KIP

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KIP 1880 Copier

Technical Manual

Service Ver B
Parts Ver 11

Contents

Chapter 1

Introduction

I .Features

1)Copy Speed of 2 copies/min. in A0 size

1 to 1 copy of A0 size,that is equivalent to 4 pages of news paper size,in speed of 2 copies/min. and of A1 size in speed of 3 copies/min. can be made.

2)2-way Paper Feeding System

Convenient 2-way Paper Feeding, that is, Automatic Paper Feeding by Roll Paper corresponding to A0/A1 and A1/A2 size and Manual Paper Feeding corresponding to A0-A4 size, is employed.

3)Possible to use on ordinary Power Outlet

Special arrangement for power line is not needed as ordinary Power Outlet can bu used.

4)Space-Saving Design

Compact size of 130cm(W)x46cm(D) is achieved by rational design and installation in less space in office can be made[Occupied Space:310cm(W)x 230cm(D)].

5)Superior Operation

Superior operation is provided, such as all operation for copying is made on front as well as Copy is made automatically just inserting Original.

6)Others

*Long original up to 3m length is possible.
*Self-Diagnosis function telling the cause of trouble is provided, if trouble occurs on machine.

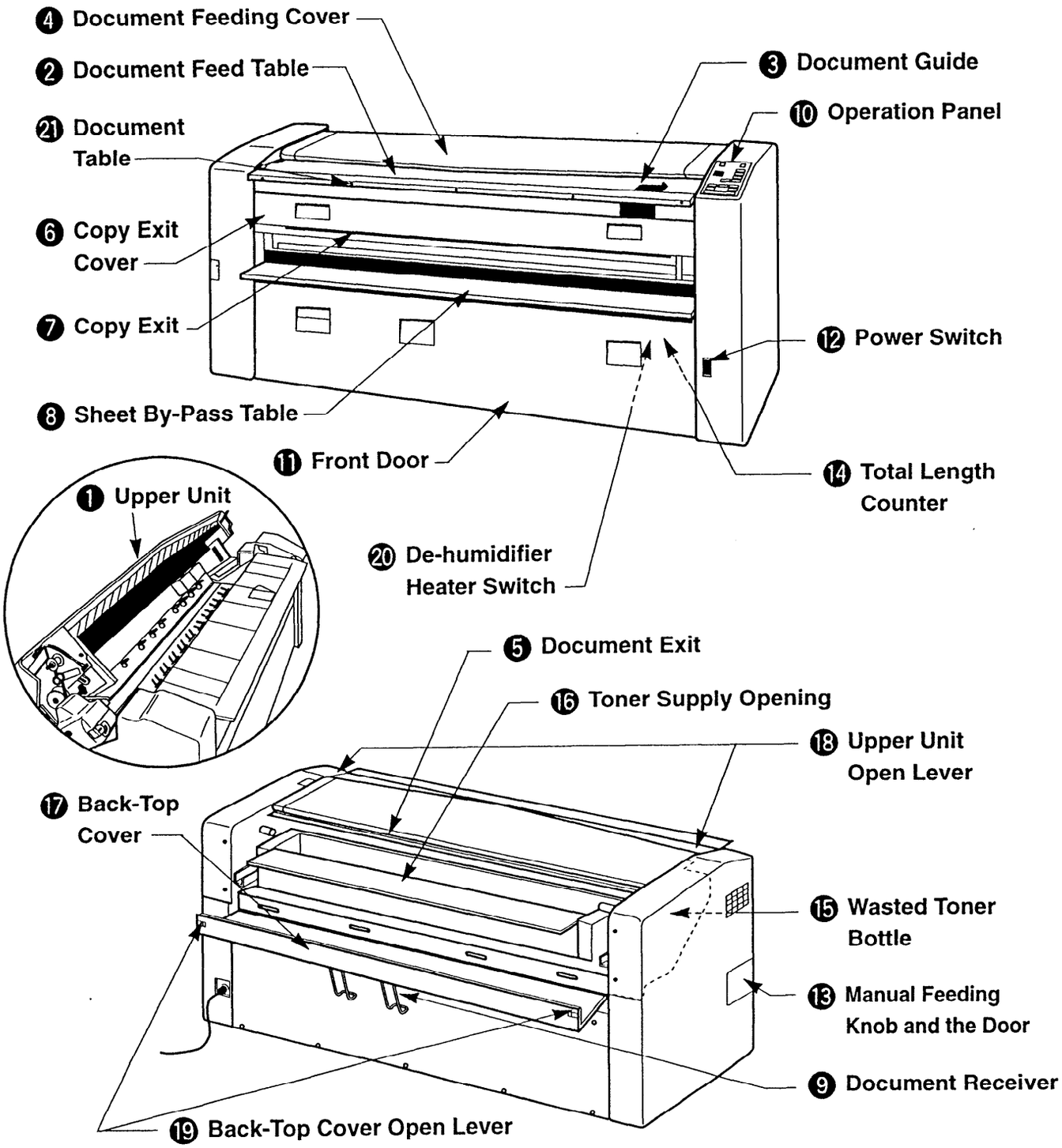
II .Specifications

Body	Desk Top Type
Original	Original Moving System
Photo-conductor	OPC
Copying System	Indirect Electrostatic System
Development	Dry System
Fusing System	Heat Pressure Roller
Kind of Original	Sheet
Original Size	W:210-914mm, L:279-3,000mm
Copy Size	A0-A4(portrait),36"-11"(portrait) Max length:3,000mm(Plain Paper only)
Original Thickness	0.05-0.2mm
Wait Time	8 min.
First Copy Time	33 sec./A0
Copying Speed	60mm/sec.
Copy Magnification Ratio	1 : 1
Paper Feeding System	Automatic Roll Paper Feed/Manual Sheet Feed
Power Source	Voltage : 220-240V ; Frequency: 50Hz 120V ; 60Hz 100V ; 50Hz/60Hz
Power Consumption	1,450W
Dimensions	W: 1,293mm D: 460mm H: 580mm
Weight	125kg

Note; Some illustrations and contents of this booklet may be differed from actual machine due to improvement or modifications applied on machine.

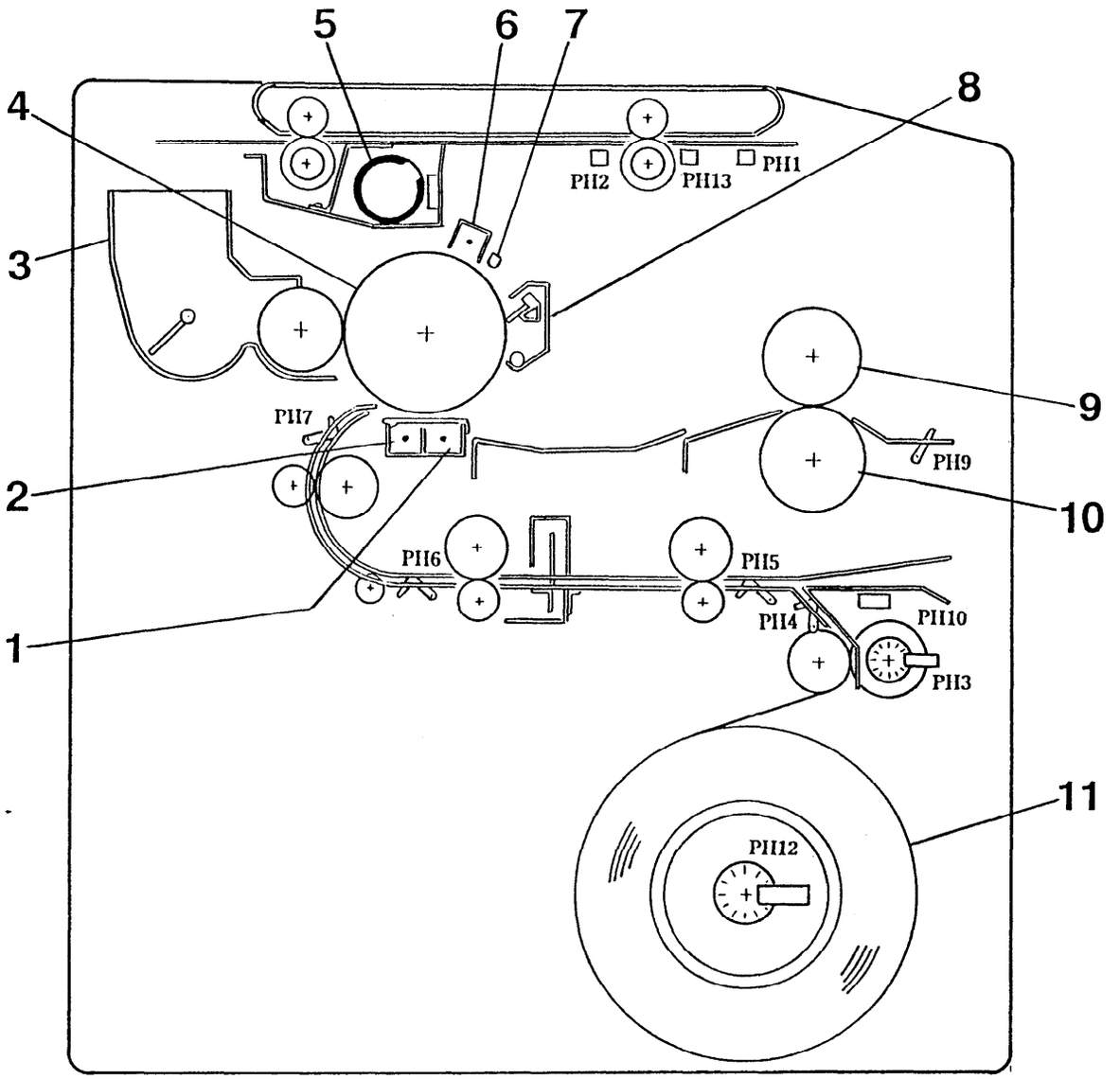
Ⅲ .Name of Each Part

A. Appearance Drawing



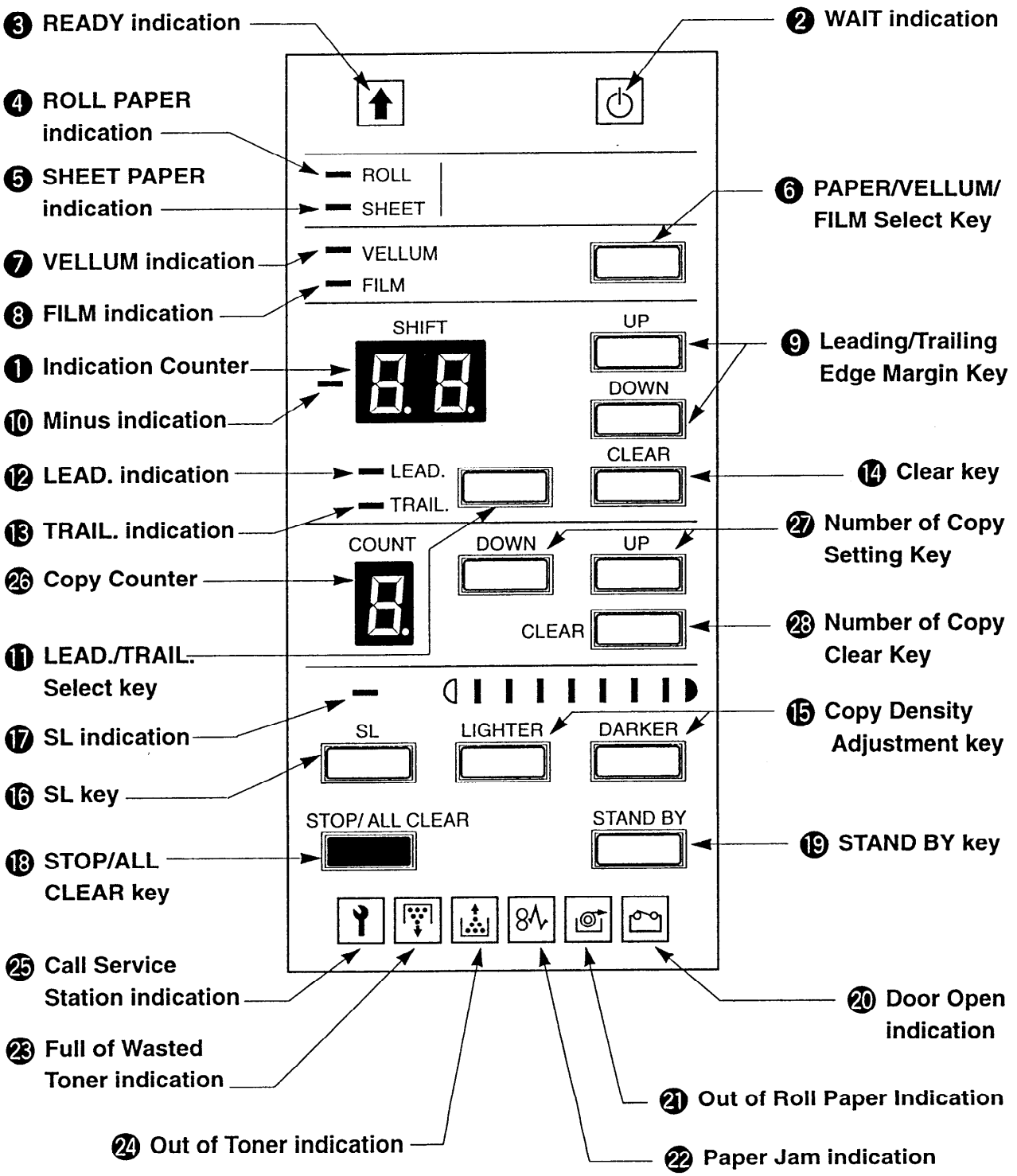
Name	Function
❶ **Upper Unit**	This is composed of Document Feed, Photoconductive Drum, Developer, Exposure unit and etc.
❷ **Document Feed Table**	Original is inserted from here by referring to Size Mark
❸ **Document Guide**	Set this Guide to meet Original size and feed Original along with Guide.
❹ **Document Feeding Cover**	Original is fed under this.
❺ **Document Exit**	Original comes out from here.
❻ **Copy Exit Cover**	Open this when cleaning Fuser part or making treatment of Paper Jam.
❼ **Copy Exit**	Copy comes out from here.
❽ **Sheet By-Pass Table**	Open this when taking copy by sheet paper. It is switched to Sheet Paper mode automatically. Insert Paper from here
❾ **Document Receiver**	Original is received by this.
❿ **Operation Panel**	Operate when Copy is taken. Machine condition also is indicated.
⓫ **Front Door**	Open this when Roll Paper is replaced.
⓬ **Power Switch**	Turn Power of Machine ON & OFF. "I" side is ON.
⓭ **Manual Feeding Knob and the Door**	Use this Knob when cleaning Fuser Rollers. Fuser Rollers are revolved by turning the Knob. Do not turn this knob because this knob is prepared exclusively for service engineer.
⓮ **Total Length Counter**	Accumulated length is indicated. (1 count/1 yard)
⓯ **Wasted Toner Bottle**	Wasted Toner is collected into this bottle.
⓰ **Toner Supply Opening**	Hopper where Toner is supplied.
⓱ **Back-Top Cover**	Open this when suppling Toner.
⓲ **Upper Unit Open Lever**	Upper Unit is opened by pushing these two Levers.
⓳ **Back-Top Cover Open Lever**	Back-Top Cover is opened by pulling these two Levers.
⓴ **De-humidifier Heater Switch**	Turn this switch ON when using Roll Paper in high humidity condition.
㉑ **Document Table**	Open this surely when making copies.

B. Section Drawing



1. Separating Charging Unit
2. Transfer Charging Unit
3. Developer Unit
4. Photoconductive Drum
5. Original Exposure Lamp
6. First Charging Unit
7. Pre-Exposure Lamp
8. Cleaner Unit
9. Fusing Roller
10. Pressure Roller
11. Roll Paper

C. Name of Operation Panel



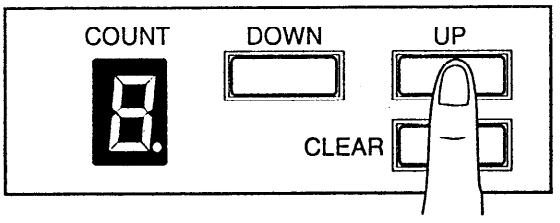
Name	Function
❶ **Indication Counter**	Indication Counter has 2 functions. A. Indication of Edge Margin selected. B. Indication of Self-Diagnosis Code in 2 digits when abnormal condition, such as paper jam and etc., is occurred.
❷ **WAIT indication**	While this indication is lit, Machine is under warm-up condition and Copy can not be made. Wait until Lamp is shut off.
❸ **READY indication**	Lighting of this indicator means that Copy operation is possible. But, it is shut off when Copy operation starts.
❹ **ROLL PAPER indication**	Indication that Roll paper is selected. It is set to Roll Paper mode normally.
❺ **SHEET PAPER indication**	Indication that Sheet Paper is selected.
❻ **PAPER/VELLUM/FILM Select Key**	Use this when selecting either Paper, Vellum ❼ or Film ❽mode.
❼ **VELLUM indication**	Indication that Vellum material is selected.
❽ **FILM indication**	Indication that Film material is selected.
❾ **Leading/Trailing Edge Margin Key**	Adjustment of Leading or Trailing Edge Margin is made. Margin Key Normally, use scale "0". But if Leading Edge Margin of copy is needed, adjust by pushing "UP" key and minus margin of Leading Edge of Copy is needed, adjust by pushing "DOWN" key. Trailing Edge Margin of Copy is also the same way as the above, but minus margin of Trailing Edge of Copy can not be done. Adjustment range is ± 40 mm on Leading Edge and 0 ~40 mm on Trailing Edge. In case of using Sheet Paper, Trailing Edge Margin can not be adjusted.
❿ **Minus indication**	This indicates Minus adjustment for Leading Edge Margin.
⓫ **LEAD./TRAIL. Select Key**	Use this when selecting to adjust and to indicate either Leading Edge Margin or Trailing Edge Margin.
⓬ **LEAD. indication**	Indication that Leading Edge Margin is selected.
⓭ **TRAIL. indication**	Indication that Trailing Edge Margin is selected.

⑭ **Clear key**	Re-setting of Leading Edge Margin to be "0" when LEAD. indication is lit and re-setting of Trailing Edge Margin to be "0" when TRAIL. indication is lit.
⑮ **Copy Density Adjustment key**	Adjust according to Original image density.
⑯ **SL key**	If adjustment is impossible by Copy Density Adjustment key, use this as the supplement.
⑰ **SL indication**	Indication that SL (Strong Light) is selected.
⑱ **STOP/ALL CLEAR key**	● Use when Copy operation is to be stopped. The machine is stopped immediately when this key is depressed and Paper Jam indication is lit. Remove jammed paper in accordance with Jam Treatment. ● Use when all settings are cleared. Then, the setting of Machine returns to as follows. 1) Indication of Leading/Trailing Edge Margin returns to "0". 2) LEAD/TRAIL indication returns to "LEAD". 3) Indication of Copy Density returns to "Green Lamp". 4) "SL" mode is released. 5) It is switched to PAPER material mode. 6) STAND BY mode is released.
⑲ **STAND BY key**	Push this when keeping Power on for many hours without using Machine. Wait indication flickers and Energy can be saved. When releasing STAND BY condition , re-push this key or push STOP/ALL CLEAR Key.
⑳ **Door Open indication**	This is lit if one of Upper unit, Copy Exit Cover, Front Door and Back-Top Cover is opened or not locked perfectly.
㉑ **Out of Roll Paper Indication**	Supply Roll Paper when this indication is lit.
㉒ **Paper Jam indication**	This is lit when Paper jam is occurred. At the same time, Indication Counter indicates the place of Paper Jam to make necessary treatment
㉓ **Full of Wasted Toner indication**	This is lit when Wasted Toner Bottle becomes full by Wasted Toner or Bottle is not set correctly. Replace Bottle or correct the setting.
㉔ **Out of Toner indication**	Fill Toner when this indication is lit.
㉕ **Call Service Station indication**	Call Serviceman when this indication is lit.
㉖ **Copy Counter**	Number of Copy set is indicated.
㉗ **Number of Copy Setting Key**	Use when Number of Copy is to be set.
㉘ **Number of Copy Clear Key**	Use when Print Count is to be reset. Indication returns to 1 by pushing this key.

Ⅳ .Operation Procedure

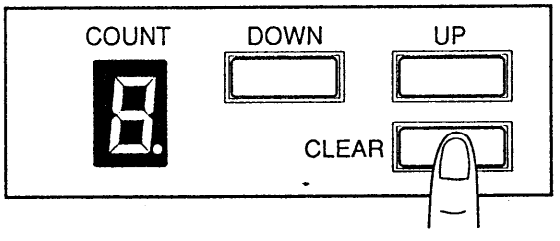
How to Set Number of Copy

❶ Input required Number of Copy (2~9) by using Number of Copy Setting Key.



- Input is not needed when single copy is made.
- Continuous Copy can not be made for the original having more than 1.25m length.
- Use of copied original is recommended in order to avoid the possible damage of true original.
- If an original is broken or having holes, the continuous copy is not possible.

❷ Change of Setting for Number of Copy.



- When error is made on setting for Number of Copy, release is made by pushing Number of Copy Clear Key.
- Set correct Number of copy again by Number of Copy Setting Key.
- Continuous copy can not be made under Manual Insersion Mode.

❸ Interruption of Continuous Copy.

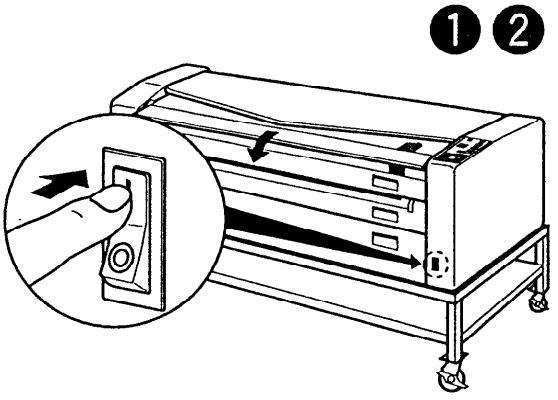
- Push Number of Copy Clear Key.
- Indication returns to 1 and continuous copy operation is stopped.

Note

- If the Original Guide is not the far right position, the copy counter flashes and the continuous copy is not possible.
- To make continuous copy, insert an original, then move the Original Guide to the far right position. The copy counter changes from flashing to illuminating, and the continuous copy is made possible.

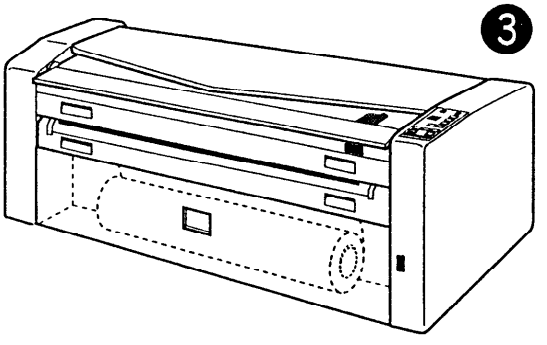
How to Make Copies by Using Roll Paper

❶ Turn Power Switch ON.



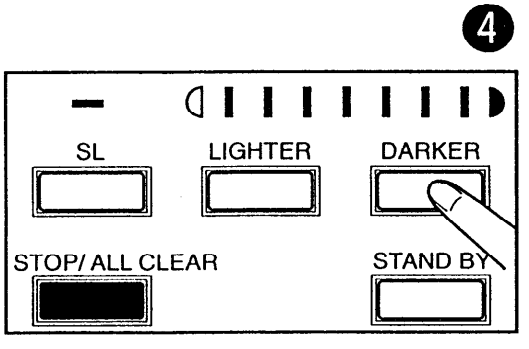
- While Machine is warm-up condition, WAIT indication on Operation Panel is lit. When it is shut off and READY indication is lit, Copy operation becomes possible.
- If Original is set before Power Switch is turned ON,Paper Jam indication(JO) is lit the moment it is turned ON.
- If Original is inserted while warm-up condition, READY indication and WAIT indication are blinking together when machine becomes READY condition.
  Wait until READY indication is lit.
- Insert Original after READY indication is lit.

❷ Open Document Table.



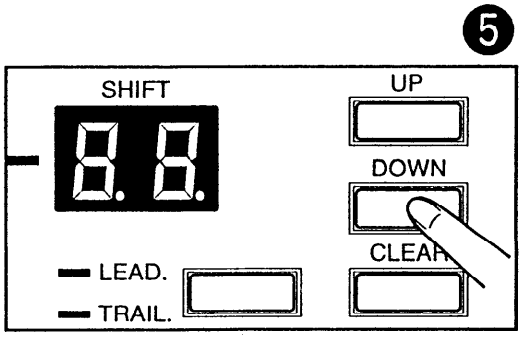
❸ Confirm that Out of Roll Paper indication is shut off and Roll paper size to be copied is set.

- When Sheet By-pass Table is opened, Operation is not switched to Roll Paper mode and Copy by Roll Paper can not be taken.



❹ Adjust Copy Density by pushing Copy Density Adjustment key.

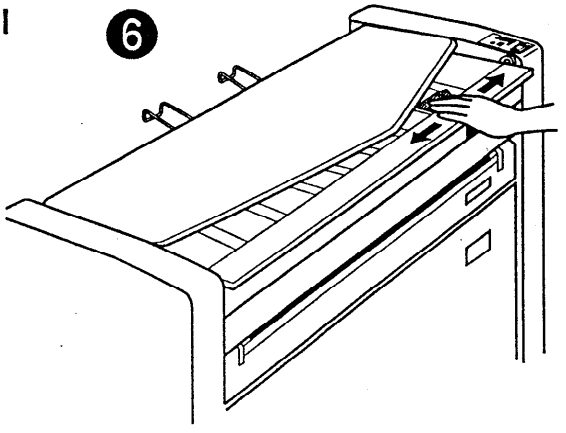
- Copy Density Adjustment is set for total 14 steps and normally it is set 7 steps of normal copy mode. If Copy is taken from normal Original, Adjustment is possible by 7 steps of normal copy mode.
- By pushing SL key, it is switched to 7 steps of Strong Light and SL indication is lit.
- If Copy is taken from Original having dark background (dark blue print and etc.), adjust it by 7 steps of Strong Light.



❺ Adjust Leading or Trailing Edge Margin, if needed, by pushing LEAD./TRAIL. select key to select LEAD. or TRAIL., and Leading/Trailing Edge Margin key.

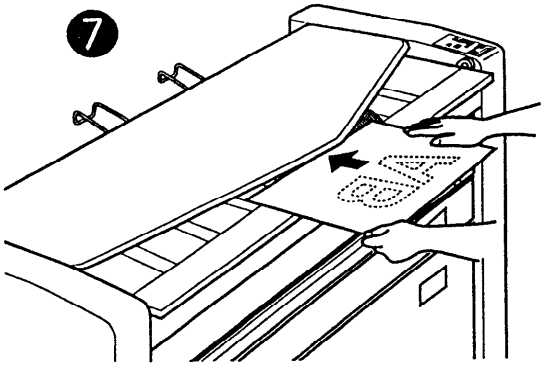
- Adjustment range is ±40 mm on Leading Edge and 0 ~+40 mm on Trailing Edge in step of 5mm.

❻ Move Document Guide to meet Original size.



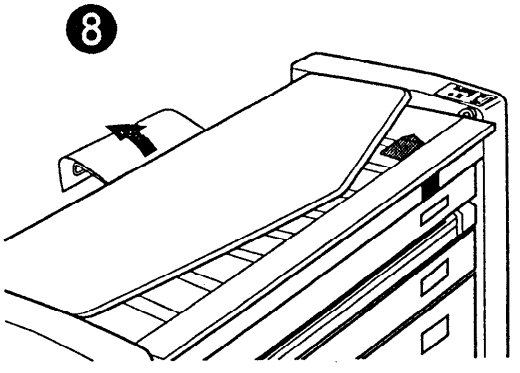
❼ Insert Original along with Document Guide. Original is pulled in a little and stopped for a moment and then is fed further.

- Place Original face-down.
- To make continuous copy, insert an original, then move the Original Guide to the far right position. The copy counter changes from flashing to illuminating, and the continuous copy is made possible.



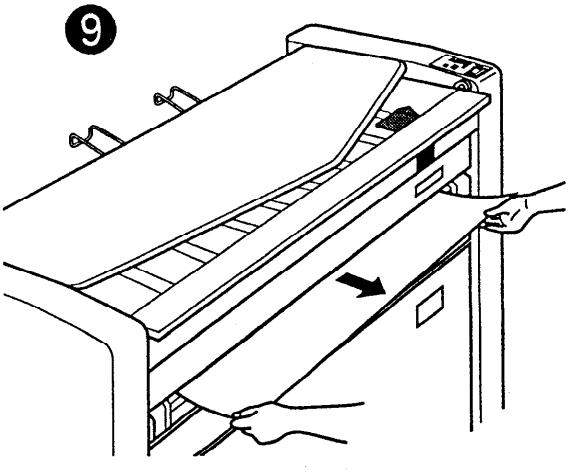
❽ Original comes out from Document Exit of the rear side.

- Remove original gently.
- When Continuous copy is made, the Original returns to the insertion entrance after copying as many as specified is complete.



❾ Copy comes out from Copy Exit and Copy operation is finished.

- Copy paper is cut according to the original length and the set margin automatically.

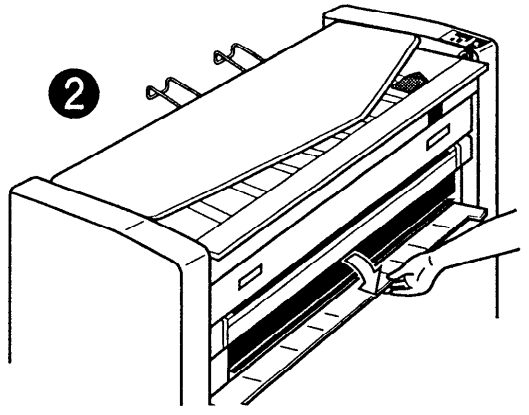


How to Make Copies by Using Sheet Paper

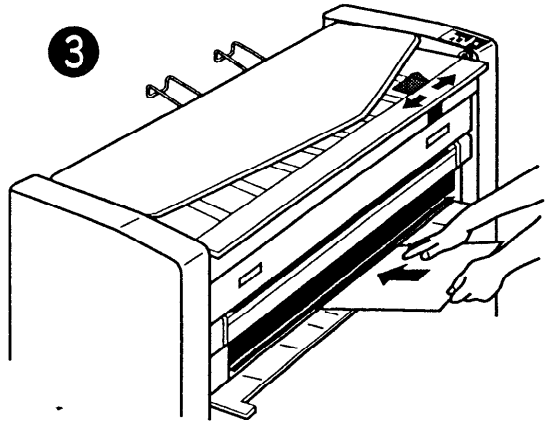
❶ Turn Power Switch ON.

❷ Open Document Table and Sheet By-Pass Table.

- When opening Sheet By-Pass Table, Sheet Paper mode is selected automatically and Sheet Paper Indication is lit.



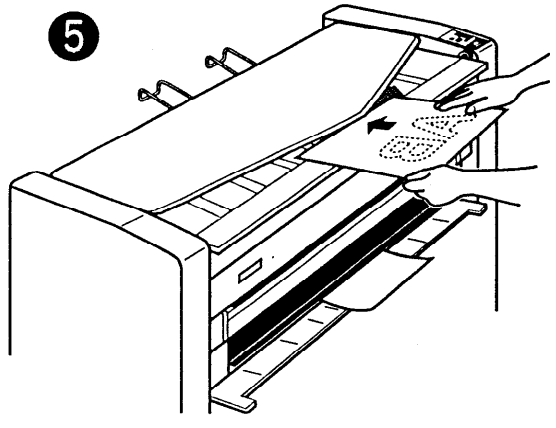
❸ Move Document Guide to meet Original size.



❹ Insert Copy paper straight along with Size indication of Sheet By-Pass Table. Copy paper is pulled in a little and is stopped.

❺ Insert Original straight along with Document Guide. Original is pulled and then is fed accordingly.

- Place Original face-down.
- Adjust by pushing Leading/Trailing Edge Margin key, if leading edge margin is needed. Trailing edge margin can not be adjusted.



❻ Original comes out from Document Exit of the rear side.

❼ Copy comes out from Copy Exit and Copy operation is finished.

- When closing Sheet By-Pass Table, It is switched to Roll Paper mode automatically.

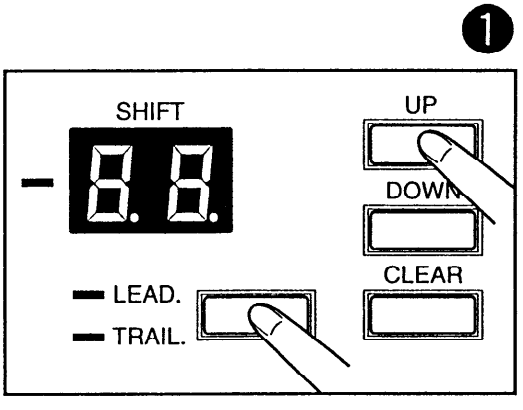
Paper Cut Mode

This is to cut approx. 280 mm of Leading part of Roll Paper.

- When Roll Paper is Set, Cut leading edge of Roll Paper as there might be notches or dirts on leading edge.
- Due to the environment of installed Machine, if copy is not taken for a long time (Power Switch is turned OFF in the evening and turned ON in the next morning to start operation and etc.), Leading part of Copy may not be good because Leading part of Roll Paper gets moisture and etc.
  If this kind of condition is occurred, it is recommend to use "Paper Cut Mode" before taking copies.

❶ Push UP key of Leading/Trailing Edge Margin Key by keeping to push LEAD./TRAIL. select key.

- This function is available only while READY indication is lit.



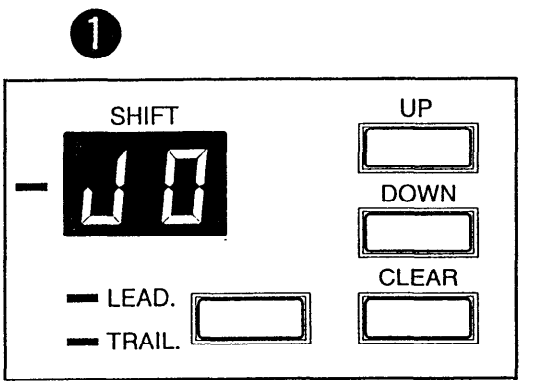
❷ Approx. 280 mm of Leading part of Roll Paper is cut and it comes out from Copy Exit.

(No copy is made on this part.)

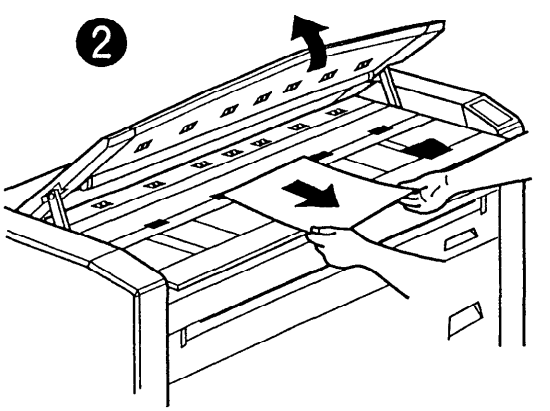
Light of Original Jam Indicator

J0 indication

❶ **Original is stopped under Document Feeding Cover and J0 indication is shown on Indication Counter.**



❷ **In this case, take out Original by lifting up Document Feeding Cover.**



❸ **Close Document Feeding Cover after that.**

- If Paper jam indication (J1 ~ J5) is shown on Indication Counter after removing Paper, remove it according to Treatment method of Paper Jam

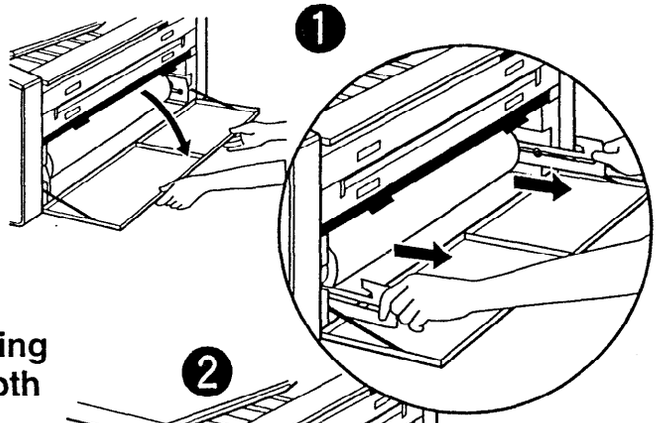
- J0 indication is shown also in case of depressing STOP/ALL CLEAR key during Copy operation.

  In that case, do with the same manner as the above.

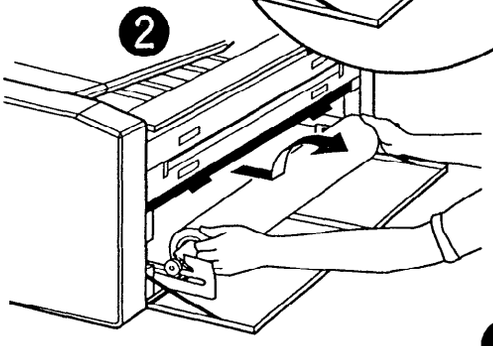
Light of Out of Paper Indicator

❶ Open Front Door by both hands.

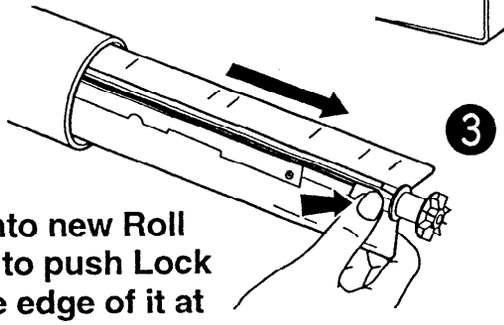
- Pull out Spool Guides as shown in illustration.



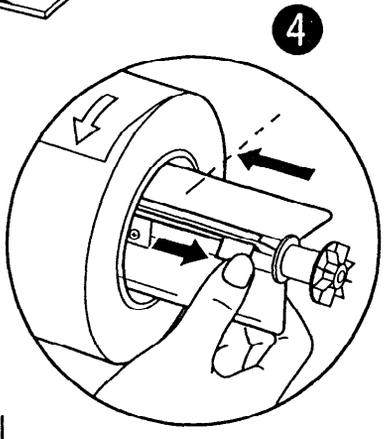
❷ Lift up Roll Paper with Spool by holding both ends of core of Roll Paper by both hands.



❸ Pull out Spool from Roll Paper Core by keeping to push Lock Lever.

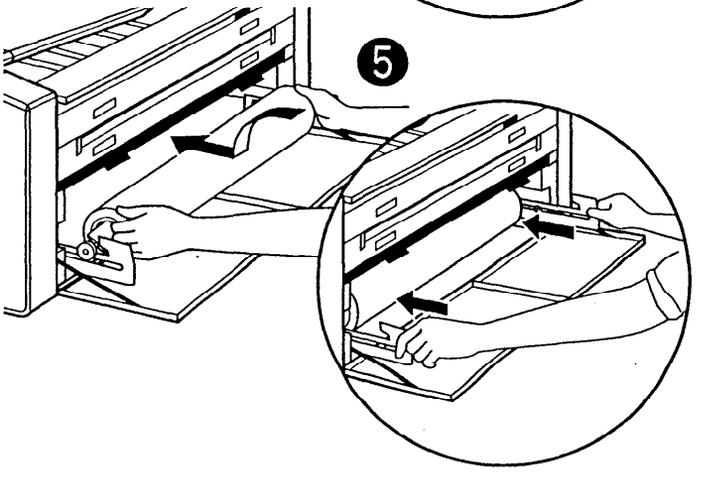


❹ Insert the Spool into new Roll Paper by keeping to push Lock lever. Then set the edge of it at the paper size indication.

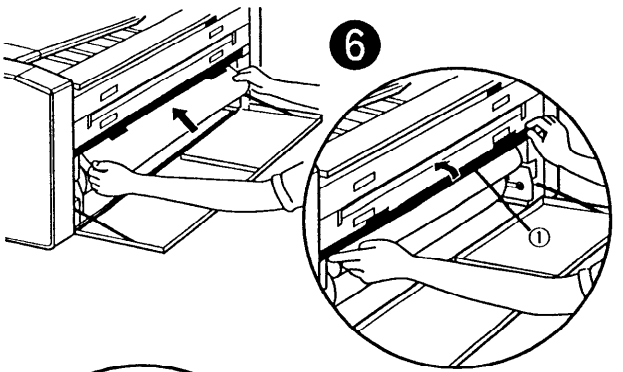


❺ Load new Roll Paper with Spool on inner groove of the Spool Guides by holding both ends of Roll Paper Core.

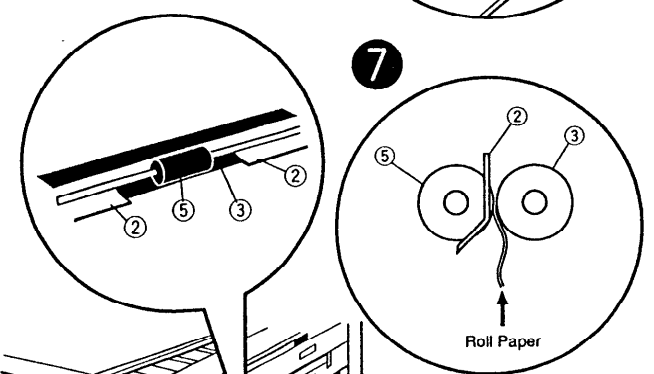
- Return Spool Guide as shown in illustration.
- Handle carefully as Roll Paper is heavy.
- Do not touch surface of Roll Paper as surface of Roll Paper is copy making side.



❻ Lift up Feeding Roller Cover ① until it is locked.

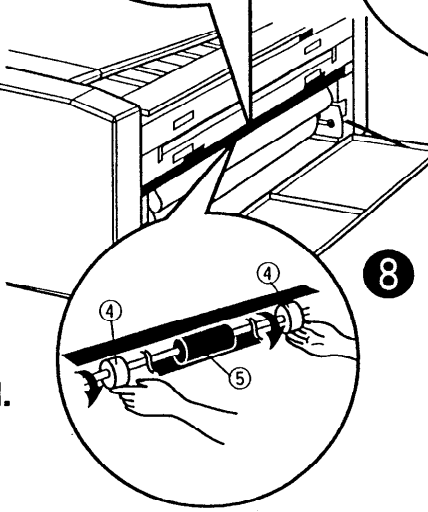


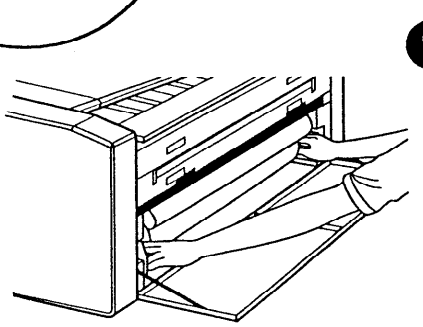
❼ Insert leading part of Roll material between Cover ② and Roller ③ approx. 5cm by holding both sides of Roll material and lower Feeding Roller Cover ①.



❽ Turn Roller ④ equipped at the side of Roller ⑤ slowly to the direction shown in illustration and feed Roll material inner side until its leading part hits to Roller.

❾ In order to avoid slant feeding, rewind Roll material a little by holding both sides of Spool until sag of Roll material is disappeared.



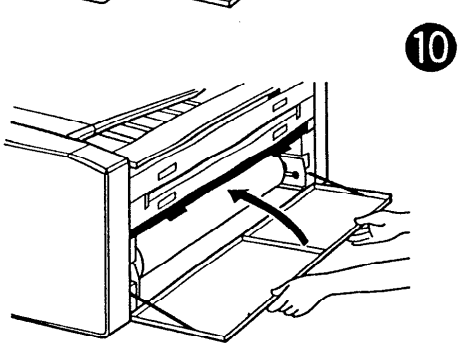


❿ Close Front Door.

- Unless Feeding Roller Cover is closed perfectly, Front Door also can not be closed.

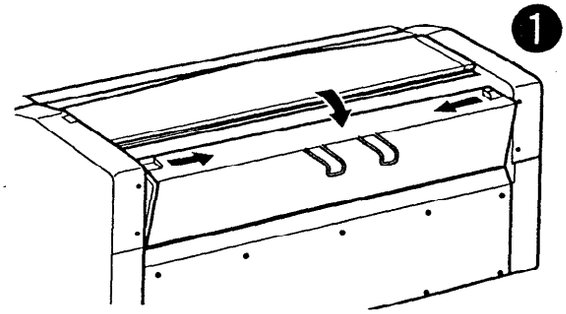
⓫ Roll Paper Indication on Operation Panel is off and Supply of Roll Paper is finished.

- When Roll Paper is Set,Cut leading edge of Roll Paper as there might be notches or dirts on leading edge.

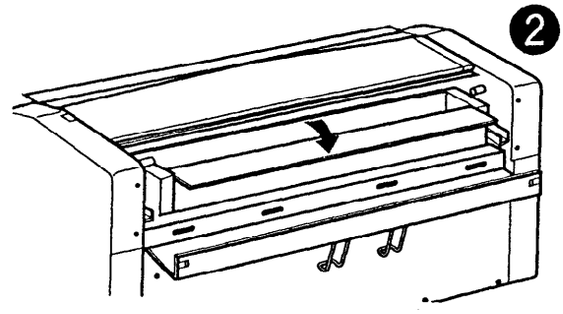


Light of Out of Toner Indicator

❶ Open Back-Top Cover by pulling Gray Levers at the both ends of left and right.

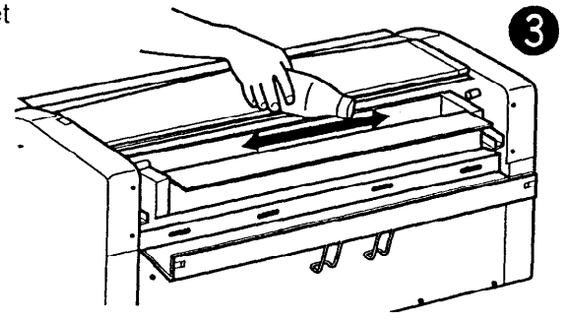


❷ Open Lid of Toner Supply Opening.



❸ Fill Toner evenly by shaking Toner Bottle.

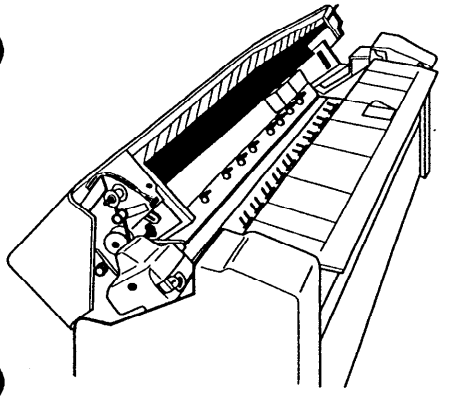
- Filling Toner should be made gently. Clean by wet cloth, if Toner is spilled out.
- Fill 1 bottle of Toner (500 g/bottle) at one time when Toner is filled.



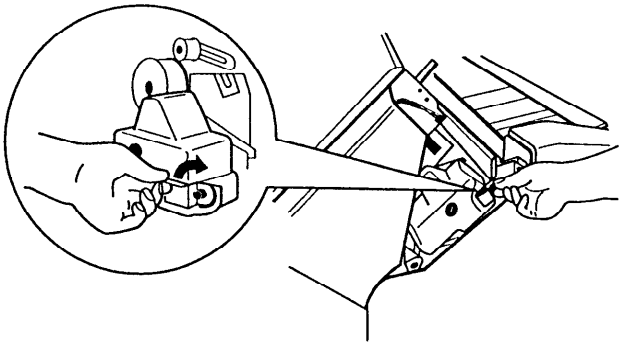
❹ Close Lid of Toner Supply Opening and Back-Top Cover, and then work is finished.

Light of Full of Wasted Toner Indicator 

❶ **Lift up Upper Unit by pushing Upper Unit open Levers at the both sides of Document Feed Table.**

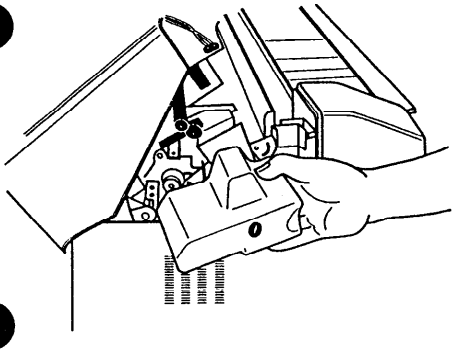


❷ **Take off Bracket of Wasted Toner Bottle by loosing the Screw Knob by hand.**



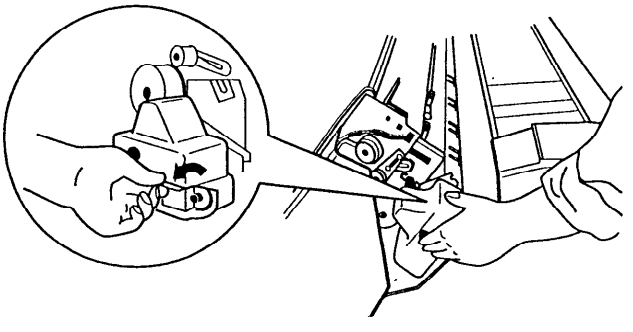
❸ **Remove Wasted Toner Bottle slowly.**

- Re-use of Wasted Toner can not be made.
- Do not put Wasted Toner in incinerator or fire.
- Seal the mouth of Bottle with Toner Bottle Seal.



❹ **Install and fix new Wasted Toner Bottle with Bracket and the Screw.**

❺ **Close Upper Unit and then work is finished.**



Light of Paper Jam Indicator

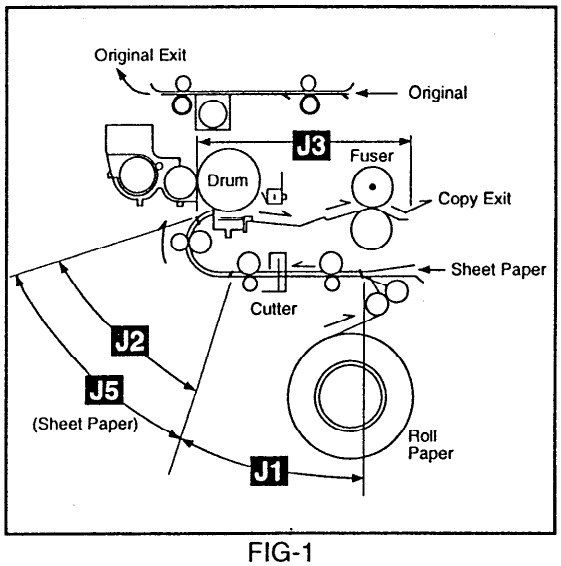


FIG-1

When Paper Jam indicator is lit, Self-Diagnosis Code that tells the place of Paper Jam is shown on Indication Counter.

In case of J1

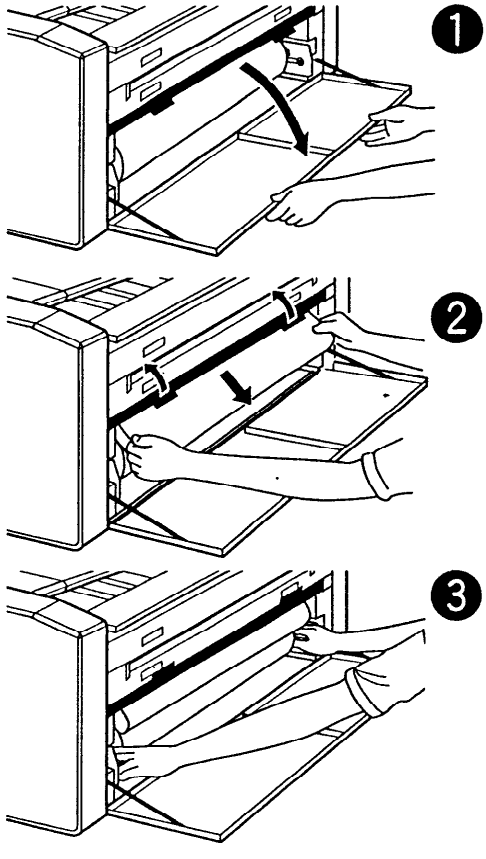
→ Paper Jam is occurred near Paper Entrance Part

❶ Open Front Door.

❷ Open Feeding Roller Cover by pulling it to the front side.

❸ Remove jammed paper slowly and set it again.

- If it is difficult to set paper again under Feeding Roller, cut by Knife properly and insert Leading edge part of Roll Paper.



❹ Close Feeding Roller Cover.

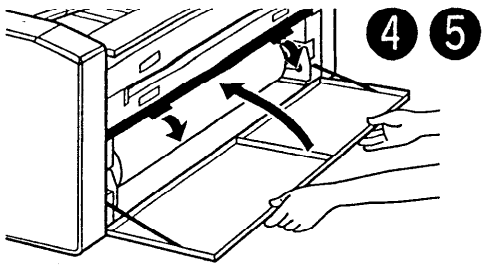
❺ Close Front Door and then work is finished.

- Make sure that Paper Jam indication and Code indication are disappeared.
- If Paper Jam Indication is not disappeared, check if Paper Jam is occurred near Separation part.

In case of J2

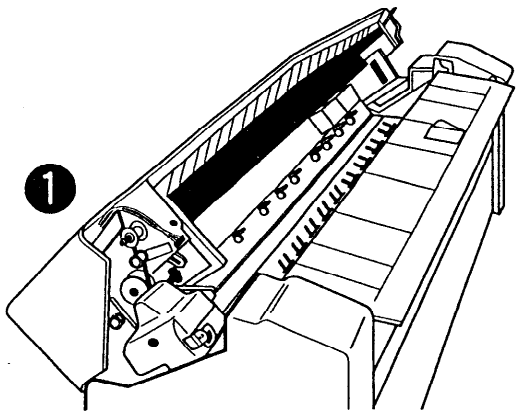
→ Paper Jam is occurred near Separation Part

Do with same manner as Treatment of J1



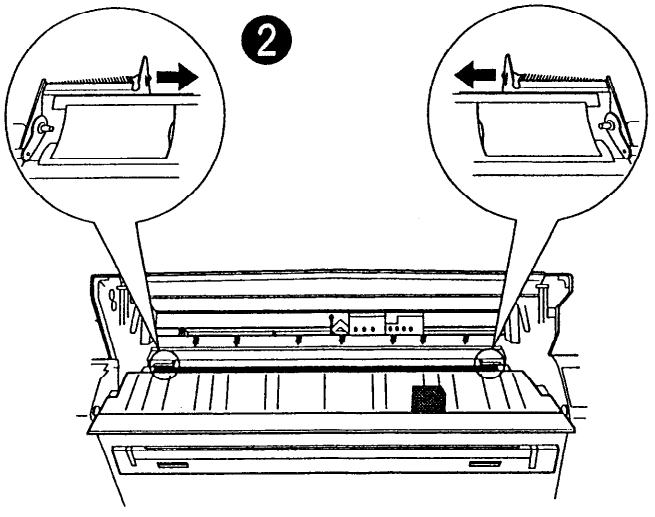
In case of J3

→ Paper Jam is occurred near Drum, Fuser Entrance Part



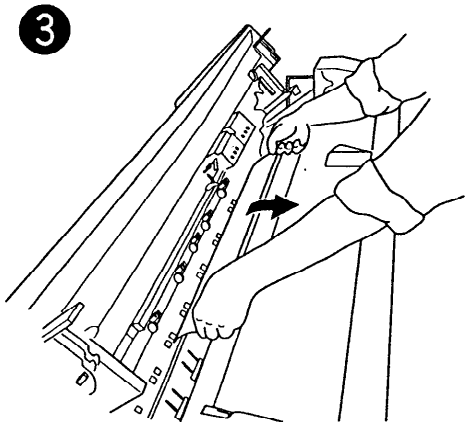
❶ Open Upper Unit.

❷ Open Outer Bracket of U-feeder by Pulling Levers at the both sides of U-feeder toward Arrow Mark.



❸ Remove jammed paper slowly.

- Be careful not to touch Photoconductive Drum when jammed paper is removed.
  If Drum gets scratches or dirts, good copies can not be made.



❹ Close Outer Bracket of U-feeder by keeping to pull the Levers.

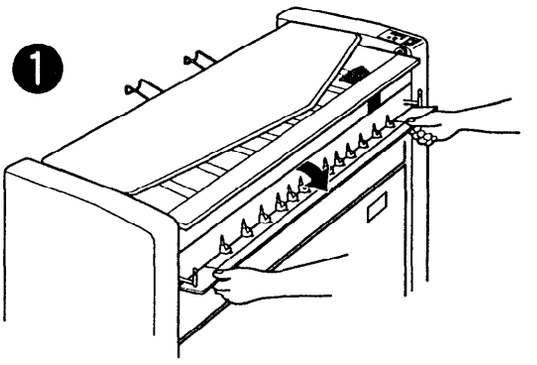
❺ Work is finished by closing Upper Unit.

- Make sure that Paper Jam indication and Code indication are disappeared.
- If Paper Jam indication is not disappeared, check if Paper Jam is occurred near Cutter part.

In case of J3

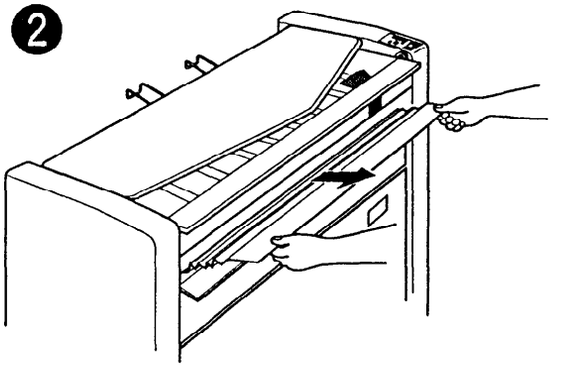
→ Paper Jam is occurred near Paper Exit Part.

❶ Open Copy Exit Cover by both hands.



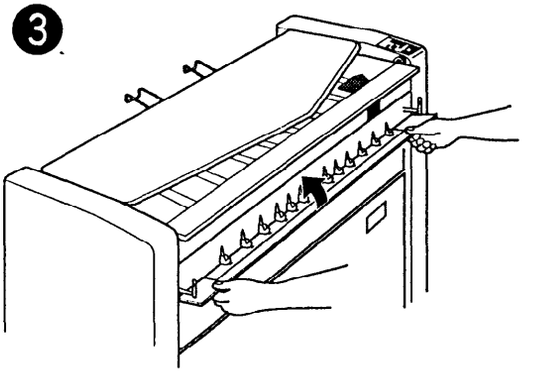
❷ Remove jammed paper slowly with the care not break it.

- Be careful not to touch on Fuser Roller and surrounding parts of Fuser Unit as they are high temperature.



❸ Work is finished by closing Copy Exit Cover.

- Make sure that Paper Jam indication and Code indication are disappeared.



Note

- After treatment for paper jam is finished,it is recommended to perform Paper Cut Mode by waiting READY condition of the machine. Clean copy may not be made by dirts on Roller and etc.,if Paper Cut Mode is not performed.

In case of J4

→ This is lit when Sheet paper is inserted wrongly while copying is made by Roll Paper

● **Remove Sheet Paper from Sheet By-Pass Table side.**

- If Paper Jam indication (J0 ~ J3) is shown on Indication Counter after removing Sheet Paper, remove it according to Treatment Method of J0 ~ J3.

In case of J5

→Same Paper Jam as J2 is occurred by Sheet Paper as shown in FIG-1.

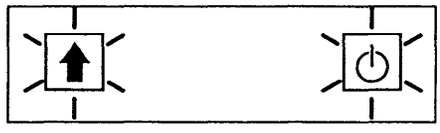
● **Remove Sheet Paper from Sheet By-Pass Table side.**

In case of J6

→Paper Jam is occurred only when inserting Sheet material of less than 279mm length or more than 3,000mm length.

● **Do with same Treatment Method as J3.**

How to treat When both READY and WAIT indication are flickering at the same time.



→Sheet Paper is not inserted correctly.

