

USER'S MANUAL

The logo for the Fujitsu Print Partner 12M/MX printer. It features the words "Print Partner" in a large, elegant, italicized serif font. The word "Print" is white and set against a black, wavy, ribbon-like background that extends across the page. The word "Partner" is black. A horizontal line separates "Partner" from the model number "12M/MX", which is written in a large, outlined, sans-serif font.

*Print Partner*TM

12M/MX

12 ppm page printer

Notice to American Users

Federal Communications Commission Radio Frequency Interference Statement

Notice: 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 to 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.

FCC warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notes

- Testing of this equipment was performed on model number M33111A02.
- The use of a non-shielded interface cable with the referenced device is prohibited. The length of the parallel interface cable must be 3meters (10 feet) or less. The length of the serial interface cable must be 15meters (50feet) or less.
- The length of the power cord must be 3 meters (10 feet) or less.

Laser Safety Information

This printer has been designed and manufactured according to FDA regulations "title 21, CFR, chapter 1, subchapter J, based on the Radiation Control for Health and Safety Act of 1968", and is classified as class I laser product.

Warning: Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notice to Canadian Users

This class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Notice aux Utilisateurs Canadiens

Cet appareil numérique de la Classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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- M33111B01/02

in Übereinstimmung mit den Bestimmungen der

- EN 45014 (CE) funkenstört ist.

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In case that an Ethernet interface board is installed, this equipment complies with EMI regulations as follows:

Notice to American Users

Federal Communications Commission Radio Frequency Interference Statement

Notice: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notes

- The use of a non-shielded interface cable with the referenced device is prohibited. The length of the parallel interface cable must be 3meters (10feet) or less. The length of the Ethernet interface cable must be 100meters (328feet) or less for type 10BASE-2 and 185 meters (607 feet) or less for type 10BASE-T.
- The length of the power cord must be 3 meters (10 feet) or less.

Notice to Canadian Users

This class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Notice aux Utilisateurs Canadiens

Cet appareil numérique de la Classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Notice to European and Oceanian Users

Warning: This is a product which meets Class A of EN55022 and AS/NZS3548. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

日本におけるVCCI 規制について

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CE Declaration

This product sold in Europe conforms to the standards in accordance with EC Directives. The copy of “Declaration of Conformity” is attached in the next page.

Reseved

The contents of this manual may be revised without prior notice and without obligation to incorporate changes and improvements into units already shipped.

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DOS, Windows

Lexmark International Inc.: MarkVision

Miles, Inc.: Intellifont

Novell, Inc.: Netware

Pipeline Associates, Inc.: PowerPage

Xerox Corporation: 4024, Ethernet,

Xerox

Precautions

Read this section and remember these instructions to ensure your safety and your printer's correct performance. Follow the cautions and notices labeled on the printer or marked with icons in the manual. Save this manual for future reference.

- Use only the power cord furnished with the printer and a properly grounded outlet. Do not use an extension power cord.
- Confirm that the rated voltage of your printer matches the voltage of your power outlet. The maximum wattage of the printer is 600 watts.
- Turn off the printer and disconnect the power cord before beginning maintenance operations.
- Disconnect the power cord from the outlet whenever you are not using the printer for an extended period of time.
- Disconnect the power cord from the outlet whenever thunder storms are nearby. Leaving the power cord connected may allow damage to the printer or other property.
- Do not put the printer in direct sunlight, near a heater, or near water. Leave adequate space around the printer.
- Do not touch any connector contacts. This could cause electrostatic damage to the printer.
- Do not touch the heat roller and motors if you have been printing recently. These parts may be hot.
- Do not touch or scratch the green drum surface, and do not expose it to light for more than three minutes.
- Use only a shielded interface cable of 3 meters (10 feet) or less for the parallel interface, 15 meters (50 feet) or less for the serial interface, 100 meters (328 feet) or less for Ethernet interface 10BASE-T/100BASE-TX connection, and 185 meters (607 feet) or less for the Ethernet interface 10BASE-2 connection.
- Be sure the printer is turned off before connecting the interface.
- Do not turn the printer off while it is printing.
- Do not disassemble or remove any components unless instructed in this manual.
- Keep the print unit upright when removing or installing it.
- Do not use alcohol or other cleaning solutions on the drum surface or on any interior parts of the printer.
- Clear paper jams quickly, especially when they occur in the heat roller unit.
- Do not drop small objects, such as paper clips, into the printer.
- Do not set page margins off the physically printable page area.
- Turn off the printer and disconnect the power cord immediately if an abnormal condition occurs: for instance, if the printer smokes, prints abnormally, becomes wet, or falls. Then consult your dealer.

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Preface

Thank you for purchasing the Fujitsu PrintPartner 12M/12MX Page Printer. The PrintPartner 12M is a 12-ppm, 600-dpi, laser printer with a Centronics parallel interface (type B connector). The PrintPartner 12MX is a 12-ppm, 600-dpi or 6-ppm, 1200-dpi, laser printer with two interfaces consisting of Centronics parallel (type B connector) and RS-232C serial (DB9 connector). Both models are compatible with the HP LaserJet 5 printers, IBM Proprinters 4202, and EPSON EX-800 printers. The PrintPartner 12MX is also compatible with PostScript level 2 printers by using the PowerPage® Level 2 interpreter.

Options available for both 12M and 12MX are:

- 4-, 8-, 16-, and 32-megabyte memory expansion cards
- Interface expansion boards: Centronics parallel (type B connector), Ethernet C, D, F, or GXL, and USB
- FLASH ROM card: 4-megabytes, for PCL emulation only
- Barcode card: Barcodes and OCR fonts
- 500-sheet paper feeder: Base mechanism plus 500-sheet paper tray (tray 2; A4, A5, JIS B5, letter, legal, and executive sizes)

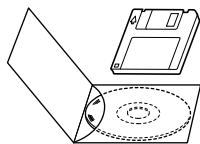
Options available for 12M only are:

- FPS card: PostScript level 2 emulation

Options available for 12MX only are:

- Duplex unit: Two-sided printing mechanism

Manual and Software Set



The PrintPartner 12M/12MX has a single user's manual. This user's manual provides a summary of everything for from non-technical users unfamiliar with page printers to highly experienced technical users.

The PrintPartner 12M/12MX comes with a software set (a CD-ROM and a floppy disk) to supply you with the following items of printer control software.

- Printer Drivers for Windows 95/98, NT 3.51, and NT 4.0, which provide the computer's operating system with the programs that control this printer.
- MarkVision™ by Lexmark for Windows 95/98/NT 4.0, printer management utility programs, which allow you to easily understand the printer (status, statistics, or features) and displays the printer control panel on your computer display to remotely operate the printer.
- Network Printer Utility for Windows 3.X, which allows you to remotely change or confirm settings of an Ethernet interface board of the printer or locally check the printer.
- PPMENU for MS-DOS, printer remote setup utility program, which allows you to easily customize and program your printer to your computer and software environments, using your computer keyboard and display

The CD-ROM contains all items of the software but the floppy disk contains printer drivers for Windows 3.X only.

Operating Environments

To run a Printer Driver, you need an IBM PC/AT or PS/2 computer or compatible running MS-Windows 95/98, MS-Windows NT 3.51, or MS-Windows NT 4.0.

To run MarkVision™, you need an IBM PC/AT or PS/2 computer or compatible running MS-Windows 95/98 or MS-Windows NT 4.0, with at least 9MB of memory available on a hard disk, a CD-ROM drive or a 3.5" double-sided high density (2HD) floppy disk drive, and a VGA (640 × 480 dots) or higher resolution display.

To run the Network Printer Utility, you need an IBM PC/AT or PS/2 computer or compatible running MS-Windows 3.1/3.11, with at least 5MB of memory available on a hard disk, a CD-ROM drive or a 3.5" double-sided high density (2HD) floppy disk drive, and a VGA (640 × 480 dots) or higher resolution display.

To run PPMENU, you need an IBM PC/AT or PS/2 computer or compatible running MS-DOS, with at least 1MB of memory available on a hard disk, a CD-ROM drive or a 3.5" double-sided high density (2HD) floppy disk drive, and a VGA (640 × 480 dots) display. You must also be using PC-DOS version 5.02, MS-DOS version 3.3, or higher version.

Conventions

Icons draw your attention to advisory messages, as illustrated below. A line precedes and follows the message to show where the message begins and ends.



Warning:

Ignoring this information could result in personal injury.



Caution:

Ignoring this information could result in loss of data or harm to your equipment.

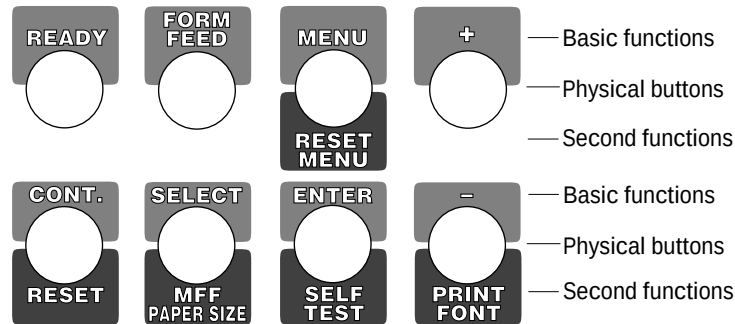


Important:

These notes contain remarks, tips, and other useful supplementary information.

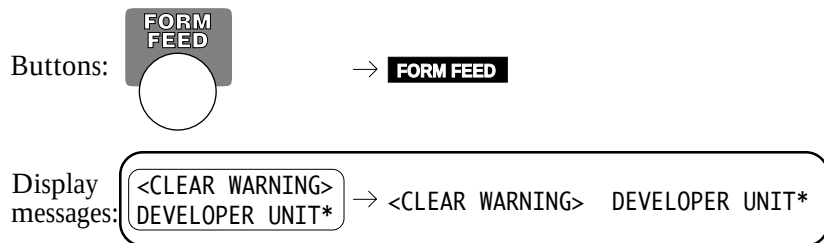
Control Panel

The printer's control panel incorporates two rows of buttons, with each button having one or two labels (see below). The physical button is beneath the rectangular section of no-labeled space. The top label represents the basic function, which is activated by a touch of the button. The bottom label represents the second function, which is activated when you release the button after holding it down more than five seconds.



The control panel has a character display of 16 columns $\times$ 2 lines.

In text, the names of the control panel buttons appear as all capital letters inside a box like **READY** and control panel display messages appear in a fixed-spacing font like `READY`. Button names or messages occupying two lines are expressed in a single line shown below.



The asterisk in the display column indicates that the displayed option is currently selected in the selected menu.

Changing Message Language (**MENU**)

You can select a language used for control panel messages. Selectable languages are English, French, German, Italian, Spanish, and Swedish.

To select a language, follow these steps:

1. **Turning the printer on while pressing **MENU**.**

The message C . P . LANGUAGE ENGLISH appears after printer initialization.

2. **Press the **+** or **-** button until the desired language appears. Press the **ENTER** button.**

The asterisk appears after the language, indicating the language is selected.

3. **Save the selection.**

Pressing the **READY** button saves the new setting and returns the printer to the ready state. The printer will display the selected language for messages.

Getting Started

This chapter provides complete setup instructions in the following sections:

- *Getting Acquainted.* Learning the printer's main parts and its paper paths.
- *Getting Ready.* Choosing a suitable location and unpacking the printer.
- *Setting Up.* Assembling the printer.
- *Connecting the Printer.* Selecting an interface and connecting to the computer.
- *Installing a Printer Driver and other software.*
- *Printing Your First Document.*
- *Where to Go from Here.*

Getting Acquainted

The photos and illustrations on the following pages identify the main parts of the printer and two routes of paper feeding. These parts are referred to throughout the manual, so take some time to become familiar with them.

008

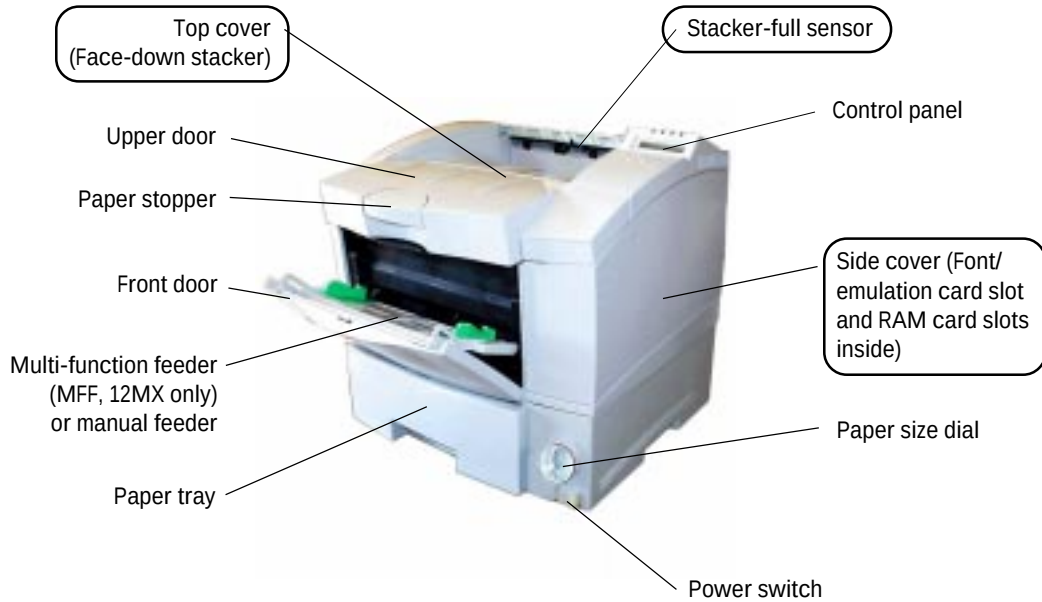


Figure 1-1 Front and right side view

009

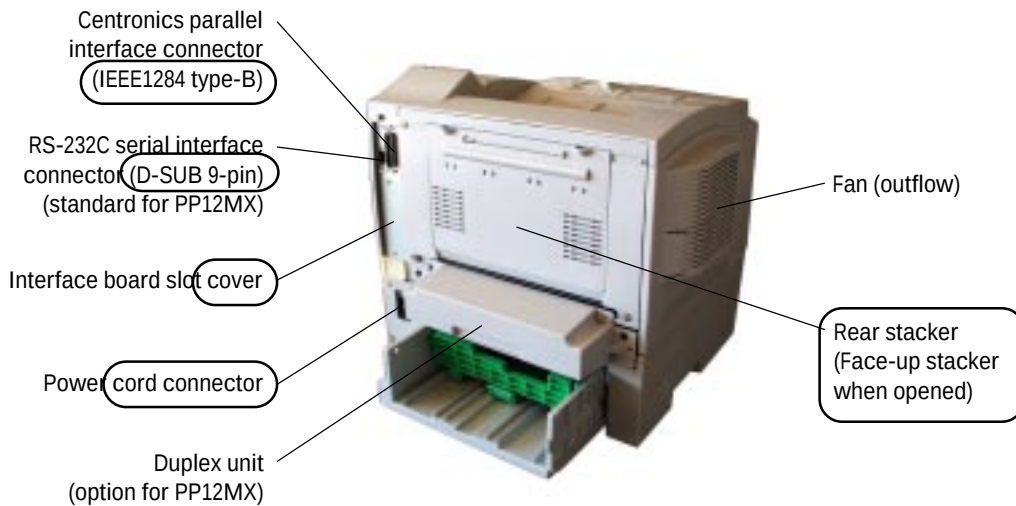


Figure 1-2 Rear and left side view

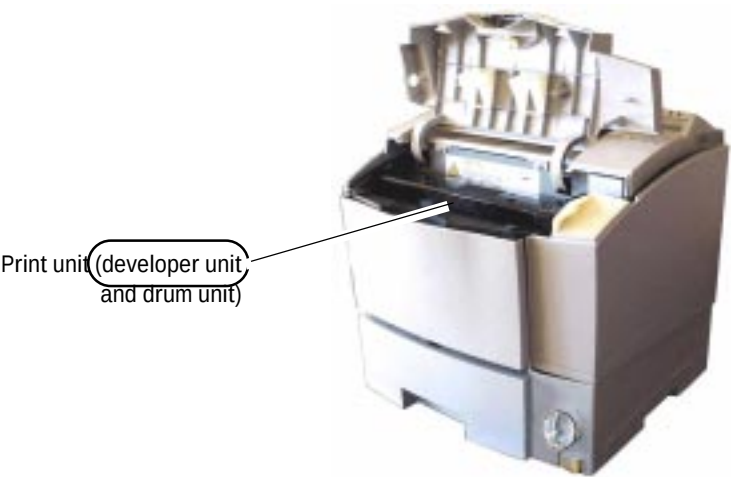


Figure 1-3 Interior view

The path from the paper tray to the top cover is for ordinary paper. The straight path from the multi-function feeder (12MX only) or the manual feeder to the rear stacker is for thick paper, transparencies, and envelopes.

Paper paths-1

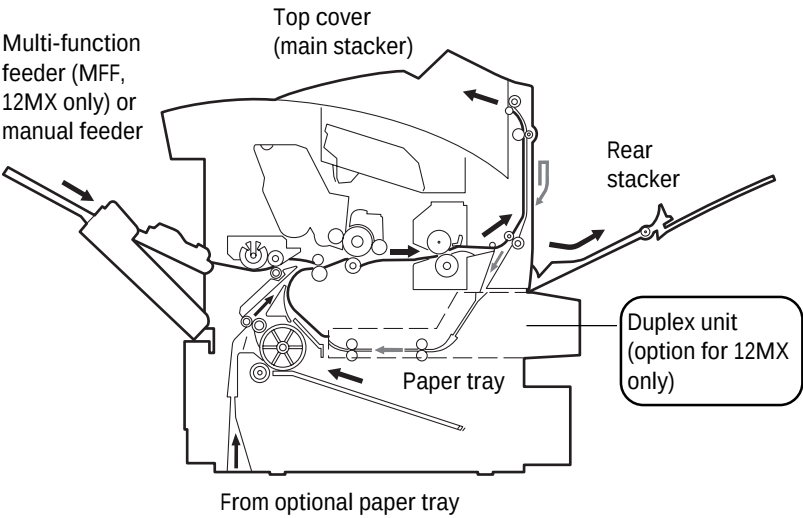


Figure 1-4 Paper paths

Getting Ready

This section will help you:

- Choose a suitable location for the printer
- Inventory the parts of the printer as you unpack it

Picking a Suitable Location

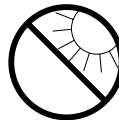
The first step is to pick a suitable location for your printer. For peak performance and usability, follow these guidelines:

013

Arrow 1

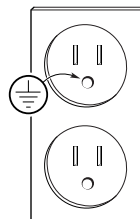
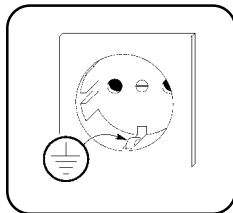


- Place the printer on a sturdy, level surface.
- Choose a room that is well ventilated and free of excessive dust. Leave space around the printer especially on the left side for proper ventilation.



- To avoid exposing the printer to extremes of temperature, do not put the printer in direct sunlight or near a heater. Ideal room temperature is from 10°C to 32°C (50°F to 90°F). Humidity should be between 20% and 80% RH (no condensation).

001



- Use a grounded AC power outlet. Do not use a three-pronged adapter in an ungrounded outlet.



- Use only the power cord furnished with the printer. Do not use an extension cord.

**Warning:**

For your safety from an electric shock, observe the above prohibition.



- Do not touch any connector contacts and corona wires to avoid possible electrostatic damage to the printer.



- Do not use a circuit shared with equipment that causes electrical noise, such as motors.
- Do not use a circuit shared with equipment that uses a lot of power, such as a copier or a coffee maker.

Unpacking and Checking Your Printer

As you unpack the printer, check each item carefully for damage. If you find damage, notify your dealer. Check also that you have received all the items shown below.

This printer comes with everything you need except an interface cable. If you do not yet have a cable, you must purchase one before you can connect the printer to your computer.

**Important:**

Save the original carton and packing materials in case you need to store or transport your printer.

001 017

Printer

Developer unit (*)

016

021



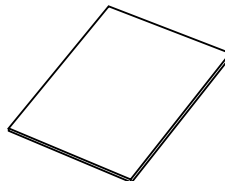
Drum unit (*)



Quick installation
guide



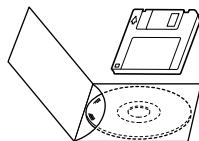
Cleaning sheets



Power cord



Software set
(printer drivers and other software)



* Developer unit and drum unit
are assembled and placed in
printer at shipment.

- An interface cable is not a standard accessory. Please purchase an appropriate cable according to the interface you intend to use.
- The power cord may differ slightly from this figure depending on the country where you purchased the printer.
- The software set consists of:
 - CD-ROM labeled PrintPartner Software
 - Floppy disk labeled Printer Drivers for Windows 3.X.

Figure 1-5 Printer inventory

Setting Up

This section describes how to assemble the printer and connect the power cord after choosing a suitable location for the printer and checking that you received all the parts.

**GETTING
STARTED**

Preparing the Print Unit

This printer is shipped with the print unit (developer unit and drum unit) mounted and protective materials attached. Be sure to take off the print unit and remove the two protective materials from the print unit. This operation must be done before connecting the power cord.

**Caution:**

Be careful with the print unit's drum (the green surface). The drum is easily damaged by contamination or by exposure to light for more than three minutes. Follow these guidelines:

- Never open the shutter of the drum unit before until you are ready to install the print unit.
- Never touch or scratch the drum surface.
- When the print unit is not in the printer, close the shutter of the drum unit and store the print unit in a dark place or cover it with a clean sheet of paper.
- When the print unit is in the printer, keep the printer upper door closed. If you must work inside the printer for more than three minutes, remove the print unit and store it in a dark place.
- If you store the print unit out of the printer, it may be contaminated by dust. This may cause a smudge on the page. When storing the print unit out of the printer, wrap it with paper or something.

To install the print unit, follow these steps:



1. **Open the upper door.** Lift the center portion under the stopper of the upper door to open it.

023



2. **Remove the print unit from the printer.** Pull the top center of the print unit at a 45 degree angle towards the front of the printer.

When the print unit begins to move, gently lift it up and out.

024



3. **Shake the print unit by moving it back and forth in a horizontal motion several times.**

Place the print unit on a level, steady place.



Caution:

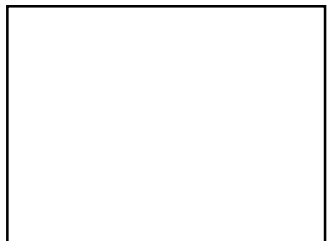
Never open the shutter of the drum unit to avoid scratching the green surface of the drum.

025



4. **Remove the plastic seal from the print unit.**
Gently pull off the seal being carefully not to spill toner. Handle to seal carefully to avoid staining your hands or clothes.

025a



5. **Open the shutter of the drum.** Holding the top center of the print unit, push up backwards the green-labeled handle of the shutter under the print unit and fix the shutter on the hook.

026



- ⑥. **Orient the print unit.** Hold the top center of the print unit with the green drum facing you and adjust the ends of the drum shaft to the grooves on the sides of the printer.

027



- ⑦. **Install the print unit.** Slide the print unit at a 45 degree angle along the grooves and towards the back of the printer.

028



- ⑧. **Seat the print unit in place.** Press down gently on the top left and right portions of the print unit until it clicks into place.

029

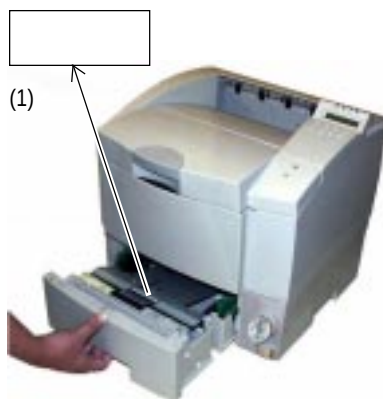


- ⑨. **Close the printer's upper door.** Press down firmly on the front portion of the upper door and make sure the upper door is locked completely.

Loading Paper and Installing the Paper Tray

This printer has a single paper tray that is preset for letter size (8.5 x 11.0 inches) paper for U.S. customers and to A4 size (210 x 297 mm) paper for European customers. (You can adjust the paper tray to a different size paper. See Chapter 2. You can purchase an optional paper tray. See Chapter 3 and Appendix B.) You should load about 50 sheets of copier paper to test the printer.

030



1. Pull the paper tray out of the printer.

031



2. **Prepare the paper tray.**
Remove restraint card board (1) and tapes securing the rear paper guide.

3. Widen the side guides.
While holding right side-guide together with its lock plate, push both guides outwards.

032



4. Prepare a paper stack.
Prepare paper of the size indicated by the paper size dial (actually the paper size scale where the rear guide of the paper tray is set). Fan the paper stack both ways to prevent sheets from sticking together.



Important:

Be sure to set the paper size dial correctly according to the loaded paper. Improper setting may cause an error during printing.



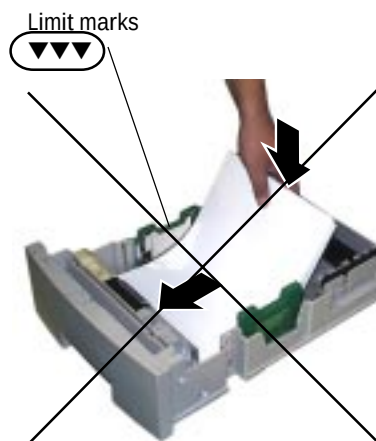
Caution:

Put the paper stack in the paper tray with the printing side faced down.

