CP660

SERVICE MANUAL

REVISION 0

Canon

FEB.1999 FY8-13FJ-000

 CANON 660/2100 REV.0 FEB. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

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INTRODUCTION

This Service Manual contains basic data and figures on the color printer needed to service the machine in the field.

This machine consists of the following system units:

1. Reader unit
2. Editor
3. Original holder
4. Printer unit
5. Duplexing unit
6. R cassette
7. PS/PCL board*

* Remains disabled when the printer unit is used in a copier mode.

For the reader unit, duplexing unit, R cassette, and PS/PCL board, refer to their respective Service Manuals. This manual covers the printer unit, duplexing unit, and R cassette, and consists of the following chapters:

Chapter 1 General Description introduces the machine's features and specifications, shows how to operate it, and explains how copies are made.

Chapter 2 Basic Operation provides outlines of the machine's various mechanical workings.

Chapter 3 Laser Exposure System discusses the principles of operation used for the mechanical/electrical operations of the machine's laser system. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

Chapter 4 Image Formation System discusses the principles of how images are formed. It also explains the timing at which the various units involved in image formation are operated, and shows how they may be disassembled/assembled and adjusted.

Chapter 5 Pick-Up/Feeding System discusses the principles of how the printer unit picks up and moves paper inside it. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

Chapter 6 Fixing System discusses the principles of how the printer unit fuses toner images to paper. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

Chapter 7 Externals/Auxiliary Mechanisms shows the machine's external parts, and explains the principles used for the machine's various control mechanisms in view of the functions of electrical and mechanical units and in relation to their timing of operation. It also shows how these units may be disassembled/assembled and adjusted.

Chapter 8 Installation introduces requirements for the site of installation, and shows how the printer unit may be installed using step-by-step instructions.

Chapter 9 Maintenance and Servicing provides tables of periodically replaced parts and consumables/durables and scheduled servicing charts.

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Chapter 10 Troubleshooting provides tables of maintenance/inspection, standards/adjustments, and problem identification (image fault/malfunction).

Appendix contains a general timing chart and general circuit diagrams.

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.
   In the diagrams, ▭▭▭ represents the path of mechanical drive-where a signal name accompanies the symbol →, the arrow indicates the direction of the electric signal.
   In the digital circuits, '1' is used to indicate that the voltage level of a given signal is "High," while '0' is used to indicate "Low." (The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in "DRMD*" indicates that the DRMD signal goes on when '0'.
   The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.
2. In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine.

Reference:

Reader Unit Service Manual:	FY8-13FH-000
PS/PCL Board Service Manual:	FY8-13FK-000

System Configuration

This printer unit is designed to accommodate the following accessories:

- Upper 500 Sheet Cassette CS-82 A4R/A5R/B5R/LTRR*1
- Duplex Unit-A1 *1
- 1000-Sheet Paper Deck-D1 *2,3
- 2×500-Sheet Paper Deck-C1 *2,3
- 2000-Sheet Paper Deck-N1 *2,3
- ACC Controller-A1 *2,3
- ACC Interface Board-B1 *3
- ACC Interface Unit-B1 *3
  (ACC controller-A1, ACC Interface Board-B1 and Plate)
- Sorter-H1 (requires the Attachment Kit for STR-H1 if the printer unit is mounted to a Rack-A1) *2, *3
- Network Color PS/PCL Board-A1 *2
- Token Ring Board TB83

*1: Covered in this Service Manual
*2: Covered in a separate Service Manual.
*3:
If the printer unit is installed as a copier,
- Requires the ACC Interface Unit-B1,
- Requires the ACC Controller-A1.

If the printer unit is installed as a copier and a printer,
- Requires the ACC Controller-A1 and the ACC Interface Board-B1.

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CHAPTER 9 MAINTENANCE AND SERVICING

CHAPTER 10 TROUBLESHOOTING

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CHAPTER 1

GENERAL DESCRIPTION

This chapter provides specifications of the machine, instructions on how to operate the machine, and an outline of reproduction process.

I. FEATURES

1. Oil-Free Fixing Assembly

The fixing assembly is free of oil, allowing replacement without soiling hands. Further, since the fixing assembly is fixed in place without a screw, it may be removed by simply shifting the releasing lever.

