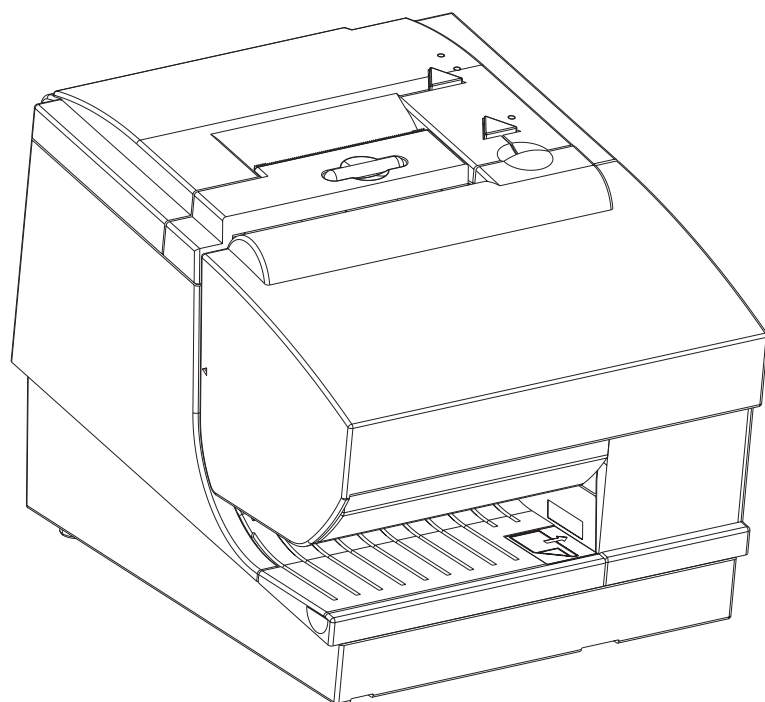


SureMark 4610 Printers



User's Guide for Models 2CR and 2NR



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SureMark 4610 Printers



User's Guide for Models 2CR and 2NR

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Note

Before using this information and the product it supports, be sure to read *IBM Safety Information—Read This First*, GA27-4004, and the general information under Appendix B, “Notices,” on page 41.

Edition Notice

This edition applies to IBM SureMark Printer Models 2CR and 2NR .

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Preface

This guide provides information for installing, using, and maintaining your IBM® SureMark™ Models 2CR and 2NR printers.

Who should read this guide

This guide is intended for use by personnel who are installing and using the IBM SureMark printer Models 2CR and 2NR .

How this guide is organized

This publication is organized as follows:

- Chapter 1, “Introducing the 4610 Models 2CR and 2NR,” on page 1 provides an overview of the 4610 Models 2CR and 2NR .
- Chapter 2, “Installing the 4610 Models 2CR and 2NR,” on page 9 describes procedures on setting up and installing the product.
- Chapter 3, “Using and maintaining the 4610,” on page 19 contains information on maintaining the 4610 such as cleaning the unit and replenishing paper rolls and ribbon.
- Chapter 4, “Running tests and diagnostics,” on page 31 provides information on using the utility disks, and running diagnostics procedures.
- Appendix A, “Product specifications,” on page 37 contains technical information for the IBM 4610 Models 2CR and 2NR, such as physical dimensions, and station characteristics.

Related publications

- *IBM SureMark Printers: Hardware Service Guide for Models 2CR and 2NR*, GA27-5004
- *IBM SureMark Printers: Programming Guide for Models 2CR and 2NR*, GA27-5005
- *IBM SureMark Printers: Fonts and Logos Utility Diskette*
- *IBM SureMark Printers: Firmware Update Diskettes*
- *IBM 4693 Point-of-Sale Terminals Reference Diskette*
- *IBM 4694/4695 Point-of-Sale Terminals Service Diskette*
- *IBM Safety Information—Read This First*, GA27-4004.
- *IBM SurePOS 700 Series: System Reference*, SA27-4220.
- *IBM SurePOS 500 Series: System Reference*, SA27-4255.
- *POSS Programming Reference and User’s Guide*, SC30-3560

Publications accessibility

The softcopy version of this guide and other related publications are accessibility enabled.

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- Go to <http://www.ibm.com/solutions/retail/store>. Click **Support**, then click **Publications**. Click the **publication comments** within the introductory text. Provide the requested information and your comments. Be sure to include the name and form number of the document in the [Publication ID] field.
- Print and complete the form at the end of this document. Return the form to IBM by mail or by giving it to an IBM representative.

If applicable, include a reference to the specific location of the text (for example, the page or table number) on which you are commenting.

Between major revisions of this document, there might be minor technical updates. The latest version of this document is available on the Retail Store Solutions Web site at www.ibm.com/solutions/retail/store/support/publications/.

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Chapter 1. Introducing the 4610 Models 2CR and 2NR

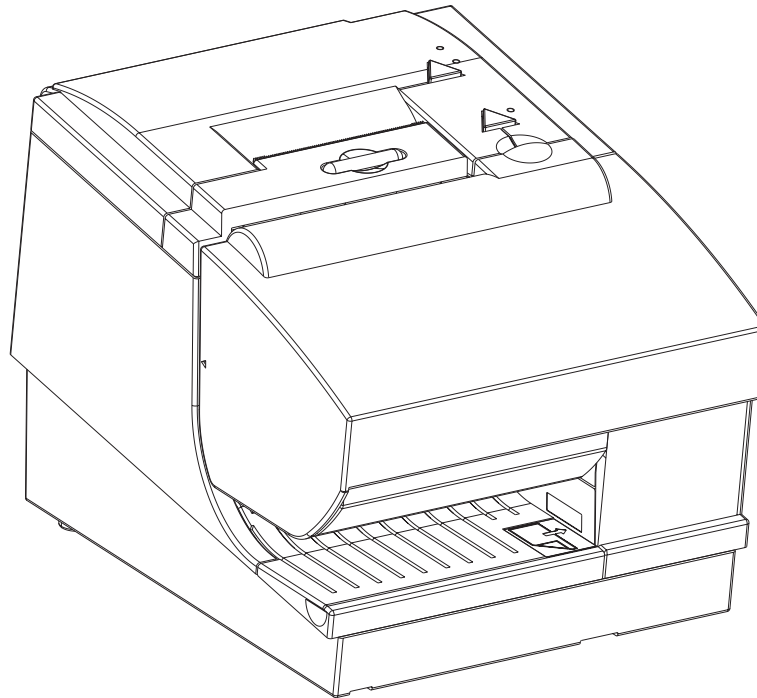


Figure 1. IBM SureMark 4610 printer

The IBM SureMark printer Models 2CR and 2NR are dual-station printers consisting of a high-speed thermal station and an impact station for printing inserted documents. The Models 2CR and 2NR are designed for ease of service: The interface card, logic card, and thermal printhead can be replaced by the customer.

Models and features

The IBM 4610 Models 2CR and 2NR provide:

- Easy paper loading
- Easy-to-load ribbon cartridge
- Fast, quiet receipt printing
- High speed thermal station printing
- High-speed document flipper
- Enhanced system management sensors
 - Paper present
 - Low paper sensing
 - Paper motion/jams
 - Cutter health
 - Printhead status
 - Printer usage statistics:
 - MICR reads
 - Document printing
 - Characters printed
 - Checks flipped
- Quieter paper cutter
- USB, RS-232 and RS-485 interfaces

- 8 MB flash memory for storing messages, logos, code pages, and electronic journal data
- 32 MB RAM for storing image data and program code
- Simple DBCS-enablement through a software switch
- MICR (Model 2CR)
- Bar code generation
- Downloadable fonts and code pages
- Downloadable microcode
- Small footprint
- Single-pass handling of checks

Table 1. Model feature description

Features	2CR	2NR
Cash receipt/document insert	Thermal/Impact	
Print speed	80 lps thermal, 4.7 lps narrow format, 4.1 lps wide format for Impact (8lpi)	
Usage data	Yes	
User defined fonts - including proportional fonts		
Scalable fonts up to 8X		
Journal station	No	
Single pass MICR, check franking, printing (Model 2CR)	Yes	No
MICR reading		Yes
Check insert station		
Document insert station		
Document insert print width	83.0 mm	
Document insert minimum form width	65 mm (See note 1)	
Document insert maximum form width (see note 1)	101.6 mm	N/A
Document insert minimum form length (see note 2)	80 mm	N/A
Document insert maximum form length (see note 3)	223 mm	N/A
Multipart form	Yes	
Barcode printing		
Receipt paper loading	Drop and load	
Receipt paper cutter	Standard	
Receipt tear bar		
Receipt paper width	80 mm	
Print fonts (CPI)	12, 15, 17, 20	
Rotate print (line by line)	Yes	
DBCS thermal font - 24x24 matrix - 13501 characters	Yes	

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Table 1. Model feature description (continued)

Features	2CR	2NR
DBCS impact font - 9x16 or 16x16 matrix - 14060 characters		Yes
Notes: <ol style="list-style-type: none"> 1. Maximum form width if using flipper mechanism 2. Minimum form length if using flipper mechanism 3. Maximum form length if using flipper mechanism 		

Warranty information

Table 2 shows the warranty information for each printer model.

Table 2. Warranty information

Model type	Description	Warranty service
2NR, 2CR, 2NS, 2CS	RS-232, RS-485, USB (Pearl white or Iron Gray covers)	IOR 24x7
2ND, 2CD	RS-232, RS-485, USB (Pearl white or Iron Gray covers)	Depot

Note: IOR 24x7 is IBM on-site repair 24 hours times seven days per week.

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Communication and power

An interface card provides communication with the SureMark printers Models 2CR and 2NR to the system unit. Select the card for your type of communication: the RS485, RS-232, or USB.

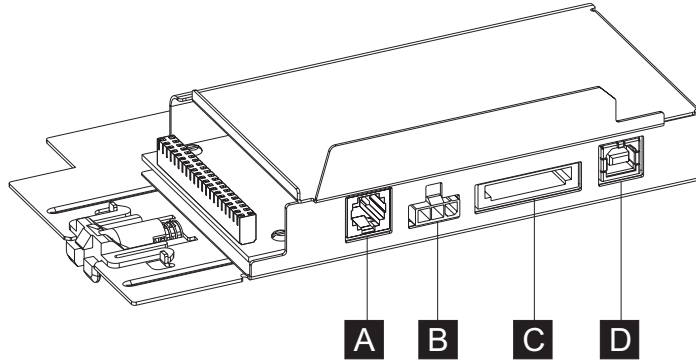


Figure 2. USB interface card.

- A** Cash drawer
- B** Power supply
- C** Powered USB
- D** Standard USB

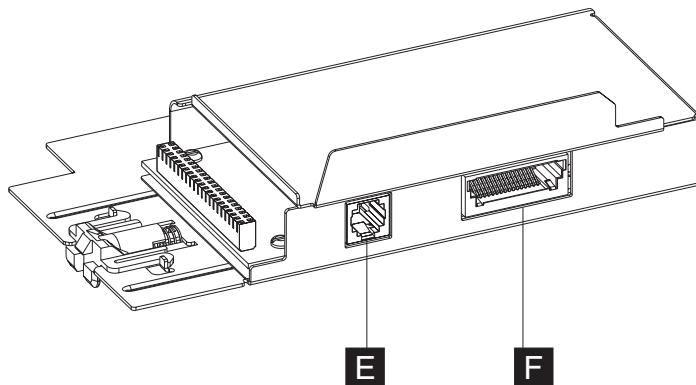


Figure 3. RS-485 interface card.

