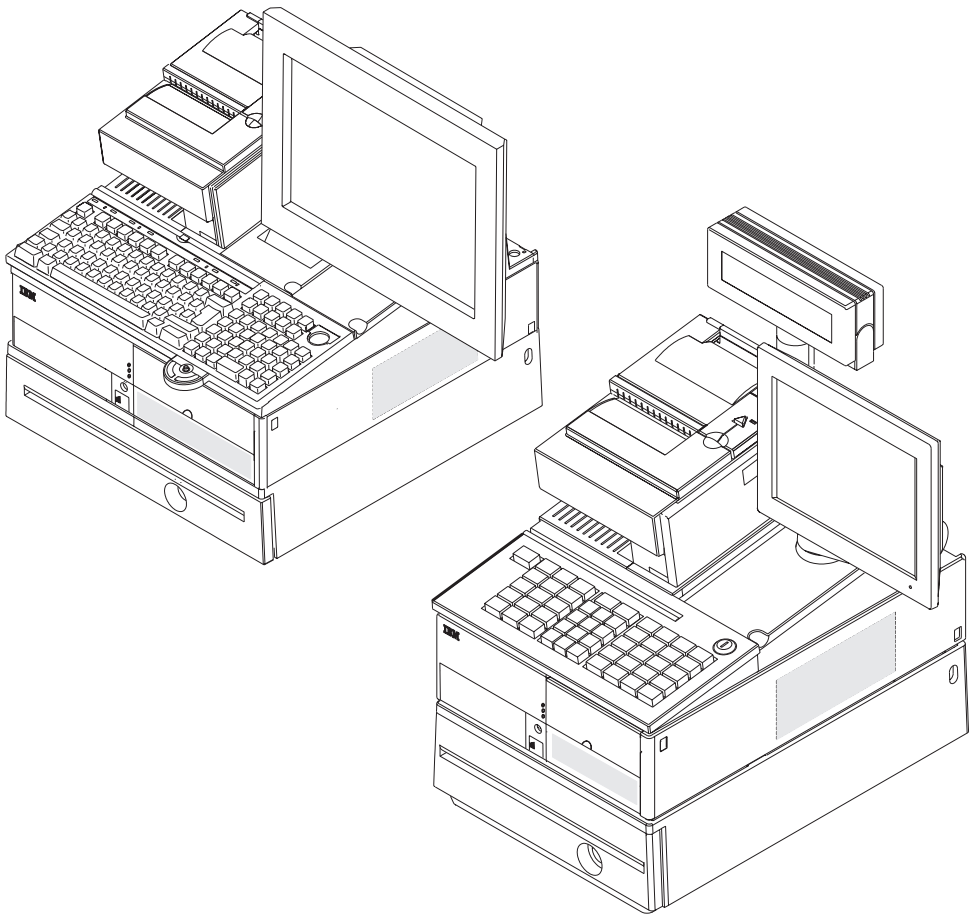
SurePOS 700 Series

SurePOS 700-723/743/783 Hardware Service Guide



October 31, 2007

GY27-0424-00

SurePOS 700 Series

SurePOS 700-723/743/783 Hardware Service Guide

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Note

Before using this information and the product it supports, be sure to read the general information under Appendix B, “Safety information,” on page 71 and Appendix C, “Notices,” on page 77.

October 2007

This edition applies to IBM SurePOS 700 Series Models 723, E23, 743, C43, E43, 783, and E833 and to all subsequent releases and modifications until otherwise indicated in new editions.

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About this guide

This document describes removal, replacement, and diagnostics procedures for IBM® SurePOS™ 700 Series Models 723, E23, 743, C43, E43, 783, and E83.

Who should read this guide

This guide is to be used by trained point-of-sale (POS) equipment service representatives.

How this guide is organized

This guide is organized as follows:

- Chapter 1, “Introducing the SurePOS 700 models,” on page 1 covers the system specifications, options, and features of the SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83.
- Chapter 2, “Removal and replacement procedures,” on page 23 presents procedures for removing and replacing parts.
- Chapter 3, “Problem determination,” on page 49 assists in resolving errors or malfunctions.
- Chapter 4, “Diagnostics and configuration settings,” on page 59 explains how to change and restore system configuration settings.
- Appendix A, “Parts catalog,” on page 63 lists all field replaceable units (FRUs) for the SurePOS 700 and options.
- Appendix B, “Safety information,” on page 71 provides safety information and warnings.
- Appendix C, “Notices,” on page 77 provides detailed legal and disposal information.

Related publications

These related IBM publications are also available from the IBM Retail and Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support:

- *Safety and Regulatory Information – Read This First*, GA27-4004
- *SurePOS 700 Series: SurePOS 700-723/743/783 Systems, Installation, and Operations Guide*, GA27-5002
- *SurePOS 700 Series: SurePOS 700-723/743/783 Operating System Installation Guide*, GA27-4357
- *Point of Sale: Options and I/O Devices Service Guide*, GC30-9737
- *SureMark 4610 Printers: User’s Guide*, GA27-4151
- *SureMark 4610 Printers: Hardware Service Guide*, GY27-0355
- *Point of Sale Subsystem: Programming Reference and User’s Guide*, SC30-3560
- *Point of Sale Subsystem: Installation, Keyboards, and Code Pages*, GC30-3623
- *4820 SurePoint Solution: Planning, Installation and Service Guide*, GA27-4231
- *4820 SurePoint Solution: System Reference*, SA27-4249

Diagnostic programs that are media-independent are downloadable from the IBM Retail and Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support. The use of generic drivers from manufacturer Web sites is not recommended.

SurePOS 700 Series Models 723, E23, 743, C43, E43, 783, and E83 important driver information

The SurePOS 700 Series Models 723, E23, 743, C43, E43, 783, and E83 require new POS input/output (I/O) and hardware drivers. Existing drivers for Models 4694 and 4800 will not work properly with these products. This notice applies to all operating systems: DOS, 4690, Microsoft® Windows®, and Linux®. Additionally, a hard drive image for a predecessor product will not work properly. Be sure to download the appropriate drivers from the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store.

Uninterruptible power supply option

This product contains a sealed lead acid battery. The battery must be recycled or disposed of properly. In the United States, IBM has established a collection process for reuse, recycling, or proper disposal of used IBM sealed acid batteries. For information about proper disposal of these batteries, contact IBM at 1-800-426-4333. You must have the IBM part number listed on the battery available before your call. For information about disposal of sealed acid batteries outside the United States, contact your local waste disposal facility or go to this URL:

http://www.ibm.com/ibm/environment/products/batteryrecycle.shtml

SurePOS 700 UPS batteries are a consumable item and, as such, you are responsible for replacing them. IBM warrants the original UPS battery for 90 days from the ship date to the customer or distributor. In the U.S. and Canada, you can purchase replacement batteries (P/N 23K8052) by calling 1-800-IBM-CALL (1-800-426-2225). If you are located outside of the U.S. and Canada, contact your IBM representative.

Publications accessibility

The soft-copy version of this guide and other related publications are accessibility-enabled.

Providing feedback

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You can use either of these ways to provide feedback:

- 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/.

Chapter 1. Introducing the SurePOS 700 models

The IBM SurePOS 700 Series Models 723, E23, 743, C43, E43, 783, and E83 are offered in a wide footprint and a narrow footprint. Your packaging options determine the width of the unit. A unique cover-set feature provides a broad selection of cover options and colors.

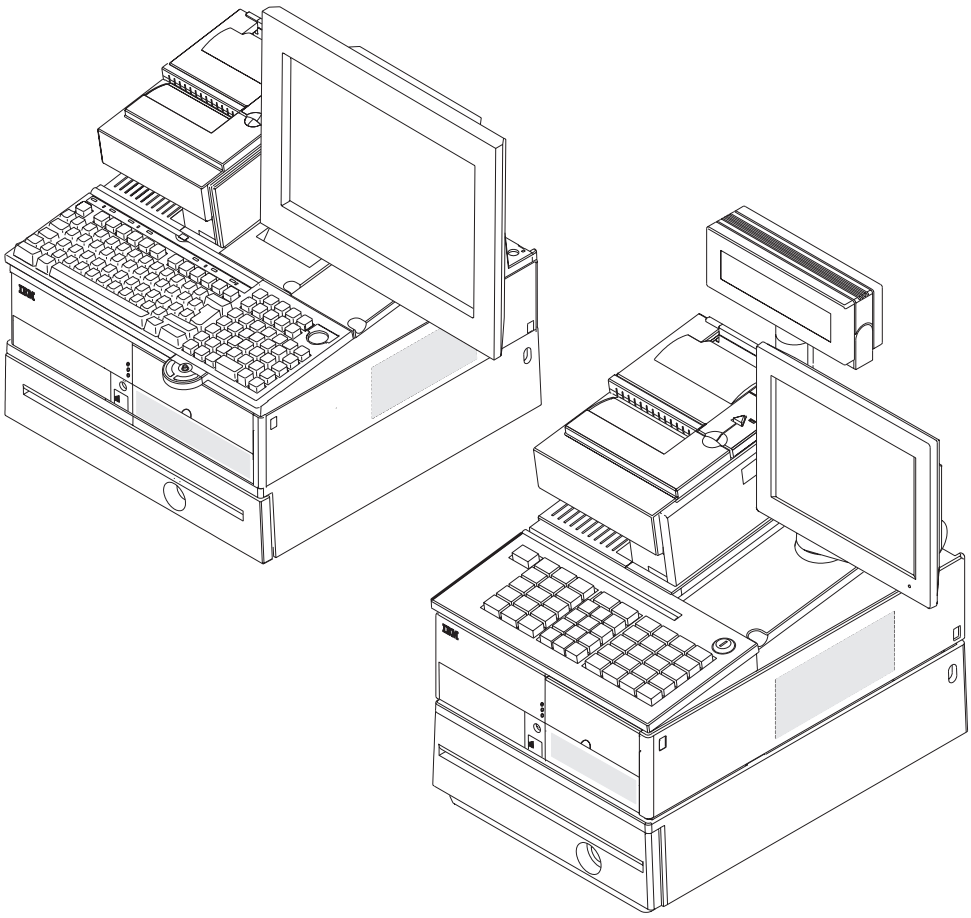


Figure 1. Example of the wide and narrow SurePOS 700 Series

Table 1 describes the available models and shows the processor that is standard with each model.

Table 1. Model descriptions

Entry products for cost-sensitive applications:	
723	VIA C7-D 2.0 GHz
E23	VIA C7-D 2.0 GHz with Microsoft Windows Embedded for Point of Service (WEPOS) operating system preinstalled
Value products that balance cost and high performance:	
743	Intel® Celeron® 440 2.0 GHz
C43	**Controller model** Intel Celeron 440 2.0 GHz without SurePort adapters 512 MB DDR II memory, 80 GB hard drive and combo drive standard This model does not have preinstalled software.

Table 1. Model descriptions (continued)

E43	Intel Celeron 440 2.0 GHz with WEPOS preinstalled
High-performance products for intensive point-of-sale (POS) applications:	
783	Intel Core 2 Duo E4300 1.8 GHz
E83	Intel Core 2 Duo E4300 1.8 GHz with WEPOS preinstalled

Features and options

Table 2 shows the standard installed features and options for baseline SurePOS 700 systems.

Table 2. Features and options

Attribute	**Models 723 and E23**	**Models 743, C43, and E43**	**Models 783 and E83**
Processor	VIA C7-D 2.0 GHz/800 MHz	Intel Celeron 440 2.0 GHz/800 MHz	Intel Core 2 Duo E4300 1.8 GHz/800 Mhz
Memory	533 MHz DDR2 DIMM 256 MB standard 2 GB maximum 2 slots	667 MHz DDR2 DIMM 512 MB standard 4 GB maximum 2 slots	667 MHz DDR2 DIMM 512 MB standard 4 GB maximum 2 slots
NVRAM	128 KB		
Service processor	Renesas H8S2116		
Hard disk (optional; one disk is standard)	Zero, one, or two 80 GB or larger SATA II 7200 RPM VIA RAID 0, 1		Zero, one, or two 80 GB or 160 GB or larger SATA II 7200 RPM VIA RAID 0, 1
Video	Two analog VGA interfaces Dual display support standard		
Video memory	64 MB maximum, shared with system memory	256 MB maximum, shared with system memory	
LAN	10/100 Mbps	10/100/1000 Mbps + Trusted Platform Module (TPM)	
Slots	One PCI and one x1 lane PCI Express (approximately ½ length; 195 mm/7.6 in. maximum)		
DVD or CD-RW	Internal CD-RW/DVD External Universal Serial Bus (USB) Boot support included		
Audio, front	None	Headphone out	
Audio, rear	Microphone in, line in, line out		
PC I/O	PS/2 keyboard and mouse		
	No USB on front	One 12 V POS USB 2.0 on front	
	Two PC USB 2.0 on rear		
	Two standard RS-232 on rear	Four standard RS-232 on rear	
Diskette drive	External USB (optional)		
Standby power	Internal UPS (optional - wide only)		

System memory

All system boards have two memory slots. The factory-installed base memory occupies one of the slots. An empty slot depends on the initial order for base memory.

Models 723 and E23 use 533 MHz DDR2 DIMMs: 256 MB standard, 2 GB maximum (two slots).

Models 743, C43, and E43 use 667 MHz DDR2 DIMMs: 512 MB standard, 4 GB maximum (two slots).

Models 783 and E83 use 667 MHz DDR2 DIMMs: 512 MB standard, 4 GB maximum (two slots).

Note: Use only memory provided by IBM Retail Store Solutions. Not all third-party memory modules work with every product. IBM performs extensive life and reliability testing to ensure that the memory offered by IBM will operate correctly over all voltage and temperature ranges.

Service processor

SurePOS 700 Series Models 723, E23, 743, C43, E43, 783, and E83 include a complete implementation of a service processor to monitor system health.

LEDs provide a quick diagnosis of a critical system or device failure:

Front panel

Power (green)
Hard disk drive (HDD) activity (green)
INFO (amber)

Behind the front door

Processor fan failure (amber)
System board failure (amber)
Upper HDD failure (amber)
Lower HDD failure (amber)
Power supply failure (amber)

On system board

Memory has power (red)
Service processor heartbeat (red)
Backup BIOS active (red)

On riser

Riser not seated (red)

Video function

The integrated chip set on the system board provides the video function. No separate VGA subsystem is provided. Video storage uses system dynamic random-access memory (DRAM) and uses technology that provides extra video memory as needed and releases it back to the operating system (OS) when not in use.

Using the BIOS setup, you can permanently allocate memory to system memory or to video memory.

Models 723 and E23 use an integrated video controller that can be configured to use up to 64 MB of system DRAM for video storage. It can display resolutions up to 1600x1200 on the primary VGA port, while the secondary VGA port is limited to 1024x768.

Models 743, C43, E43, 783, and E83 use an integrated video controller that can be configured to use up to 256 MB of system DRAM for video storage. The primary VGA port supports resolutions up to 2048x1536, while the secondary VGA port is limited to 1024x768.

Video drivers are available for many versions of Windows and Linux. Video support for the 4690 OS, Novell Linux Point of Service (NLPOS), and IBM Retail Environment for SUSE Linux Version 2 (IRES2) is already embedded in those operating systems. DOS uses the video subsystem in standard DOS modes.

Local area network

IBM provides special local area network (LAN) drivers for Models 723 and E23 and for Models 743, C43, E43, 783, and E83.

Note: Existing LAN drivers for 4694 and for earlier models of the SurePOS 700 are not compatible with Models 723, E23, 743, C43, E43, 783, and E83.

Models 723 and E23 use a 10/100 Mbps Ethernet controller.

Models 743, C43, E43, 783, and E83 use a 10/100/1000 Mbps x1 lane PCI Express (PCI-E) plus TPM Ethernet controller.

The SurePOS 700 Series supports these additional protocols and standards:

- Dynamic Host Configuration Protocol (DHCP) and Preboot Execution Environment (PXE), but *not* for the Remote Program Load (RPL) or Novell NetWare protocols
- Wireless connectivity through the use of an additional PCI or PCI-E feature card or a USB adapter
- IEEE 802.3i 10/100/1000Base-T physical layer interfaces
- IEEE 802.3u autonegotiation
- Desktop Management Interface (DMI), Simple Network Management Protocol (SNMP), Windows Management Instrumentation (WMI), quality of service (QoS), and so forth
- IBM Wake on LAN®

Audio and headphones

The SurePOS 700 Models 723 and E23 contains an AC97-compatible audio subsystem. The product is capable of driving conventional speakers or headphones with the line-out output, but cannot drive nonpowered speakers (such as the early models of the 4820 display with optional speaker kit).

The SurePOS 700 Models 743, C43, E43, 783, and E83 contain a high-definition audio subsystem.

Connecting headphones to the front headphone jack disconnects the line-out jack on the rear.

Note: The front headphone jack is not available on Models 723 and E23.

PC speaker tones are coupled into the audio subsystem (line-out); contact your IBM Support representative if you would like to change this default behavior.

PC I/O

The core chip sets have standard interfaces for these devices:

- PS/2 keyboard and mouse
- Two RS-232 ports

  Note: Models 743, C43, E43, 783, and E83 contain two additional RS-232 channels. Drivers are required to enable these ports (for all operating systems) and they are available through the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store. Because these ports are PCI devices and fully Plug and Play compliant, applications must use OS and BIOS calls to discover their locations in the system's I/O map. Also, these applications must be able to share the PCI interrupt structure, if interrupt support is required. Finally, these ports have an option to map them to standard COM3/COM4 PC-AT COM port addresses.
- Two PC USB 2.0 ports

  Note: USB 1.1 devices can be used with USB 2.0 ports (at USB 1.1 speeds), and USB 2.0 devices will work on USB 1.1 ports (at USB 1.1 speeds).

Optional USB DASD

External USB direct access storage devices (DASDs) such as HDDs, CD-ROMs, diskettes, or memory keys operate with the product; IBM provides USB boot support. Before use, test any specific USB device that is not offered by IBM Retail Store Solutions. This requirement is especially necessary due to the implementation differences between drive suppliers.

USB support

The base subsystem is implemented on the main processor board and uses the core USB support provided by the system board chip set. SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83 support the USB 1.1. and 2.0 standard; and all system board USB controllers are Universal Host Controller Interface (UHCI) and Enhanced Host Controller Interface (EHCI) compliant.

Unique software interface

For the software programmer, the SurePOS 700 appears as a PCI-based PC system unit with the usual PC peripherals. The unique POS function is packaged on the PCI riser card. These unique functions are also provided in the system unit:

- 128 KB of nonvolatile random access memory (NVRAM)
- A ROM bank that connects to the system ROM during power-on self-test (POST) to provide additional functionality and information
- An interface to the RS-485 (Electronic Industries Alliance [EIA] 485) subsystem, if the system is equipped with RS-485 ports[1]
- An interface to the POS USB subsystem[1]
- An interface to the POS RS-232 subsystem[1]

1. IBM drivers and operating systems isolate these changes from the application.

Physical characteristics

This section gives you the physical characteristics for the SurePOS 700 Series Models 723, E23, 743, C43, E43, 783, and E83 for narrow, wide, and wide with uninterruptible power supply (UPS) models.

Dimensions

The dimensions for the wide and narrow models are as follows:

Footprint	Width	Depth	Height	Weight
Wide	435 mm (17.13 in.)	475 mm (18.70 in.)	117.3 mm (4.62 in.)	11.8 kg (30.64 lbs)
Narrow	320 mm (12.60 in.)	475 mm (18.70 in.)	117.3 mm (4.62 in.)	11.4 kg (25.13 lbs)
Wide with UPS	435 mm (17.13 in.)	475 mm (18.70 in.)	117.3 mm (4.62 in.)	18.4 kg (40.57 lbs)

Controls and indicators

Figure 2 describes the front panel controls and indicators.

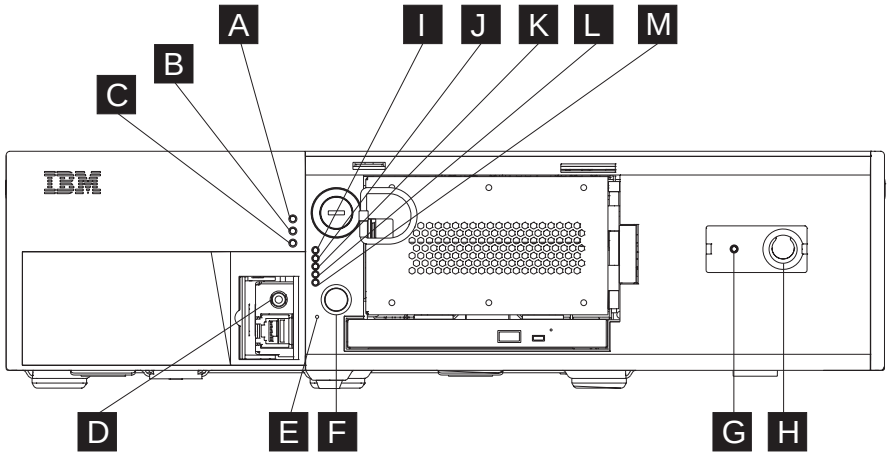


Figure 2. Front panel controls and indicators. Note: Use of the front headphone jack overrides the rear line-out jack.

A Power
B Hard disk or optical drive activity
C INFO
D Headphone jack (Models 743, C43, E43, 783, and E83 only)
E Recessed dump switch
F System power switch
G UPS indicator (only with wide footprint and UPS installed; otherwise covered)
H UPS switch (only with wide footprint and UPS installed; otherwise covered)
I LED 1, processor fan failure
J LED 2, system board failure
K LED 3, upper HDD failure
L LED 4, lower HDD failure
M LED 5, power supply failure

Note: **G** and **H** are available only if you install the optional UPS.

Connectors

The SurePOS 700 Series offers a unique configuration for connecting POS input and output (I/O) devices. Most of the POS-specific I/O function is contained on a riser card that connects into the main processor board.

The SurePOS models support RS-485 POS I/O (4694 family), powered USB I/O (IBM SurePOS 700 family), and powered RS-232 I/O. A unique tailgate design, which includes IBM SurePort adapters, provides different configurations of I/O that you can later upgrade or change in the field. The rear I/O panels are attached to the riser card.

Table 3 provides a summary of the available I/O ports.

Table 3. Available I/O ports

Connector	**SurePOS 723**	**SurePOS 743**	**SurePOS 783**
Microphone in, line in, line out	Back	Back + front headphone	
USB	Two PC 2.0 back	Two PC USB 2.0 back One 12 V POS USB 2.0 front	
Dump switch	Front		
Ethernet	One back		
Analog video	Two back		
PS/2 keyboard	One back		
PS/2 mouse	One back		
RS-232 (EIA 232)	Two back	Four back	
POS ports (USB, RS-485, RS-232)	Choice		

Figure 3 shows the 12 V USB and the headphone jack on the front panel of Models 743, C43, E43, 783, and E83.