● **Remove Paper Sheet and insert it again.**

→Original is not inserted correctly.

● **Remove Original and insert it again.**

→Copy material is not come out from Copy Exit Perfectly.

● **Remove Copy Sheet from Copy Exit.**

Call Service Station Indication

When some abnormal condition is occurred in Machine which does not operate properly, **E0** ~ **E9** or **EA** ~ **EF** is flickering in Indication Counter and Call Service Station Indication is also lit at the same time.

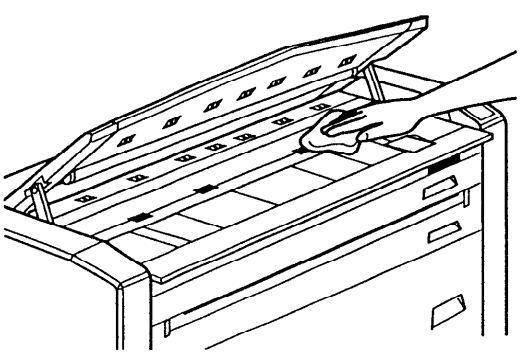
In the above cases, turn Power Switch OFF first and turn it ON again.
If Machine does not operate by this, turn Power Switch OFF and pull out Power Cord Plug from Outlet and call Service Station.

Ordinary Checking

In order to get good copies always, check following parts and clean them once a week.

Exposure Part

If Exposure Glass or Roller gets dirts, it may be the cause of dirts on Original or on Copies.
Clean them by gauze soaked slight water by opening **Document Feed Cover**

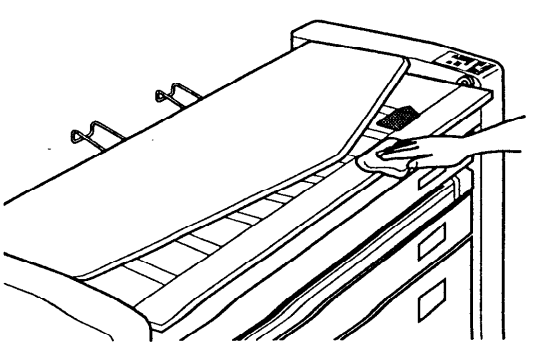


Document Guide

Clean by dry cloth after cleaning by wet cloth.

Wire Cleaning

If Wire gets dirts, it may be the cause of dirts on copies.
Wire Cleaning is recommended, if copy has black line, white void and etc.



Chapter 2
Copying Process

I . Image Forming

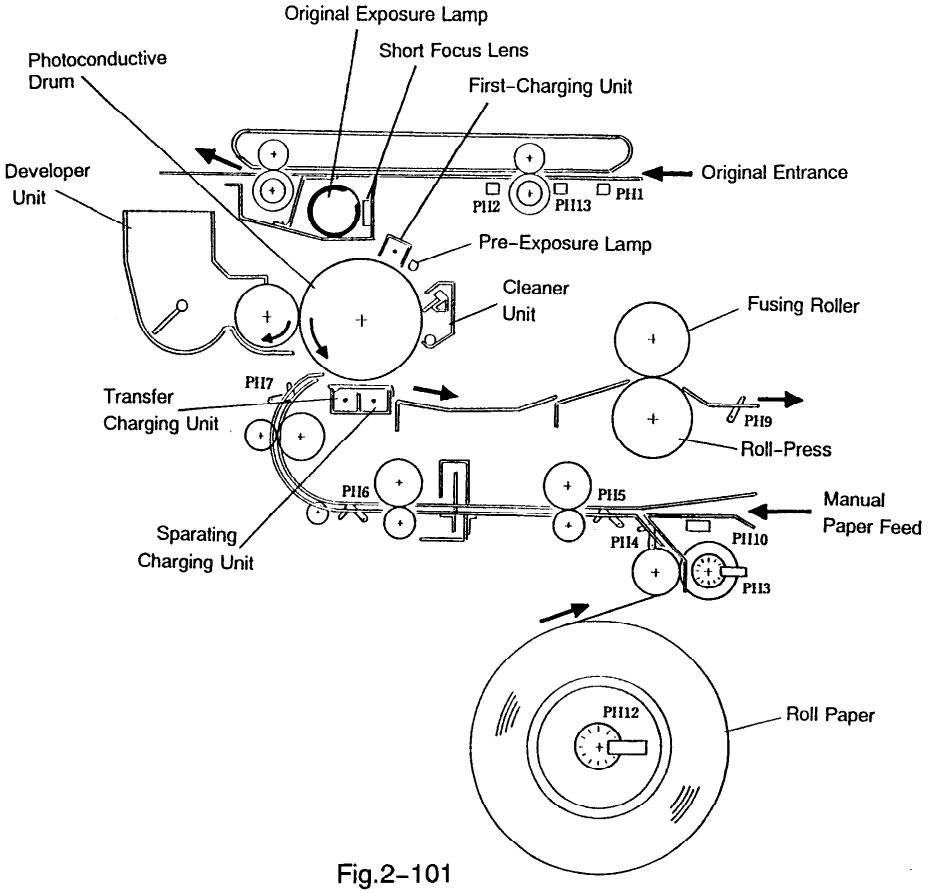


Fig.2-101

This machine is constructed as shown in Fig. 2-101

Explanation of each step for image forming process is made in following.

Image Forming Process is consisted of 8 steps.

Step 1: Pre-Exposure
Step 2: 1st Charging
Step 3: Image Exposure
Step 4: Development
Step 5: Transfer
Step 6: Separation
Step 7: Fusing
Step 8: Drum Cleaning

Remarks: Step 1-3 is so called "Electrostatic Latent Image Forming Block".

Photo-Conductive Drum is made with Photo-conductive Layer of Organic Photo-Conductor(OPC)for outer side and conductive base of Aluminum for inner side.

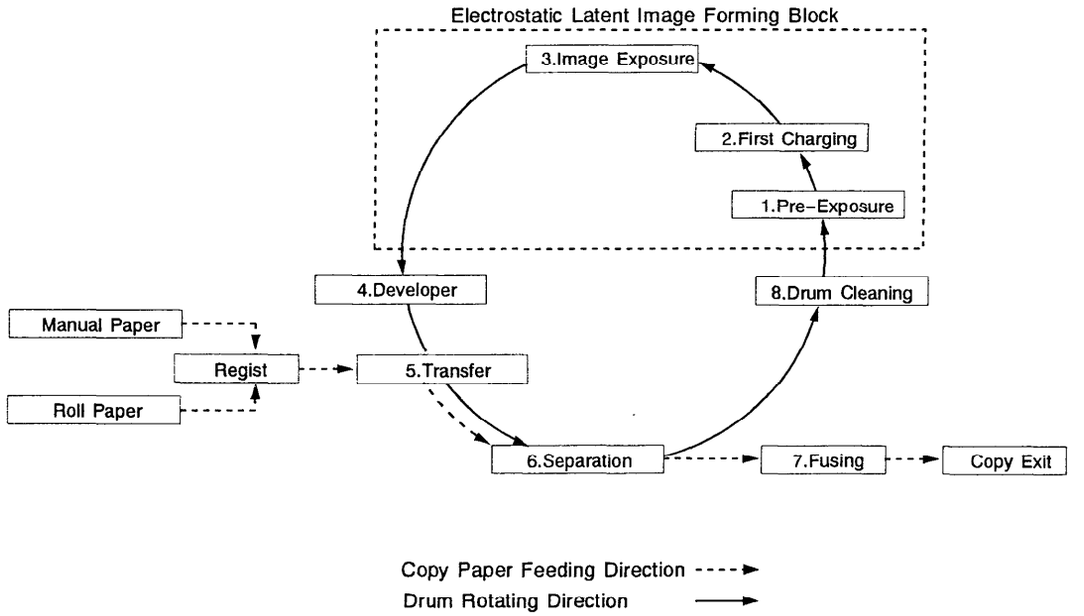


Fig.2-102

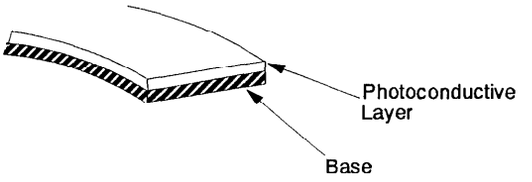
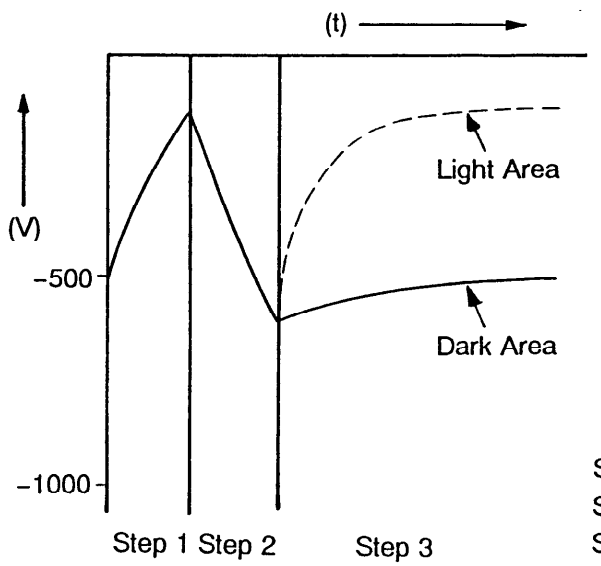


Fig.2-103

Electrostatic Latent Image Forming Block

This block is consisted of 3 steps and is purposed finally to remain negative charge on the Drum for the area corresponding to Black area of original and to remove negative charge on the Drum for the area corresponding to White area of original.

Image on Drum by this negative charge can not be seen by human eyes directly so that it is called Electrostatic Latent Image.



Step 1 Pre-Exposure
Step 2 1st Charger
Step 3 Image Exposure

Fig.2-104

Step 1: Pre-Exposure

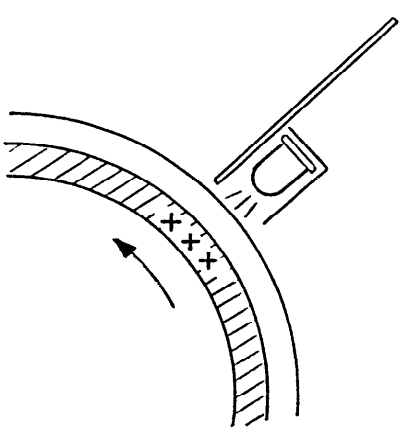


Fig.2-105

Pre-Exposure is made by applying light from Pre-Exposure Lamp before applying 1st Charging. By this, residual charge on Drum surface is removed and uneven copy density is prevented(In this machine, 81 pcs. of LED are used as Pre-Exposure Lamp.)

Step 2: 1st Charging

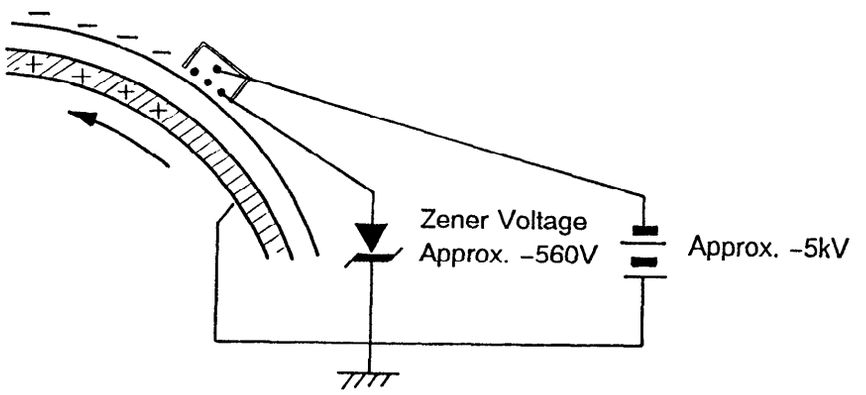


Fig.2-106

Negative charge on Drum surface is made by negative corona discharging of 1st charging and 1st potential is held.

As surface potential of charged Drum is decided by Grid potential, Grid is grounded through Zener Diode so that Drum surface potential is kept constant (decided by Zener Voltage).

Step 3: Image Exposure

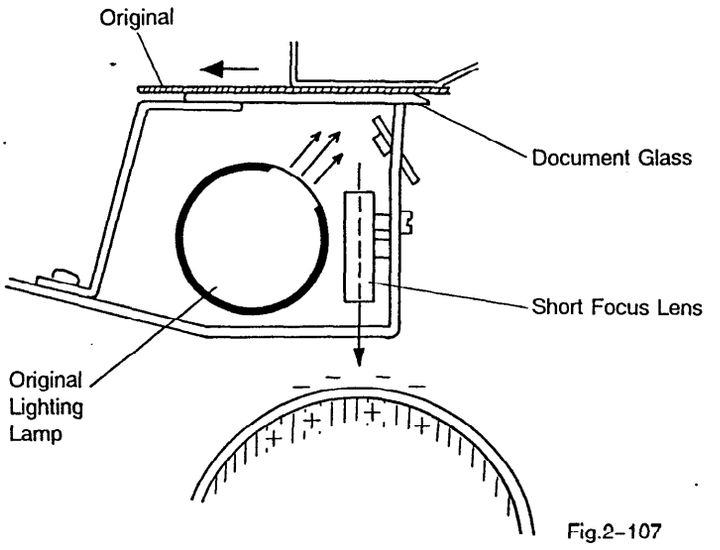


Fig.2-107

Light image of original is projected on Drum surface and charge of light area is neutralized.

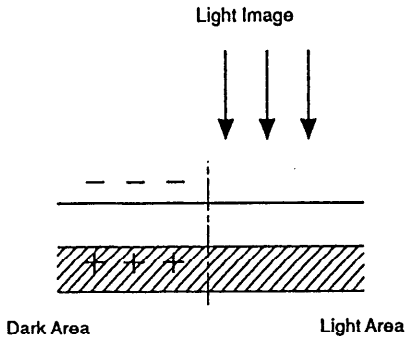


Fig.2-108

Step 4: Development

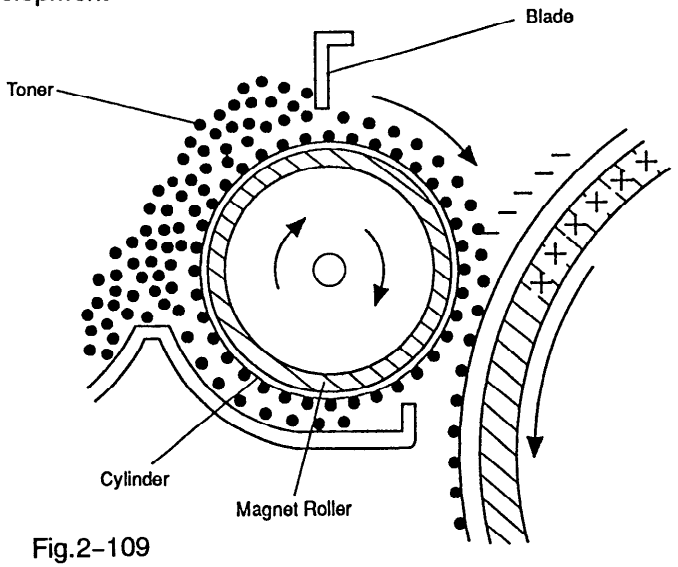


Fig.2-109

As shown in Fig.2-109 the developer unit consists of a rotating magnet roller, a developer cylinder which rotates outside of the magnet roller and a non-magnetic blade.

Toner is a single component developing powder which consists of resin and magnetic material.
The toner is charged with positive electricity by friction caused between toner, developer cylinder and non-magnetic blade.

The toner is conveyed by rotation of both cylinder and magnet roller. The developing powder on the surface of the developer cylinder is limited by the blade and then formed even thin layer on the surface of the cylinder.

In this machine both magnet roller and developer cylinder are rotated clockwise as shown in the Fig.2-109.
When magnet roller is rotated clockwise under the condition that the developer cylinder is fixed, the toner is actually conveyed counter-clockwise. However, the toner is actually conveyed clockwise because the developer cylinder rotates clockwise faster than the conveyance speed of toner.

As AC and DC Bias(negative components) are applied on Developer Cylinder at the same time(this is called as "Developer Bias"),negative component of Developer Bias is more than that of positive.

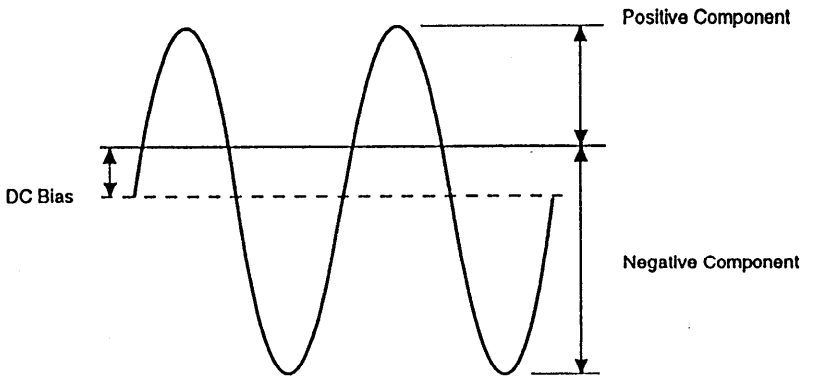


Fig.2-110

Toner is drawn up on Drum in accordance with the relation of pulling force between Toner and Magnet with strength of electric field produced by difference between Drum surface potential and Developer Cylinder potential(Developer Bias) and magnetic force while making copies and so Electrostatic Latent Image becomes visible image.

AC Bias(especially its frequency) influences mainly for reproduction of gray scale (if frequency becomes lower,reproduction of gray scale becomes better but becomes easy to get foggy condition),DC Bias influences copy density and foggy condition (if it comes to near 0V,image density becomes dark but becomes easy to get foggy Condition).

Step 5: Transfer

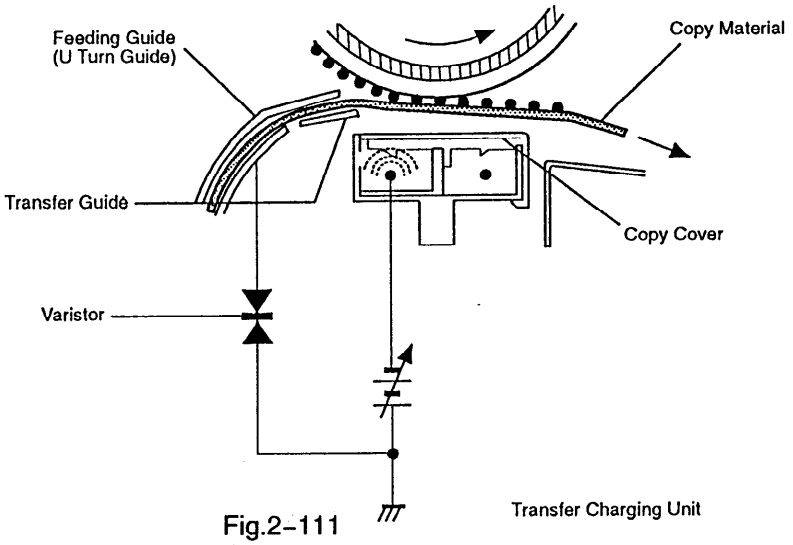


Fig.2-111

Toner on Drum surface is transferred to copy material with negative charge on reverse side of copy material by applying negative corona from reverse side of copy material.

In order to avoid transfer failure or getting dirty on reverse side of copy material, Feeding Guide is grounded through varistor.

Remarks:

If Feeding Guide is grounded directly, electric charge to be charged on reverse side of copy material is not remained, and transfer failure may occur.

If they are open, Feeding Guide is charged,and miss-operation may be occurred by noise.

Step 6: Separation

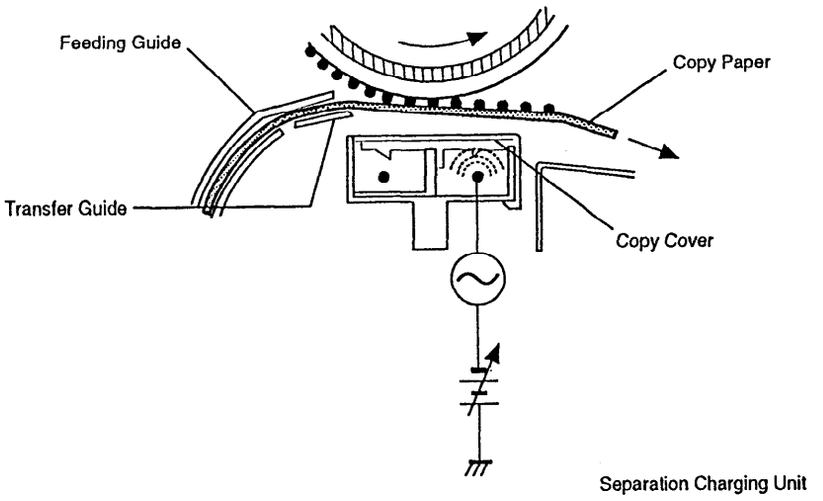


Fig.2-112

Copy Material is charged negative by Transfer Charging Unit and is stuck onto Drum surface by electrostatic force.

Due to this, copy material is separated by removing electrostatic force between Drum and copy material that is made by applying AC corona discharge added DC bias.

Step 7: Fusing

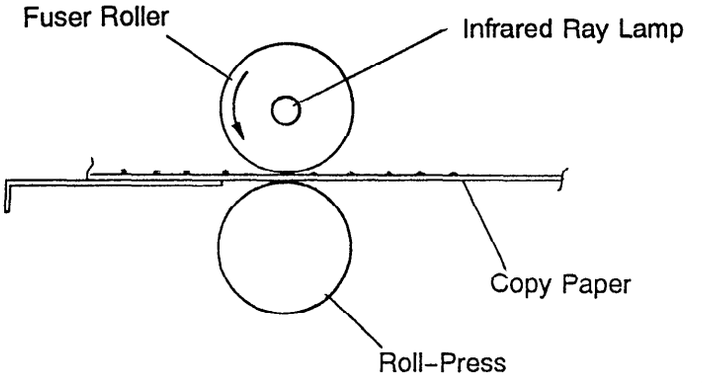


Fig.2-113

Copy material transferred Toner image on it is fused by binding with Fuser Roller and Roll-Press.

Step 8: Drum Cleaning

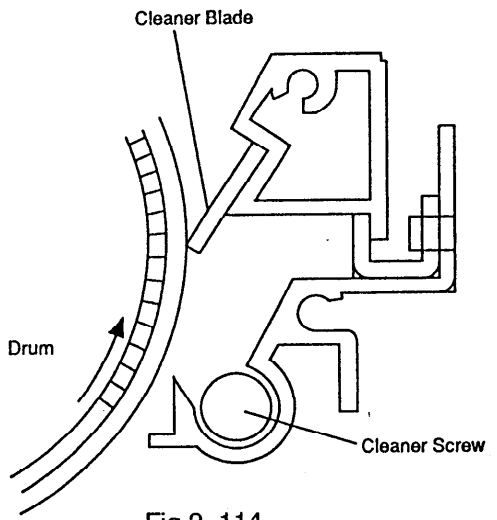


Fig.2-114

In order to make next copy, residual Toner on Drum surface is scraped down by Cleaner Blade and is collected to Wasted Toner Bottle by Cleaner Screw.

Chapter 3
Operation Outline

1. In this chapter, outline for purpose and role of each function, relation between electrical and mechanical systems and work timing of each part are explained in each function.

   ▬▭▬ signal in outline figure shows mechanical drive transmission, and in case of signal name is shown together with ⟶ sign, it shows flow of electrical signal.

   Meantime, basic figure relating to timing is shown in below.

Drum	Approx.
1 rotation	4.19sec.

2. In explanation for digital circuit in this machine, "1" means high level of signal and "0" means low level. But, Voltage is different depending on circuit.

   Micro Computer is equipped in this machine, but explanation of its work is eliminated as its internal function check is impossible actually.

   Also, as no repair for PCB at customer's place is expected, explanation for circuits in PCB is limited for only outline using block diagram. Accordingly, explanation of circuit is made for from sensor to input of major PCB, from output of major PCB to load and block diagram in each function.

I Basic Operation

A. Functional Composition

As the rough classification of each function of this machine, it is consisted of 4 Blocks, Paper Feeding System, Exposure Original Feeding System, Image Forming System and Control System.

I .Basic Operation

A.Functional Composition

As the rough classification of each function of this machine, it is consisted of 4 Blocks, Paper Feeding System, Exposure Original Feeding System, Image Forming System and Control System.

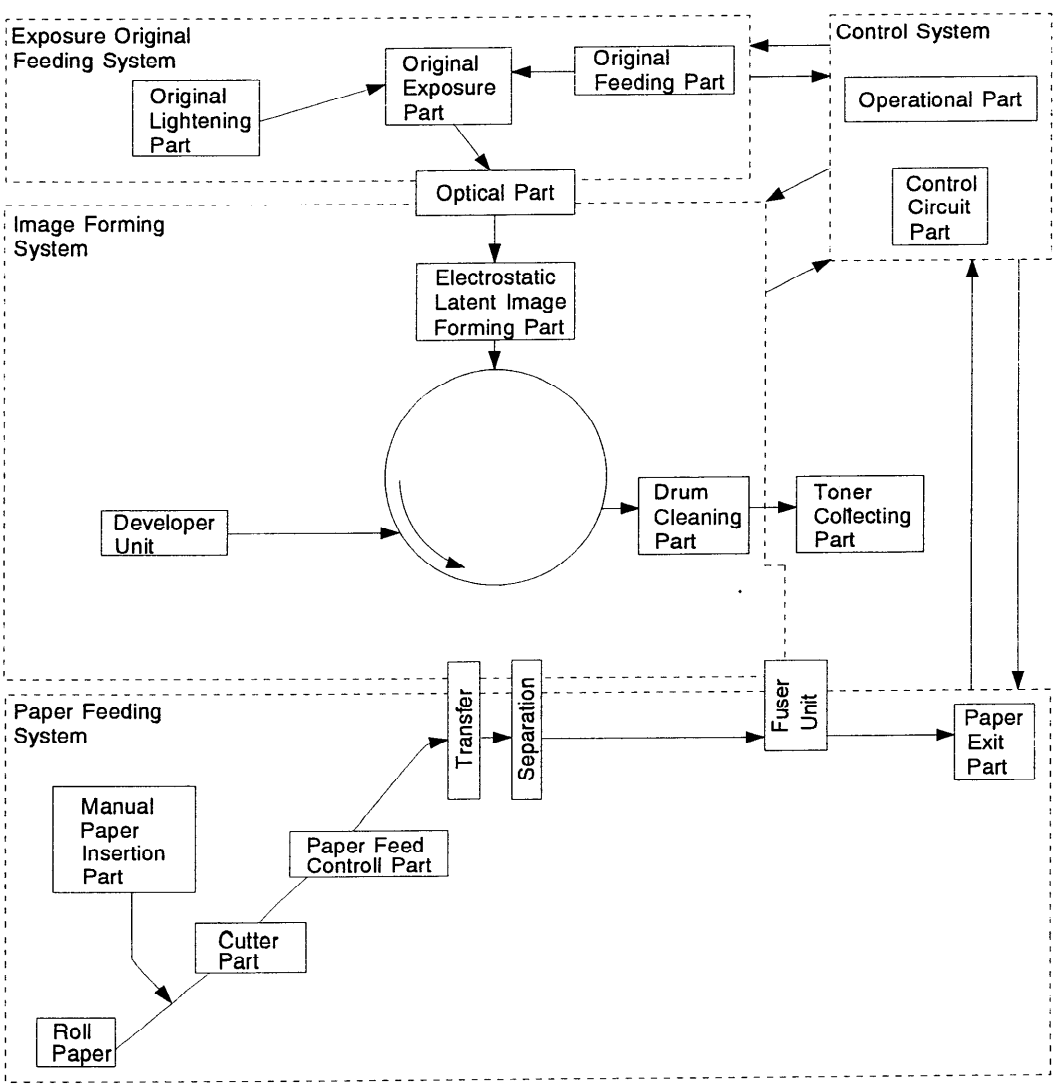


Fig.3-101

B .Electronics Circuit Outline

Main electrical control of this machine is done by Micro-computer.

This Micro-computer generates control signal in accordance with Program pre-memorized in order to drive loads in required such as Motor, Clutch. Lamp and etc. and necessary control signals for circuits in other PCB by reading input signals from sensor, Operating Key or other PCB.

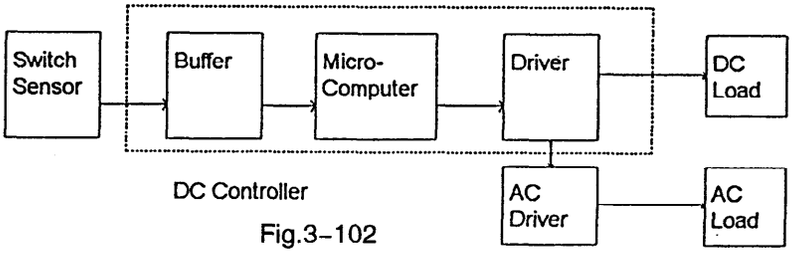


Fig.3-102

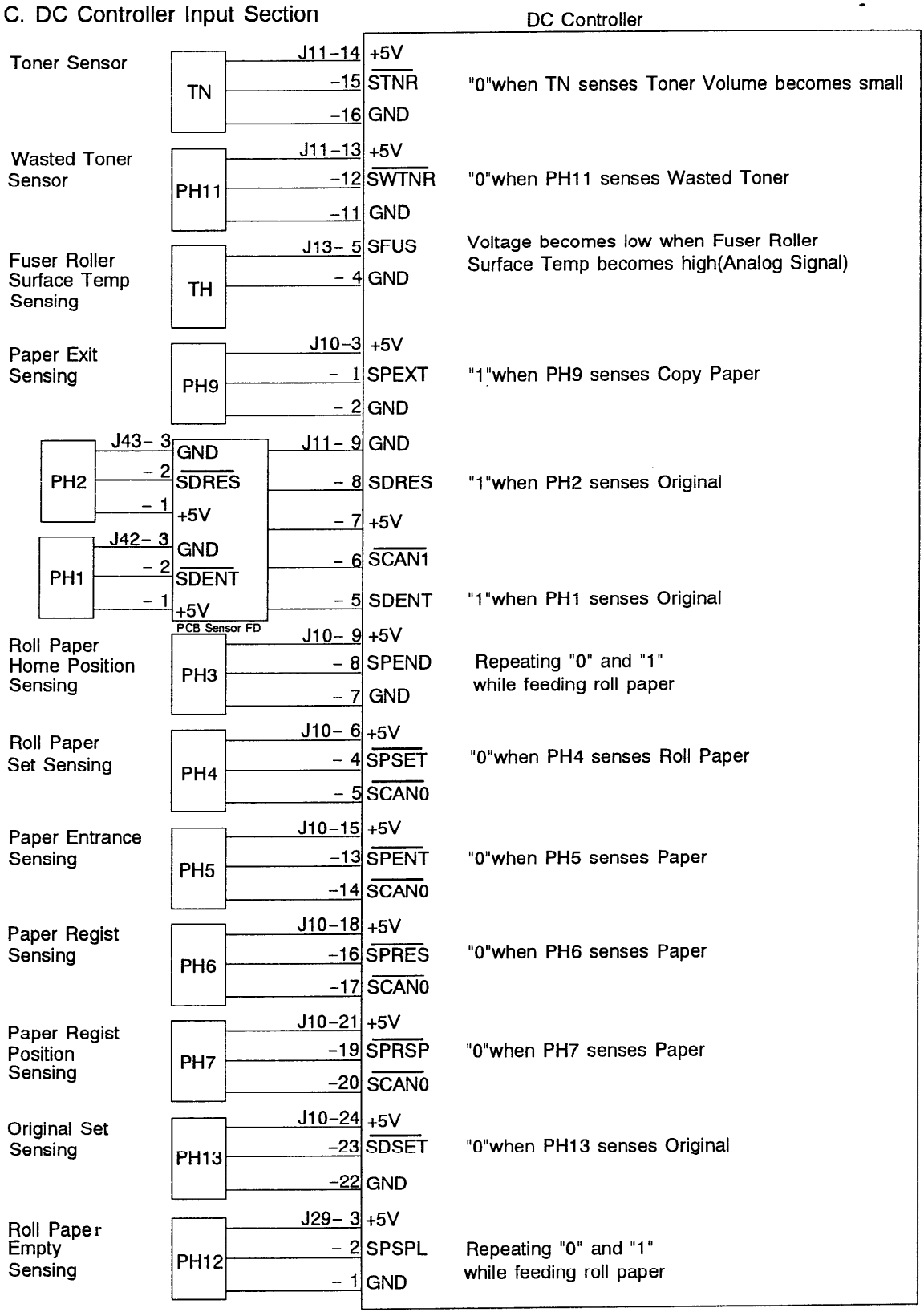
Fig. 3-102 is simple block diagram that shows basic flow of signal.

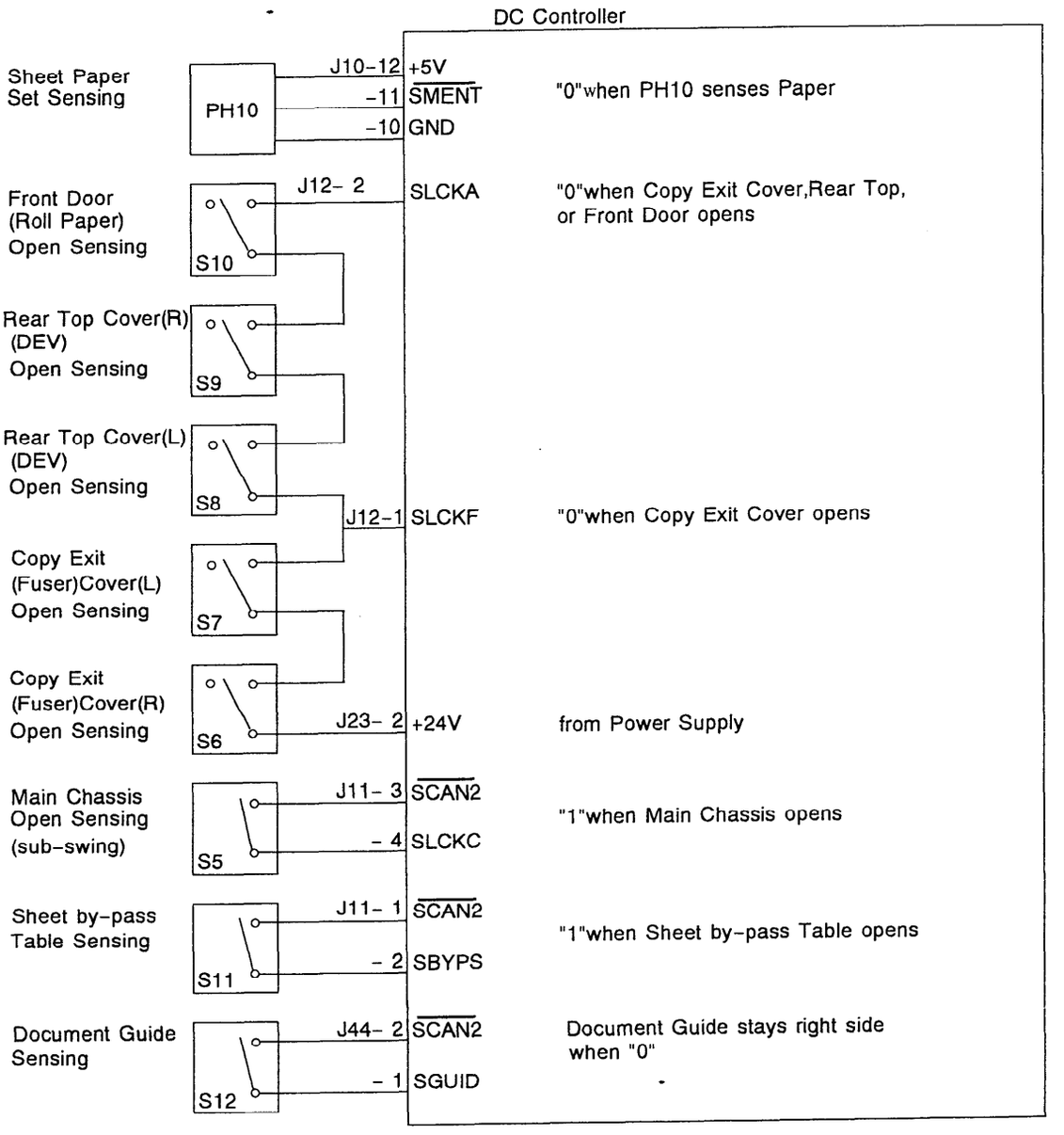
Buffer in the figure is provided to prevent miss-operation of Micro-computer caused by outside noise or to convert voltage of output signal from Sensor.

Driver in the figure is to amplify output signal of Micro-computer in order to driver loads.

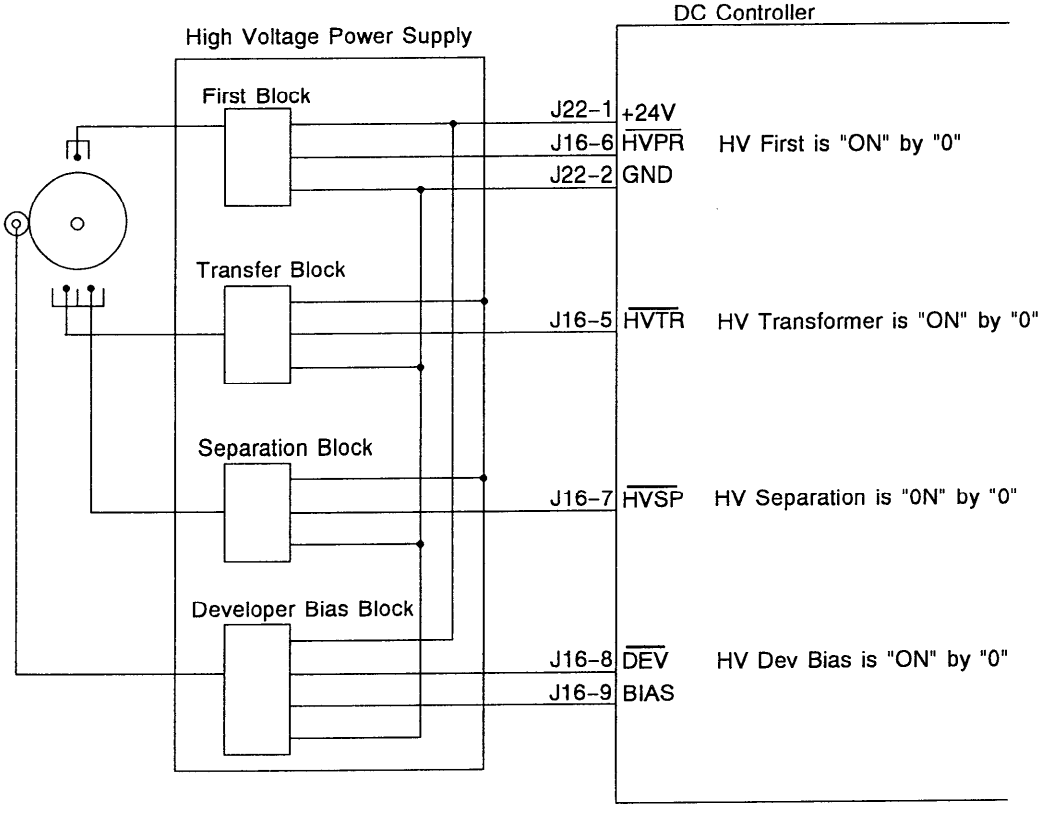
Input voltage of designated AC from Power Plug is transformed to 24 VDC, and 5VDC by Power Supply circuit and supplied to circuit or element. Detailed distribution of these Power is explained later.

C. DC Controller Input Section



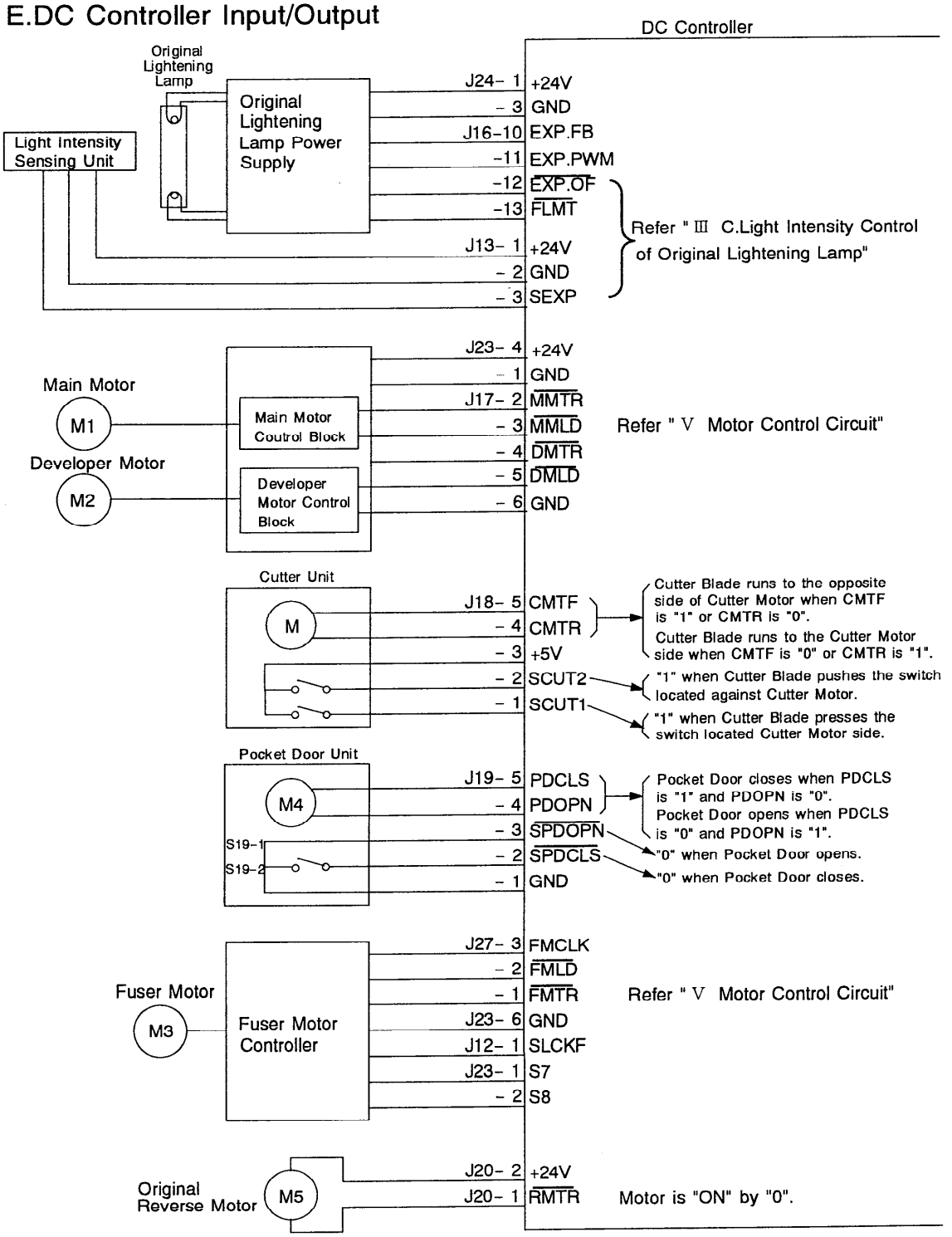

DC Controller
Sheet Paper Set Sensing
PH10
J10-12 +5V
-11 SMENT
-10 GND
"0"when PH10 senses Paper
Front Door (Roll Paper) Open Sensing
S10
J12- 2 SLCKA
"0"when Copy Exit Cover,Rear Top, or Front Door opens
Rear Top Cover(R) (DEV) Open Sensing
S9
Rear Top Cover(L) (DEV) Open Sensing
S8
J12-1 SLCKF
"0"when Copy Exit Cover opens
Copy Exit (Fuser)Cover(L) Open Sensing
S7
Copy Exit (Fuser)Cover(R) Open Sensing
S6
J23- 2 +24V
from Power Supply
Main Chassis Open Sensing (sub-swing)
S5
J11- 3 SCAN2
- 4 SLCKC
"1"when Main Chassis opens
Sheet by-pass Table Sensing
S11
J11- 1 SCAN2
- 2 SBYPS
"1"when Sheet by-pass Table opens
Document Guide Sensing
S12
J44- 2 SCAN2
- 1 SGUID
Document Guide stays right side when "0"

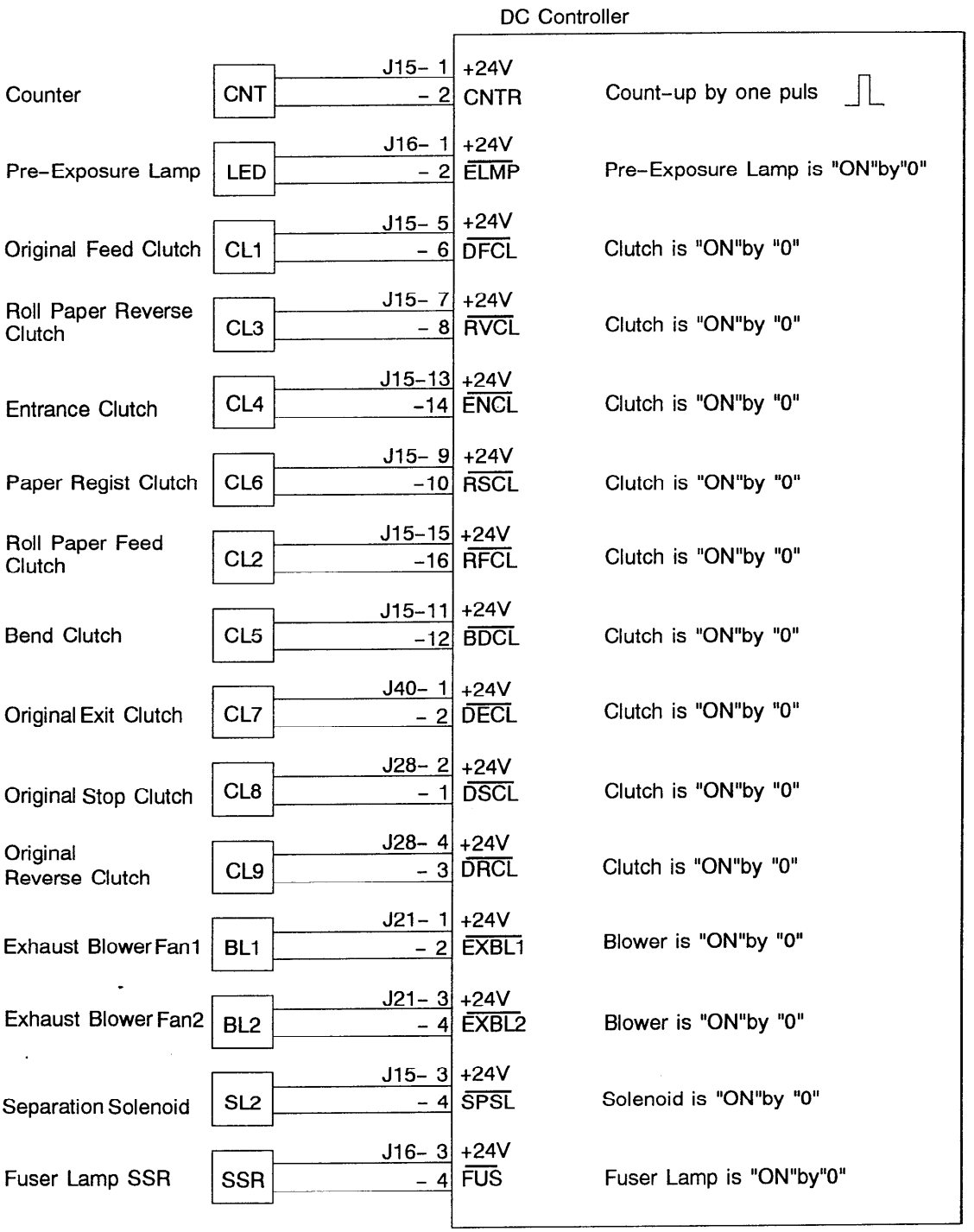
D.DC Controller Output



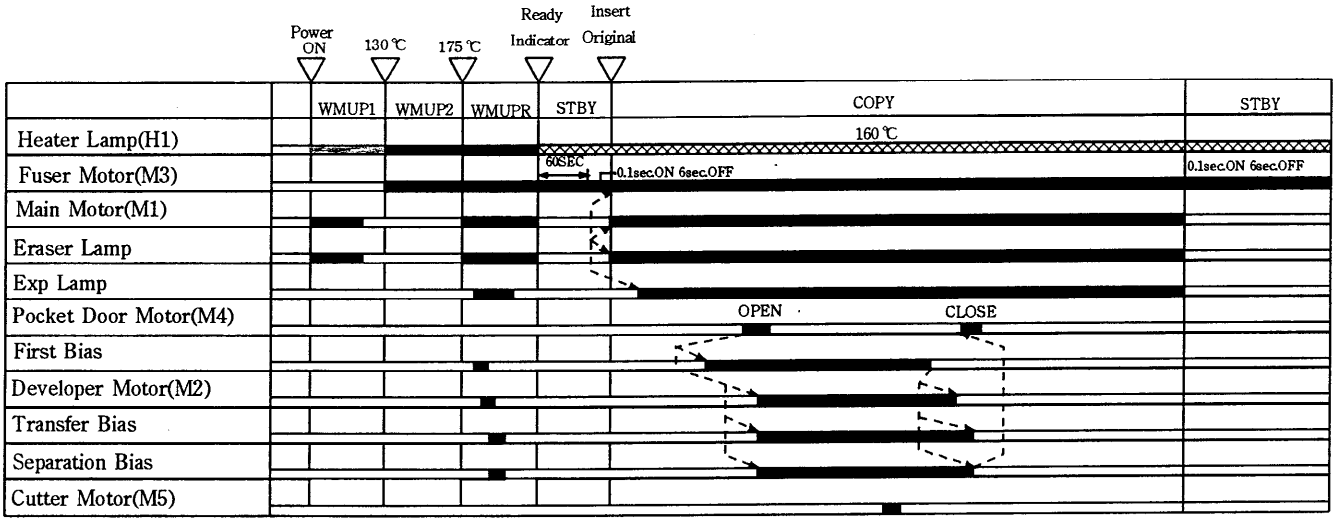
E. DC Controller Input/Output

E.DC Controller Input/Output




DC Controller
Counter
CNT
J15- 1
- 2
+24V
CNTR
Count-up by one puls
Pre-Exposure Lamp
LED
J16- 1
- 2
+24V
ELMP
Pre-Exposure Lamp is "ON"by"0"
Original Feed Clutch
CL1
J15- 5
- 6
+24V
DFCL
Clutch is "ON"by "0"
Roll Paper Reverse Clutch
CL3
J15- 7
- 8
+24V
RVCL
Clutch is "ON"by "0"
Entrance Clutch
CL4
J15-13
-14
+24V
ENCL
Clutch is "ON"by "0"
Paper Regist Clutch
CL6
J15- 9
-10
+24V
RSCL
Clutch is "ON"by "0"
Roll Paper Feed Clutch
CL2
J15-15
-16
+24V
RFCL
Clutch is "ON"by "0"
Bend Clutch
CL5
J15-11
-12
+24V
BDCL
Clutch is "ON"by "0"
Original Exit Clutch
CL7
J40- 1
- 2
+24V
DECL
Clutch is "ON"by "0"
Original Stop Clutch
CL8
J28- 2
- 1
+24V
DSCL
Clutch is "ON"by "0"
Original Reverse Clutch
CL9
J28- 4
- 3
+24V
DRCL
Clutch is "ON"by "0"
Exhaust Blower Fan1
BL1
J21- 1
- 2
+24V
EXBL1
Blower is "ON"by "0"
Exhaust Blower Fan2
BL2
J21- 3
- 4
+24V
EXBL2
Blower is "ON"by "0"
Separation Solenoid
SL2
J15- 3
- 4
+24V
SPSL
Solenoid is "ON"by "0"
Fuser Lamp SSR
SSR
J16- 3
- 4
+24V
FUS
Fuser Lamp is "ON"by"0"

Basic Sequence



WMUP1	After power switch is turned ON until the temperature of Heat Roller reaches to approx.130℃	To wait until Heat roller is heated up	When power switch is turned ON, out of paper and waste toner bottle full are detected. And pocket door is closed and roll cutter is put back to the home position.
WMUP2	Until the temperature of Heat Roller reaches to approx. 130℃ ~175℃	To equalize the heater temperature Heater Motor rotates	
WMUPR	Until the temperature of Heat Roller is stabilized from 175℃ to approx.~~160~~ 165℃.	To turn ON Main Motor, High Voltage of Primary Transfer/Srparation, Pre-Exposure Lamp and Original Lightening Lamp.	High Voltage is applied while drum rotates five times.
STBY		To wait the copy indication under copy ready condition.	
COPY	While Main motor is rotating after original is inserted.		

II Exposure Original Feeding System

A.Original Lightening Lamp

Hot-cathode discharge tube is used in this machine as Original Lightening Lamp.
The inside wall of the tube consists of white color area and transparent area.
The rays of light is reflected and gathered by white color area and provided to the Original through the transparent area.

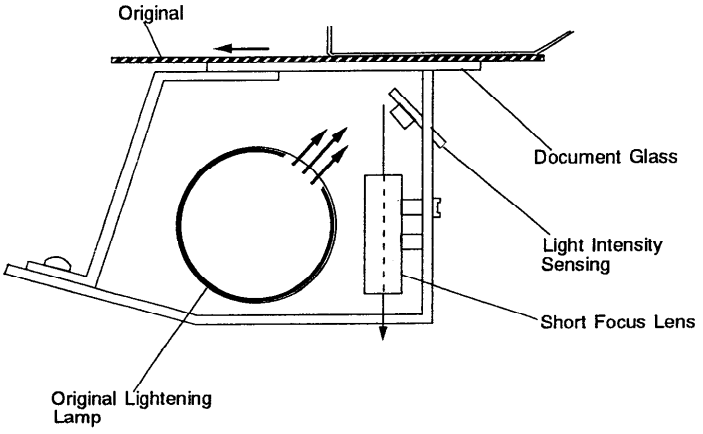


Fig.3-201

B.Original Feeding

1. General

When Original is inserted from front, the original is fed to the rear side through exposure part.

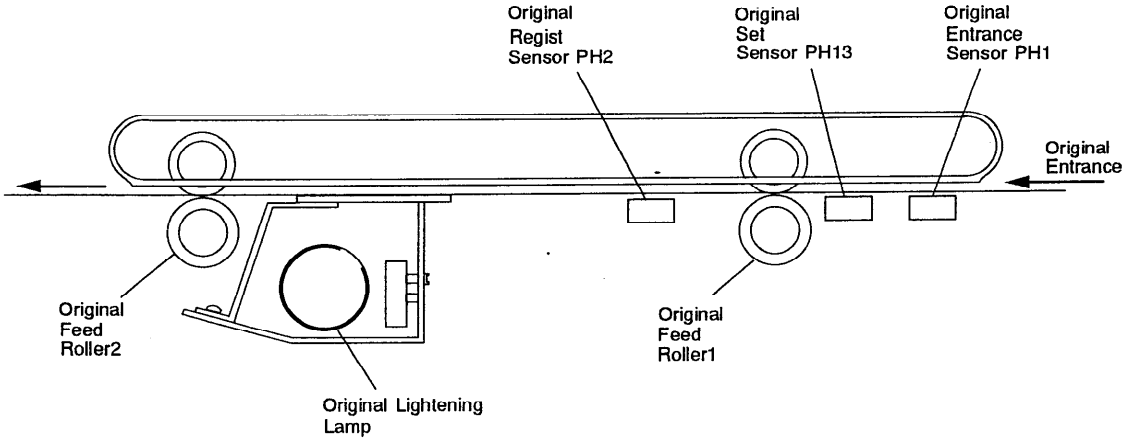


Fig.3-202

2.Operation

When an original is inserted, the original passes through Original Entrance Sensor(PH1) and Original Set Sensor(PH13), then after a certain period Main Motor (M1) is energized. (In case the sheet paper is inserted, Main Motor (M1) is energized in the same way as just like the above case.) At that time Original Feed Clutch (CL1) is turned on and Original Feed Roller 1 is energized and the original is once fed. After the original passes through Original Regist Sensor (PH2),Original Feed Clutch (CL1) is turned off and the original stops. Then Original Feed Clutch (CL1) and Original Exit Clutch (CL7) are turned on and the Original is fed into the original exposure area.

In case of multiple print by roll paper, the trailing edge of the original passes through Original Regist Sensor (PH2), then after a certain period Original Feed Clutch (CL1) and Original Exit Clutch (CL7) are turned off and the original is held by Original Feed Roller 2 and stops. After a certain period Original Reverse Motor (M5) and Original Reverse Clutch (CL9) is turned on and Original Feed Roller 2 is reversed and the original starts to return to the front side. And after the trailing edge of the original passes through Original Regist Sensor (PH2), Original Stop Clutch (CL8) is turned on and Original Feed Roller 1 is also reversed.

When the leading edge of original passes through Original Regist Sensor (PH2), Original Reverse Clutch (CL9) is once turned off and then after a certain period Original Reverse Motor (M5) and Original Stop Clutch are turned off and the original is held by Original Feed Roller 1 and stops. At that time Original Feed Roller 1 is turned on and fed again if the remaining copy count number is not 0.

In case of one copy by roll paper or copies by sheet paper, the trailing edge of original passes through Original Regist Sensor (PH2), then after a certain period Original Feed Clutch (CL1) and Original Exit Clutch (CL7) are turned off and the original is held by Original Feed Roller 2 and stops.

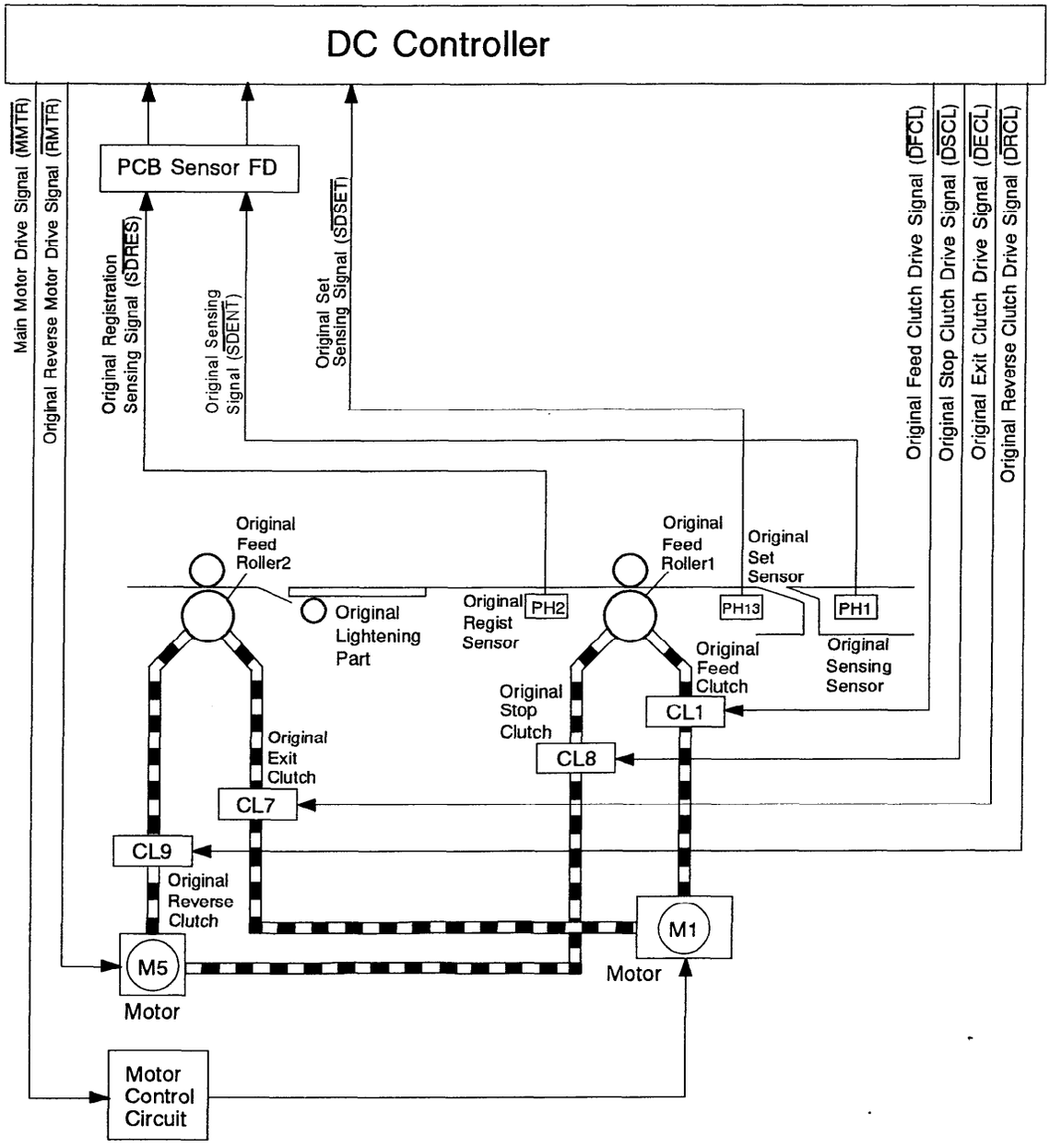

DC Controller
Main Motor Drive Signal (MMTR)
Original Reverse Motor Drive Signal (RMTR)
PCB Sensor FD
Original Registration Sensing Signal (SDRES)
Original Sensing Signal (SDENT)
Original Set Sensing Signal (SDSET)
Original Feed Clutch Drive Signal (DFCL)
Original Stop Clutch Drive Signal (DSCL)
Original Exit Clutch Drive Signal (DECL)
Original Reverse Clutch Drive Signal (DRCL)
Original Feed Roller2
Original Feed Roller1
Original Set Sensor
Original Lightening Part
Original Regist Sensor
PH2
PH13
PH1
Original Feed Clutch
Original Sensing Sensor
Original Stop Clutch
CL1
CL8
Original Exit Clutch
CL7
CL9
Original Reverse Clutch
M5
Motor
M1
Motor
Motor Control Circuit

Fig.3-203

Ⅲ . Image Forming System

A. General

Basic Composition of image forming system of this machine is shown in Fig. 3-301.

