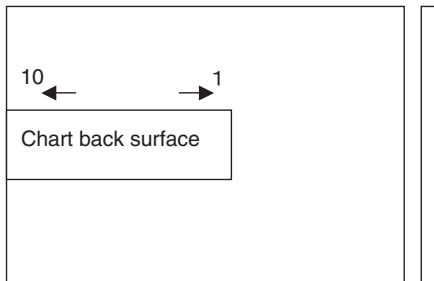
- 1) When the main PWB is replaced.
- 2) When the EEPROM in the main PWB is replaced.
- 3) When "U2" trouble occurs.
- 4) When repairing or replacing the optical section.

b. Adjustment procedure

Used to acquire the black level target value used for the black level adjustment of white balance.

When SIM 63-02 is executed, the current correction value is displayed in 3 digits of 12bit hexadecimal number.

Place the gray gradation chart (KODAK GRAY SCALE) used as the correction document so that the density 10 (black side) comes on the left side and that the chart is upside down at the center of the plate left center.



When START key is pressed, the mirror base unit scans the chart and calculates the correction value.

After completion of correction, the corrected value is displayed on the display section.

* Default: 0x60

[10] SIMULATION, TROUBLE CODES

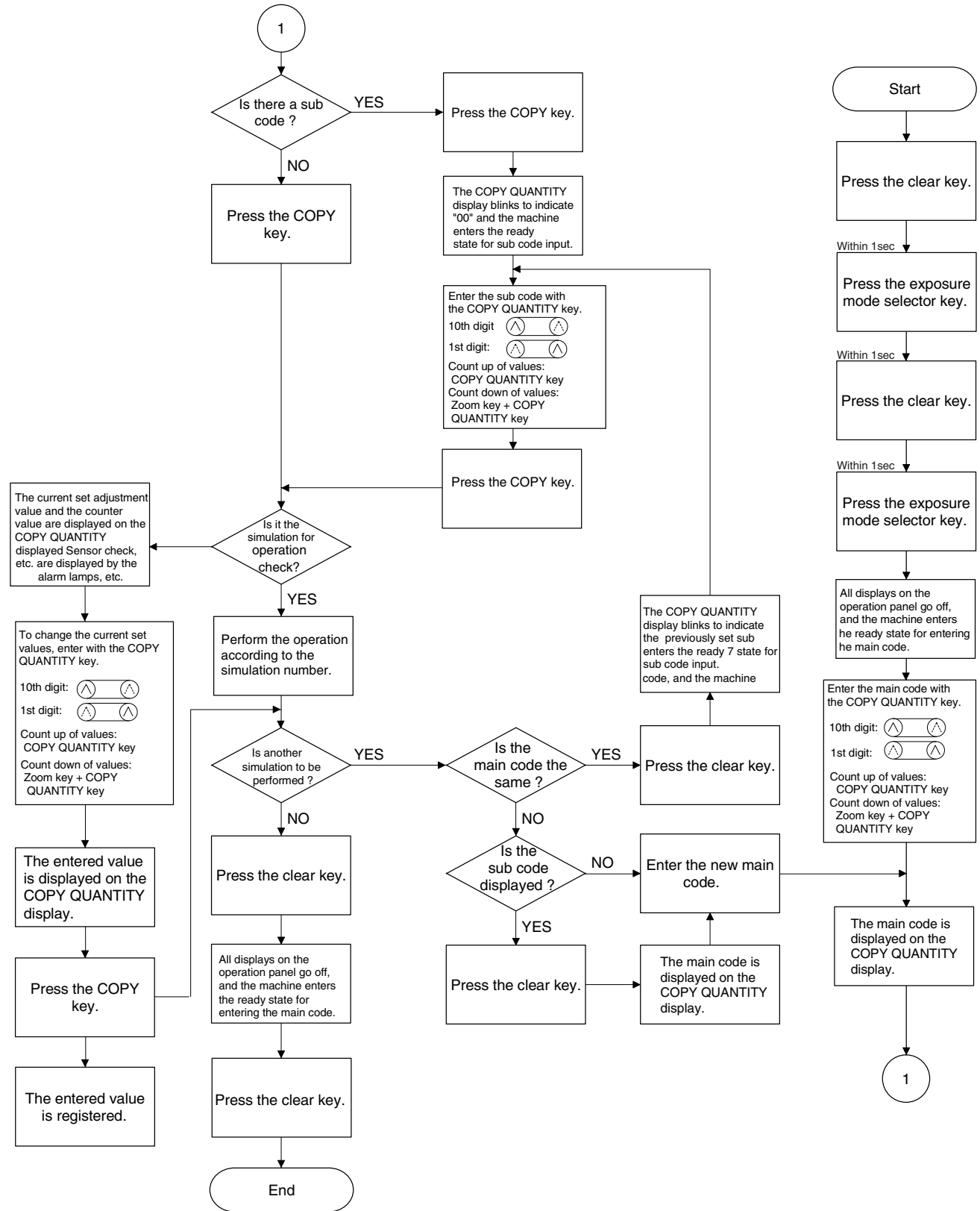
1. Entering the simulation mode

To enter the serviceman simulation mode, press the keys as follows:

Clear → Exposure select → Clear → Exposure select

To cancel the simulation mode, press the clear key.

Flow chart of entering the simulation mode



2. List of simulations

Sim No.	Kind of main code	Sub code	Operation
01	Optical system	01 02 06	Mirror scan operation Mirror home position sensor (MHPS) status display Aging of mirror scanning
02	ADF Individual load operation	01 02 03	Automatic Document Feeder (ADF) aging operation <ADF model only> ADF sensor status display <ADF model only> ADF motor ON <ADF model only>
05	Lamp ON check	01 02 03	Operation panel display check Fusing lamp, cooling fan operation check Copy lamp ON
06	Machine individual load operation	01 02	Paper feed solenoid ON Resist solenoid ON
07	Aging	01 06 08	Warm-up display and aging with jam Intermittent aging Shift to copy with the warm-up display.
08	High voltage output check	01 02 03 06	Developing bias Main charger (Grid high) Grid voltage (Low) Transfer charger
10	Toner motor operation check	NONE	Toner motor aging
14	Trouble reset	NONE	Cancel of troubles other than U2
16	U2 trouble reset	NONE	Cancel of U2 trouble
20	Maintenance counter clear	01	Maintenance counter clear
21	Maintenance cycle setting	01	Maintenance cycle setting
22	Counter display	01 02 04 05 06 08 12 13 14 17 18 19 21 22	Maintenance counter display Maintenance preset value display JAM total counter display Total counter display Developer counter display ADF counter display <ADF model only> Drum counter display CRUM type display ROM version display Copy counter display Printer counter display Scanner mode counter display <Scanner model only> Scanner counter display ADF JAM counter display <ADF model only>
24	Counter clear	01 04 06 07 08 09 13 14 15	JAM total counter clear ADF counter clear <ADF model only> Developer counter clear Drum counter clear Copy counter clear Printer counter clear Scanner counter clear ADF JAM total counter clear <ADF model only> Scanner mode counter clear <Scanner model only>
25	Main motor ON	01 10	Main motor operation check (Cooling fan motor rotation check) Polygon motor ON
26	Various setup	02 03 04 06	ADF setup Second cassette setup Machine duplex setup Destination setup

Sim No.	Kind of main code	Sub code	Operation
26	Various setup	07 20 30 37 39 40 42 43 54 62	Machine conditions check Rear edge void setup CE mark support control ON/OFF Cancel of stop at developer life over Memory capacity check Polygon motor OFF time setup (Time required for turning OFF after completion of printing) Transfer ON timing control setup Side void setup γ life correction setup Energy-save mode copy lamp setup
30	Sensor operation check (Standard provision)	01	Paper sensor status display
41	OC cover float detection	06 07	OC cover float detection level adjustment <ADF model only> OC cover float detection margin setting <ADF model only>
43	Fusing temperature setup	01 04 09 11 14 15	Fusing temperature setting (Normal copy) Fusing temperature setting in multi copy Fusing control setting for postcard-size paper Fusing temperature setting for postcard-size paper Fusing start temperature setting Postcard size paper fusing control cycle sync setting
46	Exposure adjustment	01 02 18 19 20 29 30 31 32	Copy density adjustment (300dpi) Copy density adjustment (600dpi) Image contrast adjustment (300dpi) Exposure mode setup ADF exposure correction <ADF model only> Image contrast adjustment (600dpi) AE limit adjustment Image sharpness adjustment Copier color reproduction setup
48	Magnification ratio correction	01 05	Front/rear (main scanning) direction and scan (sub scanning) direction magnification ratio adjustment The current ADF mode sub scan direction magnification ratio is displayed on the LCD/7seg. <ADF model only>
49	Program download	01	Flash ROM program writing mode
50	Lead edge adjustment	01 06 10 12	Lead edge image position Copy lead edge position adjustment (ADF) <ADF model only> Center offset adjustment Document off-center adjustment
51	Timing adjustment	02	Resist quantity adjustment
53	ADF scan adjustment	08	ADF scan position automatic adjustment <ADF model only>
61	Laser system operation	03	Polygon motor check (HSYNC output check)
63	Shading	01 02 12 13	Shading check Black level automatic correction Light quantity stabilization wait time setting Light quantity stabilization band setting
64	Self print	01	Self print
67	USB adjustment	50	USB receive speed adjustment (USB1.1)

3. Contents of simulations

Input method: Clear key → Exposure Select key → Clear key → Exposure Select key

Main code	Sub code	Content						
01	01	<p>Mirror scan operation (Operation/Procedure)</p> <p>1. When this simulation is executed, the mirror home position is detected.</p> <table border="1"> <thead> <tr> <th>Sensor name</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>Mirror home position sensor</td> <td>OPC drum cartridge replacement lamp</td> </tr> </tbody> </table> <p>2. When the START key is pressed, scanning is executed at the speed corresponding to the currently set copy magnification ratio. The copy magnification ratio can be arbitrarily set with the magnification ratio select key/zoom key.</p>	Sensor name	Display lamp	Mirror home position sensor	OPC drum cartridge replacement lamp		
	Sensor name	Display lamp						
	Mirror home position sensor	OPC drum cartridge replacement lamp						
02	<p>Mirror home position sensor (MHPS) status display The mirror home position sensor is monitored, and the sensor status is displayed as follows: (The lamp is lighted while the sensor is ON.) [Photoconductor drum cartridge replacement lamp]</p>							
06	<p>Aging of mirror scanning When the START key is pressed, the mirror base performs full scan at the speed of the set magnification ratio. After 3 sec, the mirror case performs full scan again. These procedures are repeated until the clear key is pressed. (When the START key is pressed once, the ready lamp keeps OFF.) The status of the mirror home position sensor is displayed with the photoconductor cartridge lamp. (The lamp is ON when the mirror is at the home position.) During aging, the copy lamp keeps ON.</p>							
02	01	<p>Automatic Document Feeder (ADF) aging operation <ADF model only> When START key is pressed, the set magnification ratio is obtained. For the ADF, the single surface document transport operation is performed. For the R-ADF, the duplex document transport operation is performed. Since, however, there is no required operating condition, the operation is not stopped even when a JAM occurs. The magnification ratio change and the operation status display are Similar to SIM 1-01.</p>						
	02	<p>ADF sensor status display <ADF model only> ON/OFF of the sensors in the ADF can be checked with the following lamps.</p> <table border="1"> <thead> <tr> <th>Display</th> <th>Sensor</th> </tr> </thead> <tbody> <tr> <td>Developer cartridge replacement lamp</td> <td>Document set detection (SPID)</td> </tr> <tr> <td>Jam lamp</td> <td>ADF document transport detection (SPPD)</td> </tr> </tbody> </table>	Display	Sensor	Developer cartridge replacement lamp	Document set detection (SPID)	Jam lamp	ADF document transport detection (SPPD)
	Display	Sensor						
Developer cartridge replacement lamp	Document set detection (SPID)							
Jam lamp	ADF document transport detection (SPPD)							
03	<p>ADF motor ON <ADF model only> (Operation/Procedure) When the START key is pressed, the ADF motor rotates for 10 sec at the speed corresponding to the currently set magnification ratio.</p>							
05	01	<p>Operation panel display check</p> <ul style="list-style-type: none"> When the START key is pressed, all LEDs (including 7-segment LEDs) on the operation panel are lighted. (LED check mode) When 1Up key is pressed, the LEDs on the operation panel are lighted individually from the top left to the bottom right in sequence. After completion of all individual lighting, all LEDs are lighted simultaneously. (The 7-segment LED lights the three-digit sections at the same time.) Individual lighting frequency ON: 300ms, OFF: 20ms When the CLEAR key is pressed, this simulation is terminated. When the START key is pressed in the LED check mode, the machine enters the Key input check mode. "Key input check mode" When the machine enters the Key input check mode, the value display section indicates "-- --." Every time any key on the operation panel is pressed, the entered value is added and displayed on the value display section. However, the keys that were pressed once are not counted again. When the START key is pressed, the entered value is added and displayed for 3 sec and all the LEDs are lighted. (LED lighting check mode) (Note for Key input check mode) Press the START key at the end. (If it is pressed in the middle of the process, the entered value up to that moment is displayed for 3 sec and the machine enters the LED lighting check mode. (ALL the LEDs are lighted.)) Multiple key inputs are ignored. 						
	02	<p>Fusing lamp, cooling fan operation check When the START key is pressed, the fusing lamp repeats operations of 500ms-ON and 500ms-OFF 5 times. During that time, the cooling fan motor rotates.</p>						
	03	<p>Copy lamp ON (Operation/Procedure) When the START key is pressed, the copy lamp is lighted for 5 sec.</p>						

Main code	Sub code	Content																			
06	01	Paper feed solenoid ON (Operation/Procedure) When the START key is pressed, the paper feed solenoid selected by the tray select key repeats ON (500ms) and OFF (500ms) 20 times.																			
	02	Resist solenoid ON (Operation/Procedure) When the START key is pressed, the resist solenoid (RRS) repeats ON (500ms) and OFF (500ms) 20 times.																			
07	01	Warm-up display and aging with jam (Operation/Procedure) 1. When the simulation is executed, warming up is started. 2. Warm-up time is counted and displayed every second on the copy quantity display. 3. After completion of warm-up, the time count is stopped and the ready lamp is lighted. 4. Press the clear key to clear the warm-up time display, set the copy quantity, and press the START key, and the machine will copy the set quantity repeatedly. This simulation is canceled by turning off the power or executing any simulation which performs hardware reset.																			
	06	Intermittent aging (Operation/Procedure) 1. When the simulation is executed, warming up is started. 2. After completion of warm-up, the ready lamp is lighted. 3. Set the copy quantity and press the START key, and the machine will copy the set quantity repeatedly. 4. After 3 sec of the interval time from completion of copying the set quantity, the machine will resume copying. 5. The above operation 4 is repeated. This simulation is canceled by turning off the power or executing any simulation which performs hardware reset.																			
	08	Shift to copy with the warm-up display. When the simulation code is entered, warming-up is started. The warming-up time is counted from 0 in the increment of 1 sec. The operation during count-up process is as stated below. When C key is pressed, the operation is terminated. (The 7-seg display indicates the sub code.) Warming-up operation is continued. After completion of warming-up, counting is terminated. (This is similar to SIM 07-01 without the aging function.)																			
08	01	Developing bias (Operation/Procedure) When the START key is pressed, the developing bias is outputted for 30 sec.																			
	02	Main charger (Grid high) (Operation/Procedure) When the START key is pressed, the main charger output is supplied for 30 sec in the grid voltage HIGH mode.																			
	03	Grid voltage (Low) (Operation/Procedure) When the START key is pressed, the main charger output is supplied for 30 sec in the grid voltage LOW mode.																			
	06	Transfer charger (Operation/Procedure) When the START key is pressed, the transfer charger output is supplied for 30 sec.																			
10	NONE	Toner motor aging (Operation/Procedure) When the START key is pressed, the toner motor output is supplied for 30 sec.																			
14	NONE	Cancel of troubles other than U2 (Operation/Procedure) After canceling the trouble, the simulation is also automatically canceled.																			
16	NONE	Cancel of U2 trouble (Operation/Procedure) 1. When the START key is pressed, the EEPROM total counter check sum is rewritten and the trouble is canceled. 2. After canceling the trouble, the simulation is also automatically canceled.																			
20	01	Maintenance counter clear When START key is pressed, the maintenance count value is cleared and "000,000" is displayed. The value (000,000) is displayed on the 7seg in 3 digits for each.																			
21	01	Maintenance cycle setting The currently set code of the maintenance cycle is displayed, and the newly set data are saved. Enter the code number with UP/UP key and press START key. The entered value is saved and the display returns to the sub code input standby state.																			
		<table border="1"> <thead> <tr> <th>Code number</th> <th>Setting</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>3,000 sheets</td> <td></td> </tr> <tr> <td>1</td> <td>6,000 sheets</td> <td></td> </tr> <tr> <td>2</td> <td>9,000 sheets</td> <td></td> </tr> <tr> <td>3</td> <td>13,000 sheets</td> <td></td> </tr> <tr> <td>4</td> <td>25,000 sheets</td> <td>Default</td> </tr> <tr> <td>5</td> <td>Free (999,999 sheets)</td> <td></td> </tr> </tbody> </table>	Code number	Setting	Remark	0	3,000 sheets		1	6,000 sheets		2	9,000 sheets		3	13,000 sheets		4	25,000 sheets	Default	5
Code number	Setting	Remark																			
0	3,000 sheets																				
1	6,000 sheets																				
2	9,000 sheets																				
3	13,000 sheets																				
4	25,000 sheets	Default																			
5	Free (999,999 sheets)																				

Main code	Sub code	Content												
22	01	Maintenance counter display When START key is pressed, the maintenance counter is displayed. The value (000,000) is displayed on the 7seg in 3 digits for each.												
	02	Maintenance preset value display When START key is pressed, the preset value (25,000 sheets, etc.) corresponding to the code set with SIM 21-01 is displayed. The value (000,000) is displayed on the 7seg in 3 digits for each.												
	04	JAM total counter display The display method is the same as the total count value display. <Display example: 12345> 012 → Blank → 345 → Blank → 012 0.7s 0.3s 0.7s 1.0s 0.7s												
	05	Total counter display The total count value is displayed in 3 digits X 2 times repeatedly.												
	06	Developer counter display When START key is pressed, the developer counter value is obtained and displayed. The value (000,000) is displayed on the 7seg in 3 digits for each.												
	08	ADF counter display <ADF model only> The display method is the same as the total count value display.												
	12	Drum counter display The display method is the same as the total count value display.												
	13	CRUM type display When START key is pressed, the CRUM type set (written) in the current CRUM chip is displayed. <table border="1" data-bbox="289 814 690 991"> <thead> <tr> <th>Code number</th> <th>CRUM type</th> </tr> </thead> <tbody> <tr> <td>00</td> <td>Not set</td> </tr> <tr> <td>01</td> <td>BTA-A</td> </tr> <tr> <td>02</td> <td>BTA-B</td> </tr> <tr> <td>03</td> <td>BTA-C</td> </tr> <tr> <td>99</td> <td>Conversion</td> </tr> </tbody> </table>	Code number	CRUM type	00	Not set	01	BTA-A	02	BTA-B	03	BTA-C	99	Conversion
	Code number	CRUM type												
	00	Not set												
	01	BTA-A												
	02	BTA-B												
	03	BTA-C												
	99	Conversion												
14	ROM version display The main code and the sub code of the ROM version is displayed on the value display section in 2 digits alternately. The display method is the same as the total count value display.													
17	Copy counter display The display method is the same as the total count value display.													
18	Printer counter display The display method is the same as the total count value display.													
19	Scanner mode counter display <Scanner model only> The display method is the same as the total count value display.													
21	Scanner counter display The display method is the same as the total count value display.													
22	ADF JAM counter display <ADF model only> The display method is the same as the total count value display.													
24	01	JAM total counter clear When the START key is pressed, the JAM total count value is reset to 0.												
	04	ADF counter clear <ADF model only> When the START key is pressed, the ADF count value is reset to 0.												
	06	Developer counter clear When START key is pressed, the developer counter value is cleared to 0. The value (000,000) is displayed on the 7seg in 3 digits for each.												
	07	Drum counter clear When the START key is pressed, the drum count value is reset to 0.												
	08	Copy counter clear When the START key is pressed, the copy count value is reset to 0.												
	09	Printer counter clear When the START key is pressed, the printer count value is reset to 0.												
	13	Scanner counter clear When the START key is pressed, the scanner count value is reset to 0.												
	14	ADF JAM total counter clear <ADF model only> When the START key is pressed, the ADF JAM total count value is reset to 0.												
	15	Scanner mode counter clear <Scanner model only> When the START key is pressed, the scanner mode counter is reset to 0.												

