Model PN-F1a/F1c
Machine Code: H320/H321

SERVICE MANUAL

30th Nov. 2006
Subject to change

Safety Notice

Important Safety Notices

Prevention of Physical Injury

1. Be sure that the power cord is unplugged before disassembling or assembling parts of the copier or peripherals.
2. The wall outlet should be near the copier and easily accessible.
3. Note that electrical voltage is supplied to some components of the copier and the paper tray unit even while the main power switch is off.
4. If you start a job before the machine completes the warm-up or initializing period, keep hands away from the mechanical and electrical components until job execution has started. The machine will start making outputs as soon as warm-up or initialization is finished.
5. The inside and the metal parts of the fusing unit become extremely hot while the machine is operating. Be careful to avoid touching those components with your bare hands.

Health Safety Conditions

Toner and developer are nontoxic, but getting either of these into your eyes may cause temporary eye discomfort. Try to remove with eye drops or flush with water. If material remains in eye or if discomfort continues, get medical attention.

⚠WARNING

- Keep the machine away from flammable liquids, gases, and aerosols. A fire or an explosion might occur if this precaution is not observed.

Safe and Ecological Disposal

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly if exposed to an open flame.
2. Dispose of used toner, developer, and organic photoconductors in accordance with local regulations. (These are nontoxic 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 not specified in this manual, or performance of adjustments or procedures not specified in this manual, may result in hazardous radiation exposure.

⚠ WARNING FOR LASER UNIT

⚠WARNING

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

CAUTION MARKING:

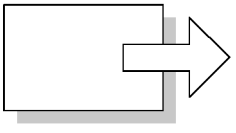
laser3b

Symbols and Abbreviations

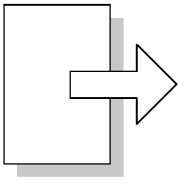
This manual uses several symbols and abbreviations. The meaning of those symbols and abbreviations is as follows:

	See or Refer to
	Clip ring
	E-ring
	Screw
	Connector

	Clamp
SEF	Short Edge Feed
LEF	Long Edge Feed
CT	Core Technology manual



Short Edge Feed (SEF)



Long Edge Feed (LEF)

Cautions, Notes, etc.

The following headings provide special information:

⚠WARNING

- FAILURE TO OBEY WARNING INFORMATION COULD RESULT IN SERIOUS INJURY OR DEATH.

⚠CAUTION

- Obey these guidelines to ensure safe operation and prevent minor injuries.

Note

- This information provides tips and advice about how to best service the machine.

TABLE OF CONTENTS

4. Troubleshooting

5. Service Tables

6. Detailed Section Descriptions

7. Specifications

8. Apppendix

1. Installation

Installation Procedure

Refer to the "Operation Instructions for Installation Procedure".

2. Preventive Maintenance

PM Tables

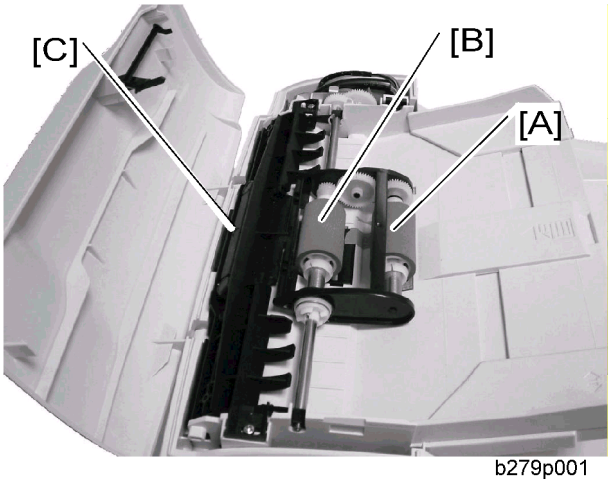
There are no PM parts for this machine.

Cleaning

To keep the machine in good working condition, the following operations should be carried out regularly:

- Cleaning the paper transport rollers of the ADF
- Cleaning the paper separator
- Cleaning the front panel keys and the printer covers
- Printer maintenance
- Cleaning the printer with a soft cloth, never use abrasives or detergents

Paper Transport Rollers



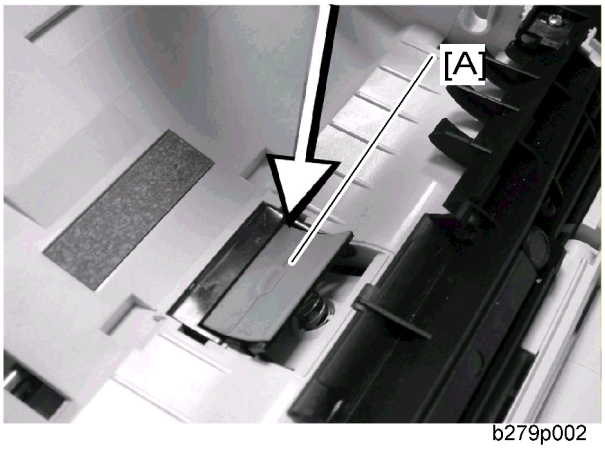
b279p001

1. Set the On/Off switch to Off (position 0).
2. Open the ADF cover.
3. Clean the paper feed roller (pick-up) [A], paper feed roller (feed) [B], feed shafts, and also the two analysis rollers [C] located on the mobile part of the scanner, with a lint-free cloth moistened in isopropyl alcohol.

To clean them, rotate them in the same direction as during paper transport.

Recommended interval: from 2 to 6 months, depending on utilization.

Paper Separator Module



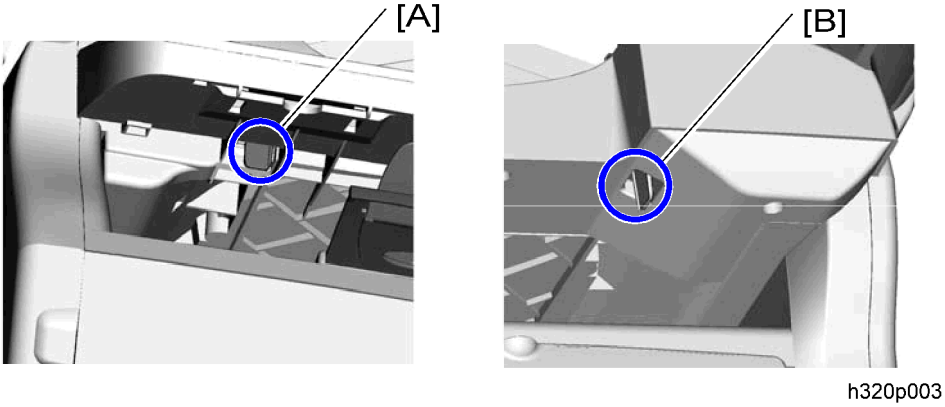
b279p002

1. Set the On/Off switch to Off (position 0).
2. Open the ADF cover.
3. Disassemble the ADF pick-up assembly (☛ "ADF Pick-up Assembly" in the chapter "Replacement and Adjustment").
4. Wipe the elements of the friction pad [A] with a lint-free cloth soaked with isopropyl alcohol.

Recommended interval: from 2 to 6 months, depending on utilization.

CIS Window

1. Set the On/Off switch to Off (position 0).



h320p003

2. Unlock the clips [A] under the operation panel and [B] at the rear bottom of the ADF.

h320p004

3. Lift the ADF module [C].
4. Clean the CIS window [D] with a lint-free cloth moistened with isopropyl alcohol or use antistatic paper used for cleaning optic glass.

Recommended interval: depending on utilization; it is advisable to make a local copy to check if the window is clean.

Front Panel Keys and Covers

Cleaning the front panel keys

1. Set the On/off switch to Off (position O).
2. Clean the top of the front panel and the keys with a lint-free cloth moistened with isopropyl alcohol or a spray-on cleaning product.
3. Leave the product on for a few seconds before wiping it off.

Recommended interval: to be defined depending on utilization.

Cleaning the covers

It is advisable to clean all the covers during a maintenance visit.

1. Set the On/Off switch to Off (position O).
2. Clean the external areas of the covers with a lint-free cloth moistened with isopropyl alcohol or a spray-on cleaning product.

3. Leave the product on for a few seconds before wiping it off.

3. Replacement and Adjustment

General Precautions on Disassembly

General Precautions

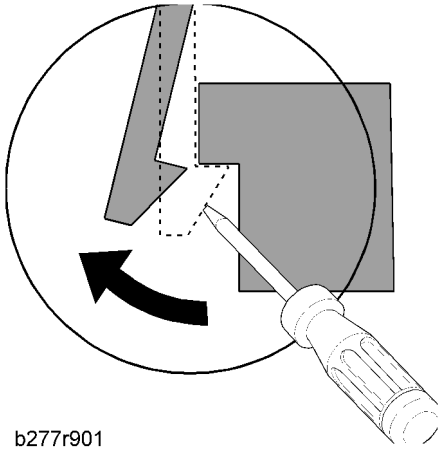
Use high caution when you disassemble and reassemble components.

Make sure all cables are correctly routed. Check the correct cable routing before you service the machine. Return all cables to their original position after you service the machine.

Servicing the Machine

1. Make sure there are not documents stored in memory before you service the machine.
2. Remove the toner cartridge before you disassemble parts.
3. Unplug the power cord before you service the machine.
4. Use a flat clean surface to service the machine.
5. Use only approved replacement parts. Machine function cannot be guaranteed of you use unauthorized replacement parts.
6. Do not force plastic components.
7. Make sure all components are in their correct positions.

Releasing Plastic Latches

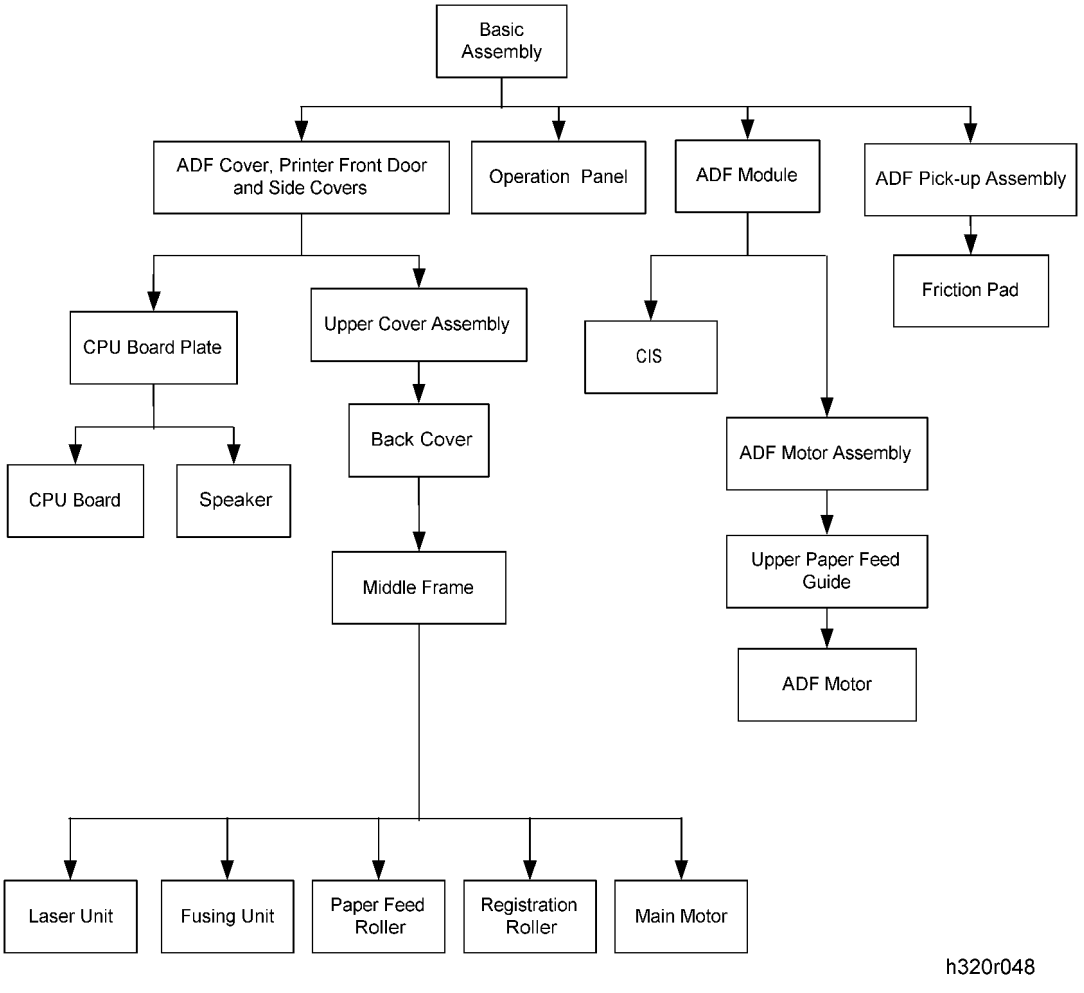


b277r901

Many of the parts are held in place with plastic latches. The latches break easily. Release them carefully. To remove such parts, press the hook end of the latch away from the part to which it is latched.

Replacement Worksheet Chart

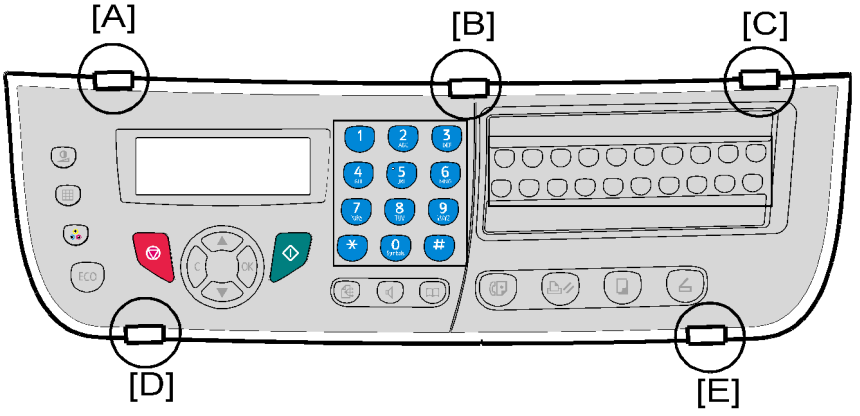
When you replace a unit, refer to the flowchart as shown below to confirm the steps.



h320r048

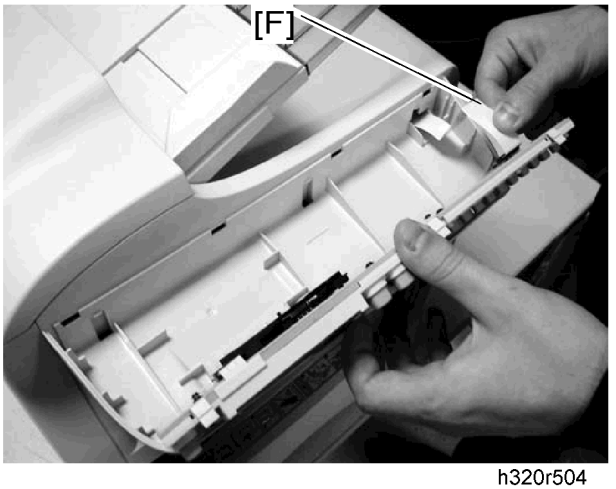
Operation Panel

1. Stand in front of the machine.



h320r503

2. Unlock the three clips of the operation panel ([A], [B] and [C]).
3. Pull the panel towards yourself to release it from the two bottom slots ([D] and [E]).

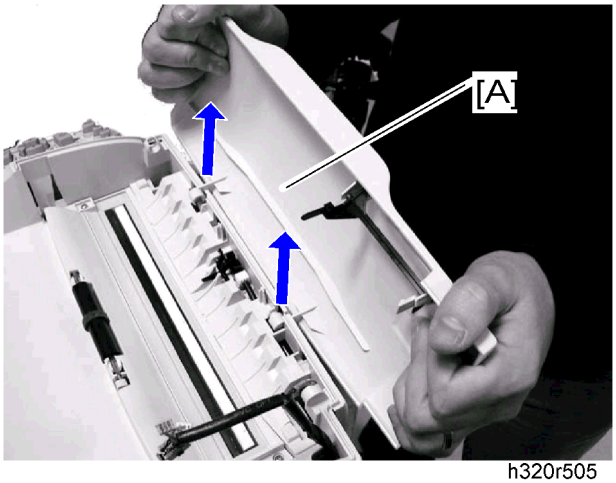


h320r504

4. Disconnect the flat panel cable [F] from the panel card connector.
5. Disassemble the operation panel.

Covers and Front Door

ADF Cover

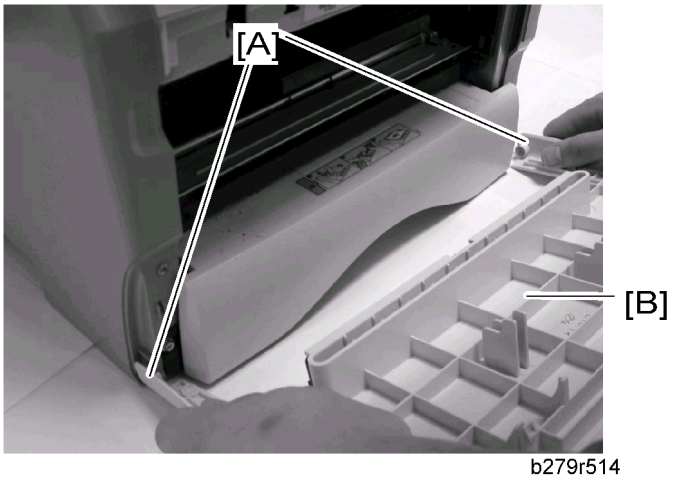


h320r505

1. Open the ADF cover [A].
2. Pull up the ADF cover.

Front Door

1. Stand in front of the machine.



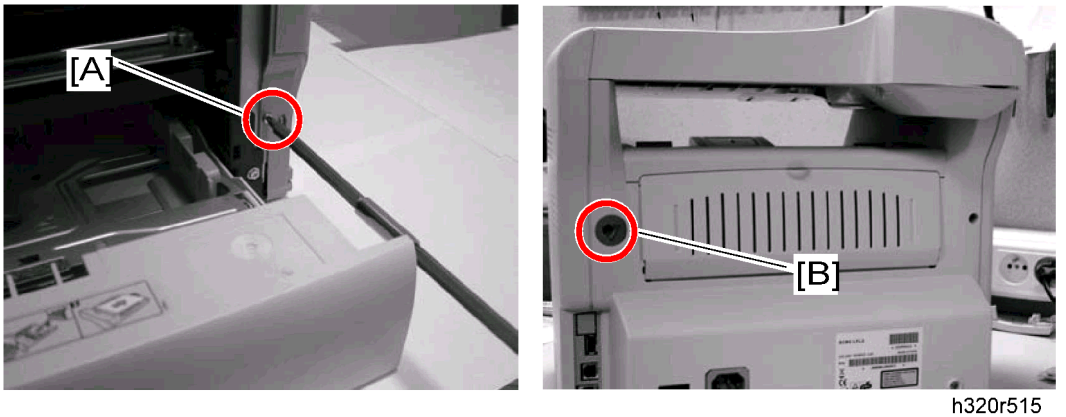
b279r514

2. Push the left and right sides [A] of the front door and simultaneously pull it towards yourself.

3. Move the arms away from each other and remove the front door [B].

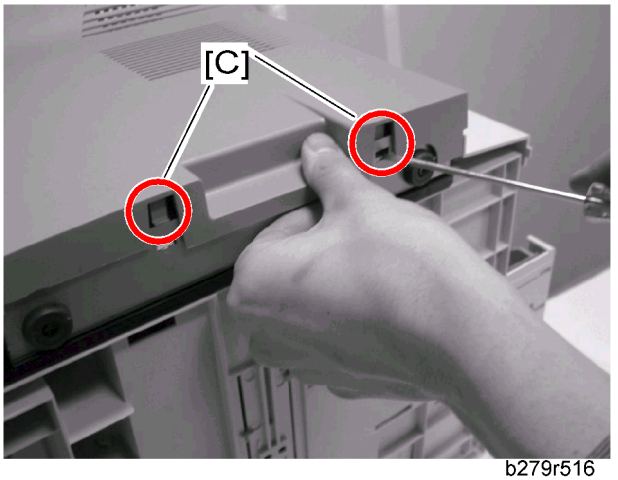
Side Covers

1. Open the printer's paper tray.



h320r515

2. Unscrew the two mounting screws on the front [A] and back [B] of the side covers (right and left).



b279r516

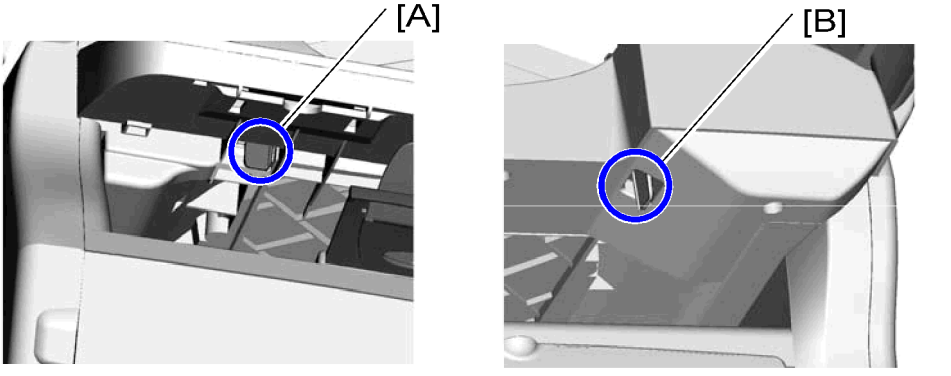
3. Using a flat screwdriver, unscrew the side covers from their slots [C] located at the bottom of the machine.

4. Unclip the side covers [D] from the top slots located at the back of the machine and pivot them towards yourself to remove them.
5. Remove the side covers.

ADF Assembly

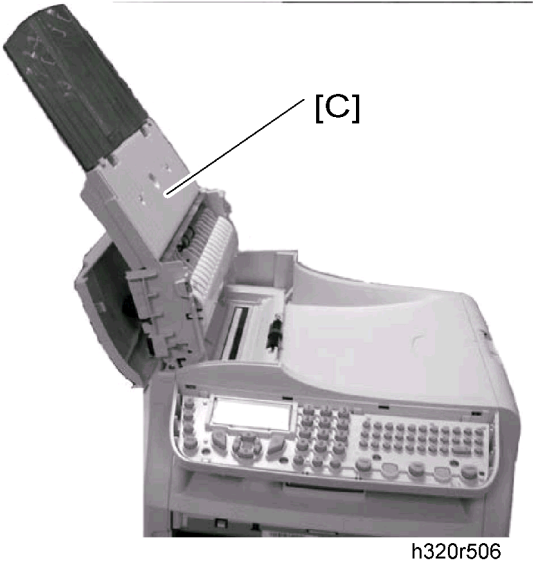
ADF Motor Cover

1. Set the On/Off switch to Off (position 0).



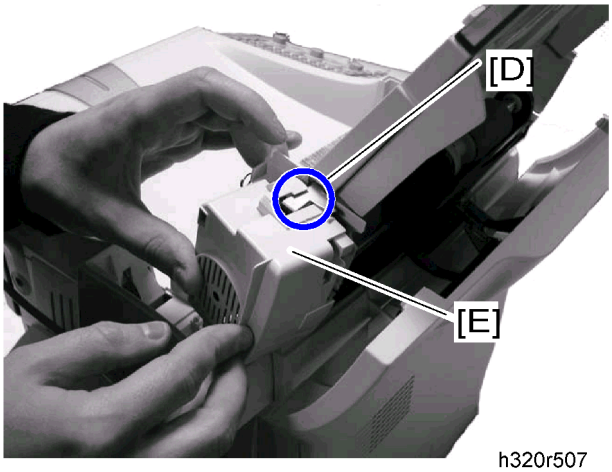
h320p003

2. Open the ADF cover.
3. Unlock the clips [A] under the operation panel and [B] at the rear bottom of the ADF.



h320r506

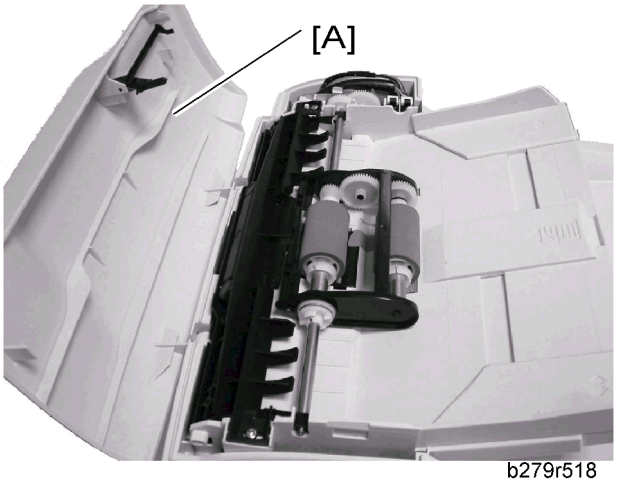
4. Lift the ADF module [C].



h320r507

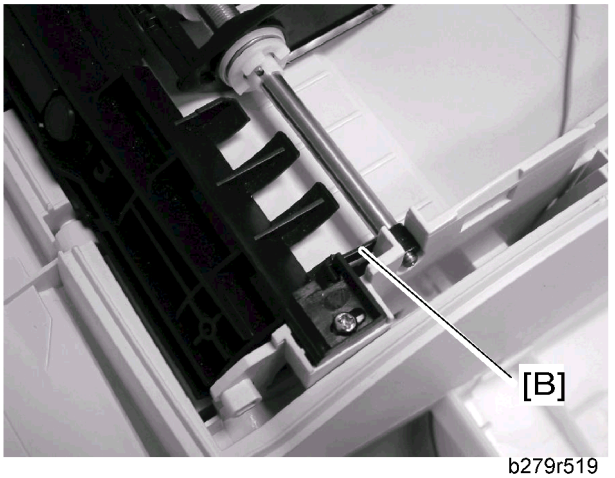
5. Unlock the clip [D], and then pull out the ADF motor cover [E].

ADF Pick-up Assembly



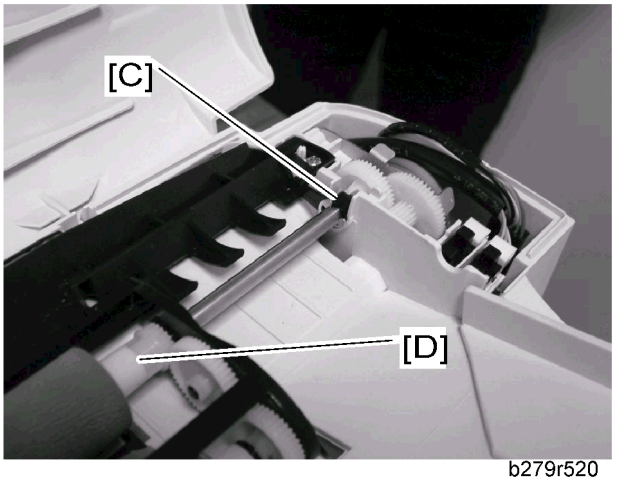
b279r518

1. Open the ADF cover [A].



b279r519

2. Lift the roller bearing [B].

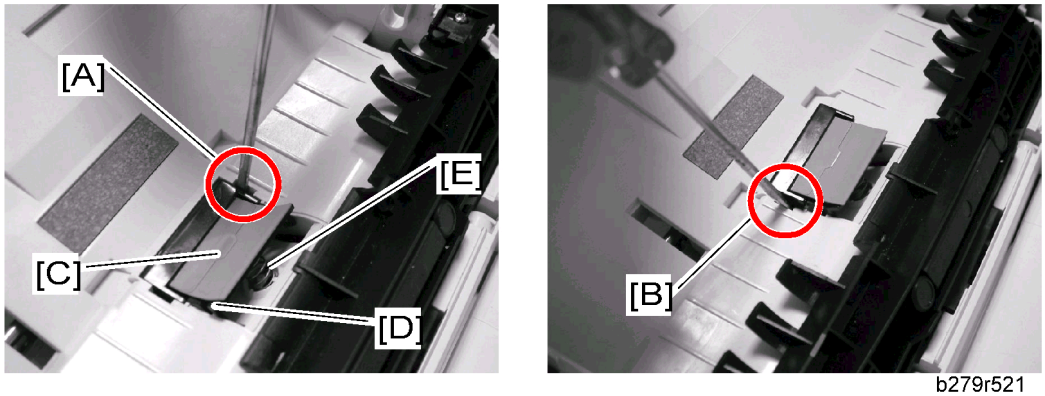


b279r520

3. Lift the roller bearing [C] from the other end of the feeder.
4. Lift the ADF pick-up assembly [D] and remove it.

Friction Pad and Cork Pad

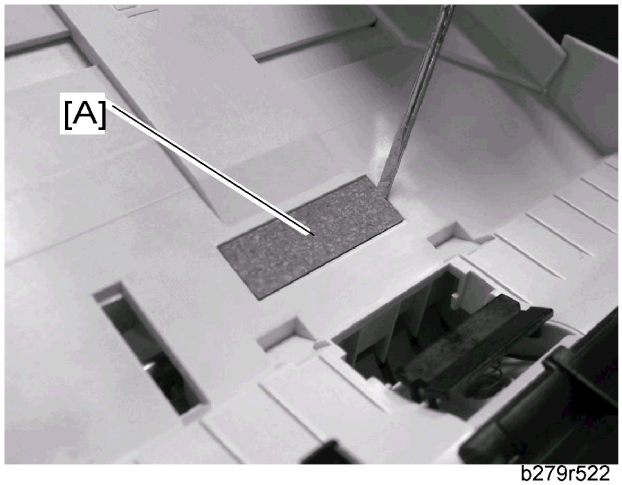
Friction Pad



b279r521

1. ADF pick-up assembly (☛ "ADF Pick-up Assembly ")
2. Insert a screwdriver in the right slot [A] as shown above and make a pivoting movement downwards without strain to remove the friction pad.
3. Repeat the previous step for the left slot [B] of the friction pad.
4. Remove the friction pad [C], the feeder shoe [D] and the friction pad spring [E].