Light intensity Sensing Sensor(Photo-Diode) is provided and light intensity of Original Lightening Lamp is kept by feedback of the sensor output to Original Lightening Lamp Power Supply.

Adjustment of copy density is done by Original Lightening Lamp. In this machine, besides normal copy density setting (7 steps), additional copy density of 7 steps for high contrast can be set.

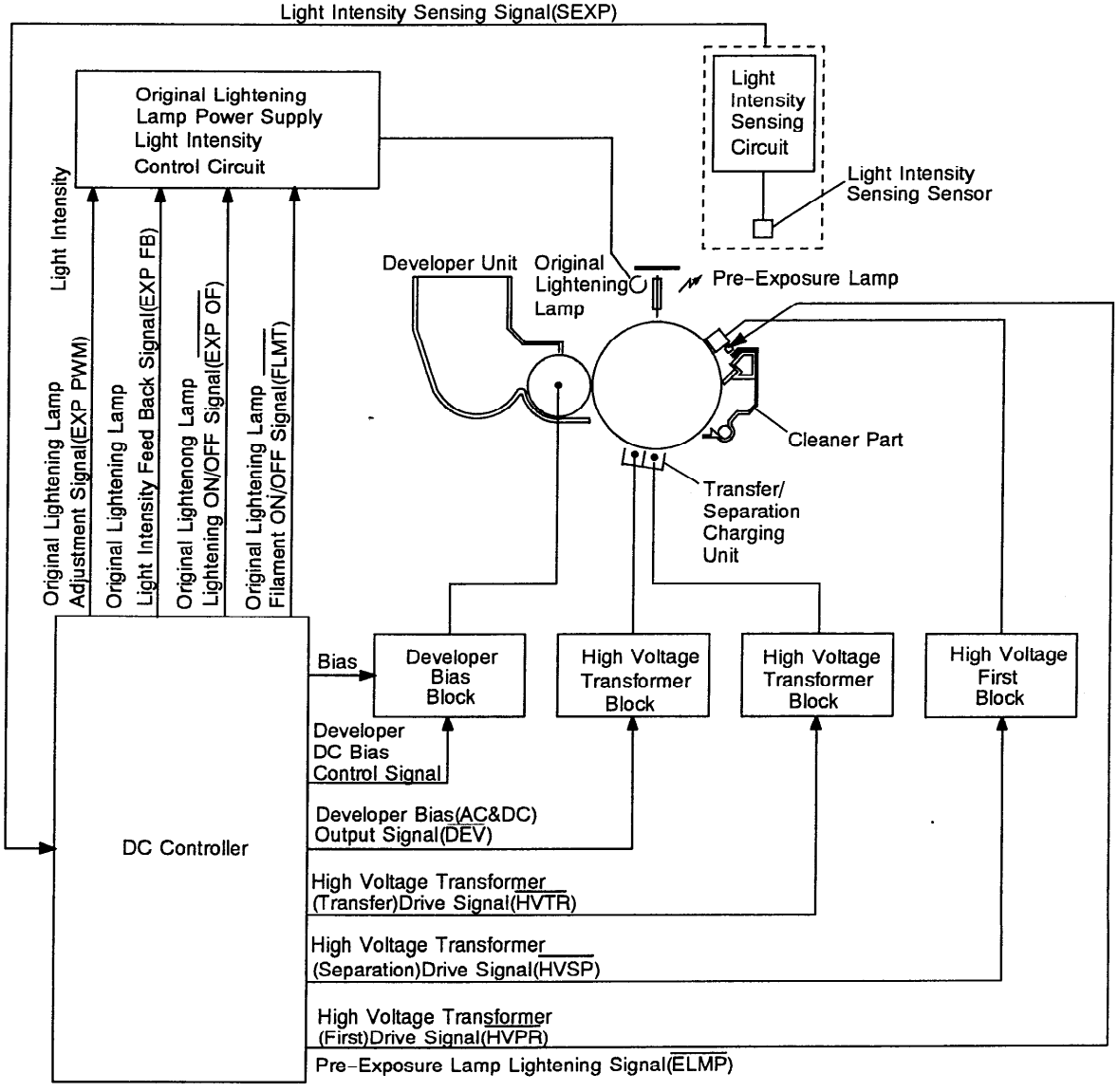


Fig.3-301

B. Setting of Copy Density

1. General

Copy Density is indicated by color LED of Density indication Panel in 7 steps which is located in Operation Panel.

In this machine, Copy Density for High Contrast can be also set in order to get proper copy from high density original.

Accordingly, total 14 steps for copy density setting are possible.

2. Function

1) When Power Switch is turned ON, Copy Density of normal 7 steps can be set.
This time, Green of 4th step(Center) of Density Indication Panel is lit.

2) By SL(Strong Light) key ON, Copy Density for High Contrast can be set in 7 steps.
This time, Orange of Density Switching Indicator for SL Indicator and(4th) step Green of Density indication Panel are lit.

3) By further ON of SL key, it returns to copy density setting of normal 7 steps.
This time, LED SL Indicator of Density Switching Indication Panel is shut off and Green of 4th step of Density Indication Panel is lit.

3. Control of Density Adjustment

Density Adjustment of normal 7 steps is made by varying light intensity of Original Lightening Lamp and Developer Bias is kept constant.

Density Adjustment of High Contrast is made by varying light intensity further more.

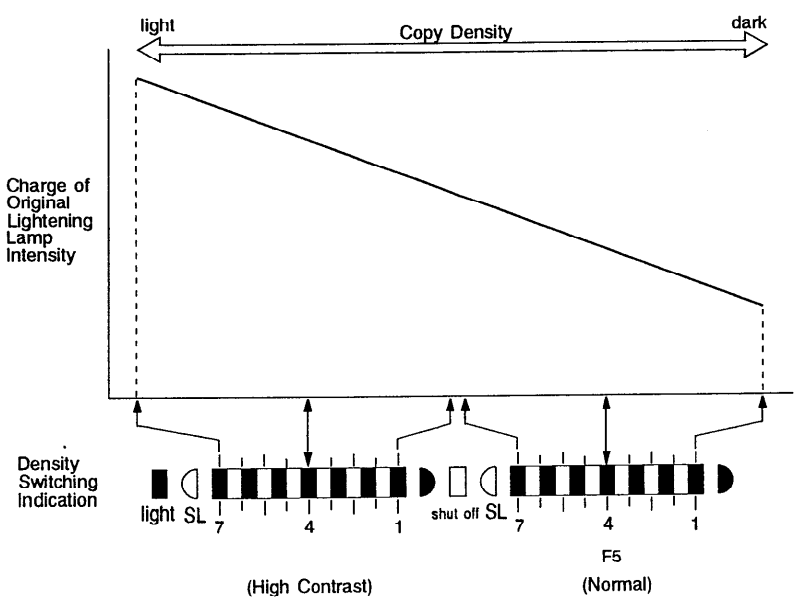


Fig.3-302

C. Light Intensity Control of Original Lightening Lamp

1. General

Control system of light intensity of Original Lightening Lamp is purposed to have function of keeping constant light intensity if input line voltage for machine is varied, and of control of light intensity by Copy Density Adjusting Key.

2. Control Circuit of Light Intensity of Original Lightening Lamp

a. General

Circuit shown in Fig. 3-303 is the circuit controlling light intensity of Original Lightening Lamp that has mainly following functions.

1)ON/OFF control of Original Lightening Lamp.

2)Light intensity control of Original Lightening Lamp.

*Light intensity control in accordance with the setting of Copy Density Adjusting Key.

*To keep constant light intensity with the feed-back of light intensity.

3)Sensing of lightening intensity of Original Lightening Lamp.

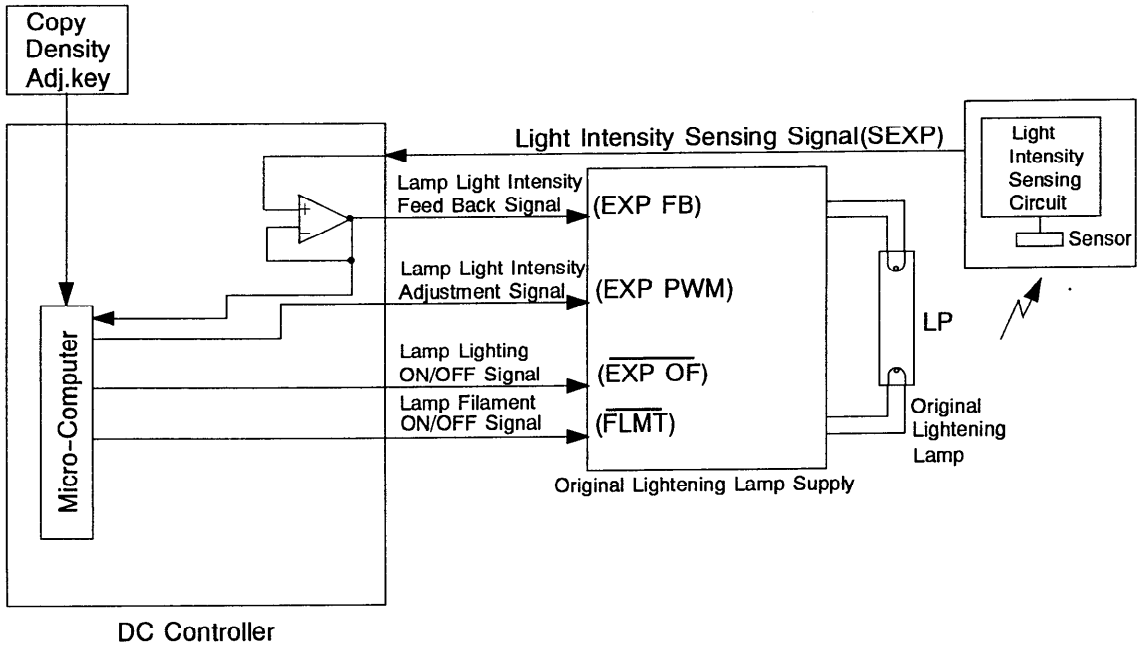


Fig.3-303

b. Function

1) ON-OFF control of Original Lightening Lamp

* Lamp Filament ON/OFF Signal ($\overline{FLMT}$)
  Lamp Filament is OFF when $\overline{FLMT}$=1
  Lamp Filament is ON when $\overline{FLMT}$=0

Original Lightening Lamp used in this machine is a hot-cathode discharge tube.
It requires turning on the electricity and preheating of filament in advance to light the lamp.
Preheat condition is kept for turning on the lamp.

* Lamp Lighting ON/OFF Signal ($\overline{EXPOF}$)
  Lamp is OFF when $\overline{EXPOF}$=1
  Lamp is ON when $\overline{EXPOF}$=0

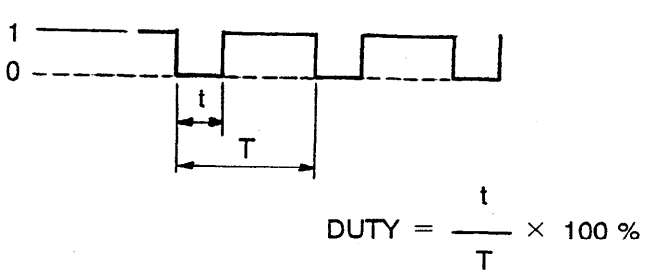
When Original Lightening Lamp is lit, DC voltage is sent to DC Controller (SEXP) from Light Intensity Sensing Circuit based on Lightening Intensity and the voltage is monitored by micro computer.

When Original Lightening Lamp is not turn ON or OFF within a certain time and abnormal condition are observed that too strong or too weak Light Intensity are generated, the self-diagnosis works and indicates error codes on the operation panel as per under.

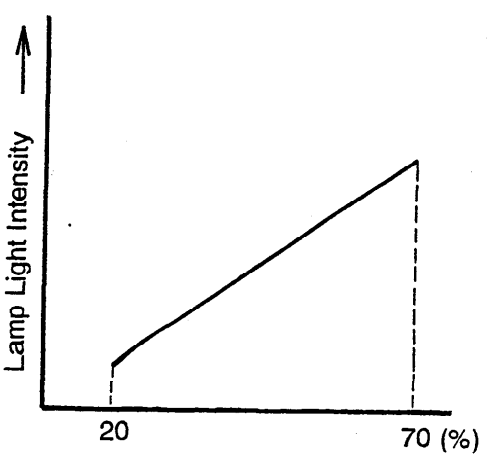
E9. Lightening Lamp is not turned ON. Even if Lightening Lamp is lit but the Light Intensity is less than a standard value.

EA. Lightening Lamp is not turned OFF. Even if Lightening Lamp is lit but the Light Intensity is more than a standard value.

This signal varied by Copy Density Indication which is set by Copy Density Adjusting Key as shown in Fig. 3-304



Lamp Light Intensity
Adjustment Signal (EXP PWM)



Lamp Light Intensity
Adjustment Signal DUTY

Fig. 3-304

D. First/Transfer/Separation Corona Current Control

1. General

Circuit shown in Fig.3-305 is control circuit for First/Transfer/Separation Corona that has mainly following functions.

1) Control for ON/OFF of First/Transfer/Separation Corona Current.

2) Constant current control for First/Transfer Corona Current.
Output of First/Transfer charging in this machine is controlled in constant current in order to avoid influence for corona discharging effect with the change of environment condition.

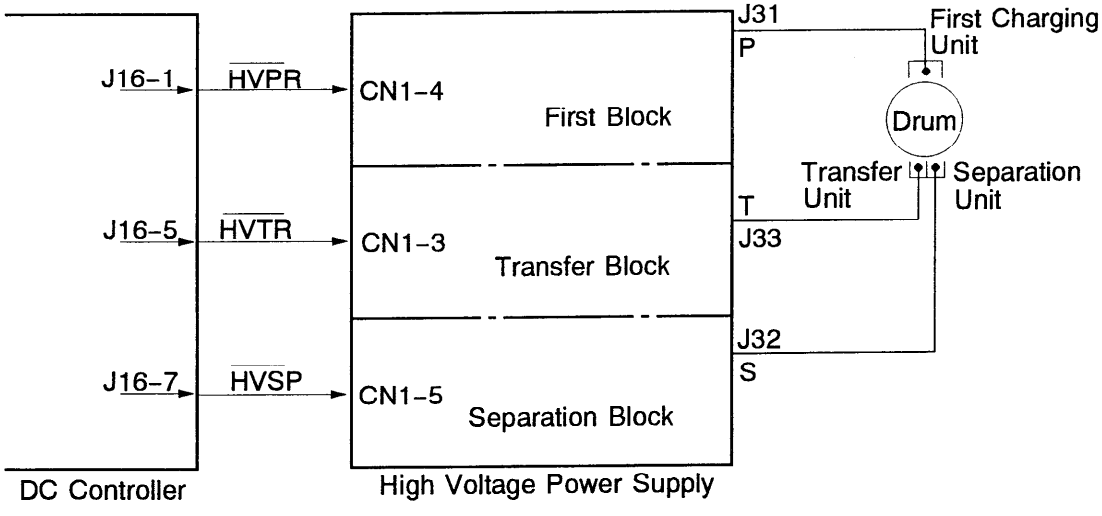


Fig.3-305

2. Function

1) Function by each control signal is as shown below.

First Charging Unit High Voltage Output Signal $\overline{HVPR}$

$\overline{HVPR}$ = 0 Output ON

$\overline{HVPR}$ = 1 Output OFF

Transfer Charging Unit High Voltage Output Signal $\overline{HVTR}$

$\overline{HVTR}$ = 0 Output ON

$\overline{HVTR}$ = 1 Output OFF

Separation Charging Unit High Voltage Output Signal $\overline{HVSP}$

$\overline{HVSP}$ = 0 Output ON

$\overline{HVSP}$ = 1 Output OFF

2) In First Charging Unit/Transfer Charging Unit High Voltage Block the constant-current control is made to maintain an even output current value from High Voltage Block in order to reduce an effect to corona discharge by environmental changes. And in Separation Charging Unit High Voltage Block the constant-voltage control is made to maintain an even output voltage value.

E. Developer Bias Control

1. General

AC Bias and DC Bias are applied on Developer Cylinder while copy is taken.
AC Bias is set to 2,000Vp-p, and DC Bias is set -160V.
And value of Developer DC Bias is not changed with the change of Density setting by Copy Density Adjustment key.

2. Developer Bias Control Circuit

a. General

Circuit shown in Fig.3-306 is Developer Bias Control circuit that has mainly following function.
*ON/OFF control for AC and DC component oF Developer Bias.
*Voltage level control for DC component of Developer Bias.

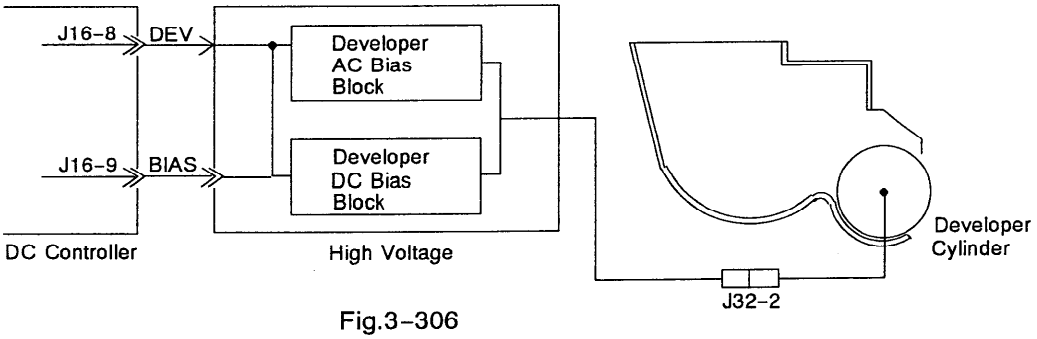


Fig.3-306

b. Function

1) Function by Developer AC/DC Bias Output Control Signal (DEV) is as shown below.

DEV = 0	AC/DC Bias Output ON
DEV = 1	AD/DC Bias Output OFF

2) Developer DC Bias Output Voltage Control Signal (Bias) is an analog DC voltage which is output from DC controller and varies the value of DC Bias by the analog voltage as shown in the figure 3-307.
The analog voltage is changeable by setting of DIP SW as shown Chapter 7.

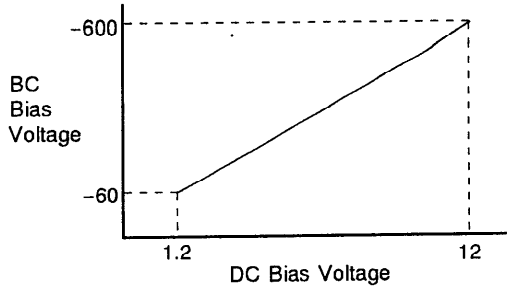


Fig. 3-307

F. Developer/Drum Cleaner

Rotation of Developer Cylinder is made by Developer Motor(M2).
And, rotation of Drum and cleaner screw is made by Main Motor(M1) as shown in Fig. 3-308.

Toner volume in Developer Unit is sensed by Toner Sensor TN and Out of Toner Indicator in Operation Panel is lit when Toner volume becomes less than designated volume.

Collected Toner by Cleaner Blade is stored in Wasted Toner Bottle by Cleaner Screw in Cleaner.

Stored Toner volume is sensed by Wasted Toner Sensor PH11 and Wasted Toner Full Indicator in Operation Panel is lit when Wasted Toner becomes more than designated volume.

Remarks; Piezo electricity vibrator is used for Toner Sensor. When Toner is not existed, Vibrator vibrates in few K Hz and sensor output becomes "0".

When Toner is existed, vibration of Vibrator is stopped by the weight of Toner and sensor output becomes "1".

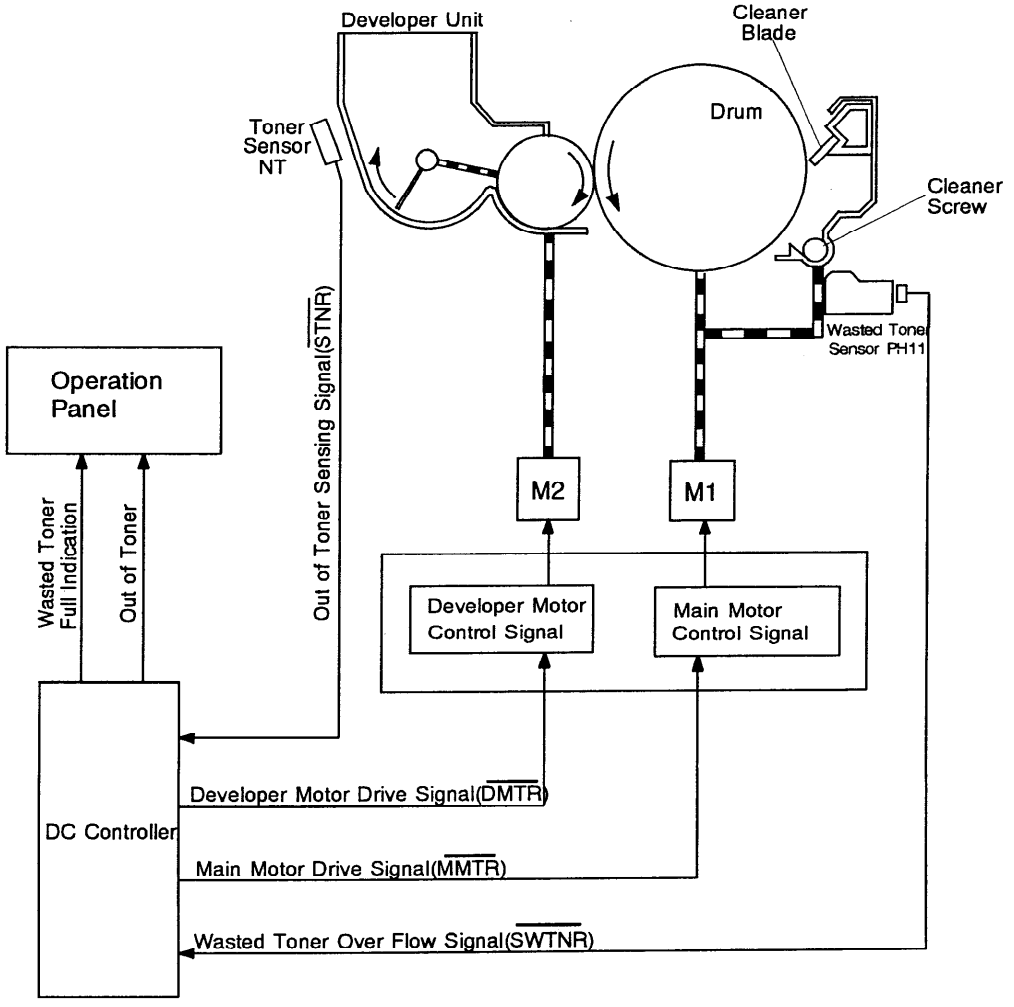


Fig.3-308

IV. Paper Feeding System

A. General

There are two kinds of paper supply mode in this machine as per under. One is a roll paper supply mode designed to be fed the paper and automatically cut depends on the length of an original. Another one is a manual paper supply mode using sheet paper. And both of copying papers are controlled by regist roller.

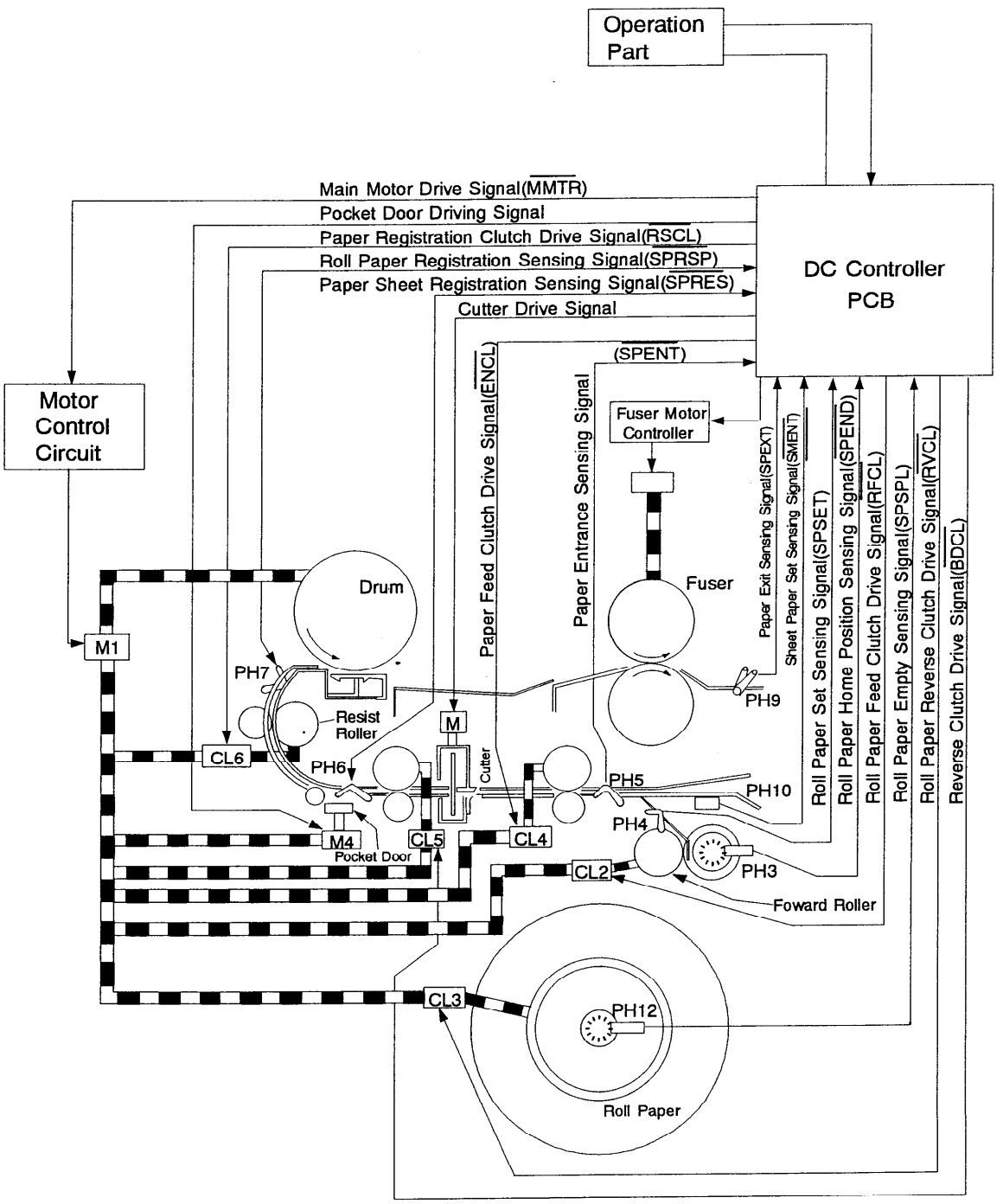


Fig.3-401

B. Roll Paper Auto supply Mode

Set the roll paper and close the door. The roll paper feed clutch(CL2) is turned ON and the roll paper feeding is started. After the leading edge of the roll paper turns ON the original entrance sensor(PH5), the roll paper feed clutch(CL2) is turned OFF. Then the roll paper reverse clutch(CL3) is turned ON and the roll paper is rewound to the specified home position (approx. 21mm from the center of forward roller) for stand-by.
The roll paper feed clutch(CL2), the entrance clutch(CL4) and the reverse clutch(CL5) are turned ON and then the roll paper feeding is started after a specified time when an original passes through the original set sensor(PH13).
The pocket door motor(M4) is turned ON and the pocket door is opened after a specified time when the leading edge of the roll paper passes through the manual paper feed sensor(PH6). At almost the same time, the paper regist clutch(CL6) is turned ON. And then(CL6) is turned OFF and stopped the regist roller when the leading edge of the roll paper reaches to the roll paper regist sensor(PH7).
And the roll paper is fed into the pocket door which was opened and a slack of paper is made to be cut.
When an original passes through the original set sensor(PH13) and the leading edge of the original reaches to the original regist sensor(PH2), the paper regist clutch(CL6) is turned ON and the roll paper is fed onto the surface of the photoconductive drum after a specified time(t1).
When the trailing edge of the original is detected by the original entrance sensor(PH1), the roll paper is cut after a specified time(t2).

* It is possible to change the additional blank area of leading edge of original depending on the change of the specified time(t1).

* It is possible to change the additional blank area of trailing edge of original depending on the change of the specified time(t2).

About ten seconds later after the completion of the copy, the roll paper reverse clutch(CL3) is turned ON and the roll paper is rewound to the specified home position(approx. 21mm from the center of the forward roller) for stand-by.

C. Manual Paper Supply Mode

When the sheet by-pass table is opened, the sheet by-pass sensor(S11) is turned OFF and PAPER SUPPLY MODE is switched to the MANUAL PAPER SUPPLY MODE. And the SHEET PAPER INDICATION is lit on the operation panel at the same time. When the sheet paper is inserted, the paper entrance sensor(PH5) is turned ON and then the entrance clutch(CL4), the reverse clutch(CL5) are turned ON and then the sheet paper is fed into the machine. When the leading edge of the sheet paper reaches to the manual paper feed regist sensor(PH6), the sheet stops till the original comes.
And the original is inserted and then the original regist sensor(PH2) is turned ON, the entrance clutch(CL4), the reverse clutch(CL5) and the regist clutch(CL5) are turned ON simultaneously. Then the sheet paper is fed onto the surface of the photoconductive drum.

D. Fusing

The fuser roller is driven by the fuser motor(M3). It is heated up by one halogen heater. The surface temperature is controlled by the thermistor(TH). When it reaches to 130 ℃ , the fuser motor is turned ON to maintain the surface temperature equally. The surface temperature is once increased to 175 ℃ and then decreased gradually and controlled at approx. 165. And after the surface temperature of the fuser roller is stabilized to 165 ℃ , the fuser motor(M3) continues an intermittent operation that turning ON for about 0.1 seconds and turning OFF for about 6 seconds.
To prevent the malfunction of the fusing heater, a protective function is provided.
The micro-computer of the DC controller watches the voltage of the thermistor(TH). If it detects an abnormal high temperature(more than190 ℃) or an abnormal low temperature, the electricity to the heater is cut off and the power supply is shut OFF and "E0" or "E1" is indicated on the operation panel then. If the surface temperature of thr fuser roller exceeds 230 ℃ , the thermostat(TS1) is turned OFF and cut off the electricity to the heater.

E. Jam Detecting

Copy Paper Sensing Sensor; PH4, PH5, PH6, PH7, PH9, and PH10 are provided in this machine (FIG.3-402) in order to sense if paper is fed normally or not.
For Original, Document Sensing Sensors; PH1,PH13 and PH2 are provided in Document feeding Part to sense Original Jams.
When Micro-Computer senses Jam, machine is stopped and Jam Code No. is indicated on the counter of Control Panel as follows;

Indication Cord	Detector: Kind of Jam	
[DELAY JAM]	-While making Copy.	
J0	PH1/PH13/PH2:Original Jam	*during copy When the original length is shorter than 150mm or longer than 3,000mm. *during original reverse a. 1.8sec. Cl9 on ~ PH2 on b. 1.35sec. PH2 on ~ PH13 on c. 1.933sec. PH13 on ~ PH1 on d. When the original length is longer than 1,500mm. e. When the original guide is not on the right side.
J1	PH6: RoLL Paper Jam	a. 3.832sec. CL2 on ~ PH6 on. b. 6.294sec. CL3 on ~ Reverse to Home Position after Cutting. c. 11.174sec. CL3 on ~ Reverse to Home Position from other positions.
J2	PH7:Paper Jam	2.945sec. PH6 on ~ PH7 on.
J3	PH9:Paper Jam	6.808sec. In case of roll paper,after a slack is made for cutting Paper Regist Clutch, CL6 on ~ PH9 on. In case of cut sheet,PH7 on ~ PH9 on
J4	PH10:while copying by Roll Paper.	PH10 is always detected while the roll paper is being printed.
J5	PH7:while copying by Sheet Paper.	2.945sec. PH6 on ~ PH7 on.
J6	PH6:while copying by Sheet Paper	279mm ≦ Sheet Paper ≦ 3,000mm
[REMAINED JAM]	-Just after Power On.	
J0	PH1/PH13/PH2: Original remained Jam.	
J1	PH4/PH5 and	When warm up turns to Ready and Copy cycle turns to Ready. In case of paper remains at either PH4 or PH5 while roll empty indicator is flickering.
J2	PH6 & PH4: Paper Remained Jam.(Roll Paper)	When PH6 and PH4 senses paper existing at the same time.
J3	PH7/PH9: Paper Remained Jam	
J4	PH10: Paper Remained Jam.(Sheet Paper)	
J5	PH6: Paper Remained Jam.(Sheet Paper)	When PH6 senses paper existing and Ph4 senses paper not existing.

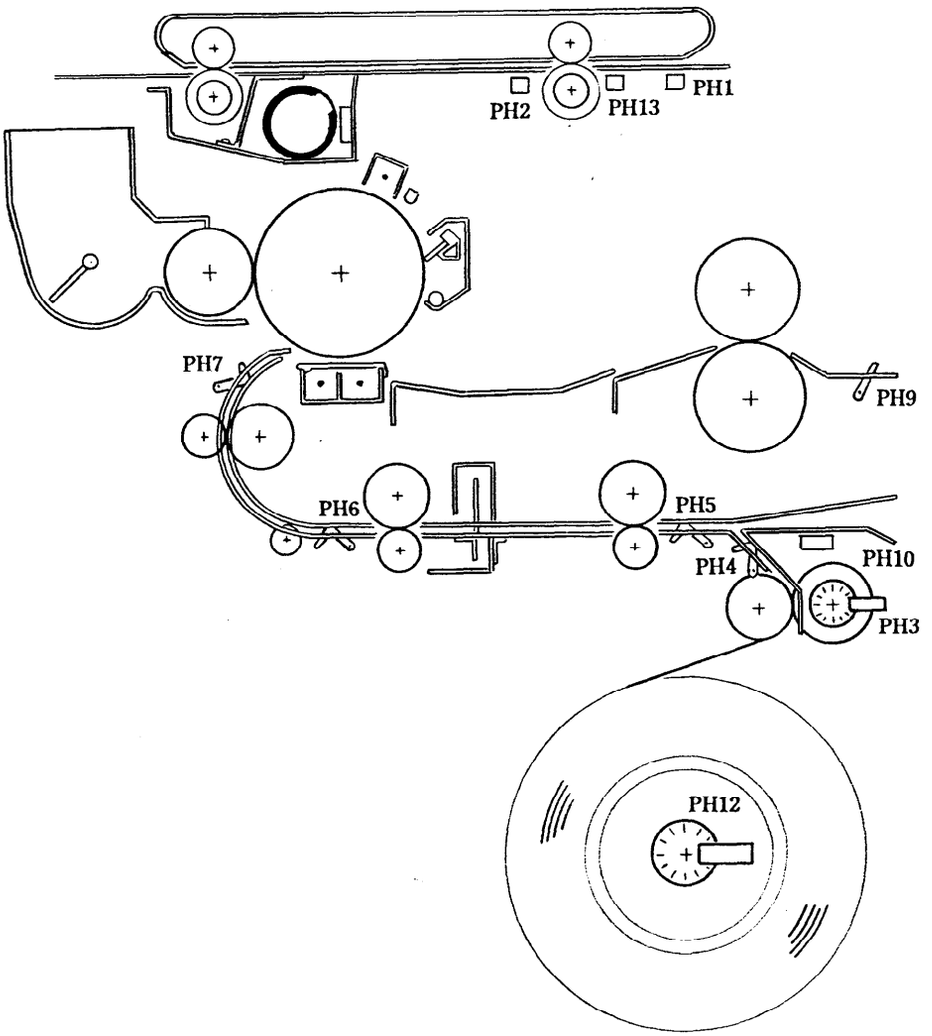


FIG.3-402

V .Motor Control circuit

1.General

Circuit shown in Fig.3-501 are control circuits for Main Motor and Developer Motor, and Fuser Motor that have mainly following functions.

1) Control for ON/OFF of Motor.
2) Control for constant rotation of Motor.

Each Motor is controlled to be rotated in constant speed.

Each Motor is DC Motor and rotating speed is controlled by controlling applied voltage to Motor.

These 3 Motors are incorporated clock Pulse Generator and generate Clock Pulse of frequency in proportion to motor rotation.

In Motor control circuit, control of Motor rotation is made by using this Clock Pulse.

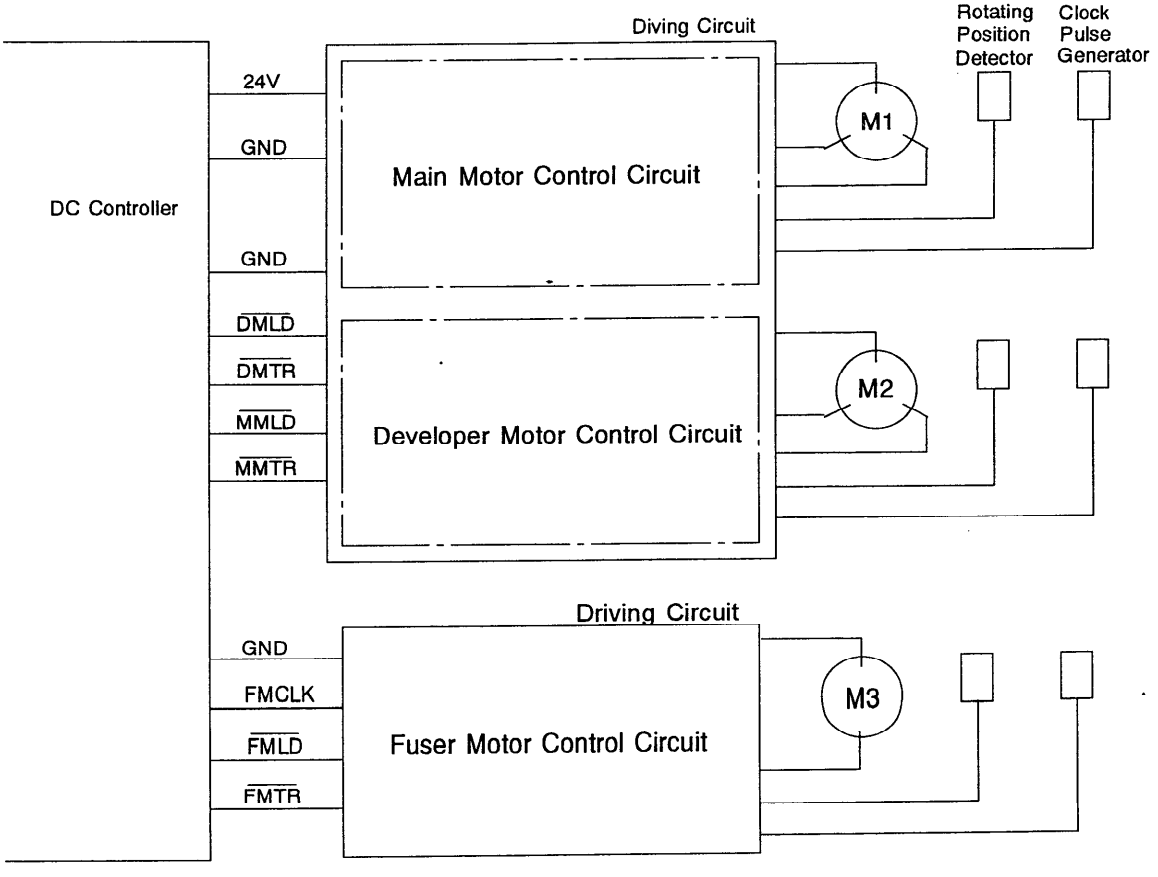


Fig.3-501

2.Function

a. Main Motor Control

When $\overline{\text{MMTR}}$=1, Driving Circuit becomes OFF, and so Main Motor is not rotated.

When $\overline{\text{MMTR}}$=0, Driving Circuit becomes ON, and so Main Motor is rotated.

b. Developer Motor Control

When $\overline{\text{DMTR}}$=1, Driving Circuit becomes OFF, and so Developer Motor is not rotated.

When $\overline{\text{DMTR}}$=0, Driving Circuit becomes ON, and so Developer Motor is rotated.

c. Fuser Motor Control

When $\overline{\text{FMTR}}$=1, Driving Circuit becomes OFF, and so Fuser Motor is not rotated.

When $\overline{\text{FMTR}}$=0, Driving Circuit becomes ON, and so Fuser Motor is rotated.

Remarks:

Constant Rotating Control Circuit of each Motor is incorporated(X'tal) Oscillator and its divided frequency is used as reference signal.

Control signal is come out to Driving Circuit in order to get Clock Pulse in coincide with reference Signal always by comparing Clock Pulse from each Motor with reference Signal.

Driving Circuit keeps constant rotation of Motor by controlling of supply voltage to Motor in accordance with Control Signal.

Also When Motor Abnormal Signals (MMTR-LD,DMTR-LD & FMTR-LD) are come out from each Motor Constant Rotation control circuit to DC Controller for approx. 1sec. continuously, error cord of self-diagnosis is lit in flashing on Control Panel because DC controller senses as some abnormal condition is occurred in motor.

Motor Name	Error Code
Main Motor	EE
Developer Motor	ED
Fuser Motor	EF

VI . Power Source

1. Power Supply

AC power supply supplied to DC power source by turning Interlock(Open Upper Unit) and Power Switch ON.

DC Power Supply supplies 24V DC and 5V DC, and they are supplied to DC Controller, and Motor Control PCB.
Also, AC power supply is supplied to Dehumidifier Heater.

2.Protection Function of Power Circuit

When load becomes shorted condition due to any abnormal conditions and over current is flowed, its input is stopped with the operation of Circuit Breaker(CB).

Chapter 4
Mechanical System

In this chapter, mechanical feature and function, and procedure for disassembling and assembling are explaining.

Please keep in mind following cautions in doing disassembling or assembling of the machine.

1. Pull out Power Plug of the machine in doing disassembling or assembling for safety purpose.

2. In doing assembling, do it reverse sequence of disassembling, if not specially mentioned.

3. Assembling should be made in right places not to use wrong kind of length or diameter of screws and etc.

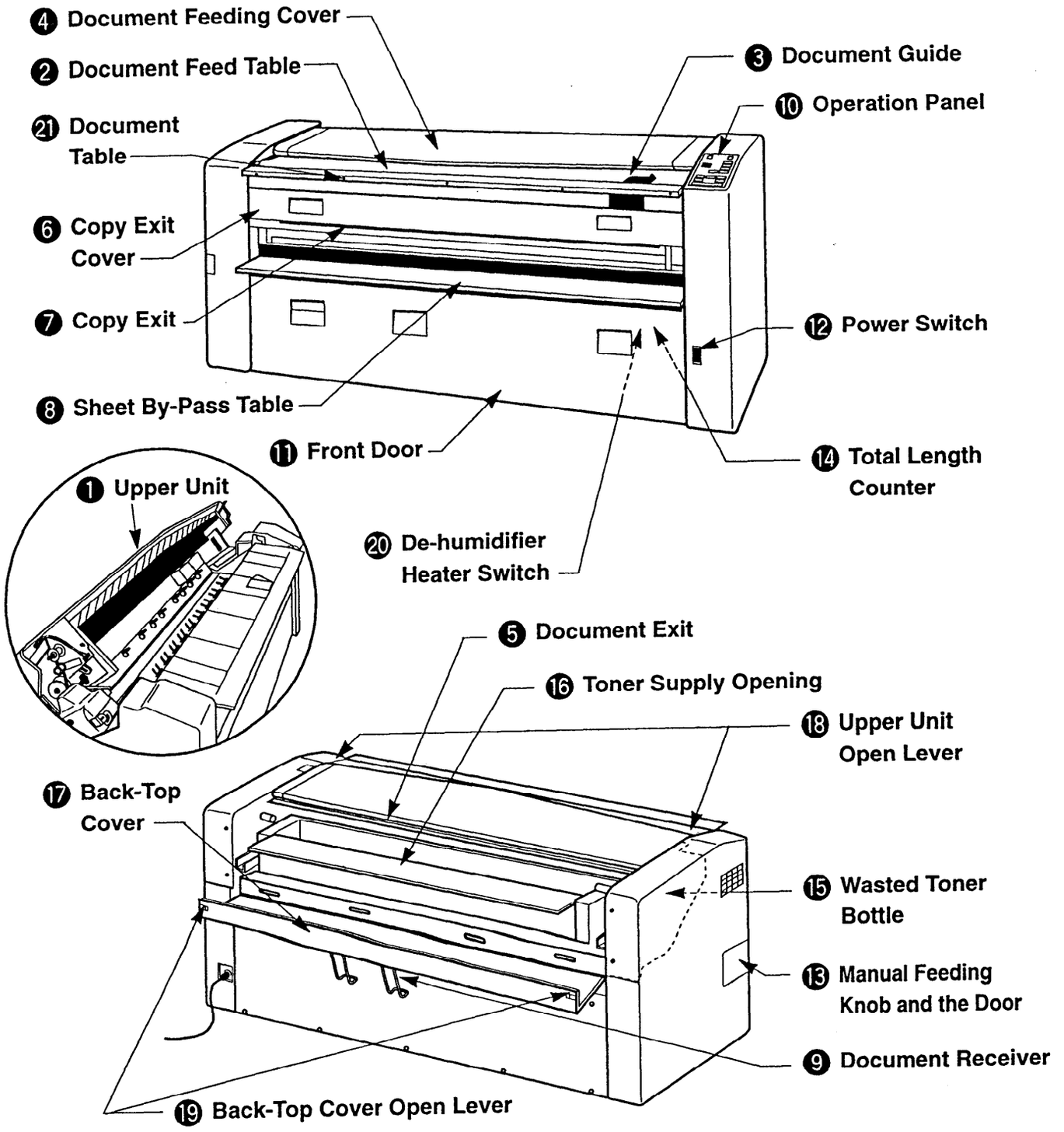
4. In order to make ground surely, Toothed Washer is used for fixing screw of Ground Wire, Varistor and etc.

   So, use such Washer when such screws are tighten.

5. In general, do not operate machine while parts are removed.

I . Appearance, Control Related

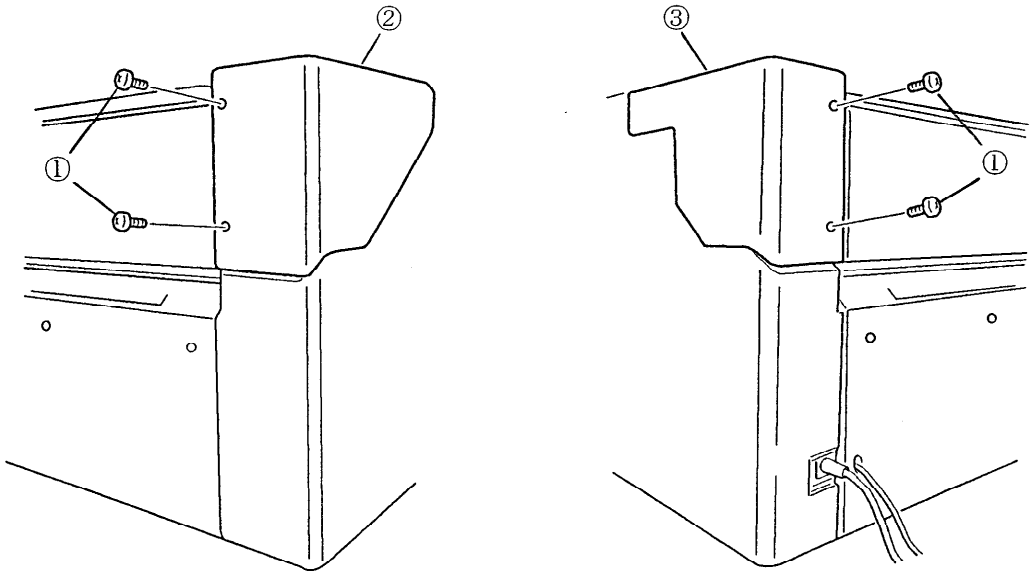
A. Name of Outside Cover



B. Removal of Outside Cover

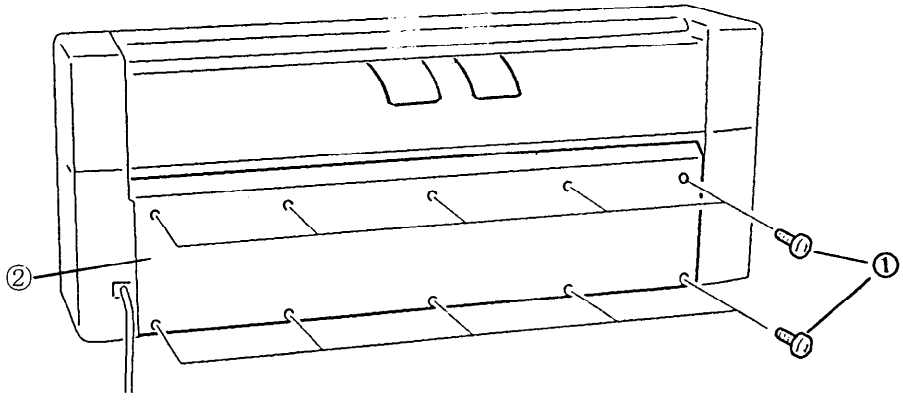
1.Removal of Left Cover(Upper) and Right Cover(Upper)

Take out Left Cover(Upper) and Right Cover(Upper) by removing 4 screws.



① screw
② Left Cover(Upper)
③ Right Cover(Upper)

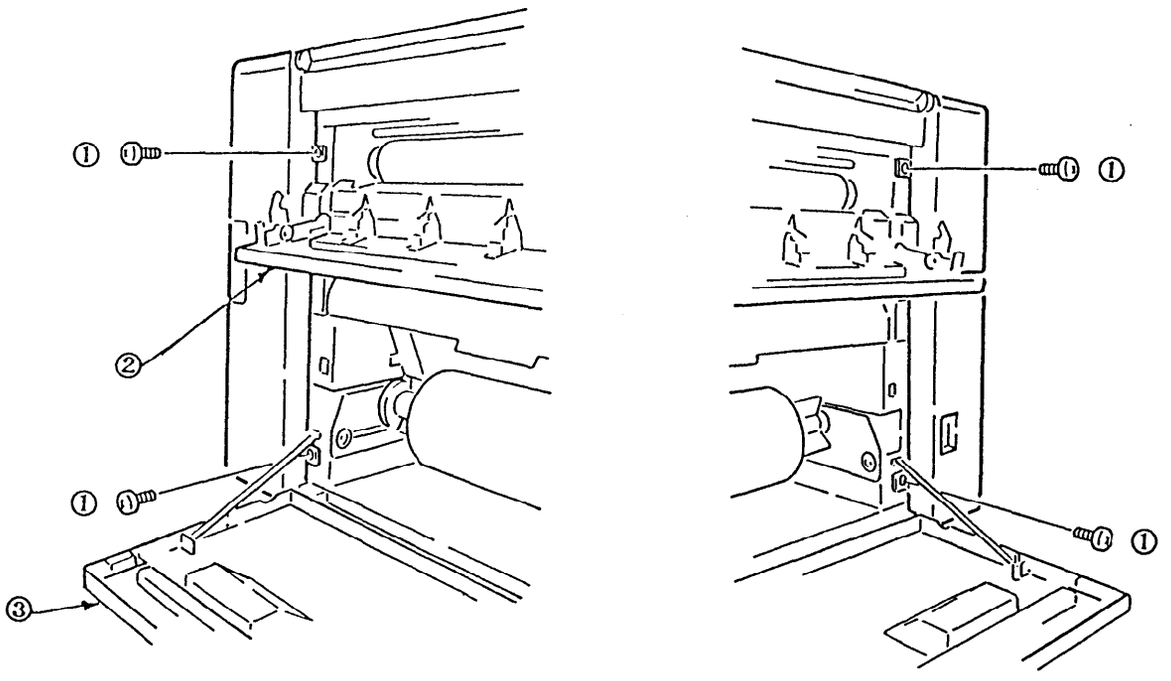
2.Removal of Rear Cover(Lower)



① screw
② Rear Cover(Lower)

3. Removal of Left Cover (Lower) and Right Cover (Lower):

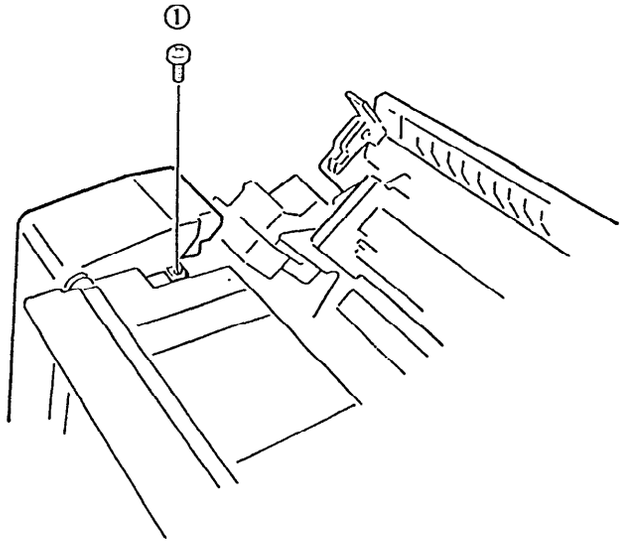
1) Open Copy Exit Cover and Front Door first, and remove 4 fixing Screws of Left (Lower) and Right Cover (Lower) at the front side.



① screw
② Copy Exit Cover
③ Front Door

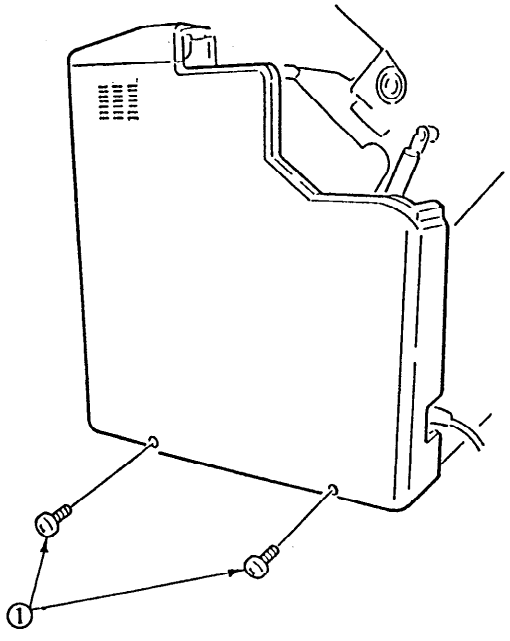
2) Lift up Upper Unit by pushing two Gray Lavers at the both sides of Document Feed Table.

3) Remove the Screw at the Upper Part of Left Cover (Lower).

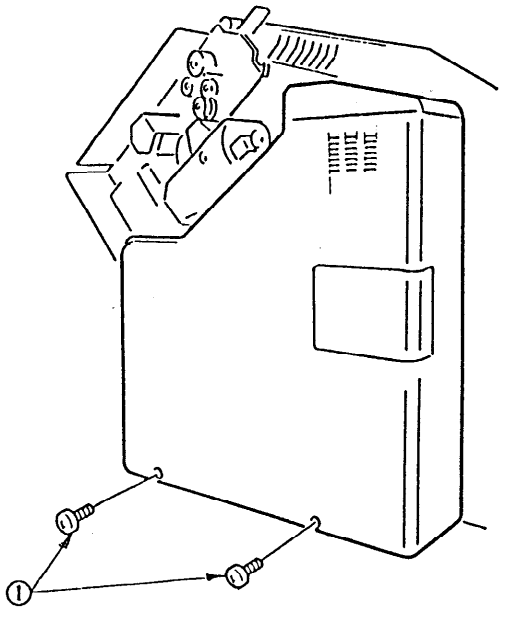


① Screw

4) Remove 4 fixing Screws of Left Cover (Lower) and Right Cover (Lower) at left and right sides.



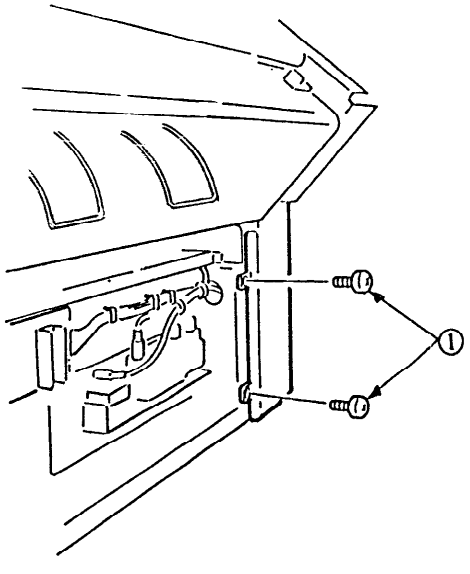
Left side



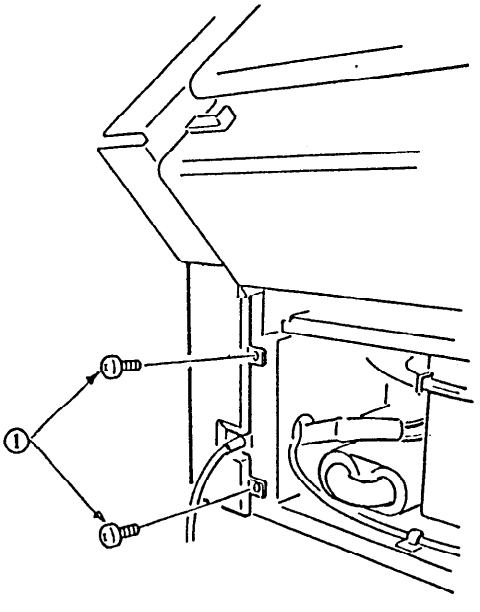
Right side

① Screw

5) Remove Left Cover (Lower) by removing 2 screws at rear side.
6) Remove Right Cover (Lower) with same method as Left Cover (Lower).



