Model PL-P2L

Machine Code: G162

SERVICE MANUAL

March 2007

Subject to change

Important Safety Notices

Prevention of Physical Injury

1. Before disassembling or assembling parts of the printer and peripherals, make sure that the printer power cord is unplugged.
2. The wall outlet should be near the printer 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. The printer drives some of its components when it completes the warm-up period. Be careful to keep hands away from the mechanical and electrical components as the printer starts operation.
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

Toner and developer are non-toxic, but if you get either of them 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.

Observance of Electrical Safety Standards

The printer and its peripherals must be serviced by a customer service representative who has completed the training course on those models.

⚠WARNING

- ⃠Keep the machine away from flammable liquids, gases, and aerosols. A fire or an explosion might occur.

Safety and Ecological Notes for Disposal

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of used toner, the maintenance unit which includes developer or the organic photoconductor in accordance with local regulations. (These are non-toxic supplies.)
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

Turn off the main switch before attempting any of the procedures in the Optics Unit section. Laser beams can seriously damage your eyes.

CAUTION MARKING:

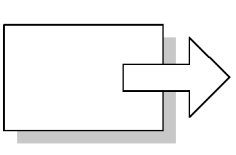
g162_safety

Symbols, Abbreviations and Trademarks

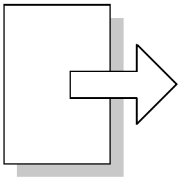
Symbols and Abbreviations

This manual uses several symbols and abbreviations. The meaning of those symbols and abbreviations are as follows:

	See or Refer to
	Clip ring
	Screw
	Connector
	Clamp
	E-ring
SEF	Short Edge Feed
LEF	Long Edge Feed



Short Edge Feed (SEF)



Long Edge Feed (LEF)

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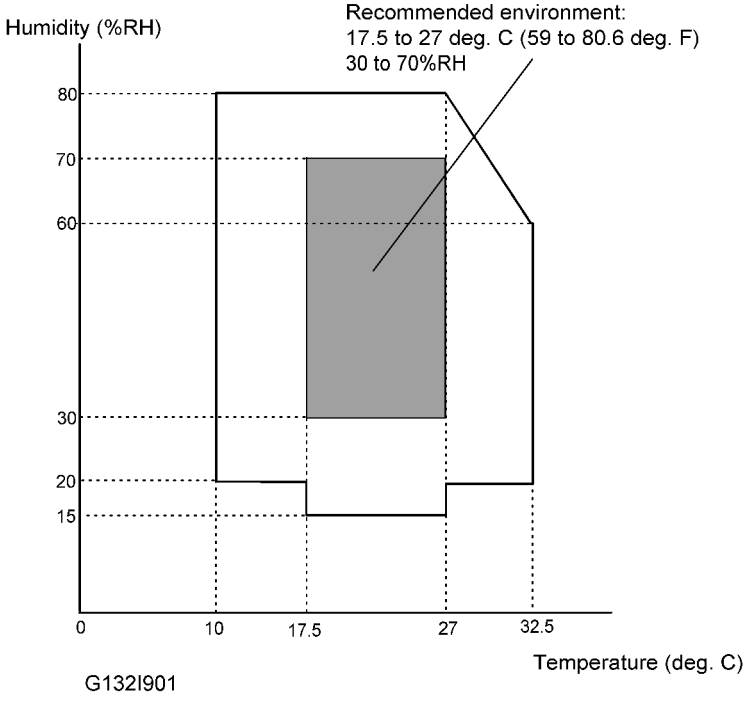
1. Installation

Installation Requirements

Environment



1. Temperature range: 10 - 32.5 °C (50 - 90.5 °F)
2. Humidity range: 15 - 80%RH
3. Do not install the machine areas that get direct sunlight.
4. Do not install the machine areas with bad airflow.
5. Do not let the machine get temperature changes from these:
    - Direct cool air from an air conditioner
    - Direct heat from a heater
6. Do not install the machine areas that can get corrosive gas.
7. Install the machine at locations lower than 2,500 m (8200 ft.).
8. Install the machine on a strong, level base.
9. Do not install the machine areas that get strong vibrations.

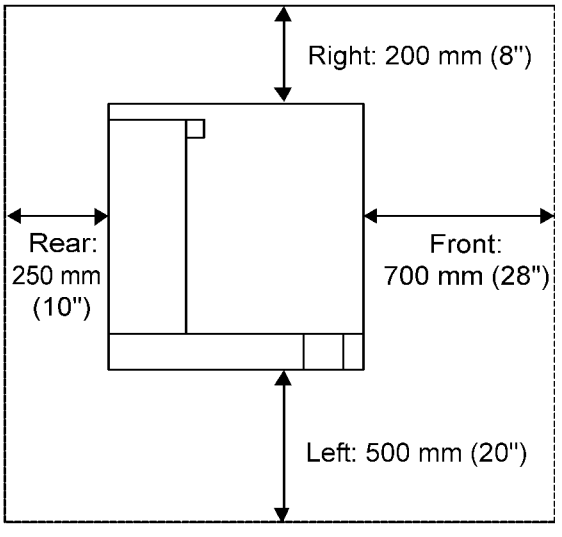
1

Machine Level

Front to back: 1 degree or less

Left to right: 1 degree or less

Machine Space Requirements



G132I915

[A] (right): 200 mm (8")

[B] (front): 700 mm (28")

[C] (left): 500 mm (20")

[D] (rear): 250 mm (10")

Note

- The space for maintenance work is included.

Power Requirements

⚠CAUTION

- 1. Put the power plug tightly in the outlet.
- 2. Do not use extension cords.
- 3. Ground the machine.

1. Input voltage level:

- 120 V, 60 Hz, 11 A or less

2. Permissible voltage fluctuation: ±10 %
3. Do not put anything on the power cord.

Installation Procedure

1

Installing the Printer

See the Setup Guide.

Moving the Machine

Use caution when you move the machine:

1. You need two or more persons to move the machine. The machine weighs about 29.0 kg (64 lb) without optional units. Keep the machine level at the time you move it.
2. Put the machine on a flat area. Make sure that the whole part of the base supports the weight of the machine.
3. Use the padding in the original package.
4. Remove these units before you move the machine:
    - Photoconductor unit
    - Optional paper feed unit
    - Paper

    Note

    - Do not remove the waste toner bottle. Waste toner may fall from the waste toner path.
5. Protect the photoconductor unit surface with paper or cloth.
6. Clean the units and components in the printer.
7. Secure the paper tray and all exterior covers with tape.

2. Preventive Maintenance

User Maintenance

Page Count

The table shows the components that require maintenance when the printer has output a certain number of pages.

Key: AN: As necessary, C: Clean, R: Replace, L: Lubricate, I: Inspect

Component	9KP	AN	Remarks
Registration roller		C	
Waste toner bottle	R		NOTE 1

The part life of the photoconductor unit is approximately "26.4KP" (see Note 1).

Note

- 1. The life is decided by the number of developments. The number in the table is calculated for these conditions: A4 SEF, 5% image coverage ratio, two pages per job, 50% color ratio.

Service Maintenance

Necessary Settings

1. You must do the PM counter initialization (Service Menu > Maintenance > Item) after you replace these units:
    - Transfer belt unit
    - Transfer roller (OW)
    - Transfer belt-cleaning unit (OW)
    - Paper feed roller
    - Separator pad
2. You must do "Clear Fuser" (Utility Menu > Clear Fuser) after you replace the Fusing unit.

Page Count

The table shows the components that need maintenance when the printer has output a certain number of pages.

Key: C: Clean, R: Replace, L: Lubricate, I: Inspect

PRINTER

Component	26.4KP	37KP	Remarks
Fusing unit		R	Note 1
Photoconductor unit	R		Note 2, 3

Note

- 1. The figure is calculated for these conditions: A4 SEF, 5% image coverage ratio, two pages per job, 50% color ratio. You must do "Clear Fuser" (Utility Menu > Clear Fuser) after you replace the Fusing unit.
- 2. You must do this procedure after replacing the photoconductor unit: Utility menu > Clear Belt CG > Execute > Completed.
- 3. The life is decided by the number of developments. The number in the table is calculated fro the conditions above.

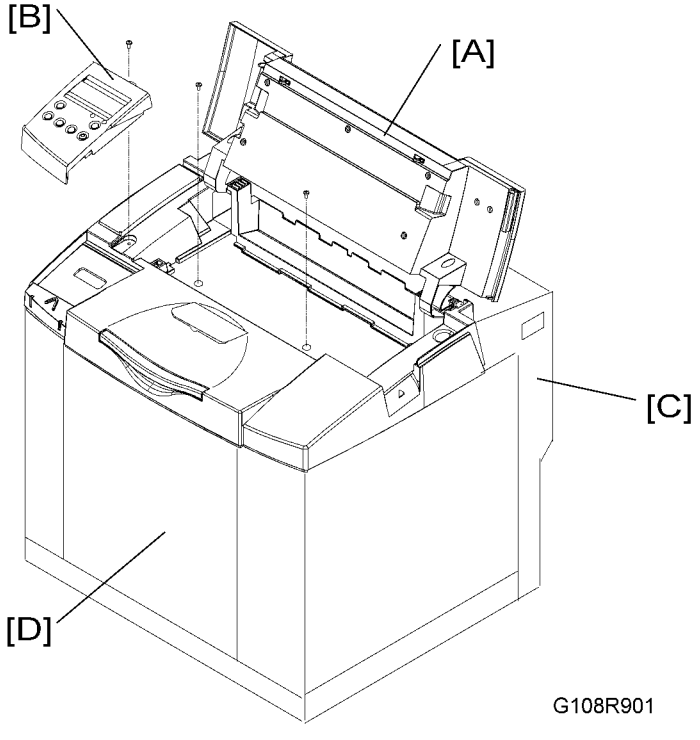
3. Replacement and Adjustment

Exterior Covers

⚠CAUTION

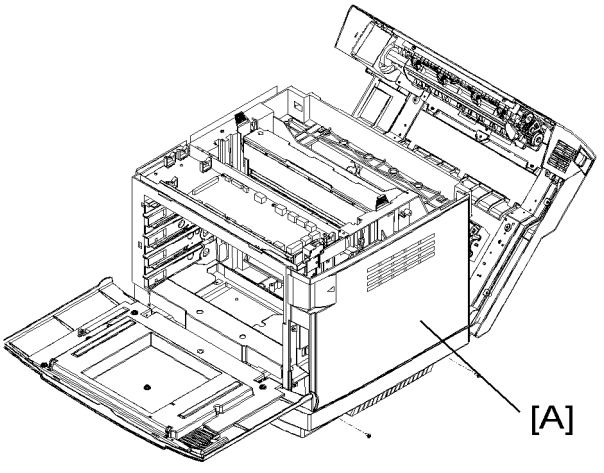
- Turn the power off and disconnect the printer before you remove parts of the printer.

Top Cover



1. Open the top cover [A].
2. Operation panel [B] (x 1, x 1)
3. Open the rear cover [C].
4. Open the front cover [D].
5. Top cover (x 2)

Right Cover



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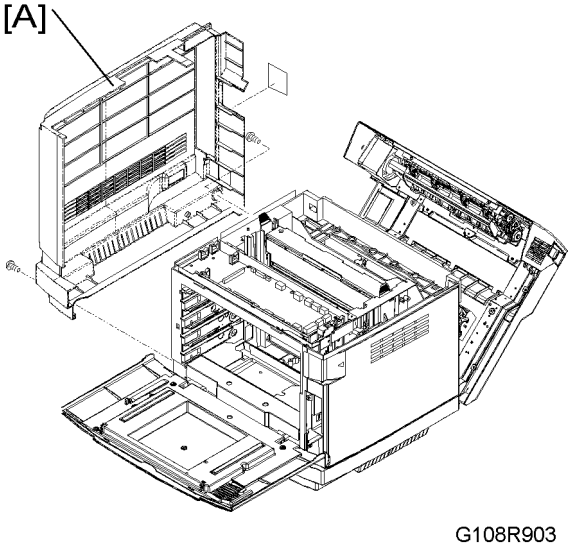
1. Top cover (☛ Top Cover)
2. Right cover [A] (🔩 x 2)

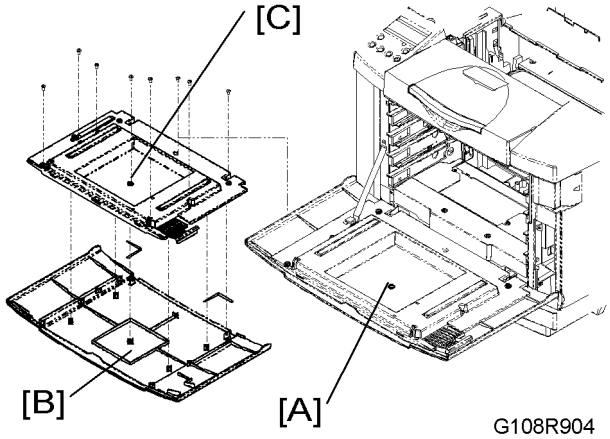
Left Cover



G108R903

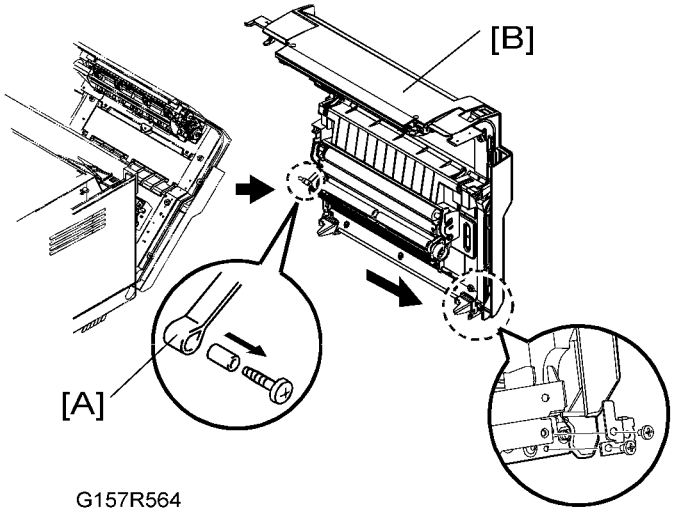
1. I/F controller board (☛ I/F Controller Board)
2. Top cover (☛ Top Cover)
3. Left cover [A] (🔩 x 2)

Front Cover



1. Open the front cover [A].
2. Front cover [B] (x 8)
3. Internal cover [C] (Pin x 2)

Rear Cover



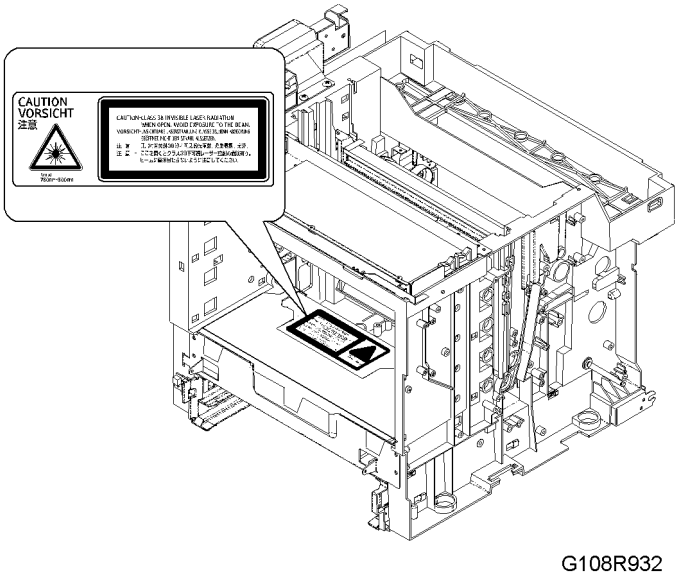
1. Top cover (☛ Top Cover)
2. Release the strap [A] (x 1, Guide x 1).
3. Rear cover (with the transfer unit and the paper exit unit) [B] (x 1, x 2)

Optics Unit

⚠WARNING

- 1. Before starting the maintenance work described in this section, unplug the printer.
- 2. Do not disassemble the laser optics unit. A class 3B invisible laser beam is produced in the unit.
- 3. Do not adjust any part of the laser optics unit. Replace the unit as a whole.
- 4. To prevent exposure to laser radiation, confirm that all covers have been attached before starting the machine.

Caution Decal Location



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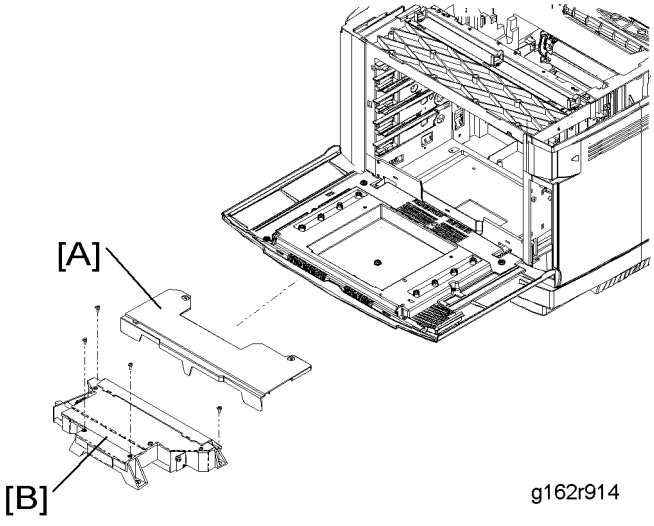
The caution decal is on the laser optics unit.

Removing the Laser Optics Unit



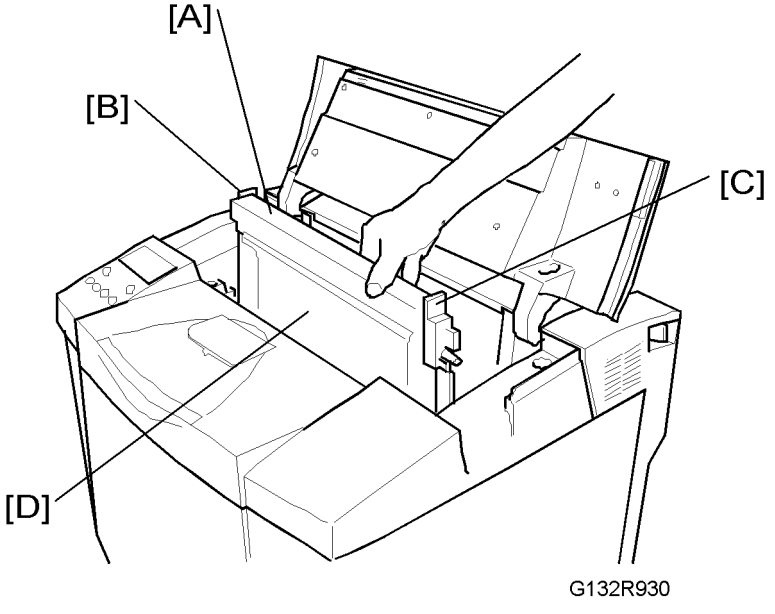
1. Open the front cover.
2. All development units
3. Photoconductor unit (☛ Photoconductor Unit)
4. Optics unit cover [A] (x 2)
5. Optics unit [B] (x 1, x 4)

OPC

Photoconductor Unit

⚠CAUTION

- Do not touch the OPC belt. Hold the grip [A] when you move the photoconductor unit.

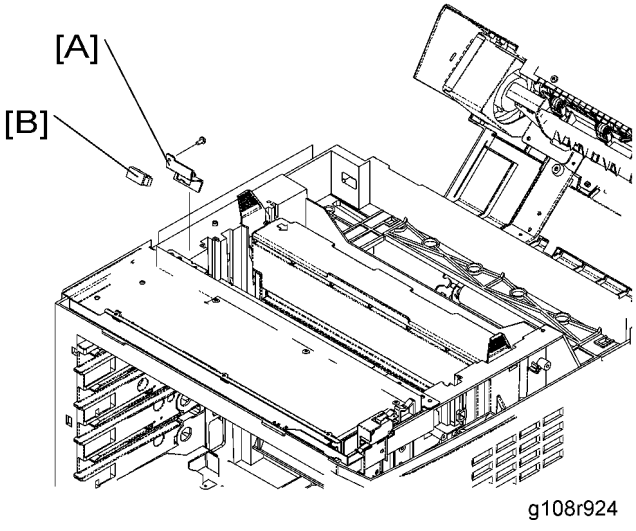


1. Open the top cover.
2. Release the locks [B] [C].
3. Photoconductor unit [D]

Necessary Setting

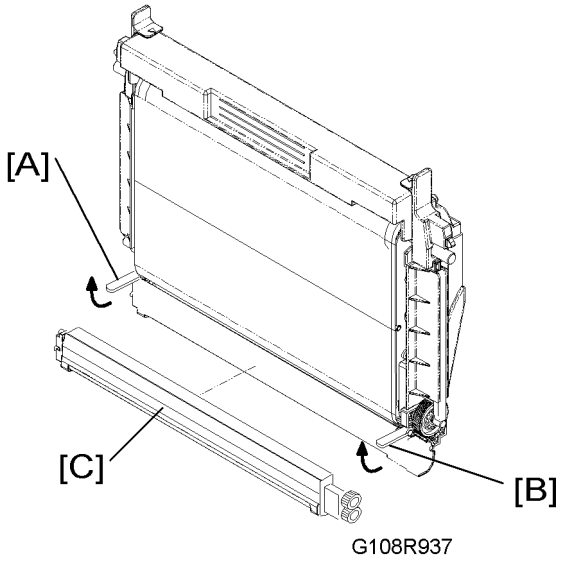
You must do the "Clear Belt CG" procedure after you replace the photoconductor unit. (☛ Service Tables –Menu Functions Table - 7:Utility menu, Clear Belt CG)

OPC Belt Sensor

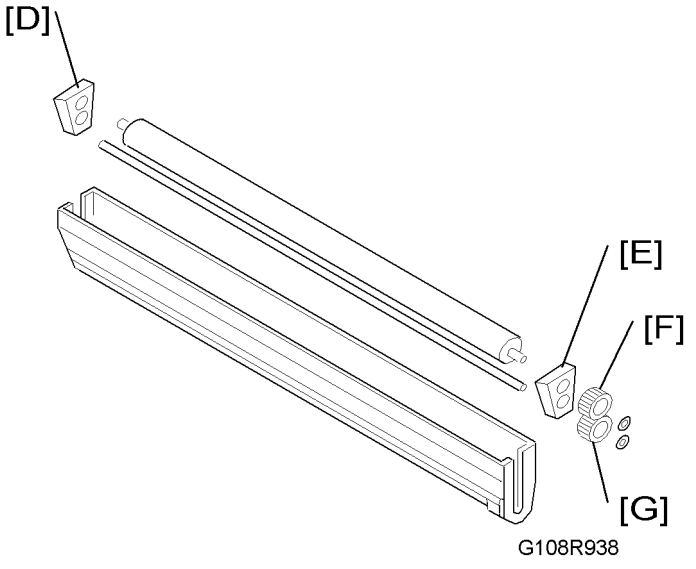


1. Photoconductor unit (☛ Photoconductor Unit)
2. Top cover (☛ Covers - Top Cover)
3. Sensor bracket (with the OPC belt sensor) [A] (x 1, x 1)
4. OPC belt sensor [B]

Charge Roller and Cleaning Roller

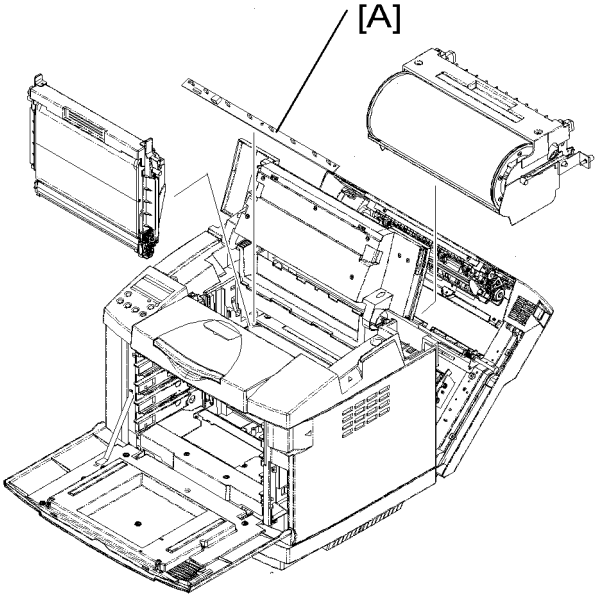


1. Photoconductor unit (☛ Photoconductor Unit)
2. Release the locks [A] [B].
3. Charge roller and cleaning roller in the cover [C]



4. Left holder [D] and right holder [E] with the charge roller and the cleaning roller
5. Charge roller gear [F] (x 1)
6. Cleaning roller gear [G] (x 1)
7. Left holder
8. Right holder

Erase Lamp



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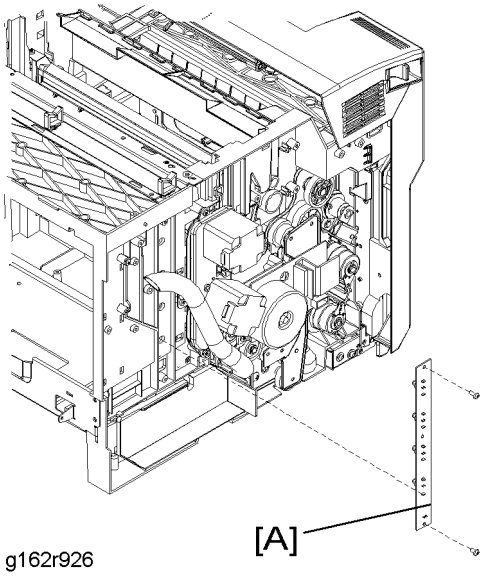
1. Photoconductor unit (☛ Photoconductor Unit)
2. Transfer belt unit (☛ Transfer Belt - Transfer Belt Unit)
3. Erase lamp [A] (x 1, x 2)

Development

Toner End Sensor

Emitter



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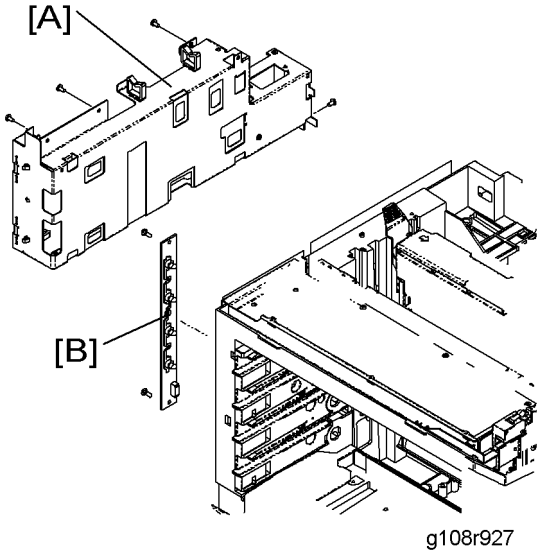
1. Top cover (☛ Covers - Top Cover)
2. Right cover (☛ Covers - Right Cover)
3. Waste toner bottle holder (☛ Waste Toner Bottle Holder)
4. Emitter of the toner end sensor [A] (x 2, x 1)

Reassembling

Attach the upper end of the emitter with the 3x6 screw. Attach the lower end with the 3x8 screw.

Receptor

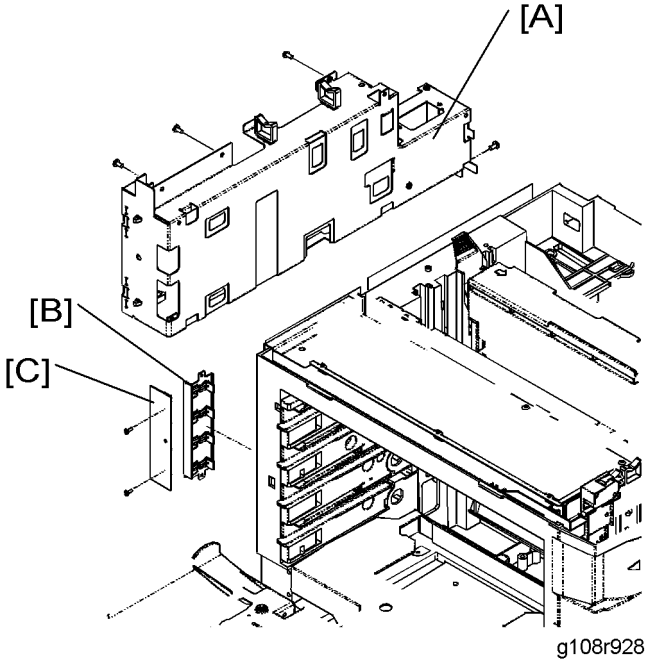


1. Top cover (☛ Covers - Top Cover)
2. Left cover (☛ Covers - Left Cover)
3. Power supply unit (☛ Circuit Boards – Power Supply Unit)
4. High voltage unit (☛ Circuit Boards – High Voltage Unit)
5. High voltage unit base [A] (x 4)
6. Receptor of the toner end sensor [C] (x 2, x 1)

Reassembling

Attach the upper end of the emitter with the 3x6 screw. Attach the lower end with the 3x8 screw.

Development Unit Sensor



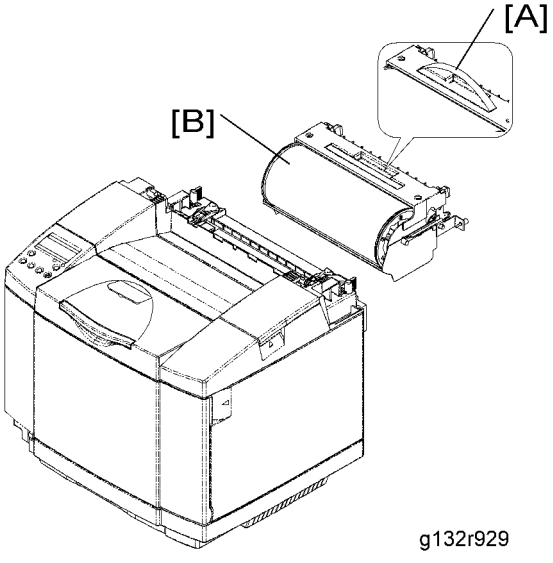
1. Top cover (☛ Covers - Top Cover)
2. Left cover (☛ Covers - Left Cover)
3. Power supply unit (☛ Circuit Boards – Power Supply Unit)
4. High voltage unit (☛ Circuit Boards – High Voltage Unit)
5. Fusing unit
6. High voltage unit base [A] (x 1, x 4)
7. Sensor bracket (with the development unit sensor) [B] (x 2)
8. Development unit sensor (with the circuit board) [C] (x 2)

Transfer Belt

Transfer Belt Unit

⚠CAUTION

- Do not touch the transfer belt. Hold the grip [A] when you move the transfer belt unit.



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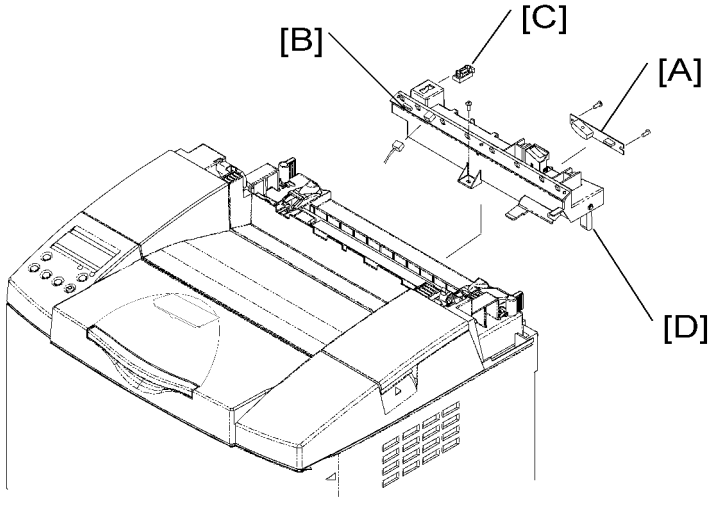
1. Open the rear cover.
2. Transfer belt unit (🖉 x 2) [B]

Necessary Setting

You must do the "Clear trans belt" procedure after you replace the transfer belt unit. (☛ Service Tables - Menu Functions Table – Service Menu – 1-3:Maintenance, Clear Trans Belt)

Transfer Belt Sensor and ID Sensor



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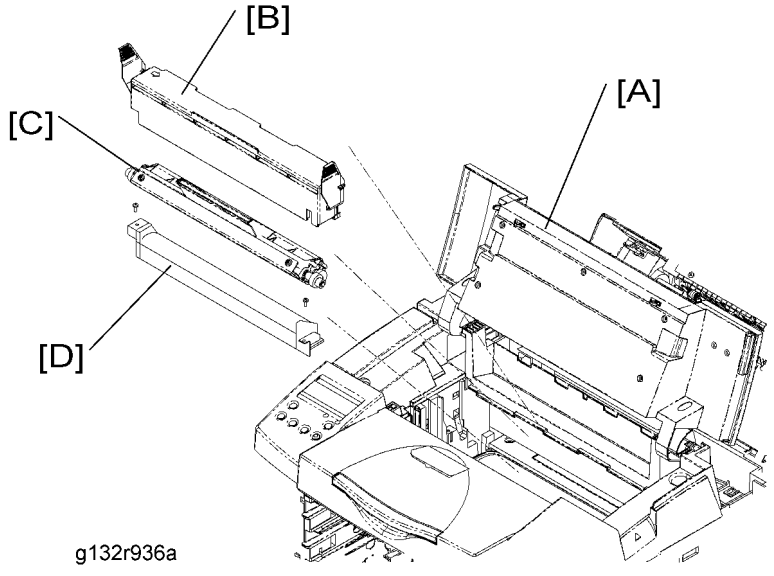
1. All development units
2. Photoconductor unit (☛ OPC - Photoconductor Unit)
3. Transfer belt unit (☛ Transfer Belt Unit)
4. ID sensor [A] (x 1, x 2)
5. Erase lamp base [B] (x 1, x 2)
6. Transfer belt sensor [C] (x 1)

Reassembling

Remove the paper tray out of the printer when you reassemble. The paper tray pushes up the lever [D] on the right end of the erase lamp base.

Transfer Belt Cleaning Unit and Waste Toner Duct



1. Open the top cover [A].
2. Cleaning unit cover [B].
3. Transfer belt-cleaning unit [C].
4. Waste toner duct [D] (🖉 x 2)

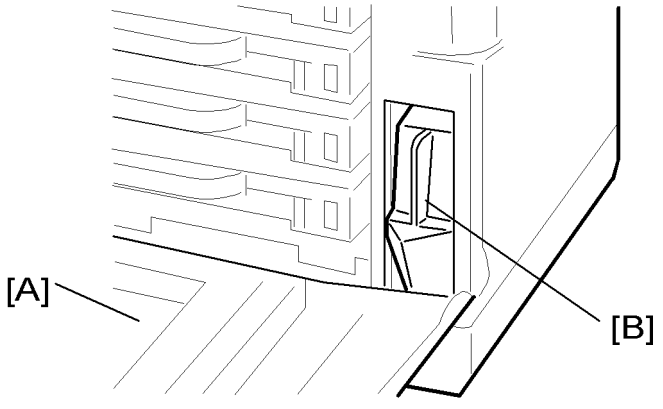
Necessary Setting

You must do the "Clear OW Kit" procedure after you replace the transfer belt-cleaning unit. (☛ Service Tables - Menu Functions Table – Service Menu – 1-3:Maintenance, Clear OW Kit)

Waste Toner Collection Unit

Waste Toner Bottle

Discard waste toner in accordance with the local regulations.



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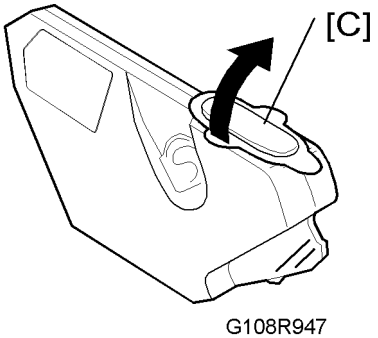
1. Open the front cover [A].
2. Waste toner bottle [B].



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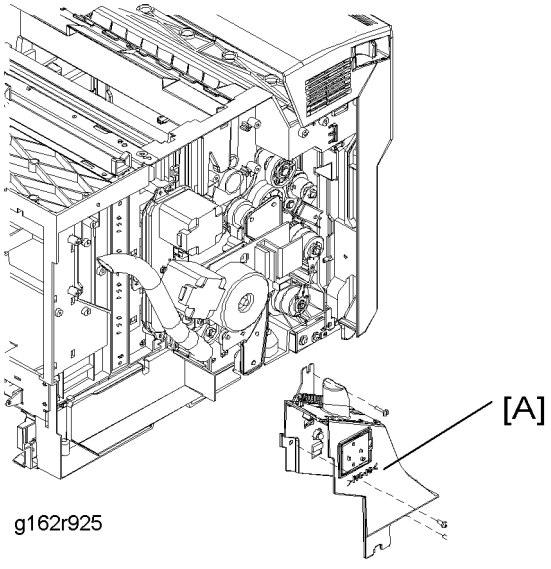
3. Remove the cover [C] from the new waste toner bottle.
4. Attach the cover to the old waste toner bottle.

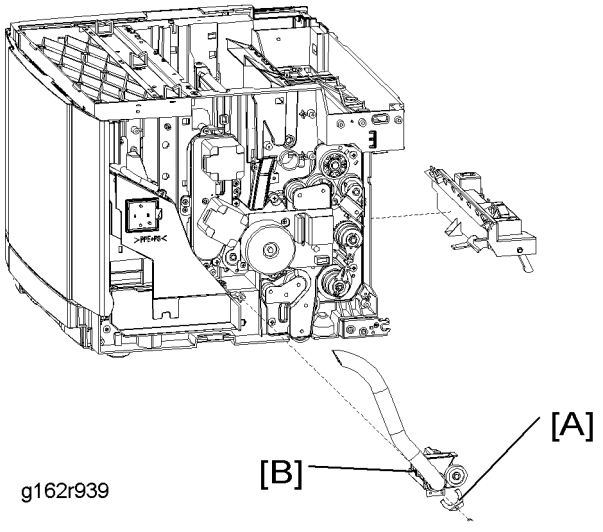
Waste Toner Bottle Holder



You cannot remove the waste toner sensor from the bottle holder. Replace the waste toner sensor with the bottle holder.

1. Top cover (☛ Covers - Top Cover)
2. Right cover (☛ Covers - Right Cover)
3. Waste toner bottle
4. Detach the waste toner duct from the waste toner bottle holder (☛ Waste Toner Duct)
5. Waste toner bottle holder [A] (x 1, x 3)

Waste Toner Duct



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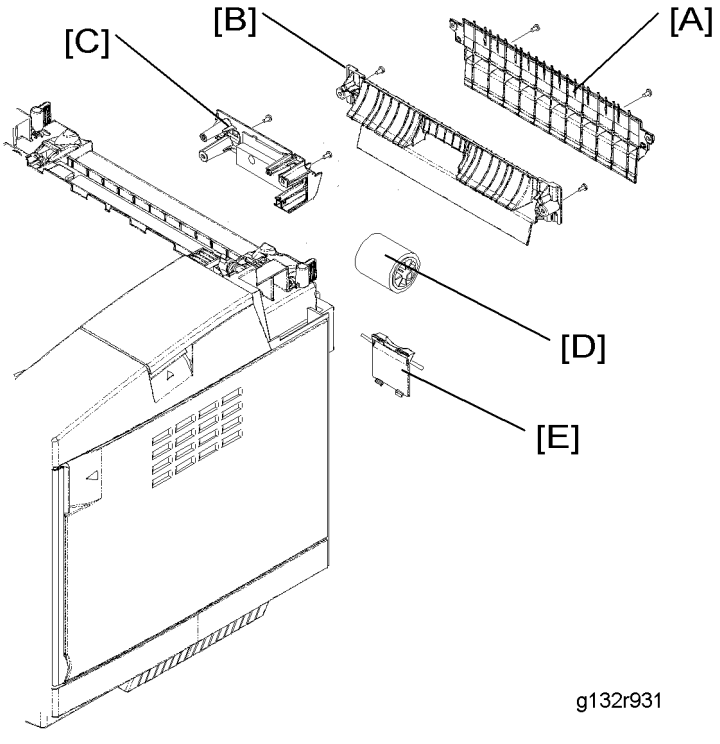
1. Remove all development units and waste toner bottle.
2. Photo conductor unit (☛ OPC - Photoconductor Unit)
3. Top cover (☛ Covers - Top Cover)
4. Right cover (☛ Covers - Right Cover)
5. Erase lamp base (☛ Transfer Belt - Transfer Belt Sensor and ID Sensor)
6. Cover the area below the waste toner duct with paper or cloth.