Cork Pad



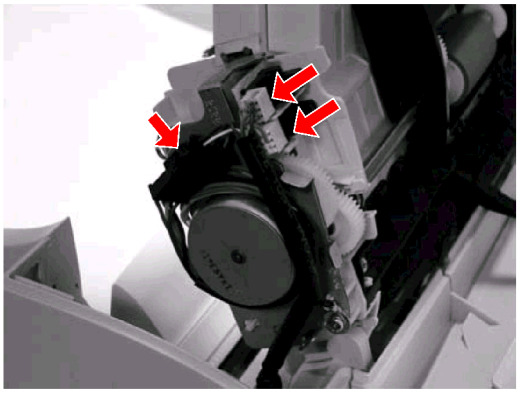
b279r522

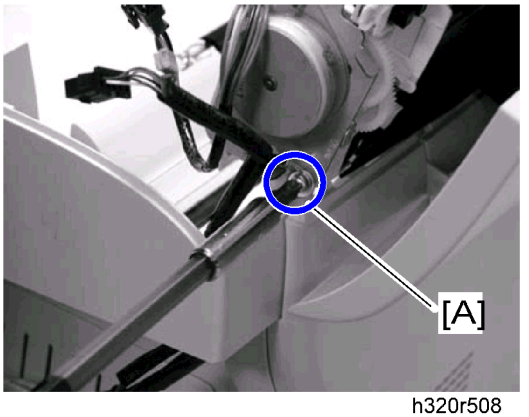
1. ADF pick-up assembly (☛ "ADF Pick-up Assembly ")

2. Insert a screwdriver in the right slot on the upper part of the ADF as shown above and make a pivoting movement downwards without strain to remove the cork pad [A].
3. Remove the cork pad.

ADF Module

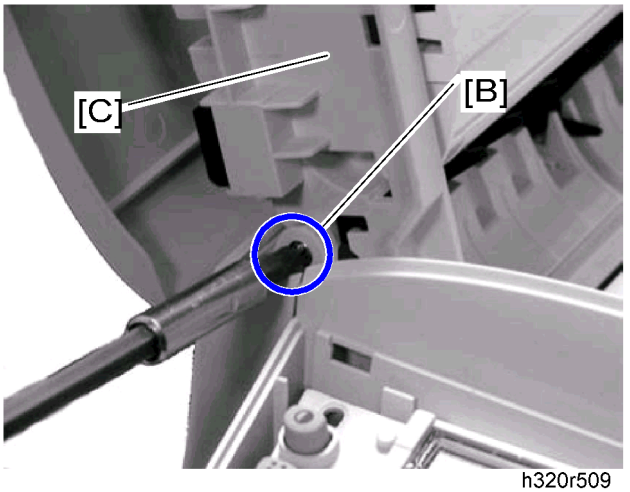
1. ADF motor cover (☛ "ADF Motor Cover").
2. ADF pick-up assembly (☛ "ADF Pick-up Assembly").





h320r508

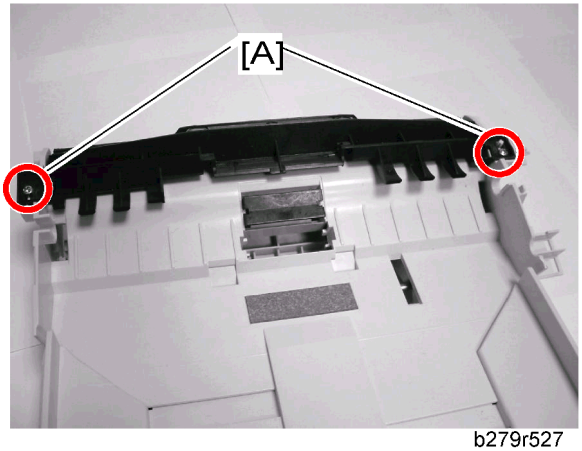
3. Disconnect the three connectors on the ADF motor.
4. Unscrew the mounting screw [A] of the ADF motor ground cable.



h320r509

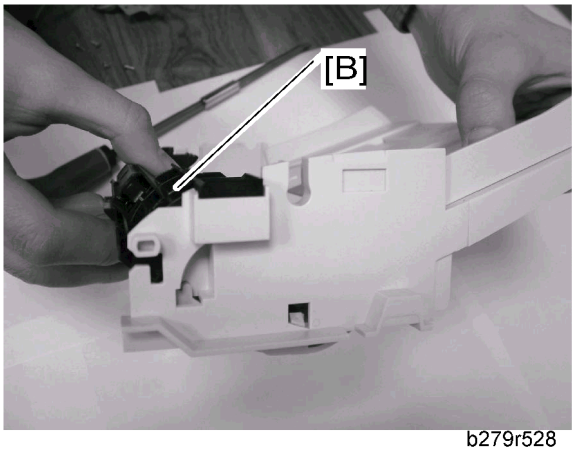
5. Unscrew the mounting screw [B] of the ADF module and remove it.
6. Lift and remove the ADF module [C] from its slot without disassembling it.

Upper Paper Feed Guide



b279r527

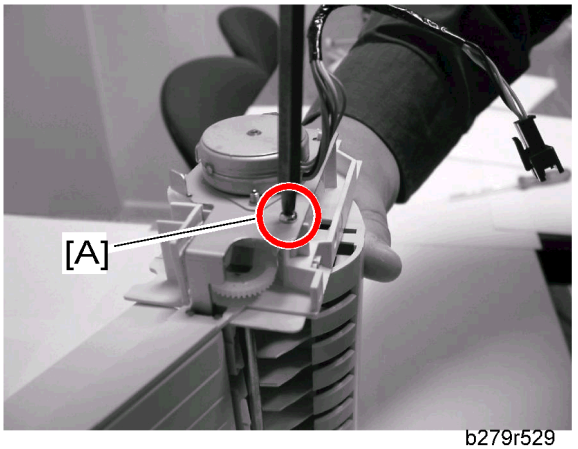
1. Open the ADF cover.
2. ADF pick-up assembly (☛ "ADF Pick-up Assembly")
3. Unscrew the two mounting screws [A] of the upper paper feed guide.



b279r528

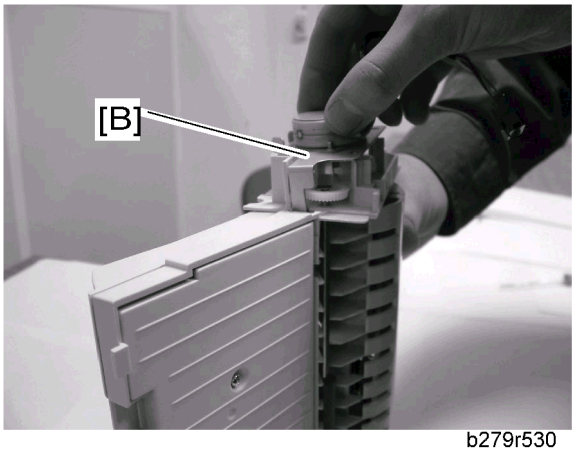
4. Make a forward movement and remove the upper paper feed guide [B].

Motor Frame



b279r529

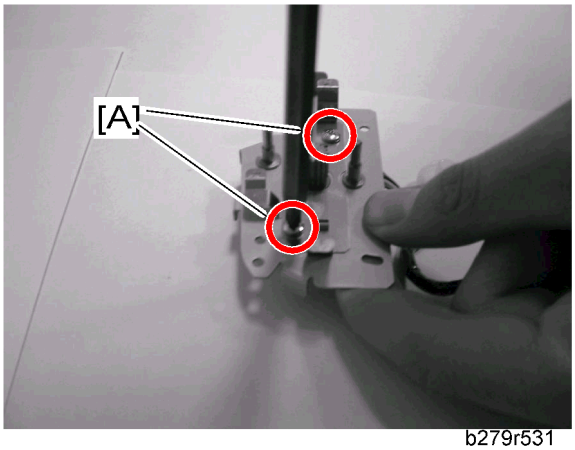
1. ADF module (☛ "ADF Module ")
2. Unscrew the mounting screw [A] of the motor frame.



b279r530

3. Lift and remove the motor frame [B]. Locate the gears and remove them.

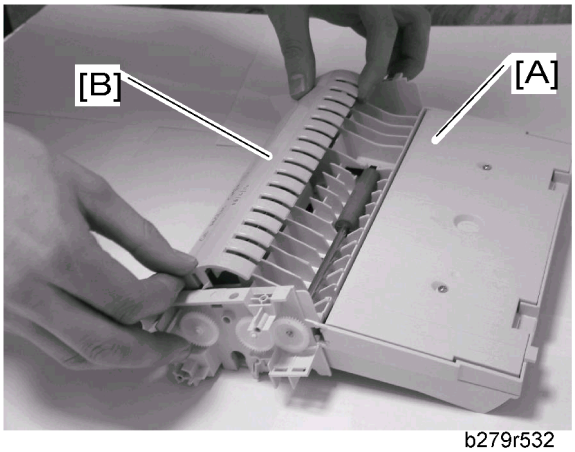
ADF Motor



b279r531

1. Motor Frame (☛ "Motor Frame)
2. Unscrew the two mounting screws [A] of the ADF motor and remove the ADF motor.

Scan Path Guide

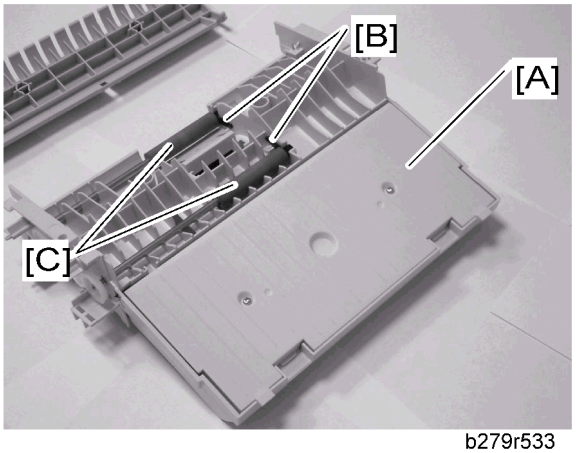


b279r532

1. ADF module (☛ "ADF module")
2. Motor frame for analysis rollers (☛ "Motor Frame")
3. Turn the ADF module [A] upside down.
4. Lift the scan path guide [B] to disassemble it from the ADF module and remove it.

Analysis Roller

1. ADF module (☛ "ADF module")
2. Motor frame for analysis rollers (☛ "Motor Frame")

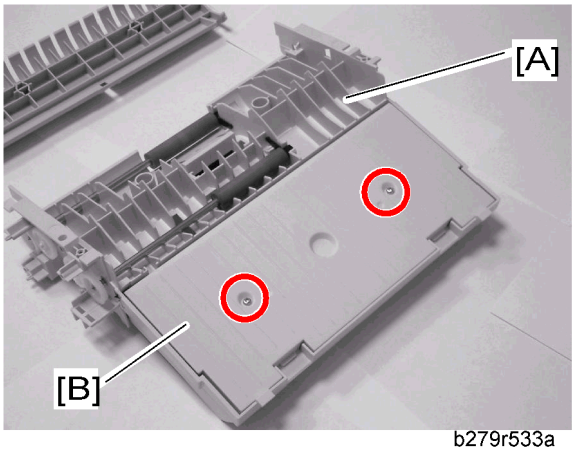


b279r533

3. Turn the ADF module [A] upside down.
4. Lift the roller bearing [B] turning of each one of the analysis rollers.
5. Remove the roller bearing turnings of the analysis rollers and remove the analysis rollers [C].

ADF Sliders and Antistatic Brush

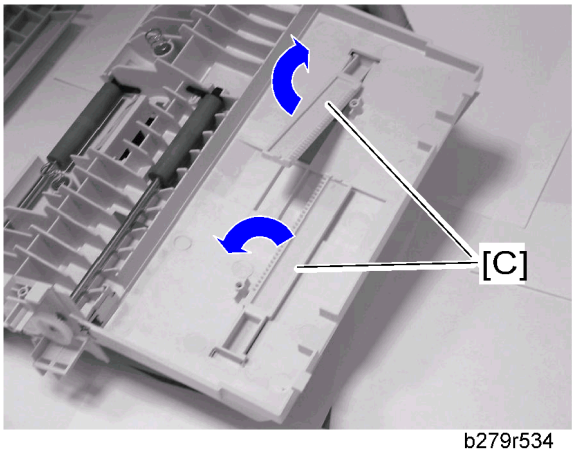
1. ADF module (☛ "ADF module")
2. Motor frame for analysis rollers (☛ "Motor Frame")



b279r533a

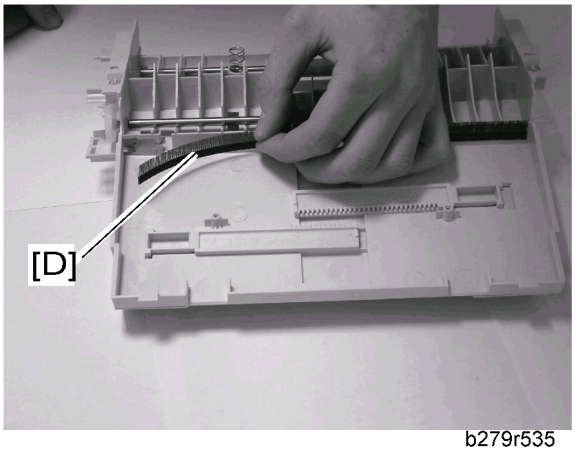
3. Turn the ADF module [A] upside down.

4. Unscrew the two mounting screws of the ADF wheelbox [B] and remove it.



b279r534

5. Vertically lift the ADF sliders [C] and remove them from the ADF module.

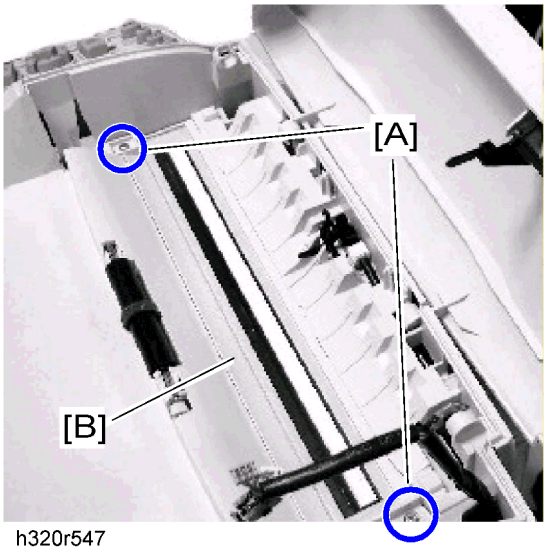


b279r535

6. Remove (gently) the antistatic brush [D].

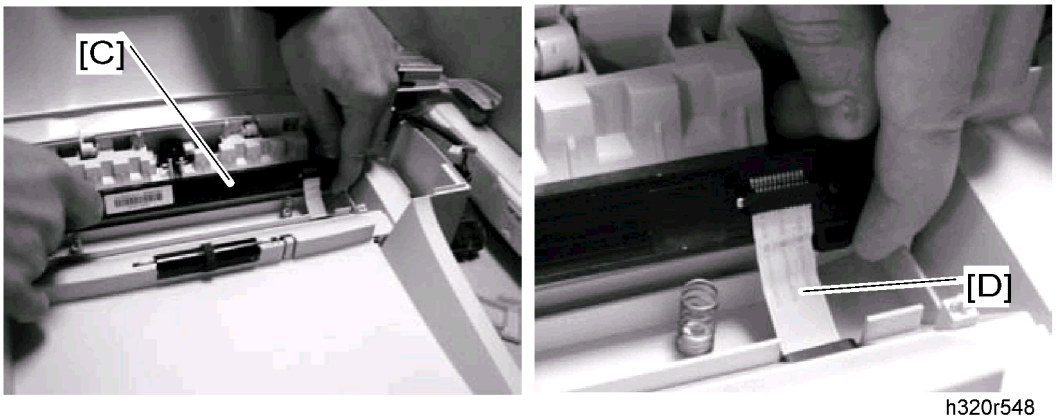
CIS (Contact Image Sensor)

1. ADF module (☛ "ADF module")



h320r547

2. Unscrew the two mounting screws [A] of the glass holder assembly.
3. Remove the glass holder assembly [B].



h320r548

4. Lift the CIS [C] backwards and disconnect the CIS flat cable [D].

Note

- Keep the CIS support spring and slides.

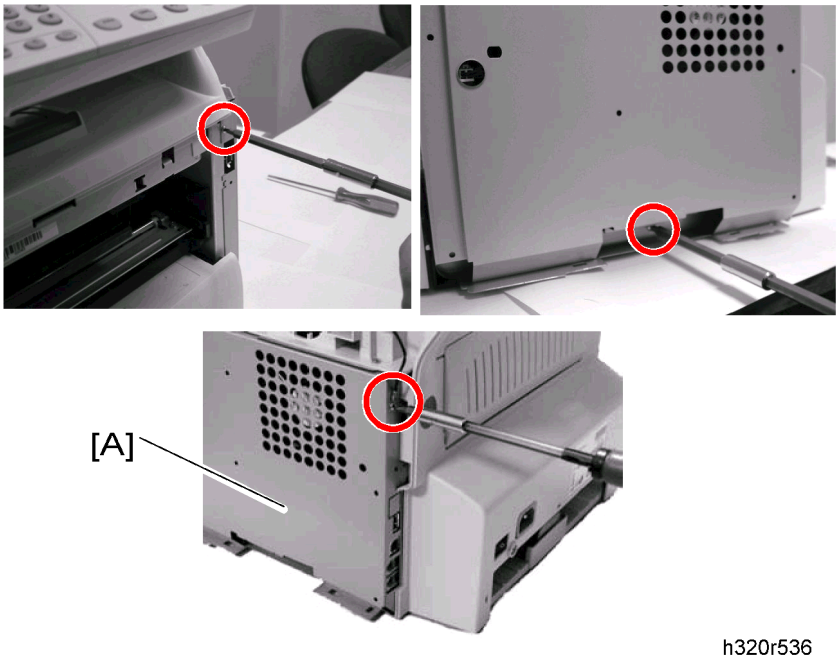
5. Remove the CIS.

CPU Board

Important

- **Before replacing the CPU board, do "Replacing the CPU Board" in the "Administrator Functions" section of the "Service Tables" chapter.**

1. Front door and the right side cover (☛ "Front Door and Side Covers")

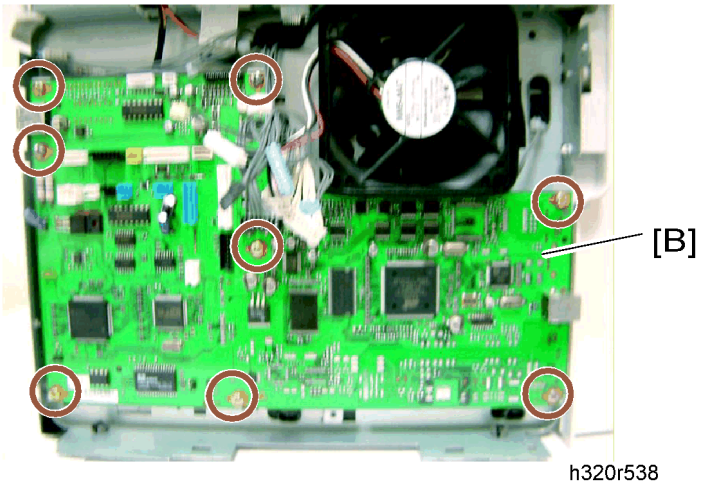


h320r536

2. Unscrew the three mounting screws of the CPU board plate [A].
3. Pull the CPU board plate [A] towards yourself and remove it.
4. Disconnect all incoming cords and leads from the CPU board connectors.

Important

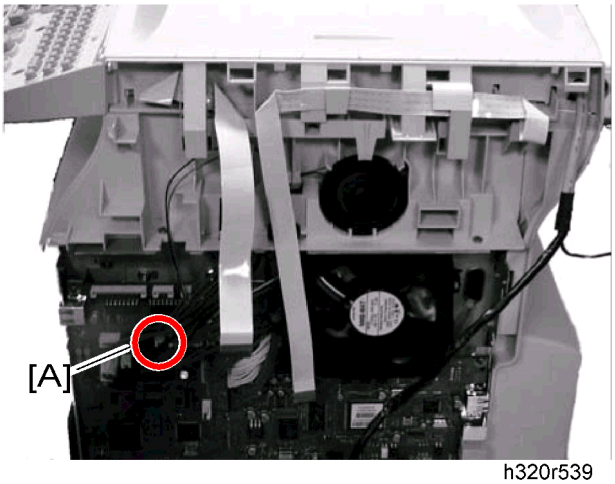
- MEMORIZE ALL CONNECTIONS FOR REASSEMBLY.



5. Unscrew the eight mounting screws and remove the CPU board [B].

Speaker

1. Front door and the right-hand side cover (☛ "Front Door and Side Covers")
2. CPU board plate (☛ "CPU Board")

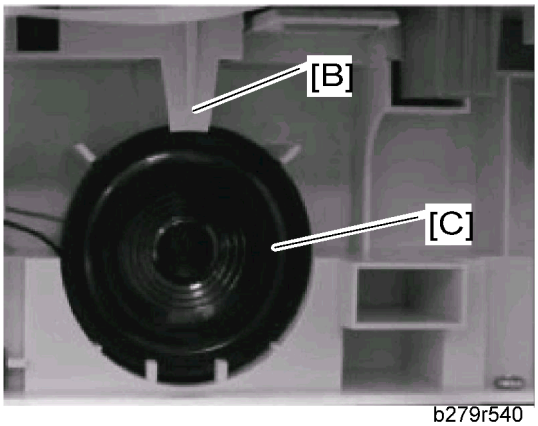


h320r539

3. Disconnect the speaker connector [A] from the CPU board.
4. Remove the speaker connector from its ferrite tube and cable guide.

Important

- MEMORIZE THE CABLE GUIDE FOR REASSEMBLY.

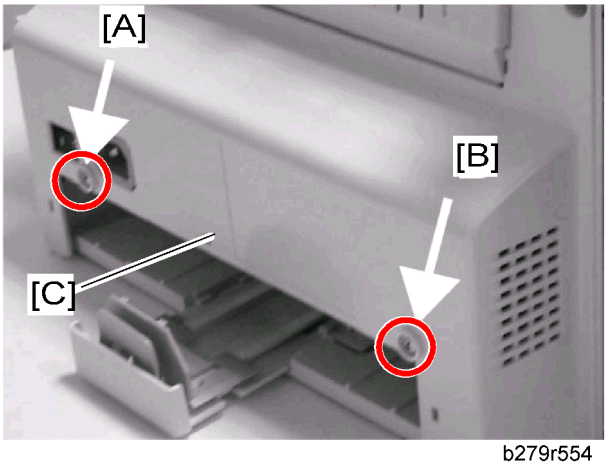


b279r540

5. Press the top clip [B] inwards until it unclips and pull the speaker [C] towards yourself.
6. Remove the speaker.

Back Cover

1. Front door and the side covers (☛"Front Door and Side Covers").
2. CPU board plate (☛"CPU Board").



b279r554

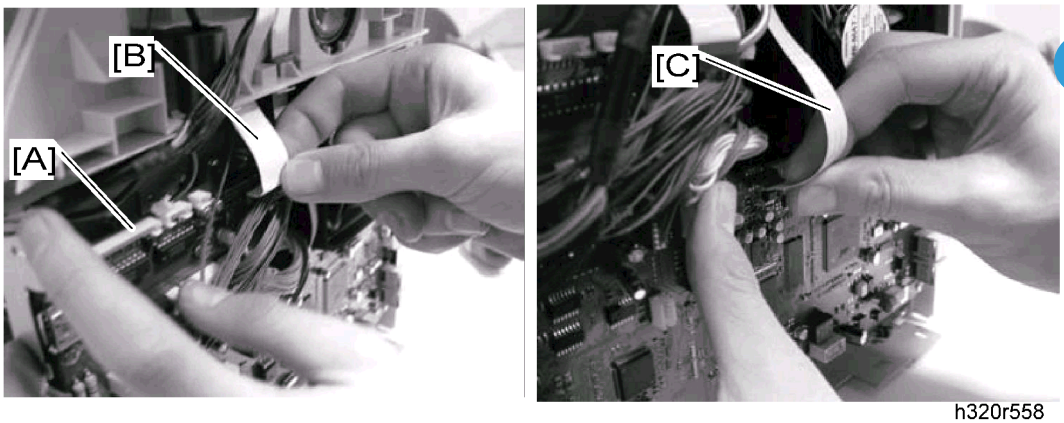
3. Stand behind the machine.
4. Unscrew the two back mounting screws [A] [B] on the back cover [C].

b279r555

5. Unscrew the two top mounting screws [D] [E] on the back cover.
6. Pull the back cover [C] towards yourself and remove it.

Upper Cover Assembly

1. Front door and the side covers (☛ "Front Door and Side Covers")
2. ADF module (☛ "ADF Module")
3. CIS (☛ "CIS").
4. CPU board plate (☛ "CPU Board").

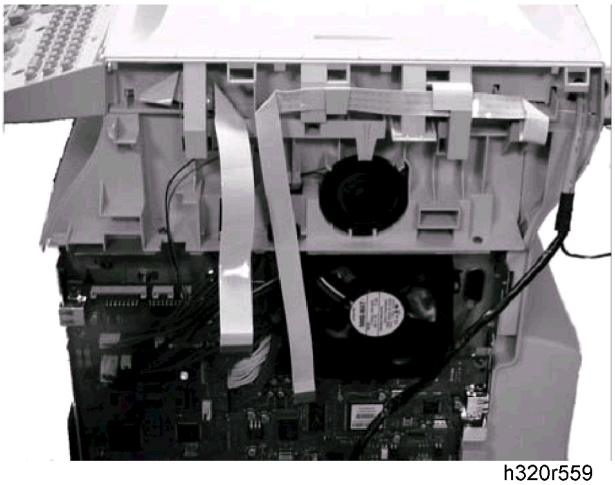


h320r558

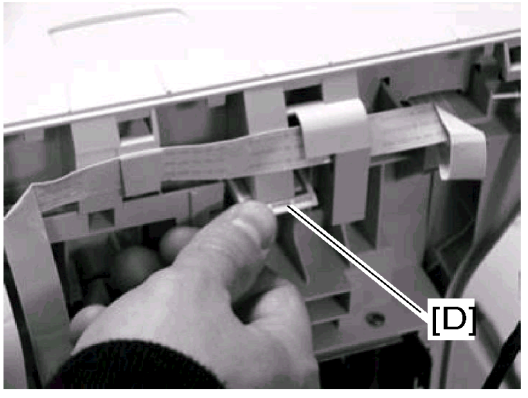
5. Disconnect the scanner connector [A] from the CPU board and remove it from its cable guide.
6. Disconnect the front panel flat cable [B] and the CIS flat cable [C] from the CPU board.

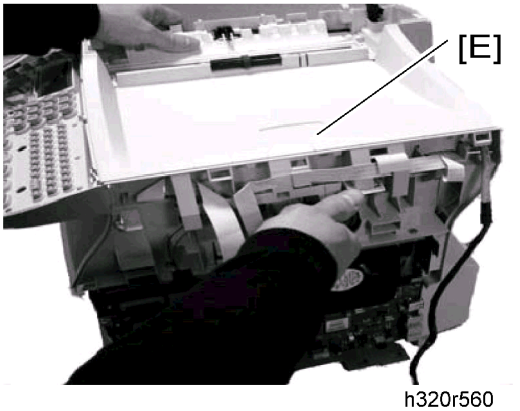
Important

- MEMORIZE THE CONNECTIONS FOR REASSEMBLY.


h320r559

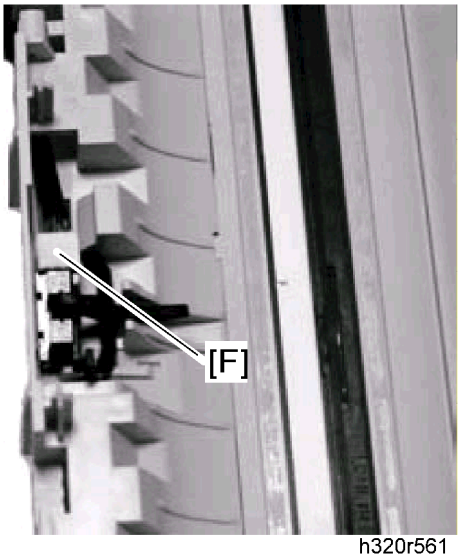
7. Remove the front panel and CIS ribbon cables from their cable guide.





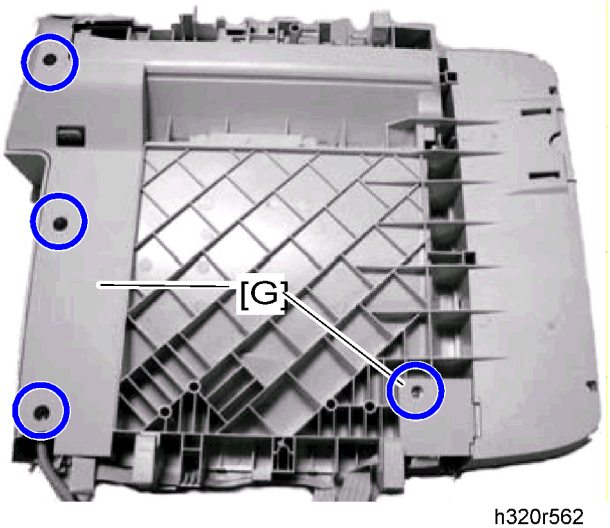
h320r560

8. Unlock the hook [D] and pull the upper cover assembly [E] towards the right.
9. Lift the upper cover assembly and remove it.



