Illustrated Parts & Service Map

HP Compaq dx7400 Microtower
Business PC

NOTE: The part numbers listed here may not be the most current information available. See http://partsurfer.hp.com for the most current spare parts listing.

Cables

1	SATA cable, 13 inch (1 straight end, 1 right angle end) (use for optical drive 2)	391738-001
2	Diskette drive cable	392288-001
*	DMS-59 to dual VGA dongle	339257-001
*	SATA cable, 14 inch (2 straight ends) (use for optical drive 1)	391740-001
*	Front USB cable	457230-001
*	Power switch with cable and switch mounting bracket	416163-001
*	Second serial port cable	444656-001
*	Modem cable	198220-005
*	SATA hard drive cable, 10 inch (2 straight ends)	392307-001

Not shown

Key Specifications

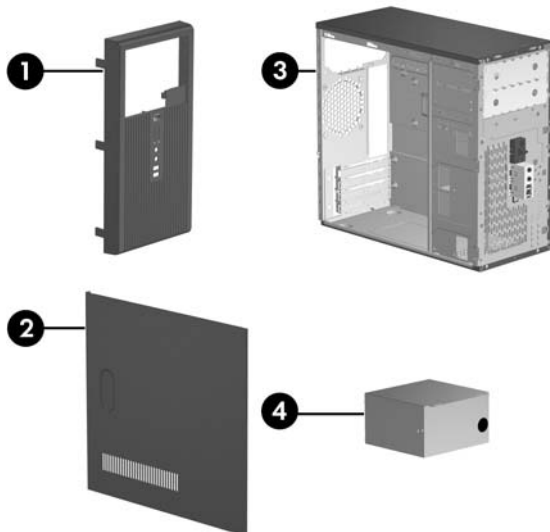|	
Processor Type	Intel Core 2 Duo, Core 2 Quad, Pentium Dual Core, Celeron
RAM Type	DDR2-SDRAM DIMMs, PC2-5300 (667 MHz) non-ECC or PC2-6400 (800 MHz) non-ECC
Maximum RAM Supported	8 GB
Expansion Slots	• 1 PCIe-x16 • 2 PCIe-x1 • 1 PCI
Graphics Adapter	Intel Graphics Media Accelerator
Drive Support	• SATA (hard drives and optical drives) • FDD, Media Card Reader
I/O Interfaces	Serial (2, 1optional), parallel (1), USB 2.0 (8), RJ-45 (1), audio jacks (3), PS/2 ports (2), VGA (1)

Spare Parts

Mass Storage Devices

1	Diskette drive, 3.5-inch, with mounting screws	392415-001
2	48X SATA CD-RW/DVD-ROM drive	419497-001
*	16X SATA DVD±RW and CD-RW drive with LightScribe	447310-001
*	16X SATA DVD-ROM drive	419496-001
3	80 GB, 7200-RPM SATA hard drive, 8-MB cache	449978-001
3	160 GB, 7200-RPM SATA hard drive, 8-MB cache	449979-001
3	250 GB, 7200-RPM SATA hard drive, 8-MB cache	449980-001
*	Media card reader	407187-001

Not shown

Modem RJ-11 adapters (not illustrated)

