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You can read the recommendations in the user guide, the technical guide or the installation guide for COMPAQ DESKPRO EX MINITOWER MODELS. You'll find the answers to all your questions on the COMPAQ DESKPRO EX MINITOWER MODELS in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual COMPAQ DESKPRO EX MINITOWER MODELS
User guide COMPAQ DESKPRO EX MINITOWER MODELS
Operating instructions COMPAQ DESKPRO EX MINITOWER MODELS
Instructions for use COMPAQ DESKPRO EX MINITOWER MODELS
Instruction manual COMPAQ DESKPRO EX MINITOWER MODELS

COMPAQ

Maintenance & Service Guide

Compaq Deskpro EX and Deskpro EXS
Series of Personal Computers

Minitower Models



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.....o Headphone Jack* Headphone Volume Control* Diskette Drive Activity Light Dual-State Power Button Power-On Light Ref.

6 7 8 9 Component/Function CD-ROM Eject Button* CD-ROM Drive Busy Indicator* Diskette Eject Button Drive Activity Light** *CD-ROM models only.

**Flashes when an ATAPI device, such as the hard drive, is active. 1-2 Product Description 1.1.2 Rear Panel Connectors Ref.

Component 1 2 3 Mouse Connector Keyboard Connector Universal Serial Bus (USB) Connectors (2) (connects the computer to any USB peripheral while the computer is operating; is a fully functional plug and play connector) Serial Connector Parallel Port Connector Ref. 6 7 8 Component Monitor Connector Headphone/Line-Out Audio Connector Serial Connector 4 5 9 : Line-In Audio Connector Microphone Connector Compaq Deskpro EX and Deskpro EXS

Series of Personal Computers 1-3 1.1.3 Drive Positions Reference Drive Bay 1, 2 3 4, 5 1, 2 3 4, 5 Configuration Two standard 5.25-inch, half-height bays for optional drives One standard 3.

5-inch, 1.44-MB diskette drive mounted with a drive adapter into a 5.25-inch bay Two standard 3.5-inch drive bays; Bay 4 contains the preinstalled hard drive; Bay 5 is available for an optional hard drive Drive bay numbers are stamped on the chassis. To verify the type and size of the mass storage devices installed in the computer, run F10 Compaq Computer Setup. 1-4 Product Description 1.2 Serial Number Location The serial number and model information label is located on the access panel of the unit 1. A second barcode label is located on the rear of the unit 2. For the purpose of AssetControl, the serial number is embedded in CMOS and in the EEPROM on the system board and may be accessed through Diagnostics for Windows. If the system board is replaced with a spare part from Compaq, the invalid serial number condition will be recognized during POST.

The original serial number must then be reentered through Computer Setup. Refer to the Software Reference Guide for more information. CAUTION: A system board borrowed from another computer is recognized as a valid serial number and will create a mismatch between the serial number label and the electronic serial number.



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The computer serial number should be provided to Compaq when requesting information or ordering spare parts. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 1-5 chapter 2 SPARE PARTS Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 2-1 2.1 System Unit Description 1 2 3 4 5 6 7 Access panel Front bezel Chassis/basepan Logo Kit (only minitower version-166806-002-used) Power switch with cable, LED and switch holder Feet Power supply Spare Part Number Not spared 166868-001 Not spared 166924-001 199854-001 Misc Plastics Kit 201828-001 Warranty Tier B B B B 2-2 Spare Parts 2.2 Mass Storage Devices Description 1 2 3 * Diskette drive, 3.5-inch 48X Max tray load IDE CD-ROM drive 10.0-GB Ultra ATA hard drive (66/5400) quiet 15.0-GB Ultra ATA hard drive (66/5400) Spare Part Number 158266-001 187263-001 203139-001 202903-001 Warranty Tier D B B B *Not shown (nn/nmm) = hard drive transfer rate (MBytes/sec)/RPM Ultra ATA/100 hard drives are backwards compatible with Ultra ATA/66 devices; however, the data transfer rate is reduced to 66MB/sec.

Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 2-3 2.3 Cables Description Cable Kit includes: 1 2 * * 3 4 5 6 * Single device, hard drive/CD-ROM cable, 18" (108950-019) Audio cable, 21" (387527-001) Single device, hard drive/CD-ROM cable, 12.5" (105876-001) Audio cable, 21", (288489-002) (not used for this product) Single device, hard drive/CD-ROM cable, 9.75" (108950-021) Dual device, hard drive/CD-ROM cable, 18", 10" to the first connector Power switch/LED cable Diskette drive cable CD audio cable Spare Part Number 192264-001 Warranty Tier B 196667-001 199854-001 161735-001 149806-001 B B B D *Not shown 2-4 Spare Parts 2.4 Standard, Memory, and Expansion Boards Description 1 Nvidia M64 16MB SDRAM AGP Card 5 A1MM (GPA) 4MB, 133MHz for graphics Memory Module (SDIMM, 133 MHz) 2 128 MB 256 MB Intel Pentium III Processor 3 * * * * * 566/66

600/66 MHz with heatsink (191832-002) and clip (223575-007). 667/133 MHz with heatsink (191832-002) and clip (223575-007). 700/66 MHz with heatsink (191832-002) and clip (223575-007). 733/133 MHz with heatsink (191832-002) and clip (223575-007). 800/133 MHz with heatsink (191832-002) and clip (223575-007).

866/133 MHz with fansink (191845-002). Fansink includes fan, heatsink, and clip. 933/133 MHz with fansink (191845-002). Fansink includes fan, heatsink, and clip. Spare Part Number 182757-001 192012-001 170081-001 192014-001 203967-001 192011-001 192007-001 203968-001 192008-001 192009-001 192006-001 203969-001 188297-001 203966-001 Warranty Tier B B B B B B B B B B B B B B 4 10/100 PCI Network Interface Card 6 System Board *Not shown. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 2-5 2.5 Miscellaneous Plastics Kit Description Miscellaneous Plastics Kit, includes: 1 2 3 4 5 6 7 8 9 * Panel, sub (166835-001) Bezel, blank (166775-001) Diskette bezel (166776-001) Card guide (166778-001) Foot, rubber (4 ea.) (166939-002) Button, power (166774-001) Drivelock, DT (166779-001) (not used with this product) Spring, power button (166837-001) Springs, drivelock (2 ea.) (166837-002) Retention mechanism (2 ea.) (350767-001) Spare Part Number 166878-001 Warranty Tier B 10 Drivelock, MT (166780-001) *Not shown 2-6 Spare Parts 2.