Main code	Sub code	Content								
25	01	<p>Main motor operation check (Cooling fan motor rotation check)</p> <p>When the START key is pressed, the main motor (as well as the duplex motor in the duplex model) is operated for 30 sec. If the developing unit is installed at that time, the developing bias, the main charger, and the grid are outputted together in order to avoid toner consumption. Since, in this case, laser discharge is required when stopping the motor, the polygon motor is rotated at the same time. If the developing unit is not installed, the above high voltage is not outputted and only the motor is rotated.</p> <p>☆ : Do not execute this simulation by forcibly turning ON the door ON/OFF switch.</p>								
	10	<p>Polygon motor ON (Operation/Procedure)</p> <p>When the START key is pressed, the polygon motor is operated for 30 sec.</p>								
26	02	<p>ADF setup</p> <p>When this simulation is executed, the current setup of the ADF code number is displayed. Enter the code number corresponding to the ADF and press the START key to enable the setup.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>ADF</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>ADF not installed</td> </tr> <tr> <td>1</td> <td>ADF installed</td> </tr> <tr> <td>2</td> <td>RADF installed</td> </tr> </tbody> </table>	Code number	ADF	0	ADF not installed	1	ADF installed	2	RADF installed
	Code number	ADF								
	0	ADF not installed								
	1	ADF installed								
	2	RADF installed								
	03	<p>Second cassette setup (Operation/Procedure)</p> <p>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.</p> <table border="1"> <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									
04	<p>Machine duplex setup (Operation/Procedure)</p> <p>1. When this simulation is executed, the currently set duplex code number is displayed. 2. Enter the code number corresponding to the duplex and press the START key, and the setup will be changed.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Duplex</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Without Duplex</td> </tr> <tr> <td>1</td> <td>With Duplex</td> </tr> </tbody> </table>	Code number	Duplex	0	Without Duplex	1	With Duplex			
Code number	Duplex									
0	Without Duplex									
1	With Duplex									
06	<p>Destination setup</p> <p>When this simulation is executed, the current setup of the destination code number is displayed. Enter the code number corresponding to the destination and press the START key to enable the setup.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Destination</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Inch series</td> </tr> <tr> <td>1</td> <td>AB series</td> </tr> </tbody> </table>	Code number	Destination	0	Inch series	1	AB series			
Code number	Destination									
0	Inch series									
1	AB series									
07	<p>Machine conditions check</p> <p>When this simulation is executed, the current machine setup is displayed.</p> <table border="1"> <thead> <tr> <th>CPM</th> <th>Copy quantity display</th> </tr> </thead> <tbody> <tr> <td>20 cpm</td> <td>20</td> </tr> </tbody> </table>	CPM	Copy quantity display	20 cpm	20					
CPM	Copy quantity display									
20 cpm	20									
20	<p>Rear edge void setup</p> <p>When this simulation is executed, the current setup of the rear edge void code number is displayed. Enter the code number corresponding to the rear edge void and press the START key to enable the setup.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Rear edge void setup</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Rear edge void not provided</td> </tr> <tr> <td>1</td> <td>Rear edge void provided * Default</td> </tr> </tbody> </table>	Code number	Rear edge void setup	0	Rear edge void not provided	1	Rear edge void provided * Default			
Code number	Rear edge void setup									
0	Rear edge void not provided									
1	Rear edge void provided * Default									
30	<p>CE mark support control ON/OFF</p> <p>When this simulation is executed, the current setup of the CE mark support code number is displayed. Enter the code number corresponding to the CE mark support setup and press the START key to enable the setup.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>CE mark support setup</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>CE mark support control OFF * Default (100V series)</td> </tr> <tr> <td>1</td> <td>CE mark support control ON</td> </tr> </tbody> </table> <p>The default for CE-support 200V series is "1."</p>	Code number	CE mark support setup	0	CE mark support control OFF * Default (100V series)	1	CE mark support control ON			
Code number	CE mark support setup									
0	CE mark support control OFF * Default (100V series)									
1	CE mark support control ON									

Main code	Sub code	Content																																																
26	37	<p>Cancel of stop at developer life over When this simulation is executed, the current setting is displayed. Enter the code number and press START key to change the setting.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Setting</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Stop at developer life over</td> </tr> <tr> <td>1</td> <td>Cancel of stop at developer life over</td> </tr> </tbody> </table>	Code number	Setting	0	Stop at developer life over	1	Cancel of stop at developer life over																																										
Code number	Setting																																																	
0	Stop at developer life over																																																	
1	Cancel of stop at developer life over																																																	
	39	<p>Memory capacity check When this simulation is executed, the current memory capacity is displayed.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Setup</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>8 Mbyte</td> </tr> <tr> <td>16</td> <td>16 Mbyte</td> </tr> </tbody> </table>	Code number	Setup	8	8 Mbyte	16	16 Mbyte																																										
Code number	Setup																																																	
8	8 Mbyte																																																	
16	16 Mbyte																																																	
	40	<p>Polygon motor OFF time setup (Time required for turning OFF after completion of printing) When this simulation is executed, the current setup of the code number is displayed. Enter the code number and press the START key to enable the setup.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Setup</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0 sec</td> </tr> <tr> <td>1</td> <td>30 sec * Default</td> </tr> <tr> <td>2</td> <td>60 sec</td> </tr> <tr> <td>3</td> <td>90 sec</td> </tr> </tbody> </table>	Code number	Setup	0	0 sec	1	30 sec * Default	2	60 sec	3	90 sec																																						
Code number	Setup																																																	
0	0 sec																																																	
1	30 sec * Default																																																	
2	60 sec																																																	
3	90 sec																																																	
	42	<p>Transfer ON timing control setup (Operation/Procedure)</p> <ol style="list-style-type: none"> When this simulation is executed, the currently set code number is displayed. Enter the code number and press the START key, and the setting will be changed. (For any number different from the following ones, the default time is automatically set.) <table border="1"> <thead> <tr> <th>Code number</th> <th>Setting</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Default (236 msec)</td> </tr> <tr> <td>1</td> <td>-20 msec</td> </tr> <tr> <td>2</td> <td>-18 msec</td> </tr> <tr> <td>3</td> <td>-16 msec</td> </tr> <tr> <td>4</td> <td>-14 msec</td> </tr> <tr> <td>5</td> <td>-12 msec</td> </tr> <tr> <td>6</td> <td>-10 msec</td> </tr> <tr> <td>7</td> <td>-8 msec</td> </tr> <tr> <td>8</td> <td>-6 msec</td> </tr> <tr> <td>9</td> <td>-4 msec</td> </tr> <tr> <td>10</td> <td>-2 msec</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Code number</th> <th>Setting</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>Default (236 msec)</td> </tr> <tr> <td>12</td> <td>+2 msec</td> </tr> <tr> <td>13</td> <td>+4 msec</td> </tr> <tr> <td>14</td> <td>+6 msec</td> </tr> <tr> <td>15</td> <td>+8 msec</td> </tr> <tr> <td>16</td> <td>+10 msec</td> </tr> <tr> <td>17</td> <td>+12 msec</td> </tr> <tr> <td>18</td> <td>+14 msec</td> </tr> <tr> <td>19</td> <td>+16 msec</td> </tr> <tr> <td>20</td> <td>+18 msec</td> </tr> <tr> <td>21</td> <td>+20 msec</td> </tr> </tbody> </table>	Code number	Setting	0	Default (236 msec)	1	-20 msec	2	-18 msec	3	-16 msec	4	-14 msec	5	-12 msec	6	-10 msec	7	-8 msec	8	-6 msec	9	-4 msec	10	-2 msec	Code number	Setting	11	Default (236 msec)	12	+2 msec	13	+4 msec	14	+6 msec	15	+8 msec	16	+10 msec	17	+12 msec	18	+14 msec	19	+16 msec	20	+18 msec	21	+20 msec
Code number	Setting																																																	
0	Default (236 msec)																																																	
1	-20 msec																																																	
2	-18 msec																																																	
3	-16 msec																																																	
4	-14 msec																																																	
5	-12 msec																																																	
6	-10 msec																																																	
7	-8 msec																																																	
8	-6 msec																																																	
9	-4 msec																																																	
10	-2 msec																																																	
Code number	Setting																																																	
11	Default (236 msec)																																																	
12	+2 msec																																																	
13	+4 msec																																																	
14	+6 msec																																																	
15	+8 msec																																																	
16	+10 msec																																																	
17	+12 msec																																																	
18	+14 msec																																																	
19	+16 msec																																																	
20	+18 msec																																																	
21	+20 msec																																																	
	43	<p>Side void setup (Operation/Procedure)</p> <ol style="list-style-type: none"> When this simulation is executed, the currently set code number of the side void amount is displayed. Enter the code number and press the START key. The setting is changed. <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																																																	
	54	<p>γ life correction setup (Operation/Procedure)</p> <ol style="list-style-type: none"> When this simulation is executed, the currently set code number is displayed. Enter the code number and press the START key. The setting is changed. <table border="1"> <thead> <tr> <th>Code number</th> <th>γ life correction</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>OFF</td> </tr> <tr> <td>1</td> <td>ON * Default</td> </tr> </tbody> </table>	Code number	γ life correction	0	OFF	1	ON * Default																																										
Code number	γ life correction																																																	
0	OFF																																																	
1	ON * Default																																																	

Main code	Sub code	Content																										
26	62	<p>Energy-save mode copy lamp setup Used to set half-ON (50%)/OFF of the copy lamp in the pre-heat mode. When this simulation is executed, the current setup of the code number is displayed. Enter the code number and press the START key to enable the setup.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Setup</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Copy lamp OFF</td> </tr> <tr> <td>1</td> <td>Copy lamp half-ON (50%) * Default</td> </tr> </tbody> </table>	Code number	Setup	0	Copy lamp OFF	1	Copy lamp half-ON (50%) * Default																				
Code number	Setup																											
0	Copy lamp OFF																											
1	Copy lamp half-ON (50%) * Default																											
30	01	<p>Paper sensor status display Indicates the paper sensor status using the lamps on the operation panel.</p> <table border="1"> <thead> <tr> <th>Sensor name</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>Before-resist paper sensor (PPD1)</td> <td>Developer cartridge replacement lamp</td> </tr> <tr> <td>Fusing section paper sensor (PPD2)</td> <td>JAM lamp</td> </tr> <tr> <td>Paper exit sensor (POD)</td> <td>Photoconductor cartridge replacement lamp</td> </tr> <tr> <td>2nd CS paper sensor (PPD3)</td> <td>2nd cassette lamp</td> </tr> <tr> <td>New drum cartridge sensor (PUIS)</td> <td>Zoom lamp</td> </tr> </tbody> </table>	Sensor name	Display lamp	Before-resist paper sensor (PPD1)	Developer cartridge replacement lamp	Fusing section paper sensor (PPD2)	JAM lamp	Paper exit sensor (POD)	Photoconductor cartridge replacement lamp	2nd CS paper sensor (PPD3)	2nd cassette lamp	New drum cartridge sensor (PUIS)	Zoom lamp														
Sensor name	Display lamp																											
Before-resist paper sensor (PPD1)	Developer cartridge replacement lamp																											
Fusing section paper sensor (PPD2)	JAM lamp																											
Paper exit sensor (POD)	Photoconductor cartridge replacement lamp																											
2nd CS paper sensor (PPD3)	2nd cassette lamp																											
New drum cartridge sensor (PUIS)	Zoom lamp																											
41	06	<p>OC cover float detection level adjustment <ADF model only> When this simulation is executed, the current set value is displayed. When START key is pressed, the mirror base unit moves to the ADF scanning position and the OC cover float detection level (number of pixels between black lines) is acquired and displayed. The value (0000) is displayed on the 7seg in 2 digits for each. When the mirror base unit returns to the home position, the acquired value is displayed. If the value is not acquired, an error is displayed as shown below. (Default: 0) The status display is as shown below. The JAM lamp is lighted. (The 7seg display remains to the original value.) Note that the OC cover must be closed when executing this simulation. * When the value is 0, float detection is not performed in a normal job. When C key is pressed, the display returns to the sub code input standby state.</p>																										
	07	<p>OC cover float detection margin setting <ADF model only> For the number of pixels between black markers on the ADF scanning position saved in SIM 41-06 (OC cover float detection level adjustment), if the number of pixels between the markers when processing float detection is less than the number of pixels set with this simulation, it is judged as the float error. In addition, if the set value of this simulation is 0, no float error occurs. When this simulation is executed, the current set value is displayed. Enter the adjustment value with UP/UP key, and press START key to save the entered value. The display returns to the sub code input standby mode. Set range: 0 – 99 Default: 30 (30 pixels)</p>																										
43	01	<p>Fusing temperature setting (Normal copy) Used to set the fusing temperature of 3rd or later sheet. (For 1st and 2nd sheets, SIM 43-14 is used.) When this simulation is executed, the currently set code number is displayed. Enter the code number with UP/UP key and press START key. The entered value is saved and the display returns to the sub code input standby state. The exposure select key is used to select the mode. The set value of the selected mode is displayed on the 7seg.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Set temperature (°C)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>170</td> </tr> <tr> <td>1</td> <td>175</td> </tr> <tr> <td>2</td> <td>180</td> </tr> <tr> <td>3</td> <td>185</td> </tr> <tr> <td>4</td> <td>190</td> </tr> <tr> <td>5</td> <td>195 (* Default)</td> </tr> <tr> <td>6</td> <td>200</td> </tr> <tr> <td>7</td> <td>205</td> </tr> <tr> <td>8</td> <td>210</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Mode</th> <th>Lamp ON</th> </tr> </thead> <tbody> <tr> <td>Main cassette paper feed & 2nd cassette paper feed</td> <td>AE mode lamp</td> </tr> <tr> <td>Manual paper feed</td> <td>TEXT mode lamp</td> </tr> </tbody> </table> <p>* The cassette feed and the manual feed are controlled similarly.</p>	Code number	Set temperature (°C)	0	170	1	175	2	180	3	185	4	190	5	195 (* Default)	6	200	7	205	8	210	Mode	Lamp ON	Main cassette paper feed & 2nd cassette paper feed	AE mode lamp	Manual paper feed	TEXT mode lamp
Code number	Set temperature (°C)																											
0	170																											
1	175																											
2	180																											
3	185																											
4	190																											
5	195 (* Default)																											
6	200																											
7	205																											
8	210																											
Mode	Lamp ON																											
Main cassette paper feed & 2nd cassette paper feed	AE mode lamp																											
Manual paper feed	TEXT mode lamp																											

Main code	Sub code	Content																													
43	04	<p>Fusing temperature setting in multi copy From the 20th sheet and later, the fusing temperature is changed over from the level set with SIM 43-1 to the level set with this simulation. When this simulation is executed, the currently set code number is displayed. Enter the code number with UP/UP key and press START key. The entered value is saved and the display returns to the sub code input standby state. The exposure select key is used to select the mode. The set value of the selected mode is displayed on the 7seg.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Set temperature (°C)</th> </tr> </thead> <tbody> <tr><td>0</td><td>165</td></tr> <tr><td>1</td><td>170</td></tr> <tr><td>2</td><td>175</td></tr> <tr><td>3</td><td>180</td></tr> <tr><td>4</td><td>185</td></tr> <tr><td>5</td><td>190</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Mode</th> <th>Lamp ON</th> <th>Default</th> </tr> </thead> <tbody> <tr> <td>Main cassette paper feed & 2nd cassette paper feed</td> <td>AE mode lamp</td> <td>3</td> </tr> <tr> <td>Manual paper feed</td> <td>TEXT mode lamp</td> <td>3</td> </tr> <tr> <td>Main cassette paper feed & 2nd cassette paper feed (small-size)</td> <td>PHOTO mode lamp</td> <td>1</td> </tr> <tr> <td>Manual paper feed (small-size)</td> <td>AE, TEXT mode lamp</td> <td>1</td> </tr> </tbody> </table> <p>* The cassette feed and the manual feed are controlled similarly.</p>	Code number	Set temperature (°C)	0	165	1	170	2	175	3	180	4	185	5	190	Mode	Lamp ON	Default	Main cassette paper feed & 2nd cassette paper feed	AE mode lamp	3	Manual paper feed	TEXT mode lamp	3	Main cassette paper feed & 2nd cassette paper feed (small-size)	PHOTO mode lamp	1	Manual paper feed (small-size)	AE, TEXT mode lamp	1
Code number	Set temperature (°C)																														
0	165																														
1	170																														
2	175																														
3	180																														
4	185																														
5	190																														
Mode	Lamp ON	Default																													
Main cassette paper feed & 2nd cassette paper feed	AE mode lamp	3																													
Manual paper feed	TEXT mode lamp	3																													
Main cassette paper feed & 2nd cassette paper feed (small-size)	PHOTO mode lamp	1																													
Manual paper feed (small-size)	AE, TEXT mode lamp	1																													
	09	<p>Fusing control setting for postcard-size paper When this simulation is executed, the currently set code number is displayed. Enter the code number and press START key to save the setting.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Temperature shift (°C)</th> </tr> </thead> <tbody> <tr><td>0</td><td>Cancel * Default</td></tr> <tr><td>1</td><td>Setting</td></tr> </tbody> </table>	Code number	Temperature shift (°C)	0	Cancel * Default	1	Setting																							
Code number	Temperature shift (°C)																														
0	Cancel * Default																														
1	Setting																														
	11	<p>Fusing temperature setting for postcard-size paper When this simulation is executed, the current set value is displayed. Press UP/UP key to select the setting, and press START key to write into the EEPROM. The display returns to the sub code input standby mode.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Temperature shift (°C)</th> </tr> </thead> <tbody> <tr><td>0</td><td>160</td></tr> <tr><td>1</td><td>165</td></tr> <tr><td>2</td><td>170</td></tr> <tr><td>3</td><td>175</td></tr> <tr><td>4</td><td>180</td></tr> <tr><td>5</td><td>185</td></tr> <tr><td>6</td><td>190</td></tr> <tr><td>7</td><td>195 * Default</td></tr> <tr><td>8</td><td>200</td></tr> </tbody> </table>	Code number	Temperature shift (°C)	0	160	1	165	2	170	3	175	4	180	5	185	6	190	7	195 * Default	8	200									
Code number	Temperature shift (°C)																														
0	160																														
1	165																														
2	170																														
3	175																														
4	180																														
5	185																														
6	190																														
7	195 * Default																														
8	200																														
	14	<p>Fusing start temperature setting The fusing temperature when starting printing (first – second sheet) is set. When this simulation is executed, the currently set code number is displayed. When the code number is entered with UP/UP key and the START key is pressed, setting is changed over. The exposure select key is used to select the mode. The set value of the selected mode is displayed on the 7seg.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Set temperature (°C)</th> </tr> </thead> <tbody> <tr><td>0</td><td>160</td></tr> <tr><td>1</td><td>165</td></tr> <tr><td>2</td><td>170</td></tr> <tr><td>3</td><td>175</td></tr> <tr><td>4</td><td>180</td></tr> <tr><td>5</td><td>185</td></tr> <tr><td>6</td><td>190</td></tr> <tr><td>7</td><td>195 (* Default)</td></tr> <tr><td>8</td><td>200</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Mode</th> <th>Lamp ON</th> </tr> </thead> <tbody> <tr> <td>Main cassette paper feed & 2nd cassette paper feed</td> <td>AE mode lamp</td> </tr> <tr> <td>Manual paper feed</td> <td>TEXT mode lamp</td> </tr> </tbody> </table> <p>* The cassette feed and the manual feed are controlled similarly.</p>	Code number	Set temperature (°C)	0	160	1	165	2	170	3	175	4	180	5	185	6	190	7	195 (* Default)	8	200	Mode	Lamp ON	Main cassette paper feed & 2nd cassette paper feed	AE mode lamp	Manual paper feed	TEXT mode lamp			
Code number	Set temperature (°C)																														
0	160																														
1	165																														
2	170																														
3	175																														
4	180																														
5	185																														
6	190																														
7	195 (* Default)																														
8	200																														
Mode	Lamp ON																														
Main cassette paper feed & 2nd cassette paper feed	AE mode lamp																														
Manual paper feed	TEXT mode lamp																														

Main code	Sub code	Content																	
43	15	<p>Postcard size paper fusing control cycle sync setting When this simulation is executed, the currently set code number is displayed. Change the setting with UP/UP key, and press START key to write the setting to the EEPROM. (Setting range: 0 – 20, default: 0)</p> <ul style="list-style-type: none"> * When set to "0," the setting is canceled and the fusing temperature control and the paper pass timing are not synchronized. The conventional control (control same as the other paper) is performed. * When set to "1" – "20," the postcard pass is synchronized with the fusing temperature control cycle, providing stable fusing performance. However, CPM is reduced. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Code number</th> <th>Sync setting</th> <th>Fusing heater lamp OFF timing temperature</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Cancel</td> <td>– (* Default)</td> </tr> <tr> <td>1</td> <td rowspan="5">Setting</td> <td>+0.5°C</td> </tr> <tr> <td>:</td> <td>:</td> </tr> <tr> <td>6</td> <td>+3.0°C</td> </tr> <tr> <td>:</td> <td>:</td> </tr> <tr> <td>20</td> <td>+10.0°C</td> </tr> </tbody> </table> <p>* When set to "1" – "20," if "Set value x 0.5°C + Temperature control level," the fusing heater lamp is turned OFF.</p>	Code number	Sync setting	Fusing heater lamp OFF timing temperature	0	Cancel	– (* Default)	1	Setting	+0.5°C	:	:	6	+3.0°C	:	:	20	+10.0°C
Code number	Sync setting	Fusing heater lamp OFF timing temperature																	
0	Cancel	– (* Default)																	
1	Setting	+0.5°C																	
:		:																	
6		+3.0°C																	
:		:																	
20		+10.0°C																	
46	01	<p>Copy density adjustment (300dpi) Used to set the copy density in each mode. (Operating procedure) When this simulation is executed, warm-up and shading operations are performed and the current setup is displayed in two digits (default: 50). Change the setup value with the copy quantity keys. Press the START key and a copy is made according to the new setup. The greater the setup value is, the darker the copy is. The smaller the setup value is, the brighter the copy is. Only EXP.3 copy is made in this simulation. When set to a darker level, Exp.1 and Exp.5 copies also become darker. When set to a brighter level, Exp.1 and Exp.5 copies also become brighter. Press the CLEAR key to save the setup and exit from the simulation mode. The exposure select key is used to select the mode. The set value of the selected mode is displayed on the 7seg. (adjustment range: 1 – 99)</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Copy mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>AE mode (300dpi)</td> <td>AE mode lamp</td> </tr> <tr> <td>TEXT mode (300dpi)</td> <td>TEXT mode lamp</td> </tr> <tr> <td>PHOTO mode</td> <td>PHOTO mode lamp</td> </tr> <tr> <td>TS mode (TEXT) (300dpi)</td> <td>TEXT mode lamp & PHOTO mode lamp</td> </tr> <tr> <td>TS mode (AE) (300dpi)</td> <td>AE mode lamp & PHOTO mode lamp</td> </tr> </tbody> </table>	Copy mode	Display lamp	AE mode (300dpi)	AE mode lamp	TEXT mode (300dpi)	TEXT mode lamp	PHOTO mode	PHOTO mode lamp	TS mode (TEXT) (300dpi)	TEXT mode lamp & PHOTO mode lamp	TS mode (AE) (300dpi)	AE mode lamp & PHOTO mode lamp					
Copy mode	Display lamp																		
AE mode (300dpi)	AE mode lamp																		
TEXT mode (300dpi)	TEXT mode lamp																		
PHOTO mode	PHOTO mode lamp																		
TS mode (TEXT) (300dpi)	TEXT mode lamp & PHOTO mode lamp																		
TS mode (AE) (300dpi)	AE mode lamp & PHOTO mode lamp																		
	02	<p>Copy density adjustment (600dpi) Used to set the copy density in each mode. (Operation/Procedure) When this simulation is executed, the machine performs warm-up and shading, and the current setup value is displayed in two digits. (Default: 50) Use the copy quantity key to change the setup value, and press the START key to make a copy with the new setup. The greater the setup value is, the darker the copy is, and vice versa. Only EXP.3 copy is made. If it is set to a darker density, EXP.1 and EXP.5 copies also become darker. If it is set to a brighter density, they also become brighter. When the CLEAR key is pressed, the entered setup value is saved and the simulation is terminated. The exposure select key is used to select the mode. The set value of the selected mode is displayed on the 7seg. (adjustment range: 1 – 99)</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Copy mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>AE mode (600dpi)</td> <td>AE mode lamp</td> </tr> <tr> <td>TEXT mode (600dpi)</td> <td>TEXT mode lamp</td> </tr> <tr> <td>PHOTO mode</td> <td>PHOTO mode lamp</td> </tr> <tr> <td>TS mode (TEXT) (600dpi)</td> <td>TEXT mode lamp & PHOTO mode lamp</td> </tr> <tr> <td>TS mode (AE) (600dpi)</td> <td>AE mode lamp & PHOTO mode lamp</td> </tr> </tbody> </table>	Copy mode	Display lamp	AE mode (600dpi)	AE mode lamp	TEXT mode (600dpi)	TEXT mode lamp	PHOTO mode	PHOTO mode lamp	TS mode (TEXT) (600dpi)	TEXT mode lamp & PHOTO mode lamp	TS mode (AE) (600dpi)	AE mode lamp & PHOTO mode lamp					
Copy mode	Display lamp																		
AE mode (600dpi)	AE mode lamp																		
TEXT mode (600dpi)	TEXT mode lamp																		
PHOTO mode	PHOTO mode lamp																		
TS mode (TEXT) (600dpi)	TEXT mode lamp & PHOTO mode lamp																		
TS mode (AE) (600dpi)	AE mode lamp & PHOTO mode lamp																		