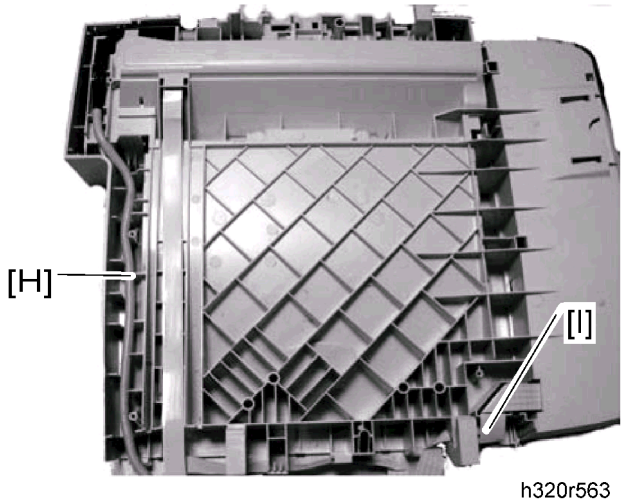
h320r561

10. Disconnect the sensor connector and remove the sensor [F].



h320r562

11. Turn over the upper cover assembly.
12. Unscrew the four mounting screws and remove the cable covers [G].

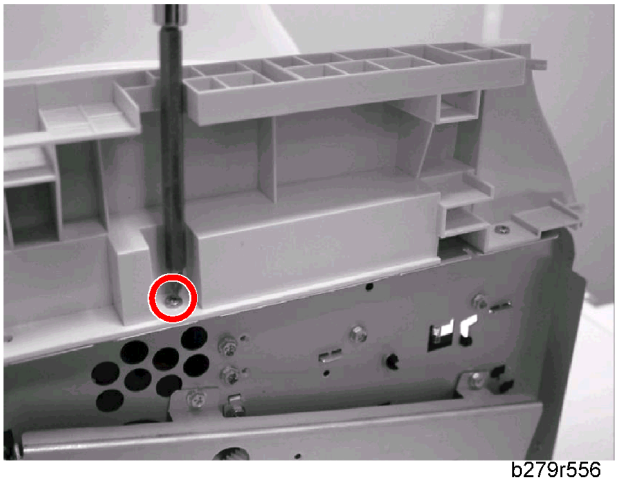


h320r563

13. Remove the ADF motor cable [H] and the operation panel flat cable [I] from its cable guide.
14. Upper cover assembly

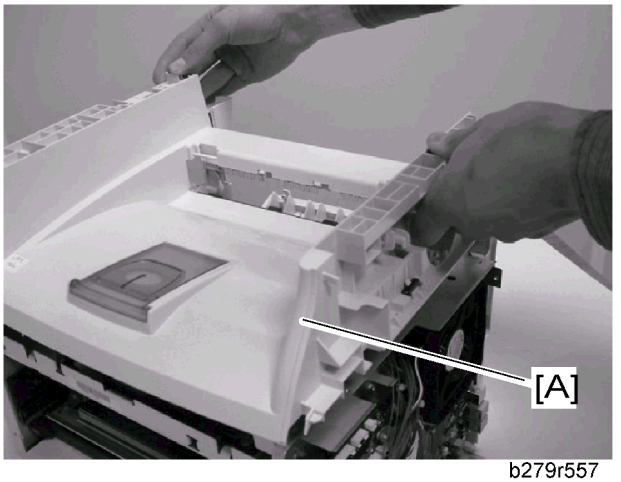
Middle Frame

1. Front door and the side covers (☛"Front Door and Side Covers").
2. CPU board plate (☛"CPU Board").
3. Speaker (☛ "Speaker")
4. Upper cover assembly (☛ "Upper Cover Assembly")
5. Back cover (☛ "Back Cover")



b279r556

6. Unscrew the two mounting screws on the left and right side on the middle frame.

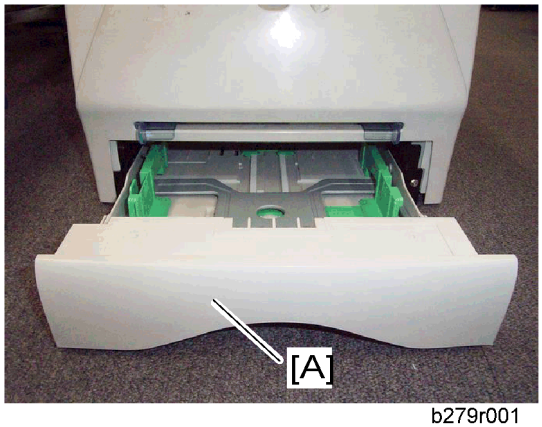


b279r557

7. Lift and remove the middle frame [A].

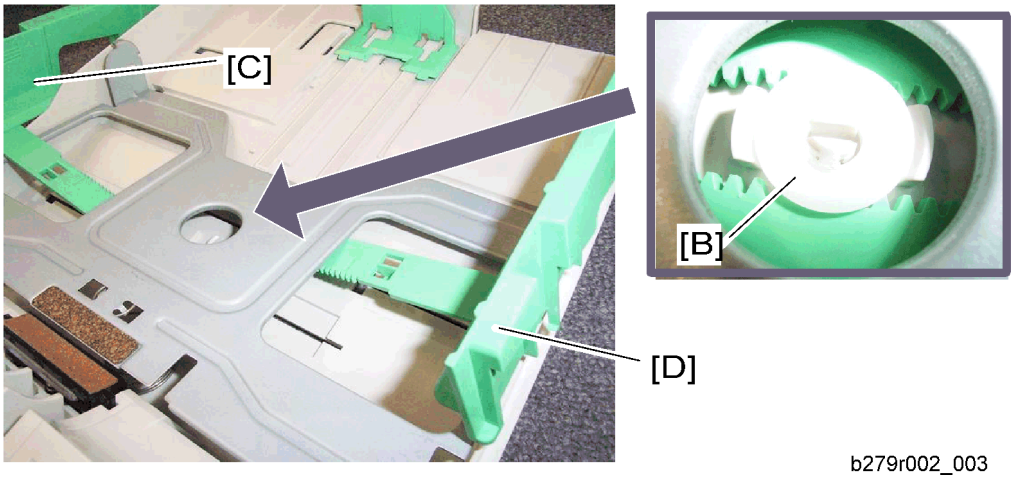
Paper Cassette

Paper Cassette, Side Fence, Bottom Plate and Friction Pad



b279r001

1. Pull out the paper cassette [A]

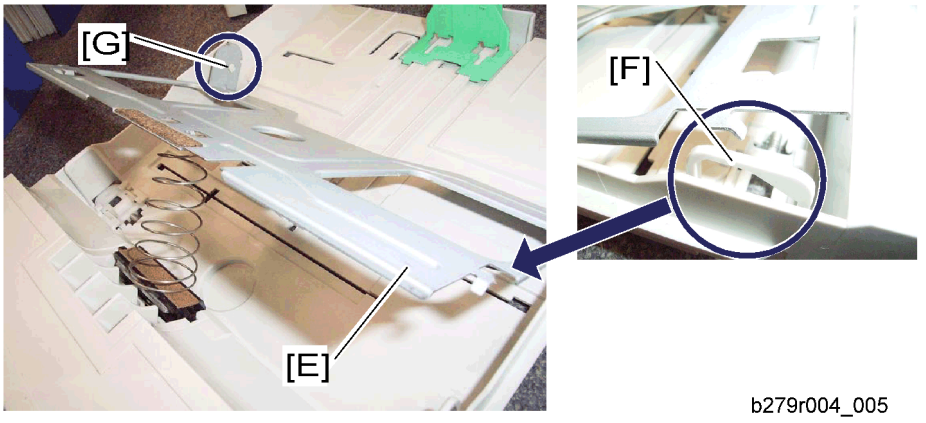


b279r002_003

2. Side fence gear [B]
3. Side fence – Left [C] (hook)
4. Side fence – Right [D] (hook)

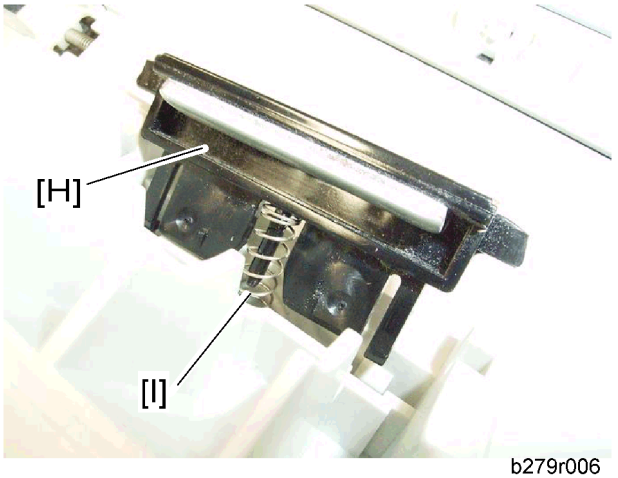
Note

- Lift the bottom plate before removing the side fences.



b279r004_005

5. Bottom plate [E]
6. Unhook the hook [F] at both sides of the cassette.
7. Detach from the pin [G] at both sides.



b279r006

8. Friction pad [H] (two hooks)

Note

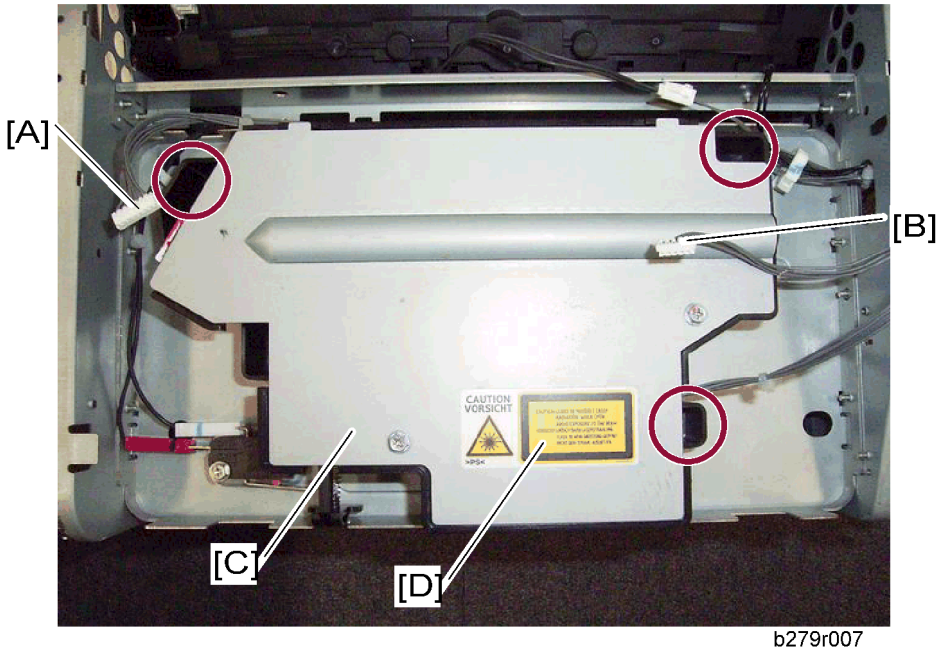
- Be careful not to lose the spring [I].

Laser Unit

⚠WARNING

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

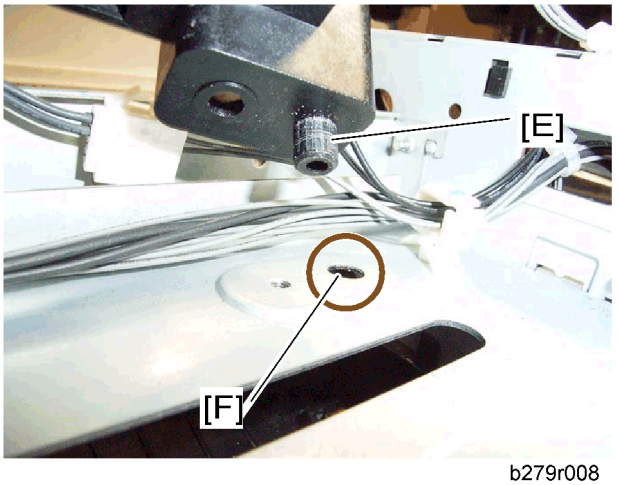
1. Front door and side covers (☛ "Front Door and Side Covers")
2. Upper cover assembly (☛ "Upper Cover Assembly")
3. Back cover (☛ "Back Cover")
4. Middle frame (☛ "Middle Frame")



b279r007

5. Laser diode unit harness [A]
6. Polygon mirror motor harness [B]
7. Laser unit [C] (🔩 x 3)

Caution Decal: [D]



b279r008

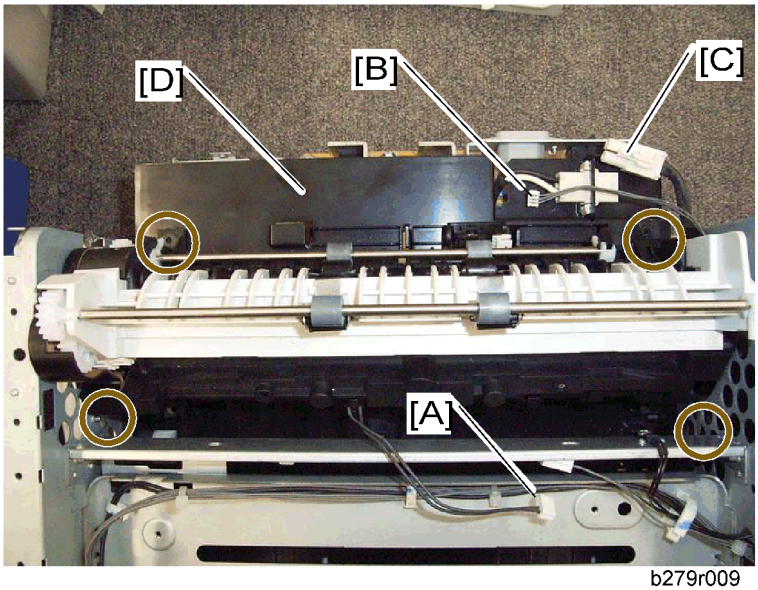
Note

- When re-assembling, make sure to set the positioning pin [E] in the hole [F].

Fusing Area

Fusing Unit

1. Front door and side covers (☛ "Front Door and Side Covers")
2. Upper cover assembly (☛ "Upper Cover Assembly")
3. Back cover (☛ "Back Cover")
4. Middle frame (☛ "Middle Frame")

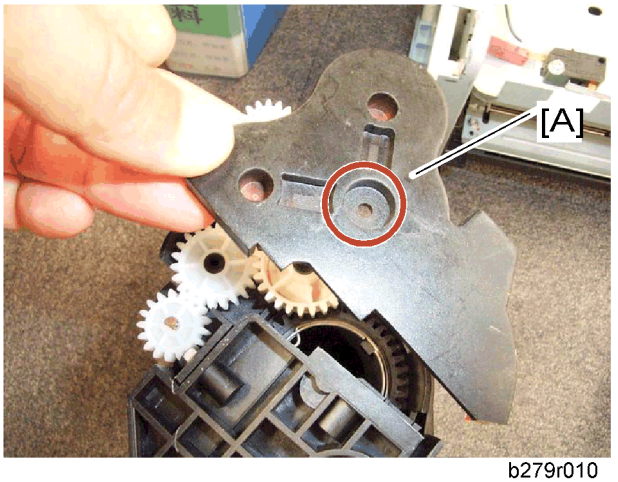


b279r009

5. Thermistor harness [A]
6. Paper exit sensor harness [B]
7. Fusing lamp harness [C]
8. Fusing unit [D] (🔩 x 4)

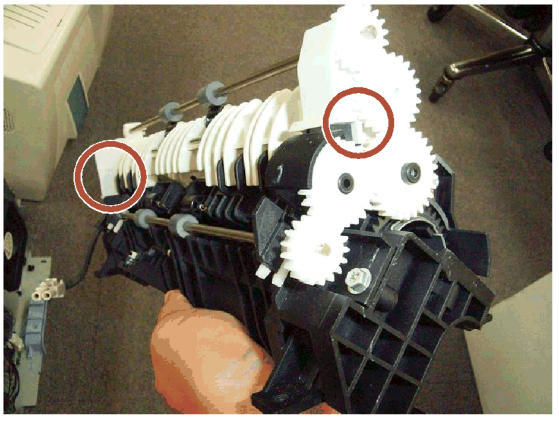
Paper Exit Assembly

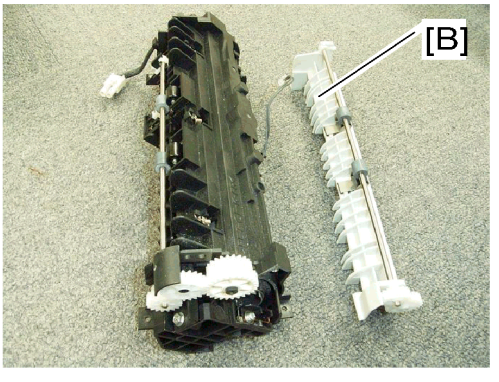
1. Fusing unit (☛ "Fusing Unit")



b279r010

2. Fusing cover [A] (x 1)





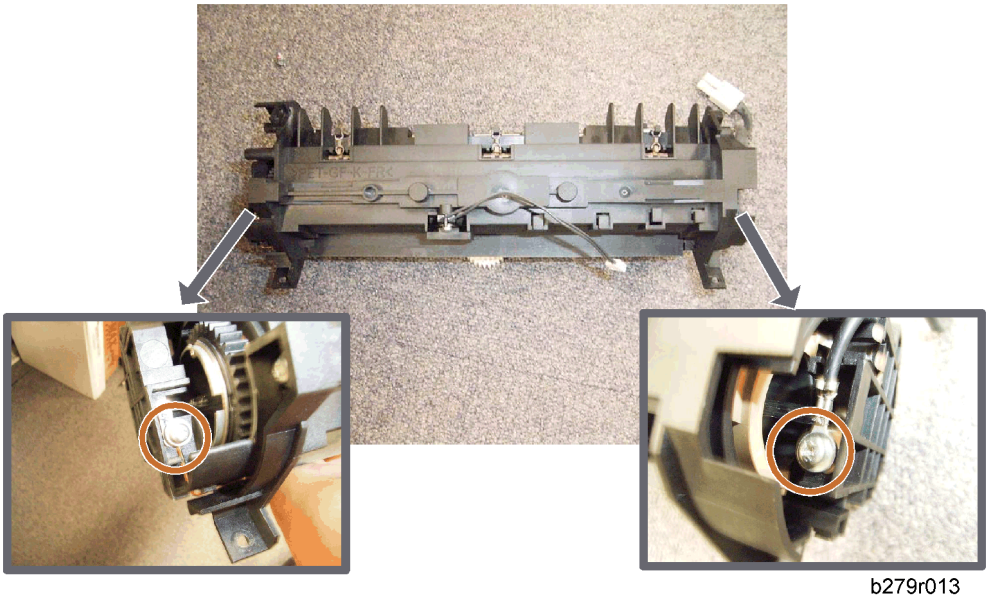
b279r011_012

3. Paper exit assembly [B] (x 2)

Fusing Lamp and Hot Roller

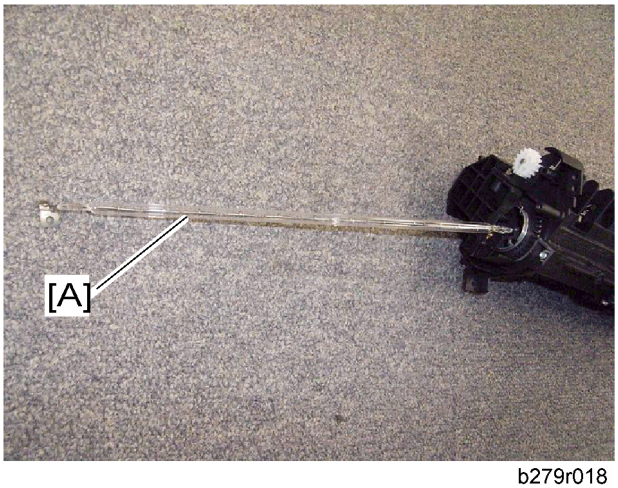
Fusing Lamp

1. Fusing unit (☛ "Fusing Unit")
2. Paper exit assembly (☛ "Paper Exit Assembly").



b279r013

3. Remove two screws (x 2)



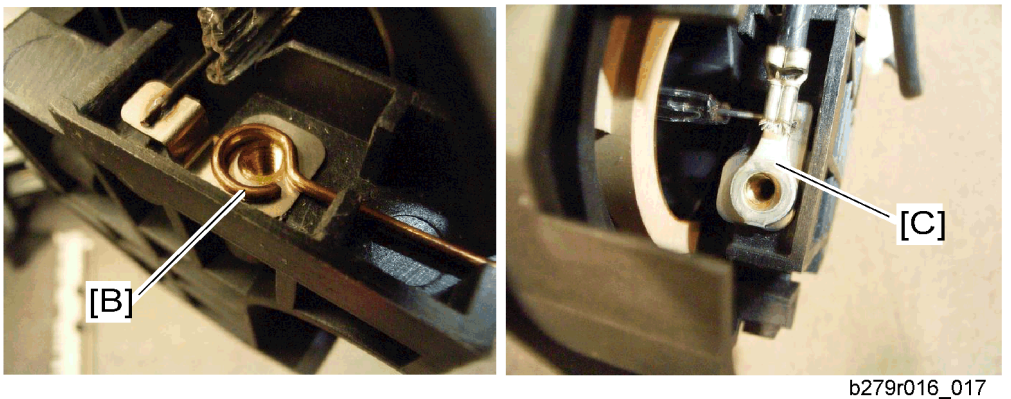
b279r018

4. Fusing lamp [A]

Note

- Do not touch the surface of the fusing lamp with bare hands.

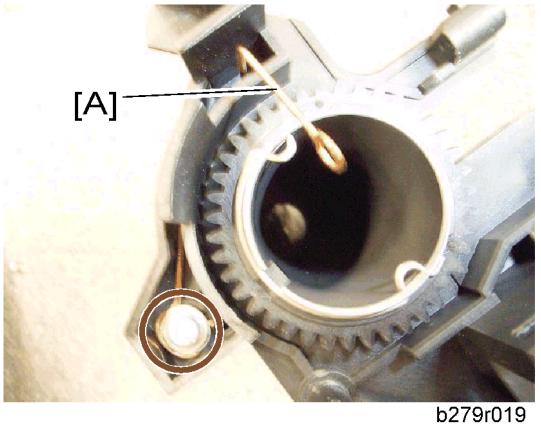
Reassembly



b279r016_017

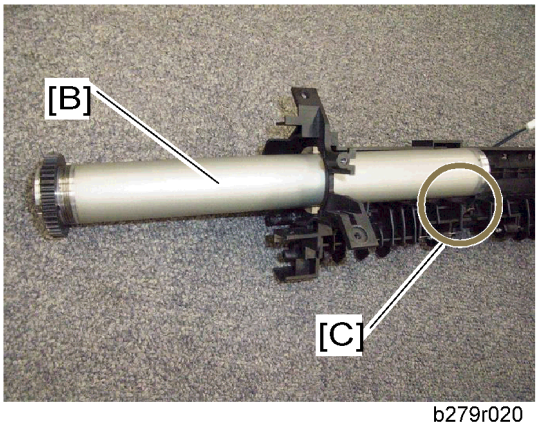
When reassembling, be careful to set the fusing lamp on the frame first, then set the terminals [B] and [C].

Hot Roller



b279r019

1. Electrode [A] (☞ x 1)



b279r020

2. Hot roller [B] (pull it out)

Note

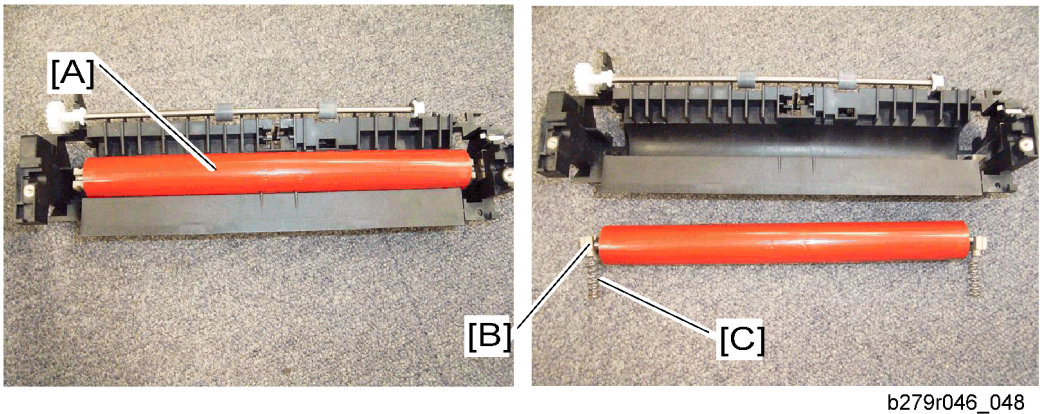
- Do not touch the surface of the hot roller with bare hands.

Note

- When reassembling, be careful not to damage the hot roller strippers [C].

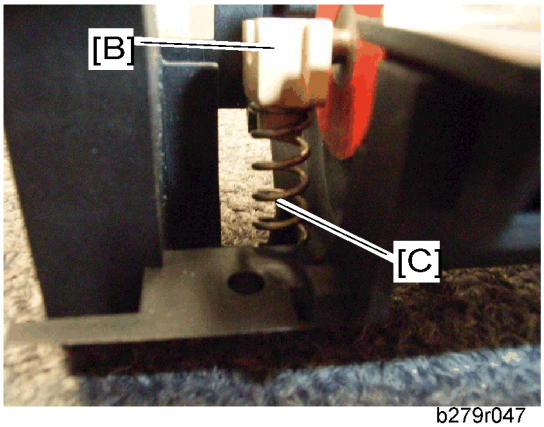
Pressure Roller

1. Fusing unit (☛ "Fusing Unit")
2. Paper exit assembly (☛ "Paper Exit Assembly)
3. Fusing lamp and hot roller (☛ "Fusing Lamp and Hot Roller)



b279r046_048

4. Pressure roller [A] (1 bushing [B] and 1 spring [C] at each side)



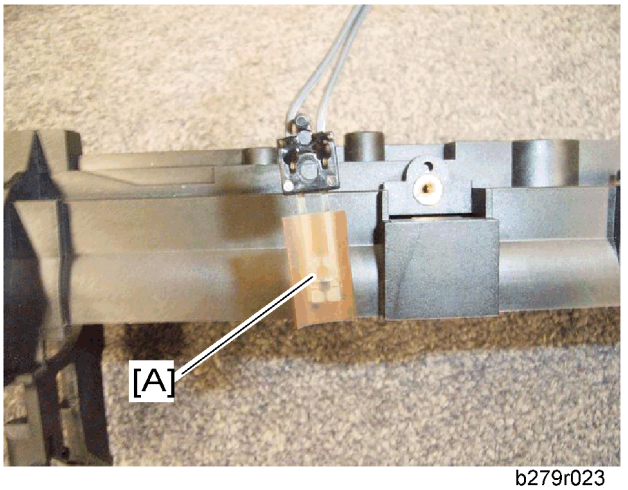
b279r047

Note

- When re-assembling, be careful to set the bushing [B] and spring [C] in the correct position.

Thermistor

1. Fusing unit (☛ "Fusing Unit")
2. Paper exit assembly (☛ "Paper Exit Assembly")



b279r023

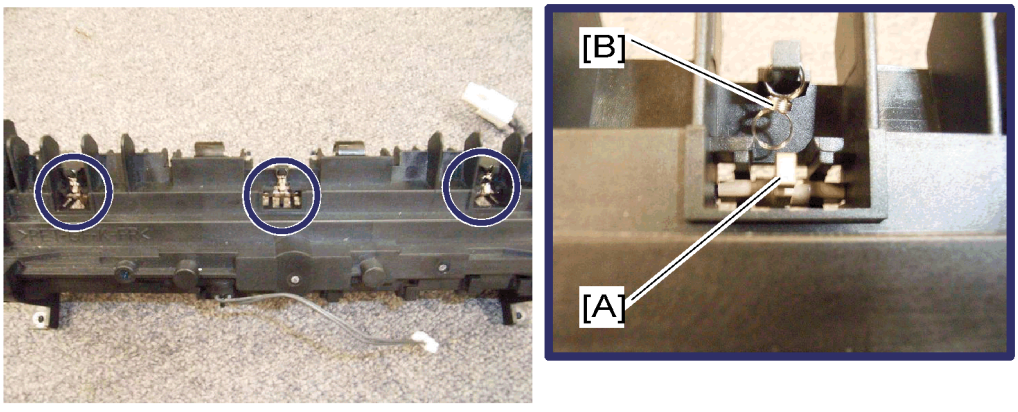
3. Thermistor [A] (🔩 x 1)

Note

- When reassembling, do not damage the thermistor, and check that the element touches the hot roller.

Hot Roller Strippers

1. Fusing unit (☛ "Fusing Unit")
2. Paper exit assembly (☛ "Paper Exit Assembly)
3. Fusing lamp and hot roller (☛ "Fusing Lamp and Hot Roller")



b279r021_022

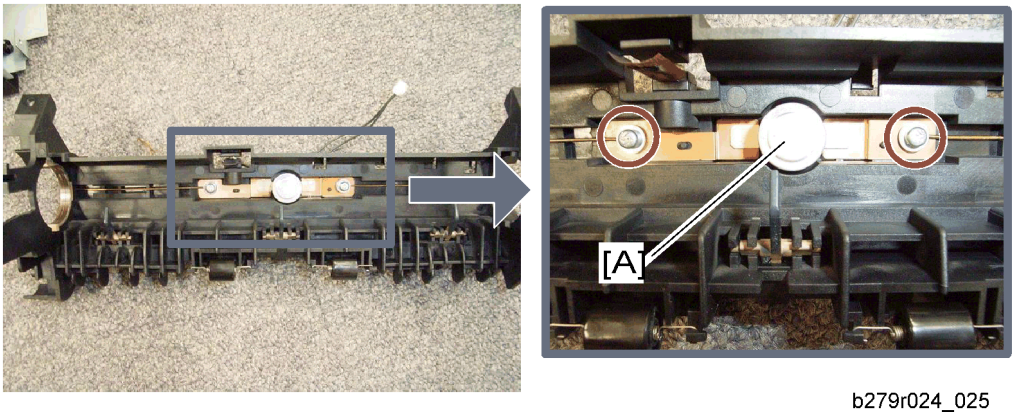
4. Hot roller stripper [A] (1 spring [B] each)

Note

- When reassembling, be careful not to lose the spring [B].