Left side

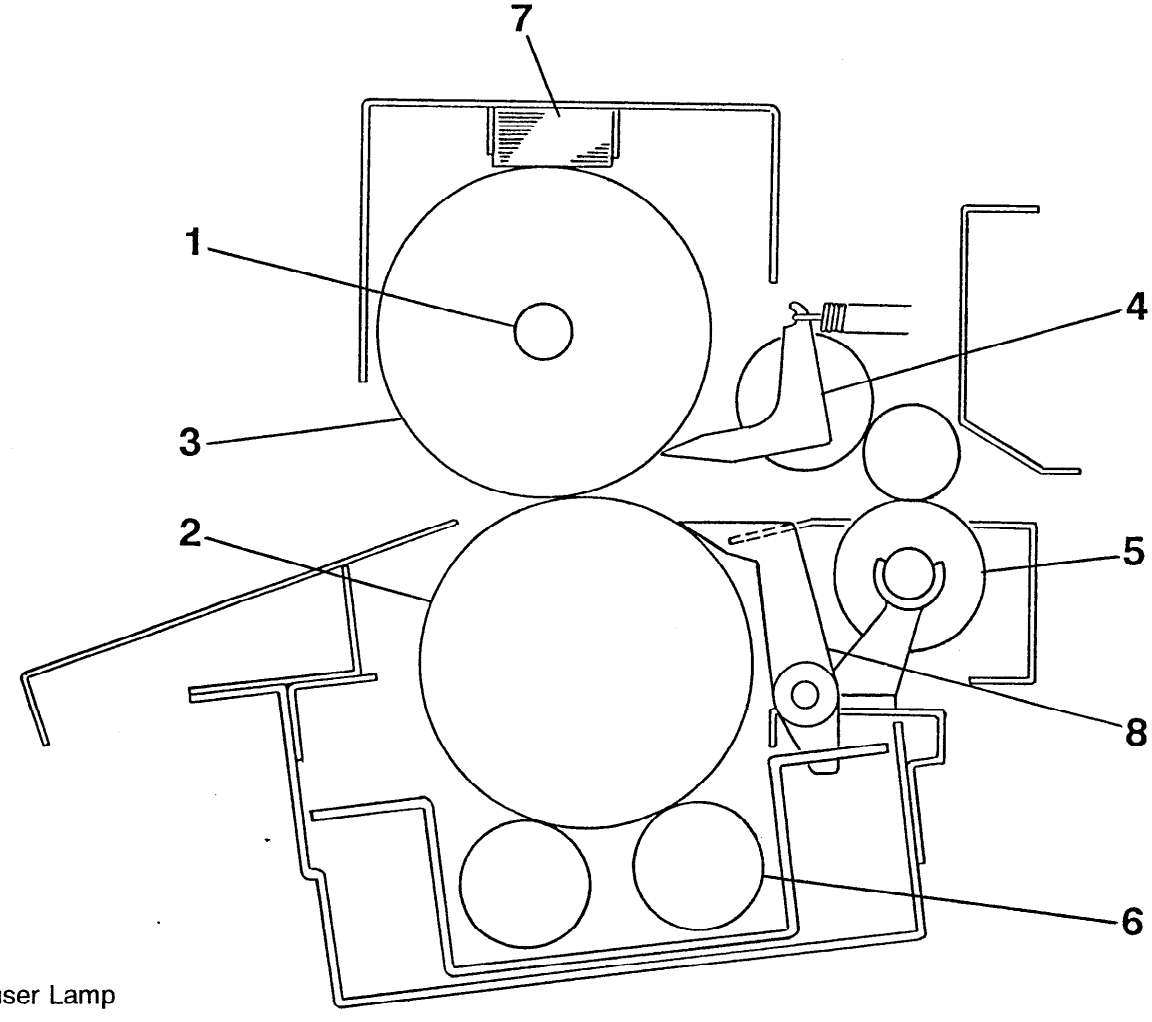


Right side

① Screw

Ⅱ . Fuser Unit

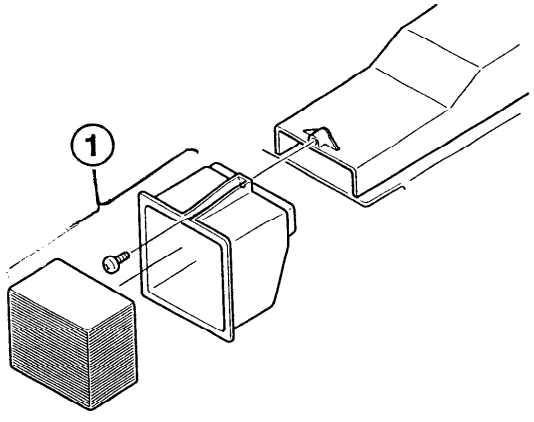
1.Composition

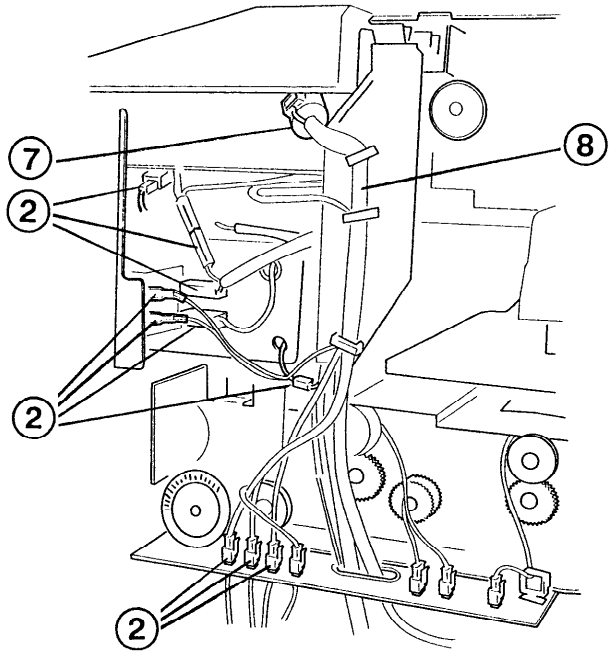


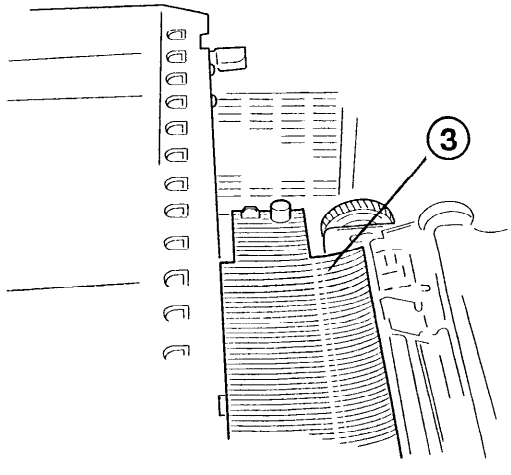
① Fuser Lamp
② Roll Press
③ Heat Roller
④ Heat Roller Stripper
⑤ Exit Roller
⑥ Pressure Roller
⑦ Cleaning Felt
⑧ Finger Strip

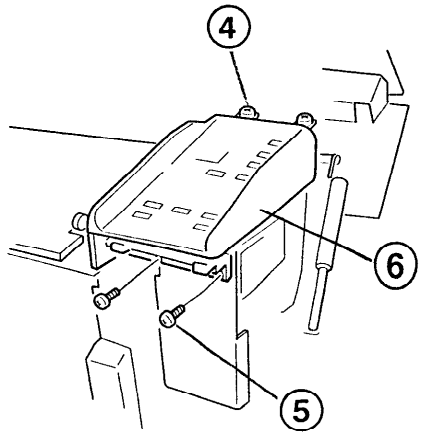
2 Removal of Fuser Unit

1. Remove the Left and Right Cover(Upper),Rear Cover(Lower),Left and Right Cover(Lower).
   Refer to "Removal of Outside Cover".
2. Remove the Ozone Filter Assy ① (both sides).
3. Disconnect the Eleven Connectors ②.
4. Open the Upper Unit, then remove the Guide Plate ③.
5. Loosen the two screws ④ and remove the two screws ⑤ ,then remove the Operation Panel ⑥.
6. Remove the Ferrite Core ⑦ [220V only].
7. Remove the Harness ⑧ from clamp.

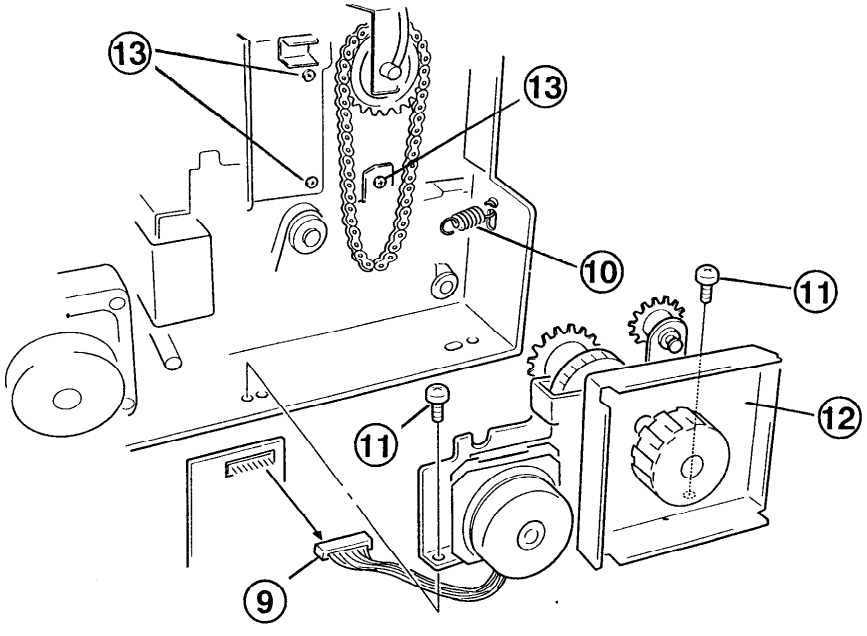






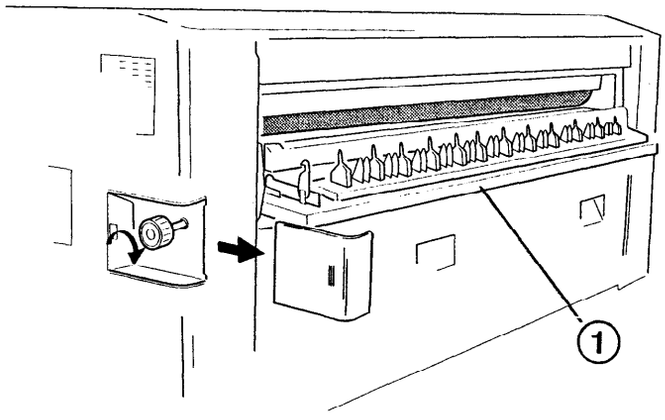


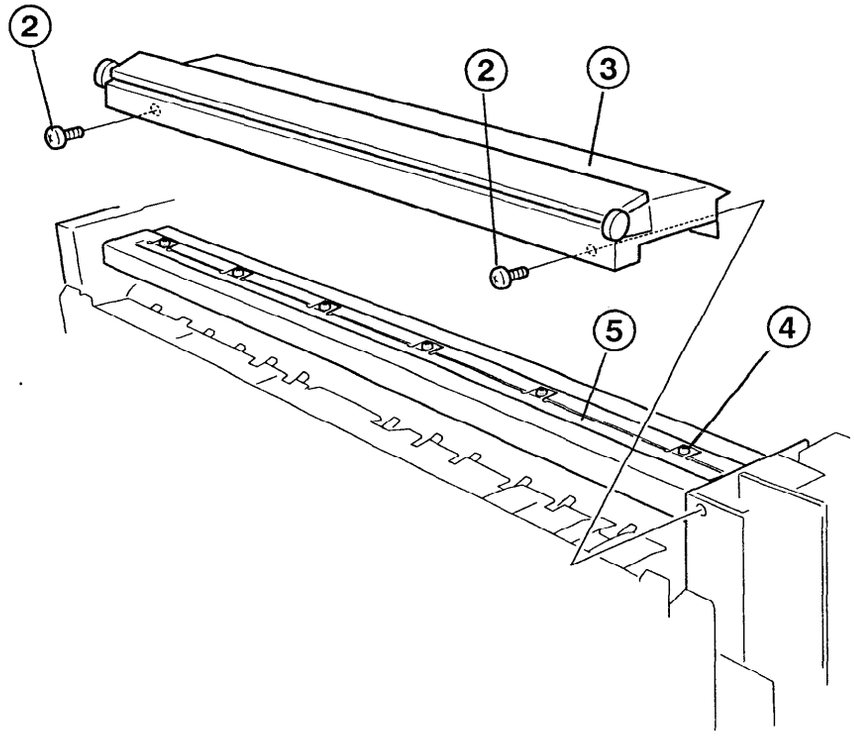
8. Disconnect the Fuser Motor connector ⑨.
9. Remove the Tension Spring ⑩ ,two screws ⑪ ,then remove the Fuser Gear Assy ⑫.
10. Open the Sheet By-Pass Table.
11. Remove the six screws ⑬ and flat washers at the both ends and then take out the Fuser Unit while lifting the upper part of the both fuser side frame.
12. Reassemble in reverse order.



3 Replacement of Cleaning Felt Assy

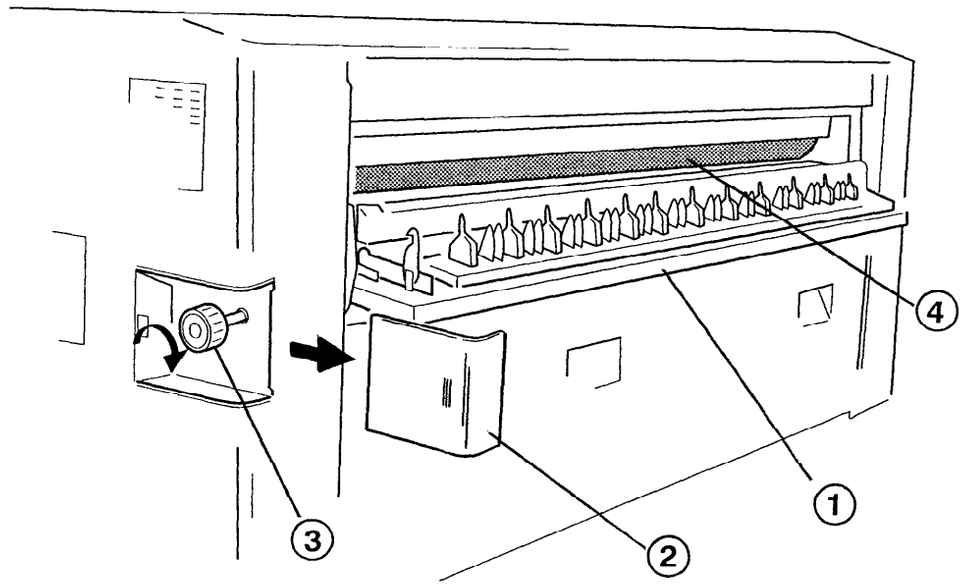
1. Remove the Left and Right Cover(Upper),Rear Cover(Lower),Left and Right Cover(Lower).
   Refer to "Removal of Outside Cover".
2. Remove the Ozone Filter Assy,(both sides).
   As to item2 through item7,refer to "Removal of Fuser Unit".
3. Disconnect the connectors.
4. Open the Upper Unit.
5. Remove the Operation Panel.
6. Remove the Ferrite Core [220V only].
7. Remove the Harness.
8. Open the Copy Exit Cover ①.
9. Remove the two screws ② ,then remove the Base-Blower Assy ③.
10. Remove the six screws ④ ,then remove the Cleaning Felt Assy ⑤.
11. Reassemble in reverse order.





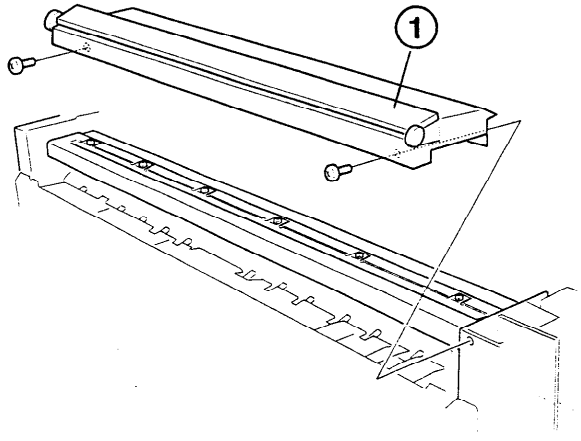
4 Cleaning of Heat Roller

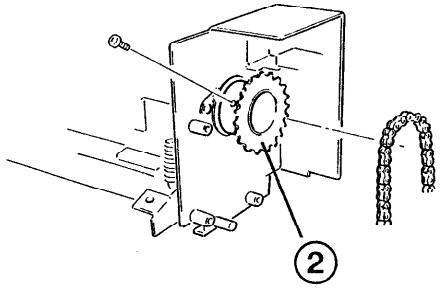
1. Open the Copy Exit Cover ①.
2. Remove the Manual Feeding Door ②.
3. While rotating the Manual Feeding Knob ③ ,clean the Heat Roller ④.
   with a soft cloth moistened with alcohol.

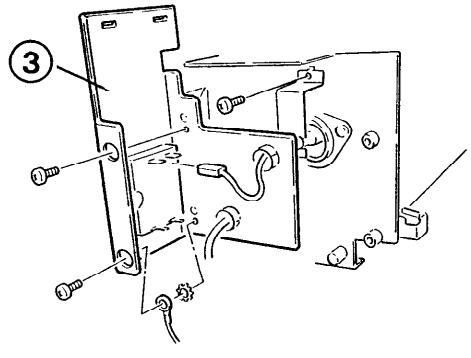


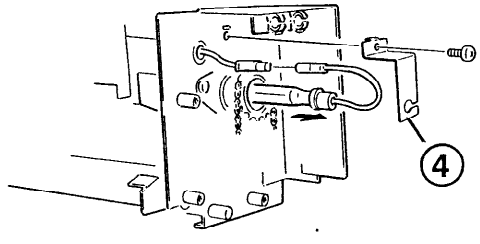
5 Replacement of Heat Roller

1. Remove the Fuser Lamp. Refer to "Replacement of Fuser Lamp"
2. Disconnect the Blower connector. As to item2 through item7,refer to "Removal of Fuser Unit".
3. Open the Upper Unit.
4. Remove the Operation Panel.
5. Remove the Ferrite Core.[220V only].
6. Remove the Harness.
7. Open the Copy Exit Cover.
8. Remove the two screws,then remove the Base-Blower Assy ①.
9. Disconnect the Fuser Motor connector . Refer to "Removal of Fuser Unit".
10. Remove the Fuser Gear Assy . Refer to "Removal of Fuser Unit".
11. Remove the Chain and Sprocket ②.
12. Remove the two screws,then remove the SSR Bracket ③.
13. Remove the Fuser Lamp Bracket ④.

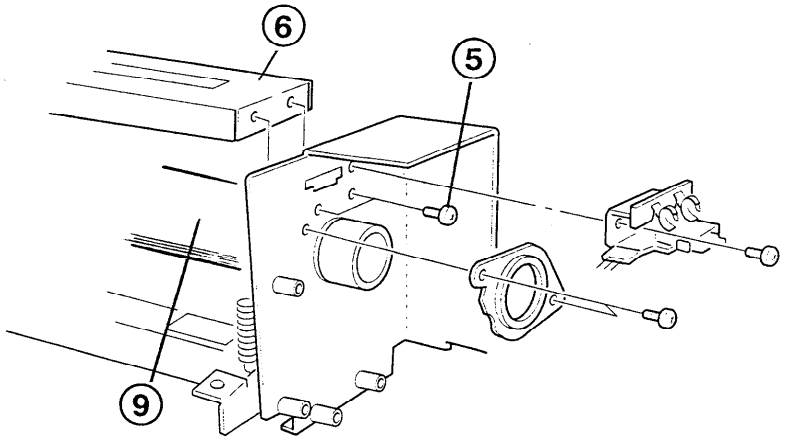


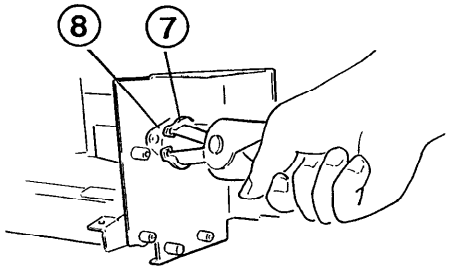






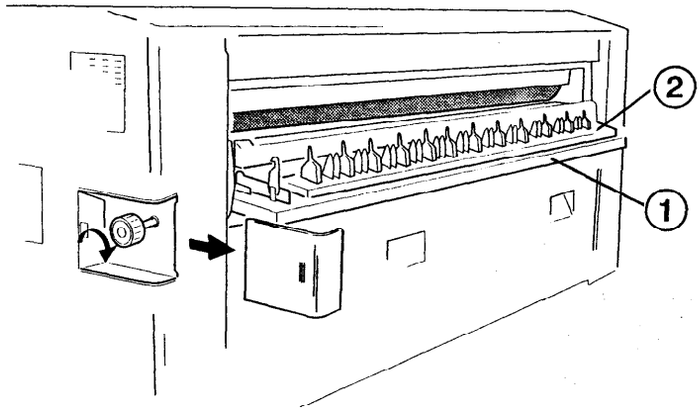
14. Remove the four screws ⑤ (both sides),then lift up Heat Roll Case Assy ⑥.
    Note:Take care not to damage the Heat Roller when you take out the
    Heat Roll Case Assy from the machine.
15. Remove the C-ring ⑦ , Heat Roll Bearing ⑧.
16. Move the Heat Roller ⑨ to the left fully and take it out toward the upper right.
17. Reassemble in reverse order.

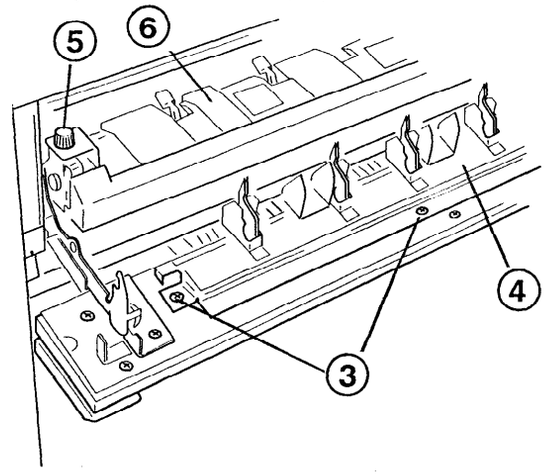


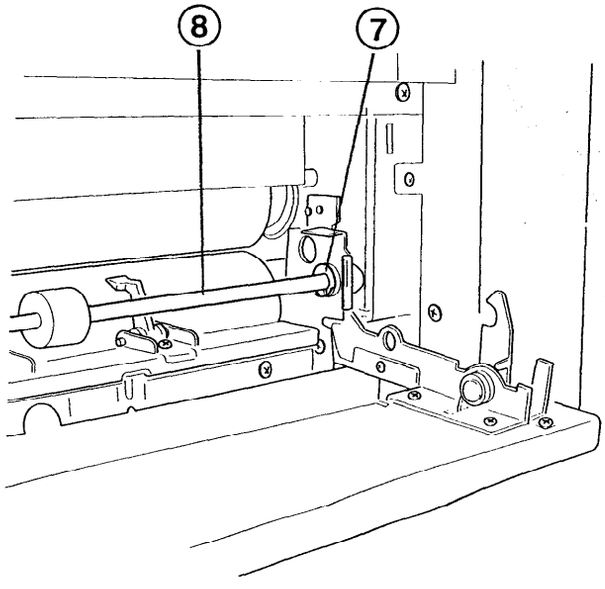


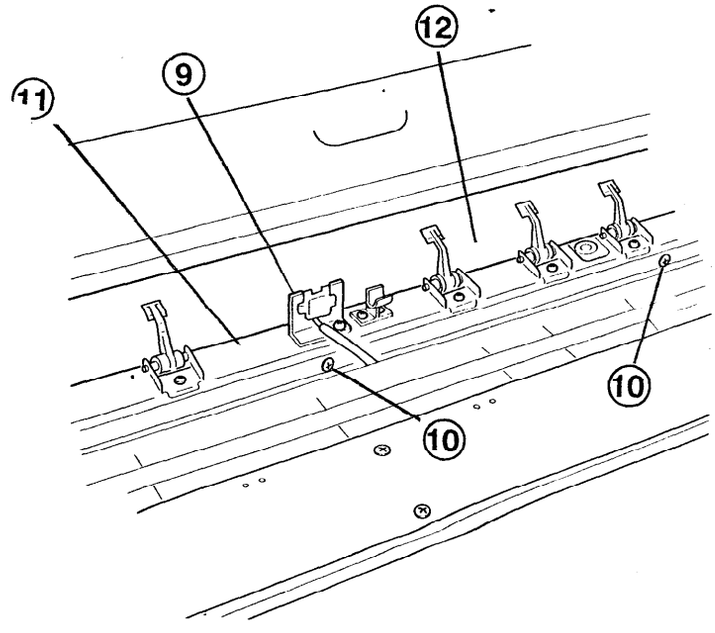
6 Cleaning of Roll-Press

1. Open the Sheet By-Pass Table ①.
2. Open the Copy Exit Cover ②.
3. Remove the five screws ③ ,then remove the Heat Roller Stripper Unit ④.
4. Remove the Knob screw ⑤ ,then remove the Roll-Press Stripper Unit ⑥.
5. Remove the KL clip ⑦ , then remove the Exit Roller Assy ⑧.
6. Remove the Bracket Sensor ⑨.
7. Remove the five screws ⑩ ,then remove the Finger Strip Unit ⑪.
8. Clean the Roll-Press ⑫ with a soft cloth moistened with alcohol.
9. Reassemble in reverse order.





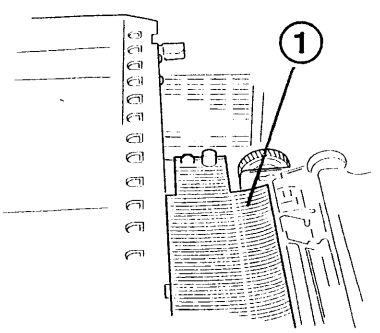


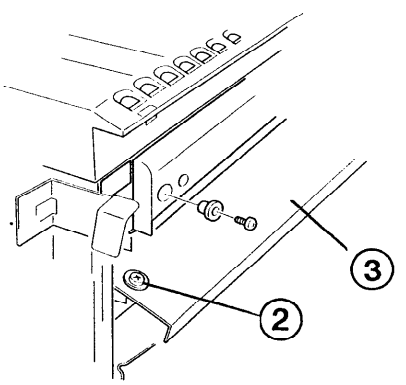


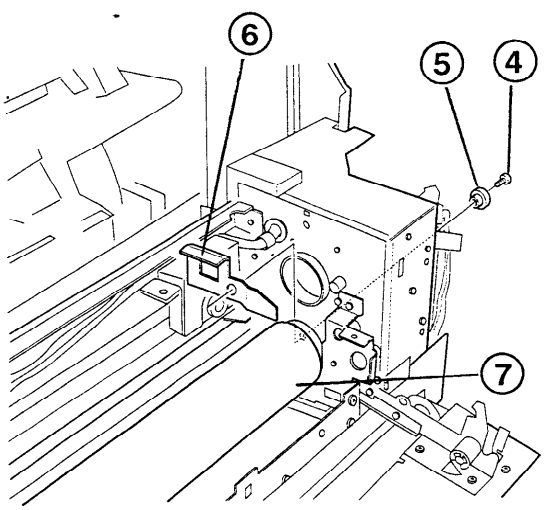
7 Replacement of Roll-Press

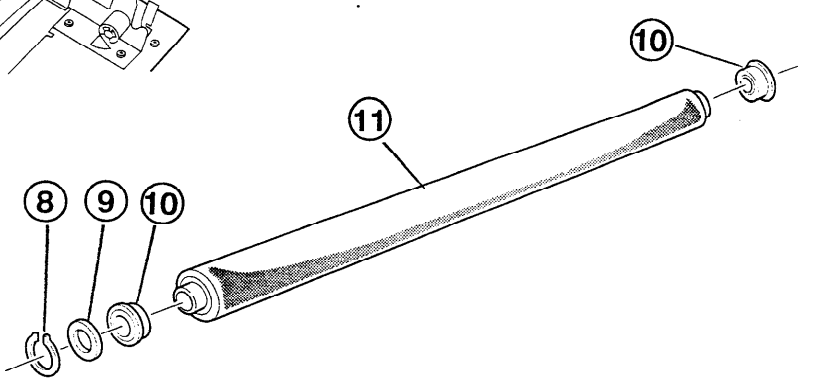
1. Open the Sheet By-Pass Table.
2. Remove the Heat Roller. Refer to "Replacement of Heat Roller"
3. Remove the Heat Roller Stripper Unit.

   As to item3 through item7,refer to "Cleaning of Roll-Press".
4. Remove the Roll-Press Stripper Unit
5. Remove the Exit Roller Assy.
6. Remove the Bracket Sensor.
7. Remove the Finger Strip Unit.
8. Open the Upper Unit.
9. Remove the Copy Paper Guide Plate Assy ①.
10. Remove the two screws ② ,then remove the Fuser Guide Plate ③ .
11. Close the Copy Exit Cover.
12. Remove the screw ④ ,Bush ⑤ ,and Lever ⑥ (both sides).
13. Remove the Roll-Press Assy ⑦ .
14. Remove the C-ring ⑧, Spacer ⑨, Bearing ⑩ ,then you can replace the Roll-Press ⑪ .
15. Reassemble in reverse order.



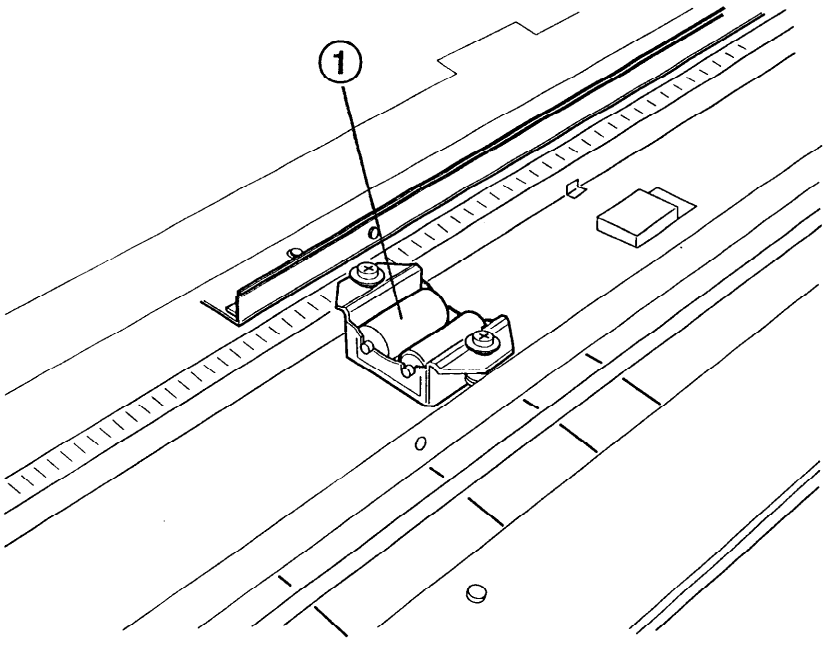






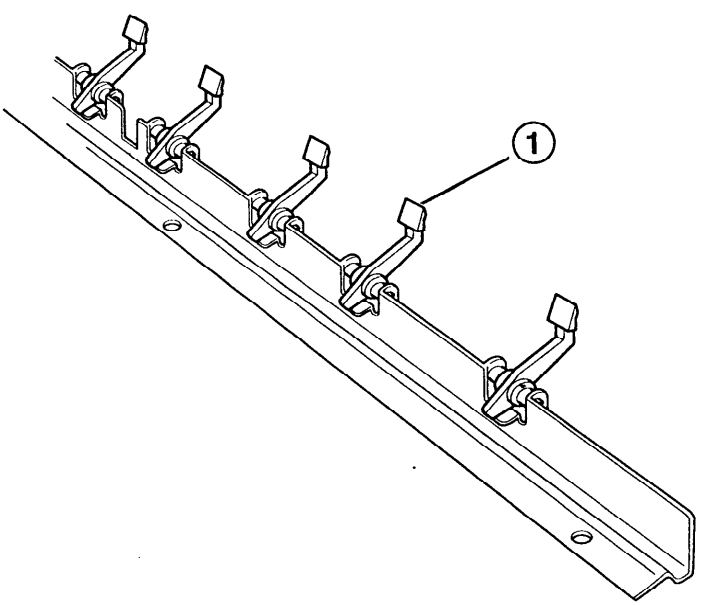
8 Cleaning of Pressure Roller

1. Remove the Roll-Press. Refer to "Replacement of Roll-Press".
2. Clean the Pressure Roller ① with a soft cloth moistened with alcohol.



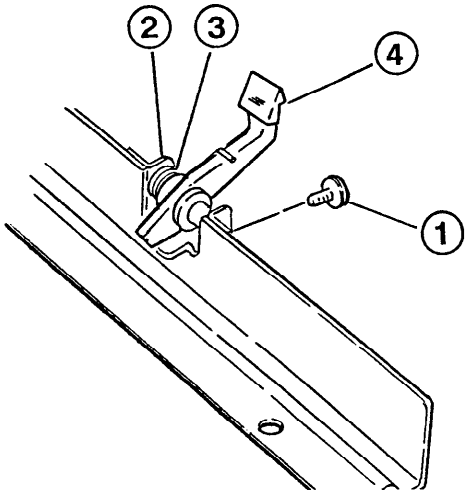
9 Cleaning of Finger Strip

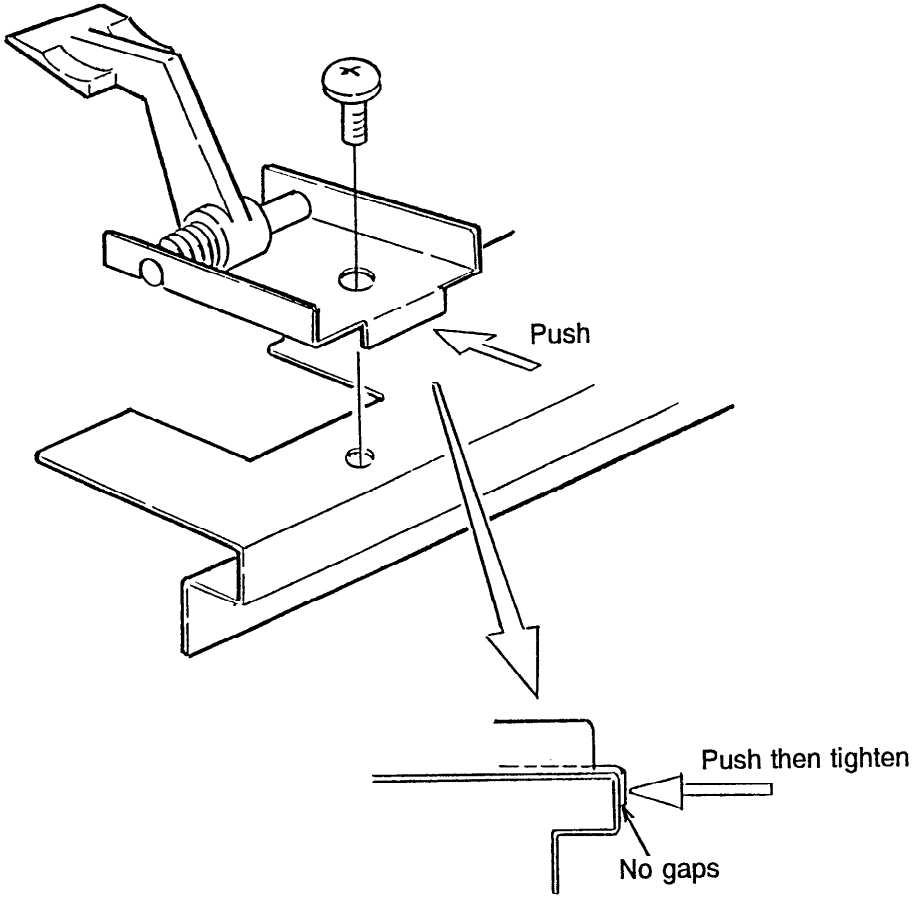
1. Open the Sheet By-Pass Table. As to item1 through item7,refer to "Cleaning of Roll-Press".
2. Open the Copy Exit Cover.
3. Remove the Heat Roller Stripper Unit.
4. Remove the Roll-Press Stripper Unit.
5. Remove the Exit Roller Assy.
6. Remove the Bracket Sensor.
7. Remove the Finger Strip Unit.
8. Clean the Finger Strip ① with a soft cloth moistened with alcohol.
9. Reassemble in reverse order.



10 Replacement of Finger Strip

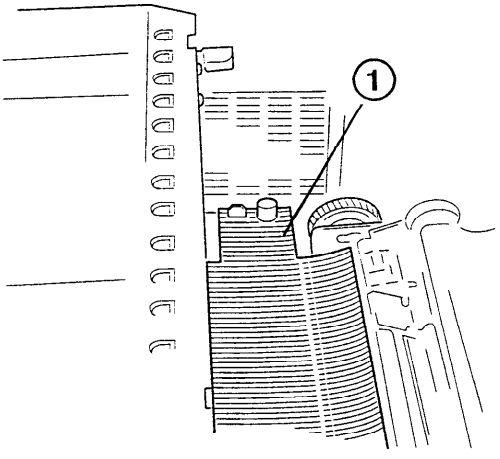
1. Open the Sheet By-Pass Table. As to item1 through item7,refer to "Cleaning of Roll-Press".
2. Open the Copy Exit Cover.
3. Remove the Heat Roller Stripper Unit.
4. Remove the Roll-Press Stripper Unit.
5. Remove the Exit Roller Assy.
6. Remove the Bracket Sensor.
7. Remove the Finger Strip Unit.
8. Remove the screw ① ,then remove the Plate Strip Nail ② , and Coil Spring ③ .
9. Replace the Finger Strip ④ .
10. Reassemble in reverse order.

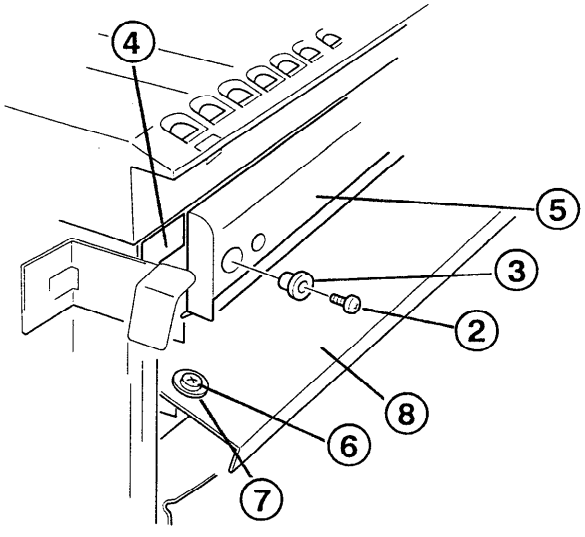


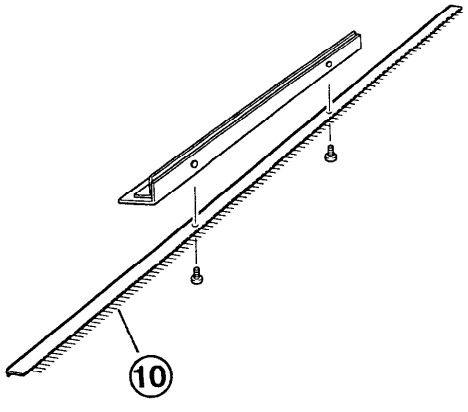


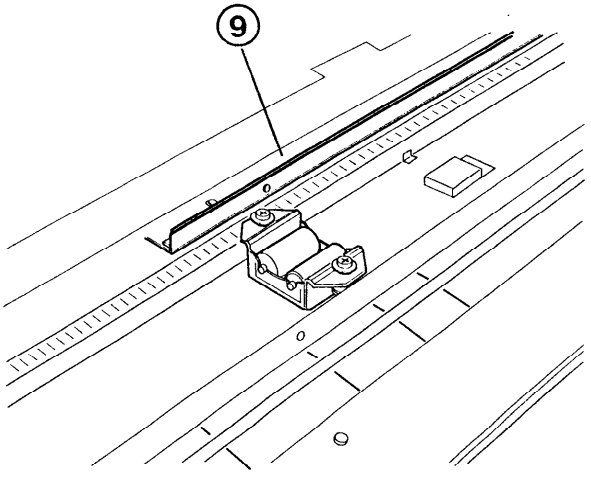
11 Replacement of Discharge Brush

1. Open the Upper Unit.
2. Remove the Copy Paper Plate Guide ① .
3. Remove the five screws ② ,then Ozone Duct Collar ③ ,Fuser Cover ④ (front), and Ozone Duct Assy ⑤ .
4. Remove the two screws ⑥ ,and Spacer ⑦ ,then remove the Fuser Guide Plate ⑧ .
5. Remove the two screws,then remove the Holder Plate Unit ⑨ .
6. Remove the Discharge Brush ⑩ .
7. Reassemble in reverse order.



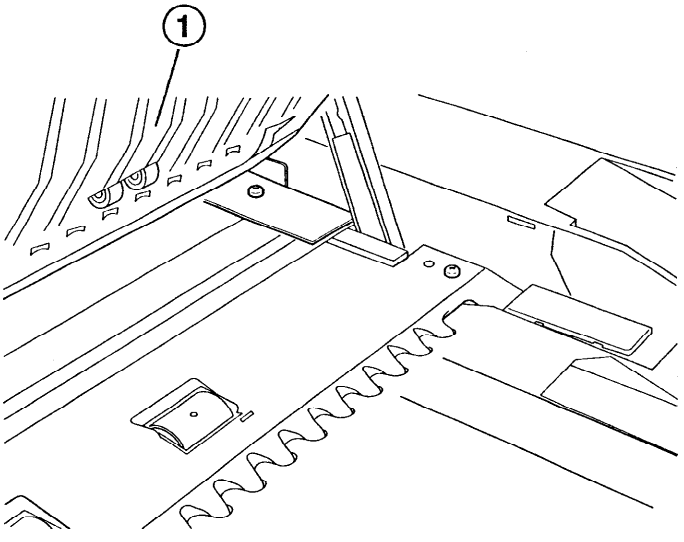


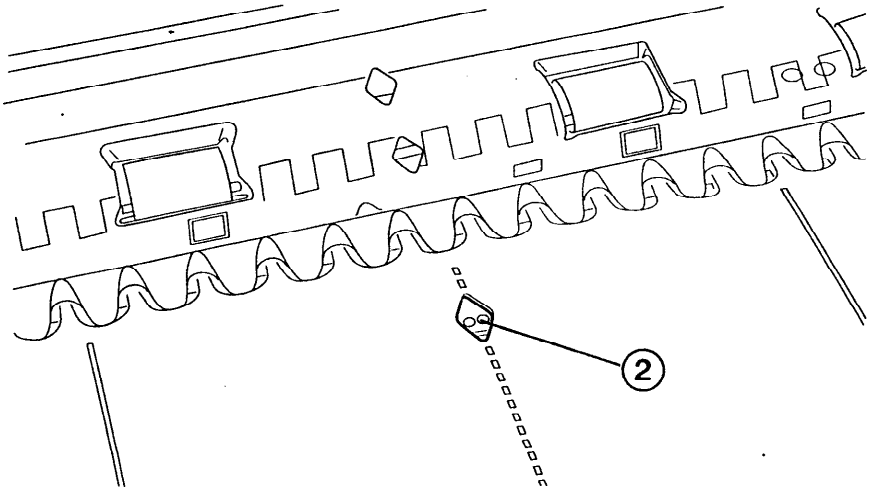




12 Cleaning of Entrance Sensor (PH1)

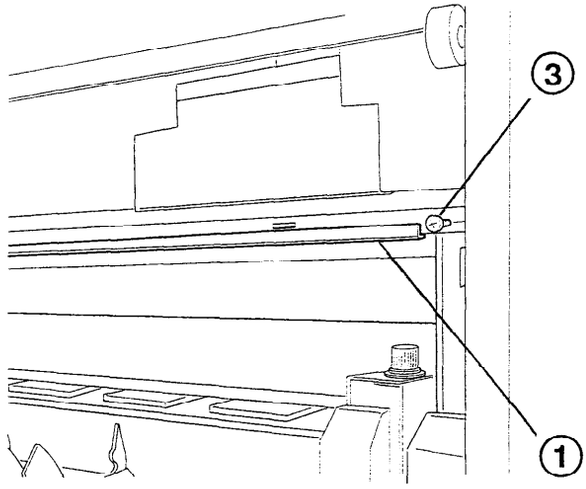
1. Open the Document Top Assy ① .
2. Clean the lens ② with dry cloth.
3. And clean the lens with a soft cloth moistened with alcohol.

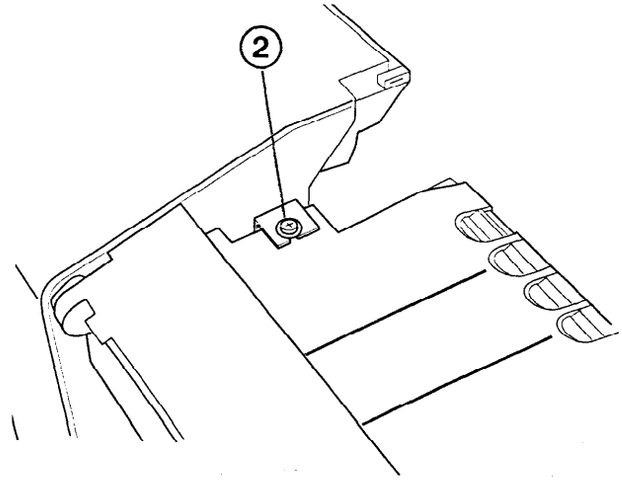


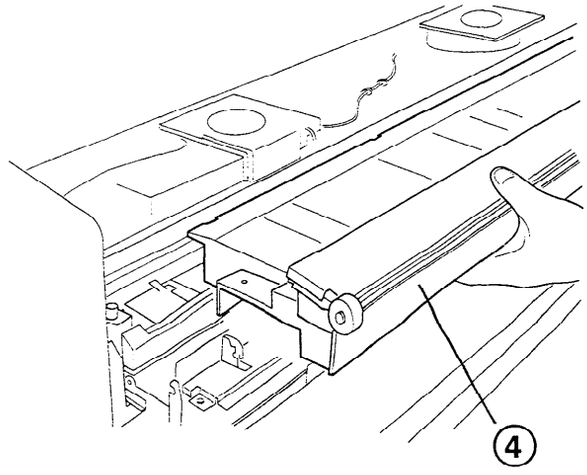


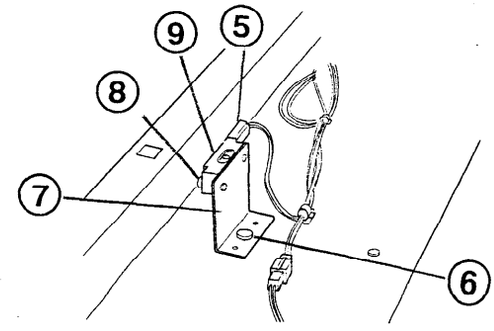
13 Replacement of Entrance Sensor (PH1)

1. Open the Copy Exit Cover.
2. Remove the Edging ① .
3. Open the Upper Unit.
4. Remove the screw ② of Left Cover (Lower).
5. Remove the three screws ③ ,then remove the Document Feed Table Assy ④ .
6. Disconnect the connector ⑤ .
7. Remove the screw ⑥ ,then remove the Bracket Sensor ⑦ .
8. Remove the screw ⑧ ,then remove the Entrance Sensor ⑨ .
9. Reassemble in reverse order.



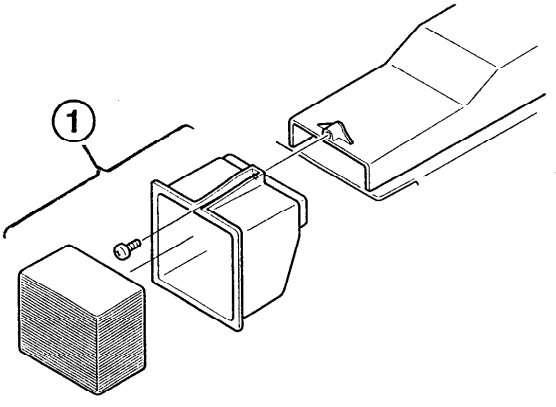


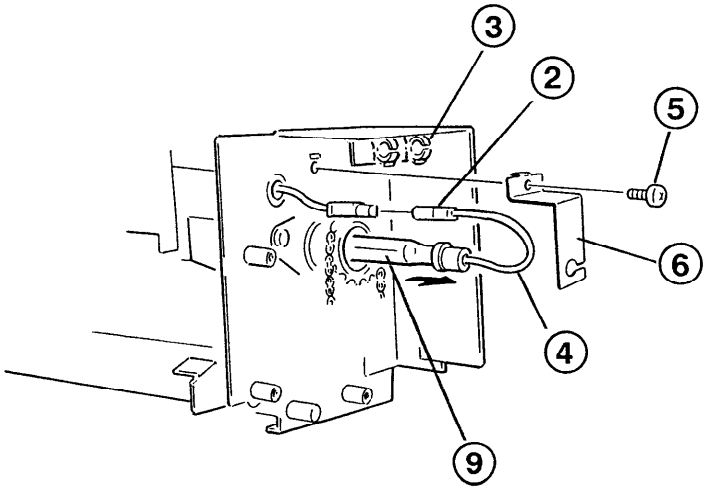


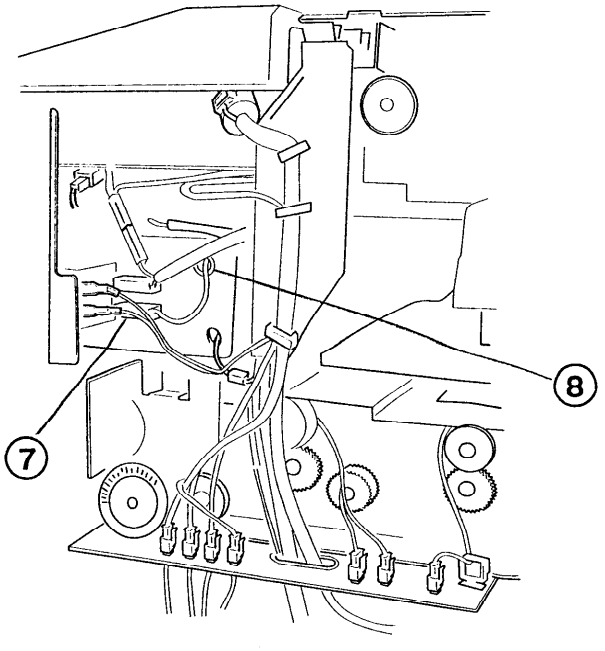


14 Replacement of Fuser Lamp

1. Remove the Left and Right Cover(Upper),Rear Cover(Lower), Left and Right Cover(Lower).
   Refer to "Removalof Outside Cover".
2. Remove the Ozone Filter Assy ① ,(both sides).
3. Disconnect the connector ② for the Left Lead Wire of Fuser Lamp and then release the Lead Wire from the two wire saddles ③ and remove the Lead Wire ④ .
4. Remove the screw ⑤ ,then remove the Fuser Lamp Bracket ⑥ .
5. Disconnect the connector ⑦ for the Right Lead Wire of Fuser Lamp from the terminal SSR.
6. Remove the right end of the Fuser Lamp from the Fuser Lamp Bracket and pull back the connector for the Lead Wire of the Fuser Lamp inside through the Bush ⑧ to take out the lamp toward the right hand.
7. Remove the Fuser Lamp ⑨ from Left side.
8. Reassemble in reverse order.

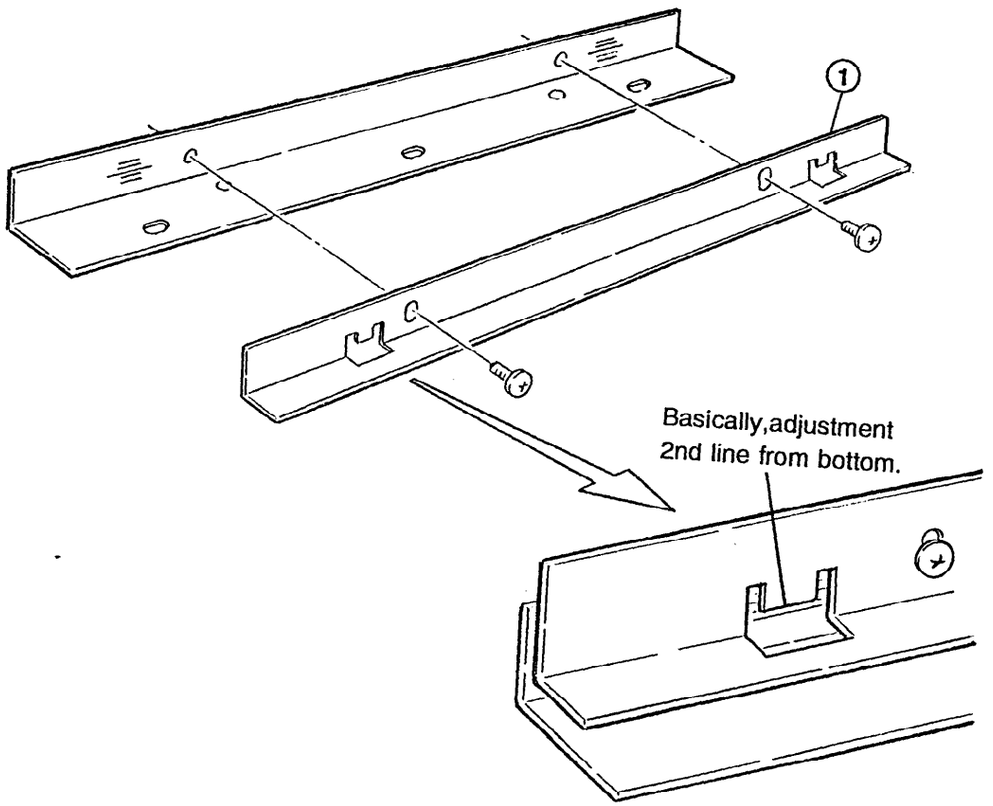






15 Adjustment of Holding Plate

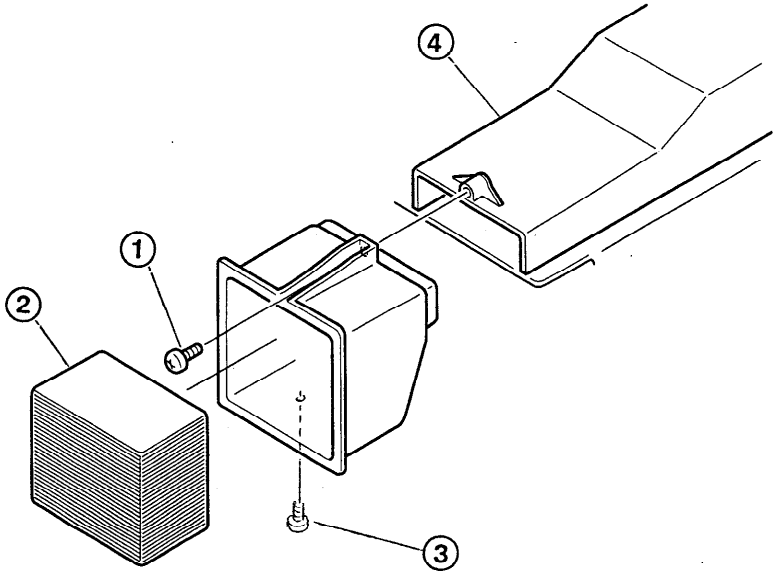
1.In case of wrinkle is observed on 914mm width "Tracing Paper", adjust Holding Plate B ① 3rd line(the longest line) from bottom.



16.Removal of Ozone Filter

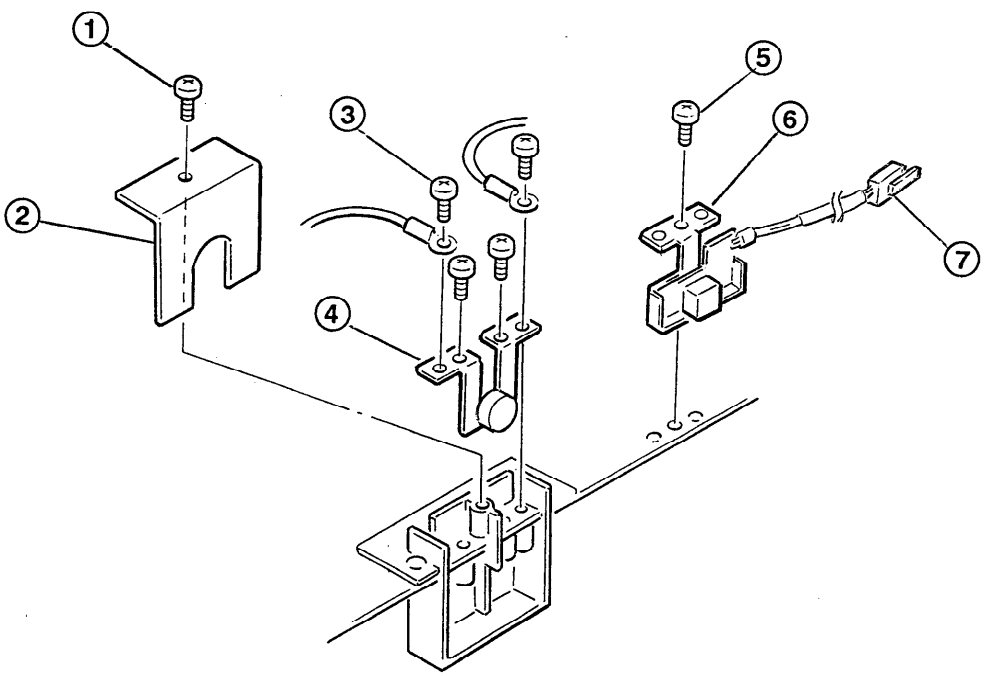
1)Remove Ozone Filter(L) Assy from Air Duct by loosening a screw ① .

2)Remove Ozone Filter ② from Ozone Filter Assy by removing a Screw ③ . For Ozone Filter(R),the same method is taken.



17.Removal of Thermo Switch and Thermistor

1)Remove Thermo Switch Cover ② by removing a Screw ① .
2)Remove Thermo Switch by removing 4 fixing Screws ③ .
3)Disconnect Connector ⑦ of Thermistor ⑥ and remove it by removing a Screw ⑤ .



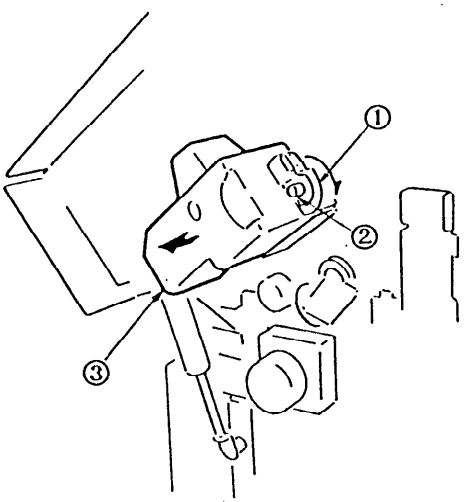
Ⅲ. Phot-Conductive Drum Unit

1. Removal of Photo-conductive Drum Unit

1) Remove both Left cover (upper) and Right Cover (upper).

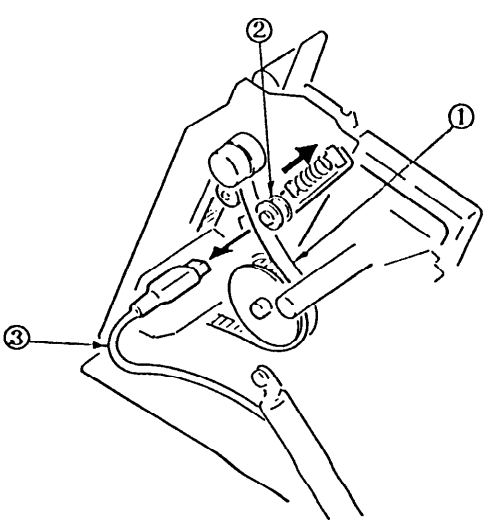
2) Lift up Upper Unit by pushing Gray Levers at the both sides of Document Feed Table.