- E** Cash drawer
- F** RS-485

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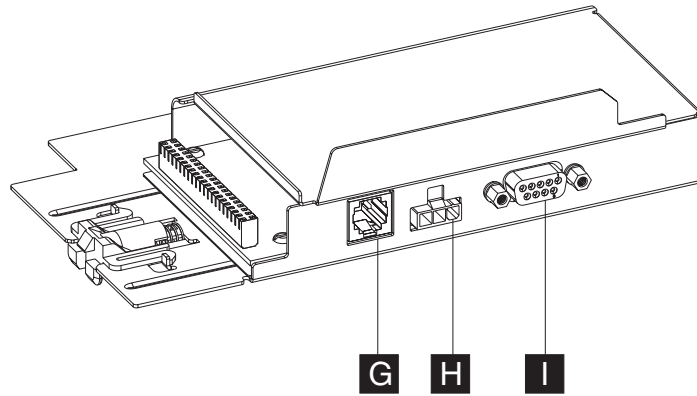


Figure 4. RS-232 interface card.

- G** Cash drawer
- H** Power supply
- I** RS-232

Table 3. Communication interface, rate and power source

Device	Description	Power
RS-232	9.6K - 115.2K (selectable using off-online configuration) Baud rate	Separate power supply
RS-485	IBM proprietary	System unit input voltage +38 V or +24 V (Japan only)
USB	USB is 2.0 Compliant Full Speed HID; Bulk transfers at 12 Mbps (Mega bits per second)	System unit input voltage (+24 V); power supply if needed

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Locating the power button

The power button (**P** in Figure 5) for the 4610 Models 2CR and 2NR is located under the paper door. A removable cover is provided over the power button.

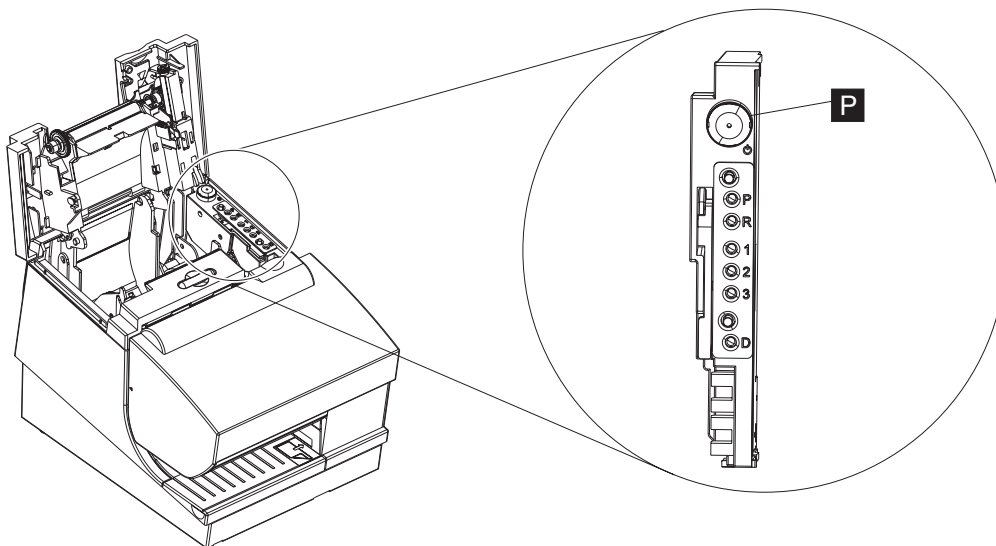


Figure 5. Power button

Operating system requirements

Drivers can be downloaded from the Retail Store Solutions Web site at www.ibm.com/solutions/retail/store/support/.

RS-232 interface

The RS-232 interface supports systems with the following operating systems:

- Windows® XP Professional
- Novell Linux® Point of Service (NLPOS)
- IBM Retail Environment for SUSE Linux
- Windows XP Professional with OPOS and JavaPOS support from UPOS 1.96 or later
- Windows Vista with OPOS and JavaPOS support from UPOS 1.96 or later

RS-485 interface

The RS-485 interface supports systems with the following operating systems:

- 4690 Operating System Version 1 at maintenance level 9910, 4690 OS V2 or 4690 OS V2R3
- IBM Retail Environment for SUSE Linux
- Novell Linux Point of Service
- IBM PC DOS 2000 or later with POSS for DOS V1.60(b) plus delta package 160(D), or later
- Windows XP Professional
- Windows XP Professional with OPOS and JavaPOS support from UPOS 1.96 or later
- Windows Vista with OPOS and JavaPOS support from UPOS 1.96 or later

USB interface

The USB interface supports systems with the following operating systems:

- 4690 OS V2R3, which includes JavaPOS 1.4

- Windows XP Professional
- IBM Retail Environment for SUSE Linux
- Novell Linux Point of Service
- Windows XP Professional with OPOS and JavaPOS support from UPOS 1.96 or later
- Windows Vista with OPOS and JavaPOS support from UPOS 1.96 or later

4690 OS

Customers must be at these application levels (or higher) when running the 4690 OS:

Application Name	Product Number	Maintenance Level
IBM SUREPOS Application Client/Server Environment for 4690 OS	5745-C44	N/A
IBM Chain Drug Sales Application	5669-212	9701 with PRPQ 5799-QYP
IBM 4680/4690 General Sales Application	5696-546	9701 with APAR IR33229 and PRPQ 5799-QYN
IBM 4680/4690 Supermarket Application	5696-536	9701 with APAR IR33228 plus PRPQ 5799-QYL
StoreFlow™ (see note 1)		Release 1.4
Notes:		
1. 4690 Terminal Services for Windows NT is required when you use Windows NT 4.0 or Windows 2000 as the primary operating system with these 4690 applications.		

Hardware requirements

SureMark printers work with the following systems:

- IBM 4694 systems
- IBM 4695 systems (RS-232 connection only and with power supply)
- PC or other store controller with an RS-232 or USB port
- SurePOS 100 Series systems
- SurePOS 700 Series systems
- SurePOS 500 Series systems
- SurePOS 300 Series systems
- IBM Self Checkout solution

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Calling for service

The serial number and model number (**S** in Figure 6) are located beside the flipper door.

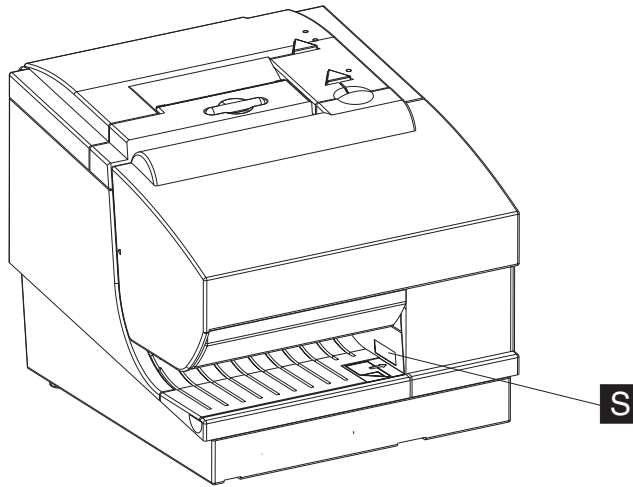


Figure 6. Location of serial number

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Chapter 2. Installing the 4610 Models 2CR and 2NR

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This section provides safety information and steps on installing your printer.

Before you begin

Before you install your IBM SureMark printer, be sure to read this section and the *IBM Safety Information—Read This First, GA27-4004*.

Understanding your configuration

Your printer can be set up in either an integrated or distributed configuration. An *integrated* configuration is one in which all parts of a system are assembled in one location. A *distributed* configuration is one in which you set up parts of the system in different physical locations. In an integrated configuration, you install the printer on the input/output tray option with the fillers to contain the printer and display on top of the wide-footprint system units. Other tray options include mounting the printer on the full-size cash drawer or directly on the counter.

Your order and packaging

Each order contains the following:

- 4610 unit
- Interface card (RS-232, RS-483, or USB)
- Safety manual
- Customer options, such as fillers, cables, and power bricks (packaged separately).

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Understanding the controls, indicators, and connectors

This section describes the IBM 4610 Models 2CR and 2NR controls, indicators, and connectors.

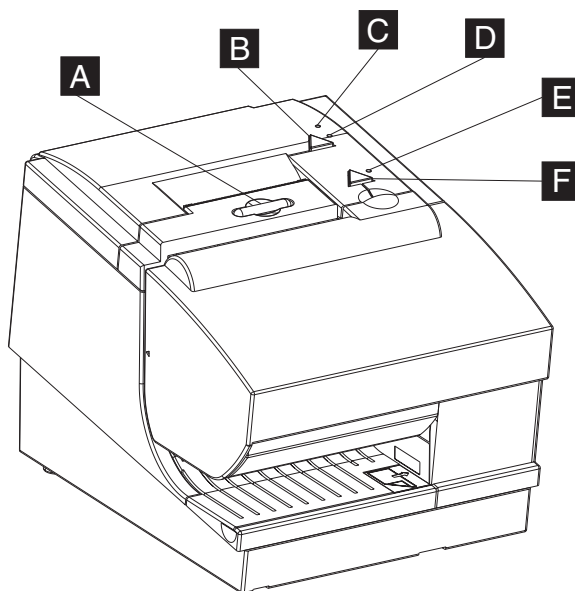


Figure 7. Indicators and controls.

- A** Paper door release button
- B** Paper feed button; press to advance the customer receipt paper.
- C** Paper supply LED indicator. See Table 4.
- D** Printer ready LED indicator. See Table 5.
- E** Document presence LED indicator. See Table 6 on page 11.
- F** Document feed button; press to advance the document

Table 4. Paper supply LED Indicator

LED Indicator (C)		
Amber	On	Paper out
	Off	Paper sufficient
	Blinking	Critical paper supply

Table 5. Printer ready LED indicator

Printer ready (D)		
Amber	Blinking (0.5s on / 0.5s off)	Station not ready; critical paper supply
	Blipping (0.25s on / 1.75s off)	Off-line testing
Green	On	Station is ready

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Table 6. Document presence LED indicator

Document inserted / No document inserted (E)		
Green	On	Station is ready
Amber	Blinking (0.5s on / 0.5s off)	Station is not ready or one of the following conditions exists: <ul style="list-style-type: none"> • The cover is open. • The printer has a nonrecoverable home error.
	Blipping (0.25s on / 1.75s off)	Printer is in off-line mode
Green	Blinking	Station is waiting

If you press both buttons at the same time and then release them, the document insert throat opens. The throat must be open to insert a document from the side. Press and then release both buttons again to close the throat.

Both buttons are also used to test the printer. See “Firmware off-line tests” on page 32 for additional button functions.

Installing the interface card

Note: Plug all cables into the interface card before installation; however, **do not** plug in any power until after installation.

