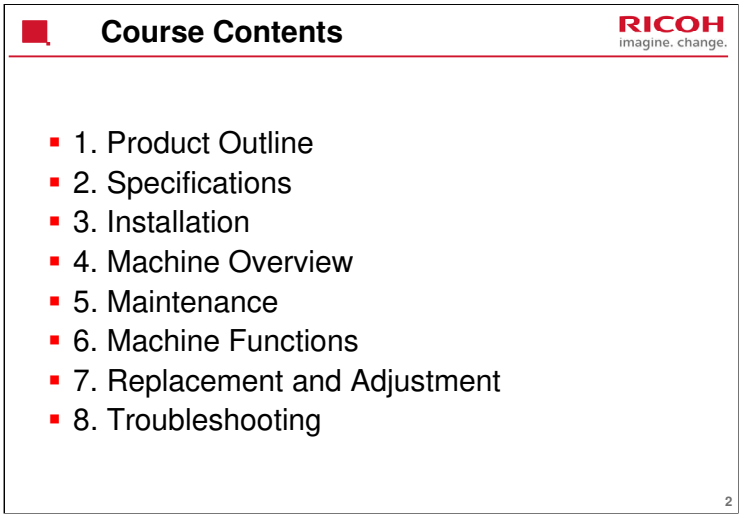
This course is about the standalone fax unit HL-F2.



No additional notes

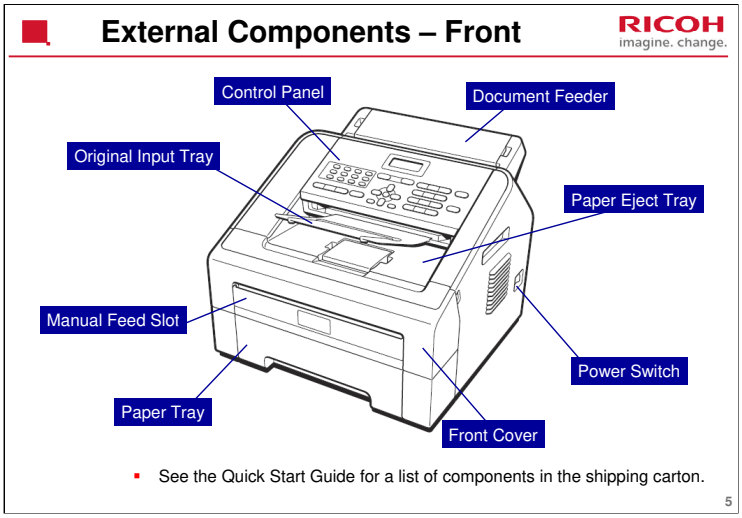
No additional notes

Appearance

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

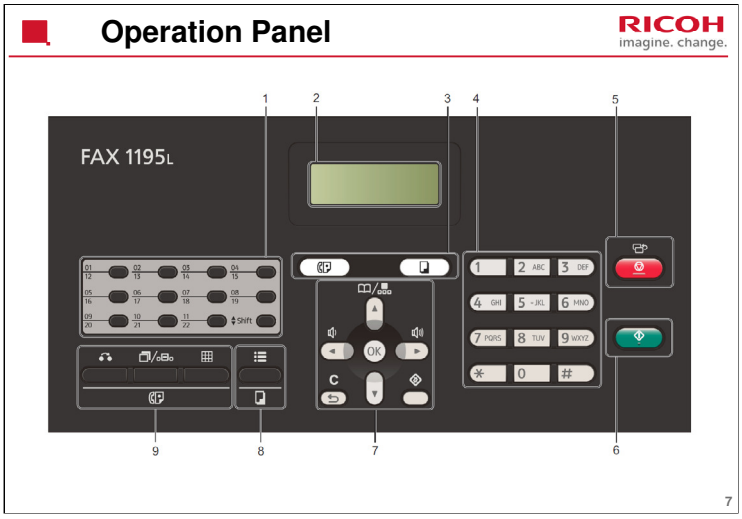
4

No additional notes



Refer to the operating instructions for more details.

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.

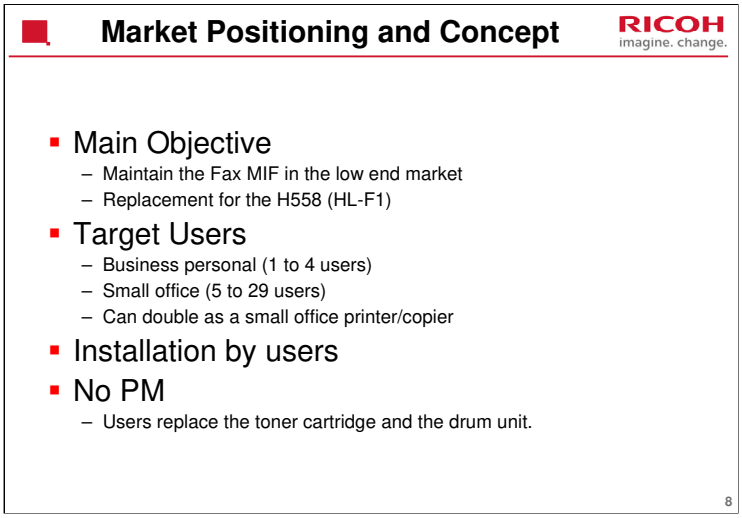
    Menu (Bottom right): Lets you access the menu to program your settings in the machine.

    Address Book (Top): Lets you access speed dial numbers directly.
8. Copy key (to select options for copying)
9. Fax keys

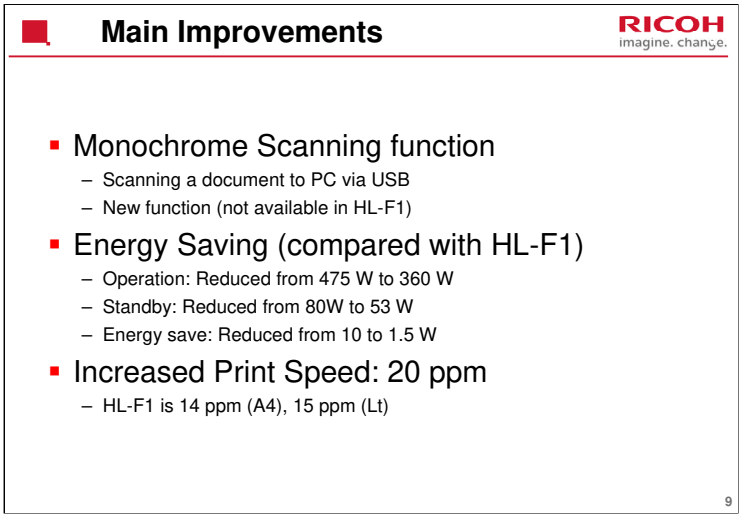
    Left: Access to outside through PBX, or to have a conversation with the other end

    Center: Redial, or enter a pause in the phone number

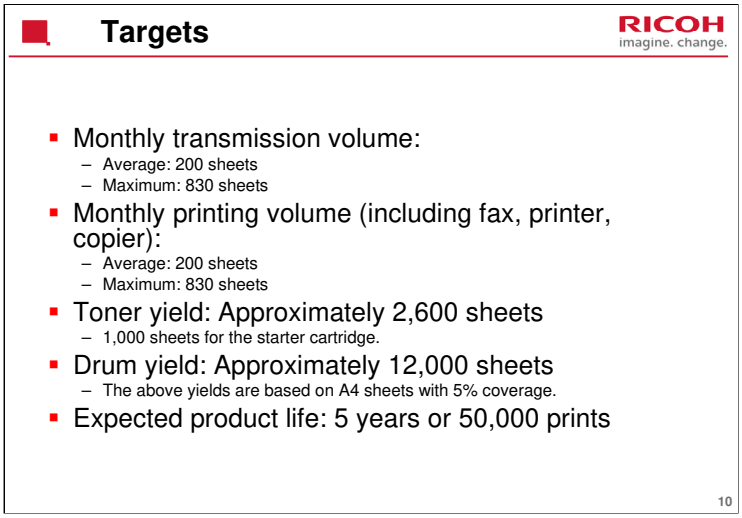
    Right: Sets the resolution when sending a fax.



No additional notes.