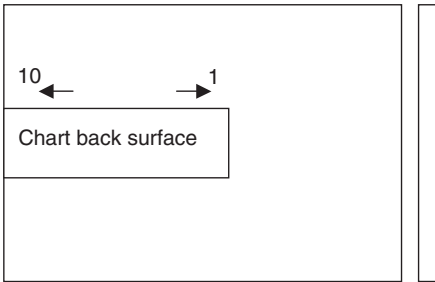
Main code	Sub code	Content																																									
46	18	<p>Image contrast adjustment (300dpi) Used to set the image contrast in each mode. (Operating procedure) When this simulation is executed, warm-up and shading operations are performed and the current setup value is displayed in two digits. (Default: 50) Change the setup value with the copy quantity keys. Press the START key and a copy is made according to the new setup. The greater the setup value is, the higher the contrast is. The smaller the setup value is, the lower the contrast is. Though only EXP.3 copy is made in this simulation, the contrast levels in EXP.1 and EXP.5 are also changed. Press the CLEAR key to save the setup and exit from the simulation mode. The exposure select key is used to select the mode. The set value of the selected mode is displayed on the 7seg. (adjustment range: 1 – 99)</p> <table border="1"> <thead> <tr> <th>Copy mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>AE mode (300dpi)</td> <td>AE mode lamp</td> </tr> <tr> <td>TEXT mode (300dpi)</td> <td>TEXT mode lamp</td> </tr> <tr> <td>PHOTO mode</td> <td>PHOTO mode lamp</td> </tr> <tr> <td>TS mode (TEXT) (300dpi)</td> <td>TEXT mode lamp & PHOTO mode lamp</td> </tr> <tr> <td>TS mode (AE) (300dpi)</td> <td>AE mode lamp & PHOTO mode lamp</td> </tr> </tbody> </table>	Copy mode	Display lamp	AE mode (300dpi)	AE mode lamp	TEXT mode (300dpi)	TEXT mode lamp	PHOTO mode	PHOTO mode lamp	TS mode (TEXT) (300dpi)	TEXT mode lamp & PHOTO mode lamp	TS mode (AE) (300dpi)	AE mode lamp & PHOTO mode lamp																													
Copy mode	Display lamp																																										
AE mode (300dpi)	AE mode lamp																																										
TEXT mode (300dpi)	TEXT mode lamp																																										
PHOTO mode	PHOTO mode lamp																																										
TS mode (TEXT) (300dpi)	TEXT mode lamp & PHOTO mode lamp																																										
TS mode (AE) (300dpi)	AE mode lamp & PHOTO mode lamp																																										
	19	<p>Exposure mode setup <γ table setup or AE operation mode setup> When this simulation is executed, the current setup of the gamma table code number is displayed. Enter the code number corresponding to desired gamma table, and press the START key or the exposure select key to enable the setup.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>γ table</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Image quality priority mode</td> </tr> <tr> <td>2</td> <td>Toner consumption priority mode * Default</td> </tr> </tbody> </table> <p>When the exposure select key is pressed during setup of the gamma table, the mode is switched to the AE operation setup mode and the current setup of the AE operation mode code number is displayed. (Default: 0) Enter the code number corresponding to your desired AE operation mode, and press the START key or the exposure select key to switch the setup. (When the exposure select key is pressed, the mode is returned to the gamma table setup mode.)</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>AE operation mode</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Fixed process * Default</td> </tr> <tr> <td>1</td> <td>Real time process</td> </tr> </tbody> </table> <p><PHOTO image process setting> When the exposure select key is pressed in the AE operation mode setting, the mode is changed to the PHOTO image process setting and the currently set code number of the PHOTO image process setting is displayed. (Default: 0) When the code number corresponding to the desired Photo image process setting is entered and the exposure select key is pressed, the mode is changed over.</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>Code number</th> <th>Setting content</th> <th>Display lamp</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td rowspan="2">γ</td> <td>1</td> <td>Image priority mode</td> <td rowspan="2">OFF</td> <td>Default : NAD, ARD</td> </tr> <tr> <td>2</td> <td>Toner consumption priority mode</td> <td>Default : BRAD, ASD, ASU, MJD</td> </tr> <tr> <td rowspan="2">AE</td> <td>0</td> <td>Lead edge stop</td> <td rowspan="2">AE ON</td> <td>Default</td> </tr> <tr> <td>1</td> <td>Real time process</td> <td></td> </tr> <tr> <td rowspan="2">PHOTO</td> <td>1</td> <td>Error diffusion process</td> <td rowspan="2">PHOTO ON</td> <td>Default</td> </tr> <tr> <td>2</td> <td>Dither process</td> <td></td> </tr> </tbody> </table>	Code number	γ table	1	Image quality priority mode	2	Toner consumption priority mode * Default	Code number	AE operation mode	0	Fixed process * Default	1	Real time process	Mode	Code number	Setting content	Display lamp	Remark	γ	1	Image priority mode	OFF	Default : NAD, ARD	2	Toner consumption priority mode	Default : BRAD, ASD, ASU, MJD	AE	0	Lead edge stop	AE ON	Default	1	Real time process		PHOTO	1	Error diffusion process	PHOTO ON	Default	2	Dither process	
Code number	γ table																																										
1	Image quality priority mode																																										
2	Toner consumption priority mode * Default																																										
Code number	AE operation mode																																										
0	Fixed process * Default																																										
1	Real time process																																										
Mode	Code number	Setting content	Display lamp	Remark																																							
γ	1	Image priority mode	OFF	Default : NAD, ARD																																							
	2	Toner consumption priority mode		Default : BRAD, ASD, ASU, MJD																																							
AE	0	Lead edge stop	AE ON	Default																																							
	1	Real time process																																									
PHOTO	1	Error diffusion process	PHOTO ON	Default																																							
	2	Dither process																																									
	20	<p>ADF exposure correction <ADF model only> Used to adjust the exposure correction quantity in the ADF mode by adjusting the differential of Vref voltage for the OC mode. (Operating procedure) When this simulation is executed, the current setup is displayed. Enter the adjustment value and press the START key to enable the setup and make a copy. When the CLEAR key is pressed, the entered value is saved and the simulation mode is terminated. * The greater the value is the darker the exposure is. The smaller the value is, the brighter the exposure is.</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>ADF</td> <td>TEXT mode lamp</td> </tr> </tbody> </table>	Mode	Display lamp	ADF	TEXT mode lamp																																					
Mode	Display lamp																																										
ADF	TEXT mode lamp																																										

Main code	Sub code	Content																				
46	29	<p>Image contrast adjustment (600dpi) Used to set the contrast in each mode. (Operation/Procedure) When this simulation is executed, the machine performs warm-up and shading, and the current setup value is displayed in two digits. (Default: 50) Use the copy quantity keys to change the setup value, and press the START key to make a copy with the new setup. The greater the setup value is, the greater the contrast is, and vice versa. Only EXP.3 copy is made, however, EXP.1 contrast and EXP.5 contrast are also changed accordingly. When the CLEAR key is pressed, the entered setup value is saved and the simulation is terminated. The exposure select key is used to select the mode. The set value of the selected mode is displayed on the 7seg. (Setup range: 1 – 99)</p> <table border="1"> <thead> <tr> <th>Copy mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>AE mode (600dpi)</td> <td>AE mode lamp</td> </tr> <tr> <td>TEXT mode (600dpi)</td> <td>TEXT mode lamp</td> </tr> <tr> <td>PHOTO mode</td> <td>PHOTO mode lamp</td> </tr> <tr> <td>TS mode (TEXT) (600dpi)</td> <td>TEXT mode lamp & PHOTO mode lamp</td> </tr> <tr> <td>TS mode (AE) (600dpi)</td> <td>AE mode lamp & PHOTO mode lamp</td> </tr> </tbody> </table>	Copy mode	Display lamp	AE mode (600dpi)	AE mode lamp	TEXT mode (600dpi)	TEXT mode lamp	PHOTO mode	PHOTO mode lamp	TS mode (TEXT) (600dpi)	TEXT mode lamp & PHOTO mode lamp	TS mode (AE) (600dpi)	AE mode lamp & PHOTO mode lamp								
Copy mode	Display lamp																					
AE mode (600dpi)	AE mode lamp																					
TEXT mode (600dpi)	TEXT mode lamp																					
PHOTO mode	PHOTO mode lamp																					
TS mode (TEXT) (600dpi)	TEXT mode lamp & PHOTO mode lamp																					
TS mode (AE) (600dpi)	AE mode lamp & PHOTO mode lamp																					
30		<p>AE limit adjustment AE and the limit value of AE (toner save) are set. Setting is changed. When START key is pressed, the set content is written into the EEPROM and the display returns to the sub code input standby mode. When UP key is pressed, the setting is changed over. (Set range: 0 – 31, Default: 0) Each mode can be selected by pressing the exposure select key. For UP keys, only 1UP key is valid. (10UP key is invalid.)</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>AE limit value</td> <td>AE mode lamp</td> </tr> <tr> <td>AE (toner save) limit value</td> <td>TEXT mode lamp</td> </tr> </tbody> </table> <p><Remark> When SIM 26-06 is changed or SIM 46-19 automatic exposure mode is changed, this setting is also changed to the default value.</p>	Mode	Display lamp	AE limit value	AE mode lamp	AE (toner save) limit value	TEXT mode lamp														
Mode	Display lamp																					
AE limit value	AE mode lamp																					
AE (toner save) limit value	TEXT mode lamp																					
31		<p>Image sharpness adjustment Used to adjust the clear/shading-off of an image in each mode. (Operating procedure) When this simulation is executed, warm-up and shading operations are performed and the current setup value is displayed. (Default: 1) Change the setup value with the copy quantity keys. Press the START key and a copy is made according to the new setup. When the clear key is pressed, the entered setup value is saved and the simulation is terminated.</p> <table border="1"> <thead> <tr> <th>Setup value</th> <th>Image quality</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Shading off</td> </tr> <tr> <td>1</td> <td>Standard * Default</td> </tr> <tr> <td>2</td> <td>Clear</td> </tr> </tbody> </table> <p>The exposure select key is used to select the mode. The set value of the selected mode is displayed on the 7seg.</p> <table border="1"> <thead> <tr> <th>Copy mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>AE mode</td> <td>AE mode lamp</td> </tr> <tr> <td>TEXT mode</td> <td>TEXT mode lamp</td> </tr> <tr> <td>PHOTO mode</td> <td>PHOTO mode lamp</td> </tr> <tr> <td>TS mode (TEXT)</td> <td>TEXT mode lamp & PHOTO mode lamp</td> </tr> <tr> <td>TS mode (AE)</td> <td>AE mode lamp & PHOTO mode lamp</td> </tr> </tbody> </table>	Setup value	Image quality	0	Shading off	1	Standard * Default	2	Clear	Copy mode	Display lamp	AE mode	AE mode lamp	TEXT mode	TEXT mode lamp	PHOTO mode	PHOTO mode lamp	TS mode (TEXT)	TEXT mode lamp & PHOTO mode lamp	TS mode (AE)	AE mode lamp & PHOTO mode lamp
Setup value	Image quality																					
0	Shading off																					
1	Standard * Default																					
2	Clear																					
Copy mode	Display lamp																					
AE mode	AE mode lamp																					
TEXT mode	TEXT mode lamp																					
PHOTO mode	PHOTO mode lamp																					
TS mode (TEXT)	TEXT mode lamp & PHOTO mode lamp																					
TS mode (AE)	AE mode lamp & PHOTO mode lamp																					

Main code	Sub code	Content																																																
46	32	<p>Copier color reproduction setup Used to set color reproduction for each mode. Colors which are easily copied or which are not easily copied are selected.</p> <table border="1"> <thead> <tr> <th>Setup value</th> <th>Easy-to-copy colors</th> <th>Difficult-to-copy colors</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Purple/Blue/Red</td> <td>Yellow/Green/Light blue</td> </tr> <tr> <td>1</td> <td>Light blue/Green/Blue</td> <td>Purple/Red/Yellow</td> </tr> <tr> <td>2</td> <td>Yellow/Red/Green</td> <td>Blue/Light blue/Purple</td> </tr> </tbody> </table> <p>* This setup does not affect black-and-white copies.</p> <p>(Operating procedure) When this simulation is executed, the current setup of the code number for each copy mode is displayed. (Default: 0) Change the setup value with the copy quantity keys and press the Print switch. A copy will be made according to the setup. At that time, the color component used for copying is changed. When the clear key is pressed, the entered code number is saved and the simulation mode is terminated. The exposure select key is used to select the mode. The set value of the selected mode is displayed on the 7seg.</p> <table border="1"> <thead> <tr> <th>Code number</th> <th>Component of use</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Green * Default</td> </tr> <tr> <td>1</td> <td>Red</td> </tr> <tr> <td>2</td> <td>Blue</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Copy mode</th> <th>Display lamp</th> </tr> </thead> <tbody> <tr> <td>AE mode (including TS)</td> <td>AE mode lamp</td> </tr> <tr> <td>TEXT mode (including TS)</td> <td>TEXT mode lamp</td> </tr> <tr> <td>PHOTO mode</td> <td>PHOTO mode lamp</td> </tr> </tbody> </table>	Setup value	Easy-to-copy colors	Difficult-to-copy colors	0	Purple/Blue/Red	Yellow/Green/Light blue	1	Light blue/Green/Blue	Purple/Red/Yellow	2	Yellow/Red/Green	Blue/Light blue/Purple	Code number	Component of use	0	Green * Default	1	Red	2	Blue	Copy mode	Display lamp	AE mode (including TS)	AE mode lamp	TEXT mode (including TS)	TEXT mode lamp	PHOTO mode	PHOTO mode lamp																				
Setup value	Easy-to-copy colors	Difficult-to-copy colors																																																
0	Purple/Blue/Red	Yellow/Green/Light blue																																																
1	Light blue/Green/Blue	Purple/Red/Yellow																																																
2	Yellow/Red/Green	Blue/Light blue/Purple																																																
Code number	Component of use																																																	
0	Green * Default																																																	
1	Red																																																	
2	Blue																																																	
Copy mode	Display lamp																																																	
AE mode (including TS)	AE mode lamp																																																	
TEXT mode (including TS)	TEXT mode lamp																																																	
PHOTO mode	PHOTO mode lamp																																																	
48	01	<p>Front/rear (main scanning) direction and scan (sub scanning) direction magnification ratio adjustment The magnification ratios in the main scanning direction (front/rear) and in the sub scanning direction are adjusted. Enter the adjustment value, and press START key to save the entered value, and make a copy. (When the set value is increased by 1, the magnification ratio is increased by 0.1%.) The adjustment mode can be selected with the exposure select key. (Adjustment range: 1 – 99, Default: 50)</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>Display lamp</th> <th>Default</th> </tr> </thead> <tbody> <tr> <td>Main scanning direction magnification ratio</td> <td>TEXT mode lamp</td> <td>50</td> </tr> <tr> <td>OC mode sub scanning direction magnification ratio</td> <td>PHOTO mode lamp</td> <td>50</td> </tr> </tbody> </table> <p>05 The current ADF mode sub scan direction magnification ratio is displayed on the LCD/7seg. <ADF model only> When START key is pressed, the entered data are obtained and saved into the EEPROM, and a copy is made. (When the set value is changed by 1, the ratio is increased by 0.1%.) (Set range: 1 – 99, Default: 50) Each mode can be selected by pressing the exposure select key.</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>Display lamp</th> <th>Lamp ON</th> <th>Default</th> </tr> </thead> <tbody> <tr> <td>Sub scanning direction magnification ratio adjustment on the ADF document front surface.</td> <td>COPY mode lamp</td> <td>AE mode lamp</td> <td>50</td> </tr> </tbody> </table> <p>* When there is no document in the ADF, copy is inhibited.</p>	Mode	Display lamp	Default	Main scanning direction magnification ratio	TEXT mode lamp	50	OC mode sub scanning direction magnification ratio	PHOTO mode lamp	50	Mode	Display lamp	Lamp ON	Default	Sub scanning direction magnification ratio adjustment on the ADF document front surface.	COPY mode lamp	AE mode lamp	50																															
Mode	Display lamp	Default																																																
Main scanning direction magnification ratio	TEXT mode lamp	50																																																
OC mode sub scanning direction magnification ratio	PHOTO mode lamp	50																																																
Mode	Display lamp	Lamp ON	Default																																															
Sub scanning direction magnification ratio adjustment on the ADF document front surface.	COPY mode lamp	AE mode lamp	50																																															
49	01	<p>Flash ROM program writing mode (Operating procedure) When this simulation is executed, "d" is displayed on the display and the machine enters the Flash ROM program writing mode. Use the writing tool to write the program from PC. During writing, the display indicates as shown below. After completion of downloading, turn OFF/ON the power to reset.</p> <table border="1"> <thead> <tr> <th>Status</th> <th>Display</th> <th>Pre-heat lamp</th> <th>Ready lamp</th> </tr> </thead> <tbody> <tr> <td>Download data reception</td> <td>"d" ON</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>Data erase start</td> <td>"d" ON</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>Data writing (Boot section)</td> <td>"d" ON</td> <td>Blink</td> <td>OFF</td> </tr> <tr> <td>Data writing (program section)</td> <td>"d" ON</td> <td>Blink</td> <td>Blink</td> </tr> <tr> <td>Sum check</td> <td>"d" ON</td> <td>ON</td> <td>ON</td> </tr> <tr> <td>Download complete</td> <td>"OFF" ON</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>Error state</td> <td>"E **" ON</td> <td>OFF</td> <td>OFF</td> </tr> </tbody> </table> <p>* "*" in an error display indicates the error position.</p> <table border="1"> <tbody> <tr> <td>1</td> <td>Data reception error</td> </tr> <tr> <td>2</td> <td>Loader function transfer</td> </tr> <tr> <td>3</td> <td>FLASH ROM delete</td> </tr> <tr> <td>4</td> <td>FLASH ROM writing (Boot section)</td> </tr> <tr> <td>5</td> <td>FLASH ROM writing (Program section)</td> </tr> <tr> <td>6</td> <td>Sum check (Loader section)</td> </tr> <tr> <td>7</td> <td>Sum check (Boot section)</td> </tr> <tr> <td>8</td> <td>Sum check (Program section)</td> </tr> </tbody> </table>	Status	Display	Pre-heat lamp	Ready lamp	Download data reception	"d" ON	ON	OFF	Data erase start	"d" ON	OFF	ON	Data writing (Boot section)	"d" ON	Blink	OFF	Data writing (program section)	"d" ON	Blink	Blink	Sum check	"d" ON	ON	ON	Download complete	"OFF" ON	OFF	OFF	Error state	"E **" ON	OFF	OFF	1	Data reception error	2	Loader function transfer	3	FLASH ROM delete	4	FLASH ROM writing (Boot section)	5	FLASH ROM writing (Program section)	6	Sum check (Loader section)	7	Sum check (Boot section)	8	Sum check (Program section)
Status	Display	Pre-heat lamp	Ready lamp																																															
Download data reception	"d" ON	ON	OFF																																															
Data erase start	"d" ON	OFF	ON																																															
Data writing (Boot section)	"d" ON	Blink	OFF																																															
Data writing (program section)	"d" ON	Blink	Blink																																															
Sum check	"d" ON	ON	ON																																															
Download complete	"OFF" ON	OFF	OFF																																															
Error state	"E **" ON	OFF	OFF																																															
1	Data reception error																																																	
2	Loader function transfer																																																	
3	FLASH ROM delete																																																	
4	FLASH ROM writing (Boot section)																																																	
5	FLASH ROM writing (Program section)																																																	
6	Sum check (Loader section)																																																	
7	Sum check (Boot section)																																																	
8	Sum check (Program section)																																																	

Main code	Sub code	Content																
50	01	<p>Lead edge image position</p> <p>Used to adjust the copy image position and the lead edge void amount on the copy paper. The adjustment is made by adjusting the image scan start position and the print start position (resist roller ON timing) at 100%. (Operating procedure)</p> <p>When this simulation is executed, the current setup value is displayed the current setup value is displayed in two digits. (Center value: 50) Press the exposure select key to select your desired copy mode, and the display will change. Enter the adjustment value and press the START key, and the setup value will be saved and a copy will be made. Press the clear key to save the setup value and exit from the simulation mode. When the adjustment is made for the main cassette feed, all the adjustment values at all the paper feed ports become the same. (Increasing the setup value by 1 corresponds to about 0.1mm shift.)</p> <table border="1"> <thead> <tr> <th>Adjustment mode</th> <th>Lamp ON</th> </tr> </thead> <tbody> <tr> <td>Print start position (Main cassette paper feed)</td> <td>AE, main cassette lamp</td> </tr> <tr> <td>☆ Print start position (2nd cassette paper feed)</td> <td>AE, 2nd cassette lamp</td> </tr> <tr> <td>Print start position (Manual paper feed)</td> <td>AE, manual paper feed lamp</td> </tr> <tr> <td>Image lead edge void amount</td> <td>AE, main cassette lamp</td> </tr> <tr> <td>Image scan start position</td> <td>PHOTO, main cassette lamp</td> </tr> <tr> <td>Image rear edge void amount (Main cassette paper feed)</td> <td>AE, TEXT, PHOTO, main cassette lamp</td> </tr> <tr> <td>Image rear edge void amount (Manual paper feed)</td> <td>AE, TEXT, manual paper feed lamp</td> </tr> </tbody> </table> <p>☆ : Supported if the model is installed and skipped if it is not installed.</p> <p>(Adjustment procedure)</p> <div style="display: flex; justify-content: space-around; text-align: center;"> <div> <p>AE ON</p> <p>↓</p> </div> <div> <p>TEXT ON</p> <p>↓</p> </div> <div> <p>PHOTO ON</p> <p>↓</p> </div> </div> <ol style="list-style-type: none"> Set the print start position (A), the lead edge void amount (B) and the scan start position (C) to 1 (Set range: 1 – 99), and make a copy at 100%. Measure the image loss amount (R mm) of the scale. Set C = 10 × R (mm) (Example: Set 40.) When the value C is increased by 10, the image loss is decreased by 1mm. (Default: 50) Measure the distance (H mm) from the paper lead edge to the image print start position. Set A = 10 × H (mm) (Example: set 50) When the value A is increased by 1mm, the image lead edge is shifted to the paper lead edge by 1mm. (Default: 50) Set the lead edge void amount to B = 50 (2.5mm). (Default: 50) When the value B is increased by 10, the void is increased by about 1mm. (When set to 25 or less, the void becomes zero.) <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>(Example)</p> </div> </div> <ul style="list-style-type: none"> The ADF adjustment is performed by adjusting the ADF image scan start position. 	Adjustment mode	Lamp ON	Print start position (Main cassette paper feed)	AE, main cassette lamp	☆ Print start position (2nd cassette paper feed)	AE, 2nd cassette lamp	Print start position (Manual paper feed)	AE, manual paper feed lamp	Image lead edge void amount	AE, main cassette lamp	Image scan start position	PHOTO, main cassette lamp	Image rear edge void amount (Main cassette paper feed)	AE, TEXT, PHOTO, main cassette lamp	Image rear edge void amount (Manual paper feed)	AE, TEXT, manual paper feed lamp
Adjustment mode	Lamp ON																	
Print start position (Main cassette paper feed)	AE, main cassette lamp																	
☆ Print start position (2nd cassette paper feed)	AE, 2nd cassette lamp																	
Print start position (Manual paper feed)	AE, manual paper feed lamp																	
Image lead edge void amount	AE, main cassette lamp																	
Image scan start position	PHOTO, main cassette lamp																	
Image rear edge void amount (Main cassette paper feed)	AE, TEXT, PHOTO, main cassette lamp																	
Image rear edge void amount (Manual paper feed)	AE, TEXT, manual paper feed lamp																	
06		<p>Copy lead edge position adjustment (ADF) <ADF model only></p> <p>The ADF copy lead edge adjustment is performed.</p> <p>When the document scan position adjustment value is increased by 1, the scan start timing is advanced by 0.1mm. As the print result, it is shifted in the direction opposite to the scan start position. Each mode can be selected by pressing the exposure select key.</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>Lamp ON</th> <th>Default</th> </tr> </thead> <tbody> <tr> <td>Front surface document scan position</td> <td>AE mode lamp</td> <td rowspan="2">50</td> </tr> <tr> <td>Rear edge void amount (ADF)</td> <td>PHOTO mode lamp</td> </tr> </tbody> </table> <p>* When there is no document in the ADF, copy is inhibited.</p>	Mode	Lamp ON	Default	Front surface document scan position	AE mode lamp	50	Rear edge void amount (ADF)	PHOTO mode lamp								
Mode	Lamp ON	Default																
Front surface document scan position	AE mode lamp	50																
Rear edge void amount (ADF)	PHOTO mode lamp																	
10		<p>Center offset adjustment</p> <p>Used to adjust the copy image position on the copy paper and the center offset position when scanning a document. (Operating procedure)</p> <p>When this simulation is executed, the current setup value is displayed. Enter the adjustment value and press the START key, and the entered value will be saved and a copy will be made. When the clear key is pressed, the entered value will be saved and the simulation will be terminated. (When the setup value is increased by 1, shift is increased by 0.1mm.) The exposure select key is used to select the mode.</p> <table border="1"> <thead> <tr> <th>Adjustment mode</th> <th>Lamp ON</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>☆ Second side center offset (Main cassette paper feed)</td> <td>TEXT, main cassette lamp</td> </tr> </tbody> </table> <p>☆ : Supported only for installing models, and skipped for not-installing models.</p> <p>* When the setup value is too great, outside of the shading area may be read, and black streaks may be produced on the edges. When the adjustment value is increased, the image is shifted to the left. When the adjustment value is decreased, the image is shifted to the right.</p>	Adjustment mode	Lamp ON	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	☆ Second side center offset (Main cassette paper feed)	TEXT, main cassette lamp						
Adjustment mode	Lamp ON																	
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																	
☆ Second side center offset (Main cassette paper feed)	TEXT, main cassette lamp																	

