



**IBM NetVista Computer Types 6058,
6059, 6269, 6568, 6569,
6578, 6579, 6648, 6649**

Hardware Maintenance Manual



IBM NetVista Computer Types 6058, 6059, 6269, 6568, 6569, 6578, 6579, 6648, 6649

Note:

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 228.

Second Edition (November 2000)

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About this manual

This manual contains service and reference information for the IBM® NetVista™ Series computer types 6058, 6059, 6269, 6568, 6569, 6578, 6579, 6648, 6649.

This manual is divided into product service sections (by machine chassis) and a related service section, as follows:

- The product service sections include procedures for isolating problems to a FRU, a Symptom-to-FRU Index, additional service information and an illustrated parts catalog.
- The related service section includes safety notices and safety information, and problem determination tips.

Note: This manual is intended for trained servicers who are familiar with IBM Personal Computer products. Use this manual along with advanced diagnostic tests to troubleshoot problems effectively.

Before servicing an IBM product, be sure to review the “Safety notices (multi-lingual translations)” on page 189 and “Safety information” on page 185.

Important Safety Information

Be sure to read all caution and danger statements in this book before performing any of the instructions.

Prenez connaissance de toutes les consignes de type Attention et Danger avant de procéder aux opérations décrites par les instructions.

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

Accertarsi di leggere tutti gli avvisi di attenzione e di pericolo prima di effettuare qualsiasi operazione.

Leia todas as instruções de cuidado e perigo antes de executar qualquer operação.

Lea atentamente todas las declaraciones de precaución y peligro ante de llevar a cabo cualquier operación.

주의 및 위험 경고문(한글)

중요:

이 책에 나오는 모든 주의 및 위험 경고문은 번호로 시작됩니다. 이 번호는 *Safety Information* 책에 나오는 영문판 주의 및 위험 경고문과 한글판 주의 및 위험 경고문을 상호 참조하는데 사용됩니다.

예를 들어 주의 경고문이 번호 1로 시작되면 *Safety Information* 책에서 이 주의 경고문은 경고문 1번 아래에 나옵니다.

지시를 따라 수행하기 전에 먼저 모든 주의 및 위험 경고문을 읽도록 하십시오.

注意及危險聲明 (中文)

重要資訊：

本書中所有「注意」及「危險」的聲明均以數字開始。此一數字是用來作為交互參考之用，英文「注意」或「危險」聲明可在「安全資訊」(Safety Information)一書中找到相同內容的「注意」或「危險」聲明的譯文。

例如，有一「危險」聲明以數字 1 開始，則該「危險」聲明的譯文將出現在「安全資訊」(Safety Information)一書的「聲明」1 中。

執行任何指示之前，請詳讀所有「注意」及「危險」的聲明。

Related Publications

The following publications are available for IBM products. For more information, contact IBM or an IBM Authorized Dealer.

For Information About:	See Publication:
PC300/700 [®] and IntelliStation [®] computers - Volume 1 Hardware Maintenance Manual	IBM Personal Computer HMM Volume 1 (S83G-7789)
PC300 [®] and IntelliStation computers (Including Aptiva [®] 2173) - Volume 2 Hardware Maintenance Manual	IBM Personal Computer HMM Volume 2 (S00N-4019)
PC300 and IntelliStation computers - Volume 3 Hardware Maintenance Manual	IBM Personal Computer HMM Volume 3 (S09N-8603)
PS/2 [®] Computers	IBM Personal System/2 HMM (S52G-9971)
PS/ValuePoint [®] Computers	IBM PS/ValuePoint Hardware Maintenance Service and Reference (S61G-1423)
Laptop, Notebook, Portable, and ThinkPad [®] Computers (L40, CL57, N45, N51, P70/P75, ThinkPad 300, 350, 500, 510, 710T, Expansion Unit, Dock I, Dock II)	IBM Mobile Systems HMM Volume 1 (S82G-1501)
ThinkPad Computers (340, 355, 360, 370, 700, 701, 720, 750, 755)	IBM Mobile Systems HMM Volume 2 (S82G-1502)
ThinkPad Computers (365, 560, 760, SelectaDock)	IBM Mobile Systems HMM Volume 3 (S82G-1503)
Monitors (Displays) (February 1993)	IBM PS/2 Display HMM Volume 1 (SA38-0053)
Monitors (December 1993)	IBM Color Monitor HMM Volume 2 (S71G-4197)
IBM Monitors (P/G Series) (June 1996)	IBM Monitor HMM Volume 3 (S52H-3679)
IBM 2248 Monitor (February 1996)	IBM Monitor HMM Volume 4 (S52H-3739)
Disk Array technology overview and using the IBM RAID Configuration Program	Configuring Your Disk Array booklet (S82G-1506)
Installation Planning for Personal System/2 computers	Personal System/2 Installation Planning and Beyond (G41G-2927)
Installation Planning for Advanced Personal System/2 Servers	Advanced PS/2 Servers Planning and Selection Guide (GG24-3927)

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Chapter 1. IBM PC Enhanced Diagnostics error codes

Refer to the following Diagnostic Error Codes when using the IBM PC Enhanced Diagnostics test. See the "Diagnostic and test information" section for the specific model for information about the IBM PC Enhanced Diagnostics program.

In the following index, X can represent any number.

Diagnostic Error Code	FRU/Action
000-000-XXX BIOS Test Passed	1. No action
000-002-XXX BIOS Timeout	1. Flash the system 2. System board
000-024-XXX BIOS Addressing test failure	1. Flash the system 2. System board
000-025-XXX BIOS Checksum Value error	1. Flash the system 2. Boot block 3. System board
000-026-XXX FLASH data error	1. Flash the system 2. Boot block 3. System board
000-027-XXX BIOS Configuration/Setup error	1. Run Setup 2. Flash the system 3. Boot block 4. System board
000-034-XXX BIOS Buffer Allocation failure	1. Reboot the system 2. Flash the system 3. Run memory test 4. System board
000-035-XXX BIOS Reset Condition detected	1. Flash the system 2. System board
000-036-XXX BIOS Register error	1. Flash the system 2. Boot block 3. System board

Diagnostic Error Code	FRU/Action
000-038-XXXBIOS Extension failure	<ol style="list-style-type: none"> 1. Flash the system 2. Adapter card 3. System board
000-039-XXXBIOS DMI data error	<ol style="list-style-type: none"> 1. Flash the system 2. System board
000-195-XXXBIOS Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
000-196-XXXBIOS test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file
000-197-XXXBIOS test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
000-198-XXXBIOS test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
000-199-XXXBIOS test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
000-250-XXXBIOS APM failure	<ol style="list-style-type: none"> 1. Flash the system 2. System board
000-270-XXXBIOS ACPI failure	<ol style="list-style-type: none"> 1. Flash the system 2. System board
001-000-XXXSystem Test Passed	<ol style="list-style-type: none"> 1. No action
001-00X-XXXSystem Error	<ol style="list-style-type: none"> 1. System board
001-01X-XXXSystem Error	<ol style="list-style-type: none"> 1. System board
001-024-XXXSystem Addressing test failure	<ol style="list-style-type: none"> 1. System board
001-025-XXXSystem Checksum Value error	<ol style="list-style-type: none"> 1. Flash the system 2. System board
001-026-XXXSystem FLASH data error	<ol style="list-style-type: none"> 1. Flash the system 2. System board

Diagnostic Error Code	FRU/Action
001-027-XXX System Configuration/Setup error	<ol style="list-style-type: none"> 1. Run Setup 2. Flash the system 3. System board
001-032-XXX System Device Controller failure	<ol style="list-style-type: none"> 1. System board
001-034-XXX System Device Buffer Allocation failure	<ol style="list-style-type: none"> 1. Reboot the system 2. Flash the system 3. Run memory test 4. System board
001-035-XXX System Device Reset condition detected	<ol style="list-style-type: none"> 1. System board
001-036-XXX System Register error	<ol style="list-style-type: none"> 1. System board
001-038-XXX System Extension failure	<ol style="list-style-type: none"> 1. Adapter card 2. System board
001-039-XXX System DMI data structure error	<ol style="list-style-type: none"> 1. Flash the system 2. System board
001-040-XXX System IRQ failure	<ol style="list-style-type: none"> 1. Power-off/on system and re-test 2. System board
001-041-XXX System DMA failure	<ol style="list-style-type: none"> 1. Power-off/on system and re-test 2. System board
001-195-XXX System Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
001-196-XXX System test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file
001-197-XXX System test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
001-198-XXX System test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section

Diagnostic Error Code	FRU/Action
001-199-XXX System test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
001-250-XXX System ECC error	1. System board
001-254-XXX 001-255-XXX 001-256-XXX 001-257-XXX System DMA error	1. System board
001-260-XXX 001-264-XXX System IRQ error	1. System board
001-268-XXX System IRQ1 failure	<ol style="list-style-type: none"> 1. Device on IRQ1 2. System board
001-269-XXX System IRQ2 failure	<ol style="list-style-type: none"> 1. Device on IRQ2 2. System board
001-270-XXX System IRQ3 failure	<ol style="list-style-type: none"> 1. Device on IRQ3 2. System board
001-271-XXX System IRQ4 failure	<ol style="list-style-type: none"> 1. Device on IRQ4 2. System board
001-272-XXX System IRQ5 failure	<ol style="list-style-type: none"> 1. Device on IRQ5 2. System board
001-273-XXX System IRQ6(diskette drive) failure	<ol style="list-style-type: none"> 1. Diskette Cable 2. Diskette drive 3. System board
001-274-XXX System IRQ7 failure	<ol style="list-style-type: none"> 1. Device on IRQ7 2. System board
001-275-XXX System IRQ8 failure	<ol style="list-style-type: none"> 1. Device on IRQ8 2. System board
001-276-XXX System IRQ9 failure	<ol style="list-style-type: none"> 1. Device on IRQ9 2. System board
001-277-XXX System IRQ10 failure	<ol style="list-style-type: none"> 1. Device on IRQ10 2. System board
001-278-XXX System IRQ11 failure	<ol style="list-style-type: none"> 1. Device on IRQ11 2. System board

Diagnostic Error Code	FRU/Action
001-279-XXX System IRQ12 failure	<ol style="list-style-type: none"> 1. Device on IRQ12 2. System board
001-280-XXX System IRQ13 failure	<ol style="list-style-type: none"> 1. Device on IRQ13 2. System board
001-281-XXX System IRQ14(hard disk drive) failure	<ol style="list-style-type: none"> 1. Hard disk drive cable 2. Hard disk drive 3. System board
001-282-XXX System IRQ15 failure	<ol style="list-style-type: none"> 1. Device on IRQ15 2. System board
001-286-XXX 001-287-XXX 001-288-XXX System Timer failure	<ol style="list-style-type: none"> 1. System board
001-292-XXX System CMOS RAM error	<ol style="list-style-type: none"> 1. Run Setup and re-test 2. System board
001-293-XXX System CMOS Battery	<ol style="list-style-type: none"> 1. Battery 2. System board
001-298-XXX System RTC date/time update failure	<ol style="list-style-type: none"> 1. Flash the system 2. System board
001-299-XXX System RTC periodic interrupt failure	<ol style="list-style-type: none"> 1. System board
001-300-XXX System RTC Alarm failure	<ol style="list-style-type: none"> 1. System board
001-301-XXX System RTC Century byte error	<ol style="list-style-type: none"> 1. Flash the system 2. System board
005-000-XXX Video Test Passed	<ol style="list-style-type: none"> 1. No action
005-00X-XXX Video error	<ol style="list-style-type: none"> 1. Video card, if installed 2. System board
005-010-XXX 005-011-XXX 005-012-XXX 005-013-XXX Video Signal failure	<ol style="list-style-type: none"> 1. Video card, if installed 2. System board
005-016-XXX Video Simple Pattern test failure	<ol style="list-style-type: none"> 1. Video Ram 2. Video card, if installed 3. System board

Diagnostic Error Code	FRU/Action
005-024-XXXVideo Addressing test failure	<ol style="list-style-type: none"> 1. Video card, if installed 2. System board
005-025-XXXVideo Checksum Value error	<ol style="list-style-type: none"> 1. Video card, if installed 2. System board
005-027-XXXVideo Configuration/Setup error	<ol style="list-style-type: none"> 1. Run Setup 2. Video drivers update 3. Video card, if installed 4. System board
005-031-XXXVideo Device Cable failure	<ol style="list-style-type: none"> 1. Video cable 2. Monitor 3. Video card, if installed 4. System board
005-032-XXXVideo Device Controller failure	<ol style="list-style-type: none"> 1. Video card, if installed 2. System board
005-036-XXXVideo Register error	<ol style="list-style-type: none"> 1. Video card, if installed 2. System board
005-038-XXXSystem BIOS extension failure	<ol style="list-style-type: none"> 1. Video card, if installed 2. System board
005-040-XXXVideo IRQ failure	<ol style="list-style-type: none"> 1. Video card, if installed 2. System board
005-195-XXXVideo Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
005-196-XXXVideo test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file
005-197-XXXVideo test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
005-198-XXXVideo test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section

Diagnostic Error Code	FRU/Action
005-199-XXXVideo test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
005-2XX-XXX 005-3XX-XXXVideo subsystem error	<ol style="list-style-type: none"> 1. Video card, if installed 2. System board
006-000-XXXDiskette interface Test Passed	<ol style="list-style-type: none"> 1. No action
006-0XX-XXXDiskette interface error	<ol style="list-style-type: none"> 1. Diskette drive Cable 2. Diskette drive 3. System board
006-195-XXXDiskette interface Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
006-196-XXXDiskette interface test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file
006-197-XXXDiskette interface test warning	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
006-198-XXXDiskette interface test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
006-199-XXXDiskette interface test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
006-25X-XXXDiskette interface Error	<ol style="list-style-type: none"> 1. Diskette drive cable 2. Diskette drive 3. System board
011-000-XXXSerial port Interface Test Passed	<ol style="list-style-type: none"> 1. No action
011-001-XXXSerial port Presence	<ol style="list-style-type: none"> 1. Remove external serial device, if present 2. Run setup, enable port 3. System board
011-002-XXX 011-003-XXXSerial port Timeout/Parity error	<ol style="list-style-type: none"> 1. System board

Diagnostic Error Code	FRU/Action
011-013-XXX 011-014-XXXSerial port Control Signal/Loopback test failure	1. System board
011-015-XXXSerial port External Loopback failure	1. Wrap plug 2. System board
011-027-XXXSerial port Configuration/Setup error	1. Run Setup, enable port 2. Flash the system 3. System board
011-03X-XXX 011-04X-XXXSerial port failure	1. System board
011-195-XXXSerial port Test aborted by user	1. Information 2. Re-start the test, if necessary
011-196-XXXSerial port test halt, error threshold exceeded	1. Press F3 to review the log file 2. Re-start the test to reset the log file
011-197-XXXSerial port test warning	1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
011-198-XXXSerial port test aborted	1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
011-199-XXXSerial port test failed, cause unknown	1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
011-2XX-XXXSerial port signal failure	1. External serial device 2. System board
014-000-XXXParallel port Interface Test Passed	1. No action
014-001-XXXParallel port Presence	1. Remove external parallel device, if present 2. Run setup, enable port 3. System board
014-002-XXX 014-003-XXXParallel port Timeout/Parity error	1. System board

Diagnostic Error Code	FRU/Action
014-013-XXX 014-014-XXXParallel port Control Signal/Loopback test failure	1. System board
014-015-XXXParallel port External Loopback failure	1. Wrap plug 2. System board
014-027-XXXParallel port Configuration/Setup error	1. Run Setup, enable port 2. Flash the system 3. System board
014-03X-XXX 014-04X-XXXParallel port failure	1. System board
014-195-XXXParallel port Test aborted by user	1. Information 2. Re-start the test, if necessary
014-196-XXXParallel port test halt, error threshold exceeded	1. Press F3 to review the log file 2. Re-start the test to reset the log file
014-197-XXXParallel port test warning	1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
014-198-XXXParallel port test aborted	1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
014-199-XXXParallel port test failed, cause unknown	1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
014-2XX-XXX 014-3XX-XXXParallel port failure	1. External parallel device 2. System board
015-000-XXXUSB port Interface Test Passed	1. No action
015-001-XXXUSB port Presence	1. Remove USB device(s) and re-test 2. System board
015-002-XXXUSB port Timeout	1. Remove USB device(s) and re-test 2. System board

Diagnostic Error Code	FRU/Action
015-015-XXXUSB port External Loopback failure	<ol style="list-style-type: none"> 1. Remove USB device(s) and re-test 2. System board
015-027-XXXUSB port Configuration/Setup error	<ol style="list-style-type: none"> 1. Flash the system 2. System board
015-032-XXXUSB port Device Controller failure	<ol style="list-style-type: none"> 1. System board
015-034-XXXUSB port bufferallocation failure	<ol style="list-style-type: none"> 1. Reboot the system 2. Flash the system 3. Run memory test 4. System board
015-035-XXXUSB port Reset condition detected	<ol style="list-style-type: none"> 1. Remove USB device(s) and re-test 2. System board
015-036-XXXUSB port Register error	<ol style="list-style-type: none"> 1. System board
015-040-XXXUSB port IRQ failure	<ol style="list-style-type: none"> 1. Run setup and check for conflicts 2. Flash the system 3. System board
015-195-XXXUSB port Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
015-196-XXXUSB port test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file
015-197-XXXUSB port test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
015-198-XXXUSB port test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
015-199-XXXUSB port test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
018-000-XXXPCI Card Test Passed	<ol style="list-style-type: none"> 1. No action

Diagnostic Error Code	FRU/Action
018-0XX-XXXPCI Card Failure	<ol style="list-style-type: none"> 1. Riser card, if installed 2. System board
018-195-XXXPCI Card Test aborted by user	<ol style="list-style-type: none"> 1. PCI card 2. Information 3. Re-start the test, if necessary
018-196-XXXPCI Card test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file
018-197-XXXPCI Card test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
018-198-XXXPCI Card test aborted	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
018-199-XXXPCI Card test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
018-250-XXXPCI Card Services error	<ol style="list-style-type: none"> 1. PCI card 2. Riser card, if installed 3. System board
020-000-XXXPCI Interface Test Passed	<ol style="list-style-type: none"> 1. No action
020-0XX-XXXPCI Interface error	<ol style="list-style-type: none"> 1. PCI card 2. Riser card, if installed 3. System board
020-195-XXXPCI Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
020-196-XXXPCI test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file

Diagnostic Error Code	FRU/Action
020-197-XXXPCI test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
020-198-XXXPCI test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
020-199-XXXPCI test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
020-262-XXX PCI system error	<ol style="list-style-type: none"> 1. PCI card 2. Riser card, if installed 3. System board
025-000-XXX IDE interface Test Passed	<ol style="list-style-type: none"> 1. No action
025-00X-XXX 025-01X-XXXIDE interface failure	<ol style="list-style-type: none"> 1. IDE signal cable 2. Check power supply 3. IDE device 4. System board
025-027-XXXIDE interface Configuration/Setup error	<ol style="list-style-type: none"> 1. IDE signal cable 2. Flash the system 3. IDE device 4. System board
025-02X-XXX 025-03X-XXX 025-04X-XXXIDE Interface failure	<ol style="list-style-type: none"> 1. IDE signal cable 2. Check power supply 3. IDE device 4. System board
025-195-XXXIDE interface Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
025-196-XXXIDE interface test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file

Diagnostic Error Code	FRU/Action
025-197-XXXIDE interface test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
025-198-XXXIDE interface test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
025-199-XXXIDE interface test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
030-000-XXXSCSI interface Test Passed	<ol style="list-style-type: none"> 1. No action
030-00X-XXX 030-01X-XXXSCSI interface failure	<ol style="list-style-type: none"> 1. SCSI signal cable 2. Check power supply 3. SCSI device 4. SCSI adapter card, if installed 5. System board
030-027-XXXSCSI interface Configuration/Setup error	<ol style="list-style-type: none"> 1. SCSI signal cable 2. Flash the system 3. SCSI device 4. SCSI adapter card, if installed 5. System board
030-03X-XXX 030-04X-XXXSCSI interface error	<ol style="list-style-type: none"> 1. SCSI signal cable 2. Check power supply 3. SCSI device 4. SCSI adapter card, if installed 5. installed System board
030-195-XXXSCSI interface Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
030-196-XXXSCSI interface test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file

Diagnostic Error Code	FRU/Action
030-197-XXXSCSI interface test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
030-198-XXXSCSI interface test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
030-199-XXXSCSI interface test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
035-000-XXXRAID interface Test Passed	<ol style="list-style-type: none"> 1. No action
035-0XX-XXXRAID interface Failure	<ol style="list-style-type: none"> 1. RAID signal cable 2. RAID device 3. RAID adapter card, if installed 4. System board
035-195-XXXRAID interface Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
035-196-XXXRAID interface test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file
035-197-XXXRAID interface test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
035-198-XXXRAID interface test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
035-199-XXXRAID interface test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
071-000-XXXAudio port Interface Test Passed	<ol style="list-style-type: none"> 1. No action

Diagnostic Error Code	FRU/Action
071-00X-XXX 071-01X-XXX 071-02X-XXX Audio port error	<ol style="list-style-type: none"> 1. Run Setup 2. Flash the system 3. System board
071-03X-XXX Audio port failure	<ol style="list-style-type: none"> 1. Speakers 2. Microphone 3. Audio card, if installed 4. System board
071-04X-XXX Audio port failure	<ol style="list-style-type: none"> 1. Run Setup 2. Audio card, if installed 3. System board
071-195-XXX Audio port Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
071-196-XXX Audio port test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file
071-197-XXX Audio port test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
071-198-XXX Audio port test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
071-199-XXX Audio port test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
071-25X-XXX Audio port failure	<ol style="list-style-type: none"> 1. Speakers 2. Audio card, if installed 3. System board
080-000-XXX Game Port interface Test Passed	<ol style="list-style-type: none"> 1. No action
080-XXX-XXX Game Port interface Error	<ol style="list-style-type: none"> 1. Remove the game port device and re-test the system
080-195-XXX Game Port interface Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary

Diagnostic Error Code	FRU/Action
080-196-XXXGame Port interface test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file
080-197-XXXGame Port interface test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
080-198-XXXGame Port interface test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
080-199-XXXGame Port interface test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
086-000-XXXMouse Port interface Test Passed	<ol style="list-style-type: none"> 1. No action
086-001-XXXMouse Port interface Presence	<ol style="list-style-type: none"> 1. Mouse 2. System board
086-032-XXXMouse Port interface Device controller failure	<ol style="list-style-type: none"> 1. Mouse 2. System board
086-035-XXXMouse Port interface Reset	<ol style="list-style-type: none"> 1. Mouse 2. System board
086-040-XXXMouse Port interface IRQ failure	<ol style="list-style-type: none"> 1. Run Setup 2. Mouse 3. System board
086-195-XXXMouse Port interface Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
086-196-XXXMouse Port interface test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file
086-197-XXXMouse Port interface test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test

Diagnostic Error Code	FRU/Action
086-198-XXX Mouse Port interface test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
086-199-XXX Mouse Port interface test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
089-000-XXX Microprocessor Test Passed	<ol style="list-style-type: none"> 1. No action
089-XXX-XXX Microprocessor failure	<ol style="list-style-type: none"> 1. Microprocessor(s) 2. System board
089-195-XXX Microprocessor Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
089-196-XXX Microprocessor test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file
089-197-XXX Microprocessor test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
089-198-XXX Microprocessor test aborted	<ol style="list-style-type: none"> 1. Flash the system and re-test 2. Go to the "Undetermined problems" section
089-199-XXX Microprocessor test failed, cause unknown	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Go to the "Undetermined problems" section 3. Flash the system and re-test 4. Replace component under function test
170-000-XXX Voltage Sensor(s) Test Passed	<ol style="list-style-type: none"> 1. No action
170-0XX-XXX Voltage Sensor(s) failure	<ol style="list-style-type: none"> 1. Flash system 2. System board
170-195-XXX Voltage Sensor(s) Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
170-196-XXX Voltage Sensor(s) test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file

Diagnostic Error Code	FRU/Action
170-197-XXX Voltage Sensor(s) test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
170-198-XXX Voltage Sensor(s) test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
170-199-XXX Voltage Sensor(s) test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
170-250-XXX 170-251-XXX Voltage Sensor(s) Voltage limit error	<ol style="list-style-type: none"> 1. Power supply 2. System board
170-254-XXX Voltage Sensor(s) Voltage Regulator Module error	<ol style="list-style-type: none"> 1. Voltage Regulator Module (VRM) 2. Microprocessor 3. System board
175-000-XXX Thermal Sensor(s) Test Passed	<ol style="list-style-type: none"> 1. No action
175-0XX-XXX Thermal Sensor(s) failure	<ol style="list-style-type: none"> 1. Flash system 2. System board
175-195-XXX Thermal Sensor(s) Test aborted by user	<ol style="list-style-type: none"> 1. Information 2. Re-start the test, if necessary
175-196-XXX Thermal Sensor(s) test halt, error threshold exceeded	<ol style="list-style-type: none"> 1. Press F3 to review the log file 2. Re-start the test to reset the log file
175-197-XXX Thermal Sensor(s) test warning	<ol style="list-style-type: none"> 1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
175-198-XXX Thermal Sensor(s) test aborted	<ol style="list-style-type: none"> 1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to "Undetermined problems" section

Diagnostic Error Code	FRU/Action
175-199-XXX Thermal Sensor(s) test failed, cause unknown	<ol style="list-style-type: none"> 1. Go to the "Undetermined problems" section 2. Flash the system and re-test 3. Replace component under function test
175-250-XXX 175-251-XXX Thermal Sensor(s) limit error	<ol style="list-style-type: none"> 1. Check fans 2. Check Power supply 3. Microprocessor 4. System board
185-000-XXX Asset Security Test Passed	<ol style="list-style-type: none"> 1. No action
185-XXX-XXX Asset Security failure	<ol style="list-style-type: none"> 1. Flash system 2. System board
185-278-XXX Asset Security Chassis Intrusion	<ol style="list-style-type: none"> 1. Assure Asset Security Enabled 2. C2 Cover Switch 3. System board
201-000-XXX System Memory Test Passed	<ol style="list-style-type: none"> 1. No action
201-XXX-XXX System Memory error	<ol style="list-style-type: none"> 1. Replace the memory module called out by the test 2. System board
202-000-XXX System Cache Test Passed	<ol style="list-style-type: none"> 1. No action
202-XXX-XXX System Cache error	<ol style="list-style-type: none"> 1. Cache, if removable 2. System board 3. Microprocessor
206-000-XXX Diskette Drive Test Passed	<ol style="list-style-type: none"> 1. No action
206-XXX-XXX Diskette Drive error	<ol style="list-style-type: none"> 1. Diskette Drive Cable 2. Check power supply voltages 3. Diskette drive 4. System board
215-000-XXX CD-ROM Drive Test Passed	<ol style="list-style-type: none"> 1. No action
215-XXX-XXX CD-ROM Drive error	<ol style="list-style-type: none"> 1. CD-ROM Drive Cable 2. Check power supply voltages 3. CD-ROM drive 4. System board
217-000-XXX Hard Disk Drive Test Passed	<ol style="list-style-type: none"> 1. No action

Diagnostic Error Code	FRU/Action
217-25X-XXX 217-26X-XXXHard Disk Drive (IDE) error	<ol style="list-style-type: none"> 1. Hard Disk Drive Cable 2. Check power supply voltages 3. Hard Disk drive (IDE) 4. System board
217-28X-XXX 217-29X-XXXHard Disk Drive (SCSI) error	<ol style="list-style-type: none"> 1. Hard Disk Drive Cable 2. Check power supply voltages 3. Hard Disk drive (SCSI) 4. SCSI adapter card 5. System board
220-000-XXXHi-Capacity Cartridge Drive Test Passed	1. No action
220-XXX-XXXHi-Capacity Cartridge Drive error	1. Remove the Hi-Capacity Cartridge Drive and re-test the system
301-XXX-XXXKeyboard error	<ol style="list-style-type: none"> 1. Keyboard 2. Check and test mouse 3. System board
301-000-XXXKeyboard Test Passed	1. No action
302-000-XXXMouse Test Passed	1. No action
302-XXX-XXXMouse error	<ol style="list-style-type: none"> 1. Mouse 2. Check and test Keyboard 3. System board
303-000-XXXJoystick Test Passed	1. No action
303-XXX-XXXJoystick error	1. Remove the Joystick and re-test the system
305-000-XXXMonitor DDC Test Passed	1. No action
305-250-XXXMonitor DDC self test failure	<ol style="list-style-type: none"> 1. Run Setup to enable DDC 2. Cable 3. Monitor 4. Video card 5. System board
415-000-XXX Modem Test Passed	1. No action
415-XXX-XXXModem error	1. Remove the Modem and re-test the system

Chapter 2. Types 6568/6569/6648/6649

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Product description

The NetVista type 6568/6569/6648/6649 computers are available in 2 x 3 (two I/O adapter slots plus Ethernet, and three drive bays).

- Type 6568 and 6569 are the white desktop types with the A40 and A40P system boards, respectively.
- Type 6648 and 6649 are the black desktop types with the A40 and A40P system boards, respectively.
- **Security**
 - Administrator password
 - Cover lock
 - Power-on password
 - Operating system password
 - U-bolt and cable (optional for some models)
- **CMOS backup battery (lithium)**
- **Common parts**
 - Diskette drive
 - Hard disk drive
 - Keyboard
 - Power supply
 - Mouse

Specifications Information (ISO/ANSI)

The machine type specifications information on the following pages was determined in controlled acoustical environments according to procedures specified by the American National Standards Institute (ANSI) S12.10 and ISO 7779, and are reported in accordance with ISO 9296. Actual sound pressure levels in your location might differ from the average values stated because of room reflections and other nearby noise sources. The declared sound power levels indicate an upper limit, below which a large proportion of machines will operate.

Specifications - Types 6568/6569/6648/6649

Feature	Description
Size	Depth: 360 mm (14.2 inches) Height: 87 mm (3.43 inches) Width: 345 mm (13.6 inches)
Weight	Minimum configuration as shipped: 8.2 kg (18 lb) Maximum configuration as shipped: 8.6 kg (19 lb)
Environment	Air temperature: <ul style="list-style-type: none">• System on: 10 to 35 C (50 to 95 F)• System off: 10 to 43 C (50 to 110 F) Humidity: <ul style="list-style-type: none">• System on: 8% to 80%• System off: 8% to 80% Maximum altitude: 2134 m (7000 ft.)
Heat Output	Approximate heat output in BTUs per hour: <ul style="list-style-type: none">• Minimum: 205 BTU/hr. (60 watts)• Maximum: 375 BTU/hr. (110 watts)

Feature	Description
Electrical Input	Sine-wave input (47 to 63 Hz) required Input voltage range: <ul style="list-style-type: none"> • Minimum: 90 V AC • Maximum: 265 V AC Input kVA (approximately):. <ul style="list-style-type: none"> • Minimum: 0.08 kVA • Maximum: 0.16 kVA (as shipped)
Airflow	Approximately 0.25 cubic meters/minute (9 cubic feet/minute)
Acoustical Noise Emission Values	Average sound pressure levels: At operator position: <ul style="list-style-type: none"> • 43 dB operating • 38 dB idle At bystander position (1 meter): <ul style="list-style-type: none"> • 37 dB operating • 33 dB idle Declared (upper limit) sound power levels: <ul style="list-style-type: none"> • 5.1 bels operating • 4.8 bels idle

For additional information, see the *ISO Supplier's Declaration*, which is available from IBM.

General checkout

This general checkout procedure is for type 6568/6569/6648/6649 computers.

Attention:

The drives in the computer you are servicing might have been rearranged or the drive startup sequence changed. Be extremely careful during write operations such as copying, saving or formatting. Data or programs can be overwritten if you select an incorrect drive.

Diagnostic error messages appear when a test program finds a problem with a hardware option. For the test programs to properly determine if a test *Passed*, *Failed* or *Aborted*, the test programs check the error-return code at test completion. See "IBM PC Enhanced Diagnostics" on page 35.

General error messages appear if a problem or conflict is found by an application program, the operating system, or both. For an explanation of these messages, refer to the information supplied with that software package.

Notes:

1.
 - Type 6568/6569/6648/6649 computers default to come up quiet (no beep and no memory count and checkpoint code display) when no errors are detected by POST.
To enable beep and memory count and checkpoint code display when a successful POST occurs, do the following:
 - a. Select **Start Options** in the Configuration/Setup Utility program (see "Setup Utility program" on page 41).
 - b. Set **Power-On Self-Test to Enhanced**.
2. Before replacing any FRUs, ensure that the latest level of BIOS is installed on the system. A down-level BIOS might cause false errors and unnecessary replacement of the system board. For more information on how to determine and obtain the latest level BIOS, see "BIOS levels" on page 49.
3. If multiple error codes are displayed, diagnose the first error code displayed.
4. If the computer hangs with a POST error, go to "Symptom-to-FRU index" on page 69.
5. If the computer hangs and no error is displayed, go to "Undetermined problems" on page 90.
6. If an installed device is not recognized by the diagnostics program, that device might be defective.

001

1. Power-off the computer and all external devices.
2. Check all cables and power cords.
3. Make sure the system board is seated properly.
4. Set all display controls to the middle position.
5. Power-on all external devices.
6. Power-on all external devices.
7. Power-on the computer.
8. Check for the following response:
 - Readable instructions or the Main Menu.

DID YOU RECEIVE THE CORRECT RESPONSE?

If NO, continue to **002** .

If YES, proceed to **003** .

002

If the Power Management feature is enabled, do the following:

1. Start the Configuration/Setup Utility program (see “Setup Utility program” on page 41)
2. Select **Power Management** from the Configuration/Setup Utility program menu.
3. Select **APM**.
4. Be sure **APM BIOS Mode** is set to **Disabled**. If it is not, press Left Arrow (←) or Right Arrow (→) to change the setting.
5. Select **Automatic Hardware Power Management**.
6. Set **Automatic Hardware Power Management** to **Disabled**.

- or -

Go to “IBM PC Enhanced Diagnostics” on page 35.

003

Run the IBM PC Enhanced Diagnostics test. If necessary, refer to “Diagnostics, test and recovery information” on page 33.

- If you receive an error, replace the part that the diagnostic program calls out or go to “IBM PC Enhanced Diagnostics” on page 35.
- If the test stops and you cannot continue, replace the last device tested.

- If the computer has incorrect keyboard responses, go to “Keyboard” on page 29.
- If the printer has incorrect responses, go to “Printer” on page 29.
- If the display has problems such as jittering, rolling, shifting, or being out of focus, go to “Display” on page 32.

Module test menu and hardware configuration report

Depending on the diagnostics version level you are using, the installed devices in the computer are verified in one of two ways.

1. At the start of the diagnostic tests, the Module Test Menu is displayed. Normally, all installed devices in the computer are highlighted on the menu.
2. At the start of the diagnostic tests, the main menu appears. From this menu, select **System Info**, then select **Hardware Configuration** from the next menu. Normally, all installed devices in the computer are highlighted on this report.

If an installed device is not recognized by the diagnostics program, then review the following:

- The diagnostic code for the device is not in the Enhanced Diagnostics utility. Run the diagnostics provided with that device.
- The missing device is defective or it requires an additional diskette or service manual.
- An unrecognizable device is installed.
- A defective device is causing another device not to be recognized.
- The SCSI controller failed (on the system board or SCSI adapter).
- Use the procedure in “Undetermined problems” on page 90 to find the problem.

If a device is missing from the list, replace it. If this does not correct the problem, use the procedure in “Undetermined problems” on page 90.

Keyboard

Note: If a mouse or other pointing device is attached, remove it to see if the error symptom goes away. If the symptom goes away, the mouse or pointing device is defective.

001

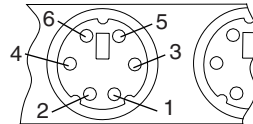
- Power-off the computer.

Disconnect the keyboard cable from the system unit.

Power-on the computer and check the keyboard cable connector on the system unit for the voltages shown.

All voltages are 5%.

Pin	Voltage (Vdc)
1	+5.0
2	Reserved
3	Ground
4	+5.0
5	+5.0
6	Reserved



ARE THE VOLTAGES CORRECT?

If NO, continue with **002**.

If YES, proceed to **003**.

002

Replace the system board.

003

On keyboards with a detachable cable, replace the cable. If the problem remains or if the cable is permanently attached to the keyboard, replace the keyboard. If the problem remains, replace the system board.

Printer

1. Make sure the printer is properly connected and powered on.
2. Run the printer self-test.

If the printer self-test does not run correctly, the problem is in the printer. Refer to the printer service manual.

If the printer self-test runs correctly, install a wrap plug in the parallel port and run the diagnostic tests to determine which FRU failed.

If the diagnostic tests (with the wrap plug installed) do not detect a failure, replace the printer cable. If that does not correct the problem, replace the system board or adapter connected to the printer cable.

Power supply

If the power-on indicator is not on, the power supply fan is not running, or the computer will not power-off, use the following procedures.

Check/Verify	FRU/Action
Check the following for proper installation. <ul style="list-style-type: none">• Power Cord• On/Off Switch connector• On/Off Switch Power Supply connector• System Board Power Supply connectors• Microprocessor(s) connection	Reseat
Check the power-on switch for continuity.	Power Cord
Check the power-on switch for continuity.	Power-on Switch

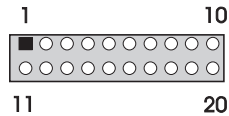
If the above are correct, check the following voltages.

20-pin main power supply connection

See “A40 and A40P system board layout” on page 67 for connector locations.

Attention

These voltages must be checked with the power supply cables connected to the system board.



Pin	Signal	Function
1	3.3 V	+3.3 V dc
2	3.3 V	+3.3 V dc
3	COM	Ground
4	5 V	+5 V dc
5	COM	Ground
6	5 V	+5 V dc
7	COM	Ground
8	POK	Power Good
9	5VSB	Standby Voltage
10	12 V	+12 V dc
11	3.3 V	+3.3 V dc
12	-12 V	-12 V dc
13	COM	Ground
14	PS-ON	DC Remote Enable
15	COM	Ground
16	COM	Ground
17	COM	Ground
18	No voltage	Not used
19	5 V	+5 V dc
20	5 V	+5 V dc

If the voltages are not correct, and the power cord is good, replace the power supply.

Display

If the screen is rolling, replace the display assembly. If that does not correct the problem, replace the video adapter (if installed) or replace the system board.

If the screen is not rolling, use the following procedure to run the display self-test.

1. Power-off the computer and display.
2. Disconnect the display signal cable.
3. Power-on the display.
4. Turn the brightness and contrast controls clockwise to their maximum setting.
5. Check for the following conditions.
 - You should be able to vary the screen intensity by adjusting the contrast and brightness controls.
 - The screen should be white or light gray, with a black margin (test margin) on the screen.

Note: The location of the test margin varies with the type of display. The test margin might be on the top, bottom, or one or both sides.

If you do not see any test margin on the screen, replace the display. If there is a test margin on the screen, replace the video adapter (if installed) or replace the system board.

Note: During the first two or three seconds after the display is powered on, the following might occur while the display synchronizes with the computer.

- Unusual patterns or characters
- Static, crackling, or clicking sounds
- A “power-on” hum on larger displays

A noticeable odor might occur on new displays or displays recently removed from storage.

These sounds, display patterns, and odors are normal. Do not replace any parts.

If you are unable to correct the problem, go to “Undetermined problems” on page 90.

Diagnostics, test and recovery information

The following tools are available to help identify and resolve hardware-related problems.

- Power-On Self-Test (POST)
 - POST Beep Codes
 - Error Code Format
- IBM PC Enhanced Diagnostics
- Recovery utility
 - Full recovery
 - Partial recovery
- Repair utility

Power-On Self-Test (POST)

Each time you power-on the system, it performs a series of tests that check the operation of the system and some options. This series of tests is called the *Power-On Self-Test*, or *POST*. POST does the following operations.

- Checks some basic system-board operations
- Checks the memory operation
- Starts the video operation
- Verifies that the diskette drive is working
- Verifies that the hard disk drive is working

If the POST finishes without detecting any problems, a single beep sounds and the first screen of the operating system or application program appears.