If paper is curled, remove the curl.

033

Arrow 1
Arrow 2



5. **Load the paper.** While pushing and holding down the pressure plate, place the front portion of the paper stack on the tray and slide it towards the front of the tray so that the rear portion of the stack is placed in position at the rear guide.

Make sure the stack does not exceed the limit marks on either side guide.



Caution:

When additional sheets of paper are supplied to the tray which is not empty, it may cause paper mispick, double-feed, skew at the boundary between old paper and new paper.

034



6. **Adjust the side guides.** Push the lock plate of the right side-guide inwards to fit the side guides to the width of paper snugly. Align the rear edges of the paper stack.

 Bad placement

 Good placement

036



7. Arrange paper edges. Rock the paper tray to gather the edges of the stack together to ensure correct positioning of paper in the tray.

037

Paper
stopper



8. Raise the paper stopper.

038



9. **Install the paper tray.**
Align the sides of the tray with the guide grooves of the tray slot and firmly slide the tray all the way into the slot.



Important:

Do not turn the paper size dial after you have loaded paper.

Changing the dial setting causes a paper mismatch error when printing the paper.

Using the Multi-function Feeder (12MX only)

The multi-function feeder (MFF) is built in the PrintPartner 12MX (not available for the PrintPartner 12M). It is useful to print a lot of thick paper, envelopes, or transparencies. It can hold and deliver 100 sheets of 0.09 mm thick paper or 30 envelopes.

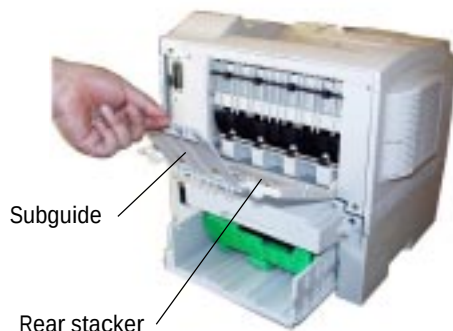
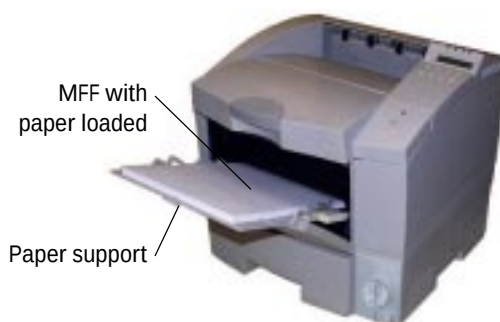


Important:

When using paper, do not leave the paper in the multi-function feeder for long time. It may cause waving of paper and dropouts in printing.

Because the MFF does not have a mechanism that detects the physical size of paper in use, you must inform the printer of the paper size. Use the MFF paper size menu to select a paper size which equals the size of paper loaded in the MFF. See Chapter 2.

To use the multi-function feeder, follow these steps. For details, see Chapter 2.



1. **Open the front cover.**
2. **Extend the paper support.** Pull the center top of the paper support all the way.
3. **Adjust the paper guides.** Slide the paper guides to fit the width of the paper snugly.
4. **Load paper.** Place the paper stack on the MFF and push it all the way until its front portion is stopped.
5. **Open the rear stacker.** If necessary, open the rear stacker.
6. **Extend the subguide.**

Connecting the Power Cord

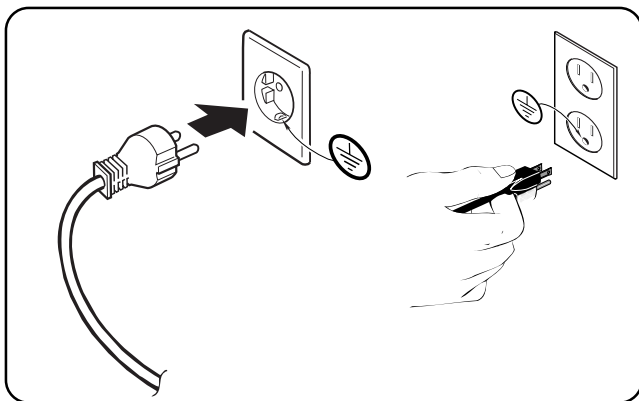
This printer comes equipped with one of the two voltage ratings:

- 120 VAC (such as for the USA)
- 220 to 240 VAC (such as for Europe)

The manufacturer's nameplate on the back of the printer indicates this rating. Confirm that the rated voltage of your printer matches the voltage of your power outlet.



1. **Check that the printer is turned off.** The "O"-marked side of the switch at the right front of the printer should be depressed.
2. **Plug the female end of the power cord into the connector on the right back of the printer.**
3. **Plug the male end into a wall outlet.**



Warning:

For your safety, use only a properly grounded outlet. To avoid possible electromagnetic interference or power supply problems, do not use an extension cord.

Connecting the Printer to Your Computer

This section explains how to connect the printer to your computer via the parallel or serial interface.



Important:

The following restrictions apply to interface cables:

- To comply with regulations for radio frequency emissions, use only shielded cable for computer-to-printer communications.
- The length of the parallel interface cable must be 3 meters (10 feet) or less.
- The length of the serial interface cable must be 15 meters (50 feet) or less.

About Interfacing

Generally, you can connect the printer to your computer using a standard parallel or serial interface. However, if your printer is used as a network printer, use an optional LocalTalk or Ethernet interface. An optional infrared interface is also provided.

• **Parallel (Centronics) or serial (RS-232C, 12MX only)**

Use a serial interface if the printer is not near the computer. Many computers have both parallel and serial interface ports. Serial communication can operate up to 15 meters (50 feet). Parallel communication is normally limited to 3 meters (10 feet).

• **Ethernet C, D, F, or GXL (option)**

Use Ethernet C, D, F, or GXL if the printer is used in a NetWare or TCP/IP corresponding.

• **USB (option)**

Use the universal serial bus if the printer is used in a

Whichever interface you use, the printer automatically detects the interface that the computer is using.

For these options refer to Chapter 3.

Connecting to the Parallel Port

This printer does not come with a parallel interface cable. You can use a Centronics cable with IEEE 1284 type B connector (sold separately) at the printer side for this purpose. Your dealer can advise you on the cable you require.



Caution:

Be sure the printer is turned off before connecting the interface.

Do not touch any connector contacts to avoid possible electrostatic damage to the printer.



To make the connection, plug the cable connector into the parallel interface port on the back of the printer. Secure the connector with the wire clips. Plug the other connector into your computer's parallel port. Consult your computer documentation if you need help.

Connecting to the Serial Port (12MX only)

Connecting to the serial port involves the following tasks:

- Connect the interface cable to the printer and your computer.
- Print out the status report to check the serial parameter settings.

Connecting the Serial Interface Cable

To connect to the serial interface port, you need a cable correctly wired for this printer and your computer. The cable must also have the proper connectors. Your dealer or technical support person can supply you with the proper cable.

The serial interface of this printer requires a null-modem cable with a male D-SUB 9-pin connector at the printer side. Refer to your computer documentation for the type of connector required by its serial port.



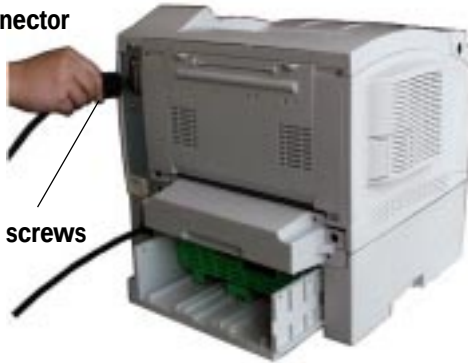
Caution:

Be sure that the printer is turned off before connecting the interface cable.

Do not touch any connector contacts to avoid possible electrostatic damage to the printer.

**Insert
connector**

**Secure
holding screws**



To make the connection, plug the cable connector into the serial interface port at the back right of the printer. Secure the connector by tightening the screws in the connector hood. Plug the other connector into your computer's serial port. Consult your computer documentation if you need help.

Verifying Serial Parameter Settings

Next, you must make sure the serial parameter settings are the same between the computer and the printer. Consult your computer and software documentation to determine the settings your computer uses. Then compare these to the printer's settings in the following table.

Item	Parameter setting (printer side)
Baud rate	9600 (default)
Data bits	8 (fixed)
Stop bits	1 (fixed)
Parity	None (fixed)
Pacing (protocol)	DTR (default)
DTR polarity	HI (default)
ROBUST (XON/XOFF)	Off (default)

If the settings match, the installation is complete. If the interface parameters of the printer and the computer do not match, the message display indicates COMM.ERROR. The printer may not respond at all or it may print wrong characters. Change the settings in one of the two ways:

- Change options of the serial menu in setup mode.
- Set permanent defaults in your computer to match the printer's defaults.

On an IBM PC or compatible computer running MS-DOS, you can set permanent defaults by placing the following commands in your AUTOEXEC.BAT file:

```
MODE COM1:9600,N,8,1,P
```

```
MODE LPT1:=COM1:
```

Also make sure that the file MODE.COM is in your boot directory. Then whenever you boot your computer, the computer will print through the serial port using the printer's settings.



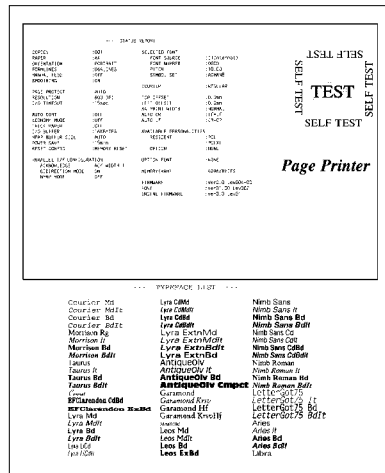
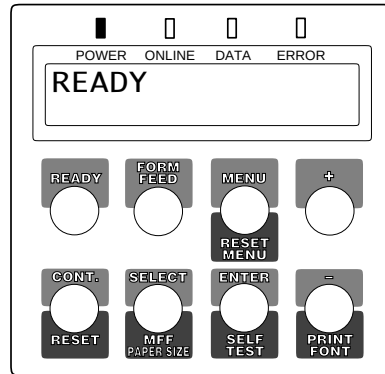
Important:

For information on DOS files and commands, consult your DOS manual or the manual supplied with your computer.

Note that you may also be able to specify serial parameters through your software programs. Some software programs allow you to specify the printer port and serial settings from within the program. Consult the documentation supplied with the software.

Printing a Test Page Offline

The printer has a status report function which prints a page summarizing printer option settings and showing samples of resident fonts. Use this function to check the printer performance offline.



1. Turn the printer on. The printer initializes the mechanism and then enters the ready state. The message display indicates <<<INITIALIZE>>>, WARMING UP, then READY.
2. Print a test page offline. Press the **READY** button to put the printer offline (the ONLINE indicator turns off). Press the **SELF TEST** button for more than five seconds. The message display indicates PCL PAGE CONFIG. Press the **ENTER** button to start printing.

The message display indicates SELF TEST and the DATA indicator flashes. A status report page is printed.

Check that the printing is successful.



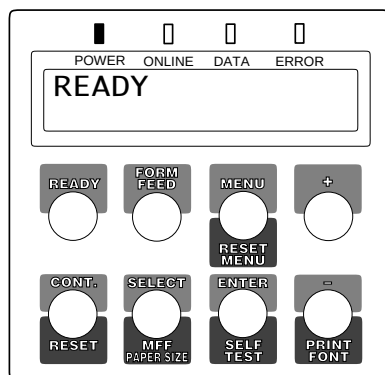
Important:

You can select **IBMPRO PAGE CONFIG** or **EPSON PAGE CONFIG** for both models or **FPS PAGE CONFIG** for PP12MX by pressing the **+** or **-** button while the message display indicates **PCL PAGE CONFIG**.

Selecting an Emulation

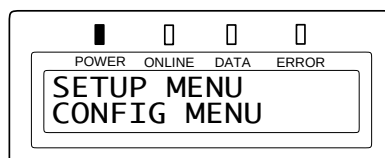
The PrintPartner 12M has three emulations as a standard feature: PCL6, IBMPRO, and EPSON. The PrintPartner 12MX has four emulations: PCL6, FPS, IBMPRO, and EPSON. You can use these emulations to connect your printer to different computers. PCL6 emulates HP LaserJet 5 printers, IBMPRO emulates IBM Proprinters 4204, EPSON emulates EPSON EX-800 printers, and FPS emulates PostScript Level 2 compatible printers by the PowerPage® Level 2 interpreter.

The printer automatically selects the active emulation with default settings. To specify an emulation, use the control panel in menu mode and use the Personality menu of the Config menu as shown below.

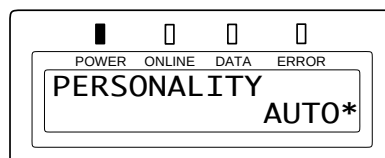


1. Enter setup mode. Press the **READY** button to put the printer offline (the ONLINE indicator turns off). Then, press the **MENU** button briefly six times.

The message display indicates SETUP MENU CONFIG MENU.



2. Select the Personality menu. Press the **ENTER** button briefly. The message display indicates PERSONALITY AUTO*.



3. Select emulation. Press the **ENTER** button briefly. The option **AUTO** changes to **PCL**, **PS**, **IBMPRO**, **EPSON** then back to **AUTO**. Press the **READY** button when the desired option is displayed.

Installing a Printer Driver

The selected emulation is selected (an asterisk is followed). Once you change the emulation, the other menus automatically change to reflect the options and functions of the new emulation. For details of the setup menu, see Chapter 2.

Now that you connected your printer to the parallel port of the computer, you are ready to install a Windows printer driver into your computer. The Windows printer driver is essential for controlling your printer in Microsoft Windows environments. Several printer drivers are contained in the attached software set consisting of a CD-ROM and a floppy disk.

Printer drivers in the CD-ROM are:

- Standard drivers for Windows 95/98
- FPS drivers for Windows 95/98
- Standard driver for Windows NT 3.51
- FPS driver for Windows NT 3.51
- Standard driver for Windows NT 4.0
- FPS driver for Windows NT 4.0

If your printer is 12M, note that the FPS drivers are only available with an optional FPS card.

Printer drivers in the floppy disk are:

- Standard drivers for Windows 3.X

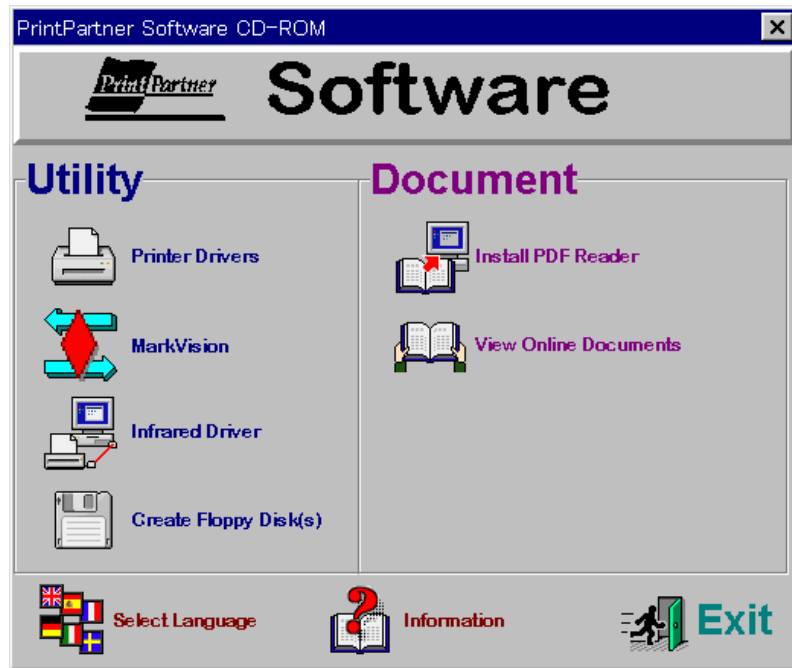
Standard drivers are to be installed when your printer is used as a PCL printer, IBMPRO and EPSON drivers are to be installed when your printer is used instead of a serial printer, and FPS drivers are to be installed when your printer is used as a PostScript printer.

When you are using Windows 95/98 or Windows NT 4.0, it is recommended that you should install a printer driver using MarkVision™ because the printer driver is reinforced with MarkVision™'s features such as remotely changing settings of a network printer and checking status of a network printer. For MarkVision™, see the next section.

To install a printer driver in Windows 95/98, note the following:

- When you install the printer driver, the original OS (CD-ROM or floppy disks) is required during installation.

When the CD-ROM is installed, the following menu screen is displayed in Windows 95/98 or Windows NT 4.0.



Get to Know Your Printer Driver

The Printer Driver has two functions:

1. it automatically translates formatting choices, such as tab settings or boldface type, into commands the printer understands.
2. it allows you to set up the printer according to your needs.

If you encounter problems with this installation, confirm that your configuration corresponds to the minimum requirements listed on page vi at the start of this manual. If the configuration corresponds to these requirements and troubles persist, contact your dealer for assistance.

When running application programs under Windows, you select the printer type in the application program itself before you print a document.



Important:

If you encounter conflicts with other already installed external drivers that use bidirectional communication on the Centronics port or with drivers of other dedicated Windows printers used in parallel with this printer (conflicts like the failure to establish communication between the Printer Driver and the printer), remove these from Windows and reinstall the PrintPartner 12M or 12MX Printer Driver.

Printer Drivers Supplied by the CD-ROM

To install printer drivers contained in the CD-ROM, see the booklet “Quick Start” enclosed in the CD-ROM envelope.

Printer Drivers Supplied by the Floppy Disk

The floppy disk of the software set contains the Windows 3.X Printer Standard Driver only. To install it, follow these steps:

1. Start Microsoft Windows 3.X.
2. Insert the floppy disk into drive A.
3. Click “File” and choose “Run”.
4. Type A:INSTALL, then press ENTER.
5. From here, follow the instructions on the screen.

The FUJITSU PrintPartner 12M or 12MX Windows 3.X Standard Printer Driver is now installed.

For further details, see the driver’s Readme file.

Installing Other Software

This section provides information about the two kinds of printer management software contained in the CD-ROM supplied with this printer. The topics are:

- **PPMENU**: Enables you to remotely control or configure your printer's features from your computer's screen.
- **MarkVision™**: Monitors printer status (status is displayed with text and graphics), displays optional printer's features, and cooperates with printer drivers. It also describes the printer control panel function by which MarkVision™ allows you to remotely operate your printer from the printer control panel displayed on your computer's screen.

Note that PPMENU is available in MS-DOS, PC-DOS, or Windows DOS prompt environments and MarkVision™ is available in Windows 95, Windows 98, or Windows NT4.0 environments.

PPMENU

Generally, the printer driver controls the printer. You can also control the printer using the remote setup utility program called PPMENU, stored in the attached CD-ROM.

PPMENU allows you to easily change your printer's features directly from your computer. You use it to configure your printer to suit the requirements of your computer, software, and documents to be printed.

The parameters you can change using PPMENU affect page layout, font, and printer control. If your software programs have printer drivers, those printer drivers control the parameters for you. Therefore, it may not be necessary to change the settings using PPMENU.

PPMENU needs to be installed only if you will print from DOS or DOS based applications.

To install PPMENU, see the booklet "Quick Start" enclosed in the CD-ROM envelope.

For more details and the latest modifications, refer to the "ReadMe.txt" file concerning PPMENU.

Lexmark's MarkVision™

MarkVision™ by Lexmark is an integrated software for managing printers, contained in the CD-ROM. It has the following main functions:

- Monitoring the printer
- Displaying the printer status and features (including options) and statistics
- Providing the printer control panel on the computer's screen (Remote control panel)

These functions are most effective and valuable for remote printers in network environments.

MarkVision™ is automatically activated when an abnormal condition occurs in the printer. It operates in Windows 95/98 environments only.

The remote control panel is quite a nice function that enables you to easily and remotely operate the printer even if your printer is set up remotely. MarkVision™ displays the printer control panel on the computer's screen and gives you the exactly same functions as available with the control panel of the printer. You can perform a function by clicking a button on the computer's screen without pushing a button of the printer's control panel.

To install MarkVision™, see the booklet "Quick Start" enclosed in the CD-ROM envelope.

For more details and the latest modifications, refer to the operation guide PDF document file and the "ReadMe.txt" file concerning MarkVision™ in the CD-ROM.

Printing Your First Document

Your printer should be set up and connected to your computer. This section explains how to test your installation setup by printing a trial document from an application program under Windows. To test the printer alone, without your computer, you can use the status report printing which does not require the use of a computer. See *Printing a Status Report* in Chapter 2.

Turn on your printer and observe the initialization sequence. If no RAM (extra memory) cards have been installed, the sequence lasts about one minute, during which the following events occur:

- The printer conducts a number of self-checks.
- The main motor rotates to check mechanical functions and clean the drum.
- The message display indicates READY, indicating the printer is ready for printing.

The following procedures show you how to print your trial document.

To print a trial document, follow these steps:

1. Start Windows and a Windows application.
2. Open your trial document.

Select an existing or start a new document. Choose a small document for the first trial.

3. Select PP12M or PP12MX as the document printer.

In most programs, you make the selection in a print menu. Consult your program documentation for the exact procedure.

4. If desired, change the font(s) in the document to one of the fonts offered by your application.
5. Check the printer.

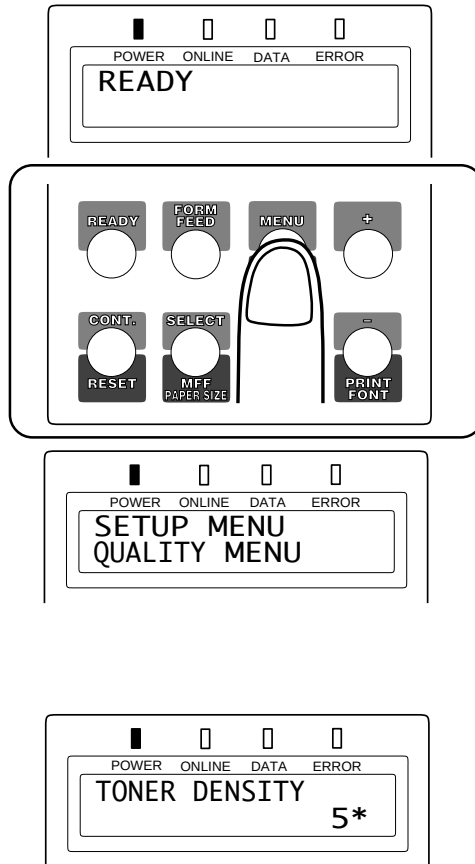
Look in the main window of the Print Manager to make sure the printer is activated.

6. Print your document.

Start the program. The default paper size is fixed to A4 (for Europe) or Letter (for the USA).

Adjusting Print Density

If you feel that the printout is too light or too dark, adjust the print density from the control panel in setup mode. After making the adjustment, print your trial document again and check the results. Use the Toner density menu of the Quality menu as shown below.



1. Enter setup mode. Press the **READY** button to put the printer offline (the ONLINE indicator turns off). Then, press the **MENU** button briefly two times.

The message display indicates **SETUP MENU QUALITY MENU**.

2. Select the Toner density menu. Press the **ENTER** button briefly once. Then, press the **MENU** button briefly three times. The message display indicates **TONER DENSITY 5***.

3. Change density. Press the **+** or **-** button briefly. The option changes between 1 (lightest) and 10 (darkest). Press the **ENTER** button when the density you estimate proper is displayed.

The selected density is selected (an asterisk is followed). For details of the setup menu, see Chapter 2.

If you see a problem with the printed pages other than print density, see Chapter 5 for possible causes and solutions.

If your document printed successfully, skip the next subsection **If Something Goes Wrong**.

If Something Goes Wrong

This section briefly discusses the most common problems you might encounter. For more complete troubleshooting information, see Chapter 5. Chapter 5 also describes all printer error and status indicators.

Problem	Remedy
No response by printer	Ensure that: • The printer is turned on and online. The ONLINE indicator should be lit. • The cable from the computer to the printer is properly connected at both ends. • Your software program has sent the print data to the printer. Many programs have a printer control function that shows print
No printout; DATA indicator on	The printer has received data from the computer but has not printed the page. To print the page, put the printer offline by pressing READY briefly then press FORM FEED .

Problem	Remedy
Unreadable printout	Possible causes and solutions are: • A wrong printer driver is selected. Select the PrintPartner 12M or 12MX printer driver as the document printer. • The document contains unknown printer commands. Remove any setup strings or embedded commands, or print the document with a Text only or ASCII text print option.

Where To Go From Here

To help you enhance or customize the printer, the user's manual contains the following additional information:

- To get information on how to use the control panel and on handling various types of paper, see Chapter 2.
- To customize printer defaults, see Chapter 2.
- To install additional memory, see Chapter 3.
- To install an additional interface, see Chapter 3.
- To install an additional paper tray, see Chapter 3.

The FPS card is optional for the PrintPartner 12M and the duplex unit is optional for the PrintPartner 12MX.

- To install a duplex unit, see Chapter 3.
- To install an FPS card, see Chapter 3.

Printing and Paper Handling

This chapter provides information you may need for day-to-day printing. The topics are:

- Control panel tutorial

The tutorial describes the indicators, message display, and buttons. It includes an example of how to use the control panel.

- Control panel functions

This section describes the functions by buttons.

- Menu functions

This section describes how to use the control panel for customizing printer defaults.

