# Illustrated Parts & Service Map

## HP Pro 3120 Business PC
## Minitower Chassis



**Document Number 621938-001.** 1st Edition May 2010.

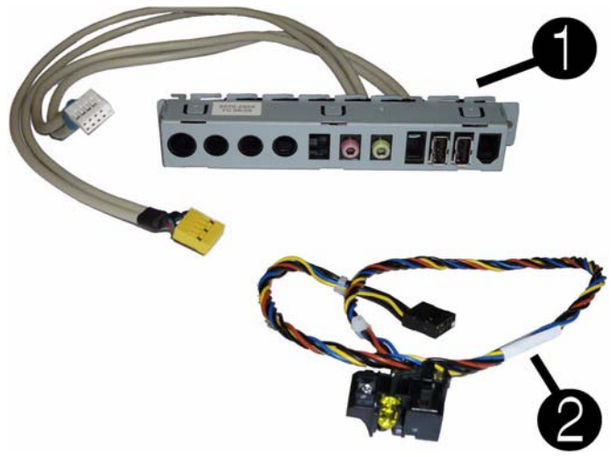
## Key Specifications

| | |
|---|---|
| Processor Type | Intel® Celeron, Pentium, Core™ 2 Duo, Core 2 Quad |
| RAM Type | DDR3-SDRAM DIMMs, PC2-10600 (1333 MHz) non-ECC |
| Maximum RAM Supported | 8 GB |
| Expansion Slots | • (3) PCIe x1<br>• (1) PCIe x16 |
| Graphics Adapter | Integrated Intel Graphics Media Accelerator X4500HD |
| Chipset | Intel G43 Express |
| Drive Support | • (2) external 5.25-inch<br>• (1) external 3.5-inch<br>• (2) internal 3.5-inch |
| I/O Interfaces | Front: (2) USB 2.0 ports, microphone, headphone<br>Rear: (4) USB, (1) VGA, (1) DVI, (1) RJ-45 Ethernet, (1) SPDIF Out, (1) audio in, (1) audio out, (1) microphone, (1) surround rear, (1) surround side, (1) surround center/sub |
| Operating Systems | • Windows 7<br>• Windows XP Professional<br>• FreeDOS |

## Spare Parts


### System Unit

| | | |
|---|---|---|
| 1 | Front bezel | 614499-001 |
| 2 | Access panel | 586372-001 |
| 3 | Power supply, 300W, PFC | 592502-001 |
| 4 | Chassis | not spared |




### Cables

| | | |
|---|---|---|
| 1 | Front I/O assembly | 508463-001 |
| 2 | Power switch/LED with holder | 614496-001 |
| * | SATA optical drive cable with latch, 9.5 inch (240 mm) | 614498-001 |
| * | SATA hard drive cable with latch, 6.5 inch (165 mm) | 448670-001 |

**Not shown*

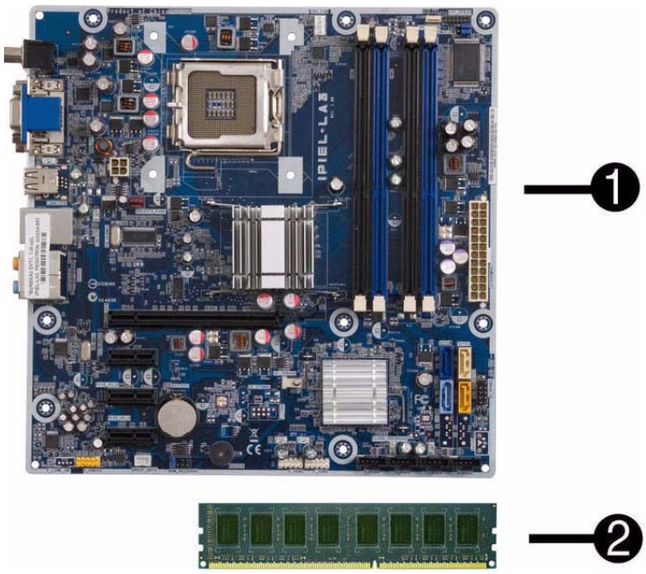
### Keyboards (not illustrated)