2. Quick Replacement of Toner Cartridges

The Y, M, and C toner cartridges are designed as a 3-color rotary development construction so that they, including the black toner cartridge, may be replaced by the user without effort.

The black toner cartridge is a large-capacity cartridge—suitable for business uses, which require large volumes of black-and-white printing work.

3. Auto Duplexing Mechanism

The installation of a duplexing unit (accessory) will enable making double-sided prints (through-path configuration).

4. Reader Unit

The installation of the reader unit (accessory in some areas) will generate sharp prints at a resolution of 600 dpi x 600 lpi.

II. SPECIFICATIONS

A. Printer Unit

1. Type

Body	Desk-top page printer (console when installed to a paper deck)
Photosensitive medium	OPC drum (62-mm dia.)

2. System

Printing	Laser beam indirect photostatic reproduction (using an intermediate transfer drum)
Laser	Semiconductor laser
Scanning system	Scanning by 6-facet mirror
Charging	Roller charging
Exposure	Laser beam
Contrast adjustment	Auto
Development	Toner projection
Toner	Non-magnetic, single-component dry toner (Y, M, C) Magnetic, single-component dry toner (Bk)
Toner supply	By replacement of Y, M, C, and Bk toner cartridges
Pick-up	Special front cassette (2 holders), multifeeder
Transfer	Primary transfer: rubber blade Intermediate transfer drum: cleaning roller
Fixing	Heat roller (top: 595 W; bottom: 595 W (100/120 V)) (top: 550 W; bottom: 550 W (220/240 V))

3. Functions

Wait time		5 min or less	
First print time		See Table 1-201.	
Printing speed		See Table 1-202.	
Cassette		Universal cassette: about 500 sheets of 80 g/m^2 R cassette (accessory): about 500 sheets of 80 g/m^2	
Multifeeder tray		about 10 mm in height (about 100 sheets of 80 g/m^2)	
Duplexing unit		Through-path (accessory)	
Delivery tray		Face-down: about 300 sheets (80 g/m^2 paper), w/ limit sensor Face-up: about 100 sheets (80 g/m^2 paper)	
Print size	Cassette 1	Universal cassette: LGL, B4, LTR, A4 Special cassette (accessory): LTRR, A4R, B5R, A5R	
	Cassette 2	Universal cassette: 11×17, A3, LGL, B4, LTR, A4	
	Multifeeder	Envelope, A3 (11×17) to A5 (if B5 and A5, horizontal only); 12×18.5	
Print paper	Cassette	Plain paper (60 to 105 g/m^2), colored paper, recycled paper	
	Multifeeder	Plain paper (60 to 105 g/m^2), transparency (special), thick paper (106 to 135 g/m^2), label sheet (special), envelope, colored paper, recycled paper	
	Double-sided printing	Duplexing unit (if installed) : A3 to B5R plain paper (60 to 105 g/m^2)	
Image margin		Single-sided	Double-sided
		Leading edge: 5.0 ±2.0 mm Trailing edge: 5.0 ±2.0 mm Left/right: 5.0 ±2.0 mm	Leading edge: 5.0 ±2.0 mm Trailing edge: 5.0 ±2.0 mm Left/right: 5.0 ±2.0 mm
Non-image width		Single-sided	Double-sided
		Leading edge: 5.0 ±2.0 mm Trailing edge: 5.0 ±2.0 mm Left/right: 5.0 ±2.0 mm	Leading edge: 5.0 ±2.0 mm Trailing edge: 5.0 ±2.0 mm Left/right: 5.0 ±2.0 mm
Resolution	Main scanning direction	600 dpi (dots per inch)	
	Sub scanning direction	600 lpi (lines per inch)	

