



ThinkCentre Chromebox Hardware Maintenance Manual

ThinkThink**ThinkCentre**Think

Machine Types: 10H2, 10H3, 10H4, 10H5, 10H6, 10H7, 10H8, and 10H9

Note: Before using this information and the product it supports, be sure to read and understand the Chapter 1 “Read this first: Important safety information” on page 1 and Appendix F “Notices” on page 103.

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Contents

About this manual.	iii
---------------------------	------------

Chapter 1. Read this first: Important safety information.	1
--	----------

Power cords and power adapters	1
General safety	1
Electrical safety	2
Glass parts notice	4
Safety inspection guide	4
Handling electrostatic discharge-sensitive devices	4
Grounding requirements	5
Safety notices (multi-lingual translations)	5

Chapter 2. Product overview	27
------------------------------------	-----------

Locations	27
Locating connectors, controls, and indicators on the front of your computer	27
Locating connectors on the rear of your computer	28
Locating components	30
Locating major FRUs and CRUs	30
Locating parts on the system board	32
Locating the machine type and model label	34
Features	34
Specifications	36

Chapter 3. Using your computer	37
---------------------------------------	-----------

Registering your computer	37
Frequently asked questions	37

Chapter 4. You and your computer	39
---	-----------

Accessibility and comfort	39
Arranging your workspace	39
Comfort	39
Glare and lighting	40
Air circulation	40
Electrical outlets and cable lengths	40
Accessibility information	40
Moving your computer to another country or region	41

Chapter 5. Security	43
----------------------------	-----------

Attaching a Kensington-style cable lock	43
---	----

Chapter 6. Preventing problems	45
---------------------------------------	-----------

Basics	45
Cleaning your computer	45

Computer	45
Display screen	45
Moving your computer	46

Chapter 7. Troubleshooting and diagnostics	47
---	-----------

Basic troubleshooting	47
Troubleshooting procedure	47
Troubleshooting	48
Audio problems	48
Intermittent problems	48
Monitor problems	49
Networking problems	49
Insufficient free storage drive space	50
Serial connector cannot be accessed	50
Software problems	50
My USB connectors cannot be accessed	51

Chapter 8. Service checkout and symptom-to-FRU index	53
---	-----------

Service checkout	53
Problem determination tips	53
Symptom-to-FRU index	54
Power supply problems	54
Miscellaneous error conditions	54
Undetermined problems	56
Overview of the USB recovery shim	56

Chapter 9. Installing or replacing hardware	61
--	-----------

Handling static-sensitive devices	61
Installing or replacing hardware	61
Installing external options	61
Replacing the ac power adapter	61
Removing the front cover	63
Replacing the system fan	65
Replacing a memory module	66
Replacing the system board frame	68
Replacing the power button board	69
Replacing the coin-cell battery	71
Replacing the M.2 storage drive	72
Replacing the M.2 Wi-Fi card module	73
Replacing the M.2 Wi-Fi antennas	74
Replacing the reset button board	78
Replacing the system board	79
Completing the parts replacement	81

Chapter 10. Getting information, help, and service 85

Information resources	85
Safety and Warranty.	85
Lenovo Web site	85
Lenovo Support Web site.	85
Help and service	86
Calling for service.	86
Using other services	86
Purchasing additional services	87

Appendix A. Regulatory information 89

Export classification notice	89
Electronic emissions notices	89
Federal Communications Commission Declaration of Conformity	89
Eurasian compliance mark	91
Brazil regulatory notice	91
Mexico regulatory notice.	91
Additional regulatory information	91

Appendix B. WEEE and recycling information 93

Important WEEE information	93
Recycling information for Japan	93
Recycling information for Brazil	94
Battery recycling information for Taiwan.	94
Battery recycling information for the European Union	94

Appendix C. Restriction of Hazardous Substances Directive (RoHS) 97

European Union RoHS	97
China RoHS.	97
Turkish RoHS	97
Ukraine RoHS	98
India RoHS	98

Appendix D. China Energy Label 99

Appendix E. ENERGY STAR model information 101

Appendix F. Notices 103

Trademarks	104
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About this manual

This manual provides service and reference information for ThinkCentre® computers listed on the front cover.

Use this manual along with the advanced diagnostic tests to troubleshoot problems.

Important: This manual is intended only for trained service technicians who are familiar with ThinkCentre computers. Use this manual along with the advanced diagnostic tests to troubleshoot problems effectively. Before servicing a ThinkCentre computer, be sure to read and understand Chapter 1 “Read this first: Important safety information” on page 1.

Chapter 1. Read this first: Important safety information

This chapter contains the safety information that you must be familiar with.

Power cords and power adapters

Use only the power cords and power adapters supplied by the product manufacturer. Do not use the ac power cord for other devices.

The power cords shall be safety approved. For Germany, it shall be H05VV-F, 3G, 0.75 mm², or better. For other countries, the suitable types shall be used accordingly.

Never wrap a power cord around a power adapter or other object. Doing so can stress the cord in ways that can cause the cord to fray, crack, or crimp. This can present a safety hazard.

Always route power cords so that they will not be walked on, tripped over, or pinched by objects.

Protect power cord and power adapters from liquids. For instance, do not leave your power cord or power adapter near sinks, tubs, toilets, or on floors that are cleaned with liquid cleansers. Liquids can cause a short circuit, particularly if the power cord or power adapter has been stressed by misuse. Liquids also can cause gradual corrosion of power cord terminals and/or the connector terminals on a power adapter, which can eventually result in overheating.

Ensure that all power cord connectors are securely and completely plugged into receptacles.

Do not use any power adapter that shows corrosion at the ac input pins or shows signs of overheating (such as deformed plastic) at the ac input or anywhere on the power adapter.

Do not use any power cords where the electrical contacts on either end show signs of corrosion or overheating or where the power cord appears to have been damaged in any way.

General safety

Follow these rules to ensure general safety:

- Observe good housekeeping in the area of the machines during and after maintenance.
- When lifting any heavy object:
 1. Ensure you can stand safely without slipping.
 2. Distribute the weight of the object equally between your feet.
 3. Use a slow lifting force. Never move suddenly or twist when you attempt to lift.
 4. Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back.

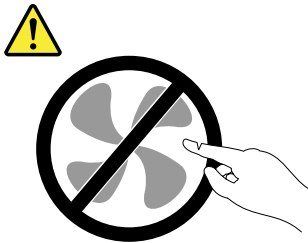
Attention:

Do not attempt to lift any objects that weigh more than 16 kg (35 lb) or objects that you think are too heavy for you.

- Do not perform any action that causes hazards to the customer, or that makes the equipment unsafe.
- Before you start the machine, ensure that other service representatives and the customer's personnel are not in a hazardous position.

- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the machine.
- Keep your tool case away from walk areas so that other people will not trip over it.
- Do not wear loose clothing that can be trapped in the moving parts of a machine. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
- Insert the ends of your necktie or scarf inside clothing or fasten it with a nonconductive clip, approximately 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.
Remember: Metal objects are good electrical conductors.
- Wear safety glasses when you are: hammering, drilling, soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly before returning the machine to the customer.

CAUTION:



Hazardous moving parts. Keep fingers and other body parts away.

CAUTION:



Before you open the computer cover, turn off the computer and wait several minutes until the computer is cool.

Electrical safety



CAUTION:

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

Observe the following rules when working on electrical equipment.

Important: Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not insulate you when working with live electrical currents. Many customers have, near their equipment, rubber floor mats that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
 - Performing a mechanical inspection
 - Working near power supplies
 - Removing or installing Field Replaceable Units (FRUs)
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, power off the wall box that supplies power to the machine and lock the wall box in the off position.
- If you need to work on a machine that has exposed electrical circuits, observe the following precautions:
 - Ensure that another person, familiar with the power-off controls, is near you.
Remember: Another person must be there to switch off the power, if necessary.
 - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.
Remember: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
 - When using a tester, set the controls correctly and use the approved probe leads and accessories for that tester.
 - Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.

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

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

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

- If an electrical accident occurs:
 - Use caution; do not become a victim yourself.
 - Switch off power.
 - Send another person to get medical aid.

Glass parts notice

CAUTION:

Some parts of your product may be made of glass. This glass could break if the product is dropped on a hard surface or receives a substantial impact. If glass breaks, do not touch or attempt to remove it. Stop using your product until the glass is replaced by trained service personnel.

Safety inspection guide

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

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

Consider these conditions and the safety hazards they present:

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

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

Checklist:

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

Handling electrostatic discharge-sensitive devices

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

Notes:

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

When handling ESD-sensitive parts:

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

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

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

Grounding requirements

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

Safety notices (multi-lingual translations)

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

- English
- Arabic
- Brazilian/Portuguese
- Chinese (simplified)
- Chinese (traditional)
- French
- German
- Hebrew
- Italian
- Korean
- Spanish



DANGER

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

To avoid a shock hazard:

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect to properly wired outlets any equipment that will be attached to this product.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following tables when installing, moving, or opening covers on this product or attached devices.**

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



CAUTION:

When replacing the lithium battery, use only Part Number 45C1566 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of. *Do not:*

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

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



CAUTION:

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

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

 **DANGER**

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

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



≥18 kg (37 lb)



≥32 kg (70.5 lb)

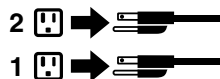


≥55 kg (121.2 lb)

CAUTION:
Use safe practices when lifting.



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



التيار الكهربائي الموجود بمصدر الطاقة أو أجهزة التليفون أو أسلاك الاتصالات يشكل خطورة.

لتفادي مخاطر الصدمات الكهربائية:

لا تحاول توصيل أو فصل أي أسلاك أو القيام بعمليات تركيب أو صيانة أو إعادة توصيف لهذا المنتج أثناء وجود عاصفة كهربائية.

يجب توصيل كل أسلاك الكهرباء في مخارج كهرباء ذات توصيلات أسلاك وتوصيلات أرضية صحيحة
يجب توصيل أي جهاز سيتم الحاقه بهذا المنتج في مخارج كهرباء ذات توصيلات أسلاك صحيحة.

وإن أمكن يجب استخدام يد واحدة فقط في توصيل أو فصل أسلاك الإشارة.

لا تحاول تشغيل أي جهاز إذا كان هناك أثر لحرق أو مياه أو تلف بالمكونات

يجب فصل أسلاك الكهرباء وأنظمة الاتصالات وشبكات الاتصال وأجهزة المودم الملحقة قبل فتح أغطية الجهاز، مالم يتم طلب خلاف ذلك في التعليمات الخاصة بالتركيب والتوصيف.
قم بتوصيل وفصل الأسلاك كما هو موضح في الجدول التالي وذلك عند القيام بعمليات التركيب أو النقل أو فتح أغطية هذا المنتج أو الأجهزة الملحقة.

للتوصيل:

قم بإيقاف كل شيء.
أولاً، قم بتوصيل كل الأسلاك بالأجهزة.
قم بتوصيل أسلاك الإشارة في لموصلات.
قم بتوصيل أسلاك الكهرباء في المخارج.
قم بتشغيل الجهاز.