   Note

   - When you remove the waste toner duct, waste toner comes out of the duct.
7. Support bracket [A] (🔩 x 1)
8. Detach the waste toner duct from the waste toner bottle holder.
9. Photoconductor drive gear box (☛ Drive Path - Main Motor and Photoconductor Drive Gear Box)
10. Waste toner duct [B]

Paper Feed

Paper Feed Roller and Separator Pad



1. Rear cover (☛ Covers - Rear Cover)
2. Paper guide 1 [A] (x 2)
3. Paper guide 2 [B] (x 2)
4. Paper sensor assembly [C] (x 2)

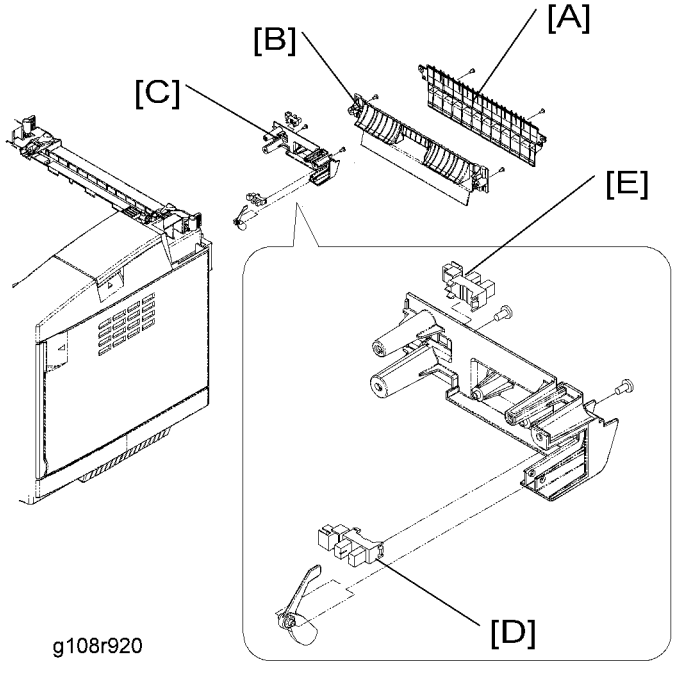
   Note

   - You do not need to remove the connectors.
5. Paper feed roller [D]
6. Separator pad [E]

Necessary Setting

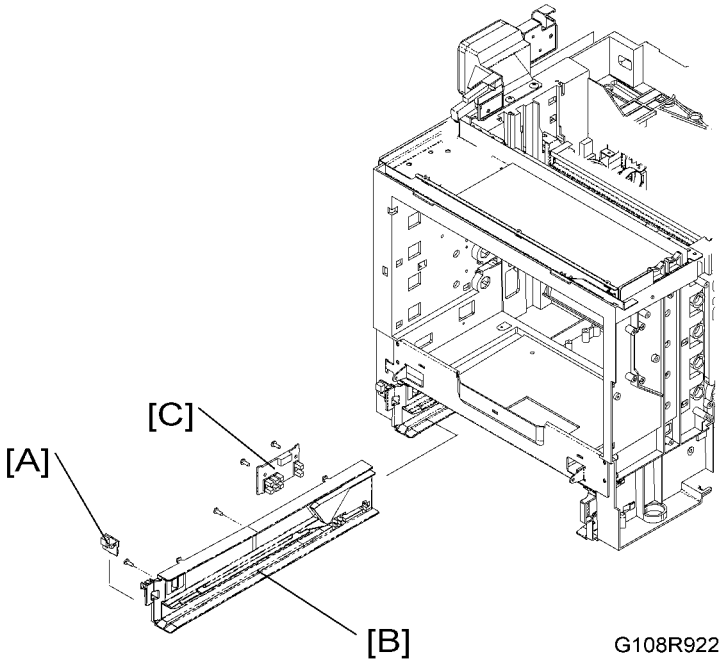
You must do the "Clear Feed-Roll1" procedure after you replace the paper feed roller and the separator pad. (☛ Service Tables - Menu Functions Table – Service Menu – 1-3:Maintenance, Clear Feed-Roll1)

Paper End Sensor and Registration Sensor



1. Rear cover (☛ Covers - Rear Cover)
2. Paper guide 1 [A] (x 2)
3. Paper guide 2 [B] (x 2)
4. Paper sensor assembly [C] (x 2)
5. Paper end sensor [D] (x 1)
6. Registration sensor [E] (x 1)

Temperature Sensor, Paper Size Sensor and Paper Tray Sensor



1. Left cover (☛ Covers - Left Cover)
2. Temperature sensor [A] (✋ x 1)
3. Paper tray
4. Power supply unit (☛ Circuit Boards – Power Supply Unit)
5. Left rail of the paper tray [B] (🔩 x 2)

   Note

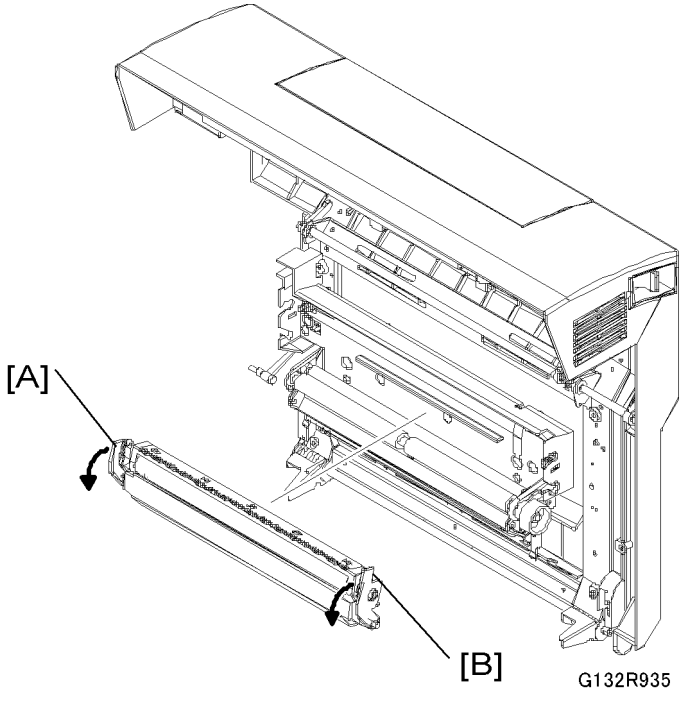
   - The screws are behind the power supply unit.
6. Paper size sensor and paper tray sensor [C] (✋ x 1, 🔩 x 2)

   Note

   - Put the connector through the opening behind the power supply unit.

Paper Transfer and Paper Exit

Transfer Roller Unit

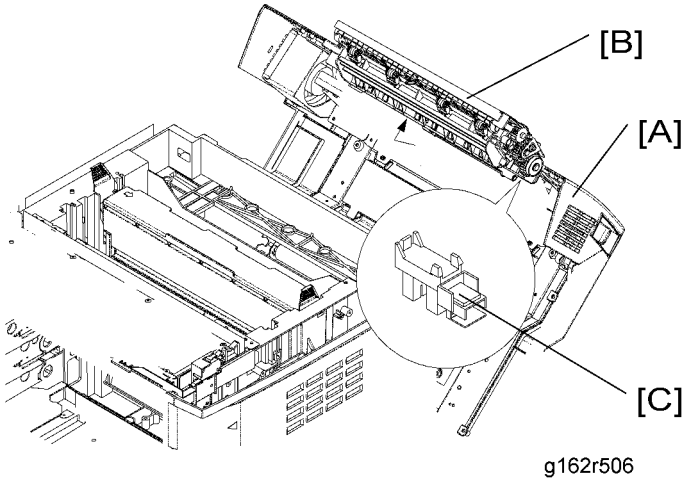


1. Open the rear cover.
2. Grasp the left and right levers [A] [B]. Then pull them towards the front until the upper half of the transfer roller unit comes out.
3. Transfer roller unit

Necessary Setting

You must do the "Clear OW Kit" procedure after you replace the transfer roller unit. (☛ Service Tables - Menu Functions Table – Service Menu – 1-3:Maintenance, Clear OW Kit)

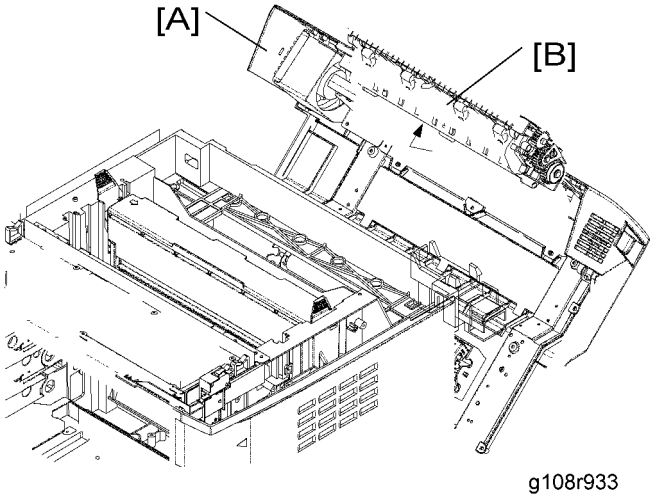
Paper Exit Sensor



g162r506

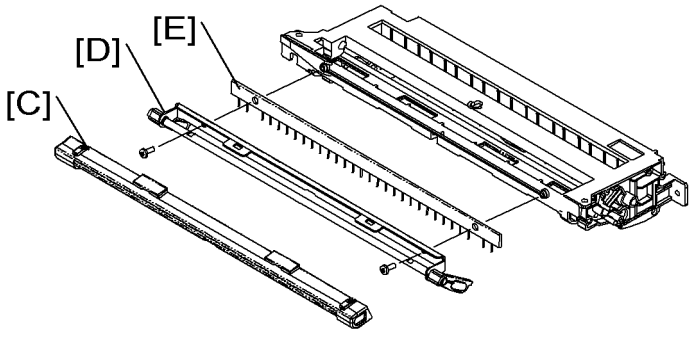
1. Open the rear cover [A].
2. Paper exit unit [B] (x 4)
3. Paper exit sensor [C] (x 1)

Discharge Brush



g108r933

1. Open the rear cover [A].
2. Paper exit unit [B] (x 4)



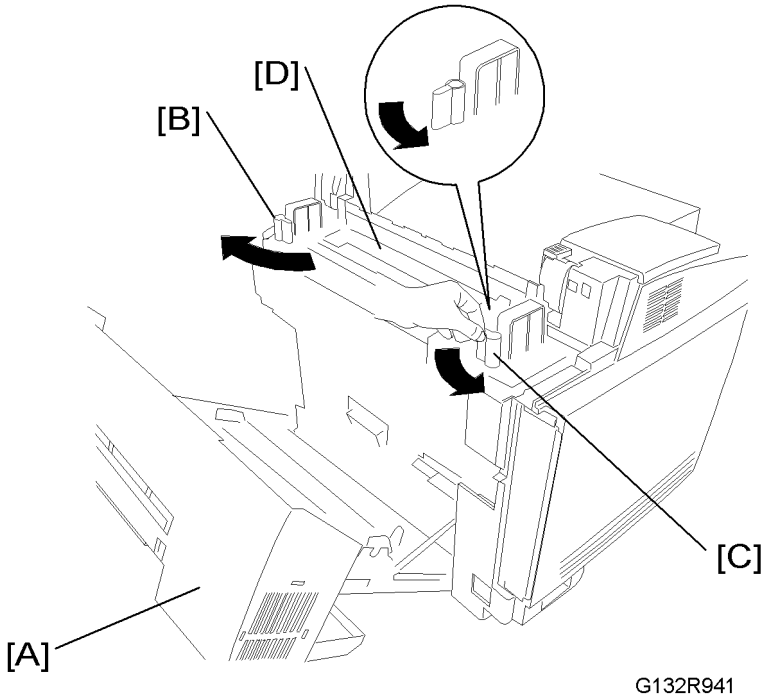
G108R934

3. Lock shaft cover [C]
4. Lock shaft [D] (x 2)
5. Discharge brush [E]

Fusing Unit and Fusing Lamp

⚠CAUTION

- 1. Before starting the maintenance work, turn off the main power switch and unplug the machine.
- 2. Use extreme caution when you touch the fusing unit. The fusing unit can be very hot.
- 3. Do not remove or adjust the tension bolts [Y] or the hot-roller guard [Z]. Normal operation is not guaranteed if you remove or adjust them.

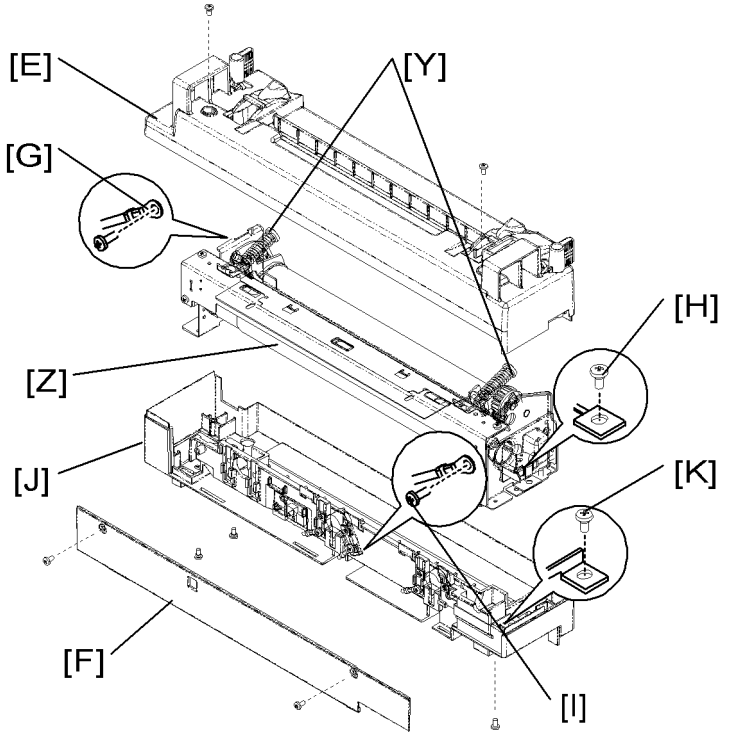


G132R941

1. Open the rear cover [A].
2. Release the locks [B] [C].
3. Fusing unit [D]

Necessary Setting

You must do the "Clear Fuser" procedure after you replace the fusing unit. (☛ Service Tables - Menu Functions Table –7:Utility Menu - Clear Fuser)

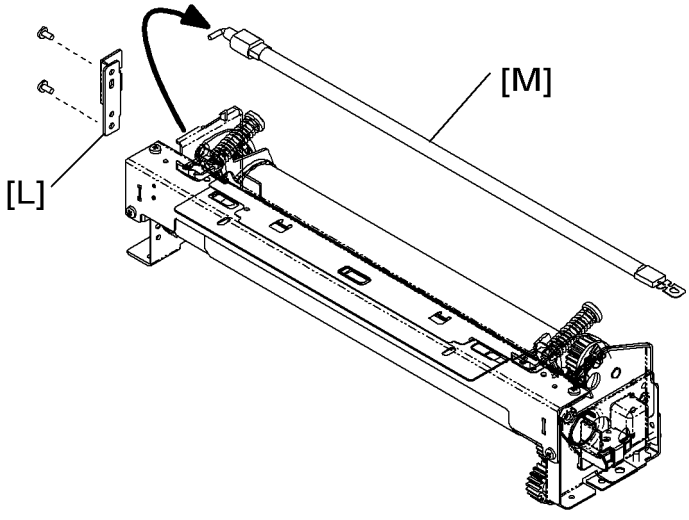


G108R942

4. Top cover [E] (x 2)
5. Front cover [F] (x 2)
6. Ground cable [G] (x 1)
7. Screw at the right end of the fusing lamp [H]
8. Screw at the terminal of the fusing lamp [I]
9. Bottom cover [J] (x 4)

Note

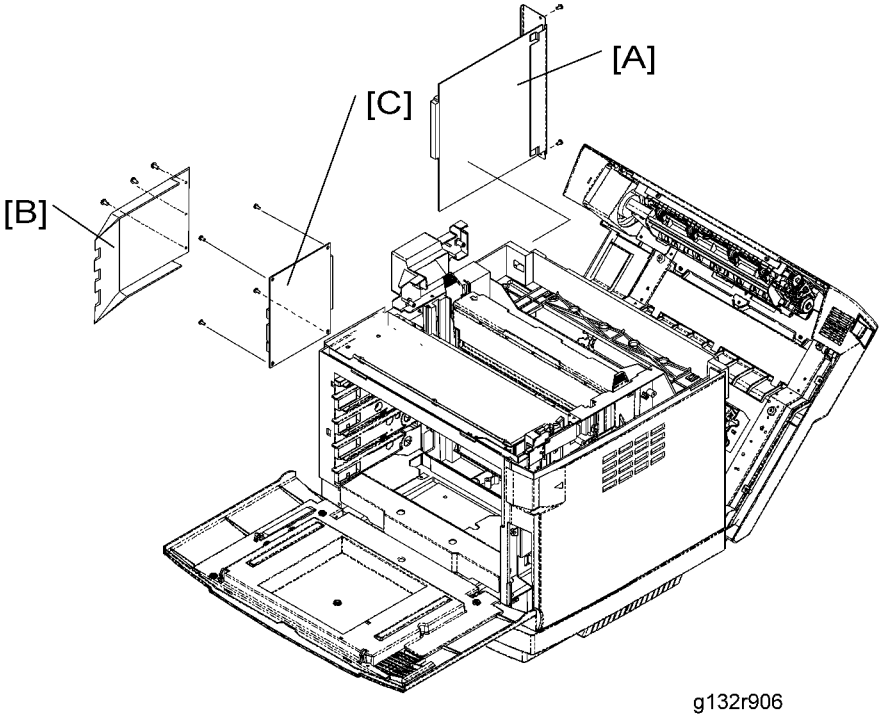
- One screw is at the right end [K]. The other three are on the bottom.



10. Left bracket [L] (x 2)
11. Fusing lamp [M]

Circuit Board

Controller, Base Engine Control Unit (BCU)



Controller

1. Start "Service Menu".
2. Print "Print maintenance page" (☛ Service Tables - Menu Functions Table – 4:Print maintenance page).

   Note

   - Record the information of the maintenance page and keep it. This printer does not have a device to keep this information.
3. Print the configuration page (☛ Service Tables - Menu Functions Table – 5:Test Menu, Config page).
4. Replace the controller [A] (🔩 x 2) when the printer is off.
5. Store the values on the configuration page in the machine, using "Config Menu" (☛ Service Tables - Menu Functions Table – 6:Config Menu).
6. Print the configuration page again.

7. Make sure that the settings do not change.

BCU

1. Start "Service Menu".
2. Execute "MCTL ➜ PRC". (☛ Service Tables - Menu Functions Table – 1-3:Maintenance)
3. Execute "Information" to print a sheet of the printer information. (☛ Service Tables - Menu Functions Table – 1-1:Information)
4. Quit "Service Menu".
5. Turn the main switch off.
6. Disconnect the printer.
7. Remove the top cover (☛ Top Cover).
8. Remove the left cover (☛ Left Cover).
9. BCU cover [B] (x 3)
10. BCU [C] (Flat cable x 3, All 's, x 4)

Settings

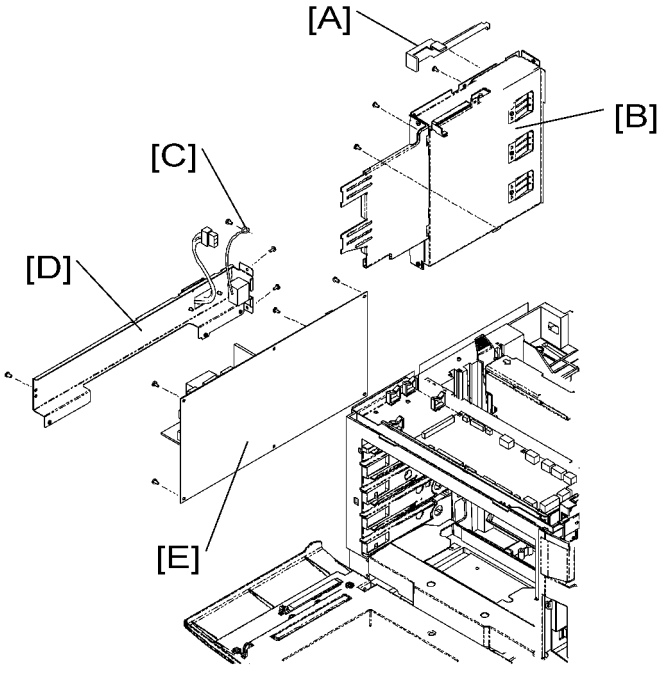
Do these when you replace the BCU:

1. Start "Service Menu".
2. Execute "PRC ➜ MCTL". (☛ Service Tables - Menu Functions Table – 1-3:Maintenance)
3. Execute "Information" print a sheet of the printer information. (☛ Service Tables - Menu Functions Table – 1-1:Information)
4. Make sure that the settings do not change.

Power Supply Unit (Direct Current)

⚠CAUTION

- Check that you have connected the ground wire when you reassemble.



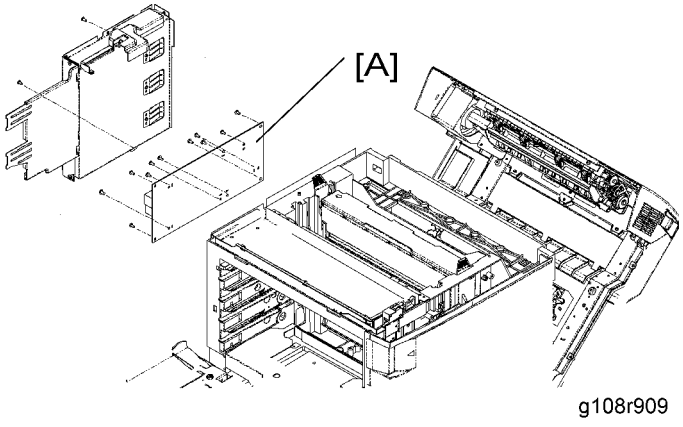
G108R908

1. Transfer unit (☛ Transfer Unit)
2. Top cover (☛ Covers - Top Cover)
3. Left cover (☛ Covers - Left Cover)
4. BCU cover (☛ Controller, BCU)
5. All flat cables and 🖑's on the BCU
6. PSU fan assembly (☛ PSU Fan)
7. Safety-switch connector cover [A]
8. Controller box [B] (🔩 x 3)
9. Ground wire [C] (🔩 x 1)
10. Left frame [D] (🖑 x 1, 🔩 x 4)
11. Power supply unit [E] (All 🖑's, 🔩 x 7)

High Voltage Unit

⚠WARNING

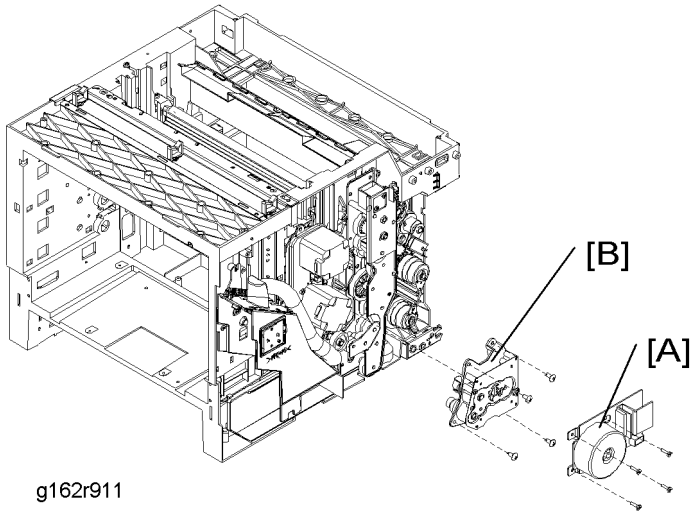
- Make sure that you have disconnected the printer before you touch the high voltage unit. You can get an electrical shock if you touch the unit when the printer plug is put in.



1. Controller box (☛ Power Supply Unit (Direct Current))
2. High voltage unit [A] (🖉 x 7 for terminals, 🖉 x 4)

Drive Path

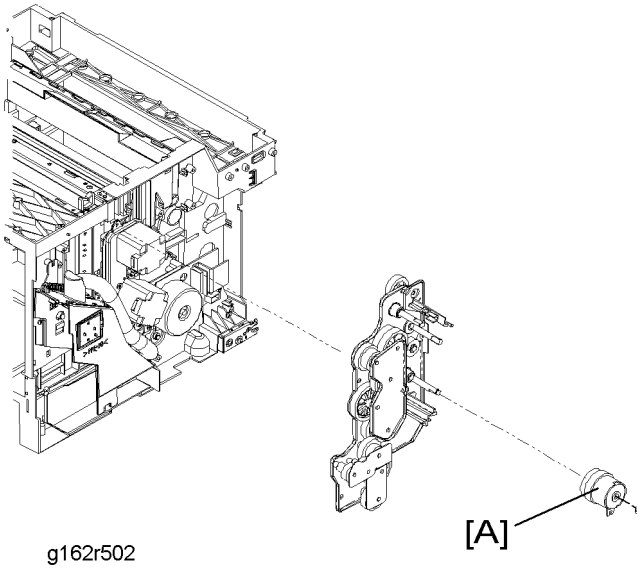
Main Motor and Photoconductor Drive Gear Box



g162r911

1. Top cover (☛ Covers - Top Cover)
2. Right cover (☛ Covers - Right Cover)
3. Cleaning roller gear unit (☛ Cleaning Roller Gear Unit)
4. Development drive clutch assembly
5. Main motor [A] (x 4, x 1)
6. Photoconductor drive gear box [B] (x 4)

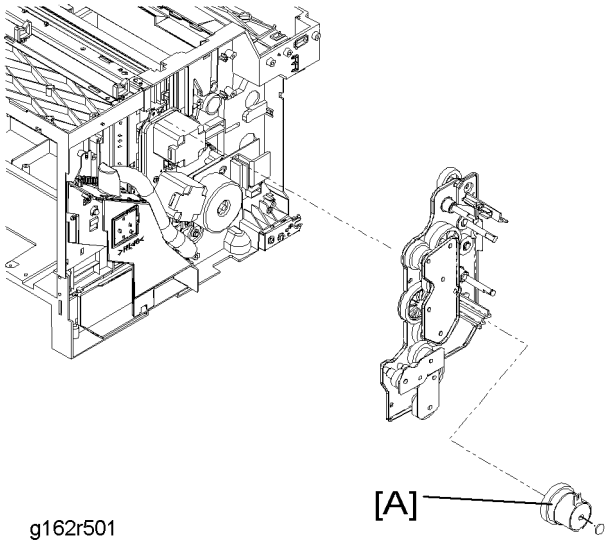
Registration Clutch



g162r502

1. Right cover (☛ Covers - Right Cover)
2. Registration clutch [A] (washer x 1, 🖑 x 1)

Paper Feed Clutch

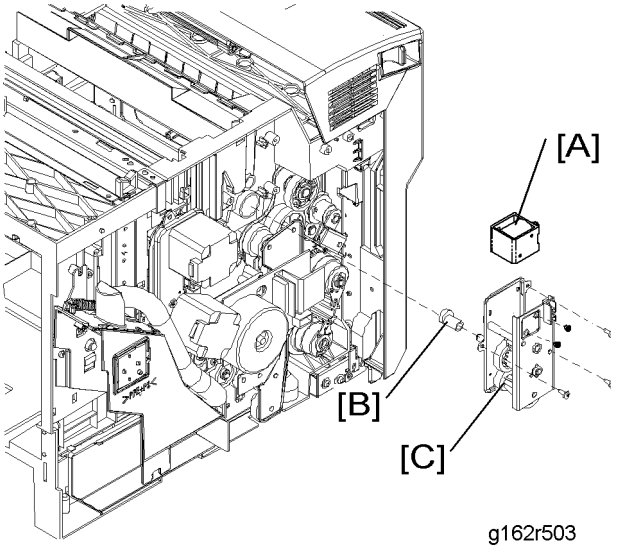


g162r501

1. Right cover (☛ Covers - Right Cover)
2. Registration clutch (☛ Registration Clutch)

3. Paper feed clutch [A] (washer x 1, x 1)

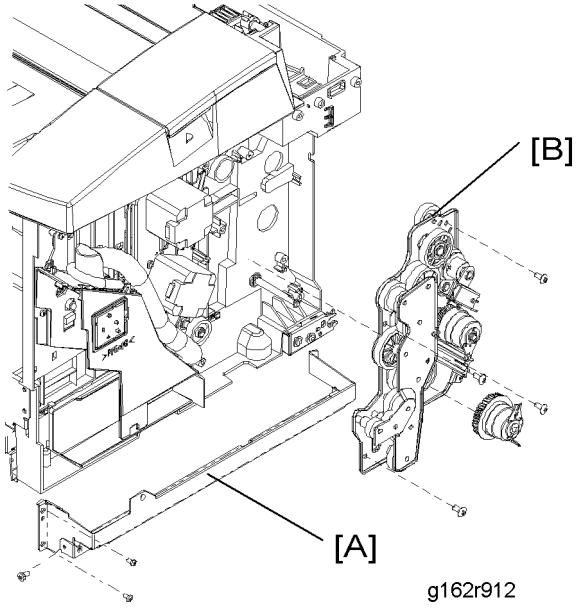
Cleaning Roller Gear Unit



g162r503

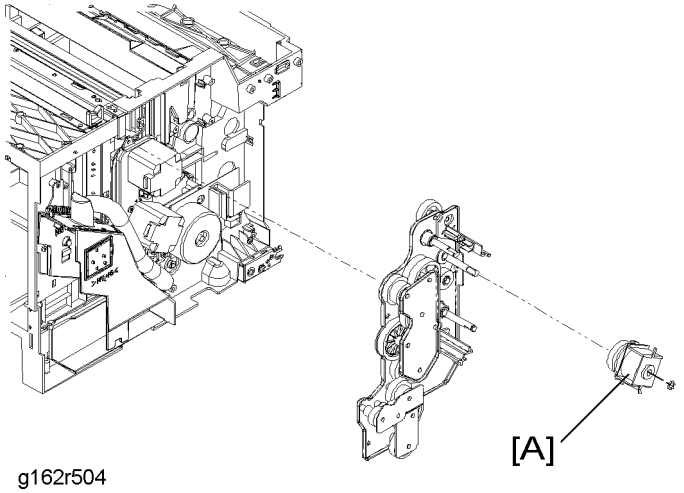
1. Right cover (☛ Covers - Right Cover)
2. Cleaning roller solenoid [A] (x 2, x 1) (only when you replace the solenoid)
3. Remove the coupling gear [B] from the inside of the frame.
4. Cleaning roller gear unit [C] (x 3)

Main Drive Gear Unit



1. Right cover (☛ Covers - Right Cover)
2. OPC drive gear box (☛Main Motor and OPC Drive Gear Box)
3. Rear cover (☛ Rear Cover)
4. Registration clutch (☛ Registration Clutch)
5. Cleaning roller gear unit (☛ Cleaning Roller Gear Unit)
6. Paper feed clutch
7. Remove the right frame [A] (🔩 x 6)
8. Main drive gear unit [B] (🔩 x 4)

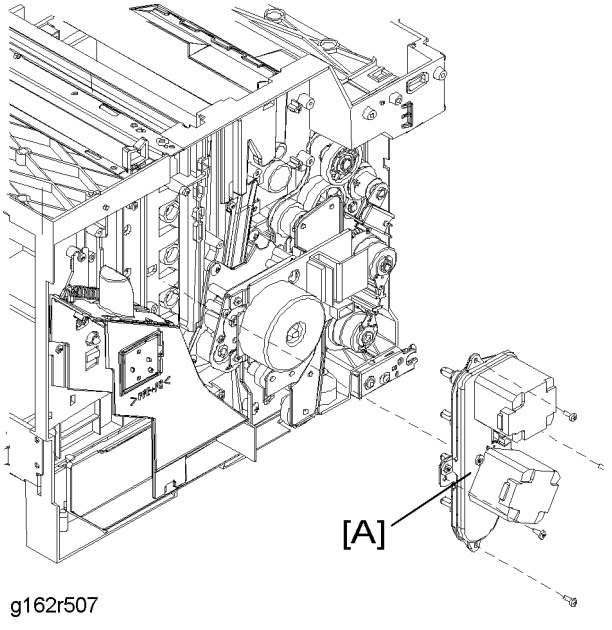
Transfer Roller Clutch



g162r504

1. Right cover (☛ Covers - Right Cover)
2. Transfer roller clutch [A] (washer x 1, 🖑 x 1)

Development Drive Assembly



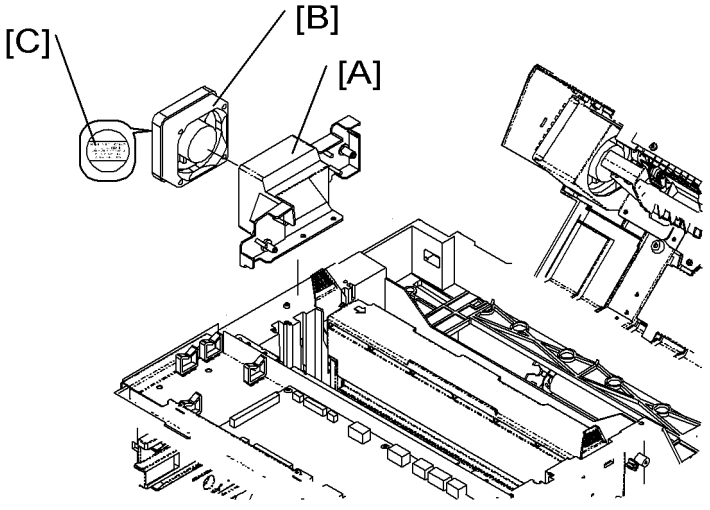
g162r507

1. Remove the all development units.

2. Photoconductor unit
3. Right cover (☛ Covers - Right Cover)
4. Waste toner feeder pipe (☛ Waste Toner Feeder Assembly)
5. Remove the four development drive gears from the inside of the frame (with washers).
6. Remove the development drive assembly [A] (x 4, x 2)

Exhaust Fans

PSU Fan

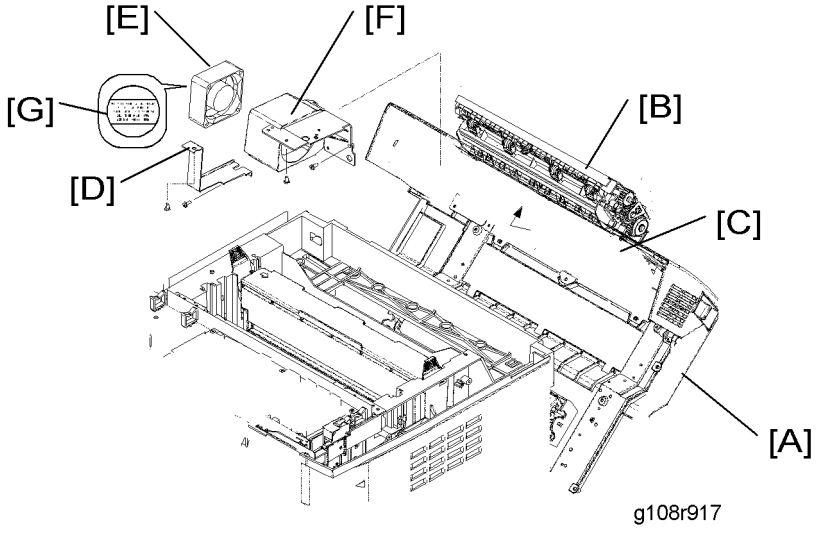


1. Top cover (☛ Covers - Top Cover)
2. PSU fan assembly [A] (x 1)
3. PSU fan [B] (x 1)

Reassembling

Put the side with the fan label [C] to the left side of the printer when you reassemble.

Fusing Fan



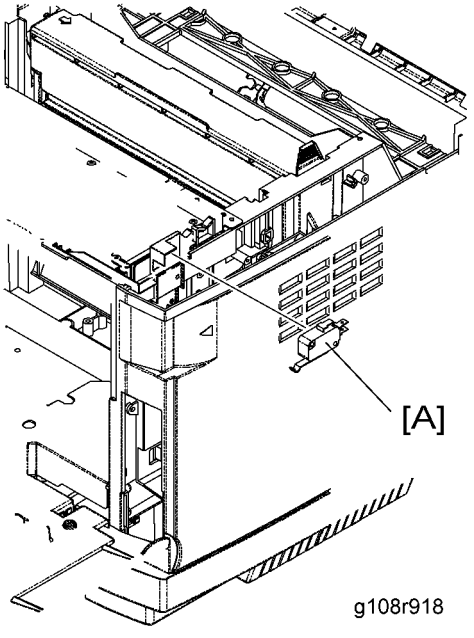
1. Open the rear cover [A].
2. Paper exit unit [B] with the base [C] (x 4)
3. Fan bracket [D] (x 2)
4. Fusing fan duct [E] (x 4)
5. Fusing fan [F] (x 1)

Reassembling

Put the side with the fan label [G] to the left side of the printer when you reassemble.

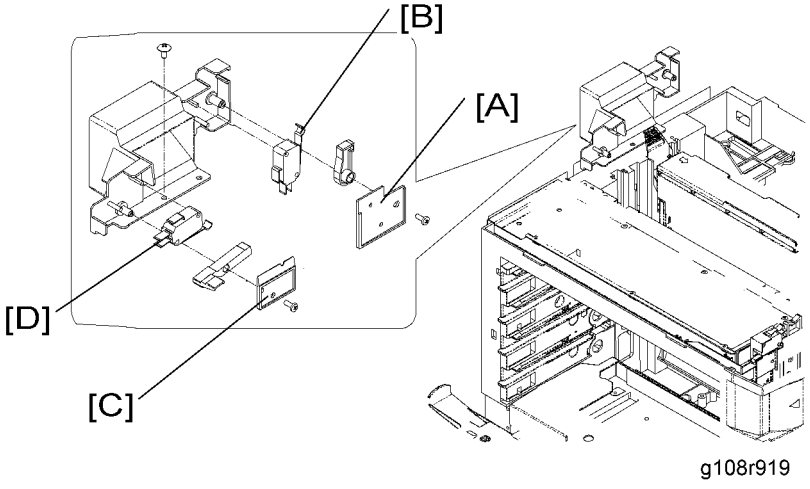
Interlock Switches

Front Cover Switch



1. Top cover (☛ Covers - Top Cover)
2. Front cover switch [A] (x 1)

Top and Rear Cover Switches



1. Top cover (☛ Covers - Top Cover)
2. Switch cover 1 [A] (🔩 x 1)
3. Rear cover switch [B]
4. Switch cover 2 [C] (🔩 x 1)
5. Top cover switch [D]

Registration

Leading Edge Registration

SP "Margin Adjust: Top" (☛ Service Tables - Service Menu Functions – Engine Tune Up) adjusts the margin on the leading edge. The top margin gets wider when you set a greater value.

You can specify the values from -35 to +35. The margin changes by 0.7 mm when the value increases or decreases by 5 in the SP. For example, when you specify "+5" the margin changes by +0.7 mm, or when you specify "-10" the margin changes by -1.4 mm.

Default	NOTE 2
Maximum	+3.5 mm
Minimum	-3.5 mm
Step	0.5 mm

Note

- 1. The diagrams show examples of adjustment results. Actual results may not be the same as these examples.
- 2. Default depends on the adjustment in the factory.

Side-To-Side Registration

SP "Margin Adjust: Left1, Left2 and Left Duplex" (☛ Service Tables - Service Menu Functions – Engine Tune Up) adjusts the margin on the left edge. The left margin gets wider when you seta greater value. Specify the value for each tray and the duplex unit:

- Margin Adjust: Left1, Tray 1 (Standard paper tray)
- Margin Adjust: Left2, Tray 2 (Optional paper feed unit)

Default	Tray 1, see Note 2
Maximum	+3.5 mm
Minimum	-3.5 mm
Step	0.5 mm

Note

- 1. The diagrams show examples of adjustment results. Actual results may not be the same as these examples.
- 2. Default depends on the adjustment in the factory.

4. Troubleshooting

Service Call

SC Table

Turn the main power on and off before you do these countermeasures. Do these countermeasures if the problem stays.

No.	Error Message	Possible Cause	Countermeasure
1	SVC 110 ERROR	Read/Write error in memory	Replace the Controller board.
2	SVC 111 ERROR	Read/Write error in memory	Replace the Controller board.
3	SVC 112 ERROR	Read/Write error in memory	Replace the Controller board.
4	SVC 113 ERROR	Read/Write error in memory	Replace the Controller board.
5	SVC 180 ERROR	Read/Write test error in cash register at CPU interface	Replace the Controller board.
6	SVC 160 ERROR	Read/Write error in DMA RAM	Replace the Controller board.
7	SVC 251 ERROR	DMA circuit cut-in error	Replace the Controller board.
8	SVC 25# ERROR	DMA circuit test error	Replace the Controller board.
9	SVC 411 ERROR	IRQ timer 1 error	Replace the Controller board.
10	SVC 412 ERROR	IRQ timer 2 error	Replace the Controller board.
11	SVC 140 ERROR	MII interface error	Replace the Controller board.

No.	Error Message	Possible Cause	Countermeasure
12	SVC 141 ERROR	LAN loop back test error	Replace the Controller board.
13	SVC 090 ERROR	Check sum error	Replace the Controller board.

No.	Error Message	Possible Cause	Countermeasure
1	SVC 11 ERROR	Communication Error	Replace the Controller or MCTL board.
2	SVC 31 ERROR	Download Error (Memory Location Error)	Replace the Controller or MCTL board.
3	SVC 32 ERROR	Download Error (Flash ROM Erase /Light Error)	Replace the Controller or MCTL board.
4	SVC 33 ERROR	Download Error (Another Serious Error)	Replace the Controller or MCTL board.
5	SVC 41 ERROR	Pipe line Handling Error (DMA Error)	Replace the Controller or MCTL board.
6	SVC 42 ERROR	Pipe line Handling Error (Time-out Error)	Replace the Controller or MCTL board.
7	SVC 43 ERROR	Pipe line Handling Error (DMA Error)	Replace the Controller or MCTL board.
8	SVC 61 ERROR	Program Process Error	Replace the Controller or MCTL board.
9	SVC C3 ERROR	NVRAM Error	Refer to the flow chart for C3.
10	SVC C4 ERROR	MTCL Board Error	Refer to the flow chart for C4.
11	SVC C7 ERROR	Process Timing Error	Refer to the flow chart for C7.
12	SVC D1 ERROR	Development Motor 1 (DM1) Error	Refer to the flow chart for D1.