- Handling paper

This section describes how to print on various types of paper.

Control Panel Tutorial

This section introduces the printer's control panel, beginning with a description of the indicators, message display, and buttons. The tutorial describes the use of the buttons in some detail and follows with an example.

The Control Panel

The control panel consists of four indicators, a message display, and eight buttons. The physical buttons are beneath the LCD display. The top row of labels represents basic functions. The bottom row of labels represents secondary functions. See later in this section for a list of functions.

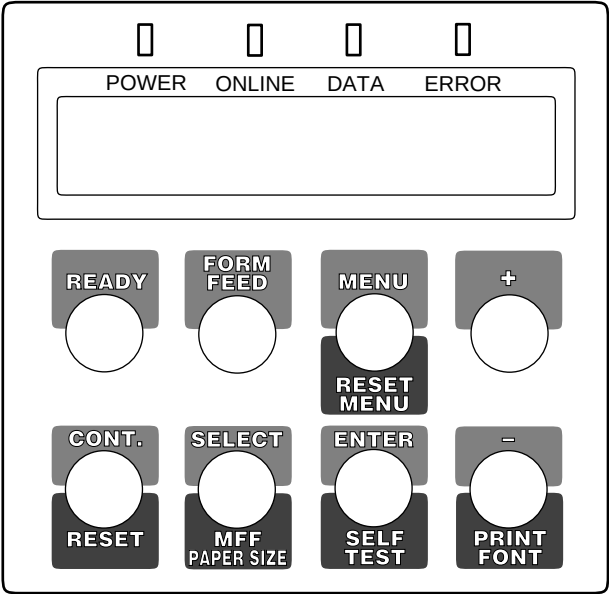


Figure 2-1 Control panel

Indicators

The control panel has four labeled LED indicators across the top.

Indicator	Meaning
POWER	Indicates printer power is on.
ONLINE	Indicates the printer is online and ready to print.
DATA	Flashes when data is being sent from your computer. Lights steadily to indicate the printer's buffer contains unprocessed data.
ERROR	Indicates a printer error has occurred. Details are indicated by the message display.

Message Display (LCD)

The message display uses a liquid-crystal display representing status and errors by two lines of sixteen characters. In operating mode, it may show:

- What the printer is doing
- Whether the printer is ready to print
- When paper should be added
- When paper should be manually inserted
- When the toner bottle needs to be replaced
- When the print unit needs to be replaced
- An error message condition such as paper jam



Important:

A "Ready" message means the printer has no data to print without any errors and the **READY** button is not pressed. "Not Ready" means the printer detected an error or the **READY** button was pressed in the Ready state.

Error messages inform you of conditions requiring your attention, such as TRAY *n* PAPER OUT, COVER OPEN *n*, or PAPER JAM *n*. They also warn you of hardware problems, such as FUSER FAILURE or BD CYCLE ERROR. The TONER LOW *n* message informs you that the toner bottle needs replacement. See Chapter 5 for a complete list of messages and explanations.

In tray select mode or MFF paper size mode, the message display shows the selected tray or the selected paper size respectively. In menu mode, the message display shows menu items and option selections. These modes are explained later in this chapter.

Buttons

One or two functions are assigned to a button. To use the functions represented by the top labels, simply press the button. To use the functions represented by the bottom labels, press and hold down the button for five or more seconds. The following tables summarize the functions.

Pressing the button briefly

Except for the **READY** button, the following buttons are also valid when the printer is offline.

Button (top label)	Function
READY	Switches the printer between online and offline.
FORM FEED	Performs a form feed to print the remaining data.
CONT.	Clears a recoverable error and continues printing.
SELECT	Puts the printer in tray select mode which allows you to select the paper tray to be used.
MENU	Puts the printer in setup mode.
ENTER	Selects the displayed option as the printer default. This button and the two buttons below are valid in setup, tray select, or MFF paper size mode.
+	Displays the next option.
–	Displays the previous option.

Pressing and holding down the button for five or more seconds

The following buttons are also valid when the printer is offline.

Button (bottom label)	Function
RESET	Clears the buffer of any print data and puts the printer through its initialization sequence.
RESET MENU	Besides the above reset function, resets all printer operation options to their factory default values except interface settings (parallel menu, serial menu, and network menu).
MFF PAPER SIZE	Puts the printer in MFF paper size mode, which allows you to select the paper size to be used.
SELF TEST	Selects the self test menu, which lists printer operation options currently selected.
PRINT FONT	Selects the print font menu, which lists the fonts currently available.

Control Panel Functions

Changing Message Language (**MENU**)

You can select a language used for control panel messages. Selectable languages are English, French, German, Italian, Spanish, and Swedish.

To select a language, follow these steps:

1. **Turning the printer on while pressing **MENU**.**

The message C . P . LANGUAGE ENGLISH appears after printer initialization.

2. **Press the **+** or **-** button until the desired language appears. Press the **ENTER** button.**

The asterisk appears after the language, indicating the language is selected.

3. **Save the selection.**

Pressing the **READY** button saves the new setting and returns the printer to the ready state. The printer will display the selected language for messages.

Printing Data Remaining in the Buffer (**FORM FEED**)

Pressing **FORM FEED** tells the printer to advance to the next page. The practical effect is to print any data remaining in the buffer. For example, the buffer might contain data from an interrupted print job. When the buffer contains residual data, the control panel DATA indicator is steadily lit.

Clearing an Error Condition to Continue Printing (**CONT.**)

When a recoverable error occurred, pressing **CONT.** clears the error condition and continues printing. For example, you can resume printing after adding paper in response to a TRAY1 PAPER OUT message. You can use **CONT.** to ignore a message such as Load TRAY1 A4. For example, you might want to print a page with A4-size format on a letter-size sheet. **CONT.** also allows you to override the INSERT A4 prompt when feeding paper manually. By pressing **CONT.**, the printer prints from tray1 instead.

Clearing the Buffer and Reinitializing the Printer (**RESET**)

Pressing and holding down **RESET** for five or more seconds clears the print buffer and tells the printer to initialize itself. You might use this function if you cancel a print job in the middle and want to clear the printer and start over. In this case, permanently downloaded fonts are removed by the initialization process. You must download the fonts again.

Clearing EEPROM (**RESET**)

Turning the printer on while pressing and holding down **RESET** resets the menu settings of EEPROM to the factory default values. The message display indicates EEPROM CLEAR for a second, WARMING UP, then READY (about a minute after). Unlike resetting menu by **RESET MENU**, this function also resets the interface settings. Use this function to return all menu settings to the original standard conditions.

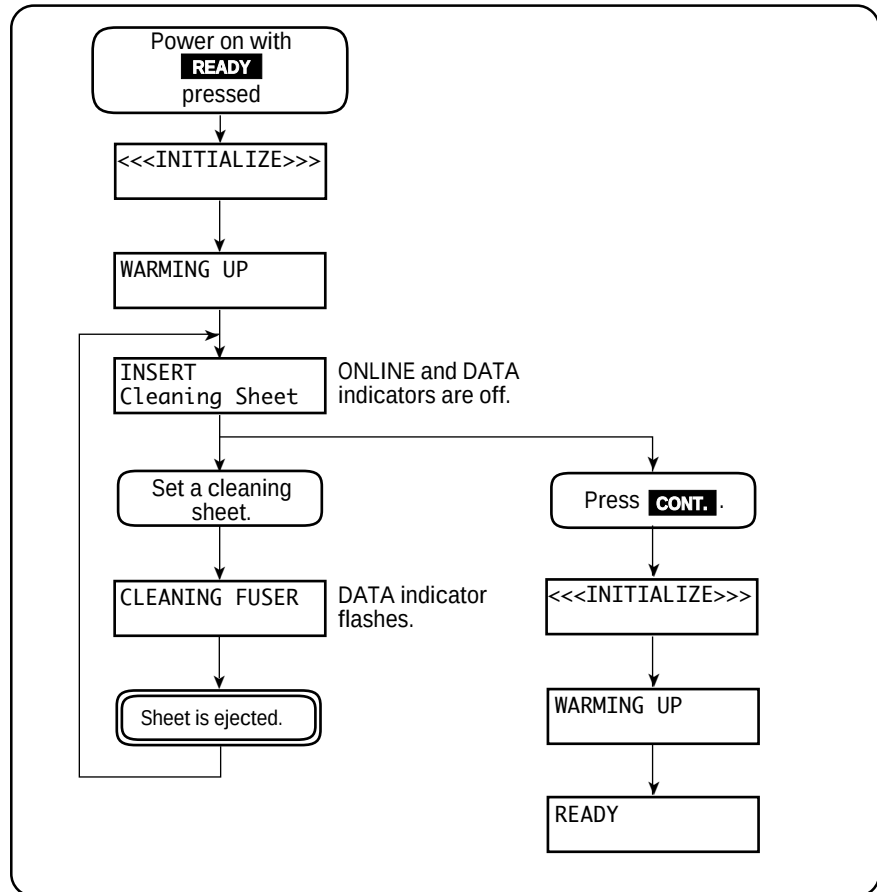
Setting the Fuser Unit Cleaning Mode (**READY**)

Turning the printer on while pressing and holding down **READY** sets the fuser unit cleaning mode after printer initialization. Before setting this mode, be sure to remove paper from the manual feeder.

When entering this mode, the printer requests you to set a cleaning sheet in the manual feeder. Setting a cleaning sheet starts feeding the sheet to clear the fuser unit. After cleaning, the printer ejects the sheet and waits for setting of the next sheet.

While the printer waits for setting of the next sheet, pressing **CONT.** clears the cleaning mode and puts the printer in the ready state.

If an error such as paper jam or cover open occurs during execution in cleaning mode, the printer returns to the cleaning sheet waiting state after the error is cleared. **RESET** and **RESET MENU** are disabled.



Selecting the Self Test Menu (**SELF TEST**)

Pressing **SELF TEST** puts the printer into the self test menu which allows you to print a status report which lists printer operation options currently selected in the selected emulation.

To select the self test menu and print a status report, follow these steps:

1. **Make sure that the message display indicates READY with the ONLINE and DATA indicators off.**

2. **Press the **SELF TEST** button for five or more seconds.**

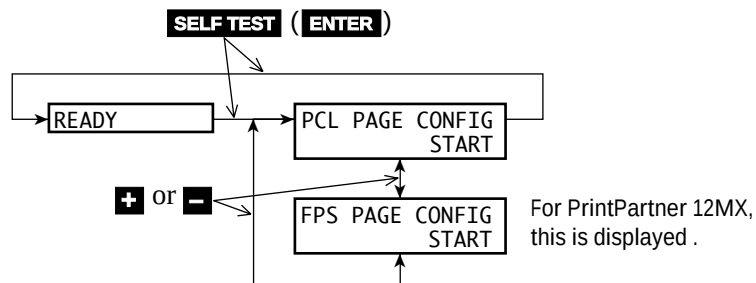
The message changes to PCL PAGE CONFIG START.

3. **Select a desired emulation.**

Press the **+** or **-** buttons until the desired emulation appears.

4. **Start printing.**

Press the **ENTER** button. The message display indicates SELF TEST and the DATA indicator flashes, then a status report page is printed.



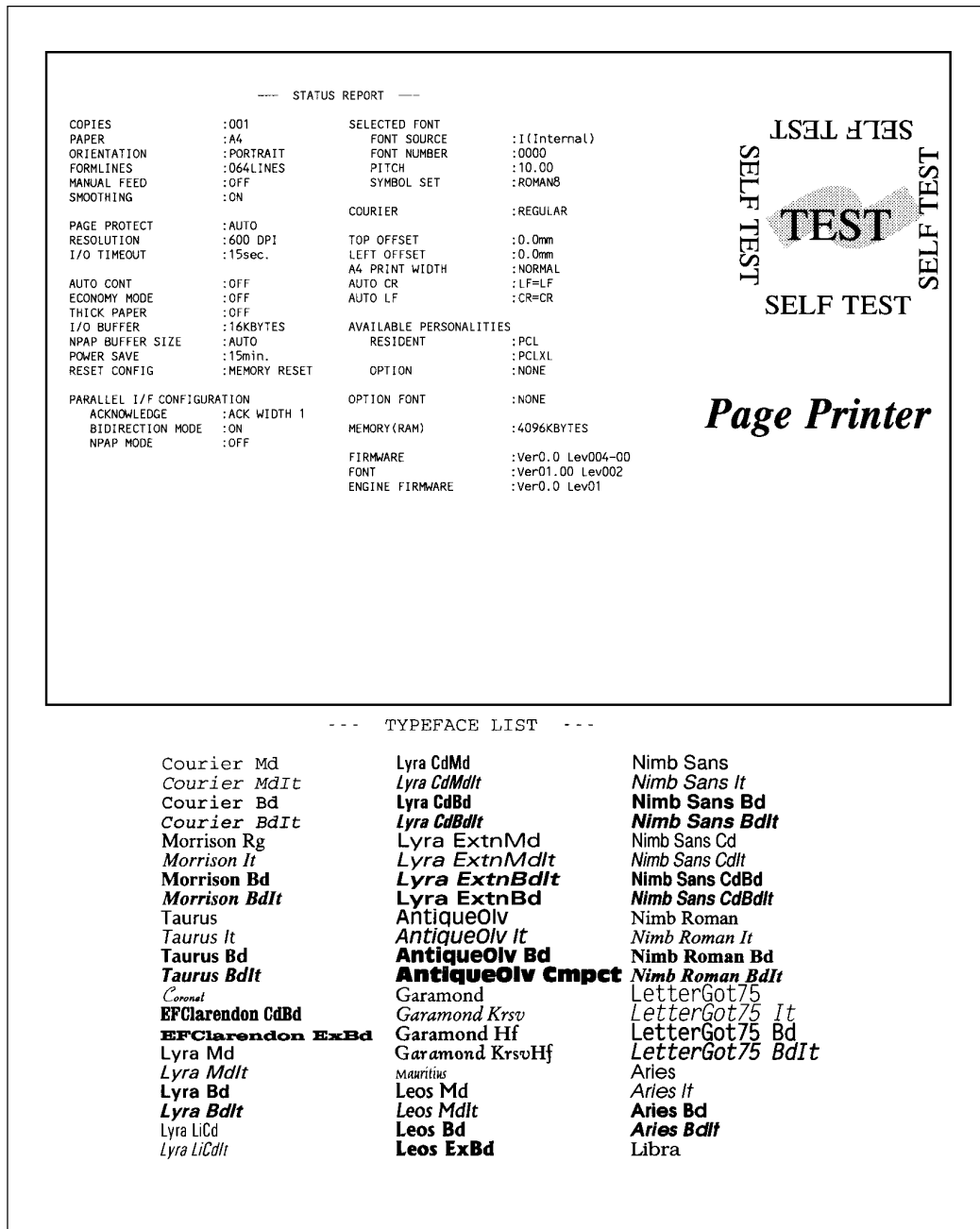


Figure 2-2 Status report (PCL emulation)

Selecting the Font Print Menu (**PRINT FONT**)

Pressing **PRINT FONT** puts the printer into the print font menu which allows you to list the fonts available in the selected emulation.

To select the print font menu and print the font list, follow these steps:

1. **Make sure that the message display indicates READY with the ONLINE and DATA indicators off.**

2. **Press the **PRINT FONT** button for five or more seconds.**

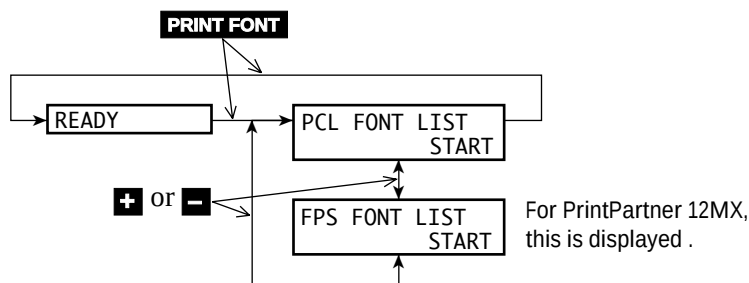
The message changes to PCL FONT LIST START.

3. **Select a desired emulation.**

Press the **+** or **-** buttons until the desired emulation appears.

4. **Start printing.**

Press the **ENTER** button. The message display indicates PRINT FONT and the DATA indicator flashes, then a font report page is printed.



-- FONT LIST --						
NO.	F.ID	FONT NAME	POINT	PITCH	Esc Sequence	SAMPLE
<u>RESIDENT FONTS</u>						
0000		Courier Md	scale		<Esc>(_<Esc>(s0p_h0s0b4099T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0001		Courier MdIt	scale		<Esc>(_<Esc>(s0p_h1s0b4099T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0002		Courier Bd	scale		<Esc>(_<Esc>(s0p_h0s3b4099T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0003		Courier Bdit	scale		<Esc>(_<Esc>(s0p_h1s3b4099T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0004		Morrison Rg	scale		<Esc>(_<Esc>(s1p_v0s0b4101T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0005		Morrison It	scale		<Esc>(_<Esc>(s1p_v1s0b4101T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0006		Morrison Bd	scale		<Esc>(_<Esc>(s1p_v0s3b4101T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0007		Morrison Bdit	scale		<Esc>(_<Esc>(s1p_v1s3b4101T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0008		Taurus	scale		<Esc>(_<Esc>(s1p_v0s0b4113T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0009		Taurus It	scale		<Esc>(_<Esc>(s1p_v1s0b4113T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0010		Taurus Bd	scale		<Esc>(_<Esc>(s1p_v0s3b4113T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0011		Taurus Bdit	scale		<Esc>(_<Esc>(s1p_v1s3b4113T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0012		Coronet	scale		<Esc>(_<Esc>(s1p_v1s0b4116T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0013		EFClarendon CdBd	scale		<Esc>(_<Esc>(s1p_v4s3b4140T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0014		EFClarendon ExBd	scale		<Esc>(_<Esc>(s1p_v2s3b4140T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0015		Lyra Md	scale		<Esc>(_<Esc>(s1p_v0s0b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0016		Lyra MdIt	scale		<Esc>(_<Esc>(s1p_v1s0b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0017		Lyra Bd	scale		<Esc>(_<Esc>(s1p_v0s3b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0018		Lyra Bdit	scale		<Esc>(_<Esc>(s1p_v1s3b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0019		Lyra LiCd	scale		<Esc>(_<Esc>(s1p_v4s-3b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0020		Lyra LiCdIt	scale		<Esc>(_<Esc>(s1p_v5s-3b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0021		Lyra CdMd	scale		<Esc>(_<Esc>(s1p_v4s0b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0022		Lyra CdMdIt	scale		<Esc>(_<Esc>(s1p_v5s0b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0023		Lyra CdBd	scale		<Esc>(_<Esc>(s1p_v4s3b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0024		Lyra CdBdit	scale		<Esc>(_<Esc>(s1p_v5s3b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0025		Lyra ExtnMd	scale		<Esc>(_<Esc>(s1p_v2s0b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0026		Lyra ExtnMdIt	scale		<Esc>(_<Esc>(s1p_v2s0b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0027		Lyra ExtnBdit	scale		<Esc>(_<Esc>(s1p_v2s3b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0028		Lyra ExtnBd	scale		<Esc>(_<Esc>(s1p_v2s3b4148T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0029		AntiqueOlv	scale		<Esc>(_<Esc>(s1p_v0s0b4168T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0030		AntiqueOlv It	scale		<Esc>(_<Esc>(s1p_v1s0b4168T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0031		AntiqueOlv Bd	scale		<Esc>(_<Esc>(s1p_v0s3b4168T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0032		AntiqueOlv Cmpct	scale		<Esc>(_<Esc>(s1p_v2s5b4168T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0033		Garamond	scale		<Esc>(_<Esc>(s1p_v0s0b4197T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0034		Garamond Krsv	scale		<Esc>(_<Esc>(s1p_v1s0b4197T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0035		Garamond Hf	scale		<Esc>(_<Esc>(s1p_v0s3b4197T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0036		Garamond KrsvHf	scale		<Esc>(_<Esc>(s1p_v1s3b4197T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0037		Mauritius	scale		<Esc>(_<Esc>(s1p_v0s0b4297T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0038		Leos Md	scale		<Esc>(_<Esc>(s1p_v0s1b4362T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0039		Leos MdIt	scale		<Esc>(_<Esc>(s1p_v1s1b4362T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0040		Leos Bd	scale		<Esc>(_<Esc>(s1p_v0s3b4362T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0041		Leos ExBd	scale		<Esc>(_<Esc>(s1p_v0s4b4362T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0042		Nimb Sans	scale		<Esc>(_<Esc>(s1p_v0s0b16602T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0043		Nimb Sans It	scale		<Esc>(_<Esc>(s1p_v1s0b16602T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0044		Nimb Sans Bd	scale		<Esc>(_<Esc>(s1p_v0s3b16602T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0045		Nimb Sans Bdit	scale		<Esc>(_<Esc>(s1p_v1s3b16602T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ
0046		Nimb Sans Cd	scale		<Esc>(_<Esc>(s1p_v4s0b16602T	ABCDE#\$\$%&< ÀÇÑ;âëøÆæ

PRINTING AND
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Figure 2-3 Font report-first page (PCL emulation)

Selecting Paper Tray, MFF, or Manual Feeder (**SELECT**)

Pressing **SELECT** puts the printer in tray select mode which allows you to set paper sources in locked or unlocked status. In the locked status, the paper source selection is fixed. In the unlocked status, the paper source is automatically switched to another source in a certain condition (auto tray selection). The paper sources are tray 1, tray 2 (if installed), MFF (available for 12MX only), and manual feeder.

MFF

The MFF operation is controlled by MFF mode in which “first” mode and “cassette” mode are provided.

First mode

The MFF has the highest priority and is selected first of all if printing is requested. You do not need to set the paper size of the MFF. (The MFF paper size menu is disabled.) The printer starts printing assuming that the loaded paper has the job-specified size of paper.

If you are printing using tray 1 or 2 with this mode set, you can immediately switch the tray to the MFF just by putting paper on the MFF. This is called on-demand printing.

Cassette mode (default)

The MFF is controlled in the same manner as for other paper trays. However, it has the lowest priority as compared with trays 1 and 2. You must set the physical size of the paper loaded on the MFF, using the MFF paper size menu. If the MFF paper size does not match the job-specified size, a paper mismatch error occurs.

Manual Feeder (Manual Feed Mode On)

The printer has also a manual feeder which is enabled in manual feed mode on. Operation slightly differs with the two modes of the MFF.

In first mode

If paper is already loaded on the manual feeder, it is picked without the paper insertion request message. If paper is not loaded on the manual feeder, the paper insertion request message is displayed.

In cassette mode

Whether or not paper is loaded on the manual feeder, the paper insertion request message is displayed. If paper is already loaded on the manual feeder, printing starts after you press **CONT.** If paper is not loaded on the manual feeder, printing starts when you load paper.

You can select two or three paper sources at a time, but must select at least one paper source. Tray 1, tray 2 (if installed), and MFF cassette mode are all selected as factory default.

When two or three paper sources are selected for auto tray selection (unlocked) and when a paper source runs out of paper or a paper miss match error occurs, the printer switches the paper source for another one.

To select a paper source for auto tray selection, follow these steps:

1. **Make sure that the message display indicates READY with the ONLINE and DATA indicators off.**
2. **Press the **SELECT** button briefly.**

The message changes to TRAY TRAY1*. The asterisk means that tray 1 is selected for auto tray selection (unlocked).

3. **Select or deselect a paper source.**

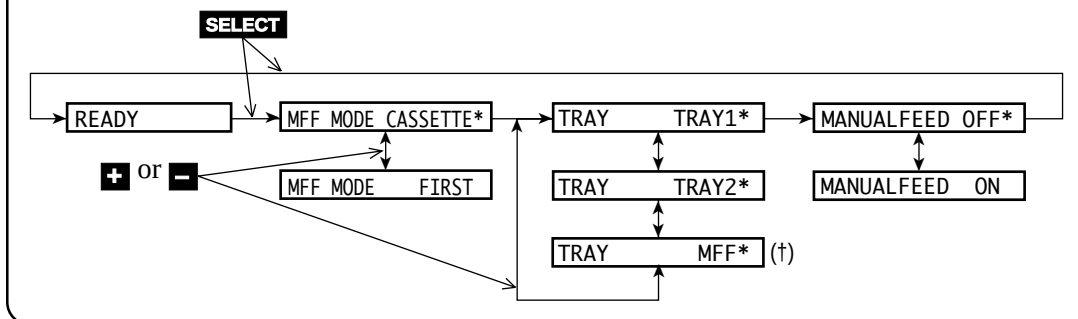
This step is valid when tray 2 (option) or MFF (standard for 12MX) is installed. Pressing the **ENTER** button in this condition makes the asterisk disappear. Tray 1 is deselected. Pressing the **ENTER** button again makes the asterisk reappear. Tray 1 is selected.

4. Select or deselect other paper sources.

Press the **+** or **-** buttons briefly to display another paper source.
Use the **ENTER** button in the same way as described above.

5. Save the selections.

Press **READY** button to save the new settings and return to the ready state.



According to tray selection, the INTRAY LOCK status printed in a status report changes as follows:

Tray selection	Intray lock status	Remarks
TRAY TRAY1	INTRAY1: LOCKED	
TRAY TRAY1*	INTRAY1: UNLOCKED	
TRAY TRAY2	INTRAY2: LOCKED	
TRAY TRAY2*	INTRAY2: UNLOCKED	
TRAY MFF (†)	INTRAYMFF: LOCKED	12MX only
TRAY MFF* (†)	INTRAYMFF: UNLOCKED	12MX only

† When MFF MODE = FIRST, TRAY MFF is not displayed or selected.