Note: Type 6568/6569/6648/6649 computers default to come up quiet (no beep and no memory count and checkpoint code display) when no errors are detected by POST. To enable beep and memory count and checkpoint code display when a successful POST occurs, do the following:

1. Select **Start Options** in the Configuration/Setup Utility program (see “Setup Utility program” on page 41).
2. Set **Power-On Self-Test** to **Enhanced**.

If the POST detects a problem, an error message appears on the screen. A single problem can cause several error messages to appear. When you correct the cause of the first error message, the other error messages probably will not appear on the screen the next time you turn on the system.

POST beep codes

The Power-On Self-Test generates a beeping sound to indicate successful completion of POST or to indicate that the tests detect an error.

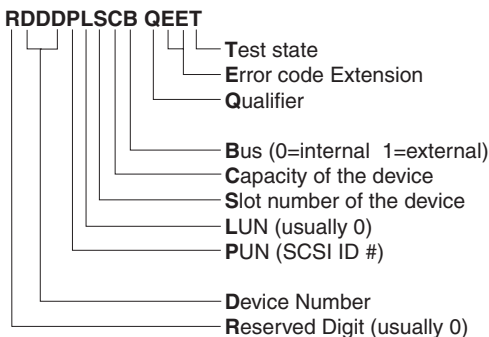
One beep and the appearance of text on the display indicates successful completion of the POST. More than one beep indicates that the POST detects an error.

Error code format

This section provides an explanation of the encoded non-SCSI and SCSI POST error codes.

Error messages are displayed on the screen as three, four, five, eight, twelve, or thirteen digits. An X in an error message can be any number or letter. The shorter POST errors are highlighted in the Symptom-to-FRU Index. Some digits will represent different information for SCSI errors versus non-SCSI errors.

The following figure shows which digits display the shorter POST errors. The figure also defines additional SCSI information.



Notes:

1. Non-IBM device error codes and documentation supersede this list.
2. Duplicate SCSI ID settings will cause misleading error symptoms or messages.

Product Recovery Program menu

Type 6568/6569/6648/6649 machines have recovery and diagnostics programs on a separate hard drive partition. The recovery CD and Enhanced Diagnostics diskette are not shipped with the machine or the HMM. To download diagnostics tests or to order a recovery CD, see “Enhanced Diagnostics download or diskette” on page 35.

At startup, after the machine tests the DIMM memory (if Power-on Self Test is set to **Enhanced**), the machine displays the following:

To start the Product Recovery Program, press F11

After depressing F11, you are given the following options.

- **Full recovery**

This utility reformats the hard drive and restores all original files.

- **Partial recovery**

This utility reformats the hard drive and restores the Windows operating system and all device drivers

- **Repair**

This is the emergency repair utility, and should not be used to install Windows components.

- **System utilities**

1. Run diagnostics

This selection accesses the IBM PC Enhanced Diagnostics.

2. System info

3. Create recovery/ repair diskette

IBM PC Enhanced Diagnostics

The IBM PC Enhanced Diagnostics programs use a full range of diagnostic utilities to determine the operating condition of the computer's hardware components.

The diagnostic program includes the following:

- PC-Doctor's Diagnostic Software

This interface serves as the control program for running both the IBM PC Enhanced Memory Diagnostics and the suite of diagnostic tests provided by PC-Doctor.

- IBM PC Enhanced Memory Diagnostics

The memory diagnostic tests determine which memory module (SIMM or DIMM) is defective and report the socket where the failing module is located. The Memory diagnostics can run a quick and full test of the system. Diagnostics can also be run on a single SIMM or DIMM.

Note: See "Chapter 1. IBM PC Enhanced Diagnostics error codes" on page 1 for the specific error codes.

Enhanced Diagnostics download or diskette

The IBM PC Enhanced Diagnostics are available on-line at <http://www.ibm.com/>

- Select **Support**.
- Select **Desktop computing** from the "Search by Category" pull-down menu.
- Select **NetVista** from the "Product Family" list.
- Search for the machine type in the "Quick Path" box on the left.
- Select **Diagnostics** from the "Downloadable files by Category" menu or select the link to **PC Enhanced Diagnostics** from the "Downloadable files by date" list.

Navigating through the diagnostics programs

Use the cursor movement keys to navigate within the menus.

- The **Enter** key is used to select a menu item.
- The **Esc** key is used to back up to the previous menu.
- For online help select **F1**.

Running diagnostics tests

There are four ways to run the diagnostic tests.

1. Using the cursor movement keys, highlight **Run Normal Test** or **Run Quick Test** from the Diagnostics Menu and then press **Enter**.
This will automatically run a pre-defined group of tests from each test category. **Run Normal Test** runs a more extensive set of tests than does **Run Quick Test** and takes longer to execute.
2. Press **F5** to automatically run all selected tests in all categories. See "Test Selection".
3. From within a test category, press **Ctrl-Enter** to automatically run only the selected tests in that category. See "Test Selection".
4. Using the cursor movement keys, highlight a single test within a test category, then press **Enter**. This will run only that test.

Press **Esc** at any time to stop the testing process.

Test results, (N/A, PASSED, FAILED, ABORTED), are displayed in the field beside the test description and in the test log. See "Viewing the test log" on page 40.

Test selection

To select one or more tests, use the following procedure.

1. Open the corresponding test category.
2. Using the cursor movement keys, highlight the desired test.
3. Press the space bar.
A selected test is marked by >>. Pressing the space bar again de-selects a test and removes the chevron.
4. Repeat steps 2 and 3 above to select all desired tests.

IBM PC Enhanced Memory Diagnostics

The IBM PC Enhanced Memory Diagnostics provide the capability to identify a particular memory module (SIMM or DIMM) which fails during testing. Use the System Board Layout section to reference the memory sockets, or select **F1** *twice* to load the Online Manual and select Chapter 11, "SIMM/DIMM/RIMM Locator".

Follow the steps below to locate the IBM PC Enhanced Memory Diagnostics test options.

1. Select the DIAGNOSTICS option on the toolbar and press **Enter**.
2. Highlight either the *Memory Test-Full* or *Memory Test-Quick* option and press **Enter**.
3. Memory Test-Full
The full memory test will take about 80 seconds per MB of memory and will detect marginal, intermittent, and solid (stuck) memory failures.
4. Memory Test-Quick
The quick memory test will take about 20 seconds per MB of memory and will detect solid (stuck) memory failures only.

Notes

Either level of memory testing can be performed on all memory or a single SIMM or DIMM socket.

Only sockets containing a SIMM or DIMM can be selected for testing. Unpopulated sockets are noted by beside the test description.

Alert-On LAN™ test

The Alert On LAN test does the following:

- Determines if Alert On LAN is supported on the system.
- Checks the revision ID register.
- Verifies the EEPROM checksum.
- Validates that a software alert can be sent.

Asset ID™ test

The Asset ID test does the following:

- Determines if Asset ID is supported on the system.
- Verifies the EEPROM areas.
- Performs an antenna detection test.

Test results

IBM PC Enhanced Diagnostic test results will produce the following error code format:

Function Code	Failure Type	DeviceID	Date	ChkDigits	Text
---------------	--------------	----------	------	-----------	------

- **Function Code:**
Represents the feature or function within the PC.
- **Failure Type:**

Represents the type of error encountered.

- **DeviceID:**

Contains the component's unit-ID which corresponds to either a fixed disk drive, removable media drive, serial or parallel port, processor, specific SIMM or DIMM, or a device on the PCI bus.

- **Date:**

Contains the date on which the diagnostic test was run. The date is retrieved from CMOS and displayed using the YYYYMMDD format.

- **ChkDigits:**

Contains a 2-digit check-digit value to ensure the following:

- Diagnostics were run on the specified date.
- Diagnostics were run on the specified IBM computer.
- The diagnostic error code is recorded correctly.

- **Text:**

Description of the error.

Note

See "Chapter 1. IBM PC Enhanced Diagnostics error codes" on page 1 for error code listings.

Hard file Smart test

Use the Hard File Smart Test when the system management tool has detected a hard file SMART alert.

The Smart test does the following:

- Interrogates IDE devices for support of the SMART instruction set.
- Issues a ENABLE SMART command to make sure SMART functionality is active.
- Checks the SMART RETURN STATUS command to determine if any thresholds have been exceeded.

If thresholds have been exceeded, an error message is shown, and the test fails. If no SMART is supported by the drive, the test returns with "N/A".

IBM Fixed Disk Optimized Test

You can use the IBM Fixed Disk Optimized Test to identify a particular area of a hard disk that fails during testing. You can also use this test to correct types of errors.

To run the Fixed Disk Optimized Test, do the following:

1. From the toolbar, select **Diagnostics**.

2. Select **Fixed Disk Optimized Test**.
3. Select one of the tests:
 - **Hard Disk Test - Full** performs a complete test of the hard disk drive.
 - **Hard Disk Test - Quick** performs a subset of the full hard disk tests.
 - **Start SMART Hard Disk Test** initiates an IDE extended offline self-test.
 - **SMART Hard Disk Test Results** runs the IDE extended offline self-test and displays the results.

You can run the Start SMART Hard Disk Test and then continue with other diagnostics tests before running the Hard Drive Self-Test Results.

Quick and Full erase - hard drive

The IBM PC Enhanced Diagnostics Program offers two hard drive format utilities:

- Quick Erase Hard Drive
- Full Erase Hard Drive

The Quick Erase Hard Drive provides a DOS utility that performs the following steps.

- Destroys the Master Boot Record (MBR) on the hard drive.
- Destroys all copies of the FAT Table on all partitions (both the master and backup).
- Destroys the partition table.
- Provides messages that warn the user that this is a non-recoverable process.

The Full Erase Hard Drive provides a DOS utility that performs the following steps.

- Performs all the steps in Quick Erase.
- Provides a DOS utility that writes random data to all sectors of the hard drive.
- Provide an estimate of time to completion along with a visual representation of completion status.
- Provides messages that warn the user about non-recoverable process.

Important

Make sure that the customer backs up all data before using the Quick or Full Erase function.

To select the Quick Erase or Full Erase Hard Drive utility, use the following procedure.

1. Select the **UTILITY** option on the toolbar and press **Enter**.
2. Select either the **QUICK ERASE** or **FULL ERASE HARD DISK** option and follow the instructions.

Iomega Zip drive test

Use the Iomega Zip Drive Test to test the Zip drive and the drive interface. The test takes about 20 seconds to run.

The default tests the following:

- Controller
- Max Seek (50 times)
- Random Seek (300 sectors)

Asset EEPROM backup

When replacing a system board, this utility allows the backup of all Asset information from the EEPROM to diskette. This utility also restores data to the EEPROM from diskette after replacement of the system board.

To run this utility, use the following procedure.

- Select **Utility**
- Select **Asset EEPROM Backup**
- Follow instructions on screen.

Viewing the test log

Errors reported by the diagnostic test will be displayed by the program as a failed test.

To view details of a failure or to view a list of test results, use the following procedure from any test category screen.

- Press **F3** to activate the log file.
- Press **F3** again to save the file to diskette or **F2** to print the file.

SIMM/DIMM/RIMM memory errors

SIMM/DIMM/RIMM error messages issued by the IBM PC Enhanced Diagnostics.

Message	Failure Found	Recommended Actions
2xx-1y	A memory error was detected in SIMM socket Y.	<p>Replace the SIMM in the socket identified by the last digit of the error code.</p> <p>Re-run the test.</p> <p>If the same error code occurs again, replace the system board.</p>

Message	Failure Found	Recommended Actions
2xx-2y	A memory error was detected in DIMM/RIMM socket Y	Replace the DIMM/RIMM in the socket identified by the last digit of the error code. Re-run the test. If the same error code occurs again, replace the system board or where memory is on the processor card, replace the processor card.
Corrupt BIOS	Information in BIOS is not as expected. Not able to find expected DMI information from BIOS. Memory controller chipset vendor ID does not match expected value.	Reflash the BIOS. Perform boot block recovery. Replace the system board.
Test aborted by user	User stopped test.	Restart test.

Note: Y is the SIMM/DIMM/RIMM socket number. Use the System Board Layout section in the latest Hardware Maintenance Manual (HMM) to reference the memory sockets.

Setup Utility program

Attention

A customized setup configuration (other than default settings) might exist on the computer you are servicing. Running the Setup Utility program might alter those settings. Note the current configuration settings and verify that the settings are in place when service is complete.

The Setup Utility (configuration) program is stored in the permanent memory of the computer. This program includes settings for the following:

- System Summary
- Product Data
- Devices and I/O Ports
- Start Options
- Date and Time
- System Security

- Advanced Setup
- Power Management

To run the Setup Utility program, use the following procedure.

1. Power-off the computer and wait for a few seconds until all in-use lights go off.
2. Power-on the computer.
3. When the Setup Utility prompt appears on the screen during start-up, press **F1**. The Setup Utility menu will appear.
4. Follow the instructions on the screen.
5. When finished, select **System Summary** to verify that any configuration changes have been accepted.

Hard disk drive boot error

A hard disk drive boot error (error codes 1962 and I999030X) can have the following causes.

Cause	Action
The start-up drive is not in the boot sequence in configuration.	Check the configuration and ensure the start-up drive is in the boot sequence.
No operating system installed on the boot drive.	Install an operating system on the boot drive.
The boot sector on the start-up drive is corrupted.	The drive must be formatted, do the following: <ol style="list-style-type: none"> 1. Attempt to access and recover (back-up) the failing hard disk drive. 2. Using the operating systems programs, format the hard disk drive. 3. Go to "Preparing the hard disk drive for use" on page 43.
The drive is defective.	Replace the hard disk drive.

When to use the Low-Level Format program

Notes

1. The low-level format is not available on all diagnostic diskettes.
2. Before formatting the hard disk drive, make a back-up copy of the files on the drive to be formatted.

Use the Low-Level Format program in the following situations:

- When you are installing software that requires a low-level format.
- When you get recurring messages from the test programs directing you to run the Low-Level Format program on the hard disk.

- As a last resort before replacing a hard disk drive.

Preparing the hard disk drive for use

When the Low-Level Format program is finished, restore to the hard disk all the files that you previously backed up.

1. Partition the remainder of the hard disk for the operating system. (The commands vary with the operating system. Refer to the operating system manual for instructions.)
2. Format the hard disk using the operating system. (The commands vary with the operating system. Refer to the operating system manual for instructions.)
3. Install the operating system.

You are now ready to restore the files.

Additional service information

The following additional service information supports types 6568/6569/6648/6649.

- “Replacing a processor” on page 45
- “Replacing a system board” on page 45
- “Security features” on page 46
- “Passwords” on page 46
- “Vital product data” on page 47
- “Management Information Format (MIF)” on page 47
- “Alert on LAN” on page 48
- “Hard disk drive jumper settings” on page 48
- “CD-ROM drive jumper settings” on page 49
- “BIOS levels” on page 49
- “Flash (BIOS/VPD) update procedure” on page 50
- “Flash recovery boot block jumper” on page 50
- “Power management” on page 51
- “Network settings” on page 53
- “Flash over LAN (update POST/BIOS over network)” on page 54
- “Wake on LAN” on page 54
- “System board memory” on page 55

Replacing a processor

Make sure the processor is fully seated in its socket and that the goal post latches are engaged.

Important

- Make sure the air baffle is installed to prevent processor overheating.
- If the processor is not installed correctly, the system board and the processor can be damaged.

Replacing a system board

Important

Before replacing a system board, back up Asset information with PC-Doctor by using the “Asset EEPROM backup” on page 40.

Notes

1. The BIOS and Vital Product Data (VPD) for the computer you are servicing must be installed on the new system board (FRU) after it is installed in the computer. To do this, **you must run the Flash Update program using the Flash Update diskette**. See “BIOS levels” on page 49, “Vital product data” on page 47, and “Flash (BIOS/VPD) update procedure” on page 50.
2. Always ensure the latest level of BIOS is installed on the computer. A down level BIOS may cause false errors and unnecessary replacement of the system board.
3. The processor is a separate FRU from the system board and is not included with the system board FRU. If you are instructed to replace the system board, use the following procedure.
 - a. Remove the processor from the old system board and install it on the new system board.
 - b. Remove any of the following installed options on the old system board, and install them on the new system board.
 - Memory modules
 - c. Ensure that the new system board jumper settings match the old system board jumper settings.
 - d. If the new system board does not correct the problem, reinstall the options on the old system board, reinstall the old system board, then replace the processor.

Security features

Security features in this section include the following:

- Passwords
- Vital Product Data
- Management Information Format (MIF)
- Alert on LAN

Passwords

The following section provides information about computer hardware and software-related passwords.

- Power-on Password
- Administrator Password
- Operating System Password

Power-on and Administrator passwords are set in the Setup Utility program. See “Setup Utility program” on page 41 for information about running the Setup Utility.

Power-on password: A power-on password denies access to the computer by an unauthorized user when the computer is powered on. When a power-on password is active, the password prompt appears on the screen each time the computer is powered on. The computer starts after the proper password is entered.

Removing a power-on password: To service a computer with an active and unknown power-on password, power-off the computer and use the following procedure.

Note

On some models, this procedure will also remove the administrator password.

1. Unplug the power cord and remove the top cover.
2. Refer to “A40 and A40P system board layout” on page 67 to find the recovery jumper.
3. Move the recovery jumper from **normal** to **clear**.
4. Power-on the computer. The system senses the change in the position and erases the password. *It is necessary to move the jumper back to the previous position.*
5. Remind the user to enter a new password when service is complete.

Administrator password: The administrator password is used to restrict access to the Configuration/Setup Utility program. If the administrator password is activated, and you do not enter the administrator password, the configuration can be viewed but not changed.

Note

Type 6568/6569/6648/6649 has Enhanced Security Mode. If Enhanced Security mode is enabled and there is no password given, the computer will act as if Enhanced Security is disabled.

If Enhanced Security is Enabled and an administrator password is given, the administrator password must be entered to use the computer. If the administrator password is lost or forgotten, the system board in the computer must be replaced in order to regain access to the Configuration/Setup Utility program.

Administrator password control: The Administrator password is set in the Setup Configuration. Refer to “Setup Utility program” on page 41.

Operating system password: An operating system password is very similar to a power-on password and denies access to the computer by an unauthorized user when the password is activated. The computer is unusable until the password is entered and recognized by the computer.

Vital product data

Each computer has a unique Vital Product Data (VPD) code stored in the nonvolatile memory on the system board. After you replace the system board, the VPD must be updated. To update the VPD, see “Flash (BIOS/VPD) update procedure” on page 50.

Management Information Format (MIF)

Management Information Format (MIF) is a file used to maintain a list of the system unit serial number along with all serialized components (for example, system board, riser card, memory, and processor).

At the time of computer manufacture, the EPROM will be loaded with the serial numbers of the system and all major components. The customer will have access to the MIF file via the DMI MIF Browser that is installed with the preload and is also available on the SSCD that is provided with the system.

A company called Retain-a-Group is a central data warehouse offering serial number data management. Retain-a-Group acts as a focal point to law enforcement. The customer has the option to purchase serial number

information and services from Retain-a-Group. It is the customer's responsibility to maintain the MIF file and to inform Retain-a-Group of any changes to the file.

Some customers may request their servicers to assist them in maintaining the MIF file when serialized components are replaced during hardware service. This assistance is between the customer and the servicer. The servicer can use the DMI MIF Browser to update the MIF information in the EPROM. It is anticipated that some servicers might charge for this service.

To update the EPROM using the DMI MIF Browser, use the following procedure.

1. Click **Start** from the desktop, then **Programs**.
2. Select **IBM SystemView Agent**
3. Select the **Serial Number Information** icon
4. Click the plus sign to expand.
5. Select the component you want to view or edit.
6. Double click on the component you want to change.
7. Enter new data in the *Value* field, then click **Apply**.

Alert on LAN

Alert on LAN provides notification of changes in the computer, even when the computer power is turned off. Working with DMI and Wake on LAN[®] technologies, Alert on LAN helps to manage and monitor the hardware and software features of the computer. Alert on LAN generates notifications to the server of these occurrences:

- Computer disconnected from the network
- Computer unplugged from the power outlet
- All POST errors
- Operating system or POST hang condition

Alert on LAN events are configured to be Enabled or Disabled from the LAN server only, and not from the computer. See the LAN administrator for configuration status information.

Hard disk drive jumper settings

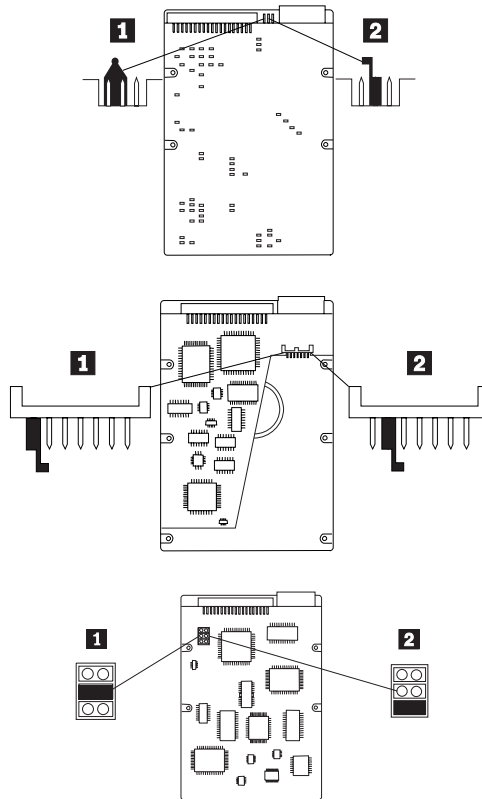
IDE hard disk drives for the NetVista series computers use jumpers to set the drives as primary (master) or secondary (slave).

Note

For drives not shown below, refer to the label on the hard disk drive for the hard disk drive settings.

1 Primary (Master) Hard Disk Drive

2 Secondary (Slave) Hard Disk Drive



CD-ROM drive jumper settings

Type 6568/6569/6648/6649 machines support only the 24X slim CD-ROM drive. Thus there are no primary versus secondary jumper settings.

BIOS levels

An incorrect level of BIOS can cause false error and unnecessary FRU replacement. Use the following information to determine the current level of BIOS installed in the computer, the latest BIOS available for the computer, and where to obtain the latest level of BIOS.

- Current Level BIOS information
 - Run the Configuration Utility to determine the level of BIOS installed.
- Sources for determining the latest level BIOS available
 - 1.

IBM PC Company Home Page
<http://www.ibm.com/pc/us/>

2. PC PartnerInfo-Technical Database (CTSTIPS.NSF)
 3. HelpCenter[®]
 4. Levels 1 and 2 Support
 5. RETAIN[®]
- Sources for obtaining the latest level BIOS available
 1.
 - IBM PC Company Home Page
 - <http://www.ibm.com/pc/us/>
 2. PC PartnerInfo-Technical Database (CTSTIPS.NSF)
 3. HelpCenter
 4. Levels 1 and 2 Support

To update (flash) the BIOS, see “Flash (BIOS/VPD) update procedure” on page 50.

Flash (BIOS/VPD) update procedure

Attention

Refer to the information label located inside the system unit cover for any model-specific information.

1. Power-off the computer.
2. Insert the flash update diskette into drive A.
3. Power-on the computer.
4. When the Update Utility appears; select the country/keyboard, then press **Enter**.
5. If the computer serial number was previously recorded, the number is displayed with an option to update it. Press **Y** to update the serial number.
6. Type the 7-digit serial number of the computer you are servicing, then press **Enter**.
7. Follow the instructions on the screen to complete the flash (BIOS/VPD) update procedure.

Flash recovery boot block jumper

Attention

If an interruption occurs during a Flash/BIOS upgrade, the BIOS might be left in an unusable state. The Boot Block jumper enables you to restart the system and recover the BIOS.

To perform a Flash/BIOS recovery using the recovery jumper, use the following procedure.

1. Power-off the computer and remove the cover.
2. Move the system board recovery jumper to the **clear** position. Refer to “A40 and A40P system board layout” on page 67 or the label inside the computer for more information.
3. Insert the upgrade diskette into the diskette drive.
4. Power-on the computer. The IBM Logo will appear.
5. When the Flash Update Utility appears, select the country/keyboard, then press **Enter**.
6. If the computer serial number was previously recorded, the number is displayed with an option to update it. Press **Y** to update the serial number.
7. Type the 7-digit serial number of the computer you are servicing, then press **Enter**.
8. Follow the instructions on the screen to complete the flash (BIOS/VPD) update procedure.
9. When you are instructed to reboot the computer, power-off the computer and move the recovery jumper to the **normal** position. Then replace the cover and power-on the computer.

Power management

Power management reduces the power consumption of certain components of the computer such as the system power supply, processor, hard disk drives, and some monitors. Advanced Power Management and Rapid Resume™ Manager are features of some personal computers.

Automatic configuration and power interface (ACPI) BIOS

Being an ACPI BIOS system, the operating system is allowed to control the power management features of the computer and the setting for Advanced Power Management (APM) BIOS mode are ignored. Not all operating systems support ACPI BIOS mode.

Advanced Power Management

Energy-saving settings can be viewed and changed by using the Advanced Power Management menu in the Configuration/Setup Utility program.

Attention

If a device, such as a monitor, does not have power-management capabilities, it can be damaged when exposed to a reduced-power state. Before making energy-saving selections for the monitor, check the documentation supplied with the monitor to see if it supports Display Power Management Signaling (DPMS).

Automatic Hardware Power Management features

Automatic Hardware Power Management can reduce the power states of the computer, processor, and monitor (if the monitor supports DPMS) if they are inactive for a predetermined length of time.

There are three levels of specified time that the computer must be inactive before the power management options that are selected take effect. Select the amount of time that is offered within each level.

Level 1	Set time from 5 minutes to 4 hours.
Level 2	Set time from 10 minutes to 5 hours.
Level 3	Set time from 15 minutes to 6 hours.

At each level, you can define the amount of energy savings by specifying values for the following options.

-

System Power

- Select **On** for the computer to remain on.
- Select **Off** for the computer to shut down.

-

Processor Speed

Set the microprocessor to be **disabled**, or to run at **1**, **10**, **25**, or **50** percent of its internal clock speed.

-

Display

Set display to be disabled or to be reduced at these power states:

- **Standby:** Screen is blank, but can be restored immediately when any activity is detected.
- **Suspend:** Monitor uses less power than in Standby mode. Screen image is restored after a few seconds when any activity is detected.
- **Off:** Monitor power is off. Press Monitor power button to restore power. On some monitors, you might have to depress the power button twice.

Setting Automatic Hardware Power Management features

1. Start the Configuration/Setup Utility program (see “Setup Utility program” on page 41).
2. Select **Advanced Power Management** from the Configuration/Setup Utility program menu.
3. Select the **APM BIOS Mode** and be sure it is set to **Enabled**. If it is not, press Left Arrow (←) or Right Arrow (→) to change the setting.
4. Select **Automatic Hardware Power Management**.

5. Set **Automatic Hardware Power Management** to **Enabled**.
6. Select values for the three categories of power management (system power, processor speed, and display), as necessary.
7. Set **Hard Disk** to **Enabled** or **Disabled**.

Note: This does not apply to SCSI drives.

8. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
9. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
10. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Automatic Power-On features

The Automatic Power-On features within the Power Management menu allow you to enable and disable features that turn on the computer automatically.

- **Serial Port A Ring Detect:** With this feature set to **Enabled** and an external modem connected to serial port (COM1), the computer will turn on automatically when a ring is detected on the modem.
- **PCI Modem Ring Detect:** With this feature set to **Enabled**, the computer will turn on automatically when a ring is detected on the internal modem.
- **PCI Wake Up:** This feature allow PCI cards that support this capability to wake the system.
- **Wake Up on Alarm:** You can specify a date and time at which the computer will be turned on automatically. This can be either a single event or a daily event.
- **Wake on LAN:** If the computer has a properly configured token-ring or Ethernet LAN adapter card that is Wake on LAN-enabled and there is remote network management software, you can use the IBM-developed Wake on LAN feature. When you set Wake on LAN to **Enabled**, the computer will turn on when it receives a specific signal from another computer on the local area network (LAN). For further information, see "Wake on LAN" on page 54.

Network settings

This section applies only to computers that are linked to a network.

The Configuration/Setup Utility program includes settings that can be enabled and disabled to configure the network interface in the computer. These settings are the following:

- Flash over LAN (Update POST/BIOS over Network)
- Wake on LAN

Flash over LAN (update POST/BIOS over network)

Note: For local Flash (BIOS/VPD) update, see “Flash (BIOS/VPD) update procedure” on page 50.

This setting is used to enable or disable the Flash over LAN feature. When the feature is enabled, the system programs, in the computer, can be updated remotely from a network server. If the administrator password is set in the computer, it does not have to be entered by the server.

To access the Flash over LAN setting, use the following procedure.

1. Start the Configuration/Setup Utility program. See “Setup Utility program” on page 41.
2. Select **System Security**.
3. Select **POST/BIOS Update** from the Configuration/Setup Utility program menu.
4. To enable Flash over LAN, select **Enabled**. To disable Flash over LAN, select **Disabled**.
5. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
6. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
7. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Wake on LAN

This setting is used to enable or disable the IBM-developed Wake on LAN feature. This feature makes it possible for the computer to be turned on remotely by a network server. Remote network management software must be used in conjunction with this feature.

To access the Wake on LAN setting, use the following procedure.

1. Start the Configuration/Setup Utility program. See “Setup Utility program” on page 41.
2. Select **Advanced Power Management**.
3. Select **Automatic Power On** from the program menu.
4. Select **Wake on LAN** from the *Automatic Power On* menu.
5. To enable Wake on LAN, select **Enabled**. To disable Wake on LAN, select **Disabled**.
6. Press **Esc** until you return to the Configuration/Setup Utility program menu.
7. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.

8. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

System board memory

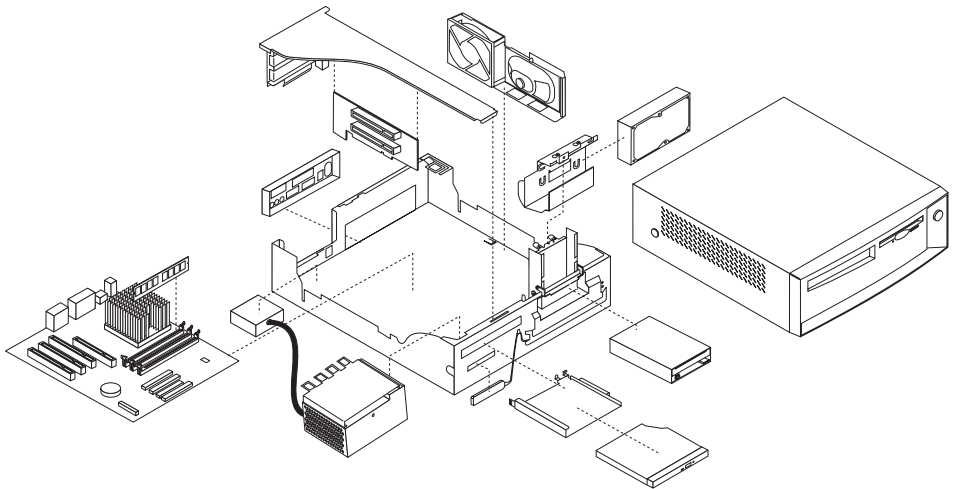
The following matrix cross-references the name of the computer (printed on the logo) and the size, speed, and type of memory modules supported in the computer.

Computers	Memory Module		
	Size	Speed	Type
Types 6568/6569/6648/6649	64 MB 128 MB 256 MB	133 MHz	SDRAM Non-Parity Industry Standard

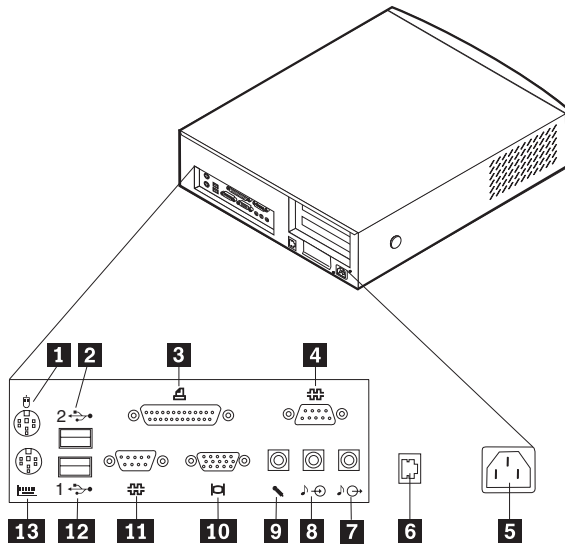
Supported memory configuration

DIMM sizes of 64 MB, 128 MB and 256 MB are acceptable. Start filling DIMM socket 0, then 1. Use 3.3 V unbuffered 133 MHz SDRAM non-parity DIMMs only.

Computer exploded view - Types 6568/6569/6648/6649



Input/Output connectors



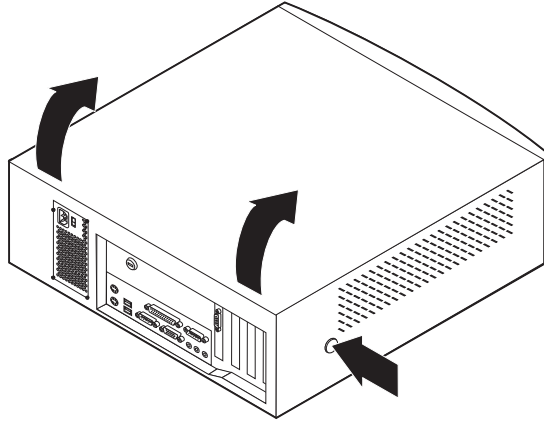
- | | |
|--|--------------------------------|
| 1 Mouse | 8 Audio input connector |
| 2 USB connector 2 | 9 Microphone connector |
| 3 Parallel connector | 10 Monitor connector |
| 4 Serial connector 2 (joystick/MIDI connector in some models) | 11 Serial connector 1 |
| 5 Power connector | 12 USB connector 1 |
| 6 Ethernet connector | 13 Keyboard connector |
| 7 Audio output connector | |

Cover removal

Firmly press the cover latch buttons on both sides. Pull up the back end of cover, and swing the cover toward the front of the computer.

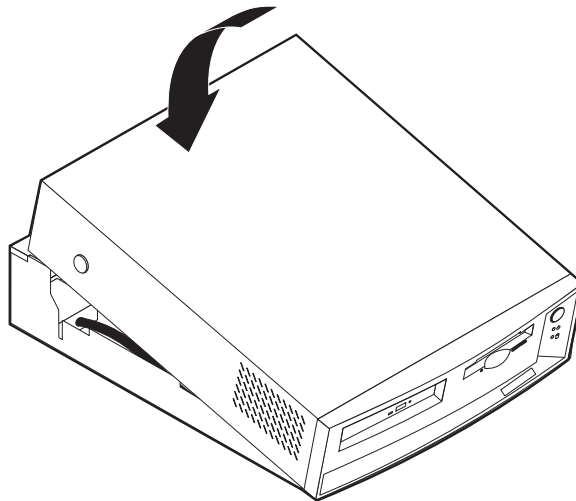
Note

The front panel is integrated with the top cover.



Replacing the cover

Position the cover over the chassis and pivot the cover down over the computer until the cover snaps into place.



EMC shield (CD-ROM drive bay)

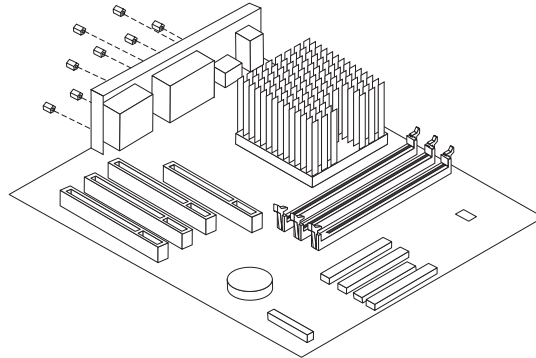
To remove the EMC shield:

1. Remove the front cover.
2. Remove the single screw that holds the EMC shield in place.

EMC shield (system board)

To remove the EMC shield from the system board:

1. Remove the eight I/O screws that hold the EMC shield in place.

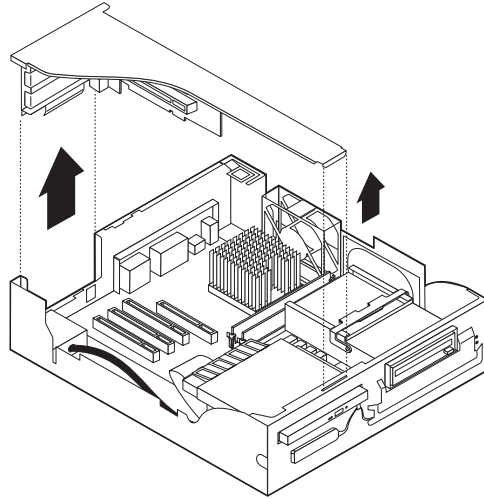


Installing adapters

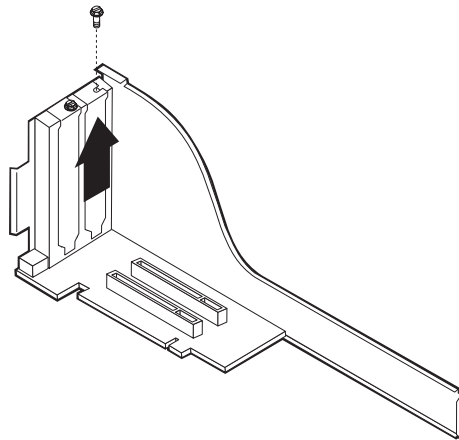
Adapter slots

To install an adapter in a PCI expansion slot:

1. Remove the riser card housing and place the housing on its side with the adapter slots facing up.



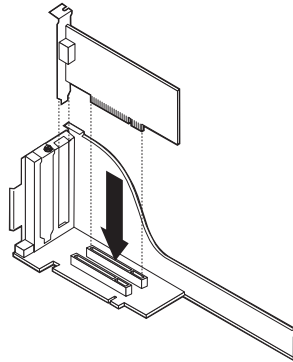
2. Remove the adapter from its static-protective package.



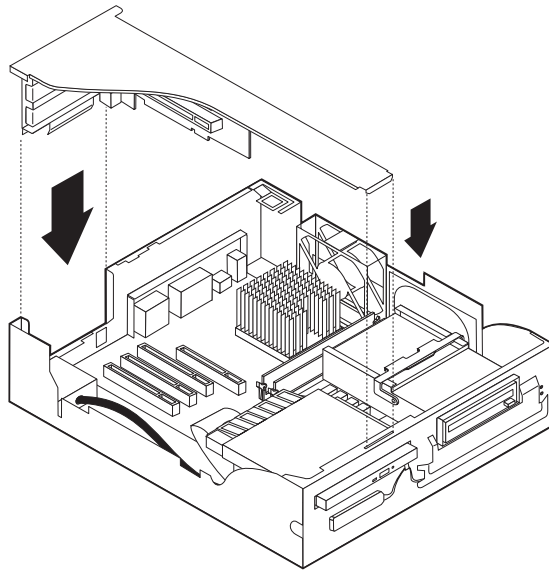
3. Remove the screw and adapter slot cover for the adapter slot into which you installing the adapter.
4. Install the adapter and insert the retaining screw.

Note: If you are installing a Wake on LAN supported network adapter, attach the Wake on LAN cable that came with the adapter to the

Wake on LAN connector on the system board. If you also want to take advantage of the Alert on LAN feature of the computer, you must install the network adapter in PCI slot 1. For the location of PCI slot 1 and the Wake on LAN connector, see the diagram of the system board on the inside of the computer.



