G026/G036
SERVICE MANUAL

⚠IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the machine and peripherals, make sure that the machine power cord is unplugged.
2. The wall outlet should be near the machine and easily accessible.
3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
4. If the print job process is started (the PC Interface LED lit) before the machine completes the warm-up or initialising period, keep hands away from the mechanical and electrical components because the machine starts making prints as soon as the warm-up period is completed.
5. The inside and the metal parts of the fusing unit become extremely hot while the printer is operating. Be careful to avoid touching those components with your bare hands.

HEALTH SAFETY CONDITIONS

1. Toner is non-toxic, but if you get it in your eyes by accident, it may cause temporary eye discomfort. Try to remove with eye drops or flush with water as first aid. If unsuccessful, get medical attention.

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

1. Do not incinerate toner cassette. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of used toner cassette in accordance with local regulations. (It is non-toxic supply.)
3. Dispose of replaced parts in accordance with local regulations.

LASER SAFETY

The Center for Devices and Radiological Health (CDRH) prohibits the repair of laser-based optical units in the field. The optical housing unit can only be repaired in a factory or at a location with the requisite equipment. The laser subsystem is replaceable in the field by a qualified Customer Engineer. The laser chassis is not repairable in the field. Customer engineers are therefore directed to return all chassis and laser subsystems to the factory or service depot when replacement of the optical subsystem is required.

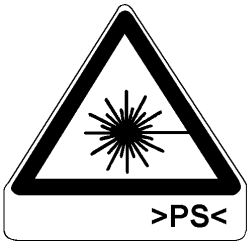
⚠WARNING

Use of controls, or adjustment, or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

⚠WARNING FOR LASER UNIT

This machine contains a laser beam generator. Laser beams can cause permanent eye damage. Do not open the laser unit or look along the laser beam path while the main power is on.

CAUTION MARKINGS:



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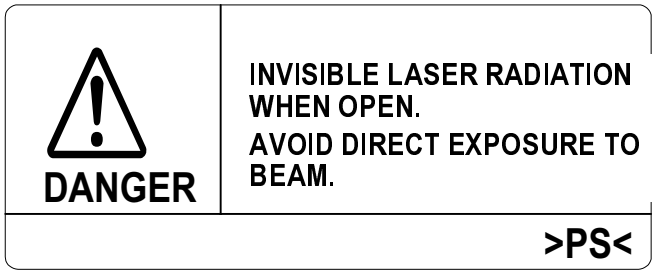

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⚠CAUTION FOR LITHIUM BATTERY (MEMORY BACK-UP)

The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacture's instructions.

Trademarks

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General Notice:
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1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Type	Copier/Printer G026: Flatbed scanner, Copier, PC Printer G036: Flatbed scanner, ADF, Copier, PC Printer
Document Size	Flatbed Scanner Width: Within 216 mm [8.5"] Length: Within 355.6 mm [14"] ADF (G036 only) Width: 91 mm - 216 mm [3.6" - 8.5"] Length: 140 mm - 355.6 mm [5.5" - 14"]
Document Weight:	Equivalent to 60 g/m² - 90 g/m² (0.05 mm to 0.2 mm [2 mils to 8 mils])
Document Feed	Face down
ADF Capacity	10 sheets
Scanning Method	CCD unit (including LED array)
Scan Resolution	Main scan: 300 dpi Sub scan: 150 - 600 dpi (Depends on reduction/enlargement ratio)
Printing System	Laser printing, plain paper, dry toner
Print Speed	Copier: 6 cpm Printer: 6 ppm
Paper Size	Upper Paper Tray Width: 91 mm - 216 mm [3.6" - 8.5"] Length: 140 mm - 355.6 mm [5.5" - 14"] Lower Paper Tray (Option) A4, 8½" x 11"
Paper Capacity	Upper Paper Tray: 100 sheets (Plain paper) Lower Paper Tray (Option): 250 sheets (Plain paper)
Printer Resolution	600 dpi x 600 dpi (Enhanced 1200 dpi x 600 dpi with smoothing in the PC print mode)

PC Connection	PC: PC/AT Compatible Interface: IEEE-1284 PDL: PCL5e Compatible
Power Supply	AC 120 V 60 Hz AC 220 V - 240 V 50 Hz/60 Hz
Power Consumption (without optional paper feed unit)	Standby (Pre heating mode): 120 V: 75 W (Normal) 300 W (Maximum) 220 V: 75 W (Normal) 255 W (Maximum) 240 V: 75 W (Normal) 280 W (Maximum) Standby (Sleep mode): 120 V: 14.0 W (Normal) 15.0 W (Maximum) 220 V: 14.5 W (Normal) 15.0 W (Maximum) 240 V: 14.7 W (Normal) 15.0 W (Maximum) Copying: 120 V: 240 W (Normal) 540 W (Maximum) 220 V: 240 W (Normal) 480 W (Maximum) 240 V: 240 W (Normal) 540 W (Maximum) Printing: 120 V: 210 W (Normal) 530 W (Maximum) 220 V: 215 W (Normal) 470 W (Maximum) 240 V: 215 W (Normal) 530 W (Maximum)
Operating Environment	Temperature: 10ºC - 35ºC [50ºF - 95ºF] Humidity: 15% - 80%
Recommended Environment	Temperature: 15ºC - 25ºC [59ºF - 77ºF] Humidity: 30% - 70%
Dimensions (W x D x H)	Main Unit: G026: 352 mm x 576 mm x 249 mm (13.9" x 22.7" x 9.8") G036: 352 mm x 576 mm x 297 mm (13.9" x 22.7" x 11.7") (Excluding trays and optional unit) Optional Paper Feed Unit 332 mm x 523 mm x 79 mm (13.1" x 20.6" x 3.1")
Weight	G026: 15.0 kg [33.0 lb] G036: 15.5 kg [34.1 lb] (Including toner cassette) Optional Paper Feed Unit 2.8 kg [6.2 lb]

1.2 FEATURES

Equipment

Features	G026	G036
ADF	-	✓
Flatbed Scanner	✓	✓
Paper Feed Unit	option	option
Software Counter	✓	✓
Parallel Interface	✓	✓
Second Printer Interface	✓	✓

Video Processing Features

Features	G026	G036
Auto Image Density Control	✓	✓
Halftone (Dithering & Error diffusion)	✓	✓
Resolution	✓	✓
Smoothing	✓	✓

Copier Features

Features	G026	G036
Auto Image Density	✓	✓
Photo Mode	✓	✓
Reduction/Enlargement	✓	✓
Zoom	✓	✓
Electronic Sorting	-	✓
Memory Copy	✓	✓

Other User Features

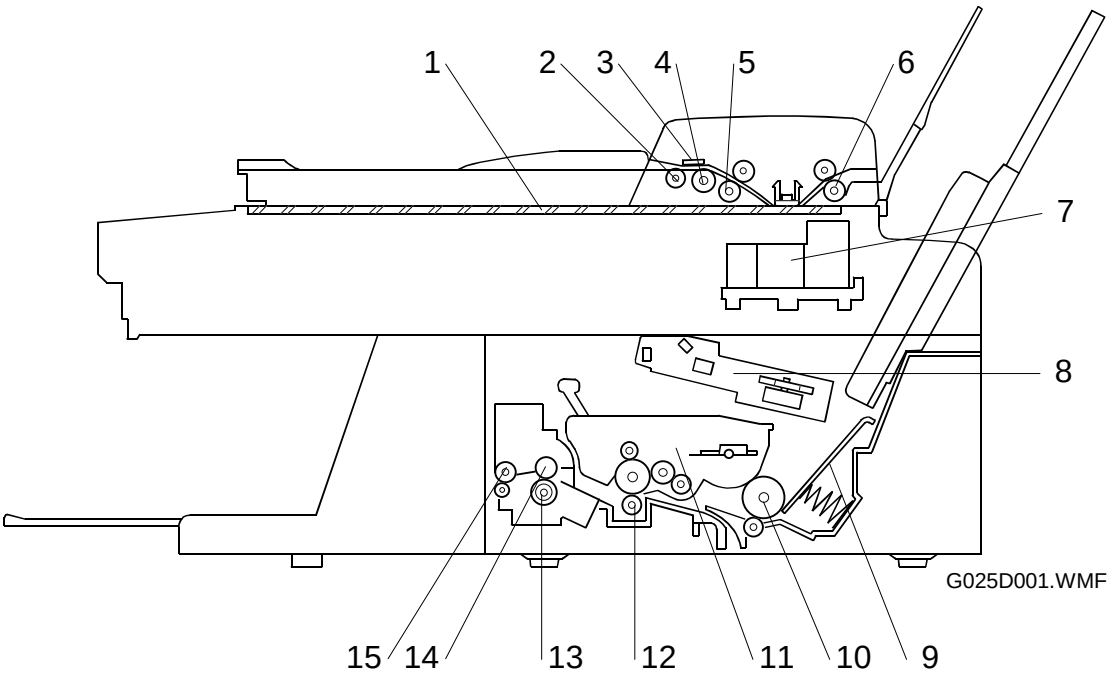
Features	G026	G036
Language Selection	✓	✓
Multi-copy Mode (up to 99)	✓	✓
Power Saver Mode (standby mode)	✓	✓
Toner Saving Mode	✓	✓
User Parameters	✓	✓

Service Mode Features

Features	G026	G036
Country Code	✓	✓
Operation Panel Test (Key)	✓	✓
Operation Panel Test (LED)	✓	✓
Operation Panel Test (LCD)	✓	✓
RAM Clear	✓	✓
RAM Display/Rewrite	✓	✓
RAM Dump	✓	✓
RAM Test	✓	✓
System Parameter List	✓	✓

1.3 COMPONENT LAYOUT

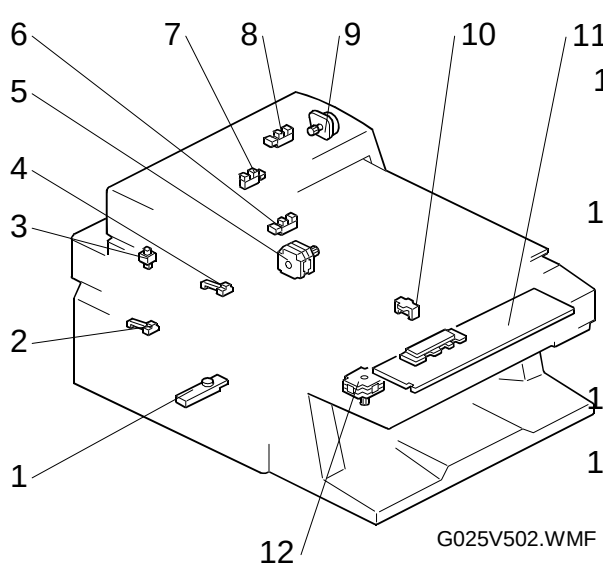
1.3.1 MECHANICAL COMPONENTS



No.	Name	Description
1	Exposure Glass	Original is placed here for scanning.
2	Pick-up Roller (G036 only)	Picks up pages of the document from the document table one at a time.
3	Separation Tab (G036 only)	Prevents more than one sheet from feeding into the scanner.
4	Document Feed Roller (G036 only)	Feeds the document to the document feed-in roller.
5	Document Feed-in Roller (G036 only)	Feeds the document through the scanning area.
6	Document Feed-out Roller (G036 only)	Feeds the document out from the scanning area.
7	CCD Unit	Contains the CCD and LED array.
8	Laser Unit	Consists of the laser diode unit, cylindrical lens, f-theta lens, polygon mirror motor, and other laser optical components.
9	Upper Tray Bottom Plate	Presses paper stacked in the upper paper tray against the paper feed roller.
10	Paper Feed Roller	Picks up the top sheet of paper from the stack in the upper paper tray and feeds it into the transfer area.
11	Toner Cassette	Consists of the OPC drum, toner, toner application roller, development roller, charge brush roller, cleaning blade, and other development components.

No.	Name	Description
12	Transfer Roller	Applies a charge to the paper to pull the toner off the drum and onto the copy paper.
13	Pressure Roller	Applies pressure to the paper during fusing.
14	Hot Roller	Fuses the toner to the copy paper.
15	Paper Exit Roller	Feeds the paper out of the printer.

1.3.2 ELECTRICAL COMPONENTS



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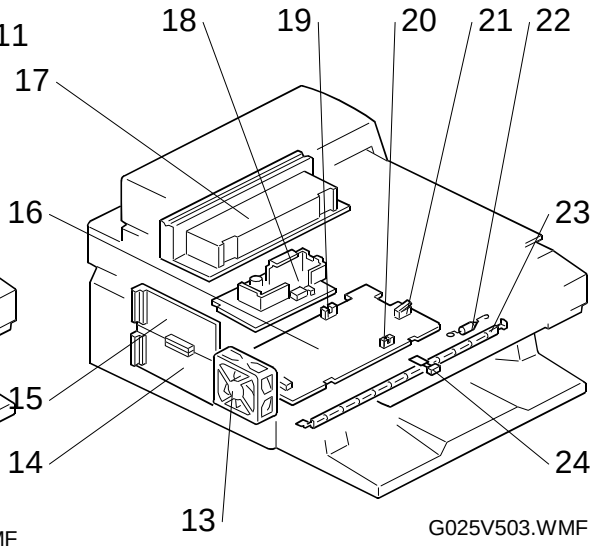

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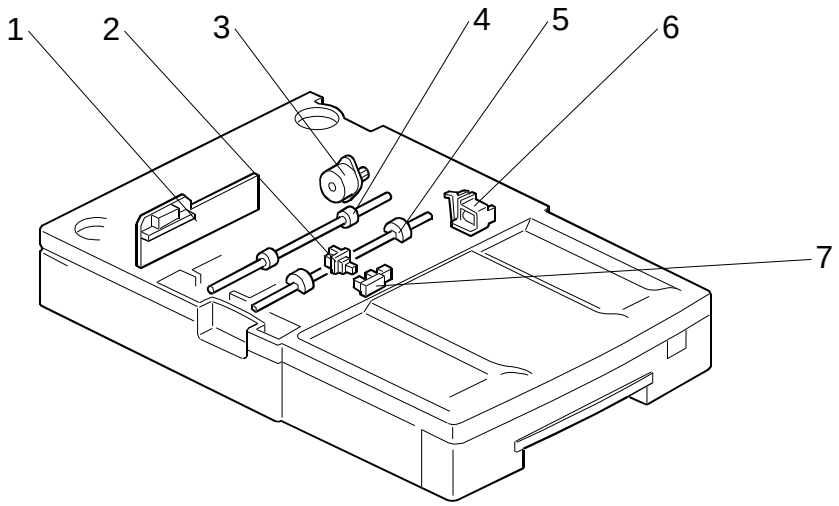
No.	Name	Description
1	Toner End Sensor	This detects when the toner has run out.
2	Paper Width Sensor	This detects whether the paper in the upper paper tray is wider than 203 millimeters or not.
3	Platen Cover Switch (G036 only)	This detects when the platen cover is opened.
4	Paper End Sensor	This detects when the paper in the upper paper tray has run out.
5	Main Motor	This dc motor drives the toner cassette, paper feed mechanism, and fusing unit.
6	Home Position Sensor	This detects when the CCD unit is at the home position.
7	Document Sensor (G036 only)	This detects the presence of a document in the feeder.
8	ADF Registration Sensor (G036 only)	This detects when the document has reached the registration sensor.
9	ADF Motor (G036 only)	This stepper motor drives the ADF mechanism.
10	Paper Pick-up Solenoid	This releases the cam stopper to pick up a sheet of paper.
11	Operation Panel	This board controls the operation panel.
12	Scanner Motor	This stepper motor drives the book scanner.
13	Fan Motor	This blows hot air out of the machine.
14	Control Board	This board controls the machine.
15	Scanner Control Board (SCB)	This board controls the scanner components.
16	Mechanical Control Board (MCB)	This board controls the printer components.

No.	Name	Description
17	CCD Unit	This includes the CCD and LED array. The CCD reads and converts the light reflected from the document into an analog video signal. The LED array illuminates the document.
18	Power Supply Unit (PSU)	This board supplies power to the machine.
19	Paper Registration Sensor	This detects when the paper has reached the registration sensor.
20	Paper Exit Sensor	This detects when the paper has been fed out of the fusing unit
21	Interlock Switch	If the upper cover is open, this interlock switch cuts the +5VLD power supply for the laser diode and the +24V power supply for the fan motor, polygonal mirror motor, main motor, and other components.
22	Thermofuse	This interrupts the ac power supply to the fusing lamp if the temperature of the thermostat surface exceeds 250°C.
23	Fusing Lamp	This fuses the toner to the paper.
24	Thermistor	This monitors the temperature inside the fusing unit.

1.3.3 OPTIONAL PAPER FEED UNIT



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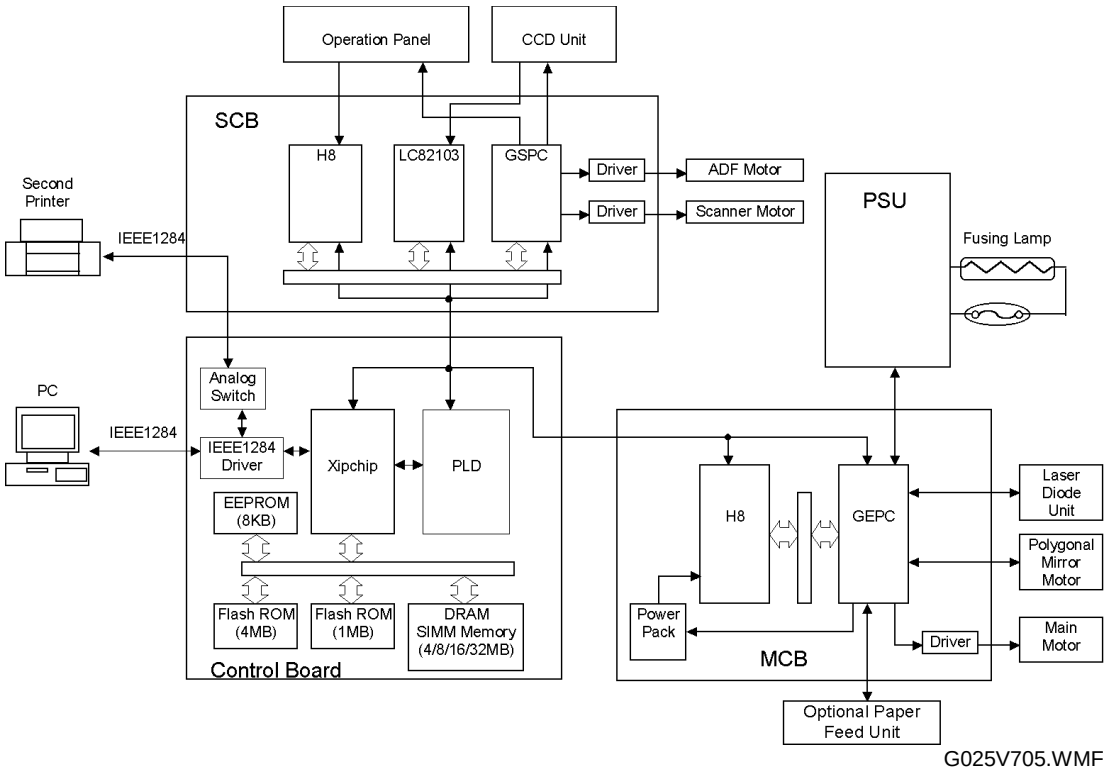
No.	Name	Description
1	Paper Feed Unit Control Board	This board receives power and control signals from the mechanical control board. This board drives the motor and solenoid in the optional paper feed unit.
2	Paper Tray Sensor	This detects whether the lower paper tray is set correctly.
3	Paper Feed Motor	This motor drives the paper pick-up roller and paper feed roller.
4	Paper Feed Roller	This feeds paper from the lower paper tray into the machine.
5	Paper Pick-up Roller	This picks up the top sheet of paper from the stack in the lower paper tray and feeds it to the paper feed roller.
6	Paper Feed Solenoid	This controls the paper feed clutch.
7	Paper End Sensor	This detects when paper in the optional paper feed unit has run out.

1.4 OVERALL MACHINE CONTROL



This machine contains a control board, mechanical control board (MCB), scanner control board (SCB), and power supply unit (PSU).

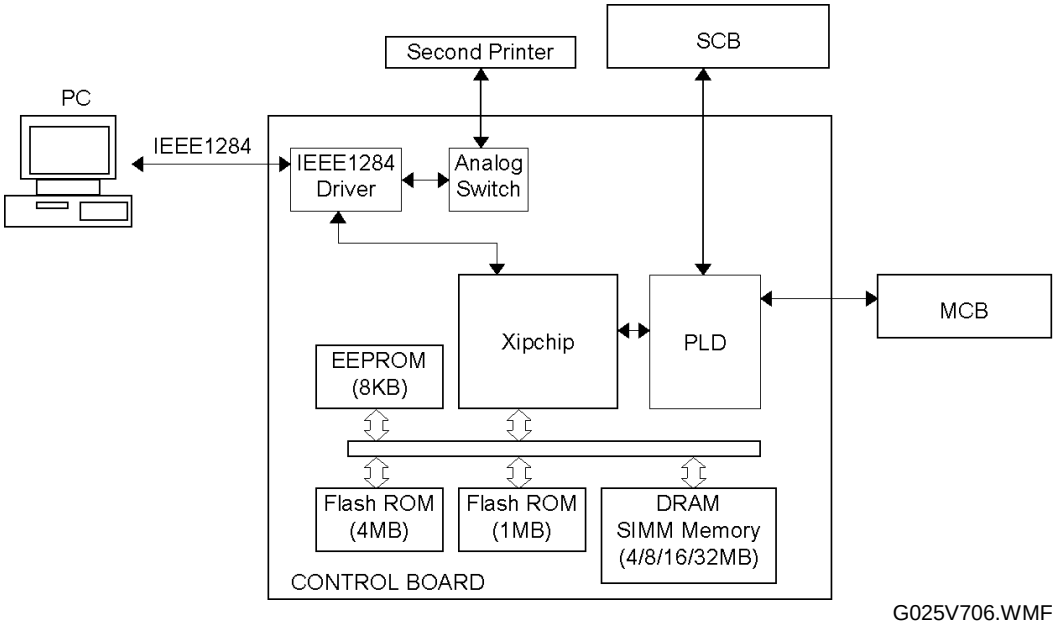
The control board controls the system and interfaces with the SCB, MCB, and PC.

The MCB controls devices related to the printer port, and the optional paper feed unit. It also has an onboard power pack which generates high voltage supplies necessary for the printing process.

The SCB controls devices related to the scanner.

The PSU generates dc +24 volts, +5 volts and -5 volts and supplies them to the boards. It also supplies ac power to the fusing lamp.

1.4.1 CONTROL BOARD



Overall

The control board controls the machine with the assistance of the mechanical control board (MCB) and scanner control board (SCB). It contains a Xipchip, PLD, flash ROM, EEPROM, DRAM, IEEE1284 connector, driver and analog switch. The DRAM is plugged into a SIMM socket so that it can be changed easily by a user.

Functions

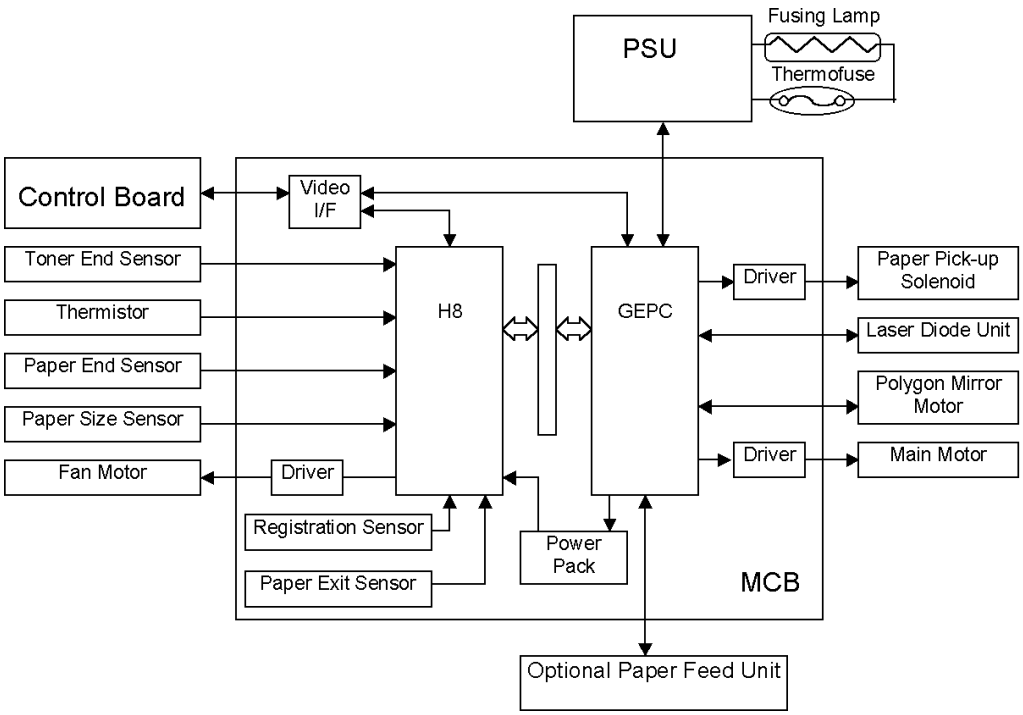
1. Scanning process control
2. Printing process control
3. Halftone image process (photo1: dithering, photo2: error diffusion)
4. Smoothing control
5. JBIG/ABIC control
6. IEEE1284 I/O port control
7. Second printer control

Components

1. Xipchip
   This is a multi-function peripheral controller. It functions as a CPU and an image processor.
2. Memory
   - Flash ROM (4 MB/1 MB): For the firmware
   - EEPROM (8 KB): For individual data such as country code, factory adjustments and so on.
   - DRAM (4 MB as standard): Working area for the Xipchip, image data, and so on.
3. PLD
   This chip functions as the interface for the SCB and MCB.
4. IEEE1284 driver
   This chip is the IEEE1284 parallel interface driver.

Analog switch
This switch makes this machine function as a printer exchanger. Data for printing passes through this switch to the second printer.

1.4.2 MCB (MECHANICAL CONTROL BOARD)



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Overall

The mechanical control board (MCB) controls devices related to the printer and optional paper feed unit.
The MCB contains a CPU (H8), peripheral control gate array (GEPC), video I/F chips, motor drivers, power pack, and on-board sensors.

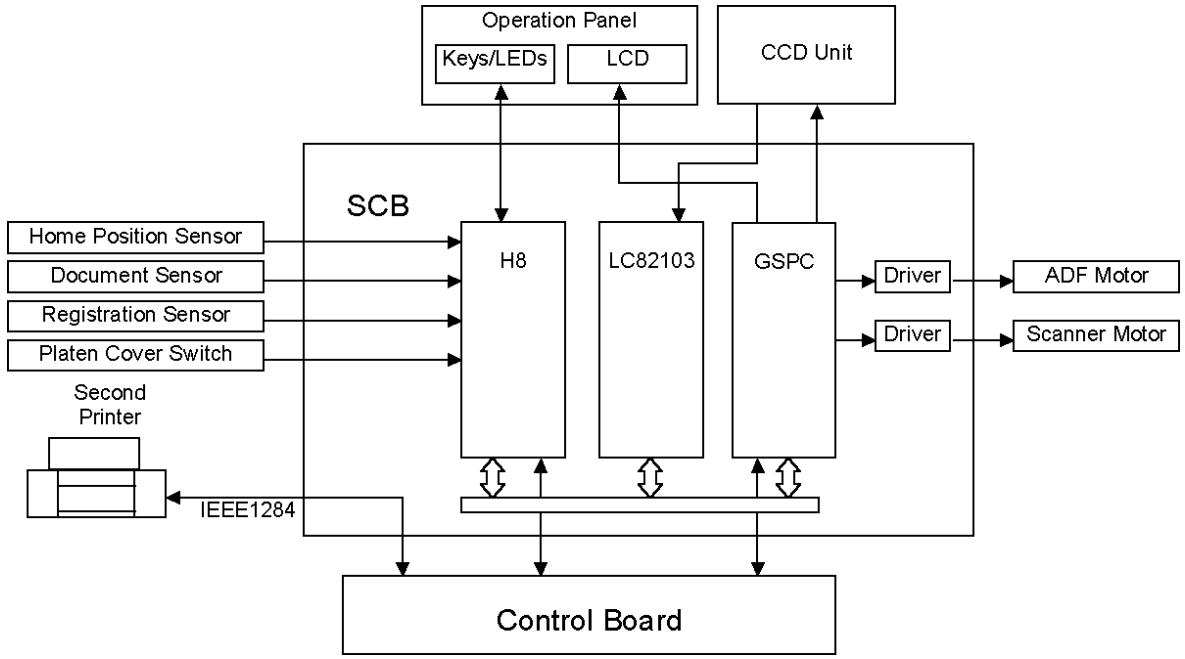
Functions

1. To control the main motor, laser diode driver, polygon mirror motor, sensors, and so on.
2. To control fusing temperature through the power supply unit (PSU).
3. To generate high voltages for development bias, charge voltage, and transfer voltage.
4. To control the optional paper feed unit.

Contents

1. H8
   This eight-bit CPU controls the MCB. It receives outputs from sensors and the thermistor.
2. GEPC
   This chip contains an I/O port and controls the main motor, laser diode driver, polygon mirror motor, optional paper feed unit, and so on. This chip generates the pulse width modulation signal to control the power pack.
3. Video I/F
   This chip is the interface for the control board.
4. Sensors
   The registration sensor and paper exit sensor are built into this board.

1.4.3 SCB (SCANNER CONTROL BOARD)



G025V508.WMF

Overall

The scanner control board (SCB) controls devices related to the scanner unit and operation panel. The SCB contains a CPU (H8), peripheral control gate array (GSPC), image processing LSI (LC82103), motor drivers, and an IEEE1284 connector for the second printer.

Functions

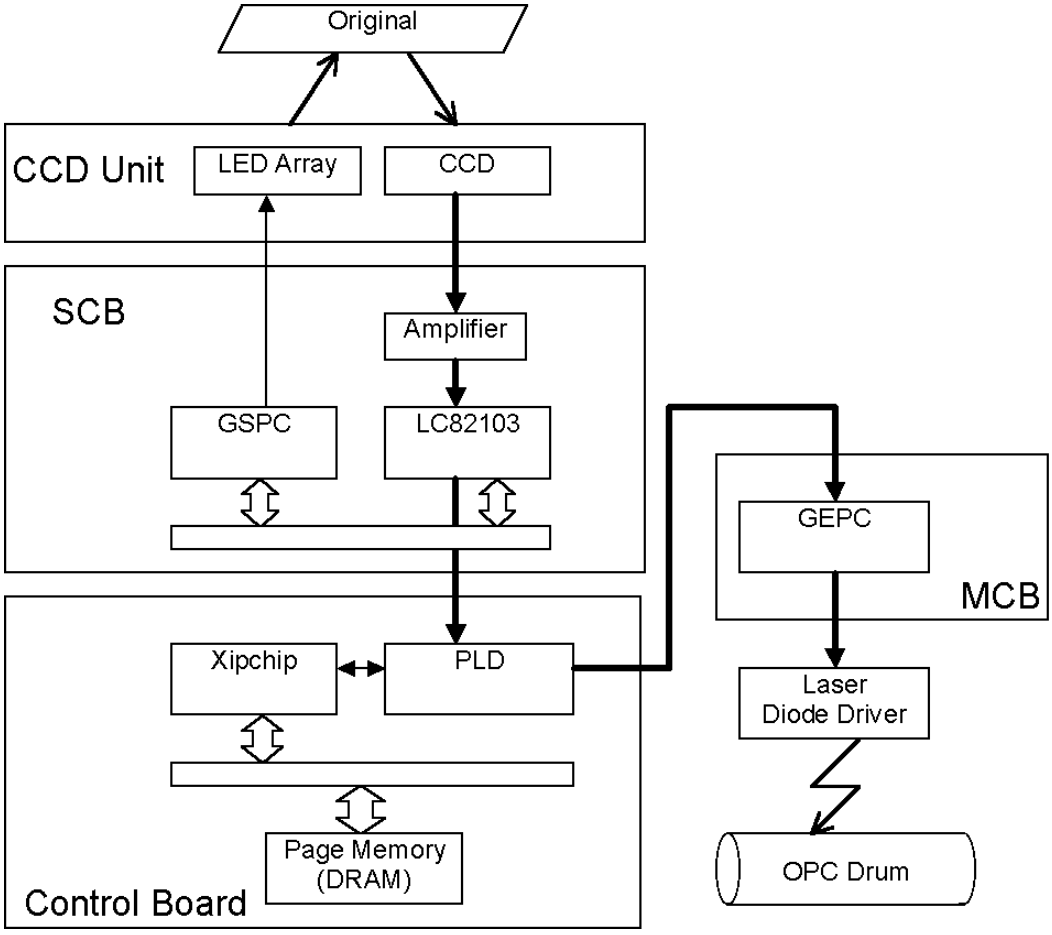
1. Flatbed scanner mechanism control
2. ADF mechanism (G036 only) control
3. CCD unit control
4. Operation panel control
5. Second printer interface

Contents

1. H8
   This eight-bit CPU controls the SCB. It receives output from sensors.
2. GEPC
   This chip contains an I/O port and it controls scanner motor, ADF motor (G036 only), CCD unit, and LCD display.
3. LC82103
   This chip is an image processing LSI. It converts the analog signal from the CCD unit to a digital signal.

1.5 VIDEO DATA PATH

1.5.1 COPYING



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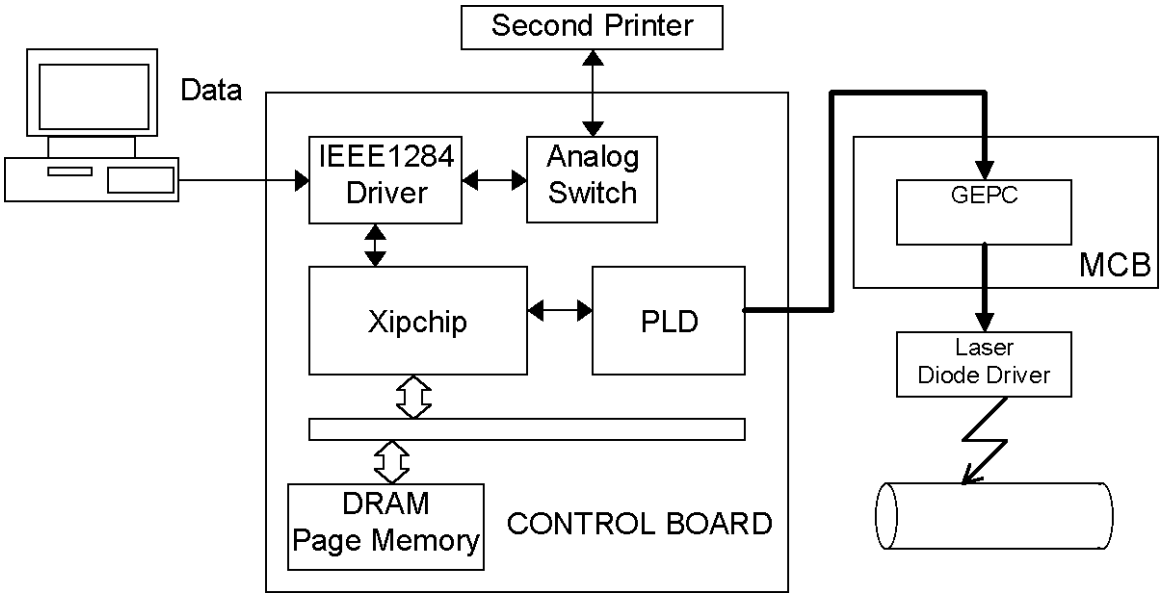
The CCD generates an analog video signal from the light reflected from the original.
The scanned data passes to the scanner control board (SCB). The SCB converts scanned video data from the analog signal to a digital signal. Then the data passes to the control board. The control board does digital video data processing, such as halftone (dither/error diffusion), reduction/enlargement, and smoothing. Then it stores the processed data in the page memory. The processed data passes to the mechanical control board (MCB). The MCB drives the laser diode based on the processed data signal. Then, the laser beam writes a latent image on the drum.

1.5.2 PC PRINTING



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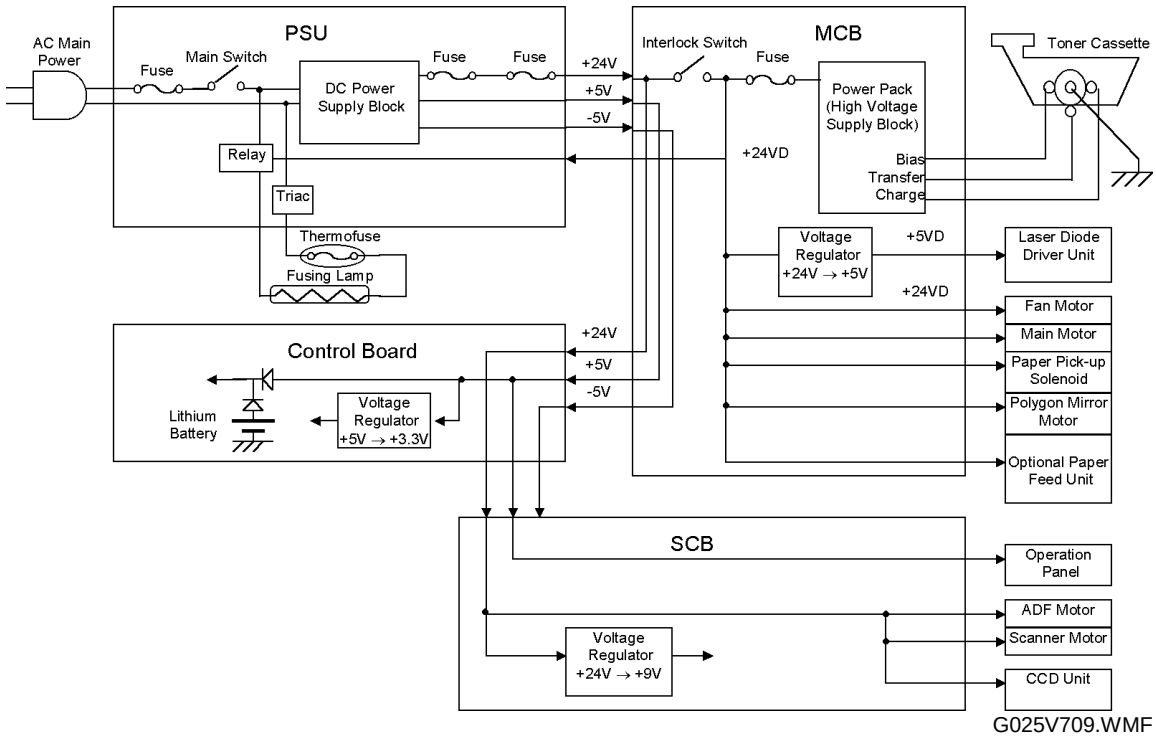
Data from the PC passes to the control board through the IEEE1284 driver. If the analog switch is changed over the second printer by pressing the second printer key on the operation panel, the video data passes to the second printer.
The control board does digital video data processing such as halftone (dither/error diffusion), reduction/enlargement, and smoothing. Then it stores the processed data in the page memory. The processed data passes to the mechanical control board (MCB).
The MCB drives laser diode based on the processed data signal. Then, the laser beam writes a latent image on the drum.

1.6 POWER DISTRIBUTION



The power supply unit (PSU) supplies +24 volts, +5 volts, and -5 volts dc power to the mechanical control board (MCB). The MCB generates +5 volts from the +24 volts for the laser diode driver, and it also generates high voltage power for development bias, charge voltage, and transfer voltage. The control board generates +3.3 volts from the +5 volts supply, which is used internally. The scanner control board (SCB) generates +9 volts from the +24 volts supply, which is used internally.

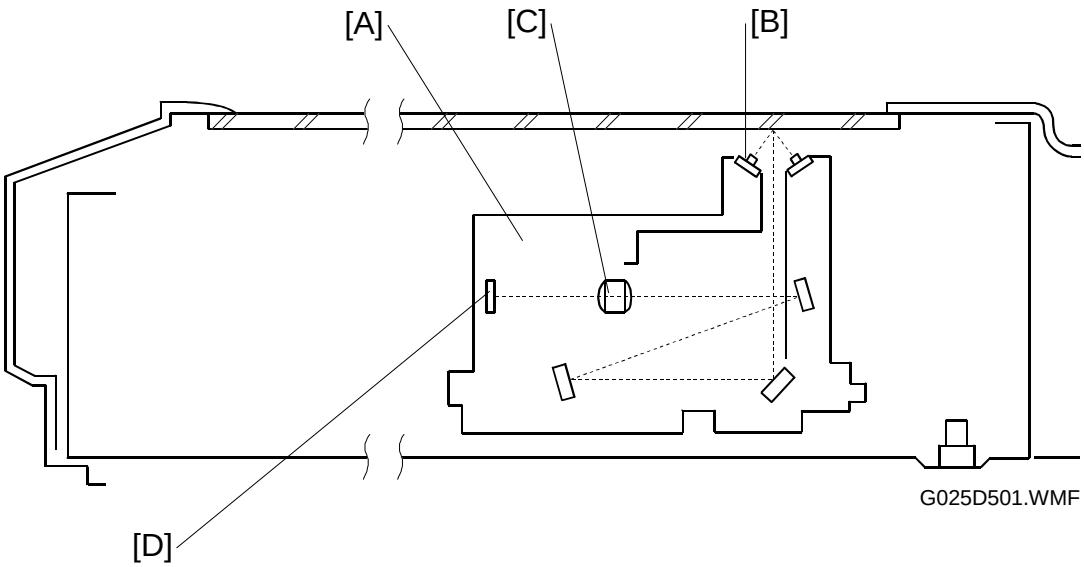
The MCB contains an interlock switch, which is opened by opening the upper cover. If this switch is opened, the +24 volt dc power is cut and the power to the following devices is shut off.

- Power pack
- Main motor, fan motor, polygon mirror motor
- Laser diode driver
- Fusing lamp
- Paper pick-up solenoid
- Optional paper feed unit

2. DETAILED SECTION DESCRIPTIONS

2.1 SCANNING

2.1.1 OVERVIEW

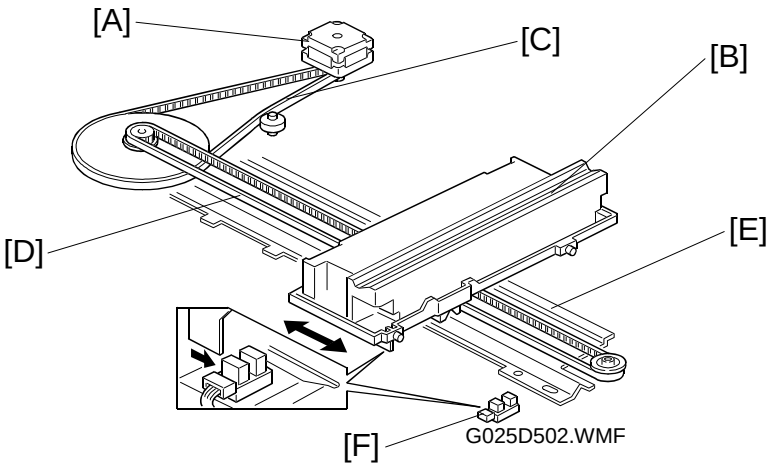


The CCD unit [A] consists of an LED array [B], 3 mirrors, a lens [C], and a CCD [D].