Thermostat

1. Fusing unit (☛ "Fusing Unit")
2. Paper exit assembly (☛ "Paper Exit Assembly")
3. Fusing lamp and hot roller (☛ "Fusing Lamp and Hot Roller")



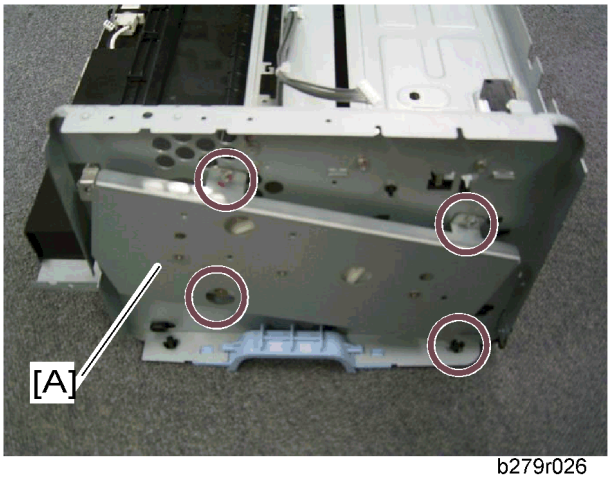
b279r024_025

4. Thermostat [A] (☞ x 2)

Paper Feed

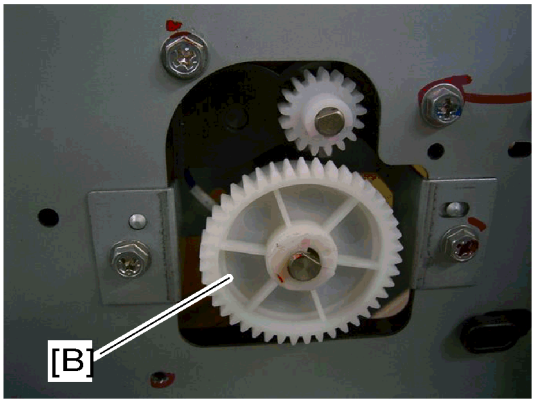
Paper Feed Roller

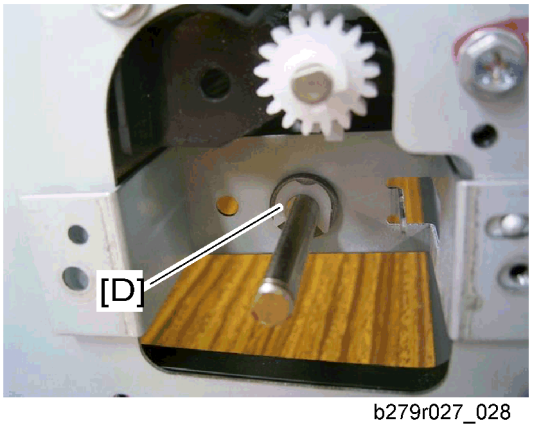
1. Middle frame (☛ "Middle Frame")



b279r026

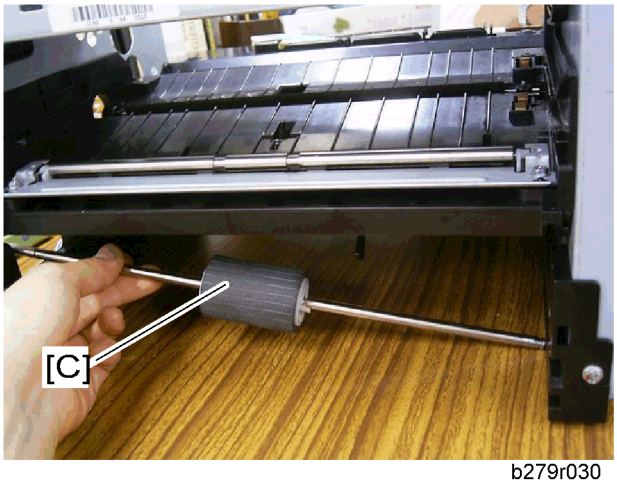
2. Drive assembly [A] (🔩 x 4)





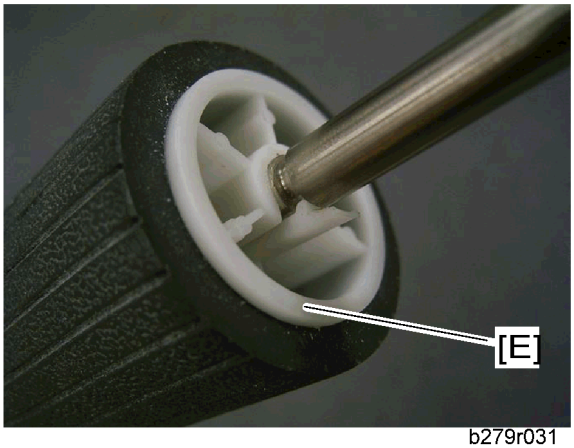
b279r027_028

3. Electromagnetic clutch assembly [B] (x 1)



b279r030

4. Paper feed roller shaft [C] (x 2, one [D] at the left side, and one at the right side)



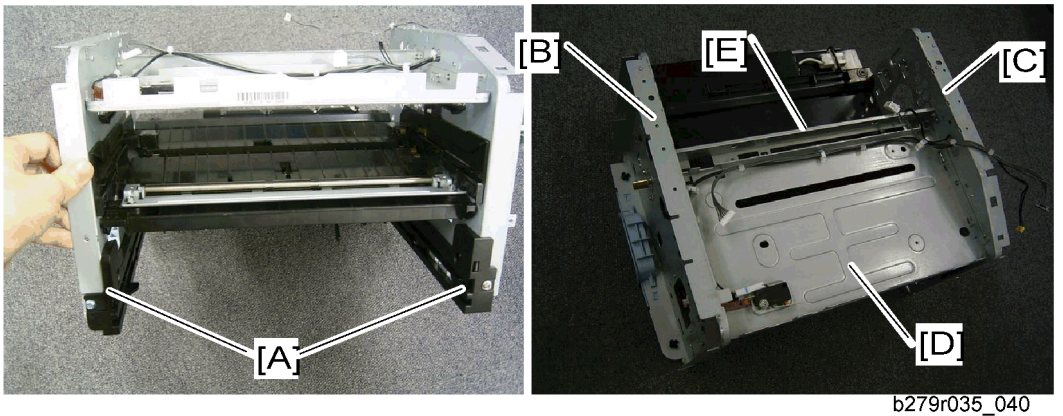
b279r031

5. Paper feed roller [E] from the shaft.

Registration Roller

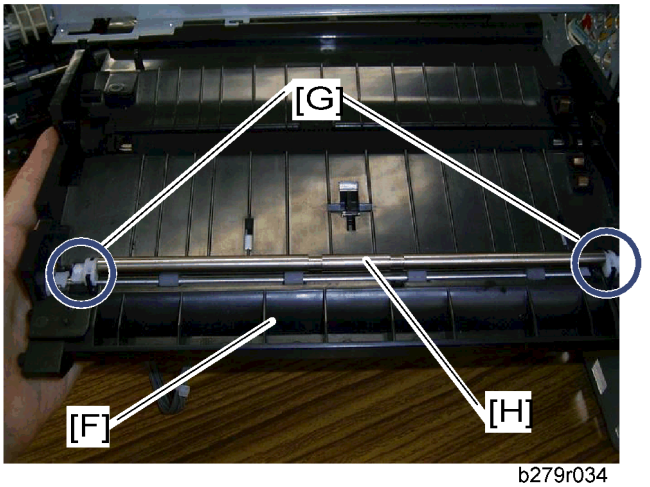
(Also known as 'Roller Driven' in the parts catalog)

1. Middle frame (☛ "Middle Frame")
2. Pull out the paper tray.
3. Remove the toner cartridge.



b279r035_040

4. Paper tray guides [A] (x 2)
5. Left shield [B] (x 13, x 2 at the bottom)
6. Right shield [C] (x 9)
7. Laser shield [D] (x 4)
8. Guide shield [E] (x 4)



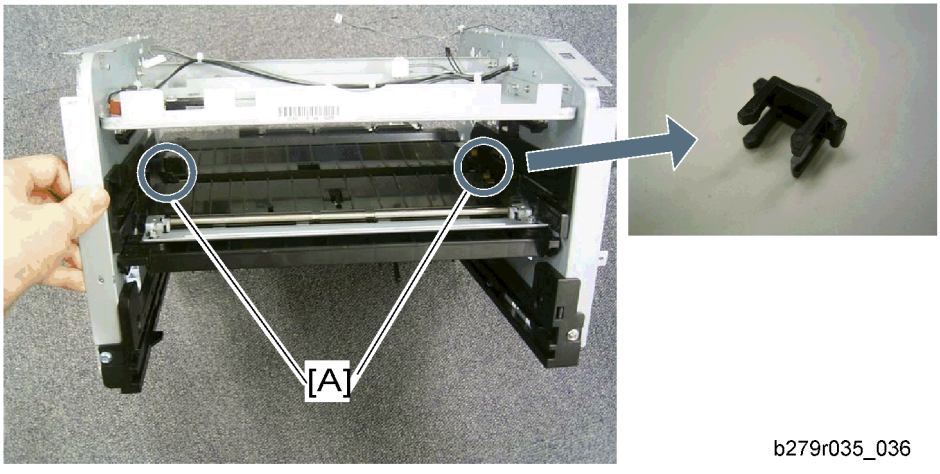
b279r034

9. Plate [F] (x 2)
10. White bushings [G]
11. Registration roller [H] (lift it out)

Others

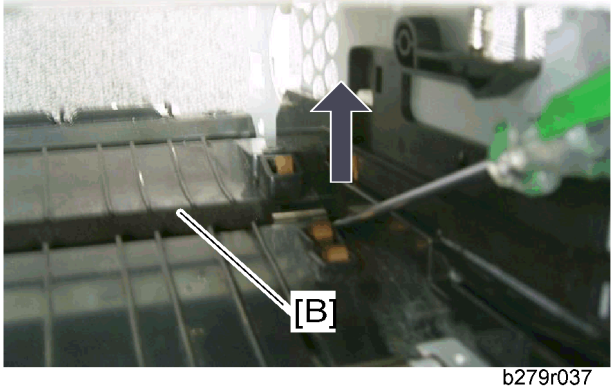
Transfer Roller

1. Open the front door.
2. Remove the toner cartridge.



b279r035_036

3. Black bushings [A]

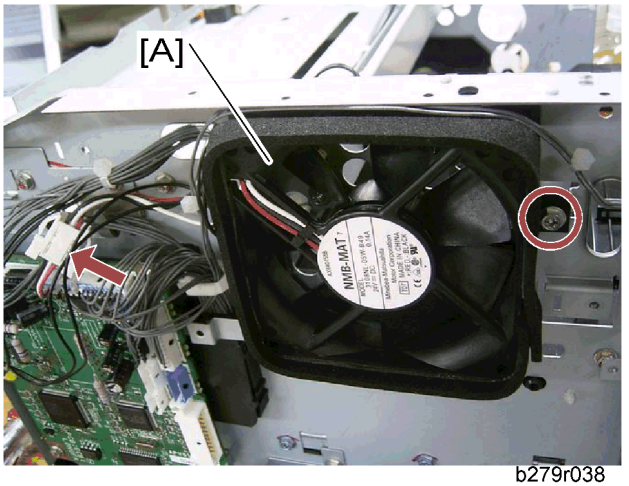


b279r037

4. Remove the transfer roller [B] with a flat-head (-) screwdriver.

Fan Motor

1. Middle frame (☛ "Middle Frame")

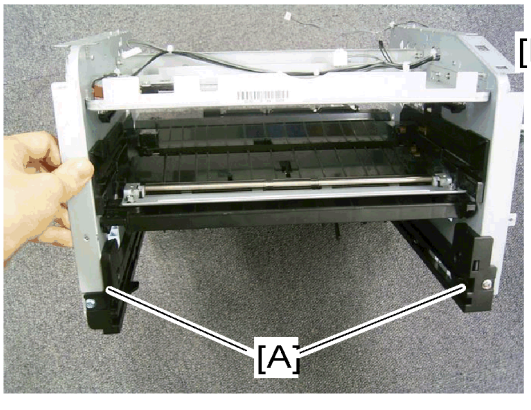


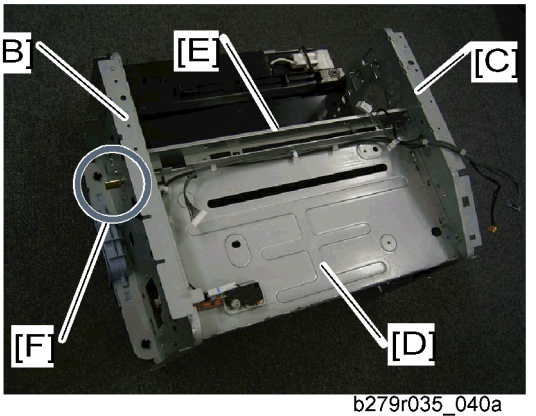
b279r038

2. Fan motor [A] (x 1, x 1)

Main Motor

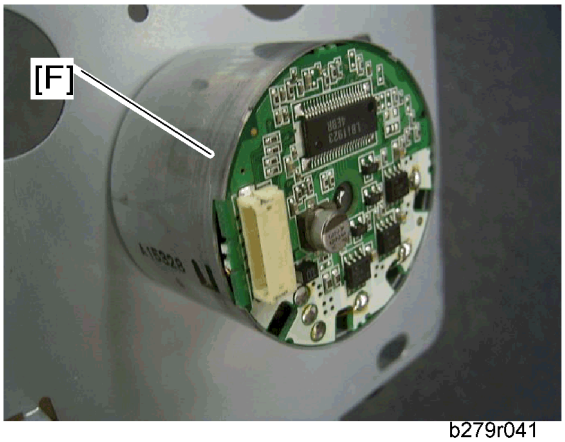
1. Middle frame (☛ "Middle Frame")
2. Remove the paper tray.
3. Remove the toner cartridge.
4. Laser unit (☛ "Laser Unit")





b279r035_040a

5. Paper tray guides [A] (x 2)
6. Left shield [B] (x 13, x 2 at the bottom)
7. Right shield [C] (x 9)
8. Laser shield [D] (x 4)
9. Guide shield [E] (x 4)

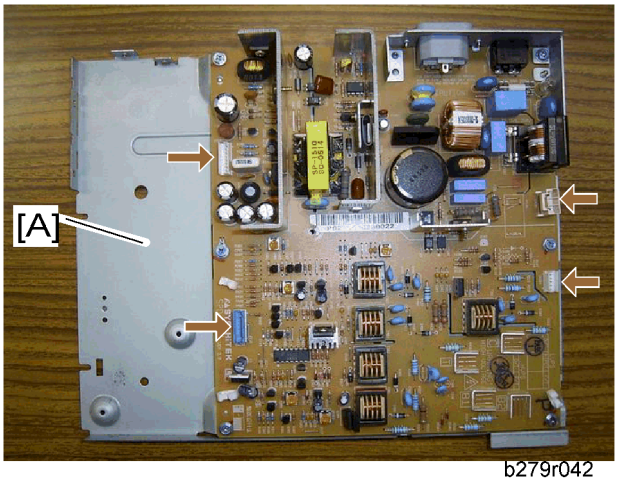


b279r041

10. Main motor [F] (x 3, x 1)

PSU (Power Supply Unit)

1. Middle frame (☛ "Middle Frame")
2. Remove the paper tray.
3. Remove the toner cartridge.
4. Right and left shield (☛ "Main Motor")



5. PSU [A] (x 9, x 4)

4. Troubleshooting

Paper Jam

Paper Jam 1

Non-feed

Possible Cause:

1. Use of a non-recommended paper type.
2. The paper cassette end fence is set incorrectly.
3. The paper lift mechanism is not working properly.
4. Malfunction in the paper feed clutch.
5. The paper feed roller is set incorrectly.
6. The paper feed motor is defective.
7. The registration sensor is defective.

Action:

1. Check whether a correct paper type is being used.
2. Check that the paper cassette end fence is set correctly and check the paper lift mechanism.
3. Check that the paper lift is working properly.
4. Check that the feed clutch for the cassette is working properly.
5. Check that the paper feed roller is installed properly. Clean or replace if necessary.
6. Check the registration sensor and mechanism. Clean or replace if necessary.
7. Check that the registration sensor is working correctly.

Paper Jam - Inside Printer

Possible Cause:

1. Use of a non-recommended type of paper.
2. The paper end fence and/or the paper guides in the cassette are set incorrectly.
3. The registration sensor is defective.
4. Obstruction in the paper path.
5. The main motor is defective.

Action:

1. Check whether a correct paper type is being used, and whether the paper end fence and guides are set correctly.
2. Check for obstructions in the paper path.
3. Check that the registration sensor is working properly.
4. Check for obstructions in the paper path.
5. Replace the main motor if necessary.
6. If the problem remains, do the following:
7. Check the connections between board and the main motor.
8. Check the fusing unit drive mechanism. Check to see that the gears are installed correctly.

Jam - Fusing Exit

Possible Cause:

1. Use of a non-recommended type of paper.
2. Obstruction in the paper path.
3. The registration sensor is defective.
4. Malfunction in the fusing drive mechanism.
5. Malfunction in the hot roller stripper(s) mechanism.
6. Malfunction in the pressure mechanism in the fusing unit.

Action:

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

Skew

Possible Cause:

1. Use of a non-recommended type of paper.
2. Incorrect positioning of the paper guides in the paper cassette.
3. The friction pad is out of position.
4. The paper feed roller is worn out or damaged.
5. Obstruction in the paper path.

6. Malfunction in the registration mechanism.

Action:

1. Check whether a correct type of paper is being used.
2. Check that the paper guides and the end fence are set correctly.
3. Check that the friction pad is set correctly.
4. Check if the paper feed roller is installed correctly and clean. Replace if necessary.
5. Check for obstructions in the paper path.
6. Check the registration mechanism and clean or replace the rollers if necessary.

Multi-feed

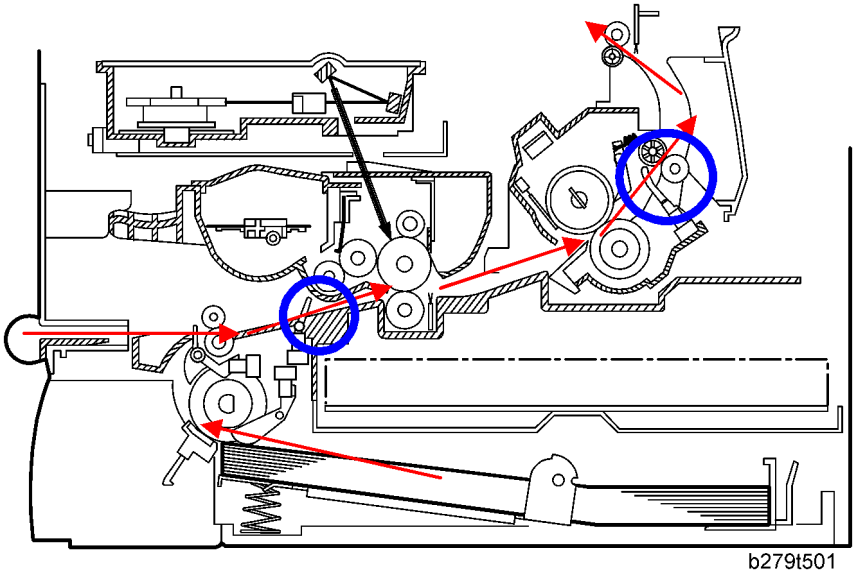
Possible Cause:

1. Use of a non-recommended type of paper.
2. Incorrect positioning of the paper guides and/or end fence in the paper cassette.
3. The friction pad is out of position.

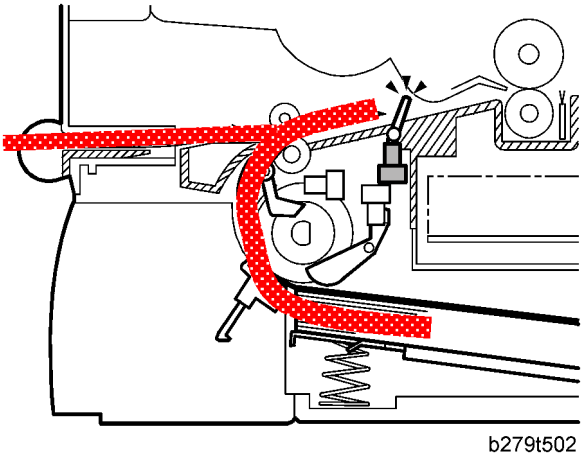
Action:

1. Check whether a correct type of paper is being used.
2. Check that the paper guides and the end fence are set correctly.
3. Check that the friction pad is set correctly.
4. Fan the edges of the paper stack to separate the pages. Then tap the stack on a flat surface to even up.

Paper Jam 2



Jam 1. Paper jam at the paper cassette



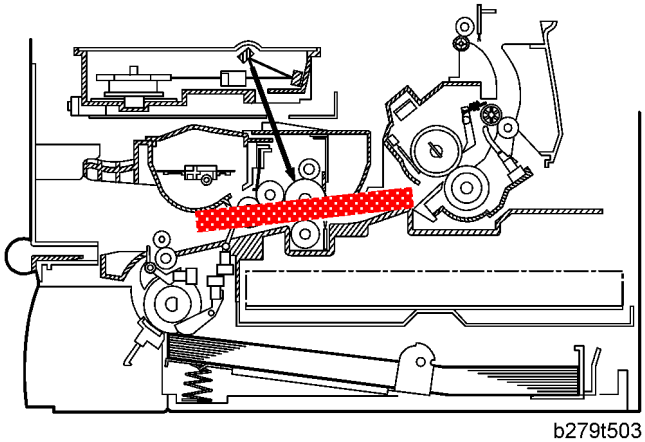
When the registration sensor does not turn on within 2.65 seconds after the paper pick-up clutch for the paper cassette turns on.

Action

1. Slide out the paper tray unit.
2. Grab the visible edge of the paper and gently pull it out of the paper tray as shown above. Then make sure the remaining paper on the paper tray unit is correctly aligned.

3. Slide the tray back into the machine. Then open and close the front cover. Printing starts again.

Jam 2. Paper did not pass the registration sensor



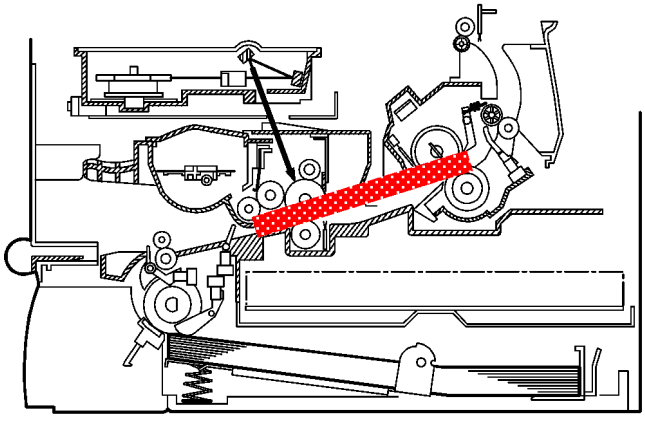
b279t503

When the registration sensor does not turn off within the specified time for passing a paper after the registration sensor turns on.

Action

1. Open the front cover and remove the AIO.
2. Gently pull the paper toward you as shown above.
3. Make sure there is no more paper in the machine.
4. Re-install the AIO and close the cover. Printing starts again.

Jam 3. Paper did not reach the fusing unit



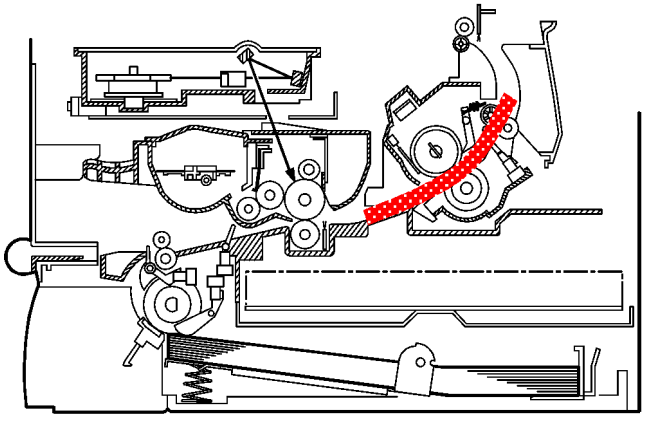
b279t504

When the paper exit sensor does not turn on within 2.1 seconds after the registration sensor turns on.

Action

1. Open the front cover and remove the AIO.
2. Gently pull the paper toward you as shown above.
3. Make sure there is no more paper in the machine.
4. Re-install the AIO and close the cover. Printing starts again.

Jam 4. Paper jam in the fusing exit area



b279t505

The paper exit sensor does not turn off within 3.0 seconds after the registration sensor turns off.

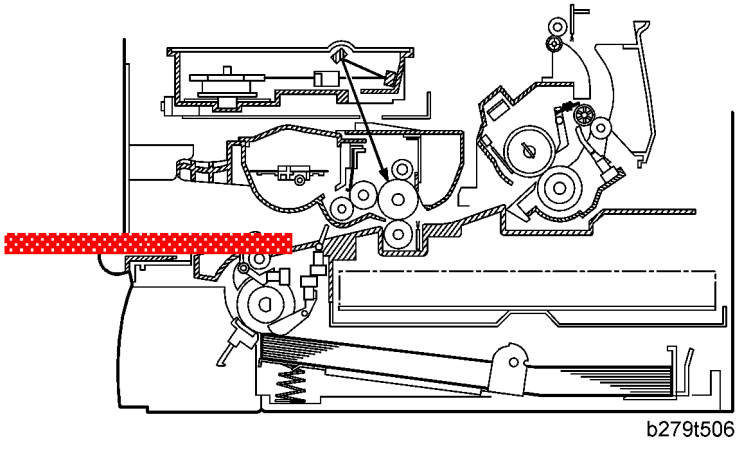
Action

1. Pull the paper straight out if paper gets jammed when it exits to the output tray. Do not continue to pull the paper if there is resistance and the paper does not move. In this condition, go to the next step.
2. Open the rear output tray.
3. Loosen the paper if it is caught in the feed rollers. Then gently pull the paper out.
4. Close the rear output tray. Then open and close the front cover. Printing starts again.

Note

- Paper jam in this area is very close to the fusing unit. The fusing unit can get very hot. Use high caution when you remove paper in this area.

Jam 5. Paper no feed jam in the bypass tray



When the registration sensor does not turn on within 1.6 seconds after the main motor starts.

Action

Pull the paper straight out if paper gets jammed when it exits rear cover area.

Print Quality

Blank Copies

Possible Cause

- Poor drum sensitivity.
- Laser optic components are out of position.
- The proper bias voltages are not applied to the toner application roller and/or the development roller.
- The proper current is not applied to the transfer roller.

Action

1. Print a test pattern, and open the cover in the middle of printing.
2. Check to see if there is toner adhered to the drum surface.

   If there is, do the following. If not, go to step 3.

   - Check to see if the cartridge is correctly installed.
   - Check to see if the transfer roller is correctly positioned.
3. Check to see if the cartridge is empty. If it is, replace the cartridge.

Black Copies

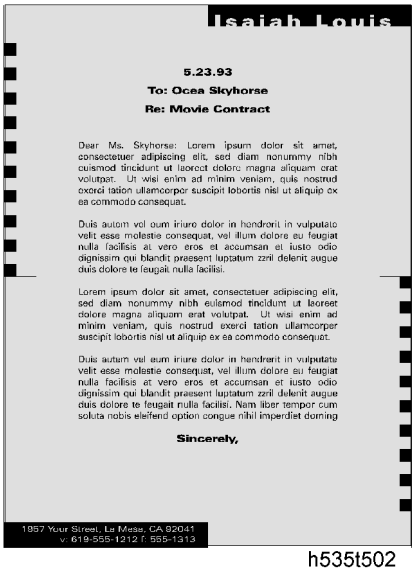
Possible Cause

The charge is incorrectly applied.

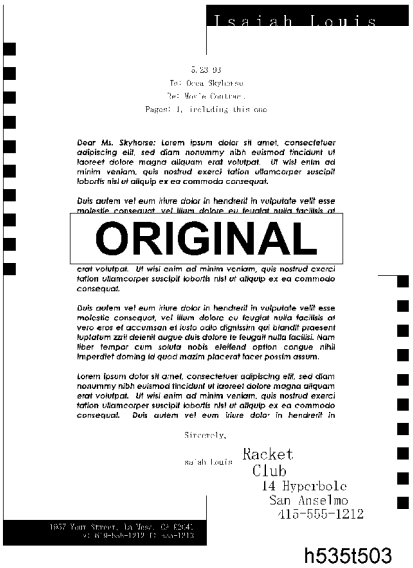
Action

1. Check the connections between the power supply unit, the charge voltage terminals, and the cartridge.
   - If they are OK, go to step 2.
   - If not, fix the connections.
2. Replace the power supply unit.

Dirty Background



h535t502



h535t503

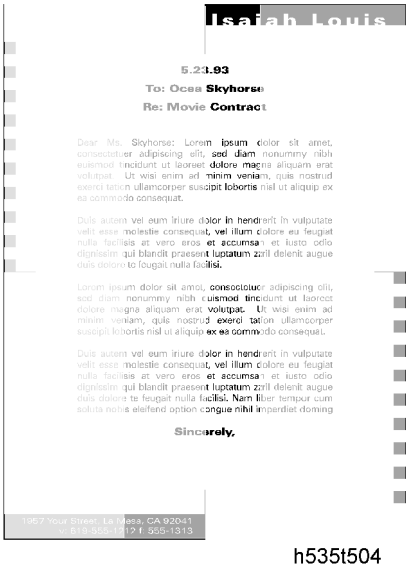
Possible Cause

- Poor drum sensitivity.
- The charge is incorrectly applied.
- The hot roller is dirty.

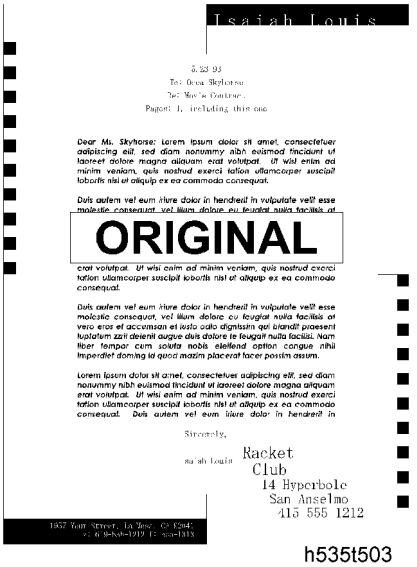
Action

1. Try replacing the cartridge.
2. Check to see if the hot roller surface is dirty.
    - If it is, clean the roller.
    - If not, go to step 3.
3. Check whether all connections between the charge bias terminals and the cartridge are correct.
    - If they are, check or replace power supply unit.
    - If they are not, fix the connections.

Uneven Image Density



h535t504



h535t503

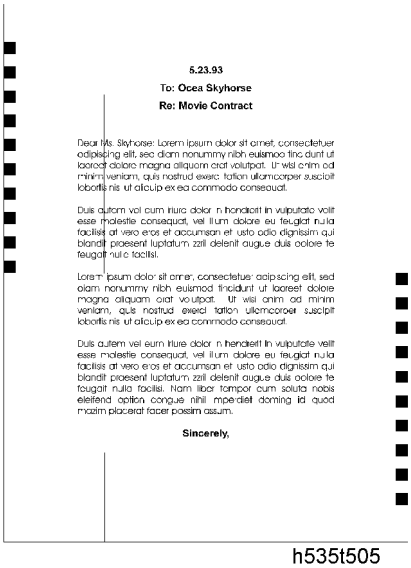
Possible Cause

- Poor drum sensitivity.
- Dirty laser optic components.
- A deformed toner metering blade.
- Uneven toner supply in the toner hopper.