للفصل:

قم بإيقاف كل شيء.
أولاً، قم بفصل كل أسلاك الكهرباء من المخرج.
قم بفصل أسلاك الإشارة من الموصلات.
قم بفصل كل الأسلاك من الأجهزة.



تنبيه :

عند استبدال البطارية الليثيوم، استخدم فقط رقم الجزء الخاص **Part Number 45C1566** أو نوع آخر يكون على نفس مستوى الكفاءة يحدده لك المصنع.

إذا كان النظام الخاص يستخدم معه بطارية ليثيوم قم باستبدالها بنفس النوع الذي تم صناعته من خلال نفس المصنع. تحتوي البطارية على مادة الليثيوم ويمكن أن تنفجر في حالة عدم استخدامها أو التعامل معها بطريقة صحيحة أو عند التخلص منها بطريقة خطأ.

لا تقم بـ:

- القاء البطارية أو غمرها في الماء
- تسخينها أعلى من ١٠٠ درجة مئوية و(٢١٢ ° فهرنهايت)
- بتصليحها أو فكها

تخلص من البطارية طبقاً للقانون أو النظام المحلي .



تنبيه :

أثناء تركيب منتجات ليزر (مثل CD-ROMs أو وحدة تشغيل DVD أو أجهزة Fiber Optic أو وحدات الإرسال) يجب مراعاة الآتي:

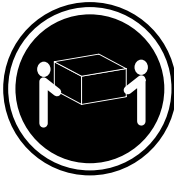
لا تنزع الأغطية. قد ينتج عن نزع أغطية منتج الليزر انفجار أشعة الليزر شديدة الخطورة.
لا يوجد أجزاء يمكن تغييرها داخل الجهاز. قد ينتج عن استخدام تحكمات أو تعديلات أو عمل أي تصرفات أخرى تخالف ما هو محدد هنا إلى انفجار أشعة شديدة الخطورة.



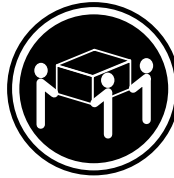
خطر

تحتوي بعض منتجات الليزر على الفئة دايود ليزر مدمج من الفئة Class 3A أو Class 3B. يجب مراعاة الآتي .

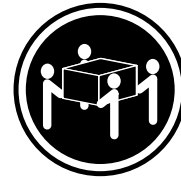
أشعة الليزر عند الفتح. لا تحقق إلى الإشعاع و لا تنظر إليه مباشرة بواسطة أي أجهزة مرئية وتجنب التعرض المباشر للإشعاع .



≥18 kg (37 lb)



≥32 kg (70.5 lb)



≥55 kg (121.2 lb)

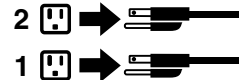
تنبيه :

يجب استخدام ممارسات آمنة عند الرفع



تنبيه :

لا يقرم زر التحكم في التشغيل الموجود على الجهاز والمفتاح الكهربائي الموجود على لوحة التحكم بإيقاف التيار الكهربائي المار بالجهاز. قد يكون للجهاز أكثر من سلك كهربائي واحد. لإيقاف التيار الكهربائي المار بالجهاز، تأكد من فصل جميع أسلاك الكهرباء من مصدر الكهرباء .



PERIGO

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

Para evitar risco de choque elétrico:

- Não conecte nem desconecte nenhum cabo ou execute instalação, manutenção ou reconfiguração deste produto durante uma tempestade com raios.
- Conecte todos os cabos de alimentação a tomadas elétricas corretamente instaladas e aterradas.
- Todo equipamento que for conectado a este produto deve ser conectado a tomadas corretamente instaladas.
- Quando possível, utilize apenas uma das mãos para conectar ou desconectar cabos de sinal.
- Nunca ligue nenhum equipamento quando houver evidência de fogo, água ou danos estruturais.
- Antes de abrir tampas de dispositivos, desconecte cabos de alimentação, sistemas de telecomunicação, redes e modems conectados, a menos que especificado de maneira diferente nos procedimentos de instalação e configuração.
- Conecte e desconecte os cabos conforme descrito na tabela apresentada a seguir ao instalar, mover ou abrir tampas deste produto ou de dispositivos conectados.

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



CUIDADO:

Ao substituir a bateria de lítio, utilize apenas uma bateria com Número de Peça 45C1566 ou um tipo de bateria equivalente recomendado pelo Se o seu sistema possui um módulo com uma bateria de lítio, substitua-o apenas por um módulo do mesmo tipo e do mesmo fabricante. A bateria contém lítio e pode explodir se não for utilizada, manuseada ou descartada de maneira correta.

Não:

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

Descarte a bateria conforme requerido pelas leis ou regulamentos locais.



PRECAUCIÓN:

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

- Não remova as tampas. A remoção das tampas de um produto a laser pode resultar em exposição prejudicial à radiação de laser. Não existem peças que podem ser consertadas no interior do dispositivo.

- A utilização de controles ou ajustes ou a execução de procedimentos diferentes dos especificados aqui pode resultar em exposição prejudicial à radiação.

PERIGO

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

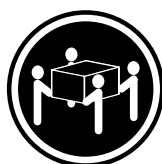
Radiação a laser quando aberto. Não olhe diretamente para o feixe a olho nu ou com instrumentos ópticos e evite exposição direta ao feixe.



≥18 kg (37 lb)



≥32 kg (70.5 lb)



≥55 kg (121.2 lb)

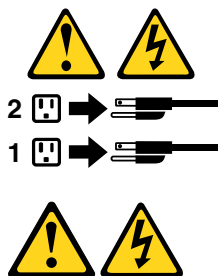
CUIDADO:

Utilize procedimentos de segurança para levantar equipamentos.



CUIDADO:

O botão de controle de alimentação do dispositivo e o botão para ligar/desligar da fonte de alimentação não desligam a corrente elétrica fornecida ao dispositivo. O dispositivo também pode ter mais de um cabo de alimentação. Para remover toda a corrente elétrica do dispositivo, assegure que todos os cabos de alimentação estejam desconectados da fonte de alimentação.



危险

电源、电话和通信电缆中的电流是危险的。

为避免电击危险：

- 请勿在雷电期间连接或断开任何电缆的连接，或者对本产品进行安装、维护或重新配置。
- 将所有电源线连接到正确连线 and 妥善接地的电源插座。
- 将所有要连接到该产品的设备连接到正确连线的插座。
- 如果可能，请仅使用一只手来连接或断开信号电缆的连接。
- 切勿在有火、水、结构损坏迹象的情况下开启任何设备。
- 在打开设备外盖之前请断开已连接的电源线、远程通信系统、网络和调制解调器，除非在安装和配置过程中另有说明。
- 当安装、移动或打开该产品或连接设备的外盖时，请按照下表所述来连接或断开电缆的连接。

要连接	要断开连接
<div>1. 切断所有电源。</div> <div>2. 首先将所有电缆连接到设备。</div> <div>3. 将信号电缆连接到接口。</div> <div>4. 将电源线连接到插座。</div> <div>5. 开启设备。</div>	<div>1. 切断所有电源。</div> <div>2. 首先从插座上拔出电源线。</div> <div>3. 从接口上拔出信号电缆。</div> <div>4. 从设备上拔出所有电缆。</div>



警告：
更换锂电池时，请仅使用部件号为 45C1566 的电池或制造商推荐的同类电池。如果您的系统有包含锂电池的模块，请仅使用同一制造商生产的相同模块类型来替换该模块。该电池中含有锂，如果使用、操作或处理不当，可能会发生爆炸。

切勿：

- 投入或浸入水中
- 加热到 100 °C（212 °F）以上
- 维修或拆卸

请按照当地法令或条例的要求处理电池。



警告：
安装激光产品（例如 CD-ROM、DVD-ROM 驱动器、光纤设备或发射设备）时，请注意以下声明：

- 请勿卸下外盖。卸下激光产品的外盖可能导致遭受激光辐射的危险。该设备内没有可维修的部件。
- 如果不按照此处指定的过程进行控制、调整或操作，则有可能导致遭受辐射的危险。



危險

某些激光产品包含嵌入式 3A 类或 3B 类激光二极管。请注意以下声明：
打开后有激光辐射。请勿注视光束，请勿直接用光学仪器查看，并请避免直接暴露在光束中。

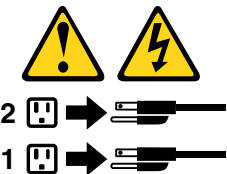


≥18 千克（37 磅） ≥32 千克（70.5 磅） ≥55 千克（121.2 磅）

警告：
抬起时请采取安全措施。



警告：
设备上的电源控制按钮和电源上的电源开关不会切断供给该设备的电流。该设备还可能有多条电源线。要切断该设备的所有电流，请确保所有电源线都与电源断开连接。



危險

- 電源、電話及通訊纜線上的電流都具有危險性。
若要避免觸電危險：
- 請勿在雷雨期間，連接或拔除纜線、執行安裝、維護或重新配置本產品。
 - 將所有電源線連接到正確配線及接地的電源插座。
 - 任何與本產品連接的設備都必須連接到配線妥當的電源插座。
 - 請盡可能用單手連接或拔除信號線。
 - 發生火災、水災或結構損害時，絕對不要開啟任何設備。
 - 除非在安裝及配置程序中另有指示，否則在開啟裝置機蓋之前，請拔掉連接的電源線、電信系統、網路及數據機。
 - 安裝、移動或開啟本產品或附屬裝置的機蓋時，請遵循下列說明連接及拔掉纜線。

連線	切斷連線
<div>1. 關閉所有開關。</div> <div>2. 首先，連接所有接線到裝置。</div> <div>3. 連接信號線到接頭。</div> <div>4. 連接電源線到插座。</div> <div>5. 開啟裝置。</div>	<div>1. 關閉所有開關。</div> <div>2. 首先，拔掉插座上的電源線。</div> <div>3. 拔掉接頭上的信號線。</div> <div>4. 拔掉裝置上所有接線。</div>



警告：

更換鋰電池時，請僅使用產品編號 **45C1566** 或製造商所建議的同類型電池。
如果您的系統中含有鋰電池模組，請僅使用同一家製造商所生產的相同模組進行更換。
如果未以正確方式使用、處理或棄置含鋰的電池，會有爆炸的危險。
請勿：

- 沾溼或浸入水中
 - 置於 **100°C (212°F)** 以上的高溫環境
 - 修理或拆開
- 請按照各地區有關廢棄電池的法令和規定處理舊電池。



警告：

- 請勿移除機蓋。移除雷射產品的機蓋，可能會導致暴露在危險的雷射輻射中。裝置內部並無可自行維修的零件。
- 利用或執行非本文中所指定的控制、調整及執行程序，可能會導致危險的輻射外洩。



危險

部分雷射產品含有內嵌式 **Class 3A** 或 **Class 3B** 雷射二極體。請注意下列事項：
在開啟光碟機時，會發生雷射輻射。請勿直視光束或用光學儀器直接檢視，並避免直接暴露在光束中。



≥ 18 公斤 (37 磅)



≥ 32 公斤 (70.5 磅)



≥ 55 公斤 (121.2 磅)

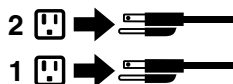
警告：

搬運時請注意安全。



警告：

裝置上的電源控制按鈕及電源供應器上的電源開關，無法關閉裝置所產生的電流。
該裝置可能有多條電源線。若要除去裝置流出的所有電流，請確認已切斷所有電源線的電源。



DANGER

Le courant électrique provenant de l'alimentation, du téléphone et des câbles de transmission peut présenter un danger.