During a copy cycle, the light from the LED array is reflected off the original, and then is transferred onto the CCD via 3 mirrors and a lens.

The CCD unit moves under the exposure glass to scan a book original. When scanning a sheet original using the ADF, it remains at the ADF scan line.

2.1.2 CCD UNIT DRIVE

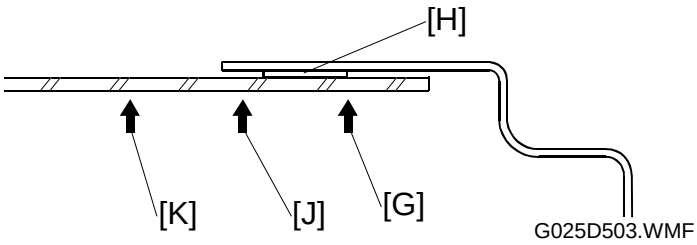


A stepper motor [A] is used to drive the CCD unit [B]. The motor drives the CCD unit through the timing belt [C] and the drive belt [D]. The CCD unit moves along the guide rail [E].

The home position sensor [F] detects when the CCD unit is at the home position.

The motor speed depends on the selected reduction or enlargement ratio.

When the machine is turned on, it checks the home position sensor. If home position sensor is on, the CCD unit is at the home position. If home position sensor is off, the machine moves the CCD unit until the home position sensor turns on.



At the start of scanning, the CCD unit moves from the home position sensor [G] to the left until the scanner position sensor turns off and then moves in the opposite direction until the home position sensor turns back on. After that, the CCD unit moves from the home position to a position under the white shading strip [H] to adjust shading. At that time, the LED array is turned on.

Book Scanning

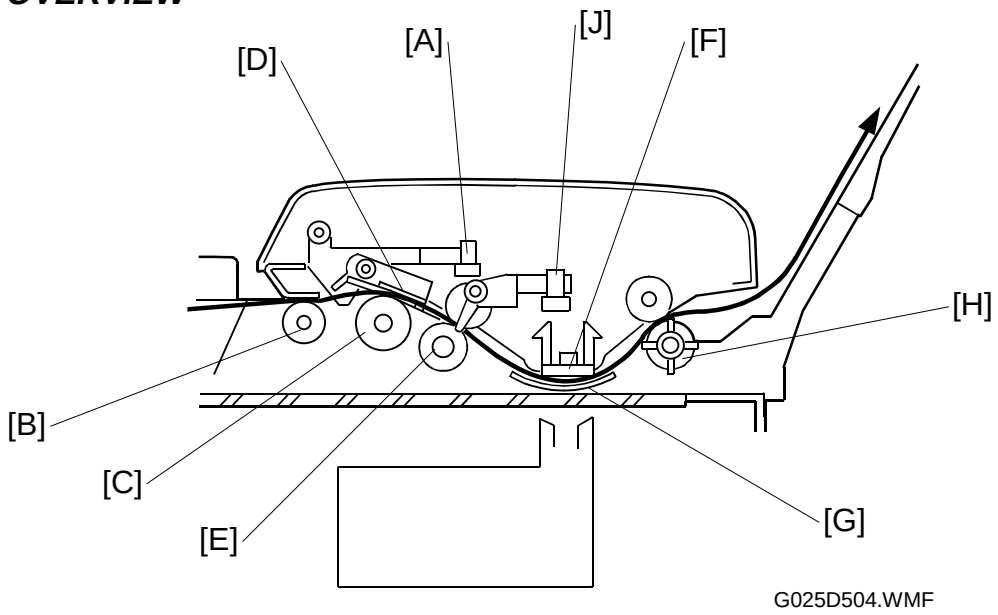
After shading, the CCD unit stops temporarily at the reading standby position [J] while the scan parameters (X/Y coordinates) are initialized. Then, it scans across the original. Scanning speed depends on the reproduction ratio. Full size (100%) scanning speed is 38 mm/s. Shading is done before scanning each page.

ADF Scanning

After shading, the scanner moves to the ADF scanning position [K] and stays there while documents are fed through the ADF. Shading is done only once before scanning.

2.1.3 ADF (G036 ONLY)

OVERVIEW



The sheet-through type ADF feeds documents from the bottom page of the document stack on the ADF table. During scanning the document moves past the CCD unit, which is locked in position.

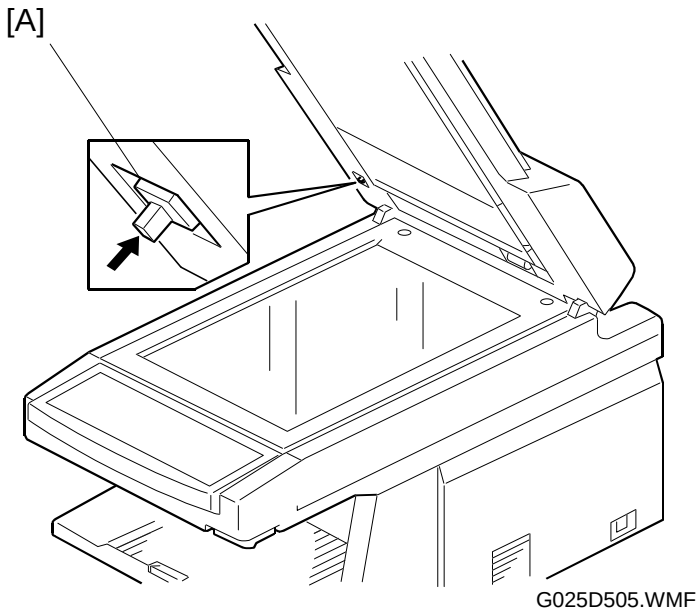
The document sensor [A] detects documents set on the table.

Before the start of scanning, the CCD unit moves to the ADF scanning position. The pick-up roller [B] and feed roller [C] feed the document into the ADF unit. Only the bottom sheet is fed because the separation tab [D] prevents any other sheets from feeding. The document feed-in roller [E] feeds the document through the ADF unit. The document feed speed depends on the reproduction ratio. For 100% copies, the feeding speed is 38 mm/s.

The pressure plate [F] presses the document to the exposure glass through the mylar guide [G] at the scan line, so that the document is within the CCD unit's range of focus.

After the document passes the scanning position, the feed-out roller [H] feeds it onto the document exit tray. When scanning is finished, the CCD unit moves back to the home position.

The registration sensor [J] detects the leading edge and the trailing edge of the document, and it is also used to detect document jam.



The platen cover switch [A] detects if the platen cover is opened or closed.

If a document is set on the ADF without first opening the platen cover after copying in the book scanner mode, “Remove original” and “from glass” are displayed on the LCD alternately and the machine disables copying. When the platen cover is opened and closed, the machine enables copying.

JAM CONDITION

Non-feed

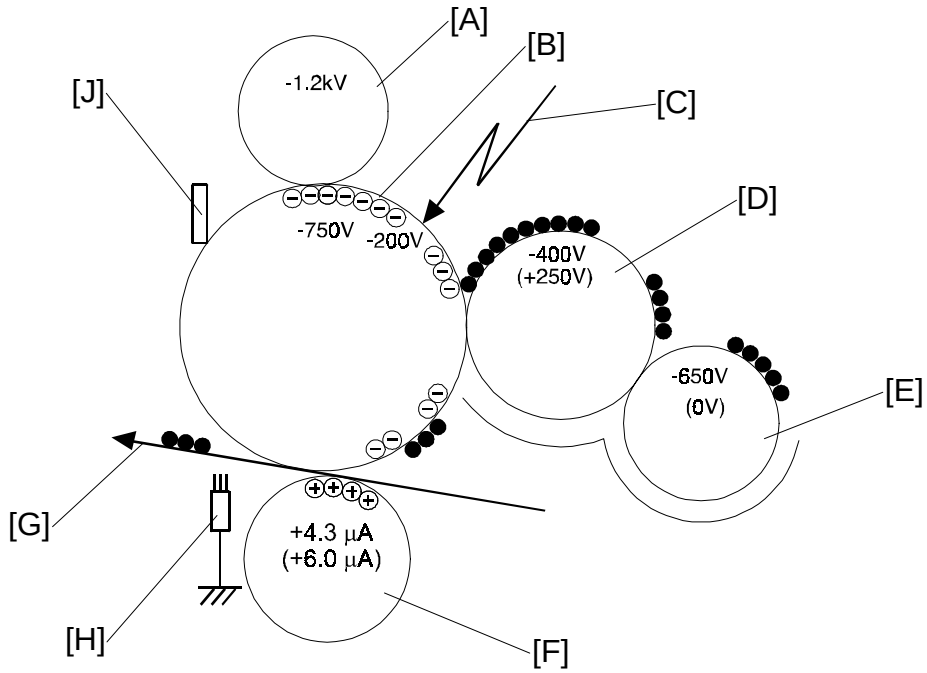
The ADF registration sensor does not turn on within 2 seconds after the ADF motor starts (Error Code 91).

Maximum document length exceeded

The ADF registration sensor does not turn off after the maximum document length (400 mm) has been fed since it turned on (Error Code 92).

2.2 PRINTING

2.2.1 PRINTING PROCESSES AROUND THE DRUM



G025D706.WMF

This machine uses a “write to black” system, using negative toner.

Charge: The charge brush roller [A] gives the OPC drum [B] surface a negative charge of -750 volts.

Exposure: A laser [C] writes a latent image on the drum. The area exposed by the laser beam drops to about -200 volts.

Development: The development roller [D] carries toner to the drum and develops the latent image on the drum surface.

Development bias (during printing):
- Toner application roller [E]: -650 volts
- Development roller [D]: -400 volts

Switching bias (At the start and the end of any print process):
- Toner application roller [E]: 0 volts
- Development roller [D]: +250 volts

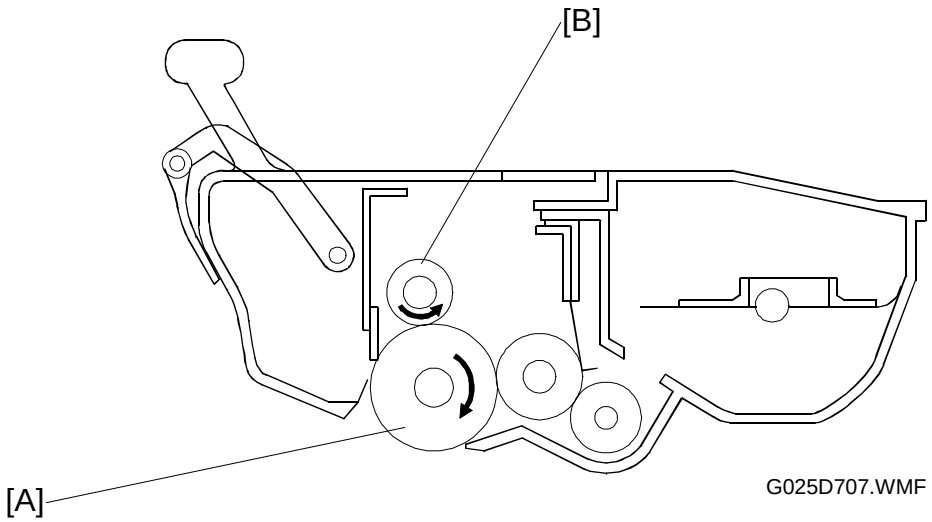
Image Transfer: The transfer roller [F] pulls the toner from the drum onto the paper [G]. A constant current of 4.3 µA (6.0 µA for envelopes) is applied.

Paper Separation: The antistatic brush [H] removes the charge on the underside of the paper to help the paper separate from the drum.

Drum Cleaning: The cleaning blade [J] removes any toner remaining on the drum after the image is transferred to paper.

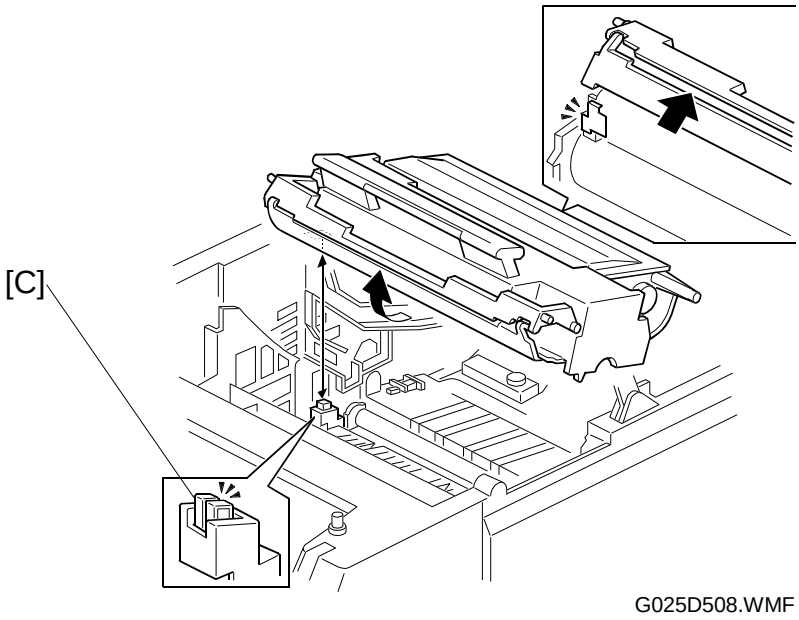
The high voltages are supplied from Mechanical Control Board.

2.2.2 CHARGE



The OPC (Organic Photoconductor) drum [A] used in this machine is small in diameter (24 mm). This allows a very compact design.

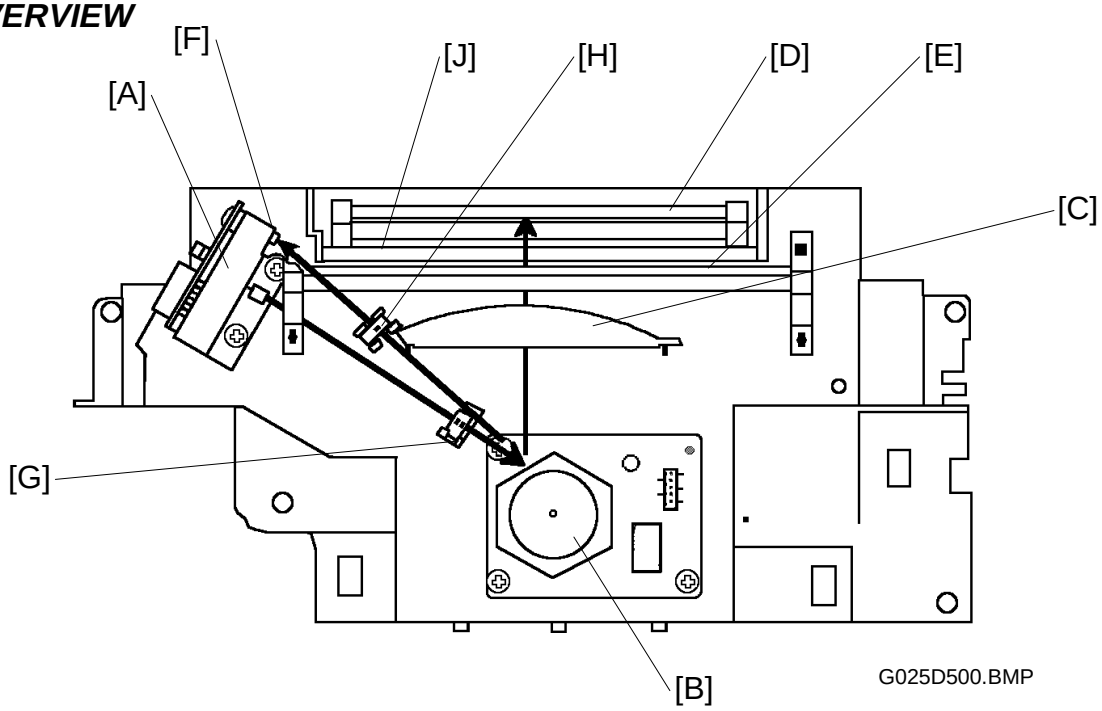
A charge brush roller [B] charges the photoconductor. The charge brush has the advantage of not generating ozone. A large negative voltage (-1.2 kV) is applied from mechanical control board to the charge brush roller. This charge brush roller gives the OPC drum surface a negative charge (-750 V). The diameter of the roller is 14 millimeters.



The voltage to the charge brush roller is supplied through the terminal [C] from Mechanical Control Board.

2.2.3 LASER EXPOSURE

OVERVIEW



Laser Unit Layout

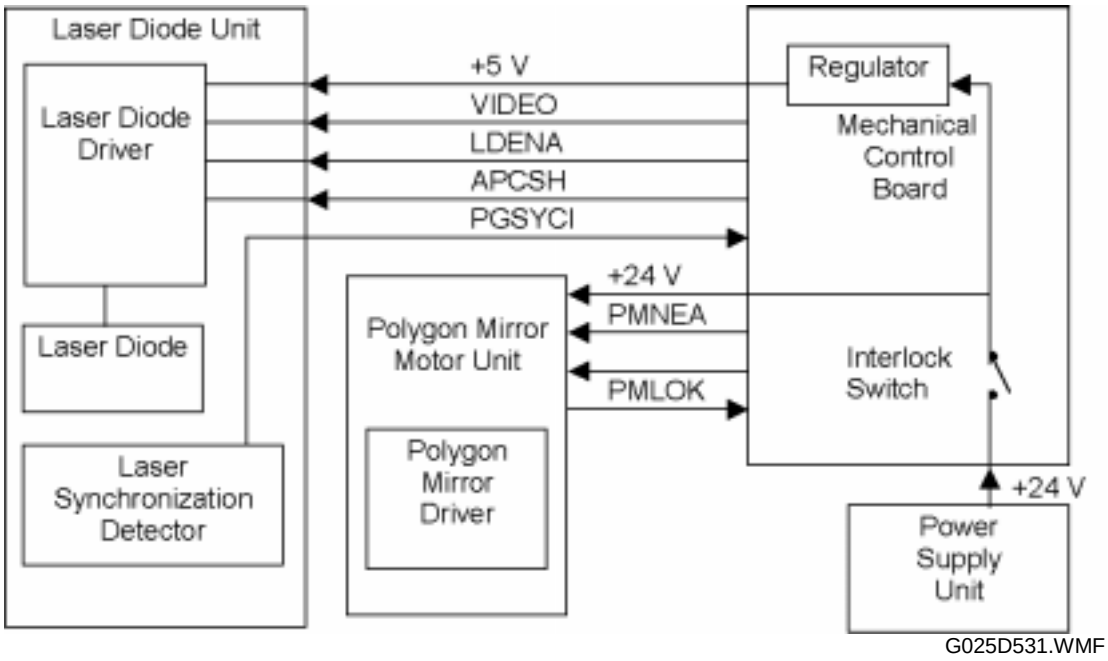
A : Laser Diode Unit	F : Laser Synchronization Detector
B : Polygon Mirror Motor	G : Cylindrical Lens
C : F-theta Lens	H : Synchronization Detector Lens
D : First Mirror	J : Shutter
E : Second Mirror	

This machine uses a laser diode to produce an electrostatic latent image on the OPC drum. The laser diode unit converts image data from the mechanical control board into laser pulses, and the optical components direct these pulses to the OPC drum.

The strength of the beam emitted from the laser diode is 0.21 milliwatts at a wavelength of 785 ± 20 nanometers.

As a mechanical safety feature, the shutter [J] closes to block the laser beam path whenever the upper unit opened.

BLOCK DIAGRAM



The Mechanical Control Board controls the laser diode power (APCSH) and transfers data for printing to the laser diode (VIDEO). As an electrical safety feature, there is a interlock switch on the Mechanical Control Board. This switch cuts +24 volts whenever the upper unit is opened.

ERROR CONDITIONS

Laser Error

The machine detects laser synchronization signal pulses (PGSYCI) 70 milliseconds after the (LDENA) signal is sent. It detects a laser error if the pulse count does not reach the specified number within 100 milliseconds.

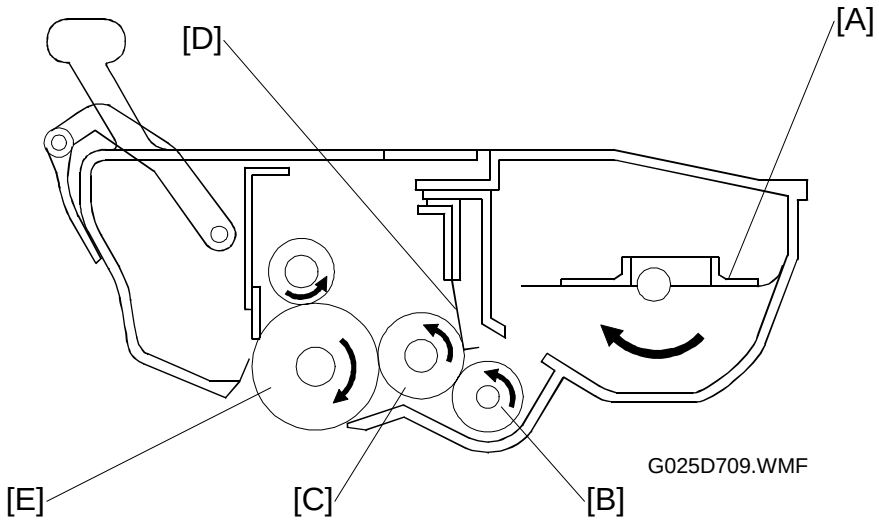
When this occurs, the machine warns the customer on the LCD panel (Error 56).

Polygon Mirror Motor Error

The machine detects a polygon mirror motor error when the (PMLOK) signal does not go low within 10 seconds of the (PMNEA) signal. When this occurs, the machine warns the customer on the LCD panel (Error 57).

2.2.4 DEVELOPMENT

OVERVIEW



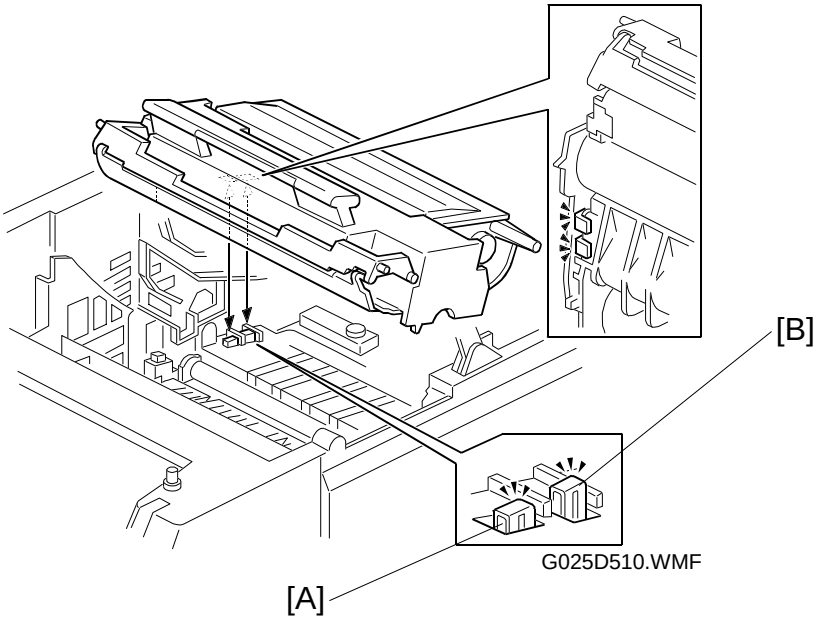
This machine uses monocomponent toner, which is composed of resin and ferrite. The toner mixing bar [A] stirs and carries toner to the toner application roller [B]. The toner application roller supplies toner to the development roller [C]. As the development roller turns past the toner metering blade [D], only a thin coating of negatively charged toner particles stays adhered.

The diameter of development roller is 16 millimeters and the toner application roller is 13 millimeters.

During printing, a bias voltage of -650 volts is applied to the toner application roller and another bias voltage of -400 volts is applied to the development roller. The toner is transferred from the toner application roller to the development roller by the potential difference between these two rollers.

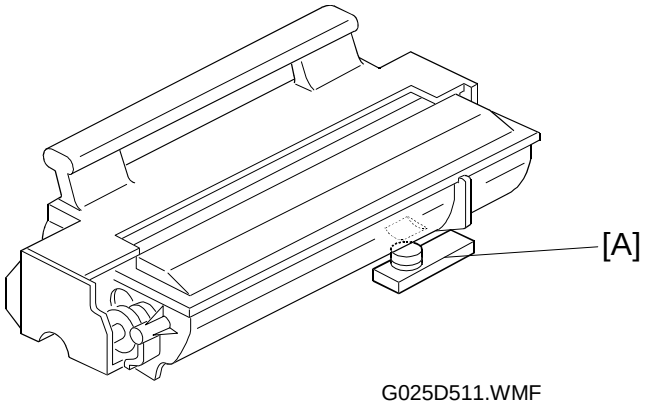
The exposed area on the drum [E] is at -200 volts. The development roller applies toner to these areas of the latent image as they turn past the drum.

At the start and the end of all print process (including the cleaning and initial toner supply modes), 0 volt is applied to the toner application roller, and +250 volts is applied to the development roller. This is to avoid any toner transfer to the drum.



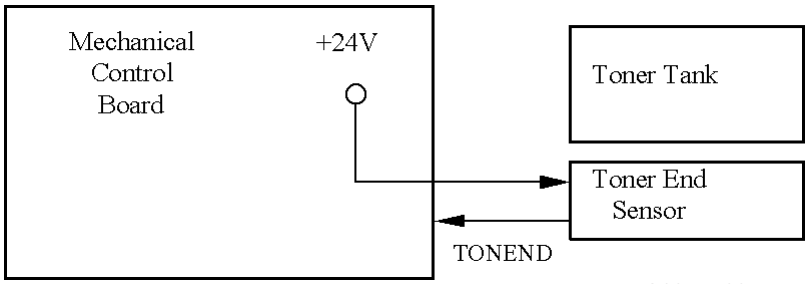
The voltage to the development roller and the toner application roller is supplied through the terminals [A and B] from mechanical control board.

TONER END DETECTION



G025D511.WMF

Toner near-end is detected by the toner end sensor [A], which is located below the toner tank of toner cassette.



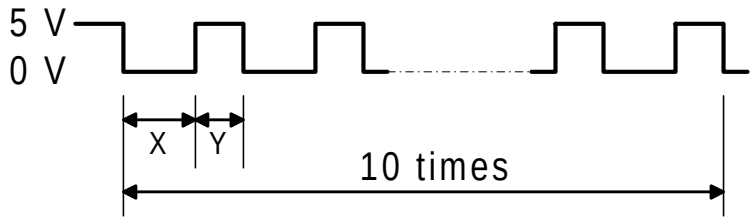
G025D532.WMF

While the main motor is rotating, the machine monitors the voltage output (TONEND) from the toner end sensor. The voltage from the sensor is high when the toner tank of the toner cassette is full. When the toner tank is almost empty, the output of the toner end sensor starts occasionally dropping low as the toner level changes with the stirring of the toner-mixing bar.

Toner near-end condition

When the Mechanical Control Board detects the following output from the toner end sensor, the "Toner near-end" is displayed on the LCD. (This is the toner near-end condition).

Output of toner end sensor



G025D733.WMF

0.6 s < X and Y < 2 s

The machine clears the toner near-end condition if the output from the toner end sensor goes back high for more than 5 seconds.

Toner end condition

If the machine makes more 100 copies during the toner near-end condition or the mechanical control board detects a low output for more than 10 seconds, it disables copying and “Add toner” is displayed on the LCD. This is the toner end condition.

Toner end recovery

Replacing the toner cassette clears the toner end condition. If the main switch is turned off and back on, or the upper unit is opened and closed during the toner near-end condition or toner end condition, the machine expects that the toner cassette has been replaced. It then rotates main motor for toner cassette initialization. At the same time, the mechanical control board monitors the output from the sensor. The machine clears the toner end condition if the mechanical control board detects a high output from the toner end sensor for more then 5 seconds.

Toner saving mode

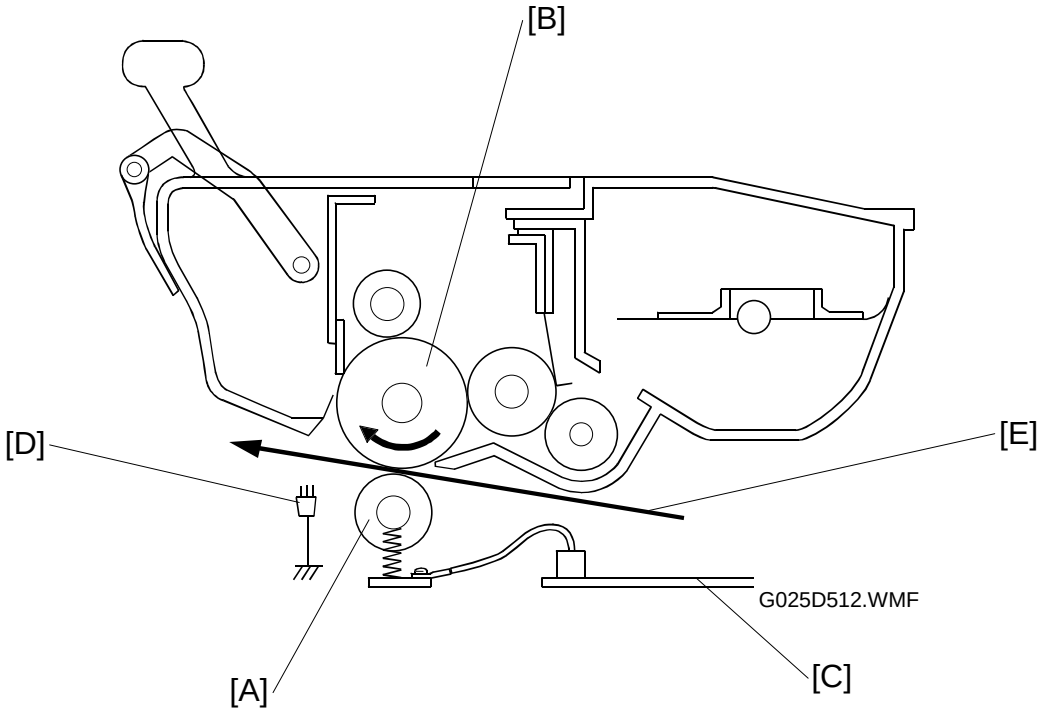
In this mode, the machine prints by cutting out some of the pixels (about 30%) of the video data to save toner.

This mode can be selected by changing bit 2 of user bit switch 02.

SwUser 02—bit 2
0: OFF (default setting)
1: ON

2.2.5 TRANSFER AND SEPARATION

OVERVIEW



This machine uses a transfer roller [A], which touches to the OPC drum [B] surface. A constant current of +4.3 μA (6.0 μA for envelopes) is applied to the transfer roller from the mechanical control board [C]. The positively biased transfer roller pulls negatively charged toner off the drum. The curvature of the drum and the antistatic brush [D] help the paper [E] to drop away from the drum.

The diameter of transfer roller is 14 millimeters.

CLEANING MODE

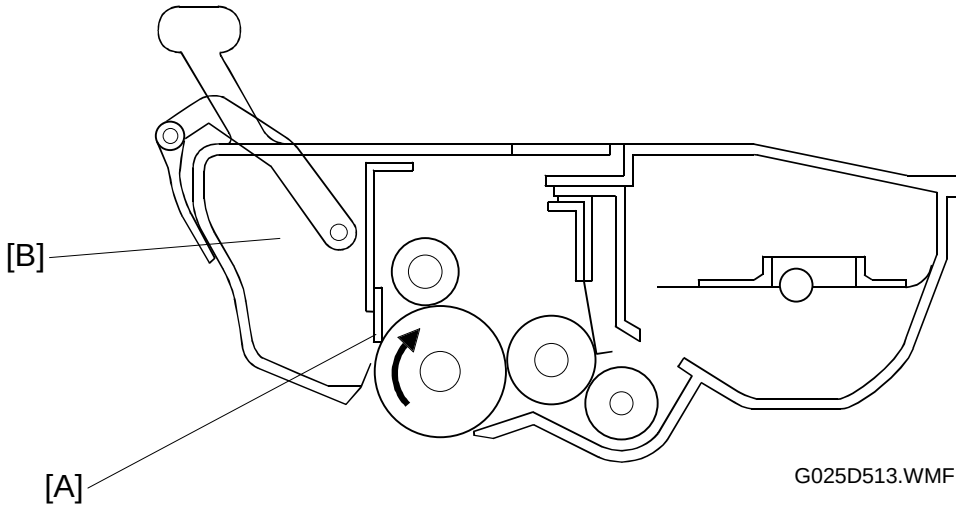
If a paper jam occurs during printing, toner may be transferred to the transfer roller surface. To prevent this toner from transferring to the under side of the paper, the transfer roller has to be cleaned before the next printing run.

While the machine is in the cleaning mode, the mechanical control board applies -1000 volts to the transfer roller, and charges the drum to -750 volts. The negatively charged toner on the transfer roller is then transferred back to the drum.

The machine goes through the cleaning mode in the following conditions.

- At power-up: The process starts when the fusing temperature reaches half of the standby temperature.
- When the cover is opened and then closed during the printing process.
- After a printer jam has been cleared.

2.2.6 DRUM CLEANING



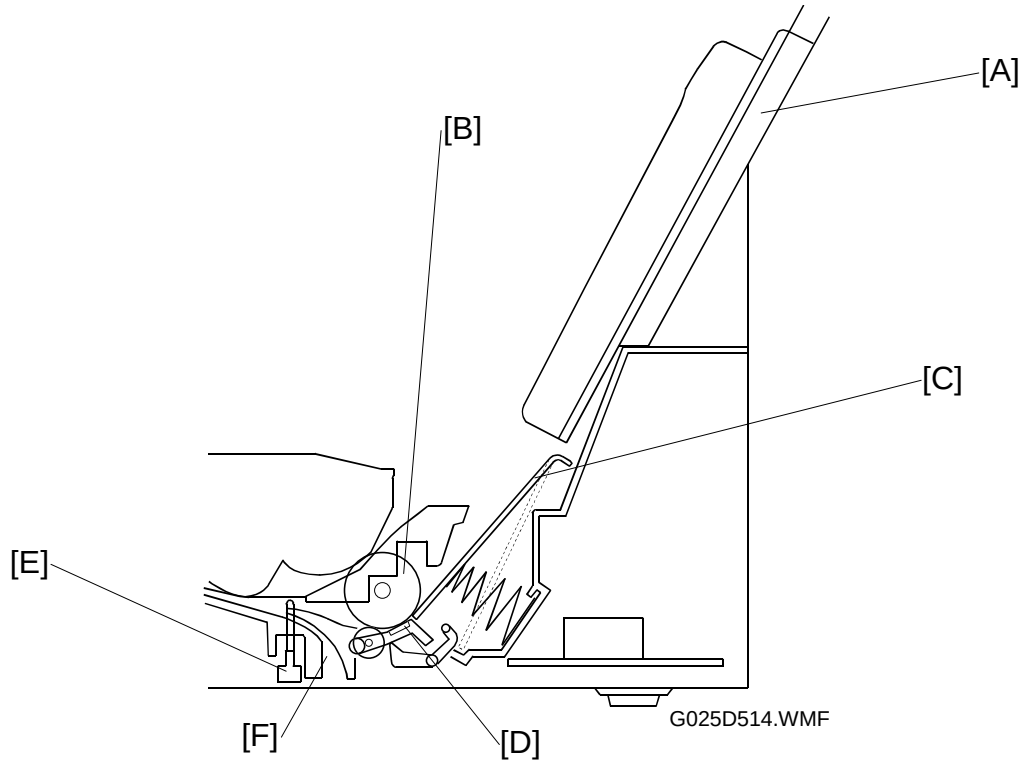
The cleaning blade and the used toner tank are contained in the toner cassette.

A counter blade system is used for drum cleaning. The cleaning blade [A] removes any toner remaining on the drum after the image is transferred to the paper. This removed toner is stored in the used toner tank [B].

There is no used toner overflow detection mechanism because the used toner tank is large enough for the lifetime of the toner cassette.

2.2.7 PAPER FEED AND REGESTRATION

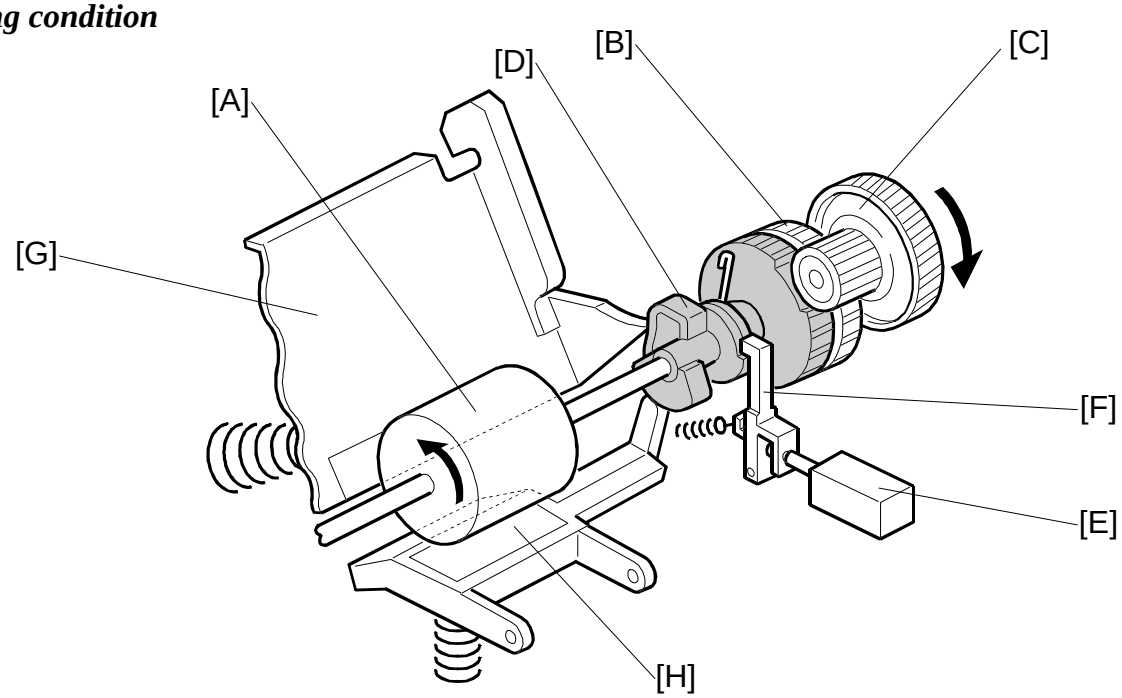
OVERVIEW



The upper paper tray [A] holds 100 sheets. The left side fence on the paper tray is adjustable to fit to the paper size. The paper feed roller [B] is located on the right side of the machine so that it can feed a narrow sheet of paper. The feed roller, the upper tray bottom plate [C], and the friction pad [D] allow only one sheet to feed from the paper tray. They are controlled by the pick-up cam. (See the next page.) The registration sensor [E] detects the leading edge of the paper and synchronizes the paper feeding with the activation of the laser diode to write the image on the OPC drum. The space [F] is the entrance for paper from the optional paper feed unit.

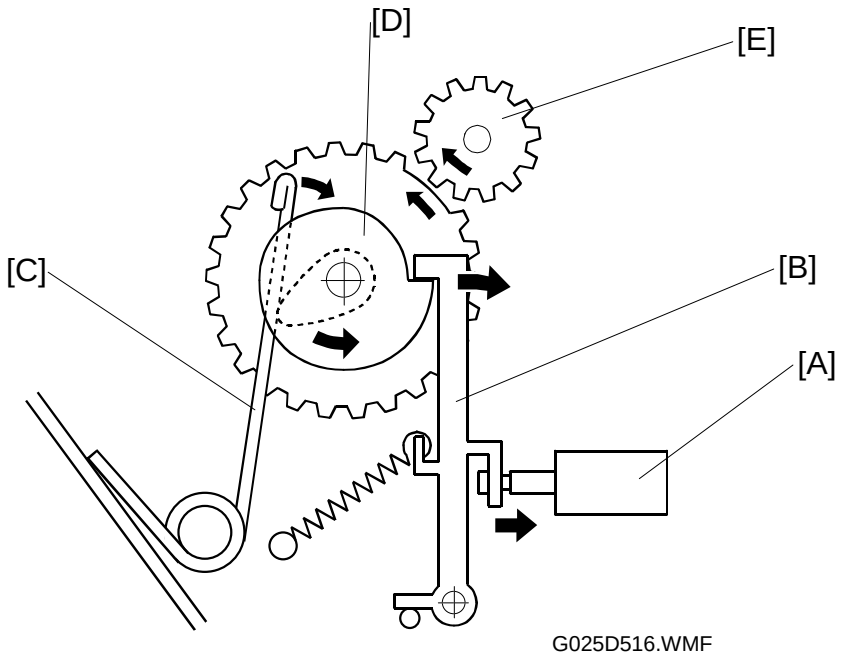
PAPER FEED MECHANISM

Idling condition



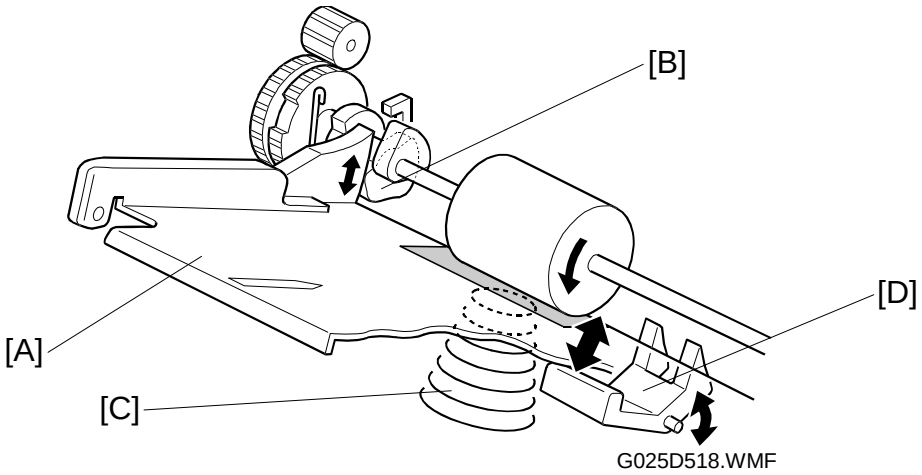
The paper feed roller [A] always rotates while the main motor rotates since drive from the motor is transmitted to the feed roller gear [B] which is fixed to the roller shaft through the paper feed drive gear [C]. The pick-up cam [D] idles on the shaft of the feed roller. This cam (shown by shading in the illustration) is a complex part with four cam surfaces and a gear. When the paper pick-up solenoid [E] is not energized, the cam stopper [F] locks the cam in the idling position. In this position, it holds the upper tray bottom plate [G] and the friction pad [H] away from the feed roller. The rotation of the main motor is not transmitted to the pick-up cam through the gear because cogs are not provided on the section of the cam gear that faces the drive gear during idling.