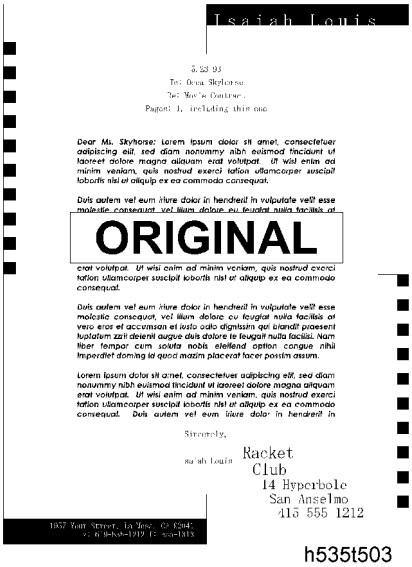
Action

1. Print a solid black test pattern, and open the cover in the middle of printing.
2. If the image is lighter in the center of the image, the toner may be low. Replace the cartridge. If it is not, go to step 3.
3. Check to see if the toner is evenly distributed on the drum.
    - If it is not, check the cartridge and the laser optic components.
    - If it is, check if there is any dirt on the transfer roller surface.

Vertical Black Lines



h535t505



h535t503

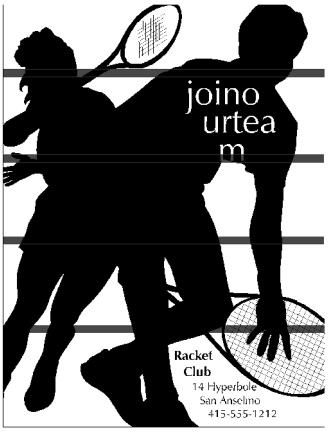
Possible Cause

- Damaged cleaning blade.
- Dirty hot roller stripper(s).

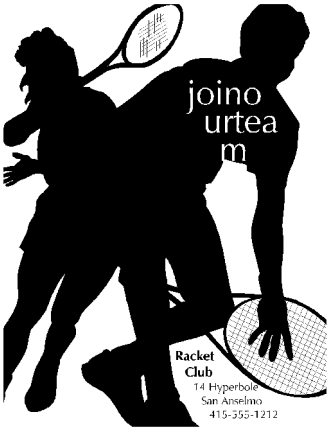
Action

1. Replace the cartridge.
2. Clean the hot roller strippers.

Horizontal Black Lines



h535t506



h535t507

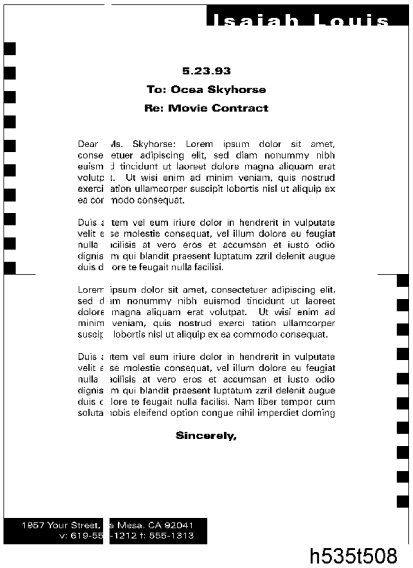
Possible Cause

The drum surface is scratched or damaged.

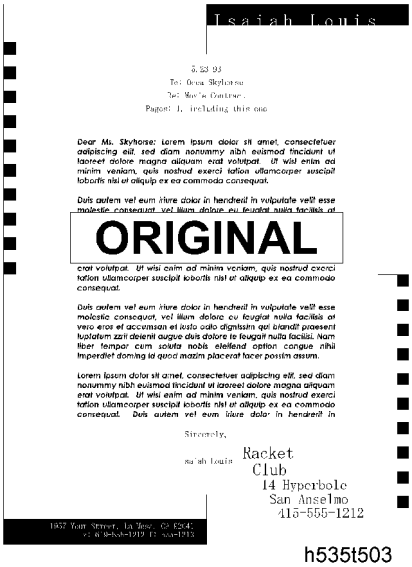
Action

1. Check to see if the surface of the drum is damaged.
    - Replace the cartridge if damaged.

Vertical White Lines



h535t508



h535t503

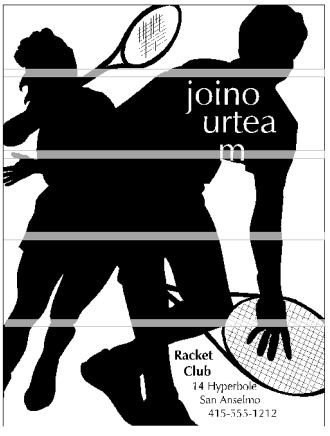
Possible Cause

- The laser optic components are dirty.
- The hot roller stripper scrapes off toner from the print paper.
- Damaged cleaning blade.

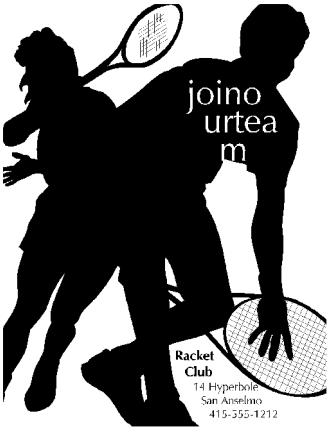
Action

- Clean the laser optic components.
- Check the hot roller stripper mechanism. Clean the strippers and replace them if damaged.
- Replace the cartridge.

Horizontal White Lines



h535t509



h535t507

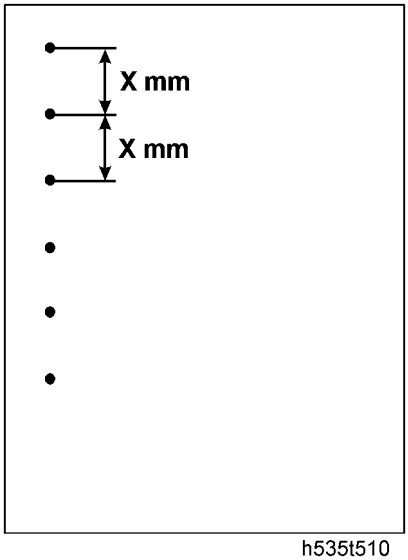
Possible Cause

- A damaged or deformed development roller surface.
- The development bias is unstable.
- The transfer current is unstable.

Action

1. Print a test pattern, and open the cover in the middle of printing.
2. Check to see if horizontal white lines (where toner is not adhered) appear on the drum surface or not.
    - If not, check the transfer roller surface and the transfer bias terminal connections. If they are OK, check or replace the power supply unit.
    - Replace the cartridge.

Black Dots/Spots



h535t510

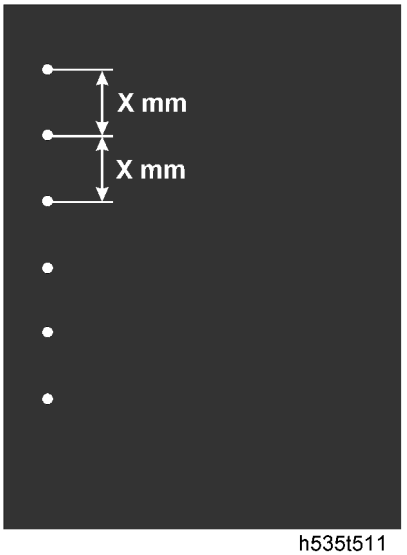
Possible Cause

- The drum surface is damaged (this is likely if the dots appear at 75.3 mm intervals).

Action

- Replace the cartridge.

White Spots in Black Image Areas



h535t511

Possible Cause

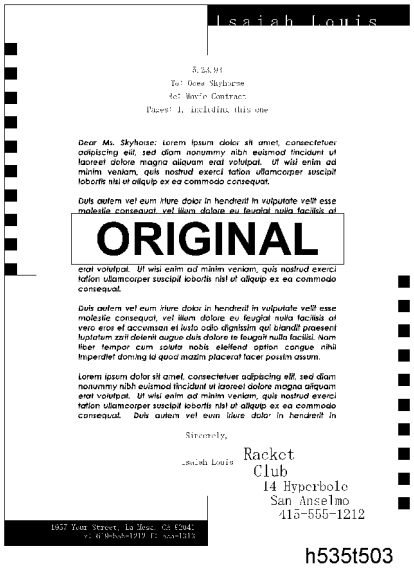
- The drum surface is damaged (this is likely if the dots appear at 75.3 mm intervals).
- The development roller surface is damaged (this is likely if the dots appear at 36.4 mm intervals).
- The toner application roller surface is damaged (this is likely if the dots appear at about 29.1 mm intervals).
- The transfer roller surface is damaged (this is likely if the dots appear at about 43.9 mm intervals).
- The exposure roller surface is damaged (this is likely if the dots appear at about 37.7 mm intervals).

Action

- Replace the cartridge.

Faint Copies

h535t512



h535t503

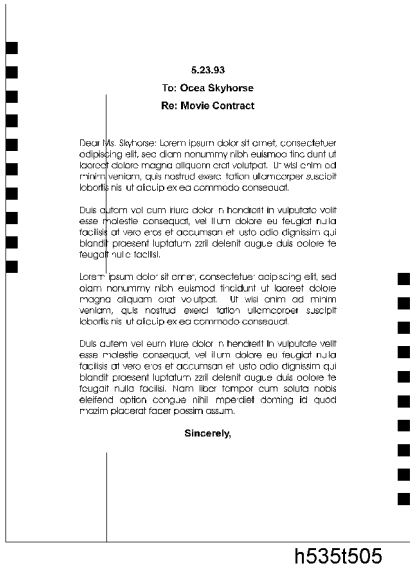
Possible Causes

- Poor drum sensitivity.
- Dirty laser optic components.
- Incorrect development/ transfer bias
- Low toner
- Low fusing temperature

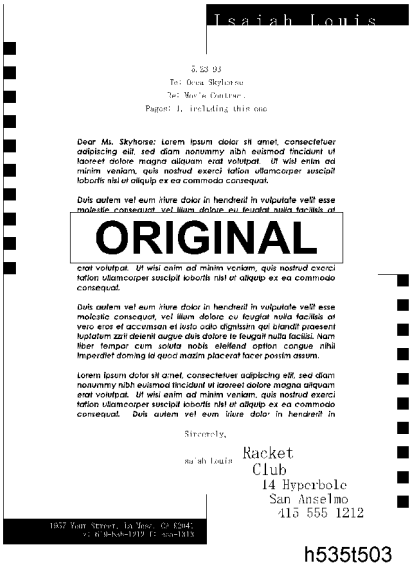
Action

1. Print a test pattern, and open the cover in the middle of printing.
2. Check to see if the toner on the paper at the entrance of the fusing unit appears faint.
    - If it does, check or replace the fusing lamp, thermistor, and power supply unit.
    - If it does not, go to step 3.
3. Check to see if the toner on the drum looks faint.
    - If it does, go to step 4.
    - If it does not, check the contacts between the transfer bias terminals and power supply unit.
4. Check all the contacts between the development and toner application rollers' bias terminals.
    - If it does not, try replacing the cartridge.

Vertical Black Band



h535t505



h535t503

Possible Cause

- A deformed, damaged, or incorrectly positioned toner metering blade.

Action

- Replace the cartridge.

Unfused Copies

Possible Cause

- The thermistor is defective.
- The spring mechanism for the fusing pressure roller is defective.
- Incorrect toner type.
- Non-recommended paper type.

Action

1. Check that the correct type of paper and toner are in use.

- If they are, go to step 2.
- If not, use recommended types of paper and cartridge.

2. Try replacing the fusing lamp and the hot and/or pressure roller.

Ghost Image

Possible Cause

- Poor drum sensitivity.
- The cleaning blade is deformed or incorrectly positioned.
- Dirty hot roller

Action

1. Replace the cartridge.
2. Clean the hot roller surface and/or replace the cleaning pad.

Toner on the Back of the Printer Paper

Possible Cause

- Dirty transfer roller
- Dirty fusing pressure roller

Action

1. Check to see if the transfer roller is dirty with toner.
    - If it is, clean the roller surface by copying a sheet of white paper three times or more. (For better results, copy one sheet at a time)
    - If not, go to step 2.
2. Check to see if the fusing pressure roller is dirty with toner.
    - If it is, clean the fusing pressure roller.
    - If not, check for any other dirty rollers and clean them.

Incorrectly Aligned Output

Possible Cause

- Laser optics are aligned incorrectly.
- Incorrect print margin setting (main scan direction).

Action

- Adjust the main scan print margin.
- Check that the laser optics are aligned correctly.
- Replace the Laser unit.
- Replace the main board.

Incorrectly Aligned Output/Reduced Image

Possible Cause

- Incorrect print margin (sub-scan direction).

Action

- Replace the Laser unit.
- Replace the main board.

Error Code

Communication Error Codes

The communication error codes appear in the logs (printed using key sequence ▼ > "5" > "2") and in the transmission reports.

General Codes

Code	Error	Cause	Actions
01	**Engaged or no fax tone**	This code appears after 6 failed attempts.	Restart the transmission at a later time.
03	**Stopped by operator**	Communication stopped by the operator by pressing the ▼ key.	
04	**Programmed number invalid**	Invalid programmed single-key or quick-dial number (Example: a delayed transmission has been programmed with a single key and this key has been deleted).	Check the validity of the programmed number and/or the single-key associated to the programmed number.
05	**Scanning fault**	An incident has occurred at the location of the document to be transmitted (Example: the sheet is jammed).	Check the ADF module.
06	**Printer not available**	An incident has occurred on the printer (Example: out of paper, paper jam or cover open). In the case of a reception, this incident code only appears if the "RECEPTION WITHOUT PAPER" parameter is set to "WITHOUT PAPER".	Check the printer.
07	**Disconnect**	The communication has been cut (bad connection).	Check the called number.

Code	Error	Cause	Actions
08	**Quality**	The document that you have transmitted has not been received correctly.	Contact your correspondent to check whether it is necessary to retransmit the document -:interference may have occurred in an unimportant area of the document.
0A	**No document to recover**	You have attempted to recover a document from a correspondent, but the latter has not prepared (stored) the document or the password that was entered is wrong.	Contact your correspondent to check whether the document to recover has been prepared or to check the validity of the password.
0B	**Wrong number of pages**	There is a difference between the number of pages indicated when the document was prepared for transmission and the number of pages actually transmitted.	Check the number of pages of the document.
0C	**Received document faulty**	The document is too long to be received in its entirety.	Ask the correspondent to check/ reduce the length of his document.
0D	**Document transmission fault**	Document reception error.	Ask the correspondent to retransmit his document.
13	**Memory full**	The terminal memory is full (there are too many documents that have been received but not yet printed, or waiting to be transmitted).	Print the received documents. Delete or transmit in immediate mode the documents waiting to be transmitted.
14	**Memory full**	Received document memory saturated.	Print the received documents.
16	**List number x not retransmitted**	Failure to retransmit a document via a remote fax (the requested list of recipients is not programmed on the remote fax).	Check that the list of recipients is programmed on the remote fax.

Code	Error	Cause	Actions
19	**Stopped by correspondent**	Communication stopped by your correspondent (Example: a fax attempts to recover a document from your fax, while there is no document waiting for this correspondent).	
1A	**Disconnect**	Transmission has not started (the phone line is too noisy).	Check the quality of the phone line or restart the transmission at a later time.
1B	**Document transmission fault**	Document transmission error.	Transmission: restart the transmission. Reception: ask your correspondent to retransmit the document.

5. Service Tables

User Mode

Refer to the Operating Instructions.

Tech Mode

How to go into Tech Mode

Each one of the administrator functions described here can be accessed via a specific succession of keys.

The alphabetic keys are available via the navigation keys ▲ and ▼ via the keyboard.

For example, to enter a sequence ▼ > "✱" > "A" (launching scanner tuning):

1. Press the following key ▼.
2. Press the following key ✱.
3. Press ▼ to display all the options available until you reach "A".

Confirm your choice with "OK".

Installation Parameters

The installation parameters are used for adapting the machine to the specific requirements of users in countries where it is to be installed.

Each machine is programmed with the factory test configurations. The installer can obtain a printed copy of these parameters (sequence of keys ▼ > "5" > "4").

Remark(s): It is recommended to keep a paper copy of the list of parameters provided at delivery.

Access to these parameters is only authorized for maintenance and/or installation service technicians.

The machine comes with software blocks called SOS (Soft Switches) No. 1 to 60. Each block is made up of 8 bits called bit 1 to 8. Each bit has a value of 0 or 1. Reading the block (from bit 1 to bit 8) on the display panel is done from right to left. The blinking cursor is always located on bit 8 (on the extreme left) when selecting the configuration.

Access to the configuration data is available via the initialization screen, via a succession of keys: ▼ > "✱" > "#"

The significance of the principal configuration parameters for the machine is provided as following section "List of Configurations". They can be modified just like any other parameter.

List of Configurations (SOS)

Remark(s): The undocumented Soft Switches in this section are reserved.

Soft-Switch 1: Tuning the Ringing Tone and Automatic Printing

Bit	Value	Description
1	1	Reserved
2	0	Reserved
3	0	SOS-DURPAUSE: Long/short pause while dialing Values: # 0 (Short 2s) or 1 (Long 6s)
4	0	Reserved
5	0	Reserved
6	1	SOS-IMPAUTO: Automatic log print Values: 0 (Without) or 1 (With)
7	0	SOS-IMPT30: Automatic printing of T30 trace after comm error Values: # 0 (Without)1 (With)
8	0	SOS-IMPTRA: Trace printing/PC download enable Values: # 0 (Without)1 (With)

Soft-Switch 2: Scanner/Printer Configuration

Bit	Value	Description
1	0	Reserved
2	0	Reserved
3	0	Emitting a beep tone when pressing a front panel key Values: # 0 (with beep tone)1 (without beep tone)
4	1	Reserved
5	0	Reserved
6	0	Reserved
7	0	SOS-COPLOC: Capping local copy Values: # 0 (With capping)1 (Without capping)
8	0	Reserved

Soft-Switch 3 : Line Configuration

Bit	Value	Description
1	1	SOS-NIVEMI: Transmission level Values: 00 = 0 dBm 01 = -1 dBm ... # 06 = -6 dBm ... 0F = -15 dBm
2	0	
3	0	
4	1	
5	0	Reserved
6	0	SOS-SEUILREC: Reception threshold 1 Values: # 0 (-43 dB) 1 (-47 dB)
7	0	SOS - EPTV29: Use Echo Protect Tone with V29 Values: #0 (Without) 1 (With)
8	0	SOS - ECHO: Echo canceling Values: #0 (Without) 1 (With)

Soft-Switch 4: Fax Protocol Configuration

Bit	Value	Description
1	1	SOS-MODPRIV: Communication in private mode Values: 0 (Without)# 1 (With)
2	0	SOS-DIS-COURT: Restricted DIS size Values: # 0 (long DIS (complete)) 1 (Short DIS)
3	0	SOS-TCF: TCF accept criterion Values: # 0 (Normal): refused if there has not been 1 continuous second. 1 (Special): 1 discontinuous second in the TCF, then accepted systematically at 2 400 b/s.
4	0	SOS-RTN: Page accept criterion Values: # 0 (10 percent)
5	0	

Bit	Value	Description
		1 (15 percent) 2 (20 percent) 3 (no check)
6	1	SOS-DISINF: Unlimited DIS length Values: 0 (Without)# 1 (With)
7	0	SOS-LGINF: Maximum length of scan, printing, communication Values: # 0 (1 meter) 1 (3 meters)
8	1	SOS-ECM: Restricted ECM Values: 0 (Without) # 1 (With)

Soft-Switch 5: Voice/Loudspeaker Configuration

Bit	Value	Description
1	1	Reserved
2	0	Reserved
3	0	Reserved
4	0	Reserved
5	0	Reserved
6	1	SOS-HP: Line monitoring during fax comm. Values: # 0 (Without) 1 (With)
7	1	Reserved
8	0	Reserved

Soft-Switch 6: Line Adjustment

Bit	Value	Description
1	0	Reserved
2	0	Reserved

Bit	Value	Description
3	0	Reserved
4	0	Reserved
5	0	Reserved
6	0	Reserved
7	0	Reserved
8	0	SOS-TSTDCOM: Driver test functions Values: # 0 (Without)1 (With)

Soft-Switch 9: Approval + Communication Applications

Bit	Value	Description
1	0	Reserved
2	0	Reserved
3	0	Reserved
4	1	SOS-REPERR: Redialing from page fault Values: 0 (Without) # 1 (With)
5	1	SOS-NOTREMIS: Printing of first page on transmission report Values: 0 (Without) # 1 (With)
6	0	SOS-GRILLAGE: Burn phone numbers Values: #0 (Without) 1 (With)
7	1	SOS-LIGNE5S: Lines of 5 seconds during reception Values: 0 (Length of lines not limited to 5 sec./line) # 1 (Maximum length of a line: 5 seconds)
8	1	SOS-AGRE-FRA: French approval functions Values: 0 (Without) # 1 (With)

Soft-Switch 10: Communications: Locks/Miscellaneous

Bit	Value	Description
1	0	SOS-AFFVIT: Communication rate display Values: # 0 (Without) the page number is displayed. 1 (With) the comm. rate is displayed.
2	1	SOS-BTYPNUM: Access to impulse/DTMF parameter Values: 0 (With) Reserved # 1 (Without)
3	0	Reserved
4	1	Reserved
5	1	SOS-TLRFAX: Remote readout by fax (ATTENTION!!!) Values: # 0 (Remote readout to Quadrige in transparent mode) 1 (Remote readout by fax)
6	0	Reserved
7	0	SOS-SONREA: Access to redialing parameters (screen /printer) Values: # 0 (No access)1 (With access)
8	0	Reserved

Soft-Switch 18: Coding/ UART Rate

Bit	Value	Description
1	1	SOS-CODMEM: Stored document encoding type Values: 00 (RL Coding) 01 (MH Coding) 10 (MR Coding) #11 (MMR Coding)
2	1	
3	1	SOS-CODCOM: COM negotiated encoding type Values: 01 (MH Coding) 10 (MR Coding) #11 (MMR Coding)
4	1	

Bit	Value	Description
5	0	Reserved
6	0	Reserved
7	0	SOS-AFF_VIT_REELLE : Show/hide real communication rates Values: # 0 (show reduced rates) 1 (show real rates)
8	0	Reserved

Soft-Switch 19: Miscellaneous Software Functions

Bit	Value	Description
1	0	Reserved
2	1	Reserved
3	0	SOS-GROUPE: Restriction on groups (or distribution list) Values: # 0 (No groups) 1 (Groups accepted)
4	0	SOS-REGULREC: T30 reception control inhibited Values: # 0 (Without) 1 (With)
5	0	Reserved
6	1	SOS-MENUCLAVIER: Hide keyboard menus and force QWERTY keyboard Values: 0 (Show) # 1 (Hide)
7	0	SOS-ONETOUCH: Enable "One touch" functions Values: # 0 (Without) 1 (With)
8	0	SOS-TLC: Accept software download via STN Values: # 0 (Without) 1 (With)

Soft-Switch 21: T4 Decoder/ Debug

Bit	Value	Description
1	1	SOS-TRAITLIGERR: T4 decoding line copying mode Values: 0 (For each line with an error) # 1 (Only once, then destroy)

Bit	Value	Description
2	0	Reserved
3	0	Reserved
4	0	Reserved
5	1	SOS-GARBAGE-FLASH: Flash memory garbage collection method Values: 0 (garbage collection when application terminates) # 1 (garbage collection as background task) **⚠CAUTION** • Taken into account only after reboot of the CPU
6	0	Reserved
7	0	SOS-DETECT OCCUP: Inhibition of engaged tone detect Values: # 0 (Without)1 (With)
8	0	Reserved

Soft-Switch 22: Miscellaneous

Bit	Value	Description
1	1	SOS-DUREE-2100: Transmission time of the 2100 modified for V34 reception Values: 00 (5 seconds) 01 (4.5 seconds) 10 (4 seconds) # 11 (3.5 seconds)
2	1	
3	0	SOS-SORTIMP: Printing at the end of fax communications Values: # 0 (Printing during comm.) 1 (Print after comm.)
4	0	Reserved
5	0	Reserved
6	0	Reserved
7	0	Reserved
8	0	Reserved

Soft-Switch 23: Miscellaneous

Bit	Value	Description
1	1	SOS-JBIG: SUPER 3 capability to execute communication with JBIG encoding. Values: 0 (No SUPER G3) 1 (Negotiated SUPER G3)
2	1	Reserved
3	0	SOS-FSI-NOCOVER: Inhibition of generation of cover pages. Values: # 0 (FSI V6 cover page) 1 (FSI V7 cover page) Ricoh model can not set.
4	1	SOS-COMPACTE-RL: Compacting of run length (for fax server ELLIPSE) Values: 0 (No compacting) # 1 (Compacting run length of no length)
5	0	SOS-DEBRIDAGE-JAUGE: Acceptation of EEPROM cards at any moment. Values: # 0 (No) 1 (Yes) Return to 0 after removing the card.
6	0	Reserved
7	0	Reserved
8	1	Reserved

Soft-Switch 26: Miscellaneous

Bit	Value	Description
1	0	Reserved
2	0	Reserved
3	0	Reserved
4	0	Restriction on USB function Values: # 0 (Without)1 (With)
5	0	With or without duplication of on page passage threshold. Values: #0 : No duplication: NBI_SUP_B (1cm) 1 : Duplication: NBI_SUP_B * 2 (2 cm)

Bit	Value	Description
6	0	RR/RNR regulation limitation to 4 in T30. Values: #0 : No limitation 1 : With limitation
7	1	Double alternation optocoupler use Values : 0: Optocoupleur mono alternation #1 : Optocoupleur double alternation
8	0	Reserved

Soft-Switch 27: Miscellaneous

Bit	Value	Description
1	0	Size of remote readout serial number #1000: 8 digits remote readout serial number 1111: 15 digits remote readout serial number (only for EGT for now)
2	0	
3	0	
4	1	
5	0	Waiting time before validation of unexpected modulation in comparison with expected modulation. (~/driver/m_lucent/sms_m_dp2v/src/dpmain.c) # 00 = 60 + 0*30 ms= 60 ms 01 = 60 + 1*30 ms = 90 ms 02 = 60 + 2*30 ms = 120 ms 03 = 60 + 3*30 ms = 150 ms 04 = 60 + 4*30 ms = 180 ms 05 = 60 + 5*30 ms = 210 ms 06 = 60 + 6*30 ms = 240 ms ..... 0F = 60 + 15*30 ms = 510 ms
6	0	
7	0	
8	0	

Soft-Switch 29: Miscellaneous

Bit	Value	Description
1	0	Reserved
2	0	Reserved
3	0	Reserved
4	0	Force the V29 modulation for 9600 and 7200 rates #0 : Enabled 1: Disabled
5	0	Reserved
6	0	Reserved
7	0	Reserved
8	0	Reserved

Soft-Switch 31: Miscellaneous

Bit	Value	Description
1	0	Reserved
2	0	Reserved
3	0	Reserved
4	0	Displaying the TRASH CAN consumable (in the 86 menu) Values: # 0 (Without) 1 (With)
5	0	Using the DHCP queries in ad-hoc WLAN mode Values: # 0 (With) 1 (Without DHCP-directly APIPA)
6	0	Reserved
7	0	Reserved
8	0	Reserved

Soft-Switch 32: Miscellaneous

Bit	Value	Description
1	0	Reserved
2	0	Reserved
3	0	Reserved
4	0	Reserved
5	1	Using One Touch Management for Ricoh values: 0 (without) #1 (with)
6	1	Using Ricoh Toner Management Values: 0 (Without) #1 (With)
7	0	Reserved
8	1	Reserved

Soft-Switch 33: Miscellaneous

Bit	Value	Description
1	0	Reserved
2	0	Reserved
3	0	Reserved
4	0	Reserved
5	1	Question to the user about a good fax printing values : 0 (with) #1 (without question to user)
6	0	Reserved
7	0	Reserved
8	0	Reserved

Administrator Functions

Initializing and erasing memory

Before you start, set the "Soft-Switch 1" bit 8 parameter value to1.

Description	Input Keys
Reset all parameters (user, installer or technical) to the default configuration (factory configuration):	▼ > "#" > "0"
Erase the directory:	▼ > "#" > "1"
Erase the logs :	▼ > "#" > "2"
Erase the printer counters:	▼ > "#" > "3"
Erase the consumable counters (▼, "8", "5"): **Note** • To see the initialization message (this requires inserting the smart card INIT), switch On then Off.	Open the front door then: ▼ > "#" > "4"
Reinitialize the flash data (erases all):	Open the front door then: ▼ > "#" > "5"
Reset to default configuration (combination of functions 0 and 8):	▼ > "#" > "7"
Erase all documents stored in memory:	▼ > "#" > "8"
Erase the first element of the printer queue :	▼ > "#" > "I"
Erase Printer Error:	▼ > "#" > "T"

Switch ON/OFF the machine after changing settings.

Other Functions

Description	Input Keys
Printing all parameters (including installation and technical parameters):	▼ > "✱" > "1"
Switching to forced standby mode regardless of the clock:	▼ > "✱ " > "2"

Description	Input Keys
Switching to software download via a phone line:	▼ > "✱" > "3"
Switching to software download via a computer link:	▼ > "✱" > "4"
Save the directory and parameters on I2C card:	▼ > "✱" > "5"
Save the directory and parameters via STN:	▼ > "✱" > "7"
Accept directory and parameters download via STN:	▼ > "✱" > "8"
Restore the directory and parameters from I2C card:	▼ > "✱" > "9"
Launching scanner tuning:	▼ > "✱" > "A"
Displaying mini-boot version:	▼ > "✱" > "B"
Displaying the state of the applications, traffic and drivers:	▼ > "✱" > "E"
Display modem software version:	▼ > "✱" > "M"
Entering the serial number (with the SOS 1 bit 8 at 1):	▼ > "✱" > "N"
Displaying the internal counters:	▼ > "✱" > "O"
Displaying the GDI throughput:	▼ > "✱" > "P"
Rebooting the machine manually (with the SOS 1 bit 8 at 1):	▼ > "✱" > "R"
Displaying main software version, checksum:	▼ > "✱" > "V"
Displaying the printer firmware version:	▼ > "✱" > "W"
Printing internal counters:	▼ > "✱" > "Y"
Tuning the level of PDL symbols:	▼ > "✱" > "Z"

Replacing the CPU Board

To replace the machine's CPU board, follow this procedure:

1. Print the machine's parameters (user, administrator and technical) and the activity counter values in order to keep a record (▼ > "5" > "4").
2. Replace the CPU board (☛ "CPU Board" in the Chapter "Replacement and Adjustment").
3. Tune the CIS (▼ > "8" > "0").

Replacing the Scanner

To replace the scanner, follow this procedure:

1. Print the machine's parameters (user, administrator and technical) and the activity counter values in order to keep a record (▼ > "5" > "4").
2. Replace the CIS (☛ "CIS" in the Chapter "Replacement and Adjustment").
3. Tune the CIS (▼ > "8" > "0") only if the quality of the copy is unsatisfactory.

New Cartridge

Three toner cartridge replacement procedures can be used depending on the TONER MANAGEMENT setting.