Setting MFF Paper Size (**MFF PAPER SIZE**) (12MX only)

Pressing **MFF PAPER SIZE** puts the printer in MFF paper size mode which allows you to inform the controller of the physical paper size used in the MFF. You must select the size of paper currently loaded in the MFF. This menu is not available for the PrintPartner 12M.

To select a paper size, follow these steps:

1. **Make sure that the message display indicates READY with the ONLINE and DATA indicators off.**

2. **Press the **MFF PAPER SIZE** button for five or more seconds.**

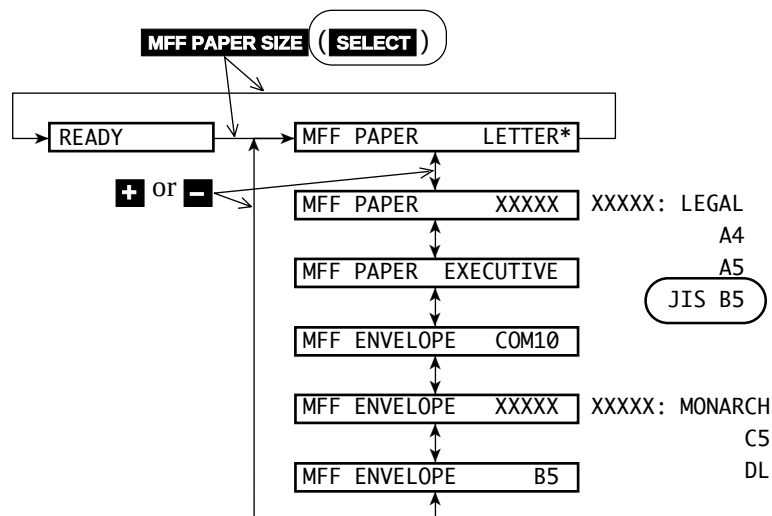
The message changes to **MFF PAPER A4***. The asterisk means that A4 size is selected for the MFF.

3. **Select a desired paper size.**

Press the **+** or **-** buttons until the desired paper size appears. Press the **ENTER** button. The asterisk appears and the paper size is selected.

4. **Save the selection.**

Press the **READY** button to save the new setting and return to the ready state.



Selecting the Thick Control Menu (**SELECT)**

This printer has the thick control menu which allows you to select one of the two thick control modes for adjusting the printer for paper thickness. One is the normal mode (factory default) and the other is the extension mode.

The normal mode allows you to print thick paper, but has only one choice between two options (ON for thick paper and OFF for ordinary paper). This choice is common to all paper sources (tray 1, tray 2 (if installed), manual feeder, and MFF (12MX only)).

The extension mode allows you to print several kinds of thin paper, thick paper, and thick envelopes for every paper source (eight options for every tray 1, tray 2 (if installed), manual feeder, or MFF (12MX only)).

When one mode is selected, you cannot use the other mode.

To select a thick control mode, follow these steps:

1. **Turning the printer on while pressing and holding down **SELECT**.**

The message indicates THICK CONTROL NORMAL* after printer initialization. The asterisk means that normal mode is selected for paper thickness.

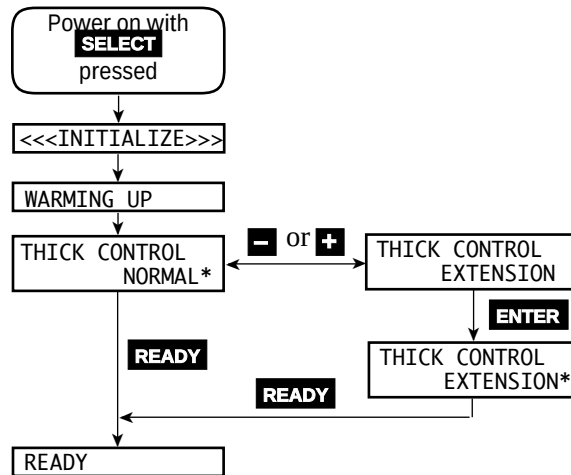
2. **Select a desired mode.**

Press the **+** or **-** button until the desired mode appears. Press the **ENTER** button. The asterisk appears and the mode is selected.

3. **Save the selection.**

Press the **READY** button to save the new setting and return to the ready state.

This selection remains even if you turn the printer off.



When you select a mode, the contents of the Quality menu changes according to the mode selected.

When the thick control is normal, only the Thick Paper item appears for paper thickness. This item has two options, OFF and ON.

When the thick control is extension, the Tray1 Media, Tray2 Media, Manual Media, and MFF Media items appear for paper thickness. Tray2 Media appears when tray 2 is installed. MFF Media appears for 12MX only. Each item has eight options from -2 to 5.

To select an option in thick control mode, follow these steps:

1. **Make sure that the message display indicates READY with the ONLINE and DATA indicators off.**

2. **Press the **MENU** button briefly.**

The message changes to SETUP MENU PAGE FORMAT MENU.

3. **Press the **MENU** button.**

The message changes to SETUP MENU QUALITY MENU.

4. **Press the **ENTER** button.**

The message changes to SMOOTHING ON*.

5. Press the **MENU button three times.**

The message changes to THICK PAPER OFF* when the thick control is normal, or TRAY1 MEDIA 0* when the thick control is extension.

6. When the thick control is extension, press the **MENU button until the desired item appears.**

The message changes to TRAY2 MEDIA 0*, MANUAL MEDIA 0*, or MFF MEDIA 0*.

7. Select a desired option.

Press the **+** or **-** button until the desired option appears. Press the **ENTER** button. The asterisk appears and the option is selected.

When the thick control is extension, repeat steps 6 and 7.

8. Save the selection.

Press the **READY** button to save the new setting and return to the ready state.

This selection remains even if you turn the printer off.

Each option means as follows:

When the thick control is normal:

- Off: Ordinary paper
- On: Thick paper

When the thick control is extension:

- 2: Thin paper when resulting in waving
- 1: Thin paper when resulting in light printing with duplex unit
- 0: Ordinary paper
- 1: Thick paper
- 2: Thick envelope when resulting in toner easily coming off
- 3: Thick envelope when resulting in light printing
- 4: Thick rough paper when resulting in smudging
- 5: Thick rough paper when resulting in light printing

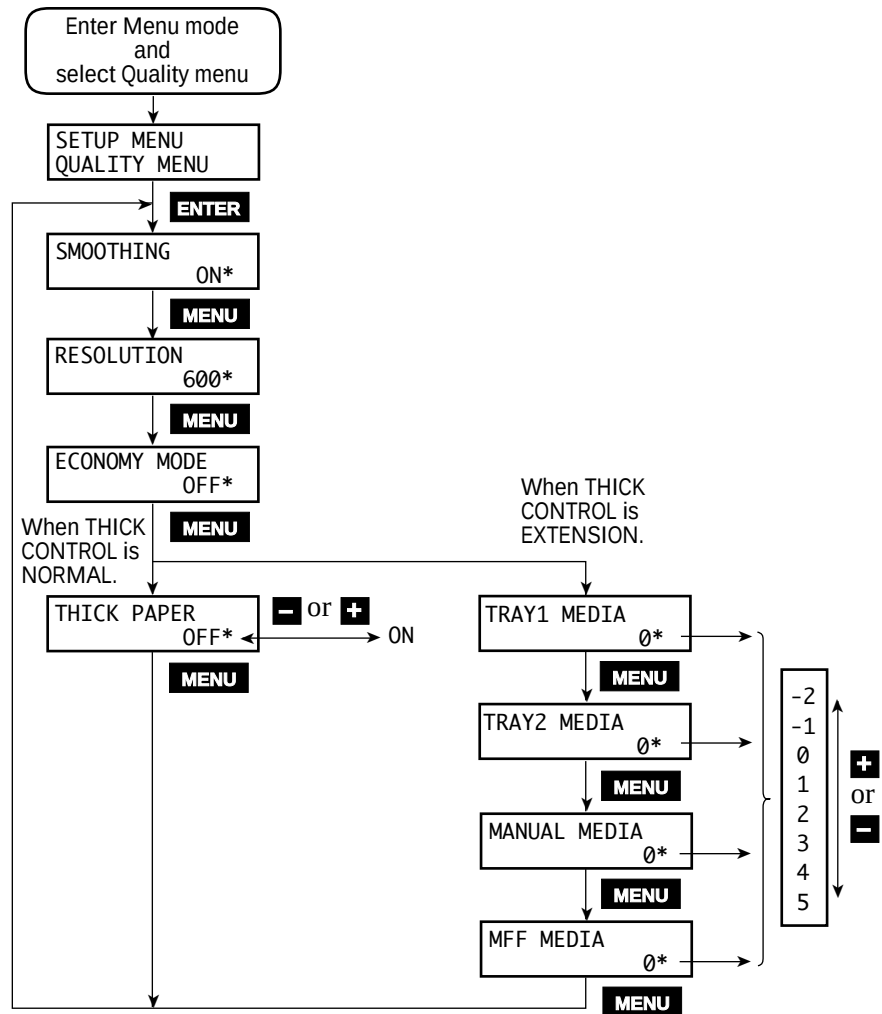
The mode number increases according to paper thickness and roughness. Select one of the underlined numbers in the normal usage.

Try several options and select an appropriate option that results in the most satisfied print quality. However, use the normal mode basically.

**Caution:**

Turn the mode off or reset it to 0 after printing thick or thin paper.

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Selecting Menu Option (**MENU**) and Resetting Menu (**RESET MENU**)

Pressing **MENU** briefly puts the printer in menu mode which allows you to set up the printer, for example, selecting a paper size, changing a font, and adjusting serial interface parameters. You can select options from the menu by using the four buttons, **MENU**, **+**, **-**, and **ENTER**.

Pressing **RESET MENU** for five or more seconds in menu mode resets all parameters to the factory default values except interface settings (parallel menu, serial menu, and network menu).

The following section briefly explains the menu mode and its operation.

Menu Functions

The menu mode allows you to change your printer's defaults using the four buttons on the control panel. You can use the control panel's menu mode to configure your printer to suit the requirements of your computer, software, and documents.

Menu Structure and How to Use Control Panel Buttons

The menu mode is structured as a tree consisting of submenus, items, and options. The following example shows a small portion of the tree and illustrates how the four buttons work.

In the example:

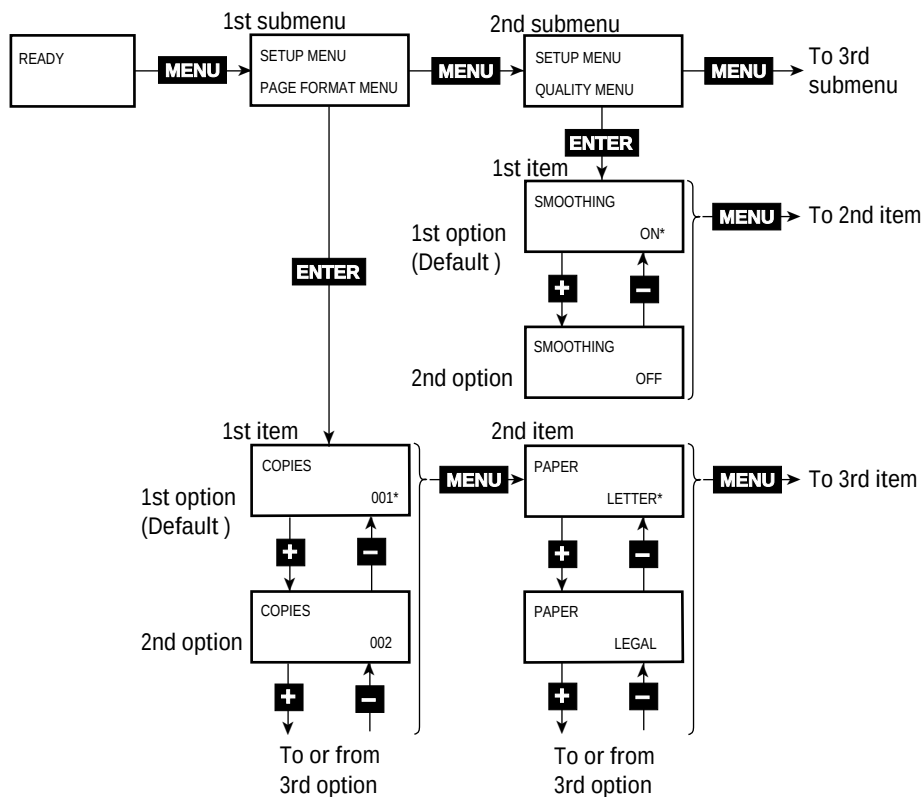
Submenus are **PAGE FORMAT MENU** and **QUALITY MENU**. Items are **COPIES**, **PAPER**, and **SMOOTHING**. Options are **001**, **002**, **LETTER**, **LEGAL**, **ON**, and **OFF**.

MENU selects menu mode when the printer is ready and offline. Once the printer is in menu mode, **MENU** selects the first submenu and moves you right to the next submenu. If you are on the last submenu, pressing **MENU** returns you to the first submenu.

When a submenu is selected, **ENTER** selects the first item of the submenu. Once the first item is selected, **MENU** moves you right to the next item, regardless of an option selected. If you are on the last item, pressing **MENU** returns you to the first item.

Use **+** and **-** to move up and down the options list.

When an item is displayed, **ENTER** selects that option (adds an asterisk after the option indicating that the option is stored in RAM).



Submenus, Items, and Options

The following table shows all of submenus and items and summary of options displayed on the message display in menu mode. The display initially shows the factory default option followed by an asterisk (underlined in the table).

Submenu (bold)/Item	Options
Page format menu	
Copies	001, 002, 003, ..., 999 (pages)
Paper/Envelope	A4, A5, JIS B5, Letter, Legal, Executive (*1) A6, COM10, Monarch, C5, DL, B5
Custom size X	90 to 229 (mm)
Custom size Y	210 to 356 (mm)
Orientation	Portrait, Landscape
Form lines	005, 006, 007, ..., 060, ..., 128 (lines/page) (*2)
Page protect	Auto, On
Duplex mode	Off, On (*3)
Bind	Long edge, Short edge (*3)
Quality menu	
Smoothing (*4)	On, Off
Resolution (*5)	600, 300, 1200 (dpi)
Economy mode	Off, On
Toner density	1, 2, ..., 5, ..., 9, 10
Thick paper (*6)	Off, On
Tray1 media (*7)	-2, -1, 0, 1, 2, 3, 4, 5
Tray2 media (*7)	-2, -1, 0, 1, 2, 3, 4, 5
Manual media (*7)	-2, -1, 0, 1, 2, 3, 4, 5
MFF media (*7)	-2, -1, 0, 1, 2, 3, 4, 5
PCL font menu	
Font source	Internal, Soft, SIMM (*8)
Font number	000, 001, 002, 003, ..., N (depending on the font source, max. 999)
Pitch size (*9)	0.44, 0.45, 0.46, ..., 99.99 (characters/inch)
Point size (*10)	4.00, 4.25, 4.50, 4.75, 5.00, ..., 999.75 (point)
Symbol set	Roman8, ISOL1, ISOL2, ISOL5, PC8, PC8-DN, PC850, PC852, PC8TK, ..., WingDings
Courier	Regular, Dark
PCL menu (*11)	
Top offset	-25.0, -24.9, -24.8, ..., 00.0, ..., +24.9, +25.0 (mm)
Left offset	-25.0, -24.9, -24.8, ..., 00.0, ..., +24.9, +25.0 (mm)
A4 print width	Normal, 80 columns/line
Auto attach FF	No, Yes
Auto CR	LF, LF+CR
Auto LF	CR, CR+LF

Submenu (bold)/Item	Options
FPS menu (*12)	
Jam recovery	Off, On
Print FPS errors	On, Off
Job timeout	0, 10, 11, 12, ..., 298, 299, 300 (0: no check)
Wait timeout	0, 10, 11, 12, ..., 298, 299, 300 (0: no check)
Manual timeout	0, 10, 11, 12, ..., 60, ..., 298, 299, 300 (0: no check)
Model selection	Auto model, Memory model, Speed model (*13)
Config menu	
Personality	Auto, PCL, PS, IBMPRO, EPSON (*12)
Auto continue	Off, On, Ext
I/O timeout (*14)	5, 6, 7, ..., 15, ..., 298, 299, 300 (seconds)
I/O buffers	Auto, 32K, 64K, 128K, 256K (bytes)
Power save	On after 15 min, 30 min, 60 min, 120 min, Off
Toner low	Stop, Continue
Pre pick	Off, On
Soft switch	SW1, SW2, SW3, SW4
SW1-1 to SW1-7	Off, On
SW2-1 to SW2-7	Off, On
SW3-1 to SW3-7	Off, On
SW4-1 to SW4-7	Off, On
Parallel menu	
Acknowledge (*15)	Mode1, Mode2, Mode3
Bi-direction	On, Off, ECP
NPAP mode	Auto, On, Off
Serial menu (*16)	
Baud rate	2400, 4800, 9600, 19200, 38400, 57600
Pacing	DTR, Xon/Xoff
DTR polarity	Hi, Low
ROBUST XON	On, Off
Network menu (*17)	
NPAP mode	Auto, On
Bootp	No, Yes
IP address	###. ###. ###. ### (### = 0, 1, 2, ..., 255) (*18)
IP netmask	###. ###. ###. ### (### = 0, 1, 2, ..., 255) (*18)
IP gateway	###. ###. ###. ### (### = 0, 1, 2, ..., 255) (*18)
Clear warning	Shows the printing component to be replaced.
<Clear warning>	Developer unit, Drum unit

- *1 Default is Letter or A4. For example, Letter for U.S. customers and A4 for European customers. To print on legal-size paper, banding mode must be on or the total RAM capacity must be 12M bytes or more (optional 8MB or more).
- *2 This is for Letter and portrait. It automatically changes depending on paper size and page orientation.
- *3 Valid when a duplex unit is installed (12MX only)
- *4 Makes the contours of objects appear smoother than normally possible with the printers standard resolution. Actual resolution depends on emulations and resolutions selected in menu mode.
- *5 Actual resolution depends on emulations selected in menu mode.
- *6 Displayed when the thick control is normal (factory default).
- *7 Displayed when the thick control is extension. Tray2 media is displayed when tray 2 is installed. MFF media is displayed for 12MX only.
- *8 Displayed when soft fonts are downloaded or a font SIMM card is installed
- *9 Displayed when the selected font is a scalable and fixed-spacing one. The default depends on a selected font.
- *10 Displayed when the selected font is a scalable and proportional-spacing one. The default depends on a selected font.
- *11 Effective when PCL jobs are being executed. These values are used as defaults of top and left offset specifications in PCL mode.
- *12 PS is displayed when the FPS (standard for 12MX and option for 12M) is selected for personality
- *13 If the total capacity of memory is 11M bytes or less with speed model selected, the resolution is automatically set to 300 dpi and Legal size paper cannot be used. To print Legal size paper or print in 600 dpi, select memory model. To print on Legal size paper with speed model selected, install additional memory cards of 8M bytes or more regardless of 300 or 600 dpi.
- *14 This is essential for sharing the printer among multiple computers.
- *15 This is for the parallel interface.
- *16 Displayed when a serial interface board is installed
- *17 Displayed when a network interface board is installed
- *18 Consists of four parameters. The one followed by < can be changed.

Menu Items

The following briefly explains each item of the menu mode.

Page format menu

Copies	The number of copies the printer prints from each page
Paper/Envelope	A paper size or envelope size to be used by the printer
Custom size X	Length of irregular-sized paper to be used by the printer
Custom size Y	Width of irregular-sized paper to be used by the printer
Orientation	A printing direction
Form lines	The number of lines printed per page
Page protect	Whether a block of printer memory is reserved exclusively for text and graphics data, especially for printing dense text or complex graphics, to prevent memory overflow errors. However, it reduces the amount of printer memory available for downloadable fonts.
Duplex mode	Two-sided printing mode (12MX only)
Binding	Where an extra area for fastening pages is located, short or long edge of a page (12MX only)

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Quality menu

Smoothing	Whether the edge smoothness technology is applied (improves resolution to 1200 dpi class) Actual resolution depends on emulations and resolutions selected in menu mode.
On	1200 dpi with 1200 dpi resolution and PCL6 or PS emulation selected 600 dpi in other cases
Off	Follows specifications of the next resolution.
Resolution	The number of dots printed per inch. Actual resolution depends on selected emulations.
300 dpi	300 dpi in all emulations
600 dpi	300 dpi in IBM or EPSON emulation 600 dpi in other emulations
1200 dpi	300 dpi in IBM or EPSON emulation 600 dpi in PCL5e emulation 1200 dpi in PCL6 or PS emulation

Economy mode	Toner saving mode
Toner density	Thickness of printout
Thick paper	Mode for printing thick paper for all paper input sources. Be sure to turn this off whenever you are using paper of ordinary thickness.
Tray1 media	Mode for printing thick or thin paper for tray 1. Be sure to return to 0 whenever you are using paper of ordinary thickness.
Tray2 media	Mode for printing thick or thin paper for tray 2. Be sure to return to 0 whenever you are using paper of ordinary thickness. (displayed when tray 2 is installed)
Manual media	Mode for printing thick or thin paper for manual feeder. Be sure to return to 0 whenever you are using paper of ordinary thickness.
MFF media	Mode for printing thick or thin paper for MFF. Be sure to return to 0 whenever you are using paper of ordinary thickness. (12MX only)
PCL font menu	
Font source	Where the printer finds the font
Font number	The internal number of a font to be selected
Pitch size	Character width (characters per inch)
Point size	Character height (multiple of 1/72 inch)
Symbol set	A set of characters used in a font, consisting of the standard letters, numbers, and punctuation. It differs in the accented characters, line drawing characters, and special symbols by languages.
Courier	Thickness of the strokes of the Courier font

PCL menu

Top offset	Distance by which the page is virtually shifted from the top edge of physical paper in PCL emulation
Left offset	Distance by which the page is virtually shifted from the left edge of physical paper in PCL emulation
A4 print width	Setting the width of the printable area for A4 paper size
<i>Normal</i>	PCL6 compatible
<i>80 columns/line</i>	Expands the width of the printable area so that 80 characters of a 10-pitch font can be printed within a line. This setting is available only for A4 paper size in portrait orientation.
Auto attach FF	FF code (paper ejection) issued at timeout
Auto CR	CR code added to an LF code
Auto LF	LF code added to a CR code

FPS menu

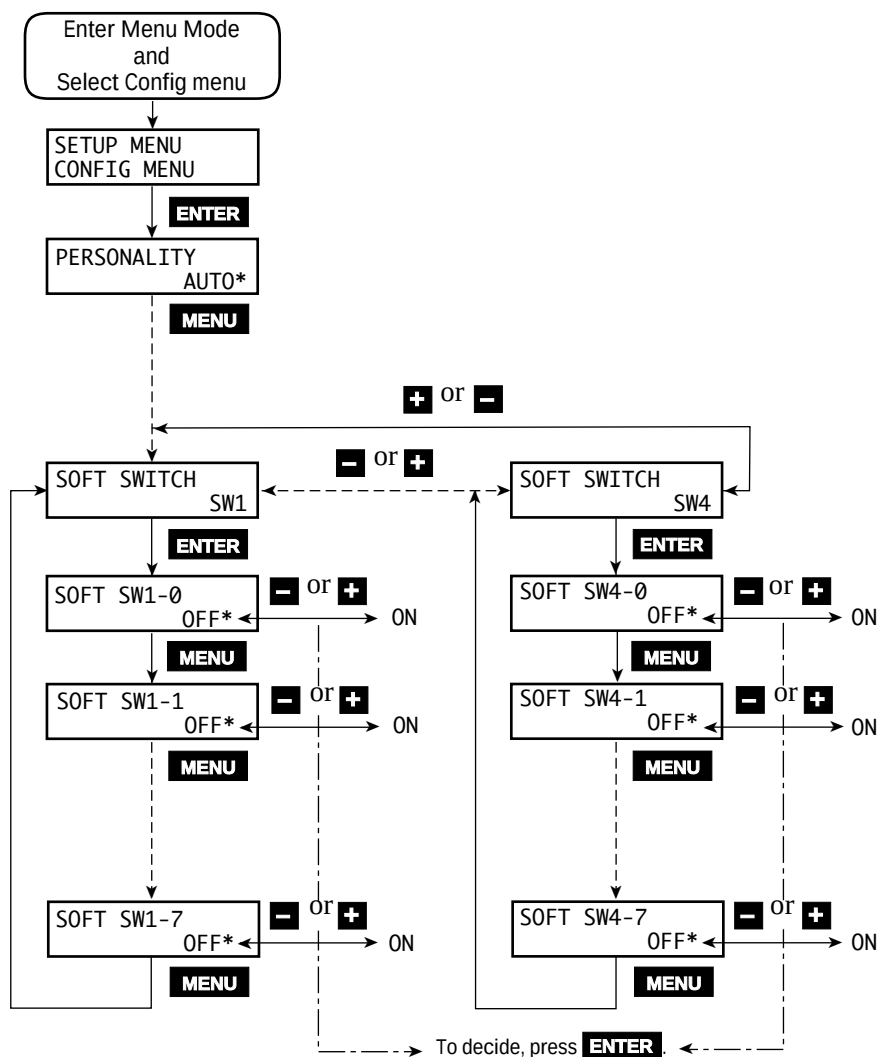
Jam recovery	Whether the jammed page is reprinted
Print FPS errors	Whether an error report is printed out
Job timeout	Time interval to be allotted between jobs
Wait timeout	Time interval to be allotted for waiting a job end
Manual timeout	Time interval to be allotted for manual insertion
Model selection	Switching printing control (band/full page)
<i>Auto model</i>	Standard setting. Automatically switches the following two models depending on the total RAM capacity. • 11MB or less (standard 4MB + optional 7MB or less): equivalent to virtual memory model • 12MB or more (standard 4MB + optional 8MB or more): equivalent to speed model

<i>Speed model</i>	Attaches importance to speedup of printing control, thus processing all pages per job. Print density depends on the RAM capacity. • 300 dpi when total RAM capacity is 4M to 11M bytes (standard 4MB + optional 7MB or less) • 600 dpi when total RAM capacity is 12M bytes or more (standard 4MB + optional 8MB or more). Note: • To print at 600 dpi when total RAM capacity is 4M to 11M bytes (standard 4MB + optional 7MB or less), select memory model. • To print on legal-size paper, expand the total RAM capacity to 12M bytes or more (optional 8MB or more) even in printing at 300 dpi or select memory model.
<i>Memory model</i>	(Virtual) memory model. Attaches importance to reliable printing rather than speedup, thus processing data per page.
Config menu	
Personality	Selecting an emulation (personality) without a PJI command which clearly specifies the emulation
Auto continue	Automatic control of continuing recoverable errors
I/O timeout	Time interval allowed for switching the interface
I/O buffers	Size of interface buffer
Power save	Setting the time interval during which the printer remains idle state before entering sleep mode after printing last
<i>On after 15 min</i>	Power save mode on. The printer enters sleep mode after remaining idle state for ## minutes after printing last.
<i>On after 30 min</i>	
<i>On after 60 min</i>	
<i>On after 120 min</i>	
Off	Power save mode off. (Even in this mode, the printer enters sleep mode after remaining idle state for 180 minutes.)
Toner low	Whether the printer stops printing when it detects near end of toner.
Pre pick	Earlier start of paper picking

Soft switch	Functions like conventional DIP switches.
SW1-0	Buzzer mode off or on
SW1-1	Dither mode 1 (off) or 2 (on) (PCL6 600 dpi only)
Other switches	Reserved for future use.

