



This course is about the standalone fax unit HL-F2.

- 1. Product Outline
- 2. Specifications
- 3. Installation
- 4. Machine Overview
- 5. Maintenance
- 6. Machine Functions
- 7. Replacement and Adjustment
- 8. Troubleshooting

No additional notes



Product Outline

No additional notes



Appearance

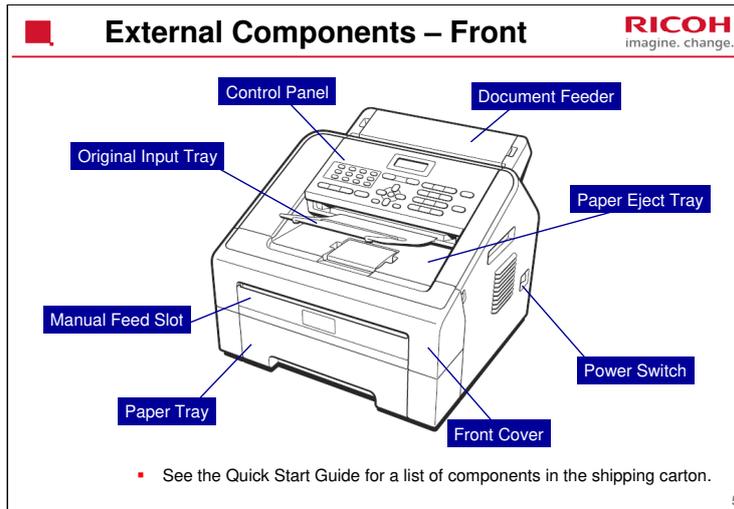
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- This is the machine you will study in this training course.
- There is only one model: H560 (FAX 1195L)
 - 20 cpm (A4, LT)

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No additional notes

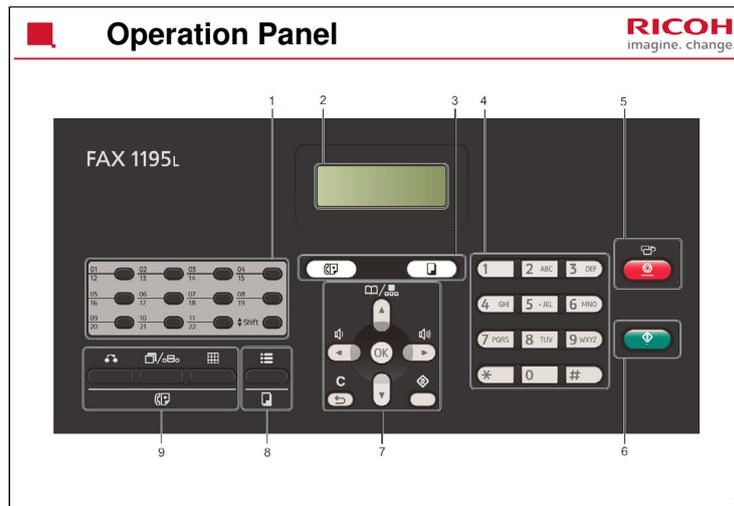


Refer to the operating instructions for more details.

External Components – Rear



No additional notes.



1. One Touch keys
2. LCD
3. Mode keys (Fax, Copy)
4. Dial pad
5. Stop/Exit: Stops an operation or exits from a menu.
6. Start: Lets you start sending faxes or making copies.
7. Menu keys:
 - Clear (Bottom left): Deletes entered data or lets you cancel the current setting.
 - Menu (Bottom right): Lets you access the menu to program your settings in the machine.
 - Address Book (Top): Lets you access speed dial numbers directly.
8. Copy key (to select options for copying)
9. Fax keys
 - Left: Access to outside through PBX, or to have a conversation with the other end
 - Center: Redial, or enter a pause in the phone number
 - Right: Sets the resolution when sending a fax.



- **Main Objective**
 - Maintain the Fax MIF in the low end market
 - Replacement for the H558 (HL-F1)
- **Target Users**
 - Business personal (1 to 4 users)
 - Small office (5 to 29 users)
 - Can double as a small office printer/copier
- **Installation by users**
- **No PM**
 - Users replace the toner cartridge and the drum unit.

No additional notes.



Main Improvements

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- **Monochrome Scanning function**
 - Scanning a document to PC via USB
 - New function (not available in HL-F1)
- **Energy Saving (compared with HL-F1)**
 - Operation: Reduced from 475 W to 360 W
 - Standby: Reduced from 80W to 53 W
 - Energy save: Reduced from 10 to 1.5 W
- **Increased Print Speed: 20 ppm**
 - HL-F1 is 14 ppm (A4), 15 ppm (Lt)

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No additional notes

- **Monthly transmission volume:**
 - Average: 200 sheets
 - Maximum: 830 sheets
- **Monthly printing volume (including fax, printer, copier):**
 - Average: 200 sheets
 - Maximum: 830 sheets
- **Toner yield: Approximately 2,600 sheets**
 - 1,000 sheets for the starter cartridge.
- **Drum yield: Approximately 12,000 sheets**
 - The above yields are based on A4 sheets with 5% coverage.
- **Expected product life: 5 years or 50,000 prints**

No additional notes.



Specifications

No additional notes



General Specifications - 1

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- **Resolution:**
 - Scanner engine: 600 x 600 dpi
 - Fax scan: Standard, Fine, Super fine, and Photo
 - Print engine: 300 x 600 dpi
- **Print speed:**
 - Up to 20/21 ppm
 - No duplex mode
- **Fax speed: 2.5 s (approx., ITU-T #1, JBIG)**
- **Warm-up time**
 - From Sleep mode: Less than 7 seconds
 - From Power off: Less than 27 seconds
- **First print time**
 - From Ready mode: Less than 10.0 seconds
 - From Sleep mode: Less than 19.0 seconds

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This slide shows the basic specifications.

For more detailed specifications, see the field service manual.