Pour éviter tout risque de choc électrique :

- Ne manipulez aucun câble et n'effectuez aucune opération d'installation, d'entretien ou de reconfiguration de ce produit au cours d'un orage.
- Branchez tous les cordons d'alimentation sur un socle de prise de courant correctement câblé et mis à la terre.
- Branchez sur des socles de prise de courant correctement câblés tout équipement connecté à ce produit.
- Lorsque cela est possible, n'utilisez qu'une seule main pour connecter ou déconnecter les câbles d'interface.
- Ne mettez jamais un équipement sous tension en cas d'incendie ou d'inondation, ou en présence de dommages matériels.
- Avant de retirer les carters de l'unité, mettez celle-ci hors tension et déconnectez ses cordons d'alimentation, ainsi que les câbles qui la relient aux réseaux, aux systèmes de télécommunication et aux modems (sauf instruction contraire mentionnée dans les procédures d'installation et de configuration).
- Lorsque vous installez, que vous déplacez, ou que vous manipulez le présent produit ou des périphériques qui lui sont raccordés, reportez-vous aux instructions ci-dessous pour connecter et déconnecter les différents cordons.

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



ATTENTION:

Remplacer la pile au lithium usagée par une pile de référence identique exclusivement, (référence 45C1566), ou suivre les instructions du fabricant qui en définit les équivalences. Si votre système est doté d'un module contenant une pile au lithium, vous devez le remplacer uniquement par un module identique, produit par le même fabricant. La pile contient du lithium et peut exploser en cas de mauvaise utilisation, de mauvaise manipulation ou de mise au rebut inappropriée.

Ne pas :

- la jeter à l'eau,
- l'exposer à des températures supérieures à 100°C,
- chercher à la réparer ou à la démonter.

Ne pas mettre la pile à la poubelle. Pour la mise au rebut, se reporter à la réglementation en vigueur.



ATTENTION:

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

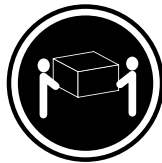
- Ne retirez pas le carter. En ouvrant l'unité de CD-ROM ou de DVD-ROM, vous vous exposez au rayonnement dangereux du laser. Aucune pièce de l'unité n'est réparable.
- Pour éviter tout risque d'exposition au rayon laser, respectez les consignes de réglage et d'utilisation des commandes, ainsi que les procédures décrites dans le présent manuel.



DANGER

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

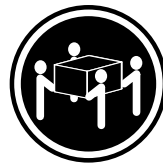
Rayonnement laser lorsque le carter est ouvert. Evitez toute exposition directe au rayon laser. Evitez de regarder fixement le faisceau ou de l'observer à l'aide d'instruments optiques.



≥18 kg (37 lb)



≥32 kg (70.5 lb)



≥55 kg (121.2 lb)

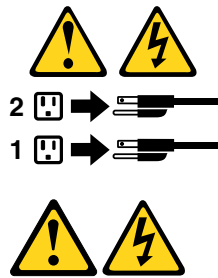
ATTENTION:

Soulevez la machine avec précaution.



ATTENTION:

L'interrupteur de contrôle d'alimentation de l'unité et l'interrupteur du bloc d'alimentation ne coupent pas le courant électrique alimentant l'unité. En outre, le système peut être équipé de plusieurs cordons d'alimentation. Pour mettre l'unité hors tension, vous devez déconnecter tous les cordons de la source d'alimentation.



VORSICHT

An Netz-, Telefon- und Datenleitungen können gefährliche Spannungen anliegen.

Aus Sicherheitsgründen:

- Bei Gewitter an diesem Gerät keine Kabel anschließen oder lösen. Ferner keine Installations-, Wartungs- oder Rekonfigurationsarbeiten durchführen.
- Gerät nur an eine Schutzkontaktsteckdose mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Alle angeschlossenen Geräte ebenfalls an Schutzkontaktsteckdosen mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Die Signalkabel nach Möglichkeit einhändig anschließen oder lösen, um einen Stromschlag durch Berühren von Oberflächen mit unterschiedlichem elektrischem Potenzial zu vermeiden.
- Geräte niemals einschalten, wenn Hinweise auf Feuer, Wasser oder Gebäudeschäden vorliegen.
- Die Verbindung zu den angeschlossenen Netzkabeln, Telekommunikationssystemen, Netzwerken und Modems ist vor dem Öffnen des Gehäuses zu unterbrechen, sofern in den Installations- und Konfigurationsprozeduren keine anders lautenden Anweisungen enthalten sind.
- Zum Installieren, Transportieren und Öffnen der Abdeckungen des Computers oder der angeschlossenen Einheiten die Kabel gemäß der folgenden Tabelle anschließen und abziehen.

Zum Anschließen der Kabel gehen Sie wie folgt vor	Zum Abziehen der Kabel gehen Sie wie folgt vor
<ol style="list-style-type: none"> 1. Schalten Sie alle Einheiten AUS. 2. Schließen Sie erst alle Kabel an die Einheiten an. 3. Schließen Sie die Signalkabel an die Buchsen an. 4. Schließen Sie die Netzkabel an die Steckdose an. 5. Schalten Sie die Einheit EIN. 	<ol style="list-style-type: none"> 1. Schalten Sie alle Einheiten AUS. 2. Ziehen Sie zuerst alle Netzkabel aus den Netzsteckdosen. 3. Ziehen Sie die Signalkabel aus den Buchsen. 4. Ziehen Sie alle Kabel von den Einheiten ab.



CAUTION:

Eine verbrauchte Lithiumbatterie nur durch eine Batterie mit der Teilenummer 45C1566 oder eine gleichwertige, vom Hersteller empfohlene Batterie ersetzen. Enthält das System ein Modul mit einer Lithiumbatterie, dieses nur durch ein Modul desselben Typs und von demselben Hersteller ersetzen. Die Batterie enthält Lithium und kann bei unsachgemäßer Verwendung, Handhabung oder Entsorgung explodieren.

Die Batterie nicht:

- mit Wasser in Berührung bringen.

- über 100 C erhitzen.
- reparieren oder zerlegen.

Die örtlichen Bestimmungen für die Entsorgung von Sondermüll beachten.



ACHTUNG:

Bei der Installation von Lasergeräten (wie CD-ROM-Laufwerken, DVD- aufwerken, Einheiten mit Lichtwellenleitertechnik oder Sendern) Folgendes beachten:

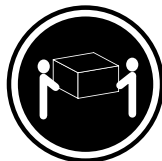
- Die Abdeckungen nicht entfernen. Durch Entfernen der Abdeckungen des Lasergeräts können gefährliche Laserstrahlungen freigesetzt werden. Das Gerät enthält keine zu wartenden Teile.
- Werden Steuerelemente, Einstellungen oder Durchführungen von Prozeduren anders als hier angegeben verwendet, kann gefährliche Laserstrahlung auftreten.



VORSICHT

Einige Lasergeräte enthalten eine Laserdiode der Klasse 3A oder 3B. Beachten Sie Folgendes:

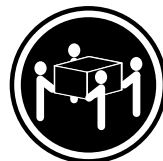
Laserstrahlung bei geöffneter Verkleidung. Nicht in den Strahl blicken. Keine Lupen oder Spiegel verwenden. Strahlungsbereich meiden.



≥18 kg



≥32 kg



≥55 kg

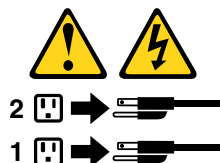
ACHTUNG:

Arbeitsschutzrichtlinien beim Anheben der Maschine beachten.



ACHTUNG:

Mit dem Netzschalter an der Einheit und am Netzteil wird die Stromversorgung für die Einheit nicht unterbrochen. Die Einheit kann auch mit mehreren Netzkabeln ausgestattet sein. Um die Stromversorgung für die Einheit vollständig zu unterbrechen, müssen alle zum Gerät führenden Netzkabel vom Netz getrennt werden.



סכנה

זרם חשמלי המועבר בכבלי חשמל, טלפון ותקשורת הוא מסוכן.

כדי להימנע מסכנת התחשמלות:

- אל תחברו או תנתקו כבלים, ואל תבצעו פעולת התקנה, תחזוקה או שינוי תצורה במוצר זה במהלך סופת ברקים.
- חברו את כל כבלי החשמל לשקע חשמל מחווט ומארק כהלכה.
- חברו כל ציוד שיחובר למוצר זה לשקעי חשמל מחוטים כהלכה.
- במידת האפשר, השתמשו ביד אחת בלבד לחיבור או לניתוק של כבלי אותות.
- לעולם אל תפעילו ציוד כלשהו כאשר יש עדות לנזק מבני או לנזק כתוצאה מאש או ממים.
- נתקו את כבלי החשמל, מערכות התקשורת, התקני הרשת והמודמים המחוברים לפני פתיחת כיסויי ההתקן, אלא אם הליכי ההתקנה וקביעת התצורה מורים אחרת.
- בעת התקנה, העברה או פתיחת כיסויים במוצר זה או בהתקנים המחוברים, חברו ונתקו את הכבלים כמתואר בטבלה שלהלן.

כדי לחבר	כדי לנתק
1. כבו הכל.	1. כבו הכל.
2. ראשית, חברו את כל הכבלים להתקנים.	2. ראשית, נתקו את כבלי החשמל מהשקעים.
3. חברו את כבלי האותות למחברים.	3. נתקו את כבלי האותות מהמחברים.
4. חברו את כבלי החשמל לשקעים.	4. הסירו את כל הכבלים מההתקנים.
5. הפעילו את ההתקן.	



זהירות:

בעת החלפת סוללת הליתיום, השתמשו רק בסוללה בעלת מק"ט 45C1566 או בסוג תואם שהומלץ על ידי היצרן. אם המערכת כוללת מודול המכיל סוללת ליתיום, החליפו אותו רק במודול מאותו סוג ומתוצרת אותו יצרן. הסוללה מכילה ליתיום, ועלולה להתפוצץ אם לא משתמשים ומטפלים בה או משליכים אותה כראות.

לעולם:

- אל תטבלו במים
 - אל תחממו לטמפרטורה הגבוהה מ-100°C (212°F)
 - אל תתקנו או תפרקו
- השליכו את הסוללה כנדרש לפי התקנות והחוקים המקומיים.



זהירות:

בעת התקנת מוצרי לייזר (כגון כונני תקליטורים ו-DVD, התקני סיב אופטי או משדרים), שימו לב לאזהרות הבאות:

- אל תסירו את הכיסויים. הסרת הכיסויים של מוצר הלייזר עלולה לגרום לחשיפה לקרינת לייזר מסוכנת. אין חלקים ברי טיפול בתוך ההתקן.
- שינויים, שימוש בבקורות או ביצוע הליכים אחרים מאלה המתוארים כאן, עלולים לגרום לחשיפה לקרינה מסוכנת.