6 Keyboards (not illustrated) Description Easy Access Keyboard-US Dutch Finnish French International Norwegian Spanish Swedish UK US Spare Part Number 123130-xxx -331 -351 -051 -B31 -091 -071 -101 -031 -001 Warranty Tier D 2.7 Miscellaneous Screw Kit (not illustrated) Description Miscellaneous Screw Kit, includes: 6-32 x 1/4 hi-top, thread-forming screw with serrations (5 ea.) (192308-001) 6-19 x 5/16 panhead, plastite screw (4 ea.) (101346-068) 6-19 x .5/16 hi-top, taptite screw with captive washer (4 ea.) (114399-069) 6-32 x 3/16 hi-top, thread-forming screw with serrations (5 ea.) (192308-003) M3 x 5mm, hi-top, taptite screw with serrations (4 ea.) (247348-001) 6-32 x 3/16 buttonhead tamper-resistant, taptite screw with serrations (3 ea.) (296769-002) 6-32 x 5/16 hi-top, taptite screw (4 ea.) (109834-568) 6-19 x 1/2 Panhead, plastite screw (5 ea.)

(101346-071) Thumbscrew, molded cap (4 ea.) (179333-002) Spare Part Number 179180-001 Warranty Tier D Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 2-7 2.8 Miscellaneous Parts (not illustrated) Description Mouse Scroll, Opal Spare Part Number 334689-002 Warranty Tier D 2.9 Shipping Boxes (not illustrated) Description Return Kit Spare Part Number 166990-002 2.10 Documentation and Software (not illustrated) Description Maintenance & Service Guide Illustrated Parts Map Service Reference Guide Quick Troubleshooting Guide Spare Part Number 215879-001 215880-001 152611-001 153837-001 2-8 Spare Parts chapter 3 CAUTION: When the computer is plugged into an AC power source there is always voltage applied to the system board.

You must disconnect the power cord from the power source before opening the computer to prevent system board or component damage. REMOVAL & REPLACEMENT PRELIMINARIES This chapter provides general service information for the computer. 3.1 Electrostatic Discharge Information A sudden discharge of static electricity from your finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs.

An electronic device exposed to electrostatic discharge (ESD) may not be affected at all and can work perfectly throughout a normal cycle. The device may function normally for a while, then degrade in the internal layers, reducing its life expectancy. Networks built into many integrated circuits provide some protection, but in many cases, the discharge contains enough power to alter device parameters or melt silicon junctions. 3.1.1 Generating Static The following table shows that: !! Different activities generate different amounts of static electricity. Static electricity increases as humidity decreases. Relative Humidity 55% 40% 10% 7,500 V 3,000 V 400 V 400 V 2,000 V 3,500 V 7,000 V 5,000 V 15,000 V 5,000 V 800 V 700 V 4,000 V 5,000 V 20,000 V 11,000 V 35,000 V 12,000 V 6,000 V 2,000 V 11,500 V 14,500 V 26,500 V 21,000 V Event Walking across carpet Walking across vinyl floor Motions of bench worker Removing DIPs* from plastic tube Removing DIPs* from vinyl tray Removing DIPs* from Styrofoam Removing bubble pack from PCB Packing PCBs in foam-lined box *Dual Inline Packaging (DIP) is the packaging around individual microcircuitry. These are then multi-packaged inside plastic tubes, trays, or Styrofoam. 700 volts can degrade a product.

Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 3-1 3.



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1.2 Preventing Electrostatic Damage to Equipment Many electronic components are sensitive to ESD. Circuitry design and structure determine the degree of sensitivity. The following proper packaging and grounding precautions are necessary to prevent damage to electric components and accessories. ! ! ! ! ! To avoid hand contact, transport products in static-safe containers such as tubes, bags, or boxes. Protect all electrostatic parts and assemblies with conductive or approved containers or packaging. Keep electrostatic sensitive parts in their containers until they arrive at static-free stations. Place items on a grounded surface before removing them from their container. Always be properly grounded when touching a sensitive component or assembly.

Avoid contact with pins, leads, or circuitry. Place reusable electrostatic-sensitive parts from assemblies in protective packaging or conductive foam. 3.1.3 Personal Grounding Methods and Equipment Use the following equipment to prevent static electricity damage to equipment: ! Wrist straps are flexible straps with a minimum of one-megohm +/- 10% resistance in the ground cords.

To provide proper ground, a strap must be worn snug against bare skin. The ground cord must be connected and fit snugly into the banana plug connector on the grounding mat or workstation. Heel straps/Toe straps/Boot straps can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use them on both feet with a minimum of one-megohm +/- 10% resistance between the operator and ground. ! Static Shielding Protection Levels Method Antistatic plastic Carbon-loaded plastic Metallized laminate Voltage 1,500 7,500 15,000 3.

1.4 Grounding Workstations To prevent static damage at the workstation, use the following precautions: ! ! ! Cover the workstation with approved static-dissipative material. Provide a wrist strap connected to the work surface and properly grounded tools and equipment. Use static-dissipative mats, foot straps, or air ionizers to give added protection. Handle electrostatic sensitive components, parts, and assemblies by the case or PCB laminate. Handle them only at static-free workstations. Turn off power and input signals before inserting and removing connectors or test equipment. 3-2 Removal & Replacement Preliminaries ! ! ! Use fixtures made of static-safe materials when fixtures must directly contact dissipative surfaces. Keep work area free of nonconductive materials such as ordinary plastic assembly aids and Styrofoam. Use field service tools, such as cutters, screwdrivers, and vacuums, that are conductive.

3.1.5 Recommended Materials and Equipment Materials and equipment that are recommended for use in preventing static electricity include: ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! Antistatic tape Antistatic smocks, aprons, or sleeve protectors Conductive bins and other assembly or soldering aids Conductive foam Conductive tabletop workstations with ground cord of one-megohm +/- 10% resistance Static-dissipative table or floor mats with hard tie to ground Field service kits Static awareness labels Wrist straps and footwear straps providing one-megohm +/- 10% resistance Material handling packages Conductive plastic bags Conductive plastic tubes Conductive tote boxes Opaque shielding bags Transparent metallized shielding bags Transparent shielding tubes 3.2 3.2.1 Routine Care General Cleaning Safety Precautions 1. 2. 3. 4. 5.

