

Brother Color Laser Printer SERVICE MANUAL

MODEL: HL-4140CN/4150CDN/ 4570CDW/4570CDWT



Read this manual thoroughly before maintenance work. Keep this manual in a convenient place for quick and easy reference at all times.

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| Model | HL-4140CN | HL-4150CDN | HL-4570CDW | HL-4570CDWT |
|-----------------|-----------|------------|----------------|----------------|
| LAN | Wired | Wired | Wired/Wireless | Wired/Wireless |
| Duplex printing | No | Yes | Yes | Yes |
| LT | No | No | No | Yes |

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CONTENTS

| REGULATION | . 1 |
|------------|-----|
| | |

| SAFETY INFORMATION | V |
|--------------------|---|
|--------------------|---|

CHAPTER 1 SPECIFICATIONS

| 1-1 | 1. SPECIFICATIONS LIST |
|-----|------------------------------|
| 1-1 | 1.1 General |
| | 1.2 Network Connectivity |
| | 1.3 Service Information |
| | 1.4 Supplies |
| | 1.5 Paper |
| | 1.5.1 Paper handling |
| | 1.5.2 Media specifications |
| | 1.5.3 Type and size of paper |
| 1-9 | 1.6 Unprintable Area |
| | |

CHAPTER 2 ERROR INDICATION AND TROUBLESHOOTING

| 1. INTRODUCTION | 2-1 |
|----------------------------|------|
| 1.1 Precautions | 2-1 |
| 1.2 Initial Check | 2-2 |
| 2. OVERVIEW | 2-4 |
| 2.1 Cross-section Drawing | |
| 2.2 Paper Feeding | |
| 2.3 Operation of Each Part | 2-6 |
| 2.4 Block Diagram | 2-8 |
| 2.5 Components | |
| 3. ERROR INDICATIONS | 2-10 |
| 3.1 Error Codes | 2-10 |
| 3.2 Error Messages | 2-16 |
| 3.3 Error Cause and Remedy | 2-21 |
| 3.4 Paper Feeding Problems | 2-83 |
| 3.4.1 No feeding | 2-83 |
| 3.4.2 Double feeding | |

| 3.4.3 Paper jam | 2-86 |
|---------------------------------------------------------------------------|-------|
| 3.4.4 Dirt on paper | 2-90 |
| 3.4.5 Wrinkles on paper | 2-90 |
| 3.5 Image Defect Troubleshooting | 2-91 |
| 3.5.1 Image defect examples | 2-91 |
| 3.5.2 Pitch indicated in roller image | 2-92 |
| 3.5.3 Troubleshooting image defect | 2-92 |
| 3.6 Software Setting Problems | 2-108 |
| 3.6.1 Cannot print data | 2-108 |
| 3.7 Network Problems | 2-108 |
| 3.7.1 Cannot make a print through network connection | |
| (Error code ED, EE) | 2-108 |
| 3.8 Others Problems | 2-109 |
| 3.8.1 The printer is not turned ON, or the LCD indication does not appear | 2-109 |
| 3.8.2 The fan does not work (Error code 2B, EC) | 2-109 |
| 3.8.3 The USB direct interface does not work (Error code CA, etc) | 2-110 |
| 3.8.4 The room temperature is high or low | 2-110 |

CHAPTER 3 DISASSEMBLY AND ASSEMBLY

| 1. | . SAFETY PRECAUTIONS | 3-1 |
|----|-------------------------------------------|------|
| 2. | . PACKING | 3-2 |
| 3. | . SCREW CATALOGUE | 3-3 |
| 4. | . SCREW TORQUE LIST | 3-4 |
| 5. | LUBRICATION | 3-6 |
| 6. | OVERVIEW OF GEARS | 3-8 |
| 7. | . HARNESS ROUTING | 3-10 |
| 8. | DISASSEMBLY FLOW | 3-21 |
| 9. | . DISASSEMBLY PROCEDURE | 3-22 |
| | 9.1 Paper Tray | |
| | 9.2 Paper Stopper | 3-24 |
| | 9.3 Back Cover/Back Cover Stopper Arm L/R | 3-25 |
| | 9.4 Fuser Cover | |
| | 9.5 Fuser Unit | 3-30 |
| | 9.6 Side Cover L/Access Cover | 3-33 |
| | | |

| 9.8 Duplex Feed ASSY | 3-38 |
|-------------------------------------------------------------------|---------|
| 9.9 MP Cover ASSY/MP Paper Guide ASSY | 3-39 |
| 9.10 MP Link L/R | 3-42 |
| 9.11 Front Cover Arm L/R | 3-43 |
| 9.12 Front Cover Release Button/Front Cover Release Button Spring | 3-47 |
| 9.13 Top Cover ASSY | 3-49 |
| 9.14 Wireless LAN PCB | 3-52 |
| 9.15 LCD ASSY | 3-53 |
| 9.16 Panel PCB ASSY | 3-55 |
| 9.17 USB Host Relay PCB ASSY | 3-56 |
| 9.18 Main PCB ASSY | 3-58 |
| 9.19 Engine PCB ASSY | 3-60 |
| 9.20 Laser Unit | 3-61 |
| 9.21 Develop Release Motor | 3-64 |
| 9.22 Front Cover Sensor | 3-65 |
| 9.23 Top Drive ASSY | 3-66 |
| 9.24 Forced Develop Release Link | 3-71 |
| 9.25 Drum Drive Motor | 3-72 |
| 9.26 Drum Position Sensor PCB ASSY | 3-75 |
| 9.27 Registration Solenoid ASSY | 3-76 |
| 9.28 Develop Release Sensor PCB ASSY/Mono Solenoid ASSY | 3-77 |
| 9.29 Fuser Develop Motor ASSY | 3-79 |
| 9.30 PF Plate ASSY/T1 Solenoid ASSY | 3-80 |
| 9.31 Toner/New Sensor PCB ASSY | 3-82 |
| 9.32 Internal Temperature Thermistor | 3-83 |
| 9.33 Fuser Fan | 3-84 |
| 9.34 Paper Eject ASSY | 3-86 |
| 9.35 Filter ASSY | 3-87 |
| 9.36 Paper Eject Motor | 3-88 |
| 9.37 Back Cover Sensor ASSY | 3-89 |
| 9.38 Power Fan | 3-90 |
| 9.39 Low-voltage Power Supply Unit | 3-92 |
| 9.40 Paper Eject Sensor PCB ASSY | 3-95 |
| 9.41 Low-voltage Power Supply PCB ASSY/Inlet Harness ASSY | 3-96 |
| 9.42 Cleaner Pinch Roller Holder | 3-99 |
| 9.43 Registration Mark Sensor Holder ASSY/ | |
| Shutter Solenoid | . 3-101 |
| 9.44 MP Paper Empty/Registration Front Sensor PCB ASSY | . 3-103 |
| 9.45 PF ASSY | 3-111 |

| 9.46 T1 Registration Front/Rear Sensor PCB ASSY | |
|-------------------------------------------------------------------------------------------------|-------|
| 9.47 MP Sector Solenoid | 3-115 |
| 9.48 T1 Paper Edge Sensor PCB ASSY/ T1 Paper Edge Actuator/ T1 Paper Edge Actuator Spring | 3-116 |
| 9.49 Cleaner Drive Gear 15 | |
| 9.50 High-voltage Power Supply PCB ASSY | |
| 9.51 Waste Toner Sensor | |
| 9.52 Air Duct Cover/Blower Fan | |
| 10. DISASSEMBLY PROCEDURE (LT-300CL) | 3-127 |
| 10.1 T2 Paper Tray Unit | |
| 10.2 T2 Separation Roller ASSY/T2 Paper Feed Roller ASSY 1 | |
| 10.3 T2 Cover Rear | |
| 10.4 T2 Cover Left | |
| 10.5 T2 Cover Right | |
| 10.6 T2 Relay PCB ASSY | |
| 10.7 T2 Solenoid ASSY | |
| 10.8 Collar 6 | |
| 10.9 T2 Paper Feed Frame Unit | |

CHAPTER 4 ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

| 1. | IF YOU REPLACE THE MAIN PCB ASSY | 4-1 |
|----|------------------------------------------------------------------------------------|-------|
| | 1.1 Rewriting the Firmware (Sub Firmware, Main Firmware) | . 4-2 |
| | 1.1.1 Checking firmware version | . 4-2 |
| | 1.1.2 Rewriting the firmware using computer | . 4-2 |
| | 1.1.3 Rewriting the firmware using USB flash memory | . 4-3 |
| | 1.2 Initialization of EEPROM of Main PCB ASSY (Maintenance Mode: Code 01) | . 4-4 |
| | 1.3 Setting by Country (Maintenance Mode: Code 74) | . 4-4 |
| | 1.4 Setting the Serial Number | . 4-4 |
| | 1.5 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72) | . 4-5 |
| | 1.6 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code 83). | . 4-5 |
| | 1.7 Performing the Adjustment of Color Registration (Maintenance Mode: Code 66) | . 4-5 |
| | 1.8 Operational Check of Control Panel Button (Maintenance Mode: Code 13) | . 4-5 |
| 2. | IF YOU REPLACE THE REGISTRATION MARK SENSOR | |
| | HOLDER ASSY | 4-5 |

2.1 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)......4-5

| 2.2 Performing the D 2.3 Performing the A | Developing Bias Voltage Correction (Notestation) (Notestation) (Notestation) | <i>N</i> aintenance Mode: Code 83).4-5 ntenance Mode: Code 66)4-5 |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3. IF YOU REPLAC | E THE HIGH-VOLTAGE POW | ER SUPPLY PCB ASSY4-6 |
| 3.1 Sensitivity Adjust3.2 Performing the D3.3 Performing the A | tment of Density Sensor (Maintenand Developing Bias Voltage Correction (N Adjustment of Color Registration (Mai | e Mode: Code 72)4-6 Naintenance Mode: Code 83).4-6 ntenance Mode: Code 66)4-6 |
| 4. IF YOU REPLAC | E THE LASER UNIT | 4-7 |
| 4.1 Sensitivity Adjust4.2 Performing the D4.3 Performing the A | tment of Density Sensor (Maintenand Developing Bias Voltage Correction (N Adjustment of Color Registration (Mai | e Mode: Code 72)4-7 Maintenance Mode: Code 83).4-7 ntenance Mode: Code 66)4-7 |
| 5. IF THE MACHINE POWER SUPPLY | E ERROR EF IS DETECTED A (PCB ASSY IS REPLACED | ND THE LOW-VOLTAGE |
| 5.1 Reset of Irregula | r Power Supply Detection Counter | |
| 5.1.1 Reset of irre | egular power supply detection count | er using the PJL file 4-8 |
| 5.1.2 Reset of irre the mainter | egular power supply detection counternance driver | er using 4-8 |

6. IF YOU REPLACE THE DRUM DRIVE MOTOR4-10

CHAPTER 5 SERVICE FUNCTIONS

| 1. MAINTENANCE MODE | 5-1 |
|-----------------------------------------------------------------------|------|
| 1.1 How to Enter the Maintenance Mode | 5-1 |
| 1.2 How to Enter the End User-accessible Maintenance Mode | 5-1 |
| 1.3 List of Maintenance-mode Functions | 5-2 |
| 1.4 Detailed Description of Maintenance-mode Functions | 5-3 |
| 1.4.1 EEPROM parameter initialization (Function code 01, 91) | 5-3 |
| 1.4.2 Monochrome image quality test pattern (Function code 09) | 5-4 |
| 1.4.3 Worker switch (WSW) setting and printout (Function code 10, 11) | 5-5 |
| 1.4.4 Operational check of LCD (Function code 12) | 5-8 |
| 1.4.5 Operational check of control panel button (Function code 13) | 5-9 |
| 1.4.6 Software version check (Function code 25) | 5-10 |
| 1.4.7 "One Push Demo" setting (Function code 28) | 5-11 |
| 1.4.8 Operational check of sensors (Function code 32) | 5-12 |
| 1.4.9 LAN connection status display (Function code 33) | 5-15 |
| 1.4.10 Printout of EEPROM log (Function code 40) | 5-16 |
| 1.4.11 Not-disclosed-to-users functions (Function code 45) | 5-17 |
| 1.4.12 Adjustment of color registration (Function code 66) | 5-21 |
| 1.4.13 Continuous print test (Function code 67) | 5-25 |

| | 1.4.14 Laser unit test pattern print (Function code 68) | 5-28 |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| | 1.4.15 Frame pattern print (One-sided) (Function code 69) | 5-29 |
| | 1.4.16 Frame pattern print (Two-sided) (Function code 70) | 5-31 |
| | 1.4.17 Color test pattern (Function code 71) | 5-33 |
| | 1.4.18 Sensitivity adjustment of density sensor (Function code 72) | 5-35 |
| | 1.4.19 Setting by country (Function code 74) | 5-36 |
| | 1.4.20 Sensitivity adjustment of registration mark sensor and check of belt unit s (Function code 75) | surface 5-38 |
| | 1.4.21 Printout of maintenance information (Function code 77) | 5-40 |
| | 1.4.22 Operational check of fans (Function code 78) | 5-42 |
| | 1.4.23 Display of machine history (log) (Function code 80) | 5-43 |
| | 1.4.24 Error code indication (Function code 82) | 5-47 |
| | 1.4.25 Developing bias voltage correction (Function code 83) | 5-48 |
| | | |
| | 1.4.26 Exit from the maintenance mode (Function code 99) | 5-49 |
| 2. O [.] | 1.4.26 Exit from the maintenance mode (Function code 99) | 5-49 5-50 |
| 2. O 2.1 | 1.4.26 Exit from the maintenance mode (Function code 99) THER SERVICE FUNCTIONS. 1 Service Function Menus Enabled by Pressing Button (s) When Turning the Printer On. | 5-49 5-50 |
| 2. 0 2.1 2.2 | 1.4.26 Exit from the maintenance mode (Function code 99) THER SERVICE FUNCTIONS. 1 Service Function Menus Enabled by Pressing Button (s) When Turning the Printer On | 5-49 5-50 5-50 |
| 2. 0 2.1 2.2 2.3 | 1.4.26 Exit from the maintenance mode (Function code 99) THER SERVICE FUNCTIONS. 1 Service Function Menus Enabled by Pressing Button (s) When Turning the Printer On | 5-49 5-50 5-52 5-54 |
| 2. 0 2.1 2.2 2.3 2.4 | 1.4.26 Exit from the maintenance mode (Function code 99) THER SERVICE FUNCTIONS | 5-49 5-50 5-52 5-54 5-55 |
| 2. 0 2.2 2.2 2.3 2.4 2.5 | 1.4.26 Exit from the maintenance mode (Function code 99) THER SERVICE FUNCTIONS. 1 Service Function Menus Enabled by Pressing Button (s) When Turning the Printer On | 5-49 5-50 5-52 5-54 5-55 5-62 |
| 2. 0 2.2 2.3 2.4 2.5 2.6 | 1.4.26 Exit from the maintenance mode (Function code 99) THER SERVICE FUNCTIONS. 1 Service Function Menus Enabled by Pressing Button (s) When Turning the Printer On | 5-49 5-50 5-52 5-54 5-55 5-62 5-63 |
| 2. 0 2.2 2.2 2.2 2.4 2.5 2.6 2.7 | 1.4.26 Exit from the maintenance mode (Function code 99) THER SERVICE FUNCTIONS. 1 Service Function Menus Enabled by Pressing Button (s) When Turning the Printer On | 5-49 5-50 5-52 5-54 5-55 5-62 5-63 5-64 |
| 2. 0 2.2 2.2 2.2 2.2 2.5 2.6 2.7 2.8 | 1.4.26 Exit from the maintenance mode (Function code 99) THER SERVICE FUNCTIONS. 1 Service Function Menus Enabled by Pressing Button (s) When Turning the Printer On | 5-49 5-50 5-52 5-54 5-62 5-63 5-64 5-66 |
| 2. 0 2.2 2.3 2.4 2.6 2.6 2.7 2.8 2.6 2.7 | 1.4.26 Exit from the maintenance mode (Function code 99) THER SERVICE FUNCTIONS. 1 Service Function Menus Enabled by Pressing Button (s) When 1 Turning the Printer On 2 Developer Roller Counter Reset Function 3 Parts Life Reset Function 4 Printout of Printer Settings. 5 Deletion of User Setting Information, etc. 6 How to Recover from Errors of the Fuser Unit 7 Switching of Return Value of USB No./Support for Banding. 8 Drum Cleaning. 9 Deep Sleep Function | 5-49 5-50 5-52 5-54 5-62 5-63 5-64 5-66 5-67 |

CHAPTER 6 CIRCUIT DIAGRAMS & WIRING DIAGRAM

| 1. CIRCUIT DIAGRAMS | 6-1 |
|---------------------|-----|
| 2. WIRING DIAGRAM | |

CHAPTER 7 PERIODICAL MAINTENANCE

| 1. PRECAUTIONS | 7-1 |
|--------------------------------------------------------|-----|
| 2. PERIODICAL REPLACEMENT PARTS | 7-2 |
| 2.1 Procedures to Replace Periodical Replacement Parts | 7-2 |
| 2.1.1 Fuser unit | |
| 2.1.2 Laser unit | |
| 2.1.3 Paper feeding kit1 | |

| 2.1.4 Paper feeding kit2 | 7-27 |
|----------------------------|------|
| 2.1.5 MP paper feeding kit | 7-30 |

APPENDIX 1. DELETION OF USER SETTING INFORMATION, ETC.

APPENDIX 2. SERIAL NUMBERING SYSTEM

APPENDIX 3. INSTALLING THE MAINTENANCE DRIVER

REGULATION

■ Declaration of Conformity (Europe only) (HL-4570CDW/HL-4570CDWT only)

We, Brother Industries, Ltd.

15-1, Naeshiro-cho, Mizuho-ku, Nagoya 467-8561 Japan

declare that this product is in compliance with the essential requirements of Directives 1999/5/EC and 2005/32/EC.

The Declaration of Conformity (DoC) is on our Website.

Please go to http://solutions.brother.com/.

- choose region (eg. Europe)
- choose country
- choose your model
- choose "Manuals"
- choose Declaration of Conformity (Select Language when required.)

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- choose region (eg. Europe)
- choose country
- choose your model
- choose "Manuals"
- choose Declaration of Conformity (Select Language when required.)

■ IEC60825-1:2007 Specification (For 220-240V models only)

This product is a Class 1 laser product as defined in IEC60825-1:2007 specifications. The label shown below is attached in countries where required.

This product has a Class 3B Laser Diode which emits invisible laser radiation in the scanner unit. The scanner unit should not be opened under any circumstances.



Internal laser radiation

Wave length: 770 - 800 nm Output: 20 mW max. Laser Class: Class 3B

Use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

Disconnect Device

This product must be installed near an electrical socket that is easily accessible. In case of emergencies, you must disconnect the power cord from the electrical socket to shut off power completely.

■ Wiring Information (U.K. only)

If you need to replace the plug fuse, fit a fuse that is approved by ASTA to BS1362 with the same rating as the original fuse.

Always replace the fuse cover. Never use a plug that does not have a cover. If in any doubt, call a qualified electrician.

Warning -This product must be earthed.

The wires in the mains lead are coloured in line with the following code:

- Green and Yellow: Earth
- Blue: Neutral
- Brown: Live

■ LAN Connection (Network models only)

DO NOT connect this product to a LAN connection that is subject to over-voltages.

Radio Interference

This product complies with EN55022 (CISPR Publication 22)/Class B.

■ EU Directive 2002/96/EC and EN50419



This equipment is marked with the above recycling symbol. It means that at the end of the life of the equipment you must dispose of it separately at an appropriate collection point and not place it in the normal domestic unsorted waste stream. This will benefit the environment for all. (European Union only)

For USA and Canada

Federal Communications Commission (FCC) Declaration of Conformity (For USA)

Responsible Party: Brother International Corporation 100 Somerset Corporate Boulevard P.O. Box 6911 Bridgewater, NJ 08807-0911 USA Telephone: (908) 704-1700

declares, that the products

| Product name: | Printer HL-4140CN, HL-4150CDN, HL-4570CDW and HL-4570CDWT |
|-----------------|-----------------------------------------------------------|
| Model number: | HL-41, HL-45 |
| Product option: | Lower Tray Unit LT-300CL |

complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

(Wireless network models only)

This transmitter must be co-located or operated in conjunction with any other antenna or transmitter.

Important

A shielded interface cable should be used to ensure compliance with the limits for a Class B digital device. Changes or modifications not expressly approved by Brother Industries, Ltd. could void the user's authority to operate the equipment.

■ Industry Canada Compliance Statement (For Canada)

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

■ Laser Safety (110 to 120 volt model only)

This machine is certified as a Class 1 laser product under the USA. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the machine does not produce hazardous laser radiation.

Since radiation emitted inside the machine is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

■ FDA Regulations (110 to 120 volt model only)

The USA Food and Drug Administration (FDA) has implemented regulations for laser products manufactured on and after August 2, 1976. Compliance is mandatory for products marketed in the United States. The following label on the back of the machine indicates compliance with the FDA regulations and must be attached to laser products marketed in the United States.

MANUFACTURED:

Brother Technology (Shenzhen) Ltd.

NO6 Gold Garden Ind., Nanling Buji, Longgang, Shenzhen, China

This product complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No.50, dated June 24, 2007.

Internal laser radiation

| Maximum radiation power: | 20 mW |
|--------------------------|--------------|
| Wave length: | 770 - 800 nm |
| Laser class: | Class 3B |

SAFETY INFORMATION

■ Definitions of Warnings, Cautions, Notes and Memos

The following conventions are used in this manual:

| Mark | Contents | | | | | |
|------|------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| | Warnings tell you what to do to prevent possible personal injury. | | | | | |
| Â | Electrical Hazard icons alert you to a possible electrical shock. | | | | | |
| | Hot Surface icons warn you not to touch machine parts that are hot. | | | | | |
| 0 | Cautions specify procedures you must follow or avoid to prevent possible damage to the machine or other objects. | | | | | |
| Note | Notes tell you useful tips when servicing the machine. | | | | | |
| Memo | Memo tells you bits of knowledge to help understand the machine. | | | | | |

Safety Precautions

Listed below are the various kinds of "WARNING" messages included in this manual.



WARNING DO NOT touch the shaded parts shown in the illustration. These rollers may be rotating at high speed and an pinch or entrap your hand. Languages on the label may vary depending on your country. DO NOT use flammable substances, any type of spray or any organic solvent/liquids contains alcohol or ammonia to clean the inside or outside of the machine. Doing this may cause a fire or electrical shock. If the machine becomes hot, blows smoke, or generates obscure odor, immediately turn off the power switch and unplug the machine from the AC power outlet. If metal objects, water or other liquids get inside the machine, immediately turn off the power switch and unplug the machine from the AC power outlet. This machine is heavy and weighs approximately 21.0 kg (46.3 lb). To prevent injuries when moving or lifting this machine, make sure to use at least two people. Be careful not to pinch your fingers when you set the machine back down.

Lightning and power surges can damage this product! We recommend that you use a quality surge protection device on the AC power line, or unplug the machine during a lightning storm.

Violently closing the top cover without mounting the toner cartridge and the drum unit can damage this product.

■ Caution for Laser Product (WARNHINWEIS fur Laser drucker)

- CAUTION: When the machine during servicing is operated with the cover open, the regulations of VBG 93 and the performance instructions for VBG 93 are valid.
- CAUTION: In case of any trouble with the laser unit, replace the laser unit itself. To prevent direct exposure to the laser beam, do not try to open the enclosure of the laser unit.
- ACHTUNG: Im Falle von Störungen der Lasereinheit muß diese ersetzt werden. Das Gehäuse der Lasereinheit darf nicht geöffnet werden, da sonst Laserstrahlen austreten können.

<Location of the scanner windows>



Additional Information

When servicing the optical system of the machine, be careful not to place a screwdriver or other reflective object in the path of the laser beam. Be sure to take off any personal accessories such as watches and rings before working on the machine. A reflected beam, though invisible, can permanently damage the eyes.

Since the beam is invisible, the following caution label is attached on the laser unit.

| 1 | | |
|---|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | DANGER | WARNING INVISIBLE LASER RADIATION WHEN COVER OPEN AND INTER-LOCK DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.CLASS 3B LASER PRODUCT. |
| | GEFAHR | UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET UND VERRIEGELUNG GELÖST. DIREKTEN KONTAKT MIT DEM LASERSTRAHL VERMEIDEN.KLASSE 3B LASERPRODUKT. |
| | DANGER | RAYONNEMENT LASER INVISIBLE LORSQUE L'APPAREIL EST OUVERT OU ENDOMMAGE. EVITER TOUTES EXPOSITIONS DIRECTES AU FASCEAU.PRODUCT LASER DE CLASS 3B. |
| | FARA | OSYNLIG LASERSTRÅLNING NÄR LUCKAN ÄR ÖPPEN OCH LÅSEN TILL DENNA ENHET ÄR FORSERADE. UNDVIK DIREKT EXPONERIG FRÅN LASERSTRÅLEN. KLASS 3B LASER PRODUKT. |
| | FARE | USYNLIG LASERSTRÅLE NÅR MASKINEN ER ÅPEN OG DELKSELBRYTERE AKTIVERT, UNNGÅ DIREKTE EKSPONERING AV LASERSTRÅLEN KLASSE 3B LASER PRODUKT. |
| | GEVAAR | ONZICHTBARE LASER STRALING BIJ OPENING EN OMZEILDE BEVEILIGING. VOORKOM DIRECTE BLOOTSTELLING AAN STRAAL.KLASSE 3B LASER PRODUCT. |
| | FARE | USYNLIG LASERSTRÅLER, HVIS DU ÅBNER OG SAMTIDIGT BLOKERER LASEREN. UNDGÅ LASERSTRÅLERNE KLASSE 3B LASERPRODUKT. |
| | PELIGRO | EMISIÓN DE RADIACIÓN LÁSER INVISIBLE CUANDO LA CUBIERTA SE ENCUENTRA ABIERTA Y DESBLOQUEADA. EVITE LA EXPOSICIÓN DIRECTA AL HAZ. PRODUCTO LÁSER DE CATEGORÍA 3B. |
| | VAARA | LAITETTA AVATTAESSA JA SUOJALUKITUSTA PURKAESSA, LAITTEESTA LÄHTEE NÄKYMÄTÖNTÄ LASERSÄTEILYÄ. VÄLTÄ SUORAA ALTISTUMISTA SÄTEELLE. LUOKAN 3 LASERLAITE. |
| | 危険 | 3B类激光产品。避免激光直接照射。开盖或盖锁失效,可能有激光外溢! |
| | 危険 | セーフティインターロックを解除すると不可視レーザー光が出ます。 ビームを直接見たり触れたりしないでください。 |
| | | |

CHAPTER 1 SPECIFICATIONS

CHAPTER 1 SPECIFICATIONS

This chapter lists the specifications of each model.

CONTENTS

| 1. | SPECIFICATIONS LIST | 1-1 |
|----|------------------------------|-----|
| | 1.1 General | 1-1 |
| | 1.2 Network Connectivity | 1-4 |
| | 1.3 Service Information | 1-5 |
| | 1.4 Supplies | 1-6 |
| | 1.5 Paper | 1-7 |
| | 1.5.1 Paper handling | 1-7 |
| | 1.5.2 Media specifications | 1-7 |
| | 1.5.3 Type and size of paper | 1-8 |
| | 1.6 Unprintable Area | 1-9 |

1. SPECIFICATIONS LIST

1.1 General

| Model | | HL-4140CN | HL-4150CDN | HL-4570CDW | HL-4570CDWT | | |
|-----------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------|--|--|
| Print method | | Electrophotographic Laser printer (Single-pass) | | | | | |
| Resolution | | 600 x 600 dpi, | 2,400 dpi (2400 | x 600) quality | | | |
| Print speed One-sided | | Monochrome/ Full Color: Up to 22/22 ppm (A4/Letter size) | Monochrome/ Full Color: Up to 24/25 ppm (A4/Letter size) | Monochrome/Full Color: Up to 28/30 ppm (A4/Letter size) | | | |
| | | * When loading | A4 or Letter-siz | ze paper from th | e paper tray. | | |
| | Two-sided | N/A | Monochrome/F (A4/Letter size * When loading the paper tra | [:] ull Color: Up to) g A4 or Letter siz y | ull Color: Up to 7/7 ppm A4 or Letter size paper from | | |
| Warm-up time | ļ | From Sleep mo From Power O | ode: Less than 2 N: Less than 33 | 9 seconds at 23 seconds at 23 | ^s °C (73.4 F) °C (73.4 F) | | |
| First print time | , *1 | From Ready m From Sleep mo | From Ready mode: Less than 16 seconds From Sleep mode: Less than 40 seconds | | | | |
| CPU | | StarSaphire (SS1000) 400 MHz | | | | | |
| Memory | Standard | 128 MB | | | | | |
| | Option | Up to 256 MB (DDR2 16 bit, 144 pin) | | | | | |
| Interface | | Hi-Speed USB 2.0, 10BASE-T/100BASE-TX Ethernet | | HI-Speed USB 2.0, 10BASE-T/100BASE-TX Ethernet, Wireless LAN IEEE802.11b/g | | | |
| Power | Printing | Average: Appro | oximately 560 W | 1 | | | |
| consumption | Ready | Average: Approximately 65 W | Average: Approximately 70 W (for USA) Approximately 65 W (for Europe, Asia Pacific) | | Average: Approximately 65 W | | |
| | Sleep, Wireless LAN: ON | N/A | | Average: Approximately 7 W (for USA) Approximately 8 W (for Europe, Asia Pacific) | Average: Approximately 7 W | | |
| | Deep Sleep | Average: Average: Approximately 0.7 W (for US Approximately Approximately 0.9 W 0.9 W (for Europe, Asia Pacific) | | | (for USA) | | |

^{*1} The time may change if the printer is performing adjustment of color density or adjustment of color registration.

| Model | | HL-4140CN | HL-4150CDN | HL-4570CDW | HL-4570CDWT | |
|-------------|---------------------------------------|-------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--|
| Noise level | Sound pressure | Printing: LpAm Ready: LpAm = | Printing: LpAm = 57 dB (A) Ready: LpAm = 33 dB (A) | | | |
| | Sound power | Printing (Mono LWAd = 6.71B Ready: LWAd = | chrome): (A) = 4.07 B (A) | Printing (Monochrome): LWAd = 6.63B (A) Ready: LWAd = 4.01 B (A) | Printing (Monochrome): LWAd = 6.77B (A) Ready: LWAd = 4.09 B (A) | |
| Environment | Temperature | Operating: 10 t Storage: 0 to 4 | o 32.5 °C 0 °C | | | |
| | Humidity | Operating: 20 t Non operating: | | | | |
| Dimensions | Carton size | 650 x 574 x 521 mm (25.6 x 22.6 x 20.5 inch) | | | 815 x 599 x 850 mm (32.1 x 23.6 x 33.5 inch) | |
| | Machine size | 410 x 486 x 313 mm (16.1 x 19.1 x 12.3 inch) | | | 410 x 495 x 446 mm (16.1 x 19.5 x 17.6 inch) | |
| Weights | with Carton | 25.5 kg/56.2 lb | | | 39.0 kg/86.0 lb | |
| | without Carton, with toner/drum | 21.0 kg/46.3 lb | | | 27.0 kg/59.5 lb | |
| | without Carton, and toner/drum | 16.0 kg/35.3 lb | | | 22.0 kg/48.5 lb | |
| LCD Size | | 16 Characters x 2 lines | | | | |

<Computer requirements>

| Comput Operating | er Platform & System Version | Processor Minimum Speed | Minimum RAM | Recommended RAM | Hard Disk Space to install | Supported PC Interface ^{*2} | | | | | | | | | | | | |
|-----------------------------------|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|----------------------------------|--------------------------------------------|-------------------------------------|--|--|--|--|--|--|--|--|--|--|--|
| Windows [®] Operating | Windows [®] 2000 Professional | Intel [®] Pentium [®] II or equivalent | 64 MB | 256 MB | 50 MB | USB, 10Base-T/ | | | | | | | | | | | | |
| System | Windows [®] XP Home Edition | | equivalent | 128 MB | | | 100Base-TX Ethernet, Wireless | | | | | | | | | | | |
| | Windows [®] XP Professional | | | | | 802.11b/g | | | | | | | | | | | | |
| | Windows [®] XP Professional x64 Edition | 64-bit (Intel [®] 64 or AMD64) supported CPU | 256 MB | 512 MB | | | | | | | | | | | | | | |
| | Windows Vista [®] | Intel [®] | 512 MB | 1 GB | | | | | | | | | | | | | | |
| | Windows [®] 7 | Pentium [®] 4 or equivalent 64-bit (Intel [®] 64 or AMD64) supported CPU | 1 GB (32-bit) 2 GB (64-bit) | 1 GB (32-bit) 2 GB (64-bit) | | | | | | | | | | | | | | |
| | Windows Server [®] 2003 | Intel [®] Pentium [®] III or equivalent | 256 MB | 512 MB | | | | | | | | | | | | | | |
| | Windows Server [®] 2003 x64 Edition | 64-bit (Intel [®] 64 or AMD64) supported CPU | | | | | | | | | | | | | | | | |
| | Windows Server [®] 2008 | Intel [®] Pentium [®] 4 or equivalent 64-bit (Intel [®] 64 or AMD64) supported CPU | 512 MB | 2 GB | | | | | | | | | | | | | | |
| | Windows Server [®] 2008 R2 | 64-bit (Intel [®] 64 or AMD64) supported CPU | | | | | | | | | | | | | | | | |
| Macintosh Operating System | OS X 10.4.11 and 10.5.x | PowerPC [®] G4/ G5 Intel [®] Core TM Processor | 512 MB | 1GB | 80 MB | | | | | | | | | | | | | |
| | OS X 10.6.x | Intel [®] Core TM Processor | 1GB | 2GB | | | | | | | | | | | | | | |

^{*1} Microsoft[®] Internet Explorer 6.0 or greater.

*2 Third-party USB ports are not supported.

1.2 Network Connectivity

| Model | | HL-4140CN | HL-4150CDN | HL-4570CDW | HL-4570CDWT | |
|---------------------|----------------------|--------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--|
| Wired network | Network node type | NC-6900h type2 | | | | |
| | Network type | 10Base-T/100 | Base-TX Ethern | et | | |
| Wireless network | Network node type | N/A NC-7700w type2 | | e2 | | |
| | Network type | type N/A | | | IEEE802.11b/g | |
| | Communication mode | N/A | | Infrastructure, Ad-hoc | | |
| | Network security | N/A | | WEP 64/128 b WPA-PSK (TK WPA2-PSK (A POP before SM SMTP-AUTH, (IPPS, HTTPS SNMP v3, 802.1x (LEAP, PEAP, EAP-TL Kerberos | it, IP/AES), ES), APOP, MTP, SSL/TLS , SMTP, POP), EAP-FAST, S, EAP-TTLS), | |

1.3 Service Information

| Model | | HL-4140CN | HL-4150CDN | HL-4570CDW | HL-4570CDWT | |
|------------------------|-------------------------|--------------------------------------|---------------------------------------|------------|-------------|--|
| Machine life | | 200,000 pages (A4/Letter) or 5 years | | | | |
| MTBF | | 4,000 hours | | | | |
| MTTR | | 0.5 hours | | | | |
| Maximum monthly volume | | Up to 40,000 pa | Up to 40,000 pages Up to 60,000 pages | | ages | |
| Periodical | Fuser unit | 100,000 pages | | | | |
| replacement | Laser unit | 100,000 pages | | | | |
| F | Paper feeding kit1 | 100,000 pages | | | | |
| | Paper feeding kit2 | 100,000 pages | | | | |
| | Paper feeding kit MP | 50,000 pages | | | | |

* As for replacement of the periodical maintenance parts, refer to "PERIODICAL MAINTENANCE" in Chapter 7.

1.4 Supplies

| Model | | | HL-4140CN | HL-4150CDN | HL-4570CDW | HL-4570CDWT | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--|
| Toner Starter Black | | Approximately 2,500 pages | | | | | |
| cartridge | Ioner - | Cyan, Magenta, Yellow | Approximately 1,500 pages | | | | |
| | Standard | Black | Approximately | 2,500 pages | | | |
| | Ioner ' | Cyan, Magenta, Yellow | Approximately 1,500 pages | | | | |
| | High Capacity Toner ^{*1} | Black | N/A (for USA, Asia Pacific) Approximately 4,000 pages (for Europe) | N/A (for Asia Pacific) Approximately 6,000 pages (for USA) Approximately 4,000 pages (for Europe) | | | |
| Cyan, Mager Yellow | | Cyan, Magenta, Yellow | N/A (for USA, Asia Pacific) Approximately 3,500 pages (for Europe) | Approximately 3,500 pages | | | |
| | Super | Black | N/A | N/A (for USA, | N/A (for USA) | N/A (for USA, | |
| | Capacity Toner ^{*1} | Cyan, Magenta, Yellow | N/A | Europe) Approximately 6,000 pages (for Asia Pacific) | Approximately 6,000 pages (for Asia Pacific, Europe) | Asia Pacific) Approximately 6,000 pages (for Europe) | |
| * When p Shelf life: | rinting A4 2 years v | /Letter size | e one sided pag ening (6 months | es in accordance after opening) | e with ISO/IEC | 19798. | |
| Drum uni | t | | Life expectance The life expect (Refer to Displa Chapter 5.) * When printing with ISO/IEC Shelf life: 2 year | y: Approximately ancy varies acco ay of the machin g A4/Letter size of 19798. ars without open | / 25,000 ^{*3} page ording to the use le log (Function one sided pages ing (6 months a | s/drum unit e condition. code 80 in s in accordance fter opening) | |
| The shelf life of toner cartridge and drum unit is guaranteed under the normal condition as below; (Temperature) Normal condition: 0 to 40 °C * Storage condition at the temperature of 40 to 50 °C: Up to 5 days * Storage condition at the temperature of -20 to 0 °C: Up to 5 days | | | | | | | |
| (Humidity) Normal condition: 35 to 85 % * Storage condition at the humidity of 85 to 95 %: Up to 5 days * Storage condition at the humidity of 10 to 35 %: Up to 5 days | | | | | | | |
| Belt unit | | | Life expectancy: Approximately 50,000 pages/belt unit The life expectancy varies according to use the condition. | | | | |
| Waste toner box | | | Life expectancy: Approximately 50,000 pages/waste toner box | | | | |
| 1 Separately sold consumable toner | | | | | | | |

Separately sold consumable toner.

*2 Toner supplied with the printer.

^{*3} In the normal use, the color photosensitive drums rotate simultaneously even if no color print is made at all and black print only is made. Thus, the four color drum units reach the life expectancy at the same time.

1.5 Paper

1.5.1 Paper handling

| Model | | HL-4140CN | HL-4150CDN | HL-4570CDW | HL-4570CDWT | |
|-------------|--------------|-------------------------------|------------|------------|-------------|--|
| Paper Input | Paper tray 1 | 250 sheets | | | | |
| | Paper tray 2 | 500 sheets | | | | |
| | MP tray | 50 sheets | | | | |
| Paper | Face-down | 150 sheets | | | | |
| Output | Face-up | 1 sheet (Straight paper path) | | | | |
| Duplex | | N/A | Yes | | | |

Specifications are subject to change without notice.

1.5.2 Media specifications

| Model | | HL-4140CN | HL-4150CDN | HL-4570CDW | HL-4570CDWT | |
|--------------|--------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------|-------------|--|
| Media type | Paper tray 1 | Plain Paper, Thin Paper, Recycled Paper | | | | |
| | Paper tray 2 | Plain Paper, Thin Paper, Recycled Paper | | | | |
| | MP tray | Plain Paper, Th Recycled Pape Env.Thick, Glos | Paper, Thin, | | | |
| | Duplex | N/A | Plain Paper, Thin Paper, Recycled Paper, Glossy Paper | | | |
| Media weight | Paper tray 1 | 60 to 105 g/m ² (16 to 28 lb) | | | | |
| | Paper tray 2 | 60 to 105 g/m ² (16 to 28 lb) | | | | |
| | MP tray | 60 to 163 g/m ² (16 to 43 lb) | | | | |
| | Duplex | N/A | 60 to 105 g/m ² | (16 to 28 lb) | | |
| Media size | Paper tray 1 | A4, Letter, B5(ISO/JIS), A5, A5(Long Edge), B6(ISO), A6, Executive, Legal ^{*2} , Folio | | | 6(ISO), A6, | |
| | Paper tray 2 | A4, Letter, B5(ISO/JIS), A5, B6(ISO), Executive, Legal ^{*2} , Folio | | | | |
| | MP tray | Width: 69.8 to 216 mm (2.75 to 8.5 inch) Length: 116 to 406.4 mm (4.57 to 16 inch) | | | | |
| | Duplex | N/A | Letter, Legal ^{*2} , A4 (for Europe | Folio (for USA) , Asia Pacific) | , | |

^{*1} When you print on glossy paper, set only a single sheet on the MP tray.