Main code	Sub code	Content										
50	12	<p>Document off-center adjustment The document scan off-center adjustment is performed. The adjustment mode is changed over with the exposure select key. (Adjustment range: 1 – 99, Default: 50) When the adjustment value is increased, the print result is shifted to the left.</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>Lamp ON</th> <th>Default</th> </tr> </thead> <tbody> <tr> <td>Platen document scanning</td> <td>AE mode lamp</td> <td rowspan="2">50</td> </tr> <tr> <td>☆ ADF document front surface scanning</td> <td>TEXT mode lamp</td> </tr> </tbody> </table> <p>☆ : Supported only for installing models, and skipped for not-installing models.</p>	Mode	Lamp ON	Default	Platen document scanning	AE mode lamp	50	☆ ADF document front surface scanning	TEXT mode lamp		
Mode	Lamp ON	Default										
Platen document scanning	AE mode lamp	50										
☆ ADF document front surface scanning	TEXT mode lamp											
51	02	<p>Resist quantity adjustment Used to adjust the contact pressure of paper against the machine resist roller and the RADF resist roller. (Operating procedure) When this simulation is executed, the current setup value is displayed. Enter the adjustment value and press the START key, the entered set value will be saved and a copy will be made. When the clear key is pressed, the entered value will be saved and the machine will exit from the simulation mode. The exposure select key is used to select the mode.</p> <table border="1"> <thead> <tr> <th>Adjustment mode</th> <th>Lamp ON</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>☆ duplex back</td> <td>TEXT, PHOTO, main cassette lamp</td> </tr> </tbody> </table> <p>☆ : Supported only for installing models, and skipped for not-installing models.</p>	Adjustment mode	Lamp ON	Main cassette paper feed	AE, main cassette lamp	☆ 2nd cassette paper feed	AE, 2nd cassette lamp	Manual paper feed	AE, manual paper feed lamp	☆ duplex back	TEXT, PHOTO, main cassette lamp
Adjustment mode	Lamp ON											
Main cassette paper feed	AE, main cassette lamp											
☆ 2nd cassette paper feed	AE, 2nd cassette lamp											
Manual paper feed	AE, manual paper feed lamp											
☆ duplex back	TEXT, PHOTO, main cassette lamp											
53	08	<p>ADF scan position automatic adjustment <ADF model only> Place three sheets of white paper so that they cover the ADF scan glass and the OC glass, and execute the simulation with the OC cover open, the mirror unit scans from the home position to the ADF scan position to identify the ADF glass cover edge position by the difference in the CCD output levels of the ADF glass cover edge and the OC side document glass. Default is 50. Adjustment range is 0 – 99. Adjustment increment: 1 = about 0.127mm In the case of AUTO, when START key is pressed, the mirror unit scans from the home position to the ADF scan position with the current adjustment value displayed. Then the ADF glass cover edge position is determined from the difference in the CCD output levels of the ADF glass cover edge and the OC side document glass. If the adjustment is completed normally, the adjusted value is displayed on the 7seg/LCD. If it is terminated abnormally, the following lamp is turned ON. "JAM lamp": When the operation is canceled by pressing C key during execution, the mirror is returned and "- -" is displayed. The exposure select key is used to select the mode.</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>Lamp ON</th> <th>Default</th> </tr> </thead> <tbody> <tr> <td>ADF scan position auto adjustment</td> <td>AE mode lamp</td> <td rowspan="2">50</td> </tr> <tr> <td>ADF scan position manual adjustment</td> <td>TEXT mode lamp</td> </tr> </tbody> </table>	Mode	Lamp ON	Default	ADF scan position auto adjustment	AE mode lamp	50	ADF scan position manual adjustment	TEXT mode lamp		
Mode	Lamp ON	Default										
ADF scan position auto adjustment	AE mode lamp	50										
ADF scan position manual adjustment	TEXT mode lamp											
61	03	<p>Polygon motor check (HSYNC output check) (Operation/Procedure) When the START key is pressed, HSYNC is performed and the polygon motor is rotated for 30 sec. At that time, the Zoom lamp is lit for 100msec for every 3 times that the HSYNC is detected.</p>										
63	01	<p>Shading check Used to display the detection level of the white board for shading. (Operating procedure) When the START key is pressed, the mirror base unit moves to the white board for shading to light the copy lamp. Under this state, the level of one pixel at the CCD center which is not corrected for 10sec in 1 sec, and the result is displayed on the value display section.</p>										

Main code	Sub code	Content															
63	02	<p>Black level automatic correction The black level target value for using in the black level adjustment of the white balance is obtained. When this simulation is executed, the current correction value is displayed in 12bit hexadecimal number in 3 digits. Place the gray gradation chart (KODAK GRAY SCALE) used as the correction document face-down at the center of the left edge of the platen so that the density 10 side (black side) is on the left side of the OC.</p>  <p>When START key is pressed, the mirror base unit scans the chart to calculate the correction value. After completion of correction, the revised correction value is displayed on the LCD/7seg. * When the black level adjustment is failed, the JAM lamp is lighted. Default: 0</p>															
	12	<p>Light quantity stabilization wait time setting In the light quantity stabilization process on white balance, the wait time before entering the light quantity level stabilization process is set. (Note: The light quantity level of the previous light quantity stabilization is used as the target. When the light quantity level reaches the level during the wait time, the wait time set with this simulation is ignored and the stabilization process is started. When this simulation is executed, the currently set value is displayed. Enter the adjustment value with UP/UP key, and press START key to save the entered value. Set range: 0 – 99 (Corresponding to the light quantity stabilization wait time 0 – 99 sec) Default: 15 (15 sec)</p>															
	13	<p>Light quantity stabilization band setting When the difference between the minimum value and the maximum value of the light quantity levels sampled for 3.2 sec in 100msec cycle in the light quantity stabilization process on white balance is smaller than the set value of this simulation, it is judged that the light quantity is stabilized. (Note: The magnification ratio of the AFE gain setting is automatically reflected on the stabilization band.) When this simulation is executed, the currently set value is displayed. Enter the adjustment value with UP/UP key, and press START key to save the entered value. Set range: 1 – 99 (Light quantity stabilization band: Corresponds to 1 – 99 of 4,095 gradations) Default: 16</p>															
64	01	<p>Self print Print of one page is made regardless of the status of the optical system. (Operating procedure) When this simulation is executed, warm-up is performed and the ready lamp is lighted. Enter the code number, and select the cassette with the cassette select key and press the START key, and paper feed operation will be made from the selected cassette and printing of the selected pattern will be made. Printing is in 1by2 mode, or grid pattern.</p> <table border="1" data-bbox="305 1356 716 1514"> <thead> <tr> <th>Code number</th> <th>Pattern</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1by2</td> </tr> <tr> <td>1</td> <td>Grid pattern</td> </tr> <tr> <td>2</td> <td>White paper</td> </tr> <tr> <td>3</td> <td>Black background</td> </tr> </tbody> </table>	Code number	Pattern	0	1by2	1	Grid pattern	2	White paper	3	Black background					
Code number	Pattern																
0	1by2																
1	Grid pattern																
2	White paper																
3	Black background																
67	50	<p>USB receive speed adjustment (USB1.1) Used to set the limitation on the print data receive speed of USB2.0 (Full speed) port (USB port on the machine). → When print images from USB2.0 (Full speed) port are disturbed, change the setting and try again. When this simulation is executed, the currently set code number is displayed. Enter the code number corresponding to the adjustment value, and press START key to change the setting.</p> <table border="1" data-bbox="305 1665 1154 1812"> <thead> <tr> <th>Code number</th> <th>Setting</th> <th>Speed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>FAST</td> <td>↑ Fast</td> </tr> <tr> <td>2</td> <td>NORMAL1</td> <td></td> </tr> <tr> <td>3</td> <td>NORMAL2</td> <td></td> </tr> <tr> <td>4</td> <td>SLOW</td> <td>↓ Slow</td> </tr> </tbody> </table>	Code number	Setting	Speed	1	FAST	↑ Fast	2	NORMAL1		3	NORMAL2		4	SLOW	↓ Slow
Code number	Setting	Speed															
1	FAST	↑ Fast															
2	NORMAL1																
3	NORMAL2																
4	SLOW	↓ Slow															

4. Trouble codes

A. Trouble codes list

Main code	Sub code	Details of trouble
E7	01	Duplex model memory setup error, memory not-detected error
	02	LSU trouble
	10	Shading trouble (Black correction)
	11	Shading trouble (White correction)
	16	Abnormal laser output
F2	02	Toner supply abnormality
	04	Improper cartridge (Destination error, life cycle error)
F5	02	Copy lamp lighting abnormality
H2	00	Thermistor open
H3	00	Heat roller high temperature detection
H4	00	Heat roller low temperature detection
L1	00	Feeding is not completed within the specified time after starting feeding. (The scan head locking switch is locked)
L3	00	Scanner return trouble
L4	01	Main motor lock detection
	32	Exhaust fan motor lock detection trouble
L6	10	Polygon motor lock detection
U2	04	EEPROM read/write error (Serial communication error)
	11	Counter check sum error (EEPROM)
	40	CRUM chip communication error

B. Details of trouble codes

Main code	Sub code	Details of trouble	
E7	01	Content	Duplex model memory setup error, memory not-detected error
		Detail	The memory is not set properly or the memory capacity is not set to the duplex setup (6M).
		Check and remedy	Set SIM 26-39 code number to 2.
	02	Content	LSU trouble
		Detail	The BD signal from the LSU cannot be detected in a certain cycle. (Always OFF or always ON)
		Cause	LSU connector or LSU harness defect or disconnection Polygon motor rotation abnormality Laser beams are not generated. MCU PWB abnormality.
		Check and remedy	Check connection of the LSU connector. Execute SIM 61-03 to check the LSU operations. Check that the polygon motor rotates normally. Check that the laser emitting diode generates laser beams. Replace the LSU unit. Replace the MCU PWB.

Main code	Sub code	Details of trouble		
E7	10	Content	Shading trouble (Black correction)	
		Detail	The CCD black scan level is abnormal when the shading.	
		Cause	Improper connection of the CCD unit flat cable CCD unit abnormality MCU PWB abnormality	
		Check and remedy	Check connection of the CCD unit flat cable. Check the CCD unit.	
		11	Content	Shading trouble (White correction)
			Detail	The CCD white scan level is abnormal when the shading.
	Cause		Improper connection of the CCD unit flat cable Dirt on the mirror, the lens, and the reference white plate Copy lamp lighting abnormality CCD unit abnormality MCU PWB abnormality (When occurred in the ADF scan position.) Improper installation of the mirror unit	
	Check and remedy		Clean the mirror, lens, and the reference white plate. Check the light quantity and lighting status of the copy lamp (SIM 05-03). Check the MCU PWB.	
	16		Content	Abnormal laser output
			Detail	When the laser output is stopped, HSYNC is detected.
		Cause	Laser abnormality MCU PWB abnormality.	
		Check and remedy	Check the laser emitting diode operation. Replace the MCU PWB.	
F2	02	Content	Toner supply abnormality	
		Detail	The maximum toner supply time is greatly exceeded.	
		Cause	CRUM chip trouble Improper developing unit	
		Check and remedy	Replace the CRUM chip. Replace the developing unit.	
	04	Content	Improper cartridge (Destination error, life cycle error)	
		Detail	The destination of the main unit differs from that of the CRUM. When the life cycle information is other than Not Used (FFh).	
		Cause	CRUM chip trouble Improper developing unit	
		Check and remedy	Replace the CRUM chip. Replace the developing unit.	

Main code	Sub code	Details of trouble	
F5	02	Content	Copy lamp lighting abnormality
		Detail	The copy lamp does not turn on.
		Cause	Copy lamp abnormality Copy lamp harness abnormality CCD PWB harness abnormality.
		Check and remedy	Use SIM 5-3 to check the copy lamp operations. When the copy lamp lights up. Check the harness and the connector between the CCD unit and the MCU PWB. When the copy lamp does not light up. Check the harness and the connector between the copy lamp unit and the MCU PWB. Replace the copy lamp unit. Replace the MCU PWB.
H2	00	Content	Thermistor open
		Detail	The thermistor is open. The fusing unit is not installed.
		Cause	Thermistor abnormality Control PWB abnormality Fusing section connector disconnection The fusing unit is not installed.
		Check and remedy	Check the harness and the connector between the thermistor and the PWB. Use SIM 14 to clear the self diagnostic display.
H3	00	Content	Heat roller high temperature detection
		Detail	The fusing temperature exceeds 240°C.
		Cause	Thermistor abnormality Control PWB abnormality Fusing section connector disconnection.
		Check and remedy	Use SIM 5-02 to check the heater lamp blinking operation. When the lamp blinks normally. Check the thermistor and its harness. Check the thermistor input circuit on the control PWB. When the lamp keeps ON. Check the power PWB and the lamp control circuit on the MCU PWB. Use SIM 14 to clear the self diagnostic display.

Main code	Sub code	Details of trouble	
H4	00	Content	Heat roller low temperature detection
		Detail	1) When the target temperature (165°C) is not reached in 55 sec after starting warming-up. 2) When the temperature below 100°C is detected for 300ms under the ready print state. * "Starting warming-up" means not only that in power supply but also reset that in reset from shut-off and in side door close. (The timing of generating H4 is not limited to that in power supply.)
		Cause	Thermistor abnormality Heater lamp abnormality Thermostat abnormality Control PWB abnormality
		Check and remedy	Use SIM 5-02 to check the heater lamp blinking operation. When the lamp blinks normally. Check the thermistor and its harness. Check the thermistor input circuit on the control PWB. When the lamp does not light up. Check for disconnection of the heater lamp and the thermostat. Check the interlock switch. Check the power PWB and the lamp control circuit on the MCU PWB. Use SIM 14 to clear the self diagnostic display.
L1	00	Content	Feeding is not completed within the specified time after starting feeding. (The scan head locking switch is locked)
		Detail	Though the mirror base is shifted by about 30mm, the MHPS is not turned OFF.
		Cause	The scan head is locked by the lock switch. Mirror unit abnormality The scanner wire is disconnected. The origin detection sensor abnormality Mirror motor harness abnormality
		Check and remedy	Check to confirm that the scan head lock switch is released. Use SIM 1-1 to check the mirror reciprocating operations. When the mirror does not feed. Check for disconnection of the scanner wire. Check the harness and the connector between the mirror motor and the MCU PWB. Replace the mirror unit. Replace the MCU PWB. When the mirror does feed. Use SIM 1-2 to check the mirror home position sensor.

Main code	Sub code	Details of trouble	
L3	00	Content	Scanner return trouble
		Detail	When the mirror base is returned for the specified time (6 sec) in mirror initializing after turning on the power, the mirror home position sensor (MHPS) does not turn ON. Or when the mirror base is returned for the specified time (about 6 sec) after start of copy return, the mirror home position sensor (MHPS) does not turn ON.
		Cause	Mirror unit abnormality Scanner wire disconnection Origin detection sensor abnormality Mirror motor harness abnormality
		Check and remedy	Use SIM 1-1 to check the mirror reciprocating operations. When the mirror does not return. Check for disconnection of the scanner wire. Check the harness and the connector between the mirror motor and the MCU PWB. Replace the mirror unit. Replace the MCU PWB. When the mirror does feed. Use SIM 1-2 to check the mirror home position sensor.
L4	01	Content	Main motor lock detection
		Detail	When the main motor encoder pulse is not detected for 1000 msec.
		Cause	Main motor unit abnormality Improper connection or disconnection the main motor and the harness. MCU PWB abnormality
	Check and remedy	Use SIM 25-01 to check the main motor operations. Check connection of the main motor harness/connector. Replace the main motor. Replace the MCU PWB.	
	32	Content	Exhaust fan motor lock detection trouble
		Detail	The error detection is started after 2 sec from starting rotation of the exhaust fan motor. 1) The continuous rotation state of 250ms is not detected for 1 sec after starting detection. 2) When the lock sensor (in the exhaust fan) detects the HIGH level (unstable) after detection the lock state (stable state).
Cause		Exhaust fan motor connector connection trouble Exhaust fan motor trouble MCU PWB trouble	
Check and remedy	Exhaust fan motor connector connection check Exhaust fan motor replacement Replace the MCU PWB.		

Main code	Sub code	Details of trouble	
L6	10	Content	Polygon motor lock detection
		Detail	The lock signal (specified rpm signal) does not return within a certain time (about 20 sec) from starting the polygon motor rotation.
		Cause	Polygon motor unit abnormality Improper connection or disconnection of the polygon motor and the harness. MCU PWB abnormality
		Check and remedy	Use SIM 61-1 to check the polygon motor operations. Check connection of the polygon motor harness/connector. Replace the polygon motor. Replace the MCU PWB.
U2	04	Content	EEPROM read/write error (Serial communication error)
		Detail	EEPROM access process error
		Cause	EEPROM abnormality
	Check and remedy	Check that the EEPROM is properly set. Cancel by turning OFF/ON the power. Replace the MCU PWB.	
	11	Content	Counter check sum error (EEPROM)
		Detail	Check sum error of the counter area in the EEPROM
Cause		EEPROM abnormality	
Check and remedy	Check that the EEPROM is properly set. Use SIM 16 to cancel the trouble. Replace the MCU PWB.		
40	Content	CRUM chip communication error	
		Detail	An error occurs in MCU-CRUM chip communication.
	Cause	CRUM chip trouble Defective contact of developing unit MCU PWB trouble	
		Check and remedy	Replace the CRUM chip. Check installation of the developing unit. Cancel by turning OFF/ON the power. Replace the MCU PWB.

[11] MAINTENANCE

1. Maintenance table

× : Check (Clean, adjust, or replace when required.) ○ : Clean ▲ : Replace △ : Adjust ☆ : Lubricate

Section	Parts	25K	50K	75K	100K	125K	Remark
Developing	Developer	▲	▲	▲	▲	▲	
	DV blade	○	▲	○	▲	○	
	DV side seal (F/R)	○	▲	○	▲	○	
Process peripheral	Drum	▲	▲	▲	▲	▲	

2. Maintenance display system

Toner	Life	8K	
	Remaining quantity	NEAR EMPTY About 12.5%	EMPTY
	LED	ON	Flash
	Machine	Operation allowed	Stop
Developer	Life	25K	
	LED	ON at 25K of the developer count.	
	Machine	Selection is available between Not Stop and Stop by Service Simulation (SIM 26-37) Setup. (If Stop is selected, the LED will flash and stop at 25K.) * Default: Not Stop * Clear: SIM 24-06	
Maintenance	LED	Selection is available among 25K, 13K, 9K, 6K, 3K, and free (no lighting) with SIM 21-1. * Default: 25K * Clear: SIM 20-1	
	Machine	Not stop.	

Note: When developer is replaced, be sure to execute simulation No. 24-06 to reset the counter.

[12] USER PROGRAMS

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

1. Functions that can be set with user programs

Toner save mode

Reduces toner consumption by approximately 10%.

Power save modes

The unit has two power save modes of operation: preheat mode and auto power shut-off mode.

Preheat mode

When the unit enters the preheat mode, the power save (☺) indicator will light up and other indicators will remain on or off as before. In this condition, the fuser in the unit is maintained at a lower heat level, thereby saving power. To copy from the preheat mode, make desired copier selections and press the start (⊕) key using the normal copying procedure.

Auto power shut-off mode

When the unit enters the auto power shut-off mode, the power save (☺) indicator will light up and other indicators except the ONLINE indicator will go out. The auto power shut-off mode saves more power than the preheat mode but requires a longer time before starting copying. To copy from the auto power shut-off mode, press the start (⊕) key. Then make desired copier selections and press the start (⊕) key using the normal copying procedure.

Auto clear

The unit returns to the initial settings a preset amount of time after the end of job.

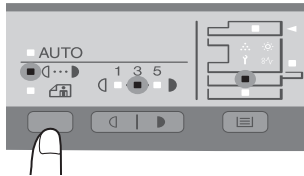
This preset amount of time (auto clear time) can be changed.

