Model HL-F1
Machine Code: H558
Field Service Manual

14 May, 2010

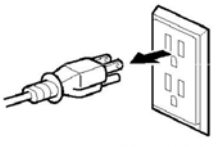
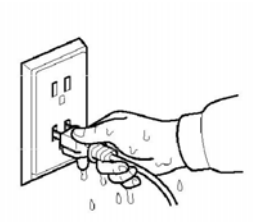
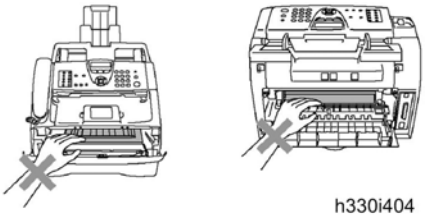
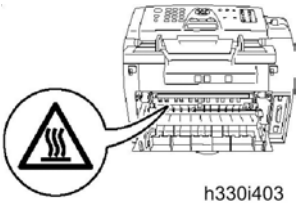
Safety Precautions

To use the machine safely

Please keep these instructions for later reference and read them before attempting any maintenance.

Note

- If there are faxes in the machine's memory, you need to print them or save them before you turn off the power and unplug the machine.

	⚠WARNING	
⚠	There are high voltage electrodes inside the machine. Before you clean the inside of the machine, make sure you have unplugged the telephone line cord first and then the power cord from the AC power outlet.	 h330i401
⚠	Do not handle the plug with wet hands. Doing this might cause an electrical shock.	 h330i402
⚠	After you use the machine, some internal parts are extremely HOT! To prevent injures, be careful not to put your fingers in the area shown in the illustration.	 h330i404
⚠	The fixing unit is marked with a caution label. Please do not remove or damage the label.	 h330i403

- Use caution when installing or modifying telephone lines. Never touch telephone wires or terminals that are not insulated unless the telephone line has been disconnected at the walljack.

Never install telephone wiring during a lightning storm. Never install a telephone wall jack in a wet location.

- This product must be installed near an AC power outlet that is easily accessible. In case of an emergency, you must disconnect the power cord from the AC power outlet to shut off the power completely.

Do not use a vacuum cleaner to clean up scattered toner. Doing this might cause the toner dust to ignite inside the vacuum cleaner, potentially starting a fire. Please carefully clean the toner dust with a dry, lint-free cloth and dispose of it according to local regulations.

⚠WARNING

DO not use any type of spray to clean inside or outside of the machine. Doing this may cause a fire or electrical shock.

⚠WARNING

IMPORTANT SAFETY INSTRUCTIONS

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to people, including the following:

1. Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or washing machine, in a wet basement or near a swimming pool.
2. Avoid using this product during an electrical storm. There may be a remote risk of electric shock from lightning.
3. Do not use this product to report a gas leak in the vicinity of the leak.
4. Use only the power cord supplied with this machine.

SAVE THESE INSTRUCTIONS

Warnings, Cautions, Notes

In this manual, the following important symbols and notations are used.

⚠WARNING

- A Warning indicates a potentially hazardous situation. Failure to obey a Warning could result in death or serious injury.

⚠CAUTION

- A Caution indicates a potentially hazardous situation. Failure to obey a Caution could result in minor or moderate injury or damage to the machine or other property.

Important

- **Obey these guidelines to avoid problems such as misfeeds, damage to originals, loss of valuable data and to prevent damage to the machine.**

Note

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

Symbols and Abbreviations

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

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

TABLE OF CONTENTS

5. Service Maintenance

6. Troubleshooting

7. Energy Saving

1. Product Information

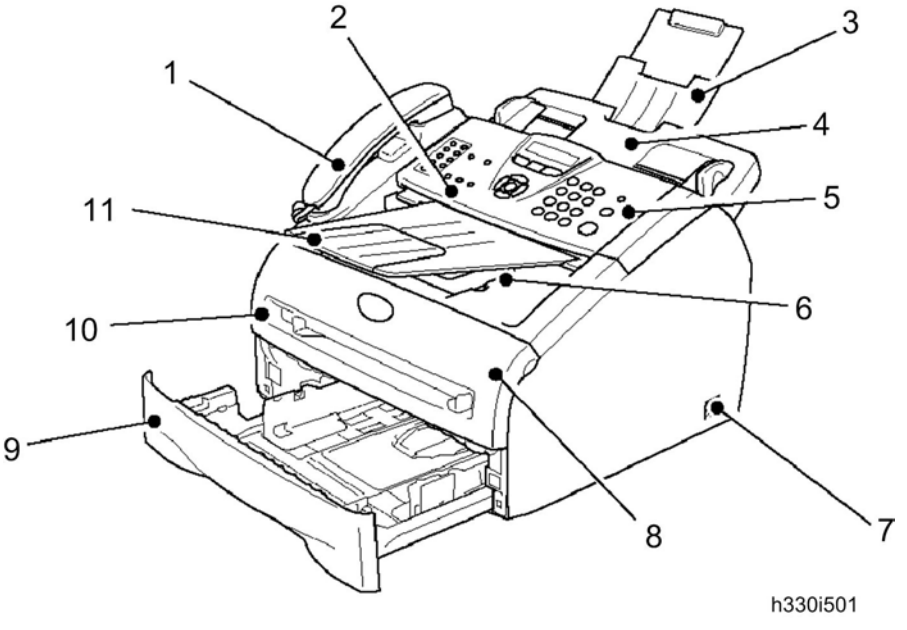
Specifications

See "Appendices" for the Specifications.

Overview

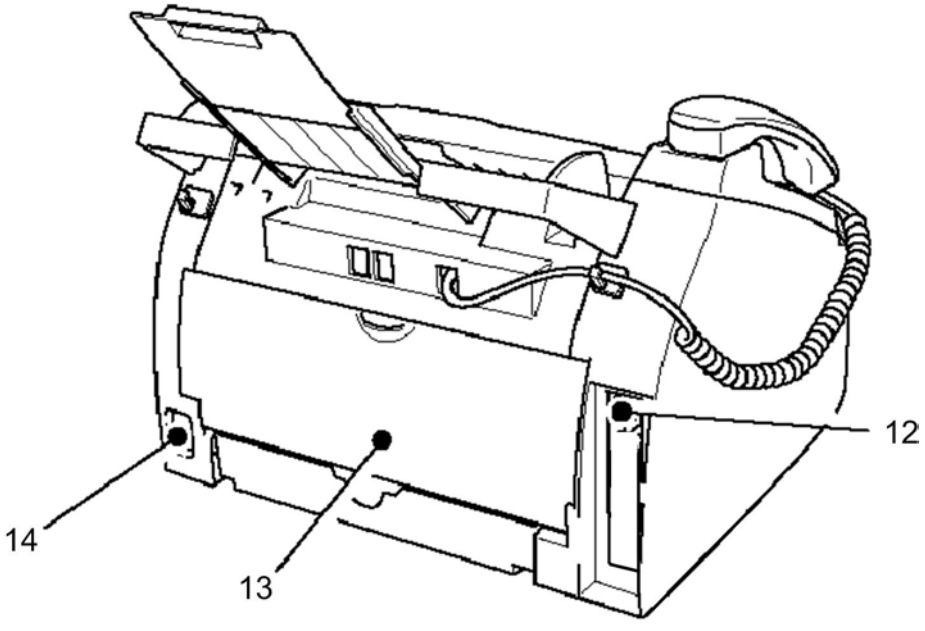
1

Front View



1. Telephone Handset (NA/China only) 2. Control Panel Cover 3. ADF Document Support 4. Automatic Document Feeder (ADF) 5. Control Panel 6. Face-down Output Tray Support Flap with Extension	7. Power Switch 8. Front Cover 9. Paper Tray 10. Manual Feed Slot 11. ADF Document Output Support

Rear View



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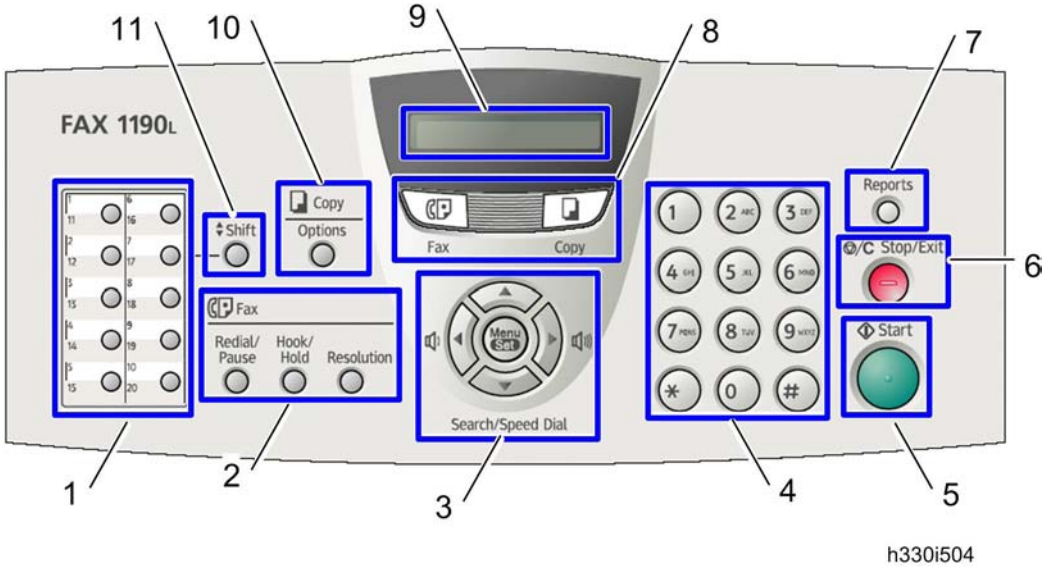
12. USB Interface Connector 13. Back Cover	14. AC Power Connector

1

Control Panel



1. One-Touch Keys

   These 10 keys give you instant access to 20 previously stored dial numbers.

2. Fax and Telephone Keys
   - Redial/Pause: Redials the last number you called. It also inserts a pause in quick dial numbers.
   - Hook/Hold: Lets you dial telephone and fax numbers without lifting the handset.

     -OR-

     Lets you place telephone calls on hold.
   - Resolution: Sets the resolution when you send a fax.

3. Navigation Keys
   - Menu/Set: The same key is used for Menu and Set operations. Lets you access the Menu to program and store your settings in the machine.
   - Volume keys (◄►): When using the handset, listening to the speaker in Fax mode or on standby, you can press these keys to adjust the volume.
   - Search/Speed Dial (▼): Lets you look up numbers that are stored in the dialing memory. It also lets you dial stored numbers by pressing # and a three-digit number.
   - ◄►: Press to scroll forward or backward to a menu selection.
   - ▲ or ▼: Press to scroll through the menus and options.

4. Dial Pad

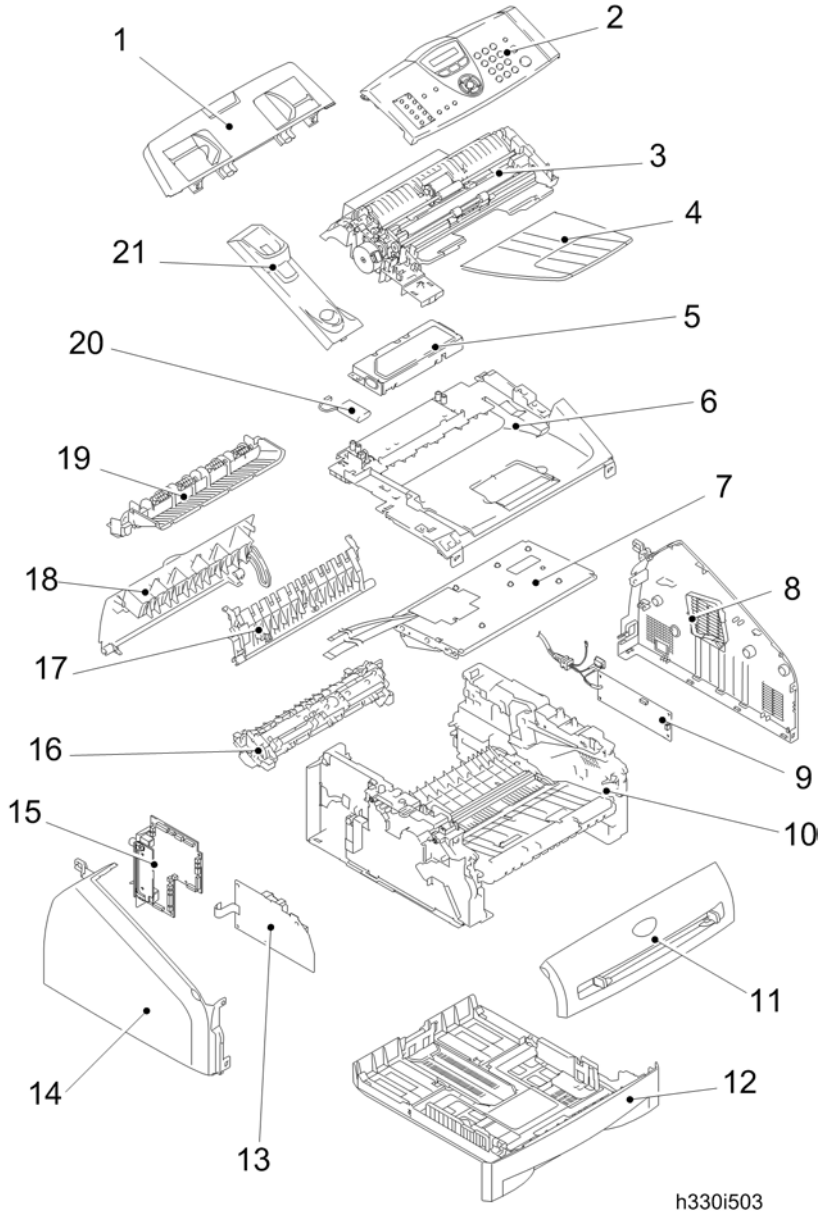
   Use these keys to dial telephone or fax numbers and as a keyboard for entering information into the machine.

The "#" key lets you temporarily switch the dialing mode during a telephone call from Pulse to Tone (For Canada only).

5. Start: Lets you start sending faxes or making copies.
6. Stop/Exit: Stops an operation or exits from the menu.
7. Reports: Print the Transmission Verification Report, Help List, Quick-Dial List, Fax Journal, and User Settings.
8. Mode Keys
    - Fax: Lets you access Fax mode.
    - Copy: Lets you access Copy mode.
9. Liquid Crystal Display (LCD): Displays messages on the screen to help you set up and use your machine.
10. Copy Key (Temporary settings)
    - Options: You can quickly and easily select temporary settings for copying.
11. Shift: To access One-Touch numbers 11 to 20, hold down "Shift" as you press the One-Touch key.

1

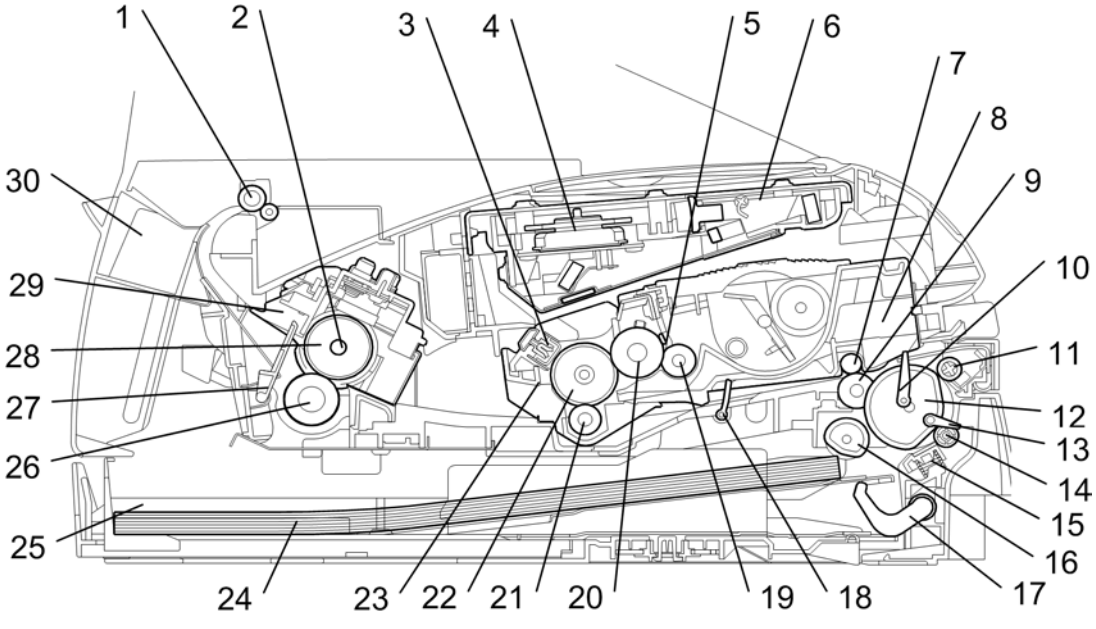
Components



The equipment consists of the following major components:

1. Document Base ASSY 2. Panel Unit 3. Document Chute ASSY 4. Paper Eject Tray 5. NCU PCB & Shield Case 6. Inner Chute Cover ASSY 7. Laser Unit 8. Side Cover R 9. PS PCB Unit 10. Frame Unit	11. Front Cover 12. Paper Tray 13. High-voltage PS PCB 14. Side Cover L 15. Main PCB 16. Fixing Unit 17. Rear Chute Cover 18. Back Cover 19. Inner Chute 20. Battery ASSY 21. Handset Holder (NA/China only)

Mechanical Components



1. Eject roller ASSY	16. Feed roller
2. Halogen heater	17. Up plate
3. Corona wire	18. Regist rear actuator
4. Polygon motor	19. Supply roller
5. Blade	20. Developer roller
6. Laser unit	21. Transfer roller
7. Pinch roller	22. Exposure drum
8. Drum/toner ASSY	23. Brush
9. Paper feed roller	24. Paper
10. Regist front actuator	25. Paper tray
11. Pinch roller	26. Pressure roller
12. Separation roller	27. Paper eject actuator
13. Tail edge actuator	28. Heat roller
14. Pressure roller	29. Fixing unit
15. Separation pad	30. Back cover

2. Installation

Installation Requirement

Choosing a Location

Place your machine on a flat, stable surface that is free of vibration and shocks, such as a desk.

Put the machine near a telephone wall jack and a standard, grounded AC power outlet. Choose a location where the temperature remains between 50°F and 90.5°F (10°C and 32.5°C).

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⚠CAUTION

- Avoid placing your machine in a high-traffic area.
- Do not place the machine near heaters, air conditioners, water, chemicals, or refrigerators.
- Do not expose the machine to direct sunlight, excessive heat, moisture, or dust.
- Do not connect your machine to an AC power outlet controlled by wall switches or automatic timers.
- Disruption of power can wipe out information in the machine's memory.
- Do not connect your machine to an AC power outlet on the same circuit as large appliances or other equipment that might disrupt the power supply.
- Avoid interference sources, such as speakers or the base units of cordless phones.

Fax Installation

For details, see the “User’s Guide” of this machine.

3. Preventive Maintenance

PM Tables

There are no PM parts for this machine.

4. Replacement and Adjustment

Transferring Received Fax Data

When the machine at the user site requires to be repaired, unplugging the power cord from the wall socket for sending the machine for repair will lose received FAX data if unprinted and left in the machine.

To prevent such data loss, the service personnel should instruct end users (e.g., by telephone) to transfer data to another facsimile machine using the procedure below.

Note

- The number of files that can be transferred at a time is 99. To transfer 100 files or more, carry out the following procedure more than one time.

Operating Procedure

1. Connect the machine to be repaired (that has received data in the memory) to the telephone line.
2. Switch the machine on.
3. Press the "Menu/Set", "Start", "Menu/Set", "0", "5" and "3" keys in this order to access user-accessible functions of the maintenance mode.

   The "FAX TRANSFER" appears on the LCD.
4. To check the number of received files, press the "1" key.

   The "1.NO. OF JOBS" appears on the LCD.

   Press the "Menu/Set" key, and the number of received files appears, just as "NO. OF. JOBS:10".
5. To transfer the activity report only, press the "2" key.

   The "2.ACTIVITY" appears.

   To transfer received files together with the activity report, press the "3" key.

   The "3.DOCUMENTS" appears. Note that if there is no received file, the "NO DOCUMENTS" appears.
6. To transfer the communication list for the latest communication, press the "4" key.

   The "4.COM.LIST (NEW)" appears.

   To transfer the communication list for last three errors, press the "5" key.

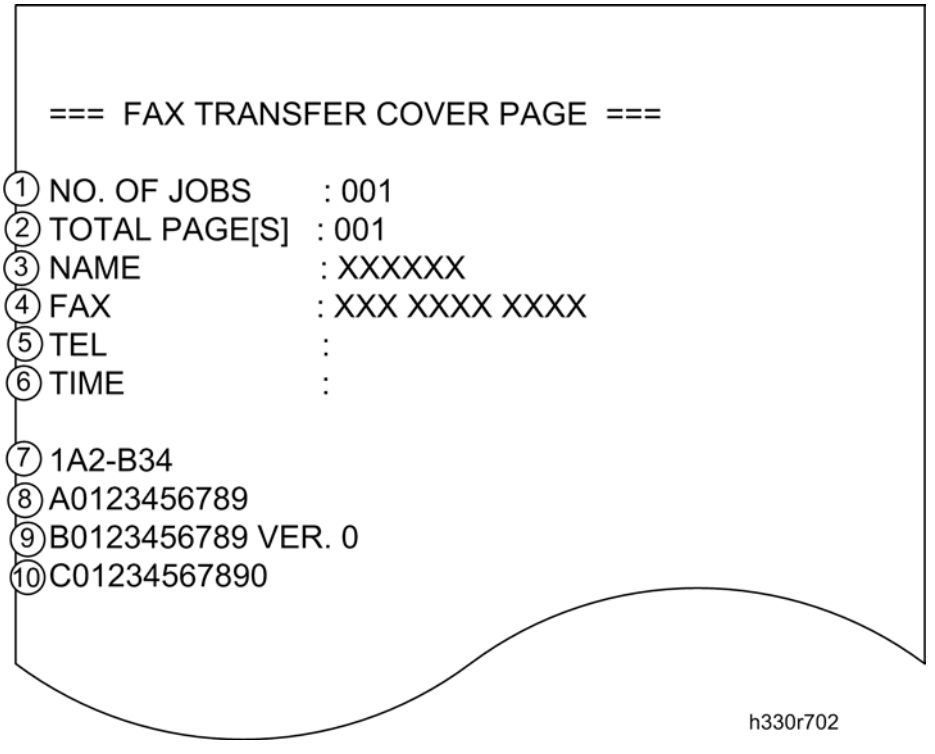
   The "5.COM.LIST (ERR3)" appears.
7. With the "2.ACTIVITY", "3.DOCUMENTS", "4.COM.LIST (NEW)" or "5.COM.LIST (ERR3)" being displayed, press the "Menu/Set" key.

   The "ENTER NO. &SET" appears.
8. Enter the telephone number of the receiver machine and press the "Menu/Set" key again.

Note

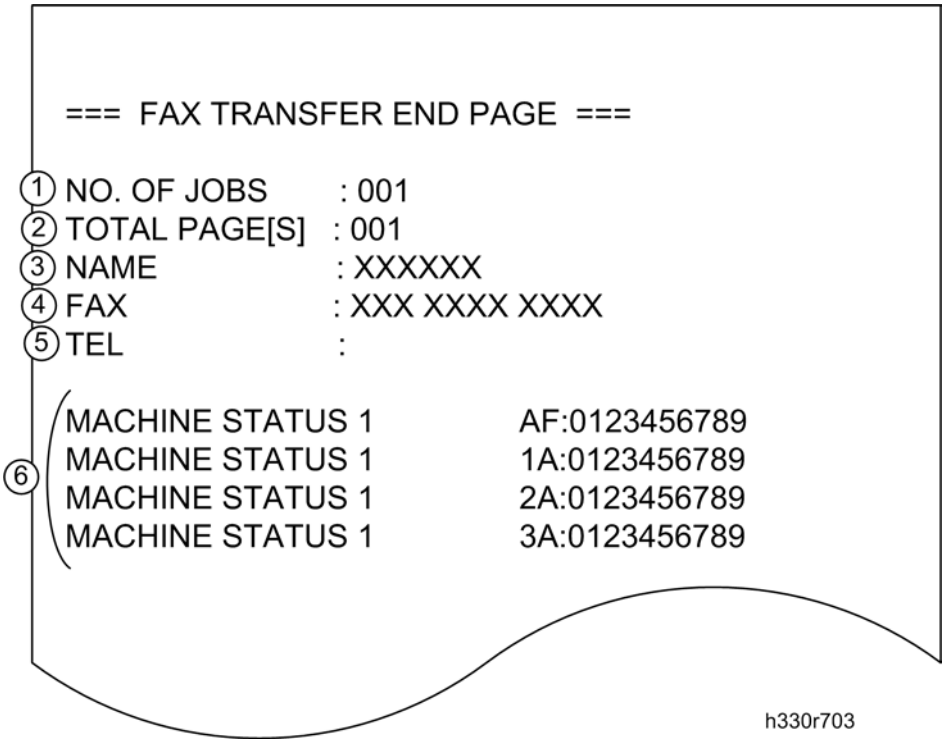
- Be sure to type the telephone number with the numerical keys. No one-touch dialing is allowed in this procedure.
- The machine displays the "ACCEPTED" for approx. two seconds and starts dialing to transfer data.
- No station ID will be attached. A cover page and end page as shown below will be automatically attached, instead.

Cover page sample



1. Job number
2. Total number of pages to be transferred
3. Station ID registered in the sender equipment
4. Fax number of the sender equipment
5. Telephone number of the sender equipment
6. Transfer start date
7. Model code
8. Boot ROM information
9. ROM information
10. Serial number

End page sample



1. Job number
2. Total number of pages to be transferred
3. Station ID registered in the sender equipment
4. Fax number of the sender equipment
5. Telephone number of the sender equipment
6. Error codes

Before You Do

Safety Precautions

To prevent the creation of secondary problems by mishandling, observe the following precautions during maintenance work.

1. Before starting disassembly/reassembly jobs, unplug the power cord and telephone line. In particular, when having access to the power supply inside the machine, make sure that the power cord is unplugged from the electrical outlet; when having access to the main PCB or NCU PCB, make sure that both the power cord and telephone line are unplugged from the machine.
2. Be careful not to lose screws, washers, or other parts removed for parts replacement.
3. When using soldering irons and other heat-generating tools, take care not to damage the resin parts such as wires, PCBs, and covers.
4. Static electricity charged in your body may damage electronic parts. When transporting PCBs, be sure to wrap them in conductive sheets.
5. When replacing the PCB and all the other related parts, put on a grounding wrist band and perform the job on a static mat. Also take care not to touch the conductor sections on the flat cables or on the wire harness.
6. Be sure to reinsert self-tapping screws correctly, if removed.
7. Tighten screws to the torque values listed on the next page.
8. After disconnecting flat cables, check that each cable is not damaged at its end or shortcircuited.
9. When connecting flat cables, do not insert them at an angle. After insertion, check that the cables are not at an angle.
10. When connecting or disconnecting cable connectors, hold the connector bodies not the wires. If the connector has a lock, always slide the connector lock to unlock it.
11. Before reassembly, apply the specified lubricant to the specified points.
    (Refer to Section 5.2 in this chapter.)
12. After repairs, check not only the repaired portion but also that the connectors and other related portions function properly before operation checks.
13. After you use the machine, some internal parts are extremely HOT! To prevent injuries, be careful not to put your fingers in the areas shown in the illustration.

Tightening Torque

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
Document base ASSY	Taptite, cup B M4x12	2	0.79 ±0.1 (8 ±1)
Side cover L	Taptite, bind B M4x12	2	0.79 ±0.1 (8 ±1)
Speaker hold spring	Taptite, cup B M3x8	1	0.49 ±0.1 (5 ±1)
Side cover R	Taptite, bind B M4x12	2	0.79 ±0.1 (8 ±1)

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
ADF plate spring	Taptite, cup B M3x6	1	0.49 ±0.1 (5 ±1)
Panel rear cover	Taptite, cup B M3x8	3	0.46 ±0.05 (4.5 ±0.5)
Rear cover stopper	Taptite, bind B M4x12	1	0.79 ±0.1 (8 ±1)
Inner chute	Taptite, bind B M4x12	2	0.79 ±0.1 (8 ±1)
LV shield plate cover	Screw, pan (s/p washer) M3.5x6	1	0.49 ±0.1 (5 ±1)
Top cover ASSY	Taptite, bind B M4x12	2	0.79 ±0.1 (8 ±1)
LF ground plate	Taptite, cup S M3x6	1	0.69 ±0.1 (7 ±1)
LF FG harness ASSY	Taptite, cup B M3x4	1	0.39 ±0.1 (4 ±1)
Inner chute cover ASSY	Taptite, bind B M4x12	4	0.79 ±0.1 (8 ±1)
Scanning driver ASSY	Taptite, cup B M3x8	2	0.49 ±0.1 (5 ±1)
Scanning motor F sub ASSY	Screw, pan (s/p washer) M3x6	1	0.69 ±0.1 (7 ±1)
NCU FG harness	Screw, pan (s/p washer) M3.5x6	1	0.49 ±0.1 (5 ±1)
NCU unit	Taptite, bind B M4x12	2	0.78 ±0.1 (8 ±1)
NCU PCB ASSY	Taptite, cup S M3x6	2	0.49 ±0.1 (5 ±1)

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
Chute base	Taptite, bind B M4x12	6	0.8 ±0.1 (8 ±1)

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
Fixing unit	Taptite, cup B M4x12	2	0.78 ±0.1 (8 ±1)
Halogen heater	Screw, pan (s/p washer) M3x8	2	0.59 ±0.05 (6 ±0.5)
Thermistor ASSY	Taptite, cup B M3x12	1	0.59 ±0.1 (6 ±1)

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
High voltage PS PCB	Taptite, bind B M4x12 Taptite, cup S M3x6	2 2	0.78 ±0.1 (8 ±1) 0.69 ±0.1 (7 ±1)
CDCC PCB	Screw, Pan M3x6	2	0.49 ±0.1 (5 ±1)
Main PCB	Taptite, cup S M3x6	5	0.69 ±0.1 (7 ±1)
FG harness ASSY 1	Screw, pan (S/P washer) M3.5x6	1	0.59 ±0.1 (6 ±1)
LV shield plate cover	Taptite, cup S M3x6	2	0.69 ±0.1 (7 ±1)
LV shield plate	Taptite, bind B M4x12 Screw, pan (s/p washer) M3.5x6	2 1	0.78 ±0.1 (8 ±1) 0.59 ±0.1 (6 ±1)
AC holder	Taptite, bind B M4x12	1	0.59 ±0.1 (6 ±1)
PS PCB unit	Taptite, cup S M3x6	2	0.69 ±0.1 (7 ±1)

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
Laser unit	Taptite, cup S M3x6	4	0.69 ±0.1 (7 ±1)
FG harness ASSY 6	Taptite, cup S M3x6	1	0.69 ±0.1 (7 ±1)

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
Air duct	Taptite, cup S M3x6	2	0.69 ±0.1 (7 ±1)

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
Sub chute ASSY	Taptite, bind B M4x12	2	0.78 ±0.1 (8 ±1)

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
Regist sensor PCB ASSY	Taptite, bind B M3x6	1	0.39 ±0.1 (4 ±1)

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
Base plate	Taptite, bind B M4x12	3	0.78 ±0.1 (8 ±1)

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
Toner sensor PCB ASSY	Taptite, cup B M3x6	1	0.25 ±0.05 (2.5 ±0.5)

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
Main shield plate	Taptite, bind B M4x12	4	0.78 ±0.1 (8 ±1)
Gear plate calking ASSY	Taptite, bind B M4x12	3	0.78 ±0.1 (8 ±1)
Main motor ASSY	Taptite, cup S M3x6	3	0.69 ±0.1 (7 ±1)
P/R solenoid ASSY	Taptite, bind B M3x10	1	0.49 ±0.1 (5 ±1)
F/R solenoid ASSY	Taptite, bind B M3x10	1	0.49 ±0.1 (5 ±1)
Main frame L	Taptite, bind B M4x12	2	0.78 ±0.1 (8 ±1)

Location of screw	Screw type	Q'ty	Tightening torque N • m (kgf • cm)
Main frame R	Taptite, bind B M4x12	3	0.78 ±0.1 (8 ±1)

Preparation

Prior to proceeding with the disassembly procedure,

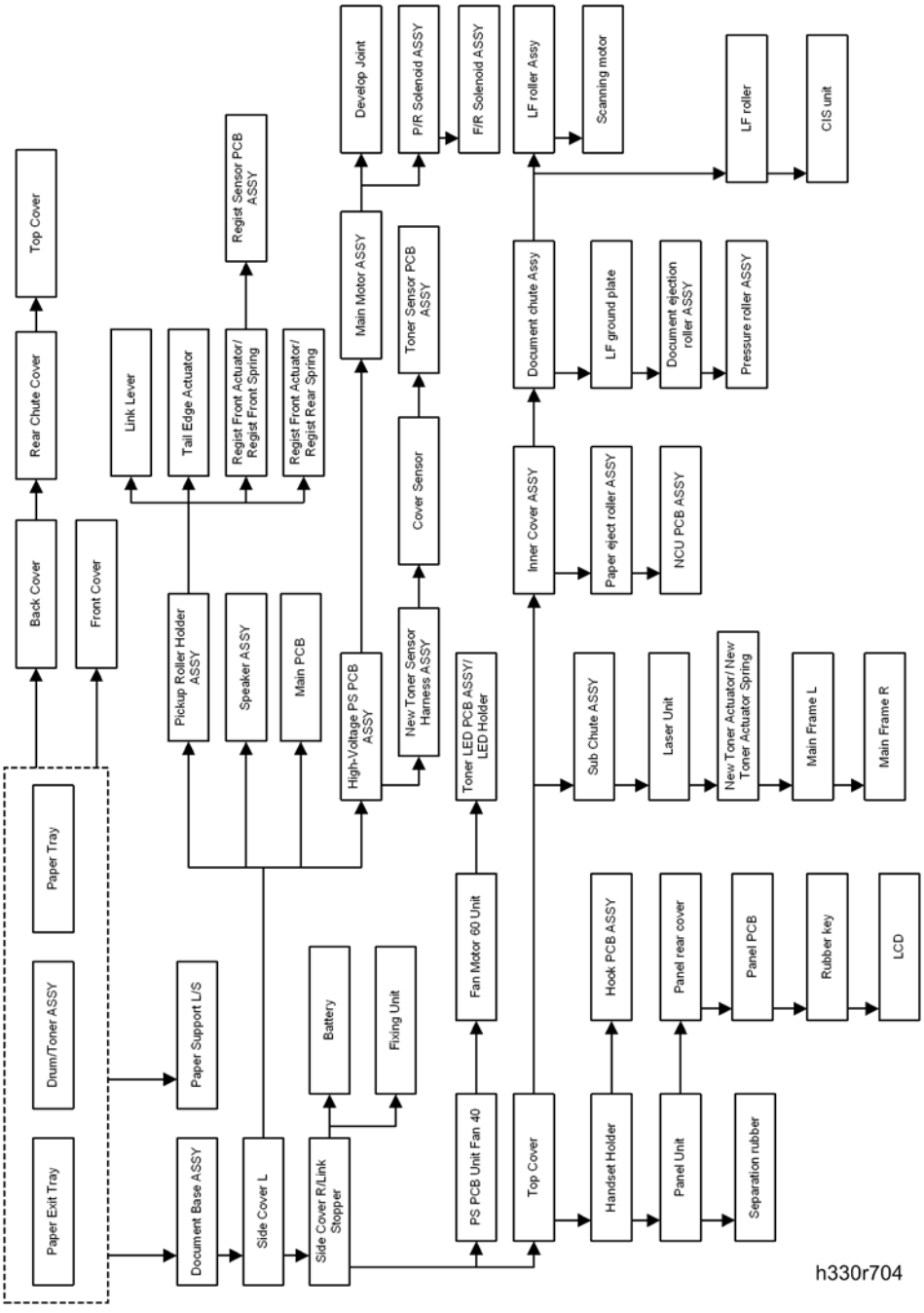
1. Unplug
   - the modular jack of the telephone line,
   - the USB cable, if connected (not shown below), and
   - the modular jack of the external telephone set if connected (not shown below).

How to Access the Object Component

On the next page is a disassembly flowchart which helps you access the object components. To remove the fixing unit, for example, first find it on the flowchart and note its name ("Fixing Unit"). To access it, you need to remove all the parts above the fixing unit on the flowchart ("Back Cover" ⇒ "Rear Chute Cover" ⇒ "Side Cover R/Link Stopper" ⇒ "Top Cover") before the unit itself can be removed.

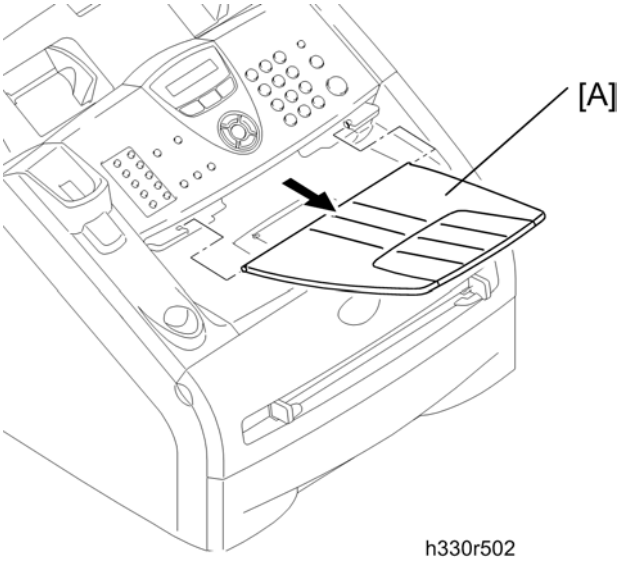
Unless otherwise specified, all parts should be replaced in the reverse order to which they were removed to reassemble the machine.

Disassembly Flowchart



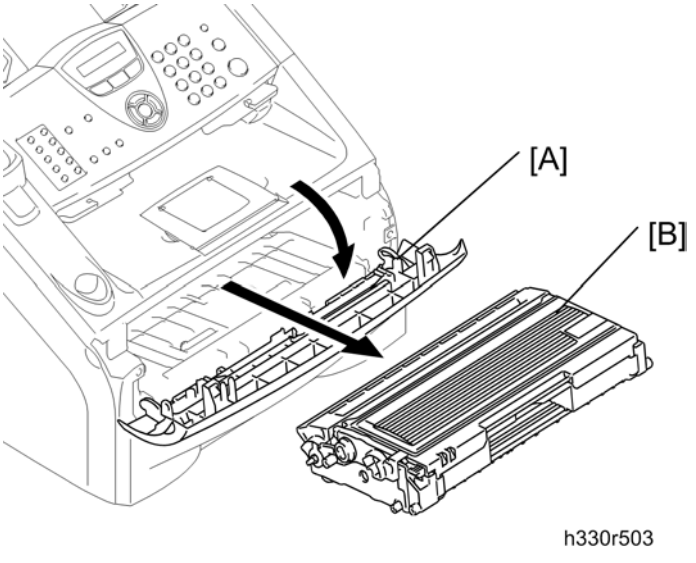
Common Parts

Paper Eject Tray



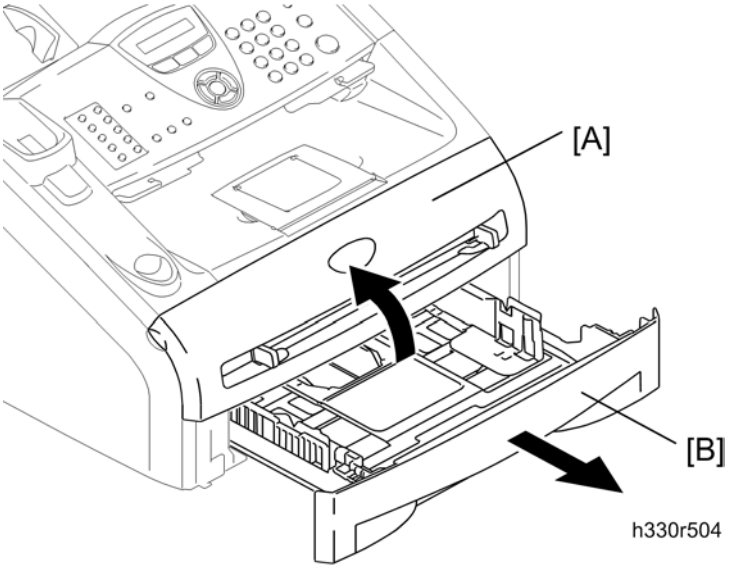
1. Remove the paper eject tray [A].

Drum/Toner ASSY

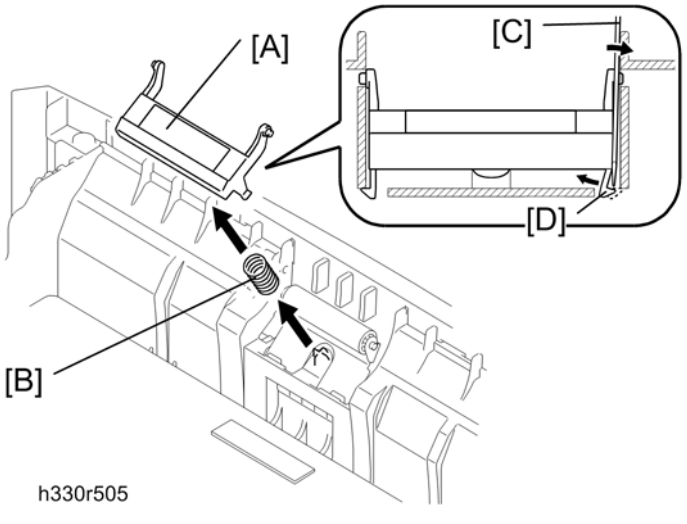


1. Open the front cover [A] and remove the drum/toner ASSY [B].

Paper Tray



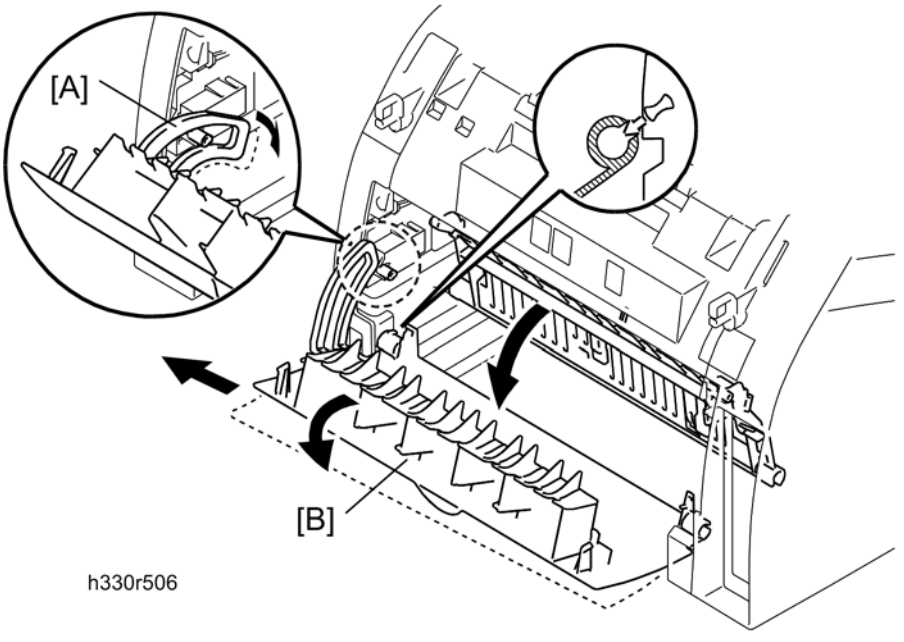
1. Close the front cover [A] and pull out the paper tray [B].
2. Remove the paper from the paper tray.



3. Remove the separation pad holder ASSY [A] and the separation pad spring [B].
4. Use a screwdriver [C] to release the hook [D].

Back Cover

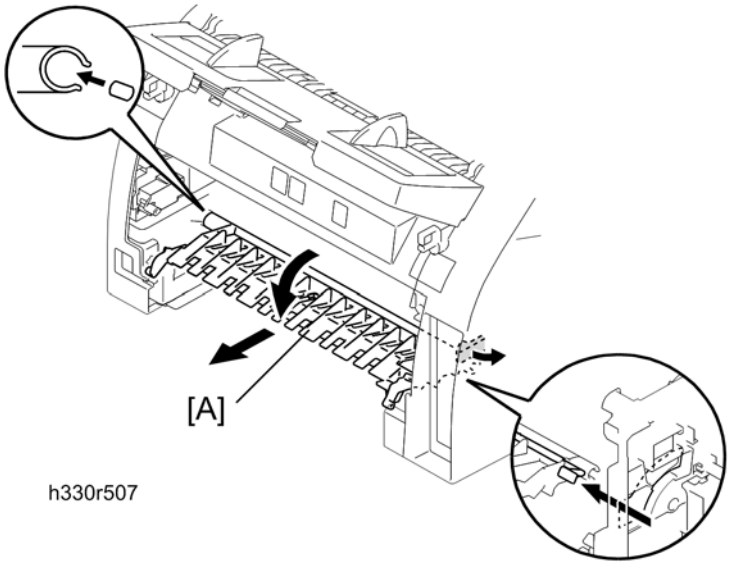
1. Paper Exit Tray (☛ p.32)
2. Drum/Toner ASSY (☛ p.32)
3. Paper Tray (☛ p.33)



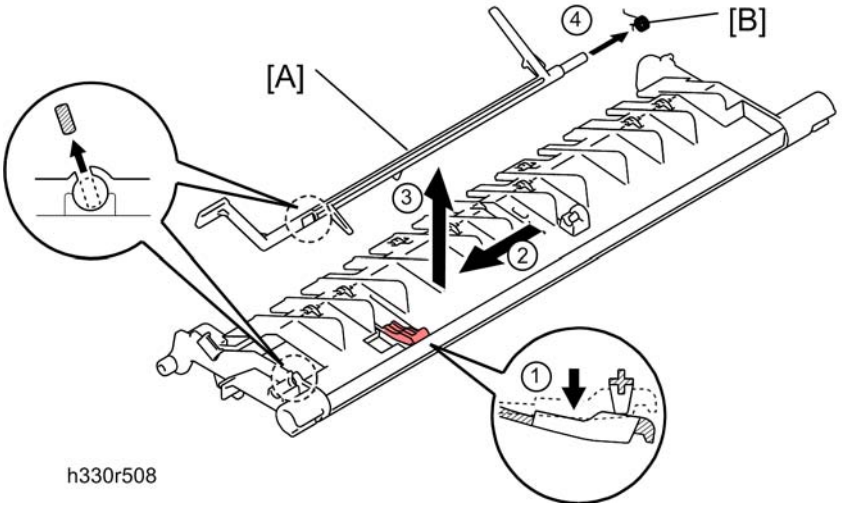
4. Remove the section [A] of the back cover while opening the back cover slightly.
5. Remove the back cover [B].

Rear Chute Cover

1. Back Cover (☛ p.34)



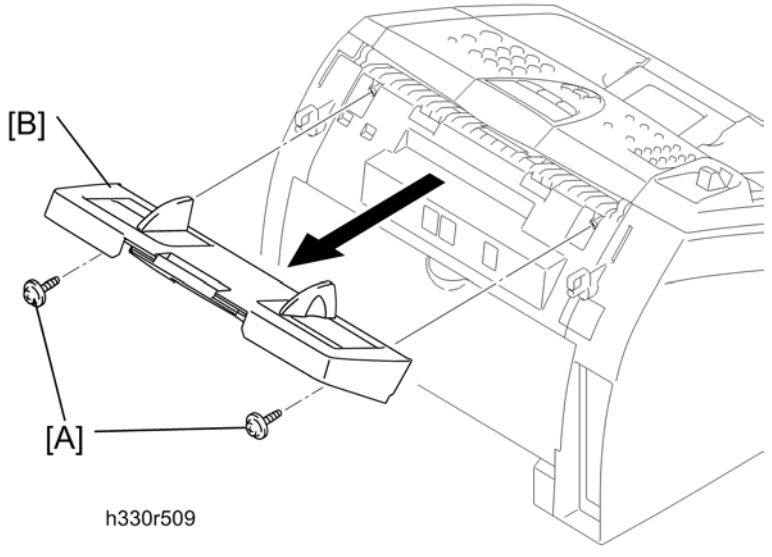
2. Remove the rear chute cover [A].



3. Remove the paper eject actuator [A] and the eject actuator spring [B].

Document Base ASSY

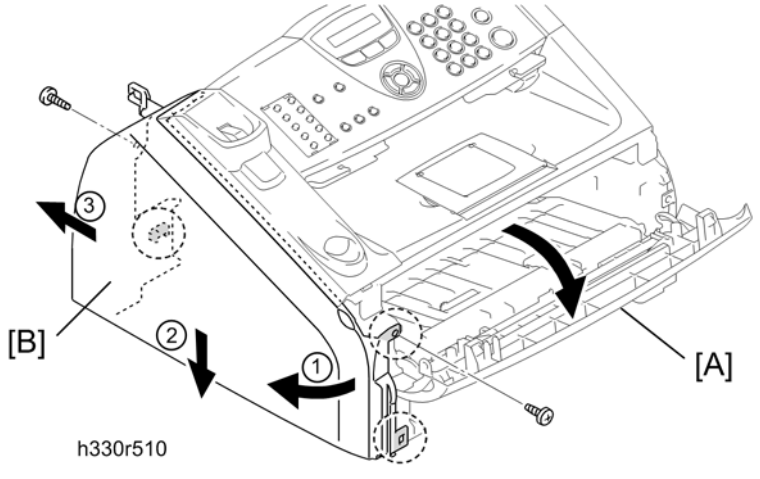
1. Paper Exit Tray (☛ p.32)
2. Drum/Toner ASSY (☛ p.32)
3. Paper Tray (☛ p.33)



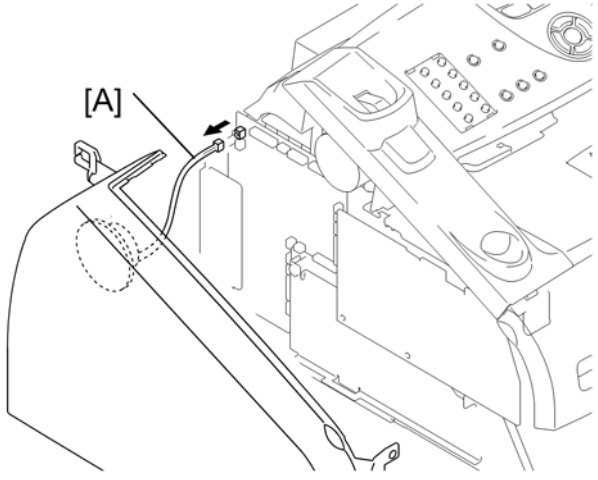
4. Remove the two screws (cup B M4x12) [A] to remove the document base ASSY [B].

Side Cover L

1. Document Base ASSY (☛ p.35)



2. Open the front cover [A].
3. Remove the side cover L [B] (x 2: B M4x12).

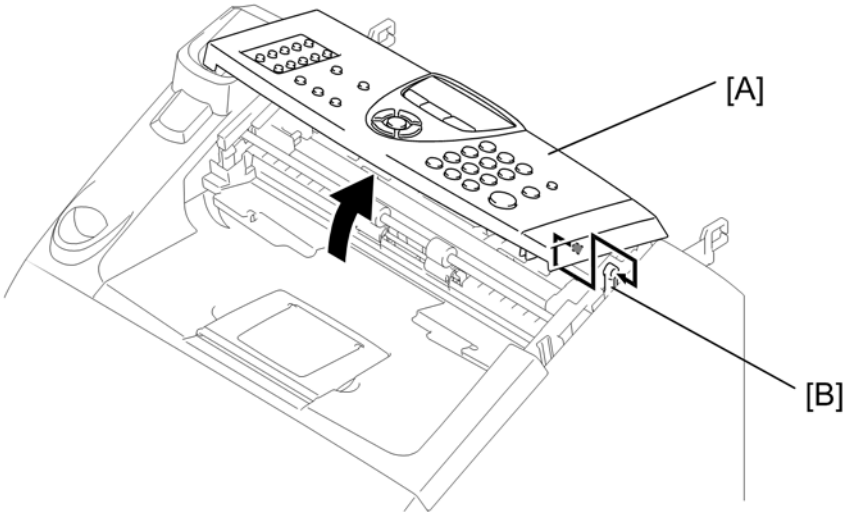


h330r511

4. Disconnect the connector [A] of the speaker ASSY.

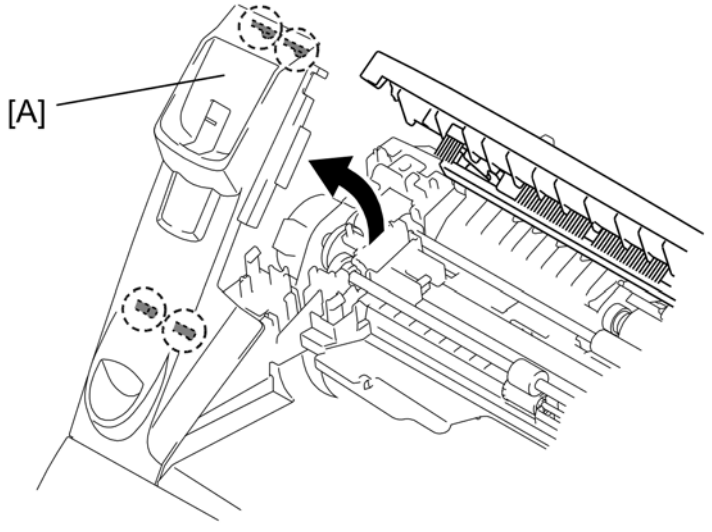
Handset Holder (NA/China only)

1. Top Cover (☛ p.49)



h330r512

2. Open the panel unit [A] and remove the link stopper [B].

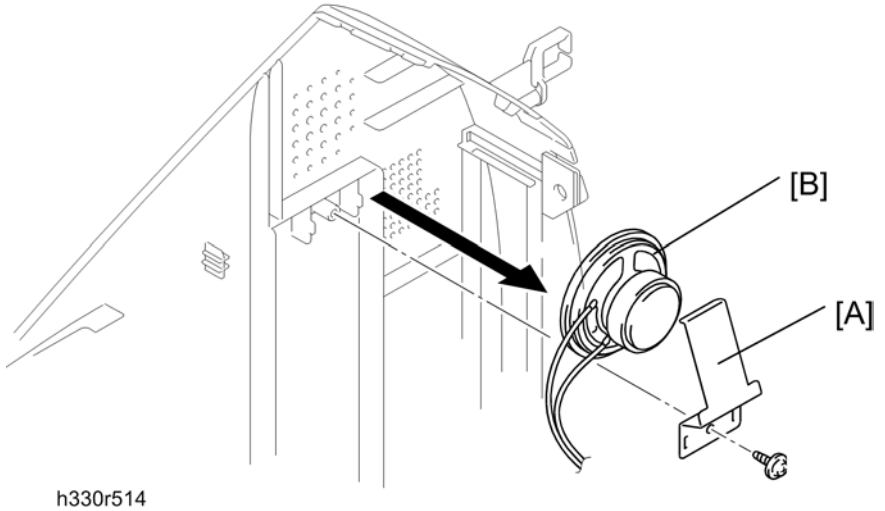


h330r513

3. Release the four hooks to remove the handset holder [A].

Speaker ASSY

1. Side Cover L (☛ p.36)

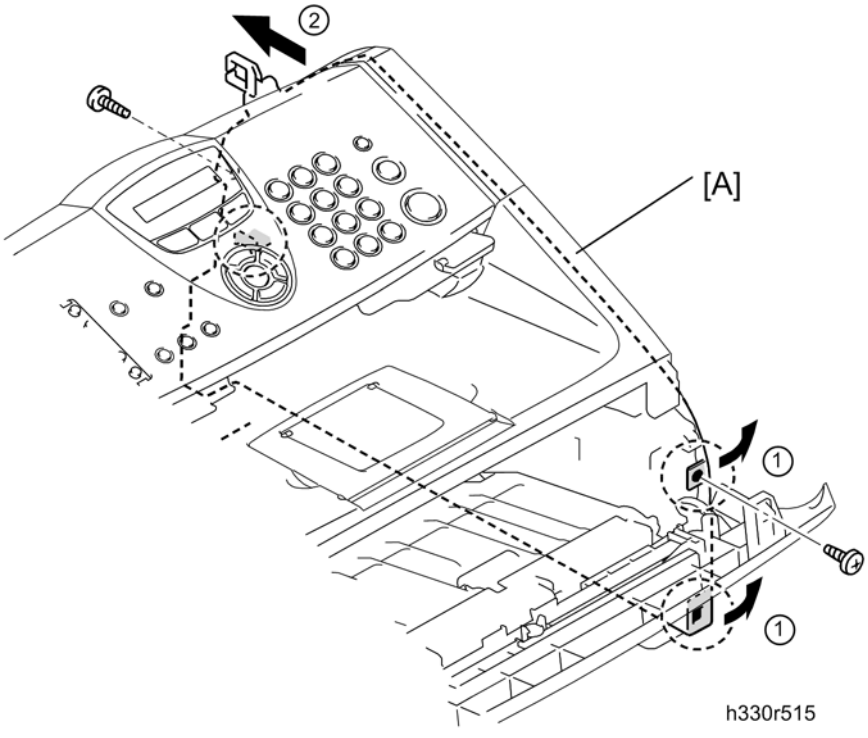


h330r514

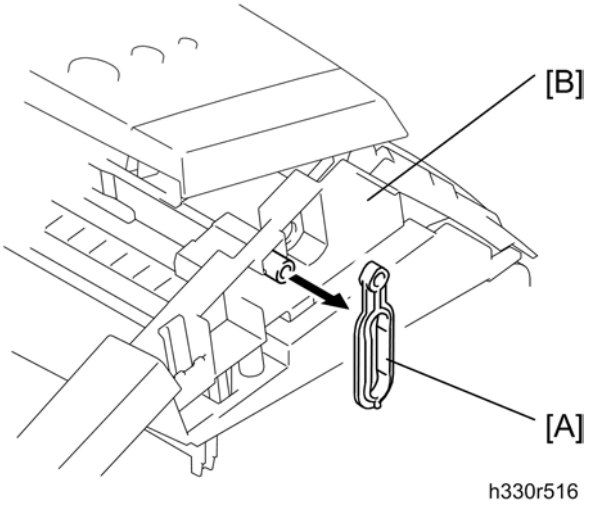
2. Remove the speaker hold spring [A] and speaker ASSY [B] (x 1; B M3x8).

Side Cover R/Link Stopper

1. Side Cover L (p.36)



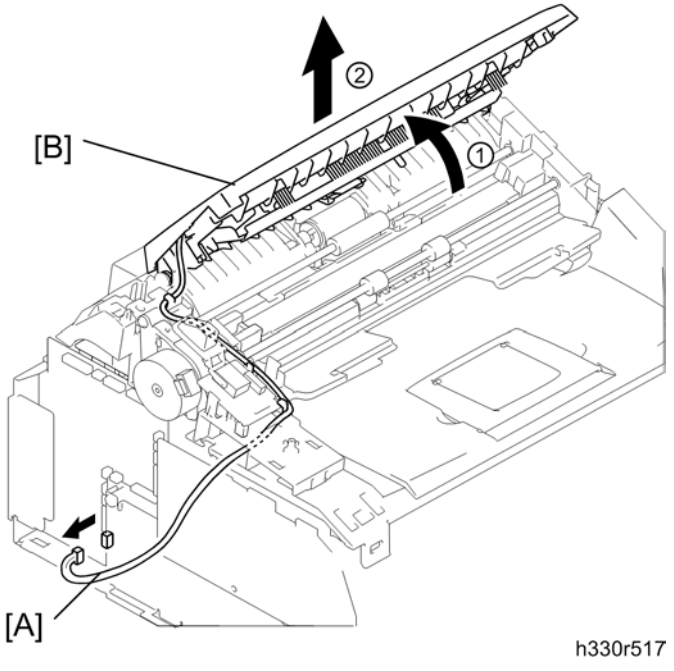
2. Remove the side cover R [A] (x 2; B M4x12, hooks).



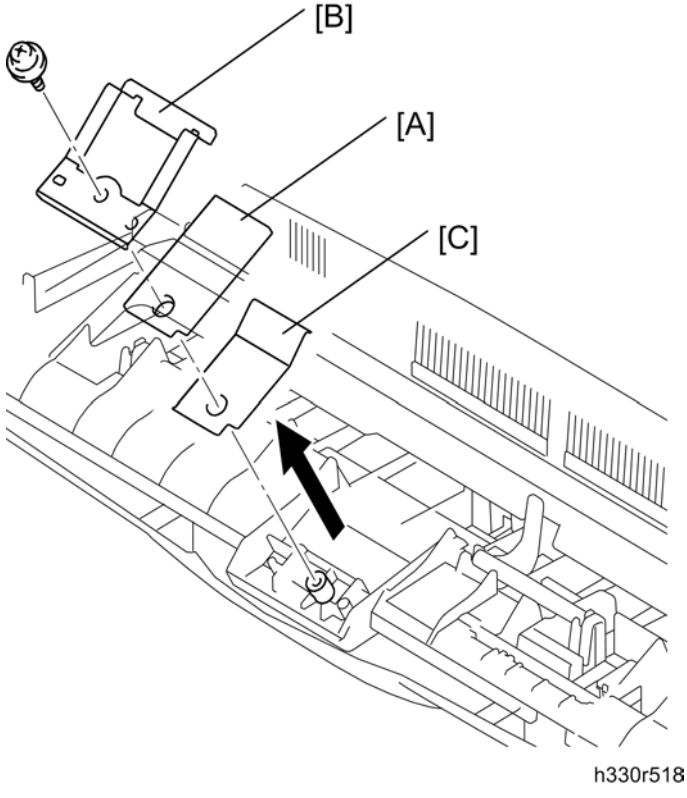
3. Remove the link stopper [A] from the top cover [B].