The interface card (either a RS232, RS485, or USB interface) is shipped in a separate box with your printer. Install the interface card as follows:

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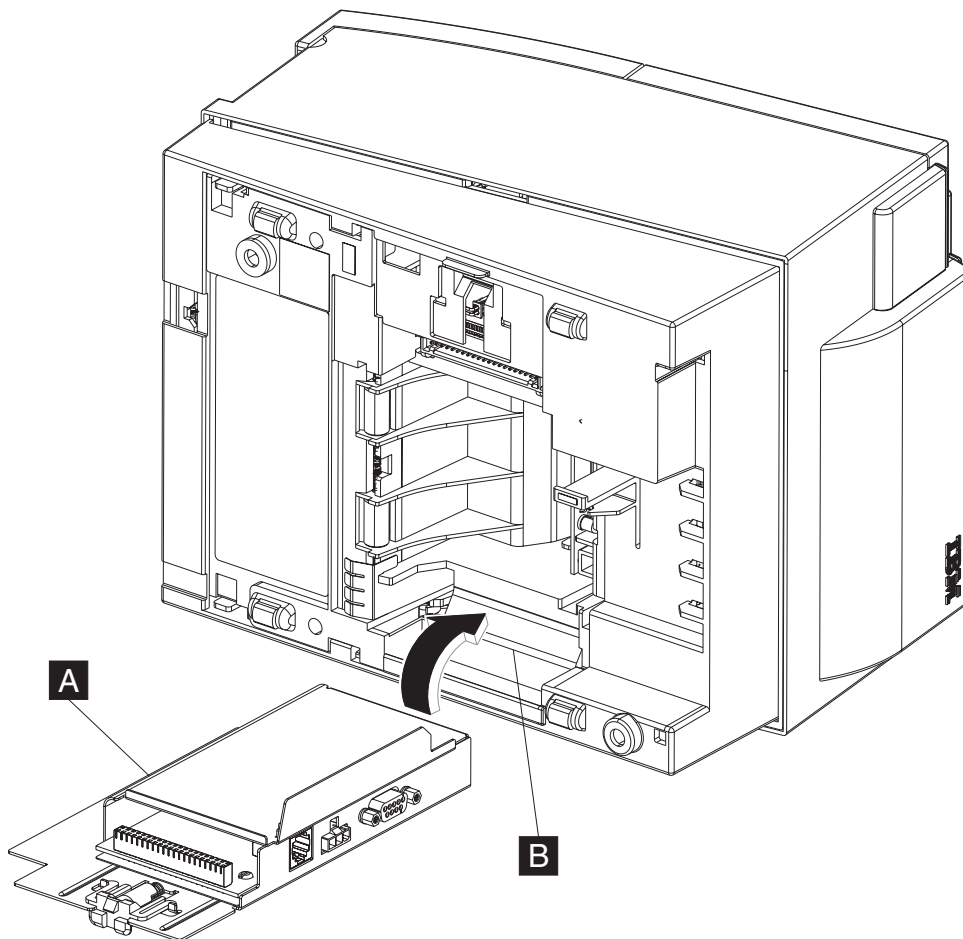


Figure 8. Installing the interface card

1. As shown in Figure 8, place the printer unit on one side.
2. Align the bottom of the interface card (**A**) to the slot (**B**) on the base of the printer and press to secure the latch.
3. Connect the printer with your system unit (RS-232, RS-485, or USB).
4. If you have an RS-232 interface, connect the power cord to the printer.

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Installing the logic card

Attention

Printer should be powered off. The following ESD handling procedure is recommended: You should touch the metal on the printer frame with the back of your hand before making contact with the printer. Also, see “Electrostatic Discharge (ESD)” on page 46.

Follow these steps to install the logic card:

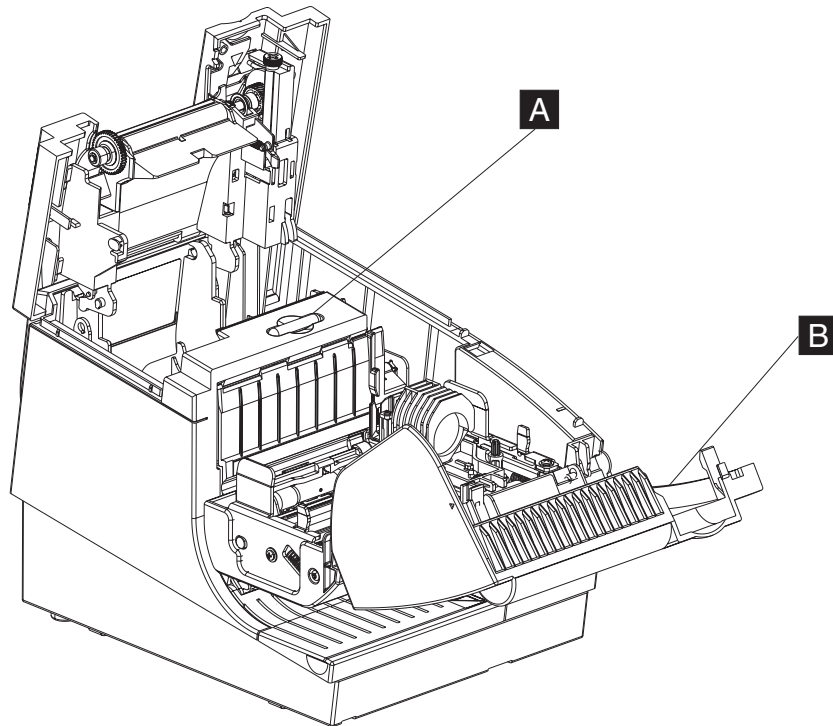


Figure 9. Opening the paper door and ribbon door

1. Turn off the power to the 4610.
2. Open the paper door by pressing the blue release button (**A** in Figure 9).
3. As shown in Figure 9, open the ribbon door (**B**) by pulling downward.

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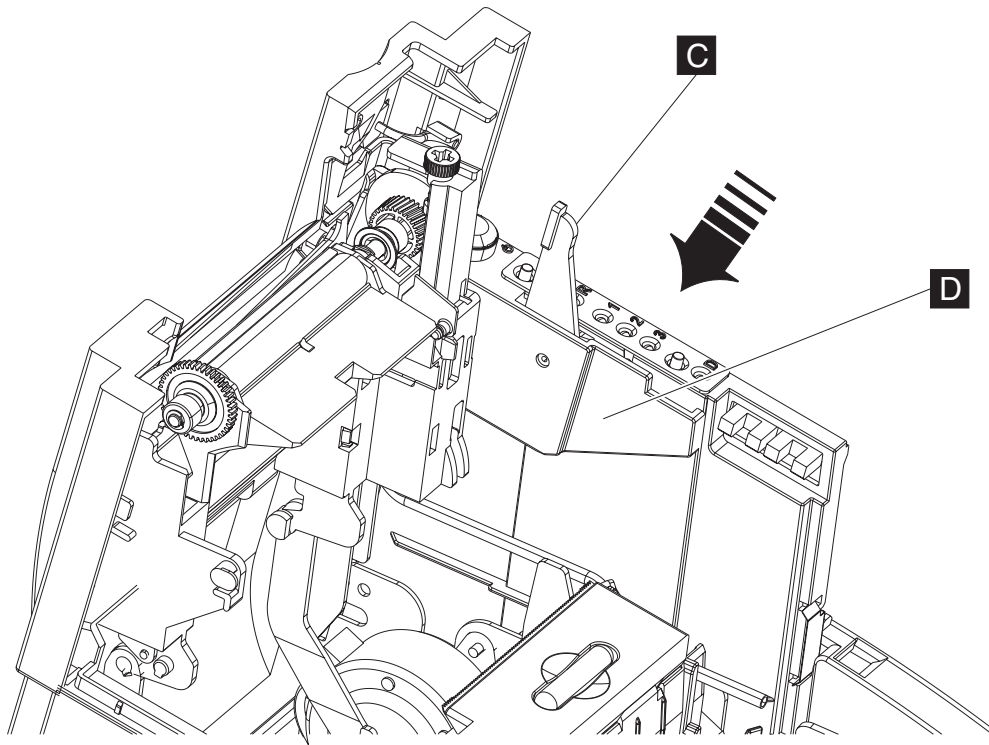


Figure 10. Installing the logic card

4. Remove the impact printer ribbon.
5. Insert the logic card (**D**), and press down on the blue lever (**C** in Figure 10) to lock the card into the correct position.

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Installing the thermal printhead assembly

Attention

Printer should be powered off. The following ESD handling procedure is recommended: You should touch the metal on the printer frame with the back of your hand before allowing the printhead to make contact with the printer. Also, see “Electrostatic Discharge (ESD)” on page 46.

Follow these procedures to install the thermal printhead assembly:

1. Open the paper door by pressing the blue release button (see Figure 9 on page 13).

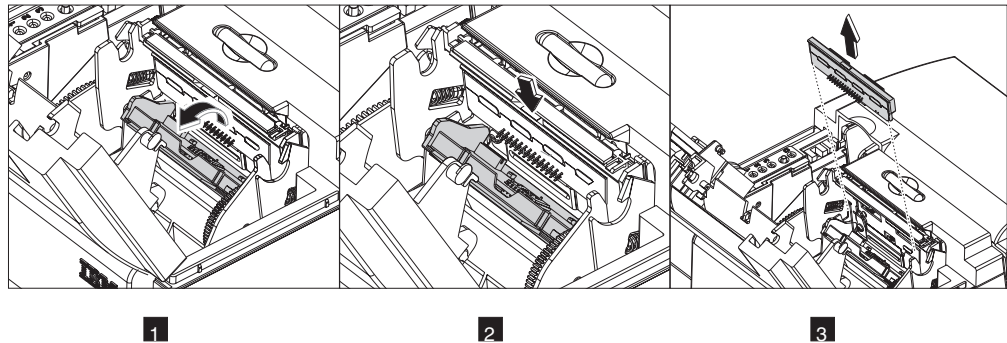


Figure 11. Installing the thermal printhead assembly

2. See **1** in Figure 11. Open the paper-out sensor by grasping the edge and pulling downward.
3. As shown in **2**, press downward on the thermal printhead assembly.
4. Lift the printhead assembly outward to remove (see **3**).

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Installing the fillers

The fillers are an important part of your integrated system. They securely position your printer into position with the system unit and other peripherals.

Note: Ensure that the side of each filler overlaps the tab on the side of the system unit.

Refer to the installation documentation for your system unit for complete instructions.