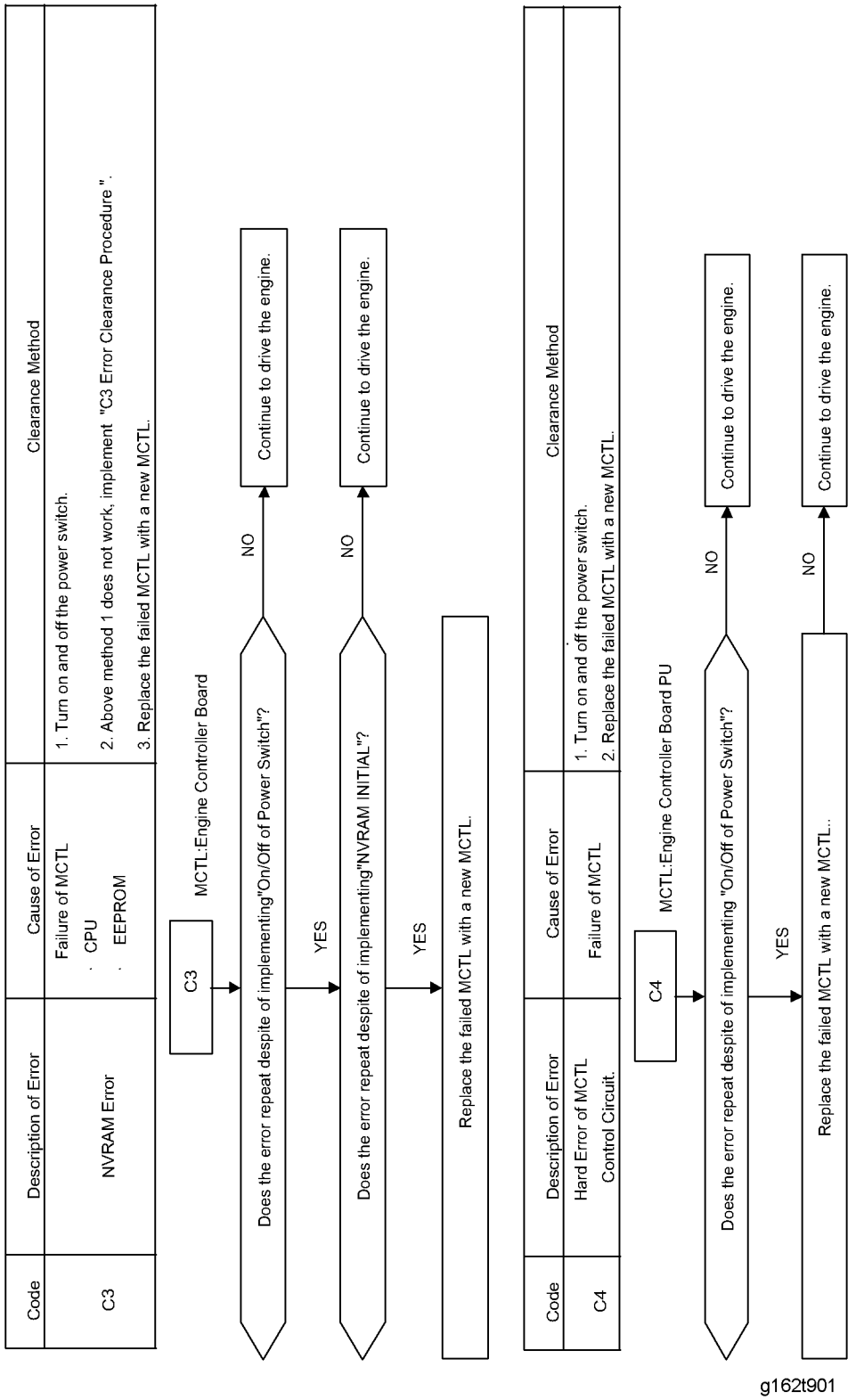
No.	Error Message	Possible Cause	Countermeasure
13	SVC D2 ERROR	Development Motor 2 (DM2) Error	Refer to the flow chart for D2.
14	SVC E0 ERROR	Development Motor 1 (DM1) Over Current Error	Refer to the flow chart for E0.
15	SVC E1 ERROR	Development Motor 2 (DM2) Over Current Error	Refer to the flow chart for E1.
16	SVC E2 ERROR	Main Motor (MM) Error	Refer to the flow chart for E2.
17	SVC E3 ERROR	Transfer Belt Error	Refer to the flow chart for E3.
18	SVC E5 ERROR	Transfer Roller Clutch Error	Refer to the flow chart for E5.
19	SVC E6 ERROR	Transfer Unit Cleaning Solenoid Error	Refer to the flow chart for E6.
20	SVC E7 ERROR	Paper Feed Clutch Error	Refer to the flow chart for E7.
21	SVC E8 ERROR	Registration Clutch Error	Refer to the flow chart for E8.
22	SVC E9 ERROR	OPC Marker Sensor Error	Refer to the flow chart for E9.
23	SVC EL ERROR	Erase Lamp Error	Refer to the flow chart for EL.
24	SVC F0 ERROR	Power Supply Fan Motor Error	Refer to the flow chart for F0.
25	SVC F4 ERROR	Paper Exit Fan Error	Refer to the flow chart for F4.
26	SVC F5 ERROR	HV Power Supply Error	Refer to the flow chart for F5.
27	SVC F6 ERROR	LV Power Supply Error	Refer to the flow chart for F6.

No.	Error Message	Possible Cause	Countermeasure
28	SVC H0 ERROR	Fuser Thermistor Error	Refer to the flow chart for H0.
29	SVC H1 ERROR	Fuser Lamp Error	Replace the fusing unit or MCTL board.
30	SVC H2 ERROR	Fuser Temperature Error (Warming-Up)	Check the input voltage. Replace the fusing unit, MCTL board, or LV power supply unit.
31	SVC H3 ERROR	Fuser Temperature Error (Printing)	
32	SVC H4 ERROR	Fuser Temperature High Error	Replace the fusing unit, MCTL board, or LV power supply unit.
33	SVC HA ERROR	Fuser ACOFF Error (Relay Off)	
34	SVC L1 ERROR	Beam Detector Error (BDT Error)	Refer to the flow chart for L1.
35	SVC L2 ERROR	Scanner Motor Error	Refer to the flow chart for L2/LL.
36	SVC LL ERROR	Laser Power Error	Refer to the flow chart for L2/LL.
37	SVC N3 ERROR	HVU Connection Error	Refer to the flow chart for N3.
38	SVC N4 ERROR	Toner Empty Sensor Error 1	Refer to the flow chart for N4/N5.
39	SVC N5 ERROR	Toner Empty Sensor Error 2	Refer to the flow chart for N4/N5.
40	SVC N6 ERROR	LFU Connection Error	Refer to the flow chart for N6.
41	SVC P6 ERROR	Pick-up Clutch Error 1	Refer to the flow chart for P6.

Countermeasures

These flow charts are the countermeasures for service call codes.

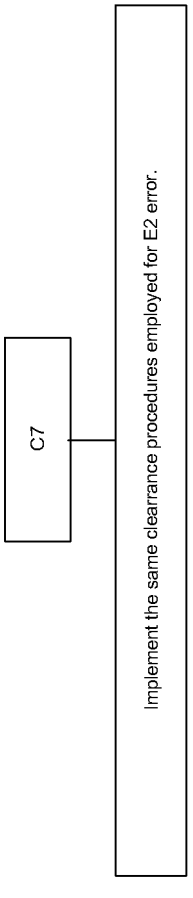
C3, C4 Flow Chart



g162t901

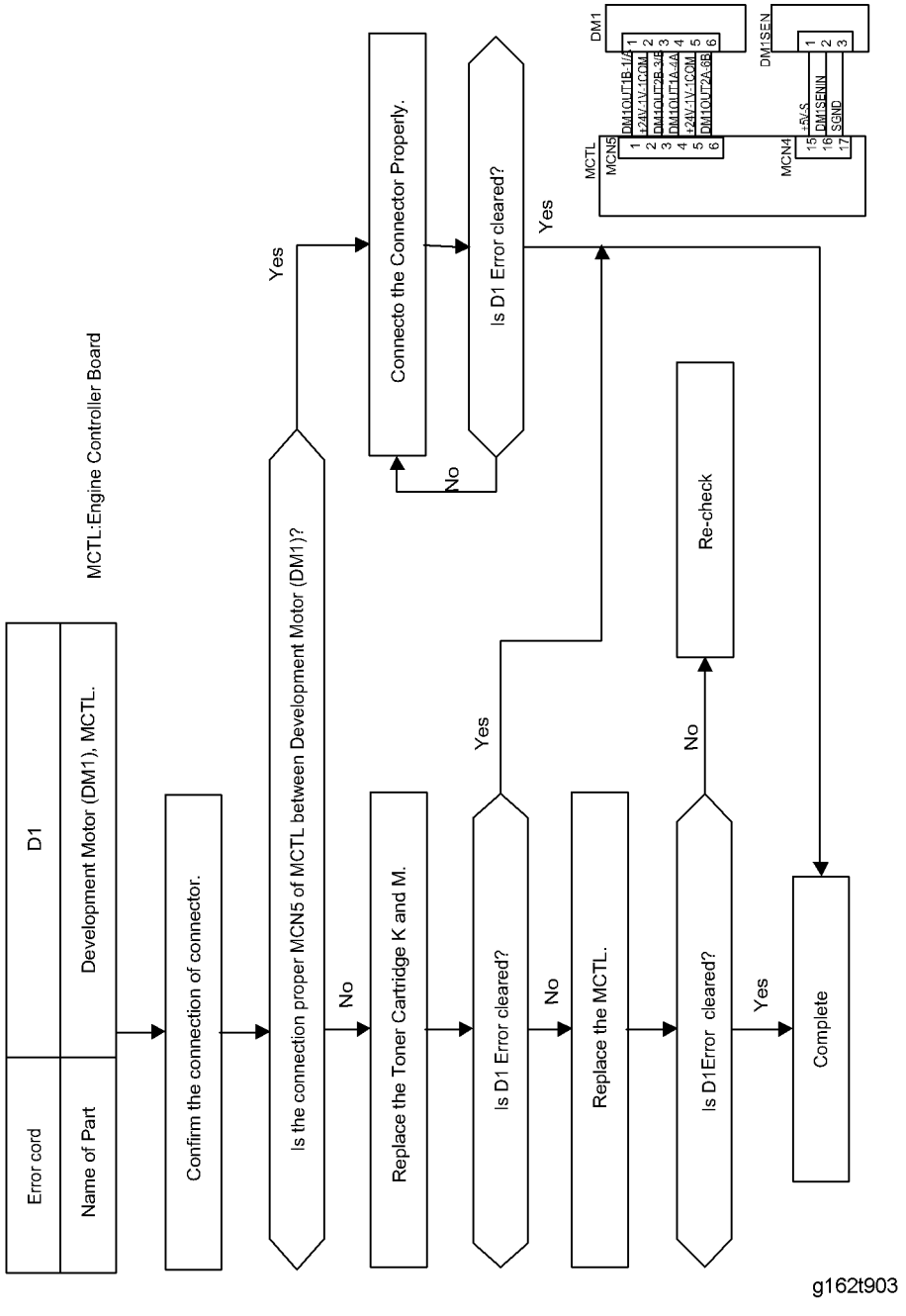
C7 Flow Chart

Code	Description of Error	Cause of Error	Clearance Method
C7	Process Timing Error	1. Power Feeding Failure 2. Main Motor Failure 3. Main Motor Input Circuit Failure	Implement the same clearance procedures employed for E2 error. [Note]: MM stands for OPC Belt Drive Main Motor.