Panel Unit

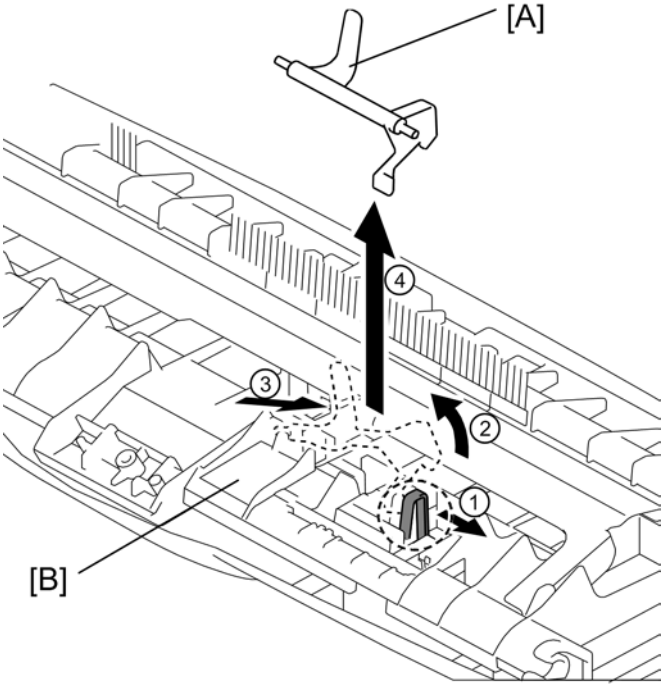
1. Handset Holder (☛ p.37)



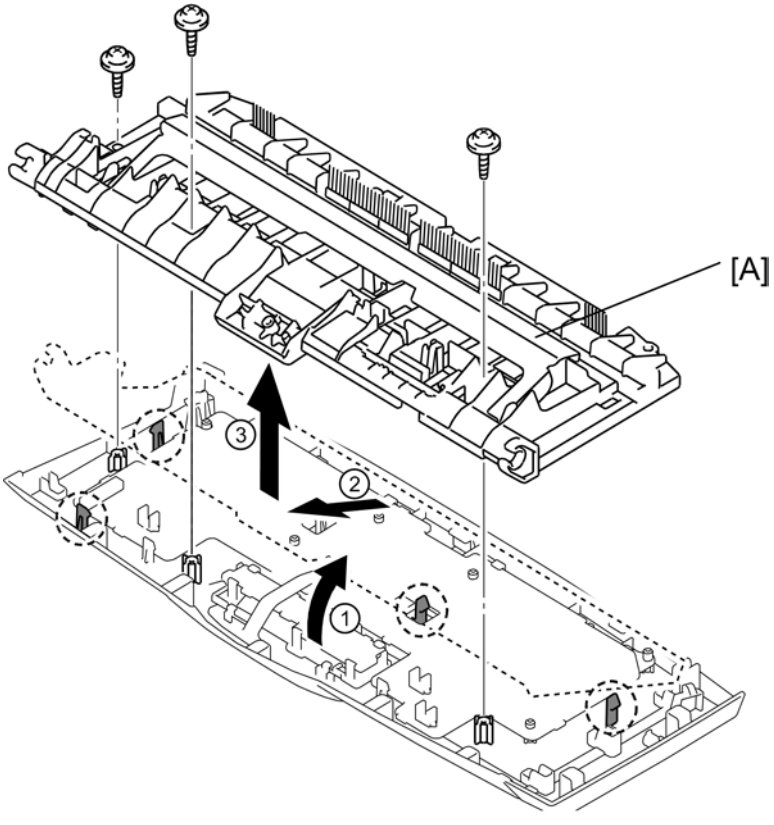
2. Disconnect the panel harness [A].
3. Remove the panel unit [B].



4. Remove the separation rubber [A], ADF plate spring [B] and front plate spring [C] (x 1; B M3x6).

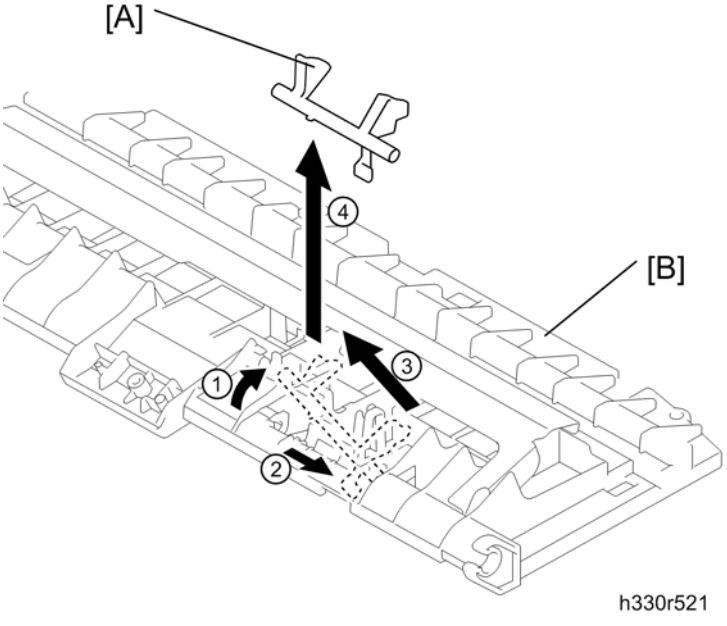


5. Remove the actuator R [A] from the panel unit [B].



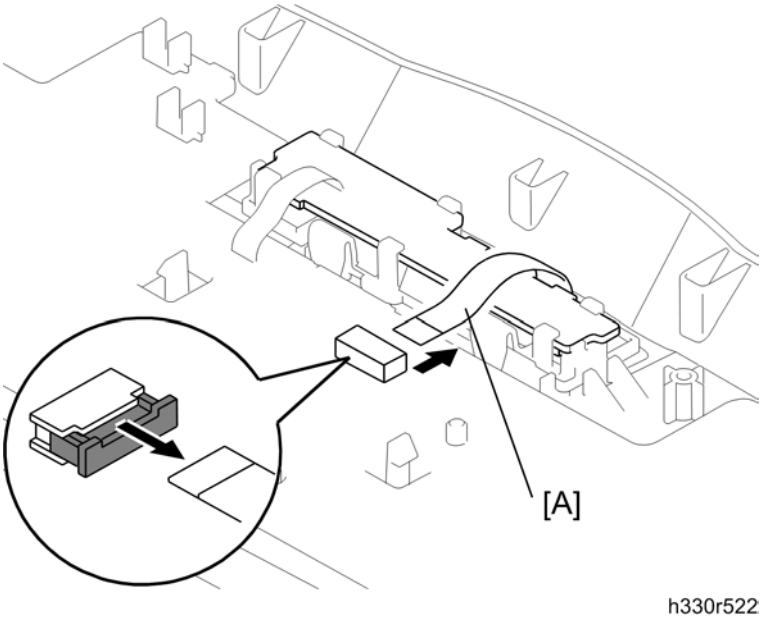
h330r520

6. Release the four hooks to remove the panel rear cover [A] (x 3; B M3x8).



h330r521

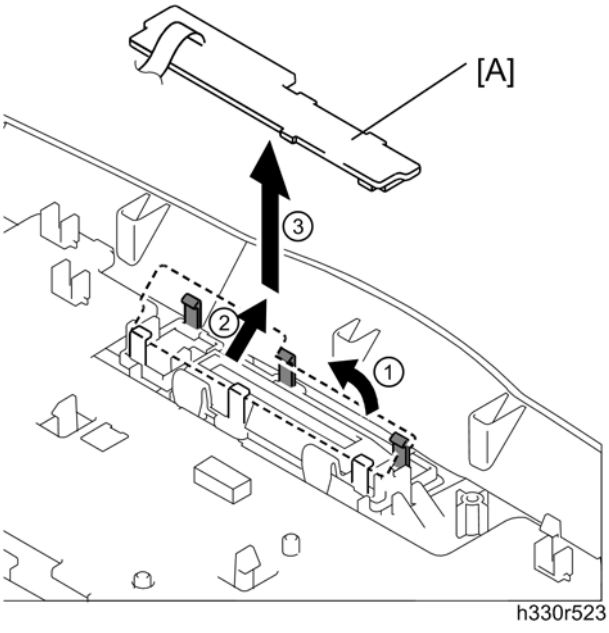
7. Remove the actuator F [A] from the panel rear cover [B].



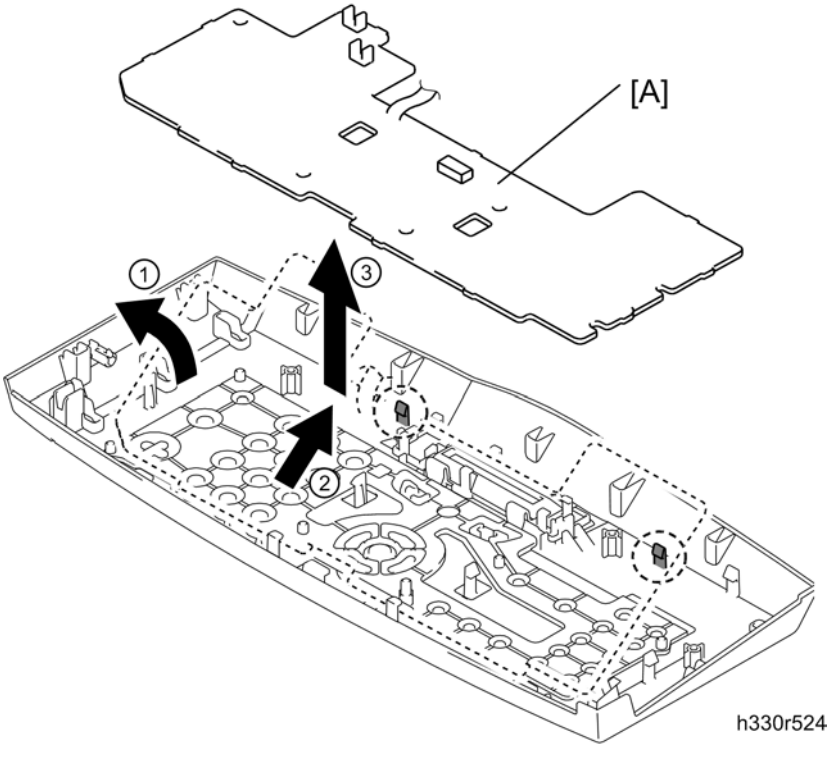
8. Disconnect the LCD harness [A].

Note

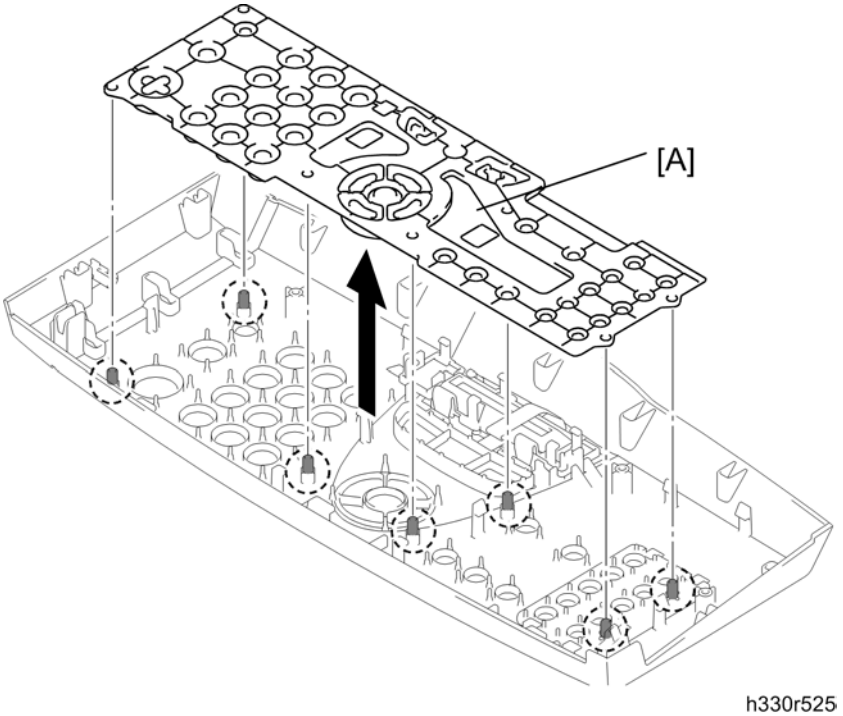
- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.



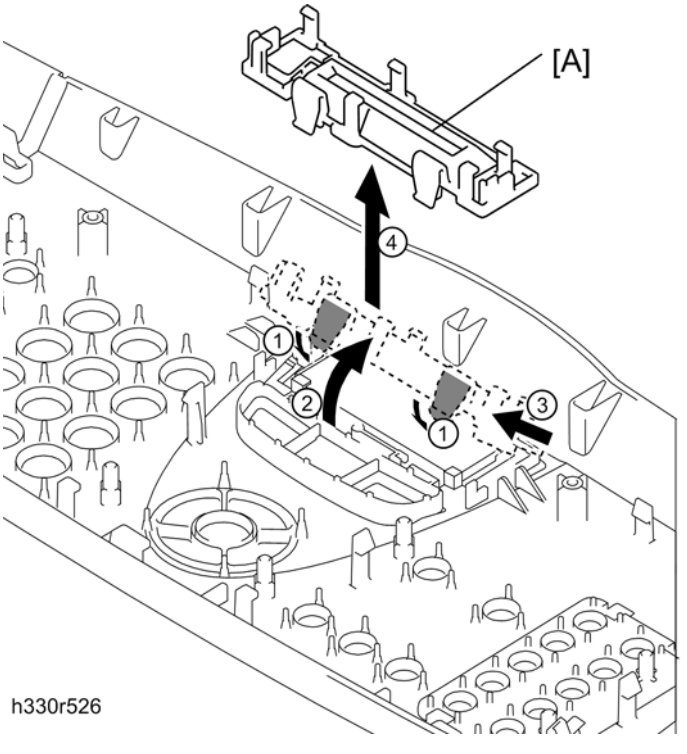
9. Release the three hooks to remove the panel PCB ASSY [A].



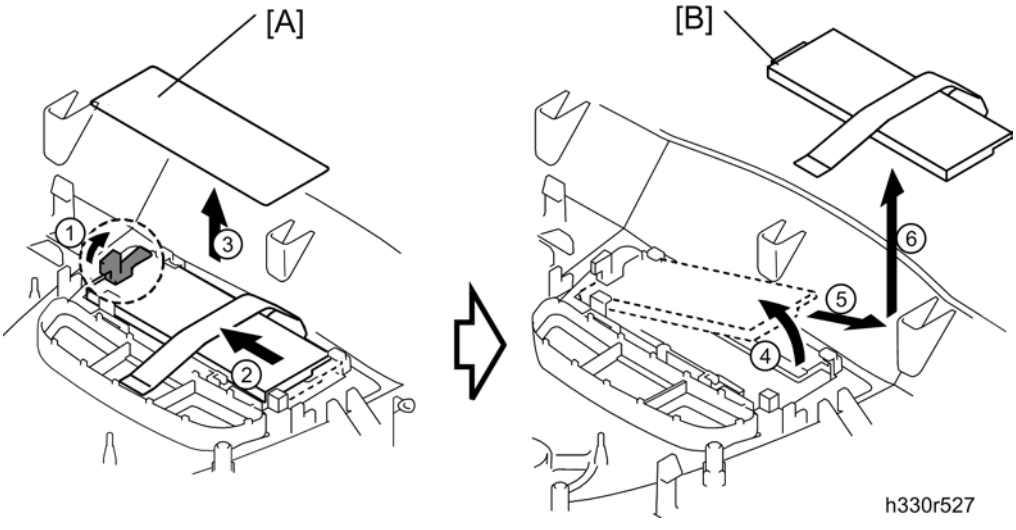
10. Release the two hooks to remove the panel PCB ASSY [A].



11. Remove the rubber key [A].



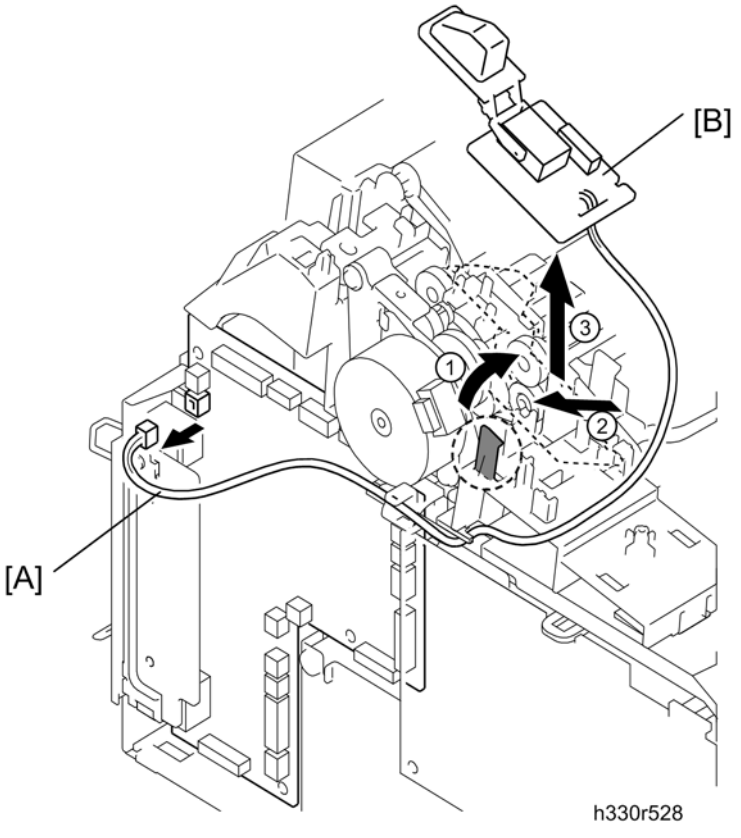
12. Release the two hooks to remove the back light holder [A].



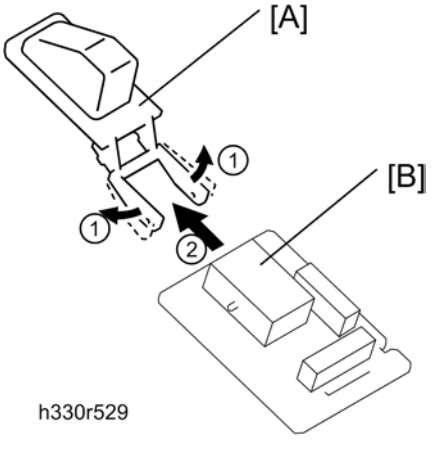
13. Remove the back light film [A].
14. Release the one hook to remove the LCD [B].

Hook PCB ASSY

1. Handset Holder (☛ p.37)



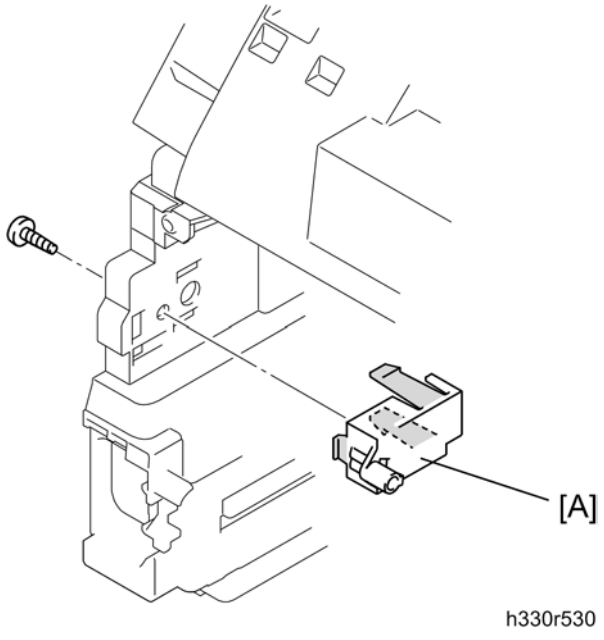
2. Disconnect the connector [A] of the hook PCB ASSY [B].
3. Release the one hook to remove the hook PCB ASSY [B].



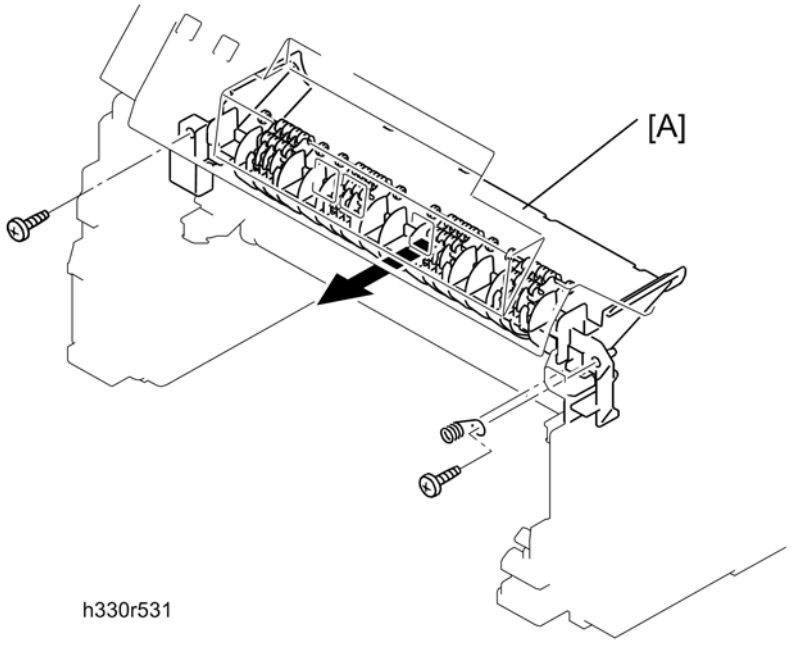
4. Remove the actuator hook [A] from the hook PCB ASSY [B].

Top Cover

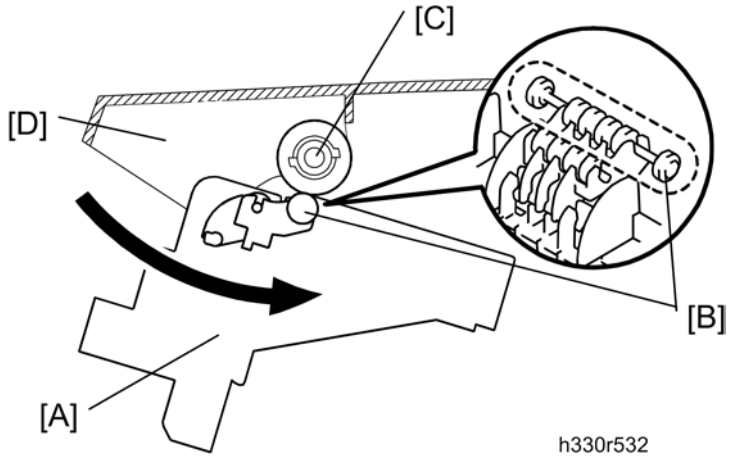
1. Rear Chute Cover (☛ p.34)



2. Remove the rear cover stopper [A] (x 1; B M4x12).

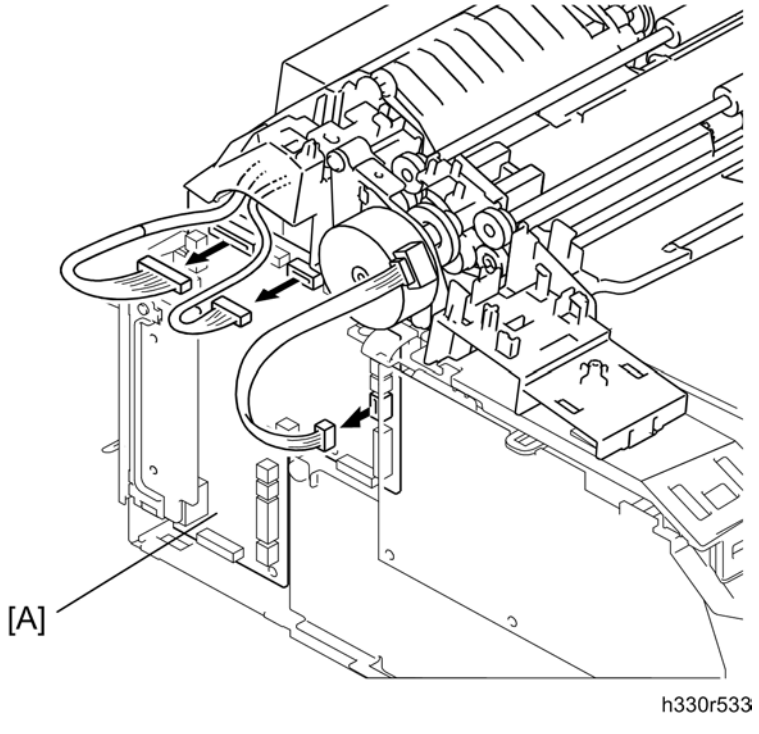


3. Remove the inner chute [A] (x 2; B M4x12, spring x 1).

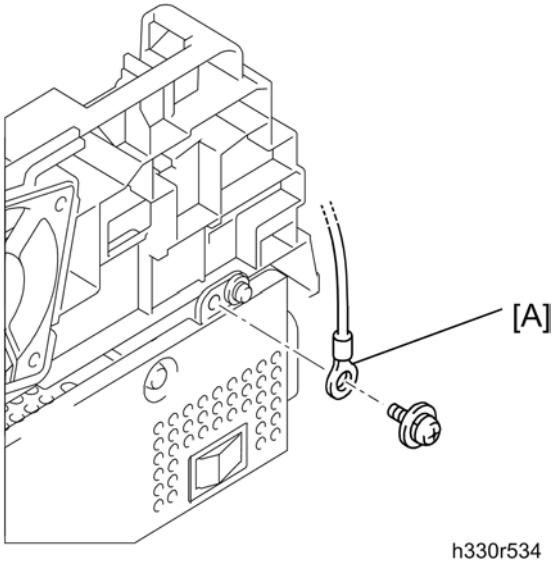


Note

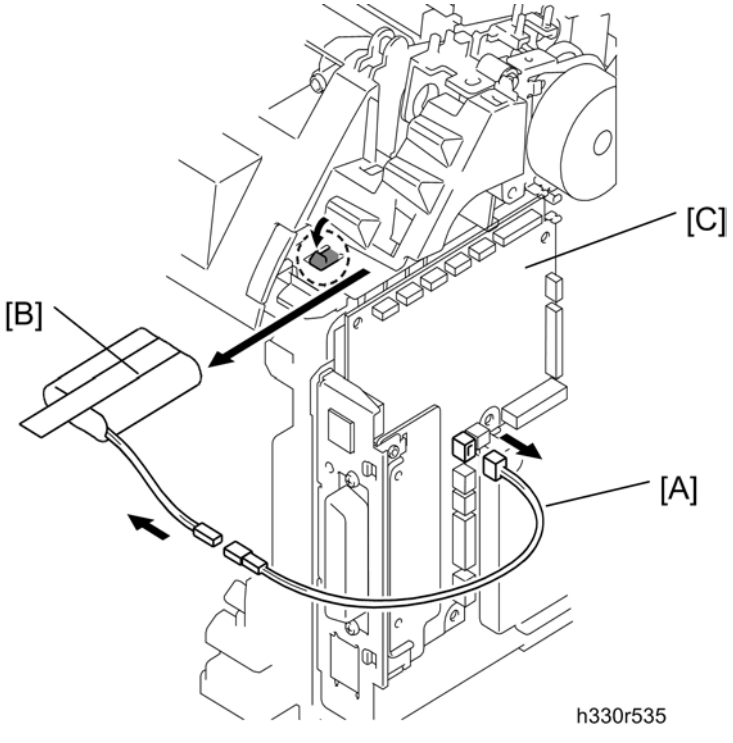
- Re-assemble the inner chute [A] while pushing onto the pinch roller [B] of the inner chute with the eject roller [C] of the top cover [D].



4. Disconnect the three connectors from the main PCB [A].



5. Remove the the NCU FG harness ASSY [A] (x 1; pan (S/P washer) M3.5x6).



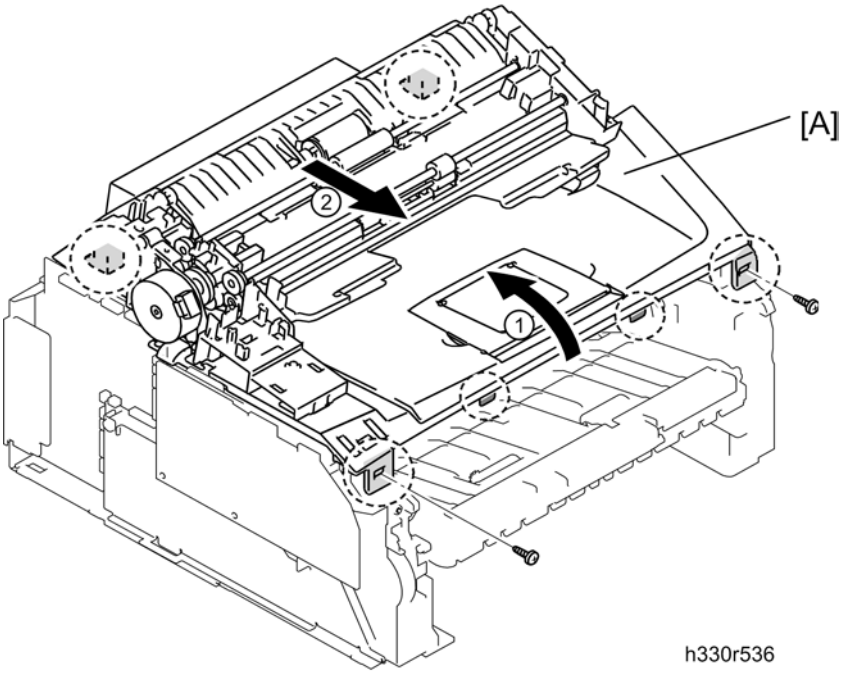
6. Disconnect the connector [A] of the battery.
7. Release the one hook to remove the battery [B].

⚠CAUTION

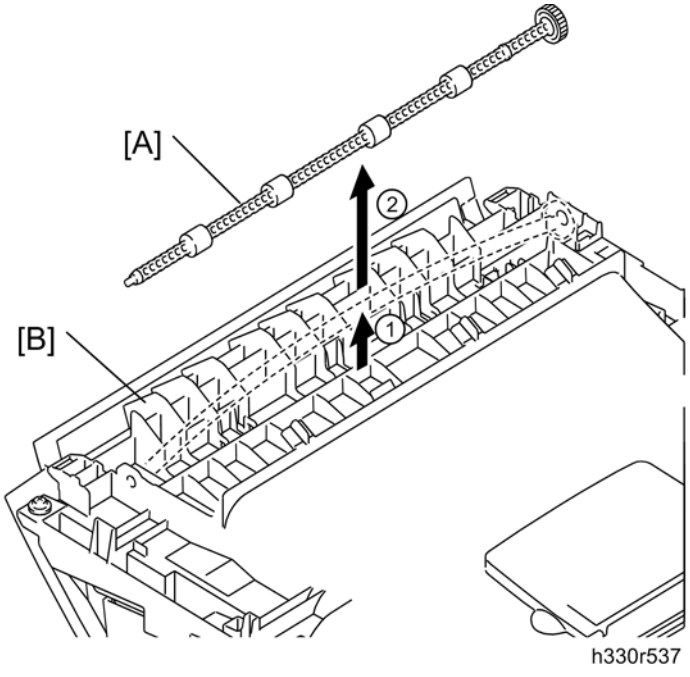
- There is a danger of explosion if the battery is incorrectly replaced.

- Use a genuine spare part when you replace the battery.
- Do not disassemble, recharge or dispose of in fire.
- Used battery should be disposed of according to local regulations.

8. Disconnect the battery harness from the main PCB [C].



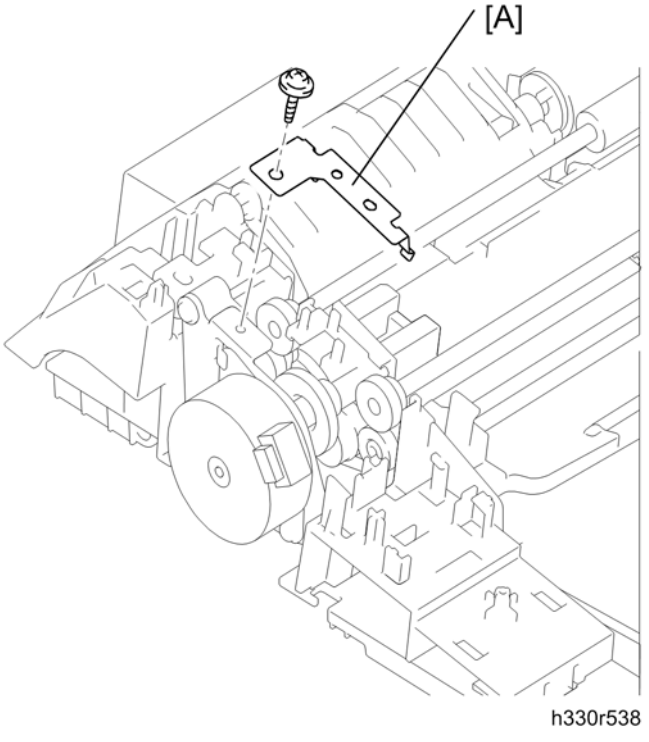
9. Release the six hooks to remove the top cover [A] (x 2; B M4x12).



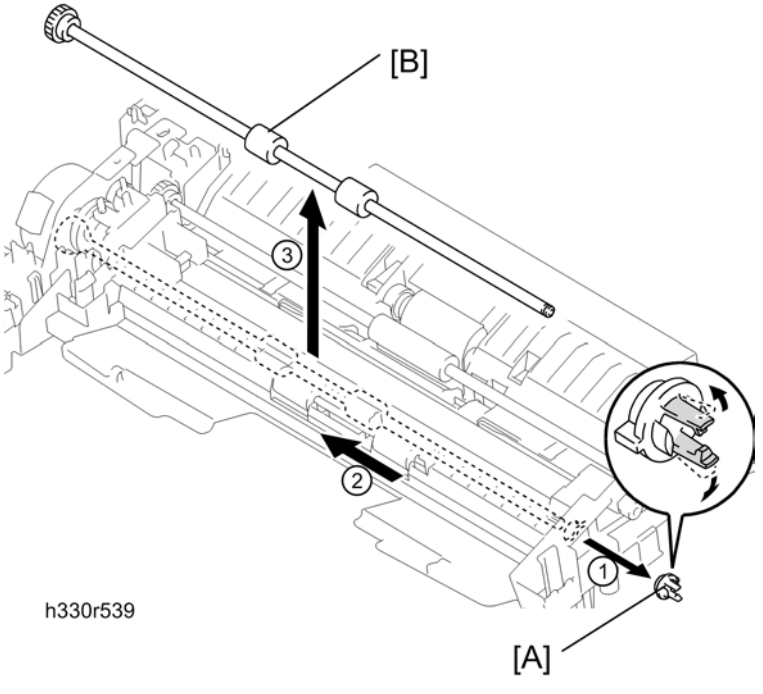
10. Remove the paper eject roller ASSY [A] from the top cover [B].

Note

- When removing the paper eject roller ASSY, the spacer may come off easily. Be sure not to lose it.

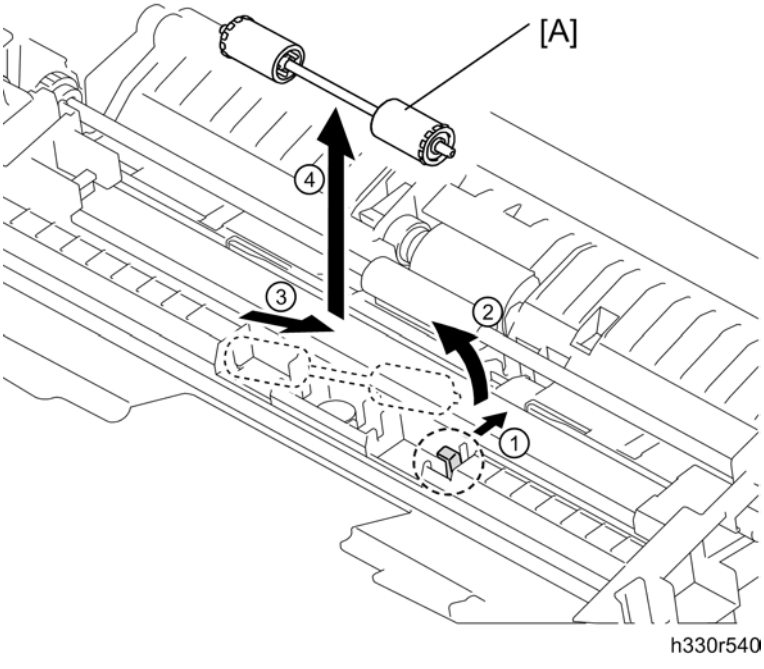


11. Remove the LF ground plate [A] (x 1; S M3x6).

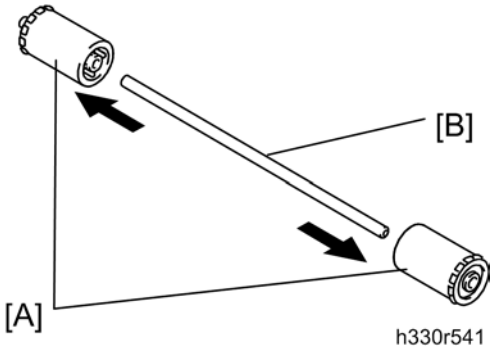


12. Release the two hooks to remove the bushing 5 [A].

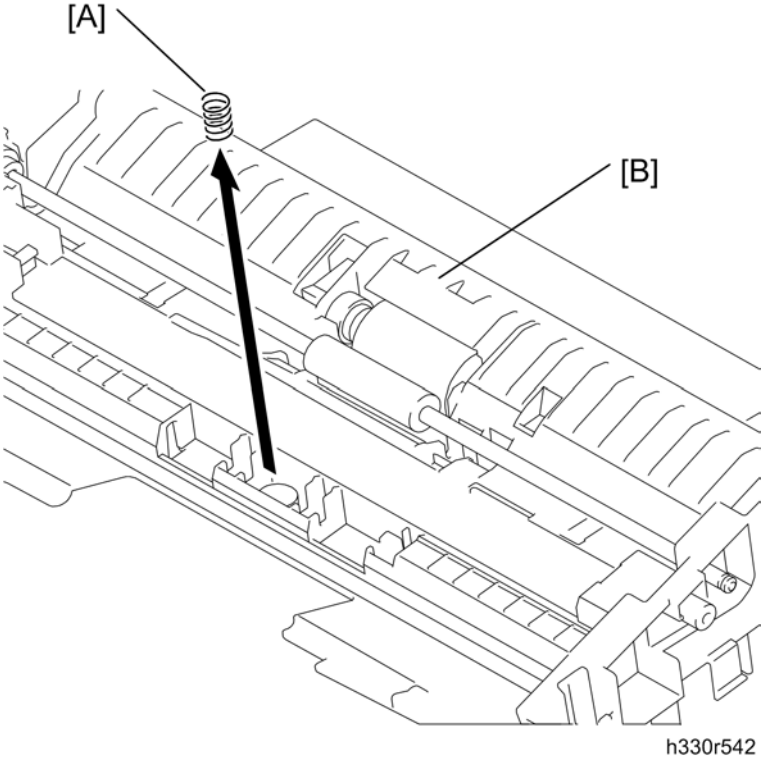
13. Remove the document ejection roller ASSY [B].



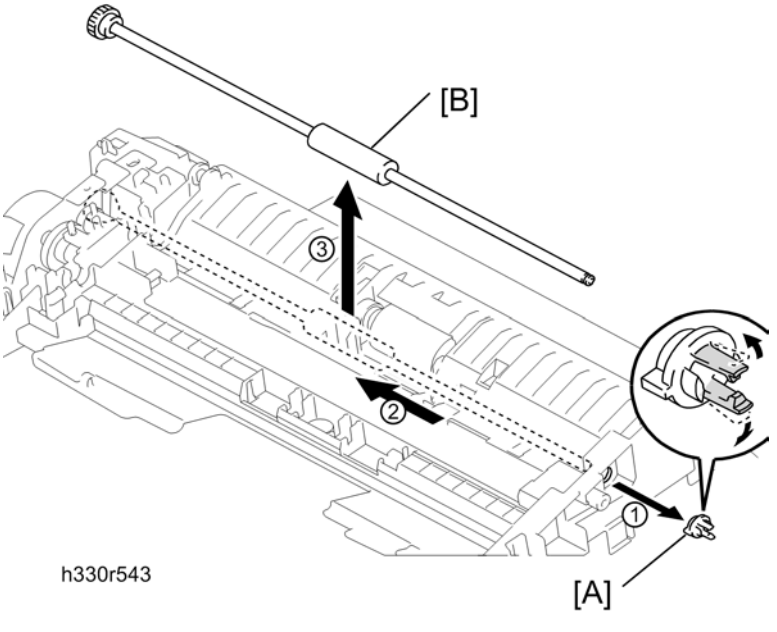
14. Release the hook to remove the pressure roller ASSY [A].



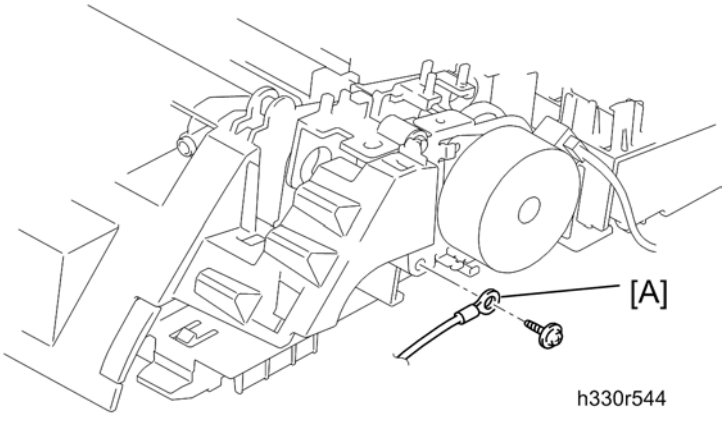
15. Remove the two pressure rollers [A] from the pressure roller shaft [B].



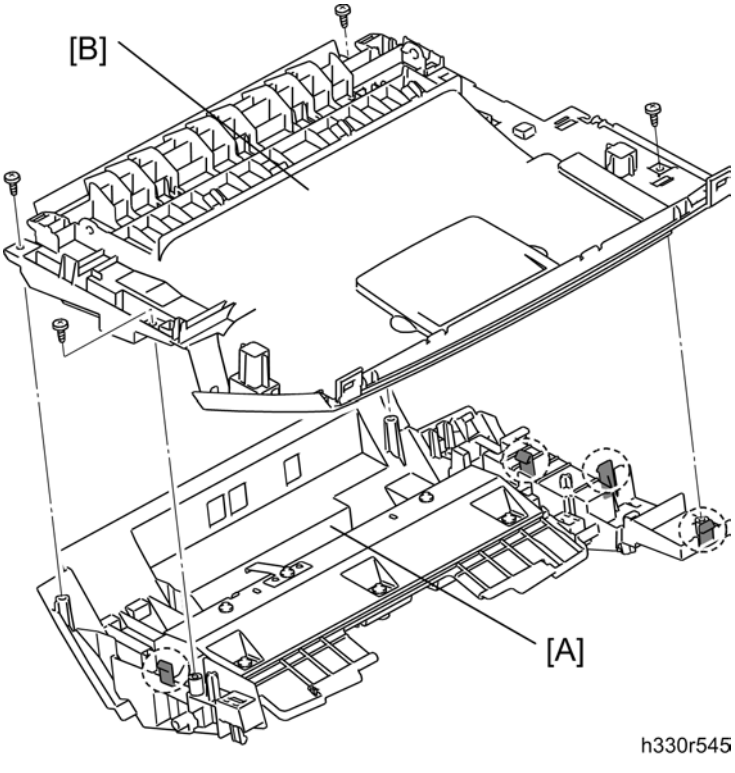
16. Remove the LF spring [A] from the top cover [B].



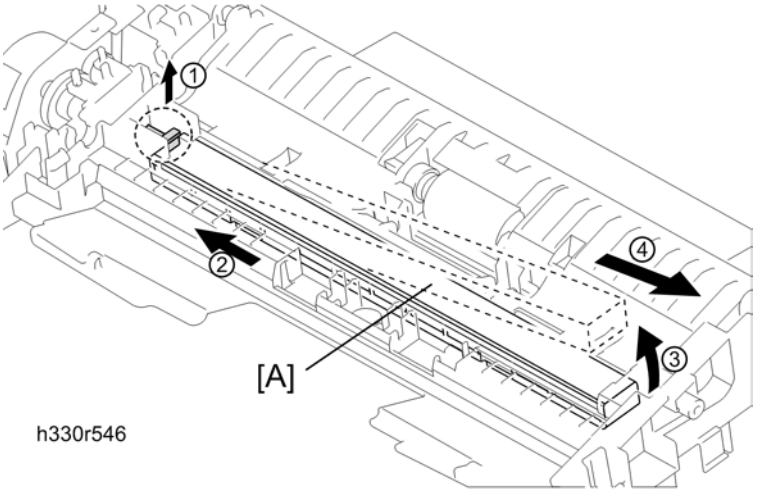
17. Release the two hooks to remove the bushing 5 [A].
18. Remove the LF roller [B].



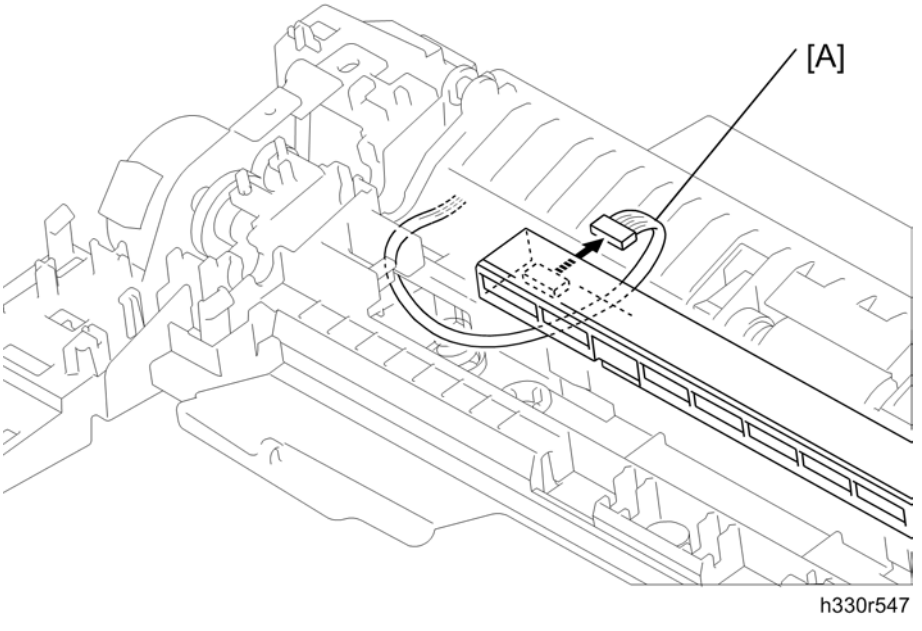
19. Remove the scanning drive LF FG harness ASSY [A] (x 1; B M3x4).



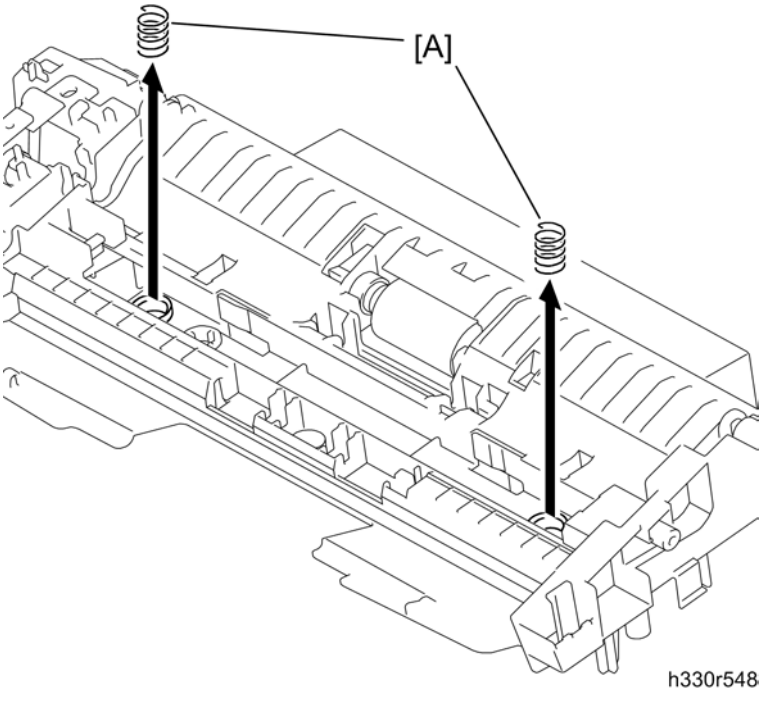
20. Remove the four bind taptite screws.
21. Release the four hooks to remove the document chute ASSY [A] from the inner chute cover ASSY [B] (x 1; B M4x12).



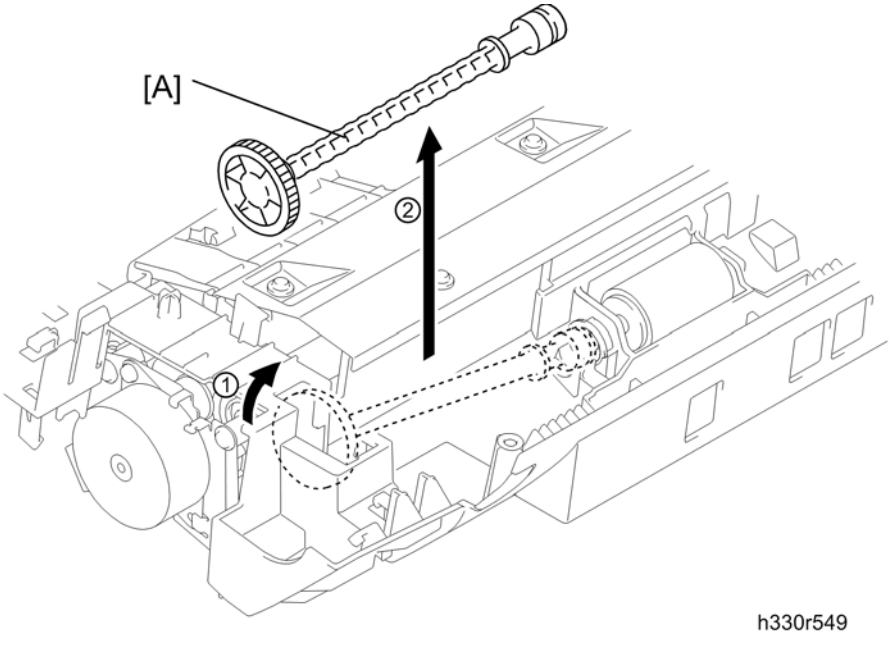
22. Remove the CIS [A].



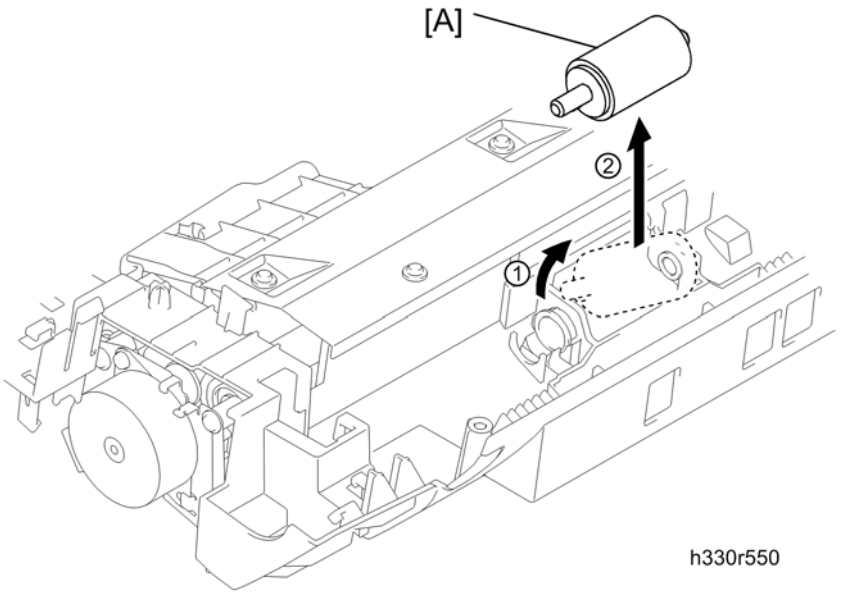
23. Disconnect the CIS harness [A].



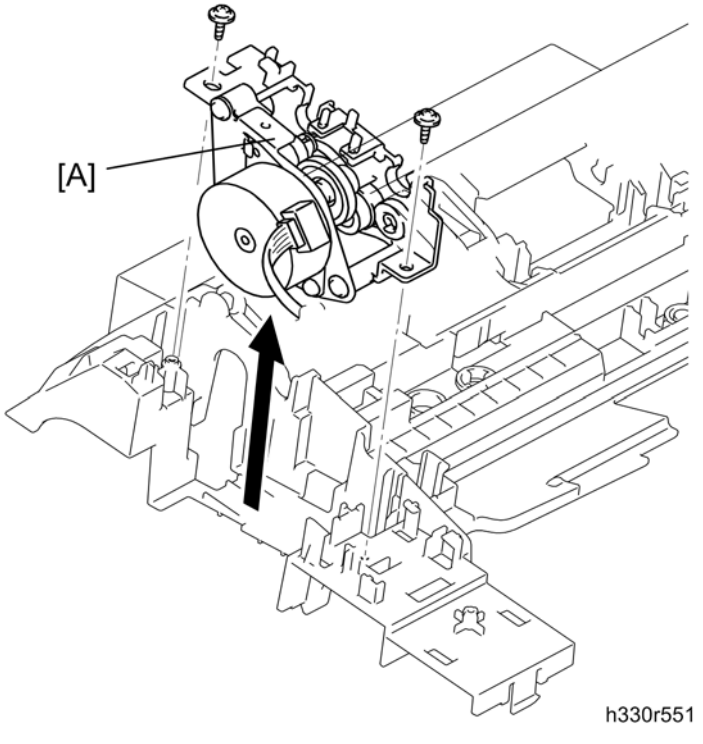
24. Remove the two CIS springs [A].



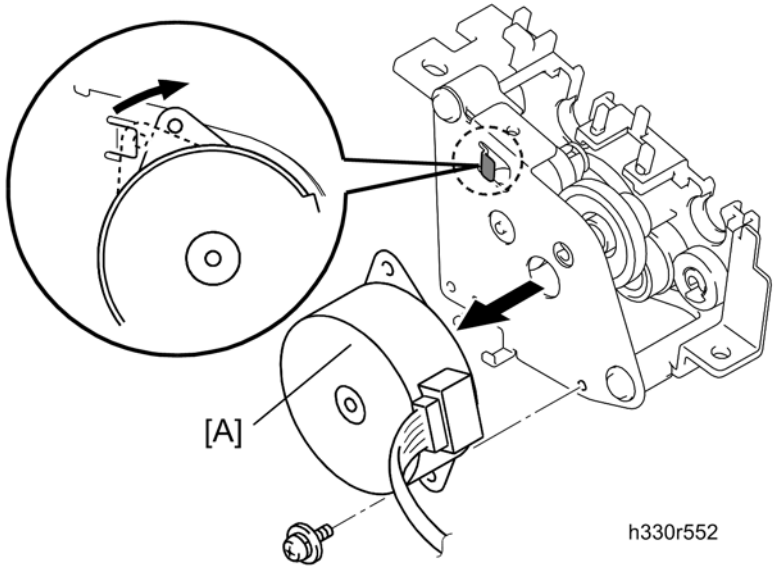
25. Remove the LF roller gear [A].



26. Remove the separation roller [A].



27. Remove the scanning driver ASSY [A] (x 2; B M3x8).

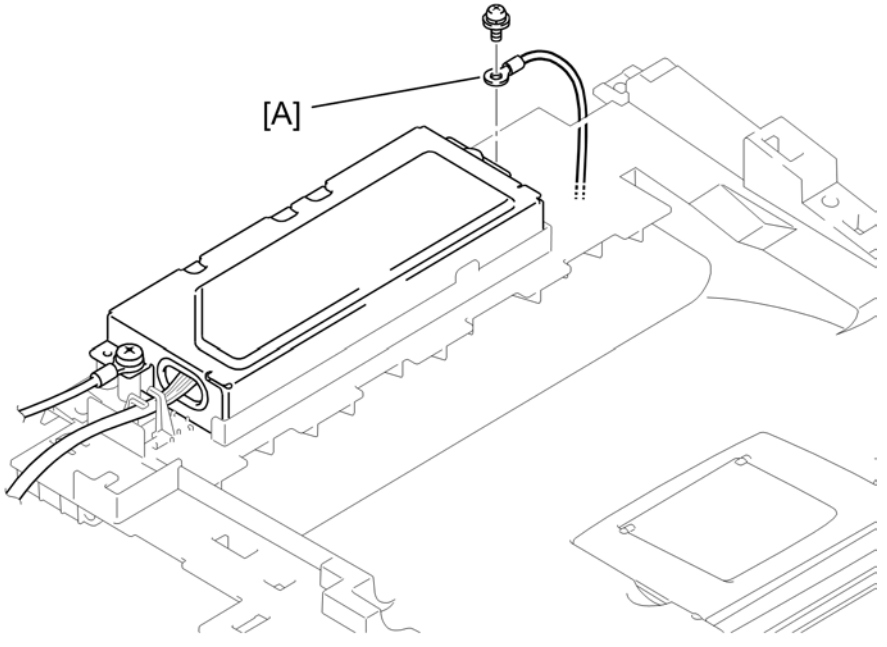


28. Remove the scanning motor F sub ASSY [A] (x 1; M3x6).

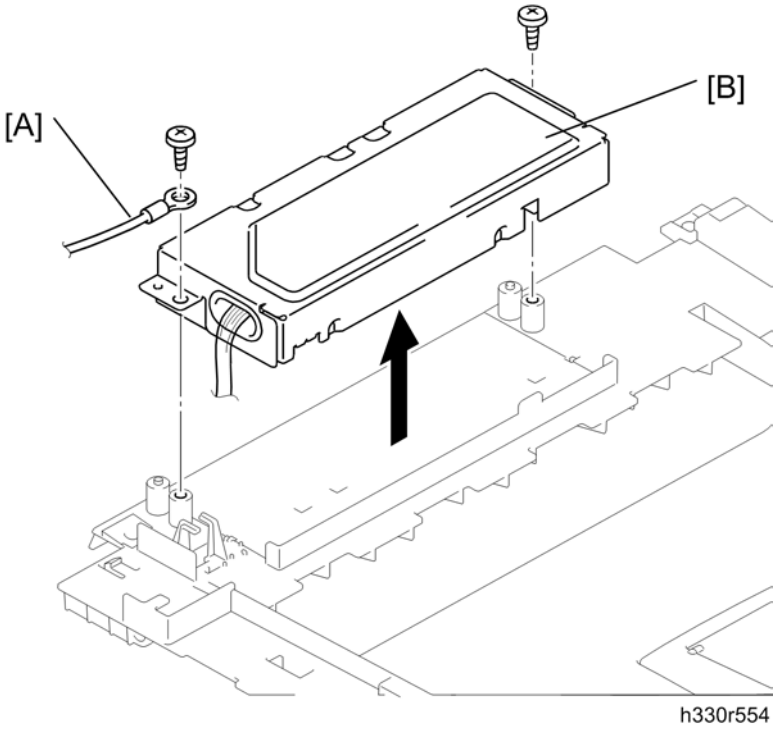
Main Body

NCU PCB ASSY

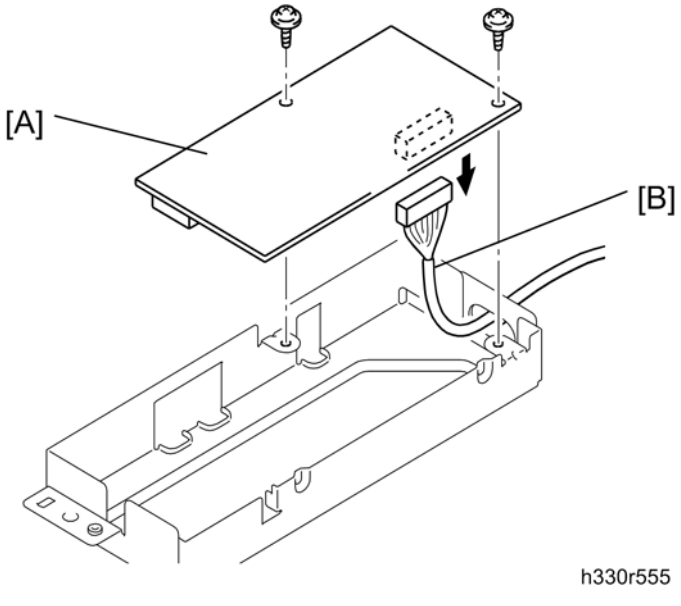
1. Paper Eject Roller ASSY (☛ p.49 "Top Cover")



2. Remove the NCU FG harness ASSY [A] (🔩 x 1; pan (S/P washer) M3.5x6).

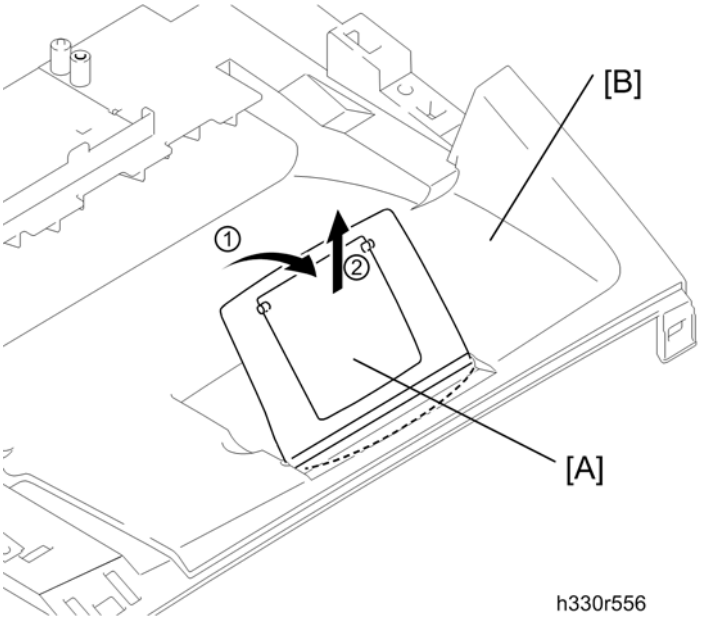


3. Remove the scanning drive LF FG harness [A] and NCU unit [B] (x 2; B M4x12).



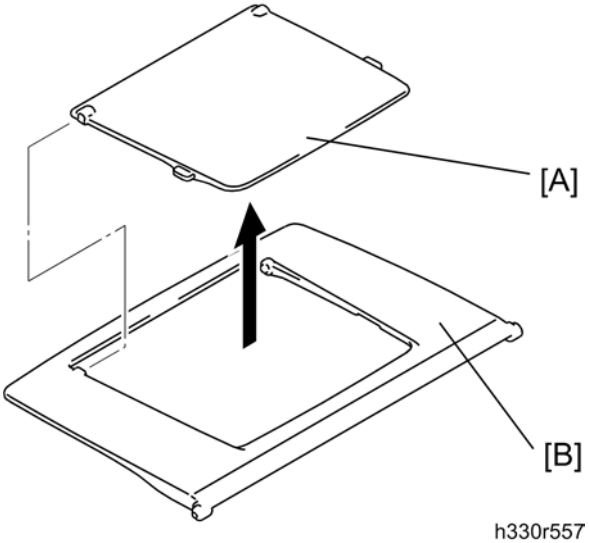
4. Turn the NCU unit upside down.
5. Remove the NCU PCB ASSY [A] (x 2; S M3x6).
6. Disconnect the NCU harness ASSY [B].