General Specifications - 2

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- Maximum Original and Output Size: A4/LT
- Paper tray capacity: 250 sheets
- By-pass tray capacity: 1 sheet
- ADF capacity: 20 sheets
- Paper output capacity: 100 sheets
- Paper weight
 - Paper tray 1: 60 to 105 g/m² (16 to 28 lb)
 - Manual feed slot: 60 to 163 g/m² (16 to 43 lb)
 - ADF: 64 to 90 g/m² (17 to 24 lb)

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This slide shows the basic specifications.

For more detailed specifications, see the field service manual.

- **Memory: 16 MB standard**
 - No optional memory or HDD
- **Interface: USB 2.0**
 - No Ethernet connection
- **Power Consumption (Average)**
 - Copying: Approximately 360 W
 - Ready: Approximately 55 W
 - Sleep: Approximately 1.5 W

This slide shows the basic specifications.

For more detailed specifications, see the field service manual.



Installation

No additional notes

- Generally, the user installs this machine. However, in addition to your maintenance duties, you may also have to install the machine when you are in the field.
- The full installation procedure is in the *Quick Setup Guide*.
- Before you start installation:
 - Check the accessories.
 - Confirm the location to install the machine.

No additional notes.



Install the Machine

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- The following are the main steps to installation. Refer to the Quick Setup Guide (QSG) for details.
 - Attach the ADF document output support.
 - Install the drum unit.
 - Load paper in the paper tray.
 - Connect the power cord.
 - Connect the phone line.
 - Do the initial setup. This includes the following. See the QSG for details.
 - Set the country.
 - Set the language (if different from the country).
 - Set the receive mode.
 - Set the date and time.
 - Set the station ID (name and fax number to be printed on all fax pages sent).
- In addition to the above, the user may ask you to set up their computer for printing. (Refer to the QSG.)
 - Install the Multi-function suite.
 - Connect a USB cable (not supplied with the machine).

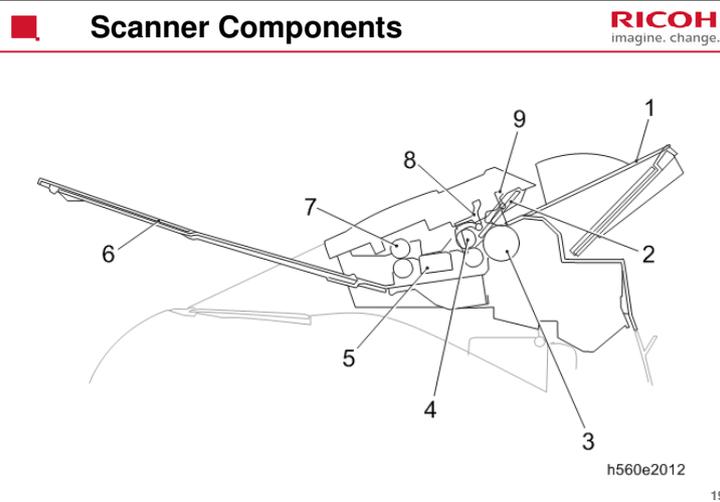
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The Basic User's Guide and Advanced User's Guide contain a lot more information about machine setup options. Familiarize yourself with these and the other operation manuals in case the user requests your help.

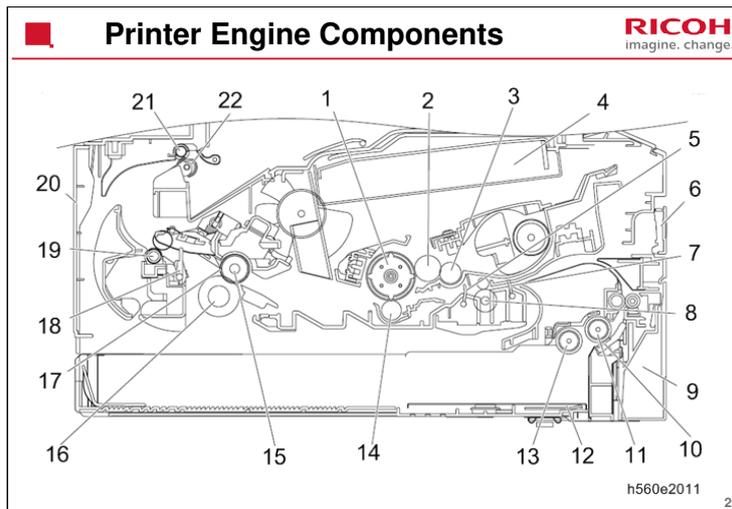


Machine Overview

No additional notes

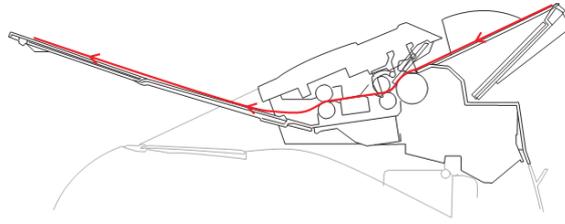


1. Document tray
2. Separation pad
3. Document separation roller
4. Document feed roller
5. CIS unit
6. ADF document output support flap
7. Document ejection roller
8. Document scanning position actuator
9. Document detection actuator



1. Exposure drum
2. Developer roller
3. Supply roller
4. Laser unit
5. Registration rear actuator
6. Manual feed slot cover
7. Registration front actuator
8. Registration roller
9. Paper tray
10. Separation pad
11. Separation roller
12. Plate
13. Pick-up roller
14. Transfer roller
15. Halogen heater
16. Pressure roller
17. Heat roller
18. Paper eject actuator
19. Eject roller 1
20. Back cover
21. Eject roller 2
22. Eject pinch roller

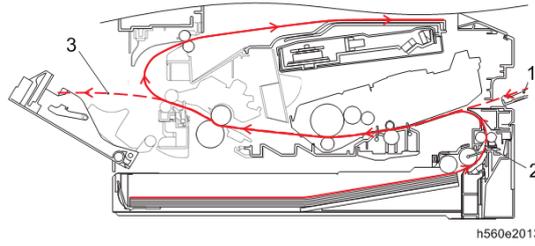
Paper Path: Scanning



h560e2014

No additional notes

Paper Path: Printing



h560e2013

- 1. Manual feed slot path
- 2. Paper tray path
- 3. Rear paper eject path

No additional notes



Maintenance

No additional notes

- There is no PM schedule for technicians.
- Users can replace the drum unit and toner cartridge.