6. Never use solvents or flammable solutions to clean the computer. Never immerse any parts in water or cleaning solutions; apply any liquids to a clean cloth and then use the cloth on the component. Always turn off the computer when cleaning with liquids or damp cloths. Always turn off the computer before cleaning the keyboard, mouse, or air vents.

Disconnect the keyboard before cleaning it. Wear safety glasses equipped with side shields when cleaning the keyboard. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 3-3 3.2.2 Cleaning the Computer Case Follow all safety precautions in Section 3.

2.1 before cleaning the computer. To clean the computer case, follow the procedures described below: ! ! ! ! To remove light stains or dirt, use plain water with a clean, lint-free cloth or swab. For stronger stains, use a mild dishwashing liquid diluted with water. Rinse well by wiping it with a cloth or swab dampened with clear water. For stubborn stains, use isopropyl (rubbing) alcohol. No rinsing is needed as the alcohol will evaporate quickly and not leave a residue. After cleaning, always wipe the unit with a clean, lint-free cloth. Occasionally clean the air vents on the computer. Lint and other foreign matter can block the vents and limit the airflow.

3.2.3 Cleaning the Keyboard Follow all safety precautions in Section 3.2.1 before cleaning the keyboard. To clean the tops of the keys or the keyboard body, follow the procedures described in Section 3.2.2. When cleaning debris from under the keys, review all rules in Section 3.2.

! before following these procedures: CAUTION: Use safety glasses equipped with side shields before attempting to clean debris from under the keys. ! ! Visible debris underneath or between the keys may be removed by vacuuming or shaking. Canned, pressurized air may be used to clean debris from under the keys. Caution should be used as too much air pressure can dislodge lubricants applied under the wide keys. If you remove a key, use a specially designed key puller to prevent damage to the keys.

This tool is available through many electronic supply outlets. CAUTION: Never remove a wide leveled key (like the space bar) from the keyboard. If these keys are improperly removed or installed, the keyboard may not function properly. ! ! Cleaning under a key may be done with a swab moistened with isopropyl alcohol and squeezed out. Be careful not to wipe away lubricants necessary for proper key functions.

Use tweezers to remove any fibers or dirt in confined areas. Allow the parts to air dry before reassembly. 3.2.4 Cleaning the Monitor ! Wipe the monitor screen with a clean cloth moistened with water or with a towelette designed for cleaning monitors. Do not use sprays or aerosols directly on the screen, the liquid may seep into the housing and damage a component. Never use solvents or flammable liquids on the monitor. To clean the monitor body follow the procedures in Section 3.2.2.

! 3-4 Removal & Replacement Preliminaries 3.2.5 Cleaning the Mouse Before cleaning the mouse, ensure that the power to the computer is turned off. ! Clean the mouse ball by first removing the retaining plate and the ball from the housing. Pull out any debris from the ball socket and wipe the ball with a clean dry cloth before reassembly. To clean the mouse body, follow the procedures in 3.2.2. ! 3.3 Service Considerations Listed below are some of the considerations that you should keep in mind during the disassembly and assembly of the computer.



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6). 5. Disconnect the power/LED cable from the system board 1. 6. Push the release tab 2 toward the drive bays, then remove the power switch assembly from the chassis.

To install the new power switch, reverse the above procedure, pushing the switch assembly until it snaps into place. The power/LED connector is keyed to ensure proper installation. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 4-9 4.10 Mass Storage Devices The Compaq Deskpro EX Series of Personal Computers support up to five drives in various configurations. Drive Positions Reference Drive Bay 12 3 4 5 1, 2 3 4, 5 Configuration Two standard 5.25-inch, half-height bays for optional drives. One standard 3.5-inch, 1.44-MB diskette drive mounted with a drive adapter into a 5.25-inch bay.

Two standard 3.5-inch drive bays; bay 4 contains the preinstalled hard drive, bay 5 is available for an optional hard drive. Drive bay numbers are stamped on the chassis. To verify the type and size of the mass storage devices installed in the computer, run Computer Setup. 4-10 Removal & Replacement Procedures When installing additional drives, follow these guidelines: ! For optimal performance, connect hard drives to the primary controller. Connect expansion devices, such as CD-ROM, IDE tape, and diskette drives to the secondary controller. You may install either a third-height or a half-height drive into a half-height bay. You must install guide screws to ensure that the drive lines up correctly in the drive cage. Compaq has provided extra guide screws, which are installed in the front of the computer chassis, behind the front bezel. Some options require metric hardware.

Compaq-supplied metric screws are black. WARNING: Power is continuous to the system board and power supply even when the power switch is turned off. ! Using the Cable-Select Feature with Ultra ATA Devices Optional drives are available from Compaq in kits that include a special drive cable. The configuration of the drives employs a cable-select feature that identifies the drives as device 0 (primary drive) or device 1 (secondary drive). The system board determines which drive is device 0 or device 1, based on the way the drives are connected to the special drive cable.

The device 0 drive is the drive connected to the short segment of the drive cable (or that connector closest to the system board); the device 1 drive is the drive connected to the long segment of the drive cable. Drive installation requires no jumper setting changes on the existing or optional drives. All Compaq drives have the jumpers preset for cable-select installation. If installing a second device on the primary controller, you must use an 80-conductor Ultra ATA cable for optimal performance. This cable is available as a Compaq option.

Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 4-11 4.10.1 Removing an Internal 3.5-Inch Hard Drive 1. Prepare the computer for disassembly (Section 4.2). 2. Remove the access panel (Section 4.5). 3.

Remove the front bezel (Section 4.6). 4. Disconnect the power and data cables from the back of the hard drive. 5. Slide the drivelock mechanism to unlock the hard drives 1. 6. While holding the drivelock in the unlocked position, remove the drive from the drive bay 2. 7. Remove the guide screws from the drive. 8. Install two guide screws on each side of the replacement drive (use silver screws). Metric screws (M3) have a black finish while U.S. screws (#6) have a silver finish.

Replace the 3.5-inch drive by reversing the above procedure. CAUTION: When servicing the computer, ensure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the computer. CAUTION: Use only 3/16-inch or 5-mm long screws as guide screws.

Longer screws can damage the internal components of the drive. When installing a second ATA hard drive on the primary controller, you must use an 80-conductor ATA cable for optimal performance. The system automatically recognizes hard drives sold by Compaq (or any other plug and play hard drive) and will automatically reconfigure the computer. If you installed a thirdparty hard drive, or one that is not a plug and play device, you must run Computer Setup to reconfigure the computer. 4-12 Removal & Replacement Procedures 4.10.2 Removing an External 5.25-Inch Drive 1. @@ 2. Remove the access panel (Section 4.