| | | | |
|---|---|---|---|
| **PS/2** | | **537745-xxx** | |
| **USB, Standard** | | **537746-xxx** | |
| **USB SmartCard** | | **537747-xxx** | |
| **USB, low cost** | | **537924-xxx** | |
| Arabic[c] | -171 | Hungarian | -211 |
| Belgian | -181 | International English | -L31 |
| BHCSY[a] | -BL1 | Italian | -061 |
| BHCSY[b] | -B41 | Norwegian | -091 |
| Bulgaria[b] | -261 | Portuguese | -131 |
| Czech[b] | -221 | Romanian[b] | -271 |
| Danish[b] | -081 | Russian[d] | -251 |
| Finnish | -351 | Slovakian | -231 |
| French | -051 | Spanish | -071 |
| French Arabic | -DE1 | Swedish | -101 |
| German | -041 | Swiss | -111 |
| Greek | -151 | Turkish | -141 |
| Hebrew | -BB1 | U.K. | -031 |

*[a] 537747-xxx only*
*[b] not for 537747-xxx*
*[c] 537924-xxx only*
*[d] not for 537746-xxx*

### Mass Storage Devices (not illustrated)

| | |
|---|---|
| Blu-ray Disc ROM with SuperMulti DVD±R/RW DL Drive | 581601-001 |
| DVD±RW and CD-RW SuperMulti DL Combo Drive with LightScribe | 581600-001 |
| DVD-ROM drive | 581599-001 |
| 2 TB hard drive, 7200 rpm | 616608-001 |
| 1.5 TB hard drive, 7200 rpm | 613209-001 |
| 1.5 TB hard drive, 5400 rpm | 613203-001 |
| 1 TB hard drive, 7200 rpm | 613202-001 |
| 750 GB hard drive, 7200 rpm | 613205-001 |
| 640 GB hard drive, 7200 rpm | 613204-001 |
| 500 GB hard drive, 7200 rpm | 613208-001 |
| 320 GB hard drive, 7200 rpm | 613207-001 |
| 320 GB hard drive, 5400 rpm | 586969-001 |
| 250 GB hard drive, 7200 rpm | 613206-001 |
| 250 GB hard drive, 5400 rpm | 586719-001 |
| 250 GB USB hard drive | 586383-001 |
| 160 GB hard drive, 7200 rpm | 613201-001 |
| 160 GB hard drive, 5400 rpm | 419102-001 |
| Hard drive conversion bracket | 397117-001 |




