HP Pavilion x2 Detachable PC

Maintenance and Service Guide
IMPORTANT! This document is intended for
HP authorized service providers only.

Product notice

This guide describes features that are
common to most models. Some features
may not be available on your tablet.

Software terms

By installing, copying, downloading, or
otherwise using any software product
preinstalled on this tablet, you agree to be
bound by the terms of the HP End User
License Agreement (EULA). If you do not
accept these license terms, your sole
remedy is to return the entire unused
product (hardware and software) within 14
days for a refund subject to the refund
policy of your place of purchase.

For any further information or to request a
full refund of the tablet, please contact your
local point of sale (the seller).

Safety warning notice

⚠ WARNING! To reduce the possibility of heat-related injuries or of overheating the device, do not place the device directly on your lap or obstruct the device air vents. Use the device only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The device and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

Table of contents

1 Product description

Category	Description
Product Name	HP Pavilion x2 Detachable PC
Processor	Intel® Atom Z3745D 1.33- to 1.83-GHz quad core processor soldered-on-circuit (SoC)
Panel	10.1-in (1280×800), Antiglare (AG), light-emitting diode (LED), WXGA, TouchScreen display panel
Graphics	**Internal graphics**: Intel 7th generation graphics and media encode/decode engine 2D/3D graphics Supports DX11, OpenGL 3.0 (OGL 3.0), OpenCL 1.2 (OCL 1.2), and OpenGLES 2.0 (OGLES 2.0)
Memory	On-board; non-accessible 2-GB DDR3L Single channel on-board (4 Gb×16 DDR3L@1600-GHz IC; 96 ball) Supports up to 2-GB max system memory
Mass storage	Supports 32- or 64-GB eMMC (v4.5)
Audio and video	Stereo speakers (2) Dual array digital microphones with appropriate beam-forming, echo-cancellation, and noise-suppression software DTS Studio Sound Audio codec ALC5642 HD webcam: 1/6-in, F2.4, 1.26-MP max., (1296×976), 720P, 36.7 fps
Sensor	Accelerometer Ambient Light Sensor eCompass Gyroscope
Wireless networking	**Integrated wireless option**: Broadcom BCM43340 (1×1 a/b/g/n, DB, Bluetooth 4.0) with dual antennas (SDIO+UART) AzureWave AW-AH640 Supports Miracast Supports WiDi (v4.1)
External expansion	Integrated micro SD Card Reader expandable to 32-GB
Ports	- Audio: headphone/microphone combo jack - Micro SD Card Reader - Micro USB port supporting charging and data (1 USB 3.0, 1 USB 2.0) - Micro HDMI v1.4a port supporting up to 1080p @ 60Hz - Pogo-pin (9-pin) docking connector

Category	Description
Keyboard	93% island-style thin cover keyboard (1.5-mm travel distance) with image sensor clickpad
	Multitouch gestures enabled for clickpad
Power requirements	Supports a 2-cell, 35-Wh battery (non-removable), USB charging
	Supports a 15-W AC adapter with DC plug and localized cable plug support
Operating system	**Preinstalled**: Microsoft Windows 8.1 Update Bing 32-bit Wimboot
Serviceability	**End user replaceable part**: AC adapter and keyboard

2 External component identification

Finding your hardware and software information

Locating hardware

To find out what hardware is installed on your tablet:

1. From the Start screen, type `control panel`, and then select **Control Panel**.

   – or –

   From the Windows desktop, right-click the **Start** button, and then select **Control Panel**.

2. Select **System and Security**, select **System**, and then click **Device Manager** in the left column.

   A list displays all the devices installed on your tablet.

For information about system hardware components and the system BIOS version number, press fn +esc (select models only).

Locating software

To find out what software is installed on your tablet:

▲ From the Start screen, click the down arrow in the lower-left corner of the screen.

   – or –

   From the Windows desktop, right-click the **Start** button, and then select **Programs and Features**.

Display
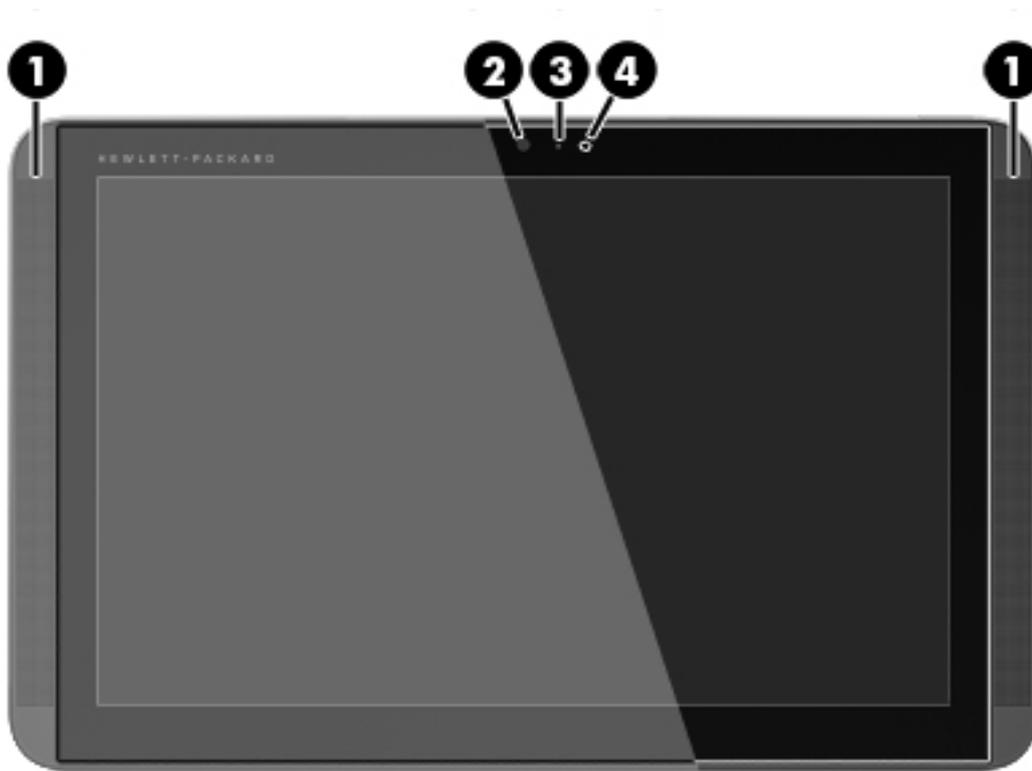
Item	Component	Description
(1)	Speakers (2)	Produce sound.
(2)	Webcam	Records video and captures photographs. Some models allow you to video conference and chat online using streaming video. To use the webcam, from the Start screen, type `camera`, and then select **Camera** from the list of applications.
(3)	Webcam light	On: The webcam is in use.
(4)	Ambient light sensor	Automatically adjusts the display brightness based on the lighting conditions in your environment.

Top edge

Item	Component	Description
(1)	Internal microphones (2)	Record sound.
(2)	Power button	- When the tablet is off, press the button to turn on the tablet. - When the tablet is on, press the button briefly to initiate Sleep. - When the tablet is in the Sleep state, press the button briefly to exit Sleep. - When the tablet is in Hibernation, press the button briefly to exit Hibernation. **CAUTION:** Pressing and holding down the power button will result in the loss of unsaved information. If the tablet has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button down for at least 10 seconds to turn off the tablet. To learn more about your power settings, see your power options. From the Start screen, type `power`, select **Power and sleep settings**, and then select **Power and sleep** from the list of applications.

Bottom edge
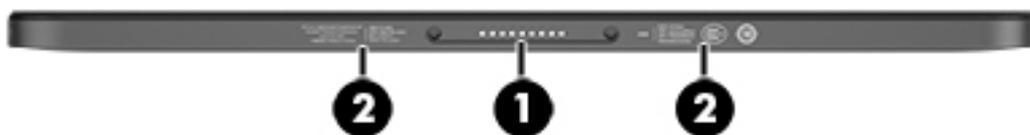
Item	Component	Description
(1)	Docking port	Connects the tablet to the keyboard base.
(2)	Product and regulatory information	Provides product and regulatory information (select models only).

Left edge

Item	Component	Description
(1)	Audio-out (headphone)/Audio-in (microphone) jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional microphone-only devices.
		WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the Regulatory, Safety, and Environmental Notices. To access this guide, from the Start screen, type `support`, and then select the **HP Support Assistant** app.
		NOTE: When a device is connected to the jack, the tablet speakers are disabled.
		NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).