3) Remove Wasted Toner Bottle Bracket, by loosening a Screw with hand and then take out Wasted Toner Bottle slowly.



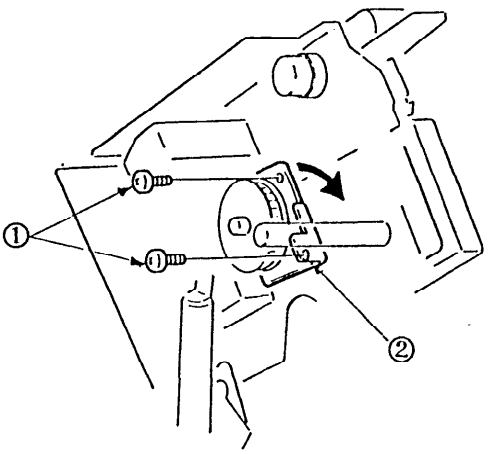
① Wasted Toner Bottle Bracket
② Screw
③ Wasted Toner Bottle

4) Remove Timing Belt by Pulling Tension Pulley by hand and pull out Connector of Image Corona Wire from Terminal of Image Corona.



① Timing Belt
② Tension Pulley
③ Connector of Image Corona Wire

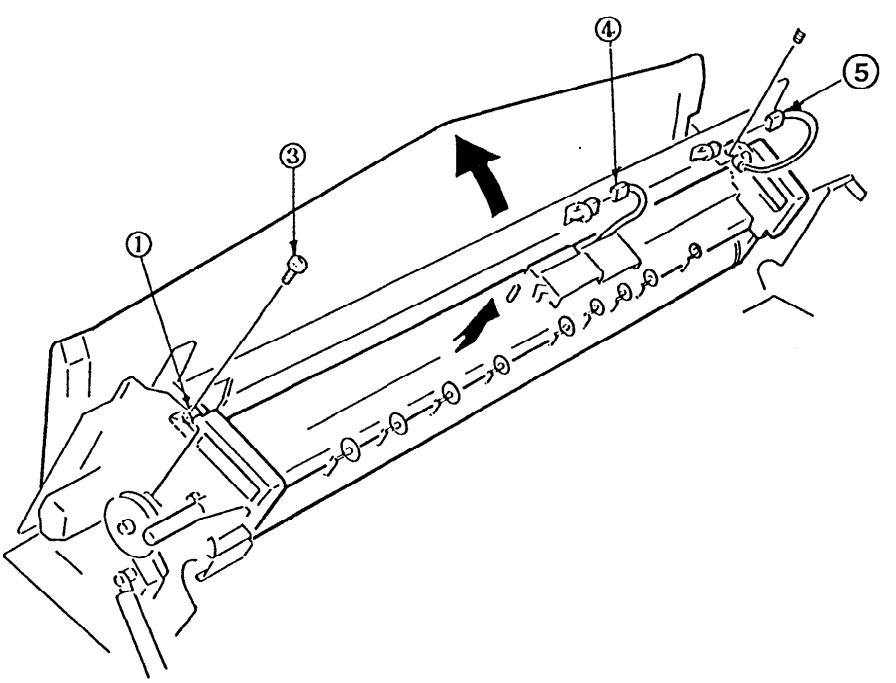
5) Remove Drum Bracket (L) by removing 2 Screws and, next remove Drum Bracket (R) with the same method as Drum Bracket (L).



① Screw
② Drum Bracket (L)

6) Remove Disconnect both 2P Connector of Plunger and 2p Connector of LED with hand.

7) Remove Drum Unit Bracket (L) by removing a Screw and, next remove Drum Unit Bracket (R) with the same method as Drum Unit Bracket (L).

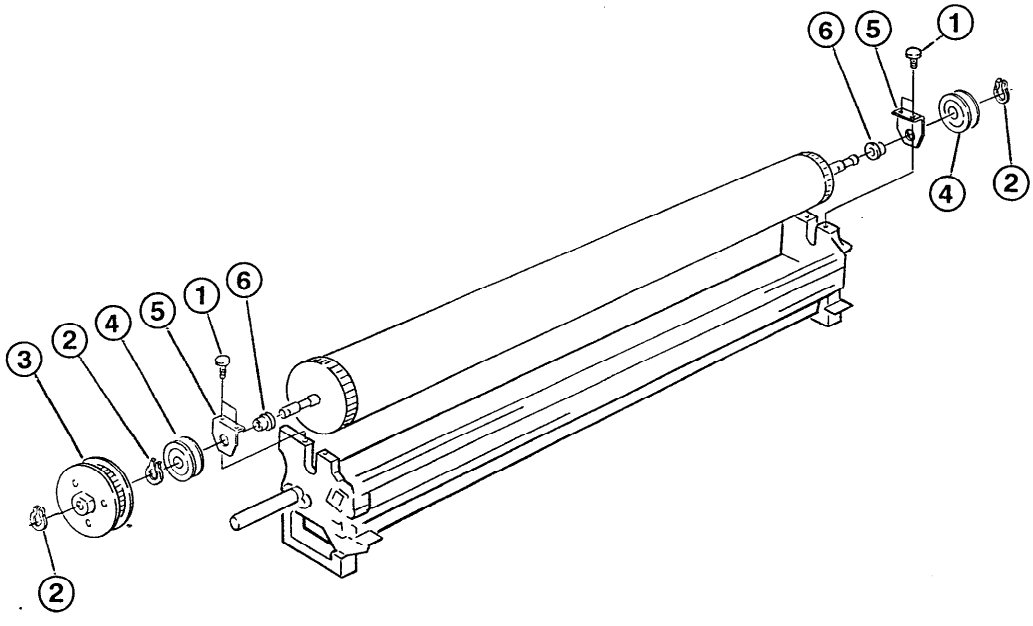


① Drum Unit Bracket (L)
② Drum Unit Bracket (R)
③ Screw
④ 2P Connector of Plunger
⑤ 2P Connector of LED

8) Open Document Cover and take out Drum Unit by holding It by hands and Pull it out to the front side.

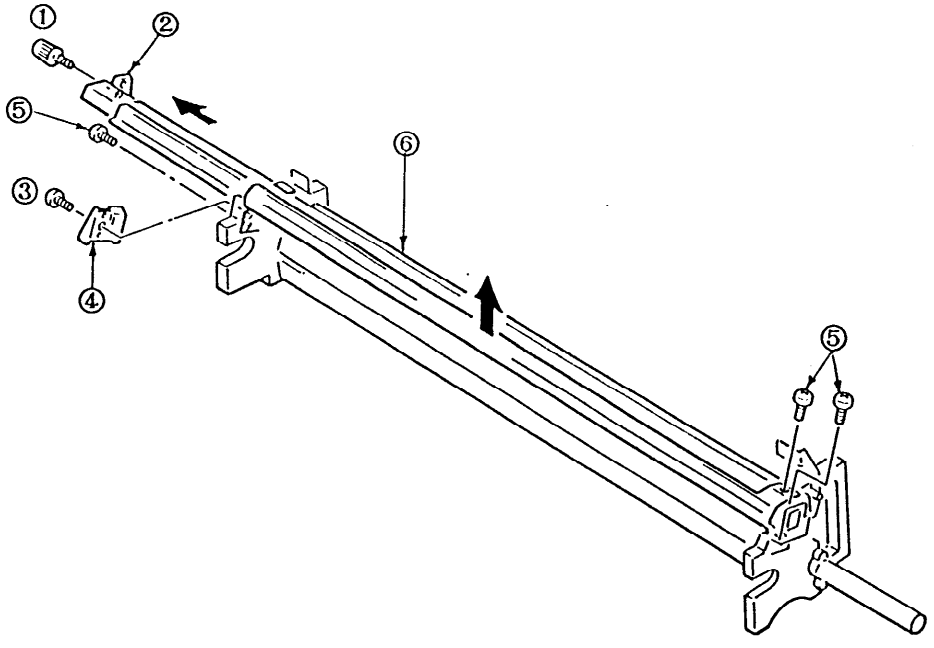
2.Removal of Photoconductive Drum

1)Remove the C-Ring ② (left side), then remove the Pulley Document Drive Assy ③ and Roller C ④ .
2)Remove the C-Ring ② (right side),then remove the Roller C ④ .
3)Remove the four screws ① (both side),then remove the Bearing Bracket ⑤ .
4)Hold Flange arer using both hands and lift up Photoconductive Drum,
then remove the Bearings ⑥ from shaft.



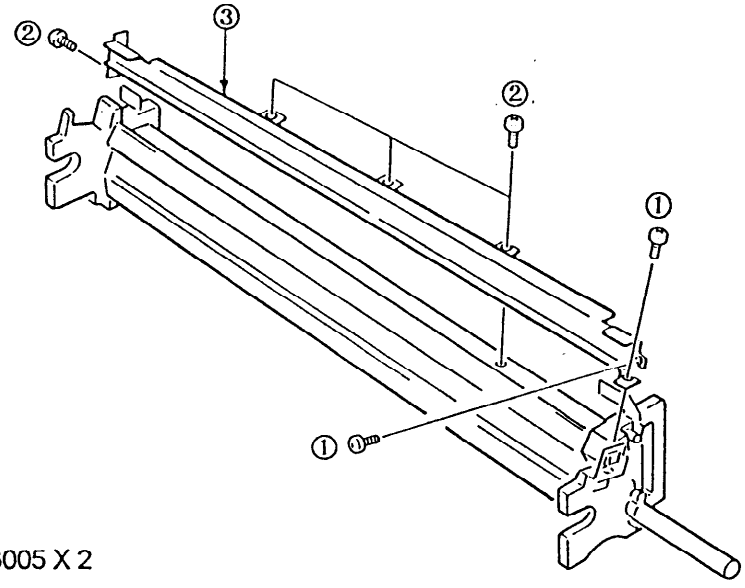
3. Removal of Eraser LED ASSY

1) Remove Image Corona ASSY by removing Image Corona Stopper with hand.
2) Remove Image Corona Guide by removing a Screw.
3) Remove Image Corona Holder (B) by removing 3 Screws.



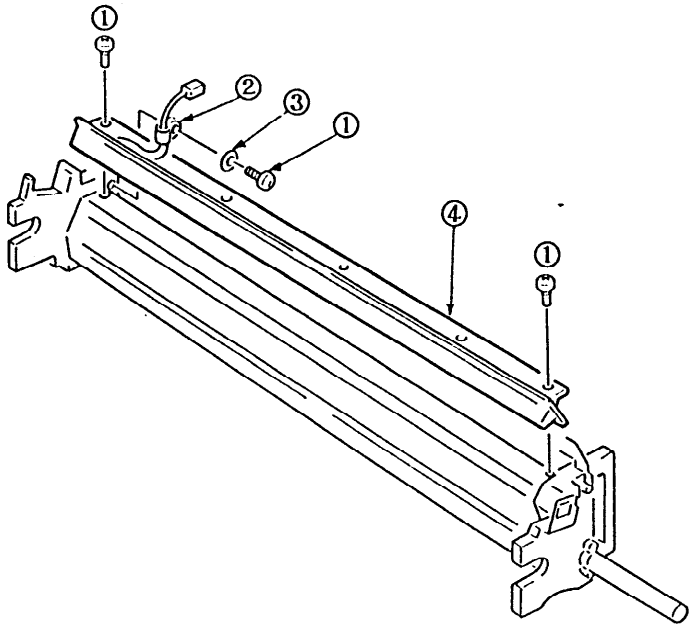
① Image Corona Stopper
② Image Corona ASSY
③ Screw
④ Image Corona Guide
⑤ Screw
⑥ Image Corona Holder (B)

4) Remove Image Corona Holder (A) by removing 6 Screws.



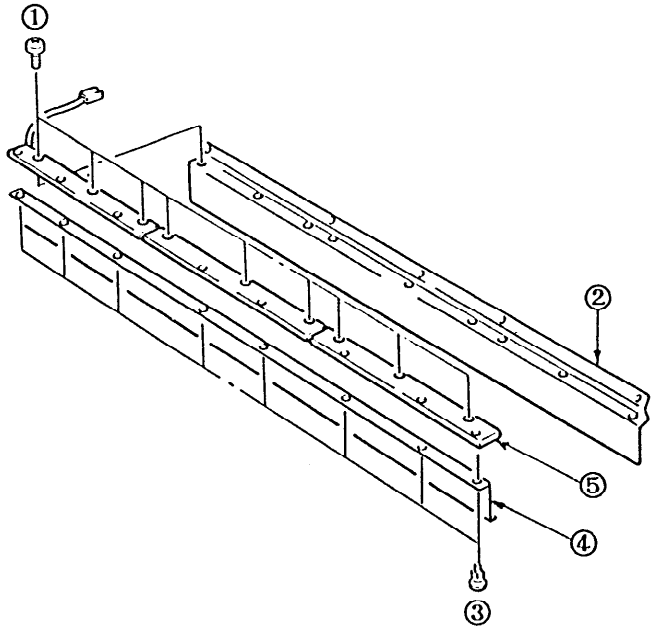
① BID 3005 X 2
② Screw
③ Image Corona Holder

5) Remove Wire Clamper at right side by removing a Screw with Flat Washer.
6) Remove Eraser LED ASSY by removing each 1 Screw at left and right sides.



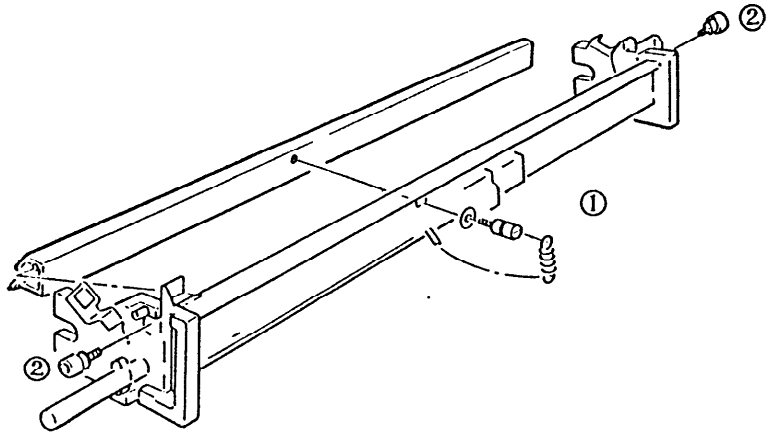
① Screw
② Wire Clamper
③ Plain Washer
④ Eraser LED ASSY

* Removal of Eraser LED ASSY.



① BID +2. 6X5 9 pcs
② Bracket-Eraser LED PC-Board 1 pcs
③ Push Rivet 8 pcs
④ Shade-Eraser LED 1 pcs
⑤ LED-PC-Board 1 pcs

7) Remove Cleaner Blade Spring hanging to Cleaner Blade Shaft (A).
8) Remove Cleaner Blade Shaft (A) by turning it with (-) Screw Driver.
9) Remove Cleaner Blade ASSY at both sides of Cleaner Blade ASSY by (-) Screw Driver.



10) Composition of Cleaner Blade ASSY

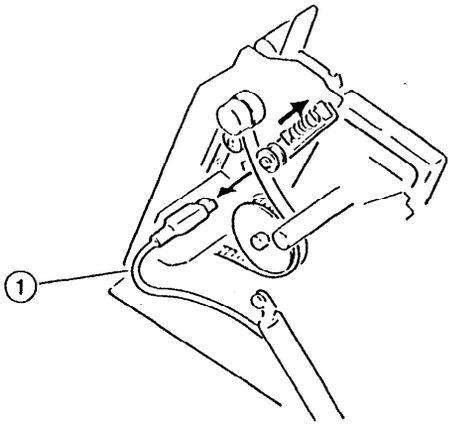
- Cleaner Blade Frame
- Cleaner Blade
- Adhesive Tape

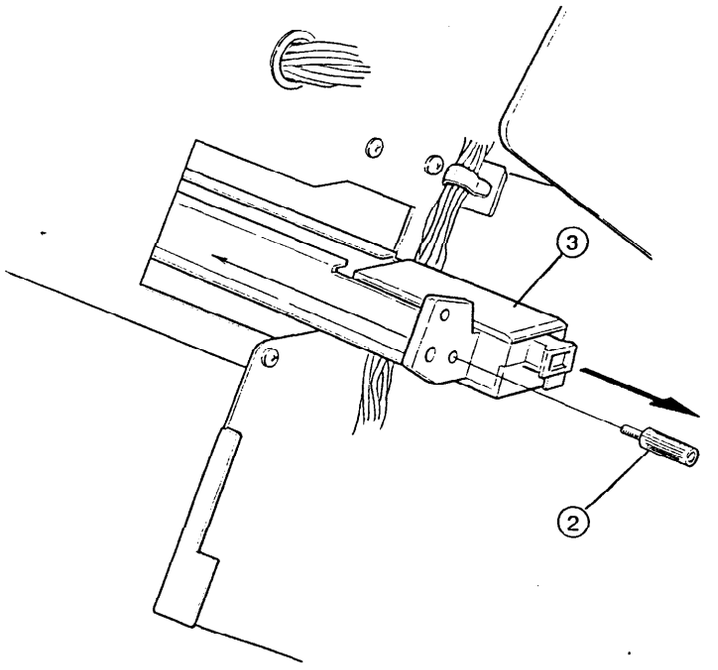
11) Composition of Cleaner Blade Shaft (B) ASSY

- Blade Shaft Bearing 1 pc
- Cleaner Blade Shaft (B) 1 pc
- E-Ring (#5) 1 pc

4. How to disassemble Image Corona Assy

1.Open Upper Unit.
2.Open Document Feeding Cover.
3.Pull out High Voltage connector located left side of the machine.
4.Remove Corona Stopper located right side of the machine.
5.Take out Image Corona Assy in the direction of arrow.

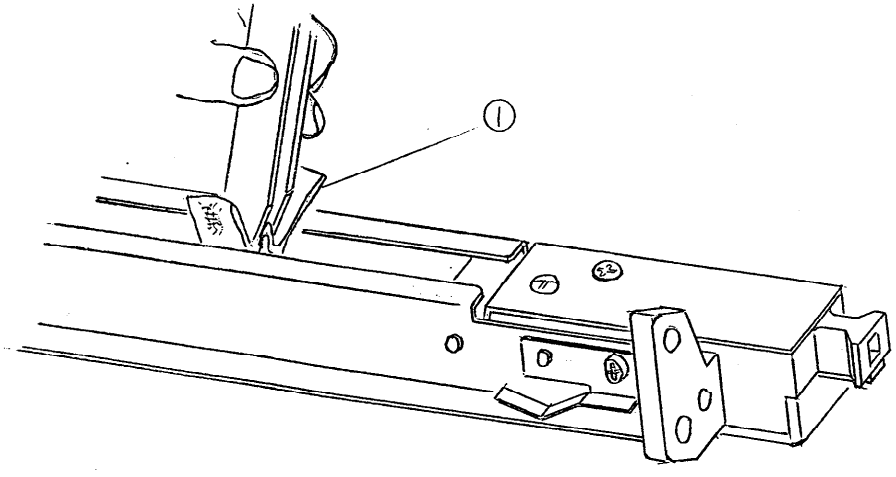




① High Voltage connector
② Corona Stopper
③ Image Corona Assy

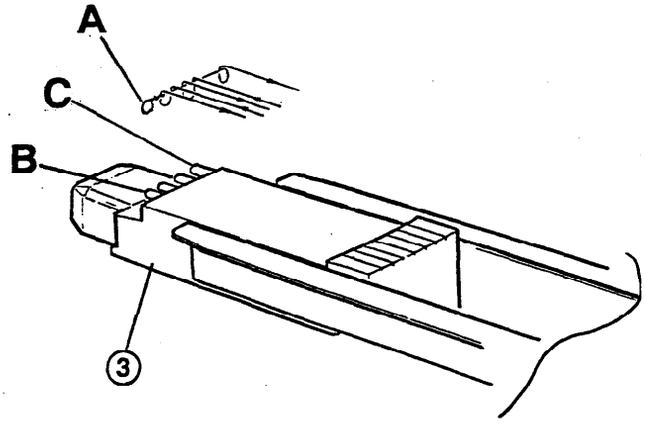
5.Cleaning of Image Corona Wire

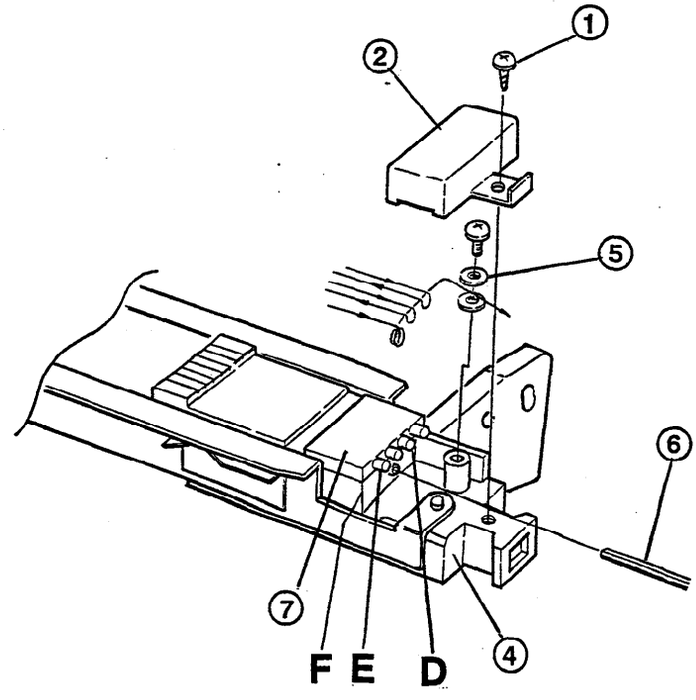
1)Pick up Lens Cleaner ① with tweezers,and wipe Corona Wire with a dry Lens Cleaner.



6.Replacement of Grid Wire

1)Remove the fixing screw ① and pull out the cover ② .
2)Rotate the adjuster screw C.C.W. by the L-shaped wrench ⑥ and close the gap between the corona block right ④ and the adjuster ⑦ .
3)Hook up the ring(A) of wire to the pin(B) on the right side of the corona block left.
4)Pull the wire lightly in the direction of the pin(C) and then hook up to the pin(D) on the right side of the corona block right.
5)Apply the same procedure to install the wire to the slit like a ladder more two rounds and wind it C.W. to the pin(E) and then pull the end of it under the five wires.
6)Then put the wire between two flat washers ⑤ and tighten the screw and cut the extra part of wire.
7)Rotate the adjuster screw C.W. by the L-shaped wrench ⑥ until the end of the adjuster ⑦ reaches to the surface(F) of the corona block right ④ .
Note:Be sure that the grid wire is properly inserted into each slit of the corona block.
And also no twisted or crimped wire should be confirmed.

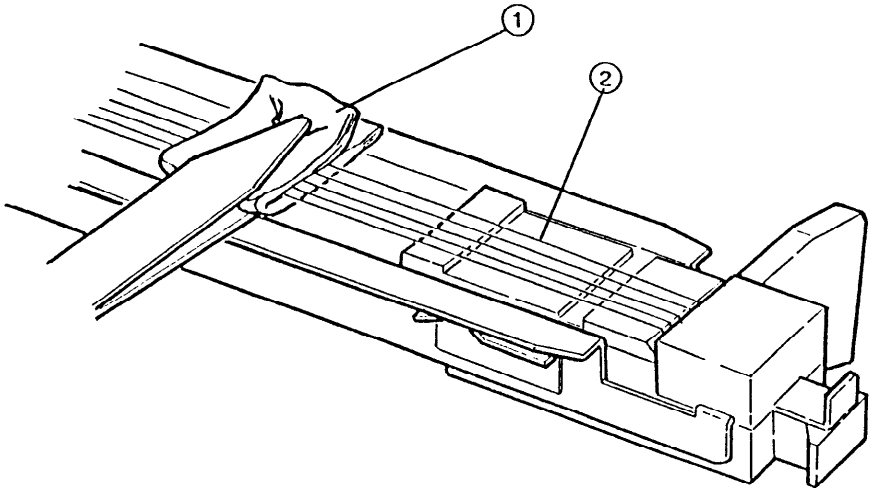




7.Cleaning of Grid Wire

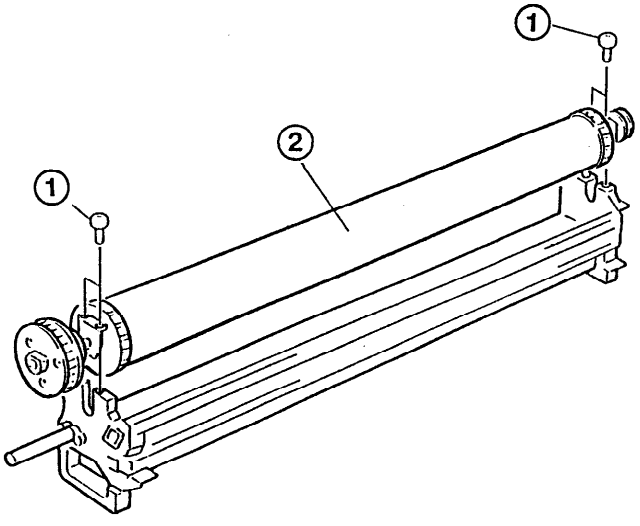
1)Pick up Lens Cleaner ① with tweezers and wipe Grid Wire ② with a dry Lens Cleaner as shown below.

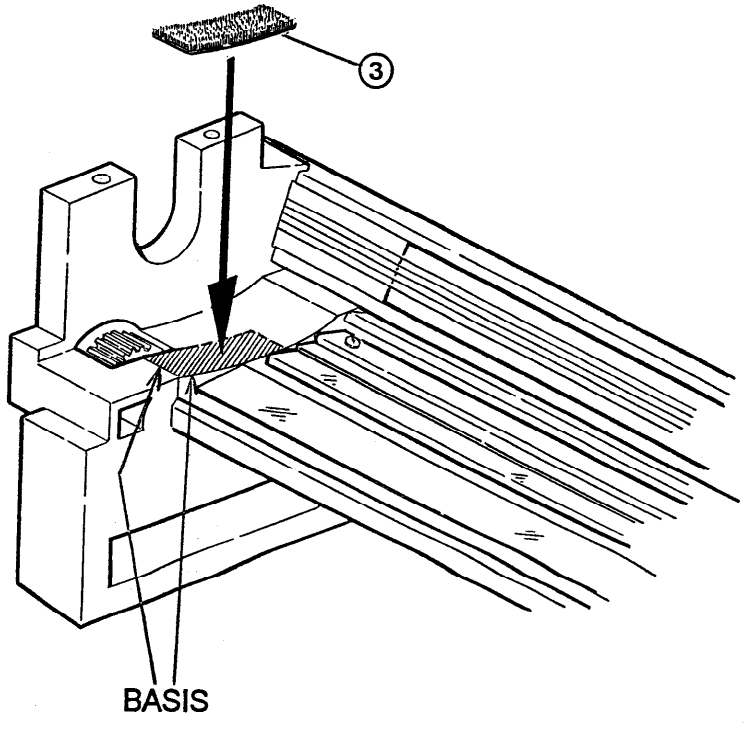
Note:Be sure that the grid wire is properly inserted into each slit of the corona block.



8.Replacement of Side Seal

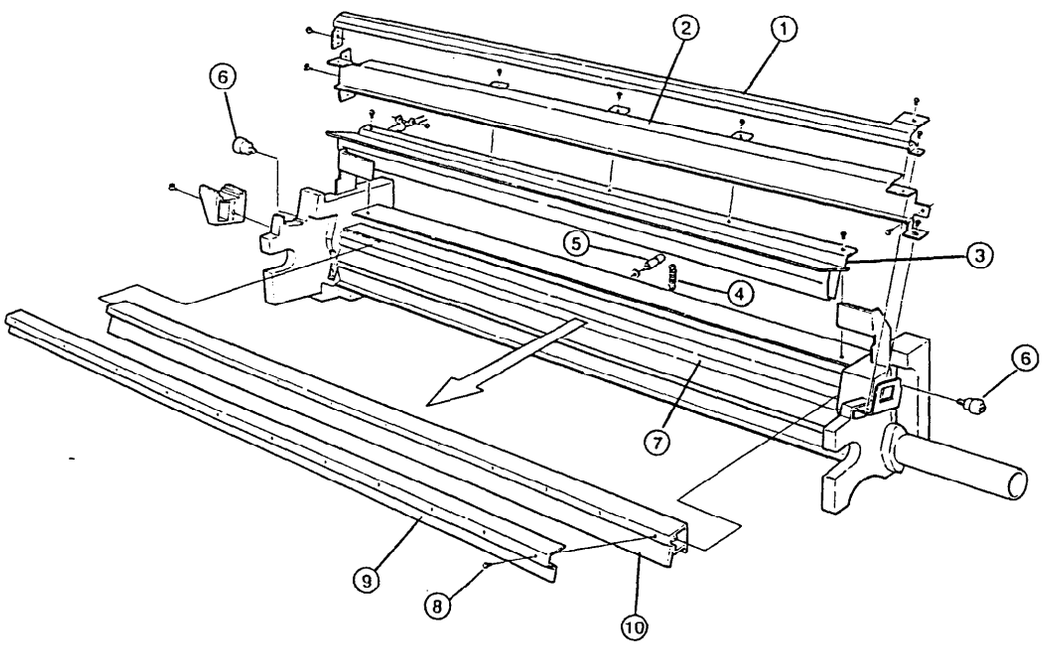
1)Remove Drum Unit(Refer to "How to remove Drum Unit").
2)Remove a Screw ① of Bearing Bracket.
3)Take out Drum ② from the Drum Unit.
Note:Do not expose photoconductor to direct ray of the sun.
Do not leave it unattended long-even indoors.
4)Remove Side Seal and wipe up remaining glue.
5)Clean up th surface where should be glued with alcohol.
6)Stick Side Seal ③ according to the basis.





9. Replacement of Cleaner Blade

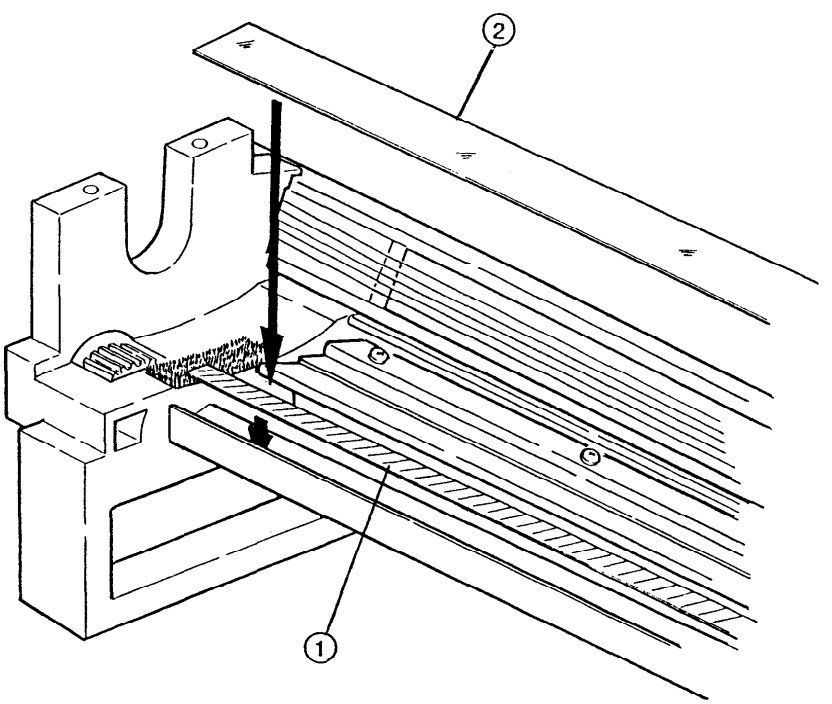
1.Remove Drum Unit(Refer to "How to remove Drum Unit").
2.Remove Image Corona Assy(Refer to "How to remove Image Corona Assy").
3.Remove Photoconductive Drum(Refer to "How to remove Photoconductive Drum").
4.Remove Image Corona Holder B.
5.Remove Image Corona Holder A.
6.Remove Eraser LED Assy.
7.Remove Cleaner Blade Spring.
8.Remove Cleaner Blade Shaft A.
9.Remove Cleaner Blade Shaft B(Both ends).
10.Take out Blade Sub-Assy as arrow shown.
11.Remove eleven screws and Cleaner Blade Stay.
12.Replace Blade Assy with a new one and reassemble in reverse order.

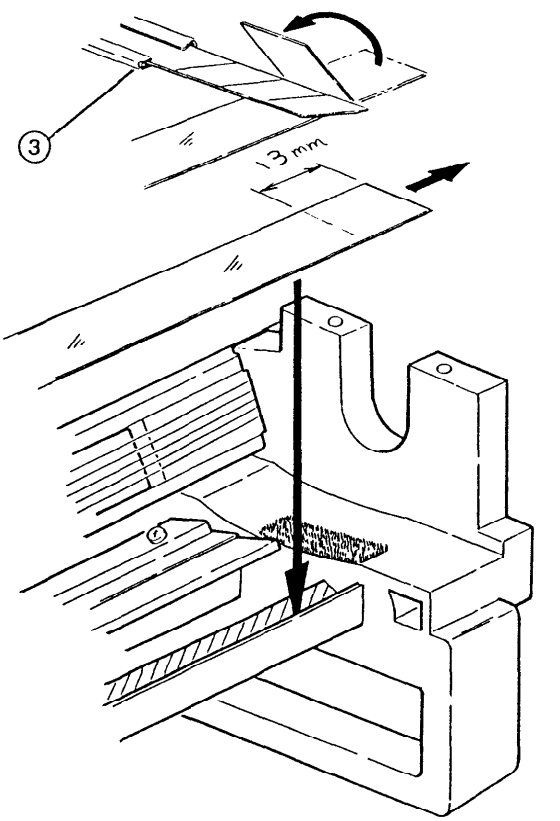


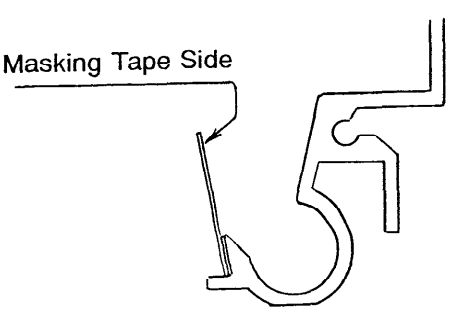
① Image Corona Holder B
② Image Corona Holder A
③ Eraser LED Assy
④ Cleaner Blade Spring
⑤ Cleaner Blade Shaft A
⑥ Cleaner Blade Shaft B
⑦ Blade Sub-assy
⑧ Screw
⑨ Cleaner Blade Stay
⑩ Blade Assy

10.Replacement of Receive Rubber

1)Remove Drum Unit(Refer to"How to remove Drum Unit").
2)Remove Photoconductive Drum(Refer to"How to remove Photoconductive Drum").
3)Peel worn-out Receive Ribber.
Remove remaining adhesive and grease from the surface.
4)Put on adhesive tape(Double face) ① .
5)Remove a masking tape from Receive Rubber ② .
6)Press one end of Receive Rubber on the tape and pull it 13mm to the direction of other end put it on the tape as shown below(Mask sure that Receive Rubber does not make winkies).
7)Cut an extra part of Receive Robber by cutter ③ .

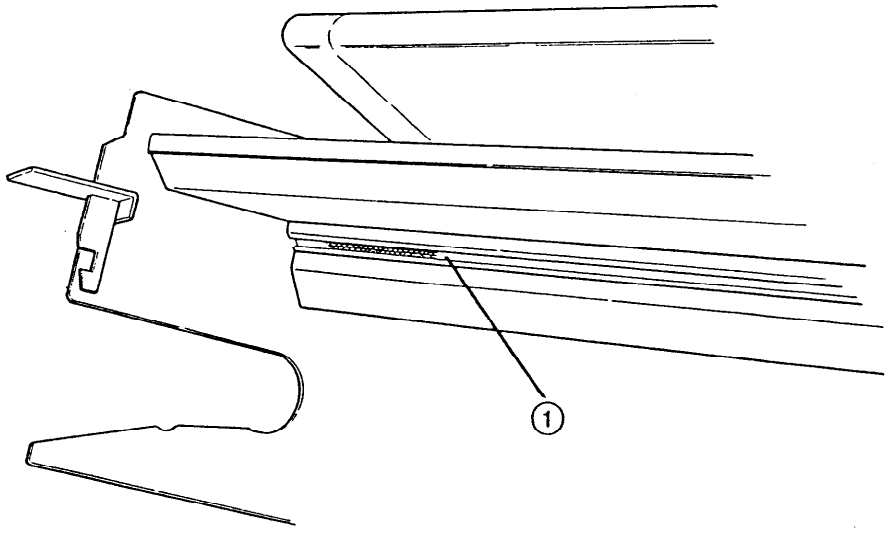






11.Cleaning of Sêlfoc Lens Array

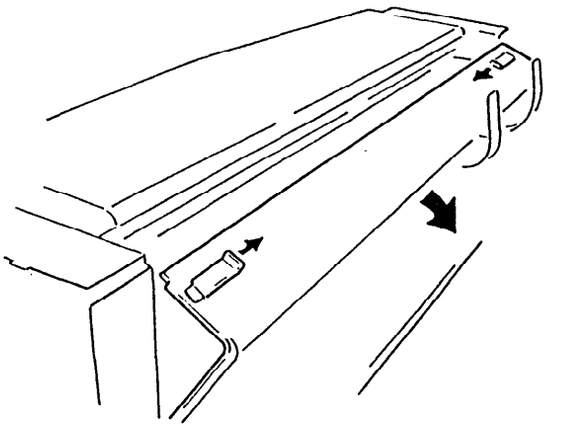
1)Remove Drum Unit(Refer to"How to remove Drum Unit").
2)Clean the surface of Selsoc Lens Array ① by Lens Cleaner.



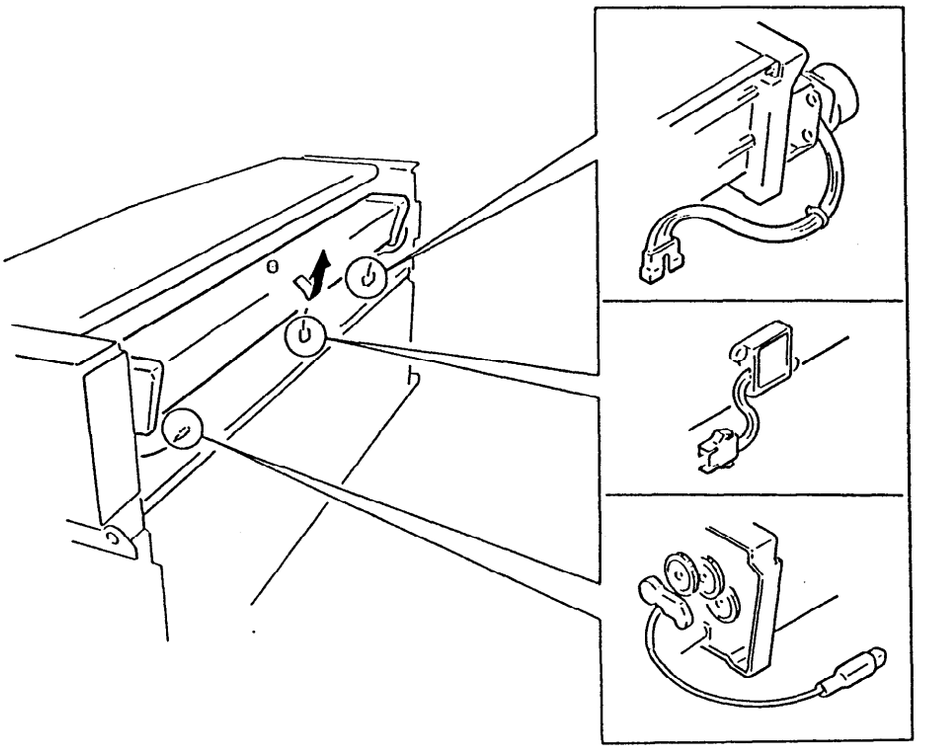
Ⅳ Developer Unit

1. Removal of Developer Unit

1) Open Back Top Cover by pulling Gray Levers at the both ends of left and right.



2. Take out Developer Unit by disconnecting 3 Connectors.

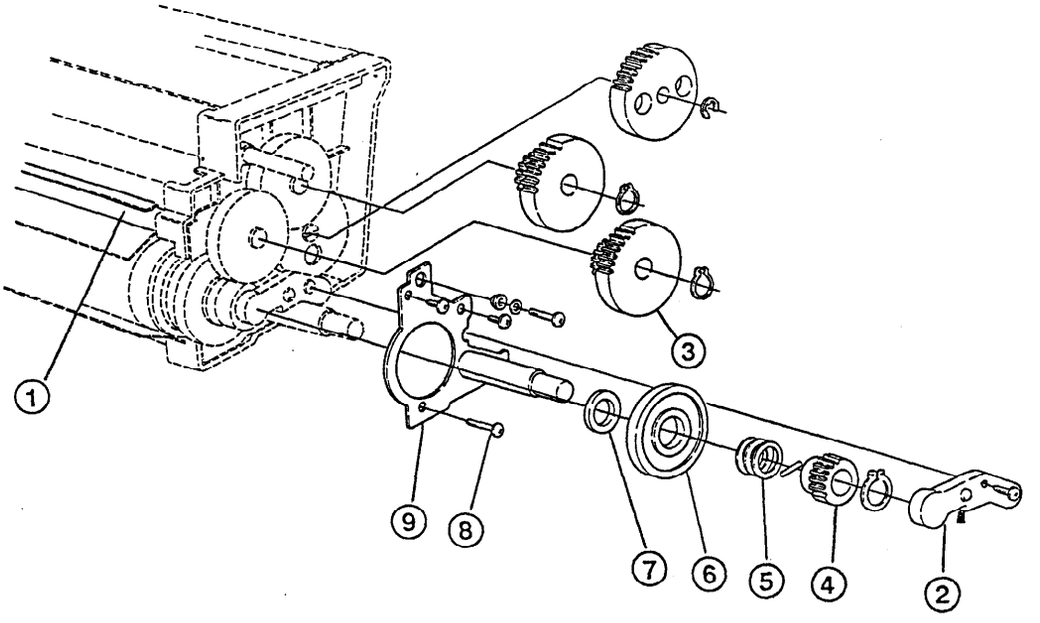


Connector of DEV. Motor Wires
Connector of Toner Sensor Wires
Connector of DEV Bias Wire

2.Replacement of Magnet Roller

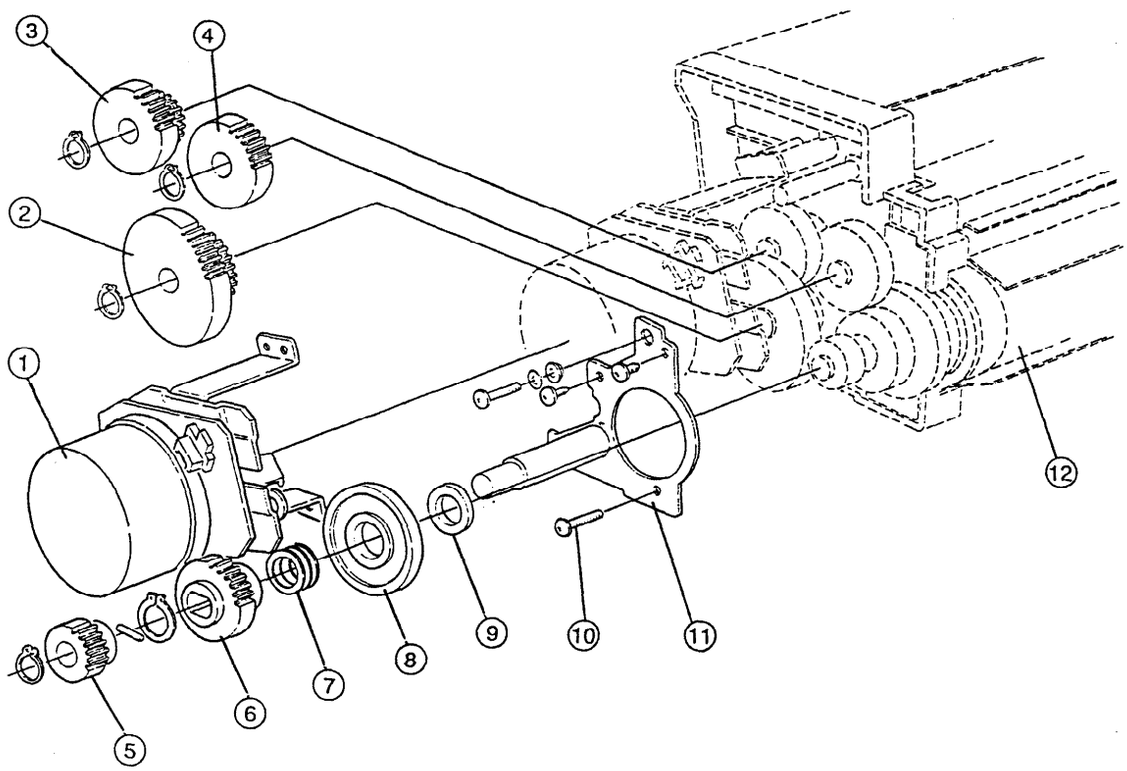
Remove the parts located right side of Developer Uint.

1)Slide the Sleeve Cover ① upward and take it out from the guide.
2)Remove Contact Cover ② .
3)Remove Gear Z43/Z19S ③ .
4)Remove Gear Z25S ④ .
5)Remove Washer A ⑤ .
6)Remove Roller B ⑥ .
7)Remove Washer B ⑦ .
8)Remove five screws ⑧ .
9)Remove Plate(R) ⑨ .



Remove the parts located left side of the Developer Unit.

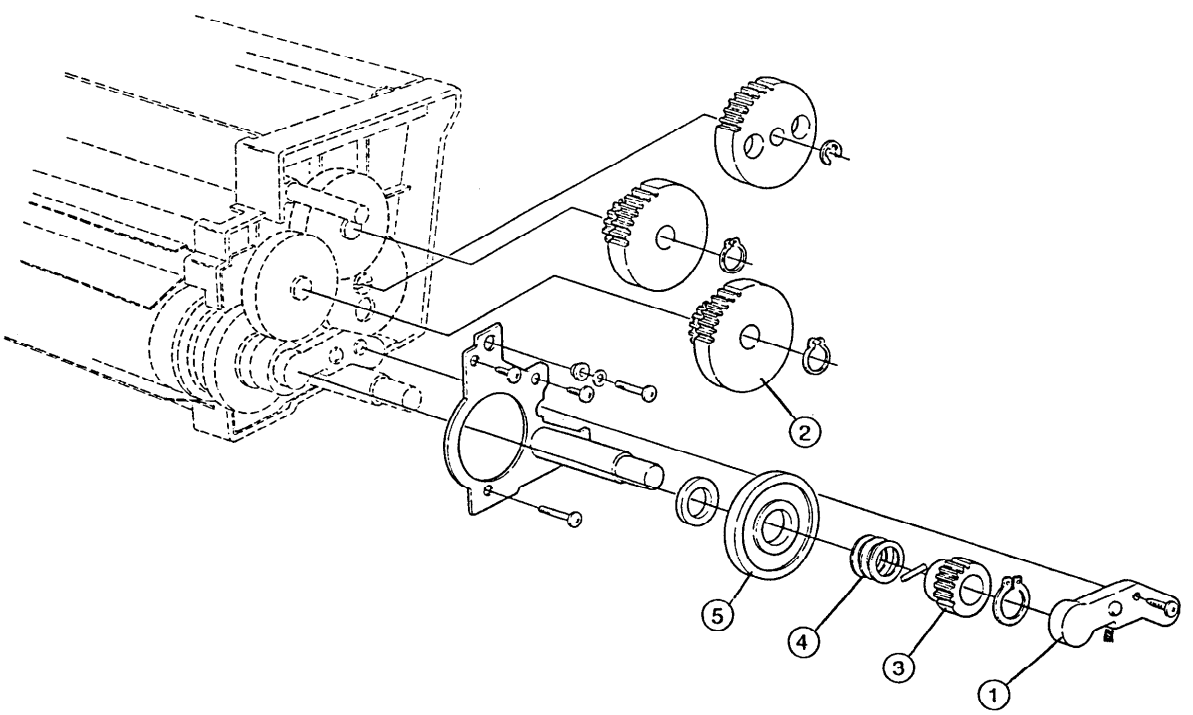
1)Remove Developer Motor ① .
2)Remove Gear Z57/Z24 ② .
3)Remove Gear Z40/Z23 ③ .
4)Remove Gear Z41 ④ .
5)Remove Gear Z25 ⑤ .
6)Remove Gear Z40 ⑥ .
7)Remove Washer A ⑦ .
8)Remove Roller B ⑧ .
9)Remove Washer B ⑨ .
10)Remove five screws ⑩ .
11)Remove Plate(L) ⑪ .
12)Take out Magnet Roller toward your side ⑫ .



3. Replacement of Roller B

Right Side of Developer Unit.

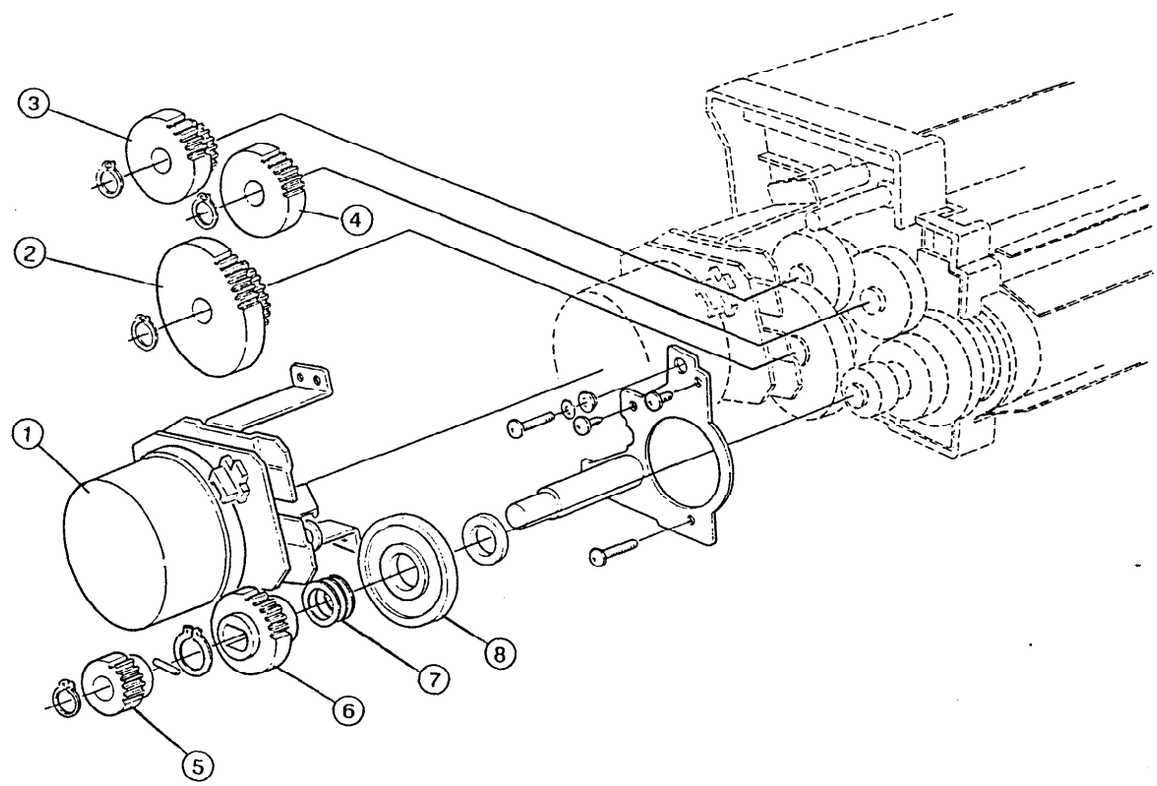
1.Remove Contact Cover.
2.Remove Gear Z43/Z19S.
3.Remove Gear Z25S.
4.Remove Washer A.
5.Remove Roller B and replace it with a new one.



① Contact Cover
② Gear Z43/Z19S
③ Gear Z25S
④ Washer A
⑤ Roller B

Left Side of Developer Unit

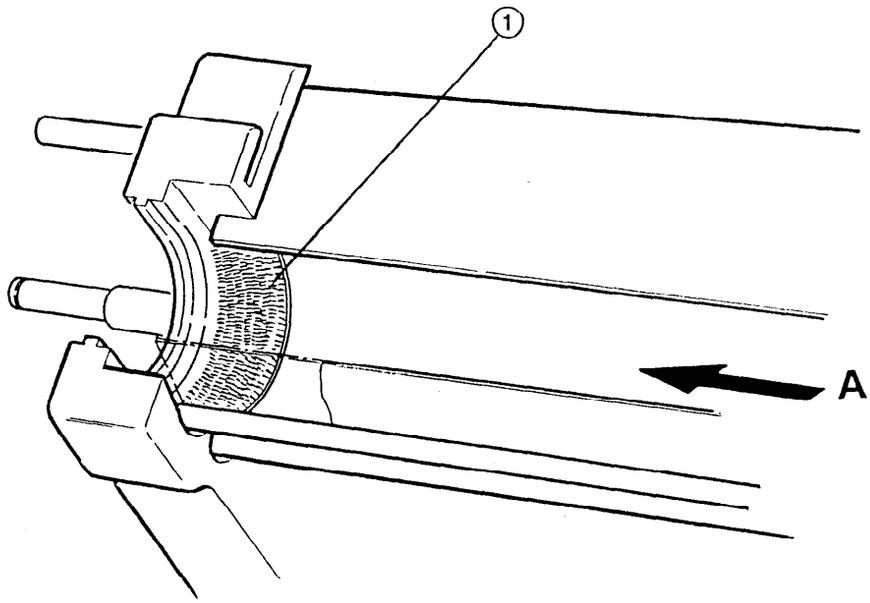
1.Remove Developer Motor.
2.Remove Gear Z57/Z24.
3.Remove Gear Z40/Z23.
4.Remove Gear Z41.
5.Remove Gear Z25.
6.Remove GearZ40.
7.Remove Washer A.
8.Remove Roller B and replace it with a new one.

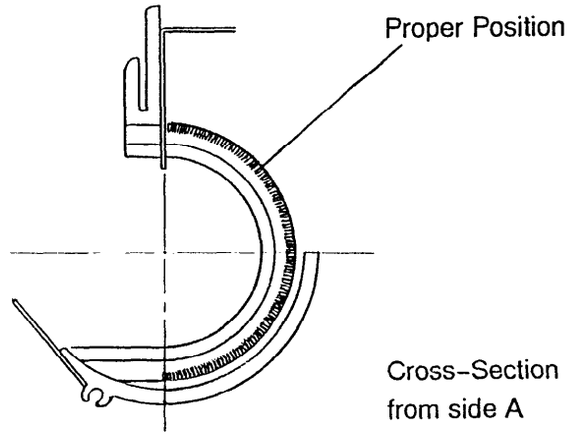


① Developer Motor
② Gear Z57/Z24
③ Gear Z40/Z23
④ Gear Z41
⑤ Gear Z25
⑥ Gear Z40
⑦ Washer A
⑧ Roller B

4. Replacement of Toner Seal

1.Remove Magnet Roller (Refer to "Replacement of Magnet Roller").
2.Remove Toner Seal and wipe up remaining glue.
3.Stick new Toner Seal on the proper position (Both Sides are required).

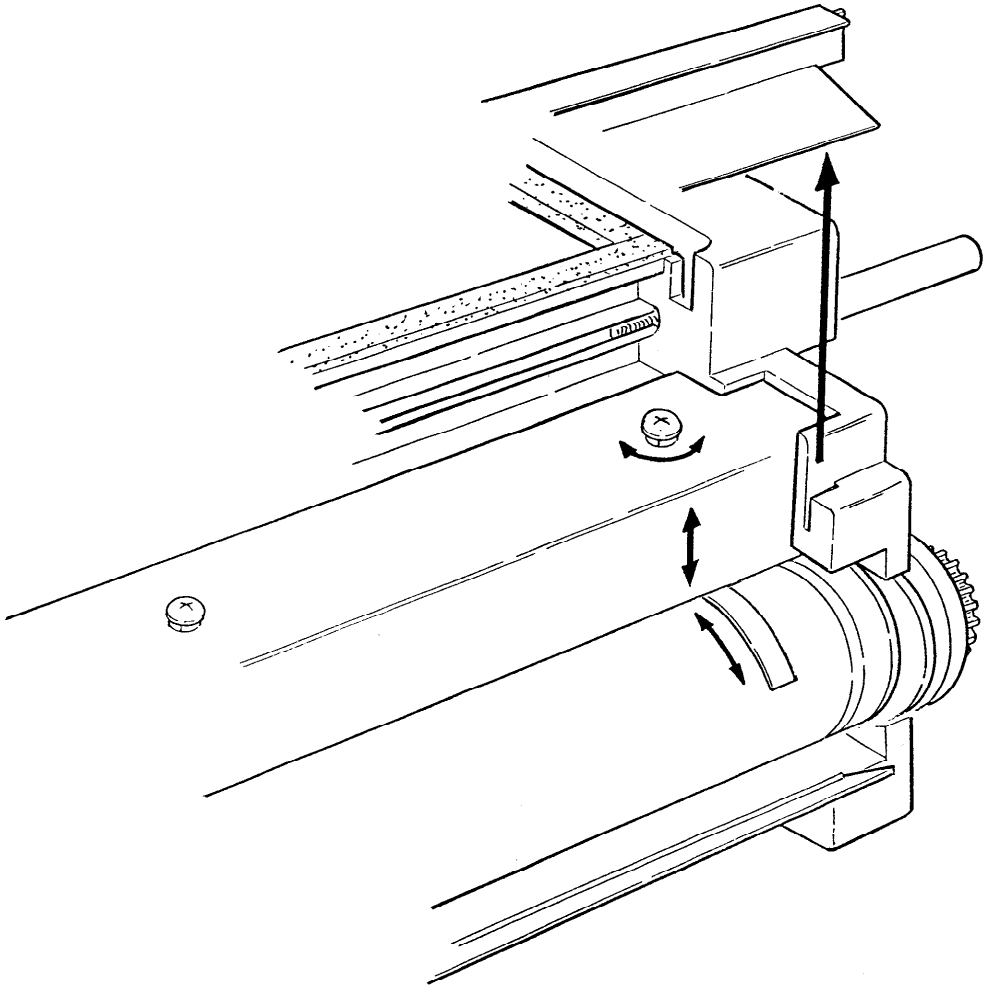




① Toner Seal

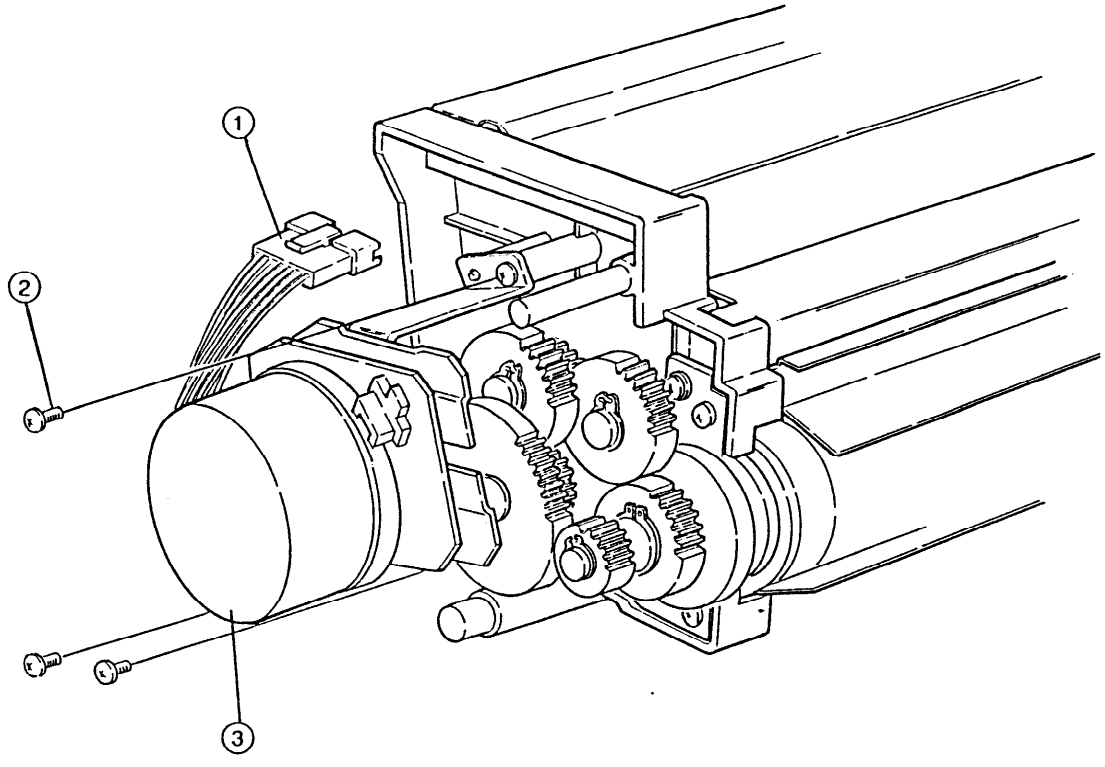
5.Adjustment of Doctor Blade Gap

1)Remove Sleeve Cover ① .
2)Loosen a screw from Doctor Blade ② .
3)Insert Jig Mylar ③ between Magnet Roller ④ and Doctor Blade to check the gap.
4)Adjust the gap by screw until Jig Mylar is caught rather tight a littie.
5)Adjust five positions of screws by the same order.
6)Undo Sleeve Cover.