Paper Stopper L/S



h330r556

1. Remove the paper stopper ASSY [A] from the inner chute cover ASSY [B].



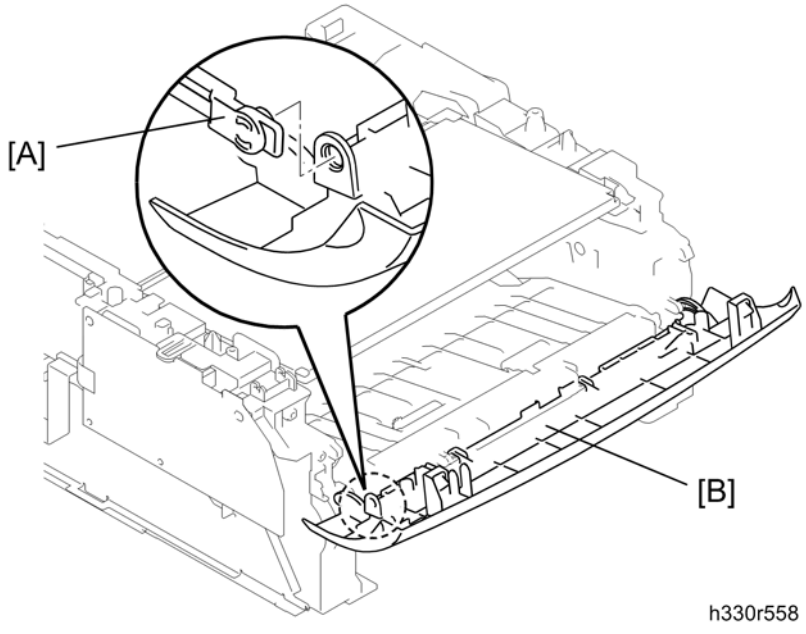
h330r557

2. Remove the paper stopper S [A] from the paper stopper L [B].

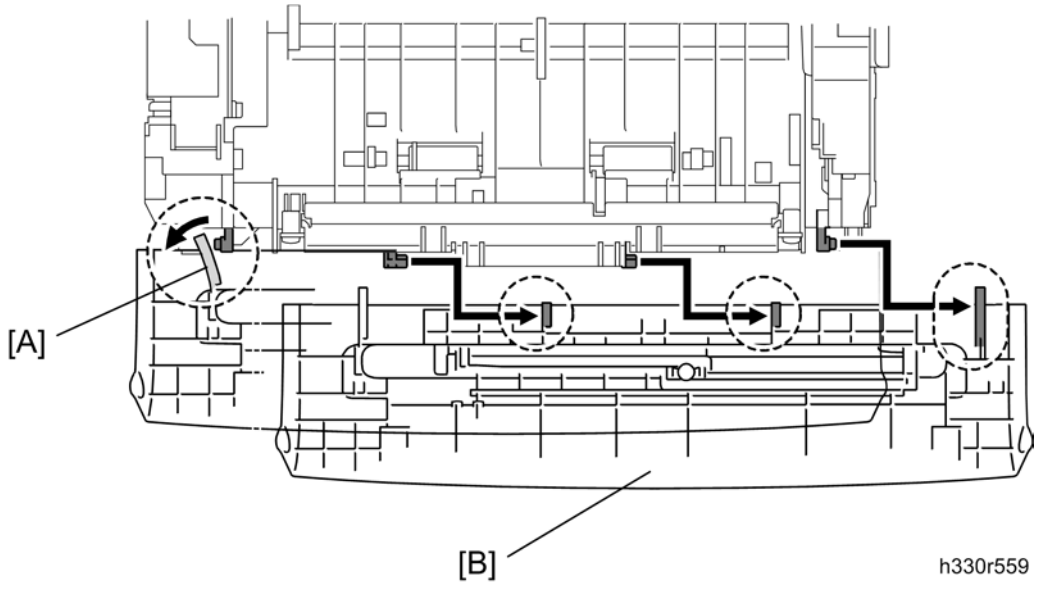
Front Cover

1. Paper Exit Tray (☛ p.32)

2. Drum/Toner ASSY (☛ p.32)
3. Paper Tray (☛ p.33)



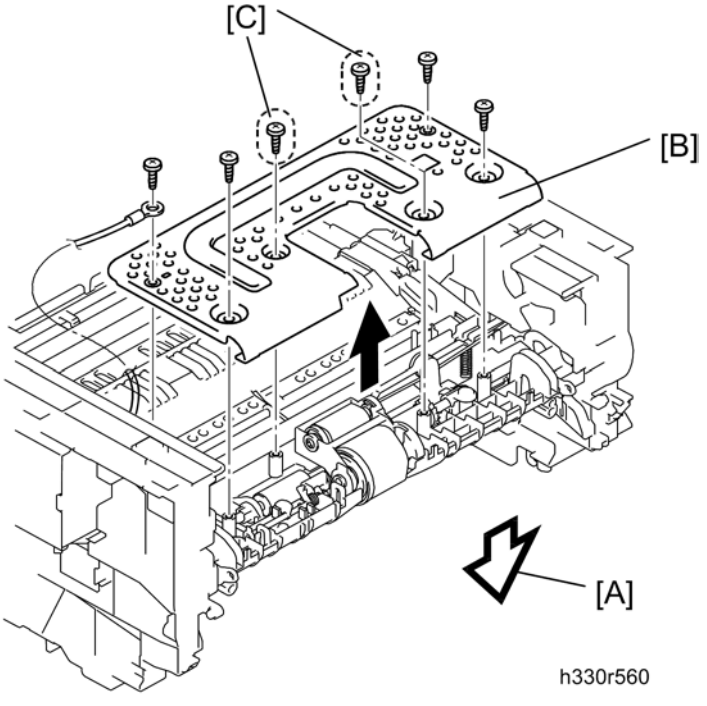
4. Release the hook [A] of the drive release cam from the front cover ASSY [B].



5. Release the hook [A] on the front cover ASSY from the chute [B].
6. Slide the front cover ASSY to the direction of the arrow shown in the figure above to remove it.

Pickup Roller Holder ASSY

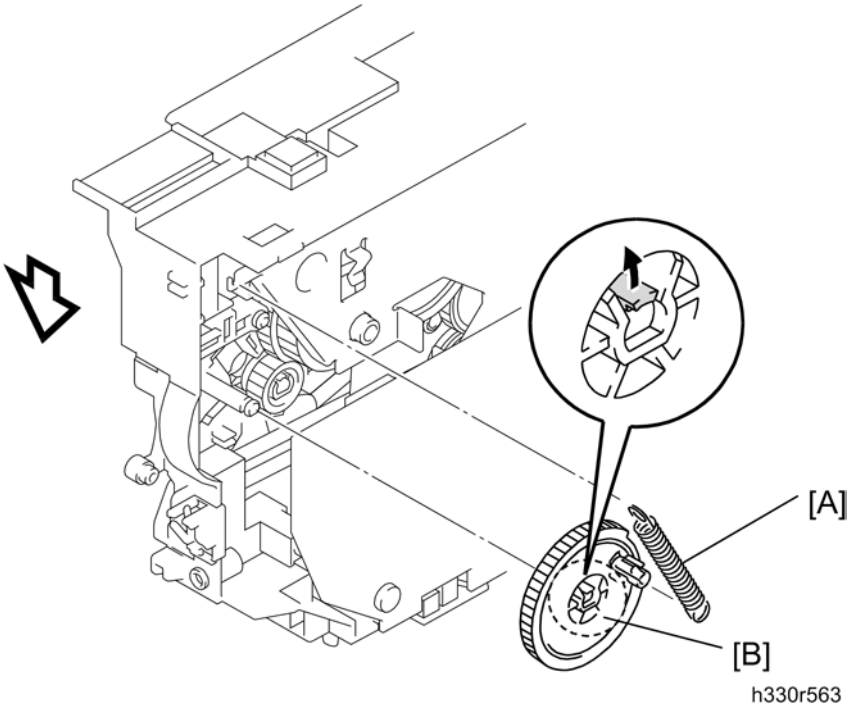
1. Side Cover L (☛ p.36)



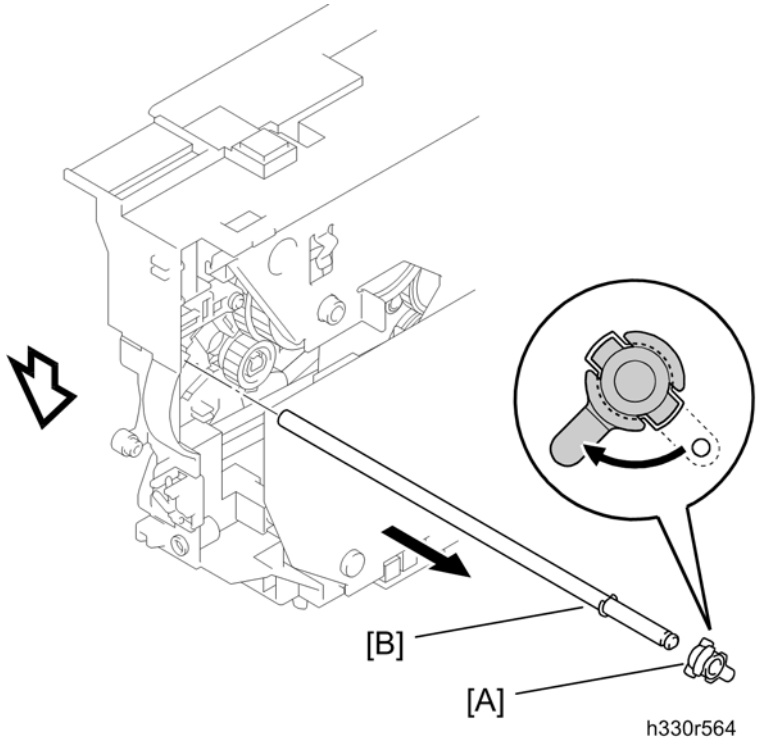
2. Turn the printer upside down.
   - Printer top side [A]
3. Remove the chute base [B] (x 6; B M4x12).

Note

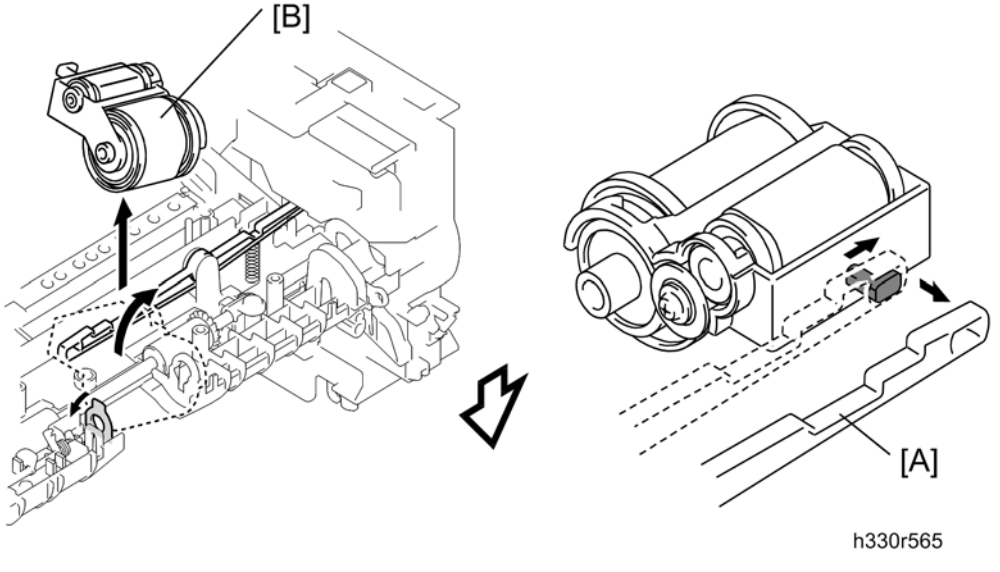
- When re-assembling the chute base, check that the screws [C] are secured correctly. For details, see "How to check" described below.



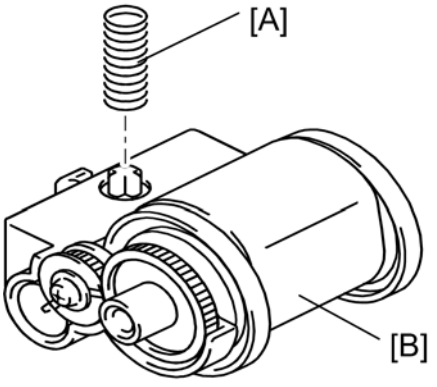
4. Remove the spring extension P/R [A] from the gear 52 P/R [B].
5. Release the hook and remove the gear 52 P/R [B].



6. Remove the bush F/R [A].
7. Remove the F/R roller shaft ASSY [B].



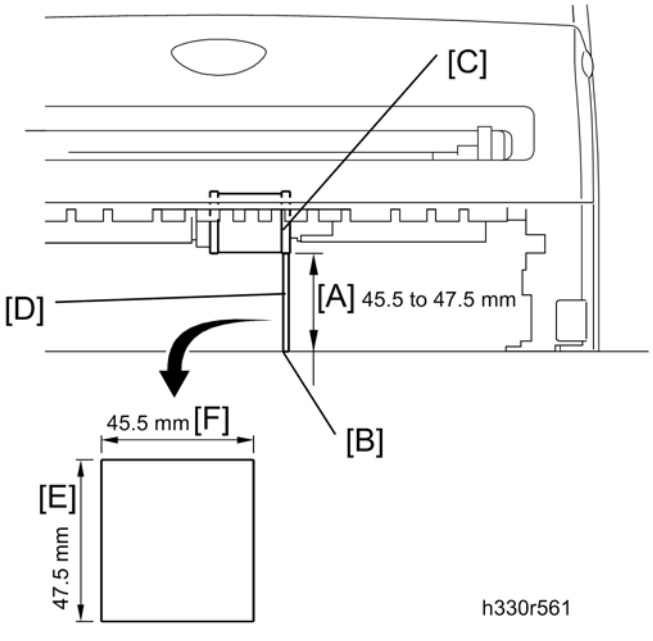
8. Remove the link lever [A] from the hook of the pickup roller holder ASSY [B].
9. Remove the pickup roller holder ASSY [B].



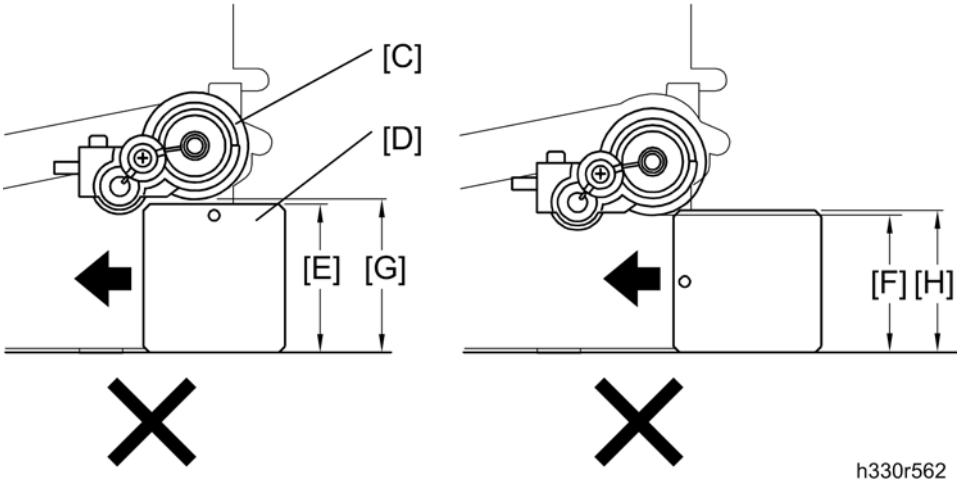
Note

- The pickup roller holder spring [A] is assembled on the bottom of the pickup roller holder ASSY [B]. Be careful not to lose the spring [A].

How to check



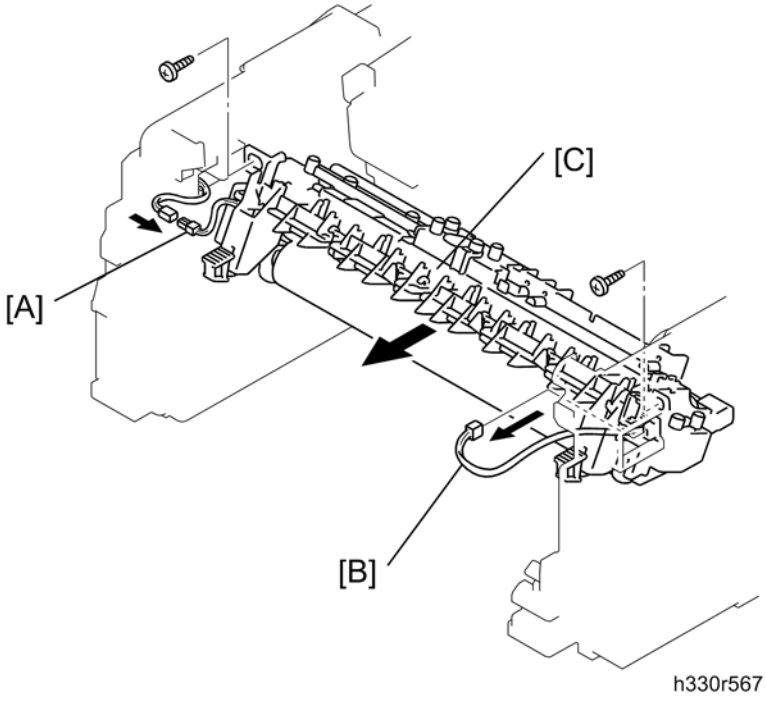
Check that the distance [A] between the floor [B] and the separation roller collar [C] of the pickup roller holder ASSY is 45.5 to 47.5mm by using the plate jig [D]. If not, re-assemble the chute base.



- [E] (height: 47.5 mm) which is contacted with the roller is acceptable.
- [G] (more than 47.5 mm) which is not contacted with the roller is NOT acceptable.
- [F] (height: 45.5 mm) which is not contacted with the roller.
- [H] (less than 45.5 mm) which is contacted with the roller is NOT acceptable.

Fixing Unit

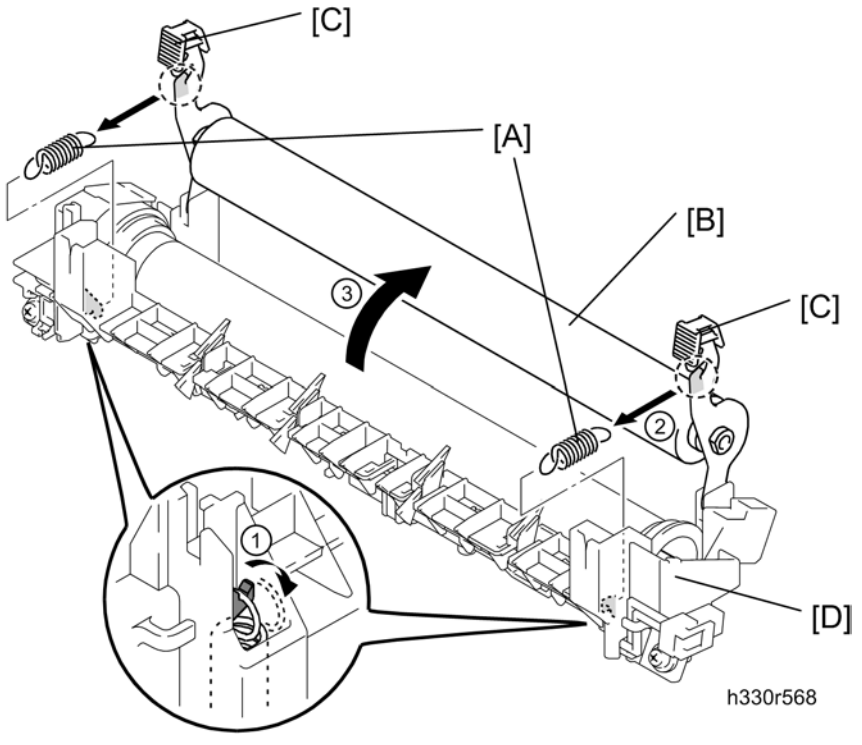
1. Side Cover R/Link Stopper (☛ p.39)



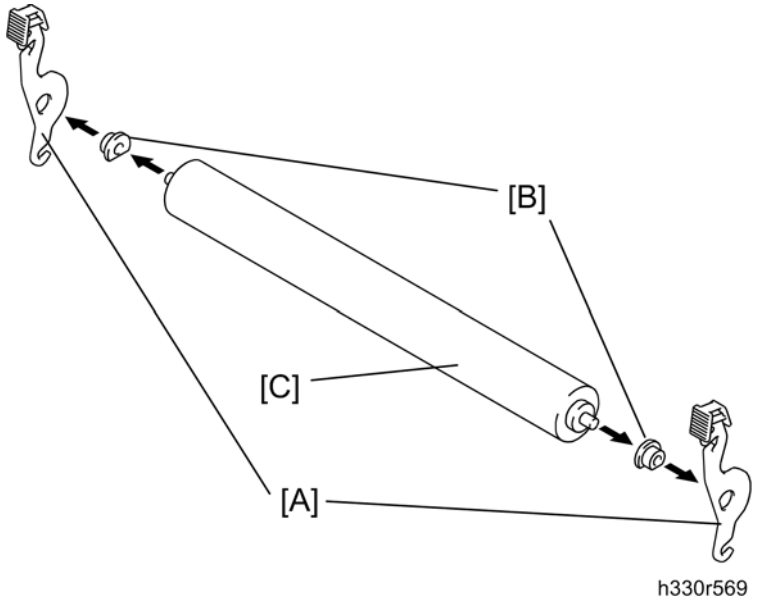
2. Disconnect the heater harness connector [A] and thermistor harness connector [B].
3. Remove the fixing unit [C] (x 2; B M4x12).

Note

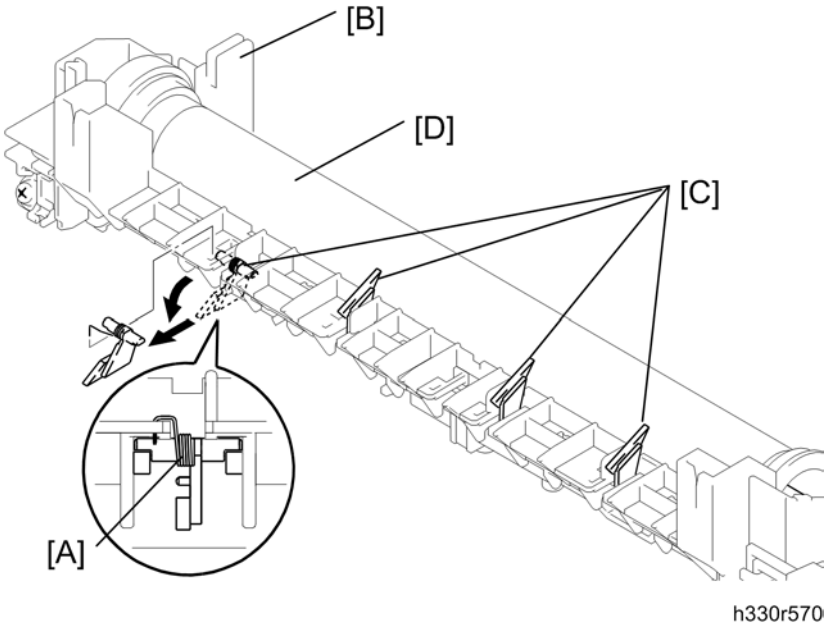
- Be sure not to touch the pressure roller.



4. Remove the two PR springs [A].
5. Remove the pressure roller ASSY (pressure roller [B], PR arm ASSY [C], PR bush) from the fuser frame [D].



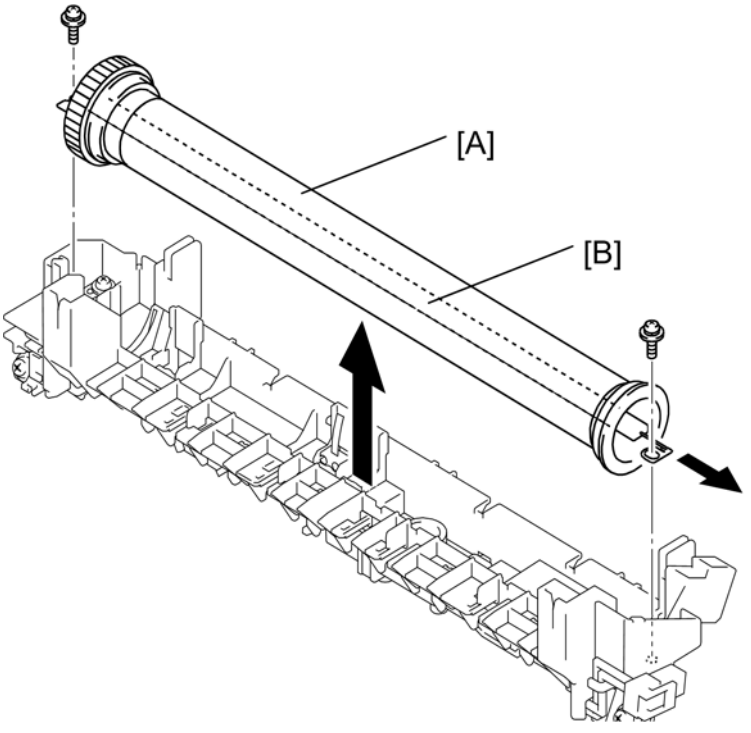
6. Remove the two PR arm ASSYs [A] and two PR bushes [B] from the pressure roller [C].



7. Release each hook of the springs [A] from the fuser frame [B] and remove the four separate claw ASSYs [C].
    - Align the separate claw ASSY with the shape of the fuser frame to remove.

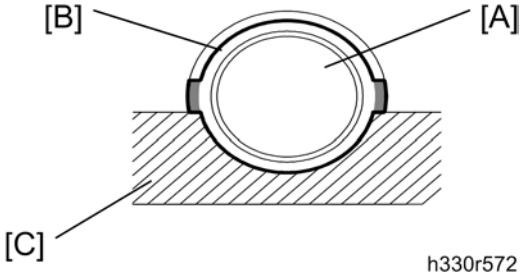
Note

- Be careful not to damage the heat roller [D] when removing the separate claw ASSYs [C]



h330r571

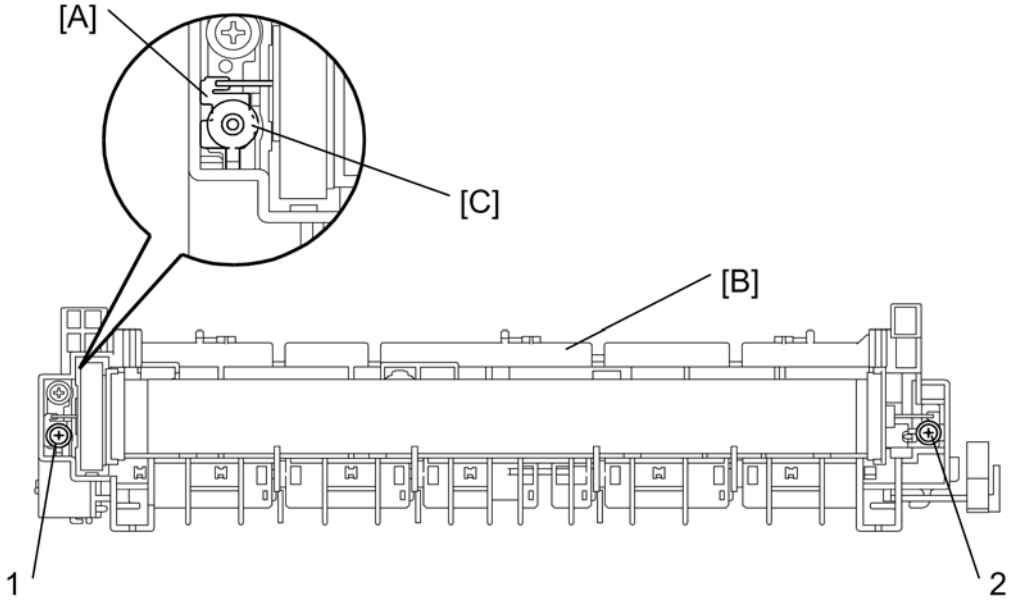
8. Remove the heat roller [A] (x 2; pan (S/P washer) M3x8).
9. Remove the halogen heater [B].



h330r572

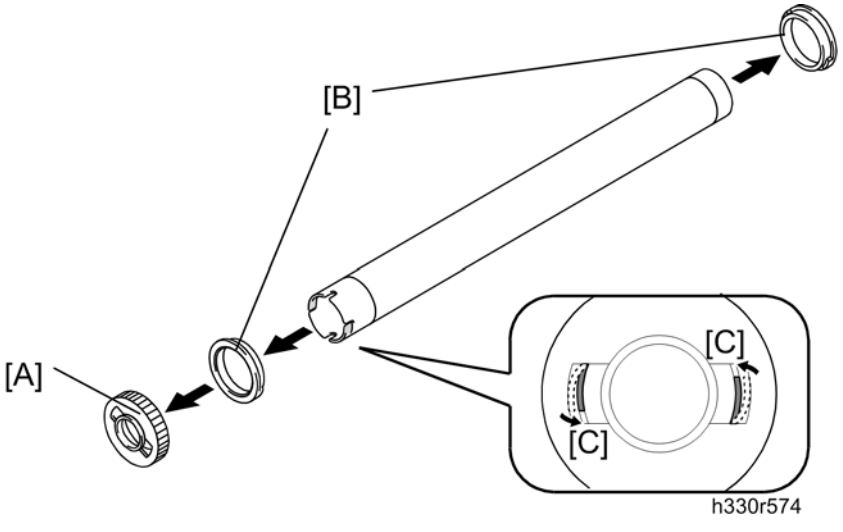
Note

- When re-assembling the heat roller [A], assemble the HR bush [B] onto the fuser frame [C] referring to the figure above.

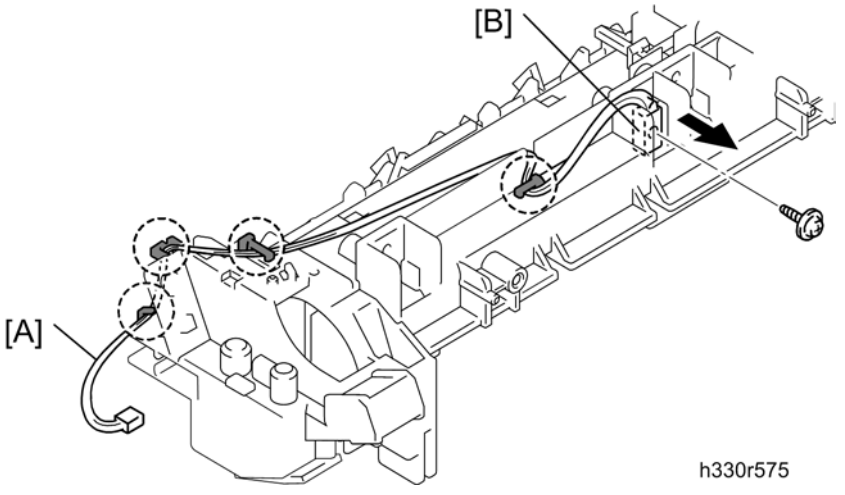


Note

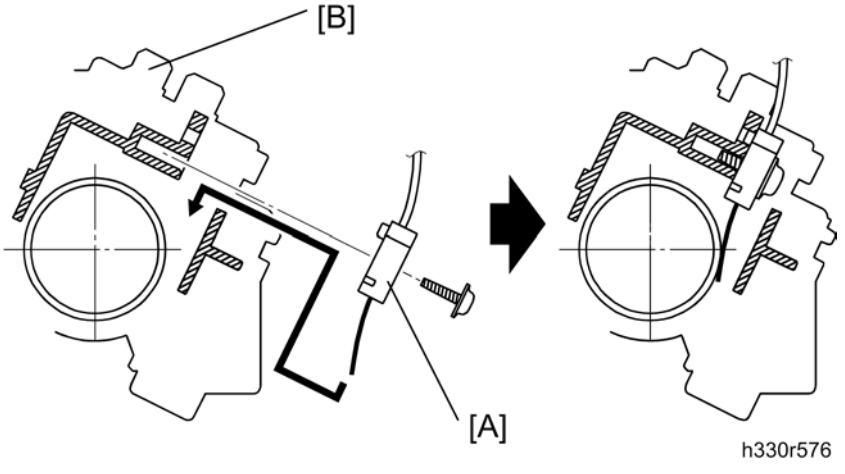
- When re-assembling the halogen heater [A], put the halogen heater [A] onto the fuser frame [B] so that the terminal of the heater harness [C] is at the top, and secure the screws in the order shown in the figure above.



10. Remove the HR gear [A].
11. Remove the two HR bushes [B].
    - Return the hooks [C] to the original position.



12. Remove the thermistor ASSY harness[A] from the four hooks.
13. Remove the thermistor ASSY [B] (x 1; B M3x12).

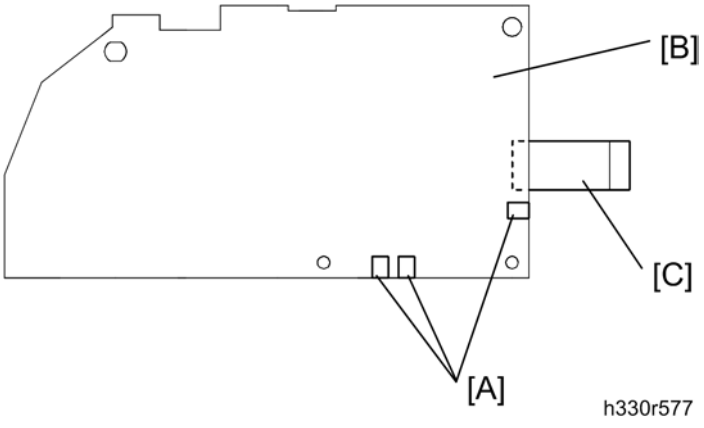


Note

- When re-assembling the thermistor ASSY [A] to the fuser frame [B], ensure the direction of the thermistor ASSY [A] is correct referring to the figure above;

High-Voltage PS PCB ASSY

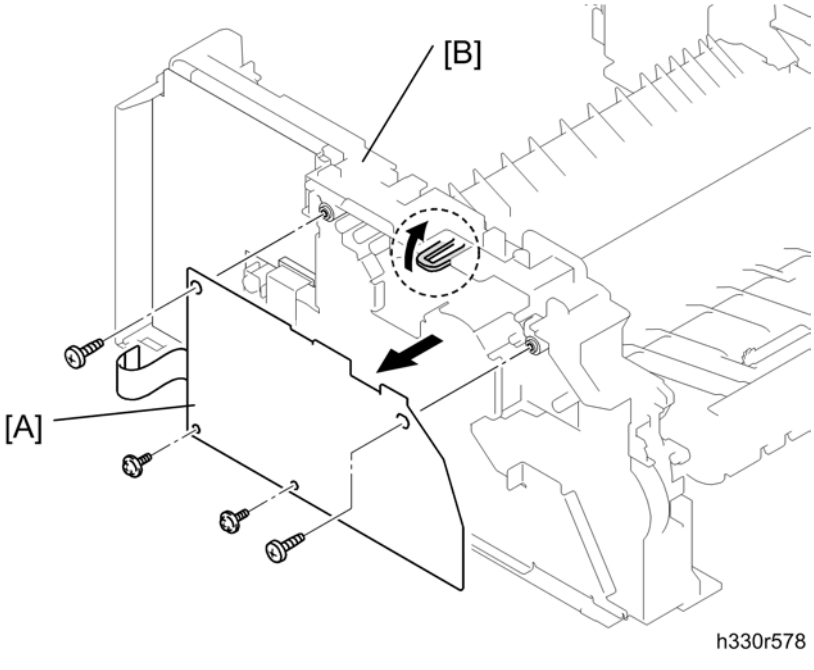
1. Side Cover R/Link Stopper (☛ p.39)



2. Disconnect the three connectors [A] from the high-voltage PS PCB ASSY [B].
3. Disconnect the high-voltage PS PCB harness [C] from the main PCB.

Note

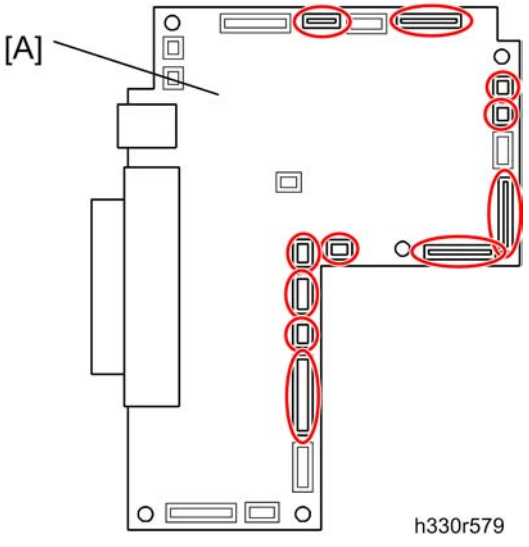
- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.



4. Remove the high-voltage PS PCB [A] from main frame L [B]. (Top x 2; B M4x12, Bottom x 2; S M3x6, hook)

Main PCB

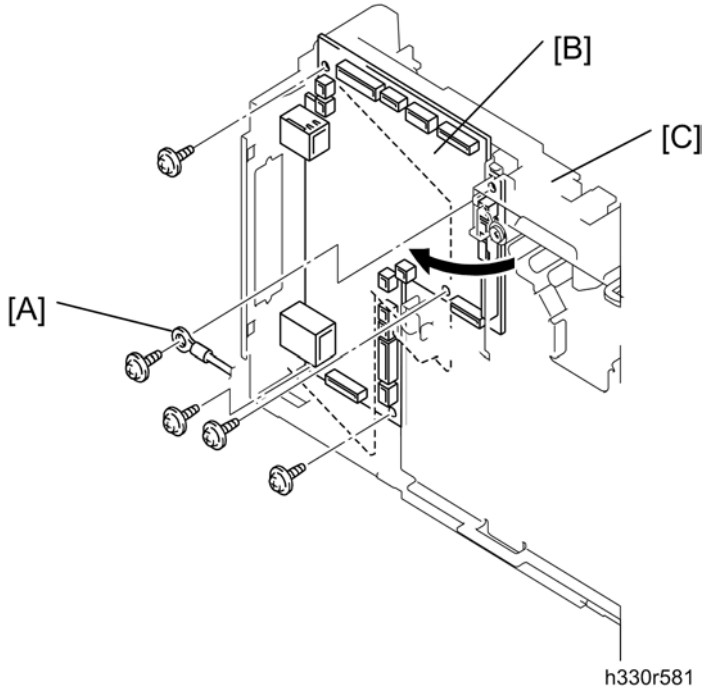
1. Side Cover R/Link Stopper (☛ p.39)



2. Disconnect all connectors from the main PCB [A].

Note

- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.



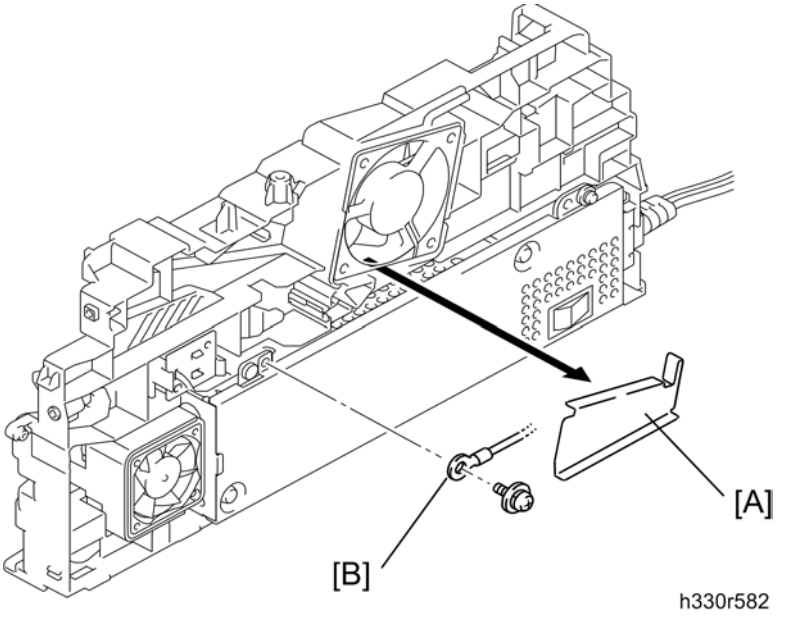
3. Remove the FG harness ASSY 6 [A] (x 5; S M3x6).
4. Remove the main PCB [B] from main frame L [C].

Note

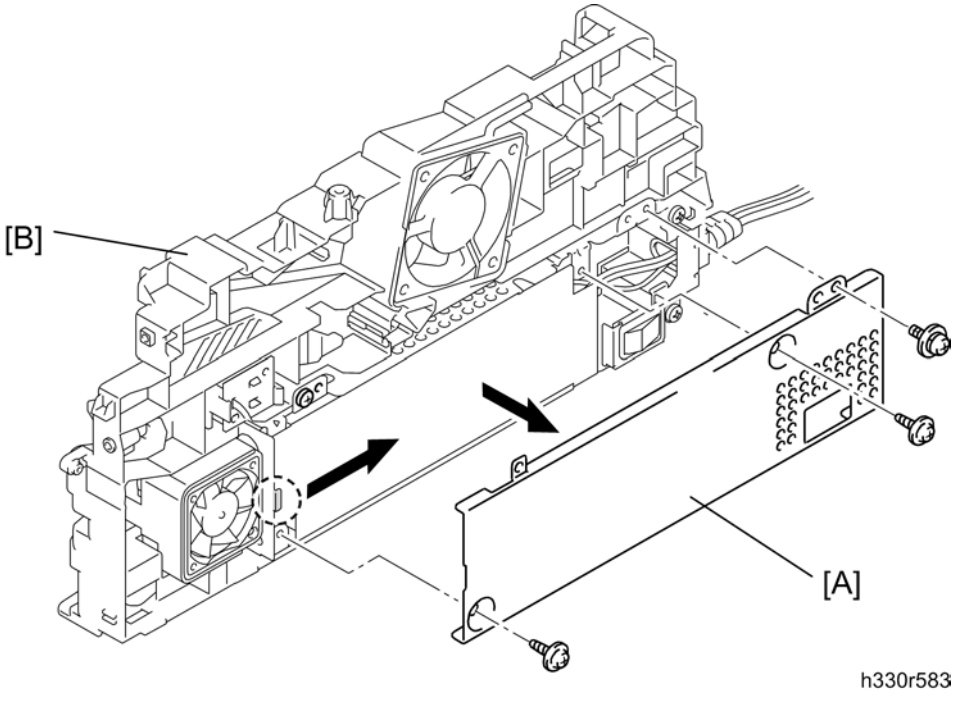
- When replacing the main PCB [B], refer to "Adjustments and Updating of Settings, Required After Parts Replacement".
- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.

PS PCB Unit/Fan 40

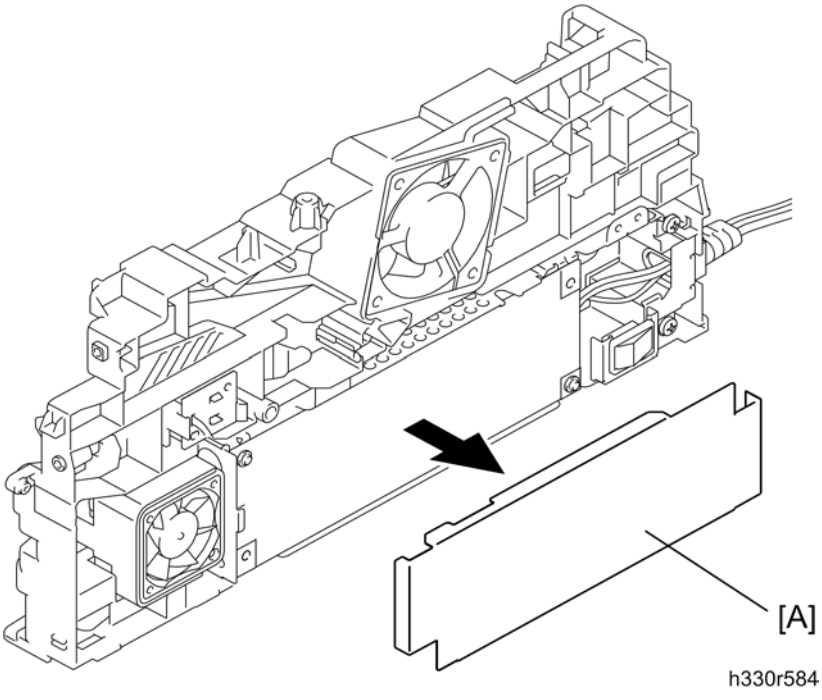
1. Side Cover R/Link Stopper (☛ p.39)



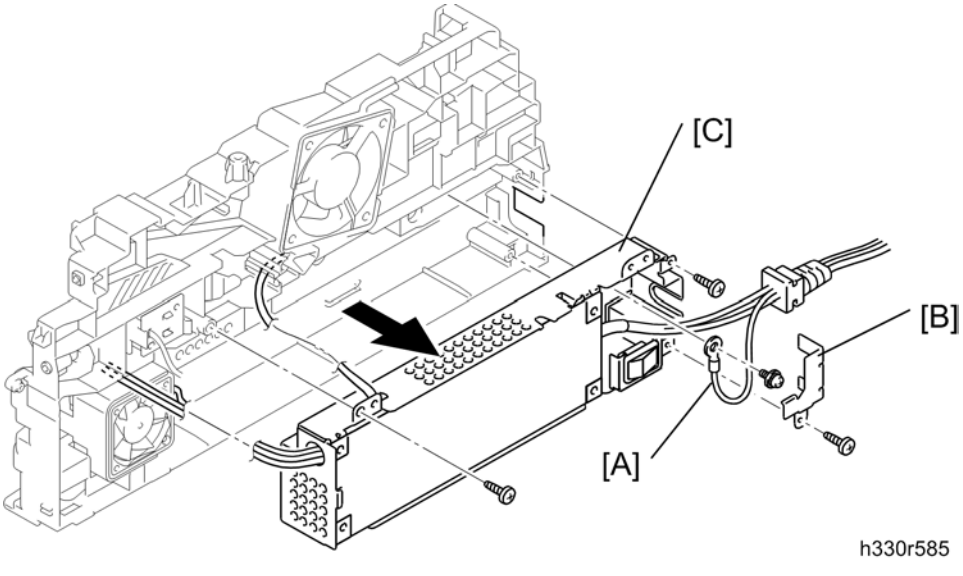
2. Remove the duct film [A].
3. Remove the FG harness ASSY 1 [B] (x 1; pan (S/P washer) M3.5x6).



4. Remove the LV shield plate cover [A] from the main frame R [B] (x 2; S M3x6, x 1; pan (S/P washer) M3.5x6).



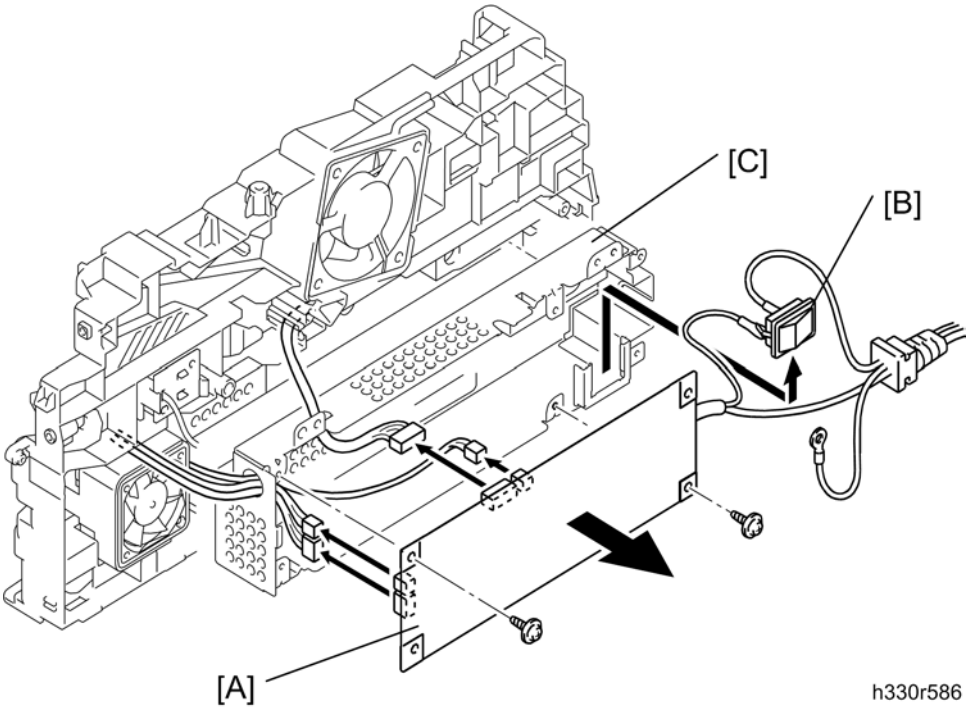
5. Remove the LV insulation sheet [A].



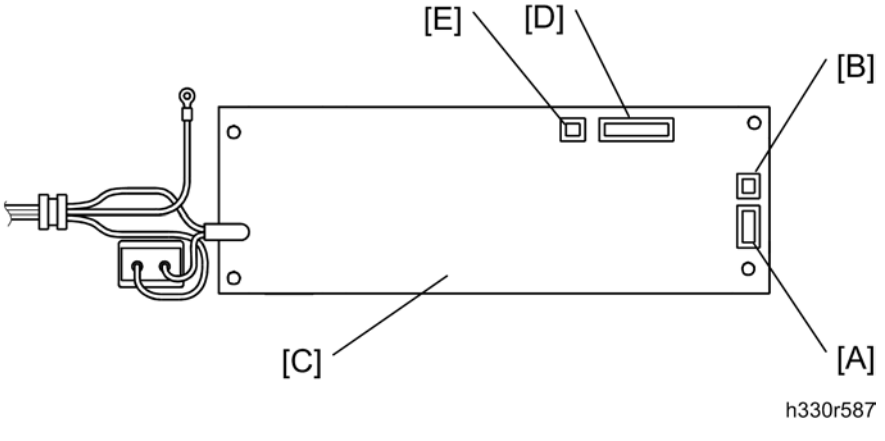
6. Remove the ground wire [A] (x 1; pan (S/P washer) M3.5x6).
7. Remove the AC holder [B] (x 1; B M4x12).
8. Remove the two bind B M4x12, taptite screws and then remove the LV shield plate [C] (x 2; B M4x12).

Note

- Re-assemble the ground wire [A] so that the section attached to the terminal is downwards.

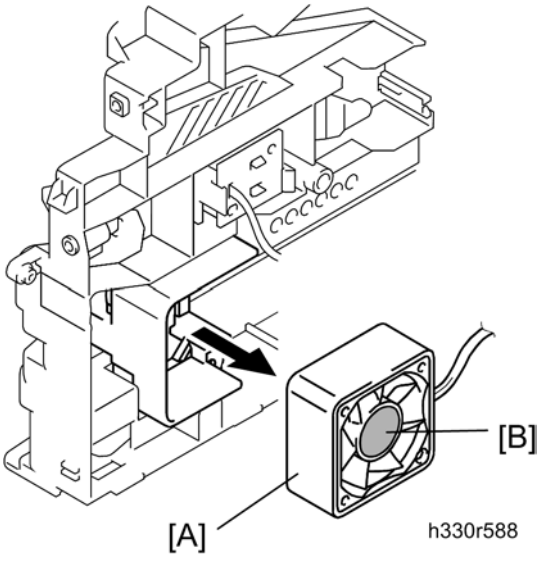


9. Remove the two cup S M3x6 taptite screws.
10. Disconnect the four connectors from the PS PCB unit [A], and then remove the PS PCB unit [A].
11. Remove the power supply switch [B] from the LV shield plate [C].



Note

- When disconnecting the connectors, disconnect the regist sensor PCB connector [A] and toner LED PCB unit ASSY connector [B] first, lift up the PS PCB unit [C] from the LV shield plate, and disconnect the two connectors of the main PCB [D] and fan 40 [E].



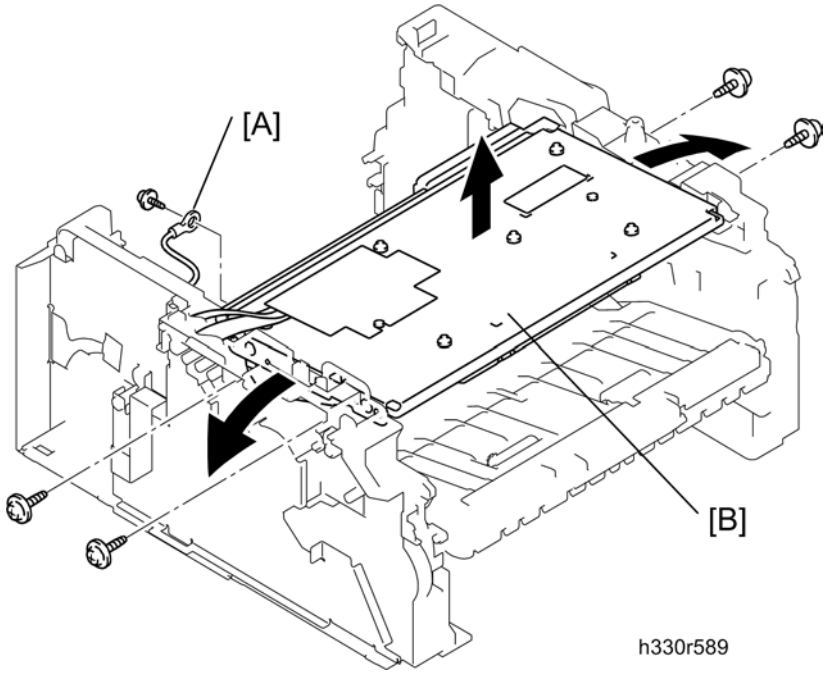
12. Remove the Fan 40 [A].

CAUTION

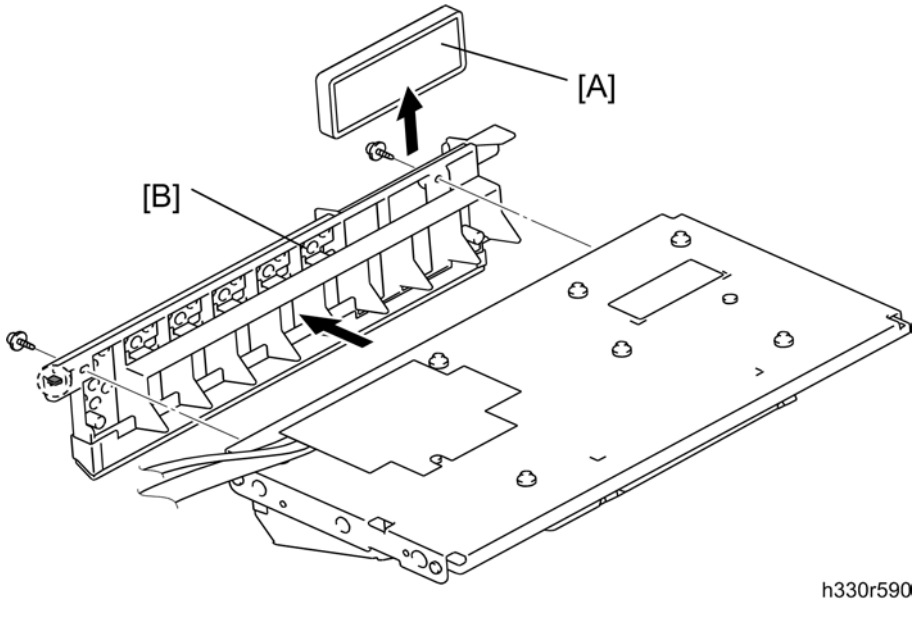
- When re-assembling the fan 40 unit, make sure to turn the side with a label [B] outwards.

Laser Unit

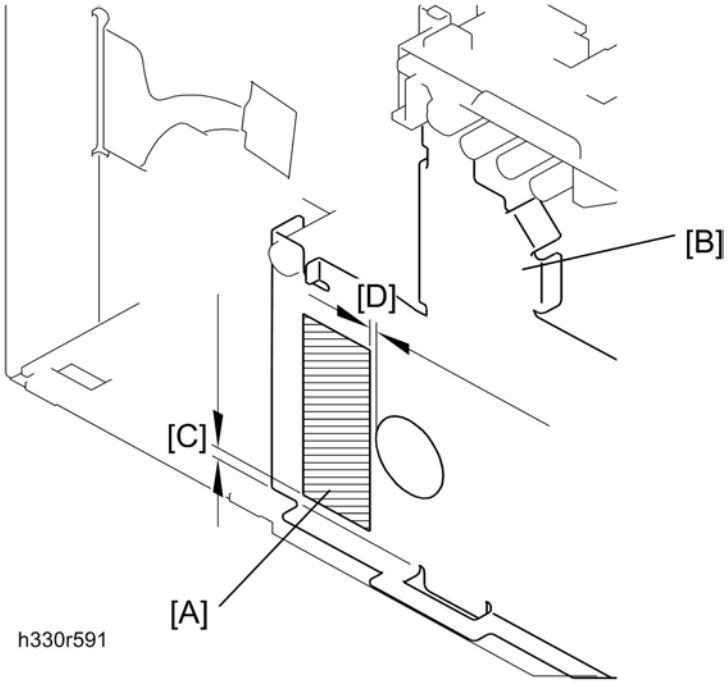
1. Sub Chute ASSY (☛ p.85)



2. Remove the FG harness ASSY 6 [A] (x 1; S M3x6).
3. Remove the laser unit [B] (x 4; S M3x6).



4. Remove the filter ASSY [A] from the air duct [B].
5. Remove the air duct [B] (x 1; S M3x6).

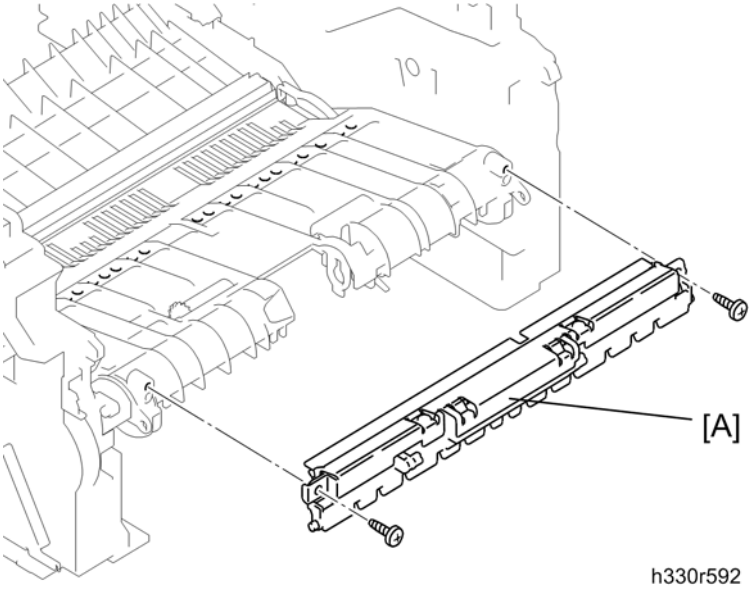


Note

- When replacing the laser unit, replace the barcode label [A] attached on the gear plate calking ASSY [B] with a new one supplied with a new unit.
- [C]: 2 to 3 mm/ [D]: 1 to 2 mm
- Another barcode label supplied with a new unit is spare. Make sure to throw it out.