4. Others

<table>
<tr><td>Operating environment</td><td colspan="2">See p. 8-1.</td></tr>
<tr><td rowspan="11">Power supply (rated voltage ±10%)</td><td>Power supply</td><td>Serial No.</td></tr>
<tr><td>120V (USA)</td><td>NLQ xxxxx</td></tr>
<tr><td>120V (TWN)</td><td>NLX xxxxx</td></tr>
<tr><td>230V (KOR)</td><td>PLC xxxxx</td></tr>
<tr><td>230V (Others)</td><td rowspan="2">PLF xxxxx</td></tr>
<tr><td>230V (CA)</td></tr>
<tr><td>230V (UK)</td><td rowspan="5">ULL xxxxx</td></tr>
<tr><td>230V (FRN)</td></tr>
<tr><td>230V (GER)</td></tr>
<tr><td>230V (AMS)</td></tr>
<tr><td>230V (ITA)</td></tr>
<tr><td>Weight (printer unit only)</td><td colspan="2">91.6 kg (including drum cartridge weighing about 2.3 kg; black toner cartridge, about 1.5 kg; each color toner cartridge, about 1.2 kg)
The duplexing unit weighs about 3.5 kg.</td></tr>
</table>

(unit: sec or less)*

		4-color	Mono-color (YMCK)
Plain paper	A4/LTR	34	18
Thick paper	A4/LTR	50	35
Transparency	A4/LTR	57	41

Table 1-201 First Print Time

*A4, Direct, cassette 1, face-up delivery, no pre-scanning if face-down delivery, add 3 sec for plain paper, 6 sec for thick paper, and 7 sec for transparency.

(copies/min)

	Source	Size	4-color	Mono-color (YMCK)
Plain paper	Cassette Multifeeder	A3/B4/A4R/B5/A5R/ 11×17/LGL/LTRR	3	12
		A4/LTR	6	24
Thick paper	Multifeeder	A3/11×17	1.2	1.7
		A4/LTR	2.4	3.4
Transparency	Multifeeder	A4/LTR	2.1	2.8

Table 1-202 Printing Speed

The above specifications are subject to change for product improvement.

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III. SAFETY OF LASER LIGHT

Radiation of laser light can be hazardous to human beings. To ensure safety, the machine's laser scanning system is sealed inside a protective housing and external covers, preventing leakage of laser light to the outside so that the user cannot be exposed to the machine's laser light as long as the printer unit is used normally.

The printer unit is certified as a Class I product under 1040.10 of Title 21 of the Code of Federal Regulations (USA) and a Class 1 laser product under IEC825.

Figure 1-301 shows the label attached to products certified to comply with the foregoing standards (120-V model).

Warning:

Do not insert a screwdriver or other tools with a high reflectance into the laser path when servicing areas around the laser scanning system.
Be sure to remove watches, rings, and the like before starting to service the machine.

The eye, if exposed to laser light, can suffer permanent damage.

The machine's laser light is a visible light. However, the following label is attached to covers that may reflect laser light. Pay special attention whenever servicing areas behind such covers.

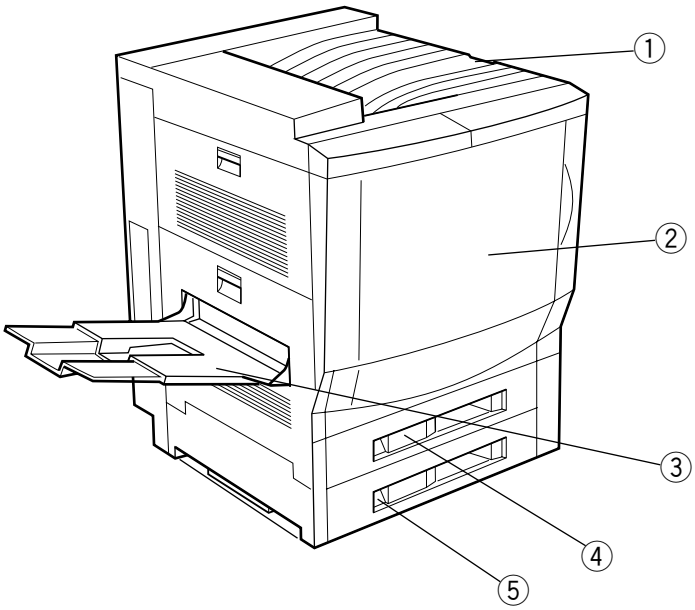
Figure 1-301

This label is attached to those covers of the machine's laser scanning system which are used to protect against laser light.