To install the fillers for a 4694 integrated system:

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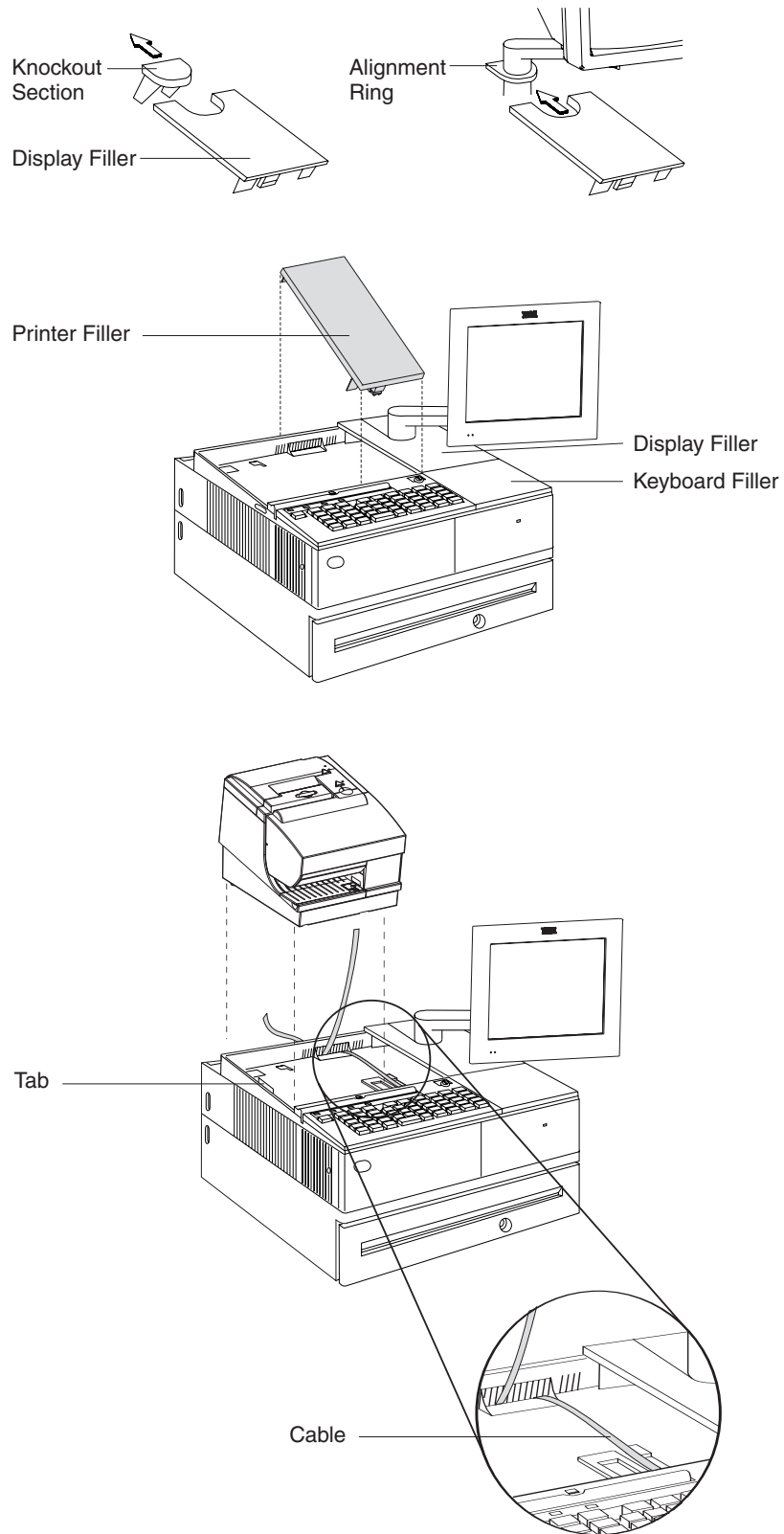


Figure 12. Installing the fillers for RS-232/RS-485 systems:

1. Power the system off.

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2. Move the display on its arm to the side and remove any tape holding the alignment ring.
3. Remove the knockout section of the display filler.
4. Align the display filler with the alignment ring and slide the filler onto the ring. Press the display filler into place. See Figure 12 on page 17.
5. If you do not have a display, place the display filler on the system unit.
6. If you have a short keyboard, place the keyboard filler beside the keyboard. See Figure 12 on page 17.
7. Place the printer filler beside the display filler. **Make sure you route the printer cable to the side, as shown in Figure 12 on page 17.**

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Chapter 3. Using and maintaining the 4610

This section provides information on the proper use and maintenance of the 4610 Models 2CR and 2NR . For detailed technical information, see Appendix A, “Product specifications,” on page 37.

Note: All covers *must* be installed on the SureMark printer during operation.

Replenishing consumable supplies

You are responsible for replenishing consumable supplies. These supplies include:

- Supply roll paper
- Inserted forms
- Ribbon cartridges

Make sure that you have the correct supplies for the 4610.

Loading and replacing the paper roll

Ensure that you have the correct paper for the 4610. See “Supported paper types” on page 20.

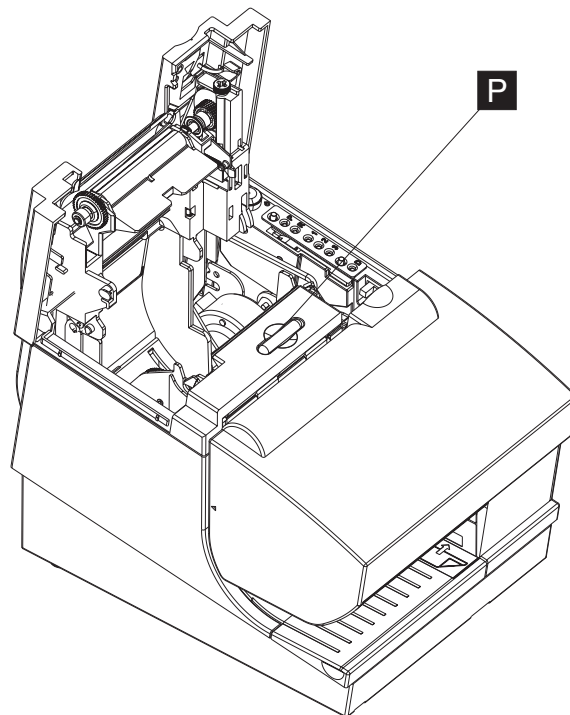


Figure 13. Opening the paper door

1. Press and release the blue release button (**P** in Figure 13) to release the paper door.
2. If necessary, remove any unused paper or empty paper roll core from the paper roll bucket before inserting a new paper roll.

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Note: Refer to the label on the inside of the paper cover for a diagram of how to load paper.

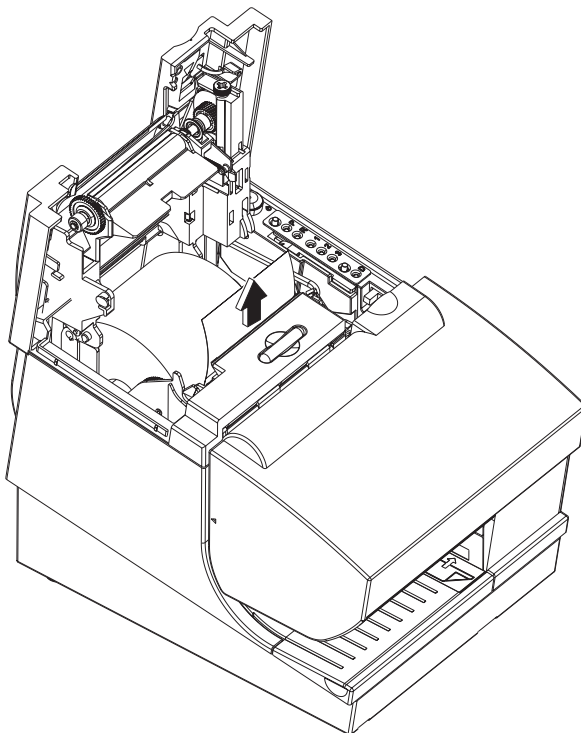


Figure 14. Paper roll placement

3. See Figure 14 and place the paper roll into the paper roll bucket as shown. The leading edge of the paper should come from the bottom of the roll as shown in the diagram.

Note: The thermal printhead will not print on paper with glue on it. If the new paper roll was sealed by glue, tear off the 6 to 8 inches of paper with glue on it before loading it.

4. Close the paper cover.
5. Press the customer receipt feed button to advance the paper, to verify that the paper is feeding correctly. Feed 30 cm (about 1 ft.) of paper through to test for correct alignment.

Attention: Do not pull the receipt paper out of the printer with the paper access cover closed. This disengages the paper feed. The paper feed motor must then catch up before the printer can feed the paper, which causes missing lines or partial lines of print. Use the customer receipt feed button to advance the receipt and all lines will print.

Supported paper types

Attention: Using an inferior grade of paper can affect print quality as well as the life of printheads and the printer mechanism.

Note: When selecting a paper, ensure that the paper's archive life meets the requirements of the tax authorities of your country for archiving tax-related data.

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Thermal paper: The paper used in the thermal receipt station must meet the following requirements:

Width 79.5 ± 0.5 mm (3.13 ± 0.02 in.)

Outside Diameter

102 mm (4.0 in.) maximum

Thickness

60 M (0.00225 in.) Range: 41 M minimum to 99 M maximum

Important

Paper has a significant manufacturing tolerance and nominal paper designations do not reflect actual measurements. The manufacturing tolerance must fall within the published operating thickness range. IBM strongly recommends that customers test paper in their specific configuration before use. The intent of this specification is that if any spot measurement of the paper is outside the specified range, the paper is deemed not to meet the specification and the customer is responsible for any problems caused by paper jams.

The paper must be wound with the printing side facing out. The paper should not be attached to the core in any manner. A red stripe of 1.5 to 2.1 m (5 to 7 ft.) should indicate the end of the roll.

Note: Papers that meet these criteria include Appleton Optima POS and Seiko (Jujo) papers.

Important

Printer reliability and performance are directly related to the quality of the supplies used by the customer. The published parameters for printer performance are established using supplies that meet the specifications listed above.

Thermal paper with watermarks, coupons, or advertisements printed on the front or back of the paper **is not covered by IBM specifications**. Some inks and printing processes will work acceptably, while others will not. Printer problems that are caused by supplies that do not meet IBM specifications may result in a billable service call, regardless of the existence of a service contract.

Document insert forms:

Note: Models 2CR and 2NR support up to three parts on a multipart form. Table 7 on page 22 list the specifications of supported single and multipart forms.

Notes:

1. Test all forms in the printer to ensure acceptable performance prior to buying a significant quantity.
2. No binding holes or other holes should be within 10 mm (0.4 in.) from the right edge of the form.
3. Forms less than 0.15 mm (0.006 in.) thick with the grain of the paper perpendicular to the feed direction (short-grain paper) should not be used for landscape printing.

Table 7. Specifications of supported single and multipart forms

Specification	Value
Minimum width:	50 mm (2 in.)
Maximum thickness of multipart forms:	0.47 mm (0.0185 in.)
Maximum thickness of front sheet, multipart forms:	0.08 mm (0.003 in.)
Minimum thickness of single-part form:	0.10 mm (0.004 in.)
Maximum thickness of single-part form:	0.2 mm (0.008 in.)
Weight range for single-part forms:	68–90 g/m ² (18–24 #)
For best reliability, paper grain should be in the direction that the paper is fed into the printer.	

Supported documents that are flipped: The flipping of multipart forms and short-grain single-part forms is not supported. Table 8 describes the supported flipping specifications.

Table 8. Supported flipping specifications

Specification	Value
Minimum form length:	80 mm (3.14 in.)
Maximum form length:	223 mm (8.78 in.)
Maximum form width:	102 mm (4 in.)
Paper weight:	75–95 g/m ²

Polymer film: The 4610 Models 2CR and 2NR can support polymer film in the thermal station.