5). 3. Remove the front bezel (Section 4.6). 4. Slide the drivelock mechanism to unlock the drive 1. 5. While the drivelock is held in the unlatched position, remove the drive from the drive bay 2. 6. Remove the guide screws from the drive.

To install a new drive: 1. Install two guide screws on each side of the replacement drive. Metric screws (M3) have a black finish while U.S. screws (#6) have a silver finish.

CD and DVD drives use black metric screws. 2. Ensure that the guide screw lines up with the guide slots, then gently slide the drive into the drive bay until it snaps into place. 3. Connect the power and signal cables to the back of the drive.

4. Remove the bezel blank from the subpanel, if necessary (Section 4.8). 5. Reinstall the subpanel and the front bezel. The system automatically recognizes hard drives sold by Compaq (or any other plug and play hard drive) and will automatically reconfigure the computer. If you installed a thirdparty hard drive, or one that is not a plug and play device, you must run Computer Setup to reconfigure the computer. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 4-13 4.10.3 Removing an External 3.

5-Inch Drive If you are installing a second 3.5-inch diskette drive into 5.25-inch bays #1 or 2 for the first time, you must use a special adapter bracket. If you are installing a 3.5-inch diskette drive into 5.25-inch bay #3, you must use a special adapter bracket. If installing a second ATA hard drive on the primary controller, you must use an 80conductor ATA cable for optimal performance. 1. @@ 2. Remove the access panel (Section 4.

5). 3. Remove the front bezel (Section 4.6). The primary diskette drive is always installed in drive bay 3.

4. Slide the drivelock mechanism to unlock the drive 1. 5. While the drivelock is held in the unlatched position, remove the drive from the drive bay 2. 4-14 Removal & Replacement Procedures 6.

Remove the bracket brace 1 from the top of the drive adapter by squeezing inward on both sides, then rotating the brace up and out. 7. Remove the drive bezel 2. 8. Remove the three screws 3 that secure the drive 4 to the drive adapter. 9. Lift the drive out of the drive adapter. 10. Remove the guide screws from the drive 5. To replace the drive, reverse the previous procedures.

The primary 3.5-inch diskette drive should only be installed into bay 3. Bay 3 is the bottom bay in the minitower. When replacing the drive, use the existing screws. Metric screws (M3) have a black finish while U.S. screws (#6) have a silver finish. Diskette drives use black metric screws.



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The drive adapters use silver U.S.

screws. CAUTION: When servicing the computer, ensure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the computer. CAUTION: Use only 3/16-inch or 5-mm long screws as guide screws. Longer screws can damage the internal components of the drive.

Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 4-15 4.11 4.11.1 Expansion Boards Expansion Board Slots 1 2 PCI expansion slots AGP graphics slot 4-16 Removal & Replacement Procedures 4.11.

2 Removing a PCI Expansion Board 1. @ @ 2. Lay the computer down on its large base for greater stability. 3. Remove the access panel (Section 4.5). 4. Disconnect any cables from the expansion board, noting their location for reinstallation. 5. Remove the expansion board retaining screw.

6. Hold the board at each end and carefully rock it back and forth while pulling upward until the connectors pull free from the slot. Be sure not to scrape the card against other components 7. If not installing another expansion board in the slot, then close off the open slot by installing an expansion slot cover with a screw. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 4-17 4.11.3 Installing a PCI Expansion Board 1. @ @ 2. Lay the computer down on its large base for greater stability. 3.

Remove the access panel (Section 4.5). 4. If you are installing an expansion board for the first time, remove the expansion slot cover. 4-18 Removal & Replacement Procedures 5.

Hold the board at each end and carefully rock it back and forth while pushing downward, until the connectors fit completely and firmly into the expansion slot. 6. Secure the board to the chassis with the retaining screw. 7. Attach any cables that came with the board.

If installing a NIC board, attach the WOL power cable to connector P9 on the system board, if applicable. 8. Reassemble the computer. The computer should automatically recognize the added plug and play board. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 4-19 4.12 System Memory The computer comes with synchronous dynamic random access memory (SDRAM) dual inline memory modules (DIMMs). The Intel 815 chipset comes with at least 64 MB of SDRAM DIMMs, upgradeable to 512 MB. DIMMs The memory sockets on the Intel 815 chipset-based system board can be populated with industry-standard DIMMs. These memory module slots are populated with at least one preinstalled memory module. To achieve the maximum memory support, you may be required to replace the preinstalled DIMM with a higher capacity DIMM.

For proper system operation, the DIMMs must be industry-standard 168-pin, unbuffered PC100 or PC133 compliant SDRAM DIMMs, depending on the model. The SDRAM DIMMs must support CAS Latency 2 or 3 (CL = 2 or CL = 3). They must also contain the mandatory Joint Electronic Device Engineering Council (JEDEC) Serial Presence Detect (SPD) information. DIMMs constructed with x4 SDRAM (16 ICs per side) are not supported; the system will not start using unsupported DIMMs. The Intel 815 chipset supports both PC100 and PC133 SDRAM DIMMs. PC133 DIMMs should be used for optimal performance. If both PC100 and PC133 SDRAM DIMMs are installed in a computer, the system memory will run at the lower 100MHz speed. Some configurations of PC133 SDRAMs may run at 100MHz, instead of 133MHz. Memory Module Installation CAUTION: Your memory module sockets have gold metal contacts. When upgrading your memory, it is important to use memory modules with gold metal contacts to prevent corrosion and/or oxidation resulting from having incompatible metals in contact with each other.

CAUTION: Static electricity can damage the electronic components of the computer or optional cards. @ @ Refer to Appendix F, "Electrostatic Discharge," for more information. CAUTION: When handling a memory module, be careful not to touch any of the contacts. Doing so may damage the module. 4-20 Removal & Replacement Procedures To install a memory module, complete the following steps: 1.

@ @ 2. 3. 4. Remove the access panel (Section 4.5).

Open both latches of the memory socket, and insert the memory module into the socket #. A memory module can be installed in only one way. Match the notch on the module with the tab on the memory socket. Push the module down into the socket, ensuring the module is securely seated. Close both latches. 5. 6. 7. Repeat step 4 for any additional modules you want to install. Reassemble the computer.