Right edge
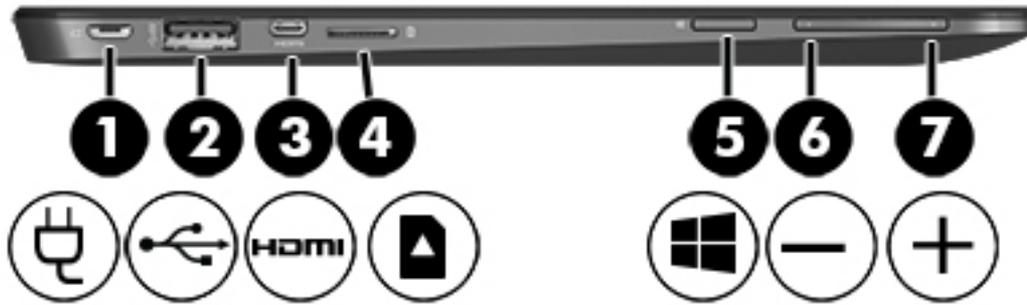
Item	Component	Description
(1)	Power connector	Connects an AC adapter.
(2)	USB 3.0 port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(3)	HDMI port	Connects an optional video or audio device, such as a highdefinition television, any compatible digital or audio component, or a high-speed HDMI device.
(4)	Memory card reader	Reads optional memory cards that store, manage, share, or access information. To insert a card: Hold the card label-side up, with connectors facing the slot, insert the card into the slot, and then push in on the card until it is firmly seated. To remove a card: Press in on the card until it pops out.
(5)	Windows key	Returns you to the Start screen from an open app or the Windows desktop. **NOTE:** Pressing the Windows key again will return you to the previous screen.
(6)	Volume down button	Decreases speaker volume.
(7)	Volume up button	Increases speaker volume.

3   Illustrated parts catalog

NOTE: HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to http://partsurfer.hp.com, select your country or region, and then follow the on-screen instructions.

Locating the product number and serial number

The tablet product number **(1)** and serial number **(2)** are located on the tablet bottom edge. This information may be needed when travelling internationally or when contacting support.

Tablet major components
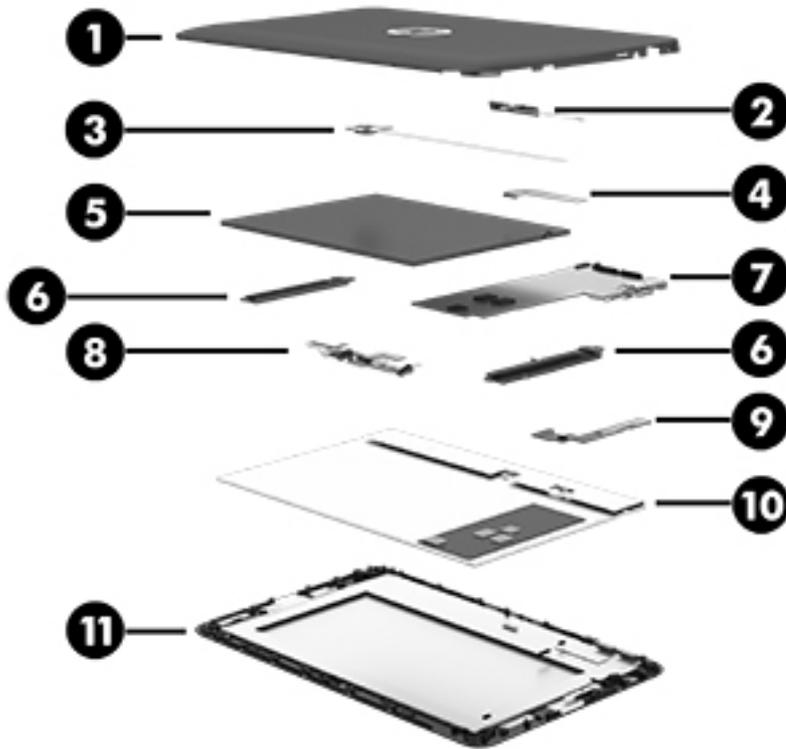
Item	Component	Spare part number
(1)	**Back cover**	784412-001
(2)	**Docking port board** (includes cable double-sided adhesive)	784418-001
(3)	**Audio jack board** (includes cable and double-sided adhesive)	784416-001
(4)	**Display panel cable**	784414-001
(5)	**Battery**, 2-cell, 35-Wh, (includes cable and double-sided adhesive)	784413-001
(6)	**Speaker Kit** (includes left and right speakers and cables)	784422-001
(7)	**System board** equipped with an Intel Atom Z3745D 1.33- to 1.83-GHz quad core processor (SoC), graphics subsystem with UMA memory, 2.0-GB DDR3 system memory, and the Windows 8 Standard operating system (includes replacement thermal material)	
	Equipped with a 64-GB eMMC hard drive	784424-501
	Equipped with a 32-GB eMMC hard drive	784423-501
	Thermal Material Kit (not illustrated, includes replacement thermal material)	651046-001
(8)	**Webcam module** (includes cable and double-sided adhesive)	784425-001
(9)	**Power/volume button board** (includes cable)	784417-001
(10)	**Middle frame**	789612-001
(11)	**Display panel assembly**, 10.1-in (1280×800), AG, LED, WXGA, TouchScreen (includes bezel and TouchScreen cable)	784420-001

Miscellaneous parts

Component	Spare part number
15-W AC adapter (includes USB extension cable)	791102-001
Duck head adapter:	
For use in Australia	791079-002
For use in Europe and South Korea	791079-009
For use in India	791079-005
For use in North America	791079-008
For use in the People's Republic of China	791079-006
For use in the United Kingdom	791079-003
Keyboard:	
In moonstone gray finish:	
For use in France	784415-051
For use in Japan	784415-291
For use in the Netherlands	784415-B31
For use in Slovenia	784415-BA1
For use in South Korea	784415-AD1
For use in Spain	784415-071
For use in Switzerland	784415-BG1
For use in Taiwan	784415-AB1
For use in Thailand	784415-281
For use in the United Kingdom	784415-031
For use in the United States	784415-001
In pale lavender finish:	
For use in the United Kingdom	788479-031
For use in the United States	788479-001
In tiffany blue finish:	
For use in Japan	788478-291
For use in South Korea	788478-AD1
For use in Taiwan	788478-AB1
For use in Thailand	788478-281
For use in the United Kingdom	788478-031
For use in the United States	788478-001
Screw Kit	784421-001

Sequential part number listing

Spare part number	Description
651046-001	Thermal Material Kit (includes replacement thermal material)
784412-001	Back cover
784413-001	Battery, 2-cell, 35-Wh (includes cable and double-sided adhesive)
784414-001	Display panel cable
784415-001	Keyboard with TouchPad in moonstone gray finish for use in the United States
784415-031	Keyboard with TouchPad in moonstone gray finish for use in the United Kingdom
784415-051	Keyboard with TouchPad in moonstone gray finish for use in France
784415-071	Keyboard with TouchPad in moonstone gray finish for use in Spain
784415-281	Keyboard with TouchPad in moonstone gray finish for use in Thailand
784415-291	Keyboard with TouchPad in moonstone gray finish for use in Japan
784415-AB1	Keyboard with TouchPad in moonstone gray finish for use in Taiwan
784415-AD1	Keyboard with TouchPad in moonstone gray finish for use in South Korea
784415-B31	Keyboard with TouchPad in moonstone gray finish for use in the Netherlands
784415-BA1	Keyboard with TouchPad in moonstone gray finish for use in Slovenia
784415-BG1	Keyboard with TouchPad in moonstone gray finish for use in Switzerland
784416-001	Audio jack board (includes cable and double-sided adhesive)
784417-001	Power/volume button board (includes cable)
784418-001	Docking port board (includes cable and double-sided adhesive)
784420-001	Display panel assembly, 10.1-in (1280×800), AG, LED, WXGA, TouchScreen (includes bezel and TouchScreen cable)
784421-001	Screw Kit
784422-001	Speaker Kit (includes left and right speakers and cables)
784423-501	System board equipped with an Intel Atom Z3745D 1.33- to 1.83-GHz quad core processor (SoC), graphics subsystem with UMA memory, 2.0-GB DDR3 system memory, 32-GB eMMC hard drive, and the Windows 8 Standard operating system (includes replacement thermal material)
784424-501	System board equipped with an Intel Atom Z3745D 1.33- to 1.83-GHz quad core processor (SoC), graphics subsystem with UMA memory, 2.0-GB DDR3 system memory, 64-GB eMMC hard drive, and the Windows 8 Standard operating system (includes replacement thermal material)
784425-001	Webcam module (includes cable and double-sided adhesive)
788478-001	Keyboard with TouchPad in tiffany blue finish for use in the United States
788478-031	Keyboard with TouchPad in tiffany blue finish for use in the United Kingdom
788478-281	Keyboard with TouchPad in tiffany blue finish for use in Thailand
788478-291	Keyboard with TouchPad in tiffany blue finish for use in Japan
788478-AB1	Keyboard with TouchPad in tiffany blue finish for use in Taiwan