סכנה

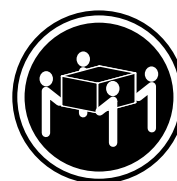
מוצרי לייזר מסוימים מכילים דיודת לייזר מסוג Class 3A או Class 3B. שימו לב לאזהרה הבאה:
כאשר הוא פתוח, המוצר פולט קרינת לייזר. אל תביטו ישירות בקרן, אל תביטו ישירות בעזרת ציוד אופטי, והימנעו מחשיפה לקרן.



≤ 18 ק"ג (37 ליב')



≤ 32 ק"ג (70.5 ליב')



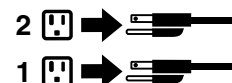
≤ 55 ק"ג (121.2 ליב')

זהירות:
השתמשו בהליכים
הנאותים בעת
הרמת הציוד.



זהירות:

לחצן ההפעלה של ההתקן ומתג ההפעלה של ספק החשמל אינם מפסיקים את זרם החשמל המסופק להתקן. בנוסף, ההתקן עשוי לכלול יותר מכבל חשמל אחד. כדי לסלק את כל הזרם החשמלי מההתקן, ודאו שכל כבלי החשמל מנותקים ממקור החשמל.





PERICOLO

La corrente elettrica proveniente dai cavi di alimentazione, del telefono e di comunicazione può essere pericolosa.

Per evitare il rischio di scosse elettriche:

- **Non collegare o scollegare qualsiasi cavo oppure effettuare l'installazione, la manutenzione o la riconfigurazione del prodotto durante un temporale.**
- **Collegare tutti i fili elettrici a una presa di alimentazione correttamente cablata e dotata di messa a terra.**
- **Collegare alle prese elettriche appropriate tutte le apparecchiature che verranno utilizzate per questo prodotto.**
- **Se possibile, utilizzare solo una mano per collegare o scollegare i cavi di segnale.**
- **Non accendere assolutamente apparecchiature in presenza di incendi, perdite d'acqua o danno strutturale.**
- **Scollegare i cavi di alimentazione, i sistemi di telecomunicazione, le reti e il modem prima di aprire i coperchi del dispositivo, salvo istruzioni contrarie relative alle procedure di installazione e configurazione.**
- **Collegare e scollegare i cavi come descritto nella seguente tabella quando vengono effettuate operazioni di installazione, spostamento o apertura dei coperchi di questo prodotto o delle unità collegate.**

Per collegarsi	Per scollegarsi
<ol style="list-style-type: none">1. SPEGNERE le apparecchiature.2. Innanzitutto, collegare tutti i cavi alle unità.3. Collegare i cavi di segnale ai connettori.4. Collegare i cavi di alimentazione alla presa.5. Accendere l'unità.	<ol style="list-style-type: none">1. SPEGNERE le apparecchiature.2. Innanzitutto, rimuovere i cavi di alimentazione dalla presa.3. Rimuovere i cavi di segnale dai connettori.4. Rimuovere tutti i cavi dalle unità.



ATTENZIONE:

Quando si sostituisce la batteria al litio, utilizzare solo il Numero parte 45C1566 o un tipo di batteria equivalente consigliato dal produttore. Se sul sistema è presente un modulo che contiene una batteria al litio, sostituirlo solo con un tipo di modulo dello stesso tipo della stessa casa di produzione. La batteria contiene litio e può esplodere se usata, maneggiata o smaltita in modo non corretto.

Non:

- **Gettare o immergere la batteria nell'acqua**
- **Riscaldarla ad una temperatura superiore ai 100 gradi C (212 gradi F)**
- **Smontarla, ricaricarla o tentare di ripararla**

Le batterie usate vanno smaltite in accordo alla normativa in vigore (DPR 915/82 e successive disposizioni e disposizioni locali).



ATTENZIONE:

Quando vengono installati prodotti laser (quali CD-ROM, unità DVD-ROM, unità a fibre ottiche o trasmettenti), tener presente quanto segue:

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



PERICOLO

Alcune unità laser contengono un diodo laser di Classe 3A o Classe 3B. Tener presente quanto segue:

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



≥18 kg



≥32 kg



≥55 kg

ATTENZIONE:

Prestare attenzione nel sollevare l'apparecchiatura.



ATTENZIONE:

Il pulsante di controllo dell'alimentazione presente sull'unità e l'interruttore dell'alimentatore non disattivano l'alimentazione corrente fornita all'unità. E' possibile che l'unità disponga di più cavi di alimentazione. Per disattivare l'alimentazione dall'unità, accertarsi che tutti i cavi di alimentazione siano scollegati dalla fonte di alimentazione.





위험

전원, 전화, 통신 케이블의 전류는 위험합니다.

감전의 위험을 피하려면 다음과 같이 하십시오.

- 번개가 치는 날에는 케이블을 연결 또는 분리하거나 본 제품을 설치, 보수, 재구성하지 마십시오.
- 모든 전원 코드는 올바르게 접지된 전기 콘센트에 연결하십시오.
- 본 제품에 연결될 장치는 올바르게 배선된 콘센트에 연결하십시오.
- 신호 케이블을 연결 또는 분리할 때 가능하면 한 손만을 사용하십시오.
- 불 또는 물로 인한 손상이나 구조적인 손상이 있을 경우 장치의 전원을 절대 켜지 마십시오.
- 설치 및 구성 과정에 별도의 지시 사항이 없는 경우, 장치의 덮개를 열기 전에 연결된 전원 코드, 원격 통신 시스템, 네트워크, 모뎀을 분리하십시오.
- 본 제품이나 연결된 장치를 설치, 이동하거나 덮개를 열 때 다음 표와 같은 순서로 케이블을 연결하거나 분리하십시오.

연결할 때:	분리할 때:
<ol style="list-style-type: none"> 1. 모든 장치의 전원을 끄십시오. 2. 먼저 모든 케이블을 장치에 연결하십시오. 3. 커넥터에 신호 케이블을 연결하십시오. 4. 콘센트에 전원 코드를 연결하십시오. 5. 장치의 전원을 켜십시오. 	<ol style="list-style-type: none"> 1. 모든 장치의 전원을 끄십시오. 2. 먼저 콘센트에서 전원 코드를 분리하십시오. 3. 커넥터에서 신호 케이블을 분리하십시오. 4. 장치에서 모든 케이블을 분리하십시오.



주의:

배터리를 교환할 때는 Part Number 45C1566 또는 제조업체에서 지정한 동일한 종류의 제품을 사용하십시오. 사용자의 시스템이 리튬 배터리를 포함하는 모듈일 경우, 동일한 제조업체에서 동일한 모듈 유형으로 생산된 제품으로 교체하십시오. 배터리에는 리튬이 함유되어 있어 잘못 사용, 취급 또는 폐기할 경우 폭발의 위험이 있습니다.

사고를 방지하려면 다음 사항을 준수하십시오.

- 배터리를 물 속에 던지거나 침수시키지 마십시오.
- 100℃ (212°F) 이상 가열하지 마십시오.
- 수리하거나 분해하지 마십시오.

배터리를 폐기할 때는 법령 또는 회사의 안전 수칙에 따라 폐기하십시오.



주의:

CD-ROM, DVD-ROM 장치, 광섬유 장치 또는 송신 장치와 같은 레이저 제품을 설치할 때, 다음과 같은 취급 주의사항을 참고하십시오.

- 덮개를 열지 마십시오. 덮개를 열면 레이저 복사 에너지에 노출될 위험이 있습니다. 장치 내부에는 사용자가 조정하거나 수리할 수 있는 부품이 없습니다.
- 규정된 것 이외의 절차 수행, 제어 조정 등의 행위로 인해 해로운 레이저 복사에 노출될 수 있습니다.



위험

일부 장비에는 임베디드 클래스 3A 또는 클래스 3B 레이저 다이오드가 있습니다. 다음 주의사항에 유의하십시오.

드라이브가 열리면 레이저 복사 에너지가 방출됩니다. 광선이 눈에 직접 쏘이지 않도록 하십시오. 나안 또는 광학 기구를 착용한 상태에서 광선을 직접 바라보지 않도록 하십시오.



≥ 18 kg (37 lbs)



≥ 32 kg (70.5 lbs)

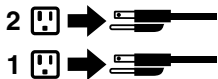


≥ 55 kg (121.2 lbs)

주의:
제품을 들어 올릴 때
안전 규제를 따르십시오.



주의:
장치의 전원 제어 버튼 및 전원 공급 장치의 전원 스위치를 사용하여 장치에 공급되는 전기를 차단하지 마십시오.
장치는 둘 이상의 코드를 가지고 있을 수 있습니다. 장치에서 모든 전원을 차단하려면 콘센트에서 코드가 모두
분리되어 있는지 확인하십시오.



PELIGRO

La corriente eléctrica procedente de cables de alimentación, teléfonos y cables de comunicación puede ser peligrosa.

Para evitar el riesgo de descarga eléctrica:

- No conecte ni desconecte los cables ni realice ninguna tarea de instalación, mantenimiento o reconfiguración de este producto durante una tormenta eléctrica.
- Conecte todos los cables de alimentación a tomas de corriente debidamente cableadas y conectadas a tierra.
- Cualquier equipo que se conecte a este producto también debe conectarse a tomas de corriente debidamente cableadas.
- Siempre que sea posible, utilice una sola mano para conectar o desconectar los cables de señal.

- No encienda nunca un equipo cuando hay señales de fuego, agua o daños estructurales.
- Desconecte los cables de alimentación, los sistemas de telecomunicaciones, las redes y los módems conectados antes de abrir las cubiertas de los dispositivos, a menos que se indique lo contrario en los procedimientos de instalación y configuración.
- Conecte y desconecte los cables, como se describe en la tabla siguiente, cuando instale, mueva o abra las cubiertas de este producto o de los dispositivos conectados.

Para conectar	Para desconectar
<ol style="list-style-type: none"> 1. APÁGUELO todo. 2. En primer lugar, conecte todos los cables a los dispositivos. 3. Conecte los cables de señal a los conectores. 4. Enchufe los cables de alimentación a las tomas de corriente. 5. Encienda el dispositivo. 	<ol style="list-style-type: none"> 1. APÁGUELO todo. 2. En primer lugar, desenchufe los cables de alimentación de las tomas de corriente. 3. Desconecte los cables de señal de los conectores. 4. Desconecte todos los cables de los dispositivos.



PRECAUCIÓN:

Cuando sustituya una batería de litio, utilice solamente una batería número de pieza 45C1566 u otra de tipo equivalente recomendada por el fabricante. Si su sistema dispone de un módulo que contiene una batería de litio, reemplácelo sólo con el mismo tipo de módulo, del mismo fabricante. La batería contiene litio y puede explotar si no se utiliza, manipula o desecha correctamente.

No debe:

- Arrojarla al agua o sumergirla en ella
- Exponerla a temperaturas superiores a 100°C (212°F)
- Repararla o desmontarla

Deshágase de la batería según especifiquen las leyes o normas locales.