No additional notes



Cleaning the Machine

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- This machine is designed for user maintenance; so, it does not have a periodic maintenance schedule.
- As a preventive maintenance measure, you may need to clean machine components during service calls.
- Pay particular attention when cleaning the drum.
 - Refer to Appendix A (Routine Maintenance) in the Basic User's Guide for the cleaning procedures.
 - Pay particular attention to important notes and cautions.

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No additional notes



- Maintenance mode contains some programs that technicians can use, in a similar way to the SP modes of Ricoh models.
- For how to enter maintenance mode, see your supervisor.
 - Then press the up or down arrow buttons until the mode that you want appears on the display.
- To exit the maintenance mode, press the [9] button twice when the maintenance mode is in the initial state.
 - For models without numeric keys, press the up or down arrow button until "MAINTENANCE 99" appears on the LCD. Then press the [OK] button, and the machine returns to the ready state.
- For more details, see the following section of the service manual:
 - System Maintenance > Service Maintenance
- For details of what each function does, see the following section of the service manual:
 - System Maintenance > Detailed Description of Maintenance mode Functions

No additional notes



List of Maintenance Mode Functions

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- 01 EEPROM parameter initialization
 - 05 Printout of scanning compensation data
 - 06 Scanning lock
 - 08 ADF performance test
 - 09 Monochrome image quality test pattern
 - 10 Worker switch (WSW) setting
 - 11 Printout of worker switch data
 - 12 Operational check of LCD
 - 13 Operational check of control panel buttons
 - 25 Software version check
 - 32 Operational check of sensors
 - 33 LAN connection status display
 - 43 PC print function
 - 45 Changing return value of USB No.
 - 53 Received data transfer function
 - 54 Fine adjustment of scan start/end positions
 - 55 Acquisition of white level data
 - 57 Automatic scanning position adjustment
 - 67 Continuous print test
 - 74 Setting by country
 - 77 Printout of maintenance information
 - 78 Operational check of fan
 - 80 Display of machine log history
 - 82 Error code indication
 - 87 Sending communication error list
 - 91 EEPROM parameter initialization
 - 99 Exit the maintenance mode
- Note that customers can access the following modes: 6, 9, 10, 11, 12, 25, 43, 45, 53, 54, 77, 80, 82, 87, 91

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No additional notes

- The full procedure is in this section of the service manual.
 - 5. System Maintenance > Firmware Installation

No additional notes



- To prepare to install new firmware, do the following:
 - Prepare a USB cable
 - Create a temporary folder on the C drive of a computer (Windows ® XP//2000 or higher).
 - Service setting tool (BrUsbn.zip): Copy it into the temporary folder created on the C drive. Extract the copied file and double-click the "BrUsbsn.exe" file when you need to start it.
 - Download utility (FILEDG32.EXE): Copy it into the temporary folder created on the C drive.
 - Maintenance USB printer driver (Maintenance_Driver.zip): Copy it into the temporary folder created on the C drive. Extract the copied file.
 - Prepare a file of the latest firmware
 - Main firmware LZXXXX_\$.upd *
 - LZXXXX: First six digits of the part number of the firmware
 - \$: Alphabetic character representing the revision version of the firmware
 - *upd: Used to rewrite the firmware via a computer.
 - Install the maintenance USB printer driver (sometimes called the 'maintenance driver' in the service manual).

No additional notes



- Check if the firmware on the main PCB is the latest version or not.
 - Press the [*] and [#] buttons at the same time in the ready state. The firmware version information is displayed on the LCD.
 - This method only displays information on the main firmware.
 - Maintenance mode function code 25 also checks the latest firmware in the machine.
 - This method displays the versions of all firmware modules.

No additional notes



■ Procedure

1. Turn OFF the power switch of the machine.
2. Then turn it ON again with the [5] button held down ([Number of Copies] button for models without numeric keys).
3. Check that a row of 8 black squares appears on the LCD.
4. Connect the computer to the machine with the USB cable.
5. Double-click the "FILEDG32.EXE" file to start it. Select the "Maintenance USB Printer".
6. Drag and drop the firmware file that you want to use (for instance, LZXXXX_\$.upd) onto the "Maintenance USB Printer" icon. The computer sends this file to the machine, to update the firmware.
 - DO NOT unplug the power cord of the machine or your computer or disconnect the USB cable while rewriting the firmware.
7. When rewriting firmware is completed, the machine returns to the ready state.
 - To continue rewriting other program files, go back to do steps 1, 2, and 6.

No additional notes



- Check that Setting by Country (Function code 74) is correct.
 - 5. System Maintenance > Detailed Description of Maintenance mode Functions > Setting by Country (Function code 74)
 - Be sure to do this after replacing the main PCB ASSY or rewriting the firmware.

No additional notes



- These are similar to the bit switches in Ricoh fax machines and MFPs.
 - Descriptions of each switch: 5. System Maintenance > Firmware Switches (WSW)
 - Adjustment procedure: 5. System Maintenance > Detailed Description of Maintenance mode Functions > Firmware Switch Setting (Function code 10)

No additional notes



- The following section contains a few other procedures that you might need to use sometimes.
 - 5. System Maintenance > Other Service Functions

 - Developer Roller Counter Reset
 - Parts Life Reset Function (Drum)
 - Deletion of User Setting Information, etc.
 - Continue Mode / Stop Mode Settings of Toner Cartridge
 - Drum Cleaning
 - ON/OFF Setting of Deep Sleep Function
 - Communication List

No additional notes



- **Developer Roller Counter Reset**
 - This function allows you to manually perform the same operation as when the toner cartridge is replaced with a new one.
 - The purpose of this function is to provide an error resetting method when the toner life display cannot be cleared.
- **Parts Life Reset Function (Drum)**
 - This function is used to reset the part counter when the user replaced a periodical replacement part with the correct procedure. It is also used to forcibly reset the relevant part counter; this is needed when an error cannot be reset because the user did not replace a consumable part with the correct procedure.
 - All replacement parts are always displayed on the LCD even though they have not yet reached the end of their life.