5. Replace the riser card housing.

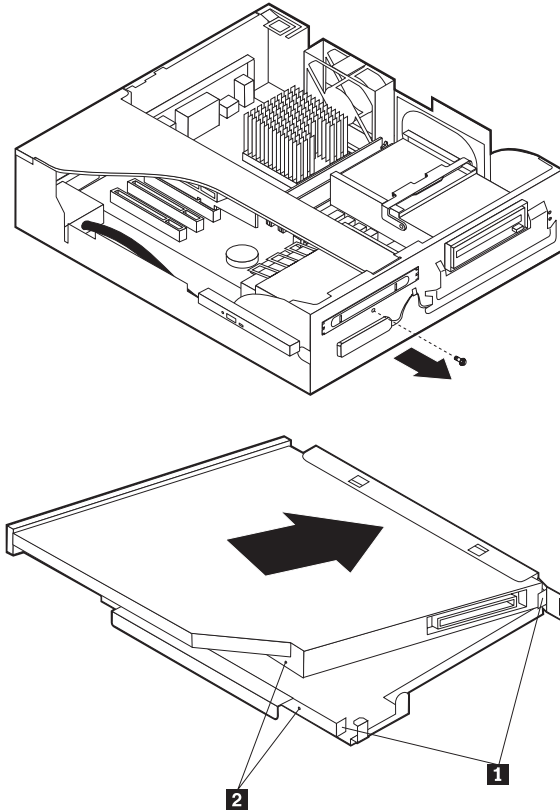


6. Replace the cover.

CD-ROM drive removal and replacement

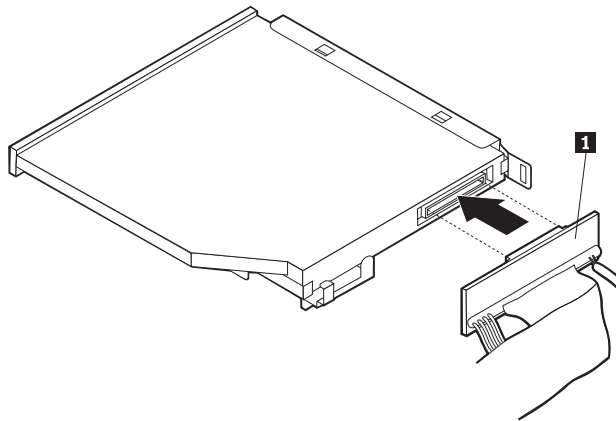
1. Remove the riser card housing (see "Installing adapters" on page 59).
2. Remove the retaining lever and cable from the rear of the drive.

3. Remove the CD-ROM drive bracket retaining screw from the front of the chassis and remove the CD-ROM drive bracket from the drive bay.

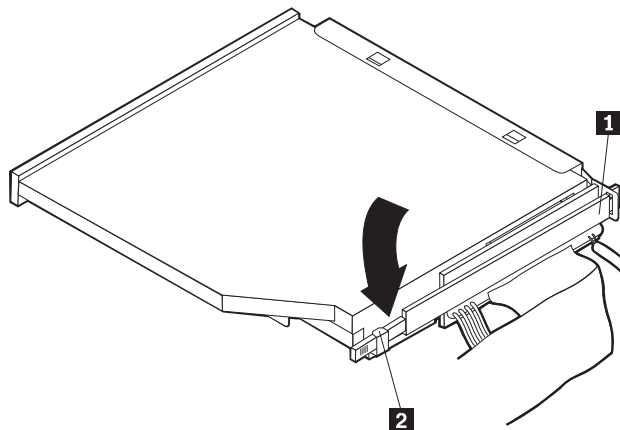


4. Install the slimline CD-ROM drive into the drive bay bracket, aligning the tabs on the bay bracket **1** with the rear of the slimline CD-ROM drive **2** and the tiny holes in the drive with the retaining pins in the drive bay bracket.
5. Press the CD-ROM drive against the retaining spring in the bracket until the drive is squarely oriented in the bracket and release the drive. You should hear a slight click as the drive is secured into the bracket.

6. Insert the CD-ROM drive and the bracket into the drive bay and replace the screw.



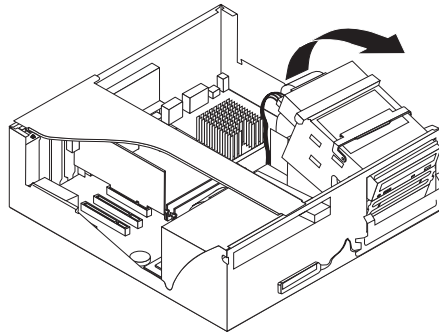
7. Install the cable and replace the retaining lever behind the CD-ROM.



Internal drive removal

Note: The internal drive assembly is designed to latch firmly into place. When pivoting the drive cage out, you will feel some initial resistance, so you should pull firmly until the drive cage swings out. Inversely, when you swing the cage back into the machine case, you should feel a slight resistance until the cage snaps solidly back into place.

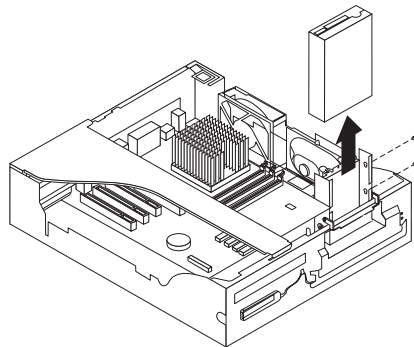
1. Pivot the drive bay cage up and toward the front of the computer.
2. Latch the handle to the front of the chassis, so that the drive cage stays upright.



3.5" drive removal

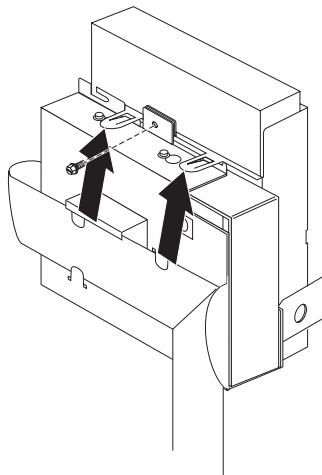
1. Remove the two screws from the right side of the drive. Lift the drive out.

Note: Be sure to place the 3.5" drive cable under the single tab on the bottom of the drive cage. Press the cable down so that the cable folds underneath the drive cage, toward the front of the chassis, instead of folding back toward the system board. This will ensure the 3.5" drive cable is not pinched when the drive cage is firmly placed into its horizontal operating position.



Hard drive removal

1. Latch the drive cage in the upright position.
2. Remove the 3.5" drive cable from the tab at the bottom of the drive cage.
3. Remove the screw that holds the HD bracket, and lift the tabs that hold the bracket in place. Lift the drive back and up.

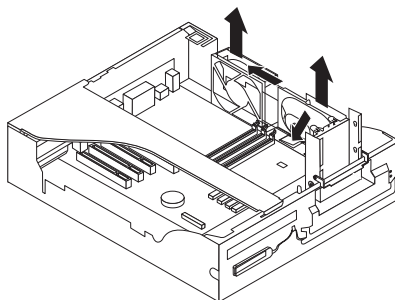


4. Remove the HD cable from the drive and from the bottom of the drive cage. Note the placement of the cable under the three tabs.
5. Remove the four screws on the side and bottom, and take the HD out of the bracket.

Note: When replacing the HD in the drive cage, place the cable under the three tabs at the bottom of the drive cage. Be sure to fold the 3.5" drive cable properly under the cage (see "Note" in "3.5" drive removal" on page 63).

Fan/speaker bracket removal

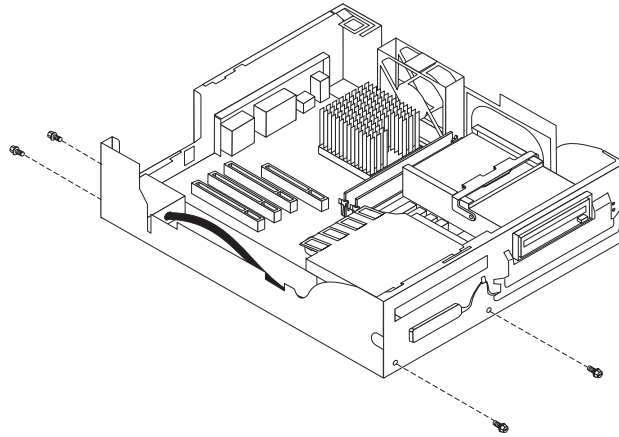
1. Locate the metal tab that secures the fan/speaker bracket to the chassis (on the bottom of the bracket, just below the rear end of the speaker).



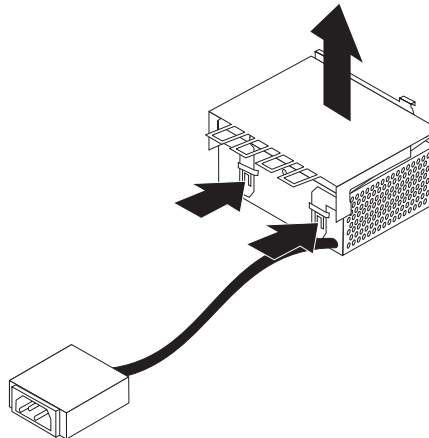
2. Press down on the tab, slide the bracket back and lift up.

Power supply removal

1. Remove the CD-ROM drive (see “CD-ROM drive removal and replacement” on page 60).
2. Remove the two screws that secure the power supply to the front of the chassis. Remove the two screws that secure the power cord plug to the back of the chassis.



3. Locate the two tabs that secure the CD-ROM drive bracket to the back of the power supply. Push in the two tabs and remove the bracket.



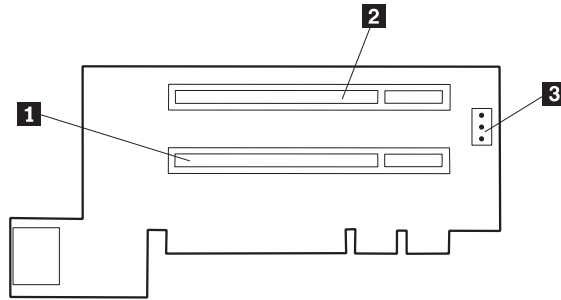
4. Lift out the power supply and plug.

Components of the riser card

The following illustration shows the location of PCI connectors on the riser card. The Ethernet disable jumper pins (as seen in the diagram below) are numbered as follows:

- Pin 1 is at the top.
- Pin 2 is in the middle.
- Pin 3 is at the bottom.

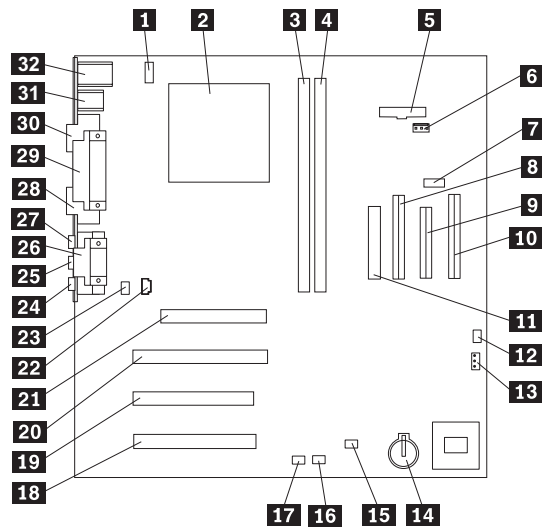
To **enable** Ethernet, jumper pins 1-2. To **disable** Ethernet, jumper pins 2-3.



1 PCI slot 1
2 PCI slot 2

3 Ethernet disable jumper

A40 and A40P system board layout



System board locations

1	#2 fan connector	17	Wake on LAN
2	Microprocessor	18	PCI slot 3
3	DIMM 0	19	PCI slot 2
4	DIMM 1	20	PCI slot 1
5	Power LED connector	21	AGP connector
6	RFID connector	22	CD-ROM audio
7	Front USB connector	23	Speaker connector
8	Secondary IDE connector	24	Audio output
9	Diskette connector	25	Audio input
10	Primary IDE connector	26	Serial port 2
11	Power connector	27	Microphone input
12	CMOS clear/recovery jumper	28	Monitor port
13	#1 fan connector	29	Parallel port
14	Battery	30	Serial port 1
15	SCSI adapter LED connector	31	USB connectors
16	Alert on LAN	32	Mouse and keyboard connectors

A40/A40P System board jumper settings

The following table contains the jumper setting information. (D) indicates the default setting.

A40/A40P Clear CMOS/Flash Boot Block Recovery

Use the recovery jumper setting to Clear CMOS or to Flash Boot Block Recover.

Note: The A40/A40P CMOS clear/recovery jumper pins are numbered as follows:

- Pin 1 is the farthest from the battery.
- Pins 2 and 3 are below pin 1, as seen in the A40/A40P System Board layout.

Jumper	Setting	Description
CMOS Reset	2-3	CMOS Reset/Flash Recovery Mode
	1-2 (D)	Normal Mode

A40/ A40P Processor Speed Settings

Processor speed for type 6568/6569/6648/6649 computers are fixed and are determined by the processor. There are no settings required.

A40/A40P Diskette Write Access

Diskette Write Enable and Write Protect options are changed in the Setup Configuration. See "Setup Utility program" on page 41.

Symptom-to-FRU index

The Symptom-to-FRU index lists error symptoms and possible causes. The most likely cause is listed first. Always begin with “General checkout” on page 26. See “Chapter 1. IBM PC Enhanced Diagnostics error codes” on page 1 when running diagnostics. This index can also be used to help you decide which FRUs to have available when servicing a computer. If you are unable to correct the problem using this index, go to “Undetermined problems” on page 90.

Notes

- If you have both an error message and an incorrect audio response, diagnose the error message first.
- If you cannot run the diagnostic tests or you get a diagnostic error code when running a test, but did receive a POST error message, diagnose the POST error message first.
- If you did not receive any error message, look for a description of your error symptoms in the first part of this index.
- Check all power supply voltages before you replace the system board. (See “Power supply” on page 30.)
- Check the hard disk drive jumper settings before you replace a hard disk drive. (See “Hard disk drive jumper settings” on page 48.)

Important

1. Some errors are indicated with a series of beep codes (see “Beep symptoms” on page 70).
Type 6568/6569/6648/6649 computers default to come up quiet (no beep and no memory count and checkpoint code display) when no errors are detected by POST. To enable beep and memory count and checkpoint code display when a successful POST occurs, do the following:
 - a. Select **Start Options** in the Configuration/Setup Utility program (see “Setup Utility program” on page 41).
 - b. Set **Power-On Self-Test** to **Enhanced**.
2. The processor is a separate FRU from the system board; the processor is not included with the system board FRU.

Beep symptoms

Beep symptoms are short tones or a series of short tones separated by pauses (intervals without sound). See the following examples.

Beeps	Description
1-2-X	<ul style="list-style-type: none">• One beep• A pause (or break)• Two beeps• A pause (or break)• Any number of breaks
4	Four continuous beeps

Use the following table to diagnose beep symptoms.

Beep Symptom	FRU/Action
1-1-3CMOS read-write error	<ol style="list-style-type: none">1. Run Setup2. System Board
1-1-4ROM BIOS check error	<ol style="list-style-type: none">1. System Board
1-2-XDMA error	<ol style="list-style-type: none">1. System Board
1-3-X	<ol style="list-style-type: none">1. Memory Module2. System Board
1-4-4	<ol style="list-style-type: none">1. Keyboard2. System Board
1-4-XError detected in first 64 KB of RAM	<ol style="list-style-type: none">1. Memory Module2. System Board
2-1-1, 2-1-2	<ol style="list-style-type: none">1. Run Setup2. System Board
2-1-XFirst 64 KB of RAM failed	<ol style="list-style-type: none">1. Memory Module2. System Board
2-2-2	<ol style="list-style-type: none">1. Video Adapter (if installed)2. System Board
2-2-XFirst 64 KB of RAM failed	<ol style="list-style-type: none">1. Memory Module2. System Board
2-3-X	<ol style="list-style-type: none">1. Memory Module2. System Board

Beep Symptom	FRU/Action
2-4-X	<ol style="list-style-type: none"> 1. Run Setup 2. Memory Module 3. System Board
3-1-XDMA register failed	<ol style="list-style-type: none"> 1. System Board
3-2-4Keyboard controller failed	<ol style="list-style-type: none"> 1. System Board 2. Keyboard
3-3-4Screen initialization failed	<ol style="list-style-type: none"> 1. Video Adapter (if installed) 2. System Board Display
3-4-1Screen retrace test detected an error	<ol style="list-style-type: none"> 1. Video Adapter (if installed) 2. System Board 3. Display
3-4-2POST is searching for video ROM	<ol style="list-style-type: none"> 1. Video Adapter (if installed) 2. System Board
4	<ol style="list-style-type: none"> 1. Video Adapter (if installed) 2. System Board
All other beep code sequences	<ol style="list-style-type: none"> 1. System Board
One long and one short beep during POST.Base 640 KB memory error or shadow RAM error	<ol style="list-style-type: none"> 1. Memory Module 2. System Board
One long beep and two or three short beeps during POST.(Video error)	<ol style="list-style-type: none"> 1. Video Adapter (if installed) 2. System Board
Three short beeps during POST	<ol style="list-style-type: none"> 1. See “System board memory” on page 55 2. System Board
Continuous beep	<ol style="list-style-type: none"> 1. System Board
Repeating short beeps	<ol style="list-style-type: none"> 1. Keyboard stuck key? 2. Keyboard Cable 3. System Board

No-beep symptoms

Note

Type 6568/6569/6648/6649 computers default to come up quiet (no beep and no memory count and checkpoint code display) when no errors are detected by POST.

To enable beep and memory count and checkpoint code display when a successful POST occurs, do the following:

1. Select **Start Options** in the Configuration/Setup Utility program (see "Setup Utility program" on page 41).
2. Set **Power-On Self Test** to **Enhanced**.

Symptom/Error	FRU/Action
No beep during POST but computer works correctly.	1. System Board
No beep during POST.	<ol style="list-style-type: none"> 1. See "Undetermined problems" on page 90 2. System Board 3. Memory Module 4. Any Adapter or Device 5. Riser Card 6. Power Cord 7. Power Supply

POST error codes

In the following index, X can represent any number.

POST Error Code	FRU/Action
000SCSI Adapter not enabled	1. Verify adapter device and Bus Master fields are enabled in PCI configuration program. See documentation shipped with computer.
02X	1. SCSI Adapter
08XCheck SCSI terminator installation.	<ol style="list-style-type: none"> 1. SCSI Cable 2. SCSI Terminator 3. SCSI Device 4. SCSI Adapter
101System board interrupt failure	1. System Board
102System board timer error	1. System Board

POST Error Code	FRU/Action
106	1. System Board
110 System board memory parity error	1. Memory Module 2. System Board
111 I/O channel parity error	1. Reseat adapters 2. Any adapter 3. Riser card 4. System Board
114 Adapter ROM error	1. Adapter Memory 2. System Board 3. Riser card
129 Internal cache test error	1. Processor 2. L2 Cache Memory 3. System Board
151 Real-time clock failure	1. System Board
161 Bad CMOS battery	1. Run Setup 2. CMOS Backup Battery (see "Safety information" on page 185) 3. System Board
162 Configuration mismatch	1. Run Setup and verify Configuration 2. Had a device been added, removed, changed location? If not, suspect that device. 3. Power-on external devices first, then power-on computer 4. CMOS Backup Battery (see "Safety information" on page 185) System Board 5. System Board 6. Riser card
162 And unable to run diagnostics	1. Diskette Drive 2. System Board 3. Diskette Drive Cable 4. Riser card
163 Clock not updating or invalid time set	1. Time and Date Set? 2. CMOS Backup Battery (see "Safety information" on page 185) 3. System Board

POST Error Code	FRU/Action
164 POST detected a base memory or extended memory size mismatch error or RIMM socket 3 is populated with a RIMM memory module	<ol style="list-style-type: none"> 1. Run Setup. Check System Summary menu for memory size change. (See "Setup Utility program" on page 41.) 2. Run the Extended Memory Diagnostic tests
166 Boot Block Check Sum Error	<ol style="list-style-type: none"> 1. Run Flash Recovery using Boot Block. See "Flash recovery boot block jumper" on page 50. 2. System Board
167 Microprocessor installed that is not supported by the current POST/BIOS	<ol style="list-style-type: none"> 1. Run Setup. Check Stepping level for the BIOS level needed, then perform the flash update. 2. Processor
168 Alert on LAN error	<ol style="list-style-type: none"> 1. Run Setup. Check to see that Ethernet and Alert on LAN are enabled. 2. System Board 3. Riser card
17X, 18X	<ol style="list-style-type: none"> 1. C2 Security
175	<ol style="list-style-type: none"> 1. Run Configuration. See "Setup Utility program" on page 41. 2. System Board
176	<ol style="list-style-type: none"> 1. Covers were removed from the computer
177 Corrupted Administrator Password	<ol style="list-style-type: none"> 1. System Board
178	<ol style="list-style-type: none"> 1. System Board
183	<ol style="list-style-type: none"> 1. Enter the administrator password
184 No RFID Antenna	<ol style="list-style-type: none"> 1. Make sure Asset Care and Asset ID are enabled in Configuration/Setup 2. RFID Antenna 3. System Board 4. Riser card
185 Corrupted boot sequence	<ol style="list-style-type: none"> 1. Set configuration and reinstall the boot sequence
186	<ol style="list-style-type: none"> 1. System Board
187	<ol style="list-style-type: none"> 1. Clear Administration password 2. System Board

POST Error Code	FRU/Action
189	1. More than three password attempts were made to access the computer
190Chassis intrusion detector was cleared. This is information only, no action required. If this code does not clear:	1. System Board
1XXNot listed above	1. System Board
201, 20XMemory data error	1. Run Enhanced Diagnostics Memory Test 2. Memory Module 3. System Board
225	1. Unsupported Memory
229External cache test error	1. L2 Cache Memory 2. System Board
262POST detected a base memory or extended memory type error	1. Run Setup. Check System Summary menu for memory. (See "Setup Utility program" on page 41.) 2. Run the Extended Memory Diagnostic tests.
301	1. Keyboard 2. Keyboard Cable 3. System Board
303With an 8603 error	1. Mouse 2. Keyboard 3. Keyboard Cable 4. System Board
303With no 8603 error	1. Keyboard 2. Keyboard Cable 3. System Board
3XXNot listed above	1. Keyboard 2. Keyboard Cable 3. System Board
5XX	1. Video Adapter (if installed) 2. System Board
601	1. Diskette Drive A 2. Diskette Drive Cable 3. System Board 4. Riser card

POST Error Code	FRU/Action
602	<ol style="list-style-type: none"> 1. Bad Diskette? 2. Verify Diskette and retry
604 And able to run diagnostics	<ol style="list-style-type: none"> 1. Run Setup and verify diskette configuration settings 2. Diskette Drive A/B 3. Diskette Drive Cable 4. System Board 5. Riser card
605 POST cannot unlock the diskette drive	<ol style="list-style-type: none"> 1. Diskette Drive 2. Diskette Drive Cable 3. System Board 4. Riser card
662	<ol style="list-style-type: none"> 1. Diskette drive configuration error or wrong diskette drive type; run Setup Configuration
6XX Not listed above	<ol style="list-style-type: none"> 1. Diskette Drive 2. System Board 3. Riser card 4. External Drive Adapter 5. Diskette Drive Cable 6. Power Supply
762 Math coprocessor configuration error	<ol style="list-style-type: none"> 1. Run Setup 2. Processor 3. System Board
7XX Not listed above	<ol style="list-style-type: none"> 1. Processor 2. System Board
962 Parallel port configuration error	<ol style="list-style-type: none"> 1. Run Configuration 2. Parallel Adapter (if installed) 3. System Board
9XX	<ol style="list-style-type: none"> 1. Printer 2. System Board
1047	<ol style="list-style-type: none"> 1. 16-Bit AT™ Fast SCSI Adapter

POST Error Code	FRU/Action
107X Check SCSI terminator installation	<ol style="list-style-type: none"> 1. Check SCSI terminator installation 2. SCSI Cable 3. SCSI Terminator 4. SCSI Device 5. SCSI Adapter
1101 Serial connector error, possible system board failure	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
1101, 1102, 1106, 1108, 1109	<ol style="list-style-type: none"> 1. System Board 2. Any Serial Device
1107	<ol style="list-style-type: none"> 1. Communications Cable 2. System Board
1102 Card selected feedback error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
1103 Port fails register check	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics 2. System Board
1106 Serial option cannot be turned off	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics 2. System Board
1107	<ol style="list-style-type: none"> 1. Serial Device Cable 2. System Board
1110 Register test failed	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics 2. System Board
1116 Interrupt error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
1117 Failed baud rate test	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
1162 Serial port configuration error	<ol style="list-style-type: none"> 1. Run Configuration 2. Serial Adapter (if installed) 3. System Board
11XX Not listed above	<ol style="list-style-type: none"> 1. System Board
1201	<ol style="list-style-type: none"> 1. System Board 2. Any Serial Device
1202, 1206, 1208, 1209, 12XX	<ol style="list-style-type: none"> 1. Dual Async Adapter/A 2. System Board 3. Any Serial Device

POST Error Code	FRU/Action
1207	<ol style="list-style-type: none"> 1. Communications Cable 2. Dual Async Adapter/A
13XX	<ol style="list-style-type: none"> 1. Game Adapter
1402Printer not ready	Information only
1403No paper error, or interrupt failure	Information only
1404System board timeout failure	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
1405Parallel adapter error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
1406Presence test error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
14XXNot listed above. Check printer before replacing system board	<ol style="list-style-type: none"> 1. Printer 2. System Board
15XX	<ol style="list-style-type: none"> 1. SDLC Adapter
1692Boot sequence error	<ol style="list-style-type: none"> 1. Run FDISK to ensure at least one active partition is set active
16XX	<ol style="list-style-type: none"> 1. 36/38 Workstation Adapter
1762Hard disk drive configuration error	<ol style="list-style-type: none"> 1. Run Configuration (See "Setup Utility program" on page 41)
1780 (Disk Drive 0)1781 (Disk Drive 1)1782 (Disk Drive 2)1783 (Disk Drive 3)	<ol style="list-style-type: none"> 1. See "Power supply" on page 30 2. Hard Disk Drive 3. System Board 4. Riser card 5. Hard Disk Cable 6. Power Supply
180X, 188XPCI configuration or resource error	<ol style="list-style-type: none"> 1. Run Setup and verify PCI/ISA configuration settings. 2. If necessary, set ISA adapters to <i>Not available</i> to allow PCI adapters to properly configure. 3. Remove any suspect ISA adapters. 4. Rerun diagnostics. 5. PCI Adapter
1962Boot sequence error	<ol style="list-style-type: none"> 1. Possible hard disk drive problem; see "Hard disk drive boot error" on page 42
209X	<ol style="list-style-type: none"> 1. Diskette Drive 2. Diskette Cable

POST Error Code	FRU/Action
20XX Not listed above	1. BSC Adapter
21XX	1. SCSI Device 2. 16-bit AT Fast SCSI adapter 3. Alternate BSC adapter
2401, 2402 If screen colors change	1. Display
2401, 2402 If screen colors are OK	1. System Board 2. Display
2409	1. Display
2410	1. System Board 2. Display
2462 Video memory configuration error	1. Check cable connections 2. Run Setup and verify video configuration settings 3. Video Memory Modules 4. Video Adapter (if installed) 5. System Board
4611, 4630	1. Multiport/2 Interface Board 2. Multiport/2 Adapter
4612, 4613, 4640, 4641	1. Memory Module Package 2. Multiport/2 Adapter
4650	1. Multiport/2 Interface Cable
46XX Not listed above	1. Multiport/2 Adapter 2. Multiport/2 Interface Board 3. Memory Module
5600	1. Financial System Controller Adapter
5962 An IDE device (other than hard drive) configuration error	1. Run Configuration 2. CD-ROM Drive 3. CD-ROM Adapter 4. Zip or other ATAPI device 5. System Board 6. Riser card

POST Error Code	FRU/Action
62XX	<ol style="list-style-type: none"> 1. 1st Store Loop Adapter 2. Adapter Cable
63XX	<ol style="list-style-type: none"> 1. 2nd Store Loop Adapter 2. Adapter Cable
64XX	<ol style="list-style-type: none"> 1. Network Adapter
71XX	<ol style="list-style-type: none"> 1. Voice Adapter
74XX	<ol style="list-style-type: none"> 1. Video Adapter (if installed)
76XX	<ol style="list-style-type: none"> 1. Page Printer Adapter
78XX	<ol style="list-style-type: none"> 1. High Speed Adapter
79XX	<ol style="list-style-type: none"> 1. 3117 Adapter
80XX	<ol style="list-style-type: none"> 1. PCMCIA Adapter
84XX	<ol style="list-style-type: none"> 1. Speech Adapter 2. Speech Control Assy.
8601, 8602	<ol style="list-style-type: none"> 1. Pointing Device (Mouse) 2. System Board
8603, 8604	<ol style="list-style-type: none"> 1. System Board 2. Pointing Device (Mouse)
86XX Not listed above	<ol style="list-style-type: none"> 1. Mouse 2. System Board
89XX	<ol style="list-style-type: none"> 1. PC Music Adapter 2. MIDI Adapter Unit
91XX	<ol style="list-style-type: none"> 1. Optical Drive 2. Adapter
96XX	<ol style="list-style-type: none"> 1. SCSI Adapter 2. Any SCSI Device 3. System Board 4. Riser card
10101, 10102, 10104, 10105, 10106, 10107, 10108, 10109, 10111, 10112, 10113, 10114, 10115, 10116	<ol style="list-style-type: none"> 1. Have customer verify correct operating system device drivers are installed and operational. 2. Modem

POST Error Code	FRU/Action
10103, 10110, 101171	<ol style="list-style-type: none"> 1. System Board 2. Data/Fax Modem 3. Riser card
10117 Not listed above	<ol style="list-style-type: none"> 1. Check system speaker 2. Check PSTN cable 3. External DAA (if installed) 4. Modem
10118	<ol style="list-style-type: none"> 1. Run Diagnostics and verify the correct operation of the modem slot 2. Modem
10119	<ol style="list-style-type: none"> 1. Diagnostics detected a non-IBM modem 2. Modem
10120	<ol style="list-style-type: none"> 1. Check PSTN Cable 2. External DAA (if installed) 3. Modem
10132, 10133, 10134, 10135, 10136, 10137, 10138, 10139, 10140, 10141, 10142, 10143, 10144, 10145, 10146, 10147, 10148, 10149, 10150, 10151, 10152	<ol style="list-style-type: none"> 1. Modem
10153	<ol style="list-style-type: none"> 1. Data/Fax Modem 2. System Board 3. Riser card
101XX Not listed above	<ol style="list-style-type: none"> 1. Modem Adapter/A 2. Data/Fax Modem 3. System Board 4. Riser card
10450, 10451, 10490, 10491, 10492, 10499 Read/write error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics 2. Hard Disk Drive 3. System Board 4. Riser card
10452 Seek test error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics

POST Error Code	FRU/Action
10453 Wrong drive type?	Information only
10454 Sector buffer test error	1. Run Enhanced Diagnostics
10455, 10456 Controller error	1. Run Enhanced Diagnostics
10459 Drive diagnostic command error	Information only
10461 Drive format error	1. Run Enhanced Diagnostics
10462 Controller seek error	1. Run Enhanced Diagnostics
10464 Hard Drive read error	1. Run Enhanced Diagnostics
10467 Drive non-fatal seek error	1. Run Enhanced Diagnostics
10468 Drive fatal seek error	1. Run Enhanced Diagnostics
10469 Drive soft error count exceeded	1. Run Enhanced Diagnostics
10470, 10471, 10472 Controller wrap error	1. Run Enhanced Diagnostics
10473 Corrupt data. Low level format might be required	Information only
10480	1. Hard Disk Drive (ESDI) 2. Drive Cable 3. System Board
10481 ESDI drive D seek error	1. Run Enhanced Diagnostics
10482 Drive select acknowledgement bad	1. Run Enhanced Diagnostics
106X1	1. Check Configuration 2. Ethernet Adapter
10635	1. Power-off computer, wait ten seconds then power-on the computer 2. Ethernet Adapter
10651, 10660	1. Check Cables 2. Ethernet Adapter
106XX Not listed above	1. Ethernet Adapter
107XX	1. 5.25-inch External Diskette Drive 2. 5.25-inch Diskette Drive Adapter/A

POST Error Code	FRU/Action
109XX Check the adapter cables	<ol style="list-style-type: none"> 1. ActionMedia Adapter/A 2. System Board 3. Riser card
112XX This adapter does not have cache	<ol style="list-style-type: none"> 1. SCSI Adapter 2. Any SCSI Device 3. System Board 4. Riser card
119XX	<ol style="list-style-type: none"> 1. 3119 Adapter
121XX	<ol style="list-style-type: none"> 1. Modem Adapter 2. Any Serial Device 3. System Board 4. Riser card
136XX	<ol style="list-style-type: none"> 1. ISDN Primary Rate Adapter 2. System Board 3. Riser card
137XX	<ol style="list-style-type: none"> 1. System Board
141XX	<ol style="list-style-type: none"> 1. Realtime Interface Coprocessor Portmaster Adapter/A
143XX	<ol style="list-style-type: none"> 1. Japanese Display Adapter 2. System Board 3. Riser card
14710, 14711	<ol style="list-style-type: none"> 1. System Board Video Adapter 2. Adapter Video Memory
148XX	<ol style="list-style-type: none"> 1. Video Adapter
14901, 14902, 1491X, 14922	<ol style="list-style-type: none"> 1. Video Adapter (if installed) 2. System Board 3. Riser card 4. Display (any type)
14932	<ol style="list-style-type: none"> 1. External Display 2. Video Adapter
161XX	<ol style="list-style-type: none"> 1. FaxConcentrator Adapter

POST Error Code	FRU/Action
164XX	<ol style="list-style-type: none"> 1. 120 MB Internal Tape Drive 2. Diskette Cable 3. System Board 4. Riser card
16500	<ol style="list-style-type: none"> 1. 6157 Tape Attachment 2. Adapter
16520, 16540	<ol style="list-style-type: none"> 1. 6157 Streaming Tape Drive 2. 6157 Tape Attachment Adapter
166XX, 167XX	<ol style="list-style-type: none"> 1. Token Ring Adapter 2. System Board 3. Riser card
18001 to 18029	<ol style="list-style-type: none"> 1. Wizard Adapter 2. Wizard Adapter Memory
18031 to 18039	<ol style="list-style-type: none"> 1. Wizard Adapter Cable
185XXXX	<ol style="list-style-type: none"> 1. DBCS Japanese Display Adapter/A 2. System Board 3. Riser card
20001 to 20003	<ol style="list-style-type: none"> 1. Image Adapter/A Image-I Adapter/A 2. Memory Module DRAM, VRAM
20004	<ol style="list-style-type: none"> 1. Memory Module DRAM, VRAM 2. Image Adapter/A Image-I Adapter/A
20005 to 20010	<ol style="list-style-type: none"> 1. Image Adapter/A Image-I Adapter/A 2. Memory Module DRAM, VRAM
200XXNot listed above	<ol style="list-style-type: none"> 1. Image Adapter/A 2. Image-I Adapter/A 3. Memory Module DRAM, VRAM 4. System Board 5. Riser card
20101 to 20103	<ol style="list-style-type: none"> 1. Printer/Scanner Option 2. Image Adapter/A 3. Memory Module DRAM, VRAM

POST Error Code	FRU/Action
20104	<ol style="list-style-type: none"> 1. Memory Module DRAM, VRAM 2. Printer/Scanner Option 3. Image Adapter/A
20105 to 20110	<ol style="list-style-type: none"> 1. Printer/Scanner Option 2. Image Adapter/A 3. Memory Module DRAM, VRAM
Image Adapter/A Memory Test failure indicated by graphic of adapter	<ol style="list-style-type: none"> 1. Replace memory module (shown in graphic)
206XX	<ol style="list-style-type: none"> 1. SCSI-2 Adapter 2. Any SCSI Device 3. System Board 4. Riser card
208XX Verify there are no duplicate SCSI ID settings on the same bus.	<ol style="list-style-type: none"> 1. Any SCSI Device
210XXXX Internal bus, size unknown 210XXX1 External bus, size unknown	<ol style="list-style-type: none"> 1. SCSI Hard Disk Drive 2. SCSI Adapter or System Board 3. SCSI Cable 4. SCSI ID Switch (on some models)
Tape Drive amber LED remains on	<ol style="list-style-type: none"> 1. Tape Drive 2. SCSI Cable (internal) 3. SCSI Adapter or System Board
Tape Drive green "in use" LED fails to come on	<ol style="list-style-type: none"> 1. Tape Drive 2. SCSI Adapter or System Board 3. SCSI Cable (internal) 4. SCSI Cable (external)
Tape automatically ejected from drive	<ol style="list-style-type: none"> 1. Tape Cassette Drive
SCSI ID on rotary switch does not match SCSI ID set in configuration. Verify drive switches inside cover are set to zero	<ol style="list-style-type: none"> 1. Rotary Switch Circuit Board 2. Circuit Board Cable 3. Tape Drive
Tape sticks or breaks in drive. Verify that the tapes used meet ANSI standard X3B5	<ol style="list-style-type: none"> 1. Tape Cassette
212XX	<ol style="list-style-type: none"> 1. SCSI Printer 2. Printer Cable
213XX	<ol style="list-style-type: none"> 1. SCSI Processor

POST Error Code	FRU/Action
214XX	1. WORM Drive
215XXXC, 215XXXD, 215XXXE, 215XXXUIf an external device, and power-on LED is off, check external voltages	1. CD-ROM Drive I 2. CD-ROM Drive II Enhanced CD-ROM Drive II Any CD-ROM Drive 3. SCSI Cable 4. SCSI Adapter or System Board
216XX	1. Scanner
217XXIf an external device, and power-on LED is off, check external voltages	1. Rewritable Optical Drive 2. SCSI Adapter or System Board 3. SCSI Cable
218XXCheck for multi CD tray or jukebox	1. Changer
219XX	1. SCSI Communications Device
24201Y0, 24210Y0Be sure wrap plug is attached	1. ISDN/2 Adapter 2. ISDN/2 Wrap Plug 3. ISDN/2 Communications Cable
273XX	1. 1 Mbps Micro Channel 2. Infrared LAN Adapter
27501, 27503, 27506, 27507	1. ServerGuard Adapter 2. System Board 3. Riser card
27502, 27504, 27510, 27511, 27533, 27534, 27536, 27537	1. ServerGuard Adapter
27509	1. Remove redundant adapters, run Auto Configuration program, then retest.
27512	1. WMSELF.DGS diagnostics file is missing 2. WMSELF.DGS diagnostics file is incorrect
27535	1. 3V Lithium Backup Battery 2. ServerGuard Adapter
27554	1. Internal Temperature out of range 2. ServerGuard Adapter
27555, 27556	1. ServerGuard Adapter 2. Power Supply

POST Error Code	FRU/Action
27557	<ol style="list-style-type: none"> 1. 7.2V NiCad Main Battery Pack 2. ServerGuard Adapter
27558, 27559, 27560, 27561	<ol style="list-style-type: none"> 1. PCMCIA Type II Modem 2. ServerGuard Adapter
27562	<ol style="list-style-type: none"> 1. External Power Control not connected 2. External Power Control 3. ServerGuard Adapter
27563, 27564	<ol style="list-style-type: none"> 1. External Power Control 2. ServerGuard Adapter
275XX	<ol style="list-style-type: none"> 1. Update Diagnostic Software
27801 to 27879	<ol style="list-style-type: none"> 1. Personal Dictation System 2. Adapter 3. System Board
27880 to 27889	<ol style="list-style-type: none"> 1. External FRU (Speaker, Microphone)
999030XHard disk reset failure	<ol style="list-style-type: none"> 1. Possible hard disk drive problem; see "Hard disk drive boot error" on page 42

Miscellaneous error messages

Message/Symptom	FRU/Action
CMOS Backup Battery inaccurate	<ol style="list-style-type: none"> 1. CMOS Backup Battery (see "Safety information" on page 185) 2. System Board
Changing colors	<ol style="list-style-type: none"> 1. Display
Computer will <i>not</i> power-off. See "Power supply" on page 30.	<ol style="list-style-type: none"> 1. Power Switch 2. System Board 3. Riser card
Computer will <i>not</i> RPL from server	<ol style="list-style-type: none"> 1. Ensure that network is in startup sequence as first device or first device after diskette 2. Ensure that network adapter is enabled for RPL 3. Network adapter (Advise network administrator of new MAC address)

Message/Symptom	FRU/Action
Computer will <i>not</i> Wake On LAN (if applicable)	<ol style="list-style-type: none"> 1. Check power supply and signal cable connections to network adapter 2. Ensure that the operating system settings are set to enable Wake on LAN 3. Ensure Wake On LAN feature is enabled in Setup/Configuration (see "Setup Utility program" on page 41) 4. Ensure network administrator is using correct MAC address 5. Ensure no interrupt or I/O address conflicts 6. Network adapter (advise network administrator of new MAC address)
Dead computer. See "Power supply" on page 30.	<ol style="list-style-type: none"> 1. Power Supply 2. System Board 3. Riser card
Diskette drive in-use light remains on or does not light when drive is active.	<ol style="list-style-type: none"> 1. Diskette Drive 2. System Board 3. Diskette Drive Cable 4. Riser card
Flashing cursor with an otherwise blank display.	<ol style="list-style-type: none"> 1. System Board 2. Primary Hard Disk Drive 3. Hard Disk Drive Cable 4. Riser card
Incorrect memory size during POST	<ol style="list-style-type: none"> 1. Run the Memory tests 2. Memory Module 3. System Board
"Insert a Diskette" icon appears with a known-good diagnostics diskette in the first 3.5-inch diskette drive.	<ol style="list-style-type: none"> 1. System Board 2. Diskette Drive Cable 3. Riser card 4. Network Adapter
Intensity or color varies from left to right of characters and color bars	<ol style="list-style-type: none"> 1. Display 2. System Board
No power or fan not running	<ol style="list-style-type: none"> 1. See "Power supply" on page 30

Message/Symptom	FRU/Action
Non-system disk or disk error-type message with a known-good diagnostic diskette.	<ol style="list-style-type: none"> 1. Diskette Drive 2. System Board 3. Diskette Drive Cable 4. Riser card
Drives not recognized by the Fixed Disk diagnostic (e.g., you have six drives but the fixed disk test only shows three)	<ol style="list-style-type: none"> 1. Remove the first drive that does not show up and rerun the Fixed Disk diagnostic. If the remaining drives then show up, replace the drive you removed.
Hang during Fixed Disk diagnostic	<ol style="list-style-type: none"> 1. Remove the hard file being tested at the time of the hang. 2. Rerun the diagnostic. 3. If successful, replace the drive you removed.
Other display symptoms not listed above (including blank or illegible display)	<ol style="list-style-type: none"> 1. See "Display" on page 32 2. System Board 3. Display
Power-on indicator or hard disk drive in-use light not on, but computer works correctly	<ol style="list-style-type: none"> 1. Power Supply 2. System Board 3. LED Cables
Printer problems	<ol style="list-style-type: none"> 1. See "Printer" on page 29
Program loads from the hard disk with a known-good diagnostics diskette in the first 3.5-inch diskette drive	<ol style="list-style-type: none"> 1. Run Setup 2. Diskette Drive 3. Diskette Drive Cable 4. System Board 5. Riser card 6. Power Supply
RPL computer cannot access programs from its own hard disk.	<ol style="list-style-type: none"> 1. If network administrator is using LCCM Hybrid RPL, check startup sequence: <ol style="list-style-type: none"> a. First device - network b. Second device - hard disk 2. Hard disk drive
RPL computer does not RPL from server	<ol style="list-style-type: none"> 1. Check startup sequence 2. Check the network adapter LED status

Message/Symptom	FRU/Action
Serial or parallel port device failure (system board port)	<ol style="list-style-type: none"> 1. External Device Self-Test OK? 2. External Device 3. Cable 4. System Board
Serial or parallel port device failure (adapter port)	<ol style="list-style-type: none"> 1. External Device Self-Test OK? 2. External Device 3. Cable 4. Alternate Adapter 5. System Board
Some or all keys on the keyboard do not work	<ol style="list-style-type: none"> 1. Keyboard 2. Keyboard Cable 3. System Board

Undetermined problems

Check the power supply voltages. See “Power supply” on page 30. If the voltages are correct, return here and continue with the following steps.