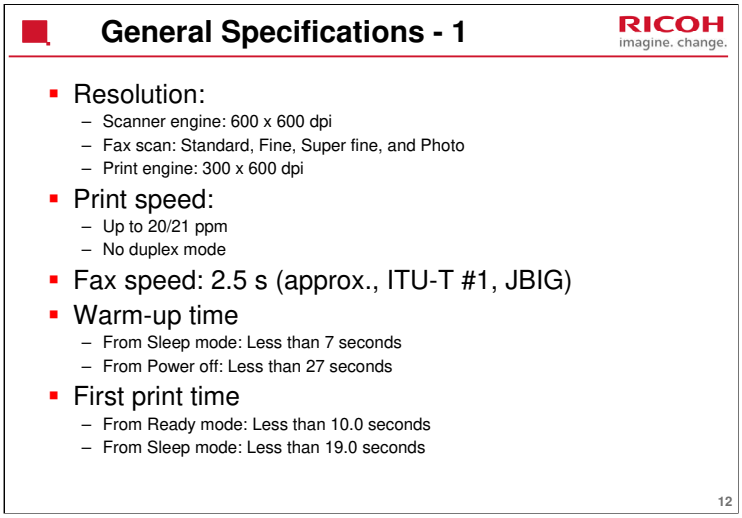


No additional notes



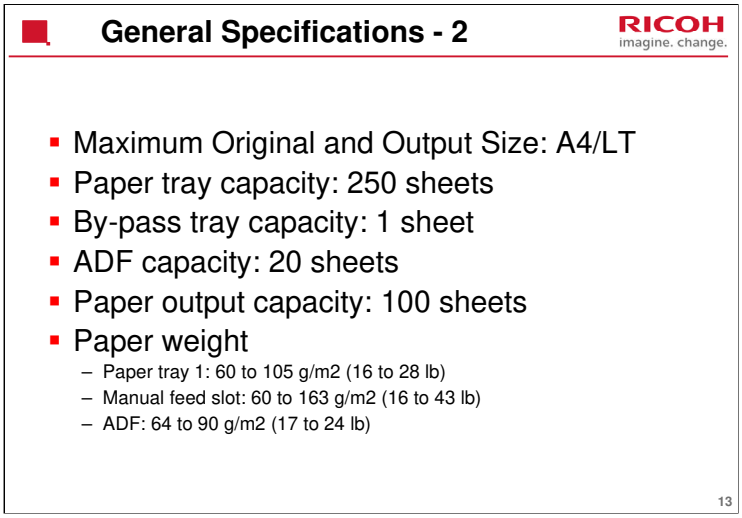
No additional notes.

No additional notes



This slide shows the basic specifications.

For more detailed specifications, see the field service manual.



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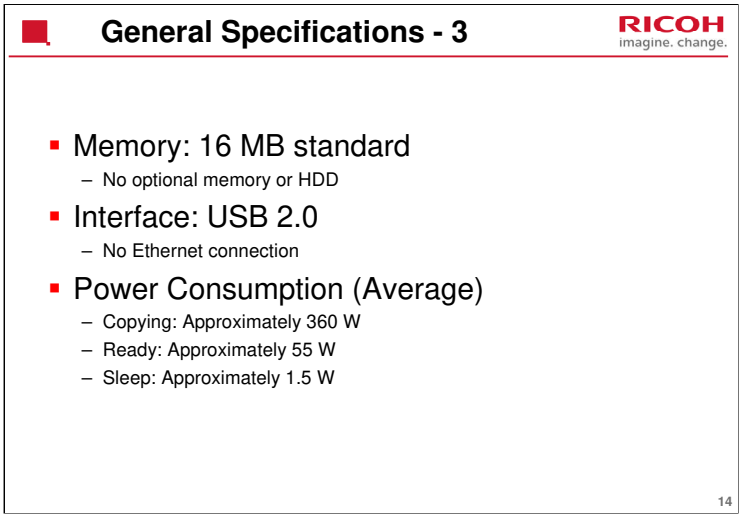

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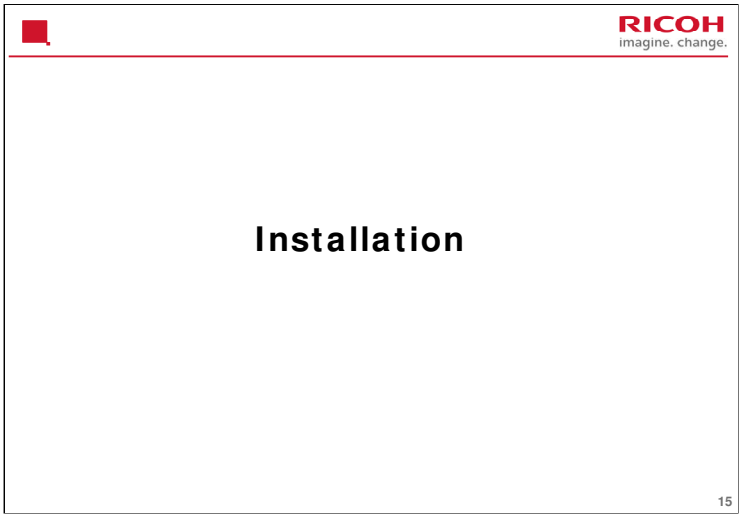
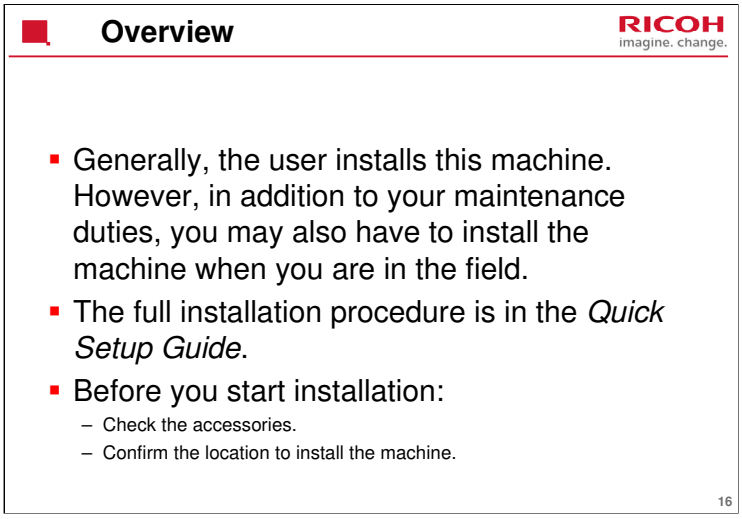


No additional notes



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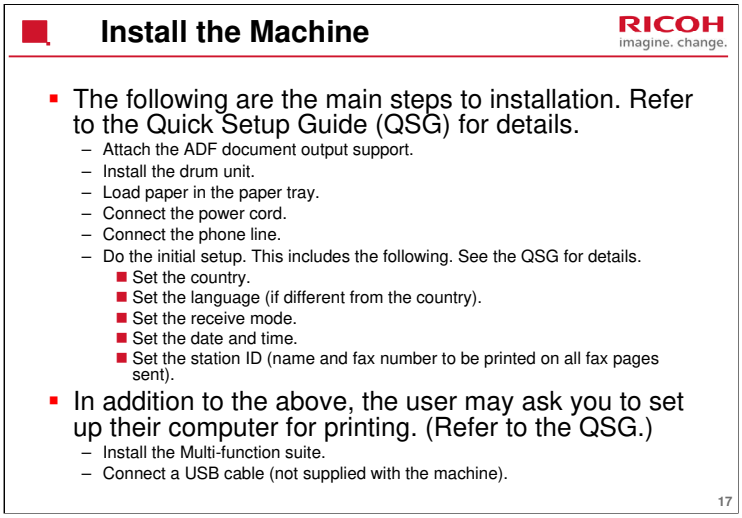
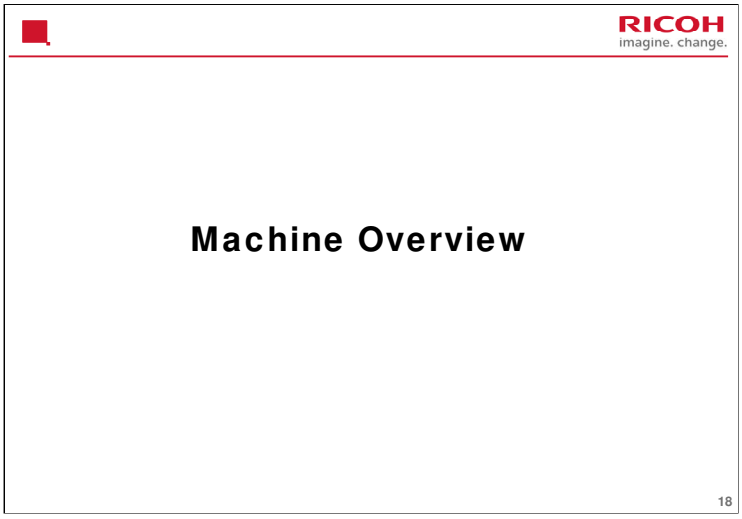
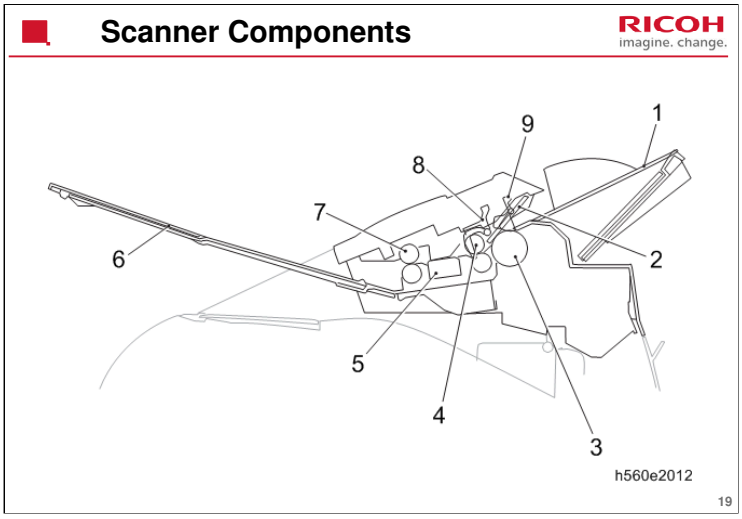