Pick-up cam drive mechanism



When the machine sends the trigger signal to feed paper, the paper pick-up solenoid [A] is energized for 0.3 seconds to release the cam stopper [B]. The pressure of the cam spring [C] then causes the pick-up cam [D] to rotate counterclockwise as show in the illustration. The cogs of the cam gear and the paper feed drive gear [E] then engage, and rotation form the main motor is transmitted to the cam. After the cam completes one rotation, the cam stopper locks the cam and the cam idles again.

Upper tray bottom plate operation



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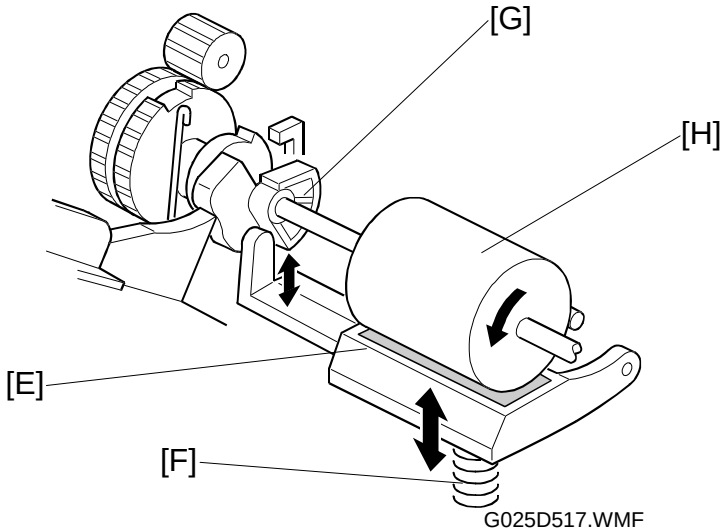
The position of the upper tray bottom plate [A] is determined by the pick-up cam [B]. When at the idle position, the cam holds the bottom plate away from the feed roller. However, when the cam rotates, the bottom plate spring [C] presses the bottom plate toward the feed roller. When the bottom plate is pressed up, it releases the paper stopper [D] and the paper on the bottom plate contacts the feed roller. The feed roller then feeds one sheet past the friction pad. As the cam continues to rotate it forces the bottom plate back down and the paper stopper separates the paper from the feed roller. After the cam completes one rotation, it stops turning and holds the bottom plate in the idle position.

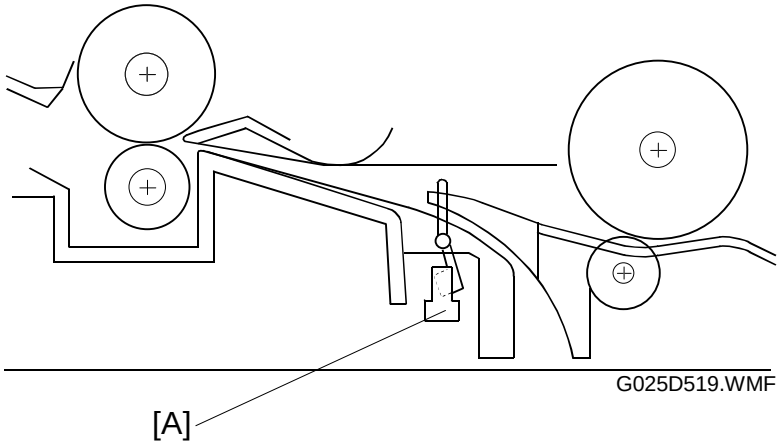
Friction pad operation



G025D517.WMF

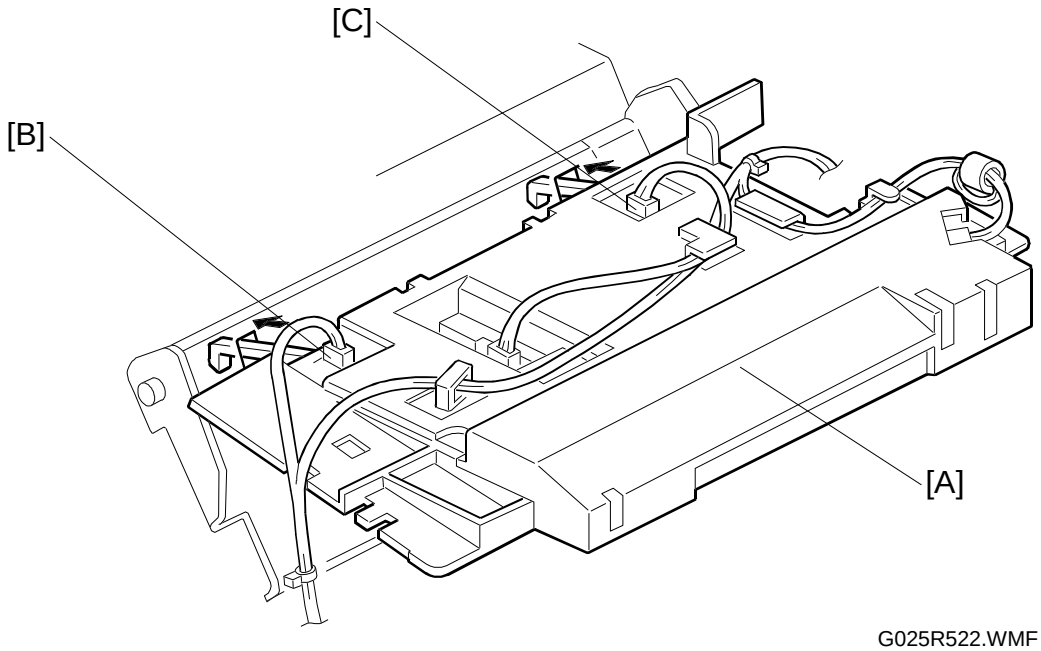
The friction pad [E] is pressed up by the friction pad spring [F]. The friction pad's position is changed by the rotation of the pick-up cam [G]. When the pad is pressed up after the cam starts to rotate, the pad contacts the feed roller. Then the feed roller [H] feeds paper to the registration section. The friction pad allows only the top sheet to feed. As the cam continues to rotate it forces the friction pad back down, and after one rotation, the pad returns to the idle position.

REGISTRATION



The registration sensor [A] is installed in the exit of paper feed section. This sensor detects the leading edge of the paper and synchronizes the paper feeding with the writing of the image on the drum so that the image and paper match up properly. This sensor also detects paper feed jams.

PAPER WIDTH AND PAPER END DETECTION



G025R522.WMF

The laser unit [A] has two sensors built into it. One, the paper width sensor [B], measures the width of the paper in the upper tray. The other, the paper end sensor [C] senses the presence or absence of paper. Each of these sensors has an actuator that extends through a slot in the upper tray bottom plate so that the sensor is actuated when paper is set in the upper tray.

The paper width sensor is activated when the width of paper set in the upper tray is more than 203 millimeters (0.8"). Whenever the machine starts printing, it checks the width of the paper set in the upper tray. If the width is more than 203 millimeters (0.8"), it starts printing. However, If the machine detects that the width is less than 203 millimeters (0.8"), it starts printing only if the paper widths registered for both the machine and the printer driver are less than 203 millimeters (0.8"). If either of these settings is more than 203 millimeters (0.8"), a warning message is displayed in the LCD.

When the upper tray runs out of paper, the actuator of the paper end sensor moves into the slot in the upper tray bottom plate. This informs the CPU that paper has run out.

JAM DETECTION

Paper jam at the upper paper tray

When the registration sensor does not turn on within 5.5 seconds after the paper pick-up solenoid of the upper tray turns on (Error 50).

Paper jam at the optional lower paper tray

When the registration sensor does not turn on within 7.0 seconds after the paper feed solenoid of the lower paper tray turns on (Error 54).

Paper did not reach at the fusing unit

When the paper exit sensor does not turn on within 5.0 seconds after the registration sensor turns on (Error 51).

Paper did not pass the registration sensor

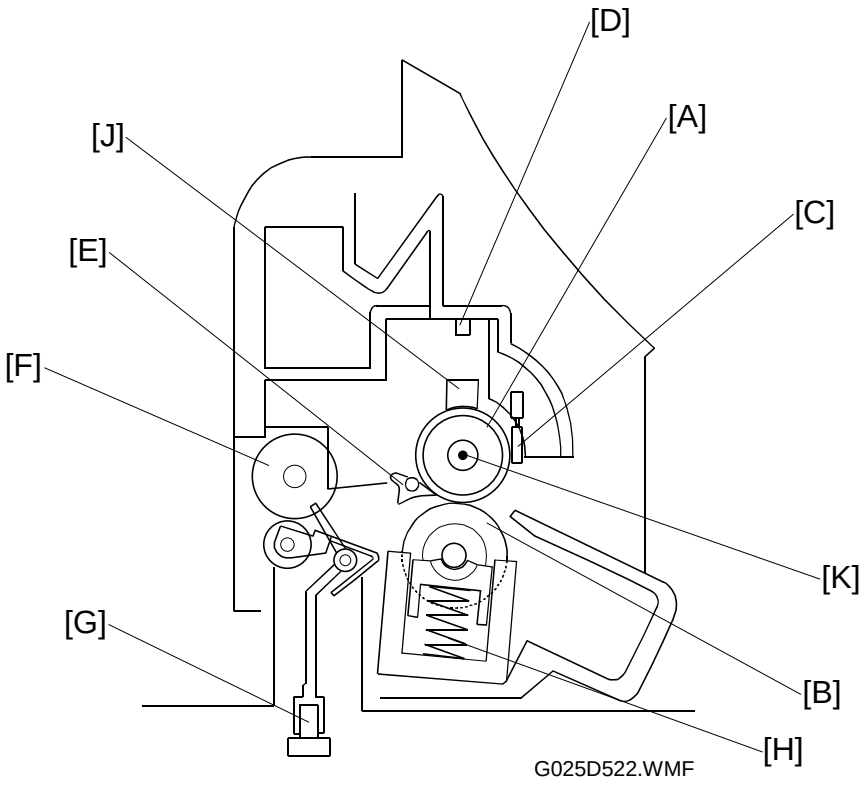
When the registration sensor does not turn off within 9.3 seconds after the paper exit sensor turns on (Error 52).

Paper jam in the fusing exit area

When the paper exit sensor does not turn off within 4.0 seconds after the registration sensor turns off (Error 53).

2.2.8 FUSING

OVERVIEW



After the image is transferred, the copy paper enters the fusing unit. The image is fused to the copy paper by applying heat and pressure through the use of a hot roller [A] and pressure roller [B].

The CPU monitors the hot roller temperature through a thermistor [C] that is in contact with the hot roller surface. A thermofuse [D] protects the fusing unit from overheating.

The hot roller strippers [E] separate the copy paper from the hot roller and direct it to the exit rollers [F]. The exit sensor [G], which is located under the fusing unit, monitors the progress of the copy paper through the fusing unit and acts as misfeed detector. The exit rollers [F] drive the copy paper to the paper tray.

Springs [H] at the front and rear apply the proper fusing pressure between the hot roller and pressure roller.

The cleaning pad [J] cleans paper dust and toner from the hot roller surface. The cleaning pad must be replaced whenever the toner cassette is replaced. The cleaning pad is packed with the toner cassette.

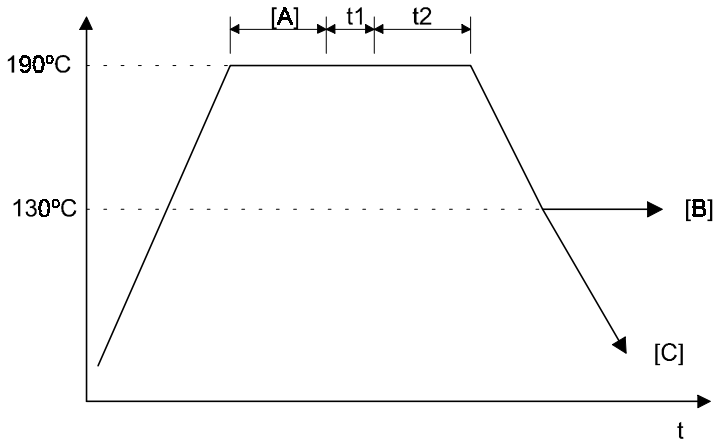
Thermistor maximum: 235°C

Thermofuse maximum: 121°C (The temperature of the hot roller would be about 400°C.)

There are two types of fusing lamp [K]—120 volts and 230 volts.

POWER SAVE CONTROL

When the main switch is turned on, the machine turns on the fusing lamp. For printing, the machine raises the fusing temperature to 190°C. The fusing temperature is controlled at 190°C during printing.



When the power saver timer expires, the machine automatically goes into power saver mode.

Power saver timer

t1 = 5 minutes.

- After time interval t1 passes following printing, copying, scanning, or key-in [A], the LCD and all LED's go off.

t1 + t2 = 15 minutes or 240 minutes (selectable)

- Default value is 15 minutes. (Economy Mode)
- Pressing Clear Modes key more than one second will change this condition.
- When the Economy Mode LED is lit, t1 + t2 = 15 minutes.
- When the Economy Mode LED is not lit, t1 + t2 = 240 minutes.

Power Saver Mode

After t1 + t2 time passed following printing, copying, scanning, or key input, the fusing lamp goes off. (Goes to Standby [C])

Standby [C] is the default mode. However, Standby [B] can be selected using user switch 02 as follows.

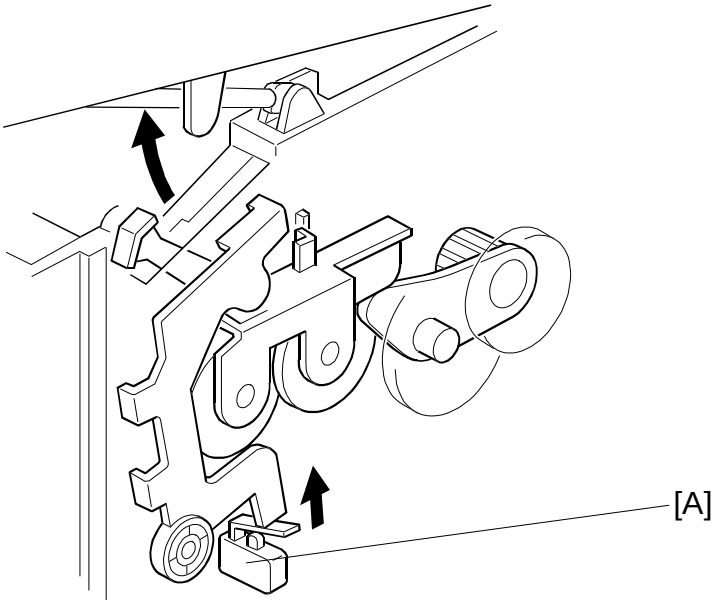
[SW User 02]

bit 5	bit 4	
0	0	Standby [C] : fusing lamp off (Sleep Mode)
1	0	Standby [B] : pre-heating condition

The machine exits power saver mode when:

- a key is pressed.
- data is input from the PC.
- a document is inserted into the ADF. (G036 only)
- the upper unit is opened and closed.

2.2.9 COVER SWITCH

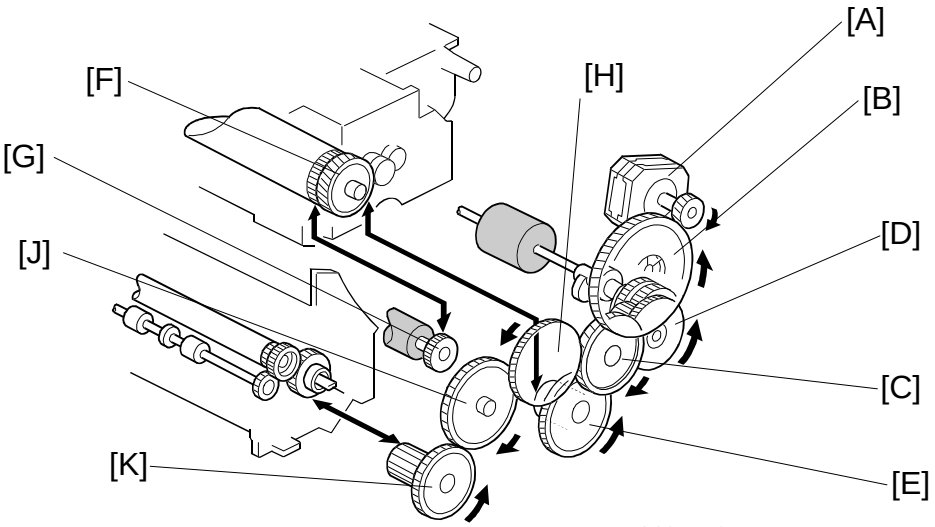


G025D523.WMF

When the upper unit is opened, the interlock switch [A] will be de-actuated and power supply to the following parts will be cut.

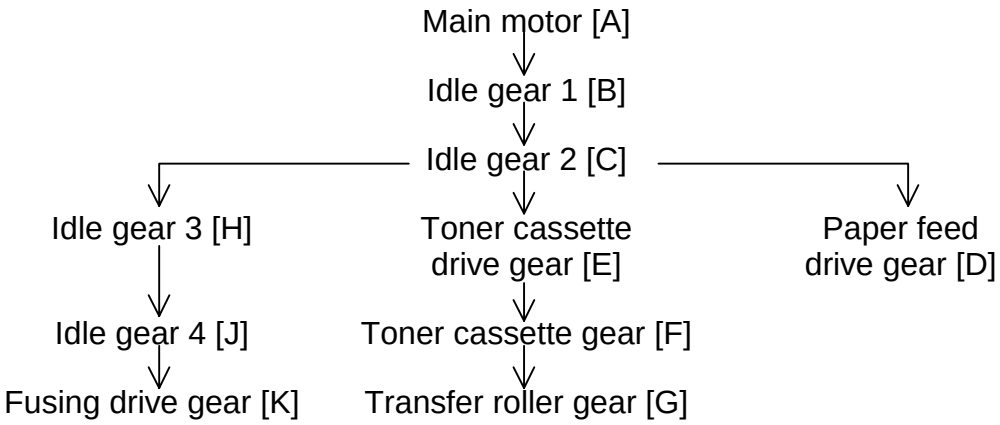
- Power pack
- Laser diode driver
- Fan motor
- Main motor
- Polygon mirror motor
- Fusing lamp
- Paper pick-up solenoid
- Optional paper feed unit

2.2.10 PAPER FEED DRIVE RELEASE AND FUSING DRIVE RELEASE

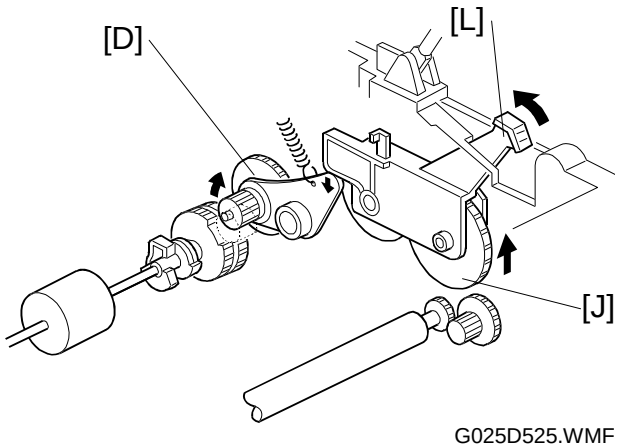


G025D524.WMF

The main motor drives the paper feed unit, the transfer roller, the toner cassette and fusing unit through a series of gears as follows.



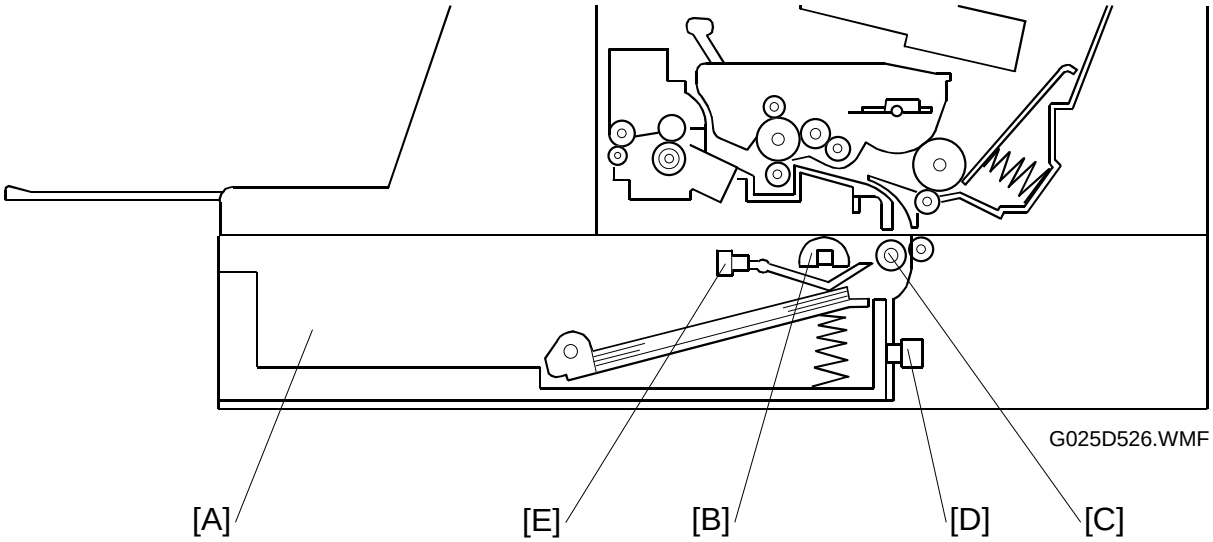
When the paper release lever [L] on the right side of the machine is lifted, the paper feed drive gear [D] and idle gear [J] disengage so that a jammed paper can be removed.



G025D525.WMF

2.2.11 OPTIONAL PAPER FEED UNIT

Overview

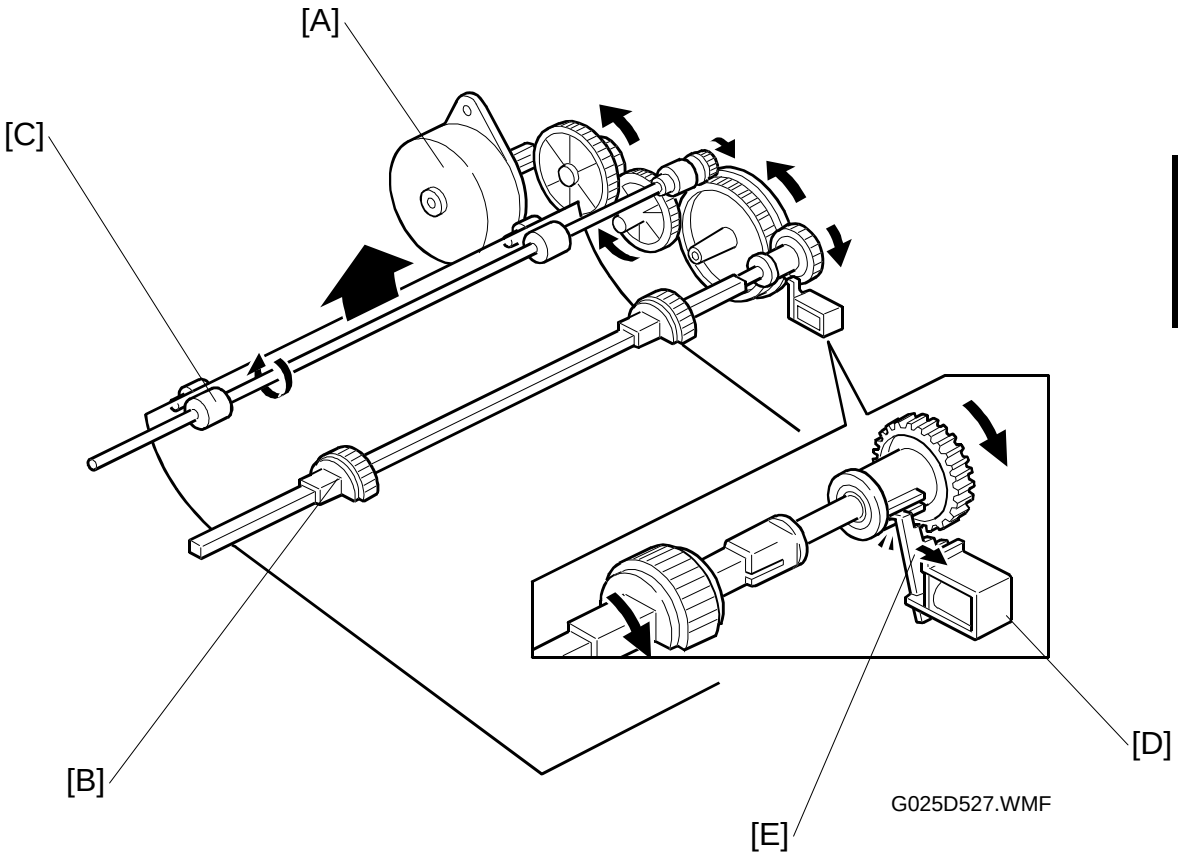


An optional paper feed unit [A] which holds 250 sheets can be installed in the machine.

The optional paper feed unit uses two semicircular pick-up rollers [B] and two corner separators. The semicircular pick-up rollers make one rotation to drive the top sheet of the paper stack to the feed rollers [C]. Two corner separators allow only one sheet to feed. They also serve to hold the paper stack.

The lower paper tray sensor [D] detects when the lower paper tray is closed. The paper end sensor [E] detects when paper runs out.

Paper Feed Mechanism



The paper feed motor [A] drives the pick-up rollers [B] and feed rollers [C].

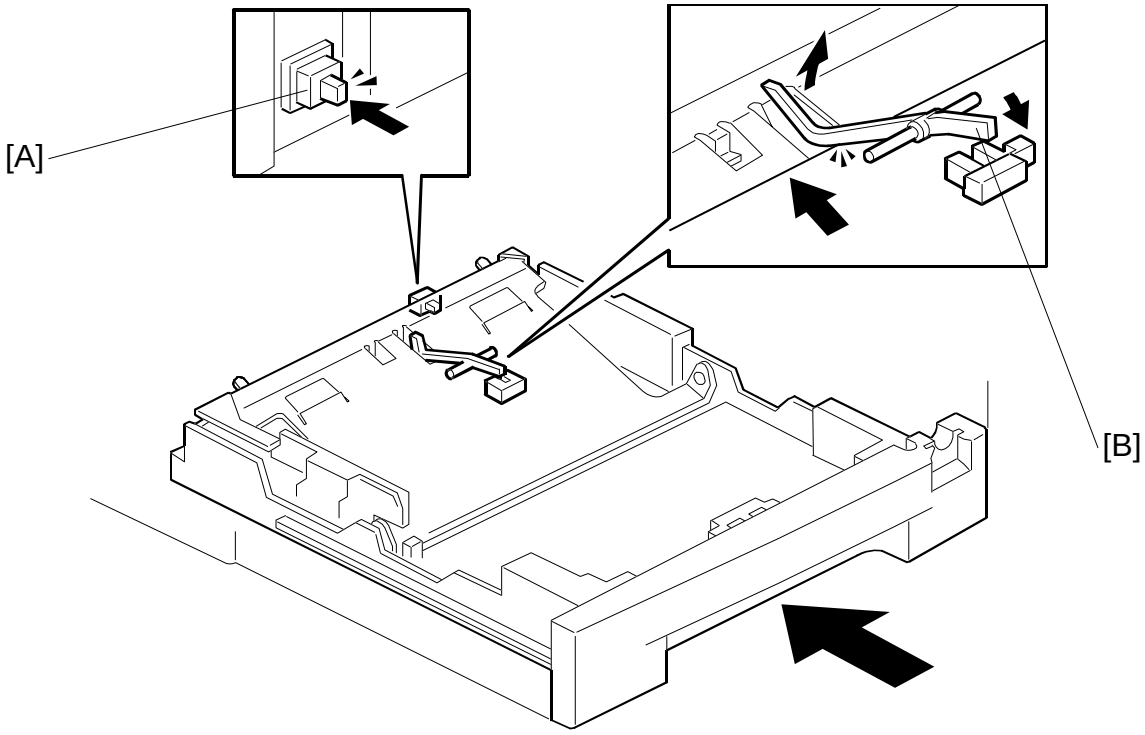
When the machine feeds a sheet of paper from the optional paper feed unit, the solenoid [D] of the paper feed clutch is energized to release the stopper [E], and the rotation of the paper feed motor is transmitted to the pick-up roller shaft. The solenoid stays on for 300 milliseconds and then turns off. The pick-up rollers stops when after one rotation.

Before the pick-up rollers stop, the feed rollers catch the leading edge of the paper and continue feeding it.

Optional Paper Feed Unit Detection

When the machine is turned on or the printer is reset, the machine monitors if the optional paper feed unit is installed. The machine cannot detect the optional paper feed unit if it is installed while the power is on.

Paper Tray, Paper Size and Paper End Detection



G025D528.WMF

When the lower paper tray is closed, the edge of the tray turns on the paper tray sensor [A] located on the paper feed unit and the machine detects that the paper tray is closed.

When the optional paper feed unit runs out of paper, the paper end sensor actuator [B] drops through a slot in the bottom plate and the machine detects that paper has run out.

There are no sensors to detect the paper size in the machine. The paper sizes can be set to A4 or 8½" x 11" by the user function.

Paper Feed Selection

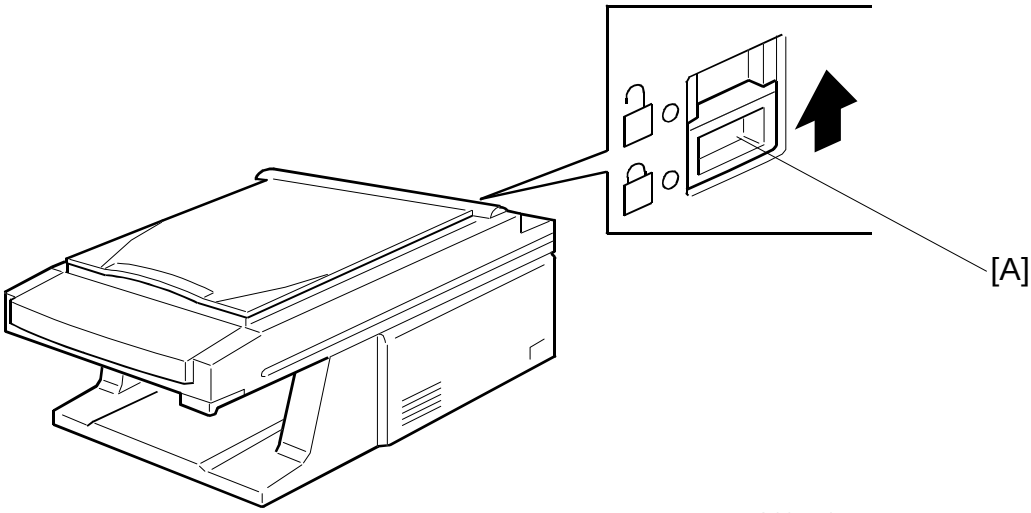
If there is an optional paper feed unit installed in the machine, the selection for feeding paper is decided in accordance with the current setting.

Jam Detection

The machine detects the paper jam at the optional paper feed unit when the registration sensor is not turned on within 7 seconds after the solenoid is turned on (Error Code 50).

3. INSTALLATION

3.1 INSTALLING THE MACHINE



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Refer to Operator's Manual for information on the installation environment and how to install and set up the machine.

The CCD unit lock [A] prevents the CCD unit from moving during transportation.

Slide the lock to the ″UNLOCK″ position before power-on.

Important:

1. If you forget to unlock the CCD unit, an error message will appear on the display. If this happens, turn off the machine and unlock the CCD unit before turning it back on.
2. If you want to move the machine to a different location, you have to slide the CCD unit lock to the ″LOCK″ position before transportation.

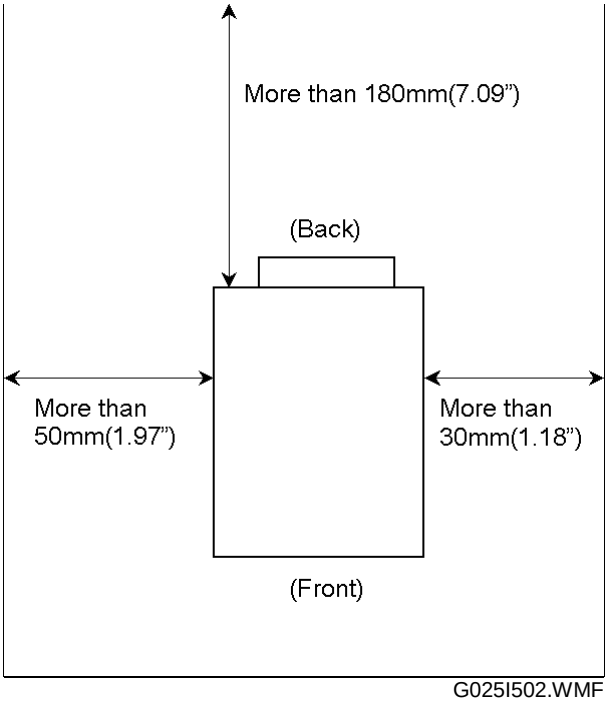
3.2 INSTALLING OPTIONAL UNITS

A lower paper feed unit is available for this machine.

Refer to the Operator's Manual for how to install and set up the lower paper feed unit.

3.3 MINIMUM SPACE REQUIREMENTS

Place the machine near the power source, providing clearance as shown:



4. SERVICE TABLES AND PROCEDURES

4.1 SERVICE FUNCTIONS

Function List

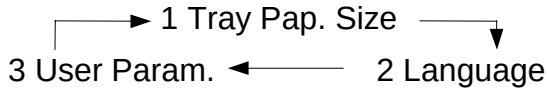
Service Mode	Parameter/Sub Mode	Functions
1 Tray Pap. Size	Upper Lower (option)	Set the tray paper size (User settable)
2 Language	English, francais, Espanol, Italiano, Deutsch, svenska)	Set the local language (User settable)
3 User Param.	00 02	User bit switch parameters (User settable)
	CC	Country code
	S00 …C02	Service bit switch parameters
7 Adjustments	74 Ram Clear	Erase data and initialize parameters
8 Reconfigure	81 System Parameter List	Print the system parameter list
	82 RAM Display/Rewrite	Display and change RAM data
	83 RAM Dump	Print RAM data
9 General Tests	91 RAM Tests	Test RAM and EEPROM
	92 Key Test	Test the function of keys
	93 LED Test	Test the LEDs
	94 LCD Test	Test the LCD
	97 Factory Mode	Factory use only. Cannot be used in the field.

Service Tables

4.1.1 ENTERING AND EXITING USER AND SERVICE MODES

USER MODE

Press [Help/Function] to enter the user function mode. Then press [Zoom ▸] to cycle through the following sequence.



SERVICE MODE

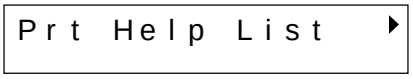
1. Press [OK] then [Stop] three times in succession within three seconds.
2. Press [Help/Function] to enter the service function mode. Then press [Zoom ▸] to cycle through the service modes. (See details in section “4.1.2”.)
3. Execute service mode operations.

Wait forty seconds or turn the machine off and on to exit user function mode or service function mode.

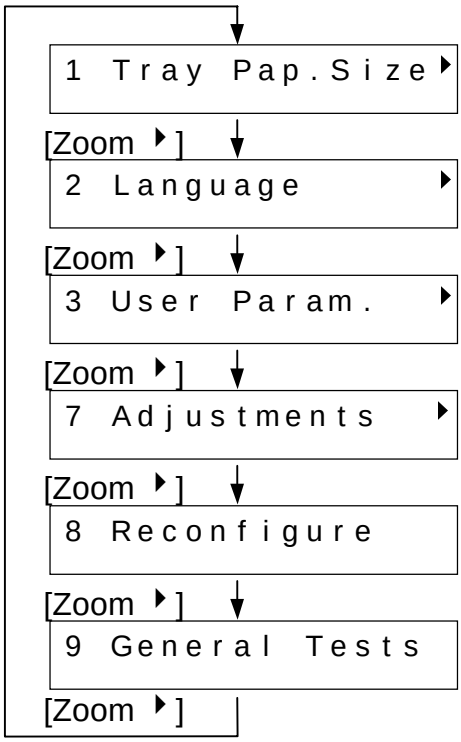
4.1.2 SELECTING A SERVICE MODE

Service modes can be selected by pressing the "Zoom ▸" key. The selected mode will change cyclically, (e.g.: 1, 2, ...8, 9, 1, ...).

1. Enter service mode.



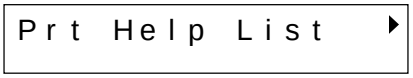
2. Press [Zoom ▸] to select a service mode number.



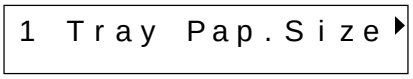
4.1.3 PAPER SIZE REGISTRATION

UPPER TRAY PAPER SIZE REGISTRATION

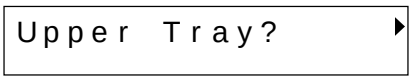
1. Enter service mode.



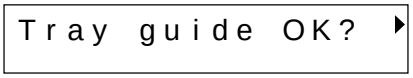
2. Press [Zoom ▸] once.



3. Press [OK].

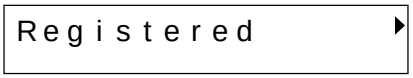


4. Press [OK].



5. After pressing [OK], press [Zoom ▸] or [◂ Zoom] to specify the paper size.

6. After the correct paper size is on the display, press [OK].



7. Press [Help/Function] to select other service functions.

Prt Help List ▸

LOWER TRAY (OPTION) PAPER SIZE REGISTRATION

1. Enter service mode.

Prt Help List ▸

2. Press [Zoom ▸] once.

1 Tray Pap.size ▸

3. Press [OK].

Upper Tray? ▸

4. Press [Zoom ▸] once.

Lower Tray? ▸

5. After pressing [OK], press [Zoom ▸] or [Zoom ◂] to specify the paper size.

6. After the correct paper size is on the display, press [OK].

Registered ▸

7. Press [Help/Function] to select other service function.

Prt Help List ▸

4.1.4 LANGUAGE SELECTION

1. Enter service mode.

Prt Help List ▸

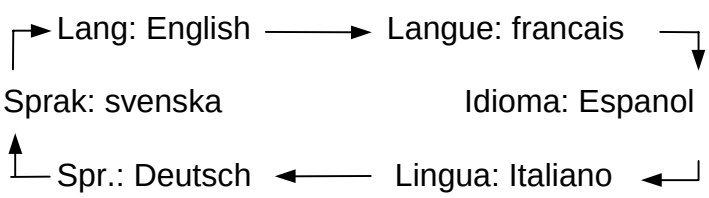
2. Press [Zoom ▸] twice.

2 Language ▸

3. Press [OK].

Lang.:English ▸

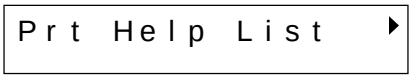
4. Press [Zoom ▸] to cycle through the following sequence.



5. When the required language is displayed, press [OK].

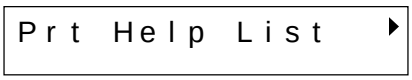
Registered ▸

6. Press [Help/Function] to select other service functions.

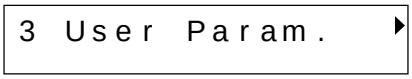


4.1.5 USER PARAMETER (BIT SWITCH) PROGRAMMING

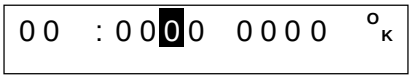
1. Enter service mode.



2. Press [Zoom ▶] three times.

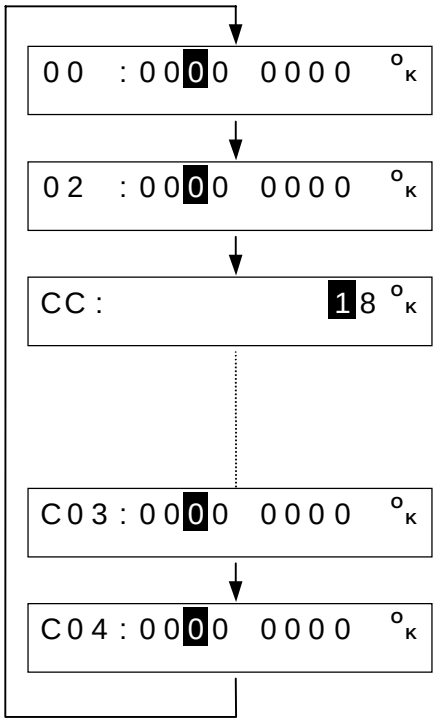


3. Press [OK].

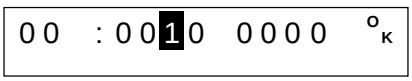


NOTE: Bit switch number 00 is displayed. The selected bit blinks.

4. Press the [Zoom ▶] and [◀ Zoom] keys, to change the selected bit or parameter.



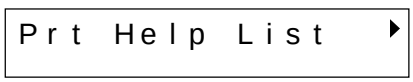
5. Press [Up +] or [Down -] to change bit value.



NOTE: The bit value is 1 or 0.

6. Press [OK].

7. Press [Help/Function] to select other service functions.



4.1.6 RAM CLEAR [FUNCTION 74]

1. Enter service mode.

Prt Help List ▸

2. Press [Zoom ▸] four times.

7 Adjustments

3. Press [OK].

74 RAM Clear

4. Press [OK].

6.3 300598 7408

NOTE: Software version information is displayed.

5. Press [OK].

RAM Clear 1 or 2

NOTE: The function has two types of RAM clear mode.
RAM clear 1: Erase all stored data and initialize all parameters to default setting.
RAM clear 2: Erase all stored data and initialize parameters to default setting except bit switch settings between S04 and S10.

6. Press [◂ Zoom] to select RAM clear 1 or [Zoom ▸] to select RAM clear 2 mode.

Are You Sure?