### Standard and Optional Boards

| | | |
|---|---|---|
| System boards with thermal grease, alcohol pad, and CPU socket cover | | |
| 1 | System board, GL8 (includes bumper) | 615594-001 |
| Memory modules (PC3-10600, CL9) | | |
| 2 | 1 GB | 576109-001 |
| * | 2 GB | 576110-001 |
| * | 4 GB | 585157-001 |
| Other boards | | |
| * | Agere International 56K LSI v92 modem, includes bracket | 490689-001 |
| * | ATI Radeon HD4350 (RV710D2) PCIe x16 graphics card, 512 MB | 586750-001 |
| * | ATI Radeon HD4550 (RV710) PCIe x16 graphics card, 512 MB | 584217-001 |
| * | ATI Radeon HD4650 (RV730) PCIe x16 graphics card, 1 GB | 578174-001 |
| * | ATI Radeon HD5450 PCIe graphics card, 1 GB | 601155-001 |
| * | ATI Radeon HD5450 PCIe graphics card, 512 MB, low profile | 614506-001 |
| * | ATI Radeon HD5570 PCIe graphics card, 1 GB | 614507-001 |
| * | ATI Radeon HD5570 (RV830) PCIe graphics card, 2 GB | 615792-001 |
| * | GeForce GT320 1-GB PCIe graphics card | 615793-001 |
| * | GeForce GT315 512-MB PCIe graphics card, low profile | 614508-001 |
| * | GeForce GT315 1-GB PCIe graphics card | 619934-001 |
| * | GeForce GT230 1.5-GB PCIe graphics card | 586381-001 |
| * | GeForce GT220 1.0-GB PCIe graphics card | 614509-001 |
| * | GeForce GT210 512-MB PCIe graphics card | 593213-001 |
| * | 802.11b/g/n WLAN PCIe adapter | 616609-001 |
| * | Intel Gigabit NIC, includes bracket | 490367-001 |
| **Intel Celeron Processors with alcohol pad and thermal grease:** | | |
| E3400, 1-MB cache, 2.60 GHz | | 602071-001<br>602072-001 |
| E3300, 1-MB cache, 2.50 GHz | | 585886-001 |
| **Intel Core2 Quad Processors with alcohol pad and thermal grease:** | | |
| Q9500, 12-MB cache, 2.83 GHz | | 602073-001 |
| Q8400, 4-MB cache, 2.66 GHz | | 573955-001 |
| Q8300, 4-MB cache, 2.50 GHz | | 586746-001<br>516901-001 |
| **Intel Core2 Duo Processors with alcohol pad and thermal grease:** | | |
| E8500, 6-MB cache, 3.16 GHz | | 466170-001 |
| E7600, 3-MB cache, 3.06 GHz | | 573954-001 |
| E7500, 3-MB cache, 2.93 GHz | | 586745-001<br>531988-001 |
| E7400, 3-MB cache, 2.80 GHz | | 581070-001 |
| **Intel Pentium Processors with alcohol pad and thermal grease:** | | |
| E6700, 2-MB cache, 3.20 GHz | | 617840-001 |
| E6600, 2-MB cache, 3.06 GHz | | 602070-001 |
| E6500, 2-MB cache, 2.93 GHz | | 586748-001 |
| E5500, 2-MB cache, 2.80 GHz | | 613035-001 |
| E5400, 2-MB cache, 2.70 GHz | | 586743-001 |
| **Intel Quad-Core processors (8-MB L3 cache)** | | |
| i7-860, 2.80-GHz processor | | 586377-001 |
| i5-750, 2.66-GHz processor | | 586376-001 |
| **Intel Dual-Core processors (4-MB L3 cache)** | | |
| i5-670, 3.46-GHz processor | | 604616-001 |
| i5-660, 3.33-GHz processor | | 604615-001 |
| i5-650, 3.20-GHz processor | | 604614-001 |
| i3-550, 3.20-GHz processor | | 617830-001 |
| i3-540, 3.06-GHz processor | | 604613-001 |
| i3-530, 2.93-GHz processor | | 600133-001 |

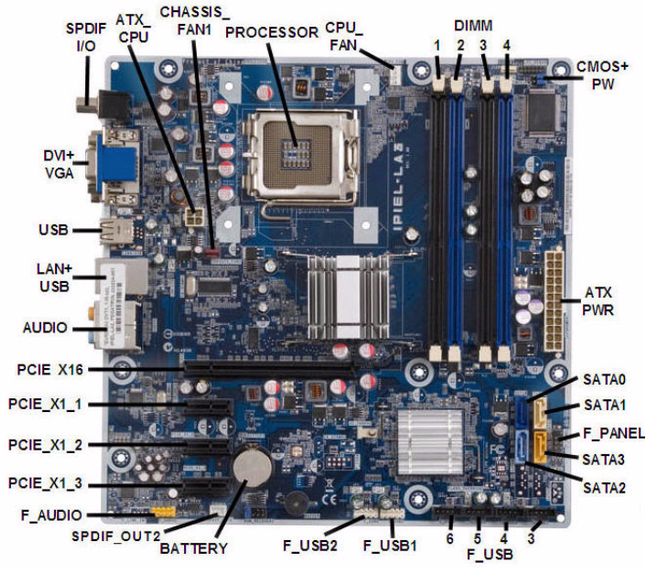
**Not shown*


### Miscellaneous Parts

| | | |
|---|---|---|
| 1 | Chassis fan | 438741-001 |
| 2 | Heat sink, Intel class F (includes replacement thermal material) | 616605-001 |
| * | Media card reader | 480032-001 |
| * | Mouse, optical, Jack Black | 537749-001 |
| * | Mouse, laser, Jack Black | 570580-001 |
| * | Mouse, optical, Portia | 596410-001 |
| * | Mouse, wireless (includes dongle) | 596412-001 |
| * | Rubber feet | 370708-001 |
| * | Antenna, dual band dipole, 802.11 a/b/g/n | 583345-001 |