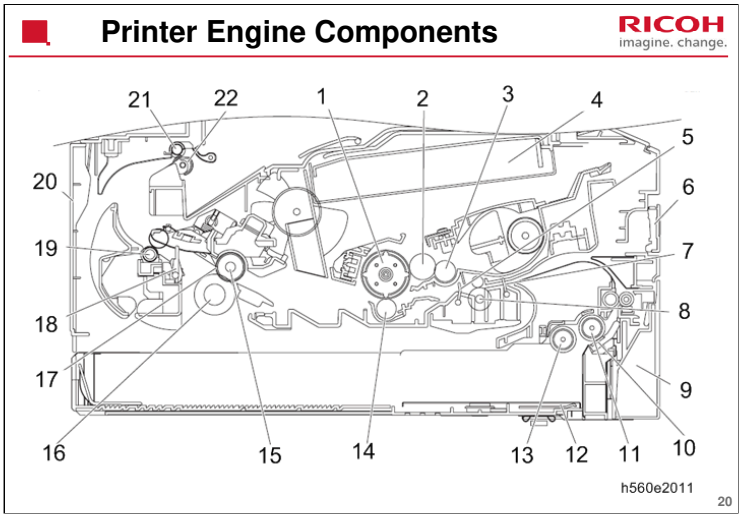
The Basic User's Guide and Advanced User's Guide contain a lot more information about machine setup options. Familiarize yourself with these and the other operation manuals in case the user requests your help.



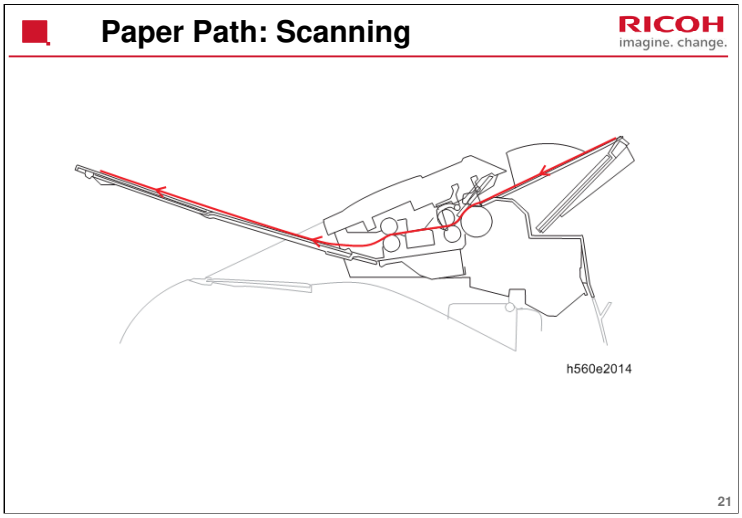
No additional notes



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



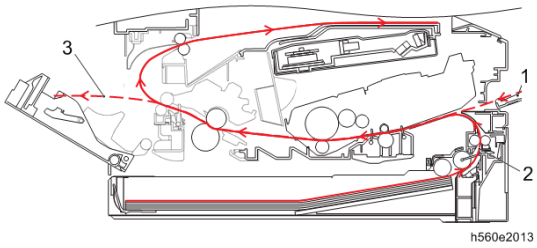
1. Exposure drum
2. Developer roller
3. Supply roller
4. Laser unit
5. Registration rear actuator
6. Manual feed slot cover
7. Registration front actuator
8. Registration roller
9. Paper tray
10. Separation pad
11. Separation roller
12. Plate
13. Pick-up roller
14. Transfer roller
15. Halogen heater
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



No additional notes

Paper Path: Printing

RICOH
imagine. change.

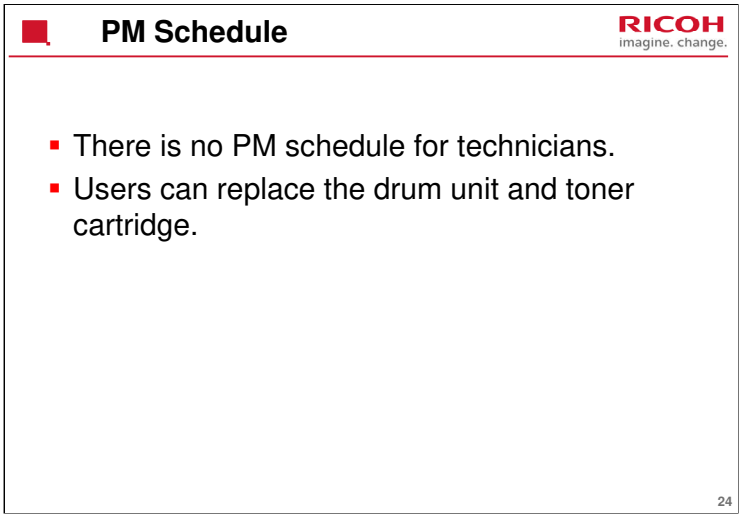


1. Manual feed slot path
2. Paper tray path
3. Rear paper eject path

22

No additional notes

No additional notes



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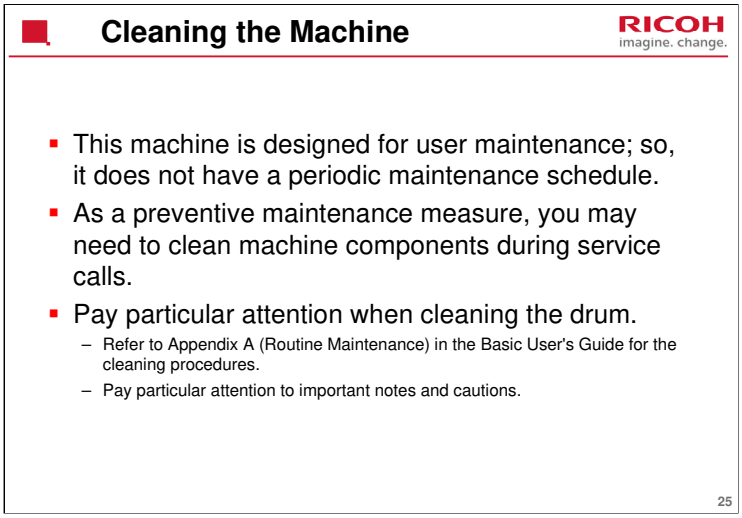
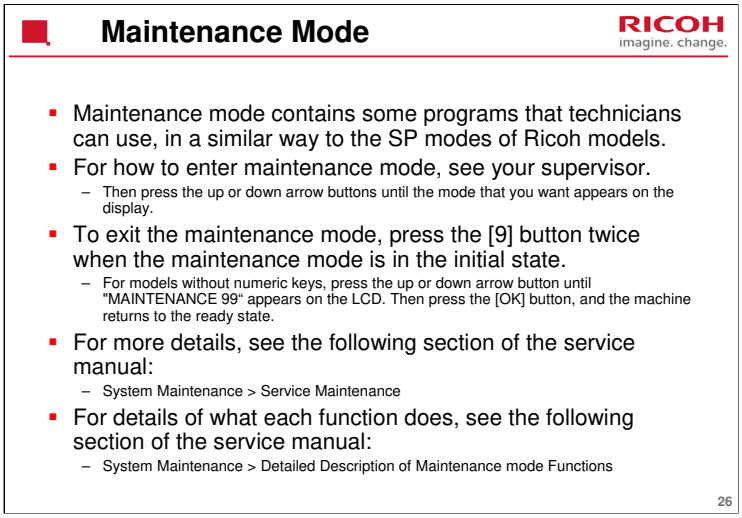