Spare part number	Description
788478-AD1	Keyboard with TouchPad in tiffany blue finish for use in South Korea
788479-001	Keyboard with TouchPad in pale lavender finish for use in the United States
788479-031	Keyboard with TouchPad in pale lavender finish for use in the United Kingdom
789612-001	Middle frame
791079-002	Duck head adapter for use in Australia
791079-003	Duck head adapter for use in the United Kingdom
791079-005	Duck head adapter for use in India
791079-006	Duck head adapter for use in the People's Republic of China
791079-008	Duck head adapter for use in North America
791079-009	Duck head adapter for use in Europe and South Korea
791102-001	15-W AC adapter with USB extension cable

4   Removal and replacement preliminary requirements

Tools required

You will need the following tools to complete the removal and replacement procedures:

● Magnetic screw driver

● Phillips P0 screw driver

● Plastic case utility tool

Service considerations

The following sections include some of the considerations that you must keep in mind during disassembly and assembly procedures.

NOTE: As you remove each subassembly from the tablet, place the subassembly (and all accompanying screws) away from the work area to prevent damage.

Plastic parts

CAUTION: Using excessive force during disassembly and reassembly can damage plastic parts. Use care when handling the plastic parts. Apply pressure only at the points designated in the maintenance instructions.

Cables and connectors

CAUTION: When servicing the tablet, be sure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the tablet.

Cables must be handled with extreme care to avoid damage. Apply only the tension required to unseat or seat the cables during removal and insertion. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing cables. Be sure that cables are routed in such a way that they cannot be caught or snagged by parts being removed or replaced. Handle flex cables with extreme care; these cables tear easily.

Grounding guidelines

Electrostatic discharge damage

Electronic components are sensitive to electrostatic discharge (ESD). Circuitry design and structure determine the degree of sensitivity. Networks built into many integrated circuits provide some protection, but in many cases, ESD contains enough power to alter device parameters or melt silicon junctions.

A discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Even if the spark is neither felt nor heard, damage may have occurred.

An electronic device exposed to ESD may not be affected at all and can work perfectly throughout a normal cycle. Or the device may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

CAUTION: To prevent damage to the tablet when you are removing or installing internal components, observe these precautions:

Keep components in their electrostatic-safe containers until you are ready to install them.

Before touching an electronic component, discharge static electricity by using the guidelines described in this section.

Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.

If you remove a component, place it in an electrostatic-safe container.

The following table shows how humidity affects the electrostatic voltage levels generated by different activities.

CAUTION: A product can be degraded by as little as 700 V.

Typical electrostatic voltage levels			
	Relative humidity		
Event	10%	40%	55%
Walking across carpet	35,000 V	15,000 V	7,500 V
Walking across vinyl floor	12,000 V	5,000 V	3,000 V
Motions of bench worker	6,000 V	800 V	400 V
Removing DIPS from plastic tube	2,000 V	700 V	400 V
Removing DIPS from vinyl tray	11,500 V	4,000 V	2,000 V
Removing DIPS from Styrofoam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCB	26,500 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

● To avoid hand contact, transport products in static-safe tubes, bags, or boxes.

● Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging.

● Keep ESD-sensitive parts in their containers until the parts arrive at static-free workstations.

● Place items on a grounded surface before removing items from their containers.

● Always be properly grounded when touching a component or assembly.

● Store reusable ESD-sensitive parts from assemblies in protective packaging or nonconductive foam.

● Use transporters and conveyors made of antistatic belts and roller bushings. Be sure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

Workstation guidelines

Follow these grounding workstation guidelines:

● Cover the workstation with approved static-shielding material.

● Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.

● Use conductive field service tools, such as cutters, screw drivers, and vacuums.

● When fixtures must directly contact dissipative surfaces, use fixtures made only of static-safe materials.

● Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and Styrofoam.

● Handle ESD-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.

● Avoid contact with pins, leads, or circuitry.

● Turn off power and input signals before inserting or removing connectors or test equipment.

Equipment guidelines

Grounding equipment must include either a wrist strap or a foot strap at a grounded workstation.

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm ±10% resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.

- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or 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 foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive must be worn in contact with the skin.

The following grounding equipment is recommended to prevent electrostatic damage:

- Antistatic tape
- Antistatic smocks, aprons, and sleeve protectors
- Conductive bins and other assembly or soldering aids
- Nonconductive foam
- Conductive tabletop workstations with ground cords of one megohm resistance
- Static-dissipative tables or floor mats with hard ties to the ground
- Field service kits
- Static awareness labels
- Material-handling packages
- Nonconductive plastic bags, tubes, or boxes
- Metal tote boxes
- Electrostatic voltage levels and protective materials

The following table lists the shielding protection provided by antistatic bags and floor mats.

Material	Use	Voltage protection level
Antistatic plastics	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	5,000 V

5   Removal and replacement procedures

This chapter provides removal and replacement procedures for authorized service provider only parts.

⚠ **CAUTION:**   Tablet components described in this chapter should only be accessed by an authorized service provider. Accessing these parts can damage the tablet and void the warranty.

📝 **NOTE:**   HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to http://partsurfer.hp.com, select your country or region, and then follow the on-screen instructions.

Tablet component replacement procedures

There are as many as 20 screws that must be removed, replaced, and/or loosened when servicing the tablet. Make special note of each screw size and location during removal and replacement.

Back cover

Description	Spare part number
Back cover	784412-001
Display panel assembly, 10.1-in, AG, LED, WXGA, TouchScreen (includes bezel and TouchScreen cable)	784420-001

Before disassembling the tablet, follow these steps:

1.   Turn off the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.

2.   Disconnect the power from the tablet by unplugging the power cord from the tablet.

3.   Disconnect all external devices from the tablet.

📝 **NOTE:**   When replacing the back cover, be sure to remove the docking port board and cable (see Docking port board on page 19) from the defective back cover and installed on the replacement back cover.

Remove the back cover:

⚠ **CAUTION:**   Before turning the display panel assembly upside down, make sure the work surface is clear of tools, screws, and any other foreign objects. Failure to follow this caution can result in damage to the display panel assembly.

1.   Place the tablet on a flat surface, display panel side down, with the power button toward you.

2.   Insert a thin, plastic tool **(1)** between the back cover and the display panel assembly. The first insertion point should be just to the left of the microphone openings.

3.   Lift the front edge of the back cover **(2)** until it separates from the display panel assembly.

4. Release the zero insertion force (ZIF) connector **(3)** to which the docking port board cable is attached, and then disconnect the docking port board cable from the system board.

5. Remove the back cover **(4)**.

Reverse this procedure to install the back cover.

Docking port board

📝 **NOTE:** The microphone spare part kit includes the cable.

Description	Spare part number
Docking port board (includes cable)	784418-001

Before removing the docking port board, follow these steps:

1. Turn off the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.

2. Disconnect the power from the tablet by unplugging the power cord from the tablet.

3. Disconnect all external devices from the tablet.

4. Remove the back cover (see).

Remove the docking port board:

1. Detach the docking port board cable **(1)** from the back cover. (The docking port board cable is attached to the back cover with double-sided adhesive.)

2. Remove the two Phillips PM1.9×3.3 screws **(2)** that secure the docking port board to the back cover.

3. Remove the docking port board **(3)** and cable.
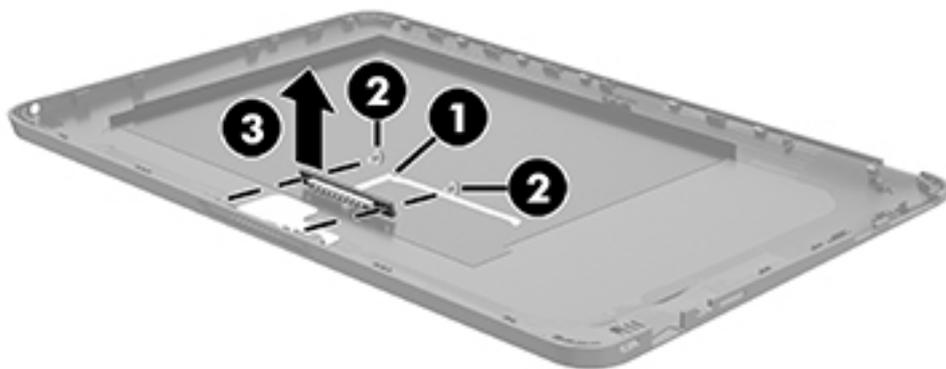
Reverse this procedure to install the docking port board.