- TONER MANAGEMENT setting set to WITH [0-10%]: the replacement of the cartridge can be performed only when the message Toner near end is displayed. At the end of replacement, validation with the smart card is required.
- TONER MANAGEMENT setting set to WITH [0-100%]: the replacement of the cartridge can be performed at any time. At the end of replacement, validation with the smart card is required.
- TONER MANAGEMENT setting set to WITHOUT: the replacement of the cartridge can be performed at any time and no validation with the smart card is necessary. When set to WITHOUT, the screen displays TONER ? %.

To set the TONER MANAGEMENT setting, select ▼ 2979 - SETUP / TECHNICALS / TONER MANAGEMENT and choose the setting.

Replacement Procedure

- This procedure applies when the setting TONER MANAGEMENT is set to WITH [0-10%].
- When set to With [0-100%], follow the procedure from step 2.
- When set to WITHOUT, follow the procedure from step 2 to step 7.

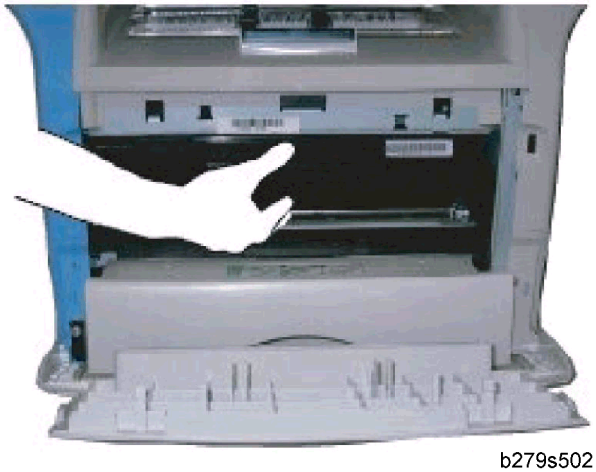
Your machine comes with a current consumable management system. It tells you if your toner cartridge is close to its end of cycle. The message "TONER NEAR END" will appear on your machine screen.

To quit this screen, press "OK" key.

To replace the toner cartridge, proceed as shown below.

1. When the message "TONER EMPTY REPLACE <OK>" is displayed on the screen, press "OK" key.
2. The message "OPEN FRONT COVER REPLACE TONER" is displayed on the screen.
3. Stand in front of the device.
4. Push on the left and right sides of the cover and pull it towards you.
5. Raise and remove the toner cartridge from the machine.

6. Unpack the new cartridge and insert it into the slot as indicated in the diagram below.

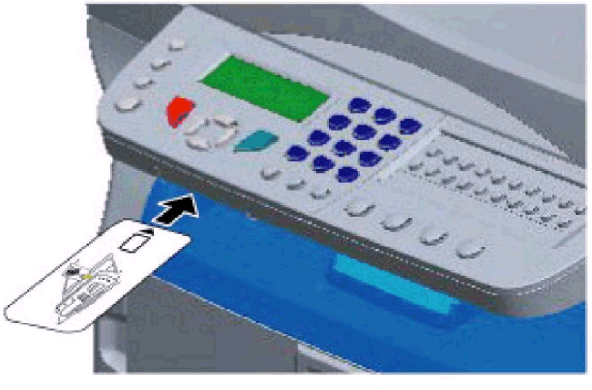


b279s502

7. Close the cover.

   The following message appears:

8. Press "OK" key.
9. When the message "HAVE YOU CHANGED THE TONER? <OK>" appears, insert the toner card provided with the new toner cartridge as shown on the picture below.



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10. The message "PLEASE WAIT" appears.
11. The message "NEW TONER REMOVE CARD" appears after the smart card has been read.
12. Remove the smart card from the reader, the machine is ready to print again.

⚠CAUTION

- To continue the printing of your documents when the message "TONER NEAR END" is displayed, set the TONER MANAGEMENT setting to WITHOUT.

- However, this procedure is not recommended as disabling toner
- management (parameter set to WITHOUT) can lead to fax loss and
- toner being spilled in your print mechanism.

Issues with smart cards

If you use a smart card that has already been used, the machine will display "PLEASE WAIT", then "REMOVE CARD ALREADY USED".

If you use a defective smart card, the machine will display "PLEASE WAIT", then "UNKNOWN CARD REMOVE CARD".

If the C button is pressed while the smart card is being read, the machine displays "ACTION CANCELLED REMOVE CARD"

Firmware Download

Updating the machine's software is carried out via a PC connection (USB or Serial cable). There are two types of firmware (System and Engine firmware) for this machine.

The system software which controls the card core and the mini-boot software may be downloaded separately.

Note

- After downloading the system software, the CIS may require tuning.
- Enter ▼ > "8" > "0" and confirm by pressing "OK". Wait until the screen refreshes and reverts to the default screen mode. Make a local copy to check its quality.

System Firmware

Via PC Connection

Via the executable TELUSB2:

This procedure requires a standard PC running under Windows and equipped with the TELUSB2.exe (version 2.2.0.0) executable and a USB cable.

Before you start, position bit #8 to 1 on the Soft-switch 1.

1. Connect the machine to a PC via a USB cable.
2. Set the machine to download via PC mode (▼ > "✱" > "4").
3. Launch the executable **TELUSB2.EXE** and select the file to be downloaded (extensions .bin or .fwf).

   After about ten seconds, a window will appear to indicate that the download was successful. The machine should not be restarted immediately.

   If the machine restarts immediately, the file is corrupted (checksum false) or the software is not compatible with the machine. The machine then restarts with the initially installed software. In this case, check the file and repeat **step 1**.
4. After about 40 seconds, the machine switches off then restarts. The message "WAIT" is displayed.
5. Check the version of the principal software and checksum by typing in ▼ > "✱" > "V" or check the software version and the mini-boot's checksum by typing in ▼ > "✱" > "B".

Via the UDPATEDEVICE function of COMPANION SUITE:

This procedure requires a standard PC running under Windows equipped with the Companion Suite software and a USB cable.

Before you start, check that the machine is connected to the PC via a USB cable.

1. On the PC, click "START" > "COMPANION SUITE" > "COMPANION" > "UPDATE".

2. In the window "MFUPDATEPRINTER", click on the "BROWSE" icon and select the update file to be downloaded on the machine.
3. After selecting the update file, click on "OPEN".
4. Click on "UPDATE".

Downloading with the Mini-boot

Via the UDPATEDEVICE function of the COMPANION SUITE (H321 only):

This procedure requires a standard PC running under Windows and equipped with the Companion Suite software and a USB cable.

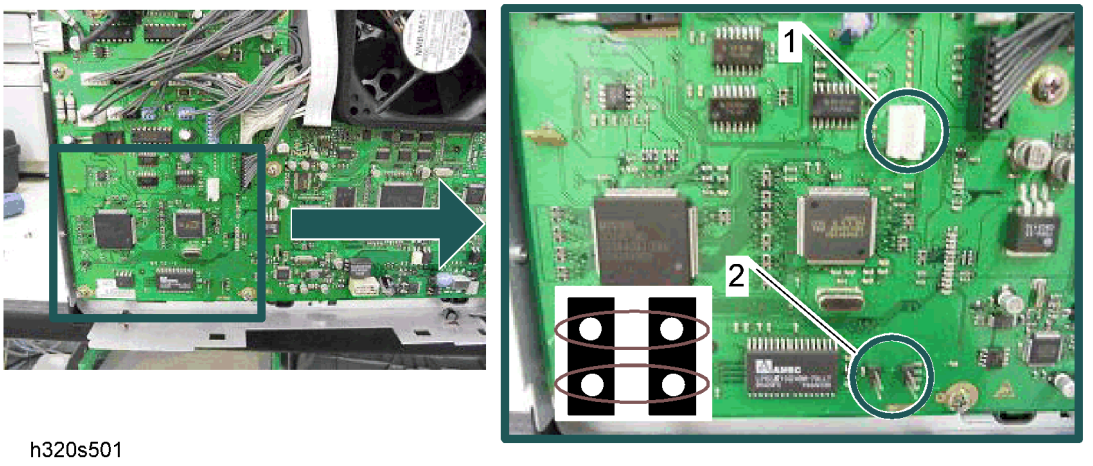
Before you start, position bit #8 to 1 on the Soft-switch 1.

1. Set the machine's On/Off switch to the Off (position 0).
2. Connect the machine to the PC via a USB cable.
3. Press the "4", "6" and "2" keys simultaneously and set the On/Off switch to On (position I).
4. The machine is switched on. The message "RECEIVING FILE" is displayed and a warning sound is emitted.
5. Release the "4", "6" and "2" keys.
6. Continue downloading from **step 1** of the "Via the UDPATEDEVICE function of COMPANION SUITE" in the section "Via PC Connection".

Engine Firmware

Preparation for updating the engine firmware

1. Make sure that the machine is turned off before proceeding with this procedure.



h320s501

2. Remove the CPU board plate (see "CPU Board" in the "Replacement and Adjustment").
3. Connect "CN9" **[1]** on the CPU board to PC's serial port with a cable provided as a special tool.
4. Connect two sets of terminals **[2]** with two pins as shown above.

⚠CAUTION

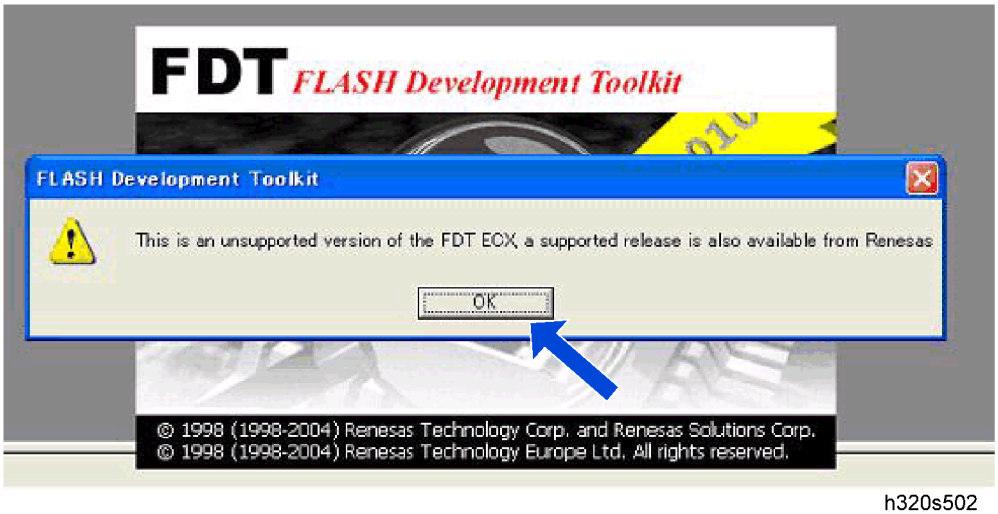
- Connecting two sets of terminals must be done in power off. Otherwise, FDT will fail to connect the serial port for downloading.

5. Turn on the machine.

Creating a new workspace with Flash Development ToolKit3.2

Before opening Flash Development ToolKit3.2, we should make sure the serial port for downloading program isn't used by other active applications (such as debug monitor). If it is used, we must shut down the applications. For example, we should shut down the debug monitor window. Otherwise, FDT will fail to connect to the serial port.

1. Install the toolkit "Flash Development ToolKit3.2", and then run it.



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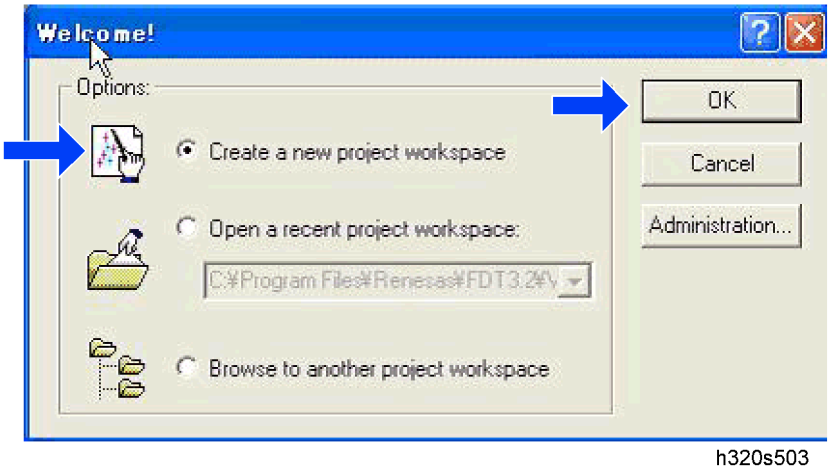
2. Click "OK" after the error dialog box appears as shown.



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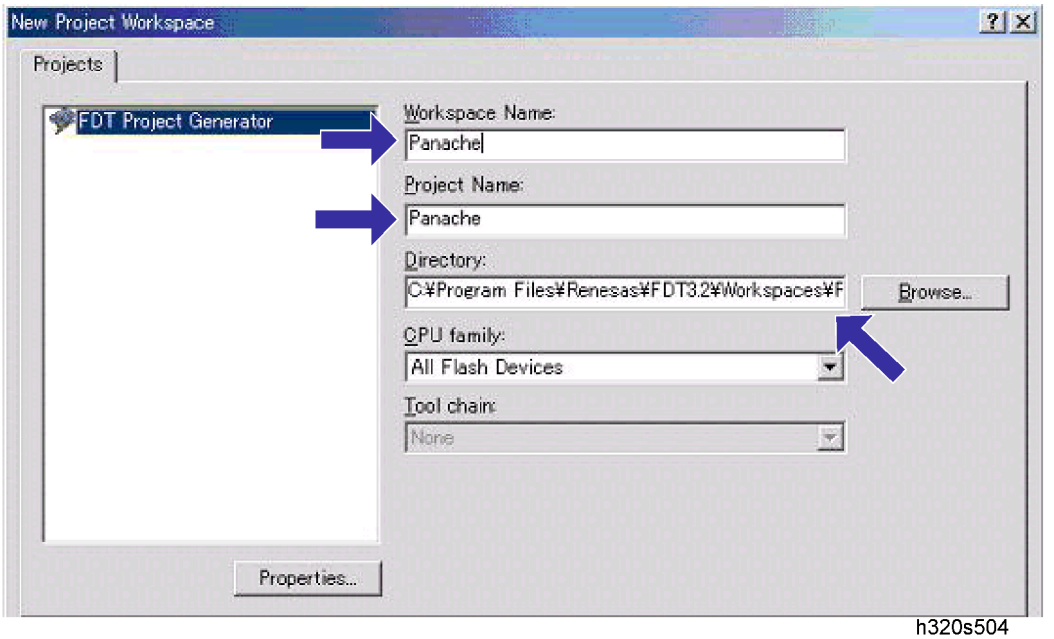
3. Choose “Create a new project workspace”, and then click "OK".

Note

- We may choose other items if we have already created a project workspace.



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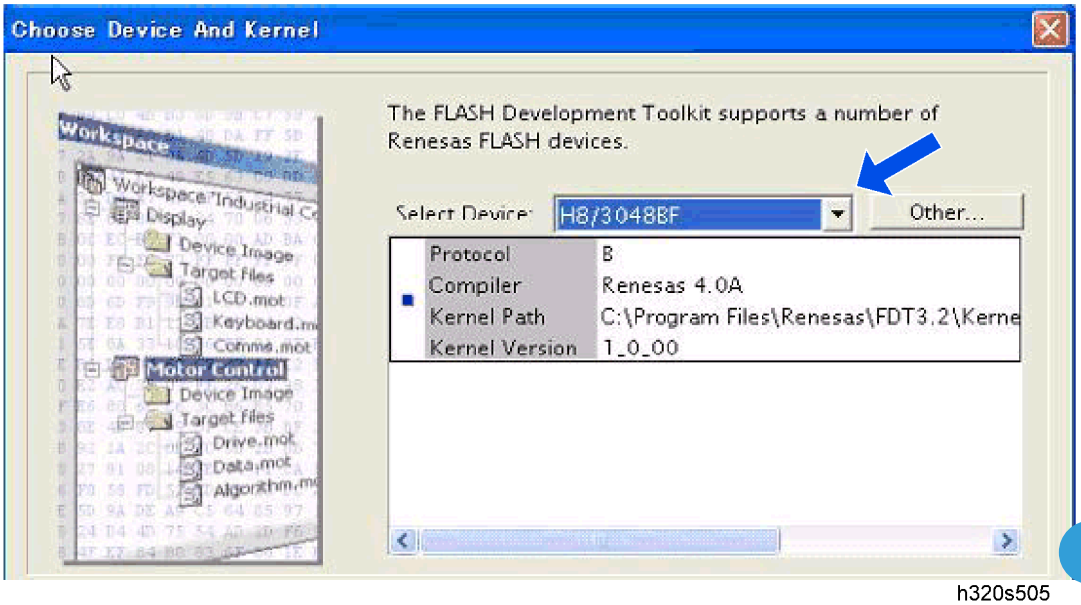
4. Input a name in the "Workspace Name".

Note

- At this time, "Panache" is input.

5. Choose the "Directory" for workspace, and then click "OK".



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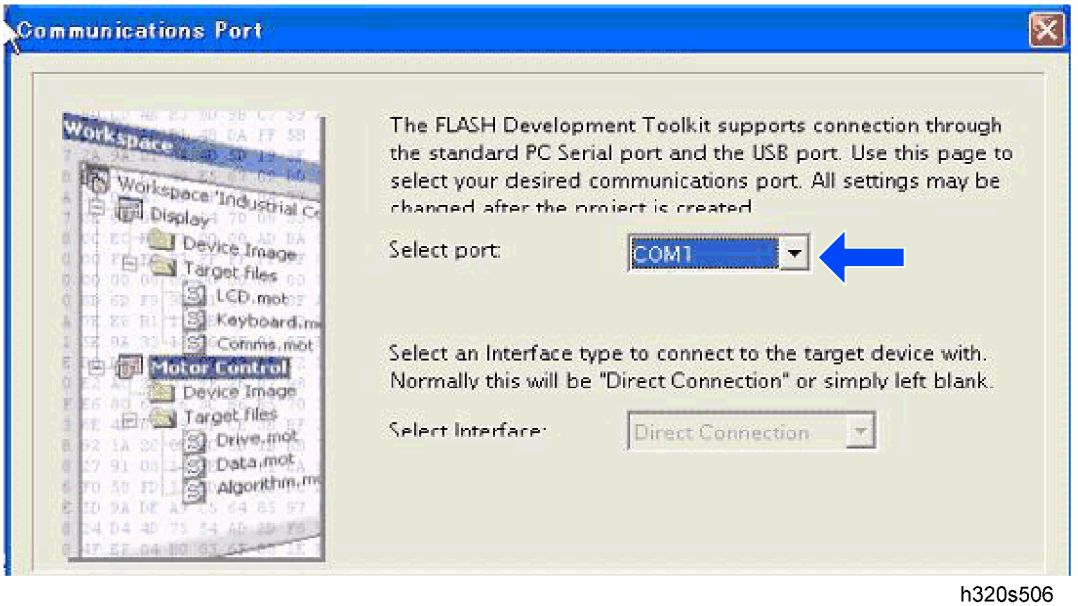
6. Choose the appropriate chip type. For this machine, choose "H8/3048BF", and then click "Next step".



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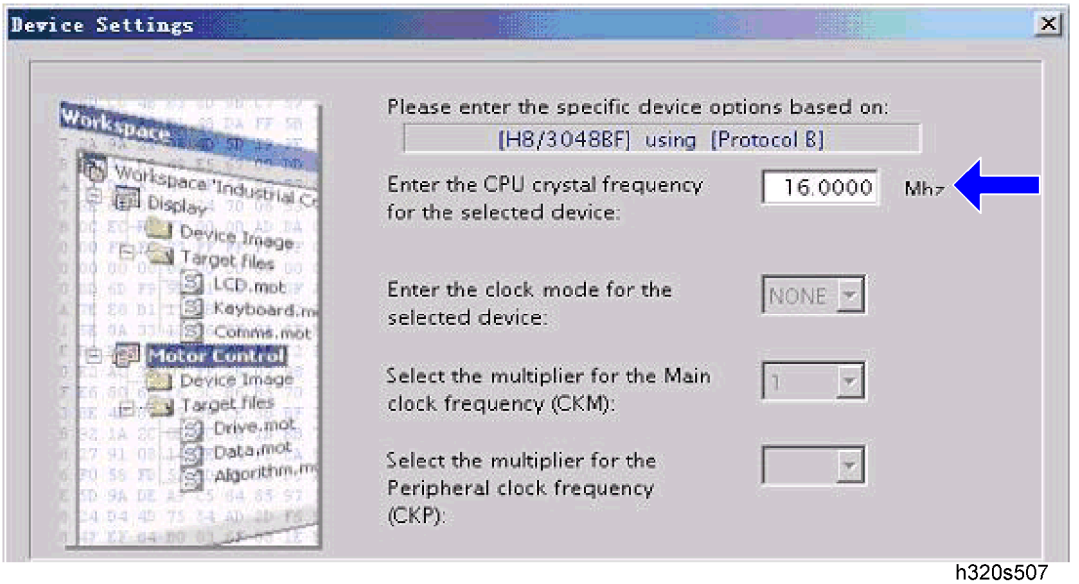
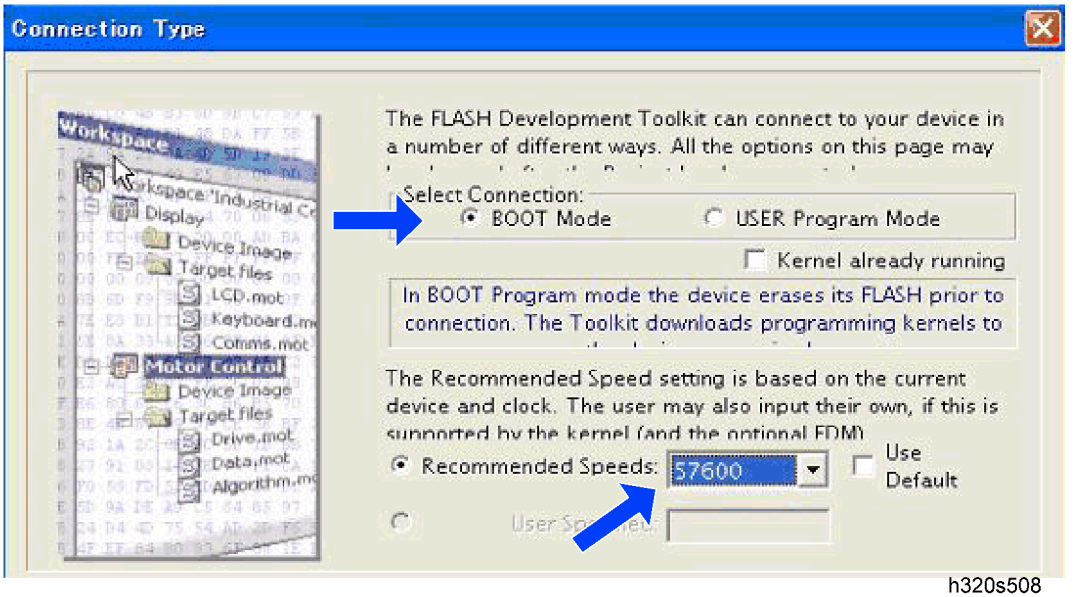
7. Choose the corresponding serial port, and then click "Next Step".



h320s507

8. Choose the appropriate CPU system clock. For this machine, choose 16Mhz, and then click “Next Step”.



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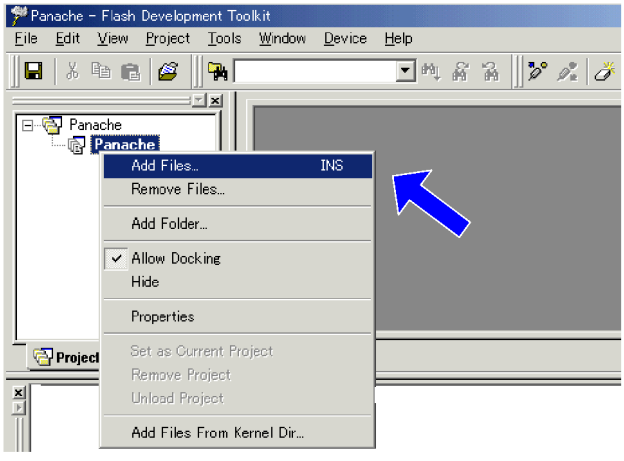
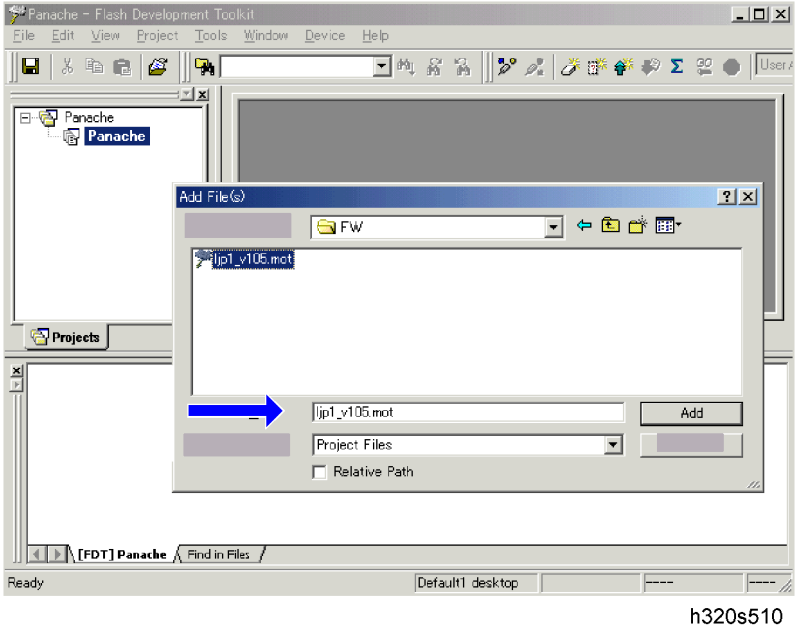
9. Select “BOOT Mode”, and then click “Use Default”.
10. Choose speeds “57600”, and then click “Next Step”.
11. Click “Finish”.

Download Program from PC



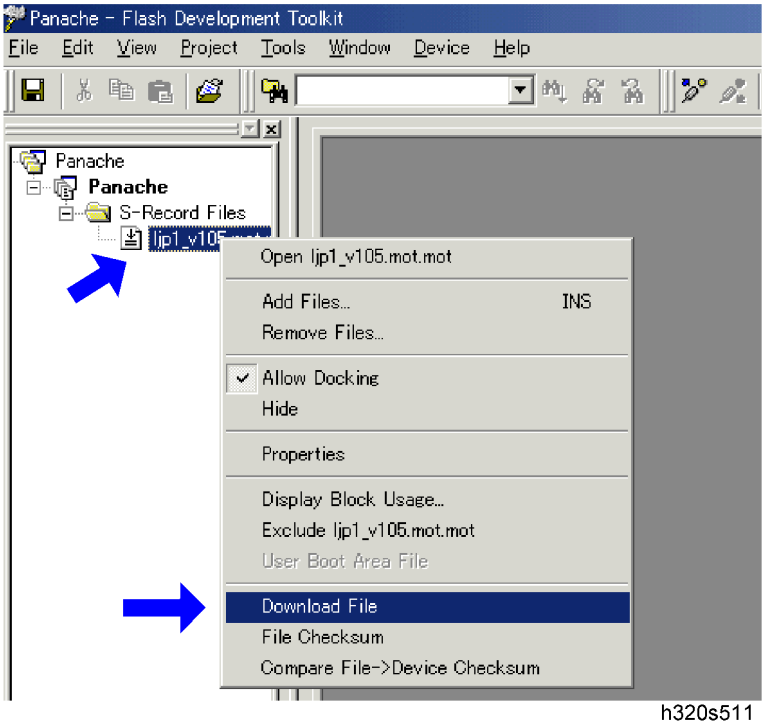
h320s509

1. Choose “Panache”, and then right-click it after new created workspace appears in the following dialog’s left side.
2. Choose "Add Files...", and then click it.



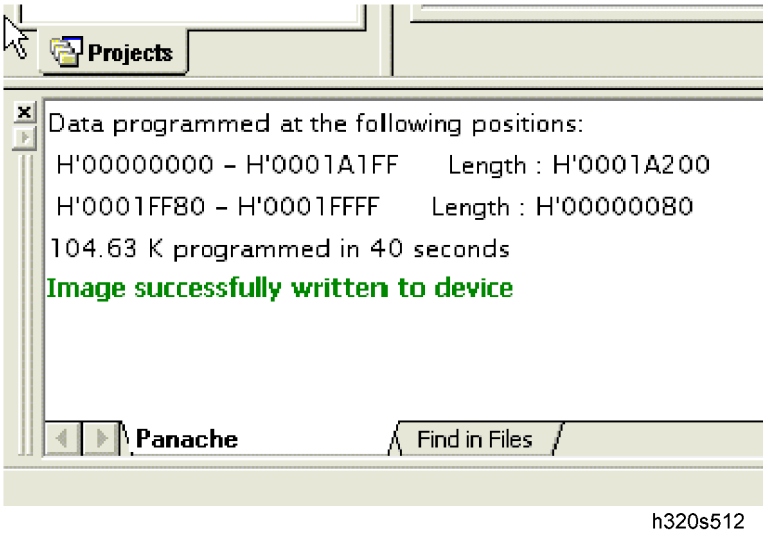
h320s510

3. Choose a file with ".mot-extension". For this machine, choose "ljp1.mot".
4. Click “Add”.



h320s511

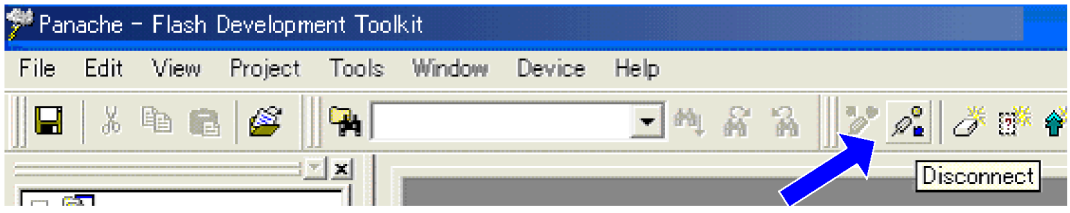
5. Choose the file (for this machine: "ljp1.mot"), and then right-click it.
6. Choose "Download File", and then click it. This will automatically begin to connect serial port and download program.



h320s512

7. The window as shown above will appear when file has successfully downloaded.

Disconnect Serial Port



h320s513

1. Choose the icon “disconnect” and click it.

⚠CAUTION

- Do not forget to disconnect the serial port. Otherwise, the serial port will be always occupied by this toolkit.