1. Power-off the computer.
2. Remove or disconnect the following components (if installed) one at a time.
 - a. Non-IBM devices
 - b. External devices (modem, printer, or mouse)
 - c. Any adapters
 - d. Riser card
 - e. Memory modules
Before removing or replacing memory modules, see “System board memory” on page 55.
 - f. Extended video memory
 - g. External Cache
 - h. External Cache RAM
 - i. Hard disk drive
 - j. Diskette drive
3. Power-on the computer to re-test the system.
4. Repeat steps 1 through 3 until you find the failing device or adapter.

If all devices and adapters have been removed, and the problem continues, replace the system board. See “Replacing a system board” on page 45.

Model tables - Country/Region/Language

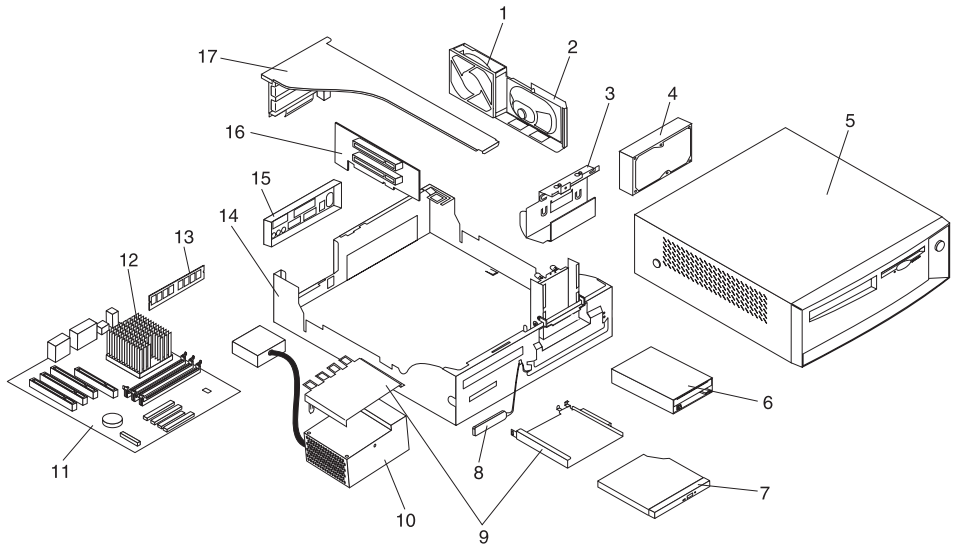
Note

For model information, please refer to IBM online at <http://www.ibm.com>, then select **support** to find information for type 6568/6569/6648/6649 models.

Use this table to identify the country/region/language specific models. In most cases, country/region or language designation will be identified by the last digit of the model number.

EMEA	Model
EMEA preload	xxG
North America	Model
U.S. English	xxU
Canadian French	xxF
Latin America	Model
Portuguese (Brazil)	xxP
L.A. Spanish	xxS
Asia Pacific (AP)	Model
A.P. English (Australia, New Zealand)	xxA
Japan (Japanese)	xxJ
Hong Kong (A.P. English)	xxD
Hong Kong (Chinese)	xxM
China (Chinese)	xxC
China (A.P. English)	xxD
Thailand (Thai)	xxT
Taiwan (Chinese)	xxV

Parts - Types 6568/6569/6648/6649



Parts listing

Each FRU is available for all types/models, unless specific types or models are given.

Index	System (Types 6568/6569/6648/6649)	FRU No.
1	FAN ASM 80MM with FAN/SPEAKER BRACKET (all types/models)	22P2473
2	SPEAKER w/CABLE ASM (all types/models)	00N5151
3	DASD MOUNTING BRACKET (all types/models)	10K0941
4	10.1GB HARDFILE EIDE 5400 RPM (6568 - GAx, GBx, LAx, LBx, NAx, NBx) (6569/ 6649 - LAx, LBx)(6648 - GAx,GBx,LAx,LBx,D2U,D3U,NAx,NBx)	36L8681
4	15.0GB HARDFILE EIDE 5400RPM (6568 - D3U)	09N0851
4	20.4GB HARDFILE EIDE 5400RPM (6568 - LCx, LDx, PAX, PBx, RAX, RBx, TAx, TBx, RAA, RBA, RFG,VEG,VCM,VCV, VCD,VDV, KAV, KQV, KTV, PBV)(6569 - NAX, NBx, PAX, PBx, RAX, RBx, TAx, TBx, RAA, RBA, RCG, TCG)(6648 - PAX, PBx, RAX, RBx, TAx, TBx, TCU) (6649 - NAX, NBx, TAx, PAX, PBx, RAX, RBx, TBx,TCU)	09N0705
	20.4GB HARDFILE EIDE OPTIONAL (6568 - LCx, LDx, PAX, PBx, RAX, RBx, TAx, TBx, RAA, RBA, RFG,VEG,VCM,VCV,VDV)	06P5240
5	TOP COVER ASM with Front Bezel Asm (6568/6569 - all models)	10K0939
5	TOP COVER ASM with Front Bezel Asm (6648/6649 only)	19K5571
6	3.5" 1.44MB DISKETTE DRIVE (all types/models)	06P5229
7	CD-ROM DRIVE - 24x SLIM(6568 - LCx, LDx, RAX, RBx, NAX, NBx, TAx, TBx, RAA, RBA, RFG, VEG)(6569 - NAX, NBx, PAX, PBx, RAX, RBx, TAx, TBx, RAA, RBA, RCG, TCG)(6648 - NAX, NBx, RAX, RBx, TAx, TBx,TCU) (6649 - NAX, NBx, TAx, TBx, PAX, PBx, RAX, RBx, TCU)	19K1523
8	RFID ANTENNA	03K9654
9	CDROM BRACKET w/SPRING KIT (all)	10K0937
10	110W POWER SUPPLY (6568/6569/6648/6649 - all models)	00N7673
10	110W POWER SUPPLY - CHINA (6568 - GAC, GBC, KAV, KQV, KTV, LAC, LBC, NAC, NBC, PAC, PBC, PBV, TAC, TBC)	00N7675
11	SYST BD W/O MEM/PROC/ MERLOT/ W/O POV CARD (6568/6569/6648/6649)	09K9982
11	SYST BD MERLOT W/POV CARD (6569/6649 only)	10K1195
12	PIII COPPERMINE 600MHz (6648 - D2U,D3U)	06P7445
12	PIII COPPERMINE 667MHz (6568/6648 - GAx, GBx)	10K0863
12	PIII COPPERMINE 733MHz (6568 - LAx, LBx, LCx, LDx)(6569/6648/6649 - LAx, LBx)	10K0864
12	PIII COPPERMINE 800MHz (OPTIONAL) (6568/6648/6569/6649 - NAX, NBx)	10K1196
12	COPPERMINE 866MHz PROCESSOR (6568/6569/6648/6649 - PAX, PBx)	19K7539
12	COPPERMINE 933MHz PROCESSOR (6568 - RAX, RBx,RAA,RBA,RFG) (6569 - RAX, RBx,RAA,RBA,RCG) (6648/6649 - RAX, RBx)	19K7537
12	COPPERMINE 933MHz (6648/6649 - RAX, RBx)	25P0719
12	PIII 1GHz PROCESSOR (6568 - TAx, TBx, VEG, VCM, VCV, VCD, VDV, KQV, KTV) (6569 - TAx, TBx,TCG)(6648/6649 -TAX,TBx,TCU)	24P9479

Index	System (Types 6568/6569/6648/6649)	FRU No.
13	MEMORY 64MB SDRAM (6568 - GAx, GBx, LAx, LBx, NAx, NBx)(6569/6649 - LAx, LBx)(6648 - GAx, GBx, LAx, LBx, NAx, NBx)	33L3072
13	MEMORY 128MB SDRAM (6568 - LCx, LDx, PAX, PBx, RAX, RBx, TAx, TBx, D3U, RAA, RBA, RFG, VEG,VCM, VCV, VCD, VDV, KAV, KQV, KTV, PBV)(6569 - NAx, NBx, PAX, PBx, RAX, RBx, TAx, TBx,RAA,RBA,RCG,TCG)(6648 - D2U, D3U, PAX, PBx, RAX, RBx, TAx, TBx)(6649 - NAx, NBx, PAX, PBx, RAX, RBx, TAx, TBx)	33L3074
13	MEMORY 256MB SDRAM (6648, 6649 - TCU)	33L3076
14	Chassis ASM with FDD Cage (6568/6569 only, all models)	06P2950
14	Chassis ASM with FDD Cage (6648/6649 only, all models)	06P2951
15	EMC PLANAR SHIELD (all types/models)	09N5770
16	RISER CARD ENET (all types/models)	09N4515
17	I/O BRACKET ASM (all types/models)	10K0940
	FOOT (5) and VERTICAL STAND (6568/6569 only, all models)	10K0934
	FOOT (5) and VERTICAL STAND (6648/6649 only, all models)	19K5569
	BEZEL KIT with NAMEPLATE (6568/6569 only, all models)	10K0935
	BEZEL KIT with NAMEPLATE (6648/6649 only, all models)	19K5570
	POWER/LED CABLE ASM (all types/models)	10K0942
	KEYLOCK ASM (all types/models)	10K0944
	C2 SWITCH ASM (all types/models)	09K9827
	CABLE HARDFILE - ATA (all types/models)	10K0829
	CABLE DISKETTE DRIVE (all types/models)	10K0828
	MOUSE - 2 Button (6568/6648 - all) (6569 -PAG, PBG, RAX, RBx, TAx, TBx, RAA, RBA, RCG, TCG) (6649 - TAx, TBx, TCU)	10L6145
	MOUSE - Scrollpoint® (6569 - NAx, NBx, LAx ,LBx, PAA, PBA)	09N5535
	MOUSE - 2 Button Black (6648 - all) (6649 - TAx, TBx,TCU)	76H5080
	MOUSE - Scrollpoint Black (6649 only - LAx, LBx, NAx, NBx, PAX, PBx, RAX, RBx)	28L1868
	MOUSE - Scrollpoint Black (6649 - LAx, LBx, NAx, NBx, PAX, PBx, RAX, RBx)	09N5537
	MISC. HARDWARE KIT (all types/models)	10K0938
	CDROM CABLE (all types/models)	09N0102
	USB CABLE (all types/models)	09N4496
	LITHIUM BATTERY (all types/models)	33F8354
	PLANAR LOCATION LABEL (all types/models)	06P2735
	CELERON 600MHz (6568 - D3U)	06P2442
	COPPERMINE CELERON 800MHz (100 Bus/800MHz/128Kb L2 Cache) "D0" STEP LEVEL FLIP CHIP WITH HEATSINK 09N4373 (NOTE: PRIME P/N TO 10K1196) (6568/ 6569/ 6648/ 6649 - NAx, NBx)	25P2779
	COPPERMINE 866MHz (133/866-256KL2Cache) "D0" STEP LEVEL WITH HEATSINK 09N4373 (PRIME TO 22P4385 AND 19K7539) (6568 - PAX, PBx, KAV, PBV) (6648 - PAX,PBx)	25P2778
	COPPERMINE 866MHz (133/866-256KL2Cache) "C0" STEP LEVEL WITH HEATSINK 09N4373 (OPTIONAL) (6568/6648 - PAX,PBx)	22P4385

Index	System (Types 6568/6569/6648/6649)	FRU No.
	HEATSINK NON-IHS 566-866 MHz (6568 - GAx, GBx, LAx, LBx, LCx, LDx, NAx, NBx, PAX, PBx, KAV, PBV) (6569/6649 - LAx, LBx, NAx, NBx, PAX, PBx) (6648 - GAx, GBx, LAx, LBx, D2U, D3U, NAx, NBx, PAX, PBx)	09N4372
	PROCESSOR HEATSINK (6568 - TAx, TBx, VEG, VCM, VCV, VCD, VDV, KQT, KTV) (6569 - TAx, TBx, RAA, RBA, RCG, TCG)	22P2457
	FAN SINK 900 MHz (6568 - RAx, RBx, RAA, RBA, RFG, TAx, TBx, VEG, VCM, VCV, VCD, VDV, KQV, KTV) (6569 - RAx, RBx, RAA, RBA, RCG, TAx, TBx, TCG) (6648/6649 - RAx, RBx, TAx, TBx, TCU)	06P2458
	FANSINK IHS 866-1.10 GHz (6568 - RAx, RBx, RAA, RBA, RFG, TAx, TBx, VEG, VCM, VCV, VCD, VDV, KQV, KTV) (6569 - RAx, RBx, RAA, RBA, RCG, TAx, TBx, TCG) (6648/6649 - RAx, RBx, TAx, TBx, TCU)	22P4370
	AIR BAFFLE DUCT (6568 - TAx,TBx,VEG,VCM,VCV, VCD,VDV, KQV, KTV) (6569 - TAx,TBx,RAA,RBA,RCG,TCG) (6648/ 6649 - TAx,TBx,TCU)	22P3624

**Keyboards - 6568/6569
(PCNext Lite Pearl White)**

US ENGLISH	37L2514
FRENCH CANADIAN 058	37L0912
FRENCH CANADIAN 044	37L2515
LA/SPANISH	37L2516
BRAZIL - PORTUGUESE	28L1826
ARABIC	37L2518
BELGIUM - FRENCH	37L2519
BELGIUM - ENGLISH	37L2520
BULGARIAN	37L2521
CZECH	37L2522
DANISH	37L2523
DUTCH	37L2524
FRENCH	37L2525
GERMAN	37L2526
GREEK	37L2527
HEBREW	37L2528
HUNGARIAN	37L2529
ITALIAN	37L2531
NORWEGIAN	37L2532
POLISH	37L2533
PORTUGUESE	37L2534
ROMANIAN	37L2535
RUSSIAN	37L2536
SERBIAN - CYR	37L2537
SLOVAK	37L2538
SPANISH	37L2539

SWEDISH/FINNISH	37L2540
SWISS - FRENCH/GERMAN	37L2541
TURKISH - ID 179	37L2542
TURKISH - ID 440	37L2543
UK ENGLISH	37L2544
YUGOSLAVIAN	37L2545
UK ENGLISH (ISO)	37L2546
JAPANESE	37L2547
CHINESE	37L2548
KOREAN	28L1860
THAI	37L2550

**Keyboards - 6648/6649
(PCNext Lite Black)**

US ENGLISH	37L2551
FRENCH CANADIAN 058	37L0913
FRENCH CANADIAN 044	37L2552
LA/SPANISH	37L2553
BRAZIL - PORTUGUESE	37L2554
ARABIC	37L2555
BELGIUM - FRENCH	37L2556
BELGIUM - ENGLISH	37L2557
BULGARIAN	37L2558
CZECH	37L2559
DANISH	37L2560
DUTCH	37L2561
FRENCH	37L2562
GERMAN	37L2563
GREEK	37L2564
HEBREW	37L2565
HUNGARIAN	37L2566
ICELAND	37L2567
ITALIAN	37L2568
NORWEGIAN	37L2569
POLISH	37L2570
PORTUGUESE	37L2571
ROMANIAN	37L2572
RUSSIAN	37L2573
SERBIAN - CYR	37L2574
SLOVAK	37L2575
SPANISH	37L2576
SWEDISH/FINNISH	37L2577
SWISS - FRENCH/GERMAN	37L2578
TURKISH - ID 179	37L2579

TURKISH - ID 440	37L2580
UK ENGLISH	37L2581
YUGOSLAVIAN	37L2582
UK ENGLISH (ISO)	37L2583
JAPANESE	37L2584
CHINESE	37L2585
KOREAN	28L1905
THAI	37L2587

Computer Power Cords

ARABIC	14F0033
AUSTRALIAN	93F2365
BELGIAN	1339520
BULGARIAN	1339520
CANADIAN	93F2364
CZECH	1339520
DENMARK	13F9997
FINLAND	1339520
FRANCE	1339520
GERMAN	1339520
HUNGARIAN	1339520
ISRAEL	14F0087
ITALIAN	14F0069
LATIN AMERICAN	6952301
NETHERLANDS	1339520
NEW ZEALAND	93F2365
NORWEGIAN	1339520
POLISH	1339520
PORTUGUESE	1339520
SERBIAN	1339520
SLOVAKIAN	1339520
SOUTH AFRICAN	14F0015
SPANISH	1339520
SWISS	1339520
SWISS - FRENCH/GERMAN	14F0051
US ENGLISH	93F2364
UK - IRELAND	14F0033
YUGOSLAVIAN	1339520
CHILE	14F0069
ARGENTINA, PARAGUAY, & URUGUAY	36L8880

Display and Monitor Information

Display and monitor information is available separately and is listed under "Related Publications" on page vii.

Special tools

The following tools are required to service the computer models/types listed in this section of the service manual

- Volt-ohm meter, IBM P/N 73G5404
- Wrap Plug, IBM P/N 72X8546

Chapter 3. Types 6058/6059/6269/6578/6579

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Product description

The NetVista type 6058/6059/6269/6578/6579 computers are available in 4 x 4 (four I/O adapter slots, four drive bays). Type 6269 has only 3 usable I/O slots.

- Type 6269 is the white desktop type with the A20 system board.
- Types 6578 and 6579 are the white desktop types with the A40 and A40P system boards, respectively.
- Types 6058 and 6059 are the Global machine types, white desktop, with the A40 and A40P system boards, respectively.
- **Security**
 - Administrator password
 - Cover lock
(optional on 6269; not shipped with machine)
 - Power-on password
 - Operating system password
 - U-bolt and cable (optional for some models)
- **CMOS backup battery (lithium)**
- **Common parts**
 - Diskette drive
 - Hard disk drive
 - Keyboard
 - Power supply
 - Mouse

Specifications Information (ISO/ANSI)

The machine type specifications information on the following pages was determined in controlled acoustical environments according to procedures specified by the American National Standards Institute (ANSI) S12.10 and ISO 7779, and are reported in accordance with ISO 9296. Actual sound pressure levels in your location might differ from the average values stated because of room reflections and other nearby noise sources. The declared sound power levels indicate an upper limit, below which a large proportion of machines will operate.

Specifications - Types 6058/60596269/6578/6579

Feature	Description
Size	Depth: 425 mm (16.7 inches) Height: 140 mm (5.5 inches) Width: 425 mm (16.7 inches)
Weight	Minimum configuration as shipped: 9.4 kg (20 lb) Maximum configuration as shipped: 11.3 kg (25 lb)
Environment	Air temperature: <ul style="list-style-type: none">• System on: 10 to 35 C (50 to 95 F)• System off: 10 to 43 C (50 to 110 F) Humidity: <ul style="list-style-type: none">• System on: 8% to 80%• System off: 8% to 80% Maximum altitude: 2134 m (7000 ft.)
Heat Output	Approximate heat output in BTUs per hour: <ul style="list-style-type: none">• Minimum: 240 BTU/hr. (75 watts)• Maximum: 705 BTU/hr. (207 watts)

Feature	Description
Electrical Input	Sine-wave input (47 to 63 Hz) required Input voltage range: <ul style="list-style-type: none"> • Minimum: 90 V AC • Maximum: 265 V AC Input kVA (approximately): <ul style="list-style-type: none"> • Minimum: 0.08 kVA • Maximum: 0.30 kVA (as shipped)
Airflow	Approximately 0.5 cubic meters/minute (18 cubic feet/minute)
Acoustical Noise Emission Values	Average sound pressure levels: At operator position: <ul style="list-style-type: none"> • 43 dB operating • 38 dB idle At bystander position (1 meter): <ul style="list-style-type: none"> • 37 dB operating • 33 dB idle Declared (upper limit) sound pressure levels: <ul style="list-style-type: none"> • 5.1 bels operating • 4.8 bels idle

General checkout

This general checkout procedure is for type 6058/6059/6269/6578/6579 computers.

Attention: The drives in the computer you are servicing might have been rearranged or the drive startup sequence changed. Be extremely careful during write operations such as copying, saving or formatting. Data or programs can be overwritten if you select an incorrect drive.

Diagnostic error messages appear when a test program finds a problem with a hardware option. For the test programs to properly determine if a test *Passed*, *Failed* or *Aborted*, the test programs check the error-return code at test completion. See “IBM PC Enhanced Diagnostics” on page 113.

General error messages appear if a problem or conflict is found by an application program, the operating system, or both. For an explanation of these messages, refer to the information supplied with that software package.

Notes:

1.

Type 6058/6059/6269/6578/6579 computers default to come up quiet (no beep and no memory count and checkpoint code display) when no errors are detected by POST.

To enable beep and memory count and checkpoint code display when a successful POST occurs, do the following:

- a. Select **Start Options** in the Configuration/Setup Utility program (see “Setup Utility program” on page 122).
- b. Set **Power-On Self-Test to Enhanced**.

2. Before replacing any FRUs, ensure that the latest level of BIOS is installed on the system. A down-level BIOS might cause false errors and unnecessary replacement of the system board. For more information on how to determine and obtain the latest level BIOS, see “BIOS levels” on page 129.
3. If multiple error codes are displayed, diagnose the first error code displayed.
4. If the computer hangs with a POST error, go to “Symptom-to-FRU index” on page 150.
5. If the computer hangs and no error is displayed, go to “Undetermined problems” on page 171.
6. If an installed device is not recognized by the diagnostics program, that device might be defective.

001

1. Power-off the computer and all external devices.
2. Check all cables and power cords.
3. Make sure the system board is seated properly.
4. Set all display controls to the middle position.
5. Power-on all external devices.
6. Power-on all external devices.
7. Power-on the computer.
8. Check for the following response:
 - Readable instructions or the Main Menu.

DID YOU RECEIVE THE CORRECT RESPONSE?

If NO, continue to **002** .

If YES, proceed to **003** .

002

If the Power Management feature is enabled, do the following:

1. Start the Configuration/Setup Utility program (see “Setup Utility program” on page 122)
2. Select **Power Management** from the Configuration/Setup Utility program menu.
3. Select **APM**.
4. Be sure **APM BIOS Mode** is set to **Disabled**. If it is not, press Left Arrow (←) or Right Arrow (→) to change the setting.
5. Select **Automatic Hardware Power Management**.
6. Set **Automatic Hardware Power Management** to **Disabled**.

- or -

Go to the “IBM PC Enhanced Diagnostics” on page 113.

003

Run the IBM PC Enhanced Diagnostics test. If necessary, refer to “Diagnostics, test and recovery information” on page 111.

- If you receive an error, replace the part that the diagnostic program calls out or go to “IBM PC Enhanced Diagnostics” on page 113.
- If the test stops and you cannot continue, replace the last device tested.

- If the computer has incorrect keyboard responses, go to “Keyboard” on page 107.
- If the printer has incorrect responses, go to “Printer” on page 107.
- If the display has problems such as jittering, rolling, shifting, or being out of focus, go to “Display” on page 110.

Module test menu and hardware configuration report

Depending on the diagnostics version level you are using, the installed devices in the computer are verified in one of two ways.

1. At the start of the diagnostic tests, the Module Test Menu is displayed. Normally, all installed devices in the computer are highlighted on the menu.
2. At the start of the diagnostic tests, the main menu appears. From this menu, select **System Info**, then select **Hardware Configuration** from the next menu. Normally, all installed devices in the computer are highlighted on this report.

If an installed device is not recognized by the diagnostics program, then review the following:

- The diagnostic code for the device is not in the Enhanced Diagnostics utility. Run the diagnostics provided with that device.
- The missing device is defective or it requires an additional diskette or service manual.
- An unrecognizable device is installed.
- A defective device is causing another device not to be recognized.
- The SCSI controller failed (on the system board or SCSI adapter).
- Use the procedure in “Undetermined problems” on page 171 to find the problem.

If a device is missing from the list, replace it. If this does not correct the problem, use the procedure in “Undetermined problems” on page 171.

Keyboard

Note

If a mouse or other pointing device is attached, remove it to see if the error symptom goes away. If the symptom goes away, the mouse or pointing device is defective.

001

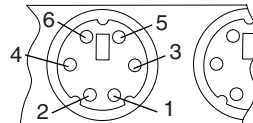
- Power-off the computer.

Disconnect the keyboard cable from the system unit.

Power-on the computer and check the keyboard cable connector on the system unit for the voltages shown.

All voltages are 5%.

Pin	Voltage (Vdc)
1	+5.0
2	Reserved
3	Ground
4	+5.0
5	+5.0
6	Reserved



ARE THE VOLTAGES CORRECT?

If YES, proceed to **003** .

If NO, continue with **002** .

002

Replace the system board.

003

On keyboards with a detachable cable, replace the cable. If the problem remains or if the cable is permanently attached to the keyboard, replace the keyboard. If the problem remains, replace the system board.

Printer

1. Make sure the printer is properly connected and powered on.
2. Run the printer self-test.

If the printer self-test does not run correctly, the problem is in the printer. Refer to the printer service manual.

If the printer self-test runs correctly, install a wrap plug in the parallel port and run the diagnostic tests to determine which FRU failed.

If the diagnostic tests (with the wrap plug installed) do not detect a failure, replace the printer cable. If that does not correct the problem, replace the system board or adapter connected to the printer cable.

Power supply

If the power-on indicator is not on, the power supply fan is not running, or the computer will not power-off, use the following procedures.

Check/Verify	FRU/Action
Verify that the voltage-selector switch is set for the correct voltage.	Correct the voltage-selector switch setting
Check the following for proper installation. <ul style="list-style-type: none">• Power Cord• On/Off Switch connector• On/Off Switch Power Supply connector• System Board Power Supply connectors• Microprocessor(s) connection	Reseat
Check the power-on switch for continuity.	Power Cord
Check the power-on switch for continuity.	Power-on Switch

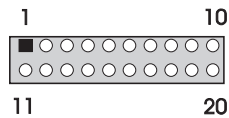
If the above are correct, check the following voltages.

20-pin main power supply connection

See “A20 system board layout (Type 6269)” on page 146 or “A40/A40P system board layout (Types 6058/6059/6578/6579)” on page 148 for connector locations.

Attention

These voltages must be checked with the power supply cables connected to the system board.



Pin	Signal	Function
1	3.3 V	+3.3 V dc
2	3.3 V	+3.3 V dc
3	COM	Ground
4	5 V	+5 V dc
5	COM	Ground
6	5 V	+5 V dc
7	COM	Ground
8	POK	Power Good
9	5VSB	Standby Voltage
10	12 V	+12 V dc
11	3.3 V	+3.3 V dc
12	-12 V	-12 V dc
13	COM	Ground
14	PS-ON	DC Remote Enable
15	COM	Ground
16	COM	Ground
17	COM	Ground
18	No voltage	Not used
19	5 V	+5 V dc
20	5 V	+5 V dc

If the voltages are not correct, and the power cord is good, replace the power supply.

Display

If the screen is rolling, replace the display assembly. If that does not correct the problem, replace the video adapter (if installed) or replace the system board.

If the screen is not rolling, use the following procedure to run the display self-test.

1. Power-off the computer and display.
2. Disconnect the display signal cable.
3. Power-on the display.
4. Turn the brightness and contrast controls clockwise to their maximum setting.
5. Check for the following conditions.
 - You should be able to vary the screen intensity by adjusting the contrast and brightness controls.
 - The screen should be white or light gray, with a black margin (test margin) on the screen.

Note: The location of the test margin varies with the type of display. The test margin might be on the top, bottom, or one or both sides.

If you do not see any test margin on the screen, replace the display. If there is a test margin on the screen, replace the video adapter (if installed) or replace the system board.

Note: During the first two or three seconds after the display is powered on, the following might occur while the display synchronizes with the computer.

- Unusual patterns or characters
- Static, crackling, or clicking sounds
- A “power-on” hum on larger displays

A noticeable odor might occur on new displays or displays recently removed from storage.

These sounds, display patterns, and odors are normal. Do not replace any parts.

If you are unable to correct the problem, go to “Undetermined problems” on page 171.

Diagnostics, test and recovery information

The following tools are available to help identify and resolve hardware-related problems.

- Power-On Self-Test (POST)
 - POST Beep Codes
 - Error Code Format
- IBM PC Enhanced Diagnostics
- Recovery utility
 - Full recovery
 - Partial recovery
- Repair utility

Power-On Self-Test (POST)

Each time you power-on the system, it performs a series of tests that check the operation of the system and some options. This series of tests is called the *Power-On Self-Test*, or *POST*. POST does the following operations.

- Checks some basic system-board operations
- Checks the memory operation
- Starts the video operation
- Verifies that the diskette drive is working
- Verifies that the hard disk drive is working

If the POST finishes without detecting any problems, a single beep sounds and the first screen of the operating system or application program appears.

Note: Types 6058/6059/6269/6578/6579 computers default to come up quiet (no beep and no memory count and checkpoint code display) when no errors are detected by POST.

To enable beep and memory count and checkpoint code display when a successful POST occurs, do the following:

1. Select **Start Options** in the Configuration/Setup Utility program (see “Setup Utility program” on page 122).
2. Set **Power-On Self-Test** to **Enhanced**.

If the POST detects a problem, an error message appears on the screen. A single problem can cause several error messages to appear. When you correct the cause of the first error message, the other error messages probably will not appear on the screen the next time you turn on the system.

POST beep codes

The Power-On Self-Test generates a beeping sound to indicate successful completion of POST or to indicate that the tests detect an error.

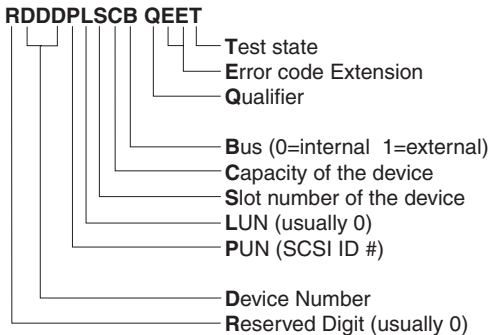
One beep and the appearance of text on the display indicates successful completion of the POST. More than one beep indicates that the POST detects an error.

Error code format

This section provides an explanation of the encoded non-SCSI and SCSI POST error codes.

Error messages are displayed on the screen as three, four, five, eight, twelve, or thirteen digits. An *X* in an error message can be any number or letter. The shorter POST errors are highlighted in the Symptom-to-FRU Index. Some digits will represent different information for SCSI errors versus non-SCSI errors.

The following figure shows which digits display the shorter POST errors. The figure also defines additional SCSI information.



Notes:

1. Non-IBM device error codes and documentation supersede this list.
2. Duplicate SCSI ID settings will cause misleading error symptoms or messages.

Product Recovery Program menu

Types 6058/6059/6269/6578/6579 machines have recovery and diagnostics programs on a separate hard drive partition. The recovery CD and Enhanced Diagnostics diskette are not shipped with the machine or the HMM. To download diagnostics tests or to order a recovery CD, see "Enhanced Diagnostics download or diskette" on page 113.

At startup, after the machine tests the DIMM memory, the machine displays the following:

To start the Product Recovery Program, press F11

After depressing F11, you are given the following options.

- **Full recovery**

This utility reformats the hard drive and restores all original files.

- **Partial recovery**

This utility reformats the hard drive and restores the Windows operating system and all device drivers

- **Repair**

This is the emergency repair utility, and should not be used to install Windows components.

- **System utilities**

1. Run diagnostics

This selection accesses the IBM PC Enhanced Diagnostics.

2. System info

3. Create recovery/ repair diskette

IBM PC Enhanced Diagnostics

The IBM PC Enhanced Diagnostics programs use a full range of diagnostic utilities to determine the operating condition of the computer's hardware components.

The diagnostic program includes the following:

- PC-Doctor's Diagnostic Software

This interface serves as the control program for running both the IBM PC Enhanced Memory Diagnostics and the suite of diagnostic tests provided by PC-Doctor.

- IBM PC Enhanced Memory Diagnostics

The memory diagnostic tests determine which memory module (SIMM or DIMM) is defective and report the socket where the failing module is located. The Memory diagnostics can run a quick and full test of the system. Diagnostics can also be run on a single SIMM or DIMM.

Note: See "Chapter 1. IBM PC Enhanced Diagnostics error codes" on page 1 for the specific error codes.

Enhanced Diagnostics download or diskette

The IBM PC Enhanced Diagnostics are available on-line at <http://www.ibm.com/>

- Select **Support**.

- Select **Desktop computing** from the "Search by Category" pull-down menu.
- Select **NetVista** from the "Product Family" list.
- Search for the machine type in the "Quick Path" box on the left.
- Select **Diagnostics** from the "Downloadable files by Category" menu or select the link to **PC Enhanced Diagnostics** from the "Downloadable files by date" list.

Navigating through the diagnostics programs

Use the cursor movement keys to navigate within the menus.

- The **Enter** key is used to select a menu item.
- The **Esc** key is used to back up to the previous menu.
- For online help select **F1**.

Running diagnostics tests

There are four ways to run the diagnostic tests.

1. Using the cursor movement keys, highlight **Run Normal Test** or **Run Quick Test** from the Diagnostics Menu and then press **Enter**.
This will automatically run a pre-defined group of tests from each test category. **Run Normal Test** runs a more extensive set of tests than does **Run Quick Test** and takes longer to execute.
2. Press **F5** to automatically run all selected tests in all categories. See "Test Selection".
3. From within a test category, press **Ctrl-Enter** to automatically run only the selected tests in that category. See "Test Selection".
4. Using the cursor movement keys, highlight a single test within a test category, then press **Enter**. This will run only that test.

Press **Esc** at any time to stop the testing process.

Test results, (N/A, PASSED, FAILED, ABORTED), are displayed in the field beside the test description and in the test log. See "Viewing the test log" on page 120.

Test selection

To select one or more tests, use the following procedure.

1. Open the corresponding test category.
2. Using the cursor movement keys, highlight the desired test.
3. Press the space bar.
A selected test is marked by >>. Pressing the space bar again de-selects a test and removes the chevron.
4. Repeat steps 2 and 3 above to select all desired tests.

IBM PC Enhanced Memory Diagnostics

The IBM PC Enhanced Memory Diagnostics provide the capability to identify a particular memory module (SIMM or DIMM) which fails during testing. Use the System Board Layout section to reference the memory sockets, or select **F1** *twice* to load the Online Manual and select Chapter 11, "SIMM/DIMM/RIMM Locator".

Follow the steps below to locate the IBM PC Enhanced Memory Diagnostics test options.

1. Select the DIAGNOSTICS option on the toolbar and press **Enter**.
2. Highlight either the *Memory Test-Full* or *Memory Test-Quick* option and press **Enter**.
3. Memory Test-Full
The full memory test will take about 80 seconds per MB of memory and will detect marginal, intermittent, and solid (stuck) memory failures.
4. Memory Test-Quick
The quick memory test will take about 20 seconds per MB of memory and will detect solid (stuck) memory failures only.

Notes:

1. Either level of memory testing can be performed on all memory or a single SIMM or DIMM socket.
2. Only sockets containing a SIMM or DIMM can be selected for testing. Unpopulated sockets are noted by beside the test description.

Alert-On LAN test

The Alert On LAN test does the following:

- Determines if Alert On LAN is supported on the system.
- Checks the revision ID register.
- Verifies the EEPROM checksum.
- Validates that a software alert can be sent.

Asset ID test

The Asset ID test does the following:

- Determines if Asset ID is supported on the system.
- Verifies the EEPROM areas.
- Performs an antenna detection test.

Test results

IBM PC Enhanced Diagnostic test results will produce the following error code format:

Function Code	Failure Type	DeviceID	Date	ChkDigits	Text
---------------	--------------	----------	------	-----------	------

- **Function Code:**
Represents the feature or function within the PC.
- **Failure Type:**
Represents the type of error encountered.
- **DeviceID:**
Contains the component's unit-ID which corresponds to either a fixed disk drive, removable media drive, serial or parallel port, processor, specific SIMM or DIMM, or a device on the PCI bus.
- **Date:**
Contains the date on which the diagnostic test was run. The date is retrieved from CMOS and displayed using the YYYYMMDD format.

- **ChkDigits:**
Contains a 2-digit check-digit value to ensure the following:
 - Diagnostics were run on the specified date.
 - Diagnostics were run on the specified IBM computer.
 - The diagnostic error code is recorded correctly.
- **Text:**
Description of the error.

Note:

See “Chapter 1. IBM PC Enhanced Diagnostics error codes” on page 1 for error code listings.

Hard file Smart test

Use the Hard File Smart Test when the system management tool has detected a hard file SMART alert.