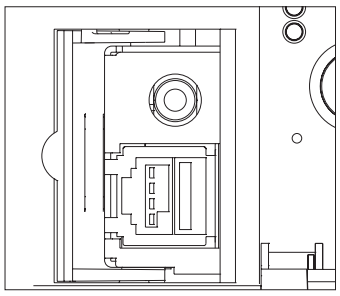


Figure 3. Front panel of Models 743, C43, E43, 783, and E83

Figure 4 shows a view of the rear-panel I/O connections: the top adapter is chosen based on application, while the bottom adapter is available on all models. Table 4 defines the icons that label each connection.

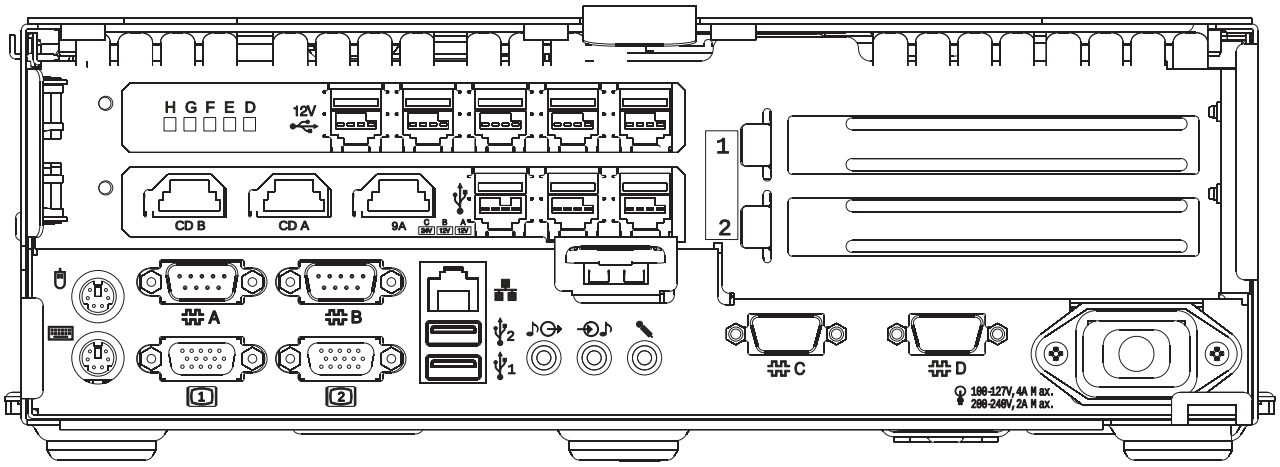


Figure 4. Rear panel

Table 4. Connection icons definitions

Icon	Definition	Icon	Definition
	PS/2 mouse		Display 1 and 2
	PS/2 keyboard		Ethernet LAN
	USB 2.0	A	External serial devices (such as a scale and a scanner) A and B (and C and D on Models 743, C43, E43, 783, and E83)
	Line (audio) in		Line (audio) out
	Microphone		

IBM SurePorts Point-of-Sale connections

There are several possible configurations of IBM SurePorts in a SurePOS 700. This section details some of the most common.

Attention: Hot plugging of powered USB devices is not supported.

Attention: RS-485 Port 7 and Powered USB 24V port are intended for use with POS printers (IBM SureMark™ 4610). All IBM POS printer cables are classified as UL Data-Processing Cables DP-3. For safe use of these ports, any third party cables must meet the same requirements.

Base configuration

Figure 5 shows the base SurePort adapter configuration (the top slot is filled by a blank).

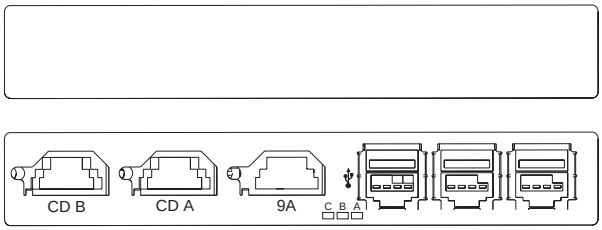


Figure 5. Base configuration

A, B 12 V powered USB ports

C 24 V powered USB port

CD A (3A), CD B (3B)
IBM cash drawer ports

Note: Port 3A automatically detects an IBM cash drawer. If you use non-IBM cash drawers, read the voltage considerations described in “Cash drawers” on page 17.

9A RS-485 scanner or a secondary RS-485 display

RS-232 and base configuration

Figure 6 shows the RS-232 SurePort adapter with the base SurePort adapter configuration.

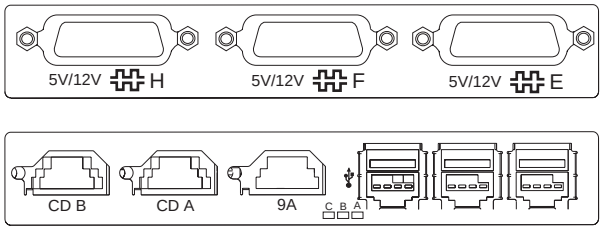


Figure 6. RS-232 and base configuration

A, B 12 V powered USB ports

C 24 V powered USB port

CD A (3A), CD B (3B)
IBM cash drawer ports

Note: Port 3A automatically detects an IBM cash drawer. If you use non-IBM cash drawers, read the voltage considerations described in “Cash drawers” on page 17.

E, F, H
Powered RS-232 (serial) ports

9A RS-485 scanner or a secondary RS-485 display

Serial I/O (SIO) and base configuration

Figure 7 shows the RS-485 SurePort adapter with the base SurePort adapter configuration.

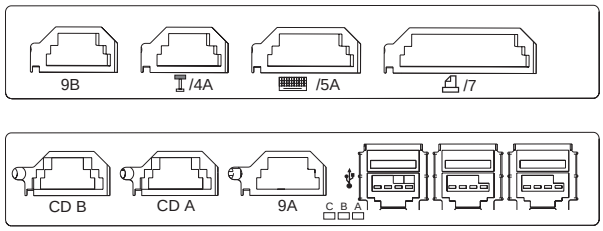


Figure 7. RS-485 and base configuration

A, B 12 V powered USB ports

C 24 V powered USB port

CD A (3A), CD B (3B)
IBM cash drawer ports

Note: Port 3A automatically detects an IBM cash drawer. If you use non-IBM cash drawers, read the voltage considerations described in “Cash drawers” on page 17.

4A IBM RS-485 primary display

5A IBM RS-485 primary POS keyboard

7 RS-485 printer port

Notes:

1. The RS-485 back panel has hardware jumpers that can be changed to provide either 24 V or 38 V to the printer connector. The factory default is 38 V.
2. For systems with both 24 V and 38 V printer ports, only *one* printer (either USB or RS-485) can be connected at the same time.

9A, 9B
RS-485 scanner or a secondary RS-485 display

USB and base configuration

Figure 8 shows the USB SurePort adapter with the base SurePort adapter configuration.

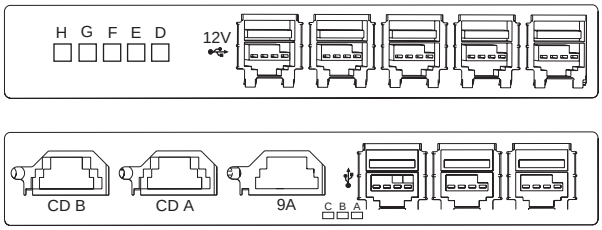


Figure 8. USB and base configuration

A, B, D, E, F, G, H
12 V powered USB ports

Note: The letters shown on the USB connectors are used to identify the connector space and the order of connection per card. As an example, for each card, the system first recognizes a device connected to USB port A before recognizing the device connected to USB port B. This autosensing feature applies to both cards; therefore, the system could recognize card 1, USB port B, then C, before recognizing the USB port D on card 2.

C 24 V powered USB port

CD A (3A), CD B (3B)
IBM cash drawer ports

Note: Port 3A automatically detects an IBM cash drawer. If you use non-IBM cash drawers, read the voltage considerations described in “Cash drawers” on page 17.

9A RS-485 scanner or a secondary RS-485 display

Cooling

Cooling is provided through forced-air cooling by a fan contained in the power supply and, in some cases, by a chassis fan. Air vents must not be blocked, and the vents must have two inches of clearance from cabinet walls, trash cans, and papers.

Environmental and temperature

These environmental characteristics apply:

- Operating temperature: +10 to 40°C (+50 to 104°F) with 8% to 80% relative humidity
- Shipping: -40 to +60°C (-40 to +140°F)
- Storage: 0 to +60°C (32 to +140°F)

Power

This section describes the power, power switches, and power management.

Attention: Hot plugging of powered USB devices is not supported.

These are the power requirements for the SurePOS 700 Series Models 723, E23, 743, C43, E43, 783, and E83:

- Input voltage: 100 to 127 VAC or 200 to 240 VAC nominal
- Frequency: 50 to 60 Hz, ±3 Hz
- Power consumption: 70 W typical, 120 W maximum

See Table 5 for the maximum continuous DC load rating for each port.

Table 5. Port DC loads.

Notes:

1. The total 12 V current for all external loads is 5 A maximum. The total 5 V current available for all external loads is 5 A maximum.
2. Two printers cannot be attached to the system simultaneously.
3. Only one cash drawer can be activated at any time.

Port	Amperage
24 V printer	3.0 A
38 V printer	2.1 A
24 V/38 V cash drawer	1.0 A 150 ms pulse
12 V RS-485	1.0 A/port
12 V RS-232	1.0 A/port
12 V USB	1.5 A/port
5 V RS-485	1.0 A/port
5 V RS-232	1.0 A/port
5 V PS/2 keyboard	0.5 A/port
5 V PS/2 mouse	0.5 A/port
5 V in all USB ports	0.5 A/port
The total 12 V current for all external loads is 5 A maximum.	
The total 5 V current for all external loads is 5 A maximum.	

Power switch operation

During normal operation, the power switch on the SurePOS 700 Series operates as you would expect. Push the switch to turn the system on; push it again to turn the system off. There are some exceptions:

1. You can program the switch to operate differently. For example, if your operating system supports power management, you can program the switch to behave as a standby or resume switch. For more information, refer to the documentation included with your operating system or power management software.
2. A delay can occur when you are turning the system off, if you press the power button when the unit is running its power-on self-test (POST).
3. Sometimes you cannot initiate a controlled shutdown because the application or system is hung. Press and hold the power switch until the unit turns off (approximately five seconds).

   Note: This is not the recommended method of turning off the SurePOS 700. Use it only when no other method is available to turn off the system. If you turn off the unit by pressing and holding the power switch, some programmed events do not function until the unit is turned on again (for example, IBM Wake on LAN).

Power management

Power management on the SurePOS 700 is based on the standard desktop PC model. Depending on the OS and drivers that are used, all models are capable of being placed into a standby state with AC power applied. Protection from AC power events is provided by an optional UPS that can be integrated into the wide-footprint unit. Support is provided for the following industry standards and conventions:

- Advanced Configuration and Power Interface-Advanced Power Management (ACPI-APM)
- IBM Wake on LAN
- Wake on USB
- Wake on SIO
- Wake on PS/2 keyboard/mouse
- Wake on real-time clock alarm

Uninterruptible power supply (optional)

The technical characteristics of the uninterruptible power supply are as follows:

- Capacity: 500 VA/300 W
- Run time: 2.5 minutes minimum at full-rated (500 VA) load with a new, fully charged battery
- Output voltage in battery mode: 113 VAC ±10% for low range; 220 VAC ±10% for high range
- Frequency (in backup mode): 60 Hz ±3 Hz for line frequency > 55 Hz; 50 Hz ±3 Hz for line frequency < 55 Hz (output waveform is a stepped sine wave approximation)
- Transfer time: less than 8 ms typical, 10 ms maximum, AC to battery

The characteristics of the batteries are as follows:

- The battery is replaceable by persons with typical PC hardware upgrade skills.
- Battery recharge time is typically 8 hours, with a maximum of 16 hours for a fully depleted battery.
- Battery type is a 12 V, 5 AH, sealed, leakproof, maintenance-free lead-acid type.

Battery life

With a new, fully charged battery, the UPS is capable of delivering full output for 2.5 minutes. Typical POS configurations require much less power. A typical system unit with an liquid crystal display (LCD) operator display can last 15 minutes with a new, fully charged battery, depending on print activity; and it can last 60 minutes if the terminal is in standby mode. The battery charge capacity decreases over time and this decrease is accelerated by heavy usage. Regular deep discharges of the battery can dramatically reduce its useful service life. The useful life of a battery in a typical environment is one to three years.

Input voltage

The UPS option cannot sense low- versus high-line voltages. Separate units are designed for low- and high-line voltages, which cannot be converted between high- and low-line voltage. Figure 9 on page 15 shows the power outlets and connectors of the UPS.

Attention: Damage to the UPS will occur if incorrect line voltage is applied to the unit.

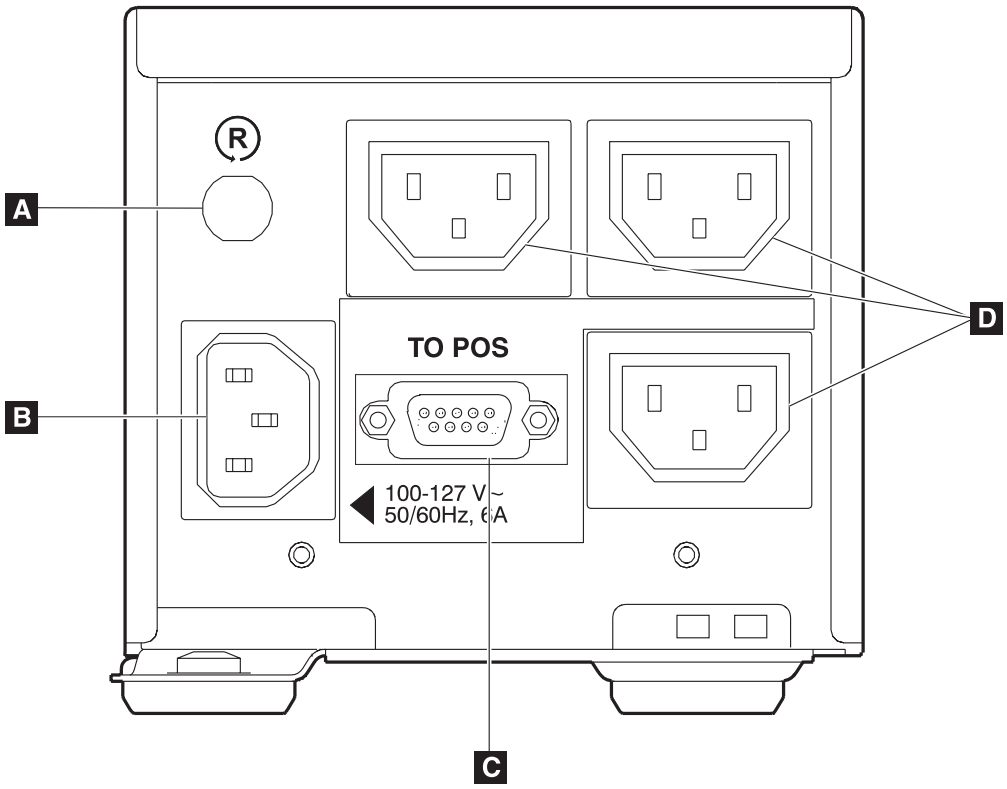


Figure 9. UPS rear view

- **A** Circuit breaker
- **B** Power inlet
- **C** RS-232 port
- **D** AC outlets

System unit interface

The UPS has an RS-232-compatible output that can connect to one of the system unit RS-232 ports to communicate UPS status (AC power loss, low battery) to the operating system or application. The interface is compatible with the Microsoft Windows default UPS implementations.

Configuration switches

The UPS configuration dual in-line package (DIP) switches are located on the front panel of the UPS subassembly (see **A** in Figure 10). Use these switches to select whether the ON or OFF state of the connected system unit controls the operation of the UPS during an AC power outage.

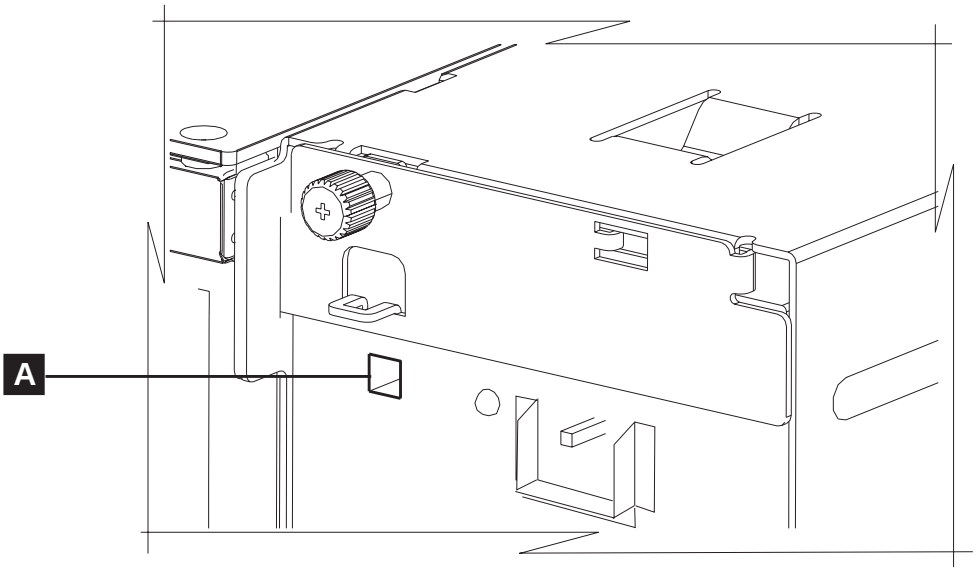


Figure 10. Location of UPS configuration switches

Stand-alone mode: When both switches are set to the OFF, or up, position (factory default), the UPS always enters battery mode during an AC outage. The unit remains in battery mode until AC is restored or until the battery is discharged. *On-battery* and *low-battery* signals are available to the associated system when an RS-232 cable connection is in place, but there is no control of the UPS from the system unit. This mode of operation is typical for the *standby* type of power supplies commonly found in the marketplace.

Host-dependent mode: The host-dependent mode is when both DIP switches are set in the ON, or down, position. During an AC outage, the UPS does not remain in battery mode for more than five seconds unless there is an active RS-232 connection present from a powered-on system unit. If the system unit is turned on, the UPS remains in standby mode. If the system unit is turned off, the unit does not stay in standby mode. When AC power is restored, AC power is again available at the UPS output. This setting is useful for situations where system units are turned off at the close of business and the main store power is also shut down. This setting prevents the UPS from switching into standby mode and discharging the battery when the store power is removed.

I/O devices

The SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83 support a wide range of displays, keyboards, printers, cash drawers, and scanners. Refer to the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support for a list of currently supported devices.

Note: Additional I/O installation and operation information is available in these publications:

- *Point-of-Sale Options and I/O Devices Service Guide*, GC30-9737

- *Store Systems Installation and Operation Guide for Point-of-Sale Input/Output Devices*, GA27-4028

Cash drawers

The SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83 are preconfigured from the factory to work correctly with all IBM cash drawers. In this automatic mode, the system can correctly detect the difference between IBM 24 V and IBM 38 V cash drawers. Cash drawer port 3A provides an autosensing function for an IBM cash drawer.

CAUTION:
Automatic mode sets the cash drawer operating voltage for both cash drawer ports. If you connect a 24 V cash drawer to port 3A and then connect a second drawer, it must also be a 24 V drawer. If you are using a non-IBM drawer, the automatic mode will not work correctly; and damage to either the cash drawer, the system unit, or both is possible. If you have two connected cash drawers, both drawers must be the same voltage.

You can configure the cash drawer voltage (24 V or 38 V) with the configuration options in the POS configuration setup program or with the jumper override. Figure 11 shows the location of the cash drawer voltage jumper on the riser card and a diagram with the position of the jumpers.

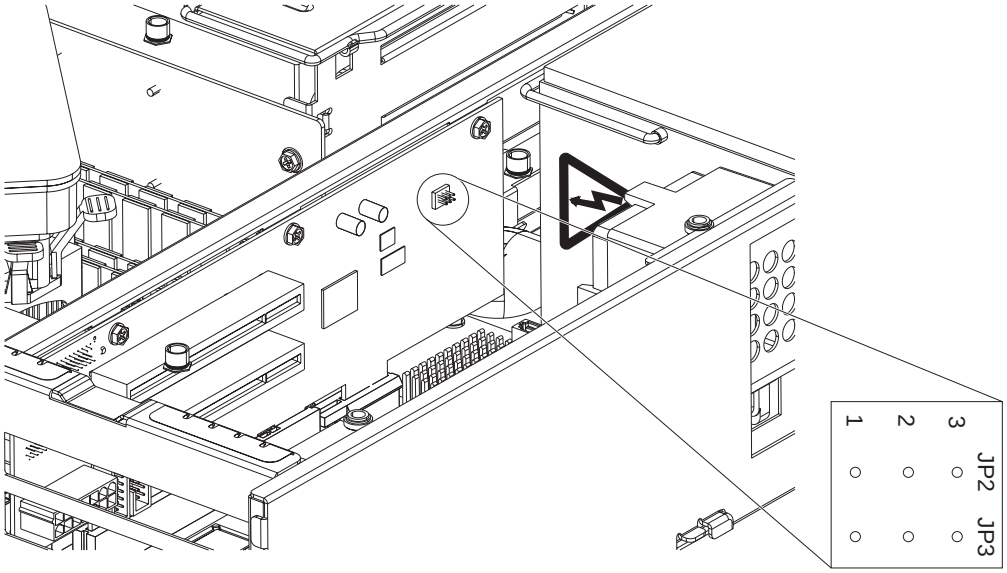


Figure 11. Setting the cash drawer using the jumper override

Table 6 provides the correct jumper settings for the 24 V and 38 V cash drawers.

Table 6. Cash drawer jumper settings

Voltage	Jumper JP2	Jumper JP3
Automatic setup (default)	Not used	2-3
Manual 38 V	1-2	1-2
Manual 24 V	2-3	1-2

Voltage setting for the 4689 DBCS SurePOS Receipt Journal printer

To operate correctly with the SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83, the 4689 double-byte character set (DBCS) SurePOS Receipt Journal printer voltage must set to 24 V. All other RS-485 printers will work correctly with the SurePOS 700 at the default setting of 38 V.

To configure the printer voltage to 24 V, set jumpers JP1 and JP2 as shown in Table 7.