PRECAUCIÓN:

Cuando haya productos láser (como unidades de CD-ROM, unidades de DVD, dispositivos de fibra óptica o transmisores) instalados, tenga en cuenta lo siguiente:

- No quite las cubiertas. Si quita las cubiertas del producto láser, podría quedar expuesto a radiación láser peligrosa. Dentro del dispositivo no existe ninguna pieza que requiera servicio técnico.
- Si usa controles o ajustes o realiza procedimientos que no sean los especificados aquí, podría exponerse a radiaciones peligrosas.



PELIGRO

Algunos productos láser tienen incorporado un diodo láser de clase 3A o clase 3B. Tenga en cuenta lo siguiente:

Cuando se abre, queda expuesto a radiación láser. No mire directamente al rayo láser, ni siquiera con instrumentos ópticos, y evite exponerse directamente al rayo láser.



≥18 kg



≥32 kg



≥55 kg

PRECAUCIÓN:

Adopte procedimientos seguros al levantar el equipo.



PRECAUCIÓN:

El botón de control de alimentación del dispositivo y el interruptor de alimentación de la fuente de alimentación no desconectan la corriente eléctrica suministrada al dispositivo. Además, el dispositivo podría tener más de un cable de alimentación. Para suprimir toda la corriente eléctrica del dispositivo, asegúrese de que todos los cables de alimentación estén desconectados de la toma de corriente.



Chapter 2. Product overview

This chapter provides the general information about your computer.

Locations

This section provides the following topics:

- “Locating connectors, controls, and indicators on the front of your computer” on page 27
- “Locating connectors on the rear of your computer” on page 28
- “Locating components” on page 30
- “Locating parts on the system board” on page 32
- “Locating the machine type and model label” on page 34

Note: The components in your computer might look slightly different from the illustrations.

Locating connectors, controls, and indicators on the front of your computer

The following illustration shows the locations of the connectors, controls, and indicators on the front of your computer.

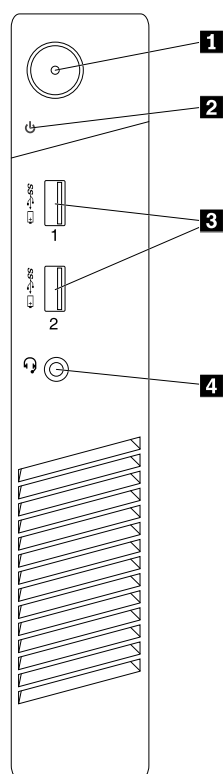


Figure 1. Front connector, control, and indicator locations

1 Power button	2 Power indicator
3 USB 3.0 connectors (2)	4 Headset connector

- **Headset connector**

Used to connect a headset or a headphone to your computer. You can use the headset to record sounds, use speech-recognition software, and listen to the sounds from your computer without disturbing anyone. You can use the headphone only to listen to the sounds from your computer.

- **Power button**

Used to turn on your computer. You can use the power button to turn off your computer only when you cannot use any Google Chrome OS™ shutdown procedure to turn off your computer.

- **Power indicator**

Used to indicate the power status. When the indicator is on, the power is supplied to your computer properly. When the indicator is off, the power cord or power adapter is not connected or other problems occur.

- **USB 3.0 connector**

Used to connect a device that requires a USB 2.0 or USB 3.0 connection, such as a keyboard, a mouse, a scanner, a printer, or a personal digital assistant (PDA).

Locating connectors on the rear of your computer

The following illustration shows the locations of the connectors on the rear of your computer. Some connectors on the rear of your computer are color-coded to help you determine where to connect the cables on your computer.

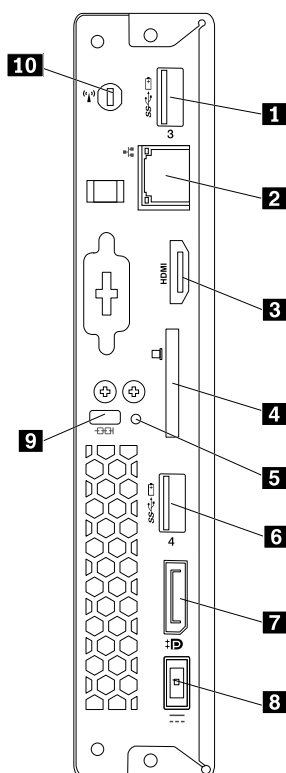


Figure 2. Rear connector locations

1 USB 3.0 connector	2 Ethernet connector
3 HDMI™ connector	4 SD card reader slot (available on some models)
5 Reset button	6 USB 3.0 connector
7 DisplayPort® connector	8 ac power adapter connector
9 Security-lock slot	10 Wi-Fi antenna slot

- **ac power adapter connector**

Used to connect the ac power adapter to your computer for power supply.

- **DisplayPort connector**

Used to connect a high-performance monitor, a direct-drive monitor, or other devices that use a DisplayPort connector.

- **Ethernet connector**

Used to connect an Ethernet cable for a local area network (LAN).

Note: To operate the computer within Federal Communications Commission (FCC) Class B limits, use a Category 5e or better Ethernet cable.

- **HDMI connector**

Used to deliver uncompressed high-definition video and multichannel digital audio signals through a single cable. A high-performance monitor, a direct drive monitor, or another audio or video device that uses a High-Definition Multimedia Interface (HDMI) connector can be attached to this HDMI connector.

- **Reset button**

Used to put the computer into the recovery mode. For more information about restoring your computer, contact the Lenovo Customer Support Center.

- **SD card reader slot**

Used to hold a secure digital (SD) card and make the card be read by the card reader.

- **Security-lock slot**

For information, see “Attaching a Kensington-style cable lock” on page 43.

- **USB 3.0 connector**

Used to connect a device that requires a USB 2.0 or USB 3.0 connection, such as a keyboard, a mouse, a scanner, a printer, or a PDA.

- **Wi-Fi antenna slot**

Used to install the rear Wi-Fi antenna cable connector that is available only on some models. The rear Wi-Fi antenna is installed on the rear Wi-Fi antenna cable connector.

Locating components

The following illustration shows the locations of the various components in your computer. To remove the front cover, see “Removing the front cover” on page 63.

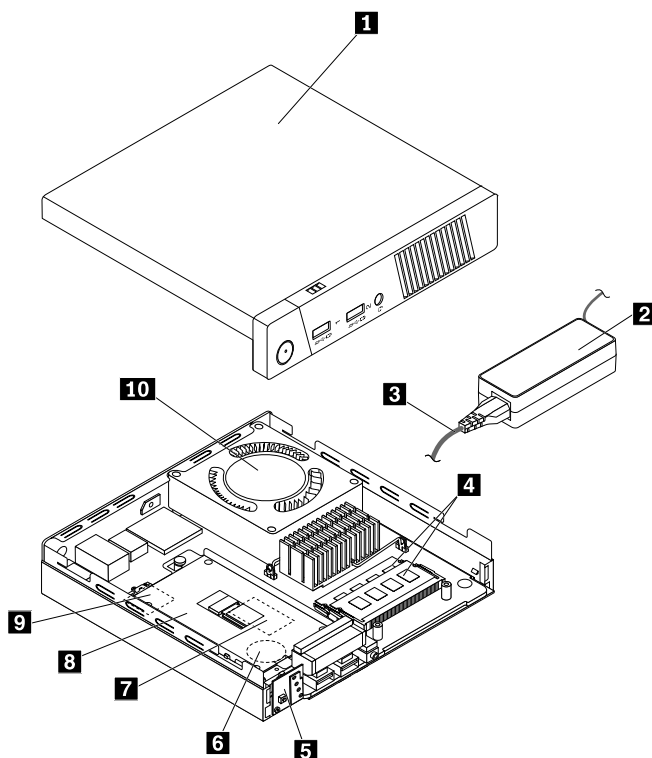


Figure 3. Component locations

1 Front cover	2 ac power adapter (available on some models)
3 Power cord (available on some models)	4 Memory modules (2)
5 Power button board	6 Coin-cell battery
7 M.2 storage drive	8 System board frame
9 M.2 Wi-Fi card module	10 System fan

Locating major FRUs and CRUs

The following illustration shows the locations of the major FRUs and Customer Replaceable Units (CRUs) in the computer. To remove the front cover, see “Removing the front cover” on page 63.

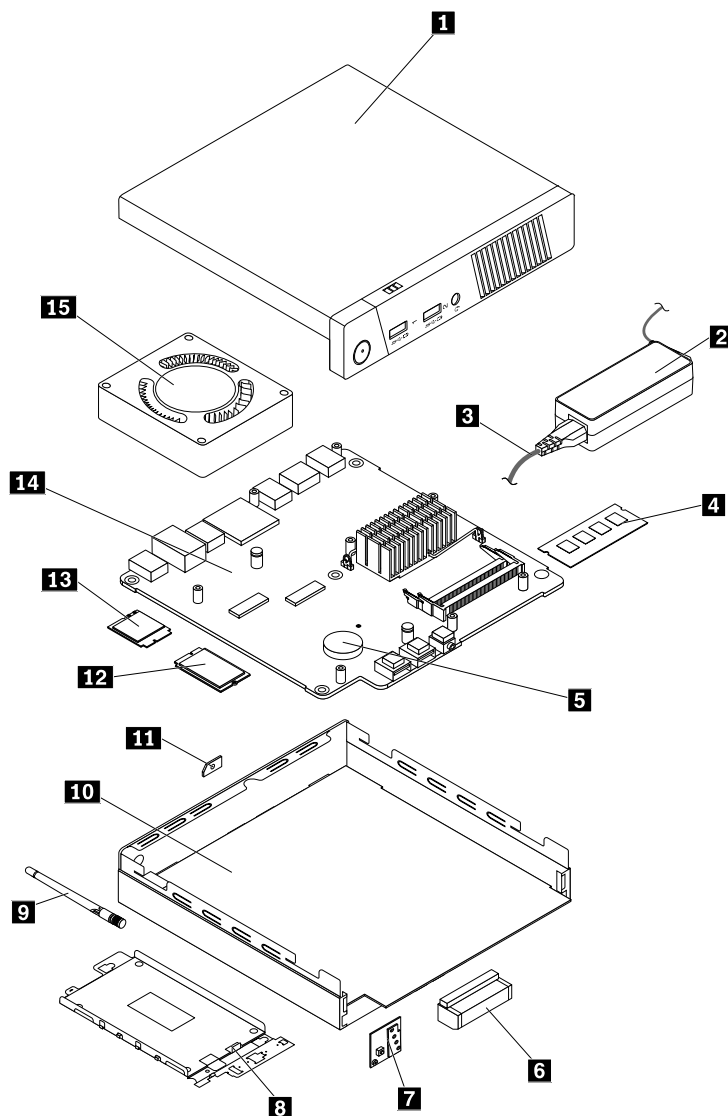


Figure 4. Locating major FRUs and CRUs

The following table lists the major FRUs shown in the illustration above and identifies which FRUs are also self-service CRUs or optional-service CRUs.

Notes:

- Self-service CRUs: These CRUs unplug or are secured by no more than two screws. Examples of these types of CRUs include the keyboard, the mouse, any USB device, and the power cord. Other self-service CRUs depending on product design might include memory modules, adapter cards, hard disk drives, and optical drives.
- Optional-service CRUs: These CRUs are isolated parts within the computer and are concealed by an access panel that is typically secured by more than two screws. Once the access panel is removed, the specific CRU is visible.