**Important:**

The soft switches are invalid for this printer. Never change the settings.



Parallel menu

Acknowledge	The pulse width of the ACK signal
<i>Mode1</i>	0.5 μ s
<i>Mode2</i>	1.0 μ s
<i>Mode3</i>	4.0 μ s
Bi-direction	Bi-directional Centronics interface mode
NPAP mode	Whether the NPAP commands are used. When using MarkVision™, the NPAP mode must be Auto or On.

Serial menu

Baud rate	Data transfer speed on the serial interface
Pacing	Protocol of the serial interface
DTR polarity	Level of the DTR signal in the DTR protocol
ROBUST XON	ROBUST mode in the Xon/Xoff protocol

Network menu

NPAP mode	Whether the NPAP commands are used. When using MarkVision™, the NPAP mode must be Auto or On.
BootP	Whether the TCP/IP protocol that enables a workstation to find its IP address is enabled or disabled for the network adapter
IP address	A unique address of the printer in the TCP/IP network environment
IP netmask	Bit mask that logically subdivides the network, specifying a local network portion of the IP address
IP gateway	A unique address of the equipment for the gateway to outside of the enclosed environment

Clear warning

<Clear warning>	Clearing a consumables life counter (for the developer unit or the drum unit)
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Handling Paper

Discusses paper selection and paper handling:

- Types and sizes of paper you can use with this printer, including envelopes and transparencies
- Ensuring that both the software program and the printer have compatible paper size settings
- Adjusting the printer for a variety of paper thickness
- Tips on handling print media
- Adjusting the paper tray to fit a different paper size
- Feeding paper manually

Paper Types and Sizes

This printer can print on a variety of common office papers in addition to standard photocopier bond. Bond paper can range in basic weight from 60 to 105 g/m² (16 to 28 pound) for the paper tray and from 60 to 199 g/m² (16 to 53 pound) for the manual feeder. Smooth paper produces the best print quality, but textured papers usually provide satisfactory results.

The following descriptions also apply to an optional paper tray.



Caution:

When you use thick paper, follow these guidelines:

- When you are using thick paper, thick envelopes, or special paper and find improper adhering of toner to the paper, turn the thick paper mode on using the control panel. This mode is invalid for transparencies and labels.
- When you cannot be satisfied with the results of the thick paper mode or want to print on thin paper, use the extension mode of paper thickness.
- Turn the mode off or reset it to 0 when you print on regular paper. Printing regular paper with this mode on or set to a value other than 0 may cause a decrease in print quality or reliability of the printer.
- With some kinds of paper, curling may happen. In this case, put the paper face down.

This printer can print on a wide range of paper sizes, but the size is limited when using paper trays.

- When using a paper tray, the size is:

Paper size (physical)	Dimensions
A4 (European letter size)	210 × 297 mm
A5	148 × 210 mm
JIS B5 (Japanese letter size)	182 × 257 mm
Letter (US letter size)	8.5 × 11 in
Legal (US legal size)	8.5 × 14 in
Executive	7.25 × 10.5 in

- When using the MFF (12MX only) or manual feeder, the size is:

Paper size (physical)	Dimensions
A4, A5, B5, Letter, Legal, Executive	Same as above
A6	105 × 148 mm
Envelope COM-10	4 1/8 × 9.5 inches
Envelope Monarch	3 7/8 × 7.5 inches
Envelope C5	162 × 229 mm
Envelope DL	110 × 220 mm
Envelope B5	176 × 250 mm
Custom size: Minimum (*)	90 mm wide × 148 mm long (3.54 × 5.81 inches)
Maximum	229 mm wide × 356 mm long (9.01 × 14.01 inches)

* Two-sided printing using an optional duplex unit cannot be done for paper shorter than 210 mm (8.26 inches) long and envelopes. If it is specified, single-sided printing is automatically done.



Important:

When printing on legal-size paper in the FPS emulation, set the one of the following:

- Add RAM extension cards of 8M bytes or more (12M bytes or more in total)
- Select “memory model” in the FPS menu.

If a print job stops halfway with a certain error message printed, the same measures above often recover the error.

Although this printer can print on any sheet within the limits stated above, printing area and margin calculations are based on several paper sizes as shown in the table below. Use the control panel to change the supported paper size.

Paper size (logical)	Dimensions	Abbreviation
A4	210 × 297 mm	A4
A5	148 × 210 mm	A5
JIS B5	182 × 257 mm	JB5
Letter	8.5 × 11 inches	LT
Legal	8.5 × 14 inches	LG
Executive	7.25 × 10.5 inches	EX
A6	105 × 148 mm	A6
Envelope COM-10	4 1/8 × 9.5 inches	CO
Envelope Monarch	3 7/8 × 7.5 inches	MO
Envelope C5	162 × 229 mm	C5
Envelope DL	110 × 220 mm	DL
Envelope B5	176 × 250 mm	B5

When the PCL emulation is used and if the physical paper size (tray size or MFF paper size) is different from the logical paper size (value specified by setup menu of paper size), a paper mismatch error occurs.

If a paper mismatch error occurs, the printer requests you to load the correct size of paper on the tray or MFF by the following message:

LOAD MFF XXX or LOAD TRY_n XXX

XXX means the abbreviation of paper size shown in the third column of the above table. It is also used in the paper insertion request message for a paper out error or manual feed mode.

However, you can load the correct size of paper in tray 1 or 2 to clear the error.

Adjusting for Paper Thickness

When you are using thin paper, thick paper, or thick envelopes, you may find improper adhering of toner to the paper, wavy paper, or light printing. This printer can improve the above print quality within the paper specifications by means of the thick control menu which has two modes, normal and extension. The printer is set in normal mode as a factory default. To change the mode and select an option, see **Selecting the Thick Control Menu** described earlier in this chapter.

In normal mode, you can use the thick paper mode, which allows you to print on thick paper, from 90 to 199 g/m² (24 to 53 pound). The setting is common to all paper sources. The thick paper mode is automatically used regardless of its option setting when you select an envelope for MFF paper size.

In extension mode, you can use media modes on tray 1, tray 2 (if installed), manual feeder, and MFF (12MX only), which allow you to print on thin paper, thick paper, or thick envelopes. A different setting can be specified every paper source. The media mode = 1 (thick paper) is automatically used when you select an envelope for MFF paper size so long as the media mode = 0 (ordinary paper) is being selected.



Caution:

Turn the mode off or reset it to 0 when you print on regular paper. Printing regular paper with this mode on or set to a value other than 0 may cause a decrease in print quality or reliability of the printer.

Use the following guidelines when printing on thin paper, thick paper, or thick envelopes:

Basically use the thick paper mode (option: on or off) in the normal mode:

Off: Ordinary paper

On: Thick paper, 90 to 199 g/m² (24 to 53 pound),
Rough surface of paper,
Toner easily scraped off by fingers, or
Printing or back side stained with toner

Use a media mode (option: -2 to 5) in the extension mode if you cannot be satisfied with the normal mode and want to make fine adjustment. Select an appropriate option as follows:

- 2: Thin paper near 60 g/m² (16 pound), resulting in waving
- 1: Thin paper near 60 g/m² (16 pound), resulting in light printing with the duplex unit
- 0: Ordinary paper
- 1: Thick paper from 90 to 199 g/m² (24 to 53 pound)
- 2: Thick envelope, resulting in toner easily coming off paper
- 3: Thick envelope, resulting in light printing
- 4: Thick rough bond paper containing cotton over 50 %, resulting in smudging
- 5: Thick rough bond paper containing cotton over 50 %, resulting in light printing

For light printing, see the print quality problems at first. Media mode for light printing affects only under the limited usage.

With mode number 2, 3, 4, or 5 selected, continuous printing is allowed up to 30 minutes.

General Tips

Observe the following tips when handling print media.

- Do not use paper that is wrinkled or curled.
- Do not use paper with staples or metal parts.
- When printing both sides of sheets and your printer is a PrintPartner 12MX, we recommend you to use an optional duplex unit. If your printer is PrintPartner 12M, use the manual feeder (in this case, remove curls after first printing). Use paper in 60 to 105 g/m² (16 to 28 pound) weight for the duplex unit and 60 to 199 g/m² (16 to 53 pound) weight for the manual feeder. Paper thinner than this weight may be wrinkled thus causing decrease in print quality.
- Two-sided printing is not allowed for transparencies, envelopes, and labels even if your printer has the duplex unit.

Preprinted Sheets

In general, you can safely print on preprinted sheets such as letterhead. However, letterhead with thermographic (raised) printing, embossing, or foil stamping may not work well. The forces used to create these effects (heat and/or pressure) are also used in the printer's fuser unit. For this reason, the fuser unit may damage the preprinted image.

Load preprinted paper with the printed side facing down in the paper tray. When using the manual feeder, place paper with the printed side facing up. For printing in portrait orientation, the letterhead should be at the front of the tray. For landscape orientation, it should be at the right of the tray. For more information on printing in different orientations, see the later section of this chapter.

Transparencies

This printer can print on overhead transparency material.

- We recommend you to set up the rear stacker so that transparencies are ejected straight out the back to minimize curl.

The capacity of the rear stacker is about 10 sheets.



- Use materials specially designed for laser printers or photocopiers.
- Always feed transparency material from the multi-function feeder (MFF; option for 12MX) or the manual feeder.
- To remove curls from printed transparency materials, use correct frames or put a weight on them until they lay flat.

- Be sure to fan the transparency stack to prevent sheets from sticking together.

Envelopes

This printer prints well on envelopes if you carefully follow these guidelines:

- Use envelopes made of paper in 75 to 199 g/m² (20 to 53 pound) weight. Printing with envelopes made of paper thinner than this weight may produce wrinkles thus causing decrease in print quality.
- Be sure to set up the rear stacker so that envelopes are ejected straight out the back to minimize curl.

The capacity of the rear stacker is about 10 sheets.

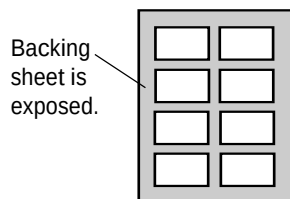
- Use the envelope sizes shown in the preceding table.
- To avoid damage to the printer, never use envelopes with clasps, snaps, windows, or synthetic materials.
- Feed from the multi-function feeder (MFF; 12MX only) or the manual feeder of the printer.
- Feed the envelopes with the gummed side of the flaps facing downward.
- Do not use “encapsulated” adhesives, which seal by pressure alone.
- To avoid jamming, restrict the minimum paper weight to 64 g/m² (17 pound).
- To avoid creasing along the edges, use high-quality envelopes with stiff edges.
- To avoid uneven printing, do not attempt to print on the gummed overlap areas.
- Be sure to feed or load the envelopes with the envelope centered against the manual feeder, using the paper guides.
- Before attempting large-scale printing on envelopes, consult with your stationery dealer. Also, test the envelopes carefully for consistent, trouble-free printing.

- If fusing is insufficient (toner is easily scraped off by fingers), use the thick paper mode.

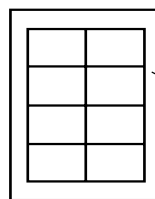
Labels

This printer prints well on labels if you carefully follow these guidelines:

- Be careful to use labels under normal operating conditions. Labels are sensitive to temperature and humidity.
- Use the rear stacker so that labels are ejected straight out the back to minimize curl.
- Use only labels without backing sheets exposed in the printable area. Labels mounted separately on a backing sheet tend to slip, resulting in crooked print.



Not acceptable

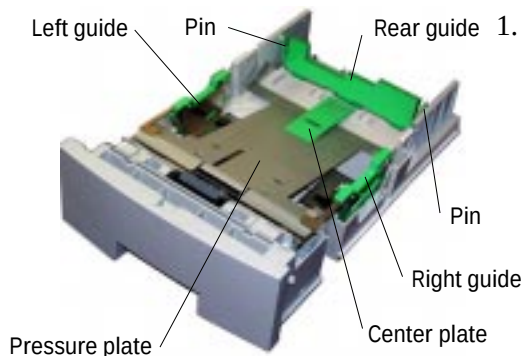


Acceptable

- Test-print labels before using them. If jamming problems occur and continue, try a different type of label.

Changing the Paper Tray Size

The paper tray can be adjusted to one of the six paper sizes: A4, A5, JIS B5, LTR (Letter), LGL (Legal), and EXE (Executive). To change the size, follow these steps:



1. Remove the paper tray from the printer.

Refer to the illustration for the parts you adjust when changing the size of the tray.

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2. Remove the rear paper guide from the tray. Push the two catches inward to release the pins from the holes and remove the rear paper guide from the tray.

070



3. If you want to use the legal size, move the center guide one slot outwards. Lift the rear end of the center guide to detach it from the pressure plate. Then, put the front end of the center guide into the adjacent slot.

071



4. Attach the rear paper guide to the correct position. Refer to the engraving on a side guide to locate the notch of the desired paper size.

First push the bottom center tab of the rear paper guide into the notch, then push the two catches inward to put the two pins into the corresponding side holes.

072



5. Change the setting of the paper size dial. Turn the dial to the correct position.

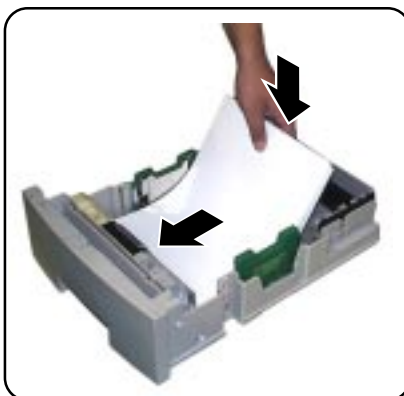


Important:

Set the paper size dial to the size of the loaded paper and select the correct paper size on the print menu of your application program, or a paper mismatch error will occur when printing.

033

Arrow 1
Arrow 2



6. Load paper and check that the paper fits the tray.

Adjust the right side-guide so that both side-guides fit to the width of paper snugly.

7. Return the paper tray. Slide the tray back into the printer.



Caution:

Put the paper stack in the tray with the printing side faced down.

If paper is wavy or curled, remove waved or curled sheets of paper.

If paper is abnormally curled or becomes cylindrical after printing, use the paper upside down. It may reduce a degree of curl.



Important:

Do not turn the paper size dial after you have loaded paper. Changing the dial setting causes a paper mismatch error when printing the paper.

Using the Multi-function Feeder (12MX only) or Manual Feeder

The PrintPartner 12M has a manual feeder, accessible with the front door opened, to allow you to feed a sheet manually. The PrintPartner 12MX has a multi-function feeder, with a similar appearance to the manual feeder at a glance, to allow you to handle a stack of sheets.

The multi-function feeder also functions as the manual feeder when it is set in manual feed mode. Use these feeders for printing, thick paper, envelopes, overhead transparencies, and labels. The manual feeder or the multi-function feeder in manual feed mode also can be used to print a document on a different type of paper without unloading your regular paper from the paper tray.

Multi-function Feeder

The multi-function feeder is available for PrintPartner 12MX only.

1. Open the front door. Pull the depression at the top of the door.



2. Extend the paper support. Pull the center top of the paper support all the way.



075



3. Adjust the paper guides. Slide the paper guides to fit the width of paper snugly.

076



4. Fan the paper stack. When loading paper, be sure to fan the paper stack to prevent sheets from sticking together.

077



5. Load paper. Place the paper stack on the MFF and push it all the way until its front portion is stopped.

078

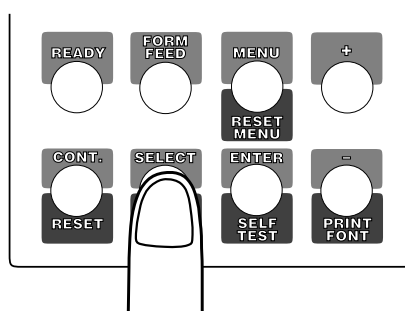


6. Open the rear stacker. If necessary, open the rear stacker.



7. Extend the subguide. Raise the top of the subguide to open it.

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8. Set the physical paper size of the MFF. Use the MFF paper size menu to select the size of paper loaded in the MFF. See the early section, Setting MFF Paper Size, in this chapter.



Important:

The MFF has two operation modes: First mode and Cassette mode. When using it in Cassette mode (default), you must specify the physical paper size of the MFF.

Manual Feeder

To use the manual feeder or the multi-function feeder in manual feed mode, first select **MANUALFEED ON** using the tray select mode of the control panel. Next, start your software program to print a file. Paper handling is similar to that of the multi-function feeder. The following shows paper loading step only:



Place a sheet with print side face up. When the printer is ready to print, it displays the message **Insert size** to prompt you to prepare a sheet of paper. Insert the sheet until it is stopped. Insufficient insertion prevents paper from being fed or causes skewed feeding.

If your file has additional pages, the printer prompts you for another sheet.

Setting Up the Rear Stacker

This printer has a rear stacker that allows you to eject sheets straight out the back to minimize curl. Use the rear stacker to print thick paper, envelopes, overhead transparencies, and labels.

To use the rear stacker, follow these steps:



1. Open the rear stacker. Pull the projections at the top of the stacker.
2. Extend the subguide. Raise the top of the subguide to open it.

Printing on Custom-Sized Paper

PrintPartner 12MX can print on custom-sized paper (nonstandard size paper) by using the multi-function feeder (MFF).

Note that you can also use the manual feeder to print custom-sized paper. You must load sheets one by one and the printer does not check the paper size.

To print on custom-sized paper, follow these steps:

1. Specify the size of paper to be used. Set the printer in menu mode using the control panel and select the Page Format menu.



- a. Select Custom for Paper/Envelope.
- b. Adjust Custom X and Custom Y to the size of paper to be used.

To the paper feed direction, length X is perpendicular and length Y is parallel as shown left.

When you specify the paper size from the printer driver, use a property sheet screen.

2. Specify the physical paper size of the MFF. When the MFF mode is “Cassette” (default), select the MFF Paper Size menu from the control panel and select “Custom” in the menu. When the MFF mode is “First”, you do not need to specify the paper size.

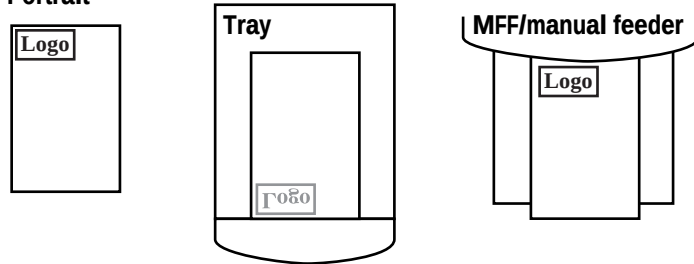
Page Orientation

When you want to print on preprinted paper like letterhead, it is important to understand the relationship between the paper loading direction (lengthwise feeding only) and the page orientation (portrait/landscape).

When using a paper tray, place the paper with its letterhead facing down. Insert the paper as shown below.

When using the MFF (12MX only) or the manual feeder, place the paper with its letterhead facing up. Insert the paper as shown below.

Portrait



Landscape

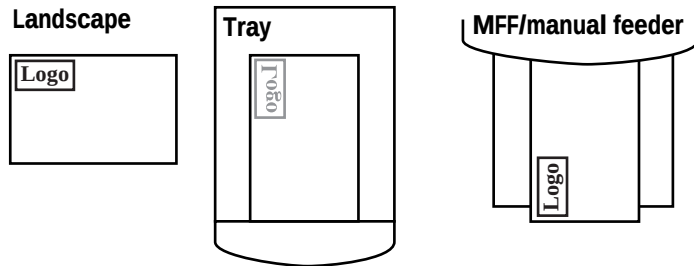


Figure 2-4 Loading letterhead in a paper tray or on the manual feeder

Enhancing and Customizing the Printer

This chapter explains the following ways to enhance or customize your printer:

- Add RAM up to a total of 64 megabytes except the resident RAM.
- Add an alternate emulation to the resident one.
- Add an additional interface to the parallel and/or serial interfaces.
- Add a paper feeder as the second paper source.
- Add a duplex unit as the two-sided printing mechanism (available for 12MX only).

You can order these options separately. See Appendix B for ordering information. Contact your dealer for information on other new options that may be available.

The following gives you brief information and installation instructions for each option.



Caution:

Be sure that the printer is turned off before installing an option.

Do not touch any connector contacts to avoid possible electrostatic damage to the printer.

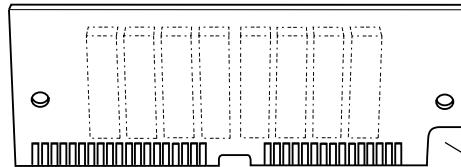
Adding RAM

You may need to expand RAM to process more data for either of the following reasons:

- You commonly download several fonts when printing a job
- You print files with complex graphics
- You print on legal-size paper in speed mode with banding mode off in FPS emulation (standard for 12MX and option for 12M)

You can install two memory expansion cards. The expansion card can have 4, 8, 16, or 32 megabytes of RAM. Together with the printer's resident memory (4 megabytes for 12M and 8 megabytes for 12MX), these expansion options offer a range of RAM from 4 to 68 (12M) or 72 (12MX) megabytes.

(8MB card)



Insert with cut facing down and to the right

To install the RAM card, first make sure the printer is turned off and follow these steps:

1. **Open the upper door and remove the right side cover of the printer.** To remove the right side cover, remove the two screws and open the front of the cover while pushing it backwards. You will see a connector cover on the metal plate.

2. Remove the connector cover. Remove the fastening screw and the cover. You can now see three connectors (upper two ivory ones for RAM cards).

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3. Orient the RAM card.
Hold the card with the cut corner down and facing right and insert the card aslant into connector.

Use upper two
ivory connectors

ENHANCING &
CUSTOMIZING



Caution:

Do not touch any connector contacts to avoid possible electrostatic damage to the printer.

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4. **Install the RAM card.**
Push its top edge downwards so that holes of the card align with locating pins of the connector and the card is secured by retaining clips.



Caution:

The expansion RAM card or font card is easily damaged by static electricity. Hold it by its edges and do not touch the electric circuit parts and wiring.



Important:

When installing two RAM cards, first install the lower one, and then the upper one. If you install them in the opposite order, the upper card prevents the lower card from being installed.

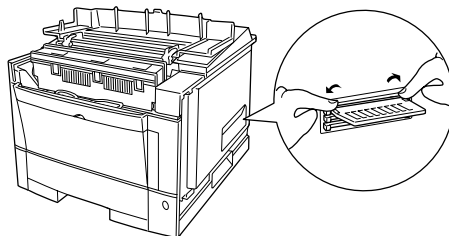
5. Secure the connector cover.
Secure the connector cover, which was removed in step 2, with a screw.

**Caution:**

Be sure to secure the connector cover to avoid a fire hazard.

6. Close the side cover and then upper door.

Turn power on. If necessary, change buffer memory assignment (page protect or jam recovery) using the control panel.

Removal

To remove a RAM card push out the retaining clips. when the card slants outwards, pull the card to remove.

Installing an Alternate Emulation

Alternate emulations are offered with emulation cards. You can use these emulations to connect your printer to different computers. The FPS card (PostScript Level 2 compatible) is available. Note that the FPS emulation is standard for 12MX.

The installation procedure is the same as that for the RAM card except that the emulation card uses the bottom connector.

To install the FPS emulation card, follow these steps:

1. If RAM cards are already installed, remove them.
2. Insert the emulation card into the bottom *black* connector.
3. Reinstall the RAM cards.