Resolution of AUTO & MANUAL mode

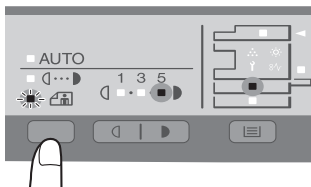
You can set the copy resolution used for AUTO and MANUAL (◀...▶) exposure mode.

2. Toner save mode

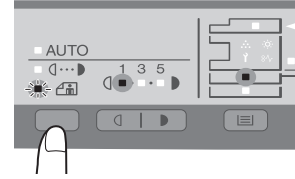
- 1) Press the exposure mode selector key to select the MANUAL (◀...▶) mode.



- 2) Press and hold down the exposure mode selector key for approximately 5 seconds. The MANUAL (◀...▶) indicator will go out and the PHOTO (📷) indicator will begin to blink. The light and dark indicator marked "5" will light up, indicating the standard toner mode is active.



- 3) To enter the toner save mode, press the light (☐) key. The light and dark indicator marked "1" will light up, indicating the toner save mode is selected.



- 4) Press the exposure mode selector key. The PHOTO (📷) indicator will stop blinking and light up steadily. The light and dark indicator marked "3" will light up. The toner save mode is now active.

Note: To return to the standard mode, repeat the procedure but use the dark (◻) key to select exposure level "5" in step 3).

3. User programs

The user programs allow the parameters of certain functions to be set, changed, or canceled as desired.

Set the power save modes, auto clear time, preheat mode, ADF automatic original discharge time, resolution of AUTO & MANUAL mode and reset factory setting.

- 1) Press and hold down the light (☐) key simultaneously for more than 5 seconds until all the alarm indicators (☺, ⚠, ⚠, ⚠) blink and " -- " appears in the display.
- 2) Use the left copy quantity (◀) key to select a user program number (1: Auto clear time, 2: Preheat mode, 3: Auto power shut off mode, 4: Auto power shut off timer, 6: ADF automatic original discharge time, 10: Resolution of AUTO & MANUAL mode, 21: Reset factory, 24: Prevention of OC copies when the ADF is up function, 25: Copy effective paper width setting function (Bypass tray), 26: Copy effective paper width setting function (Tray), 28: Selection of copy start state (Polygon rotation on/off), 29: Fusing temperature setting when the bypass tray is used). The selected number will blink in the left side of the display.
- 3) Press the start (⊕) key. The entered program number will be steadily lit and the currently selected parameter number for the program will blink on the right side of the display.
- 4) Select the desired parameter using the right copy quantity (▶) key. The entered parameter number will blink on the right of the display.

Program No.	Mode	Parameters
1	Auto clear time	1 → 10 sec., 2 → 30 sec., *3 → 60 sec., 4 → 90 sec., 5 → 120 sec., 6 → OFF
2	Preheat mode	*1 → 30 sec., 2 → 60 sec., 3 → 5 min., 4 → 30 min., 5 → 60 min., 6 → 120 min., 7 → 240 min.
3	Auto power shut off mode	*1 → ON, 2 → OFF
4	Auto power shut off timer	*1 → 5 min., 2 → 30min., 3 → 60 min., 4 → 120 min., 5 → 240 min.
6	ADF automatic original discharge time	1 → 5 min., *2 → 30 min., 3 → 60 min., 4 → 120 min., 5 → 240 min., 6 → OFF
10	Resolution of AUTO & MANUAL mode	*1 → 300dpi, 2 → 600dpi
21	Reset factory	1 → YES, *2 → NO
24	Prevention of OC copies when the ADF is up function	*1 → ON, 2 → OFF

Program No.	Mode	Parameters
25	Copy effective paper width setting function (Bypass tray)	*1 → Large (A4 width/LETTER), 2 → Small (B5R width/INVOICE)
26	Copy effective paper width setting function (Tray)	*1 → Large (A4 width/LETTER), 2 → Small (B5R width/INVOICE)
28	Selection of copy start state (Polygon rotation on/off)	*1 → ON, 2 → OFF
29	Fusing temperature setting when the bypass tray is used	1 → Low, *2 → High

* Factory default settings are indicated with an asterisk (*).

5) Press the start (⏻) key. The right-hand number in the display will be steadily lit and the entered value will be stored.

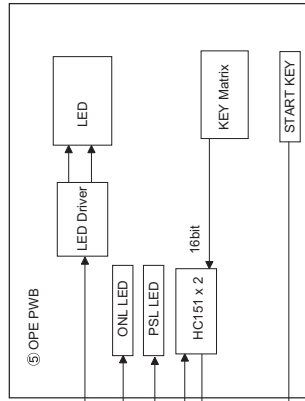
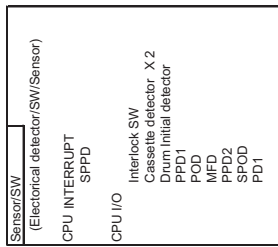
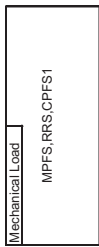
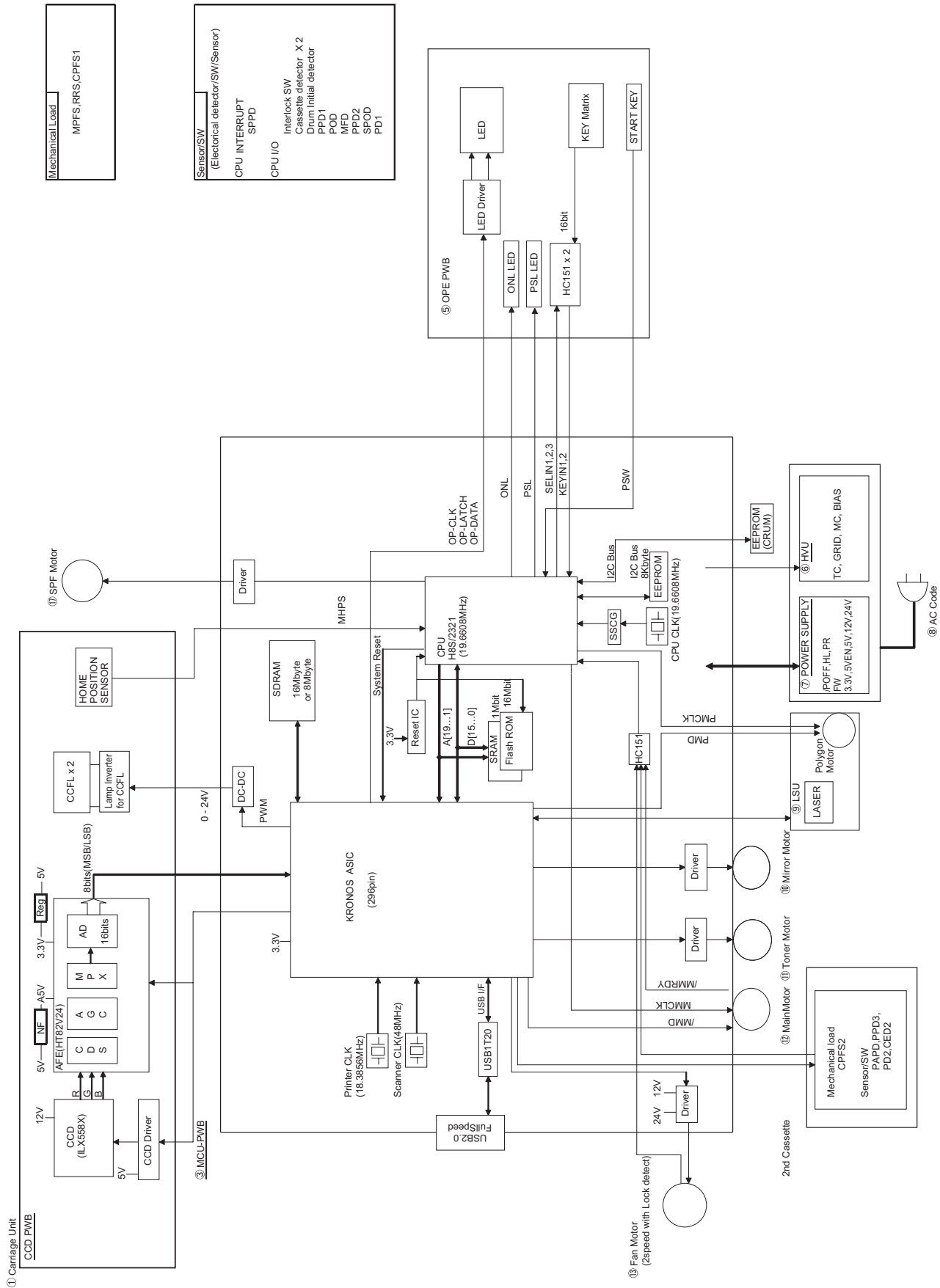
Note: To change the setting or to set another mode, press the clear key. The unit will return to step 2).

6) Press the light (☐) key to return to the normal copy mode.

[13] ELECTRICAL SECTION

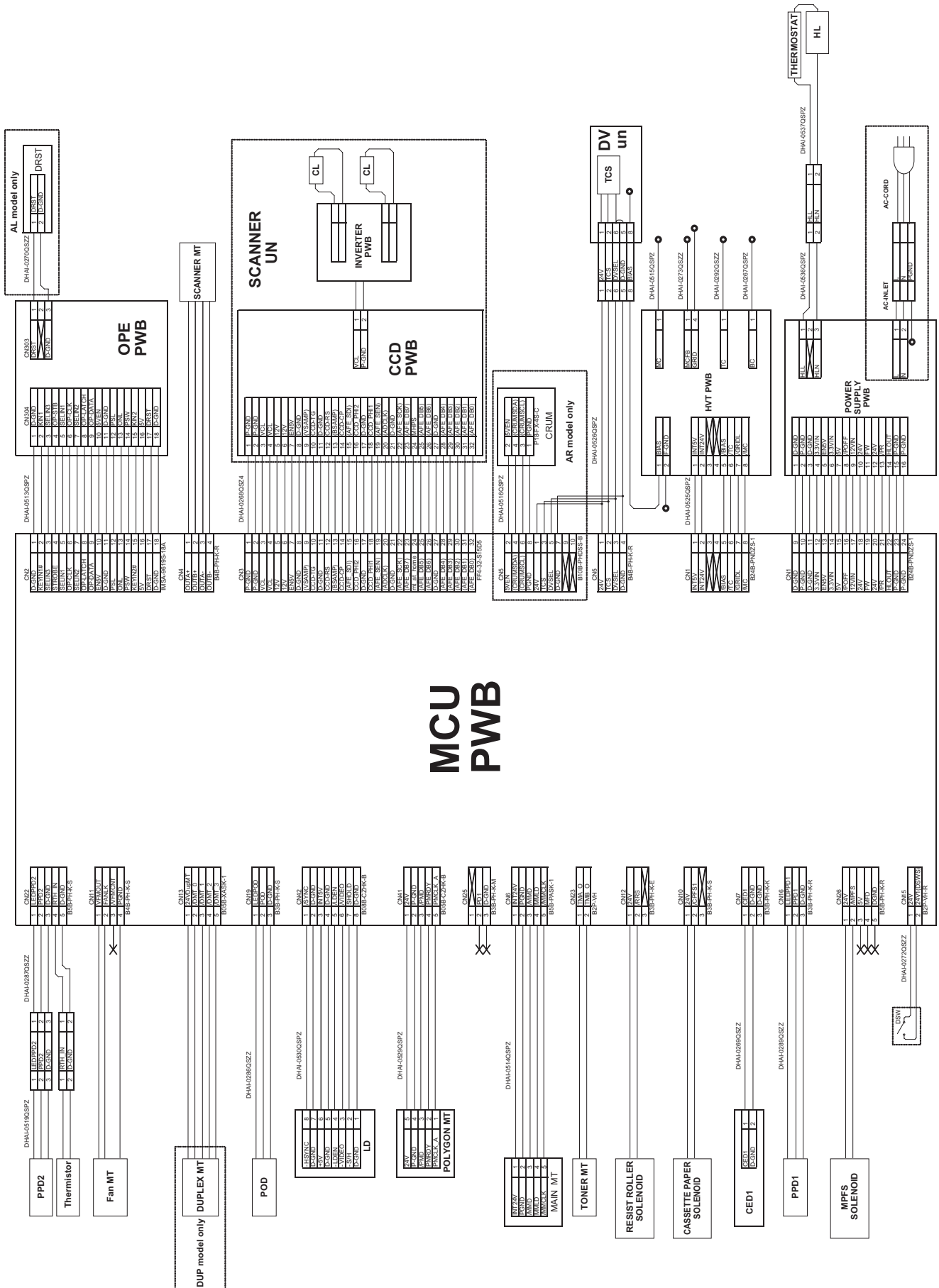
1. Block diagram

A. Overall block diagram

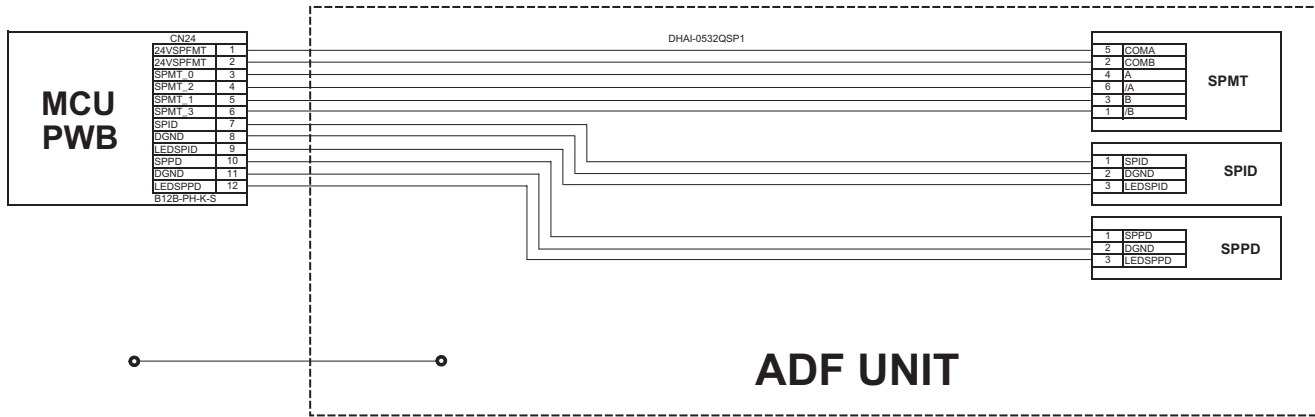


2. Actual wiring diagram

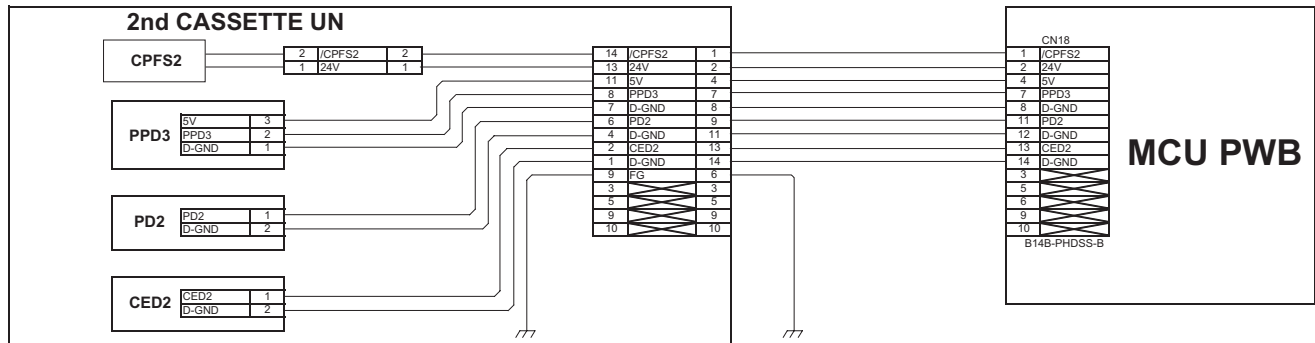
A. MCU PWB (1/3)



B. ADF unit (2/3)



C. 2nd cassette unit (3/3)



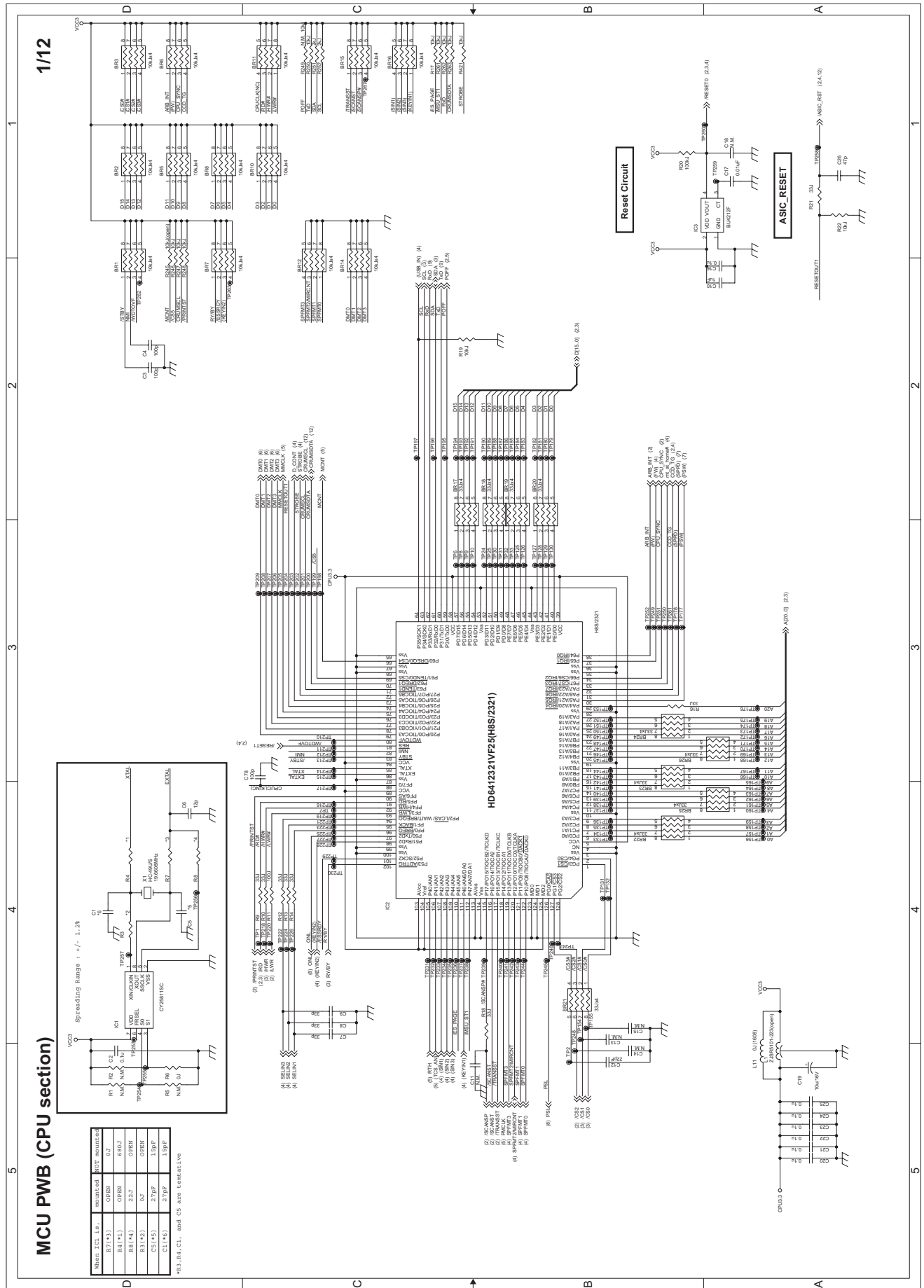
3. Signal name list

Signal name	Name	Function/Operation	Section
LEDPPD2	PPD2 sensor power		Fusing section
PPD2	PPD2 sensor	Paper transport detection	Fusing section
RTH_IN	Thermistor	Fusing section thermistor temperature detection	Fusing section
VFMOUT	Fusing fan	Fan drive signal	Optical section
FANLK	Fusing fan	Fan lock detection signal	Optical section
/VFCNT	Fan speed signal	Fan rotation speed control	Optical section
/DMT_0	DUP motor	DUP motor phase control	Duplex drive section
/DMT_1	DUP motor	DUP motor phase control	Duplex drive section
/DMT_2	DUP motor	DUP motor phase control	Duplex drive section
/DMT_3	DUP motor	DUP motor phase control	Duplex drive section
LEDPOD	POD sensor power		Paper exit section
POD	POD sensor	Paper transport detection	Paper exit section
/SYNC	Laser	Horizontal sync signal from the LSU	LSU
/LDEN	Laser	Laser circuit control signal	LSU
/VIDEO	Laser	Laser drive signal	LSU
SHOLD	Laser	Laser APC signal	LSU
/PMD	Polygon motor	Polygon motor drive signal	LSU
PMRDY	Polygon motor	Polygon motor ON/OFF detection signal	LSU
PMCLK_A	Polygon motor	Clock signal to the polygon motor	LSU
PD1	PD SW sensor	1st CS paper width sensor	Not used
/MMD	Main motor	Polygon motor drive signal	Main drive section
MMLD	Main motor	Polygon motor ON/OFF detection signal	Main drive section
/MMCLK	Main motor	Clock signal to the polygon motor	Main drive section
TMA_O	Toner motor	Toner motor phase control	Toner motor drive section
TMB_O	Toner motor	Toner motor phase control	Toner motor drive section
/RRS	1st transport solenoid		Paper transport section
/CPFS1	1st CS pickup solenoid		Paper transport section
CED1	Machine cassette detection		Paper transport section
LEDPPD1	PPD sensor power		Paper transport section
PPD1	PPD sensor	Paper transport detection	Paper transport section
/MPFS	Multi bypass solenoid		Optical section
KEYIN1#	Key scan input	Key detection control	Operation section
SELIN3	Select signal 3	HC151 select signal	Operation section
STROBE	LED driver control		Operation section
SELIN1	Select signal 1	HC151 select signal	Operation section
OP-CLK	LED driver control		Operation section
SELIN2	Select signal 2	HC151 select signal	Operation section
OP-LATCH	LED driver control		Operation section
OP-DATA	LED driver control		Operation section
PSL	Power save LED		Operation section
ONL	Online LED		Operation section
PSW	Start button control		Operation section
KEYIN2#	Key scan input	Key detection control	Operation section
OUTA+	Scanner motor	Scanner motor phase control	Optical drive section
OUTB+	Scanner motor	Scanner motor phase control	Optical drive section
OUTA-	Scanner motor	Scanner motor phase control	Optical drive section
OUTB-	Scanner motor	Scanner motor phase control	Optical drive section
VCL	Copy lamp	Copy lamp control	Scanner unit section
(VSAMP)	AFE	AFE control signal	Scanner unit section
CCD-TG	CCD	CCD control signal	Scanner unit section
CCD-RS	CCD	CCD control signal	Scanner unit section
(BSAMP)	AFE	AFE control signal	Scanner unit section
CCD-CP	CCD	CCD control signal	Scanner unit section
(AFE_SDI)	AFE	AFE serial data	Scanner unit section
CCD_PHI2	CCD	CCD control signal	Scanner unit section
CCD_PHI1	CCD	CCD control signal	Scanner unit section
(AFE_SEN)	AFE	AFE control signal	Scanner unit section
(ADCLK)	AFE	AFE control signal	Scanner unit section
(AFE_SCK)	AFE	AFE control signal	Scanner unit section
(AFE_DB7)	AFE	Image scan data	Scanner unit section