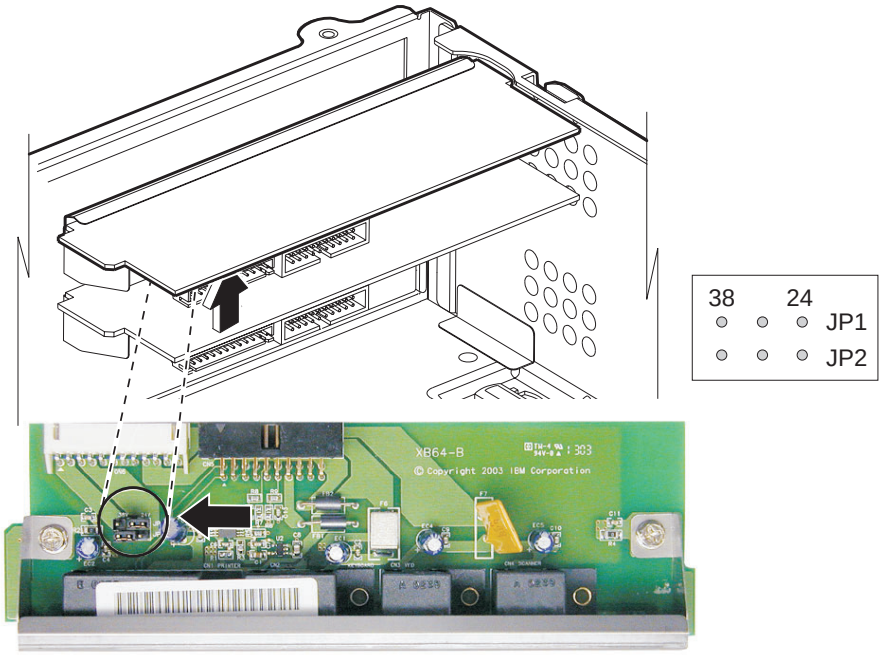


Figure 12. Location of the printer jumper on the I/O card

Table 7 provides the correct jumper settings for 24 V and 38 V printers.

Table 7. Cash drawer jumper settings

Voltage	Jumper JP1	Jumper JP2
Manual 38 V (default)	1-2	1-2
Manual 24 V	2-3	2-3

Powered USB connectors

The powered USB connectors provide additional power from the host to devices that require more power than is available from the USB standard Type A connector. As shown in Figure 13 on page 19, the powered USB receptacle consists of two connectors that are integrated within a common shielded housing. These two connectors are stacked vertically inside the common housing. The *upper connector* (**A** in Figure 13 on page 19) contains four contacts that are used for powering the attached device. The *lower connector* (**B** in Figure 13 on page 19) is a fully compliant USB Type A connector capable of mating with either a standard USB Type A plug or a powered USB plug. In other words, the bottom half of the connectors are standard USB Type A ports to which USB I/O devices can be attached.

Note: On SurePort cards, the connector is mounted upside down; on the front USB port, the connector is mounted sideways.

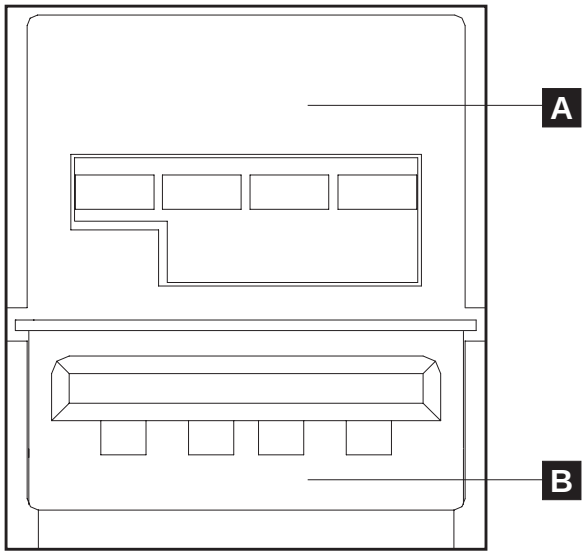


Figure 13. Example of the powered USB port

A Upper connector; power section of the connector

B Lower connector; standard USB section of the connector

Powered USB connectors provide these features:

- Additional power for USB POS I/O devices needing more than 5 V
- Unique keying and color coding of the 12 V and 24 V connectors, which prevents unintentionally attaching a connector to the wrong type of port
- Positive mechanical retention latch between the plug and receptacle, which prevents inadvertent disconnections

Non-POS I/O devices

The SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83 support most of these non-POS I/O devices:

- Many, but not all, USB mass-storage devices such as diskette drives, CD-ROM drives, and memory keys. Lack of standardization precludes a list of the devices that are not supported. Boot mode is supported for most devices that support USB boot.
- IBM VGA monitors (CRT and LCD)
- Industry-standard PC keyboards, mice, and printers
- Standard USB and RS-232 devices with appropriate drivers, software, and operating systems

System and driver support

This section describes the supported operating systems, BIOS information, and driver requirements for the SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83.

Operating systems

These operating systems are supported:

- 4690 OS Version 5 Release 2 (V5R2) or higher
- Windows 2000 with Service Pack 4
- Windows XP Professional Edition with Service Pack 2
- Windows XP Embedded for Point of Service (WEPOS) V1.1 or higher
- PC DOS 2000

Note: Problem resolution procedures typically require the installation of the latest fix pack.

Drivers

Driver packages are available on the IBM Web site at http://www.ibm.com/solutions/retail/store/support for download for all supported operating systems. A complete list is provided on the Web site. Drivers are provided for video, LAN, USB, audio, RS-232 (if required), and POS I/O. In many cases, the default drivers shipped with the operating system will be satisfactory.

BIOS

The SurePOS 700 Series has an upgradeable BIOS. IBM provides utilities to upgrade the BIOS and updates are published on the support Web site. You are responsible to perform BIOS upgrades as required. BIOS upgrades are not covered by IBM warranties or maintenance agreements.

Compatibility

To ensure that the SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83 operate smoothly with any previous hardware equipment and software programs, carefully review the requirements in this section.

Hardware

- **All cash drawers:** If you use non-IBM cash drawers, you must use the POS I/O configuration screen or jumper override to set the correct operating voltage. Failure to do so can damage the cash drawer or the system unit. See “Cash drawers” on page 17.
- **4820 DVI displays:** These displays require a video card that supports Digital Video Interactive (DVI). The output port is installed in the feature card slot.
- **4820 displays with the integrated speaker feature:** These displays require a PCI audio card with integrated speaker amplification.
- **4820 "active" microphone:** The microphone in these displays does not work with the system.
- **PCI Express x1 or PCI card slot:** The maximum length of PCI Express or PCI card slots is 195 mm (7.6 in.).

Software

This section provides details about operating system software requirements and considerations.

Note: New and unique drivers for all operating systems are required for all functions in the product.

General migration considerations

These are common migration considerations in retail environments:

- If it is installed, the IBM 4690 OS must be V5R2.
- Applications with hardcoded routines to specific interrupt request (IRQ) levels or I/O addresses might experience migration problems.
- Applications requiring COM ports 3 or greater must be capable of using a PCI-compliant, Plug and Play device that uses the shared interrupt architecture.
- Third-party memory modules do not work with every product.

DOS migration considerations

New LAN drivers are required, with modifications to LAN configuration files such as PROTOCOL.INI. Modifications to CONFIG.SYS and AUTOEXEC.BAT are also required.

Windows and Linux migration considerations

To migrate a Windows or Linux environment, first reinstall the operating system.

After the operating system is installed, install the appropriate drivers (downloaded from the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support), and then install the applications.

Note: Existing operating system images for the 4694 or previous models of 4800 are not compatible with the SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83. However, after you install the operating system, typical HDD imaging utilities should operate correctly.

RAID

The Redundant Array of Independent Disks (RAID) function provides support for redundant hard disk drives. Supported only on the Microsoft Windows operating systems, RAID provides an error message if one of the two hard disk drives experiences a failure. For more information, see the *SurePOS 700-722/742/782, 723/743/783 Operating System Installation Guide*, GA27-4357.

Preparing to call for service

When you call IBM for warranty information or service, be sure to have the serial number, machine type, and model number available.

Figure 14 shows the location of this information on the pullout tray of SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83.

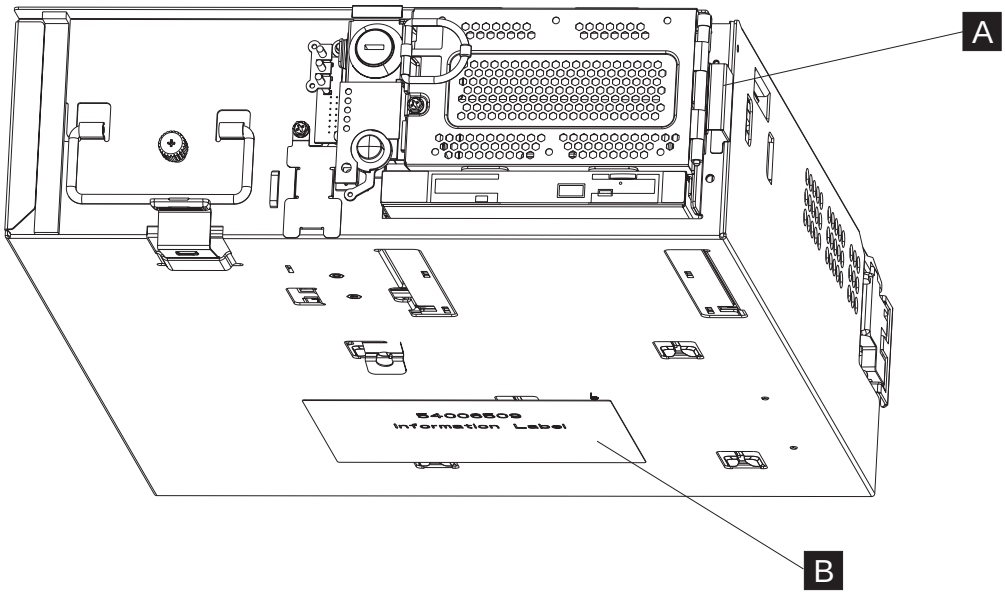


Figure 14. Serial number and machine information on front and bottom

Note: Both positions **A** and **B** show the serial number, machine type, and model number.

You can also obtain this information from the BIOS setup screen, as follows:

1. With a monitor and keyboard attached, turn on the system.
2. Press the **Delete** key during POST, to enter BIOS setup.
3. Use the arrow keys to navigate to **Standard CMOS Features** and press **Enter**. The machine type, model, and serial number are shown, in addition to other unit-specific information.

Chapter 2. Removal and replacement procedures

This chapter describes how to remove and replace the field replacement parts. It is supplemental to the common installation and replacement procedures in *SurePOS 700 Series SurePOS 700-723/743/783 Systems, Installation, and Operations Guide*, GA27-4998.

Before you begin

Before you begin any of the procedures in this chapter, follow these steps:

1. Turn the power OFF at the system unit.
2. Disconnect the power cord from the external power source.

CAUTION:
Never attempt to service this product with AC power present. Only apply AC power after the system is fully assembled.

3. Remove any attached devices and I/O connections from the unit.
4. Establish personal grounding before touching the unit. For more information, see “Federal Communications Commission (FCC) statement” on page 79.

Attention: Before servicing the inside of the system and after you have slid the pullout tray out of the unit frame, verify that no system board LEDs (red) are illuminated. Any illuminated LED indicates the presence of power; you must remove the AC power cord before continuing.

Cables, connectors, and headphones

These tips will assist you when removing and replacing parts for the SurePOS 700:

- All cables and connectors are keyed; therefore, you cannot insert a cable in an incorrect location.
- When connecting a powered USB cable to the back of the unit, insert the connector with the latch on the bottom. A bottom latch makes it easy to disconnect. For the front USB cables, insert the connector in the usual manner, with the latch on the side.
- For Models 743, C43, E43, 783, and E83, installing a headphone overrides the line-out speaker.
- All models contain a serial ATA (SATA) connector.
- When routing the cables in the rear, leave extra length at the connector end by forming a loop before attaching the cable into the cable guide. This extra length prevents undue strain on the connector.

Removing the slanted I/O tray

The slanted I/O tray installs on the top of a wide system unit and groups the IBM printer and keyboard with specific dimensions. The tray has a raised edge that is low in the front. The sides slope up toward the rear and are higher at the rear than at the front.

The top of the system unit serves as a built-in flat I/O tray. Use this surface when grouping IBM and non-IBM peripheral devices with varying dimensions.

Note: A version of the slanted I/O tray is available that can be placed on the wide-footprint SurePOS 700 in an integrated environment. Other versions of the tray can be placed directly on the counter or on the full-size cash drawer. The cash drawers provide a built-in flat I/O tray.

To remove a slanted I/O tray, follow these steps:

1. Working from above the system unit, remove the screws from the holes at the back corners of the I/O tray.
2. Lift off the I/O tray.
3. To remove the front mount clips, push each of the front mounting tabs forward until it unlatches.

To replace the I/O tray:

Install the two mounting clips (**A** in Figure 15) into the slanted I/O tray. From the inside of the I/O tray, insert the back of the mounting clip first and push the front part into the opening.

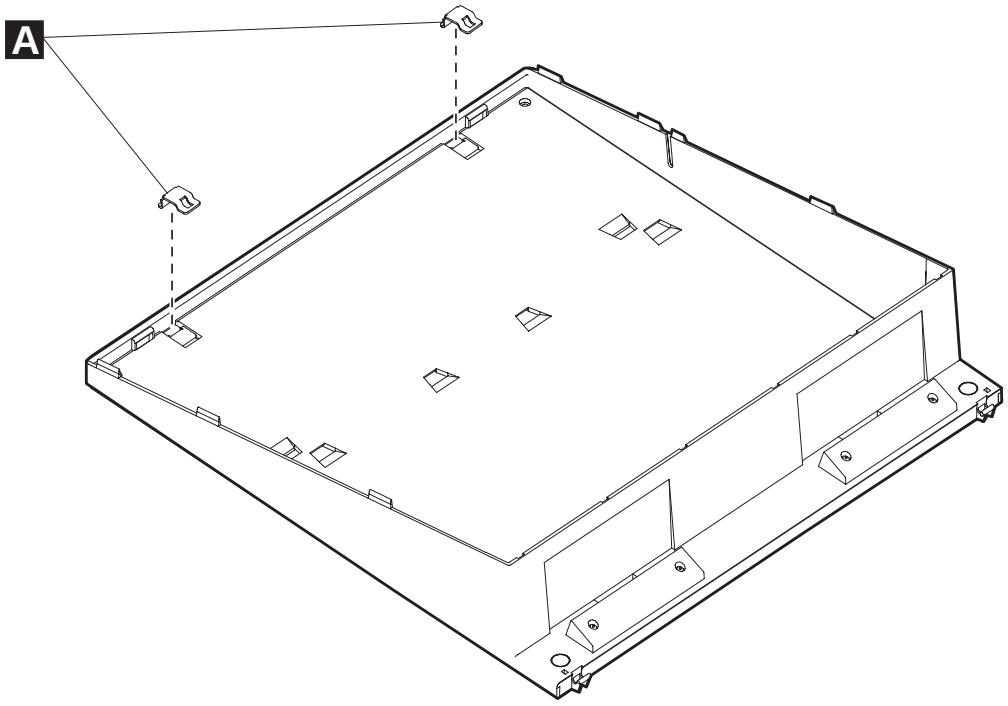


Figure 15. Installing two mounting tabs into the slanted I/O tray

Turn the I/O tray over. Push on the front of the tab until it clicks into place.

Set the I/O tray on top of the unit, and connect the tabs in front of the unit.

Attach the I/O tray to the cash drawer by inserting and tightening the two plastic thumbscrews into the holes at the back corners of the I/O tray.

Removing the covers

The procedures in this section apply to all models and to both the wide and narrow features. The covers consists of these parts:

- Front bezel
- Hinged rear door (modesty cover)
- Top cover

Removing the front bezel

To remove the front bezel:

1. Press the right latch (**C**) and depress the center latch which hooks into the center tab (**A**) to loosen the bezel.

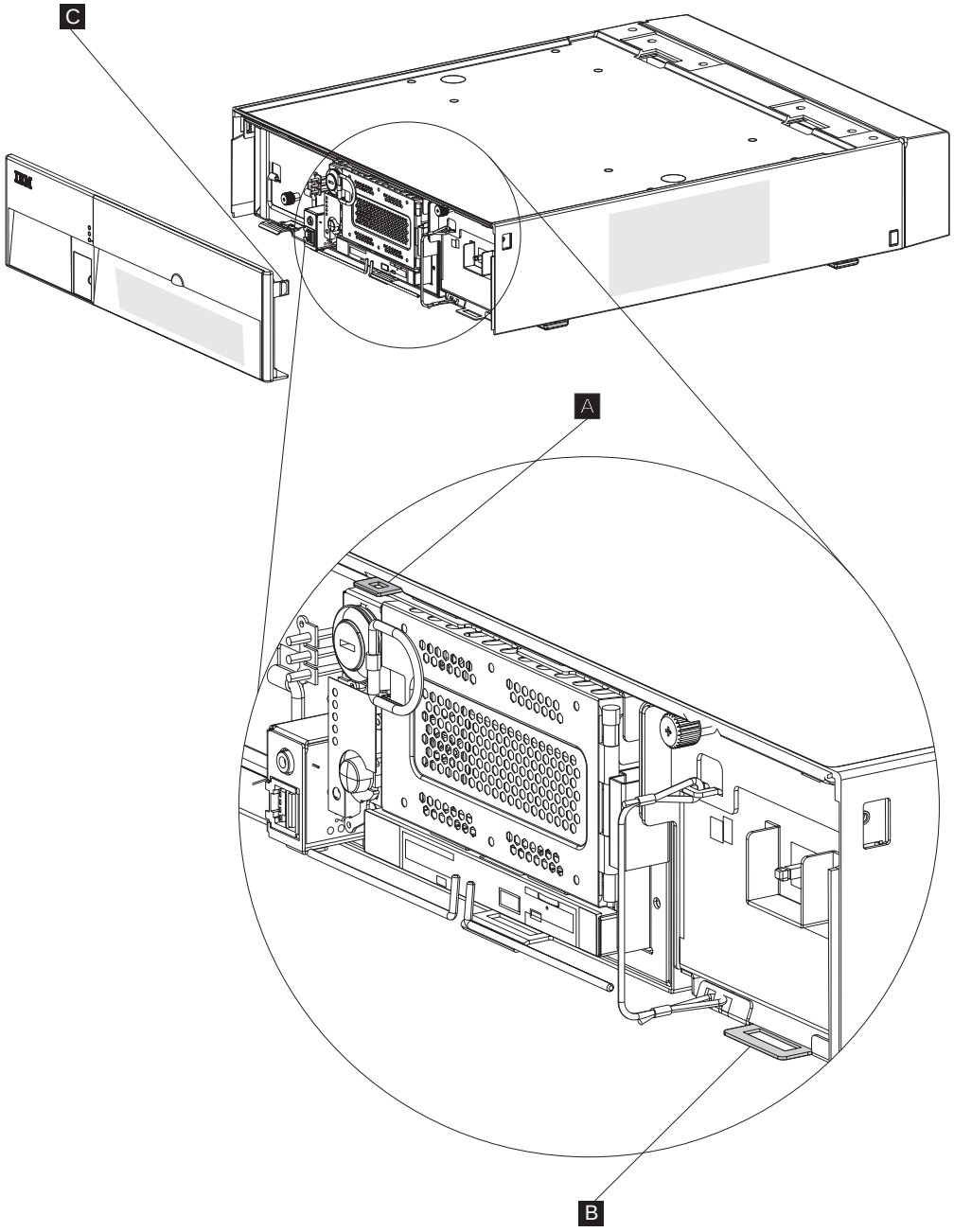


Figure 16. Removing the front bezel

2. Press the left latch to release the bezel and pull it forward.
3. Lift the bezel from the system.

Opening the rear door

To open the rear door, firmly grip the middle of the rear door and pull. The latches (**B** in Figure 17) will release automatically.

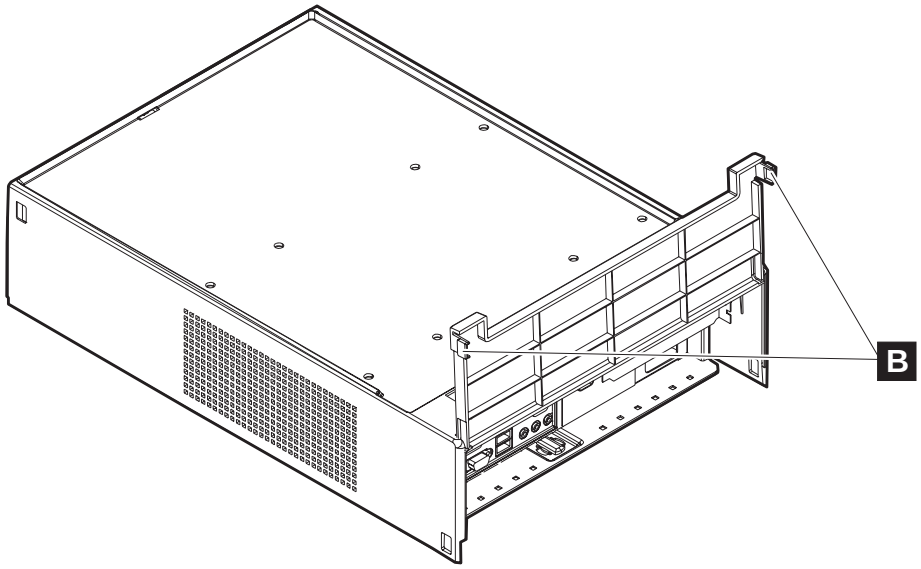


Figure 17. Opening the rear door

Removing the top cover

To remove the top cover:

1. Locate the metal holding clip located in the rear center of the top cover (**A** in Figure 18).

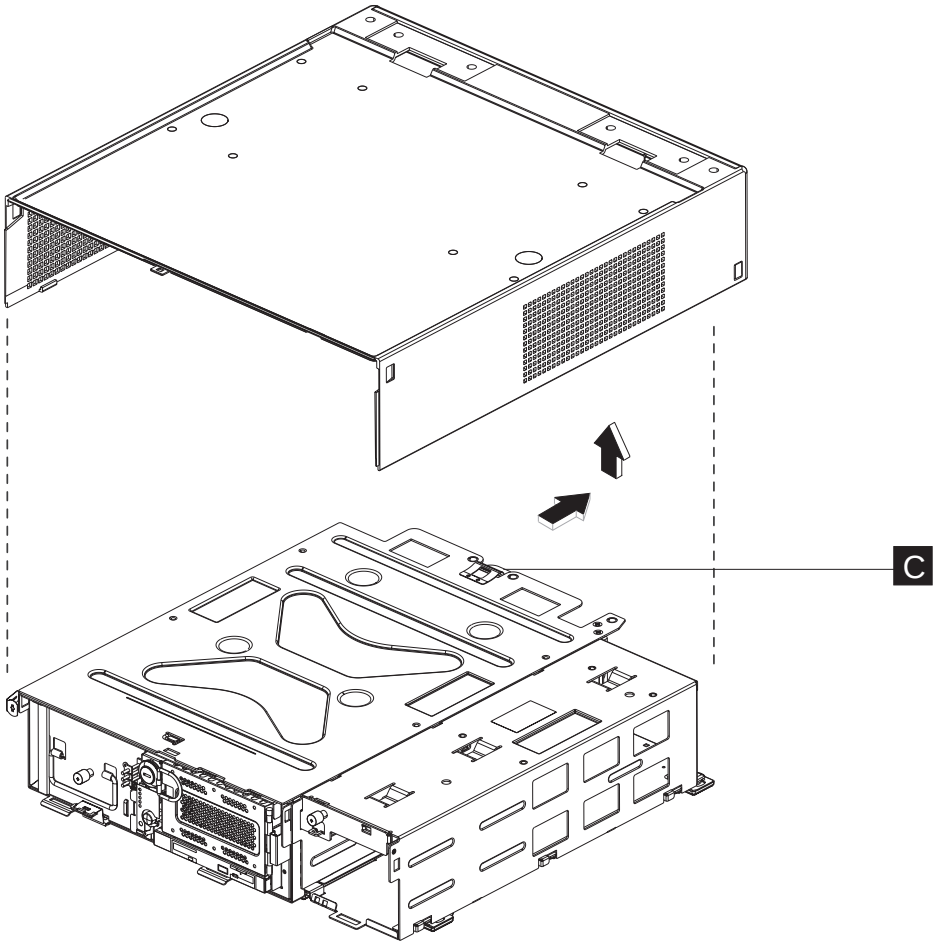


Figure 18. Removing the top cover

2. Push this clip downward and push the cover backward a few inches, then lift upward to remove.

Replacing the top cover

To replace the top cover:

1. Place the top cover in position over the system unit so that the front edge aligns with the line imprinted on the top plate (**A** in Figure 19).