2. Disconnect two pins of the terminals on the CPU board (see step 5 in the "Preparation for updating the engine firmware").
3. Turn off the machine and wait for 30 seconds.

⚠CAUTION

- Make sure that the machine is turned off before turning on the machine.

4. Reassemble the machine (see "CPU Board" in the "Replacement and Adjustment").
5. Turn on the machine.

Storing User Parameters

The condition of the printer consumable (toner cartridge) is stored in EEPROM memory (on the CPU card) and can be read via the command ▼ > "8" > "6".

This evaluation, provided in percentage format, indicates the remaining quantity of toner in relation to the consumable's initial values.

The printer activity counters are also stored in flash (on the CPU card), they can be read via the command ▼ > "8" > "2" and can be printed via ▼ > "5" > "4" (printing of parameters).

These absolute counters reflect the machine's overall utilization regardless of the consumable:

- Number of pages sent ;
- Number of pages received ;
- Number of pages printed ;
- Number of pages scanned.

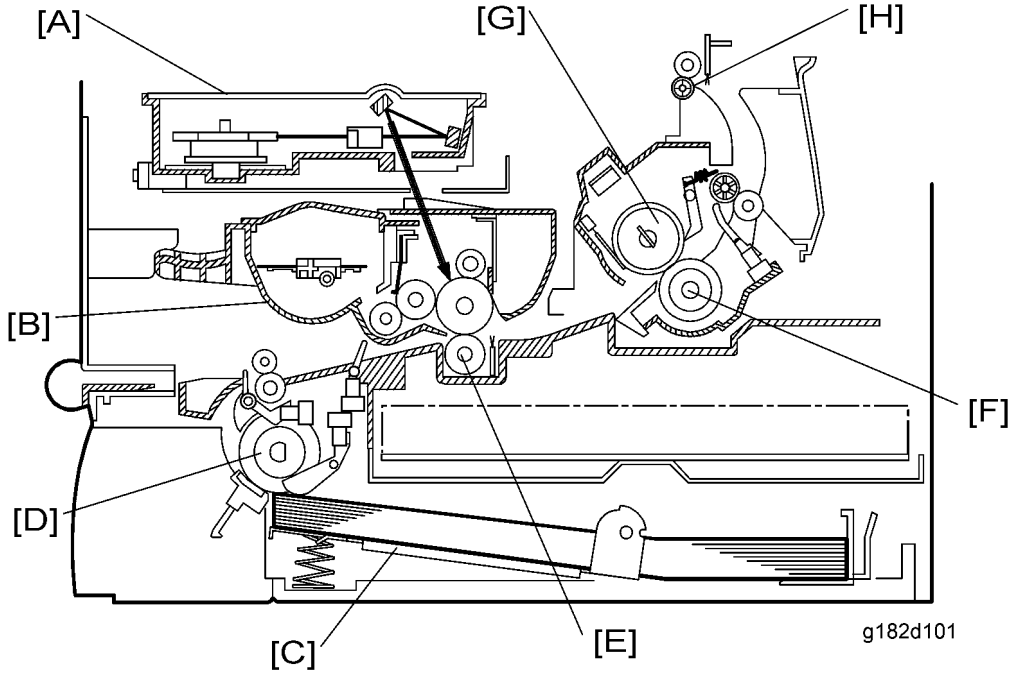
⚠CAUTION

- ANY MAJOR OPERATION ON THE MACHINE (REPLACEMENT OF THE CPU CARD, MAJOR UPGRADE OF THE MACHINE'S SOFTWARE) MAY LEAD TO THE PERMANENT LOSS OF THE USER PARAMETERS AND THE ACTIVITY COUNTER VALUES.
- IF SUCH OPERATIONS ARE NECESSARY, PRINT THE PARAMETERS AND COUNTERS (▼ > "5" > "4") TO RETAIN A COPY.

6. Detailed Section Descriptions

Component Layout

Mechanical Components

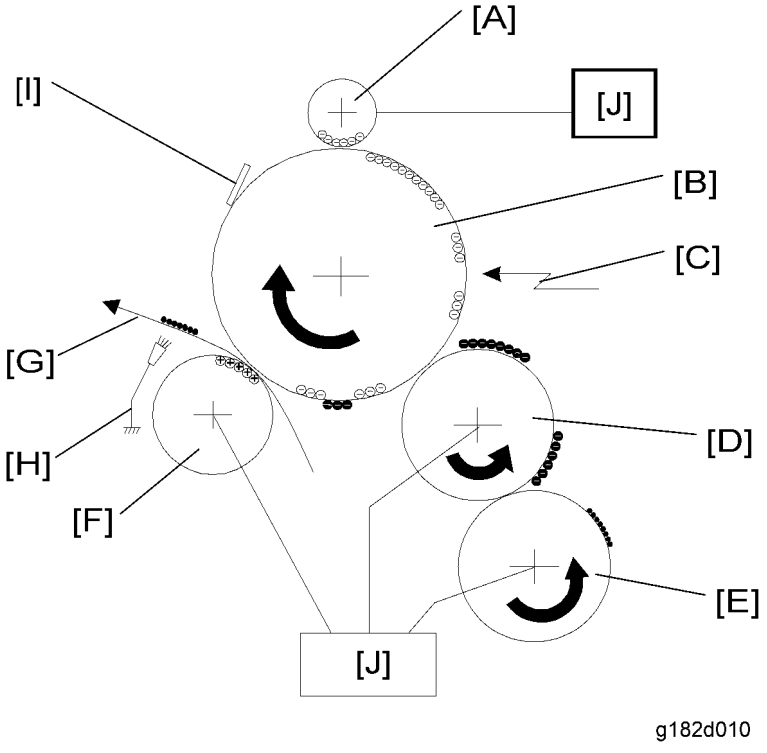


No.	Name	Description
A	Laser Unit	Consists of the laser diode unit, cylindrical lens, F-theta lens, polygon mirror motor, and other laser optical components.
B	Toner Cassette	Consists of the OPC drum, toner, toner application roller, development roller, charge brush roller, cleaning blade, and other development components.
C	Upper Tray Bottom Plate	Presses paper stacked in the upper paper tray against the paper feed roller.
D	Paper Feed Roller	Picks up the top sheet of paper from the stack in the upper paper tray and feeds it into the transfer area.

No.	Name	Description
E	Transfer Roller	Applies a charge to the paper to pull the toner off the drum and onto the copy paper.
F	Pressure Roller	Applies pressure to the paper during fusing.
G	Hot Roller	Fuses the toner to the copy paper.
H	Paper Exit Roller	Feeds the paper out of the printer.

Printing

Printing Processes around the Drum



This machine uses a negative toner system.

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

Exposure: A laser [C] writes a latent image on the drum. The charge in the area exposed by the laser beam drops.

Development: The development roller [D] carries toner to the drum and develops the latent image on the drum. The following charges are applied.

Development bias (during printing): Toner application roller [E], Development roller [D]

Switching bias (At the start and the end of any print process): Toner application roller [E], Development roller [D]

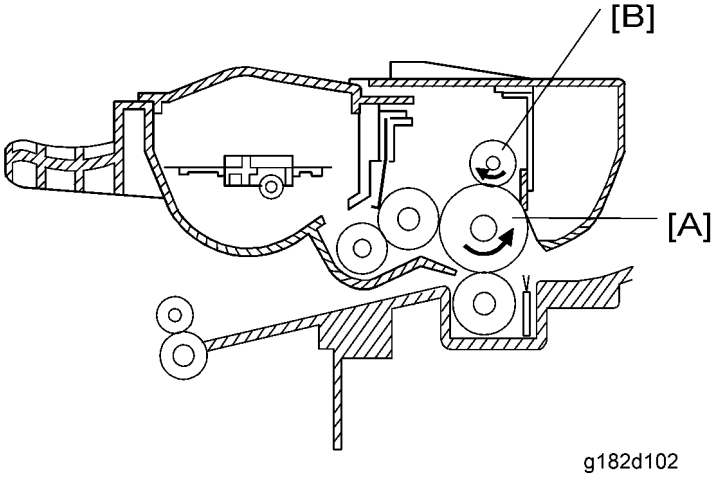
Image Transfer: The transfer roller [F] pulls the toner from the drum onto the paper [G].

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

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

High voltages [J] are supplied from the Power Supply Unit board.

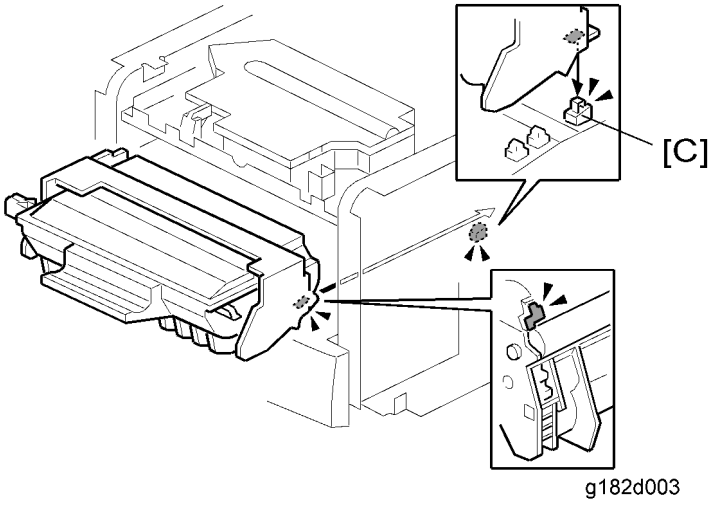
Charge



g182d102

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

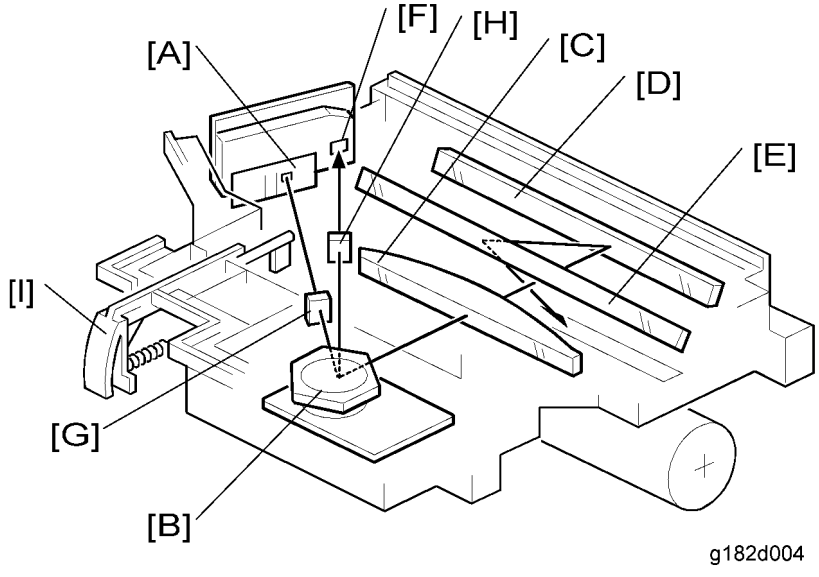
A charge roller [B] charges the photoconductor. The charge roller has the advantage of not generating ozone. A large negative voltage is applied from the Power Supply Unit board to the charge roller. This charge roller gives the OPC drum surface a negative charge.



g182d003

Laser Exposure

Overview



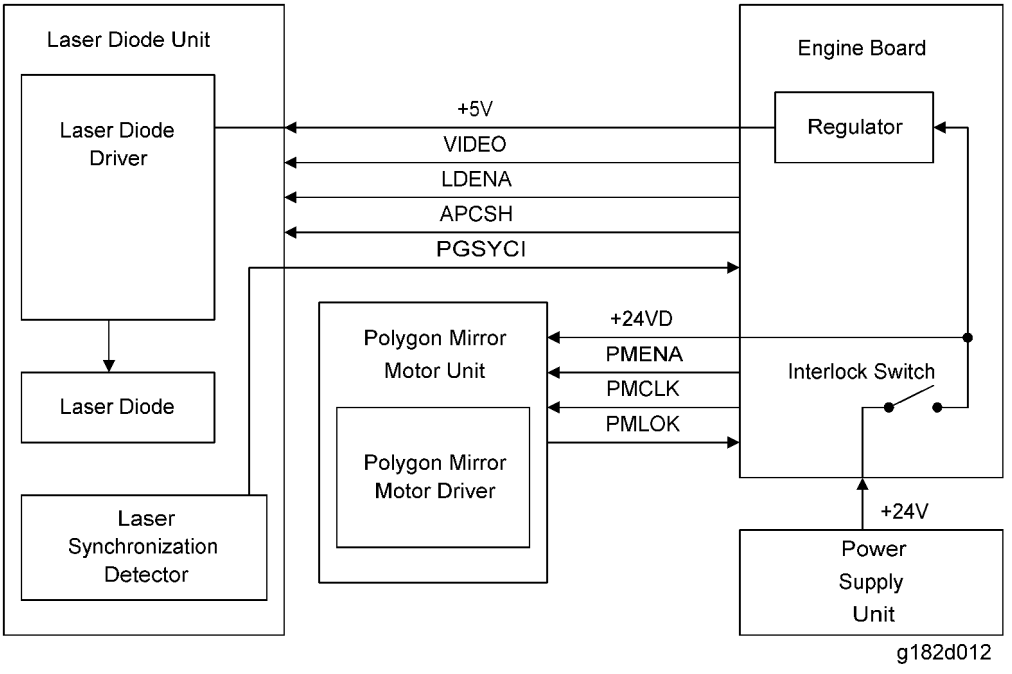
Laser Unit Layout

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

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

As a mechanical safety feature, the shutter [I] closes to block the laser beam path whenever the front door is opened.

Block Diagram



The Engine Board controls the laser diode power (APCSH) and transfers data for printing to the laser diode (VIDEO). As an electrical safety feature, there is an interlock switch on the Engine Board. This switch cuts power whenever the front door is opened.

Error Conditions

Laser Error

The machine detects laser synchronization signal pulses (PGSYCI) 70 milliseconds after the (LDENA) signal is sent. It detects a laser error if the pulse count does not reach the specified number within 400 milliseconds.

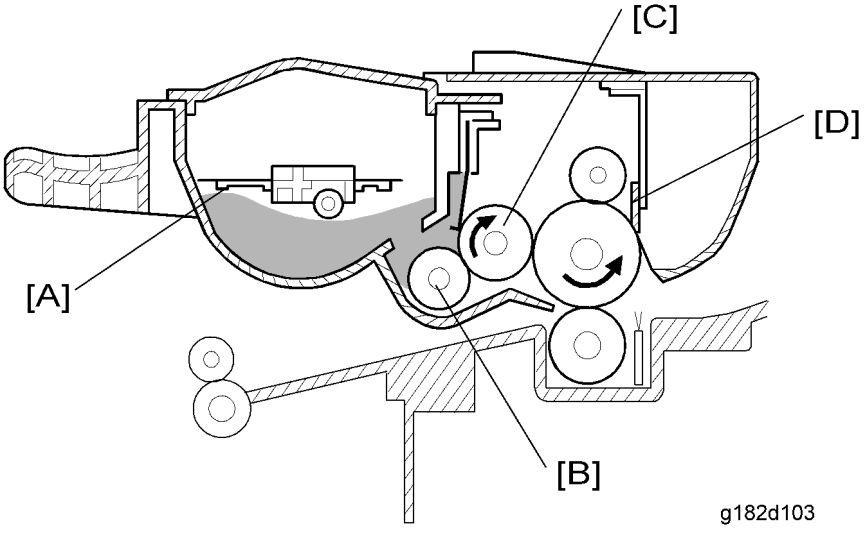
When this occurs, the machine warns the customer on the LCD panel (Error 56).

Polygon Mirror Motor Error

The machine detects a polygon mirror motor error when the (PMLOK) signal does not go low within 3.5 seconds of the (PMENA) signal. When this occurs, the machine warns the customer on the LCD panel (Error 57).

Development

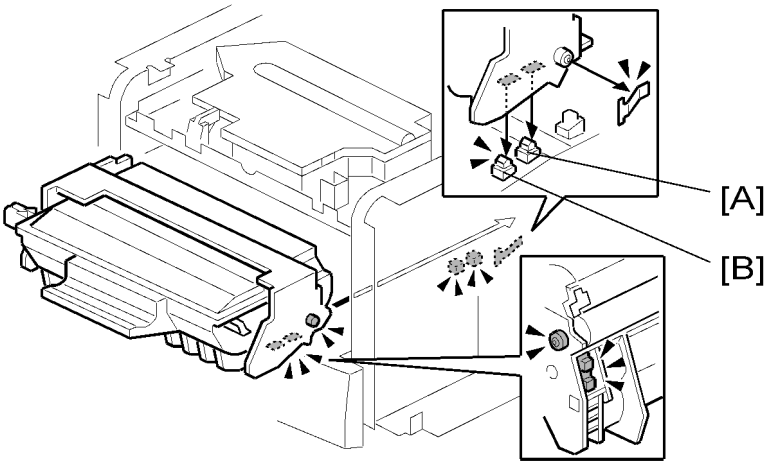
Overview



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

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

The development roller applies toner to the exposed areas of the latent image as they turn past the drum.



g182d005

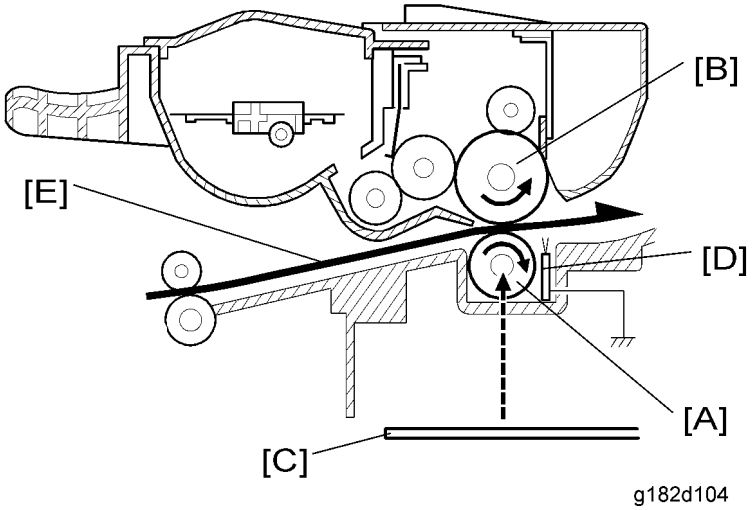
The voltage applied to the development roller and the toner application roller is supplied through terminals ([A] for the development roller and [B] for the toner application roller) from the Power Supply Unit board.

Toner End Detection

This machine does not have toner end detection.

Transfer and Separation

Overview



g182d104

This machine uses a transfer roller [A], which touches the OPC drum [B] surface. A constant current is applied to the transfer roller from the power supply unit board [C]. The positively-biased transfer roller pulls negatively-charged toner off the drum. The curvature of the drum, and the antistatic brush [D], help the paper [E] to separate from the drum.

Cleaning Mode

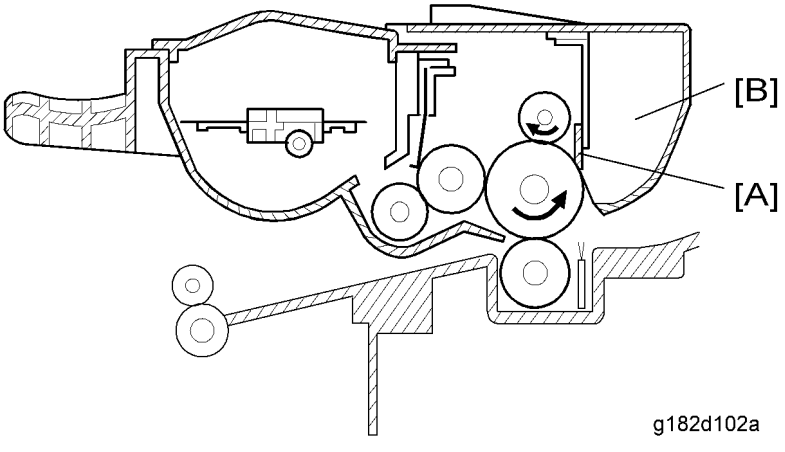
If a paper jam occurs during printing, toner may be transferred to the transfer roller surface. To prevent toner from transferring to the underside of the paper, the transfer roller must be cleaned before the next print job.

While the machine is in the cleaning mode, the Power Supply Unit board applies a negative voltage to the transfer roller. The negatively charged toner on the transfer roller is then transferred back to the drum.

The machine goes through the cleaning mode at the following times.

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

Drum Cleaning



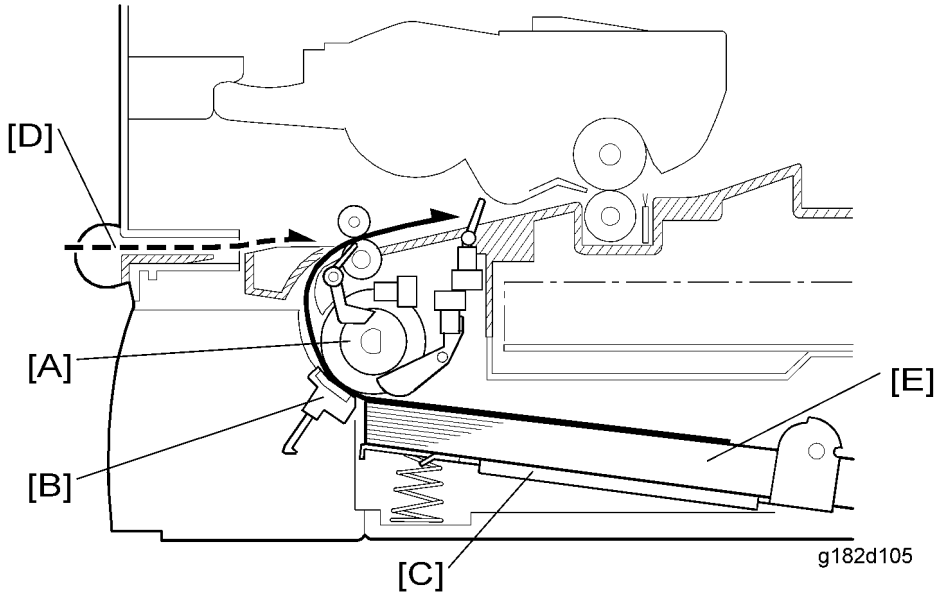
The cleaning blade and the used toner tank are contained in the toner cartridge.

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

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

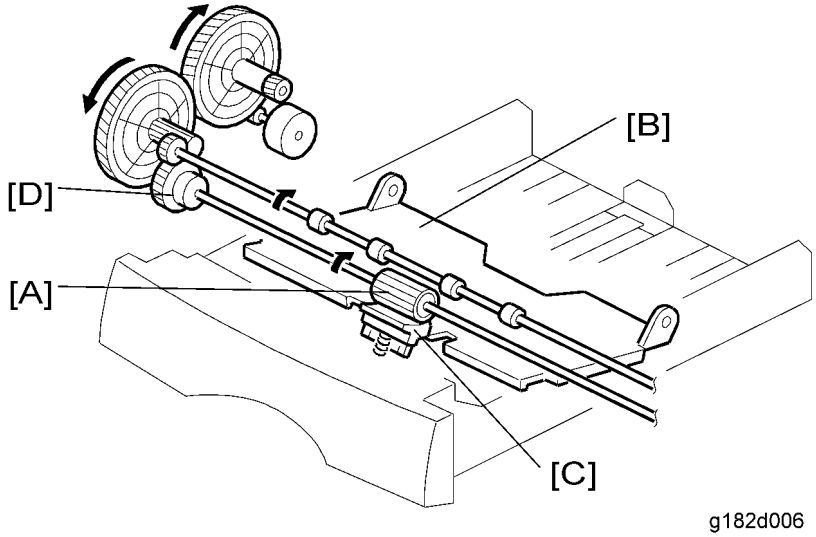
Paper Feed and Registration

Overview



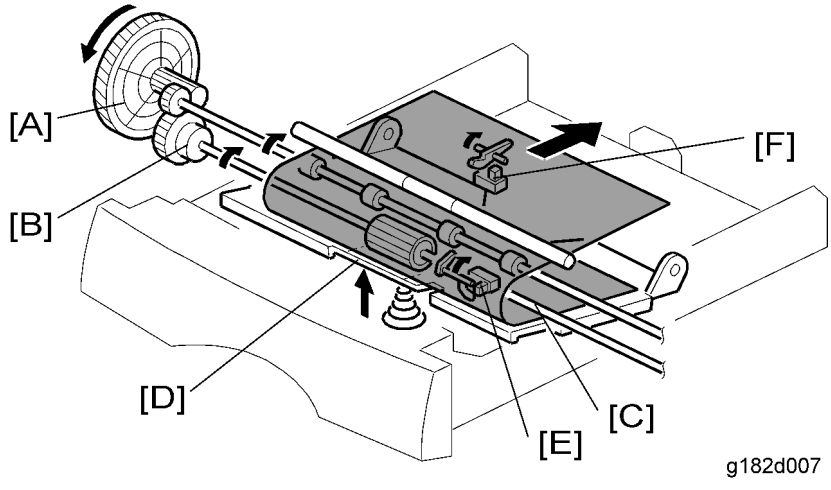
Paper Feed System:	Feed roller [A] and Friction pad [B]
Paper Lift Mechanism:	Bottom plate with spring [C]
Sheet feeder	1 sheet feeder [D]
Tray Capacity:	250 sheets [E]
Paper End Detection:	Paper end sensor
Paper Size Detection:	None

Paper Feed Drive Mechanism



The feed roller [A] is located above the upper tray bottom plate [B] and the friction pad [C]. It allows only one sheet to feed from the paper tray. They are controlled by the paper feed clutch [D]. The registration sensor detects the leading edge of the paper and synchronizes paper feed with the activation of the laser diode to write the image on the OPC drum.

Paper Feed Operation



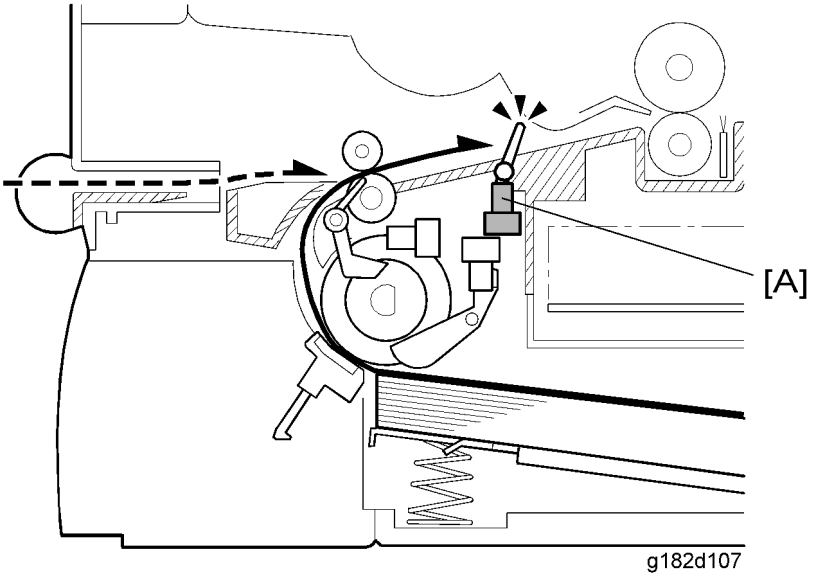
A : Paper feed drive gear	D : Friction pad
B : Paper feed clutch	E : Paper feed sensor

C : Paper feed roller	F : Registration sensor

The paper feed drive gear [A] always rotates while the main motor rotates, since the paper feed clutch (magnet clutch) [B] is energized to turn the paper feed roller [C].

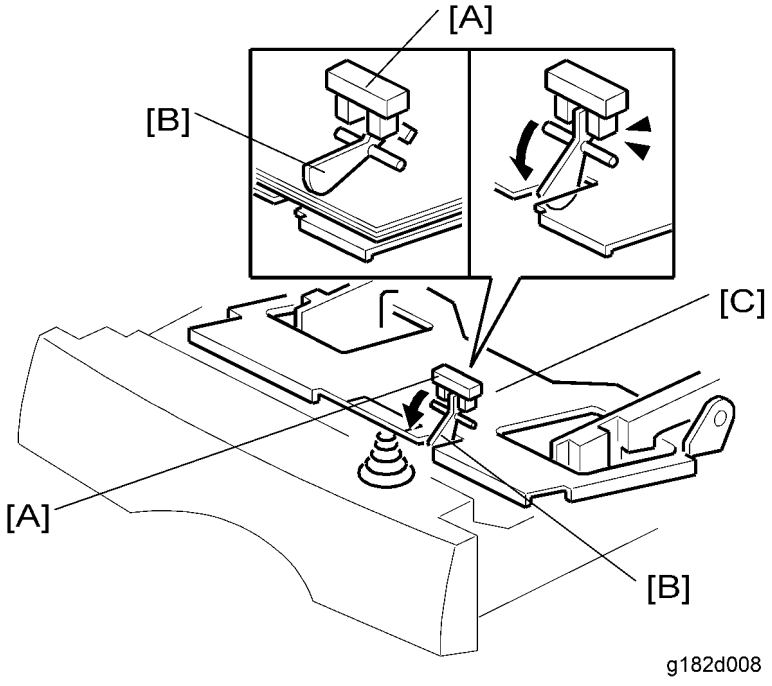
When the paper feed clutch [B] is energized to turn the feed roller, the paper feed roller feeds one sheet of paper from the tray. The paper is fed into the machine by the registration roller.

Registration



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

Paper End Detection



This machine has the paper end sensor [A] built into it. The paper end sensor detects the presence or absence of paper. The sensor has an actuator [B] that extends through a slot in the paper tray bottom plate [C], and the sensor is actuated when paper is placed in the upper tray.

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

Jam Detection

Jam 1. Paper jam at the paper cassette

When the registration sensor does not turn on within 2.65 seconds after the paper pick-up clutch for the paper cassette turns on.

Jam 2. Paper did not pass the registration sensor

When the registration sensor does not turn off within the specified time for passing each paper size (see below) + 3 seconds after the registration sensor turns on.

Paper Size	A4SEF	A5SEF	A5LEF	A6SEF	
Specified Time (msec)	2830	2000	1410	1410	

Paper Size	B5SEF	B6SEF	Letter SEF	Legal SEF	Envelope (91x191mm)
Specified Time (msec)	2450	1740	2660	3400	1820

Jam 3. Paper did not reach the fusing unit

When the paper exit sensor does not turn on within 2.1 seconds after the registration sensor turns on.