Installing large paper rolls

The 4610 can accommodate extra large rolls (up to 15 in.) of paper below the printer. Mounting hardware is necessary to avoid placing undue strain on the paper feed motor. See your IBM representative for additional information.

Replacing the ribbon

1. Open the ribbon door. As the door is opened, the printhead moves to a position where you can easily load a ribbon.

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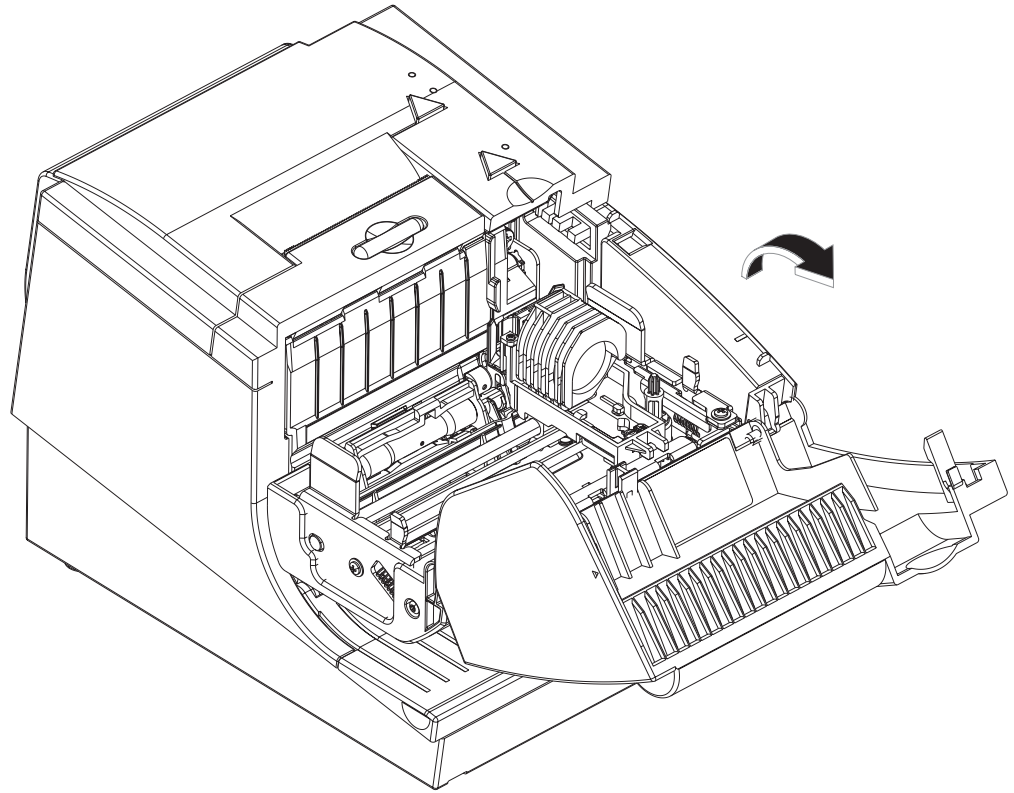


Figure 15. Opening the ribbon cover

2. If a ribbon cartridge is installed, remove it by lifting it straight up.

Note: You might need to grasp the body of the cartridge rather than the top to remove it.

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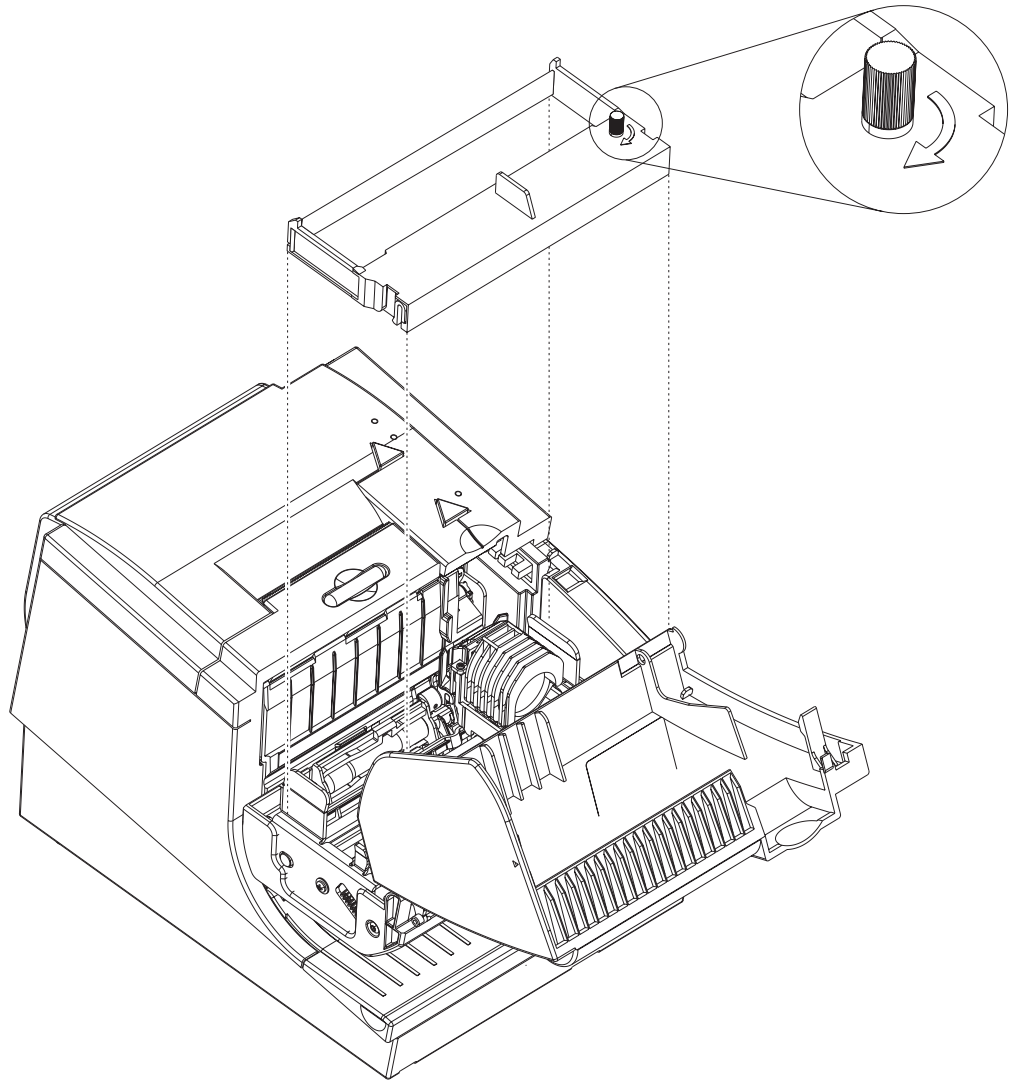


Figure 16. Ribbon cartridge loading

3. Maintain ribbon tension by turning the ribbon cartridge knob as shown in Figure 16. Lower the cartridge into position until the notches on its sides snap into place on the printer guides.

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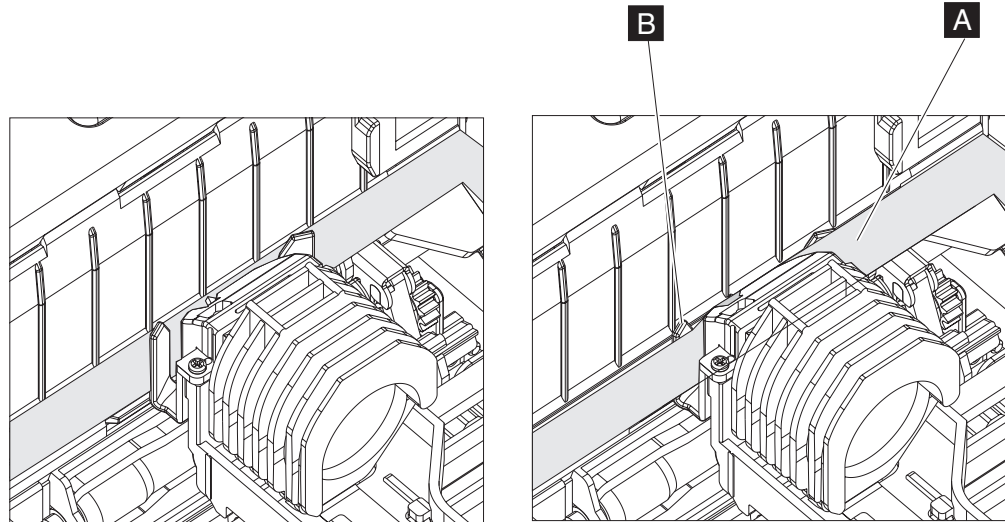


Figure 17. Ribbon path around the printhead. Incorrect placement of the ribbon (A) around the printer guides (B). Correct placement is shown on left.

- Once the cartridge is in place, close the ribbon cover. The ribbon will be moved into the correct position. See Figure 17 for correct ribbon positioning.

Supported ribbon types

Attention: Using an inferior grade of ribbon can affect print quality and the life of printheads and the printer mechanism.

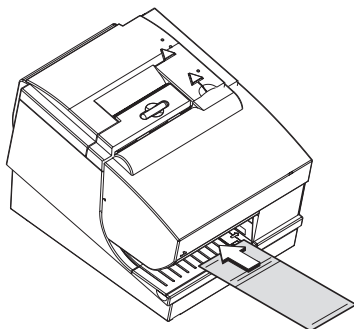
The 4610 Models 2CR and 2NR require a stuffer-box ribbon type: Feed rollers pull the ribbon from one end of the cartridge and stuff it into the cartridge cavity of the other end. IBM recommends the Epson ERC 35 ribbon; however, other original equipment manufacturers offer replacements that are adequate.

Correctly inserting documents

The Models 2CR and 2NR printer is capable of printing verification information on a check and on an inserted document. Figure 18 on page 26 shows the correct positioning of checks and documents:

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Insertion of Check for MICR Reading and Franking



Insertion of Check for Printing the Face

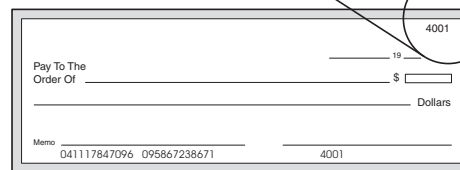
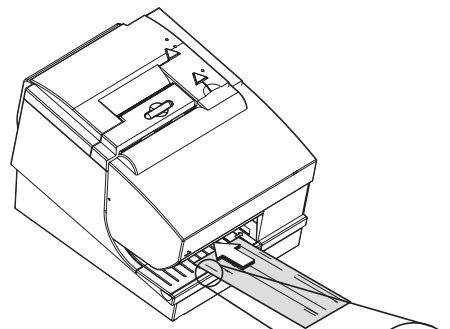


Figure 18. Inserting checks

Cleaning recommendations

You should periodically inspect your 4610 unit and clean the cover as required. Use a soft clean cloth with warm soapy water to clean the plastic parts. Do not use abrasives or any alkaline, ammonia, or chloride-based cleaner.

Note: Do not apply cleaning solution directly to the cover. Always apply the cleaner on a clean cloth and then wipe the cover with the damp cloth. Be certain that the cloth is only damp and not dripping wet.