Turn on the computer. When a memory module has been removed, moved, or added, Memory Change Alerts, a feature of Intelligent Manageability, alerts the system administrator and end user. The system automatically recognizes the added memory. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 4-21 4.13 Graphics Cards The AGP expansion slot may come with a retention mechanism installed around it to hold the graphics cards securely in place. There are two different types of retention mechanisms that may be installed around the AGP expansion slot. 4.13.1 Graphics Performance Accelerator (GPA)/AGP Inline Memory Module (AIMM) Card with a Type I Retention Mechanism Removing a GPA/AIMM Card 1. @ @ 2.

Lay the computer down on its large base for greater stability. 3. Remove the access panel (Section 4.5). 4.

Pull the arm on the right side of the retention mechanism 1. 5. At the same time, rotate the front of the GPA/AIMM card up until it is at a 45 degree angle 2. 6. Remove the card from the expansion slot 3.

4-22 Removal & Replacement Procedures Installing a GPA/AIMM Card WARNING: Power is continuous to the system board and power supply even when the power switch is turned off. 1. Prepare the computer for disassembly (Section 4.2). 2. Lay the computer down on its large base for greater stability. 3. Remove the access panel (Section 4.5). 4.

Insert the hook 1 on the left side of the GPA/AIMM card under the loop 2 on the left side of the retention mechanism. 5. Rotate the right side of the card down until it is at a 45 degree angle 3. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 4-23 6. With the GPA/AIMM card at a 45 degree angle, slide the card toward the back of the expansion slot 4 until the fingers on the bottom of the card line up properly with the connectors in the expansion slot. CAUTION: The fingers on the bottom of the GPA/AIMM card must be properly aligned with the expansion slot during installation. Misalignment may result in damage to the card or the AGP connector. 7. While pulling the arm on the right side of the retention mechanism 5, rotate the card down into the expansion slot until seated 6. 4-24 Removal & Replacement Procedures 4.

13.2 AGP Card with a Type I Retention Mechanism Removing an AGP Card 1. Prepare the computer for disassembly (Section 4.2). 2.

Lay the computer down on its large base for greater stability.



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3. Remove the access panel (Section 4.5). 4.

Remove the screw at the top of the expansion slot. 5. Pull the arm on the right side of the retention mechanism. 6. Pull the card straight up to remove it from the expansion slot. To install the graphics card, reverse the above procedures. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 4-25 4.13.3 GPA/AIMM Card with a Type 2 Retention Mechanism Removing a GPA/AIMM Card 1. Prepare the computer for disassembly (Section 4.

2). 2. Lay the computer down on its large base for greater stability. 3. Remove the access panel (Section 4.5). 4. Pull the arm on the right side of the retention mechanism. 5. Pull the card straight up to remove it from the expansion slot.

To install the graphics card, reverse the above procedures. 4-26 Removal & Replacement Procedures 4.13.4 AGP Card with a Type 2 Retention Mechanism Removing an AGP Card 1. Prepare the computer for disassembly (Section 4.

2). 2. Lay the computer down on its large base for greater stability. 3. Remove the access panel (Section 4.

5). 4. Remove the screw at the top of the expansion slot. 5. Pull the arm on the right side of the retention mechanism. 6. Pull the card straight up to remove it from the expansion slot. To install the graphics card, reverse the above procedures. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 4-27 4.13.

5 Standard AGP Expansion Card Removing an AGP Card 1. Prepare the computer for disassembly (Section 4.2). 2. Lay the computer down on its large base for greater stability. 3. Remove the access panel (Section 4.5). 4. Remove the screw at the top of the expansion slot.

5. Remove the AGP graphics board as you would any PCI expansion board (Section 4.11.2). 4-28 Removal & Replacement Procedures 4.14 Processor 1. @ @ 2. Remove the computer cover (Section 4.3). 3.

If there is a fansink on the processor, unplug the fan cable from the system board. 4. Remove the heatsink retaining clip 1 by pressing down on the clip's extended tab until it releases from the safety catch. 5. Lift the heatsink 2 off the processor. 6. Release the processor 3 from the socket by pulling the handle on the ZIF socket out and upward 4. 7. Lift the processor out of the socket. WARNING: Removing the heatsink from the processor destroys the integrity of the thermal interface pad between the two.

Whenever the heatsink is removed, the thermal interface pad must be removed and a new one installed in its place. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 4-29 Before installing a fansink, prepare for its installation by doing one of the following: · · New heatsink: if the heatsink has a thermal interface attached to its bottom, peel off the protective paper before installing the heatsink, if necessary. Reinstalled heatsink: Note where the thermal interface is located on the heatsink. Carefully remove the thermal interface pad and all residue from the heatsink surface. If any thermal interface remains on the die of the processor, scrape it off with your fingernail. A Q-Tip dipped in alcohol can be used to clean both surfaces. Add thermal interface pad to the bottom of the heatsink before reinstalling the original heatsink to insure an efficient thermal interface. Use Compaq part number 210397-001 thermal interface pad. CAUTION: Thermal interface heat transmission is reduced if residue remains on the heatsink or processor, or the heatsink thermal interface surface is scratched. This could lead to the processor running at a higher than normal temperature, fan turning at a higher than normal speed, and possible loss of data if processor shuts down from overheating.

Ensure that the pins on the processor are properly aligned before inserting the processor in the ZIF socket. Two corners of the processor will not have an outermost pin. All units with 866 MHz and faster processors require an active fansink. When installing the fan, make sure it is positioned so it blows down on the processor. All units with 866 MHz and faster processors require use of a chassis fan (Section 4.

15). 4-30 Removal & Replacement Procedures 4.15 System Board More information on the system board, including troubleshooting criteria, can be found in the Compaq Quick Troubleshooting Guide (part number 153837-001) and the Compaq Service Reference Guide (part number 152611-001). 1. @ @ 2. Remove the access panel (Section 4.5). 3. Remove all expansion boards (Section 4.11). 4. Disconnect any cables that are attached to the system board, noting their location for reinstallation. 5. Remove the DIMMs (optional) (Section 4.12).

6. Remove the graphics card (Section 4.13). 7. Remove the six retaining screws that secure the system board to the chassis. 8. Slide the board about ½ inch toward the front of the chassis to disengage the I/O panel, then lift it up and out of the chassis. To install a new system board, reverse the above procedures.

Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 4-31 4.16 Battery 1.

Prepare the computer for disassembly (Section 4.2). 2. Lay the computer down on its large base for greater stability. 3.