Sub Chute ASSY

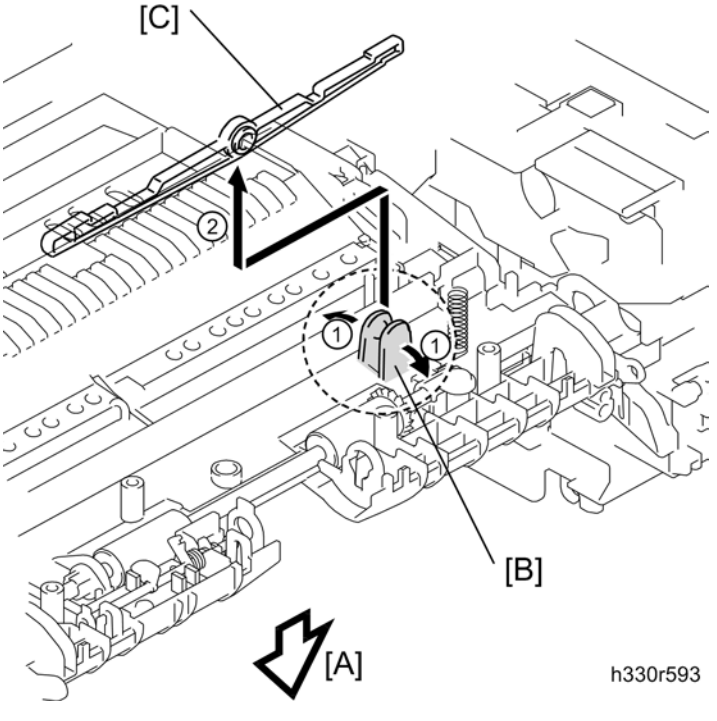
1. Top Cover (☛ p.49)



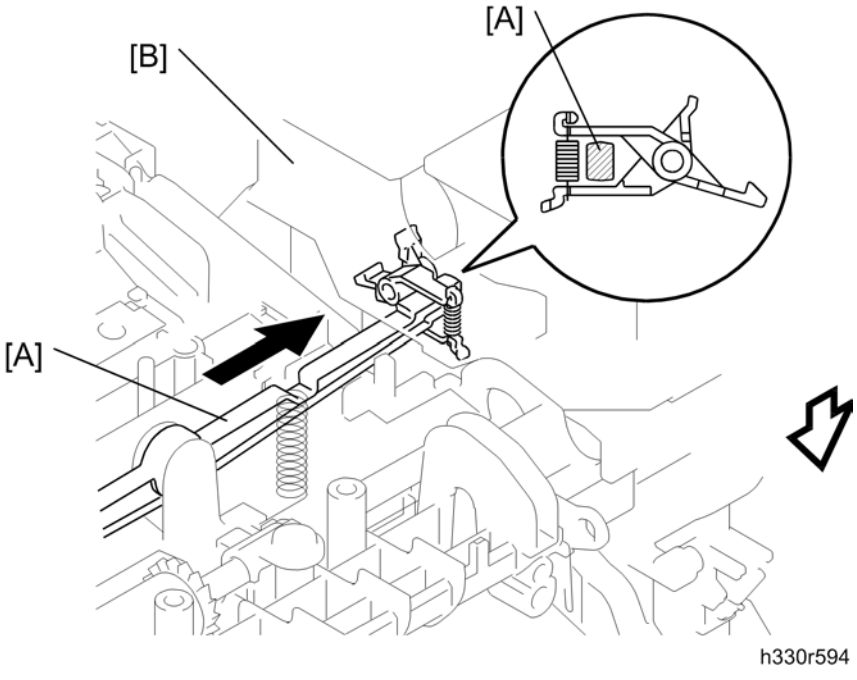
2. Remove the sub chute ASSY [A] (x 2; B M4x12).

Link Lever

1. Pickup Roller Holder ASSY (p.66)



2. Turn the printer body upside down.
    - [A]: Printer top side
3. Pull the section [B] outwards and remove the link lever [C].

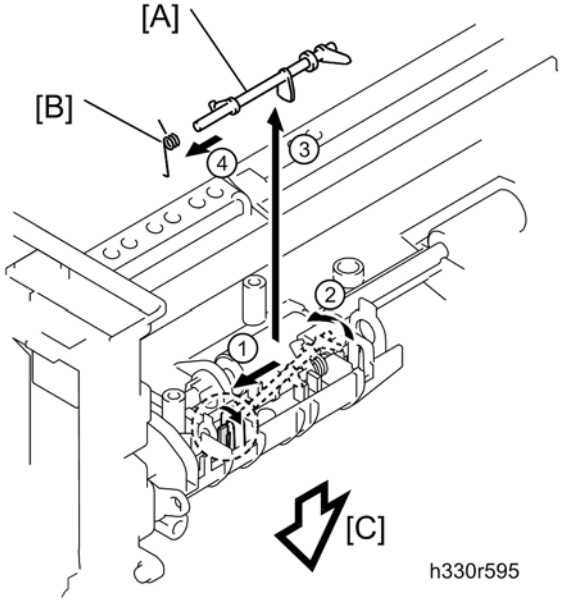


Note

- When re-assembling the link lever [A], insert the end of the link lever [A] into the main frame L [B] referring to the figure above.

Tail Edge Actuator

1. Pickup Roller Holder ASSY (p.66)



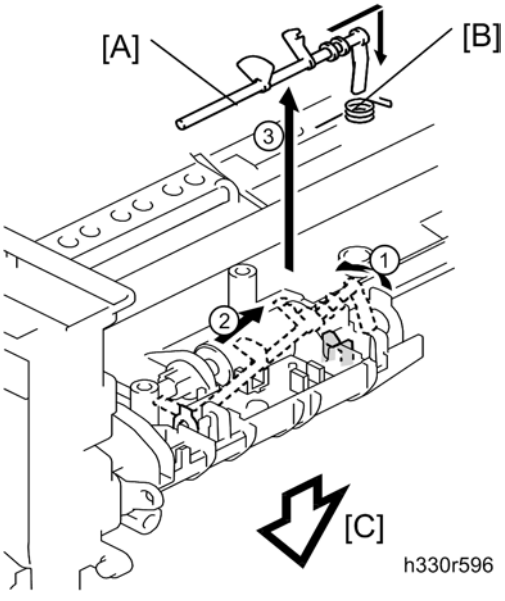
2. Remove the tail edge actuator [A] with the tail edge spring [B].
3. Remove the tail edge spring [B] from the tail edge actuator.

Note

- [C]: Printer top side

Regist Front Actuator/Regist Front Spring

1. Pickup Roller Holder ASSY (☛ p.66)



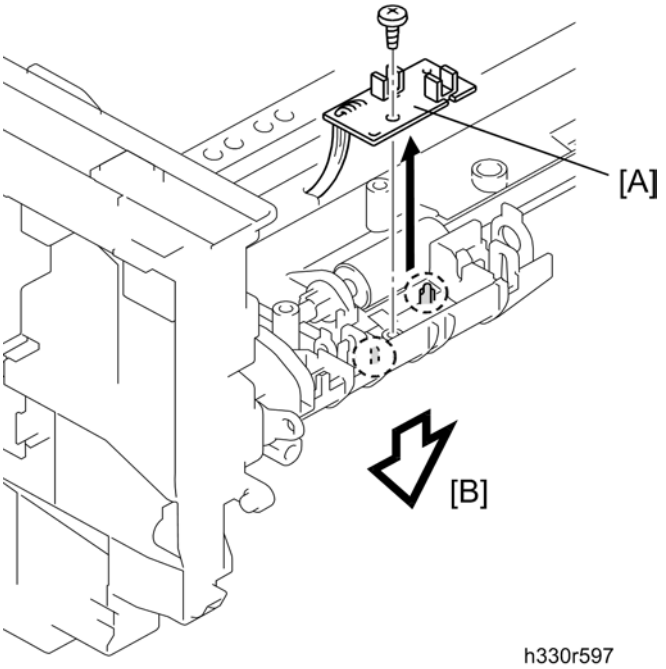
2. Remove the regist front actuator [A] with the regist front spring [B].
3. Remove the regist front spring [B] from the regist front actuator.

Note

- [C]: Printer top side

Regist Sensor PCB ASSY

1. Regist Front Actuator/Regist Front Spring (☛ p.88)



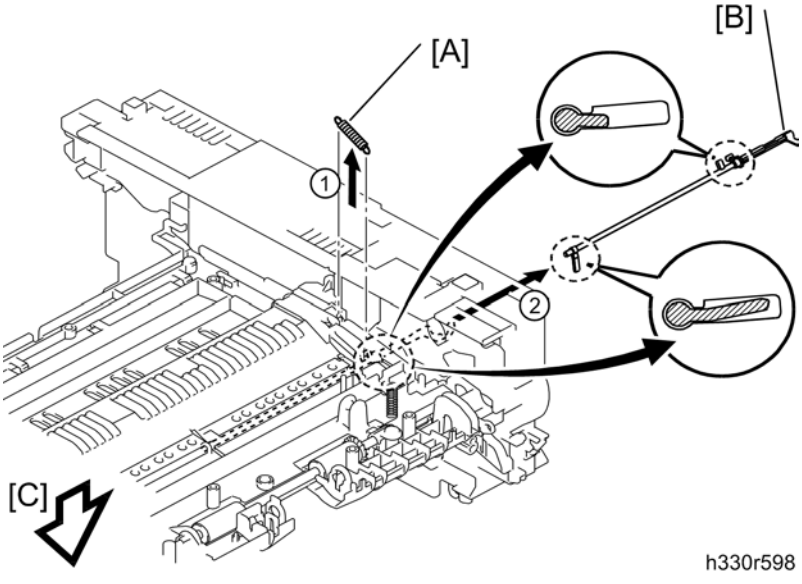
2. Release the harness from the hook and remove the regist sensor PCB ASSY [A] (x 1; B M3x6).

Note

- [B]: Printer top side

Regist Rear Actuator/Regist Rear Spring

1. Pickup Roller Holder ASSY (p.66)



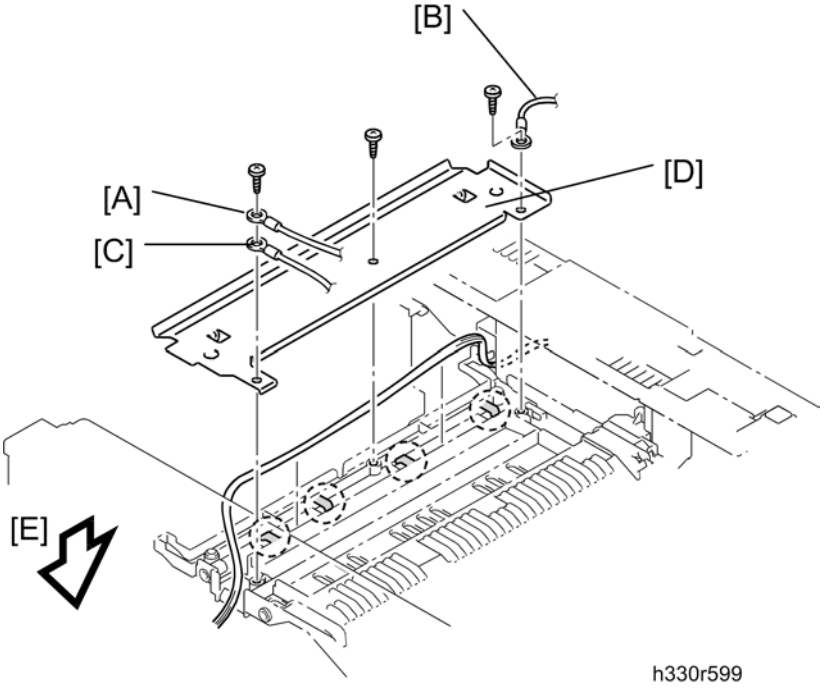
2. Remove the regist rear spring [A].
3. Remove the regist rear actuator [B].

Note

- [C]: Printer top side

Fan Motor 60 Unit

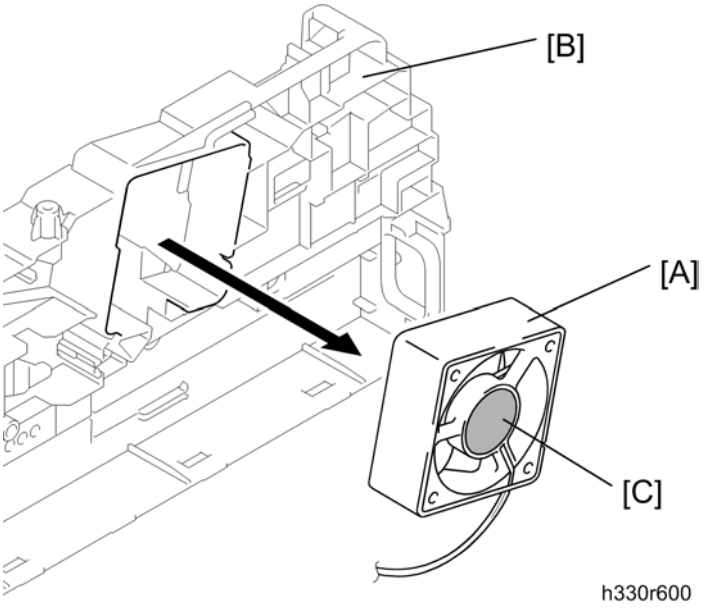
1. PS PCB Unit/Fan 40 (☛ p.79)



2. Remove the three bind B M4x12, taptite screws and three FG harness ASSY 1 [A], 4 [B], 5 [C] (x 1 each; B M4x12).
3. Remove the base plate [D].

Note

- [E]: Printer top side



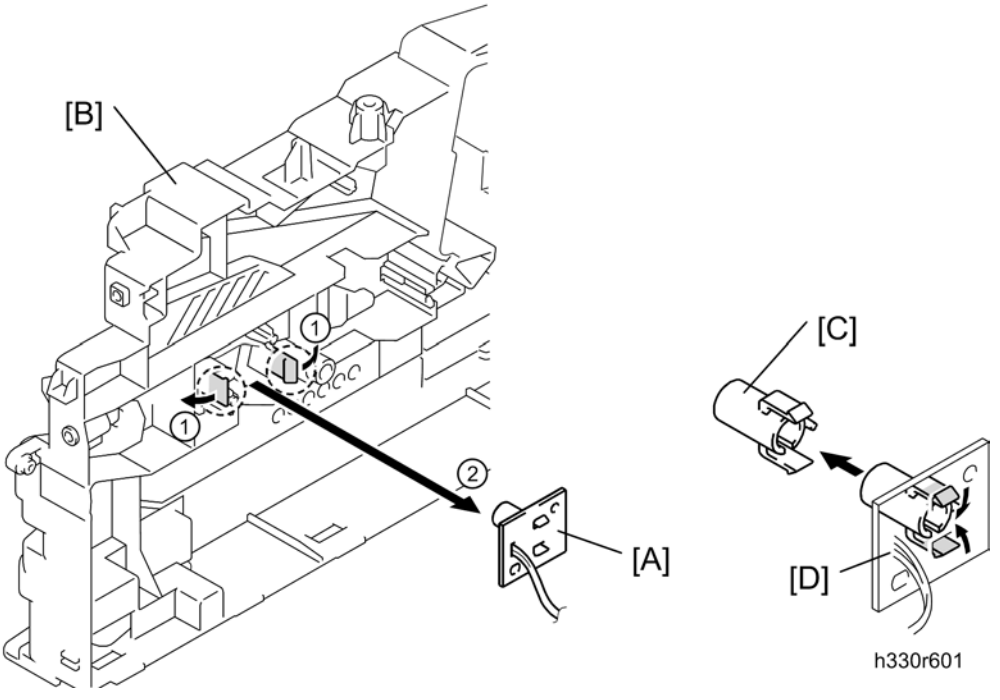
4. Release the harness from the hook, and then remove the fan motor 60 unit [A] from the main frame R [B].

⚠CAUTION

- When re-assembling the fan motor 60 unit [A], make sure to turn the side with a label [C] outwards.

Toner LED PCB ASSY/LED Holder

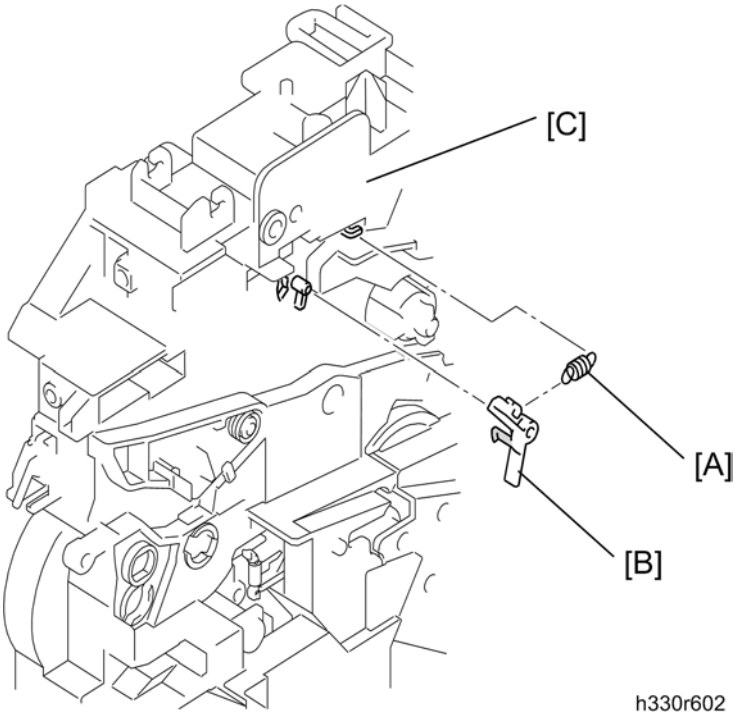
1. Fan Motor 60 Unit (☛ p.91)



2. Remove the toner LED PCB ASSY [A] from the main frame R [B].
3. Remove the LED holder [C] from the toner LED PCB ASSY [D].

New Toner Actuator/New Toner Actuator Spring

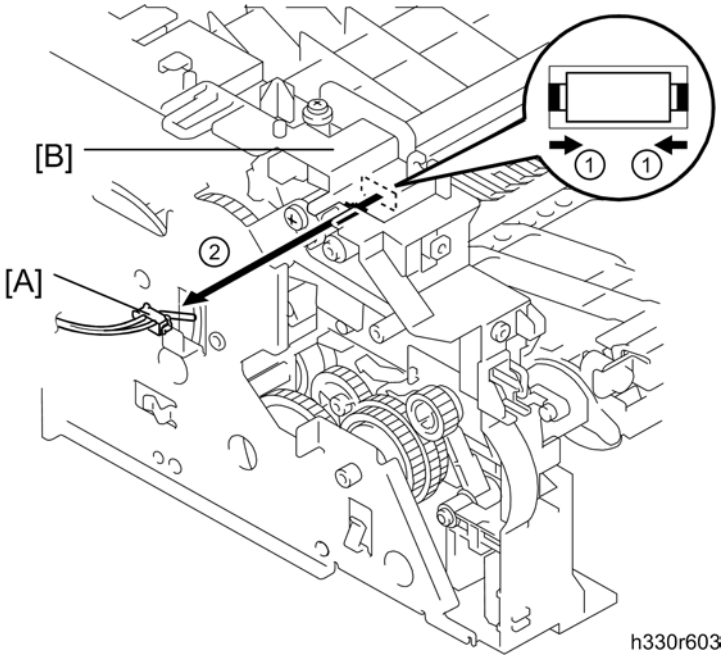
1. Laser Unit (☛p.83)



2. Remove the new toner actuator spring [A].
3. Release the hook and remove the new toner actuator [B] from the main frame L [C].

New Toner Sensor Harness ASSY

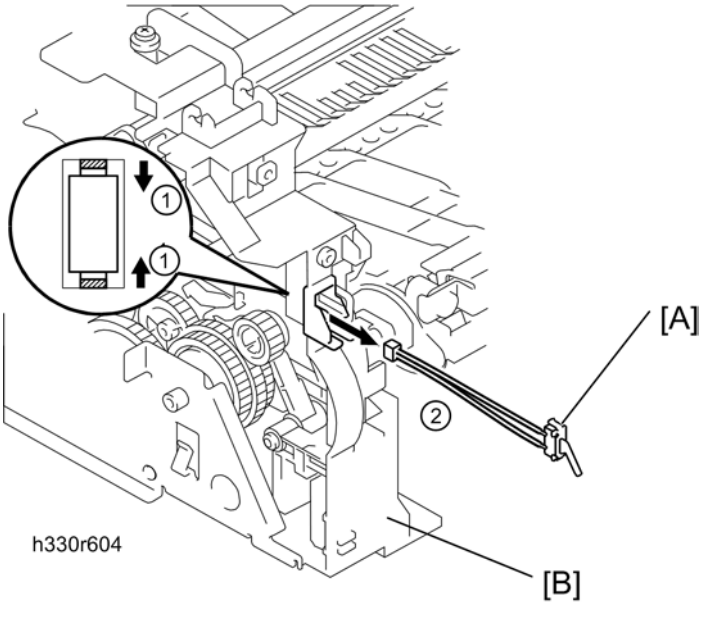
1. High-Voltage PS PCB ASSY (☛ p.76)



2. Release the two hooks and remove the new toner sensor harness ASSY [A] from the main frame L [B].

Cover Sensor

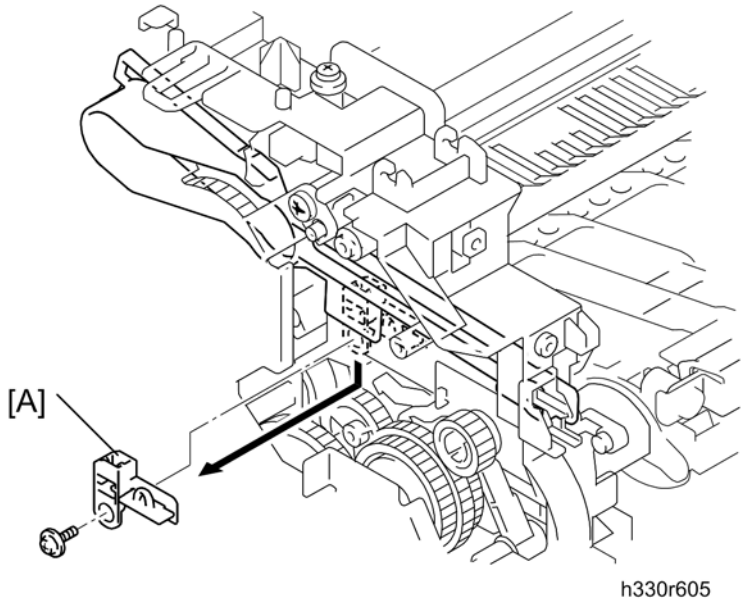
1. New Toner Sensor Harness ASSY (☛p.95)



2. Release the two hooks and remove the cover sensor [A] from the main frame L [B].

Toner Sensor PCB ASSY

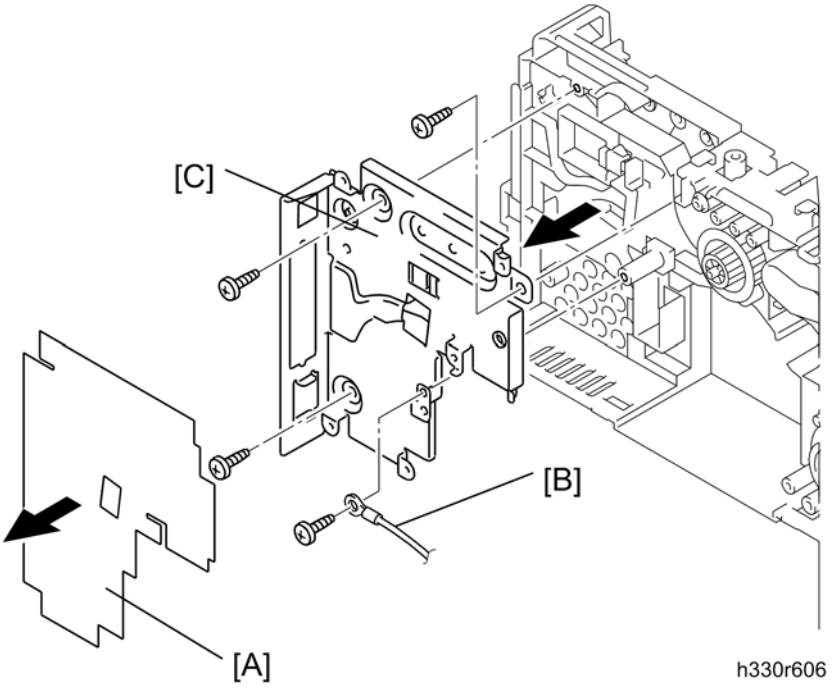
1. Cover Sensor (☛ p.96)



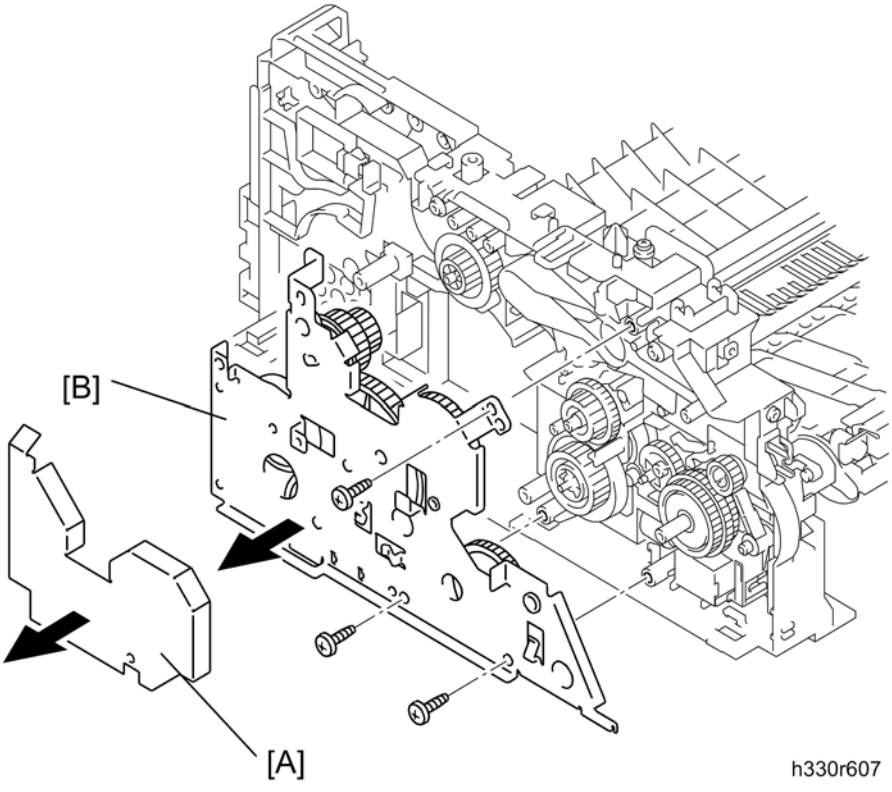
2. Remove the toner sensor PCB ASSY [A] (x 1; B M3x6).

Main Motor ASSY

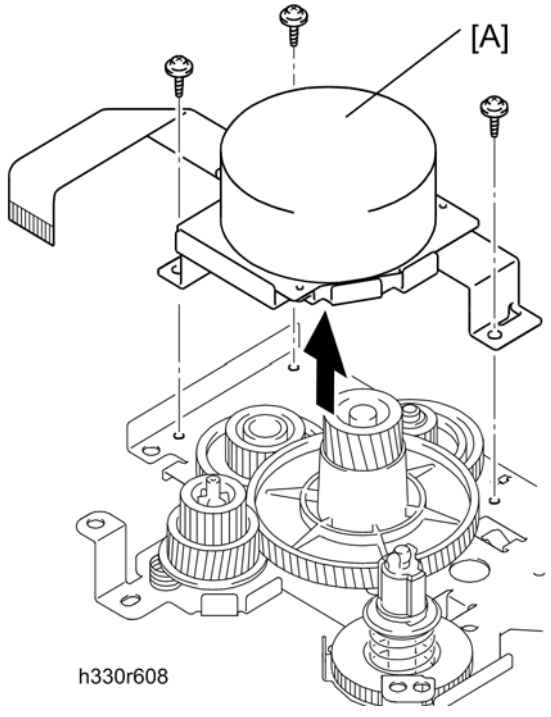
1. High-Voltage PS PCB ASSY (☛ p.76)



2. Remove the main PCB sheet [A].
3. Remove the FG harness ASSY 4 [B], and then remove the main shield plate [C] (x 4; B M4x12).



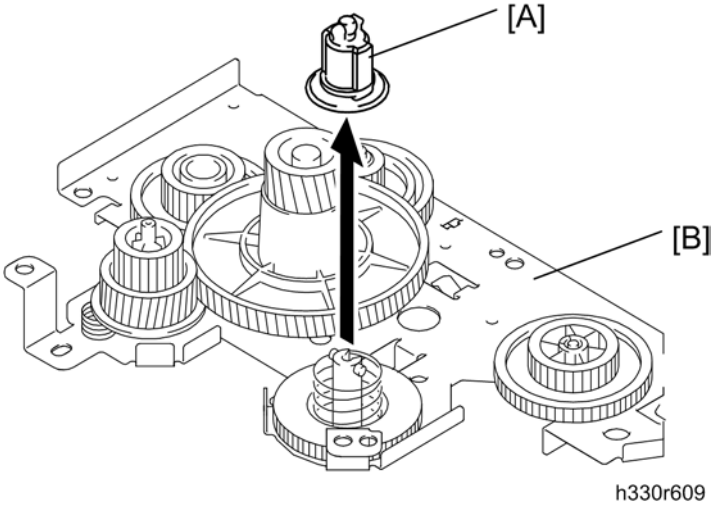
4. Remove the HVPS insulation sheet [A].
5. Remove the gear plate calking ASSY [B] (x 3; B M4x12).



6. Remove the main motor ASSY [A] (x 3; S M3x6).

Develop Joint

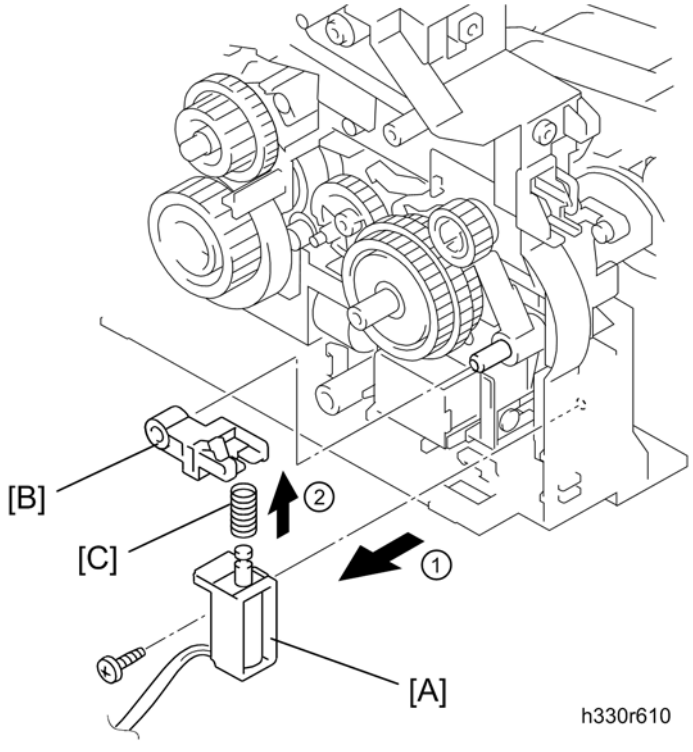
1. Main Motor ASSY (p.97)



2. Remove the develop joint [A] from the gear plate calking ASSY [B].

P/R Solenoid ASSY

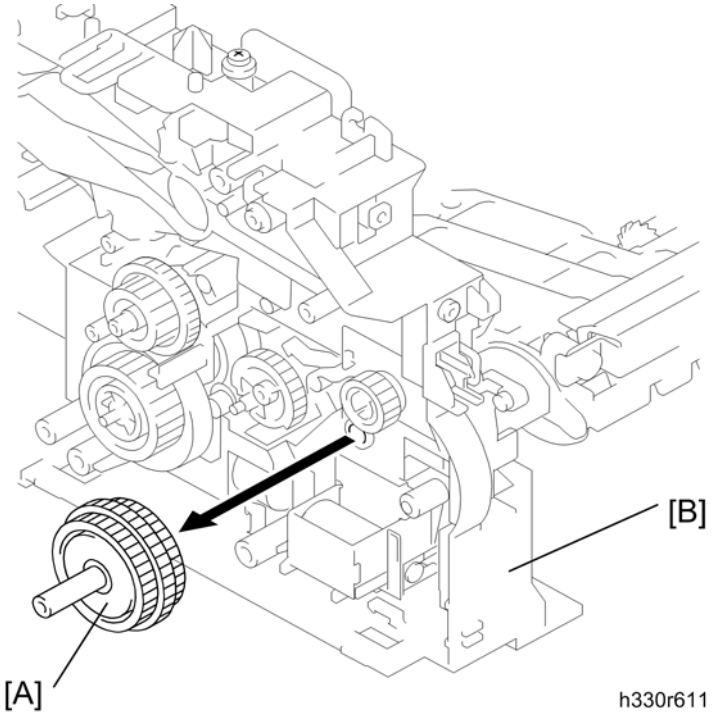
1. Main Motor ASSY (☛ p.97)



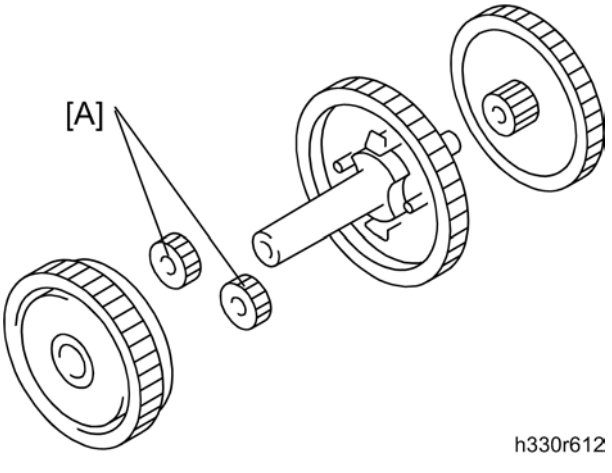
2. Remove the P/R solenoid ASSY [A], the P/R solenoid lever [B] and the solenoid release spring P/R [C] (x 1; B M3x10).

F/R Solenoid ASSY

1. P/R Solenoid ASSY (☛ p.101)

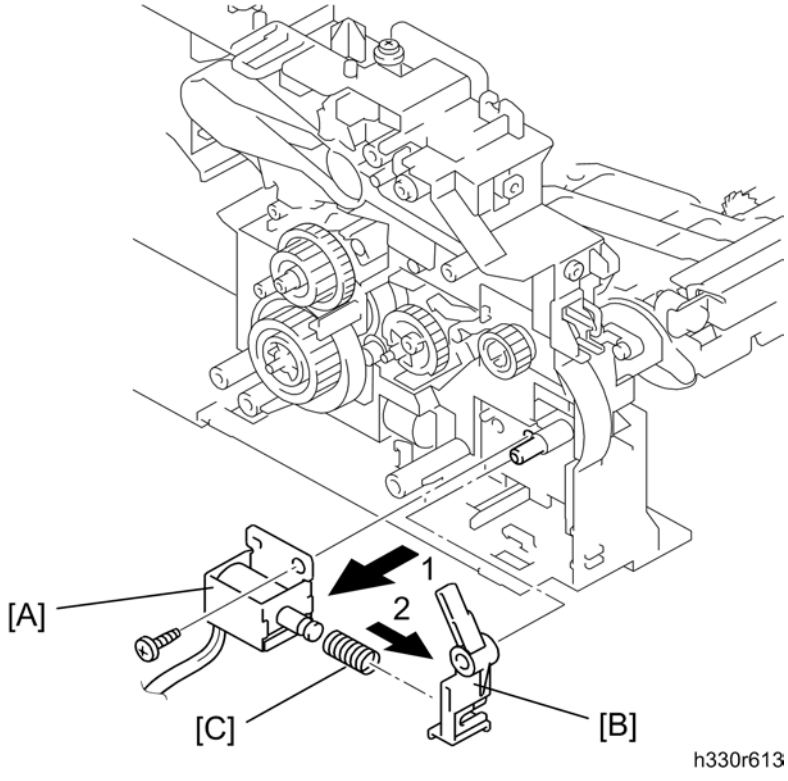


2. Remove the gear ASSY [A] from the main frame L [B].



Note

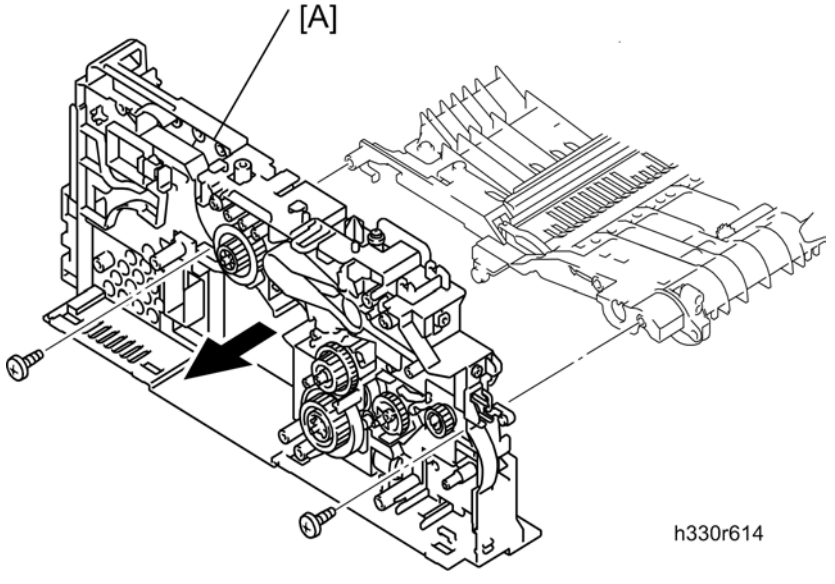
- The gear ASSY contains the small gears [A]. Be careful not to lose them by disassembling the gear ASSY.

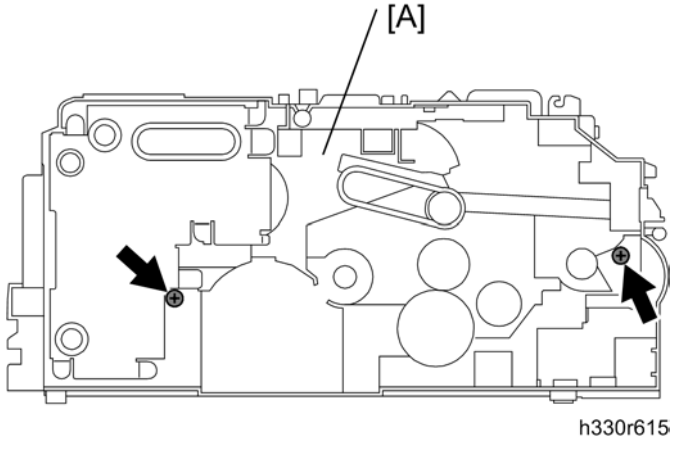


3. Remove the F/R solenoid ASSY [A], the F/R solenoid lever [B] and the solenoid release spring F/R [C] (x 1; B M3x10).

Main Frame L

1. New Toner Actuator/New Toner Actuator Spring (p.94)

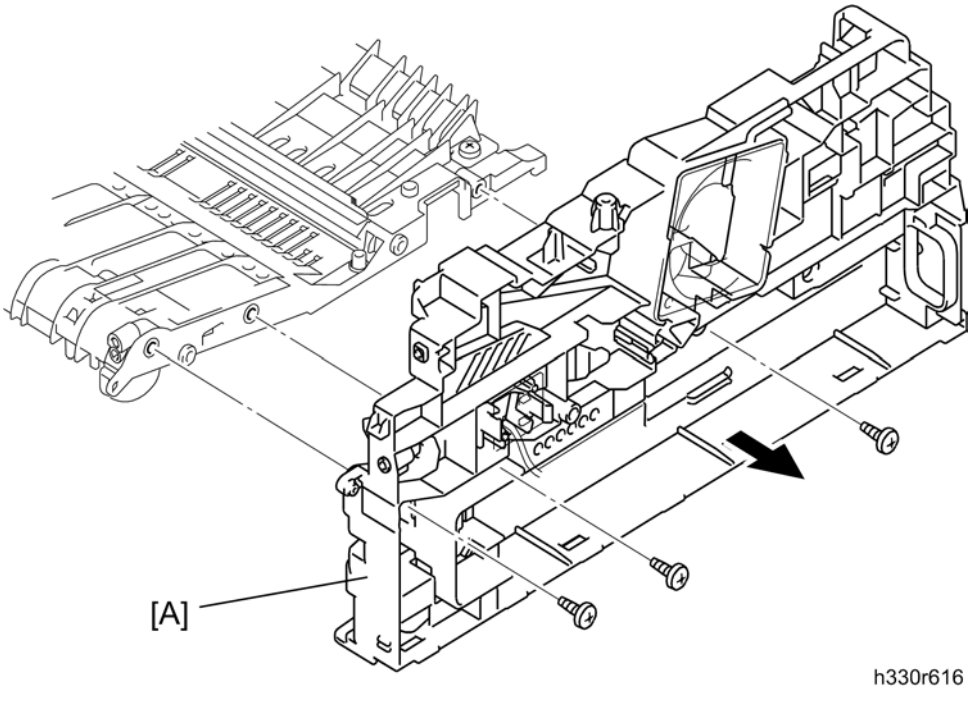


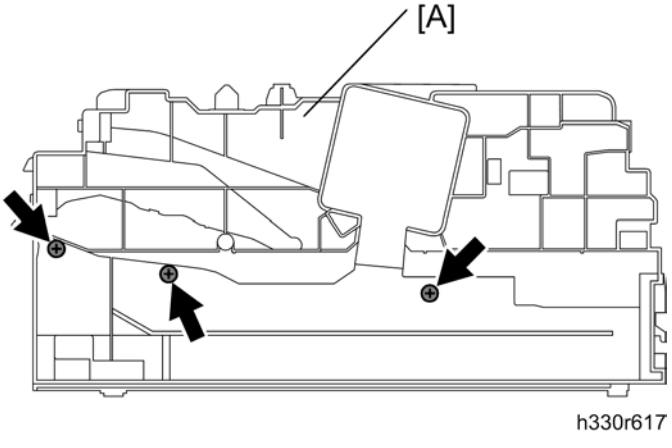


2. Remove the main frame L [A] (x 2; B M4x12).

Main Frame R

1. Main Frame L (p.103)

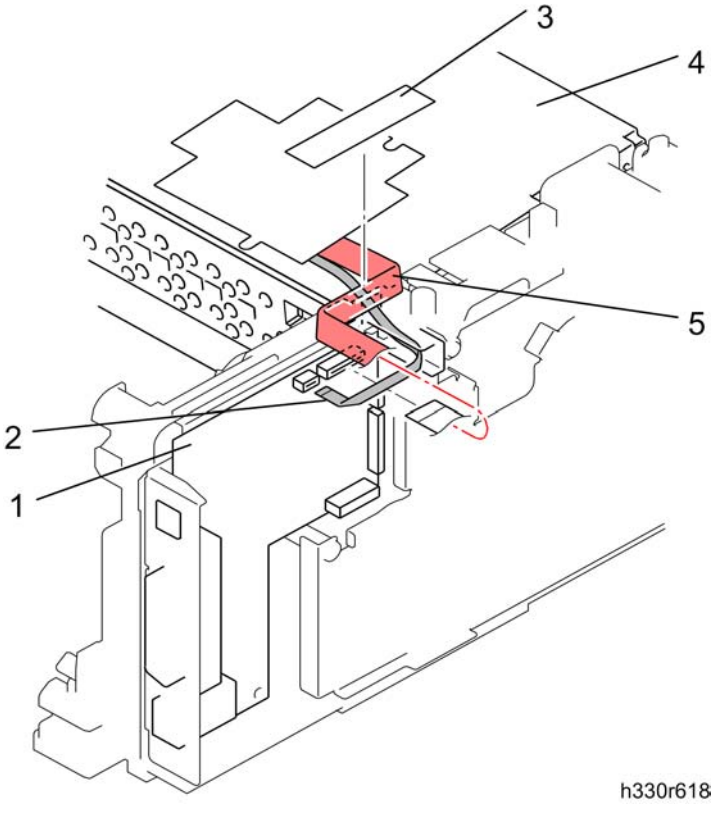




2. Remove the main frame R [A] (x 3; B M4x12).

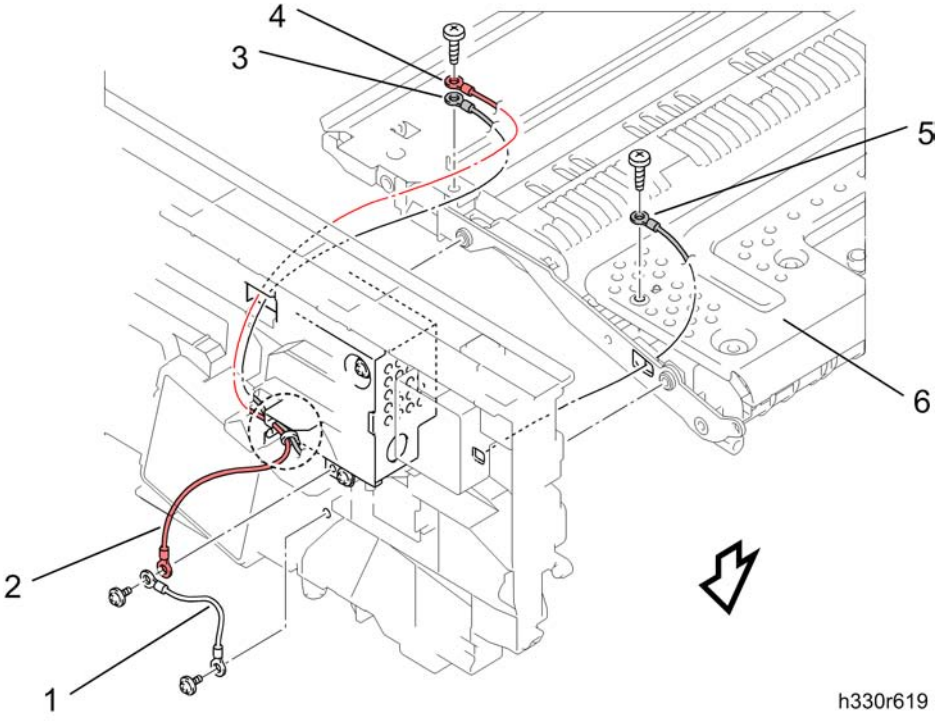
Harness Routing

Laser Unit



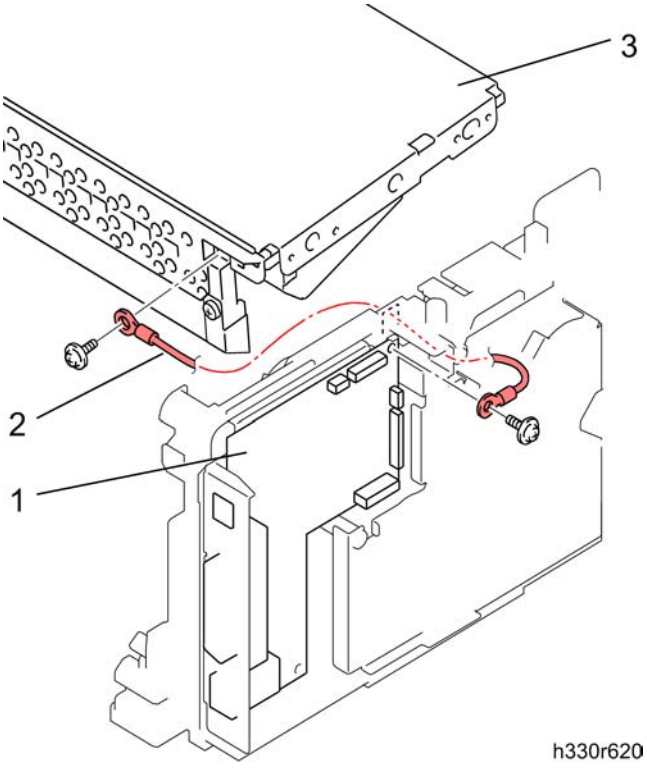
1. Main PCB 2. LD harness 5P 3. Adhesion tape	4. Laser unit 5. Polygon motor connector

FG harness ASSY 1/ FG harness ASSY 2/ FG harness ASSY 5



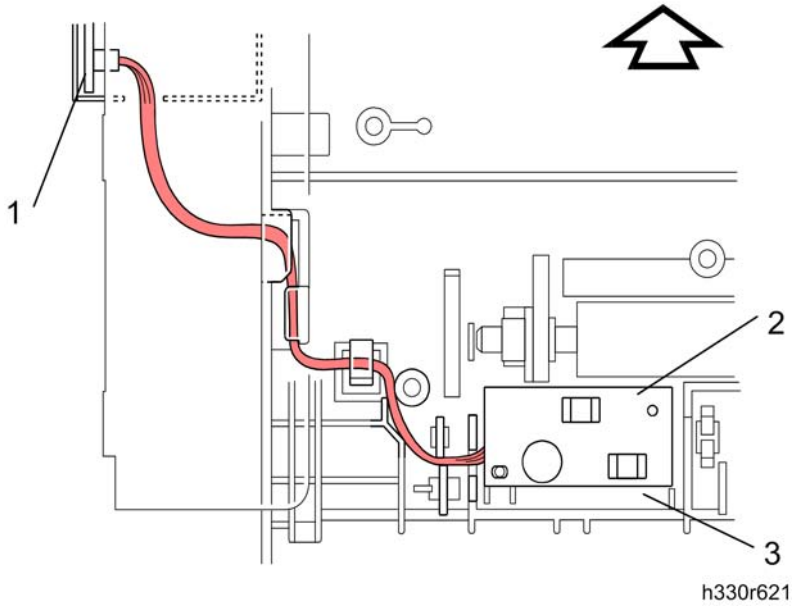
1. FG harness ASSY 2	4. FG harness ASSY 1
2. FG harness ASSY 1	5. FG harness ASSY 5
3. FG harness ASSY 5	6. Chute

FG harness ASSY



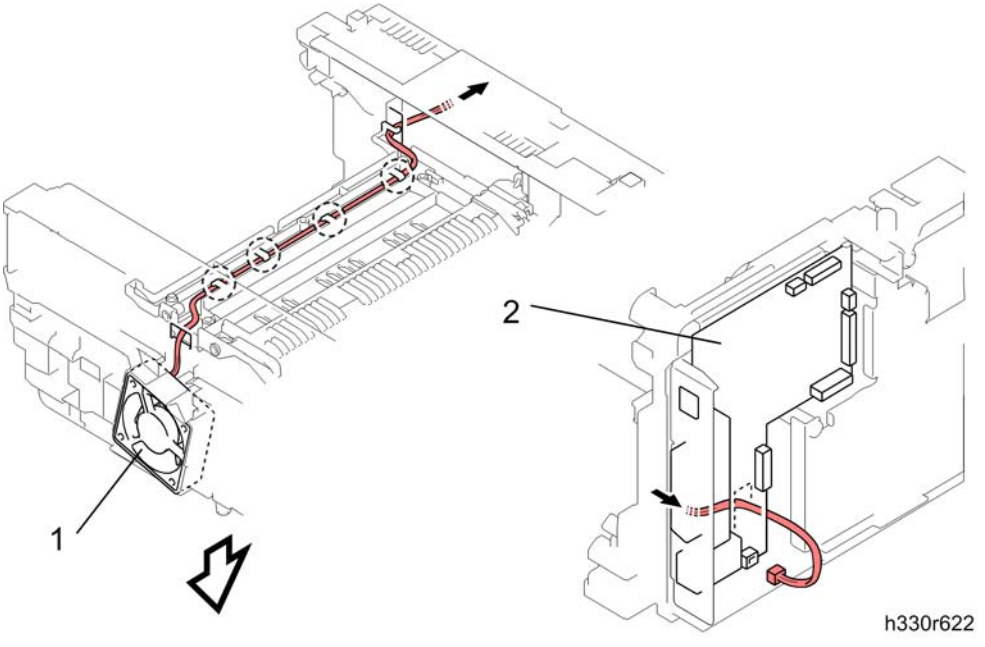
1. Main PCB 2. FG harness ASSY	3. Laser unit

Regist sensor PCB ASSY



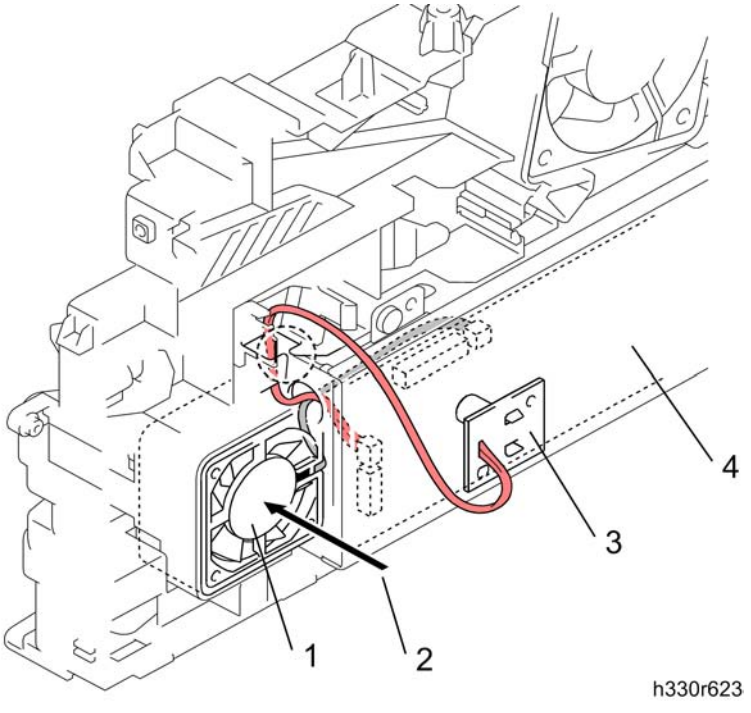
1. PS PCB unit 2. Regist sensor PCB ASSY	3. Chute

Fan Motor 60 Unit



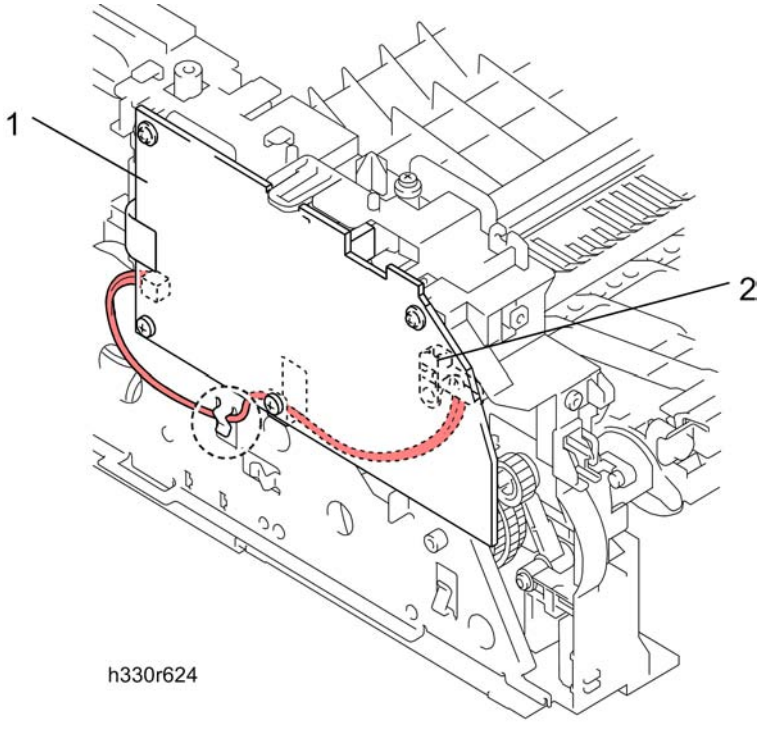
1. Fan motor 60 unit	2. Main PCB

Toner LED PCB ASSY/ Fan 40



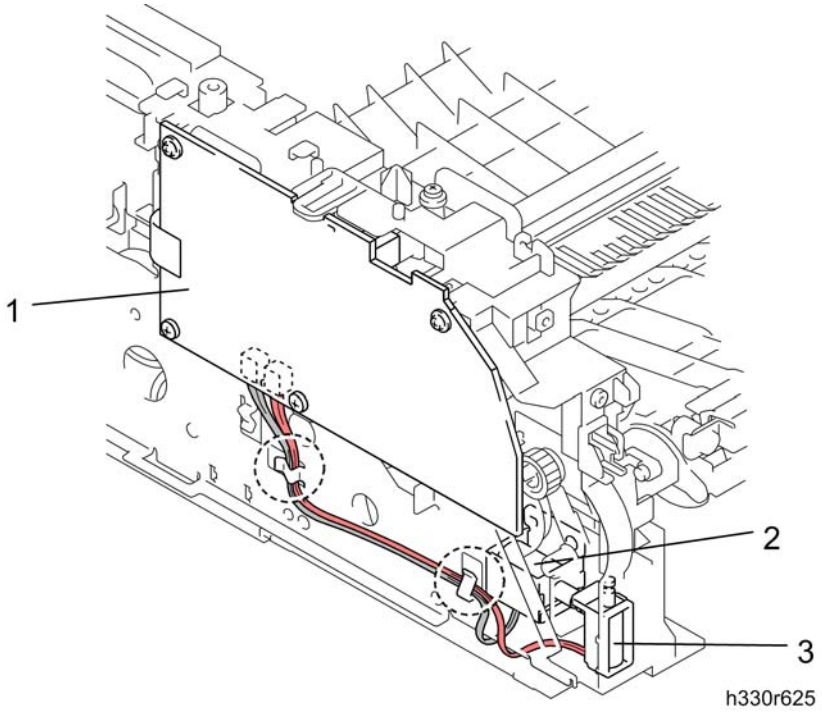
1. Fan 40	3. Toner LED PCB ASSY
2. Label side	4. PS PCB unit

Toner Sensor PCB ASSY



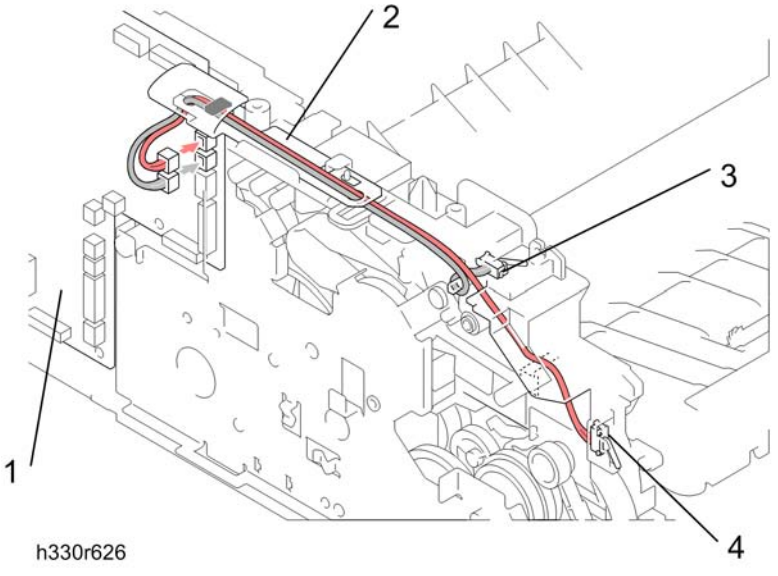
1. High-voltage PS PCB ASSY	2. Toner sensor PCB ASSY