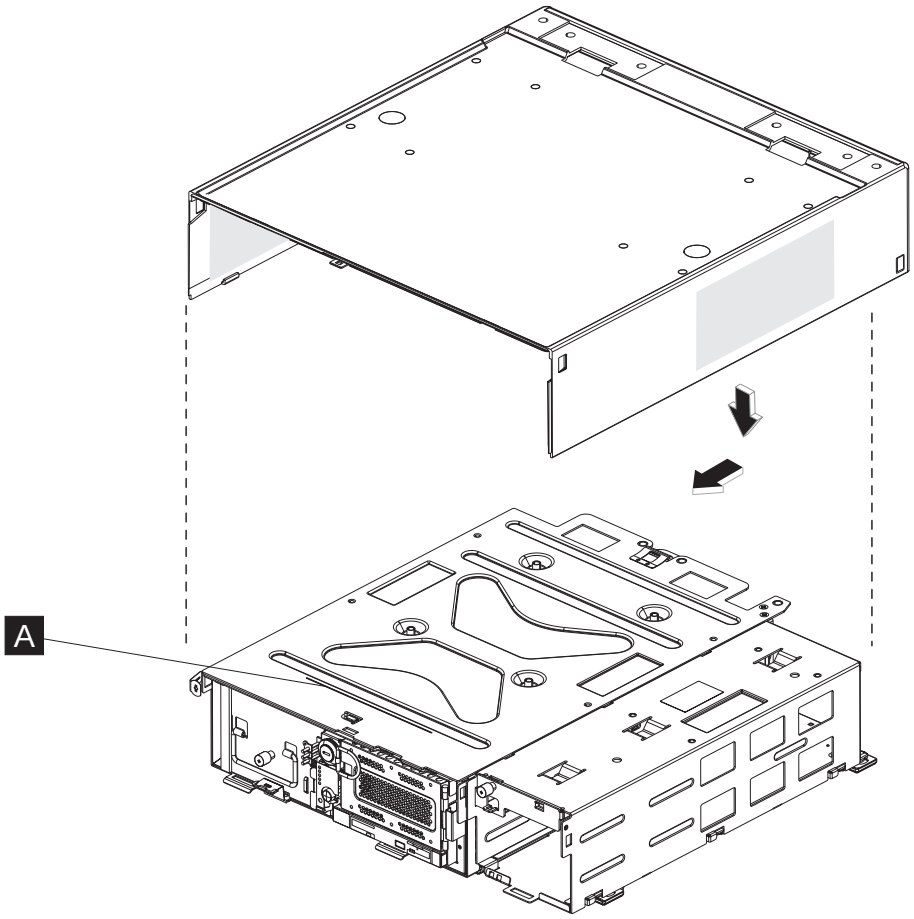


Figure 19. Installing the top cover

2. Press the top cover sides down and inward slightly while sliding the cover forward, to lock it into place.
3. Close the rear door by pressing downward on the door.

To replace the bezel, align the hooks on the bottom of the bezel with the slots on the frame and snap the top into place.

Replacing the front bezel

To replace the front bezel:

1. Locate the hooks on the bottom of the front bezel and align these hooks with the slots on the frame (**B** in Figure 20).

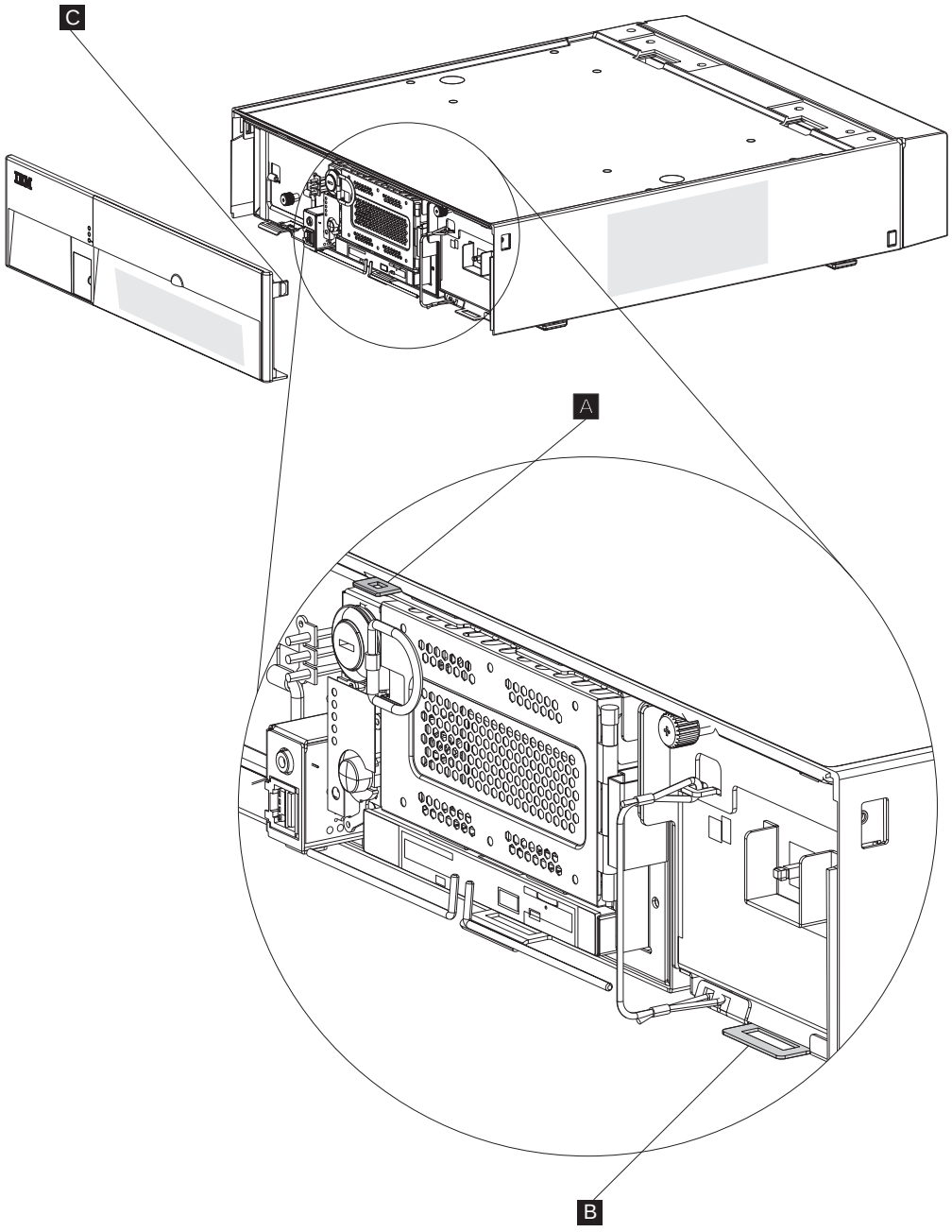


Figure 20. Placement of bezel

Note: Before proceeding, pivot the drive bay door D-loop handle completely to the right, flush against the front of the drive bay door, to ensure that it does not interfere with closing the front bezel.

2. Push inward on the side tabs (**C** in Figure 20) and insert one end and then the other. Push gently on the bezel to close it, ensuring that the center tab (**A**) locks into place.

Removing the pullout tray

Attention: Establish personal grounding before touching the unit. For more information, see “Federal Communications Commission (FCC) statement” on page 79.

To remove the pullout tray from the unit frame:

1. Follow the steps in “Removing the front bezel” on page 25 to remove the front bezel.
2. Remove all cable attachments which will restrict removal of the pullout tray.
3. While holding the unit frame in place, grab the pullout tray handle (**A**), use your thumb to lift the pullout tray lock tab (**B**), and pull firmly. The pullout tray will slide out of the unit frame completely.

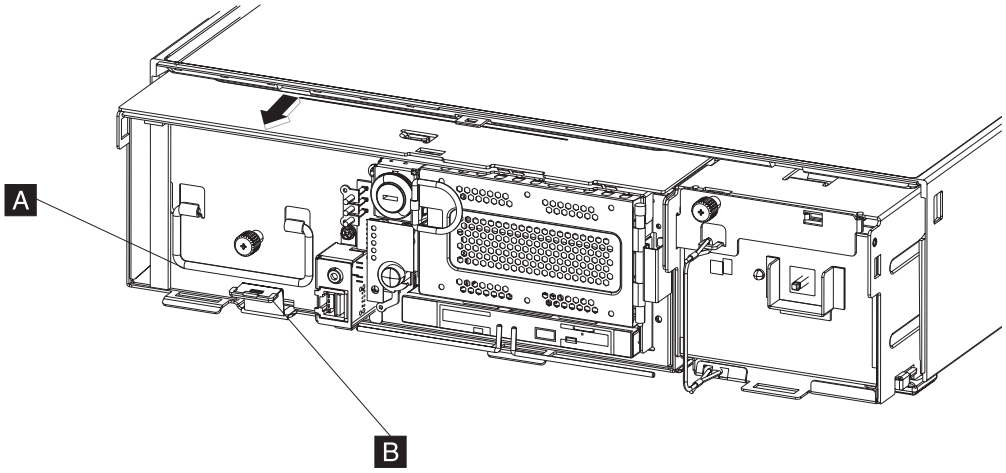


Figure 21. Removing the unit pullout tray from the unit frame

Note: Be sure to support the pullout tray, if you remove it completely.

To replace the pullout tray, insert the rear of the pullout tray into the front of the unit frame and gently slide back until the pullout tray lock tab (**B**) locks into place.

Opening the drive bay door

Attention: Establish personal grounding before touching the unit. For more information, see “Federal Communications Commission (FCC) statement” on page 79.

To open the drive bay door:

1. Open the front bezel door.
2. If necessary, unlock the drive bay door (refer to "Operating the front lock or lock plug" in the *SurePOS 700 Series SurePOS 700-723/743/783 Systems, Installation, and Operations Guide*, GA27-4998).
3. Pull on the blue drive bay door handle, to open the drive bay door.

Replacing a hard disk drive

To remove a hard disk drive (HDD):

1. Follow the steps in “Opening the drive bay door” on page 31 to open the drive bay door.
2. Squeeze the two blue drive rail lock tabs (**A** in Figure 22) inward and pull to remove the hard disk drive on its rails.

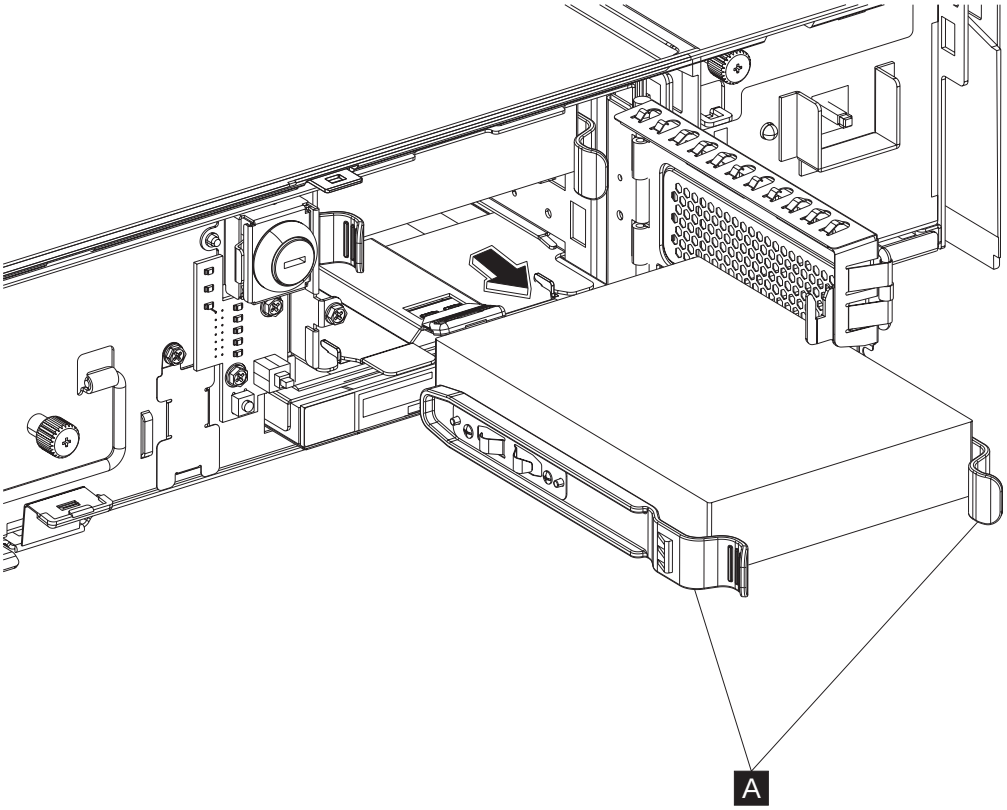


Figure 22. Removing a hard disk drive

To replace the hard disk drive, reverse the previous steps.

Note: Be sure to press the new drive on its rails into the back of the direct access storage device (DASD) cage, to ensure a solid connection. The drive rail lock tabs will snap into the windows on the side of the DASD cage when the drive is fully inserted.

Replacing the optical drive

To remove the optical drive:

1. Follow the steps in “Removing the front bezel” on page 25 to remove the front bezel.
2. Follow the steps in “Opening the drive bay door” on page 31 to open the drive bay door.
3. With your hand facing upward, grip the bottom of the optical drive and its bracket with you fingers while pushing down on the bracket lock tab (**A** in Figure 23) to disengage it from its window.
4. Pull out the optical drive in its bracket.

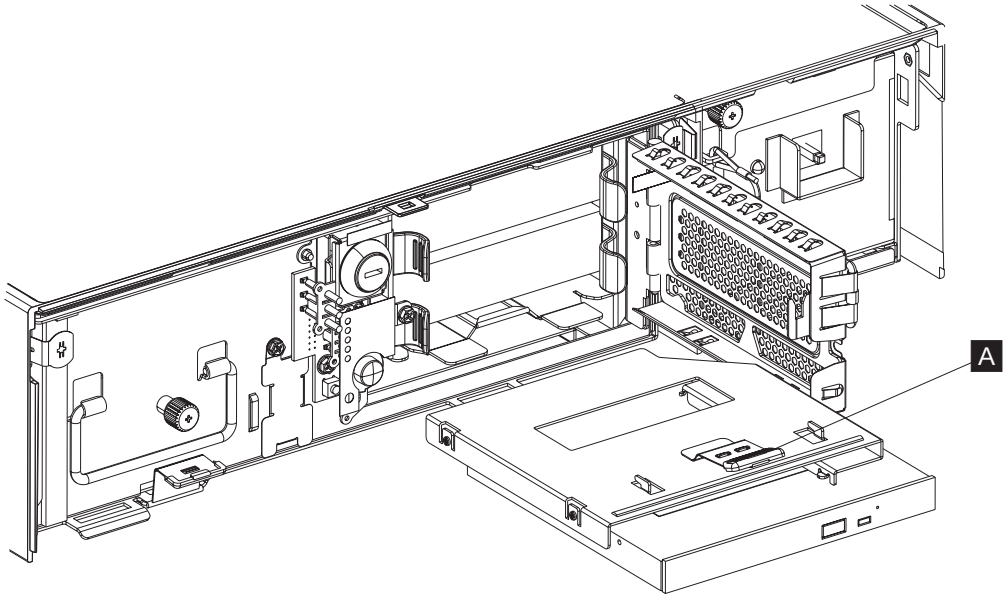


Figure 23. Removing an optical drive

To replace the optical drive, reverse the previous steps.

Note: Be sure to press the new drive in its bracket into the back of the DASD cage, to ensure a solid connection. The bracket lock tab will snap into the windows near the bottom of the DASD cage when the drive is fully inserted.

Replacing an I/O module

To remove an I/O module:

1. Remove any cables that are attached to the I/O module.
2. Follow the steps in “Removing the pullout tray” on page 31 to remove the pullout tray completely from the unit frame.
3. Open the I/O modules latch (**A** in Figure 24) by pressing down on its locking tab (**B**) and rotating it counterclockwise on its hinge.

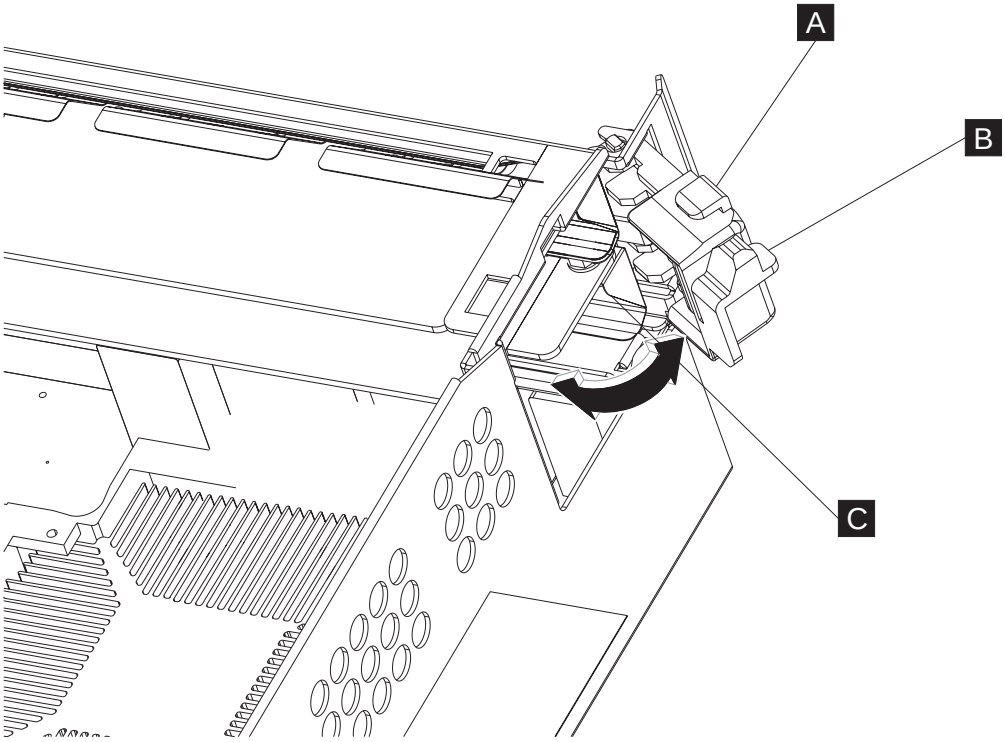


Figure 24. Opening the I/O module latch

4. Pull carefully on the I/O module (**C**) to slide it out of the slot.

To replace the I/O modules, reverse the previous steps.

Note: Before you install a new RS-485 module, ensure that the jumpers on the new module match the removed, old module.

Replacing the I/O module latch

To remove the I/O module latch:

1. Follow the steps in “Replacing an I/O module” on page 34 to open the I/O module latch a full 90 degrees from its closed position.

   Note: You do not need to remove the I/O modules to replace the latch.

2. Press down on the top locking tab of the I/O module latch (**A** in Figure 25) and pivot the latch downward, out of its sockets (**B**).

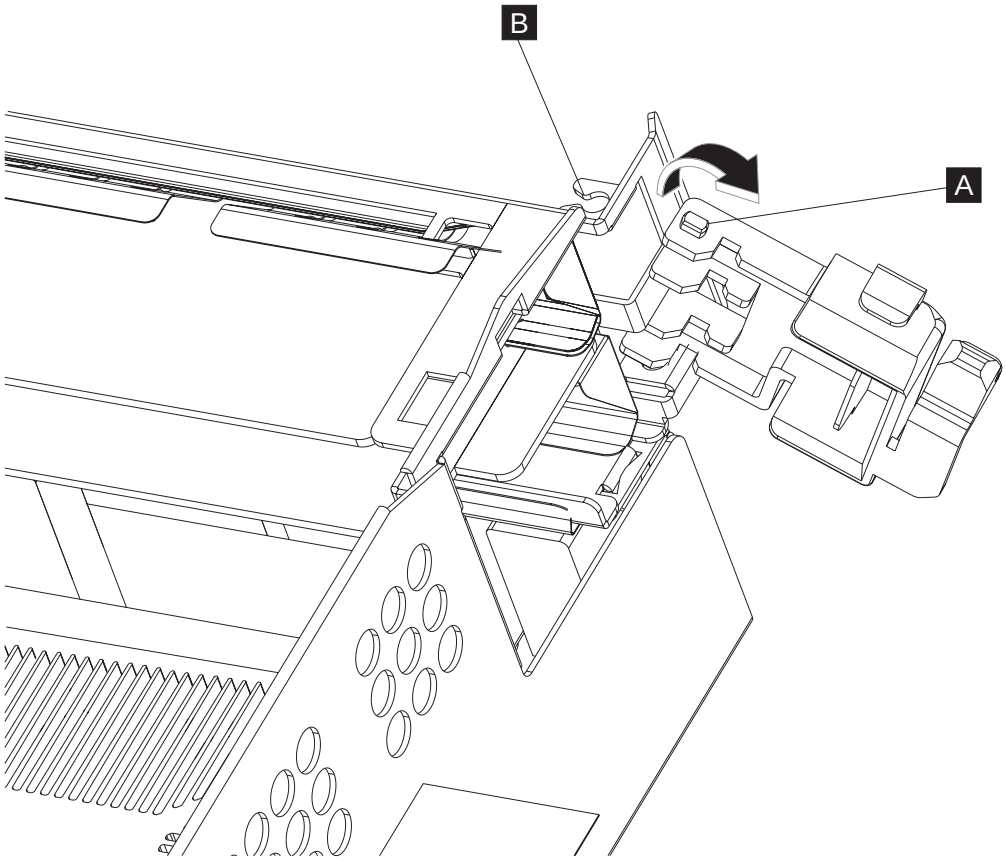


Figure 25. Removing the I/O module latch

To replace the I/O module latch, reverse the previous steps.

Replacing the chassis fan and fan duct (Models 723 and E23 only)

To remove the chassis fan:

1. Follow the steps in “Removing the pullout tray” on page 31 to slide the pullout tray halfway out of the unit frame.
2. Carefully disconnect the fan connector (**A** in Figure 26) from the system board.

Figure 26. Disconnecting the chassis fan

3. Push down on the duct lock tab (**A** in Figure 27 on page 37) and slide the chassis fan duct (**B**) towards the rear of the system. Its upper tab and lower tabs will slide out of the slots on the pullout tray sidewall, which lets you pull it from the openings in the slots.