Remove the access panel (Section 4.5). 4. Locate the battery on the system board. If you have expansion boards installed, you may need to remove them to gain access to the battery (Section 4.

11.2). 5. Lift the battery out of the holder. 6. Slide the replacement battery into position with the positive side up. The battery holder automatically secures the battery in the proper position. 7. If you removed expansion boards, reinstall them now. 8.

Replace the computer access panel. 9. Reassemble the computer. 10. Reconnect the AC power cord and turn on the computer. 11. Reset the date and time, your passwords, and any special system setups, using Compaq Computer Setup. WARNING: This computer contains a lithium battery. There is a risk of fire and chemical burn if the battery pack is handled improperly. Do not disassemble, crush, puncture, short external contacts, dispose in water or fire, or expose it to temperatures higher than 60°C (140°F).

In North America, dispose of nickel metal hydride or lithium batteries by taking advantage of the Compaq battery recycling program. You will be provided with a postage-paid battery pack mailer preaddressed to a reclamation facility where the metals are recycled. Call the telephone number listed for your location in the Contacting Customer Support guide for more information. In Europe, do not dispose of batteries with general household waste. @ @ @ @ 2.

Remove the access panel (Section 4.5). 3. Disconnect the fan power cable 1 from the system board. 4.

Remove the four screws 2 that secure the fan to the chassis. 5. @ @ @ @ 2. Lay the computer down on its large base for greater stability. 3. Remove the access panel (Section 4.5). 4. Disconnect all power cables from the mass storage devices and the system board. Power connectors are keyed for correct installation.

Note the orientation of each cable connector and the routing of the cables to facilitate reassembly.



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5. Remove the four screws that secure the power supply to the back of the chassis. 6. Slide the power supply toward the front of the computer, then lift up to remove it from the chassis. To replace the power supply, reverse the above procedure. 4-34 Removal & Replacement Procedures chapter 5 CONNECTORS AND JUMPERS This chapter provides connector, jumper, and switch information for system board jumpers, system I/O board connectors, and hard drives for the Desktop Model. 5.1 5.1.

1 System Board Connectors and Jumpers CR28 CR29 E6 E29 E49 J20-22 J40 P1 P5 P10 P11 3.3V Aux LED 3.3V Main LED (NI) Firmware Hub Top Block Lock (Installed=Bootblock unprotected, Removed=Bootblock protected) SCSI LED Cable Connector Clear Password Header (Installed = Enabled, Removed = Cleared) PCI Slots AGP/AIMM Connector Power Supply Connector Power Button, Front Panel LED Cable Connector Diskette Drive Connector Aux Audio Connector P12 P20 P21 P70 P100 P701 P216 SW50 XBT1 XMM1-2 XU1 SOS Connector Primary IDE Connector Secondary IDE Connector CPU Fan Connector ITP Connector (NI) CD-ROM Audio Chassis Fan Connector Clear CMOS CMOS Battery DIMM Memory Slots Primary Processor Socket Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 5-1 5.1.2 Clearing CMOS The computer's configuration (CMOS) may occasionally be corrupted.

If it does, it is necessary to clear the CMOS memory using push button switch SW50. To clear and reset the configuration, perform the following procedure: 1. Prepare the computer for disassembly (Section 4.2). CAUTION: The power cord must be disconnected from the power source before pushing the Clear CMOS Button (NOTE: All LEDs on the board should be OFF).

Failure to do so may damage the system board. 2. Remove the access panel (Section 4.5). 3. Press the CMOS button located on the system board and keep it depressed for 5 seconds. 4. Replace the access panel. 5. Turn the computer on.

6. Run F10 Computer Setup to reconfigure the system. 5-2 Connectors and Jumpers 5.1.3 Disabling or Clearing the Power-On and Setup Passwords 1. Turn off the computer and any external devices, and disconnect the power cord from the power outlet. 2. Disconnect the keyboard, monitor, and any other external devices connected to the computer. 3. Remove the computer cover.

4. Locate the header and jumper labeled E49. 5. Remove the jumper from pins 1 and 2. Place the jumper over pin 2 only, in order to avoid losing it. 6. Replace the computer cover. 7. Reconnect the external equipment. 8.

Plug in the computer and turn on power. Allow the operating system to start. This clears the current passwords and disables the password features. 9. To re-enable the password features, repeat steps 1-4, then replace the jumper on pins 1 and 2. 10. Repeat steps 6-8, then establish new passwords. Refer to the Computer Setup (F10 Setup) instructions to establish new passwords. Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 5-3 5.2 5.

2.1 Hard Drive Jumper Settings Seagate, Quantum, and Western Digital The drawings and tables below apply to a number of different size drives in the following paragraphs. Seagate, Quantum, and Western Digital Ultra ATA Hard Drive Jumper Settings Definition Single Primary Secondary Seagate 7-8 5 - 6 and 7 - 8 No connection Quantum 1 - 2 and 3 - 5 1 - 2 and 3 - 5 3-5 2 - 4 and 3 - 5 Western Digital 3-5 5-6 3-4 1-2 Cable Select 5 - 6 5-4 Connectors and Jumpers 5.2.2 Maxtor Maxtor Ultra ATA Hard Drive Jumper Settings Definition Single Secondary Cable Select Disabled* Enabled 4092 Cylinder Limitation Disabled* Enabled Factory Reserved Factory Reserved * = Default setting J = Jumper O = No jumper J50 J48 J46 J44 J42 J O O J O J O O Primary (in a dual-drive system) J Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 5-5 chapter 6 SPECIFICATIONS 6.1 6.1.1 Specifications System Dimensions Height Width Depth Weight (approximate, depending on configuration) Power Supply, 200 Watt Operating Voltage Range Rated Voltage Range Rated Line Frequency Rated Input Current (Maximum) Maximum Rated Power Environmental Requirements: Temperature Operating Shipping Humidity (noncondensing) Operating Nonoperating Maximum Altitude (unpressurized) Operating Nonoperating 50 to 95°F -4° to 140°F 20% to 80% 10% to 90% 10,000 ft 30,000 ft 10 to 35°C -20° to 60°C 20% to 80% 10% to 90% 3048 m 9144 m 90-132 Vac 120-127 Vac 47-63 Hz 5.5A 200W 180-264 Vac 200-240 Vac 47-63 Hz 3A 200W 17.65 in 6.

60 in 16.80 in 26 lb 44.83 cm 16.76 cm 42.67 cm 11.