**Not shown*

## System Board




### System Board Connectors and Jumpers (component location may vary)

| | | | |
|---|---|---|---|
| SPDIF I/O | Digital line-in/line-out audio connector | SATA2 | 2nd SATA optical drive |
| ATX_CPU | CPU power connector | F_USB3-6 | USB connectors |
| CHASSIS_ FAN1 | System fan connector | FRNT_USB1 | Media card reader connector |
| PROCESSOR | Processor slot | FRNT_USB2 | Front I/O panel USB connector |
| CPU_FAN | CPU/heat sink fan connector | BATTERY | RTC battery socket |
| DIMM1 | Memory socket 1 | SPDIF_OUT2 | SPDIF internal connector |
| DIMM2 | Memory socket 2 | F_AUDIO | Front panel audio connector |
| DIMM3 | Memory socket 3 | PCIE_X1_3 | PCI Express x1 slot 3 |
| DIMM4 | Memory socket 4 | PCIE_X1_2 | PCI Express x1 slot 2 |
| CMOS+PW | CMOS jumper | PCIE_X1_1 | PCI Express x1 slot 1 |
| ATXPWR | Main power connector | PCIEX16 | PCIe X16 connector |
| SATA0 | 1st SATA optical drive | AUDIO | Double stack audio connector |
| SATA1 | 1st SATA hard drive | LAN+USB | Stacked RJ-45/USB connectors |
| F_PANEL | Power switch connector | USB | USB connector |
| SATA3 | 2nd SATA hard drive | DVI+VGA | Stacked DVI/VGA connector |

## Computer Setup

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 | |
|---|---|---|
| Main | System Time | Allows you to set system time. |
| | System Date | Allows you to set system date. |
| | System IDs | Allows you to view or change the following by pressing **Enter**: Product name, serial number, UUID, SKU, Family name (view only), Feature byte, Build ID. |
| | Language | Allows you to select the language. |
| | Floppy Diskette A | Allows you to set to Disabled, 1.44 MB 3.5", Not Installed. |
| | 1st Drive<br>2nd Drive<br>3rd Drive*<br>4th Drive* | Allow you to: Enable/disable port configuration, view capacity, transfer mode. Also allows you to run HDD self-test for selected channel: SMART status check, SMART short self test, SMART extended self test. |
| | System Information | Allows you to view installed memory, memory banks 1-4, BIOS revision, core version. |
| Advanced | CPU Type | View only. |
| | CPU Speed | View only. |
| | Cache RAM | View only. |
| | Cache RAM (L2) | View only. |
| | Cache RAM (L3) | View only. |
| | Primary Video Adapter | Allows you to select boot display device when more than 2 video options are offered by system: Integrated (Onboard), PCI-E. |
| | USB Ports | Allows you to disable/enable individual USB ports. |
| | SATA Controller | Allows you to disable/enable the SATA controller. |
| | SATA Controller Mode | If SATA Controller is enabled, allows you to set the mode to: IDE, AHCI |
| | Onboard Audio | Allows you to set the onboard audio to: Enabled, Disabled, Auto. |
| | Onboard LAN | Allows you to disable/enable onboard LAN controller. |
| | Onboard LAN Boot ROM | Disable/enable the boot ROM of the onboard LAN chip. |
| | Change Supervisor Password | Allows you to establish, disable, or change the supervisor password. |
| | Change User Password | Allows you to establish, disable, or change the user password. Only displays in a Supervisor password is set. |
| | Supervisor Password | Allows you to view the supervisor password. |
| | User Password | Allows you to view the user password. Only displays in a Supervisor password is set. |
| Power | After AC Power Failure | Allows you to select system restart behavior after power loss: Stay off, Power on, Auto. |
| | XD (Execute Disable) | Allows you to disable/enable the processor's XD feature. Default is enabled. |
| | Virtualization Technology | Allows you to enable/disable the processor's Virtualization Technology feature. Default is disabled. |
| | WOL in S5 | Disables/enables limited Wake on LAN from S5. Note that the computer can only wake from S5 during a normal shutdown event. Default is disabled. |
| Boot | Boot-time Diagnostic Screen | Disable/enable POST diagnostic messages display during boot. |
| | (Boot Device Priority)<br>1st Boot Device,<br>2nd Boot Device,<br>3rd Boot Device,<br>4th Boot Device | Allows you to set device group boot priority: CD-ROM group, Hard drive group, Floppy group, Network boot group. MS-DOS drive lettering assignments maybe apply after a non-MS-DOS operating system has started. |
| | Floppy Group Boot Priority | Specifies boot device priority within removable devices. NOTE: This computer does not support floppy drives. |
| | CD-ROM Boot Priority | Specifies boot device priority within CD/DVD drives. |
| | Hard Drive Boot Priority | Specifies boot device priority within hard drives. |
| | Network Group Boot Priority | Specifies boot device priority within bootable network devices. |
| Exit | Exit Saving Changes | Press **Enter** to exit saving changes. |
| | Exit Discarding Changes | Press **Enter** to exit discarding changes. |
| | Load Setup Defaults | Press **Enter** to load setup defaults. |
| | Discard Changes | Press **Enter** to discard changes. |
| | Save Changes | Press **Enter** to save changes. |