The Smart test does the following:

- Interrogates IDE devices for support of the SMART instruction set.
- Issues an ENABLE SMART command to make sure SMART functionality is active.
- Checks the SMART RETURN STATUS command to determine if any thresholds have been exceeded.

If thresholds have been exceeded, an error message is shown, and the test fails. If no SMART is supported by the drive, the test returns with “N/A”.

IBM Fixed Disk Optimized Test

You can use the IBM Fixed Disk Optimized Test to identify a particular area of a hard disk that fails during testing. You can also use this test to correct types of errors.

To run the Fixed Disk Optimized Test, do the following:

1. From the toolbar, select **Diagnostics**.
2. Select **Fixed Disk Optimized Test**.
3. Select one of the tests:
 - **Hard Disk Test - Full** performs a complete test of the hard disk drive.
 - **Hard Disk Test - Quick** performs a subset of the full hard disk tests.
 - **Start SMART Hard Disk Test** initiates an IDE extended offline self-test.
 - **SMART Hard Disk Test Results** runs the IDE extended offline self-test and displays the results.

You can run the Start SMART Hard Disk Test and then continue with other diagnostics tests before running the Hard Drive Self-Test Results.

Quick and Full erase - hard drive

The IBM PC Enhanced Diagnostics Program offers two hard drive format utilities:

- Quick Erase Hard Drive
- Full Erase Hard Drive

The Quick Erase Hard Drive provides a DOS utility that performs the following steps.

- Destroys the Master Boot Record (MBR) on the hard drive.
- Destroys all copies of the FAT Table on all partitions (both the master and backup).
- Destroys the partition table.
- Provides messages that warn the user that this is a non-recoverable process.

The Full Erase Hard Drive provides a DOS utility that performs the following steps.

- Performs all the steps in Quick Erase.
- Provides a DOS utility that writes random data to all sectors of the hard drive.
- Provide an estimate of time to completion along with a visual representation of completion status.
- Provides messages that warn the user about non-recoverable process.

Important: Make sure that the customer backs up all data before using the Quick or Full Erase function.

To select the Quick Erase or Full Erase Hard Drive utility, use the following procedure.

1. Select the UTILITY option on the toolbar and press **Enter**.
2. Select either the QUICK ERASE or FULL ERASE HARD DISK option and follow the instructions.

Iomega Zip drive test

Use the Iomega Zip Drive Test to test the Zip drive and the drive interface. The test takes about 20 seconds to run.

The default tests the following:

- Controller
- Max Seek (50 times)
- Random Seek (300 sectors)

Asset EEPROM backup

When replacing a system board, this utility allows the backup of all Asset information from the EEPROM to diskette. This utility also restores data to the EEPROM from diskette after replacement of the system board.

To run this utility, use the following procedure.

- Select **Utility**
- Select **Asset EEPROM Backup**
- Follow instructions on screen.

Viewing the test log

Errors reported by the diagnostic test will be displayed by the program as a failed test.

To view details of a failure or to view a list of test results, use the following procedure from any test category screen.

- Press **F3** to activate the log file.
- Press **F3** again to save the file to diskette or **F2** to print the file.

SIMM/DIMM/RIMM memory errors

SIMM/DIMM/RIMM error messages issued by the IBM PC Enhanced Diagnostics.

Message	Failure Found	Recommended Actions
2xx-1y	A memory error was detected in SIMM socket Y.	Replace the SIMM in the socket identified by the last digit of the error code. Re-run the test. If the same error code occurs again, replace the system board.
2xx-2y	A memory error was detected in DIMM/RIMM socket Y	Replace the DIMM/RIMM in the socket identified by the last digit of the error code. Re-run the test. If the same error code occurs again, replace the system board or where memory is on the processor card, replace the processor card.
Corrupt BIOS	Information in BIOS is not as expected. Not able to find expected DMI information from BIOS. Memory controller chipset vendor ID does not match expected value.	Reflash the BIOS. Perform boot block recovery. Replace the system board.
Test aborted by user	User stopped test.	Restart test.

Note: Y is the SIMM/DIMM/RIMM socket number. Use the System Board Layout section in the latest Hardware Maintenance Manual (HMM) to reference the memory sockets.

Setup Utility program

Attention: A customized setup configuration (other than default settings) might exist on the computer you are servicing. Running the Setup Utility program might alter those settings. Note the current configuration settings and verify that the settings are in place when service is complete.

The Setup Utility (configuration) program is stored in the permanent memory of the computer. This program includes settings for the following:

- System Summary
- Product Data
- Devices and I/O Ports
- Start Options
- Date and Time
- System Security
- Advanced Setup
- Power Management

To run the Setup Utility program, use the following procedure.

1. Power-off the computer and wait for a few seconds until all in-use lights go off.
2. Power-on the computer.
3. When the Setup Utility prompt appears on the screen during start-up, press **F1**. The Setup Utility menu will appear.
4. Follow the instructions on the screen.
5. When finished, select **System Summary** to verify that any configuration changes have been accepted.

Hard disk drive boot error

A hard disk drive boot error (error codes 1962 and I999030X) can have the following causes.

Cause	Action
The start-up drive is not in the boot sequence in configuration.	Check the configuration and ensure the start-up drive is in the boot sequence.
No operating system installed on the boot drive.	Install an operating system on the boot drive.
The boot sector on the start-up drive is corrupted.	The drive must be formatted, do the following: <ol style="list-style-type: none">1. Attempt to access and recover (back-up) the failing hard disk drive.2. Using the operating systems programs, format the hard disk drive.3. Go to "Preparing the hard disk drive for use" on page 123.
The drive is defective.	Replace the hard disk drive.

When to use the Low-Level Format program

Notes:

1. The low-level format is not available on all diagnostic diskettes.
2. Before formatting the hard disk drive, make a back-up copy of the files on the drive to be formatted.

Use the Low-Level Format program in the following situations:

- When installing software that requires a low-level format.
- When you get recurring messages from the test programs directing you to run the Low-Level Format program on the hard disk.
- As a last resort before replacing a hard disk drive.

Preparing the hard disk drive for use

When the Low-Level Format program is finished, restore to the hard disk all the files that you previously backed up.

1. Partition the remainder of the hard disk for the operating system. (The commands vary with the operating system. Refer to the operating system manual for instructions.)
2. Format the hard disk using the operating system. (The commands vary with the operating system. Refer to the operating system manual for instructions.)
3. Install the operating system.

You are now ready to restore the files.

Additional service information

- “Replacing a processor” on page 125
- “Replacing a system board” on page 125
- “Security features” on page 125
- “Passwords” on page 126
- “Vital product data” on page 127
- “Management Information Format (MIF)” on page 127
- “Alert on LAN” on page 128
- “Hard disk drive jumper settings” on page 128
- “CD-ROM drive jumper settings” on page 129
- “BIOS levels” on page 129
- “Flash (BIOS/VPD) update procedure” on page 130
- “Flash recovery boot block jumper” on page 131
- “Power management” on page 131
- “Network settings” on page 133
- “Flash over LAN (update POST/BIOS over network)” on page 134
- “Wake on LAN” on page 135
- “System board memory” on page 135

The following additional service information supports Types 6058/6059/6269/6578/6579.

Replacing a processor

Make sure the processor is fully seated in its socket and that the goal post latches are engaged.

Important:

- Make sure the air baffle is installed to prevent processor overheating.
- If the processor is not installed correctly, the system board and the processor can be damaged.

Replacing a system board

Important:

Before replacing a system board, back up Asset information with PC-Doctor by using the “Asset EEPROM backup” on page 120.

Notes:

1. The BIOS and Vital Product Data (VPD) for the computer you are servicing must be installed on the new system board (FRU) after it is installed in the computer. To do this, **you must run the Flash Update program using the Flash Update diskette**. See “BIOS levels” on page 129, “Vital product data” on page 127, and “Flash (BIOS/VPD) update procedure” on page 130.
2. Always ensure the latest level of BIOS is installed on the computer. A down level BIOS may cause false errors and unnecessary replacement of the system board.
3. The processor is a separate FRU from the system board and is not included with the system board FRU. If you are instructed to replace the system board, use the following procedure.
 - a. Remove the processor from the old system board and install it on the new system board.
 - b. Remove any of the following installed options on the old system board, and install them on the new system board.
 - Memory modules
 - c. Ensure that the new system board jumper settings match the old system board jumper settings.
 - d. If the new system board does not correct the problem, reinstall the options on the old system board, reinstall the old system board, then replace the processor.

Security features

Security features in this section include the following:

- Passwords

- Vital Product Data
- Management Information Format (MIF)
- Alert on LAN

Passwords

The following section provides information about computer hardware and software-related passwords.

- Power-on Password
- Administrator Password
- Operating System Password

Power-on and Administrator passwords are set in the Setup Utility program. See “Setup Utility program” on page 122 for information about running the Setup Utility.

Power-on password: A power-on password denies access to the computer by an unauthorized user when the computer is powered on. When a power-on password is active, the password prompt appears on the screen each time the computer is powered on. The computer starts after the proper password is entered.

Removing a power-on password: To service a computer with an active and unknown power-on password, power-off the computer and use the following procedure.

Note: On some models, this procedure will also remove the administrator password.

1. Unplug the power cord and remove the top cover.
2. Refer to “A20 system board layout (Type 6269)” on page 146 or “A40/A40P system board layout (Types 6058/6059/6578/6579)” on page 148 to find the recovery jumper.
3. Move the recovery jumper from **normal** to **clear**.
4. Power-on the computer. The system senses the change in the position and erases the password. *It is necessary to move the jumper back to the previous position.*
5. Remind the user to enter a new password when service is complete.

Administrator password: The administrator password is used to restrict access to the Configuration/Setup Utility program. If the administrator password is activated, and you do not enter the administrator password, the configuration can be viewed but not changed.

Note: Types 6058/6059/6269/6578/6579 has Enhanced Security Mode. If Enhanced Security mode is enabled and there is no password given, the computer will act as if Enhanced Security is disabled.

If Enhanced Security is Enabled and an administrator password is given, the administrator password must be entered to use the computer. If the administrator password is lost or forgotten, the system board in the computer must be replaced in order to regain access to the Configuration/Setup Utility program.

Administrator password control: The Administrator password is set in the Setup Configuration. Refer to “Setup Utility program” on page 122.

Operating system password: An operating system password is very similar to a power-on password and denies access to the computer by an unauthorized user when the password is activated. The computer is unusable until the password is entered and recognized by the computer.

Vital product data

Each computer has a unique Vital Product Data (VPD) code stored in the nonvolatile memory on the system board. After you replace the system board, the VPD must be updated. To update the VPD, see “Flash (BIOS/VPD) update procedure” on page 130.

Management Information Format (MIF)

Management Information Format (MIF) is a file used to maintain a list of the system unit serial number along with all serialized components (for example, system board, riser card, memory, and processor).

At the time of computer manufacture, the EPROM will be loaded with the serial numbers of the system and all major components. The customer will have access to the MIF file via the DMI MIF Browser that is installed with the preload and is also available on the SSCD that is provided with the system.

A company called Retain-a-Group is a central data warehouse offering serial number data management. Retain-a-Group acts as a focal point to law enforcement. The customer has the option to purchase serial number information and services from Retain-a-Group. It is the customer’s responsibility to maintain the MIF file and to inform Retain-a-Group of any changes to the file.

Some customers may request their servicers to assist them in maintaining the MIF file when serialized components are replaced during hardware service. This assistance is between the customer and the servicer. The servicer can use the DMI MIF Browser to update the MIF information in the EPROM. It is anticipated that some servicers might charge for this service.

To update the EPROM using the DMI MIF Browser, use the following procedure.

1. Click **Start** from the desktop, then **Programs**.
2. Select **IBM SystemView Agent**
3. Select the **Serial Number Information** icon
4. Click the plus sign to expand.
5. Select the component you want to view or edit.
6. Double click on the component you want to change.
7. Enter new data in the *Value* field, then click **Apply**.

Alert on LAN

Alert on LAN provides notification of changes in the computer, even when the computer power is turned off. Working with DMI and Wake on LAN technologies, Alert on LAN helps to manage and monitor the hardware and software features of the computer. Alert on LAN generates notifications to the server of these occurrences:

- Computer disconnected from the network
- Computer unplugged from the power outlet
- All POST errors
- Operating system or POST hang condition

Alert on LAN events are configured to be Enabled or Disabled from the LAN server only, and not from the computer. See the LAN administrator for configuration status information.

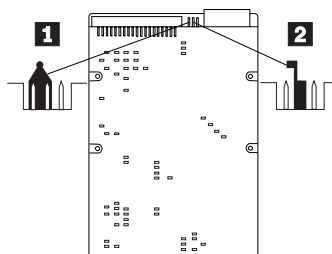
Hard disk drive jumper settings

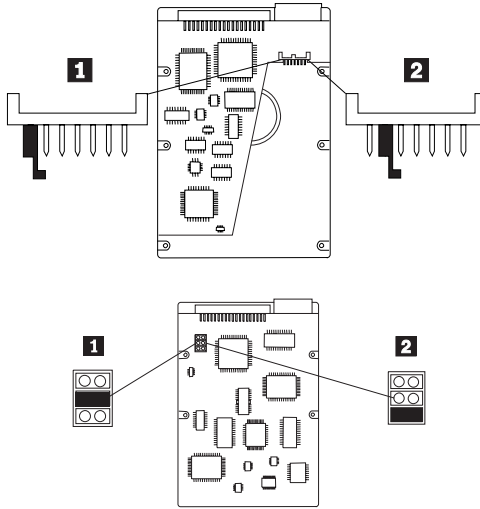
IDE hard disk drives for the NetVista series computers use jumpers to set the drives as primary (master) or secondary (slave).

Note: For drives not shown below, refer to the label on the hard disk drive for the hard disk drive settings.

1 Primary (Master) Hard Disk Drive

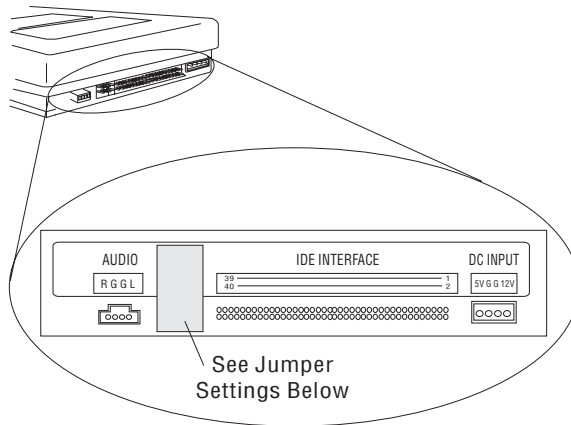
2 Secondary (Slave) Hard Disk Drive





CD-ROM drive jumper settings

CD-ROM and PC/CD-ROM drives use jumpers or tabs to set the drives as primary (master) or secondary (slave). Refer to the drive connector labels or the figures below for the drive settings.



CD-ROM	Primary (Master)	Secondary (Slave)
40X	:: █	: █ :
48X	:: █	: █ :

BIOS levels

An incorrect level of BIOS can cause false error and unnecessary FRU replacement. Use the following information to determine the current level of

BIOS installed in the computer, the latest BIOS available for the computer, and where to obtain the latest level of BIOS.

- Current Level BIOS information
 - Run the Configuration Utility to determine the level of BIOS installed.
- Sources for determining the latest level BIOS available
 1. IBM PC Company Home Page
<http://www.ibm.com/pc/us/>
 2. PC PartnerInfo-Technical Database (CTSTIPS.NSF)
 3. HelpCenter
 4. Levels 1 and 2 Support
 5. RETAIN
- Sources for obtaining the latest level BIOS available
 1. IBM PC Company Home Page
<http://www.ibm.com/pc/us/>
 2. PC PartnerInfo-Technical Database (CTSTIPS.NSF)
 3. HelpCenter
 4. Levels 1 and 2 Support

To update (flash) the BIOS, see “Flash (BIOS/VPD) update procedure”.

Flash (BIOS/VPD) update procedure

Attention: Refer to the information label located inside the system unit cover for any model-specific information.

1. Power-off the computer.
2. Insert the flash update diskette into drive A.
3. Power-on the computer.
4. When the Update Utility appears; select the country/keyboard, then press **Enter**.
5. If the computer serial number was previously recorded, the number is displayed with an option to update it. Press **Y** to update the serial number.
6. Type the 7-digit serial number of the computer you are servicing, then press **Enter**.
7. Follow the instructions on the screen to complete the flash (BIOS/VPD) update procedure.

Flash recovery boot block jumper

Attention: If an interruption occurs during a Flash/BIOS upgrade, the BIOS might be left in an unusable state. The Boot Block jumper enables you to restart the system and recover the BIOS.

To perform a Flash/BIOS recovery using the recovery jumper, use the following procedure.

1. Power-off the computer and remove the cover.
2. Move the system board recovery jumper to the **clear** position. Refer to “A20 system board layout (Type 6269)” on page 146, “A40/A40P system board layout (Types 6058/6059/6578/6579)” on page 148, or to the label inside the computer for more information.
3. Insert the upgrade diskette into the diskette drive.
4. Power-on the computer. The IBM Logo will appear.
5. When the Flash Update Utility appears, select the country/keyboard, then press **Enter**.
6. If the computer serial number was previously recorded, the number is displayed with an option to update it. Press **Y** to update the serial number.
7. Type the 7-digit serial number of the computer you are servicing, then press **Enter**.
8. Follow the instructions on the screen to complete the flash (BIOS/VPD) update procedure.
9. When you are instructed to reboot the computer, power-off the computer and move the recovery jumper to the **normal** position. Then replace the cover and power-on the computer.

Power management

Power management reduces the power consumption of certain components of the computer such as the system power supply, processor, hard disk drives, and some monitors. Advanced Power Management and Rapid Resume Manager are features of some personal computers.

Automatic configuration and power interface (ACPI) BIOS

Being an ACPI BIOS system, the operating system is allowed to control the power management features of the computer and the setting for Advanced Power Management (APM) BIOS mode are ignored. Not all operating systems support ACPI BIOS mode.

Advanced Power Management

Energy-saving settings can be viewed and changed by using the Advanced Power Management menu in the Configuration/Setup Utility program.

Attention: If a device, such as a monitor, does not have power-management capabilities, it can be damaged when exposed to a reduced-power state. Before making energy-saving selections for the monitor, check the documentation supplied with the monitor to see if it supports Display Power Management Signaling (DPMS).

Automatic Hardware Power Management features

Automatic Hardware Power Management can reduce the power states of the computer, processor, and monitor (if the monitor supports DPMS) if they are inactive for a predetermined length of time.

There are three levels of specified time that the computer must be inactive before the power management options that are selected take effect. Select the amount of time that is offered within each level.

Level 1	Set time from 5 minutes to 4 hours.
Level 2	Set time from 10 minutes to 5 hours.
Level 3	Set time from 15 minutes to 6 hours.

At each level, you can define the amount of energy savings by specifying values for the following options.

-

System Power

- Select **On** for the computer to remain on.
- Select **Off** for the computer to shut down.

-

Processor Speed

Set the microprocessor to be **disabled**, or to run at **1, 10, 25, or 50** percent of its internal clock speed.

-

Display

Set display to be disabled or to be reduced at these power states:

- **Standby:** Screen is blank, but can be restored immediately when any activity is detected.
- **Suspend:** Monitor uses less power than in Standby mode. Screen image is restored after a few seconds when any activity is detected.
- **Off:** Monitor power is off. Press Monitor power button to restore power. On some monitors, you might have to depress the power button twice.

Setting Automatic Hardware Power Management features

1. Start the Configuration/Setup Utility program (see “Setup Utility program” on page 122).

2. Select **Advanced Power Management** from the Configuration/Setup Utility program menu.
3. Select the **APM BIOS Mode** and be sure it is set to **Enabled**. If it is not, press Left Arrow (←) or Right Arrow (→) to change the setting.
4. Select **Automatic Hardware Power Management**.
5. Set **Automatic Hardware Power Management** to **Enabled**.
6. Select values for the three categories of power management (system power, processor speed, and display), as necessary.
7. Set **Hard Disk** to **Enabled** or **Disabled**.

Note: This does not apply to SCSI drives.

8. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
9. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
10. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Automatic Power-On features

The Automatic Power-On features within the Power Management menu allow you to enable and disable features that turn on the computer automatically.

- **Serial Port A Ring Detect:** With this feature set to **Enabled** and an external modem connected to serial port (COM1), the computer will turn on automatically when a ring is detected on the modem.
- **PCI Modem Ring Detect:** With this feature set to **Enabled**, the computer will turn on automatically when a ring is detected on the internal modem.
- **PCI Wake Up:** This feature allow PCI cards that support this capability to wake the system.
- **Wake Up on Alarm:** You can specify a date and time at which the computer will be turned on automatically. This can be either a single event or a daily event.
- **Wake on LAN:** If the computer has a properly configured token-ring or Ethernet LAN adapter card that is Wake on LAN-enabled and there is remote network management software, you can use the IBM-developed Wake on LAN feature. When you set Wake on LAN to **Enabled**, the computer will turn on when it receives a specific signal from another computer on the local area network (LAN). For further information, see "Wake on LAN" on page 135.

Network settings

This section applies only to computers that are linked to a network.

The Configuration/Setup Utility program includes settings that can be enabled and disabled to configure the network interface in the computer. These settings are the following:

- Flash over LAN (Update POST/BIOS over Network)
- Wake on LAN

Flash over LAN (update POST/BIOS over network)

Note: For local Flash (BIOS/VPD) update, see “Flash (BIOS/VPD) update procedure” on page 130.

This setting is used to enable or disable the Flash over LAN feature. When the feature is enabled, the system programs, in the computer, can be updated remotely from a network server. If the administrator password is set in the computer, it does not have to be entered by the server.

To access the Flash over LAN setting, use the following procedure.

1. Start the Configuration/Setup Utility program. See “Setup Utility program” on page 122.
2. Select **System Security**.
3. Select **POST/BIOS Update** from the Configuration/Setup Utility program menu.
4. To enable Flash over LAN, select **Enabled**. To disable Flash over LAN, select **Disabled**.
5. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
6. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
7. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Wake on LAN

This setting is used to enable or disable the IBM-developed Wake on LAN feature. This feature makes it possible for the computer to be turned on remotely by a network server. Remote network management software must be used in conjunction with this feature.

To access the Wake on LAN setting, use the following procedure.

1. Start the Configuration/Setup Utility program. See “Setup Utility program” on page 122.
2. Select **Advanced Power Management**.
3. Select **Automatic Power On** from the program menu.
4. Select **Wake on LAN** from the *Automatic Power On* menu.
5. To enable Wake on LAN, select **Enabled**. To disable Wake on LAN, select **Disabled**.
6. Press **Esc** until you return to the Configuration/Setup Utility program menu.
7. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
8. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

System board memory

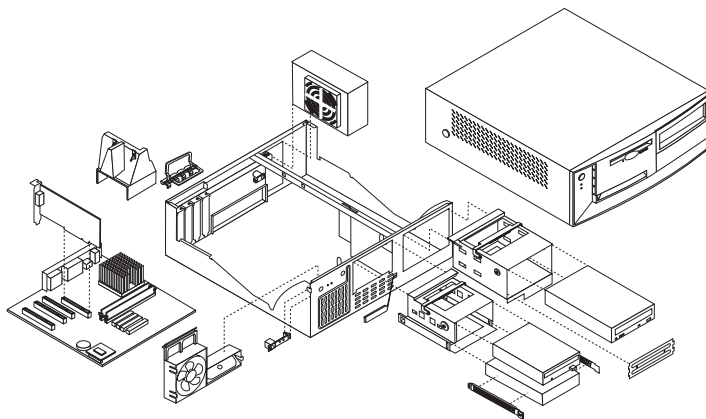
The following matrix cross-references the name of the computer (printed on the logo) and the size, speed, and type of memory modules supported in the computer.

Computers	Memory Module		
	Size	Speed	Type
Types 62696058/6059/6578/6579	64 MB 128 MB 256 MB	133 MHz	SDRAM Non-Parity Industry Standard

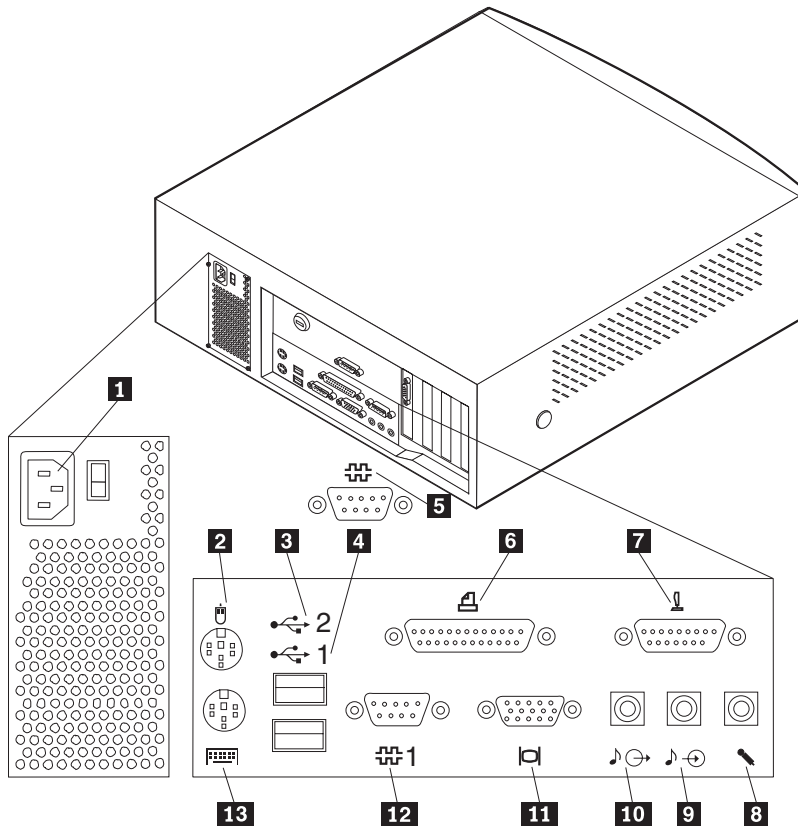
Supported memory configuration

DIMM sizes of 64 MB, 128 MB and 256 MB are acceptable. Start filling DIMM socket 0, then 1. Use 3.3 V unbuffered 133 MHz SDRAM non-parity DIMMs only.

**Computer exploded view -
Types 6058/6059/6269/6578/6579**



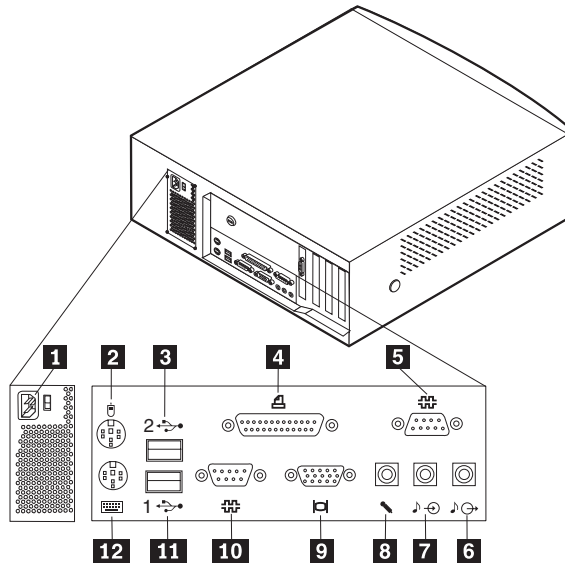
Input/Output connectors - Type 6269



- 1** Power cord
- 2** Mouse connector
- 3** USB connector 2
- 4** USB connector 1
- 5** Serial connector 2
- 6** Parallel connector
- 7** Joystick / MIDI

- 8** Microphone connector
- 9** Audio input connector
- 10** Audio output connector
- 11** Monitor connector
- 12** Serial connector 1
- 13** Keyboard connector

Input/Output connectors - Types 6058/6059/6578/6579



1 Power connector

2 Mouse

3 USB connector 2

4 Parallel connector

5 Serial connector 2 (joystick/MIDI connector in some models)

6 Audio out connector

7 Audio in connector

8 Microphone connector

9 Monitor connector

10 Serial connector 1

11 USB connector 1

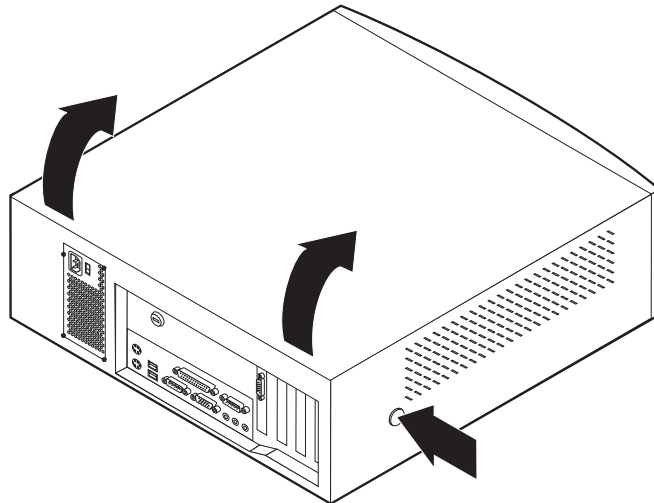
12 Keyboard connector

Cover removal

Note

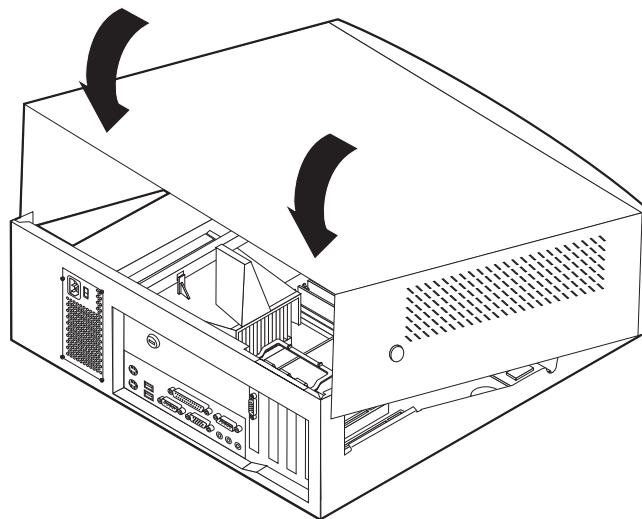
The front panel is integrated with the top cover.

Firmly press the cover latch buttons on both sides. Pull up the back end of cover, and swing the cover toward the front of the computer.



Replacing the cover

Pivot the cover from the front, and move it down over the computer until the cover snaps into place.

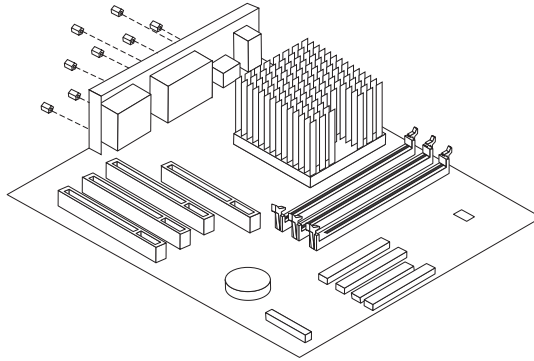


EMC shield (front)

Models that are not shipped with a CD-ROM drive have an EMC shield covering the drive bay. To remove the EMC shield, remove the front cover. Then, remove the single screw that holds the EMC shield in place.

EMC shield (system board)

Remove the eight screws that hold the EMC shield in place.



Installing adapters

This section provides information and instructions for installing and removing adapters.

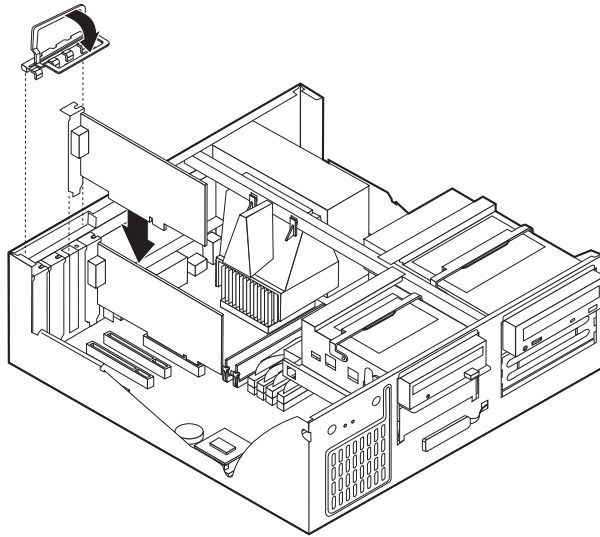
Adapter slots

Types 6058/6059/6269/6578/6579 have four expansion slots used to connect adapters to the peripheral component interconnect (PCI) bus.

To install an adapter in a PCI or AGP expansion slot:

1. Remove the adapter from its static-protective package.
2. Remove the metal I/O bracket from the adapter slot.

3. Install the adapter into the appropriate slot on the system board.

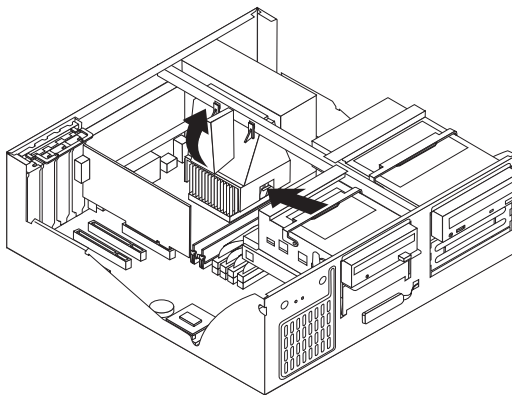


4. Install the adapter slot cover latch. Pivot the latch back to horizontal

Note: If you are installing a Wake on LAN supported network adapter, attach the Wake on LAN cable that came with the adapter to the Wake on LAN connector on the system board. If you also want to take advantage of the Alert on LAN feature of the computer, you must install the network adapter in PCI slot 1.

Air duct (Types 6058/6059/6278/6279)

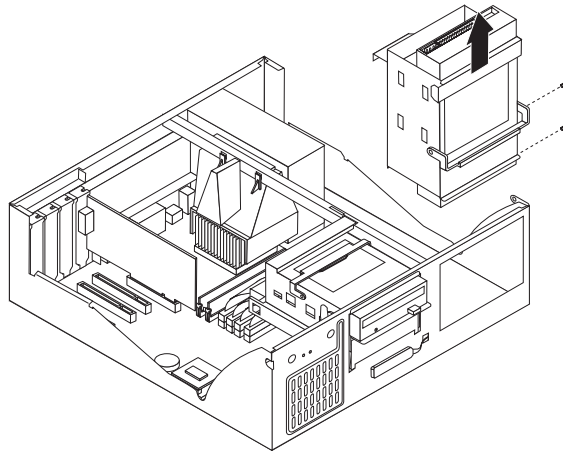
1. The air duct in some machines may have a hole in the side. Press the metal latch that is behind the hole, and swing out the duct to a 45-degree angle and lift it up.



2. If the air duct does not have a hole, simply swing out the duct to a 45-degree angle and lift it up.

CD-ROM drive removal

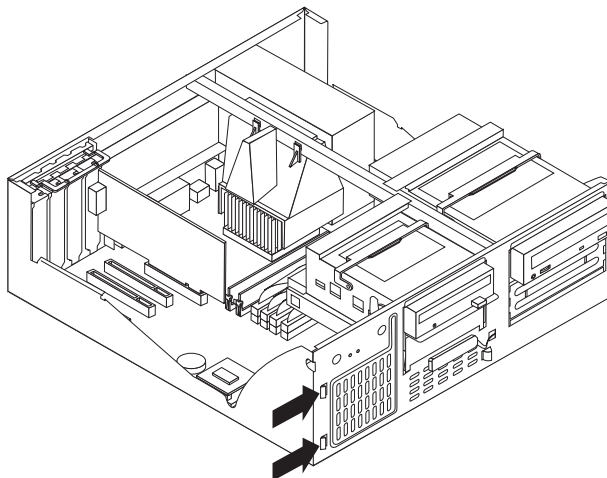
1. Swing the 5.25" drive cage up and out.



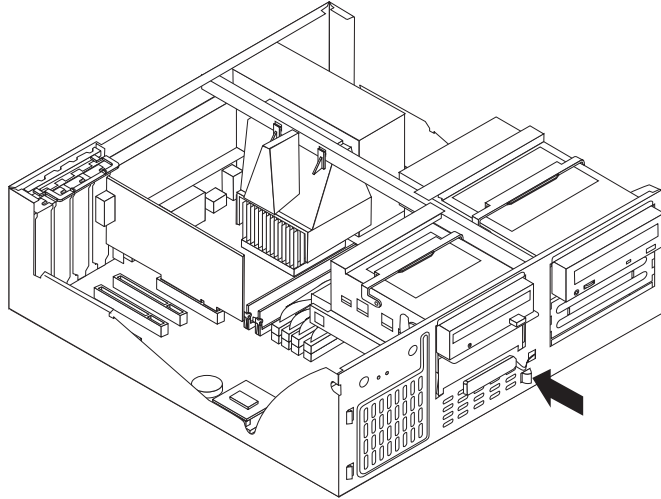
2. Remove the two screws that hold the CD-ROM drive in place. Lift the CD-ROM drive out of the cage.
3. When replacing the drive cage into its horizontal position, be sure place the cage latch back to its regular horizontal position. This is necessary so that the machine cover will fit properly.

Fan/speaker bracket removal

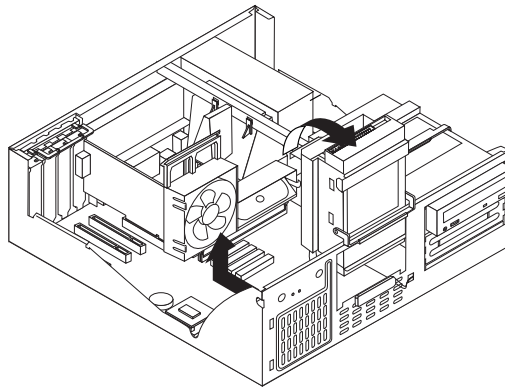
1. Detach the left side of the fan/speaker bracket by pushing the two left tabs that latch the bracket to the chassis.



2. Locate the right tab that hinges the fan/speaker bracket to the chassis. Push the tab to detach the bracket from the chassis.



3. Swing the 3.5" drive cage up and latch into vertical.

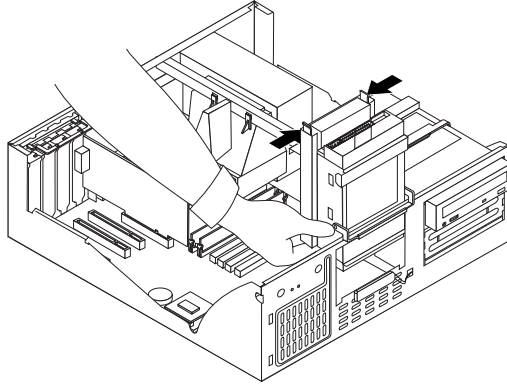


4. Lift the fan/speaker bracket back and out.

Hard drive removal

1. Swing the 3.5" drive cage up, and latch it to the vertical position.

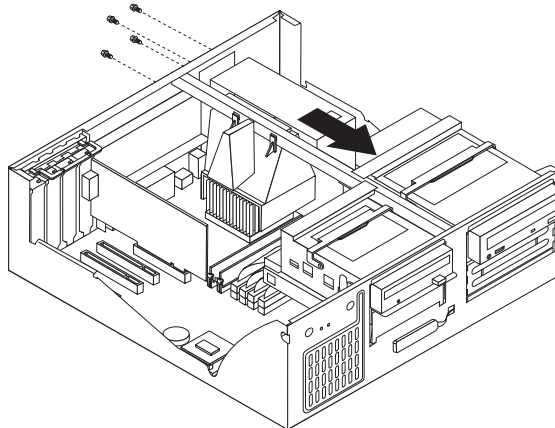
2. Press the two side rail tabs and push the HD from the bottom. Pull the HD out.



3. When replacing the drive cage into its horizontal position, be sure place the cage latch back to its regular horizontal position. This is necessary so that the machine cover will fit properly.