Use the bottom
black connector

**Caution:**

After installing cards, be sure to secure the connector cover to avoid a fire hazard. See the previous section for RAM cards.

With default settings, the printer automatically selects the active emulation. To specify an emulation steadily, select the emulation using the control panel. Use the Personality item of the Config menu.

Once you change the emulation, the other menus change to reflect the options and functions of the new emulation. Procedures for working in the menus remain the same as for the PCL emulation.

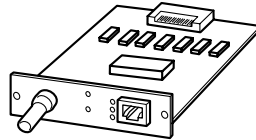
Installing an Interface Expansion Board

The Centronics parallel interface is standard for 12M and 12MX. The RS-232C serial interface is standard for 12MX. The currently available optional interfaces are Ethernet, IrDA, GXL, and USB. If the location of your printer is distant from the computer, you can use the Ethernet port of the computer to connect your printer. Fujitsu offers the optional Ethernet board C, D, F, or GXL for these purposes. The USB board is a universal serial bus board.



Caution:

When sharing the printer among multiple computers, setting the I/O time-out short may cause a printing problem. See the section Menu Items in Chapter 2.



Ethernet interface board (*)

* Some types of boards do not have the coaxial connector.

Installing an Interface Board

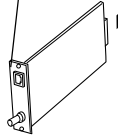


Remove the cover

1. To install an interface board, first make sure the printer is turned off. Remove the interface board slot cover from the back right of the printer.

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**Secure
screws**



2. Hold the board with the parts mounting side left. Slide the board into the empty interface slot using the guides, and push it until it stops. Secure the board by the two screws supplied with it.

**ENHANCING &
CUSTOMIZING**

Reserved

Reserved

Connecting to the Ethernet Port

Type C board has two connectors, 10BASE-2 and 10BASE-T. Type D or G board has only a connector, 10BASE-T or 10BASE-T/100BASE-TX respectively. The 10BASE-2 connector is for a coaxial cable, bus connection. The 10BASE-T or 100BASE-TX connector is for a twisted-pair cable, star connection. Either will do.

Connecting to the Ethernet port involves the following three tasks:

- Check the type of cables your network uses.
- Select the 10BASE-2 or 10BASE-T/100BASE-TX connector of the interface board according to the connector type of your cable.
- Connect the interface cable to the printer and a network port.

Connecting the Ethernet Interface Cable

To connect to the Ethernet interface port, you need a cable correctly wired for your network. The cable must also have the proper connectors. Your dealer or technical support person can supply you with the proper cable.

For example, C66L-2810-0111 and C66L-1240-0002 (Fujitsu products) are available for 10BASE-T and 10BASE-2 ports respectively. Also refer to your network documentation for the type of connector required by its Ethernet port.



Caution:

Be sure that the printer is turned off before connecting the interface cable.

Do not touch any connector contacts to avoid possible electrostatic damage to the printer. For the same reason, do not remove the protective cover from the 10BASE-2 port which is not in use.

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The procedure below applies to the 10BASE-2 port.

To make the connection, firmly plug the cable connector into the Ethernet interface port on the back right of the printer. Secure the connector by turning the connector hood. Plug the other connector into a network's Ethernet port. Consult your computer documentation if you need help.

Selecting the Ethernet Interface

The printer's standard interfaces are parallel and serial. While the Ethernet interface board is installed, the printer automatically detects that the computer is using the Ethernet interface.

Ethernet Specifications

The table below shows the physical specifications of the Ethernet interface.

Specification	Description
Span of 10BASE-2	Max. 185 meters (coaxial, bus connection)
Span of 10BASE-T/100BASE-TX	Max. 100 meters (twisted-pair, star connection)

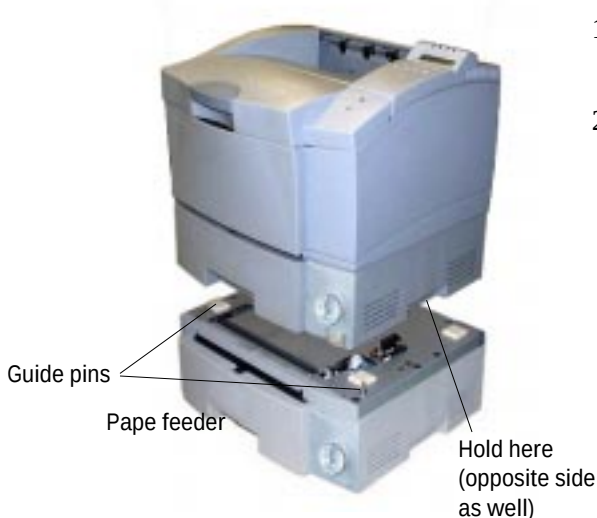
Adding Paper Sources

Paper Feeder

If you switch paper sizes frequently, you may want to add a second paper source. Or you may simply want to increase the paper capacity of your printer. You can easily do this by installing an optional paper feeder which consists of a base frame and a paper tray. The paper tray in the paper feeder is identified as *tray 2* and the one in the basic configuration is identified as *tray 1*.

The paper types and sizes used by *tray 2* are the same as those for the standard paper tray. The capacity is 500 sheets of 0.09 mm thick paper, the same as that of the standard paper tray.

To install the paper feeder, follow these steps:



1. Turn off the printer and disconnect the power cord.
2. Mount the printer on the paper feeder. Grip the bottom left and right sides of the printer to lift the printer and place it on the paper feeder. When placing the printer on the paper feeder, be sure you insert the two guide pins of the paper feeder into the two positioning holes at the bottom of the printer.



Caution:

Be careful not to drop the printer on the paper feeder.

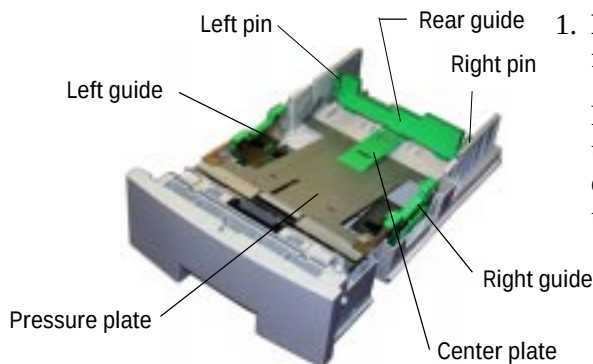
Be sure to turn off the printer or not to touch any connector contacts when mounting or dismounting the paper feeder to avoid possible electrostatic damage to the printer and paper feeder.

When removing the paper feeder, lift the printer straight.

For paper loading, refer to Loading Paper and Installing the Paper Tray in Chapter 1. For paper sizes and types as well as tips on handling paper, refer to Handling Paper in Chapter 2.

Changing the Paper Tray Size

The paper tray can be adjusted to one of the six paper sizes: A4, A5, B5 (JIS B5), **LTR (Letter)**, LGL (Legal), and EXE (Executive). To change the size, follow these steps:



1. Remove the paper tray from the printer.

Refer to the illustration for the parts you adjust when changing the size of the tray.

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2. Remove the rear paper guide from the tray. Push the left or right pin of the rear guide inwards to release the pin from the hole, then release the other pin.



3. If you want to use the legal size, move the center guide one slot outwards. Lift the rear end of the center guide to detach it from the pressure plate. Then, put the front end of the center guide into the adjacent slot.

098
(071)



4. Attach the rear guide to the correct position. Locate the mounting holes of the desired paper size by referring to the engraving on the center plate.

Mount the rear guide in reverse order of the removal.

099
(034)



5. Load paper, move the right paper guide to adjust both guides to the width of paper. Sure the paper fits the tray and the stack of paper does not exceed the limit. (See Chapter 1 for details.)



Caution:

Put the paper stack in the tray with the printing side faced down.

If paper is wavy or curled, remove waved or curled sheets of paper.

If paper is abnormally curled or becomes cylindrical after printing, use the paper upside down. It may reduce a degree of curl.

100
(072)



6. Return the paper tray. Slide the tray back into the printer.
7. Change the setting of the paper size dial. Turn the dial to the desired position: A4, A5, B5, LTR, LGL, or EXE engraved around the dial.



Important:

Set the paper size dial to the size of the loaded paper and select the correct paper size on the print menu of your application program, or a paper mismatch error occurs when printing.

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CUSTOMIZING

Adding Duplex Unit

The duplex unit is an option of the PrintPartner 12MX. It allows the printer to print data both sides of sheets at 7 sheets per minute. It can provide an extra margin for binding as specified by software.

To print data using the duplex unit with the printer in the FPS emulation, the total capacity of printer's RAMs must be 10M bytes or more. Insufficient capacity restricts some functions.

To install and use the duplex unit, follow these steps:

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1. Remove the rear cover.
Use a screwdriver to remove the two screws securing the cover. (Save the cover and the screws.)

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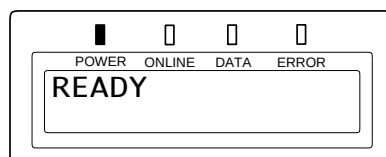


2. Mount the duplex unit.
Insert the duplex unit all the way along the guides inside the slot. It is automatically caught by the printer.

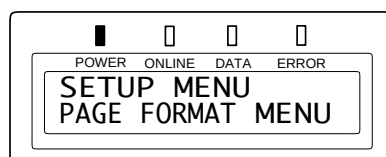
To remove the duplex unit, lift the duplex unit and pull out it.



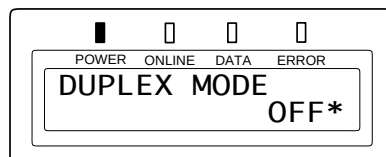
You can check two-sided printing using the printer control panel. Follow these steps:



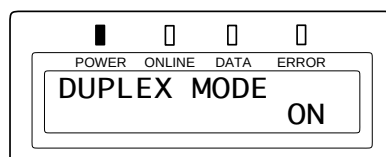
1. Enter setup mode. Press the **READY** button to put the printer offline (the ONLINE indicator turns off). Then, press the **MENU** button briefly once.



The message display indicates SETUP MENU PAGE FORMAT MENU.

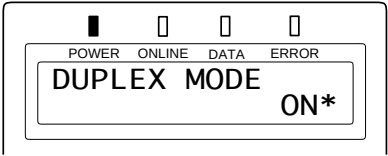


2. Select the Duplex mode menu. Press the **ENTER** button briefly once. Then, press the **MENU** button briefly five times. The message display indicates DUPLEX MODE OFF*.



3. Change the setting. Press the **+** button briefly once. The message display indicates DUPLEX MODE ON.

4. Select the new setting. Press the **ENTER** button briefly once. The message display indicates DUPLEX



Maintenance

This chapter covers preventive maintenance, periodic routine maintenance, and repacking the printer for shipment or storage.

**Caution:**

Before performing any maintenance, be sure that the printer is turned off.

During maintenance procedures, do not touch any connector contacts to avoid possible electrostatic damage to the printer.

When performing maintenance, do not disassemble or remove any components unless specifically directed in the procedures.

Preventive Maintenance

The following guidelines can help to ensure trouble-free operation:

- Follow the guidelines in Chapter 1 when selecting a location for your printer.
- To minimize paper jams, store paper under favorable conditions. Do not expose paper to high humidity or moisture, which can cause wavy edges. Do not store paper in direct sunlight or allow it to become very dry, which can impart an electrostatic charge. Store paper flat, not on edge.
- If you must open the printer's upper door for more than three minutes and remove the print unit (developer unit and drum unit), close the shutter of the drum unit or store the print unit in a dark, clean, level place. Exposure of the photoconductor drum to dust or light can cause damage.
- Make sure small objects such as paper clips do not drop into the printer.
- When the message display indicates **REPLACE PARTS**, print a status report or display a **<CLEAR WARNING>** message in menu mode to confirm the cause of the message. For the procedures, see Chapter 2.
- Shake the print unit before installation.

Periodic Routine Maintenance

Table 4-1 lists the printer’s periodic routine maintenance and indicates when this maintenance should be performed.

Table 4-1 Periodic Routine Maintenance

Maintenance	When to perform
Replace developer unit	When the message display indicates TONER LOW <i>n</i> (<i>n</i> : 1, 2, 3) When the message display indicates REPLACE PARTS DEVELOPER UNIT You do not need replace the unit if you are satisfied with the print quality
Replace drum unit	When print quality is bad, even after replacing or cleaning other parts When the message display indicates REPLACE PARTS DRUM UNIT and you cannot be satisfied with the print quality
Clean paper path	When replacing the drum unit or developer unit, after clearing a paper jam, or when printouts show toner smudging

Replacing the Developer unit or Drum Unit

Procedures for replacing these two units are similar.

Developer unit

The developer unit is designed to last approximately 10,000 printed pages under the condition of 5% coverage on A4 paper or last about one year after unpacking.

There are two timings of replacing the developer unit:

- when the message display indicates **TONER LOW n** (n : 1, 2, 3). (The remaining toner is sensed.)
- when the message display indicates **REPLACE PARTS DEVELOPER UNIT**. (The number of printed pages is counted.)

These messages are displayed to recommend you to replace the developer unit. The actual replacement is entrusted to you. If you are still satisfied with the print quality, you do not replace the developer unit and can continue printing.

- press the **CONT.** button when the printer stops with **TONER LOW n**
- just remember the recommendation when the printer displays **REPLACE PARTS**

However, you must at least prepare a new developer unit.

About Toner Low Messages

When the printer first detects that toner in the developer unit is short, the message display indicates **TONER LOW 1** and printing stops. We recommend you to replace the developer unit for printing formal documents. If you are satisfied with the print quality, press the **CONT.** button to continue printing. When the printer further prints a certain number of pages, the message display indicates **TONER LOW 2** and printing stops. If you are satisfied with the print quality, press the **CONT.** button to continue printing. When the printer further prints a certain number of pages, the message display indicates **TONER LOW 3** and printing stops. We recommend you to replace the developer unit unless printing informal documents.

- **TONER LOW n** Toner low error message
Press Continue (Printer stops with this message.)
- **READY** Toner low warning message
TONER LOW n (Printer is ready for printing.)

After **TONER LOW 3**, n is kept to 3 even if you continue printing again and again.



Important:

If you change the toner low option from “Stop” to “Continue” with the Config menu in setup mode, the printer does not stop even if a toner low condition is detected.

When you are not satisfied with the print quality, perform the following steps while a toner low error message or toner low warning message is displayed. Then, the printer becomes ready.

- replace the developer unit

When you close the upper door after replacement, the replacement confirmation message is displayed after the warming up message. Press the **ENTER** button to clear the developer unit counter.

- shake the print unit by moving it back and forth several times

When you close the upper door after remounting, the replacement confirmation message will be displayed after the warming up message. Press the **CONT.** button not so as to clear the developer unit counter.



Important:

If the shaken developer unit does not contain tone at all, the original toner low message is displayed again after the warming up message.

If you have turned the printer off and on while a toner low warning message is displayed, it changes to a toner low error message after the warming up message.



Caution:

When replacing the developer unit, clean the paper path.

If you replace the developer unit without a toner low message, be sure to clear the developer unit counter by using the control panel. For control panel operations, see the end of this section.

Drum Unit

The drum unit life is designed to last about 50,000 pages of 5% coverage continuous printing on A4 paper or about one year after unpacking, whichever comes first. The drum unit life depends on print coverage, paper type, and operating and/or storage conditions. The drum unit life may end in the following cases:

- when the message display indicates **REPLACE PARTS DEVELOPER UNIT**
- when toner smudges the background of printing
- when an image of the previous page ghosts on the next page
- when dropouts occur

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Avoid unnecessary high coverage printing to maintain the print unit performance.

For the drum unit life, this printer indicates the near end of life only. The printer message display begins indicating **REPLACE PARTS** when the print unit can print 10,000 more pages left. Prepare a new drum unit if you notice this indication.



Important:

When replacing the drum unit, clean the paper path.

After replacing the drum unit, be sure to clear the drum unit counter by using the control panel. For control panel operations, see the end of this section.

Replacement

To replace the developer unit or drum unit, follow these steps:



1. Open the upper door. Lift the center portion under the stopper of the upper door to open it.



2. **Remove the print unit.** Pull the top center of the print unit at a 45° angle towards the front of the printer.

When the print unit begins to move, gently lift it up and out.

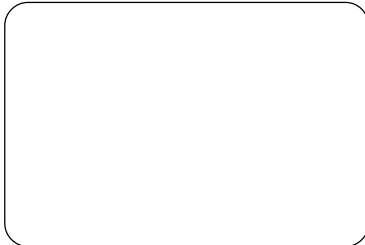
Place the print unit on a level, steady place.



Caution:

Be careful not to scratch the green surface of the drum unit.

3. **Unhook the shutter of the drum unit to close it.**



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4. Disassemble the print unit.

Pull the ark-shaped green lever at one end of the developer unit to release the shaft of the drum unit.

MAINTENANCE

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Then, gently pull out the other end of shaft from the developer unit to take apart the developer unit and drum unit.

Go to step 5a for developer unit replacement, and 5b for drum unit replacement.

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(017)



5a. Remove a new developer unit from its envelope.

110

Shake the developer unit by moving it back and forth in a horizontal motion several times.

111

Remove the plastic seal from the developer unit.

Gently pull off the seal being carefully not to spill toner. Handle to seal carefully to avoid staining your hands or clothes.

112
(016)

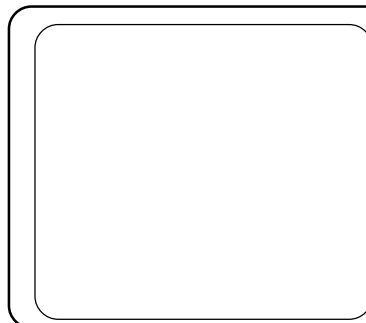


5b. **Remove a new drum unit from its envelope.**

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6. **Assemble the developer unit and the drum unit into a print unit.** Reverse the procedure at step 3.

???



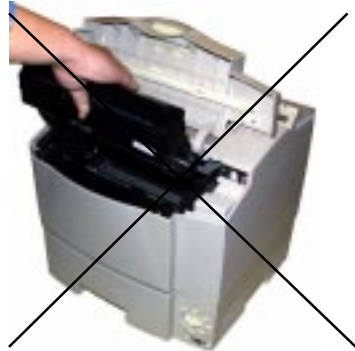
7. **Open the shutter of the drum.** Holding the top center of the print unit, push up backwards the green-labeled handle of the shutter under the print unit and fix the shutter on the hook.

114
(026)



- ⑧ **Orient the print unit.** Hold the top center of the print unit with the green drum facing you and adjust the ends of the drum shaft to the grooves on the sides of the printer.

115
(027)



- ⑨ **Install the print unit.** Slide the print unit at a 45 degree angle along the grooves and towards the back of the printer.

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(028)



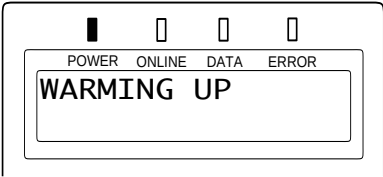
- ⑩ **Seat the print unit in place.** Press down gently on the top left and right portions of the print unit until it clicks into place.

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(029)

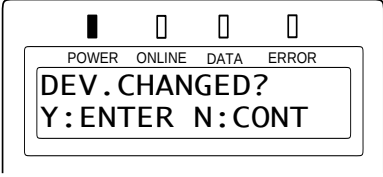


- ⑪ **Close the printer's upper door.** Press down firmly on the front portion of the upper door and make sure the upper door is locked completely.

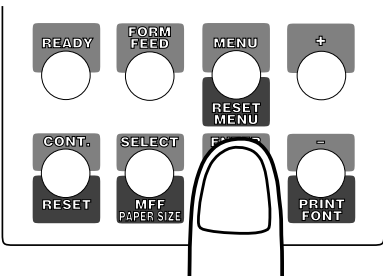
If you have replaced the developer unit because of a toner low condition, the printer starts warm-up.



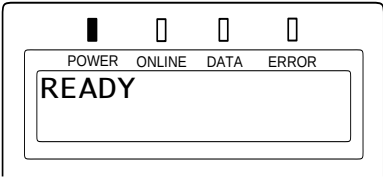
The printer display shows four indicator lights at the top: POWER (on), ONLINE (off), DATA (off), and ERROR (off). The main display area shows the text "WARMING UP".



The printer display shows four indicator lights at the top: POWER (on), ONLINE (off), DATA (off), and ERROR (off). The main display area shows the text "DEV. CHANGED?" followed by "Y:ENTER N:CONT".



The printer control panel features eight buttons arranged in two rows. The top row contains: READY, FORM FEED, MENU, and a button with a plus sign (+). The bottom row contains: CONT. (with RESET below it), SELECT, a button with a downward arrow (with RESET MENU below it), and PRINT FONT. A hand is shown pressing the button with the downward arrow.



The printer display shows four indicator lights at the top: POWER (on), ONLINE (off), DATA (off), and ERROR (off). The main display area shows the text "READY".

12. The printer indicates a replacement confirmation message. The message display indicates **WARMING UP** then **DEV. CHANGED?** Y:ENTER N:CONT.

13. **Press the ENTER button.** If the old developer unit was replaced by a new one, press the **ENTER** button to clear the developer unit counter.

If the old print unit was just shaken and remounted, press the **CONT.** button not so as to clear the developer unit counter..

The message changes to **READY**. The printer is ready for printing.



Important:

When replacing the **developer unit** or drum unit, clean the paper path.



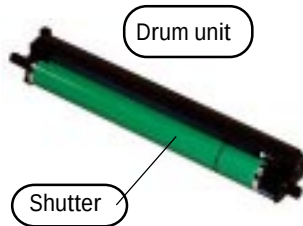
Caution:

To avoid exposing the photoconductor drum to light or contamination, follow these guidelines:

- Do not remove the drum unit from its envelope until you are ready to install it.
- Complete the procedure as quickly as possible to avoid exposing the drum to light for more than three minutes.

To avoid damaging the drum:

- Never open the shutter of the drum unit until you are ready to install it. .
- Never touch or scratch the green drum surface.



- If you store the print unit out of the printer, it may be contaminated by dust. This may cause a smudge on the page.
- When storing the print unit out of the printer, close the shutter of the drum unit and wrap the print unit with paper or something.

Cleaning the Paper Path

Clean the paper path:

- When replacing the **developer unit** or drum unit
- After clearing a paper jam
- When printouts show toner smudging



Warning:

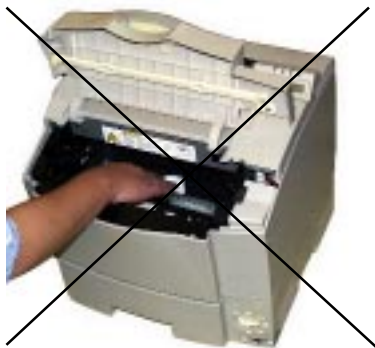
For safety, turn off the printer and disconnect the power cord before beginning.



Caution:

If you think you need more than three minutes for cleaning, store the drum unit and **developer unit** in a clean, dark place to protect the photoconductor drum from light.

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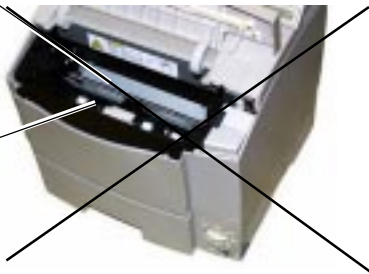


Open the upper door and remove the print unit. Be careful not to damage the green drum surface. Look for spilled toner on the inside of the printer. Use a clean, lint free, damp cloth to remove any toner stains.

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Paper guide ②

Paper guide ①



Clean also the paper paths under paper guide ① and paper guide ②. Open both guides by lifting the finger-marked portion. Paper guide ① locks and keeps open, but paper guide ② does not keep open.



Caution:

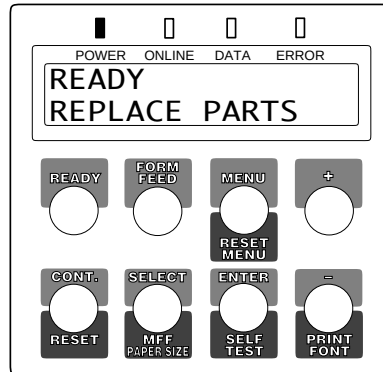
Be sure close paper guide ②. Leaving paper guide ② opened causes damage to the print unit when the print unit is installed.

Clearing the Replace Parts Message

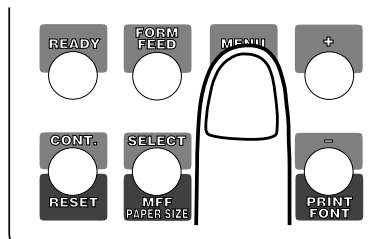
This printer has counters to estimate the end of service life of the developer unit and the drum unit. Clear a proper counter whenever you have replaced the developer unit or the drum unit, or the printer continues displaying the warning message REPLACE PARTS or displays the message at a bad timing.

To clear a counter (e.g., developer unit counter), follow these steps:

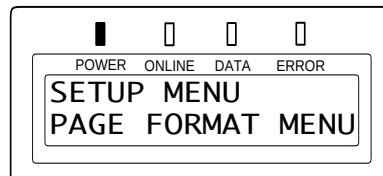
MAINTENANCE



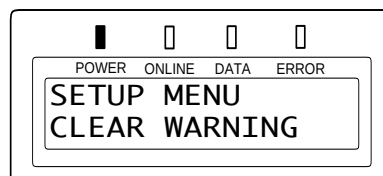
1. Make sure the printer is offline. If necessary, press the **READY** button to put the printer offline. The ONLINE indicator is off with the REPLACE PARTS message displayed.