No additional notes



- **Deletion of User Setting Information, etc.**
 - The user setting information is stored in the EEPROM and flash memory of the main PCB.
 - You can delete all user settings, such as user switches, and telephone numbers
 - Maintenance mode functions 01 and 91 also delete settings. For a list of what these functions delete, see the following section of the service manual: 5. System Maintenance > Detailed Description of Maintenance mode Functions > EEPROM Parameter Initialization (Function code 01, 91)

No additional notes



- **Continue Mode / Stop Mode Settings of Toner Cartridge**
 - There are three levels for toner near-end/end detection.
 - 'Toner Low': This is just a near-end warning displayed for the user.
 - 'Replace Toner': This is toner end, but the machine can still operate if 'Continue Mode' is enabled.
 - 'Toner Ended': Toner end. The machine cannot print
- **If Continue Mode is enabled, the machine will continue printing after "Replace Toner" is displayed, until "Toner Ended" is displayed.**
 - "Stop" is the default setting.
 - Printing quality is not guaranteed when Continue Mode is set.
 - The machine returns to the default setting when the toner cartridge is replaced.

No additional notes



■ Drum Cleaning

- To clean the drum, insert a sheet of plain paper into the manual feed slot, then do the procedure in the manual.

■ ON/OFF Setting of Deep Sleep Function

- In addition to the normal sleep mode, the Deep Sleep function reduces the power consumption even more.
 - In addition to the normal sleep mode, the fans are stopped.
- If the machine is in Sleep mode and does not receive any jobs for a certain length of time, the machine will automatically enter Deep Sleep mode.
 - When a Secure Print exists, the machine does not enter the Deep Sleep mode.
- The machine exits Deep Sleep mode when it receives an input from an external device (such as when the machine receives data, any button on the control panel is operated, or the front cover is opened or closed).
- The default setting for the technician's on/off setting is: Deep Sleep enabled.
 - If you change this setting to 'off', the machine will not go into Deep Sleep mode.

If you enter maintenance mode and do function 55 to get new white data just after recovering from deep sleep mode, but the machine cannot get the correct data, you have to reinstall the firmware.

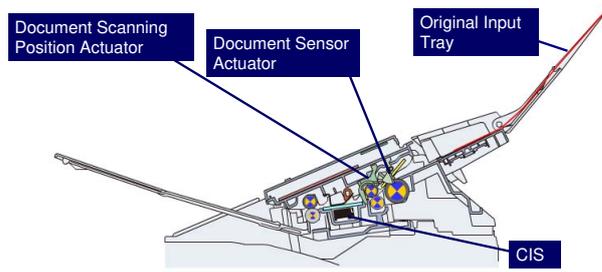


Machine Functions

No additional notes

ADF - Overview

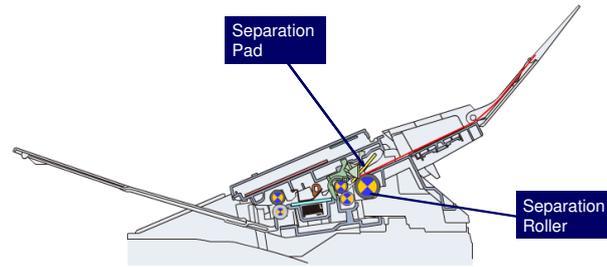
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- These are the main components of the ADF.

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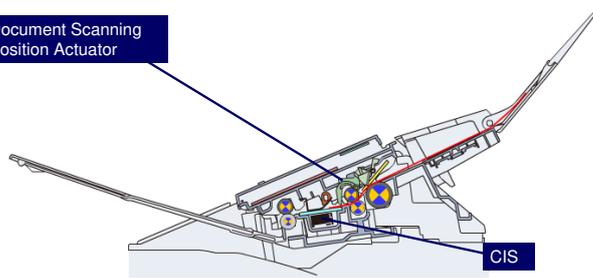
No additional notes



- When the machine detects a document in the input tray, original feed begins.
 - The separation roller and pad only allow one sheet through to the scanner.

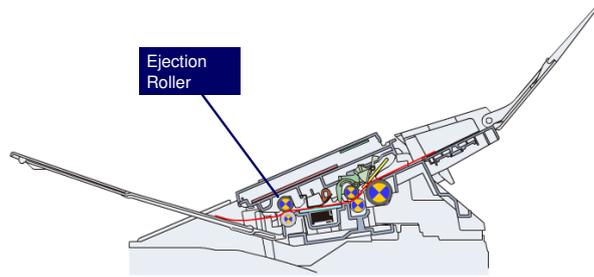
No additional notes

Document Scanning
Position Actuator



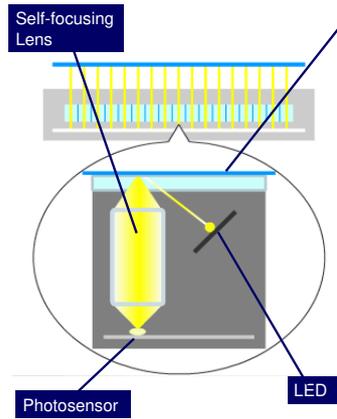
- After the leading edge passes the document scanning position actuator, the CIS starts to scan the original.
 - This sensor also detects jams in the ADF.

No additional notes



- A pressure plate holds the document against the CIS (contact image sensor) as the document passes.
- The ejection roller feeds the original out.