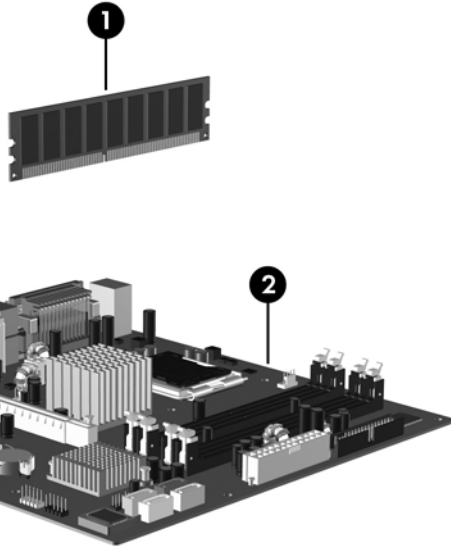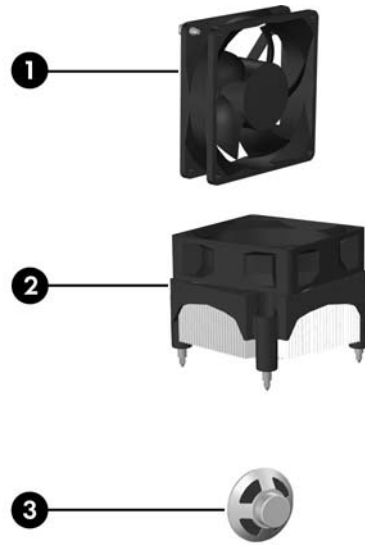|			
Australia	417561-011	Italian	316904-061
Belgian	316904-181	Netherlands	316920-331
Czechoslovakian	234963-221	Polish	316904-241
French	316904-051	Saudi Arabian	316904-AR1
German	316904-045	Scandinavian	382848-DH1
Greek	316904-151	Switzerland	417562-111
Hungarian	234963-211	Turkish	316904-141
Israel	316904-BB1	United Kingdom	158593-031

System Unit

1	Front bezel with bezel blank	438609-001
*	Front bezel without bezel blank (for China only)	445366-001
2	Access panel	440197-001
3	Chassis	not spared
4	Power supply, PFC, 300W	447584-001
5	Bezel blank, 5.25 inch	335937-001

Not shown

Keyboards (not illustrated)

PS/2, Basic USB, Basic	435302-xxx 435382-xxx		
Arabic	-171	Korea	-KD1
Belgian	-181	Norwegian	-091
BHCSY	-B41	PRC	-AA1
Czech	-221	Portuguese	-131
Danish	-081	Romanian	-271
Finnish	-351	Russian	-251
French	-051	Slovakian	-231
French Arabic	-DE1	Spanish	-071
German	-041	Swedish	-101
Greek	-151	Swiss	-111
Hebrew	-BB1	Taiwanese	-AB1
Hungarian	-211	Thai	-281
International	-B31	Turkish	-141
Italian	-061	U.K.	-031
Japanese	-291		

Standard and Optional Boards

	Memory modules, non-ECC, DDR2	
1	256 MB, PC2-5300, CL5	396519-001
1	512 MB, PC2-5300, CL5	396520-001
1	1 GB, PC2-5300, CL5	398038-001
1	2 GB, PC2-5300, CL5	450367-001
1	512 MB, PC2-6400, CL6	418952-001
1	1 GB, PC2-6400, CL6	418951-001
1	2 GB, PC2-6400, CL6	457624-001
	System Boards with thermal grease, alcohol pad, and CPU socket cover	
2	Standard board	447583-001
	Intel Celeron Processors with alcohol pad and thermal grease	
*	440, 512-KB cache, 2.0 GHz	449166-001
*	430, 512-KB cache, 1.8 GHz	449165-001
*	420, 512-KB cache, 1.8 GHz	449164-001
	Intel Pentium Dual Core Processors with alcohol pad and thermal grease	
*	E2180, 1-MB cache, 2.0 GHz	457656-001
*	E2160, 1-MB cache, 1.8 GHz	449168-001
*	E2140, 1-MB cache, 1.6 GHz	449167-001
	Intel Core 2 Quad Processor with alcohol pad and thermal grease	
*	Q6600, 8-MB cache, 2.40 GHz	452451-001
	Intel Core 2 Duo Processors with alcohol pad and thermal grease	
*	E6850, 4-MB cache, 3.00 GHz	450792-001
*	E6750, 4-MB cache, 2.66 GHz	450791-001
*	E6550, 4-MB cache, 2.33 GHz	450694-001
*	E6320, 4-MB cache, 1.86 GHz	446040-001
*	E4500, 2-MB cache, 1.60 GHz	449452-001
*	E4400, 2-MB cache, 2.00 GHz	449451-001
	Other boards	
*	802.11 Wireless LAN adapter	391866-001
*	Standard 1394 PCI card with 2 external and 1 internal port	393308-001
*	Gigabit NIC, PCI-E card	398754-001
*	Agere International 56K Modem, FH	398661-001
*	nVidia QUADRO video card	441280-001
*	nVidia GeForce 8440 GS 256-MB video card with dual-link DVI-I and TV (S-Video) outputs. LP	445743-001
*	nVidia GeForce 8440 GS 256-MB video card with DMS59 and TV (S-Video) outputs. LP	445744-001
*	DVI-D ADD2 graphics	398333-001
*	ReadyBoost module, 1 GB	455971-001