Signal name	Name	Function/Operation	Section
MHPS	MHPS sensor	Carriage HP detection	Optical section
(AFE_DB5)	AFE	Image scan data	Scanner unit section
(AFE_DB6)	AFE	Image scan data	Scanner unit section
(AFE_DB4)	AFE	Image scan data	Scanner unit section
(AFE_DB3)	AFE	Image scan data	Scanner unit section
(AFE_DB2)	AFE	Image scan data	Scanner unit section
(AFE_DB1)	AFE	Image scan data	Scanner unit section
(AFE_DB0)	AFE	Image scan data	Scanner unit section
TCS	Toner sensor	Toner quantity detection	Developing section
DVSEL	Developing tank detection		Developing section
/BIAS	HV bias signal	HV bias drive	Process section
/TC	HV TC signal	Transfer charger grid control	Process section
/GRIDL	HV grid signal	Main charger grid control	Process section
/MC	HV MC signal	Main charger control	Process section
/POFF	Low voltage power	Output power control	Power section
FW	Low voltage power	Zero cross detection	Power section
/PR	Heater lamp	Power relay control	Power section
HLOUT	Heater lamp	Heater lamp control	Power section
SPMT_0	ADF motor	ADF motor phase control	ADF section
SPMT_2	ADF motor	ADF motor phase control	ADF section
SPMT_1	ADF motor	ADF motor phase control	ADF section
SPMT_3	ADF motor	ADF motor phase control	ADF section
SPID	SPID sensor	ADF UN paper entry sensor	ADF section
LEDSPID	SPID sensor power		ADF section
SPPD	SPPD sensor	ADF transport detection	ADF section
LEDSPPD	SPPD sensor power		ADF section
/CPFS2	2nd CS pickup solenoid		2nd cassette section
PPD3	PPD3 sensor	2nd CS paper transport detection	2nd cassette section
PD2	PD2 SW sensor	2nd CS paper width detection	2nd cassette section
CED2	2nd CS cassette detection		2nd cassette section
/REV	IEEE1284	/REV signal	Network section
/INIT	IEEE1284	/INIT signal	Network section
/SLCTIN	IEEE1284	/SLCTIN signal	Network section
/AUTOFD	IEEE1284	/AUTOFD signal	Network section
/STB	IEEE1284	/STB signal	Network section
/FAULT	IEEE1284	/FAULT signal	Network section
SLCT	IEEE1284	SLCT signal	Network section
PE	IEEE1284	PE signal	Network section
BUSY	IEEE1284	BUSY signal	Network section
/ACK	IEEE1284	/ACK signal	Network section
PARAD7	IEEE1284	Data bus	Network section
PARAD6	IEEE1284	Data bus	Network section
PARAD5	IEEE1284	Data bus	Network section
PARAD4	IEEE1284	Data bus	Network section
PARAD3	IEEE1284	Data bus	Network section
PARAD2	IEEE1284	Data bus	Network section
PARAD1	IEEE1284	Data bus	Network section
PARAD0	IEEE1284	Data bus	Network section
/OA_RST	Option reset	Reset signal to the NIC PWB	Network section

4. Circuit diagram

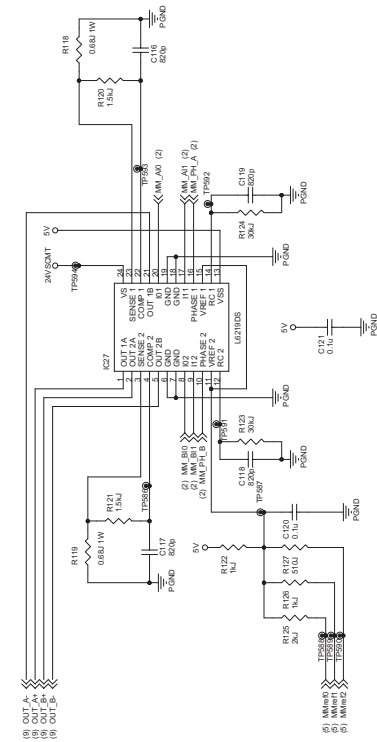
A. MCU PWB



MCU PWB (Driver section 3)

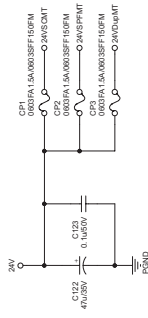
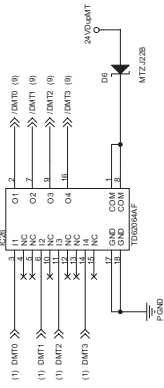
6/12

Scanner Motor Driver

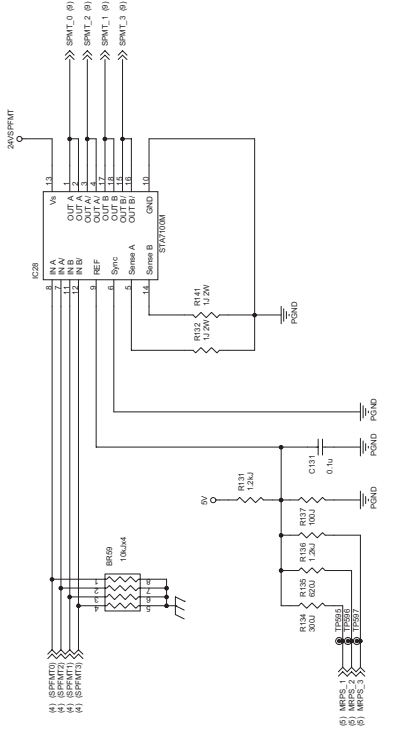


Duplex Motor Driver

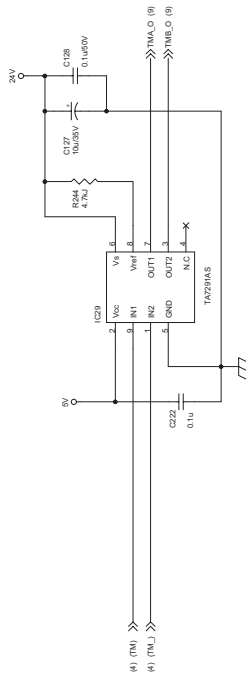
For AL2040 Model Only



ADF Motor Driver

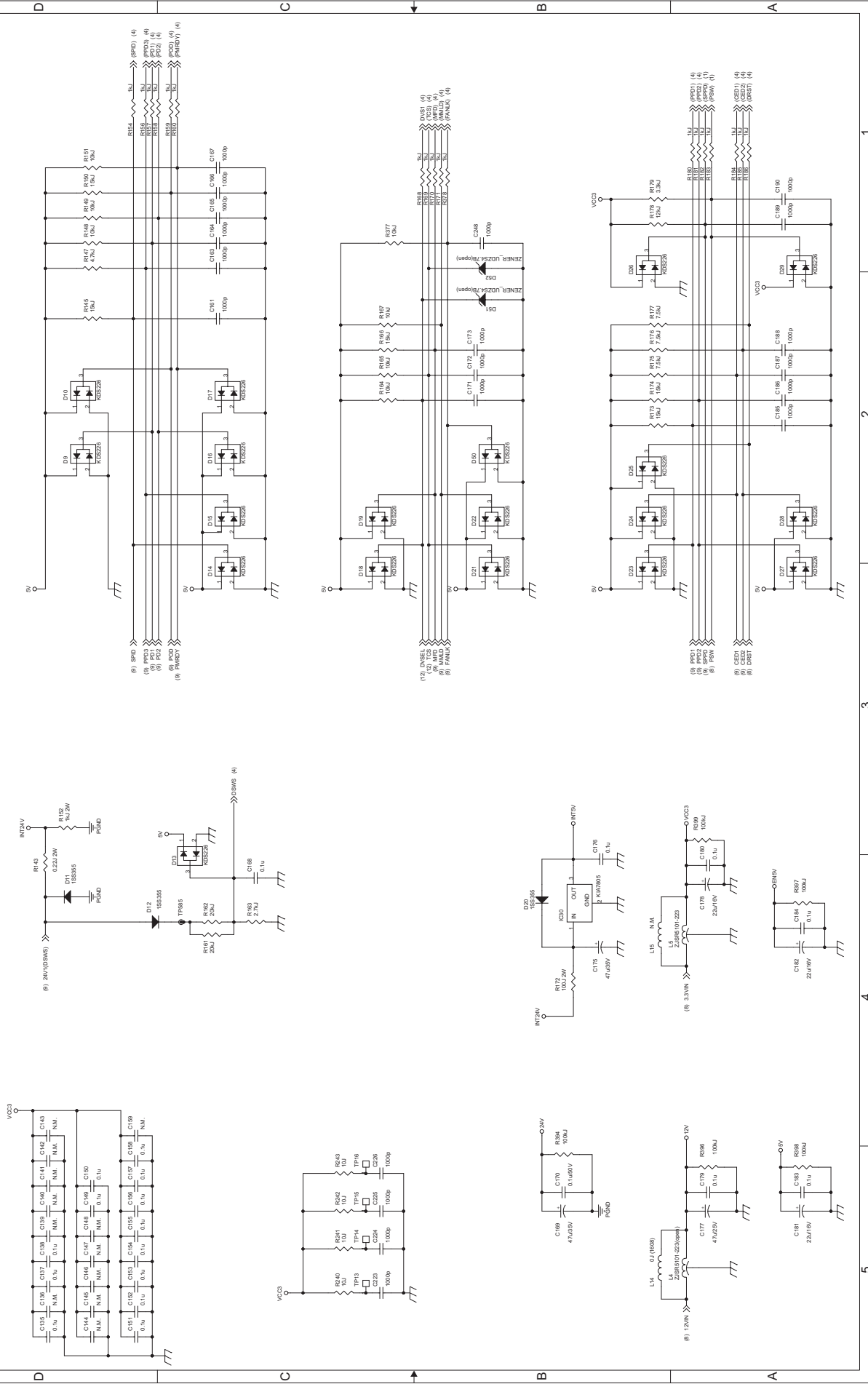


Tonner Motor Driver



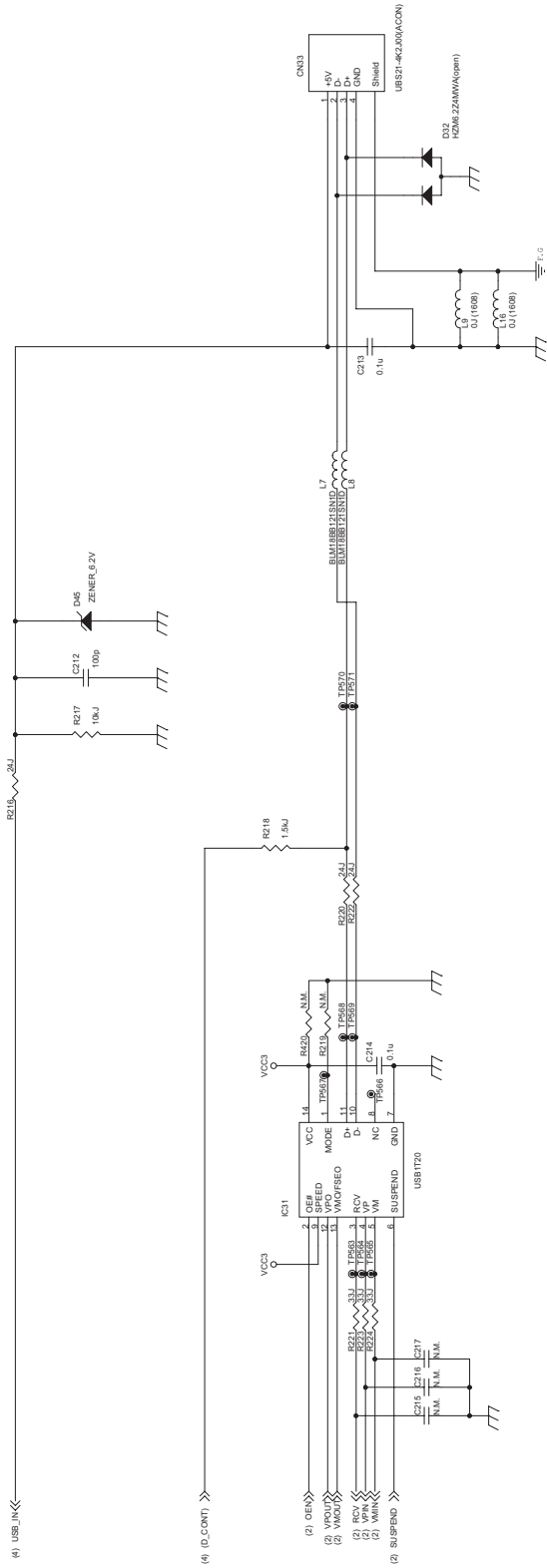
MCU PWB (Noise filter/Pull-up section)

7/12

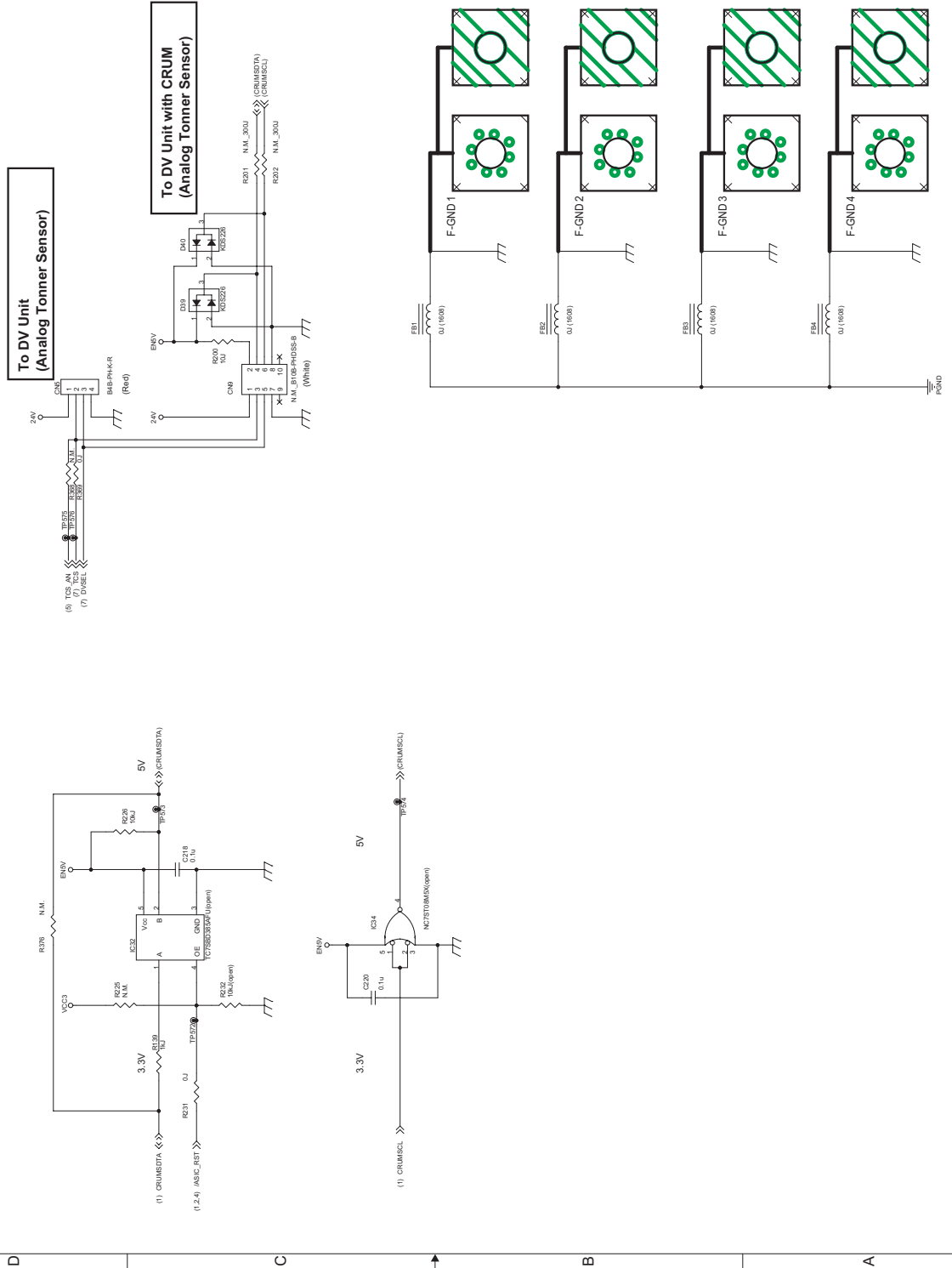


MCU PWB (USB2.0 (FULL) I/F section)

11/12



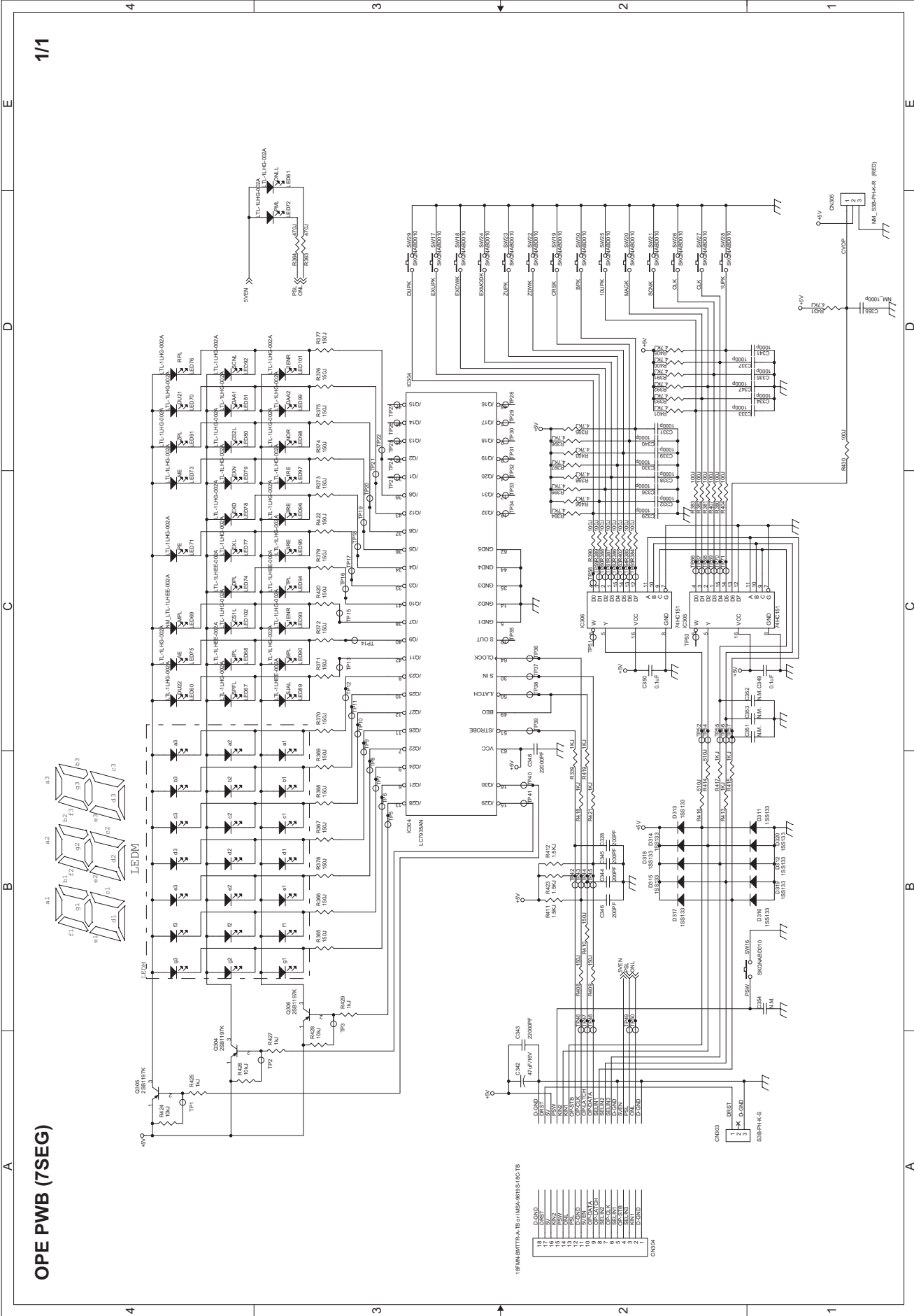
MCU PWB (CRUM I/F section)



B. OPE PWB

1/1

OPE PWB (7SEG)



18PIN MMTTA-TB-01 (MSA-WP)S-1 (C) 18

19	D-GND
18	D-2
17	D-1
16	D-0
15	D-EN
14	D-CLK
13	D-CE
12	D-EN
11	D-0
10	D-1
9	D-2
8	D-3
7	D-4
6	D-5
5	D-6
4	D-7
3	D-8
2	D-9
1	D-GND

1	D-EN
2	D-CLK
3	D-CE

[14] FIRMWARE DOWNLOAD PROCEDURES

[Preparation]

Write the download data (extension .dwl) into the main unit.

A USB port is required for the PC.

Create "MaintenanceTool " folder in the PC, and copy the following files to the folder.

Necessary for program download

- Maintenance.exe (← Tool program)
- ProcModelQ.fmt
- ProcModelQ.mdl

Driver

- Drivers/Vista/Mainte.inf (For Windows Vista)
- Drivers/2kXP/Mainte.inf (For Windows XP/2000)
- Drivers/Win9xME/Mainte.inf (For Windows Me/98SE)
- Drivers/Win9xME/UsbScan.sys (For Windows Me/98SE)

Download file

- Download file (extension .dwl)

Note: Copy the download data file (extension .dwl) to the folder in which the maintenance program is included.

When making a folder for the maintenance tool in the PC, do not put a long folder name in the absolute path.