P/R Solenoid ASSY/ F/R Solenoid ASSY



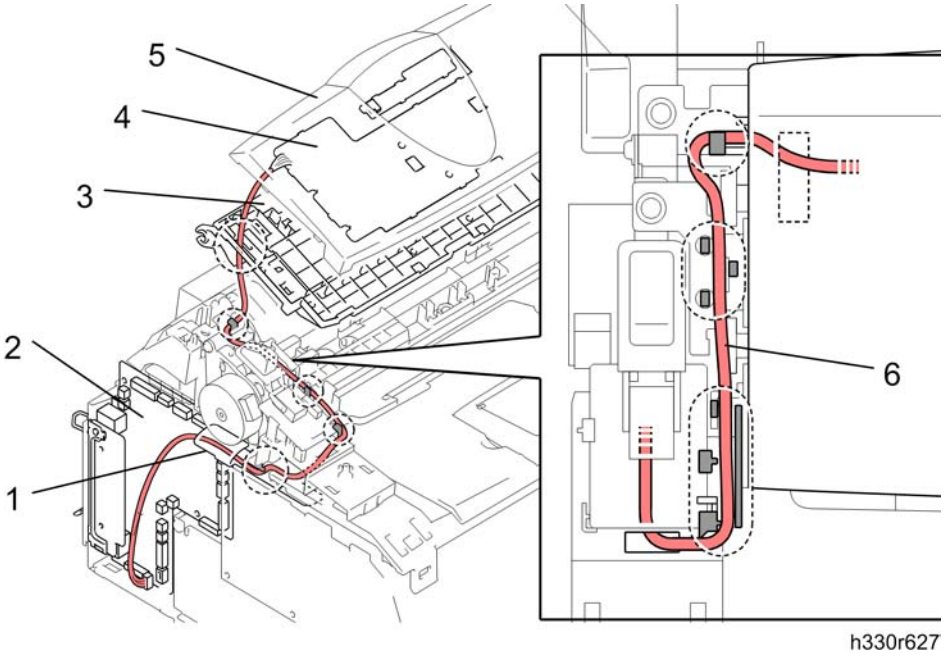
1. High-voltage PS PCB ASSY 2. F/R solenoid ASSY	3. P/R solenoid ASSY

New Toner Sensor Harness Assy/ Cover Sensor



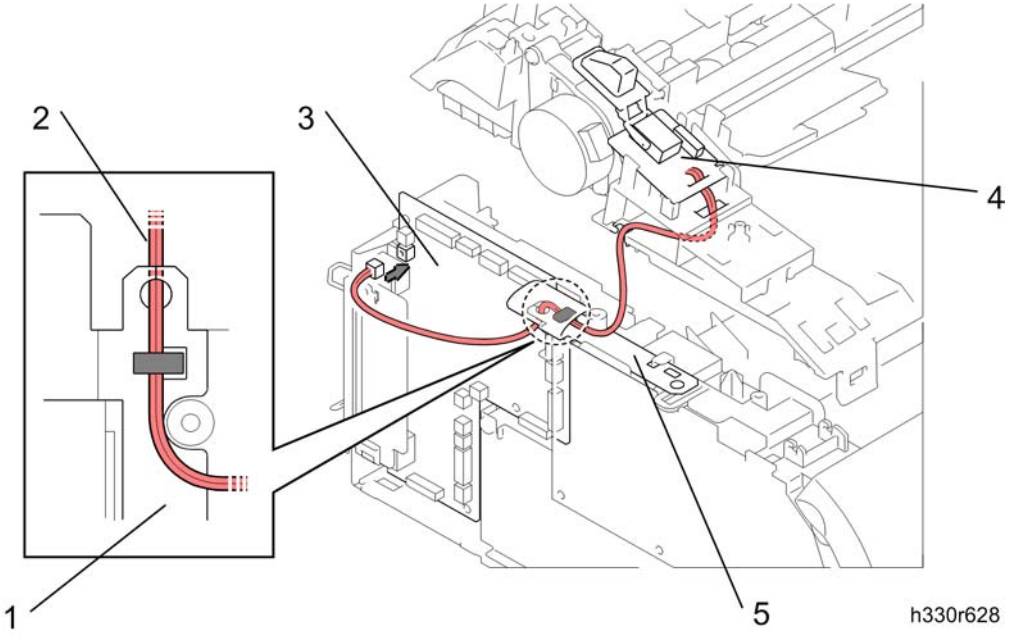
1. Main PCB ASSY 2. Harness guide	3. New toner sensor harness ASSY 4. Cover sensor

Panel Unit



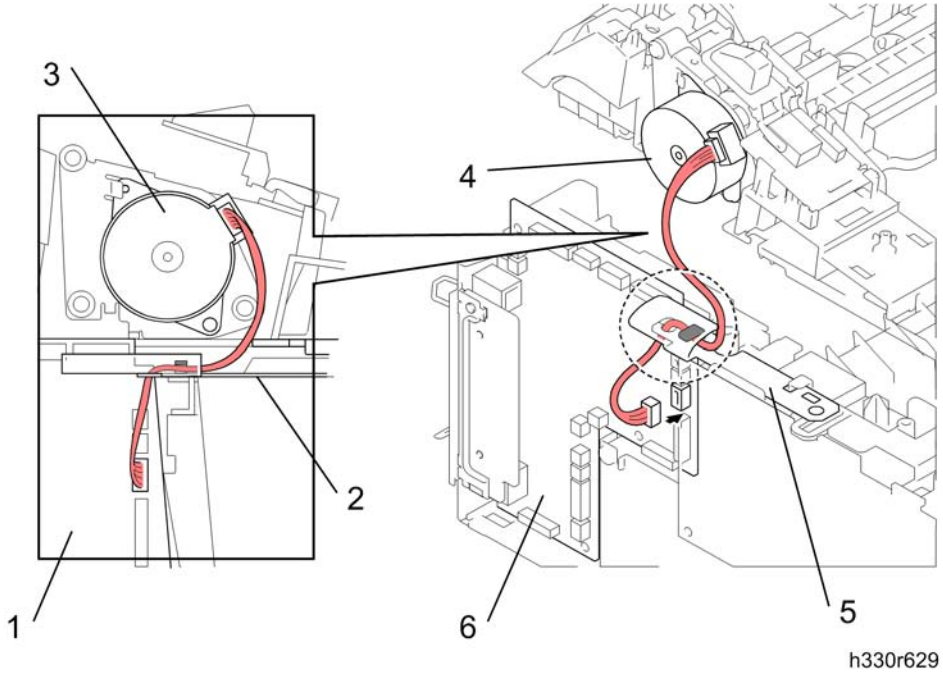
1. Harness guide	4. Panel PCB
2. Main PCB	5. Panel cover
3. Panel rear cover	6. Panel PCB harness

Hook PCB



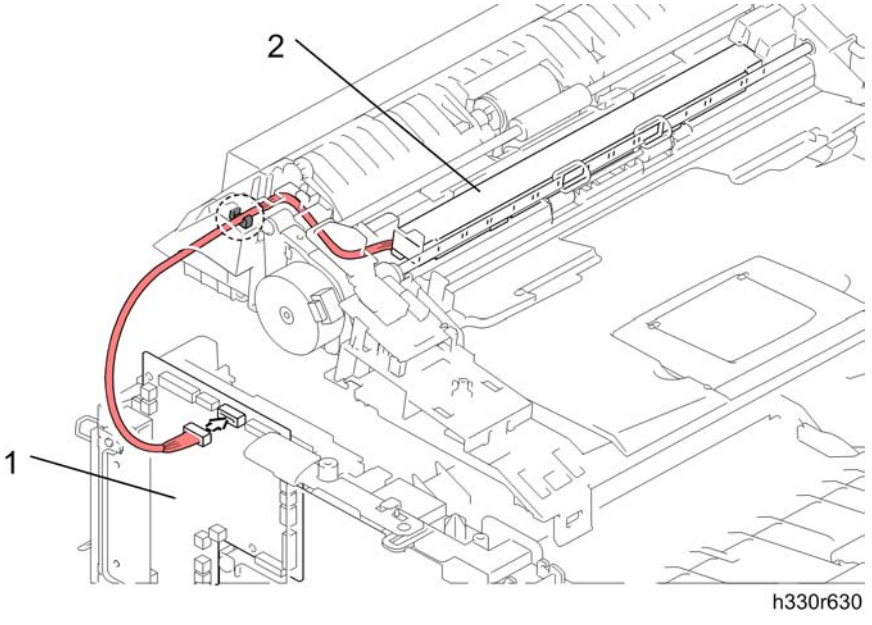
1. Harness guide film 2. Hook PCB harness 3. Main PCB	4. Hook PCB 5. Harness guide film

Scanning Motor F Sub ASSY



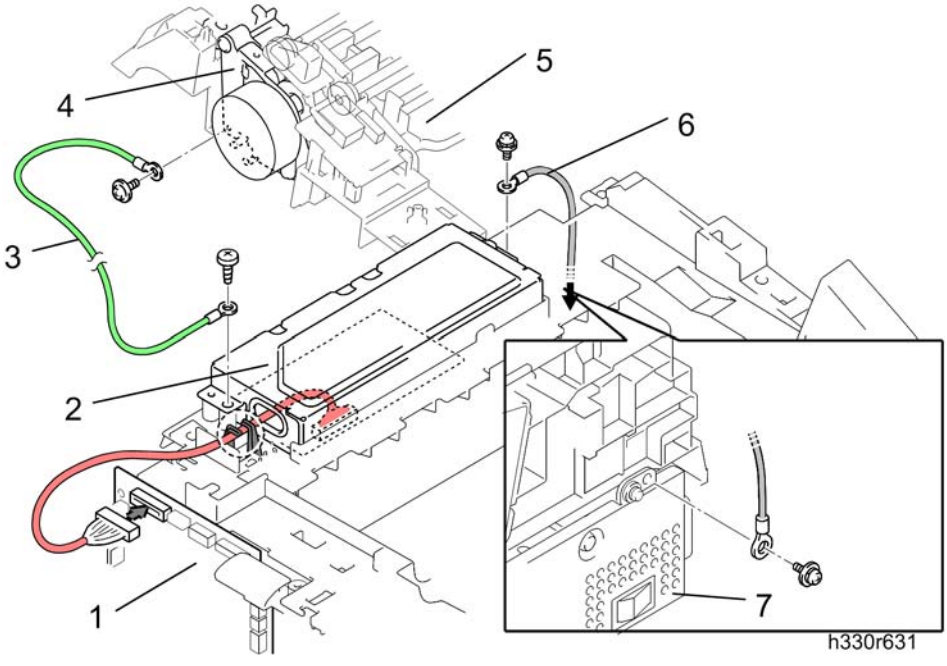
1. Main PCB	4. Scanning motor F sub ASSY
2. Harness guide film	5. Harness guide film
3. Scanning motor F sub ASSY	6. Main PCB

CIS



1. Main PCB	2. CIS

NCU PCB



1. Main PCB 2. NUC PCB 3. LF FG harness 4. Scanning driver ASSY	5. Document chute ASSY 6. NCU FG harness 7. LV shield unit

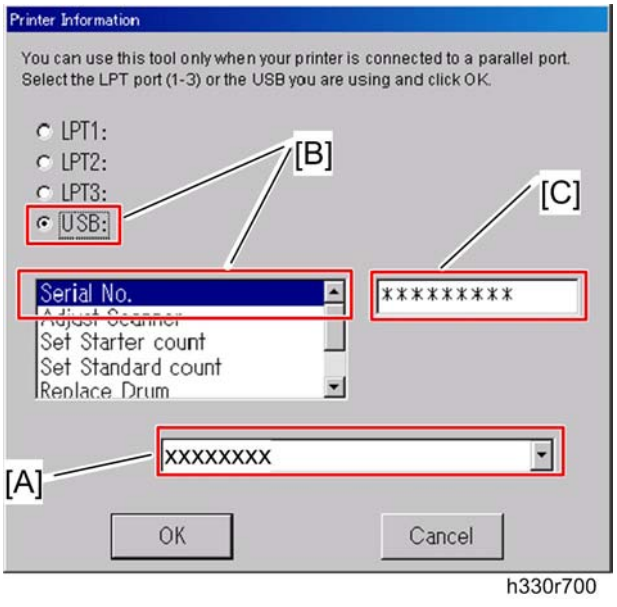
Requirement Adjustment after Parts Replacement

If You Replace the Main PCB

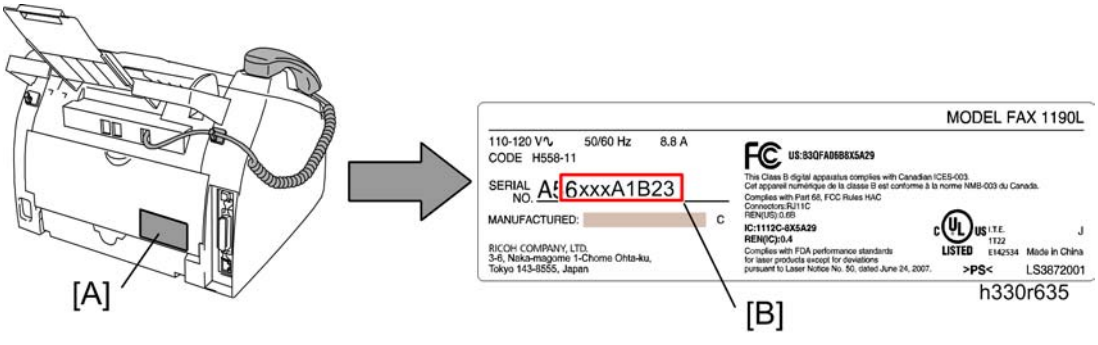
Note

- If you replace the main PCB, also replace the ink absorber box. Using the machine without replacing the ink absorber box may cause an overflow of drained ink from the ink absorber box, thereby staining the machine.

1. Load update program/data
   If the main PCB is replaced with a new one, write the update program/data onto the flash ROM.
   Refer to p.149 "Firmware Installation"
2. Initialize the EEPROM on the main PCB (Function code 01)
   Refer to p.129 "EEPROM Parameter Initialization (Function code 01/91)".
3. Customize the EEPROM on the main PCB (Function code 74)
   Refer to p.144 "EEPROM Customizing (Function code 74)".
4. Check the control panel PCB for normal operation (Function code 13).
   Refer to p.137 "Operational Check of Control Panel PCB (Function code 13)".
5. Adjust the handset volume (Function code 16).
   Refer to p.138 "Adjustment of Handset Volume (Function code 16)".
6. Make a sensor operation check (Function code 32).
   Refer to p.139 "Sensor Operational Check (Function code 32)".
7. Adjust the scan start/end positions (Function code 54).
   Refer to p.142 "Fine Adjustment of Scan Start/End Positions (Function code 54)".
8. Acquire of white level data and set the CIS scanner area setting (Function code 55).
   Refer to p.143 "Acquisition of White Level Data and CIS Scanner Area Setting (Function code 55)".
9. Setting the serial number



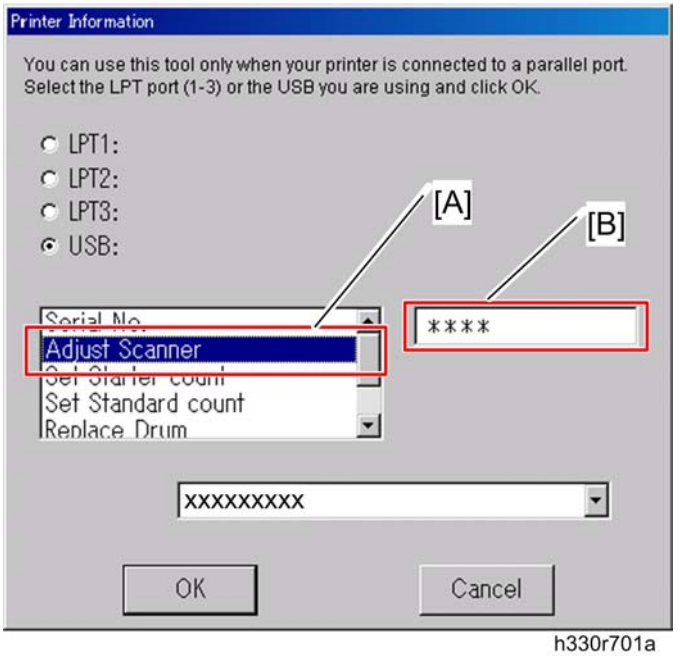
- (1) Double-click the brmainte.EXE file (maintenance utility) stored in the PC.
- (2) Select Input Information [A] from Menu. Select the applicable model name.
- (3) Check the port (USB) [B] which the machine is connected through and click "Serial No." [B].
- (4) Enter the serial number [C] (the last nine digits) of the machine and click the OK button. (Refer to the NOTE below for the serial number label [A].)
- (5) The serial number is shown in the window, and check if it is correct. The setting of the serial number is completed.



Note

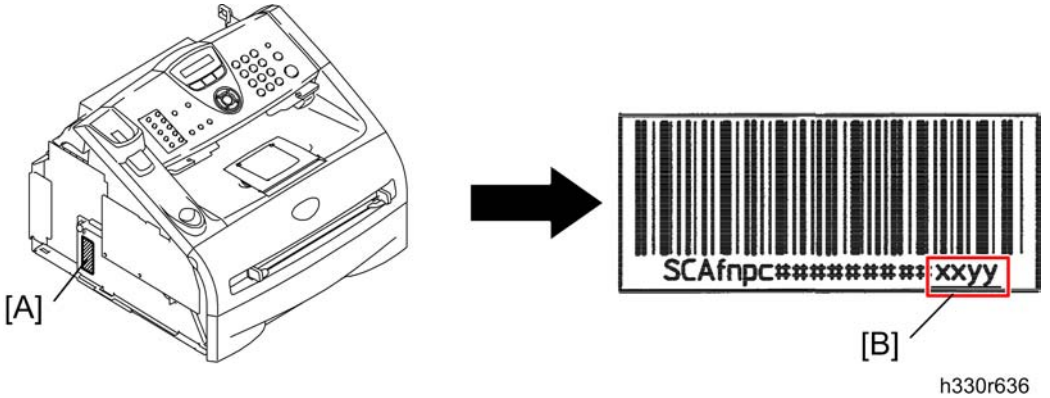
- Please refer to the illustration above for the identification and the location of the serial number label [A]. (Serial number [B]: last nine digits)

10. Inputting the adjusted value of the laser scanner



h330r701a

- (1) Select "Adjust Scanner" [A] from Menu.
- (2) Look for the laser unit serial label which can be found on the right of the main PCB. (Refer to the NOTE below for the laser unit serial label.)
- (3) Enter the last 4 digit numbers [B] of the machine.
- (4) Then click the OK button.



h330r636

Note

- Please refer to the illustration above for the identification and the location [B] of the laser unit serial labe [A]l.
- The error of "NG!!" may be shown after the input of the adjusted value but the entry should be accepted correctly.

11. Switch back to standby.
    - Disconnect the USB cable and press the "9" key twice.

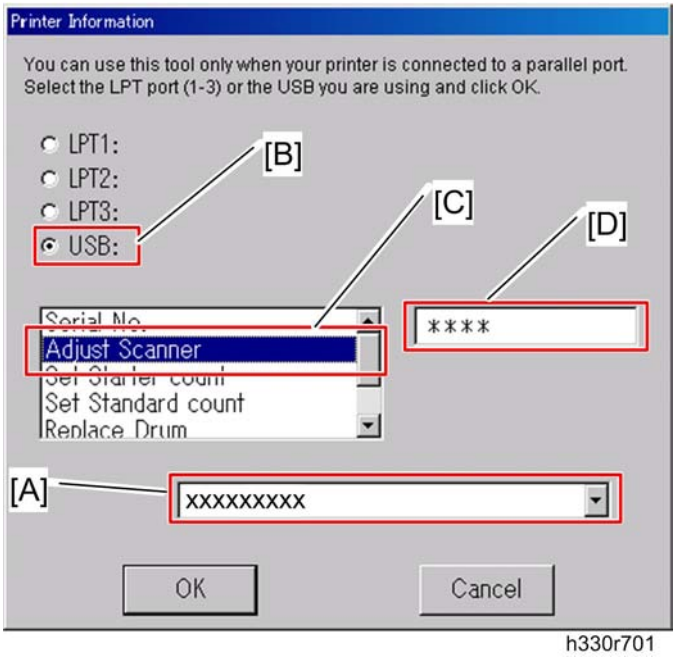
If You Replace the CIS

Acquire of white level data and set the CIS scanner area setting (Function code 55).

- Refer to p.143 "Acquisition of White Level Data and CIS Scanner Area Setting (Function code 55)".

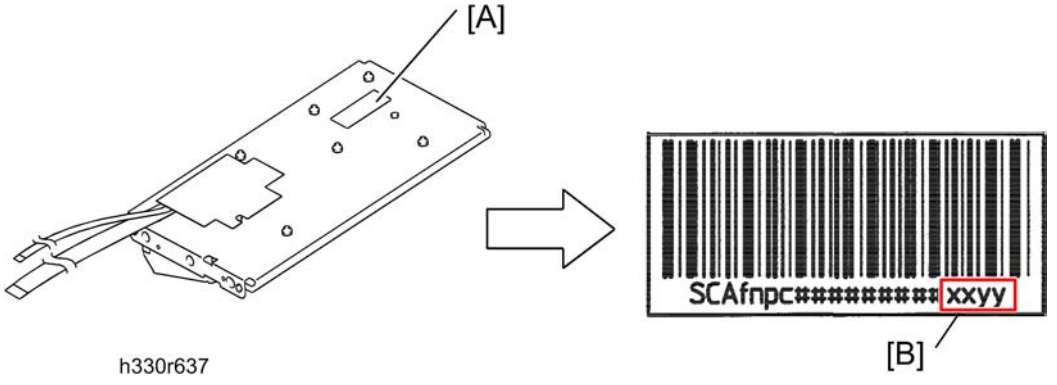
If You Replace the Laser Unit

Inputting the adjusted value of the laser scanner



1. Double-click the brmainte.EXE file (maintenance utility) stored in the PC.
2. Select Input Information from Menu.
3. Select the applicable model name [A].
4. Check the port (USB) [B] which the machine is connected through.
5. Select "Adjust Scanner" from Menu [C].
6. Look for the serial number attached on the laser unit spare part. (Refer to the NOTE below for the laser unit serial label.)

7. Enter the last 4 digit numbers of the machine into the box [D] at the right hand side.
8. Click the OK button.



Note

- Please refer to the illustration above for the identification and the location [B] of the laser unit serial label [A].
- The error of "NG!!" may be shown after the input of the adjusted value but the entry should be accepted correctly.

5. Service Maintenance

Entry into the Maintenance Mode

There is maintenance mode in this machine.

After entering the maintenance mode, the machine beeps for approx. one second and displays "MAINTENANCE" on the LCD, indicating that it is placed in the initial stage of the maintenance mode, a mode in which the machine is ready to accept entry from the keys.

To select one of the maintenance-mode functions listed in "List of Maintenance-Mode Functions" Section, enter the corresponding 2-digit function code with the numerical keys on the control panel. (The details of each maintenance-mode function are described in p.129 "Detailed Description of Maintenance-Mode Functions")

Note

- To exit from the maintenance mode and switch to standby, press the "9" key twice in the initial stage of the maintenance mode.
- Pressing the "Stop/Exit" key after entering only one digit restores the machine to the initial stage of the maintenance mode.
- If an invalid function code is entered, the machine resumes the initial stage of the maintenance mode.

RTB 1
How to enter Maintenance Mode

List of Maintenance-Mode Functions

Maintenance-mode Functions

Function Code	Function	Reference Page
01	EEPROM Parameter Initialization	p.129
05	Printout of Scanning Compensation Data	p.130
08	ADF Performance Test	p.131
09	Test Pattern	p.131
10	Firmware Switch Setting	p.132
11	Printout of Firmware Switch Data	p.136
12	Operational Check of LCD	p.136
13	Operational Check of Control Panel PCB	p.137
16	Adjustment of Handset Volume	p.138
32	Sensor Operational Check	p.139
53	Received Data Transfer Function	p.140
54	Fine Adjustment of Scan Start/End Positions	p.142
55	Acquisition of White Level Data and CIS Scanner Area Setting	p.143
67	Continuous print Test	p.144
74	EEPROM Customizing	p.144
80	Display of the Equipment's Log Information	p.145
82	Machine Error Code Indication	p.147
87	Output of Transmission Log to the Telephone Line	p.147
99	Exit from the Maintenance Mode	-
-	Cancellation of the Memory Security Mode	p.148

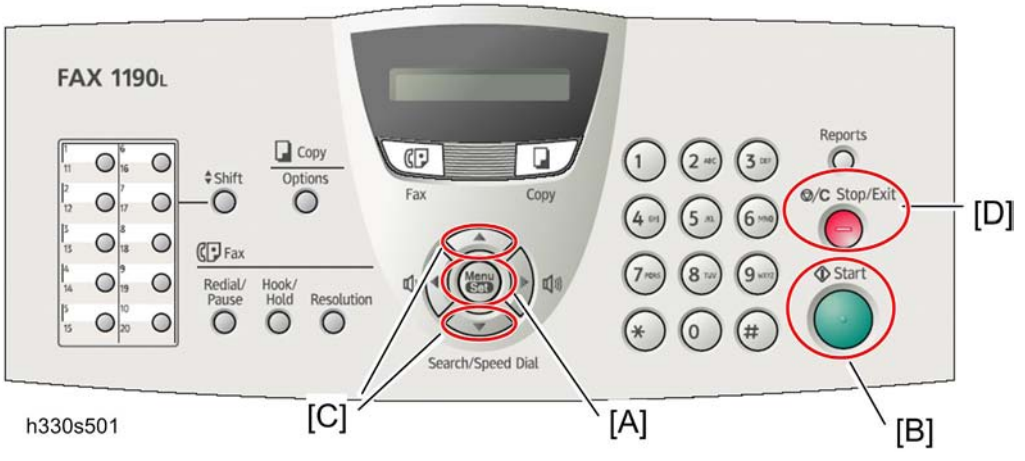
The numbers in bold can be accessed by end users if the machine setting is changed. For details, see "User-Access to The Maintenance Mode" on the next page.

User-Access to The Maintenance Mode

Basically, the maintenance-mode functions listed on the previous page should be accessed by service personnel only. However, you can allow end users to access some of these under the guidance of service personnel (e.g., by telephone).

The user-accessible functions (codes 09, 10, 11, 12, 53, 54, 80, 82 and 87) are bolded in the table given on the previous page. Function code 10 accesses the firmware switches, each of which has eight selectors. You should not allow end users to access all of those selectors, but you can allow them to access user-accessible selectors which are bolded in the firmware switch tables in Appendix.

The service personnel should instruct end users to follow the procedure given below.



1. Press the "Menu/Set" [A], "Start" [B] and "Menu/Set" [A] keys in this order.

   For the FAX models equipped with numerical keypads, you may press the "Menu/Set" [A], "Start" [B], and "0" keys.

   The "0" appears on the LCD.

2. To access any other function code, call up the desired code using the ▲ and ▼ [C] keys or numerical keys.

   Then press the "Menu/Set" [A] key.

   For function code 10, access the desired firmware switch according to the operating procedure described in p.160 "Firmware Switches (WSW)".

3. To switch the machine back to the standby state, press the "Stop/Exit" [D] key. When each of the user-accessible functions is completed, the machine automatically returns to the standby state.

Detailed Description of Maintenance-Mode Functions

EEPROM Parameter Initialization (Function code 01/91)

Function

The machine initializes the parameters, user switches, and firmware switches registered in the EEPROM, to the initial values. Entering the function code 01 initializes all of the EEPROM areas, but entering 91 does not initialize some areas, as listed below.

Data item	Function code	
	01	91
Maintenance-mode functions User switches Firmware switches	All of these will be initialized.	These will be initialized.
Remote activation code		These will not be initialized.
Station ID data Outside line number Telephone function registration One-touch dialing Speed dialing Group dialing		These will not be initialized.

Note

- If you replace the main PCB with the one used for any other machine, carry out this procedure and then customize the EEPROM (maintenance-mode function code 74 in p.144 "EEPROM Customizing (Function code 74)").

Operating Procedure

1. Press the "0" and "1" keys (or the "9" and "1" keys according to your need) in this order in the initial stage of the maintenance mode.

   The "PARAMETER INIT" will appear on the LCD.

2. Upon completion of parameter initialization, the machine returns to the initial stage of the maintenance mode.
3. Be sure to turn the machine power off. If you press the "9" key twice to exit from the maintenance mode without turning the power off, then the machine will not fully initialize the EEPROM.

Printout of Scanning Compensation Data (Function code 05)

Function

The machine prints out the white and black level data for scanning compensation.

Operating Procedure

Do not start this function merely after powering on the equipment but start it after carrying out a sequence of scanning operation. Unless the equipment has carried out any scanning operation, this function cannot print out correct scanning compensation data. This is because at the start of scanning operation, the equipment initializes white and black level data and takes in the scanning compensation reference data.

1. Press the "0" and "5" keys in this order in the initial stage of the maintenance mode.

   The "WHITE LEVEL 1" will appear on the LCD.
2. The equipment prints out the scanning compensation data list containing the following:

   a) Bright output adjustment value 1Byte

   b) Illuminant adjustment value 1Byte

   c) Black level MIN data 1Byte

   d) Black level MAX data 1Byte

   e) White level MIN data 1Byte

   f) White level MAX data 1Byte

   g) Background color compensated data 1Byte

   h) Black level data 1664Byte

   i) White level data 1664Byte
3. Upon completion of recording of the compensation data list, the equipment returns to the initial stage of the maintenance mode.

Note

- If any data is abnormal, its code will be printed in inline style, as shown on the next page.

ADF Performance Test (Function code 08)

Function

The machine counts the documents fed by the automatic document feeder (ADF) and displays the count on the LCD for checking the ADF performance.

Operating Procedure

1. Set documents. (Allowable up to the ADF capacity.)
   The "DOC. READY" will appear on the LCD.
2. Press the "0" and "8" keys in this order.
   While counting the documents, the machine feeds them in and out, displaying the current count on the LCD as shown below.
   Current count (1st page in this example)
3. To return the machine to the initial stage of the maintenance mode, press the "Stop/Exit" key.

Test Pattern (Function code 09)

Function

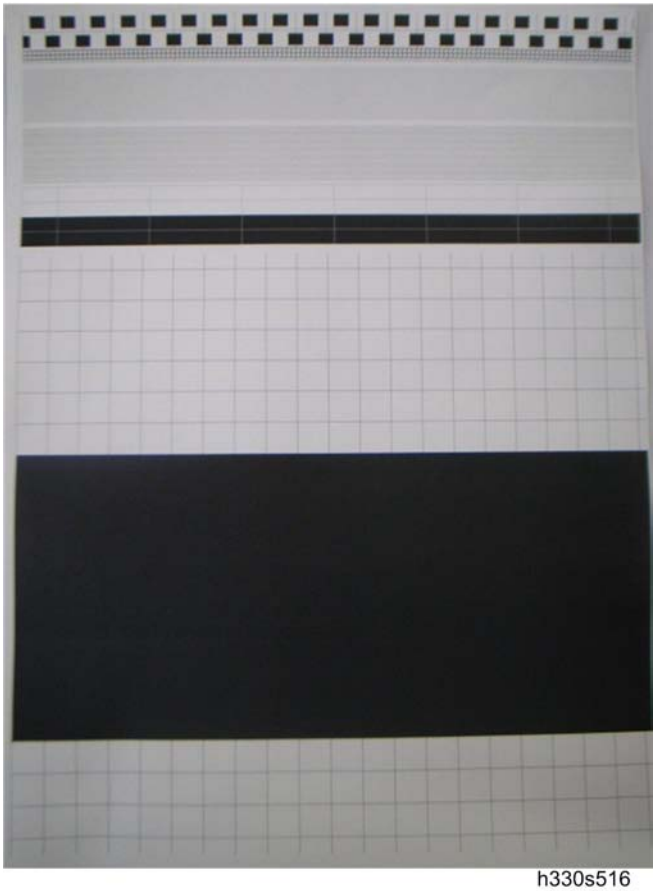
This function, much like the copying function, prints out test pattern to allow the service personnel to check for record data missing or print quality.

Operating Procedure

Press the "0" and "9" keys in this order in the initial stage of the maintenance mode.

The figure below shows test pattern.

Test Pattern



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Firmware Switch Setting (Function code 10)

Function

The machine incorporates the following firmware switch functions which may be activated with the procedures using the control panel keys and buttons.

The firmware switches have been set at the factory in conformity to the communications standards and codes of each country. Do not disturb them unless necessary. Some firmware switches may not be applicable in some versions. The firmware switch data list indicates "Not used." for those inapplicable switches.

Firmware Switches (WSW01 through WSW51)

WSW No.	Function
WSW01	Dial pulse setting
WSW02	Tone signal setting
WSW03	PABX mode setting
WSW04	TRANSFER facility setting
WSW05	1st dial tone and busy tone detection
WSW06	Redial/Pause key setting and 2nd dial tone detection
WSW07	Dial tone setting 1
WSW08	Dial tone setting 2
WSW09	Protocol definition 1
WSW10	Protocol definition 2
WSW11	Busy tone setting
WSW12	Signal detection condition setting
WSW13	Modem setting
WSW14	AUTO ANS facility setting
WSW15	REDIAL facility setting
WSW16	Function setting 1
WSW17	Function setting 2
WSW18	Function setting 3
WSW19	Transmission speed setting
WSW20	Overseas communications mode setting
WSW21	TAD setting 1
WSW22	ECM and call waiting caller ID
WSW23	Communications setting
WSW24	TAD setting 2

WSW No.	Function
WSW25	TAD setting 3
WSW26	Function setting 4
WSW27	Function setting 5
WSW28	Function setting 6
WSW29	Function setting 7
WSW30	Function setting 8
WSW31	Function setting 9
WSW32	Function setting 10
WSW33	Function setting 11
WSW34	Function setting 12
WSW35	Function setting 13
WSW36	Function setting 14
WSW37	Function setting 15

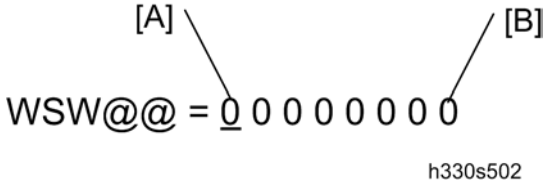
Firmware Switches (WSW01 through WSW51) Continued

WSW No.	Function
WSW38	V.34 transmission settings
WSW39	V.34 transmission speed
WSW40	V.34 modem settings
WSW41	ON-duration of the scanning light source
WSW42	Internet mail settings
WSW43	Function setting 21
WSW44	Speeding up scanning-1
WSW45	Speeding up scanning-2
WSW46	Monitor of power ON/OFF state and parallel port kept at high

WSW No.	Function
WSW47	Switching between high- and full-speed USB
WSW48	USB setup latency
WSW49	End-of-copying beep and print in black
WSW50	SDAA settings
WSW51	Function setting 16

Operating Procedure

1. Press the "1" and "0" keys in this order in the initial stage of the maintenance mode. The machine displays the "WSW00" on the LCD and becomes ready to accept a firmware switch number.
2. Enter the desired number from the firmware switch numbers (01 through 51). The following appears on the LCD:



h330s502

   - [A]: Selector 1, [B]: Selector 8
3. Use the ◀ and ▶ keys to move the cursor to the selector position to be modified.
4. Enter a value to be set (0 or 1) using the "0" and "1" keys.
5. Press the "Menu/Set" key. This operation saves the newly entered selector values onto the EEPROM and readies the machine for accepting a firmware switch number.
6. Repeat steps (2) through (5) until the modification for the desired firmware switches is completed.
7. Press the "Stop/Exit" key to return the machine to the initial stage of the maintenance mode.

Note

- To cancel this operation and return the machine to the initial stage of the maintenance mode during the above procedure, press the "Stop/Exit" key.
- If there is a pause of more than one minute after a single-digit number is entered for double-digit firmware switch numbers, the machine will automatically return to the initial stage of the maintenance mode.

Details of Firmware Switches

The details of the firmware switches are described in "Firmware Switches (WSW)" in which the user-accessible selectors of the firmware switches are in bold.

Machine w/o fax support some selectors of firmware switches. Those selector numbers are circled.

Printout of Firmware Switch Data (Function code 11)

Function

The machine prints out the setting items and contents specified by the firmware switches.

Operating Procedure

1. Press the "1" key twice in the initial stage of the maintenance mode.
   The "PRINTING" will appear on the LCD.
2. The machine prints out the configuration list as shown in the figure below.
3. Upon completion of printing, the machine returns to the initial stage of the maintenance mode.

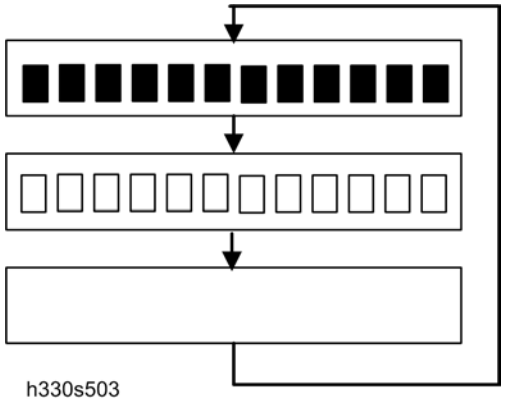
Operation Check of LCD (Function code 12)

Function

This function allows you to check whether the LCD on the control panel works normally.

Operating Procedure

1. Press the "1" and "2" keys in this order in the initial stage of the maintenance mode.
   The LCD shows the screen given at figure below.
2. Press the "Start" key. Each time you press the "Start" key, the LCD cycles through the displays shown at figure below.
3. Press the "Stop/Exit" key in any process of the above display cycle. The machine beeps for one second and returns to the initial stage of the maintenance mode.



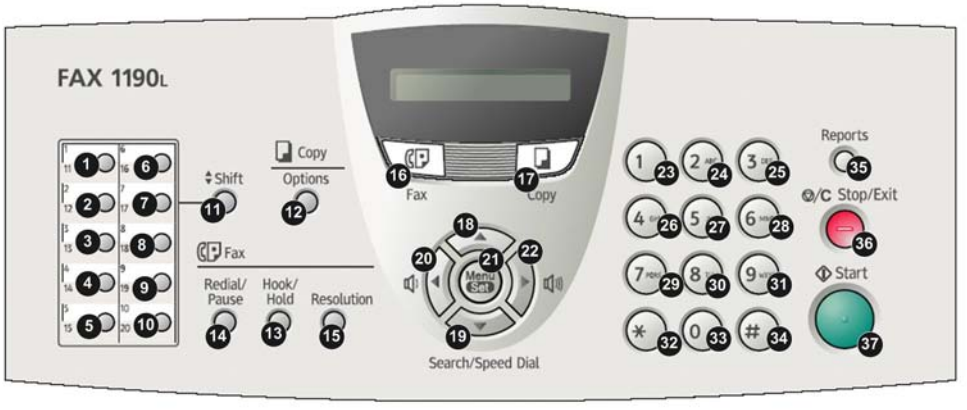
Operational Check of Control Panel PCB (Function code 13)

Function

This function allows you to check the control panel PCB for normal operation.

Operating Procedure

1. Press the "1" and "3" keys in this order in the initial stage of the maintenance mode.
   The "00 " will appear on the LCD.
2. Press the keys and buttons in the order designated in the illustration shown below.
   The LCD shows the corresponding number in decimal notation each time a key or button is pressed.
   Check that the displayed number is correct by referring to the illustration below.
   If a key or button is pressed out of order, the machine beeps and displays the "INVALID OPERATE" on the LCD. To return to the status ready to accept key & button entry for operational check, press the "Stop/Exit" key.
3. After the last number key or button is pressed, the machine beeps for one second and returns to the initial stage of the maintenance mode.
   To terminate this operation, press the "Stop/Exit" key. The machine returns to the initial stage of the maintenance mode.



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5

Adjustment of Handset Volume (Function code 16)

Function

This function is to adjust the handset volume when it is set to Volume Amplify.

(The adjustment is valid only when the Volume Amplify is set, and only "Low ■■■■■■ High" can be set.)

Use this function for U.S.A models as it is provided for the U.S.A models only.

Operating Procedure

1. Press the "1" and "6" keys in this order in the initial stage of the maintenance mode.
   The "Low ■■■■ High" will appear on the LCD.
2. Press the Start button.
   The "Low ■■■■ High 5B" will appear on the LCD.
   The above "5B" indicates the setting value. The value varies with setting condition.
3. When press any one of the "1", "3", "4" or "6" key, value will be changed as follows
   "1": The value is decreased by 10H.
   "3": The value is increased by 10H.
   "4": The value is decreased by 1H.
   "6": The value is increased by 1H.
   When the value is increased, the handset volume is decreased, and vice versa.
   The adjustment range is from "00H" to "7FH".
4. Check the handset volume by listening to the actual sound. If the volume is adjusted properly, press the "Menu/Set" key.
   The machine will write the adjusted level onto the ROM.

5. Press the "Stop/Exit" key so that the machine returns to the initial stage of the maintenance mode.

Sensor Operational Check (Function code 32)

Function

This function allows you to check whether the 9 sensors.

Operating Procedure

1. Press the "3" and "2" keys in this order in the initial stage of the maintenance mode. The machine beeps 1100 Hz and 400 Hz tones cyclically through the following volumes for testing the speaker. To stop beeping, press the "Menu/Set" key.
   - OFF ⇒ 400 Hz Low ⇒ 400 Hz Medium ⇒ 400 Hz High ⇒ OFF ⇒ 1100 Hz Low ⇒ 1000 Hz Medium ⇒ 1000 Hz High ⇒ OFF

   If the sensing status are as listed below, the LCD will show the following:

   "DFDRCVHK" and "NTMNRSTNKOFU" (which can be switched by pressing the "Start" key for machines.)

   Given below is the relationship between the LCD indication, sensor names and sensor status.

LCD	Sensors	Sensing status
DF	Document front sensor	No document detected.
DR	Document rear sensor	No document detected.
CV	Cover sensor	Front cover closed.
HK	Hook Switch	On-hook state
NT	New toner sensor	New toner detected.
MN	Manual insertion sensor	No paper detected.
RS	Registration sensor	No paper detected.
TN	Toner sensor	Toner detected.
KO	Tail edge sensor	No paper detected.
FU	Fixing sensor	No recording paper detected.

2. Change the detecting conditions to check that the indication on the LCD changes according to the sensor states. For instance, insert paper through the document front (or rear) sensor or the registration

sensor(s), open the front cover or the document cover, remove the toner cartridge, jam paper at the paper outlet, insert paper from the manual feeder, and load a recording paper tray, etc.

3. Press the "Stop/Exit" key. The machine beeps for one second and return to the initial stage of the maintenance mode.

Note

- If you have opened and closed the front cover during the above procedure, you need to open and close the front cover again upon completion of the procedure.

Received Data Transfer Function (Function code 53)

Function

This function transfers received FAX data to another machine. It is useful when the machine cannot print received data due to the printing mechanism defective.

Note

- The number of files that can be transferred at a time is 99. To transfer 100 files or more, carry out the following procedure more than one time.
- If there are both color and monochrome data in a file to be transferred, the monochrome data will be transferred first. If the receiver machine does not support the color function, the sender machine cannot transfer color data, resulting in an error.

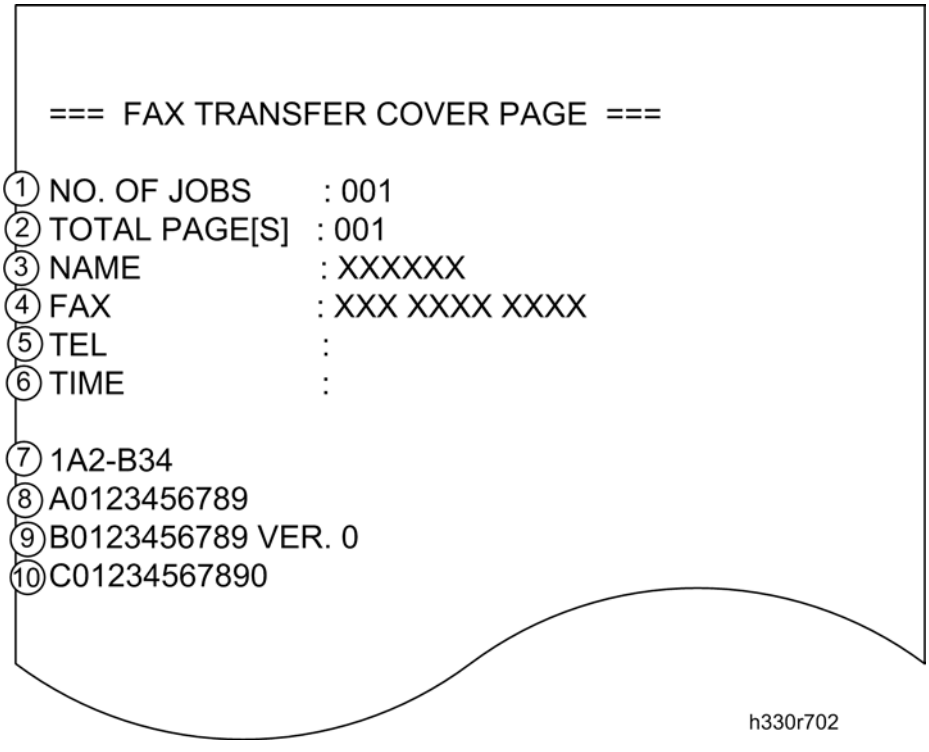
Operating Procedure

1. Press the "5" and "3" keys in this order in the initial stage of the maintenance mode.
   The "FAX TRANSFER" appears on the LCD.
2. To check the number of received files, press the "1" key.
   The "1.NO. OF JOBS" appears on the LCD.
   Press the "Menu/Set" key, and the number of received files appears, just as "NO. OF. JOBS: 10."
3. To transfer the activity report only, press the "2" key.
   The "2.ACTIVITY" appears.
   To transfer received files (together with the activity report), press the "3" key.
   The "3.DOCUMENTS" appears. Note that if there is no received file, the "NO DOCUMENTS" appears.
4. With the "2.ACTIVITY," or "3.DOCUMENTS," being displayed, press the "Menu/Set" key. The "ENTER NO. &SET" appears.
5. Enter the telephone number of the receiver machine and press the "Menu/Set" key again.

Note

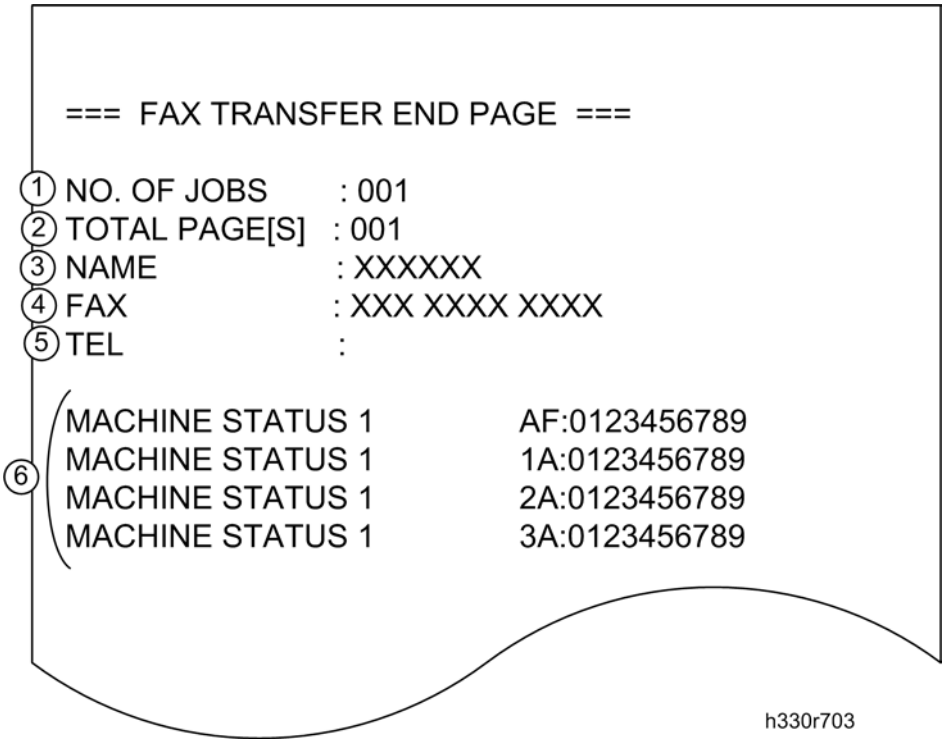
- Be sure to type the telephone number with the numerical keys. No one-touch dialing is allowed in this procedure.
- The machine displays the "ACCEPTED" for approx. two seconds and starts dialing to transfer data.
- No station ID will be attached. A cover page and end page as shown on the next page will be automatically attached, instead.

Cover page sample



1. Job number
2. Total number of pages to be transferred
3. Station ID registered in the sender equipment
4. Fax number of the sender equipment
5. Telephone number of the sender equipment
6. Transfer start date
7. Model code
8. Boot ROM information
9. ROM information
10. Serial number

End page sample



1. Job number
2. Total number of pages to be transferred
3. Station ID registered in the sender equipment
4. Fax number of the sender equipment
5. Telephone number of the sender equipment
6. Error codes

Fine Adjustment of Scan Start/End Positions (Function code 54)

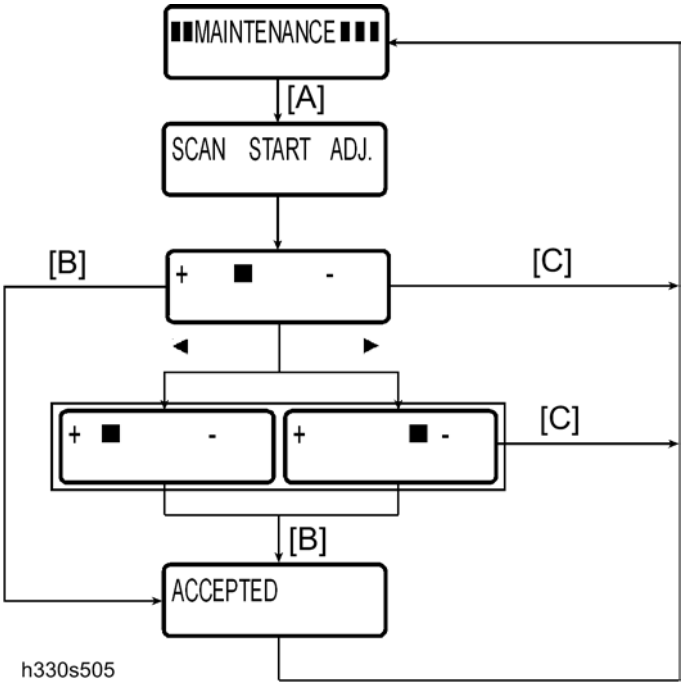
Function

This function is to adjust the scan start/end positions.

Operating Procedure

1. Press the "5" and "4" keys in this order in the initial stage of the maintenance mode.
   The "SCAN START ADJ." will appear on the LCD.

2. Press the "1" or "2" key to display the present compensation level for the start position.
   Compensation levels can be adjusted in 11 steps from -5 to +5 (mm).
3. Press the key to increase compensation levels, and the key to lower them.
   Press the "Stop/Exit" key, and the machine returns to the initial state of the maintenance mode without adjusting compensation levels.
4. Press the "Menu/Set" key.
   The "ACCEPTED" will appear on the LCD. One second later, the machine returns to the initial stage of the maintenance mode.



- [A]: "5" and "4" keys
- [B]: "Menu/Set" key
- [C]: "Stop/Exit" key

Note

- The correlation between the scan start/end positions and compensation levels is shown above.

Acquisition of White Level Data and CIS Scanner Area Setting (Function code 55)

Function

This function allows the machine to obtain white level data for the CIS scanner and save it together with the CIS scanner area into the EEPROM on the main PCB.

Operating Procedure

1. Press the "5" key twice in the initial stage of the maintenance mode.
   The "SCANNER AREA SET" will appear on the LCD.
   The machine automatically obtains white level data.
2. If this operation completes normally, the machine returns to the initial stage of the maintenance mode.
   If any error is noted, the "SCANNER ERROR" appears on the LCD. To return the machine to the initial stage of the maintenance mode, press the "Stop/Exit" key.

Continuous Print Test (Function code 67)

Function

This function allows you to check that a sheet of paper is fed and ejected correctly by printing the grid pattern on a page, whose interval is 1cm.

Operating Procedure

1. Press the "6" and "7" keys in this order in the initial stage of the maintenance mode.
   The "PAPER FEED TEST" will appear on the LCD.
   The test printing is started, and the grid pattern is printed.
2. To return the machine to the initial stage of the maintenance mode, press the "Stop/Exit" key.

Note

- In the case that the front cover is opened, or that there is no paper in the tray during test printing, the test printing is stopped.

EEPROM Customizing (Function code 74)

Function

This function allows you to customize the EEPROM according to language, function settings, and firmware switch settings. The customizing codes list is given in "Customizing Codes" section.

Note

- If you replace the main PCB, be sure to carry out this procedure.

Operating Procedure

1. Press the "7" and "4" keys in this order in the initial stage of the maintenance mode.

The current customizing code appears.

2. Enter the desired customizing code. The newly entered code appears.

Note

- The machine does not work properly when an incorrect code is entered.

3. Press the "Start" key.
   The machine saves the setting and appears the "PARAMETER INIT" on the LCD.
   The machine returns to the initial stage of the maintenance mode.
   If you press the "Stop/Exit" key or no keys are pressed for one minute in the above procedure, the machine stops the procedure and returns to the initial stage of the maintenance mode.

Display of the Equipment's Log Information (Function code 80)

Function

The equipment may display its log information on the LCD.

Operating Procedure

1. Press the "8" and "0" keys in this order in the initial stage of the maintenance mode.
   The USB serial number appears on the LCD.
2. Press the "Start" key. Each time the "Start" key is pressed, one of the following log information items appears on the LCD in the order given below.
   - 1) Jam count, indicating how many times a paper jam has been occurred
   - 2) Page count, indicating how many pages the photosensitive drum has been printed
   - 3) Total page count, indicating how many pages the equipment has been printed since produced
   - 4) Drum count, indicating how many times the photosensitive drum has been rotated
   - 5) Drum change count, indicating how many times drum replacement has been made
   - 6) Toner change count, indicating how many times toner replacement has been made
   - 7) Copy page count, indicating how many copies have been made
   - 8) PC print page count, indicating how many pages the equipment has been printed as an output device of the connected PC
   - 9) FAX page count, indicating how many received FAX pages have been printed
   - 10) Error code of the most recent machine error *1
   - 11) Error code of the most recent communications error *2
   - 12) ADF jam count, indicating how many times a document jam has been occurred
   - 13) ADF page count, indicating how many documents have been fed

Note

- *1 When you press the "Menu/Set" key while the MACHINE ERR error code is displayed, the last error code is displayed. Each time the "Menu/Set" key is pressed, up to the ten error codes are displayed one by one in reverse order.
- *2 When you press the "Menu/Set" key while the COMEER1 error is displayed, the last error, the previous error, and the second previous error are displayed in turn. The indication changes from "COMEER1", "COMEER2", to "COMEER3".

3. To stop this operation and return to the equipment to the initial stage of the maintenance mode, press the "Stop/Exit" key.

USB:	USB Serial No
DRUM:	Drum counter
COVERAGE: *	Average black coverage
TTL_PG:	Total number of pages printed
COPY:	Number of copies made
PC PRINT:	Number of PC prints made
FAX:	Number of FAX outputs made
TR1_PG:	Number of pages picked up from the paper tray
MN_PAGE:	Number of pages picked up from the manual tray
A4+LTR:	Number of A4/Letter size sheets picked up
LG+A4L:	Number of Legal/A4-Long size sheets picked up
B5+EXE:	Number of B5/Executive size sheets picked up
ENVLOP:	Number of envelopes picked up
OTHER:	Number of other-size sheets picked up
TTL_JAM:	Total number of jams
TR1_JAM	Number of jams that occurred at the paper tray
MN_JAM	Number of jams that occurred at the manual tray
IN_JAM	Number of jams that occurred at the feeding
RE_JAM	Number of jams that occurred at the ejecting

DRUM_CH	Number of times the drum has been replaced
DRUM_PG	Number of pages printed by a drum
TNER_CH	Number of times the toner cartridge has been replaced
TNER_PG1	Number of pages printed with the current toner cartridge
TNER_PG2	Number of pages printed with the previous toner cartridge
DEV_BIAS	Current bias voltage
MACHINE ERR_01 to 10	Last machine error code 01 to 10
ADF_JAM	Number of document jams that occurred at the ADF
AD_PG	Number of scanned pages from the ADF
COMERR1 to 3	Last communication error code 1 to 3

* Some margin of error must be taken into consideration because coverage for the printable area of A4-size paper is calculated using video signals.

Machine Error Code Indication (Function code 82)

Function

This function displays an error code of the last error on the LCD.

Operating Procedure

1. Press the "8" and "2" keys in this order in the initial stage of the maintenance mode.
   The LCD shows the "MACHINE ERROR X X."
2. Press the "Stop/Exit" key. Return to the initial stage of the maintenance mode.

Output of Transmission Log to the Telephone Line (Function code 87)

Function

This function outputs the transmission log (that the machine has stored about the latest transmission) to the telephone line. It allows the service personnel to receive the transmission log of the user's machine at a remote location and use it for analyzing problems arising in the user's machine.

Operating Procedure

1. If the user's machine has a transmission-related problem, call the user's machine at a remote location from your machine.
2. If the line is connected, have the user perform the following:
   - 1) Hook up the handset.
   - 2) Press the "Menu/Set", "Start", "Menu/Set", "Start" keys in this order.
   - 3) Press the "8" and "7" keys.

     The above operation makes the user's machine send CNG to your machine for sending the transmission log.
3. If you hear the CNG sent from the user's machine, press the "Start" key of your machine.
   Your machine will start to receive the transmission log from the user's machine.

Cancellation of the Memory Security Mode

Function

This procedure can cancel the memory security mode. Use this procedure if the user forgets his/her password entered when setting the memory security mode so as not to exit from the memory security mode.

Note

- Carrying out this procedure will lose passwords previously entered but retain FAX messages received in the memory security mode.

Operating Procedure

1. When the "SECURE MODE" is displayed on the LCD, press the "Menu/Set" key and "#" key together.
   Within two seconds, start to press the "2", "7", "9", "0" and "0" keys.
   The memory security mode will be canceled and the machine returns to the calendar clock screen.

Firmware Installation

Installing the Update Data to the Machine

If you want to update the current program stored in the flash ROM of the main PCB to the newer version or after you replace the main PCB, install the update program onto the flash ROM.

USB cable connection

Preparation

You need to have the BHL2-Maintenance Printer driver and FILEDG32.exe on hand. Save them in an arbitrary folder in your PC.

Installing the BHL2-Maintenance Printer driver

To identify terminals connected via USB interface, a PC requires the corresponding virtual USB devices to be implemented by driver/software. If you connect any number of machines to your PC, therefore, the same number of virtual USB devices will be automatically configured on your PC.

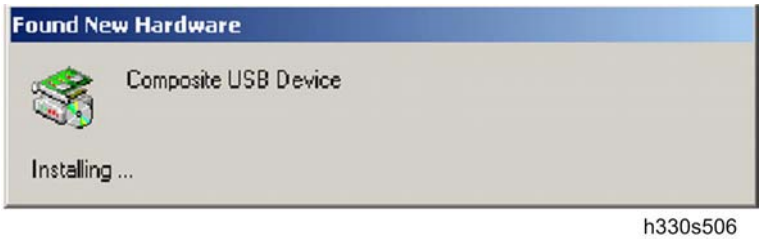
To prevent virtual USB devices from being configured limitlessly, use the unique driver installation procedure described below that enables your PC to identify terminals via a single virtual USB device.

Note

- Once this installation procedure is carried out for a PC, no more driver/software installation will be required for that PC to identify machines. If the BHL2-Maintenance Printer driver has been already installed to your PC according to this procedure, skip this section.
- Before proceeding to the procedure given below, make sure that the BHL2-Maintenance Printer driver is stored in your PC.

1. Make sure that the power cord of the machine is unplugged from the electrical outlet.

   If the machine is connected to a PC, unplug the USB cable.
2. Switch on your PC.
3. Plug the power cord of the machine into an electrical outlet.
4. Enter the "Maintenance Mode".
5. Connect the machine to your PC using the USB cable.



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- The window above appears.