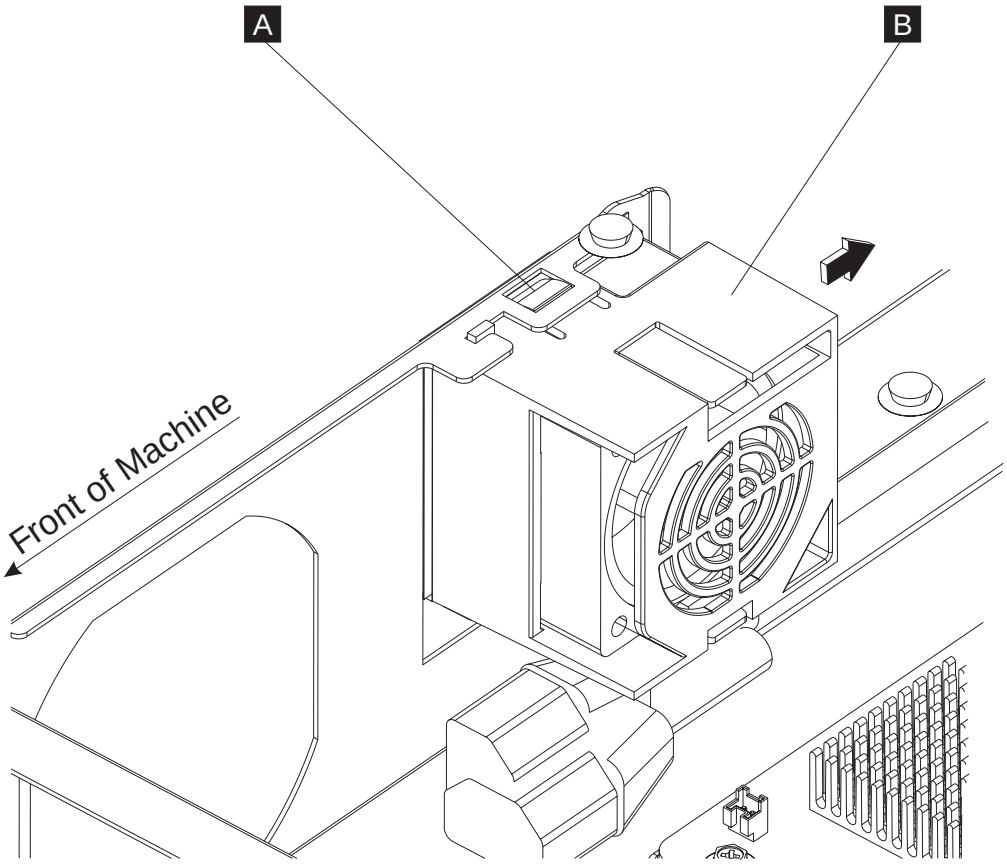


Figure 27. Removing the chassis fan with duct

To replace the chassis fan, reverse the previous steps.

Notes:

1. When doing the reverse of Step 3 on page 36, be sure that the two bottom lock tabs on the fan duct engage their slots on the pullout tray sidewall.
2. Be sure to route the chassis fan connector cable under the spline and main riser card; *do not* route it over the spline, or it will interfere with pullout tray movement in the unit frame.

Replacing the processor fan (Models 723 and E23 only)

To remove the processor fan:

1. Follow the steps in “Removing the pullout tray” on page 31 to remove the pullout tray completely from the unit frame.
2. Follow the steps in “Replacing an I/O module” on page 34 to remove the I/O modules from the system.
3. Carefully disconnect the fan connector cable from the plug on the system board that is next to the processor.
4. Remove the four screws holding down the fan to remove the fan.

To replace the processor fan, reverse the previous steps.

Replacing the processor fan (Models 743, C43, E43, 783, and E83 only)

To remove the processor fan:

1. Follow the steps in “Removing the pullout tray” on page 31 to remove the pullout tray completely from the unit frame.
2. Carefully disconnect the fan connector cable from the plug on the system board that is next to the memory modules.
3. Press down on the levers (**A** in Figure 28) on the processor heatsink to release the connections.

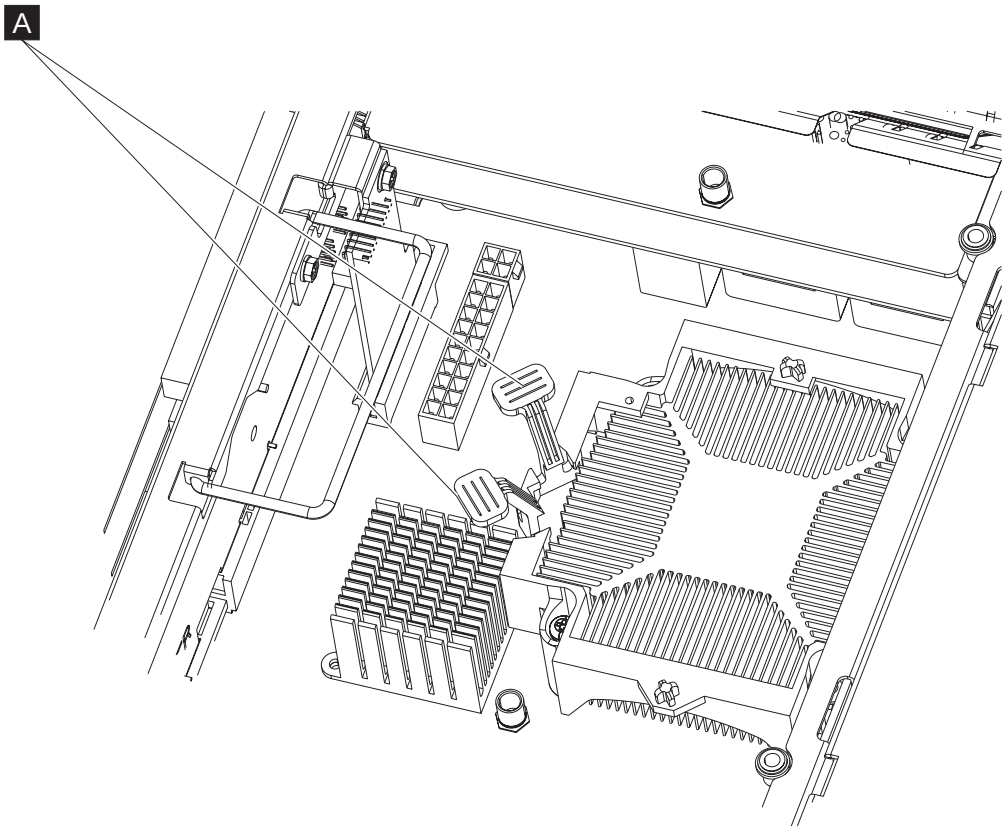


Figure 28. Processor fan and levers

4. Lift the corner of the fan previously held down by the levers, unhook the opposite corner of the fan, and remove it.

To replace the processor fan, hook the corner of the fan opposite the levers and press down the corner of the fan next to the levers to lock the fan into place.

Replacing the heatsink and processor (Models 743, C43, E43, 783, and E83 only)

To remove the heatsink and processor:

1. Follow the steps in “Replacing the processor fan (Models 743, C43, E43, 783, and E83 only)” on page 38 to remove the processor fan.
2. Completely loosen the four spring screws holding down the heatsink to remove the heatsink.
3. Press down on the processor latch, and move sideways and up to unlock it.
4. Pivot open the processor cover.
5. Lift out the processor, carefully keeping your fingers on each side of the module.

To replace the processor and heatsink, reverse the previous steps.

Replacing the control switch card

To remove the control switch card:

1. Follow the steps in “Removing the front bezel” on page 25 to remove the front bezel.
2. Remove the two screws on the front of the card that are holding the card in place.
3. Pull the card from the unit.
4. Disconnect the cable that is attached to the card connector.

To replace the control switch card, reverse the previous steps.

Replacing the front lock

To remove the front lock:

1. Follow the steps in “Removing the pullout tray” on page 31 to slide the pullout tray halfway out of the unit frame.
2. Remove the lock lever from the back of the lock.
3. Remove the clip from the front of the lock.
4. Slide the lock out of the lock bracket.
5. Remove the screw that attaches the lock bracket to the inside of the pullout tray and remove the lock bracket.

To replace front lock, reverse the previous steps.

Replacing the front USB module (Models 743, C43, E43, 783, and E83 only)

To remove the front USB module:

1. Disconnect the external option cable attached to the USB module.
2. Follow the steps in “Removing the pullout tray” on page 31 to slide the pullout tray halfway out of the unit frame.
3. Disconnect the internal cable attached to the back of the USB module.
4. Remove the two screws holding the USB module to the pullout tray: one attached to the front of the pullout tray; one attached inside the pullout tray, to the bottom.

5. Pull the USB module from the front of the unit.

To replace front USB module, reverse the previous steps.

Replacing the spline

To remove the spline:

1. Follow the steps in “Removing the pullout tray” on page 31 to remove the pullout tray completely from the unit frame.
2. Locate any installed feature cards and retaining screws (**A** in Figure 29). Remove the screws and pull outward to remove the feature card.

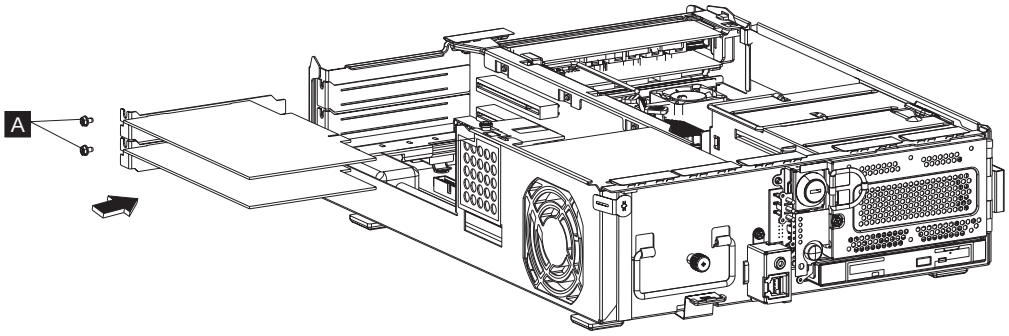


Figure 29. Removing feature cards

3. Note the cable routing, and then carefully disconnect all power and communications cables from the riser card.

   Note: The riser card main power connector has a latch on the bottom of it which you must push to disconnect it.
4. Completely loosen the spring screw (**A** in Figure 30 on page 41) holding the front of the spline down to the pullout tray.

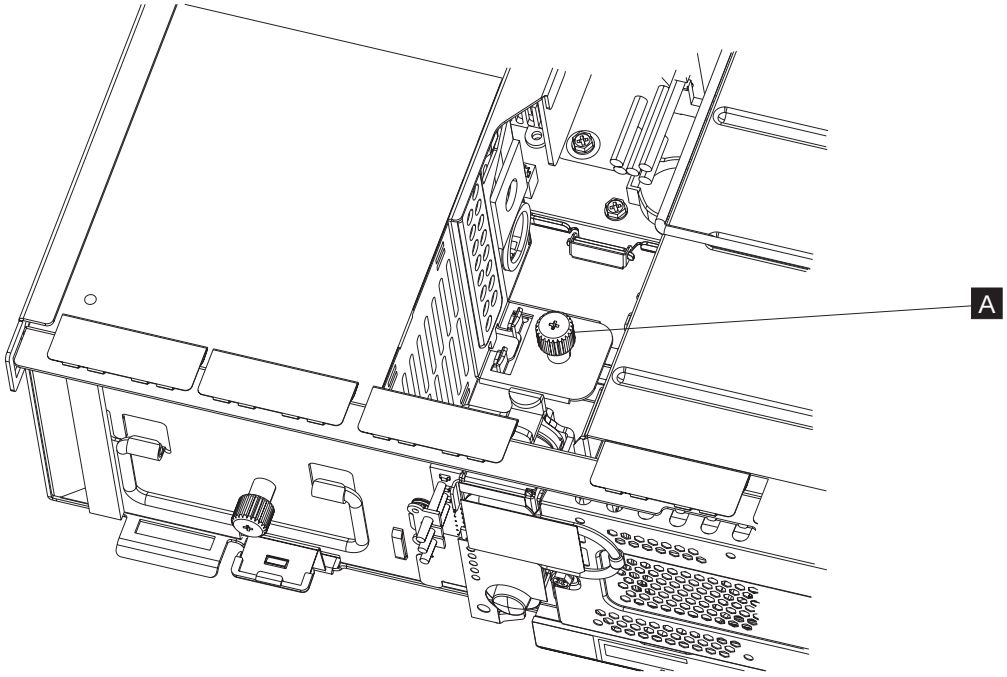


Figure 30. Loosening the spline screw

5. Lift the spline handle, push down on the rear spline latch tab (**A** in Figure 31), and pull up to remove the spline along with the riser card.

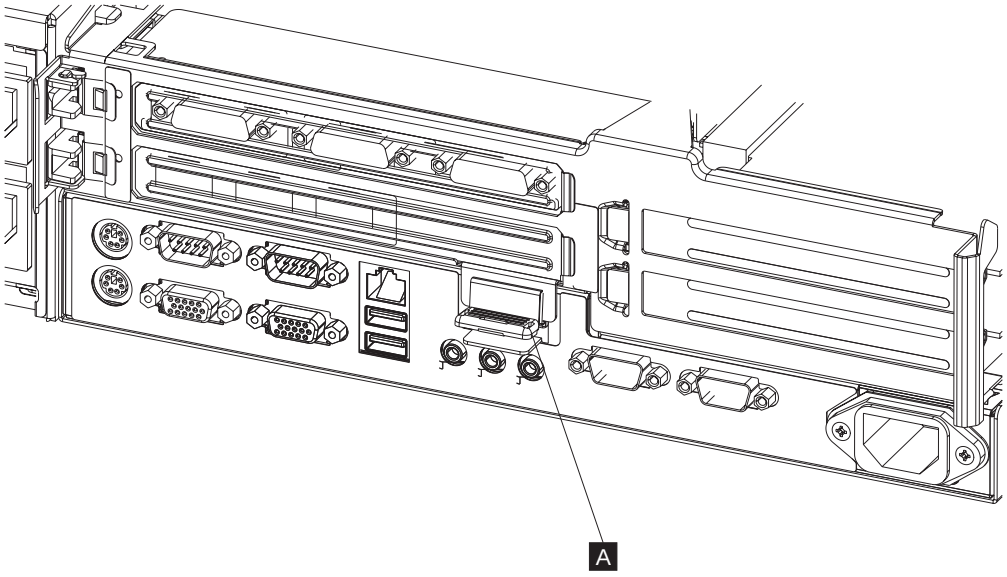


Figure 31. Loosening the spline screw

6. If the spline itself is being serviced, remove all I/O slot and adapter slot blanks (if any), and then proceed to “Replacing the main riser card” on page 43 to remove the I/O modules and the riser card.

To replace the spline, reverse the previous steps.

Note: When replacing the riser card, ensure that the cash drawer voltage setting matches the voltage setting on the old riser card. See “Cash drawers” on page 17

page 17 for additional information.

Replacing the main riser card

To remove the main riser card:

1. Follow the steps in “Replacing the spline” on page 40 to remove the spline.
2. Follow the steps in “Replacing an I/O module” on page 34 to remove all I/O modules.
3. Remove the four screws (**A** in Figure 32) holding the riser card to the spline.

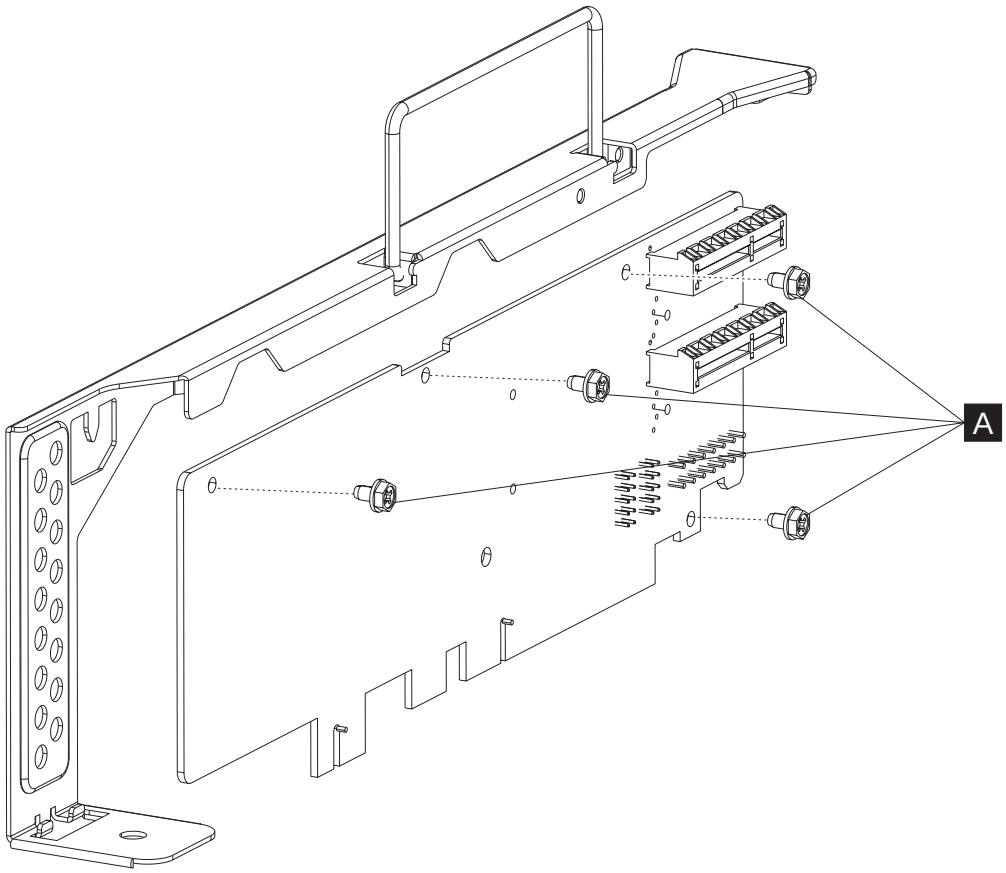


Figure 32. Removing the riser screws

To replace the main riser card, reverse the previous steps.

Replacing the main riser card battery

The SurePOS 700 uses a CR2032 3 V lithium "coin" battery on the main riser card.

To remove the main riser card battery:

1. Follow the steps in “Replacing the spline” on page 40 to remove the spline.
2. Using the tip of a screwdriver, *carefully* lever the battery out from under the battery socket's short tabs (**A** in Figure 33 on page 44, toward the rear of the riser card).

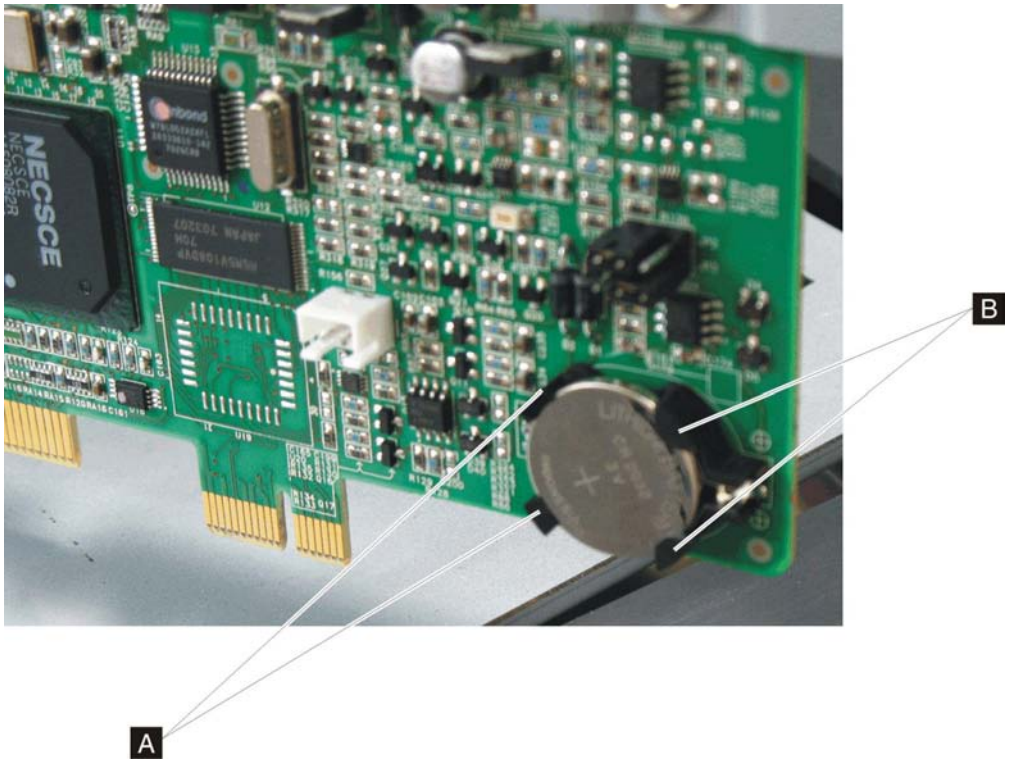


Figure 33. Removing the riser battery

To replace the main riser card battery:

1. Insert one edge of the battery (positive side UP) under the battery socket's longer tabs (**B** in Figure 33, toward the front of the riser card).
2. Push down on the opposite edge of the battery to snap it under the short tabs.
3. Reverse the steps in “Replacing the spline” on page 40 to reinstall the spline.

Replacing the DASD cage

To remove the direct access storage device (DASD) cage:

1. Follow the steps in “Replacing a hard disk drive” on page 32 and in “Replacing the optical drive” on page 33 to remove all drives from the drive bay.

   Note: This step is only necessary if you are actually replacing just the DASD cage; if you are merely removing it as part of another procedure, ignore this step.
2. Follow the steps in “Replacing the spline” on page 40 to remove the spline from the system.
3. While holding the DASD cage handle (**A** in Figure 34 on page 45), push down on the cage lock tab (**B**) with your thumb and pull up.