Battery

Description	Spare part number
Battery 2-cell, 35-Wh, (includes cable and double-sided adhesive)	784413-001

Before removing the battery, follow these steps:

1. Turn off the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.

2. Disconnect the power from the tablet by unplugging the power cord from the tablet.

3. Disconnect all external devices from the tablet.

4. Remove the back cover (see Back cover on page 17).

⚠ **WARNING!** To reduce potential safety issues, use only the battery provided with the tablet, a replacement battery provided by HP, or a compatible battery purchased from HP.

⚠ **CAUTION:** Removing a battery that is the sole power source for the tablet can cause loss of information. To prevent loss of information, save your work or shut down the tablet through Windows before removing the battery.

Remove the battery:

1. Disconnect the battery cable **(1)** from the system board.

2. Detach the battery **(2)** from the display panel assembly. (The battery is attached to the display panel assembly with double-sided adhesive.)
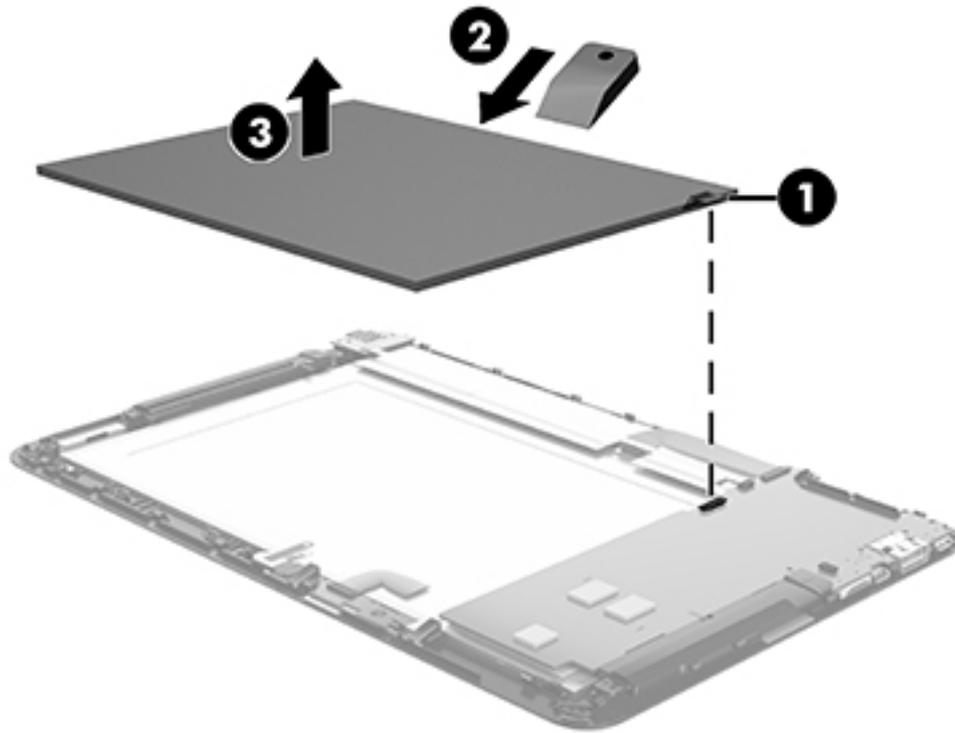
3. Remove the battery.

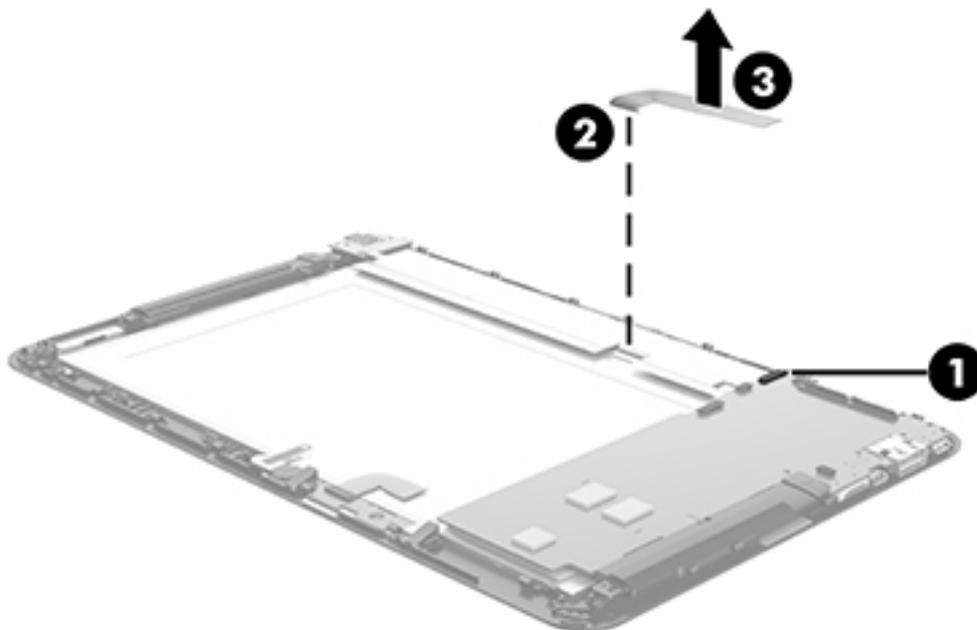Reverse this procedure to install the battery.

Display panel cable

Description	Spare part number
Display panel cable	784414-001

Before removing the display panel cable, follow these steps:

1. Turn off the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.

2. Disconnect the power from the tablet by unplugging the power cord from the tablet.

3. Disconnect all external devices from the tablet.

4. Remove the back cover (see Back cover on page 17).

5. Disconnect the battery cable from the system board (see Battery on page 20).

Remove the display panel cable:

1. Release the ZIF connector **(1)** to which the display panel cable is attached, and then disconnect the display panel cable from the system board.

2. Release the ZIF connector **(2)** to which the display panel cable is attached, and then disconnect the display panel cable from the display panel assembly.

3. Remove the display panel cable **(3)**.

4. Remove the display panel cable.

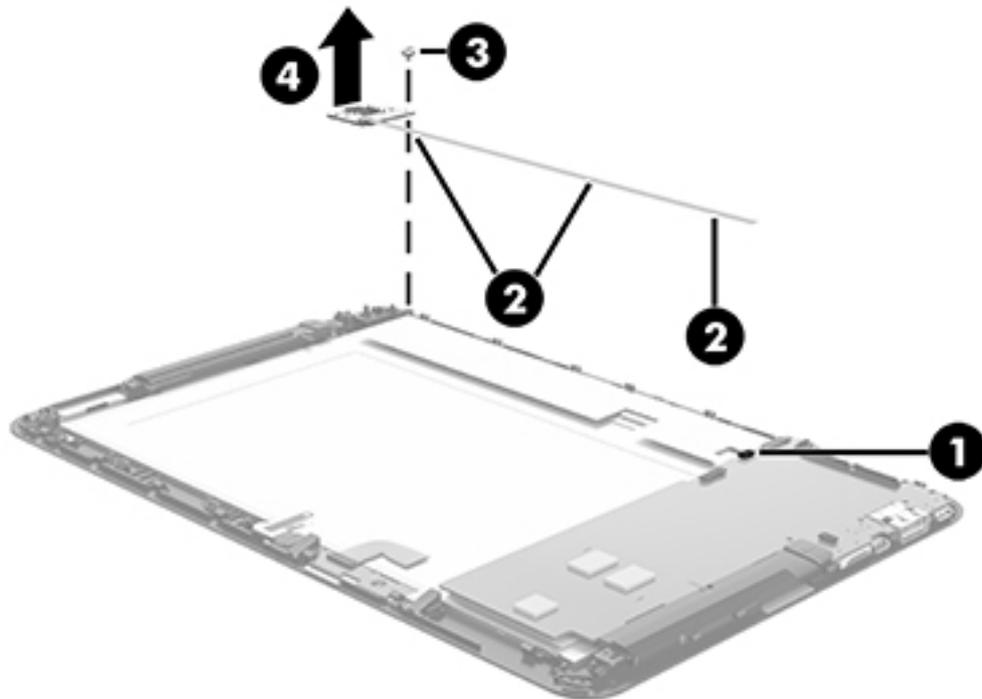Reverse this procedure to install the display panel cable.