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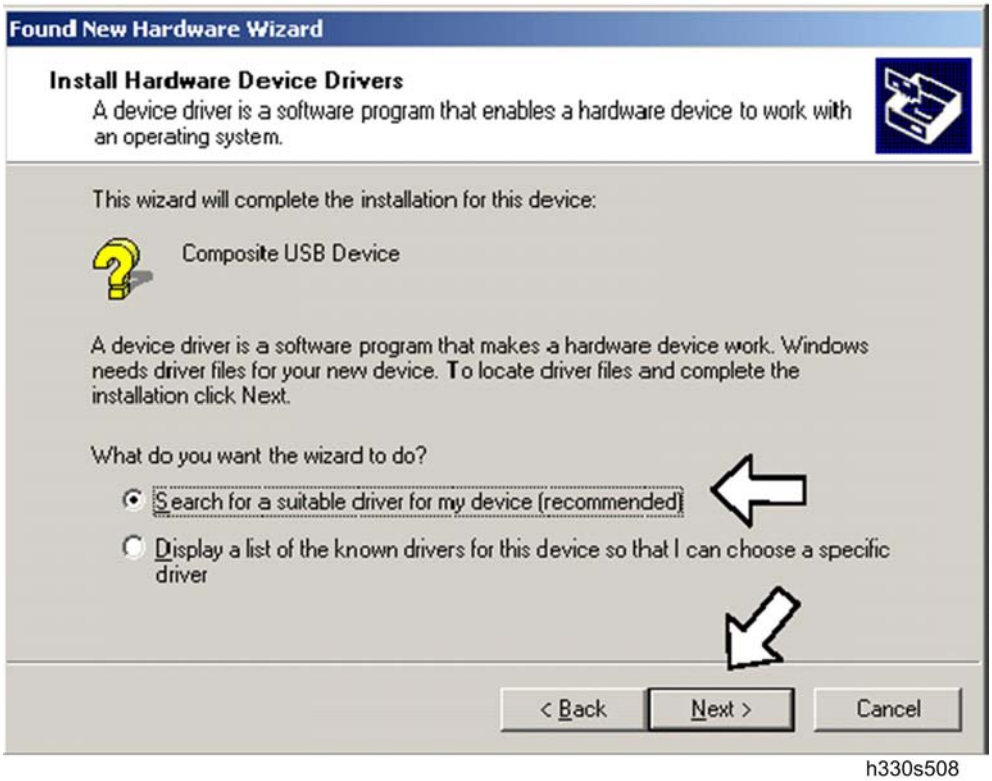
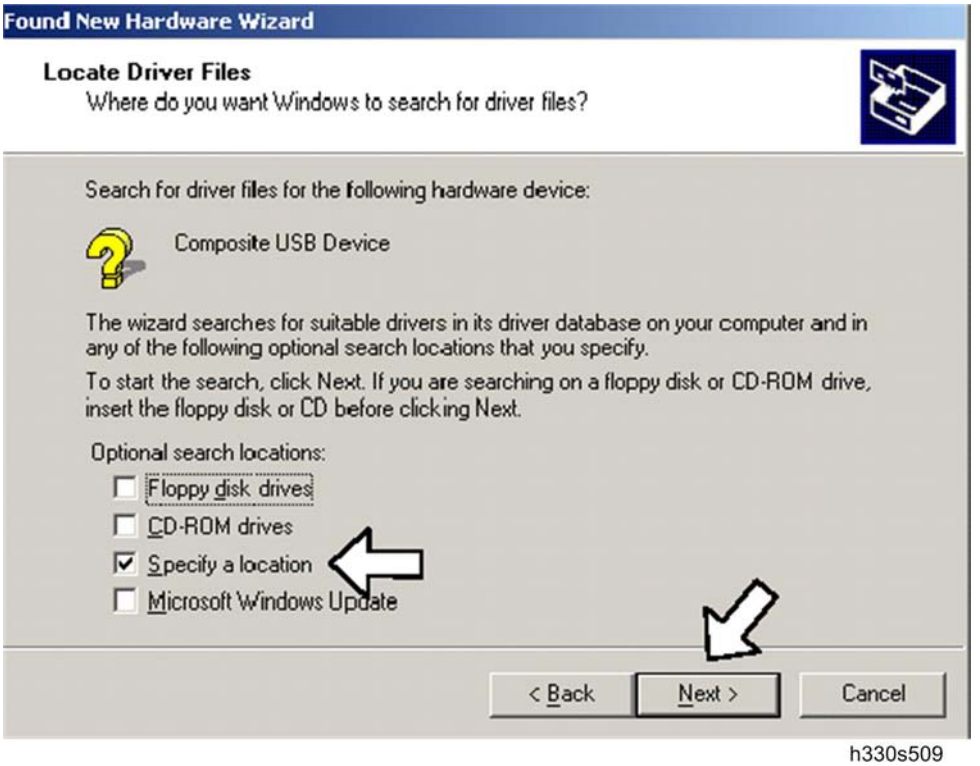
6. The screen above appears, indicating the detection of new hardware device by the system. And then click "Next" to proceed.



7. Select "Search for a suitable driver for my device (recommended)" and click "Next".



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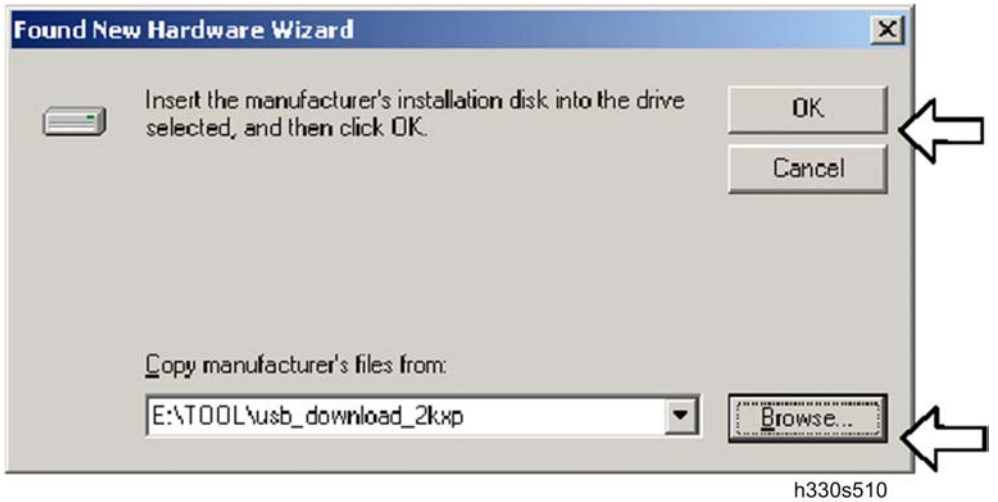
8. Select "Specify a location" and click "Next".



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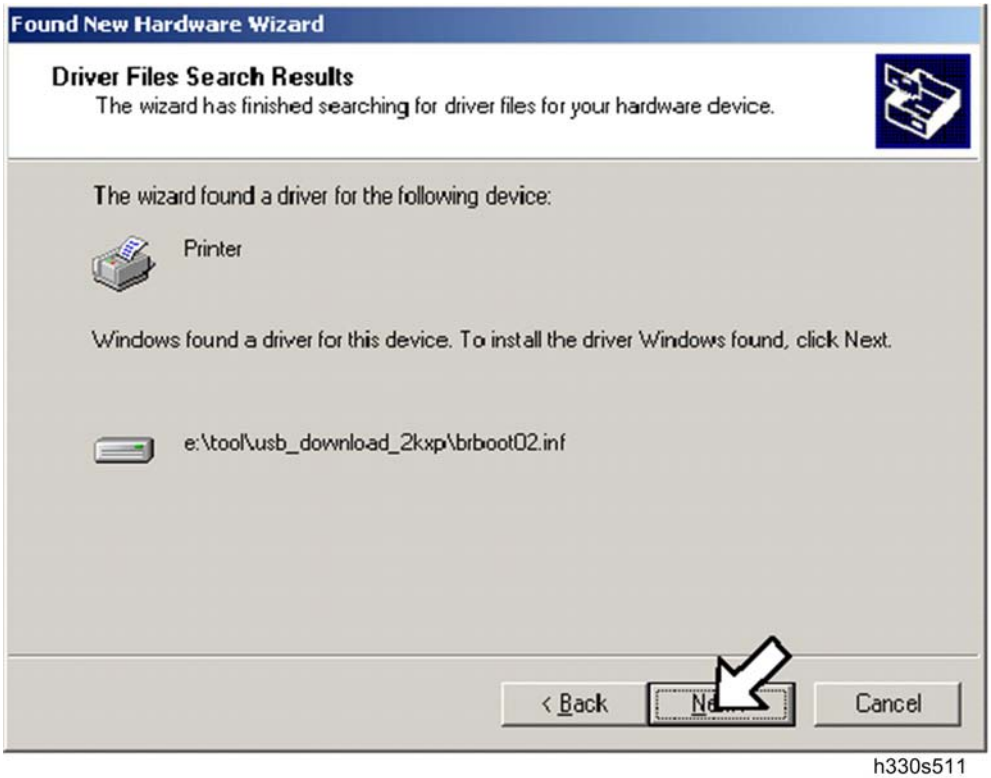
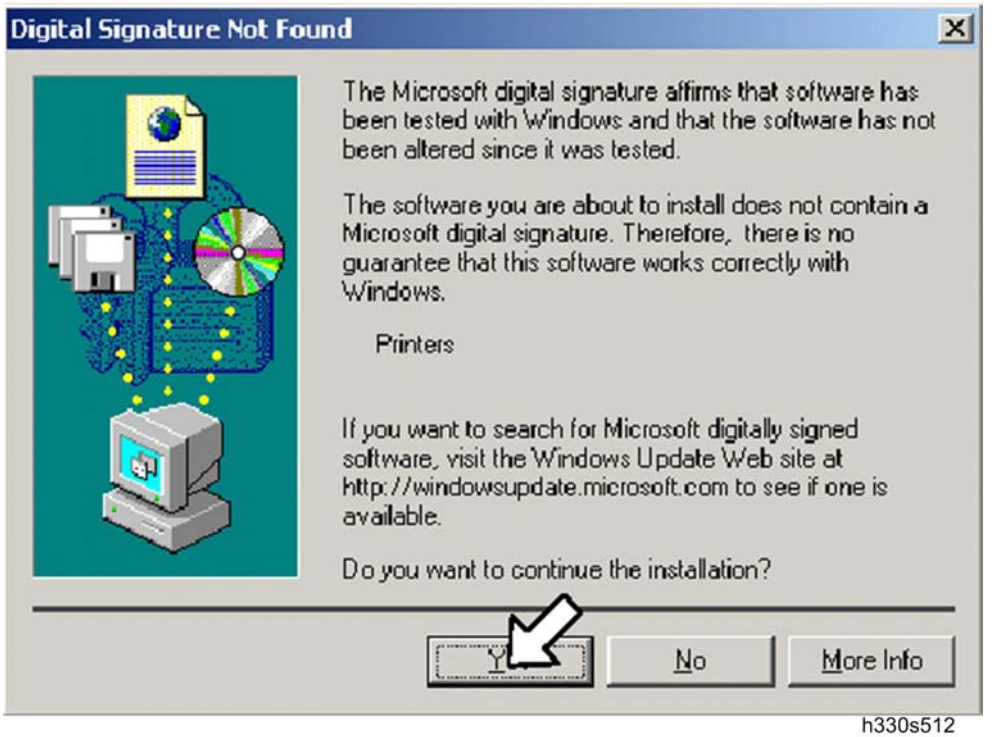
9. Select the folder where the copy of the BHL2-Maintenance Printer driver is located (or click Browse to specify it), then click OK.
   - This sample screen is captured on the Windows 2000 desktop.



10. Click Next.



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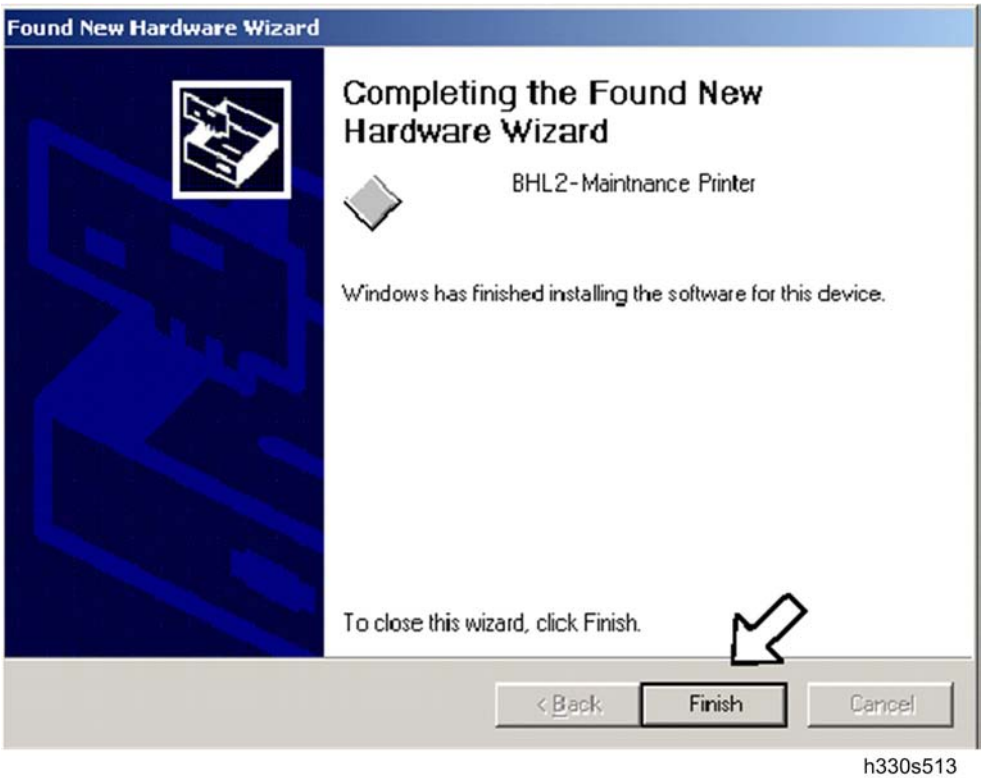
11. To proceed, click Yes.



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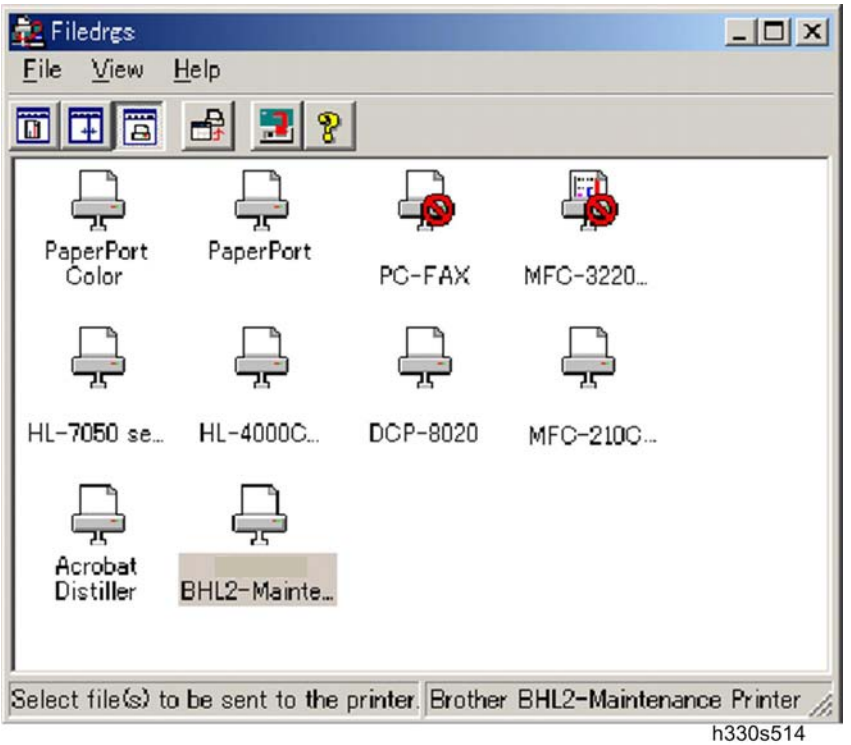
12. If the driver is successfully installed, the following message window appears. Click Finish to return to Windows.



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Note

- After completion of the driver installation, if the machine exits the maintenance mode, the "Found New Hardware Wizard" screen in step (6) appears again. Click Cancel.
- To check that the printer driver is successfully installed, click Start|Settings|Printers to call up the Printers window as shown below and confirm that the BHL2-Maintenance Printer icon is displayed.

Writing the update programs/data onto the flash ROM of the machine

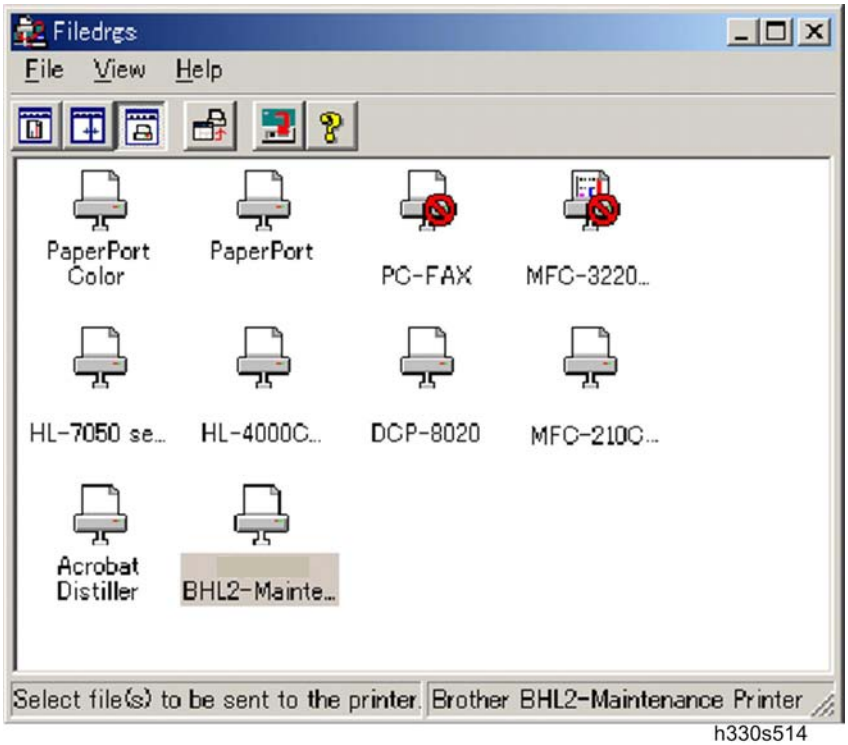
After the installation procedure of the printer driver, proceed to the firmware writing operation.

If the printer driver has been installed so that you start from writing firmware, unplug the power cord from the electrical outlet.

While holding down the "5" key, plug the power cord into an electrical outlet.

Note

- Never unplug the machine's or PC's power cord or the USB cable during writing.



h330s514

1. Run "FILEDG32.exe".
   - The Filedrgs window will appear as shown below.
2. Drag and drop the firmware (e.g., LZ0023_A.upd) onto the BHL2-Maintenance Printer icon in the Filedrgs window shown above.

   Note

   - Use a firmware file after extracting. It is a self-extracting file having the extension .exe. Double-click the exe file to extract it.
   - When writing operation starts, the machine beeps intermittently. After approx. 2 to 5 minutes, the writing operation is complete and the machine automatically reboots and returns to the standby state.
3. Press the "*" and "#" keys at the same time when the machine is on standby. The firmware version appears on the LCD.
4. If downloading finishes abnormally, turn the machine off and on. The machine automatically enters the write mode and emits a large beep. Perform the writing procedure above again.

Setting ID Codes to Machines

This machine is assigned unique ID codes (character strings) at the factory. If you replace the main PCB of the machine, the machine will lose its assigned ID code so that it will not be identified by the connected PC*.

You need to assign a unique ID code (character string) to the machine according to the procedure given here. For models covered by this manual, set serial numbers given to individual machines as ID codes.

(* ID codes are essential when more than one machine is connected to a single PC via USB.)

Please check the printer driver of the machine is installed in a host computer before working. When not installed. Please install a printer driver in a host computer before working.

1. Double-click the brmainte.EXE file (maintenance utility).
2. Select Input Information from Menu. Select the applicable model name.
3. Check the port (USB) which the printer is connected through and click "Serial No." in the lower box. Enter the serial number (the last nine digits) of the printer into the box at the right hand side and click the OK button. The serial number is shown in the window, and check that it is correct. The setting of the serial number is completed.

Customizing Codes

According to Shipping Destination

This appendix provides instructions on how to set up the customizing codes for the various preferences exclusively designed for each destination (e.g. language). Those codes are stored in the memory (EEPROM) mounted on the main PCB. If the main PCB is replaced, therefore, you need to set the proper customizing code with the machine in the maintenance mode.

Note

- Customizing codes customize firmware for individual models, enabling the common firmware to be used for various models. They come with the firmware data.

EEPROM Customizing Codes

This function allows you to customize the EEPROM according to language, function settings, and firmware switch settings.

Operating Procedure

1. Enter the "Maintenance Mode".

   The machine beeps for approx. one second and displays "Maintenance" on the LCD.
2. Press the "7" and "4" keys in this order in the initial stage of the maintenance mode.

   The current customizing code appears.
3. Enter the desired customizing code.

   The newly entered code appears.

   Note

   - If a wrong 4-digit code is entered, the machine will malfunction.
4. Press the "Start" key.

   The machine saves the setting and returns to the initial stage of the maintenance mode. If you press the "Stop/Exit" key or no keys are pressed for one minute in the above procedure, the machine stops the procedure and returns to the initial stage of the maintenance mode.

Firmware Switches (WSW)

WSW Switch List

This appendix describes the functions of the firmware switches, which can be divided into two groups: one (selector number in plain) is for customizing preferences designed for the shipping destination (as described in p.159 "Customizing Codes") and the other (selector number in bold) is for modifying preferences that match the machine to the environmental conditions. Use the latter group if the machine malfunctions due to mismatching.

WSW No.	Function	Refer to:
WSW01	Dial pulse setting	p.162
WSW02	Tone signal setting	p.163
WSW03	PABX mode setting	p.164
WSW04	TRANSFER facility setting	p.165
WSW05	1st dial tone and busy tone detection	p.166
WSW06	"Redial/Pause" key setting and 2nd dial tone detection	p.167
WSW07	Dial tone setting 1	p.170
WSW08	Dial tone setting 2	p.171
WSW09	Protocol definition 1	p.172
WSW10	Protocol definition 2	p.173
WSW11	Busy tone setting	p.174
WSW12	Signal detection condition setting	p.175
WSW13	Modem setting	p.176
WSW14	AUTO ANS facility setting	p.177
WSW15	REDIAL facility setting	p.178
WSW16	Function setting 1	p.179
WSW17	Function setting 2	p.180
WSW18	Function setting 3	p.181

WSW19	Transmission speed setting	p.182
WSW20	Overseas communications mode setting	p.182
WSW21	TAD setting 1	p.184
WSW22	ECM and call waiting caller ID	p.184
WSW23	Communications setting	p.185
WSW24	TAD setting 2	p.186
WSW25	TAD setting 3	p.187
WSW26	Function setting 4	p.187
WSW27	Function setting 5	p.188
WSW28	Function setting 6	p.189
WSW29	Function setting 7	p.190
WSW30	Function setting 8	p.190
WSW31	Function setting 9	p.190
WSW32	Function setting 10	p.191
WSW33	Function setting 11	p.192
WSW34	Function setting 12	p.192
WSW35	Function setting 13	p.193
WSW36	Function setting 14	p.193
WSW37	Function setting 15	p.194

WSW No.	Function	Refer to:
WSW38	V.34 transmission settings	p.195
WSW39	V.34 transmission speed	p.196
WSW40	V.34 modem settings	p.198
WSW41	ON-duration of the scanning light source	p.199
WSW42	Internet mail settings	p.200

WSW43	Function setting 21	p.200
WSW44	Speeding up scanning-1	p.201
WSW45	Speeding up scanning-2	p.201
WSW46	Monitor of power ON/OFF state and parallel port kept at high	p.201
WSW47	Switching between high- and full-speed USB	p.201
WSW48	USB setup latency	p.201
WSW49	End-of-copying beep and print in black	p.201
WSW50	SDAA settings	p.202
WSW51	Function setting 16	p.202

WSW01 (Dial pulse setting)

Selector No.	Function	Setting and Specifications
1 2	Dial pulse generation mode	**No. 1 2** 0 0 : N 0 1 : N+1 1 0 : 10-N 1 1 : N
3 4	Break time length in pulse dialing	**No. 3 4** 0 0 : 60 ms 0 1 : 67 ms 1 0 : 40 ms (for 16 PPS) 1 1 : 64 ms (at 106-ms intervals)
5 6	Inter-digit pause	**No. 5 6** 0 0 : 800 ms 0 1 : 850 ms 1 0 : 950 ms 1 1 : 600 ms

7	Switching between pulse (DP) and tone (PB) dialing, by the function switch	0: Yes 1: No
8	Default dialing mode, pulse (DP) or tone (PB) dialing	0: PB 1: DP

- Selectors 1 and 2: Dial pulse generation mode

  These selectors set the number of pulses to be generated in pulse dialing.

  N: Dialing "N" generates "N" pulses. (Dialing "0" generates 10 pulses.)

  N + 1: Dialing "N" generates "N + 1" pulses.

  10 - N: Dialing "N" generates "10 - N" pulses.
- Selectors 3 and 4: Break time length in pulse dialing

  These selectors set the break time length in pulse dialing.

  (Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)
- Selectors 5 and 6: Inter-digit pause

  These selectors set the inter-digit pause in pulse dialing.

  (Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)
- Selector 7: Switching between pulse (DP) and tone (PB) dialing, by the function switch

  This selector determines whether or not the dialing mode can be switched between the pulse (DP) and tone (PB) dialing by using the function switch.
- Selector 8: Default dialing mode, pulse (DP) or tone (PB) dialing

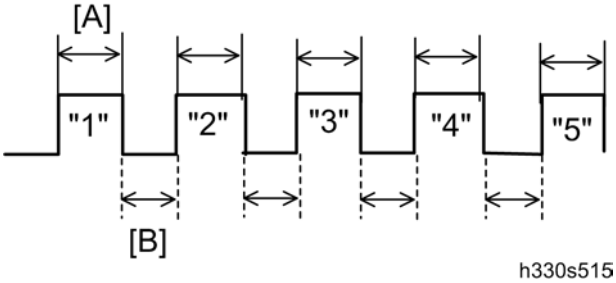
  This selector sets the default dialing mode (pulse dialing or tone dialing) which can be changed by the function switch. If the user switches it with the function switch when selector 7 is set to "0," the setting specified by this selector will also be switched automatically.

WSW02 (Tone signal setting)

Selector No.	Function	Setting and Specifications
1 2	Tone signal transmission time length	**No. 1 2** 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 100 ms

3 4	Min. pause in tone dialing	**No. 3 4** 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 140 ms
5 to 8	Attenuator for pseudo ring backtone to the line (selectable in the range of 0-15 dB, in 1 dB increments)	No 5 = 0 : 0 dB, 1: 8 dB No 6 =0 : 0 dB, 1: 4 dB No 7 =0 : 0 dB, 1: 2 dB No 8 =0 : 0 dB, 1: 1 dB

- Selectors 1 through 4: Tone signal transmission time length and Min. pause in tone dialing



These selectors set the tone signal transmission time length [A] and minimum pause [B] in tone dialing.

(Example: If "1," "2," "3," "4," and "5" are dialed.)

- Selectors 5 through 8: Attenuator for pseudo ring backtone to the line

These selectors are used to adjust the sound volume of a ring backtone in the F/T mode, an on-hold sound, or a beep generated as a signal during remote control operation or at the start of ICM recording.

The larger the value specified by these selectors, the greater the attenuation.

WSW03 (PABX* mode setting)

Selector No.	Function	Setting and Specifications
1	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
2 to 4	Not used.	-

5	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
6 7	Not used.	-
8	Not used.	-

* PABX: Private automatic branch exchange

- Selectors 1 and 5: CNG detection when sharing a modular wall socket with a telephone

  These selectors determine whether or not the machine detects a CNG signal when a line is connected to a telephone sharing a modular wall socket with the machine. Upon detection of CNG signals by the number of cycles specified by these selectors, the machine interprets CNG as an effective signal and then starts FAX reception.

Selector		Cycle
No. 1	No. 5	
0 (A)	0 (A)	0.5 cycle
0 (A)	1 (B)	1.0 cycle
1 (B)	0 (A)	1.5 cycles
1 (B)	1 (B)	2.0 cycles

WSW04 (TRANSFER facility setting)

Selector No.	Function	Setting and Specifications
1 to 6	Not used.	-
7 8	Break time length for flash function	No. 7 8 0 0 : 80 ms 0 1 : 110 ms 1 0 : 250 ms 1 1 : 500 ms

Note

- Selectors 7 and 8 are not applicable in those countries where no transfer facility is supported.

- Selectors 7 and 8: Break time length for flash function

  These selectors set the break time length.

  This setting is effective only when the flash function is selected for the "Search/Speed Dial" key by using the function switch.

WSW05 (1st dial tone and busy tone detection)

Selector No.	Function	Setting and Specifications
1 to 3	1st dial tone detection	**No. 1 2 3** 0 0 0 : 3.5 sec. WAIT 0 0 1 : 7.0 sec. WAIT 0 1 0 : 10.5 sec. WAIT 0 1 1 : 14.0 sec. WAIT 1 0 0 : 17.5 sec. WAIT 1 0 1 : 21.0 sec. WAIT 1 1 0 : 24.5 sec. WAIT 1 1 1 : Detection (Without WAIT)
4	Max. pause time allowable for remote ID code detection	0 : 2 seconds 1: 1 second
5 **6**	Busy tone detection in automatic sending mode	**No. 5 6** 0 0 : No detection 0 1 : Detection only after dialing 1 0 : No detection 1 1 : Detection before and after dialing
7	Busy tone detection in automatic receiving mode	0 : Yes 1: No
8	Not used.	-

Note

- Selectors 5 through 7 are not applicable in those countries where no busy tone detection is supported.
- Selectors 1 through 3: 1st dial tone detection

  These selectors activate or deactivate the 1st dial tone detection function which detects the 1st dial tone issued from the PSTN when a line is connected to the PSTN.

Setting all of these selectors to "1" activates the dial tone detection function so that the machine starts dialing upon detection of a dial tone when a line is connected. (However, in those countries which support no dial tone detection function, e.g., in the U.S.A., setting these selectors to "1" makes the machine start dialing after a WAIT of 3.5 seconds.) For the detecting conditions of the

1st dial tone, refer to WSW07 and WSW08.

Other setting combinations deactivate the dial tone detection function so that the machine starts dialing after the specified WAIT (3.5, 7.0, 10.5, 14.0, 17.5, 21.0, or 24.5 seconds) without detection of a dial tone when a line is connected to the PSTN.

- Selector 4: Max. pause time allowable for remote ID code detection

  This selector sets the maximum pause time allowable for detecting the second digit of a remote ID code after detection of the first digit in remote reception.

  If selector 4 is set to "0" (2 seconds), for instance, only a remote ID code whose second digit is detected within 2 seconds after detection of the first digit will become effective so as to activate the remote function.

- Selectors 5 and 6: Busy tone detection in automatic sending mode

  These selectors determine whether or not the machine automatically disconnects a line upon detection of a busy tone in automatic sending mode.

  Setting selector 6 to "0" ignores a busy tone so that the machine does not disconnect the line.

  Setting selectors 5 and 6 to "0" and "1," respectively, makes the machine detect a busy tone only after dialing and disconnect the line.

  Setting both of selectors 5 and 6 to "1" makes the machine detect a busy tone before and after dialing and then disconnect the line.

- Selector 7: Busy tone detection in automatic receiving mode

  This selector determines whether or not the machine automatically disconnects the line upon detection of a busy tone in automatic receiving mode.

WSW06 (Redial/Pause key setting and 2nd dial tone detection)

Selector No.	Function	Setting and Specifications

1 to 3	"Redial/Pause" key setting and 2nd dial tone detection	**No. 1 2 3** 0 0 0 : No pause 0 0 1 : 3.5 sec. WAIT 0 1 0 : 7 sec. WAIT 0 1 1 : 10.5 sec. WAIT 1 0 0 : 14 sec. WAIT 1 1 0 : 2nd dial tone detection only in pulse dialing (DP) system 1 0 1 : 2nd dial tone detection both in DP and push-button (PB) dialing system 1 1 1 : 2nd dial tone detection both in DP and push-button (PB) dialing system
4 to 6	Detection of international tone	**No. 4 5 6** 0 0 0 : 50 ms 0 0 1 : 210 ms 0 1 0 : 500 ms 0 1 1 : 800 ms 1 0 0 : 900 ms 1 0 1 : 1.5 sec. 1 1 0 : 2.0 sec. 1 1 1 : 2.5 sec.
7	No. of 2nd dial tone detection cycles	0: 1 cycle 1: 2 cycles
8	Allowable instantaneous interrupt during reception of 2nd dial tone	0: 30 ms 1: 50 ms

Note

- Selectors 4 through 8 are not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.
- Selectors 1 through 3: "Redial/Pause" key setting and 2nd dial tone detection

Selector 1	Selector 2	Selector 3	
0	0	1	No WAIT is inserterd even if the "Redial/Pause" key is pressed.

0	1	0	If you press the "Redial/Pause" key during dialing, the machine will insert WAIT as defined in the above table. If the "Redial/Pause" key is pressed repeatedly, the machine inserts the specified WAIT multiplied by the number of depressions. It applies also in hook-up dialing.
0	1	1	
1	0	0	
1	0	1	When these selectors are set to "1, 0, 1": Each time you press the "Redial/Pause" key in dialing, the machine will wait for the 2nd dial tone to be sent via the communications line regardless of pulse dialing or tone dialing.
1	1	0	When these selectors are set to "1, 1, 0": If you press the "Redial/Pause" key in pulse dialing, the machine will first wait for the 2nd dial tone to be sent via the communications line. After that, pressing the "Redial/Pause" key will cause the machine to insert a WAIT of 3.5 seconds. In tone dialing, the machine will insert a WAIT of 3.5 seconds.
1	1	1	If you press the "Redial/Pause" key, the machine will first wait for the 2nd dial tone to be sent via the communications line regardless of pulse dialing or tone dialing. After that, pressing the "Redial/Pause" key will cause the machine to insert a WAIT of 3.5 seconds. (In those countries where no dial tone detection function is supported, setting these selectors to "1, 0, 1," "1, 1, 0," or "1, 1, 1" inserts a WAIT of 3.5 seconds.)

- Selectors 4 through 6: Detection of international tone

  Upon detection of the 2nd dial tone for the time length specified by these selectors, the machine starts dialing.

  This setting is effective only when the 2nd dial tone detection function is activated by selectors 1 through 3 (Setting 101, 110, or 111).

  This function does not apply in those countries where no dial tone detection function is supported.
- Selector 7: No. of 2nd dial tone detection cycles

  This selector sets the number of dial tone detection cycles required for starting dialing.
- Selector 8: Allowable instantaneous interrupt during reception of 2nd dial tone

  This selector sets the allowable instantaneous interrupt period that should be ignored during reception of the 2nd dial tone.

WSW07 (Dial tone setting 1)

Selector No.	Function	Setting and Specifications
1 2	Dial tone frequency band control	No. 1 2 0 0 : Narrows by 10 Hz 0 1 : Initial value 1 X : Widens by 10 Hz
3	Not used.	-
4 to 6	2nd dial tone detection level (Z = 600 Ω)	No. 4 5 6 0 0 0 : -21 dBm 0 0 1 : -24 dBm 0 1 0 : -27 dBm 0 1 1 : -30 dBm 1 0 0 : -33 dBm 1 0 1 : -36 dBm 1 1 0 : -39 dBm 1 1 1 : -42 dBm
7	Allowable instantaneous interrupt during reception of 1st dial tone	0: 30 ms 1: 50 ms
8	Not used.	-

Note

- Selectors 1, 2, 4 through 7 are not applicable in those countries where no dial tone or line current detection is supported, e.g., U.S.A.
- Selectors 1 and 2: Dial tone frequency band control

  These selectors set the frequency band for the 1st dial tone and busy tone (before dialing) to be detected.

  This setting is effective only when selectors 1 through 3 on WSW05 are set to "1,1,1".
- Selectors 4 through 6: 2nd dial tone detection level

  These selectors set the detection level of the 2nd dial tone.
- Selector 7: Allowable instantaneous interrupt during reception of 1st dial tone

  This selector sets the allowable instantaneous interrupt period that should be ignored during reception of the 1st dial tone.

WSW08 (Dial tone setting 2)

Selector No.	Function	Setting and Specifications
1 to 3	1st dial tone detection time length	**No. 1 2 3** 0 0 0 : 50 ms 0 0 1 : 210 ms 0 1 0 : 500 ms 0 1 1 : 800 ms 1 0 0 : 900 ms 1 0 1 : 1.5 sec. 1 1 0 : 2.0 sec. 1 1 1 : 2.5 sec.
4 5	Time-out length for 1st and 2nd dial tone detection	**No. 4 5** 0 0 : 10 sec. 0 1 : 20 sec. 1 0 : 15 sec. 1 1 : 30 sec.
6 to 8	Detection level of 1st dial tone and busy tone before dialing	**No. 6 7 8** 0 0 0 : -21 dBm 0 0 1 : -24 dBm 0 1 0 : -27 dBm 0 1 1 : -30 dBm 1 0 0 : -33 dBm 1 0 1 : -36 dBm 1 1 0 : -39 dBm 1 1 1 : -42 dBm

Note

- The WSW08 is not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.
- Selectors 1 through 3: 1st dial tone detection time length

  Upon detection of the 1st dial tone for the time length set by these selectors, the machine starts dialing.

  This setting is effective only when selectors 1 through 3 on WSW05 are set to "1,1,1".

- Selectors 4 and 5: Time-out length for 1st and 2nd dial tone detection

  These selectors set the time-out length for the 1st and 2nd dial tone detection so that the machine waits dial tone input for the specified time length and disconnects itself from the line when no dial tone is inputted.

WSW09 (Protocol definition 1)

Selector No.	Function	Setting and Specifications
1	Frame length selection	0: 256 octets 1: 64 octets
2	Use of non-standard commands	0: Allowed 1: Prohibited
3 4	No. of retries	No. 3 4 0 0 : 4 times 0 1 : 3 times 1 0 : 2 times 1 1 : 1 time
5	T5 timer	0: 300 sec. 1: 60 sec.
6	T1 timer	0: 35 sec. 1: 40 sec.
7 8	Timeout for response from the called station in automatic sending mode	No. 7 8 0 0 : 55 sec. (in U.S.A. and Canadian models)/ 60 sec. (in other models) 0 1 : 140 sec. 1 0 : 90 sec. 1 1 : 35 sec.

Note

- Selectors 1 through 5 are not applicable in those models which do not support ECM.
- Selector 1: Frame length selection

  Usually a single frame consists of 256 octets (1 octet = 8 bits). For communications lines with higher bit error rate, however, set selector 1 to "1" so that the machine can divide a message into 64-octet frames.

  Remarks: The error correction mode (ECM) is a facsimile transmission manner in which the machine divides a message into frames for transmission so that if any data error occurs on the transmission line, the machine retransmits only those frames containing the error data.

- Selector 2: Use of non-standard commands

  If this selector is set to "0," the machine can use non-standard commands (the machine's native-mode commands, e.g., NSF, NSC, and NSS) for communications. If it is set to "1," the machine will use standard commands only.

- Selectors 3 and 4: No. of retries

  These selectors set the number of retries in each specified modem transmission speed.

- Selector 5: T5 timer

  This selector sets the time length for the T5 timer.

- Selector 6: T1 timer

  This selector sets the time length for the T1 timer.

- Selectors 7 and 8: Timeout for response from the called station in automatic sending mode

  If the machine (calling station) receives no response (no G3 command) from the called terminal in automatic sending mode for the period specified by these selectors, it disconnects the line.

WSW10 (Protocol definition 2)

Selector No.	Function	Setting and Specifications
1	Not used.	-
2	Time length from transmission of the last dial digit to CML ON	0: 100 ms 1: 50 ms
3	Time length from CML ON to CNG transmission	0: 2 sec. 1: 4 sec.
4	Time length from CML ON to CED transmission (except for facsimile-to-telephone switching)	0: 0.5 sec. 1: 2 sec.
5 6	No. of training retries	No. 5 6 0 0 : 1 time 0 1 : 2 times 1 0 : 3 times 1 1 : 4 times
7	Encoding system (Compression): MR	0: Allowed 1: Not allowed
8	Encoding system (Compression): MMR	0: Allowed 1: Not allowed

- Selector 2: Time length from transmission of the last dial digit to CML ON

  This selector sets the time length from when the machine transmits the last dial digit until the CML relay comes on.
- Selector 3: Time length from CML ON to CNG transmission

  This selector sets the time length until the machine transmits a CNG after it turns on the CML relay.
- Selector 4: Time length from CML ON to CED transmission

  This selector sets the time length until the machine transmits a CED after it turns on the CML relay. This setting does not apply to switching between facsimile and telephone.
- Selectors 5 and 6: No. of training retries

  These selectors set the number of training retries to be repeated before automatic fallback.
- Selectors 7 and 8: Encoding system (Compression)

  This selector determines whether or not to allow the use of the MR/MMR coding system.

WSW11 (Busy tone setting)

Selector No.	Function	Setting and Specifications
1 2	Busy tone frequency band control	No. 1 2 0 0 : Narrows by 10 Hz 0 1 : Initial value 1 x : Widens by 10 Hz
3	ON/OFF time length ranges for busy tone (More than one setting allowed)	1: 250-750/250-750 ms
4		1: 400-600/400-600 ms
5		1: 175-440/175-440 ms
6		1: 100-1000 ms/17-660 ms
7		1: 110-410/320-550 ms
8		1: 100-660/100-660 ms

Note

- WSW11 is not applicable in those countries where no busy tone detection is supported.
- The setting of WSW11 is effective only when selectors 5 and 6 on WSW05 are set to "0, 1" or "1, 1" (Busy tone detection).
- Selectors 1 and 2: Busy tone frequency band control

These selectors set the frequency band for busy tone to be detected.

- Selectors 3 through 8: ON/OFF time length ranges for busy tone

  These selectors set the ON and OFF time length ranges for busy tone to be detected. If more than one selector is set to "1," the ranges become wider. For example, if selectors 4 and 5 are set to "1," the ON and OFF time length ranges are from 175 to 600 ms.

WSW12 (Signal detection condition setting)

Selector No.	Function	Setting and Specifications
1 2	Min. detection period required for interpreting incoming calling signal (CI) as OFF	No. 1 2 0 0 : 1500 ms 0 1 : 500 ms 1 0 : 700 ms 1 1 : 900 ms
3 4	Max. detection period for incoming calling signal (CI) being OFF	No. 3 4 0 0 : 6 sec. 0 1 : 7 sec. 1 0 : 9 sec. 1 1 : 11 sec.
5 6	Min. detection period required for acknowledging incoming calling signal (CI) as ON	No. 5 6 0 0 : 800 ms (1000 ms*) 0 1 : 200 ms 1 0 : 250 ms 1 1 : 150 ms
7 and 8	Not used.	-

*1000 ms in Chinese models.

- Selectors 1 through 4: Min. detection period required for interpreting incoming calling signal (CI) as OFF

  Max. detection period for incoming calling signal (CI) being OFF

  If the machine detects the OFF state of a CI signal for the period greater than the value set by selectors 1 and 2 and less than the value set by selectors 3 and 4, it interprets the CI signal as OFF.

- Selectors 5 and 6: Min. detection period required for acknowledging incoming calling signal (CI) as ON

These selectors set the period required to make the machine acknowledge itself to be called. That is, if the machine continuously detects a CI signal with the frequency set by selectors 1 through 4 on WSW14 during the period set by these selectors 5 and 6, then it acknowledges the call.

WSW13 (Modem setting)

Selector No.	Function	Setting and Specifications
1 2	Cable equalizer	No. 1 2 0 0 : 0 km 0 1 : 1.8 km 1 0 : 3.6 km 1 1 : 5.6 km
3 4	Reception level	No. 3 4 0 0 : -43 dBm 0 1 : -47 dBm 1 0 : -49 dBm 1 1 : -51 dBm
5 to 8	Modem attenuator	No.5 = 0: 0 dB 1: 8 dB No.6 =0: 0 dB 1: 4 dB No.7 =0: 0 dB 1: 2 dB No.8 =0: 0 dB 1: 1 dB

The modem should be adjusted according to the user's line conditions.

- Selectors 1 and 2: Cable equalizer

  These selectors are used to improve the pass-band characteristics of analogue signals on a line. (Attenuation in the high-band frequency is greater than in the low-band frequency.)

  Set these selectors according to the distance from the telephone switchboard to the machine.
- Selectors 3 and 4: Reception level

  These selectors set the optimum receive signal level.
- Selectors 5 through 8: Modem attenuator

  These selectors are used to adjust the transmitting level attenuation of the modem when the reception level at the remote station is improper due to line loss. This function applies for G3 protocol signals.

  Setting two or more selectors to "1" produces addition of attenuation assigned to each selector.

If selector 8 on WSW23 is set to "0," this setting is so limited that 10 dB (1 dB in France) or higher setting only is effective. Note that in Japan and China, 9 dB or higher and 2 dB or higher settings only are effective, respectively, regardless of whether selector 8 on WSW23 is set to "0."

WSW14 (AUTO ANS facility setting)

Selector No.	Function	Setting and Specifications
1 2	Frequency band selection (lower limit) for incoming calling signal (CI)	**No. 1 2** 0 0 : 13 Hz 0 1 : 15 Hz 1 0 : 23 Hz 1 1 : 20 Hz
3 4	Frequency band selection (upper limit) for incoming calling signal (CI)	**No. 3 4** 0 0 : 30 Hz 0 1 : 55 Hz 1 0 : 70 Hz 1 1 : 200 Hz

5 to 8	No. of rings in AUTO ANS mode	No. 5 6 7 8 0 0 0 0 : Fixed to once 0 0 0 1 : Fixed to 2 times 0 0 1 0 : Fixed to 3 times 0 0 1 1 : Fixed to 4 times 0 1 0 0 : 1 to 2 times 0 1 0 1 : 1 to 3 times 0 1 1 0 : 1 to 4 times 0 1 1 1 : 1 to 5 times 1 0 0 0 : 2 to 3 times 1 0 0 1 : 2 to 4 times 1 0 1 0 : 2 to 5 times 1 0 1 1 : 2 to 6 times 1 1 0 0 : 1 to 10 times 1 1 0 1 : 2 to 10 times 1 1 1 0 : 3 to 5 times 1 1 1 1 : 4 to 10 times

- Selectors 1 through 4: Frequency band selection for incoming calling signal (CI)

  These selectors are used to select the frequency band of CI for activating the AUTO ANS facility.

  In the French models, if the user sets the PBX to OFF from the control panel, the setting made by selectors 1 and 2 will take no effect and the frequency's lower limit will be fixed to 32 Hz. (Even if the setting made by these selectors does not apply, it will be printed on the configuration list.)

- Selectors 5 through 8: No. of rings in AUTO ANS mode

  These selectors set the number of rings to initiate the AUTO ANS facility.

WSW15 (REDIAL facility setting)

Selector No.	Function	Setting and Specifications

1 2	Redial interval	No. 1 2 0 0 : 5 minutes 0 1 : 1 minute 1 0 : 2 minutes 1 1 : 3 minutes
3 to 6	No. of redialings	No. 3 4 5 6 0 0 0 0 : 16 times 0 0 0 1 : 1 times 0 0 1 0 : 2 times 0 0 1 1 : 3 times ↓ 1 1 1 1 : 15 times
7	Not used.	-
8	CRP option	0: Disable 1: Enable

- Selectors 1 through 6: Redial interval and No. of redialings

  The machine redials by the number of times set by selectors 3 through 6 at intervals set by selectors 1 and 2.

- Selector 8: CRP option

  If a command error occurs in the machine (calling station), the machine usually waits for three seconds and then makes a retry three times. This CRP option is a request command that can be sent from the called station for requesting the calling station to retry the failed command immediately.

WSW16 (Function setting 1)

Selector No.	Function	Setting and Specifications
1	Not used.	-
2	ITU-T (CCITT) superfine recommendation	0: OFF 1: ON
3 to 6	Not used.	-
7	Max. document length limitation	0: 400 cm 1: 90 cm
8	"Stop/Exit" key pressed during reception	0: Not functional 1: Functional

Note

- Selector 7 is applicable to models equipped with ADF units.
- Selector 2: ITU-T (CCITT) superfine recommendation

  If this selector is set to "1," the machine communicates in ITU-T (CCITT) recommended superfine mode (15.4 lines/mm). If it is set to "0," it communicates in native superfine mode.
- Selector 7: Max. document length limitation

  This selector is used to select the maximum length of a document to be sent.
- Selector 8: "Stop" key pressed during reception

  If this selector is set to "1," pressing the "Stop/Exit" key can stop the current receiving operation. The received data will be lost.

WSW17 (Function setting 2)

Selector No.	Function	Setting and Specifications
1 2	Off-hook alarm	No. 1 2 0 0 : No alarm 0 1 : Always valid 1 X : Valid except when 'call reservation' is selected.
3 4	Not used.	-
5	Calendar clock type	0: U.S.A. type 1: European type
6	Not used.	-
7	Non-ring reception	0: OFF 1: ON
8	Not used.	-

- Selectors 1 and 2: Off-hook alarm

  These selectors activate or deactivate the alarm function which sounds an alarm when the communication is completed with the handset being off the hook.
- Selector 5: Calendar clock type

  If this selector is set to "0" (USA), the MM/DD/YY hh:mm format applies; if it is set to "1" (Europe), the DD/MM/YY hh:mm format applies: DD is the day, MM is the month, YY is the last two digits of the year, hh is the hour, and mm is the minute.

- Selector 7: Non-ring reception

  Setting this selector to "1" makes the machine receive calls without ringer sound if the Ring Delay is set to 0.

WSW18 (Function setting 3)

Selector No.	Function	Setting and Specifications
1	Not used.	-
2 3	Detection enabled time for CNG and no tone	No. 2 3 0 0 : 40 sec. 0 1 : 0 sec. (No detection) 1 0 : 5 sec. 1 1 : 80 sec.
4 5	Not used.	-
6	Registration of station ID	0: Permitted 1: Prohibited
7 8	Tone sound monitoring	No. 7 8 0 X : No monitoring 1 0 : Up to phase B at the calling station only 1 1 : All transmission phases both at the calling and called stations

- Selectors 2 and 3: Detection enabled time for CNG and no tone

  After the line is connected via the external telephone or by picking up the handset of the machine, the machine can detect a CNG signal or no tone for the time length specified by these selectors.

  The setting specified by these selectors becomes effective only when selector 8 on WSW20 is set to "1."

- Selector 6: Registration of station ID

  Setting this selector to "0" permits the registration of station ID for Austrian and Czech models.

- Selectors 7 and 8: Tone sound monitoring

  These selectors set monitoring specifications of the tone sound inputted from the line.

WSW19 (Transmission speed setting)

Selector No.	Function	Setting and Specifications
1 to 3	First transmission speed choice for fallback	**No. 1 2 3** **No. 4 5 6** 0 0 0 : 2,400 bps 0 0 1 : 4,800 bps 0 1 0 : 7,200 bps 0 1 1 : 9,600 bps 1 0 0 : 12,000 bps 1 0 1 : 14,400 bps 1 1 0 : 14,400 bps 1 1 1 : 14,400 bps
4 to 6	Last transmission speed choice for fallback	
7	V.34 mode	0: Permitted 1: Prohibited
8	V.17 mode	0: Permitted 1: Prohibited

Note

- Selector 7 takes effect only in models supporting V.34 mode.
- Selectors 1 through 6: First and last choices of transmission speed for fallback

  These selectors are used to set the MODEM speed range. With the first transmission speed choice specified by selectors 1 through 3, the machine attempts to establish the transmission link via the MODEM. If the establishment fails, the machine automatically steps down to the next lowest speed and attempts to establish the transmission link again. The machine repeats this sequence while stepping down the transmission speed to the last choice specified by selectors 4 through 6.

  If the MODEM always falls back to a low transmission speed (e.g., 4,800 bps), set the first transmission speed choice to the lower one (e.g., modify it from 12,000 bps to 7,200 bps) in order to deactivate the high-speed MODEM function and reduce the training time for shorter transmission time.

  Generally, to save the transmission time, set the last transmission speed choice to a higher one.

WSW20 (Overseas communications mode setting)

Selector No.	Function	Setting and Specifications
1	EP* tone prefix	0: OFF 1: ON

2	Overseas communications mode (Reception)	0: 2100 Hz 1: 1100 Hz
3	Overseas communications mode (Transmission)	0: OFF 1: Ignores DIS once.
4 5	Min. time length from reception of CFR to start of transmission of video signals	No. 4 5 0 0 : 100 ms 0 1 : 200 ms 1 0 : 300 ms 1 1 : 400 ms
6 7	At CNG detection, elimination of chattering noise	No. 6 7 0 0 : Yes, at both ON/OFF timings 0 1 : Yes, at OFF timing 1 X : No
8	Limitation on CNG detection	0: OFF 1: ON

* EP: Echo protection

Note

- Selectors 6 and 7 are applicable to models equipped with SDAA circuits.
- Selector 1: EP tone prefix

  Setting this selector to "1" makes the machine transmit a 1700 Hz echo protection (EP) tone immediately preceding training in V.29 modulation system to prevent omission of training signals.

  Prefixing an EP tone is useful when the machine fails to transmit at the V.29 modem speed and always has to fall back to 4800 bps transmission.

  The setting made by this selector takes effect only when the Overseas Mode is set to ON.
- Selectors 2 and 3: Overseas communications mode

  These selectors should be used if the machine malfunctions in overseas communications.

  According to the communications error state, select the signal specifications.

  Setting selector 2 to "1" allows the machine to use 1100 Hz CED signal instead of 2100 Hz in receiving operation. This prevents malfunctions resulting from echoes, since the 1100 Hz signal does not disable the echo suppressor (ES) while the 2100 Hz signal does.

  Setting selector 3 to "1" allows the machine to ignore a DIS signal sent from the called station once in sending operation. This operation suppresses echoes since the first DIS signal immediately follows a 2100 Hz CED (which disables the ES) so that it is likely to be affected by echoes in the disabled ES state. However, such a disabled ES state will be removed soon so that the second and the following

DIS signals are not susceptible to data distortion due to echoes. Note that some models when called may cause error by receiving a self-outputted DIS.

The setting made by selector 3 takes effect only when the Overseas Communications Mode is set to ON. (The setting made by selector 2 is always effective.)

- Selectors 8: Limitation on CNG detection

  If this selector is set to "1," the machine detects a CNG signal according to the condition preset by selectors 2 and 3 on WSW18 after a line is connected. If it is set to "0," the machine detects a CNG signal as long as the line is connected.

WSW21 (TAD setting 1)

Selector No.	Function	Setting and Specifications
1 to 5	Not used.	-
6 7	Not used.	-
8	Erasure of message stored in the memory after the message transfer	0: Yes 1: No

Note

- Selector 8 is applicable to models equipped with TADs.
- Selector 8: Erasure of message stored in the memory after the message transfer

  Setting this selector to "0" will erase the message recorded in the memory after the document retrieval feature transfers the message.

WSW22 (ECM and call waiting caller ID)

Selector No.	Function	Setting and Specifications
1	ECM* in sending	0: ON 1: OFF
2	ECM* in receiving	0: ON 1: OFF
3	Call Waiting Caller ID	0: ON 1: OFF
4 to 8	Not used.	-

* ECM: Error correction mode

Note

- Selector 3 is applicable to the American models only.
- Selector 3: Call Waiting Caller ID

  Setting this selector to "0" allows the user to decide whether or not to interrupt the current call when a new call comes in. If Call Waiting Caller ID service is available in the area and the user subscribes to it, he/she can see information about his/her incoming call on the LCD.

WSW23 (Communications setting)

Selector No.	Function	Setting and Specifications
1	Starting point of training check (TCF)	0: From the head of a series of zeros 1: From any arbitrary point
2 3	Allowable training error rate	No. 2 3 0 0 : 0% 0 1 : 0.5% 1 0 : 1% 1 1 : 2%
4 5	Decoding error rate for transmission of RTN	No. 4 5 0 0 : 16% 0 1 : 14% 1 0 : 10% 1 1 : 8%
6 7	Not used.	-
8	Limitation of attenuation level	0: Yes 1: No

Note

- Selector 8 is not applicable to the French models.
- Selector 1: Starting point of training check (TCF)

  At the training phase of receiving operation, the called station detects for 1.0 second a training check (TCF) command, a series of zeros which is sent from the calling station for 1.5 seconds to verify training and give the first indication of the acceptability of the line.

  This selector sets the starting point from which the called station should start counting those zeros.

If this selector is set to "0," the called station starts counting zeros 100 ms after the head of a series of zeros is detected.

If it is set to "1," the called station starts counting zeros upon detection of 10-ms successive zeros 50 ms after the head of a series of zeros is detected. In this case, if the detection of 10-ms successive zeros is too late, the data counting period will become less than 1.0 second, making the called station judge the line condition unacceptable.

- Selectors 2 and 3: Allowable training error rate

  The called station checks a series of zeros gathered in training (as described in Selector 1) according to the allowable training error rate set by these selectors. If the called station judges the line condition to be accepted, it responds with CFR; if not, it responds with FTT.

- Selectors 4 and 5: Decoding error rate for transmission of RTN

  The machine checks the actual decoding errors and then transmits an RTN according to the decoding error rate (Number of lines containing an error per page ÷ Total number of lines per page) set by these selectors.

- Selector 8: Limitation of attenuation level

  Setting this selector to "0" limits the transmitting level of the modem to 10 dB (1 dB in France).

  This setting has priority over the settings selected by WSW02 (selectors 5 through 8) and WSW13 (selectors 5 through 8).

WSW24 (TAD setting 2)

Selector No.	Function	Setting and Specifications
1 2	Not used.	-
3 **4**	Time length from CML ON to start of pseudo ring backtone transmission	**No. 3 4** 0 0 : 4 sec. 0 1 : 3 sec. 1 0 : 2 sec. 1 1 : 1 sec.
5 to 8	Not used.	-

- Selectors 3 and 4: Time length from CML ON to start of pseudo ring backtone transmission

  These selectors set the length of time from CML-ON up to the start of pseudo ring backtone transmission.

In models with OGM facilities, the settings made by these selectors also apply to the length of time from CML-ON up to the start of OGM transmission.

WSW25 (TAD setting 3)

Selector No.	Function	Setting and Specifications
1 to 4	Not used.	-
5 to 7	Pause between paging number and PIN	No. 5 6 7 0 0 0 : 2 sec. 0 0 1 : 4 sec. 0 1 0 : 6 sec. 0 1 1 : 8 sec. 1 0 0 : 10 sec. 1 0 1 : 12 sec. 1 1 0 : 14 sec. 1 1 1 : 16 sec.
8	Not used.	-

Note

- Selectors 5 through 7 are applicable to the U.S.A. models only.
- Selectors 5 through 7: Pause between paging number and PIN

  These selectors set the pause time between a telephone number being paged and PIN (personal identification number) for the paging feature.

WSW26 (Function setting 4)

Selector No.	Function	Setting and Specifications
1 2	Not used.	-
3	Dialing during document reading into the temporary memory in in-memory message transmission	0: Disable 1: Enable

4 5	No. of CNG cycles to be detected (when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone)	No. 4 5 0 0 : 0.5 (A) 0 1 : 1 (B) 1 0 : 1.5 (C) 1 1 : 2 (D)
6 7	No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode)	No. 6 7 0 0 : 0.5 (A) 0 1 : 1 (B) 1 0 : 1.5 (C) 1 1 : 2 (D)
8	Not used.	-

- Selector 3: Dialing during document reading into the temporary memory in in-memory message transmission

  If this selector is set to "0," the machine waits for document reading into the memory to complete and then starts dialing. This enables the machine to list the total number of pages in the header of the facsimile message.

- Selectors 4 and 5: No. of CNG cycles to be detected (when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone)

  The machine interprets a CNG as an effective signal if it detects the CNG by the number of cycles specified by these selectors when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone.

- Selectors 6 and 7: No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode)

  The machine interprets a CNG as an effective signal if it detects the CNG by the number of cycles specified by these selectors when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode.

WSW27 (Function setting 5)

Selector No.	Function	Setting and Specifications
1	Not used.	-

2	Ringer OFF setting	0: Yes 1: No
3	Not used.	-
4	Detection of distinctive ringing pattern	0: Yes 1: No
5 to 7	Not used.	-
8	Not used.	-

Note

- Selectors 4 and 5 are applicable to the U.S.A. models only.
- Selector 2: Ringer OFF setting

  This selector determines whether or not the ringer can be set to OFF.
- Selectors 4: Detection of distinctive ringing pattern

  If this selector is set to "1," the machine detects only the number of rings; if it is set to "0," the machine detects the number of rings and the ringing time length to compare the detected ringing pattern with the registered distinctive one.

WSW28 (Function setting 6)

Selector No.	Function	Setting and Specifications
1 to 3	Transmission level of DTMF high-band frequency signal	**No. 1 2 3** 0 0 0 : 0 dB 0 0 1 : +1 dB 0 1 0 : +2 dB 0 1 1 : +3 dB 1 0 0 : 0 dB 1 0 1 : -1 dB 1 1 0 : -2 dB 1 1 1 : -3 dB

4 to 6	Transmission level of DTMF low-band frequency signal	**No. 4 5 6** 0 0 0 : 0 dB 0 0 1 : +1 dB 0 1 0 : +2 dB 0 1 1 : +3 dB 1 0 0 : 0 dB 1 0 1 : -1 dB 1 1 0 : -2 dB 1 1 1 : -3 dB
7 8	Not used.	-

- Selectors 1 through 6: Transmission level of DTMF high-/low-band frequency signal

  These selectors are intended for the manufacturer who tests the machine for the Standard. Never access them.

WSW29 (Function setting 7)

Not used.

WSW30 (Function setting 8)

Not used.

WSW31 (Function setting 9)

Selector No.	Function	Setting and Specifications
1	Not used.	-
2	Default reduction rate for failure of automatic reduction during recording	0: 100% 1: 70%
3	Not used.	-
4	Do not disturb this selector.	-

5	Minimum ON and OFF duration of ringer signals effective in distinctive ringing	0: 130 ms 1: 90 ms
6 to 8	Not used.	-

Note

- Selector 5 is applicable only to the U.S.A. models.
- Selector 2: Default reduction rate for failure of automatic reduction during recording

  This selector sets the default reduction rate to be applied if the automatic reduction function fails to record one-page data sent from the calling station in a single page of the current recording paper.

  If it is set to "0," the machine records one-page data at full size (100%) without reduction; if it is set to "1," the machine records it at 70% size.
- Selector 5: Minimum ON and OFF duration of ringer signals effective in distinctive ringing

  The ringer pattern consists of short and long rings, e.g., short-short-long rings. This selector sets the minimum ON and OFF duration of ringer signals that are required for the machine to interpret ringer signals as being ON or OFF. This is to prevent components of a ringer pattern from being misinterpreted due to chattering in distinctive ringing.

  The machine monitors ringer signals at 10-ms intervals. If the signal is ON, the machine counts +1; if it is OFF, it counts -1. If the counter increments up to +5 or +13 when this selector is set to "1" (50 ms) or "0" (130 ms), respectively, the machine interprets the current signal as being ON.

  If the counter returns to zero, the machine interprets the signal as being OFF.

  If the Distinctive Ring is set to OFF, this selector is not effective.