No additional notes



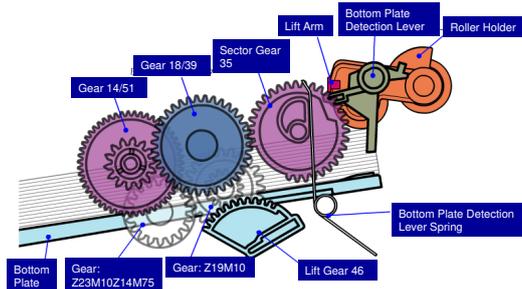
- The upper part of the diagram shows a part of the CIS, and the lower part shows one element of the CIS.
- Light from the LED array is reflected off the original, through an array of self focusing lenses, to a photosensor array.
- The photosensors send the image to the main board.

No additional notes



Paper Tray: Bottom Plate Lift

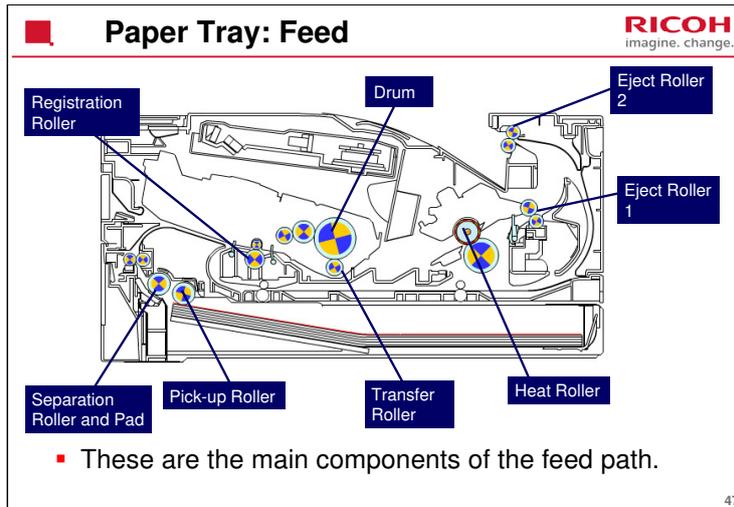
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- In this model, a motor drives the bottom plate lift mechanism, not pressure springs.
- When the tray is placed in the machine, the tray moves down. Then the main motor turns on, and drives lift gear 46 through some other gears, which lifts the bottom plate.
- When the roller holder starts to be pushed up, the motor stops.

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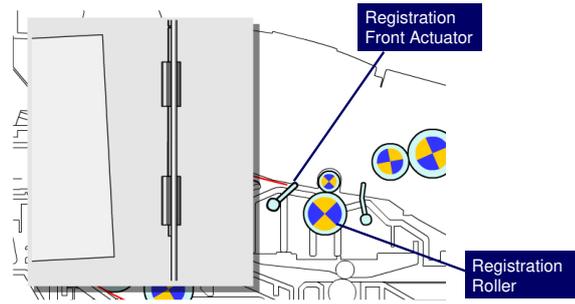
No additional notes



No additional notes

■ Paper Tray: Registration - 1

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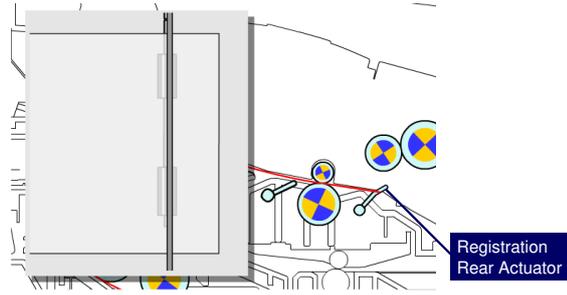
- The registration front actuator detects when the leading edge is approaching the registration roller.
 - This sensor also detects paper length and checks for paper jams.

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No additional notes

■ Paper Tray: Registration - 2

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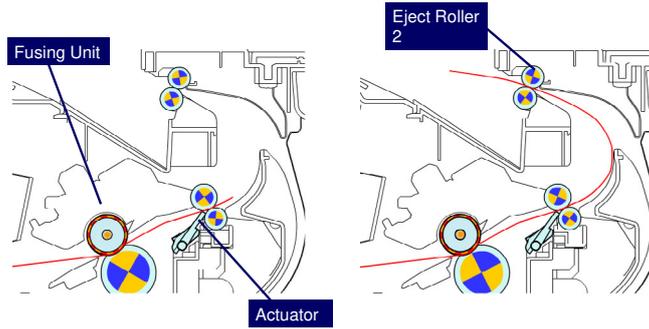
- The registration rear actuator detects the leading edge when it approaches the drum.
 - This sensor controls the timing for starting to write the image on the drum.

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No additional notes

■ Paper Tray: Feed-out

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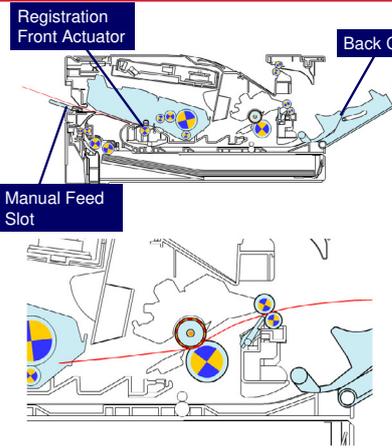


- The paper eject actuator detects paper when it leaves the fusing unit.
 - This sensor also checks for paper jams.
 - If a jam is detected, the main motor reverses to disengage the gears. As a result, eject roller 2 can move freely and it is easier to remove the jammed paper.
- Paper is fed out face down.

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No additional notes

Paper Tray: Manual Feed



- Sheets are fed one at a time into the manual feed slot.
- If the registration front actuator detects the leading edge, the machine determines that paper has been fed into the manual feed slot.
- If the back cover is open, paper is fed out face up.

No additional notes



- Toner consumption is measured by the dot count and development roller rotation. There is no sensor.
- Because toner is monitored by software and not hardware, sometimes the machine displays toner end and stops printing when toner still remains.
- However, the user can force the machine to continue printing, if the user thinks that sufficient toner remains for the job. But if the user does this, print quality cannot be guaranteed.
 - Explained earlier in Continue Mode / Stop Mode Settings of Toner Cartridge, on the slide titled Other Service Functions - 4
- Then, as a safety measure to prevent mechanical problems, if the development roller rotation counter reaches the maximum limit, printing is prohibited until a new toner cartridge is installed.
 - The development roller is part of the toner cartridge. So wear on the development roller is an important part of determining the maximum life of the cartridge.