 $^{\star 2}~$ Legal size paper is not available in some regions outside USA and Canada.

1.5.3 Type and size of paper

The printer loads paper from the installed paper tray or the manual feed slot. The names for the paper trays in the printer driver as follows:

| The name for the paper trays | The name for the paper trays in the printer driver |
|------------------------------|----------------------------------------------------|
| Paper tray 1 (T1) | Tray 1 |
| Paper tray 2 (T2) | Tray 2 |
| MP tray | MP Tray |
| Duplex | DX |

<Media type>

| | Paper tray 1 (T1) | Paper tray 2 (T2) | MP tray | Duplex | Choose the media type from the printer driver |
|---------------------------------------------------------------------------------|----------------------|----------------------|------------------------------------|--------|-----------------------------------------------------|
| Plain paper 75 to 105 g/m ² (20 to 28 lb) | Yes | Yes | Yes | Yes | Plain Paper |
| Recycled paper | Yes | Yes | Yes | Yes | Recycled Paper |
| Bond paper Rough paper 60 to 163 g/m ² (16 to 43 lb) | N/A | N/A | Yes | N/A | Bond Paper |
| Thin paper 60 to 75 g/m ² (16 to 20 lb) | Yes | Yes | Yes | Yes | Thin Paper |
| Thick paper 105 to 163 g/m ² (28 to 43 lb) | N/A | N/A | Yes | N/A | Thick Paper or Thicker Paper |
| Labels (A4 or Letter) | N/A | N/A | Yes | N/A | Label |
| Envelopes | N/A | N/A | Yes | N/A | Envelopes, Env. Thin, Env. Thick |
| Glossy paper | N/A | N/A | Only 1 sheet for paper input | Yes | Glossy Paper |

Memo:

- Use paper that is made for plain-paper copying.

- Use paper that is 75 to 90 g/m² (20 to 24 lb).
- Use neutral paper. Do not use acidic or alkaline paper.
- Use long-grain paper.
- This printer can use recycled paper that meets DIN 19309 specifications.
- DO NOT use ink jet paper because it may cause a paper jam or damage your printer.

1.6 Unprintable Area

Portrait

Landscape



| | Windows [®] printer driver and Macintosh printer driver BRScript printer driver for Windows [®] and Macintosh |
|---|---------------------------------------------------------------------------------------------------------------------------------|
| 1 | 4.23 mm (0.16 inch) |
| 2 | 4.23 mm (0.16 inch) |

Note:

The area that cannot be printed on may vary depending on the paper size and the printer driver you are using. The unprintable area shown above is for Letter size paper.

CHAPTER 2 ERROR INDICATION AND TROUBLESHOOTING

CHAPTER 2 ERROR INDICATION AND TROUBLESHOOTING

This chapter details error messages and codes which the incorporated self-diagnostic function of the printer will display if any error or malfunction occurs. If any error message appears, refer to this chapter to find which parts should be checked or replaced.

The latter half of this chapter provides sample problems which could occur in the main sections of the printer and related troubleshooting procedures.

CONTENTS

| 1. | INTRODUCTION | 2-1 |
|----|---------------------------------------|-------|
| | 1.1 Precautions | 2-1 |
| | 1.2 Initial Check | 2-2 |
| 2. | OVERVIEW | 2-4 |
| | 2.1 Cross-section Drawing | 2-4 |
| | 2.2 Paper Feeding | 2-5 |
| | 2.3 Operation of Each Part | 2-6 |
| | 2.4 Block Diagram | 2-8 |
| | 2.5 Components | 2-9 |
| 3. | ERROR INDICATIONS | 2-10 |
| | 3.1 Error Codes | 2-10 |
| | 3.2 Error Messages | 2-16 |
| | 3.3 Error Cause and Remedy | 2-21 |
| | 3.4 Paper Feeding Problems | 2-83 |
| | 3.4.1 No feeding | 2-83 |
| | 3.4.2 Double feeding | 2-86 |
| | 3.4.3 Paper jam | 2-86 |
| | 3.4.4 Dirt on paper | 2-90 |
| | 3.4.5 Wrinkles on paper | 2-90 |
| | 3.5 Image Defect Troubleshooting | 2-91 |
| | 3.5.1 Image defect examples | 2-91 |
| | 3.5.2 Pitch indicated in roller image | 2-92 |
| | 3.5.3 Troubleshooting image defect | 2-92 |
| | 3.6 Software Setting Problems | 2-108 |
| | 3.6.1 Cannot print data | 2-108 |
| | 3.7 Network Problems | 2-108 |

| 3.7.1 Cannot make a print through network connection (Error code ED, EE) | 2-108 |
|-----------------------------------------------------------------------------|-------|
| 3.8 Others Problems | |
| 3.8.1 The printer is not turned ON, or the LCD indication does not appear . | 2-109 |
| 3.8.2 The fan does not work (Error code 2B, EC) | 2-109 |
| 3.8.3 The USB direct interface does not work (Error code CA, etc) | 2-110 |
| 3.8.4 The room temperature is high or low | 2-110 |

1. INTRODUCTION

Troubleshooting is the countermeasure procedures that the service personnel should follow if an error or malfunction occurs with the printer. It is impossible to anticipate all of the possible troubles which may occur in future and determine the troubleshooting procedures, so this chapter covers some sample troubles. However, those samples will help the service personnel pinpoint and repair other defective elements.

1.1 Precautions

Be sure to observe and follow all the precautions to prevent any secondary problems from happening during troubleshooting.

- (1) Always turn off the power and unplug the power cable before removing any covers or PCBs, adjusting the printer and so on. If you need to take voltage measurements with the power switched on, take the greatest of care not to receive an electric shock.
- (2) When connecting or disconnecting cable connectors, make sure that you hold the connector body and not the cables.
- (3) Static electricity charged in your body may damage electronic parts. Before handling the PCBs, touch a metal portion of the printer to discharge static electricity charged in your body. When transporting PCBs, be sure to wrap them in conductive sheets.

When replacing the PCBs, 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.

(4) Follow the warning by all means.

<text><text><text><image><image>

(5) Verify again that the repaired portion works properly.

1.2 Initial Check

Check the following items before attempting to repair the printer.

Operating environment

- (1) Put your printer on a flat, stable surface such as a desk that is free of vibration and shocks.
- (2) Use the printer in a well-ventilated room; use the printer within the following ranges of temperature and humidity: temperature between 10 °C and 32.5 °C (50 °F to 90.5 °F), and the relative humidity is maintained between 20 % and 80 %.
- (3) Ensure the printer is not exposed to direct sunlight, excessive heat, moisture, or dust.
- (4) Keep the printer horizontal when you carry it. To prevent injuries when moving or lifting this printer, make sure to use at least two people.



Fig. 2-1

Power supply

- (1) The AC input power supply described on the rating plate of the printer should be within ± 10 % of the rated voltage.
- (2) The AC input power supply is within the regulated value.
- (3) The cables and harnesses are connected correctly.
- (4) The fuses are not blown.

Paper

- (1) A recommended type of paper is being used. (Refer to User's guide.)
- (2) The paper is not damp.
- (3) The paper is not short-grained paper or acid paper.

Consumable parts

- (1) The drum unit (including the toner cartridge) is installed correctly.
- (2) The belt unit and waste toner box are installed correctly.

Others

(1) Condensation

When the printer is moved from a cold place into a warm room, condensation may occur inside the printer, causing various problems as listed below.

- Condensation on the surface of optical devices such as the scanner windows, lens, reflecting mirror, and protection glass, etc, may cause light print image.
- If the exposure drum is cold, the electrical resistance of the photosensitive layer is increased, making it impossible to obtain the correct contrast when printing.
- Condensation on the charge unit may cause corona charge leakage.
- Condensation on the plate and separation pad may cause paper feed problems.

If condensation has occurred, leave the printer for at least two hours to allow it to reach room temperature.

If the drum unit is unpacked soon after it is moved from a cold place to a warm room, condensation may occur inside the unit which may cause incorrect images. Instruct the user to allow the unit to come to room temperature before unpacking it. This will take one or two hours.

(2) Low temperature

The motor may not drive normally under the low temperature environment. This is due to there being too much load to drive each unit. In this case, the "Low Temperature/Increase room temperature to allow the machine to operate" message will appear on the LCD. Increase the room temperature when the above message is indicated.

Cleaning

Use a soft dry lint-free cloth.

DO NOT use flammable substances, any type of spray or any organic solvent/liquids contains alcohol or ammonia to clean the inside or outside of the printer. Doing this may cause a fire or electrical shock.



2. OVERVIEW

2.1 Cross-section Drawing



Fig. 2-2
2.2 Paper Feeding



Fig. 2-3

2.3 Operation of Each Part

| Part name | Operation |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T1 paper pick-up roller | Feed the paper from the paper tray 1. |
| T1 separation roller, T1 separation pad | Separate into single sheet from the paper tray 1. |
| T1 paper edge actuator | Detect whether or not the paper tray 1 is installed. Detect whether or not paper is loaded. Detect the paper jam of front part. |
| Registration front actuator | Detect the front edge of paper and control the drive of the registration roller. Detect the paper jam of front part. |
| Registration roller | When the front edge of the paper hit the stopped registration roller and the inclination of the paper is corrected. After correction is made, the registration roller rotates to feed the paper to the belt unit. |
| Registration rear actuator | Detect the passage of paper and adjust the starting position for writing on a sheet of paper. Detect the paper jam of center part. Detect the rear edge of paper and identify the paper size. |
| Belt unit | Feed the paper to the drum unit for each color and transfer toner on the paper. |
| Heat roller, Pressure roller | Fuse and fix the toner transferred on paper by heat and pressure, and feed the paper to the paper eject roller 1. |
| Paper eject actuator | Detect whether or not paper is ejected from the fuser unit. In the case of the duplex printing, detect the rear edge of paper and adjust the timing of the paper eject roller 3 switching. |
| Paper eject roller 1 | Feed the paper ejected from the fuser unit to the paper eject roller 2. |
| Paper eject roller 2 | Feed the paper to the paper eject roller 3. |
| Paper eject roller 3 | Eject the paper to the face-down output tray. In the case of the duplex printing, after the paper is fed from the eject roller 3 up to a certain point with the front of the sheet printed, the eject roller 3 rotates conversely and feeds the paper to the duplex tray. |
| DX feed roller | Feed the paper passed in the duplex tray to the registration roller. |
| MP paper pick-up roller | Feed the paper from the MP tray. |
| MP separation roller, MP separation pad | Separate into single sheet from the MP tray. |
| MP paper empty actuator | Detect whether paper is loaded in the MP tray. |
| MP registration front actuator | Detect the front edge of paper from MP tray and control the drive of the registration roller. Detect the paper jam of MP part. |

| Part name | Operation |
|--------------------------------------------|------------------------------------------------------------------------------------------------|
| T2 paper pick-up roller | Feed the paper from the paper tray 2. |
| T2 separation roller, T2 separation pad | Separate into single sheet from the paper tray 2. |
| T2 paper edge actuator | Detect whether or not the paper tray 2 is installed. Detect whether or not paper is loaded. |

2.4 Block Diagram



Fig. 2-4

2.5 Components



Fig. 2-5

3. ERROR INDICATIONS

This printer includes a self-diagnosis function. If the printer does not work normally it judges that an error has occurred, and indicates the corresponding error message on the LCD, which in turn helps the service men to quickly find out the problem.

3.1 Error Codes

| Error codes | Problem | Refer to: | Error codes | Problem | Refer to: |
|----------------|-------------------------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 0F | The back cover is open upon duplex printing. (The back cover sensor is OFF.) | 2-21 | 1B | 1B Drum error. (An error occurred after the counter value exceeded the value more than twice as long as the life of the drum.) (Printing is | |
| 10 | Color registration adjustment failure. (Error, which cannot be recorded, occurs.) | 2-21 | | not available until the drum unit is replaced.) | |
| | | | 1C | Drum error. | 2-25 |
| 11 | Color registration adjustment failure. (Toner of the color which is being used reached the end of life.) | 2-21 | (An error occurred after the counter value exceeded the value more than twice as long as the life of the drum.) (Printing is not available until the drum unit is replaced.) | | |
| 12 | Color registration adjustment | 2-22 | | is replaced. | |
| | failure. (Incorrect measurement value of color registration adjustment.) | | 1D | Drum error. (An error occurred after the counter value exceeded the | 2-25 |
| 16 | Paper of unsupported size for duplex printing or paper of different sizes is loaded. | 2-22 | | value more than twice as long as the life of the drum.) (Printing is not available until the drum unit is replaced.) | |
| 17 | The paper tray 1 is not installed before printing. (The T1 paper edge sensor is OFF.) | 2-23 | 1E | The drum unit will reach the end of life soon. | 2-25 |
| | | | 1F | More than the specified number | 2-26 |
| 18 | The paper tray 2 is not installed | 2-23 | | of the option trays is installed. | |
| | before printing. (The T2 paper edge sensor is OFF.) | | 20 | Laser diode error (K). | 2-26 |
| | , , , , , , , , , , , , , , , , , , , | | 21 | Laser diode error (Y). | 2-26 |
| 19 | The drum unit reached the end | 2-24 | 22 | Laser diode error (M). | 2-26 |
| | of life. | | 23 | Laser diode error (C). | 2-26 |
| 1A | Condensation occurred on the | 2-24 | 24 | Internal temperature sensor error. | 2-27 |
| | laser unit. | | 25 | Develop drive motor error. | 2-27 |
| | | | 26 | Belt drive motor error. | 2-27 |
| | | | 27 | PF drive motor error. | 2-28 |

| Error codes | Problem | Refer to: | Error codes | Problem | Refer to: |
|----------------|--------------------------------------------------------------------------------------------|--------------|----------------|-----------------------------------------------------------------|--------------|
| 28 | Drum drive motor error. | 2-28 | 3D | Main PCB error. | 2-35 |
| 29 | Paper eject motor error. | 2-29 | | (Read error in NVRAM.) | |
| 2A | Develop release motor error. | 2-29 | 3E | Main PCB error. | 2-35 |
| 2B | Blower fan error. | 2-30 | | (Bus error in NVRAM.) | |
| 2C | Black Toner/New sensor PCB | 2-31 | 3F | Write error in engine firmware. | 2-36 |
| | error. | | 40 | Error in the high-voltage power | 2-36 |
| 2D | Yellow Toner/New sensor PCB | 2-31 | | supply PCB while the printer is in operation. | |
| | error. | | 42 | High-voltage power supply PCB | 2-36 |
| 2E | Magenta Toner/New sensor PCB | 2-31 | | transfer error. | |
| | error. | | 43 | ASIC error of the main PCB. | 2-36 |
| 2F | Cyan Toner/New sensor PCB error. | 2-31 | 44 | The black toner cartridge is not | 2-37 |
| 30 | Erase lamp current value error. | 2-31 | | installed. | |
| 31 | Density sensor error. | 2-32 | 45 | The yellow toner cartridge is not | 2-37 |
| 32 | Density sensor shutter operation | 2-32 | | installed. | |
| | error. | | 46 | The magentatoner cartridge is | 2-37 |
| 33 | Registration mark R PCB ASSY | 2-33 | | not installed. | |
| | | | 47 | The cyan toner cartridge is not | 2-37 |
| 34 | Registration mark L PCB ASSY | 2-33 | | installed. | |
| | | | 50 | Drum unit is at the end of life. | 2-39 |
| 35 | Failure in NVRAM of the engine PCB ASSY. | 2-33 | 51 | MP paper feeding kit is at the end of life. | 2-39 |
| 36 | Error in the high-voltage power supply PCB while the printer is in the standby mode. | 2-34 | 52 | Paper feeding kit1 is at the end of life. | 2-39 |
| 37 | Belt unit temperature sensor error. | 2-34 | 53 | Paper feeding kit2 is at the end | 2-39 |
| 38 | External temperature/humidity | 2-34 | | of life. | |
| | sensor error. | | 54 | Fuser unit is at the end of life. | 2-39 |
| 39 | External temperature/humidity | 2-34 | 55 | Laser unit is at the end of life. | 2-39 |
| | sensor error. | | 56 | The fuser cover is open. | 2-40 |
| 3A | Main PCB failure. | 2-35 | 57 | Paper is jammed in the duplex | 2-40 |
| 3B | Main PCB DRAM access error. | 2-35 | | | |
| 3C | Main PCB error. (Write error in NVRAM) | 2-35 | 58 | Fuser unit error. (Some kind of fixing error occurs.) (warning) | 2-41 |

| Error codes | Problem | Refer to: | Error codes | Problem | Refer to: |
|----------------|---------------------------------------------------------------------------------------------------------------|--------------|----------------|----------------------------------------------------------------------------------------------------|--------------|
| 59 | Fuser unit error. (After the error code 58 occurred, a failure in the fuser unit is detected again upon | 2-41 | 67 | The black toner cartridge will reach the end of life soon. | 2-45 |
| | start-up.) | | 68 | Fuser unit error. (The | 2-45 |
| 5A | High-voltage power supply PCB transfer error. | 2-41 | | even after the halogen heater is turned OFF.) | |
| 5B | It was detected that the length of the paper under printing was less than the specified value. | 2-42 | 69 | Fuser unit error. (The connector of the center thermistor is inserted incorrectly.) | 2-45 |
| 5C | It was detected that the size of the paper was less than the specified value. | 2-42 | 6A | Fuser unit error. (The center thermistor does not detect 60 °C within the specified time.) | 2-46 |
| 5D | The belt unit will reach the end of life soon. | 2-42 | 6B | Fuser unit error. (The center thermistor does not detect 100 °C within the specified time.) | 2-46 |
| 5E | Belt unit is at the end of life. | 2-42 | | | |
| 5F | The waste toner box near full. (The sensor detected that the waste toner became near full.) | 2-43 | 6C | Fuser unit error. (The center thermistor detects 270 °C or higher temperature for 1 second.) | 2-46 |
| 60 | Cyan toner cartridge is at the end of life. | 2-44 | 6D | Fuser unit error. (The center thermistor detects 60 °C or lower temperature for 1 second | 2-46 |
| 61 | Magenta toner cartridge is at the end of life. | 2-44 | | during standby or printing.) | |
| | | | 6E | Fuser unit error. (The center thermistor fails to detect the | 2-46 |
| 62 | Yellow toner cartridge is at the end of life. | 2-44 | | temperature rise even after the halogen heater is turned ON during printing and 15 second | |
| 63 | Black toner cartridge is at the end of life. | 2-44 | | pass.) | |
| | | | 6F | Fuser unit error. (The center and side thermistors detect extremely | 2-47 |
| 64 | The cyan toner cartridge will reach the end of life soon. | 2-45 | | high temperature.) (Detection of hardware.) | |
| 65 | The magenta toner cartridge will | 2-45 | 70 | Fuser develop motor error. | 2-47 |
| | | | 71 | Laser unit error. | 2-48 |
| 66 | The yellow toner cartridge will reach the end of life soon. | 2-45 | 72 | Beam detecting sensor (Black/ Yellow) error of the laser unit. | 2-48 |

| Error codes | Problem | Refer to: | Error codes | Problem | Refer to: |
|----------------|-------------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------|
| 73 | Beam detecting sensor (Cyan/ Magenta) error of the laser unit. | 2-48 | 86 | The paper tray 2 is not installed. | 2-57 |
| 74 | The color toner reached the end of life during printing. | 2-49 | 87 | Toner of the color which is being used reaches the end of life when implementing adjustment | 2-58 |
| 75 | Cooling down the inside of the printer to protect it. | 2-49 | 88 | Paper iam inside the printer | 2-58 |
| 76 | Fuser unit error. (The center thermistor detects the sharp temperature rise.) | 2-50 | 89 | Unsupported paper size is used for duplex printing. | 2-59 |
| | | | 8A Paper jam in the paper tray 1. | | 2-59 |
| 78 | Fuser unit error. (The center | 2-50 | 8B | Paper jam in the paper tray 2. | 2-60 |
| | temperature fall.) | | 8C | 8C Paper jam in the MP tray. | |
| | | | 8D | Paper jam occurred around the | 2-62 |
| 7A | Engine PCB failure (detection of motor lock error) | 2-50 | | power was turned ON, or the back cover is open. | |
| 7B | Engine PCB error. | 2-51 | 8E | 8E Error in the adjustment of color | |
| 7C | Communication error between the engine PCB and main PCB. | 2-51 | | implementing it. | |
| | | | 8F | Detection of abnormal value of | 2-63 |
| 7D | Dirt on drum unit. | 2-51 | registration sensor sensitivity when implementing adjustment | | |
| 7E | Belt unit is at the end of life. (The operation is stopped.) | 2-54 | | of color registration. | |
| | | | 90 | The paper size of the MP tray does not match that of the print | 2-63 |
| 81 | Incorrect density sensor measurement value when implementing adjustment of | 2-55 | | setting. | |
| | color density. | | 91 | The paper size of the paper tray 1 does not match that of the | 2-63 |
| 82 | Density patch measurement is not completed normally when implementing adjustment of | 2-55 | | print setting. | |
| | color density. | | 92 | The paper size of the paper tray 2 does not match that of the | 2-63 |
| 83 | Drum unit error. (An drum error occurred after the drum unit reached the end of | 2-55 | | print setting. | |
| | lite.) | | 93 | No paper in MP tray. | 2-63 |
| 84 | Paper jam at the rear section of the printer | 2-56 | 94 | No paper in paper tray 1. | 2-63 |
| | | | 95 | No paper in paper tray 2. | 2-64 |
| 85 | The paper tray 1 is not installed. | 2-57 | 96 | No paper in all trays. | 2-64 |
| | | | | | |

| Error codes | Problem | Refer to: | Error codes | Problem | Refer to: |
|----------------|---------------------------------------------------------------------------------------------------------------------------|--------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 97 | A paper size, which is not | 2-64 | C8 | RAM area for secure data full. | 2-70 |
| | supported by the paper tray 1, is specified in the paper size of the | | C9 | Defective DIMM is installed. | 2-71 |
| | data. | | CA | USB device overcurrent error. | 2-71 |
| 98 | A paper size, which is not | 2-64 | СВ | The belt unit is not installed. | 2-71 |
| | supported by the paper tray 2, is specified in the paper size of the | | СС | The fuser unit is not installed. | 2-72 |
| | data. | | CD | The drum unit is not installed. | 2-72 |
| 99 | The tray in which unsupported paper size is loaded is selected for duplex printing. | 2-64 | CE | The waste toner box is not installed. | 2-73 |
| 9A | No paper is loaded in the MP tray (MP paper empty sensor fails to be turned ON.) | 2-64 | CF | Waste toner box full. (The sensor detects that the waste toner is full.) | 2-73 |
| 9D | Detection of incorrect registration sensor measurement value when implementing adjustment of color registration. | 2-65 | DE | When the center thermistor is higher than the idle temperature, it is detected that the side thermistor temperature is lower | 2-75 |
| 9E | Toner of the color which is being used reaches the end of life when implementing adjustment | 2-65 | | than 60 °C. | 0.75 |
| | of color registration. | | EU | occurred in the ROM checksum.) | 2-75 |
| 9F | Paper runs out during printing. | 2-65 | E 1 | Program orror | 2.75 |
| A1 | The front cover is open. | 2-66 | | | 2-15 |
| C0 | Identification failure for a new black toner cartridge. | 2-68 | E2 | When the center thermistor is lower than the idle temperature, | 2-76 |
| C1 | Identification failure for a new yellow toner cartridge. | 2-68 | | it is detected that the side thermistor temperature is higher than 280 °C. | |
| C2 | Identification failure for a new | 2-68 | F3 | Drum position sensor error | 2-76 |
| | | | F4 | Run out of paper | 2-76 |
| C3 | Identification failure for a new | 2-68 | F6 | Write error in FEPROM of the | 2-77 |
| | | | 20 | main PCB. | |
| C4 | Paper tray 2 pressing plate up/ down error. | 2-69 | E9 | Main PCB error. | 2-77 |
| C5 | Energization failure of erase lamp. | 2-69 | EB | Read error in EEPROM of the laser unit. | 2-78 |
| C6 | Pressure engagement/ disengagement failure of toner cartridge. | 2-70 | EC | Fuser fan error. | 2-78 |
| C7 | Insufficient memory. | 2-70 | | | |

| Error codes | Problem | Refer to: | Error codes | Problem | Refer to: |
|----------------|---------------------------------------------------------------------------------------------|--------------|----------------|-------------------------------------------|--------------|
| ED | Communication with the | 2-78 | F5 | Main PCB communication error. | 2-80 |
| | established upon startup of the | | F6 | P.C.I error. | 2-80 |
| power supply. | | | F8 | Battery connection error | 2-80 |
| EE | Unavailability of communication after connecting to the wireless LAN PCB is detected. | 2-79 | F9 | The country code is not entered properly. | 2-80 |
| | | | FE | Detection of incorrect | 2-81 |
| EF | The supplied power is unstable. | 2-79 | | sensor sensitivity calibration. | |
| F4 | The waste toner box is at the | 2-80 | | | |
| | | | FF | Wireless LAN overcurrent error. | 2-82 |

3.2 Error Messages

The error messages displayed on the LCD of the printer and their description are shown in the table below.

| Error message | Description | Error codes | Refer to: |
|------------------|--------------------------------------------------------------------------------------------------------------------------|----------------|--------------|
| Access Error | The USB device is taken out while data is being processed. | | |
| Belt End Soon | The belt unit will reach the end of life soon. | 5D | 2-42 |
| Calibrate | Incorrect density sensor measurement value when implementing adjustment of color density. | 81 | 2-55 |
| | Density patch measurement is not completed normally when implementing adjustment of color density. | 82 | 2-55 |
| | Toner of the color which is being used reaches the end of life when implementing adjustment of color density. | 87 | 2-58 |
| Cartridge Error | Identification failure for a new black toner cartridge. | C0 | 2-68 |
| | Identification failure for a new yellow toner cartridge. | C1 | 2-68 |
| | Identification failure for a new magenta toner cartridge. | C2 | 2-68 |
| | Identification failure for a new cyan toner cartridge. | C3 | 2-68 |
| Condensation | Condensation occurred on the laser unit. | 1A | 2-24 |
| Connection Error | As the result that an access point is searched, more than one access point is found. | | |
| Connection Fail | As the result that an access point is searched, the access point is found, but connection fails to be established. | | |
| Cooling Down | Cooling down the inside of the printer to protect it. | 75 | 2-49 |
| Cover is Open | The front cover is open. | A1 | 2-66 |
| | The fuser cover is open. | 56 | 2-40 |
| Drum End Soon | The drum unit will reach the end of life soon. | 1E | 2-25 |
| Drum Error | Dirt on drum unit. | 7D | 2-51 |
| Drum Stop | Drum unit error. (An drum error occurred after the drum unit reached the end of life.) | 83 | 2-55 |
| Duplex Disabled | The back cover is open upon duplex printing. (The back cover sensor is OFF.) | 0F 16 | 2-21 2-22 |

| Error message | Description | Error codes | Refer to: |
|------------------|--------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------|
| Fuser Error | Failure in the center thermistor of the fuser unit. | 6A 6B 6C 6D 6F 76 78 | 2-46 2-46 2-46 2-46 2-47 2-50 2-50 |
| Ignore Data | Undecodable data is found during printing. Undecodable PS data is received. | | 2-108 |
| Jam Duplex | Paper is jammed in the duplex paper feed system. | 57 | 2-40 |
| Jam Inside | Paper jam inside the printer. | 88 | 2-58 |
| Jam MP Tray | Paper jam in the MP tray. | 8C | 2-61 |
| Jam Rear | Paper jam at the rear section of the printer. | 84 | 2-56 |
| Jam Tray 1 | Paper jam in the paper tray 1. | 8A | 2-59 |
| Jam Tray 2 | Paper jam in the paper tray 2. | 8B | 2-60 |
| Log Access Error | Authentication error occurs. | | |
| | File access error occurs. | | |
| | Server timeout occurs. | | |
| | Server time cannot be obtained when SNTP is used. | | |
| Low temperature | Room temperature is low. | | 2-110 |
| Machine Error F9 | The country code is not entered properly. | F9 | 2-80 |
| No Belt Unit | The belt unit is not installed. | СВ | 2-71 |
| No Drum Unit | The drum unit is not installed. | CD | 2-72 |
| No HUB Support | USB HOST connection error | | 2-110 |
| No Paper | No paper in paper tray 1. | 94 | 2-63 |
| | No paper in MP tray. | 93 | 2-63 |
| | No paper in paper tray 2. | 95 | 2-64 |
| | No paper in all trays. | 96 | 2-64 |
| No Toner | The black toner cartridge is not installed. | 44 | 2-37 |
| | The yellow toner cartridge is not installed. | 45 | 2-37 |
| | The magenta toner cartridge is not installed. | 46 | 2-37 |
| | The cyan toner cartridge is not installed. | 47 | 2-37 |

| Error message | Description | Error codes | Refer to: |
|-------------------|--------------------------------------------------------------------------------------------------------------------------|----------------|--------------|
| No Tray | The paper tray 1 is not installed before printing. (The T1 paper edge sensor is OFF.) | 17 | 2-23 |
| | The paper tray 1 is not installed. | 85 | 2-57 |
| | The paper tray 2 is not installed before printing. (The T2 paper edge sensor is OFF.) | 18 | 2-23 |
| | The paper tray 2 is not installed. | 86 | 2-57 |
| No Waste Toner | The waste toner box is not installed. | CE | 2-73 |
| Out of Memory | Insufficient memory. | C7 | 2-70 |
| | RAM area for secure data full. | C8 | 2-70 |
| | The program update process cannot be performed due to insufficient memory. | | |
| Registration | Color registration adjustment failure. (Toner of the color which is being used reached the end of life.) | 11 | 2-21 |
| | Color registration adjustment failure. (Incorrect measurement value of color registration adjustment.) | 12 | 2-22 |
| | Error in the adjustment of color registration result when implementing it. | 8E | 2-62 |
| | Detection of incorrect registration sensor measurement value when implementing adjustment of color registration. | 9D | 2-65 |
| | Toner of the color which is being used reaches the end of life when implementing adjustment of color registration. | 9E | 2-65 |
| Replace Belt | Belt unit is at the end of life. | 5E | 2-42 |
| | Belt unit is at the end of life. (The operation is stopped.) | 7E | 2-54 |
| Replace Drum | Drum unit is at the end of life. | 19 | 2-24 |
| | | 50 | 2-39 |
| Replace Fuser | | 54 | 2-39 |
| Replace Laser | Laser unit is at the end of life. | 55 | 2-39 |
| Replace PF Kit MP | MP paper feeding kit is at the end of life. | 51 | 2-39 |
| Replace PF Kit1 | Paper feeding kit1 is at the end of life. | 52 | 2-39 |
| Replace PF Kit2 | Paper feeding kit2 is at the end of life. | 53 | 2-39 |

| Error message | Description | Error codes | Refer to: |
|------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------|--------------|
| Replace Toner | Each toner cartridge reached the end of life. | 60 61 62 63 | 2-44 |
| | The color toner reached the end of life during printing. | 74 | 2-49 |
| Replace WT Box | Waste toner box full. (The sensor detected that the waste toner became full.) | CF | 2-73 |
| Self-Diagnostic | Fuser unit error. (After the error code 58 occurred, a failure in the fuser unit is detected again upon start-up.) | 59 | 2-41 |
| Short paper | It was detected that the length of the paper under printing was less than the specified value. | 5B | 2-42 |
| Size Error | A paper size, which is not supported by the paper tray 1, is specified in the paper size of the data. | 97 | 2-64 |
| | A paper size, which is not supported by the paper tray 2, is specified in the paper size of the data. | 98 | 2-64 |
| Size Error DX | The tray in which unsupported paper size is loaded is selected for duplex printing. | 99 | 2-64 |
| | Unsupported paper size is used for duplex printing. | 89 | 2-59 |
| Size Mismatch | The paper size of the MP tray does not match that of the print setting. | 90 | 2-63 |
| | The paper size of the paper tray 1 does not match that of the print setting. | 91 | 2-63 |
| | The paper size of the paper tray 2 does not match that of the print setting. | 92 | 2-63 |
| Small paper | It was detected that the size of the paper was less than the specified value. | 5C | 2-42 |
| Toner Error | Pressure engagement/disengagement failure of toner cartridge. | C6 | 2-70 |
| Tray 2 Error | Paper tray 2 pressing plate up/down error. | C4 | 2-69 |
| Unable to Update | Execution of the program update cannot be started because other function is being executed. | | |
| Unusable Device | USB device overcurrent error. | CA | 2-71 |
| | Unsupported device | | |
| Unusable File | The update process cannot be continued because the data of the program file is incorrect. | | |

| Error message | Description | Error codes | Refer to: |
|-----------------|---------------------------------------------------------------------------------------------|----------------|--------------|
| WT Box End Soon | The waste toner box near full. (The sensor detected that the waste toner became near full.) | 5F | 2-43 |

3.3 Error Cause and Remedy

Check the **User Check** items first. If an error cannot be resolved, follow the procedures in numerical order in the Step field.

Error code 0F

Duplex Disabled Close the Back Cover of the machine.

The back cover is open upon duplex printing. (The back cover sensor is OFF.)

<User Check>

- Close the back cover.

| Step | Cause | Remedy |
|------|----------------------------------------------------|------------------------------------------------------------------------------|
| 1 | Harness connection failure of back cover sensor | Check the harness connection of the back cover sensor ASSY and reconnect it. |
| 2 | Back cover damaged | Replace the back cover. |
| 3 | Back cover sensor failure | Replace the back cover sensor ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Error code 10

Registration Registration failed. Press Go, and try again.

Color registration adjustment failure. (Error, which cannot be recorded, occurs.)

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 11

Registration Registration failed. Insufficient Toner for Registration.

Color registration adjustment failure. (Toner of the color which is being used reached the end of life.)

<User Check>

- Replace the toner cartridge of the color displayed on the LCD.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Registration Registration failed. See Troubleshooting chapter in User's Guide.

Color registration adjustment failure.

(Incorrect measurement value of color registration adjustment.)

<User Check>

- Replace the cleaner unit with a new one.
- Replace the belt unit with a new one.
- Replace the waste toner box with a new one.

| Step | Cause | Remedy |
|------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of registration mark sensor holder ASSY | Check the harness connection of the registration mark sensor holder ASSY and reconnect it. |
| 2 | Registration mark sensor PCB failure | Replace the registration mark sensor holder ASSY. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Error code 16

Duplex Disabled Reload paper, then press Go.

Paper of unsupported size for duplex printing or paper of different sizes is loaded.

<User Check>

- Use the A4 or Letter size paper.

| Step | Cause | Remedy |
|------|---------------------------------------------------------|---------------------------------------------------------|
| 1 | Registration rear actuator catching on some position | Correct the position of the registration rear actuator. |
| 2 | Main PCB failure | Replace the main PCB ASSY. |

No Tray A Tray is not detected, install Tray 1. (The paper tray cannot be detected, re-install Tray 1.)

The message displayed in the second line on the LCD might be the one in parentheses according to the version.

The paper tray 1 is not installed before printing. (The T1 paper edge sensor is OFF.)

<User Check>

- Open and close the paper tray 1.

| Step | Cause | Remedy |
|------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1 | T1 paper edge actuator catching on some position | Check the T1 paper edge actuator and reinstall it. |
| 2 | Harness connection failure of T1 paper edge sensor PCB ASSY | Check the harness connection of the T1 paper edge sensor PCB ASSY and reconnect it. |
| 3 | T1 paper edge sensor PCB failure | Replace the T1 paper edge sensor PCB ASSY. |
| 4 | Engine PCB failure | Replace the engine PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Error code 18

| No Tray | |
|---------------------------------------------------------|--|
| A Tray is not detected, install Tray 2. | |
| (The paper tray cannot be detected, re-install Tray 2.) | |

The message displayed in the second line on the LCD might be the one in parentheses according to the version.

The paper tray 2 is not installed before printing. (The T2 paper edge sensor is OFF.)

<User Check>

- Open and close the paper tray 2.

| Step | Cause | Remedy |
|------|-----------------------------------------------------|--------------------------------------------------------------------------|
| 1 | T2 paper edge actuator catching on some position | Check the T2 paper edge actuator and reinstall it. |
| 2 | Harness connection failure of T2 sensor PCB ASSY | Check the harness connection of the T2 sensor PCB ASSY and reconnect it. |
| 3 | Harness connection failure of T2 Relay PCB ASSY | Check the harness connection of the T2 Relay PCB ASSY and reconnect it. |
| 4 | T2 sensor PCB ASSY failure | Replace the T2 paper feed frame unit. |
| 5 | T2 Relay PCB failure | Replace the T2 Relay PCB ASSY. |
| 6 | Engine PCB failure | Replace the engine PCB ASSY. |
| 7 | Main PCB failure | Replace the main PCB ASSY. |

Replace Drum Open the Front Cover, replace the Drum Unit. Refer to the User's Guide for instructions.

The drum unit reached the end of life.

<User Check>

- Replace the drum unit and reset the counter. (Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 1A

Condensation

Leave switched ON. Fully open the front cover. Wait 30 minutes, switch OFF and close cover, then switch ON.

Condensation occurred on the laser unit.

<User Check>

- Open the front and rear covers and leave them for 30 minutes or more with the power ON. After that, close the front and rear covers and turn OFF and ON the power switch.

| Step | Cause | Remedy |
|------|---------------------------------------|-------------------------------------------------|
| 1 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code 1B (C)

Drum Stop

We cannot guarantee the print quality. Replace the Drum Unit. Refer to the User's Guide for instructions.

Error code 1C (M)

Drum Stop

We cannot guarantee the print quality. Replace the Drum Unit. Refer to the User's Guide for instructions.

Error code 1D (Y)

Drum Stop

We cannot guarantee the print quality. Replace the Drum Unit. Refer to the User's Guide for instructions.

Drum error. (An drum error occurred after the counter value exceeded the value more than twice as long as the life of the drum.) (Printing is not available until the drum unit is replaced.)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 1E

Drum End Soon

The drum unit will reach the end of life soon.

<User Check>

- Prepare a new drum unit.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 1F

More than the specified number of the option trays is installed.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 20 (K)

Print Unable 20

Turn the power off and then back on again.

Error code 21 (Y)

Print Unable 21

Turn the power off and then back on again.

Error code 22 (M)

Print Unable 22

Turn the power off and then back on again.

Error code 23 (C)

Print Unable 23

Turn the power off and then back on again.

Laser diode error.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Print Unable 24

Turn the power off and then back on again.

Internal temperature sensor error.

| Step | Cause | Remedy |
|------|-------------------------------------|------------------------------------------|
| 1 | Internal temperature sensor failure | Replace the internal temperature sensor. |
| 2 | Main PCB failure | Replace the main PCB ASSY. |

Error code 25

Print Unable 25 Turn the power off and then back on again.

Develop drive motor error.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 26

Print Unable 26

Turn the power off and then back on again.

Belt drive motor error.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Print Unable 27

Turn the power off and then back on again.

PF drive motor error.

<User Check>

- Replace the toner cartridge (Black) with a new one.

| Step | Cause | Remedy |
|------|-------------------------------------------------|-------------------------------------------------------------------------|
| 1 | Harness connection failure of PF drive motor | Check the harness connection of the PF drive motor and reconnect it. |
| 2 | PF drive motor failure | Replace the PF plate ASSY. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY |

Error code 28

Print Unable 28

Turn the power off and then back on again.

Drum drive motor error.

<User Check>

- Replace the toner cartridge (Black) with a new one.

| Step | Cause | Remedy |
|------|---------------------------------------------------|---------------------------------------------------------------------------|
| 1 | Harness connection failure of drum drive motor | Check the harness connection of the drum drive motor and reconnect it. |
| 2 | Drum drive motor failure | Replace the drum drive motor. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Print Unable 29

Turn the power off and then back on again.

Paper eject motor error.

<User Check>

- Replace the toner cartridge (Black) with a new one.

| Step | Cause | Remedy |
|------|----------------------------------------------------|-------------------------------------------------------------------------|
| 1 | Harness connection failure of paper eject motor | Check the harness connection of the paper eject motor and reconnect it. |
| 2 | Paper eject motor failure | Replace the paper eject motor. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Error code 2A

Print Unable 2A

Turn the power off and then back on again.

Develop release motor error.