Cleaning the MICR read head

The MICR read head should be cleaned after 10 000 checks are processed or every three months. Clean the MICR head using a cotton swab soaked in isopropyl alcohol.

Follow these steps to clean the MICR read head:

1. Open the ribbon door (**B** in Figure 9 on page 13) by pulling downward.
2. Remove the ribbon cartridge by lifting it out.
3. Move the carriage to the right until it stops, or as shown in Figure 19 on page 27.

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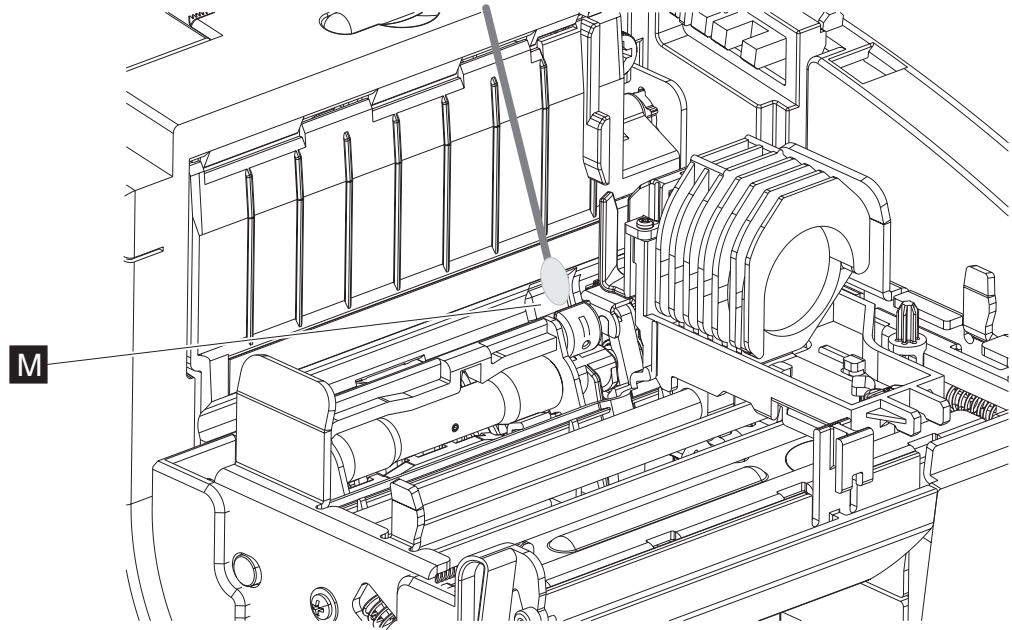


Figure 19. Cleaning the MICR head

pap

4. Gently wipe the head (see **M** in Figure 19) with the swab several times. Wipe away any residual alcohol with a dry swab.
5. Replace the ribbon and close the ribbon door.

If cleaning the MICR read head does not solve a problem you are having, it might be that you are experiencing electromagnetic noise interference. Sources of electromagnetic noise (for example, displays, security towers, and other sources) can interfere with the MICR read head. The printer is equipped to filter noise from many devices. If the MICR reader does not function properly, rearranging the printer relative to the noise source may improve MICR reading. The noise source should be as far away as possible from the right side of the printer.

For additional information on troubleshooting MICR read problems, see “Firmware off-line tests” on page 32.

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Cleaning the thermal printhead

The thermal printhead can be cleaned whenever print quality deteriorates.

1. Open the paper cover.

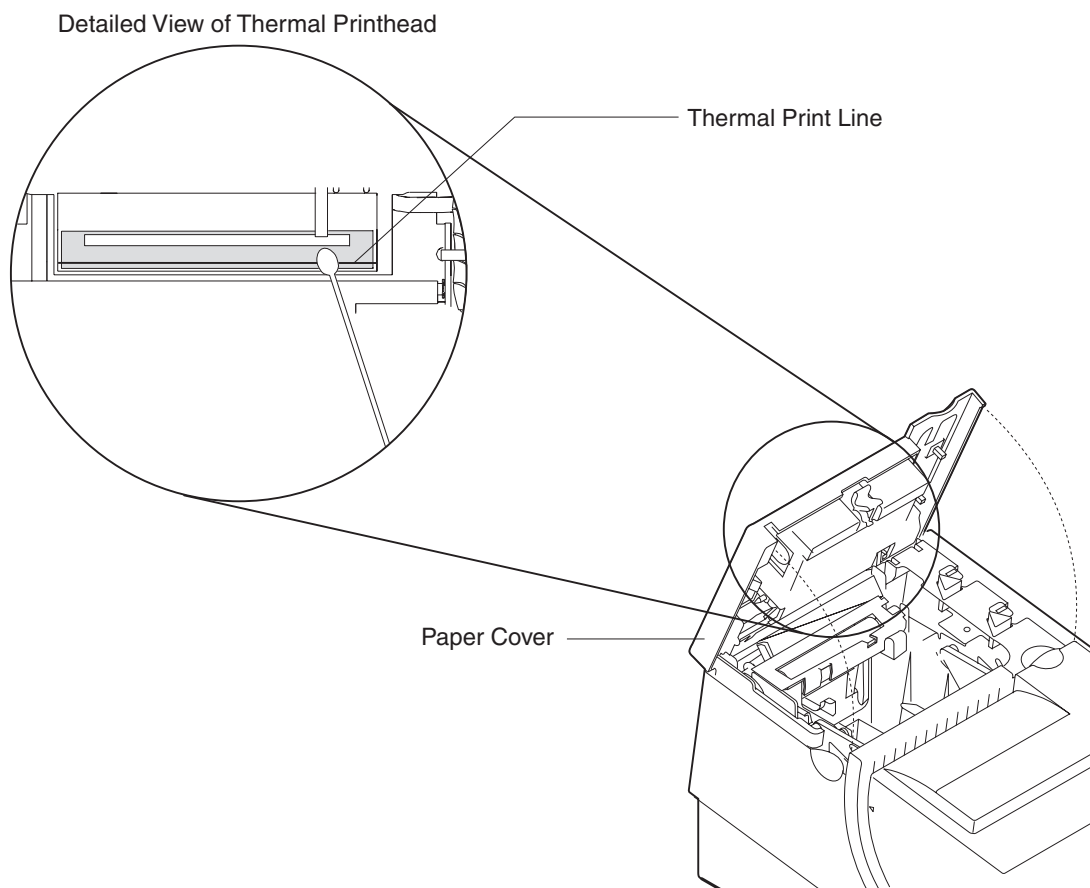


Figure 20. Cleaning the thermal printhead

2. Using a cotton swab soaked in isopropyl alcohol, gently wipe the printhead several times on its print line and on the surrounding area.
3. Wipe off any residual alcohol with a dry swab.

If print quality does not improve after cleaning the thermal printhead, call for service.

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Clearing jams in the check flipper area

If a check jams in the check flipper mechanism:

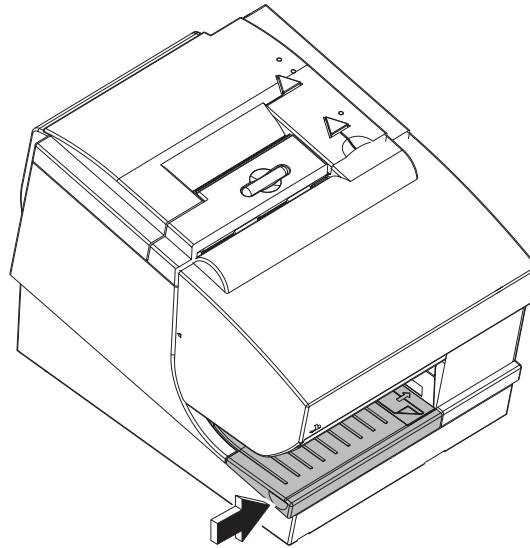


Figure 21. Removing the flipper door (lower document insert cover)

1. Lift up the left front corner of the flipper door (document insert cover) and pull the cover from the printer. (See Figure 21.)
2. If the document is visible, remove the document.
3. Replace the flipper door.

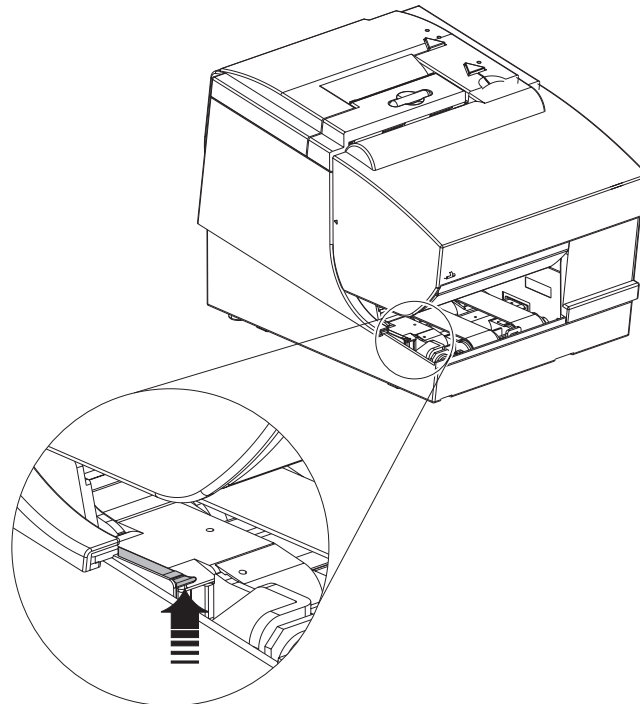


Figure 22. Lifting up on the thumb tab

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4. If you cannot remove the document, lift up the tab on the left side of the check flipper cartridge (with a blue label) and remove the check flipper cartridge from the printer. (See Figure 23.)

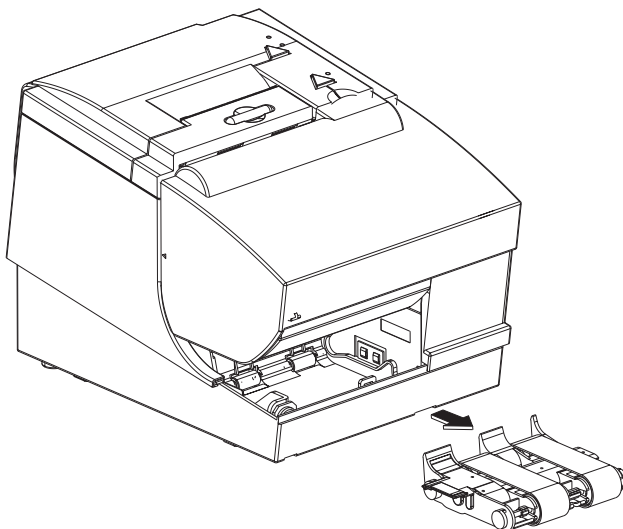


Figure 23. Removing the check flipper cartridge

5. Reach inside the document insert station and carefully remove the jammed check.
6. Reinstall the check flipper cartridge and the flipper door.

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Chapter 4. Running tests and diagnostics

This chapter describes the IBM Diagnostics for POS Systems and Peripherals, offline tests, and troubleshooting procedures.