## POST Error Messages

- Default BIOS settings have been loaded due to BIOS update or checksum issue.
  Press <F10> to enter Setup. Otherwise, allow the PC to continue.
- ERROR: System Fan Has Failed.
  Service PC to prevent damage to the system.
  Press <F2> to continue
- ERROR: System Fan Has Failed.
  Service PC to prevent damage to the system.
  Press <F2> to continue
- ERROR: Unsupported CPU installed.
  PC will automatically power down in a few seconds.
- The machine cover has been removed since last system startup.
  Please ensure that any system access was authorized.
  Press <F2> to continue.
- (HDD information displayed here): Hard disk failure is imminent. Please back up your hard disk and have it replaced!
  Press <F10> for Setup, <F2> to Continue
- Warning: Changing setup options while resuming from Hibernate may cause your system to fail to resume.

**POST Audible Codes**

| Beeps | Meaning | Recommended Action |
|---|---|---|
| 1 short beep and 1 long beep followed by a three second pause | Bad memory or memory configuration error. | Check that the memory modules have been installed correctly and that proper modules are used. |
| 2 short beeps and 1 long beep followed by a three second pause | No graphics card installed or graphics card initialization failed. | For systems with a graphics card:<br>1. Reseat the graphics card. Power on the system.<br>2. Replace the graphics card.<br>3. Replace the system board.<br>For systems with integrated graphics, replace the system board. |
| 3 short beeps and 1 long beep followed by a three second pause | CPU configuration error or invalid CPU detected before graphics card initialized. | 1. Upgrade the BIOS to proper version.<br>2. Change the processor. |
| 1 short beep followed by a one second pause | No optical drive found. | 1. Check cable connections.<br>2. Run the Computer Setup utility and ensure the device port is enabled. |
| 2 short beeps followed by a three second pause | No CD found. | 1. Check the type of drive that you are using and use the correct media type.<br>2. Replace the CD with a new one. |
| 3 short beeps followed by a three second pause | Flashing not ready (missing utility or BIOS image file, etc.) | Upgrade the BIOS to proper version. |
| 4 short beeps followed by a three second pause | Flashing operation has failed (checksum error, corrupted image, etc.) | 1. Verify the correct ROM.<br>2. Flash the ROM if needed.<br>3. If an expansion board was recently added, remove it to see if the problem remains.<br>4. Clear CMOS.<br>5. If the message disappears, there may be a problem with the expansion card.<br>6. Replace the system board. |
| 5 short beeps followed by a three second pause | BIOS recovery was successful | No action required. |