Audio jack board

Description	Spare part number
Audio jack board (includes cable and double-sided adhesive)	784416-001

Before removing the audio jack board, follow these steps:

1. Turn off the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.

2. Disconnect the power from the tablet by unplugging the power cord from the tablet.

3. Disconnect all external devices from the tablet.

4. Remove the back cover (see Back cover on page 17).

5. Disconnect the battery cable from the system board (see Battery on page 20).

Remove the audio jack board:

1. Release the ZIF connector (1) to which the audio jack board cable is attached, and then disconnect the audio jack board cable from the system board.

2. Detach the audio jack board cable (2) from the display panel assembly. (The audio jack board cable is attached to the display panel assembly with double-sided adhesive.)

3. Remove the Phillips PM1.5×3.3 screw (3) that secures the audio jack board to the display panel assembly.

4. Remove the audio jack board (4) and cable.

Reverse this procedure to install the audio jack board and cable.
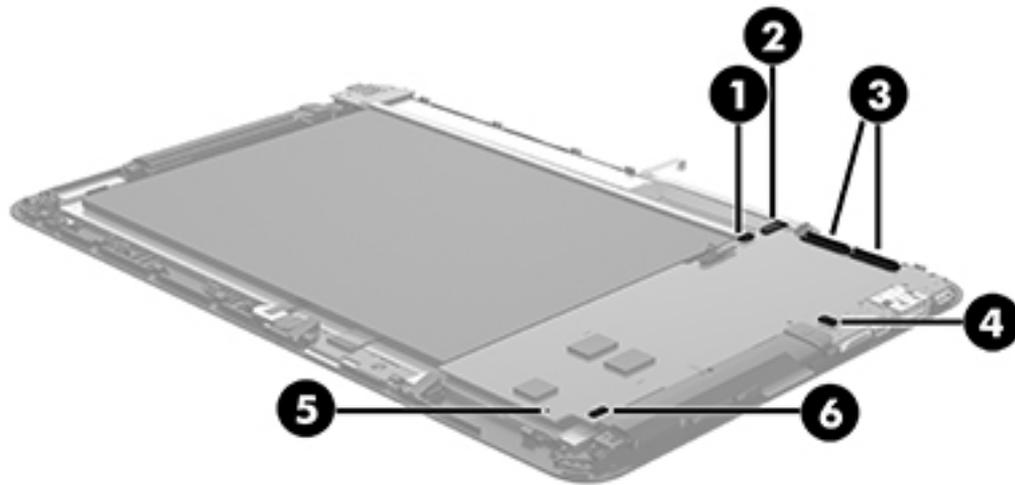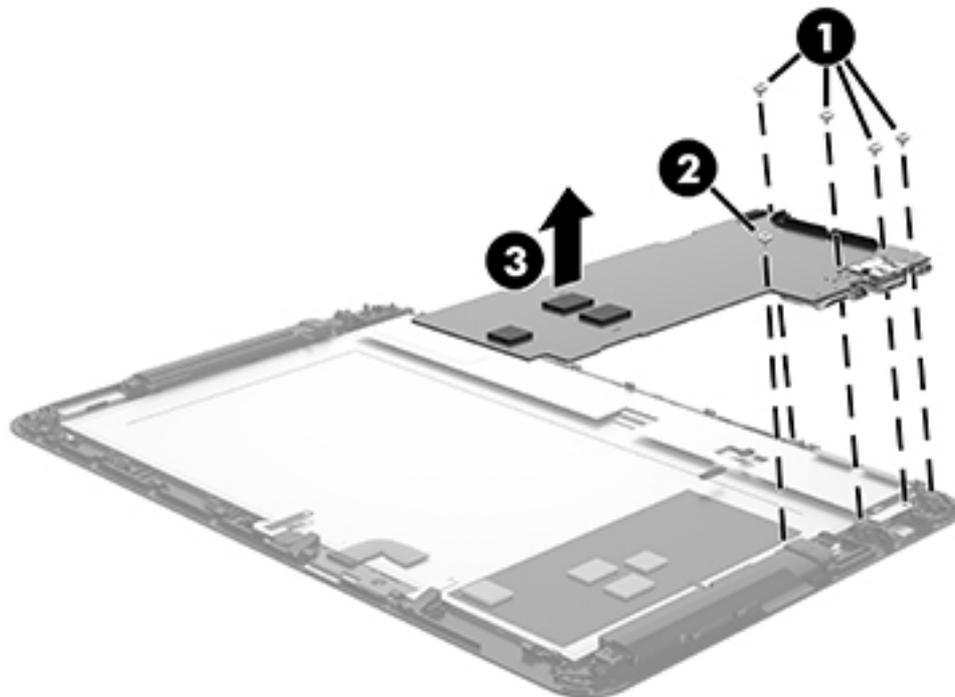
System board

Description	Spare part number
System board equipped with an Intel Atom Z3745D 1.33- to 1.83-GHz quad core processor (SoC), graphics subsystem with UMA memory, 2.0-GB DDR3 system memory, and the Windows 8 Standard operating system (includes replacement thermal material)	
Equipped with a 64-GB eMMC hard drive	784424-501
Equipped with a 32-GB eMMC hard drive	784423-501
Thermal Material Kit (includes replacement thermal material)	651046-001

Before removing the system board, follow these steps:

1. Turn off the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.

2. Disconnect the power from the tablet by unplugging the power cord from the tablet.

3. Disconnect all external devices from the tablet.

4. Remove the back cover (see Back cover on page 17).

5. Disconnect the battery cable from the system board (see Battery on page 20).

Remove the system board:

1. Disconnect the following cables from the system board:

   (1) Audio jack board cable ZIF connector on the system board (see Audio jack board on page 23)

   (2) Display panel cable ZIF connector on the system board (see Display panel cable on page 22)

   (3) TouchScreen cable ZIF connectors on the system board (2 connectors)

   (4) Speaker cable (see Speakers on page 28)

   (5) Antenna cable from terminal on the system board

   (6) Power/volume button board cable ZIF connector on the system board (see Power/volume button board on page 31)

2. Remove the four Phillips PM1.5×3.3 screws **(1)** and the Phillips PM1.9×3.3 screw **(2)** that secure the system board to the display panel assembly.

3. Remove the system board **(3)**.

NOTE: The thermal material must be thoroughly cleaned from the surfaces of the display panel assembly and the system board components each time the system board is removed. Replacement thermal material is included with the system board and system board spare part kits. Replacement thermal material is also included in the Thermal Material Kit, spare part number 651046-001.

The following illustration shows the replacement thermal material locations on the system board **(1)** and the display panel assembly **(2)**.
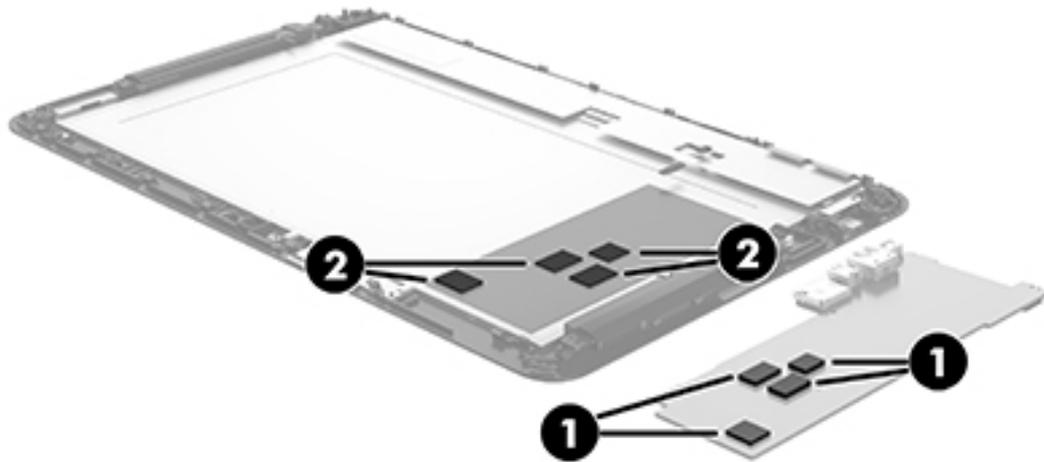
Reverse this procedure to install the system board.