Not shown

Miscellaneous Parts

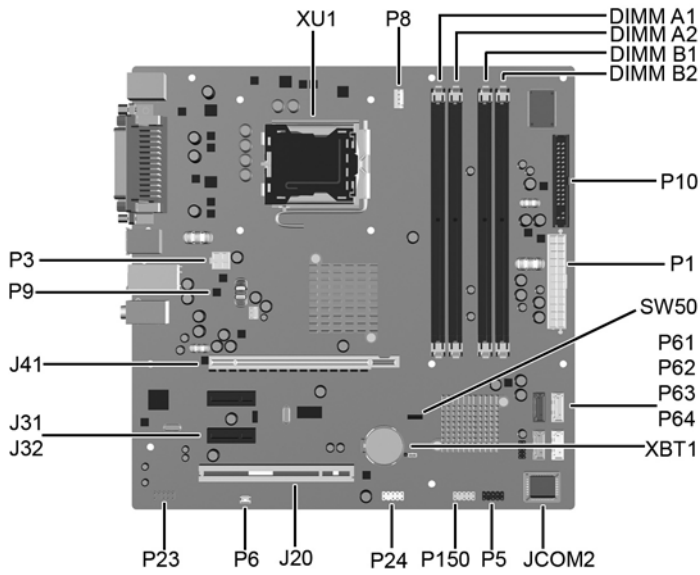| 1	Chassis fan with mounting screws	438741-001
2	Heatsink with alcohol pad and factory-applied thermal grease	441391-001
3	Internal speaker	438607-001
*	Mouse, PS2, optical	417966-001
*	Mouse, PS2, scroll type	390937-001
*	Mouse, optical	390938-001
*	Battery, real-time clock	153099-001
*	Foot (4 ea)	370708-001
*	DVI-I to VGA adapter	202997-001
	Miscellaneous hardware kit, includes:	410717-001
*	3.5-inch diskette drive bezel (414218-001)	
*	3.5-inch bezel blank (414219-001)	
*	5.25-inch bezel blank (166775-004)	
*	#6-32 x .187 Taptite, hitop screw with serrations (6 ea) (192308-003)	
*	#6-32 x .187 Taptite, hitop screw with serrations (6 ea) (192308-001)	
*	#6-32 x .250 Taptite, hitop screw with captive flat washer (2 ea) (114399-067)	
*	M3 x 5mm Taptite hitop screw with serrations (4 ea) (247348-001)	
*	M5 x 12mm Plastite screw with flat, countersunk head (247481-002)	

Not shown

System Board

System Board Connectors and Jumpers (position of some untitled components may vary in location)

JCOM2	Second serial port connector	P24	Front I/O USB connector
J20	PCI slot	P61	First SATA connector
J31	PCI Express Slot 1	P62	Second SATA connector
J32	PCI Express Slot 2	P63	Third SATA connector
J41	x16 PCI Express slot for graphics	P64	Fourth SATA connector
P1	Power supply connector (24-pin)	P150	Media card reader
P3	Power supply connector (4-pin)	SW50	Clear CMOS switch
P5	Power switch/LED connector	XBT1	Battery
P6	Speaker connector	DIMM A1	Memory slot
P8	Heatsink fan	DIMM A2	Memory slot
P9	Chassis fan	DIMM B1	Memory slot
P10	Floppy drive connector	DIMM B2	Memory slot
P23	Front audio connector	XU1	Primary processor socket

System Setup and Boot

Basic system information regarding system information, setup, power management, hardware, and passwords is maintained in the Setup Utility held in the system ROM. The Setup Utility is accessed by pressing the F10 key when prompted (on screen) to do so during the boot sequence. If the screen prompt opportunity is missed, a restart will be necessary.