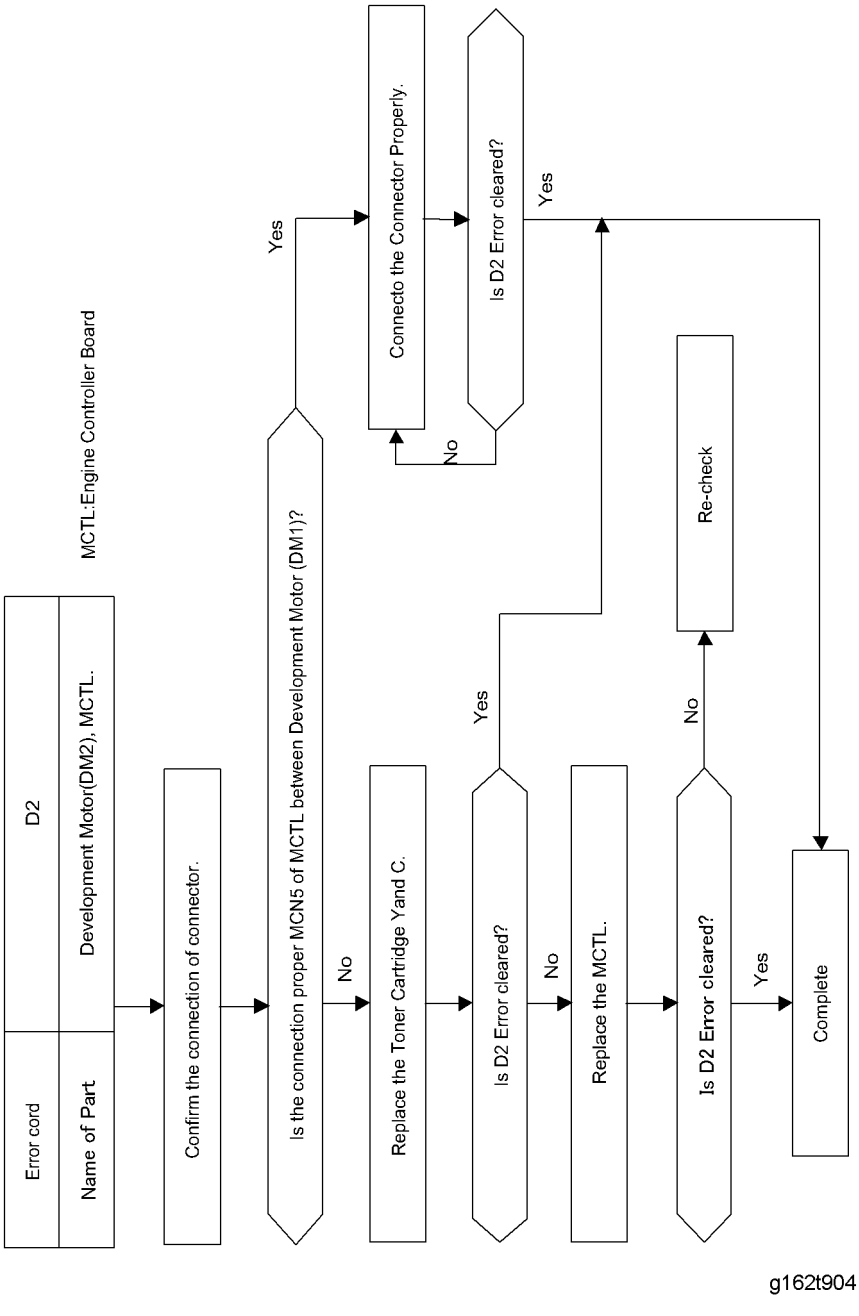


g162t902

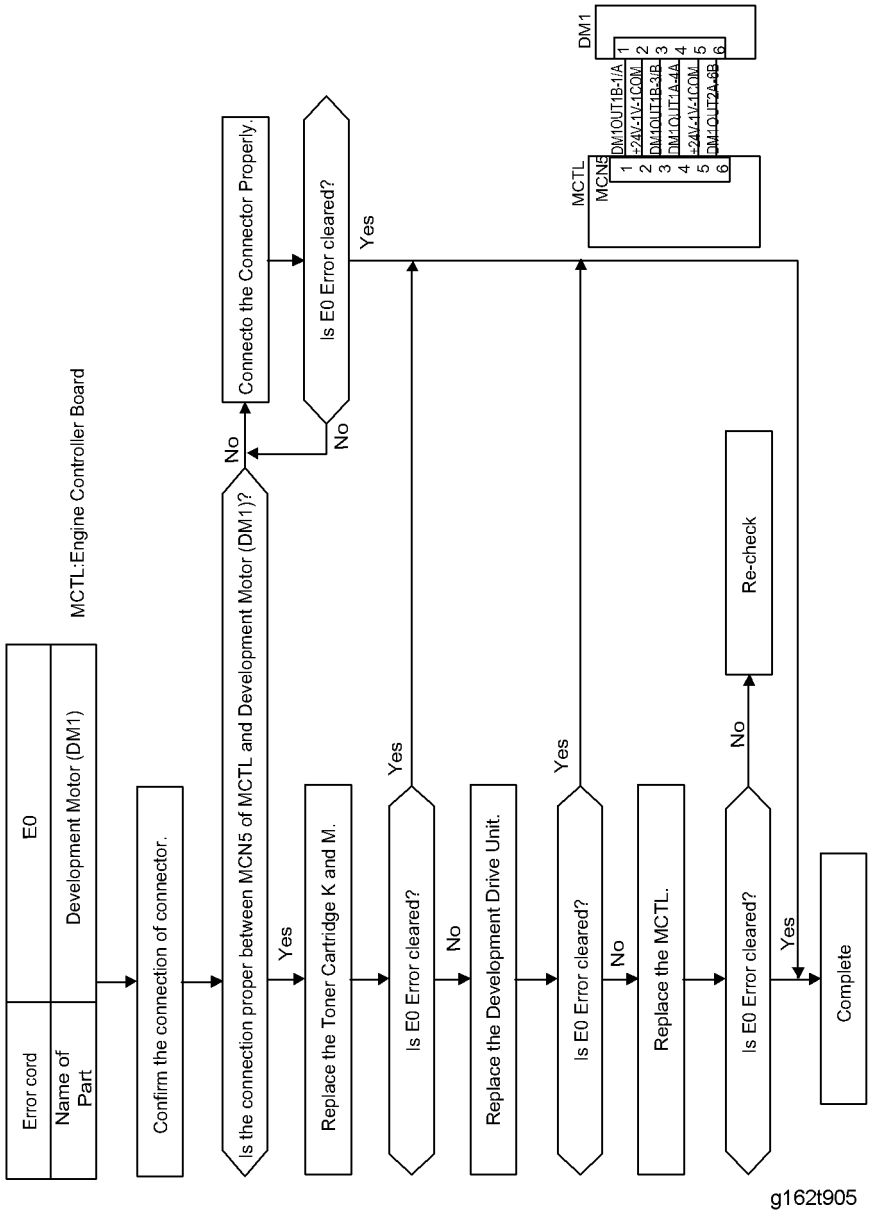
D1 Flow Chart



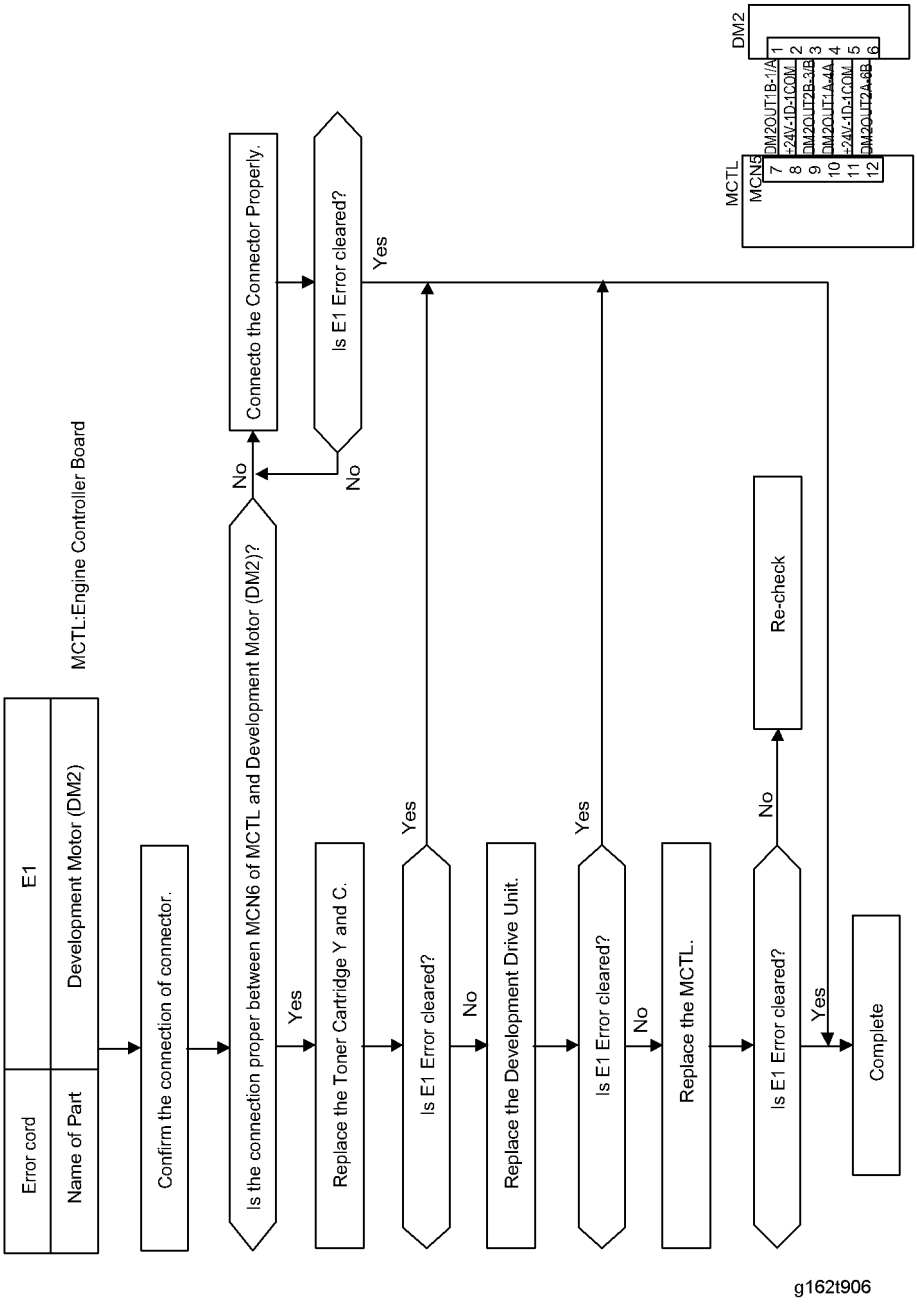
D2 Flow Chart



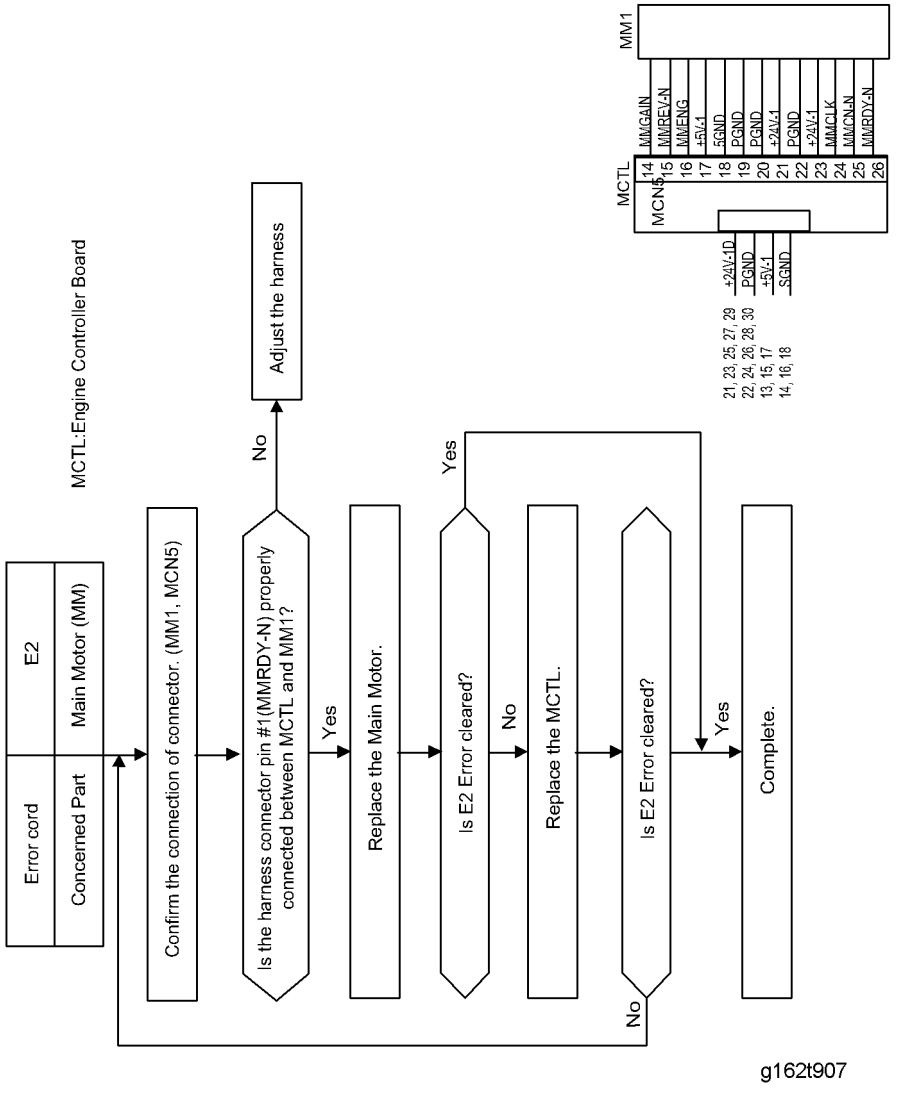
E0 Flow Chart



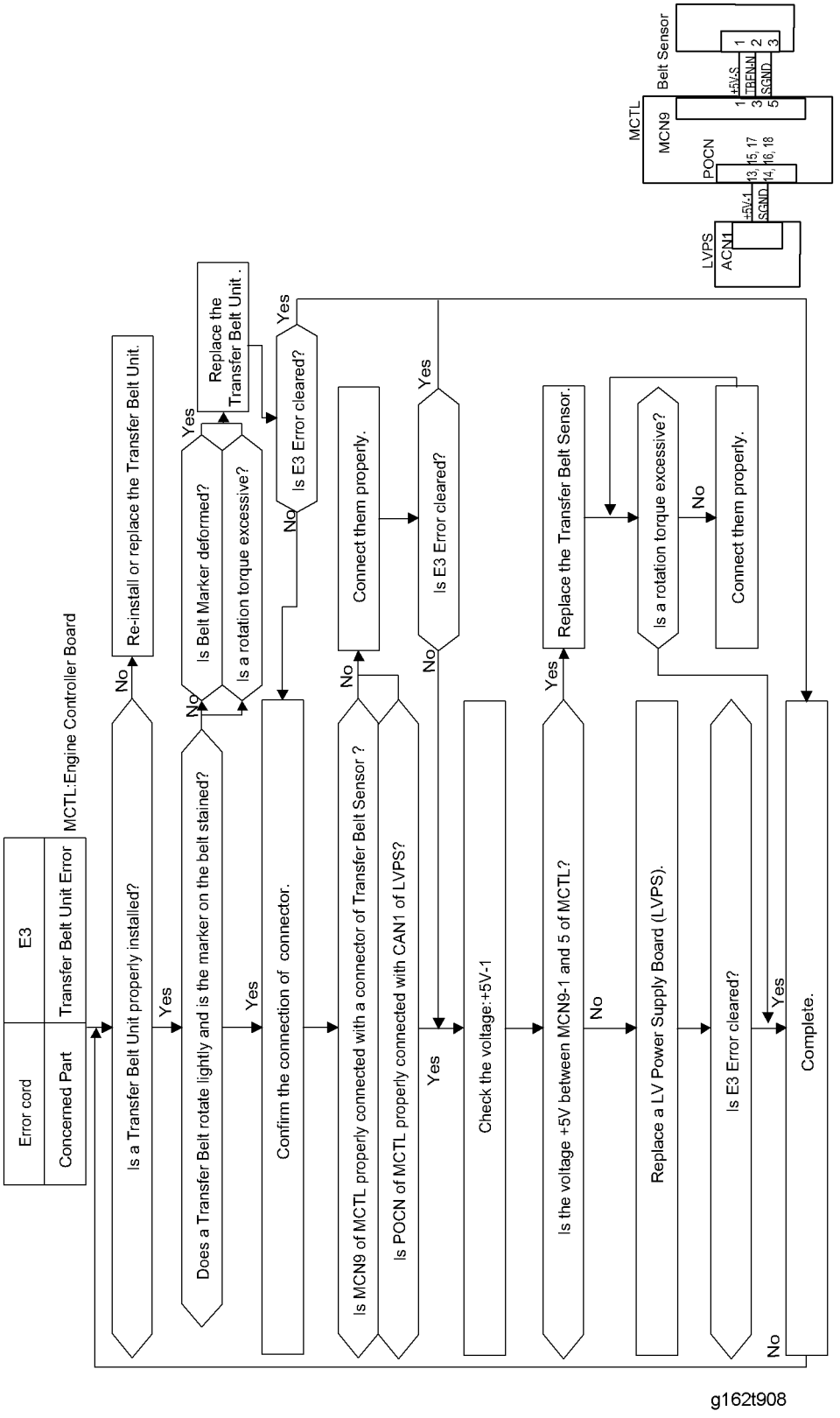
E1 Flow Chart



E2 Flow Chart

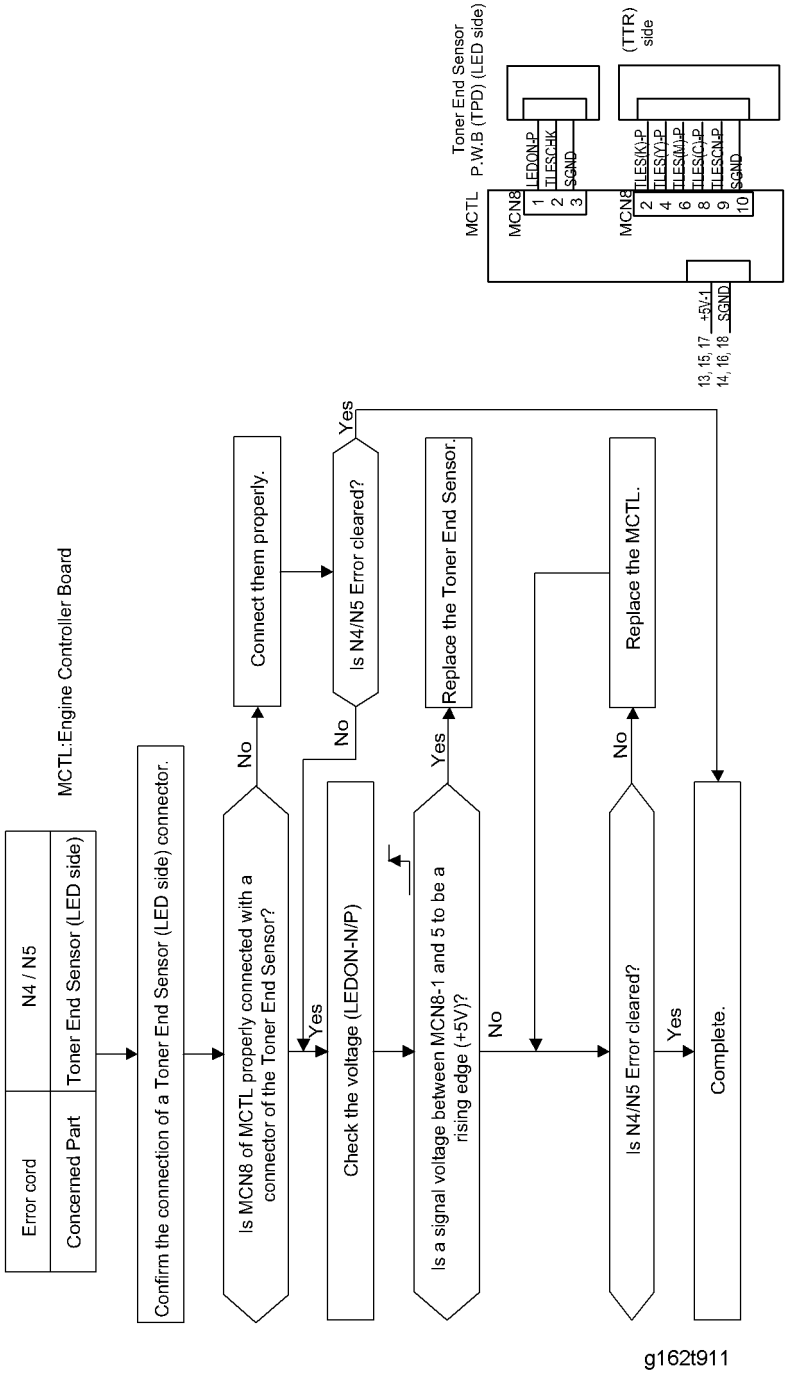


E3 Flow Chart

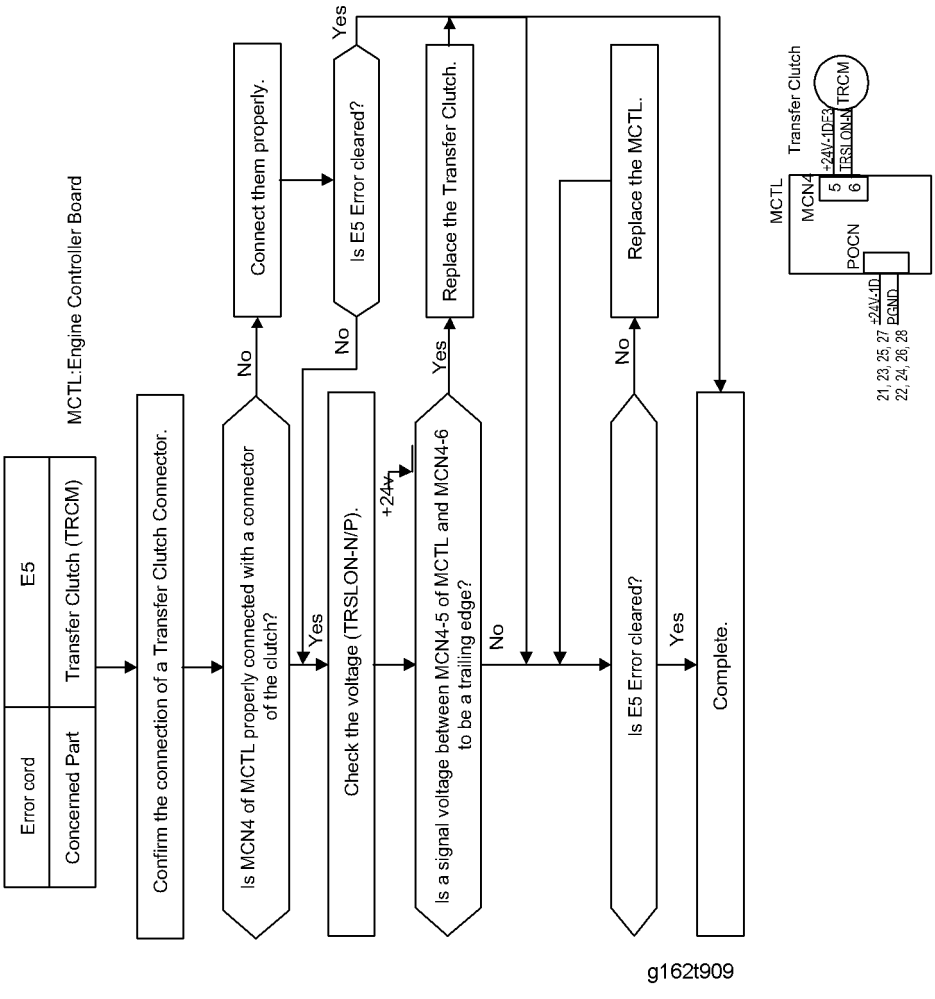


g162t908

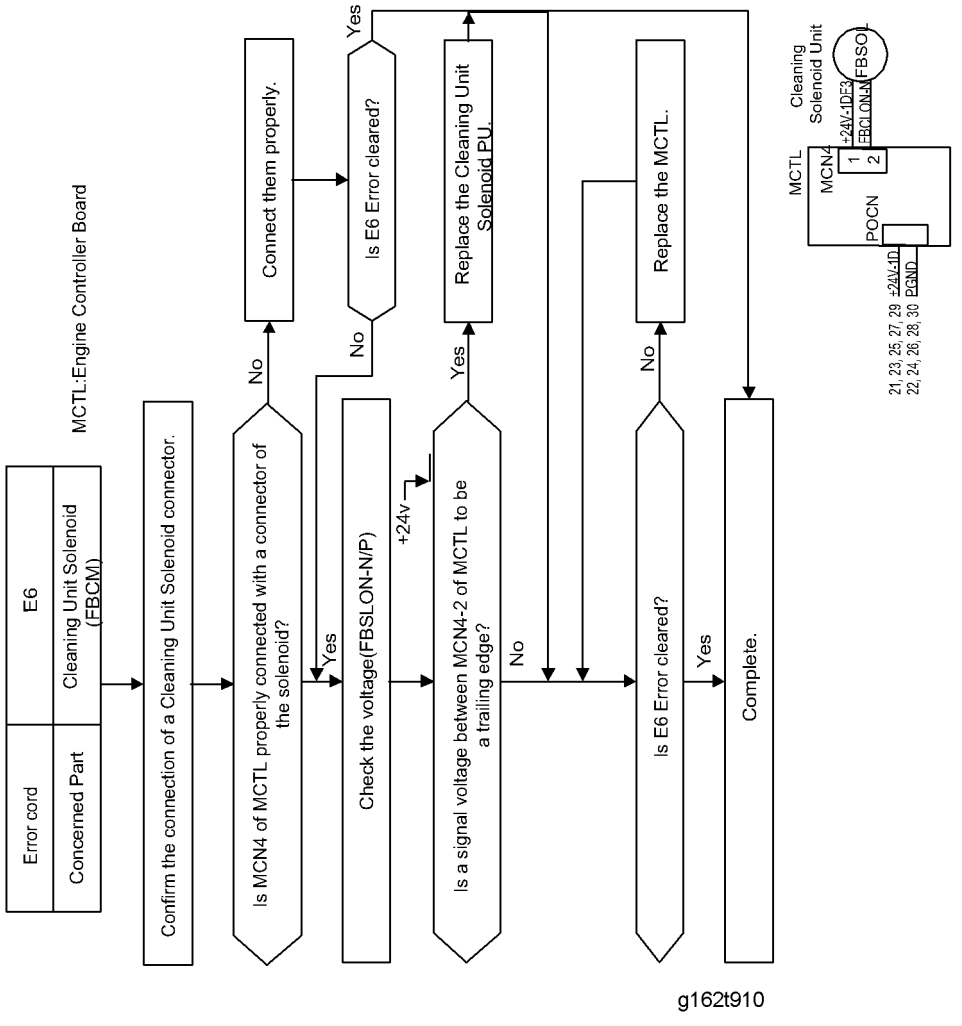
N4/N5 Flow Chart



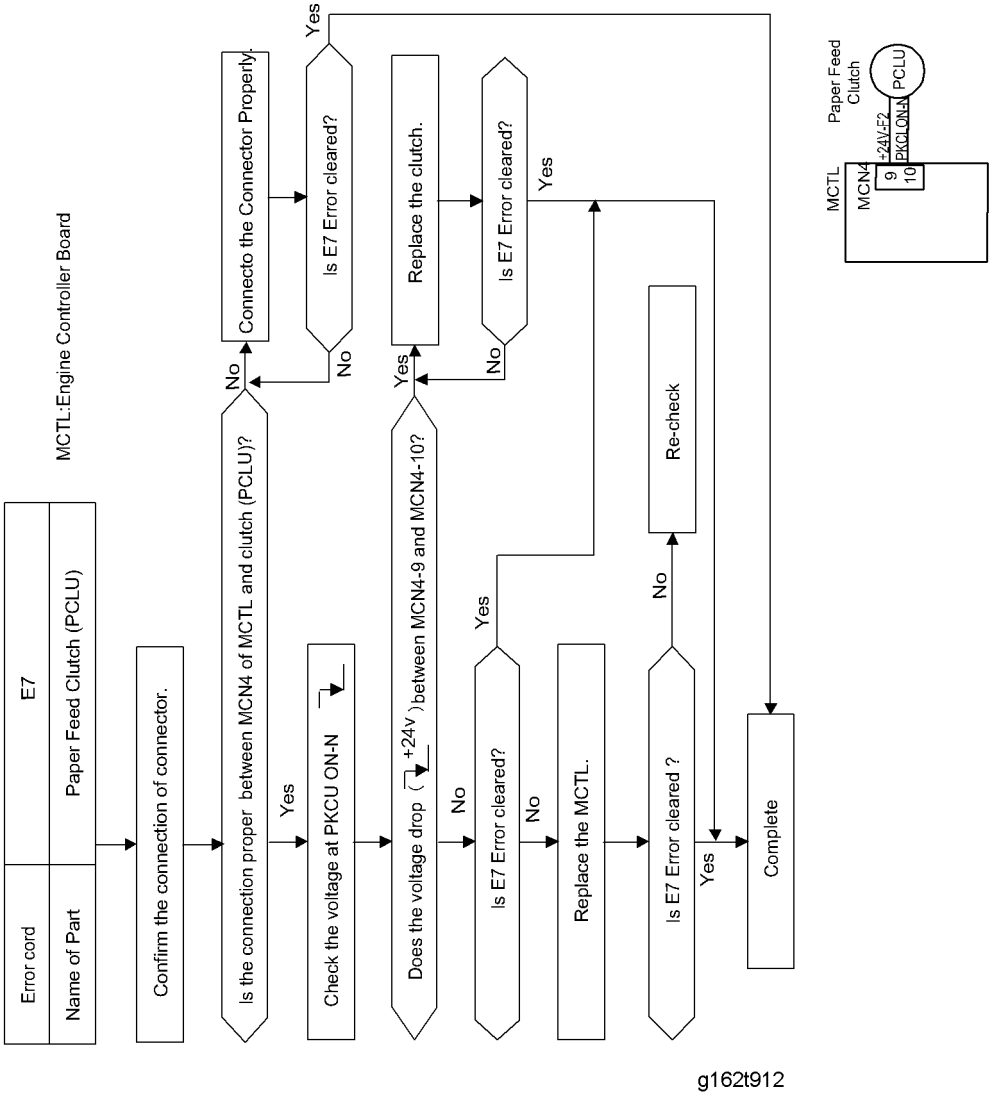
E5 Flow Chart



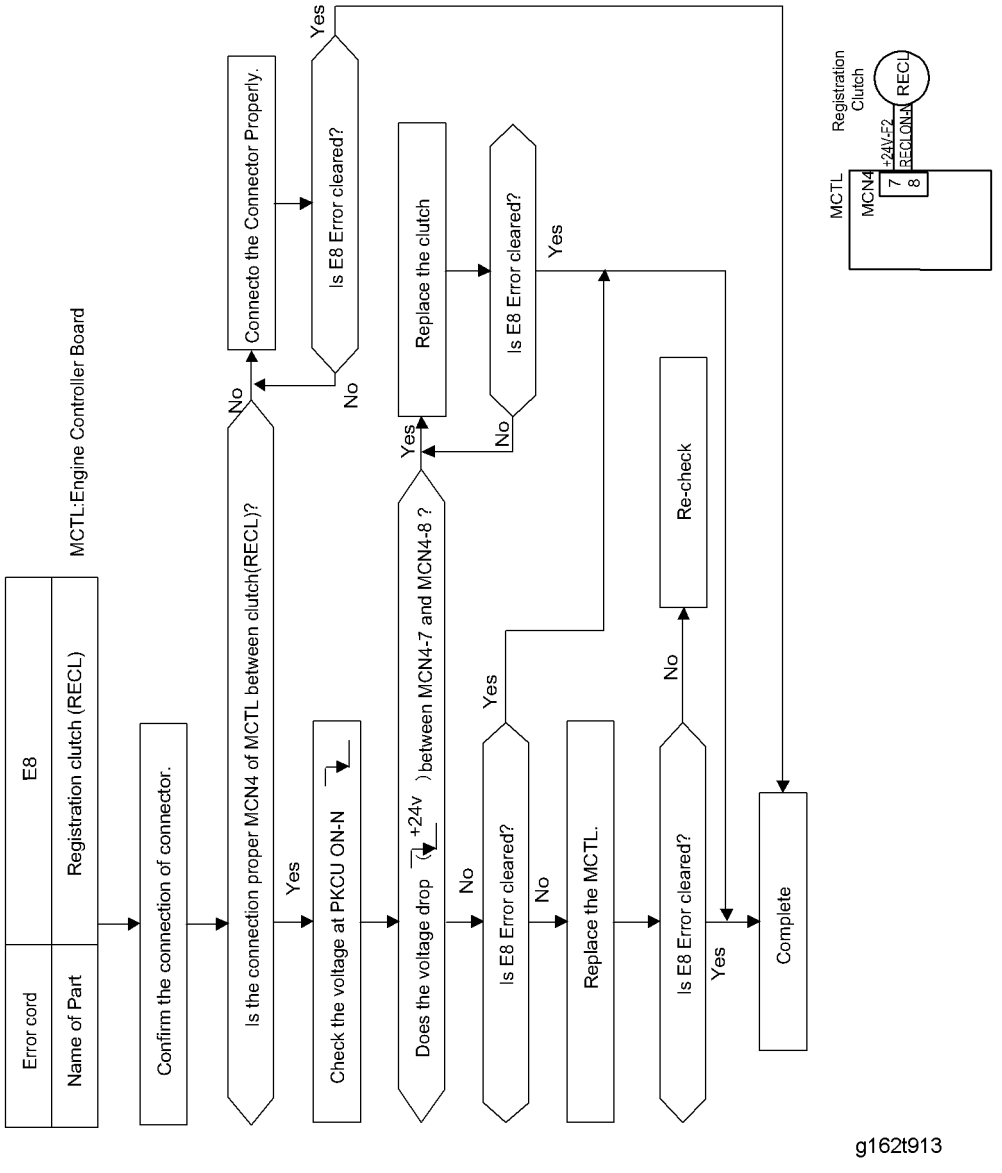
E6 Flow Chart



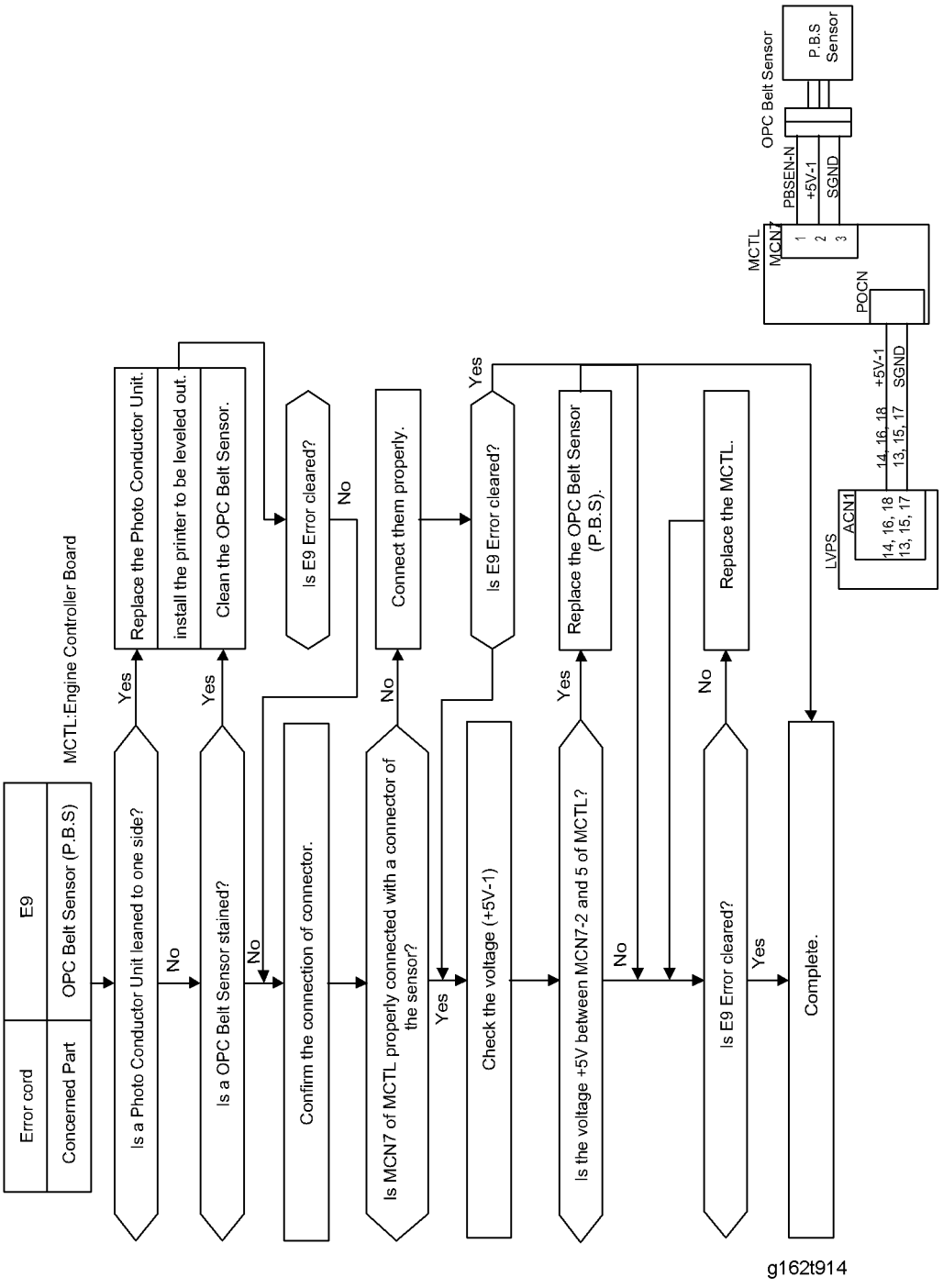
E7 Flow Chart



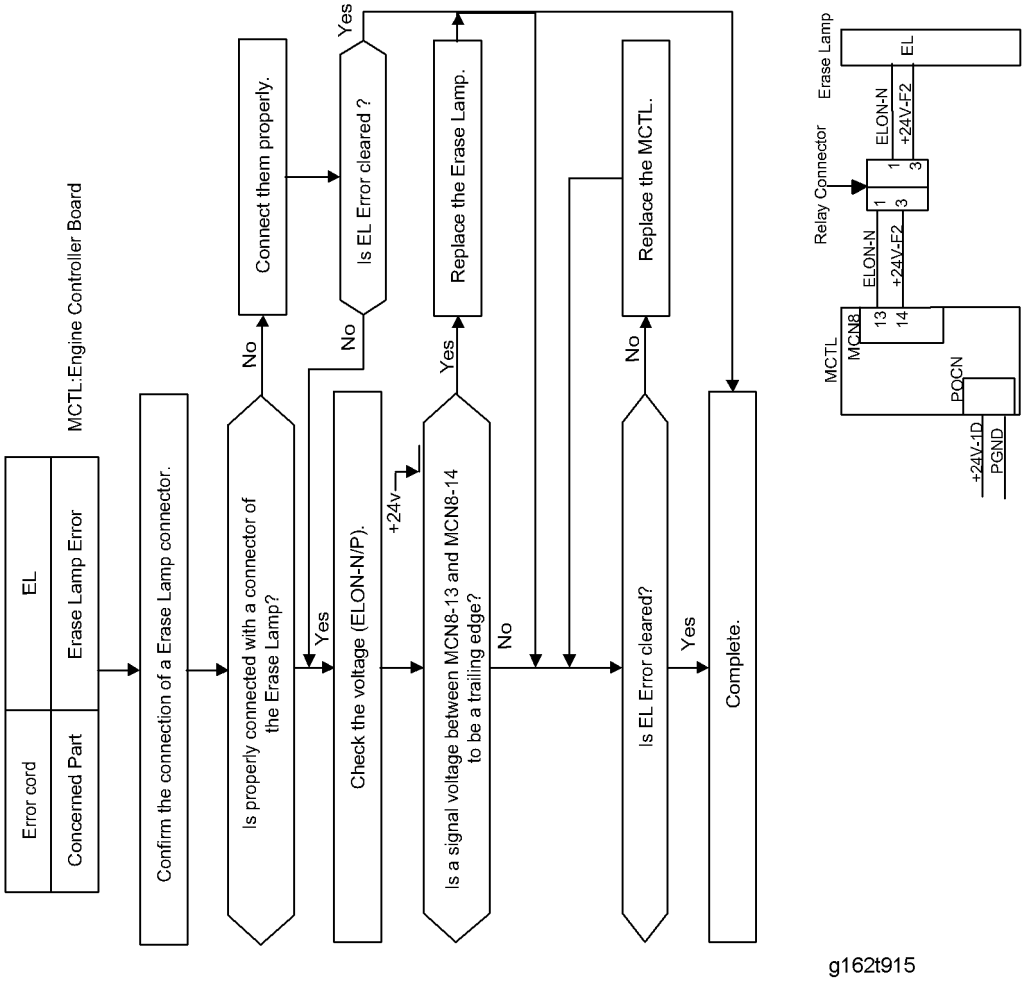
E8 Flow Chart



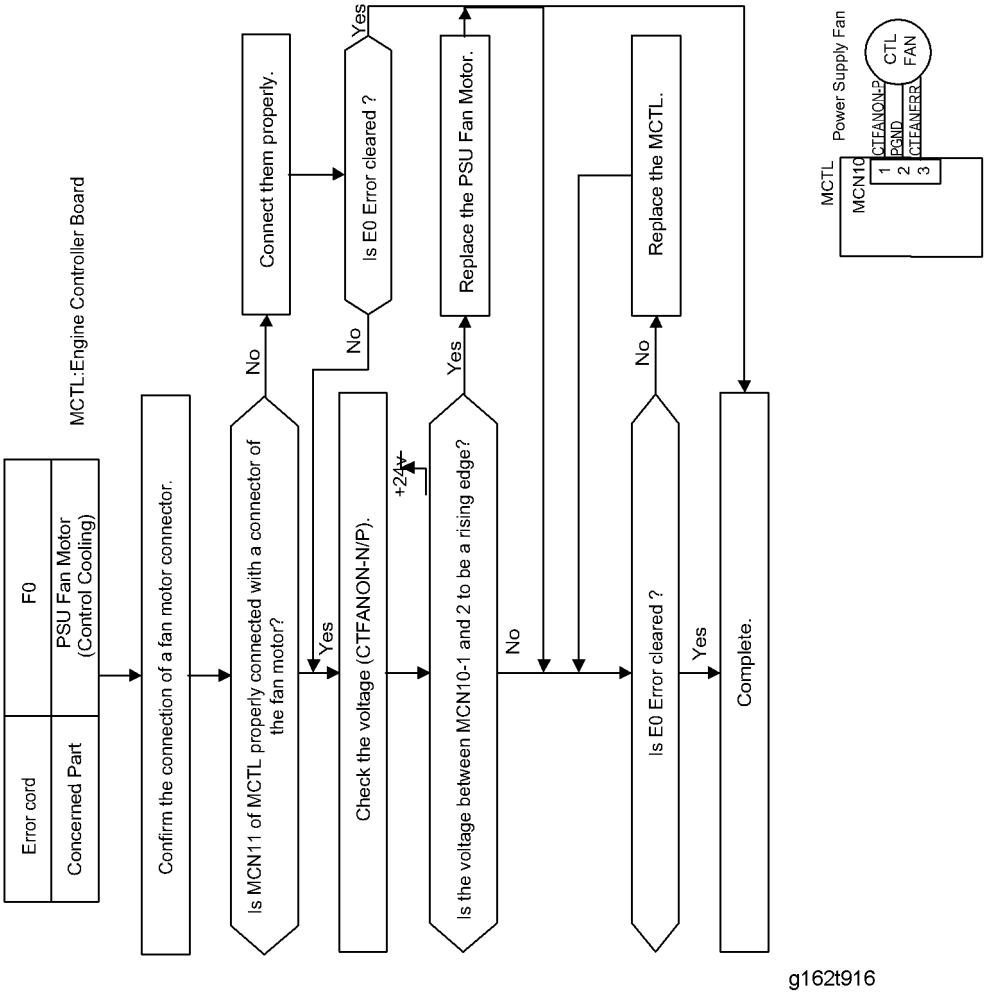
E9 Flow Chart



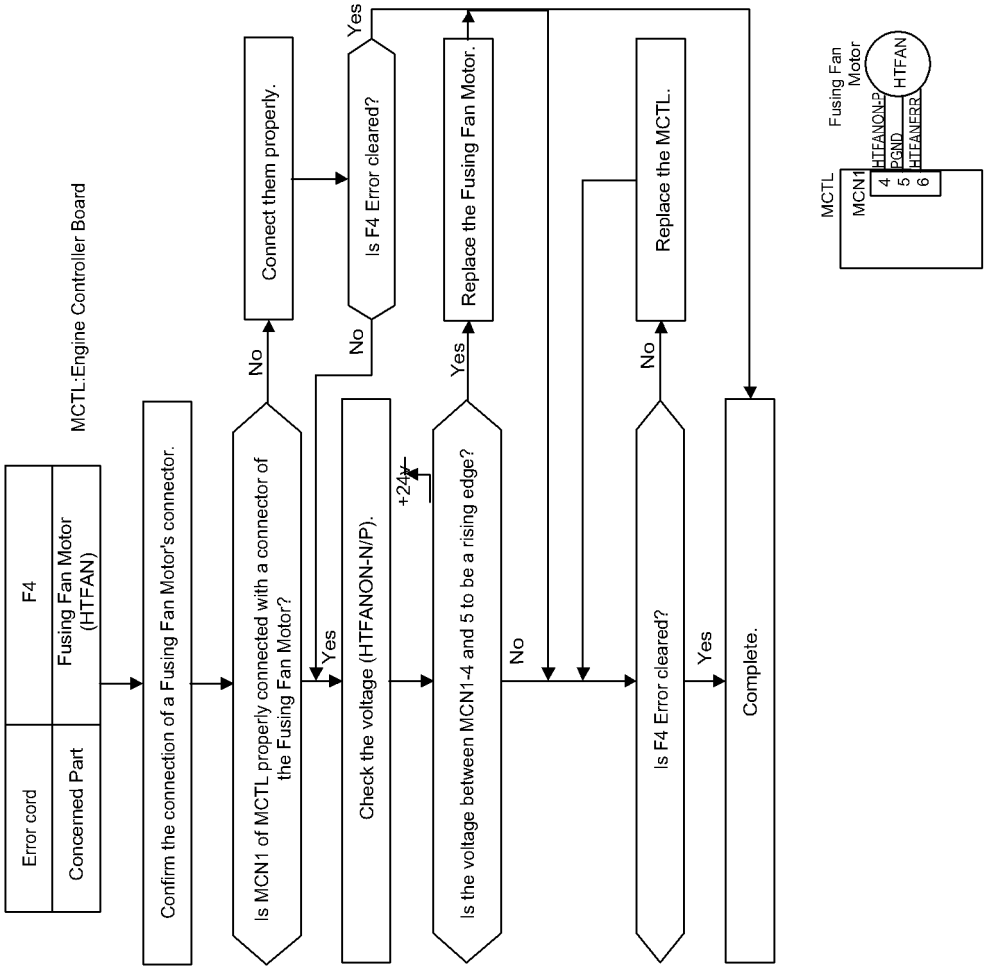
EL Flow Chart



F0 Flow Chart

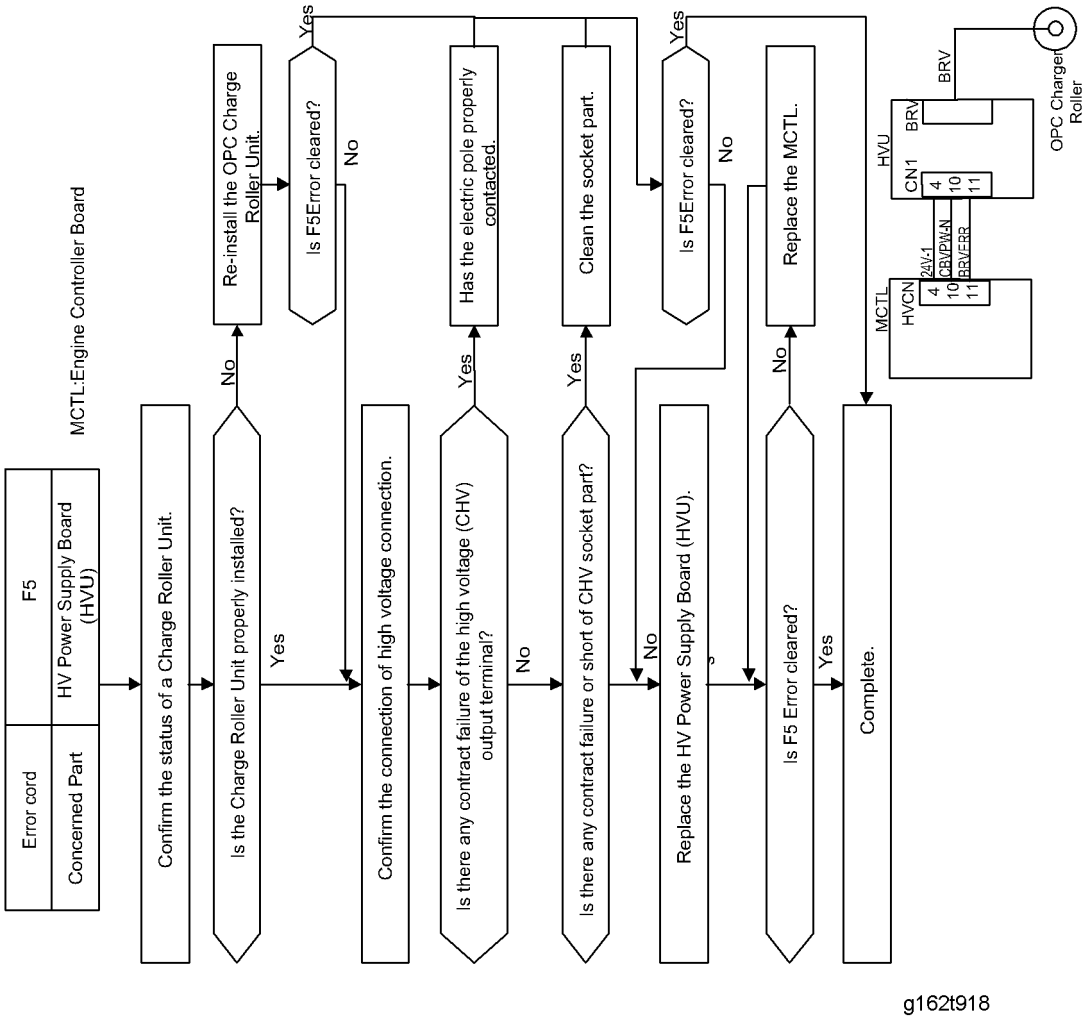


F4 Flow Chart

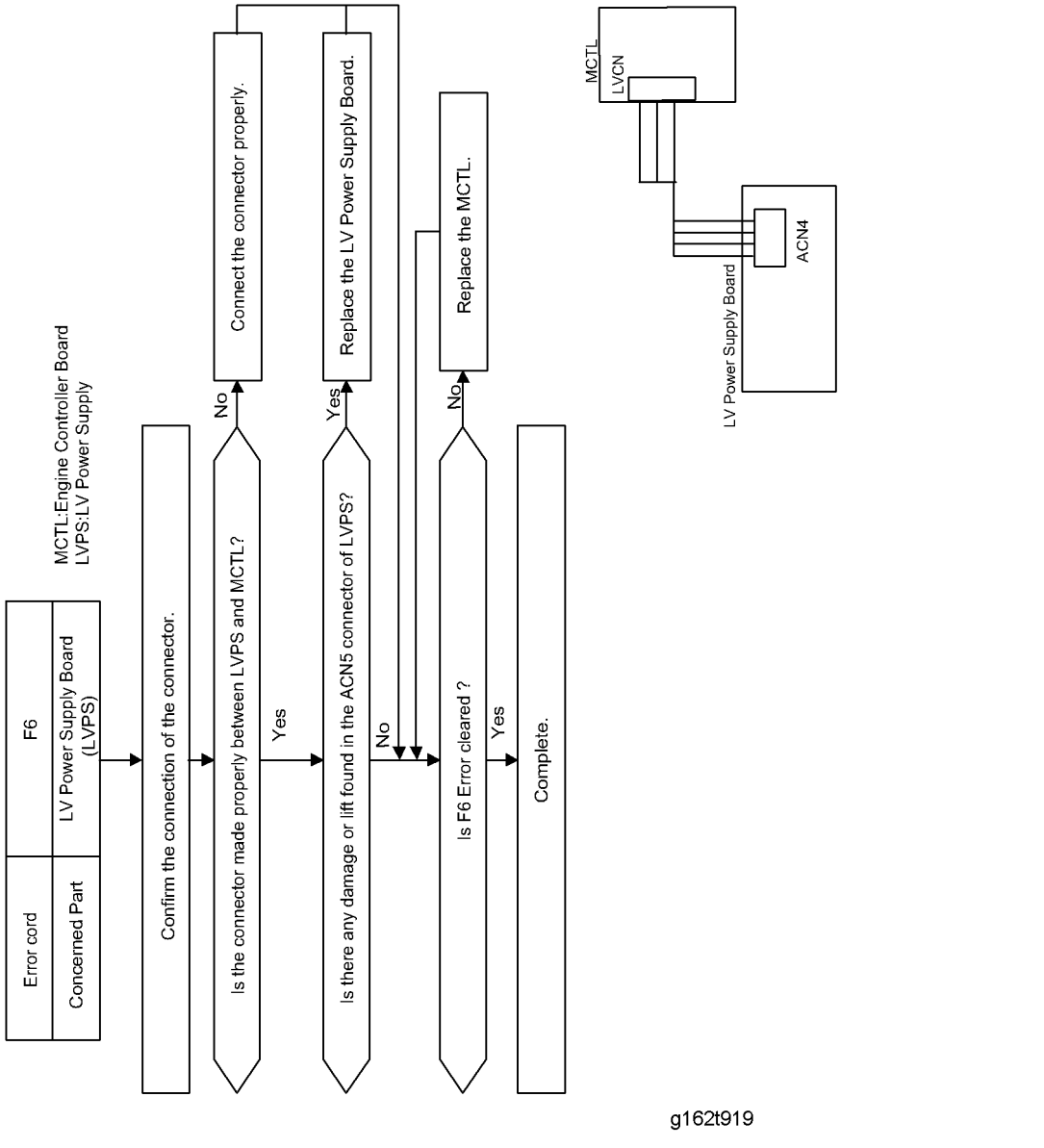


g162t917

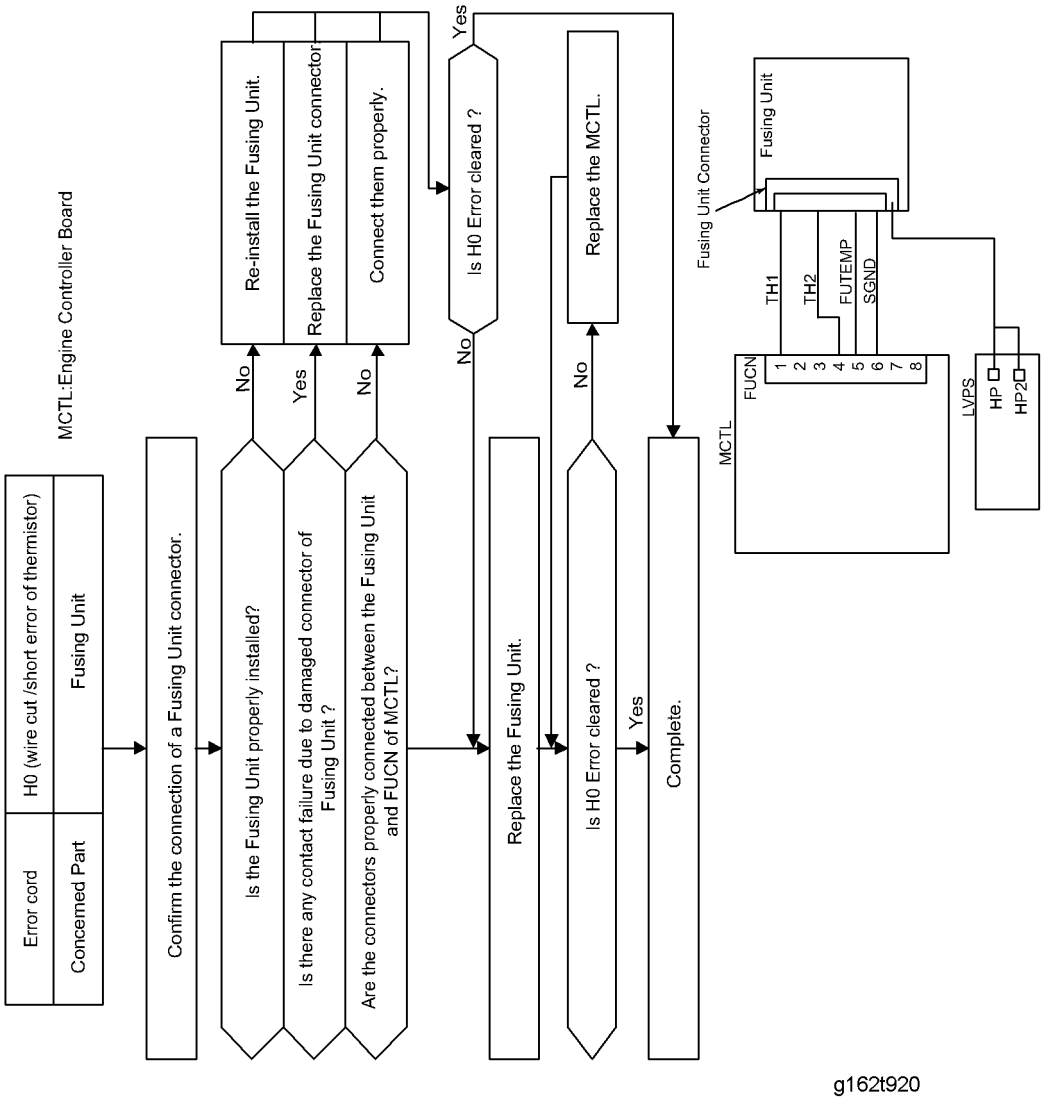
F5 Flow Chart



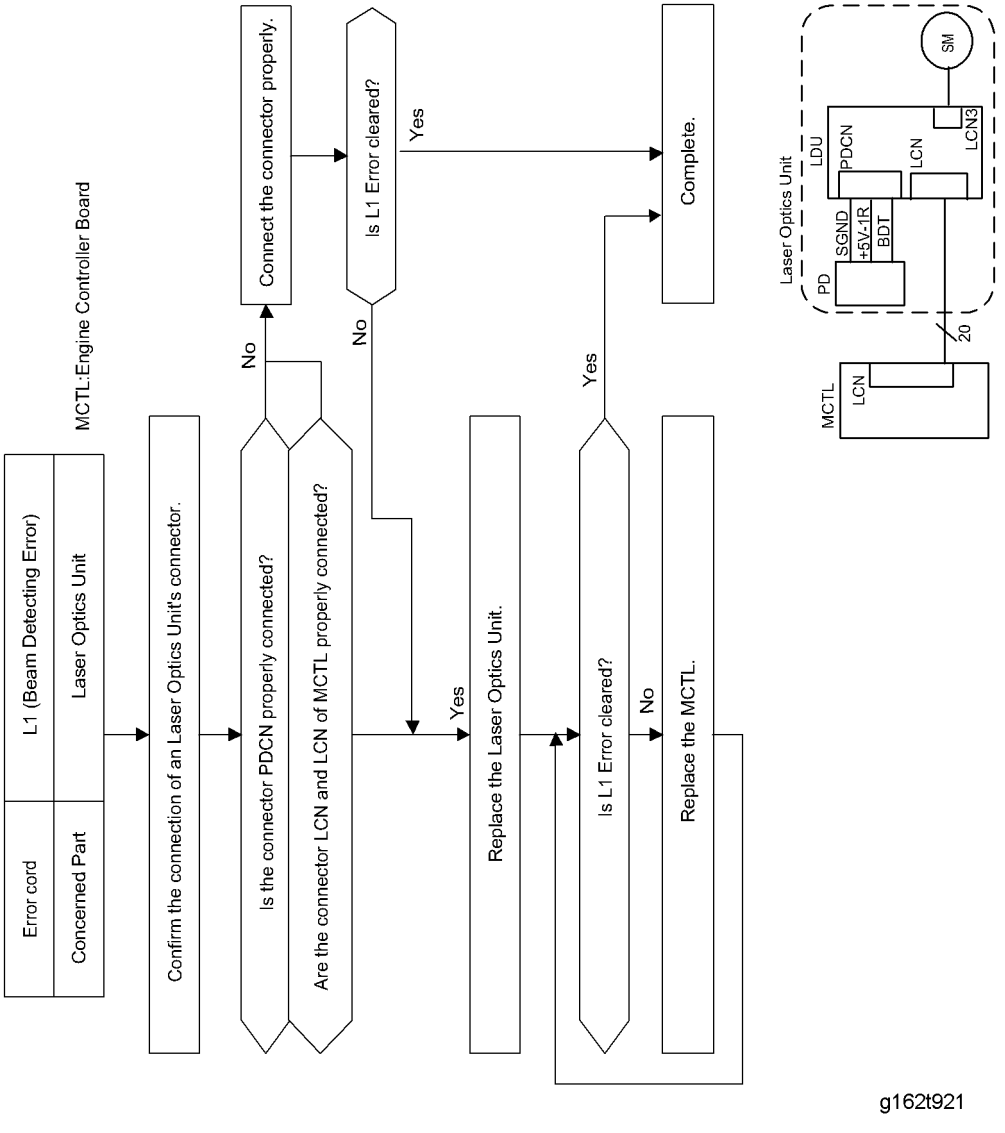
F6 Flow Chart



H0 Flow Chart

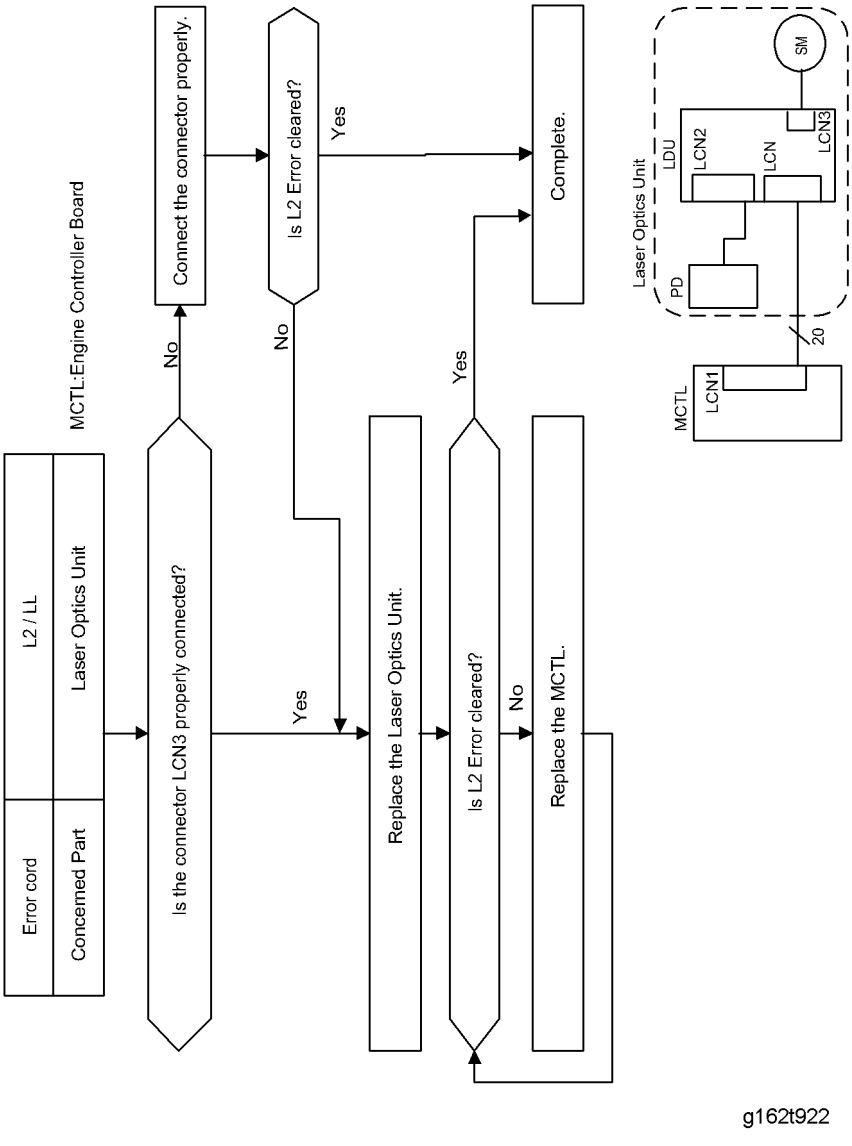


L1 Flow Chart



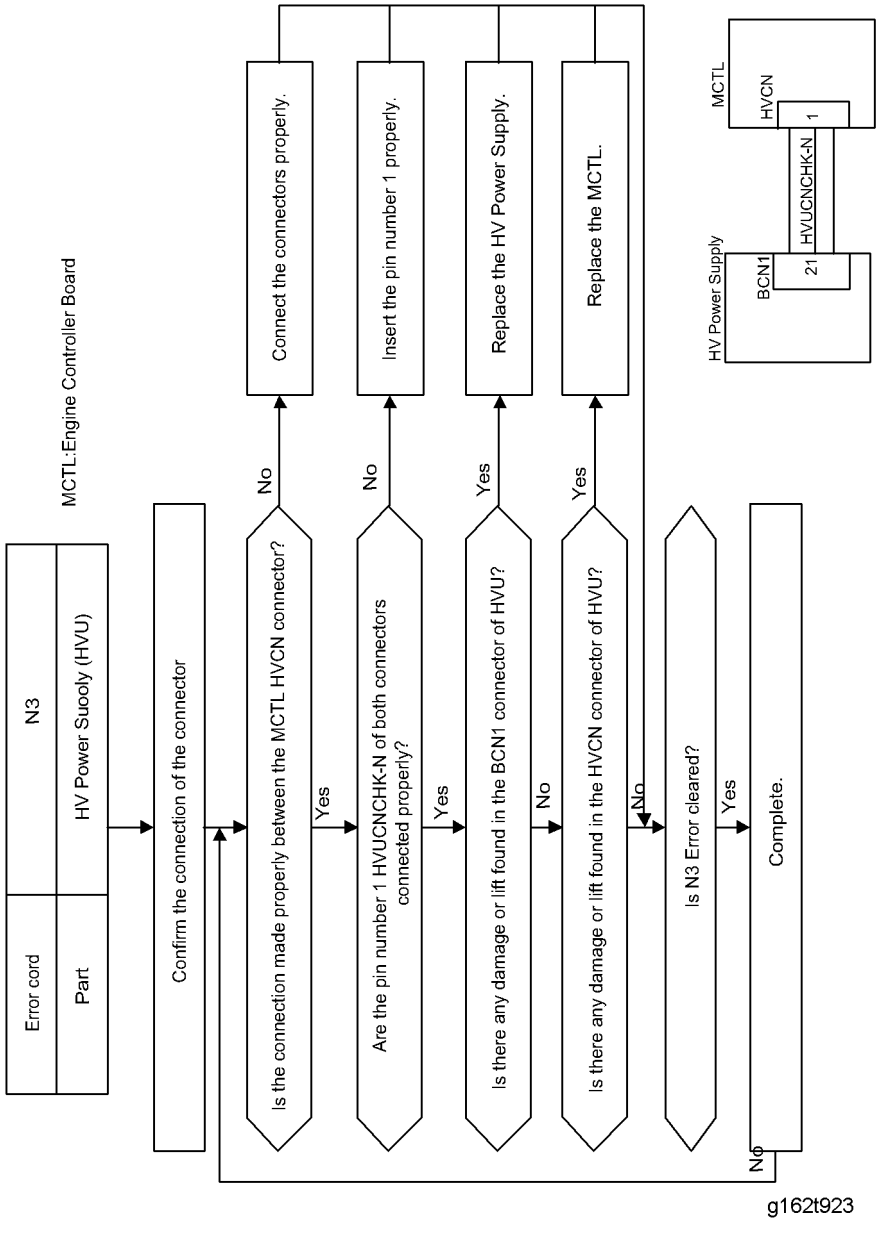
g162t921

L2, LL Flow Chart

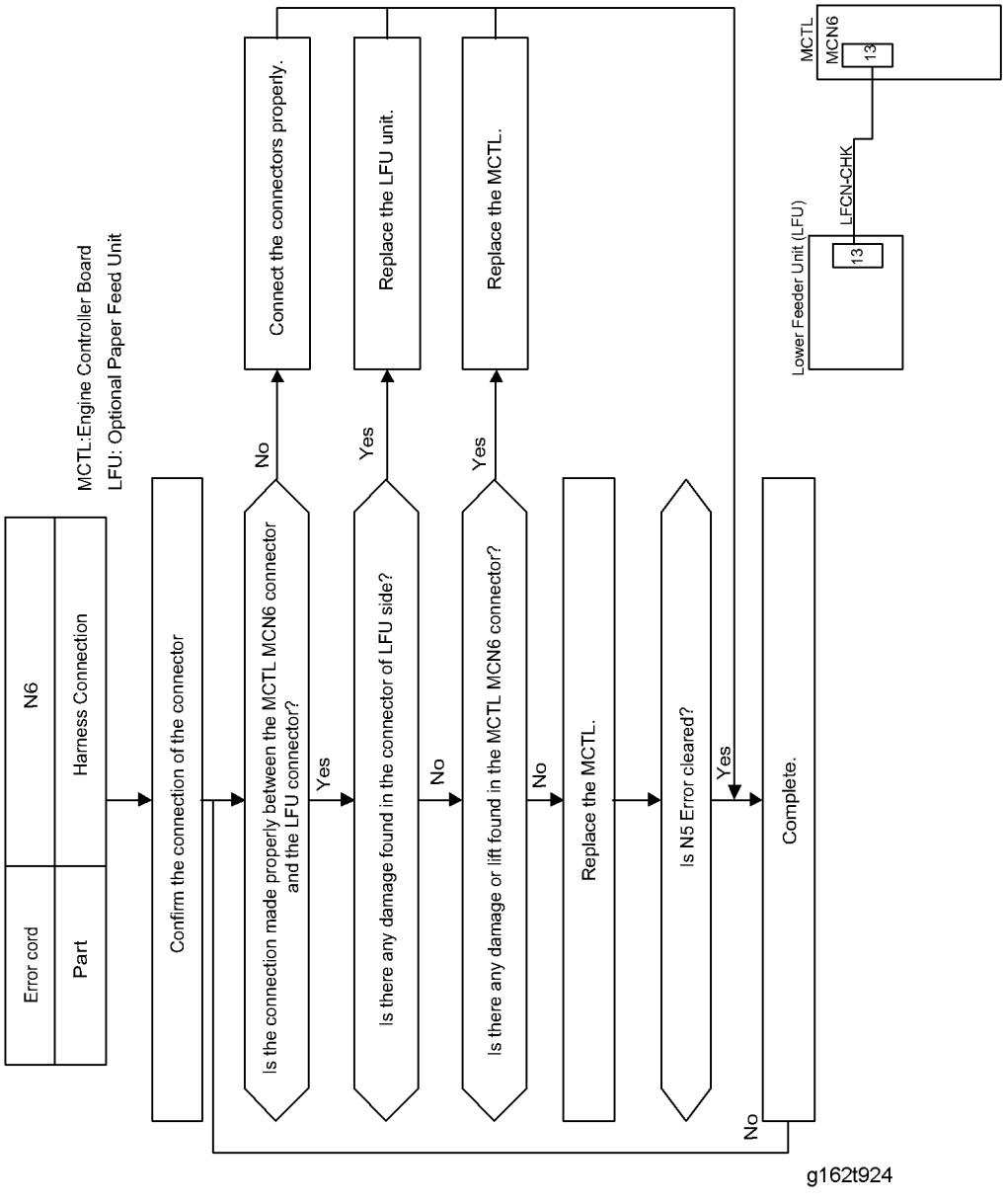


g162t922

N3 Flow Chart



N6 Flow Chart



P6 Flow Chart

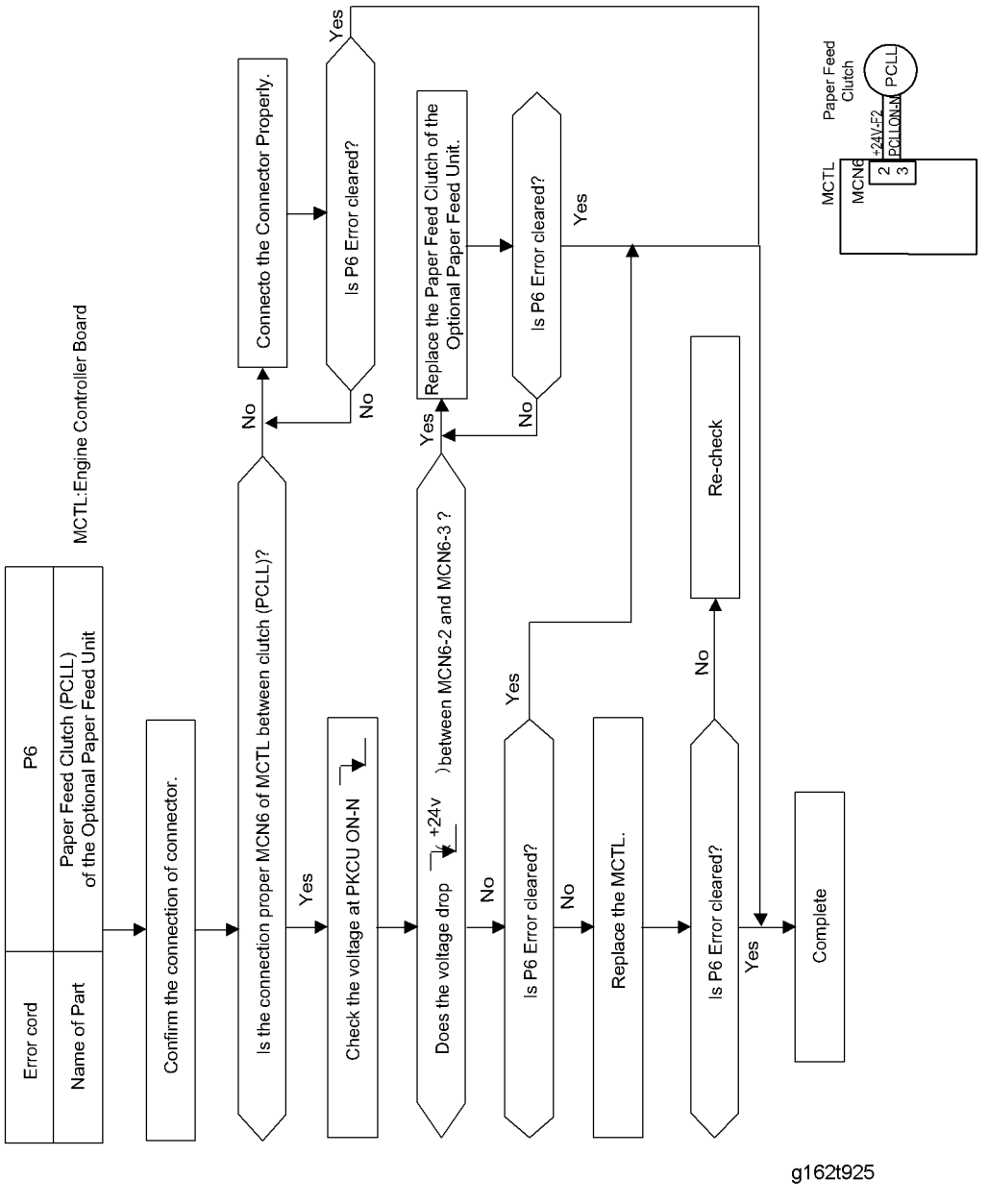


Image Quality

This section illustrates some examples of image quality problems.