Attention: For firmware and driver updates, see the *IBM SureMark Printers: Programming Guide for Models 2CR and 2NR, GA27-5005*

Testing the 4610

When you power ON the SureMark printer, it runs a power-on self-test (POST). If the POST finds no errors, the printer is ready for operation. Follow these steps if you receive an error:

1. If the printer is powered ON, power OFF the printer and power it ON again.
 - If the printer is attached to the system with the RS-232 cable or the standard USB cable with a power brick, disconnect the power cord, then reconnect the power cord to a properly wired and grounded power source.
 - If the printer is attached to the system with the RS-485 cable, power OFF the POS system, and then power ON the system, which also powers ON the printer.
 - If the printer is attached to the system with a powered USB cable, the USB attached printer can be hot-plugged.
2. Check the status of the Printer Ready indicator:

Printer ready indicator ON:

The power-on self-test completed successfully.

Printer ready indicator OFF or blinking:

The POST failed.

3. If the POST fails or if you suspect problems with your system, see “Troubleshooting” on page 35.
4. See “Firmware off-line tests” on page 32 and run the offline tests. If the offline tests fail or you suspect problems with your system, see “Troubleshooting” on page 35.

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Firmware off-line tests

To enter the firmware off-line test and setup procedures follow these steps:

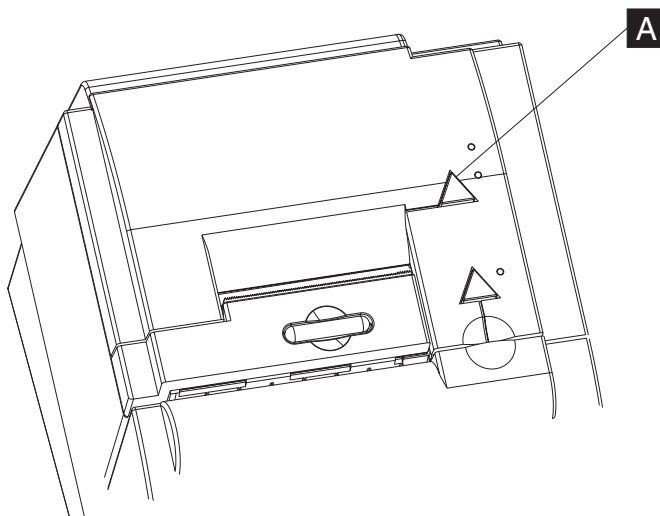


Figure 24. Paper feed and document feed buttons

1. Power on the printer while pressing the paper feed button (**A** in Figure 24) . The following off-line selection menu is printed. See Figure 25.

```

Main menu
Off-line selection started
To select a sub-menu or test:
1. Enter the code by pressing the paper feed button.
2. Press again and hold the button down at least 1
second to confirm selection.

Sub-menus and tests                               Codes
Thermal Receipt test                             1 Press
Choose Emulation Mode                           2 Presses
Model Selection                                   3 Presses
EIA-232/RS-232 Flow Control                       4 Presses
More Selections                                  5 Presses

To Exit Off-line setup, Open Printer Cover

```

Figure 25. Example of the off-line selection main menu. See Table 9 on page 33 for an explanation of these menu items.

2. Follow the instructions that are printed for each required test.

Summary of off-line test menus

IBM recommends that you use the firmware off-line test menus to perform the off-line tests. However, note that some legacy off-line test methods still apply (see "Legacy methods for off-line tests" on page 33). Table 9 on page 33 describes the available firmware off-line test menus:

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Table 9. Summary of the off-line test menu items

Menu item	Definition	Sub-menu (if applicable)	Definition
Thermal receipt test	Prints a receipt		
Choose emulation mode	Displays the sub-menus (see next column)	Compatibility with Legacy 4610	Changes the command set and statuses to support the previous drivers and applications (such as plug and play for legacy 4610 printers).
		Native mode	Changes the command set and statuses to support the low paper detection, paper jam detection, and other 4610 Model 2CR and 2NR sensors.
Model selection	You specify the printer type: MICR reading or non-MICR reading model.		
EIS-232/RS-232 flow control	Provides a list of available baud rates and flow controls.		
More selections	Provides access to additional menus:		
		MCT listing	Information for service personnel
		Low paper calibration	You are instructed to insert a <i>small</i> roll of paper in the printer. During the test the printer ejects all of the paper from this roll to calibrate the low paper sensor.
		Document print test	Starts print test
		Execute printhead test	Starts printhead test
		Reset TPM user data	Select after you install a new thermal printhead.
		Main menu	Returns to main menu

Storing a new serial number in the firmware

For proper printer operation, the firmware must correlate the serial number of the printer with the serial number of the logic card. When you replace either the logic card or the interface card, the serial number is restored into the new card. However, if both cards are replaced, you must store the correct serial number in the firmware.

For more information, see the IBM Retail Store Solutions support website at www.ibm.com/solutions/retail/store/support/.

Legacy methods for off-line tests

The section provides the previous methods for initiating off-line tests. Although these methods are supported, IBM recommends that you use the firmware menu and sub-menus to initiate all off-line tests.

Resetting the printer and the document sensor threshold: To reset the printer, open and close the paper door by pressing the paper release button (**C** in Figure 24 on page 32). This action also resets the document sensor threshold setting.

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Customer receipt test:

Note: IBM recommends that you use the off-line menus to initiate this test.

To initiate the customer receipt test, follow these steps:

1. Press and hold both the paper feed and document feed buttons (**A** and **B** in Figure 24 on page 32) to enter offline mode
2. When the printer ready indicator begins blinking, release both buttons.
3. Press and release the paper feed button to start the test

Document insert station test:

Note: IBM recommends that you use the off-line menus to initiate this test.

To initiate the document insert station test, follow these steps:

1. Press and hold both the paper feed and document feed buttons (**A** and **B** in Figure 24 on page 32) buttons to enter offline mode.
2. When the printer ready indicator begins blinking, release both buttons.
3. Press and release the document feed button to start the test.

MICR read, flipper test:

Note: IBM recommends that you use the off-line menus to initiate this test.

The MICR read test is accessed through the sub-menus in off-line mode.

Follow these steps to start the MICR read and flipper test:

1. Insert the check face down with the magnetic ink characters to the right.
2. To enter offline mode, press and hold both buttons until the printer ready indicator begins blinking.
3. Then release both buttons.
4. Press and release both buttons again. The printer reads the check.
5. Characters that match the magnetic ink characters are printed on the customer receipt. The check is then flipped over, and ejected.

Understanding MICR test results: If the characters printed do not match the magnetic ink characters, check the MICR read head. The printer will insert question marks if the MICR read engine cannot decode a number. An **X** appears if the printer had to read the document twice to determine a good read. If the printer detects noise, it will print out the amplitude and frequency of the noise, if possible.

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Troubleshooting

Table 10 contains common steps to identify and resolve problems. For the latest troubleshooting guidance and symptom-fix tip information, go to the IBM Knowledgebase support Web site at: www2.clearlake.ibm.com/store/support/html/knowledgebase.html. This site contains additional information that is gathered from field experience, and might not have been available at the publishing date of this document.

Table 10. Troubleshooting

If the problem is...	Then do this...
Printer ready indicator is OFF.	<ul style="list-style-type: none"> • Check the power to the printer. • If connected to a system using the RS-485 communication port, check that the system is powered ON and cable 7 is connected. • If using the RS-232 communication port or a USB port with a power brick, check that the brick power supply is connected to the printer and plugged into an AC power source. • If using USB communication with a powered USB cable, check that the system is powered ON.
Printer ready indicator is blinking.	<ul style="list-style-type: none"> • Check that the customer receipt station has paper loaded correctly. Close the cover and push the Customer Receipt Feed button to feed a small amount of paper. • Check the document insert station printhead and paper path for any obstructions. • Check that the paper and ribbon doors are closed.
Checks not flipping	Go to “Clearing jams in the check flipper area” on page 29.
Checks not reading	Go to “Cleaning the MICR read head” on page 26.
Customer receipt station is feeding paper, but is not printing.	<ul style="list-style-type: none"> • Ensure that the paper roll is not upside down. Go to “Loading and replacing the paper roll” on page 19. • Clean the printhead. See “Cleaning the thermal printhead” on page 28.
Document insert station is not printing	<ul style="list-style-type: none"> • Check the paper path. • Check to see if the ribbon is installed correctly. • Change the ribbon, go to “Replacing the ribbon” on page 22.

Notes:

1. Record all symptoms before calling for service.
2. If you receive software error messages, refer to the software manual of the application.
3. Call your service representative.

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Appendix A. Product specifications

This section describes the Models 2CR and 2NR physical specifications.

Physical dimensions

Figure 26 describes the physical dimensions:

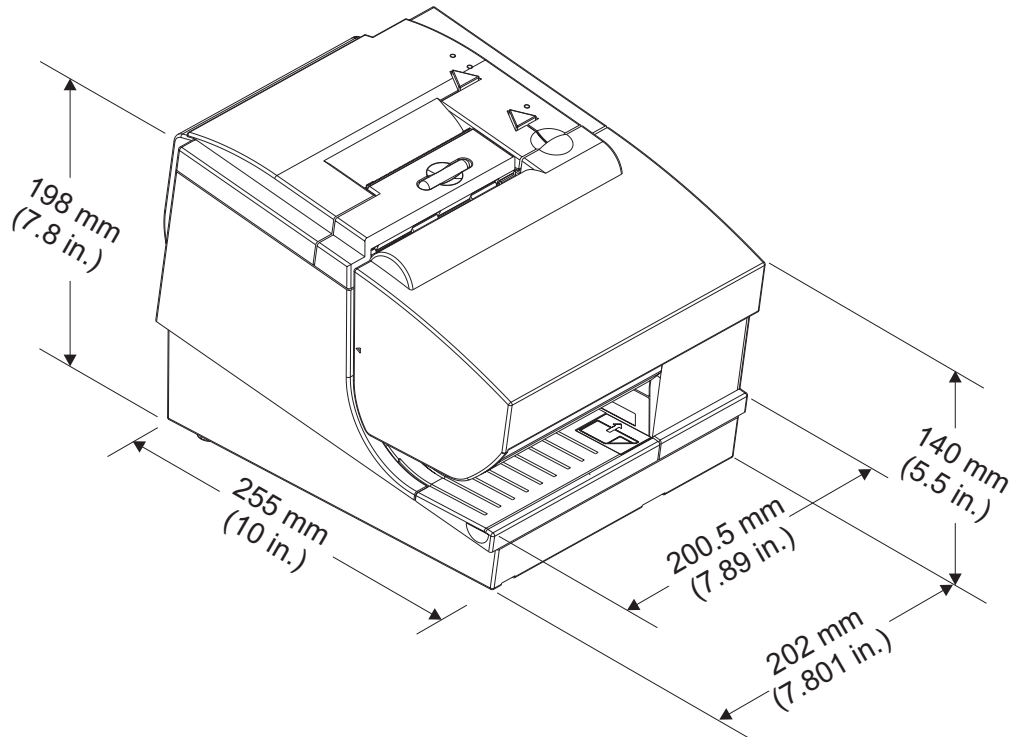


Figure 26. SureMark 4610 Models 2CR and 2NR dimensions

Table 11. Summary of dimensions

Width:	202 mm (7.801 in.) footprint
	200.5 mm (7.89") with overhanging edge
Height:	Front: 140 mm (5.5 in.)
	Rear: 198 mm (7.8 in.)
Depth:	277 mm (10.914 in.)
Weight:	4.8kg (10.582 lb)

Temperature and humidity limits

Shipping -40° to 60° C (-40° to 140° F) with 5% to 100% relative humidity including condensation, but excluding rain

Storage 0° to 60° C (32° to 140° F)

Operating 5° to 40° C (42.8° to 104° F) with 8% to 80% relative humidity

To allow convection cooling, ventilation holes in the covers must not be blocked.