8 kg Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 6-1 6.1.2 System Interrupts Hardware IRQ 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 System Function Timer Interrupt Keyboard Interrupt Controller Cascade Serial Port (COM B) Serial Port (COM A) Audio Diskette Drive Parallel Port (LPT

1) Real-Time Clock Available for PCI Available for PCI Available for PCI Mouse Coprocessor Primary IDE Controller Secondary IDE Controller 6.1.3 System DMA Hardware DMA 0 1 2 3 4 5 6 7 System Function Unused Unused Diskette Drive ECP Parallel Port LPT1 (Default; Alternate = DMA 0) DMA Controller Cascading Unused Unused Unused 6-2 Specifications 6.

1.4 ICH Fixed I/O Registers Port 00h, 02h, 04h, 06h C0h, C4h, C8h, CCh 01h, 03h, 05h, 07h C2h, C6h, Cah, CEh 10h-1Fh 20h Register Name Channel 0, 1, 2, 3 DMA Base & Current Address Register Channel 4, 5, 6, 7 DMA Base & Current Address Register Channel 0, 1, 2, 3 DMA Base & Current Count Register Channel 4, 5, 6, 7 DMA Base & Current Count Register Aliased at 00h-0Fh Master PIC ICW1 Init. Cmd Word 1 Register Master PIC OCW2 Op Ctrl Word 2 Register Master PIC OCW3 Op Ctrl Word 3 Register 21h Master PIC ICW2 Init. Cmd Word 1 Register Master PIC ICW3 Init. Cmd Word 1 Register Master PIC ICW4 Init. Cmd Word 1 Register Master PIC OCW1 Op Ctrl Word 3 Register 24h-25h, 28-29h, 2Ch-2Dh, 30h-31h, 34h-35h, 38h-39h, 3Ch-3Dh 40h 41h 42h 43h Aliased at 20h-21h Counter 0 Interval Time Status Byte Format Counter 0 Counter Access Port Register Counter 1 Interval Time Status Byte Format Counter 1 Counter Access Port Register Counter 2 Interval Time Status Byte Format Counter 2 Counter Access Port Register Timer Control Word Register Timer Control Word Register Read Back Counter Latch Command 50h-53h 61h 70h 71h 72h 73h 74h-75h 76h-77h 81h, 82h, 83h 84h-86h, 88h 89h, 8Ah, 8Bh 8Ch-8Eh 8Fh 91h-9Fh (except 92h) 92h Aliased at 40h-43h NMI Status and Control Register NMI Enable Register Real-Time Clock (Standard RAM) Index Register Real-Time Clock (Standard RAM) Target Register Extended RAM Index Register Extended RAM Target Register Aliased at 70h-71h Aliased at 72h-73h or 70h-71h Channel 2, 3, 1 DMA Memory Low Page Register Reserved Page Registers Channel 6, 7, 5 DMA Memory Low Page Register Reserved Page Registers Refresh Low Page Register Aliased at 81h-8Fh Fast A20 and INIT Register continued Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 6-3 ICH Fixed I/O Registers cont Port Register Name CF9h A0h Reset Control Register Slave PIC ICW1 Init.



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Cmd Word 1 Register Slave PIC OCW2 Op Ctrl Word 2 Register Slave PIC OCW3 Op Ctrl Word 3 Register A1 Slave PIC ICW2 Init. Cmd Word 2 Register Slave PIC ICW3 Init. Cmd Word 3 Register Slave PIC ICW4 Init. Cmd Word 4 Register Slave PIC OCW1 Op Ctrl Word 1 Register A4h-A5h, A8h-A8h, ACh-ADh, B0h-B1h, B4h-B5h, B8h-B9h, BCh-BDh B2h B3h C0h, C4h, C8h, CCh C1h C5h C9h CDh C2h, C6h, CAh, CEh C3h C7h CBh CFh D0h D1h D4h D5h D6h D7h D8h D9h DAh DBh DCh DEh DEh DFh F0h 170h-177h Aliased at A0h-A1h Advanced Power Management Control Port Register Advanced Power Management Status Port Register Channel 4, 5, 6, 7 DMA Base and Current Address Register Aliased at C0h Aliased at C4h Aliased at C8h Aliased at CCh Channel 4, 5, 6, 7 DMA Base and Current Count Register Aliased at C2h Aliased at C6h Aliased at CAh Aliased at Ceh Channel 4-7 DMA Command Register Channel 4-7 DMA Status Register Aliased at D0h Channel 4-7 DMA Write Single Mask Register Aliased at D4h Channel 4-7 DMA Channel Mode Register Aliased at D6h Channel 4-7 DMA Clear Byte Pointer Register Aliased at D8h Channel 4-7 DMA Master Clear Register Aliased at DAh Channel 4-7 DMA Clear Mask Register Aliased at DCh Channel 4-7 DMA Write All Mask Register Aliased at DEh Coprocessor Error Register PIO Mode Command Block Offset for Secondary Drive continued 6-4 Specifications ICH Fixed I/O Registers cont Port Register Name 1F0h-1F7h 376h 3F6h 4D0h 3F6h 4D0h 4D1h 400-47F F800-F87F FA00-FA3F FC00-FC0F PIO Mode Command Block Offset for Primary Drive PIO Mode Control Block Offset for Secondary Drive PIO Mode Control Block Offset for Primary Drive Master PIC Edge/Level Triggered Register Slave PIC Edge/Level Triggered Register Super I/O Reserved (power management) Reserved (GPIO management) Reserved (SMBUS controller) NOTE: When the POS_DEC_EN bit is set, additional I/O ports get positively decoded by the ICH.

6.1.5 System Memory Map Size 512 KB 3839 MB 511 MB 128KB 96 KB 32 KB 128 KB 640 KB Memory Address FFFFFFFFh to FFF80000 FFFBFFFFh to 10000000h 0FFFFFFFh to 00100000h 000FFFFFFh to 000E0000h 000DFFFFh to 000C8000h 000C7FFFh to 000C0000h 000BFFFFh to 000A0000h 0009FFFFh to 00000000h System Function System ROM PCI Memory Expansion HOST or PCI Memory Expansion System ROM PCI Option ROMs Video ROM Video RAM Base Memory Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 6-5 6.2 6.2.1 Drives 1.44-MB Diskette Drive Size and Capacity Size (in) High Density (MB) Low Density (KB) Compaq Spare Part Number Light Drive Rotation (rpm) Height Bytes per Sector Sectors per Track (high/low density) Tracks per Side (high/low density) Read/Write Heads Cylinders (high/low density) Average Seek Time (ms) Track-to-Track (high/low) Average (high/low) Settling Seek Time Latency Average (ms) 3.5 1.44 720 210795-001 Green 300 One-third (1 inch) 512 18/9 80/80 2 80/80 3/6 94/173 15 100 6-6 Specifications 6.2.