Computer Setup Menu

Heading	Option / Description	
System Information	Lists the following main system specifications: • Product Name • Memory Size • SKU Number • Integrated MAC • Processor Type • UUID • Processor Speed • System Serial # • System ROM • Asset Tracking Number • Cache Size	
Main	Date (mm/dd/yyyy)	Allows you to set system date.
	Time (hh/mm/ss)	Allows you to set system time.
	SATA Port 1, 2, 3, and 4	Allows you to run HDD self-tests, auto detect HDD size and head, set extended IDE drive details, set access mode, and view information about the device(s)
	Onboard FDC Controller	Disable/enable
	Drive A	Allows you to set to None or 1.4M, 3.5 in.
	Halt On	Allows you to set POST error behavior to: all errors, no errors, all but keyboard, all but diskette, or all but diskette/keyboard.
	POST Delay	Allows you to set POST delay to 0, 5, 10, 15, or 30 seconds
Advanced	Execute Disable Bit	Disable/enable hardware DEP function.
	MAX DVMT Allocation	Specify size of DVMT/system memory to allocate for video memory. Settings: 64MB, 128MB, 224 MB.
	Init Display First	Allows you to set primary display device to PCI slot, OnChip VGA, or PCIEx.
	Onboard HD Audio	Disable/enable
	OnChip USB Controller	Disable/enable
	USB Legacy Support	Disable/enable (USB keyboard, mouse, and flash media).
	Onboard LAN	Disable/enable
	Onboard LAN Boot ROM	Disable/enable
	Onboard Serial Port 1 or 2	Allows you to select: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, or 2E8/IRQ3.
	Onboard Parallel Port	Allows you to select: Disabled, 378/IRQ7, 278/IRQ5, or 3BC/IRQ7.

Computer Setup Menu *(Continued)*

Heading	Option / Description	
Advanced (continued)	Parallel Port Mode	Allows you to select: SPP, EPP, ECP, ECP + EPP, or Normal.
	After AC Power Loss	Allows you to select power loss behavior to On, Off, or Last state.
	Wake on PCI Device from S5	Disable/enable
	RTC Alarm Resume	Disable/enable
	Date (of Month)	If RTC Alarm is enabled, allows you to select day of month to resumption (0 = every day).
	Resume Time (hh:mm:ss)	If RTC Alarm enabled, allows you to select time to resume.
Boot	Device Boot Disabling	Allows you to restrict a device from booting the unit. May disable: none, USB, Internal ODD, Internal FDD, or USB+ODD+FDD
	F9 Boot Menu	Disable/enable
	F10 Setup Prompting	Disable/enable
	F11 Recovery Prompting	Disable/enable
	F12 Boot from LAN Prompting	Disable/enable
	Removable Device Boot Seq.	Allows you to specify the order of attached removable devices. The first drive in the order has priority and is recognized as drive A.
	Hard Disk Boot Priority	Allows you to specify the order of attached hard drive devices (USB HDD, USB2 Drive Key, or USB flash media). The first attached drive in the order has priority and is recognized as drive C.
	Optical Drive Boot Seq.	Allows you to specify the order in which attached optical drives (including USB ODD) are checked for a bootable operating system image.
	Network Boot Seq.	Allows you to specify the order in which network devices (including UP NIC cards) are checked for a bootable operating system image.
	First, Second, Third, and Fourth Boot Device	Allows you to specify which devices will boot in which sequence or to disable any of the four: removable, hard disk, CDROM, network, or disabled.
	Set Supervisor Password	Allows you to establish a password to enter Computer Setup
	Set User Password	Allows you to establish a password to enter the computer (must have Supervisor password established)
	Security Option	Allows you to set security option to Setup or System so that the password is required each time the system boots or only when entering Computer Setup.
	BIOS Write Protection	Enable to prevent BIOS from being updated.
PC Health	System Fan Fail Check	Disable/enable
	Smart Fan Function	Disable/enable
	Current CPU Temperature	View only
	Current System Temp	View only
	Current CPU Fan Speed	View only
	Current System Fan Speed	View only
	Vcore	View only
	12V	View only
	5V	View only
	VBAT (V)	View only
	5VSB (V)	View only
Exit	Save & Exit Setup	Allows you to save current settings and exit Computer Setup.
	Exit Without Saving	Allows you to exit Computer Setup without saving changes.
	Load Optimized defaults	Allows you to reset Computer Setup to factory defaults.