IV. NAMES OF PARTS

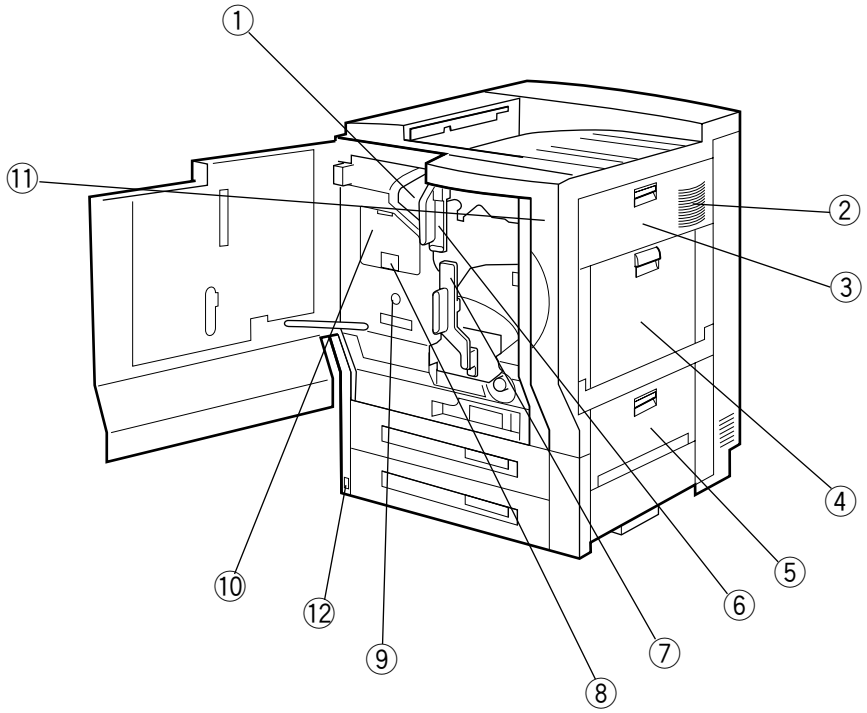
A. External View

- **Front View**



① Face-down tray
② Front cover
③ Face-up tray
④ Cassette 1
⑤ Cassette 2

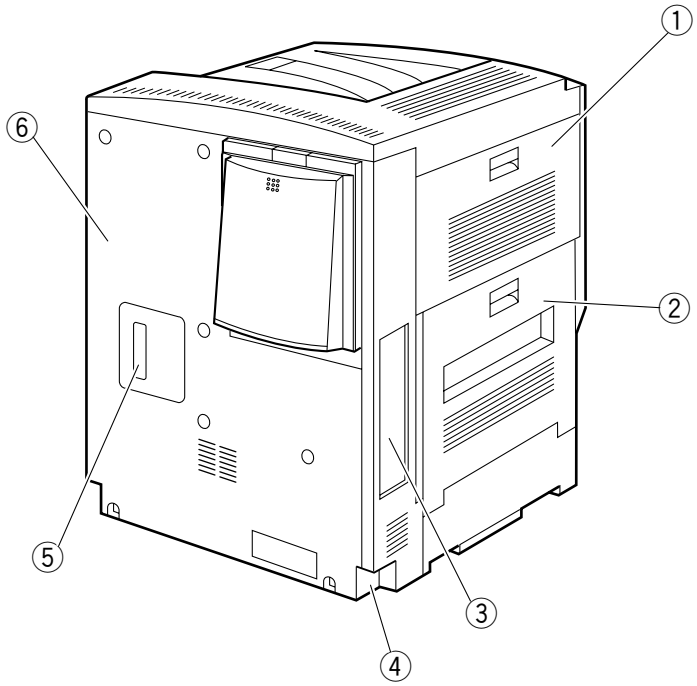
Figure 1-401



① Black toner cartridge slot
② Exhaust vent
③ Right cover
④ Multifeeder
⑤ Pick-up cassette cover
⑥ Top releasing lever
⑦ Bottom releasing lever
⑧ Toner cartridge color check window
⑨ Color cartridge replacement turret button
⑩ Color cartridge cover
⑪ Front right cover
⑫ Printer unit power switch