[Example]

Erroneous case: c:\Maintenance Tool Download

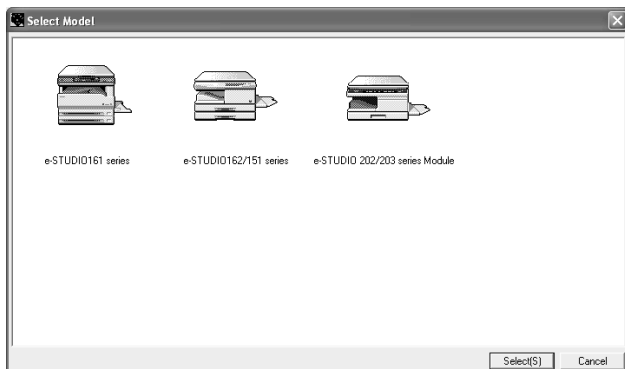
Proper case: c:\MaintenanceTool

1. Initial setting (Serial number setting procedures)

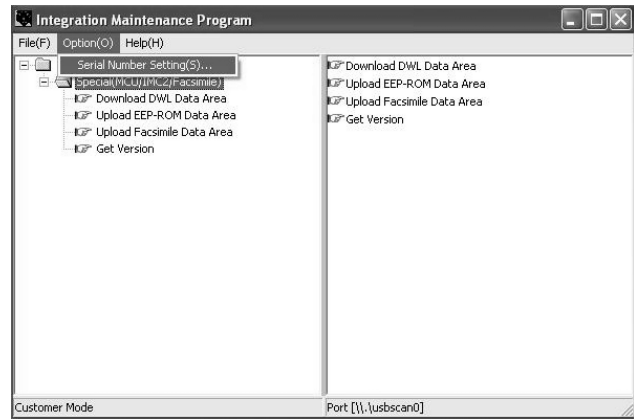
The serial number is set to the PC which is used for downloading. Setting is required once only, and there is no need to set again when rebooting the program.

Note: This setting is required only when downloading the default data of E2PROM, and is not required when downloading firmware only.

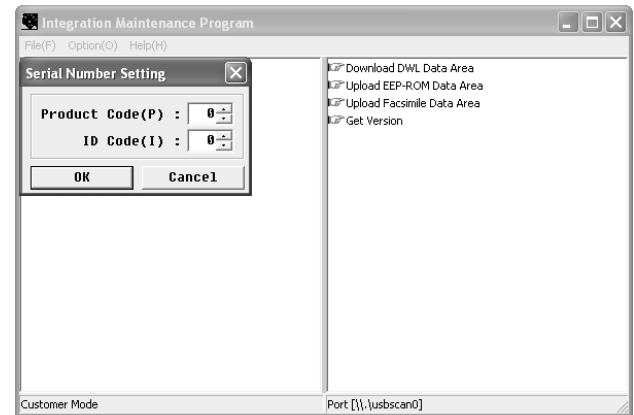
- 1) PC side: Boot "Maintenance.exe" and select "e-STUDIO202/203 series Module" in the "Select Model" menu.
(Only to set the serial number, the PC should not be connected to the machine.)



- 2) Select "Option" → "Serial Number Setting" on the menu bar.



- 3) Set the serial number according to the following.



Product Code (P): Enter number (0 – 99)
Enter the product code of "3."

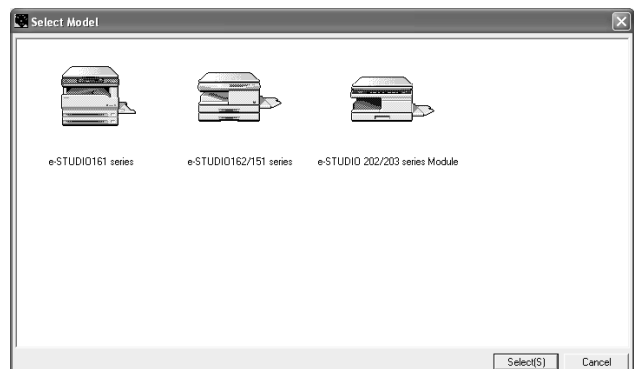
ID Code(I): Enter number (0 – 99)
Assign an individual code to each PC uses
"Maintenance.exe."

After completion setting, press [OK] key.

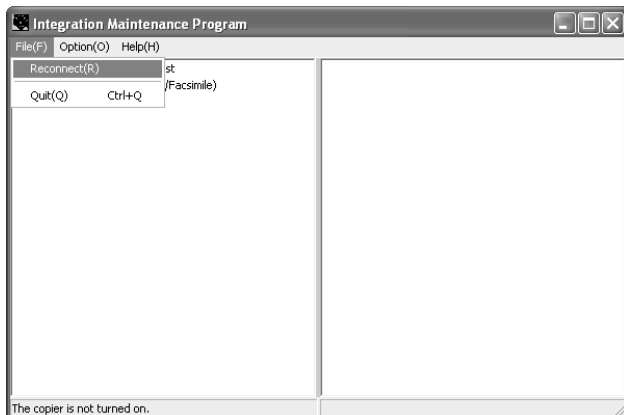
- 4) The serial number has been assigned.

2. Download procedures

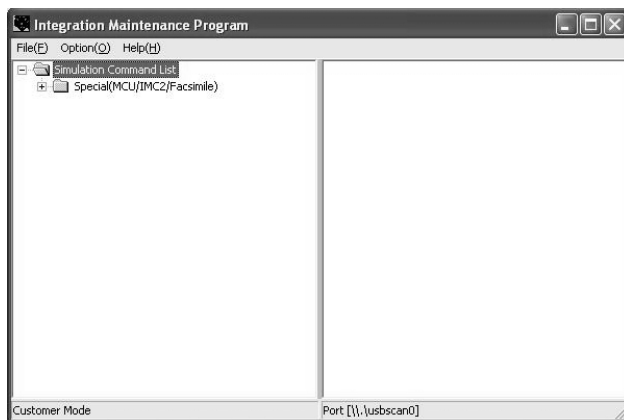
- 1) Main unit side: Execute simulation No. 49-01 (Flash ROM program write mode).
Check that "DOWNLOAD MODE" is displayed on the LCD of the operation panel. (Press and hold [C] key and [ZOOM DOWN] key (left key) together, and turn on the power simultaneously.)
- 2) Connect machine and the PC with a USB cable. (Connect it to the USB port on the main unit without fail.)
- 3) PC side: Boost "Maintenance.exe" and select "e-STUDIO202/203 series Module" in the Select Model menu.



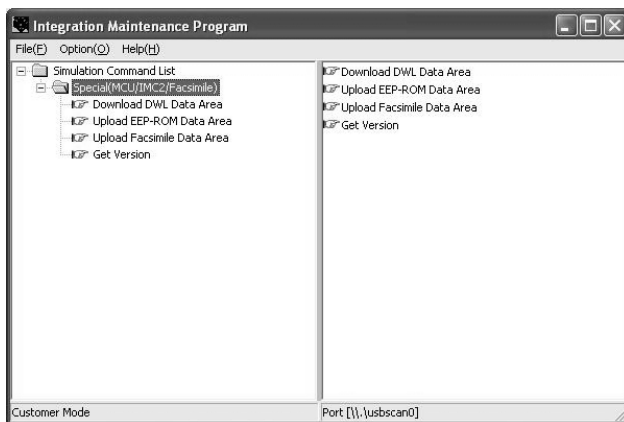
- 4) PC side: Check that the "Simulation Command List" tree is displayed on the integration maintenance program.
- 5) PC side: When the integration maintenance program is boosted and "The copier is not turned on." is displayed at the bottom of display, select "File" → "Reconnect" on the menu bar.



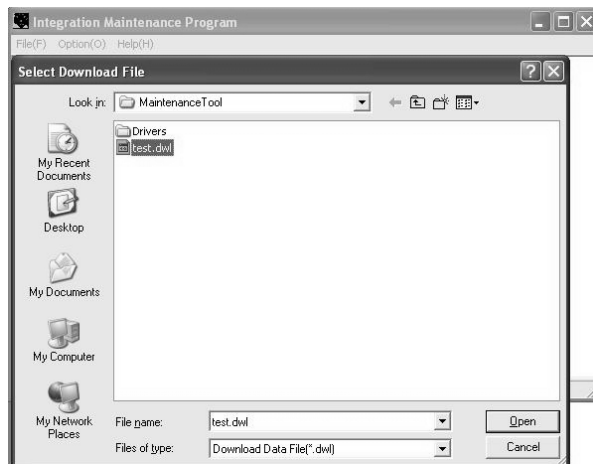
- 6) PC side: Check that trees are displayed in the "Special (MCU/IMC2/Facsimile)" folder in the integration maintenance program. (If trees are not displayed, check that the USB connector is connected, and select "Reconnect" in procedure 5) again.)



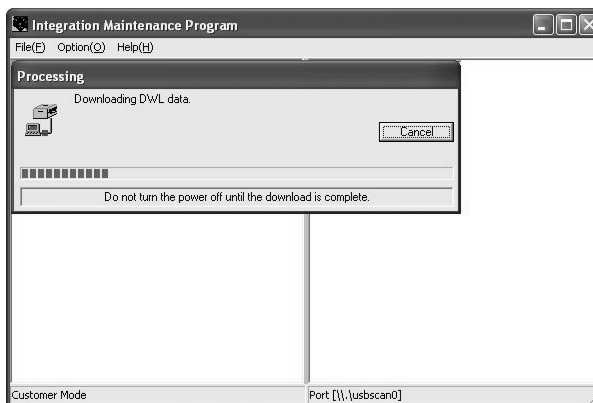
- 7) PC side: Double-click "Special (MCU/IMC2/Facsimile)" in the main tree to develop its sub trees, and double-click "Download DWL Data Area" in the sub trees.



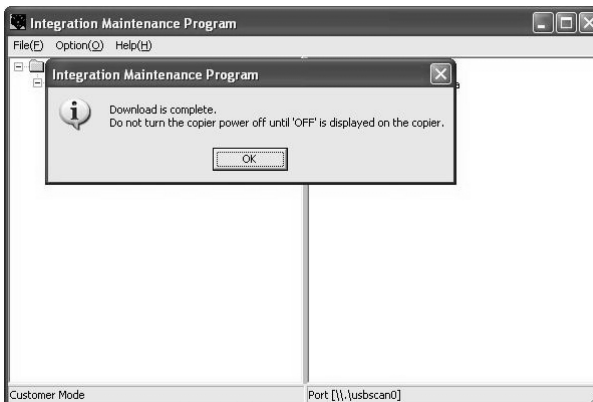
- 8) PC side: Specify the download file (*****.dwl) to be used.



- 9) PC side: When a download file is specified, downloading is performed automatically.



- 10) PC side: When download is completed, the following message is displayed.

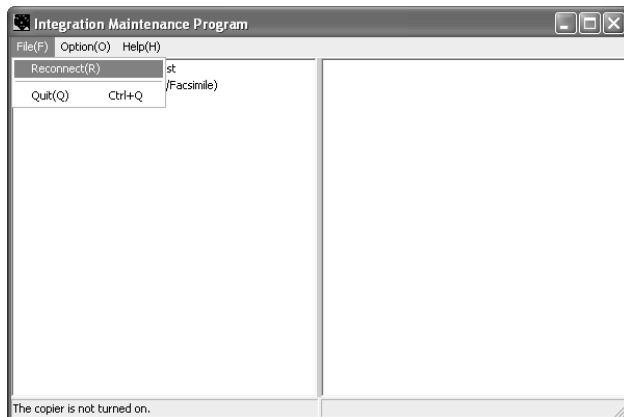


Note: Since, however, the machine enters the download data write state, do not turn OFF the power of the machine at this moment.

- 11) Main unit side: Wait until "DOWNLOAD COMPLETE!" is displayed on the LCD of the operation panel. When "DOWNLOAD COMPLETE!" is displayed, download is completed. Turn OFF the power of the machine, and disconnect the USB cable.
- 12) Terminate the integration maintenance program, and turn ON the machine again.

Download is completed with the above procedures.

Note: When another machine is connected, connect the USB cable again and select "File" → "Reconnect" on the menu bar of the integration maintenance program. Repeat the above procedures from 5).



*** Inhibition during download (Important)**

If download is failed, the next download may not be executed. Use great care not to execute the following items during download.

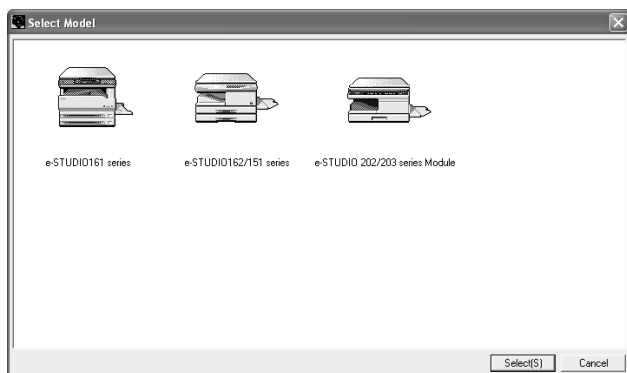
- Never turn off the machine.
- Never disconnect the download cable (USB cable).

*** If the above inhibition item occurs during downloading, turn OFF/ON the power.**

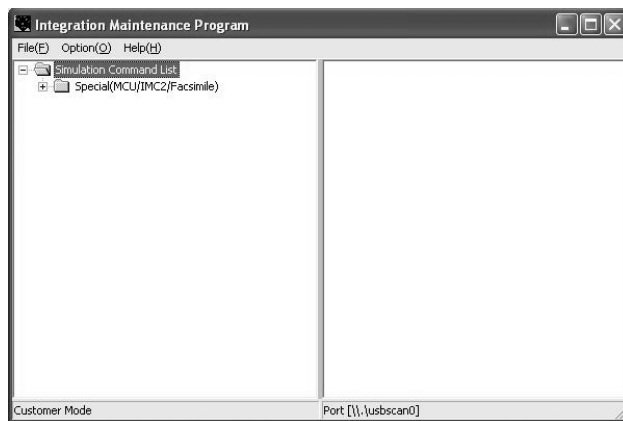
- 1) When "DOWNLOAD MODE" is displayed on the operation panel, execute the download procedure again.
- 2) If "DOWNLOAD MODE" is not displayed on the operation panel, turn OFF the power and press and hold [C] key and [ZOOM DOWN] key (left key) and turn ON the power. Check that "DOWNLOAD MODE" is displayed on the operation panel, and execute the download procedure again.
If "DOWNLOAD MODE" is not still displayed, replace the MCU with a new one.

3. Version acquisition procedures

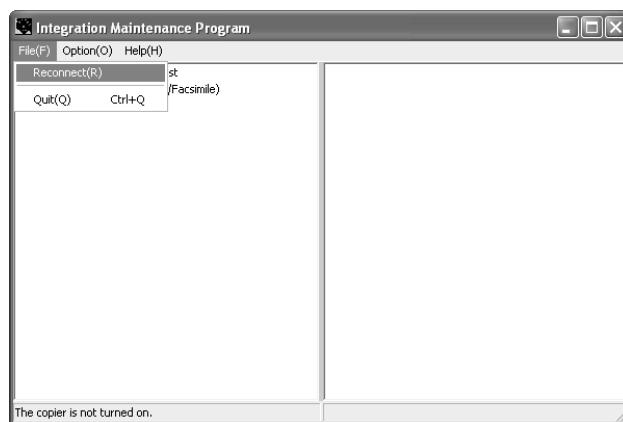
- 1) Main unit side: Execute simulation No. 49-01 (Flash ROM program write mode).
Check that "DOWNLOAD MODE" is displayed on the operation panel of the main unit. (Press and hold [C] key and [ZOOM DOWN] key (left key) together, and turn on the power simultaneously.)
- 2) Connect the machine and the PC with a USB cable.
- 3) PC side: Boost "Maintenance.exe" and select "e-STUDIO202/203 series Module" in the "Select Model" menu.



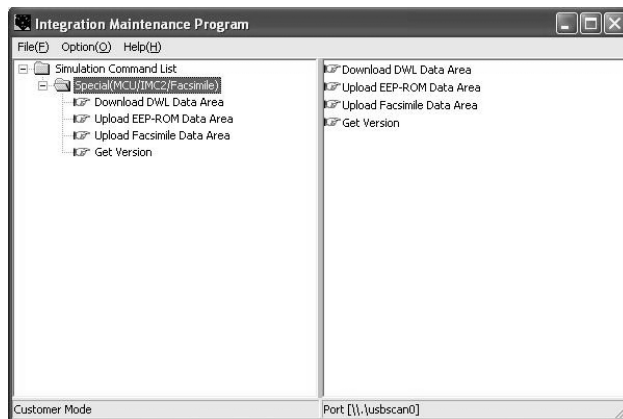
- 4) PC side: Check that the "Simulation Command List" tree on the integration maintenance program.



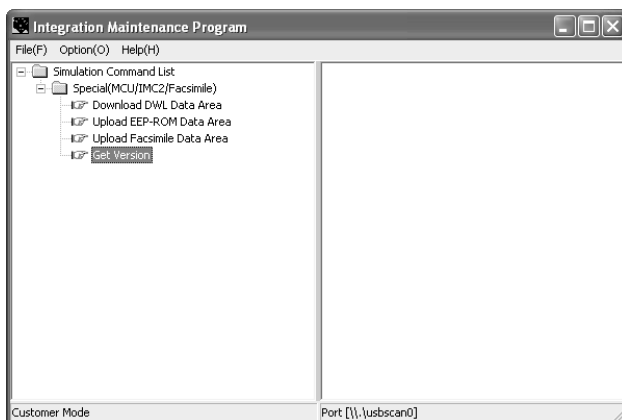
- 5) PC side: Boot the integration maintenance program. If "The copier is not turned on." is displayed, select "File" → "Reconnect" on the menu bar.



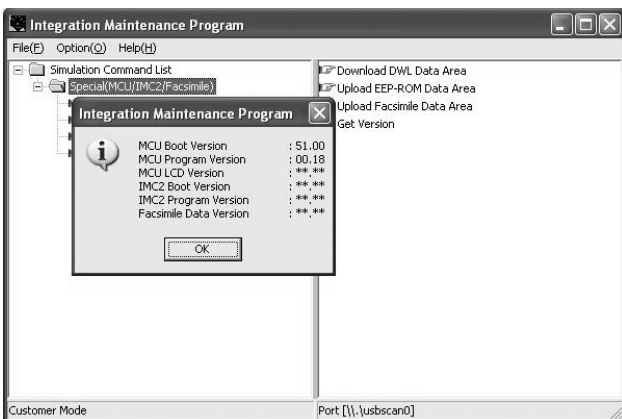
- 6) PC side: Check that trees are displayed on "Special (MCU/IMC2/Facsimile)" in the integration maintenance program. (If trees are not displayed, check that the USB cable is connected and select "Reconnect" again in procedure 5).



- 7) PC side: Double-click "Special (MCU/IMC2/Facsimile)" in the main tree items to develop its sub trees. Select "Get Version" in the sub trees.



- 8) Check that the following display is shown.



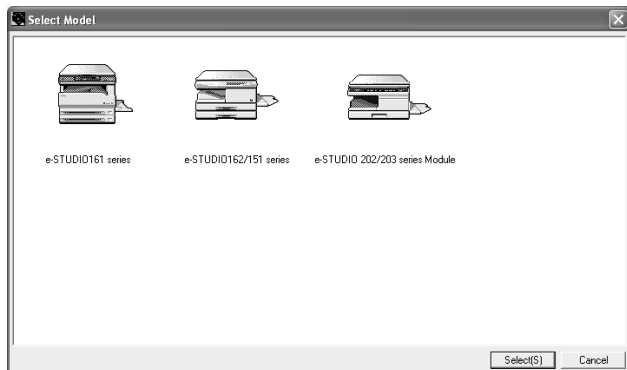
With the above procedures, version acquisition is completed.

- The display of "**.*" means its version is not downloaded. The downloaded versions are displayed in a version number as shown in "MCU Boot Version" and "MCU program Version".

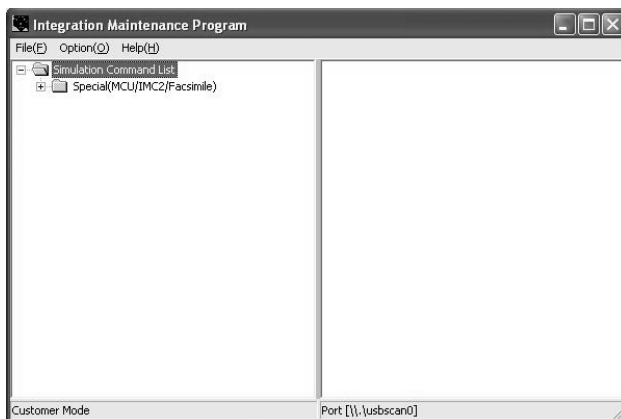
4. EEPROM data acquisition procedure

EEPROM data is acquired to the PC. Use this procedure as data maintenance of EEPROM.

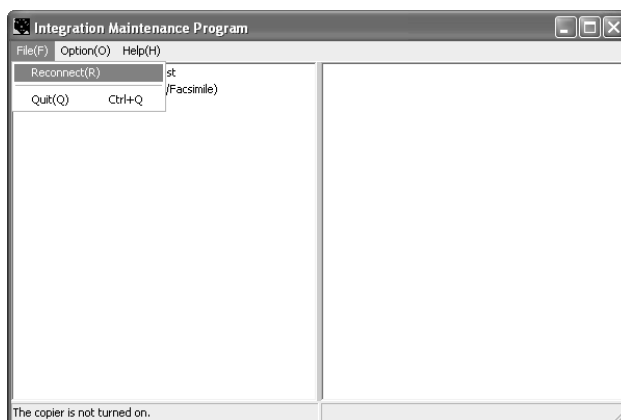
- 1) Main unit side: Execute simulation No. 49-01 (Flash ROM program write mode).
Check that "DOWNLOAD MODE" is displayed on the operation panel of the main unit. (Press and hold [C] key and [ZOOM DOWN] key (left key) together, and turn on the power simultaneously.)
- 2) Connect the machine and the PC with a USB cable.
- 3) PC side: Boot "Maintenance.exe" and select "e-STUDIO202/203 series Module" in the "Select Model" menu.



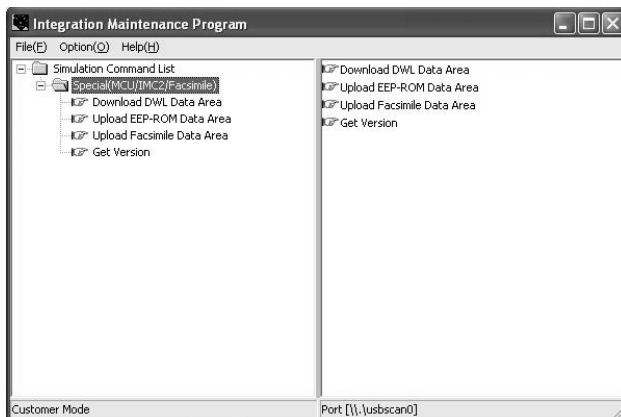
- 4) PC side: Check that "Simulation Command List" tree is displayed in the integration maintenance program.



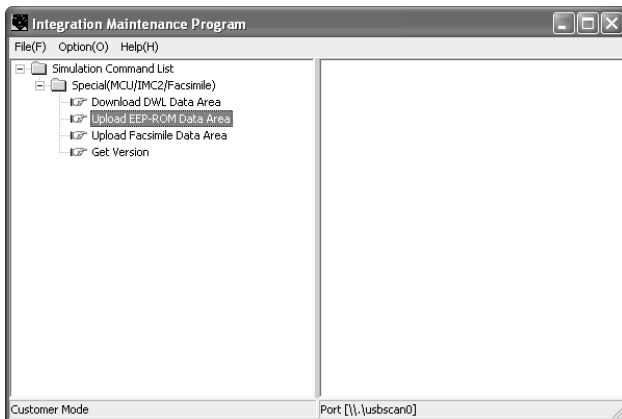
- 5) PC side: Boot the integration maintenance program. If "The copier is not turned on." is displayed on the lower side of the display, select "File" → "Reconnect" on the menu bar.