Webcam module

Description	Spare part number
Webcam module (includes cable and double-sided adhesive)	784425-001

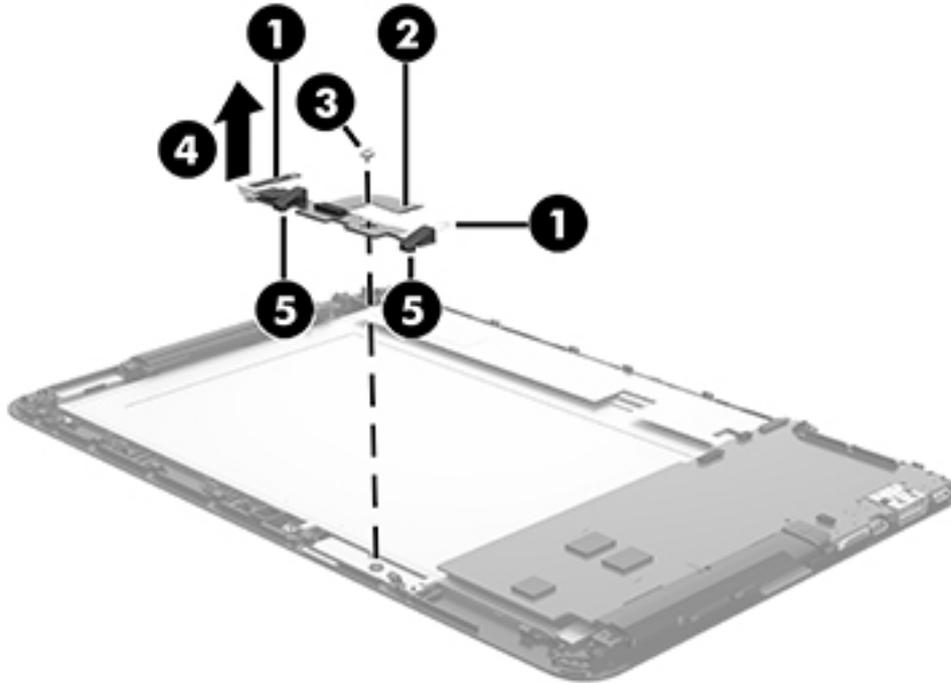Before removing the webcam module, follow these steps:

1. Turn off the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.

2. Disconnect the power from the tablet by unplugging the power cord from the tablet.

3. Disconnect all external devices from the tablet.

4. Remove the back cover (see Back cover on page 17).

5. Remove the battery (see Battery on page 20).

Remove the webcam module:

1. Release the ground tape **(1)** that secures the webcam module to the display panel assembly.

2. Detach the webcam module cable **(2)** from the display panel assembly. (The webcam module cable is attached to the display panel assembly with double-sided adhesive.)

3. Remove the Phillips PM1.5×2.6 broad head screw **(3)** that secures the webcam module to the display panel assembly.

4.   Remove the webcam module **(4)**.

> **NOTE:**   When removing the webcam module, the microphone rubber covers **(5)** may be inadvertently removed. Reinstall the rubber covers if they are removed.

5.   Remove the webcam module and cable.

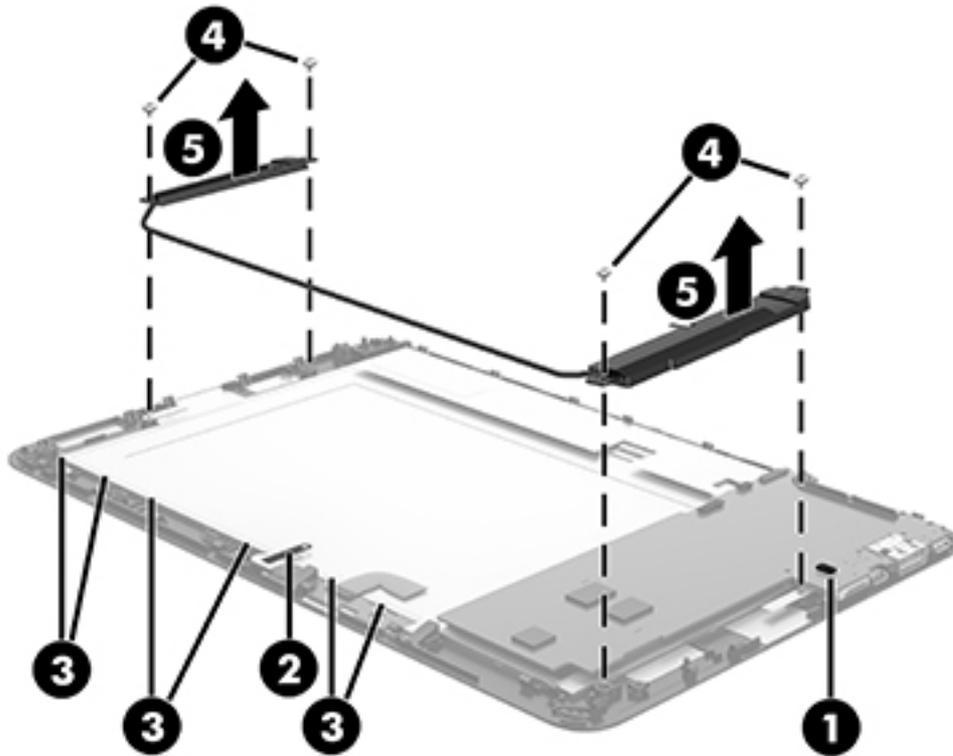Reverse this procedure to install the webcam module.

Speakers

Description	Spare part number
Speaker Kit (includes left and right speakers and cables)	784422-001

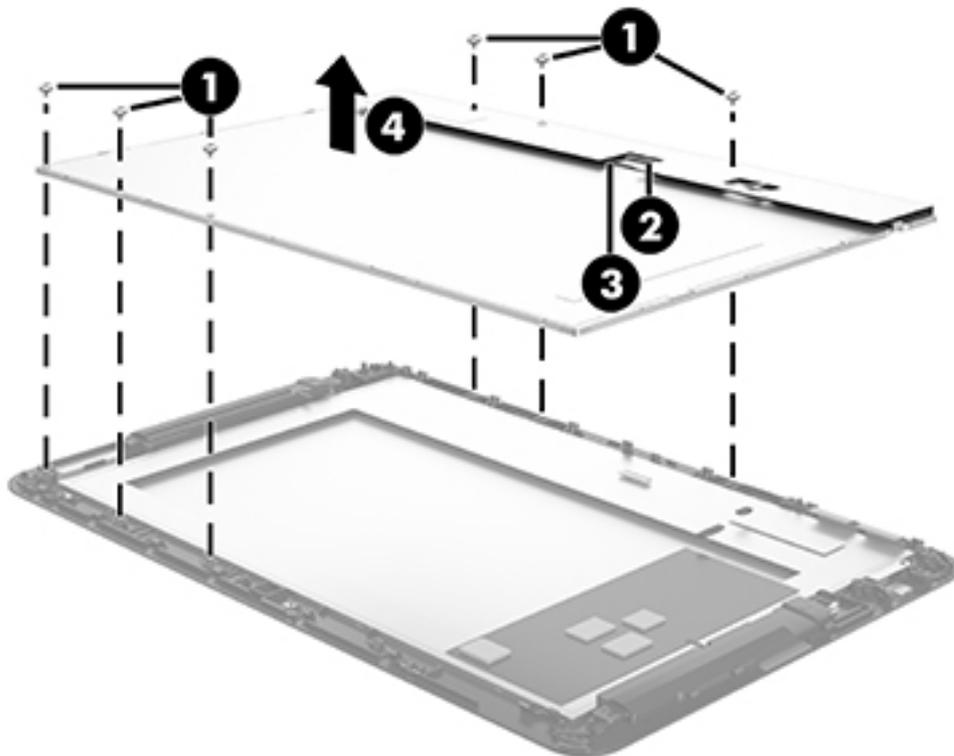Before removing the speakers, follow these steps:

1.   Turn off the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.

2.   Disconnect the power from the tablet by unplugging the power cord from the tablet.

3.   Disconnect all external devices from the tablet.

4.   Remove the back cover (see).

5.   Remove the battery (see).

Remove the speakers:

1. Disconnect the speaker cable **(1)** from the system board.

2. Release the ground tape **(2)** that secures the speaker cable to the display panel assembly.

3. Release the speaker cable from the clips **(3)** and routing channel built into display panel assembly.

4. Remove the four Phillips PM1.9×4.7 screws **(4)** that secure the speakers to the display panel assembly.

5. Remove the speakers **(5)**.

Reverse this procedure to install the speakers.

Middle frame

Description	Spare part number
Middle frame	789612-001

Before removing the middle frame, follow these steps:

1. Turn off the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.

2. Disconnect the power from the tablet by unplugging the power cord from the tablet.

3. Disconnect all external devices from the tablet.

4. Remove the back cover (see Back cover on page 17).

5. Disconnect the battery cable from the system board (see Battery on page 20).

Remove the middle frame:

1. Remove the six Phillips PM1.9×3.3 screws **(1)** that secure the middle frame to the display panel assembly.

> ⚠ **CAUTION:** When removing the middle frame, make sure the display panel cable **(2)** routes cleanly through the opening **(3)** in the middle frame. Failure to follow this caution can result in damage to the display panel cable.