No additional notes

- If many small jobs are printed, wear on the development roller is more than if the same number of pages is printed continuously.
- If power is turned off/on, or the cover opened and closed, the development roller makes extra rotations, which wears it out.

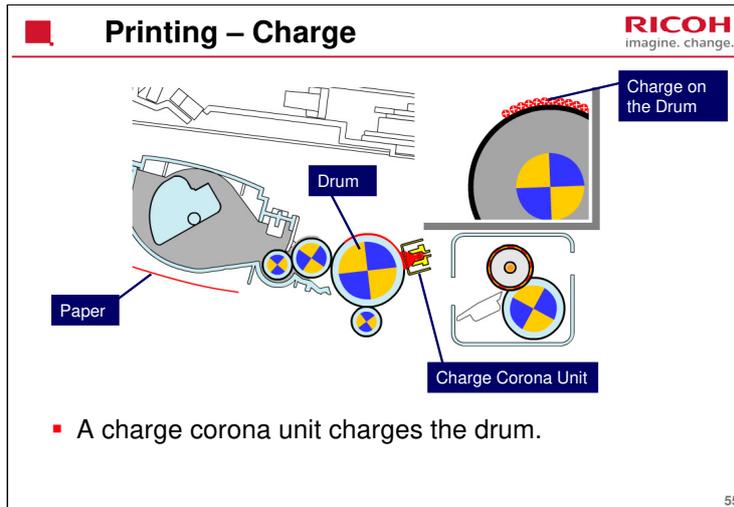
No additional notes

■ New Toner Cartridge Detection **RICOH**
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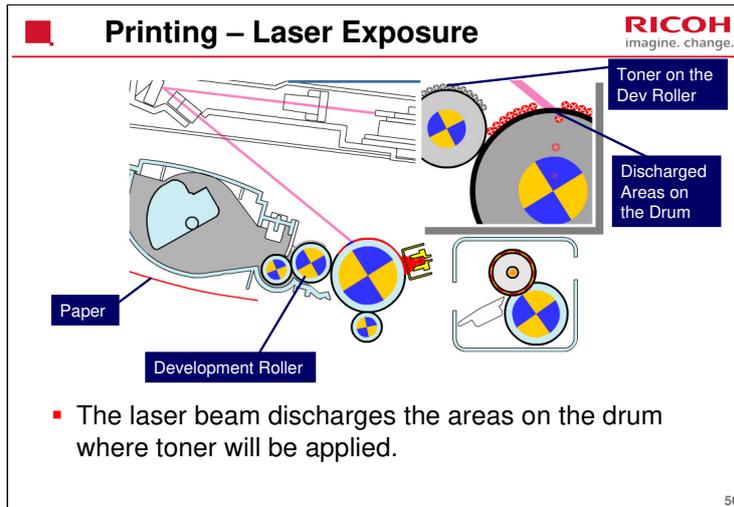
- When a new toner cartridge is installed, the development motor starts, and turns the reset gear through some other gears.
- The rib (colored red in the diagram) on the reset gear pushes the new toner actuator, and the machine detects that a new cartridge was just installed.
- The machine can detect which type of cartridge as follows
 - Normal cartridge: 1 rib
 - Starter cartridge: No reset gear, so no ribs. The machine assumes this cartridge is installed the first time the power is turned on after shipping.

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Drum unit: After replacing a drum unit, the user must reset the counter by following the procedure on the sheet that is packed with the new drum unit.



The positive charge given to the drum is shown in red.



No additional notes

Printing - Development **RICOH**
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The diagram illustrates the development stage of a printer. It shows a drum with a yellow and blue pattern, a development roller with a blade, and a paper sheet. Labels 'Paper' and 'Toner Applied to the Drum' point to the respective components. A list of two bullet points explains the process.

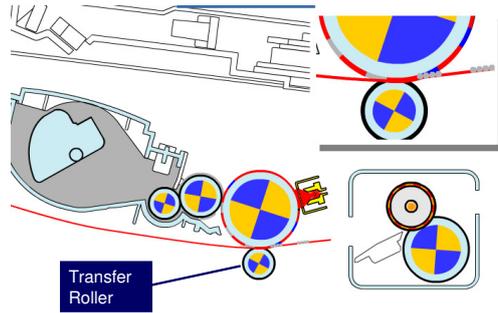
- Toner is applied to the discharged areas of the drum.
- A blade trims the toner on the development roller to a uniform thickness.

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No additional notes

■ Printing - Transfer

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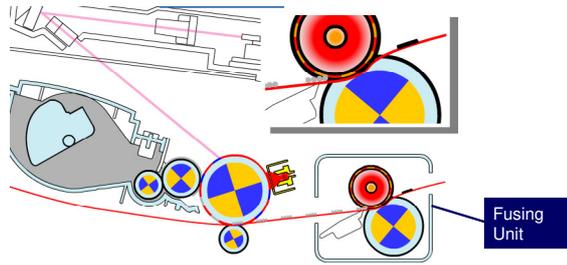
- A negative charge on the transfer roller pulls the toner from the drum onto the paper.
- The voltage depends on the paper size and type.

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No additional notes

Printing - Fusing

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- Heat and pressure fuse the toner to the paper.
- A thermistor near the heat roller surface monitors the temperature, and the machine controls fusing temperature by turning the halogen lamp on/off.
- The fusing temperature depends on the paper size and type.

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No additional notes



This section explains important points about the replacement and adjustment procedures. For full details, see the Replacement and Adjustment section of the service manual.



Transferring Received Fax Data

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- If you unplug the power cord, received fax data left in the machine could be lost.
- To prevent such data loss, instruct the user to transfer data to another fax machine or PC using the procedure in the service manual.
 - 4. Replacement and Adjustment > Transferring Received Fax Data
- 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 once.

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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.