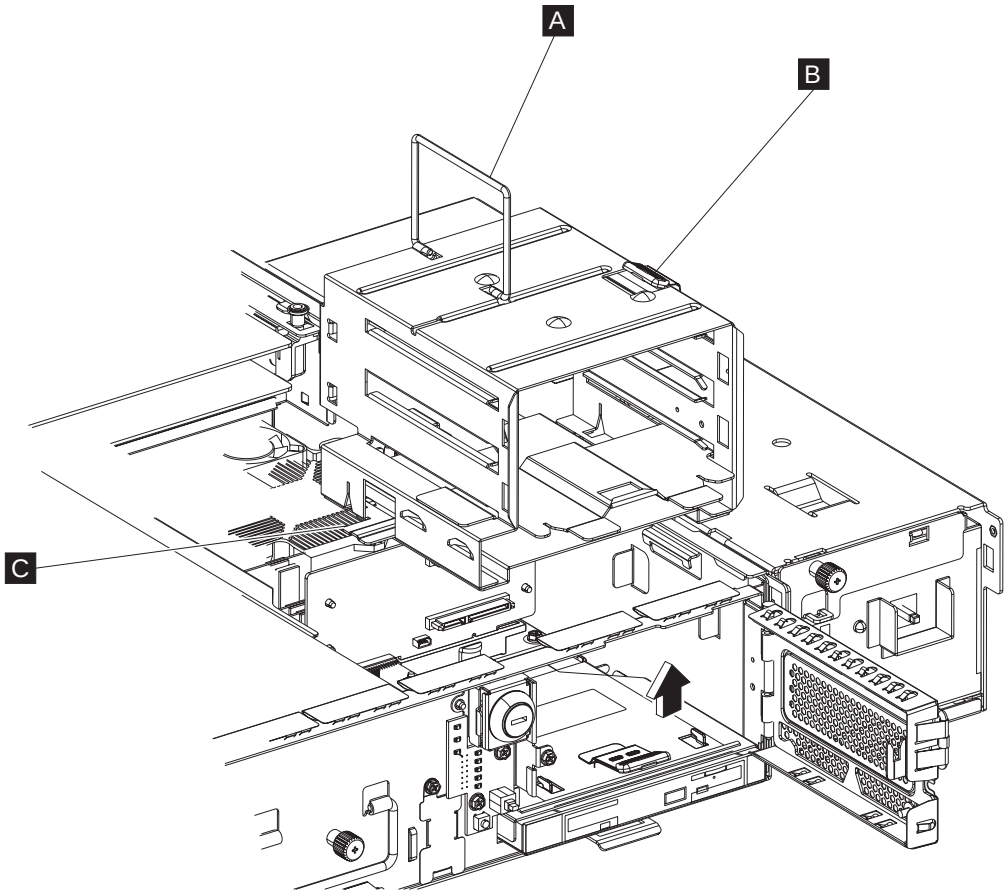


Figure 34. Removing the DASD cage

To replace the DASD cage, reverse the previous steps.

Note: Ensure that the guide tab (**C**) aligns with its slot on the pullout tray base (not shown), which will help to guide the DASD riser card into the DASD slot on the system board.

Replacing the power supply

To remove the power supply:

1. Follow the steps in “Replacing the spline” on page 40 to remove the spline.
2. Note the cable routing, and then carefully disconnect the internal power connector from the system board.

   Note: The system board main power connector has a latch on the right side of it which you must push to disconnect it.
3. Disconnect the internal power cable rear coupling that connects the power supply to the rear of the pullout tray.
4. Completely loosen the spring screw holding the front of the power supply to the front of the pullout tray.
5. Lift to remove the power supply from the unit.

To replace the power supply, reverse the previous steps.

Replacing the power supply rear coupling

To remove the power supply rear coupling:

1. Follow the steps in “Removing the pullout tray” on page 31 to remove the pullout tray completely from the unit frame.
2. Disconnect the internal power cable rear coupling from the power supply.
3. Remove the two screws holding the power cable rear coupling to the rear of the pullout tray.
4. Pull from the rear of the pullout tray to remove the power cable rear coupling from the unit.

To replace the power cable rear coupling, reverse the previous steps.

Replacing the system board

To remove the system board:

1. Disconnect all external device cables (I/O devices, audio, keyboard, and so forth).
2. Follow the steps in “Replacing the spline” on page 40 to remove the spline along with its riser card and all adapters and I/O modules.

   Note: You do not have to remove the riser card, adapters, or I/O modules from the spline to remove it from the system; you may skip those steps of that procedure.
3. Follow the steps in “Replacing the DASD cage” on page 44 to remove the drive cage along with its riser card and all drives.

   Note: You do not have to remove the riser card or drives from the DASD cage to remove it from the system; you may skip those steps of that procedure.
4. Refer to "Installing memory modules" in the *SurePOS 700 Series SurePOS 700-723/743/783 Systems, Installation, and Operations Guide*, GA27-4998, to remove the memory modules.
5. If necessary, follow the steps in “Replacing the heatsink and processor (Models 743, C43, E43, 783, and E83 only)” on page 39 to remove the processor fan, the heatsink, and the processor.
6. Follow the steps in “Replacing the power supply” on page 45 to remove the power supply.
7. Note the cable routing, and then carefully disconnect the connectors on the system board for the control switch card and–on Models 743, C43, E43, 783, and E83 only–for the front USB module.
8. Lift the system board tray lever (**A** in Figure 35 on page 47) and pull towards the front of the tray. The system board tray will slide off of its hooks on the bottom of the pullout tray, which lets you remove the system board tray and system board completely from the pullout tray.

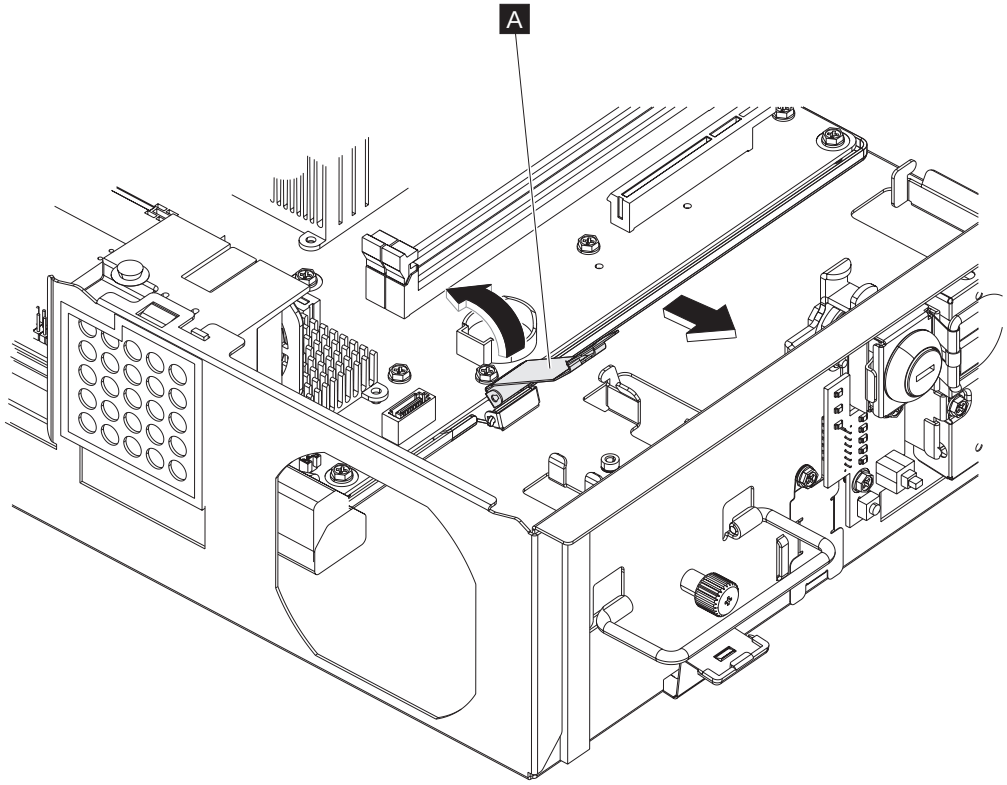


Figure 35. Removing the system board tray

To replace the system board, reverse the previous steps.

Replacing the system board battery

The SurePOS 700 uses a CR2032 3 V lithium "coin" battery on the system board.

To remove the system board battery:

1. Follow the steps in “Removing the pullout tray” on page 31 to slide the pullout tray halfway out of the unit frame.
2. Carefully press down on the battery release button (**A** in Figure 36 on page 48, toward the front of the system board). The battery will lever up out of the socket.

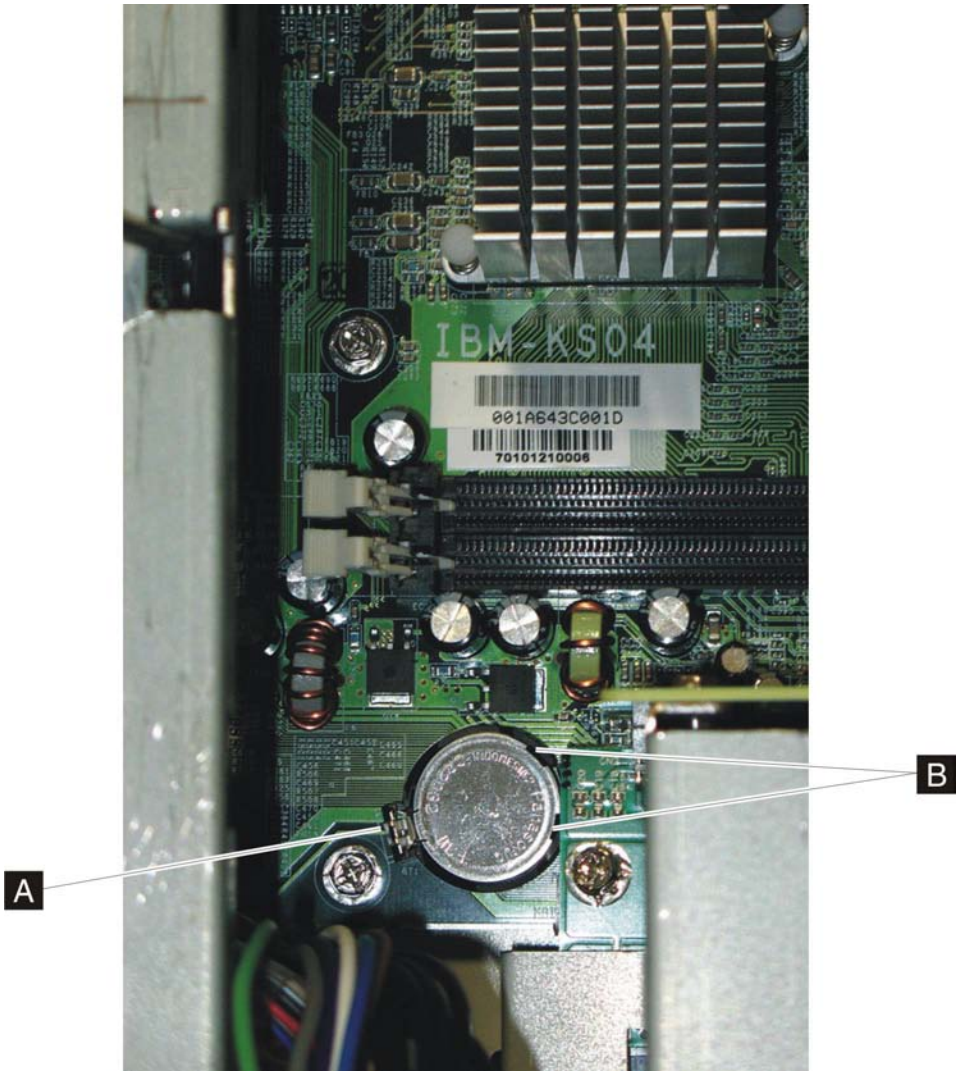


Figure 36. Removing the system board battery

To replace the system board battery:

1. Insert one edge of the battery (positive side UP) under the battery socket's tabs (toward the rear of the system board).
2. Carefully press down on the battery to snap it under the battery release button.
3. Slide the pullout tray back into the unit frame until it locks into place.

Chapter 3. Problem determination

Problems with the SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83 can be caused by software errors or hardware failures. This chapter contains problem-analysis tables to help determine the cause of a problem and how to solve it.

When you turn on the SurePOS 700, the system runs a power-on self-test (POST). These conditions indicate a successful POST:

- A single beep sounds.
- The power and UPS status indicators are both on and are not blinking.

If the POST is unsuccessful, see “Problem isolation” on page 53.

Preliminary checklist

If you have a problem with the system, first use this checklist:

1. Ensure that all I/O devices are connected correctly.
2. Ensure that AC power is connected.
3. Ensure that the contrast and the brightness controls on the display are adjusted correctly.
4. Ensure that all installed hardware (such as a memory module, feature card, printer, or mouse) and cables are connected correctly and securely.
5. Turn on the system and listen for one or two beeps at the completion of the POST.
6. If POST does not complete, turn off the system and remove any optional adapters and all I/O devices except a single keyboard and display.
7. If POST still fails to complete, see “Problem isolation” on page 53.

Using the diagnostic processor

The system unit contains a diagnostic processor that assists in the diagnosis of common hardware field problems. This task is accomplished using the following:

- Diagnostic LEDs
- System Event Log Viewer

Understanding the light path LEDs

Table 8 describes the front panel LEDs and the component or process each LED represents (see also Figure 2 on page 6). This table also describes the possible conditions and actions for you to resolve the condition.

Table 8. Diagnostic processor LEDs

LED	Component	Conditions when lit	Action
C	Information	A hardware fault has occurred.	Open the front door and view LEDs I, J, K, L, and M for actions. When the fault is corrected, the information LED will no longer be lit.
I	LED 1, fan	The processor fan is no longer spinning.	1. Check the processor vent for blockages or dust build up. 2. Ensure that the processor fan is plugged into the system board. 3. Replace the processor fan. When the fault is corrected, the fan LED will no longer be lit.
J	LED 2, system board	The system board has failed.	Replace the system board. When the fault is corrected, the system board LED will no longer be lit.
K	LED 3, upper HDD	The HDD failed the hard disk health check.	1. Check that the HDD connection to the system. Make sure that it is secured and completely engaged in the drive bay. 2. If the HDD presence or type change is intended, no failure occurred. Reset the system event log to clear the failure. When the fault is corrected, the HDD LED will no longer be lit.
L	LED 4, lower HDD		
M	LED 5, power supply	The power supply voltage is operating outside of the supported parameters, or the power supply fan is no longer spinning.	1. Ensure that the power supply fan has not been blocked or obstructed. 2. Replace the power supply. When the fault is corrected, the power supply LED will no longer be lit.

Using the System Event Log Viewer

The System Event Log Viewer is a BIOS POST (power on start) plug-in that provides access to the system event log. Follow these steps to view the system event log:

1. Turn on the system and wait for the System Event Log Viewer (Figure 37) screen to appear.

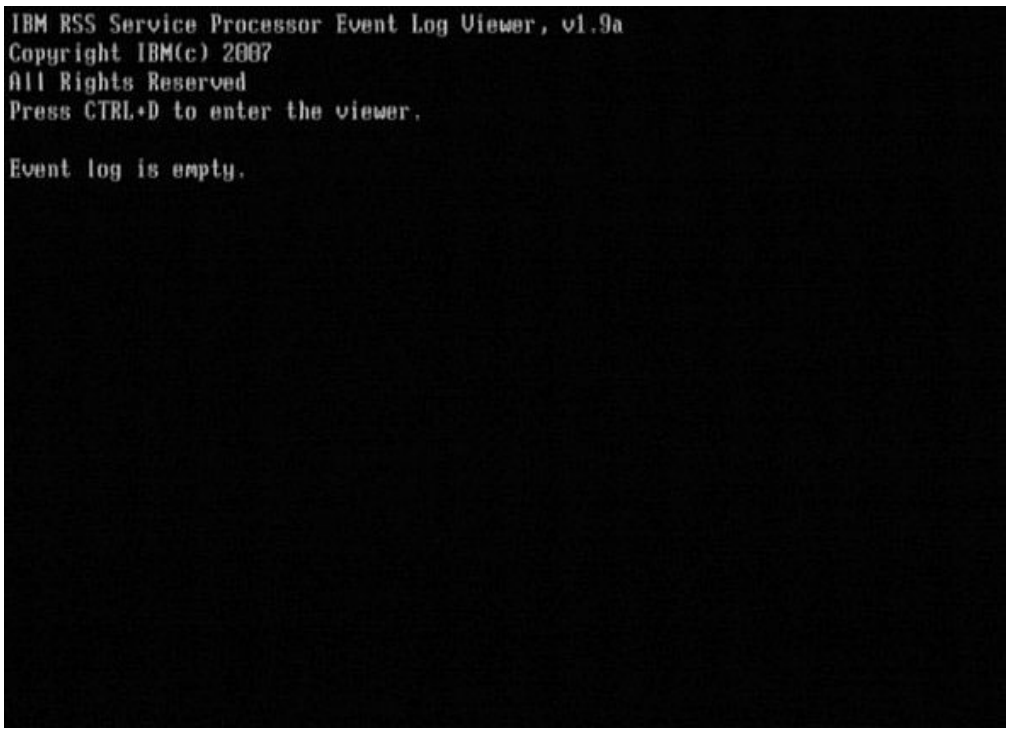


Figure 37. System Event Log Viewer screen

2. Press Ctrl+D to open the System Event Log Viewer. A screen similar to Figure 38 appears.

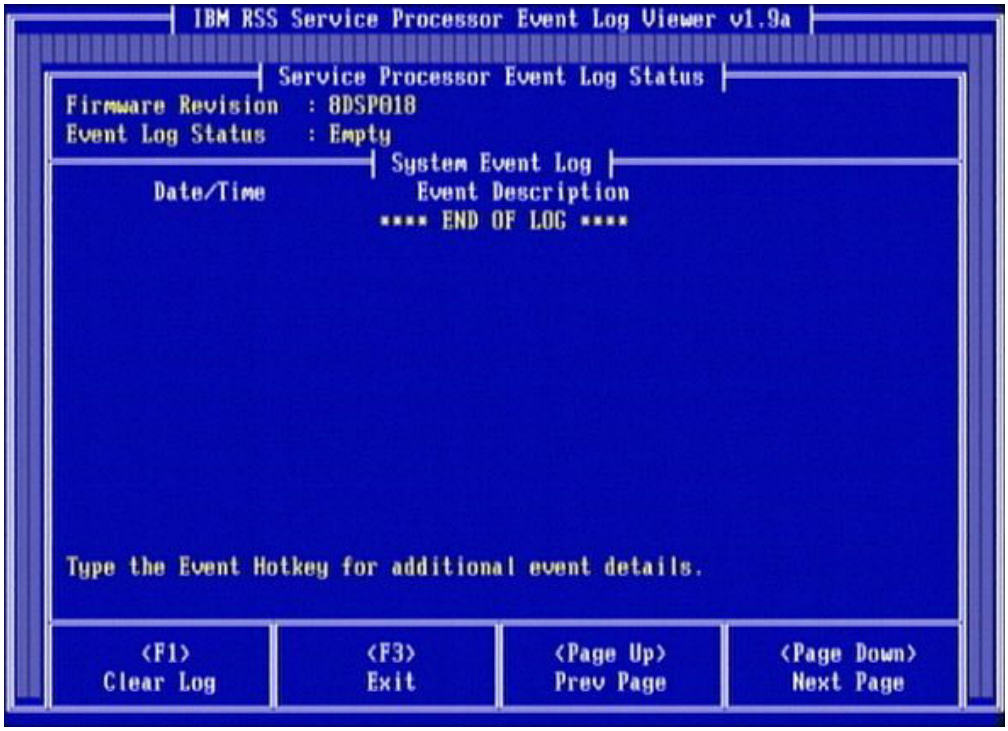


Figure 38. Example of saved events screen

3. For additional details of a saved event, select one with the keyboard or press the event hot key.
4. Follow the prompts on the screen to view events or to clear the system event log.

Notes:

1. All saved events can be viewed.
2. Events are logged by event date: most recent to oldest.
3. If the event log reaches its capacity, the oldest events are deleted.

Problem isolation

If the SurePOS 700 fails, follow the procedures that are described in Table 9. If you cannot solve the problem, contact a trained service technician.

Table 9. Actions to isolate the cause of a problem

Problem	Action to perform
The power indicator remains off.	1. Check that the AC power cord is plugged into both the wall outlet and the back of the terminal. 2. Ensure that AC power is present at the wall outlet.
There is a continuous series of beeps.	1. Check to see if memory is missing. 2. Re-seat memory. 3. Replace memory.
The video display is failing (totally blank screen, no cursor displayed, screen is unreadable, or other display problems).	1. Verify that the video display cables are securely connected. 2. Ensure that the video display power cord is plugged in and that the video display is turned on. 3. Verify that the power indicator on the system unit and the indicator light on the display are lit. 4. Adjust contrast and brightness controls on the display. 5. Use the reference documentation (if available) for the display. 6. Exchange the video display.
The keyboard does not work or only some keys work.	1. Ensure that the keyboard is securely attached to the keyboard port. 2. Move your fingers across the keys. Ensure that no keys are stuck. 3. Ensure that you are on a screen that permits typing. Some screens do not permit you to type on them.
One or more POS I/O devices are failing.	1. Ensure that the I/O devices are securely and correctly connected to the system unit. 2. If the device has its own power cord and power switch, ensure that it has power and that the power switch is turned on. 3. Exchange the cables. 4. If a POS I/O device is available that is known to be good, substitute it for the failing device to help in isolating the failure.
An optional feature adapter is failing.	Refer to the service information for the adapter.
The system does not turn off when the power switch is pressed.	Press and hold the power button until the unit turns off (approximately five seconds).

Notes:

1. Some devices that attach to the system have test instructions. Refer to those instructions when testing those devices.
2. Record any error message or symptom so that this information is available when service is called.

3. When using application software, you might receive error messages that apply to the software. Refer to the software manual for explanations of those messages.

Special tools requirements

You might need to order these tools, which are not included in the toolkit:

- Ethernet wrap plug
- Tri-connector (serial and parallel) wrap plug
- USB mouse, required for POS Device Diagnostics
- PS/2-style or POS keyboard

Using the RAID application

The Redundant Array of Inexpensive Disks (RAID) application supports Models 723, E23, 743, C43, E43, 783, and E83 with one or two hard disk drives and the Microsoft Windows operating system. RAID provides an error message if one of the two hard disk drives experiences a failure.

Determining a hard drive failure

When the RAID program indicates a hard drive failure, you can determine which drive has failed using one of the following two methods:

Method one: Clicking on the RAID icon

1. From the Microsoft Windows task bar, click on the RAID icon. This icon is present only during an array rebuilding or if abnormal activity occurred, such as a failed drive. The VIA V-RAID utility opens.
2. Determine which hard disk drive has failed by expanding the array (see Figure 39).