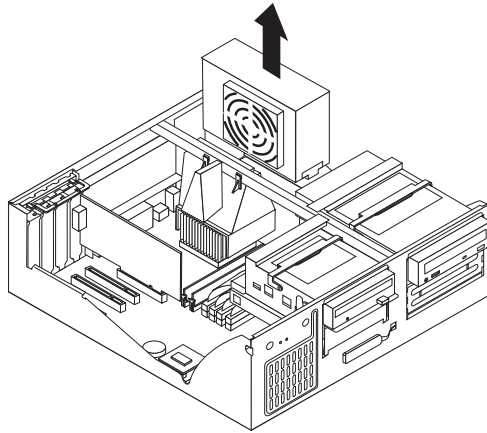
Power supply removal

1. Remove the four screws that hold the power supply to the back of the chassis.

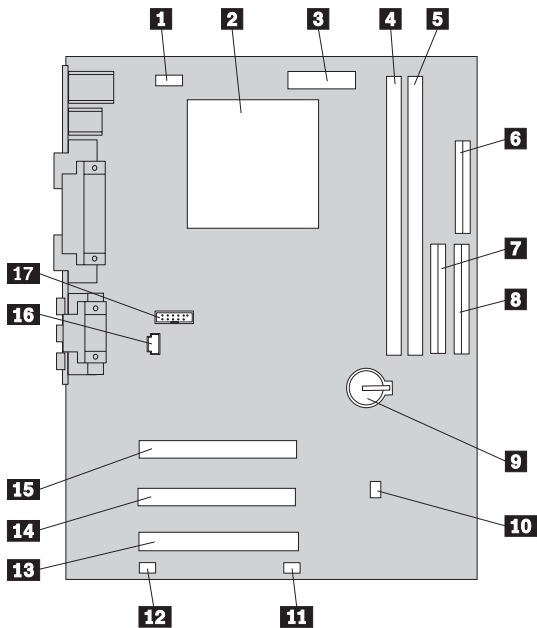


2. The power supply is attached to the base of the chassis by a latch on the front. Slide the power supply forward to dislatch it from the chassis.

3. Lift out the power supply.



A20 system board layout (Type 6269)



System board locations

1	CPU fan connector	10	Clear CMOS/recovery jumper
2	Microprocessor	11	Front fan connector
3	Power connector	12	Wake on LAN connector
4	DIMM 1	13	PCI connector 3
5	DIMM 2	14	PCI connector 2
6	Diskette connector	15	PCI connector 1
7	Secondary IDE connector	16	CD-ROM audio connector
8	Primary IDE connector	17	Serial 2 connector
9	Battery		

A20 System board jumper settings

The following table contains the jumper setting information. (D) indicates the default setting.

A20 Clear CMOS/Flash Boot Block Recovery

Use the recovery jumper setting to Clear CMOS or to Flash Boot Block Recover.

Jumper	Setting	Description
CMOS Reset	2-3	CMOS Reset/Flash Recovery Mode
	1-2 (D)	Normal Mode

Note: The A20 CMOS clear/recovery jumper pins are numbered as follows:

- Pin 1 is the nearest to the battery.
- Pins 2 and 3 are below pin 1, as seen in the A20 System Board layout.

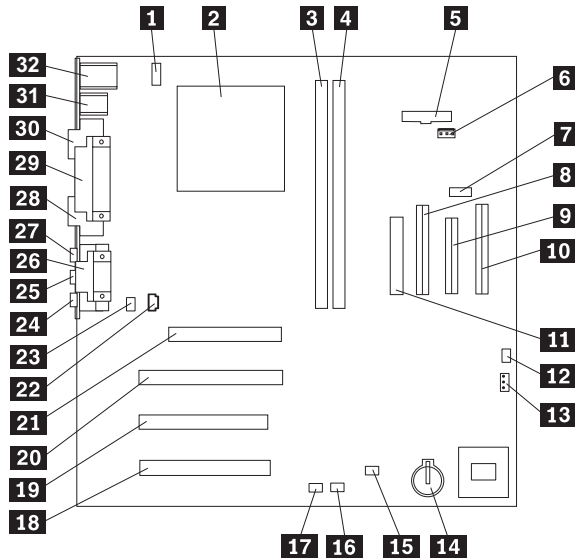
A20 Processor Speed Settings

Processor speed for Type 6269 computers is fixed and are determined by the processor. There are no settings required.

A20 Diskette Write Access

Diskette Write Enable and Write Protect options are changed in the Setup Configuration. See "Setup Utility program" on page 122.

A40/A40P system board layout (Types 6058/6059/6578/6579)



System board locations

1	#2 fan connector	17	Wake on LAN
2	Microprocessor	18	PCI slot 3
3	DIMM 0	19	PCI slot 2
4	DIMM 1	20	PCI slot 1
5	Power LED connector	21	AGP connector
6	RFID connector	22	CD-ROM audio
7	Front USB connector	23	Speaker connector
8	Secondary IDE connector	24	Audio output
9	Diskette connector	25	Audio input
10	Primary IDE connector	26	Serial port 2
11	Power connector	27	Microphone input
12	CMOS clear/recovery jumper	28	Monitor port
13	#1 fan connector	29	Parallel port
14	Battery	30	Serial port 1
15	SCSI adapter LED connector	31	USB connectors
16	Alert on LAN	32	Mouse and keyboard connectors

A40/A40P System board jumper settings

The following table contains the jumper setting information. (D) indicates the default setting.

A40/A40P Clear CMOS/Flash Boot Block Recovery

Use the recovery jumper setting to Clear CMOS or to Flash Boot Block Recover.

Jumper	Setting	Description
CMOS Reset	2-3	CMOS Reset/Flash Recovery Mode
	1-2 (D)	Normal Mode

Note: The A40/A40P CMOS clear/recovery jumper pins are numbered as follows:

- Pin 1 is the farthest from the battery.
- Pins 2 and 3 are below pin 1, as seen in the A40/A40P System Board layout.

A40/A40P Processor Speed Settings

Processor speed for NetVista type 6058/6059/6578/6579 computers is fixed and is determined by the processor. There are no settings required.

A40/A40P Diskette Write Access

Diskette Write Enable and Write Protect options are changed in the Setup Configuration. See "Setup Utility program" on page 122.

Symptom-to-FRU index

The Symptom-to-FRU index lists error symptoms and possible causes. The most likely cause is listed first. Always begin with “General checkout” on page 104. See “Chapter 1. IBM PC Enhanced Diagnostics error codes” on page 1 when running diagnostics. This index can also be used to help you decide which FRUs to have available when servicing a computer. If you are unable to correct the problem using this index, go to “Undetermined problems” on page 171.

Notes:

1. If you have both an error message and an incorrect audio response, diagnose the error message first.
2. If you cannot run the diagnostic tests or you get a diagnostic error code when running a test, but did receive a POST error message, diagnose the POST error message first.
3. If you did not receive any error message, look for a description of your error symptoms in the first part of this index.
4. Check all power supply voltages before you replace the system board. (See “Power supply” on page 108.)
5. Check the hard disk drive jumper settings before you replace a hard disk drive. (See “Hard disk drive jumper settings” on page 128.)

Important:

1. Some errors are indicated with a series of beep codes (see “Beep symptoms”).
Types 6058/6059/6269/6578/6579 computers default to come up quiet (no beep and no memory count and checkpoint code display) when no errors are detected by POST. To enable beep and memory count and checkpoint code display when a successful POST occurs, do the following:
 - a. Select **Start Options** in the Configuration/Setup Utility program (see “Setup Utility program” on page 122).
 - b. Set **Power-On Self-Test** to **Enhanced**.
2. The processor is a separate FRU from the system board; the processor is not included with the system board FRU.

Beep symptoms

Beep symptoms are short tones or a series of short tones separated by pauses (intervals without sound). See the following examples.

Beeps	Description
1-2-X	<ul style="list-style-type: none"> • One beep • A pause (or break) • Two beeps • A pause (or break) • Any number of breaks
4	Four continuous beeps

Use the following table to diagnose beep symptoms.

Beep Symptom	FRU/Action
1-1-3CMOS read-write error	<ol style="list-style-type: none"> 1. Run Setup 2. System Board
1-1-4ROM BIOS check error	<ol style="list-style-type: none"> 1. System Board
1-2-XDMA error	<ol style="list-style-type: none"> 1. System Board
1-3-X	<ol style="list-style-type: none"> 1. Memory Module 2. System Board
1-4-4	<ol style="list-style-type: none"> 1. Keyboard 2. System Board
1-4-XError detected in first 64 KB of RAM	<ol style="list-style-type: none"> 1. Memory Module 2. System Board
2-1-1, 2-1-2	<ol style="list-style-type: none"> 1. Run Setup 2. System Board
2-1-XFirst 64 KB of RAM failed	<ol style="list-style-type: none"> 1. Memory Module 2. System Board
2-2-2	<ol style="list-style-type: none"> 1. Video Adapter (if installed) 2. System Board
2-2-XFirst 64 KB of RAM failed	<ol style="list-style-type: none"> 1. Memory Module 2. System Board
2-3-X	<ol style="list-style-type: none"> 1. Memory Module 2. System Board
2-4-X	<ol style="list-style-type: none"> 1. Run Setup 2. Memory Module 3. System Board

Beep Symptom	FRU/Action
3-1-XDMA register failed	1. System Board
3-2-4Keyboard controller failed	1. System Board 2. Keyboard
3-3-4Screen initialization failed	1. Video Adapter (if installed) 2. System Board Display
3-4-1Screen retrace test detected an error	1. Video Adapter (if installed) 2. System Board 3. Display
3-4-2POST is searching for video ROM	1. Video Adapter (if installed) 2. System Board
4	1. Video Adapter (if installed) 2. System Board
All other beep code sequences	1. System Board
One long and one short beep during POST.Base 640 KB memory error or shadow RAM error	1. Memory Module 2. System Board
One long beep and two or three short beeps during POST.(Video error)	1. Video Adapter (if installed) 2. System Board
Three short beeps during POST	1. See “System board memory” on page 135 2. System Board
Continuous beep	1. System Board
Repeating short beeps	1. Keyboard stuck key? 2. Keyboard Cable 3. System Board

No-beep symptoms

Note: Types 6058/6059/6269/6578/6579 computers default to come up quiet (no beep and no memory count and checkpoint code display) when no errors are detected by POST.

To enable beep and memory count and checkpoint code display when a successful POST occurs, do the following:

1. Select **Start Options** in the Configuration/Setup Utility program (see “Setup Utility program” on page 122).

2. Set Power-On Self Test to Enhanced.

Symptom/Error	FRU/Action
No beep during POST but computer works correctly.	1. System Board
No beep during POST.	1. See “Undetermined problems” on page 171 2. System Board 3. Memory Module 4. Any Adapter or Device 5. Power Cord 6. Power Supply

POST error codes

In the following index, X can represent any number.

POST Error Code	FRU/Action
000SCSI Adapter not enabled	1. Verify adapter device and Bus Master fields are enabled in PCI configuration program. See documentation shipped with computer.
02X	1. SCSI Adapter
08XCheck SCSI terminator installation.	1. SCSI Cable 2. SCSI Terminator 3. SCSI Device 4. SCSI Adapter
101System board interrupt failure	1. System Board
102System board timer error	1. System Board
106	1. System Board
110System board memory parity error	1. Memory Module 2. System Board
111I/O channel parity error	1. Reseat adapters 2. Any adapter 3. System Board
114Adapter ROM error	1. Adapter Memory 2. System Board
129Internal cache test error	1. Processor 2. L2 Cache Memory 3. System Board

POST Error Code	FRU/Action
151Real-time clock failure	1. System Board
161Bad CMOS battery	1. Run Setup 2. CMOS Backup Battery (see "Safety information" on page 185) 3. System Board
162Configuration mismatch	1. Run Setup and verify Configuration 2. Had a device been added, removed, changed location? If not, suspect that device. 3. Power-on external devices first, then power-on computer 4. CMOS Backup Battery (see "Safety information" on page 185) System Board 5. System Board
162And unable to run diagnostics	1. Diskette Drive 2. System Board 3. Diskette Drive Cable
163Clock not updating or invalid time set	1. Time and Date Set? 2. CMOS Backup Battery (see "Safety information" on page 185) 3. System Board
164POST detected a base memory or extended memory size mismatch error or RIMM socket 3 is populated with a RIMM memory module	1. Run Setup. Check System Summary menu for memory size change. (See"Setup Utility program" on page 122.) 2. Run the Extended Memory Diagnostic tests
166Boot Block Check Sum Error	1. Run Flash Recovery using Boot Block. See "Flash recovery boot block jumper" on page 131. 2. System Board
167Microprocessor installed that is not supported by the current POST/BIOS	1. Run Setup. Check Stepping level for the BIOS level needed, then perform the flash update. 2. Processor
168Alert on LAN error	1. Run Setup. Check to see that Ethernet and Alert on LAN are enabled. 2. System Board
17X, 18X	1. C2 Security

POST Error Code	FRU/Action
175	<ol style="list-style-type: none"> 1. Run Configuration. See "Setup Utility program" on page 122. 2. System Board
176	<ol style="list-style-type: none"> 1. Covers were removed from the computer
177Corrupted Administrator Password	<ol style="list-style-type: none"> 1. System Board
178	<ol style="list-style-type: none"> 1. System Board
183	<ol style="list-style-type: none"> 1. Enter the administrator password
184No RFID Antenna	<ol style="list-style-type: none"> 1. Make sure Asset Care and Asset ID are enabled in Configuration/Setup 2. RFID Antenna 3. System Board
185Corrupted boot sequence	<ol style="list-style-type: none"> 1. Set configuration and reinstall the boot sequence
186	<ol style="list-style-type: none"> 1. System Board
187	<ol style="list-style-type: none"> 1. Clear Administration password 2. System Board
189	<ol style="list-style-type: none"> 1. More than three password attempts were made to access the computer
190Chassis intrusion detector was cleared. This is information only, no action required. If this code does not clear:	<ol style="list-style-type: none"> 1. System Board
1XXNot listed above	<ol style="list-style-type: none"> 1. System Board
201, 20XMemory data error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics Memory Test 2. Memory Module 3. System Board
225	<ol style="list-style-type: none"> 1. Unsupported Memory
229External cache test error	<ol style="list-style-type: none"> 1. L2 Cache Memory 2. System Board
262POST detected a base memory or extended memory type error	<ol style="list-style-type: none"> 1. Run Setup. Check System Summary menu for memory. (See "Setup Utility program" on page 122.) 2. Run the Extended Memory Diagnostic tests.

POST Error Code	FRU/Action
301	<ol style="list-style-type: none"> 1. Keyboard 2. Keyboard Cable 3. System Board
303 With an 8603 error	<ol style="list-style-type: none"> 1. Mouse 2. Keyboard 3. Keyboard Cable 4. System Board
303 With no 8603 error	<ol style="list-style-type: none"> 1. Keyboard 2. Keyboard Cable 3. System Board
3XX Not listed above	<ol style="list-style-type: none"> 1. Keyboard 2. Keyboard Cable 3. System Board
5XX	<ol style="list-style-type: none"> 1. Video Adapter (if installed) 2. System Board
601	<ol style="list-style-type: none"> 1. Diskette Drive A 2. Diskette Drive Cable 3. System Board
602	<ol style="list-style-type: none"> 1. Bad Diskette? 2. Verify Diskette and retry
604 And able to run diagnostics	<ol style="list-style-type: none"> 1. Run Setup and verify diskette configuration settings 2. Diskette Drive A/B 3. Diskette Drive Cable 4. System Board
605 POST cannot unlock the diskette drive	<ol style="list-style-type: none"> 1. Diskette Drive 2. Diskette Drive Cable 3. System Board
662	<ol style="list-style-type: none"> 1. Diskette drive configuration error or wrong diskette drive type; run Setup Configuration

POST Error Code	FRU/Action
6XX Not listed above	<ol style="list-style-type: none"> 1. Diskette Drive 2. System Board 3. External Drive Adapter 4. Diskette Drive Cable 5. Power Supply
762 Math coprocessor configuration error	<ol style="list-style-type: none"> 1. Run Setup 2. Processor 3. System Board
7XX Not listed above	<ol style="list-style-type: none"> 1. Processor 2. System Board
962 Parallel port configuration error	<ol style="list-style-type: none"> 1. Run Configuration 2. Parallel Adapter (if installed) 3. System Board
9XX	<ol style="list-style-type: none"> 1. Printer 2. System Board
1047	<ol style="list-style-type: none"> 1. 16-Bit AT Fast SCSI Adapter
107X Check SCSI terminator installation	<ol style="list-style-type: none"> 1. Check SCSI terminator installation 2. SCSI Cable 3. SCSI Terminator 4. SCSI Device 5. SCSI Adapter
1101 Serial connector error, possible system board failure	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
1101, 1102, 1106, 1108, 1109	<ol style="list-style-type: none"> 1. System Board 2. Any Serial Device
1107	<ol style="list-style-type: none"> 1. Communications Cable 2. System Board
1102 Card selected feedback error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
1103 Port fails register check	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics 2. System Board
1106 Serial option cannot be turned off	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics 2. System Board

POST Error Code	FRU/Action
1107	<ol style="list-style-type: none"> Serial Device Cable System Board
1110 Register test failed	<ol style="list-style-type: none"> Run Enhanced Diagnostics System Board
1116 Interrupt error	<ol style="list-style-type: none"> Run Enhanced Diagnostics
1117 Failed baud rate test	<ol style="list-style-type: none"> Run Enhanced Diagnostics
1162 Serial port configuration error	<ol style="list-style-type: none"> Run Configuration Serial Adapter (if installed) System Board
11XX Not listed above	<ol style="list-style-type: none"> System Board
1201	<ol style="list-style-type: none"> System Board Any Serial Device
1202, 1206, 1208, 1209, 12XX	<ol style="list-style-type: none"> Dual Async Adapter/A System Board Any Serial Device
1207	<ol style="list-style-type: none"> Communications Cable Dual Async Adapter/A
13XX	<ol style="list-style-type: none"> Game Adapter
1402 Printer not ready	Information only
1403 No paper error, or interrupt failure	Information only
1404 System board timeout failure	<ol style="list-style-type: none"> Run Enhanced Diagnostics
1405 Parallel adapter error	<ol style="list-style-type: none"> Run Enhanced Diagnostics
1406 Presence test error	<ol style="list-style-type: none"> Run Enhanced Diagnostics
14XX Not listed above. Check printer before replacing system board	<ol style="list-style-type: none"> Printer System Board
15XX	<ol style="list-style-type: none"> SDLC Adapter
1692 Boot sequence error	<ol style="list-style-type: none"> Run FDISK to ensure at least one active partition is set active
16XX	<ol style="list-style-type: none"> 36/38 Workstation Adapter
1762 Hard disk drive configuration error	<ol style="list-style-type: none"> Run Configuration. (See "Setup Utility program" on page 122.)

POST Error Code	FRU/Action
1780 (Disk Drive 0)1781 (Disk Drive 1)1782 (Disk Drive 2)1783 (Disk Drive 3)	<ol style="list-style-type: none"> 1. See "Power supply" on page 108 2. Hard Disk Drive 3. System Board 4. Hard Disk Cable 5. Power Supply
180X, 188XPCI configuration or resource error	<ol style="list-style-type: none"> 1. Run Setup and verify PCI/ISA configuration settings. 2. If necessary, set ISA adapters to <i>Not available</i> to allow PCI adapters to properly configure. 3. Remove any suspect ISA adapters. 4. Rerun diagnostics. 5. PCI Adapter
1962Boot sequence error	<ol style="list-style-type: none"> 1. Possible hard disk drive problem; see "Hard disk drive boot error" on page 123.
209X	<ol style="list-style-type: none"> 1. Diskette Drive 2. Diskette Cable
20XXNot listed above	<ol style="list-style-type: none"> 1. BSC Adapter
21XX	<ol style="list-style-type: none"> 1. SCSI Device 2. 16-bit AT Fast SCSU adapter 3. Alternate BSC adapter
2401, 2402If screen colors change	<ol style="list-style-type: none"> 1. Display
2401, 2402If screen colors are OK	<ol style="list-style-type: none"> 1. System Board 2. Display
2409	<ol style="list-style-type: none"> 1. Display
2410	<ol style="list-style-type: none"> 1. System Board 2. Display
2462Video memory configuration error	<ol style="list-style-type: none"> 1. Check cable connections 2. Run Setup and verify video configuration settings 3. Video Memory Modules 4. Video Adapter (if installed) 5. System Board
4611, 4630	<ol style="list-style-type: none"> 1. Multiport/2 Interface Board 2. Multiport/2 Adapter

POST Error Code	FRU/Action
4612, 4613, 4640, 4641	<ol style="list-style-type: none"> 1. Memory Module Package 2. Multiport/2 Adapter
4650	<ol style="list-style-type: none"> 1. Multiport/2 Interface Cable
46XX Not listed above	<ol style="list-style-type: none"> 1. Multiport/2 Adapter 2. Multiport/2 Interface Board 3. Memory Module
5600	<ol style="list-style-type: none"> 1. Financial System Controller Adapter
5962 An IDE device (other than hard drive) configuration error	<ol style="list-style-type: none"> 1. Run Configuration 2. CD-ROM Drive 3. CD-ROM Adapter 4. Zip or other ATAPI device 5. System Board
62XX	<ol style="list-style-type: none"> 1. 1st Store Loop Adapter 2. Adapter Cable
63XX	<ol style="list-style-type: none"> 1. 2nd Store Loop Adapter 2. Adapter Cable
64XX	<ol style="list-style-type: none"> 1. Network Adapter
71XX	<ol style="list-style-type: none"> 1. Voice Adapter
74XX	<ol style="list-style-type: none"> 1. Video Adapter (if installed)
76XX	<ol style="list-style-type: none"> 1. Page Printer Adapter
78XX	<ol style="list-style-type: none"> 1. High Speed Adapter
79XX	<ol style="list-style-type: none"> 1. 3117 Adapter
80XX	<ol style="list-style-type: none"> 1. PCMCIA Adapter
84XX	<ol style="list-style-type: none"> 1. Speech Adapter 2. Speech Control Assy.
8601, 8602	<ol style="list-style-type: none"> 1. Pointing Device (Mouse) 2. System Board
8603, 8604	<ol style="list-style-type: none"> 1. System Board 2. Pointing Device (Mouse)

POST Error Code	FRU/Action
86XX Not listed above	<ol style="list-style-type: none"> 1. Mouse 2. System Board
89XX	<ol style="list-style-type: none"> 1. PC Music Adapter 2. MIDI Adapter Unit
91XX	<ol style="list-style-type: none"> 1. Optical Drive 2. Adapter
96XX	<ol style="list-style-type: none"> 1. SCSI Adapter 2. Any SCSI Device 3. System Board
10101, 10102, 10104, 10105, 10106, 10107, 10108, 10109, 10111, 10112, 10113, 10114, 10115, 10116	<ol style="list-style-type: none"> 1. Have customer verify correct operating system device drivers are installed and operational. 2. Modem
10103, 10110, 101171	<ol style="list-style-type: none"> 1. System Board 2. Data/Fax Modem
10117 Not listed above	<ol style="list-style-type: none"> 1. Check system speaker 2. Check PSTN cable 3. External DAA (if installed) 4. Modem
10118	<ol style="list-style-type: none"> 1. Run Diagnostics and verify the correct operation of the modem slot 2. Modem
10119	<ol style="list-style-type: none"> 1. Diagnostics detected a non-IBM modem 2. Modem
10120	<ol style="list-style-type: none"> 1. Check PSTN Cable 2. External DAA (if installed) 3. Modem
10132, 10133, 10134, 10135, 10136, 10137, 10138, 10139, 10140, 10141, 10142, 10143, 10144, 10145, 10146, 10147, 10148, 10149, 10150, 10151, 10152	<ol style="list-style-type: none"> 1. Modem

POST Error Code	FRU/Action
10153	<ol style="list-style-type: none"> 1. Data/Fax Modem 2. System Board
101XXNot listed above	<ol style="list-style-type: none"> 1. Modem Adapter/A 2. Data/Fax Modem 3. System Board
10450, 10451, 10490, 10491, 10492, 10499Read/write error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics 2. Hard Disk Drive 3. System Board
10452Seek test error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
10453Wrong drive type?	Information only
10454Sector buffer test error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
10455, 10456Controller error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
10459Drive diagnostic command error	Information only
10461Drive format error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
10462Controller seek error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
10464Hard Drive read error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
10467Drive non-fatal seek error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
10468Drive fatal seek error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
10469Drive soft error count exceeded	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
10470, 10471, 10472Controller wrap error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
10473Corrupt data. Low level format might be required	Information only
10480	<ol style="list-style-type: none"> 1. Hard Disk Drive (ESDI) 2. Drive Cable 3. System Board
10481ESDI drive D seek error	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
10482Drive select acknowledgement bad	<ol style="list-style-type: none"> 1. Run Enhanced Diagnostics
106X1	<ol style="list-style-type: none"> 1. Check Configuration 2. Ethernet Adapter

POST Error Code	FRU/Action
10635	<ol style="list-style-type: none"> 1. Power-off computer, wait ten seconds then power-on the computer 2. Ethernet Adapter
10651, 10660	<ol style="list-style-type: none"> 1. Check Cables 2. Ethernet Adapter
106XXNot listed above	<ol style="list-style-type: none"> 1. Ethernet Adapter
107XX	<ol style="list-style-type: none"> 1. 5.25-inch External Diskette Drive 2. 5.25-inch Diskette Drive Adapter/A
109XXCheck the adapter cables	<ol style="list-style-type: none"> 1. ActionMedia Adapter/A 2. System Board
112XXThis adapter does not have cache	<ol style="list-style-type: none"> 1. SCSI Adapter 2. Any SCSI Device 3. System Board
119XX	<ol style="list-style-type: none"> 1. 3119 Adapter
121XX	<ol style="list-style-type: none"> 1. Modem Adapter 2. Any Serial Device 3. System Board
136XX	<ol style="list-style-type: none"> 1. ISDN Primary Rate Adapter 2. System Board
137XX	<ol style="list-style-type: none"> 1. System Board
141XX	<ol style="list-style-type: none"> 1. Realtime Interface Coprocessor Portmaster Adapter/A
143XX	<ol style="list-style-type: none"> 1. Japanese Display Adapter 2. System Board
14710, 14711	<ol style="list-style-type: none"> 1. System Board Video Adapter 2. Adapter Video Memory
148XX	<ol style="list-style-type: none"> 1. Video Adapter
14901, 14902, 1491X, 14922	<ol style="list-style-type: none"> 1. Video Adapter (if installed) 2. System Board 3. Display (any type)

POST Error Code	FRU/Action
14932	<ol style="list-style-type: none"> 1. External Display 2. Video Adapter
161XX	<ol style="list-style-type: none"> 1. FaxConcentrator Adapter
164XX	<ol style="list-style-type: none"> 1. 120 MB Internal Tape Drive 2. Diskette Cable 3. System Board
16500	<ol style="list-style-type: none"> 1. 6157 Tape Attachment 2. Adapter
16520, 16540	<ol style="list-style-type: none"> 1. 6157 Streaming Tape Drive 2. 6157 Tape Attachment Adapter
166XX, 167XX	<ol style="list-style-type: none"> 1. Token Ring Adapter 2. System Board
18001 to 18029	<ol style="list-style-type: none"> 1. Wizard Adapter 2. Wizard Adapter Memory
18031 to 18039	<ol style="list-style-type: none"> 1. Wizard Adapter Cable
185XXXX	<ol style="list-style-type: none"> 1. DBCS Japanese Display Adapter/A 2. System Board
20001 to 20003	<ol style="list-style-type: none"> 1. Image Adapter/A Image-I Adapter/A 2. Memory Module DRAM, VRAM
20004	<ol style="list-style-type: none"> 1. Memory Module DRAM, VRAM 2. Image Adapter/A Image-I Adapter/A
20005 to 20010	<ol style="list-style-type: none"> 1. Image Adapter/A Image-I Adapter/A 2. Memory Module DRAM, VRAM
200XXNot listed above	<ol style="list-style-type: none"> 1. Image Adapter/A 2. Image-I Adapter/A 3. Memory Module DRAM, VRAM 4. System Board
20101 to 20103	<ol style="list-style-type: none"> 1. Printer/Scanner Option 2. Image Adapter/A 3. Memory Module DRAM, VRAM

POST Error Code	FRU/Action
20104	<ol style="list-style-type: none"> 1. Memory Module DRAM, VRAM 2. Printer/Scanner Option 3. Image Adapter/A
20105 to 20110	<ol style="list-style-type: none"> 1. Printer/Scanner Option 2. Image Adapter/A 3. Memory Module DRAM, VRAM
Image Adapter/A Memory Test failure indicated by graphic of adapter	<ol style="list-style-type: none"> 1. Replace memory module (shown in graphic)
206XX	<ol style="list-style-type: none"> 1. SCSI-2 Adapter 2. Any SCSI Device 3. System Board
208XXVerify there are no duplicate SCSI ID settings on the same bus.	<ol style="list-style-type: none"> 1. Any SCSI Device
210XXXXInternal bus, size unknown 210XXX1External bus, size unknown	<ol style="list-style-type: none"> 1. SCSI Hard Disk Drive 2. SCSI Adapter or System Board 3. SCSI Cable 4. SCSI ID Switch (on some models)
Tape Drive amber LED remains on	<ol style="list-style-type: none"> 1. Tape Drive 2. SCSI Cable (internal) 3. SCSI Adapter or System Board
Tape Drive green "in use" LED fails to come on	<ol style="list-style-type: none"> 1. Tape Drive 2. SCSI Adapter or System Board 3. SCSI Cable (internal) 4. SCSI Cable (external)
Tape automatically ejected from drive	<ol style="list-style-type: none"> 1. Tape Cassette Drive
SCSI ID on rotary switch does not match SCSI ID set in configuration. Verify drive switches inside cover are set to zero	<ol style="list-style-type: none"> 1. Rotary Switch Circuit Board 2. Circuit Board Cable 3. Tape Drive
Tape sticks or breaks in drive. Verify that the tapes used meet ANSI standard X3B5	<ol style="list-style-type: none"> 1. Tape Cassette
212XX	<ol style="list-style-type: none"> 1. SCSI Printer 2. Printer Cable
213XX	<ol style="list-style-type: none"> 1. SCSI Processor

POST Error Code	FRU/Action
214XX	1. WORM Drive
215XXXC, 215XXXD, 215XXXE, 215XXXU If an external device, and power-on LED is off, check external voltages	1. CD-ROM Drive I 2. CD-ROM Drive II Enhanced CD-ROM Drive II Any CD-ROM Drive 3. SCSI Cable 4. SCSI Adapter or System Board
216XX	1. Scanner
217XX If an external device, and power-on LED is off, check external voltages	1. Rewritable Optical Drive 2. SCSI Adapter or System Board 3. SCSI Cable
218XX Check for multi CD tray or jukebox	1. Changer
219XX	1. SCSI Communications Device
24201Y0, 24210Y0 Be sure wrap plug is attached	1. ISDN/2 Adapter 2. ISDN/2 Wrap Plug 3. ISDN/2 Communications Cable
273XX	1. 1 Mbps Micro Channel 2. Infrared LAN Adapter
27501, 27503, 27506, 27507	1. ServerGuard Adapter 2. System Board
27502, 27504, 27510, 27511, 27533, 27534, 27536, 27537	1. ServerGuard Adapter
27509	1. Remove redundant adapters, run Auto Configuration program, then retest.
27512	1. WMSELF.DGS diagnostics file is missing 2. WMSELF.DGS diagnostics file is incorrect
27535	1. 3V Lithium Backup Battery 2. ServerGuard Adapter
27554	1. Internal Temperature out of range 2. ServerGuard Adapter
27555, 27556	1. ServerGuard Adapter 2. Power Supply

POST Error Code	FRU/Action
27557	<ol style="list-style-type: none"> 1. 7.2V NiCad Main Battery Pack 2. ServerGuard Adapter
27558, 27559, 27560, 27561	<ol style="list-style-type: none"> 1. PCMCIA Type II Modem 2. ServerGuard Adapter
27562	<ol style="list-style-type: none"> 1. External Power Control not connected 2. External Power Control 3. ServerGuard Adapter
27563, 27564	<ol style="list-style-type: none"> 1. External Power Control 2. ServerGuard Adapter
275XX	<ol style="list-style-type: none"> 1. Update Diagnostic Software
27801 to 27879	<ol style="list-style-type: none"> 1. Personal Dictation System 2. Adapter 3. System Board
27880 to 27889	<ol style="list-style-type: none"> 1. External FRU (Speaker, Microphone)
999030XHard disk reset failure	<ol style="list-style-type: none"> 1. Possible hard disk drive problem; see "Hard disk drive boot error" on page 123.

Miscellaneous error messages

Message/Symptom	FRU/Action
CMOS Backup Battery inaccurate	<ol style="list-style-type: none"> 1. CMOS Backup Battery (see "Safety information" on page 185) 2. System Board
Changing colors	<ol style="list-style-type: none"> 1. Display
Computer will <i>not</i> power-off. See "Power supply" on page 108.	<ol style="list-style-type: none"> 1. Power Switch 2. System Board
Computer will <i>not</i> RPL from server	<ol style="list-style-type: none"> 1. Ensure that network is in startup sequence as first device or first device after diskette 2. Ensure that network adapter is enabled for RPL 3. Network adapter (Advise network administrator of new MAC address)

Message/Symptom	FRU/Action
Computer will <i>not</i> Wake On LAN (if applicable)	<ol style="list-style-type: none"> 1. Check power supply and signal cable connections to network adapter 2. Ensure that the operating system settings are set to enable Wake on LAN 3. Ensure Wake On LAN feature is enabled in Setup/Configuration. (See "Setup Utility program" on page 122.) 4. Ensure network administrator is using correct MAC address 5. Ensure no interrupt or I/O address conflicts 6. Network adapter (advise network administrator of new MAC address)
Dead computer. See "Power supply" on page 108.	<ol style="list-style-type: none"> 1. Power Supply 2. System Board
Diskette drive in-use light remains on or does not light when drive is active.	<ol style="list-style-type: none"> 1. Diskette Drive 2. System Board 3. Diskette Drive Cable
Flashing cursor with an otherwise blank display.	<ol style="list-style-type: none"> 1. System Board 2. Primary Hard Disk Drive 3. Hard Disk Drive Cable
Incorrect memory size during POST	<ol style="list-style-type: none"> 1. Run the Memory tests 2. Memory Module 3. System Board
"Insert a Diskette" icon appears with a known-good diagnostics diskette in the first 3.5-inch diskette drive.	<ol style="list-style-type: none"> 1. System Board 2. Diskette Drive Cable 3. Network Adapter
Intensity or color varies from left to right of characters and color bars	<ol style="list-style-type: none"> 1. Display 2. System Board
No power or fan not running	<ol style="list-style-type: none"> 1. See "Power supply" on page 108
Non-system disk or disk error-type message with a known-good diagnostic diskette.	<ol style="list-style-type: none"> 1. Diskette Drive 2. System Board 3. Diskette Drive Cable
Other display symptoms not listed above (including blank or illegible display)	<ol style="list-style-type: none"> 1. See "Display" on page 110 2. System Board 3. Display

Message/Symptom	FRU/Action
Power-on indicator or hard disk drive in-use light not on, but computer works correctly	<ol style="list-style-type: none"> 1. Power Supply 2. System Board 3. LED Cables
Printer problems	<ol style="list-style-type: none"> 1. See "Printer" on page 107
Program loads from the hard disk with a known-good diagnostics diskette in the first 3.5-inch diskette drive	<ol style="list-style-type: none"> 1. Run Setup 2. Diskette Drive 3. Diskette Drive Cable 4. System Board 5. Power Supply
Drives not recognized by the Fixed Disk diagnostic (e.g., you have six drives but the fixed disk test only shows three)	<ol style="list-style-type: none"> 1. Remove the first drive that does not show up and rerun the Fixed Disk diagnostic. If the remaining drives then show up, replace the drive you removed.
Hang during Fixed Disk diagnostic	<ol style="list-style-type: none"> 1. Remove the hard file being tested at the time of the hang. 2. Rerun the diagnostic. 3. If successful, replace the drive you removed.
RPL computer cannot access programs from its own hard disk.	<ol style="list-style-type: none"> 1. If network administrator is using LCCM Hybrid RPL, check startup sequence: <ol style="list-style-type: none"> a. First device - network b. Second device - hard disk 2. Hard disk drive
RPL computer does not RPL from server	<ol style="list-style-type: none"> 1. Check startup sequence 2. Check the network adapter LED status
Serial or parallel port device failure (system board port)	<ol style="list-style-type: none"> 1. External Device Self-Test OK? 2. External Device 3. Cable 4. System Board
Serial or parallel port device failure (adapter port)	<ol style="list-style-type: none"> 1. External Device Self-Test OK? 2. External Device 3. Cable 4. Alternate Adapter 5. System Board

Message/Symptom	FRU/Action
Some or all keys on the keyboard do not work	<ol style="list-style-type: none">1. Keyboard2. Keyboard Cable3. System Board

Undetermined problems

Check the power supply voltages. See “Power supply” on page 108. If the voltages are correct, return here and continue with the following steps.

1. Power-off the computer.
2. Remove or disconnect the following components (if installed) one at a time.
 - a. Non-IBM devices
 - b. External devices (modem, printer, or mouse)
 - c. Any adapters
 - d. Memory modules
Before removing or replacing memory modules, see “System board memory” on page 135.
 - e. Extended video memory
 - f. External Cache
 - g. External Cache RAM
 - h. Hard disk drive
 - i. Diskette drive
3. Power-on the computer to re-test the system.
4. Repeat steps 1 through 3 until you find the failing device or adapter.

If all devices and adapters have been removed, and the problem continues, replace the system board. See “Replacing a system board” on page 125.

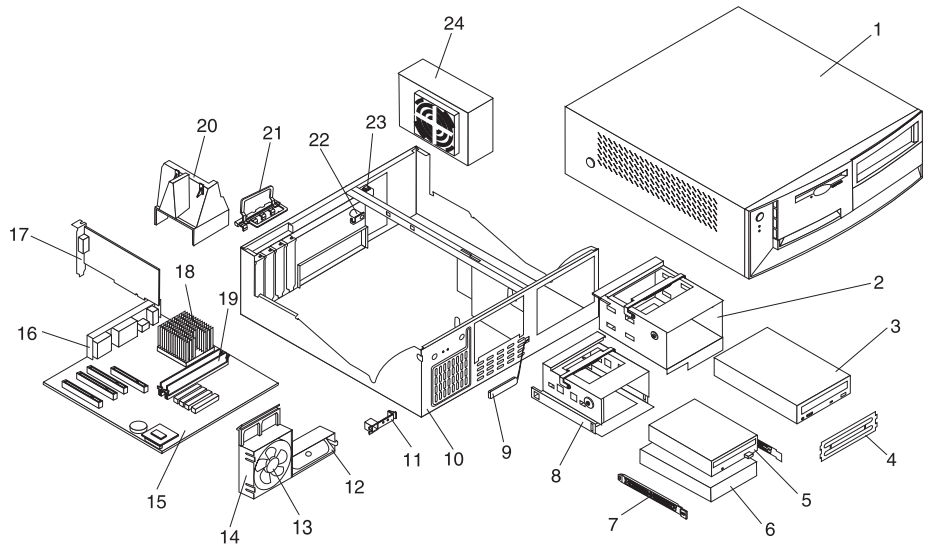
Model tables - Country/Region/Language

Note: For model information, please refer to IBM online at <http://www.ibm.com>, then select **support** to find model information for Types 6058/6059/6269/6578/6579 models.

Use this table to identify the country/region/language of specific models. In most cases, country/region or language designation will be identified by the last digit of the model number.

EMEA	Model
EMEA preload	xx G
North America	Model
U.S. English	xx U
Canadian French	xx F
Latin America	Model
Portuguese (Brazil)	xx P
L.A. Spanish	xx S
Asia Pacific (AP)	Model
A.P. English (Australia, New Zealand)	xx A
Japan (Japanese)	xx J
Hong Kong (A.P. English)	xx D
Hong Kong (Chinese)	xx M
China (Chinese)	xx C
China (A.P. English)	xx D
Thailand (Thai)	xx T
Taiwan (Chinese)	xx V

Parts - Types 6058/6059/6269/6578/6579



Parts listing

Each FRU is available for all types/models, unless specific types or models are given.