Background

Symptom

G108T901

The background is smeared.

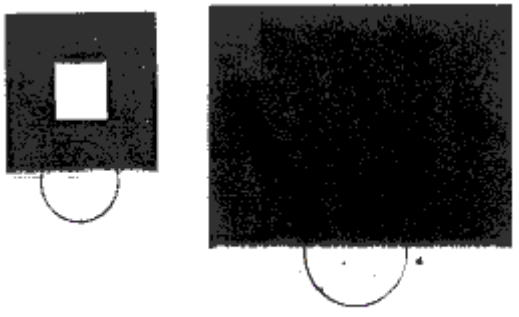
Possible Cause

1. Too small charge in the development procedure.
2. Not sufficient contact of the development roller's bias terminal.
3. Life over or failure of the transfer belt unit.
4. Failure of the high voltage unit.

Countermeasures

1. Replace the development unit.
2. Check that the developer bias terminal is not damaged.
3. Replace the transfer belt unit.
4. Replace the high voltage unit.

Missing Image at Edge



G108T902

Symptom

There are some missing areas at the edges of toner images.

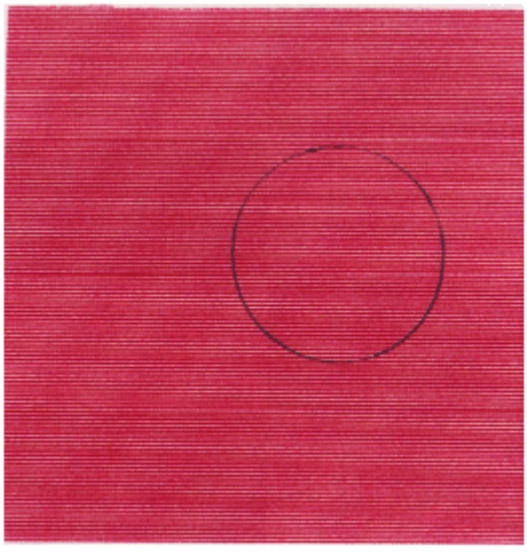
Possible Cause

1. Not sufficient toner mass and/or charge in the development procedure.
2. The OPC belt is damaged.

Countermeasures

1. Replace the development unit.
2. Replace the OPC belt unit.

Jitter



G108T903

Symptom

The image density changes at times and horizontal lines appear.

Possible Cause

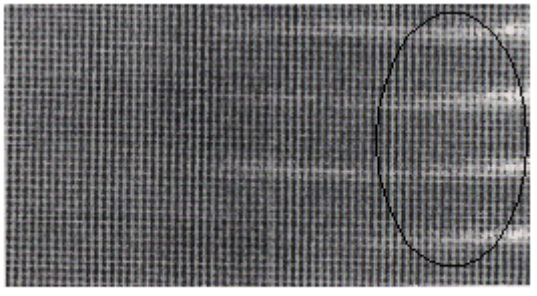
1. Failure of main motor.
    - Irregular rotation of the main motor.
    - Failure in the OPC belt drive path.
    - Changes of OPC belt run speed due to the above reasons.
2. Failure of the OPC belt unit.
3. Failure of the gearbox.
4. Failure in the development unit drive path.

Countermeasures

1. Replace the gears in the OPC belt drive path.
2. Replace the OPC belt unit.
3. Replace the gearbox.
4. Replace the gears in the development unit drive path.

Ribbing

Symptom

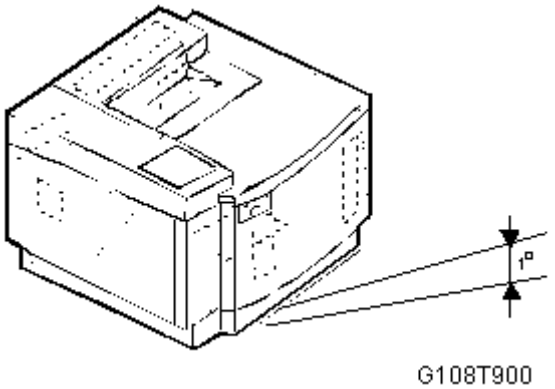


G108T904

The image is weak on the right or left side.

Possible Cause

1. Small tilt on the surface where the printer is installed (tilt should be less than 1 degree).



G108T900

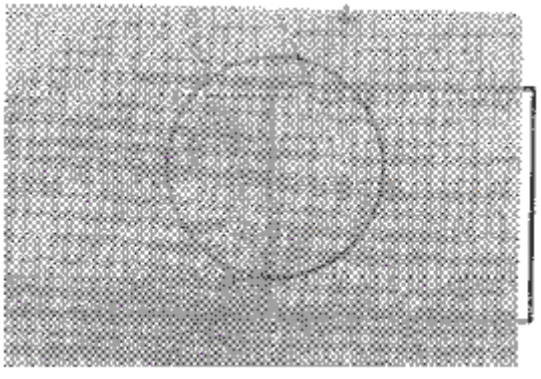
2. Toner amount in the development unit is not sufficient.
3. The development unit is not level (the toner in the unit is on one side only).
4. The rear cover is not correctly closed.
5. The OPC belt is off the track and damaged.
6. Retraction of the development unit.

Countermeasures

1. Check that the printer is installed on a level surface.
2. Shake the toner cartridge horizontally several times.
3. Replace the development unit.
4. Close the rear cover correctly.

5. Replace the OPC belt unit.
6. Replace the development solenoid

Wrinkle/Image Migration



G108T905

Symptom

The image density changes and band-like shadows appear because of wrinkled paper, image migration, and/or incorrect color registration.

Possible Cause

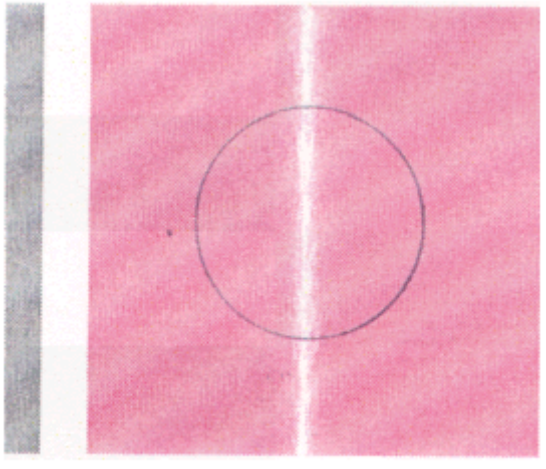
1. Paper in use is wrinkled or not a recommended type.
2. The rear cover is not locked correctly.
3. The fusing unit is damaged.
4. One side of the fusing unit is not in position when the unit is installed.

Countermeasures

1. Use a recommended paper type or new paper.
2. Push the rear cover and make sure it is locked on both sides.
3. Check that the fusing unit is installed correctly and attached with the lock levers on both sides.
4. Replace the fusing unit.

White Line 1

Symptom



G108T906

A vertical white line appears in a specified color area on a test print in the four-color mode (Stripe Mode).

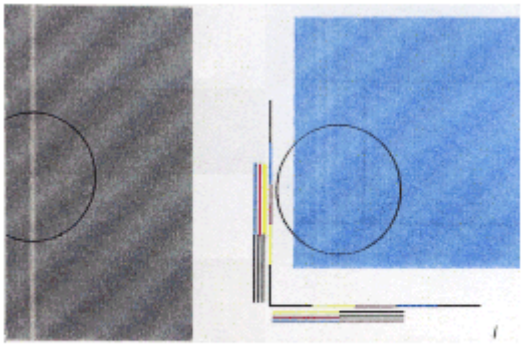
Possible Cause

1. Unwanted particles bond to the development roller of the color in question.
2. The development roller's surface is damaged.

Countermeasures

1. Make a test print.
2. Isolate the development unit that causes the white line.
3. Remove the unwanted particles from the development roller.

White Line 2



G108T907

Symptom

A vertical white line appears from the leading edge to the trailing edge.

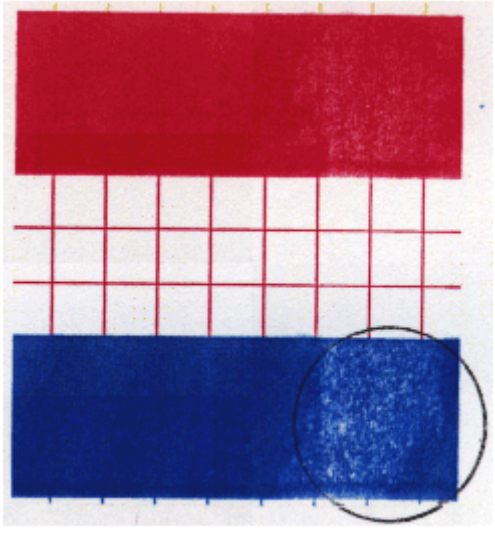
Possible Cause

1. The dust shield glass on the optics unit is smeared with toner or unwanted particles.
2. Unwanted particles bond to the components in the laser beam path.
3. There are unwanted particles mixed in the development unit.

Countermeasures

1. Clean the dust shield glass.
    - Remove the OPC belt unit and the development unit.
    - Open the optics unit cover.
    - Clean the dust shield glass.
2. Check and clean the laser beam path.
3. Replace the development unit.

Vertical White Band



G108T908

Symptom

A vertical white band appears.

Possible Cause

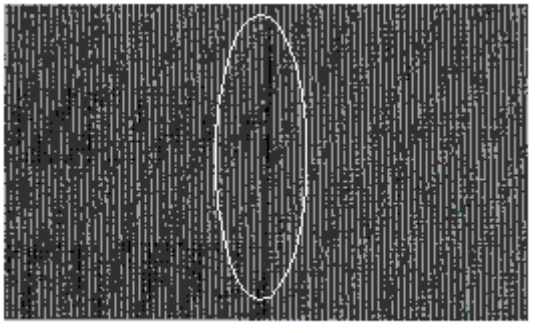
1. Doctor blade failure in the development unit.
2. Stain on the OPC belt charge roller.
3. Stain on the OPC belt.

4. Stain on the transfer belt.

Countermeasures

1. Replace the development unit.
2. Replace the OPC belt unit.
3. Replace the transfer belt unit.

Black Line



G108T909

Symptom

A fine black line appears.

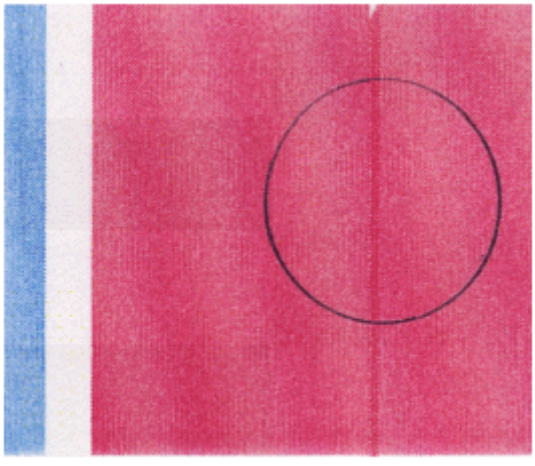
Possible Cause

1. The doctor blade in the development unit is damaged.
2. The OPC belt surface is damaged.
3. Unwanted particles (paper dust, etc.) stay in between the cleaning blade and the OPC belt.
4. Unwanted particles bond to the perimeter parts of the OPC belt and the transfer belt. Then they contact the toner image formed on the belt.

Countermeasures

1. Replace the development unit.
2. Replace the OPC belt unit.
3. Clean the perimeter of the mounting area of the OPC belt and the transfer belt.

Vertical Line



G108T910

Symptom

A vertical line appears.

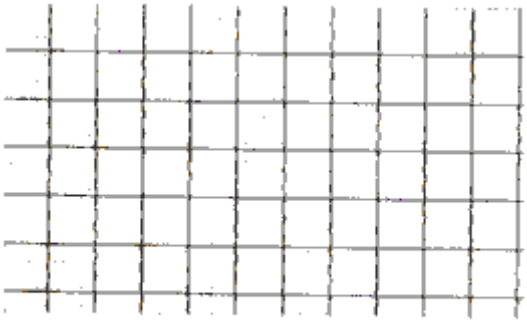
Possible Cause

1. Unwanted particles (dust, etc.) bond to the parts near the OPC belt and the transfer belt. Then they contact the toner image formed on the belt surface.

Countermeasures

1. Clean the OPC belt unit.
2. Clean the transfer belt.
3. Remove the transfer unit cleaning unit. Then clean the inside and outside of the waste toner feeder.

Vertical Staggering Image



G108T911

Symptom

Some images make wavy lines.

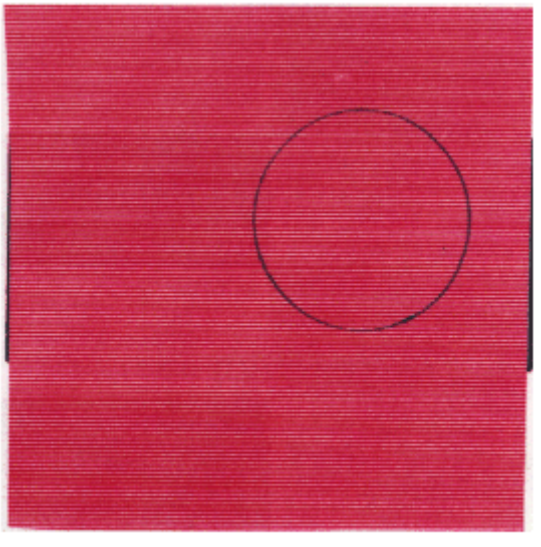
Possible Cause

1. Shock or vibration is applied to the printer.
2. Failure of the LD unit (vibration from the rotation of the scanner motor).

Countermeasures

1. Do not apply shock or vibration to the printer body.
2. Replace the LD unit.

4 Banding



G108T912

Symptom

A horizontal band-like line appears.

Possible Cause

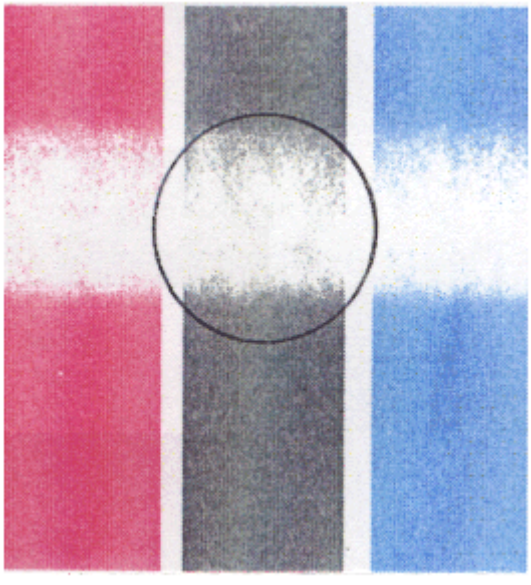
1. This is a transfer failure because of the uneven rotational speed caused by the shock that occurs when the seam of the OPC belt passes over the cleaning blade.
2. The OPC belt and the transfer belt fail to maintain the regular and proper rotation due to the impact caused during the retraction of the toner cartridge.

Countermeasures

1. Replace the OPC belt unit.

2. Replace the development unit.

White Band



G108T913

Symptom

A horizontal white band appears.

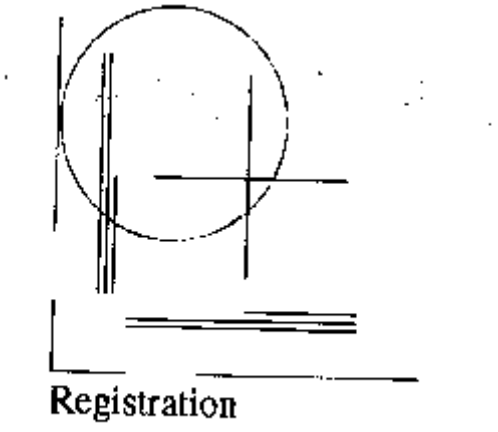
Possible Cause

1. Deformation of the transfer roller.
2. Contact failure of the transfer roller's bias terminal.
3. Failure of the paper transfer clutch.

Countermeasures

1. Replace the transfer roller unit.
2. Check the transfer roller's bias terminal.
3. Check the paper transfer clutch and cam structure.

Toner Spots



G108T914

Symptom

Spots of toner appear at random.

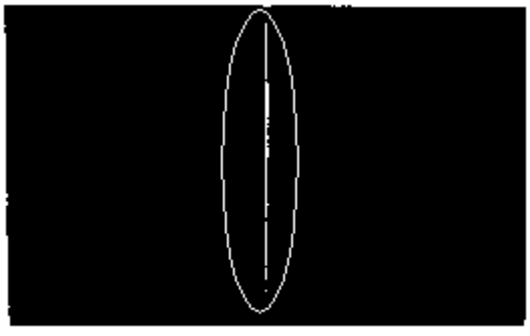
Possible Cause

1. Toner drops on the transfer belt because of the failure of the waste toner auger.
    - Mylar of the waste toner auger is damaged.
    - Waste toner is not correctly collected by the waste toner auger.
2. Toner adhering to the development roller drops on the OPC belt.

Countermeasures

1. Check the cleaning brush and the waste toner path.
    - Clean the perimeter of the transfer-belt cleaning unit.
    - Check the seal on the transfer-belt cleaning unit. Replace the transfer-belt cleaning unit if necessary.
    - Check the waste toner path. If waste toner stays, remove it with a vacuum cleaner.
2. Clean or replace the development unit.

White Spot / Black Spot



G108T915

Symptom

A white spot or a black spot appears.

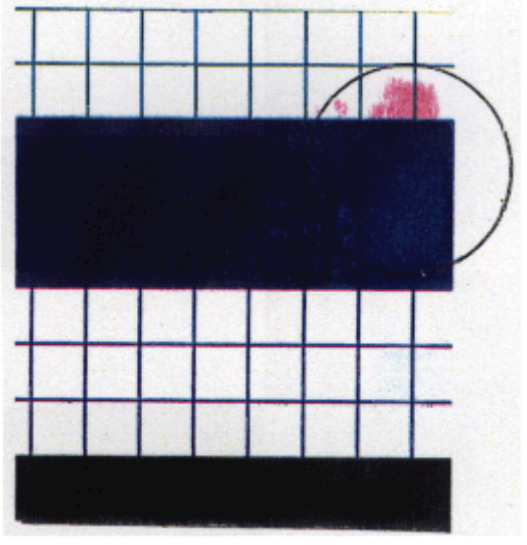
Possible Cause

1. Unwanted particles bond to the OPC belt or the transfer belt.
2. The OPC belt or the transfer belt is damaged.
3. Unwanted particles are mixed in the toner.
4. Unwanted particles bond to the transfer roller, or partial deformation of the transfer roller.

Countermeasures

1. Clean or replace the OPC belt unit.
2. Clean or replace the transfer roller unit. Replace the rear cover if necessary.
3. Replace the development unit.
4. Replace the transfer roller unit.

Mixed Color Image



G108T916

Symptom

A mixed color image appears.

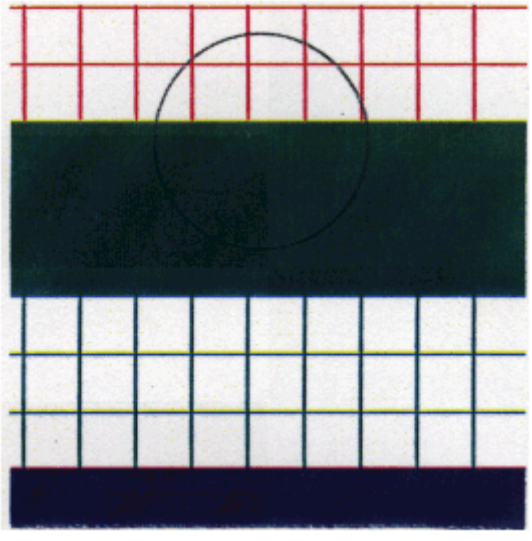
Possible Cause

1. Retraction error of the development unit.
2. Retraction error of the transfer roller.
3. Retraction error of the transfer-belt cleaning unit.

Countermeasures

1. Check where the mixed color image is caused.
    - If it is on the OPC belt, the cause is the retraction error of the toner cartridge.
    - If it is on the transfer belt, the cause is the retraction error of the transfer belt or cleaning roller.
2. Replace the transfer roller clutch.
3. Replace the transfer-belt cleaning solenoid.

Incorrect Color Registration



G108T917

Symptom

Incorrect color registration is seen between the two colors.

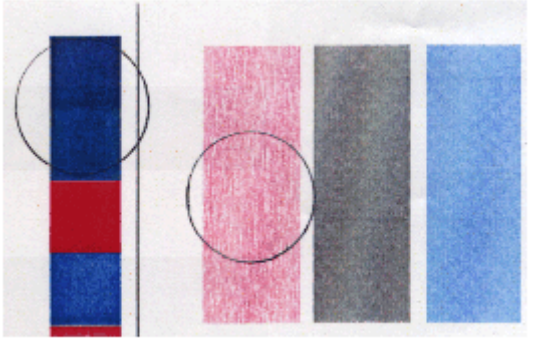
Possible Cause

1. OPC belt error
2. The OPC belt fails to keep the regular and correct rotation because of the impact caused when the toner cartridge contacts the OPC belt.
3. Transfer belt error.
4. The transfer belt fails to keep the regular and correct rotation because of the impact caused when the transfer roller contacts the transfer belt.

Countermeasures

1. Check that the transfer roller unit is correctly installed.
2. Check that the transfer-belt cleaning unit is correctly installed.
3. Replace the OPC belt unit.
4. Replace the transfer belt unit.

Mottling



G108T918

Symptom

The image density varies.

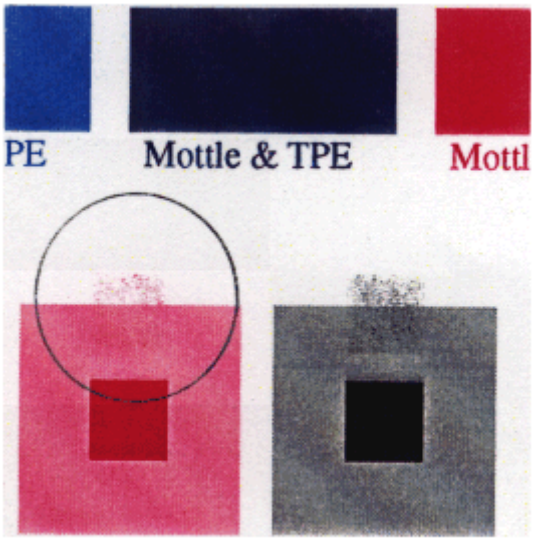
Possible Cause

1. The rear cover is not in place.
2. The transfer roller is incorrectly installed.
3. The THV output of the power supply unit is not correct.
4. Failure in the development unit.
5. Damaged print paper.

Countermeasures

1. Check that the rear cover is correctly locked.
2. Replace the papers with new papers.
3. Replace the development unit.
4. Check that the transfer roller unit is correctly installed.
5. Replace the high voltage unit.

Residual Image



G108T919

Symptom

Part of the image on the previous page appears.

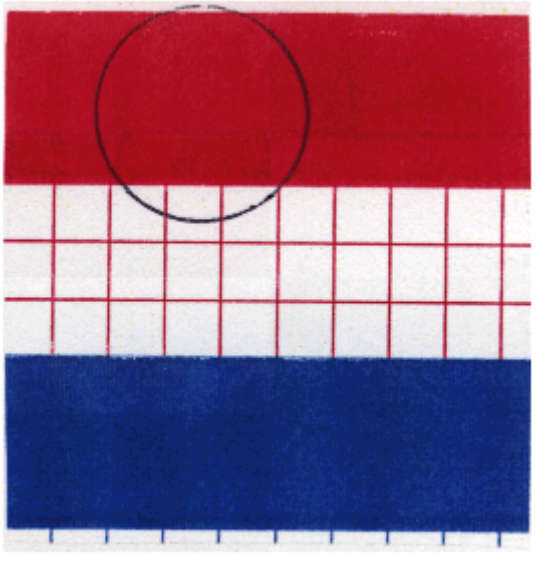
Possible Cause

1. The transfer-belt cleaning unit is lifted at incorrect intervals.
2. Contact failure of the cleaning unit's bias terminal.
3. Failure of the high voltage unit.

Countermeasures

1. Check that the transfer-belt cleaning unit is correctly installed.
2. Replace the high voltage unit.

Insufficient Gloss



G108T920

Symptom

Part of the image is not glossy enough.

Possible Cause

1. The hot roller or the pressure unit in the fusing unit is damaged.
2. The fusing temperature is not correctly controlled.
3. The paper type is not set correctly.

Countermeasures

1. Replace the fusing unit.
2. Check the mode setting of the paper.

Stain on the Rear Side

G108T921

Symptom

The backside of the paper is stained.

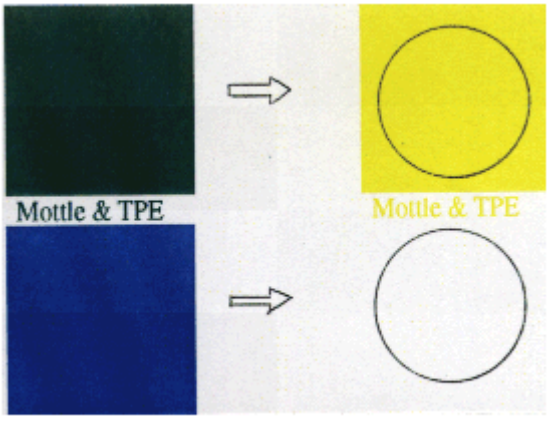
Possible Cause

1. Fusing Unit:
    - The hot roller and the pressure unit are dirty. (The paper is output immediately after a paper jam has occurred.)
    - The fusing temperature is not correct.
    - The hot roller and the pressure unit are damaged
2. The transfer roller is dirty.

Countermeasures

1. Clean the hot roller by printing a couple of pages.
2. Replace the fusing unit.
3. Replace the transfer roller unit.

White Print



G108T922

Symptom

A blank page is output or a specified color is missing.

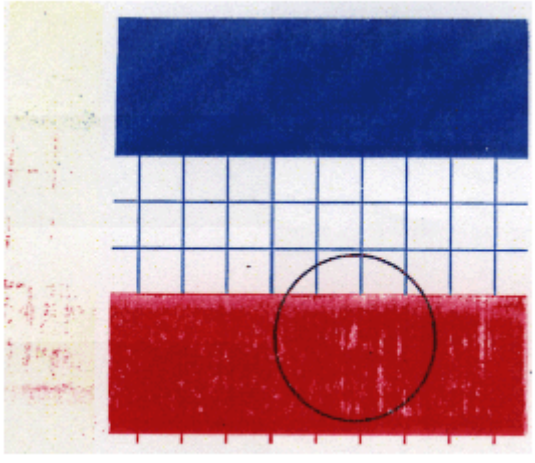
Possible Cause

1. The paper stops the laser beam path.
2. The development unit is not in its position.
3. The bias voltage of the transfer roller is not sufficient (loose connection).

Countermeasures

1. Check the laser beam path and remove unwanted particles.
2. Replace the development unit.
3. Check the rotation of the development unit motor.
4. Check the transfer roller unit is correctly installed.
5. Replace the high voltage unit.

Insufficient Fusing



G108T923

Symptom

Parts of the image printed images are partially missing.

Possible Cause

1. The tension lever on the fusing unit is not locked.
2. Inappropriate paper is used.

Countermeasures

1. Check that the tension lever is locked.
2. Check that the paper type settings are correct.
3. Use the recommended paper.
4. Replace the defective fusing unit.

Uneven Density between Left and Right Sides

Symptom

The image density on one side of the paper is different from the image density on the other side.

Possible Cause

1. The quantity of toner in the development unit is not sufficient.
2. The retraction mechanism of the development unit does not operate correctly.
3. The doctor blade in the development unit is damaged.
4. The transfer belt is damaged.

5. The transfer roller unit is not correctly installed.
6. The rear cover is damaged.
7. The rear cover is not correctly locked.
8. The dust shield glass of the laser optics unit is dirty.

Countermeasures

1. Replace the development unit.
2. Replace the OPC belt unit.
3. Check that the transfer roller unit is correctly installed.
4. Replace the transfer roller unit.
5. Check that the rear cover is correctly locked.
6. Replace the rear cover.
7. Clean the dust shield glass of the laser optics unit.
8. Replace the laser optics unit.

Uneven Density on Different Pages

Symptom

The image density is not the same for each page, or it changes suddenly.

Possible Cause

1. The cable of the ID sensor is disconnected.
2. The ID sensor is dirty.
3. The cleaning mechanism of the ID sensor is broken.
4. The ID sensor does not work.

Countermeasures

1. Check that the message "TMAs" is displayed. This message is displayed when the ID sensor fails.
2. If you see the message, check these components:
    - The ID sensor cable
    - The ID sensor
    - The cleaning mechanism of the ID sensor

Note

- The printer operates even when the message "TMAs" is displayed. In a condition like this, the image density on the outputs can be incorrect.

Electrical Components

Sensors

Reflective Photo Sensors

Sensor	Connector	Condition	Symptom
ID	MCN9	Abnormal	• Image quality may deteriorate.
OPC belt	MCN7	Abnormal	• SVC E9 ERROR (See "SC Table") • The message "Set Belt CG" is displayed.
Waste toner	MCN4	Abnormal	• The waste toner bottle or the waste toner is not detected. • The message "Replace WT. Pack" is displayed.
Toner end	MCN8	Abnormal	• SVC N4 ERROR (See "SC Table") • SVC N5 ERROR (See "SC Table")
Transfer belt	MCN9	Abnormal	• The message "Set Belt CG" is displayed.

Note

- Connector TACN is on the BCU (MCTL).

Photo Sensors

Sensor	Connector	Condition	Symptom
Development unit	MCN2	Interrupted	The message "Check Toner xxxxx" is displayed, where xxxxx indicates a color.
		Not interrupted	The message "Replace Toner xxxxx" is displayed, where xxxxx indicates a color.
Paper exit	MCN1	Interrupted	The paper stops in the paper exit unit and the message "JAM-B Rear" or "JAM-C Rear" is displayed.

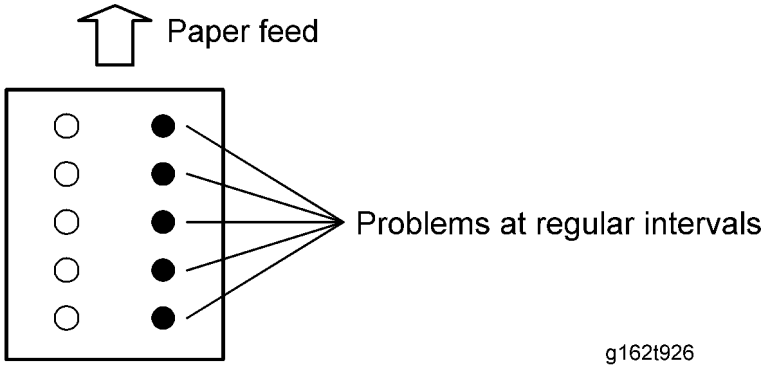
Sensor	Connector	Condition	Symptom
		Not interrupted	The message "JAM-B Rear" or "JAM-C Rear" is displayed while no paper is in the path.
Registration	MCN9	Interrupted	The message "JAM-A Tray, Rear" is displayed.
		Not interrupted	The message "JAM-B Rear" or "JAM-C Rear" is displayed.
Paper end	MCN9	Interrupted	The message "Trayx Load zzzz" is displayed while the paper is in the tray.
		Not interrupted	The message is not displayed while no paper is in the tray.
Paper size/tray	MCN7	Interrupted	The message "JAM-B Rear" or "JAM-C Rear" is displayed.
		Not interrupted	The message "Trayx Load zzzz" is displayed.

Note

- The connectors are on the BCU (MCTL).

Image Problem at Regular Intervals

Image problems may appear at regular intervals that depend on the circumference of certain components. The following diagram shows the possible symptoms (black or white dots at regular intervals).



Abnormal image at 34.5-mm intervals: Charge roller

Colored spots at 35-mm intervals: Development roller

Abnormal image at 50-mm intervals: Exit roller

Abnormal image at 63-mm intervals: Transfer roller

Abnormal image at 95-mm intervals: Pressure roller in the fusing unit

Abnormal image at 128-mm intervals: Hot roller in the fusing unit

5. Service Tables

Service Program Menu

⚠CAUTION

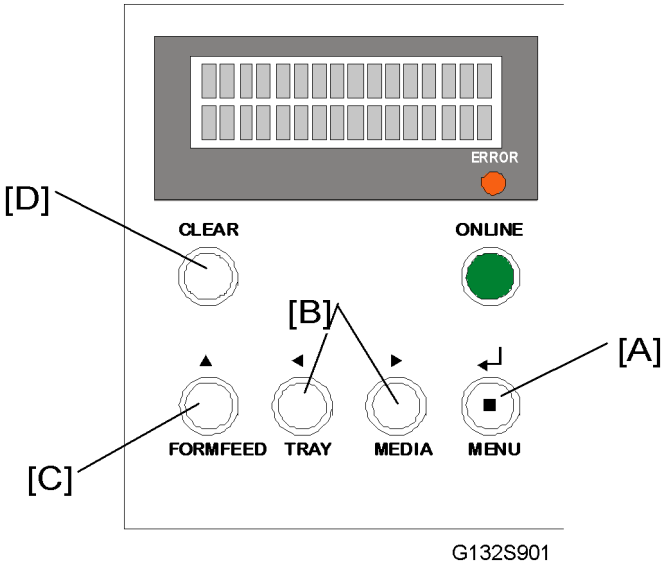
- Make sure that the printer is not processing any data before you go into the service program menu.

Operating Menu Function

This machine has several menu functions for service engineers.

Important

- **Do not let the user go into the "Service Menu", "Default Setting", "Factory Mode" and "Print Maintenance Page". Normal operation is not guaranteed if the user goes into these menu functions.**



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Activating the Service Menu

When the printer is turned off:

1. Press the MENU key [A] and the FORMFEED key [C] and hold them down.
2. Turn the main power on. (Keep the two keys held down.)
3. Wait until the message "Service Menu" shows.

When the printer is already turned on:

1. Press the CLEAR key [D] three times while holding the MEDIA key down.
2. Press the MENU key [A] to get “CE”.
3. Press the TRAY or the MEDIA key [B] to get “Service Menu”. Then press the MENU key to go into the service program.

Activating the other Menu Functions

For details of activating "Print Maintenance Page", "Test menu", "Config menu", "Utility menu" and "Toner Sense Menu", refer to the "**Operation procedure**" of each menu function description in the section "Menu Functions Table".

Selecting a Service Program

1. Press the TRAY or MEDIA key to get one of these menus:
   - 1. Information
   - 2. Test Print
   - 3. Maintenance
   - 4. Engine Tune Up
   - 5. Ver-Rev
   - 6. Product ID
   - 7. DataErrorSetting
2. Press the MENU key.
3. Press the TRAY or MEDIA key to get one of the sub menus.
4. Press the MENU key.
5. Press the TRAY or MEDIA key to get one of the service programs.
6. Press the MENU key.
7. Press any key to go back to the main menu.

(You can go back to the previous step if you press the FORMFEED key.)

Specifying a Setting

1. Press the TRAY or MEDIA key to get a setting.
2. Press the MENU key to keep the one you want to set.
3. Press the FORMFEED key to go back to the main menu.

Exiting the Service Menu

Press the FORMFEED key when the message "Service Menu" shows on the LCD. This lets you go out of "Service Menu". Then the printer goes back to the online mode.

Menu Functions Table

Overview

This device has menu functions as shown below.

"DFU" indicates "designed factory use only". Do not change the settings.

No.	Main Menu	Sub Menu/Description
1	Service Menu	1. Information: Prints the printer's information. 2. TestPrint: Prints consecutively the test pattern to be selected. 3. Maintenance: Initializes the PM counter Keeps MCTL information 4. Engine Tune Up: Adjusts the engine. 5. Ver-Rev: Shows the software version in this machine. 6. Product ID: Shows the printer model information in the firmware of the controller. 7. DataErrorSetting: Lets the machine skip or stop a print job when it gets incorrect data.
2	Default Setting	Sets the panel menu and network settings (except address and speed) to their initial values. **DFU**
3	Factory Mode	**DFU**
4	Print Maintenance Page	Prints a sheet of the paper that has printer's information, other information and the color test pattern.
5	Test menu	Prints the test pattern, menu setting and printer's information.
6	Config menu	Sets the various printer actions regarding reception of printing data and interface language of the printer.
7	Utility menu	1. Clear Belt CG, Fuser or Print Info: Initializes the counters of the belt cartridge, fusing unit and total number of prints.

		2. Setting Default: Initializes the contents of the panel menu, the network settings and the passwords of the Web/Hidden page. 3. Tray2 Margin: Sets the adjustment value of the tray 2 paper feeder.
8	Toner Sense Menu	Adjusts the toner detection function.

1-1 Information (Service Menu):

This prints a sheet of paper that shows the machine's software version. You can also see information for the total printing counter.

You can set these engine values shown below:

- Print Counter
- Unit Life
- Laser Power
- Developer Bias Voltage
- Transfer High Voltage
- Margin
- Toner Mass Amount Calibration
- Toner Mass Amount Density
- OPC Belt Bias Voltage

PRINTERCOUNTER	Printer Counter	Description
	Image total	Shows the printing image total (current and back up data). You must replace it if goes over 150,000.
	Yellow	
	Magenta	
	Cyan	
	Black	
	Page total	Shows the page total.

UNIT LIFE	**Counter**	**Description**
	Belt cartridge	Shows the image total. You must replace it if this number is under 0.