Figure 1-402

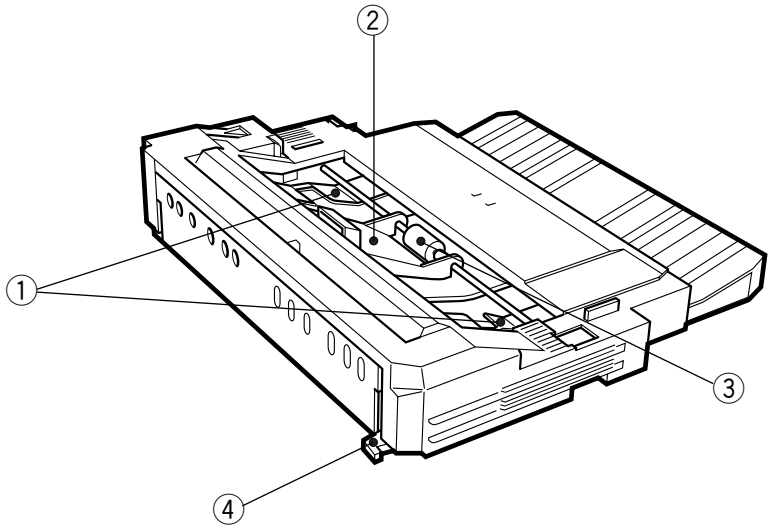
- **Back**



① Upper left cover
② Delivery cover
③ Video controller cover
④ Power supply cord connector (printer unit)
⑤ Interface cable (for connection to the reader unit)
⑥ Rear cover

Figure 1-403

- **Duplexing Unit**

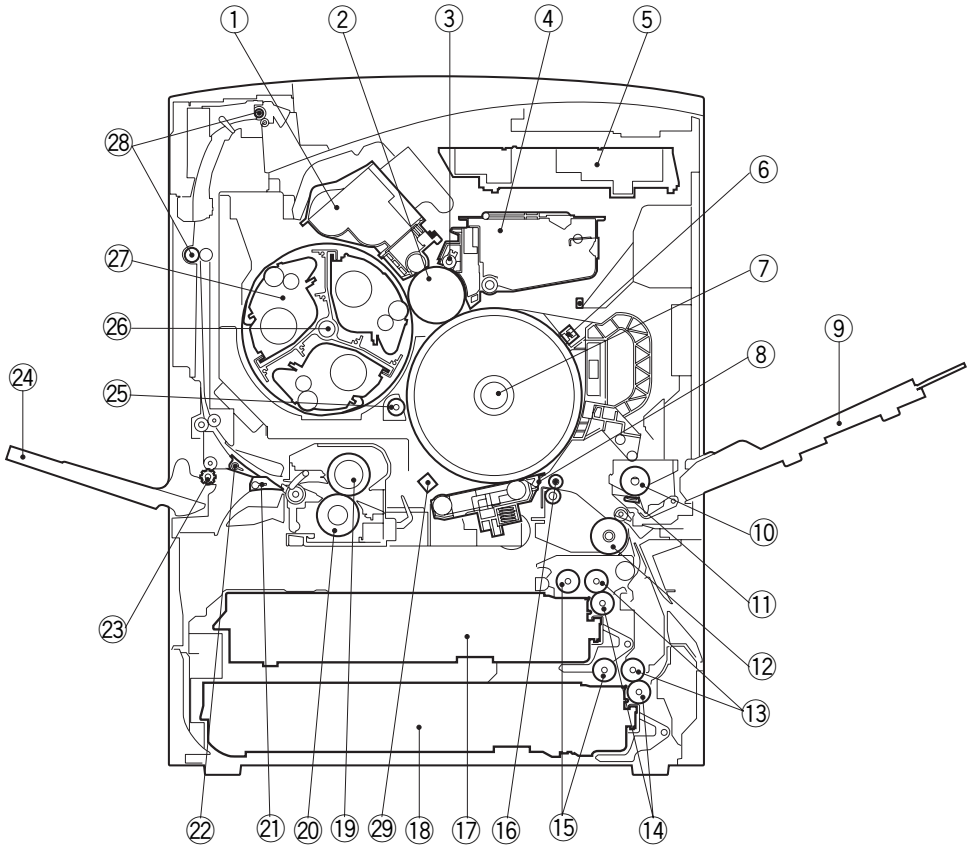


① Horizontal registration guide
② Pick-up guide plate
③ Duplexing feeding roller 1
④ Duplexing releasing lever