6. How to Remove Developer Motor

1.Pull out Developer Connector.
2.Remove three screws.
3.Remove Developer Motor.

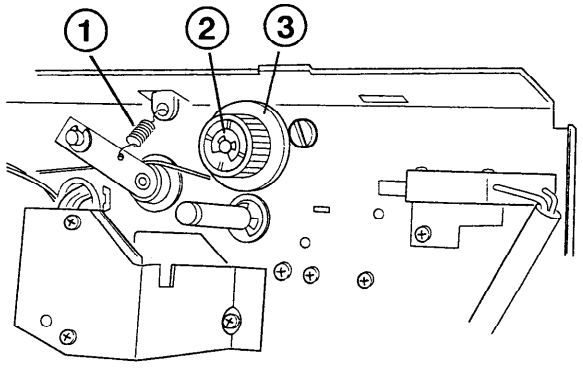


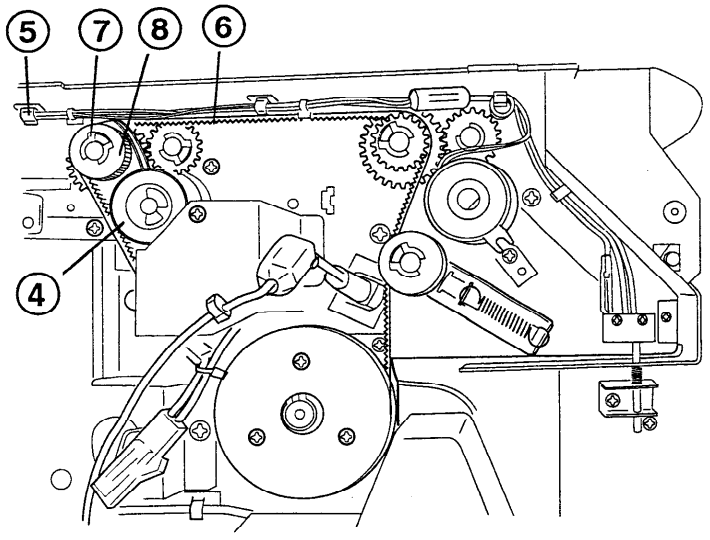
① Developer Connector
② Screws
③ Developer Motor

V Exposure Device Unit

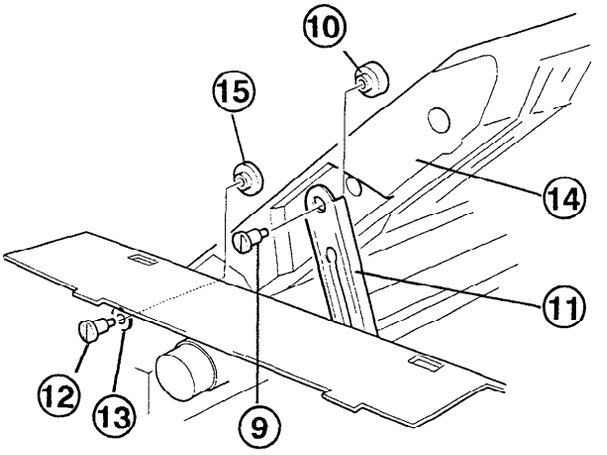
1 Removal of Document Top Assy

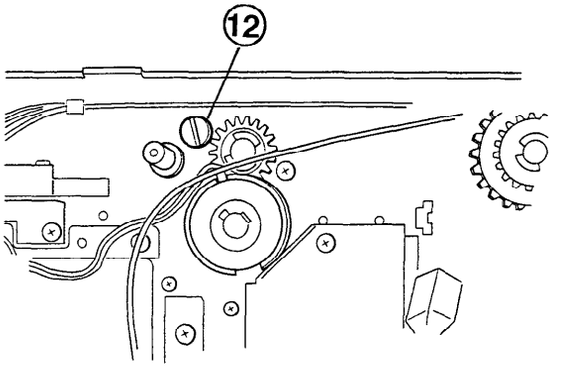
1. Remove the Left and Right Cover(Upper). Refer to "Removal of Outside Cover"
2. Remove the Document Reverse Motor(M3).
   Refer to "Replacement of Document Reverse Motor (M3)".
3. Remove the Document Reverse Clutch(CL9).
   Refer to "Replacement of Document Reverse Clutch (CL9)".
4. Remove the Tension Spring ① at Timming Pulley.
5. Remove the E-ring ② of the 20-47T Gear Pulley ③ Right and shift the pulley toward your side.
6. Remove the lead wire of Document Feed Clutch (CL7) ④ from clamp ⑤ .
7. Remove the Timming Belt ⑥ .
8. Remove the KL clip ⑦ ,then remove the Document Drive Gear B ⑧ .





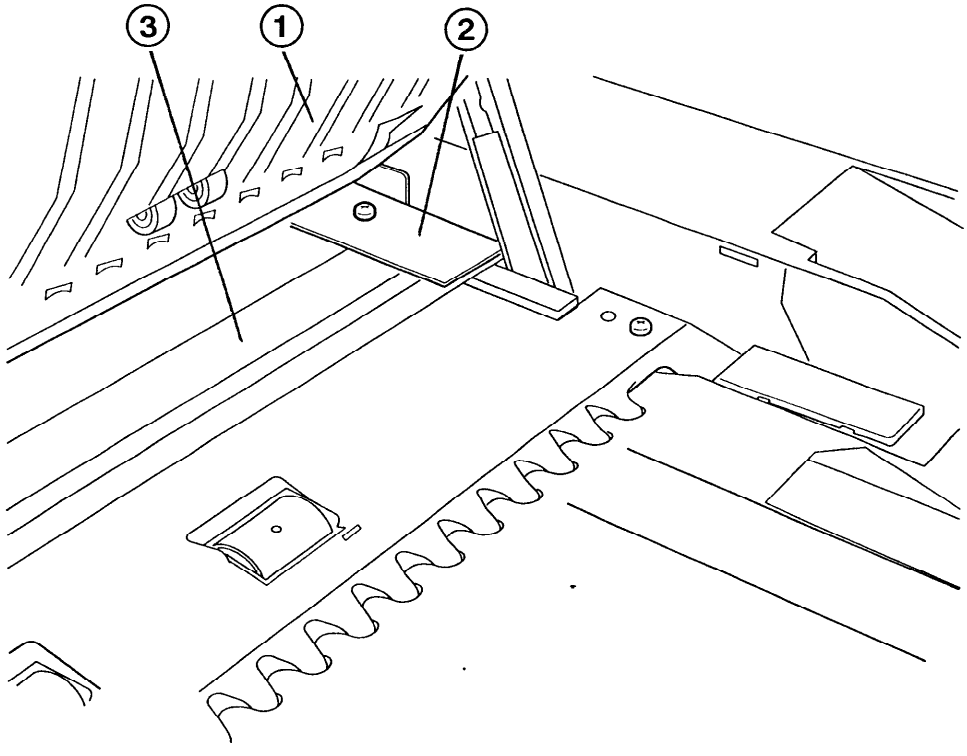
9. Open the Document Top Assy.
10. Remove the screw ⑨ and Collar A ⑩ (both sides).
11. Press the Slide Stay Assy ⑪ down (both sides).
12. Close the Document Top Assy.
13. Remove the screw ⑫ with washer ⑬ .
14. Lift up Document Top Assy ⑭ .
    Note:Collar A and B ⑮ are different from each other in thickness.
15. Reassemble in reverse order.





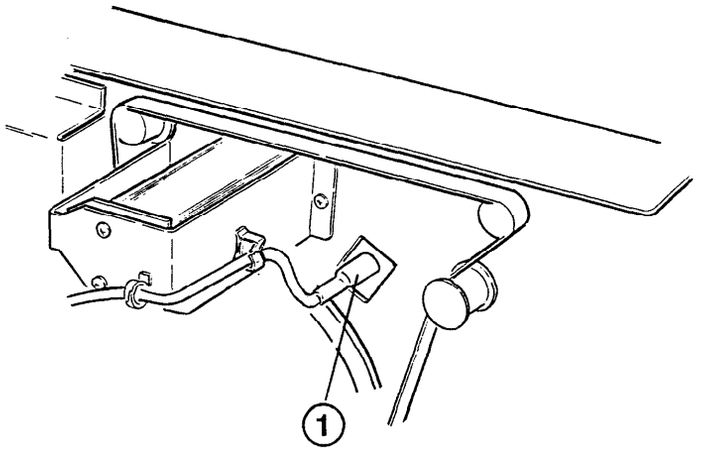
2 Replacement of Document Glass

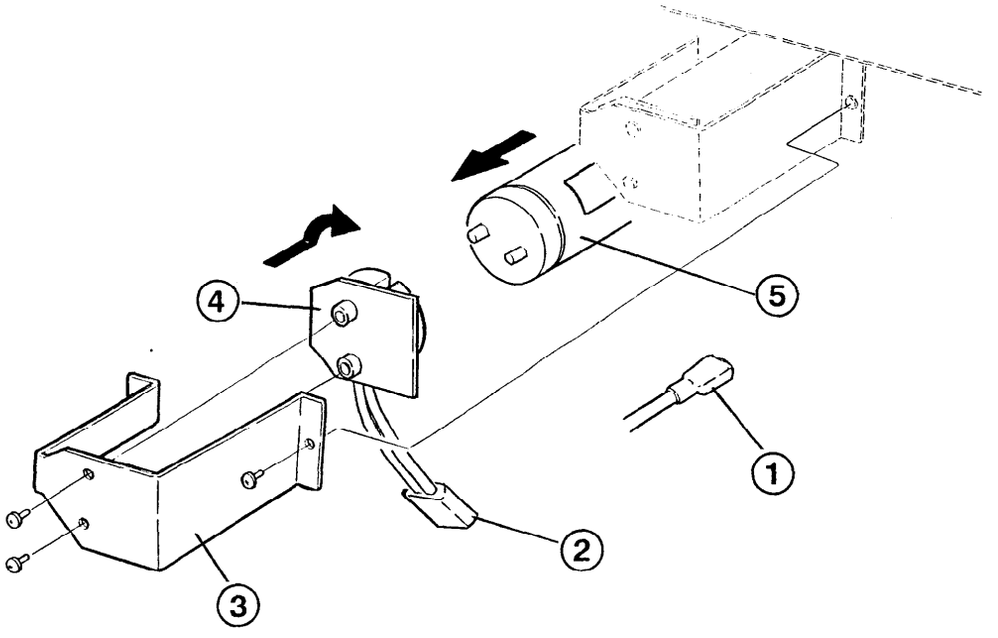
1. Remove the Document Top Assy ① . Refer to "Removal of Document Top Assy"
2. Remove the Document Glass Holder ② (both sides).
3. Remove the Document Glass ③ and replace it with a new one.
4. Reassemble in reverse order.



3 Replacement of Exposure Lamp

1. Remove the Left and Right Cover(Upper). Refer to "Removal of Outside Cover".
2. Disconnect the Image Corona connector ① .
3. Disconnect the Lamp Socket Connector ② .
4. Remove the Lamp Socket Bracket L ③ .
5. Remove the Socket Plate L ④ .
6. Take out Exposure Lamp ⑤ .
7. Install new Exposure Lamp.
   Note:Installation is not reversible.
8. Insert the right side of Exposure Lamp into the Socket Plate R
   Note:Turn it 45 degrees after the insertion.
9. Insert Socket Plate L to the Exposure Lamp.
   Note:Turn Socket Plate L 90 degrees after the insertion.
10. Mount Lamp Socket Bracket L and then fix Socket Plate L.
    Note:Make sure that the metal plate and the guide part of the clutch are fitted properly each other.

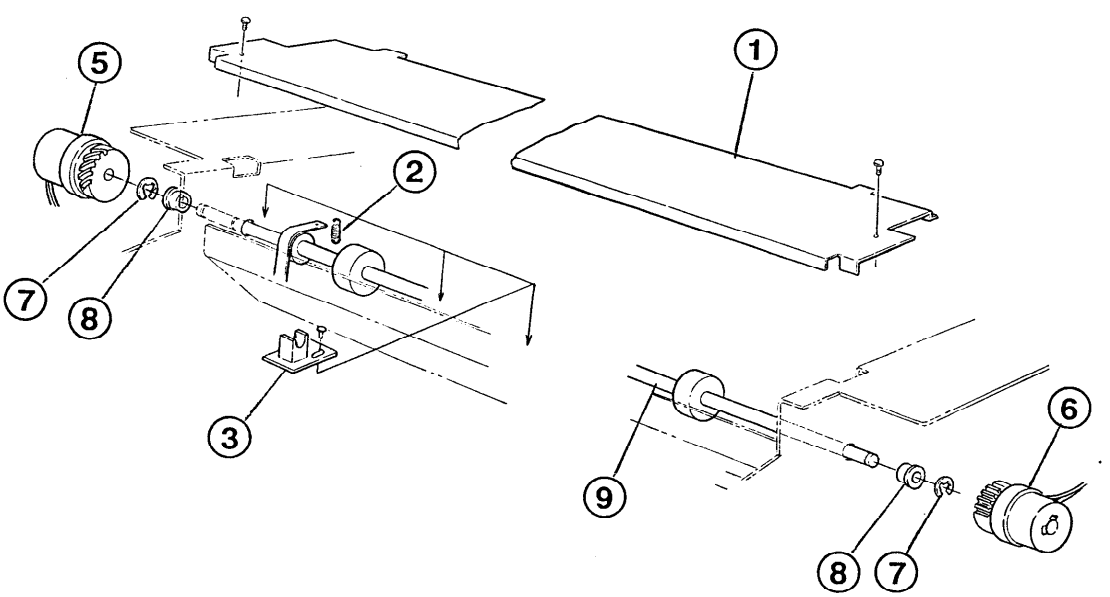


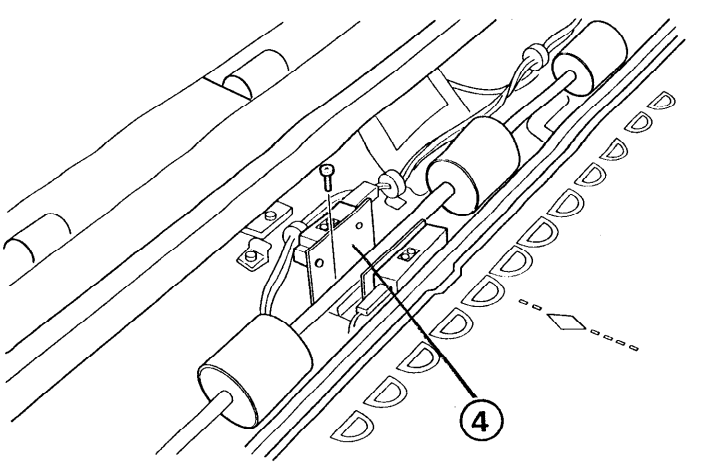


4. Removal of Document Front Roller

1.Remove the Left and Right Cover(Upper).Refer to "Removal of Outside Cover"
2.Open the Document Top Assy
3.Remove the Document Feed Plate ① (front).
4.Remove the Spring ② .
5.Remove the three Document Bearing A ③ ,and Sensor Assy ④ .
6.Open the Upper Unit.
7.Remove the Feed Clutch CL6 ⑤ ,Reverse Clutch CL8 ⑥ ,then remove the E ring ⑦ ,Oilless Bearing ⑧ .
8.Remove the Document Front Roller ⑨ .
9.Reassemble in reverse order

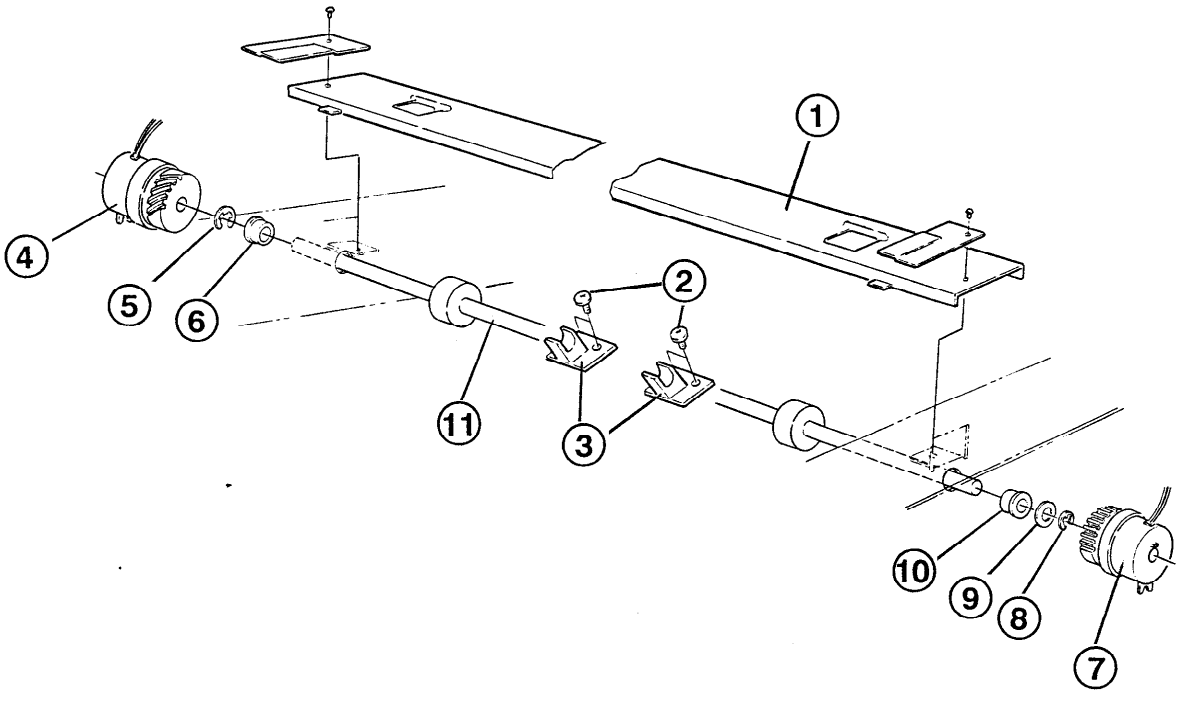
Notes:There are three Document bearing A to support the shaft.
Before tighten the fixing screws of the central two Document Bearing A, rotate the shaft a few times by hand before fitting of the Spring ② and get the middle range of the shaft deflection and fix the screws of the two central Document Bearing A.





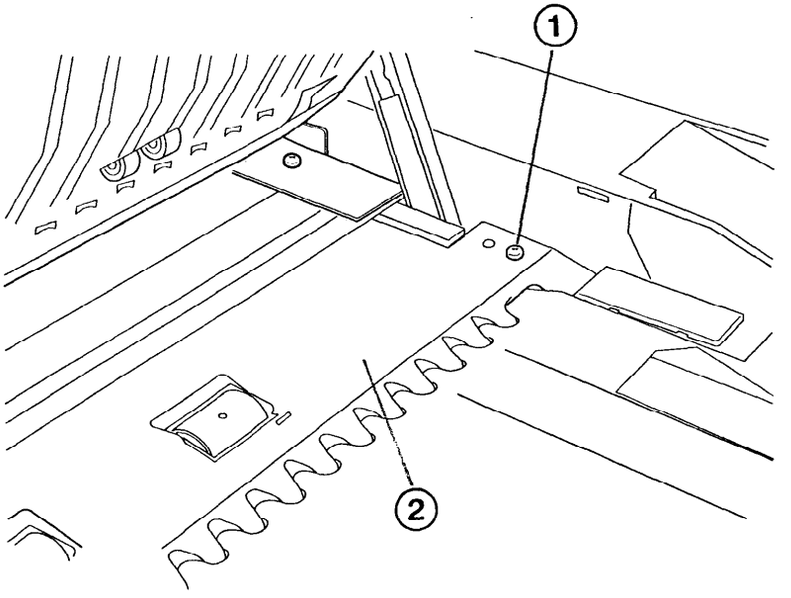
5 Removal of Document Rear Roller

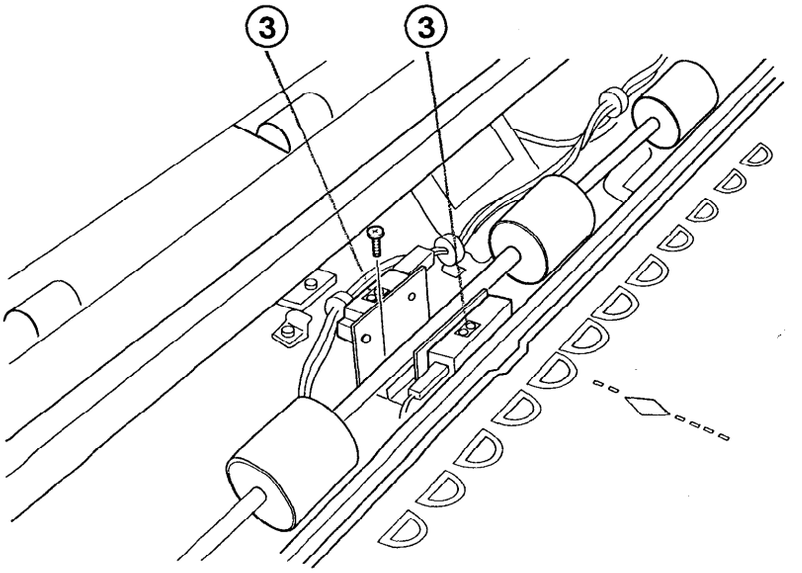
1. Remove the Left and Right Cover(Upper). Refer to "Removal of Outside Cover".
2. Remove the Document Top Assy. Refer to "Removal of Document Top Assy".
3. Remove the Document Glass. Refer to "Replacement of Document Glass".
4. Remove the Document Feed Rear Plate ① (Pull it out to the front).
5. Remove the four screws ② ,then remove the Bearing ③ .
6. Remove the Document Feed Clutch(CL7) ④ ,then remove the E ring ⑤ , Oilless Bearing ⑥ .
7. Remove the Document Reverse Clutch(CL9) ⑦ ,then remove the E ring ⑧ , Spacer ⑨ , Oilless Bearing ⑩ .
8. Remove the Document Rear Roller ⑪ .
9. Reassemble in reverse order.



6 Cleaning of Document Set Sensor/Resist Sensor

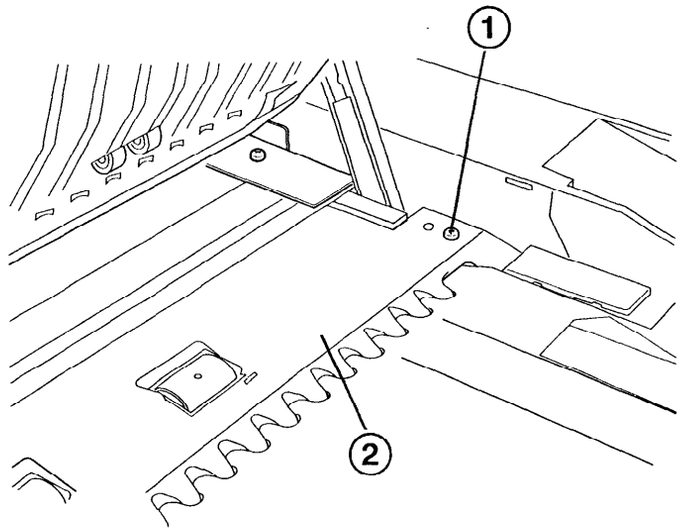
1. Open the Document Top Assy.
2. Remove two screws ① ,then remove the Document Feed Plate ② (front).
3. Clean the lens ③ with dry cloth.
4. Then clean the lens with a soft cloth moistened with alcohol.
5. Reassemble in reverse order.

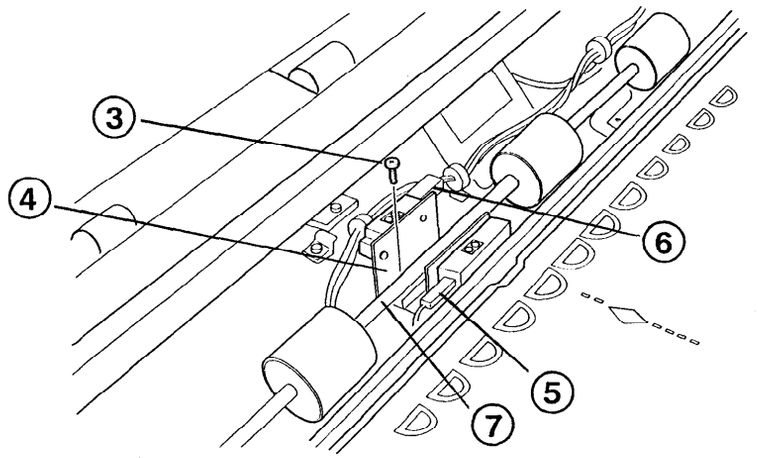


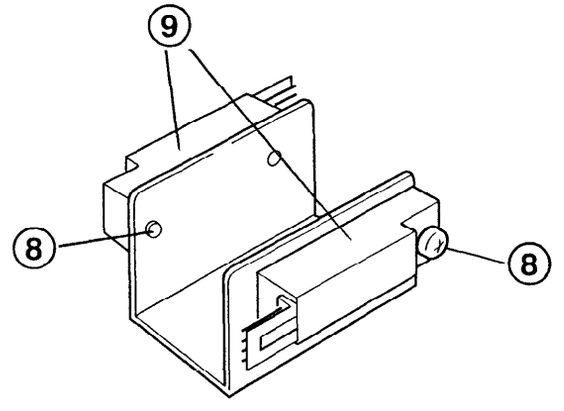


7 Replacement of Document Set Sensor/Resist Sensor

1. Open the Document Top Assy.
2. Remove two screws ① ,then remove the Document Feed Plate ② (front).
3. Remove the screw ③ ,then remove the Sensor Assy ④ .
4. Disconnect the Set Sensor connector ⑤ and Resist Sensor connector ⑥ .
5. Lift up the Document Roller Shaft ⑦ (front),then remove the Sensor Assy.
6. Remove the screw ⑧ ,then you can replace the each Sensor ⑨ .
7. Reassemble in reverse order.

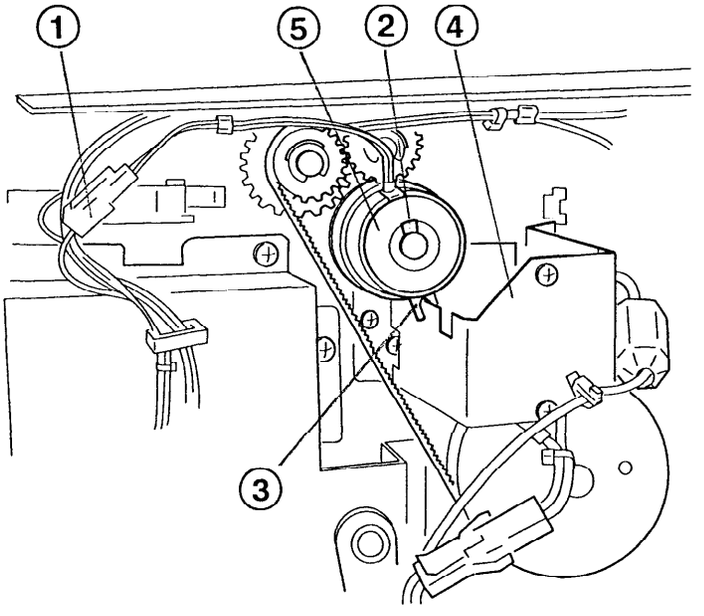






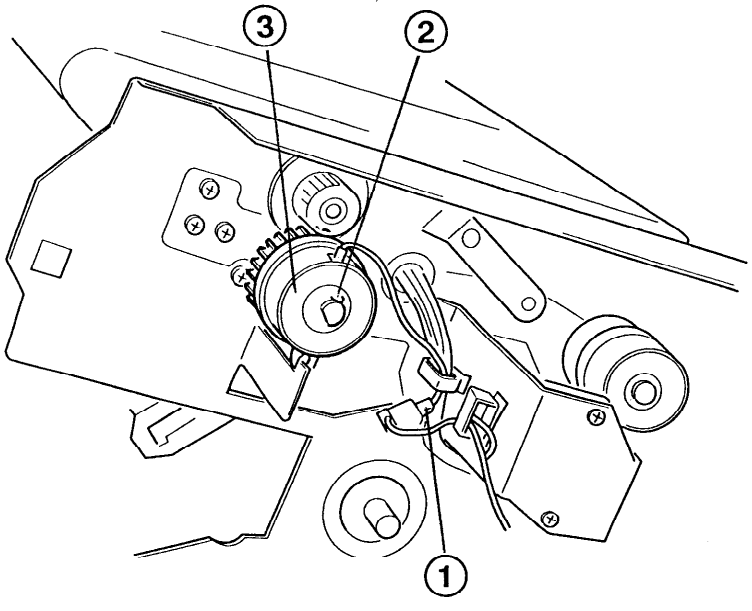
8 Replacement of Document Feed Clutch(CL7)

1. Remove the Left Cover(Upper). Refer to "Removal of Outside Cover".
2. Disconnect the Feed Clutch(CL7) connector ① .
3. Release the finger ② of the clutch and pull the clutch toward your side and remove the stopper ③ of the clutch from the Lamp Socket Bracket ④ .
4. Press the Lamp Socket Bracket a little to the right and take out the Feed Clutch(CL7) ⑤ toward your side.
5. Reassemble in reverse order.



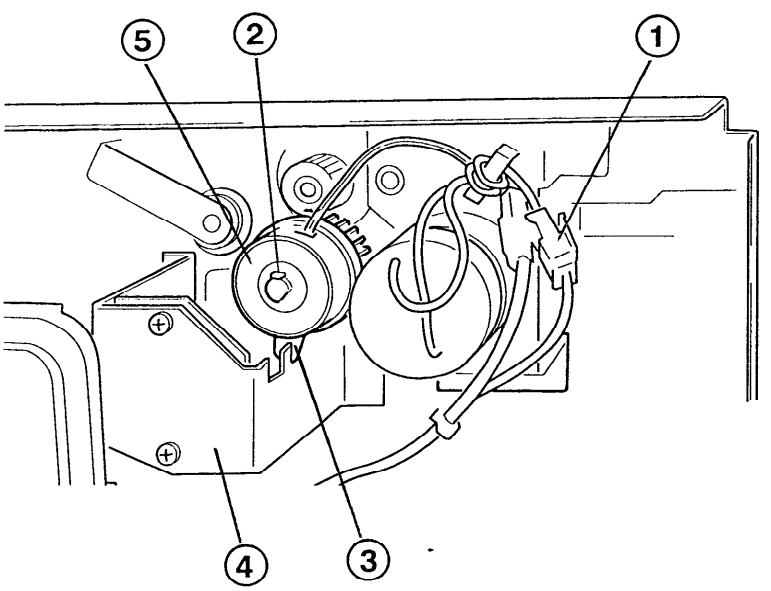
9 Replacement of Document Reverse Clutch(CL8)

1. Remove the Right Cover(Upper). Refer to "Removal of Outside Cover".
2. Open the Upper Unit.
3. Disconnect the Reverse Clutch(CL8) connector ① .
4. Release the finger ② of the clutch and remove the Document Reverse Clutch(CL8) ③ toward your side.
5. Reassemble in reverse order.



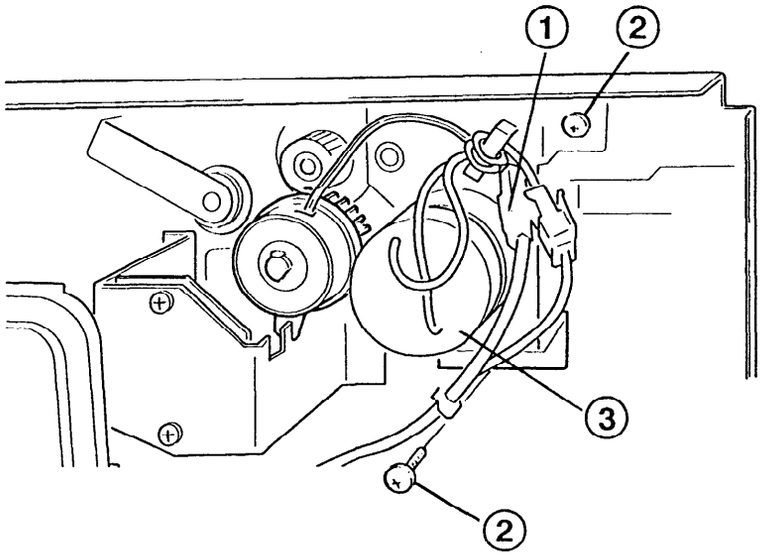
10 Replacement of Document Reverse Clutch(CL9)

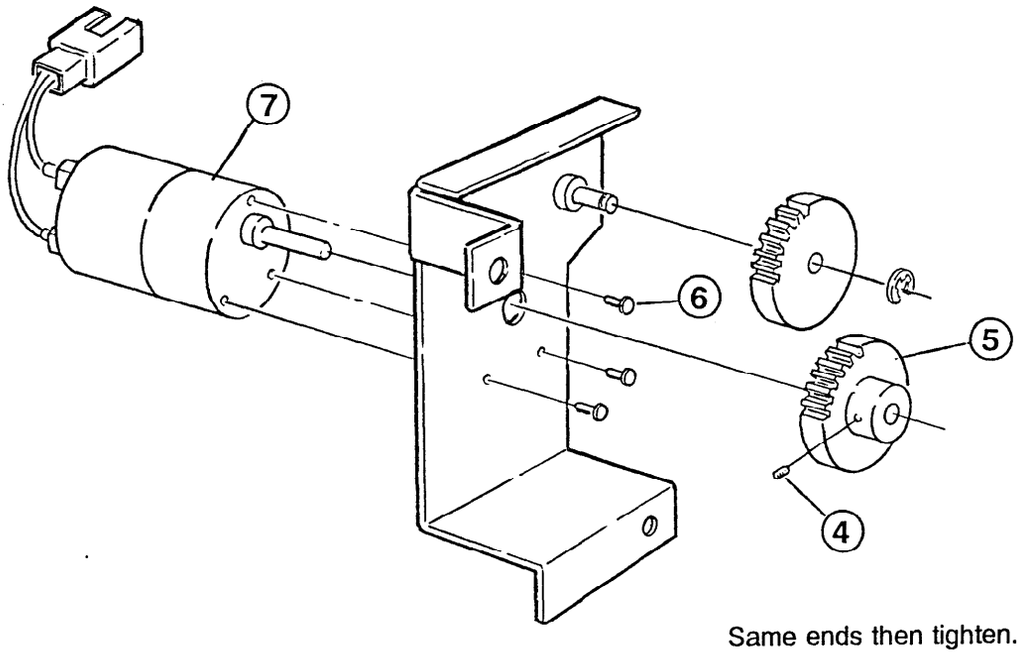
1. Remove the Right Cover(Upper). Refer to "Removal of Outside Cover".
2. Disconnect the Reverse Clutch(CL9) connector ① .
3. Release the finger ② of the clutch and pull the clutch towerd your side and remove the stopper ③ of the clutch from the Lamp Socket Bracket ④ .
4. Press the Lamp Socket Bracket ④ a little to the left and take out the Reverse Clutch (CL9) ⑤ toward your side.
5. Reassemble in reverse order.



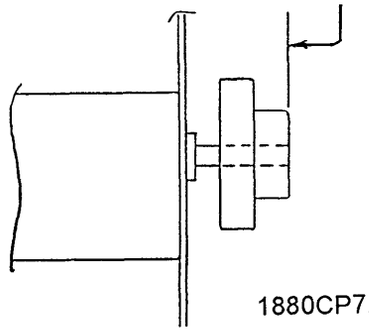
11 Replacement of Document Reverse Motor(M3)

1. Remove the Right Cover(Upper). Refer to "Removal of Outside Cover".
2. Disconnect the Reverse Motor(M3) connector ① .
3. Remove the two screws ② ,then remove the Document Reverse Motor Assy ③ .
4. Loosen the screw ④ ,then remove the 32T Spur Gear ⑤ .
5. Remove the three screws ⑥ ,then remove the Reverse Motor(M3) ⑦ .
6. Reassemble in reverse order.



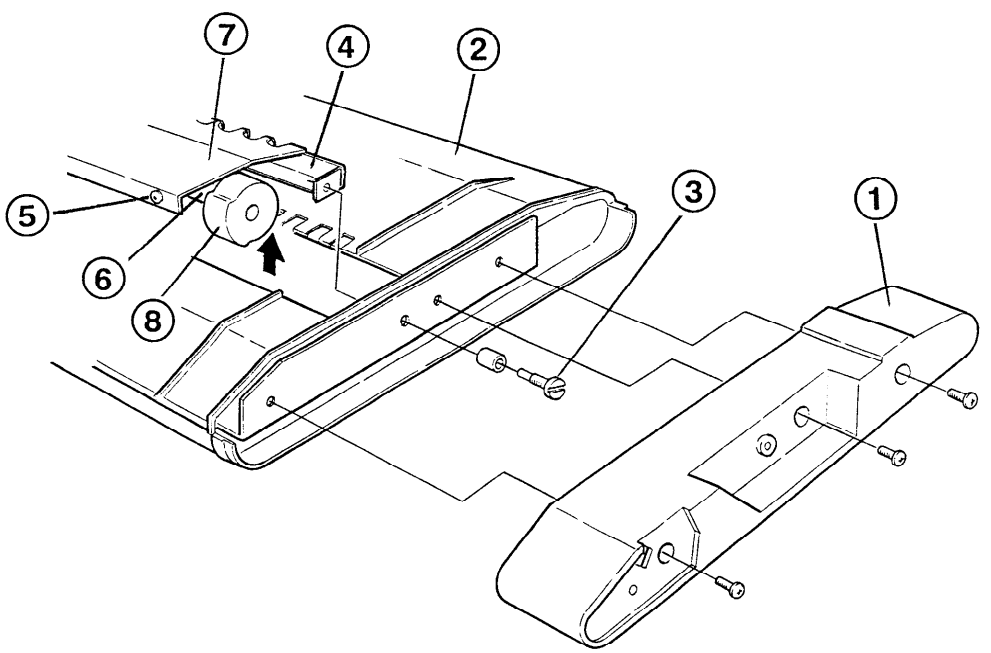


Same ends then tighten.



12. Replacement of Document Top Plate

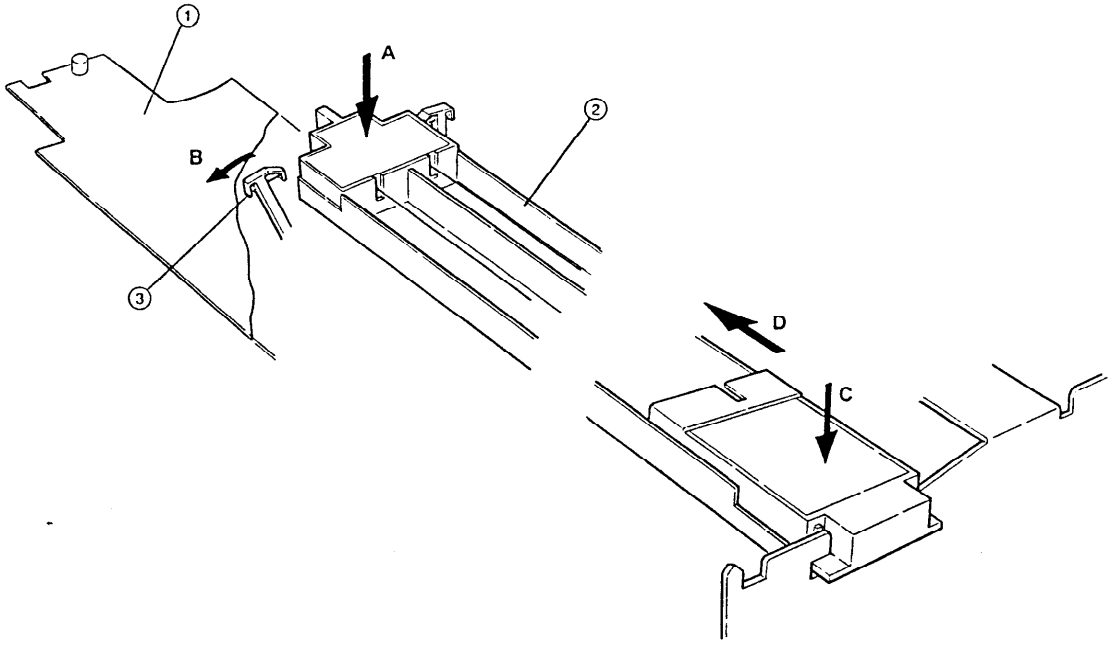
1.Remove the Document Top Assy. Refer to "Removal of Document Top Assy"
2.Remove the Side Cabinet ① ,both sides.
3.Remove the Document Top Front Guide ② ,(8 screws).
4.Remove the Screw ③ both side,then Document Top Plate Unit ④ .
5.Remove the 2 screws ⑤ ,then Document Top Plate Assy ⑥ ,both side.
6.Then replace the Document Top Plate ⑦ .
7.Reassemble in reverse order.
Notes:Adjust the gap between the Document Top Plate and the Document Glass so as to get 0.3mm ~ 0.9mm using the Gap Adjustment Collars ⑧ at both ends.



Ⅵ Process Device Unit

1. How to remove TR,SP Corona

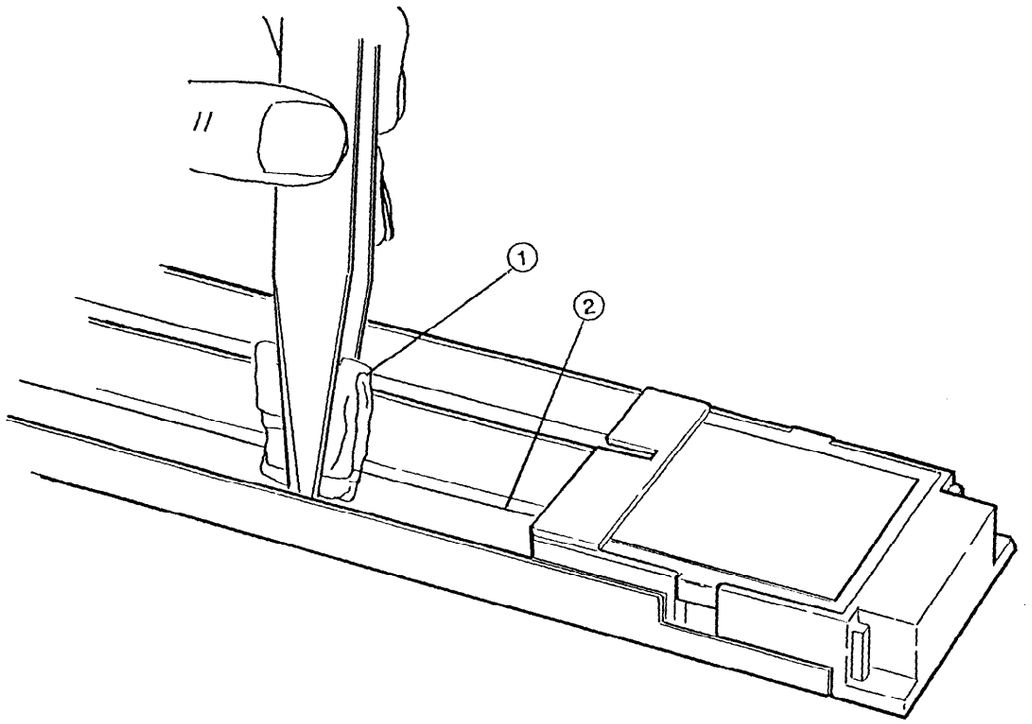
1.Open Upper Unit.
2.Remove Copy Paper Guide Plate.
3.Push left end of TR,SP Corona Assy(Refer to Arrow A).
4.Pull Corona House Lock Arm a little(Refer to Arrow B).
5.Push right end of TR,SP Corona Assy(Refer to Arrow C).
6.Pull TR,SP Corona Assy to the left side and remove it(Refer to Arrow D).



① Copy Paper Guide Plate
② TR,SP Corona Assy
③ Corona House Lock Arm

2. Cleaning of TR.SP Corona Wire

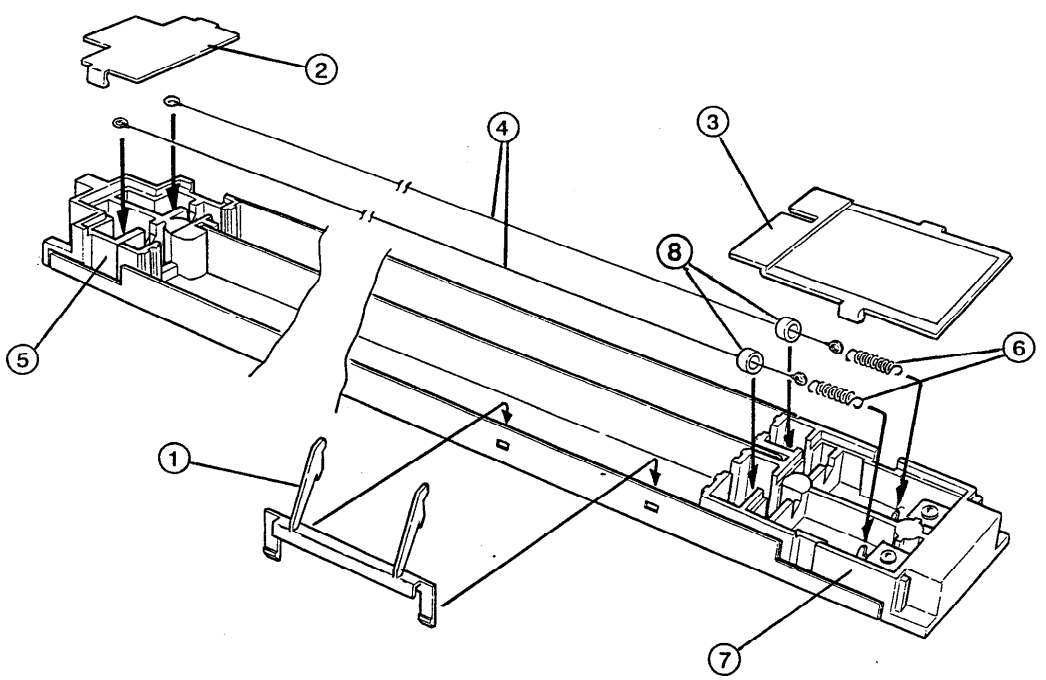
1.Remove Corona Guards.
2.Pick up Lens Cleaner with tweezers.
Wipe Corona Wire with a dry Lens Cleaner.



① Lens Cleaner
② Corona Wire

3.Replacement of TR,SP-Corona Wire

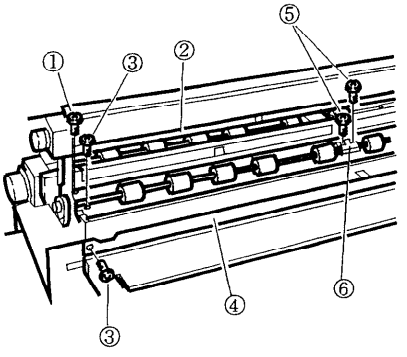
1)Remove 12 Corona Guards ① .
2)Remove Corona Cover(Left ② & Right ③).
3)Hook a ring of Corona Wire ④ on Catch inside of Corona Block(L) ⑤ .
4)Hook a Spring ⑥ on the other end of Corona Wire.
5)Hook the Spring on Catch inside of Corona Block(R) ⑦ .
6)Undo both Corona Covers and Corona Guard.
Note:Put the beads ⑧ into the position as shown below.

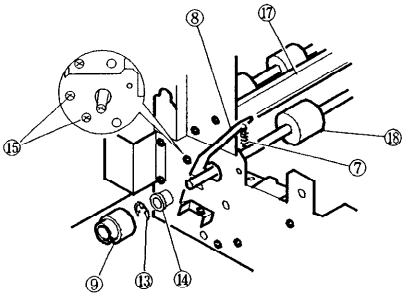


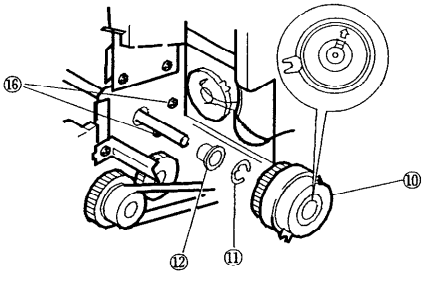
Ⅶ .Paper Supply/Paper Feeder

1.Removal of Paper Feed Roller A

1)Remove the copying paper guide plate and the Fuser Unit.
2)Remove the fixing screw ① (both side) and pull out the Tray Cover B ② .
3)Remove the fixing screw ③ (both side) and pull out the Tray Cover A ④ .
4)Remove the two fixing screws ⑤ and pull out the shaft mount plate ⑥ .
5)Remove the spring ⑦ and then pull out the brake belt ⑧ .
6)Loosen the fixing screws(with hexagon hole) and then remove the tension ring ⑨ .
7)Release the nail of clutch ⑩ as shown in the figure and pull out the clutch.
8)Remove the KL-Clip ⑪ and pull out the oilless bearing ⑫ .
9)Remove the E-Ring ⑬ and pull out the oilless bearing ⑭ .
10)Remove the two fixing screws ⑮ and two screws ⑯ .
11)Remove the roller frame ⑰ and take out the Paper Feed Roller A ⑱ .

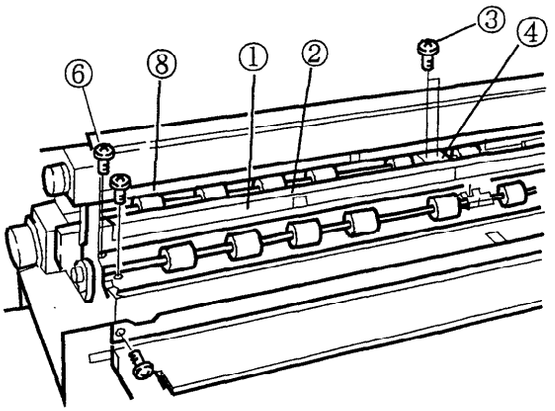


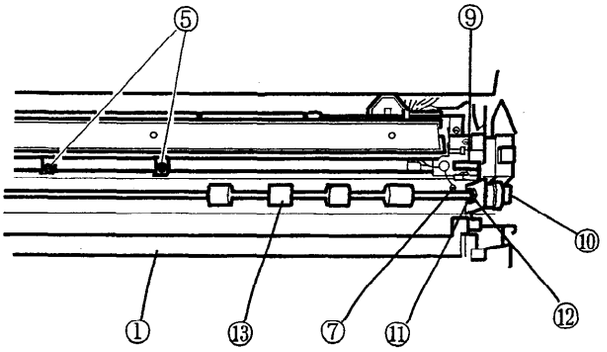




2.Removal of Paper Feeder Roller B

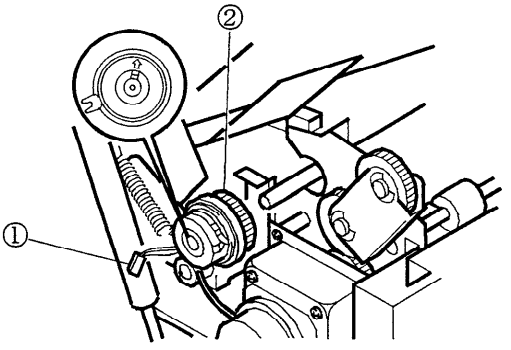
1)Remove the copying paper guide plate
2)Remove the Transfer/Separator Corona. (Refer to the "Removal of TR/SP Corona").
3)Remove the fixing screw(both side) and pull out the tray cover ① .
4)Pull out the cutter paper guide plate ② .
5)Remove the two fixing screws ③ and pull out the shaft mount plate ④ .
6)Remove the two fixing screws ⑤ .
Note:Do not lose the collars.
7)Remove the fixing screw ⑥ .
Note:Do not lose the toothed washer.
8)Remove the fixing screw ⑦ .
Note:Do not lose the toothed washer.
9)Remove the fixing screw and pull out the ground plate ⑨ of the Transfer/Separator Corona
Note:Do not lose the toothed washer.
10)Release the nail of clutch ⑩ and pull out the clutch.
11)Remove the KL-Clip ⑪ and pull out the oilless bearing ⑫ .
Note:Slide the bearing toward the center and pull it out from the side plate.
12)Shift the roller guide plate ⑧ and the roller B ⑬ to the right and take out the roller B.
Note:Do not lose the oilless bearing.

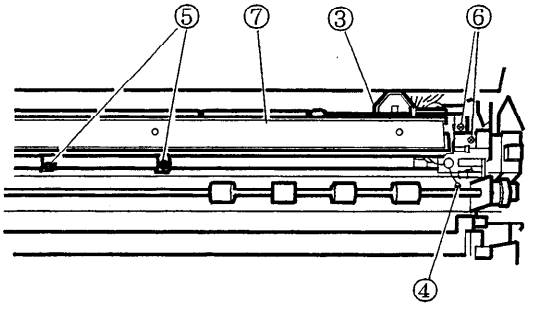


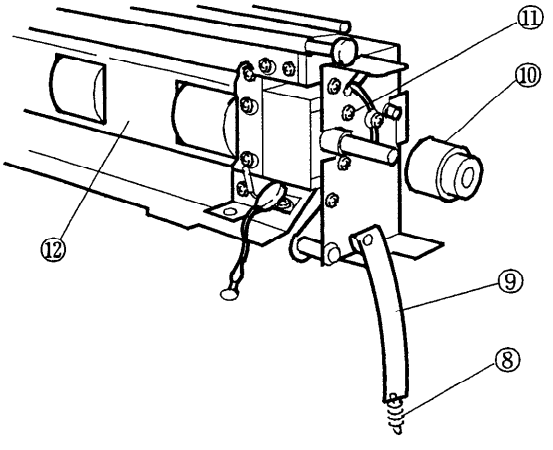


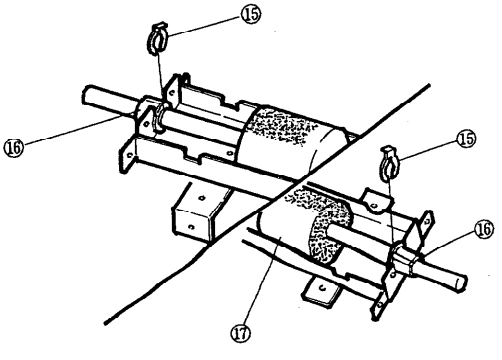
3.Removal of Resist Roller

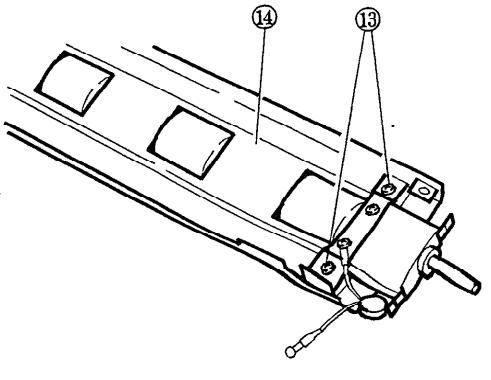
1)Remove the back cover lower.
2)Remove the Drum Unit.
(Refer to the "Removal of Drum Unit").
3)Remove the copying Paper Guie Plate.
4)Remove the Transfer/Separator Corona Unit
5)Disconnect the connector ① and release the nail of the clutch ② as shown in the figure and then pull out the clutch.
6)Disconnect the connector ③ .
7)Remove the fixing screw of varistor ④ .
Note:Do not lose the toothed washer
8)Remove the two fixing screws ⑤ .
Note:Do not lose the collars.
9)Remove the fixing screws ⑥ (2 pcs both side).
Note:Do not lose the collars.
10)Remove the U-turn Unit ⑦ .
11)Remove the spring ⑧ and pull out the brake belt ⑨ .
12)Loosen the fixing screw(with hexagon hole) and then remove the tension ring ⑩ .
13)Remove the fixing screws ⑪ (4 pcs both side) and pull out the Resist Roller Unit ⑫ .
14)Remove the 8 fixing screws ⑬ and take out the resist roller part ⑭ .
15)Remove the KL-Clip ⑮ and pull out the oilless bearing ⑯ .
16)Take out the Resist Roller ⑰ .