2. Remove the middle frame **(4)**.

Reverse this procedure to install the middle frame.

Power/volume button board

| Description	Spare part number
Power/volume button board (includes cable)	784417-001

Before removing the power/volume button board, follow these steps:

1. Turn off the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.

2. Disconnect the power from the tablet by unplugging the power cord from the tablet.

3. Disconnect all external devices from the tablet.

4. Remove the back cover (see Back cover on page 17), and then remove the following components:

   a. Battery (see Battery on page 20)

   b. Audio jack board (see Audio jack board on page 23)

   c. System board (see System board on page 24)

   d. Speakers (see Speakers on page 28)

   e. Webcam module (see Webcam module on page 27)

   f. Remove the middle frame (see Middle frame on page 30).

Remove the power/volume button board:

1. Release the ZIF connector **(1)** to which the power/volume button board cable is attached, and then disconnect the power/volume button board cable from the system board.

2. Remove the Phillips PM1.9×2.6 broad head screw **(2)** that secures the power/volume button board to the display panel assembly.

3. Remove the power/volume button board **(3)** and cable.
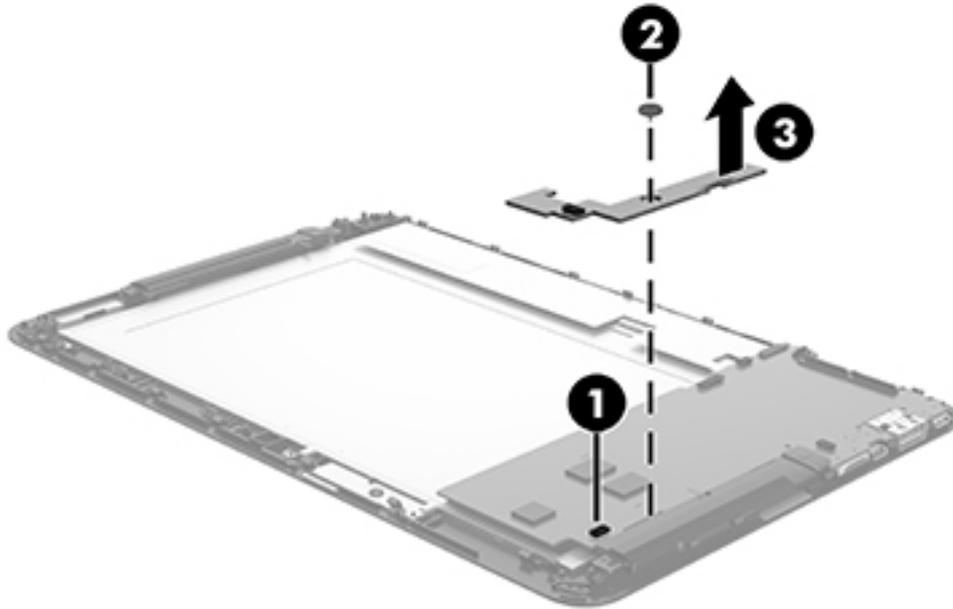
Reverse this procedure to install the power/volume button board.

6   Using Setup Utility (BIOS) and HP PC Hardware Diagnostics (UEFI)

Setup Utility, or Basic Input/Output System (BIOS), controls communication between all the input and output devices on the system (such as disk drives, display, keyboard, mouse, and printer). Setup Utility (BIOS) includes settings for the types of devices installed, the startup sequence of the tablet, and the amount of system and extended memory.

Starting Setup Utility (BIOS)

You can open Setup Utility using the tablet only or an optional USB keyboard (purchased separately). The keyboard base that came with your tablet cannot be used to open Setup Utility.

▲   To start Setup Utility (BIOS), using the tablet only, turn on or restart the tablet, quickly press the Windows button on the tablet, and then tap f10.

– or –

To start Setup Utility (BIOS) using an optional USB keyboard (purchased separately):

1.   Connect an optional USB keyboard (purchased separately) to the tablet.

2.   Turn on or restart the tablet, quickly press esc, and then press f10.

📝 **NOTE:**   Use extreme care when making changes in Setup Utility (BIOS). Errors can prevent the tablet from operating properly.

Updating the BIOS

Updated versions of the BIOS may be available on the HP website.

Updated versions of the BIOS may be available on the HP website.

Some download packages contain a file named Readme.txt, which contains information regarding installing and troubleshooting the file.

Determining the BIOS version

To determine whether available BIOS updates contain later BIOS versions than those currently installed on the tablet, you need to know the version of the system BIOS currently installed.

BIOS version information (also known as ROM date and System BIOS) can be revealed by pressing fn+esc (if you are already in Windows) or by using Setup Utility (BIOS).

1.   Start Setup Utility (BIOS) (see .

2.   Tap **Main**, and then make note of your current BIOS version.

3.   To exit Setup Utility (BIOS) without saving your changes, tap **Exit**, tap **Exit Discarding Changes**, and then follow the on-screen instructions.

– or –

To start Setup Utility (BIOS) using an optional USB keyboard (purchased separately):

1. Connect an optional USB keyboard (purchased separately) to the tablet.

2. Turn on or restart the tablet, quickly press esc, and then press f10.

Downloading a BIOS update

⚠ **CAUTION:** To reduce the risk of damage to the tablet or an unsuccessful installation, download and install a BIOS update only when the tablet is connected to reliable external power using the AC adapter. Do not download or install a BIOS update while the tablet is running on battery power, docked in an optional docking device, or connected to an optional power source. During the download and installation, follow these instructions:

Do not disconnect power from the tablet by unplugging the power cord from the AC outlet.

Do not shut down the tablet or initiate Sleep.

Do not insert, remove, connect, or disconnect any device, cable, or cord.

1. From the Start screen, type `support`, and then select the **HP Support Assistant** app.

2. Click **Updates and tune-ups**, and then click **Check for HP updates now**.

3. Follow the on-screen instructions.

4. At the download area, follow these steps:

   a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your tablet. If the update is more recent than your BIOS, make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.

   b. Follow the on-screen instructions to download your selection to the hard drive.

      If the update is more recent than your BIOS, make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

      📝 **NOTE:** If you connect your tablet to a network, consult the network administrator before installing any software updates, especially system BIOS updates.

BIOS installation procedures vary. Follow any instructions that are revealed on the screen after the download is complete. If no instructions are revealed, follow these steps:

1. From the Start screen, type `file`, and then select **File Explorer**.

2. Click your hard drive designation. The hard drive designation is typically Local Disk (C:).

3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.

4. Double-click the file that has an .exe extension (for example, *filename.exe*). The BIOS installation begins.

5. Complete the installation by following the on-screen instructions.

📝 **NOTE:** After a message on the screen reports a successful installation, you can delete the downloaded file from your hard drive.

Using HP PC Hardware Diagnostics (UEFI)

HP PC Hardware Diagnostics is a Unified Extensible Firmware Interface (UEFI) that allows you to run diagnostic tests to determine whether the tablet hardware is functioning properly. The tool runs outside the operating system so that it can isolate hardware failures from issues that are caused by the operating system or other software components.

To start HP PC Hardware Diagnostics UEFI:

1. Turn on or restart the tablet, quickly press the Windows button on the tablet, and then press f2.

    The BIOS searches three places for the diagnostic tools, in the following order:

    a. Connected USB drive

        NOTE: To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see Downloading HP PC Hardware Diagnostics (UEFI) to a USB device on page 35.

    b. Hard drive

    c. BIOS

2. When the diagnostic tool opens, use the keyboard arrow keys to select the type of diagnostic test you want to run, and then follow the on-screen instructions.

NOTE: If you need to stop a diagnostic test, press esc.

Downloading HP PC Hardware Diagnostics (UEFI) to a USB device

NOTE: Instructions for downloading HP PC Hardware Diagnostics (UEFI) are provided in English only.

There are two options to download HP PC Hardware Diagnostics to a USB device:

Option 1: HP PC Diagnostics homepage— Provides access to the latest UEFI version

1. Go to http://hp.com/go/techcenter/pcdiags.

2. Click the **UEFI Download** link, and then select **Run**.

Option 2: Support and Drivers page—Provides downloads for a specific product for earlier and later versions

1. Go to http://www.hp.com.

2. Point to **Support**, located at the top of the page, and then click **Download Drivers**.

3. In the text box, enter the product name, and then click **Go**.

    – or –

    Click **Find Now** to let HP automatically detect your product.