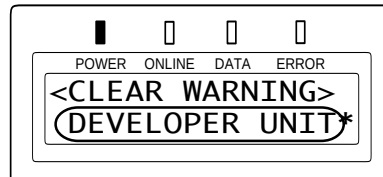
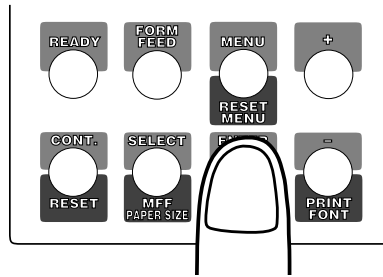
2. Press the **MENU** button to put the printer in menu mode.



The message changes to SETUP MENU PAGE FORMAT MENU.

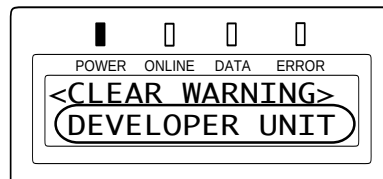


3. Press the **MENU** button repeatedly until the lower message changes to CLEAR WARNING.

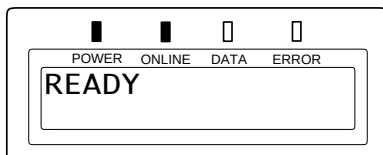
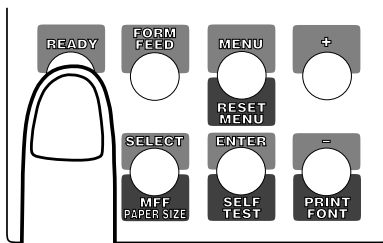


4. Press the **ENTER** button to select this function.

The message changes to **<CLEAR WARNING> DEVELOPER UNIT***. The asterisk means that the developer unit is expired. (Press the **+** or **-** button to check the expiration of the drum unit.)



5. Press the **ENTER** button again to perform the function. The asterisk disappears from the message, indicating the counter is cleared.



6. Press the **READY** button to return the printer online.

The ONLINE indicator lights up without the REPLACE PARTS message.



Important:

After the clear operation, check the status report to make sure that the Warning Message is cleared.

Repacking the Printer

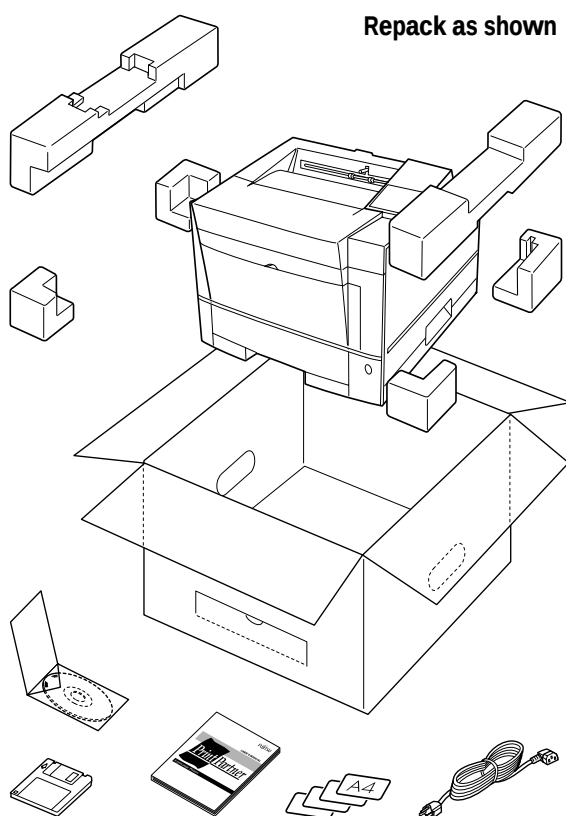
If you need to ship your printer or store it for an extended time, protect it by packing it in its original carton.

Store the print unit separately from the printer. Do not remove the developer unit from the drum unit. Close the shutter of the drum unit to cover the photoconductive drum to avoid exposing the drum to light, wrap the print unit with a protective material, and store it in a safe place.

To protect the printer from moisture, place it in the plastic bag it was shipped in. Seal the bag with tape.

Place the printer in its carton using the original packing materials to brace and protect the printer. The illustration shows the position of the printer components within the carton.

MAINTENANCE



Solving Problems

Although this printer is designed to be highly reliable, you may occasionally experience problems. The most common problems are paper jamming and poor print quality. This chapter helps you to identify the cause of the problem and suggests solutions. For detailed procedures, see Chapter 4, **Maintenance**.

This chapter is divided into five sections:

- *Clearing Paper Jams*. This section explains how to locate and clear paper jams.
- *Operational Problems*. Start here if the printer doesn't function properly. You may save yourself a service call.
- *Print Quality Problems*. Check here if the printed pages don't look as they should.
- *Error Indications*. The printer has self-diagnostic tests for a variety of hardware and interface problems. If a test indicates a problem, the printer displays it on the control panel. This section explains these error conditions.
- *Printer Status Indications*. These statuses are not error conditions. Most of them require no action by you. However, explanations are included here for your information.



Caution:

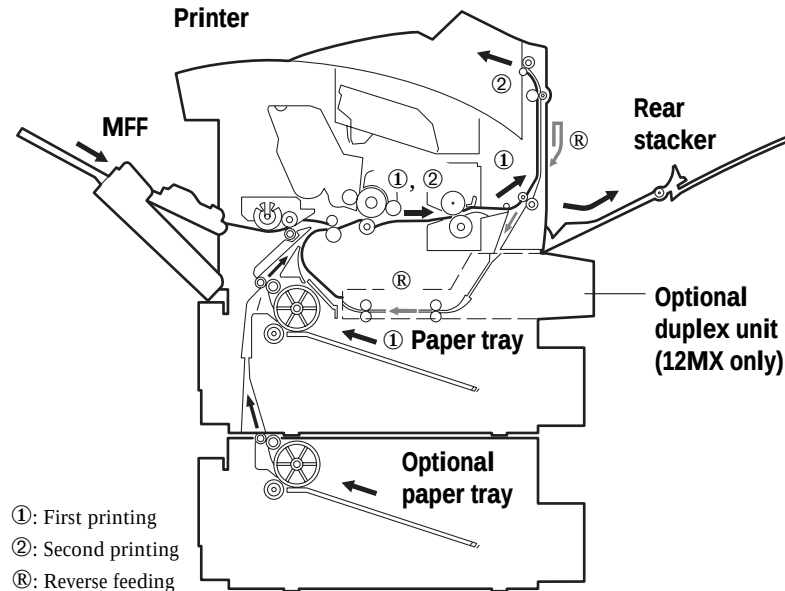
During solution of a problem, do not touch any connector contacts to avoid possible electrostatic damage to the printer.

Clearing Paper Jams

The printer has sensors to detect paper jams. If a jam occurs, the printer displays it on the message display. The message is **PAPER JAM *n*** (*n*: 0 to 6 indicating the jam location). Because the paper path is short and simple, you should have no problem locating the jam.

- *n* = 0: From paper tray/MFF to feed roller
- *n* = 1: From feed roller to eject unit
- *n* = 2: From feed roller to eject unit
- *n* = 3: In fuser unit
- *n* = 4: In eject unit or duplex unit
- *n* = 5: Duplex unit to print unit
- *n* = 6: In paper tray 2

The following shows paper paths when your printer is equipped with optional paper tray and duplex unit. Be familiar with the paper paths especially in duplex printing.



Recovery from Paper Jams

When a paper jam occurs, all switches are disabled. Remove the paper jam according to the procedure explained below. After removing the paper jam, (open and) close the upper door, then the error message disappears and the printer turns online.

If “On” is selected in advance for “Jam recovery” in “FPS menu” in setup mode, the printer resumes printing from the page where the paper jam occurred.

To clear a paper jam, follow these steps:



Caution:

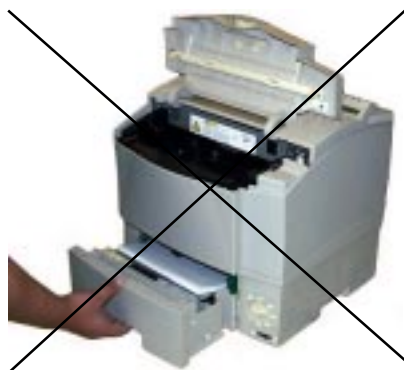
Clear paper jams quickly to avoid problems with the fuser unit.

Do not touch or scratch the green drum surface when clearing the paper jam.

Be careful not to expose the drum to light for more than three minutes.

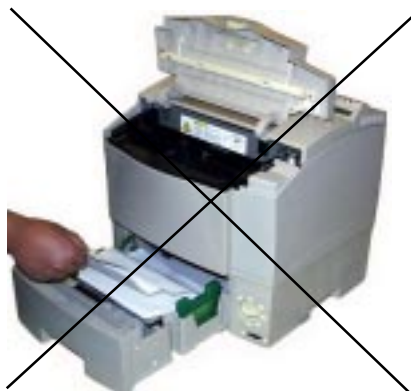
After clearing a paper jam, return the printer components to the original positions.

Jam 0: from a Paper Tray to the Print Unit



1. **Open the upper door.**
2. **Pull out the paper tray.**

124



3. **Remove the sheet.** Pull the jammed sheet gently not so as to remain pieces of paper in the printer.

If you cannot remove the jammed paper from the paper tray, follow the next steps.

125
(023)



4. **Remove the print unit.** For detailed procedures and advisory notes, see the section **Replacing the Print Unit** in Chapter 4.

126



5. **Remove the sheet.** While lifting the finger-marked portion of the paper guide ① to open it, pull the jammed sheet gently not so as to remain pieces of paper in the printer.

6. **Return the paper tray and the print unit and close the upper door.** The printer is initialized.



Warning:

Do not touch the heat roller. This hot area may burn your hand. See the label attached to the frame under the upper door.

Jam 1: under the Print Unit or in the Fuser Unit

127
(023)



1. **Open the upper door.**
2. **Remove the print unit.**
For detailed procedures and advisory notes, see the section **Replacing the Print Unit** in Chapter 4.

SOLVING
PROBLEMS

128



3. **Open paper guide ②.** Lift the finger-marked portion of the paper guide ② until it keeps open (feed rollers are disengaged).

129



4. **Remove the sheet.** Pull the jammed sheet gently not so as to remain pieces of paper in the printer.

After removing the sheet, return the paper guide to its original position.

5. **Return the print unit and close the upper door.** The printer is initialized.



Warning:

Do not touch the heat roller. This hot area may burn your hand. See the label attached to the frame under the upper door.

**Caution:**

Leaving paper guide ② opened causes damage to the print unit when the print unit is installed.

Jam 2: under the Print Unit near the Paper Tray

130
(023)



1. **Open the upper door.**

2. **Remove the print unit.**

For detailed procedures and advisory notes, see the section **Replacing the Print Unit** in Chapter 4.

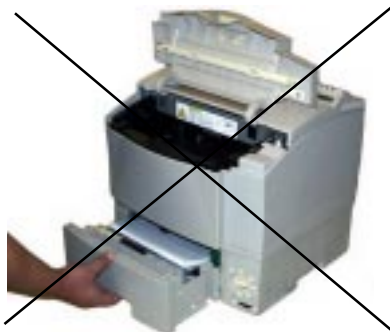
131
(126)



3. **Remove the sheet.** While lifting the finger-marked portion of the paper guide ① to open it, pull the jammed sheet gently not so as to remain pieces of paper in the printer.

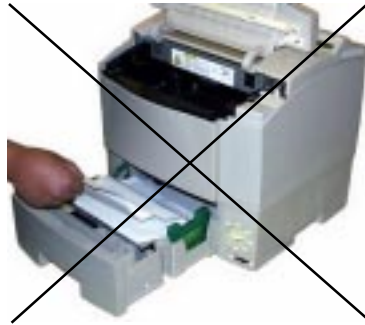
If you cannot hold the jammed paper, follow the next steps.

132
[123]



4. **Pull out the paper tray.**

133
(124)



5. **Remove the sheet.** Pull the jammed sheet gently not so as to remain pieces of paper in the printer.

6. **Return the paper tray and the print unit and close the upper door.** The printer is initialized.



Warning:

Do not touch the heat roller. This hot area may burn your hand. See the label attached to the frame under the upper door.

SOLVING
PROBLEMS

Jam 3: in the Fuser Unit

134
(023)



1. **Open the upper door.**
2. **Remove the print unit.**
For detailed procedures and advisory notes, see the section **Replacing the Print Unit** in Chapter 4.

135
(128)



3. **Open paper guide ②.** Lift the finger-marked portion of the paper guide ② until it keeps open (feed rollers are disengaged).

136
(129)



4. **Remove the sheet.** Pull the jammed sheet gently not so as to remain pieces of paper in the printer.

If you cannot hold the jammed paper, follow the next steps.

Return the paper guide to its original position.

137
(078)



5. Open the rear stacker at the back of the printer.

138



6. Remove the sheet. While pushing up the labeled portion of the paper guide, pull the jammed sheet gently not so as to remain pieces of paper in the printer.

7. **Return the paper guide and the rear stacker and close the upper door.** The printer is initialized.



Warning:

Do not touch the heat roller. This hot area may burn your hand. See the label attached to the frame under the upper door.



Caution:

Leaving paper guide ② opened causes damage to the print unit when the print unit is installed.

Jam 4 (12MX only): from the Eject Unit to the Duplex Unit

The following procedure is when your printer is equipped with an optional duplex unit.

**SOLVING
PROBLEMS**

140
(078)



1. Open the rear stacker at the back of the printer.

141
(138)



2. Remove the sheet. While pushing up the paper guide, pull the jammed sheet gently not so as to remain pieces of paper in the printer.

If you cannot hold the jammed paper, follow the next steps.

142
(103)



3. Lift the rear of the duplex unit and pull out it.

143



4. **Remove the sheet.** Pull the jammed sheet gently not so as to remain pieces of paper in the duplex unit.

???
[103]



5. **Return the duplex unit.** Insert the duplex unit all the way along the guides inside the slot. It is automatically caught by the printer.
6. **Return the paper guide and the rear stacker and close the upper door.** The printer is initialized.

Jam 5 (12MX only): from the Duplex Unit to the Print Unit

The following procedure is when your printer is equipped with an optional duplex unit. |

144
(103)



1. **Remove the duplex unit.**
Lift the rear of the duplex unit and draw the duplex unit out of the printer.

SOLVING
PROBLEMS

145



2. Remove the sheet.

- a. Place the duplex unit on a sturdy, level surface. While holding the molded part of the duplex unit, pull out the jammed sheet gently not so as to remain pieces of paper in the duplex unit.

146

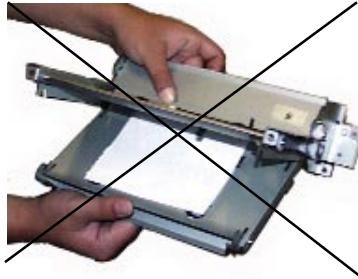


- b. Pull out the jammed sheet as shown left.

147

- c. Push down the end of the movable paper guide plate to open it.

148



Pull out the jammed sheet as shown left.

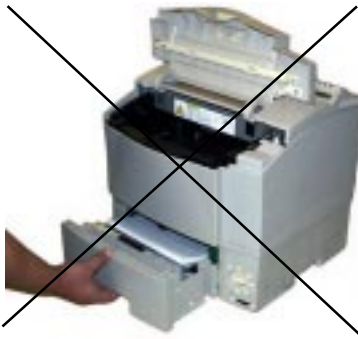
3. **Return the duplex unit and open and close the upper door.** The printer is initialized.

If you cannot find the jammed sheet in the duplex unit, check the paper path from the duplex unit to the print unit. See jam 0.

Jam 6: at the Feed Roller of the Optional Paper Tray

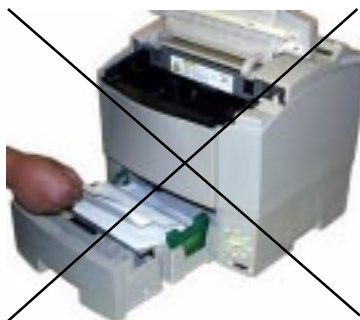
This jam is indicated when turning the printer on with the jammed sheet left at the feed roller of the optional paper tray.

149
(2nd tray)



1. **Open the upper door.**
2. **Pull out the optional paper tray.**

150
(2nd tray)



3. **Remove the sheet.** Pull the jammed sheet gently not so as to remain pieces of paper in the printer.

If the jammed paper goes to the print unit, Remove the print unit. While lifting the finger-marked portion of the paper guide ① to open it, pull the jammed sheet gently not so as to remain pieces of paper in the printer.

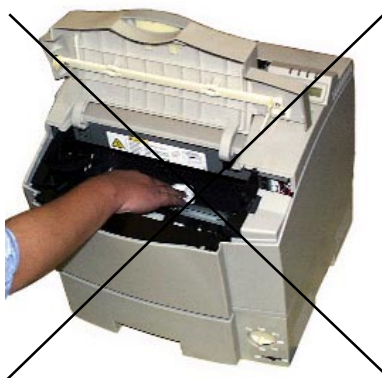
4. **Return the paper tray and the print unit and close the upper door.** The printer is initialized.

SOLVING
PROBLEMS

Cleaning the Paper Path

After clearing a paper jam, clean the inside of the printer.

151
(119)



1. **Clean the inside of the printer.** Look for spilled toner inside the printer. Clean away any toner with a damp cloth.
2. Return the components handled during clearing a paper jam to the original positions. Put the paper tray, paper guide ②, print unit, duplex unit, upper door, and rear cover in place.

When the upper door is closed, the printer is initialized.

151a
(073)

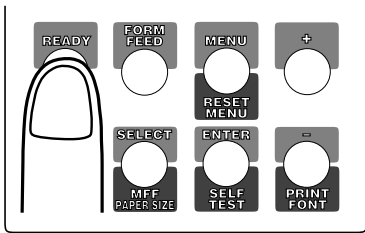
151b
(075)

Cleaning the Fuser Unit Rollers

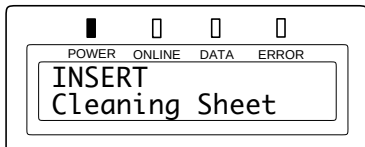
After clearing a paper jam in the fuser unit, clean the rollers in the unit using the cleaning sheets supplied with the printer. To clean the fuser unit rollers, follow these steps:



1. Turn off the power switch.
2. Open the front door. Pull down the front door. If it is open, make sure that no sheets of paper are not loaded on the manual feeder.
3. Set up the manual feeder. Extend the paper support and widen the paper guides.

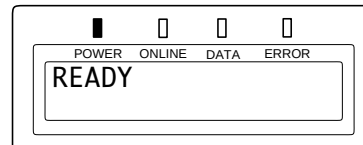
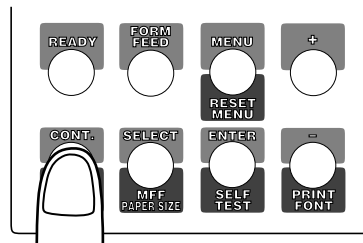
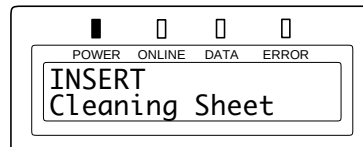
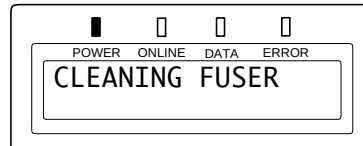


4. Set the fuser unit cleaning mode. While pressing down **READY**, turn on the power switch.



The message display indicates INITIALIZE, WARMING UP, then INSERT Cleaning Sheet.

**151c
(081)**



5. Set a cleaning sheet. Put a cleaning sheet widthwise on the base of the feeder and adjust the left and right slide guides to the width of the sheet.

The printer takes in the cleaning sheet, cleans the fuser unit rollers, and ejects the sheet.

The printer waits for loading the next sheet.

6. Repeat the cleaning two or three times.

7. Press **CONT.** to exit from cleaning mode.

The message display indicates INITIALIZE, WARMING UP, then READY.

8. Close the front door. Close the front door after the cleaning.

**SOLVING
PROBLEMS**



Important:

- In cleaning mode, the printer acts specially for cleaning. Therefore, do not load paper other than the cleaning sheet.
- The cleaning sheet is designed to be used several times. If it becomes dirty or wrinkled, use a new cleaning sheet.

The table below contains advice on dealing with repeated paper feed problems.

Problem	Causes and solutions
Paper does not feed cleanly from paper tray	Top edge of paper stack may be deformed (wavy or bent sheets). Try turning the paper stack around. Paper stack may not be aligned properly. Pull out the tray, straighten the paper stack against the paper guides, and re-insert the tray. Too many sheets in the paper stack. Make sure the stack is level with or below the limit mark on the left or right paper guide. The paper pressure plate may not be released. Pull out the tray and insert the tray again until it clicks up.

Operational Problems

Problem	Solutions
No power when you turn on the printer	Check that the power cord is plugged in at both ends and that the power outlet has power.
Printer does not initialize	Close the upper door completely.
Printer initializes, but does not online	Install a print unit. Insert the paper tray all the way.
Printer initializes, but the settings are wrong	Use the control panel to select the desired settings.

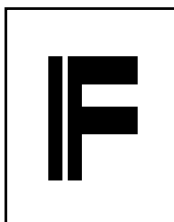
Print Quality Problems

The figures below show the typical appearances of print quality problems.

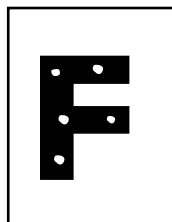
Too light



White vertical line



White spots

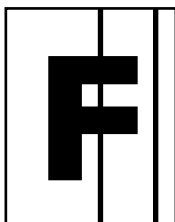


Ghost printing



SOLVING
PROBLEMS

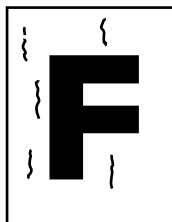
Black vertical line



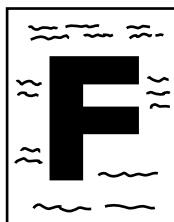
Toner stains (back)



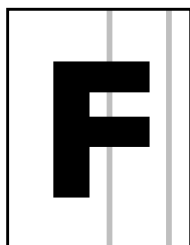
Vertical smudge



Horizontal smudge



Blurred black vertical line



Problem	Solutions
Printing is too light	Adjust the print density to a larger value using the control panel. Check to see if your paper is wet. Remove the print unit and rock it to distribute the toner evenly.
Printing is too dark	Adjust the print density to a smaller value using the control panel.
Page is black	Replace the drum unit.
Page is blank	Replace the drum unit.
Vertical white lines appear	Remove the print unit and rock it to distribute the toner evenly, or replace the drum unit.
Vertical blurred black lines appear	Contact your dealer if the fuser unit is damaged.
Ghost printing	Print several pages if this problem occurs after a paper jam. Check to see if your paper is wet. Contact your dealer if the fuser unit is damaged.
Pages have toner stains or horizontal smudging	If this problem occurs after a paper jam, print several pages. Clean the paper path. If the fuser unit is damaged, contact your dealer.

Problem	Solutions
Toner insufficiently adheres to or easily comes off paper when you are printing thick or special paper.	Turn the thick paper mode on or select the thick control menu then select an option in media mode using the control panel.
Paper become wavy or printing is too light in duplex printing when you are printing thin paper.	Select the thick control menu then select an option in media mode using the control panel.
Vertical lines appear in solid black printing, stains appear in the back of a page, or paper is wrinkled or curled.	Check if the thick paper mode is on by using the control panel; if the mode is on, turn it off.

SOLVING
PROBLEMS



Caution:

Whenever replacing the developer unit or drum unit due to any troubles, reset the counter which controls the "REPLACE PARTS" message (whether or not the message display indicates "REPLACE PARTS"). See Chapter 4.

Error Indications

Errors refer to a problem or condition which requires you to take action. The printer shows errors by using the ERROR indicator and the message display of the control panel. The following table lists the error indications, explains causes, and suggests solutions.

Message	Causes and solutions
BD CYCLE ERROR	Cause: Malfunction in the laser unit Solution: If the error recurs, consult your dealer for service.
COMM. ERROR	Cause: Communication error Solution: Press the CONT. button and select the correct settings of the serial interface using the control panel setup mode.
COVER OPEN 1	Cause: Incomplete closing of upper door Solution: Close the upper door. Note: See caution following in this table.
FUSER FAILURE	Cause: Malfunction in the fuser unit Solution: If the error recurs, consult your dealer for service.
INVALID SIMM	Cause: Incorrect SIMM card installed Solution: Press the CONT. button.
JOB TIMEOUT	Cause: FPS job timeout (This error occurs when the FPS emulation is active.) Solution: Press the CONT. button. Note: FPS emulation is standard for 12MX but optional for 12M.
LOAD MFF size or LOAD TRAYn size	Cause: Paper mismatch occurred. Solution: Set the specified tray to the correct paper size specified.