2 Ultra ATA Hard Drives 10.0 GB Formatted Capacity Physical (MB) Logical (MB) Compaq Spare Part Number Logical Block Allocation Total Sectors User Addressable Sectors Sectors per Track Physical Logical Data Heads/Cylinder Physical Logical Data Bytes/Sector Sector Interleave ECC Bytes Encoding Method Spin-Up Time (maximum) Spin-Down Time (maximum) Seek Times, Logical (Busy to Seek Complete) Track-to-Track Average (Read) Full Stroke Average Latency Data Transfer Rate @Disk to Buffer @Interface w/o IORDY DMA UDMA RPM 10242 10242 203139-001 16514064 19541088 648-396 63 2 16 512 1:1 24 24/26 EPRML 15 seconds 15 seconds MAX 4.75ms 11.5ms 27.0ms 5.

56ms 308 Mbits/s (max.) 16.6 MB/s 16.6 MB/s 66.6 MB/s 5400+/-0.

2% TYP 2.1ms 10.9ms 25.0ms 15.0 GB 15364 15364 202903-001 16514064 29336832 648-396 63 3 16 512 1:1 24 24/26 EPRML 15 seconds 15 seconds MAX 4.75ms 11.5ms 27.0ms 5.56ms 308 Mbits/s (max.) 16.

6 MB/s 16.6 MB/s 66.6 MB/s 5400+/-0.2% TYP 2.1ms 10.9ms 25.0ms Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 6-7 6.2.3 CD-ROM Drives 48X Max Compaq Spare Part Number Data Buffer (ms) Data Transfer Rate Access Time (ms) Random Full-Stroke Seek Cache Buffer Interface Disk Formats Read 187263-001 16.6 150 KB/s Min (audio) CD: 3000-7200 KB/s <100 <150 128 KB ATAPI Photo-CD/Multisession CD-ROM Multi Read CD TEXT Audio CD CD-I CD-RW CD-R CD EXTRA CD-ROM XA CD: 650 MB Mode 1 2048 bytes Mode 2 2340, 2336 bytes CD-DA 2353 bytes CD-XA 2328 bytes 12 cm; 8 cm 1.

2 mm 1.6 um 0.7 V @ 47 K ohm 0.6 V @ 32 ohm <7 sec (typical); <30 sec with multisession 5 45 C 10-80% relative humidity 42.9x150.

1x208 1200 Disk Capacity Block Size Diameter Thickness Track Pitch Audio Output Level Line Out Headphone Startup Time Operating Conditions Temperature Humidity Dimensions (mm) (HxWxD) Weight (grams) MPEG Playback Graphics None Solution Support 6-8 Specifications 6.3 Compaq Keyboard Compaq Easy Access Dimensions Height Width Depth 1.4 in 18.3 in 6.3 in 6.

4 Scroll Mouse Dimensions Height Length Width Weight Base Resolution Tracking Speed (maximum) Temperature Operating Non-operating Lifetime Mechanical Switch Relative Humidity Operating Non-operating 1.34 in 4.45 in 2.36 in 4.59 oz 400 dpi 10 in/sec 3.4 cm 11.3 cm 6.0 cm 130 g 15.8 dp 25 cm/sec 50°F to 104°F -22°F to 140°F 300 miles 1 million operations 10% to 90% 20% to 80% 10°C to 50°C -30°C to 60°C 483 km 1 million operations 10% to 90% 20% to 80% Compaq Deskpro EX and Deskpro EXS Series of Personal Computers 6-9 6.5 6.

5.1 Supported Graphics Resolutions Intel 3D Graphics Colors 640 x 480 800 x 600 1024 x 768 1152 x 864 1280 x 1024 1600 x 1200 256 85 Hz 85 Hz 85 Hz 85 Hz 85 Hz 85 Hz 65K 85 Hz 85 Hz 85 Hz 85 Hz 85 Hz 85 Hz 85 Hz 85 Hz 85 Hz 85 Hz 85 Hz 85 Hz 85 Hz 6.5.2 nVIDIA M64 Pro Mode 640 x 480 800 x 600 1024 x 768 1152 x 864 1280 x 1024 1600 x 1200 1600 x 1200 1920 x 1080 1920 x 1080 1920 x 1200 Color Depth (bits/pixel) 8/16/32 8/16/32 8/16/32 8/16/32 8/16/32 8/16 32 8/16 32 8/16 Refresh Rate (Hz) 60,72,75,85 60,72,75,85 60,70,75,85 60,70,72,75,85 60,70,72,75,85 60,70,72,75,85 60 60,70,72,75,85 60 60,70,72,75,85 6-10 Specifications Index A access panel removal and replacement, 4-5 AGP card spare part number, 2-3 AGP retention mechanism, 4-22 AIMM card spare part number, 2-3 D DIMM spare part number, 2-3 DIMMs, 4-20 disassembly chart, 4-1 disassembly preparation, 4-2 diskette drive spare part number, 2-2 specifications, 6-6 DMA settings and specifications, 6-2 documentation spare part number, 2-5 drive configurations, 4-10 drive positions, 1-4 G graphics specifications, 6-10 graphics cards removal and replacement, 4-22 spare part number, 2-3 grounding methods, 3-2 B battery proper disposal, 4-32 removal and replacement, 4-32 H hard drive jumpers, 5-4 proper handling, 3-6 removal and replacement, 4-12 spare part number, 2-2 specifications, 6-7 C cable kit spare part number, 2-2 cable lock removal and replacement, 4-4 cable select feature, 4-11 CD-ROM specifications, 6-8 CD-ROM drive spare part number, 2-2 cleaning computer, 3-4 keyboard, 3-4 monitor, 3-4 mouse, 3-5 clearing CMOS, 5-2 clearing passwords, 5-3 CMOS clearing configuration, 5-2 computer cleaning, 3-4 Computer Features Rear Panel Connectors, 1-3 configurations, drives, 4-10 connectors and jumpers, 5-1 E electrostatic discharge (ESD), 3-1 ESD.



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