No additional notes



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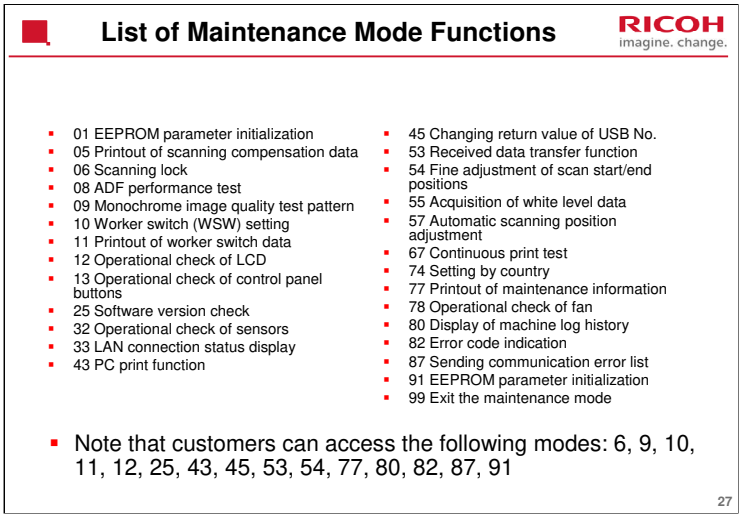
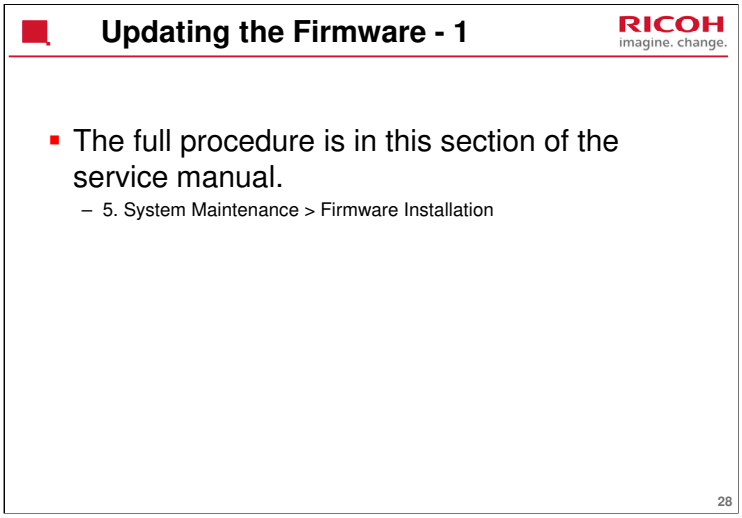
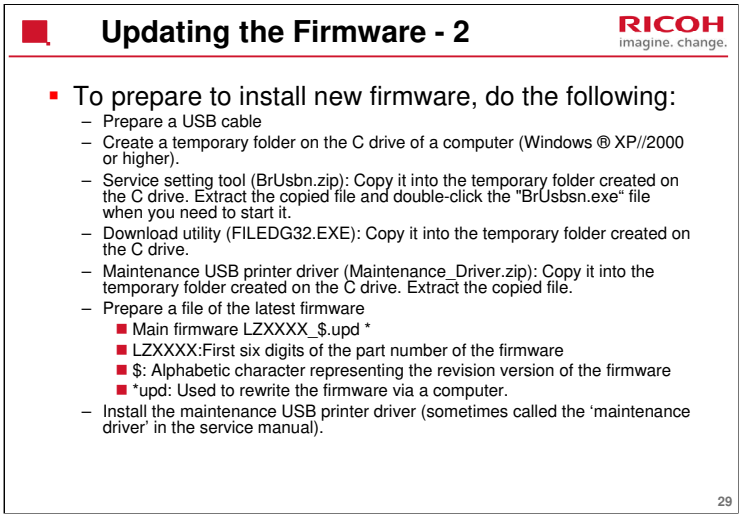


No additional notes



No additional notes



No additional notes

Updating the Firmware - 3

RICOH imagine. change.

- 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.

30

No additional notes

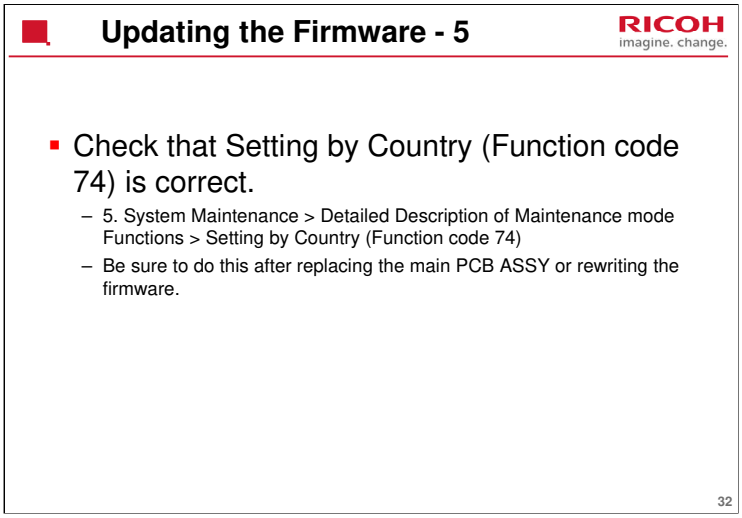
Updating the Firmware - 4

RICOH imagine. change.

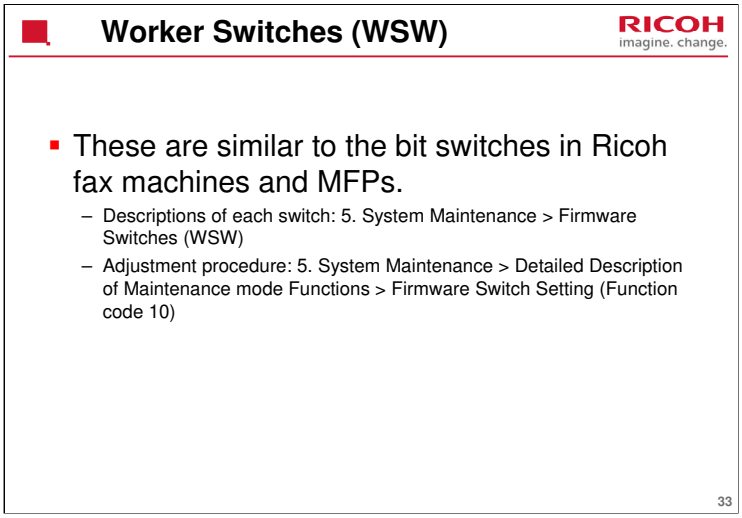
- Procedure
  1. Turn OFF the power switch of the machine.
  2. Then turn it ON again with the [5] button held down ([Number of Copies] button for models without numeric keys).
  3. Check that a row of 8 black squares appears on the LCD.
  4. Connect the computer to the machine with the USB cable.
  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.

31

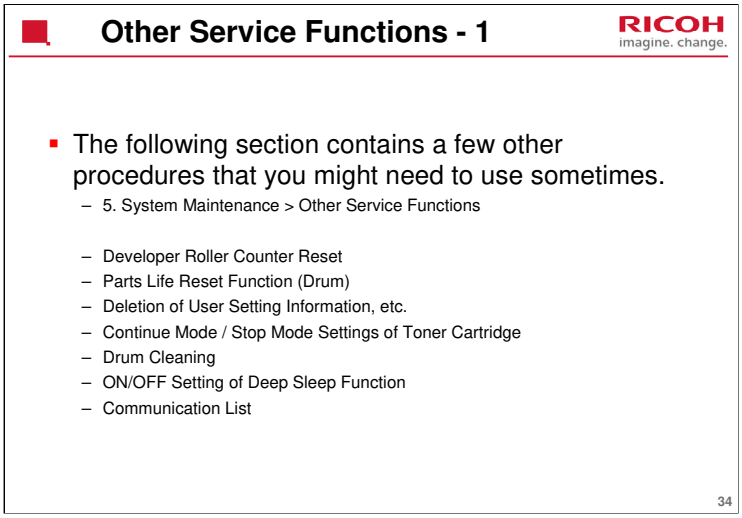
No additional notes



No additional notes



No additional notes



No additional notes

Other Service Functions - 2

RICOH
imagine. change.

- 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.

35

No additional notes

Other Service Functions - 3

RICOH
imagine. change.

- 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)

36

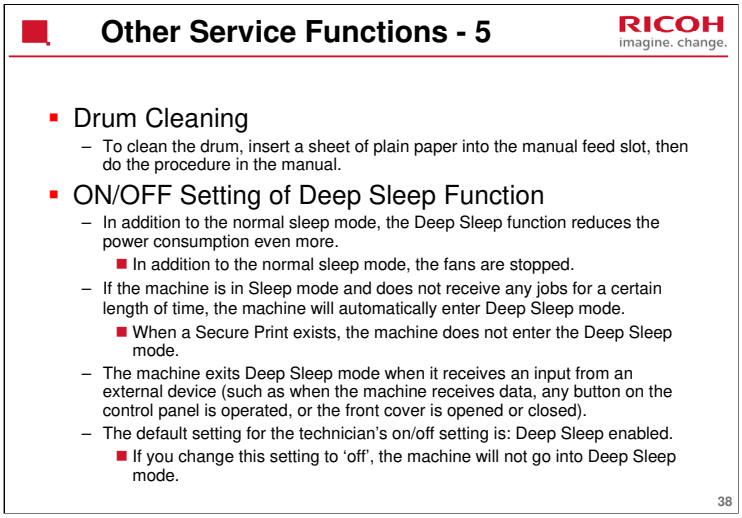
No additional notes

Other Service Functions - 4

- 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.