7. Press [OK]. The machine will then execute the RAM clear mode.

8. After RAM is cleared, the machine exits the service mode automatically.

100% 01

4.1.7 SYSTEM PARAMER LIST [FUNCTION 81]

1. Enter service mode.

Prt Help List ▸

2. Press [Zoom ▸] five times.

8 Reconfigure

3. Press [OK].

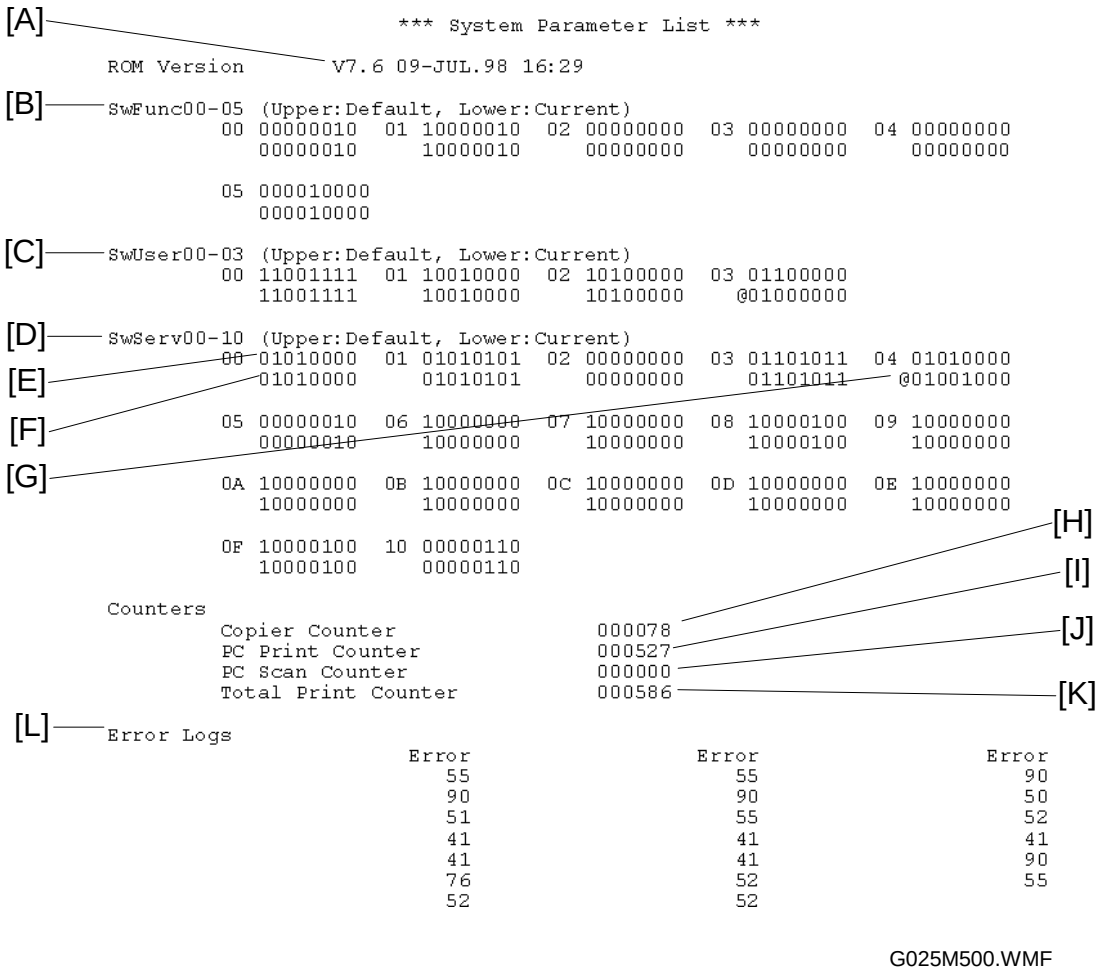
81 System Para.

4. Press [OK].

Printing ...

8 Reconfigure

Details of the system parameter list

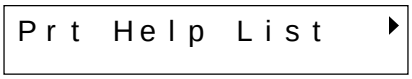


G025M500.WMF

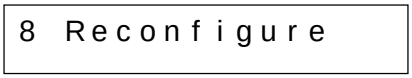
[A]: Firmware version information
[B]: Function switch parameters
[C]: User switch parameters
[D]: Service switch parameters
[E]: Default setting data
[F]: Current setting data
[G]: @ mark attached if current setting is deferent from default setting.
[H]: Copy print counter
[I]: PC print counter
[J]: This counter is not used.
[K]: Total print counter, which includes list printing (system parameter, RAM dump and help list).
[L]: Latest error codes (maximum: 30) are listed.

4.1.8 RAM DISPLAY/REWRITE [FUNCTION 82]

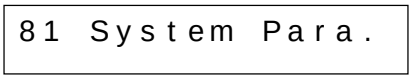
1. Enter service mode.



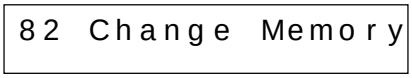
2. Press [Zoom ▸] five times.



3. Press [OK].



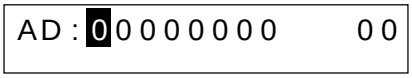
4. Press [Zoom ▸].



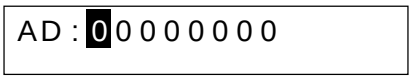
5. Press [OK].

6. Press [◂ Zoom] to select hexadecimal mode or
   Press [Zoom ▸] to select binary mode.

   NOTE: In the hexadecimal mode, AD in the LCD display stands for address. The first 8 digits are the RAM address, and the next 2 digits are data.

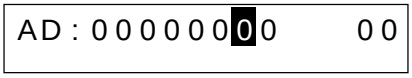


   NOTE: When in the binary mode, the data is not displayed at the same time as the address.



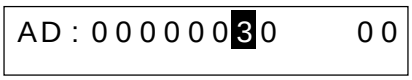
HEXADECIMAL MODE

7. After entering the hexadecimal mode, press [Zoom ▸] or [Zoom ◂] to move the blinking cursor.
   Example: After pressing [Zoom ▸] six times, the blinking cursor moves right as shown.

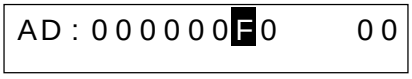


8. Press the following keys to change value of the blinking digit.
   Value increment: [Enlarge]
   Value decrement: [Reduce]

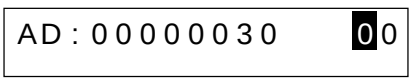
   Example: To change the value from 0 to 3, press [Enlarge] three times.



   Example: To change the value from 0 to F, press [Reduce] once.

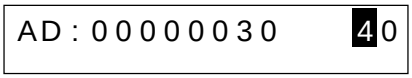


9. Press [Start] to move the blinking digit to the data field.

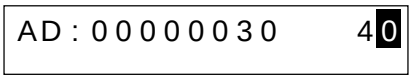


10. Press the following keys to change the data.
    Value increment: [Enlarge]
    Value decrement: [Reduce]

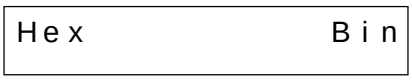
    Example: To change the value from 0 to 4, press [Enlarge] four times.



11. Press [Zoom ▸] or [Zoom ◂] to move blinking digit.
    Example: After pressing [Zoom ▸] once, the blinking digit moves right as shown in the right.



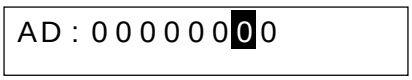
12. Press [Start] to register.
13. Press [OK] to exit the hexadecimal mode.



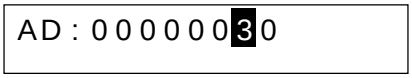
BINARY MODE

NOTE:

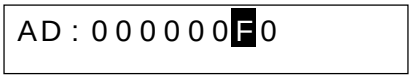
13. After entering the binary mode (refer to step 6) press [Zoom ▸] or [Zoom ◂] to move blinking digit.
    Example: After pressing [Zoom ▸] six times, the blinking digit moves as shown to the right.



14. Press the following keys to change value of the blinking digit.
    Value increment: [Enlarge]
    Value decrement: [Reduce]
    Example: To change the value from 0 to 3, press [Enlarge] three times.

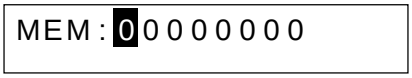


    Example: To change the value from 0 to F, press [Reduce] once.

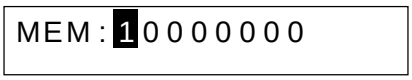


15. Press [Start] to display the data field.

    NOTE: The data field displayed in binary as shown in the right.



16. Press the following keys to change data.
    Value increment: [Enlarge]
    Value decrement: [Reduce]
    Example: To change the value from 0 to 1, press [Enlarge] once.



17. Press [Zoom ▸] or [Zoom ◂] to move the blinking digit.
    Example: After pressing [Zoom ▸] once, the blinking digit moves right as shown.

    MEM: 10000000

18. Press [Start] to register.
19. Press [OK] to exit the binary mode .

    Hex Bin

20. Press [Stop] to exit this function.

    100% 01

4.1.9 RAM DUMP [FUNCTION 83]

1. Enter service mode.

   Prt Help List ▸

2. Press [Zoom ▸] five times.

   8 Reconfigure

3. Press [OK].

   81 System Para.

4. Press [Zoom ▸] twice.

   83 Print Memory

5. Press [OK].

   Start: 00000000

   NOTE: The printing start address is displayed in hexadecimal code.

6. Press [Zoom ▸] or [Zoom ◂] to move blinking digit.

   Example: To change digit 2 of start address, press [Zoom ▸] six times.

   Start: 00000000

7. Enter printing start address by using the following keys.
   Value increment: [Enlarge]
   Value decrement: [Reduce]

   Example: To change the value to 3, press [Enlarge] three times.

   Start: 00000030

8. Press [OK].

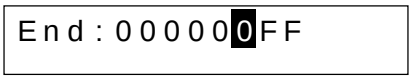
   End: 000000FF

Service Tables

NOTE: The printing end address is displayed in hexadecimal code..

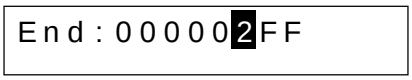
9. Press [Zoom ▸] or [Zoom ◂] to move the blinking digit.

   Example: To change digit 3, press [Zoom ▸] six times.

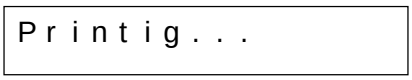
   

10. Change the value of the digit by using the following keys.
    Value increment: [Enlarge]
    Value decrement: [Reduce]

    Example: To change the value to 2, press [Enlarge] twice.

11. Press [OK].
    Printing starts.

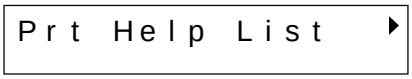
    NOTE: If you want to stop printing immediately, press [Stop].

12. Press [Stop] to exit RAM dump mode.

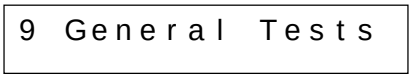
    

4.1.10 RAM TEST [FUNCTION 91]

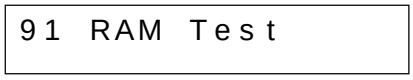
1. Enter service mode.

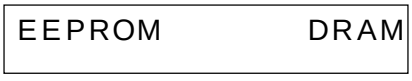
2. Press [Zoom ▸] six times.

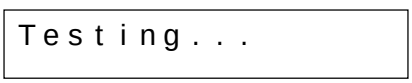
3. Press [OK].

4. Press [OK].

5. Press [Zoom ▸] to select EEPROM area or [◂ Zoom] to select DRAM area. The machine executes the test immediately.

   NOTE: The EEPROM test needs about fifteen minutes to finish.

6. After testing is finished, the test result is displayed.

   Example: If there is no error, "RAM Test OK" is displayed for two seconds then, "9 General Tests" is displayed.

   RAM Test OK:
   9 General Tests

   Example: If error occurs, error address is displayed for three seconds, then "RAM Test Error" is displayed.

   Error at 00FF01
   RAM Test Error

7. Press [OK].

   9 General Tests

4.1.11 KEY TEST [FUNCTION 92]

1. Enter service mode.

   Prt Help List ▸

2. Press [Zoom ▸] six times.

   9 General Tests

3. Press [OK].

   91 RAM Test

4. Press [Zoom ▸].

   92 Key Test

5. Press [OK].

   NOTE: The name of the first key to be tested is displayed.

   Key:Sec.Prt<STA>

6. Press [Second Printer].

   NOTE: If the key functions properly, the machine displays the name of the next key to be pressed.

   Key:Sort <STA>

   NOTE: If the key does not function properly or a different key is pressed, machine displays "Key Test Error".

   Key Test Error

Displayed Names	Actual Key Names
Sec.Prt	Second Printer
Sort	Sort
Reduce	Reduce
Enlarge	Enlarge

Paper	Paper Select
Txt/Pho	Text Fine/Photo1/Photo2
Help/Fu	Help/Function
Left	◀ Zoom
Right	Zoom ▶
OK	OK
Density	Lighter/Auto Image Density/Darker
Minus	Down -
Plus	Up +
Cl.Mode	Clear Modes
Stop	Stop
Start	Start

NOTE: Press [OK] to cancel error display and exit key test mode.

```
1 Tray Pap.Size
```

7. When all the key tests are completed, “Key Test OK” is displayed for two seconds.

```
Key Test OK
```

```
9 General Tests
```

4.1.12 LED TEST [FUNCTION 93]

1. Enter service mode.

```
Prt Help List ▶
```

2. Press [Zoom ▶] six times.

```
9 General Tests
```

3. Press [OK].

```
91 RAM Test
```

4. Press [Zoom ▶] twice.

```
93 LED Test
```

5. Press [OK].

NOTE: All the LEDs on the operation panel light.

```
Testing...
```

6. Press [OK].

```
9 General Tests
```

4.1.13 LCD TEST [FUNCTION 94]

1. Enter service mode.

```
Prt Help List ▶
```

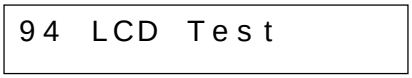
2. Press [Zoom ▶] six times.

```
9 General Tests
```

3. Press [OK].

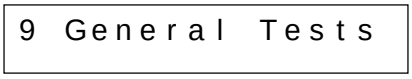
```
91 RAM Test
```

4. Press [Zoom ▸] three times.



5. Press [OK].
   NOTE: All the LCD pixels turn black.

6. Press [OK].



4.2 BIT SWITCHES

⚠CAUTION

Do not adjust a bit switch that is described as "Not used", as this may cause the machine to malfunction. Such bits are for use only in other areas, such as Japan.

⚠CAUTION

Do not turn off the power while "Please wait" or "Registered" is displayed.

NOTE: After setting bit switches, turn power off and on to cause the change to take effect.

4.2.1 FUNCTION SWITCH PARAMETERS (SWFUNC)

Function switch parameters appear on the System Parameter List (service mode 8-81) as SwFunc00 – 05; however, they cannot be accessed nor changed using the service mode functions.

4.2.2 USER SWITCH PARAMETERS (SWUSER)

NOTE: User bit switches that are not listed in the following tables are not used in this machine and cannot be accessed. (For example SwUser00 bits 0 to 4.)

00: SwUser 00 (User Switch 00)				
Bit No.	**FUNCTION**	**NOTE**	**G026**	**G036**
5	Not used	Do not change the default settings.		

02: SwUser 02 (User Switch 02)				
Bit No.	**FUNCTION**	**NOTE**	**G026**	**G036**
2	Toner saving mode selection 0: Off 1: On	Default: off	✓	✓
3	Printer resolution 0: 600 dpi 1: 300 dpi	Default: 600dpi.	✓	✓
4 - 5	Energy save mode selection Bit 5 Bit 4 Setting 0 0 Off 0 1 Not used 1 0 Pre-heat 1 1 Not used	Default: on	✓	✓

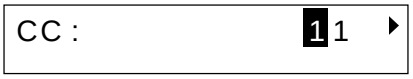
4.2.3 COUNTRY CODE

Generally, it is not necessary to change the country code value. Changing the country code will change the language and the default paper size settings; however, this is not necessary, as the user can change these values with the user bit switches.

The value of the country code “CC” parameter can be selected by using the [Up +] and [Down -] keys. The selectable country numbers are as follows.

No.	Country	No.	Country	No.	Country
01	France	13	Portugal	25	Singapore
02	Germany	14	Netherlands	26	Malaysia
03	U. K.	15	Spain	27	China
04	Italy	16	Israel	28	Taiwan
05	Austria	17	Canada	29	do not use
06	Belgium	18	U. S. A.	30	do not use
07	Denmark	19	Asia	31	do not use
08	Finland	20	Japan	32	do not use
09	Ireland	21	Hong Kong	33	Turkey
10	Norway	22	South Africa	34	Greece
11	Sweden	23	Australia		
12	Switzerland	24	New Zealand		

Example: To change the country number from 18 (U. S .A.) to 11 (Sweden), press [Down -] seven times.



4.2.4 SERVICE SWITCH PARAMETERS (SWSERV)

NOTE: These parameters are under the user parameter menu, but they can be accessed only using the service mode.

Service Switch Number	FUNCTION	NOTE	G026	G036
S00: SwServ 00	Not used	Do not change.		
S04: SwServ 04	Start timing of data writing	00(H) to FF(H) unit = 0.1 mm [4 mils] Default: 50(H) (8 mm) [0.31"]	✓	✓
S05: SwServ 05	No-feed detection time of ADF (Jam check)	00(H) to FF(H) unit = 1 second Default: 02(H) (2 seconds)		✓
S06: SwServ 06	Read start timing for scanning document in ADF mode—count starts when the lead edge of the document passes sensor S2.	68(H) to 98(H) unit = 1 step (0.085 mm) [3.4 mils] Default: 80(H) (10.88 mm) [0.43"]		✓
S07: SwServ 07	Read end timing for scanning document in ADF mode—count starts when the trail edge of the document passes sensor S2.	68(H) to 98(H) unit = 1 step (0.085 mm) [3.4 mils] Default: 80(H) (10.88 mm) [0.43"]		✓
S08: SwServ 08	Read start point of horizontal scanning in ADF mode	00(H) to FF(H) unit = 1 dot (0.085 mm) [3.4 mils] Default: 84(H) (11.2 mm) [0.44"]		✓
S09: SwServ 09	Not used	Do not change the default settings.		
S0A: SwServ 0A	Read start timing for scanning document in flatbed mode—count starts when the CCD unit leaves home position.	51(H) to AF(H) unit = 1 step (0.042 mm) [1.7 mils] Default: 80(H) (5.43 mm) [0.21"]	✓	✓
S0B: SwServ 0B	CCD unit stop position in ADF copy mode	51(H) to AF(H), unit = 1 step (0.042 mm) [1.7 mils] Default: 80(H) (5.43 mm) (0.21")		✓
S0C: SwServ 0C	Not used	Do not change the default settings.		
S0D: SwServ 0D	Shading end point in flatbed mode	68(H) to AF(H) unit = 1 step (0.042 mm) [1.7 mils] Default: 80(H) (5.43 mm) [0.21"]	✓	✓
S0E: SwServ 0E	Not used	Do not change the default settings.		
S0F: SwServ 0F	Read start point of horizontal scanning in flatbed mode	00(H) to FF(H) unit = 1 dot (0.085 mm) [3.4 mils] Default: 84(H) (11.2 mm) [0.44"]	✓	✓
S10: SwServ 10	Not used	Do not change the default settings.		

4.2.5 COUNTRY SWITCH PARAMETERS (SWCNTRY)

C03: SwCntry 03 (Country Switch 03)				
Bit No.	**FUNCTION**	**NOTE**	**G026**	**G036**
0 - 5	Country code bit 5 4 3 2 1 0 0 0 0 0 0 0 France 0 0 0 0 0 1 Germany 0 0 0 0 1 0 U. K. 0 0 0 0 1 1 Italy 0 0 0 1 0 0 Austria 0 0 0 1 0 1 Belgium 0 0 0 1 1 0 Denmark 0 0 0 1 1 1 Finland 0 0 1 0 0 0 Ireland 0 0 1 0 0 1 Norway 0 0 1 0 1 0 Sweden 0 0 1 0 1 1 Switzerland 0 0 1 1 0 0 Portugal 0 0 1 1 0 1 Netherlands 0 0 1 1 1 0 Spain 0 0 1 1 1 1 Israel 0 1 0 0 0 0 Canada 0 1 0 0 0 1 U. S. A. 0 1 0 0 1 0 Asia 0 1 0 0 1 1 Japan 0 1 0 1 0 0 Hong Kong 0 1 0 1 0 1 South Africa 0 1 0 1 1 0 Australia 0 1 0 1 1 1 New Zealand 0 1 1 0 0 0 Singapore 0 1 1 0 0 1 Malaysia 0 1 1 0 1 0 China 0 1 1 0 1 1 Taiwan 0 1 1 1 0 0 Not used 0 1 1 1 0 1 Not used 0 1 1 1 1 0 Not used 0 1 1 1 1 1 Not used 1 0 0 0 0 0 Turkey 1 0 0 0 0 1 Greece	This parameter is an alternate method to parameter CC for entering the country code. Both methods change the same memory location. When the country code is changed, the machine reverts to the default language and paper size settings for the country selected.	✓	✓
6, 7	Not used	Do not change the default settings.		

Service Tables

C04: SwCntry 04 (Country Switch 04)				
Bit No.	**FUNCTION**	**NOTE**	**G026**	**G036**
0, 1	Paper size group selection of upper tray Bit 1 Bit 0 Group 0 0 Europe/Asia 0 1 U. S. A. 1 0 Japan 1 1 Not used	The following paper sizes can be selected Europe/Asia: <Paper width >= 203 mm> A4 → A5 landscape → 8¼ x 13 → Letter (8½ x 11) → 8 ½ x 5 ½ → 8½ x 13 → 8 x 10½ → Legal (8½ x 14) → return to A4 <Paper width < 203 mm> A5 portrait → C5 Env → C6 Env →DL Env → return to A5 portrait USA: <Paper width >= 203 mm> Same as Europe/Asia <Paper width < 203 mm> 5½ x 8½ → Exec (7¼ x 10½) → Com 10 (4 1/8 x 9½) → Mon. (3 7/8 x 7½) → return to 5½ x 8½ Japan: <Paper width >= 203 mm> Same as Europe/Asia <Paper width < 203 mm> A5 portrait → B5 portrait →Post Card → return to A5 portrait	✓	✓
2 - 7	Not used	Do not change the default setting.		

5. PREVENTIVE MAINTENANCE

5.1 MAINTENANCE ITEMS AND METHODS

The G series does not require preventive maintenance.
However, if the machine is serviced, the following items must be done.

Action Symbol: L: Lubricate I: Inspect C: Clean A: Adjust

Item	Action	Method
Scanner (Flatbed)		
Platen Cover Sheet	C	Soft cloth dampened with water
Exposure Glass	C	Soft cloth dampened with alcohol or water
Scanner (ADF)		
Separation Tab	C	Soft cloth dampened with water
Pick-up Roller	C	Soft cloth dampened with water
Document Feed Roller	C	Soft cloth dampened with water
Document Feed-in Roller	C	Soft cloth dampened with water
Document Feed-out Roller	C	Soft cloth dampened with water
Document Guide Film	C	Soft cloth dampened with water
CCD Guide Rail	L	Grease - CPL501
Ground contact point of the feed-in roller shaft	L	Grease - KS660
Ground contact point of the feed-out roller shaft	L	Grease - KS660
Paper Feed		
Paper Feed Roller	C	Soft cloth dampened with water
Ground contact point of the paper feed roller shaft	L	Grease - KS660
Transfer Roller		
Transfer Roller	C	Blower Brush (Remove the roller and then blow off adhered toner.)
Fusing		
Cleaning Pad	I	Replace when the toner cassette is changed.
Hot Roller Bushing (Left)	L	Grease – KS660
Gear Train		
Gears	L	Grease - CPL501

6. REPLACEMENT AND ADJUSTMENT

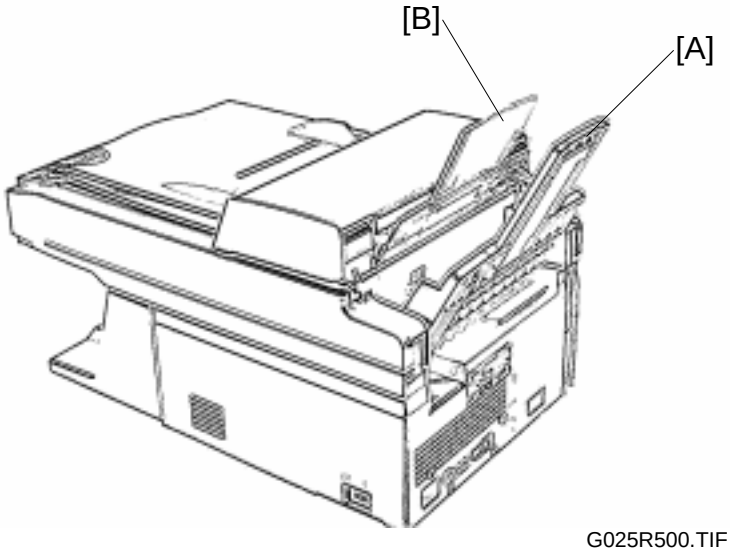
6.1 EXTERIOR

6.1.1 UPPER COVER REMOVAL

[G036 MODEL]

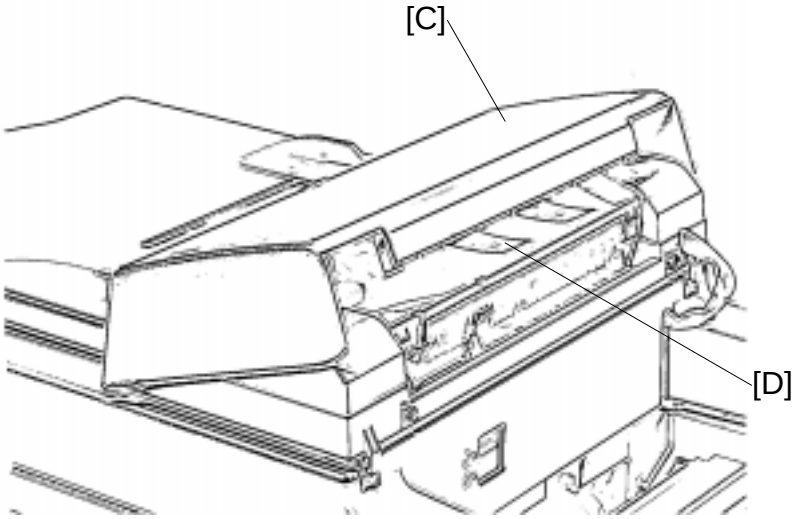
A: Upper paper tray

B: Document exit tray



G025R500.TIF

C: ADF upper cover

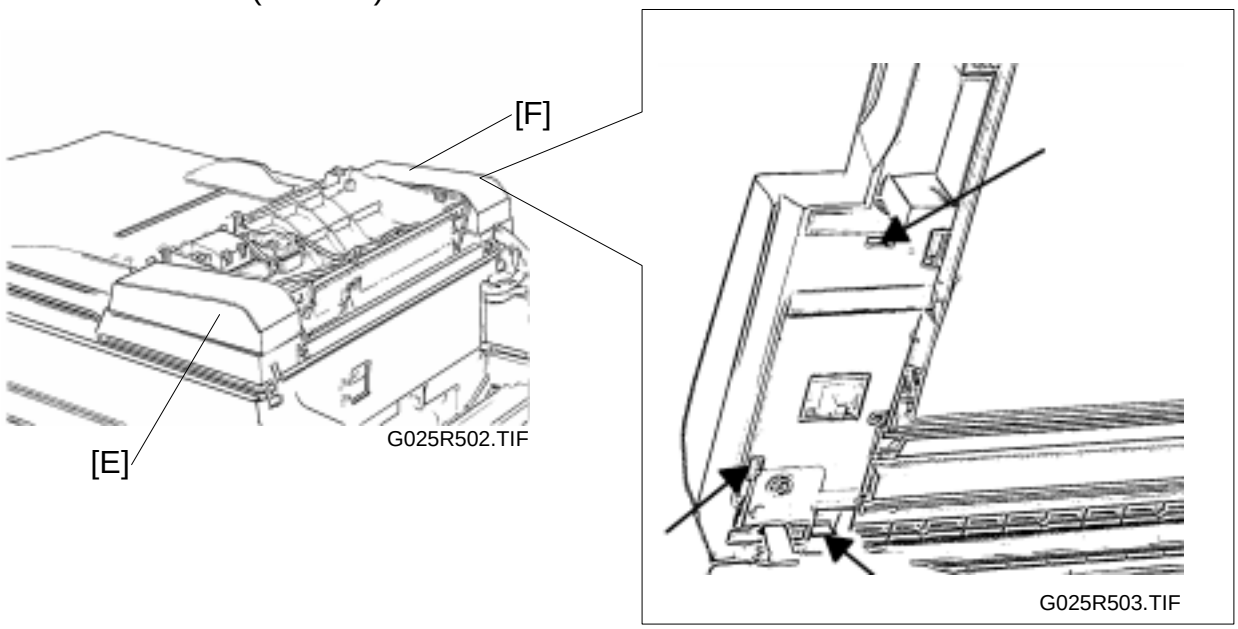


G025R501.TIF

NOTE: Do not damage the mylar [D].

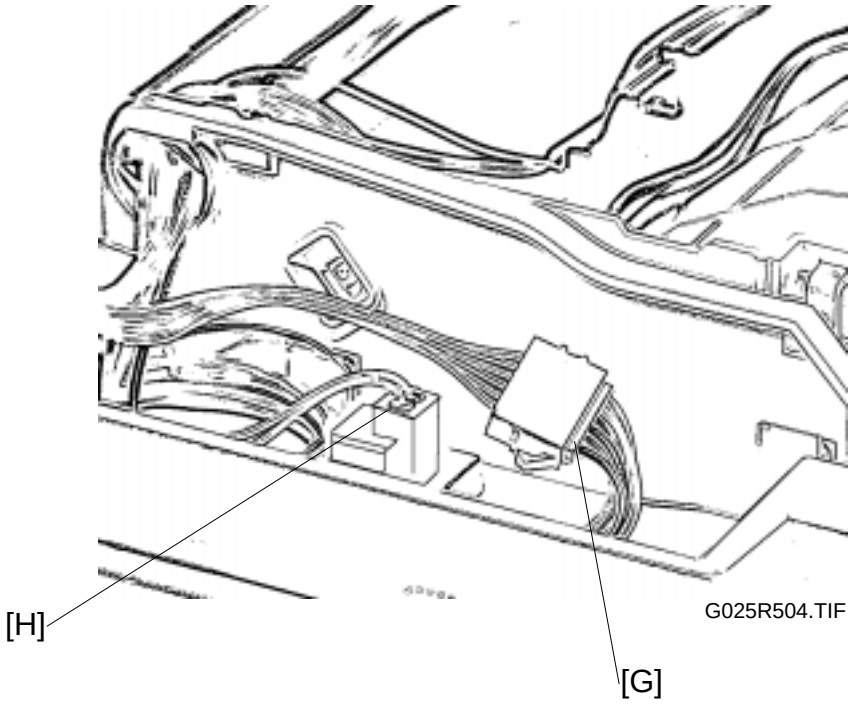
E: ADF right cover (3 hooks)

F: ADF left cover (3 hooks)

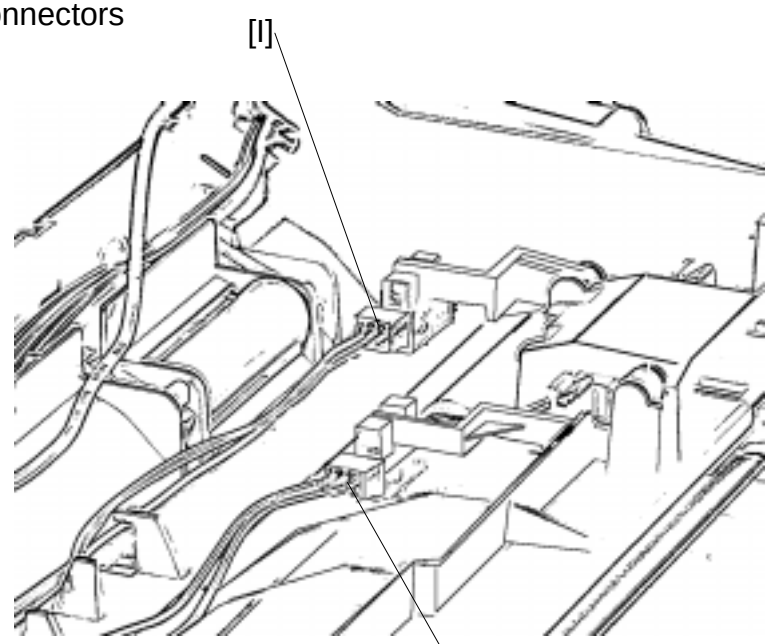


G: Motor connector

H: Platen cover switch connector

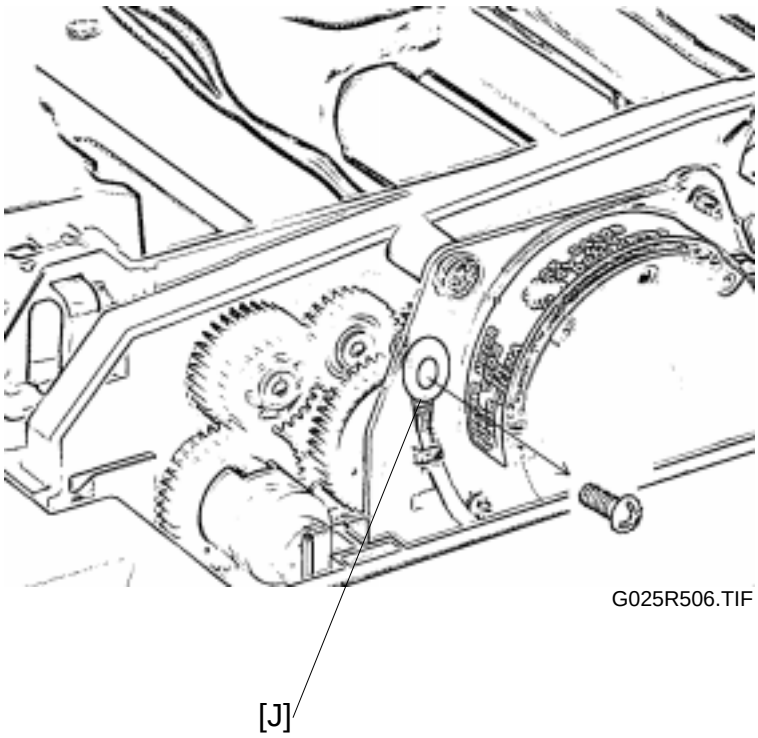


I: 2 sensor connectors



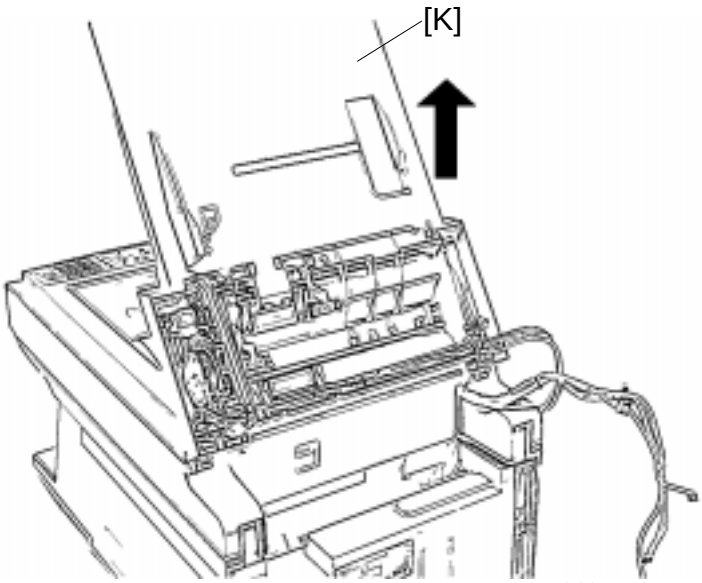
G025R505.TIF

J: Grounding wire (1 tapping screw)



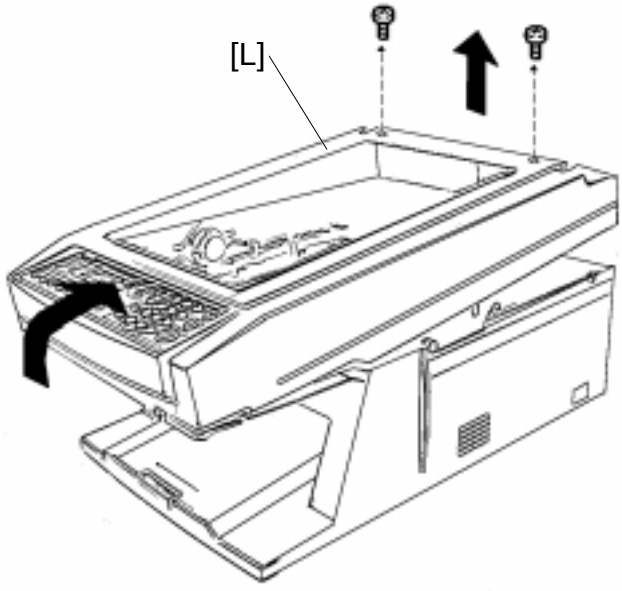
G025R506.TIF

K: Platen cover unit



G025R507.TIF

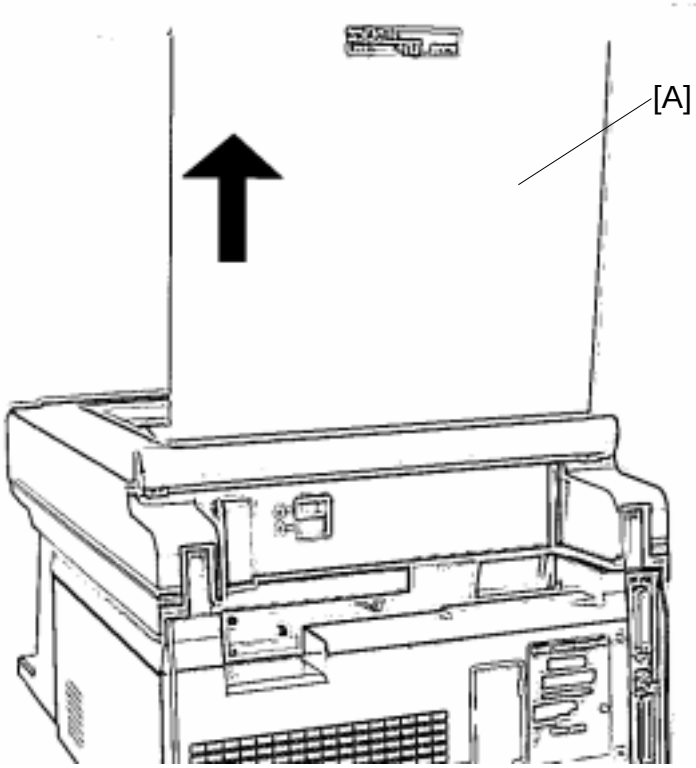
L: Upper cover (2 Philips screws)



G025R508.TIF

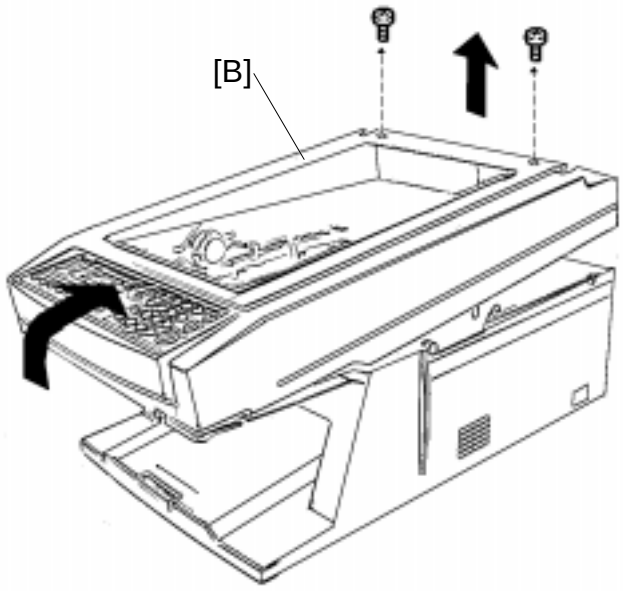
[G026 MODEL]

A: Platen cover unit



G025R509.TIF

B: Upper cover (2 Philips screws)



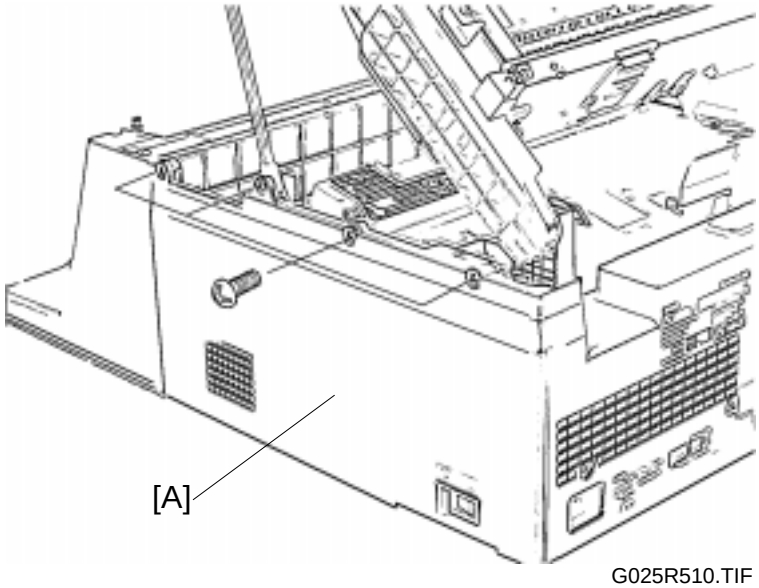
G025R508.TIF

6.1.2 RIGHT COVER REMOVAL

Preparation

1) Remove the upper cover. (See the Upper Cover Removal.)
2) Open the upper unit.

A: Right cover (4 tapping screws and 6 hooks)



G025R510.TIF

CAUTION: Do not close the upper unit while the right cover is removed. Otherwise, lower ring of the gas spring may suddenly slip off the anchor post and possibly cause injury and damage to the frame

NOTE: The right cover holds the interlock switch actuator, gas spring, and drive gears in position. They can slip off easily when the right cover is off.

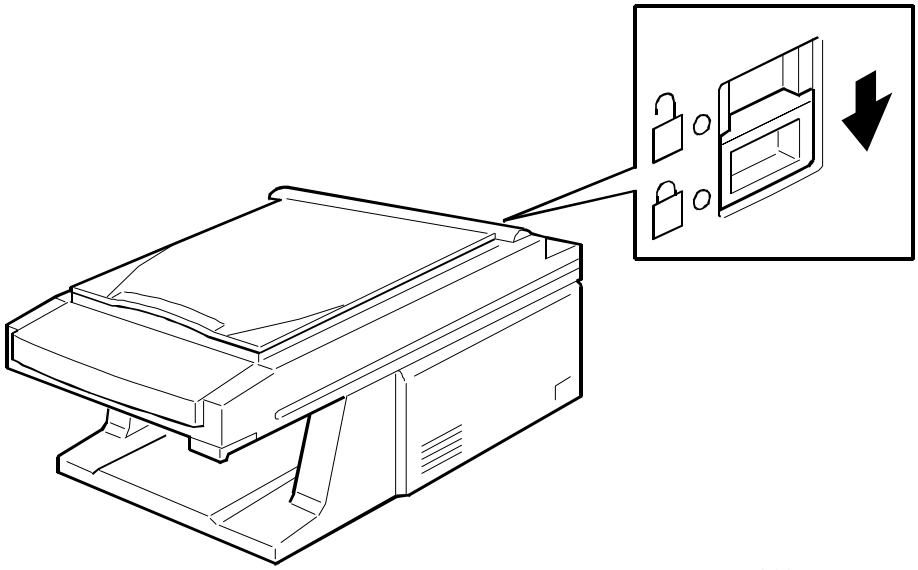
Reinstallation

Make sure the harness is not pinched by the right cover.