Message	Causes and solutions
MANUAL TIMEOUT	Cause: Paper was not inserted into the manual feeder in the prescribed time. (This error occurs when the FPS emulation is active.) Solution: Press the CONT. button. Note: FPS emulation is standard for 12MX but optional for 12M.
MEMORY OVER FLOW	Cause: Memory overflow error Solution: Press the CONT. button.
MEMORY SHORTAGE	Cause: Insufficient memory Solution: Add RAM boards.
MOTOR FAILURE <i>n</i>	Cause: Malfunction in the feed motor, etc. Solution: If the error recurs, consult your dealer for service.
NO PROCESS UNIT	Cause: No print unit is installed. Solution: Install the print unit.
OVERRUN ERROR	Cause: Incomplete in extracting compressed data Solution: Press the CONT. button.
PAPER JAM n	Cause: Paper jam in the specified position Solution: Clear the jammed paper from the following area: 0: From paper tray to print unit 1: under print unit or in fuser unit 2: under print unit near paper tray 3: in fuser unit 4: from eject unit to duplex unit 5: from duplex unit to print unit 6: at feed roller of 2nd paper tray Duplex unit is optional for 12MX.
PS ERROR <i>mn</i>	Cause: A PostScript error Solution: If the error recurs, consult your dealer for service.
STACKER FULL	Cause: Face-down paper stacker full Solution: Remove paper from the face-down paper stacker.

SOLVING
PROBLEMS

Action-required Status Indications

Message	Causes and solutions
SYSTEM ERROR <i>n</i>	Cause: A system error on the controller board Solution: If the error recurs, consult your dealer for service.
TRAY <i>n</i> MISS SET	Cause: Paper tray installed incorrectly Solution: Install the paper tray.
TRAY <i>n</i> PAPER OUT or MFF PAPER OUT	Cause: Paper out in the specified paper source Solution: Supply paper.

Action-required Status Indications

These conditions, not errors, require you to take action. The following table lists the message indications, explains causes, and suggests solutions.

Message	Causes and solutions
INSERT <i>size</i>	Cause: Printer is ready for manual insertion of paper. Solution: Put paper into manual feeder.
***** LOW TRAY <i>x,y</i>	Cause: Tray <i>x</i> and/or <i>y</i> is near end of paper. This message flashes in the lower row with the current message alternately displayed in the upper row or both rows. 1: Tray 1; 2: Tray 2; 1, 2: Trays 1 and 2 Solution: Prepare paper.

Message	Causes and solutions
READY TONER LOW (n)	Cause: Toner runs short. 1: First level; 2: Second level; 3: Third level and after The printer stops when this codition is detected (factory default). Solution: • If you satisfy the print quality, press the CONT. button to continue printing. Prepare a new developer unit. • If you satisfy the print quality and the printer just displays this message (continue mode), prepare a new developer unit. • If you cannot satisfy the print quality, replace the developer unit. Press the ENTER button when the confirmation message is displayed after the upper door is closed.
READY REPLACE PARTS	Cause: Developer unit or drum unit is near end. Solutions: Replace the developer unit or drum unit. Note: When the upper door is closed after replacement, the printer enters menu mode. Be sure to press ENTER to perform Clear Warning.

SOLVING
PROBLEMS



Important:
If the upper door is not firmly closed, the printer does not work.

Upper door



Printer Status Indications

Printer statuses refer to conditions which generally require no action by you. The following table lists the printer statuses and explains their meaning. It does not include messages in menu mode.

Message	Meaning
ACCESS DENIED	The printer displays this message when you attempt to enter setup menu or do MENU RESET with the control panel locked by a command from a computer.
FORM FEED	The printer displays this message when you press FORM FEED with the DATA indicator off. The printer is printing data remaining in buffer.
I/F SETTING NOW!	Setting items on an optional interface are being changed because they are changed in setup mode.
<<<INITIALIZE>>>	The printer is initializing. This message appears whenever you turn on the printer or close the upper door.
MEMORY CONFIG	Memory configuration is in progress because of changing some settings in setup mode, for example, changing the I/O buffer size.
MENU RESET	The printer displays this message when you press RESET MENU for five or more seconds. This reset returns parameter settings in the menu to their factory defaults except for interface settings as well as clears error latches, buffered data, and temporary soft fonts.
PRINT FONT	The printer displays this message when you press PRINT FONT for five or more seconds then press ENTER . The printer is printing the font report.
READY	The printer is ready to print.

Message	Meaning
RESET	The printer displays this message when you press RESET for five or more seconds. This reset clears error latches, buffered data, and temporary soft fonts.
SELF TEST	The printer displays this message when you press SELF TEST for five or more seconds then press ENTER . The printer is printing the status report.
WARMING UP	The printer is warming up to its operating temperature.

SOLVING
PROBLEMS

Warning
Messages

This printer counts the number of the printed sheets to estimate the life of the consumables (developer unit and drum unit). The printer indicates the following warning message when and after the count reaches a predetermined value.

READY
REPLACE PARTS

When the warning message is indicated, press the **READY** button to put the printer offline and press the **MENU** button to enter menu mode. The Clear Warning message appears, indicating the expired unit by an asterisk. When the drum unit is expired, the message is:

<CLEAR WARNING>
DRUM UNIT*

However, depending on the print quality, you may not have to replace the (developer unit or drum unit) because you may be satisfied with the print quality.

Font Samples

This appendix provides samples of the fonts resident in this printer. Resident fonts are provided separately for two emulation modes:

- PCL mode
- FPS mode

PCL Mode

Bitmapped Font

Line Printer

Scalable Fonts

Courier Md
Courier MdIt
 Courier Bd
Courier BdIt
 Morrison Rg
Morrison It
Morrison Bd
Morrison BdIt
 Taurus
Taurus It
Taurus Bd
Taurus BdIt
Coronet
EFClarendon CdBd
EFClarendon ExBd
 Lyra Md
Lyra MdIt
Lyra Bd
Lyra BdIt
 Lyra LiCd
Lyra LiCdIt
 Lyra CdMd
Lyra CdMdIt
Lyra CdBd
Lyra CdBdIt

Lyra ExtnMd
Lyra ExtnMdIt
Lyra ExtnBdIt
Lyra ExtnBd
 AntiqueOlv
AntiqueOlv It
AntiqueOlv Bd
AntiqueOlv Cmpct
 Garamond
Garamond Krsv
 Garamond Hf
 Garamond KrsvHf
Mauritius
 Leos Md
Leos MdIt
Leos Bd
Leos ExBd
 Nimb Sans
Nimb Sans It
Nimb Sans Bd
Nimb Sans BdIt
 Nimb Sans Cd
Nimb Sans CdIt
Nimb Sans CdBd
Nimb Sans CdBdIt

Nimb Roman
Nimb Roman It
Nimb Roman Bd
Nimb Roman BdlIt
 LetterGot75
LetterGot75 It
LetterGot75 Bd
LetterGot75 BdIt
 Aries
Aries It
Aries Bd
Aries BdlIt
 Libra
Libra It
Libra Bd
Libra BdlIt
EFBodoni No2
 Bodoni No5
Bodoni No5 It
Bodoni No5 Bd
Bodoni No5 BdlIt
CooperBlk
CooperBlk It
 CentSchl
CentSchl It
CentSchl Bd
CentSchl BdlIt
 Clarendon Bk
Clarendon Bd
 Saturn
Saturn Bd
 Saturn Extn
Saturn ExtnBd

Dorado Li
Dorado Lilt
Dorado Bd
Dorado BdlIt
 Dorado
Dorado It
Dorado ExBd
 Dorado Cd
Dorado CdBd
 GoudyOs
GoudyOs It
 GoudyOs Bd
GoudyOs BdlIt
GoudyOs ExBd
 EFGrandera
EFGrandera It
EFGrandera Bd
EFGrandera BdlIt
 Gemini
Gemini It
Gemini Bd
Gemini BdlIt
 EFRivero Bd
Cassiopeia
 SaturnMono
SaturnMono It
 SaturnMono Bd
SaturnMono BdlIt
 ♣*■*⊙⊙▼▲
 Σψμβολ
 ♠□□♦♦

FPS Mode

Courier

Courier-Bold***Courier-BoldOblique****Courier-Oblique*

Helvetica

Helvetica-Bold***Helvetica-BoldOblique****Helvetica-Oblique*

Helvetica-Narrow

Helvetica-Narrow-Bold***Helvetica-Narrow-BoldOblique****Helvetica-Narrow-Oblique*

Times-Roman

Times-Bold***Times-BoldItalic****Times-Italic*

Symbol

Palatino-Roman

Palatino-Bold***Palatino-BoldItalic****Palatino-Italic*

NewCenturySchlbk-Roman

NewCenturySchlbk-Bold***NewCenturySchlbk-BoldItalic****NewCenturySchlbk-Italic*

AvantGarde-Book

AvantGarde-Demi***AvantGarde-DemiOb****AvantGarde-BookOb*

Bookman-Light

Bookman-Demi***Bookman-DemiItalic****Bookman-LightItalic**ZapfChancery-MediumItalic*

ZapfDingbats

FONT SAMPLES

Supplies and Accessories

This appendix provides ordering information on supplies required for periodic maintenance as well as optional accessories.

Contact your dealer to order or obtain additional information about the supplies and accessories listed here.

Supplies

Part name (order number)	Description
Developer unit (CA04339-C301)	The developer unit consists of a toner housing and a developing mechanism in a single module.
Drum unit (CA04339-C401)	The drum unit consists of a photo-conductor drum and a drum cleaner in a single module.

SUPPLIES AND
ACCESSORIES

Accessories

Part name (order number)	Description
Memory expansion cards (*1) (CA02417-C854) (CA02417-C858) (CA02758-C856) (CA04040-C853)	Allows RAM expansion by one of the following: 4 megabytes 8 megabytes 16 megabytes 32 megabytes
FLASH ROM card (CA04291-C850)	4 megabytes, for PCL emulation only
Barcode card (CA04291-C860)	Barcodes and OCR fonts

Part name (order number)	Description
Ethernet board (CA04040-C832) (CA04040-C833) (CA04040-0852) (CA04040-0851)	TCP/IP, IPX/SPX, and EtherTalk corresponding Type C (English manual) Type C (for Europe) Type D (English manual) Type D (for Europe)
(CA02946-C942) (CA02946-C943) Serial interface board (CA04339-C801) USB board (CA04339-C841)	Type F (common) Type GXL (common) RS-232C, for PP12M Universal serial bus
FPS card (CA04291-C821)	PostScript level 2 compatible emulation, for PP12M
Paper feeder (CA04339-C74x) European/Asian spec USA spec Canadian spec	Consists of a feeder unit and a paper tray adjustable for a different size 5: A4 size tray 6: Letter size tray 7: Letter size tray
Duplex unit (CA04339-C750)	Two-sided printing mechanism for PP12MX only

*1 We recommend the installation of additional memory cards of 8MB or more when you:

- use the FPS emulation and
- select speed model and
- print on legal size paper regardless of the print resolution of 300 or 600 dpi or print large image data

If you cannot get memory cards, select an appropriate memory model in the FPS menu in menu mode using the control panel.

Specifications

Specification	Description
Printing technology	Semiconductor laser + electrophotography
Compatible emulations	Standard: PP12M: HP LaserJet 5 (PCL6) IBM Proprinter 4202 EPSON EX-800 PP12MX: HP LaserJet 5 (PCL6) PostScript level-2 IBM Proprinter 4202 EPSON EX-800 Optional: PP12M: PostScript level-2 Switching: Automatic or by the control panel
Dimensions	Width: 443 mm (17.4 inches) Depth: 441.4 mm (17.3 inches) Height: 408 mm (16.0 inches) Weight: 16 kg (35.3 pounds), for PP12M 17 kg (37.5 pounds), for PP12MX
Power requirements (*)	110 to 120 VAC , 50 or 60 Hz 220 to 240 VAC , 50 or 60 Hz Consumption: Maximum 600 W (full option) Average during operating 450 W or less 30 W or less during sleep mode
Environmental requirements	Temperature: 10° to 32°C (50° to 90°F) during operating 0° to 40°C (32° to 104°F) during storage Humidity: 20% to 80% relative humidity (non-condensing) during operating and storage Maximum wet bulb 29°C (84°F)

* The rated voltage of input power differs with countries of destination and their regulations. See the next page.

Specification	Description																				
Acoustic noise	Sound pressure level (front, bystander position) Printing: 48 dBA with/without duplex unit Sleep mode: Background noise level Declared noise emissions in accordance with ISO9296 and ISO7779																				
Certification or compliance	<table> <tr> <td>EnergyStar</td><td></td></tr> <tr> <td>Safety:</td><td>Input power</td></tr> <tr> <td>UL 1950 CSA C22.2 No. 950 21 CFR 1040.10, Class I</td><td>120 VAC, 50/60 Hz</td></tr> <tr> <td>EN 60950 EN 60825, Class 1</td><td>230 VAC, 50/60 Hz</td></tr> <tr> <td>EMC:</td><td>Input power</td></tr> <tr> <td>FCC Part 15B, Class B ICES-003 Class B</td><td>120 VAC, 60 Hz</td></tr> <tr> <td>CNS 13438 class B</td><td>110 VAC, 60 Hz</td></tr> <tr> <td>EN 55022, Class B EN 50082-1</td><td>230 VAC, 50 Hz</td></tr> <tr> <td>AS/NZS 3548 class B</td><td>240 VAC, 50 Hz</td></tr> <tr> <td colspan="2">(Complies with Class A when an Ethernet interface board is used.)</td></tr> </table>	EnergyStar		Safety:	Input power	UL 1950 CSA C22.2 No. 950 21 CFR 1040.10, Class I	120 VAC, 50/60 Hz	EN 60950 EN 60825, Class 1	230 VAC, 50/60 Hz	EMC:	Input power	FCC Part 15B, Class B ICES-003 Class B	120 VAC, 60 Hz	CNS 13438 class B	110 VAC, 60 Hz	EN 55022, Class B EN 50082-1	230 VAC, 50 Hz	AS/NZS 3548 class B	240 VAC, 50 Hz	(Complies with Class A when an Ethernet interface board is used.)	
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Performance	<table> <tr> <td>Print resolution: (available)</td><td>300/600 dpi for 12M 300/600/1200 dpi for 12MX (300 dpi in IBMPRO/ EPSON emulation)</td></tr> <tr> <td>Smoothing:</td><td>Equivalent to 1200 dpi for 12M 2400 dpi for 12MX</td></tr> <tr> <td>Printing speed:</td><td>For character printing on A4 size paper from first tray 12 pages per minute</td></tr> <tr> <td>Warm-up time:</td><td>At 25°C (77°F) 60 seconds or less</td></tr> <tr> <td>Recommended duty cycle:</td><td>5000 pages per month (up to 35,000 pages per month)</td></tr> <tr> <td>Developer unit: life</td><td>10,000 pages at 5% coverage continuous printing (or up to 20,000 pages)</td></tr> <tr> <td>Drum unit life:</td><td>50,000 pages at 5% coverage continuous printing</td></tr> </table>	Print resolution: (available)	300/600 dpi for 12M 300/600/1200 dpi for 12MX (300 dpi in IBMPRO/ EPSON emulation)	Smoothing:	Equivalent to 1200 dpi for 12M 2400 dpi for 12MX	Printing speed:	For character printing on A4 size paper from first tray 12 pages per minute	Warm-up time:	At 25°C (77°F) 60 seconds or less	Recommended duty cycle:	5000 pages per month (up to 35,000 pages per month)	Developer unit: life	10,000 pages at 5% coverage continuous printing (or up to 20,000 pages)	Drum unit life:	50,000 pages at 5% coverage continuous printing						
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Drum unit life:	50,000 pages at 5% coverage continuous printing																				

Specification	Description
Computer interface	Standard: Parallel (Centronics), conforming to IEEE1284 (Compatible, Nibble, and ECP modes) Serial (RS-232C), for 12MX only Optional: Ethernet C, D, F, or GXL (TCP/IP, IPX/SPX, EtherTalk corresponding) USB (Universal serial bus) Serial (RS-232C), for 12M only Switching: Automatic sensing
Controller	Processor: NKK R4645 (125 MHz) RAM: 4 MB, for 12M 8 MB, for 12MX SIMM: 4, 8, 16, or 32MB, 2 slots provided
Fonts	Resident: PCL mode, 115 fonts available Bitmapped (1 font) Line Printer Scalable (114 fonts) Courier, Morrison, Taurus, Coronet, EF Clarendon, EF Clarendon, Lyra, Antique Olive, Garamond, Maurítius, Leos, , Nimbus Sans, Nimbus Roman, Letter Gothic, Aries, Libra, EF Bodoni, Bodoni, Cooper Black, Century Schoolbook, Clarendon, Saturn, Dorado, Goudy Os, EF Grandera, Gemini, EF Rivero, Cassiopeia, Saturn Mono, Dingbats, Symbol, Sorts FPS mode, 35 fonts available Courier, Helvetica, Helvetica Narrow, Times, Symbol, Palatino, New Century Schoolbook, Avant Garde, Bookman, Zapf Chancery, Zapf Dingbats Soft fonts: Available from independent vendors

SPECIFICATIONS

Specification		Description
Paper	Type	Single sheet photocopy paper (equivalent to Xerox 4024), bond paper, overhead transparencies (equivalent to 3M 731), and envelopes. See Chapter 2 for more information.
	Size	Tray: A4 (210 × 297 mm) A5 (148 × 210 mm) JIS B5 (182 × 257 mm) Letter (8.5 × 11 inches) Legal (8.5 × 14 inches) Executive (7.25 × 10.5 inches) Manual feeder and MFF: Minimum: 90 mm wide × 148 mm long (3.54 × 5.81 inches) Maximum: 229 mm wide × 356 mm long (9.01 × 14.01 inches)
	Weight	60 to 105 g/m ² (16 to 28 pound bond) in tray 60 to 199 g/m ² (16 to 53 pound bond) in manual feeder or MFF
	Input	Tray 1 or 2: 500 sheets of 0.09 mm thick paper Manual feeder: 1 sheet MFF: 100 sheets of 0.09 mm thick paper or 30 envelopes
	Output	Stacker: Face down (top cover) 250 sheets of 0.09 mm thick paper (possible to decrease depending on paper types and paper curl conditions) Rear stacker: Face up 10 sheets of 0.09 mm thick paper

- MFF is built in PP12MX but is not available for PP12M.
- The duplex unit is an option for PP12MX only. It cannot handle paper shorter than 210 mm (8.26 inches).
- Tray 2 is an option for both models.

Glossary

Application software

A program that performs a particular task on a computer. Examples are word processing, spreadsheet, and database programs.

Baud

The speed of data transmission measured in bits per second. Baud rates apply to data transmission through the printer's serial interface. Baud is also called baud rate.

For example, 1200 baud is approximately equal to 120 characters per second.

Bit

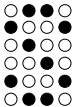
A binary digit, or bit, is the smallest unit of information in a computer's memory. A bit can have the value 0 or 1, which represents the OFF and ON state in a computer's memory. Eight bits equals one byte.

Bit map

An image representation in which each point in the image is separately defined. For monochrome images, each point is defined by a single unit of information. For color images, each point is defined by several units of information, representing the different color elements.

The characters produced by a dot matrix printer are a kind of bit map. Each character image is created by defining the points in the dot matrix as either on or off.

Example:



○	●	●	○
●	○	○	●
○	●	○	○
○	○	●	○
●	○	○	●
○	●	●	○

Bitmapped font

A font in which the character images are defined by bit maps. With bitmapped fonts, a separate set of definitions is required for each point size. For example, Times 10 point and Times 12 point are considered separate fonts. *See also* Scalable font.

Configuration

A combination of settings that allows your computer and printer to work together. Some of the necessary settings are in the computer or application software, while other settings are in the printer. For example, the interface setting must be set the same in both the computer and the printer.

Default

A setting automatically used when you or your application software do not make a selection. The settings in effect when you turn on or reset the printer are called power-on defaults. *See also* Factory default.

Density

The darkness of the image as it appears on the page. If the density is too dark, the small white areas inside letters and numbers will be filled in. If the density is too light, pinholes appear in black areas. Print density can be adjusted with the Quality menu in setup mode.

Downloadable font

A font that is transferred (downloaded) to the printer's memory when or before it is needed. Before they are transferred, downloadable fonts are stored on font cards, floppy disks, or the computer's hard disk. Downloadable fonts are also called soft fonts.

Emulation

The ability of one printer to understand the command set of another printer. Emulations may be built into a printer's memory or may be supplied on optional plug-in emulation cards or cartridges.

Ethernet

A communication hardware for a high-speed network: developed by Xerox Corporation.

Factory default

The settings that are programmed into a printer at the factory. The printer uses these settings unless they are replaced by user selected settings entered from the control panel or through application software.

Flow control

See Serial protocol.

Font

A complete set of characters and symbols in one size, typeface, and style. Size refers to the character height, and is usually measured in points (1/72 inch). Typeface refers to the character design, such as Courier, Times, or Helvetica. Style refers to the character appearance, such as Italic or Bold. Typical examples of fonts are 12-point Courier Bold, and 10-point Times Italic.

Fuser unit

One of the internal parts of a page printer. The fuser unit bonds the toner to the paper. It consists of a heat roller and a pressure roller that the paper passes under after toner has been applied.

GLOSSARY

Initialization

Resets the printer to its power-on defaults. Initialization clears the print buffer of any data and places the printer online. *See also* Reset.

Interface

The means by which information is transferred from one part of a system to another. For example, the cable between the printer and the computer is an interface.

ISO symbol set

ISO stands for “International Organization for Standardization”. An ISO symbol set contains special international characters that replace the following twelve ASCII characters: #, \$, @, [, \ ,] , ^ , 9 , { , | , } , and ~. ISO symbols sets are available for most European languages, Chinese, and Japanese.

LocalTalk

A protocol for an easy AppleTalk that connects devices and computers in a Macintosh system, developed by Apple Computer.

Margin

The space at the edges of a page in which no printing occurs. There are four margins: left, right, top, and bottom. In application software, margins are usually expressed in inches, centimeters, or points. In printer commands, left and right margins are specified as columns, while top and bottom margins are specified as lines.

Page printers have a minimum margin, typically of about .2 inch (5 mm), on all four sides, called the nonprint margin. No printing occurs in this margin. If the application software specifies a margin of 0, actual printing begins at the edge of the nonprint margin. *See also* Printable area.

MarkVision™

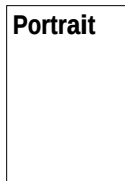
A printer management integrated software which monitors printer status, displays optional printer's features, spools print data, and cooperates with printer drivers. It also displays the virtual printer control panel to allow remote operation of printers.

Orientation

The direction of print on a page. Printing such that the shorter edges of the paper are at the top and bottom is called portrait orientation. Printing such that the longer edges of the paper are at the top and bottom is called landscape orientation.

Example:

Portrait



Landscape



Page description language

A set of codes that describe the placement of text and graphics on a page. Page Control Language (PCL), the language used by HP LaserJet printers, and Postscript are examples of page description languages.

Page protect

A printer feature that reserves a block of printer memory exclusively for text and graphics data. Page protect prevents memory overflow errors when printing very dense text or complex graphics. However, page protect also reduces the amount of printer memory available for downloadable fonts.

Parallel interface

A connection between the computer and printer in which data is transferred simultaneously through multiple wires. A parallel interface is faster than a serial interface, but the distance over which it can send data is limited. The Centronics interface is a type of parallel interface. *See also* Serial interface.

GLOSSARY

Photoconductive drum

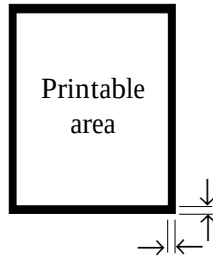
The part inside a page printer on which the image is created before it is transferred to the paper.

Postscript

See Page description language.

Printable area

The area of the physical page in which the printer is able to print. Page printers have a nonprint margin, typically about .2 inch (5 mm) wide, at each edge of the paper. The printable area is the space within these margins. *See also* Margin.

Example:**Printer driver**

A set of instructions in application software that translates formatting choices into printer commands. When installing the application, the user identifies the type of printer being used so the application knows which printer driver to use.

Print unit

A maintenance package consisting of the photoconductive drum, developing unit, toner, and drum cleaner.

Reset

Clears the print buffer and places the printer online. Unlike initialization, reset leaves the currently selected settings in effect. That is, reset does not restore the power-on defaults. *See also* Initialization.

Resolution

The fineness of the printing. Resolution depends on the number of dots per inch. High resolution (with more dots) is finer and more precise than low resolution, which is coarser with rougher edges.

Scalable font

A font capable of printing in any point size. Scalable fonts are stored on the computer's hard disk. Each font consists of character templates that are used by the accompanying font utility software to create the characters in the desired point size.

Some font utilities create a complete set of characters in the desired size and send the complete set to the printer. Other utilities create and send only the individual characters as they are needed, which conserves printer memory.

Serial interface

A connection between the computer and printer in which data is transmitted sequentially over a single wire. A serial interface is slower than a parallel interface, but it can send data over a much greater distance. The RS-232C interface is a type of serial interface. *See also* Parallel interface.

Serial protocol

A set of rules used by the computer and the printer to regulate the flow of data between them.

Symbol set

The set of characters used in a font. Most symbol sets contain standard letters, numbers, and punctuation. Symbol sets differ in the accented characters, line drawing characters, and special symbols they contain. ASCII, Roman-8 and PC-8 and examples of symbol sets.

Symbol sets are also called character sets, which is the term usually used with dot matrix printer fonts. *See also* ASCII character set; ISO symbol set.

GLOSSARY**Toner**

Electrically charged carbon particles that adhere to charged areas on the photoconductive drum to produce an image pattern. The carbon pattern is transferred to the paper and melted by the fuser unit to form a permanent image on the paper.

Transfer unit

The part inside a page printer that transfers the image from the photoconductive drum to the paper.

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