<User Check>

- Replace the toner cartridge (Black) with a new one.

| Step | Cause | Remedy |
|------|--------------------------------------------------------|-----------------------------------------------------------------------------|
| 1 | Harness connection failure of develop release motor | Check the harness connection of the develop release motor and reconnect it. |
| 2 | Develop release motor failure | Replace the develop release motor. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Error code 2B

Print Unable 2B Turn the power off and then back on again.

Blower fan error.

<User Check>

- Replace the toner cartridge (Black) with a new one.

| Step | Cause | Remedy |
|------|------------------------------------------|------------------------------------------------------------------|
| 1 | Harness connection failure of blower fan | Check the harness connection of the blower fan and reconnect it. |
| 2 | Blower fan failure | Replace the blower fan. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Error code 2C (K)

Print Unable 2C

Turn the power off and then back on again.

Error code 2D (Y)

Print Unable 2D Turn the power off and then back on again.

Error code 2E (M)

Print Unable 2E Turn the power off and then back on again.

Error code 2F (C)

Print Unable 2F Turn the power off and then back on again.

Toner/New sensor PCB error.

| Step | Cause | Remedy |
|------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Toner/New sensor PCB ASSY failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the Toner/New sensor PCB ASSY. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |
| 3 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Error code 30

Print Unable 30 Turn the power off and then back on again.

Erase lamp current value error.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Print Unable 31 Turn the power off and then back on again.

Density sensor error.

| Step | Cause | Remedy |
|------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of registration mark sensor holder ASSY | Check the harness connection of the registration mark sensor holder ASSY and reconnect it. |
| 2 | Registration mark sensor holder ASSY failure | Replace the registration mark sensor holder ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code 32

Print Unable 32 Turn the power off and then back on again.

Density sensor shutter operation error.

<User Check>

- Check if there is a scratch, dirt or the like on the belt unit. If there is, replace the belt unit with a new one.

| Step | Cause | Remedy |
|------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1 | Foreign object around registration mark sensor shutter | Remove the foreign object. |
| 2 | Harness connection failure of registration mark sensor holder ASSY | Check the harness connection of the registration mark sensor holder ASSY and reconnect it. |
| 3 | Harness connection failure of density sensor shutter solenoid ASSY | Check the harness connection of the density sensor shutter solenoid ASSY and reconnect it. |
| 4 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 5 | Registration mark sensor holder ASSY failure | Replace the registration mark sensor holder ASSY. |
| 6 | Main PCB failure | Replace the main PCB ASSY. |

Print Unable 33

Turn the power off and then back on again.

Registration mark R PCB ASSY error.

Error code 34

Print Unable 34 Turn the power off and then back on again.

Registration mark L PCB ASSY error.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 35

Print Unable 35

Turn the power off and then back on again.

Failure in NVRAM of the engine PCB.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Print Unable 36

Turn the power off and then back on again.

Error in the high-voltage power supply PCB while the printer is in the standby mode.

| Step | Cause | Remedy |
|------|---------------------------------------|-------------------------------------------------|
| 1 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code 37

Print Unable 37 Turn the power off and then back on again.

Belt unit temperature sensor error.

| Step | Cause | Remedy |
|------|---------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1 | Harness connection failure of belt unit temperature sensor | Check the harness connection of the belt unit temperature sensor and reconnect it. |
| 2 | Belt unit temperature sensor failure | Replace the registration mark sensor holder ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code 38

Print Unable 38

Turn the power off and then back on again.

External temperature/humidity sensor error.

Error code 39

Print Unable 39

Turn the power off and then back on again.

External temperature/humidity sensor error.

| Step | Cause | Remedy |
|------|----------------------------------------------|-------------------------------------------------|
| 1 | External temperature/humidity sensor failure | Replace the high-voltage power supply PCB ASSY. |
| 2 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code 3A

Print Unable 3A Turn the power off and then back on again.

Main PCB failure.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 3B

| Print Unable 3B | |
|--------------------------------------------|--|
| Turn the power off and then back on again. | |

Main PCB DRAM access error.

| Step | Cause | Remedy |
|------|--------------------|------------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |

Error code 3C

Print Unable 3C

Turn the power off and then back on again.

Main PCB error. (Write error in NVRAM.)

Error code 3D

Print Unable 3D

Turn the power off and then back on again.

Main PCB error. (Read error in NVRAM.)

Error code 3E

Print Unable 3E

Turn the power off and then back on again.

Main PCB error. (Bus error in NVRAM.)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 3F

Print Unable 3F

Turn the power off and then back on again.

Write error in engine firmware.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 40

Print Unable 40

Turn the power off and then back on again.

Error in the high-voltage power supply PCB while the printer is in operation.

Error code 42

Print Unable 42 Turn the power off and then back on again.

High-voltage power supply PCB transfer error.

| Step | Cause | Remedy |
|------|----------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of high-voltage power supply PCB | Check the harness connection of the high-voltage power supply PCB ASSY and reconnect it. |
| 2 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |

Error code 43

Print Unable 43 Turn the power off and then back on again.

ASIC error of the main PCB.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 44 (K)

No Toner

Open the Front Cover, then install Toner Cartridge. Black (K)

Error code 45 (Y)

No Toner

Open the Front Cover, then install Toner Cartridge. Yellow (Y)

Error code 46 (M)

No Toner

Open the Front Cover, then install Toner Cartridge. Magenta (M)

Error code 47 (C)

No Toner Open the Front Cover, then install Toner Cartridge. Cyan (C)

The toner cartridge of the appropriate color is not installed.

<User Check>

- Install the toner cartridge of the color displayed on the LCD.

| Step | Cause | Remedy |
|------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Toner/New sensor PCB ASSY failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the Toner/New sensor PCB ASSY. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code 49

Error code 4A

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Error code 4B

Error code 4C

Error code 4D

-

_

Error code 4E

Error code 4F

- |

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Replace Drum

Drum unit is at the end of life.

Error code 51

Replace PF Kit MP

MP paper feeding kit is at the end of life.

Error code 52

Replace PF Kit1

Paper feeding kit1 is at the end of life.

Error code 53

Replace PF Kit2

Paper feeding kit2 is at the end of life.

Error code 54

Replace Fuser

Fuser unit is at the end of life.

Error code 55

Replace Laser

Laser unit is at the end of life.

| Step | Cause | Remedy |
|------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | The part displayed on the LCD reached the end of life. | Replace the part displayed on the LCD and reset the counter of each part. (Refer to "2.3 Parts Life Reset Function" in Chapter 5.) |
| 2 | Main PCB failure | Replace the main PCB ASSY. |

Cover is Open Close the Fuser Cover which can be found behind the Back Cover of the machine.

The fuser cover is open.

<User Check>

- Close the fuser cover properly.

| Step | Cause | Remedy |
|------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Paper eject actuator catching on some position | Correct the position of the paper eject actuator. |
| 2 | Paper eject sensor PCB failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the paper eject sensor PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code 57

Jam Duplex

Pull out Tray 1 completely. Check inside the machine or open the Back Cover to remove the jammed paper.

Paper is jammed in the duplex paper feed system.

<User Check>

- Check if the paper is jammed. If jammed, remove it.
- Use the A4 or letter size paper.

| Step | Cause | Remedy |
|------|---------------------------------------------------|---------------------------------------------------------------------------|
| 1 | Foreign object around paper eject | Remove the foreign object. |
| 2 | Foreign object around paper guide DX ASSY | Remove the foreign object. |
| 3 | Coming off of back flapper ASSY | Re-assemble the back flapper ASSY. |
| 4 | Paper guide DX ASSY not assembled correctly | Re-assemble the paper guide DX ASSY. |
| 5 | Duplex paper guide not assembled correctly | Re-assemble the duplex paper guide. |
| 6 | Harness connection failure of paper eject ASSY | Check the harness connection of the paper eject ASSY and reconnect it. |
| 7 | Paper eject motor failure | Replace the paper eject motor. |
| 8 | Paper guide DX ASSY failure | Replace the paper tray 1. |
| 9 | Duplex paper guide failure | Replace the paper tray 1. |
| 10 | Paper eject ASSY failure | Replace the paper eject ASSY. |
| 11 | Engine PCB failure | Replace the engine PCB ASSY. |
| 12 | Main PCB failure | Replace the main PCB ASSY. |
Fuser Error Turn the power off, then on again. Leave the machine for 15 min.

Error code 59

Self-Diagnostic Will Automatically Restart within 15 minutes.

Fuser unit error.

| Step | Cause | Remedy |
|------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 1 | Harness connection failure between paper eject sensor PCB ASSY connector and engine PCB ASSY | Check the harness connection between the fuser unit connector and paper eject sensor PCB ASSY, and reconnect it. |
| 2 | Harness connection failure between low-voltage power supply PCB ASSY connector and fuser unit | Check the harness connection between the fuser unit connector and low-voltage power supply PCB ASSY, and reconnect it. |
| 3 | Fuser unit failure | Replace the fuser unit. |
| 4 | Paper eject sensor PCB ASSY failure | Replace the paper eject sensor PCB ASSY. |
| 5 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. |
| 6 | Main PCB failure | Replace the main PCB ASSY. |

Error code 5A

Print Unable 5A

Turn the power off and then back on again.

High-voltage power supply PCB transfer error.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 5B

Short paper

Open the Back Cover and then press Go.

It was detected that the length of the paper under printing was less than the specified value.

Error code 5C

Small paper Open the Back Cover and then press Go.

It was detected that the size of the paper was less than the specified value.

<User Check>

- Remove the paper left inside the printer.
- Replace the paper with the specified A4 size or larger size paper.

| Step | Cause | Remedy |
|------|--------------------|------------------------------|
| 1 | Engine PCB failure | Replace the engine PCB ASSY. |
| 2 | Main PCB failure | Replace the main PCB ASSY. |

Error code 5D

Belt End Soon

The belt unit will reach the end of life soon.

<User Check>

- Prepare a new belt unit.

Error code 5E

| Replace Parts | |
|----------------------|--|
| Belt | |

Belt unit is at the end of life.

<User Check>

- Prepare a new belt unit. Reset the belt counter. (Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 5F

WT Box End Soon

The waste toner box near full. (The sensor detected that the waste toner became near full.)

| - Prepare a new waste toner box. |
|----------------------------------|
|----------------------------------|

| Step | Cause | Remedy |
|------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Waste toner sensor failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the waste toner sensor. |
| 2 | Harness connection failure of waste toner sensor | Check the harness connection of the waste toner sensor and reconnect it. |
| 3 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Error code 60 (C)

Replace Toner Open the Front Cover, replace Toner Cartridge. Cyan (C)

Error code 61 (M)

Replace Toner Open the Front Cover, replace Toner Cartridge. Magenta (M)

Error code 62 (Y)

Replace Toner Open the Front Cover, replace Toner Cartridge. Yellow (Y)

Error code 63 (K)

Replace Toner Open the Front Cover, replace Toner Cartridge. Black (K)

Each toner cartridge reached the end of life.

<User Check>

- Replace the toner cartridge of the appropriate color.

| Step | Cause | Remedy |
|------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of Toner/New sensor PCB ASSY | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, check the harness connections of the Toner/New sensor PCB ASSY and reconnect them. |
| 2 | Toner/New sensor PCB ASSY failure (Toner empty) | Replace the Toner/New sensor PCB ASSY. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Error code 64 (C)

Ready K ■ Y ■ M ■ C □

Error code 65 (M)

| Ready | |
|-----------------|--|
| K ■ Y ■ M □ C ■ | |

Error code 66 (Y)

Ready K ■ Y □ M ■ C ■

Error code 67 (K)

| Ready | | |
|-------|--|--|
| | | |

Each toner cartridge will reach the end of life soon. \blacksquare : Lighting, \square : Blinking

<User Check>

- Gently shake the toner cartridge of the appropriate color from side to side and install it again.
- Replace the toner cartridge of the appropriate color.

| Step | Cause | Remedy |
|------|--------------------|------------------------------|
| 1 | Engine PCB failure | Replace the engine PCB ASSY. |
| 2 | Main PCB failure | Replace the main PCB ASSY. |

Error code 68

Fuser Error

Turn the power off, then on again. Leave the machine for 15 min.

Fuser unit error. (The temperature rise is detected even after the halogen heater is turned OFF.)

Error code 69

Fuser Error Turn the power off, then on again. Leave the machine for 15 min.

Fuser unit error. (The connector of the center thermistor is inserted incorrectly.)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 6A

Print Unable 6A

Turn the power off and then back on again.

Fuser unit error. (The center thermistor does not detect 60 °C within the specified time.)

Error code 6B

Print Unable 6B

Turn the power off and then back on again.

Fuser unit error. (The center thermistor does not detect 100 °C within the specified time.)

Error code 6C

Print Unable 6C

Turn the power off and then back on again.

Fuser unit error. (The center thermistor detects 270 °C or higher temperature for 1 second.)

Error code 6D

Print Unable 6D Turn the power off and then back on again.

Fuser unit error. (The center thermistor detects 60 °C or lower temperature for 1 second during standby or printing.)

| Step | Cause | Remedy |
|------|-----------------------------------------|------------------------------------------------|
| 1 | Fuser unit connector connection failure | Reconnect the connector of the fuser unit. |
| 2 | Fuser unit failure | Replace the fuser unit. |
| 3 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. |
| 4 | Paper eject sensor PCB failure | Replace the paper eject sensor PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Error code 6E

Print Unable 6E

Turn the power off and then back on again.

Fuser unit error. (The center thermistor fails to detect the temperature rise even after the halogen heater is turned ON during printing and 15 second pass.)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 6F

Print Unable 6F

Turn the power off and then back on again.

Fuser unit error.

(The center and side thermistors detect extremely high temperature.) (Detection of hardware.)

| Step | Cause | Remedy |
|------|-----------------------------------------|------------------------------------------------|
| 1 | Fuser unit connector connection failure | Reconnect the connector of the fuser unit. |
| 2 | Fuser unit failure | Replace the fuser unit. |
| 3 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. |
| 4 | Paper eject sensor PCB failure | Replace the paper eject sensor PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Error code 70

Print Unable 70

Turn the power off and then back on again.

Fuser develop motor error.

<User Check>

- Replace the toner cartridge (Black) with a new one.

| Step | Cause | Remedy |
|------|------------------------------------------------------|---------------------------------------------------------------------------|
| 1 | Harness connection failure of fuser develop motor | Check the harness connection of the fuser develop motor and reconnect it. |
| 2 | Fuser develop motor failure | Replace the fuser develop motor ASSY. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Print Unable 71 Turn the power off and then back on again.

Laser unit error.

Error code 72

Print Unable 72

Turn the power off and then back on again.

Beam detecting sensor (Black/Yellow) error of the laser unit.

Error code 73

Print Unable 73

Turn the power off and then back on again.

Beam detecting sensor (Cyan/Magenta) error of the laser unit.

<User Check>

- Open the front and rear covers and leave them for 30 minutes or more with the power ON. After that, close the front and rear covers and turn OFF and ON the power switch.

| Step | Cause | Remedy |
|------|------------------------------------------|------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of laser unit | Check the harness connections (at three locations) of the laser unit and reconnect them. |
| 2 | Laser unit failure | Replace the laser unit. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Error code 74 (This error can be found out only in "Function code 82".)

Replace Toner

Open the Front Cover, replace Toner Cartridge. Cyan (C)

Replace Toner

Open the Front Cover, replace Toner Cartridge. Magenta (M)

Replace Toner Open the Front Cover, replace Toner Cartridge. Yellow (Y)

Replace Toner Open the Front Cover, replace Toner Cartridge. Black (K)

The color toner reached the end of life during printing.

<User Check>

- Replace the toner cartridge which reached the end of life with a new one.

| Step | Cause | Remedy |
|------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Toner/New sensor PCB ASSY failure (Toner empty) | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the Toner/New sensor PCB ASSY. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code 75

Cooling Down Wait for a while

Cooling down the inside of the printer to protect it.

| Step | Cause | Remedy |
|------|-------------------------------------|------------------------------------------|
| 1 | Internal temperature sensor failure | Replace the internal temperature sensor. |
| 2 | Main PCB failure | Replace the main PCB ASSY. |

Print Unable 76

Turn the power off and then back on again.

Fuser unit error. (The center thermistor detects the sharp temperature rise.)

Error code 78

Print Unable 78 Turn the power off and then back on again.

Fuser unit error. (The center thermistor detects the sharp temperature fall.)

| Step | Cause | Remedy |
|------|-----------------------------------------|------------------------------------------------|
| 1 | Fuser unit failure | Replace the fuser unit. |
| 2 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. |
| 3 | Paper eject sensor PCB failure | Replace the paper eject sensor PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Error code 7A

Print Unable 7A Turn the power off and then back on again.

Engine PCB failure (detection of motor lock error)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 7B

Print Unable 7B Turn the power off and then back on again.

Engine PCB error.

| Step | Cause | Remedy |
|------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 1 | Harness connection failure between engine PCB and main PCB | Check the harness connection between the engine PCB ASSY and main PCB ASSY, and reconnect it. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code 7C

Print Unable 7C Turn the power off and then back on again.

Communication error between the engine PCB and main PCB.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 7D

Drum Error

Slide the Green tab on Drum Unit in each color. Refer to the User's Guide for the procedures.

Dirt on drum unit.

- Clean the corona wire in the drum unit.
- Replace the drum unit with a new one.

| Step | Cause | Remedy |
|------|---------------------------------------|-----------------------------------------------------------------------------------------------------------|
| 1 | Dirt or dust on drum unit electrodes | Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (next page) and Fig. 2-9 (P2-53)) |
| 2 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Electrodes location of the drum unit and toner cartridge







Electrodes location of the belt unit

Fig. 2-7

Electrodes location of waste toner box



Fig. 2-8



Electrodes location of main body

Fig. 2-9

<How to clean the electrodes>

Turn off the power switch. Unplug the printer from the AC power outlet, and leave the printer 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.

Error code 7E

Replace Belt

Open the Front Cover, replace the Belt Unit.

Belt unit is at the end of life. (The operation is stopped.)

<User Check>

- Replace the belt unit with a new one and reset the counter. (Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

| Step | Cause | Remedy |
|------|------------------|---------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY |

Error code 7F

| - | | |
|---|--|--|
| | | |
| | | |
| | | |

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Calibrate

Calibration failed. See Troubleshooting chapter in User's Guide.

Incorrect density sensor measurement value when implementing adjustment of color density.

Error code 82

Calibrate

Calibration failed. Press Go, and try again.

Density patch measurement is not completed normally when implementing adjustment of color density.

<User Check>

- Check if there is a scratch, dirt or the like on the belt unit. If there is, replace the belt unit with a new one.
- Check if the genuine toner cartridges are installed in the correct order of colors.

| Step | Cause | Remedy |
|------|-----------------------------------------------------|--------------------------------------------------------------|
| 1 | Foreign object is affixed around the density sensor | Remove the foreign object affixed around the density sensor. |
| 2 | Density sensor failure | Replace the registration mark sensor holder ASSY. |
| 3 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Error code 83

Drum Stop

Replace the Drum Unit. Refer to the User's Guide for instructions.

Drum unit error. (An drum error occurred after the drum unit reached the end of life.)

<User Check>

- Replace the drum unit with a new one and reset the drum counter. (Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Jam Rear

Open the Back Cover and remove the jammed paper.

Paper jam at the rear section of the printer.

| - | Check if the | paper is | jammed. If | jammed, remove it. |
|---|--------------|----------|------------|--------------------|
| | | | |]= |

| Step | Cause | Remedy |
|------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Foreign object around paper eject | Remove the foreign object. |
| 2 | Coming off of back flapper ASSY | Re-assemble the back flapper ASSY. |
| 3 | Paper eject actuator malfunction | Re-assemble the paper eject actuator. |
| 4 | Harness connection failure of paper eject motor | Check the harness connection of the paper eject motor and reconnect it. |
| 5 | Paper eject sensor PCB ASSY failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the paper eject sensor PCB ASSY. |
| 6 | Paper eject motor failure | Replace the paper eject motor. |
| 7 | Paper eject ASSY failure | Replace the paper eject ASSY. |
| 8 | Engine PCB failure | Replace the engine PCB ASSY. |
| 9 | Main PCB failure | Replace the main PCB ASSY. |

No Tray A Tray is not detected, install Tray 1. (The paper tray cannot be detected, re-install Tray 1.)

The message displayed in the second line on the LCD might be the one in parentheses according to the version.

The paper tray 1 is not installed.

<User Check>

- Check if the paper tray 1 is installed into the printer.

- Check if the paper is jammed in the paper tray 1. If jammed, remove it.

| Step | Cause | Remedy |
|------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of T1 paper edge sensor PCB ASSY | Check the harness connection of the T1 paper edge sensor PCB ASSY and reconnect it. |
| 2 | T1 paper edge sensor PCB failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T1 paper edge sensor PCB ASSY. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Error code 86

No Tray A Tray is not detected, install Tray 2. (The paper tray cannot be detected, re-install Tray 2.)

The message displayed in the second line on the LCD might be the one in parentheses according to the version.

The paper tray 2 is not installed.

- Check if the paper tray 2 is installed into the printer.
- Check if the paper is jammed in the paper tray 2. If jammed, remove it.

| Step | Cause | Remedy |
|------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of T2 sensor PCB ASSY | Check the harness connection of the T2 sensor PCB ASSY and reconnect it. |
| 2 | Harness connection failure of T2 Relay PCB ASSY | Check the harness connection of the T2 Relay PCB ASSY and reconnect it. |
| 3 | T2 paper edge sensor PCB failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T2 paper feed frame unit. |
| 4 | T2 Relay PCB failure | Replace the T2 Relay PCB ASSY. |
| 5 | Engine PCB failure | Replace the engine PCB ASSY. |
| 6 | Main PCB failure | Replace the main PCB ASSY. |

Calibrate

Calibration failed. Insufficient Toner for Calibration.

Toner of the color which is being used reaches the end of life when implementing adjustment of color density.

<User Check>

- Replace the toner cartridge with a new one.

| Step | Cause | Remedy |
|------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Toner/New sensor PCB ASSY failure (Toner empty) | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the Toner/New sensor PCB ASSY. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code 88

Jam Inside

Open the Front Cover, pull out the Drum Unit completely and remove the jammed paper.

Paper jam inside the printer.

<User Check>

- Check if the paper is jammed. If jammed, remove it.

| Step | Cause | Remedy | |
|------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1 | Harness connection failure of paper eject sensor PCB ASSY | Check the harness connection of the paper eject sensor PCB ASSY and reconnect it. | |
| 2 | Paper eject actuator catching on some position | Correct catching of the paper eject actuator. | |
| 3 | Paper eject sensor PCB ASSY failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the paper eject sensor PCB ASSY. | |
| 4 | Main PCB failure | Replace the main PCB ASSY. | |

Size Error DX

Specify the correct paper and press Go.

Unsupported paper size is used for duplex printing.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 8A

Jam Tray 1 Remove the jammed paper from Tray 1.

Paper jam in the paper tray 1.

- Check if the paper is jammed in the paper tray 1. If jammed, remove it.
- Check if the paper is loaded into the paper tray 1 correctly.
- Turn back the paper loaded in the paper tray 1 or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if the maximum loading capacity of the paper tray is not exceeded.
- Check if the thickness of the paper is 60 to 105 g/m².

| Step | Cause | Remedy |
|------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of T1 registration front/rear sensor PCB ASSY | Check the harness connection of the T1 registration front/rear sensor PCB ASSY and reconnect it. |
| 2 | Paper feeding kit1 worn out | Replace the paper feeding kit1. |
| 3 | Registration front sensor failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T1 registration front/rear sensor PCB ASSY. |
| 4 | Engine PCB failure | Replace the engine PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Error code 8B

Jam Tray 2

Remove the jammed paper from Tray 2.

Paper jam in the paper tray 2.

- Check if the paper is jammed in the paper tray 2. If jammed, remove it.
- Check if the paper is loaded into the paper tray 2 correctly.
- Turn back the paper loaded in the paper tray 2 or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.
- Check if the thickness of the paper is 60 to 105 g/m².

| Step | Cause | Remedy |
|------|-----------------------------------------------------|--------------------------------------------------------------------------|
| 1 | Foreign object around the front of the paper tray 2 | Remove the foreign object. |
| 2 | Harness connection failure of T2 sensor PCB ASSY | Check the harness connection of the T2 sensor PCB ASSY and reconnect it. |
| 3 | Harness connection failure of T2 Relay PCB ASSY | Check the harness connection of the T2 Relay PCB ASSY and reconnect it. |
| 4 | T2 separation roller ASSY worn out | Replace the T2 separation roller ASSY. |
| 5 | T2 Relay PCB failure | Replace the T2 Relay PCB ASSY. |
| 6 | Engine PCB failure | Replace the engine PCB ASSY. |
| 7 | Main PCB failure | Replace the main PCB ASSY. |

Error code 8C

Jam MP Tray

Remove the jammed paper from Multi Purpose Tray and press Go.

Paper jam in the MP tray.

- Check if paper is jammed around the MP tray. If paper is jammed, remove the jammed paper.
- Check if the paper is loaded into the MP tray correctly.
- Turn back the paper loaded in the MP tray or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.
- Check if the thickness of the paper is 60 to 163 g/m².

| Step | Cause | Remedy |
|------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Foreign object around MP tray | Remove the foreign object. |
| 2 | MP paper feeding kit worn out | Replace the MP paper feeding kit. |
| 3 | MP registration front sensor failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the MP paper empty/registration front sensor PCB ASSY. |
| 4 | Engine PCB failure | Replace the engine PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Error code 8D

Cover is Open

Make sure there is no paper jammed inside the machine and close the Back cover, then press Go.

Paper jam occurred around the back cover at the time when the power was turned ON, or the fuser cover is open.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 8E

Registration Registration failed. Press Go, and try again.

Error in the adjustment of color registration result when implementing it.

<User Check>

- Check if there is a scratch, dirt or the like on the belt unit. If there is, replace the belt unit with a new one.

| Step | Cause | Remedy |
|------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of the registration mark L PCB ASSY or registration mark R PCB ASSY | Check the harness connection of the registration mark sensor holder ASSY and reconnect it. |
| 2 | Registration mark sensor holder ASSY failure | Replace the registration mark sensor holder ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code 8F

Registration Registration failed. See Troubleshooting chapter in User's Guide.

Detection of abnormal value of registration sensor sensitivity when implementing adjustment of color registration.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 90

Size Mismatch

Load <size> paper in Multi Purpose Tray and press Go.

The paper size of the MP tray does not match that of the print setting.

Error code 91

Size Mismatch

Load <size> paper in Tray1 Purpose Tray and press Go.

The paper size of the paper tray 1 does not match that of the print setting.

Error code 92

Size Mismatch

Load <size> paper in Tray2 Purpose Tray and press Go.

The paper size of the paper tray 2 does not match that of the print setting.

Error code 93

No Paper

Load <size> paper in Multi Purpose Tray.

No paper in MP tray.

Error code 94

No Paper Load <size> paper in Tray 1.

No paper in paper tray 1.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

No Paper Load <size> paper in Tray 2.

No paper in paper tray 2.

Error code 96

No Paper

Load <size> paper in Tray.

No paper in all trays.

Error code 97

Size Error

Specify the correct paper size for Tray 1.

A paper size, which is not supported by the paper tray 1, is specified in the paper size of the data.

Error code 98

Size Error

Specify the correct paper size for Tray 2.

A paper size, which is not supported by the paper tray 2, is specified in the paper size of the data.

Error code 99

Size Error DX

Press Cancel. Specify the correct paper and load the same size paper as the Printer driver setting.

The tray in which unsupported paper size is loaded is selected for duplex printing.

Error code 9A

Manual Feed

Load Paper

No paper is loaded in the MP tray (MP paper empty sensor fails to be turned ON.)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code 9D

Registration

Registration failed. See Troubleshooting chapter in User's Guide.

Detection of incorrect registration sensor measurement value when implementing adjustment of color registration.

<User Check>

- Check if there is a scratch, dirt or the like on the belt unit. If there is, replace the belt unit with a new one.

| Step | Cause | Remedy |
|------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of the registration mark L PCB ASSY or registration mark R PCB ASSY | Check the harness connection of the registration mark sensor holder ASSY and reconnect it. |
| 2 | Registration mark sensor holder ASSY failure | Replace the registration mark sensor holder ASSY. |
| 3 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Error code 9E

Registration

Registration failed. Insufficient Toner for Registration.

Toner of the color which is being used reaches the end of life when implementing adjustment of color registration.

<User Check>

- Replace the toner cartridge with a new one.

| Step | Cause | Remedy |
|------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Toner/New sensor PCB ASSY failure (Toner empty) | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the Toner/New sensor PCB ASSY. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |

Error code 9F

Reload paper in **.

Paper runs out during printing. (The paper tray in which paper runs out is displayed in **.)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Cover is Open Close the Front Cover.

The front cover is open.

<User Check>

- Close the front cover properly.

| Step | Cause | Remedy |
|------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of front cover sensor | Check the harness connection of the front cover sensor and reconnect it. |
| 2 | Front cover sensor failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the front cover sensor. |
| 3 | The member part to press the front cover sensor which is located at the inner left side of the front cover is broken. | Replace the front cover. |
| 4 | Engine PCB failure | Replace the engine PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Error code AA

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Error code AB

Error code AE

Error code B5

Error code B6

Error code BA

-

Error code BE

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This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code C0 (K)

Cartridge Error

Put the Black (K) Toner Cartridge back in.

Identification failure for a new black toner cartridge.

Error code C1 (Y)

Cartridge Error Put the Yellow (Y) Toner Cartridge back in.

Identification failure for a new yellow toner cartridge.

Error code C2 (M)

Cartridge Error Put the Magenta (M) Toner Cartridge back in.

Identification failure for a new magenta toner cartridge.

Error code C3 (C)

Cartridge Error Put the Cyan (C) Toner Cartridge back in.

Identification failure for a new cyan toner cartridge.

<User Check>

- Install the toner cartridges into the printer properly.

| Step | Cause | Remedy |
|------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Power off or front cover opened while detecting a new toner cartridge | Reset the developing bias voltage and developer roller counter. (Refer to "2.2 Developer Roller Counter Reset Function" in Chapter 5.) |

Tray 2 Error

Take out Tray 2 and push it back in firmly.

Paper tray 2 pressing plate up/down error.

<User Check>

- Check if the paper tray 2 is installed into the printer.

| Step | Cause | Remedy |
|------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Connector connection failure between the printer and paper tray 2 | Replace the connector. |
| 2 | Harness connection failure of T2 plate motor ASSY | Check the harness connection of the T2 plate motor ASSY and reconnect it. |
| 3 | Harness connection failure of T2 Relay PCB ASSY | Check the harness connection of the T2 Relay PCB ASSY and reconnect it. |
| 4 | T2 plate-up detection sensor failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T2 paper feed frame unit. |
| 5 | T2 Relay PCB ASSY failure | Replace the T2 Relay PCB ASSY. |
| 6 | Plate-up gear damaged | Replace the plate-up gear. |
| 7 | Engine PCB failure | Replace the engine PCB ASSY. |
| 8 | T2 plate motor ASSY failure | Replace the paper tray 2. |

Error code C5

| - | | |
|------------------------------------|--|--|
| Energization failure of erase lamp | | |

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Toner Error One or more Toner Cartridges are not detected. Pull out and reinsert all 4 Toner Cartridges.

Pressure engagement/disengagement failure of toner cartridge.

| Step | Cause | Remedy |
|------|-----------------------------------------------------|-----------------------------------------------------------------------------|
| 1 | Harness connection failure of develop release motor | Check the harness connection of the develop release motor and reconnect it. |
| 2 | Develop release motor failure | Replace the develop release motor. |
| 3 | Develop release sensor PCB ASSY failure | Replace the develop release sensor PCB ASSY. |
| 4 | Engine PCB failure | Replace the engine PCB ASSY. |

Error code C7

Out of Memory

Add more Memory.

Insufficient memory.

<User Check>

- Delete the stored data.
- Install additional DIMM.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code C8

Out of Memory Secure Print Data is full. Press Cancel and delete the previously stored data.

RAM area for secure data full.

- Delete the stored data.
- Limit the registration of secure files within the limit of 10 users and 3 jobs.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

DIMM Error

Defective DIMM is installed.

<User Check>

- Replace the DIMM.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code CA

Unusable Device Remove the Device. Turn the power off and back on again.

USB device overcurrent error.

<User Check>

- Remove the USB device from the USB direct interface and turn OFF the power. After a while, turn ON the power again.
- Replace the USB device with another one.

| Step | Cause | Remedy |
|------|------------------------------------|--------------------------------------|
| 1 | USB host relay PCB ASSY failure | Replace the USB host relay PCB ASSY. |
| 2 | Main PCB failure | Replace the main PCB ASSY. |

Error code CB

No Belt Unit

Open the Front Cover, pull out the Drum Unit completely and install the Belt Unit.

The belt unit is not installed.

<User Check>

- Check if the belt unit is installed into the printer.

| Step | Cause | Remedy |
|------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of registration mark sensor holder ASSY | Check the harness connection of the registration mark sensor holder ASSY and reconnect it. |
| 2 | Density sensor failure | Replace the registration mark sensor holder ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code CC

No Fuser Unit

Install the Fuser Unit

The fuser unit is not installed.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code CD

| No Drum Unit | | |
|------------------------|--|--|
| Install the Drum unit. | | |

The drum unit is not installed.

<User Check>

- Check if the drum unit is installed into the printer.

| Step | Cause | Remedy |
|------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| 1 | Dirt on the electrode of the drum unit and on the printer | Clean the dirt on the contact points of the both electrodes. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53)) |
| 2 | Bend of electrode contact of main body | Correct the bend of the electrode contact of the main body. |
| 3 | Contact failure between the electrode of the high-voltage power supply PCB ASSY and that of the printer | Clean the electrodes of the high-voltage power supply PCB ASSY. |
| 4 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 5 | Engine PCB failure | Replace the engine PCB ASSY. |

Error code CE

No Waste Toner

Install the Waste Toner Box. Refer to the User's Guide for instructions.

The waste toner box is not installed.

<User Check>

- Check if the waste toner box is installed into the printer.
- Replace the waste toner box with a new one.

| Step | Cause | Remedy |
|------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Waste toner sensor failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the waste toner sensor. |
| 2 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code CF

Replace WT Box Replace the Waste Toner Box. Refer to the User's Guide for instructions.

Waste toner box full. (The sensor detects that the waste toner is full.)

<User Check>

- Replace the waste toner box with a new one.

| Step | Cause | Remedy |
|------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of waste toner sensor | Check the harness connection of the waste toner sensor and reconnect it. |
| 2 | Waste toner sensor failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the waste toner sensor. |
| 3 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

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Error code D3

Error code D4

Error code D5

- - - -

Error code D6

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Error code D7

Error code D8

-

Error code D9

-

Error code DA

-

Error code DB

-

Error code DC

-

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code DE

Print Unable DE

Turn the power off and then back on again.

When the center thermistor is higher than the idle temperature, it is detected that the side thermistor temperature is lower than 60 $^{\circ}$ C.

| Step | Cause | Remedy |
|------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1 | Harness connection failure between paper eject sensor PCB ASSY and fuser unit | Check the harness connection between the paper eject sensor PCB ASSY and fuser unit, and reconnect it. |
| 2 | Side thermistor or center thermistor failure | Replace the fuser unit. |
| 3 | Paper eject sensor PCB ASSY failure | Replace the paper eject sensor PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Error code E0

Print Unable E0 Turn the power off and then back on again.

Program error. (An error occurred in the ROM checksum.)

| Step | Cause | Remedy |
|------|-------------------------|-----------------------------|
| 1 | Firmware update failure | Upload the latest firmware. |
| 2 | Main PCB failure | Replace the main PCB ASSY. |

Error code E1

Print Unable E1 Turn the power off and then back on again.

Program error.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Print Unable E2

Turn the power off and then back on again.

When the center thermistor is lower than the idle temperature, it is detected that the side thermistor temperature is higher than 280 $^{\circ}$ C.

| Step | Cause | Remedy |
|------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1 | Dirt on heat roller | Clean the heat roller. |
| 2 | Harness connection failure between paper eject sensor PCB ASSY and fuser unit | Check the harness connection between the paper eject sensor PCB ASSY and fuser unit, and reconnect it. |
| 3 | Side thermistor or center thermistor failure | Replace the fuser unit. |
| 4 | Paper eject sensor PCB ASSY failure | Replace the paper eject sensor PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

Error code E3

Print Unable E3

Turn the power off and then back on again.

Drum position sensor error.

| Step | Cause | Remedy |
|------|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of drum position sensor PCB ASSY | Check the harness connection of the drum position sensor PCB ASSY and reconnect it. |
| 2 | Phase displacement of drum gear | Align the drum phase. (Refer to "6. IF YOU REPLACE THE DRUM DRIVE MOTOR" in Chapter 4.) |
| 3 | Drum position sensor failure | Replace the drum position sensor PCB ASSY. |
| 4 | Engine PCB failure | Replace the engine PCB ASSY. |

Error code E4

| - | | |
|------------------|--|--|
| Run out of paper | | |

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |
Error code E6

Print Unable E6

Turn the power off and then back on again.

Write error in EEPROM of the main PCB.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code E7

| - | | | |
|---------------|--|--|--|
| Error code E8 | | | |

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code E9

| Print Unable E9 | |
|--------------------------------------------|--|
| Turn the power off and then back on again. | |

Main PCB error.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code EA

| | | |
|---|------|--|
| - | | |
| | | |
| | | |
| | | |

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code EB

Print Unable EB

Turn the power off and then back on again.

Read error in EEPROM of the laser unit.

| Step | Cause | Remedy |
|------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| 1 | Harness connection failure between laser unit and main PCB ASSY | Check the harness connection between the laser unit and main PCB ASSY, and reconnect it. |
| 2 | Laser unit failure | Replace the laser unit. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Error code EC

Print Unable EC Turn the power off and then back on again.

Fuser fan error.

| Step | Cause | Remedy |
|------|--------------------------------------------|-----------------------------------------------------------------|
| 1 | Harness connection failure of fuser fan | Check the harness connection of the fuser fan and reconnect it. |
| 2 | Fuser fan failure | Replace the fuser fan. |
| 3 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

Error code ED

Print Unable ED Turn the power off and then back on again.

Communication with the wireless LAN PCB cannot be established upon startup of the power supply. (Wireless LAN model only)

| Step | Cause | Remedy |
|------|---------------------------------------------------|------------------------------------------------------------------------|
| 1 | Harness connection failure of wireless LAN PCB | Check the harness connection of the wireless LAN PCB and reconnect it. |
| 2 | Wireless LAN PCB failure | Replace the wireless LAN PCB. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code EE

Print Unable EE

Turn the power off and then back on again.

Unavailability of communication after connecting to the wireless LAN PCB is detected. (Wireless LAN model only)

| Step | Cause | Remedy |
|------|---------------------------------------------------|------------------------------------------------------------------------|
| 1 | Harness connection failure of wireless LAN PCB | Check the harness connection of the wireless LAN PCB and reconnect it. |
| 2 | Wireless LAN PCB failure | Replace the wireless LAN PCB. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Error code EF

Print Unable EF Turn the power off and then back on again.

The supplied power is unstable.

| Step | Cause | Remedy |
|------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | The irregular power supply is detected | Replace the low-voltage power supply PCB ASSY. Reset the irregular power supply detection counter following the procedure described in "5. IF THE MACHINE ERROR EF IS DETECTED AND THE LOW-VOLTAGE POWER SUPPLY PCB ASSY IS REPLACED" in Chapter 4. |
| 2 | Main PCB failure | Replace the main PCB ASSY. |

Note:

The irregular power supply detection error (Machine Error EF) occurs when there is a large fluctuation in the power supply voltage supplied to the printer.

In this case, if the same power supply is used, the same error might occur again even if the low-voltage power supply PCB ASSY is replaced.

Error code F1



This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code F4

High Temperature

Decrease room temperature and humidity to allow the machine to operate.

The waste toner box is at the end of life.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code F5



Main PCB communication error

Error code F6

_

P.C.I error

Error code F8

-

Battery connection error

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code F9

Machine Error F9

The country code is not entered properly

| Step | Cause | Remedy |
|------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 1 | Power turned OFF while the function code 74 is being exe- cuted and "PARAMETER INTI" is being displayed | Re-enter the country code. (Refer to "1.4.19 Setting by country (Function code 74)" in Chapter 5.) |

Error code FA

Error code FB

Error code FC

Error code FD

-

_

-

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

Error code FE

Calibrate

Calibration failed. Press Go, and try again.