Index	System (Types 6058/6059/6269/6578/6579)	FRU No.
1	TOP COVER ASM	06P2732
2	5.25 DASD BRACKET	09N5746
3	CD-ROM DRIVE - 40x (6058 - PAx, PBx) (6578 - LAx, LBx, NCx, NDx, PAx, RAx, RBx, E4L, EPS, KQG, KSG, RAA, RBA)	09N0879
3	CD-ROM DRIVE - 48x (6058 - TAx, TBx, THU, THF, THS, THP, THA, THT, THM, THV, HD, THG, THC, THJ) (6269 -C2x, D2x, E2x, M2x, N2x, K2x, L2x, N7x, N8x, P9x, R1x, R2x,P7x,P8x,F2x,G2x,P3x,H2x,H6x,HCx,J4x,A2x, A6x, R4x, R6x, RBx, RAx, U3x, U6x,V1x,V3x,UAG,UBG, VAG, VBG, K7S, KDS, KES, UCG, KCS, KAS, S1G, S2G, SAU, AFU, AGU, V4U, V5G) (6578 - PEx, PFx, RFx, K7G, K8G, TAx, TBx, TCx, TDx, KAU, DWS, TGU, THU, THF, THS, THP, THG, THA, THT, THC, THM, THV, THD, THJ, VDJ, VEJ, VGG, VGC, VGV, TLG, TMG) (6579 - LDx, LEx, NAX, NBx, PCx, PDx, RAx, RBx, TAx, TBx, TCx, TDx, TEx, TGx, RKx, RAA, RBA, RCG, TEG, TKU, VHU, VDA, VEA, VFJ, VGJ)	19K1529
3	CD-ROM DRIVE - 48x (PRIMARY)(6058 - TAx, TBx, THU, THF, THS, THP, THA, THT, THM,THV,THD,THG,THC,THJ) (6059 - LDx, LEx, NAX, NBx, PCx, PDx) (6579 - LDx, LEx, NAX, NBx, PCx, PDx, RAx, RBx, TAx, TBx, TCx, TDx, TEx, TGx, RJx, RKx,RAA,RBA,RCG,TEG,TKU,VHU,VDA,VEA,VFJ,VGJ)	09N0735
3	CD-ROM DRIVE - 48x (OPTIONAL)(6578 - PEx, PFx, REx, RFx, K7G, K8G, TAx, TBx, TCx,TDx,KAU, DWS, TGU, THU,D8V, TLG, TMG)	24P3603
4	BEZEL KIT	09N5732
5	3.5" 1.44MB DISKETTE DRIVE	75H9550
5	3.5" 1.44MB DISKETTE DRIVE - JAPAN	75H9552
6	10.1GB EIDE HARDFILE (6269 - C1x, C2x, D1x, D2x, E1x, E2x, M1x, M2x, N1x, N2x, K1x, K2x, L1x, L2x, D3A, D3T, D3G, D3C, D3D, D3M, D3V, D4x, D6G, F1x, F3x, F4x, F6x, G1x, N3x, N4x, N5x, N7x, N8x, P2x, P4x, P5x, P9x, R1x, R2x, P7x, PBx, F2x, G2x, P1x, P3x, J2S, G3x, H1x,H2x,H4x,H5x,H6x,H9x,HCx, J4x, A2x, A3x, A5x, A6x, R4x, R6x, RBx,R8x, RAx, U3x, U5x,U6x,V1x,V2x,V3x,FAG,HAG,HBG,AAG,ABG, UAG, UBG,VAG,VBG, K7S, J5S, KDS, KES, HEG, ACG, UCG, KCS, KAS, AGU, V4U) (6058 - LCx, LDx)(6578 - GAX, GBx, LCx, LDx, K7G, K8G)(6059 - GAX, GBx, LAX, LBx) (6579 - GAX, GBx, LAX, LBx)	36L8681
6	20.4GB EIDE HARDFILE 5400 RPM(6269 - none)(6058 - NAX, NBx, PAx, PBx, RAx, RBx, TAx, TBx, THU, THF, THS, THP, THA, THT, THM, THV, THD, THG, THC, THJ) (6578 -LAX, LBx, NAX, NBx, NCx, NDx, PAx, PBx, RAx, RBx, PCx, PDx, PEx, PFx, RCx, RDx, REx, RFx, RGx, TAx, TBx, TCx, TDx, TEx, E4L, EPS, KAU, KQG, KSG, DWS, TGU, THU, THF, THS, THP, PHG, THA, THT, THC, THM, THV, THD, THJ, VFM,VFD, VGG, VGC,VGV, D8V, QYV, TLG, TMG, RAA, RBA) (6579 - LDx, LEx, NCx, NDx, PAx, PBx,TCx, TDx, RJx, RKx, RCG, TEG, TEx, TKU)	09N0705

Index	System (Types 6058/6059/6269/6578/6579)	FRU No.
6	20.4GB EIDE HARDFILE (OPTIONAL)(6578 - LAx, LBx, NAx, NBx, NCx, NDx, PAX, PBx, RAX, RBx, PCx, PDx, PEX, PFX, RCx, RDx, REX, RFX, RGx, TAx, TBx, TCx, TDx, TEx, E4L, EPS, KAU, KQG, KSG, DWS, TGU, TLG, TMG)	19K1557
6	30.0GB EIDE HARDFILE 7200RPM (6059 - NAx, NBx, PCx, PDx)(6579 - NAx, NBx, PCx, PDx, RAX, RBx, TAx, TBx, TGx, RAA, RBA, VHU, VDA, VEA,VFJ,VGJ)	09N0925
7	DASD RAIL KIT	19K5331
8	3.5 DASD BRACKET	06P2734
9	RFID ANTENNA	03K9654
10	CHASSIS ASM	06P2731
11	CONTROL PANEL ASM (all)	37L5092
12	SPEAKER with CABLE ASM	01K4909
13	92MM FAN ASM w/ grommets	33L2594
14	FAN/SPEAKER BRACKET	09N5763
15	SYSTEM BD W/O MEM/PROC/POV/MERLOT	09K9982
15	SYST BD MERLOT W/POV CARD(6059/6579 only)	10K1195
15	SYSTEM BOARD(6269-All except Refresh 3 models)	19K5060
16	PLANAR EMC SHIELD KIT(6269 only)	10K1540
16	PLANAR EMC SHIELD KIT	09N5770
17	NVidia AGP4/16MB VIDEO ADAPTER(6059 - all) (6578 - TCx, TDx)(6579 - LDx, LEx, NAx, NBx, PCx, PDx, TAx, TBx, TGx,VDA,VEA)	19K5340
18	CELERON 533MHz(6269 - C1x, C2x, 20U)(6058/6059/6578/6579 - none)	09N9307
18	CELERON 566MHz(6269 - D1x, D2x, 30U, D3A, D3T, D3G, D3C, D3D, D3M, D3V, D4x, D6G)(6058/6059/6578/6579 - none)	06P3004
18	CELERON 600 MHz(6269 - E1x, E2x, 40U)(6058/6059/6578/6579 - none)	19K5067
18	CELERON 633 MHz(6269 - F1x, F3x, F4x, F6x, F2x, FAG, 42U, K3V, D3S, D4S)(6058/6059/6578/6579 - none)	06P7163
18	CELERON 667 MHz(6269 - G1x, G2x, 44U, G3x, G4x, G5x, HAG, HBG)(6058/6059/6578/6579 - none)	22P2476
18	CELERON 700 MHz(6269 - H1x, H2x, 46U, H4G, H3x, H5x, H6x, H7x, H9x, HCx, HDU, HEG)(6058/6059/6578/6579 - none)	33L2754
18	CELERON 733 MHz(6269 - J1x, JAx, J4x)(6058/6059/6578/6579 - none)	24P5586
18	CELERON 766 MHz(6269 - A1x, A2x, A3x, A4x, A5x, A6x, AAG, ABG, ADU, ACG, SAU, AHG)(6058/6059/6578/6579 - none)	24P5583
18	CELERON 800 MHz(100 BUS/800 MHz/128KB L2 CACHE) FLIP CHIP WITH HEAT SINK (all)	24P5748
18	PiII COPPERMINE 650 MHz(6269 - K1x, K2x, 70U)(6058/6059/6578/6579 - none)	19K5068
18	PiII COPPERMINE 667MHz(6269 - M1x, M2x, 50U, J2S, K7S, KDS, KES, KCS)(6058/6059/6578/6579 - none)	37L1534
18	PIII COPPERMINE 667MHz (6578/6579 - GAx, GBx)	10K0863
18	PIII COPPERMINE 700MHz(6269 - L1x, L2x, 80U)	19K5077
18	PIII COPPERMINE 733MHz (6058 - LCx, LDx)(6059/6578 - LAx, LBx, L1U, LCx, LDx) (6579 - LAx, LBx, LDx, LEx, L1U)	10K0864

Index	System (Types 6058/6059/6269/6578/6579)	FRU No.
18	PIII COPPERMINE 733MHz(6269 - N1x, N2x, 60U, N3x, N4x, N5x, N7x, N8x, J5S,KAS)(6058/6059/6578/6579 - none)	37L5338
18	PIII COPPERMINE 800MHz (6058 - NAX, NBx)(6059/6578 - NAX, NBx, NCx, NDx, N1U, E4L) (6579 - NAX, NBx, N1U, NCx, NDx)	10K1196
18	PIII COPPERMINE 800MHz (OPTIONAL TO 25P4964)(6269 - P2x, P4x, P5x, P9x, P7x, P8x, P1x, P3x, 9OU, D5S, D6S) (6579 - RAX, RBx, R1U, RJx, RKx, RAA, RBA, RCG)	19K7535
18	PIII COPPERMINE 800MHz (PRIMARY) (6269 - P2x, P4x, P5x, P9x, P7x, P8x, P1x, P3x, 9OU, D5S, D6S)	25P4964
18	PIII COPPERMINE 866MHz(6269 - R1x, R2x, R3x, R4x, R5x, R6x, RBx, R7x, R8x, RAX, S1G, DFS)	19K7536
18	PIII COPPERMINE 866MHz (6058 - PAX, PBx)(6578 - PAX, PBx, P1U, PCx, PDx, PEx, PFx, K7G,K8G, EPS, KAU, DWS) (6579 - PAX,PBx,PCx,PDx,P1U)	19K7539
18	COPPERMINE 866MHz (6578 - PAX, PBx, P1U, PCx, PDx, PEx, PFx, K7G, K8G, EPS, KAU, DWS) (6579 - PAX, PBx, PCx, PDx, P1U)	25P2778
18	COPPERMINE 866MHz (6578 -PAX, PBx, P1U, PCx, PDx, PEx, PFx, K7G, K8G, EPS, KAU, DWS)(6579 - PAX,PBx,PCx,PDX,P1U)	22P4385
18	PIII (COPPERMINE) 933MHz(6058 - RAX,RBx) (6269 - U1x, U2x, U3x, U4x, U5x, U6x, UAG, UBG, UDU, UCG, S2G)(6578 - RAX, RBx, RCx, RDx, REx, RFx, R1U, RGx, KQG, KSG,QYV, RAA, RBA)(6579 - RAX, RBx, R1U, RJx, RKx)(6579 - RAX, RBx,R1U,RJx,RKx,RAA,RBA,RCG)	19K7535
18	PIII (COPPERMINE) 933MHz (6058 - RAX, RBx) (6578 - RAX, RBx, RCx, RDx, REx, RFx, R1U, RGx, KQG, KSG,QYV, RAA, RBA) (6579 - RAX, RBx, R1U, RJx, RKx, RAA, RBA, RCG)	19K7537
18	PIII (COPPERMINE) 933MHz (6269 - U1x, U2x, U3x, U4x, U5x, U6x, UAG, UBG, UDU, UCG, S2G) (6578 - RAX, RBx, RCx, RDx, REx, RFx, R1U, RGx, KQG, KSG, QYV, RAA, RBA) (6579 -RAX, RBx, R1U, RJx, RKx, RAA, RBA, RCG)	25P0719
18	COPPERMINE 1000MHz PROCESSOR(6058 - TAx, TBx, THU, THF, THS, THP, THA, THT, THM, THV, THD, THG, THC, THJ)(6269 - V1x, V2x, V3x, VAG, VBG, VDU, S4U, V4U, V5U)(6578-TAx,TBx,TCx,TDx,TeX,T2U, TFU, TGU, THU, THF, THS, THP, THG, THA, THT, THC, THM, THV, THD, THJ, VDJ, VEJ, VFM, VFD, VGG, VGC, VGV ,D8V, TLG, TMG) (6579 - TAx, TBx, TCx, TDx, TEx, TGx, T2U, TEG, TKU, VHU, VDA, VEA, VFJ, VGJ)	22P3415
18	PROCESSOR HEATSINK AND CLIP(6269 - P1x, P2x, P3x, P4x, P5x, P7x, P8x, P9x, R1x, R2x, 9OU, A1x, A2x, A3x, A4x, A5x, A6x, R3x, R4x, R5x, R6x, RBx, R7x, R8x, RAX, AAG, ABG, ADU, AJG, D5S, D6S, ACG, S1G, SAU, A7G, A7S, A7P, A8S, A8P, A9P, A9S, AFU, AGU, AEU, AHG)	10K1689
18	PROCESSOR HEATSINK AND CLIP(6269 only - C1x, C2x, 20U)	06P2446

Index	System (Types 6058/6059/6269/6578/6579)	FRU No.
18	PROCESSOR HEATSINK AND CLIP(6269 only-D1x, D2x, D3A, D3T, D3G, D3C, D3D, D3M, D3V, D4x, D6G, E1x, E2x, F1x, F2x, F3x, F4x, F6x, G1x, G2x, G3x, H1x, H2x, J2S, K1x, K2x, L1x, L2x, M1x, M2x, N1x, N2x, N3x, N4x, N5x, N7x, N8x, 30U, 40U, 42U, 44U, 46U, 50U, 60U, 70U, 80U, H4G, H9G, K3V, H3x, H5x, H6x, H7x, H9x, HCx, J1x,JAx,J4x,FAG,HAG,HBG,HDU,D3S,K7S,J5S,KDS,KES,HEG,D4S,KCS,KAS, DFS)	06P2454
19	MEMORY 64MB SDRAM (6058 - LCx,LDx,NAx,NBx)(6269 - C1x, C2x, D1x, D2x, E1x, E2x, M1x, M2x, N1x, N2x, K1x, K2x, L1x, L2x, D4x, F1x, N3x, P2x, R1x, G1x, P7x, F2x, G2x,P1x,P3x,J2S,H1x,H2x,K3V, G4x,G5x,H3x,H4x, H5x, H6x, H7x, J1x, JAx, A1x, A2x,A3x,A4x,R3x,R4x, R5x, R6x, R7x, U1x, U2x, U3x, U4x, U5x, V1x, HAG, AAG, UAG, VAG, HDU, ADU, D3S, D5S, D6S, K7S, J5S, KDS, KES, HEG, ACG, UCG,D4S,KCS,KAS,S1G, S2G, A7G, A7S, A7P, A8S, A8P, A9S,A9P, AGU, AEU, V4U, AHG, V5G)(6578 - GAx, GBx, LCx, LDx, NAx, NBx, PCx, PDx, K7G, RGx, TEx, KQG, TLG)(6059/6579 - GAx, GBx, LAx, LBx, NCx, NDx, PAx, PBx)	33L3072
19	MEMORY 128MB SDRAM (6058 -PAx,PBx, RAx, RBx, TAx, TBx)(6059-all)(6269 - D3A, D3T, D3G, D3C, D3D, D3M, D3V, D6G, F3x, F4x, F6x, N4x, N5x, N7x, N8x, P4x, P5x, P9x, R2x, P8x, G3x, H9x, HCx, J4x, A5x, A6x, RBx, RAx, U6x, V2x, V3x, FAG, HBG, ABG, AJG, UBG, VBG, UDU, VDU, S4U, SAU, DGS, AFU) (6578 -L Ax, LBx, NCx, NDx, PAx, PBx, RAx, RBx, PEx, PFx,RCx, RDx, REx, RFx, K8G,TAx, TBx, TCx, TDx, T2U, E4L, EPS, KAU, KSG, DWS, TGU, VDJ, VEJ, VFM, VFD, VGG, VGC, VGV, D8V, TMG, RAA, RBA) (6579 - LDx, LEx, NAx, NBx, PCx, PDx, RAx, TAx, TBx, TCx, TDx, TEx, TGx, T2U, Rjx,RKx,RAA, RBA,RCG,TEG,VDA,VEA,VFJ,VGJ)	33L3074
20	AIR BAFFLE DUCT	06P2733
21	I/O CAM BRACKET	09N5734
22	KEYLOCK ASM	09K9829
23	C2 SWITCH ASM	09K9827
24	155W POWER SUPPLY	00N7685
24	155W POWER SUPPLY - JAPAN (6058 - LCJ, LDJ, NAJ, NBJ, PAJ, PBJ, RAJ, RBJ, TAJ, TBJ, LCG, LDG, NAG, NBG, PAG, PBG, RAG, RBG, TAG, TBG, THG, THJ)(6059 - NAJ, NBJ, PCJ, PDJ, NAG, NBG, PCC, PDG) (6578 - LCJ, LDJ, NAJ, NBJ, PAJ, PBJ, RAJ, RBJ, PEJ, PFJ, RCJ, RDJ, REJ, RFJ, TAJ, TBJ, LAG, LBG, LCG, LDG, NAG, NBG, NCG, NDG, PAG, PBG, RAG, RBG, RCG, RDG, REG, RFG, K7G, K8G, TAG, TBG, TCG, TDG, KQG, KSG, THG, THJ, VDJ, VEJ, VGG)(6579 - LDJ, LEJ, NAJ, NBJ, PAJ, PBJ, PCJ, PDJ, TAJ, TEJ, TGJ, NAG, NBG, PDG, RAG, RBG, TAG, TBG, RCG, TEG,VFJ,VGJ)	00N7687
24	155W POWER SUPPLY - CHINA(6058 - LCC, LDC, NAC, NBC, PAC, PBC, RAC, RBC, TAC, TBC, THC)(6578 - GAC, GBC, LAC, LBC, LCC, LDC, NAC, NBC, NCC, NDC, THC, VGC, D8V, QYV, PAC, PBC, RCC, RDC, TAC, TBC, TEC)(6579 - LAC, LBC, LDC, LEC, NAC, NBC, NCC, NDC, PAC, PBC, PCC, PDC, TAC, TEC)(6059 - NAC, NBC, PCC, PDC)	00N7689
	5.25" DASD BRACKET HANDLE	09N5747

Index	System (Types 6058/6059/6269/6578/6579)	FRU No.
	3.5" DASD BRACKET HANDLE	09N5748
	CABLE HARDFILE - ATA	37L4525
	FOOT (4)	03K9655
	BEZEL KIT	09N5732
	CABLE DISKETTE DRIVE	33L2596
	MOUSE - 2 Button(6058/6269/6578 - all)(6579 - TAx, TBx, TCx, TDx, TEx, TGx, T2U,TEG,TKU,VHU,VDA,VEA,VFJ,VGJ)	10L6145
	MOUSE - Scrollpoint(6059)(6579 - GAx, GBx, LAx, LBx, LDx, LEx, L1U, NAx, NBx, NCx, NDx, N1U, PAX, PBx, PCx, PDx, P1U, RAX, RBx, R1U, RJx, RKx, RAA, RBA, RCG)	28L1865
	MISC. HARDWARE KIT (6269/6578/6579 - all)	09N5764
	ATA-66 CABLE ASM (2 drop)(6269/6578/6579 - all)	37L5098
	CDROM AUDIO CABLE (6269/6578/6579 - all)	75H9219
	DUAL USB CABLE(6058/6059/6578/6579 only)	22P1188
	LITHIUM BATTERY	33F8354
	PLANAR LOCATION LABEL(6269 only)	10K1698
	PLANAR INFO LABEL KIT	09N5715
	EMC SHIELD FOR 5.25" BAY (6269 - all)	19K5548
	EMC SHIELD FOR 5.25" BAY	20L3073
	NAMEPLATE	09N5733
	INTERPOSER CABLE ASM(6269 only)	06P2401
	ACCTON ETHERNET CARD(6269 - C2x, D2x, E2x, M2x, N2x, K2x, L2x, D3x, F4x, N3x, N5x, N8x, P2x, P5x, P9x, F2x, G2x, P3x, G3x, H2x, H4x, H5x, H6x, H9x. HCx, J4x, A2x, A3x, A5x, A6x, R4x, R6x, RBx, R8x, RAX, U3x, U5x, U6x, V1x, V2x, V3x, FAG, HAG, HBG, AAG, ABG,UAG, UBG, VAG, VBG, K7S, KES, HEG, ACG, UCG, KAS, S1G, S2G, S4U, SAU, A7S, A7P, A8S, A8P, A9S, A9P, AFU, AGU, AHG, V5G) (6058/6059/6578/6579 - none)	19K4309
	ROULETTE ETHERNET ADAPTER (6058 - PAX, PBx, TAx, TBx,THU,THE,THS,THP,THA,THT,THM,THV,THD,THG,THC,THJ)(6578 -LAX,LBx,NCx,NDx,PAX,PBx,RAX,RBx,PEX,PFx,REx, THU, THE, THS, THG, THA, THT, THC,THM, THV, THD, THJ, VDJ, VEJ, VFM, VFDM VGG, VGC, TFU, THG, THU, RFX, ,K7G,K8G,TAX,TBx,TCx, TDx,TEx,E4L,EPS,KAU,KQG,KSG,DWS,D8V, TLG, TMG, RAA, RBA)(6059/6579 - all)	19K4885
	VIDEO CARD 4xAGP DONGLE (6578 - PEX, PFX, REX, RFX,TCx,TDx) (6059 - all)(6579 - LDx, LEx, NAX, NBx, PCx, PDx, RAX,RBx, TAX, TBx, TGx, RAA, RBA, VDA, VEA)	37L5566
	NVidia P09/32MB VIDEO ADAPTER (6578 - PEX, PFX, REX, RFX) (6579 - RAX, RBx,RAA,RBA,VDA,VEA)	09N5033
	ENET ADAPTER FERRITE (6059 - NAJ, NBJ, PCJ, PDJ) (6579 - LDJ, LEJ, NAJ, NBJ, PAJ, PBJ, PCJ, PDJ)	06P7059

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System (Types 6058/6059/6269/6578/6579)

FRU No.

SYSTEM BOARD - GIGABYTE PLANAR (6269 - G4x, G5x, H3x, H4x, H5x, H6x, H7x, H9x, HCx, J1x, JAx, J4x, A1x, A2x, A3x, A4x, A5x, A6x, R3x, R4x, R5x, R6x, RBx,R7x, R8x, RAx, U1x, U2x, U3x, U4x, U5x, U6x, V1x, V2x, V3x, FAG, HAG, HBG, AAG, ABG, UAG, UBA, VAG, VBG, HDU, ADU, UDU, VDU, KDS, KES, HEG, ACG, UCG, D4S, KCS, KAS, S1G, S2G, S4U, SAU, A7S, A7P, A8S, A8P, A9S, A9P, AFU, AGU, AEU, V4U, AHG, V5G)	24P5565
MEMORY 256MB SDRAM (6058 -THU, THF, THS, THP, THA, THT, THM, THV, THD, THG, THC, THJ) (6269 - all) (6578 - TFU, THU, THF, THS, THP, THG, THA, THT, THC, THM,THV,THD,THJ,QYV) (6579 - TKU,VHU)	33L3076
10GB HARDFILE EIDE 5400rpm (PRIMARY) (6269 -C1x, C2x, D1x, D2x, E1x,E2x,M1x,M2x,N1x,N2x,K1x, K2x,L1x,L2x,D3A,D3T,D3G,D3C,D3D,D3M,D3V, D4x,D6G,F1x,F3x,F4x,F6x,G1x,N3x,N4x,N5x,N7x, N8x, P2x, P4x, P5x, P9x, R1x, R2x,P7x,P8x,F2x,G2x,P1x,P3x,J2S,G3x,H1x,H2x,H4x,H5x,H6x,H9x,HCx,J4x,A2x,A3x,A5x,A6x,R4x,R6x, AGU, V4U)	19K1476
20GB IDE 5400rpm HARDFILE (6269 - G4x, G5x, H3x, H7x, J1x, JAx, A1x, A4x, R3x, R5x, R7x, U1x, U2x, U4x, D3S, D5S, D6S, D4S, S1G, S2G, SAU, DFS, A7G, A7S, A7P, A8S, A8P, A9S, A9P, AFU, AHG, AJG, V5G)	19K1560
30.0GB ATA - 100, 7200RPM Hardfile (6269 - S4U)(6578-TFU,VDJ,VEJ)	19K1567
8x4x32x CDROM READ/WRITE (6269- S4U)	09N0891
LC 2.3 ETHERNET CARD (6269 - F3x, N4x, P4x)	34L1209
GVC MODEM (Domestic) (PRIMARY) (6269 - KDS, KES, KCS)	09N1677
MODEM (DOMESTIC) (6269 - SAU)	09N1678
MODEM (DOMESTIC) (6269 - SAU)	19K2965
2ND SERIAL PORT CABLE ASM (6269 - all)	24P9065
8X CD-RW, LG, WHITE, NO HD PH (6578-TFU)	06P5163
COPPERMINE CELERON 800MHz (100 BUS/800MHz/128Kb L2 CACHE) "D0" STEP LEVEL FLIP CHIP WITH HEATSINK 09N4373 (NOTE: PRIME P/N TO 10K1196) (6058 - NAx,NBx) (6578 - NAx, NBx, NCx, NDx, N1U, E4L) (6579 - NAx, NBx, N1U,NCx,NDx)	25P2779
COPPERMINE CELERON 800MHz (100 BUS/800MHz/128Kb L2 CACHE) "C0" STEP LEVEL FLIP CHIP WITH HEATSINK (NOTE: PRIME P/N TO 24P5784) (6269 - A7G, A7S, A7P, A8S, A8P, A9P, AFU, AGU, AEU, AJG)	25P0834
COPPERMINE CELERON 800MHz (100 BUS/800MHz/128Kb L2 CACHE) "D0" STEP LEVEL FLIP CHIP WITH HEATSINK (NOTE: PRIME P/N TO 25P0834) (6269 - A7G, A7S, A7P, A8S, A8P, A9P, AFU, AGU, AEU, AJG)	24P5784

Index	System (Types 6058/6059/6269/6578/6579)	FRU No.
	FANSINK NON-IHS 900 MHz (6058 - RAx, RBx, TAx, TBx, THA, THU, THF, THS, THP, THT, THM, THV, THD, THG, THC, THJ) (6578 - RAx, RBx, RCx, RDx, REx, RFx, R1U, RGx, KQG, KSG, QYV, RAA, RBA, TAx, TBx, TCx, TDx, TEx, T2U, TFU, TGU, THU, THF, THS, THP, THG, THA, THT, THC, THM, THV, THD, THJ, VDJ, VEJ, VFM, VFD, VGG, VGC, VGV, DBV, TLG, TMG) (6579 - RAx, RBx, R1U, RJx, RKx, RAA, RBA, RCG, TAx, TBx, TCx, TDx, TEx, TGx, T2U, TEG, TKU, VHU, VDA, VEA, VFJ, VGJ)	06P2458
	FANSINK, IHS 866 - 1.10 GHz (6058 - PAX, PBx, RAX, RBx, TAx, TBx, THU, THF, THS, THP, THA, THT, THM, THV, THD, THG, THC, THJ) (6578 - RAx, RBx, RCx, RDx, REx, RFx, R1U, RGx, KQG, KSG, QYV, RAA, RBA, TAx, TBx, TCx, TDx, TEx, T2U, TFU, TGU, THU, THF, THS, THP, THG, THA, THT, THC, THM, THV, THD, THJ, VDJ, VEJ, VFM, VFD, VGG, VGC, VGV, D8V, TLG, TMG) (6579 - RAx, RBx, R1U, RJx, RKx, RAA, RBA, RCG, TAx, TBx, TCx, TDx, TEx, TGx, T2U, TEG, TKU, VHU, VDA, VEA, VFJ, VGJ)	22P4370
	HEATSINK, NON-IHS 566 - 866 MHz (6058 - LCx, LDx, NAX, NBx, PAX, PBx) (6578 - GAX, GBx, LAX, LBx, L1U LCx, LDx, NAX, NBx, NCx, NDx, N1U, E4L, PAX, PBx, P1U, PCx, PDx, PEX, PFX, K7G, K8G, EPS, KAU, DWS) (6579 - GAX, GBx, LAX, LBx, LDx, LEX, L1U NAX, NBx, N1U, NCx, NDx, PAX, PBx, PCx, PDx, P1U)	09N4372

Keyboards - PCNext Lite Pearl White

US ENGLISH	37L2514
FRENCH CANADIAN 058	37L0912
FRENCH CANADIAN 044	37L2515
LA/SPANISH	37L2516
BRAZIL - PORTUGUESE	28L1826
ARABIC	37L2518
BELGIUM - FRENCH	37L2519
BELGIUM - ENGLISH	37L2520
BULGARIAN	37L2521
CZECH	37L2522
DANISH	37L2523
DUTCH	37L2524
FRENCH	37L2525
GERMAN	37L2526
GREEK	37L2527
HEBREW	37L2528
HUNGARIAN	37L2529
ITALIAN	37L2531
NORWEGIAN	37L2532

POLISH	37L2533
PORTUGUESE	37L2534
ROMANIAN	37L2535
RUSSIAN	37L2536
SERBIAN - CYR	37L2537
SLOVAK	37L2538
SPANISH	37L2539
SWEDISH/FINNISH	37L2540
SWISS - FRENCH/GERMAN	37L2541
TURKISH - ID 179	37L2542
TURKISH - ID 440	37L2543
UK ENGLISH	37L2544
YUGOSLAVIAN	37L2545
UK ENGLISH (ISO)	37L2546
JAPANESE	37L2547
CHINESE	37L2548
KOREAN	28L1860
THAI	37L2550

Computer Power Cords

ARABIC	14F0033
AUSTRALIAN	93F2365
BELGIAN	1339520
BULGARIAN	1339520
CANADIAN	93F2364
CZECH	1339520
DENMARK	13F9997
FINLAND	1339520
FRANCE	1339520
GERMAN	1339520
HUNGARIAN	1339520
ISRAEL	14F0087
ITALIAN	14F0069
LATIN AMERICAN	6952301
NETHERLANDS	1339520
NEW ZEALAND	93F2365
NORWEGIAN	1339520
POLISH	1339520
PORTUGUESE	1339520
SERBIAN	1339520
SLOVAKIAN	1339520
SOUTH AFRICAN	14F0015
SPANISH	1339520
SWISS	1339520

SWISS - FRENCH/GERMAN	14F0051
US ENGLISH	93F2364
UK - IRELAND	14F0033
YUGOSLAVIAN	1339520
CHILE	14F0069
ARGENTINA, PARAGUAY, & URUGUAY	36L8880

Recovery CDs

ARGENTINA, PARAGUAY, & URUGUAY	36L8880
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Display and Monitor Information

Display and monitor information is available separately and is listed under "Related Publications" on page vii.

Special tools

The following tools are required to service the computer models/types listed in this section of the service manual

- Volt-ohm meter, IBM P/N 73G5404
- Wrap Plug, IBM P/N 72X8546

Chapter 4. Related Service Information

Note: The service procedures are designed to help you isolate problems. They are written with the assumption that you have model-specific training on all computers, or that you are familiar with the computers, functions, terminology, and service information provided in this manual.

Safety information

The following section contains the safety information that you need to be familiar with before servicing an IBM mobile computer.

General safety

Follow these rules to ensure general safety:

- Observe good housekeeping in the area of the machines during and after maintenance.
- When lifting any heavy object:
 1. Ensure you can stand safely without slipping.
 2. Distribute the weight of the object equally between your feet.
 3. Use a slow lifting force. Never move suddenly or twist when you attempt to lift.
 4. Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back. *Do not attempt to lift any objects that weigh more than 16 kg (35 lb) or objects that you think are too heavy for you.*
- Do not perform any action that causes hazards to the customer, or that makes the equipment unsafe.
- Before you start the machine, ensure that other service representatives and the customer's personnel are not in a hazardous position.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the machine.
- Keep your tool case away from walk areas so that other people will not trip over it.
- Do not wear loose clothing that can be trapped in the moving parts of a machine. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
- Insert the ends of your necktie or scarf inside clothing or fasten it with a nonconductive clip, approximately 8 centimeters (3 inches) from the end.

- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.
Remember: Metal objects are good electrical conductors.
- Wear safety glasses when you are: hammering, drilling soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly before returning the machine to the customer.

Electrical safety



CAUTION:

Electrical current from power, telephone, and communication cables can be hazardous. To avoid personal injury or equipment damage, disconnect the attached power cords, telecommunication systems, networks, and modems before you open the server covers, unless instructed otherwise in the installation and configuration procedures.

Observe the following rules when working on electrical equipment.

Important: Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not insulate you when working with live electrical currents.

Many customers have, near their equipment, rubber floor mats that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
 - Performing a mechanical inspection
 - Working near power supplies
 - Removing or installing main units
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box that supplies power to the machine and to lock the wall box in the off position.

- If you need to work on a machine that has exposed electrical circuits, observe the following precautions:
 - Ensure that another person, familiar with the power-off controls, is near you.

Remember: Another person must be there to switch off the power, if necessary.
 - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.

Remember: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
 - When using testers, set the controls correctly and use the approved probe leads and accessories for that tester.
 - Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.

Observe the special safety precautions when you work with very high voltages; these instructions are in the safety sections of maintenance information. Use extreme care when measuring high voltages.

- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- Do not use worn or broken tools and testers.
- *Never assume* that power has been disconnected from a circuit. First, *check* that it has been powered-off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- Do not service the following parts with the power on when they are removed from their normal operating places in a machine:
 - Power supply units
 - Pumps
 - Blowers and fans
 - Motor generators

and similar units. (This practice ensures correct grounding of the units.)

- If an electrical accident occurs:
 - Use caution; do not become a victim yourself.
 - Switch off power.

- Send another person to get medical aid.

Safety inspection guide

The intent of this inspection guide is to assist you in identifying potentially unsafe conditions on these products. Each machine, as it was designed and built, had required safety items installed to protect users and service personnel from injury. This guide addresses only those items. However, good judgment should be used to identify potential safety hazards due to attachment of non-IBM features or options not covered by this inspection guide.

If any unsafe conditions are present, you must determine how serious the apparent hazard could be and whether you can continue without first correcting the problem.

Consider these conditions and the safety hazards they present:

- Electrical hazards, especially primary power (primary voltage on the frame can cause serious or fatal electrical shock).
- Explosive hazards, such as a damaged CRT face or bulging capacitor
- Mechanical hazards, such as loose or missing hardware

The guide consists of a series of steps presented in a checklist. Begin the checks with the power off, and the power cord disconnected.

Checklist:

1. Check exterior covers for damage (loose, broken, or sharp edges).
2. Power-off the computer. Disconnect the power cord.
3. Check the power cord for:
 - a. A third-wire ground connector in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and frame ground.
 - b. The power cord should be the appropriate type as specified in the parts listings.
 - c. Insulation must not be frayed or worn.
4. Remove the cover.
5. Check for any obvious non-IBM alterations. Use good judgment as to the safety of any non-IBM alterations.
6. Check inside the unit for any obvious unsafe conditions, such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.
7. Check for worn, frayed, or pinched cables.
8. Check that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Handling electrostatic discharge-sensitive devices

Any computer part containing transistors or integrated circuits (ICs) should be considered sensitive to electrostatic discharge (ESD). ESD damage can occur when there is a difference in charge between objects. Protect against ESD damage by equalizing the charge so that the machine, the part, the work mat, and the person handling the part are all at the same charge.

Notes:

1. Use product-specific ESD procedures when they exceed the requirements noted here.
2. Make sure that the ESD protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:

- Keep the parts in protective packages until they are inserted into the product.
- Avoid contact with other people.
- Wear a grounded wrist strap against your skin to eliminate static on your body.
- Prevent the part from touching your clothing. Most clothing is insulative and retains a charge even when you are wearing a wrist strap.
- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Select a grounding system, such as those listed below, to provide protection that meets the specific service requirement.

Note: The use of a grounding system is desirable but not required to protect against ESD damage.

- Attach the ESD ground clip to any frame ground, ground braid, or green-wire ground.
- Use an ESD common ground or reference point when working on a double-insulated or battery-operated system. You can use coax or connector-outside shells on these systems.
- Use the round ground-prong of the ac plug on ac-operated computers.

Grounding requirements

Electrical grounding of the computer is required for operator safety and correct system function. Proper grounding of the electrical outlet can be verified by a certified electrician.

Safety notices (multi-lingual translations)

The caution and danger safety notices in this section are provided in the following languages:

- English

- Brazilian/Portuguese
- Chinese
- French
- German
- Italian
- Korean
- Spanish

Important: All caution and danger statements in this *Netfinity Server Library* begin with a number. This number is used to cross reference an English caution or danger statement with translated versions of the caution or danger statement in this section.

For example, if a caution statement begins with a number 1, translations for that caution statement appear in this section under statement 1.

Be sure to read all caution and danger statements before performing any of the instructions.

- Statement 1



DANGER

Electrical current from power, telephone and communication cables is hazardous.

To avoid a shock hazard:

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect to properly wired outlets any equipment that will be attached to this product.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**

- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.**

To Connect	To Disconnect
<ol style="list-style-type: none"> 1. Turn everything OFF. 2. First, attach all cables to devices. 3. Attach signal cables to connectors. 4. Attach power cords to outlet. 5. Turn device ON. 	<ol style="list-style-type: none"> 1. Turn everything OFF. 2. First, remove power cords from outlet. 3. Remove signal cables from connectors. 4. Remove all cables from devices.

- Statement 2



CAUTION:

When replacing the lithium battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

Do not:

- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

Dispose of the battery as required by local ordinances or regulations.

- Statement 3



CAUTION:

When laser products (such as CD-ROMs, DVD-ROM drives, fiber optic devices, or transmitters) are installed, note the following:

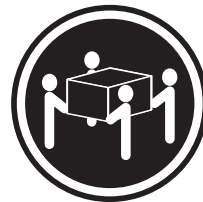
- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.



Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following:

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

- Statement 4



≥ 32 kg (70.5 lbs)

≥ 55 kg (121.2 lbs)

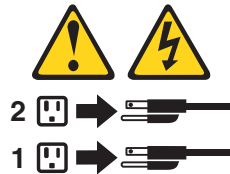
CAUTION:
Use safe practices when lifting.

- Statement 5



CAUTION:

The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.



- Statement 10



CAUTION:

Do not place any object weighing more than 82 kg (180 lbs.) on top of rack-mounted devices.



Importante:

Todas as instruções de cuidado e perigo da :cit.Netfinity Server Library:ecit. começam com um número. Este número é utilizado para fazer referência cruzada de uma instrução de cuidado ou perigo no idioma inglês com as versões traduzidas das instruções de cuidado ou perigo encontradas nesta seção.

Por exemplo, se uma instrução de cuidado é iniciada com o número 1, as traduções para aquela instrução de cuidado aparecem nesta seção sob a instrução 1.

Certifique-se de ler todas as instruções de cuidado e perigo antes de executar qualquer operação.

Instrução 1



PERIGO

A corrente elétrica proveniente de cabos de alimentação, de telefone e de comunicações é perigosa.

Para evitar risco de choque:

- Não conecte ou desconecte cabos e não realize instalação, manutenção ou reconfiguração deste produto durante uma tempestade com raios.
- Conecte todos os cabos de alimentação a tomadas elétricas corretamente instaladas e aterradas.
- Conecte todos os equipamentos ao qual esse produto será conectado a tomadas corretamente instaladas.
- Sempre que possível, utilize apenas uma das mãos para conectar ou desconectar cabos de sinal.
- Nunca ligue qualquer equipamento quando existir evidência de danos por fogo, água ou na estrutura.
- Desconecte cabos de alimentação, sistemas de telecomunicação, redes e modems antes de abrir as tampas dos dispositivos, a menos que especificado de maneira diferente nos procedimentos de instalação e configuração.
- Conecte e desconecte cabos conforme descrito na seguinte tabela, ao instalar ou movimentar este produto ou os dispositivos conectados, ou ao abrir suas tampas.