6.1.3 UPPER UNIT REMOVAL

Preparation

1) Set the CCD unit lock lever to the lock position as shown in the figure.
2) Remove the upper cover. (See the Upper Cover Removal.)
3) Open the upper unit.

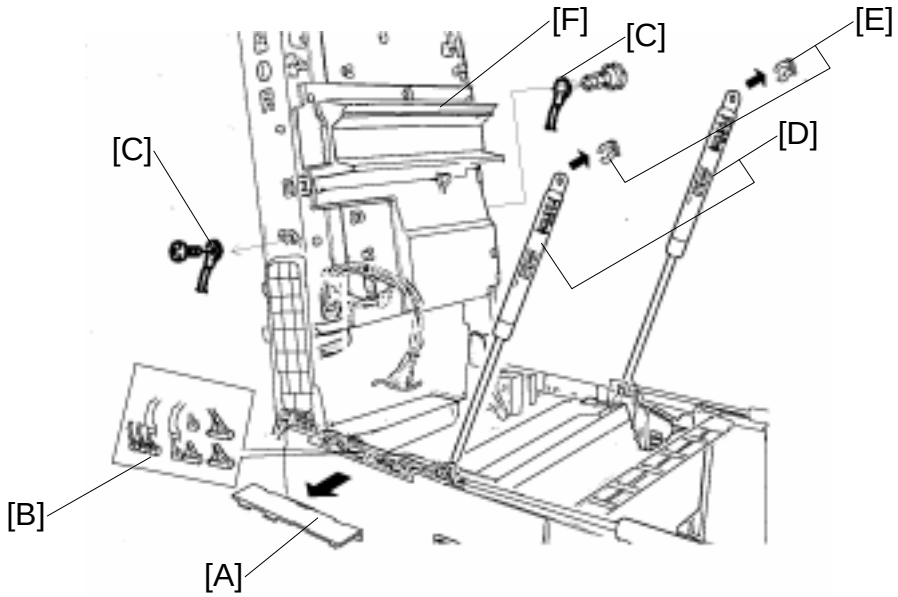


G025R511.WMF

A: Harness cover (3 hooks)

B: 2 flat cables and 4 (G026) or 8 (G036) connectors

C: 2 Grounding wires (2 Philips screws)



G025R512.TIF

D: 2 gas springs
E: 2 snap rings

⚠WARNING

1. Do not release the gas springs from their anchor posts while the upper unit is closed. Otherwise, they will expand suddenly and may cause injury.

2. When the gas springs are removed, hold the upper unit to prevent it from falling.

Turn the upper unit perpendicular (90º) to remove it.

CAUTION: Do not leave the upper unit fully opened. Otherwise, the upper unit or whole machine may be fall over and damaged.

Do not damage the mylar [F].

Reinstallation

NOTE: 1) Make sure the gas springs are oriented as shown in the figure.
2) Make sure to unlock the CCD lock lever.

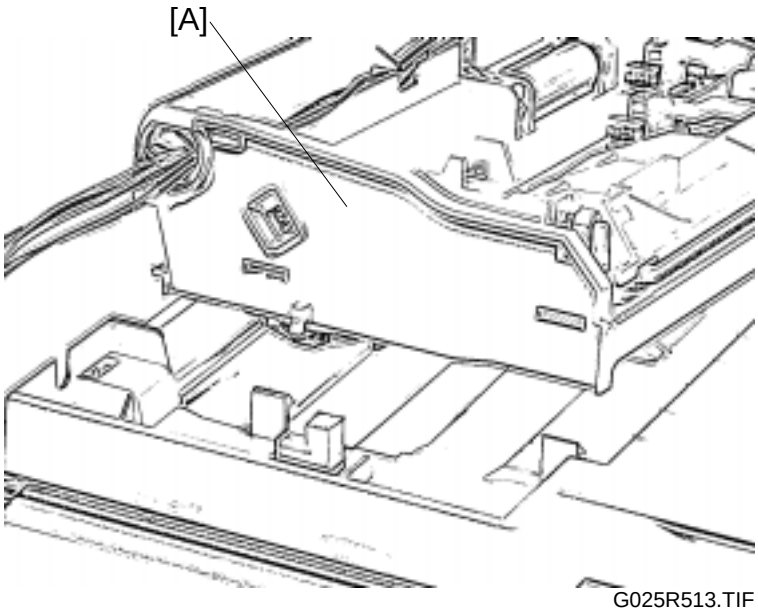
6.2 OPTICS

6.2.1 ADF UNIT REMOVAL (G036 MODEL)

Preparation: Remove the following parts. (See the Upper Cover Removal.)

1) ADF upper cover
2) ADF right and left covers
3) ADF motor connector
4) Platen cover switch connector
5) 2 sensor connectors
6) Grounding wire

A: ADF unit (4 hooks)



G025R513.TIF

6.2.2 CCD UNIT REMOVAL

Preparation

1) Remove the upper cover. (See the Exterior Cover Removal.)

Slide the CCD unit [A] away from the home position.

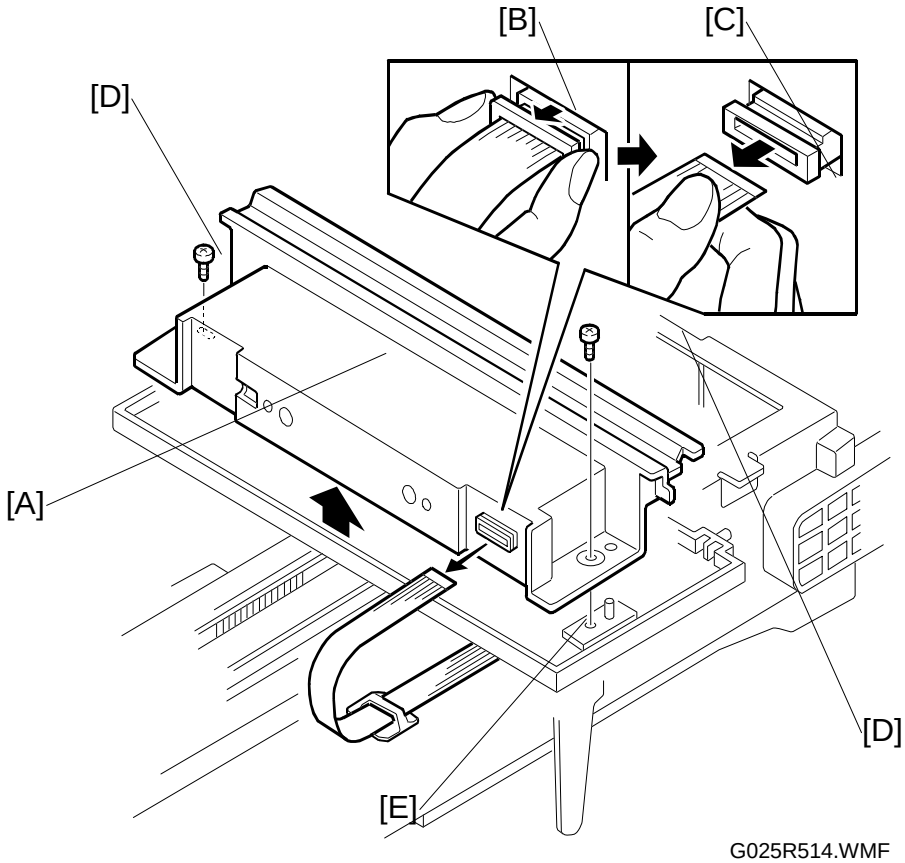
Release (pull) the flat cable lock [B].

Remove the flat cable [C].

Remove the CCD unit.

D: 2 tapping screws

While removing the tapping screws [D], hold down the CCD unit to prevent it from being twisted, which could cause the CCD base plate [E] to come off the rail.



G025R514.WMF

Reinstallation

Perform read start timing and carriage stop position adjustment.

Perform read start point of horizontal scanning adjustment.

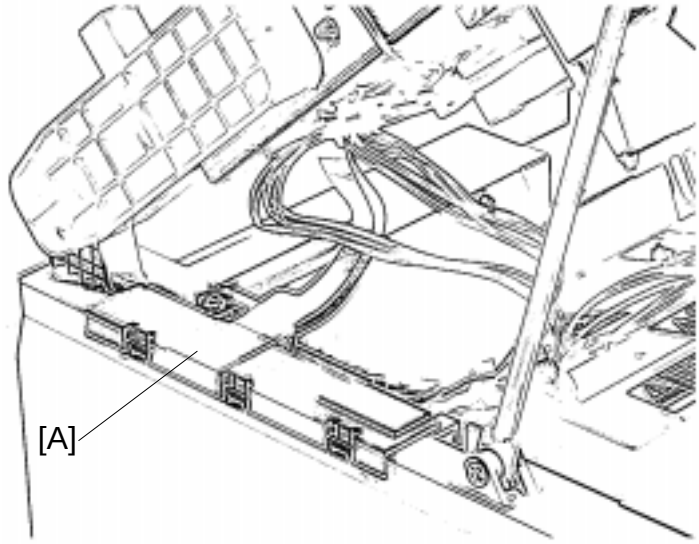
6.2.3 LASER UNIT REMOVAL

⚠WARNING FOR LASER UNIT
This machine contains a laser beam generator. Laser beams can cause permanent eye damage. Do not open the laser unit or look along the laser beam path while the main power is on.

Preparation

1) Remove the upper cover. (See the Exterior Cover Removal.)
2) Open the upper unit.

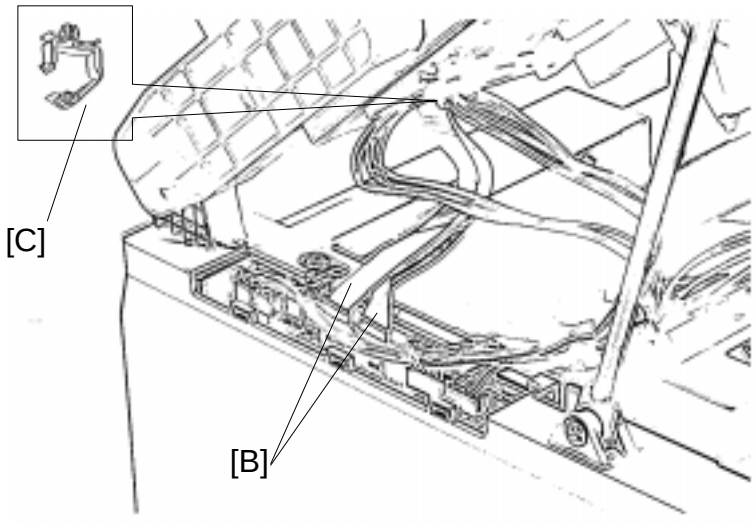
A: Harness cover (3 hooks)



G025R515.TIF

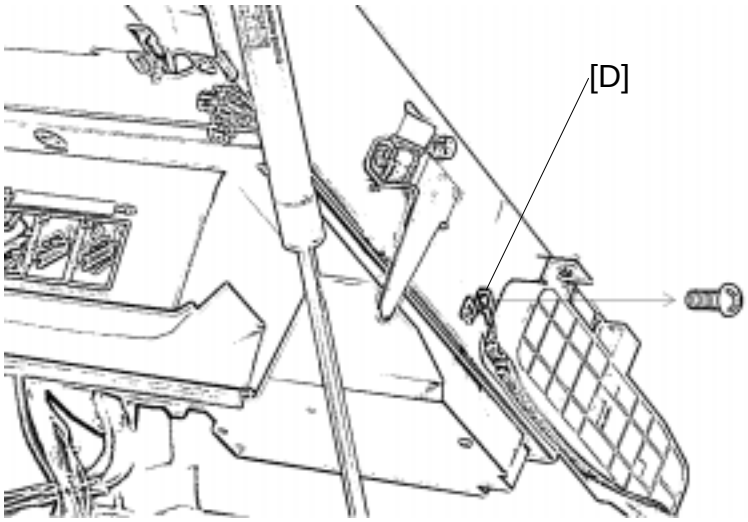
B: 2 flat cables

C: harness clamp



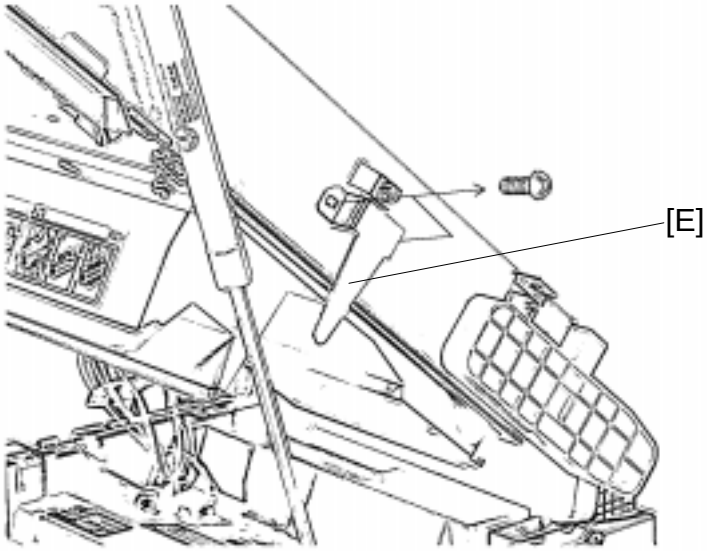
G025R516.TIF

D: Grounding wire (1 Philips screw)



G025R517.TIF

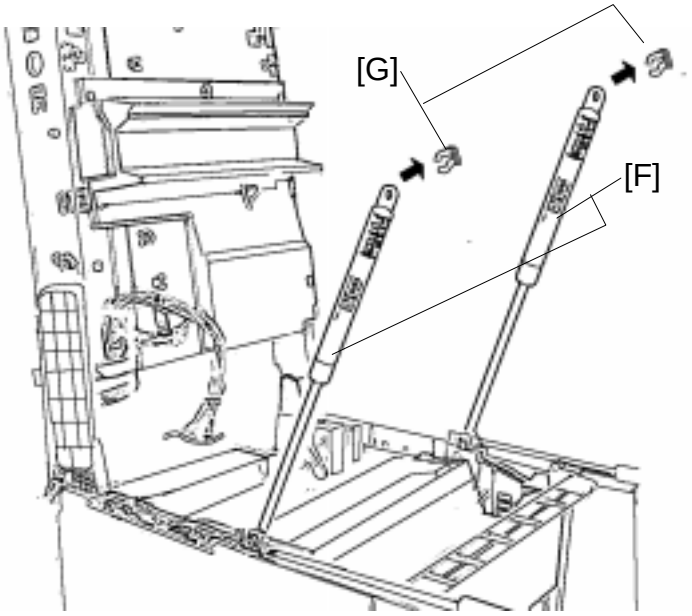
E: Interlock switch actuator (2 Philips screws)



G025R518.TIF

F: 2 gas springs

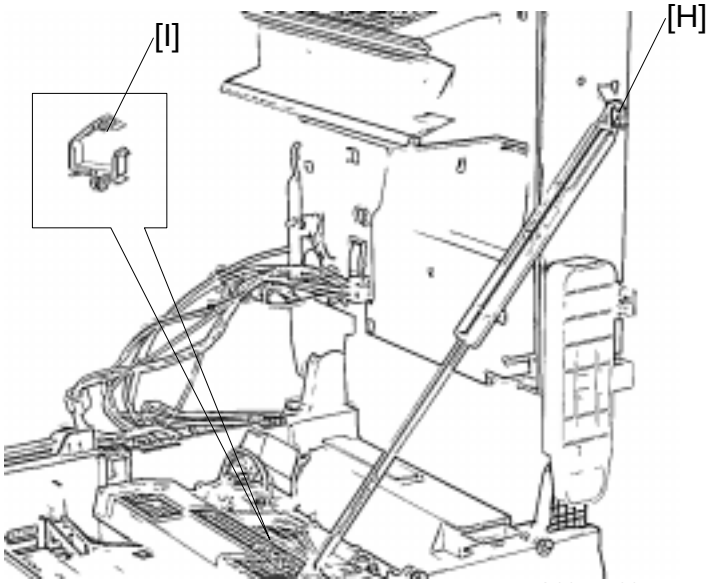
G: 2 snap rings



G025R519.TIF

Open the upper unit to 90 degrees and attach the gas spring to the maintenance pin.[H]

[I] Harness clamp



G025R520.TIF

⚠WARNING

1. Do not release the gas springs from their anchor posts while the upper unit is closed. Otherwise, they will expand suddenly and may cause injury.

2. When the gas springs are removed, hold the upper unit to prevent it from falling.

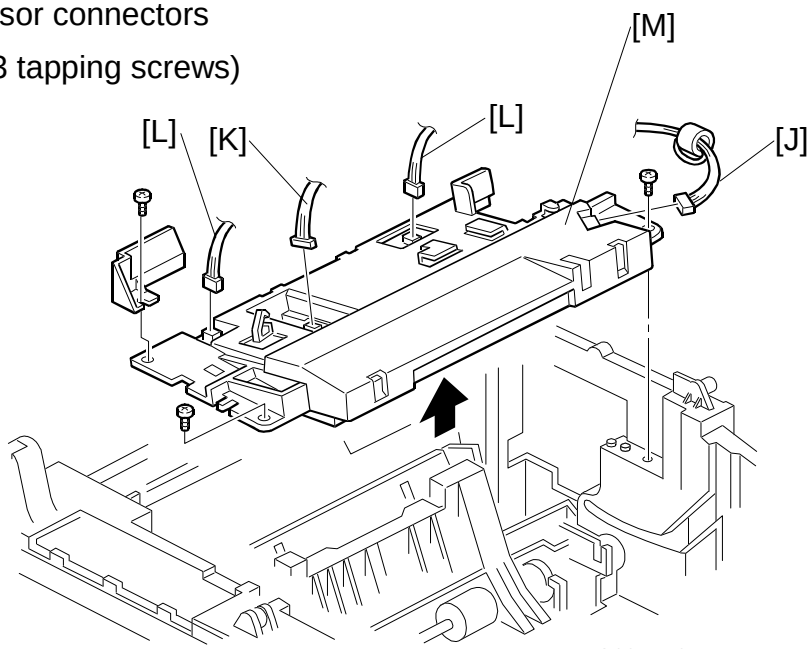
CAUTION: Do not leave the upper unit fully opened. Otherwise, the upper unit or whole machine may be fall over and be damaged.

J: Laser Diode connector

K: Polygon motor connector

L: 2 paper sensor connectors

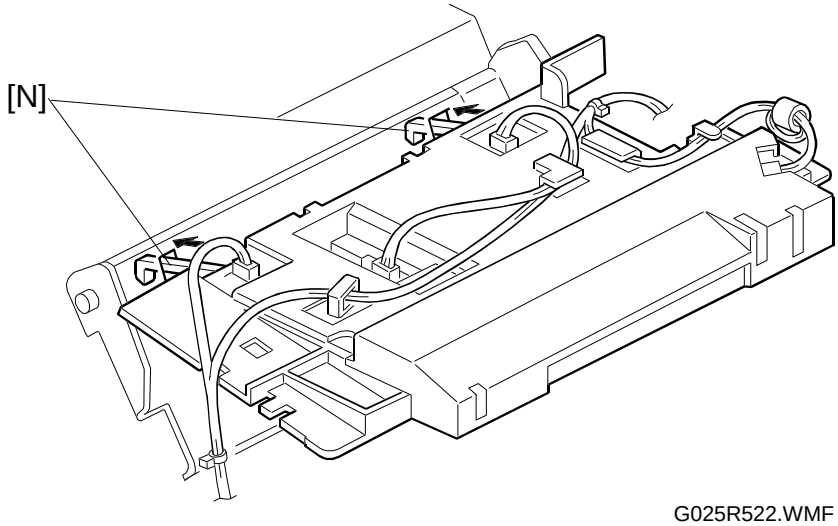
M: Laser unit (3 tapping screws)



G025R521.WMF

Reinstallation

Set the harness as shown.



G025R522.WMF

Perform registration adjustment.

NOTE: 1) Make sure the two paper sensor actuators [N] are positioned in the slits of the upper tray bottom plate correctly.
2) Do not damage the mylar.

6.2.4 CCD DRIVE MOTOR REMOVAL

Preparation

1) Remove the upper unit. (See the Upper Unit Removal.)
2) Turn the upper unit upside down.

A: Scanner under cover (3 Philips screws)

B: Release the tension pulley. (1 Philips screw)

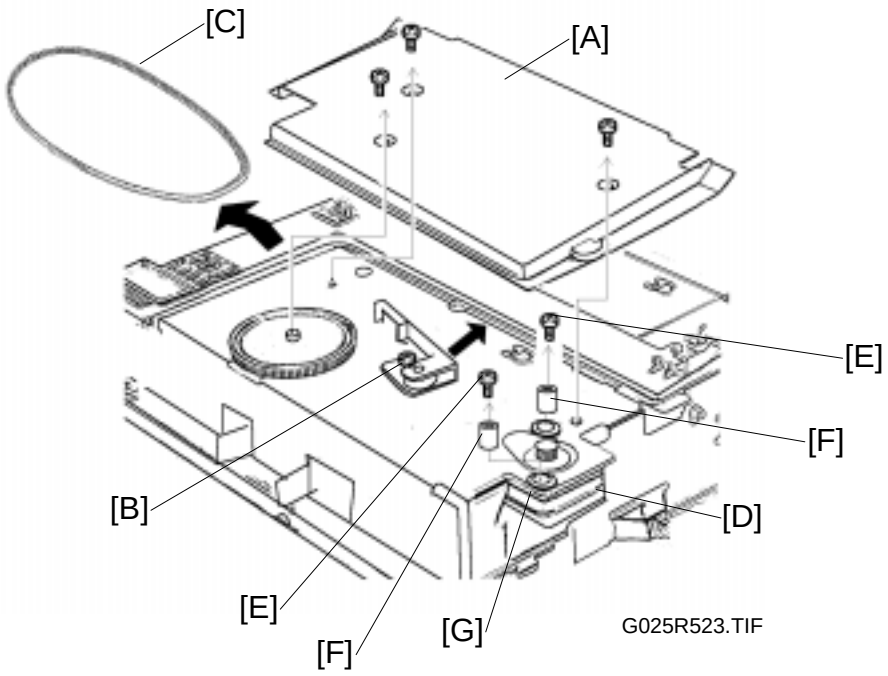
C: Timing belt

D: CCD drive motor

E: 2 Philips screws

F: 2 collars

G: Base bushing



6.3 PAPER FEED

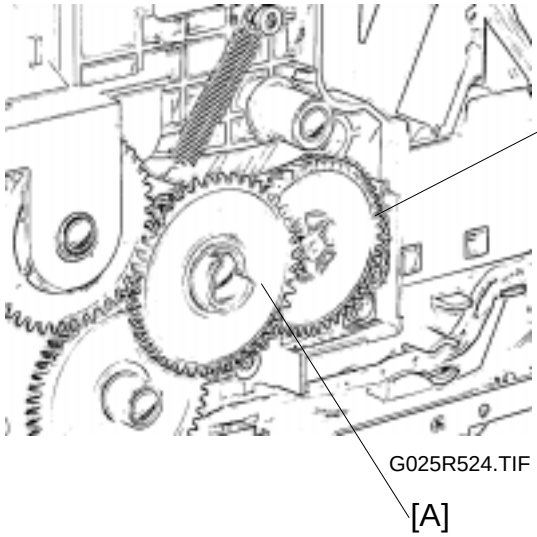
6.3.1 PAPER FEED ROLLER REMOVAL

Preparation

3) Remove the toner cassette.
4) Remove the upper unit. (See the Upper Unit Removal.)
5) Remove the Laser unit. (See the Laser Unit Removal.)
6) Remove the main motor bracket. (See the Main motor Removal.)

A: Gear

B: Gear

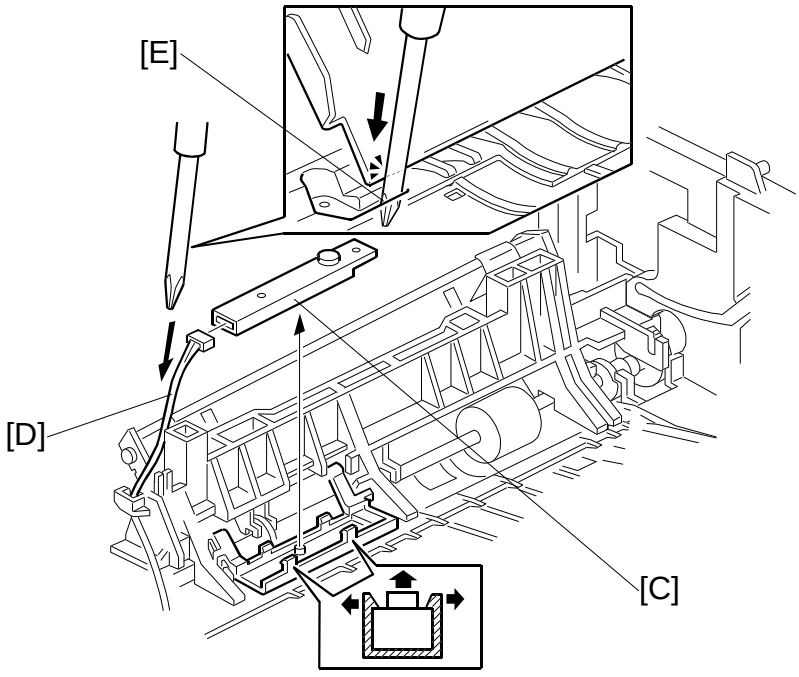


G025R524.TIF

C: Toner end sensor

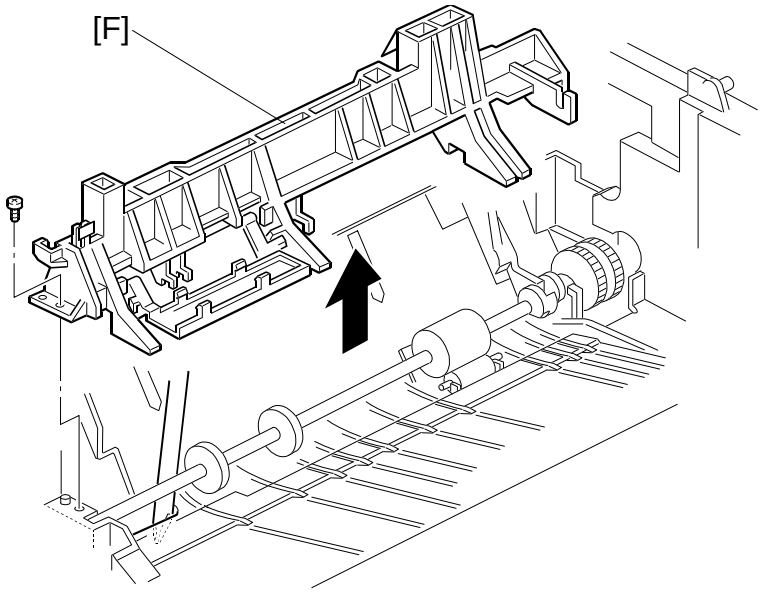
D: Connector and harness.

Insert a screwdriver in the hole on the left side [E] to hold the upper tray bottom plate apart from the paper feed roller.



G025R574.WMF

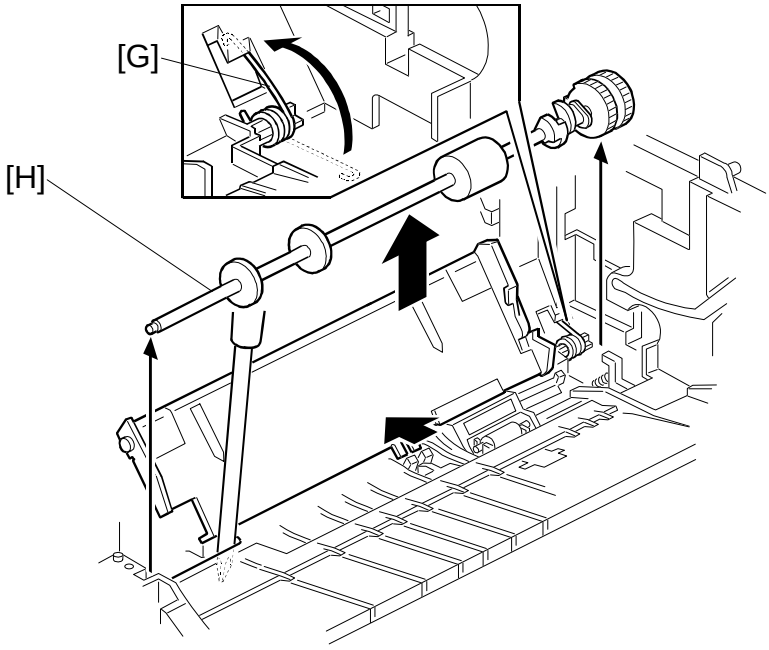
F: Paper feed roller guide (1 tapping screw)



G025R526.WMF

Hook the cam spring [G] in the cut out of the frame as shown below.

H: Paper feed roller

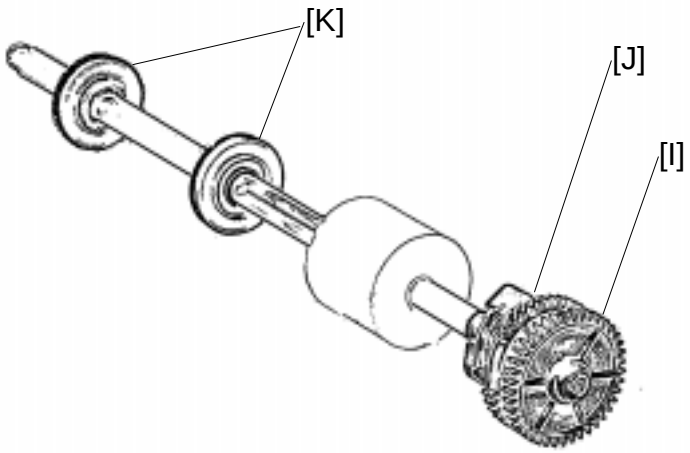


G025R527.WMF

I: Gear

J: Pick up cam

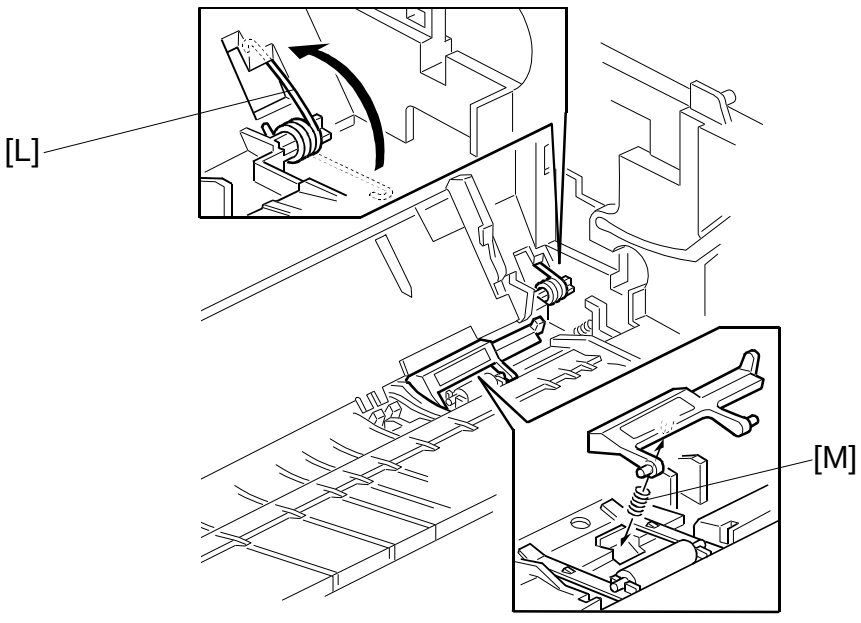
K: 2 Guide rollers



G025R528.TIF

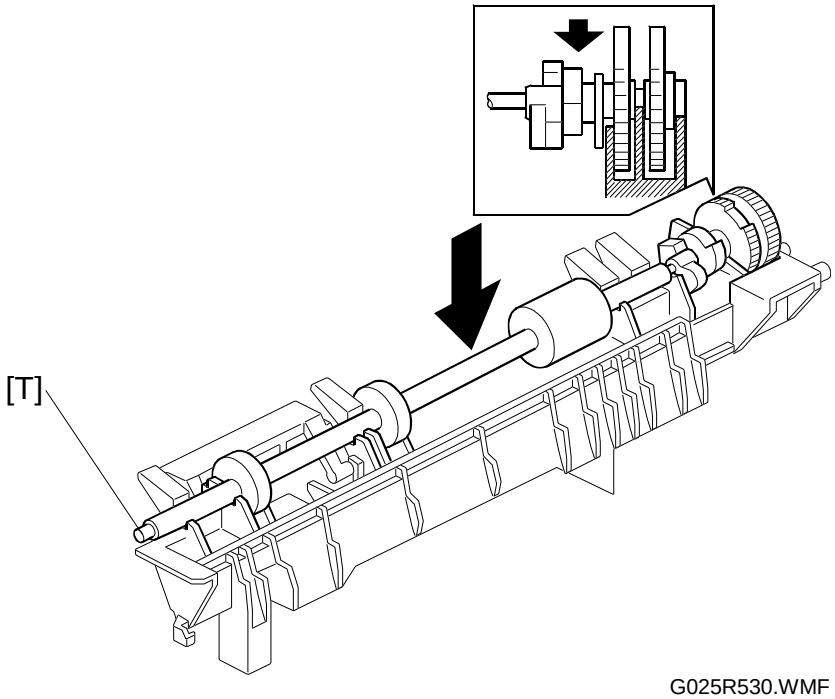
Reinstallation

1) Make sure that the end of the cam spring [L] is hooked in the cut out of the frame as shown below.
2) Make sure the friction pad spring [M] is set properly in the square notch as shown below.



G025R529.WMF

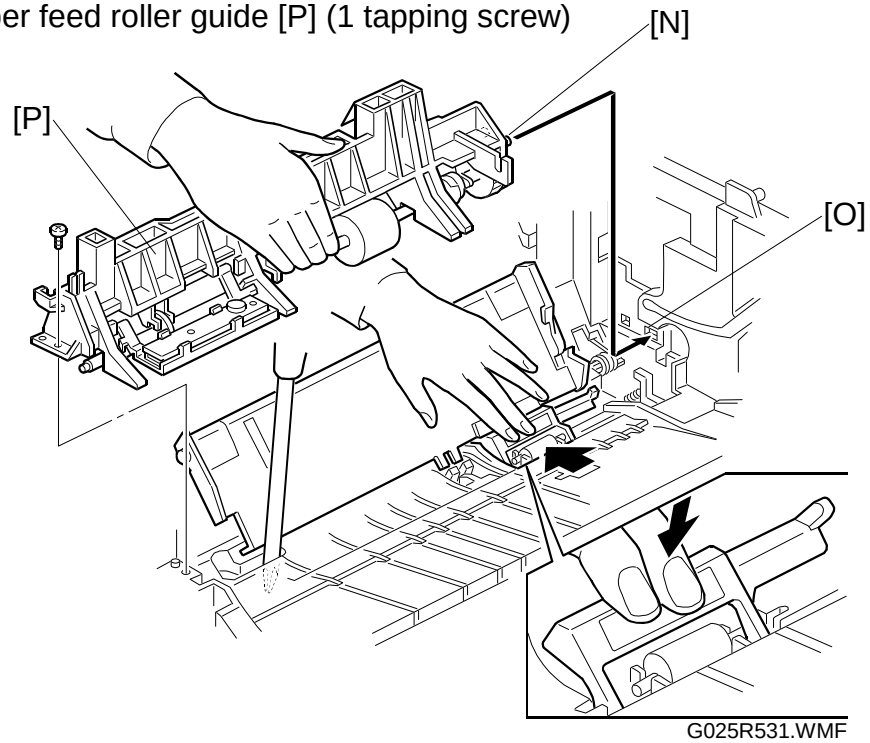
Make sure the guide rollers are positioned correctly as shown.



G025R530.WMF

NOTE: Apply grease (KS-660) to the guide roller shaft [T] to ensure ground contact.

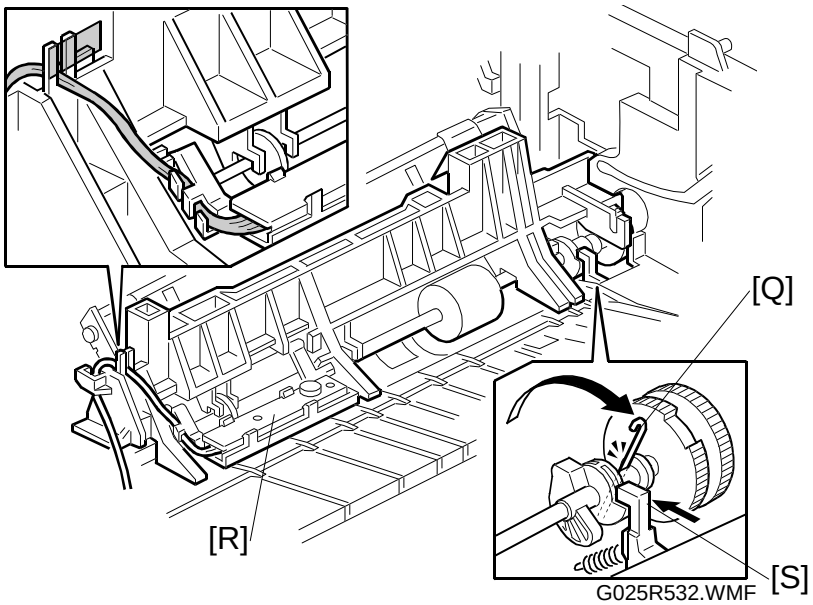
3) Set the paper feed roller assembly, so that the 2 pins [N] are set in the holes [O] on the frame, while pressing the friction pad.
4) Paper feed roller guide [P] (1 tapping screw)



G025R531.WMF

Make sure the harness is not be pinched by the paper feed roller assembly.

5) Unhook the end of the cam spring [Q] from the cut-out of the frame and make sure it is located on the pick up cam as shown.
6) Install the toner end sensor [R] and the harness as shown.



7) Install the gears.

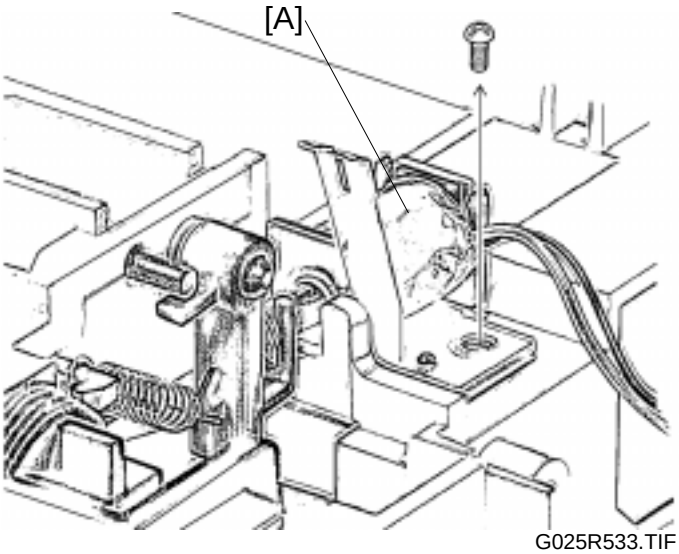
Make sure that the pick up cam stopper [S] is positioned correctly.

6.3.2 PAPER PICK-UP SOLENOID REMOVAL

Preparation

1) Remove the lower unit shell. (See the Lower Unit Shell Removal)
2) Turn the lower unit shell upside down.

A: Paper pick-up solenoid (1 tapping screw)



G025R533.TIF

6.4 OPTIONAL PAPER FEED UNIT

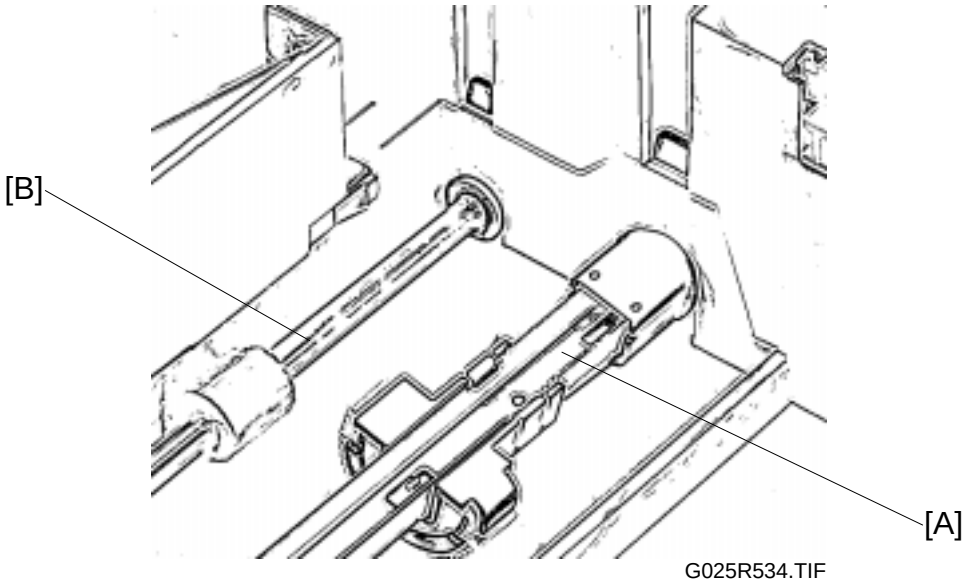
6.4.1 PAPER FEED TRAY MOTOR AND SOLENOID REMOVAL

Preparation

1) Remove the lower tray.
2) Turn the optional paper feed unit upside down.

A: Paper pick-up roller assembly (2 bushing hooks)

B: Paper feed roller assembly (3 hooks)

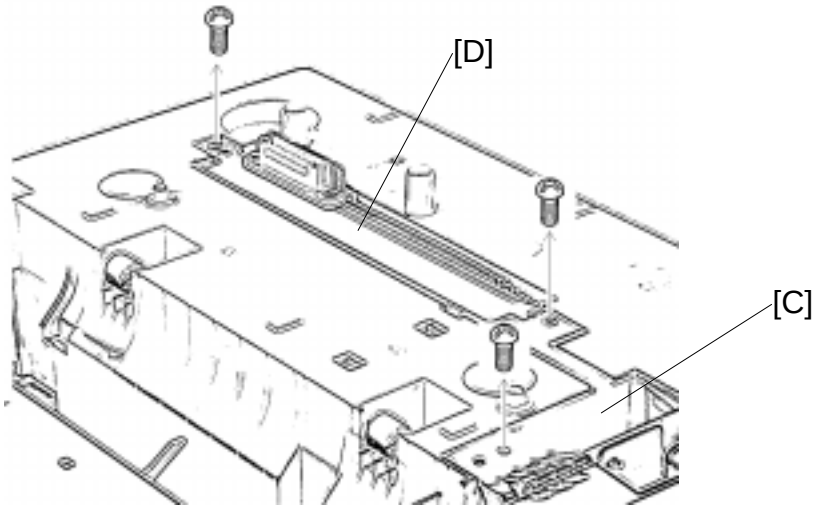


G025R534.TIF

Turn over the optional paper feed unit.