- The service manual contains a flow chart that shows which parts must be removed in order to access the part that you want to remove.
 - 4. Replacement and Adjustment > Before You Do > Disassembly Flowchart
- For example, to remove the fuser unit:
 - Find it on the flowchart.
 - To access it, remove all the parts above the fuser unit on the flowchart (Side cover R, Back Cover, Outer chute ASSY, Fuser unit cover, Inner chute ASSY)
 - Then find the removal procedure for the fuser unit in the service manual and follow the instructions. Pay attention to all notes and cautions.
- Removal procedures are in this section.
 - 4. Replacement and Adjustment > Replaceable Parts

No additional notes

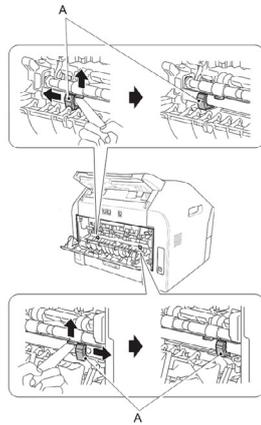


- The following sections of the manual contain diagrams that show the layout of gears and harnesses inside the machine. Refer to these sections when reassembling the machine after replacing parts.
 - Gears: 4. Replacement and Adjustment > Overview of Gears
 - Harnesses: 4. Replacement and Adjustment > Harness Routing

No additional notes

■ Fusing Unit Cover

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- When removing this cover, note the position of the anti-curl levers. Make sure they are in the same position when you re-attach the cover.

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No additional notes



- After replacing one or more of the following parts, adjustments and tests are needed.
 - Main PCB Assy
 - Laser Unit
 - Low Voltage Power Supply
 - CIS Unit
 - Panel Unit
 - LCD Unit
- The adjustments are in this section of the manual:
 - 4. Replacement and Adjustment > Requirement Adjustment after Parts Replacement

No additional notes



- Do the following
 - Preparation
 - Install the latest firmware
 - Initialize the EEPROM on the main PCB ASSY (function code 01)
 - Make the country setting (function code 74)
 - Enter the adjustment values for the laser unit
 - Set the serial number
 - Acquire the white level data (function code 55)
 - Check the sensors (function code 32)
- Counters are reset when the main PCB is replaced, so the life of consumables or user-replaceable parts in the machine may run out before an alert is displayed.

No additional notes



■ Preparation

- Prepare a USB cable to connect the machine to a PC.
- Create a temporary folder on the C drive of the computer (Windows ® XP//2000 or higher).
- Service setting tool (BrUsbn.zip): Copy it into a temporary folder created on the C drive. Extract the copied file and double-click the "BrUsbn.exe" file when you need start it.
- Download utility (FILEDG32.EXE): Copy it into a temporary folder created on the C drive.
- Maintenance USB printer driver (Maintenance_Driver.zip): Copy it into a temporary folder created on the C drive. Extract the copied file.
- Prepare a file of the latest firmware
 - Main firmware LZXXXX_\$.upd *
 - LZXXXX: First six digits of the part number of the firmware
 - \$: Alphabetic character representing the revision version of the firmware
 - *upd: Used to rewrite the firmware via a computer.
- Install the maintenance USB printer driver (also sometimes called the 'maintenance driver' in the service manual).
 - The procedure is in the section of the manual about the firmware update procedure.

We have studied this already when learning how to update the firmware.



- **Install the latest firmware.**
 - This was discussed earlier in the course.
- **Initializing the EEPROM**
 - 5. System Maintenance > Detailed Description of Maintenance mode Functions > EEPROM Parameter Initialization (Function code 01, 91)
 - Use code 01, not code 91
 - The procedure contains a list of the parameters that are initialized.
- **Country setting**
 - This function is used to customize the machine. The selected setting will adjust the language, function settings, and worker switch settings to the correct values for the selected country.
 - Be sure to do this procedure after replacing the main PCB ASSY or rewriting the firmware.
 - 5. System Maintenance > Detailed Description of Maintenance mode Functions > Setting by Country (Function code 74)

No additional notes



After Replacing the Main PCB - 4

RICOH
imagine. change.



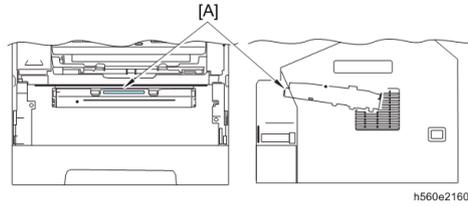
■ Adjustment values for the laser unit

- Connect the computer using the USB cable.
- Double-click the "BrUsbsn.exe" file that was copied to the temporary folder
- Click "2013".
- In the [Port] field, select the port number assigned to the Maintenance USB Printer.
 - If you do not know this port number, follow the procedure in the manual to find it.
- Enter the serial number of the machine (15 digits) in the [Serial No.] field.

No additional notes



- **Adjustment values for the laser unit, continued**
 - in the [SxxxxxVXXYY] field, enter the 2nd digit from the left on the laser serial number label [A]. This label is attached to the location shown in the illustration below
 - In the Scanner Video Clk field, enter the last five digits in the laser serial number label, and click the [OK] button.
 - The serial number and the adjustment values for the laser unit are written to the machine.



No additional notes



- **Acquiring the white level data**
 - 5. System Maintenance > Detailed Description of Maintenance mode Functions > Acquisition of White Level Data/Compensation of Scanning Width (Function code 55)
 - This acquires the white level data of the scanner and stores it in the EEPROM.