Detection of incorrect measurement value of density sensor sensitivity calibration.

| Step | Cause | Remedy |
|------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1 | Harness connection failure of registration mark sensor holder ASSY | Check the harness connection of the registration mark sensor holder ASSY and reconnect it. |
| 2 | Harness connection failure of density sensor shutter solenoid ASSY | Check the harness connection of the density sensor shutter solenoid ASSY and reconnect it. |
| 3 | Registration mark sensor holder ASSY failure | Replace the registration mark sensor holder ASSY. |
| 4 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY |

Error code FF

Unusable Device Remove the Device. Turn the power off and back on again.

Wireless LAN overcurrent error. (Wireless LAN model only)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

3.4 Paper Feeding Problems

Problems related to paper feeding are end user recoverable if following the User Check items. If the same problem occurs again, follow each procedure in the order of the number described in the Step column in the tables below.

3.4.1 No feeding

■ Paper fails to be supplied from the paper tray 1 (Error code 27, etc)

- Check if the Tray Use setting is fixed to other tray.
- Check if the paper is loaded into the paper tray 1 correctly.
- Turn back the paper loaded in the paper tray 1 or change the orientation of the paper by 180°.
- Check if the thickness of the paper is 60 to 105 g/m^2 .

| Step | Cause | Remedy |
|------|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | T1 paper edge actuator malfunction | Re-assemble the T1 paper edge actuator. |
| 2 | Harness connection failure of PF drive motor | Check the harness connection of the PF drive motor and reconnect it. |
| 3 | Installation failure of roller holder ASSY | Check the installation of the roller holder ASSY and reinstall it correctly. |
| 4 | T1 paper pick-up roller worn out | Replace the paper feeding kit1. |
| 5 | T1 paper edge sensor failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T1 paper edge sensor PCB ASSY. |
| 6 | Plate gear damaged | Replace the paper tray 1. |
| 7 | T1 solenoid ASSY failure | Replace the T1 solenoid ASSY. |
| 8 | PF drive motor failure | Replace the PF plate ASSY. |
| 9 | Engine PCB failure | Replace the engine PCB ASSY. |
| 10 | Main PCB failure | Replace the main PCB ASSY. |



Fig. 2-10

■ Paper fails to be supplied from the paper tray 2 (Error code 27, etc)

- Check if the Tray Use setting is fixed to other tray.
- Check if the paper is loaded into the paper tray 2 correctly.
- Turn back the paper loaded in the paper tray 2 or change the orientation of the paper by 180°.
- Check if the thickness of the paper is 60 to 105 g/m^2 .
- Check if the paper tray 2 is installed in the printer properly. (Check of the connection of the connectors)

| Step | Cause | Remedy |
|------|----------------------------------------------------|---------------------------------------------------------------------------------|
| 1 | T2 paper edge actuator malfunction | Re-assemble the T2 paper edge actuator. |
| 2 | Harness connection failure of plate drive motor | Check the harness connection of the plate drive motor and reconnect it. |
| 3 | Harness connection failure of T2 sensor PCB ASSY | Check the harness connection of the T2 sensor PCB ASSY and reconnect it. |
| 4 | Harness connection failure of T2 Relay PCB ASSY | Check the harness connection of the T2 Relay PCB ASSY and reconnect it. |
| 5 | Installation failure of T2 roller holder ASSY | Check the installation of the T2 roller holder ASSY and reinstall it correctly. |
| 6 | T2 separation roller ASSY worn out | Replace the T2 separation roller ASSY. |
| 7 | Plate gear damaged/Plate drive motor damaged | Replace the paper tray 2. |
| 8 | T2 paper edge sensor failure | Replace the T2 paper feed frame unit. |
| 9 | T2 Relay PCB ASSY failure | Replace the T2 Relay PCB ASSY. |
| 10 | T2 solenoid ASSY failure | Replace the T2 solenoid ASSY. |
| 11 | PF drive motor failure | Replace the PF plate ASSY. |
| 12 | Engine PCB failure | Replace the engine PCB ASSY. |
| 13 | Main PCB failure | Replace the main PCB ASSY. |

■ Paper fails to be supplied from the MP tray (Error code 27, etc)

- Check if the Tray Use setting is fixed to other tray.
- Check if the paper is loaded into the MP tray correctly.
- Check if the thickness of the paper is 60 to 163 g/m^2 .

| Step | Cause | Remedy |
|------|----------------------------------------------------------------|----------------------------------------------------------------------|
| 1 | Operation failure of the actuator of the MP paper empty sensor | Uninstall and reinstall the actuator of the MP paper empty sensor. |
| 2 | Harness connection failure of PF drive motor | Check the harness connection of the PF drive motor and reconnect it. |
| 3 | MP paper pick-up roller worn out | Replace the MP paper feeding kit. |
| 4 | MP paper empty sensor failure | Replace the MP paper empty/registration front sensor PCB ASSY. |
| 5 | MP sector solenoid failure | Replace the MP sector solenoid. |
| 6 | PF drive motor failure | Replace the PF plate ASSY. |
| 7 | Engine PCB failure | Replace the engine PCB ASSY. |
| 8 | Main PCB failure | Replace the main PCB ASSY. |

3.4.2 Double feeding

<User Check>

- Check if paper is properly loaded in each paper tray.
- Turn back the paper loaded in the each paper tray or change the orientation of the paper by 180°.
- Check if the thickness of the paper is 60 to 105 g/m². (60 to 163 g/m² for the MP tray.)
- Set out papers and reload them into the paper tray.

| Step | Cause | Remedy |
|------|-------------------------------------------------|--------------------------------------------|
| 1 | Abrasion of separation pad or separation roller | Replace the appropriate paper feeding kit. |

3.4.3 Paper jam

■ Paper jam at the paper tray 1 (Error code 8A)

- Check if the paper is loaded into the paper tray 1 correctly.
- Turn back the paper loaded in the paper tray 1 or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.
- Check if the thickness of the paper is 60 to 105 g/m^2 .

| Step | Cause | Remedy |
|------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Foreign object around paper tray 1 | Remove the foreign object. |
| 2 | Harness connection failure of T1 registration front/rear sensor PCB ASSY | Check the harness connection of the T1 registration front/rear sensor PCB ASSY and reconnect it. |
| 3 | Paper feeding kit1 worn out | Replace the paper feeding kit1. |
| 4 | Registration front actuator malfunction | Re-assemble the registration front actuator. |
| 5 | Registration front sensor failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T1 registration front/rear sensor PCB ASSY. |
| 6 | Engine PCB failure | Replace the engine PCB ASSY. |
| 7 | Main PCB failure | Replace the main PCB ASSY. |

■ Paper jam at the paper tray 2 (Error code 8B, etc)

- Check if the paper is loaded into the paper tray 2 correctly.
- Turn back the paper loaded in the paper tray 2 or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.
- Check if the thickness of the paper is 60 to 105 g/m^2 .

| Step | Cause | Remedy |
|------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Foreign object around paper tray 2 | Remove the foreign object. |
| 2 | Foreign object around paper tray 1 | Remove the foreign object. |
| 3 | Harness connection failure of T2 sensor PCB ASSY | Check the harness connection of the T2 sensor PCB ASSY and reconnect it. |
| 4 | Harness connection failure of T2 Relay PCB ASSY | Check the harness connection of the T2 Relay PCB ASSY and reconnect it. |
| 5 | T2 paper edge actuator malfunction | Re-assemble the T2 paper edge actuator. |
| 6 | T2 separation roller ASSY worn out | Replace the T2 separation roller ASSY. |
| 7 | Registration front sensor failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the registration front/rear sensor PCB ASSY. |
| 8 | T2 Relay PCB failure | Replace the T2 Relay PCB ASSY. |
| 9 | Engine PCB failure | Replace the engine PCB ASSY. |
| 10 | Main PCB failure | Replace the main PCB ASSY. |

■ Paper jam at the MP tray (Error code 8C)

<User Check>

- Check if the paper is loaded into the MP tray correctly.
- Turn back the paper loaded in the MP tray or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.
- Check if the thickness of the paper is 60 to 163 $g/m^2.$

| Step | Cause | Remedy |
|------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Foreign object around MP tray | Remove the foreign object. |
| 2 | MP paper feeding kit worn out | Replace the MP paper feeding kit. |
| 3 | MP registration front sensor failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the MP paper empty/registration front sensor PCB ASSY. |
| 4 | Engine PCB failure | Replace the engine PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

■ Paper jam around the belt unit (Error code 88, etc.)

<User Check>

- Check if the belt unit is properly installed.

| Step | Cause | Remedy |
|------|--------------------------------------------------------------|-----------------------------------------------------------------------------------|
| 1 | Registration rear actuator malfunction | Re-assemble the registration rear actuator. |
| 2 | Paper eject actuator malfunction | Re-assemble the paper eject actuator. |
| 3 | Harness connection failure of paper eject sensor PCB ASSY | Check the harness connection of the paper eject sensor PCB ASSY and reconnect it. |
| 4 | Harness connection failure of drum drive motor | Check the harness connection of the drum drive motor and reconnect it. |
| 5 | Paper eject sensor PCB failure | Replace the paper eject sensor PCB ASSY. |
| 6 | Drum drive motor failure | Replace the drum drive motor. |
| 7 | Rotation failure of the heat roller | Replace the fuser unit. |
| 8 | Engine PCB failure | Replace the engine PCB ASSY. |
| 9 | Main PCB failure | Replace the main PCB ASSY. |

| Step | Cause | Remedy |
|------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Foreign object around paper eject ASSY | Remove the foreign object. |
| 2 | Coming off of back flapper ASSY | Re-assemble the back flapper ASSY. |
| 3 | Paper eject actuator malfunction | Re-assemble the paper eject actuator. |
| 4 | Harness connection failure of paper eject motor | Check the harness connection of the paper eject motor and reconnect it. |
| 5 | Paper eject sensor PCB ASSY failure | Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the fuser unit. |
| 6 | Paper eject motor failure | Replace the paper eject motor. |
| 7 | Paper eject ASSY failure | Replace the paper eject ASSY. |
| 8 | Engine PCB failure | Replace the engine PCB ASSY. |
| 9 | Main PCB failure | Replace the main PCB ASSY. |

■ Paper jam in the back cover and paper eject section (Error code 84, etc.)

■ Paper jam during duplex printing (Error code 57, etc.)

<User Check>

- Use the A4 or letter size recording paper.

| Step | Cause | Remedy |
|------|----------------------------------------------------|-------------------------------------------------------------------------|
| 1 | Foreign object around paper eject ASSY | Remove the foreign object. |
| 2 | Foreign object around paper guide DX ASSY | Remove the foreign object. |
| 3 | Foreign object around duplex tray | Remove the foreign object. |
| 4 | Paper eject actuator malfunction | Re-assemble the paper eject actuator. |
| 5 | Coming off of back flapper ASSY | Re-assemble the back flapper ASSY. |
| 6 | Harness connection failure of paper eject motor | Check the harness connection of the paper eject motor and reconnect it. |
| 7 | Paper guide DX ASSY failure | Replace the paper guide DX ASSY. |
| 8 | Duplex tray failure | Replace the duplex feed ASSY. |
| 9 | Paper eject motor failure | Replace the paper eject motor. |
| 10 | Paper eject ASSY failure | Replace the paper eject ASSY. |
| 11 | Engine PCB failure | Replace the engine PCB ASSY. |
| 12 | Main PCB failure | Replace the main PCB ASSY. |

3.4.4 Dirt on paper

<User Check>

- Check if the paper is loaded into the paper tray correctly.
- Turn back the paper loaded in the paper tray or change the orientation of the paper by 180°.
- Replace the toner cartridge with a new one.
- Replace the waste toner box with a new one.
- Replace the belt unit with a new one.

| Step | Cause | Remedy |
|------|-------------------------------|---------------------------------------|
| 1 | Fuser unit dirty | Clean the entrance of the fuser unit. |
| | | Clean the pressure roller. |
| 2 | Dirt in the paper feed system | Wipe dirt off. |
| 3 | Paper eject ASSY dirty | Clean the paper eject ASSY. |
| 4 | Waste toner sensor failure | Replace the waste toner sensor. |

3.4.5 Wrinkles on paper

- Check if the paper is loaded into the paper tray correctly.
- Turn back the paper loaded in the paper tray or change the orientation of the paper by 180°.
- Check if the thickness of the paper is 60 to 105 g/m2. (60 to 163 g/m2 for the MP tray.)
- Switch the envelope levers.

| Step | Cause | Remedy |
|------|--------------------|-------------------------|
| 1 | Fuser unit failure | Replace the fuser unit. |

3.5 Image Defect Troubleshooting

3.5.1 Image defect examples



Fig. 2-11

3.5.2 Pitch indicated in roller image

Image defects which occur periodically may be caused by a failure of the roller. By referring to the table below, specify the cause based on the pitch indicated in the image of each roller.

| No. | Parts name | The pitch which appears in the image |
|-----|-----------------------------------|--------------------------------------|
| 1 | Developer roller | 30 mm |
| 2 | Exposure drum | 94 mm |
| 3 | Fuser unit in the heat roller | 78.5 mm |
| 4 | Fuser unit in the pressure roller | 78.5 mm |

3.5.3 Troubleshooting image defect

Image defect related problems are user recoverable if following the User Check items. If the same problem occurs, follow each procedure in the order of the number described in the Step column in the tables below.

■ Light on the whole page



<User Check>

- Check the printer's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- If the whole page is light, toner save mode may be on. Turn off the toner save mode.
- Wipe the scanner windows of the laser unit with a soft, lint-free cloth. (Refer to the figure below.)
- Adjust the color calibration from the control panel.
- Replace the toner cartridge or drum unit with a new one.
- Adjust the color density from the control panel.
- Leave the printer for a while as the power remains ON.

| Step | Cause | Remedy |
|------|-----------------------------------------|---------------------------------------------------|
| 1 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |
| 4 | Laser unit failure | Replace the laser unit. |
| 5 | Registration mark sensor PCB failure | Replace the registration mark sensor holder ASSY. |





Fig. 2-12

One color is light



- Open and close the front cover and make print again.
- Check the printer's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Wipe the scanner windows of the laser unit with a soft, lint-free cloth. (Refer to Fig. 2-12 (P2-92))
- Adjust the color density from the control panel.
- Replace the toner cartridge or drum unit with a new one.

| Step | Cause | Remedy |
|------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| 1 | Dirt on exposure drum electrode | Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53)) |
| 2 | Dirt on developer roller electrode | Clean the electrodes of the developer roller and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53)) |
| 3 | Dirt on belt unit electrode | Clean the electrodes of the belt unit and main body. (Refer to Fig. 2-7 (P2-52) and Fig. 2-9 (P2-53)) |
| 4 | Toner/New sensor PCB ASSY failure | Check the harness connection of the Toner/ New sensor PCB ASSY. Replace the Toner/New sensor PCB ASSY. |
| 5 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 6 | Laser unit failure | Replace the laser unit. |
| 7 | Main PCB failure | Replace the main PCB ASSY. |

■ Faulty registration



| Step | Cause | Remedy |
|------|---------------------------------------------------------|-----------------------------------------------------|
| 1 | Registration rear actuator catching on some position | Correct catching of the registration rear actuator. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |

Dark



- Check the printer's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Clean the corona wire.
- Replace the toner cartridge or drum unit with a new one.
- Adjust the color density from the control panel.

| Step | Cause | Remedy |
|------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1 | Corona wire conduction failure | Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53)) |
| 2 | Dirt on belt unit electrode | Clean the electrodes of the belt unit and main body. (Refer to Fig. 2-7 (P2-52) and Fig. 2-9 (P2-53)) |
| 3 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 4 | Engine PCB failure | Replace the engine PCB ASSY. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |
| 6 | Laser unit failure | Replace the laser unit. |
| 7 | Registration mark sensor PCB failure | Replace the registration mark sensor holder ASSY. |
| 8 | Toner/New sensor PCB ASSY failure | Replace the Toner/New sensor PCB ASSY. |

Poor fixing



<User Check>

- Use the specified paper.
- Open and close the front cover and make print again.
- Adjust the color calibration from the control panel.
- Adjust the auto registration from the control panel.
- Check the printer's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Replace the belt unit with a new one.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Memo

You can check this image defect with the function code 71. (Refer to "1.4.17 Color test pattern (Function code 71)" in Chapter 5.)

| Step | Cause | Remedy | |
|------|---------------------------------------|-------------------------------------------------|--|
| 1 | Fuser unit failure | Replace the fuser unit. | |
| 2 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. | |
| 3 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. | |
| 4 | Engine PCB failure | Replace the engine PCB ASSY. | |
| 5 | Laser unit failure | Replace the laser unit. | |
| 6 | Toner/New sensor PCB ASSY failure | Replace the Toner/New sensor PCB ASSY. | |
| 7 | Main PCB failure | Replace the main PCB ASSY. | |

Completely blank

| | |] |
|--|--|---|
| | | |
| | | |
| | | |
| | | |

<User Check>

- Replace the belt unit with a new one.
- Replace the toner cartridge or drum unit with a new one.

| Step | Cause | Remedy |
|------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| 1 | Developing bias voltage conduction failure | Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53)) |
| 2 | Dirt on developer roller electrode | Clean the electrodes of the developer roller and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53)) |
| 3 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 4 | Laser unit failure | Replace the laser unit. |
| 5 | Main PCB failure | Replace the main PCB ASSY. |

■ Image distortion



<User Check>

- Replace the belt unit with a new one.

| Step | Cause | Remedy |
|------|-------------------------------|-----------------------------|
| 1 | Laser unit assembling failure | Re-assemble the laser unit. |
| 2 | Main PCB failure | Replace the main PCB ASSY. |

■ All one color



<User Check>

- Replace the drum unit with a new one.

You can check this image defect with the function code 71. (Refer to "1.4.17 Color test pattern (Function code 71)" in Chapter 5.)

| Step | Cause | Remedy |
|------|---------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1 | Corona wire failure | Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53)) |
| 2 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 3 | Laser unit failure | Replace the laser unit. |
| 4 | Main PCB failure | Replace the main PCB ASSY. |

■ Dirt on the back of paper



- Clean the belt unit.
- Replace the waste toner box with a new one.
- Replace the belt unit with a new one.

| Step | Cause | Remedy |
|------|---------------------------------------|-------------------------------------------------|
| 1 | Fuser unit dirty | Print approximate 10 pages. |
| | | Replace the fuser unit. |
| 2 | Dirt in the paper feed system | Wipe dirt off. |
| 3 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |

Vertical streaks



<User Check>

- This problem may occur with noise which is caused by dirt on the corona wire in the drum unit. In this case, clean the corona wire.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Memo

You can check this image defect with the function code 71. (Refer to "1.4.17 Color test pattern (Function code 71)" in Chapter 5.)

| Step | Cause | Remedy |
|------|-------------------------------|----------------------------------------------------------------------|
| 1 | Dirt in the paper feed system | Wipe dirt off. |
| 2 | Exposure drum dirty | Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning. |
| 3 | Bend of tray ground spring | Replace the paper tray. |
| 4 | Scratch on the heat roller | Replace the fuser unit. |

Note:

When a same pattern is printed continuously, the static charge of the exposure drum is temporarily lowered, and black streaks may appear on paper.



Fig. 2-13

Vertical streaks in a dark background



<User Check>

- Clean the inside of the printer and the corona wire in the drum unit.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the toner cartridge with a new one.

| Step | Cause | Remedy |
|------|---------------------|----------------------------------------------------------------------|
| 1 | Exposure drum dirty | Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning. |
| 2 | Laser unit failure | Replace the laser unit. |

Horizontal stripes



- Clean the inside of the printer and the corona wire in the drum unit.
- Replace the drum unit with a new one.

| Step | Cause | Remedy |
|------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| 1 | Dirt on charged electrode | Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53)) |
| 2 | Bend of tray ground spring | Replace the paper tray.(Refer to Fig. 2-13 (P2-98)) |
| 3 | Toner attached on the develop roller | This problem will disappear by printing approximate 10 pages. If the same problem occurs, replace the toner cartridge. |
| 4 | Scratch on the heat roller | Replace the fuser unit. |
| 5 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |

White vertical streaks on one color image



<User Check>

- Check if there is no dust in the gap between the toner cartridge and drum frame.
- Wipe the scanner windows of the laser unit with a soft, lint-free cloth. (Refer to Fig. 2-12 (P2-92))
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the toner cartridge with a new one.
- Check the printer's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Damp (wet) paper might be used. Try to change to freshly unpacked paper.
- Replace the drum unit with a new one.

| Step | Cause | Remedy |
|------|---------------------|------------------------------------------------------------------------------------------------|
| 1 | Condensation | Try to print several pages or leave the printer 2 hours to allow it to reach room temperature. |
| 2 | Exposure drum dirty | Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning. |
| 3 | Laser unit failure | Replace the laser unit. |

■ White horizontal stripes on one color image



- 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.
- Replace the toner cartridge with a new one.
- The drum unit may be damaged. Replace the drum unit with a new one.

| Step | Cause | Remedy |
|------|---------------------------------------|-------------------------------------------------|
| 1 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |

■ Faint print

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- Open and close the front cover and make print again.
- Check that the printer is installed on a level surface.
- Wipe the scanner windows of the laser unit with a soft, lint-free cloth. (Refer to Fig. 2-12 (P2-92))
- Replace the toner cartridge with a new one.
- Replace the drum unit with a new one.

| Step | Cause | Remedy |
|------|-----------------------------------|----------------------------------------|
| 1 | Laser unit failure | Replace the laser unit. |
| 2 | Toner/New sensor PCB ASSY failure | Replace the Toner/New sensor PCB ASSY. |

■ White spots on one color image



<User Check>

- Toner may be empty. Replace the toner cartridge with a new one.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- The drum unit may be damaged. Replace the drum unit with a new one.
- The belt unit may be damaged. Replace the belt unit with a new one.

| Step | Cause | Remedy |
|------|--------------------------------------------|----------------------------------------------------------------------|
| 1 | Dirt on the pinch roller of the paper tray | Refer to the figure below and clean the pinch roller. |
| 2 | Exposure drum dirty | Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning. |
| 3 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 4 | Toner/New sensor PCB ASSY failure | Replace the Toner/New sensor PCB ASSY. |

Pinch roller cleaning procedure

Pull out both sides of the pinch roller cover from the ribs to remove the pinch roller cover. Clean the pinch roller with a brush as rotating the pinch roller in the arrow direction with your fingers.

Remove paper dust accumulated in the paper tray by turning over the paper tray.



Fig. 2-14

One color spots or dirt



<User Check>

- Damp (wet) paper might be used. Try to changing to freshly unopened paper.
- Toner may be empty. Replace the toner cartridge with a new one.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- The drum unit may be damaged. Replace the drum unit with a new one.
- The belt unit may be damaged. Replace the belt unit with a new one.

| Step | Cause | Remedy |
|------|--------------------------------------------|----------------------------------------------------------------------|
| 1 | Dirt on the pinch roller of the paper tray | Refer to Fig. 2-14 (P2-102) and clean the pinch roller. |
| 2 | Exposure drum dirty | Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning. |
| 3 | Fuser unit failure | Replace the Fuser unit. |
| 4 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 5 | Toner/New sensor PCB ASSY failure | Replace the Toner/New sensor PCB ASSY. |

One color band



- Clean the inside of the printer and the corona wire in the drum unit. If the same problem occurs after cleaning, replace the drum unit with a new one.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- The paper tray ground terminal provided in the printer body may be dirty. Clean the contact with a dry cloth.

| Step | Cause | Remedy |
|------|---------------------|----------------------------------------------------------------------|
| 1 | Exposure drum dirty | Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning. |

Downward fogging of solid color

<User Check>



- Toner may be empty. Replace the toner cartridge with a new one.

| Step | Cause | Remedy |
|------|---------------------------------------|-------------------------------------------------|
| 1 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 2 | Engine PCB failure | Replace the engine PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

Horizontal lines

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<User Check>

- The paper tray ground terminal provided in the printer body may be dirty. Clean the contact with a dry cloth.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

| Step | Cause | Remedy |
|------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1 | Dirt on charged electrode | Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53)) |
| 2 | Paper tray ground terminal provided in printer body | Correct bending of paper tray ground terminal. |
| 3 | Toner attached on the exposure drum | This symptom might disappear after making approximate 10 prints. |
| 4 | Scratch on the heat roller | Replace the fuser unit. |
| 5 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |

Ghost



- Check the printer's environment, conditions such as high humidity may cause this situation to occur.
- Check that the appropriate media type is selected in the printer driver.
- Make a print in the color mode.
- Replace the drum unit with a new one.

| Step | Cause | Remedy |
|------|---------------------------------------|-----------------------------------------------------------------------------|
| 1 | Erase lamp lens dirty | Clean the erase lamp lens. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53)) |
| 2 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | Fuser unit failure | Replace the fuser unit. |

■ Color misregistration



<User Check>

- Implement the adjustment of color registration from the control panel.
- Replace the belt unit with a new one.
- Replace the drum unit with a new one.

| Step | Cause | Remedy |
|------|-----------------------------------------|-----------------------------------------------------------------------------------------------|
| 1 | Phase displacement of drum gear | Align the drum phase. (Refer to "6. IF YOU REPLACE THE DRUM DRIVE MOTOR" in Chapter 4.) |
| 2 | Registration mark sensor PCB failure | Replace the registration mark sensor holder ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

■ Fogging



<User Check>

- Do not use acid paper.
- Replace the toner cartridge with a new one.
- Replace the drum unit with a new one.
- Check the printer's environment. (If the printer is used in the high humidity environment, this symptom is likely to occur.)

| Step | Cause | Remedy |
|------|---------------------------------------|-------------------------------------------------|
| 1 | Toner/New sensor PCB ASSY failure | Replace the Toner/New sensor PCB ASSY. |
| 2 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |

Note:

This problem often occurs when the drum unit or toner cartridge is nearly at the end of life.

■ Unstable color density



<User Check>

- Make a print on a different type of paper.
- Replace the belt unit with a new one.
- Replace the drum unit with a new one.
- Replace the waste toner box with a new one.
- Replace the toner cartridge with a new one.

| Step | Cause | Remedy |
|------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 1 | Dirt on drum unit electrode | Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53)) |
| 2 | Dirt on toner cartridge electrode | Clean the electrodes of the toner cartridge and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53)) |
| 3 | Dirt on belt unit electrode | Clean the electrodes of the belt unit and main body. (Refer to Fig. 2-7 (P2-52) and Fig. 2-9 (P2-53)) |
| 4 | Engine PCB failure | Replace the engine PCB ASSY. |
| 5 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 6 | Laser unit failure | Replace the laser unit. |
| 7 | Main PCB failure | Replace the main PCB ASSY. |

Hollow print



- Select "Improve Toner Fixing" in the printer driver, or select "Thicker Paper" in Paper Type.
- Check the printer's environment, conditions such as high humidity and low humidity may cause this situation to occur.
- Make a print on a different type of paper.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

| Step | Cause | Remedy |
|------|--------------------------------------------|----------------------------------------------------------------------|
| 1 | Dirt on the pinch roller of the paper tray | Refer to the figure below and clean the pinch roller. |
| 2 | Exposure drum dirty | Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning. |
| 3 | Fuser unit failure | Replace the fuser unit. |

Print crease



<User Check>

- Change the paper to thick paper.
- Check if paper is not damp.
- Switch the envelope levers.
- Make prints as lowering the envelope levers while the PR arm covers is drawn out. (Refer to the figure below.)

| Step | Cause | Remedy |
|------|---------------------------------------------|---------------------------------------------------------------------------|
| 1 | The pressure of the pressure roller is high | Change the position of the PR arm covers. (Refer to the figure below.) |
| 2 | Fuser unit failure | Replace the fuser unit. |

■ Spots at the rear edge of paper

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- Check the printer's environment. (If the printer is used in the high humidity environment, this symptom is likely to occur.)
- Make prints as lowering the envelope levers while the PR arm covers is drawn out. (Refer to the figure below.)

| Step | Cause | Remedy |
|------|---------------------------------------------|---------------------------------------------------------------------------|
| 1 | The pressure of the pressure roller is high | Change the position of the PR arm covers. (Refer to the figure below.) |
| 2 | Fuser unit failure | Replace the fuser unit. |



Fig. 2-15

3.6 Software Setting Problems

The end user can solve problems pertaining to software, for instance, print cannot be made from a computer although test print and printer setting print can be made from the printer, by following the User Check items. If the same problem occurs, follow each procedure in the order of the number described in the Step column in the tables below.

3.6.1 Cannot print data

<User Check>

- Check that the USB cable or LAN cable is not damaged.
- Check that the correct printer is selected if you have an interface switching device.
- Check the descriptions on the software setting in the user's guide.
- Restore the settings at factory shipment. (Refer to User's guide)
- Check the driver setting.

| Step | Cause | Remedy |
|------|------------------|----------------------------|
| 1 | Main PCB failure | Replace the main PCB ASSY. |

3.7 Network Problems

3.7.1 Cannot make a print through network connection (Error code ED, EE)

- Check the descriptions in the network user's guide.
- Restore the settings at factory shipment. (Refer to User's guide)

| Step | Cause | Remedy |
|------|---------------------------------------------------|------------------------------------------------------------------------|
| 1 | Harness connection failure of wireless LAN PCB | Check the harness connection of the wireless LAN PCB and reconnect it. |
| 2 | Wireless LAN PCB failure | Replace the wireless LAN PCB. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

3.8 Others Problems

3.8.1 The printer is not turned ON, or the LCD indication does not appear

| Step | Cause | Remedy |
|------|-------------------------------------------------|-------------------------------------------------|
| 1 | AC cord failure | Replace the AC cord. |
| 2 | Harness connection failure of panel PCB ASSY | Reconnect the panel PCB ASSY harness. |
| 3 | Harness connection failure of LCD | Reconnect the LCD harness. |
| 4 | LCD failure | Replace the LCD ASSY. |
| 5 | Inlet harness ASSY failure | Replace the inlet harness ASSY. |
| 6 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. |
| 7 | Panel PCB failure | Replace the panel PCB ASSY. |
| 8 | Engine PCB failure | Replace the engine PCB ASSY. |
| 9 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 10 | Main PCB failure | Replace the main PCB ASSY. |

3.8.2 The fan does not work (Error code 2B, EC)

| Step | Cause | Remedy |
|------|---------------------------------------------------|---------------------------------------------------------|
| 1 | Harness connection failure of the appropriate fan | Reconnect the harness of the appropriate fan correctly. |
| 2 | Failure of the appropriate fan | Replace the appropriate fan. |
| 3 | Engine PCB failure | Replace the engine PCB ASSY. |
| 4 | High-voltage power supply PCB failure | Replace the high-voltage power supply PCB ASSY. |
| 5 | Low-voltage power supply PCB failure | Replace the low-voltage power supply PCB ASSY. |
| 6 | Main PCB failure | Replace the main PCB ASSY. |

3.8.3 The USB direct interface does not work (Error code CA, etc)

<User Check>

- Check if the data is supported device.
- Replace the USB memory and check if the interface works.

| Step | Cause | Remedy |
|------|-------------------------------------------------------|-------------------------------------------------------------------------------|
| 1 | Harness connection failure of USB host relay PCB ASSY | Check the harness connection of the USB host relay PCB ASSY and reconnect it. |
| 2 | USB host relay PCB ASSY failure | Replace the USB host relay PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

3.8.4 The room temperature is high or low

- Adjust the room temperature to 10 °C to 30 °C.
- Check if the exhaust opening is blocked.

| Step | Cause | Remedy |
|------|--------------------------------------------------|-------------------------------------------------|
| 1 | Internal temperature thermistor failure | Replace the Internal temperature thermistor. |
| 2 | External temperature/ humidity sensor failure | Replace the high-voltage power supply PCB ASSY. |
| 3 | Main PCB failure | Replace the main PCB ASSY. |

CHAPTER 3 DISASSEMBLY AND ASSEMBLY

CHAPTER 3 DISASSEMBLY AND ASSEMBLY

This chapter describes procedures for disassembling and assembling the printer with relates notes. The provided disassembly order flow enables you to take in the quickest way to get an involved part at a glance.

At the start of disassembling, you can check the disassembly order flow which guides you through a shortcut to get to the part.

This chapter also covers screw tightening torques and lubrication points where the specified lubrication should be applied when the printer is assembled.

CONTENTS

| 1. SAFETY PRECAUTIONS | 3-1 |
|-------------------------------------------------------------------|------|
| 2. PACKING | 3-2 |
| 3. SCREW CATALOGUE | 3-3 |
| 4. SCREW TORQUE LIST | 3-4 |
| 5. LUBRICATION | 3-6 |
| 6. OVERVIEW OF GEARS | 3-8 |
| 7. HARNESS ROUTING | 3-10 |
| 8. DISASSEMBLY FLOW | 3-21 |
| 9. DISASSEMBLY PROCEDURE | 3-22 |
| 9.1 Paper Tray | |
| 9.2 Paper Stopper | |
| 9.3 Back Cover/Back Cover Stopper Arm L/R | 3-25 |
| 9.4 Fuser Cover | 3-28 |
| 9.5 Fuser Unit | 3-30 |
| 9.6 Side Cover L/Access Cover | |
| 9.7 Side Cover R ASSY | |
| 9.8 Duplex Feed ASSY | 3-38 |
| 9.9 MP Cover ASSY/MP Paper Guide ASSY | 3-39 |
| 9.10 MP Link L/R | 3-42 |
| 9.11 Front Cover Arm L/R | 3-43 |
| 9.12 Front Cover Release Button/Front Cover Release Button Spring | |
| 9.13 Top Cover ASSY | |
| 9.14 Wireless LAN PCB | |
| 9.15 | LCD ASSY | 3-53 |
|------|-----------------------------------------------------------|-------|
| 9.16 | Panel PCB ASSY | 3-55 |
| 9.17 | USB Host Relay PCB ASSY | 3-56 |
| 9.18 | Main PCB ASSY | 3-58 |
| 9.19 | Engine PCB ASSY | 3-60 |
| 9.20 | Laser Unit | 3-61 |
| 9.21 | Develop Release Motor | 3-64 |
| 9.22 | Pront Cover Sensor | 3-65 |
| 9.23 | Top Drive ASSY | 3-66 |
| 9.24 | Forced Develop Release Link | 3-71 |
| 9.25 | Drum Drive Motor | 3-72 |
| 9.26 | Drum Position Sensor PCB ASSY | 3-75 |
| 9.27 | Registration Solenoid ASSY | 3-76 |
| 9.28 | Develop Release Sensor PCB ASSY/Mono Solenoid ASSY | 3-77 |
| 9.29 | Fuser Develop Motor ASSY | 3-79 |
| 9.30 | PF Plate ASSY/T1 Solenoid ASSY | 3-80 |
| 9.31 | Toner/New Sensor PCB ASSY | 3-82 |
| 9.32 | Internal Temperature Thermistor | 3-83 |
| 9.33 | Fuser Fan | 3-84 |
| 9.34 | Paper Eject ASSY | 3-86 |
| 9.35 | Filter ASSY | 3-87 |
| 9.36 | Paper Eject Motor | 3-88 |
| 9.37 | Back Cover Sensor ASSY | 3-89 |
| 9.38 | Power Fan | 3-90 |
| 9.39 | Low-voltage Power Supply Unit | 3-92 |
| 9.40 | Paper Eject Sensor PCB ASSY | 3-95 |
| 9.41 | Low-voltage Power Supply PCB ASSY/Inlet Harness ASSY | 3-96 |
| 9.42 | Cleaner Pinch Roller Holder | 3-99 |
| 9.43 | Registration Mark Sensor Holder ASSY/Shutter Solenoid | 3-101 |
| 9.44 | MP Paper Empty/Registration Front Sensor PCB ASSY | 3-103 |
| 9.45 | PF ASSY | 3-111 |
| 9.46 | T1 Registration Front/Rear Sensor PCB ASSY | 3-114 |
| 9.47 | MP Sector Solenoid | 3-115 |
| 9.48 | T1 Paper Edge Sensor PCB ASSY/ T1 Paper Edge Actuator/ | 0.440 |
| 0.40 | 11 Paper Edge Actuator Spring | 3-116 |
| 9.49 | | 3-119 |
| 9.50 | | |
| 9.51 | vvaste ioner Sensor | 3-123 |

| 9.52 Air Duct Cover/Blower Fan | 3-125 |
|------------------------------------------------------------|-------|
| 10. DISASSEMBLY PROCEDURE (LT-300CL) | 3-127 |
| 10.1 T2 Paper Tray Unit | 3-127 |
| 10.2 T2 Separation Roller ASSY/T2 Paper Feed Roller ASSY 1 | |
| 10.3 T2 Cover Rear | 3-131 |
| 10.4 T2 Cover Left | |
| 10.5 T2 Cover Right | |
| 10.6 T2 Relay PCB ASSY | |
| 10.7 T2 Solenoid ASSY | 3-135 |
| 10.8 Collar 6 | |
| 10.9 T2 Paper Feed Frame Unit | 3-137 |

1. SAFETY PRECAUTIONS

To avoid creating secondary problems by mishandling, follow the warnings and precautions below during maintenance work.

Some parts inside the printer are extremely hot immediately after the printer is used. When opening the front cover or back cover to access any parts inside the printer, never touch the shaded parts shown in the following figures.



Caution:

- Be careful not to lose screws, washers, or other parts removed.
- Be sure to apply grease to the gears and applicable positions specified in this chapter.
- When using soldering irons or other heat-generating tools, take care not to accidentally damage parts such as wires, PCBs and covers.
- Static electricity charged in your body may damage electronic parts. When transporting PCBs, be sure to wrap them in conductive sheets.
- 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.
- After disconnecting flat cables, check that each cable is not damaged at its end or shortcircuited.
- When connecting flat cables, do not insert them at an angle. After insertion, check that the cables are not at an angle.
- When connecting or disconnecting cable connectors, hold the connector body, not the cables. If the connector has a lock, release the connector lock first to release it.
- After a repair, check not only the repaired portion but also all connectors. Also check that other related portions are functioning properly before operational checks.
- Violently closing the top cover without mounting the toner cartridge and the drum unit can damage this main body.