Figure 1-404

B. Cross Section

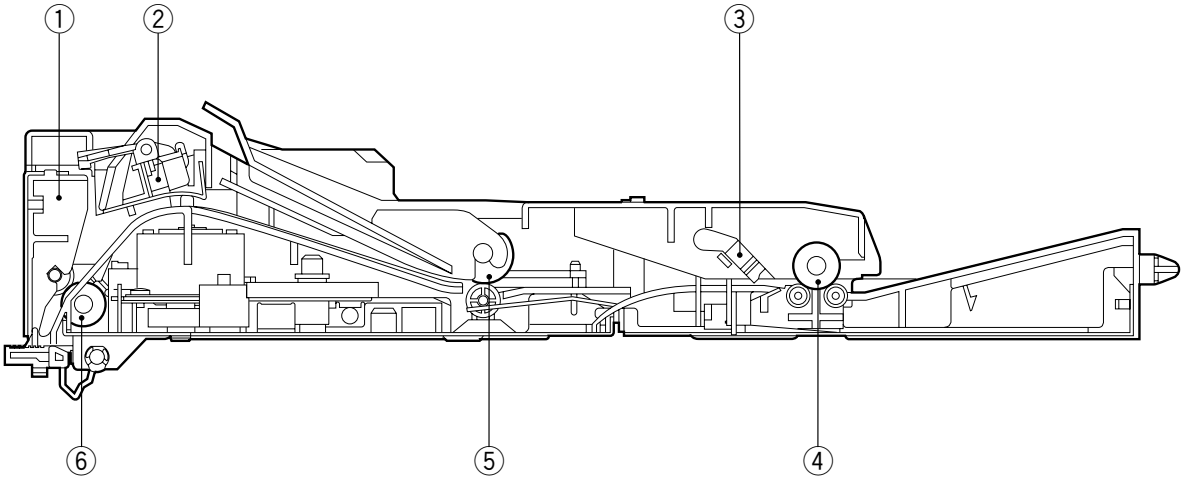
- **Printer Unit**



① Black toner cartridge
② Photosensitive drum
③ Primary charging roller
④ Photosensitive drum cartridge
⑤ Laser/scanner assembly
⑥ Secondary pre-transfer charging assembly
⑦ Intermediate transfer drum
⑧ Secondary transfer belt
⑨ Multifeeder tray
⑩ Multifeeder pickup roller
⑪ Separation pad
⑫ Feeding roller 2
⑬ Feeding roller 1
⑭ Separation roller
⑮ Pick-up roller
⑯ Registration roller
⑰ Cassette 1
⑱ Cassette 2
⑲ Upper fixing roller
⑳ Lower fixing roller
㉑ Duplexing flapper
㉒ Face-up flapper
㉓ Face-up delivery roller
㉔ Face-up tray
㉕ Intermediate transfer drum (ITD) cleaning roller
㉖ Color developing rotary
㉗ Color toner cartridge
㉘ Delivery roller
㉙ Separation static eliminator

Figure 1-405

- **Duplexing Unit**



① Reversing roller releasing plate
② Reversal paper sensor
③ Re-pick up sensor lever
④ Duplexing feeding roller 2
⑤ Duplexing feeding roller 1
⑥ Reversing roller

Figure 1-406

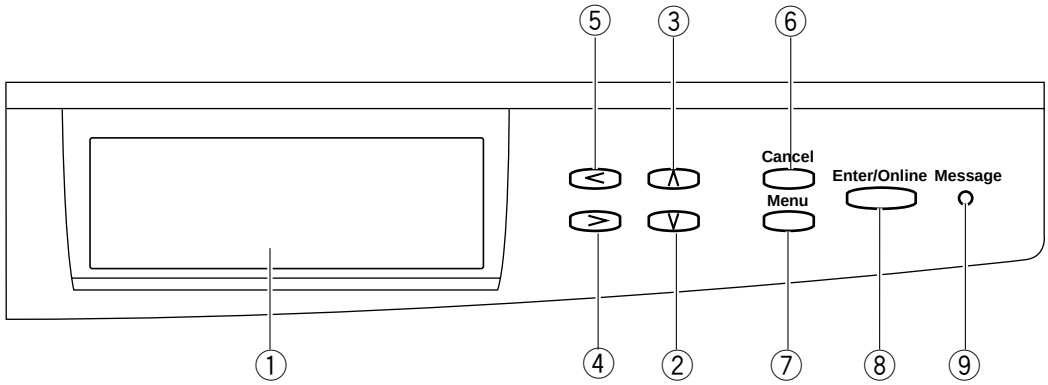
V. USING THE CONTROL PANEL

The control panel on the top of the printer enables you to set options and view the status of the printer and print jobs.