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Printing width, speed, and acoustics

Table 12. Station characteristics

Characteristic	Customer Receipt Station	Document Insert Station
Speed (see note following table)	80 lps	4.1 lps wide station 4.7 lps narrow station (8 lpi)
Paper Width	All models: 80 mm (3.54 in.)	
Print Width	34 characters at 12 cpi, 44 characters at 15 cpi, 48 characters at 17 cpi 57 characters at 20 cpi	37 characters at 12 cpi, 47 characters at 15 cpi, 52 characters at 17 cpi.
Pitch	12, 15, 17, 20 cpi	12, 15, 17 cpi

Note: To conserve power, the Models 2CR and 2NR reduce their throughput when printing high print densities, such as logo messages or full black lines. Because these types of print messages are used on a limited basis, the overall performance when printing a customer receipt is not noticeably affected.

The reduced print speed is based on the number of print dots that are turned on for a given print line, which is defined as dot utilization. Dot utilization is typically low for normal character printing and up to 100% for full black line printing. The SureMark printer operates at 80 lps at low dot utilization, and at slower speeds as the dot utilization increases.

Table 13. Sound characteristics

Type	Description	LwAd		LpAm		<LpA>m	
		Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
SureMark	Printer	5.7	N/A	61.5	N/A	47	N/A

Notes:

LwAd The declared upper limit of the sound power level for a random sample of machines.

LpAm The mean value of the A-weighted sound pressure levels at the operator position (if any) for a random sample of machines.

<LpA>m

The mean value of the A-weighted sound pressure levels at the one-meter (bystander) positions for a random sample of machines.

N/A Indicates *not applicable*.

All measurements were made in accordance with ISO 7779 and reported in conformance with ISO 9296.

Figure 27 and Figure 28 on page 39 show the printable area on an inserted document for both portrait and landscape.

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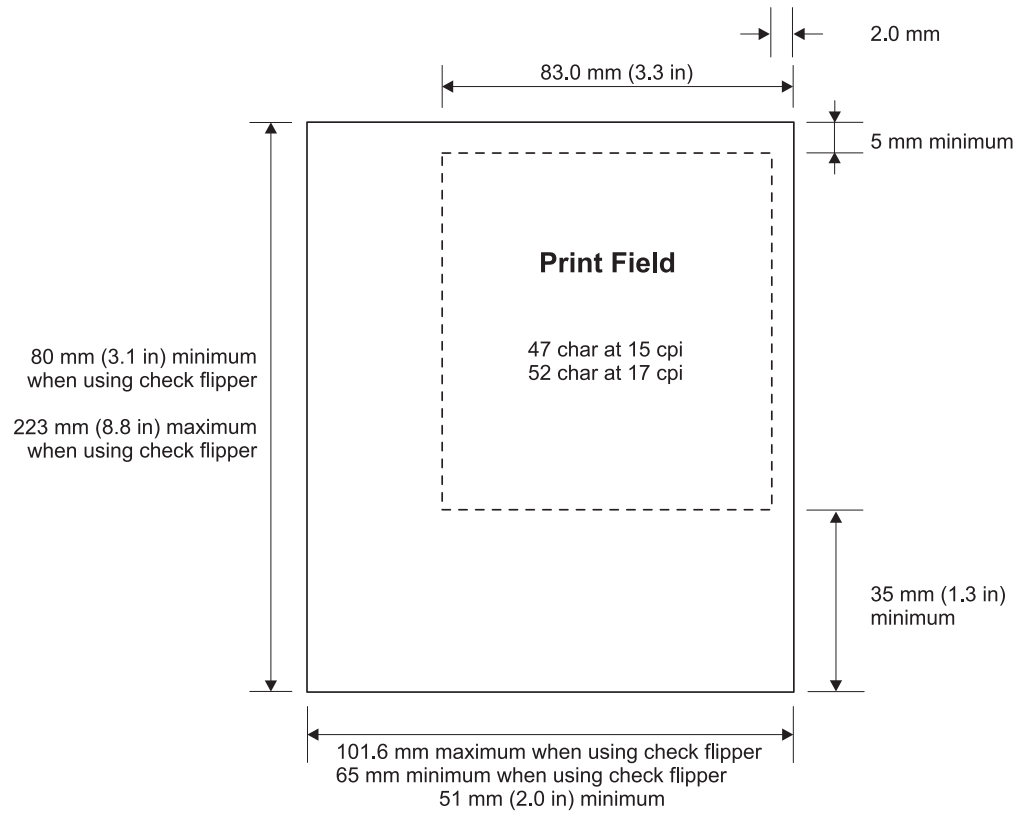


Figure 27. Printable area of an inserted document (portrait)

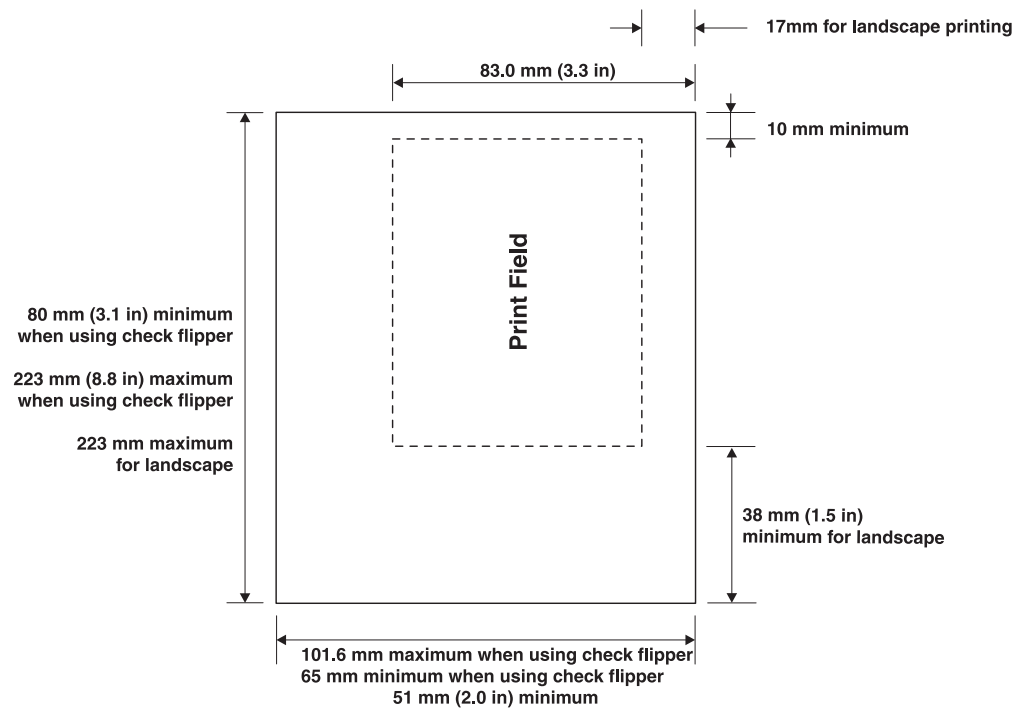


Figure 28. Printable area of an inserted document (landscape)

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Bar codes

SureMark printers can generate these bar codes:

- UPC A/E
- JAN 8 (EAN)
- JAN 13 (EAN)
- Code 39
- ITF
- Code 128 A, B, C
- Code 93
- Codabar
- PDF417

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Appendix B. Notices

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Electronic emission notices

Federal Communications Commission (FCC) statement

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.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Community contact:

IBM Technical Regulations
Pascalstr. 100, Stuttgart, Germany 70569
Telephone: 0049 (0)711 785 1176
Fax: 0049 785 1283
E-mail: tjahn@de.ibm.com

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Industry Canada Class A Emission Compliance statement

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

Avis de conformité aux normes d'Industrie Canada

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

Germany

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 30. August 1995 (bzw. der EMC EG Richtlinie 89/336).

Dieses Gerät ist berechtigt in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist die IBM Deutschland Informationssysteme GmbH, 70548 Stuttgart

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2:

Das Gerät erfüllt die Schutzanforderungen nach EN 50082-1 und EN 55022 Klasse A.
--

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

"Warnung: dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen."

EN 50082-1 Hinweis:

"Wird dieses Gerät in einer industriellen Umgebung betrieben (wie in EN 50082-2 festgelegt), dann kann es dabei eventuell gestört werden. In solch einem Fall ist der Abstand bzw. die Abschirmung zu der industriellen Störquelle zu vergrößern."

Anmerkung:

Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den IBM Handbüchern angegeben, zu installieren und zu betreiben.

Australia and New Zealand

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Chinese Class A warning statement

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中华人民共和国“A类”警告声明

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Japanese power line harmonics compliance statement

高調波ガイドライン適合品

高調波ガイドライン適合品

Japanese Voluntary Control Council for Interference (VCCI) statement

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Please note that this device has been approved for business purposes with regard to electromagnetic interference. If you find this is not suitable for your use, you may exchange it for a non-business purpose one.

A급 기기(업무용)

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Taiwanese Class A warning statement

警告使用者：
這是甲類的資訊產品，在
居住的環境中使用時，可
能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策。

Taiwan contact information

台灣IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

IBM Taiwan Product Service Contact Info:
IBM Taiwan Corporation
3F, No 7, Song Ren Road, Taipei Taiwan
Telephone: 0800-016-888

Cable ferrite requirement

All cable ferrites are required to suppress radiated EMI emissions and must not be removed.

Electrostatic Discharge (ESD)

Attention: ESD damage can occur when there is a difference in charge between the part, the product, and the service person. No damage will occur if the service person and the part being installed are at the same charge level.

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ESD Damage Prevention

Anytime a service action involves physical contact with logic cards, modules, back-panel pins, or other ESD sensitive (ESDS) parts, the service person must be connected to an ESD common ground point on the product through the ESD wrist strap and cord.

The ESD ground clip can be attached to any frame ground, ground braid, green wire ground, or the round ground prong on the AC power plug. Coax or connector outside shells can also be used.

Handling Removed Cards

Logic cards removed from a product should be placed in ESD protective containers. No other object should be allowed inside the ESD container with the logic card. Attach tags or reports that must accompany the card to the outside of the container.

Product Recycling and disposal

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/prp.shtml>.

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Appliances are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the

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WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

Disposal of IT products should be in accordance with local ordinances and regulations.

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Readers' Comments — We'd Like to Hear from You

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User's Guide for Models 2CR and 2NR

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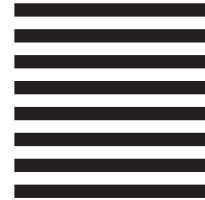
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