	Fuser unit	Shows the page total. You must replace it if this number is under 0.
	OW kit	
	Transfer belt	
	Paper feeding roller 1	
	Paper feeding roller 2	

Laser Power	**Color**	**Description**
	Yellow	Shows the setting value in Engine Tune Up menu.
	Magenta	
	Cyan	
	Black	

Developer Bias Voltage	**Color**	**Description**
	Yellow	Shows the setting value in Engine Tune Up menu.
	Magenta	
	Cyan	
	Black	

Transfer High Voltage	**Paper Type**	**Description**
	Plain paper	Shows the setting value in Engine Tune Up menu.
	Transparency	
	Label /Mid-Thick	
	Thick1	
	Thick2	
	Envelope	
	Duplex (plain)	

	Duplex (m-thick)	
	Duplex (thick1)	
	Duplex (thick2)	

Margin	**Position**	**Description**
	Top	Shows the setting value in Engine Tune Up menu.
	Left1	
	Left2	

	Type	**Description**
Toner Mass Amount Density	-	Shows the setting value in Engine Tune Up menu.
Toner Mass Amount Density	Yellow	
	Magenta	
	Cyan	
	Black	
OPC Belt Bias Voltage	-	
Transfer Belt Cleaning Bias Voltage	-	
Fusing Temperature Adjust	Transparency	
	Envelop1	
	Envelop2	
Dew Removal	-	

Sample

<PRINTERINFORMATION>

$$$$$$$$$$$$$$$

	CURRENT DATA	BACK UP DATA
PRINT COUNTER		
Image total	$$$$$$	$$$$$$
(Yellow)	$$$$$$	$$$$$$
(Magenta)	$$$$$$	$$$$$$
(Cyan)	$$$$$$	$$$$$$
(Black)	$$$$$$	$$$$$$
Page total	$$$$$$	$$$$$$
UNIT LIFE		
Belt cartridge	$$$$$$	$$$$$$
Fuser unit	$$$$$$	$$$$$$
OW kit	$$$$$$	$$$$$$
Transfer belt	$$$$$$	$$$$$$
Paper feeding roller1	$$$$$$	$$$$$$
Paper feeding roller2	$$$$$$	$$$$$$
LASER POWER		
Yellow	$$	$$
Magenta	$$	$$
Cyan	$$	$$
Black	$$	$$
DEVELOPER BIAS VOLTAGE		
Yellow	$$	$$
Magenta	$$	$$
Cyan	$$	$$
Black	$$	$$
TRANFER HIGH VOLTAGE		
Plain paper	$$	$$
Transparency	$$	$$
Label/Mid-Thick	$$	$$
Thick1	$$	$$
Thick2	$$	$$
Envelope	$$	$$
Duplex(plain)	$$	$$
Duplex(M-Thick)	$$	$$
Duplex(Thick1)	$$	$$
Duplex(Thick2)	$$	$$
MARGIN		
Top	$$	$$
Left1	$$	$$
Left2	$$	$$
TONER MASS AMOUNT CALIBRATION	$$	$$
TONER MASS AMOUNT DENSITY		
Yellow	$$	$$
Magenta	$$	$$
Cyan	$$	$$
Black	$$	$$
OPC BELT BIAS VOLTAGE	$$	$$
TRANSFER BELT CLEANER BIAS VOLTAGE	$$	$$
FUSING TEMPERATURE ADJUST		
Transparency	$$	$$
Envelope1	$$	$$
Envelope2	$$	$$
DEW REMOVAL	$$	$$

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1-2 Test Print (Service Menu)

This prints the color test pattern you want to set. You can select the print method in Item2 and the test pattern in Item3 as shown below.

Test Print procedure

1. Start "Service Menu".
2. Press the TRAY or MEDIA key to get "Test Print". Then press MENU key.
3. Press the Tray or MEDIA key to get "Print Method" (Item2) in sub menu. Then press the MENU key.
4. Press the TRAY or MEDIA key to get "Test Pattern" (Item3) in service program.
5. Press the MENU key to let the machine print.

   Note

   - The machine may print to maximum prints. Press the FORMFEED key to stop printing if you do not need to print to maximum prints.
6. The printer automatically goes back to "Service Menu" when the machine ends the print job.
7. Press the FORMFEED key in "Service Menu" to leave "Service Menu".

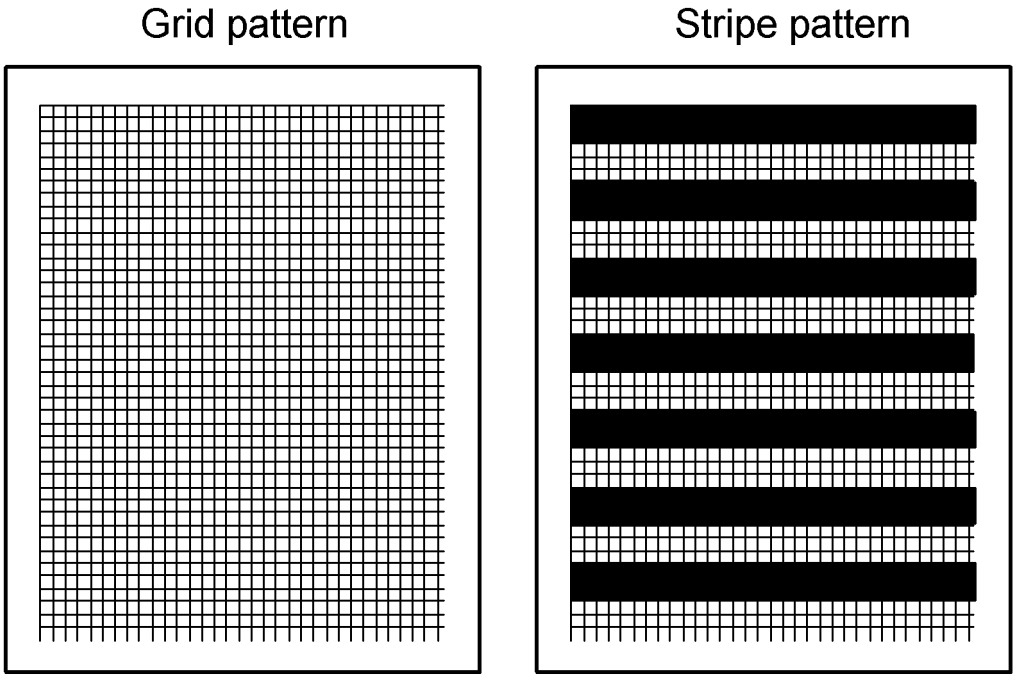
The printer goes back to "Service Menu" at these times:

- FEED key is pressed. (It may take more time for the paper to exit the machine.)
- Set sheets of paper are completely printed.

Note

- The machine will not print if an error description appears.

No.	Item	Description
		Maximum prints **NOTE:** The print speed is set to the standard speed when a sheet of paper is a ledger, legal, A4 or letter size.
1	Stripe (YMCK)	Simple: 63 sheets
2	Grid (K)	Simple: 60 sheets
3	Grid (Y)	Simple: 60 sheets
4	Grid (M)	Simple: 60 sheets
5	Grid (C)	Simple: 60 sheets
6	Grid (Y, M)	Simple: 63 sheets
7	Grid (Y, C)	Simple: 63 sheets
8	Grid (M, C)	Simple: 63 sheets



1-3 Maintenance (Service Menu)

You must do this procedure when you replace PM parts and the MCTL.

Maintenance Procedure

1. Start the "Service Menu".
2. Press the TRAY or MEDIA key to get "Maintenance". Then press the MENU key.
3. Press the TRAY or MEDIA key to get a service program (Item2). Then press the MENU key.
4. Press the TRAY or MEDIA key to get the "Not Execute" or "Execute".
5. Press the MENU key to start this program when you set "Execute" in step 4.
6. Press any key to go back to the "Service Menu".

No.	Item2	Description
1	Clear Fuser	Initializes the fuser counter. It is executed when replacing the fusing unit.
2	Clear OW Kit	Initializes the OW kit (Transfer roller /Drum cleaner) counter. It is executed when replacing both the Transfer roller and Drum cleaner at the same time.

No.	Item2	Description
3	Clear Trans Belt	Initializes the Transfer belt counter. It is executed when replacing the Transfer belt.
4	Clear Feed-Roll1	Initialize the Feed-Roll counter. It is executed when replacing Feed Roller 1 or 2. NOTE: Replace the separation pad at the same time when replacing the feed roller.
5	Clear Feed-Roll2	
6	MCTL ➔ PRC	Backup the maintenance page information of the NVRAM in the MCTL to the Flash Memory in the controller board. This needs to be executed just before replacing the MCTL. NOTE: 1) You cannot backup more than the maintenance page information to the Flash Memory. 2) If this is done correctly, the value of the current data and back up data in the Information must be same.
7	PRC ➔ MCTL	Copy the maintenance page information backed up to the Flash Memory in the controller board into the NVRAM in the MCTL. This needs to be executed just after replacing the MCTL. NOTE: If there is no information in Flash Rom, this cannot be executed.

1-4 Engine Tune Up (Service Menu)

This lets you adjust the engine setting. You do not normally have to adjust the engine setting. This setting is correctly adjusted in the factory. You can adjust this for different environments and paper types if necessary.

Engine Tune Up procedure

1. Start the "Service Menu".
2. Press the TRAY or MEDIA key to get "Engine Tune Up". Then press the MENU key.
3. Press the TRAY or MEDIA key to get a service program (Item2). Then press the MENU key.
4. Press the TRAY or MEDIA key to get Item3 if the service program has Item3. Then press the MENU key.
5. Press the TRAY or MEDIA key to adjust the value of a service program. Then press the MENU key.
6. New values and old values show on the LCD.
7. Press any key to go back to the service program (Item2) selection display.

Possible settings: [Adjustable range / **Default** / Step]: Step is the minimum amount of change.

Item2	Item3	Adjustment value
Laser Power	Adjusts the laser power to improve the print's density	
	Yellow	[1 to 15 / **8** / 1/step]
	Magenta	
	Cyan	
	Black	
DBV	Adjusts the DBV (Developer Bias Voltage) to improve the print's density.	
	Yellow	[1 to 15 / **8** / 1/step]
	Magenta	
	Cyan	
	Black	
THV	Adjusts the THV (Transfer High Voltage) to improve the transfer efficiency due to the paper type.	
	Plain Paper	[-4 to 4 / **0** / 1/step]
	Transparency	
	Label-Mid-Thick	
	Thick1	
	Thick2	
	Envelope	
Margin Adjust	Top	Adjusts the margin at the leading edge. [-35 to 35 / - / 5/step] (1=0.1mm)
	Left1	Adjusts the margin at the left side when feeding from Tray 1. [-35 to 35 / - / 5/step] (1=0.1mm)
	Left2	Adjusts the margin at the left side when feeding from Tray 2. [-35 to 35 / **0** / 5/step] (1=0.1mm)

Item2	Item3	Adjustment value
TMA Timing	Specifies the interval of the timing for the TMA detecting the amount of the toner transferred to Transfer belt. [1 to 13 / **8** / 1/step]	
TMA Density	Adjusts the each color density to improve the print's density.	
	Yellow	[1 to 15 / **8** / 1/step] (1 is the dimmest, 15 is the darkest.)
	Magenta	
	Cyan	
	Black	
CBV	Adjusts the OPC belt bias to improve the print's density. [-4 to 4 / **0** / 1/step]	
FBV	Adjusts the Transfer belt cleaner bias to improve the transfer efficiency. [-4 to 4 / **0** / 1/step]	
Fuser Temperature	Transparency	Adjusts the fusing temperature for printing (Fusing Temperature Adjust). [-4 to 4 / **0** / 1/step]
	Envelope 1	
	Envelope 2	
Dew Removal	Adjusting the dew removal mode (Dew Removal). 0: OFF, 1: ON If turned 'ON': When the machine detects an L1 or F5 error, the machine starts dew removal mode (the fusing lamp and polygon mirror motor both turn on for 10 minutes to remove condensation).	

1-5 Ver-Rev (Service Menu)

This shows the information of the machine's software version on the operation panel.

Operation Procedure

1. Start the "Service Menu".
2. Press the TRAY or MEDIA key to get "Ver-Rev". Then press the MENU key.
3. Press the TRAY or MEDIA key to get a service program for these:
   - F/W: Controller firmware
   - MCTL: MCTL software
4. Press the FORMFEED key to go back to the main menu.

1-6 Product ID (Service Menu)

This shows the printer model information in the firmware of the controller.

Operation Procedure

1. Start the "Service Menu".
2. Press the TRAY or MEDIA key to get "Product ID". Then press the MENU key.
3. A printer type name shows on the LCD.
4. Press the FORMFEED key to go back to the main menu.

1-7 Data Error Setting (Service Menu)

This let you set the skip or stop printing when receiving the defective data.

- Skip: When a data error happens, a page or job having an error data is canceled and then the next page or job is consecutively processed.
- Stop: When a data error happens, an error message shows. At this time, data does not get processed.

Operation Procedure

1. Start the "Service Menu".
2. Press the TRAY or MEDIA key to get "DataErrorSetting". Then press the MENU key.
3. A current set program shows with "*" on the LCD.
4. Press the TRAY or MEDIA key to set "Skip" or "Stop". Then press the MENU key.
5. Press the FORMFEED key to go back to the main menu.

2 Default Setting (DFU)

You can set network settings back to the initial values, except for contents of panel menu, IP address, subnet mask, gateway address, IP address mode and network speed.

3 Factory Mode (DFU)

This mode is only used in the factory.

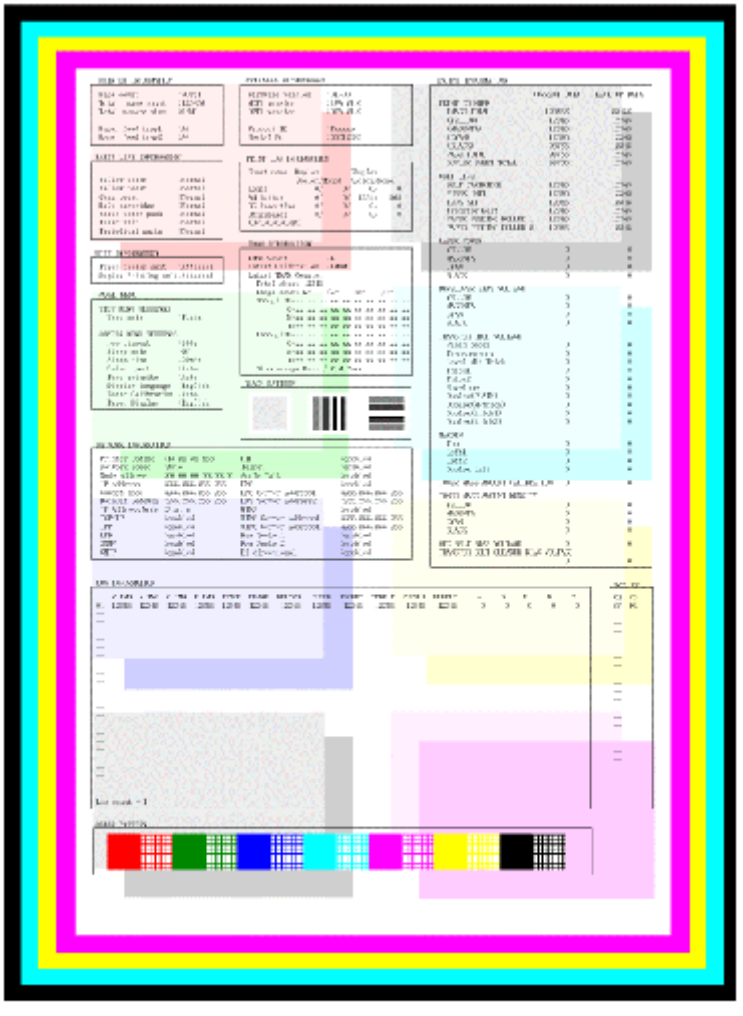
4 Print maintenance page

This prints a sheet of the paper with these items:

- Printer information
- Other information
- Color Test Pattern.

Operation procedure

1. Hold down the MEDIA key for three seconds or more in the offline mode.
2. The maintenance page prints after “Wait a moment” shows.
3. The machine automatically goes back to the offline mode after you print the maintenance page.



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5 Test Menu

Operation procedure

1. Press the ONLINE key to enter the offline mode.

2. Press the TRAY or MEDIA key to select the input tray.
3. Press the MENU key to get "Test Menu".

Menu	Sub Menu	Description
Test Menu	Test Print	Prints the test pattern contained in the printer.
	Config Page	Prints the menu setting and information of the printer: Printer, Parts Life, Software, Panel Menu, Unit information.
	Status Page	Prints the menu setting and information of the printer: Total Image, Parts Life, Printing, Calibration information.
	Test Mode	Adjusts the printing condition: PLAIN, TRANS, LABEL, THIN, MTHICK, THICK 1-2, ENV 1-2.

6 Config Menu

Operation procedure

1. Press the ONLINE key to enter the offline mode.
2. Press the MENU key to get "Test Menu".
3. Press the TRAY or MEDIA key to get "Config Menu".

Menu	Sub Menu	Description
Config menu	Timeout	Selects the reaction when receiving the printing data is interrupted during a printing job.
	Sleep Mode	Sets the Sleep Mode activated or not.
	Sleeptime	Sets the waiting time for stand by mode.
	Display	Selects the display language.
	Paper Display	Selects the paper size display on LCD when a paper other than a normal size paper is set.
	Calibration	Sets the calibration function activated or not.

7 Utility Menu

Operation procedure

1. Press ONLINE key to enter the offline mode.

2. Hold down MENU key for three seconds to get “Utility Menu”.

Menu	Sub Menu	Description
Utility Menu	Clear Belt CG	Lets you initialize the replacement cycle information after you replace the photoconductor unit.
	Clear Fuser	Lets you initialize the replacement cycle information after you replace the fusing unit.
	Clear Print Info	Lets you initialize the printer information.
	Setting Default	Lets you change the current setting into the default setting.
	Tray 2 Margin	Lets you adjust the margin when the optional paper feed unit is used.

8 Toner Sense Menu

Operation procedure

1. Press ONLINE key to enter the offline mode.
2. Hold down MENU key for three seconds to get “Utility Menu”.
3. Press TRAY or MEDIA key to get “Toner Sense Menu”.

Menu	Sub Menu	Description
Toner Sense Menu	Execute Sensing	Senses the toner density.
	Clear Sense Data	Initializes the data of sensing a toner data.

Firmware Update

Type of Firmware

The table lists the firmware program used by this machine.

Firmware	Display
Controller Firmware	RI7xxxxx.all

Note

- "XXXXX":Version-Revision
- Example:RI710000.all = Version-Revision:01-00

Preparation

You need to prepare the following before firmware update.

- USBSEND.exe: This is software to send the firmware to the printer.
- PC
- USB cable

Updating Procedure

1. Install the printer driver on the PC (Windows).
2. Copy "USBSEND.exe" and "RI6XXXXX.all" into any directory.
3. Turn the main power of the printer on.
4. Connect the printer and PC with a USB cable.
5. Execute "USBSEND.exe".
6. Click "File select".
7. Select "RI7XXXXX.all" in the file names.

   Note

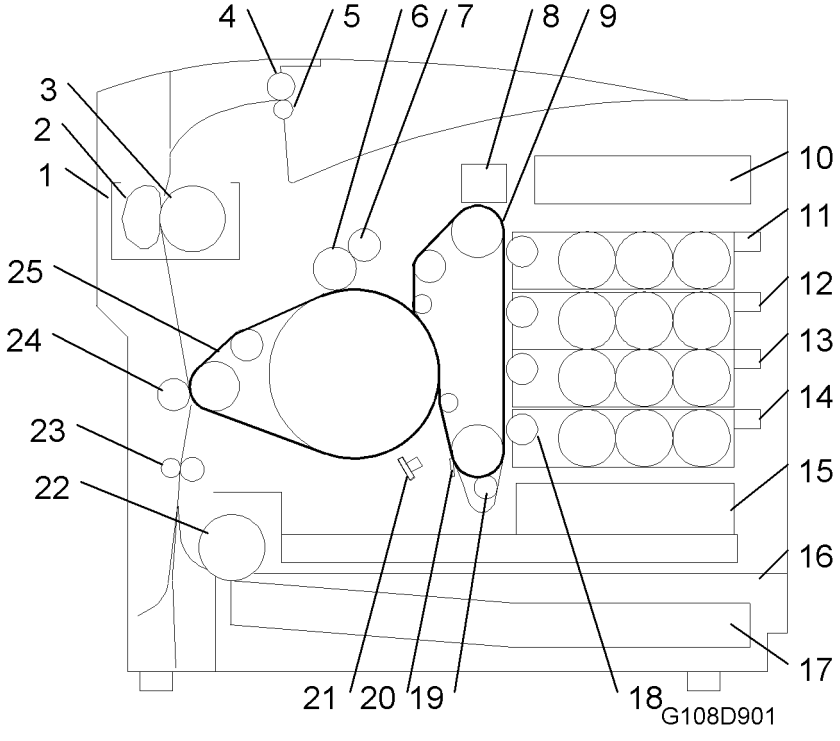
   - Do not select another file name. If so, it may cause a malfunction.
8. Make sure that the printer is in the online mode.
9. Click the "Send" button in the online mode.
10. "Downloading" is displayed on the LCD and the online lamp blinks.

11. The message “Complete” appears when updating is done.
12. Make sure that the firmware is correctly updated. (☛ Service Menu > Ver-Rev)

6. Details

Overview

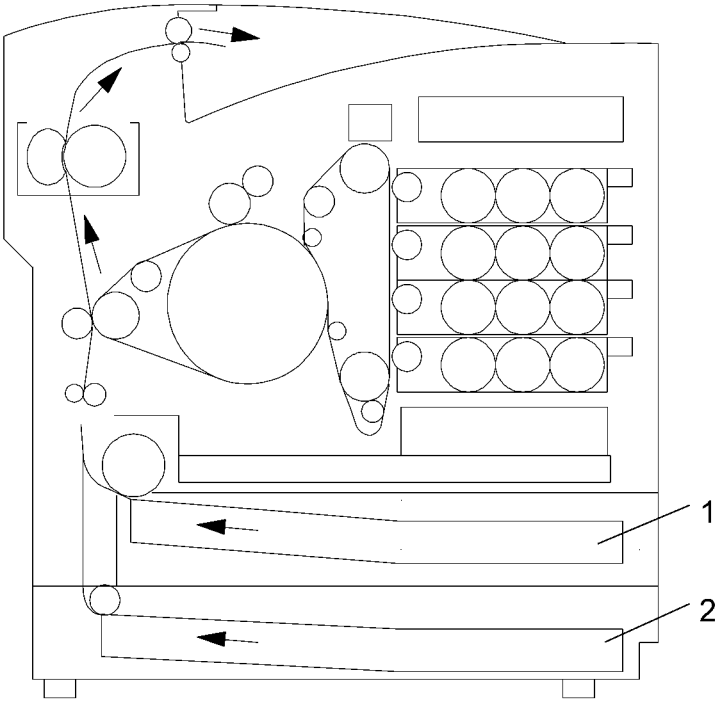
Component Layout



1. Fusing unit	14. Development unit C
2. Pressure unit	15. Optics unit
3. Hot roller	16. Paper tray
4. Exit roller	17. Paper
5. Idle roller	18. Development roller
6. Cleaning brush	19. Charge roller
7. Cleaning roller	20. Cleaning blade
8. OPC belt handle	21. Erase lamp
9. OPC Belt	22. Paper feed roller
10. Input output device	23. Registration roller

11. Development unit K 12. Development unit M 13. Development unit Y	24. Transfer roller 25. Transfer belt

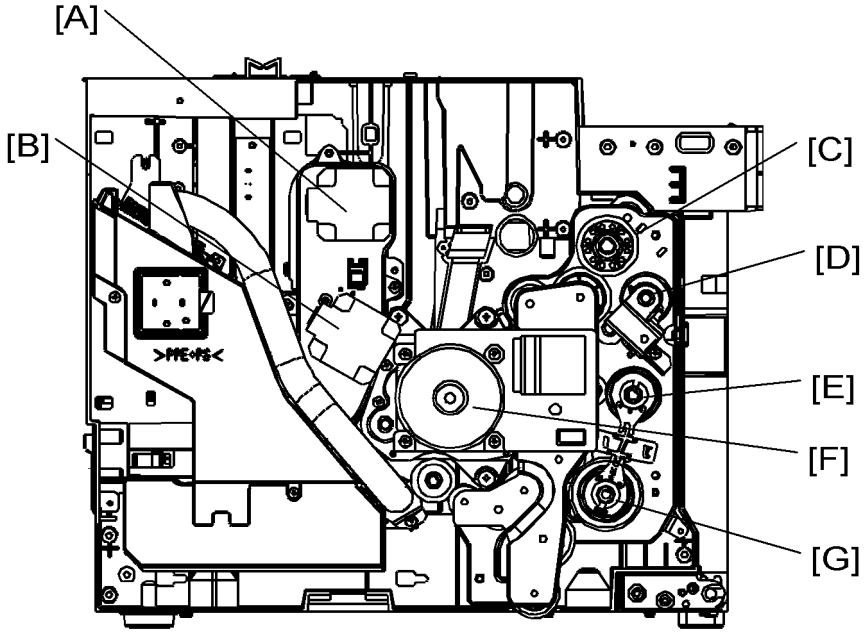
Paper Path



1. Paper tray (standard)
2. Paper tray (optional)

The diagram shows the paper paths when the optional paper feed unit is installed.

Drive Layout



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The main motor and the development motor drive these units and components: The arrow (➔) shows the drive path. All idle gears are not shown.

Main motor [F]

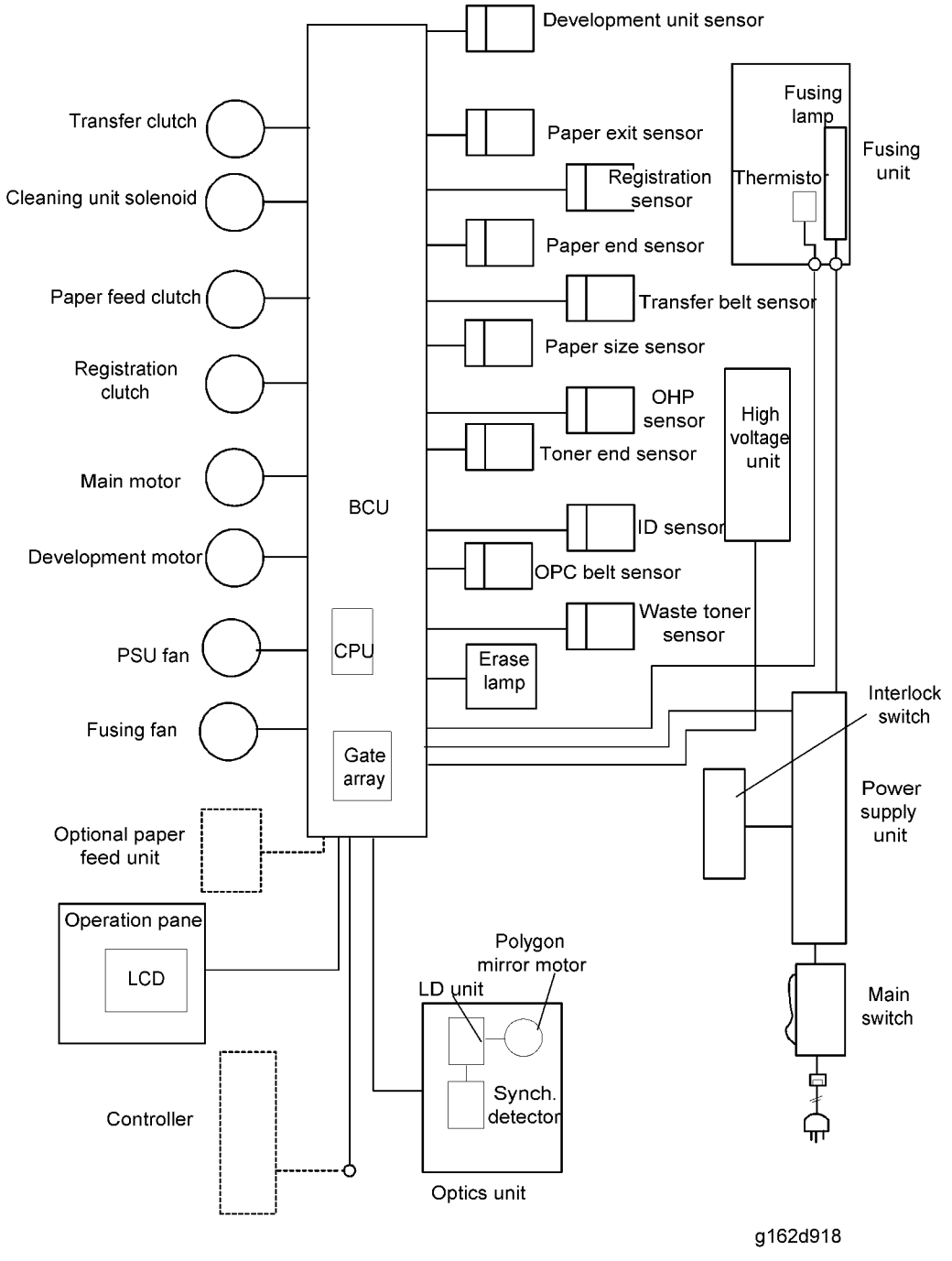
- OPC belt unit
- OPC belt charge unit
- OPC belt cleaning unit
- Transfer belt unit
- Transfer belt cleaning solenoid ➔ Transfer belt cleaning unit
- Paper transfer clutch [D] ➔ Paper transfer unit contact mechanism
- Waste-toner collection unit
- Paper Feed Clutch [G] ➔ Paper feed roller
- Registration clutch [E] ➔ Registration roller
- Fusing gear [C] ➔ Fusing unit ➔ Paper exit unit
- Optional paper tray unit

Development motors [A] [B]

- Development motor 1 [A] ➔ Development unit K and M

- Development motor 2 [B] ➔ Development unit Y and C

Board Structure



Controller

The controller is the only interface with the printer. The controller receives signals and data and sends them to the BCU. The controller supports the following:

- USB 2.0

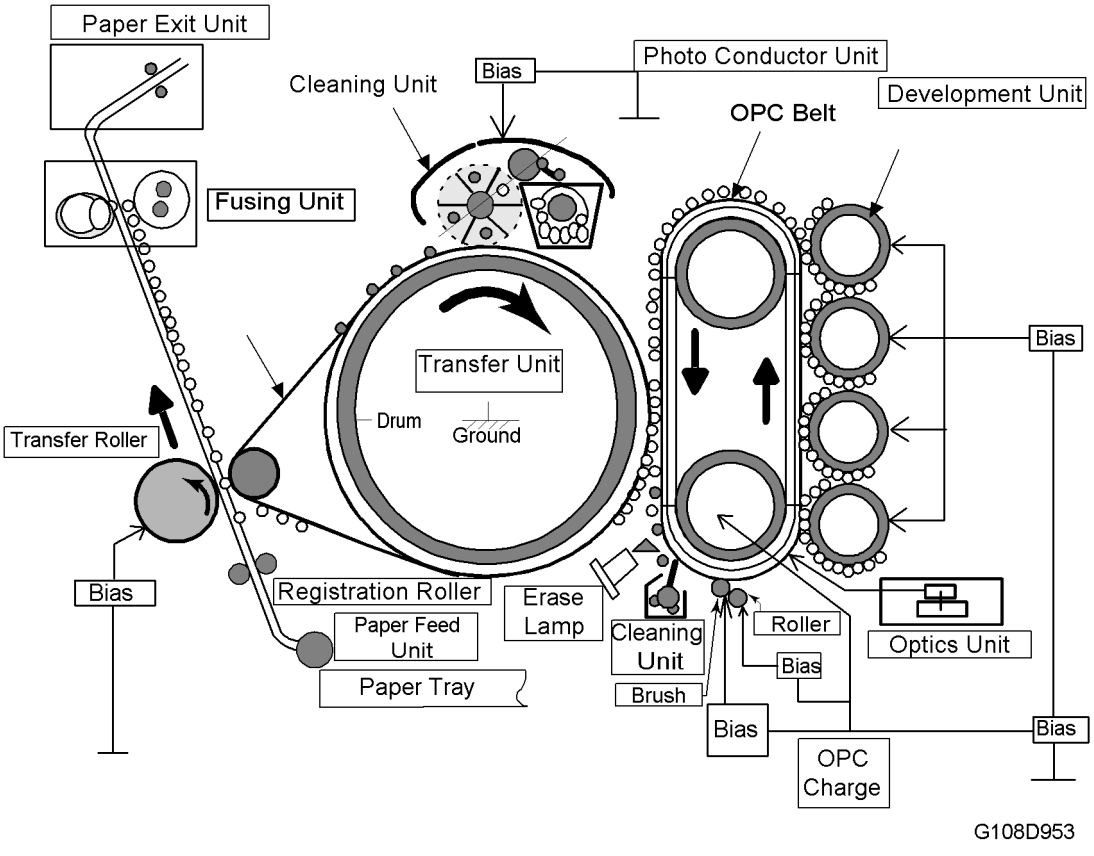
Base Engine Control Unit (BCU)

The BCU examines the power supply and the mechanical components. These include the optional paper feed unit. The BCU also operates as the interface with the operation panel.

Power Supply Unit and High Voltage Unit

The power supply unit changes alternating electrical current to direct current. The high voltage unit supplies high-voltage current.

Printing Procedure



1. OPC belt charge: The charge unit gives the OPC belt the negative charge.
2. Laser exposure: The optical housing unit emits the laser beam and makes latent images on the OPC belt.
3. Development: The development units move the toner to the OPC belt and makes toner images.
4. Belt transfer: The OPC belt moves toner images to the transfer belt.

   1) After belt transfer, the erase lamp quenches the OPC belt.

   2) After quenching, the OPC belt-cleaning blade removes remaining toner from the OPC belt. Then it moves removed toner to the waste-toner collection unit.

   3) The waste-toner collection unit moves waste toner to the waste toner bottle.
5. Paper feed: The paper feed roller sends the paper from the paper tray to the registration roller.
6. Paper registration: The registration roller keeps the paper and moves it to the paper transfer roller.
7. Paper transfer: The paper transfer roller moves toner images from the transfer belt to the paper.

   1) After paper transfer, the transfer-belt cleaning unit removes remaining toner from the transfer belt. Then it sends removed toner to the waste-toner collection unit.

   2) The waste-toner collection unit moves waste toner to the waste toner bottle.
8. Fusing: The fusing unit fuses toner images onto the paper.
9. Paper exit: The paper exit unit sends the paper to the paper tray.

Toner Mass Amount Control

Overview

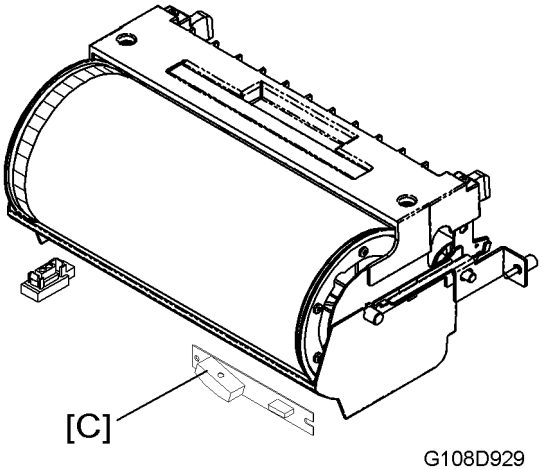
This machine automatically controls the toner mass quantity on the transfer belt. The control procedure has four phases:

1. ID sensor calibration
2. Test pattern processing
3. Reference equation processing
4. Development bias adjustment

Note

- The machine does not check the toner density on the paper.

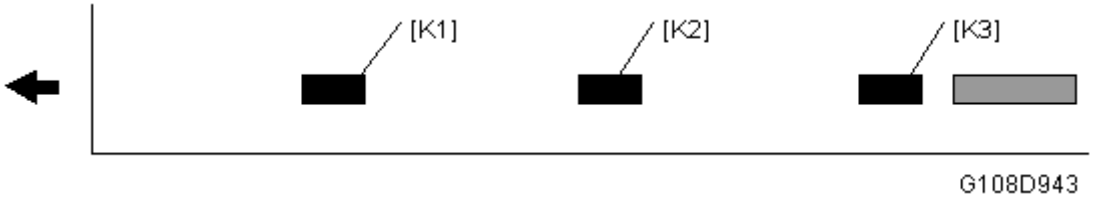
ID Sensor Calibration



1. The cyan development unit makes a rectangular image [B].

2. This cyan image on the transfer belt [A] reflects the light from the ID sensor [C].
3. The controller examines the signal level from this sensor, and calibrates the ID sensor.

Test Pattern Processing



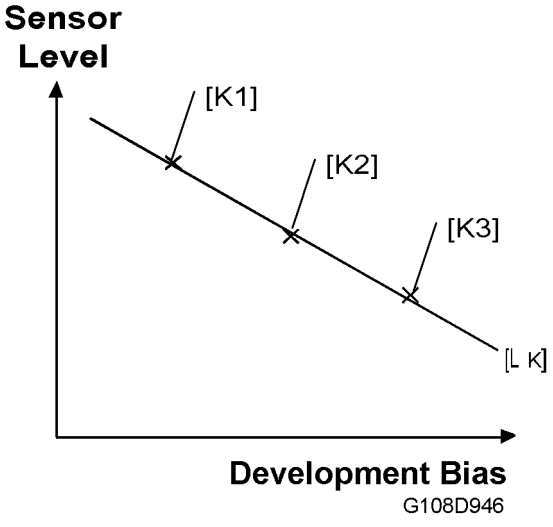
1. The black development unit changes the development bias to make three rectangular images. The first image [K1] is weaker than the second image [K2]. The second image is weaker than the third image [K3].

2. The cyan development unit changes the development bias to make three rectangular images. The first image [C1] is weaker than the second image [C2]. The second image is weaker than the third image [C3].

3. The magenta development unit changes the development bias to make three rectangular images. The first image [M1] is weaker than the second image [M2]. The second image is weaker than the third image [M3].

4. The yellow development unit changes the development bias to make three rectangular images. The first image [Y1] is weaker than the second image [Y2]. The second image is weaker than the third image [Y3].

Reference Equation Processing

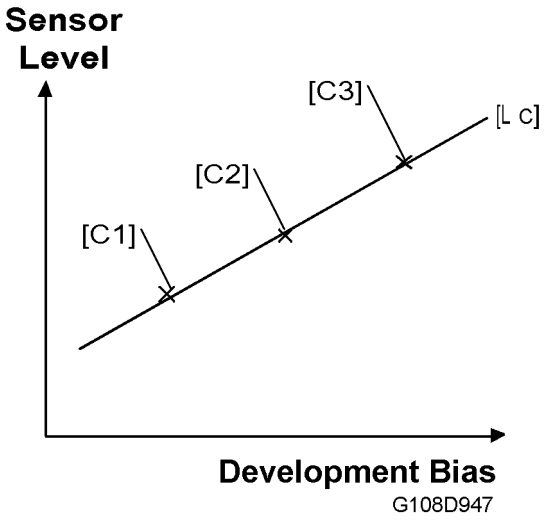


The controller makes these linear equations to adjust the development bias for each color:

1. The three black rectangular images [K1][K2][K3] (see 'Test Pattern Processing') reflect the light from the ID sensor.
2. The controller compares the signal levels from the ID sensor and finds a linear equation [LK].
3. The controller calculates the black development bias that is appropriate to realize the target ID sensor level.

Note

- The sensor level decreases as the black-image density increases.



4. The controller finds the cyan development bias, the magenta development bias, and the yellow development bias.

Note

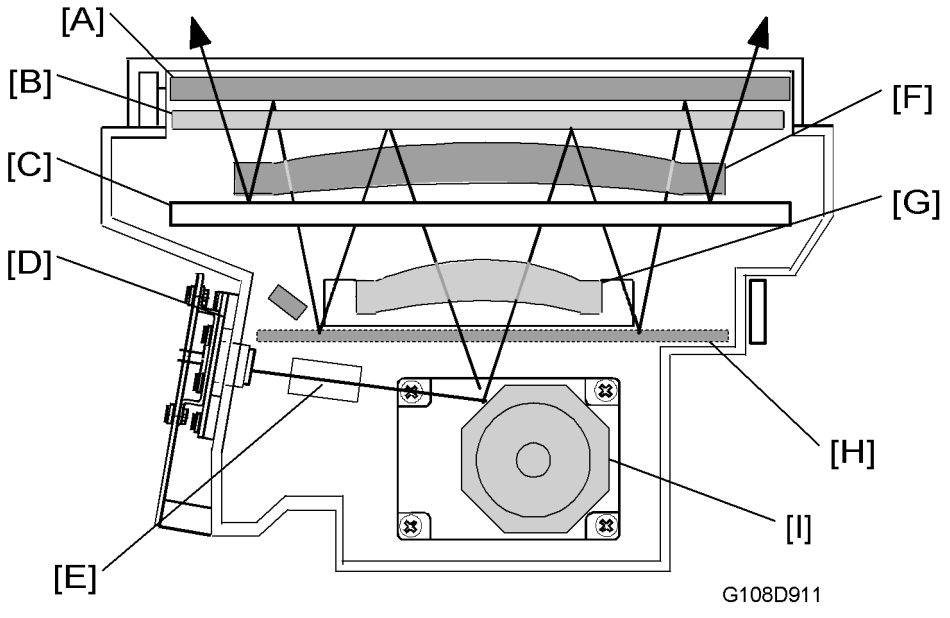
- The diagram shows the linear equation of cyan [LC]. The sensor level increases as the cyan-image density increases.

Development Bias Adjustment

Based on the examined equations this machine adjusts the development bias of each development roller. If the machine does not make a linear equation, the default voltage goes to the development roller.

Optical Housing Unit

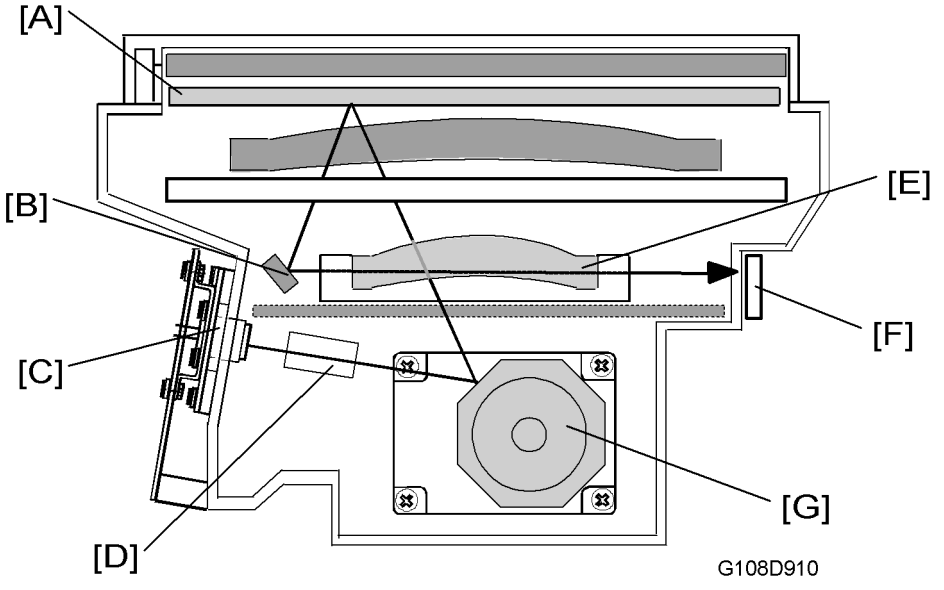
Optical Path



The laser beam moves as follows:

1. The laser diode unit [D] emits the laser beam.
2. The cylinder lens [E] condenses the laser beam.
3. The polygon mirror [I] reflects the laser beam.
4. The F-theta Lens [G] focuses the laser beam on the first mirror.
5. The first mirror [B] reflects the laser beam.
6. The second mirror [H] reflects the laser beam.
7. The barrel toroidal lens [F] focuses the laser beam on the third mirror.
8. The third mirror [A] reflects the laser beam.
9. The fourth mirror [C] reflects the laser beam.