For details, see the PS/PCL Board Service Manual.

Caution:

This control panel is available only when the printer unit is used as a printer after equipping it with a printer board, and is not available if the printer unit is used as a copier.



	Name	Operation/function	Remarks
①	Display window	The LCD window on the control panel displays status messages and a graphical representation of the printer.	
②	Down arrow button	In a fixed-length list, takes you to the next item in the list. When entering numbers or text, increments to the previous number or character. Hold down the button to increment rapidly.	
③	Up arrow button	In a fixed-length list, takes you to the previous item in the list. When entering numbers or text, increments to the previous number or character. Hold down the button to increment rapidly.	
④	Right arrow button	When entering numbers or text, advances the cursor.	
⑤	Left arrow button	When entering number or text, backspaces and deletes.	
⑥	Cancel button	In setup menus, exits menus entirely, returning to ready. While printing, cancels printing or processing the current job.	
⑦	Menu button/LED	Accepts an option and advances to the next choice. When the printer is in ready mode, takes the printer offline.	On when the printer is online (ready to accept and process new jobs), blinking when receiving, processing or printing data, and off when the printer is offline or the power is off.
⑧	Enter/Online button/LED	From ready or power saver mode, enters the setup menus. In setup menus, advances from one menu to the next. From a setup menu option, returns to the previous setup menu.	
⑨	Message LED	On when the printer requires a service call. Blinking when the printer requires operator intervention (e.g., load paper).	

VI. NOTES TO THE USER

If the printer unit is expected to remain out of use for a long time (e.g., holidays), be sure to shift up the fixing assembly releasing lever as shown to unlock the upper and lower rollers of the fixing assembly.

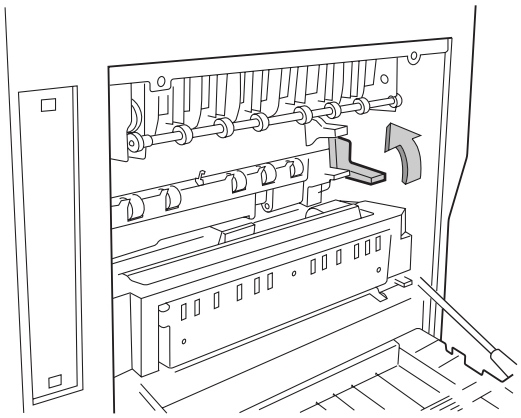


Figure 1-601 Fixing Assembly Releasing Lever

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VII. NOTES TO THE SERVICE PERSON

A. Storing the Drum Cartridge and the Toner Cartridges

Regardless of whether they have been opened or not, the cartridges (Y, M, and C toner cartridges, black toner cartridge, and drum cartridge) remain subject to the influences of the environment, and their characteristics change over time. (This is also true regardless of how many copies/prints they have processed.)

The speed of change, however, is dependent on the conditions of the site and maintenance and, therefore, it is important to take full care when storing or handling them. (Be sure to instruct the user to be careful when storing and handling the toner cartridges.)

1. Before Opening the Package

When storing the cartridges (Y, M, and C toner cartridges, black toner cartridge, and drum cartridge) in a storeroom or a workshop, be sure that the place complies with the conditions in Table 1-601; in addition,

1) Avoid direct sunshine;
2) Avoid an area subject to appreciable vibration; and
3) Avoid subjecting them to impact by hitting or dropping.