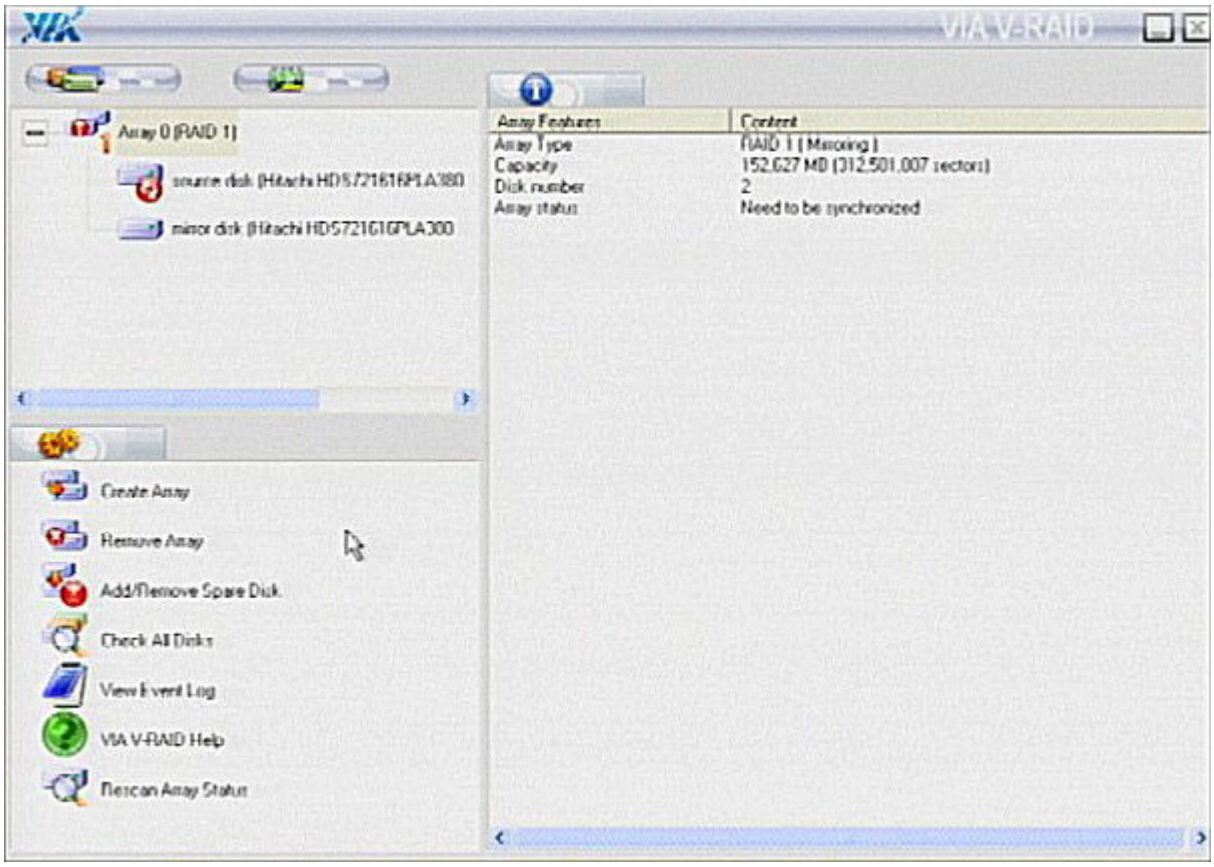


Figure 39. Disk drive failure

3. Initiate shutdown and power off the machine: click **Start > Shutdown**, press the power switch, or follow the procedure for your business.
4. Continue with the steps described in “Replacing and rebuilding a hard drive” on page 56.

Method two: Entering RAID during startup

1. Shut down and reboot the machine: click **Start > Shutdown**, press the power switch, or follow the procedure for your business.
2. During the reboot, a screen appears that displays information on the failing disk. Make note of which drive is the failing disk.

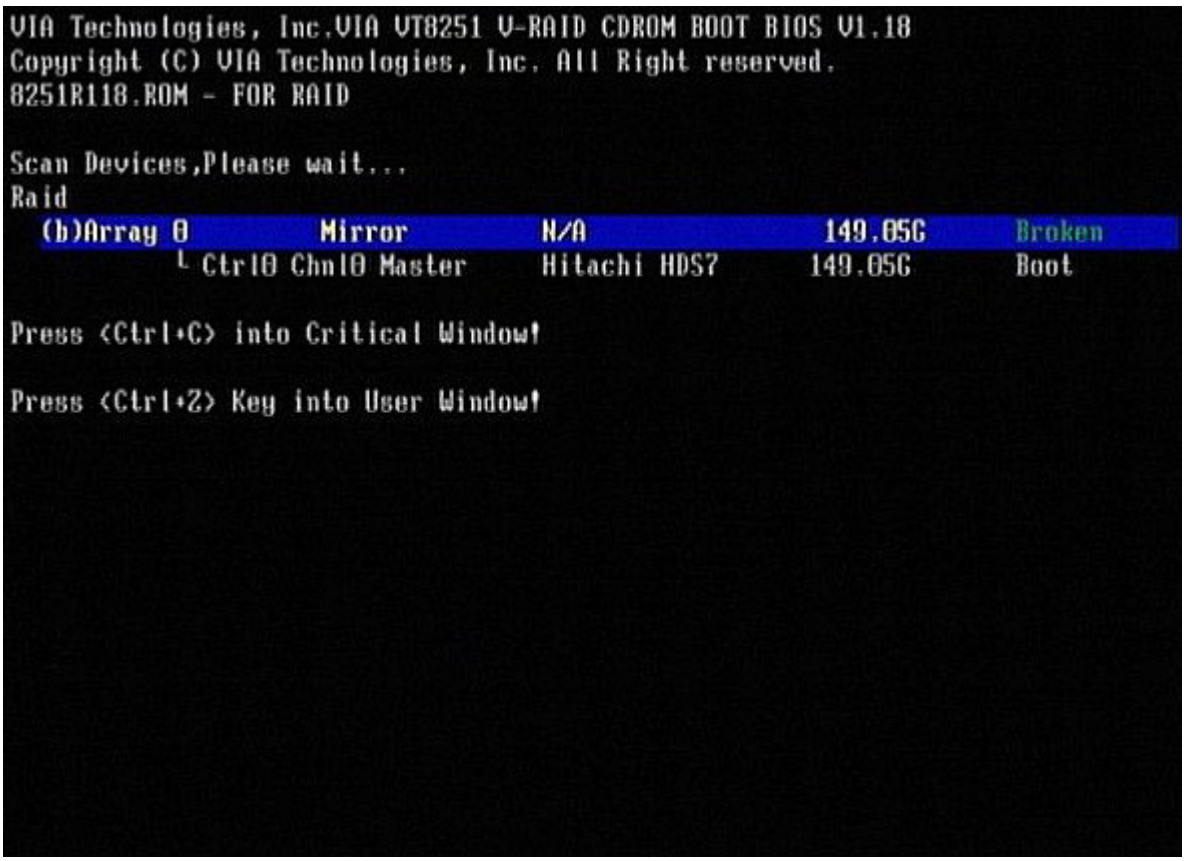


Figure 40. Boot up warning

3. Power off the machine.
4. Continue with the steps described in “Replacing and rebuilding a hard drive.”

Replacing and rebuilding a hard drive

Note: Before beginning these procedures, you should have completed one of the two methods on determining the failed hard disk drive.

1. Follow the steps in the "Removing the hard disk drive" section in the *IBM SurePOS 700 Series - SurePOS 700-723/743/783 Hardware Service Guide* to remove and replace the failing hard disk drive.
2. Reassemble the machine and power on.

After the operating system has loaded, the RAID application will automatically begin rebuilding the hard disk drive. During this process, you can use the machine normally. Rebuilding time will vary depending upon the size of the partition, amount of data and system activity during the rebuild.

Accessing the RAID setup menu

After enabling the RAID function from the BIOS setup menu, you can enter the RAID setup menu before the Windows OS starts by pressing Ctrl+C or Ctrl+Z on the keyboard. Figure 41 is an example of the menu.

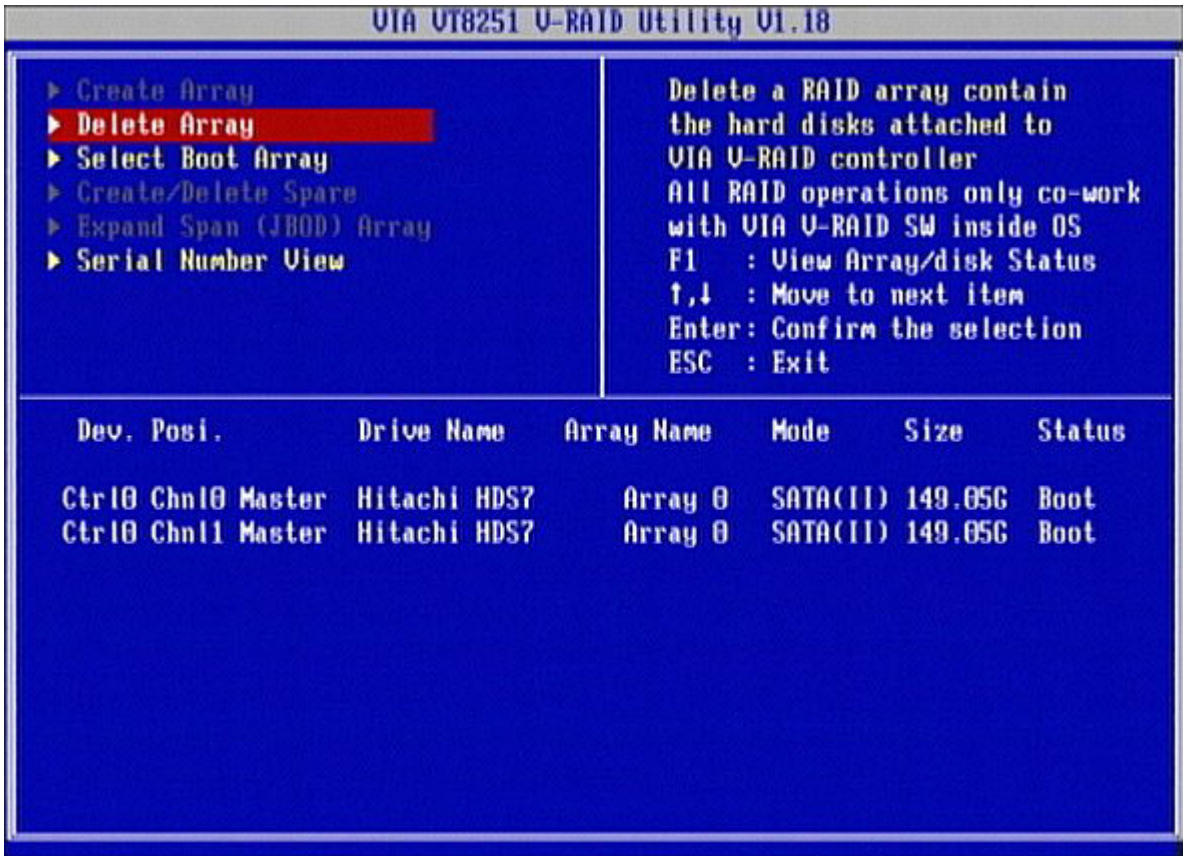


Figure 41. Example of the RAID setup menu

Chapter 4. Diagnostics and configuration settings

This chapter provides information on the diagnostics, CMOS, and configuration settings for the SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83.

Important information

The SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83 require new POS I/O and LAN drivers. Existing drivers for Models 4694 and Models 4800 will not work properly with these products. This notice applies to all operating systems: DOS, 4690, Windows, and Linux. Additionally, a hard drive image for a predecessor product will not work properly. Be sure and download the appropriate drivers from the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store.

Service and diagnostics

The service and diagnostics programs for the SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83 are available from the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store.

To run the diagnostics:

1. Download the appropriate diagnostics image from the Web site and copy it to your media.
2. Ensure that your BIOS settings on the terminal are set to permit you to boot from the media for your installation (see “Boot device order” on page 60).
3. Boot your system using the executable file.

Using the IBM BIOS Setup Utility

The IBM BIOS Setup Utility is a program for viewing and configuring system functions. These are some examples of these system functions:

- Setting the system time and date
- Changing the boot device order
- Configuring power management settings
- Setting passwords

The settings controlled by the SurePOS Feature Card program are stored in nonvolatile memory (NVRAM). The default settings for most system functions are acceptable for the majority of environments.

Navigation and menus

Use an attached PC keyboard to navigate and configure options. Start the IBM BIOS Setup Utility during the POST by pressing the Delete key when the system prompts you to enter setup.

Menus provide configuration of different system functions. Menus preceded by the greater than (**>**) symbol have submenus. Use the arrow key to navigate the menus, and use the Esc key to exit them. After you select a submenu, press Enter to open it.

Saving settings

Changes made in the IBM BIOS Setup Utility must be saved so that they can take affect on the next system boot. Exceptions are the time and date, which are updated and saved immediately. To save changes, select **Save & Exit Setup** on the main menu or press **F10** at any time. To exit Setup without saving changes, select **Exit Without Saving** or press **Esc** while at the main menu.

You can save your settings to a file using the CMOS Save Utility and then copy them to other units using the CMOS Restore Utility. These utilities can be downloaded from the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store.

Boot device order

The boot device order is a setting that you can configure. This function controls the devices from which the system can be booted and the order in which they are started. This function is located on the Advanced BIOS Features menu as **First Boot Device**, **Second Boot Device**, **Third Boot Device**, and **Fourth Boot Device**. Navigate to each item and press **Enter** to see a list of available boot devices.

The system default is:

- First Boot Device: USB-FDD
- Second Boot Device: CD-ROM
- Third Boot Device: Hard Disk
- Fourth Boot Device: Broadcom PXE

With this setting, the system attempts to boot first from a diskette in a USB diskette drive, then from hard disk drive 0, then from the LAN. If no devices are bootable, the system will repeatedly try the boot list in order until it is successful.

Restoring CMOS default settings

To clear your CMOS settings and restore the default settings:

Note: Be sure to record your customized settings to reset them later.

1. Turn off the system unit and disconnect the AC power cord.
2. Follow the instructions in “Removing the covers” on page 25.
3. Follow the instructions in “Removing the pullout tray” on page 31.
4. See **A** in Figure 42 or **B** in Figure 43 on page 62 to locate your CMOS jumper on the system board. See Table 10 on page 62 for the correct pins and position to clear your CMOS settings.

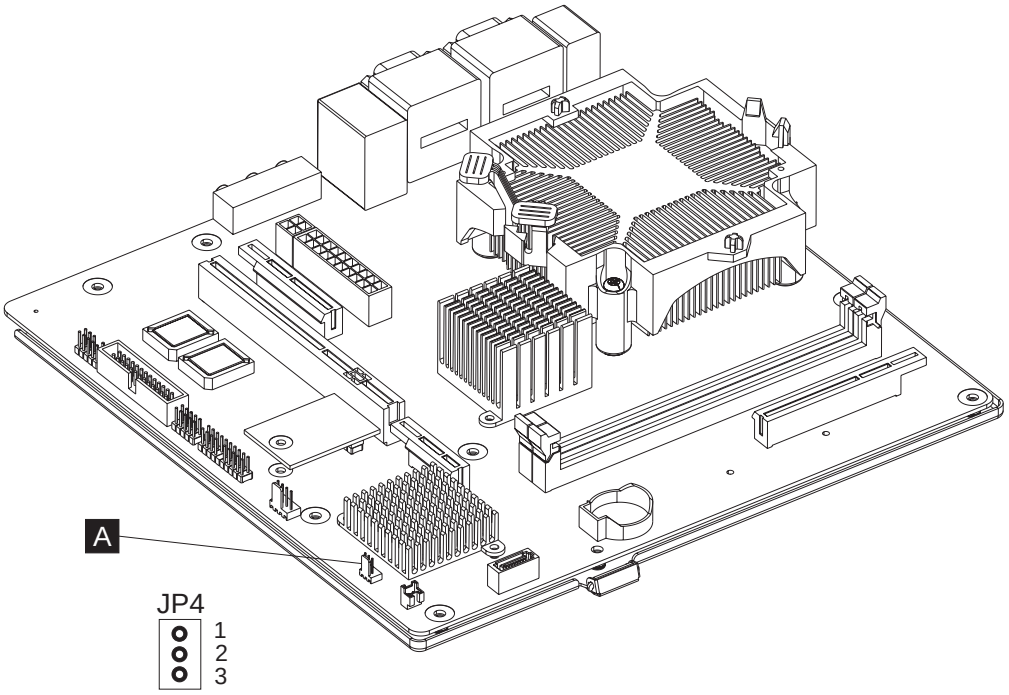


Figure 42. Location of CMOS jumper - Models 743, C43, E43, 783, and E83

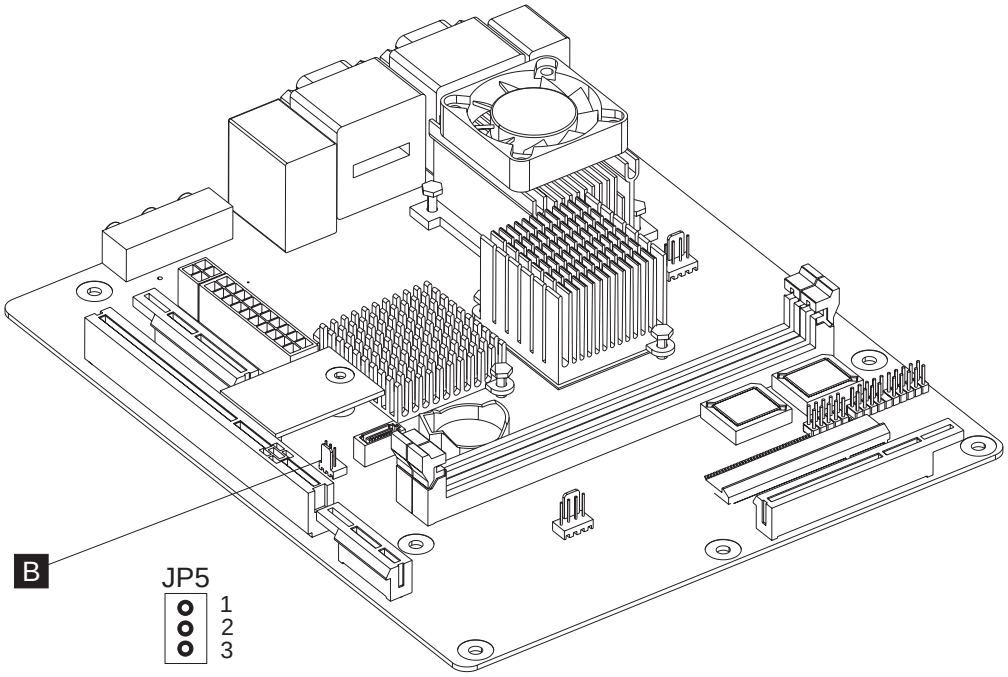


Figure 43. Location of CMOS jumper - Models 723 and E23

Table 10. CMOS jumper and pin location by model

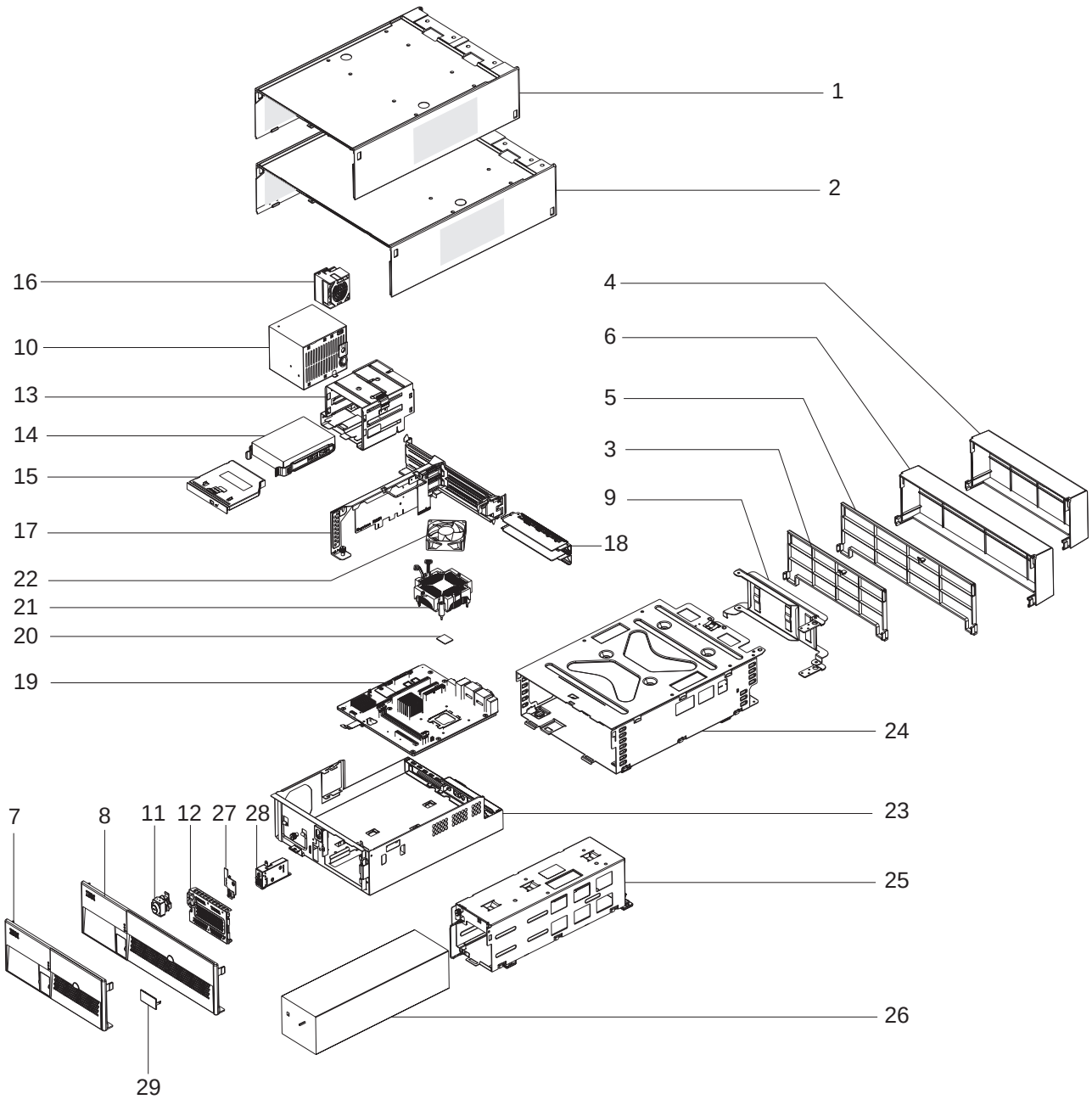
Model	CMOS jumper	Pins for normal operation	Pins to clear CMOS
Models 723 and E23	JP5	1-2	2-3
Models 743, C43, E43, 783, and E83	JP4		

5. Move the pins to position 2-3 and wait for five seconds.
6. Return the pins to position 1-2.
7. Plug the AC cord back in and turn on the system. Your system now has the default CMOS settings.

Note: Restoring the CMOS default settings might be necessary if a password is lost or forgotten.