C: Grounding plate (2 tapping screws)

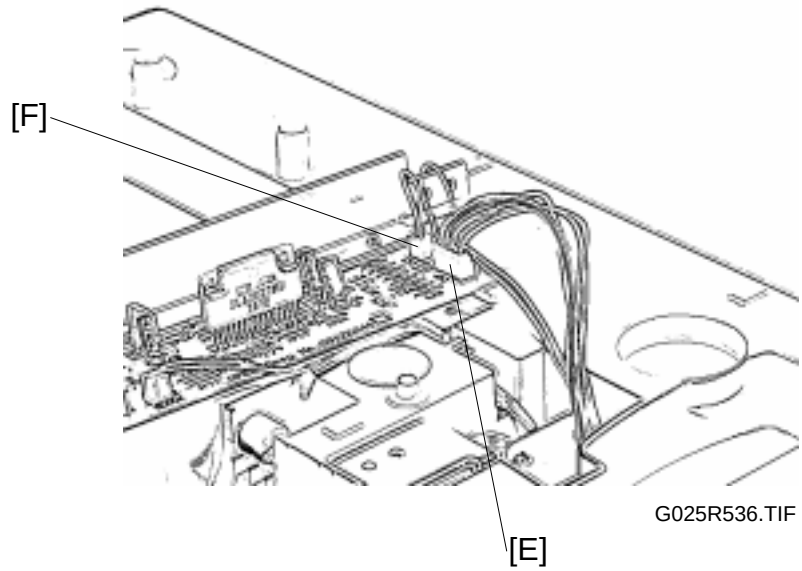
D: Control board (1 tapping screw)



G025R535.TIF

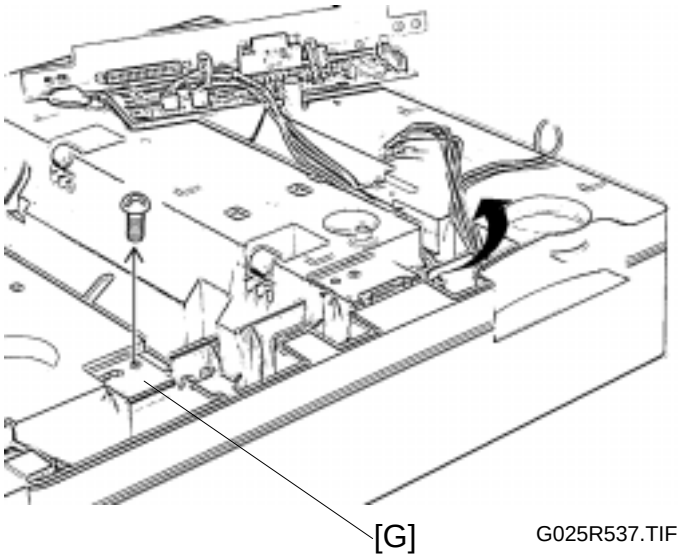
E: Paper feed tray motor connector (CN2)

F: Paper feed tray solenoid connector (CN3)



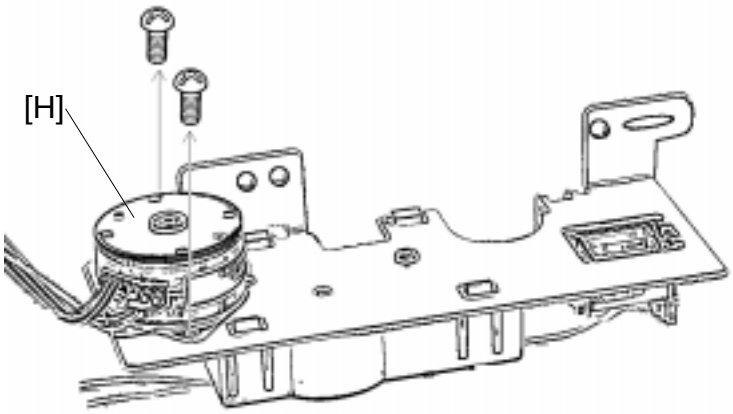
G025R536.TIF

G: Drive unit (1 tapping screw)



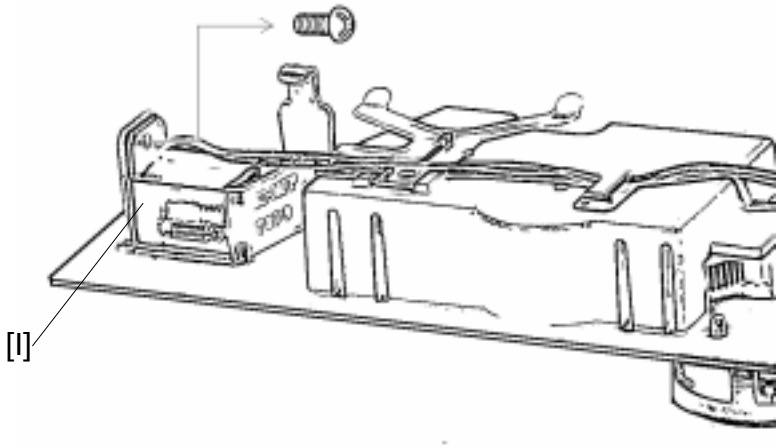
G025R537.TIF

H: Feed motor (2 Philips screws)



G025R538.TIF

I: Paper feed tray solenoid (1 Philips screw)



G025R539.TIF

Reinstallation

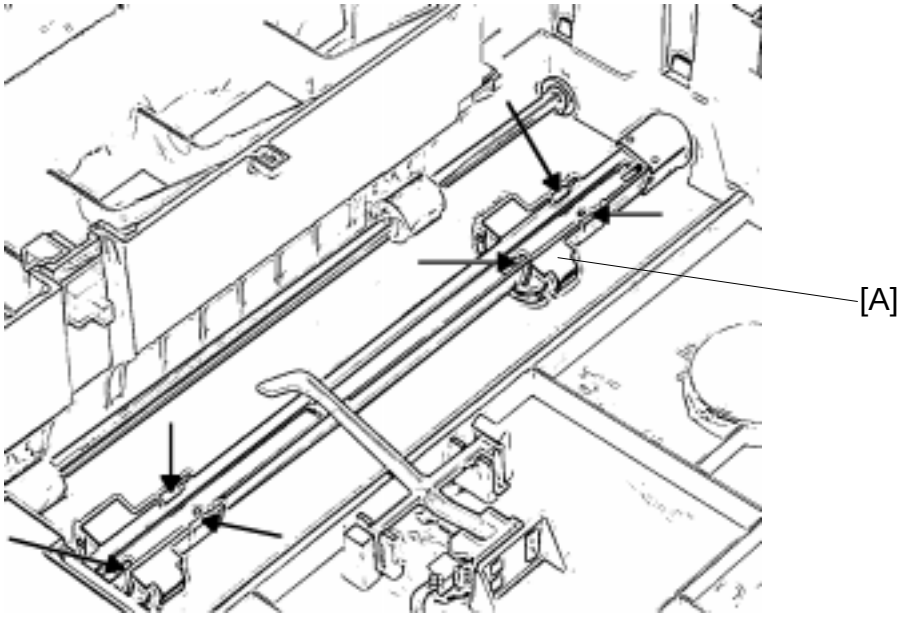
Make sure the harness is not pinched by the drive unit.

6.4.2 PAPER PICK-UP ROLLER REMOVAL

Preparation

1) Remove the lower tray.
2) Turn the optional paper feed unit upside down.

A: Paper pick-up roller (3 hooks)



G025R540.TIF

6.5 FUSING

6.5.1 FUSING UNIT REMOVAL

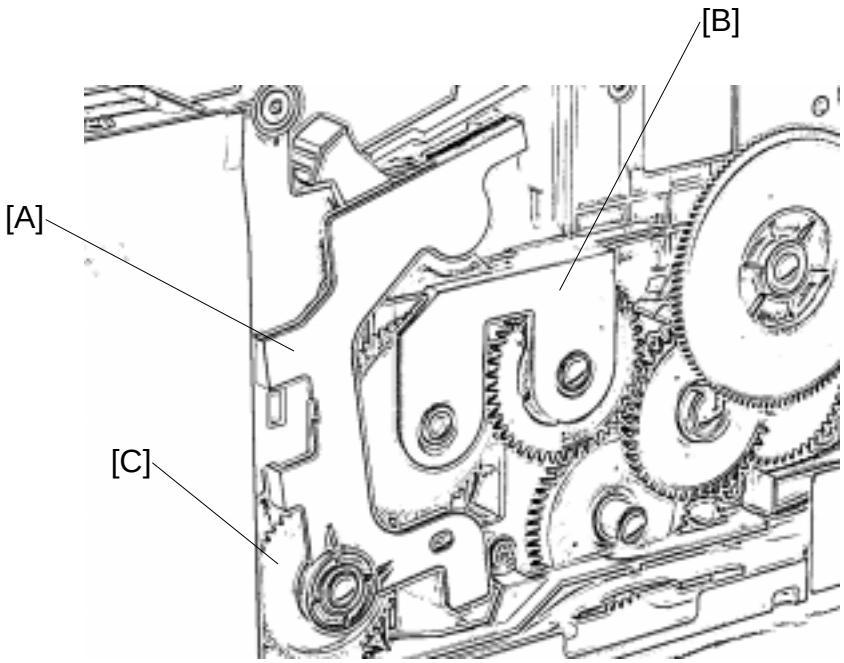
Preparation

3) Remove the toner cassette.
4) Remove the upper unit.
5) Remove the right cover. (See the Right Cover Removal)

A: Interlock switch actuator

B: Release lever and gears

C: Gear



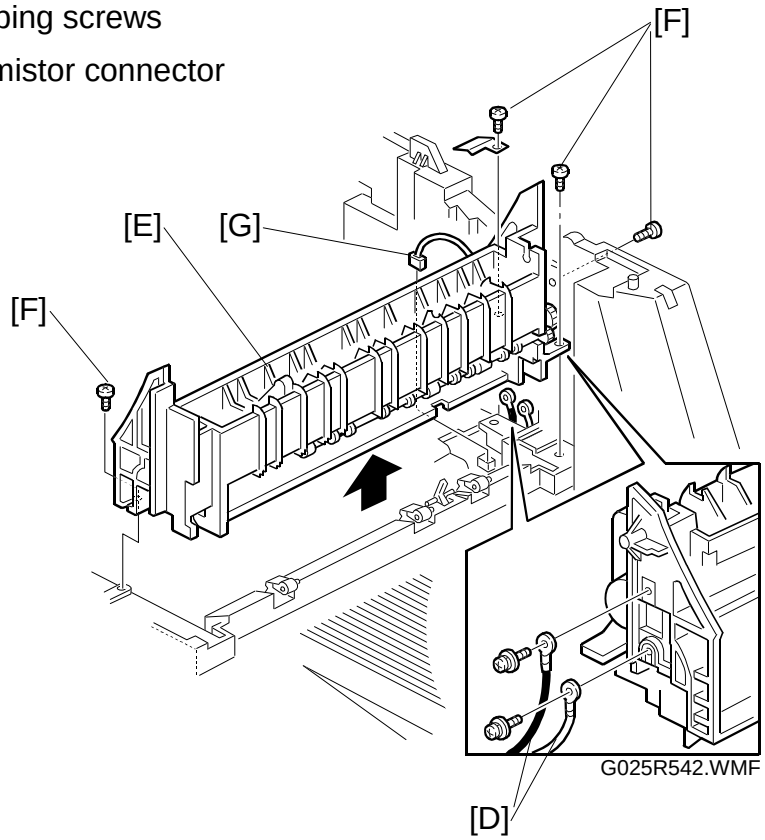
G025R541.TIF

D: 2 fusing lead wires

E: Fusing unit

F: 4 tapping screws

G: Thermistor connector



CAUTION: Do not remove the 2 white-painted screws that hold the upper and lower sections of the fusing unit together. Otherwise the fusing unit might be damaged.

Reinstallation

Make sure the black wire is connected to the upper terminal and the white wire is connected to the lower terminal as shown in a figure.

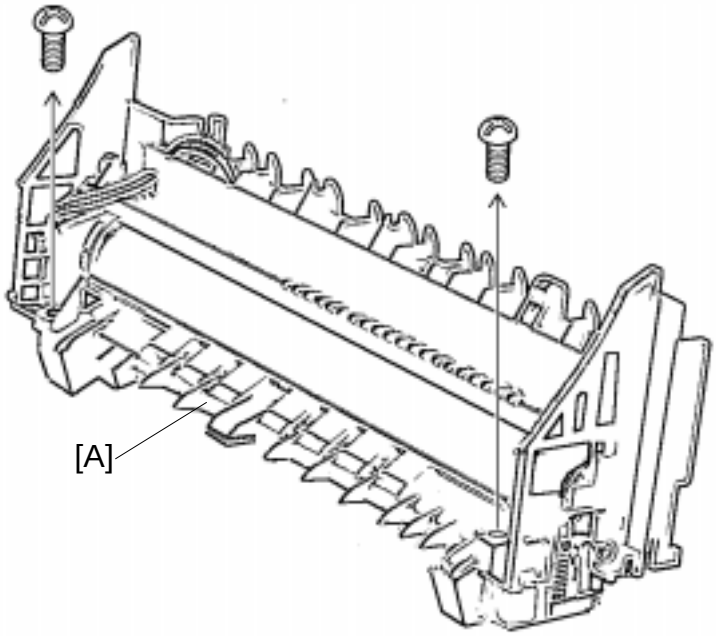
6.5.2 FUSING PRESSURE ROLLER REMOVAL

Preparation

1) Remove the fusing unit. (See the Fusing Unit Removal.)

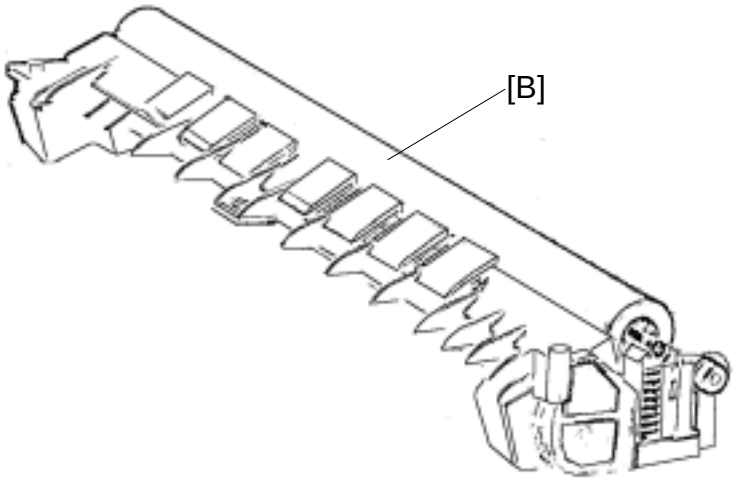
A: Fusing lower unit (2 white-painted tapping screws)

CAUTION: Hold the fusing unit's upper and lower sections securely together while removing the 2 screws. Otherwise the fusing unit might be damaged.



G025R543.TIF

B: Fusing pressure roller



G025R544.TIF

6.5.3 FUSING HOT ROLLER AND LAMP REMOVAL

Preparation

1) Remove the fusing unit. (See the Fusing Unit Removal.)
2) Remove the fusing lower unit. (See the Fusing Pressure Roller Removal.)

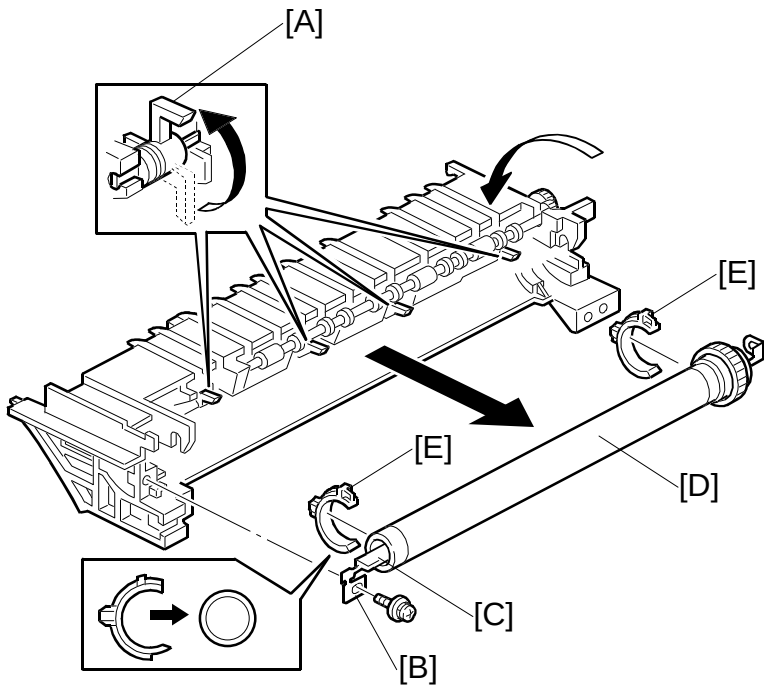
A: Rotate the stripper pawls away from the hot roller and fix them with tape.

B: Lamp terminal (1 Philips screw)

C: Fusing lamp

D: Hot roller

E: 2 bushings



G025R545.WMF

Do not touch the surface of the hot roller or lamp surface with bare hands.

Reinstallation

NOTE: 1) Make sure that the bushings are oriented correctly as shown.
2) Do not damage the fusing thermistor.
3) Apply grease (KS-660) to the left bushing [E] to ensure ground contact.

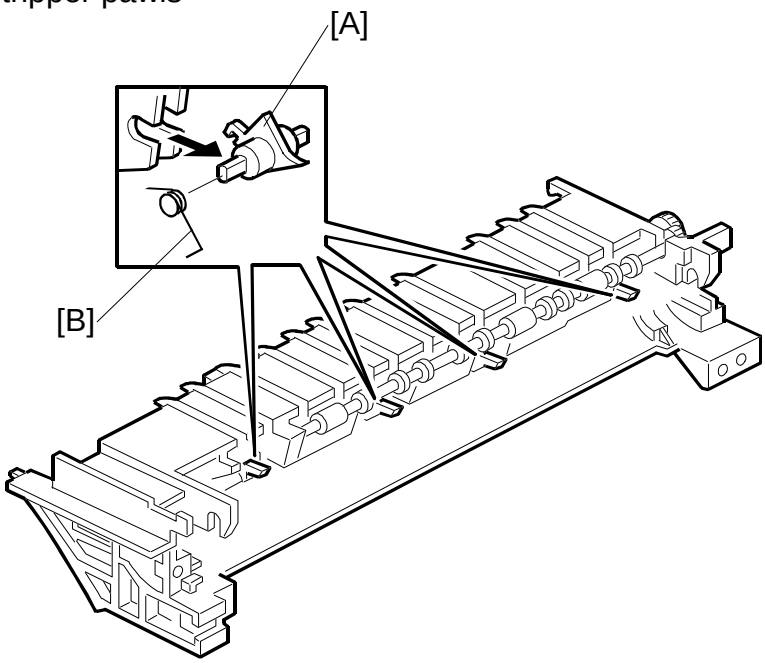
6.5.4 HOT ROLLER STRIPPER PAWL REMOVAL

Preparation

1) Remove the fusing unit. (See the Fusing Unit Removal.)
2) Remove the fusing hot roller. (See the Fusing Hot Roller and Lamp Removal.)

A: 4 hot roller stripper pawls

B: 4 springs



G025R546.WMF

Reinstallation

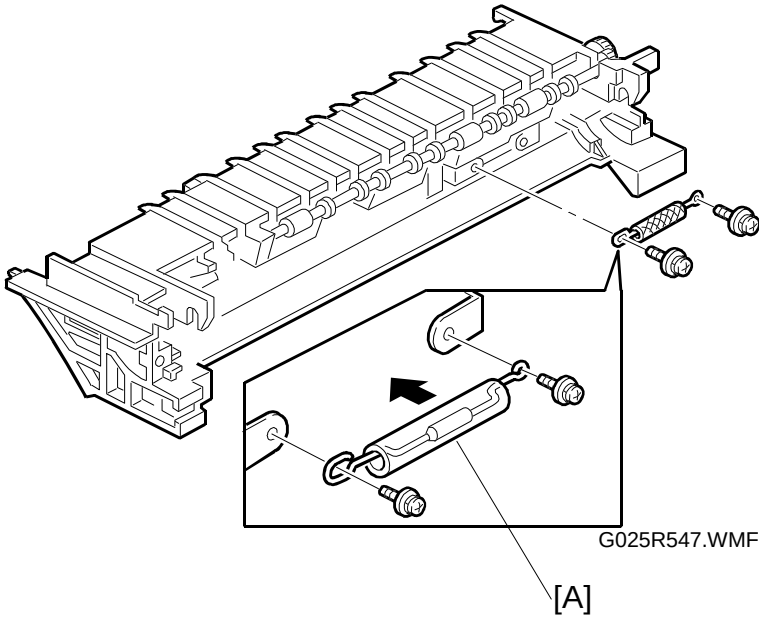
Do not deform the springs

6.5.5 FUSING THERMOFUSE REMOVAL

Preparation

1) Remove the fusing unit. (See the Fusing Unit Removal.)
2) Remove the hot roller. (See the Hot Roller And Lamp Removal.)

A: Fusing thermofuse (2 Philips screws)



Reinstallation

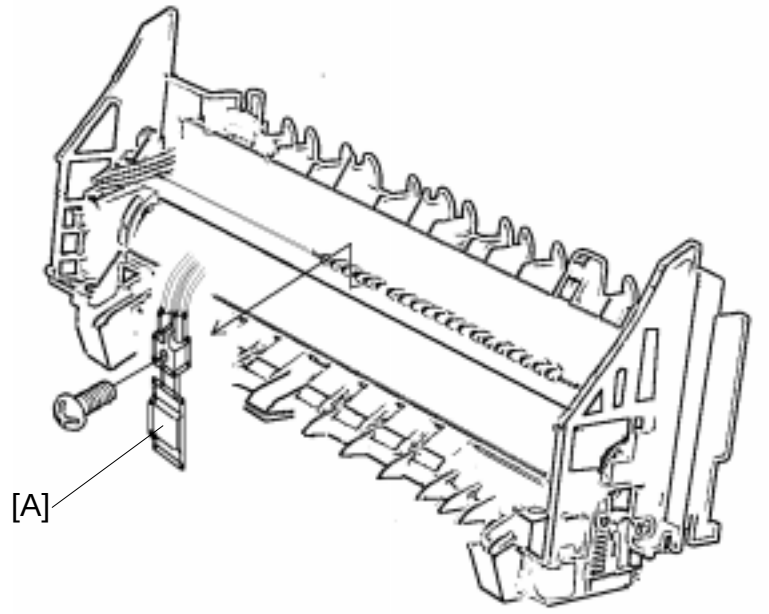
CAUTION: 1) Do not deform the thermofuse.
2) Do not install the thermofuse upside down.

6.5.6 FUSING THERMISTOR REMOVAL

Preparation

1) Remove the fusing unit.

A: Fusing thermistor (1 Philips screw)



G025R548.TIF

Reinstallation

CAUTION: Do not deform the thermistor.

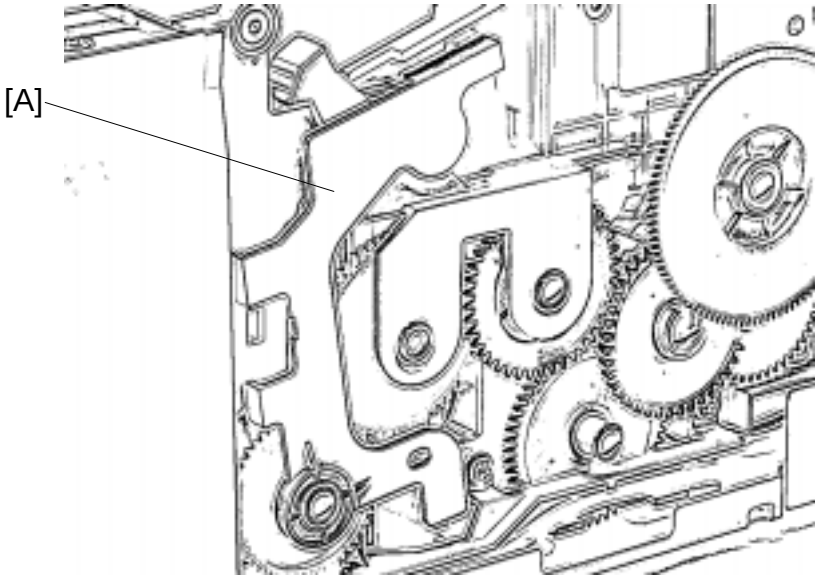
6.6 OTHERS

6.6.1 MAIN MOTOR REMOVAL

Preparation

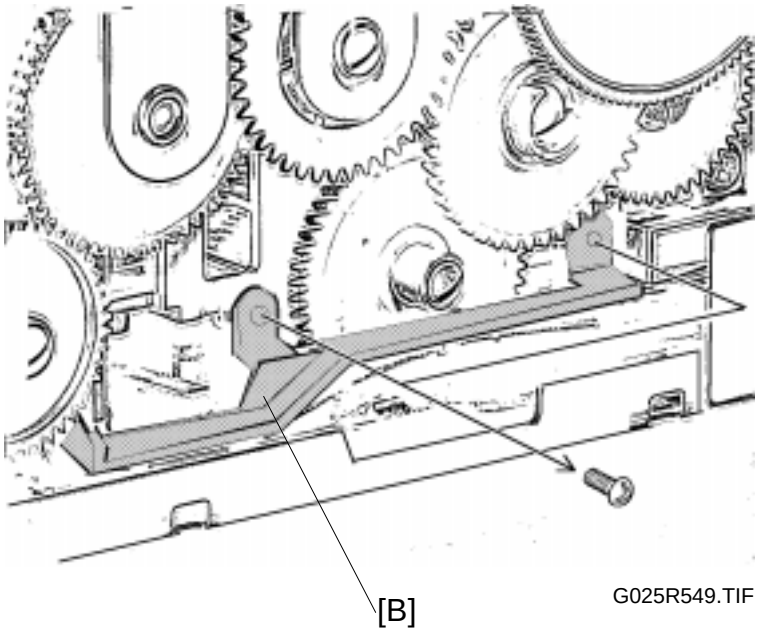
1) Remove the upper unit. (See the Upper Unit Removal.)
2) Remove the right cover. (See the Right Cover Removal.)

A: Interlock switch actuator



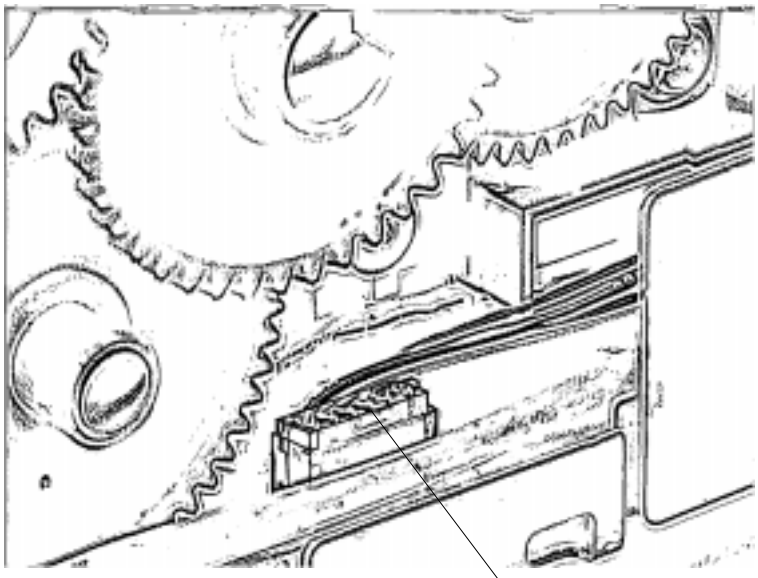
G025R541.TIF

B: Harness guide (2 tapping screws)



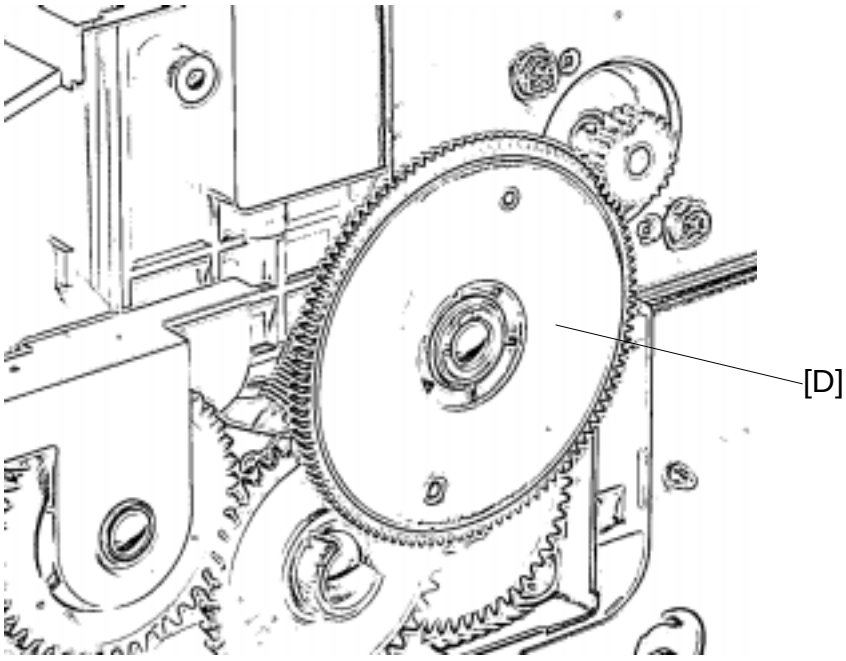
G025R549.TIF

C: Main motor connector



G025R550.TIF

D: Gear

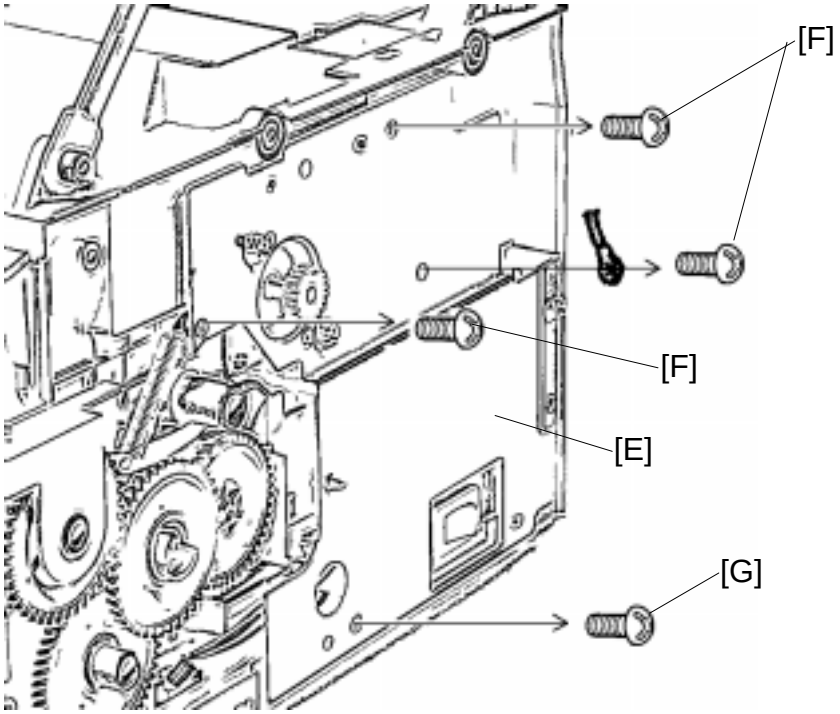


G025R551.TIF

E: Main motor bracket

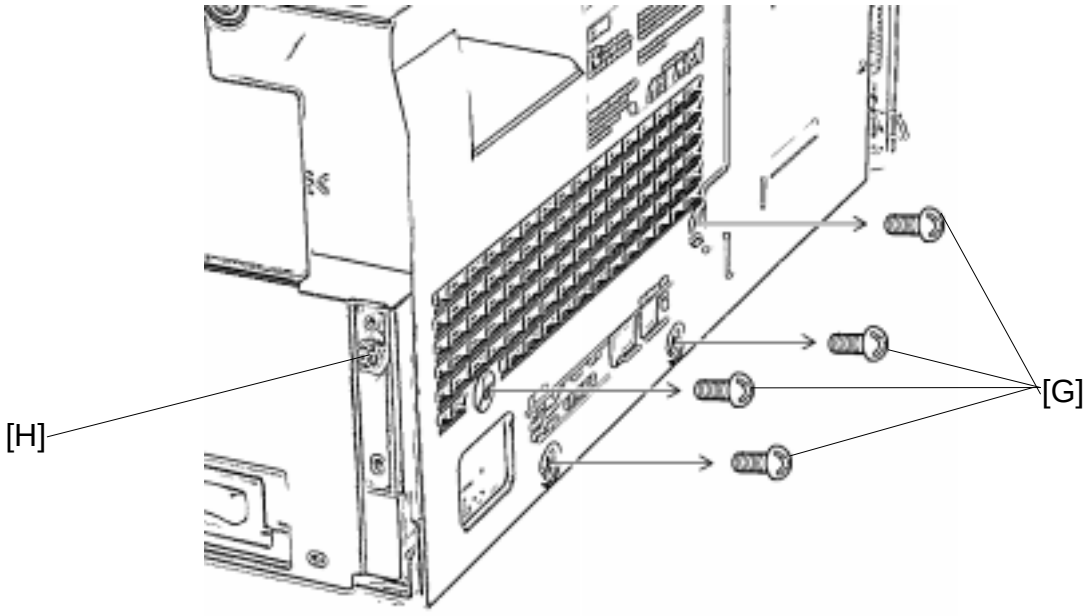
F: 3 tapping screws

G: 5 Philips screws



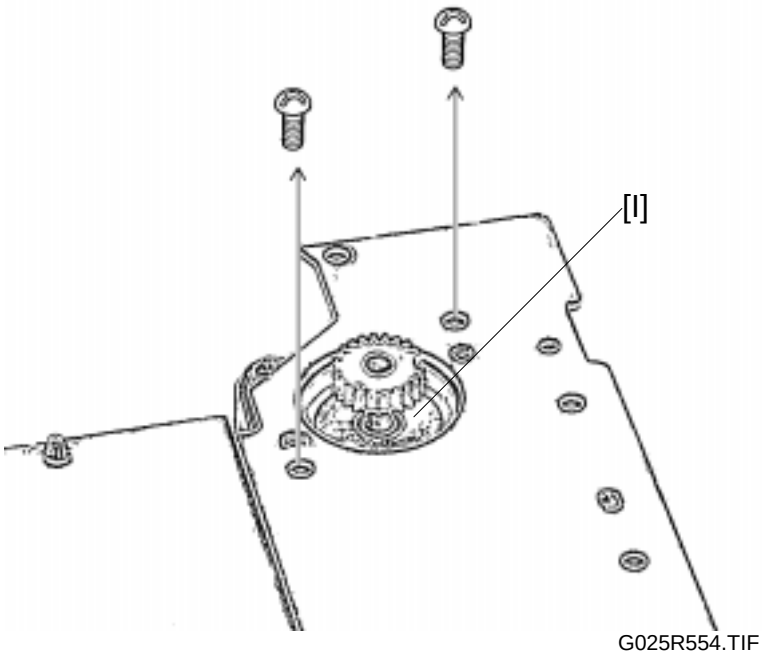
G025R552.TIF

Do not remove the bracket join screw [H]



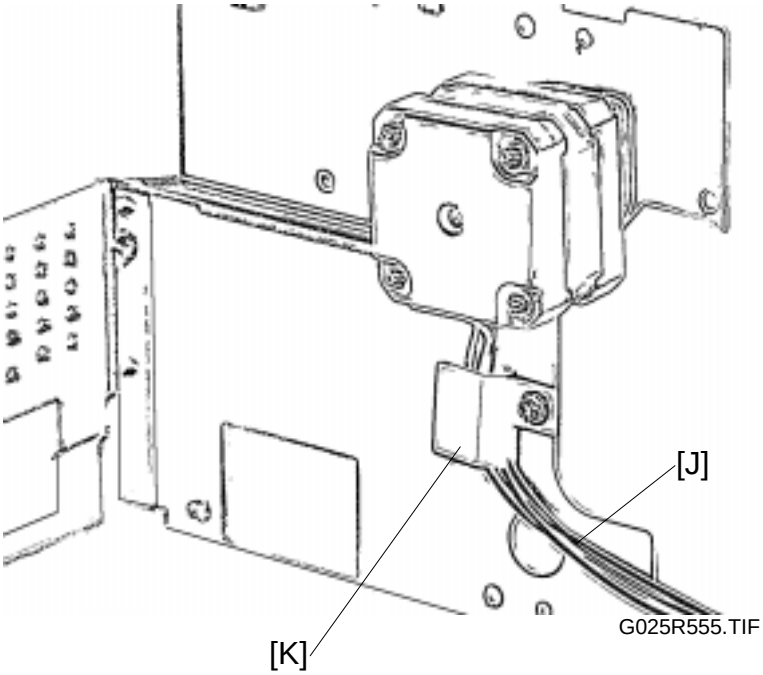
G025R553.TIF

I: Main motor (2 Philips screws)



Reinstallation

NOTE: 1) Install the main motor so that the harness [J] faces down as shown.
2) Make sure the main motor harness is secured under the harness cover [K].
3) Make sure no wires are pinched under the main motor bracket.



6.6.2 TRANSFER ROLLER REMOVAL

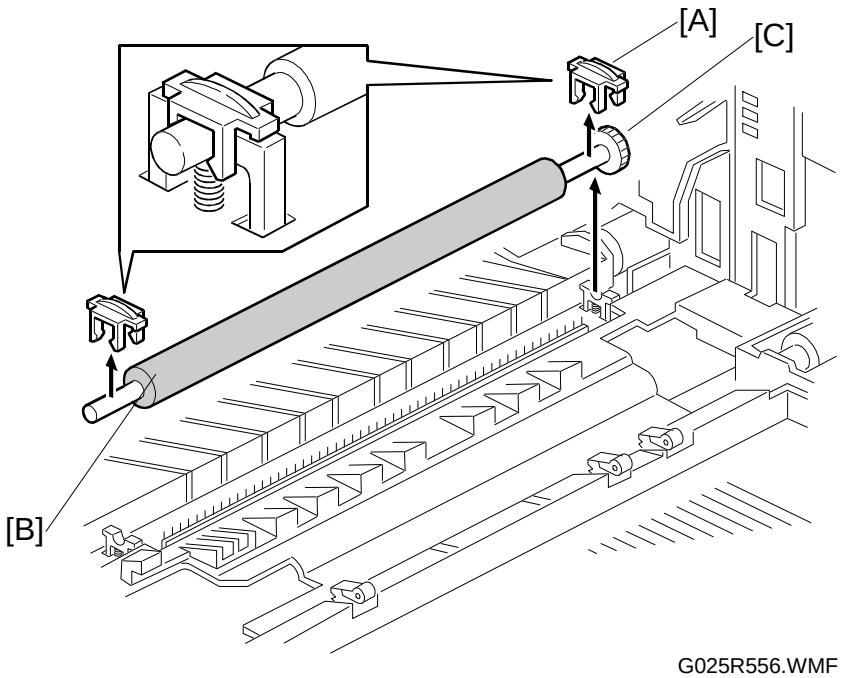
Preparation

1) Remove the toner cassette.

A: Transfer roller upper bushings.

B: Transfer roller

C: Gear



G025R556.WMF

Do not touch the transfer roller surface with bare hands.

Reinstallation

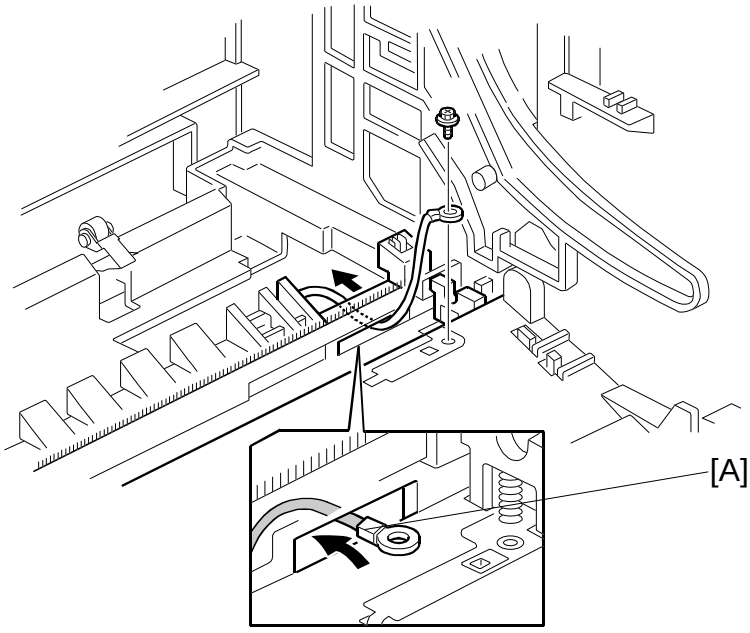
Make sure the upper bushings are set correctly as shown.

6.6.3 LOWER UNIT SHELL REMOVAL

Preparation

1) Remove the upper unit. (See the Upper Unit Removal.)
2) Remove the Laser unit. (See the Laser Unit Removal.)
3) Remove the fusing unit. (See the Fusing Unit Removal.)
4) Remove the main motor. (See the Main motor Removal.)
5) Remove the transfer roller. (See the Transfer Roller Removal.)
6) Remove the toner end sensor connector. (See the Paper Feed Roller Removal.)