Laser Synchronization



The synchronization detector [F] is on the right side of the optics unit. When emitted from the LD unit [C], the laser travels as follows: cylinder lens [D] ➔ polygon mirror [G] ➔ F-theta lens [E] ➔ first mirror [A] ➔ synchronization mirror [B] ➔ synchronization detector [F].

Specifications

The table lists some specifications of the optical housing unit.

Rated output of laser diode: 5 mW

Laser beam wavelength: Approx. 785 nm

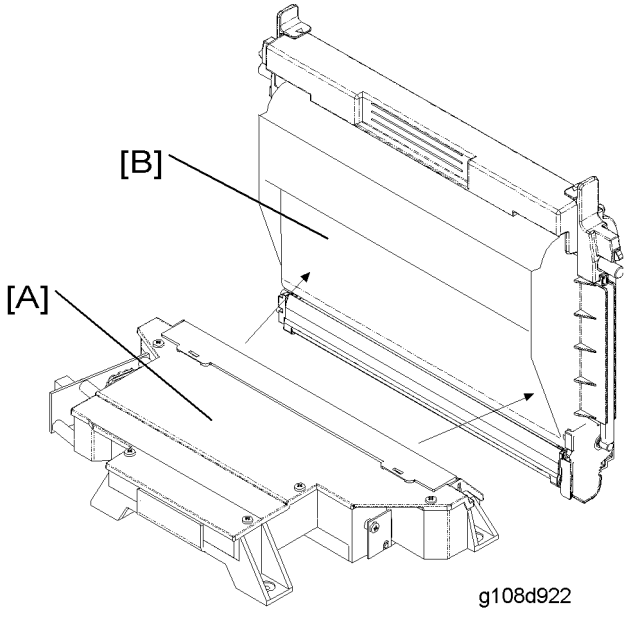
Scanning resolution: 600 dpi

Scanning width: 314 mm

Number of rotations of polygon mirror (per minute): 35,904 rpm

Polygon mirror faces: 8

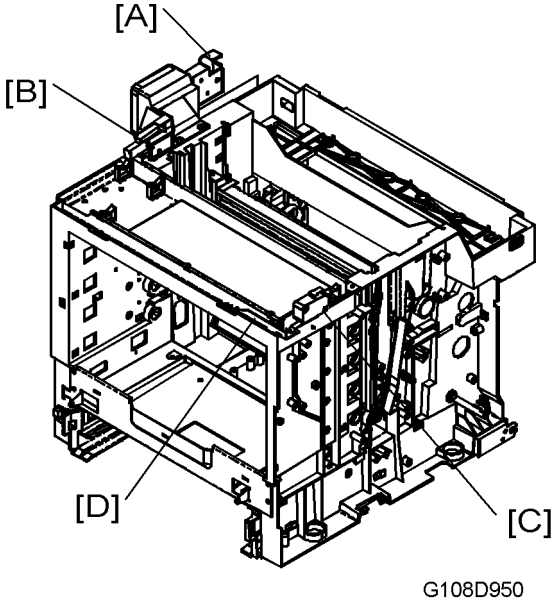
Laser Exposure



g108d922

The optical housing unit [A] emits the laser beam and writes latent images on the OPC belt [B].

Safety Switch



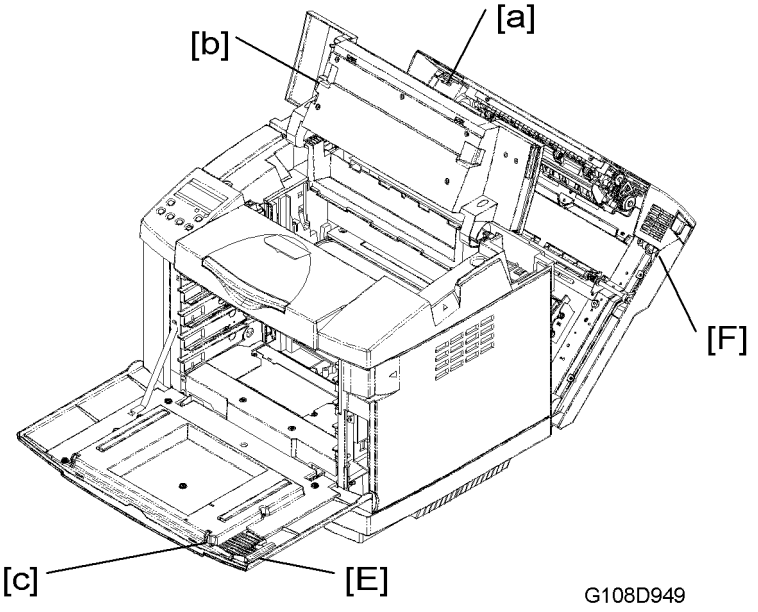
G108D950

The printer has three safety switches [A][B][C]. They all go on when these covers are closed:

[A]: Rear cover

[B]: Top cover

[C]: Front cover



These covers have a hook or a protruding part that is attached to a safety switch:

- Rear cover–in the front left corner [a]
- Top cover–on the bottom side near the left end [b]
- Front cover–at the top end near the right end [c]

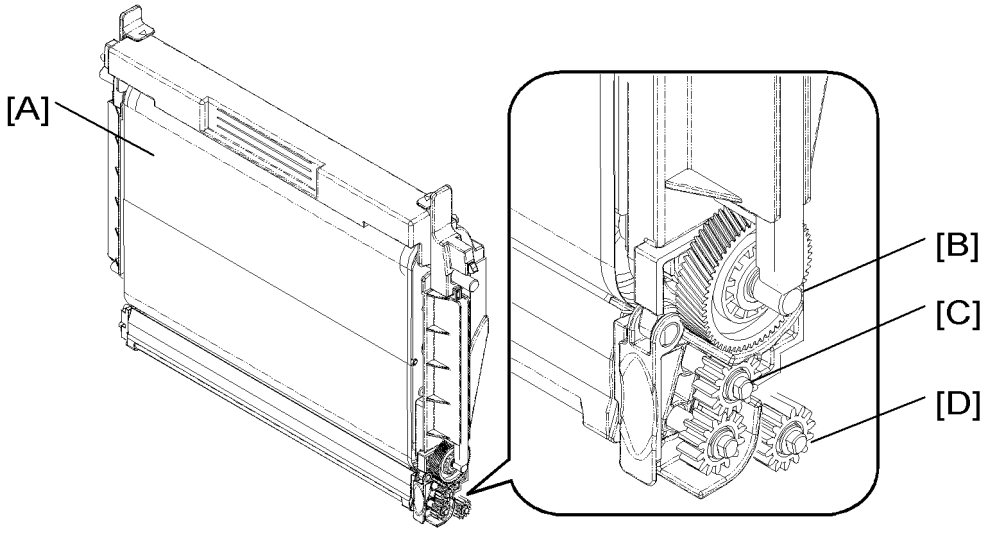
The lever on the front cover [E] is attached to the hook [c]. When you pull the lever (the front cover stays closed), the hook releases one more lever [D] on the machine front. The safety switch [C] goes off. In other words, the safety switch [C] goes off before you open the front cover. On the other hand, the lever on the rear cover [F] is not attached to a safety switch. The printer can operate even when you pull the lever (if the rear cover stays closed).

Note

- The top cover does not have such a lever.

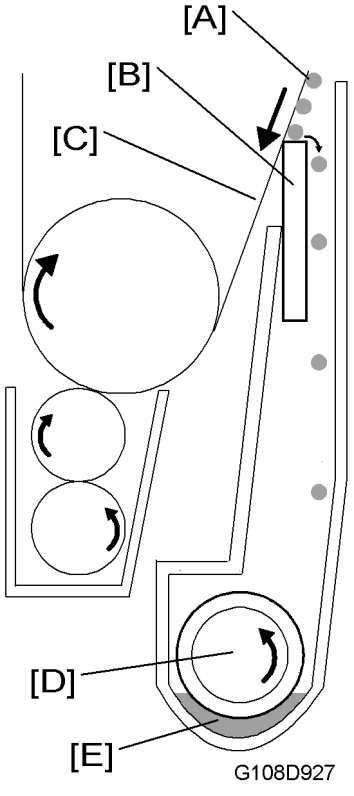
OPC Belt

Drive



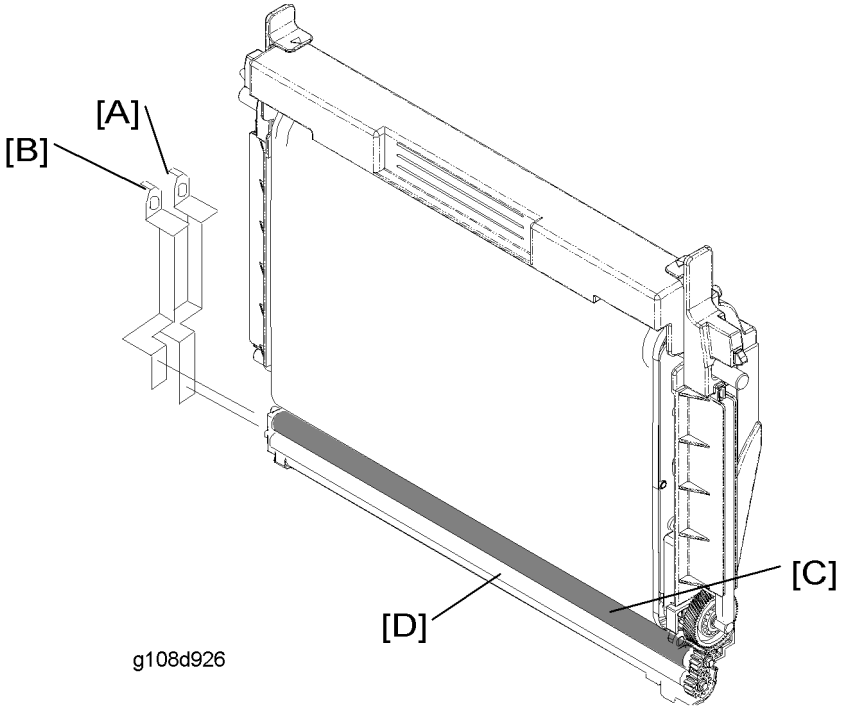
The main motor drives three different gears on the photoconductor unit [A] via three different drive paths. Two different idle gears send the drive power to the OPC belt drive gear [B] and the charge roller gear [C]. The waste-toner collection unit sends the drive power to the waste toner transport gear [D] (see 'Transfer Belt – Waste Toner Collection Unit'). The transfer belt sensor checks the drive speed (☛ 'Transfer Belt → Transfer Belt Sensor').

OPC Belt Cleaning



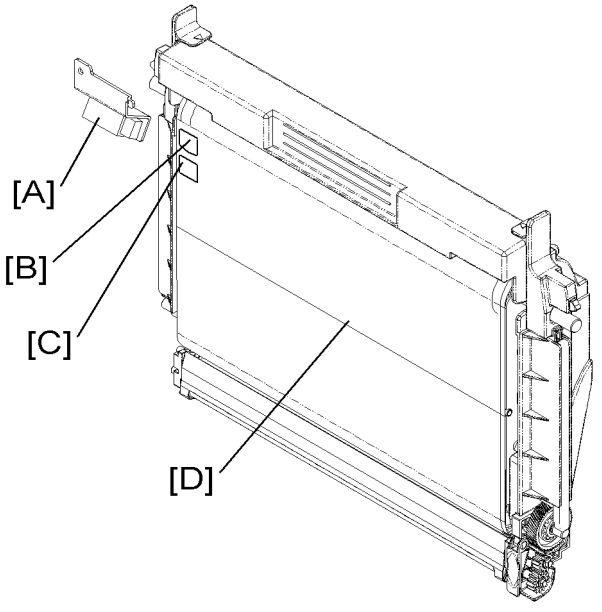
The OPC-belt cleaning blade [B] is near the bottom of the OPC belt [C]. The OPC-belt cleaning blade removes remaining toner [A] from the OPC belt. Removed toner (waste toner) goes into the waste toner duct [E]. The waste toner feeder [D] moves waste toner to the right end of the waste toner duct. At this time waste toner goes into the waste-toner collection unit.

Charge Roller and Cleaning Roller



The charge roller [C] gives negative charge to the OPC belt. The cleaning roller [D] cleans the charge roller. The high voltage unit (HVU) gives electrical power to the charge roller and the cleaning roller. The left end of the charge roller is attached to BRV [B] on the HVU. The left end of the cleaning roller is attached to CLV [A] on the HVU.

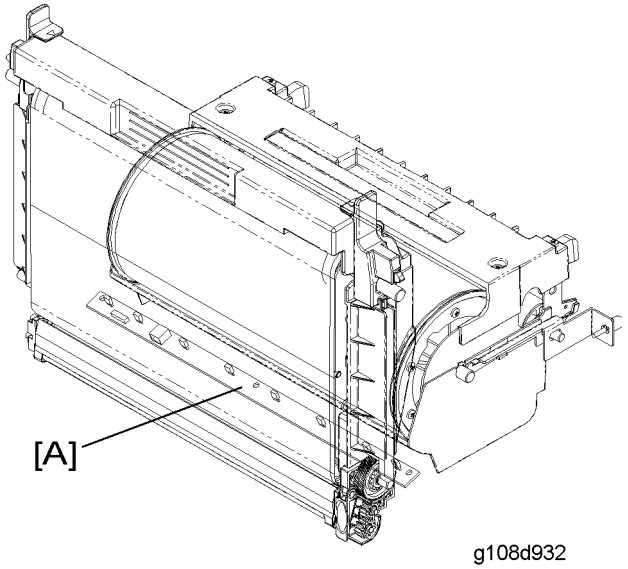
OPC Belt Sensor



G108D925

The OPC belt sensor [A] is above the top left corner of the OPC belt. The OPC belt sensor is a reflective photosensor and finds the markers [B] [C] on the left end of the OPC belt. The controller uses the signals from the OPC belt sensor to calculate the position of the horizontal joint line [D] on the OPC belt. The printer does not use the area around this line to make latent and toner images.

Quenching



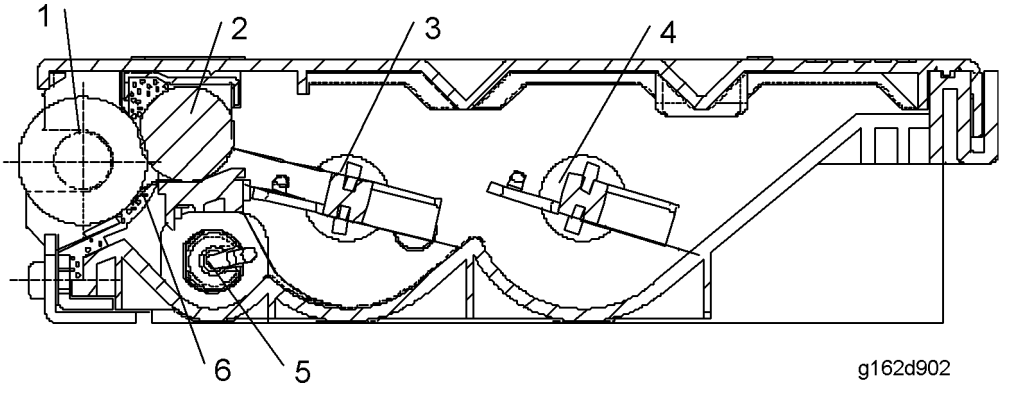
g108d932

The erase lamp [A] is below the contact point of the OPC belt and the transfer belt. The erase lamp quenches the electrical charge on the OPC belt.

The cable on the erase lamp connects with MCN8 on the BCU.

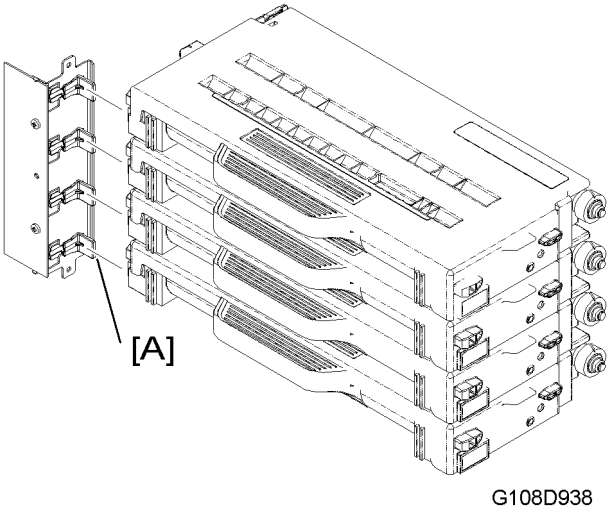
Development Unit

Overview



1. Development roller	4. Toner agitator 1
2. Toner supply roller	5. Toner return duct
3. Toner agitator 2	6. Doctor blade

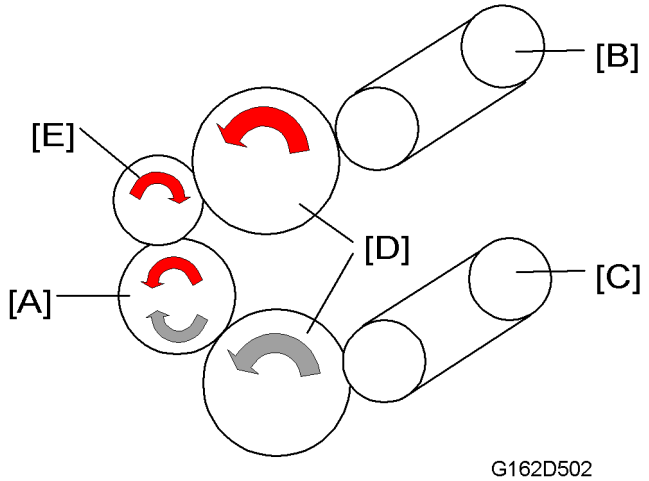
Development Unit Sensor



There are four feelers [A] on the front left corner of the printer. The left end of each feeler operates as an interrupter. Each interrupter interrupts the development unit sensor. When you set a development unit in the printer, the plate on the front left corner of the development unit pushes the feeler. The left end of the feeler (interrupter) moves out of the development unit sensor.

Drive

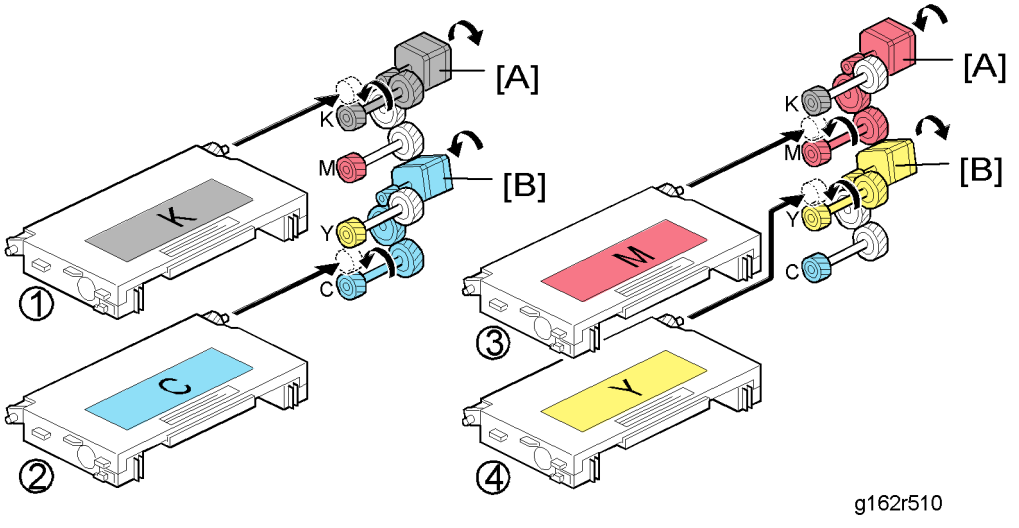
One-way Clutch and Gear



G162D502

There are two development motors in this printer. Each development motor [A] drives two development units [B] [C] via a one-way clutch [D] and gear [E]. Because of the gear [E], the development motor can drive both development units in the same direction, whether the motor rotates forward or backward.

Drive Order

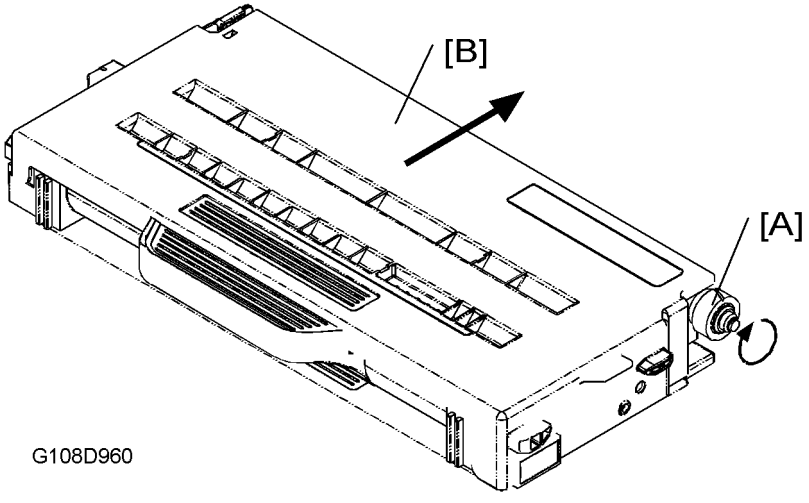


The machine drives each development unit as follows:

1. The development motor 1 [A] rotates forward and drives the development unit K.
2. The development motor 2 [B] rotates backward and drives the development unit C.
3. The development motor 1 [A] rotates backward and drives the development unit M.
4. The development motor 2 [B] rotates forward and drives the development unit Y.

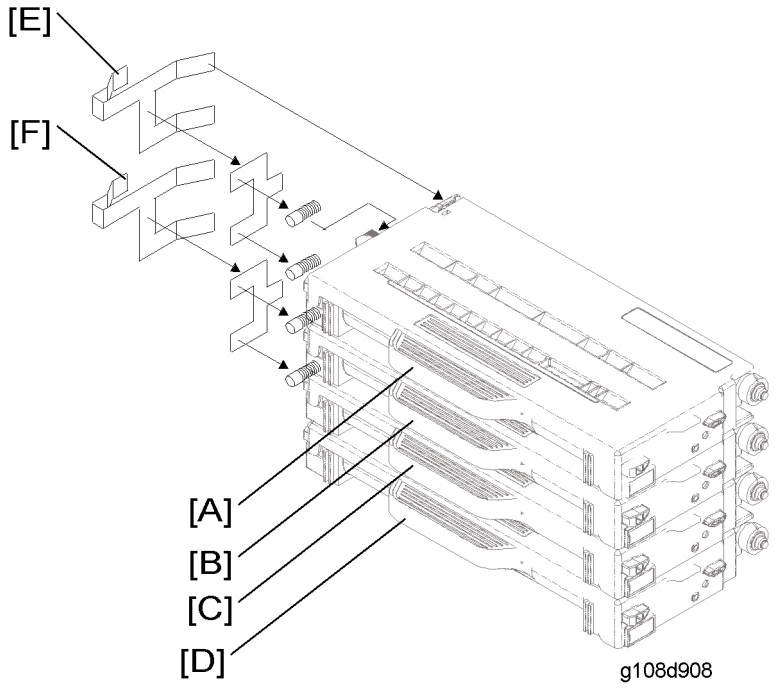
Development Unit Contact Mechanism

Contact Mechanism



There are two development motors in this printer. Each development motor controls two development units (one controls K and M, and the other controls Y and C). When a development motor turns on, a gear [A] under the development unit moves the development unit [B] into contact with the OPC belt. When the development motor turns off, two springs (one at the front and one at the rear) detach the development unit from the OPC belt.

Development Bias



The high voltage unit (HVU) gives development bias to the four development units. The development unit K [A] and the development unit M [B] are attached to DBVKY [E] on the HVU. The development unit Y [C] and the development unit C [D] are attached to DBVMC [F] on the HVU.

Toner End Sensor

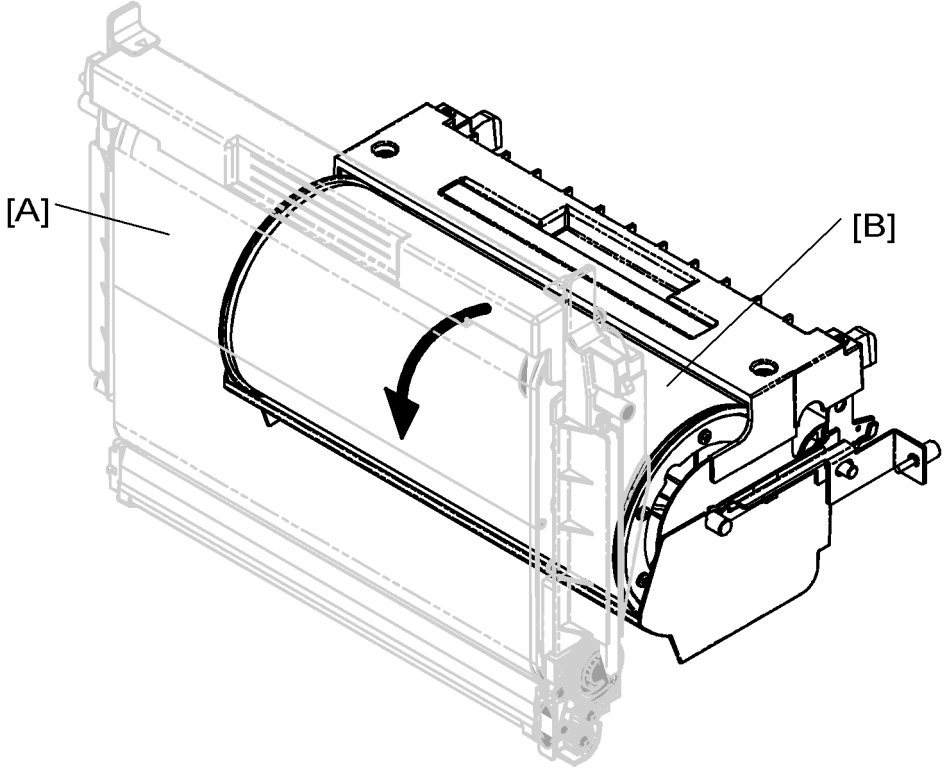
"Replace Toner x" shows when the toner is almost empty. "x" is the name of the color, such as cyan and magenta. The development unit can make approximately 250 images after this message shows. The machine stops printing if any one of the development units (K, M, Y or C) becomes empty during the print job.

Note

- The number (250 images) is calculated under these conditions:
  - A4/LT size
  - Two pages per job
  - 50% color ratio
  - 5% coverage.

Transfer Belt

Drive

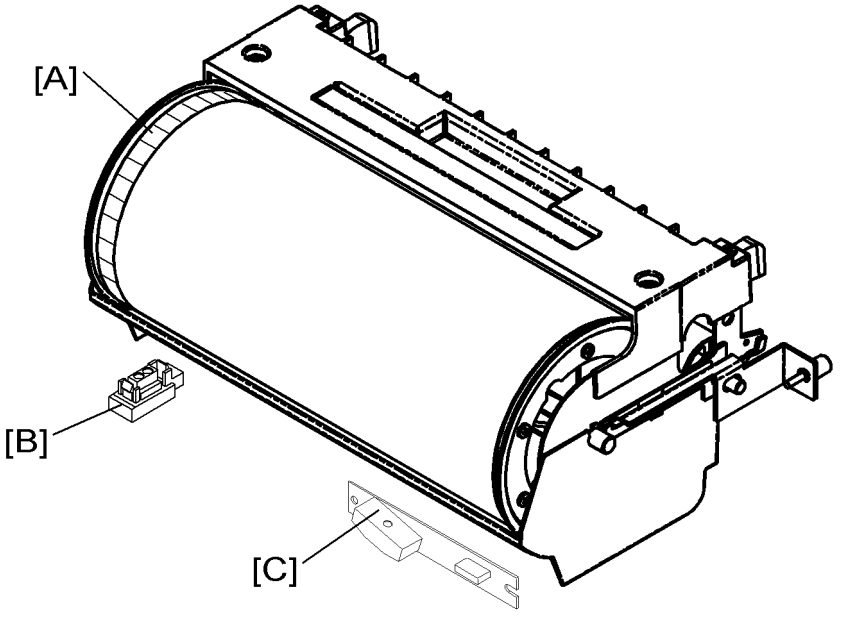


G108D928

The OPC belt [A] and the transfer belt [B] are in contact with each other. The transfer belt turns with the OPC belt when the main motor drives the OPC belt.

Transfer Belt Sensor and ID Sensor

Transfer Belt Sensor



G108D929a

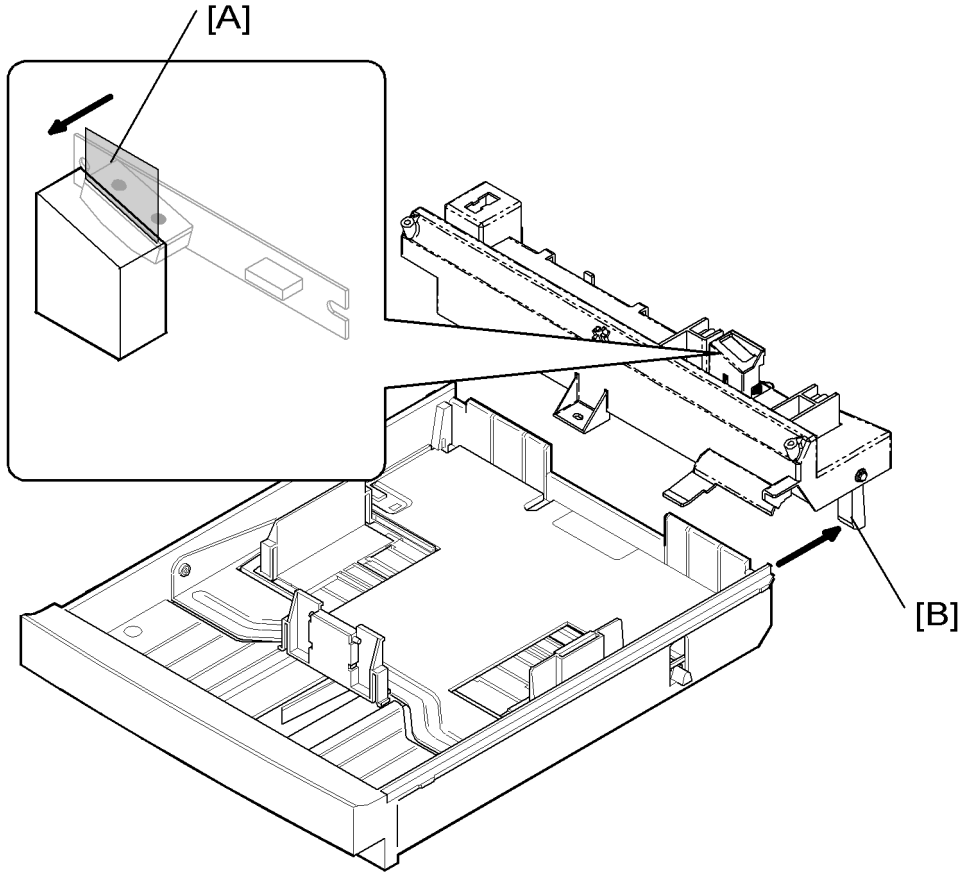
The printer has a reflective photosensor–the transfer belt sensor [B]–below the left side of the transfer belt. The transfer belt sensor emits light to the band [A] on the left end of the transfer belt, and accepts its reflection.

Since the transfer belt is driven with the OPC belt, the transfer belt and the OPC belt have the same rotation speed. If the transfer belt sensor fails to detect the normal rotation speed of the transfer belt, the message "Reset PCU Correctly" is shown.

ID Sensor

The machine has a reflective photosensor-the ID sensor [C]-below the right side of the transfer belt. The ID sensor emits light to the transfer belt and accepts its reflection. The controller examines the signals from the ID sensor to adjust the image density.

ID Sensor Cleaning



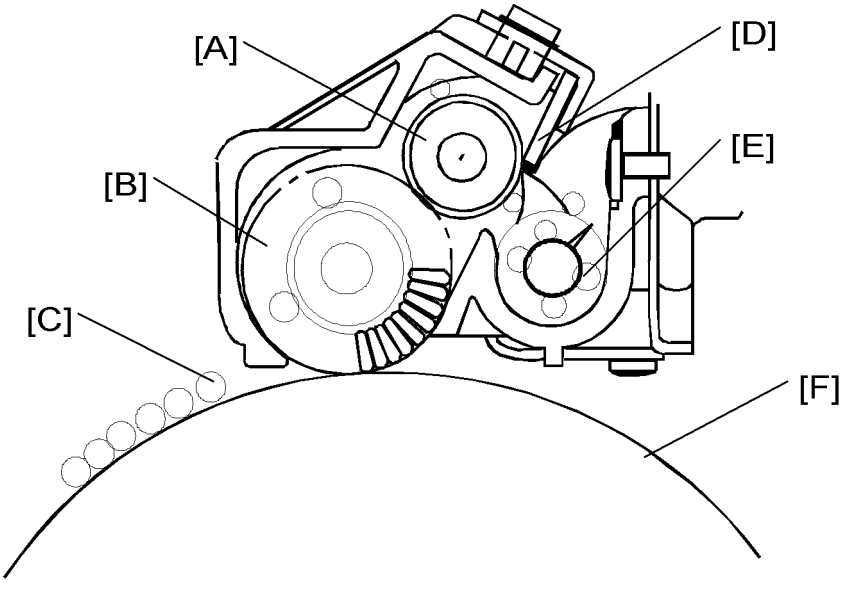
G108D939

The ID sensor is covered with the protection Mylar. This protects the ID sensor from unwanted material such as toner. On the protection Mylar is one more Mylar, the cleaning Mylar [A]. The cleaning Mylar is mechanically attached to the lever [B] above the right rail of the paper tray.

Each time you push the paper tray into the printer or pull it out of the printer, the cleaning Mylar cleans the surface of the protection Mylar.

Transfer Belt Cleaning

Cleaning Mechanism



G108D912

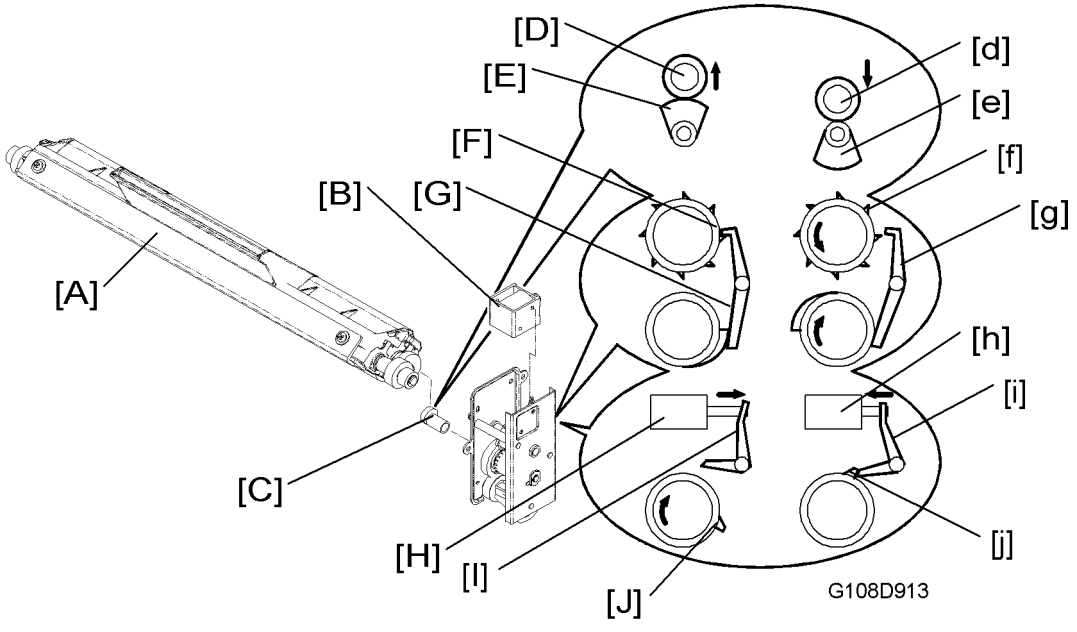
The transfer-belt cleaning unit is on top of the transfer belt [F]. The transfer-belt cleaning unit has these components:

1. The cleaning brush [B] removes the remaining toner [C] from the transfer belt.
2. The cleaning roller [A] removes the toner from the cleaning brush. The high voltage unit (HVU) gives the cleaning bias to the cleaning roller. The left end of the cleaning roller is attached to FCBV on the HVU.
3. The cleaning blade [D] removes the toner from the cleaning roller.
4. The toner removed by the cleaning blade goes into the waste toner path. The waste toner feeder [E] moves the toner to the right end of the waste toner path. At this time, the toner goes into the waste-toner collection unit.

Drive

The main motor drives the right side gear of the cleaning roller via idle gears. The left side gear of the cleaning roller sends this drive power to the cleaning brush and the waste toner feeder.

Contact-Release Mechanism



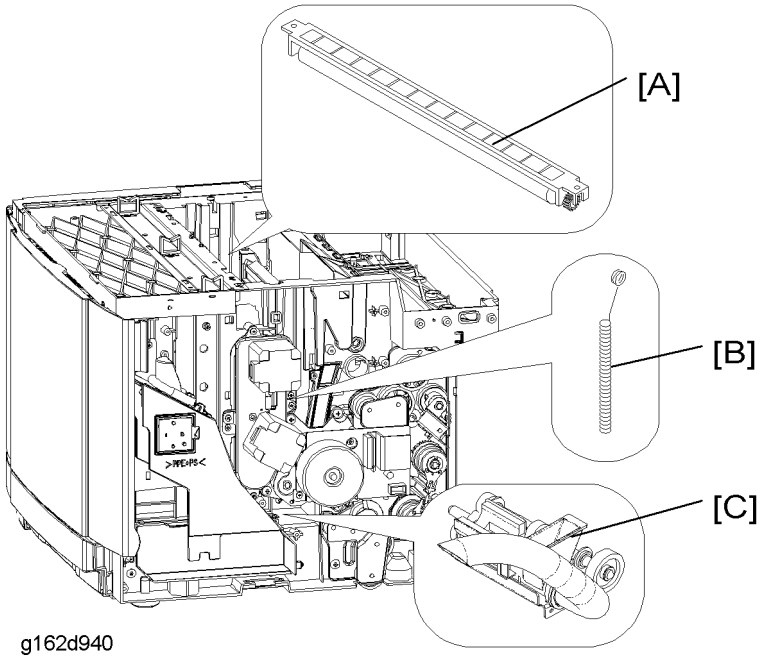
The transfer-belt cleaning unit [A] stays away from the transfer belt when not cleaning the transfer belt. The transfer-belt cleaning unit stays in contact with the transfer belt when it cleans it. These components do this procedure:

- The cleaning unit solenoid [B] moves the front lever [E].
- The front lever engages the front latch of the cam shaft [J].
- The rear lever engages the rear latch of the cam shaft [F].
- The cam lifts the cleaning unit interface [D].

When the cleaning unit solenoid is off [H], the front lever [I] releases the front latch [J] on the cam shaft. On the other hand, the rear lever [G] engages the rear latch [F] on the cam shaft. In this position, the cam stays in its upper position [E] and pushes up the cleaning unit interface [D]. As a result, the cleaning unit stays away from the transfer belt.

When the cleaning unit solenoid is on [h], the front lever [i] engages the front latch [j] on the cam shaft. On the other hand, the rear lever [g] releases the rear latch [f] on the cam shaft. In this position, the cam stays in its lower position [e] and does not push up the cleaning unit interface [d]. As a result, the cleaning unit stays in contact with the transfer belt.