2. PACKING



3. SCREW CATALOGUE

Taptite bind B



Taptite bind S Taptite bind S M3x5 Taptite bind S M3x6

Taptite cup B



Taptite cup S



Taptite flat B



Screw bind



Shoulder screw



Taptite pan



Screw pan (S/P washer)



Taptite pan (S/P W)



Taptite pan (washer)



Note:

For verifying the shape of each screw, refer to "3. SCREW CATALOGUE" in this chapter.

| Location of screw | Screw type | Q' ty | Tightening torque N·m (kgf·cm) |
|------------------------------|-----------------------------------|-------|-----------------------------------|
| Duplex feed ASSY | Taptite cup B M3x12 | 2 | 0.40±0.05 (4±0.5) |
| Fuser cover L | Taptite bind S M3x8 | 1 | 0.70±0.10 (7±1) |
| Fuser cover R | Taptite bind S M3x8 | 1 | 0.70±0.10 (7±1) |
| Fuser unit | Taptite pan B M4x14 | 2 | 0.80±0.10 (8±1) |
| Side cover L | Taptite bind S M3x8 | 3 | 0.70±0.10 (7±1) |
| | Taptite bind B M4x12 | 1 | 0.90±0.10 (9±1) |
| Side cover R ASSY | Taptite bind S M3x8 | 3 | 0.70±0.10 (7±1) |
| | Taptite bind B M4x12 | | 0.90±0.10 (9±1) |
| Front cover arm L | Taptite bind B M4x12 | 1 | 0.70±0.10 (7±1) |
| Front cover arm R | Taptite bind B M4x12 | 1 | 0.70±0.10 (7±1) |
| Main shield cover plate ASSY | Taptite cup S M3x6 SR | 6 | 0.70±0.10 (7±1) |
| Top cover ASSY | Taptite cup S M3x6 SR | 1 | 0.70±0.10 (7±1) |
| | Taptite bind B M4x12 | 5 | 0.90±0.10 (9±1) |
| Panel cover ASSY | Taptite bind B M4x12 | 2 | 0.90±0.10 (9±1) |
| Main PCB ASSY | Taptite cup S M3x6 SR | 3 | 0.70±0.10 (7±1) |
| Engine PCB ASSY | Taptite cup S M3x6 SR 4 | | 0.70±0.10 (7±1) |
| Top beam | Taptite cup S M3x6 SR 2 | | 0.70±0.10 (7±1) |
| Scanner holder | Taptite cup S M3x6 SR | 5 | 0.70±0.10 (7±1) |
| Develop release motor | Taptite bind S M3x6 SR | | 0.70±0.10 (7±1) |
| Panel cable rack | Taptite cup S M3x6 SR | | 0.70±0.10 (7±1) |
| Grand plate | Taptite cup S M3x6 SR | 1 | 0.70±0.10 (7±1) |
| | Taptite pan (washer) B M4x12DA | 1 | 0.50±0.05 (5±0.5) |
| Top drive ASSY | Taptite cup S M3x6 SR | 9 | 0.70±0.10 (7±1) |
| | Taptite bind B M4x12 | 1 | 0.80±0.10 (8±1) |
| Drum drive motor | Screw bind M3x4 | 3 | 0.50±0.05 (5±0.5) |
| Registration solenoid ASSY | Taptite cup S M3x6 SR | 1 | 0.70±0.10 (7±1) |
| Top drive cover | Taptite cup S M3x6 SR | 3 | 0.70±0.10 (7±1) |
| Mono solenoid ASSY | Taptite cup S M3x6 SR | 1 | 0.70±0.10 (7±1) |
| Fuser develop motor ASSY | Taptite cup S M3x6 SR | 4 | 0.70±0.10 (7±1) |
| PF plate ASSY | Taptite bind B M4x12 | 3 | 0.60±0.10 (6±1) |
| | Taptite cup S M3x6 SR | | 0.80±0.10 (8±1) |
| PF cleaner drive ASSY | Taptite bind B M4x12 | 2 | 0.60±0.10 (6±1) |
| T1 solenoid ASSY | Taptite bind B M3x8 | | 0.35±0.05 (3.5±0.5) |
| Paper eject ASSY | Taptite cup S M3x6 SR | 5 | 0.70±0.10 (7±1) |
| Paper eject motor | Taptite bind S M3x6 | 2 | 0.70±0.10 (7±1) |

| Location of screw | cation of screw Screw type | | Tightening torque N·m (kgf·cm) |
|------------------------------------------------------|-----------------------------------|---|-----------------------------------|
| C inlet Taptite flat B M3x10 | | 1 | 0.50±0.10 (5±1) |
| Low-voltage power supply unit | Screw pan (S/P washer) M4x8 | 2 | 0.90±0.10 (9±1) |
| | Taptite cup S M3x8 | 2 | 0.50±0.10 (5±1) |
| | Taptite cup B M3x12 | 2 | 0.40±0.05 (4±0.5) |
| | Taptite pan (washer) B M4x12DA | 4 | 0.90±0.10 (9±1) |
| | Screw pan (S/P washer) M4x8 | 1 | 0.90±0.10 (9±1) |
| Low-voltage power supply PCB ASSY | Screw cup B M3x6 | 4 | 0.35±0.05 (3.5±0.5) |
| Registration mark sensor holder ASSY | Taptite bind B M3x10 | 2 | 0.40±0.05 (4±0.5) |
| Shutter solenoid | Taptite bind B M3x10 | 1 | 0.55±0.05 (5.5±0.5) |
| MP upper cover ASSY | Taptite bind B M3x8 | 2 | 0.40±0.10 (4±1) |
| MP paper empty/registration front sensor PCB ASSY | Taptite bind B M3x8 | 1 | 0.40±0.10 (4±1) |
| PF ASSY | Taptite bind B M4x12 | 2 | 0.80±0.10 (8±1) |
| | Shoulder screw | 1 | 0.70±0.10 (7±1) |
| T1 registration front/rear sensor PCB holder | Taptite bind B M3x10 | 1 | 0.50±0.10 (5±1) |
| MP sector solenoid | Taptite bind B M3x8 | 1 | 0.40±0.10 (4±1) |
| MP drive frame | Taptite bind B M3x10 | 3 | 0.50±0.10 (5±1) |
| High-voltage power supply shield ASSY | Taptite cup S M3x6 SR | 2 | 0.50±0.10 (5±1) |
| T2 cover rear | Taptite cup S M3x10 SR | 2 | 0.80±0.10 (8±1) |
| T2 cover left | Taptite cup S M3x6 SR | 2 | 0.80±0.10 (8±1) |
| T2 cover right | Taptite cup S M3x6 SR | 2 | 0.80±0.10 (8±1) |
| T2 relay PCB ASSY | Taptite cup S M3x6 SR | 1 | 0.80±0.10 (8±1) |
| T2 solenoid holder ASSY Taptite cup S M3x6 SR | | 1 | 0.80±0.10 (8±1) |
| T2 solenoid holder Screw flanged M3x3.5 | | 1 | 0.50±0.10 (5±1) |
| T2 beam F ASSY | Taptite cup S M3x6 SR | 5 | 0.80±0.10 (8±1) |
| T2 frame L unit | Taptite cup S M3x6 SR | 1 | 0.80±0.10 (8±1) |
| | Taptite bind B M4x10 | 1 | 0.80±0.10 (8±1) |
| T2 beam front | Taptite cup S M3x6 SR | 2 | 0.80±0.10 (8±1) |
| T2 beam rear | Taptite cup S M3x6 SR | 4 | 0.80±0.10 (8±1) |

5. LUBRICATION

| The kind of the lubricating oil (Maker name) | Lubrication point | Quantity of lubrication |
|-------------------------------------------------|---------------------|--------------------------|
| MOLYKOTE PG-661 (W) | PF motor plate ASSY | 1.5 mm dia. ball (PG1.5) |
| (Dow Corning) | Front cover arm L | 1.5 mm dia. ball (PG1.5) |
| | Front cover arm R | 1.5 mm dia. ball (PG1.5) |



PG1.5: MOLYKOTE PG-661 (W) (1.5 mm dia. ball)



PG1.5: MOLYKOTE PG-661 (W) (1.5 mm dia. ball)

6. OVERVIEW OF GEARS

When ordering spare parts, please refer to Parts reference list.

■ Top drive ASSY

<Development view>



<Layout view>



<Name of gears>

| 1 | LY0192 | Develop joint gear Z48 | 15 | LY0213 | Gear Z60 |
|----|--------|------------------------------|----|--------|------------------------------|
| 2 | LY0196 | Drum coupling gear Z52 | 16 | LY0217 | Gear Z50 |
| 3 | LY0197 | Drum double idle gear Z64-26 | 17 | LY0214 | Gear Z63-30 |
| 4 | LY0192 | Develop joint gear Z48 | 18 | LY0231 | Gear Z100-47 |
| 5 | LY0194 | Develop idle gear Z66 | 19 | LY0212 | Gear Z37 |
| 6 | LY0196 | Drum coupling gear Z52 | 20 | LY0211 | Gear Z45 |
| 7 | LY0198 | Drum idle gear Z64 | 21 | LY0233 | Fuser drive gear Z25 |
| 8 | LY0192 | Develop joint gear Z48 | 22 | LY0216 | Gear Z55 |
| 9 | LY0199 | Drum idle gear Z64 first | 23 | LY0192 | Develop joint gear Z48 |
| 10 | LY0196 | Drum coupling gear Z52 | 24 | LY0197 | Drum double idle gear Z64-26 |
| 11 | LY0198 | Drum idle gear Z64 | 25 | LY0196 | Drum coupling gear Z52 |
| 12 | LY0194 | Develop joint gear Z48 | 26 | LY0203 | Belt idle gear Z64-75 |
| 13 | LY0220 | Gear Z54-18 | 27 | LY0202 | Belt idle gear Z52-40 |
| 14 | LY0219 | Gear Z90-18 | 28 | LY0201 | Belt drive gear 25-80 |

* These parts are subject to change without notice.

■ PF ASSY

<Development view>



<Layout view>



<Name of gears>

| 29 | LU5132 | Registration gear | 31 | LY0298 | Registration/Pinch roller gear bush |
|----|--------|-------------------------|----|--------|-------------------------------------|
| 30 | LY0299 | Pinch roller drive gear | | | |

* These parts are subject to change without notice.

7. HARNESS ROUTING

























8. DISASSEMBLY FLOW



Disassembly/Re-Assembly (second)

9. DISASSEMBLY PROCEDURE

Preparation

Prior to proceeding with the disassembly procedure,

- (1) Unplug
 - the AC cord,
 - the USB cable, if connected,
 - the LAN cable, if connected, and
 - USB flash memory drive, if connected.
 - LAN port cap
- (2) Remove
 - the Paper tray,
 - the Toner cartridge,
 - the Drum unit,
 - the Belt unit, and
 - the Waste toner box.



9.1 Paper Tray

(1) Release the Hook to remove the T1 separation pad holder ASSY from the Paper tray.



Fig. 3-1

Assembling Note:

Mount the T1 separation pad holder ASSY in a way that "A" of the T1 separation pad holder ASSY is inserted into "B" of the T1 separation pad spring.

(2) Remove the T1 separation pad spring from the Paper tray.

Note:

Be careful not to lose the T1 separation pad spring.



Fig. 3-2

9.2 Paper Stopper

(1) Remove the two Pins to remove the Paper stopper from the Main body.



Fig. 3-3

9.3 Back Cover/Back Cover Stopper Arm L/R

(1) Open the Back cover.





(2) Remove the Back cover stopper arm L and R from the Main body.



Fig. 3-5

(3) Remove the Shaft of the Back cover from the Bush on the right side of the Main body.



Fig. 3-6

(4) Remove the Back cover.



Fig. 3-7

(5) Remove the Back cover stopper arm L and R from the Back cover.



Fig. 3-8

9.4 Fuser Cover

(1) Open the Back flapper ASSY.





(2) Release of the Fuser cover lock lever L and R and open the Fuser cover.



Fig. 3-10

- (3) Remove the Taptite bind S M3x8 screw from the Fuser cover L.
- (4) Release the Hook to remove the Fuser cover L from the Main body.





(5) Slide the Fuser cover in the direction of the arrow 5a to remove it to the front.



Fig. 3-12

9.5 Fuser Unit

- (1) Remove the Taptite bind S M3x8 screw from the Fuser cover R.
- (2) Release the Hook to remove the Fuser cover R from the Main body.



Fig. 3-13

(3) Disconnect the two Connectors (CN1, CN2) from the Paper eject sensor PCB ASSY.



Fig. 3-14

(4) Disconnect the Electrode terminal from the Fuser unit.



Fig. 3-15

(5) Remove the two Taptite pan B M4x14 screws to remove the Fuser unit from the Main body.



Fig. 3-16

Note:

- Do not apply a physical impact or vibration to the Fuser unit.
- Do not touch the roller as shown in the figure below to prevent breakage of the Fuser unit.



Fig. 3-17

9.6 Side Cover L/Access Cover

(1) Open the Front cover.





- (2) Remove the Taptite bind S M3x8 screw from the front of the Side cover L.
- (3) Remove the Taptite bind B M4x12 screw from the side of the Side cover L.



Fig. 3-19

(4) Remove the two Taptite bind S M3x8 screws from the back of the Side cover L.





(5) Release the Hooks 1 and 2 at the same time, and then release the Hooks 3 to 6 in numerical order. Hold the "A" section and lift the cover to release the Hook 7. Lower the cover, and then lift it again and release the Hooks 8 and 9 to remove the Side cover L from the Main body.



Assembling Note:

When assembling the Side Cover L, make sure to push "A" to the rear side of the main body first, and then tighten the screws.
* Inside of Side cover L





(6) Remove the Access cover from the Side cover L.



Fig. 3-23

9.7 Side Cover R ASSY

- (1) Remove the Taptite bind S M3x8 screw from the front of the Side cover R ASSY.
- (2) Remove the Taptite bind B M4x12 screw from the side of the Side cover R ASSY.



Fig. 3-24

(3) Remove the two Taptite bind S M3x8 screws from the back of the Side cover R ASSY .



Fig. 3-25

(4) Release the Hooks 1 and 2 at the same time, and then release the Hooks 3 to 6 in numerical order. Hold the "A" section and lift the cover to release the Hook 7. Lower the cover, and then lift it again and release the Hooks 8 and 9 to remove the Side cover R ASSY from the Main body.



Fig. 3-26

* Inside of Side cover R ASSY



Fig. 3-27

9.8 Duplex Feed ASSY

(1) Remove the two Taptite cup B M3x12 screws to remove the Duplex feed ASSY from the Main body.



Fig. 3-28

9.9 MP Cover ASSY/MP Paper Guide ASSY

- (1) Close the Front cover.
- (2) Open the MP cover ASSY.





(3) Remove the Pin of the MP link L and R from the MP cover ASSY.



Fig. 3-30

(4) Remove the Pin of the MP link L and R from the MP paper guide ASSY.



Fig. 3-31

(5) Remove the MP paper guide ASSY from the MP cover ASSY.





(6) Remove the two Pins to remove the MP cover ASSY from the Front cover.



Fig. 3-33

9.10 MP Link L/R

(1) Remove the MP link L and R from the Front cover.



Fig. 3-34

9.11 Front Cover Arm L/R

- (1) Open the Front cover.
- (2) Release the Hook to remove the Forced develop release link from the Front cover.



Fig. 3-35

(3) Release the Hook to remove the Joint release link from the Front cover.



Fig. 3-36

(4) Remove the Front cover from the Main body.



Fig. 3-37

(5) Remove the Taptite bind B M4x12 screw from the Front cover arm L.



Fig. 3-38

(6) Release the Hook to remove the Front cover arm L from the Front cover.





(7) Remove the Taptite bind B M4x12 screw from the Front cover arm R.



Fig. 3-40

(8) Release the Hook to remove the Front cover arm R from the Front cover.



Fig. 3-41

9.12 Front Cover Release Button/Front Cover Release Button Spring

(1) Fasten the Hook of the Front cover release button to the Rib of the Front cover.





- (2) Tilt the Front cover release button in the direction of the arrow 2.
- (3) Slide it in the direction of the arrow 3 to remove the shaft, and then remove the Front cover release button from the Front cover.



Fig. 3-43

(4) Remove the Front cover release button spring from the Front cover release button.



Fig. 3-44

Assembling Note:

When assembling the Front cover release button spring, assemble "A" and "B" as shown in the figure.



Fig. 3-45

9.13 Top Cover ASSY

(1) Remove the six Taptite cup S M3x6 SR screws to remove the Main shield cover plate ASSY from the Main body.



Fig. 3-46

(2) Disconnect the three Connectors (CN6, CN10, CN11) and cables from the Main PCB ASSY.



Fig. 3-47

(3) Remove the Taptite cup S M3X6 SR screw from the front of the Top cover ASSY.



Fig. 3-48

(4) Remove the two Taptite bind B M4x12 screws from the back of the Top cover ASSY.





(5) Release the three Hooks 1, and then release the Hooks 2 to 7. Insert a screwdriver into the hole to release the Hook and press the Hook 8 with the screwdriver to release it. Release the Hook 9 by pressing it with a screwdriver to remove the Top cover ASSY from the Main body.



Fig. 3-50

Harness routing: Refer to " 1 Top Cover ASSY"

9.14 Wireless LAN PCB

(1) Remove the Pin to remove the Wireless LAN PCB from the Top cover ASSY.





(2) Remove the Wireless LAN harness ASSY from the Wireless LAN PCB.



Harness routing: Refer to " 1 Top Cover ASSY"

9.15 LCD ASSY

- (1) Turn the Top cover ASSY upside down.
- (2) Remove the three Taptite bind B M4x12 screws from the Top cover ASSY.





(3) Release the two Hooks to remove the Panel cover ASSY from the Top cover ASSY.



Fig. 3-54

(4) Disconnect the Flat cable (CN1) from the Panel PCB ASSY.





(5) Remove the two Pins to remove the LCD ASSY from the Panel cover ASSY.





9.16 Panel PCB ASSY

(1) Release the two Hooks to remove the Panel PCB ASSY from the Panel cover ASSY.



Fig. 3-57

(2) Remove the Panel PCB harness ASSY from the CN2 of the Panel PCB ASSY.



Fig. 3-58

Harness routing: Refer to " 1 Top Cover ASSY"

9.17 USB Host Relay PCB ASSY

(1) Remove the two Taptite bind B M4x12 screws from the Panel cover ASSY.





(2) Lift "A" of the Panel ground plate to remove the USB host relay PCB ASSY from the Panel cover ASSY.



Fig. 3-60

(3) Remove the Main USB host harness ASSY from the USB host relay PCB ASSY.



Fig. 3-61

Harness routing: Refer to " 1 Top Cover ASSY"

9.18 Main PCB ASSY

(1) Disconnect the eight Connectors (CN1, CN2, CN16, CN17, CN18, CN19, CN20, and CN21) and two Flat cables (CN5 and CN14).

Note:

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



Fig. 3-62



(2) Remove the three Taptite cup S M3x6 SR screws to remove the Main PCB ASSY from the Top drive ASSY.

Fig. 3-63

9.19 Engine PCB ASSY

 Disconnect the 17 Connectors (CN3, CN5, CN8, CN9, CN10, CN11, CN12, CN13, CN14, CN16, CN17, CN18, CN19, CN20, CN21, CN22, and CN23) and four Flat cables (CN1, CN2, CN15 and CN25).

Note:

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

Engine PCB ASSY





(2) Remove the three Taptite cup S M3x6 SR screws to remove the Engine PCB ASSY from the Top drive ASSY.



Fig. 3-65

9.20 Laser Unit

- (1) Disconnect the Flat cable from the Develop FFC holder.
- (2) Release the two Hooks to remove the Develop FFC holder from the Upper cable rack.





- (3) Disconnect cables from the Upper cable rack.
- (4) Release the four Hooks to remove the Upper cable rack from the Base frame unit.



Fig. 3-67

(5) Remove the two Taptite cup S M3x6 SR screws to remove the Top beam from the Base frame unit.



Fig. 3-68

(6) Remove the five Taptite cup S M3x6 SR screws to remove the four Scanner holders.



Fig. 3-69

(7) Disconnect the Connector (CN8) and two Flat cables from the Laser unit to remove the Laser unit from the Base frame unit.

Note:

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





Harness routing: Refer to " 2 Laser Unit"

9.21 Develop Release Motor

(1) Remove the two Taptite bind S M3x6 screws.



Fig. 3-71

(2) Rotate the Develop release motor counterclockwise to release the Hook to remove the Develop release motor from the Top drive ASSY.



Fig. 3-72

Harness routing: Refer to " 3 Develop Release Motor"

9.22 Front Cover Sensor

- (1) Disconnect the wiring of the Front cover sensor from the Panel cable rack.
- (2) Release the two Hooks to remove the Front cover sensor.



Fig. 3-73

Harness routing: Refer to " 4 Front Cover Sensor"

9.23 Top Drive ASSY

(1) Remove the Main insulation sheet from the Top drive ASSY.



Fig. 3-74

Assembling Note:

When assembling the Main insulation sheet, be careful to insert the circled area into the rear side of the Top drive ASSY.



Fig. 3-75

- (2) Disconnect cables from the Lower cable rack.
- (3) Release the four Hooks to remove the Lower cable rack from the Top drive ASSY.



Fig. 3-76

- (4) Disconnect cables from the PF line holder.
- (5) Release the three Hooks to remove the PF line holder from the Top drive ASSY.



Fig. 3-77

- (6) Disconnect cables from the Panel cable rack to remove the Taptite cup S M3x6 SR screw.
- (7) Release the four Hooks to remove the Panel cable rack from the Top drive ASSY.



Fig. 3-78

(8) Remove the Taptite cup S M3x6 SR screw and the Taptite pan (washer) B M4x12DA screw, and then remove the Grand plate from the Top drive ASSY and PF cleaner drive ASSY.



Fig. 3-79

(9) Remove the nine Taptite cup S M3x6 SR screws and Taptite bind B M4x12 screw from the Top drive ASSY.



Note:

- When removing and installing the Top drive ASSY, be sure to hang the FG wire under bar rear on the Hook of the Base frame unit as shown in the figure before removing and installing the Top drive ASSY.
- Be sure to install the FG wire under bar rear in the Top drive ASSY when installing the Top drive ASSY.

(10) Remove the Develop forced release part from the Forced develop release cam.

(11) Release the two Hooks to remove the Top drive ASSY from the Base frame unit.



Harness routing: Refer to " 5 Top Drive ASSY"
9.24 Forced Develop Release Link

(1) Remove the Forced develop release link from the Forced develop release cam.



Fig. 3-82

9.25 Drum Drive Motor

(1) Remove the two Drum coupling gear Z52 from the Top drive ASSY.



Fig. 3-83 Gear position: Refer to "Top drive ASSY."

(2) Remove the two Drum idle gear Z64 from the Top drive ASSY.



Gear position: Refer to "Top drive ASSY."

(3) Remove the Collar 6 from the Drum idle gear Z64 first.





(4) Remove the Drum idle gear Z64 first from the Top drive ASSY.





(5) Remove the three Screw bind M3x4 screws to remove the Drum drive motor from the Top drive ASSY.



Fig. 3-87

Assembling Note:

Align the phase of the Drum idle gear Z64, Drum idle gear Z64 first, and Drum coupling gear Z52. (Refer to "6. IF YOU REPLACE THE DRUM DRIVE MOTOR" in Chapter 4.)

9.26 Drum Position Sensor PCB ASSY

(1) Remove the Drum coupling gear Z52 from the Top drive ASSY.



Gear position: Refer to "Top drive ASSY."

Note:

Be sure to align the phase before removing the gear.

- (2) Disconnect the wiring of the Drum position sensor PCB ASSY.
- (3) Release the two Hooks to remove the Drum position sensor PCB ASSY from the Top drive ASSY.





9.27 Registration Solenoid ASSY

- (1) Disconnect the wiring of the Registration solenoid ASSY.
- (2) Remove the Taptite cup S M3x6 SR screw to remove the Registration solenoid ASSY and Registration solenoid spring from the Top drive ASSY.





9.28 Develop Release Sensor PCB ASSY/Mono Solenoid ASSY

(1) Remove the three Taptite cup S M3x6 SR screws to remove the Top drive cover from the Top drive ASSY.



Fig. 3-91

- (2) Turn the Top drive cover upside down and disconnect the wiring of the Develop release sensor PCB ASSY.
- (3) Release the Hook to remove the Develop release sensor PCB ASSY from the Top drive cover.



Fig. 3-92

(4) Remove the Gear Z63-30 from the Top drive ASSY.



Fig. 3-93

Gear position: Refer to "Top drive ASSY."

(5) Remove the Taptite cup S M3x6 SR screw to remove the Mono solenoid ASSY and Mono solenoid spring from the Top drive ASSY.



Fig. 3-94

9.29 Fuser Develop Motor ASSY

(1) Remove the four Taptite cup S M3x6 SR screws to remove the Fuser Develop Motor ASSY from the Top drive ASSY.



Fig. 3-95

9.30 PF Plate ASSY/T1 Solenoid ASSY

 Remove the three Taptite bind B M4x12 screws and Taptite cup S M3x6 SR screw. Release the FG wire under bar to remove the PF plate ASSY from the PF cleaner drive ASSY.



Fig. 3-96

Note:

- When removing and installing the PF plate ASSY, be sure to hang the FG wire under bar on the Hook of the Base frame unit as shown in the figure before removing and installing the Top drive ASSY.
- Be sure to install the FG wire under bar in the PF plate ASSY when installing the PF plate ASSY.



(2) Remove the two Taptite bind B M4x12 screws to remove the PF cleaner drive ASSY from the Base frame unit.

Note:

Some of the gears on the PF cleaner drive ASSY easily come off, and thus be careful not to lose them.

(3) Remove the Taptite bind B M3x8 screw to remove the T1 solenoid ASSY and T1 registration solenoid spring from the PF cleaner drive ASSY.



Fig. 3-98

Harness routing: Refer to " 6 PF Plate ASSY"

9.31 Toner/New Sensor PCB ASSY

(1) Release the two Hooks to remove the TE sensor protect film from the Toner reset holder.



Fig. 3-99

(2) Release the six Hooks to remove the Toner/New sensor PCB ASSY from the Toner reset holder.



Fig. 3-100

Harness routing: Refer to " 7 Toner/New Sensor PCB ASSY"

9.32 Internal Temperature Thermistor

(1) Remove the Internal temperature thermistor from the Main body.



Fig. 3-101

Assembling Note:

- Insert the tip of the Internal temperature thermistor firmly into the Insertion hole until it reaches the end of the Hole.
- After inserting the Internal temperature thermistor, hang the Harness on the Hook.



Fig. 3-102

Harness routing: Refer to " 13 Internal Temperature Thermistor"

9.33 Fuser Fan

(1) Disconnect the Connector (CN4) from the High-voltage power supply PCB ASSY.



High-voltage power supply PCB ASSY



(2) Pull out the Fuser fan from the Paper eject ASSY by slightly rotating it in the arrow direction in the figure below.



Fig. 3-104

Assembling Note:

When assembling the Fuser fan, be sure to assemble it in a way that the label side faces out.



Fig. 3-105

9.34 Paper Eject ASSY

- (1) Disconnect the wiring of the harness from the High-voltage power supply PCB ASSY.
- (2) Remove the five Taptite cup S M3x6 SR screws to remove the Paper eject ASSY from the Base frame unit.





Harness routing: Refer to " Paper Eject ASSY"

9.35 Filter ASSY

(1) Remove the Filter ASSY from the Paper eject ASSY.



Fig. 3-107

9.36 Paper Eject Motor

(1) Remove the two Taptite bind S M3x6 screws to remove the Paper eject motor from the Paper eject ASSY.



Fig. 3-108

Harness routing: Refer to " 9 Paper Eject ASSY"

9.37 Back Cover Sensor ASSY

(1) Release the two Hooks to remove the Back cover sensor ASSY from the Paper eject ASSY.



Fig. 3-109

Harness routing: Refer to " 9 Paper Eject ASSY"

9.38 Power Fan

(1) Disconnect the Connector (CN5) from the High-voltage power supply PCB ASSY.



Fig. 3-110

(2) Remove the Power fan from the Base frame unit.



Fig. 3-111

Assembling Note:

When assembling the Power fan, be sure to assemble it in a way that the label side faces out.



Fig. 3-112

9.39 Low-voltage Power Supply Unit

(1) Remove the two Pins to remove the Back flapper ASSY from the Low-voltage power supply cover.



Fig. 3-113

(2) Release the two Hooks to remove the Switch holder from the Base frame unit.



Fig. 3-114

(3) Remove the Taptite flat B M3x10 screw to remove the AC inlet from the Low-voltage power supply unit.





(4) Remove the screw "a" of the Screw pan (S/P washer) M4x8 from the Low-voltage power supply unit to remove the ground terminal.

Note:

When removing the screws of the Screw pan (S/P washer) M4x8, be sure to remove the screw "a" first and then screw "b".



Fig. 3-116

Assembling Note:

When assembling the screws of the Screw pan (S/P washer) M4x8, be sure to assemble the screw "b" first and then screw "a".

(5) Remove the two Taptite cup S M3x8 screws and two Taptite cup B M3x12 screws to remove the Low-voltage power supply unit from the Base frame unit.



Fig. 3-117

Harness routing: Refer to " 8 Low-voltage Power Supply PCB ASSY"

9.40 Paper Eject Sensor PCB ASSY

(1) Release the Hook to remove the Paper eject sensor PCB ASSY from the Low-voltage power supply cover.



Fig. 3-118

Harness routing: Refer to " 8 Low-voltage Power Supply PCB ASSY"

9.41 Low-voltage Power Supply PCB ASSY/Inlet Harness ASSY

- (1) Disconnect the Harness from Hooks.
- (2) Remove the four Taptite pan (washer) B M4x12DA screws, one Screw pan (S/P washer) M4x8 screw, and the Low-voltage power supply ground plate, and then remove the Low-voltage power supply plate from the Low-voltage power supply cover.



Fig. 3-119

(3) Disconnect the Connector (CN1) to remove the Inlet harness ASSY from the Low-voltage power supply PCB ASSY.



Fig. 3-120

(4) Disconnect the Connector (CN2) from the Low-voltage power supply PCB ASSY.



Fig. 3-121

(5) Release the two Hooks to remove the Switch holder from the Inlet harness ASSY.



Fig. 3-122

(6) Remove the four Screw cup M3x6 screws to remove the Low-voltage power supply PCB ASSY from the Low-voltage power supply plate.



Fig. 3-123

9.42 Cleaner Pinch Roller Holder

(1) Remove the two Pins and release the one Hook to remove the Front chute flapper and two Flapper springs from the Low-voltage power supply unit.



Fig. 3-124

(2) Press the stopper, and then slide the Cleaner pinch roller to remove it from the Low-voltage power supply unit.



Fig. 3-125

- (3) Hold down the Cleaner spring of the Cleaner pinch roller holder to remove the Cleaner pinch roller ASSY.
- (4) Remove the other three Cleaner pinch roller ASSY in the same way.



Fig. 3-126

9.43 Registration Mark Sensor Holder ASSY/ Shutter Solenoid

(1) Disconnect the Connector (CN8) from the High-voltage power supply PCB ASSY.



Fig. 3-127

(2) Remove the two Taptite bind B M3x10 screws to remove the Registration mark sensor holder ASSY from the Base frame unit.



Fig. 3-128

(3) Remove the Taptite bind B M3x10 screw to remove the Shutter solenoid from the Registration mark sensor holder ASSY.



Fig. 3-129

Assembling Note:

Be sure to firmly insert the tip of the Pin of the Shutter solenoid into "A" of the Registration sensor shutter.



Fig. 3-130

Harness routing: Refer to " 10 Registration Mark Sensor Holder ASSY"

9.44 MP Paper Empty/Registration Front Sensor PCB ASSY

(1) Press "A" to release the Hook and then remove the MP upper frame cover from the MP upper cover ASSY.



Fig. 3-131

(2) Remove the MP lift arm B from the MP upper cover ASSY.



Fig. 3-132

(3) Release the Hook to remove the MP holder bush from the MP upper cover.





(4) Remove the MP roller holder ASSY from the MP upper cover ASSY.



Fig. 3-134

(5) Remove the Registration gear from the Base frame unit.





Gear position: Refer to " PF ASSY."

(6) Remove the Pinch roller drive gear from the Base frame unit.



Fig. 3-136 Gear position: Refer to " PF ASSY."

(7) Release the Hook to remove the Registration/Pinch roller gear bush from the Base frame unit.



Fig. 3-137

Gear position: Refer to " PF ASSY."

(8) Remove the two Taptite bind B M3x8 screws. Slide the MP drive shaft as shown in the figure. Remove the MP upper cover ASSY from the PF ASSY.



Fig. 3-138
(9) Release the five Hooks to remove the Sensor cover MP from the MP upper cover ASSY.



Fig. 3-139

(10) Release the two Hooks to remove the MP paper empty actuator A ASSY from the MP upper cover ASSY.



Fig. 3-140

(11) Release the Hook to remove the MP paper empty actuator B from the MP upper cover.





(12) Release the Hook to remove the Separation R shaft bush from the MP drive shaft.



Fig. 3-142

(13) Remove the MP registration front actuator spring from the MP registration front actuator.





(14) Take out the MP drive shaft, and then remove the MP registration front actuator from the MP upper cover ASSY.



Fig. 3-144

- (15) Disconnect the wiring of the MP paper empty/registration front sensor PCB ASSY.
- (16) Remove the Taptite bind B M3x8 screw, and then remove the MP paper empty/ registration front sensor PCB ASSY from the MP upper cover ASSY.



Fig. 3-145

Harness routing: Refer to " 11 MP Paper Empty/Registration Front Sensor PCB ASSY"

9.45 PF ASSY

(1) Push the T1 lift arm to the back to remove "B" of the Roller holder ASSY from "A" of the T1 lift arm.



Fig. 3-146

- (2) Slide the Roller holder ASSY in the direction of the arrow 2a to remove it from the "C" of the Paper feed unit.
- (3) Slide the Roller holder ASSY in the direction of the arrow 3a and 3b in this order to remove it.



Fig. 3-147

Assembling Note:

Align the Shaft of the roller holder ASSY to the hole of the Paper feed unit and insert it into the hole.



Fig. 3-148

(4) Move the T1 lift arm in the direction of the arrow 4b as bending it in the direction of the arrow 4a to remove it from the Boss of the PF ASSY.



Fig. 3-149

- (5) Remove the Shoulder screw from the PF ASSY.
- (6) Remove the two Taptite bind B M4x12 screws, then shift the PF ASSY to the right, and remove it from the Base frame unit.



Fig. 3-150

9.46 T1 Registration Front/Rear Sensor PCB ASSY

- (1) Disconnect the wiring of the T1 registration front/rear sensor PCB ASSY.
- (2) Remove the Taptite bind B M3x10 screw to remove the T1 registration front/rear sensor PCB holder from the PF ASSY.





(3) Release the three Hooks to remove the T1 registration front/rear sensor PCB ASSY from the T1 registration front/rear sensor PCB holder.



Fig. 3-152

9.47 MP Sector Solenoid

- (1) Disconnect the wiring of the MP sector solenoid.
- (2) Remove the Taptite bind B M3x8 screw. Remove the MP sector solenoid and Solenoid spring MP from the PF ASSY.



Fig. 3-153

Assembling Note:

When assembling the MP sector solenoid, be sure to assemble it as shown in the figure below.



Fig. 3-154

9.48 T1 Paper Edge Sensor PCB ASSY/ T1 Paper Edge Actuator/ T1 Paper Edge Actuator Spring

- (1) Remove the three Taptite bind B M3x10 screws of the Pinch roller shaft sub ASSY from the MP drive frame.
- (2) Remove "A" of the Registration roller ground wire.
- (3) Remove the MP drive frame from the PF ASSY.



Fig. 3-155

(4) Release the Hook to remove the Separation R shaft bush from the T1 drive shaft gear Z17M07.



Fig. 3-156

(5) Remove the T1 paper edge actuator spring from the Hook of the PF ASSY and the Hook of the T1 paper edge actuator.





(6) Take out the T1 drive shaft gear Z17M07 from the PF ASSY, and then remove the T1 paper edge actuator.



Fig. 3-158

- (7) Disconnect the wiring of the T1 paper edge sensor PCB ASSY.
- (8) Release the three Hooks to remove the T1 paper edge sensor PCB ASSY from the PF ASSY.



Fig. 3-159

9.49 Cleaner Drive Gear 15

(1) Press the Hook of the Cleaner drive gear 15, and then remove it from the Main body.



Fig. 3-160

9.50 High-voltage Power Supply PCB ASSY

(1) Remove the High-voltage power supply protect film from the Base frame unit.



Fig. 3-161

(2) Remove the four Spacers from the Base frame unit.



Fig. 3-162

(3) Disconnect the two Connectors (CN1, CN2) from the High-voltage power supply PCB ASSY.



Fig. 3-163

(4) Remove the two Taptite cup S M3x6 SR screws.



Fig. 3-164

(5) Release the eight Hooks to remove the High-voltage power supply PCB ASSY from the Base frame unit.





Fig. 3-165

(7) Release the Hook to remove the High-voltage power supply shield ASSY from the High-voltage power supply PCB ASSY.



Fig. 3-166

9.51 Waste Toner Sensor

(1) Release the two Hooks to remove the Waste toner sensor cover from the Base frame unit.



Fig. 3-167

(2) Release the three Hooks to remove the Waste toner sensor from the Base frame unit.



Fig. 3-168

(3) Disconnect the Connector from the Waste toner sensor.



Fig. 3-169

9.52 Air Duct Cover/Blower Fan

(1) Release the four Hooks to remove the Air duct cover from the Base frame unit.





- (2) Disconnect the wiring of the Blower fan.
- (3) Remove the Blower fan from the Base frame unit.



Fig. 3-171

Assembling Note:

When assembling the Blower fan, be sure to assemble it in a way that the label side faces up.



Fig. 3-172

10. DISASSEMBLY PROCEDURE (LT-300CL)

10.1 T2 Paper Tray Unit

(1) Take out the T2 paper tray unit from the main body.



Fig. 3-173

(2) Release the two Hooks of the T2 separation pad ASSY to remove them in the upward direction.



Fig. 3-174

(3) Remove the T2 separation pad spring from the T2 separation pad ASSY.



Fig. 3-175

10.2 T2 Separation Roller ASSY/T2 Paper Feed Roller ASSY 1

- (1) Release the Hook and slide the T2 separation roller ASSY in the direction of the arrow 1a.
- (2) Remove the T2 separation roller ASSY in the direction of the arrow 2c as rotating it in the direction of the arrow 2b.



Fig. 3-176

Assembling Note:

When assembling the T2 separation roller ASSY, be sure to assemble it by sliding it in the direction of the arrow b as rotating the T2 separation roller ASSY in the direction of the arrow a.



Fig. 3-177

(3) Release the Hooks to remove the T2 paper feed roller ASSY 1 from the T2 paper feed shaft.



Fig. 3-178

10.3 T2 Cover Rear

(1) Remove the two Taptite cup S M3x10 SR screws from the T2 cover rear.





(2) Remove the two Pins to remove the T2 cover rear from the Main body.



Fig. 3-180

10.4 T2 Cover Left

(1) Remove the two Taptite cup S M3x6 SR screws from the T2 cover left.



Fig. 3-181

(2) Remove the one Pin, and then release the two Hooks at the top.

(3) Release the two Hooks at the bottom to remove the T2 cover left from the T2 frame L unit.



Fig. 3-182

10.5 T2 Cover Right

(1) Remove the two Taptite cup S M3x6 SR screws from the T2 cover right.





- (2) Remove the one Pin, and then release the two Hooks at the top.
- (3) Release the three Hooks at the bottom to remove the T2 cover right from the T2 frame L unit.



Fig. 3-184

10.6 T2 Relay PCB ASSY

(1) Disconnect the all Connectors from the T2 Relay PCB ASSY.



Fig. 3-185

(2) Remove the Taptite cup S M3x6 SR screw to remove the T2 Relay PCB ASSY from the T2 frame L unit.



Fig. 3-186

10.7 T2 Solenoid ASSY

(1) Remove the Taptite cup S M3x6 SR screw to remove the T2 solenoid holder ASSY from the T2 frame L unit.





(2) Remove the Screw flanged M3x3.5 screw to remove the T2 solenoid ASSY and T2 solenoid spring MP from the T2 solenoid holder.



Fig. 3-188

10.8 Collar 6

(1) Remove the two pieces of the Collar 6 from the Fittings shaft.



Fig. 3-189

10.9 T2 Paper Feed Frame Unit

(1) Remove the Clutch spring from the Clutch arm ASSY.



(2) Release the Hook to remove the Gear 45/40 from the T2 frame L unit.



Fig. 3-191

(3) Remove the Collar 6 from the Clutch arm ASSY.





(4) Remove the Clutch arm ASSY from the T2 frame L unit.



Fig. 3-193



(5) Remove the five Taptite cup S M3x6 SR screws to remove the T2 beam F ASSY from the T2 frame L unit.

Fig. 3-194

(6) Remove the Retaining ring E4 from the F roller, and then remove the Gear 24 and FR bush.



Fig. 3-195

(7) Remove the Retaining ring E3 from the F roller, and then remove the FR bush TR.





- (8) Remove the Lift spring from the Hook of the Lift lever A.
- (9) Remove the F roller from the T2 frame L unit in the directions of the arrows 9a, 9b, and 9c in this order.



Fig. 3-197

Assembling Note:

When assembling the F roller, be sure to assemble it in a way that the Rib of the T2 paper feed frame unit comes between "A" and "B" of the Lift lever B, and the lever of the T2 paper feed holder unit comes in front of "B".





(10) Release the Hook to remove the Gear 20A from the T2 frame L unit.



Fig. 3-199

(11) Release the Hook to remove the Gear 33 from the T2 frame L unit.



Fig. 3-200

- (12) Remove the Extension spring from the Spring hook.
- (13) Release the Hook to remove the Gear 46/55 from the T2 frame L unit.



Fig. 3-201
(14) Remove the Gear 46 from the T2 frame L unit.



Fig. 3-202

(15) Turn the T2 frame L unit upside down.

(16) Remove the two Taptite cup S M3x6 SR screws from the T2 beam front.



Fig. 3-203

(17) Return the T2 frame L unit to the original position.

(18) Remove the two Taptite cup S M3x6 SR screws from the T2 beam rear.





(19) Remove the two Taptite cup S M3x6 SR screws from the T2 beam rear.



(20) Remove the Taptite bind B M4x10 screw and Bush.





(21) Remove the T2 paper feed frame unit from the T2 frame L unit in the direction of the arrows 21a and 21b in this order.



Fig. 3-207

CHAPTER 4

ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

CHAPTER 4 ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

This chapter describes adjustments and updating of settings, which are required if the main PCB ASSY and some other parts have been replaced. This chapter also covers how to update the firmware.