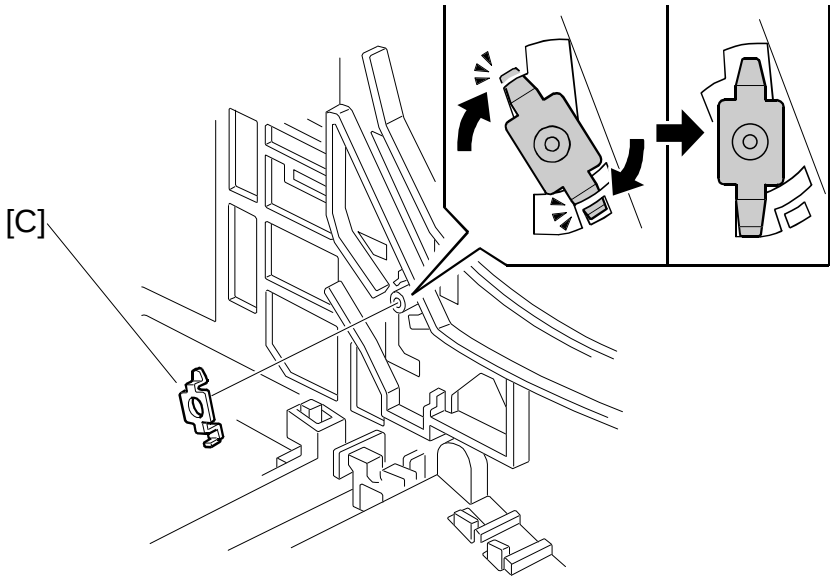
A: Transfer terminal (1 Philips screw)



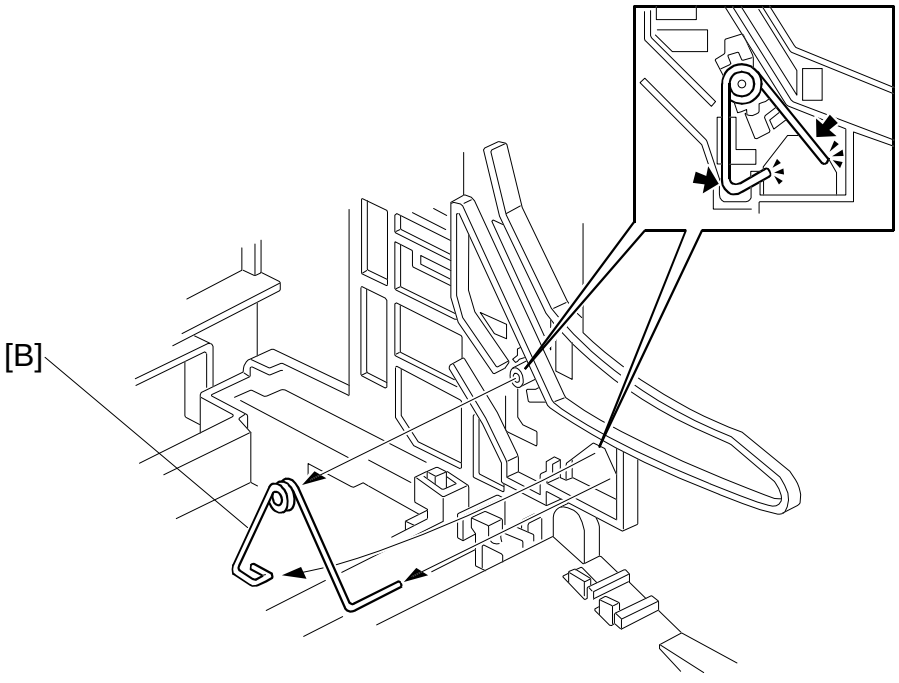
G025R557.WMF

B: Toner cassette stopper springs

C: Push the stopper holder and turn it clockwise to remove.



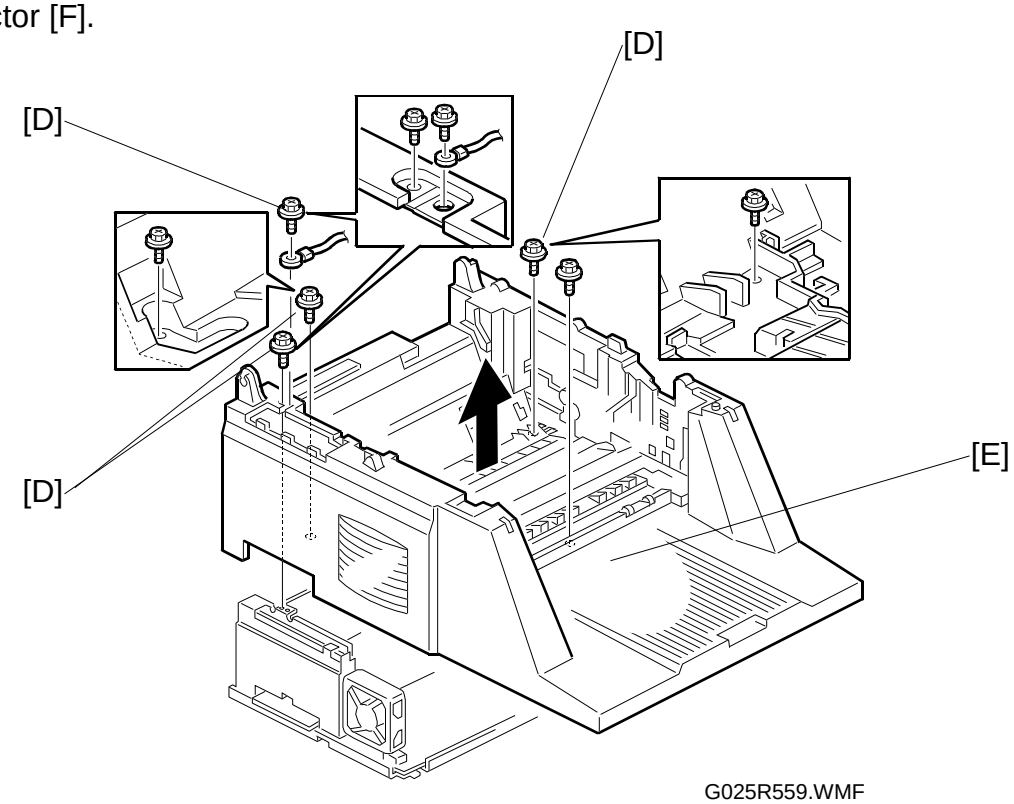
G025R558.WMF



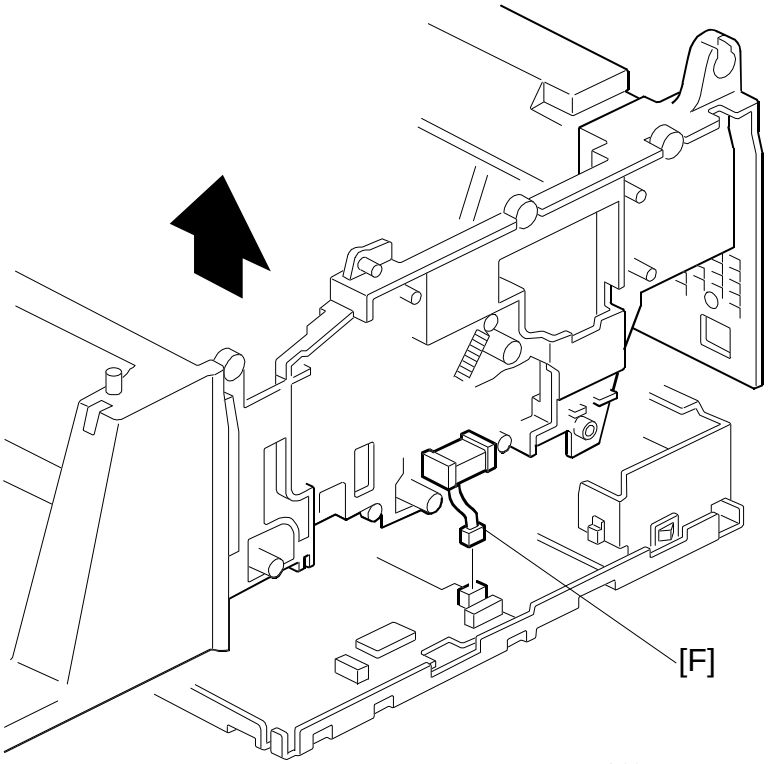
G025R570.WMF

D: 5 Philips screws

Lift the lower unit shell [E] slightly and remove the paper feed clutch solenoid connector [F].



G025R559.WMF



G025R571.WMF

Reinstallation

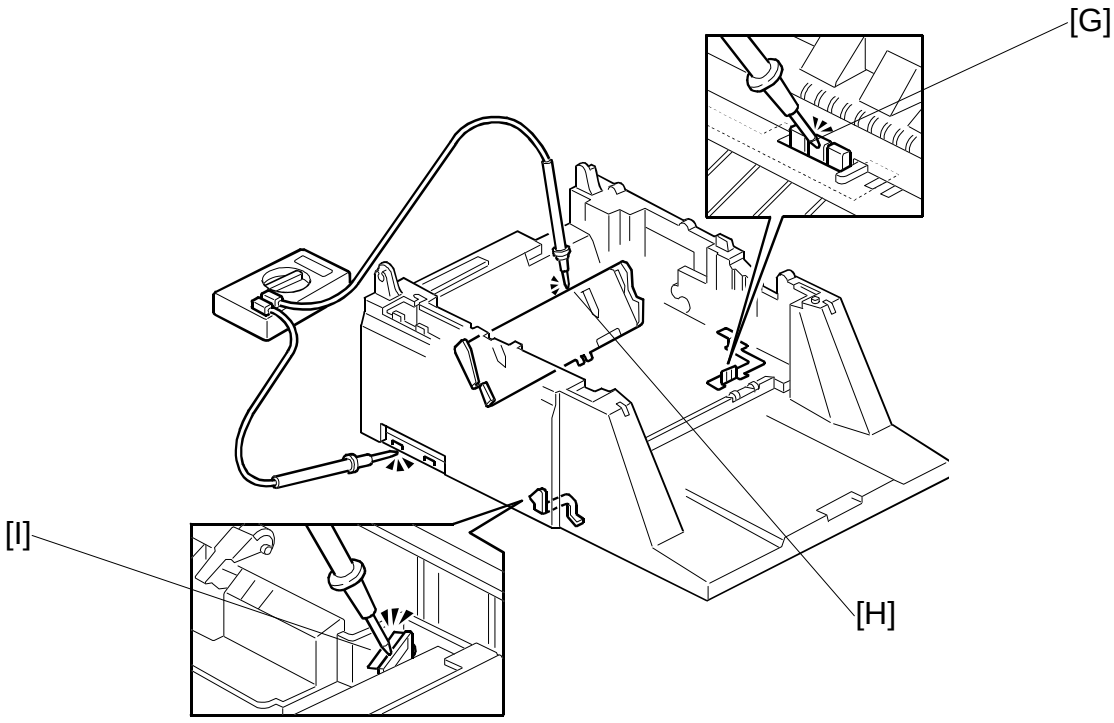
NOTE: 1) Make sure no wires are pinched under the frame unit.
2) Do not damage the terminal plates.

Confirm the following ground contacts.

G: Between paper pick-up solenoid and base frame.

H: Between grounding terminal of the upper tray bottom plate and base frame.

I: Between grounding terminal of the fusing unit and base frame.



G025R573.WMF

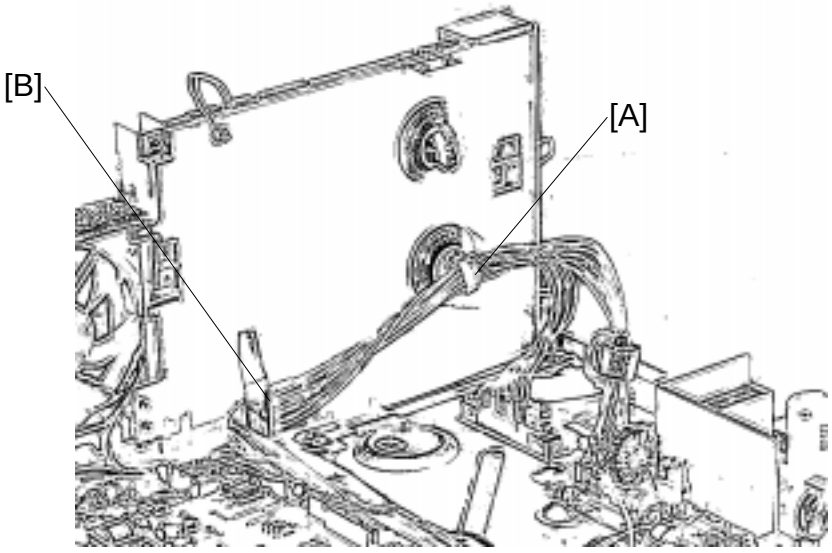
6.6.4 CONTROL BOARD AND SCANER CONTOROL BOARD REMOVAL

⚠CAUTION FOR LITHIUM BATTERY (MEMORY BACK-UP)
The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacture's instructions.

Preparation

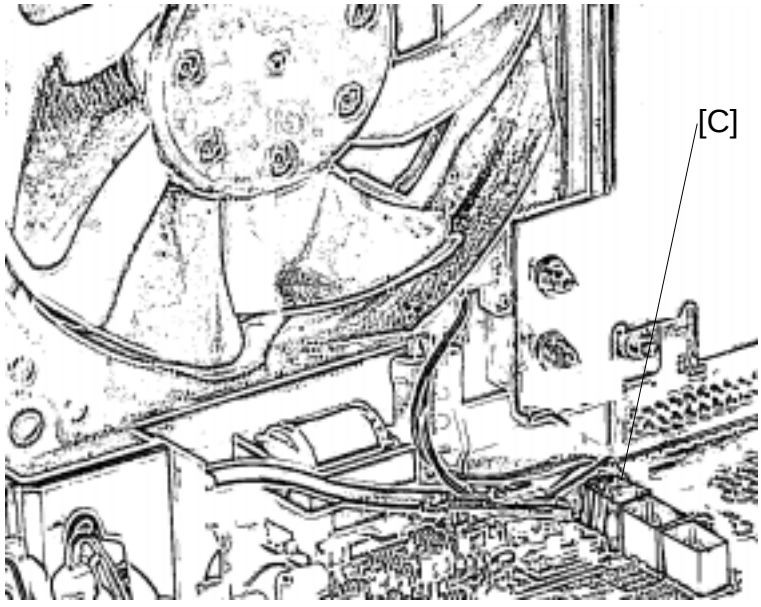
1) Remove the lower unit shell.

A: Clamp
B: Clamp.



G025R560.TIF

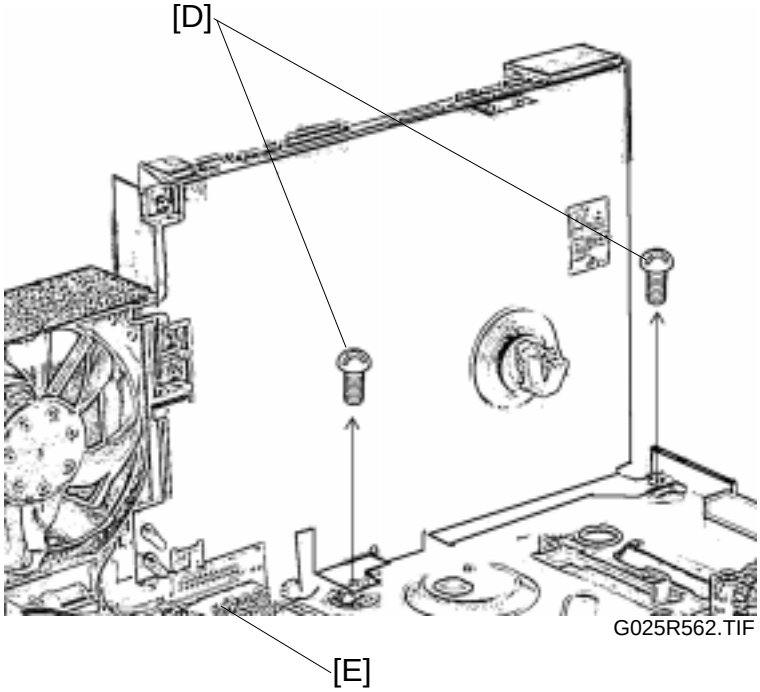
C: Fan motor connector



G025R561.TIF

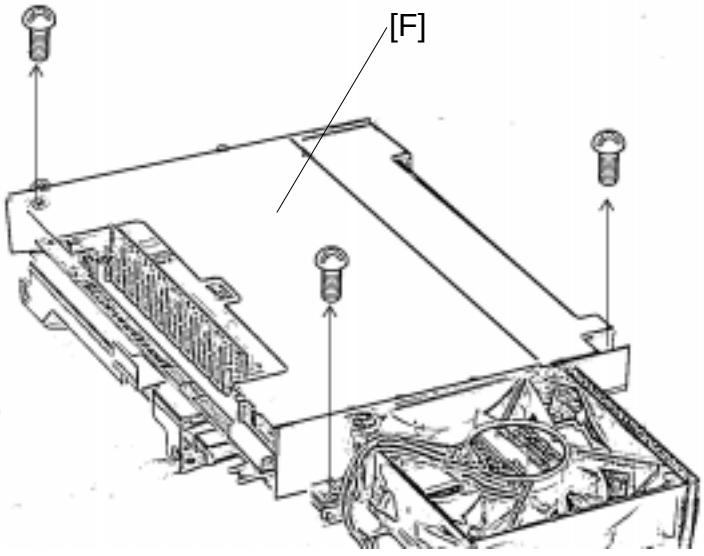
D: 2 Philips screws

Disconnect the board assembly from the mechanical control board [E].



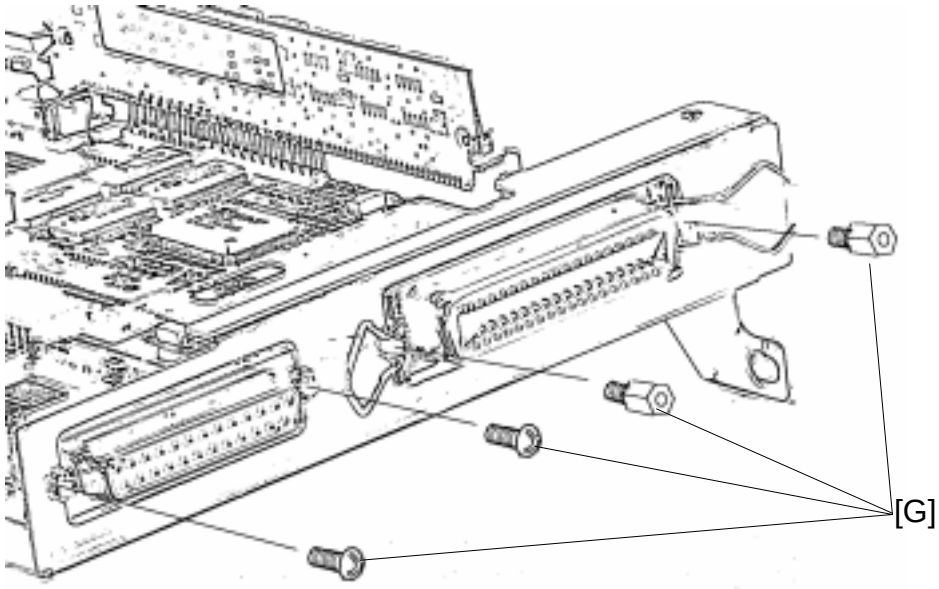
G025R562.TIF

F: Shield cover (3 Philips screws)



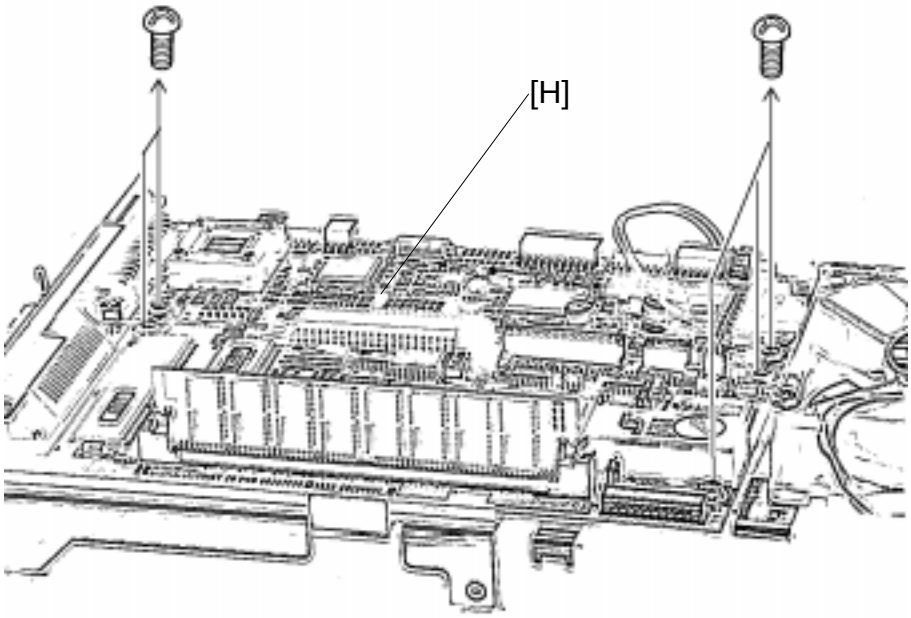
G025R563.TIF

G: Printer connector screws (2 Philips screws and 2 hexagon screws)



G025R564.TIF

H: Control board and scanner control board. (5 Philips screws)



G025R565.TIF

Reinstallation
Execute RAM clear. (Refer to the section 4.)
Perform registration adjustment.
Perform read start timing and carriage stop position adjustment.
Perform read start point of horizontal scanning adjustment.

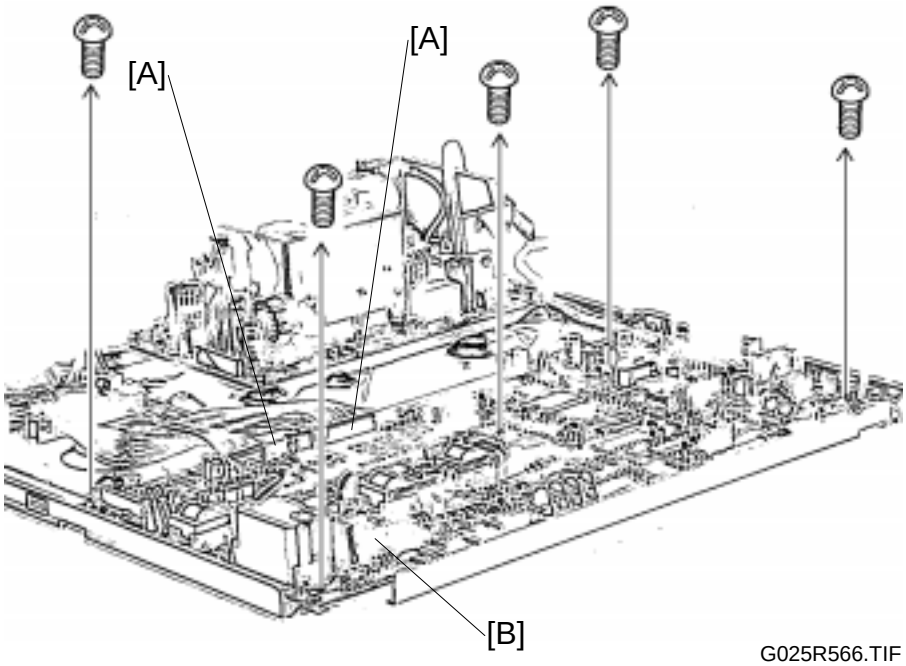
6.6.5 MECHANICAL CONTROL BOARD REMOVAL

Preparation

1) Remove the lower unit shell.
2) Remove the control board and scanner control board unit.

A: Connectors (CN8, CN12)

B: Mechanical control board (5 Philips screws)



G025R566.TIF

Reinstallation

Make sure that the insulation sheet is placed under the mechanical control board.

Perform registration adjustment.

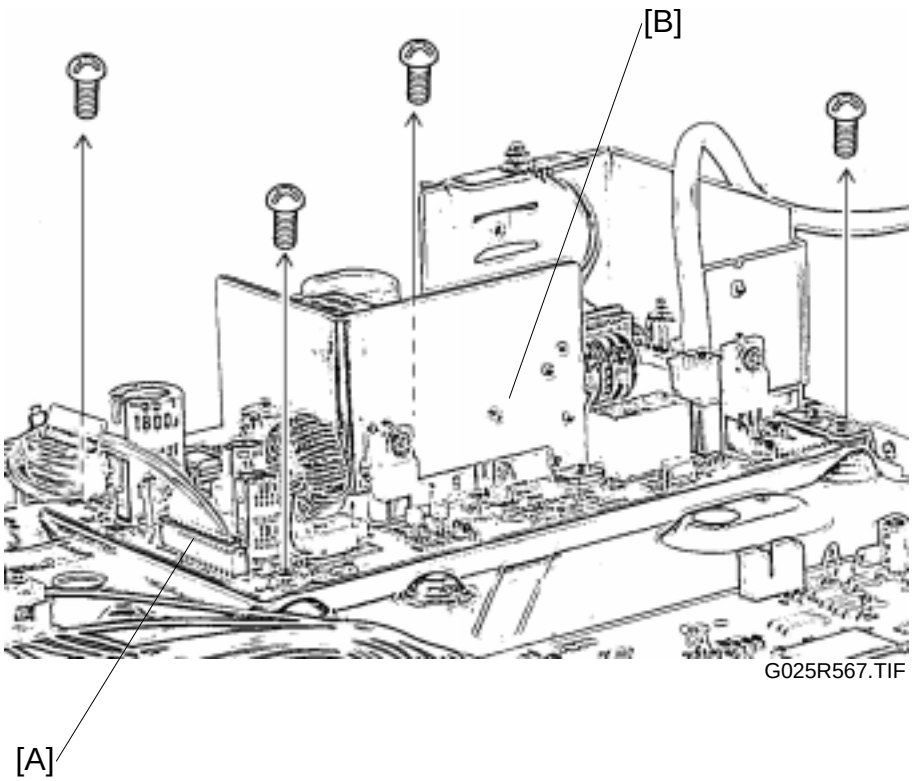
6.6.6 POWER SUPPLY UNIT REMOVAL

Preparation

1) Remove the lower unit shell. (See Lower Unit Shell Removal.)

A: Connector (CN1)

B: Power supply unit (4 Philips screws)



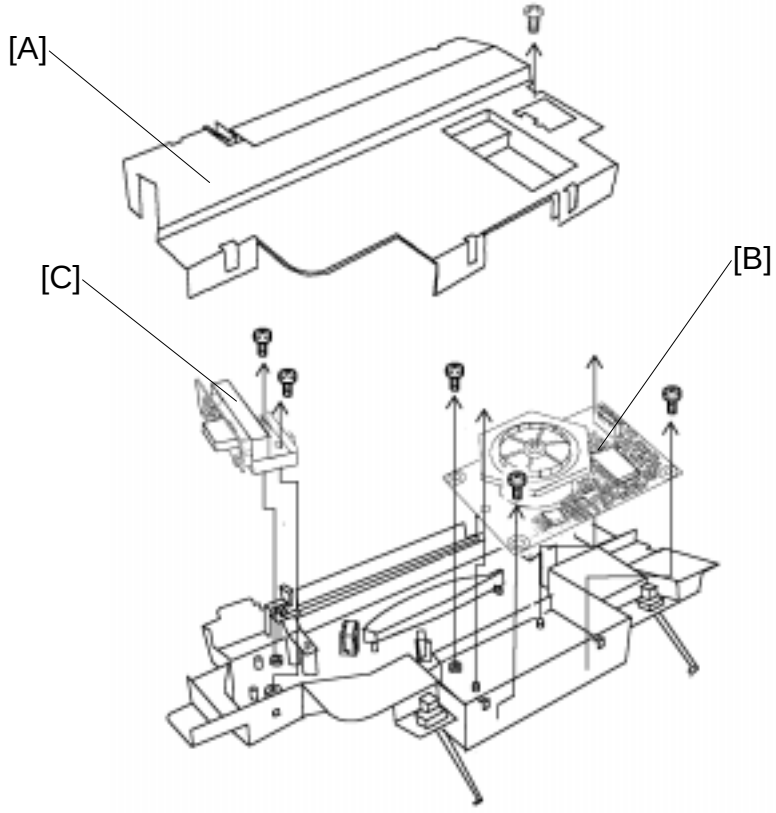
G025R567.TIF

6.6.7 POLYGON MIRROR MOTOR AND LASER DIODE UNIT REMOVAL

NOTE: 1) The polygon mirror and f-theta lens are very sensitive to dust. Be sure to keep the polygon mirror and f-theta lens away from dust when you open the Laser unit for replacement.
2) Do not touch the reflecting surfaces of the polygon mirror and the f-theta lens with bare hands.
3) Do not adjust the valuable resistor on the LD drive board as it is adjusted in the factory.

Preparation
1) Remove the Laser unit. (See the Laser Unit Removal.)

A: Laser unit upper cover (1 screw and 5 hooks)
B: Polygon mirror motor (3 tapping screws)
C: Laser diode unit (2 screws)



G025R700.TIF

Reinstallation
Perform registration adjustment.

6.7 ADJUSTMENT

6.7.1 REGISTRATION ADJUSTMENT

Adjustment Standard:

5.1 ± 0.5 millimeters

Adjustment Tool:

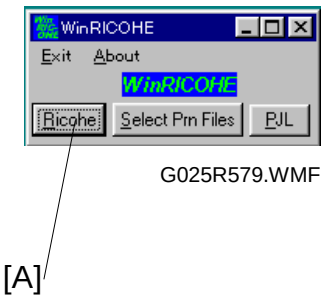
Service Switch 04: Start timing of data writing. (00 (H) to FF (H), 0.1 millimeter/unit)
The factory setting of Service Switch 04 is on the “System Parameter List”.

Personal computer (Windows 95 is installed.)
WinRICOHE (Test pattern 0210)

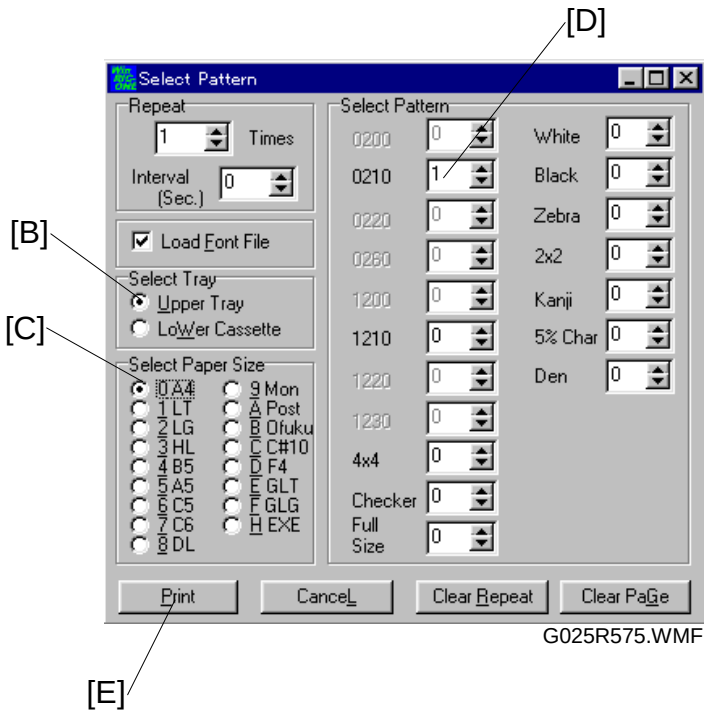
NOTE: Read the “readme.txt” file delivered with the WinRICOHE program carefully.

Procedure:

1. Start up the WinRICOHE on the personal computer and click “Ricohe” [A] on the display.
2. Select “Upper Tray” [B] under “Select Tray” and “A4” or “LT” [C] under “Select paper Size”.
3. Set “1” in the box next to pattern 0210 [D] under “Select Pattern” and click “Print” [E].

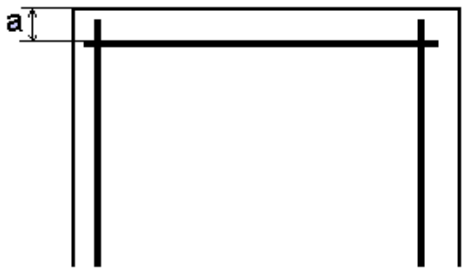


G025R579.WMF



G025R575.WMF

4. Measure “a” of the test print.
5. Adjust the registration to the standard by changing the setting of Service Switch 04. (Refer to Section 4.)



G025R576.WMF

The changed value will not be registered until the main switch is turned off and on.

6.7.2 READ START TIMING (FLATBED) AND CCD UNIT STOP POSITION (ADF) ADJUSTMENT

Adjustment Standard:

2 ± 0.5 millimeters

Adjustment Tool:

Service Switch 0A:
Read start timing of scanning document in flatbed mode —count starts when the CCD unit leaves home position. (51 (H) to AF (H), 0.04242 millimeter/unit)

Service Switch 0B: [G036 model only]
CCD unit stop position in ADF mode (51 (H) to AF (H), 0.04242 millimeter/unit)

The factory setting of Service Switch 0A and 0B are on the “System Parameter List”.

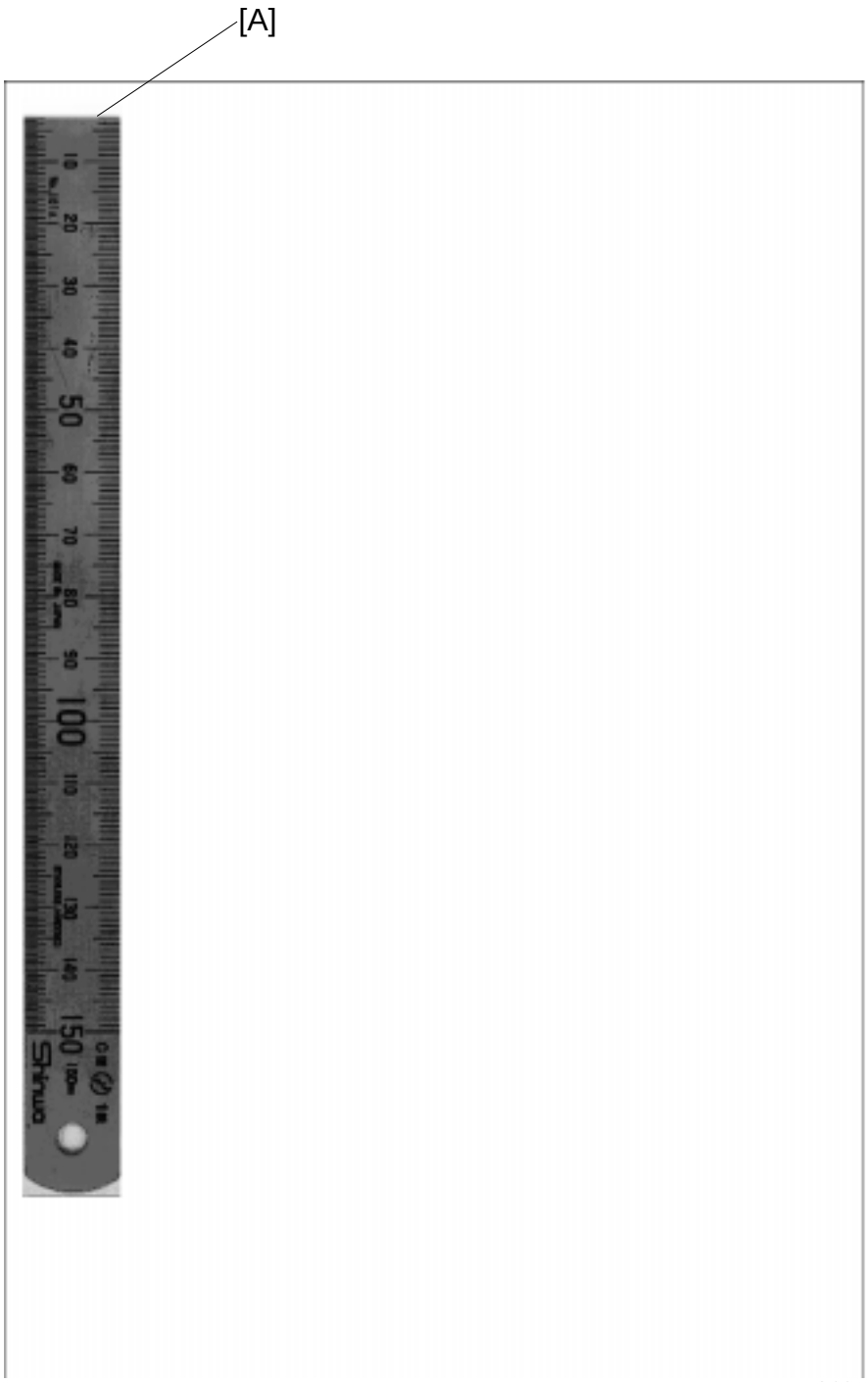
Procedure:

1. Adjust the registration.
2. Place a 150-millimeter scale against and parallel to the right scale on the exposure glass and place a sheet of paper beside the scale.

You must use a scale with measurement marks starting exactly on the edge.

3. Make copies in “photo 2” mode with the platen cover open.
4. Measure the starting point of the scale [A].
5. Adjust the flatbed read start timing to the standard by changing the setting of Service Switch 0A. (Refer to Section 4.)
6. For model G036 only, set service switch 0B to the same value as Service Switch 0A.

The changed value will not be registered until the main switch is turned off and on.



G025R577.WMF

6.7.3 READ START POINT OF HORIZONTAL SCANNING ADJUSTMENT (FLATBED AND ADF)

Adjustment Standard:

2 ± 0.5 millimeters

Adjustment Tool:

Service Switch 08: [G036 model only]
Read start point of horizontal scanning in ADF mode.
(00 (H) to FF (H), 1 dot / unit (0.0847 millimeters / unit))

Service Switch 0F:
Read start point of horizontal scanning in flatbed mode.
(00 (H) to FF (H), 1 dot / unit (0.0847 millimeters / unit))

The factory setting of Service Switch 08 is on the “System Parameter List”.

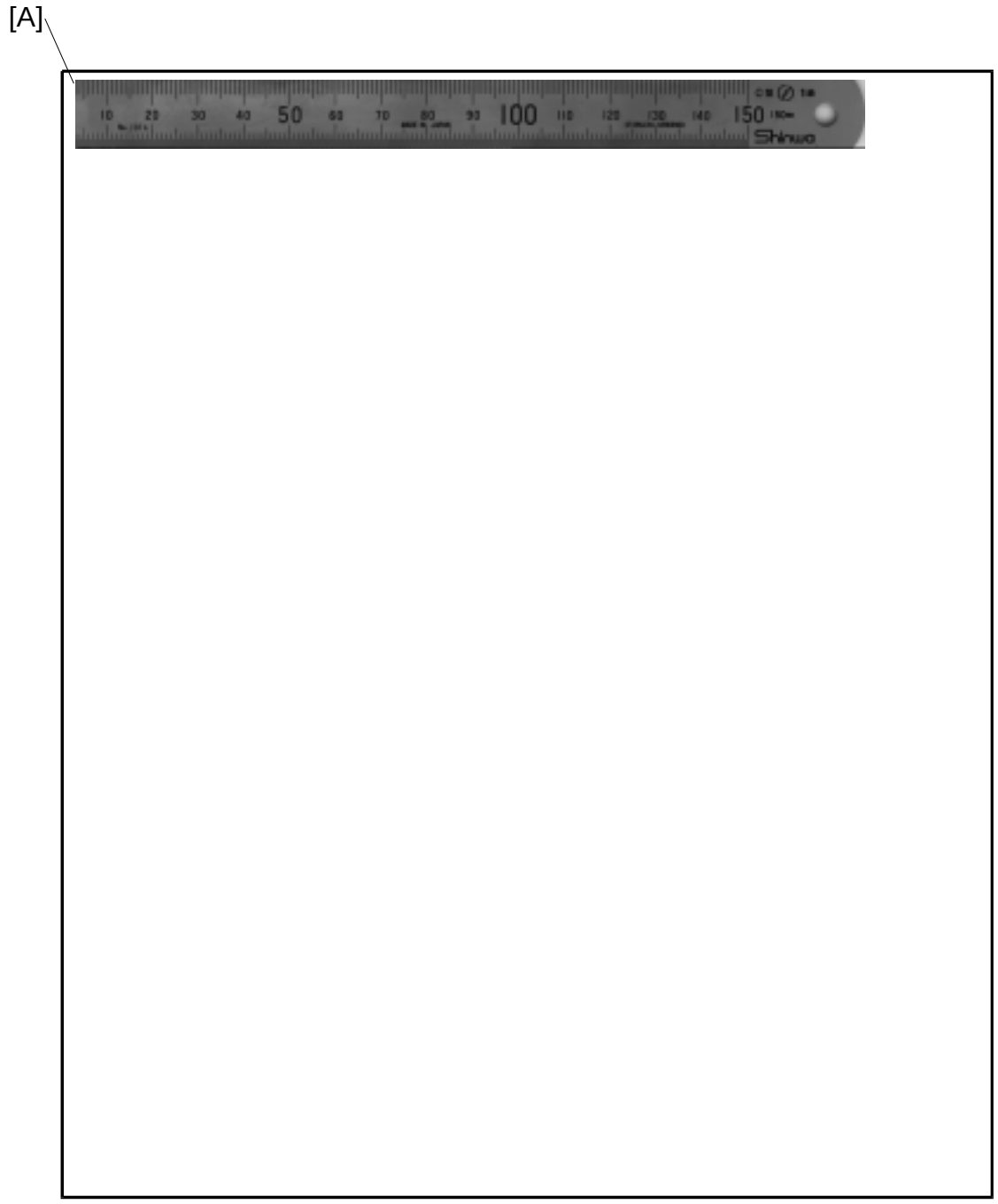
Procedure:

1. Adjust the registration.
2. Adjust the read start timing (flatbed) and CCD unit stop position (ADF).
3. Place a 150-millimeter scale against and perpendicular to the right scale on the exposure glass and place a sheet of paper beside the scale.

You must use a scale with measurement marks starting exactly on the edge.

4. Make copies in “photo 2” mode with the platen cover open.
5. Measure the starting point of the scale [A].
6. For model G036, adjust the ADF read start point for horizontal scanning to the standard by changing the setting of Service Switch 08. Then set Service Switch 0F to the same value. (Refer to Section 4.)
7. For model G026, adjust the flatbed read start point for horizontal scanning to the standard by changing the setting of Service Switch 0F. (Refer to Section 4.)

The changed value will not be registered until the main switch is turned off and on.



G025R578.WMF

6.7.4 FIRMWARE UPDATING

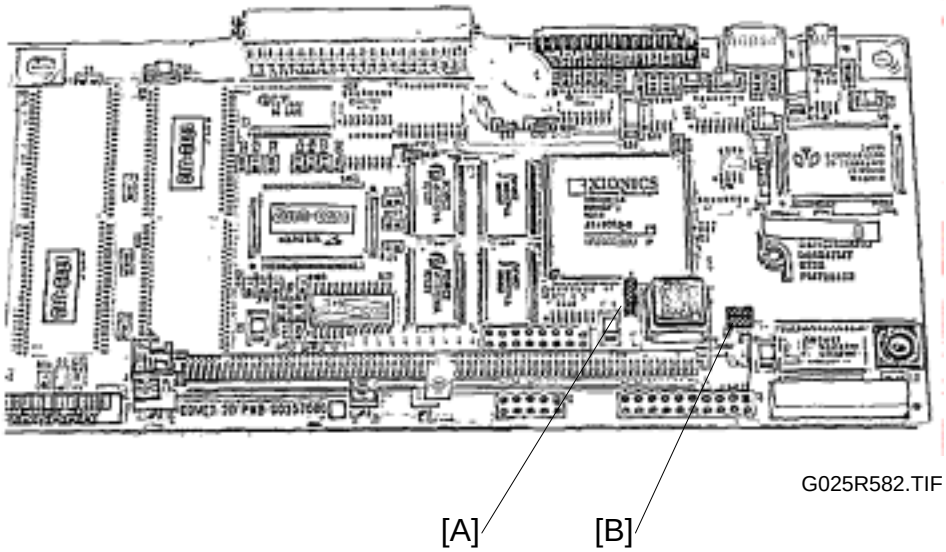
Tool:

Personal computer (Windows 95 is installed.)
WinRICOHE

Procedure:

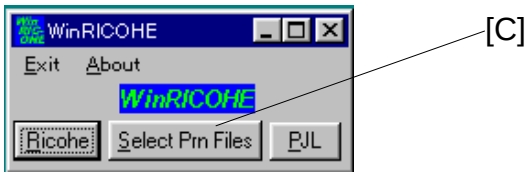
CAUTION: Do not turn off the power while “Please wait” or “Registered” is displayed.