## Resetting the password jumper

1. Shut down the operating system properly, then turn off the computer and any external devices, and disconnect the power cord from the power outlet.
2. With the power cord disconnected, press the power button again to drain the system of any residual power.
3. Remove the access panel.
4. Locate the header and jumper.
5. On systems with 3-pin jumpers, remove the jumper from pins 1 and 2. Place the jumper on pins 2 and 3. On systems with 2-pin jumpers, remove the jumper from pins 1 and 2.
6. Replace the access panel.
7. Reconnect the external equipment.
8. Plug in and turn on power. Allow the operating system to start. This clears the current passwords and disables the password features.
9. To establish new passwords, repeat steps 1 - 4, replace the password jumper on pins 1 and 2, then repeat steps 6 - 8. Establish new passwords in Computer Setup.

## Clearing and Resetting the CMOS

The computer's configuration memory (CMOS) stores information about the computer's configuration. The CMOS jumper resets CMOS but does not clear the supervisor and user passwords.

CAUTION: Resetting the CMOS jumper will reset CMOS values to factory defaults. It is important to back up the computer CMOS settings before resetting them in case they are needed later. Back up is easily done through Computer Setup.

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 equipment connected to the computer.
3. Remove the access panel.
4. Locate the header and jumper.
   CAUTION: Make sure you have disconnected the AC power cord from the wall outlet. Clearing the CMOS while power is connected can damage the system board.
5. Remove the jumper from pins 1 and 2. Place the jumper on pins 2 and 3.
6. Place the jumper back on pins 1 and 2.
7. Replace the access panel.
8. Reconnect the external equipment.
9. Plug in and turn on power.

NOTE: You will receive POST error messages after clearing CMOS and rebooting advising you that configuration changes have occurred. Use Computer Setup to reset any special system setups along with the date and time.

## Hewlett-Packard Vision Diagnostics

The Hewlett-Packard Vision Diagnostics utility allows you to view information about the hardware configuration of the computer and perform hardware diagnostic tests on the subsystems of the computer. The utility simplifies the process of effectively identifying, diagnosing, and isolating hardware issues.

Use HP Vision Diagnostics to determine if all the devices installed on the computer are recognized by the system and functioning properly.

To access HP Vision Diagnostics, you must create a Recovery Disc Set then boot to the CD containing the utility. It can also be downloaded from http://www.hp.com and either burned to CD or installed to a USB flash drive.

### Downloading the Latest Version of HP Vision Diagnostics

1. Go to http://www.hp.com.
2. Click the Software & Drivers link.
3. Select Download drivers and software (and firmware).
4. Enter your product name in the text box and press the Enter key.
5. Select your specific computer model.
6. Select your OS.
7. Click the Diagnostic link.
8. Click the Hewlett-Packard Vision Diagnostics link.
9. Click the Download button.

NOTE: The download includes instructions on how to create the bootable CD.

## Microsoft System Restore

If you have a problem that might be due to software that was installed on your computer, use System Restore to return the computer to a previous restore point. You can also set restore points manually.

NOTE: Always use this System Restore procedure before you use the System Recovery program.

NOTE: Some features might not be available on systems that are shipped without a version of Microsoft Windows.

To start a System Restore:

1. Close all open programs.
2. Click the **Start** button, right-click **Computer**, and then click **Properties**.
3. Click **System protection**, **System Restore**, click **Next**, and then follow the on-screen instructions.

To add restore points manually:

1. Close all open programs.
2. Click the **Start** button, right-click **Computer**, click **Properties**, and then click **System protection**.
3. Under **Protection Settings**, select the disk for which you want to create a restore point.
4. Click **Create**, and then follow the on-screen instructions.

## System Recovery

System Recovery completely erases and reformats the hard disk drive, deleting all data files you have created, and then reinstalls the operating system, programs, and drivers. However, you must reinstall any software that was not installed on the computer at the factory. This includes software that came on media included in the computer accessory box, and any software programs installed after purchase.

You must choose one of the following methods to perform a System Recovery:

- Recovery Image. Run the System Recovery from a recovery image stored on your hard disk drive. The recovery image is a file that contains a copy of the original factory-shipped software.