37

No additional notes

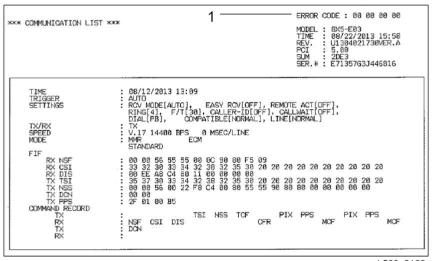


If you enter maintenance mode and do function 55 to get new white data just after recovering from deep sleep mode, but the machine cannot get the correct data, you have to reinstall the firmware.

Other Service Functions - 5

RICOH imagine. change.

- Communication List
  - This is a list of fax communications made by the machine.



```
*** COMMUNICATION LIST ***                    1 ———— ERROR CODE : 00 00 00 00

                                                     MODEL : 8X5-E03
                                                     TIME  : 08/22/2013 15:58
                                                     REV.  : U1304021730VER.A
                                                     PCI   : 5.00
                                                     SUM   : 2DE3
                                                     SER.# : E71357G3J446816

TIME              : 08/12/2013 13:09
TRIGGER           : AUTO
SETTINGS          : RCV MODE[AUTO],   EASY RCV[OFF], REMOTE ACT[OFF],
                    RING[4],  F/T[30], CALLER-ID[OFF], CALLWAIT[OFF],
                    DIAL[PB],    COMPATIBLE[NORMAL], LINE[NORMAL]
TX/RX             : TX
SPEED             : V.17 14400 BPS   0 MSEC/LINE
MODE              : MMR          ECM
                    STANDARD
FIF
    RX NSF        : 00 00 56 55 55 00 8C 90 80 F5 09
    RX CSI        : 33 32 30 33 34 32 38 32 35 30 20 20 20 20 20 20 20 20 20 20
    RX DIS        : 00 EE A8 C4 80 11 00 00 00 00
    TX TSI        : 35 37 30 33 34 32 38 32 35 30 20 20 20 20 20 20 20 20 20 20
    TX NSS        : 00 00 56 00 22 F8 C4 00 80 55 55 90 80 80 00 00 00 00 00
    TX DCN        : 00 00
    TX PPS        : 2F 01 00 B5
COMMAND RECORD
      TX          :                TSI  NSS  TCF       PIX  PPS       PIX  PPS
      RX          : NSF  CSI  DIS                 CFR            MCF            MCF
      TX          : DCN
      RX          :
```

h560e2169

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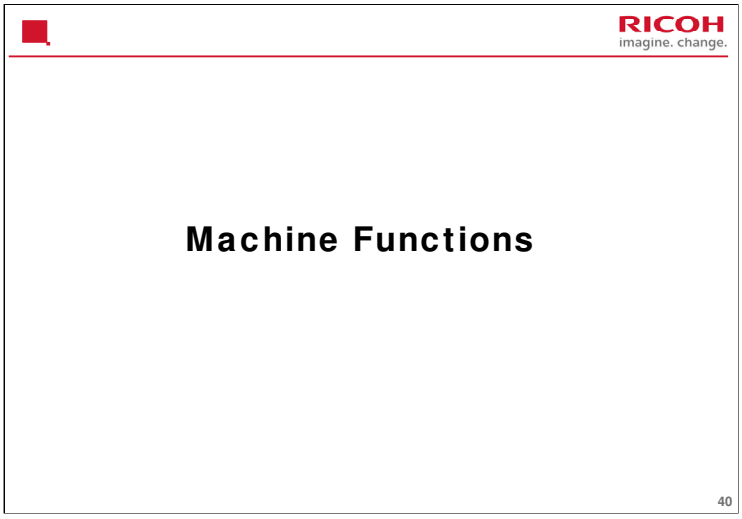
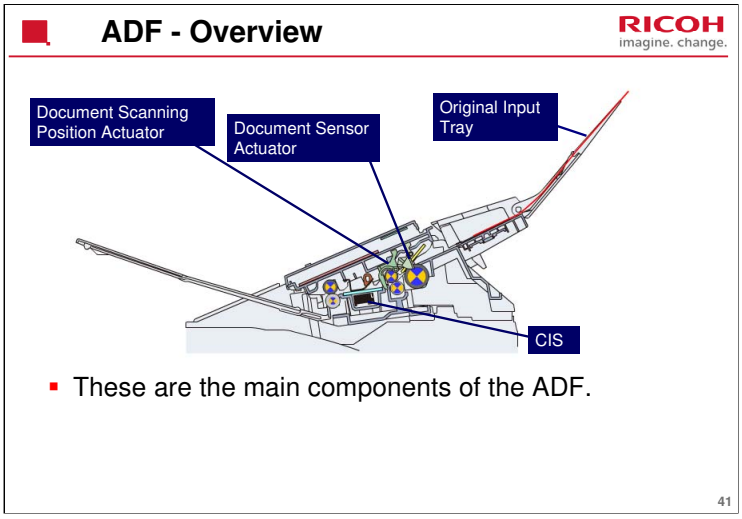
No additional notes



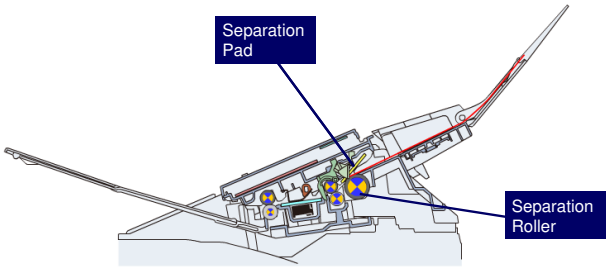
No additional notes



No additional notes

ADF - 1

RICOH
imagine. change.



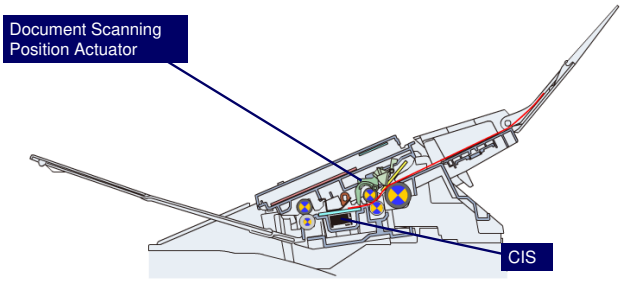
- When the machine detects a document in the input tray, original feed begins.
  - The separation roller and pad only allow one sheet through to the scanner.

42

No additional notes

ADF - 2

RICOH
imagine. change.



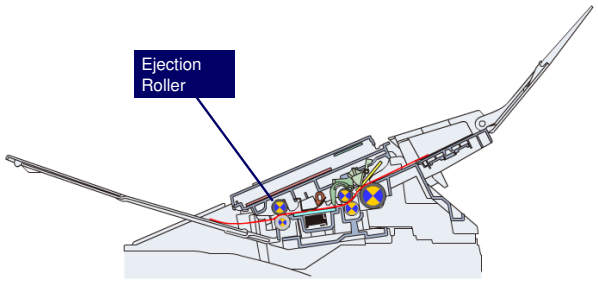
- After the leading edge passes the document scanning position actuator, the CIS starts to scan the original.
  - This sensor also detects jams in the ADF.

43

No additional notes

ADF - 3

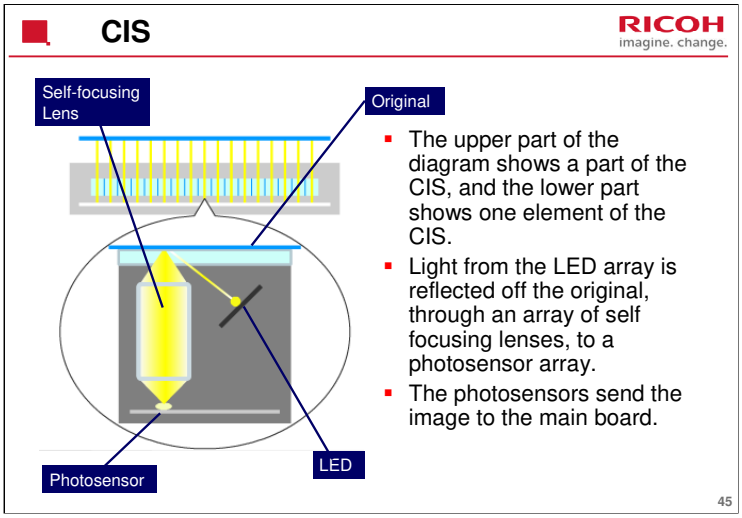
RICOH
imagine. change.