No additional notes



▪ Check the sensors

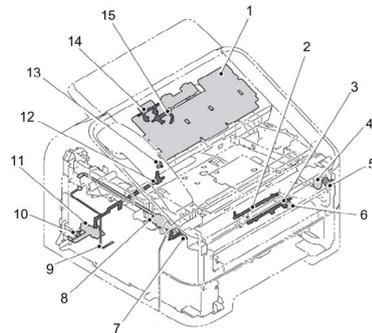
- 5. System Maintenance > Detailed Description of Maintenance mode Functions > Operational Check of Sensors (Function code 32)
- When you start this function, the machine first emits tones through the speaker. Press [OK] to stop the tones.
- Then, **RCNTRMRAPOCV25 should appear on the display. On this display, one sensor is represented by two characters. There should be two asterisks at the left side. If more than two asterisks are displayed, it means that one of the sensors is defective, or an abnormal condition exists inside the machine (such as a paper jam at one of the sensors).
 - Each sensor is represented by a two-character code, such as RC. See the table in the manual for an explanation of which sensor each two-character code represents.
 - Test the sensors, for example, by inserting paper, and see if the display changes, for example, from RC to **
- If the display is normal, press [Start]. The display should change to DFDR***AC****. Again, one sensor is represented by two characters. If DF, DR, or AC are replaced by asterisks, a component is defective or an abnormal condition exists.

No additional notes



■ Check the sensors, continued

– The following diagram shows where the sensors are.



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- 1.Document detection /Document scanning position sensor
- 2.Registration rear actuator
- 3.Registration front actuator
- 4.Front cover sensor
- 5.Front cover actuator
- 6.Registration front /Registration rear sensor
- 7.New toner actuator
- 8.New toner sensor
- 9.Internal temperature thermistor
- 10.Back cover sensor
- 11.Eject sensor
- 12.Paper eject actuator
- 13.Control panel cover sensor
- 14.Document detection actuator
- 15.Document scanning position actuator



After Replacing the Laser Unit

RICOH
imagine. change.

- Input the adjustment values for the laser unit
 - We just explained this in the procedure for after replacing the Main PCB assy.

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No additional notes

- The irregular power supply detection counter increases by one when the machine detects irregular power supply.
- When the counter reaches the limit (100), the irregular power supply detection error (error code EF) is displayed. The low voltage power supply must be replaced because it may have been damaged by the repeated application of irregular voltages.
- After replacing the board, the counter must be reset.

No additional notes

- **To reset the counter.**
 - Enter maintenance mode.
 - Connect the machine to a PC with the USB cable.
 - Double-click the "FILEDG32.EXE" file to start it. Select "Maintenance USB Printer".
 - Drag and drop the "SQWAVE.PJL" file onto the "Maintenance USB Printer" icon.
- **This resets the counter. It only works if the maintenance driver has been installed.**

No additional notes



After Replacing the Low Voltage Power Supply - 3

```

2013-01-14 09:11
0000 : 51 00 00 00 3F 00 00 00 00 00 00 00 00 00 00 00
0010 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0020 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0030 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0040 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0050 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0060 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0080 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0090 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00B0 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00C0 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00D0 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00E0 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00F0 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0100 : 46 43 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0110 : 03 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0120 : 00 01 00 00 01 00 00 00 01 00 00 01 00 00 01 00 00
0130 : 00 00 00 00 00 01 00 00 00 01 00 00 01 00 00 01 00 00
0140 : 00 01 00 00 00 01 00 00 00 01 00 00 01 00 00 01 00 00
0150 : 00 02 00 00 01 00 00 00 01 00 00 01 00 00 01 00 00
0160 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0170 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0180 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0190 : 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01A0 : 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01B0 : 00 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01C0 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01D0 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01E0 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

```

- Check that the counter has actually been reset.
 - When the machine is in the initial state of the maintenance mode, scroll up or down until "E2P DUMP ENGN ALL" appears.
 - Press OK to print a list.
 - Make sure that the indicated number is reset to 00.

No additional notes



- **Acquire the white level data**
 - 5. System Maintenance > Detailed Description of Maintenance mode Functions > Acquisition of White Level Data/Compensation of Scanning Width (Function code 55)
 - This acquires the white level data of the scanner and stores it in the EEPROM.
- **Test the scanner**
 - Scan a test chart and print the scanned image.
 - Check that there are no problems on the printout.

No additional notes



- **Test the LCD.**
 - 5. System Maintenance > Detailed Description of Maintenance mode Functions > Operational Check of LCD (Function code 12)
 - Make sure that the display cycles through the test displays as shown in the manual.
- **Test the operation panel buttons.**
 - 5. System Maintenance > Detailed Description of Maintenance mode Functions > Operational Check of Control Panel Buttons (Function code 13)
 - Press the buttons in the order shown in the manual.

No additional notes



- **Test the LCD.**
 - 5. System Maintenance > Detailed Description of Maintenance mode Functions > Operational Check of LCD (Function code 12)
 - Make sure that the display cycles through the test displays as shown in the manual.

No additional notes



This section explains important points about the replacement and adjustment procedures. For full details, see the Replacement and Adjustment section of the service manual.

- The service manual and the User's Guide provide resources to help you troubleshoot problems.
- Three types of LCD errors are displayed
 - Error messages (guidance in normal language) – documented in the FSM and User's Guide.
 - Error codes – documented in the FSM.
 - Communication errors – documented in the FSM
- Troubleshooting Procedures
 - The FSM and the User's Guide provide detailed troubleshooting procedures for the most common problems.

No additional notes



- The FSM contains troubleshooting procedures for a lot of potential problems.
- Precautions prior to starting troubleshooting procedures
 - 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.
 - Do not pull the lead wires to uncouple connectors, but hold the connector housings.
 - Before handling PCBs, touch a metal portion of the machine to discharge static electricity on your body.
- Before troubleshooting problems:
 - Check environmental conditions.
 - Check that power requirements are met.
 - Check the condition of the paper.
 - Check that the drum unit is properly set.

No additional notes.



- Study the troubleshooting procedures in the FSM.
- Familiarize yourself with the structure and contents of the troubleshooting procedures.
 - The procedures are arranged based on problem type.
 - Paper feeding problems
 - Image defects
 - Software setting problems
 - Original feed problems
 - Scanning image defects
 - Control panel problems
 - Fax function problems
 - Others
 - Procedures have possible causes, items to check, and suggested remedies. Additionally, there may be items to check with the user.

You should familiarize yourself with the troubleshooting section of the User's Guide in addition to the troubleshooting information in the FSM.



The End