  NOTE: The recovery image uses a portion of the hard disk drive that cannot be used for data storage.
- Recovery Discs. Run the System Recovery from a set of recovery discs that you create from files stored on your hard disk drive or purchased separately.

### System Recovery Options

You should attempt a System Recovery in the following order:

1. Through the hard disk drive, from the Windows Start menu.
2. Through the hard disk drive, by pressing the F11 key on the keyboard during system startup.
3. Through recovery discs that you create.
4. Through recovery discs purchased from HP Support.

### System Recovery from the Windows Start Menu

CAUTION: System Recovery deletes all data and programs you created or installed. Back up any important data to a removable disc.

If the computer is working and Windows is responding, use these steps to perform a System Recovery.

1. Turn off the computer.
2. Disconnect all peripheral devices from the computer except the monitor, keyboard, and mouse.
3. Turn on the computer.
4. Click the **Start** button, click **All Programs**, click **Recovery Manager**, and then click **Recovery Manager**. If prompted, click **Yes** to allow the program to continue.
5. Under **I need help immediately**, click **System Recovery**.
6. Select **Yes**, and then click **Next**. The computer restarts.

NOTE: If the system does not detect a recovery partition, it prompts you to insert a recovery disc. Insert the disc, select **Yes**, and then click **Next** to restart the computer and run Recovery Manager from the recovery disc. Insert the remaining recovery discs when prompted.

7. When the computer restarts, once again you see the Recovery Manager welcome screen. Under **I need help immediately**, click **System Recovery**. If you are prompted to back up your files, and you have not done so, select **Back up your files first (recommended)**, and then click **Next**. Otherwise, select **Recover without backing up your files**, and then click **Next**.
8. System Recovery begins. After System Recovery is complete, click **Finish** to restart the computer.
9. Complete the registration process, and wait until you see the desktop.
10. Turn off the computer, reconnect all peripheral devices, and turn the computer back on.

### System Recovery at System Startup

CAUTION: System Recovery deletes all data and programs you created or installed. Back up any important data to a removable disc.

If Windows is not responding, but the computer is working, follow these steps to perform a System Recovery.

1. Turn off the computer. If necessary, press and hold the On button until the computer turns off.
2. Disconnect all peripheral devices from the computer, except the monitor, keyboard, and mouse.
3. Press the On button to turn on the computer.
4. As soon as you see the initial company logo screen appear, repeatedly press the **F11** key on the keyboard until the Windows is Loading Files… message appears on the screen.
5. Under **I need help immediately**, click **System Recovery**.
6. If you are prompted to back up your files, and you have not done so, select **Back up your files first (recommended)**, and then click **Next**. Otherwise, select **Recover without backing up your files**, and then click **Next**.
7. System Recovery begins. After System Recovery is complete, click **Finish** to restart the computer.
8. Complete the registration process, and wait until you see the desktop.
9. Turn off the computer, reconnect all peripheral devices, and turn the computer back on.

### System Recovery from Recovery Discs

CAUTION: System Recovery deletes all data and programs you created or installed. Back up any important data to a removable disc.

To perform a System Recovery using recovery discs:

1. If the computer is working, create a backup DVD containing all the data files you want to save, and then remove the backup disc from the drive tray.
2. Insert recovery disc #1 into the DVD drive tray, and close the tray.
3. If the computer works, click the **Start** button, click the Arrow button next to **Shut Down**, and then click **Shut Down**. Or, if the computer is not responding, press and hold the On button for approximately 5 seconds, or until the computer turns off.
4. Disconnect all peripheral devices from the computer except the monitor, keyboard, and mouse.
5. Press the On button to turn on the computer. If you are prompted to choose between running System Recovery from disc or from hard drive, select **Run program from disc**, and then click **Next**.
6. Under **I need help immediately**, click **Factory Reset**.
7. If you are prompted to back up your files, and you have not done so, select **Back up your files first (recommended)**, and then click **Next**. Otherwise, select **Recover without backing up your files**, and then click **Next**.
8. If you are prompted to insert the next recovery disc, do so.
9. When the Recovery Manager is finished, remove all recovery discs from the system. Click **Finish** to restart the computer.