1. Print out the system parameter list. (Refer to the section 4.)
2. Turn off the main switch and then remove the SIMM from the control board.
3. Short JP4 [A] and JP7 [B] on the control board.



G025R582.TIF

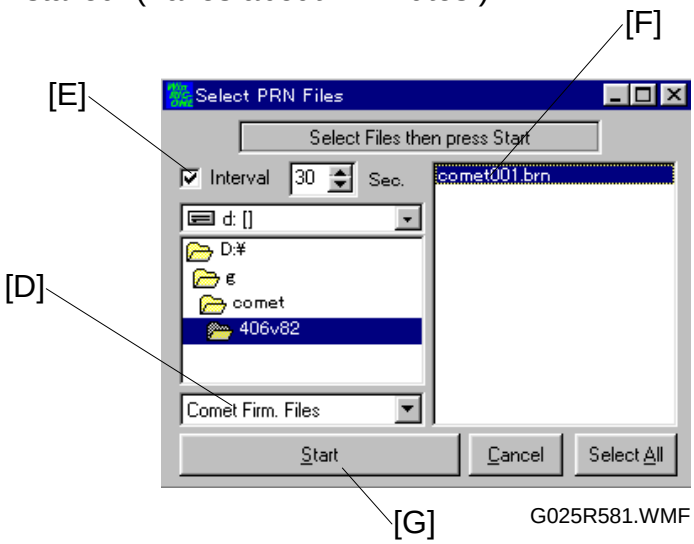
4. Reinstall the SIMM on the control board.
5. Turn on the main switch.
   After turning on the switch, no messages are displayed on the operation panel.
6. Start up WinRICOHE on the personal computer and click “Select Prn Files” [C] on the display.



G025R579.WMF

7. Select “Comet Firm Files” [D] from file types and remove the checkmark next to “Interval” [E].
8. Open the folder that contains the new firmware file.
9. Select the new firmware file [F]. (In this case comet001. brn)
10. Click “start” [G].

After clicking “Start”, the Start key changes to a counter and counts up as the new firmware is installed. (Takes about 2 minutes.)

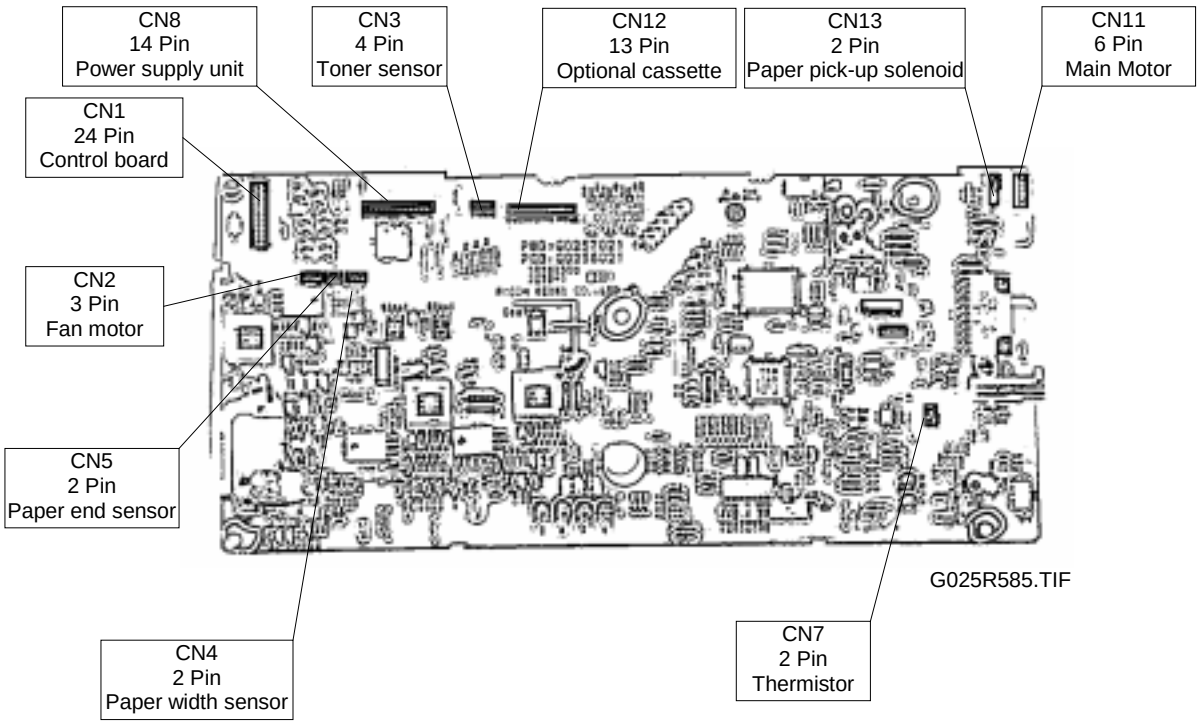


G025R581.WMF

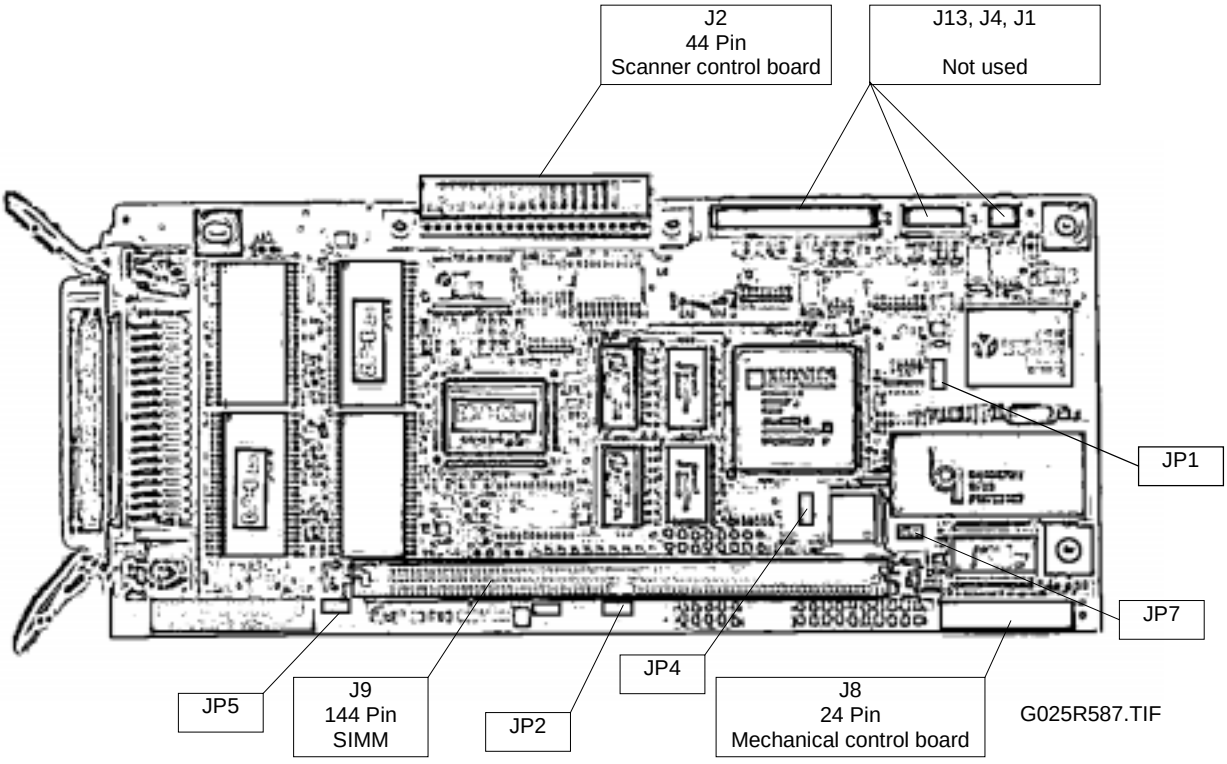
11. After the counter changes back to “Start”, wait more than 10 seconds. Then, turn off the main switch.
12. Return JP4 and JP7 to the open condition.
13. Turn on the main switch.
14. Execute RAM clear. (Select RAM CLEAR 1. Refer to the section 4.)
    NOTE: Do not turn off or operate the machine for 2 minutes after clearing RAM.
15. Turn the main switch off and on.
16. Perform Registration Adjustment and Read Start Timing adjustment.
17. Turn the main switch off and on.
    Confirm all settings by printing out the system parameter list if necessary.

6.8 CONNECTOR LAYOUT

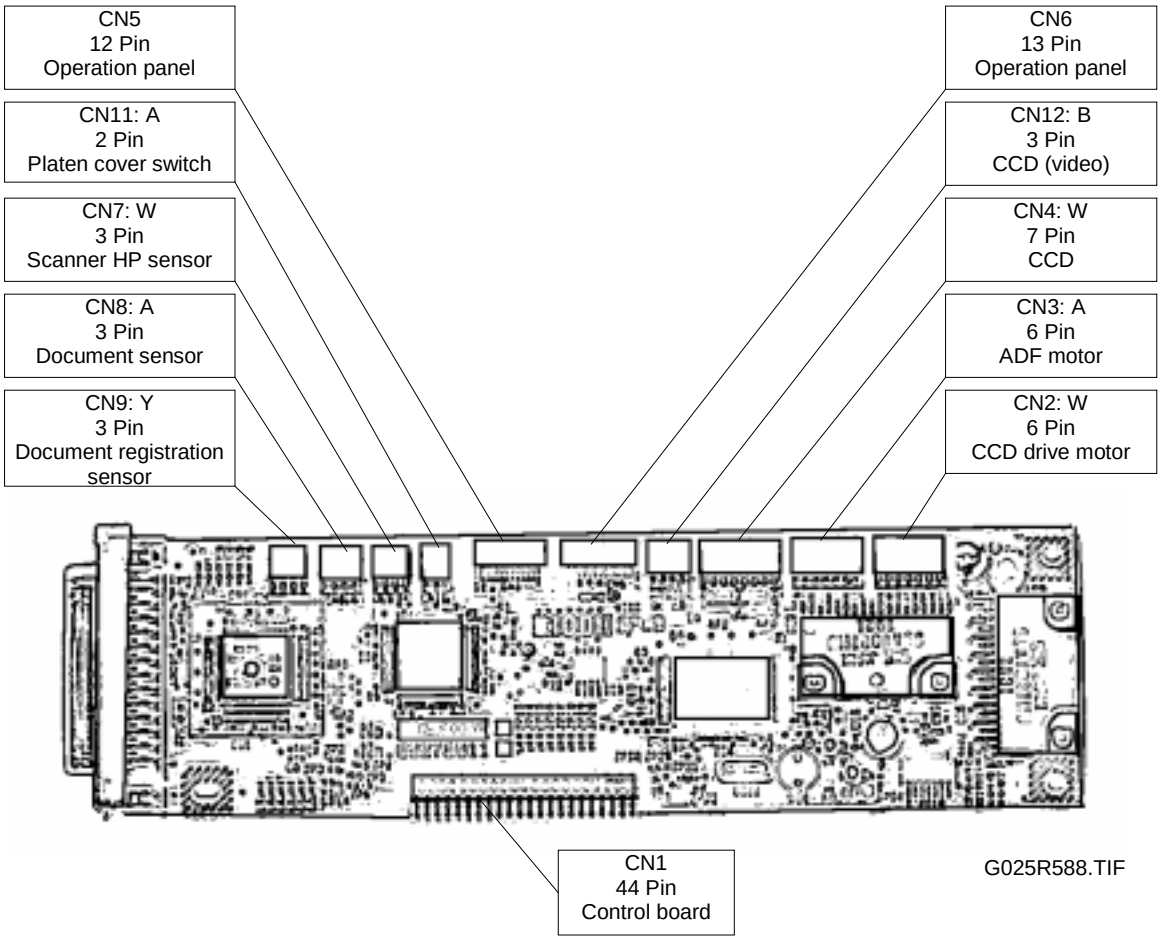
6.8.1 MECHANICAL CONTROL BOARD



6.8.2 CONTROL BOARD

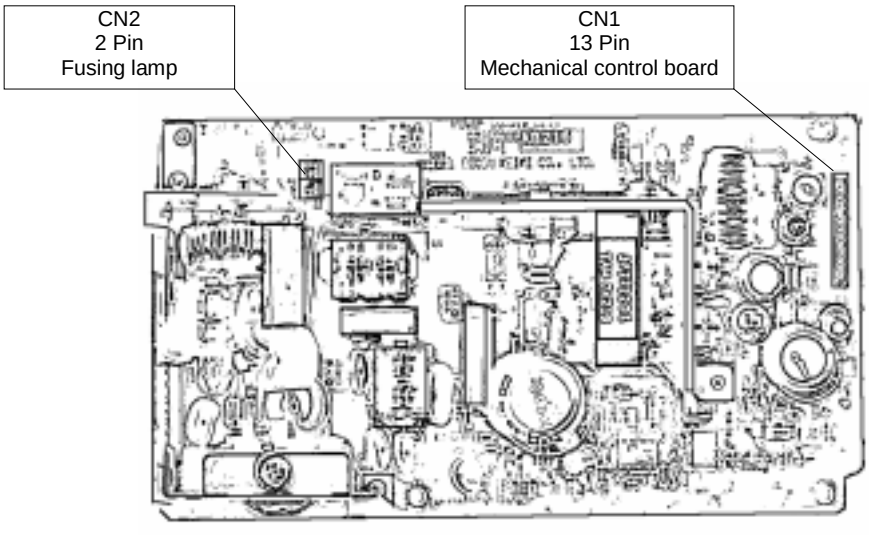


6.8.3 SCANNER CONTROL BOARD (G036 MODEL)



G025R588.TIF

6.8.4 POWER SUPPLY UNIT



G025R589.TIF

7. TROUBLESHOOTING

7.1 COPY QUALITY TROUBLESHOOTING

If there is a copy quality problem that cannot be solved easily, try using the following troubleshooting procedures, while referring to the point to point diagram. The procedures are not exhaustive, but they may help you to find the problem.

1. Make a flatbed scanner copy.
2. If the print image is OK, check the PC system and PC cable.
3. If the print image is not OK, output the system parameter list (service parameter 81) as a test pattern.
4. If the print image is OK, check the scanning related parts (upper unit) of the machine.
5. If the print image is not OK, replace the toner cassette; then, output the system parameter list.
6. If the print image is not OK, check the printing related parts (lower unit) of the machine.

7.1.1 BLANK COPIES

Possible Cause (Scanner):

- When the CCD unit does not move and “Error 90” is displayed:
  -Malfunction in the CCD unit drive mechanism

- When the CCD unit moves then stops at the front side “Error 90” is displayed:
  -Defective CCD unit home position sensor

- When the CCD does not move and no error code is displayed:
  -Defective the CCD unit control
  -Defective video signal path

- Defective scanner control board

Action:

1. Confirm that all the connectors between the scanner board and other components are set correctly. (Refer to the point-to-point diagram.)
2. Replace any defective parts.

Possible Cause (Printer):

- Defective toner cassette
- Defective laser unit
- The proper bias voltages are not applied to the toner application roller and/or the development roller.
- The proper current is not applied to the transfer roller.
- Defective mechanical control board

Action:

1. While printing the system parameter list, open the upper cover and check if the toner image exists on the drum surface.
2. Confirm that the transfer roller is installed correctly.
3. Confirm that the bias voltages for the toner application roller and/or the development roller are properly supplied.
4. Confirm proper contact between the toner cassette terminals and the mechanical control board.

   NOTE: Use the following procedure to check the bias voltages for the toner application roller and the development roller.
   1) Open the upper cover and turn on the power.
   2) Remove toner cassette.

3) Push the interlock switch actuator.
4) During power-on initializing, check the bias voltages at each terminal with a digital multi-meter.

The specified voltages are as follows:
Toner application bias:-650 V
Development bias: -400 V $\rightarrow$ +250 V
Charge voltage: -1200 V

5. Confirm that the laser unit is properly positioned and that there are no obstructions in the laser path.

7.1.2 BLACK COPIES

Possible Causes (Scanner)

- Defective CCD unit
- Defective scanner control board (SCB)

Action:

1. Check the connection between the SCB (CN12, CN4) and the scanner junction board (SJB) (CN1,CN3).
2. Check the connection between the SJB (CN2) and the CCD unit.
3. Make a flatbed mode copy with the platen cover open and check that the LED array is working properly.

Possible Causes (Printer)

- Defective toner cassette
- Charge is not properly applied.
- Defective laser unit
- Defective mechanical control board (MCB)

Action:

1. Confirm that the charge voltage is properly supplied. (Refer to Section 7.1.1—BLANK COPIES)
2. Check the connections between the charge terminal and the terminal on the MCB.
3. Check the connectors for laser unit.

7.1.3 DIRTY BACKGROUND

G025T502.WMF

G025T503.WMF

Possible Cause (Scanner)

- Scanner shading correction error or wrong threshold.

Action:

1. Clean the shading plate.

Possible Causes (Printer)

- Defective toner cassette
- The charge voltage is not properly supplied.
- The hot roller is dirty.
- Defective mechanical control board (MCB)

Action:

1. Confirm that the charge voltage is properly supplied. (Refer to Section 7.1.1—BLANK COPIES)
2. Check the connections between the charge terminal and the terminal on the mechanical control board (MCB).
3. Check whether or not the hot roller surface or cleaning pad is dirty.

7.1.4 UNEVEN IMAGE DENSITY

G025T504.WMF

G025T503.WMF

Possible Causes (Scanner)

- Defective CCD unit

Action:

1. Check the connections between the scanner control board (SCB) (CN12, CN4) and the SJB (CN1,CN3).
2. Check the connections between the scanner junction board (SJB) (CN2) and the CCD unit.
3. Make a flatbed mode copy with the platen cover open and confirm that the LED array is working properly.

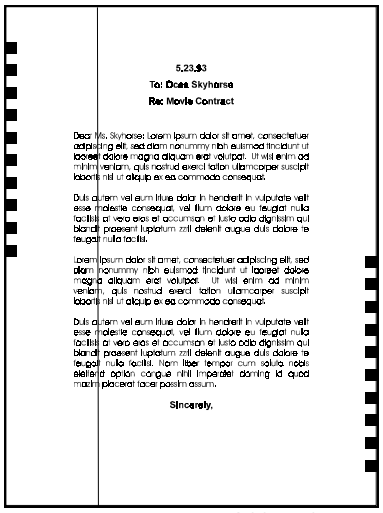
Possible Causes (Printer)

- Defective toner cassette
- Dirty or damaged transfer roller
- Dirty or defective laser unit
- Humid (damp) paper is used.

Action:

1. Make a copy with the platen cover open, and open the upper cover in the middle of printing.
2. Check if the toner is evenly distributed on the drum.
   - If it is not, check the laser optic components.
   - If it is, check if there is any contamination on the transfer roller surface.

7.1.5 VERTICAL BLACK LINES



G025T505.WMF

G025T503.WMF

Possible Causes (Scanner)

- When the problem occurs during flatbed copying mode:
  -Defective CCD unit.

- When the problem occurs during ADF copying mode:
  -Dust or scratches on the ADF paper guide.
  -Dirty white plate in the ADF.

Action:

1. Clean the paper guide and the shading plate (ADF).
2. Replace the CCD unit.

Possible Causes (Printer)

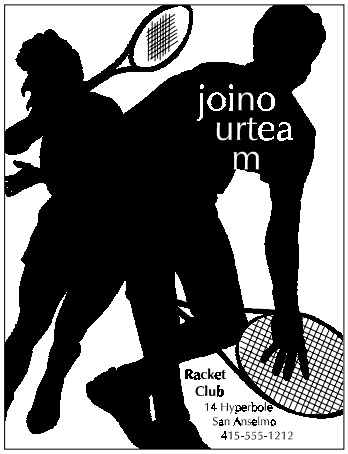
- Defective toner cassette
- Dirt or scratches on the hot roller surface
- Dirty hot roller strippers

Action:

1. Clean or replace the hot roller.
2. Clean or replace the hot roller strippers.

7.1.6 HORIZONTAL BLACK LINES

G025T506.WMF



G025T507.WMF

Possible Cause (Printer):

- Defective toner cassette

Action:

- Check that the surface of the drum is not damaged.

7.1.7 VERTICAL WHITE LINES

G025T508.WMF

G025T503.WMF

Possible Cause (Scanner):

- Defective CCD unit

Action:

- Replace the CCD unit.

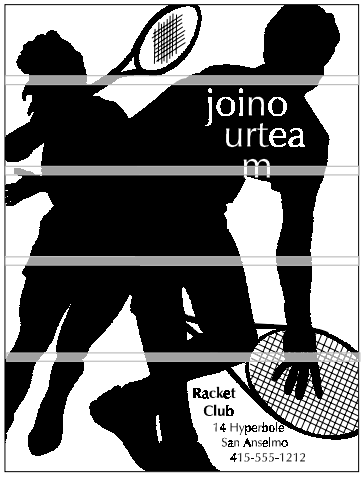
Possible Causes (Printer):

- Defective toner cassette
- The laser optic components are dirty.
- The transfer roller surface is dirty or damaged.
- The hot roller strippers scrape toner from the print paper.

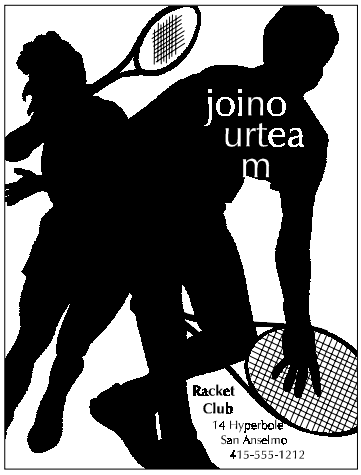
Action:

1. Check the following components. Then clean or replace if necessary.
   - Laser optic components.
   - Transfer roller.
   - Hot roller strippers.

7.1.8 HORIZONTAL WHITE LINES



G025T509.WMF



G025T507.WMF

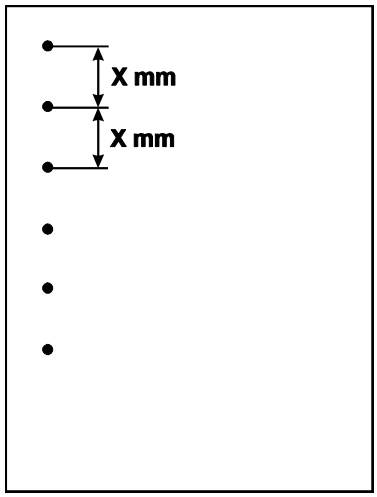
Possible Causes (Printer):

- Defective toner cassette
- The development bias is not stable.
- Transfer current is not stable.
- Defective mechanical control board (MCB)

Action:

1. Check the development bias. (Refer to Section 7.1.1 BLANK COPIES)
2. Confirm that the transfer roller is set correctly.
3. Check the connections between the development bias and charge terminals and the terminals on the MCB.

7.1.9 BLACK DOTS/SPOTS



G025T510.WMF

Possible Cause (Scanner):

- Dust on the exposure glass (the dots appear irregularly)

Action:

- Clean the exposure glass.

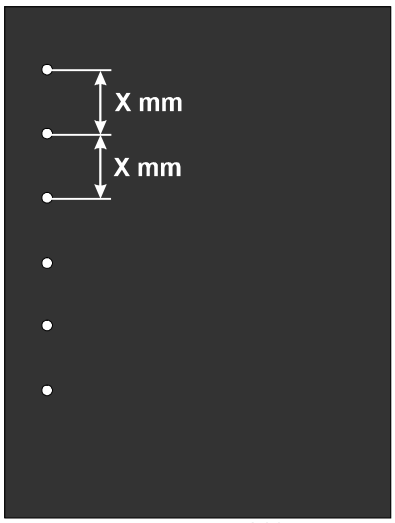
Possible Causes (Printer):

- Defective toner cassette
- The drum surface is damaged. (This is likely if the dots appear at 75.4-millimeter intervals.)
- The hot roller surface is damaged. (This is likely if the dots appear at 47.4-millimeter intervals.)

Action:

1. Replace the defective component (hot roller or toner cassette).

7.1.10 WHITE SPOTS IN BLACK IMAGE AREAS



G025T511.WMF

Possible Causes (Printer):

- The drum surface damaged. (This is likely if the dots appear at 75.4-millimeter intervals.)
- The transfer roller surface is damaged. (This is likely if the dots appear at 44-millimeter interval.)

Action:

1. Replace the defective component (transfer roller or toner cassette).

7.1.11 FAINT COPIES

G025T512.WMF

G025T503.WMF

Possible Causes (Scanner):

- Dirty shading plate and/or exposure glass
- Defective CCD unit

Action:

- Clean the white plate (for both book and ADF).
- Clean the exposure glass.

Possible Causes (Printer):

- Defective toner cassette
- Dirty laser optic components
- Incorrect development/transfer bias
- Humid (damp) paper is used.

Action:

1. Check whether the toner saving mode has not been selected with the user parameters. (If it has been selected, there is no problem.)
3. Copy a test pattern, and open the cover in the middle of printing. Then, check if the toner on the drum looks faint or not.
4. Check if laser optic components are dirty.
5. Check the connections between the transfer bias terminal and mechanical control board (MCB).
5. Check all the connections between the bias terminals and MCB.

Trouble-shooting

7.1.12 VERTICAL BLACK STREAKS

G025T513.WMF

G025T503.WMF

Possible Cause (Scanner):

- Dirty exposure glass

Action:

- Clean exposure glass.

Possible Cause (Printer):

- Defective toner cassette

Action:

- Replace the toner cassette.

7.1.13 UNFUSED COPIES

Possible Cause (Printer):

- The thermistor is defective.
- The fusing pressure roller spring mechanism is defective.
- The wrong type of toner cassette is being used.
- A non-recommended type of paper is being used.

Action:

1. Check with recommended types of paper and toner.
2. Replace any defective parts.

7.1.14 GHOST IMAGE

Possible Causes (Printer):

- Defective toner cassette
- Defective fusing thermistor
- Dirty hot roller

Action:

1. Check the hot roller surface and the cleaning pad.
2. Check the fusing thermistor.
3. Replace any defective parts.

7.1.15 TONER ON THE BACK OF THE PRINT PAPER

Possible Causes (printer):

- Dirty transfer roller
- Dirty fusing pressure roller

Action:

1. Check if the transfer roller is dirty with toner or not, and clean or replace it if necessary.
2. Check if the fusing pressure roller is dirty with toner or not.
   - If it is, clean the fusing pressure roller.
   - If not, check for any other dirty rollers and clean them.

7.1.16 MISALIGNED OUTPUT (IMAGE SHIFTED TO THE RIGHT OR LEFT)

Possible Causes (Scanner):
- Incorrect setting of the document guide
- Improper setting of the read start point of horizontal scanning

Action:
- Set the document guide correctly.
- Check the read start point and adjust if necessary. (Refer to Section 6.7.)

Possible Cause (Printer):
- Incorrect setting of the paper guide

Action:
- Set the paper guide correctly.

7.1.17 MISALIGNED OUTPUT(IMAGE SHIFTED VERTICALLY)/SHRUNKEN IMAGE

Possible Cause (Scanner)
- Improper setting of the read start timing

Action:
- Check the read start timing and adjust if necessary. (Refer to Section 6.7.)

Possible CauseS (Printer)
- Improper print registration setting
- Dirty paper feed roller

Action:
- Check the print registration setting and adjust if necessary. (Refer to Section 6.7.)
- Clean the paper feed roller.

7.2 MECHANICAL PROBLEMS

7.2.1 ADF NON FEED (G036 ONLY)

Possible Causes:

- An incorrect type or size of document or curled document is used.
- The pick-up and feed rollers are dirty or worn out.
- Defective ADF motor
- Defective platen cover switch
- Defective document sensor
- Defective scanner control board (SCB)

Action:

1. Check that a correct type of document is used.
2. Check the following.
   - Clean the pick-up and feed rollers with a soft cloth and water. Replace them if they are damaged.
   - Confirm that the ADF motor works correctly.
   - Check the connection between the SCB (CN3) and the ADF motor.
   - Confirm that the platen cover switch is working properly. Replace it if it is damaged.
   - Check that the document sensor is working properly. Replace it if it is damaged.

7.2.2 ADF JAM (G036 ONLY)

Possible Causes:

- An incorrect type or size of document is used.
- The document is too long.
- The ADF rollers (pick-up, feed, feed/in and feed-out) are dirty.
- Obstruction in the document paper path.
- Defective ADF motor
- Defective document sensor
- Defective registration sensor

Action:

1. Confirm that a correct type of document is used and that the document length is within the maximum setting.
2. Check for obstructions in the paper path.
3. If the problem still remains, do the following.
   - Clean the rollers with a soft cloth and water. Replace them if they are damaged.
   - Confirm that the ADF motor works correctly
   - Confirm that the document sensor and registration sensor are working properly. Replace them if they are damaged.

7.2.3 ADF SKEW (G036 ONLY)

Possible Causes:

- An incorrect type or size document is used.
- The document guide is not set properly.
- The scanner rollers (pick-up, feed, feed-in, and feed-out) are dirty.
- Obstruction in the document paper path

Action:

1. Check that a correct type of document is used.
2. Check that the ADF cover is securely closed, and check that the document guide is properly set. Also, check that the ADF roller assembly is properly installed.
3. Check for obstructions in the paper path.
4. Clean the rollers with a soft cloth and water, and replace them if they are damaged.

7.2.4 ADF MULTI-FEED (G036 ONLY)

Possible Causes:

- An incorrect type or size of document is used.
- The separation tab is worn or dirty.

Action:

- Clean or replace the separation tab.
- Confirm that the spring under the separation tab is properly installed.

7.2.5 SCANNER HOME POSITION ERROR (ERROR CODE 90)

Possible Causes:

- The CCD unit lock is at the lock position. (This lock should be unlocked at installation.)
- The CCD unit drive belt is out of position.
- The CCD unit drive belt is damaged or broken.
- Malfunctions in the CCD unit drive components (e.g. sensor, motor)
- Obstructions in the CCD unit drive path

Action:

- Check that the CCD unit drive components are in the correct position.
- Check that the CCD unit drive belt is positioned correctly.
- Check for obstructions in the CCD unit drive path.
- Confirm that the spring that secures the drive belt to the CCD unit is working properly, and replace if it is damaged.
- Check that the CCD unit lock is unlocked.

7.2.6 PAPER NON-FEED (PRINTER)

Possible Causes:

- A non-recommended type of paper is used.
- Malfunction in the paper pick-up cam and pick-up solenoid.
- Paper feed roller not properly set.
- The friction pad spring is not properly set.
- Obstructions in the paper path
- Defective paper pick-up drive mechanism
- Defective mechanical control board (MCB)

Action:

1. Confirm that a correct type of paper is being used.
2. Confirm that the paper tray is correctly set.
3. Confirm that the paper pick-up mechanism works correctly.
4. Confirm that the paper feed roller is properly installed. Clean or replace if necessary.
5. Check if there are any obstructions in the paper feed path.
6. Confirm that all the gears are properly installed.
7. Check the connections between the MCB (CN13) and the paper pick up solenoid.

7.2.7 PAPER JAM (REGISTRATION AREA)

Possible Causes:

- A non-recommended type of paper is used.
- The paper feed roller is dirty.
- Defective registration sensor
- Obstruction in the paper path
- Defective mechanical control board (MCB)

Action:

1. Confirm that a correct type of paper is being used, and confirm that the paper tray and the paper guide are correctly set.
2. Check for obstructions in the paper path.
3. Check the paper feed roller and its mechanism. Clean or replace if necessary.
4. Confirm that the registration sensor is working properly.
5. Check the fusing unit drive mechanism.

7.2.8 PAPER JAM (FUSING EXIT AREA)

Possible Causes:

- A non-recommended type of paper is used.
- Obstruction in the paper path
- Defective registration sensor
- Malfunctions in the fusing drive mechanism
- Defective paper feed exit sensor
- Malfunction in the hot roller stripper(s) mechanism
- Malfunction in the pressure mechanism in the fusing unit
- Defective mechanical control board (MCB)

Action:

1. Check if a correct type of paper is being used.
2. Check for obstructions in the paper path.
3. Confirm that the registration sensor is working correctly.
4. Check all the gears in the fusing drive mechanism.
5. Confirm that the paper feed-out sensor is working correctly.
6. Check the hot roller strippers and the pressure mechanism in the fusing unit.

7.2.9 PAPER SKEW (PRINTER)

Possible Causes:

- A non-recommended type of paper is used.
- Incorrect positioning of the paper guide in the upper paper tray
- The paper feed roller is worn out or damaged.
- Obstruction in the paper path
- Malfunction of the registration or paper exit sensor actuators
- Malfunctions in the pressure mechanism of the fusing unit

Action:

1. Check if a correct type of paper is used.
2. Confirm that the paper guide on the upper paper tray is correctly set.
3. Confirm that the paper feed roller is correctly installed, and clean or replace it if necessary.
4. Check for obstructions in the paper path.
5. Check the registration and paper exit sensor actuators.
6. Check the fusing unit's pressure mechanism.

7.2.10 PAPER MULTI-FEED (PRINTER)

Possible Causes:

- A non-recommended type of paper is used.
- The friction pad is dirty
- Malfunctions in the paper pick-up mechanism

Action:

- Check if a correct type of paper is used.
- Confirm that the paper guide is correctly set.
- Check the friction pad, and clean or replace it if necessary.
- Confirm that the paper pick-up mechanism works correctly.

7.3 ERROR CODES

These error codes are listed in the system parameter list.

Fatal error

When a fatal error occurs, an error code is displayed in the LCD. (For example, “Error 59”.) The machine cannot clear fatal errors even though the power is turned off and on. A fatal error can be canceled using the RAM display/rewrite mode (Service function 82).

NOTE: Perform the following operation to cancel a fatal error.

1) Enter the RAM display/rewrite mode. (See 4.1: Service functions)
2) Select the hexadecimal display mode.
3) Set the address to “11111111”.
4) Press the Start key.
5) Confirm that the blinking digit moved to the data area.
6) Change value to “00”.
7) Press the Stop key.

Semi fatal error

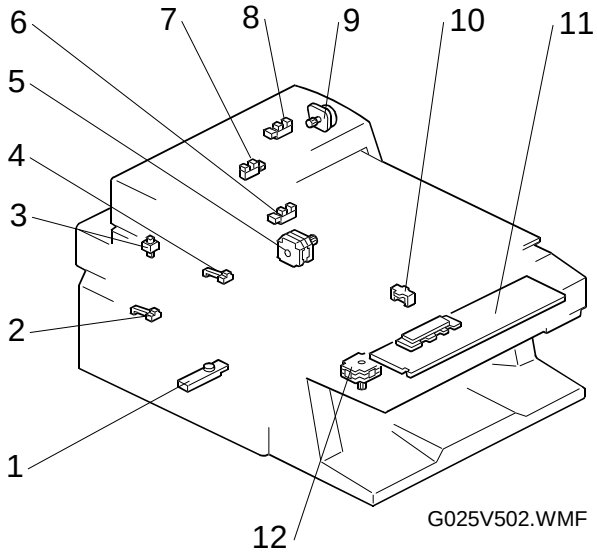
When a semi fatal error occurs, an error code is displayed in the LCD. (For example: “Error 90”.) The machine will clear this error when power is turned off and on.

Error Code	Error Type			Description	
	Error	Semi Fatal Error	Fatal Error		
40		✓		Serial error 1	Communication error in the serial signal between the control board and the SPCB happened.
41		✓		Serial error 2	Communication error in the serial signal between the control board and the MCB happened.
50	✓			Paper non-feed or jam before the registration sensor	Paper from upper tray did not reach the registration sensor.
51	✓			Paper jam in the transfer area	Paper did not reach the fusing unit.
52	✓			Paper jam in the transfer area or inside the fusing unit	Paper did not pass the registration sensor.
53	✓			Paper jam in the fusing exit area	Paper jam in the fusing exit area.
54	✓			Paper non-feed or jam before the registration sensor	Paper from lower tray did not reach the registration sensor.

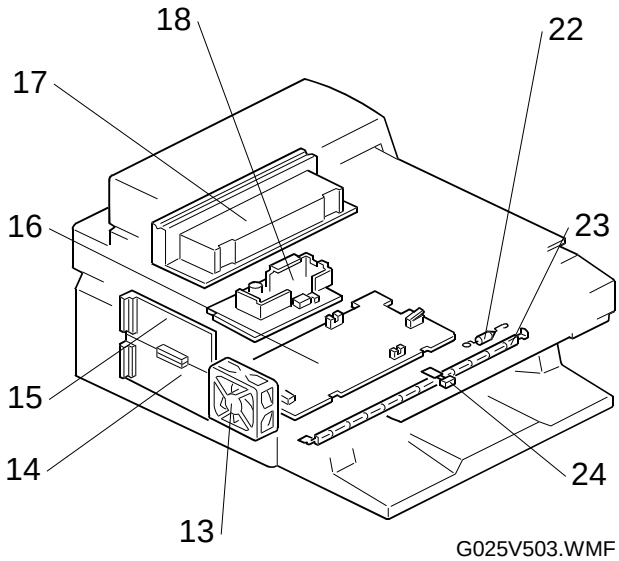
Error	Error Type			Description	
Code	Error	Semi Fatal Error	Fatal Error		
55	✓			Upper cover open detected during printing	Detected that upper cover was open during printing.
56		✓		Laser diode failure	No laser beam output
57		✓		Polygonal mirror motor failure	Polygonal mirror motor did not rotate correctly.
59			✓	Fusing unit error	Fusing lamp at high temperature during printing.
60			✓	Fusing unit error	Fusing lamp at low temperature during printing.
61			✓	Fusing unit error	Fusing lamp not at printing temperature after warm up.
62			✓	Fusing unit error	Fusing lamp at high temperature for three hundred seconds in power save mode.
63			✓	Fusing unit error	Fusing lamp at high temperature for twenty seconds after detecting proper temperature in power save mode.
64			✓	Fusing unit error	Fusing lamp at high temperature in lower temperature waiting mode.
65			✓	Fusing unit error	Fusing lamp at high temperature in higher temperature waiting mode.
66			✓	Fusing unit error	Fusing lamp at low temperature in lower temperature waiting mode.
67			✓	Fusing unit error	Fusing lamp at low temperature in higher temperature waiting mode.
68			✓	Fusing unit error	Fusing lamp at extremely low temperature during printing.
69			✓	Fusing unit error	Fusing lamp at extremely high temperature during printing.
70			✓	Fusing unit error	Fusing lamp at high temperature in lower temperature waiting mode.
71			✓	Fusing unit error	Fusing lamp at high temperature in higher temperature waiting mode.
72			✓	Fusing unit error	Thermistor error
73			✓	Fusing unit error	Over comparator temperature limit (235ºC.)
74		✓		Power pack error	Charging voltage did not change from 0 to –1200 volts.
75		✓		Power pack error	Over voltage: > –1200 volts
76		✓		Power pack error	Transfer current did not increase to +3.5 ·A.
77		✓		Power pack error	Transfer current too high: >+3.5 ·A.

Error	Error Type			Description	
Code	Error	Semi Fatal Error	Fatal Error		
78		✓		Power pack error	Development bias voltage did not go to –400 volts, or application roller bias voltage did not go to -650 volts.
79		✓		Power pack error	Development bias over voltage: > –400 volts, or Application roller bias over voltage: > -650 volts
85			✓	Fusing unit error	Over temperature while heating up.
86			✓	Fusing unit error	The temperature didn't go up while heating up.
90		✓		CCD unit home position error	When using the flatbed scanner, the carriage didn't move or home position sensor failure.
91	✓			Document jam	Document non-feed
92	✓			Document jam	Document length exceeded the maximum.

COPIER/PRINTER ELECTRICAL COMPONENT LAYOUT



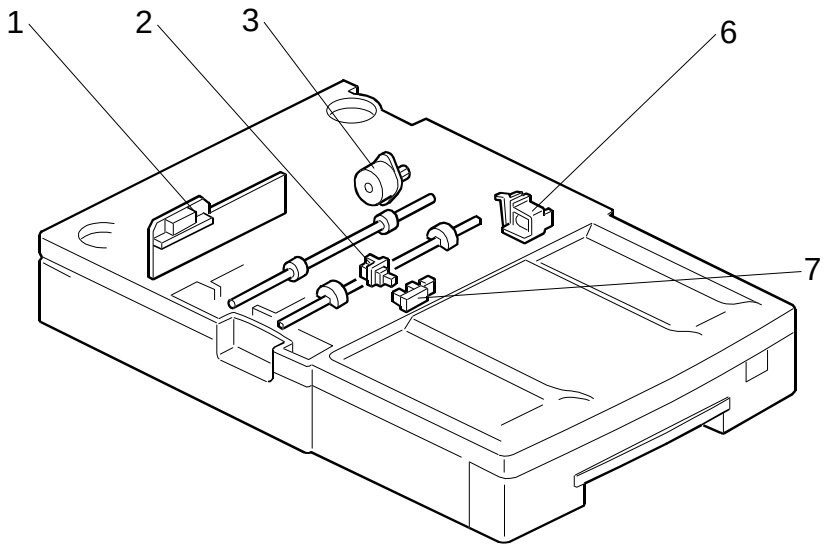
G025V502.WMF



G025V503.WMF

No.	Description		P-to-P Location
1	Toner End Sensor	(S1)	C7
2	Paper Width Sensor	(S2)	C7
3	Platen Cover Switch (G036 only)	(SW1)	O10
4	Paper End Sensor	(S3)	C7
5	Main Motor	(M1)	C4
6	Home Position Sensor	(S4)	O8
7	Document Sensor (G036 only)	(S5)	O9
8	ADF Registration Sensor (G036 only)	(S6)	O9
9	ADF Motor (G036 only)	(M3)	O7
10	Paper Pick-up Solenoid	(SOL1)	C8
11	Operation Panel	(PCB5)	O2
12	Scanner Motor	(M2)	O8
13	Fan Motor	(M3)	O7
14	Control Board	(PCB1)	I5
15	Scanner Control Board (SCB)	(PCB2)	L5
16	Mechanical Control Board (MCB)	(PCB3)	E5
17	CCD Unit	(CCD1)	O6
18	Power Supply Unit (PSU)	(PCB4)	D10
22	Thermofuse	(TF1)	B9
23	Fusing Lamp	(L1)	B9
24	Thermistor	(TH1)	C8

OPTIONAL PAPER FEED UNIT ELECTRICAL COMPONENT LAYOUT



G025V504.WMF

No.	Description		P-to-P Location
1	Paper Feed Unit Control Board	PCB1	C2
2	Paper Tray Sensor	S1	B3
3	Paper Feed Motor	M1	B1
6	Paper Feed Solenoid	SOL1	B2
7	Paper End Sensor	S2	B3

POINT-TO-POINT DIAGRAM G026/036 COPIER/PRINTER

September 11, 1998