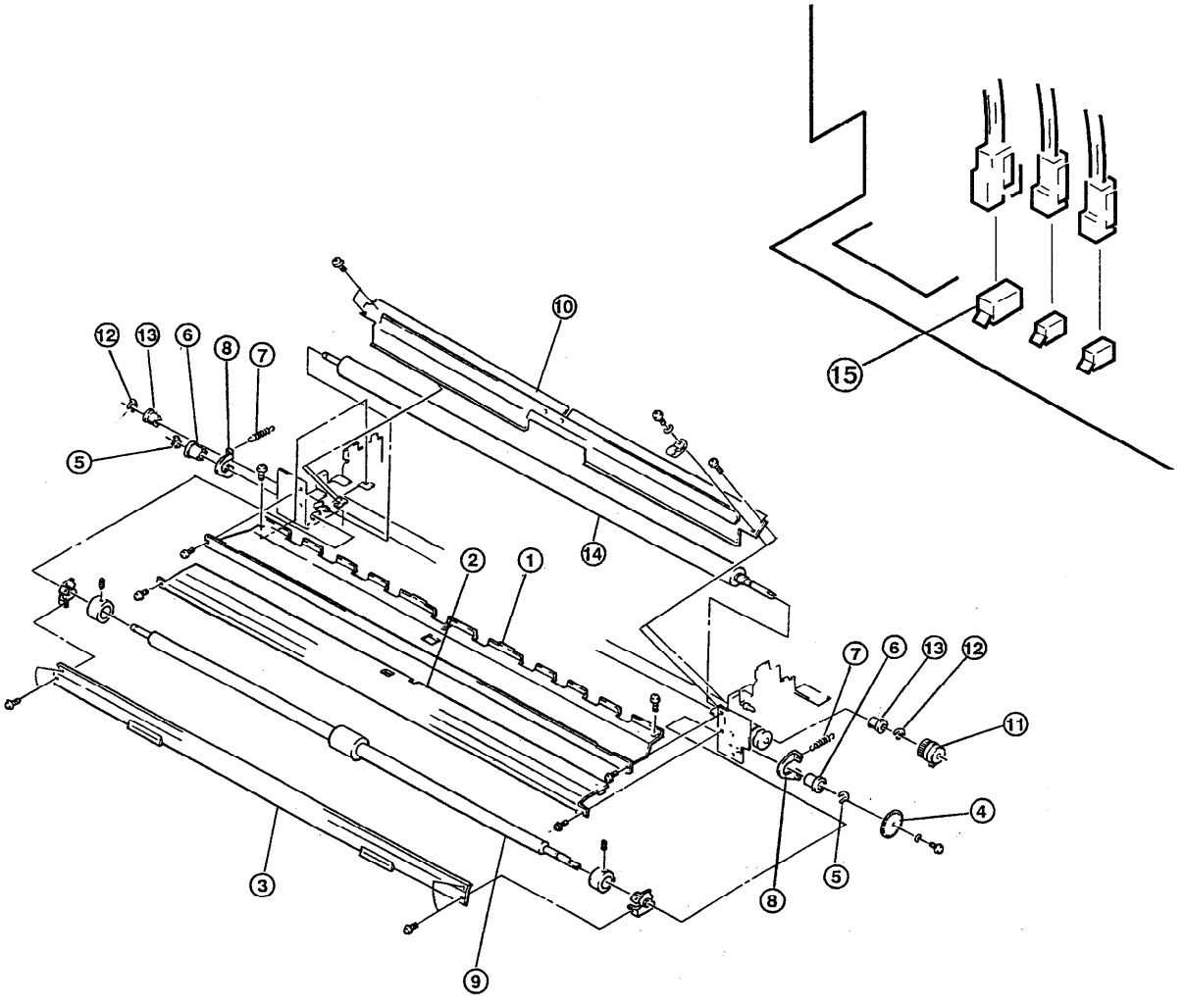






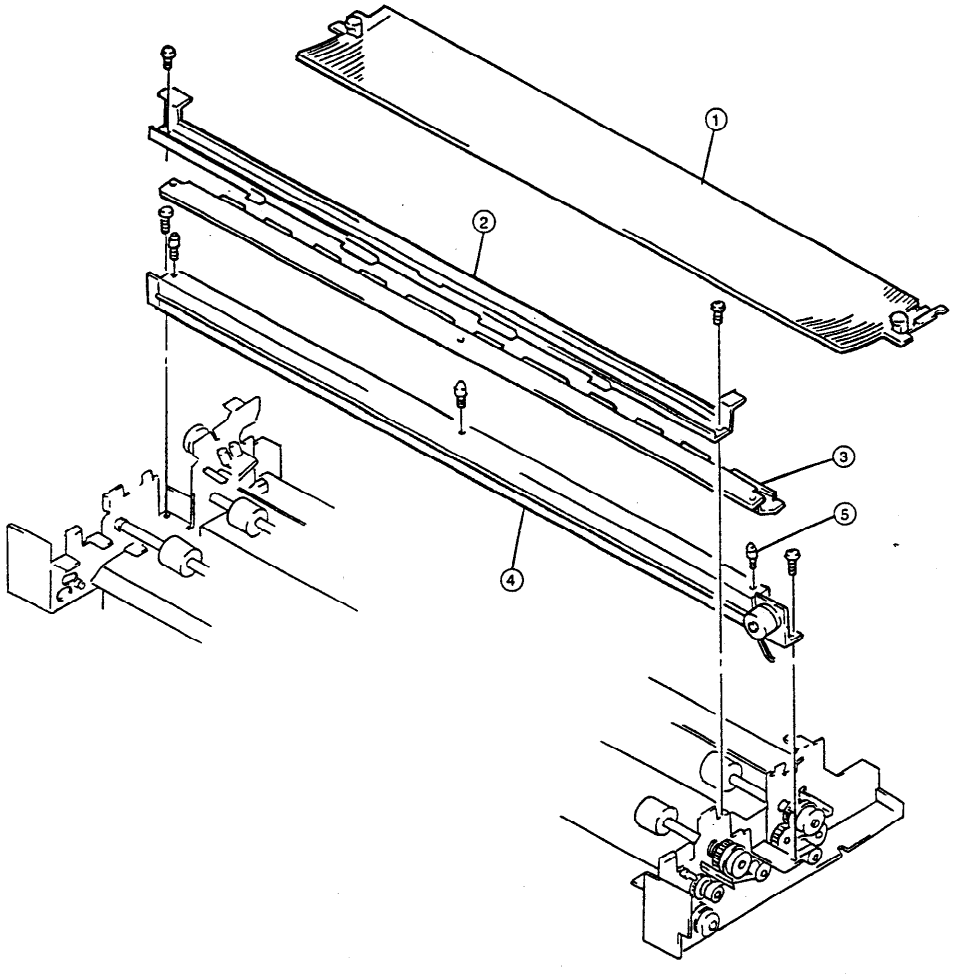
4.Removal of Roll Paper Feed Roller

1)Remove the copying guide plate and the Fuser Unit.
2)Remove the four fixing screws and pull out the Tray Cover A ① .
3)Remove the two fixing screws and pull out the Paper Tray Cover F ② .
4)Remove the four fixing screws and pull out the Return Roller Cover ③ .
5)Remove the fixing screw and washer and pull out the disc plate ④ .
6)Remove the KL-Clip ⑤ , the oilless bearing ⑥ , the spring ⑦ and the spring support plate ⑧ .Then pull out the Return Roller ⑨ .
7)Remove the four fixing screws and pull out Roll Paper Guide Plate ⑩ .
8)Disconnect the connector J121 ⑮ (plug housing).
9)Remove the clutch ⑪ , the KL-Clip ⑫ and the oilless bearing ⑬ .
And then pull out the Rroll Paper Feed Roller ⑭ .



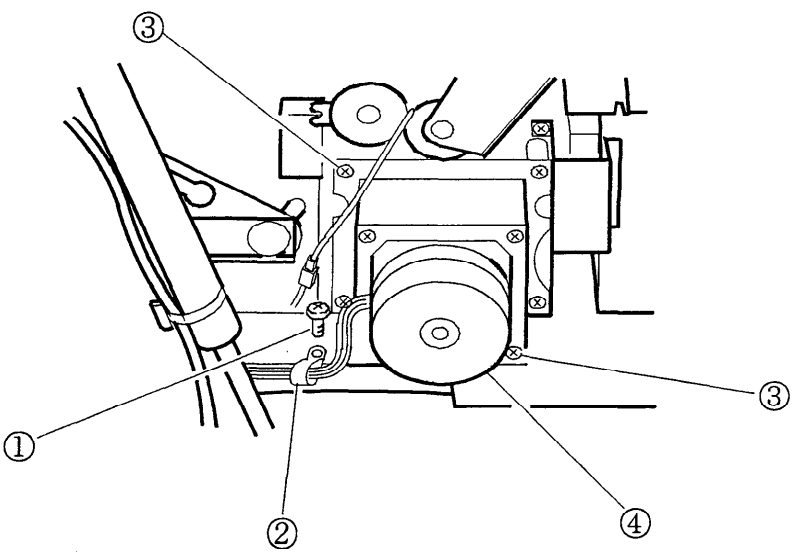
5.How to disassemble Cutter Unit.

1)Open Upper Uint.
2)Remove Copy Paper Guide Plate ① .
3)Remove Tray Cover(B) ② .
4)Remove Cutter Paper Guide Plate ③ .
5)Remove Cutter Unit ④ and replace it with a new one.
Note:1.Pull out Connector.
2.Do not throw away uaed three cutter screws ⑤ .
Reuse these three screws to assemble Cutter Unit



6.Removal of Main Motor

1)Remove the left side cover and open the upper unit.
2)Remove the Waste Toner Bottle.
3)Disconnect the connector(J104) on the Main Motor control PCB and pull out the harness from the harness guide.
4)Remove the fixing screw ① and the Nylon Clip ②.
5)Remove the fixing four screws ③ and pull out the Main Motor ④ .



7.Remove of Rack Gear Assy

1)Remove the Left and Right Cover(Upper),Rear Cover(Lower),Left and Right Cover(Lower).
Refer to"Remove of Outside Cover".

2)Remove the Disk(A).

3)Remove the Clutch(B).

4)Remove the Bracket-Spool Gear(C),(4 screws).

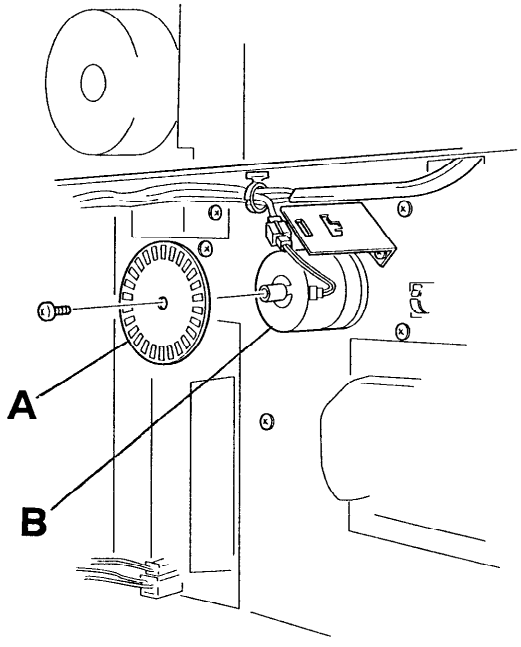
5)Remove the Heater SW(D) and Counter(E).

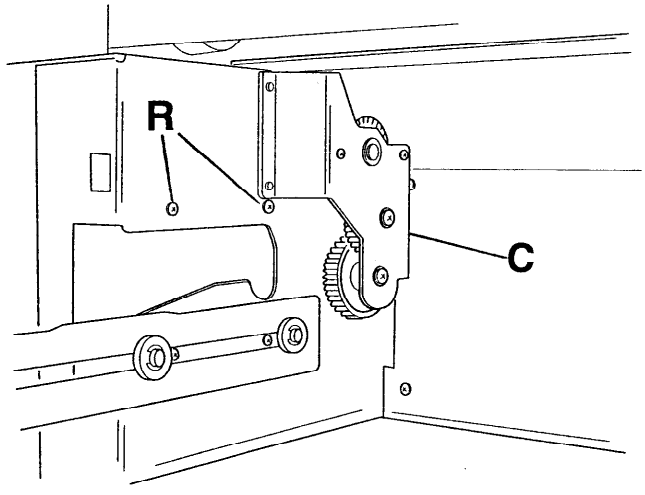
6)Disconnect the connector(F) of Heater.

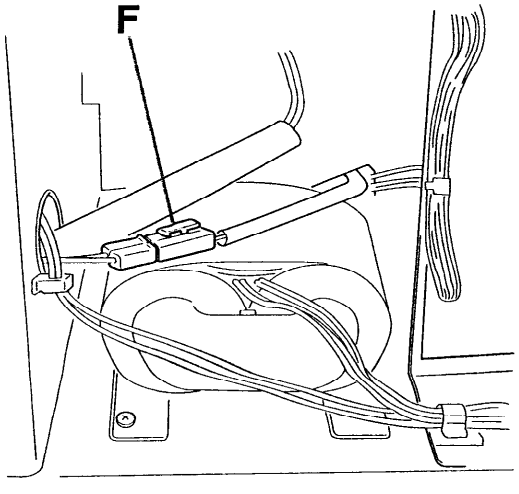
7)Remove the clamp of left side.

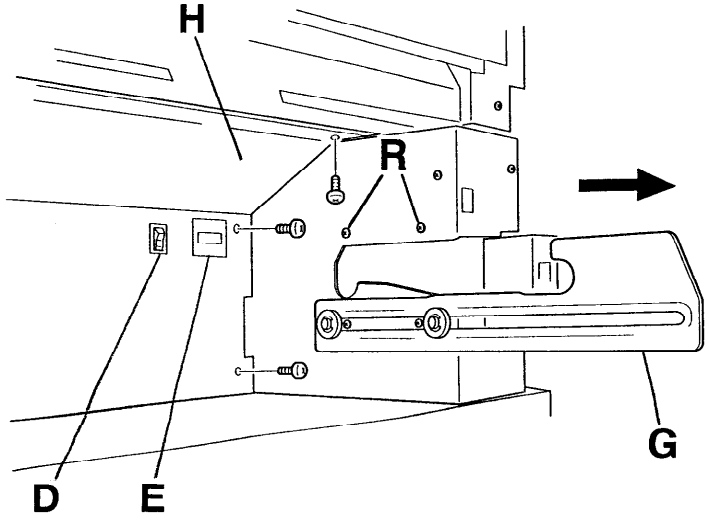
8)Remove upper two screws(R) tighten black covers on both sides.

9)Move the Spool Guide(G) toward your side, then remove the Spool Cover(H),(6 screws).





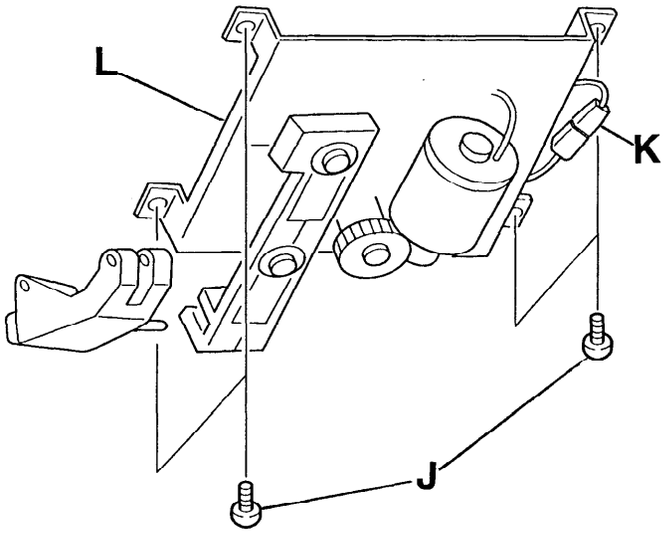


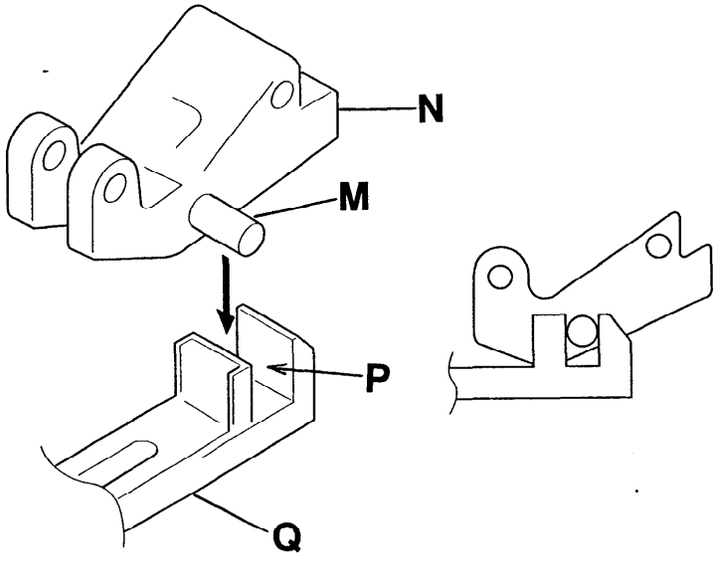


10).Remove 4 screws(J) and Connector(K), then remove the Rack Gear Assy(L).

11).Reassemble in reverse order.

Note:Insert the Boss(M) of Lever(N) into the groove(P) of the Rack Gear(Q) perfectly and then fix the Rack Gear Assy.





Chapter 5
Installation

Product is shipped after getting several adjustments and checking, and packing in the factory.

Installation work is important for performing unpacked machine at customer's place to be equal performance passed at the time of factory inspection conditions.

Service engineer should know machine performance fully and install machine at the proper environmental place with correct sequence and do full checking.

1.Selection of Installation Place

Following conditions are pointed out as installation place. So, preview of installation place before delivering machine to Customer is recommended.

* Power source should be rated voltage ±10%, more than 15A, outlet and can be connected alone and also be possible to take ground.

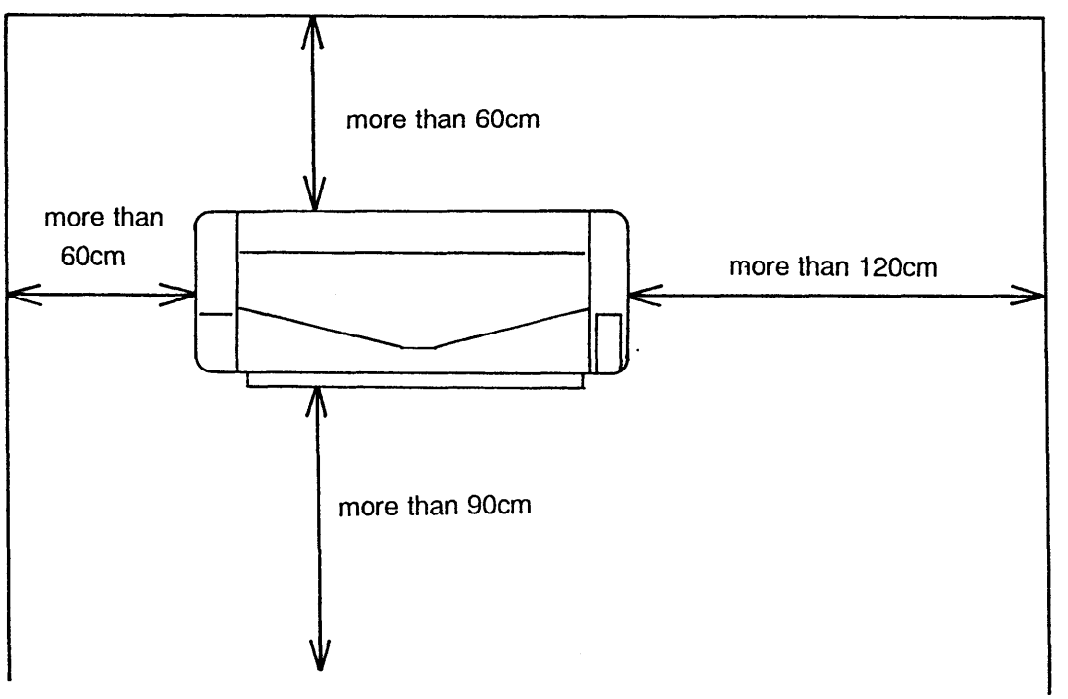
* Avoid the places near Water Cock, Water Boiler, Humidifier or Refrigerator.

* Avoid the places near fire, many dirt or direct Sun ray. Use of curtain for window is recommended, if installation at the place of direct Sun ray is not avoidable.

* Ventilation of room should be good.

* Machine should be kept in horizontal.

* Provide enough space for operation.



2.Unpacking

(1)Cut the 4 Bands ⑭ .

(2)Lift up and take away the outside Case ⑬ .

(3)Keep the Photoconductive Drum ⑳ .

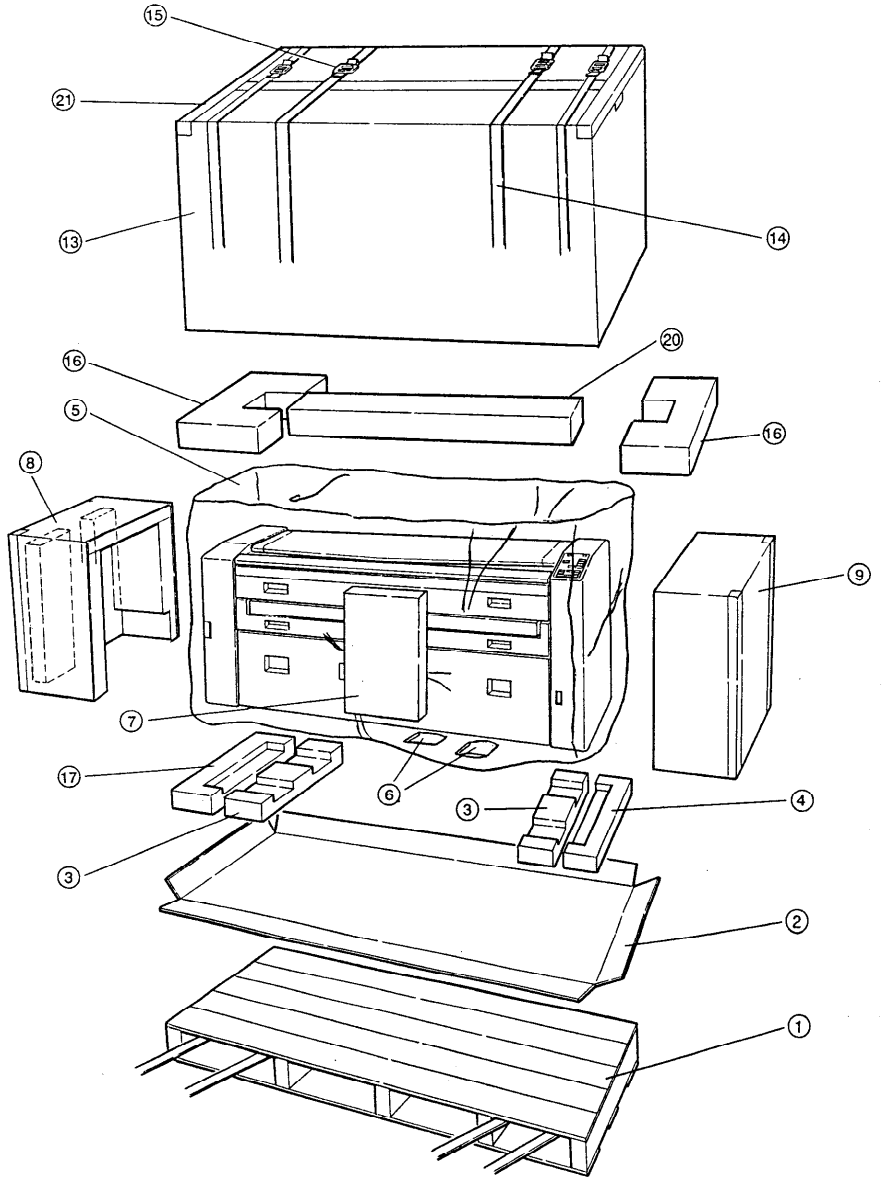
(4)Remove the Both Inside Case ⑧ ⑨ & ⑯.

(5)Open the Poly-Bag ⑤ .

(6)Put the machine on Table.
Note:Hold the machine with, more than 4 personnel as weight of the machine is approx.125Kg.

(7)Take out each part by opening Accessory Box ⑦ .
Confirm that following are contained.

*Operation Manual ----------1
*Document Receiver----------2
*Power Cord (EUR only) --------1



3.Removal of Taping & Fixing Bracket

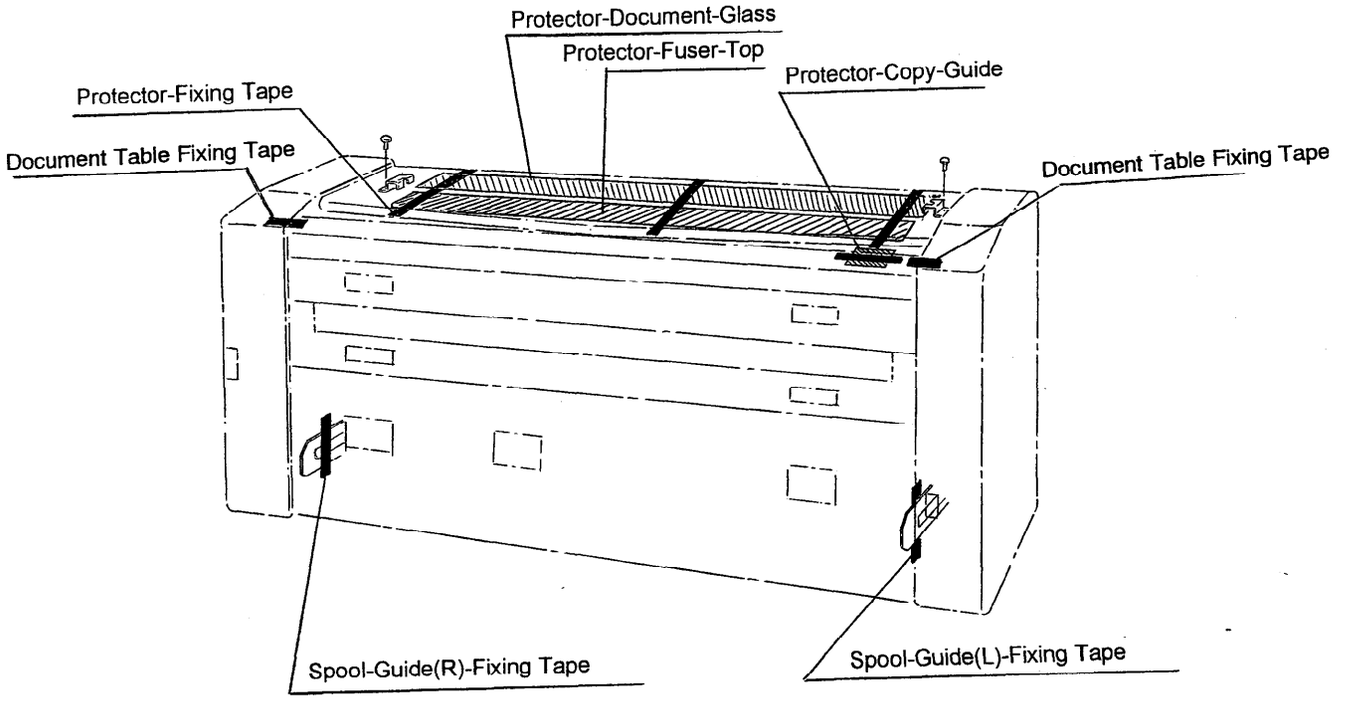
(1)Remove Protector Document Glass.

(2)Remove Protector Fuser Top.

(3)Remove Document Table Fixing Tape.

(4)Remove Protector Copy Guide.

(5)Remove the Spool Guide Fixing Tape.

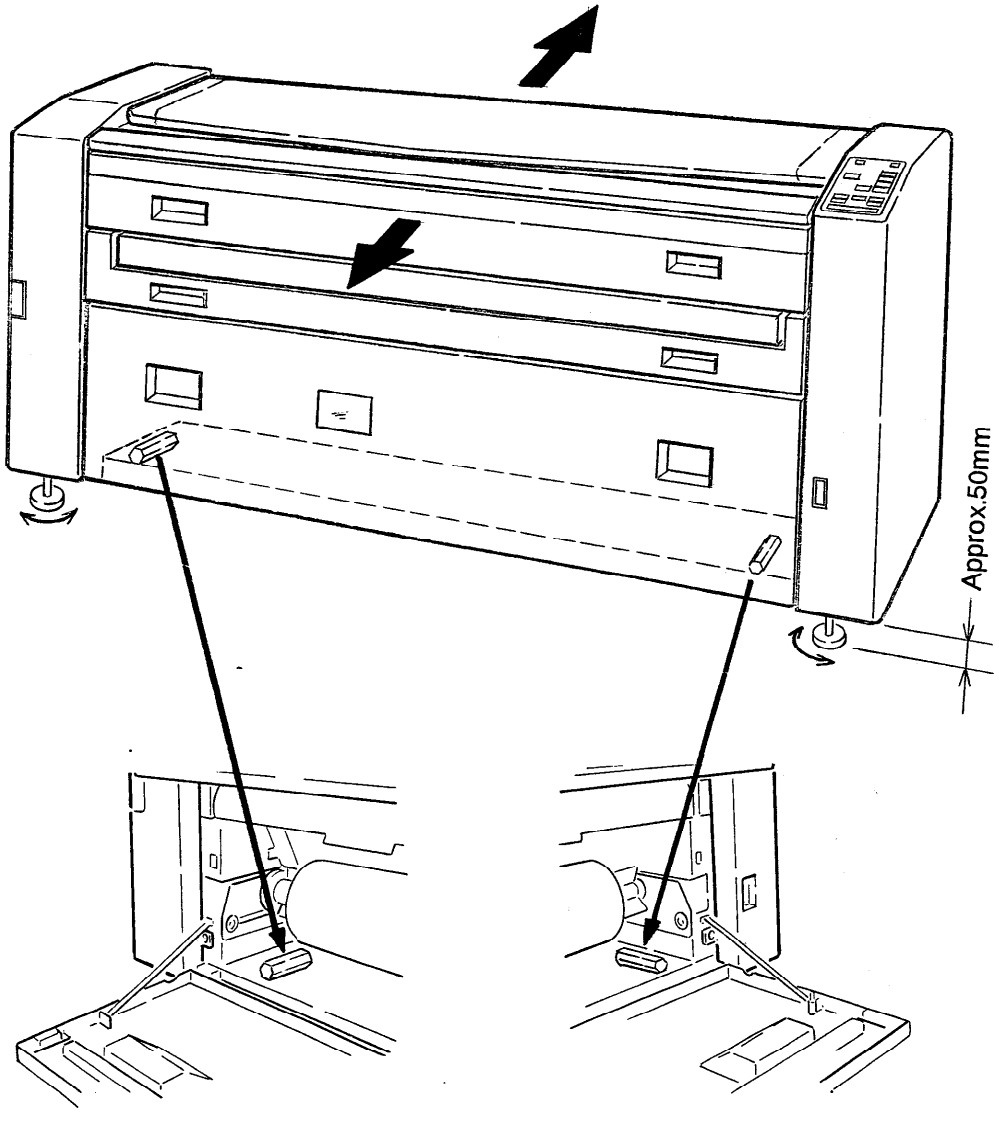


4.How to Get Exact Level

(1)Open Front Door by both hands.

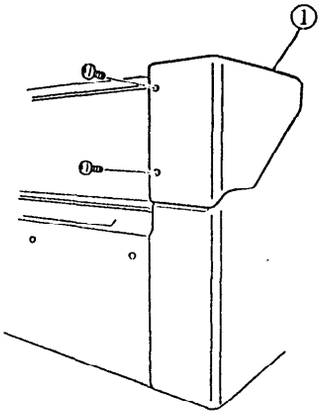
(2)Set a Leveler on the Base.

(3)Using the adjuster bolts.
Keep a base level with the ground.
Note:Please Adjust left & right side.

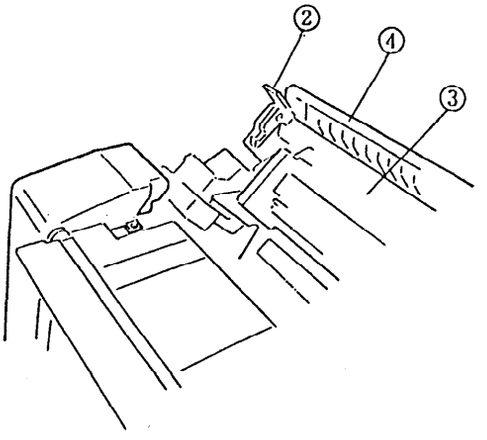


5.Preparation

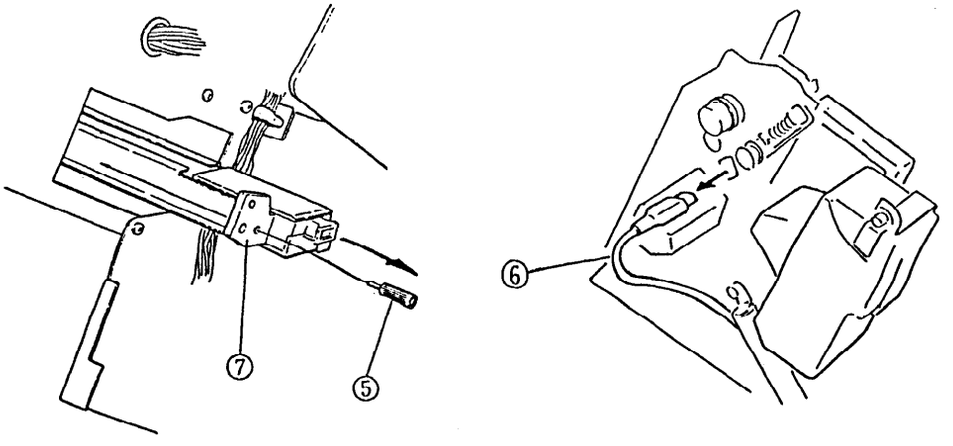
(1)Remove the Left Cover(Upper) ① and the Right Cover.



(2)Lift up Upper Unit by pushing two Gray Levers ② at the both sides of Document Feed Table ③ , and open the Document Cover ④.

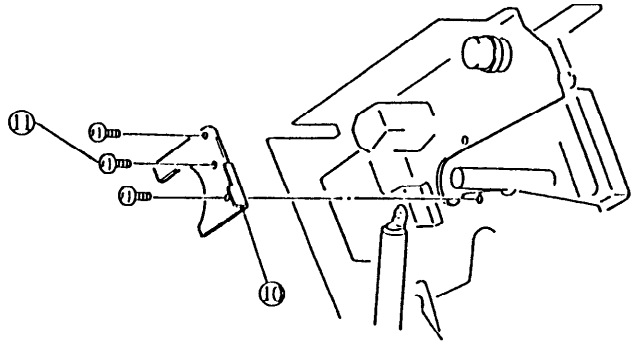


(3)Remove Image Corona Stopper ⑤ (right side) of Image Corona Unit ⑦ .
Disconnect High Voltage Connector ⑥ (left side) of Image Corona Unit. Then put out Image Corona Unit.

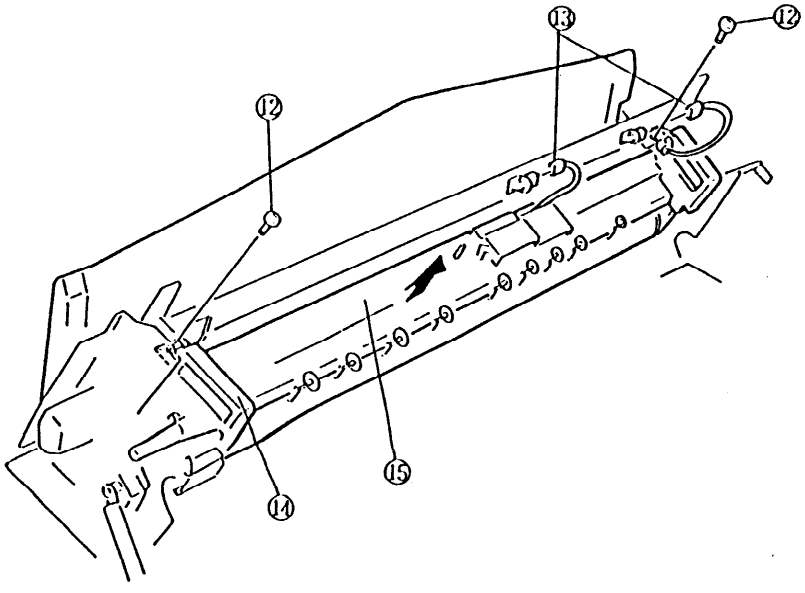


(4)Remove Wasted Toner Bottle Bracket by loosing a Knob ⑧ with hand and then take out Wasted Toner Bottle ⑨ slowly.

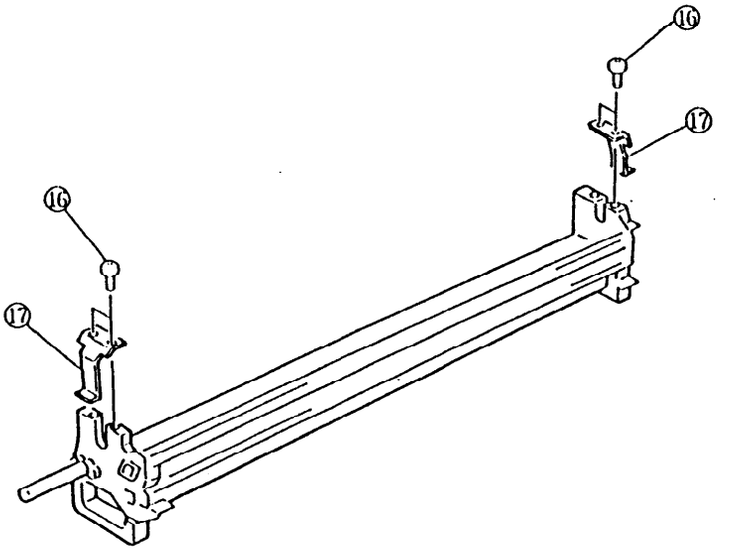
(5)Remove Drum Stoppers ⑩ of both sides of Drum.
Dispose the middle Screw ⑪ .



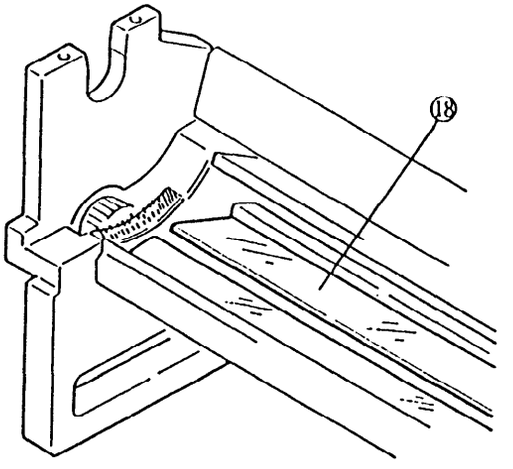
(6)Remove Fixing Screw ⑫ of Drum Unit.
Disconnect 2 connectors ⑬ and remove Drum Unit ⑮ to front side holding Drum Unit Handles ⑭ both side.



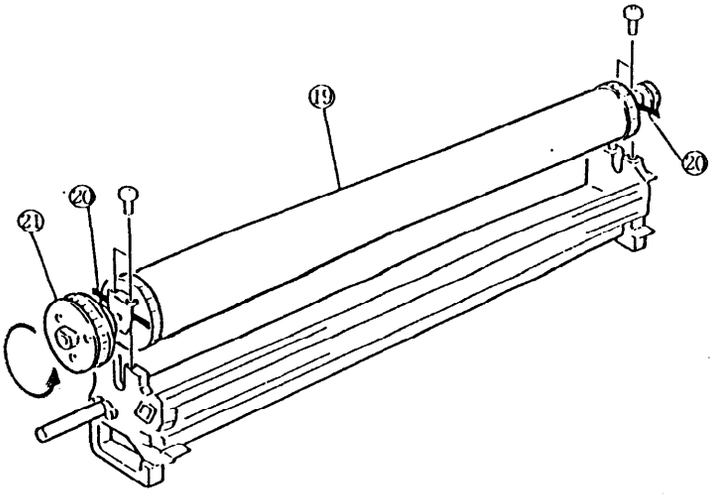
(7)Place Drum Unit with the condition that Drum Unit Handles Face Bottom sides.
Remove Screw ⑯ and Fixing Plate ⑰.



(8)Apply Toner or Keiner on the edge of Cleaner Blade ⑱ .



(9)Take out Drum ⑲ from the package. Remove Masking Seal of Photoconductive Drum and Plate Fixed Tape ⑳ .
Set Drum on Drum Unit. Rotate Drum Gear ㉑ by hand and make sure that it rotates more than one rotation.



(10)Set Drum Unit on the machine then equip Timing Belt on Drum Pulley and Document Roller.
Note: Connect 2 connectors.

(11)Set Wasted Toner Bottle.

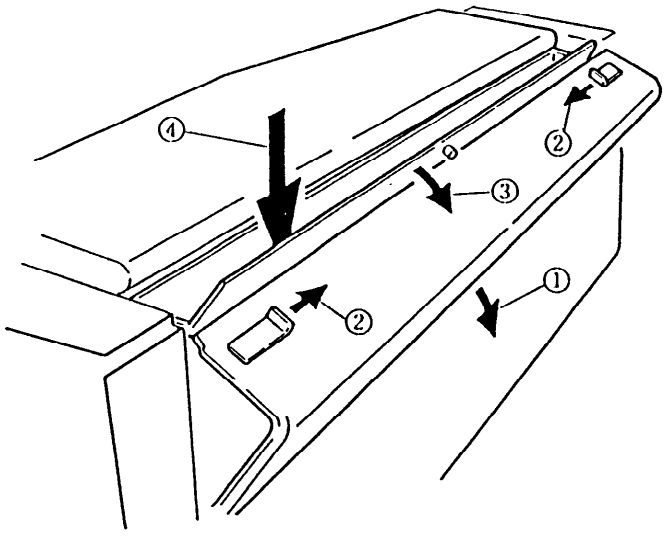
(12)Insert Image Corona Unit after clean removed image Corona Unit with dry cloth.
Note: Connect Connector of image Corona Unit.

(13)Close Upper Unit and Document Cover.

(14)Install the Left Cover (Upper) and the Right Cover(Upper).

6.Adding Toner

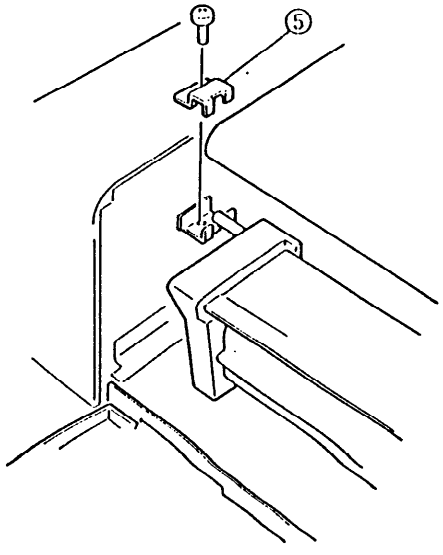
(1) Open Back-Top Cover ① by pulling Gray Levers ② at the both ends of left and right.



(2) Open Lid of Toner Supply Opening ③.

(3) Shake Toner Bottle well.
Note: Fill Toner 1.5 kg (3 bottle) evenly ④.

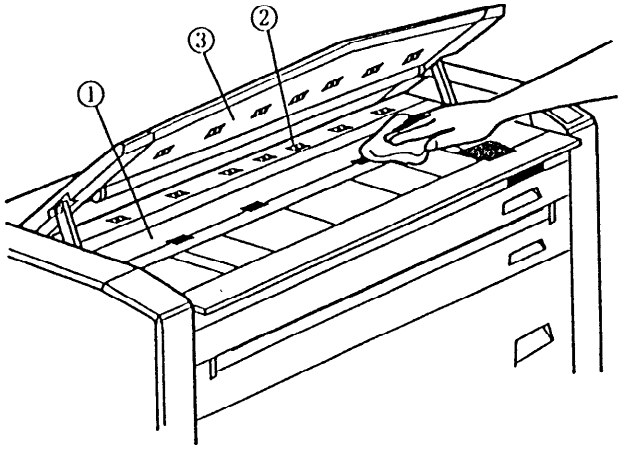
(4) Remove 2 pcs. of Fix Fitting ⑤ of both sides of Upper Shaft of Developer Unit.



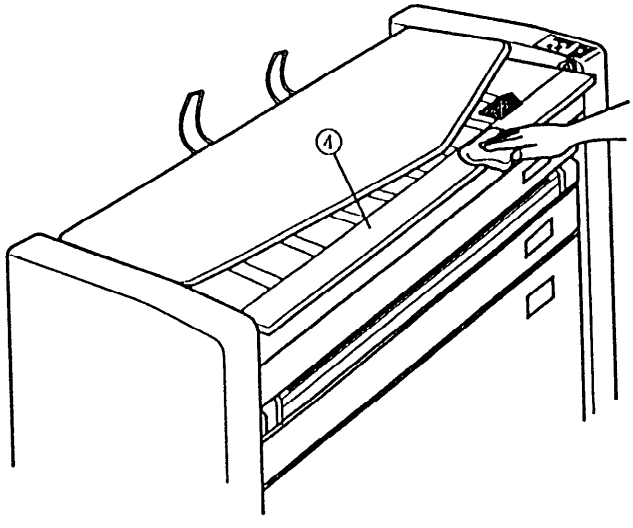
(5) Close Back-Top Cover.

7. Cleaning of Document Part

(1)Exposure Glass ① or Roller ② gets dirt. It may be the cause of dirt on Original or on Copies. Clean them by gauze soaked slight water by opening Document Feed Table ③ .

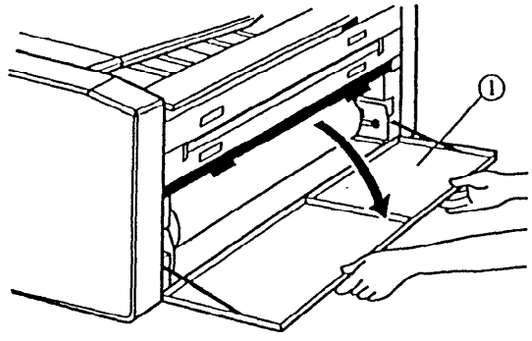


(2)Clean Document Table ④ by dry cloth after cleaning by wet cloth.

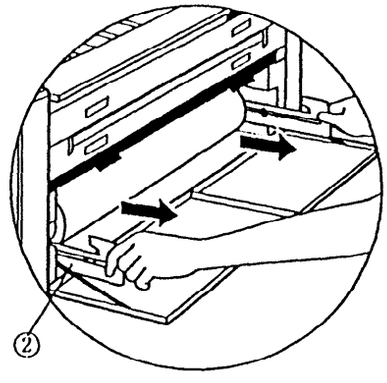


8.Setting of Roll Paper

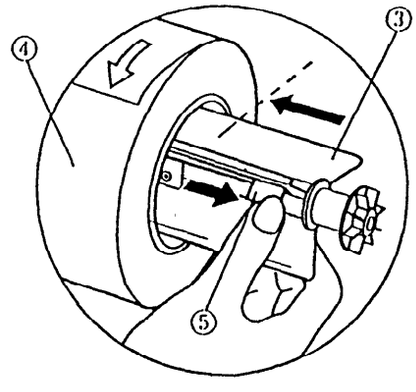
(1) Open Front Door ① by both hands.



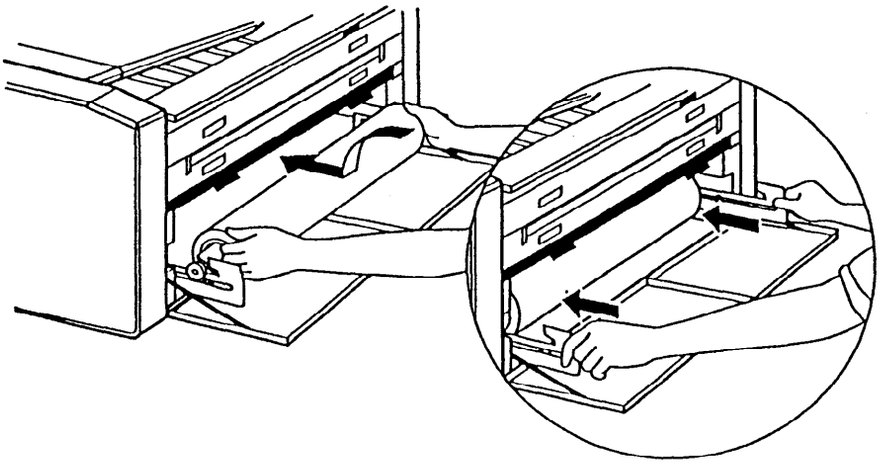
(2) Pull out Spool Guides ②.



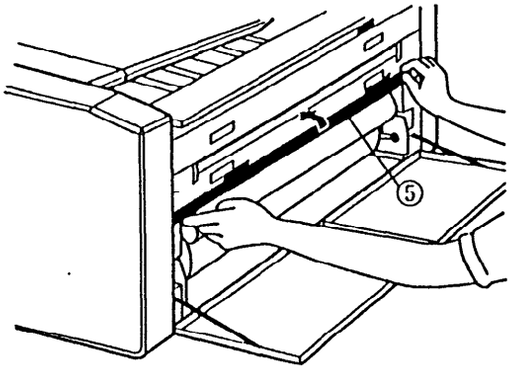
(3) Insert the Spool ③ into new Roll Paper ④ by keeping to push Lock Lever ⑤.
Then set the edge of it the paper size indication.



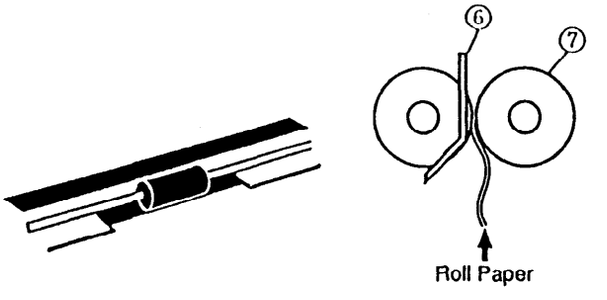
(4) Load new Roll Paper with Spool on inner groove of the Spool.
Guides by holding both ends of Roll Paper Core.



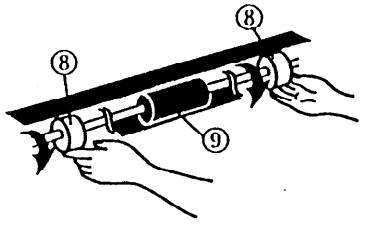
(5) Lift up Feeding Roller Cover ⑤ until it is locked.



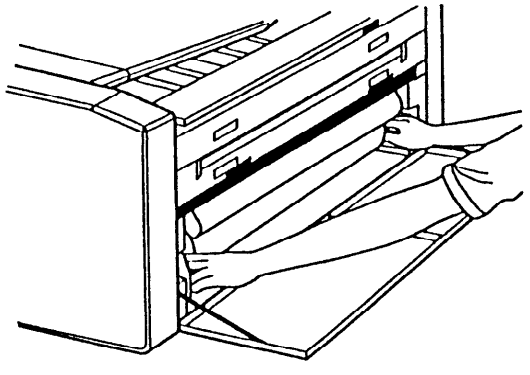
(6) Insert loading Part of Roll material between Cover ⑥, and Roller ⑦ approximately 50 mm by holding both sides of Roll material and lower Feeding Roller Cover.



(7) Turn Roller ⑧ equipped at the side of Roller ⑨ slowly to the direction shown in illustration and feed Roll material inner side until its loading part hits to Roller.

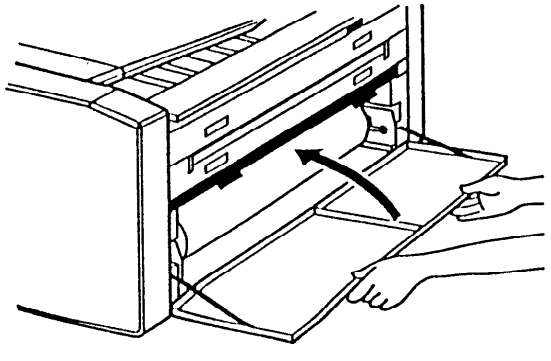


(8) In order to avoid slant feeding, rewaind Roll material a little by holding both sides of Spool until sag of Roll material is disappeared.



(9) Close Front Door.

Note: Unless Feeding Roller Cover is closed perfectly.
Front Door also can not be closed.



9.Checking of Operation

(1)Insert Power Plug into outlet.

(2)Turn Power switch ON.

(3)Confirm that WAIT is indicated.
*If Error Indication is lit, treat it in accordance with the contents of indication.

(4)When READY indication is lit, align leading edge of Roll material by using Paper Cut Mode.
*Push Up key of Leading/Trailing Edge Margin key by keeping to push LEAD./TRAIL. select key.
Approx. 280mm of Leading part of Roll Paper is cut and it comes out from Copy Exit.

(5)Check Image quality and operation by using Test Sheet.

(6)Turn Power Switch OFF and clean appearance and surrounding of the machine.

Chapter 6
Maintenance & Checking

6-1.Periodical Replacement Parts.

In order to keep product performance in constant level, parts which should be replaced(Parts that have no change of appearance or no damage but may big influence if they lose their performance)periodically are listed below.

It is recommended to replace parts at the time of periodical maintenance service when it is the closest to designated replacement No. of print.

Part Name	Part No.	Quantity in use	Replacement Reference(m)	Remarks
Ozone Filter	1159000032	2	9,000	
Toner Seal L (Developer)	1160200011	1	18,000	
Toner Seal R (Developer)	1160200031	1	18,000	
Toner Seal (Drum)	1160200060	2	18,000	
Cleaning Felt Assy	1152600250	1	3,000	

(Caution)
Figures of the above are just estimation so that they may be changed by experiential data.

6-2.Durability Reference List of Consumable Parts.

Estimated average life(length in meter)for the parts having possibility of replacement due to deterioration or damage, but replacement is needed at the time when they get failure, is shown in below.

Part Name	Part No.	Q'ty in use	Replacement Reference(m)	Remarks
Photoconductive Drum	1150300010	1	12,000	
IM Corona Wire	1152400120	1	9,000	
Grid Wire	1152400130	1	18,000	
Stripper-Heat Roll	1155000372	13	18,000	
Press Roller	1157400180	1	18,000	
Receive Rubber	1160100060	1	18,000	
Cleaner Blade Assy	9152400010	1	9,000	
TR/SP Corona Wire	1152400140	2	18,000	
Heat Roller Bearing	1159000060	2	18,000	
Heat Roller	1159800020	1	18,000	
Finger Strip	1155007511	12	18,000	

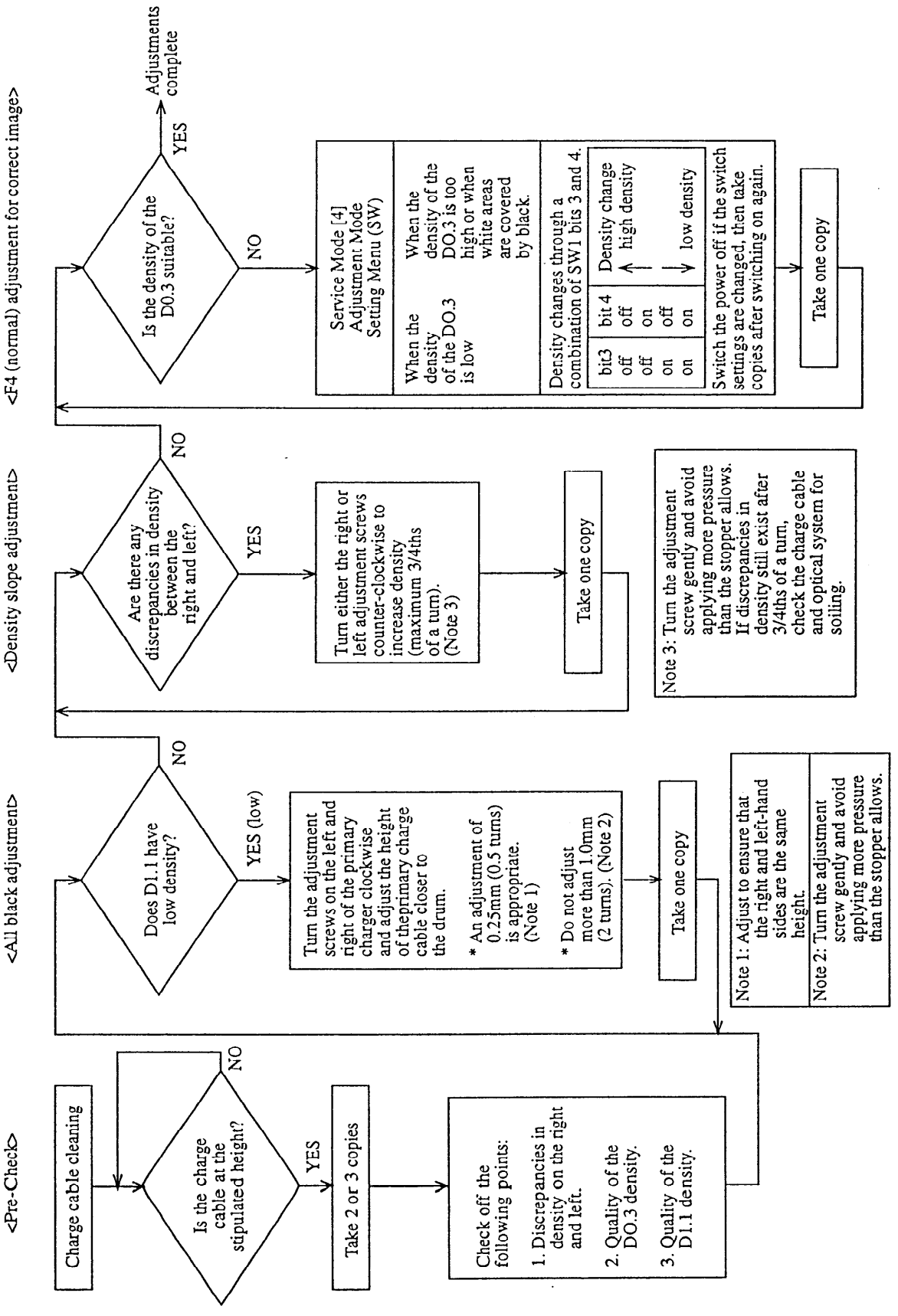
6-3.Periodical Maintenance

◎ :Replacement ○ :Cleaning △ :Checking&etc

Item	Maintenance Internal (m)						Remarks
	3K		9K	12K	18K		
① IM Corona Wire	○		◎				Only Wire replace
② Grid Wire	○				◎		Only Wire replace
③ TR/SP Wire	○				◎		Only Wire replace
④ Receive Rubber	○				◎		
⑤ Toner Seal L(Dev)	△				◎		Cleaning of spattered Toner on Blade
⑥ Toner Seal R(Dev)	△				◎		
⑦ Toner Seal(Drum)					◎		Developing Unit
⑧ Cleaner Blade			◎				
⑨ Photoconductive Drum				◎			
⑩ Heat Roller	△○				◎		Scratch
⑪ Press Roller	△○				◎		
⑫ Heat Roller Bearing					◎		
⑬ Stripper Heat Roll	○		△		◎		
⑭ Document Glass	○						
⑮ Document Feeding Roller	○						
⑯ Ozone Filter			◎				
⑰ Pressure Roller	○						
⑱ Finger Strip	○		△		◎		
⑲ Thermistor	○						
⑳ Exit Roller	○						
㉑ Feeding Roller	○						
㉒ Short Focus Lens Assy			○				
㉓ Light Detect Sensor			○				
㉔ Document Detect Sensor	○						
㉕ Document Top Plate	○						

Chapter 7
Image/Function Trouble-shooting

I Basic Image Adjustment Procedures

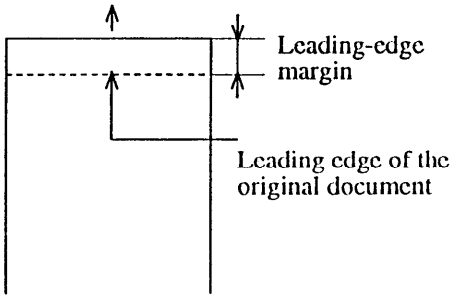


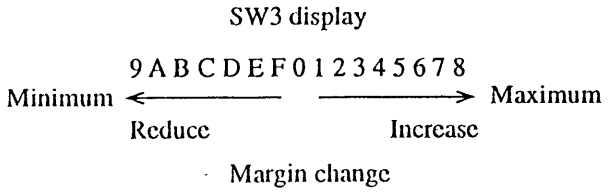
II Specifications and Adjustments

A Leading-Edge and Trailing-End Margin Adjustments

(1) Leading-edge margin adjustments for roll paper.

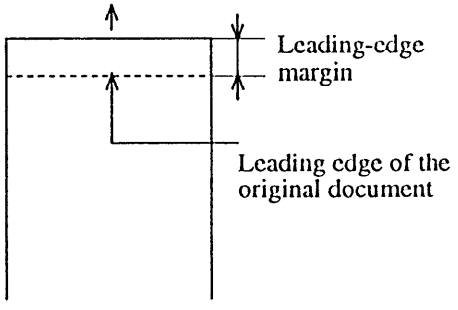
1mm step adjustable

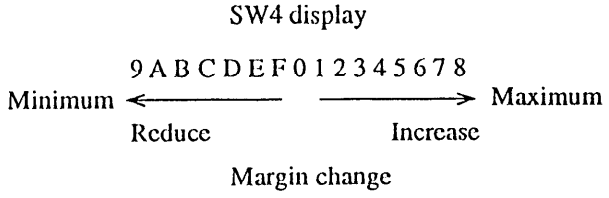




(2) Leading-edge margin adjustments for cut paper.

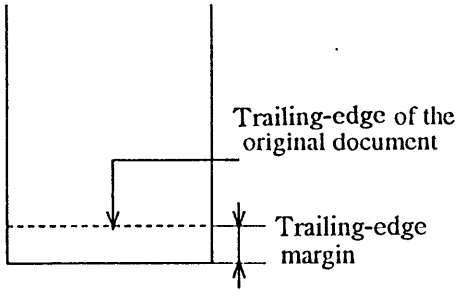
1mm step adjustable

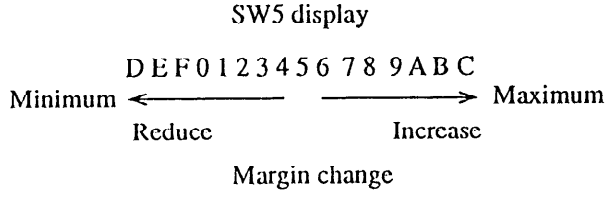




(3) Trailing-edge margin adjustments for roll paper.