Number	FRU description	Self-service CRU	Optional-service CRU
1	Front cover	Yes	No
2	Power adapter (available on some models)	Yes	No
3	Power cord (available on some models)	Yes	No
4	Memory module	No	No
5	Coin-cell battery	No	No
6	Front antenna	No	No
7	Power button board	No	No
8	System board frame	No	No
9	Rear antenna	No	No
10	Rear cover	No	No
11	Reset button board	No	No
12	M.2 storage drive	No	No
13	M.2 Wi-Fi card module	No	No
14	System board	No	No
15	System fan	No	No

For detailed FRU information, such as the FRU part numbers and supported computer models, go to:
<http://www.lenovo.com/serviceparts-lookup>

Locating parts on the system board

The following illustration shows the locations of the parts on the system board.

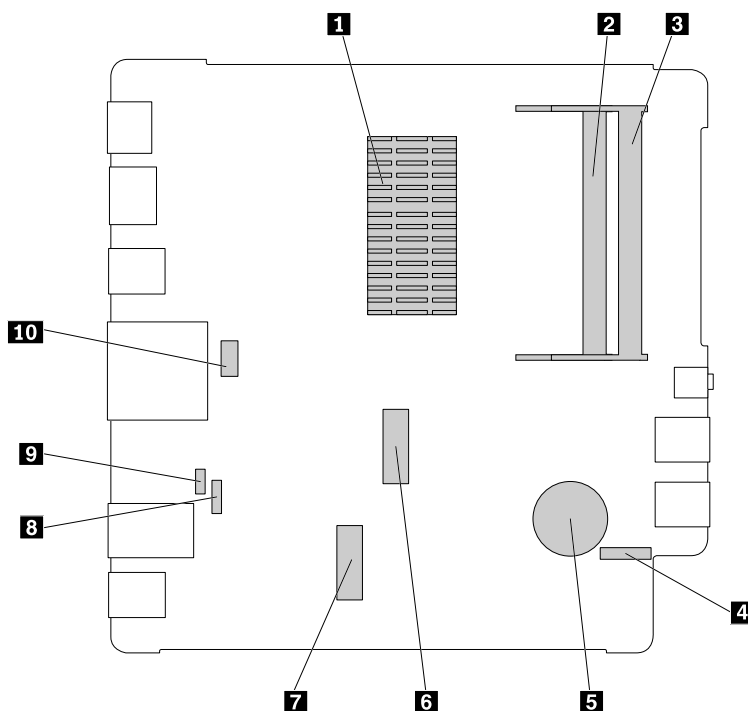


Figure 5. System board part locations

1 Microprocessor heat sink assembly	2 Memory slot 1
3 Memory slot 2	4 Power button board connector
5 Coin-cell battery	6 M.2 storage drive slot
7 M.2 Wi-Fi card slot	8 System fan connector
9 Reset button board connector	10 Debug connector

Locating the machine type and model label

The machine type and model label identifies your computer. When you contact Lenovo for help, the machine type and model information helps support technicians to identify your computer and provide faster service.

The machine type and model label is attached on the side of your computer as shown.

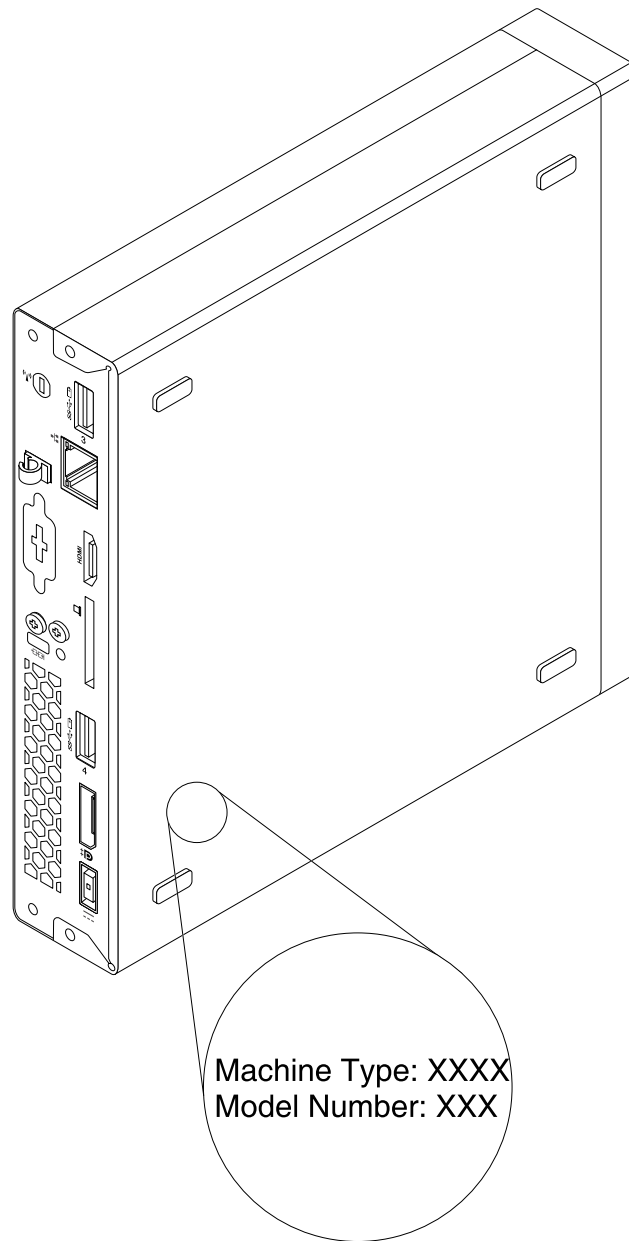


Figure 6. Machine type and model label

Features

The computer features introduced in this section covers a variety of models.

Microprocessor

- Intel® Celeron® microprocessor
- Intel Core™ microprocessor

Memory

Your computer supports two double data rate 3 small outline dual inline memory modules (DDR3 SODIMM).

Internal drives

Your computer supports an M.2 storage drive.

Video features

- Integrated graphics supports the following connectors on your computer:
 - DisplayPort connector
 - HDMI connector

For more information, see “Locating connectors on the rear of your computer” on page 28.

Audio features

Integrated audio controller supports the headset connector on your computer:

For more information, see “Locating connectors, controls, and indicators on the front of your computer” on page 27.

Input/Output (I/O) features

- Headset connector
- Display connectors (DisplayPort connector and HDMI connector)
- Ethernet connector
- USB connectors

For more information, see “Locating connectors, controls, and indicators on the front of your computer” on page 27 and “Locating connectors on the rear of your computer” on page 28.

Power supply

Your computer comes with a 65-watt ac power adapter.

Wireless features

Depending on your computer model, the following wireless features are supported:

- Wireless LAN
- Bluetooth

Specifications

This section lists the physical specifications for your computer.

Note: Lenovo computers meet the eco-design requirements of the ErP Lot 3 regulation. For more information, go to:

<http://www.lenovo.com/ecodeclaration>

Dimensions

Width: 179 mm (7.05 inches)

Height: 34.5 mm (1.36 inches)

Depth: 182 mm (7.17 inches)

Weight

Maximum configuration as shipped: 4.86 kg (10.71 lb) (with package)

Maximum configuration as shipped: 4.14 kg (9.13 lb) (without package)

Environment

- Air temperature:

Operating: From 10°C (50°F) to 35°C (95°F)

Storage in original shipping package: From -40°C (-40°F) to 60°C (140°F)

Storage without package: From -10°C (14°F) to 60°C (140°F)

- Humidity:

Operating: 20%–80% (non-condensing)

Storage: 20%–90% (non-condensing)

- Altitude:

Operating: From -15.2 m (-50 ft) to 3048 m (10 000 ft)

Storage: From -15.2 m (-50 ft) to 10 668 m (35 000 ft)

Electrical input

Input voltage: From 100 V ac to 240 V ac

Input frequency: 50/60 Hz

Chapter 3. Using your computer

This chapter provides information about the following topics:

- “Registering your computer” on page 37
- “Frequently asked questions” on page 37

Registering your computer

When you register your computer with Lenovo, you enter required information into a Lenovo database. The information enables Lenovo to contact you when there is a recall or other severe problem and provide quicker service when you call Lenovo for help. In addition, some locations offer extended privileges and services to registered users.

To register your computer with Lenovo, go to <http://www.lenovo.com/register> and follow the instructions on the screen to register your computer.

Frequently asked questions

The following are some of the frequently asked questions and their answers. The answers can help you optimize the use of your computer.

For the answers to more frequently asked questions about using your computer, go to:
<http://www.lenovo.com/support/faq>

How can I get my user guide in another language?

The user guide is available in various languages at:
<http://www.lenovo.com/UserManuals>

How can I restore my computer settings?

In case of any computer failure, you can contact the Lenovo Customer Support Center. For information about contacting the Customer Support Center, see Chapter 10 “Getting information, help, and service” on page 85.

For more information about using and configuring the Chrome OS operating system, go to the Google Web site at <http://support.google.com> and then follow the instructions on the screen.

Chapter 4. You and your computer

This chapter provides information about accessibility, comfort, and relocating your computer to other countries or regions.

Accessibility and comfort

Good ergonomic practice is important to get the most from your personal computer and to avoid discomfort. Arrange your workplace and the equipment you use to suit your individual needs and the kind of work that you perform. In addition, use healthy work habits to maximize your performance and comfort while using your computer.

The following topics provide information about arranging your work area, setting up your computer equipment, and establishing healthy work habits.

Arranging your workspace

To get the most from your computer, arrange both the equipment you use and your work area to suit your needs and the kind of work you do. Your comfort is of foremost importance, but light sources, air circulation, and the location of electrical outlets can also affect the way you arrange your workspace.

Comfort

Although no single working position is ideal for everyone, here are a few guidelines to help you find a position that suits you best.

Sitting in the same position for a long time can cause fatigue. The backrest and seat of your chair should adjust independently and provide good support. The seat should have a curved front to relieve pressure on the thighs. Adjust the seat so that your thighs are parallel to the floor and your feet are either flat on the floor or on a footrest.

When using the keyboard, keep your forearms parallel to the floor and your wrists in a comfortable position. Use a light touch on the keyboard and your hands and fingers relaxed. Change the angle of the keyboard for maximum comfort by adjusting the position of the keyboard feet.



Adjust the monitor so the top of the screen is at, or slightly below, eye level. Place the monitor at a comfortable viewing distance, usually 51–61 cm (20–24 inches). Then, position the monitor so that you can view it without twisting your body. Also, position other equipment you use regularly, such as the telephone or a mouse, within easy reach.

Glare and lighting

Position the monitor to minimize glare and reflections from overhead lights, windows, and other light sources. Reflected light from shiny surfaces can cause annoying reflections on your monitor screen. Place the monitor at right angles to windows and other light sources, when possible. Reduce overhead lighting, if necessary, by turning off lights or using lower wattage bulbs. If you install the monitor near a window, use curtains or blinds to block the sunlight. You can adjust the brightness and contrast controls on the monitor as the room lighting changes throughout the day.