Para Conectar:	Para Desconectar:
<ol style="list-style-type: none"> 1. DESLIGUE Tudo. 2. Primeiramente, conecte todos os cabos aos dispositivos. 3. Conecte os cabos de sinal aos conectores. 4. Conecte os cabos de alimentação às tomadas. 5. LIGUE os dispositivos. 	<ol style="list-style-type: none"> 1. DESLIGUE Tudo. 2. Primeiramente, remova os cabos de alimentação das tomadas. 3. Remova os cabos de sinal dos conectores. 4. Remova todos os cabos dos dispositivos.

Instrução 2



CUIDADO:

Ao substituir a bateria de lítio, utilize apenas uma bateria IBM, Número de Peça 33F8354 ou uma bateria de tipo equivalente, recomendada pelo fabricante. Se o seu sistema possui um módulo com uma bateria de lítio, substitua-o apenas pelo mesmo tipo de módulo, do mesmo fabricante. A bateria contém lítio e pode explodir se não for utilizada, manuseada e descartada de maneira correta.

.Não:

- Jogue ou coloque na água
- Aqueça a mais de 100°C (212°F)
- Conserte nem desmonte

Para descartar a bateria, entre em contato com a área de atendimento a clientes IBM, pelo telefone (011) 889-8986, para obter informações sobre como enviar a bateria pelo correio para a IBM.

Instrução 3



PRECAUCIÓN:

Quando produtos a laser (unidades de CD-ROM, unidades de DVD, dispositivos de fibra ótica, transmissores, etc.) estiverem instalados, observe o seguinte:

- Não remova as tampas. A remoção das tampas de um produto a laser pode resultar em exposição prejudicial à radiação de laser. Nenhuma peça localizada no interior do dispositivo pode ser consertada.
- A utilização de controles ou ajustes ou a execução de procedimentos diferentes dos especificados aqui pode resultar em exposição prejudicial à radiação.

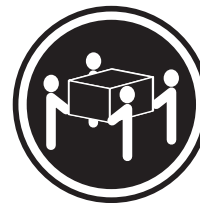


PERIGO

Alguns produtos a laser contêm um diodo laser da Classe 3A ou Classe 3B embutido. Observe o seguinte:

Radiação de laser quando aberto. Não olhe diretamente para o raio a olho nu ou com instrumentos óticos, e evite exposição direta ao raio.

Instrução 4



≥ 32 kg (70.5 lbs)

≥ 55 kg (121.2 lbs)

CUIDADO:

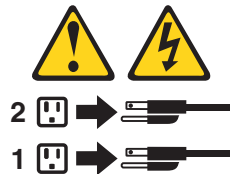
Ao levantar a máquina, faça-o com segurança.

Instrução 5



CUIDADO:

Os botões Liga/Desliga localizados no dispositivo e na fonte de alimentação não desligam a corrente elétrica fornecida ao dispositivo. O dispositivo também pode ter mais de um cabo de alimentação. Para remover toda a corrente elétrica do dispositivo, assegure que todos os cabos de alimentação estejam desconectados da fonte de energia elétrica.



CUIDADO:

Instrução 10



CUIDADO:



Não coloque nenhum objeto com peso superior a 82 kg (180 lbs.) sobre dispositivos montados em rack.

重要:

Netfinity Server Library 中的所有提醒和危险条款前都有一个数字标识。该数字是用来交叉引用一个英文的提醒和危险条款及本部分中的与之对应的已翻译成其它文字的提醒和危险条款。

例如，如果一个提醒条款前的数字为 1，则本部分中相应的译文也带有标号 1。

在执行任何指示的操作之前，请确保您已经阅读了全部提醒和危险条款。

声明 1



危险

电源、电话和通信电缆中带有危险电流。

为避免电击：

雷电期间不要拆接电缆或安装、维修及重新配置本产品。

将所有电源线连接至正确布线并已安全接地的电源插座上。

将与本产品连接的所有设备连接至正确布线的插座上。

尽量只使用单手拆接信号电缆。

有水、火及结构损坏迹象时，请勿打开任何设备。

除非在安装配置过程中有明确指示，否则，打开设备机盖前应先断开与电源线、远程通信系统、网络和调制解调器的所有连接。

安装、移动或打开本产品及其附带设备的机盖时，应按下表所述连接和断开电缆。

连接时:

1. 关闭所有设备。
2. 首先将所有电缆连接至设备。
3. 将信号电缆连接至接口。
4. 将电源线连接至插座。

断开连接时:

1. 关闭所有设备。
2. 首先从插座中拔出电源线。
3. 从接口上拔下信号电缆。

声明 2



警告:

更换锂电池时，只能使用 IBM 产品号 33F8354 或者是厂商推荐的等同类型的电池。

如果系统模块中含有锂电池，则只能使用同一厂商制造的同一类型的模块进行更换。电池中含有锂。如果使用、拿放或处理不当，可能会发生爆炸。

请勿对电池进行下列操作：

扔入或浸入水中。

加热超过 100 (212 F)

进行修理或分解

请按本地法规要求处理电池。

声明 3



警告:

安装激光产品（如 CD-ROM、DVD 驱动器、光纤设备或送话器）时，应注意以下事项：

不要拆除外盖。拆除激光产品的外盖可能会导致激光辐射的危险，本设备中没有用户可维修的部件。

非此处指定的其它控制、调整或与性能有关的操作都有可能致激光辐射的危险。



危险

某些激光产品中包含内嵌的 3A 级或 3B 级激光二极管。请注意以下事项。

打开时会产生激光辐射。不要直视光束，不要使用光学仪器直接观看光束，避免直接暴露于光束之下。

声明 4



≥18 kg (37 磅)



≥32 kg (70.5 磅)



≥55 kg (121.2 磅)

警告：
抬起时请采用安全操作方法。

声明 5



警告：
使用设备上的电源控制按钮和电源上的开关都不能断开本设备上的电流。另外，本设备可能带有多条电源线。如要断开设备上的所有电流，请确保所有电源线均已与电源断开连接。



声明 6



警告：
如果在电源线连接设备的一端安装了固定松紧夹，则必须将电源线的另一端连接至使用方便的电源。

声明 7



警告:

如果设备带有外门，则在移动或抬起设备前应将其拆除或固定以避免造成人员伤害。外门支撑不了设备的重量。

声明 8



警告:

不要拆除电源外盖或贴有下列标签的任何部件。



贴有此标签的组件内部存在高电压、高电流的危险。这些组件中没有用户可维修的部件。如果怀疑其中的部件存在问题，应与服务技术人员联系。

声明 9



警告:

为避免人员伤害，拆除设备上的风扇前应拨下热插拔风扇电缆。

声明 10



警告:

机柜安装的设备上面不能放置重于 82kg (180 磅) 的物品。



> 82 kg (180 磅)

声明 11



警告：

下面的标签表明附近有锋利的边、角或接头。



声明 12



警告：

下面的标签表明附近有高热表面。



重要資訊：

Netfinity Server Library 中所有「注意」及「危險」的聲明均以數字開始。此一數字是用來作為交互參考之用，英文「注意」或「危險」聲明可在本節中找到相同內容的「注意」或「危險」聲明的譯文。

例如，有一「危險」聲明以數字 1 開始，則該「危險」聲明的譯文將出現在本節的「聲明」1 中。

執行任何指示之前，請詳讀所有「注意」及「危險」的聲明。

聲明 1



危險

電源、電話及通信電纜上所產生的電流均有危險性。

欲避免電擊危險：

- 在雷雨期間，請勿連接或切斷本產品上的任何電纜線，或安裝、維修及重新架構本產品。
- 請將電源線接至接線及接地正確的電源插座。
- 請將本產品隨附的設備連接至接線正確的插座。
- 儘可能使用單手來連接或切斷信號電纜線。
- 當設備有火燒或泡水的痕跡，或有結構性損害時，請勿開啓該設備的電源。
- 在安裝及架構之時，若非非常熟悉，在開啓裝置蓋子之前，請切斷電源線、電信系統、網路及數據機。
- 在安裝、移動本產品或附加裝置，或開啓其蓋子時，請依照下表中「連接」及「切斷」電纜線的步驟執行。

連接：

1. 關閉所有開關。
2. 先將所有電纜線接上裝置。
3. 將信號電纜接上接頭。
4. 再將電源線接上電源插座。
5. 開啓裝置的電源。

切斷：

1. 關閉所有開關。
2. 先自電源插座拔掉電源線。
3. 拔掉接頭上的所有信號電纜。
4. 再拔掉裝置上的所有電纜線。

聲明 2



注意：

更換鋰電池時，只可使用 IBM 零件編號 33F8354 的電池，或製造商建議之相當類型的電池。若系統中具有包含鋰電池的模組，在更換此模組時，請使用相同廠商製造的相同模組類型。如未正確使用、處理或丟棄含有鋰的電池時，可能會引發爆炸。

請勿將電池：

- 丟入或浸入水中
- 加熱超過 100 °C (212 °F)
- 修理或拆開

請遵照當地法令規章處理廢棄電池。

聲明 3



注意：

安裝雷射產品 (如 CD-ROM、DVD 光碟機、光纖裝置或發射器) 時，請注意下列事項：

- 請勿移開蓋子。移開雷射產品的蓋子，您可能會暴露於危險的雷射輻射之下。裝置中沒有需要維修的組件。
- 不依此處所指示的控制、調整或處理步驟，您可能會暴露於危險的輻射之下。



危險

有些雷射產品含有內嵌式 Class 3A 或 Class 3B 雷射二極體。請注意下列事項：

開啓時會產生雷射輻射。請勿凝視光束，不要使用光學儀器直接觀察，且應避免直接暴露在光束下。

聲明 4



≥ 18 公斤 (37 磅)



≥ 32 公斤 (70.5 磅)



≥ 55 公斤 (121.2 磅)

注意：

抬起裝置時，請注意安全措施。

聲明 6



注意：

若您在電源線與裝置連接的一端安裝了鬆緊托架選用配備，您必須將電源線的另一端接至容易插上或拔掉電源上。

聲明 10



注意：

請勿將任何重量超過 82 公斤 (180 磅) 的物品置於已安裝機架的裝置上方。



> 82 公斤 (180 磅)

Important:

Toutes les consignes Attention et Danger indiquées dans la bibliothèque :cit.Netfinity Server:cit. sont précédées d'un numéro. Ce dernier permet de mettre en correspondance la consigne en anglais avec ses versions traduites dans la présente section.

Par exemple, si une consigne de type Attention est précédée du chiffre 1, ses traductions sont également précédées du chiffre 1 dans la présente section.

Prenez connaissance de toutes les consignes de type Attention et Danger avant de procéder aux opérations décrites par les instructions.

Notice n^o 1



DANGER

Le courant électrique passant dans les câbles de communication, ou les cordons téléphoniques et d'alimentation peut être dangereux.

Pour éviter tout risque de choc électrique:

- Ne manipulez aucun câble et n'effectuez aucune opération d'installation, d'entretien ou de reconfiguration de ce produit au cours d'un orage.
- Branchez tous les cordons d'alimentation sur un socle de prise de courant correctement câblé et mis à la terre.
- Branchez sur des socles de prise de courant correctement câblés tout équipement connecté à ce produit.
- Lorsque cela est possible, n'utilisez qu'une seule main pour connecter ou déconnecter les câbles d'interface.

- Ne mettez jamais un équipement sous tension en cas d'incendie ou d'inondation, ou en présence de dommages matériels.
- Avant de retirer les carters de l'unité, mettez celle-ci hors tension et déconnectez ses cordons d'alimentation, ainsi que les câbles qui la relient aux réseaux, aux systèmes de télécommunication et aux modems (sauf instruction contraire mentionnée dans les procédures d'installation et de configuration).
- Lorsque vous installez ou que vous déplacez le présent produit ou des périphériques qui lui sont raccordés, reportez-vous aux instructions ci-dessous pour connecter et déconnecter les différents cordons.

Connexion	Déconnexion
<ol style="list-style-type: none"> 1. Mettez les unités hors tension. 2. Commencez par brancher tous les cordons sur les unités. 3. Branchez les câbles d'interface sur des connecteurs. 4. Branchez les cordons d'alimentation sur des prises. 5. Mettez les unités sous tension. 	<ol style="list-style-type: none"> 1. Mettez les unités hors tension. 2. Débranchez les cordons d'alimentation des prises. 3. Débranchez les câbles d'interface des connecteurs. 4. Débranchez tous les câbles des unités.



Notice n^o 2

ATTENTION:

Remplacez la pile au lithium usagée par une pile de référence identique exclusivement - voir la référence IBM - ou par une pile équivalente recommandée par le fabricant. Si votre système est doté d'un module contenant une pile au lithium, vous devez le remplacer uniquement par un module identique, produit par le même fabricant. La pile contient du lithium et présente donc un risque d'explosion en cas de mauvaise manipulation ou utilisation.

- Ne la jetez pas à l'eau.
- Ne l'exposez pas à une température supérieure à 100 °C.
- Ne cherchez pas à la réparer ou à la démonter.

Pour la mise au rebut, reportez-vous à la réglementation en vigueur.



Notice n^o 3

ATTENTION:

Si des produits laser sont installés (tels que des unités de CD-ROM ou de DVD, des périphériques contenant des fibres optiques ou des émetteurs-récepteurs), prenez connaissance des informations suivantes:

- N'ouvrez pas ces produits pour éviter une exposition directe au rayon laser. Vous ne pouvez effectuer aucune opération de maintenance à l'intérieur.
- Pour éviter tout risque d'exposition au rayon laser, respectez les consignes de réglage et d'utilisation des commandes, ainsi que les procédures décrites dans le présent document.



DANGER

Certains produits laser contiennent une diode laser de classe 3A ou 3B. Prenez connaissance des informations suivantes:

Rayonnement laser lorsque le carter est ouvert. évitez de regarder fixement le faisceau ou de l'observer à l'aide d'instruments optiques. évitez une exposition directe au rayon.

Notice n^o 4



≥ 32 kg (70.5 lbs)

≥ 55 kg (121.2 lbs)

ATTENTION:

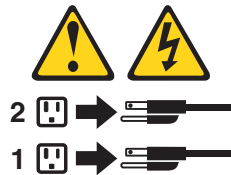
Faites-vous aider pour soulever ce produit.

Notice n^o 5



ATTENTION:

Le bouton de mise sous tension/hors tension de l'unité et l'interrupteur d'alimentation du bloc d'alimentation ne coupent pas l'arrivée de courant électrique à l'intérieur de la machine. Il se peut que votre unité dispose de plusieurs cordons d'alimentation. Pour isoler totalement l'unité du réseau électrique, débranchez tous les cordons d'alimentation des socles de prise de courant.



Notice n^o 10



ATTENTION:



Wichtig:

Alle Sicherheitshinweise in dieser :cit.Netfinity Server-Bibliothek:ecit. beginnen mit einer Nummer. Diese Nummer verweist auf einen englischen Sicherheitshinweis mit den übersetzten Versionen dieses Hinweises in diesem Abschnitt.

Wenn z. B. ein Sicherheitshinweis mit der Nummer 1 beginnt, so erscheint die Übersetzung für diesen Sicherheitshinweis in diesem Abschnitt unter dem Hinweis 1.

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

Hinweis 1



VORSICHT

Elektrische Spannungen von Netz-, Telefon- und Datenübertragungsleitungen sind gefährlich.

Aus Sicherheitsgründen:

- Bei Gewitter an diesem Gerät keine Kabel anschließen oder lösen. Ferner keine Installations-, Wartungs- oder Rekonfigurationsarbeiten durchführen.
- Gerät nur an eine Schutzkontaktsteckdose mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Alle angeschlossenen Geräte ebenfalls an Schutzkontaktsteckdosen mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Signalkabel möglichst einhändig anschließen oder lösen.
- Keine Geräte einschalten, wenn die Gefahr einer Beschädigung durch Feuer, Wasser oder andere Einflüsse besteht.
- Die Verbindung zu den angeschlossenen Netzkabeln, Telekommunikationssystemen, Netzwerken und Modems ist vor dem Öffnen des Gehäuses zu unterbrechen. Es sei denn, dies ist in den zugehörigen Installations- und Konfigurationsprozeduren anders angegeben.
- Nur nach den nachfolgend aufgeführten Anweisungen arbeiten, die für Installation, Transport oder Öffnen von Gehäusen von Personal Computern oder angeschlossenen Einheiten gelten.

Kabel anschließen:	Kabel lösen:
<ol style="list-style-type: none"> 1. Alle Geräte ausschalten und Netzstecker ziehen. 2. Zuerst alle Kabel an Einheiten anschließen. 3. Signalkabel an Anschlußbuchsen anschließen. 4. Netzstecker an Steckdose anschließen. 5. Gerät einschalten. 	<ol style="list-style-type: none"> 1. Alle Geräte ausschalten. 2. Zuerst Netzstecker von Steckdose lösen. 3. Signalkabel von Anschlußbuchsen lösen. 4. Alle Kabel von Einheiten lösen.

Hinweis 2



ACHTUNG:

Eine verbrauchte Batterie nur durch eine Batterie mit der IBM Teilenummer 33F8354 oder durch eine vom Hersteller empfohlene Batterie ersetzen. Wenn Ihr System ein Modul mit einer Lithium-Batterie enthält, ersetzen Sie es immer mit dem selben Modultyp vom selben Hersteller. Die Batterie enthält Lithium und kann bei unsachgemäßer Verwendung, Handhabung oder Entsorgung explodieren.

Die Batterie nicht:

- mit Wasser in Berührung bringen.
- über 100 C erhitzen.
- reparieren oder zerlegen.

Die örtlichen Bestimmungen für die Entsorgung von Sondermüll beachten.

Hinweis 3



ACHTUNG:

Wenn ein Laserprodukt (z. B. CD-ROM-Laufwerke, DVD-Laufwerke, Einheiten mit Glasfaserkabeln oder Transmitter) installiert ist, beachten Sie folgendes.

- Das Entfernen der Abdeckungen des CD-ROM-Laufwerks kann zu gefährlicher Laserstrahlung führen. Es befinden sich keine Teile innerhalb des CD-ROM-Laufwerks, die vom Benutzer gewartet werden müssen. Die Verkleidung des CD-ROM-Laufwerks nicht öffnen.

- Steuer- und Einstellelemente sowie Verfahren nur entsprechend den Anweisungen im vorliegenden Handbuch einsetzen. Andernfalls kann gefährliche Laserstrahlung auftreten.

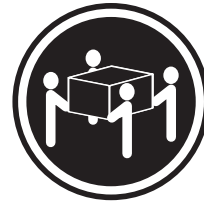


VORSICHT

Manche CD-ROM-Laufwerke enthalten eine eingebaute Laserdiode der Klasse 3A oder 3B. Die nachfolgend aufgeführten Punkte beachten.

Laserstrahlung bei geöffneter Tür. Niemals direkt in den Laserstrahl sehen, nicht direkt mit optischen Instrumenten betrachten und den Strahlungsbereich meiden.

Hinweis 4



≥ 32 kg (70.5 lbs)

≥ 55 kg (121.2 lbs)

ACHTUNG:

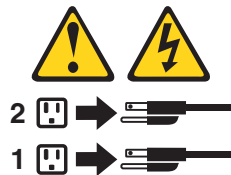
Beim Anheben der Maschine die vorgeschriebenen Sicherheitsbestimmungen beachten.

Hinweis 5



ACHTUNG:

Mit dem Betriebsspannungsschalter an der Vorderseite des Servers und dem Betriebsspannungsschalter am Netzteil wird die Stromversorgung für den Server nicht unterbrochen. Der Server könnte auch mehr als ein Netzkabel aufweisen. Um die gesamte Stromversorgung des Servers auszuschalten, muß sichergestellt werden, daß alle Netzkabel aus den Netzsteckdosen herausgezogen wurden.



Hinweis 10



ACHTUNG:

Keine Gegenstände, die mehr als 82 kg wiegen, auf Rack-Einheiten ablegen.



Importante:

Tutti gli avvisi di attenzione e di pericolo riportati nella pubblicazione :cit.Netfinity Server Library:ecit. iniziano con un numero. Questo numero viene utilizzato per confrontare avvisi di attenzione o di pericolo in inglese con le versioni tradotte riportate in questa sezione.

Ad esempio, se un avviso di attenzione inizia con il numero 1, la relativa versione tradotta è presente in questa sezione con la stessa numerazione.

Prima di eseguire una qualsiasi istruzione, accertarsi di leggere tutti gli avvisi di attenzione e di pericolo.

Avviso 1



PERICOLO

La corrente elettrica circolante nei cavi di alimentazione, del telefono e di segnale è pericolosa.

Per evitare il pericolo di scosse elettriche:

- Non collegare o scollegare i cavi, non effettuare l'installazione, la manutenzione o la riconfigurazione di questo prodotto durante i temporali.
- Collegare tutti i cavi di alimentazione ad una presa elettrica correttamente cablata e munita di terra di sicurezza.
- Collegare qualsiasi apparecchiatura collegata a questo prodotto ad una presa elettrica correttamente cablata e munita di terra di sicurezza.

- Quando possibile, collegare o scollegare i cavi di segnale con una sola mano.
- Non accendere qualsiasi apparecchiatura in presenza di fuoco, acqua o se sono presenti danni all'apparecchiatura stessa.
- Scollegare i cavi di alimentazione, i sistemi di telecomunicazioni, le reti e i modem prima di aprire i coperchi delle unità, se non diversamente indicato nelle procedure di installazione e configurazione.
- Collegare e scollegare i cavi come descritto nella seguente tabella quando si effettuano l'installazione, la rimozione o l'apertura dei coperchi di questo prodotto o delle unità collegate.

Per collegare:	Per scollegare:
<ol style="list-style-type: none"> 1. SPEGNERE tutti i dispositivi. 2. Collegare prima tutti i cavi alle unità. 3. Collegare i cavi di segnale ai connettori. 4. Collegare i cavi di alimentazione alle prese elettriche. 5. ACCENDERE le unità. 	<ol style="list-style-type: none"> 1. SPEGNERE tutti i dispositivi. 2. Rimuovere prima i cavi di alimentazione dalle prese elettriche. 3. Rimuovere i cavi di segnale dai connettori. 4. Rimuovere tutti i cavi dalle unità.

Avviso 2



ATTENZIONE:

Quando si sostituisce la batteria al litio, utilizzare solo una batteria IBM con numero parte 33F8354 o batterie dello stesso tipo o :rev refid=a. di tipo equivalente consigliate dal produttore. Se il sistema di cui si dispone è provvisto di un modulo contenente una batteria al litio, sostituire tale batteria solo con un tipo di modulo uguale a quello fornito dal produttore. La batteria contiene litio e può esplodere se utilizzata, maneggiata o smaltita impropriamente.

Evitare di:

- Gettarla o immergerla in acqua
- Riscaldarla ad una temperatura superiore ai 100°C
- Cercare di ripararla o smontarla

Smaltire secondo la normativa in vigore (D.Lgs 22 del 5/2/9) e successive disposizioni nazionali e locali.

Avviso 3



ATTENZIONE:

Quando si installano prodotti laser come, ad esempio, le unità DVD, CD-ROM, a fibre ottiche o trasmettitori, prestare attenzione a quanto segue:

- Non rimuovere i coperchi. L'apertura dei coperchi di prodotti laser può determinare l'esposizione a radiazioni laser pericolose. All'interno delle unità non vi sono parti su cui effettuare l'assistenza tecnica.
- L'utilizzo di controlli, regolazioni o l'esecuzione di procedure non descritti nel presente manuale possono provocare l'esposizione a radiazioni pericolose.



PERICOLO

Alcuni prodotti laser contengono all'interno un diodo laser di Classe 3A o Classe 3B. Prestare attenzione a quanto segue:

Aperto l'unità vengono emesse radiazioni laser. Non fissare il fascio, non guardarlo direttamente con strumenti ottici ed evitare l'esposizione diretta al fascio.

Avviso 4



ATTENZIONE:

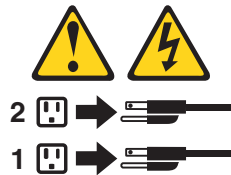
Durante il sollevamento della macchina seguire delle norme di sicurezza.

Avviso 5



ATTENZIONE:

Il pulsante del controllo dell'alimentazione situato sull'unità e l'interruttore di alimentazione posto sull'alimentatore :erev refid=a. non disattiva la corrente elettrica fornita all'unità. L'unità potrebbe disporre di più di un cavo di alimentazione. Per disattivare la corrente elettrica dall'unità, accertarsi che tutti i cavi di alimentazione siano scollegati dalla sorgente di alimentazione.



Avviso 10



ATTENZIONE:



Non poggiare oggetti che pesano più di 82 kg sulla parte superiore delle unità montate in rack.

경고문 1



위험

전원, 전화 및 통신 케이블로부터 흘러 나오는 전류는 위험합니다.

전기 충격을 피하려면:

- 뇌우를 동반할 때는 케이블의 연결이나 철수, 이 제품의 설치, 유지보수 또는 재구성을 하지 마십시오.
- 모든 전원 코드를 적절히 배선 및 접지해야 합니다.
- 이 제품에 연결될 모든 장비를 적절하게 배선된 콘센트에 연결하십시오.
- 가능한 신호 케이블을 한 손으로 연결하거나 끊으십시오.
- 화재, 수해 또는 구조상의 손상이 있을 경우 장비를 켜지 마십시오.
- 설치 및 구성 프로시저에 다른 설명이 없는 한, 장치 덮개를 열기 전에 연결된 전원 코드, 원거리 통신 시스템, 네트워크 및 모뎀을 끊어 주십시오.
- 제품 또는 접속된 장치를 설치, 이동 및 덮개를 열 때 다음 설명에 따라 케이블을 연결하거나 끊도록 하십시오.

연결하려면:

1. 모든 스위치를 끕니다.
2. 먼저 모든 케이블을 장치에 연결합니다.
3. 신호 케이블을 커넥터에 연결합니다.
4. 콘센트에 전원 코드를 연결합니다.
5. 장치 스위치를 켭니다.

연결을 끊으려면:

1. 모든 스위치를 끕니다.
2. 먼저 콘센트에서 전원 코드를 뽑습니다.
3. 신호 케이블을 커넥터에서 제거합니다.
4. 장치에서 모든 케이블을 제거합니다.

경고문 2



주의:

리튬 배터리를 교체할 때는 IBM 부품 번호 33F8354 또는 제조업체에서 권장하는 동등한 유형의 배터리를 사용하십시오. 시스템에 리튬 배터리를 갖고 있는 모듈이 있으면 동일한 제조업체에서 생산된 동일한 모듈 유형으로 교체하십시오. 배터리에 리튬이 있을 경우 제대로 사용, 처리 또는 처분하지 않으면 폭발할 수 있습니다.

다음은 주의하십시오.

- 던지거나 물에 담그지 않도록 하십시오.
- 100°C(212°F) 이상으로 가열하지 마십시오.
- 수리하거나 분해하지 마십시오.

지역 법령이나 규정의 요구에 따라 배터리를 처분하십시오.

경고문 3



주의:

레이저 제품(CD-ROMs, DVD 드라이브, 광 장치 또는 트랜스미터 등과 같은)이 설치되어 있을 경우 다음을 유의하십시오.

- 덮개를 제거하지 마십시오. 레이저 제품의 덮개를 제거했을 경우 위험한 레이저 광선에 노출될 수 있습니다. 이 장치 안에는 서비스를 받을 수 있는 부품이 없습니다.

- 여기에서 지정하지 않은 방식의 제어, 조절 또는 실행으로 인해 위험한 레이저 광선에 노출될 수 있습니다.



위험

일부 레이저 제품에는 클래스 3A 또는 클래스 3B 레이저 다이오드가 들어 있습니다. 다음을 주의하십시오.

열면 레이저 광선에 노출됩니다. 광선을 주시하거나 광학 기계를 직접 쳐다보지 않도록 하고 광선에 노출되지 않도록 하십시오.

경고문 4



≥18 kg (37 lbs)



≥ 32 kg (70.5 lbs)



≥ 55 kg (121.2 lbs)

주의:

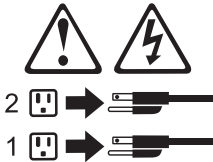
기계를 들 때는 안전하게 들어 올리십시오.

경고문 5



주의:

장치의 전원 제어 버튼 및 전원 공급기의 전원 스위치는 장치에 공급되는 전류를 차단하지 않습니다. 장치에 둘 이상의 전원 코드가 연결되어 있을 수도 있습니다. 장치에서 모든 전류를 차단하려면 모든 전원 코드가 전원으로부터 차단되어 있는지 확인하십시오.



경고문 10



주의:

서랍형 모델의 장치 상단에 82 kg(180 lbs.)이 넘는 물체를 올려 놓지 마십시오.



> 82 kg (180 lbs)

Importante:

Todas las declaraciones de precaución de esta :cit.Biblioteca del servidor Netfinity:ecit. empiezan con un número. Dicho número se emplea para establecer una referencia cruzada de una declaración de precaución o peligro en inglés con las versiones traducidas que de dichas declaraciones pueden encontrarse en esta sección.

Por ejemplo, si una declaración de peligro empieza con el número 1, las traducciones de esta declaración de precaución aparecen en esta sección bajo Declaración 1.

Lea atentamente todas las declaraciones de precaución y peligro antes de llevar a cabo cualquier operación.

Declaración 1



PELIGRO:

La corriente eléctrica de los cables telefónicos, de alimentación y de comunicaciones es perjudicial.

Para evitar una descarga eléctrica:

- No conecte ni desconecte ningún cable ni realice las operaciones de instalación, mantenimiento o reconfiguración de este producto durante una tormenta.
- Conecte cada cable de alimentación a una toma de alimentación eléctrica con conexión a tierra y cableado correctos.
- Conecte a tomas de alimentación con un cableado correcto cualquier equipo que vaya a estar conectado a este producto.
- Si es posible, utilice una sola mano cuando conecte o desconecte los cables de señal.
- No encienda nunca un equipo cuando haya riesgos de incendio, de inundación o de daños estructurales.
- Desconecte los cables de alimentación, sistemas de telecomunicaciones, redes y módems conectados antes de abrir las cubiertas del dispositivo a menos que se indique lo contrario en los procedimientos de instalación y configuración.
- Conecte y desconecte los cables tal como se describe en la tabla siguiente cuando desee realizar una operación de instalación, de traslado o de apertura de las cubiertas para este producto o para los dispositivos conectados.

Para la conexión	Para la desconexión
<ol style="list-style-type: none">1. APÁGUELO todo.2. En primer lugar, conecte los cables a los dispositivos.3. Conecte los cables de señal a los conectores.4. Conecte cada cable de alimentación a la toma de alimentación.5. ENCIENDA el dispositivo.	<ol style="list-style-type: none">1. APÁGUELO todo.2. En primer lugar, retire cada cable de alimentación de la toma de alimentación.3. Retire los cables de señal de los conectores.4. Retire los cables de los dispositivos.

Declaración 2



PRECAUCIÓN:

Cuando desee sustituir la batería de litio, utilice únicamente el número de pieza 33F8354 de IBM o cualquier tipo de batería equivalente que recomiende el fabricante. Si el sistema tiene un módulo que contiene una batería de litio, sustitúyalo únicamente por el mismo tipo de módulo, que ha de estar creado por el mismo fabricante. La batería contiene litio y puede explotar si el usuario no la utiliza ni la maneja de forma adecuada o si no se desprende de la misma como corresponde.

No realice las acciones siguientes:

- Arrojarla al agua o sumergirla
- Calentarla a una temperatura que supere los 100°C (212°F)
- Repararla o desmontarla

Despréndase de la batería siguiendo los requisitos que exija el reglamento o la legislación local.

Declaración 3



PRECAUCIÓN:

Cuando instale productos láser (como, por ejemplo, CD-ROM, unidades DVD, dispositivos de fibra óptica o transmisores), tenga en cuenta las advertencias siguientes:

- No retire las cubiertas. Si retira las cubiertas del producto láser, puede quedar expuesto a radiación láser perjudicial. Dentro del dispositivo no existe ninguna pieza que requiera mantenimiento.
- El uso de controles o ajustes o la realización de procedimientos que no sean los que se han especificado aquí pueden dar como resultado una exposición perjudicial a las radiaciones.

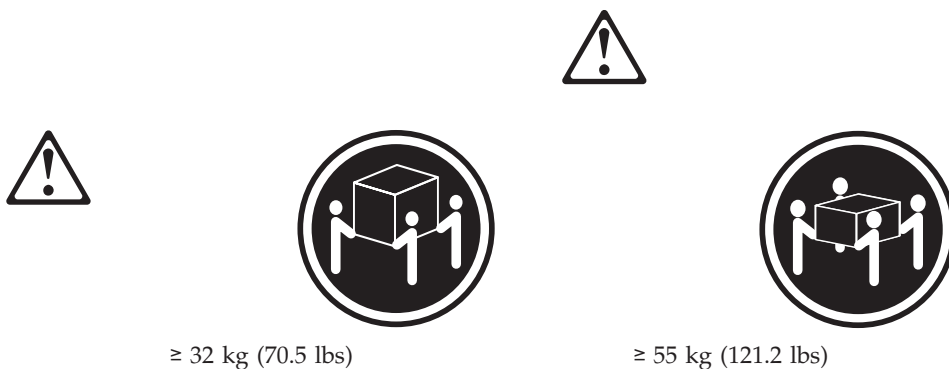


PELIGRO:

Algunos productos láser contienen un diodo de láser incorporado de Clase 3A o de Clase 3B. Tenga en cuenta la advertencia siguiente.

Cuando se abre, hay radiación láser. No mire fijamente el rayo ni lleve a cabo ningún examen directamente con instrumentos ópticos; evite la exposición directa al rayo.

Declaración 4



PRECAUCIÓN:

Tome medidas de seguridad al levantar el producto.

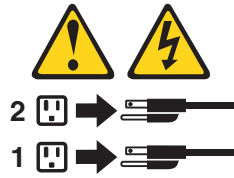
Declaración 5



PRECAUCIÓN:

El botón de control de alimentación del dispositivo y el interruptor de alimentación de la fuente de alimentación no apagan la corriente eléctrica suministrada al dispositivo. Es posible también que el dispositivo tenga más de un cable de alimentación. Para eliminar la corriente eléctrica del dispositivo, asegúrese de desconectar todos los cables de alimentación de la

fuente de alimentaci3n.



Declaraci3n 10



PRECAUCI3N:



No coloque ning3n objeto que pese m3s de 82 kg (180 libras) encima de los dispositivos montados en bastidor.

Send us your comments!

We want to know your opinion about this manual (part number 06P1504). Your input will help us to improve our publications.

Please photocopy this survey, complete it, and then fax it to **IBM HMM Survey** at **919-543-8167 (USA)**.

Name: _____

Phone number: _____

1. Do you like this manual?

Yes No

2. What would you like to see added, changed, or deleted in this manual?

3. What is your service experience level?

Less than five years

More than five years

4. Which Servers do you service most?

Thank you for your response!

Problem determination tips

Due to the variety of hardware and software combinations that can be encountered, use the following information to assist you in problem determination. If possible, have this information available when requesting assistance from Service Support and Engineering functions.

- Machine type and model
- Processor or hard disk upgrades

- Failure symptom
 - Do diagnostics fail?
 - What, when, where, single, or multiple systems?
 - Is the failure repeatable?
 - Has this configuration ever worked?
 - If it has been working, what changes were made prior to it failing?
 - Is this the original reported failure?
- Reference/Diagnostics version
 - Type and version level
- Hardware configuration
 - Print (print screen) configuration currently in use
 - BIOS level
- Operating system software
 - Type and version level

Note: To eliminate confusion, identical systems are considered identical only if they:

1. Are the exact machine type and models
2. Have the same BIOS level
3. Have the same adapters/attachments in the same locations
4. Have the same address jumpers/terminators/cabling
5. Have the same software versions and levels
6. Have the same Reference/Diagnostics Diskette (version)
7. Have the same configuration options set in the system
8. Have the same setup for the operation system control files

Comparing the configuration and software set-up between "working and non-working" systems will often lead to problem resolution.

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Miscellaneous Information

Acronyms, Abbreviations, and Terms

Term	Information
ACPA/A	Audio Capture and Playback Adapter
ADP	Automatic Data Processing
AGP	Advanced Graphics Port
Alt	Alternate
ANSI	American National Standards Institute
ARTIC	A Real Time Interface Coprocessor
ASCII	American National Standard Code for Interface Interchange
AT	Advanced Technology (refer to AT Bus)
AVC	Audio Video Connection
BIOS	Basic Input/Output System
bps	Bits Per Second
BPS	Bytes Per Second
CCITT	The International Telephone and Telegraph Consultative Committee
CCS	Common Command Set
CCSB	Common Complete Status Block
CCSB	Configuration Control Sub Board

Term	Information
CD	Compact Disc
CDPD	Cellular Digital Packet Data
CD-ROM	CD Read-Only Memory
CGA	Color Graphics Adapter (See EGA)
CRC	Cyclic Redundancy Check
CRT	Cathode Ray Tube
CSA	Canadian Standards Association
CSD	Corrective Service Diskette
DASD	Direct Access Storage Device (hard disk)
DMA	Direct Memory Access
DRAM	Dynamic Random Access Memory
ECA	Engineering Change Announcement
ECC	Error Correction Code
EGA	Enhanced Graphics Adapter
ESD	Electrostatic Discharge
ESDI	Enhanced Small Device Interface
EEPROM	Electrically Erasable Programmable Read-Only Memory
EWS	Energy Work Station
FRU	Field Replaceable Unit (replaceable part)
GPIB	General Purpose Interface Bus (IEEE 348)
GSA	General Services Administration
Ht	Height
IDE	Integrated Drive Electronics
IC	Integrated Circuit
IEEE	Institute of Electrical and Electronics Engineers
IEC	International Electrotechnical Commission
IML	Initial Machine Load
IPL	Initial Program Load
ISA	Industry Standard Architecture
ISO	International Organization for Standardization
ISDN	Integrated-Services Digital Network
LAN	Local Area Network
LBA	Local Block Address
LTB	Local Transfer Bus
LUN	Logical Unit Number (refer to SCSI)
MAP	Maintenance Analysis Procedure
MCGA	Modified Color Graphics Adapter
MCA	Micro Channel Architecture (bus structure)
MHz	Mega Hertz (million cycles per second)
MIDI	Musical Instrument Digital Interface
MM	Multimedia
N/A	Not Available or Not Applicable
NDD	National Distribution Division
NDIS	Network Driver Interface Specification

Term	Information
NMI	Non-Maskable Interrupt
NSC	National Support Center
NVRAM	Non-Volatile Random Access Memory
OEM	Original Equipment Manufacturer
PCI	Peripheral Component Interconnect
PCMCIA	Personal Computer Memory Card International Association
POS	Programmable Option Select
PUN	Physical Unit Number (refer to SCSI)
RAID	Redundant Array of Independent Disks
RAM	Random Access Memory (read/write)
RGB	Red Green Blue (refer to monitors)
RIPL	Remote Initial Program Load
ROM	Read-Only Memory
SASD	Sequential Access Storage Device (Tape)
SCB	Subsystem Control Block
SCSI	Small Computer Systems Interface
SCSI ID	SCSI Identification Number
SPD	Software Product Description
SR	Service Representative
SRAM	Static Random Access Memory
SVGA	Super Video Graphics Array (800x600x16)
STN	Super Twisted Nematic
T/A	NDD Technical Advisor (see your Marketing Representative)
TDD	Telecommunications Device for the Deaf
TFT	Thin-Film Transistor
TPF	ThinkPad File
TSR	Terminate and Stay Resident
UL	Underwriters Laboratory
VCA	Video Capture Adapter
VESA	Video Electronics Standards Association
VGA	Video Graphics Array (640x480x16)
VPD	Vital Product Data
VRAM	Video Random Access Memory
WORM	Write Once Read Many (storage medium)
XGA	Extended Graphics Array
Y/C	Luminance/Chrominance Signal (Video)



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