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

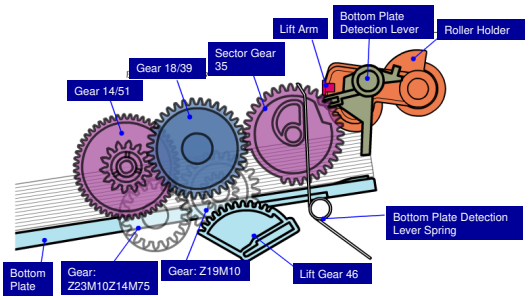
44

No additional notes



No additional notes

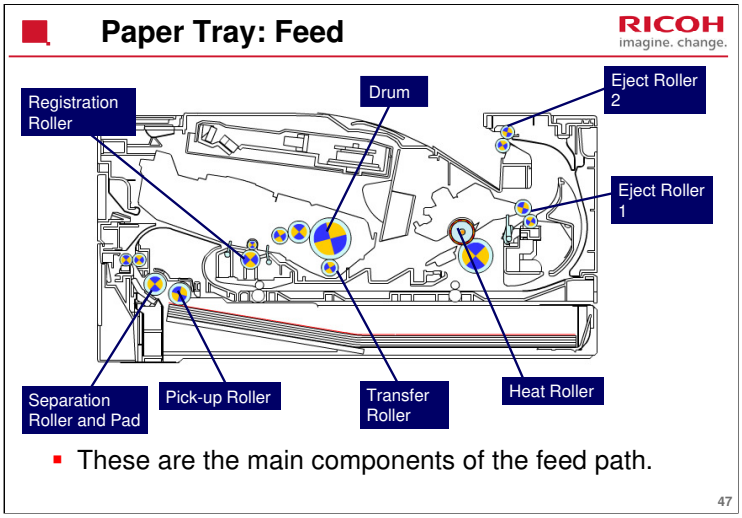
Paper Tray: Bottom Plate Lift



- 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.

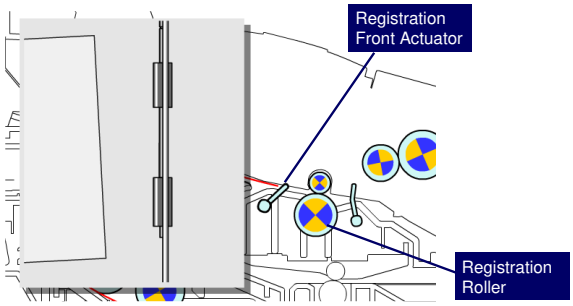
46

No additional notes



No additional notes

Paper Tray: Registration - 1

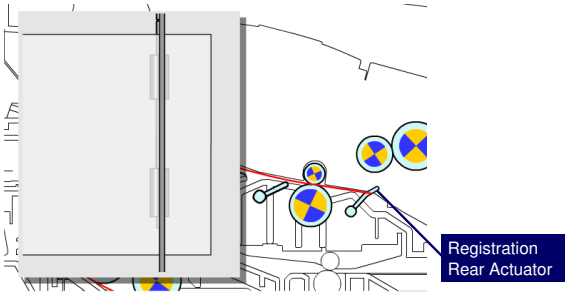


- The registration front actuator detects when the leading edge is approaching the registration roller.
  - This sensor also detects paper length and checks for paper jams.

48

No additional notes

Paper Tray: Registration - 2

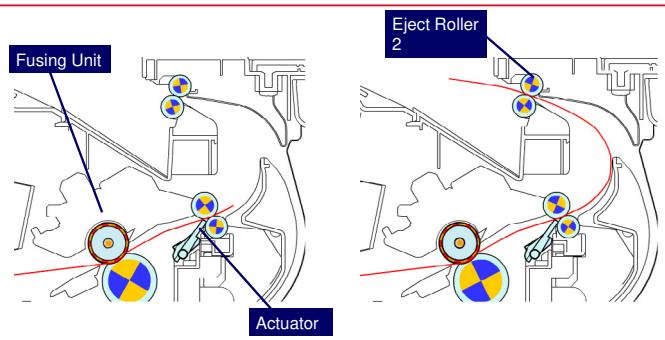


- The registration rear actuator detects the leading edge when it approaches the drum.
  - This sensor controls the timing for starting to write the image on the drum.

49

No additional notes

Paper Tray: Feed-out

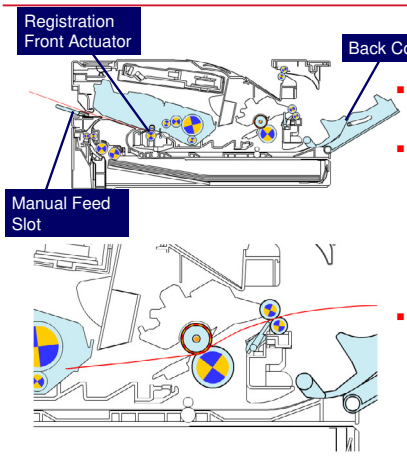


- The paper eject actuator detects paper when it leaves the fusing unit.
  - This sensor also checks for paper jams.
  - If a jam is detected, the main motor reverses to disengage the gears. As a result, eject roller 2 can move freely and it is easier to remove the jammed paper.
- Paper is fed out face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

50

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.

51

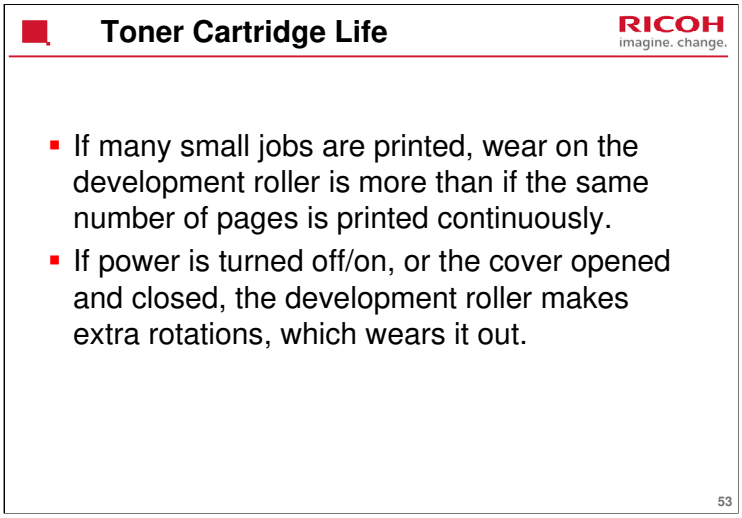
No additional notes

Toner Cartridge

- 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.

52

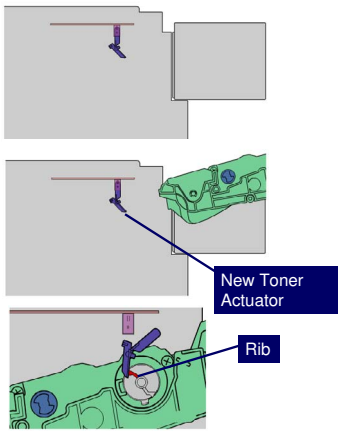
No additional notes



No additional notes

New Toner Cartridge Detection

RICOH imagine. change.



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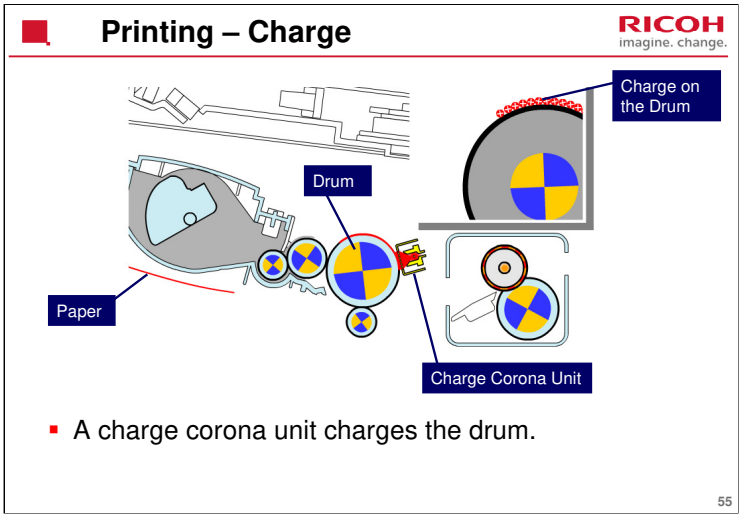
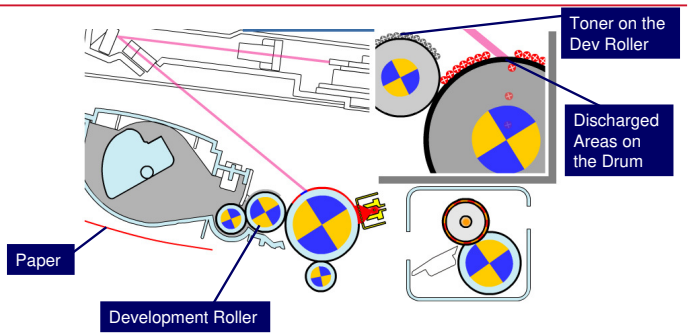
Drum unit: After replacing a drum unit, the user must reset the counter by following the procedure on the sheet that is packed with the new drum unit.