System Hardware Interrupts

IRQ	System Function	IRQ	System Function
0	Timer Interrupt	8	Real-Time Clock
1	Keyboard	9	Unused
2	Interrupt Controller Cascade	10	Unused, available for PCI
3	Serial Port (COM B)	11	Unused, available for PCI
4	Serial Port (COM A)	12	Mouse
5	Unused, available for PCI	13	Coprocessor
6	Diskette Drive	14	Primary ATA (IDE) Controller
7	Parallel Port (LPT 1)	15	Secondary ATA (IDE) Controller

Failsafe Boot Block ROM

The computer comes with a reprogrammable flash system ROM (read only memory). To upgrade the ROM, download the latest ROM BIOS image from the HP Web site (www.hp.com) and follow the online GUI/instructions.

Your system ROM includes a Failsafe Boot Block that is protected during the flash process and allows the computer to be restarted in the unlikely event of an unsuccessful ROM flash. If the system detects an invalid system ROM during the boot sequence, the Failsafe Boot Block attempts to locate a valid BIOS image on removable media. To recover from the Boot Block recovery mode complete the following steps:

Boot Block Recovery

1. Remove any bootable media from the computer and turn off power.
2. Insert a flash drive or CD containing the ROM BIOS.
3. Turn on power to the system.
4. The system will automatically flash the ROM. After a successful flash, the system will either automatically restart or prompt the user to unplug the unit, wait 5 seconds, reattach the power cord, and then press the power button.

Password Security

Establishing a Supervisor Password:

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart**.
2. As soon as the computer is turned on, press F10 when the monitor light turns green to enter Computer Setup. Press Enter to bypass the title screen, if necessary. If you do not press F10 when prompted, a restart will be necessary.
3. Select **Boot > Setup Supervisor Passwor**d and follow the instructions on the screen.
4. Before exiting, click **File > Save and Exit Setup**.

Establishing a User Password:

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart**.
2. As soon as the computer is turned on, press F10 when the monitor light turns green to enter Computer Setup. Press Enter to bypass the title screen, if necessary. If you do not press F10 when prompted, a restart will be necessary.
3. Select **Boot > Set User Passwor**d and follow the instructions on the screen.

Before exiting, click **File > Save and Exit Setup**.

Changing a Password:

1. Turn on or restart the computer. If you are in Windows, click **Start> Shut Down > Restart**.
2. As soon as the computer is turned on, press F10 when the monitor light turns green to enter Computer Setup.
3. When the key icon appears, type your current password
4. Select **Boot > Set Supervisor (or user) Password.**
5. Enter the new password (or nothing for no password) in the key icon and press Enter

The new password will take effect the next time the computer is restarted.

Deleting a Password

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart**.
2. As soon as the computer is turned on, press F10 when the monitor light turns green to enter Computer Setup.
3. When the key icon appears, type your current password
4. Select **Boot > Set Supervisor (or user) Password.**
5. Enter nothing for no password in the key icon and press Enter.

The new password will take effect the next time the computer is restarted.

Clearing CMOS

1. Turn off the computer and any external devices, disconnect the power cord from the power outlet, and remove the access panel.
2. Locate, press, and hold the CMOS button in for five seconds.
3. Replace the access panel and connect the power cord to the power outlet.
4. Turn on the computer.