Where it is impossible to avoid reflections or to adjust the lighting, an antiglare filter placed over the screen might be helpful. However, these filters might affect the clarity of the image on the screen; try them only after you have exhausted other methods of reducing glare.

Dust buildup compounds problems associated with glare. Remember to clean your monitor screen periodically using a soft cloth as directed in your monitor documentation.

Air circulation

Your computer and monitor produce heat. The computer has a fan that pulls in fresh air and forces out hot air. The monitor lets hot air escape through vents. Blocking the air vents can cause overheating, which might result in a malfunction or damage. Place the computer and monitor so that nothing blocks the air vents; usually, 51 mm (2 inches) of air space is sufficient. Also, ensure that the vented air is not blowing on people.

Electrical outlets and cable lengths

The following factors might determine the final placement of your computer:

- Location of electrical outlets
- Length of power cords
- Length of the cables that are connected to the monitor and other devices

When arranging your workspace:

- Avoid the use of extension cords. When possible, plug the computer power cord directly into an electrical outlet.
- Keep power cords and cables neatly routed away from walkways and other areas where they might get kicked accidentally.

For more information about power cords, see “Power cords and power adapters” on page 1.

Accessibility information

Lenovo is committed to providing people with disabilities greater access to information and technology. As a result, the following information provides ways to help users that have hearing, vision, and mobility limitations get the most out of their computer experience.

Assistive technologies enable users to access information in the most appropriate way. Some of these technologies are already provided in your operating system. Others can be purchased through vendors, or accessed through the World Wide Web <http://www.lenovo.com/healthycomputing>.

Assistive technologies

Some accessibility technologies are available through the Accessibility Options program. Depending on your operating system, the number of accessibility options available varies. In general, accessibility options enhance the way users with hearing, vision, or mobility limitations navigate and use their computer. For example, some users might not have the fine motor skills required to use a mouse or select key

combinations. Other users might require larger fonts or high-contrast display modes. In some cases, magnifiers and built-in speech synthesizers are available.

Screen-reader technologies

Screen-reader technologies are primarily focused on software program interfaces, help information systems, and a variety of online documents. For additional information about screen readers, see the following:

- Using PDFs with screen readers:
<http://www.adobe.com/accessibility.html?promoid=DJGVE>
- Using the JAWS screen reader:
<http://www.freedomscientific.com/jaws-hq.asp>
- Using the NVDA screen reader:
<http://www.nvaccess.org/>

Industry-standard connectors

Your computer provides industry-standard connectors that enable you to connect assistive devices.

For more information about the location and function of the connectors, see Chapter 2 “Product overview” on page 27.

Documentation in accessible formats

Lenovo provides electronic documentation in accessible formats, such as properly tagged PDF files or HyperText Markup Language (HTML) files. Lenovo electronic documentation is developed to ensure that visually impaired users can read the documentation through a screen reader. Each image in the documentation also includes adequate alternative text so that visually impaired users can understand the image when they use a screen reader.

Moving your computer to another country or region

When you move your computer to another country or region, you must take local electrical standards into consideration.

If you relocate your computer to a country or region that uses an electrical outlet style different from the type you are currently using, you have to purchase either an electrical plug adapter or a new power cord. You can order a power cord directly from Lenovo.

For power cord information and part numbers, go to:
<http://www.lenovo.com/powercordnotice>

Chapter 5. Security

This chapter provides information about how to protect your computer from theft and unauthorized use.

Attaching a Kensington-style cable lock

You can use a Kensington-style cable lock to secure your computer to a desk, table, or other non-permanent fixture. The cable lock connects to the security-lock slot at the rear of your computer. Depending on the type selected, the cable lock can be operated with a key or combination. The cable lock also locks the buttons used to open the computer cover. This is the same type of lock used with many notebook computers. You can order such a cable lock directly from Lenovo by searching for *Kensington* at: <http://www.lenovo.com/support>

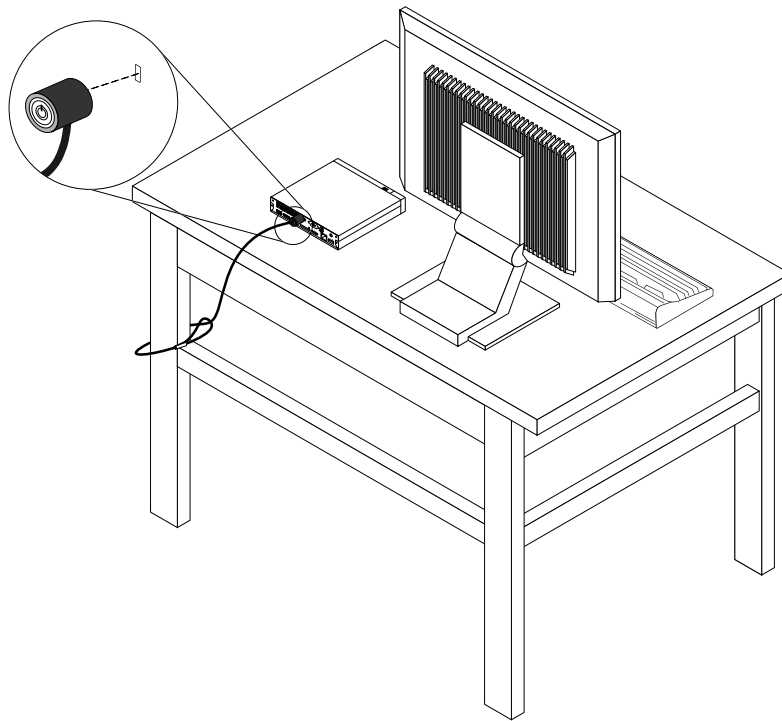


Figure 7. Kensington-style cable lock

Chapter 6. Preventing problems

This chapter provides information that can help you avoid common problems and keep your computer running smoothly.

Basics

Here are some basic points about keeping your computer functioning properly:

- Keep your computer in a clean, dry environment. Ensure that the computer rests on a flat, steady surface.
- Do not cover any of the vents in the computer or monitor. These vents provide airflow to keep your computer from overheating.
- Keep food and drinks away from all parts of your computer. Food particles and spills might make the keyboard and mouse stick and unusable.
- Do not get the power button or other controls wet. Moisture can damage these parts and cause an electrical hazard.
- Always disconnect a power cord by grasping the plug instead of the cord.

Cleaning your computer

It is a good practice to clean your computer periodically to protect the surfaces and ensure trouble-free operation.

CAUTION:

Be sure to turn off the computer and monitor before cleaning the computer and monitor screen.

Computer

Use only mild cleaning solutions and a damp cloth to clean the painted surfaces of the computer.

Display screen

Dust buildup compounds problems associated with glare. Remember to clean your monitor screen periodically.

Cleaning a flat-panel monitor surface

To clean the flexible film surface of a flat-panel computer display, wipe it gently with a soft, dry cloth, or blow on the screen to remove grit and other loose particles. Then moisten a cloth with LCD cleaner and wipe the screen surface.

Many computer supply stores carry the special cleaning fluids for displays. Use cleaning fluids developed for LCD displays only. First apply the fluid to a lint-free, soft cloth, then clean the LCD display. Some computer supply stores carry pre-moistened towelettes for LCD maintenance.

Cleaning a glass-screen surface

To clean a glass-screen surface, wipe it gently with a soft, dry cloth, or blow on the screen to remove grit and other loose particles. Then use a soft cloth moistened with a nonabrasive liquid glass cleaner.

Moving your computer

Take the following precautions before moving your computer:

1. Back up all files and data from the storage drive. There are a variety of backup programs available commercially.
2. Remove all media from your computer, such as discs, USB storage devices, memory cards, and so on.
3. Turn off the computer and all connected devices.
4. Unplug the power cords from electrical outlets.
5. Disconnect communication cables, such as modem or network cables, from the outlets first, and then disconnect the other ends from the computer.
6. Note where any remaining cables are connected to the computer; then, remove them.
7. If you saved the original shipping cartons and packing materials, use them to pack the units. If you are using different cartons, cushion the units to avoid damage.

Chapter 7. Troubleshooting and diagnostics

This chapter provides information about diagnosing and troubleshooting computer problems. If your computer problem is not described here, see Chapter 10 “Getting information, help, and service” on page 85 for additional troubleshooting resources.

Basic troubleshooting

The following table provides some basic instructions to help you troubleshoot your computer problems.

Note: If you cannot correct the problem, have the computer serviced. For a list of service and support telephone numbers, refer to the *Safety, Warranty, and Setup Guide* that comes with your computer or go to the Lenovo Support Web site at:
<http://www.lenovo.com/support/phone>

Symptom	Action
The computer does not start when you press the power button.	Ensure that: <ul style="list-style-type: none">• The power cord is correctly connected to the rear of the computer and to a working electrical outlet.• If your computer has a secondary power switch on the rear of the computer, ensure that it is switched on.• The power indicator on the front of the computer is on.• The computer voltage matches the voltage available at the electrical outlet for your country or region.
The monitor screen is blank.	Ensure that: <ul style="list-style-type: none">• The monitor signal cable is correctly connected to the monitor and to the appropriate monitor connector on the computer.• The monitor power cord is correctly connected to the monitor and to a working electrical outlet.• The monitor is turned on and the brightness and contrast is set correctly.• The computer voltage matches the voltage available at the electrical outlet for your country or region.• If your computer has a discrete graphics card installed, be sure to use a monitor connector on the discrete graphics card.
The computer beeps multiple times before the operating system starts.	Ensure that no keys are stuck.

Troubleshooting procedure

Use the following procedure as a starting point for diagnosing problems you are experiencing with your computer:

1. Ensure that the cables for all connected devices are connected correctly and securely.
2. Ensure that all connected devices that require ac power are connected to properly grounded, functioning electrical outlets.
3. Try using a previously captured configuration to see if a recent change to hardware or software settings has caused a problem. Before restoring a previous configuration, capture your current configuration in case the older configuration settings do not solve the problem or have adverse effects.

Note: For more information about restoring Chrome OS operating system, go to the Google Web site at <http://support.google.com> and then follow the instructions on the screen.

4. If none of these actions solve the problem, seek technical assistance. See Chapter 10 “Getting information, help, and service” on page 85 for more information.

Troubleshooting

Use the troubleshooting information to find solutions to problems that have definite symptoms.

If the symptom occurred immediately after you installed new software or a new hardware option, do the following before referring to the troubleshooting information:

1. Remove the new hardware option or software. If you must remove the computer cover to remove a hardware option, ensure that you review and follow the electrical safety information provided with your computer. For your safety, do not operate the computer with the cover removed.
2. Reinstall the new hardware option or software following the instructions provided by the manufacturer.

Audio problems

This section provides solutions to audio-related problems.

No audio in Chrome

Solutions:

- If you are using powered external speakers that have an On/Off control, ensure the following:
 - The On/Off control is set to the **On** position.
 - The speaker power cable is connected to a properly grounded, functional ac electrical outlet.
- If your external speakers have a volume control, ensure that the volume is not set too low.
- Some models have a front audio panel you can use to adjust volume. If you have a front audio panel, ensure that the volume is not set too low.
- Ensure that your external speakers (and headphones, if used) are connected to the correct audio connector on the computer. Most speaker cables are color-coded to match the connector.