Temperature	Normal (9/10 or more of entire storage period)		0 to 35°C
	Severe (1/10 or less of entire storage period)	High	35 to 40°C
		Low	–20 to 0°C
	Changes in temperature (within 3-min period)		40°C → 15°C –20°C → 25°C
Humidity	Normal (9/10 or more of entire storage period)		35 to 85%
	Severe (1/10 or less of entire storage period)	High	85 to 95%
		Low	85 to 95%
	Atmospheric temperature		613 to 1013 hPa (608 to 760 mmHg)
	Entire storage period		1 yr

Table 1-701

Note: The term “entire storage period” means a period of one year form the date of manufacture indicated on the cartridge package.

2. After Opening the Package

The photosensitive drum is an organic photoconductor (OPC), and would deteriorate if subjected to strong light. The toner cartridges, on the other hand, contains toner, requiring care by the user for storing and handling after they have been opened.

3. Storage Environment (after opening)

1) Keep it in a protective bag.
2) Avoid direct sunshine. Avoid bright areas (e.g., near windows). Do not leave them inside a car for a long time, as the inside can become extremely hot.
3) Avoid high-temperature, high-humidity, low-temperature, or low-humidity areas and areas in which temperature or humidity change rapidly.
4) Avoid areas subject to corrosive gas (e.g., insecticide) or briny air.
5) Make sure the cartridges are kept between 0° and 35°C.
6) Do not place the cartridges near a CRT screen, disk drive, or floppy disks.
7) Keep the cartridges out of reach of children.

4. Service Life

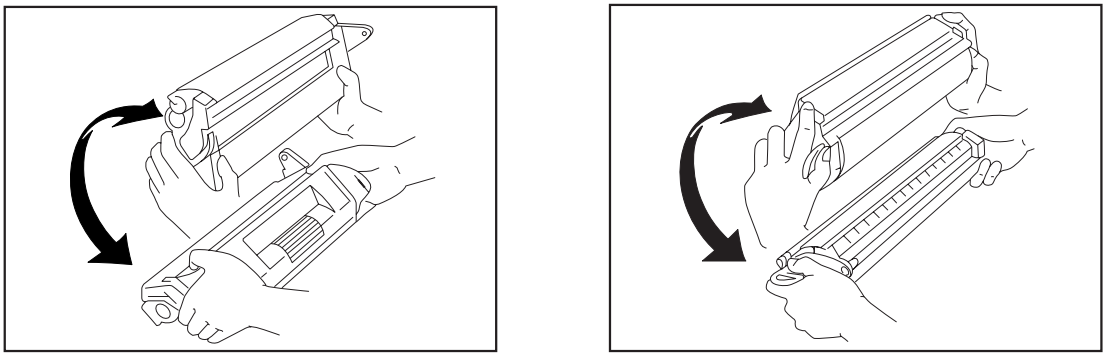
The service life of a cartridge is 2.5 years from the date of manufacture, indicated by means of an abbreviation on the cartridges.

For the user, a “service life,” obtained by adding 2.5 years to the date of manufacture, is indicated on the package and the cartridge itself.

Prints made using a cartridge older than its service life may have low image quality, making it important to use up each cartridge before the end of its service life.

B. Points to Note When Handling the Drum Cartridge and the Toner Cartridges

1) When setting a new toner cartridge (Y/M/C toner cartridge, black toner cartridge) in the printer unit or if white spots occur on output prints because of uneven toner inside a cartridge, hold the cartridge horizontal and rotate it slowly up and down (about 45°) five to six times to even out the toner. (Instruct the user to observe this. In addition, inform the user that handling a toner cartridge other than the foregoing method can cause leakage of toner from the developing cylinder.)



Black toner cartridge　　Y/M/C toner cartridge

Figure 1-701

2) Remove all cartridges if the printer unit must be moved.
In the case of the drum cartridge, put the special protective cover (MF4-0106-000) after taking it out of the printer unit, and put it in a protective bag or wrap it in a thick cloth to prevent exposure to light.
3) Do not place the black toner cartridge near a CRT screen, disk drive, or floppy disks. The magnetic field it generates can damage the data.
4) Do not expose the drum cartridge to direct sunshine or strong light. Doing so could affect print images.
5) Do not touch the surface of the photosensitive drum of the drum cartridge.
6) Do not place the cartridge on its side or turned over. Be sure that the label side faces up.
7) Do not disassemble the cartridges.