Error Conditions and Messages

Feature	Purpose	How It Is Established
Floppy drive controller	Prevents the transfer of data to or from the floppy drive.	Setup Utilities
Device Boot Disabling	Prevents booting from and or all of these devices: Internal or external USB, Internal ODD, or Internal FDD	Setup Utilities
Security Option	Prevents use of computer until password is entered. Can apply to both initial startup and restart.	Setup Utilities
BIOS Write Protect	Restricts ability to change ROM BIOS without approval.	Setup Utilities
USB Controller	Allows you to disable or enable all USB devices.	Setup Utilities

Common POST Error Messages

Screen Message	Probable Cause	Recommended Action
101-Option ROM Check-sum Error	1. System ROM checksum error. 2. Expansion board option ROM checksum 3. System board	1. Verify ROM, reflash if required 2. Remove suspected card, reboot 3. Clear CMOS memory, reboot 4. Replace system board
103-System Board Failure	DMA, timers	1. Clear CMOS memory. 2. Remove expansion boards. 3. Replace system board.
164-Memory Size Error and 201-Memory Error	Incorrect memory configuration	1. Run Setup (F10). 2. Check DIMMs for proper seating, type, and HP compatibility. 3. Remove DIMMs singularly and reboot to isolate faulty DIMM. 4. Replace system board.
214-DIMM Configuration Warning	Populated DIMM configuration is not optimized	Rearrange the DIMMs so that each channel has the same amount of memory.
301-, 304-Keyboard error	Keyboard failure.	Check keyboard connection or keys. Check connector for bent of missing pins. Replace keyboard. If 304, possible system board problem.
501-Display Adapter Failure	Graphics display controller.	1. Reseat graphics card. 2. Clear CMOS. 3. Check monitor connection. 4. Replace graphics card.
1720-SMART Hard Drive Detects Imminent Failure	Hard drive is about to fail.	1. Determine if hard drive is giving correct error message. Enter Computer Setup and run the Drive Protection System test under **Storage > DPS Self-test**. 2. Apply hard drive firmware patch if applicable. 3. Back up contents and replace hard drive.
1796-SATA Cabling Error	One or more SATA devices are improperly attached. For optimal performance, the SATA 0 and SATA 1 connectors must be used before SATA 2 and SATA 3.	Ensure SATA connectors are used in ascending order. For one device, use SATA 0. For two devices, use SATA 0 and SATA 1. For three devices, use SATA 0, SATA1, and SATA 2.
1801-Microcode Patch Error	Processor not supported by ROM BIOS.	1. Upgrade BIOS to proper version. 2. Change the processor.

Diagnostic Functions

Diagnostic functions are provided by the Setup Utility (in system ROM) and by Insight Diagnostics. Insight Diagnostics provides detailed system information including:

- Processor type and speed
- Memory amount, mapping, and integrity
- Hardware peripheral availability/settings
- Hard drive type, space used/available
- System identification, asset tracking

Insight Diagnostics may be found on the *Documentation and Diagnostics* CD that shipped with the computer. The tool may also be downloaded from the hp Web site using the following procedure:

1. Go to www.hp.com
2. Click the **Software and Download driver** link.
3. Enter the product number (for example, dx7400) in the text box and press the Enter key.
4. Select the specific product.
5. Select the OS.
6. Click the **Diagnostics** link.
7. Select **HP Insight Diagnostics Offline Edition**.
8. Select the proper language and click **Download**.

Diagnostic LEDs

LED	Color	LED Activity	State/Message
Power	Green	On	Computer on
Power	Green	1 blink every second	Processor thermal protection activated, fan blocked or not turning, OR Fansink not properly attached
Power	Green	2 blinks every second	Suspend to RAM (some Models)
Power	Green	5 blinks, 1 blink every second followed by 1 short beep	Pre-video memory error
Power	Green	6 blinks, 1 blink every second followed by a 1 long and 2 short beeps	Pre-video graphics error
Power	Green	8 blinks, 1 blink every second followed by 2 short beeps	Invalid ROM with diskette drive
Power	Green	8 blinks, 1 blink every second followed by 2 short beeps and hurried beeps	Invalid ROM without diskette drive
None	None	System does not power on and LEDs are not flashing	System unable to power on