Waste Toner Agitator



g162d940

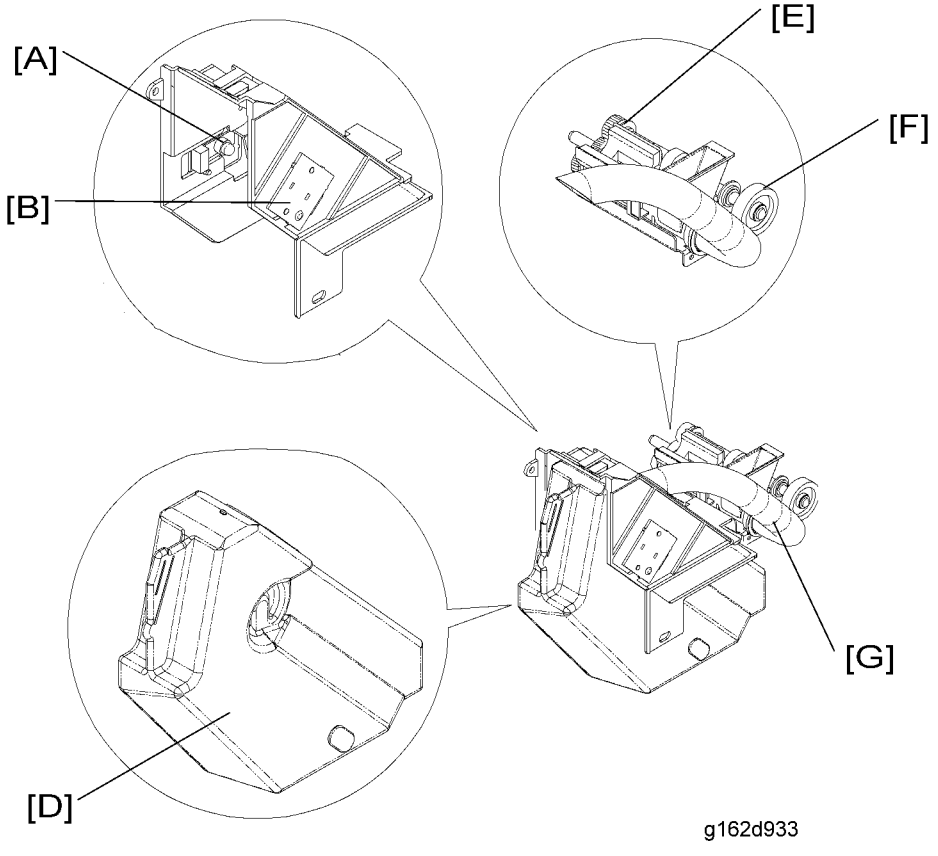
The printer has a vertical waste toner path on its right side. This path connects these two components:

- The waste toner path of the transfer-belt cleaning unit [A]
- The waste toner collection unit [C] (see "Waste Toner Collection Unit")

In this vertical waste toner path is a spring-like component, the waste toner agitator [B]. At the top end of the waste toner agitator is a loop, which hangs from the drive-gear shaft of the transfer-belt cleaning unit. The drive-gear shaft has a cam-like structure. The waste toner agitator moves along the vertical waste toner path when the gear-shaft turns.

The waste toner agitator agitates the waste toner in the vertical waste toner path. This removes waste toner from the toner path.

Waste-Toner Collection Unit



Overview

The waste-toner collection unit is below the right end of the transfer belt unit. The waste toner feeders in the OPC belt unit (see "OPC Belt – OPC Belt Cleaning") and in the transfer-belt cleaning unit move waste toner to the waste-toner collection unit. The waste-toner collection unit moves waste toner to the waste toner bottle [D] through the waste toner path [G]. The waste toner path has a collection coil in it.

Drive

The main motor drives the gear [F] on the right end of the waste-toner collection unit via idle gears. The drive power is sent to the collection coil via the gears [E] on the left end of the unit.

Note

- The gear [F] on the right end also sends the drive power to the OPC-belt charge roller (see "OPC Belt – Drive").

Waste Toner Sensor

The waste-toner collection unit has a waste toner sensor. The waste toner sensor consists of a light emitter on the left side [A] and a light receptor on the right side [B]. There is a shutter in the waste toner holder unit. The shutter interrupts light when the waste toner bottle is not set. It also prevents waste toner from falling out of the pipe into the machine when the bottle is taken out.

When you set the waste toner bottle in the waste toner collection unit, the waste toner bottle pushes the shutter. The shutter moves out of the light path. The light emitted from the light emitter goes through the waste toner bottle. At this time, the light receptor accepts the light. When the waste toner bottle is nearly full, waste toner interrupts the light. At this time, the receptor does not accept the light.

Shutter Mechanism

g162d501

The waste toner holder unit has a shutter. The shutter is pulled by a spring. As a result, the shutter is closed if the waste toner bottle is not installed. This shutter prevents waste toner from falling down inside the machine when the waste toner bottle is removed.

[A]: The shutter is closed and the waste toner bottle is not installed.

[B]: The shutter is open and the waster toner bottle is installed.

Messages

This machine uses only one sensor (the waste toner sensor) to detect the waste toner bottle and the quantity of waste toner. But the machine can show different messages when this sensor is interrupted. The table lists the messages, conditions, and possible causes.

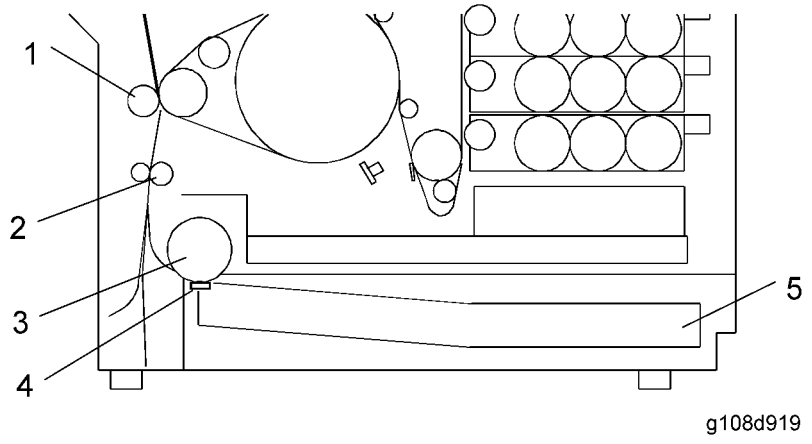
Message	Condition	Possible Cause
Waste Toner is Almost Full	The waste toner sensor is interrupted after warming up.	• The waste toner bottle becomes nearly full during printing.
Check Waste Toner Bottle	The waste toner sensor is already interrupted when the machine starts to warm up.	• The waste toner bottle is not in place. • The waste toner bottle is nearly full when the machine starts to warm up.

Near-Full and Full

When the waste toner bottle becomes almost full, the machine shows the message "Waste Toner is Almost Full". The machine can make 250 developments after this message shows. The machine will not print until the waste toner bottle is replaced after it has made 250 developments.

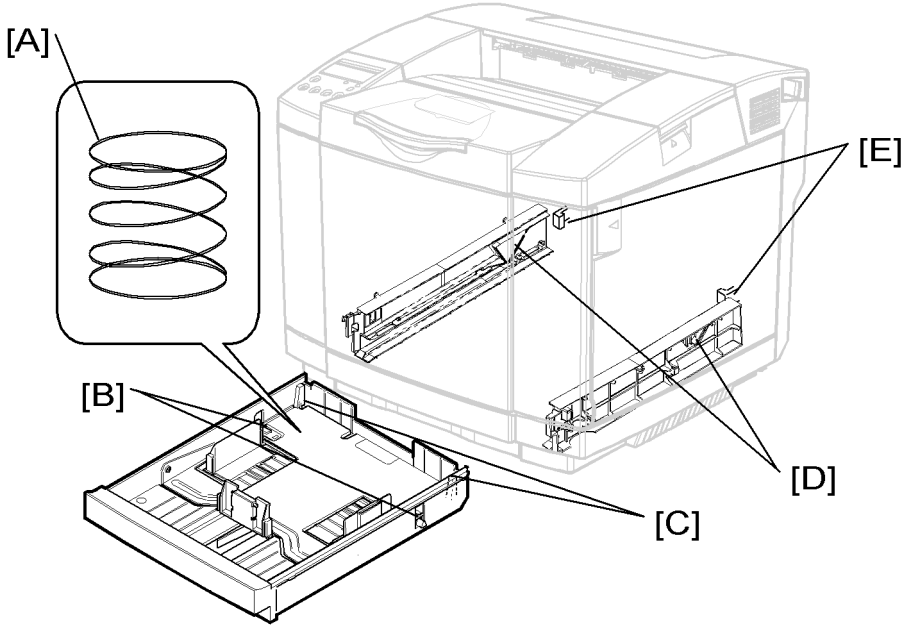
Paper Tray Unit

Overview



1. Transfer Roller
2. Registration Roller
3. Paper Feed Roller
4. Friction Pad
5. Paper tray

Paper Lift



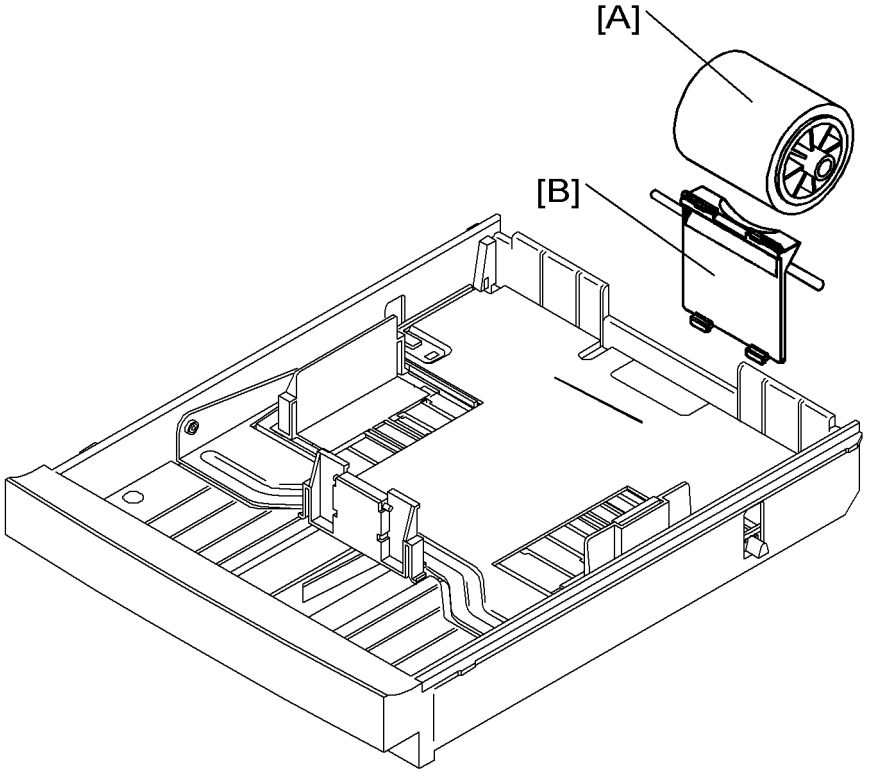
G108D948

The paper tray has two springs [A] below the bottom plate. It also has two levers [B] on the left and right ends of the bottom plate. There are two hooks [C] at the rear end. When the paper tray is out of the printer, the two hooks hold the bottom plate. The bottom plate is in its lowermost position.

When you push the paper tray into the printer, each protruding part [E] pushes the hook [C]. Each hook releases the bottom plate. The bottom plate is lifted by the springs.

When you pull the paper tray out of the printer, the triangular rails [D] on both sides push the levers [B]. The bottom plate is gradually pushed down when you pull the paper tray. At this time, the bottom plate is at its lowermost position. The hooks [C] hold the bottom plate.

Paper Feed



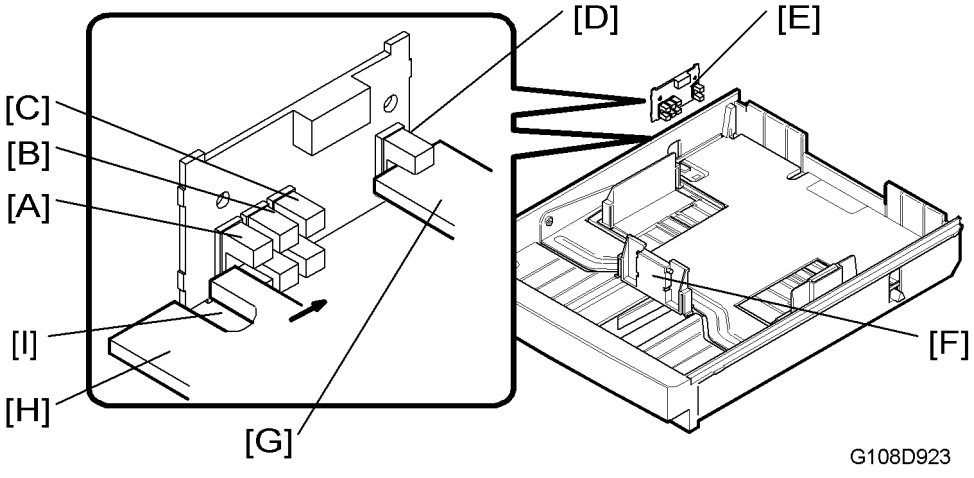
Paper Feed Roller

The paper feed roller [A] picks up the topmost sheet of paper and transports it to the registration roller. The friction pad [B] prevents the sheet below the topmost from being fed.

Drive

The main motor drives the paper feed clutch . The paper feed clutch sends the drive power to the paper feed roller when it is on.

Paper Size and Paper Tray Detection



Mechanism

There is a printed circuit board [E] at the rear end of the left paper-tray rail. There are four photosensors on this PCB. The three photosensors on the front side [A] [B] [C] are the paper size sensors. The other is the paper tray sensor [D]. The paper size sensors detect the paper size in the paper tray. The paper tray sensor detects the paper tray.

The interrupter [H] that is mechanically attached to the front plate [F] can interrupt the paper size sensors. This interrupter has an opening [I]. The interrupter can interrupt two sensors or less.

The paper tray has one more interrupter [G] on its rear left corner. This interrupter interrupts the paper tray sensor. If the paper tray is correctly set in the printer, the paper tray sensor is always interrupted.

Paper Size

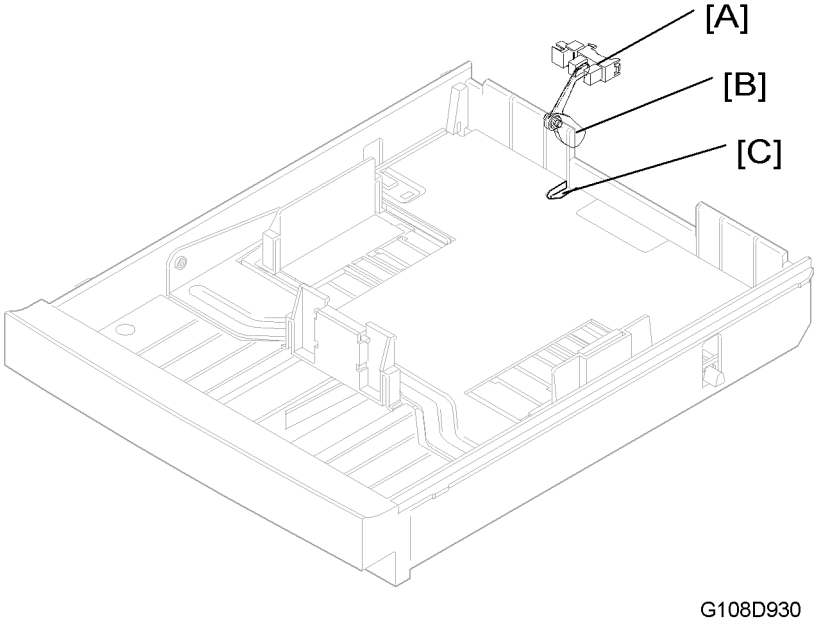
The table lists the sensor patterns and detected paper sizes.

Paper Size Sensor			Paper Tray Sensor	Paper Size
[A]	[B]	[C]	[D]	
Not interrupted	Not interrupted	Not interrupted	Interrupted	DL/#10
Interrupted	Not interrupted	Not interrupted	Interrupted	B5
Not interrupted	Interrupted	Not interrupted	Interrupted	Executive
Interrupted	Not interrupted	Interrupted	Interrupted	Letter

Paper Size Sensor			Paper Tray Sensor	Paper Size
Interrupted	Interrupted	Not interrupted	Interrupted	A4
Not interrupted	Not interrupted	Interrupted	Interrupted	Legal*

* Optional legal-size tray

Paper End Sensor

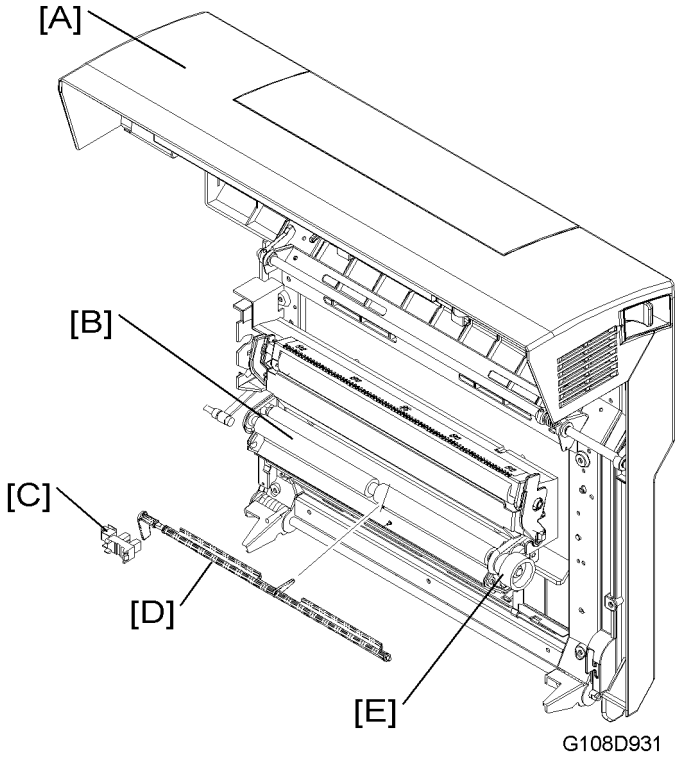


G108D930

The paper end sensor [A] is above the rear end of the paper tray. When the paper is in the tray, the paper pushes up the bottom end of the feeler [B]. The feeler does not interrupt the paper end sensor. When the paper is not in the tray, the bottom end of the feeler goes into the opening [C] of the paper-tray base. The feeler interrupts the paper end sensor.

Paper Registration and Paper Transfer

Paper Registration



Registration Roller

The registration roller [B] is inside the rear cover [A]. The paper feed roller moves the paper to the registration roller. When the paper reaches the registration roller, the controller stops the paper feed roller. The controller starts the feed roller and the registration roller when the transfer belt is ready for the paper transfer.

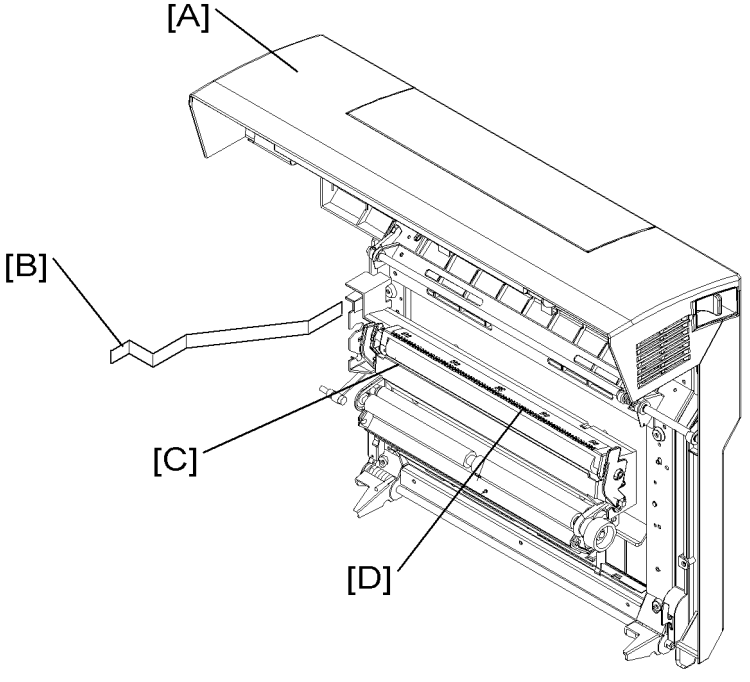
Drive

The main motor drives the registration clutch via idle rollers. The registration clutch sends the drive power to the registration roller when it is on. The registration clutch drives the registration roller gear [E].

Registration Sensor

There is a paper feeler [D] below the registration roller. The left end of the feeler works as an interrupter. The interrupter interrupts the registration sensor [C] on the rear left corner of the printer. When the paper reaches the registration roller, the paper pushes the paper feeler. The left end of the feeler (interrupter) moves out of the registration sensor.

Paper Transfer



Transfer Roller

The transfer roller [C] is inside the rear cover [A]. The transfer roller moves toner images from the transfer belt to the paper. When the paper goes between the transfer roller and the transfer belt, the transfer roller turns with the paper.

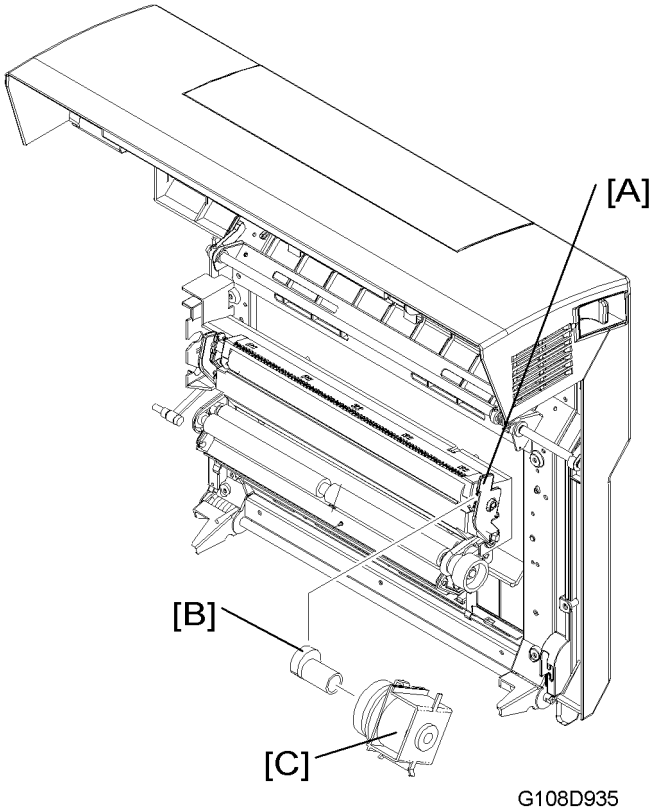
Paper Transfer Bias

The high voltage unit (HVU) gives electricity to the transfer roller. The transfer roller is positively charged. The left end of the transfer unit is attached to THV [B] on the HVU when you close the rear cover.

Discharge Plate

The transfer unit has a discharge plate [D] above the transfer roller. The discharge plate quenches paper charged during paper transfer. Quenching helps paper move away from the transfer roller.

Contact Release Mechanism

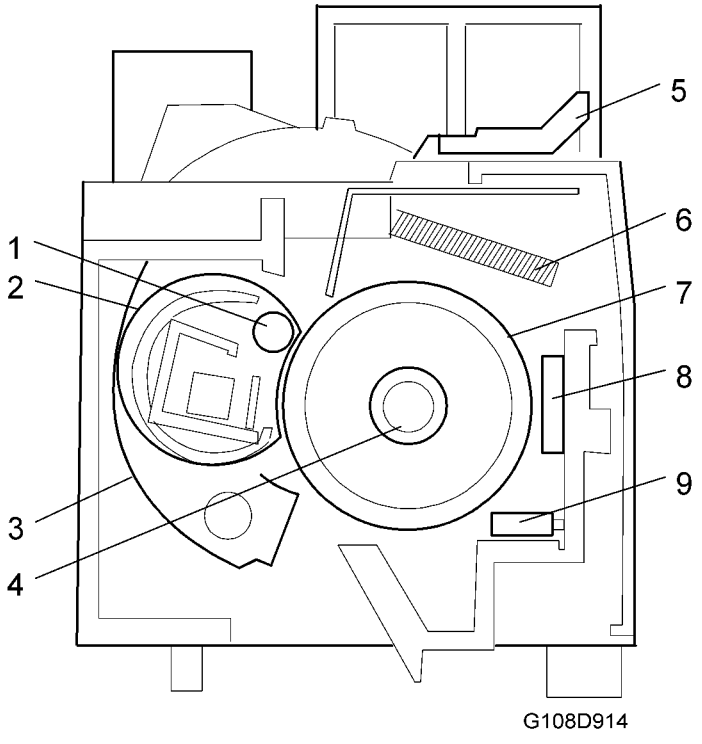


G108D935

The transfer roller stays away from the transfer belt when the printer does not print. When the printer prints, the main motor drives the transfer roller clutch [C]. Each time the clutch turns on or off, the gear on the clutch makes a half turn. Therefore, the cam [B] stops at the position where it pushes the transfer roller lever [A] to the rear or where it does not push the transfer roller lever at all. As a result, the transfer roller comes in contact with the paper (during paper transfer), or stays away from the transfer belt.

Fusing Unit

Overview



1. Pressure Roller	6. Tension Bolt
2. Pressure-Roller Sheet	7. Hot Roller
3. Tension Arm	8. Fusing Thermostat
4. Fusing Lamp	9. Fusing Thermistor
5. Tension Lever	

Drive

The main motor drives the fusing unit.

Pressure Unit

The fusing unit has a pressure roller. The pressure roller presses the pressure-roller sheet on to the hot roller. As the hot roller turns, the pressure-roller sheet turns. The paper goes between the pressure-roller sheet and the hot roller.

There are two tension arms on the right side and the left side of the fusing unit. These arms push the pressure roller to the hot roller. The tension arms are attached on the frame with two tension bolts and two springs. You can release these arms by pulling up the two tension levers to remove jammed paper from the fusing unit.

Fusing Process

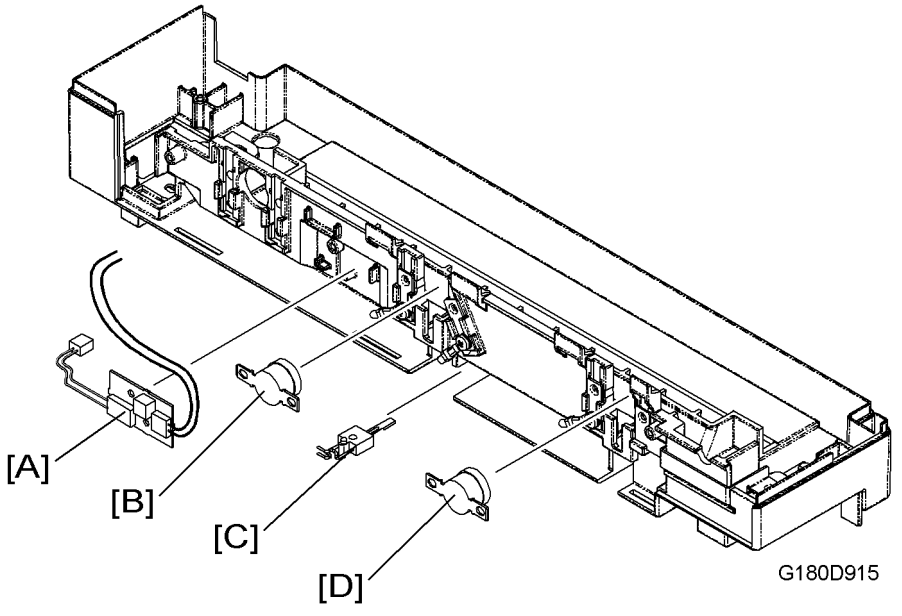
The hot roller and the pressure roller are approximately 150 °C (302 °F) during the fusing process. The pressure between these two rollers is approximately 300 N.

Temperature Control

⚠CAUTION

- Do not adjust or remove the thermistor [C], temperature control board [A], or thermostats [B] [D]. Normal operation is not guaranteed if you remove or adjust them.

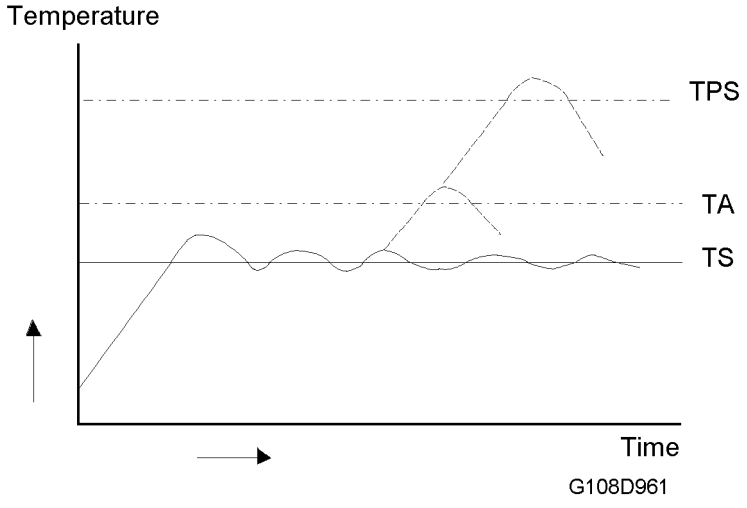
Main Components



The fusing unit has these components for temperature control:

- The fusing thermistor [C] and the temperature control board [A] sends the signal when the fusing temperature goes past the threshold. The fusing thermistor and the temperature control board are on the same electrical circuit.
- The fusing thermostats [B] [D] break the electric circuit when the fusing temperature goes past the threshold. The two fusing thermostats are on the same electrical circuit as the fusing lamp. The fusing lamp goes off if one of the two fusing thermostats breaks the electrical circuit.

Temperature

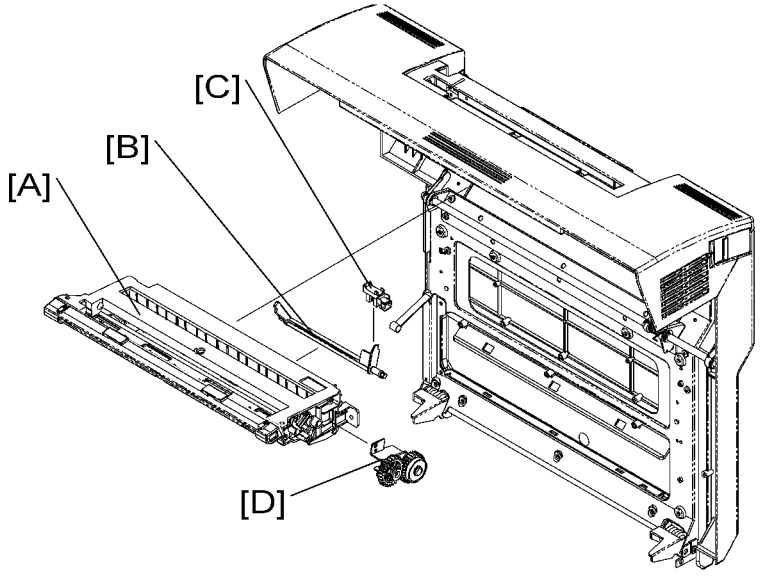


- TS (170 °C): The controller sets the fusing lamp on and off to keep the fusing temperature.
- TA (185 °C): The controller sets the relay (RY) off. The power supply to the fusing lamp is cut off. The printer will not print.
- TPS: The fusing thermostats break the electrical circuit to the fusing lamp. The printer will not print.

Energy Saver Mode

When the printer is in the energy saver mode, the fusing lamp is off.

Paper Exit Unit



Drive

The main motor drives the paper exit roller [A] via the fusing unit gears. When the rear door is closed, the topmost gear of the fusing unit and the rearmost gear [D] of the paper exit unit engage with each other. The paper exit roller turns when the fusing clutch sends the drive power to the fusing unit.

Paper Exit Sensor

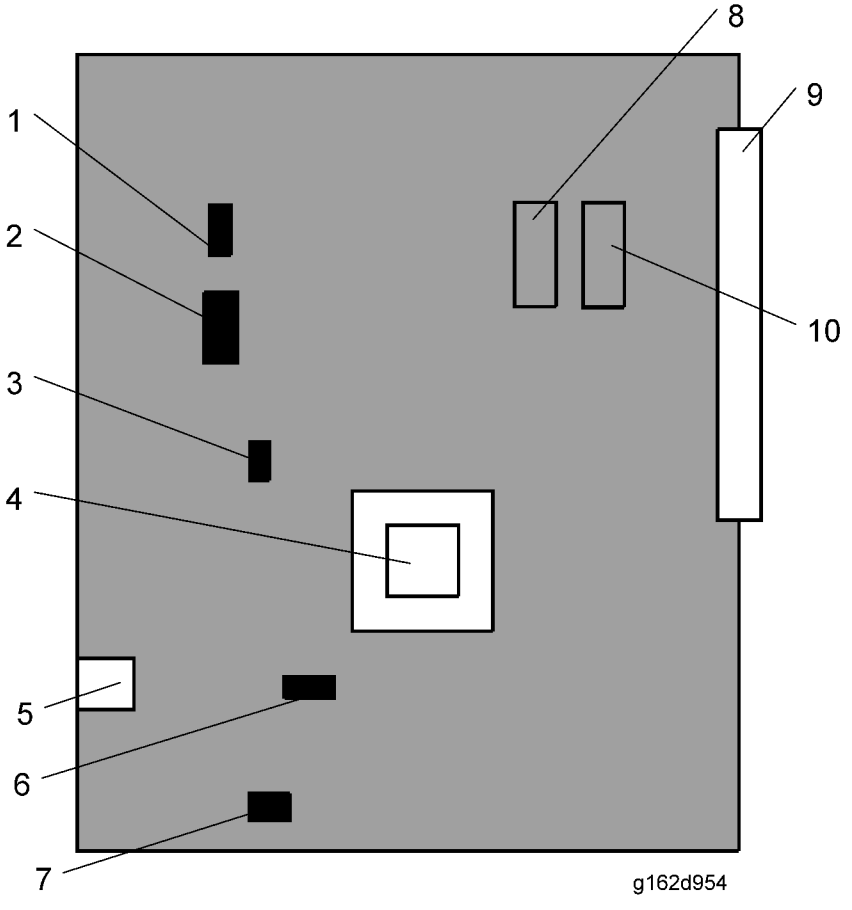
There is a paper feeler [B] at the rear end of the paper exit unit. The right end of the feeler works as an interrupter. When no paper is in the paper exit unit, the interrupter interrupts the paper exit sensor [C] on the right end of the paper exit unit. When the paper is in the paper exit unit, the paper pushes the paper feeler. The right end of the feeler (interrupter) moves out of the paper exit sensor.

Controller

Overview

CPU	ARM9 (170 MHz)
SDRAM x 2	Standard: 64 MB
SD card slots	None
NVRAM	Flash Memory instead of NVRAM
Printer language	GDI
Emulation	None
Hard disk	None
Network Interface	Standard: USB 1.1

Board Layout



1. Crystal	6. Crystal
2. CLOCK Buffer 1	7. Jumper Pin
3. CLOCK Buffer 2	8. Flash Memory
4. SOC (CPU)	9. Engine Interface
5. USB Interface	10. SDRAM x 2

7. Specifications

General Specifications

Printing Speed:	8 ppm in Full Color mode (A4/LT SEF) 31 ppm in B/W mode (A4/LT SEF)
Printer Languages:	GDI
Resolution:	600 x 600 dpi, 1200 x 600 dpi
Resident Fonts:	N/A
Host Interfaces:	Standard: USB 1.1, Optional: N/A
Network Protocols:	N/A
First Print Speed:	B/W mode: 13 sec. or less (A4/LT, SEF, Standard Tray) Full Color mode: 19 sec. or less (A4/LT, SEF, Standard Tray)
Warm-up Time	When the main power switch is on: 45 sec. or less (Room temp. /Humidity 23 °C/50%) When the printer comes out of the energy saver mode: 15 sec. or less (Room temp. /Humidity 23 °C/50%)
Paper Capacity:	Standard tray: 250 sheets (82 g/m^2) Optional paper feed unit: 530 sheets (82 g/m^2) Optional Legal Tray: 250 sheets (82 g/m^2)
Paper Size:	Standard Tray: A4, B5, Letter, EXE, Free size Optional paper feed unit: A4, B5, Letter, EXE Optional Legal Tray: A4, B5, Letter, EXE, Legal, Free size (See 'Supported Paper Sizes')
Paper Weight:	Standard tray: 60 - 210 g/m^2 (16 - 55 lb) Optional paper feed unit: 60 - 105 g/m^2 (16 - 28 lb) Optional Legal Tray: 60 - 210 g/m^2 (16 -55 lb)
Output Paper Capacity:	250 sheets (face down)
Memory:	Standard: 64 MB, Optional: N/A

Power Source:	North America: 120 V, 50/60 Hz
Power Consumption:	In operation: 1300 W or less Energy saver: 35 W or less
Noise Emission	Standby:54 dB or less Operating: 66 dB or less Energy saver: 51 dB or less
Dimensions (W x D x H)	Printer only: 480 x 420 x 385 mm (18.9" x 16.5" × 15.2") With PTU:480 x 470 x 535 mm
Weight:	Printer: 29.0 kg/ 64 lb PFU: 6.0 kg /13.2 lb

Supported Paper Sizes

Paper size			Printer	PTU	LGL
			NA	NA	NA
A3	SEF	297x420 mm	-	-	-
B4	SEF	257x364 mm	-	-	-
A4	SEF	210x297 mm	✔	✔	✔
A4	LEF	297x210 mm	-	-	-
B5	SEF	182x257 mm	S	✔	S
B5	LEF	257x182 mm	-	-	-
A5	SEF	148x210 mm	-	-	-
A5	LEF	210x148 mm	-	-	-
B6	SEF	128x182 mm	-	-	-
B6	LEF	182x128 mm	-	-	-
A6	SEF	105x148 mm	-	-	-
A6	LEF	148x105 mm	-	-	-
DLT	SEF	11x17"	-	-	-
Legal	SEF	8.5x14"	-	-	✔
Letter	SEF	8.5x11"	✔	✔	✔
Letter	LEF	11x8.5"	-	-	-
Half Letter	SEF	5.5x8.5"	-	-	-
Half Letter	LEF	8.5x5.5"	-	-	-
Executive	SEF	7.25x10.5"	✔	✔	✔
Executive	LEF	10.5x7.25"	-	-	-
F/GL	SEF	8x13"	S	-	S
Foolscap	SEF	8.5x13"	S	-	S

Folio	SEF	8.25x13"	S	-	S
Govt. LG	SEF	8.25x14"	S	-	S
Com 10	SEF	4.125x9.5"	S	-	S
Monarch	SEF	3.875x7.5"	-	-	-
C6	SEF	114x162 mm	-	-	-
C5	SEF	162x229 mm	S	-	S
DL Env.	SEF	110x220 mm	S	-	S
8 K	SEF	267x390 mm	-	-	-
16 K	SEF	195x267 mm	S	-	S
16 K	LEF	267x195 mm	-	-	-
Custom (Standard tray and PFU)	width	104.8-215.9 mm	✱	-	
	length	210-297 mm			
	width	4.13-8.5"			
	length	8.27-11.69"			
Custom (Legal tray)	width	104.8-215.9 mm			✱
	length	210-355.6 mm			
	width	4.13-8.5"			
	length	8.27-14"			

Printer: Standard tray PTU: Optional paper feed unit LGL: Optional legal tray NA: North America SEF: Short edge feed LEF: Long edge feed	✔: The paper size is automatically detected. S: The paper size is selected manually (Menu > Paper Input > Tray 1/2 Paper Size). ✱: The paper size is not detected; but the paper can be used. -: The paper size is not usable.

Software Accessories

Printer Drivers

Operating System	Printer Language
	GDI
Windows 98/Me	✓
Windows NT Workstation 4.0	-
Windows NT Server 4.0	-
Windows NT Server 4.0 TSE (*6)	-
Windows NT Server 4.0 Enterprise Edition	-
Windows 2000 professional	✓
Windows 2000 Server (*6)	✓
Windows 2000 Advanced Server (*6)	-
Windows 2000 Datacenter Server	-
Microsoft Windows XP Professional	✓
Microsoft Windows XP Home Edition	✓
Windows Server 2003 Standard Edition	✓
Windows Server 2003 Enterprise Edition	✓
Windows Server 2003 Datacenter Edition	-
Windows Server 2003 Web Edition	-
Mac OS 9.x	✓
Mac OS X	✓

✓: Supported

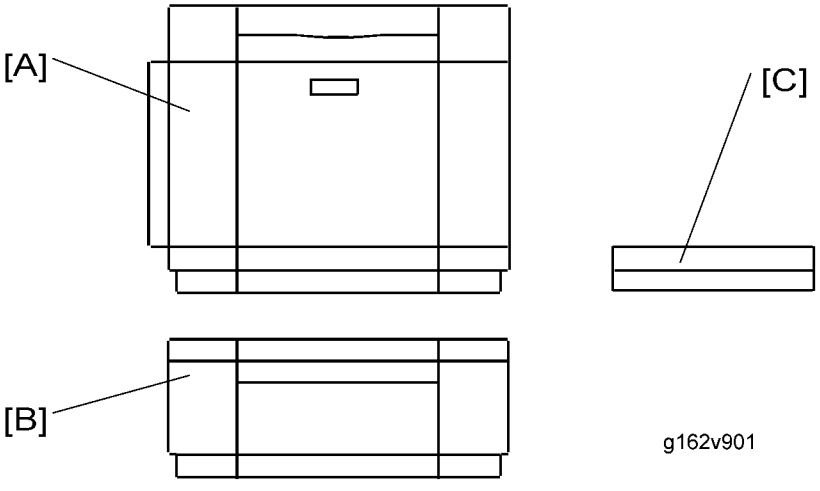
*: Service Pack 6 or later

Utility Software

USB Printing Support

Gives USB connection to Windows 98 SE/Windows Me.

Machine Configuration



Unit	M'Code	Diagram	Remarks
Printer	G162	[A]	-
Paper feed unit	G389	[B]	Option
Legal paper tray	G391	[C]	Option

Optional Equipment

Paper Feed Unit

Paper Size:	Letter, A4, B5, Executive
Print Paper Weight:	60 - 105 g/m^2 (16 to 28 lb)
Tray Capacity:	530 sheets
Paper Feed System:	Friction pad separation
Paper Height Detection:	Not available
Paper End Detection:	Available
Power Source:	24V dc (supplied by the printer)
Dimensions (W x D x H):	460 mm x 466.5 mm x 185 mm (18.1" x 18.4" x 7.3")
Weight	Approx. 6.0 kg (13.2 lb)

Legal Paper Tray

Paper Size:	A4, B5, Letter, EXE, Legal, Width: 104.8 mm - 215.9 mm, 4.13" - 8.5" Length: 210 mm - 355.6 mm, 8.27" - 14" (See "Supported Paper Sizes")
Print Paper Weight:	60 - 210 g/m^2 (16 to 55 lb)
Tray Capacity:	250 sheets
Dimensions (W x D x H):	276 mm x 408 mm x 55 mm (10.9" x 16.1" x 2.2")
Weight	Approx. 1.1 kg (2.5 lb)