WSW32 (Function setting 10)

Selector No.	Function	Setting and Specifications
1 to 4	Not used.	-
5 6	Default resolution	No. 5 6 0 0 : Standard 0 1 : Fine 1 0 : Super fine 1 1 : Photo

7 8	Default contrast	No. 7 8 0 X : Automatic 1 0 : Super light 1 1 : Super dark

- Selectors 5 and 6: Default resolution

  These selectors set the default resolution which applies when the machine is turned on or completes a transaction.

- Selectors 7 and 8: Default contrast

  These selectors set the default contrast which applies when the machine is turned on or completes a transaction.

WSW33 (Function setting 11)

Selector No.	Function	Setting and Specifications
1 to 3	Not used.	-
4 5	Not used.	-
6	Report output of polled transmission requests	0: Yes 1: No
7 8	Not used.	-

WSW34 (Function setting 12)

Selector No.	Function	Setting and Specifications
1 to 3	Not used.	-
4 5	Not used.	-

6 7	Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation	No. 6 7 0 0 : 3 0 1 : 2 1 0 : 1 1 1 : OFF
8	Not used.	-

- Selectors 6 and 7: Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation

  If the machine receives this specified number of DTMF tone signals during external TAD operation, it will not detect CNG afterwards.

  If these selectors are set to "1, 1," the CNG detection will not be inhibited.

WSW35 (Function setting 13)

Not used.

WSW36 (Function setting 14)

Selector No.	Function	Setting and Specifications
1	Not used.	-
2 3	Not used.	-
4	Not used.	-
5	Escape from phase C	0: Yes 1: No

6 to 8	Extension of incoming calling signal (CI) frequency band specified by selectors 1 through 4 on WSW14	**No. 6 7 8** 0 0 0 : 0 (Ignored) 0 0 1 : 4 (448 Hz) 0 1 0 : 8 (244 Hz) 0 1 1 : 12 (162 Hz) 1 0 0 : 16 (122 Hz) 1 0 1 : 20 (97 Hz) 1 1 0 : 24 (81 Hz) 1 1 1 : 28 (69 Hz)

- Selector 5: Escape from phase C

  This selector determines whether or not the machine will escape from phase C when it detects an RTC (Return to Control) in non-ECM mode or an RCP (Return to Control Partial page) in ECM mode.
- Selectors 6 through 8: Extension of incoming calling signal (CI) frequency band specified by selectors 1 through 4 on WSW14

  At the start of reception, if the machine detects the frequency of a CI signal specified by selectors 1 through 4 on WSW14, it starts the ringer sounding. However, the machine may fail to detect the CI signal normally due to noise superimposed at the time of reception. To prevent it, use selectors 6 through 8 on WSW36.

  If the machine detects higher frequencies than the setting made here, it regards them as noise and interprets the detecting state as being normal, allowing the ringer to keep sounding according to the preset number of ringers (until it starts automatic reception of FAX data in the FAX mode or enters the TAD mode in the TEL mode).

WSW37 (Function setting 15)

Selector No.	Function	Setting and Specifications
1	Printout of the stored image data of an unsent document onto an error report	0: No 1: Yes
2	Erasure of the stored image data of an unsent document at the time of the subsequent inmemory message transmission	0: No 1: Yes
3 to 8	Not used.	-

- Selector 1: Printout of the stored image data of an unsent document onto an error report

  This selector determines whether or not to print out the 1st-page image data of a document onto the error report if the document image data stored in the temporary memory cannot be transmitted normally.

- Selector 2: Erasure of the stored image data of an unsent document at the time of the subsequent in-memory message transmission

  If in-memory message transmission fails repeatedly when selector 1 is set to "1," the temporary memory will be occupied with image data. Setting selector 2 to "1" will automatically erase the stored 1st-page image data of an unsent document at the time of the subsequent in-memory message transmission only when recording paper or toner runs out.

WSW38 (V.34 transmission settings)

Selector No.	Function	Setting and Specifications
1 2	Setting of the equalizer	**No. 1 2** 0 X : Automatic 1 0 : Fixed to 4 points 1 1 : Fixed to 16 points
3	Sending level of guard tone at phase 2	0: Normal - 7 db 1: Normal
4	Stepping down the transmission speed at fallback each	0: 2400 bps 1: 4800 bps
5 **6**	Automatic control of modem's EQM gain for proper transmission speed choice	**No. 5 6** 0 0 : For higher transmission speed than the current setting 0 1 : No change from the current setting 1 0 : For lower transmission speed than the current setting 1 1 : For further lower transmission than the setting made by 1, 0
7	Redialing when a communications error occurs	0: ON 1: OFF
8	Detection of CED for stopping CNG	0: ON 1: OFF

Note

- WSW38 takes effect only when the V.34 mode is permitted (WSW19, selector 7) in models supporting V.34 mode.
- Selectors 1 and 2: Setting of the equalizer

  These selectors set the equalizer's training level to be applied if the machine fails to send training due to weak line connection. If these selectors are set to "0, X," the modem will automatically set the appropriate training level.
- Selector 3: Sending level of guard tone at phase 2

  This selector sets the sending level of guard tone for 1800 Hz to be sent at Phase 2 in the V. 34 mode.
- Selector 4: Stepping down the transmission speed at fallback each

  This selector determines how much the modem steps down the transmission speed at fallback when called by the remote station. If this selector is set to "1," the modem may step down the transmission speed from 33600 bps to 28800 bps by one-time fallback.
- Selectors 5 and 6: Automatic control of modem's EQM gain for proper transmission speed choice

  These selectors determine how the modem controls the EQM (Eye Quality Monitor) gain for proper choice of the transmission speed, which applies if the modem selects higher transmission speed than the possible speed so that it always repeats falling back.
- Selector 8: Detection of CED for stopping CNG

  If this selector is set to "0," the detection time of CED specified by WSW43, selectors 4 and 5 will apply.

WSW39 (V.34 transmission speed)

Selector No.	Function	Setting and Specifications

1 to 4	First transmission speed choice for fallback	**No. 1 2 3 4** **No. 5 6 7 8** 0 0 0 0 : 2400 bps 0 0 0 1 : 4800 bps 0 0 1 0 : 7200 bps 0 0 1 1 : 9600 bps 0 1 0 0 : 12000 bps 0 1 0 1 : 14400 bps 0 1 1 0 : 16800 bps 0 1 1 1 : 19200 bps 1 0 0 0 : 21600 bps 1 0 0 1 : 24000 bps 1 0 1 0 : 26400 bps 1 0 1 1 : 28800 bps 1 1 0 0 : 31200 bps 1 1 0 1 : 33600 bps 1 1 1 0 : 33600 bps 1 1 1 1 : 33600 bps
5 to 8	Last transmission speed choice for fallback	

Note

- WSW39 takes effect only when the V.34 mode is permitted (WSW19, selector 7) in models supporting V.34 mode. For the transmission speed setting in other modes, refer to WSW19.
- Selectors 1 through 8: First and last choices of transmission speed for fallback

  These selectors are used to set the modem speed range. With the first transmission speed choice specified by selectors 1 through 4, the machine attempts to establish the transmission link via the modem. If the establishment fails, the machine automatically steps down to the next highest speed and attempts to establish the transmission link again. The machine repeats this sequence while stepping down the transmission speed to the last choice specified by selectors 5 through 8.

  If the modem always falls back to a low transmission speed (e.g., 24,000 bps), set the first transmission speed choice to the lower one (e.g., modify it from 31,200 bps to 26,400 bps) in order to deactivate the high-speed modem function and reduce the training time for shorter transmission time.

  WSW39 will be limited by selectors 3 through 8 on WSW40.

WSW40 (V.34 modem settings)

Selector No.	Function	Setting and Specifications
1 2	Not used.	-
3 to 8	Masking of symbol rate(s)	0: Not masking 1: Masking No. 3 = 0/1 3429 symbols/sec No. 4 = 0/1 3200 symbols/sec No. 5 = 0/1 3000 symbols/sec No. 6 = 0/1 2800 symbols/sec No. 7 = Not used. No. 8 = 0/1 2400 symbols/sec

Note

- WSW40 takes effect only when the V.34 mode is permitted (WSW19, selector 7) in models supporting V.34 mode.
- Selectors 3 through 8: Masking of symbol rate(s)

  These selectors allow you to limit the transmission speed range in V.34 mode by masking the desired symbol rate(s). Transmission speeds assigned to the symbol rates are listed on the next page. The setting made by these selectors will limit the setting made by selectors 1 through 4 on WSW39.

  If selector 3 is set to "1" to mask the 3429 symbols/second when the first transmission speed choice is 33600 bps (specified by selectors 1 through 4 of WSW39), for example, then the allowable maximum transmission speed will be limited to 31200 bps. If selector 8 is set to "1" to mask the 2400 symbols/second when the first transmission speed choice is 33600 bps, then the allowable maximum transmission speed remains 33600 bps.

  If selector 8 is set to "1" to mask the 2400 symbols/second when the first transmission speed choice is 21600 bps (specified by selectors 1 through 4 on WSW39), then the allowable maximum transmission speed remains 21600 bps but the minimum transmission speed will be limited to 4800 bps.

Symbol rate	Transmission speed (bps)	Symbol rate	Transmission speed (bps)	Symbol rate	Transmission speed (bps)

2400	2400 4800 7200 9600 12000 14400 16800 19200 21600	3000	4800 7200 9600 12000 14400 16800 19200 21600 24000 26400 28800	3429	4800 7200 9600 12000 14400 16800 19200 21600 24000 28800 31200 33600
2800	4800 7200 9600 12000 14400 16800 19200 21600 24000 26400	3200	4800 7200 9600 12000 14400 16800 19200 21600 24000 26400 28800 31200	-	-

WSW41 (ON-duration of the scanning light source)

Selector No.	Function	Setting and Specifications
1 to 4	Not used.	-

5 to 8	Modem attenuator	**No. 5 6 7 8** 0 0 0 0 : -10 dBm 0 0 0 1 : -11 dBm 0 0 1 0 : -12 dBm 0 0 1 1 : -13 dBm 0 1 0 0 : -14 dBm ↓ 1 1 1 1 : -25 dBm

- Selectors 5 through 8: Modem attenuator

  These selectors are used to adjust the transmitting level of the modem when the reception level at the remote station is improper due to line loss. This function applies to super G3 protocol signals.

WSW42 (Internet mail settings)

Not used.

WSW43 (Function setting 21)

Selector No.	Function	Setting and Specifications
1	Not used.	-
2 3	Wait time for PC-Fax reception (Class 2) and FPTS command transmission	**No. 2 3** 0 0 : 50 ms 0 1 : 100 ms 1 0 : 150 ms 1 1 : 0 ms
4 5	Detection time of 2100 Hz CED or ANSam	**No. 4 5** 0 0 : 200 ms 0 1 : 300 ms 1 0 : 400 ms 1 1 : 500 ms
6 to 8	Not used.	-

WSW44 (Speeding up scanning-1)

Not used.

WSW45 (Speeding up scanning-2)

Not used.

WSW46 (Monitor of power ON/OFF state and parallel port kept at high)

Not used.

WSW47 (Switching between high- and full-speed USB)

Selector No.	Function	Setting and Specifications
1 to 7	Not used.	-
8	Switching between high-speed USB and full-speed USB	0: Auto switching between high-speed USB (ver. 2.0) USB (ver. 1.1) and full-speed USB (ver. 1.1) 1: Fixed to full-speed

WSW48 (USB setup latency)

Not used.

WSW49 (End-of-copying beep and print in black)

Selector No.	Function	Setting and Specifications
1 2	Not used.	-
3	End-of-copying beep	0: Yes 1: No

4 5	Command flag detection time	No. 4 5 0 0 : 150 ms 0 1 : 350 ms 1 0 : 550 ms 1 1 : 750 ms
6 to 8	Not used.	-

- Selectors 4 and 5: Command flag detection time

  After receiving a command flag, the machine will wait for the command that should follow for the time length specified by these selectors.

WSW50 (SDAA settings)

Not used.

WSW51 (Function setting 16)

Selector No.	Function	Setting and Specifications
1	Output of communications error report when transmission verification report is disabled	0: Enable 1: Disable
2 to 8	Not used.	-

6. Troubleshooting

Error Indication

To help the user or the service personnel promptly locate the cause of a problem (if any), the facsimile equipment incorporates the self-diagnostic functions which display error messages for equipment errors and communications errors.

For details of the communications errors, see "Error Indication" in the "Appendices".

Troubleshooting Guide

Introduction

This section gives the service personnel some of the troubleshooting procedures to be followed if an error or malfunction occurs with the facsimile equipment. It is impossible to anticipate all of the possible problems which may occur in future and determine the troubleshooting procedures, so this section covers some sample problems. However, those samples will help service personnel pinpoint and repair other defective elements if he/she analyzes and examines them well.

Precautions

Be sure to observe the following to prevent the secondary troubles from happening:

1. Always unplug the AC power cord from the outlet when removing the covers and PCBs, adjusting the mechanisms, or conducting continuity testing with a circuit tester.
2. When disconnecting the connectors, do not pull the lead wires but hold the connector housings.
3. Before handling the PCBs, touch a metal portion of the machine to discharge static electricity charged in your body.
   When repairing the PCBs, handle them with extra care.

After repairing the defective section, be sure to check again if the repaired section works correctly. Also record the troubleshooting procedure so that it would be of use for future trouble occurrence.

Checking Prior to Troubleshooting

Prior to proceeding to the troubleshooting procedures given in Section 9.2.4, make the following initial checks:

Environmental conditions

Check that:

1. The machine is placed on a flat, firm surface.
2. The machine is used in a clean environment at or near normal room temperature (10°C to 35°C) with normal relative humidity (20 to 80%).
3. The machine is not exposed to direct sunlight or harmful gases.

Power requirements

Check that:

1. The power supply specified on the rating plate on the machine is used. The supply voltage stays within the rating ±10%.
2. Each voltage level on AC input lines and DC lines are correct.
3. All cables and harnesses are firmly connected.
4. None of the fuses are blown.

Recording paper

Check that:

1. A recommended type of recording paper is used.
2. The recording paper is not dampened.
3. Drum unit
4. The drum unit (including the toner cartridge) is installed correctly.

Paper Feeding Problems

Even if the paper is printed and ejected without any problems such as paper jams, paper feeding problems below may appear.

Users can clear these problems by following the "User Check" items for each problem. Even if the same problem occurs again, follow the procedures in the table below.

F-1 Double feeding

User Check

Check the paper used meets the recommended paper specifications. (☛ "Paper Specifications" in "Appendices")

Possible cause and Remedy

1. Separation pad
    - Is the surface of the separation pad worn out?

      Yes: Replace the separation pad.

F-2 Wrinkles or creases

User Check

1. Check that paper is loaded into the paper tray correctly.
2. Check the paper used meets the recommended paper specifications. (☛ "Paper Specifications" in "Appendices")
3. Try printing using the straight-through output path.
4. Turn over the stack of paper in the tray or try rotating the paper 180° in the tray.

Possible cause and Remedy

1. Paper
   - Is the problem solved if new paper is used?

     Yes: Instruct the user how to store paper so that it does not absorb moisture.
2. Fixing unit entrance guide
   - Is the entrance guide dirty?

     Yes: Clean the entrance guide.
3. Fixing unit
   - Is the pressure roller dirty?

     Yes: Clean the pressure roller.

     No: Replace the fixing unit.

F-3 Waves in the paper / folds in the paper at the eject roller

Possible cause and Remedy

1. Paper
   - Is the problem solved if new paper is used?

     Yes: Instruct the user how to store paper so that it does not absorb moisture.
2. Eject roller
   - Is the eject roller dirty? (Dust and dirt)

     Yes: Clean the eject roller.

F-4 Page skew

User Check

1. Check that the paper or other media is loaded into the paper tray correctly and that the paper guides are not too tight or too loose against the paper stack.
2. If using the manual feed slot, check how to load paper into the manual feed slot correctly.
3. The paper tray may be too full. Load paper below ▼ mark in depth.

4. Check the paper used meets the recommended paper specifications. (☛ "Paper Specifications" in "Appendices")

F-5 Curl or Wave

User Check

1. Check the paper used meets the recommended paper specifications. Both high temperature and humidity will cause paper to curl.
2. If the printer is used infrequently, the paper may have sat for too long in the paper tray. Turn over the stack of paper in the paper tray. Also, try rotating the paper 180° in the paper tray.
3. Check that the paper used meets the Media Type setting in the driver.

Note

- For no paper supplied as the cause of a malfunction, see M-4 "No paper supplied' in "Malfunctions" in this Chapter.

F-6 Paper pickup

Possible cause and Remedy

1. Disconnection of the pickup solenoid harness
   - Is the harness of the pickup solenoid disconnected?

     Yes: Reconnect the harness.
2. Pickup solenoid harness failure
   - Does the harness of the pickup solenoid work correctly?

     No: Replace the harness of the pickup solenoid.
3. Pressure plate gear damage
   - Is the pressure plate gear damaged?

     Yes: Replace the pressure plate gear.
4. Clutch gear damage
   - Is the clutch gear damaged?

     Yes: Replace the gear unit.

Software Setting Problems

The printer may not print the data correctly if there are incorrect software settings.

S-1: "There was an error writing to LPT1: (or BRUSB) for the printer" error message appears.

User Check

1. Check that the printer cable is not damaged or broken. Check also that the cable is connected to the correct interface connectors of both the printer and PC.
2. Check that the correct printer is selected if you have an interface switching device.
3. Check that the appropriate printer driver is selected as "Set as Default". Check also that the correct print port is set for the selected printer driver.
4. Check that the printer is not connected to the same port which is also connected to a mass storage device or scanner. Remove all other devices and connect the port to the printer only. Turn off the printer status monitor in the device options tab in the printer driver.
5. If the print port is set as an ECP port, change it to a normal port.
6. Try printing the test page.
7. Try resetting the factory settings.

Possible cause and Remedy

1. Failure inside the printer
    - Is it possible to print the test page?

      No: Identify the error type, then refer to the specified section of this chapter.
2. Main PCB failure
    - Is it possible to print with another PC and printer cable?

      No: Replace the main PCB.

      Yes: This problem may appear under the specified system environment. Check the environment which the user used.

S-2: Although the USB driver is installed, it is unable to find the BRUSB: port. (Windows98/Me only)

User Check

1. Re-install the USB driver by following the steps below;
    - 1) Turn the printer off.
    - 2) Double-click the file "Deins USB.exe" in the USB directory of the CD-ROM.
    - 3) Re-boot the PC.
    - 4) Turn the printer on.
    - 5) "Add New Hardware Wizard" is launched again, follow the instructions in the Wizard tore-install the driver.
2. Try to connect the printer directly to the computer if it is connected through a USB hub.

Possible cause and Remedy

1. Computer Operating System
   - Windows 95 or Windows NT4.0?

     Yes: The operating system does not support USB.
2. Computer settings
   - Does "Universal Serial Bus Controllers" appear in the Device Manager tab of "System Properties" in Control Panel?

     No: This problem can be caused by your computer settings. See the computer manual.
3. USB cable/printer damage
   - Does "Add New Hardware Wizard" appear on the screen or Does test print complete?

     No: The USB cable is damaged. Replace the cable. If the same problem appears, the printer will be damaged.

Malfunction

When taking countermeasures for malfunctions as described in this section, check connectors for contact failure before measuring the voltage at the specified connector pins.

M-1 No AC power supplied

Possible cause and Remedy

1. Supply voltage
   - Is the correct voltage present at the outlet?

     No: Inform the user that the correct voltage is not supplied at the outlet.
2. Power plug
   - Is the power cord securely plugged into the outlet?

     No: Plug the power cord securely into the outlet.
3. Fuse (F1, F2)
   - Is the fuse blown?

     Yes: If the fuse blows again immediately after replacing the low-voltage power supply PCB, check that there is not a short circuit somewhere in the AC power supply line.
4. Wiring Unplug the power supply plug.
   - Is there a broken wire between the AC input connector of the lowvoltage power supply and the power plug?

     Yes: Replace the AC power cord.

M-2 No DC power supplied

Possible cause and Remedy

1. AC power supply
   - Is AC power supplied between connectors CN1-L and CN1-N when the power plug is plugged into the outlet?

     No: Follow the same check procedure of M-1 "No AC power supplied".
2. Wiring, DC load
   - Turn on the power switch. Measure the voltages between the terminals. Do the measured voltage satisfy the prescribed valued in the table below?

     Yes: Turn off the power switch, reconnect the connector and turn the power switch on again. If the protector circuit is activated, check the connector, the wiring from the connector, and the DC load.
3. Low-voltage power supply PCB
   - Refer to the chart * 1 below.

     No: Replace the low-voltage power supply PCB.

***1 Chart**

PCB	+ lead pin	- lead pin	Voltage
Main	CN12-6	CN12-9	Approx. 24V
	CN12-8	CN12-9	Approx. 5V

⚠WARNING

- If you analyze malfunctions with the power plug inserted into the power outlet, special caution should be exercised even if the power switch is OFF because it is a single pole switch.

M-3 Main motor failure

Possible cause and Remedy

1. Failure of connector
   - Is the connection of connector CN9 on the main PCB correct?

     No: Reconnect the connector.
2. Main motor
   - Is the problem solved by replacing the main motor?

     Yes: Replace the main motor.
3. Main PCB

- Is the problem solved by replacing the main PCB?

  Yes: Replace the main PCB.

M-4 No paper supplied

Possible cause and Remedy

1. Separation pad/ pickup roller failure
   - Is the surface of the separation pad or the pickup roller dirty or worn out?

     Yes: 1) Clean the surface of the separation pad or pickup roller. 2) Replace the separation pad or pickup roller.
2. Failure of connector
   - Is the contact of the solenoid connector on the high voltage PCB good?

     No: Reconnect the connector.
3. HVPS circuit/ Paper pickup clutch solenoid
   - Set paper in the manual feed slot and make a test print. Does the voltage between pins 2 (SOLENOID) and 1 (24V) of the CN16 connector on the main PCB change from approx. 24V DC to 0V within the specified time?

     Yes: Replace the HVPS.

     No: Replace the paper pickup clutch solenoid.
4. Main PCB
   - Is the problem solved by replacing the main PCB?

     Yes: Replace the main PCB.

M-5 Insufficient output from high-voltage power supply unit

Possible cause and Remedy

1. High-voltage contact
   - Do any of the terminals on the high-voltage contacts have dirt or contact burns?

     Yes: Clean the terminals.
2. High-voltage power supply PCB
   - Check the connections of the connector between the high-voltage power supply and the main PCB are secured correctly?

     Yes: Replace the high-voltage power supply PCB.

     No: Reconnect the connector between the high-voltage power supply and the main PCB.

M-6 Fixing heater temperature failure

Possible cause and Remedy

1. Poor thermistor harness contact
   - Is the contact of connector CN19 on the main PCB good?

     No: Reconnect the connector.
2. Blown thermal fuse
   - Remove the fixing unit and measure the resistance of the thermal fuse. Is it open circuit?

     Yes: Replace the fixing unit.
3. Blown thermostat
   - Remove the fixing unit and measure the resistance of the thermostat. Is it open circuit?

     Yes: Replace the fixing unit.
4. Halogen heater lamp failure
   - Remove the fixing unit and measure the resistance of the halogen heater lamp. Is it open circuit?

     Yes: Replace the halogen heater lamp.

M-7 Laser Unit failure

Possible cause and Remedy

1. Harness connection failure (1)
   - Is connector CN6 on the main PCB secured correctly?

     No: Reconnect the connector securely.

     Yes: Replace the laser unit.
2. Harness connection failure (2)
   - Is the connection of the scanner motor connector CN6 on the main PCB secure?

     No: Reconnect the connector securely.

     Yes: Replace the laser unit.

M-8 Fixing unit failure

Possible cause and Remedy

1. Poor thermistor harness contact
   - Is the contact of connector CN19 on the main PCB good?

     No: Reconnect the connector.
2. Blown thermal fuse

- Remove the fixing unit and measure the resistance between the thermostat. Is it open circuit?

  Yes: Replace the fixing unit.

3. Thermistor assembling failure
   - Is the thermistor installed properly?

     Yes: Replace the fixing unit.

     No: Reinstall the thermistor properly.
4. Halogen heater lamp failure
   - Remove the fixing unit and measure the resistance of the halogen heater lamp. Is it open circuit?

     Yes: Replace the halogen heater lamp.
5. Heater harness connection failure
   - Is the heater harness connector connected to the low-voltage power supply PCB and fixing unit secure?

     No: Reconnect the connectors securely.

Note

- This problem will be cleared if leaving the printer power ON for ten minutes.

M-9 Main PCB failure

Possible cause and Remedy

1. Main PCB
   - Is it possible to print the test page with the method?

     No: Replace the main PCB.
2. Software bug
   - Does this problem appear when printing specific data or printing under a specific environment?

     Yes: Inform the Brother office of the used specific data, printer condition and system environment.

M-10 Pickup function of paper tray does not work.

Possible cause and Remedy

1. Link lever does not move smoothly.
   - Does the link lever work? Isn't the link lever bent?

     No: Remove the cause of nonsmooth operation of the link lever. Replace the link lever.
2. Pickup roller holder ASSY does not move smoothly.
   - Does the pickup roller holder ASSY move up and down?

     No: Replace the pickup roller holder ASSY.

3. Main motor failure
    - Does the main motor work?

      No: Replace the main motor.
4. Pressure plate drive cam failure
    - Does the pressure plate drive cam rotate?

      No: Replace the main frame L ASSY.

M-11 The new toner is not sensed.

Possible cause and Remedy

1. The toner cartridge is not set to the main body correctly
    - The toner cartridge is not inserted completely.

      Yes: Reset the cartridge.
2. New toner detection switch failure
    - Isn't the toner sensed even if the switch is held?

      Yes: Replace the switch.
3. Main PCB failure
    - Is the problem solved by replacing the main PCB?

      Yes: Replace the main PCB.

M-12 Maximum speed is slow.

Possible cause and Remedy

1. Two or more sheets of the paper in the tray are pulled to feed.
    - Does paper double feeding occur?

      Yes: Replace the separation pad.
2. Foreign body attached to the tail edge actuator
    - Is a foreign body caught on the tail edge actuator?

      Yes: Remove a foreign body.
3. Tail edge actuator failure
    - Is the tail edge actuator deformed?

      Yes: Replace the tail edge actuator.
4. Tail edge sensor malfunction
    - Is the tail edge sensor turned ON?

      Yes: Replace the tail edge sensor.

M-13 Error indication when turning the power ON

Possible cause and Remedy

1. Disconnection of the main motor harness
    - Is the harness of the main motor connected?

      No: Reconnect the harness securely.
2. Disconnection of the scanner motor harness
    - Is the harness of the scanner motor connected?

      No: Reconnect the harness securely.
3. Fixing unit failure
    - Does the printer resume after opening the cover, turning the power ON and leaving the printer for ten minutes?

      No: Replace the thermistor.

M-14 The machine stops while idling.

Possible cause and Remedy

1. Front cover failure
    - Is the cover opened by vibration during idling?

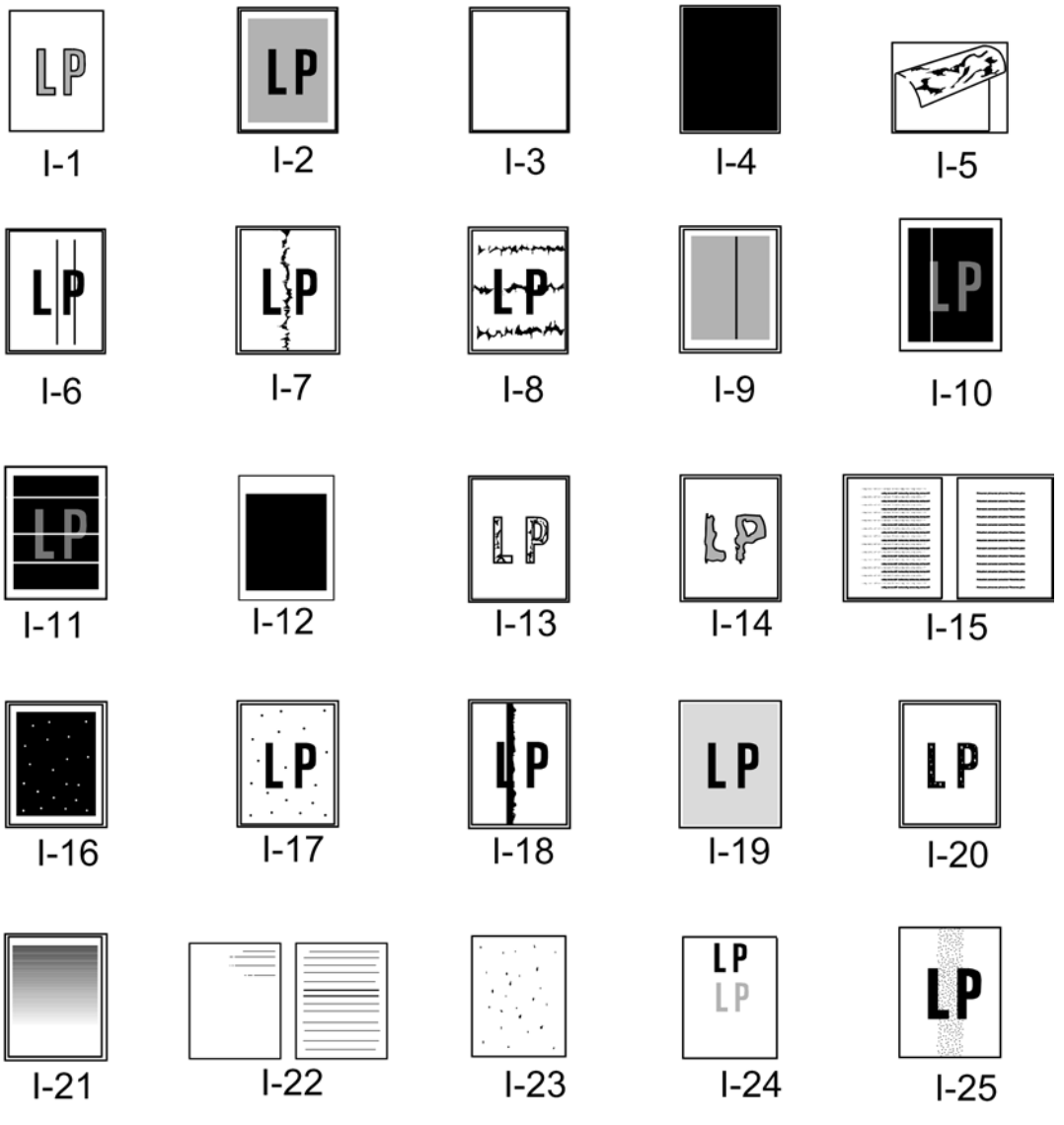
      Yes: Replace the front cover.
2. New toner detection switch failure
    - Does the new toner detection switch work correctly?

      No: Replace the new toner detection switch.
3. Drum unit terminal failure
    - Are the terminals of the drum unit dirty?

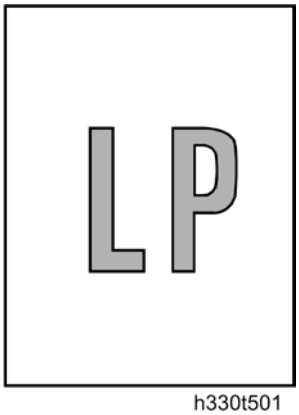
      Yes: Clean the terminals.
4. Laser unit failure
    - Does the laser unit work correctly?

      No: Replace the laser unit.

Image Defects



I-1 Light



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User Check

1. Check the printer's environment. Conditions such as humidity, high temperatures, etc. may cause this situation to occur.
2. If the whole page is light, toner save mode may be on. Disable toner save mode within Printer Properties tab of the driver.
3. Try installing a new toner cartridge or drum unit.

Possible cause and Remedy

1. Toner sensor failure (printer side)
   - Can printing be started with the drum unit and toner cartridge removed?

     Yes: Check if the toner sensor is dirty and check the toner sensor connection.
2. Toner sensor failure (toner cartridge side)
   - Is the problem solved when 4 or 5 pages are printed after the toner cartridge is replaced with a full one?

     Yes: The wiper of the toner cartridge is defective. Replace the toner cartridge.
3. Drum connection failure
   - Are all the contacts between the drum unit and printer body connected correctly?

     No: Clean contact electrodes both on the drum unit and in the printer body. (☛ (1), (4), (5), (6) in p.240 "Location of Grounding Contacts")
4. HVPS / Main PCB failure
   - Is the harness connection between the HVPS and the main PCB correct?

     Yes: Replace the HVPS or the main PCB.
5. Dirt on the scanner window
   - Is there any dirt on the scanner window?

Yes: Wipe it off with a soft clean paper.

6. Laser unit failure
   - Is the problem solved after replacing the laser unit?

     Yes: Replace the laser unit.

I-2 Dark

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User Check

1. Check the paper used meets the recommended paper specifications.
2. Check the printer's environment. High temperature and high humidity conditions can increase the amount of background shading.
3. Clean the corona wire with the wire cleaner.
4. Try installing a new toner cartridge or drum unit.

Possible cause and Remedy

1. Corona failure (contact failure)
   - Are the charge electrodes between the printer body and the drum unit dirty?

     Yes: Clean both electrodes. (☛ (3) in p.240 "Location of Grounding Contacts")
2. Drum unit failure
   - Is the problem solved after replacing the drum unit?

     Yes: Replace the drum unit with a new one.
3. Toner cartridge failure
   - Is the problem solved after replacing the toner cartridge?

     Yes: Replace the toner cartridge with a new one.
4. High-voltage power supply PCB failure

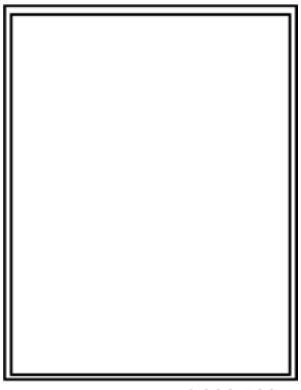
- Is the connections of the connector between the high-voltage power supply PCB and the main PCB secured correctly?

  Yes: Replace the highvoltage power supply PCB.

5. Main PCB failure
   - Are there any disconnected connectors?

     No: Replace the main PCB.

I-3 Completely blank



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Possible cause and Remedy

1. Developing bias contact failure
   - Are the developing bias contacts between the printer body and drum unit dirty?

     Yes: Clean the electrodes at both sides. (☛ (4) in p.240 "Location of Grounding Contacts")
2. Drum unit
   - Are the drum shaft and drum electrode of the printer body connected correctly?

     Yes: Clean the shaft and the electrode. (☛ (1) in p.240 "Location of Grounding Contacts")

     No: Check the connection between the shaft and the electrode. (☛ (1) in p.240 "Location of Grounding Contacts")
3. Drum unit failure
   - Is the problem solved after replacing the drum unit?

     Yes: Replace the drum unit.
4. Toner cartridge failure
   - Is the problem solved after replacing the toner cartridge?

     Yes: Replace the toner cartridge with a new one.
5. LD harness connection failure

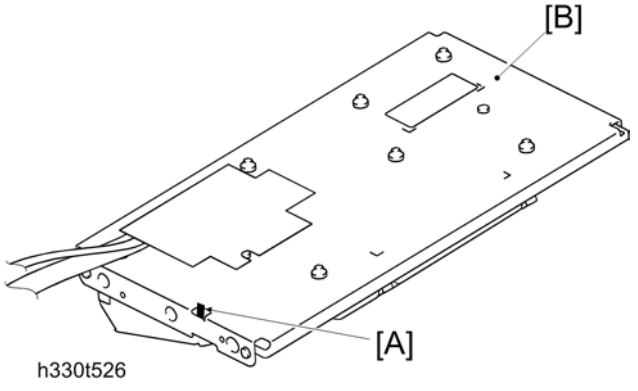
- Is the LD harness connected securely? (Check if there is any play in the connection.)

  No: Reconnect the connector correctly.

6. Main PCB failure
   - Are printing signals being input to the laser unit? Is the problem solved after replacing the main PCB?

     Yes: Replace the main PCB.

7. Laser unit failure



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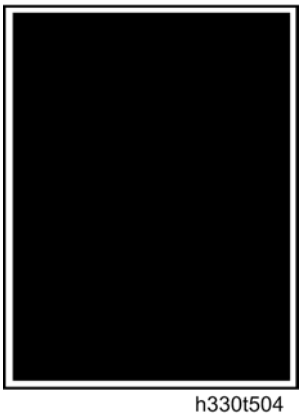
- Is the scanner interlock lever [A] damaged? Is the scanner mirror broken or loose?

  Yes: Replace the laser unit [B].

  No: Replace the highvoltage power supply PCB.

I-4 All black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User Check

1. Clean the corona wire of the drum unit.
2. The drum unit may be damaged. Install a new drum unit.

Possible cause and Remedy

1. Corona failure
    - Is the corona wire dirty?

      Yes: Clean the corona wire with the wire cleaner. (☛ (2) in p.240 "Location of Grounding Contacts")
    - Is the corona wire broken?

      Yes: Replace the drum unit.
    - Are the charge electrodes between the printer body and the drum unit dirty?

      Yes: Clean both electrodes. (☛ (3) in p.240 "Location of Grounding Contacts")
2. Harness connection
    - Is the laser unit connected to the main PCB correctly?

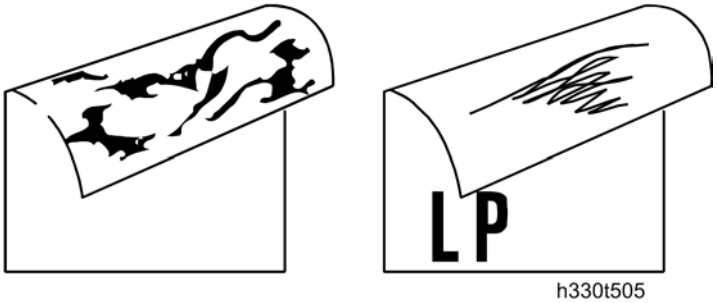
      No: Connect the harness between the laser unit and the main PCB correctly.
3. High-voltage power supply PCB failure
    - Is the problem solved after replacing the high-voltage power supply PCB?

      Yes: Replace the highvoltage power supply PCB.
4. Main PCB failure
    - Is the problem solved after replacing the main PCB?

      Yes: Replace the main PCB.
5. Laser unit failure
    - Is the problem solved after replacing the laser unit?

      Yes: Replace the laser unit.

I-5 Dirt on the back of paper



Possible cause and Remedy

1. Fixing unit dirty
    - Is the pressure roller dirty? Is any other area in the printer dirty?

Yes: Clean the pressure roller referring to the following procedure.

2. Dirt in the drum unit
   - Is the transfer roller dirty? Is the problem solved after replacing the drum unit?

     Yes: Replace the drum unit

     No: Replace the high-voltage power supply PCB.

     Note

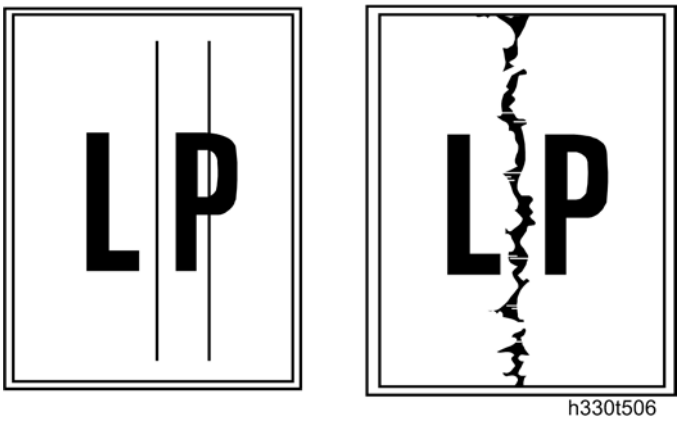
     - This problem may disappear after printing approximately 10 pages of completely blank sheets.

How to clean the pressure roller

Clean the pressure roller as follows;

1. Set 5 or more sheets of paper in the paper tray.
2. Press the "Menu/Set", "Start", ▲, ▲, ▲, ▲ keys in this order so that the machine goes into the maintenance mode.
3. Press the "6" and "7" keys. The machine starts to print the grid pattern continuously.
4. When five pages are printed, press the "Stop" key. The machine returns to the initial stage of the maintenance mode.
5. Press the "9" key twice so that the machine returns to the ready status.

I-6 Black and blurred vertical streaks



User Check

1. Clean the corona wire in the drum unit.
2. Check that the wire cleaner is at the home position.
3. Check that the toner cartridge is not empty.
4. The drum unit may be damaged. Install a new drum unit.

5. The toner cartridge may be damaged. Install a new toner cartridge.

Possible cause and Remedy

1. Corona failure
   - Is the vertical block streak about 10mm wide? (Check if the wire cleaner is at its home position.)

     Yes: Return the wire cleaner to its home position.
2. Dirt in the paper feed system
   - Is the paper tray or feed system on the drum unit dirty with toner?

     Yes: Clean the toner off.
3. Scratch on the drum
   - Is the drum surface scratched?

     Yes: Replace the drum unit.
4. Cleaning failure
   - Is the drum surface dirty with toner in streaks?

     Yes: Replace the drum unit.
5. Scratch on the heat roller
   - Is the surface of the heat roller scratched?

     Yes: Replace the fixing unit.

Note

- If you print he same pattern (especially vertical streaks) continuously, electrostatic charge performance of the drum will decrease temporarily and black vertical streaks may appear on the paper
- This problem may occur with noise due to the corona wire being dirty. In that case, clean the corona wire with the wire cleaner.

I-7 Black and blurred horizontal stripes

h330t507

User Check

1. The drum unit may be damaged. Install a new drum unit.
2. Check the paper used meets the recommended paper specifications.
3. Clean the printer interior and the corona wire in the drum unit.

Possible cause and Remedy

1. Scratch on the drum
   - Are the horizontal stripes at 75.3mm (exposure drum) intervals?

     Yes: The exposure drum was scratched. Replace the drum unit.
2. Toner stuck on the developer roller
   - Are the horizontal stripes at 37mm (developer roller) intervals?

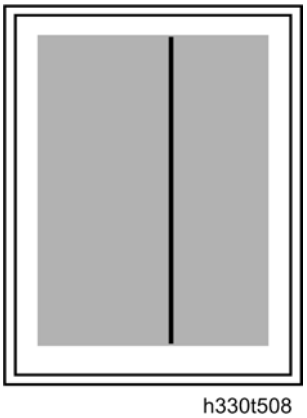
     Yes: After printing several pages, the problem will disappear. If not, replace the toner cartridge.
3. Scratch on the heat roller
   - Are the horizontal stripes at 79mm (heat roller) intervals?

     Yes: Replace the heat roller.
4. Corona contact failure
   - Are the charge electrodes between the printer body and the drum unit dirty?

     Yes: Clean both electrodes. (☛ (3) in p.240 "Location of Grounding Contacts")
5. High-voltage power supply PCB failure
   - Is the problem solved after replacing the high-voltage power supply PCB?

     Yes: Replace the highvoltage power supply PCB.

I-8 Black vertical streaks (in a gray background)



h330t508

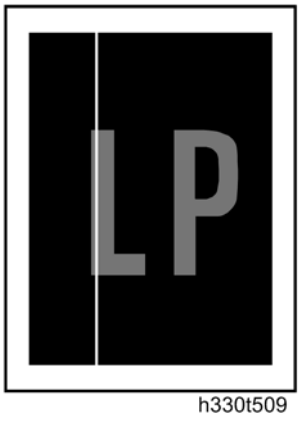
Possible cause and Remedy

1. Translucent stain on the scanner window
   - Is there any dirt on the scanner window?

     Yes: 1) Clean the scanner window. 2) If it is not effective, replace the laser unit.
2. Corona failure
   - Is the corona wire dirty?

     Yes: Clean the corona wire with the wire cleaner. (☛ (2) in p.240 "Location of Grounding Contacts")

I-9 White vertical streaks



h330t509

User Check

1. Try to wipe the scanner window with a soft cloth.
2. The toner cartridge may be damaged. Install a new toner cartridge.
3. Check the printer's environment. High temperature and high humidity conditions can cause this problem.
4. Damp (wet) paper might be used. Try to change to freshly unpacked paper.

Possible cause and Remedy

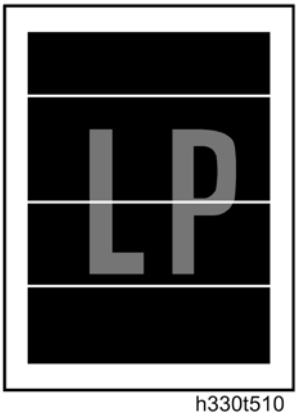
1. Transfer failure
   - Is the transfer roller scratched?

     Yes: Replace the drum unit.
2. Condensation
   - Has condensation occurred inside the printer?

     Yes: Try to print several pages or leave the printer 2 hours to allow it to reach room temperature.
3. Toner cartridge failure
   - Is there a visible vertical streak on the developing roller?

Yes: Replace the toner cartridge with a new one.

I-10 White horizontal streaks



User Check

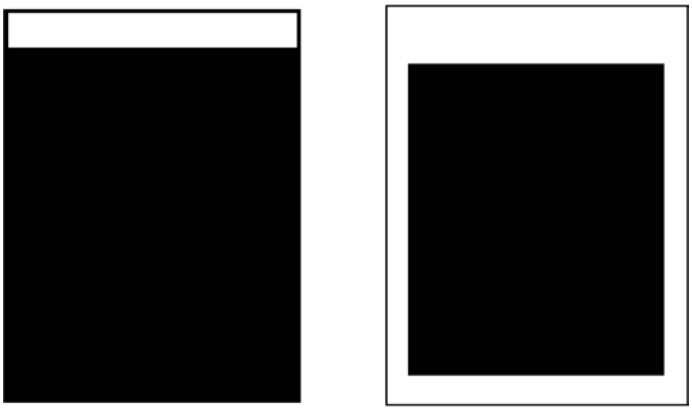
1. Check the paper used meets the recommended paper specifications. A rough surfaced paper, damp paper or thick media can cause the problem.
2. Check that the appropriate media type is selected in the printer driver.
3. The problem may disappear by itself. Try printing multiple pages to clear this problem especially if the printer has not been used for a long time.
4. The drum unit may be damaged. Install a new drum unit.

Possible cause and Remedy

1. Developing bias contact failure
   - Are the developing bias contacts between the printer body and toner cartridge dirty?

     Yes: Clean the electrodes at both sides. (☛ (4) in p.240 "Location of Grounding Contacts")

I-11 Faulty registration



h330t511

Possible cause and Remedy

1. Excessive paper load
    - Is the paper loaded in the paper tray more than 27mm high?

      Yes: Instruct the user to keep paper loads below 27mm in depth.
2. Print paper
    - Is the specified weight of the recommended paper being used?

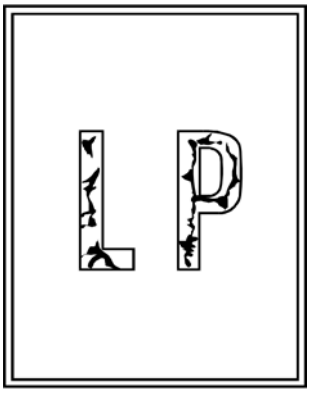
      No: Recommend to use the specified types of paper.
    - Is the first printing position within ±1mm of the tolerance specification?

      Yes: Adjust the Y offset by using the utility software supplied.
3. Regist rear sensor position incorrect
    - Is the regist rear sensor off from the correct position?

      Ye:s Reposition the sensor to the correct position.
4. Drum unit failure
    - Is the rotation torque of the drum unit heavy?

      Yes: Replace the drum unit.

I-12 Poor fixing



h330t512

Possible cause and Remedy

1. Print paper
   - Is thick paper of more than 43lb being used?

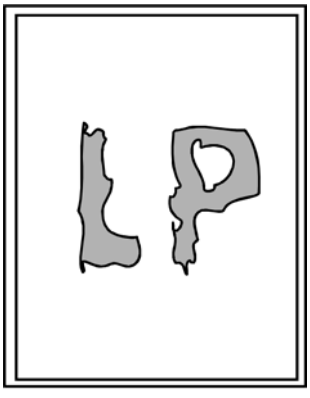
     Yes: Recommend to use the specified types of paper.
2. Toner sensor failure (When printing is faint.)
   - Is the problem solved by replacing the drum unit or the toner cartridge?

     Yes: 1) Toner is empty. 2) The toner sensor is defective. Clean the toner sensor. 3) If the wiper in the toner cartridge is broken, replace the toner cartridge with a new one.
3. Fixing unit thermistor failure
   - Is the thermistor fittedcorrectly?

     No: Fit the thermistor correctly.
4. High-voltage PS PCB failure
   - Is the problem solved by replacing the high-voltage power supply PCB?

     Yes: Replace the high-voltage power supply PCB.

I-13 Image distortion



h330t513

Possible cause and Remedy

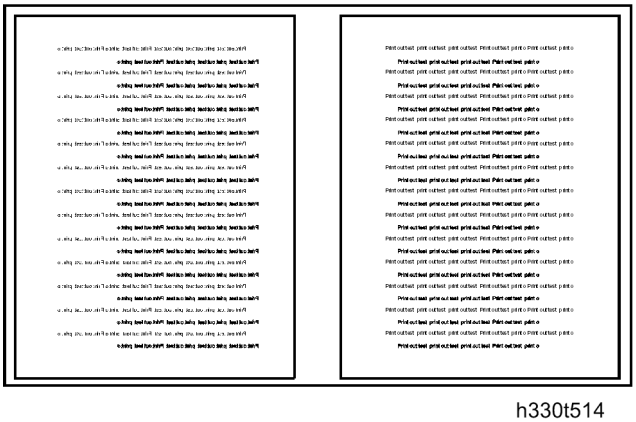
1. Laser unit installation
    - Is the laser unit secured to the frame incorrectly? (Check if there is any play.)

      No: Secure the unit correctly and tighten the screws.
2. Scanner LD emission failure/ Scanner motor rotation failure
    - Is the laser diode or the scanner motor defective?

      No: Replace the laser unit.
3. Scanner connection failure
    - Is the scanner harness connected properly? (Check if it is coming loose.)

      No: Connect the harness correctly.

I-14 Faint print



h330t514

Possible cause and Remedy

1. Printer installation
    - Is the printer placed horizontally?

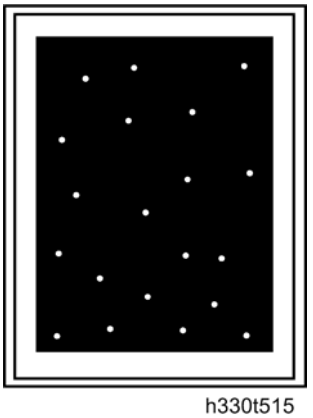
      No: Place the printer on a flat surface.
2. Toner cartridge
    - Does the problem happen immediately after replacing the toner cartridge with a new one?

      Yes: Remove and carefully shake the toner cartridge horizontally.
3. Scanner window dirty
    - Is the scanner window dirty?

      Yes: Clean the scanner window with a soft dry cloth.
4. Laser unit failure
    - Is the problem solved by replacing the laser unit?

      Yes: Replace the laser unit.

I-15 White spots



h330t515

User Check

1. If the problem is not solved after printing a few pages, the drum unit may have glue from label stock on the exposure drum surface. Refer to Step 1 in the "Possible cause and Remedy" and NOTE below.
2. The drum unit may be damaged. Install a new drum unit.

Possible cause and Remedy

1. Drum unit failure
    - Are the white spot at 75.3mm intervals?

      Yes: 1) If toner or glue remains stuck, wipe it off gently with a cotton swab. (Refer to NOTE below.) 2) If the drum surface is scratched, replace the drum unit.

- Is the problem solved after replacing the drum unit?

  No: Replace the drum unit.

2. No toner
   - Is the toner in the toner cartridge almost empty?

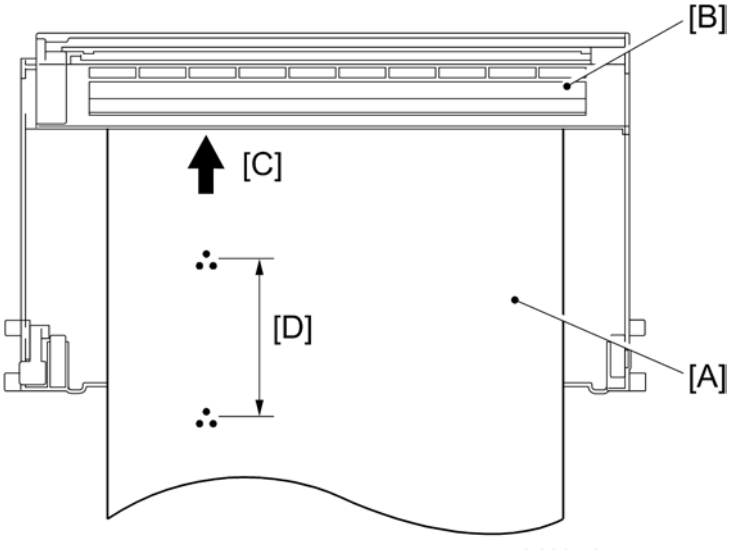
     Yes: Replace the toner cartridge with a new one.
3. Print paper
   - Is the problem solved after changing to specified freshly unpacked paper?

     No: Damp (wet) paper might be used. Recommend to change freshly unpacked paper.
4. Environment
   - Does the problem still appear after the printer has warmed up?

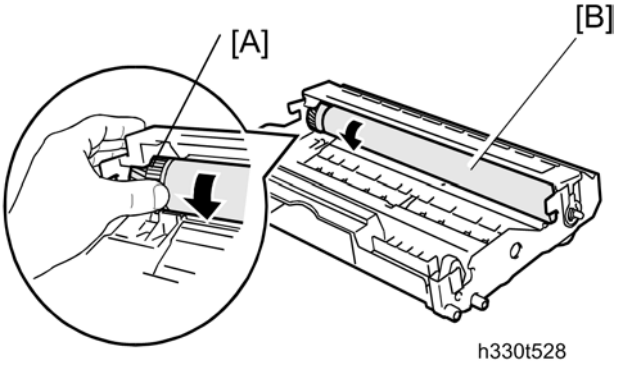
     Yes: 1) Replace the drum unit. 2) Advise the user of the specified print environment

Note

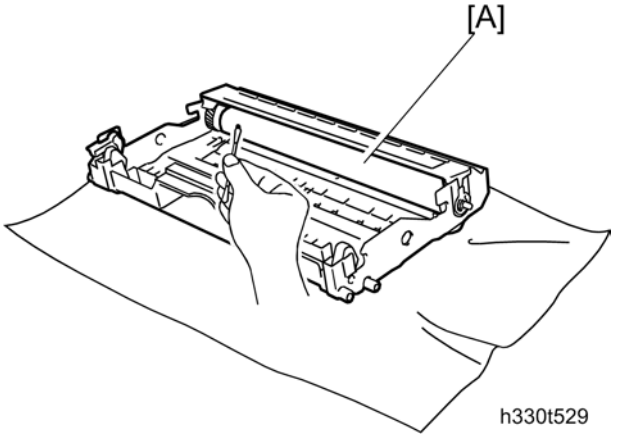
- Clean the drum unit as follows.



1. Remove the toner cartridge from the drum unit. Place the printing samples [A] in front of the drum unit [B], and find the exact position of the image defect.
   - [C]: Position of smudge on the drum
   - [D]: 75.3 mm interval



2. Turn the drum gear [A] by hand while looking at the surface of the exposure drum [B].



3. Wipe the surface of the exposure drum [A] with a cotton swab until the dust or paper powder on the surface comes off.

⚠CAUTION

- Do not wipe the surface of the exposure drum with something sharp (ball-point pen etc.).

I-16 Black spots

h330t516

User Check

1. If the problem is not solved after printing a few pages, the drum unit may have glue from label stock on the exposure drum surface. Refer to Step 1 in the " Possible cause and Remedy" and NOTE under the "I-15 White spots".
2. The drum unit may be damaged. Install a new drum unit.

Possible cause and Remedy

1. Drum unit
   - Are the spots at 75.3mm intervals? (The problem is not solved after printing a few pages.)

     Yes: 1) If toner or glue remains stuck, wipe it off gently with a cotton swab. (Refer to NOTE under the "I-15 White spots".) 2) If the exposure drum is scratched or deteriorated (exposed), replace the drum unit.
2. Drum connection failure
   - Is the contact between the drum unit and printer body connected correctly?

     No: Clean contact electrode both on the drum unit and in the printer body. (☛ (7) in p.240 "Location of Grounding Contacts")
3. Fixing unit
   - Are the spots at 79mm intervals? (The problem is not solved after printing a few pages.)

     Yes: 1) Check and clean the heat roller with a dry cotton swab. 2) Replace the fixing unit.
4. High-voltage power supply PCB failure
   - Is the problem solved after replacing the high-voltage power supply PCB?

     Yes: Replace the highvoltage power supply PCB.

I-17 Black band

h330t517

Possible cause and Remedy

1. Corona failure
    - 1 Is the wire cleaner at its home position?

      No: Return the wire cleaner to its home position. (☛ (2) in p.240 "Location of Grounding Contacts")
2. Corona dirty
    - Is the corona wire dirty?

      Yes 1) Clean the corona wire. 2) If the problem still appears after cleaning, replace the drum unit. (☛ (2) in p.240 "Location of Grounding Contacts")

I-18 Gray background

h330t518

Possible cause and Remedy

1. Print paper

- Does the paper being used meet the paper specification (weight, etc.)

  No: Recommend to use the specified types of paper.

  Yes: Recommend to change to freshly unpacked paper.

2. Toner sensor failure (printer side)
   - Is the error indication displayed when the toner cartridge and drum unit is taken out of the machine? (The front cover is closed.)

     No: Toner sensor failure. Clean the toner sensor and check the toner sensor connection.
3. Toner cartridge failure
   - Is the problem solved after replacing the toner cartridge?

     Yes: Replace the toner cartridge.
4. Drum unit failure
   - Is the problem solved after replacing the drum unit?

     Yes: Replace the drum unit.

     No: Replace the high-voltage power supply PCB.

Note

- The following cases increase the possibility of this problem.
- Acid paper is being used.
- The drum unit is at the end of its life.
- There is dust or paper powder.

I-19 Hollow print

h330t519

User Check

1. Check the paper used meets the recommended paper specifications.
2. Select the "Thick paper mode' in the printer driver, or use thinner paper than you are currently using.

3. Check the printer's environment, conditions such as high humidity may cause this situation to occur.

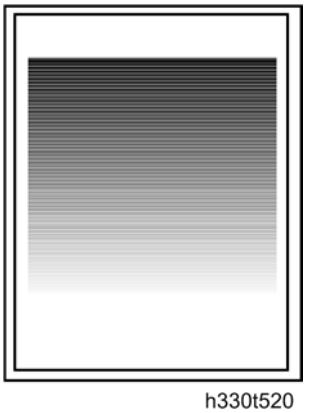
Possible cause and Remedy

1. Print paper
   - Is thick paper of more than 43lb being used or extremely rough surface paper?

     Yes: Recommend to use the specified types of paper.

     No: Refer and compare with [4] under the Image defect "I-15".

I-20 Downward fogging of solid black



h330t520

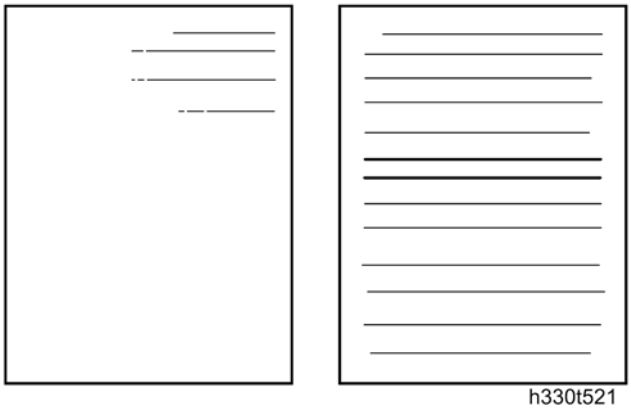
Possible cause and Remedy

1. Toner cartridge failure
   - Is the problem solved after replacing the toner cartridge?

     Yes: Replace the toner cartridge.
2. High-voltage power supply PCB failure
   - Is the problem solved after replacing the high-voltage power supply PCB?

     Yes: Replace the high-voltage power supply PCB.

I-21 Horizontal lines



h330t521

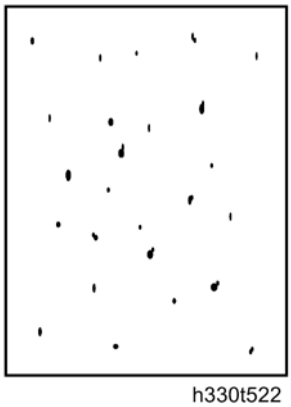
Possible cause and Remedy

1. Paper tray contacts
    - Are the ground contacts on the right side of the paper tray connecting correctly?

      No: Clean the contacts.
2. Drum unit
    - Are the high-voltage power supply and drum unit contacted correctly?

      No: Clean the contacts.

I-22 Light rain



h330t522

Possible cause and Remedy

1. Drum unit failure
    - Is the problem solved after replacing the drum unit?

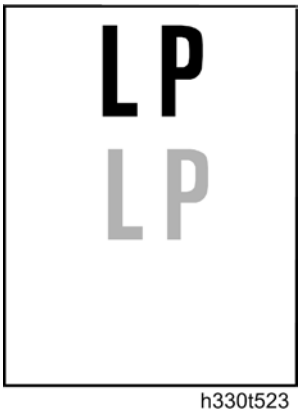
      Yes: Replace the drum unit.

2. Drum connection failure
    - Is the contact between the drum unit and printer body connected correctly?

      No: Clean contact electrode both on the drum unit and in the printer body. (☛ (7) in p.240 "Location of Grounding Contacts")
3. High-voltage power supply PCB failure
    - Is the problem solved after replacing the high-voltage power supply PCB?