Appendix A. Parts catalog

Assembly 1: SurePOS 700 Models 723, E23, 743, C43, E43, 783, and E83



Asm–Index	Part Number	Units	Description
			Top cover assemblies (without rear door):
1–1	45T9214	1	Narrow top cover assembly; storm (light) gray
–1	45T9215	1	Narrow top cover assembly; iron (dark) gray
–1	45T9216	1	Narrow top cover assembly; litho gray
–2	45T9217	1	Wide top cover assembly; storm (light) gray
–2	45T9218	1	Wide top cover assembly; iron (dark) gray
–2	45T9219	1	Wide top cover assembly; litho gray
			Rear door assemblies:
–3	45T9220	1	Narrow standard rear door; storm (light) gray
–3	45T9221	1	Narrow standard rear door; iron (dark) gray
–3	45T9222	1	Narrow standard rear door; litho gray
–4	44T5697	1	Narrow cable arm rear door; storm (light) gray
–4	44T5699	1	Narrow cable arm rear door; iron (dark) gray
–4	45T9001	1	Narrow cable arm rear door; litho gray
–5	45T9223	1	Wide standard rear door; storm (light) gray
–5	45T9224	1	Wide standard rear door; iron (dark) gray
–5	45T9225	1	Wide standard rear door; litho gray
–6	45T9003	1	Wide cable arm rear door; storm (light) gray
–6	45T9005	1	Wide cable arm rear door; iron (dark) gray
–6	45T9007	1	Wide cable arm rear door; litho gray
			Front bezel assemblies (includes front door, USB door, headphone jack plug, and UPS blank if wide):
–7	44T5216	1	Narrow front bezel assembly; storm (light) gray
–7	44T5218	1	Narrow front bezel assembly; iron (dark) gray
–7	44T5220	1	Narrow front bezel assembly; litho gray
–	44T5228	1	Narrow coverless front bezel assembly; storm (light) gray
–	44T5230	1	Narrow coverless front bezel assembly; iron (dark) gray
–	44T5232	1	Narrow coverless front bezel assembly; litho gray
–8	44T5222	1	Wide front bezel assembly; storm (light) gray
–8	44T5224	1	Wide front bezel assembly; iron (dark) gray
–8	44T5226	1	Wide front bezel assembly; litho gray
–	44T5234	1	Wide coverless front bezel assembly; storm (light) gray
–	44T5236	1	Wide coverless front bezel assembly; iron (dark) gray
–	44T5238	1	Wide coverless front bezel assembly; litho gray
–9	45T9009	1	Cable arm assembly
–10	44T5663	1	Power supply, Pi
–10	44T5665	1	Power supply, Leadyear
–11	45T9031	1	Lock assembly (includes barrel, bracket, lock cam, and screws)
–	47J5545	1	Lock plug
–12	45T9027	1	Drive bay door assembly (includes drive bay door, drive bay door pin, and drive bay door pull handle)
–13	45T9035	1	DASD cage assembly (includes metal DASD cage and DASD riser card)
–14	45T9038	1	HDD, 80 GB, SATA attached assembly (includes drive, rails, and screws)
–14	45T9041	1	HDD, 160 GB, SATA attached assembly (includes drive, rails, and screws)
–15	45T9039	1	CD-RW assembly (includes CD-RW drive, bracket, and screws)
–15	45T9040	1	DVD-RW assembly (includes CD-RW drive, bracket, and screws)
–15	45T9043	1	Floppy disk drive (FDD) assembly (includes FDD, bracket, and screws)

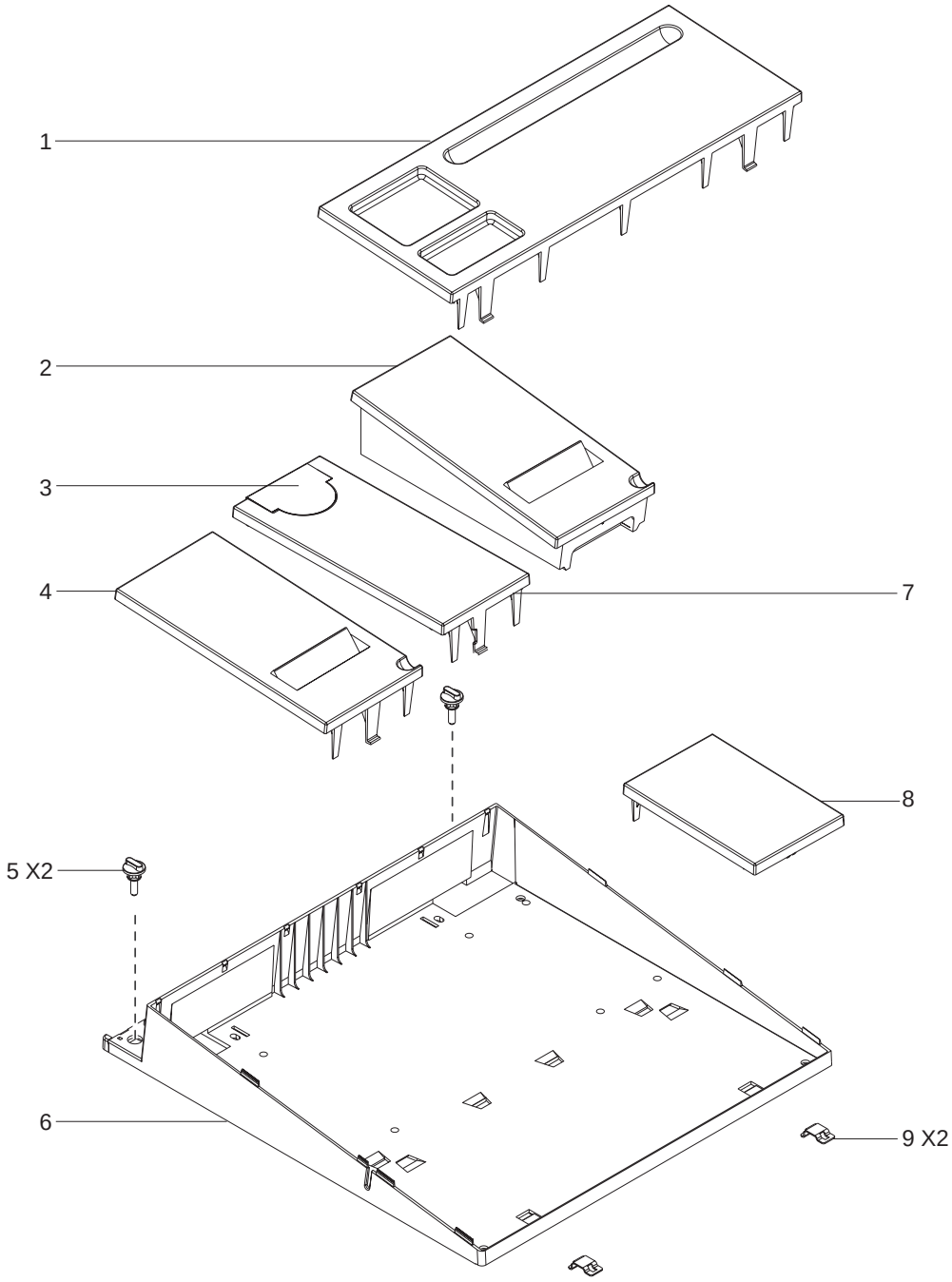
Asm–Index	Part Number	Units	Description Top cover assemblies (without rear door):
–	45T9044	1	Optical drive blanking shield
–	06P5223	1	External FDD
–16	45T9060	1	Chassis fan and duct
–17	45T9048	1	PCI/PCI Express riser assembly (includes spline and riser card)
–	45T9056	1	PCI/PCI Express riser card
–17	45T9054	1	Dual PCI riser assembly (includes spline and riser card)
–	45T9057	1	Dual PCI riser card
–	45P6222	1	Riser card battery
–	45T9059	1	Riser bracket
–18	45T9081	1	I/O module XE-13 (3 RS-485, 3 USB)
–18	45T9083	1	I/O module XE-14-1 (top, 5 USB)
–18	45T9085	1	I/O module XE-15 (top, RS-232)
–18	45T9082	1	I/O module XE-16 (RS-232; RPQ only)
–18	45T9084	1	I/O module XE-17 (top, RS-485)
–	45T9045	1	I/O module blank
–	45T9058	1	SurePort door
–	45T9073	1	System board; Models 723 and E23 (includes processor, heatsink, and system board tray)
–19	45T9076	1	System board; Models 743, C43, E43, 783, and E83 (includes system board tray)
–	45P6222	1	System board battery
–20	45T9055	1	Processor, Intel Celeron 440 2.0 GHz, Models 743, C43, and E43
–20	45T9049	1	Processor; Intel Core 2 Duo E4300 1.8 GHz, Models 783 and E83
–21	45T9067	1	Heatsink assembly with fan, Models 743, C43, E43, 783, and E83
–22	45T9071	1	Processor fan, Models 743, C43, E43, 783, and E83
–	45T9069	1	Processor fan, Models 723 and E23
–	45T9985	1	Memory, 256 MB DDR2, Models 723 and E23
–	45T9986	1	Memory, 512 MB DDR2, Models 723 and E23
–	45T9987	1	Memory, 1 GB DDR2, Models 723 and E23
–	45T9066	1	Memory, 512 MB DDR2, Models 743, C43, E43, 783, and E83
–	45T9079	1	Memory, 1 GB DDR2, Models 743, C43, E43, 783, and E83
–	45T9080	1	Memory, 2 GB DDR2, Models 743, C43, E43, 783, and E83
–23		1	Pullout tray
–24	45T9016	1	Unit frame
–25	44T5249	1	Wide USB housing
–	45T9339	1	Wide USB housing without feet
–	23K8110	1	UPS housing closeout
–26	42M5861	1	Low voltage UPS (optional; wide systems only)
–26	42M5860	1	High voltage UPS (optional; wide systems only)

Asm–Index	Part Number	Units	Description
			Top cover assemblies (without rear door):
–	23K8052	1	UPS battery[2]
–27	45T9018	1	Switch/LED card
–28	45T9022	1	Front USB module
–	45T9046	1	Front USB blanking shield
–29	45T9086	1	UPS cover; storm (light) gray
–29	45T9088	1	UPS cover; iron (dark) gray
–29	45T9090	1	UPS cover; litho gray
–	45T9092	1	Miscellaneous hardware kit[3]
			Options:
–	42M5866	1	Dual display adapter
–	42M5867	1	DVI adapter
–	45T9997	1	PCI Express video adapter, ATI
–	42C0060	1	Keyboard, PS/2 preferred
–	39X8908	1	Modular flash drive
–	41A3542	1	Vertical stand, storm (light) gray
–	41A3543	1	Vertical stand, iron (dark) gray
–	41A3544	1	Vertical stand, litho gray
			Cables:
–	45T9025	1	Cable, front USB
–	45T9020	1	Cable, switch/LED card
–	44T5667	1	Cable, serial port (black connectors)
–	44T5669	1	Cable, serial port (blue connectors)
–	45T9436	1	Cable, Ethernet, CAT6
–	42M5651	1	Cable, cash drawer adapter (SDL to RJ11)
–	39M5380	1	Cable, UPS power
–	42M5862	1	Cable, UPS communications
–	41A3552	1	Cable, UPS adapter to NEMA 5-15R
–	39M5399	1	Cable, T power connector
–	42M5873	1	Cable, RS-232 converter (15 pin, 9 pin standard)
–	41A3553	1	Universal coupler power cord

2. SurePOS 700 UPS batteries are a consumable item and, as such, you are responsible for replacing them. IBM warrants the original UPS battery for 90 days from the ship date to the customer or distributor. In the U.S. and Canada, you can purchase replacement batteries (P/N 23K8052) by calling 1-800-IBM-CALL (1-800-426-2225). If you are located outside of the U.S. and Canada, contact your IBM representative.

3. Includes blue tip, keylock cam screw, CD-ROM screw, M3 screws, M4 flat-head screws, 6-32 screws, serial port standoff, main feet, center foot, center foot pin, PCI blank, cover plug, lock plug, and labels.

Assembly 2: Slanted I/O tray



Storm Gray

Iron Gray

Asm–Index	Part Number	Units	Description
2–1	41A3567	1	Keyboard replacement filler panel; pearl white
–1	41A3566	1	Keyboard replacement filler panel; iron (dark) gray
–2	30L6322	1	Printer filler/narrow credit card holder; pearl white/storm (light) gray
–2	41A3547	1	Printer filler/narrow credit card holder; iron (dark) gray
–3	30L6230	1	Filler insert for display filler panel; pearl white
–3	10N1247	1	Filler insert for display filler panel; iron (dark) gray
–4	30L6217	1	Credit card holder; pearl white
–4	41A3548	1	Credit card holder; iron (dark) gray
–5	30L6240	2	Screw, molded; storm (light) gray
–5	10N1346	2	Screw, molded; iron (dark) gray
–5	93F1779	1	Screw, molded; litho gray
–6	14J1009	1	Slanted I/O tray; storm (light) gray
–6	14J1010	1	Slanted I/O tray; iron (dark) gray
–6	14J1255	1	Slanted I/O tray; litho gray
–	30L6320	1	Tabletop integration tray; storm (light) gray
–	41A3584	1	Tabletop integration tray; iron (dark) gray
–	41A3546	1	Tabletop integration tray; litho gray
–	45T9998	1	Metal insert for tabletop tray (supports 4820 mount)
–	41A3578	1	Cash drawer slant tray; litho gray
–	45T9226	1	Metal insert cash drawer tray (supports 4820 mount)
–	47L7995	1	Display filler panel, character/graphics
–7	30L6218	1	Display filler panel; pearl white
–7	10N1248	1	Display filler panel; iron (dark) gray
–8	30L6216	1	Keyboard filler panel; pearl white
–8	41A3557	1	Keyboard filler panel; iron (dark) gray
–	16K8692	1	Single station printer filler panel; pearl white
–	47P9273	1	Single station printer filler panel; iron (dark) gray
–9	41A3574	2	Mounting clip
–	59G9136	1	Tape holder (pearl/storm)
–	42M5726	1	Narrow gap filler; pearl white
–	42M5727	1	Narrow gap filler; iron (dark) gray

Line cord assemblies

Table 11. Power cords for all models

Part number	Length	Country
39M5066	4.3 M	Argentina, Paraguay, Uruguay
39M5100	4.3 M	Australia, New Zealand, Papua, New Guinea
39M5093	4.3 M, 220 volt	Bahamas, Barbados, Bermuda, Bolivia, Canada, Cayman Islands, Columbia, Costa Rica, Dominican Rep., El Salvador, Ecuador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, U.S., Venezuela
39M5162	2.8 M Non-locking	Chile
39M5204	4.3 M	China (PR)
39M5078	2.8 M Non-locking, 120 volt	Colombia, Venezuela, Peru, Ecuador, Brazil
39M5128	4.3 M Non-locking	Denmark
39M5121	4.3 M	European plug, Albania, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Macedonia, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, former Yugoslavia, Spain, Sweden, Turkey, Korea
39M5149	4.3 M Non-locking	Hong Kong, Ireland, Malaysia, Singapore, U.K., Guyana, Trinidad (West Indies)
39M5142	4.3 M	Bangladesh, Pakistan, South Africa, Sri Lanka
39M5224	4.3 M	India
39M5170	4.3 M Non-locking	Israel
39M5163	4.3 M Non-locking	Italy, Chile
39M5191	4.3 M Non-locking	Japan
39M5065	2.8 M Non-locking	Paraguay, Uruguay
39M5156	4.3 M Non-locking	Switzerland
39M5252	4.3 M	Taiwan
39M5077	1.8 M Non-locking	U.S. (Required in Chicago), Canada, Latin America
39M5079	4.3 M Non-locking, 120 volt	U.S., Bahamas, Barbados, Bermuda, Bolivia, Canada, Cayman Islands, Columbia, Costa Rica, Dominican Republic, El Salvador, Ecuador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Thailand, Venezuela
39M5107	4.3 M Locking	U.S.

Appendix B. Safety information

Danger:
Before you begin to install this product, read the safety information in *IBM Safety Information — Read This First*, GA27-4004. This booklet describes safe procedures for cabling and plugging in electrical equipment.

Gevaar:
Voordat u begint met de installatie van dit produkt, moet u eerst de veiligheidsinstructies lezen in de brochure *Veiligheidsinstructies—Lees dit eerst*, GA27-4004. Hierin wordt beschreven hoe u electrische apparatuur op een veilige manier moet bekabelen en aansluiten.

Perigo:
Antes de começar a instalar este produto, leia as informações de segurança contidas em *Informações Sobre Seguranaça—Leia Isto Primeiro,* GA27-4004. Esse folheto descreve procedimentos de segurança para a instalação de cabos e conexões em equipamentos elétricos.

Fare!
Før du installerer dette produkt, skal du læse sikkerhedsforskrifterne i *Sikkerhedsforskrifter—Lœs dette først* GA27-4004. Vejledningen beskriver den fremgangsmåde, du skal bruge ved tilslutning af kabler og udstyr.

Gevaar

Voordat u begint met het installeren van dit produkt, dient u eerst de veiligheidsrichtlijnen te lezen die zijn vermeld in de publikatie *IBM Safety Information — Read This First*, GA27-4004. In dit boekje vindt u veilige procedures voor het aansluiten van elektrische appratuur.

VAARA

Ennen kuin aloitat tämän tuotteen asennuksen, lue julkaisussa *Turvaohjeet—Luetämä ensin*, GA27-4004, olevat turvaohjeet. Tässä kirjasessa on ohjeet siitä, miten sähkölaitteet kaapeloidaan ja kytketään turvallisesti.

Danger

Avant d'installer le présent produit, consultez le livret *Informations pour la sécurité–Lisez-moi d'abord*, GA27-4004, qui décrit les procédures à respecter pour effectuer les opérations de câblage et brancher les équipements électriques en toute sécurité.

Vorsicht

Bevor mit der Installation des Produktes begonnen wird, die Sicherheitshinweise in *Sicherheitsinformationen—Bitte zuerst lesen,* IBM Form GA27-4004. Diese Veröffentlichung beschreibt die Sicherheitsvorkehrungen für das Verkabeln und Anschlie*ß*en elektrischer Geräte.

Vigyázat

Mielôtt megkezdi a berendezés üzembe helyezését, olvassa el a *IBM Safety Information — Read This First*, GA27-4004 könyvecskében leírt biztonsági információkat. Ez a könyv leírja, milyen biztonsági intézkedéseket kell megtenni az elektromos berendezés huzalozásakor illetve csatlakoztatásakor.

Pericolo

prima di iniziare l'installazione di questo prodotto, leggere le informazioni relative alla sicurezza riportate nell'opuscolo *Informazioni di sicurezza—Prime informazioni da leggere* in cui sono descritte le procedure per il cablaggio ed il collegamento di apparecchiature elettriche.

Fare

Før du begynner å installere dette produktet, må du lese sikkerhetsinformasjonen i *Sikkerhetsinformasjon—Les dette først,* GA27-4004 som beskriver sikkerhetsrutinene for kabling og tilkobling av elektrisk utstyr.

Perigo

Antes de iniciar a instalação deste produto, leia as informações de segurança *Informações de Segurança—Leia Primeiro,* GA27-4004. Este documento descreve como efectuar, de um modo seguro, as ligações eléctricas dos equipamentos.

Peligro

Antes de empezar a instalar este producto, lea la información de seguridad en *Información de Seguridad—Lea Esto Primero,* GA27-4004. Este documento describe los procedimientos de sequridad para cablear y enchufar equipos eléctricos.

Varning—livsfara

Innan du börjar installera den här produkten bör du läsa säkerhetsinformationen i dikumentet *Säkerhetsföreskrifter—Läs detta först,* GA27-4004. Där beskrivs hur du på ett säkert sätt ansluter elektrisk utrustning.

危險：安裝本產品之前， 請先閱讀
"IBM Safety Information--Read
This First" GA27-4004 手冊中所提
供的安全注意事項。 這本手冊將會說明
使用電器設備的纜線及電源的安全程序。

Opasnost: Prije nego sto počnete sa instalacijom produkta,
pročitajte naputak o pravilima o sigurnom rukovanju u
Upozorenje: Pravila o sigurnom rukovanju - Prvo pročitaj ovo,
GA27-4004. Ovaj privitak opisuje sigurnosne postupke za
priključrivanje kabela i priključivanje na električno napajanje.

Upozornění: než zahájíte instalaci tohoto produktu, přečtěte si
nejprve bezpečnostní informace v pokynech „ Bezpečnostní
informace“ č. GA27-4004. Tato brožurka popisuje bezpečnostní
opatření pro kabeláž a zapojení elektrického zařízení.

Κίνδυνος: Πριν ξεκινήσετε την εγκατάσταση αυτού του προϊόντος,
διαβάστε τις πληροφορίες ασφάλειας στο φυλλάδιο *IBM Safety
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περιγράφονται οι ασφαλείς διαδικασίες για την καλωδίωση των
ηλεκτρικών συσκευών και τη σύνδεσή τους στην πρίζα.

危険： 導入作業を開始する前に、安全に関する
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(Read This First)の項をお読みください。
この小冊子は、電気機器の安全な配線と接続の
手順について説明しています。

위험: 이 제품을 설치하기 전에 반드시
"주의: 안전 정보-시작하기 전에"
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Caution: Safety Information - Read This First, GA27-4004
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الحمـــاية الموجودة في التحذيـــر: معلومـــات الحمـــاية – Read This First،
GA27-4004 . يقـــوم هذا الكتيـــب بوصـــف اجـــراءات الآمـــان
لتوصـــيل الأدوات الكـــهربائية بالكـــابلات والمقبـــس الكـــهربائـــي.

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Оваа брошура опишува безбедносни процедури за каблирање и вклучување на електрична опрема.

Uwaga:
Przed rozpoczęciem instalacji produktu należy zapoznać się z instrukcją:
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Nebezpečenstvo: Pred inštaláciou výrobku si prečítajte bezpečnosté predpisy v
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注意：

請先閱讀 - 安全資訊 GA27-4004

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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 iinterferencewith 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

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 Richlinie 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 Maβnahmen 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

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.

Chinese Class A warning statement

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.

中华人民共和国“A 类”警告声明

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

Attention: This product is a Class A Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Technology Equipment (VCCI). In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Korean communications statement

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.

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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.

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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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

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.

Battery return program

This product may contain sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to http://www.ibm.com/ibm/environment/products/batteryrecycle.shtml or contact your local waste disposal facility.

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and other battery packs from IBM equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Please have the IBM part number listed on the battery available prior to your call.

For Taiwan:

Please recycle batteries.

For the European Union:

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Batteries or packaging for batteries are labeled in accordance with European Directive 2006/66/EC concerning batteries and accumulators and waste batteries and accumulators. The Directive determines the framework for the return and recycling of used batteries and accumulators as applicable throughout the European Union. This label is applied to various batteries to indicate that the battery is not to be thrown away, but rather reclaimed upon end of life per this Directive.

In accordance with the European Directive 2006/66/EC, batteries and accumulators are labeled to indicate that they are to be collected separately and recycled at end of life. The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury and Cd for cadmium). Users of batteries and accumulators must not dispose of batteries and accumulators as unsorted municipal waste, but use the collection framework available to customers for the return, recycling and treatment of batteries and accumulators. Customer participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances. For proper collection and treatment, contact your local IBM representative.

For California:

Perchlorate material – special handling may apply

Refer to http://www.dtsc.ca.gov/hazardouswaste/perchlorate.

The foregoing notice is provided in accordance with *California Code of Regulations Title 22, Division 4.5, Chapter 33: Best Management Practices for Perchlorate Materials*. This product/part includes a lithium manganese dioxide battery which contains a perchlorate substance.

Flat panel displays

The fluorescent lamp in the liquid crystal display contains mercury. Dispose of it as required by local ordinances and regulations.

Monitors

Connecticut - Please see the web site of the Department of Environmental Protection at http://www.ct.gov/dep for information about recycling covered electronic devices in the State of Connecticut, or telephone the Connecticut Department of Environmental Protection at 1-860-424-3000.

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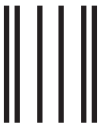

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