1mm step adjustable





* If the above switch settings are changed while the machines in the stand-by mode (not copying mode), the new switch settings become valid for all subsequent copies.

B Image Corona Height Adjustments

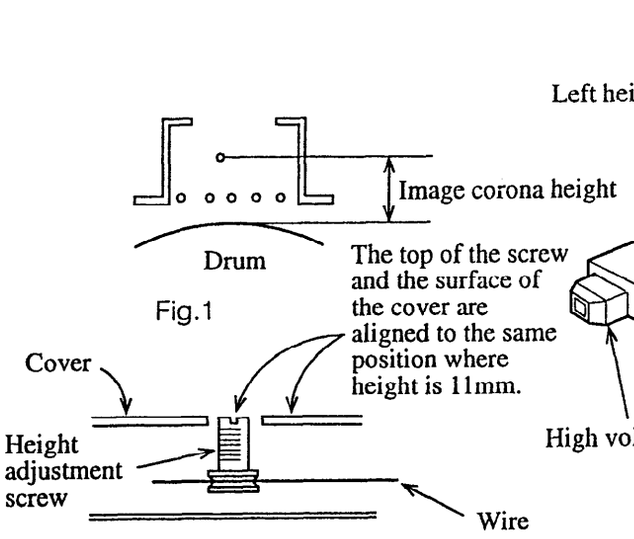


Fig.1

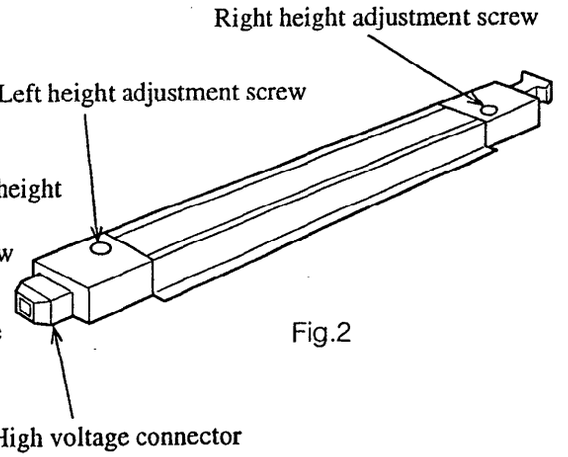


Fig.2

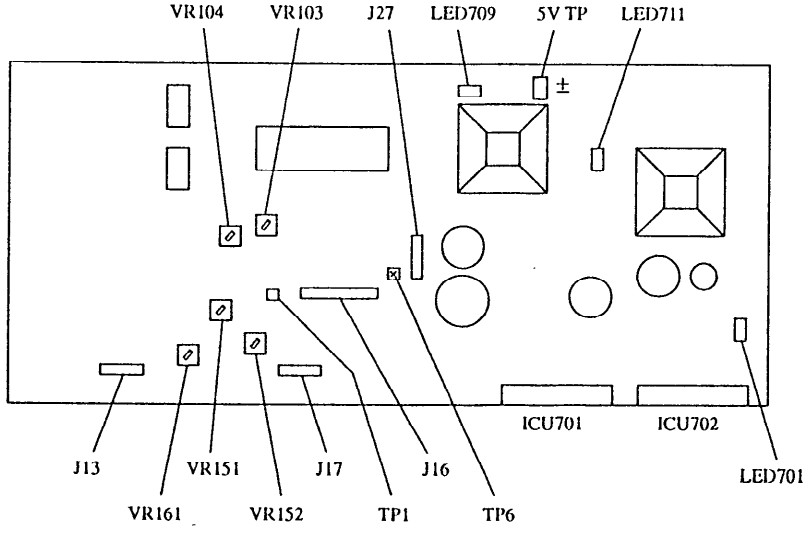
Fig.3

① As indicated in Fig.1, the image corona height is the distance between the image corona wire and the surface of the drum, and this will be a height of 11mm when the top of the height adjustment screw is aligned with the surface of the cover, and the top of the screw will be 0.5mm below the height of the cover surface when it has been set at 10.5mm.

② Height is decreased by turning the height adjustment screw clockwise (increasing density), and increased by turning it counter-clockwise (reducing density). Height will be adjusted by 0.5mm for each full turn of the screw.

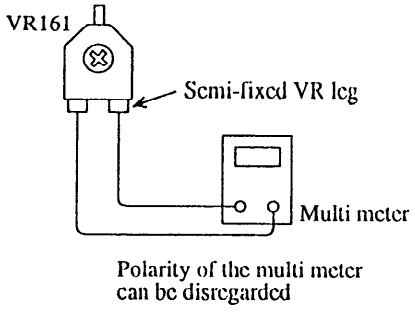
2. Main Board

① Layout and functions of the semi-fixed resistors.



LED701	Illuminated when 24 V output is ON from the ICU702	
LED709	Illuminated when 24 V output is ON from the ICU701	
LED711	Illuminated when 5 V output is ON from the ICU701	
VR151	Semi-fixed resistor for developer DB BIAS control operation amplifier gain adjustment	For factory adjustment
VR152	Ope-amp for developer DC BIAS Semi-fixed resistor for offset voltage	For factory adjustment
VR161	Semi-fixed resistor for exposure lamp light quantity adjustment	Adjustment required when the main board is replaced.
VR103	Semi-fixed resistor for fuser motor speed when paper type selection is set at Paper/Tracing Paper.	Adjustment required when the main board is replaced.
VR104	Semi-fixed resistor for fuser motor speed when paper type selection is set at Film.	Adjustment required when the main board is replaced.
TP1	Ground test point for 5V systems	
TP6	Test pointer for checking the fuser motor speed control clock.	

② Adjustments when replacing the MAIN board



a. Adjusting the semi-fixed resistor (VR161) for exposure lamp light quantity.

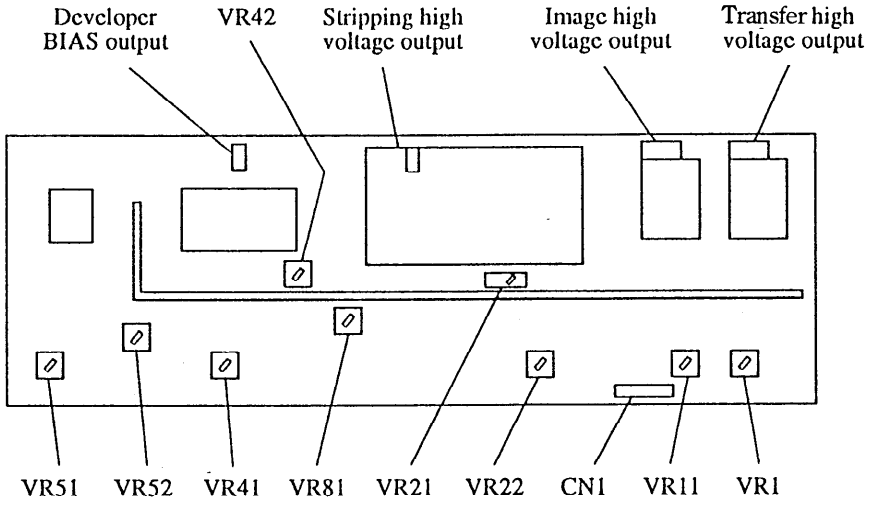
Turn off the machine and wait approx.5 min.
cannot the Multi meter to VR161 as shown fig.
adjust the VR161 to the same value as former Main PCB.

Ensure that a minimum interval of five minutes is adhered to as a certain amount of voltage will remain in the main power unit after switching off and accurate resistor readings cannot be taken.

C Board Adjustment

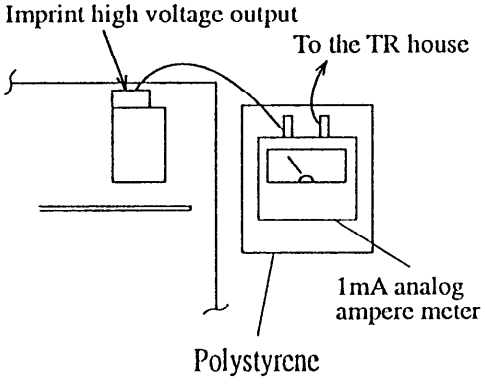
1. High Voltage Unit

① Layout and functions of the semi-fixed resistors.



VR1	Semi-fixed resistor for transfer high voltage output current adjustment	Adjustment required when the high voltage unit is replaced.
VR11	Semi-fixed resistor for image high voltage output current adjustment	For factory adjustment
VR21	Semi-fixed resistor for Stripping high voltage output AC frequency adjustment	For factory adjustment
VR22	Semi-fixed resistor for Stripping high voltage AC output voltage adjustment	For factory adjustment
VR81	Semi-fixed resistor for Stripping high voltage DC BIAS voltage adjustment	For factory adjustment
VR41	Semi-fixed resistor for developer AC BIAS output voltage adjustment	For factory adjustment
VR42	Semi-fixed resistor for developer AC BIAS output frequency adjustment	For factory adjustment
VR51/VR52	For the developer DC BIAS control operation amplifier	For factory adjustment

② Imprint high voltage output current adjustment when replacing the high voltage unit.



a. The ampere meter is connected as indicated in the diagram on the left.
A sheet of polystyrene is laid beneath the ampere meter to prevent measurement error owing to high voltage leaks. Avoid touching the ampere meter during high voltage output as there is the possibility of shocks. Set the current value to the reference value(700 μ A) or the lalue befour replacement.

b.Adjustment Procedure of Exposure Lamp

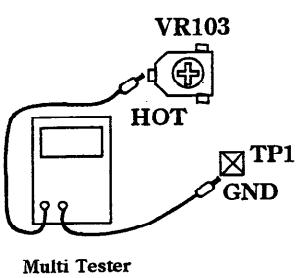
1) Power off the machine.
2) Adjust the light intensity based on the following combination of dip switches.

	Bit 4	Bit 3	Light	Intensity
	OFF	OFF	↑	Dark
※	OFF	ON		
	ON	OFF		
	ON	ON	↓	Light

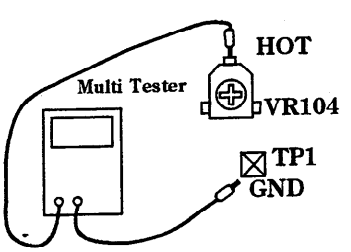
Note: ※ The combination of dip switches is set as shown in the above step 2 when the machine are shipped from the factory.

C. Adjustment procedure of semi-fixed resistor(VR103/VR104) for Fuser Motor Speed adjustment

1)Select the Paper Mode and wait for Ready condition.
2)Connect the multitester as shown in the figure and adjust the VR103 to the same DC voltage value between VR103 and TP1 before replacement of the main PCB.
3)Select the Film Mode and wait for Ready condition.
4)Connect the multitester as shown in the figure and adjust the VR104 to the same DC voltage value between VR104 and TP1 before replacement of the main PCB.



Note: It is adjustable the fuser motor speed while the fuser motor syops or it is intermittently working.



III Image Fault Measures

A Initial Inspection

(1) Installation Environment

Check to ensure that the location in which the copy machine is to be installed satisfies the following conditions:

① Connected to an independent power socket with main power voltage of 100V ±10% and 15A or more. The ground must also be connected. USA 120V 15A
EUR 220V ~ 240V 10A

② Located in an area with a temperature between 10°C and 30°C and humidity levels between 20% and 80%. Must not be located near drain outlets, water boilers, humidifiers or refrigerators.

③ Must not be located near naked flames, in dusty area or in areas where ammonia gas is generated.

④ Locations in direct sunlight are to be avoided.

⑤ Located in a well-ventilated area.

⑥ Ensure the feet of the copy machine are in firm contact with the floor and perfectly horizontal.

(2) Check the original documents for poor copying

Check to discover if trouble has been caused by the original document or by the machine.

(3) Check to see if any soiling or scratches exist on the exposure glass above the document illumination lamp, or on the document restraining board. Wipe with a neutral detergent or alcohol, etc., if soiled, and replace any scratched parts.

(4) Checking Respective Chargers

① Check for soiling of the respective chargers, and abnormalities of charge cable (damage, etc.).

② Clean the charge cables of the respective chargers, and shield plate.

③ Check for correct height of the respective charge cable.

④ Check that the respective chargers are completely attached.

(5) Inspecting Developer

① Confirm that the rollers at both ends of developer are in contact with the drum surface.

② Confirm that the developing agent is uniformly coated on the developing cylinder surface.

(6) Confirming Copying Paper

① Check that the specified paper is used.

② Check that paper does not get humid. Take a copy using a copying paper from a new copying paper pack.

(7) Checking the Periodic Maintenance Parts

① Read the numeric counter display of the machine. If the machine reaches the periodic replacement time (meter indication in units of meter), replace the parts.

(8) Others

If a machine is brought from the very cold atmosphere to a warm room, condensation is generated inside a machine causing various troubles.

[example]

① Condensation is generated on the exposure glass and short-focus lens causing blurred image.

② Drum is cooled down to its extreme (electrical resistance of the OPC unit is increased to high resistance) causing no contrast.

③ Condensation on the carger systems causes leaks.

④ Condensation on the paper feed, document guide plate causes errors in paper feed.

Note: If condensation should occur, clean respective parts with dry cloth. or leave the machine on 60 min.

B Countermeasures for Faulty Image

Copy quality is affected not only from the surface electric potential, but also from the entire process. Causes of trouble are varied, but major causes are listed as follows:

(1) No Power

Cause/Location of Defect	Check Item	Measure
AC power plug is disconnected	Is the AC power plug inserted to AC outlet?	Insert AC power plug correctly
Respective doors are not completely closed	Are the door completely closed?	Close doors
AC power is not supplied	Is the rated voltage supplied to AC outlet?	This is not the machine trouble. Explain it to user
Power cord is broken		Replace AC power cord

(2) Non-uniform Density

Cause/Location of Defect	Check Item	Measure
Position of the primary charge cable	Confirm according to the image adjustment basic procedure	Confirm according to the image adjustment basic procedure
Developer unit setting position	Is the roller of the developing cycliner block contacting with the senser drum?	Set the developing cylinder position correctly.
Plate spring on the top of back cover has worn out	Is the roller of the developing cycliner block contacting with the senser drum?	Correct the worn-out plate spring on the top of the back cover.
Roller has worn out	Has the roller of the developing cycliner block worn out?	Replace roller
Residual toner remains at one side	Is the toner in the develope unit accumulated at one side?	While feeding toner, place the remaining toner uniformly
Toner coating is non-uniform	Is the toner coated uniformly on the developing cylinder?	Check the area between the developer unit's plate and the cylinder. If chocked, remove it
Optical system has soiling	Is the exposure glass, lens array, or document retaining plate soiled?	Clean
Position of illumination correction plate	Is the position of the illumination correction plate appropriate against the light distribution of the document illuminating lamp?	Adjust position of the illumination correction plate
Charge cable	Is the position of the copying charge cable correct? Is the copying charge cable soiled?	Make adjustment referring to the adjustment procedure of the copy/striping charge cable. Clean too.

(3) Copy Density is Thin

Cause/Location of Defect	Check Item	Measure
Primary charger is soiled	Is the primary charge cable or grid wire soiled?	Clean or replace the respective charge cable and shield plate
Height of primary charge cable	Is the height of the primary charge cable correct?	Make adjustment referring to the adjustment procedure of the primary charge cable. Make adjustment referring to the basic image adjustment procedure.
Leakage of primary charger	Does the primary charger have leakage?	Replace the primary charger
Residual toner sensor unit	Is toner remaining in the developing unit?	Check the residual toner sensor circuit, then supply toner
Developing unit setting position	Is the roller of the developing cycliner block contacting with the senser drum?	Set the developing unit position correctly.
Plate spring on the top of back cover has worn out	Is the roller of the developing cycliner block contacting with the senser drum?	Correct the worn-out plate spring on the top of the back cover.
Toner coating is non-uniform	Is the toner coated uniformly on the developing cylinder?	Check the area between the developer unit's plate and the cylinder. If chocked, remove it. Check if the driving power of the developer unit's motor is correctly transmitted to the cylinder, magnet and agitator
Copy paper	Is the copy quality improved if new copy paper is used?	Replace copy paper. Check for correct operation of the de-humunanizing heater
Copying/striping charger	Is the copying/striping charger attached correctly? Is the position of the charge cable correct? Is the charge cable soiled?	Attach the charger correctly. Make adjustment referring to the adjustment procedure of the copy/striping charge cable. Clean the charge cable too.
U-turn part	Are the U-turn part and the chassis short-circuited?	Check that the U-turn part is not contacting with the metal part of the carrier. Replace varister
High voltage PWB board	Is high voltage being applied to the copying/striping charger?	Confirm according the charge test procedure described in Service Manual. Confirm conduction between the connectors of the copying/striping charger

(4) Some White Area is Covered by Black

Cause/Location of Defect	Check Item	Measure
Position of the primary charge cable	Confirm according to the image adjustment basic procedure	Confirm according to the image adjustment basic procedure
Grounding of drum earth	Is the drum shaft correctly connected to the chassis?	Attach the EARTH-DRUM corretly. Check electrical conduction
Optical system is soiled	Is the exposure glass, lens array, or document retaining plate soiled?	Clean
Cleaner unit	Is the drum cleaned correctly?	Attach the cleaner unit correctly
Eraser LED	Is the eraser LED illuminating?	Replace connector. Replace the erase PCB board
Developer's roller	Has the developer's roller worn out?	Replace the worn-out developer's roller
Developing bias	Is the developing bias correct?	Check the developing bias referring to the specification and adjustment producedure

(5) Black Stripe, Some White Area is Covered by Black Vertically

Cause/Location of Defect	Check Item	Measure
Primary charger is soiled	Is the primary charge cable or grid wire soiled?	Clean or replace
Optical system is soiled	Is the document illuminating lamp, exposure glass, lens array, or document retaining plate soiled?	Clean
Developer unit is soiled	Is soil or scar found in the rotating direction of the developing roler, position of which is corresponding to the black stripe or faulty black?	Clean. Or replace the fuser roller
Cleaner unit	Is soil or scar found on the surface of the sensor drum, position of which is corresponding to the black stripe or faulty black?	Clean the cleaner blade, or replace it
Eraser LED	Is the eraser LED soiled?	Clean or replace
Sensor drum	Is scar or black line image found in the rotating direction of the surface of the sensor drum?	Replace the sensor drum. If scar is found, investigate the cause creating the scar

(6) White Streaking, White Missing

Cause/Location of Defect	Check Item	Measure
Fuser	Turn OFF the power switch of the machine while copy paper is advancing. Is the white streaking or white missing not occurring in the copy image before passing through the fuser, but occurring in the copy image after it has passed through the fuser?	Check roller of the fuser. Clean the roller of the fuser. Clean the striping lever
Primary charger unit	Is the primary charge cable or grid wire soiled?	Clean or replace
Copying/striping charger	Is the copying/striping charge cable soiled?	Clean the charge cables, or replace. Adjust their height
Developer unit	Are their height corrrect? Is the toner accumulated at one side? Is the toner uniformly coated on the developer cylinder?	While feeding toner, place the remaining toner uniformly. Check the area between the developer unit's plate and the cylinder. If chocked, remove the choking toner. Clean the gap
Sensor drum	Is scar found in the rotating direction of the sensor drum surface which corresponds to the phenomena?	Replace the sensor drum. Ensure to investigate cause of scar
Copy paper	Take copy using a new copy paper	If copy quality is improved, the copy papers get humid. Improve the storage of copy paper

(7) Back of Copy Paper Soiled

Cause/Location of Defect	Check Item	Measure
Fuser	Is the press roll soiled?	Clean
Paper carrier	Is the carrier guide plate soiled?	Clean
Drum guide sheet	Is the drum guide sheet soiled?	Clean
Roller	Are the various rollers soiled?	Clean
Corona guard of copying/striping	Is the corona guard of the copying/striping charger soiled?	Clean

(8) Defective Fusing

Cause/Location of Defect	Check Item	Measure
Fuser roller	Is the defective fusing occur vertically?	Check if the roller gets scar
Heater	Is the heater lamp illuminated when the main power is turned ON?	Check according to the counter-measure for Function Trouble-shooting
Pressure roller	Is the pressure roller good?	Adjust the pressing power of the pressure roller
Error code display	Is E0 or E1 code displayed?	Check the machine following the result of self-diagnosis and counter-measure for trouble-shooting

(9) Copy Paper Leading Edge Error

Cause/Location of Defect	Check Item	Measure
Feed roller	Does the error occur at every leading edge of papers regardless of Roll Paper, or Manual Sheet	Clean feed roller or replace
Regist Roller (inside U-turn part)	Is the regist roller soiled, deformed or worn-out?	Clean or replace
Regist clutch	Does the regist clutch work correctly?	Clean or replace
Regist roller brake	Does the regist roller brake work correctly?	Check regist clutch according to the service mode, and replace
Document feed roller	Is the document feed roller soiled or damaged?	Replace the regist roller brake. Clean or replace
Document feed clutch	Does the document feed clutch work correctly?	Check it following the service mode. Replace the document feed clutch
Brake of the document feed roller	Does the brake of the document feed roller work correctly?	Replace the brake of the document feed roller
Leading regist adjustment	Can the leading regist be adjusted by changing the setting value?	Adjust it following the service mode

(10) Copy Position Error

Cause/Location of Defect	Check Item	Measure
Sensor drum	Does the copy position error occur at the interval of 25.13 cm?	Check the drum gear. Check to see if the contacting portion between the drum ends and the developer's roller has foreign material, is deformed or damaged.
Drum drive gear	Is there any regularity when copy position error occur?	Check to see if the drive gear and relay gear between the main motor and drum gear have foreign material or are deformed or damaged?
Cleaner	Is any vibration noise sounding while driving drum?	Check cleaner

(11) Poor Sharpness

Cause/Location of Defect	Check Item	Measure
Original document	Is the original document floating above the glass?	Check that the document retaining plate is not floating above the exposure glass.
Optical system is soiled	Is the exposure glass or lens array soiled?	Clean
Lens array position		Adjust the lens array position

(12) Copy Result is All White

Cause/Location of Defect	Check Item	Measure
The primary charge cable is broken	Is the primary charge cable or grid wire broken?	Make adjustment according to the grid wire adjustment procedure
Developer unit	Do the developing cylinder and magnet rotate during copying?	Check the respective drive gears. Check the developer's motor. Check the developer's motor controller PWB board

(13) Copy Result is All Black

Cause/Location of Defect	Check Item	Measure
Document illumination lamp	Is the document illumination lamp lit?	Check according to the Function Trouble-shooting
Grounding the earth of the	Is the drum shaft correctly connected to chassis?	Attach the EARTH-DRUM correctly, and check electrical conduction

IV Operation Fault Measures

(1) AC Power Cannot Be Turned ON

Cause/Location of Defect	Check Item	Measure
AC power plug is disconnected	Is the AC power plug connected to outlet?	Connect plug to AC outlet
AC power source is not supplied	Is the rated voltage supplied to the outlet?	This is not the trouble of copy machine. Explain to user
Interlock switch	Is the upper unit closed correctly?	Close the upper unit
AC power cord is broken	Is the rated voltage supplied between the terminal base (TB2) Ja-1 and Ja-3?	Replace the AC power cord
Power switch, interlock switch	Is the rated voltage supplied between the terminal base (TB1) Jb-2 and Jb-4?	Replace the power switch (S1), interlock switch (S2). Check AC power line wiring. Poor contact of AC power connector

(2) DC Power Cannot Be Turned ON

Cause/Location of Defect	Check Item	Measure
AC power supply is defective	Is the rated voltage supplied between J25-1 and J25-2, and between J26-1 and J26-2?	Refer to the previous item "(1) AC Power Cannot Be Turned ON". Replace the power transformer
MAIN board is defective	Connect leads of voltmeter to the following connector on the MAIN board. Are the rated voltage present?	Check each door switch (S6, S7, S8, S9, S10) Check wiring. Check poor contact of connectors. Replace the MAIN board

	+	-
24V	J23-2	J23-7
24V	J23-3	J23-6
24V	J23-4	J23-1
24V	J23-5	J23-1
24V	J24-1	J24-3
5V	TEST PIN T·P ⊕	TEST PIN T·P ⊖

(3) Copy Paper Feed Does Not Work (Roll Paper)

Cause/Location of Defect	Check Item	Measure
Roll Paper setting is defective	Is the Roll Paper set correctly?	Follow the counter-measure indicated in "Out of Roller Paper" and set the Roll Paper again
Feed roller ③ or feed roller ⑤ is soiled. Feed roller ⑤ movement and pressure	Follow the counter-measure indicated in "Out of Roller Paper" and manually rotate the roller ④ to check if the Roll Paper is advanced by the feed roller	Clean the feed rollers ③ and ⑤. Check movement and pressure of the feed roller ⑤. Replace the feed roler ⑤ and feed roller ③
Roll Paper rotation is defective. Paper path	Does the Roll Paper rotate smoothly? Check the paper path	Chek rotation of the Roll Paper and, check drive gear and relay gear. Check if foreign material exist in paper path. Check that the paper path is not deformed
Roll Paper feed clutch (CL2)	Does the voltage between the MAIN board connector J15-9-2 (+) and GND change from 24 V DC to 0 V at the correct timing?	Replace the clutch (CL2)

(4) Copy Paper Feed Does Not Work (Sheet Paper)

Cause/Location of Defect	Check Item	Measure
Sheet paper sensor switch (S11)	Measure electric conduction between the MAIN board connector J11-6-1 and J11-6-2. Is the resistance infinitive (ohms) when table is opened, and 0 ohm when table is closed?	Replace the sheet paper sensor switch (S11)
Sheet paper sensor (PH10)	Check according to the input test (sensor) of the service mode's operation/inspection mode	Replace the sheet paper sensor (PH10)
Feed sensor (PH5)	Check according to the input test (sensor) of the service mode's operation/inspection mode	Replace the sensor (PH5)
Feed clutch (CL4)	Does the voltage between the MAIN board connector J15-8-2 (+) and GND change from 24 V DC to 0 V at the correct timing?	Replace the feed clutch (CL4)

(5) Roll Paper Does Not Move in Reverse Direction

Cause/Location of Defect	Check Item	Measure
Roll Paper setting is defective	Is the Roll Paper set correctly?	Set the Roll Paper according to the insturction given in the trouble-shooting counter-measure in case of "Out of Roll Paper"
Roll Paper rotation is defective	Does the Roll Paper rotate smoothly?	Check Roll Paper rotation and the relay gear
Reverse clutch (CL3)	Does the voltage between the MAIN board connector J15-5-2(+) and GND change from 24 V DC to 0 V at the correct timing?	Replace the reverse clutch (CL3)

(6) Document is Not Advanced

Cause/Location of Defect	Check Item	Measure
READY state	Is the machine in READY state?	Wait until the machine enters the READY state
Original Document	Is the document length within the specified length?	Explain to user to use the document of the specified length. Expecially do not use the document whose rear side is black
Document feed roller	Does the document feed roller rotate when document is inserted?	Check timing belt
Document feed clutch (CL1)	Does the voltage between the MAIN board connector J15-4-2(+) and GND change from 24 V DC to 0 V at the correct timing?	Replace the document feed clutch
Document sensor (PH13)	Check according to the input test (sensor) of the service mode's operation/inspection mode	Replace sensor
Document regist sensor (PH2)	Check according to the input test (sensor) of the service mode's operation/inspection mode	Replace sensor
Document entrance (PH1) sensor	Check according to the input test (sensor) of the service mode's operation/inspection mode	Replace sensor

(7) Eraser Lamp Does Not Illuminate

Cause/Location of Defect	Check Item	Measure
Eraser lamp	Do the 9 lamps illuminate at the same time?	Replace eraser lamp board
MAIN board connector	Does the voltage between the MAIN board connector J16-1(+) and J16-2(-) go to 24 V DC during copying?	Replace the MAIN board. Check defective contact of the connectors and broken lead wires

(8) Toner Supply Display Does Not Turn ON or Turn OFF

Cause/Location of Defect	Check Item	Measure
Toner sensor cleaner	Is the toner sensor cleaner cleaning correctly?	Replace toner sensor cleaner
Toner sensor (TN)	Check according to the input test (sensor) of the service mode's operation/inspection mode	Check connection of the connectors and wirings. If there is no abnormalities, replace the toner sensor (TN).

(9) Waste Toner Display Does Not Turn ON or Turn OFF

Cause/Location of Defect	Check Item	Measure
Waste toner case	Is the Waste toner case set correctly?	Set the waste toner case again
Toner sensor (PH11)	Check according to the input test (sensor) of the service mode's operation/inspection mode	Check connection of the connectors and wirings. If there is no abnormalities, replace the toner sensor (PH11).

(10) Drum Striping Lever Does Not Work Correctly

Cause/Location of Defect	Check Item	Measure
Drum striping lever	When the solenoid of the drum striping lever is pushed manually, does the drum striping lever move smoothly?	Check coupler connecting the solenoid to the drum striping lever
Solenoid (SL2)	Turn on the main power. Does the voltage between the MAIN board connector J15-3-2(+) and GND change from 24 V DC to 0 V at the correct timing in the first copying after READY?	Check connection of the connectors and wirings. If there is no abnormalities, replace the solenoid of the drum striping lever (SL2).

(11) An Original Document Does Not Reverse

Cause/Location of Defect	Check Item	Measure
Setting of "Number of Copy"	Is the setting of "Number of Copy" from 2 to 9 copies?	Explain to the customer that an original document is ejected to rear when "1" is selected for "Number of Copy".
Manual Insertion Sheet Copy	Is the "Manual Insertion Sheet Copy" attempted?	Explain to the customer that an original document is ejected to rear when "Manual Insertion Sheet Copy" is selected.
Roll Paper Empty	Does the "Roll Paper Empty" occur during copying?	Explain to the customer that an original document is ejected to rear when "Roll Paper Empty" has occurred.
Original Document	Is the size of original document within the specified size?	Explain to the customer that an original document is ejected to rear if an original document is 1250 mm or longer.
Original Document Guide	Have you moved the "original document guide" to the right mode end after copying had started?	Explain to the customer that an original document is ejected to rear for protection of the original document if the "original document guide" is not moved to the right end in setting the "Number of Copy".
Original Document Reverse Clutch (CL9)	Enter the service mode and select the operation/check mode. Perform the Output Test 2 and check operation of the machine. Is voltage between the connector J28-03 and GND of the Main board about 0 V DC during ON and about 24 V during OFF period?	Check cable wiring from J28 to the original document reverse clutch. If the wiring is found normal; Replace the document reverse clutch, or Replace the Main board.
Original Document Reverse Motor **(M5)**	Enter the service mode and select the operation/check mode. Perform the Output Test 2 and check operation of the machine. Is voltage between the connector **J20** and GND of the Main board about 0 V DC during ON and about 24 V during OFF period?	Check cable wiring from J20 to the original document reverse motor. If the wiring is found normal; Replace the document reverse motor, or Replace the Main board.

(12) "E0" Lamp Lights

Cause/Location of Defect	Check Item	Measure
Internal short-circuit of thermistor (TH)	Turn OFF the main POWER switch. Remove J13 from the main board. Measure resistance between pins J13-4 and J13-5. (Is it about 0 Ω?)	Check cable wiring from J13 to the thermistor (TH). If the wiring is found normal; Replace the thermistor.
SSR is faulty.	Try to replace the SSR. Is the machine normal after the SSR is replaced?	Replace the SSR.
Main board	Try to replace the Main board. Is the machine normal after the Main board is replaced?	Replace the Main board.

(13) "E1" Lamp Lights

Cause/Location of Defect	Check Item	Measure
Thermistor (TH) is broken.	Turn OFF the main POWER switch. Remove J13 from the main board. Measure resistance between pins J13-4 and J13-5. (Is it about 1.4 MΩ to 2.2 MΩ?)	Check cable wiring from J13 to the thermistor (TH). If the wiring is found normal; Replace the thermistor.
Installation of thermistor (TH) is not good.	Is the thermistor pressed against the developing roller uniformly? Isn't it slanted or detached?	Attach it again correctly.
Thermistor (TH) gets dirty.	Check if there is any soiling or foreign material attached to the contacting surface of thermistor.	Clean the contacting surface of thermistor.
Thermo switch (TH1) is faulty.	Is resistance of the thermo switch about 0 Ω?	Replace the thermo switch.
Heater lamp (H1) is not connected properly.	Are both ends of the heater lamp connected correctly?	Re-connect it correctly.
Heater lamp is faulty.	Check if the heater lamp is broken.	Replace the heater lamp.
SSR is fauity.	Try to replace the SSR. Is the machine normal after the SSR is replaced?	Replace the SSR.
Main board is faulty. -	Try to replace the Main board. Is the machine normal after the Main board is replaced?	Replace the Main board.

(14) "E3" and "E4" Lamps Light

Cause/Location of Defect	Check Item	Measure
The cutter block is causing the trouble.	Turn OFF the main POWER switch. Turn the cutter gear manually. Does the cutter move correctly?	There must be no breakage of the rotating teeth, no foreign material or deformed teeth.
The cutter home position switch is faulty.	Turn OFF the main POWER switch. Check operation (ON, OFF) of the cutter home position switches SCUT T1, SCUT T2.	Check cable wiring from J18 to the cutter home position switch.
The cutter motor is faulty, or the Main board is faulty.	Enter the service mode and select the operation/check mode. Perform the Output Test 2 and perform the cutter operation test. Does the voltage between the connector J18-4 and J18-5 change momentarily? Note: Polarity of the voltage (0 to 24 V) is inverted depending upon the direction of cutter movement.	Check cable wiring from J18 to the cutter home motor. If the wiring is found normal: Replace the cutter unit Replace the Main board.

(15) "E6" and "E7" Lamps Light

Cause/Location of Defect	Check Item	Measure
The pocket door is causing the trouble.	Turn OFF the main POWER switch. Turn the worm gear of the pocket door motor manually. Does the pocket door move correctly?	Check if the rack gear of the pocket door has over-run. Check if the swing plate lever has not dropped from the rack gear. Check also if the worm gear and the motor output spindle are completely fixed.
The pocket door switch is faulty.	Turn OFF the main POWER switch. Turn the worm gear to close the pocket door manually. Do S19-2 turn ON and S19-1 OFF when the door is closed? Do S19-2 turn OFF and S19-1 ON when the worm gear is turned manually to **open** the door?	Check cable wiring from J19 to the pocket door switch. If the wiring is found normal: Replace the pocket door switch.
The pocket door motor is faulty, or the Main board is faulty.	Enter the service mode and select the operation/check mode. Perform the Output Test 2 and perform the pocket door operation test. Does the voltage between the connector J19-4 and J19-5 change momentarily (within two seconds)? Note: Polarity of the voltage (0 to 12 V) is inverted depending upon the open or close of the pocket door.	Check cable wiring from J19 to the pocket door motor. If the wiring is found normal: Replace the motor. Replace the Main board.

(16) "E9" and "EA" Lamps Light

Cause/Location of Defect	Check Item	Measure
Connection of the EXP lamp (FL1) is faulty.	Turn OFF the main POWER switch. Is the EXP lamp (FL1) connected correctly to the EXP lamp socket? Are the other connectors connected correctly?	Attach the lamp correctly. Make connections correctly.
EXP lamp (FL1) is faulty.	Is the end of the EXP lamp burnt to black?	Replace the EXP lamp.
The light sensing board is faulty.	Try to replace the light sensing board. Is the result of board replacement satisfactory?	Replace the light sensing board.
The Main board is faulty.	Is the voltage between the connector J24-1 (+) and J24-3 (-) of the Main board 24 V during stand-by mode?	Replace the Main board.

(17) "EC" Lamp Lights

Cause/Location of Defect	Check Item	Measure
Connection of the counter (CNT) is faulty.	Is the counter (CNT) connected correctly?	Make connections correctly.
Counter (CNT) is faulty, or main control board is faulty.	Enter the service mode and select the operation/check mode. Perform the Output Test 2 and perform the counter operation test. Does the voltage between the connector J15-1 and J15-2 of the Main board change momentarily?	Replace the counter. Replace the Main board.

(18) "ED" Lamp Lights

Cause/Location of Defect	Check Item	Measure
Connection of the DEV motor is faulty.	Are the connectors up to the DEV motor connected correctly?	Make connections correctly.
The Main board is faulty.	Enter the service mode and select the operation/check mode. Perform the Manual Charging Test. Does the voltage between the connector J17-4 (+) and J17-6 (–) of the Main board change to about 6 V to 0 V when the DEV motor is turned ON? Is the voltage between the connector J23-4 (+) and J23-1 (–) of the Main board about 24 V during stand-by mode?	Replace the Main board.
DEV motor (M2) is faulty, or main motor control board is faulty.		Replace the DEV motor. Replace the main motor control board.

(19) "EE" Lamp Lights

Cause/Location of Defect	Check Item	Measure
Connection of the main motor is faulty.	Are the connectors up to the main motor connected correctly?	Make connections correctly.
The Main board is faulty.	Enter the service mode and select the operation/check mode. Perform the Output Test 1 and perform the main motor operation test. Does the voltage between the connector J17-2 (+) and J17-6 (–) of the Main board change to about 6 V to 0 V when the main motor is turned ON? Is the voltage between the connector J23-4 (+) and J23-1 (–) of the Main board about 24 V during stand-by mode?	Replace the Main board.
Main motor (M1) is faulty, or main motor control board is faulty.		Replace the main motor. Replace the main motor control board.

(20) "EF" Lamp Lights

Cause/Location of Defect	Check Item	Measure
Connection of the fuser motor is faulty.	Are the connectors up to the fuser motor connected correctly?	Make connections correctly.
The Main board is faulty.	Enter the service mode and select the operation/check mode. Perform the Output Test 1 and perform the fuser motor operation test. Does the voltage between the connector J27-1 (+) and GND of the Main board change to 3.8 V to 0 V when the fuser motor is turned ON? Is the voltage between the connector J27-3 (–) and GND of the Main board about 2 V ? Is the voltage between the connector J23-2 (+) and J23-6 (–) of the Main board about 24 V ?	Replace the Main board.
Fuser motor (M3) is faulty, or fuser motor control board is faulty.		Replace the fuser motor. Replace the fuser motor control board.

(21) "—" Lamp Lights

Cause/Location of Defect	Check Item	Measure
	Is the waste toner bottle attached?	Attach the waste toner bottle.
	Did the waste toner exceed the specified amount?	Replace the waste toner bottle.
Waste toner bottle gets dirty.	Does the sensor of the waste toner get dirty?	Clean the waste toner bottle. If the waste toner bottle cannot be cleaned, replace the waste toner bottle.
Connection of the waste toner sensor (PH11) is faulty.	Are the connectors up to the sensor connected correctly?	Make connections correctly.
Waste toner sensor is faulty, or the Main board is faulty.		Replace the waste toner bottle. Replace the Main board.

V Self-Diagnosis

In this machine, function to make self-diagnosis by microcomputer is provided, and diagnosis is made at times and if it judges abnormal, trouble content is shown in the Indication Counter on operation panel in code.

Error codes and trouble contents are shown in followings.

E 0	Fuser Error High Temp.	• In case that Fuser Temp. exceeds 190°C.

E 1	Fuser Error
	Low Temp.
		• In case that Fuser Temp. has not reached the designated Temp. 130°C after the main power is turned ON.
		  • In case that Fuser Temp. has not reached the fusing temperature 130°C in 8 minutes.
		  • In case that Fuser Temp. has not reached the fusing temperature175°C in 8 minutes after reaching 130°C.
		• In case that the fusing temperature is higher than 130°C when the main power is turned ON.
		  • In case that Fuser Temp. has not reached 155°C in 8 minutes.
		  • In case that Fuser Temp. has not reached the fusing temperature165°C in 5 minutes after reaching 155°C.
		• During warm-up, the machine is controlled to175°C but the Fuser Temp. has not reached 145°C.
		• When the machine is controlled in "READY" state, the Fuser Temp. is lower than 120°C.
		• When the machine is controlled in "STAND BY" state, the Fuser Temp. is lower than 90°C.
		• When the machine mode is switched from Film mode to Paper/Drum, the machine has not entered "READY" staate in 5 minutes.

E 3	Cutter Error Cut Time Over	• In case that Cutter working has not ended in 2 sec. after starting of cutter working.
E 4	Cutter Error Switch Abnormal	• In case that both Cutter Home Position Switches (SCUT1 and SCUT2) sense "1" while cutter is working.
E 6	Pocket Door Error Time Over	• In case that Pocket Door working has not ended in 2 sec. after starting of Pocket Door working.
E 7	Pocket Door Error Switch Abnormal	• In case that both Open Sensing Switch and Close Sensing Switch sense "0" while Pocket Door is working.
E 9	EXP. Lamp Error Too Dark, Abnormal	• In case that light intensity of EXP. Lamp is less than its appropriate amount.
E A	EXP. Lamp Error Too Bright, Abnormal	• In case that light intensity of EXP. Lamp is more than its appropriate amount.
E C	Counter Error No Connection	• In case that Counter is not connected when Power is turned ON or after stop of Main Motor. Or Counter is defective.
E D	Dev. Motor Error LD	• In case that LD signal is sensed for 1 sec. continuously while Dev. Motor is rotating.
E E	Main Motor Error LD	• In case that LD signal is sensed for 1 sec. continuously while Main Motor is rotating.
E F	Fuser Motor Error LD	• In case that LD signal is sensed for 1 sec. continuously while Fuser Motor is rotating.

* LD signal: The signal which is output when motor does not rotate correctly.

--	Wasted Toner Error	In case that Wasted Toner Bottle is not set when Power is turned ON or Full of Wasted Tone is sensed.

o P	Cover Open	In case that one-of covers among Upper Unit Cover, Copy Exit Cover, Front Door Cover and Back-Top Cover is opened.

J0	Original Document Jam	• In case that Original Document length is outside the specified length (150mm ≦ Original Document ≦ 3000mm). • In case that STOP key is pressed while making copy. • In case that Original Document is left remained on PH1, PH2 or **PH13** when the main power is turned ON. < Applicable to 1880 only > • While an original document is being reversed, it does not arrive at PH2 within the specified time. • While an original document is being reversed, it does not arrive at PH13 within the specified time. • While an original document is being reversed, it does not arrive at PH1 within the specified time.
J1	Paper Jam near Copy Paper Entrance	• In case that Roll Paper has not reached PH5 within the specified time when searching for the top of Roll Paper during warm-up. • In case that Roll Paper has not reached PH6 within the specified time while making copy on Roll Paper. • In case that Roll Paper does not return to Home position within the specified time.
J2	Paper Jam near U-turn Part	• In case that Copy Paper has not reached PH7 within the specified time while making copy. • In case that Copy Paper is left remained on PH6 when the main power is turned ON.
J3	Paper Jam near Drum or Fuser	• In case that Copy Paper has not reached PH9 within the specified time while making copy. • In case that Copy Paper is left remained on PH7 or PH9 when the main power is turned ON. < Applicable to 1880 only > • While executing copying, a copy paper is not ejected from PH9 within the specified time.
J4	Paper Jam of the "Manual Insertion" Sheet Paper mode while copying with Roll Paper	• In case that Sheet Copy Paper is inserted by mistake while making copy on Roll Paper. • In case that Copy Paper is left remained on PH10 when the main power is turned ON.
J5	Paper Jam near U-turn Part (Sheet Paper mode)	• In case that Copy Paper has not reached PH7 within the specified time while making copy on Manual Insertion Sheet Paper. • In case that Copy paper is left remained on PH6 when the main power is turned ON in the Manual Insertion Sheet Paper mode.
J6	Paper Jam due to too long Manual Insertion Sheet Paper	• In case that copy paper length is outside the specified length (279 mm ≦ copy paper ≦ 3000 mm) .

* If both "READY" indication and "WAIT" indication are flashing, the machine is requesting any of the followings:

- Remove the copy paper from the Exit Cover.
- Remove the original document sheet from the machine.
- Remove the sheet copy paper from the machine.

After removal is complete, the "READY" indication will be illuminated if the machine is ready to take copy.

Ⅵ Service Mode

[1] General

There are following modes in Service Mode of this machine.

(1) Operation/Checking Mode
(2) Adjustment Mode

[2] Operation of Operation/Checking Mode

<How to Enter the Operation/Checking Mode>

1) Turn Power Switch OFF.
2) Remove Rear Lower Cover.
3) Turn ON Bit-4 and Bit-5 of SW2 on Main PCB Assy.
4) Turn Power Switch ON.
5) When READY indication is lit, desired Code No. of Menu is indicated on Indication Counter, if setting of SW6 on Main PCB Assy is made for desired Menu (Operation/Checking Mode Selecting Menu.)

<How to Exit from the Operation/Checking Mode>

1) Turn Power Switch OFF.
2) Turn OFF Bit-4 and Bit-5 of SW2 on Main PCB Assy.
3) Attach Rear Lower Cover.

[3] Operation/Checking Mode

(1) Operation/Checking Mode Setting Menu

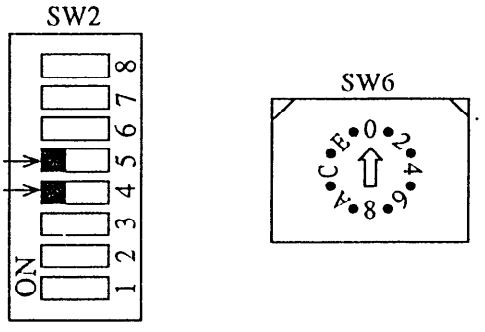
SW6 Setting	Indication Counter	Menu	Remarks
0	1.0	Manual Charging Test	
1	1.1	Rotation Drum Charging Test	Do not use.
2	1.2	Output Test-1	
3	1.3	Output Test-2	
4	1.4	Operation Panel Test (Indication)	
5	1.5	Operation Panel Test (Key Input)	
6	1.6	Input Test (Sensor)	
7	1.7	Pocket Door Life Test	
8	1.8	EXP. Lamp Life Test	
9	1.9	Not used.	Do not use.
A	1.A	Not used.	Do not use.
b	1.b	Not used.	Do not use.
C	1.C	Not used.	Do not use.
d	1.d	Not used.	Do not use.
E	1.E	Not used.	Do not use.
F	1.F	Original Retension Test	

Caution:

When Changing Setting Menu of SW6, it should be made while READY indication is lit. Function is not changed, if SW6 setting is changed while READY indication is not lit.

(2) Operation Method of Each Menu

* Manual Charging Test



(Indication) 1.0

① Turn the Power Switch OFF, and set Bit-4 and Bit-5 of SW2 to ON. Then turn Power Switch ON.

② Set SW6 to "0" after confimming of READY indication lightening, and test is started by pushing STOP/ALL CLEAR Key.

③ Each desired device becomes ON by pushing the key corresponding to each device after READY indication is blinking.

- PAPER/VELLUM/FILM Select Key: 1st. Corona ON/OFF (ROLL PAPER Indication is lit in case of ON.)
- UP Key: TR. Corona ON/OFF (SHEET PAPER Indication is lit in case of ON.)
- DOWN Key: SP. Corona ON/OFF (VELLUM Paper Indication is lit in case of ON.)
- CLEAR Key: Dev. Bias & Dev. Motor ON/OFF (FILM Indication is lit in case of ON.)
- LEAD. TRAIL. Select Key: Exp. Lamp. ON/OFF (Minus Indication is lit in case of ON.)

④ To turn OFF the device, push the key corresponding to each device pushed in (3) again.

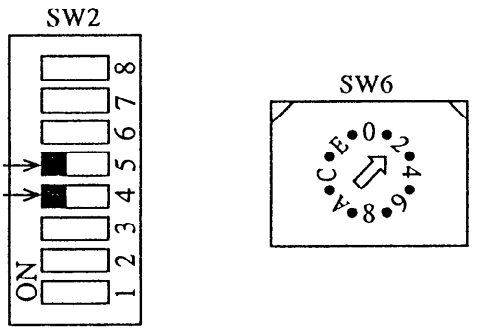
⑤ This test is terminated by pushing STOP/ALL CLEAR Key.

⑥ In case to continue this test, return to ② after lightening of READY indication. In case to change to other menu, set SW6 to the desired menu.

* While EXP. Lamp is lit, light intensity can be adjusted.

* As automatic stop timer is not provided, turn device OFF immediately after checking is complete.

* Output Test 1



(Indication) 1.2

① Turn the Power Switch OFF, and set Bit-4 and Bit-5 of SW2 to ON. Then turn Power Switch ON.

② Set SW6 to "2" after confirming of READY indication lightening, and test is started by pushing following key.

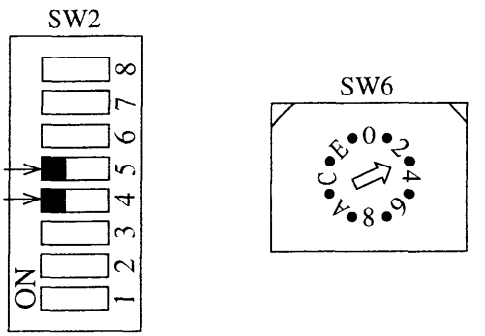
- PAPER/VELLUM/FILM Select Key: CL2 (ROLL PAPER Indication is lit in case of ON.)
- UP Key: CL4 (SHEET PAPER Indication is lit in case of ON.)
- DOWN Key: CL5 (VELLUM Indication is lit in case of ON.)
- CLEAR Key: CL6 (FILM Indication is lit in case of ON.)
- LEAD./TRAIL. Select Key: CL1 (Minus Indication is lit in case of ON.)
- DARKER Key: CL3 (F3 Indication is lit in case of ON.)
- LIGHTER Key: Main Motor & Eraser Lamp (F4 Indication is lit in case of ON.)
- SL Key: Fuser Motor (F5 Indication is lit in case of ON.)
- STAND BY Key: Exhaust Blower (F6 Indication is lit in case of ON.)

③ In order to stop the test, push the key selected in ② or STOP/CLEAR key. If the switches are left at ON, the test is turned OFF in one minute after start.

* Exhaust Blower rotates with FULL and LOW in every 5 sec. alternatively.

④ In case to continue this test, return to ② after lightening of READY indication. In case to change to other menu, set SW6 to the desired menu.

* Output Test 2



(Indication) 1.3

① Turn the Power Switch OFF, and set Bit-4 and Bit-5 of SW2 to ON. Then turn Power Switch ON.

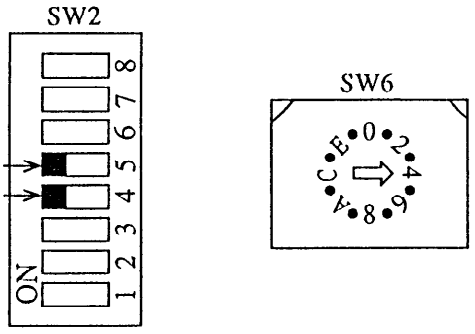
② Set SW6 to "3" after confirming of READY indication lightening, and test is started by pushing following Key.

- PAPER/VELLUM/FILM Select Key:
  Fuser Lamp (ROLL PAPER Indication is lit in case of ON.)
- UP Key: Drum Stripping Solenoid (SHEET PAPER Indication is lit in case of ON.)
- DARKER Key: Pocket Door (F3 Indication is lit in case of ON.)
- LIGHTER Key: Cutter (F4 Indication is lit in case of ON.)
- SL Key: Counter (F5 Indication is lit in case of ON.)
- DOWN Key: CL7 (VELLUM Indication is lit in case of ON.)
- CLEAR Key: CL9 (FILM Indication is lit in case of ON.)
- LEAD/TRAIL SELECT Key:
  CL8 (Minus Indication is lit in case of ON.)
- STAND BY Key: M5 (F6 Indication is lit in case of ON.)

③ In order to stop the test for Fuser Lamp and Drum Stripping Solenoid, push key selected in ② or STOP/CLEAR key. If the switches are left at ON, the test is turned OFF in 5 seconds after start.
Pocket door and cutter is turned OFF every one travel. It cannot be stopped in the middle of travel.
Counter is turned OFF at every count. It cannot be stopped in the middle of count.
In order to stop the test for CL7, CL8, CL9 and M5, push key selected in ② or STOP/CLEAR key. If the switches are left at ON, the test is turned OFF in one minute after start.

④ In case to continue this test, return to ② after lightening of READY indication. In case to change to other menu, set SW6 to the desired menu.

* Operation Panel Test (Indication)



(Indication) 1.4

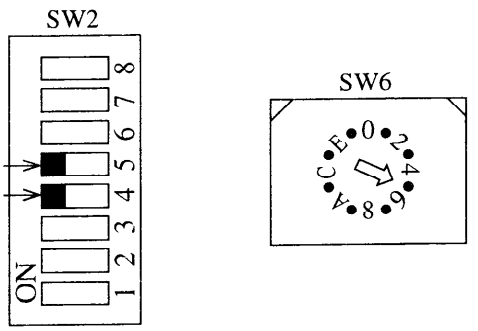
① Turn the Power Switch OFF, and set Bit-4 and Bit-5 of SW2 to ON. Then turn Power Switch ON.

② Set SW6 to "4" after confirming of READY indication lightening, and all Indication lamps on the operation panel are lit by pushing STOP/ALL CLEAR Key.

③ The test can be stopped in the middle of test by pushing STOP/ALL CLEAR Key. If the switches are left at ON, the test is turned OFF in 1 minute after start.

④ In case to continue this test, return to ② after lightening of READY indication. In case to change to other menu, set SW6 to the desired menu.

* Operation Panel Test (Key Input)



(Indication) 1.5

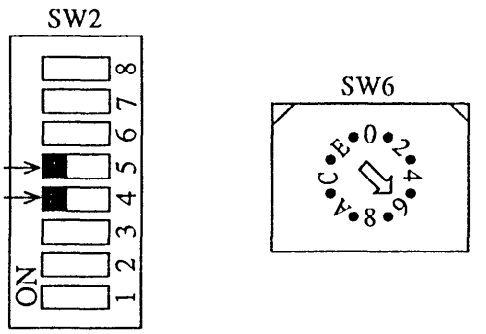
① Turn the Power Switch OFF, and set Bit-4 and Bit-5 of SW2 to ON. Then turn Power Switch ON.

② Set SW6 to "5" after confirming of READY indication lightening, and corresponding indication is lit by pushing following Key.

• PAPER/VELLUM/FILM Select Key:	Lightening of ROLL PAPER Indication
• UP Key:	Lightening of SHEET PAPER Indication
• DOWN Key:	Lightening of VELLUM Indication
• CLEAR Key:	Lightening of FILM Indication
• LEAD./TRAIL. Select Key:	Lightening of Minus Indication
• DARKER Key:	Lightening of F3 Indication
• LIGHTER Key:	Lightening of F4 Indication
• SL Key:	Lightening of F5 Indication
• STAND BY Key:	Lightening of F6 Indication
• STOP/ALL CLEAR Key:	Lightening of F7 Indication
• NUMBER OF COPY SETTING UP Key	Copy Counter: Indication
• Number of Copy Setting UP Key	COPY COUNTER: increments.
• Number of Copy Setting DOWN Key	COPY COUNTER: decrements.
• Number of Copy Setting CLEAR Key	COPY COUNTER: Clears to "1".
• Original Guide SW(S12)	COPY COUNTER:When the origanal guide is moved to the center direction from the right side during copy counter shows between 2 to 9,the Number of Copy setting starts flickering. When the original guide returns to right side, the Number of Copy setting turns normal indication.

③ To tum OFF the indications, press the key selected in step ② again.In case to change to other menu, set SW6 to the desired menu after lightning of READY indication.

* Input Test (Sensor)



(Indication) 1.6

① Turn the Power Switch OFF, and set Bit-4 and Bit-5 of SW2 to ON. Then turn Power Switch ON.

② Set SW6 to "6" after confirming of READY indication lightening, and checking for PH1 through PH13 are made. When sensing is made, corresponding indication is lit. In case to change to other menu, set SW6 to desired Menu after READY indication is lit.

- PH1 Lightening of ROLL PAPER Indication
- PH2 Lightening of SHEET PAPER Indication
- PH3 Lightening of VELLUM Indication
- PH4 Lightening of FILM Indication
- PH12 Lightening of Minus Indication
- PH5 Lightening of F1 Indication
- PH6 Lightening of F2 Indication
- PH7 Lightening of F3 Indication
- PH13 Lightening of F4 Indication
- PH9 Lightening of F5 Indication
- PH10 Lightening of F6 Indication
- PH11 Lightening of F7 Indication
- Toner Sensor Lightening of SL Indication

[4] Operation of Adjustment Mode

<How to Enter Adjustment Mode>

1) Turn Power Switch OFF.
2) Remove Rear Lower Cover.
3) Set SW1 and SW2 on Main PCB to the desired Menu (Adjustment Mode Setting Menu).
4) Attach Rear Lower Cover.
5) Turn Power Switch ON.

Adjustment Mode Setting Menu (SW2)

<table>
<tr><td colspan="11">SW2</td></tr>
<tr><td>Bit No.</td><td>Item</td><td colspan="9">Selected Contents</td></tr>
<tr><td>8</td><td>Jam Check Path Selection</td><td>OFF</td><td colspan="3">Normal Setting</td><td>ON</td><td colspan="3">Do not use</td></tr>
<tr><td>7</td><td>Device Error Check Path Selection</td><td>OFF</td><td colspan="3">Normal Setting</td><td>ON</td><td colspan="3">Do not use</td></tr>
<tr><td>6</td><td>Fuser Override Mode Selection</td><td>OFF</td><td colspan="3">Normal Setting</td><td>ON</td><td colspan="3">Do not use</td></tr>
<tr><td>5</td><td rowspan="2">Test Mode Selection</td><td>OFF</td><td rowspan="2">Normal Copy Mode</td><td>OFF</td><td rowspan="2">Do not use</td><td>ON</td><td rowspan="2">Do not use</td><td>ON</td><td rowspan="2">Operation /Checking Test Mode</td></tr>
<tr><td>4</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td></tr>
<tr><td>3</td><td>Counter Count Unit Selection Meter/Yard</td><td>OFF</td><td colspan="3">Meter Measurement
Minimum units = 0.1 meter</td><td>ON</td><td colspan="3">Yard measurement (0.09144 m)
Minimum units = 0.1 Yard</td></tr>
<tr><td>2</td><td rowspan="2">Fuser Stand-by Control Temp. Selection</td><td>OFF</td><td rowspan="2">140°C</td><td>OFF</td><td rowspan="2">130°C</td><td>ON</td><td rowspan="2">120°C</td><td>ON</td><td rowspan="2">110°C</td></tr>
<tr><td>1</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td></tr>
</table>

Adjustment Mode Setting Menu (SW1)

SW1										
Bit No.	Item		Selected Contents							
8	Fuser Film Mode Control Temp. Selection		OFF	150°C	OFF	155°C	ON	160°C	ON	165°C
7			OFF		ON		OFF		ON	
6	Fuser Paper, VELLUM Mode Temp. Selection		OFF	160°C	OFF	165°C	ON	170°C	ON	175°C
5			OFF		ON		OFF		ON	
4	EXP. Light Intensity Data Selection	F1	OFF	20.04%	OFF	20.04%	ON	22.52%	ON	24.60%
		F2		21.92%		22.82%		25.30%		27.88%
		F3		23.81%		25.60%		28.17%		31.07%
		F4		25.69%		28.37%		31.05%		34.33%
		F5		27.88%		30.85%		34.42%		38.89%
		F6		30.06%		33.33%		37.90%		43.45%
		F7		32.24%		35.81%		42.26%		48.02%
3		F8	OFF	37.60%	ON	40.67%	OFF	45.44%	ON	51.19%
		F9		43.06%		45.63%		49.50%		54.27%
		F10		48.41%		50.50%		53.67%		57.44%
		F11		53.87%		55.36%		57.74%		60.62%
		F12		59.23%		60.22%		61.81%		63.79%
		F13		64.68%		65.18%		65.97%		66.87%
		F14		70.04%		70.04%		70.04%		70.04%
2	Dev. Bias Amount Selection		OFF	160 V	OFF	150 V	ON	140 V	ON	Do not use
1			OFF		ON		OFF		ON	

Caution:

*** Do not use this Mode in the field.**

*** Values may be changed according to data.**