CONTENTS

| 1. | . IF YOU REPLACE THE MAIN PCB ASSY | 4-1 |
|----|--------------------------------------------------------------------------------|---------|
| | 1.1 Rewriting the Firmware (Sub Firmware, Main Firmware) | 4-2 |
| | 1.1.1 Checking firmware version | 4-2 |
| | 1.1.2 Rewriting the firmware using computer | 4-2 |
| | 1.1.3 Rewriting the firmware using USB flash memory | 4-3 |
| | 1.2 Initialization of EEPROM of Main PCB ASSY (Maintenance Mode: Code 01) | 4-4 |
| | 1.3 Setting by Country (Maintenance Mode: Code 74) | 4-4 |
| | 1.4 Setting the Serial Number | 4-4 |
| | 1.5 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72) | 4-5 |
| | 1.6 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code | 83).4-5 |
| | 1.7 Performing the Adjustment of Color Registration (Maintenance Mode: Code 66 |)4-5 |
| | 1.8 Operational Check of Control Panel Button (Maintenance Mode: Code 13) | 4-5 |
| | | |

2. IF YOU REPLACE THE REGISTRATION MARK SENSOR HOLDER ASSY 4-5

3. IF YOU REPLACE THE HIGH-VOLTAGE POWER SUPPLY PCB ASSY4-6

- 3.1 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)......4-6
- 3.2 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code 83). 4-6
- 3.3 Performing the Adjustment of Color Registration (Maintenance Mode: Code 66)......4-6

- 4.1 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)......4-7
- 4.2 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code 83).4-7
- 4.3 Performing the Adjustment of Color Registration (Maintenance Mode: Code 66)......4-7

| 5. IF THE MACHINE ERROR EF IS DETECTED AND THE LOW-V | |
|--------------------------------------------------------------------------------------|------|
| POWER SUPPLY PCB ASSY IS REPLACED | 4-8 |
| 5.1 Reset of Irregular Power Supply Detection Counter | |
| 5.1.1 Reset of irregular power supply detection counter using the PJL file | |
| 5.1.2 Reset of irregular power supply detection counter using the maintenance driver | 4-8 |
| 6. IF YOU REPLACE THE DRUM DRIVE MOTOR | 4-10 |

1. IF YOU REPLACE THE MAIN PCB ASSY

What to do when replacing the main PCB ASSY

- Rewriting the firmware (Sub firmware, Main firmware)
- Initialization of EEPROM of main PCB ASSY (Maintenance mode: code 01)
- Setting by country (Maintenance mode: code 74)
- Setting the serial number
- Sensitivity adjustment of density sensor (Maintenance mode: code 72)
- Performing the developing bias voltage correction (Maintenance mode: code 83)
- Performing the adjustment of color registration (Maintenance mode: code 66)
- Operational check of control panel button (Maintenance mode: code 13)

Note:

Since the counters are reset when the main PCB ASSY is replaced, the consumables and/ or periodical replacement parts might reach the end of the life before the message is displayed.

What you need to prepare

- (1) A USB cable
- (2) A USB flash memory drive
- (3) Computer (Windows[®] XP/2000 or later) Create a "hl4000" folder on the C drive, for example.
- (4) The maintenance tool (Mainte.zip) Copy it into the "hl4000" folder that has been created in the C drive. Extract the copied file and execute "brmainte.exe" file by double-clicking it.
- (5) The download utility (FILEDG32.EXE)Copy it into the "hl4000" folder that has been created in the C drive.
- (6) The Brother maintenance USB printer driver (Maintenance_Driver.zip) Copy it into the "hl4000" folder that has been created in the C drive. Extract the copied file.
- (7) The firmware

| Sub firmware | LZXXXX_\$.djf or LZXXXX_\$.upd* |
|-------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Main firmware | LZXXXX_\$.djf or LZXXXX_\$.upd* |
| LZXXXX: First six digits are a parts number of the firmware. \$: Alphabet representing the revision of the firmware. | |

* upd: Used to rewrite the firmware via a computer. djf: Used to rewrite the firmware using a USB flash memory.

(8) Installing the maintenance driver. (Refer to APPENDIX 3.)

1.1 Rewriting the Firmware (Sub Firmware, Main Firmware)

The following two methods are available for rewriting the firmware (Sub firmware and Main firmware).

- Rewriting using a computer
- Rewriting using USB flash memory

1.1.1 Checking firmware version

Check if the firmware written on the main PCB ASSY is the latest version or not. If it is the latest version, there is no need to write the firmware. If it is not, make sure to write the firmware to the main PCB ASSY in accordance with "1.1.2 Rewriting the firmware using computer "or "1.1.3 Rewriting the firmware using USB flash memory" in this chapter.

<How to check firmware version>

Press the \blacktriangle or \bigtriangledown button in the initial state of the maintenance mode to display "MAINTENANCE 25" and press the **OK** button. Then, the firmware version information is displayed on the LCD.

Memo

You can check the firmware version of the Sub firmware and the Main firmware by printing the Printer Settings. (Refer to "2.4 Printout of Printer Settings" in Chapter 5.)

1.1.2 Rewriting the firmware using computer

Note:

- It is recommendable to rewrite 1) Sub firmware and 2) Main firmware in this order.
- DO NOT unplug the power cord of the printer or your computer or disconnect the USB cable while rewriting the program files.

<Procedures>

- (1) Turn the power switch of the printer off. Then, turn it on while pressing the **Go** and **Cance**l buttons at the same time. Check that "**IIIIIII**" appears on the LCD.
- (2) Connect the computer to the printer with the USB cable.
- (3) Double-click the "FILEDG32.EXE" to start. The following screen appears. Select the "Brother Maintenance USB Printer."



(4) Click the "Brother Maintenance USB Printer" icon to select. Drag the necessary firmware program file such as LZXXXX_\$.upd and drop it.

Note:

After rewriting Sub firmware or Main firmware is completed, the printer returns to the ready state. To continue rewriting the other program files, turn off the power switch of the printer, and turn it on again while pressing the **Go** and **Cancel** buttons at the same time. Check that "

(5) Upon completion of rewriting, the printer restarts and returns to the ready state automatically.

1.1.3 Rewriting the firmware using USB flash memory

If you save the program files in the USB flash memory drive and plug it into the USB direct interface, you can rewrite the firmware.

Note:

- You cannot write the firmware using USB flash memory in the Deep Sleep mode. Press the **OK** button to clear the Deep Sleep mode before rewriting the firmware.
- Make sure that the USB flash memory drive has enough space to save the program file.
- It is recommendable to rewrite <u>1) Sub firmware and 2) Main firmware</u> in this order.
- If rewriting the firmware using a USB flash memory fails and an error message appears on the LCD, or no message appears on the LCD, it will be necessary to rewrite the firmware from a computer using the "FILEDG32.EXE". (Refer to "1.1.2 Rewriting the firmware using computer" in this chapter.)
- The printer driver of the relevant model must have been installed.

<Procedures>

- (1) Save the program files (such as LZXXXX_\$.djf) which are necessary for rewriting the firmware to the USB flash memory.
- (2) While the printer is in the ready state, connect the USB flash memory drive to the USB direct interface on the front of the printer.



(3) When the printer recognizes the USB flash memory, the names of the files stored in the USB flash memory are displayed. Select an appropriate file using the ▲ or ▼ button, and then press the **Go** or **OK** button.

Memo

To print and check the list of data stored in the USB flash memory, display the LCD, select Index Print using the \blacktriangle or \blacktriangledown button, and then press the **Go** or **OK** button.

- (4) "Program Update/Press Go" appears on the LCD. Press the Go or OK button to start. "Program Updating" message appears on the LCD with Data LED blinking while rewriting the firmware. DO NOT turn off the printer.
- (5) When the rewrite is finished, the printer automatically restarts.
- (6) If you continue to rewrite other firmware and no file names are displayed, wait for a while, and take out the USB flash memory and insert it again. When file names are displayed, select the program files which need to be rewritten, and repeat the above procedures (3) to (5) to rewrite all the selected program files.
- (7) When the rewrite of the main firmware is finished, the printer automatically restarts.
- (8) Remove the USB flash memory drive from the USB direct interface once the update have finished.
- (9) Next, make the settings according to the country. (Refer to "1.4.19 Setting by country" in Chapter 5.)

1.2 Initialization of EEPROM of Main PCB ASSY (Maintenance Mode: Code 01)

Initialize the EEPROM in accordance with "1.4.1 EEPROM Parameter Initialization" in Chapter 5.

1.3 Setting by Country (Maintenance Mode: Code 74)

Make appropriate settings by country in accordance with "1.4.19 Setting by country" in Chapter 5.

1.4 Setting the Serial Number

Note:

The printer driver of the relevant model must have been installed.

<Procedures>

- (1) Check that the printer is in the ready state, and then connect the USB cable.
- (2) Double-click the "brmainte.exe" file (maintenance utility) which has been copied in the "hl4000" folder to start.
- (3) Select "Input information" from Menu.



- (4) Select the applicable model name.
- (5) Check the port (USB) that the printer is connected through.
- (6) Click "Serial No." in the lower box. Enter the serial number (the last fifteen digits) of the printer into the box on the right hand side and click the **OK** button.

| Printer Information | |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| You can use this tool only when your printer is Select the LPT port (1-3) or the USB you are us | connected to a parallel port. sing and click OK. |
| C LPT1: | |
| C LPT2: | |
| ⊂ LPT3: | |
| | |
| | |
| Serial No. | ******* |
| Default Paper Size Letter | |
| Reset Develop Bias C STD | |
| Reset Develop Bias M STD | <u>×</u> |
| | |
| HL-45/UCDW1/45/UCDW | - |
| | |
| OK | Cancel |
| | |

A confirmation window opens and shows the serial number. Check that it is correct and click the **OK** button.

Memo

Refer to APPENDIX 2 to know how to read the serial number of the printer.

1.5 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)

Make sensitivity adjustments of the density sensor in accordance with "1.4.18 Sensitivity adjustment of density sensor" in Chapter 5.

1.6 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code 83)

Perform developing bias voltage correction in accordance with "1.4.25 Developing bias voltage correction" in Chapter 5.

1.7 Performing the Adjustment of Color Registration (Maintenance Mode: Code 66)

Perform adjustment of color registration in accordance with "1.4.12 Adjustment of color registration" in Chapter 5.

1.8 Operational Check of Control Panel Button (Maintenance Mode: Code 13)

Check performance of the panel button in accordance with "1.4.5 Operational check of control panel button" in Chapter 5.

2. IF YOU REPLACE THE REGISTRATION MARK SENSOR HOLDER ASSY

What to do when replacing the laser unit

- Sensitivity adjustment of density sensor (Maintenance mode: code 72)
- Performing the developing bias voltage correction (Maintenance mode: code 83)
- Performing the adjustment of color registration (Maintenance mode: code 66)

2.1 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)

Make sensitivity adjustments of the density sensor in accordance with "1.4.18 Sensitivity adjustment of density sensor" in Chapter 5.

2.2 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code 83)

Perform developing bias voltage correction in accordance with "1.4.25 Developing bias voltage correction" in Chapter 5.

2.3 Performing the Adjustment of Color Registration (Maintenance Mode: Code 66)

Perform adjustment of color registration in accordance with "1.4.12 Adjustment of color registration" in Chapter 5.

3. IF YOU REPLACE THE HIGH-VOLTAGE POWER SUPPLY PCB ASSY

What to do when replacing the laser unit

- Sensitivity adjustment of density sensor (Maintenance mode: code 72)
- Performing the developing bias voltage correction (Maintenance mode: code 83)
- Performing the adjustment of color registration (Maintenance mode: code 66)

3.1 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)

Make sensitivity adjustments of the density sensor in accordance with "1.4.18 Sensitivity adjustment of density sensor" in Chapter 5.

3.2 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code 83)

Perform developing bias voltage correction in accordance with "1.4.25 Developing bias voltage correction" in Chapter 5.

3.3 Performing the Adjustment of Color Registration (Maintenance Mode: Code 66)

Perform adjustment of color registration in accordance with "1.4.12 Adjustment of color registration" in Chapter 5.

4. IF YOU REPLACE THE LASER UNIT

What to do when replacing the laser unit

- Sensitivity adjustment of density sensor (Maintenance mode: code 72)
- Performing the developing bias voltage correction (Maintenance mode: code 83)
- Performing the adjustment of color registration (Maintenance mode: code 66)

4.1 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)

Make sensitivity adjustments of the density sensor in accordance with "1.4.18 Sensitivity adjustment of density sensor" in Chapter 5.

4.2 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code 83)

Perform developing bias voltage correction in accordance with "1.4.25 Developing bias voltage correction" in Chapter 5.

4.3 Performing the Adjustment of Color Registration (Maintenance Mode: Code 66)

Perform adjustment of color registration in accordance with "1.4.12 Adjustment of color registration" in Chapter 5.

5. IF THE MACHINE ERROR EF IS DETECTED AND THE LOW-VOLTAGE POWER SUPPLY PCB ASSY IS REPLACED

5.1 Reset of Irregular Power Supply Detection Counter

The irregular power supply detection counter is counted up when the printer detects irregular power supply. If the counter reaches to the limit, the printer shows the service error to replace the low-voltage power supply PCB because it might be damaged by recursive irregular power supply.

5.1.1 Reset of irregular power supply detection counter using the PJL file

Note:

The maintenance driver must have been installed. (Refer to APPENDIX 3.)

- Press the OK button and then the Go button while the printer is in the ready state. Next, press the ▲ button four times to enter the maintenance mode. The printer displays ■■ MAINTENANCE ■■■ on the LCD,
- (2) Connect the PC to the printer with the USB cable.
- (3) Double-click the "FILEDG32.EXE" to start. The following screen appears. Select the "Brother Maintenance USB Printer".
- (4) Click the "Brother Maintenance USB Printer" icon to select. Drag the SQWAVE.PJL and drop it.

5.1.2 Reset of irregular power supply detection counter using the maintenance driver

Note:

The printer driver of the relevant model must have been installed.

- (1) Check that the printer is in the ready state, and then connect it to the PC with the USB cable.
- (2) Double-click "brmainte.exe" file (maintenance utility) copied to the "hl4000" folder to activate it.
- (3) Click About.

Note:

Ignore it when a dialog box saying that "New hardware is found" is displayed.



(4) The About window appears. Double-click anywhere in the window as pressing the Shift key.



- (5) The Password window appears.
 - Enter "replace" in the Password box, and then click the **OK** button.

| Password | |
|----------|--------|
| Password | |
| ***** | |
| ОК | Cancel |

The Password window disappears.

(6) Select "Input information" from Menu.



(7) "Printer Information" is displayed.

| Printer Information |
|---------------------------------------------------------------------------------------------------------------------------------------------------|
| You can use this tool only when your printer is connected to a parallel port. Select the LPT port (1-3) or the USB you are using and click OK. |
| CLPT1: |
| C LPT3: |
| • 028: |
| Toner K Change |
| Default Paper Size Letter |
| |
| 11L 437000W |
| OK |

- (8) Select the relevant model.
- (9) Check the port (USB), which is connected to the printer.
- (10) Select "Clear SQ-Wave Detected Count".
- (11) Click the check box of "ON" to put a check in it.
- (12) Click the **OK** button.

<Procedures>

- Alignment of gear phase

When replacing the drum drive motor, the gears listed below are removed. Align the phase of each gear in accordance with the table and figure given below when mounting these gears.

<Gear names>

| 1 | LY0198001 | Drum idle gear Z64 |
|--------|-----------|--------------------------|
| 2 | LY0199001 | Drum idle gear Z64 first |
| 3 | LY0198001 | Drum idle gear Z64 |
| 4 to 7 | LY0196001 | Drum coupling gear Z52 |

<Gear phase alignment procedure>

(1) When mounting LY0198001 Drum idle gear Z64 and LY0199001 Drum idle gear Z64 first of Nos. 1 to 3, mount them by aligning their phases as shown in the figure below.



(2) When mounting LY0196001 Drum coupling gear Z52 of Nos. 4 to 7, mount them by aligning their phases as shown in the figure below.



Fig. 4-3

Note:

Since the teeth of the gears are oriented at an angle in the shaft direction, be careful when aligning the phase upon mounting the gears.

CHAPTER 5 SERVICE FUNCTIONS

CHAPTER 5 SERVICE FUNCTIONS

Describes the maintenance mode which is exclusively designed for the purpose of checking the settings and adjustments using the buttons on the control panel.

This chapter also covers not-disclosed-to-users function menus, which activate settings and functions or reset the parts life.

CONTENTS

| 1. MAINTENANCE MODE | 5-1 |
|----------------------------------------------------------------------------------------------------------|----------------|
| 1.1 How to Enter the Maintenance Mode | 5-1 |
| 1.2 How to Enter the End User-accessible Maintenance Mode | 5-1 |
| 1.3 List of Maintenance-mode Functions | 5-2 |
| 1.4 Detailed Description of Maintenance-mode Functions | 5-3 |
| 1.4.1 EEPROM parameter initialization (Function code 01, 91) | 5-3 |
| 1.4.2 Monochrome image quality test pattern (Function code 09) | 5-4 |
| 1.4.3 Worker switch (WSW) setting and printout (Function code 10, 11) | 5-5 |
| 1.4.4 Operational check of LCD (Function code 12) | 5-8 |
| 1.4.5 Operational check of control panel button (Function code 13) | 5-9 |
| 1.4.6 Software version check (Function code 25) | 5-10 |
| 1.4.7 "One Push Demo" setting (Function code 28) | 5-11 |
| 1.4.8 Operational check of sensors (Function code 32) | 5-12 |
| 1.4.9 LAN connection status display (Function code 33) | 5-15 |
| 1.4.10 Printout of EEPROM log (Function code 40) | 5-16 |
| 1.4.11 Not-disclosed-to-users functions (Function code 45) | 5-17 |
| 1.4.12 Adjustment of color registration (Function code 66) | 5-21 |
| 1.4.13 Continuous print test (Function code 67) | 5-25 |
| 1.4.14 Laser unit test pattern print (Function code 68) | 5-28 |
| 1.4.15 Frame pattern print (One-sided) (Function code 69) | 5-29 |
| 1.4.16 Frame pattern print (Two-sided) (Function code 70) | 5-31 |
| 1.4.17 Color test pattern (Function code 71) | 5-33 |
| 1.4.18 Sensitivity adjustment of density sensor (Function code 72) | 5-35 |
| 1.4.19 Setting by country (Function code 74) | 5-36 |
| 1.4.20 Sensitivity adjustment of registration mark sensor and check of belt unit s (Function code 75) | urface 5-38 |
| 1.4.21 Printout of maintenance information (Function code 77) | 5-40 |
| 1.4.22 Operational check of fans (Function code 78) | 5-42 |
| 1.4.23 Display of printer's history (log) (Function code 80) | 5-43 |

| | 1.4.24 Error code indication (Function code 82) | |
|----|------------------------------------------------------------------------|------|
| | 1.4.25 Developing bias voltage correction (Function code 83) | |
| | 1.4.26 Exit from the maintenance mode (Function code 99) | 5-49 |
| 2. | OTHER SERVICE FUNCTIONS | 5-50 |
| | 2.1 Service Function Menus Enabled by Pressing Button (s) When Turning | |
| | the Printer On | 5-50 |
| | 2.2 Developer Roller Counter Reset Function | |
| | 2.3 Parts Life Reset Function | |
| | 2.4 Printout of Printer Settings | |
| | 2.5 Deletion of User Setting Information, etc. | |
| | 2.6 How to Recover from Errors of the Fuser Unit | |
| | 2.7 Switching of Return Value of USB No./Support for Banding | |
| | 2.8 Drum Cleaning | |
| | 2.9 Deep Sleep Function | |

1. MAINTENANCE MODE

The maintenance mode is exclusively designed for the checking, setting and adjustments of the printer by using the buttons on the control panel. You can perform operational checks of sensors, perform a print test, display the log information or error codes, and modify the worker switch (WSW).

1.1 How to Enter the Maintenance Mode

<Operating procedure>

(1) Press the **OK** button and then the **Go** button while the printer is in the ready state. Next, press the ▲ button four times to enter the maintenance mode.

Note:

To enter the maintenance mode, you must press the **Go** button within 2 seconds after pressing the **OK** button. Also, you need to press the \blacktriangle button within 2 seconds after pressing the **Go** button.

- (2) The printer displays "■■ MAINTENANCE ■■■" on the LCD, indicating that it is placed in the initial state of the maintenance mode, a mode in which the printer is ready to accept entry from the buttons.
- (3) To select one of the maintenance-mode functions listed in the next page, press the ▲ or
 ▼ button to display any function code on the LCD. Then press the OK button.

1.2 How to Enter the End User-accessible Maintenance Mode

Basically, the maintenance-mode functions listed in the next 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 by phone, for example. The end user-accessible functions are **shaded** in the table given on the next page. (codes 09, 12, 25, 28, 45, 66, 68, 71, 72, 75, 80, 82 and 91)

<Operating procedure>

- (1) Press the **OK**, **Go** and **OK** buttons in this order when the printer is in the ready state. "0" appears on the LCD.
- (2) Press the ▲ or ▼ button to display the desired maintenance code on the LCD. Then press the **OK** button.

When each of the user-accessible functions is completed, the printer automatically returns to the ready state. As for the codes 12, 25, 28, 45, 66, 68, 71, 72, 75, 80 and 82, press the **Cancel** button to switch the printer return to the ready state.

1.3 List of Maintenance-mode Functions

| Function code | Function | Refer to: |
|---------------|--------------------------------------------------------------------------------------|----------------|
| 01 | EEPROM parameter initialization | 1.4.1(5-3) |
| 09 | Monochrome image quality test pattern | 1.4.2(5-4) |
| 10 | Worker switch (WSW) setting | 1.4.3 [1](5-5) |
| 11 | Printout of worker switch (WSW) data | 1.4.3 [2](5-7) |
| 12 | Operational check of LCD | 1.4.4(5-8) |
| 13 | Operational check of control panel button | 1.4.5(5-9) |
| 25 | Software version check | 1.4.6(5-10) |
| 28 | "One Push Demo" setting | 1.4.7(5-11) |
| 32 | Operational check of sensors | 1.4.8(5-12) |
| 33 | LAN connection status display | 1.4.9(5-15) |
| 40 | Printout of EEPROM log | 1.4.10(5-16) |
| 45 | Not-disclosed-to-users functions | 1.4.11(5-17) |
| 66 | Adjustment of color registration | 1.4.12(5-21) |
| 67 | Continuous print test | 1.4.13(5-25) |
| 68 | Laser unit test pattern print | 1.4.14(5-28) |
| 69 | Frame pattern print (One-sided) | 1.4.15(5-29) |
| 70 | Frame pattern print (Two-sided) | 1.4.16(5-31) |
| 71 | Color test pattern | 1.4.17(5-33) |
| 72 | Sensitivity adjustment of density sensor | 1.4.18(5-35) |
| 74 | Setting by country | 1.4.19(5-36) |
| 75 | Sensitivity adjustment of registration mark sensor and check of belt unit surface | 1.4.20(5-38) |
| 77 | Printout of maintenance information | 1.4.21(5-40) |
| 78 | Operational check of fans | 1.4.22(5-42) |
| 80 | Display of machine history (log) | 1.4.23(5-43) |
| 82 | Error code indication | 1.4.24(5-47) |
| 83 | Developing bias voltage correction | 1.4.25(5-48) |
| 91 | EEPROM parameter initialization | 1.4.1(5-3) |
| 99 | Exit from the maintenance mode | 1.4.26(5-49) |

*The functions shaded in the table above are user-accessible.

1.4 Detailed Description of Maintenance-mode Functions

1.4.1 EEPROM parameter initialization (Function code 01, 91)

<Function>

This function initializes the setting values of the operation parameters, user switches, and worker switches (WSW) registered in the EEPROM.

Entering function code 01 initializes almost all of the EEPROM areas, but entering 91 does not initialize some areas, as listed below.

| Data item | Function code 01 | Function code 91 |
|------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------|
| Printer switch - Counter information | These will not be initialized. | These will not be initialized. |
| Error history | | |
| MAC address (Ethernet Address) | | |
| Operation lock of the control panel password | These will be initialized. | |
| Secure function lock | | |
| Worker switch | | |
| User switches (Items to be initialized when resetting to the factory default settings) | | These will be initialized. |
| Function settings except user switches (Items except the factory default settings) - Languages | | |
| - Reprint | | |
| - Secure print | | |
| - Interfaces | | |
| LAN area (Network settings) | | |
| PCL core area (Emulation settings) | | |

<Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 01" (or "MAINTENANCE 91" according to your need) on the LCD in the initial state of the maintenance mode. Then, press the OK button. The "PARAMETER INIT" appears on the LCD.
- (2) Upon completion of parameter initialization, the printer returns to the initial state of the maintenance mode.

Note:

Function code 01 is for service personnel. Function code 91 is for user support.

1.4.2 Monochrome image quality test pattern (Function code 09)

<Function>

This function allows you to print various monochrome test patterns and check the quality and if there is any image loss.

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 09" on the LCD in the initial state of the maintenance mode. Then, press the OK button.
- (2) Printing of a monochrome image quality test pattern (see the figure below) is started. When printing is finished, the printer returns to the initial state of the maintenance mode.



Fig. 5-1

1.4.3 Worker switch (WSW) setting and printout (Function code 10, 11)

[1] Worker switch setting (Function code 10)

<Function>

The printer incorporates the following worker switch functions which may be activated with the procedures using the buttons on the control panel. The worker switches have been set at the factory in conformity to the codes of each country. Do not disturb them unless necessary.

DO NOT change any other worker switches except below.

| WSW No. | Function | |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------|--|
| WSW17 | Switching of the time display method (between the American method (MM/DD/YY**) and European method (DD/MM/YY**)) | |
| WSW47 | Switching between high-speed USB and full-speed USB | |
| WSW55 | Interval of time required for the developing bias voltage correction | |
| WSW56 "Last Job Reprint" function setting | | |
| | Switching of the display for the coverage of toner cartridge | |
| | Switching of the CPU sleep mode | |
| WSW59 | Enabling and disabling of transmission of USB serial number (SN) | |
| WSW63 | Switching of the time display method (between the Japanese method (YY/MM/DD**) and other methods) | |
| | Demo print type (Demo language) | |
| | Font support for Israel | |
| WSW64 | Language setting | |
| | Default paper size | |
| WSW65 | Default media type | |
| | Support for Bond paper | |
| | Support for Hagaki | |
| | Support for Label | |

* For details of the worker switches (WSW), refer to the attached manual.

** DD, MM, and YY refer to the date, month, and year respectively.

<Operating procedure>10

- Press the ▲ or ▼ button to display "MAINTENANCE 10" on the LCD in the initial state of the maintenance mode. Then, press the OK button.
- (2) The printer displays "WSW00" on the LCD and becomes ready to accept a worker switch number.
- (3) Press the ▲ or ▼ button to select the desired number from the worker switch numbers. Then, press **OK** button.
- (4) The following appears on the LCD.

```
Selector 1 Selector 8

\downarrow \downarrow \downarrow

WSWXX = 0 0 0 0 0 0 0 0 0 0
```

- (5) "1" is set by pressing the ▲ button and "0" is set by pressing the ▼ button. Press the ▲ button if you want to input "1" to the selector 1 and press the ▼ button if you want to input "0".
- (6) The cursor moves to the selector 2. The cursor moves to the selector 3 by inputting "1", by pressing the ▲ button or "0" by pressing the ▼ button as with the procedure (5). Input a value up to the selector 8 by repeating the aforementioned procedure according to the need. When an incorrect value is inputted, move the cursor back by pressing the Back button and re-input a correct value.
- (7) Press the **OK** button when the setting value is entered. This operation saves the newly entered selector values onto the EEPROM and readies the printer for accepting a firmware switch number. The printer displays "WSW00" on the LCD again to accept a worker switch number.
- (8) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

Note

- To cancel this operation and return to the printer to the initial state of the maintenance mode during the above procedure, press the **Cancel** button.
- If there is a pause of more than one minute, the printer will automatically return to the initial state of the maintenance mode.

[2] Printout of worker switch data (Function code 11)

<Function>

The printer prints out the setting items of the worker switches and their contents specified.

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 11" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The printer displays "PRINTING" on the LCD.
- (2) Printing of the CONFIGURATION LIST (see the figure below) is started. When printing is finished, the printer returns to the initial state of the maintenance mode.



Fig. 5-2

Note:

The function names specific to multi-function printers are printed in CONFIGURATION LIST for convenience of program development. They are invalid in this printer and should be ignored. These settings must not be changed.

1.4.4 Operational check of LCD (Function code 12)

<Function>

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

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 12" on the LCD in the initial state of the maintenance mode. Then, press the OK button.
- (2) Each time you press the **Go** button, the LCD cycles through the displays as shown below.
- (3) Press **Cancel** button in any process of the display cycle. The printer returns to the initial state of the maintenance mode.

| <display 1=""></display> | |
|--------------------------|------------------------------------|
| Backlight | : OFF |
| LCD | : Display of all dots |
| Data LED | : Green blinking |
| Error LED | : Red blinking |
| <display 2=""></display> | |
| Backlight | : OFF |
| LCD | : Display of 16 dots in 2 lines |
| Data LED | : Green blinking |
| Error LED | : Red blinking |
| <display 3=""></display> | |
| Backlight | : OFF |
| LCD | : Display of no dots |
| Data LED | : Green blinking |
| Error LED | : Red blinking |
| <display 4=""></display> | |
| Backlight | : ON |
| LCD | : Display of no dots |
| Data LED | : Green blinking |
| Error LED | : Red blinking |



Fig. 5-3

1.4.5 Operational check of control panel button (Function code 13)

<Function>

This function allows you to check if the buttons on the control panel work properly.

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 13" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The printer displays "00" on the LCD.
- (2) Press the buttons in the order designated in the illustration shown below. The LCD shows the corresponding number in decimal notation each time a button is pressed. Check that the displayed number is correct by referring to the illustration below. If a button is pressed out of order, the printer displays the "INVALID OPERATE" on the LCD. Press the **Cancel** button, and the press the correct buttons.
- (3) After the last number button is pressed, the printer returns to the initial state of the maintenance mode.

Memo:

To terminate this operation, press the **Cancel** button. The printer returns to the initial state of the maintenance mode.



Fig. 5-4

1.4.6 Software version check (Function code 25)

<Function>

This function allows you to check the management information of the software programs such as version information, check sum.

<Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 25" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The printer displays each of items described below on the LCD.
- (2) Press the Go, \blacktriangle or \blacktriangledown button to check the next item.
- (3) To terminate this operation, press the **Cancel** button. The printer returns to the initial state of the maintenance mode.

| LCD | Description |
|--------------------------------|---------------------------------------------------------------------------|
| MAIN: Ver1.00(A)* ¹ | Main firmware version information (A): Revision information |
| PCL: Ver1.00(P)* ¹ | Sub firmware version information (P): Identifier of PCL/PS * ² |
| ENG: Ver1.00 | Engine firmware version information |
| NET: Ver1.00 | Network program version information |
| HV: Ver1.00 BXXX | High voltage CPU program version and PCB information |
| B0608071049:5708* ¹ | Boot program creation date |
| U0612271600:7B0A* ¹ | Main firmware creation date |
| D0611301115:E6C3* ¹ | Demo firmware data creation date |
| P0612271602:BD40* ¹ | Sub firmware creation date |
| ROM Check Sum | Check sum self-diagnosis function ^{*3} |

^{*1} How to display the check sum information

Press the **OK** button when its version information is displayed on the LCD to display the check sum information. Press the **OK** button again to go back to the version information display. Press the **Go**, \blacktriangle or \blacktriangledown button to check the next item.

Note:

Regarding the version information (Engine, Network, PictBridge, and HVPS) of which check sum information cannot be obtained, the check sum information is not displayed even if you press the **OK** button.

- ^{*2} (P) indicates that the firmware supports PCL/PS.
- *3 There are two types of check sum information which can be checked with this function. This function checks if these two types of check sum information are matched each other.

When you press the **OK** button while "ROM Check Sum" is displayed, check is automatically conducted for each ROM of each software part. When the check sum is matched, "OK" is displayed on the LCD. When all ROMs result in OK, "ROM Check Sum OK" is displayed at the end, and the operation is finished. When the check sum of any ROM is not matched, NG is displayed, and the display stops.

1.4.7 "One Push Demo" setting (Function code 28)

<Function>

The One Push Demo function is to implement demo printing by pressing the **Go** button, which is mainly used for sales promotion at the shop. It is disabled if printing from a computer even once.

Therefore, it is necessary to change the setting so that the function is enabled again.

"OnePushDemo = ON" (Enabled)/OFF (Disabled) The default setting is displayed with "*".

<Operating procedure: How to set "OnePushDemo = ON">

- Press the ▲ or ▼ button to display "MAINTENANCE 28" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The printer displays "OnePushDemo = ON" on the LCD.
- (2) Press the **OK** button so that the One Push Demo function is set to be enabled.
- (3) The printer automatically returns to the initial state of the maintenance mode.

Note:

- To terminate this operation, press the **Cancel** button. The printer returns to the initial state of the maintenance mode.
- Once the One Push Demo function is enabled, printing from a computer does not disable this function unless the power is turned OFF. (After the One Push Demo function is enabled, if the power is turned OFF and ON again, and then printing is made from a computer, the function is disabled.)

1.4.8 Operational check of sensors (Function code 32)

<Function>

This function allows you to check each of the sensors.

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 32" on the LCD in the initial state of the maintenance mode. Then, press the OK button.
- (2) If the sensing status are as listed below, the LCD will show "C1C2L2T2**" when paper tray 2 is installed. "C1******" appears on the LCD when paper tray 2 is not installed. The LCD indication moves to the next term by pressing the Go button. Given below is the relationship between the LCD indication, sensor name and sensor state.

| LCD | Sensors | Sensing status (OK/NG) |
|-----|------------------------------|-----------------------------------------------------|
| C1 | T1 paper edge sensor | Paper tray 1 not installed/installed |
| C2 | T2 paper edge sensor | Paper tray 2 not installed/installed |
| L2 | T2 plate-up detection sensor | Plate down/Plate up |
| T2 | T2 connector | Paper tray 2 installed/not installed |
| MP | MP paper empty sensor | MP tray paper not detected/detected |
| MR | MP registration front sensor | MP tray paper not detected/detected |
| CV | Front cover sensor | Front cover closed/open |
| RC | Back cover sensor | Back cover closed/open |
| RM | Registration front sensor | Paper not detected/detected |
| RA | Registration rear sensor | Paper not detected/detected |
| PO | Paper eject sensor | Paper not detected/detected |
| FW | Waste toner sensor | Light shielded on sensor/ Light guided to sensor |
| NK | New toner sensor Black | OFF/ON |
| NY | New toner sensor Yellow | OFF/ON |
| NM | New toner sensor Magenta | OFF/ON |
| NC | New toner sensor Cyan | OFF/ON |
| KC | Toner sensor Black | Toner (K) detected/not detected |
| YC | Toner sensor Yellow | Toner (Y) detected/not detected |
| MC | Toner sensor Magenta | Toner (M) detected/not detected |
| CC | Toner sensor Cyan | Toner (C) detected/not detected |

Note:

- The "--" appears on the LCD if the sensor is OFF.
- The "**" appears on the LCD if the parts are not installed or there is no item.

| LCD | Sensors | Sensing status (OK/NG of temperature/humidity) |
|-----|--------------------------------------|---------------------------------------------------|
| TMP | External temperature/humidity sensor | XX °C/NG |
| HUM | External temperature/humidity sensor | XX %/NG |
| MAC | Internal temperature sensor | XX °C/NG |
| BT | Belt temperature sensor | XX °C/NG |

Note:

If the sensor detects the abnormal value, the printer displays "NG" on the LCD.

- (3) Change the detecting conditions to check that the indication on the LCD changes according to the sensor status. For instance, insert paper through the registration front/ rear sensor, open the front cover or the back cover, remove the toner cartridge, jam paper at the paper outlet, insert paper from the manual feed slot, etc.
- (4) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

Location of sensors



Fig. 5-5



Fig. 5-7

1.4.9 LAN connection status display (Function code 33)

<Function>

This function allows you to check the status of the wired LAN connection. The display items are shown in the table below.

| LCD | LAN connection status |
|----------------|-----------------------|
| Active 100B-FD | 100B-FD |
| Active 100B-HD | 100B-HD |
| Active 10B-FD | 10B-FD |
| Active 10B-HD | 10B-HD |
| Inactive | Not connected. |

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 33" on the LCD in the initial state of the maintenance mode. Then, press the OK button.
- (2) The display items in the table above are displayed.
- (3) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

1.4.10 Printout of EEPROM log (Function code 40)

<Function>

This function allows you to print the EEPROM logs described below.

<Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 40" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The printer displays "E2PDUMP ENGN ALL2" on the LCD.
- (2) Press the ▲ or ▼ button to select the information you wish to print. Press the OK button, and then the "E2PDUMP PRINTING" appears on the LCD. The printer starts to print the EEPROM log.

The terms of EEPROM logs on the LCD are as follows;

| LCD | Description |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| E2PDUMP ENGN ALL | Print of all the values stored in the E2PROM of the engine control unit. (print of 1 page) |
| E2PDUMP MAIN TOP | Print of the values stored in the E2PROM corresponding to the top 1 Kbytes of the main controller. (print of 1 page) |
| E2PDUMP MAIN BTM | Print of the values stored in the E2PROM corresponding to the last 1 Kbytes of the main controller. (print of 1 page) |
| E2PDUMP MAIN REG | Print of the values stored in the E2PROM of the informa- tion related to the compensation values of the main control- ler. (print of 1 page) |
| E2PDUMP MAIN ALL | Print of all the values stored in the E2PROM of the main controller. (print of 8 pages) |

(3) Upon completion of EEPROM logs printing, the printer returns to the initial state of the maintenance mode.

Note:

- Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.
- If the error occurs during printing, it is necessary to start from the beginning.
- The serial number of the printer is printed on the first line on each page.
1.4.11 Not-disclosed-to-users functions (Function code 45)

Regarding the not-disclosed-to-users functions, the function setting can be executed by a simple panel operation.

■ Changing return value of USB No.

<Function>

When the OS of the computer is Windows Vista[®], and the computer is connected to a device through USB 2.0 full speed, the OS might fail to get the serial No. of the USB device depending on the computer and USB device. When the OS fails to get the serial No., the return value may continue to increase every time the device is connected to the computer. To avoid this problem, the return value of the serial No. can be fixed to "0".

| LCD | Description |
|-------------|-------------------------------------------------|
| USBNo. =ON | Returns the serial No. of the device. (default) |
| USBNo. =OFF | Returns "0". |

An asterisk "*" appears beside the current setting.

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 45" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The "USBNo." will appear on the LCD.
- (2) Press the **OK** or **Go** button to select "USB No. = ON" or "USB No. = OFF," and then press the **OK** or **Go** button.
- (3) "Accepted" is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.
- (4) Turn the power switch of the printer OFF.

Note:

This mode is enabled when the power of the printer is turned OFF/ON after the setting is done.

Switching Dither Pattern

<Function>

This function is to switch the dither pattern when printed letters and/or slanted lines are not smooth, and thin lines are rough or uneven.

| LCD | Description |
|-----------------|------------------------------------------------------------------------------------------------------------------------|
| PS.DitherType=0 | Dither Pattern 0 is selected. (A dither pattern which improves roughness of letters and slanted lines) (default) |
| PS.DitherType=1 | Dither Pattern 1 is selected. (A dither pattern which alleviates banding) |

An asterisk "*" appears beside the current setting.

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 45" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The "USBNo." will appear on the LCD.
- (2) Press the ▲ or ▼ button to display "PS.DitherType" and then press the **OK** or **Go** button.
- (3) Press the ▲ or ▼ button to select "PS.DitherType=0" or "PS.DitherType=1," and then press the **OK** or **Go** button.
- (4) "Accepted" is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.

Switching ON/OFF of DirectPrint Color mode - Improve Gray Color

<Function>

This function is to switch ON/OFF of the print control for the gray color when other colors are slightly blended in the gray color or the gray color is uneven upon printing.

| LCD | Description |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DP.ImpGray=ON | DirectPrint Color mode - Improve Gray Color. (Print control for gray color) ON (Improves the symptom that other colors are slightly blended in the gray color.) (default) |
| DP.ImpGray=OFF | DirectPrint Color mode - Improve Gray Color. (Print control for gray color) OFF (Improves the unevenness of the gray color) |

An asterisk "*" appears beside the current setting.

- Press the ▲ or ▼ button to display "MAINTENANCE 45" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The "USBNo." will appear on the LCD.
- (2) Press the \blacktriangle or \bigtriangledown button to display "DP.ImpGray" and then press the **OK** or **Go** button.
- (3) Press the ▲ or ▼ button to select "DP.ImpGray=ON" or "DP.ImpGray=OFF," and then press the **OK** or **Go** button.
- (4) "Accepted" is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.

Switching of timing to execute Auto Registration

<Function>

Relative displacement between Cyan, Magenta, Yellow, and Black is detected using the registration mark sensor, and the Auto Registration is executed at the timing when the displacement value exceeds the stipulated threshold value.

This is a function to switch the threshold value which is used as the timing to execute Auto Registration.