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

Printing – Laser Exposure

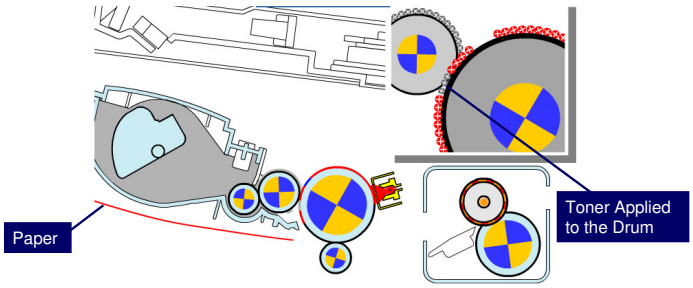


- The laser beam discharges the areas on the drum where toner will be applied.

56

No additional notes

Printing - Development



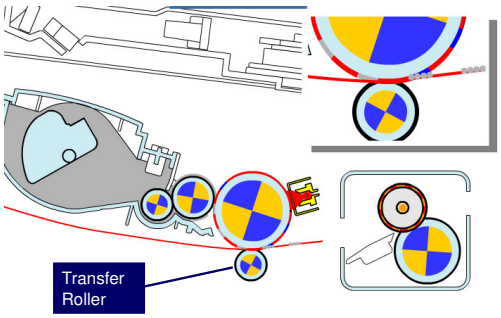
- Toner is applied to the discharged areas of the drum.
- A blade trims the toner on the development roller to a uniform thickness.

57

No additional notes

Printing - Transfer

RICOH
imagine. change.

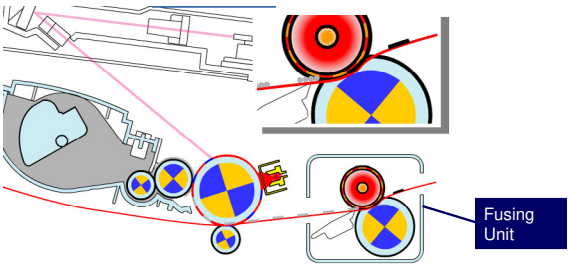


- A negative charge on the transfer roller pulls the toner from the drum onto the paper.
- The voltage depends on the paper size and type.

58

No additional notes

Printing - Fusing

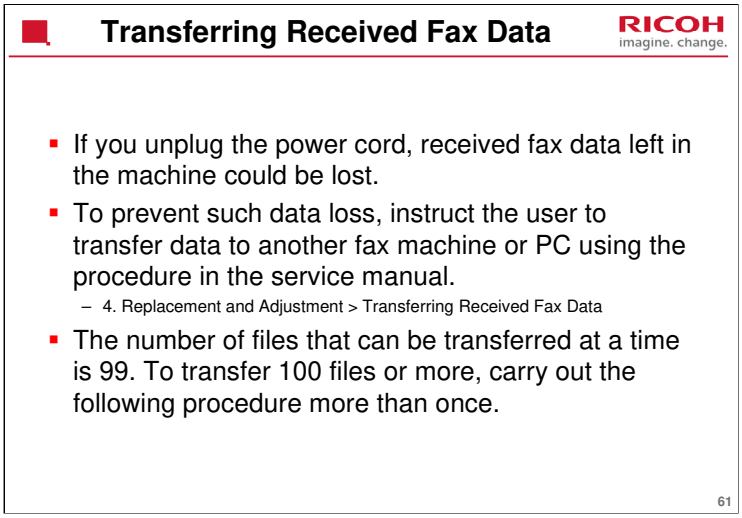


- Heat and pressure fuse the toner to the paper.
- A thermistor near the heat roller surface monitors the temperature, and the machine controls fusing temperature by turning the halogen lamp on/off.
- The fusing temperature depends on the paper size and type.

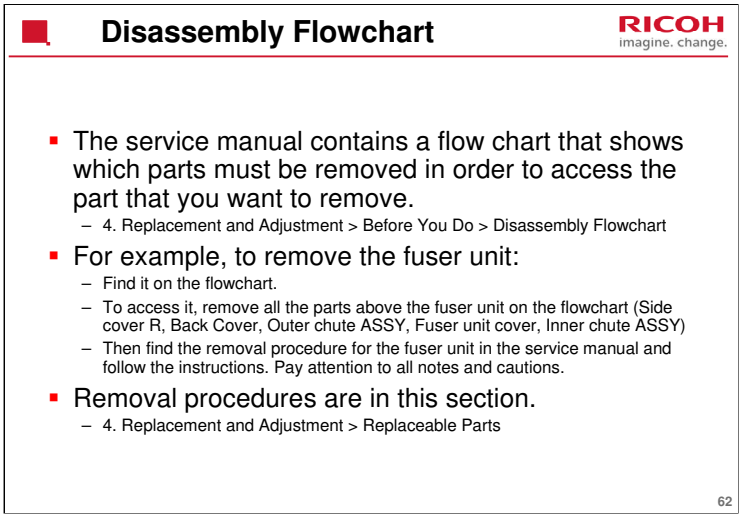
59

No additional notes

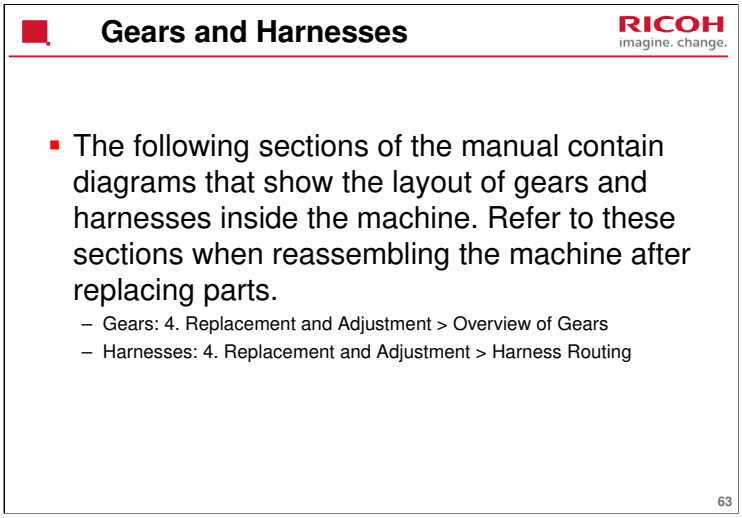
This section explains important points about the replacement and adjustment procedures. For full details, se the Replacement and Adjustment section of the service manual.



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.

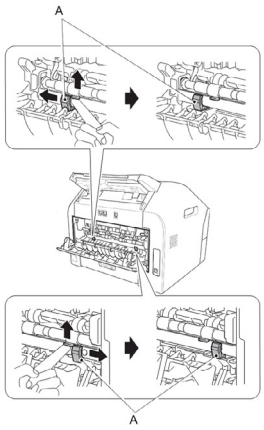


No additional notes



No additional notes

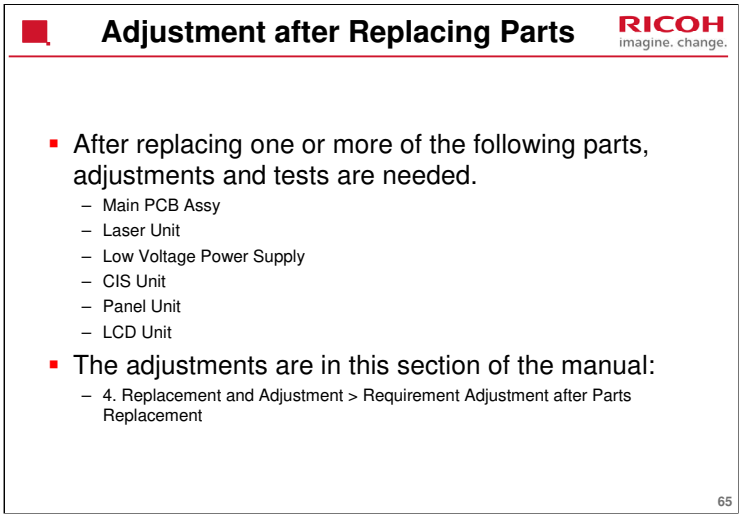
Fusing Unit Cover



- 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.

64

No additional notes



No additional notes

After Replacing the Main PCB - 1

RICOH imagine. change.

- 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.

66

No additional notes

After Replacing the Main PCB - 2

RICOH imagine. change.

- 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 "BrUsbsn.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.