      Yes: Replace the highvoltage power supply PCB.

I-23 Ghost



h330t523

User Check

1. Check the paper used meets the recommended paper specifications. Damp paper, thick media or rough surfaced paper can cause the problem.
2. Check the printer's environment. High temperature and high humidity conditions can cause the problem.
3. Check that the appropriate media type is selected in the printer driver.
4. Try installing a new drum unit.

Possible cause and Remedy

1. Driver setting
    - Is thin paper such as 64g/m^2 used under the thick paper mode?

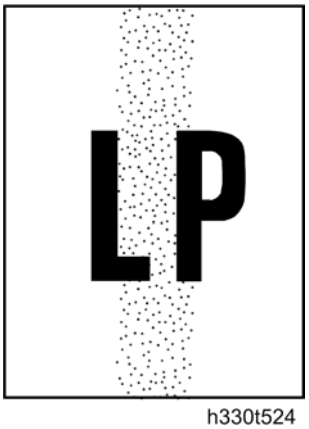
      Yes: 1) Change the current mode to the normal mode from the driver setting. 2) Print 5 or 6 blank pages if this problem occurs.
2. Drum unit failure
    - Is the problem solved after replacing the drum unit?

      Yes: Replace the drum unit.

3. High-voltage power supply PCB failure
    - Is the problem solved after replacing the high-voltage power supply PCB?

      Yes: Replace the high-voltage power supply PCB.

I-24 Toner specks



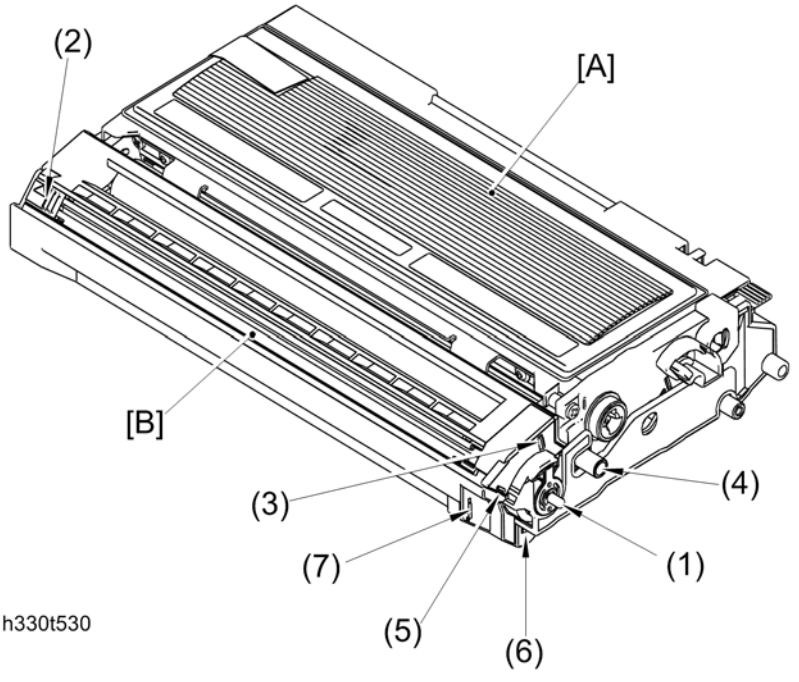
h330t524

User Check

1. Check the paper used meets the recommended paper specifications. A rough surfaced paper may cause the problem.
2. The toner cartridge may be damaged. Install a new toner cartridge.
3. The drum unit may be damaged, or may be nearly at the end of life. Install a new drum unit.

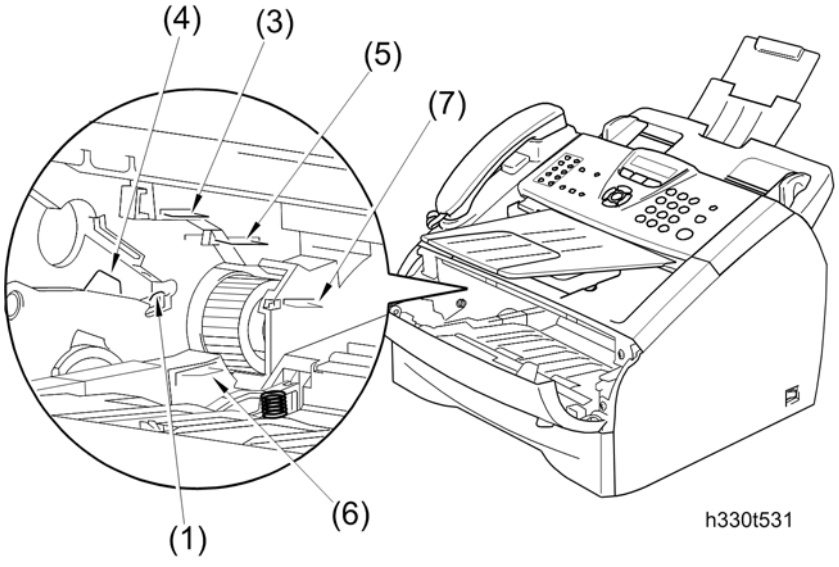
Location of Grounding Contacts

Drum unit



[A]: Toner cartridge [B]: Drum unit (1): Exposure drum (2): Wire cleaner (3): Charge	(4): Developer roller (5): Grid (6): Transfer roller (7): Cleaner

Printer body & paper tray



(1): Exposure drum (2): - (3): Charge (4): Developer roller	(5): Grid (6): Transfer roller (7): Cleaner

<How to clean the electrodes>

Turn off the power switch. Unplug the machine from the AC power outlet, and leave the machine for a few minutes. Then, wipe the electrodes above carefully with a dry lint-free cloth. Be careful not to change the shapes of the electrodes.

Incorrect Printout

When the data is not printed correctly as it is seen on the PC screen, follow the procedures below in the event of a specific error.

P-1 The printer prints unexpectedly or it prints garbage.

User Check

1. Check if the printer cable is not too long. It is recommended to use a parallel cable of less than 2 meters (6.6 feet) in length.
2. Check that the printer cable is not damaged or broken. Check also that the printer cable is connected to the correct interface connectors of both the printer and PC.

3. If an interface switching device is used, remove it and connect the computer directly to the printer and try again.
4. Check that the appropriate printer driver is selected as "Set as Default". Check also that the correct print port is set for the selected printer driver.
5. Check that the printer is not connected to the same port which is also connected to a mass storage device or scanner. Remove all other devices and connect the port to the printer only. Turn off the printer status monitor in the device options tab in the printer driver.
6. If the print port is set as an ECP port, change it to a normal port.
7. Try printing the test page.
8. Try resetting the factory settings.

Possible cause and Remedy

Failure inside the printer

- Is it possible to print the test?

  No: Identify the error type, and then refer to the specified section of this chapter.

P-2 Unable to print full pages of a document with the "PRINT OVERRUN" message.

User Check

1. Press the "Start" key on the control panel to print the data remaining in the printer.
2. If this does not clear the error, reduce the complexity of your document or reduce the printer resolution.
3. Change the following setting in the printer driver and try again. The best combination of settings below will vary depending on your document.
   Graphic Mode / TrueType™ mode

Note

- This problem may appear if the data is too complex. If it is not cleared by taking the actions above, it will be impossible to print such data under the printer specifications.

P-3 Unable to print full pages of a document with the "MEMORY FULL" message.

User Check

1. Press the "Start" key on the control panel to print the data remaining in the printer.
2. Reduce the complexity of your document or reduce the printer resolution.

Note

- This problem may appear if the data is too complex.

Possible cause and Remedy

Main PCB failure

- Is it possible to print after reducing the data of a document?

  Yes: Replace the main PCB.

P-4 Headers or footers are not printed out even though they are viewed on PC screen.

User Check

Most laser printers have a restricted area that cannot be printed on. Usually the first two lines and last two lines of text cannot print (leaving 62 printable lines). Adjust the top and bottom margins in your document to allow for this.

P-5 The printer sometimes prints a couple of characters and then ejects the page.

User Check (For DOS environment only)

The application printer emulation setting and the printer's emulation do not match. Check in the application software which printer you have selected to make sure the printer is set up correctly.

Remember that the printer emulates widely used printer selections:

HP Laser Jet 6P, HP Laser Jet 6P, Epson FX-850, IBM Proprinter XL

Try setting the printer into HP emulation and then select the HP LaserJet 6P printer in the application software.

Troubleshooting of the Control Panel

L-1 Nothing is displayed on the LCD.

User Check

Verify if the power switch is turned off.

Possible cause and Remedy

1. Connection between main PCB and control panel PCB
   - Main PCB and control panel PCB are properly connected

     No: Fix the connector properly.
2. Harness between main PCB and control panel PCB
   - Harness is damaged.

     Yes: Replace the harness with a normal part.
3. Connection between main PCB and PS PCB
   - Main PCB and PS PCB are properly connected.

     No: Fix the connection properly.
4. Harness between main PCB and PS PCB LCD

- Harness is damaged.

  Yes: Replace the harness with a normal part.

5. LCD
   - Replacement of LCD solves the problem.

     Yes: Replace the LCD with a normal part.
6. Control panel PCB
   - Replacement of control panel PCB solves the problem.

     Yes: Replace the control panel PCB with a normal part.
7. PS PCB
   - Replacement of PS PCB solves the problem.

     Yes: Replace the PS PCB with a normal part.
8. Main PCB
   - Replacement of main PCB solves the problem.

     Yes: Replace the main PCB with a normal part.

L-2 The control panel does not work.

User Check

No point to be checked

Possible and Remedy

1. Key sticking
   - Any key on control panel is stuck.

   Yes: Clean up the panel cover, or remove the burrs from panel cover and panel keys.
2. Connection between main PCB and control panel PCB
   - Main PCB and control panel PCB are properly connected.

     No: Fix the connection properly.
3. Harness between main PCB and control panel PCB
   - Harness is damaged.

     Yes: Replace the harness with a normal part.
4. Rubber key
   - Replacement of rubber key solves the problem

     Yes: Replace the rubber key with a normal part.
5. Control panel PCB
   - Replacement of control panel PCB solves the problem.

Yes: Replace the control panel PCB with a normal part.

6. Main PCB
   - 6 Replacement of main PCB solves the problem.

     Yes: Replace the main PCB with a normal part.

L-3 Printing from Macintosh applications fails.

User Check

1. Verify that the printer driver supplied with the printer has been installed in the system folder and selected in the selector.
2. Check the port selected in the selector. The selected port has to match the actual port to which the printer cable is connected.

Possible cause and Remedy

1. Fault in printer
   - 1 Test page can be printed using the method described in p.131 "Test Pattern (Function code 09)".

     No: Check the symptom of the problem and refer to an appropriate section in this Chapter to solve the problem.
2. Breakage of main PCB
   - Printing can be made using an appropriate PC, printer cable?

     No: Replace the main PCB.

Troubleshooting of Fax Functions

F-1 FAX cannot send it.

User Check

Verify that the telephone cord is securely inserted.

Possible cause and Remedy

1. Dialing mode setting
   - Dialing signal (PB or DP) comes out normally in each mode. (Use telephone line emulator.)

     Yes: Check the dialing mode setting at customer's again. Check the telephone line cord between machine and socket.
2. Connection between main PCB and NCU PCB
   - Main PCB and NCU PCB are properly connected.

No: Fix the connection properly.

3. Harness between main PCB and NCU PCB
   - Harness is damaged.

     Yes: Replace the harness with a normal part.
4. Connection between main PCB and control panel PCB
   - Main PCB and control panel PCB are properly connected.

     No: Fix the connection properly.
5. Harness between main PCB and control panel PCB
   - Harness is damaged.

     Yes: Replace the harness with a normal part.
6. Contact of rubber key
   - The rubber key works correctly.

     No: Replace the rubber key with a normal part.
7. NCU PCB
   - Replacement of NCU PCB solves the problem.

     Yes: Replace the NCU PCB with anormal part.
8. Control panel PCB
   - Replacement of control panel PCB solves the problem.

     Yes: Replace the control panel PCB with a normal part.
9. Main PCB
   - Replacement of main PCB solves the problem.

     Yes: Replace the main PCB with a normal part.

F-2 Speed dialing and One-touch dialing cannot be used.

Possible cause and Remedy

1. Speed dialing, One-touch dialing
   - A fax transmission can be made using the key, ten?

     Yes: Replace the main PCB.
2. Dialing mode setting
   - Dialing signal (PB or DP) comes out normally in each mode. (Use telephone line emulator.)

     Yes: Check the dialing mode setting at customer's again. Check the telephone line cord between machine and socket.
3. Connection between main PCB and NCU PCB

- Main PCB and NCU PCB are properly connected.

  No: Fix the connection properly.

4. Harness between main PCB and NCU PCB
   - Harness is damaged. Yes Replace the harness with a normal part.
5. Connection between main PCB and control panel PCB
   - Main PCB and control panel PCB are properly connected.

     No: Fix the connection properly.
6. Harness between main PCB and control panel PCB
   - Harness is damaged.

     Yes: Replace the harness with a normal part.
7. Rubber key
   - Replacement of rubber key solves the problem.

     Yes: Replace the rubber key with a normal part.
8. NCU PCB
   - Replacement of NCU PCB solves the problem.

     Yes: Replace the NCU PCB with a normal part.
9. Control panel PCB
   - Replacement of control panel PCB solves the problem.

     Yes: Replace the control panel PCB with a normal part.

F-3 FAX cannot be received.

User Check

Verify that the telephone cord is securely inserted.

Possible cause and Remedy

1. Receive mode setting
   - Receive mode is set to automatic receive mode.

     No: Set the receive mode to automatic receive mode.
2. NCU PCB
   - Replacement of NCU PCB solves the problem.

     Yes: Replace the NCU PCB with a normal part.
3. Main PCB
   - Replacement of main PCB solves the problem.

     Yes: Replace the main PCB with a normal part.

F-4 No bell ring.

Possible cause and Remedy

1. Ring delay
   - 1 Ring delay is set to "0".

     Yes: Set the ring delay to other than "0".
2. Ring volume
   - 2 Ring volume is set to "OFF".

     Yes: Set the ring volume to other than "OFF".
3. Connection between main PCB and scanner unit
   - Main PCB and scanner unit are properly connected.

     No: Fix the connection properly.
4. Harness between main PCB and scanner unit
   - Harness is damaged.

     Yes: Replace the harness with a normal part.
5. Connection between main PCB and NCU PCB
   - Main PCB and NCU PCB are properly connected.

     No: Fix the connection properly.
6. Harness between main PCB and NCU PCB
   - Harness is damaged.

     Yes: Replace the harness with a normal part.
7. Speaker
   - Replacement of speaker solves the problem.

     Yes: Replace the speaker with a normal part.
8. NCU PCB
   - Replacement of NCU PCB solves the problem.

     Yes: Replace the NCU PCB with a normal part.
9. Main PCB
   - Replacement of main PCB solves the problem.

     Yes: Replace the main PCB with a normal part.

F-5 Speaker is silent during on-hook dialing.

Possible cause and Remedy

1. Connection between main PCB and speaker

- Main PCB and speaker are properly connected.

  No: Fix the connection properly.

2. Speaker
   - 2 Replacement of speaker solves the problem.

     Yes: Replace the speaker with a normal part.
3. Connection between main PCB and NCU PCB
   - Main PCB and NCU PCB are properly connected.

     No: Fix the connection properly.
4. Harness between main PCB and NCU PCB
   - Harness is damaged.

     Yes: Replace the harness with a normal part.
5. Connection between main PCB and control panel PCB
   - Main PCB and control panel PCB are properly connected.

     No: Fix the connection properly.
6. Harness between main PCB and control panel PCB
   - Harness is damaged.

     Yes: Replace the harness with a normal part.
7. NCU PCB
   - Replacement of NCU PCB solves the problem.

     Yes: Replace the NCU PCB with a normal part.
8. Main PCB
   - Replacement of main PCB solves the problem.

     Yes: Replace the main PCB with a normal part.

F-6 Dialing function does not switch between "tone" and "pulse".

Possible cause and Remedy

1. Connection between main PCB and NCU PCB
   - Main PCB and NCU PCB are properly connected.

     No: Fix the connection properly.
2. Harness between main PCB and NCU PCB
   - Harness is damaged.

     Yes: Replace the harness with a normal part.
3. NCU PCB

- Replacement of NCU PCB solves the problem.

  Yes: Replace the NCU PCB with a normal part.

4. Main PCB
   - Replacement of main PCB solves the problem.

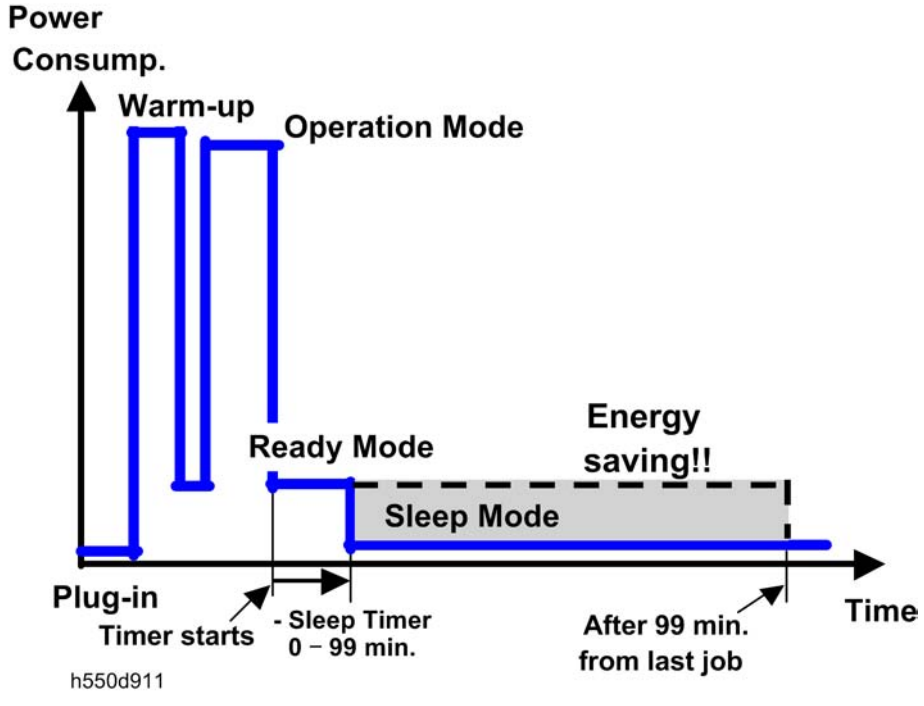
     Yes: Replace the main PCB with a normal part

7. Energy Saving

Energy Save

Sleep Modes

Customers should use the sleep mode properly, to save energy and protect the environment.



The area shaded in this diagram represents the amount of energy that is saved when the timer is at the default settings. If the timers are changed, then the energy saved will be different. For example, if the timers are all set to 99 min., the grey area will disappear, and no energy is saved before 99 min. expires.

Timer Settings

The user can set this timer with User Tools (Menu > Mode Timer > 2. Sleep Mode)

- Sleep timer (0 – 99 min): Default setting: 5 minutes

Return to Stand-by Mode

Sleep Mode

Recovery time.

- Max 18 sec.

Recommendation

We recommend that the default setting should be kept.

- If the customer requests that this setting should be changed, please explain that their energy costs could increase, and that they should consider the effects on the environment of extra energy use.
- If it is necessary to change the setting, please try to make sure that the Sleep timer is not too long. Try with a shorter setting first, such as 30 min., then go to a longer one (such as 60 min.) if the customer is not satisfied.
- If the timer is set to the maximum value, the machine will not begin saving energy until 99 minutes has expired after the last job. This means that after the customer has finished using the machine for the day, energy will be consumed that could otherwise be saved.

Model HL-F1
Machine Code: H558

Appendices

14 May, 2010

TABLE OF CONTENTS

1. Appendix: Specifications

2. Appendix: Troubleshooting Guide

1. Appendix: Specifications

Specifications

General Specifications

Memory Capacity	16 MB
Automatic Document Feeder (ADF)	Up to 20 sheets
Paper Tray	250 Sheets (20 lb (80 g/m^2))
Printer Type	Laser
Print Method	Electrophotography by semiconductor laser beam scanning
Liquid Crystal Display (LCD)	16 characters x 1 line
Power Source	100 to 120V AC 50/60Hz 220 to 240V AC 50/60Hz
Power Consumption	Sleep: 10W Standby: 80W Peak: 1100W
Dimensions (W x D x H)	374 (W) x 374 (D) x 262(H)
Weight	16.21 b (7.35kg)
Noise	Operating: 53 dB A or less Standby: 30 dB A or less
Temperature	Operating: 50°F to 90.5°F (10 to 32.5°C) Storage: 32°F to 104°F (0 to 40°C)
Humidity	Operating: 20 to 80% (without condensation) Storage: 10 to 90% (without condensation)

Paper Specifications

1

Paper type

Paper type	Tray1	Manual feed slot	Select the paper type from the printer driver
Plain paper 60 g/m^2 to 105 g/m^2 (16 to 28 lbs.)	O	O	Plain paper
Recycled paper	O	O	Recycled paper
Bond paper	O	O	Bond paper
Thick paper 105 g/m^2 to 161 g/m^2 (28 to 43 lbs.)	X	O	Thick paper or Thicker paper
Transparency	O Up to 10 sheets A4 or Letter	O	Transparency
Label	X	O	Thicker paper
Envelop	X	O	Envelope or Env.Thick or Env.Thin
Card Stock	X	O	Thick paper or Thicker paper

Paper size

	Paper Tray	Manual feed slot
Paper size	A4, Letter, Legal*, B5 (ISO), Executive, A5, A6, B6 (ISO), B5 (JIS), Folio*	Width: 69.9 to 215.9 mm (2.75 to 8.5 in.) Length: 116 to 406.4 mm (4.57 to 16.0 in.)

* Legal and Folio are not available in some regions.

Other paper specifications

<Paper tray>

	Cut sheet
Basis weight	60 to 105 g/m^2 (16 to 28 lb.)
Caliper	0.08 to 0.12 mm (0.003 to 0.005 in.)
Moisture content	4% to 6% by weight

<Manual feed slot>

	Cut sheet
Basis weight	60 to 161 g/m^2 (16 to 43 lb.)
Caliper	0.08 to 0.19 mm (0.003 to 0.007 in.)
Moisture content	4% to 6% by weight

Recommended paper

	Europe	USA
Plain paper	Xerox Premier 80 g/m^2 Xerox Business 80 g/m^2 Modo Paper DATACOPY 80 g/m^2 IGEPA X-press 80 g/m^2	Xerox 4200DP 20lb Xerox 4024 28lb Hammermill Laser Paper 24lb
Recycled paper	Xerox Recycled Supreme	Xerox Recycled Supreme
Transparency	3M CG3300	3M CG 3300
Label	Avery laser label L7163	Avery laser label #5160

* This printer can use recycled paper that meets the DIN 19309 specification.

⚠CAUTION

- When you are choosing print media, be sure to follow the information given below to prevent any paper jams, print quality problems or printer damage;

- It is recommended to use long-grained paper for the best print quality. If short-grained paper is being used, it might be the cause of paper jams.
- Use neutral paper. Do not use acid paper to avoid any damage to the drum unit.
- Avoid using coated paper such as vinyl coated paper.
- Avoid using preprinted or highly textured paper.
- It is recommended to use labels or transparencies which are designed for use in laser printers.
- Avoid feeding labels with the carrier sheet exposed, or the printer will be damaged.
- Before loading paper with holes such as organizer sheets, be sure to fan the stack well.
- Do not use organizer sheets that are stuck together. The glue that is used might caused damaged to the printer.
- When printing on the back of pre-printed paper, if the paper is curled, be sure to straighten the paper as much as possible.
- Different types of paper should not be loaded at the same time in the paper tray to avoid any paper jams or misfeeds.

Paper tray capacity

	Paper Tray	Manual feed slot
Paper Capacity	250 sheets (80 g/m^2 or 21lb)	Single sheet

Print delivery

Face down output tray capacity:

Maximum 100 sheets (80 g/m^2) face down only

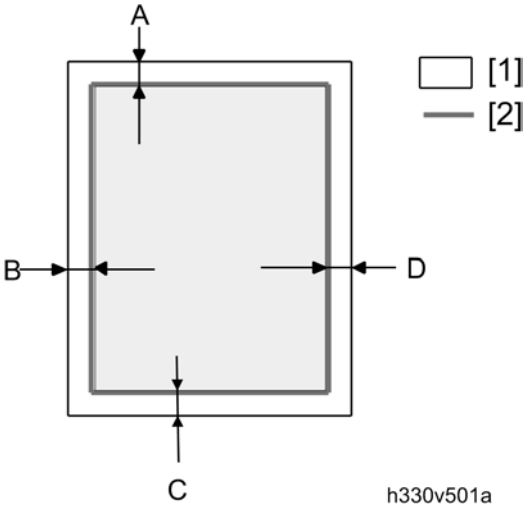
Note

- Face-down: Delivery with the printed face of the paper downwards.

Printable Area

The edges of the paper that cannot be printed on are shown below.

Short Edge Feed (SEF)



[1]: Physical page, [2]: Printable area

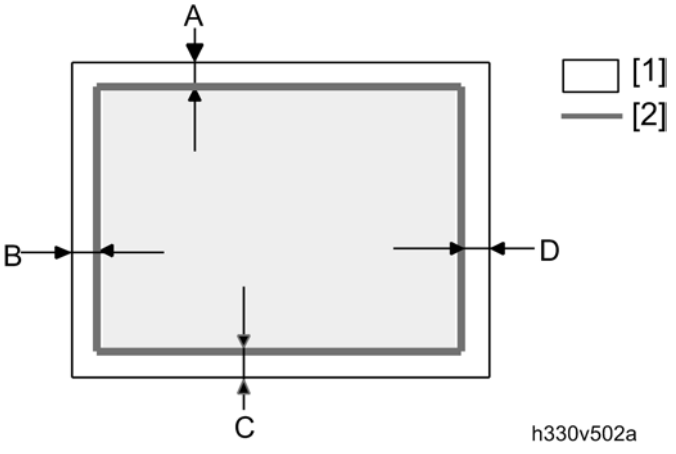
A	50 mm	All size of paper
B	75 mm	Letter, Legal, Executive, Monarc, Com-10, Organizer J/K/L/M, Folio
	71 mm	A4, A5, A6, B5, B6, DL, C5, A4 Long
	74 mm	DL LEF
	50 mm	User Setting, 3x5
C	50 mm	All size of paper
D	75 mm	Letter, Legal, Executive, Monarc, Com-10, Organizer J/K/L/M, Folio
	71 mm	A4, A5, A6, B5, B6, DL, C5, A4 Long
	74 mm	DL LEF
	50 mm	User Setting, 3x5

Note

- "Printable area" shows mechanical printable area of the machine.

1

Long Edge Feed (LEF)



[1]: Physical page, [2]: Printable area

A	50 mm	All size of paper
B	75 mm	Letter, Legal, Executive, Monarc, Com-10, Organizer J/K/L/M, Folio
	71 mm	A4, A5, A6, B5, B6, DL, C5, A4 Long
	74 mm	DL LEF
	50 mm	User Setting, 3x5
C	50 mm	All size of paper
D	75 mm	Letter, Legal, Executive, Monarc, Com-10, Organizer J/K/L/M, Folio
	71 mm	A4, A5, A6, B5, B6, DL, C5, A4 Long
	74 mm	DL LEF
	50 mm	User Setting, 3x5

Note

- "Printable area" shows mechanical printable area of the machine.

Toner Cartridge Weight Information

Toner Cartridge Weight (approximate weight)

Brand new Toner Cartridge Weight	570g (± 10g) (Recycle: 584g(± 10g))
Toner Weight at Brand New Toner Cartridge	100g
Toner Cartridge Weight at Toner Near Empty	516g
Remain Toner Weight at Toner Near Empty	46g
Toner Cartridge Weight at Toner Life End	514g
Remain Toner Weight at Toner Life End	44g
You can print 500 pages (± 100 pages) with 10g toner. (5% coverage)	

Specifications List

GENERAL			
	US/ Canada	Europe	Asia/ Pacific
Print Engine	Laser (ALL)		
CPU Speed	SparcLite 96MHz		
Back up Clock	Yes (up to 4 days)		
Operating Environment Temperature	10 - 32.5 degrees Centigrade		
Humidity	20% - 80% (without condensation)		
On/Off Switch	Yes		
AC Cord inlet	No	Yes	
Starter Toner	Full		
Simultaneous Operation	Yes		
Input /Output Width	5.8"-8.5" / 2.75"-8.5" 147.3-215.9 mm / 69.9-215.9 mm		
Input /Output Length	3.9"-14" / 4.56"-16" 100.0-356.0 mm/ 116.0-406.4 mm 0		

ADF	up to 20 sheets (Conditional* 30 sheets) (*: XX4024 or 4200 20lbs, environment: temp. 20-30C humiditiy 50-70%)
Paper Capacity	250 sheets
Optional Paper Tray	N/A
Multi-Purpose Tray	N/A
Output Paper Capacity (sheets)	up to 100 sheets
Lower Tray - Automatic	N/A
LCD Size	16 characters x 1 lines
LCD Back-Lit	Yes (1-color)
On-Screen Programming	Yes
Memory Capacity (Standard: MByte)	16 Mbyte (RAM)
Memory BackUp	Yes (up to 4 days)
Optional Memory	N/A
Memory Security	Yes
Transmission Lock	N/A
Setting Lock	Yes
Dimensions w/ Carton (WxDxH)	452 x 496 x 430mm
	17.8 x 19.5 x 16.9 inch
Dimensions w/o Carton (WxDxH)	374 x 374 x 262 mm
	14.7 x 14.7 x 10.3 inch

GENERAL			
	US/ Canada	Europe	Asia/ Pacific

Weight w/ Carton	Approx. 10.8 kg (Approx. 23.8 lbs.)	Approx. 11.4 kg (Average weight. The specific weight varies country to country)	
Weight w/o Carton (w/o Process unit)	Approx. 7.35 kg (Approx. 16.2 lbs.)	Approx. 7.25 kg	
Power Source	120V AC 50/60 (Canada) Hz	220-240V AC 50/60Hz	
Power Consumption (Copying)	475W		
Power Consumption	10W/80W/1100W		
Power Save (CPU Sleep)	N/A		
Sleep Mode (00-99min)	Yes		
Energy Star Compliant	N/A		
Total Print pages Counter (Internal/ LCD/ Print)	Yes/ Yes/ Yes		
Copy pages Counter (Internal / LCD / Print)	Yes/ Yes/ Yes		
PC print pages Counter (Internal / LCD / Print)	Yes/ Yes/ Yes		
Fax RX pages counter (Internal / LCD / Print)	Yes/ Yes/ Yes		
	Yes/ Yes/ Yes		
TELEPHONE			
Handset	Yes	N/A	N/A
Off Hook Alarm	N/A		
Power Failure Phone	N/A		
Power Failure Dialing	N/A		
Chain Dialing	Yes		

Automatic Redial	Yes		
PBX Feature	N/A	Yes	N/A
Speaker Phone	N/A		
Handset Volume	Yes (2 steps & volume amplify)	N/A	N/A
Speaker Volume	Yes (3 steps + OFF)		
Buzzer Volume	Yes (3 steps + OFF)		
Ring Volume	Yes (3 steps + OFF)		
Hold/Mute Key	Yes		
Music on Hold	N/A		
Monitoring the Line on Hold	N/A		
One-Touch Dial	20 (10 x 2) locations		

TELEPHONE			
	US/ Canada	Europe	Asia/ Pacific
Speed Dial	200 locations		
Figures of One-Touch & Speed Dial	20 digits		
Resisterable Number Of Characters	15 characters		
Group Dial	Yes (up to 8 groups)		
Telephone Index (Search)	Yes (with ▼ key)		
Pre-registered for FAX BACK SYSTEM (USA)	N/A		
Caller ID	Yes	N/A	Yes (ARL/ NZ/ SIN/ HK only)
Call Waiting Caller ID	N/A		

Call waiting Ready (Only for USA)	Yes (with ▼ key)	N/A	
Distinctive Ringing	Yes	Yes (U.K., Den. only)	Yes(ARL/ NZ/ SIN/ HK only)
FAX			
Modem Speed	33.600bps (Fax)		
Transmission Speed	Approx. 2sec. (ITU-T #1, JBIG)		
ITU-T Group	Super G3		
Coding Method	MH/ MR/ MMR/ JBIG		
Color FAX (Document Send/ Receive)	N/A		
Color FAX (Memory Send/ Receive)	N/A		
Fax/Tel Switch	Yes		
Super Fine	Yes (TX & RX)		
Gray Scale	64		
Contrast	Yes (Auto/ Light/ Dark)		
Smoothing	N/A		
Dual Access	Yes		
Enhanced Remote Activate	Yes		
Station ID	Yes (20digits / 20characters)		
RX Mode Indication	LCD		
Resolution Indication	LCD		
Delayed Timer	Yes (up to 50)		
Polled Sending	Yes (Eur : Secure Polling)		
Multi Transmission	N/A		

Multi Resolution Transmission	N/A		
Next-Fax Reservation	N/A		
Batch Transmission	Yes		
Call Reservation Over Auto TX	N/A		
Call Reservation Over Manual TX	N/A		
Quick-Scan(Memory transmission)	Approx. 3.5 sec./page (Letter/A4, Standard Resolution)		
Memory Transmission	up to 500 pages (ITU-T Test Chart, Standard Resolution, JBIG)		
	US/ Canada	Europe	Asia/ Pacific
ECM (Error Correction Mode)	Yes		
Error Re-Transmission	Yes		
Broadcasting	Yes (270 locations)		
Manual Broadcasting	Yes (50 locations)		
Easy Receive/ Fax Detect	Yes		
Polling Receiving	Yes		
Auto Reduction	Yes		
Duplex Fax Receive	N/A		
Out-of-Paper Reception	up to 500 pages (ITU-T Test Chart, Standard Resolution, JBIG)		
PC Fax	Download from Web Site (Send only)		
LIST/REPORT			
Activity Report/Journal Report	Yes (up to 200)		

Transmission Verification Report	Yes		
Cover page	Yes (Super)		
Help List	Yes		
Call Back Message	N/A		
Caller ID List	Yes	N/A	N/A
Quick Dial List	Yes		
Tel Index List	N/A		
Memory Status List	N/A		
System Setup(User Setting) List	Yes		
INTERFACE			
External TAD Interface	Yes		
Host Interface (Serial)	N/A		
Host Interface (IEEE1284)	N/A		
Host Interface (Full-Speed USB2.0)	Yes		
Ether Net (10/100base-TX)	N/A		
Cable included	N/A		
Acceptable Media Card Slot	N/A		
PRINTER			
Color/Mono	Mono		
Engine Type	Laser (ALL)		
Resolution	1200x600 dpi		
Speed (ppm)	up to 15ppm (Letter size)	up to 14ppm (A4 size)	

Duplex Printing Speed (ppm)	N/A		
	US/ Canada	Europe	Asia/ Pacific
First Print Out Time	Less than 10secs		
Standard Print Language	Windows GDI		
Emulation	N/A		
Secure Print	N/A		
Resident Fonts	N/A		
Fonts Disk Based	N/A		
Paper Handling Size	LTR, LGL, A4, B5, A5, B6, A6, EXE	LTR, A4, B5, A5, B6, A6, EXE	LTR, LGL, A4, B5, A5, B6, A6, EXE
OS	Windows 2000/XP/Vista/7		
Manual Feed Slot	Custom Size (2.75x4.56 - 8.5x16) Envelope (DL/C5/CM10/Monarch)		
Paper Type	Plain Paper, Recycled Paper, Transparency, Envelopes, Bond paper, Labels		
Sheet Weight (Paper Cassette)	60 - 105 g/m^2 (16 - 28 lb)		
(Manual Feed Slot)	60 -161 g/m^2 (16 - 43 lb)		
(ADF)	64 - 90 g/m^2 (17 - 24 lb)		
Utility Software	N/A		
Variable Dot Print	N/A		
Shingling Print	N/A		
Color Enhancement	N/A		
COPY			
Color/Mono	Mono		

Speed	up to 15cpm (Letter size)	up to 14cpm (A4 size)
First Copy Out Time (from READY mode *2)	Less than 12 sec	
Warm up Time (from SLEEP mode)	Max. 18 sec. at 73.4 F (23°C)	
Multi Copy (Stack)	Yes (up to 99)	
Multi Copy (Sort)	Yes	
Reduction/ Enlargement (%)	50% - 200% in 1% increments	
Resolution (dpi)	200 x 300 dpi	
Manual Duplex Copy	N/A	
N in 1	Yes	
Poster	N/A	
Image Enhancement	N/A	
Paper Type (Media) Setting	Yes	

MESSAGE			
	US/ Canada	Europe	Asia/ Pacific
TAD Type	N/A		
ICM Recording Time	N/A		
OGM (MC;MC Pro;Paging;F/T)	N/A		
Memo/Recording	N/A		
Toll Saver	N/A		
Remote Access	Yes		
Fax Retrieval	Yes		
Fax Forwarding	Yes		

Paging	Yes	N/A

PHOTO CAPTURE	N/A
Standard NETWORK	N/A
ACCESORY	
Life / Yield	Toner : Approx. 2,500 pages
	Drum : 12,000 pages: 1 page/job
Shelf life	**Toner and Drum:** 2 years (6 months after opening) <Temperature> Normal condition: 0 - 40°C Storage condition at a temperature of 40 to 50°C: Up to 5 days Storage condition at a temperature of -20 to 0°C: Up to 5 days <Humidity> Normal condition: 35 - 85% Storage condition at a humidity of 85 to 95%: Up to 5 days Storage condition at a humidity of 10 to 35%: Up to 5 days

2. Appendix: Troubleshooting Guide

Error Indication

To help the user or the service personnel promptly locate the cause of a problem (if any), the facsimile equipment incorporates the self-diagnostic functions which display error messages for equipment errors and communications errors.
For the communications errors, the equipment also prints out the transmission verification report and the communications list.

Equipment Errors

If an equipment error occurs, the facsimile equipment emits an audible alarm (continuous beeping) for approximately 4 seconds and shows the error message on the LCD. For the error messages, see "Error messages appearing on the LCD " below.

To display detailed error information, use maintenance-mode function code 82 described in the "List of Maintenance-Mode Functions" section of the "Main Chapter" (that is, make the equipment enter the maintenance mode and then press the "8" and "2" keys). Following the MACHINE ERROR, one of the error codes listed in "Error codes shown in the "MACHINE ERROR X X" message" will appear on the LCD.

Error messages appearing on the LCD

Error Message	Cause	Action
Back Cover Open	The back cover is not completely closed.	Close the back cover of the machine.
Change Drum Soon	The drum unit is near the end of its life.	Use the drum unit until you have a print quality problem; then replace the drum unit with a new one.
Comm. Error	Poor phone line quality caused a communication error	Send the fax again or connect the machine to another telephone line. If The problem continues, call the telephone company and ask them to check your phone line.

Error Message	Cause	Action
Connection Fail	You tried to poll a fax machine that is not in Polled Waiting mode.	Check the other fax machine's polling setup.
Cooling Down Wait For a While	The temperature of the drum unit or toner cartridge is too hot. The machine will pause its current print job and go into cooling down mode. During the cooling down mode, you will hear the cooling fan running while the display on the machine shows Cooling Down, and Wait For a While.	You must wait 20 minutes for it to cool.
Cover is Open	The front cover is not completely closed.	Close the front cover of the machine.
Document Jam	The document was not inserted or fed properly, or the document scanned from ADF was too long.	Remove the document in the ADF.

ERROR MESSAGE	CAUSE	ACTION
Data Remaining	Print data is left in the machine's memory.	Re-start printing from your computer.
Disconnected	The other person or other person's fax machine stopped the call.	Try to send or receive again.
Dust on Drum	The drum unit needs to be cleaned.	Clean the corona wire. Clean the electrodes of the main body and drum unit. (Refer to "Location of Grounding Contacts" in the "Main Chapters".)
DR Mode in Use	The machine is set to Distinctive Ring mode. You can not change the Receive Mode from Manual to another mode.	Set Distinctive Ring to Off.

Unit is too Hot	The fixing unit is too hot.	Turn off the machine's power switch, and check the machine's environment If it is in a location that is too hot or too cold, try to cool or warm the room by turning on the air conditioner or heater. Or, change the location. Then, turn on the machine's power switch. (The machine can be turn off for up to 4 days without losing faxes stored in the memory.)
Fail to Warm up	The fixing unit is too cold.	

Error Message	Cause	Action
Machine too Hot	The inside of the machine is too hot.	See the below cell.
Make sure you can hear the fan in the machine spinning and the exhaust outlet isn't blocked by something If the fan is spinning, remove any obstacles that surround the exhaust outlet, and then leave the machine turned on but do not use it for several minutes. If the fan is not spinning, you need to save the faxes before you follow the suggestions below. Turn off the machine's power switch and then turn it on again. If the error message continues leave the machine for several minutes and then try it again. (The machine can be turned off for up to 4 days without losing faxes stored in the memory.)		
No Cartridge	The toner cartridge is not installed properly.	Reinstall the toner cartridge.
No Paper Fed	The machine is out of paper or paper is not properly loaded in the paper tray.	Refill the paper in the paper tray and then press start. -OR- Remove the paper and load it again and then press start.
	The paper is jammed in the machine.	Remove the jammed paper.
No Response/Busy	The number you dialed does not answer or is busy.	Verify the number and try again
Not Registered	You tried to access a One-Touch or Speed Dial number that is not programmed.	Set up the One-Touch or Speed Dial number.

Error Message	Cause	Action
Out of Memory	The machine's memory is full.	See the below cell.
(Fax sending or copy operation in progress) Press Start to send or copy the scanned pages. -OR- Press Stop/Exit and wait until the other operations in progress have finished and then try again. -OR- Clear the faxes from the memory. (Printing operation in process) Reduce print resolution. (See Advanced tab in Software User's Guide on the CD-ROM.) -OR- Clear the faxes from the memory.		
Paper Jam Inside	The paper is jammed inside the machine	Remove the jammed paper.
Paper Jam Rear	The paper is jammed in the back of the machine.	Remove the jammed paper.
Paper Jam Tray	The paper is jammed in the paper tray of machine	Remove the jammed paper.
Toner Life End	The toner cartridge and drum unit assembly may have been installed improperly.	Re-install the toner cartridge and drum unit assembly.
Toner Low	The toner cartridge is used up and printing is not possible	Replace the toner cartridge with a new one.
	If the LCD shows Toner Low, you can still print, however, the machine is telling you that toner is near end of its life and will soon run out.	Order a new toner cartridge now.

Error Message	Cause	Action

Unable to Init. (Initialize) Unable to Print Unable to Scan	The machine has a mechanical problem. -OR- A foreign object, such as a clip or ripped paper, is in the machine	Turn off the machine's power switch and then turn it on again. If the error message continues leave the machine for several minutes and then try it again. (The machine can be turned off for up to 4 days without losing faxes stored in the memory.)
Wrong Paper Size	Paper is not the correct size.	Load the correct size of paper (Letter, Legal or A4) and then press Start.

Error codes shown in the "MACHINE ERROR X X" message

Error Code (Hex)	Symptom	Probable Cause	Solution
56	Eject sensor error. (The paper eject sensor actuator is being push down.)	The back cover is opened.	Close the back cover.
		Paper eject sensor actuator caught on the surrounding parts.	Reassemble the paper eject sensor actuator.
		Paper eject sensor defective	Replace the main PCB.
		Main PCB defective	
57	Not used.	-	-
58	The error 6X, 76, 77, 78 or 79 occurred immediately before this error.	Any error occurs in the fixing unit.	Leave the machine for 10 minutes while keeping the power on. It is all right if the machine recovers from the error.
59	Fixing unit error The machine is left for 10 minutes after the error 58 occurs, but the fixing unit error is not cleared.	PS PCB unit defective	Replace the PS PCB unit.
		Fixing unit defective	Replace the fixing unit.
		Main PCB defective	Replace the main PCB.

Error Code (Hex)	Symptom	Probable Cause	Solution
5A	Incorrect develop bias value output of high voltage PS PCB (The bias value is too low or too high.)	High-voltage PS PCB ASSY harness not connected properly.	Reconnect the high-voltage PS PCB ASSY harness.
		High-voltage PS PCB ASSY defective	Replace the high-voltage PS PCB ASSY.
		Main PCB defective	Replace the main PCB.
5B	New toner detection lever error (The new toner detection lever is being push down.)	New toner actuator caught on the surrounding parts	Reassemble the new toner actuator.
		New toner actuator broken	Replace the new toner actuator.
		New toner detection switch defective	Replace the new toner detection switch.
		Main PCB defective	Replace the main PCB.
5C-69	Not used.	-	-
6A	Heater warming-up timeout error. (Heater does not reach 60 °C within 11 second.)	Thermistor/ halogen lamp defective	Replace the fixing unit.
		PS PCB unit defective	Replace the PS PCB unit.
		Main PCB defective	Replace the main PCB.
6B	Heater warming-up timeout error. (Heater does not reach 100 °C within 15 second.)	Thermistor/ halogen lamp defective	Replace the fixing unit.
		PS PCB unit defective	Replace the PS PCB unit.
		Main PCB defective	Replace the main PCB.
6C	Heater temperature exceeds the maximum high temperature. (270°C or more is detected for 1sec.)	Thermistor defective	Replace the fixing unit.
		PS PCB unit defective	Replace the PS PCB unit.
		Main PCB defective	Replace the main PCB.

Error Code (Hex)	Symptom	Probable Cause	Solution
6D	Heater temperature does not go up enough. (The setting is 100 ºC, but the temperature reaches only 60ºC or less.)	Halogen lamp defective	Replace the fixing unit.
		PS PCB unit defective	Replace the PS PCB unit.
		Main PCB defective	Replace the main PCB.
6E	Heater temperature goes up slowly. (It rises by 2ºC or less for 5 sec.)	Halogen lamp defective	Replace the fixing unit.
		PS PCB unit defective	Replace the PS PCB unit.
		Main PCB defective	Replace the main PCB.
6F	Hardware on the main PCB turns off the heater forcibly since the thermistor detects that the fixing unit temperature exceeds the setting one.	Thermistor defective	Replace the fixing unit.
		PS PCB unit defective	Replace the PS PCB unit.
		Main PCB defective	Replace the main PCB.
70	Not used.	-	-
71	Polygon motor of laser scanner unit ASSY does not synchronize with the reference clock.	Laser scanner unit ASSY harness not connected properly.	Reconnect the laser scanner unit ASSY harness.
		Laser scanner unit ASSY defective	Replace the laser scanner unit ASSY.
		Main PCB defective	Replace the main PCB.
72	Beam detect signal of laser scanner unit ASSY cannot be detected.	Laser scanner unit ASSY harness not connected properly.	Reconnect the laser scanner unit ASSY harness.
		Laser scanner unit ASSY defective	Replace the laser scanner unit ASSY.
		Main PCB defective	Replace the main PCB.
73	Toner cartridge or drum unit not installed.	The toner sensor is always ON.	Install the drum unit.
			Replace the toner sensor PCB ASSY.
		Main PCB defective	Replace the main PCB.

Error Code (Hex)	Symptom	Probable Cause	Solution
74	Toner sensor detects no toner in the toner cartridge. Develop roller counter reaches the upper limit.	Toner empty	Replace the toner cartridge.
		Toner sensor PCB defective	Replace the toner sensor PCB ASSY.
		Main PCB defective	Replace the main PCB.
75	In casing temperature sensor detects definite temperature or higher.	Fan broken	Replace the fan.
		In casing temperature sensor defective	Replace the in casing temperature sensor.
		Main PCB defective	Replace the main PCB.
76	Fixing unit temperature goes up too high.	Fixing unit thermistor defective (Short-circuited)	Replace the fixing unit.
		PS PCB unit defective	Replace the PS PCB unit.
		Main PCB defective	Replace the main PCB.
77	Fixing unit temperature goes up too high. (The machine is turned off when the error 75, 76 or 78 occurs.)	The error history disappears.	Leave the machine for 10 minutes while keeping the power on.
78	Fixing unit temperature does not go up. Or heater thermistor harness is disconnected or broken.	Fixing unit thermistor harness not connected properly.	Reconnect the fixing unit thermistor harness.
		Fixing unit thermistor defective	Replace the fixing unit.
		Halogen heater failure	
		PS PCB unit defective	Replace the PS PCB unit.
		Main PCB defective	Replace the main PCB.

Error Code (Hex)	Symptom	Probable Cause	Solution
79	Temperature sensor harness disconnected or broken.	In casing temperature sensor not connected properly.	Reconnect the in casing temperature sensor.
		In casing temperature sensor defective	Replace the in casing temperature sensor.
7A	Main motor does not synchronize with the reference clock.	Main PCB defective	Replace the main PCB.
		Main motor defective	Replace the main motor.
7B	ASIC error on the main PCB.	Main PCB defective	Replace the main PCB.
7C	Not used.	-	-
7D	Corona wire discharge	Dust is attached on the corona wire.	Clean the corona wire.
		The electrodes are dirty.	Clean the electrodes of the main body and drum unit. (Refer to "Location of Grounding Contacts" in the “Main Chapters”.)
		High-voltage PS PCB ASSY defective	Replace the high-voltage PS PCB ASSY.
		Main PCB defective	Replace the main PCB.
7E-7F	Not used.	-	-

Error Code (Hex)	Symptom	Probable Cause	Solution
80	At the start of FAX message printing, the controller detects that paper is smaller than letter size in width.	Paper smaller than the specified size loaded in the paper tray	Load the correct size of paper.
		Regist rear sensor actuator caught on the surrounding parts.	Reassemble the regist rear sensor actuator.
		Regist rear sensor defective	Replace the high-voltage PS PCB ASSY.
		Main PCB defective	Replace the main PCB.
81	Recording paper jam. (The paper eject sensor actuator is being push down when turning the machine ON.)	Paper is jammed.	Remove the jammed paper.
		Paper eject sensor actuator caught on the surrounding parts.	Reassemble the paper eject sensor actuator.
		Paper eject sensor defective	Replace the main PCB.
		Main PCB defective	
82	Recording paper jam while feeding paper (The regist front sensor actuator is being push down.)	Paper is jammed.	Remove the jammed paper.
		Regist front sensor actuator caught on the surrounding parts.	Reassemble the regist front sensor actuator.
		Regist front sensor defective	Replace the regist front sensor PCB ASSY.
		Main PCB defective	Replace the main PCB.

Error Code (Hex)	Symptom	Probable Cause	Solution
83	Recording paper jam. (The regist front sensor actuator is push down too early when feeding paper.)	Paper is jammed.	Remove the jammed paper.
		Regist front sensor actuator caught on the surrounding parts.	Reassemble the regist front sensor actuator.
		P/R solenoid defective	Replace the P/R solenoid.
		Main PCB defective	Replace the main PCB.
84	Recording paper jam. (The paper eject sensor actuator is being push down even after ejecting paper.)	Paper is jammed.	Remove the jammed paper.
		Foreign materials in the paper path.	Remove foreign materials.
		Paper ejection roller defective	Replace the paper ejection roller.
		Paper eject sensor actuator caught on the surrounding parts.	Reassemble the paper eject sensor actuator.
		Paper eject sensor defective	Replace the main PCB.
		Main PCB defective	
85	No paper tray loaded.	No paper tray loaded.	Load the paper tray.
		Foreign materials in the paper tray	Remove foreign materials.
		Tail edge actuator caught on the surrounding parts.	Reassemble the tail edge actuator.
		Tail edge sensor defective	Replace the regist sensor PCB.
86-87	Not used.	-	-

Error Code (Hex)	Symptom	Probable Cause	Solution
88	Recording paper jam. (The regist rear sensor actuator is being push down even after feeding paper.)	Paper is jammed.	Remove the jammed paper.
		Regist rear sensor actuator caught on the surrounding parts.	Reassemble the regist rear sensor actuator.
		Foreign materials in the paper path.	Remove foreign materials.
		Regist rear sensor defective	Replace the high-voltage PS PCB ASSY.
		Paper feed roller defective	Replace the Paper feed roller.
		F/R solenoid defective	Replace the F/R solenoid.
		Main motor defective	Replace the main motor ASSY.
		Main PCB defective	Replace the main PCB.
89	Recording paper jam in the manual slot (The regist rear sensor actuator is not pushed down after a certain time elapses after paper feeding.)	Paper is jammed.	Remove the jammed paper.
		Regist rear sensor actuator caught on the surrounding parts.	Reassemble the regist rear sensor actuator.
		Foreign materials in the paper path.	Remove foreign materials.
		Regist rear sensor defective	Replace the high-voltage PS PCB ASSY.
		Main motor defective	Replace the main motor.
		Main PCB defective	Replace the main PCB.
8A-A0	Not used.	-	-

Error Code (Hex)	Symptom	Probable Cause	Solution
A1	Front cover opened. (The front open switch is not pressed down.)	Hook of the front open switch on the front cover broken	Replace the front cover.
		Front open switch broken	Replace the front open switch.
		Main PCB defective	Replace the main PCB.
A2	Document length exceeding the scan limitation. During scanning, 90 cm or longer of a document is detected. During document feeding or ejecting, 400 cm or longer of a document is detected.	Document jam	Remove the jammed document.
		Actuator R caught on the surrounding parts	Reassemble the actuator R.
		Document rear sensor broken	Replace the panel PCB ASSY.
		Main PCB defective	Replace the main PCB.
A3	The document rear sensor does not come ON during document pull-in operation.	Document jam	Remove the jammed document.
		Actuator R caught on the surrounding parts	Reassemble the actuator R.
		Scanning motor F sub ASSY defective	Replace the scanning motor F sub ASSY.
		Document rear sensor broken	Replace the panel PCB ASSY.
		Panel PCB ASSY defective	
A4	Not used.	-	-
A5	FAX scanning failure. (1st time) (Data scanning error)	Data scanning is failed.	Turn the machine ON, then OFF. Retry scanning.

Error Code (Hex)	Symptom	Probable Cause	Solution
A6	FAX scanning failure. (retry) (CIS defective)	Document pressure bar dirty	Clean the document pressure bar.
		CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
A7	Color parameter error in document scanning	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
A8	CIS scanning time error in document scanning	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
A9	Scan gain error in document scanning	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
AA-AF	Not used.	-	-
B0	CIS harness connection error	CIS harness not connected properly	Reconnect the CIS harness.
		CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
B1	Dark level offset data level error for scanning	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
B2	Gain control data level error for scanning	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
B3	Scan area left edge detection error	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
B4	Scan area right edge detection error	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.

Error Code (Hex)	Symptom	Probable Cause	Solution
B5	Horizontal scanning edge reduction detection error in scanning area setting	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
B6	Horizontal scanning edge enlargement detection error in scanning area setting	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
B7	A/D converter reference voltage error in document scanning (at High level)	Main PCB defective	Replace the main PCB.
B8	A/D converter reference voltage error in document scanning (at Low level)	Main PCB defective	Replace the main PCB.
B9	Light emission intensity error of the LED array in document scanning (Exceeding the upper limit)	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
BA	Gray level data error in document scanning	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
BB	White level data error in document scanning	Document pressure bar dirty	Clean the document pressure bar.
		CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
BC	Half tone level data error in document scanning	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
BD	Black level data error in document scanning	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
BE-CF	Not used.	-	-
D0-DF	Modem error	Main PCB defective	Replace the main PCB.

Error Code (Hex)	Symptom	Probable Cause	Solution
E0-E5	Not used.	-	-
E6	Write error in EEPROM	Main PCB defective	Replace the main PCB.
E7	Not used.	-	-
E8	Data scanning error during transmission	CIS defective	Replace the CIS.
		Main PCB defective	Replace the main PCB.
E9	Not used.	-	-
EA	Document removed at phase B	Actuator F caught on the surrounding parts	Reassemble the actuator F.
		Document front sensor PCB defective	Replace the panel PCB ASSY.
		Main PCB defective	Replace the main PCB.
EB- F0	Not used.	-	-
F1	Dial numbers are not stored.	The one-touch dial key or speed dial numbers keys which have not been stored are pressed.	Re-store the dial numbers.
F2	Not used.	-	-
F3, F5	Internal software error	Main PCB defective	Replace the main PCB.
F4	Not used.	-	-
F6	PC interface error	Main PCB defective	Replace the main PCB.
F7-FF	Not used.	-	-

The solution when Error Code 76,77,78 shown in the machine:

The heater may be overheating when one of these errors occurs. Therefore, the heater is programmed to turn off its power for 10 minutes after the machine is turned on for the safety concern when the error occurs.

To help the heater work properly, it's necessary to follow the operating procedures as below after taking measures against the cause of the error.

1. Turn the machine off. Wait until the heater temperature lowers enough.

2. Turn the machine on.

The machine enters the maintenance mode, then returns to the standby state. Or leave the machine for 10 minutes while keeping the power on.

Communications Errors

If a communications error occurs, the facsimile equipment emits an audible alarm (intermittent beeping) for approximately 4 seconds, displays the corresponding error message, and prints out the transmission verification report if the equipment is in sending operation.

Definition of error codes on the communications list

1. Calling

Code 1	Code 2	Causes
10	08	Wrong number called.
11	01	No dial tone detected before start of dialing.
11	02	Busy tone detected before dialing.
11	03	2nd dial tone not detected.
11	05	No loop current detected. *
11	06	Busy tone detected after dialing or called.
11	07	No response from the remote station in sending.
11	10	Unobtainable tone detected after dialing.
17	07	No response from the calling station in receiving.

* Available in German models only.

2. Command reception

Code 1	Code 2	Causes
20	01	Unable to detect a flag field.
20	02	Carrier was OFF for 200 ms or longer.
20	03	Abort detected ("1" in succession for 7 bits or more).

20	04	Overrun detected.
20	05	A frame for 3 seconds or more received.
20	06	CRC error in answerback.
20	07	Error command received.
20	08	Invalid command received.
20	09	Command ignored once for document setting or for dumping-out at turn-around transmission.
20	0A	T5 time-out error
20	0B	CRP received.
20	0C	EOR and NULL received.

3. Compatibility [checking the NSF and DIS]

Code 1	Code 2	Causes
32	01	Remote terminal only with V.29 capability in 2400 or 4800 bps transmission.
32	02	Remote terminal not ready for polling
32	10	Remote terminal not equipped with password function or its password switch OFF
32	11	Remote terminal not equipped with or not ready for confidential mailbox function.
32	12	Remote terminal not equipped with or not ready for relay broadcasting function.
32	13	No confidential mail in the remote terminal.
32	14	The available memory space of the remote terminal is less than that required for reception of the confidential or relay broad- casting instruction.
32	18	Remote terminal not equipped with color function

4. Instructions received from the remote terminal [checking the NSC, DTC, NSS, and DCS]

Code 1	Code 2	Causes

40	02	Illegal coding system requested.
40	03	Illegal recording width requested.
40	05	ECM requested although not allowed.
40	06	Polled while not ready.
40	07	No document to send when polled.
40	10	Nation code or manufacturer code not coincident.
40	13	Polled by any other manufacturers' terminal while waiting for secure polling.
40	17	Invalid resolution selected.
40	20	Invalid full-color mode requested.

5. Command reception [checking the NSF and DIS after transmission of NSS and DCS]

Code 1	Code 2	Causes
50	01	Vertical resolution capability changed after compensation of background color.

6. ID checking

Code 1	Code 2	Causes
63	01	Password plus "lower 4 digits of telephone number" not coincident.
63	02	Password not coincident.
63	03	Polling ID not coincident

7. DCN reception

Code 1	Code 2	Causes
74		DCN received.

8. TCF transmission/reception

Code 1	Code 2	Causes
80	01	Fallback impossible

9. Signal isolation

Code 1	Code 2	Causes
90	01	Unable to detect video signals and commands within 6 seconds after CFR is transmitted.
90	02	Received PPS containing invalid page count or block count.

10. Video signal reception

Code 1	Code 2	Causes
A0	03	Error correction sequence not terminated even at the final transmission speed for fallback.
A0	11	Receive buffer empty. (5-second time-out)
A0	12	Receive buffer full during operation except receiving into memory.
A0	13	Decoding error continued on 500 lines.
A0	14	Decoding error continued for 10 seconds.
A0	15	Time-out: 13 seconds or more for one-line transmission.
A0	16	RTC not found and carrier OFF signal detected for 6 seconds.
A0	17	RTC found but no command detected for 60 seconds.
A0	18	Receive buffer full during receiving into memory.
A0	19	No video data to be sent
A0	20	Unable to continue to receive color FAX (Remaining ink insufficient)
A8	01	RTN, PIN, or ERR received at the calling terminal. *
A9	01	RTN, PIN, or ERR received at the called terminal. *

* Available in German models only

11. General communications-related

Code 1	Code 2	Causes
B0	02	Unable to receive the next-page data.
B0	03	Unable to receive polling even during turn-around transmission due to call reservation.
B0	04	PC interface error.
BF	01	Communication canceled by pressing the Stop/Exit before establishment of FAX communication*
BF	02	Communication canceled by pressing the Stop/Exit after establishment of FAX communication*.
BF	03	Transmission canceled due to a scanning error caused by no document or document feed problem in ADF scanning in real time transmission.

* Establishment of FAX communication:

FAX communication is established when the calling station receives a DIS (reception capability) signal from the called station and the called station receives an NSS or DCS (communications test) signal from the calling station.

12. Maintenance mode

Code 1	Code 2	Causes
E0	01	Failed to detect 1300 Hz signal in burn-in operation.
E0	02	Failed to detect PB signals in burn-in operation.

13. Equipment error

Code 1	Code 2	Causes
FF	X X	Equipment error (For X X, refer to “Error codes shown in the "MACHINE ERROR X X" message” section.)