The threshold value can be switched in three phases between High, Mid, and Low.

| LCD | Description | |
|----------------|-----------------------------------------------------------------|--|
| Regi Freq=Mid | The frequency to execute Auto Registration is middle. (default) | |
| Regi Freq=High | The frequency to execute Auto Registration is high. | |
| Regi Freq=Low | The frequency to execute Auto Registration is low. | |

An asterisk "*" appears beside the current setting.

Note:

It can be set regardless of the Auto Registration switching function in the function menu.

Even if this function is switched, it does not affect the timing to execute Auto Registration in the function menu.

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 45" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The "USBNo." will appear on the LCD.
- (2) Press the \blacktriangle or \bigtriangledown button to display "Regi Freq" and then press the **OK** or **Go** button.
- (3) Select "Regi Freq = Mid", "Regi Freq = High", or "Regi Freq = Low" by pressing the ▲ or ▼ button, and press the OK or Go button.
- (4) "Accepted" is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.

■ Adjusting left-end print start position on second side in duplex printing

<Function>

This function is to adjust the left-end print start position on the second side in the left and right direction if it is displaced in duplex printing.

The adjustable range is -100 to 750 (unit: 300 dpi) (The minus direction means the left direction.)

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 45" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The "USBNo." will appear on the LCD.
- (2) Press the \blacktriangle or \bigtriangledown button to display "DX.XAdjust" and then press the **OK** or **Go** button.
- (3) To move the print start position to the left, press the ▲ button and decrease the value. To move the print start position to the right, press the ▼ button and increase the value.
- (4) When the value is changed to the adjustment value, press the **OK** button. "Accepted" is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.

Switching ON/OFF of Deep Sleep function

<Function>

This function is to switch whether or not to permit the printer to go into Deep Sleep when StoreData(Secure) exists in the main body.

| LCD | Description |
|------------------|------------------------------------------------------------------------------------|
| DpSlp.StrDt =ON | Even when StoreData(Secure) exists, the Deep Sleep function operates. |
| DpSlp.StrDt =OFF | When StoreData(Secure) exists, the Deep Sleep function does not operate. (default) |

An asterisk "*" appears beside the current setting.

Note:

This function is enabled when the Deep Sleep function is set to ON.

- Press the ▲ or ▼ button to display "MAINTENANCE 45" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The "USBNo." will appear on the LCD.
- (2) Press the \blacktriangle or \checkmark button to display "DpSlp.StrDt" and then press the **OK** button.
- (3) Select "DpSlp.StrDt =ON" or "DpSlp.StrDt =OFF" by pressing the ▲ or ▼ button, and press the **OK** button.
- (4) "Accepted" is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.

1.4.12 Adjustment of color registration (Function code 66)

<Function>

This function allows a service man to forcibly activate the color registration adjustment function, which is usually executed automatically in a specified condition. If adjustment of color registration (auto) fails because toner reaches its life, etc., you can adjust color registration manually. The end user is allowed to execute reset of color registration adjustment (manual) only.

Note:

If an error occurs after executing Maintenance Mode 66, upgrade the firmware to the latest one. (Refer to "1.1 Rewriting the Firmware (Sub Firmware, Main Firmware)" in Chapter 4.) After upgrading the firmware, execute Maintenance Mode 66 again.

■ Adjustment of color registration (auto)

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 66" on the LCD in the initial state of the maintenance mode. Then, press the OK button. "REGISTRATION" is displayed on the LCD.
- (2) Press the **OK** button. "PLEASE WAIT" is displayed on the LCD, and adjustment of color registration is automatically done.
- (3) When this operation is completed without an error, "OK L:C110 R:M105" is displayed on the LCD.
- (4) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

| Error message | Measure |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FAILED | Press the Go button to clear the error. Adjust color registration manually in accordance with the procedure for adjustment of color registration (manual) given next page. |
| TONER EMPTY # * | Replace the empty toner cartridge and press the Go button to clear the error. Conduct adjustment of color registration (auto) again. |
| NG*L : c080 R : M105 | Press the Go button to clear the error. Conduct adjustment |
| NG R-L : C030 | of color registration (auto) again. |
| NG PWM L120 R180 | |
| NG PWM R-L : 080 | |
| NG CNT R100 L100 | |
| NG S-POSI R : 080 | |
| NG SKEW C : 050 | |
| Cover is Open | Close the front cover. |
| No Paper | Replenish paper of the A4-size paper specified in the display on the tray. Conduct adjustment of color registration (auto) again. |
| Jam Tray 1 | Remove the jammed paper, and press the Go button to clear |
| Jam Rear | the error. |

* # indicates the toner color (Y, M, or C) of which cartridge became empty.

Memo:

Although adjustment of color registration (auto) is executed several times and the result of color registration adjustment chart (P5-23) does not fall within the range of ± 4 , readjust it according to the following procedures.

<Operating procedure after adjustment color registration (auto) fails>

- Press the ▲ or ▼ button to display "MAINTENANCE 66" on the LCD in the initial state of the maintenance mode. Then, press the OK button. "REGISTRATION" is displayed on the LCD. Load A4-size paper on the tray.
- Press the ▲ or ▼ button to display "PRINT CHART" on the LCD, and then press the OK button.
- 3) Display "PRINTING" on the LCD, and print the color registration adjustment chart. After printing, "PRINT CHART" is displayed again.
- Press the ▲ or ▼ button to display "OFFSET ADJUST" on the LCD, and then press the OK button. "1. MAGENTA = 0" is displayed on the LCD.
- 6) Enter the numeric value of the patterns (2) to (3) and (7) to (9) in the same way.
- 7) When you enter the numeric value of the pattern (9) (Yellow Right), "COMPLETED" is displayed.
- 8) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

Adjustment of color registration (manual)

- Press the ▲ or ▼ button to display "MAINTENANCE 66" on the LCD in the initial state of the maintenance mode. Then, press the OK button. "REGISTRATION" is displayed on the LCD. Load A4-size paper on the tray.
- (2) Press the ▲ or ▼ button to display "PRINT CHART" on the LCD, and then press the **OK** button.
- (3) Display "PRINTING" on the LCD, and print the color registration adjustment chart. After printing, "PRINT CHART" is displayed again.
- (4) Press the ▲ or ▼ button to display "SET REGISTRATION" on the LCD, and then press the OK button. "1. MAGENTA = 0" is displayed on the LCD.
- (5) With the printed color registration adjustment chart, check the numeric value where the color is the darkest among the pattern ① (Magenta Left). Press the ▲ or ▼ button to display that numeric value, and then press the OK button.
- (6) Enter the numeric value of the patterns (2) to (9) in the same way.
- (7) When you enter the numeric value of the pattern (9) (Yellow Right), "COMPLETED" is displayed.
- (8) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

Color registration adjustment chart

-



Fig. 5-8

Reset of color registration adjustment (manual)

If adjustment of color registration (both auto and manual) cannot be executed because an incorrect value is inputted in adjustment of color registration (manual), etc., you can clear the input value for adjustment of color registration (manual).

<Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 66" on the LCD in the initial state of the maintenance mode. Then, press the OK button. "REGISTRATION" is displayed on the LCD.
- (2) Press the ▲ or ▼ button to display "MANUAL REG RESET" on the LCD, and then press the **OK** button.
- (3) "PLEASE WAIT" is displayed on the LCD.
- (4) When reset of color registration adjustment is finished, the printer goes back to the initial state of the maintenance mode.

If you want to perform adjustment of color registration again, you may as well conduct adjustment of color registration (auto) of Function code 66.

1.4.13 Continuous print test (Function code 67)

<Function>

This function allows you to conduct the pick-up and delivery test as printing patterns.

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 67" on the LCD in the initial state of the maintenance mode. Then, press the OK button.
- (2) When "SELECT: K 100%" is displayed on the LCD, select a relevant continuous print pattern using ▲ or ▼ button and then press the **OK** button.

The available continuous print patterns are shown below.

| LCD |
|-----------------|
| SELECT: K 100% |
| SELECT: C 100% |
| SELECT: M 100% |
| SELECT: Y 100% |
| SELECT: R 100% |
| SELECT: G 100% |
| SELECT: B 100% |
| SELECT: KCMY1%* |
| SELECT: KCMY5%* |
| SELECT: Lattice |

* KCMY1% and KCMY5% are available only for A4 and Letter.

(3) When "SELECT: A4" is displayed on the LCD, select a relevant paper size using
 ▲ or ▼ button, and then press the OK button.

The available paper sizes are shown below.

| LCD |
|----------------|
| SELECT: A4 |
| SELECT: LETTER |
| SELECT: LEGAL |
| SELECT: A5 |
| SELECT: B6 |
| SELECT: A6 |

(4) When "SELECT: TRAY1" is displayed on the LCD, press the ▲ or ▼ button to select the print format, and press the **OK** button.

| LCD |
|------------------|
| SELECT: TRAY1 |
| SELECT: TRAY2 |
| SELECT: MP |
| SELECT: TRAY1 DX |
| SELECT: TRAY2 DX |
| SELECT: MP DX |

The available print formats are shown below.

- (5) The "PAPER FEED TEST" appears on the LCD, and print of the continuous print pattern with the selected pick-up test items starts.
- (6) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

Note:

- The test printing is stopped until there is no paper in a tray. Press the **Cancel** button to stop if you check the paper feeding and ejecting operations. (Printing is resumed when paper is loaded in the tray.)
- In the case that the error occurs during test printing, the test printing is stopped. (If you do not press the **Cancel** button, printing is resumed when the error is cleared.)
- To clear the error, remove the error factors, and then press the Go button.

■ Continuous print pattern



Fig. 5-9

1.4.14 Laser unit test pattern print (Function code 68)

<Function>

This function allows you to print the laser unit test patterns and check if there is any failure in the laser unit.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 68" on the LCD in the initial state of the maintenance mode. Then, press the OK button. "PRINTING" is displayed on the LCD, and one laser unit test pattern (refer to the figure below) is printed.

Note:

When printing fails, a relevant error is displayed on the LCD. When the error factors are removed and the **Go** button is pressed, the printer automatically recovers to the reexecutable state. "PRINTING" is displayed on the LCD, and the laser unit test pattern is printed on a sheet.

- (2) When this operation is completed without an error, "SCANNER CHECK" is displayed on the LCD.
- (3) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode. When an error message is displayed on the LCD, take the measures described in the table below.

| Error message | Measure |
|-----------------|---------------------------------------------------------------------------------------------------------------------------|
| TONER EMPTY # * | Replace the empty toner cartridge and press the Go button to clear the error. |
| Cover is Open | Close the front cover. |
| No Paper | Replenish paper of the A4-size paper specified in the display on the tray. Press the Go button to clear the error. |
| Jam Tray1 | Remove the jammed paper, and press the Go button to clear |
| Jam Rear | the error. |

indicates the toner color (K, Y, M, or C) of which cartridge became empty.

Laser unit test pattern



Fig. 5-10

1.4.15 Frame pattern print (One-sided) (Function code 69)

<Function>

This function allows you to print one page of the frame pattern of the external circumference in one-sided printing and check if there is any deviation or omission of print.

<Operating procedure>

- (1) Load Letter-size paper on the paper tray.
- (2) Press the ▲ or ▼ button to display "MAINTENANCE 69" on the LCD in the initial state of the maintenance mode. Then, press the OK button. "PRINTING" is displayed on the LCD, and one page of the frame pattern (refer to the next page) in one-sided printing. When print is completed, "WAKU SX" is displayed on the LCD.

Note:

When printing fails, a relevant error is displayed on the LCD. Remove the cause of error and press the **Go** button, and the printer automatically goes back to the executable state, and "WAKU SX" is displayed on the LCD. Press the **OK** button, and "PRINTING" is displayed on the LCD, and one page of the frame pattern is printed in one-sided printing.

(3) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

| Error message | Measure | |
|-----------------|------------------------------------------------------------------------------------------------|--|
| TONER EMPTY # * | Replace the empty toner cartridge and press the Go button to clear the error. | |
| Cover is Open | Close the front cover. | |
| No Paper | Replenish the letter-size paper in the tray and press the Go button to clear the error. | |
| Jam Tray1 | Remove the jammed paper, and press the Go button to clear | |
| Jam Rear | the error. | |

* # indicates the toner color (K, Y, M, or C) of which cartridge became empty.

| 4.23mm | 4.23mm | |
|--------------------|--------|---|
| .35mm(Letter size) | | 1 |
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| | | |
| .35mm(Letter size) | | |

Fig. 5-11

1.4.16 Frame pattern print (Two-sided) (Function code 70)

<Function>

This function allows you to print one page of the frame pattern of the external circumference in two-sided printing and check if there is any deviation or omission of print.

<Operating procedure>

- (1) Load Letter-size paper on the paper tray.
- (2) Press the ▲ or ▼ button to display "MAINTENANCE 70" on the LCD in the initial state of the maintenance mode. Then, press the OK button. "PRINTING" is displayed on the LCD, and one page of the frame pattern (refer to the next page) in two-sided printing. When print is completed, "WAKU DX" is displayed on the LCD.

Note:

When printing fails, a relevant error is displayed on the LCD. Remove the cause of error and press the **Go** button, and the printer automatically goes back to the executable state, and "WAKU DX" is displayed on the LCD. Press the **OK** button, and "PRINTING" is displayed on the LCD, and one page of the frame pattern is printed in two-sided printing.

(3) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

| Error message | Measure | |
|-----------------|------------------------------------------------------------------------------------------------|--|
| TONER EMPTY # * | Replace the empty toner cartridge and press the Go button to clear the error. | |
| Cover is Open | Close the front cover. | |
| No Paper | Replenish the letter-size paper in the tray and press the Go button to clear the error. | |
| Jam Tray1 | Remove the jammed paper, and press the Go button to clea | |
| Jam Rear | the error. | |

* # indicates the toner color (K, Y, M, or C) of which cartridge became empty.



(First side)

(Second side)

Fig. 5-12

1.4.17 Color test pattern (Function code 71)

<Function>

This function allows you to print the pattern of each color and check if there is any smear on or failure in the belt unit, developer roller, and exposure drum, etc.

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 71" on the LCD in the initial state of the maintenance mode. Then, press the OK button.
- (2) When "2D3S YCMK__A" is displayed on the LCD, press the ▲ or ▼ button to select an appropriate print pattern, and press the **OK** button.
- (3) "PRINTING" is displayed on the LCD, and the color test pattern (next page) is printed.

The available print patterns are shown below.

| LCD | Description | |
|----------------------------------------------------------------|-------------------------|----------------|
| 2D3S YCMKA One sheet for each color with full page print mode* | | Total 4 sheets |
| 2D3S MCYK | 4-color horizontal band | Total 1 sheet |
| 2D3S Y | Yellow | Total 1 sheet |
| 2D3S C Cyan | | Total 1 sheet |
| 2D3S M | Magenta | Total 1 sheet |
| 2D3S K | Black | Total 1 sheet |

* In the full page print mode, the cleaning operation is performed between printing of Magenta and Black.

Note:

When printing fails, a relevant error is displayed on the LCD. When the error factors are removed and the **Go** button is pressed, the printer automatically recovers to the reexecutable state. "PRINTING" is displayed on the LCD, and the color test pattern is printed.

- (4) When printing is finished, the screen returns to the print pattern display. To print the solid color test pattern again, press the **OK** button.
- (5) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

| Error message | Measure | |
|-----------------|---------------------------------------------------------------------------------------------------------------------------|--|
| TONER EMPTY # * | Replace the empty toner cartridge and press the Go button to clear the error. | |
| Cover is Open | Close the front cover. | |
| No Paper | Replenish paper of the A4-size paper specified in the display on the tray. Press the Go button to clear the error. | |
| Jam Tray1 | Remove the jammed paper, and press the Go button to clear | |
| Jam Rear | the error. | |

* # indicates the toner color (K, Y, M, or C) of which cartridge became empty.

Color test pattern



Fig. 5-13

1.4.18 Sensitivity adjustment of density sensor (Function code 72)

<Function>

This function allows you to print the patch data for density sensor sensitivity adjustment on the belt unit and measure the density with the density sensor. The characteristics of the density sensor are calculated based on the value measured by the density sensor, and the parameter is adjusted upon color density adjustment.

Note:

If you replace the main PCB ASSY, be sure to carry out this procedure. This function must not be executed until it is verified that the printer is in the ready state.

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 72" on the LCD in the initial state of the maintenance mode. Then, press the OK button. "PLEASE WAIT" is displayed on the LCD.
- (2) When the parameter is obtained without errors, the printer returns to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

| Error message | Measure | |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| FAILED | Remove the error factors with the following operations and press the Go button to clear the error. - Re-insert the toner cartridge in the correct position. | |
| | - Replace the toner cartridge. | |
| | - Replace the drum unit. | |
| | - Replace the belt unit. | |
| | - Replace the registration mark sensor holder ASSY. | |
| TONER EMPTY # * | Replace the empty toner cartridge and press the Go button to clear the error. Perform the sensitivity adjustment of the density sensor again. | |
| Cover is Open | Close the front cover. | |
| Replace Toner | Replace the black toner cartridge and press the Go button to clear the error. Perform the sensitivity adjustment of the density sensor again. | |

* # indicates the toner color (Y, M, or C) of which cartridge became empty.

1.4.19 Setting by country (Function code 74)

<Function>

This function allows you to customize the printer according to language, function settings, and worker switch settings.

Note:

When you replace the main PCB ASSY and rewrite the firmware forcibly, be sure to carry out this procedure.

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 74" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The present customizing code is displayed.
- (2) Enter the upper 2 digits of the country setting code that you want to set.

Press the **OK** button, and the cursor moves from the first digit to the second digit. (The first digit cannot be selected.)

Press the \blacktriangle or \blacktriangledown button to enter the second digit and press the **OK** button, and the cursor moves to the fourth digit.

(3) Enter the lower 2 digits of the country setting code that you want to set.

Press the \blacktriangle or \blacktriangledown button to enter the third and fourth digits (The numbers which cannot be selected are skipped.) and press the **Go** button.

(4) The new setting is saved, and "PARAMETER INIT" is displayed on the LCD. After the setting is saved, the printer returns to the initial state of the maintenance mode.

Memo:

- To cancel this operation and return to the printer to the initial state of the maintenance mode during the above procedure, press the **Cancel** button.
- If there is a pause of more than one minute, the printer will automatically return to the initial state of the maintenance mode.

■ Setting by country code list

| Country | HL-4140CN | HL-4150CDN | HL-4570CDW |
|----------------------------|-----------|------------|------------|
| USA | | 0001 | 0101 |
| Canada | | 0002 | 0102 |
| Brazil | | 0042 | |
| Chile | | | 0136 |
| Argentina | | 0036 | |
| Germany | 0204 | 0004 | 0104 |
| UK | 0204 | 0004 | 0104 |
| France/Belgium/Netherlands | 0204 | 0004 | 0104 |
| Italy | 0204 | 0004 | 0104 |
| Iberia | 0204 | 0004 | 0104 |
| Switzerland | 0204 | 0004 | 0104 |
| Pan-Nordic | 0204 | 0004 | 0104 |
| Russia | | 0004 | |
| EEU General | 0204 | 0004 | 0104 |
| Israel | | | |
| South Africa | | | |
| Australia/New Zealand | | 0006 | 0106 |
| Singapore | | 0040 | 0140 |
| Gulf | | 0004 | 0104 |
| Turkey | | | |
| India | | 0045 | |
| Philippines | | | |
| Taiwan | | | |
| Korea | | 0040 | |
| China | | 0020 | 0120 |

* Country codes are subject to change without notice.

Note:

The information in this page is as of August 2010. For information on the latest code settings, see the ROM/firmware information provided by Brother.

1.4.20 Sensitivity adjustment of registration mark sensor and check of belt unit surface (Function code 75)

<Function>

This function makes the registration mark sensor to adjust its sensitivity compulsory. This allows you to check if the registration mark sensor works properly. This function makes the printer to check the surface of the belt unit by using the registration mark sensor as well.

<Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 75" on the LCD in the initial state of the maintenance mode. Then, press the OK button. After "REGI_SENS ADJUST" is displayed on the LCD, "REGI ADJ-BELTOFF" is displayed.
- (2) Press the \blacktriangle or \blacktriangledown button to select the appropriate item.

| LCD | Description |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REGI ADJ - BELTOFF | Adjust the sensitivity of the registration mark sensor when the belt unit is not operated. This is to check whether the registration mark sensor's operation is okay or not. |
| REGI BELT CHECK | Check that there are no scratches on the surface of the belt unit of the registration mask sensor. |
| REGI ADJ&CHECK | Adjust the sensitivity of the registration mark sensor when the belt unit is operated. (This adjustment is the same as the operation before the color registration.) |

- (3) Press the **Go** button, and then the sensitivity adjustment is started. Upon completion of this adjustment, the "OK" appears on the LCD.
- (4) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

Note:

- If you press the **Go** button during the sensitivity adjustment or after the error message appears on the LCD, the sensitivity adjustment is started again.
- In the case that the error occurs, refer to the next page to check the error description and the way to solve it.

| Error message | Description | Solution |
|---------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| REGI_ADJ:NG R | Registration mark sensor failure | Execute the adjustment of color registration (manual). (Refer to "Adjustment of color registration (Function code 66)" in this chapter.) |
| | | Replace the belt unit. |
| | | Replace the engine PCB ASSY. |
| | | Replace the main PCB ASSY. |
| | | Replace the registration mark sensor holder ASSY. |

■ Error display when "REGI ADJ-BELTOFF" is executed

Error display when "REGI BELT CHECK" or "REGI ADJ&CHECK" is executed

| Error message | Description | Solution |
|----------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NG:X L:YYY R:ZZZ ^{*1,2} | Error occurred at the registration mark sensor L or registration mark sensor R, or at the both of them. | Execute the adjustment of color registration (manual). If the error occurs again, replace the belt unit. (Refer to "Adjustment of color registration (Function code 66)" in this chapter.) |

*1 X shows the result of the state check of the belt unit surface in the number of errors (1 to 9). As the number is larger, the state of the belt unit is worse. When an error is detected at the registration mark sensor L or registration mark sensor R, the number of errors which occurred at the registration mark sensor L is displayed. (The number of errors which occurred at the registration mark sensor R is displayed only when no error is detected at the registration mark sensor L.) When ten or more errors are detected, "NG: A" is displayed.

*2 YYY and ZZZ indicate the largest width in 2,400 dpi dots among the error noises detected by the registration mark sensor L and registration mark sensor R respectively. (1 to 999). When an error noise of which width exceeds 999 is detected, "L: 999 R: 999" is displayed.

1.4.21 Printout of maintenance information (Function code 77)

<Function>

This function allows you to print a list of all maintenance information including printer coverage information. The items are those listed in the second page of the Printer Settings. The following items are printed on the maintenance information only.

| Average Coverage | Total: Accumulated coverage Current: Coverage by the toner cartridge which is currently used | |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Drum Information | Number of prints and count value of the drum which is currently used. | |
| Power On Time | Elapsed time while the power is ON. | |
| Power On Count | Number of times when the power is turned ON. | |
| Current/Previously Used | The number of printed pages of the current toner cartridge and the previous toner cartridge on each color. | |
| Current Waste Toner | The number of printed pages of the current waste toner box. | |
| Developing Bias | The current developing bias voltage on each color. | |
| Engine Sensor Log | Operation logs of the following sensors located in the paper path. MN: Registration front sensor RS: Registration rear sensor EJ: Paper eject sensor KO: T1 paper edge sensor | |
| Status Log | Information for those in charge of development. | |
| Temperature/Humidity | Ambient temperature/ humidity during printing. | |

Note:

The error data items stored in the error history are different from those in the second page of Printer Settings.

- Press the ▲ or ▼ button to display "MAINTENANCE 77" on the LCD in the initial state of the maintenance mode. Then, press the OK button.
- (2) Upon completion of printing, the printer returns to the initial state of the maintenance mode.

Maintenance information

MAINTENANCE

HL-4570CDW series Serial No.=X12345E0J000549 Model=84E-302 Country=0101 SW CheckSum=BE Main ROM: Ver.0.69 U1004271841 ROM ChkSum: 1E92 Sub ROM: Ver.0.40 P1004271842 USB Prod.ID: 003E 8100000165 01010101 OKOK 000000 Boot ROM: B1001121720 001C00810000020 HV ROM: 0.78B4C5 E230040000000000 00000D0 RAM Size = 128Mbyte 000E 0006 0002 0004 0003 00 Remaining life of : *Toner Cartridge **Drum Unit: 24938 (100%) Belt Unit: 49829 (100%) Cyan(C): 92%
 PF Kit MP: 50000 (100%)
 Fuser Unit: 99986 (100%)

 PF Kit 1: 99988 (100%)
 Laser Unit: 99986 (100%)
 Magenta(M): 92% Yellow(Y): 92% Black(K): 94% <Device Status> <Error History (last 10 errors)>
 1: 88:Jam Inside
 01/26/04 12:02 Page: 5

 2: 93:No Paper MP
 01/26/04 11:58 Page: 5

 3: 96:No Paper
 01/22/04 08:34 Page: 1
 Total Page Count: 14 Color Page Count: 9 Monochrome rage count Image Count Total: 41 Yellow(Y): 9 Monochrome Page Count: 5 4: 5: Black(K): 14 Magenta(M): 9 6: 7: ***Average Coverage(Total) 8: Cyan(C): 0.42% Yellow(Y): 0.51% Magenta(M): 0.37% Black(K): 0.95% 9: 10: ***Average Coverage(Current)* Yellow(Y): 0.51% Black(K): 0.95% Cyan(C): 0.42% Magenta(M): 0.37% <Replace Count> Toner Cartridge Belt Unit: 0 Cyan(C): 0 Magenta(M): 0 00/00/00 Fuser Unit: 0 <Drum Information> 00/00/00 Laser Unit: 0 Drum Page Count: 62 Yellow(Y): 0 00/00/00 PF Kit MP: 0 PF Kit 1: 0 Drum Count: 1494 Black(K): 0 00/00/00 Drum Unit: 0 <Developing Roller Count> Waste Toner: 0 Cyan(C): 3151 Yellow(Y): 3151 Magenta(M): 3151 Black(K): 3918 <Total Pages Printed> Current Toner Previously Used Toner <Total Pages Printed> Cyan(C): 0 Cyan(C): 9 MP Tray: 0 Duplex: 2 Magenta(M): 9 Magenta(M): 0 Yellow(Y): 9 Black(K): 14 Tray 1: 12 Yellow(Y): 0 Black(K): 0 <Total Pages Printed> Waste Toner: 14 A4/Letter: 13 Legal/Folio: 0 <Developing Bias: C:400V M:394V Y:350V K:371V> B5/Executive: 0 Envelope: 0 <Engine Sensor Log> A5: 0 KO: 000200/001700 MN: 000335/001700 Others: 1 RS: 000550/001650 EJ: 002845/001715 <Total Pages Printed> <Status Log>
 85
 14
 01
 83
 10
 00
 85
 26
 60
 85
 14
 01

 83
 10
 00
 85
 14
 01
 83
 10
 00
 83
 13
 00

 83
 10
 00
 83
 10
 00
 83
 13
 00
 Plain/Thin/Recycled: 14 Thick/Thicker/Bond: 0 Envelope/Env.Thick/Env.Thin: 0 Label: 0 Hagaki: 0 <Temperature/Humidity> Temperature: 28 degrees(C) Humidity: 52% Glossy: 0 <Total Paper Jams: 0> Jam MP Tray: 0 Jam Rear: 0 Jam Tray 1: 0 Jam Duplex: 0 Jam Tray 1: 0 Jam Inside: 0 Remaining life will vary depending on the types of documents printed. ** Based on A4/Letter printing. <Power On Time: 71 hours> *** Calculated coverage <Power On Count: 27>

Fig. 5-14

1.4.22 Operational check of fans (Function code 78)

<Function>

This function is to check whether each of fans is operating correctly or not. The operation of the following fan is checked respectively, and their operating states (rotation speed 100 %, rotation speed 50 %, or OFF) are displayed.

| LCD | Parts name | Description |
|-----|------------|------------------------------------------------------------|
| F | Fuser fan | Evacuate hot air of the fuser unit. |
| Р | Power fan | Evacuate hot air of the low-voltage power supply PCB ASSY. |
| В | Blower fan | Intake air to prevent a dirt on the corona wire. |

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 78" on the LCD in the initial state of the maintenance mode. Then, press the OK button.
- (2) Press the **Go** button to check the next term. For operation check, spin or stop fans actually on each term.





(3) Press **Cancel** button in any process of the display cycle. The printer returns to the initial state of the maintenance mode.



Fig. 5-16

1.4.23 Display of machine history (log) (Function code 80)

<Function>

This function allows you to view the machine history (log). The display items are shown in the table below.

| | LCD | Description |
|-----------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Serial | USB: | Serial number |
| MAC Address | MAC: | MAC Address (Ethernet Address) |
| PCB Serial | PCB: | Main PCB serial number |
| | DRUM: | Number of drum rotations |
| Drum related | DRUM_PG: | Number of printed pages by drum |
| items | DRUM_CH: * ¹ | Number of times the drum unit has been replaced/ Date of last replacement |
| | CTN_PG1: | Number of printed pages by cyan toner |
| | CTN_PG2: | Number of printed pages before previous reset of cyan toner |
| | CTN_ERM: | Remaining toner amount of cyan toner (the calculated value in dots) |
| | CTN_RRM: | Remaining toner amount of cyan toner (the remaining amount based on the number of rotations of the developer roller) |
| | CTN_CH: * ¹ | Number of times the cyan toner has been replaced/ Date of last replacement |
| Toner | CTN_RND: | Cyan toner developer roller count |
| items | MTN_PG1: | Number of printed pages by magenta toner |
| | MTN_PG2: | Number of printed pages before previous reset of magenta toner |
| | MTN_ERM: | Remaining toner amount of magenta toner (the calculated value in dots) |
| | MTN_RRM: | Remaining toner amount of magenta toner (the remaining amount based on the number of rotations of the developer roller) |
| | MTN_CH: * ¹ | Number of times the magenta toner has been replaced/Date of last replacement |
| | MTN_RND: | Magenta toner developer roller count |

*1 Press the **OK** button while the number of times that the consumable part has been replaced is displayed, the date last time the consumable part was replaced is displayed. Press the **OK** button again, and the number of times the consumable part has been replaced is displayed again.

| | LCD | Description |
|-----------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------|
| | YTN_PG1: | Number of printed pages by yellow toner |
| | YTN_PG2: | Number of printed pages before previous reset of yellow toner |
| | YTN_ERM: | Remaining toner amount of yellow toner (the calculated value in dots) |
| | YTN_RRM: | Remaining toner amount of yellow toner (the remaining amount based on the number of rotations of the developer roller) |
| | YTN_CH: *1 | Number of times the yellow toner has been replaced/ Date of last replacement |
| Toner | YTN_RND: | Yellow toner developer roller count |
| items | KTN_PG1: | Number of printed pages by black toner |
| | KTN_PG2: | Number of printed pages before previous reset of black toner |
| | KTN_ERM: | Remaining toner amount of black toner (the calculated value in dots) |
| | KTN_RRM: | Remaining toner amount of black toner (the remaining amount based on the number of rotations of the developer roller) |
| | KTNR_CH: *1 | Number of times the black toner has been replaced/ Date of last replacement |
| | KTN_RND: | Black toner developer roller count |
| | WTNR_PG: | Printed pages by waste toner box |
| | WTNR_CH: * ¹ | Number of times the waste toner box has been replaced/Date of last replacement |
| | BCLN: | Number of rotations of the belt cleaner roller |
| | BELT_PG: | Printed pages by belt unit |
| a 11 | BELT_CH: | Number of times the belt unit has been replaced |
| Other replacing | PFMP_PG: | Printed pages by MP paper feeding kit |
| part related items | PFMP_CH: | Number of times the MP paper feeding kit has been replaced |
| | PFK1_PG: | Printed pages by paper feeding kit1 |
| | PFK1_CH: | Number of times the paper feeding kit1 has been replaced |
| | PFK2_PG: | Printed pages by paper feeding kit2 |
| | PFK2_CH: | Number of times the paper feeding kit2 has been replaced |

*1 Press the **OK** button while the number of times that the consumable part has been replaced is displayed, the date last time the consumable part was replaced is displayed. Press the **OK** button again, and the number of times the consumable part has been replaced is displayed again.

| | LCD | Description |
|---------------------------------------------|-----------|-----------------------------------------------------------|
| Other replacing part related items | FUSR_PG: | Printed pages by fuser unit |
| | FUSR_CH: | Number of times the fuser unit has been replaced |
| | LASR_PG: | Printed pages by laser unit |
| nomo | LASR_CH: | Number of times the laser unit has been replaced |
| | CCVRGUSI: | Average cyan coverage % (Toner in use) |
| | CCVRGACC: | Average cyan coverage % (Accumulated) |
| A | MCVRGUSI: | Average magenta coverage % (Toner in use) |
| Average print rate | MCVRGACC: | Average magenta coverage % (Accumulated) |
| related items ^{*2} | YCVRGUSI: | Average yellow coverage % (Toner in use) |
| | YCVRGACC: | Average yellow coverage % (Accumulated) |
| | KCVRGUSI: | Average black coverage % (Toner in use) |
| | KCVRGACC: | Average black coverage % (Accumulated) |
| | TTL_PG: | Total number of printed pages |
| | TTL_CO: | Total number of color printed pages |
| | TTL_MO: | Total number of monochrome printed pages |
| Print pages related items | TTL_CI: | Cyan printed pages |
| | TTL_MI: | Magenta printed pages |
| | TTL_YI: | Yellow printed pages |
| | TTL_KI: | Black printed pages |
| | TR1_PG: | Number of pages picked up from the paper tray 1 |
| Picked-up | TR2_PG: | Number of pages picked up from the paper tray 2 |
| pages by trav | MP_PG: | Number of pages picked up from the MP tray |
| udy | DX_PG: | Number of sheets picked up from the DX (except HL-4140CN) |
| | A4+LTR: | Number of A4/Letter size sheets picked up |
| Picked-up pages by paper size | LG+F0L: | Number of Legal/Folio size sheets picked up |
| | B5+EXE: | Number of B5/Executive size sheets picked up |
| | ENVLOP: | Number of envelopes picked up |
| | A5: | Number of A5 size (including A5R) sheets picked up |
| | OTHER: | Number of other-size (including JIS B6) sheets picked up |

*2 Average print rate: Print area/printable area

| | LCD | Description |
|-----------------------------------|------------|-----------------------------------------------------------------------------|
| Print pages by paper | PLTNRE: | Printed pages of plain, thin, and recycled paper |
| | TKTRBD: | Printed pages of thick, thicker, and bond paper |
| | ENVTYP: | Printed pages of envelope, envelope thick, and envelope thin |
| type ^{*3} | HAGAKI: | Printed pages of Hagaki |
| | LABEL: | Printed pages of label |
| | GLOSSY: | Number of prints of glossy paper |
| | CDEV_BIAS: | Cyan developing bias voltage (unit: V) |
| Developing | MDEV_BIAS: | Magenta developing bias voltage (unit: V) |
| time | YDEV_BIAS: | Yellow developing bias voltage (unit: V) |
| | KDEV_BIAS: | Black developing bias voltage (unit: V) |
| Power | POWER: | Power distribution time (unit: H) |
| distribution time | PWRCNT: | Number of times that the power is turned ON |
| | TTL_JAM: | Total number of times when a jam occurs |
| | TR1_JAM: | Number of times when a jam occurs at the paper tray 1 |
| .lam related | TR2_JAM: | Number of times when a jam occurs at the paper tray 2 |
| items | MP_JAM: | Number of times when a jam occurs at the MP tray |
| | DX_JAM | Number of sheets jammed in the DX (except HL-4140CN) |
| | IN_JAM: | Number of sheets jammed in the printer |
| | RE_JAM: | Number of sheets jammed around the back cover |
| Number of error occurrences | HODN_ER: | Number of times that the error caused by the dirt on the corona wire occurs |
| | FUSR_ER: | Number of times that fuser unit error occurs |
| | MTLK_ER: | Number of times that the motor lock error in the laser scanner occurs |

*3 Paper type according to the printer driver settings. It is not necessarily matched with the type of the actually fed paper.

| | LCD | Description |
|-------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| | MACHINEERR_##: * ⁴ | Error history ## to be displayed to the user: Error code/Occurrence page counter |
| Error log related items | ENGERR##:****** * ⁵ | Engine error history ##: ***** Error level (2 bytes), large classification code (2 bytes), detailed classification code (2 bytes) |
| | DEVSTATUS##: * ⁶ | Log for design analysis / Occurrence page counter |

⁴ 01 to 10 are entered in ## in chronological order. When you press the **OK** button as the printer error history is displayed, the page counter values when the errors occurred are displayed.

Note:

The error data items stored in the error history are different from those in the second page of Printer Settings.

- *5 01 to 10 are entered in ## in chronological order. When you press the **OK** button as the engine error history is displayed, TM: elapsed time (minute) from the previous error and BT: the number of times when the power is ON are displayed. When you press the **OK** button again, the engine error history is displayed again.
- *6 01 to 10 are entered in ## in chronological order. In the log for design analysis, even if a same error occurs continuously, it is recorded in the history every time it occurs.

Note:

If you press the **OK** button while an error code of "MACHINEERR" or "DEVATATUS" is displayed on the LCD, you can check the page counter value at the time when this error occurred. Press the **OK** button again to return to the error log display.

<Operating procedure>

- Press the ▲ or ▼ button to display "MAINTENANCE 80" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The printer displays "USB:" on the LCD.
- (2) Each time the **Go** button is pressed, next log information item appears on the LCD in the order. If pressing the **Back** button, the previous log information appears.
- (3) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

1.4.24 Error code indication (Function code 82)

<Function>

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

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 82" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The printer displays "printer ERROR X X" on the LCD.
- (2) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

1.4.25 Developing bias voltage correction (Function code 83)

<Function>

This function performs developing bias voltage correction to fix the density of each color toner when printed color is not correct.

Note:

Before this function is performed, there is a need that the "Sensitivity adjustment of density sensor (Function mode 72)" has been done more than once. When performing this maintenance mode 83 after replacing the main PCB, make sure to perform the "Sensitivity adjustment of density sensor (Function mode 72)" first.

<Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 83" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The printer displays "PLEASE WAIT" on the LCD and starts the developing bias voltage correction.
- (2) Upon completion of the developing bias voltage correction, the printer returns to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

| Error message | Measure |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FAILED | Remove the error factors with the following operations and press the Go button to clear the error. Re-insert the toner cartridge in the correct position. Replace the toner cartridge. Replace the drum unit. Replace the belt unit. Replace the registration sensor ASSY. |
| TONER EMPTY # * | Replace the empty toner cartridge and press the Go button to clear the error. After the sensitivity adjustment of the density sensor (Function code 72) is performed, the developing bias voltage value is compensated again. |
| Cover is Open | Close the front cover. |
| Replace Toner | Replace the black toner cartridge and press the Go button to clear the error. After the sensitivity adjustment of the density sensor (Function code 72) is performed, the developing bias voltage value is compensated again. |

* # indicates the toner color (Y, M, or C) of which cartridge became empty.

Note:

Any panel operation is invalid during the developing bias voltage correction.

1.4.26 Exit from the maintenance mode (Function code 99)

<Function>

This function allows you to exit from the maintenance mode. If the error related to the fuser unit occurs, the error is cleared. (Refer to "2.6 How to Recover from Errors of the Fuser Unit" in this chapter.)

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 99" on the LCD in the initial state of the maintenance mode. Then, press the OK button. The maintenance mode exits from the maintenance mode and return to the ready state.

Note:

When a fuser error occurs, be sure to turn ON the power after cooling the halogen heater sufficiently.

2. OTHER SERVICE FUNCTIONS

2.1 Service Function Menus Enabled by Pressing Button (s) When Turning the Printer On

The following settings and functions will be available by holding down the specified button (s) while turning the printer on.

| Panel operation | Function |
|-----------------|-----------------------------|
| Go | Not used |
| Secure | Not used |
| Back | Not used |
| ▼(-) | Hex dump mode ^{*1} |
| ▲ (+) | Not used |
| ОК | Don't use |
| Cancel | Not used |

Press one button when turning the printer on

¹ You can print data from the computer as hexadecimal code. It is useful to analyze print data itself whether it is okay or not.

| Panel operation | | Function |
|-----------------|--------------|-------------------------------------------------------------------------|
| ОК | Back | Don't use |
| Go | ▲ (+) | Not used |
| Go | Back | Engine non-startup mode ^{*2} |
| ▼(-) | ▲ (+) | Don't use |
| ▼(-) | ОК | Don't use |
| ОК | ▲ (+) | Wireless LAN PCB E2PROM saving mode ^{*3} |
| Go | ОК | Not used |
| Go | Cancel | Flash ROM updates mode (UPD file/Model classification is available.) |

■ Press two buttons at the same time when turning the printer on

*2 This mode is to start-up the printer without using the engine. When the error related to the engine occurs, you can ignore the error and get the error history or the other counter information though it is impossible to print. When the printer doesn't work in case that the connection failure between the main controller and the engine controller occurs, it is possible to update the main controller itself to recover from the failures.