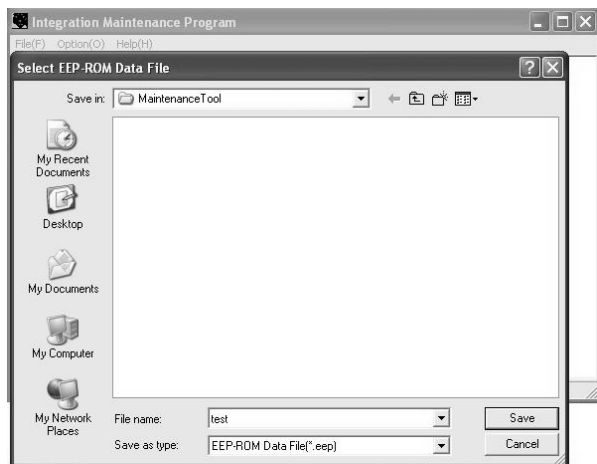
- 6) PC side: Check that trees are displayed on "Special (MCU/IMC2/Facsimile)" in the integration maintenance program. (If trees are not displayed, check that the USB cable is connected and select "Reconnect" again in procedure 5).



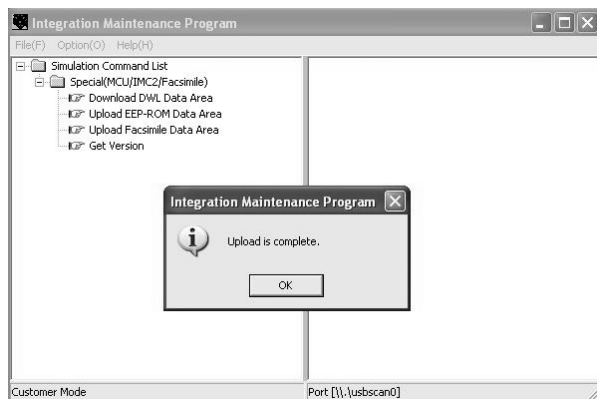
- 7) PC side: Double-click "Special (MCU/IMC2/Facsimile)" to develop its sub trees, and select "Upload EEPROM Data Area" in the sub trees.



- 8) PC side: Enter a desired file name, and select "Save."



- 9) PC side: When upload is completed, the complete message is displayed.



With the above procedure, the EEPROM data acquisition is completed.

Data acquired by the EEPROM data acquisition procedure are saved in a file with extension of .eep.

5. Installing procedures

<USB integration maintenance program installation>

Driver installation is made on plug-and-play.

<Installation on Windows Vista>

- 1) Main unit side: Execute simulation No. 49-01 (Flash ROM program write mode).
Check that "d" is displayed on the LCD of the operation panel. (Press and hold [C] key and [ZOOM DOWN] key (left key) together, and turn on the power simultaneously.)
- 2) Connect the machine and the PC with a USB cable.
- 3) The [Found New Hardware] display is shown as below. Select [Locate and install driver software (recommended)].

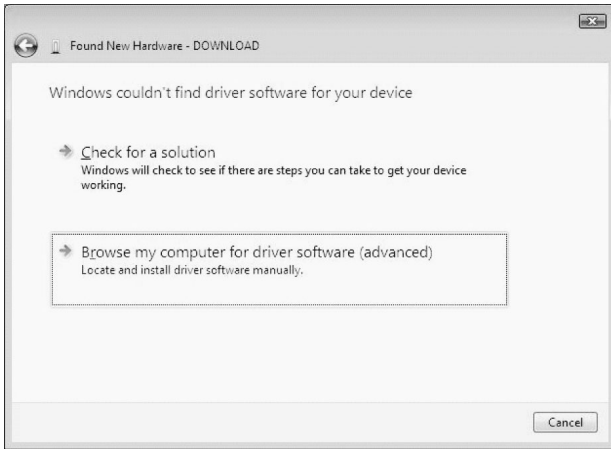


Note: A message to confirm the administrator of the computer is displayed. Press [Agree] button.

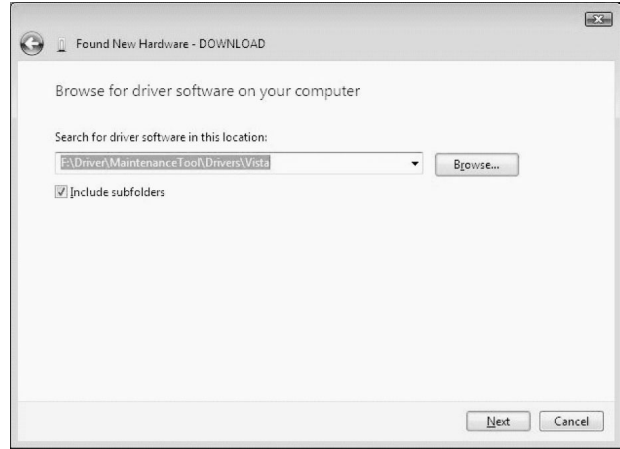
- 4) The [Found New Hardware - DOWNLOAD] display is shown. Click [I don't have the disc. Show me other options.].



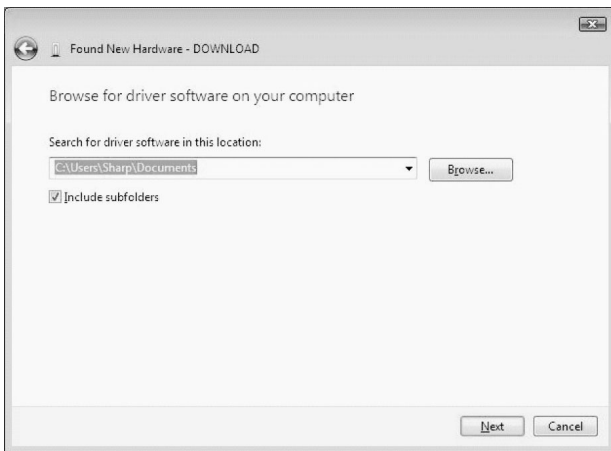
- 5) When the following display is shown, select [Browse my computer for driver software (advanced)].



- 8) The path to the folder which includes the maintenance tool driver (Maintenance.inf) is displayed. Press [Next] button.



- 6) The following display is shown.



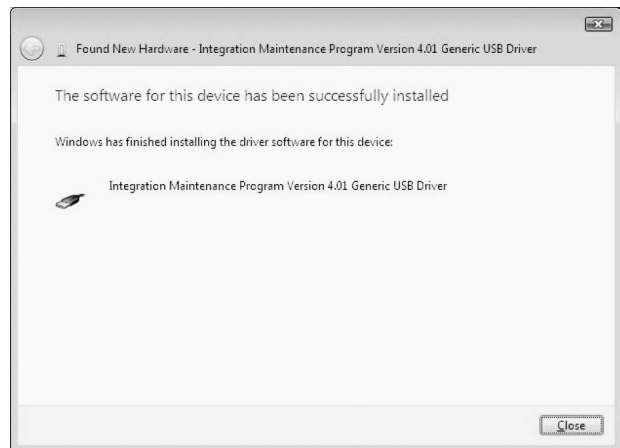
- 9) When the following display is shown, select [Install this driver software anyway].



- 7) Press [Browse] button, specify the folder which includes the maintenance tool driver (Maintenance.inf), and press [OK] button.



- 10) When the following display is shown, close [Close] button to complete installation.

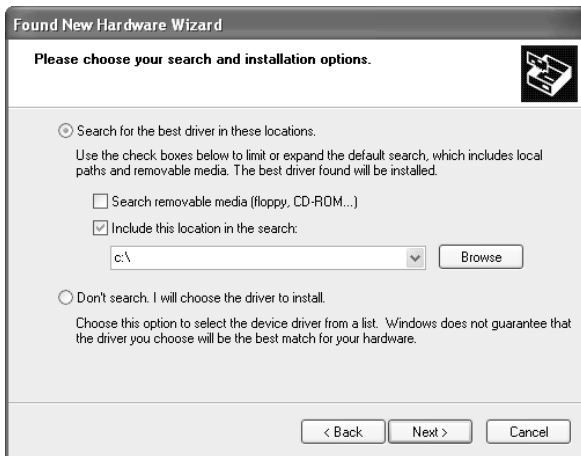


<Installation on Windows XP>

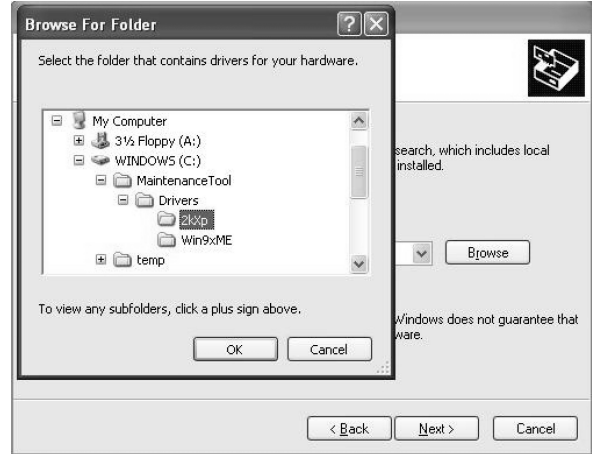
- 1) Main unit side: Execute simulation No. 49-01 (Flash ROM program write mode).
Check that "DOWNLOAD MODE" is displayed on the LCD of the operation panel. (Press and hold [C] key and [ZOOM DOWN] key (left key) together, and turn on the power simultaneously.)
- 2) Connect the machine and the PC with a USB cable.
- 3) The following display is shown.
Select [Install from a list or specific location] and press <Next> button.



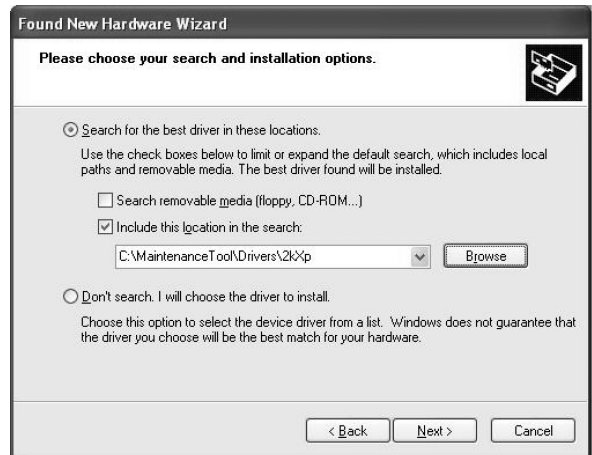
- 4) Select [Include this location in the search;]. If the search location is not the folder which includes the maintenance tool driver (Mainte.inf), select <Browse>. If the search location is the folder which includes the maintenance tool driver, press <Next> button to go to procedure 7).



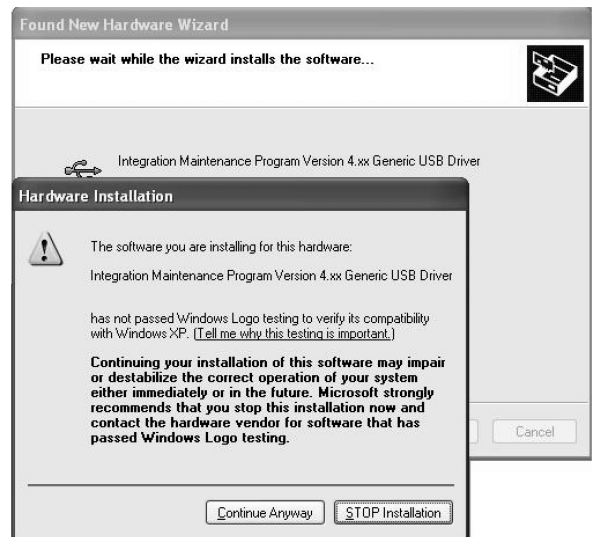
- 5) Select the folder which includes the maintenance tool driver (Mainte.inf) and press <OK> button.
(Suppose that the driver is included in C:\MaintenanceTool\Drivers\2kXp folder.)



- 6) Check the path to the folder which includes the maintenance tool driver (Mainte.inf), and press <Next> button.



- 7) When the following display is shown, press [Continue Anyway] button.



- 8) When the following display is shown, installation is completed. Press <Finish> button.



With the above procedures, installation (on Windows XP) of the integration maintenance program is completed.

<Installation on Windows 2000>

- 1) Main unit side: Execute simulation No. 49-01 (Flash ROM program write mode).
Check that "DOWNLOAD MODE" is displayed on the LCD of the operation panel. (Press and hold [C] key and [ZOOM DOWN] key (left key) together, and turn on the power simultaneously.)
- 2) Connect the machine and the PC with a USB cable.
- 3) Check that the Found New Hardware Wizard is displayed, and press <Next> button.



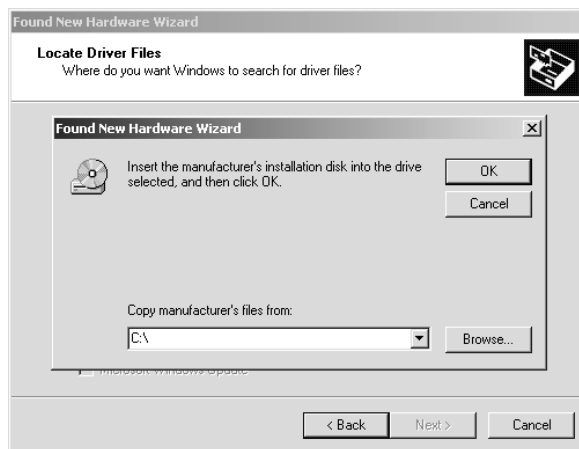
- 4) Select [Search for a suitable driver for my device] and press <Next> button.



- 5) Select [Specify a location] and press <Next> button.



- 6) Select [Include this location in the search;]. If the search location is not the folder which includes the maintenance tool driver (Mainte.inf), select <Browse>. If the search location is the folder which includes the maintenance tool driver, press <Next> button to go to procedure 9).

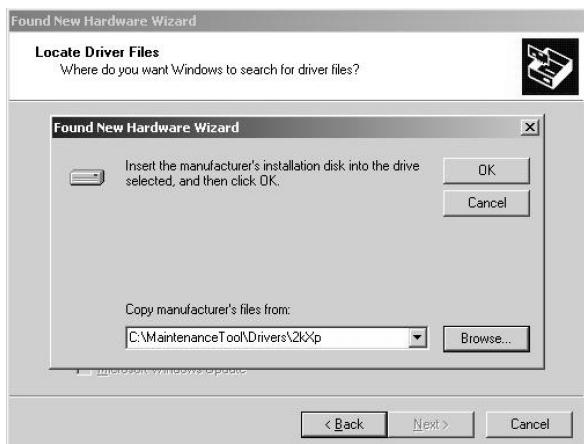


- 7) Specify the folder which includes the maintenance tool driver (Mainte.inf), and press <Open> button.

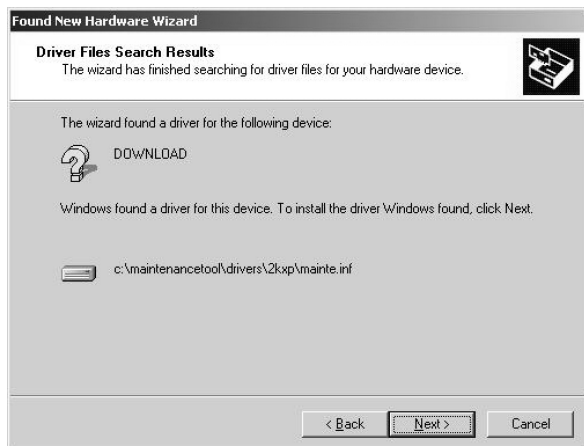


- Check that the path to the folder which includes the maintenance tool driver (Mainte.inf) is displayed, and press <OK> button.

(Suppose that the maintenance tool driver is included in C:\MaintenanceTool\Drivers\2kXp folder.)



- Press <Next> button to start installation.



- When the following display is shown, installation is completed. Press <Finish> button.



- Restart the PC.

With the above procedures, installation (on Windows 2000) of the integration maintenance program is completed.

<Installation on Windows Me>

- Main unit side: Execute simulation No. 49-01 (Flash ROM program write mode).
Check that "DOWNLOAD MODE" is displayed on the LCD of the operation panel. (Press and hold [C] key and [ZOOM DOWN] key (left key) together, and turn on the power simultaneously.)
- Connect the machine and the PC with a USB cable.
- The following display is shown on the PC side.
Select [Specify the location of the driver], and press <Next> button.



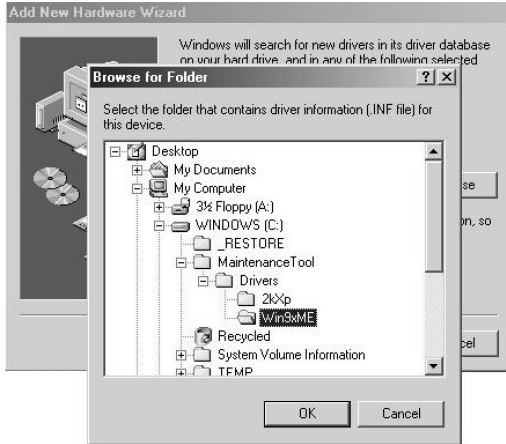
- Select [Specify a location], specify the folder which includes the maintenance tool driver (Mainte.inf) as the search location, and press <Next> button.

If the search location does not include the maintenance tool driver (Mainte.inf), press <Browse> button to specify the folder which includes the maintenance tool driver (Mainte.inf).

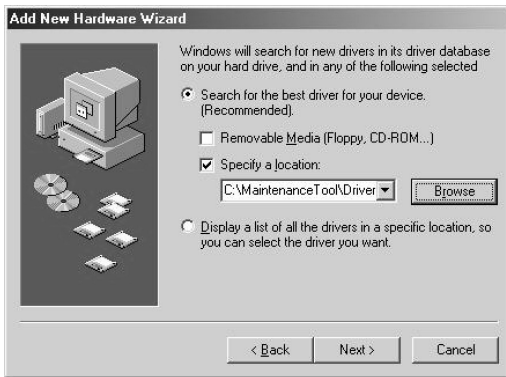
(Suppose that the maintenance tool driver is included in C:\MaintenanceTool\Drivers\Win9xMe folder.)



- 5) Select the folder which includes maintenance tool driver (Mainte.inf), and press <OK> button.
(Suppose that the driver is included in C:\MaintenanceTool\Drivers\Win9xMe folder.)



- 6) Check that the path to the folder which includes the maintenance tool driver (Mainte.inf) is displayed, and press <Next> button.



- 7) When the following display is shown, installation is completed. Press <Finish> button.

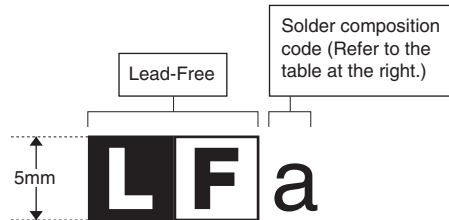


- 8) Restart the PC.
With the above procedures, installation (on Windows ME) of the integration maintenance program is completed.

LEAD-FREE SOLDER

The PWB's of this model employs lead-free solder. The "LF" marks indicated on the PWB's and the Service Manual mean "Lead-Free" solder. The alphabet following the LF mark shows the kind of lead-free solder.

Example:



<Solder composition code of lead-free solder>

Solder composition	Solder composition code
Sn-Ag-Cu	a
Sn-Ag-Bi Sn-Ag-Bi-Cu	b
Sn-Zn-Bi	z
Sn-In-Ag-Bi	i
Sn-Cu-Ni	n
Sn-Ag-Sb	s
Bi-Sn-Ag-P Bi-Sn-Ag	p

(1) NOTE FOR THE USE OF LEAD-FREE SOLDER THREAD

When repairing a lead-free solder PWB, use lead-free solder thread.

Never use conventional lead solder thread, which may cause a breakdown or an accident.

Since the melting point of lead-free solder thread is about 40°C higher than that of conventional lead solder thread, the use of the exclusive-use soldering iron is recommendable.

(2) NOTE FOR SOLDERING WORK

Since the melting point of lead-free solder is about 220°C, which is about 40°C higher than that of conventional lead solder, and its soldering capacity is inferior to conventional one, it is apt to keep the soldering iron in contact with the PWB for longer time. This may cause land separation or may exceed the heat-resistive temperature of components. Use enough care to separate the soldering iron from the PWB when completion of soldering is confirmed.

Since lead-free solder includes a greater quantity of tin, the iron tip may corrode easily. Turn ON/OFF the soldering iron power frequently.

If different-kind solder remains on the soldering iron tip, it is melted together with lead-free solder. To avoid this, clean the soldering iron tip after completion of soldering work.

If the soldering iron tip is discolored black during soldering work, clean and file the tip with steel wool or a fine filer.

CAUTION FOR BATTERY REPLACEMENT

(Danish) ADVARSEL !
Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandoren.

(English) Caution !
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the manufacturer.

Dispose of used batteries according to manufacturer's instructions.

(Finnish) VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.

(French) ATTENTION
Il y a danger d'explosion s' il y a remplacement incorrect
de la batterie. Remplacer uniquement avec une batterie du
même type ou d'un type équivalent recommandé par
le constructeur.

Mettre au rebut les batteries usagées conformément aux
instructions du fabricant.

(Swedish) VARNING
Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent
typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens
instruktion.

(German) Achtung
Explosionsgefahr bei Verwendung inkorrekt er Batterien.
Als Ersatzbatterien dürfen nur Batterien vom gleichen Typ oder
vom Hersteller empfohlene Batterien verwendet werden.
Entsorgung der gebrauchten Batterien nur nach den vom
Hersteller angegebenen Anweisungen.

CAUTION FOR BATTERY DISPOSAL

"BATTERY DISPOSAL"

THIS PRODUCT CONTAINS A LITHIUM PRIMARY
(MANGANESE DIOXIDE) MEMORY BACK-UP BATTERY
THAT MUST BE DISPOSED OF PROPERLY. REMOVE THE
BATTERY FROM THE PRODUCT AND CONTACT YOUR
LOCAL ENVIRONMENTAL AGENCIES FOR INFORMATION
ON RECYCLING AND DISPOSAL OPTIONS.

"TRAITEMENT DES PILES USAGÉES"
CE PRODUIT CONTIENT UNE PILE DE SAUVEGARDE DE
MÉMOIRE LITHIUM PRIMAIRE (DIOXYDE DE MANGANÈSE)
QUI DOIT ÊTRE TRAITÉE CORRECTEMENT. ENLEVEZ LA
PILE DU PRODUIT ET PRENEZ CONTACT AVEC VOTRE
AGENCE ENVIRONNEMENTALE LOCALE POUR DES
INFORMATIONS SUR LES MÉTHODES DE RECYCLAGE ET
DE TRAITEMENT.

TOSHIBA

TOSHIBA TEC CORPORATION

2-17-2, HIGASHIGOTANDA, SHINAGAWA-KU, TOKYO, 141-8664, JAPAN