Jam 4. Paper jam in the fusing exit area

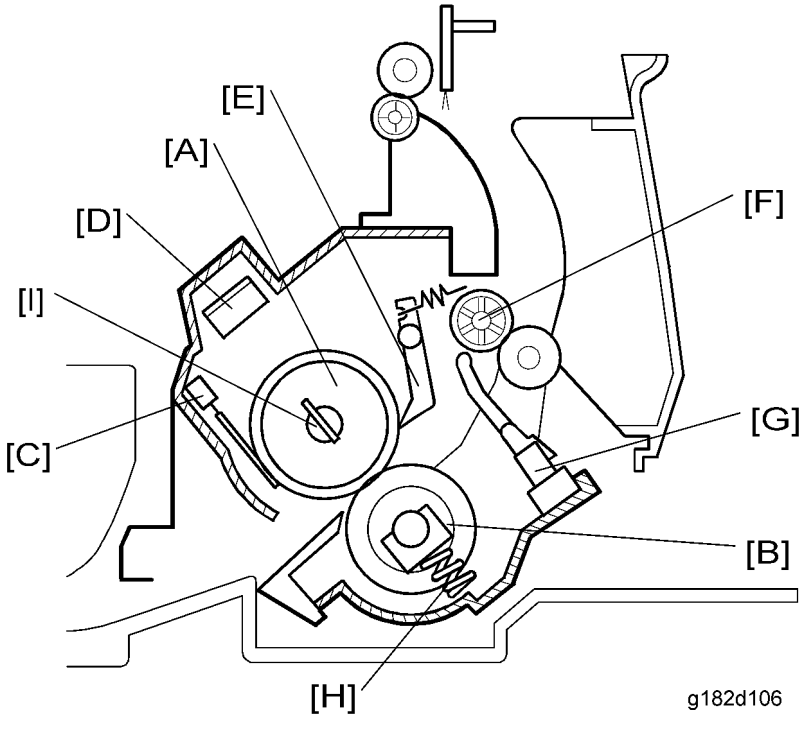
When the paper exit sensor does not turn off within 3.0 seconds after the registration sensor turns off.

Jam 5. Paper no feed jam in the bypass tray

When the registration sensor does not turn on within 1.6 seconds after the main motor starts.

Fusing

Overview



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

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

The hot roller strippers [E] separate the copy paper from the hot roller and direct it to the exit rollers [F]. The paper feed/exit sensor [G], which is under the fusing unit, monitors the progress of the copy paper through the fusing unit and detects misfeeds. The exit rollers [F] drive the copy paper to the paper output tray.

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

The fusing lamp [I] is located in the hot roller.

Power Control

When the main switch is turned on, the machine turns on the fusing lamp. For printing, the machine raises the fusing temperature to 170°C. The fusing temperature is kept at 170°C during printing. For stand by mode the machine goes down the fusing temperature to 80°C.

Cover Switch

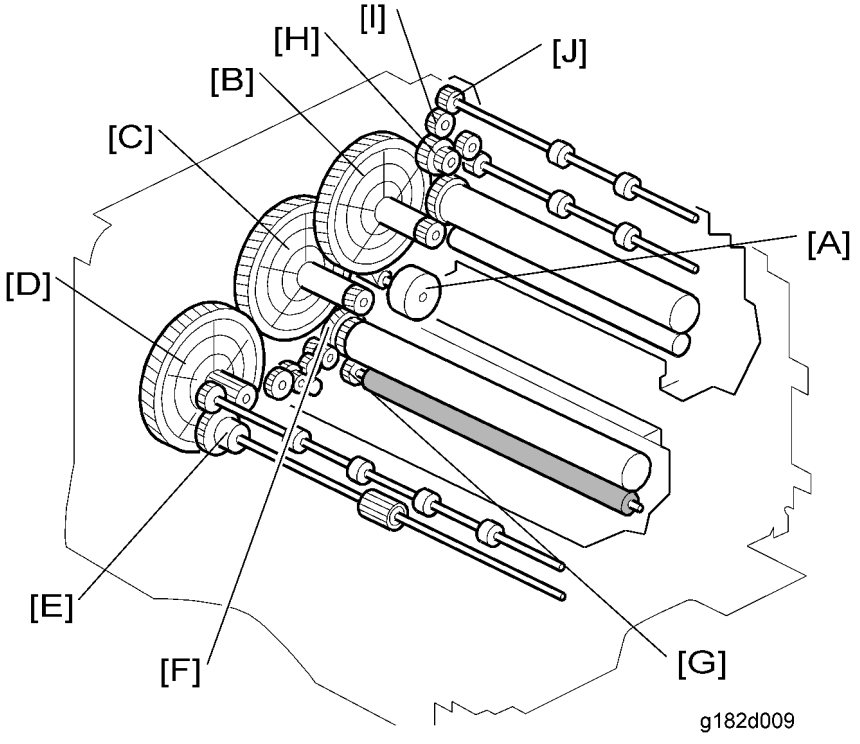
g182d014

When the front door is opened, the interlock switch [A] will be opened and power supply to the following parts gets cut.

- Power pack
- Laser diode driver
- Fan motor

- Main motor
- Polygon mirror motor
- Fusing lamp

Paper Feed Drive Release and Fusing Drive Release



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

Main motor [A]		
↓ Idle gear 1[B] Hot roller gear [H] ↓ Idle gear 4 [I] ↓ Exit roller gear [J]	↓ Idle gear 2 [C] ↓ OPC drum gear [F] ↓ Transfer roller gear [G]	↓ Idle gear 3 [D] ↓ Paper feed drive gear [E]

7. Specifications

General Features

Copier

		H320	H321
Dimension (W x D x H) (mm)		356 x 394 x 380	
Weight (basic machine)		11.5 kg	
Power Supply		220 - 240V/ 110 V - 127V/ 100 V 50/60 Hz - 4.5 A	
Electric Consumption	Operating	340 W (Max. 900W)	
	Stand-by	16 W	
	Power Save	12 W	
Noise Emission	Operating	52 dB (A) or less	
	Stand-by	34 dB (A) or less	
Scan to mail (drag and drop via Paper Port)		-	TIFF-F, JPEG, PDF
Resolution of Scanner		-	600 x 600
Copier Speed		16 cpm	
First Copy- Time		15 sec. or less	
Zoom		25% - 400%	
Paper Size Management		A5, Legal, Letter, A4	
Multi-copy		1 - 99	
Paper Capacity: Standard tray		250 (64g) /200 (80g)	
Copy-Tray Capacity		50	
Paper Weight		Tray: 60 - 105 g/m^2	

		By-pass: 52 - 162 g/m^2	
Energy saver mode		Without / 5 / 15 / 30min / Standby period	
USB host feature	No. / Position	1 / Front (only use for Firmware Updating)	2 / Front and back
	Key to print	-	Yes (JPEG,TIFF,TXT)
	Scan to key	-	Yes (TIFF)
Smart card feature Directory & Parameter save card		Yes	

Printer

	H320	H321
Technology	-	B/W Laser
Printing Speed	-	16 ppm
First Print Time	-	13 sec.
Printing Resolution	-	600 x 600 dpi
Printer Language	-	GDI
Host Interface	-	USB 2.0
Memory for printer	-	16 MB

Scanner

	H320	H321
Type	CIS B/W Scanner	CIS Color Scanner
Color Depth	-	36 bits
Resolution	Optical: 600 dpi Interpolated: 2400 dpi	
B&W speed for A4		

(excluding processing time)		
300/200* x 100 dpi 300/200* x 200 dpi 300/200* x 300 dpi *H321: 300, H320: 200	4.5 seconds 8 seconds 11.5 seconds	
Color speed for A4 (excluding processing time)		
300 X 300 dpi	-	11.5 seconds
Gray Scale Level	-	256
Software Compatibility	-	TWAIN
Maximum Paper Size	-	A4, Letter

Fax

	H320	H321
Type	PSTN-Super G3	
Coding scheme	MH, MR, MMR, JBIG	
Max speed	33600bps (V34Fax)	
V34Fax capabilities	33600 to 2400 bps	
V34Fax increments	2400 bps	
V17 capabilities	14400, 12000, 9600, 7200 bps	
V29 capabilities	9600, 7200 bps	
V27ter capabilities	4800, 2400 bps	
Automatic fall back	Yes	
Directory capacities	250	
Transmission speed / ITU	2.5 seconds	

ADF

	H320	H321
Max. paper width and length	216 mm (W)/ 1000 mm (L)	
Min. paper width and length	145 mm (W)/ 120 mm (L)	
Paper weight	60 to 105 g/m^2	
Tray capacity	50 sheets	
B&W speed (A4 excluding processing time)		
300 (200 for FAXa) x 100 dpi	Less than 4.5 seconds	
300 (200 for FAXa) x 200 dpi	Less than 8 seconds	
300 (200 for FAXa) x 300 dpi	Less than 11.5 seconds	
Color speed (for RP)		
300 x 300 dpi	-	Less than 11.5 seconds

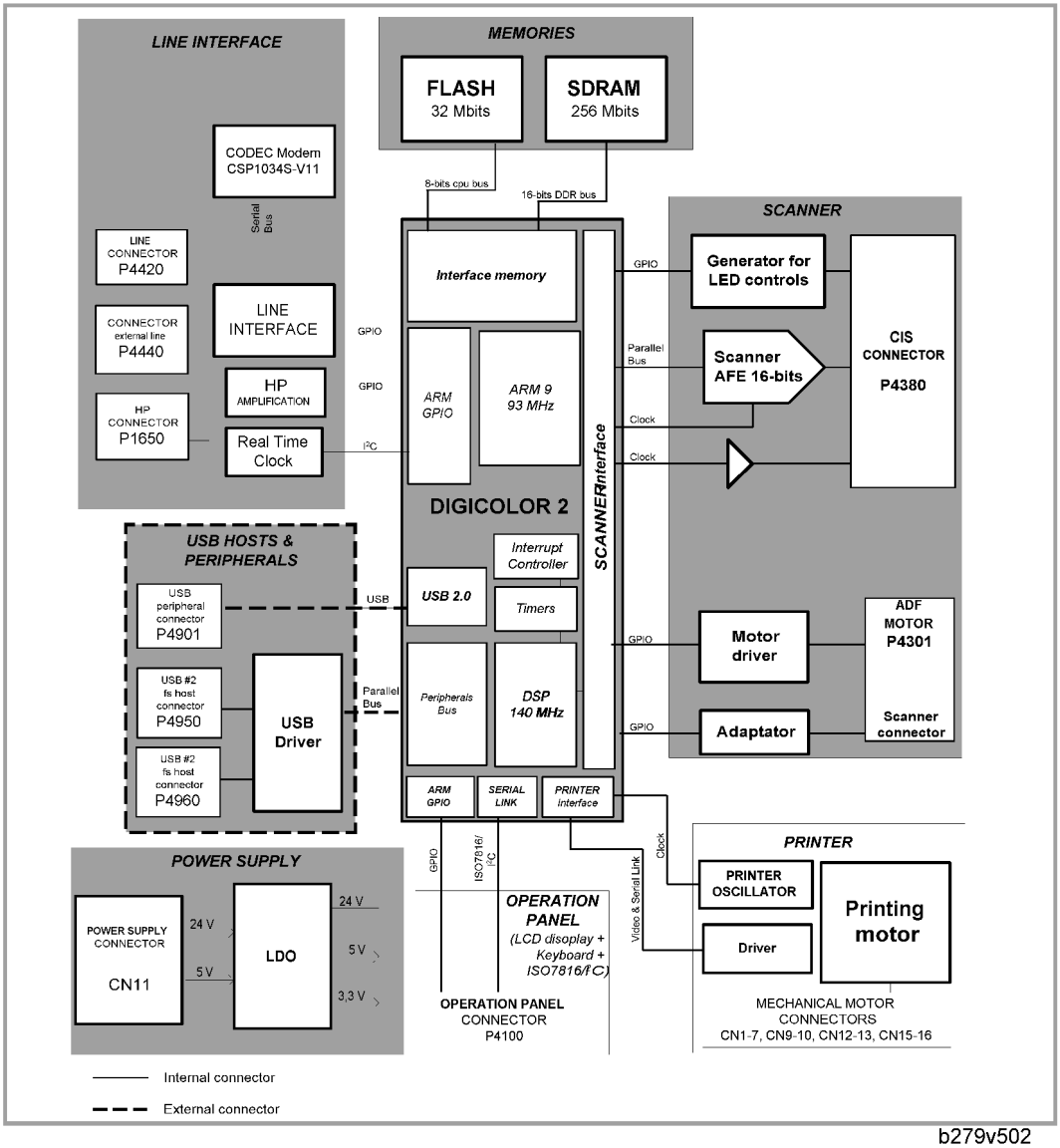
Supported Paper

Supports		Paper trays		ADF
Paper sizes	Dimensions (mm)	Main	Manual	Feeder
Legal	215.9 x 355.6	yes	yes	yes
A4	210 x 297	yes	yes	yes
Letter	215.9 x 279.4	yes	yes	yes
A5	148 x 210	yes	yes	yes
B5 (JIS)	182 x 257	no	yes	no
Executive	184.2 x 266.7	no	yes	no
A6	176 x 250	no	yes	no
Capacities		250	1	50

8. Apppendix

Block Diagram

Overview

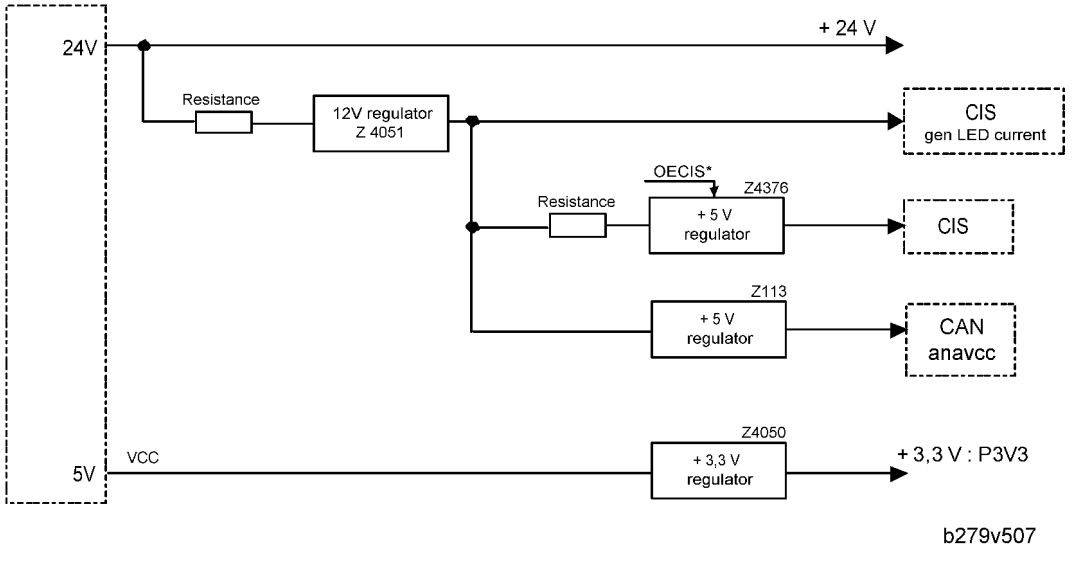


b279v502

Power Supply

The 24V and 5V power supply are provided by the printer.

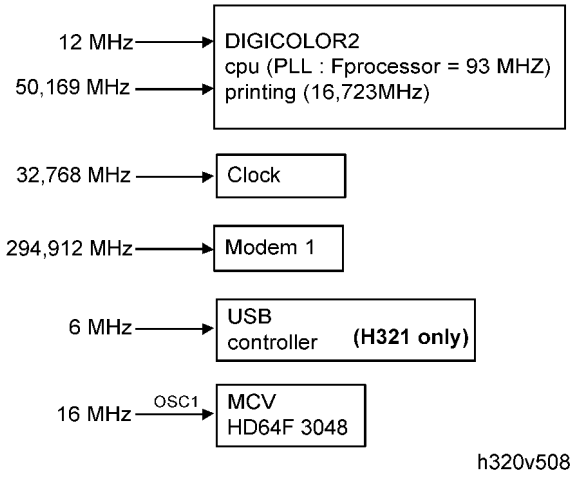
Diagram of printer power supply connections:



8

Quartz

Diagram of CPU card clocks:

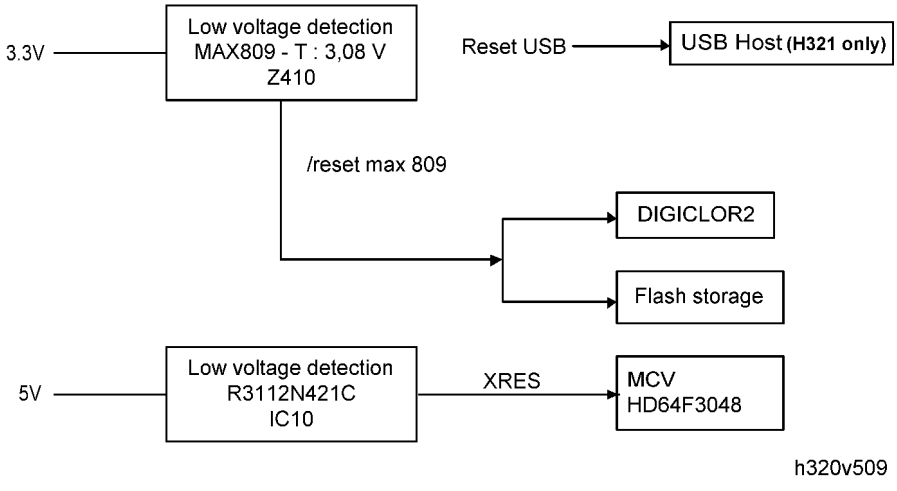


Reset

The reset is generated from 3.3V as all logical parts (DIGICOLOR2, memory, ...) are supplied in 3.3V.

The reset is active during at least 100ms.

Printer's reset diagram:



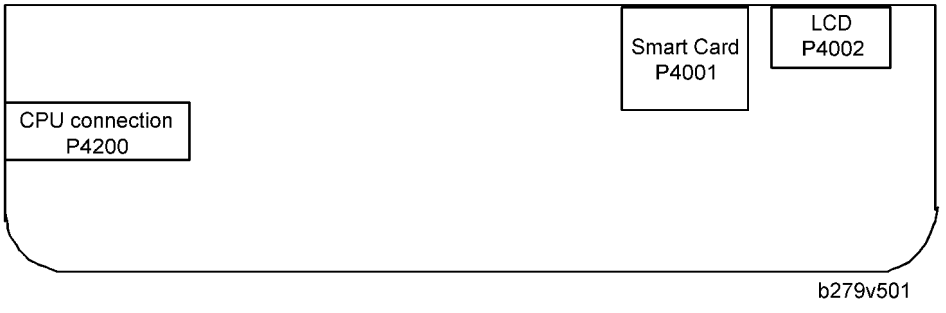
Board Connections

Operation Panel Card

The operation panel card interfaces with the keyboard keys and the LCD display.

The LCD has its own driver in the COB (Chip On Board).

The card also has an external connector to the smart card which is managed by the CPU.



List of connectors

Connector	Topography	Number of points	Sex	Position
CPU Connection	P4200	16	Female	Elbow top contact
LCD	P4002	10	Female	Elbow, top contact
Smart card	P4001	10	Female	-

CPU - P4200: CPU connection

Pin	Signal	Input/Output	Utilization
1-7-8-10-15	GND	-	Ground
2	FERCAP	I	Detection of smart card
3	CVCC	I/O	Smart card power supply (3.3V) (controlled by I/O CVCC)
4	CLKPUCE	O	Smart card clock

Pin	Signal	Input/Output	Utilization
5	RSTPUCE	I	Smart card reset
6	IOPUCE	I/O	Smart card data
9	SCLKPUP	O	Serial clock link for differential registers
11	RXPUP	I	Sending data from the operation panel
12	TXPUP	O	Sending data from the CPU
13	STROB1	-	Out-of-register strobe to control the keyboard
14	STROB2	-	Out-of-register strobe to control the display
16	P5V	-	5V power supply

LCD - P4002: LCD interface

Pin	Signal	Input/Output	Utilization
1	GND	-	Ground
2	V0	O	Connected to V0
3	RS	O	Selection of registers
4	R/W	O	Read or Write (driver configured to write in OV)
5	LCD_E	O	Enable Signal (active at 1)
6	VCCLCD	-	Vcc: 4.5V to 5.5V
7	DB4	O	Data (Bit 4)
8	DB5	O	Data (Bit 5)
9	DB6	OI	Data (Bit 6)
10	DB7	O	Data (Bit 7)

Smart card - P4001: connection with the smart card

Pin	Signal	Input/Output	Utilization
1	CVCC	O	Smart card power supply (3.3V)
2	RSTPUCE	O	Smart card reset
3	CLKPUCE	O	Smart card clock
4	-	-	Not connected
5	GND	-	Ground
6	-	-	Not connected
7	IOPUCE	I/O	Smart card data (input/output)
8	-	-	Not connected
S1	FERCAP	I	Smart card detection
S2	P5V	-	5V power supply

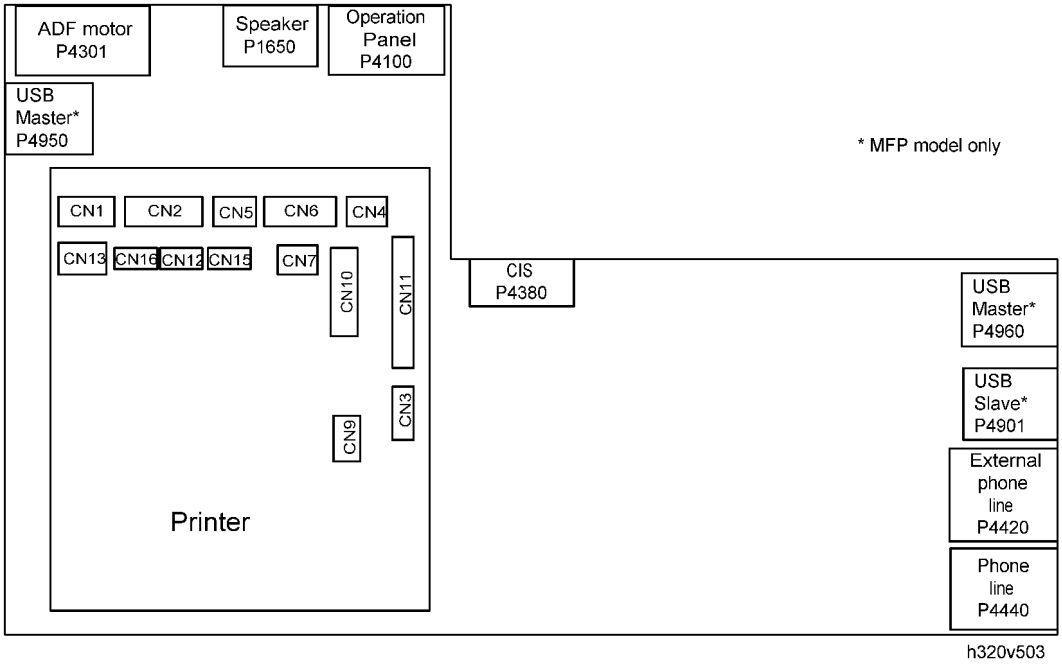
CPU Card

The CPU card is based on the Digicolor2 circuit, which ensures the processor functions.

All the executable code is stored in the flash Z466.

This flash is divided into two zones: one zone is reserved for storing code and the other is reserved for storing documents.

The code is loaded in SDRAM from this flash and the processor executes its instructions from the SDRAM. The SDRAM also serves as the operating memory for Digicolor2.



List of connectors

Connector	Topography	Number of points	Sex	Position
Printer	CNx	-	-	-
Speaker	P1650	2	-	-
Operation panel	P4100	16	Female	Straight, top contact
ADF motor	P4301	15	Female	Straight
CIS	P4380	12	Female	Straight, top contact
Phone line	P4420	4	Female	-
External phone line	P4440	4	Female	-
USB Slave (MFP model only)	P4901	4	External, type USB type B	-
USB Master (MFP model only)	P4950	4	External, type USB type A	-

Connector	Topography	Number of points	Sex	Position
USB Master (MFP model only)	P4960	4	External, type USB type A	-

CNx: printer connectors

Topography	Connector	Pin	Signal	Input/ Output	Utilization
CN1	Polygon motor	1	+24VS	-	24V power supply
		2	GND	-	Ground
		3	XPMENA	S	Starting the polygon motor
		4	XSCRDY	E	Locking the polygon motor
		5	PMCLK	-	Polygon motor clock
CN2	Diode laser	1	+5VLD	-	
		2	XLDENA	O	Activating the laser
		3	APCSH	O	Sampling
		4	XDETP	I	Ray beam detector
		5	GND	-	Ground
		6	XVD	O	Diode laser video
		7	NC	-	Not connected
CN3	Printer motor	1	P24VS	-	24V power supply
		2	GND	-	Ground
		3	P5V	-	-
		4	XMMENA	-	-
		5	MMCLK	-	-

Topography	Connector	Pin	Signal	Input/ Output	Utilization
		6	MMCW	-	-
		7	XMMLOCK	-	-
		8	MMGAIN	-	-
CN4	Fan	1	FANEMA	O	Fan in operation motor signal
		2	GND	-	Ground
		3	FANLOCK	-	
CN5	Paper output clutch	1	+24VS	-	24V power supply
		2	XFPCL	O	Electric paper clutch signal
CN6	Paper detection captors	1/4/7	GND	-	Ground
		2	XFEED	I	Paper feed signal captor
		3/6/9	+5V	-	5V power supply
		5	XREGIST	I	Register of signal captors
		8	XMANUAL	I	Manual paper feed signal
CN7	Paper output captor	1	GND	-	Ground
		2	XEXIT	I	Four paper output signal captors
		3	+5V	-	5V power supply
CN9	Debug	1	+5V	-	5V power supply
		2	DBGRXD	I	Debug receipt
		3	DBGTXD	O	Debug command
		4	GND	-	Ground

Topography	Connector	Pin	Signal	Input/ Output	Utilization
CN10	High voltage	1	TRAPWM0	O	PWM signal for transfer of charger (+)
		2	TRAPWM1	O	PWM signal for transfer of charger (-)
		3	BIASPWM	O	PWM development signal
		4	CHEPWM	O	PWM signal charger
		5	XTRACTL	O	Charger signal transferred to Onf
		6	XBIASCTL	O	Development signal
		7	GND	-	Ground
		8	+24VS	-	24V power supply
CN11	Power supply	1	HTON	O	Phase Fuser control
		2	ZEROC	I	Control signal
		3	HTEN	O	Fuser relay (Activated to H)
		4	GND	-	Ground
		5/12 /13	+24V	-	24V power supply
		6/7/ 10/ 11	GND	-	Ground
		8/9	+5V	-	5V power supply
CN12	Temperature captor	1	FTEMP	I	Fuser temperature detector
		2	GND	-	Ground
CN13	Opening of printer cover captor	1	P24V	I	24V power supply
		2	P24VS	O	24V power supply

Topography	Connector	Pin	Signal	Input/ Output	Utilization
CN15	IAO captor (presence of toner)	1	XAIO	I	Detection of cartridge
		2	GND	-	Ground
CN16	Motor temperature captor	1	TEMP	I	Detection of printer motor temperature
		2	GND	-	Ground

Speaker - P1650: connection with the speaker

Pin	Signal	Input/Output	Utilization
1	HPP	O	Differentiated BF signal to HP
2	HPN	O	Differentiated BF signal to HP

Operation panel - P4100: connection with the operation panel card

Pin	Signal	Input/Output	Utilization
1	P5V	-	5V power supply
2/7/9/10/16	GND	-	Ground
3	STROB2	-	Out-of-register strobe to control the display
4	STROB1	-	Out-of-register strobe to control the keyboard
5	TXPUP	O	Data emitted by the CPU
6	RXPUP	I	Data emitted by the operation panel
8	SCLKPUP	O	Serial link clock for differentiated registers
11	IOPUCE	I/O	Smart card data (3.3V)
12	RSTPUCE	O	Smart card reset
13	CLKPUCE	O	Smart card clock

Pin	Signal	Input/Output	Utilization
14	CVCC	O	Smart card power supply (3.3V) (controlled byr I/0 CVCC)
15	FERCAP	I	Detection of smart card

ADF motor - P4301: connection with the ADF motor

Pin	Signal	Input/Output	Utilization
1	P24V	-	24V power supply
2	ADF_BN	O	Scanner motor coil BN
3	ADF_B	O	Scanner motor coil B
4	ADF_AN	O	Scanner motor coil AN
5	ADF_A	O	Scanner motor coil A
6	GND	-	Ground
7	PSF	I	Sheet sensor
8	P5V	-	-
9	GND	-	Ground
10	OUVCAP	I	ADF cover sensor
11	P5V	-	-
12	GND	-	Ground
13	STSC	I	Document ready sensor
14	P5V	-	-
15	NC	-	Not connected

Phone line - P4420

Pin	Signal	Input/Output	Utilization
1	R1	-	Loopback

Pin	Signal	Input/Output	Utilization
2	L1	-	Phone line
3	L2	-	Phone line
4	R2	-	Loopback

External phone line - P4440

Pin	Signal	Input/Output	Utilization
1	NC	-	-
2	L1	-	Phone line
3	L2	-	Phone line
4	NC	-	-

CIS - P4380: connection with the CIS

Pin	Signal	Input/Output	Utilization
1	VIDCIS	I	CIS video
2	CMD RESOL	O	300/600dpi resolution command
3	VREFCIS	O	CIS voltage reference
4	VIDEOGND	-	Mass
5	CLKCIS	O	CIS (synchro point) pixel clock
6	ALIMCIS	-	5V power supply
7	SPCIS	O	Start Pulse CIS (line synchro)
8	ALIMLED	O	LEDs power supply (in voltage)
9	GNDLEDB	O	Blue LED cathode
10	GNDLEDV	O	Green LED cathode
11	GNDLEDR	O	Red LED cathode

Pin	Signal	Input/Output	Utilization
12	GND	-	Ground

USB - P4901: USB slave interface (H321 only)

Pin	Signal	Input/Output	Utilization
1	VBUS_USB	I	Power supply provided by the master
2	USBN	I/O	Differential pair
3	USBP	I/O	Differential pair
4	GND	I/O	Ground

USB - P4950: USB master interface (H321 only)

Pin	Signal	Input/Output	Utilization
1	VBUS_USB_HOST	O	Power supply provided to the slave
2	USBN	I/O	Differential pair
3	USBP	I/O	Differential pair
4	GND	I/O	Ground

USB - P4960: USB master interface (H321 only)

Pin	Signal	Input/Output	Utilization
1	VBUS_USB_HOST_2	O	Power supply provided to the slave
2	USBN	I/O	Differential pair
3	USBP	I/O	Differential pair
4	GND	I/O	Ground