^{*3} This mode is to save the E2PROM data in the wireless LAN PCB in the FLASH memory of the printer when the wireless LAN PCB is replaced.

■ Press the ▲ or ▼ button as holding down the Go button in the ready state

| Panel operation | | Function |
|-----------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Go | ▲(+) | Parts life reset mode for the periodical replacement parts (Refer to "2.3 Parts Life Reset Function" in this chapter.) |
| Go | ▼(-) | Switching of Return Value of USB No./Support for Banding (Refer to "2.7 Switching of Return Value of USB No./ Support for Banding" in this chapter.) |

Press the Cancel button as holding down the Secure button while the front cover is opened

| Panel operation | | Function |
|-----------------|--------|---------------------------------------------------------------------------------------------------------------------|
| Secure | Cancel | Developer roller counter reset mode (Refer to "2.2 Developer Roller Counter Reset Function" in this chapter.) |

2.2 Developer Roller Counter Reset Function

This function is to manually perform the operation same as the one when a toner cartridge is replaced with a new one. The purpose of this function is to provide a means to resolve an error when a new toner cannot be recognized by the printer, and the toner life display fails to be cleared.

Pressing the two buttons at the same time while the front cover is opened

| Panel | operation | Function |
|--------|-----------|---------------------------------------------|
| Secure | Cancel | Menus of the developer roller counter reset |



- (1) Press the **Secure** and **Cancel** buttons at the same time when the front cover is open.
- (2) "Reset Menu" appears on the LCD. Press the ▲ or ▼ button to select the appropriate toner cartridge, and then press the OK button.

| LCD | Description |
|------------|----------------------------------------------------------------------|
| K.TNR-STD | Starter/Standard black toner developer roller counter reset |
| K.TNR-HC | High capacity black toner developer roller counter reset |
| K.TNR-S.HC | Super high capacity black toner devel- oper roller counter reset |
| C.TNR-STD | Starter/Standard cyan toner developer roller counter reset |
| C.TNR-HC | High capacity cyan toner developer roller counter reset |
| C.TNR-S.HC | Super high capacity cyan toner devel- oper roller counter reset |
| M.TNR-STD | Starter/Standard magenta toner devel- oper roller counter reset |
| M.TNR-HC | High capacity magenta toner developer roller counter reset |
| M.TNR-S.HC | Super high capacity magenta toner developer roller counter reset |
| Y.TNR-STD | Starter/Standard yellow toner developer roller counter reset |
| Y.TNR-HC | High capacity yellow toner developer roller counter reset |
| Y.TNR-S.HC | Super high capacity yellow toner devel- oper roller counter reset |


Note:

If there is no operation for 30 seconds or more, the printer automatically returns to step (1).

2.3 Parts Life Reset Function

This function is used to reset the relevant part counter when the user replaced a periodical replacement part with the correct procedure, and also used to forcibly reset the relevant part counter when an error cannot be resolved because the user did not replace a consumable part with the correct procedure.

Pressing the two buttons in the ready state

| Panel operation | Function |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Press (+) as holding down Go button. | Menus of the parts life reset (Resets the counter of the periodical replacement parts or consumable parts and counts up the number of replacement times by 1.) |

<Operating procedure>



Note:

- All replacement parts are always indicated on the LCD even though their lives do not reach the end of life.
- The printer returns to the ready state automatically if no panel operation is implemented for 30 seconds.

2.4 Printout of Printer Settings

The printer prints "PRINTER SETTINGS". The "Printer Settings" is configured with three pages for HL-4140CN/4150CDN and four pages for HL-4570CDW/4570CDWT (three pages if the wireless LAN is set to OFF). All pages have following terms in common; Title, Model name, Serial number. The setting indication is the same as the LCD setting information, supporting the following 20 languages. (ENG/FRE/GER/DUT/ITA/SPA/NOR/SWE/DAN/POR/FIN/CZE/POL/HUN/RUS/BUL/ROM/SLV/BR-PT/TUR)

| PRINTER SETTINGS (1/3) Hi-4570CDV series Estila Number=000001234567890 Number=10000001234567890 Number=10000001234567890 Number=10000001234567890 Number=1000000000000000000000000000000000000 | PRINTER SETTINGS (2/3) HE-4570CDW series Berill Number=000001234567890 Main Castellie Bib NOW Version: 0.38 Roman Castellie Bib Now (Castellie Bib |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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Fig. 5-17

<Operating procedure>

- (1) Press the **OK** button three times when the printer is in the ready state.
- (2) The printer displays "Print Settings/Printing" on the LCD, and starts to print. Upon completion of printing, the printer returns to the ready state.

Printer settings (Page 1)

This page includes various setting information of the printer. Each item is indicated when it fulfills the condition.

Printer settings (Page 2)

This page includes the printer information and the maintenance information in the following order.

(1) Printer information

The following items are indicated in the order.

- 1) Main Controller Main ROM Version (Main controller firmware version)
- 2) Main Controller Sub ROM Version (Sub firmware (PCL/PS) version)
- 3) RAM Size (MB)
- (2) Maintenance information
 - 1) Consumable information/Periodical replacement part information

The printable pages remained for the part is indicated. (Toner cartridges are excluded.) lso, the percentage of life remained over the total printable pages is indicated in numerical value and bar graph.

A sample indication (PF Kit 1) is as follows:

From the top left, the parts name, the number of printable pages remained, and the percentage of life remained are indicated. The column graph shows the percentage of the remaining life, and one block indicates 2%.

| PF Kit 1 47757 | | |
|-------------------|----|------|
| 1,,0, | 0% | 100% |



The consumable parts and periodical replacement parts indicated are as follows:

- Toner Cartridge (K, Y, M and C are separated and 4 cartridges)
- Drum Unit
- Belt Unit
- PF Kit MP
- PF Kit 1
- PF Kit 2 * indicated only when paper tray 2(LT) is installed.
- Fuser Unit
- Laser Unit

■ Life of toner cartridge

<Method of detecting toner life>

There are two messages, which are displayed on the LCD to indicate that toner reaches its life: "Toner Low" and "Replace Toner." While "Toner Low" is displayed on the LCD when the toner sensor detects a certain amount of toner is used, "Replace Toner" is displayed on the LCD when the toner sensor detects that toner is used up or when the number of rotations of the developer roller reaches its life.

- Detection by the toner sensor

This printer has a function to detect the remaining toner by checking the level at which toner in a cartridge interrupts light using a transmissive light sensor.

- Detection by means of rotation rates of the developer roller reached its upper limit This printer has a function to detect when the number of rotations reaches the upper limit before the developer roller is worn out and becomes unusable.

<Relationship between printable pages of the toner cartridge and remaining toner>



Memo:

When the number of rotations of the developer roller reaches the cartridge life end, "Replace Toner" is displayed even if toner remains.

The life of toner cartridges when making prints of the print pattern specified by ISO/IEC 24712 is shown in the table below. (At the point of 2 in the figure above)

| Toner cartridge | | Number of printable pages |
|-----------------|-----------------------|---------------------------|
| Standard | Black | 2,500 pages |
| | Yellow, Magenta, Cyan | 1,500 pages |
| High | Black | 4,000 pages |
| | Yellow, Magenta, Cyan | 3,500 pages |
| Super High | Black | 6,000 pages |
| | Yellow, Magenta, Cyan | 6,000 pages |

To avoid problems caused by the worn-out of the developer roller surface and deterioration of the toner ceiling, "Replace Toner" message is displayed and the print operation is prohibited when the number of the rotations of the developer roller reaches the upper limit even if toner remains. The upper limit of the number of the rotations of the developer roller is shown in the table below.

| Toner cartridge | | Upper limit of rotations of the developer roller |
|-----------------|-----------------------|--------------------------------------------------|
| Standard | Black | 72,450 rotations |
| | Yellow, Magenta, Cyan | 43,470 rotations |
| High | Black | 115,920 rotations |
| | Yellow, Magenta, Cyan | 101,430 rotations |
| Super High | Black | 173,880 rotations |
| | Yellow, Magenta, Cyan | 173,880 rotations |

<Cartridge life>

The cartridge life (at the point of ③ in the figure above), which depends on the upper limit of the number of rotations of the developer roller, varies according to the average number of print pages per job. (See the table below.) The number of printable pages is larger when making continuous prints in one job because deterioration of the developer roller is low.

Memo:

- The number of rotations of the developer roller per A4-size page*:

| | Color | Monochrome |
|---------------------------------------|---------------------|-----------------|
| First page | 42.5 rotations | 42.5 rotations |
| | (K, Y, M, C roller) | (K roller only) |
| Second page and after (in the case of | 11.3 rotations | 11.3 rotations |
| continuous printing) | (K, Y, M, C roller) | (K roller only) |

- The number of rotations of the developer roller for each operation*:

| | K roller | Y, M, C roller |
|------------------------------------|-----------------|-----------------|
| Warm-up operation | 37.0 rotations | 35.0 rotations |
| Adjustment of color registration | 83.0 rotations | 67.7 rotations |
| Adjustment of color calibration | 142.0 rotations | 111.3 rotations |
| Number of idling rotation when the | 262.0 rotations | 214.0 rotations |
| printer is turned ON (Worst value) | | |

* Since the number of rotations varies according to individual differences between printers and the environment, consider it as a reference value.

Note:

The numeral values provided in this page are as of August 2010. These values are subject to change without prior notice.

| Average print page (page/job) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------------------------------|-------|-------|-------|-------|--------|--------|--------|--------|
| Cartridge life (Standard-K) | 1,750 | 2,762 | 3,421 | 3,885 | 4,229 | 4,494 | 4,705 | 4,876 |
| Cartridge life (Standard-YMC) | 1,050 | 1,640 | 2,018 | 2,281 | 2,474 | 2,622 | 2,739 | 2,834 |
| Cartridge life (High-K) | 2,800 | 4,419 | 5,474 | 6,216 | 6,766 | 7,190 | 7,528 | 7,802 |
| Cartridge life (High-YMC) | 2,450 | 3,827 | 4,708 | 5,322 | 5,773 | 6,118 | 6,392 | 6,613 |
| Cartridge life (Super High-K) | 4,200 | 6,628 | 8,211 | 9,324 | 10,149 | 10,785 | 11,291 | 11,703 |
| Cartridge life (Super High-YMC) | 4,200 | 6,560 | 8,071 | 9,123 | 9,896 | 10,488 | 10,957 | 11,337 |

<Relationship between average print page per 1 job and life of toner cartridges>

The developer roller also rotates for the warm-up operation, color registration adjustment operation, and developing bias adjustment operation when the power is turned ON and when the cover is opened or closed. Therefore, when these operations are frequently performed, the life of toner cartridges is shortened. (The table below shows the worst case in which the warm-up operation, color registration adjustment, and developing bias adjustment are performed when the power is turned ON.)

<Cartridge life in the case that the power is turned OFF/ON and adjustment is performed before printing>

| Average print page (page/job) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------------------------------|-----|-------|-------|-------|-------|-------|-------|-------|
| Cartridge life (Standard-K) | 244 | 470 | 681 | 877 | 1,061 | 1,233 | 1,395 | 1,547 |
| Cartridge life (Standard-YMC) | 167 | 319 | 459 | 588 | 708 | 818 | 921 | 1,017 |
| Cartridge life (High-K) | 390 | 752 | 1,089 | 1,403 | 1,697 | 1,973 | 2,232 | 2,475 |
| Cartridge life (High-YMC) | 389 | 745 | 1,072 | 1,373 | 1,651 | 1,909 | 2,149 | 2,373 |
| Cartridge life (Super High-K) | 585 | 1,128 | 1,633 | 2,105 | 2,546 | 2,959 | 3,347 | 3,713 |
| Cartridge life (Super High-YMC) | 667 | 1,277 | 1,837 | 2,353 | 2,831 | 3,273 | 3,684 | 4,067 |

■ Life of drum unit

<How to read the drum unit life>

- It initially indicates 100% and gradually decreases.
- It indicates 10% when the "Drum End Soon" appears on the LCD.

<How to calculate the drum unit life>

The drum unit life is based on the "drum counter" or the "number of drum rotations." The drum counter is based on the total printed pages on each drum unit. This total printed pages should be reset every time you replace the drum unit with a new one. (Refer to "2.3 Parts Life Reset Function" in this chapter.) Basically this amount is equal to the assured printable pages of the drum unit. If the developing bias voltage correction or color registration adjustment is performed frequently, however, only the number of drum rotation" exceeds the "drum counter" based on the total printed page.

Refer to the calculation of the drum unit life based on the number of drum rotation below;

<How to calculate the page counter>

The number of drum rotations for the first page printed is about 24. The number of drum rotations per one page for the second or later page printed (continuous printing) is 3.6.

Page counter based on the number of drum rotations = {Number of drum rotations for the first page printed + [Number of drum rotations per one page for the second or later page printed x (Number of pages in continuous printing - 1)]} / 24

(* The number of drum rotations per one page continuous printing.) Example: Starts to print when the printer is in the Ready state.

| Continuous printing | Page counter based on the number of drum rotations (Pages) |
|---------------------|------------------------------------------------------------|
| 1 page/job | {24 + [3.6 x (1 - 1)]} / 24 = 1 |
| 2 pages/job | {24 + [3.6 x (2 - 1)]} / 24 = 1.15 |
| 18 pages/job | {24 + [3.6 x (18 - 1)]} / 24 = 3.55 |

If you leave the printer without printing for a long time, the number of drum rotations is increasing because the developing bias voltage correction and the color registration are performed. If you print one page per one job every time after leaving the printer without printing for a long time, the drum unit life is shorter than usual.

The number of drum rotations required for the developing bias voltage correction = 68 rotations. Example: Performs the developing bias voltage correction and starts to print after leaving the printer without printing for a long time.

| Continuous printing | Page counter based on the number of drum rotations (Pages) |
|---------------------|------------------------------------------------------------|
| 1 page/job | {68 + 24 + [3.6 x (1 - 1)]} / 24 = 3.83 |
| 2 pages/job | {68 + 24 + [3.6 x (2 - 1)]} / 24 = 3.98 |
| 18 pages/job | {68 + 24 + [3.6 x (18 - 1)]} / 24 = 5.38 |

The number of drum rotations required for the color registration = 35 rotations

Example: Performs the color registration adjustment and starts to print after leaving the printer without printing for a long time.

| Continuous printing | Page counter based on the number of drum rotations (Pages) |
|---------------------|------------------------------------------------------------|
| 1 page/job | {35 + 24 + [3.6 x (1 - 1)]} / 24 = 2.45 |
| 2 pages/job | {35 + 24 + [3.6 x (2 - 1)]} / 24 = 2.61 |
| 18 pages/job | {35 + 24 + [3.6 x (18 - 1)]} / 24 = 5.03 |

If the developing bias voltage correction and the color registration are performed continuously, the drum unit life is shorter.

2) Counter information, history information

The counter and history information related to the following item are included. When it reaches the maximum count, each item is no longer counted.

| Total Page Count | The total number of printed pages. The maximum count is 1 million pages. | |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Color Page Count | The total number of printed pages with color toners (Y/M/C). The maximum count is 1 million pages. | |
| Monochrome Page Count | The total number of printed pages with black toner only. The maximum count is 1 million pages. | |
| Image Count Total | The total number of printed pages, and the total number of printed pages on each color (K/Y/M/C). The maximum count is 1million pages for each color. | |
| Total Pages Printed | The total number of printed pages from each of the MP tray, Manual Feed, Tray 1, Tray 2 and the Duplex. (Duplex is not displayed on the HL-4140CN.) The maximum count is 1 million pages. This information is not cleared when the paper feeding kit is replaced. | |
| Total Pages Printed | The total number of printed pages by paper size. Available paper sizes are A4/Letter, Legal/Folio, B5/Executive, Envelope, A5 and Others. The maximum count is 1 million pages. | |
| Total Pages Printed | The total number of printed pages by paper type. Available paper types are Plain/Thin/Recycled, Thick/Thicker/Bond, Envelope/Env.Thick/Env.Thin, Label, Hagaki, and Glossy. The maximum count is 1 million pages. | |
| Total Paper Jams | The number of paper jam occurrence in each of the MP tray, Tray1, Tray 2, Inside, Rear and Duplex. (Duplex is not displayed on the HL-4140CN.) The paper jam occurs when the printer is turned ON is not counted. The maximum count for each item is 65,535 times. Total number of jam occurrences is printed after "Total Paper Jams:." | |
| Error History | The error history including the latest 10 errors and the number of pages when these errors occur are indicated. The errors such as Cover is Open, Manual Feed, No Paper XX and No Tray XX are not included. | |
| Replace Count | The number of replacement of each of Toner Cartridge (K/Y/M/C), Drum Unit, Belt Unit, PF Kit MP, PF Kit 1, PF Kit 2, Fuser Unit, Laser Unit and Waste Toner. The maximum count for each item is 255 times. | |

■ Printer Settings (Page 3, Page 4)

These pages include various network settings information of the printer.

| HL-4140CN/ 4150CDN | Page 3: Wired Network Information | |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--|
| HL-4570CDW/ 4570CDWT | LAN: Wired Enable setting = ON, LAN: WLAN Enable setting = ON Page 3: Wired Network Information Page 4: Wireless Network Information | |
| | LAN: Wired Enable setting = ON, LAN: WLAN Enable setting = OFF Page 3: Wired Network Information Page 4: Not Available | |
| | LAN: Wired Enable setting = OFF, LAN: WLAN Enable setting = ON Page 3: Wireless Network Information Page 4: Not Available | |
| | LAN: Wired Enable setting = OFF, LAN: WLAN Enable setting = OFF Page 3&4: Not Available | |

2.5 Deletion of User Setting Information, etc.

In this printer, the user setting information is stored in the EEPROM and flash memory of the main PCB. You can delete all the data listed below at a time with the procedure given below.

- Information related to Net
- User setting information
- Computer usage limit information (HL-4570CDW/4570CDWT only)

<Operating procedure>



Note:

The printer returns to the ready state automatically if no panel operation is implemented for 30 seconds.

2.6 How to Recover from Errors of the Fuser Unit

How to recover from errors of the fuser unit is to use Function code 99 in the maintenance mode.

First of all, turn OFF the power of the printer to cool the fuser unit. When clearing an error, be sure that the fuser unit is cooled down sufficiently. If an error is cleared while the fuser unit is not cooled down, there is a possibility that the unit might be unable to be repaired.

2.7 Switching of Return Value of USB No./Support for Banding

This function allows you to switch the return value of the USB No. and switch controls to resolve banding symptoms.

<Operating procedure>

- (1) Press the **Go** button and **▼** button at the same time while the printer is in the ready state. "USB No." will appear on the LCD.
- (2) Select one of the functions in the table below that you want to change the value using the ▲ or ▼ button and press the OK or Go button.

| LCD | Description | |
|-----------------|---------------------------------------------------------------------------|--|
| USBNo. =ON | Changing return value of USB No. | |
| PS.DitherType=0 | Switching of PS Dither Pattern | |
| DP.ImpGray=ON | Switching ON/OFF of DirectPrint Color mode-Improve Gray Color | |
| Regi Freq | Switching of timing to execute Auto Registration | |
| DX.XAdjust | Adjusting left-end print start position on second side in duplex printing | |
| DpSlp.StrDt | Switching ON/OFF of Deep Sleep function when StoreData (Secure) exists | |

An asterisk "*" appears beside the current setting.

- (3) Select the value that you want to set using the ▲ or ▼ button and press the **OK** or **Go** button.
- (4) "Accepted" is displayed for approximately two second, and the printer goes back to the ready state.

Note:

After the setting of USB No., turn OFF the power switch. (The change will not be applied until the power switch is turned OFF and ON.)

<Details>

| Item | Description | Setting |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USBNo. | When the OS of the computer is Windows Vista [®] , it might not be able to obtain the serial No. of a USB | USBNo. =ON Returns the serial No. of the device. |
| | and USB device. To avoid this problem, the return value of the serial No. is switched to "0." | USBNo. =OFF Returns "0." |
| PS.DitherType This function is to switch the pattern when printed letters slanted lines are not smoothin lines are rough or uner | This function is to switch the dither pattern when printed letters and/or slanted lines are not smooth, and this lines are rough or uneven | PS.DitherType=0 Improves roughness of letters and slanted lines. |
| | thin lines are rough or uneven. | PS.DitherType=1 Alleviates banding. |
| DP.ImpGray This function is to switch ON/OFF of the print control for the gray color when other colors are slightly blended in the gray color or the gray color is uneven upon printing. | DP.ImpGray=ON Improves the symptom that other colors are slightly blended in the gray color. | |
| | color is uneven upon printing. | DP.ImpGray=OFF Improves the unevenness of the gray color. |
| Regi Freq | This function is to switch the threshold value which is used as the timing to execute Auto Registration. The threshold value can be switched in three phases between High, Mid, and Low. | Regi Freq=Mid The frequency to execute Auto Registration is middle. |
| | | Regi Freq=High The frequency to execute Auto Registration is high. |
| | | Regi Freq=Low The frequency to execute Auto Registration is low. |
| DX.XAdjust | This function is to adjust the left-end print start position on the second side in the left and right direction if it is displaced in duplex printing. The adjustable range is -100 to 750 (unit: 300 dpi) (The minus direction means the left direction.) | DX.Xadjust=** To move the print start position to the left, press the ▲ button and decrease the value. To move the print start position to the right, press the ▼ button and increase the value. |
| DpSlp.StrDt | This function is to switch whether or not to permit the printer to go into Deep Sleep when StoreData (Secure) exists in the main body. | DpSlp.StrDt =ON Even when StoreData(Secure) exists, the Deep Sleep function operates. |
| | | DpSlp.StrDt =OFF When StoreData(Secure) exists, the Deep Sleep function does not operate. |

2.8 Drum Cleaning

Drum cleaning function overview

This function is to attach a special cleaning sheet on the drum and perform the cleaning of the drum.

<Operating procedure>

- Press the Cancel button and ▼ button while the printer is in the ready state.
 "Drum Cleaning/Attach the cleaning sheet. Please refer to the included instructions." is displayed on the LCD.
- (2) Open the front cover, take out the drum unit, and attach the cleaning sheet on the drum unit. (For the method of attaching the cleaning sheet, refer to the insertion of the cleaning sheet.)
- (3) Mount the drum unit to the printer and close the front cover."Drum Cleaning/Please wait" is displayed on the LCD, and then drum cleaning starts.
- (4) After a while, "Drum Cleaning/Drum Cleaning completed. Remove the cleaning sheet." is displayed on the LCD, and drum cleaning is completed. Then, open the front cover, take out the drum unit, and remove the cleaning sheet from the drum unit.
- (5) Mount the drum unit to the printer and close the front cover, and the printer goes back to the ready state.

Note:

If the printer is not operated for one minute while it is in the state of the procedure (1), it goes back to the ready state.

2.9 Deep Sleep Function

In addition to the sleep function with the normal specifications, the deep sleep function is prepared to reduce the power consumption.

The deep sleep function is used to stop the operation of the following functions whereas they are available in the normal sleep mode.

- Operation of the wireless LAN
- Power supply to the paper tray 2
- Operation of all the fans
- Detection of files in a USB memory

<Transition conditions>

The printer goes into the deep sleep function when the user does not operate the printer (from a PC) and no warning such as an error is issued after it goes into the normal sleep mode and all the fans are stopped. When secure print exists, the printer does not go into the deep sleep mode.

<How to Exit>

The printer exits from the deep sleep function when it receives an input from the outside, for instance when it receives print data from a PC, or when any button on the control panel is operated, or when the front cover is opened or closed.

Setting of ON/OFF of the deep sleep function

You can set ON/OFF of the deep sleep function so that the printer will not go into the deep sleep function even when the aforementioned conditions are satisfied.

<Operating procedure>

- (1) Press the **OK** button while the printer is in the ready state.
- (2) Press the ▲ or ▼ button to display "General Setup" on the LCD, and then press the **OK** button.
- (3) Press the ▲ or ▼ button to display "General Setup/Ecology" on the LCD, and then press the **OK** button.
- (4) Press the ▲ or ▼ button to display "Sleep Time" on the LCD, and then press the OK button.
- (5) Press the **Cancel** button and ▼ button at the same time while "Sleep Time/*Min" is displayed on the LCD. "Deep Sleep/On*" is displayed on the LCD.
- (6) Press the ▲ or ▼ button to switch Deep Sleep On and Off and display the state that you want to set, and then press the **Go** button.
- (7) "Deep Sleep/Accepted" is displayed on the LCD, and the printer goes back to the ready state.

Note:

- When no operation is made for 30 seconds during the switching operation, the printer goes back to the ready state.
- The initial value of Deep Sleep is set to On.
- In the procedure (5), the present setting (On or Off) of Deep Sleep is displayed on the LCD.
- "*" is displayed on the right side of the present setting (On or Off) of Deep Sleep.

CHAPTER 6 CIRCUIT DIAGRAMS & WIRING DIAGRAM

CHAPTER 6 CIRCUIT DIAGRAMS & WIRING DIAGRAM

This chapter provides the circuit diagrams and wiring diagram for the connections of the PCBs.

CONTENTS

| 1. CIRCUIT DIAGRAMS | 6-1 |
|---------------------|-----|
| 2. WIRING DIAGRAM | 6-6 |

1. CIRCUIT DIAGRAMS

■ High-voltage Power Supply PCB Circuit Diagram (1/3)





■ High-voltage Power Supply PCB Circuit Diagram (2/3)



■ High-voltage Power Supply PCB Circuit Diagram (3/3)



■ Low-voltage Power Supply PCB Circuit Diagram (100V)



■ Low-voltage Power Supply PCB Circuit Diagram (200V)

2. WIRING DIAGRAM

Wiring Diagram



CHAPTER 7 PERIODICAL MAINTENANCE

CHAPTER 7 PERIODICAL MAINTENANCE

This chapter details consumable parts and periodical replacement parts. This chapter also covers procedures for disassembling and assembling periodical replacement parts.

CONTENTS

| 1. PRECAUTIONS | 7-1 |
|--------------------------------------------------------|------|
| 2. PERIODICAL REPLACEMENT PARTS | 7-2 |
| 2.1 Procedures to Replace Periodical Replacement Parts | 7-2 |
| 2.1.1 Fuser unit | 7-3 |
| 2.1.2 Laser unit | |
| 2.1.3 Paper feeding kit1 | 7-24 |
| 2.1.4 Paper feeding kit2 | 7-27 |
| 2.1.5 MP paper feeding kit | |
| | |

1. PRECAUTIONS

To avoid creating secondary problems by mishandling, follow the warnings below during maintenance work.

WARNING Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the printer. When opening the front cover or back cover to access any parts inside the printer, never touch the shaded parts shown in the following figures. When opening the front cover or back cover to access any parts inside the printer, never touch the shaded parts shown in the following figures.

Periodical replacement parts are the parts to be replaced periodically to maintain printer quality. These parts would affect the printer quality if they loose their functionality even if they do not appear to be damaged or there is no change in their appearance.

The periodical replacement parts listed in the table below should be replaced according to the service life.

When replacing the periodical replacement parts, each of the counters need to be reset in order to record the number of replacement times. Refer to "2. Periodical Replacement Parts" in this chapter. The number of printed pages of the printer can be checked on Print Settings. (Refer to "2.4 Printout of Printer Settings" in Chapter 5.) The actual number of printed page will vary depending on the type of print job or the paper to being used. The figures indicated as the approximate life in the table above are worked out when printing a general business document (in accordance with ISO/IEC 19798) on A4-size paper.

Note:

- If the fuser unit is replaced after errors related to the fuser unit occur, you need to wait until the printer sufficiently cools down before replacing the unit. After replacing the unit, turn ON the printer and leave if for approximately fifteen minutes. This will make the printer to be released from the error.
- After disconnecting flat cables, check that each cable is not damaged at its end or shortcircuited.
- When connecting flat cables, do not insert them at an angle. After insertion, check that the cables are not at an angle.

2. PERIODICAL REPLACEMENT PARTS

2.1 Procedures to Replace Periodical Replacement Parts

Preparation

Prior to proceeding with the disassembly procedure,

- (1) Unplug
 - the AC cord,
 - the USB cable, if connected,
 - the LAN cable, if connected, and
 - USB flash memory drive, if connected.
 - LAN port cap
- (2) Remove the Paper tray.



2.1.1 Fuser unit

(1) Open the Back cover.





(2) Remove the Back cover stopper arm L and R from the Main body.



Fig. 7-2

(3) Remove the Shaft of the Back cover from the Bush on the right side of the Main body.



Fig. 7-3

(4) Remove the Back cover.



Fig. 7-4

(5) Open the Back flapper ASSY.





(6) Release of the Fuser cover lock lever L and R and open the Fuser cover.



Fig. 7-6

- (7) Remove the Taptite bind S M3x8 screw from the Fuser cover L.
- (8) Release the Hook to remove the Fuser cover L from the Main body.





(9) Slide the Outer chute ASSY in the direction of the arrow 9a to remove it to the front.



Fig. 7-8

- (10) Remove the Taptite bind S M3x8 screw from the Fuser cover R.
- (11) Release the Hook to remove the Fuser cover R from the Main body.



Fig. 7-9

(12) Disconnect the two Connectors (CN1, CN2) from the Paper eject sensor PCB ASSY.



Fig. 7-10

(13) Disconnect the Electrode terminal from the Fuser unit.





(14) Remove the two Taptite pan B M4x14 screws to remove the Fuser unit from the Main body.



Fig. 7-12

(15) Remove the Filter ASSY from the Paper eject ASSY.



Fig. 7-13

- (16) Hold down the Cleaner spring of the Cleaner pinch roller holder to remove the Cleaner pinch roller ASSY.
- (17) Remove the other three Cleaner pinch roller ASSY in the same way.



Fig. 7-14

Note:

- Do not apply a physical impact or vibration to the Fuser unit.
- Do not touch the roller and electrodes as shown in the figure below to prevent breakage of the Fuser unit.





(18) After replacing the Fuser unit, reset the counter. (Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

2.1.2 Laser unit

(1) Open the Back cover.





(2) Remove the Back cover stopper arm L and R from the Main body.



Fig. 7-17
(3) Remove the Shaft of the Back cover from the Bush on the right side of the Main body.



Fig. 7-18

(4) Remove the Back cover.



Fig. 7-19

(5) Open the Back flapper ASSY.



Fig. 7-20

(6) Open the Front cover.



Fig. 7-21

- (7) Remove the Taptite bind S M3x8 screw from the front of the Side cover L.
- (8) Remove the Taptite bind B M4x12 screw from the side of the Side cover L.





(9) Remove the two Taptite bind S M3x8 screws from the back of the Side cover L.



Fig. 7-23

(10) Release the Hooks 1 and 2 at the same time, and then release the Hooks 3 to 6 in numerical order. Hold the "A" section and lift the cover to release the Hook 7. Lower the cover, and then lift it again and release the Hooks 8 and 9 to remove the Side cover L from the Main body.



Fig. 7-24

Assembling Note:

When assembling the Side Cover L, make sure to push "A" to the rear side of the main body first, and then tighten the screws.

* Inside of Side cover L



Fig. 7-25

(11) Remove the Taptite bind S M3x8 screw from the front of the Side cover R ASSY.

(12) Remove the Taptite bind B M4x12 screw from the side of the Side cover R ASSY.



Fig. 7-26

(13) Remove the two Taptite bind S M3x8 screws from the back of the Side cover R ASSY .



Fig. 7-27

(14) Release the Hooks 1 and 2 at the same time, and then release the Hooks 3 to 6 in numerical order. Hold the "A" section and lift the cover to release the Hook 7. Lower the cover, and then lift it again and release the Hooks 8 and 9 to remove the Side cover R ASSY from the Main body.



Fig. 7-28

* Inside of Side cover R ASSY



Fig. 7-29

(15) Remove the six Taptite cup S M3x6 SR screws to remove the Main shield cover plate ASSY from the Main body.



Fig. 7-30

(16) Disconnect the three Connectors (CN6, CN10, CN11) and cables from the Main PCB ASSY.



Fig. 7-31

(17) Remove the Taptite cup S M3X6 SR screw from the front of the Top cover ASSY.





(18) Remove the two Taptite bind B M4x12 screws from the back of the Top cover ASSY.





(19) Release the three Hooks 1, and then release the Hooks 2 to 7. Insert a screwdriver into the hole to release the Hook and press the Hook 8 with the screwdriver to release it. Release the Hook 9 by pressing it with a screwdriver to remove the Top cover ASSY from the Main body.



Fig. 7-34

- (20) Disconnect the Flat cable from the Develop FFC holder.
- (21) Release the two Hooks to remove the Develop FFC holder from the Upper cable rack.



Fig. 7-35

(22) Disconnect cables from the Upper cable rack.

(23) Release the four Hooks to remove the Upper cable rack from the Base frame unit.



Fig. 7-36

(24) Remove the two Taptite cup S M3x6 SR screws to remove the Top beam from the Base frame unit.



Fig. 7-37

(25) Remove the five Taptite cup S M3x6 SR screws to remove the four Scanner holders.



Fig. 7-38

(26) Remove the Connector (CN8) and two Flat cables from the Laser unit to remove the Laser unit from the Base frame unit.



Fig. 7-39

Assembling Note:

When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cable are not at an angle.

(27) After replacing the Laser unit, reset the counter. (Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

2.1.3 Paper feeding kit1

(1) Release the Hook to remove the T1 separation pad holder ASSY from the Paper tray.



Fig. 7-40

Assembling Note:

Mount the T1 separation pad holder ASSY in a way that "A" of the T1 separation pad holder ASSY is inserted into "B" of the T1 separation pad spring.

(2) Remove the T1 separation pad spring from the Paper tray.



Be careful not to lose the T1 separation pad spring.





(3) Push the T1 lift arm to the back to remove "B" of the Roller holder ASSY from "A" of the T1 lift arm.



Fig. 7-42

- (4) Slide the Roller holder ASSY in the direction of the arrow 4a to remove it from the "C" of the Paper feed unit.
- (5) Slide the Roller holder ASSY in the direction of the arrow 5a and 5b in this order to remove it.



Assembling Note:

Align the Shaft of the roller holder ASSY to the hole of the Paper feed unit and insert it into the hole.



Fig. 7-44

(6) After replacing the Paper feeding kit, reset the counter. (Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

2.1.4 Paper feeding kit2

(1) Release the two Hooks of the T2 separation pad ASSY to remove them in the upward direction.

Note:

Be careful not to lose the T2 separation pad spring.



Fig. 7-45

(2) Remove the T2 separation pad spring from the T2 separation pad ASSY.



Fig. 7-46

- (3) Release the Hook and slide the T2 separation roller ASSY in the direction of the arrow 3a.
- (4) Remove the T2 separation roller ASSY in the direction of the arrow 4c as rotating it in the direction of the arrow 4b.



Fig. 7-47

Assembling Note:

When assembling the T2 separation roller ASSY, be sure to assemble it by sliding it in the direction of the arrow b as rotating the T2 separation roller ASSY in the direction of the arrow a.



Fig. 7-48

(5) Release the Hooks to remove the Feed roller ASSY from the Paper feed shaft.



Fig. 7-49

(6) After replacing the Paper feeding kit, reset the counter. (Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

2.1.5 MP paper feeding kit

(1) Press "A" to release the Hook and then remove the MP upper frame cover from the MP upper cover ASSY.



Fig. 7-50

(2) Remove the MP lift arm B from the MP upper cover ASSY.



Fig. 7-51

(3) Release the Hook to remove the MP holder bush from the MP upper cover.





(4) Remove the MP roller holder ASSY from the MP upper cover ASSY.





(5) Turn the MP separation pad ASSY upright to remove it from the MP unit.





(6) Remove the MP separation pad spring from the two Pins of MP unit.





(7) After replacing the MP paper feeding kit, reset the counter. (Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

APPENDIX 1. DELETION OF USER SETTING INFORMATION, ETC.

This appendix provides instructions on how to delete user setting information etc. recorded in the printer.

DELETION OF USER SETTING INFORMATION, ETC.

In this printer, the user setting information is stored in the EEPROM and flash memory of the main PCB ASSY. You can delete all the data listed below at a time with the procedure given below.

- Information related to Net
- User setting information
- Computer usage limit information (HL-4570CDW/4570CDWT only)

<Operating procedure>

- (1) Disconnect the network cable from the printer.
- (2) Press the \blacktriangle or \bigtriangledown button in the ready state until "Reset Menu" appears on the LCD.
- (3) Press the **OK** button. The "Reset Menu/Network" will appear on the LCD.
- (4) Press the ▲ and **Cancel** buttons at the same time. The "Reset Menu/Settings Reset" will appear on the LCD.
- (5) Press the **OK** button. The "Settings Reset/ ▲ Reset ▼ Exit" will appear on the LCD.
- (6) Press the ▲ button. The "Reboot OK?/ ▲ Yes ▼ No" will appear on the LCD.
- (7) Press the button again, and the printer automatically restarts, the user setting information is deleted, and the printer goes back to the ready state.

Note:

The printer returns to the ready state automatically if no panel operation is implemented for 30 seconds.

APPENDIX 2. SERIAL NUMBERING SYSTEM

SERIAL NUMBERING SYSTEM

Serial number labels for the printer itself



Fig. App 2-1







<Location>

APPENDIX 3. INSTALLING THE MAINTENANCE DRIVER

INSTALLING THE MAINTENANCE DRIVER

To identify multiple printers connected to the computer via USB, the computer needs to configure the corresponding number of virtual USB devices by a driver or software. If you connect a multiple number of printers to your computer, the same number of virtual USB devices will be automatically configured on your computer.

To prevent virtual USB devices from being configured without limitation, use the unique driver installation procedure described below that enables your computer to connect multiple printers via one single virtual USB device.

<Procedures>

- (1) While the printer is in the ready state, press the **OK** button and then **Go** button. Next, press the ▲ button 4 times, and the printer goes into the maintenance mode.
- (2) "■ MAINTENANCE ■■■" appears on the LCD, and the printer goes into the maintenance mode.
- (3) Double-click "Setup.exe" of the maintenance printer driver which is saved in the "hl4000" folder to execute.
- (4) The following screen appears, indicating the detection of device driver installation wizard. Click **Next** to proceed. (Screen below is the example of Windows[®] XP.)



(5) Alert warning message appears three times, click **Continue Anyway** to proceed.



(6) If the device driver is successfully installed, the following message screen appears. Click **Finish** to return.



- (7) Connect the printer to your computer using the USB cable.
- (8) The following screen appears, indicating the detection of new hardware device by the system. Select "No, not this time" and click **Next**.

| Found New Hardware Wizard | | |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| | Welcome to the Found New Hardware Wizard Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). Read our privacy policy Can Windows connect to Windows Update to search for software? Yes, this time only Yes, now and every time I connect a device No, not this time Click Next to continue. | |
| | < <u>B</u> ack Next > Cancel | |

(9) Select "Install the software automatically (Recommended)" and click Next.

| Found New Hardware Wizard | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| If your hardware came with an installation CD If your hardware came with an installation CD If your want the wizard to do? What do you want the wizard to do? Install from a list or specific location (Advanced) Click Next to continue. | |
| < <u>B</u> ack Next > Cancel | |

(10) Alert warning message appears, click **Continue Anyway** to proceed.

| Hardware Installation | | |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1 | The software you are installing for this hardware: Brother Maintenance USB has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing. | |
| | Continue Anyway STOP Installation | |

| Found New Hardware Wizard | | |
|-----------------------------------------------------------------------------------------------------------------|--|--|
| Please wait while the wizard installs the software | | |
| Brother Maintenance USB | | |
| Setting a system restore point and backing up old files in case your system needs to be restored in the future. | | |
| < <u>B</u> ack <u>N</u> ext > Cancel | | |

(11) If the Brother maintenance USB printer driver is successfully installed, the following message screen appears. Click **Finish** to return.

| Found New Hardware Wizard | | |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------|--|
| | Completing the Found New Hardware Wizard The wizard has finished installing the software for: Brother Maintenance USB | |
| | | |
| | < <u>B</u> ack Finish Cancel | |

- (12) Repeat the steps from (9) to (11) three times, and then complete its installation.
- (13) Disconnect the USB cable.
- (14) Press the ▲ or ▼ button to display "MAINTENANCE 99" on the LCD. Then, press the OK button. The maintenance mode exits from the maintenance mode and return to the ready state.