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

After Replacing the Main PCB - 3

RICOH imagine. change.

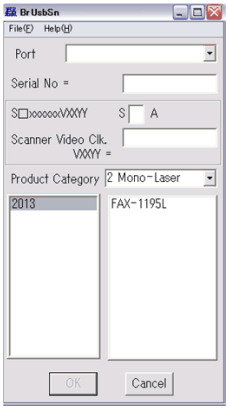
- Install the latest firmware.
  - This was discussed earlier in the course.
- Initializing the EEPROM
  - 5. System Maintenance > Detailed Description of Maintenance mode Functions > EEPROM Parameter Initialization (Function code 01, 91)
  - Use code 01, not code 91
  - The procedure contains a list 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)

68

No additional notes

After Replacing the Main PCB - 4

RICOH imagine. change.



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- 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.

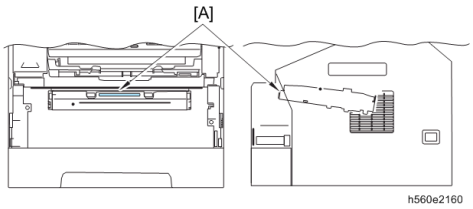
69

No additional notes

After Replacing the Main PCB - 5

RICOH imagine. change.

- Adjustment values for the laser unit, continued
  - in the [SxxxxxxVXXYY] 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.



h560e2160

70

No additional notes

After Replacing the Main PCB - 6

RICOH
imagine. change.

- 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.

71

No additional notes

After Replacing the Main PCB - 7

RICOH imagine. change.

- 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.

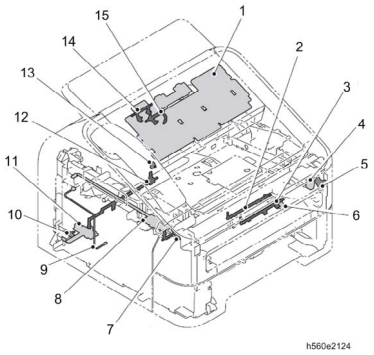
72

No additional notes

After Replacing the Main PCB - 8

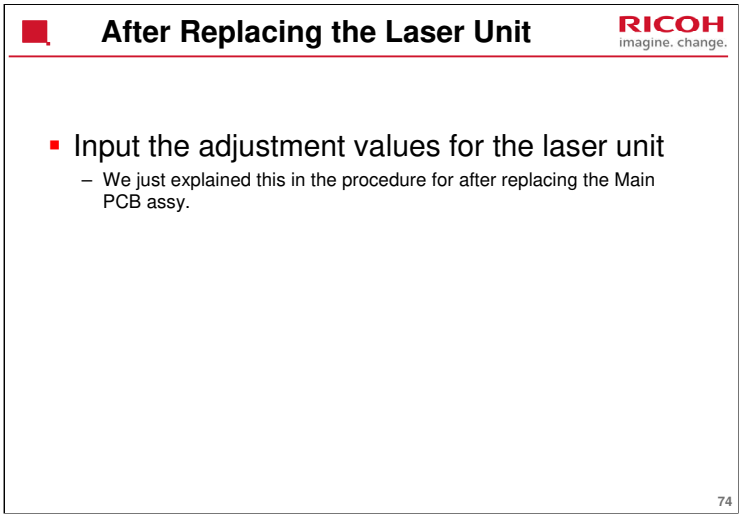
RICOH imagine. change.

- Check the sensors, continued
  - The following diagram shows where the sensors are.



73

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



No additional notes

After Replacing the Low Voltage Power Supply - 1

RICOH imagine. change.

- 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.

75

No additional notes

After Replacing the Low Voltage Power Supply - 2

RICOH imagine. change.

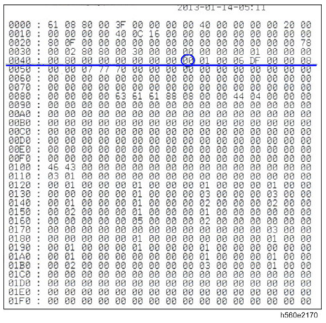
- To reset the counter.
  - Enter maintenance mode.
  - Connect the machine to a PC with the USB cable.
  - Double-click the "FILEDG32.EXE“ file to start it. Select "Maintenance USB Printer".
  - Drag and drop the "SQWAVE.PJL“ file onto the "Maintenance USB Printer“ icon.
- This resets the counter. It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

76

No additional notes

After Replacing the Low Voltage Power Supply - 3

RICOH
imagine. change.



- 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.

77

No additional notes

After Replacing the CIS Unit

- 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.

78

No additional notes

After Replacing the Panel Unit

RICOH imagine. change.

- 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.

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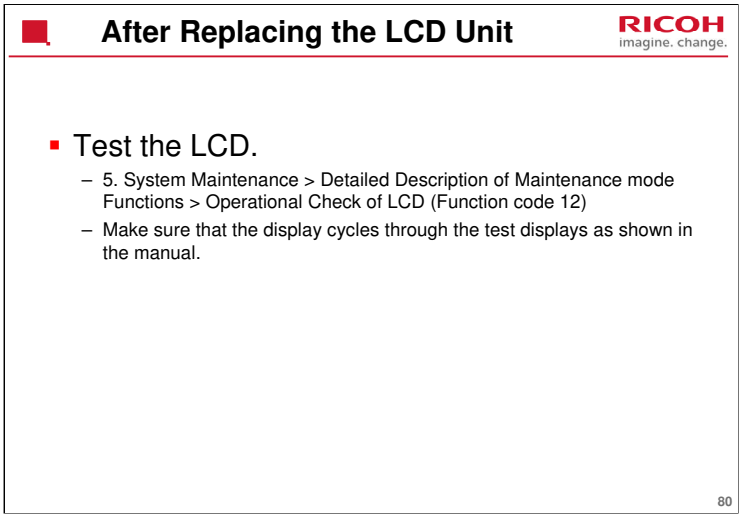
No additional notes



No additional notes

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

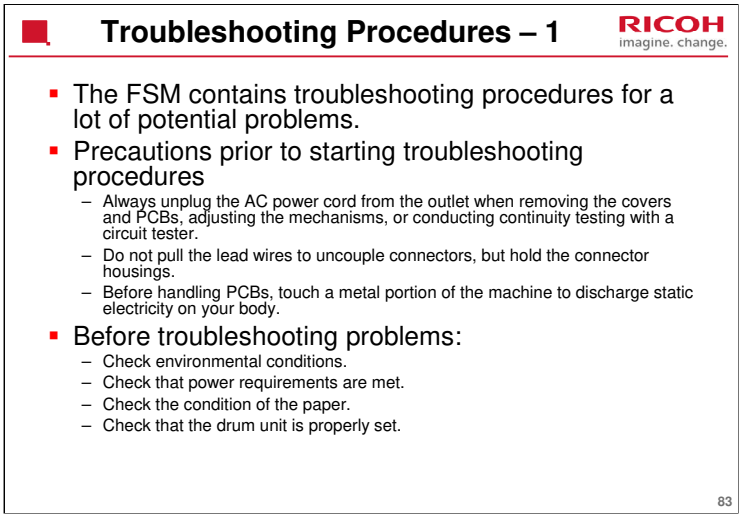
Troubleshooting Overview

RICOH
imagine. change.

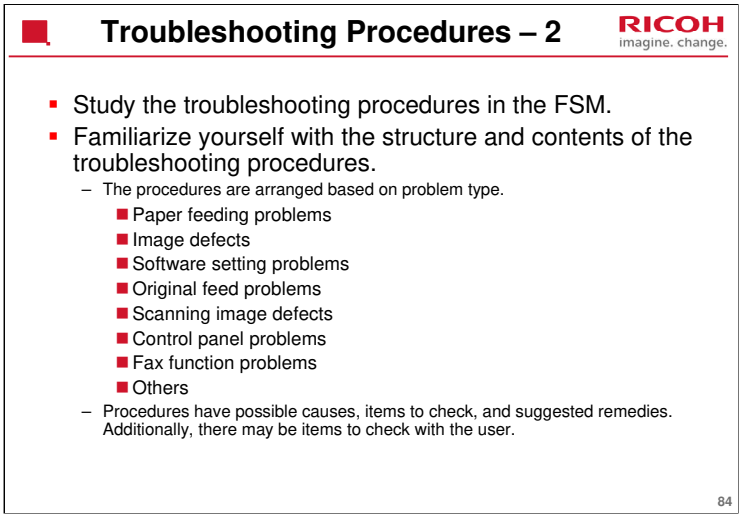
- The service manual and the User's Guide provide resources to help you troubleshoot problems.
- Three types of LCD errors are displayed
  - Error messages (guidance in normal language) – documented in the FSM and User's Guide.
  - Error codes – documented in the FSM.
  - Communication errors – documented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

82

No additional notes



No additional notes.



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

The End