4. Select your tablet model, and then select your operating system.

5. In the **Diagnostic** section, click **HP UEFI Support Environment**.

    – or –

    Click **Download**, and then select **Run**.

7   Specifications

	Metric	U.S.
Dimensions (landscape orientation)		
Width	**26.40 cm**	10.4 in
Depth	**17.00 cm**	6.7 in
Height	**0.97 cm**	0.38 in
Weight (lowest weight configuration)	**598 g**	1.32 lb
Input power	5 V dc @ 3A - 15W	

NOTE: This product is designed for IT power systems in Norway with phase-to-phase voltage not exceeding 240 V rms.

NOTE: The tablet operating voltage and current can be found on the system regulatory label.

Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Nonoperating	**-20°C to 60°C**	-4°F to 140°F
Relative humidity (non-condensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	**-15 m to 3,048 m**	-50 ft to 10,000 ft
Nonoperating	**-15 m to 12,192 m**	-50 ft to 40,000 ft

NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.

8   Backing up, restoring, and recovering

This chapter provides information about the following processes:

- Restoring and recovering your system
- Restoring and recovering your system

Creating recovery media and backups

1. After you successfully set up the tablet, create HP Recovery media. This step creates a backup of the HP Recovery partition on the tablet. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced.

    HP Recovery media you create will provide the following recovery options:

    - System Recovery—Reinstalls the original operating system and the programs that were installed at the factory.

    - Factory Reset—Restores the tablet to its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

    See Creating HP Recovery media on page 37.

2. Use the Windows tools to create system restore points and create backups of personal information. For more information and steps, see **Help and Support**. From the Start screen, type `help`, and then select **Help and Support**.

Creating HP Recovery media

HP Recovery Manager is a software program that offers a way to create recovery media after you successfully set up the tablet. HP Recovery media can be used to perform system recovery if the hard drive becomes corrupted. System recovery reinstalls the original operating system and the software programs installed at the factory, and then configures the settings for the programs. HP Recovery media can also be used to customize the system or restore the factory image if you replace the hard drive.

- Only one set of HP Recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.

- HP Recovery Manager examines the tablet and determines the required storage capacity for the blank USB flash drive or the number of blank DVD discs that will be required.

- If your tablet does not include an integrated optical drive with DVD writer capability, but you would like to create DVD recovery media, you can use an external optical drive (purchased separately) to create recovery discs, or you can obtain recovery discs for your tablet from support. If you create your own recovery discs, you must use only high-quality blank DVD-R, DVD+R, DVD-R DL, or DVD+R DL discs. Do not use rewritable discs such as CD±RW, DVD ±RW, double-layer DVD±RW, or BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software. See the *Worldwide Telephone Numbers* booklet included with the tablet. You can also find contact information from the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions. If you use an

external optical drive, it must be connected directly to a USB port on the tablet; the drive cannot be connected to a USB port on an external device, such as a USB hub.

- You can also use a high-quality blank USB flash drive to create recovery media.
- Be sure that the tablet is connected to AC power before you begin creating the recovery media.
- The creation process can take up to an hour or more. Do not interrupt the creation process.
- If necessary, you can exit the program before you have finished creating all of the recovery DVDs. HP Recovery Manager will finish burning the current DVD. The next time you start HP Recovery Manager, you will be prompted to continue, and the remaining discs will be burned.

To create HP Recovery media:

IMPORTANT: For tablets, connect to the keyboard dock before beginning these steps (select models only).

1. From the Start screen, type `recovery`, and then select **HP Recovery Manager**.
2. Select **Recovery Media Creation**, and then follow the on-screen instructions.

If you ever need to recover the system, see .

Restore and recovery

There are several options for recovering your system. Choose the method that best matches your situation and level of expertise:

- Windows offers several options for restoring from backup, refreshing the tablet, and resetting the tablet to its original state. For more information and steps, see Help and Support. From the Start screen, type `help`, and then select **Help and Support**.

- If you need to correct a problem with a preinstalled application or driver, use the Drivers and Applications Reinstall option of HP Recovery Manager to reinstall the individual application or driver.

  From the Start screen, type `recovery`, select **HP Recovery Manager**, select **Drivers and Applications Reinstall**, and then follow the on-screen instructions.

- If you want to recover the tablet's original factory partitioning and content, you can choose the System Recovery option from the HP Recovery partition (select models only) or use the HP Recovery media that you have created. For more information, see . If you have not already created recovery media, see .

- If you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media to restore the factory image to the replacement drive. For more information, see .

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the tablet to its original factory state by using the HP Recovery media that you created or by using the HP Recovery partition (select models only). If you have not already created recovery media, see Creating HP Recovery media on page 37.

Using HP Recovery media, you can choose from one of the following recovery options:

- System Recovery—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.

- Factory Reset—Restores the tablet to its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

The HP Recovery partition (select models only) allows System Recovery and Minimized Image Recovery.

What you need to know

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this tablet, you must either download the software from the manufacturer's website or reinstall the software from the media provided by the manufacturer.

- Recovery through HP Recovery Manager should be used as a final attempt to correct tablet issues.

- HP Recovery media must be used if the tablet hard drive fails. If you have not already created recovery media, see Creating HP Recovery media on page 37.

- To use the Factory Reset option, you must use HP Recovery media. If you have not already created recovery media, see Creating HP Recovery media on page 37.

- If the HP Recovery media does not work, you can obtain recovery media for your system from support. See the Worldwide Telephone Numbers booklet included with the tablet. You can also find contact information from the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions.

IMPORTANT: HP Recovery Manager does not automatically provide backups of your personal data. Before beginning recovery, back up any personal data you wish to retain.

Using the HP Recovery partition (select models only)

The HP Recovery partition (select models only) allows you to perform a system recovery or minimized image recovery without the need for recovery discs or a recovery USB flash drive. This type of recovery can only be used if the hard drive is still working.

To start HP Recovery Manager from the HP Recovery partition:

IMPORTANT: For tablets, connect to the keyboard dock before beginning these steps (select models only).

1. Press f11 while the tablet boots.

   – or –

   Press and hold f11 as you press the power button.

2. Select **Troubleshoot** from the boot options menu.

3. Select **Recovery Manager**, and then follow the on-screen instructions.

Using HP Recovery media to recover

You can use HP Recovery media to recover the original system. This method can be used if your system does not have an HP Recovery partition or if the hard drive is not working properly.

1.   If possible, back up all personal files.

2.   Insert the HP Recovery media that you created, and then restart the tablet.

NOTE: If the tablet does not automatically restart in HP Recovery Manager, change the tablet boot order. See Changing the tablet boot order on page 40.

3.   Follow the on-screen instructions.

Changing the tablet boot order

If the tablet does not restart in HP Recovery Manager, you can change the tablet boot order, which is the order of devices listed in BIOS where the tablet looks for startup information. You can change the selection for an optical drive or a USB flash drive.

To change the boot order:

1.   Insert the HP Recovery media you created.

2.   Restart the tablet, quickly press the Windows button on your tablet, and then press f9 for boot options.

3.   Select the optical drive or USB flash drive you want to boot from.

4.   Follow the on-screen instructions.

9 Power cord set requirements

The wide-range input feature of the tablet permits it to operate from any line voltage from 100 to 120 volts AC, or from 220 to 240 volts AC.

The 3-conductor power cord set included with the tablet meets the requirements for use in the country or region where the equipment is purchased.

Power cord sets for use in other countries and regions must meet the requirements of the country or region where the tablet is used.

Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least 1.0 m (3.3 ft) and no more than 2.0 m (6.5 ft).

- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.

- The power cord sets must have a minimum current capacity of 10 amps and a nominal voltage rating of 125 or 250 V AC, as required by the power system of each country or region.

- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the tablet.

Requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	METI	3
The Netherlands	KEMA	1
Norway	NEMKO	1
The People's Republic of China	COC	5
South Korea	EK	4

Country/region	Accredited agency	Applicable note number
Sweden	CEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	4
The United Kingdom	BSI	1
The United States	UL	2

1. The flexible cord must be Type HO5VV-F, 3-conductor, 1.0-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.

3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.

4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

5. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

10 Recycling

When a non-rechargeable or rechargeable battery has reached the end of its useful life, do not dispose of the battery in general household waste. Follow the local laws and regulations in your area for battery disposal.

HP encourages customers to recycle used electronic hardware, HP original print cartridges, and rechargeable batteries. For more information about recycling programs, see the HP Web site at http://www.hp.com/recycle.

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product name   1