Note: When external-speaker or headphone cables are connected to the audio connector, the internal speaker, if present, is disabled. In most cases, if an audio adapter is installed in one of the expansion slots, the audio function built into the system board is disabled. Therefore, you must use the audio connectors on the audio adapter.

- Ensure that the audio device drivers are correctly installed. To download the latest audio device drivers, go to <http://www.lenovo.com/support> and follow the instructions on the screen.

Sound comes only from one external speaker

Solutions:

- Ensure that the speaker cable is inserted completely into the connector on the computer.
- Ensure that the cable that connects the left speaker to the right speaker is securely connected.
- Ensure that the sound level setting is set correctly.

Intermittent problems

Some problems occur only occasionally and are difficult to repeat.

Solutions:

- Ensure that all cables and cords are securely connected to the computer and connected devices.
- Ensure that when the computer is on, the fan grill is not blocked (there is air flow around the grill), and the fans are working. If airflow is blocked or the fans are not working, the computer might overheat.
- If Small Computer System Interface (SCSI) devices are installed, ensure that the last external device in each SCSI chain is terminated correctly. For more information, see your SCSI documentation.

Monitor problems

This section provides solutions to monitor-related problems.

My screen goes blank while the computer is on

Solutions: Your screen saver or power management might have been enabled. Do one of the following:

- Press a key to exit the screen saver.
- Press the power button to resume the computer from sleep or hibernation mode.

The monitor works when I turn on the computer, but goes blank when I start some application programs

Solutions:

- Connect the monitor signal cable from your monitor to an appropriate connector on the computer. A loose cable might cause intermittent problems.
- Install the device drivers for the application programs. Refer to the documentation for the affected application program to check whether any device drivers are required.

The image is discolored

Solution: The monitor might be affected by interference from nearby equipment. Move fluorescent desk lighting or any equipment that produces magnetic fields further away from the monitor. If the problem persists, do the following:

1. Turn off the monitor.
2. Adjust the placement of the monitor and other devices so that they are at least 305 mm (12 inches) apart.
3. Turn on the monitor.

Networking problems

This section provides solutions to networking-related problems.

My computer cannot be connected to the network

Solutions:

- Connect the cable from the Ethernet connector to the RJ45 connector of the hub.
- Have the latest device driver installed on your computer.
- Set the same duplex for the switch port and the adapter.

If you configured the adapter for full duplex, ensure that the switch port is also configured for full duplex. Setting the wrong duplex mode might degrade performance, cause data loss, or result in lost connections.

- Install all networking software that is necessary for your network environment.

Check with your LAN administrator for the necessary networking software.

The adapter stops working for no reason

Solution: The network driver files might be corrupt or missing. Update the driver by referring to the “Solution” description for the previous problem to ensure that the latest device driver is installed.

My computer is a Gigabit Ethernet model and I use a speed of 1000 Mbps, but the connection fails or errors occur

Solution: Connect the network cable to the Ethernet connector using Category 5 wiring and a 100 BASE-T hub/switch (not 100 BASE-X).

My computer is a Gigabit Ethernet model, but it cannot be connected to the network at 1000 Mbps, but at only 100 Mbps

Solutions:

- Try another cable.
- Set the link partner to auto-negotiate.
- Set the switch to be 802.3ab-compliant (gigabit over copper).

I cannot connect to a wireless LAN using the built-in wireless networking card

Solutions:

- Install the latest wireless LAN drivers.
- Place your computer within the range of a wireless access point.
- Enable the wireless radio.
- Check Network Name (SSID) and your password.

Insufficient free storage drive space

Solution: Free up storage drive space. Clean out your folders from your e-mail application. The folder names and procedures vary depending on your e-mail application. If you need assistance, see the help system for your e-mail application.

Serial connector cannot be accessed

Solutions:

- Connect the serial cable to the serial connector on the computer and to the serial device. If the serial device has its own power cord, connect the power cord to a grounded electrical outlet.
- Turn on the serial device and keep the device online.
- Install any application programs supplied with the serial device. Refer to the documentation that comes with the serial device for more information.
- If you added one serial-connector adapter, install the adapter correctly.

Software problems

This section provides solutions to software-related problems.

When using a sort feature, dates cannot be sorted in the correct order

Solution: Some programs developed before the year 2000 used only the last two digits of a year to sort dates, assuming the first two digits were 19. Consequently, dates cannot be sorted in the correct order. Check with your software manufacturer to see if any updates are available. Many software manufacturers make updates available from the World Wide Web.

Some application programs do not work as expected

Solutions:

- If you are having difficulty with performing a specific task within an application program, refer to the help system for the program.

- If you are having difficulty with the Chrome OS operating system or one of its components, refer to the Chrome OS help information system.
- Check whether the problems are caused by a newly-installed application program.
 1. Ensure that the software is compatible with your computer. Refer to the information supplied with the software for more information.
 2. Verify that other software works correctly on your computer.
 3. Verify that the software you are using works on another computer.
- If you received any error messages while using the program, see the printed documentation that comes with the program or the help system for solutions.
- Check if any updates are available from your manufacturer or Web site. Many software manufacturers make updates available from the World Wide Web.
- If the software program used to work correctly, but does not work correctly now, uninstall the application program and reinstall it.

My USB connectors cannot be accessed

Solutions:

- Connect the USB cable from the USB connector to the USB device. If the USB device has its own power cord, connect the power cord to a grounded electrical outlet.
- Turn on the USB device and keep the device online.
- Install any device drivers or application programs supplied with the USB device. Refer to the documentation that comes with the USB device for more information.
- Detach and reconnect the USB connector to reset the USB device.

Chapter 8. Service checkout and symptom-to-FRU index

This chapter provides information about general service checkout and symptom-to-FRU index.

Service checkout

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

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

Before replacing any FRUs, ensure that the latest level of BIOS is installed on the system. To download the latest BIOS, go to <http://www.lenovo.com/support>.

Problem determination tips

Due to the variety of hardware and software combinations that can be encountered, use the following information to assist you in problem determination. If possible, have this information available when requesting assistance from Service Support and Engineering functions.

- Machine type and model
- Processor or hard disk drive upgrades
- Failure symptom
 - Do diagnostics indicate a failure?
 - What, when, where, single, or multiple systems?
 - Is the failure repeatable?
 - Has this configuration ever worked?
 - If it has been working, what changes were made prior to it failing?
 - Is this the original reported failure?
- Diagnostics version
 - Type and version level
- Hardware configuration
 - Print (print screen) configuration currently in use
 - BIOS level
- Operating system software
 - Type and version level

Notes: To eliminate confusion, identical systems are considered identical only if they:

1. Are the exact machine type and models
2. Have the same BIOS level
3. Have the same adapters/attachments in the same locations
4. Have the same address jumpers/terminators/cabling
5. Have the same software versions and levels

6. Have the same Diagnostic Diskettes (version)
7. Have the same configuration options set in the system
8. Have the same setup for the operating system control files

Comparing the configuration and software set-up between “working and non-working” systems will often lead to problem resolution.

Symptom-to-FRU index

The Symptom-to-FRU index lists error symptoms and possible causes. The most likely cause is listed first. Always begin with “Service checkout” on page 53. This index can also be used to help you decide which FRUs to have available when servicing a computer. If you are unable to correct the problem using this index, go to “Undetermined problems” on page 56.

Notes:

- The Symptom-to-FRU index is not specific to any machine type and are applicable to all ThinkCentre computers.
- If you have both an error message and an incorrect audio response, diagnose the error message first.
- If you cannot run the diagnostic tests or get a diagnostic error code when running a test, first diagnose the POST error message you receive.
- If you did not receive any error message, look for a description of your error symptoms in the first part of this index.

Power supply problems

If you suspect a power problem, use the following procedures.

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

Miscellaneous error conditions

Message/Symptom	FRU/Action
Changing display colors	Display/Monitor
Computer will <i>not</i> power-off. .	<ol style="list-style-type: none"> 1. Power Switch 2. System Board 3. Riser card, if installed.
Computer will <i>not</i> RPL from server	<ol style="list-style-type: none"> 1. Ensure that network is in startup sequence as first device or first device after diskette. 2. Ensure that network adapter is enabled for RPL. 3. Network adapter (Advise network administrator of new MAC address)

Message/Symptom	FRU/Action
Computer will <i>not</i> perform a Wake On LAN® (if applicable)	<ol style="list-style-type: none"> 1. Check power supply and signal cable connections to network adapter. 2. Ensure network administrator is using correct MAC address. 3. Ensure no interrupt or I/O address conflicts. 4. Network adapter (advise network administrator of new MAC address)
Dead computer.	<ol style="list-style-type: none"> 1. Power Supply 2. System Board
Diskette drive in-use light remains on or does not light when drive is active.	<ol style="list-style-type: none"> 1. Diskette Drive 2. System Board 3. Diskette Drive Cable
Blank screen except for flashing cursor.	<ol style="list-style-type: none"> 1. System Board 2. Primary Hard Disk Drive 3. Hard Disk Drive Cable
Incorrect memory size during POST	<ol style="list-style-type: none"> 1. Run the Memory tests. 2. Memory Module 3. System Board
"Insert a Diskette" icon appears with a known-good diagnostics diskette in the first 3.5-inch diskette drive.	<ol style="list-style-type: none"> 1. System Board 2. Diskette Drive Cable 3. Network Adapter
Intensity or color varies from left to right of characters and color bars	<ol style="list-style-type: none"> 1. Display 2. Video adapter (if present) 3. System Board
Non-system disk or disk error-type message with a known-good diagnostic diskette.	<ol style="list-style-type: none"> 1. Diskette Drive 2. System Board 3. Diskette Drive Cable
Other display symptoms not listed above (including blank or illegible display)	<ol style="list-style-type: none"> 1. Display 2. System Board
Power-on indicator or hard disk drive in-use light not on, but computer works correctly	<ol style="list-style-type: none"> 1. Power switch/LED assembly 2. System Board
Printer problems	<ol style="list-style-type: none"> 1. Printer 2. System Board
Program loads from the hard disk with a known-good diagnostics diskette in the first 3.5-inch diskette drive	<ol style="list-style-type: none"> 1. Run the Setup Utility program and check Startup sequence. 2. Diskette Drive 3. Diskette Drive Cable 4. System Board 5. Power Supply

Message/Symptom	FRU/Action
RPL computer cannot access programs from its own hard disk.	<ol style="list-style-type: none"> If network administrator is using LCCM Hybrid RPL, check startup sequence: <ol style="list-style-type: none"> First device - network Second device - hard disk Hard disk drive
RPL computer does not RPL from server	<ol style="list-style-type: none"> Check startup sequence. Check the network adapter LED status.
Serial or parallel connector device failure (system board connector)	<ol style="list-style-type: none"> External Device Self-Test OK? External Device Cable System Board
Serial or parallel connector device failure (adapter connector)	<ol style="list-style-type: none"> External Device Self-Test OK? External Device Cable Alternate Adapter System Board
Some or all keys on the keyboard do not work	<ol style="list-style-type: none"> Keyboard Keyboard Cable System Board

Undetermined problems

This section provides instructions on how to find out the failing devices or adapters.

- Power-off the computer.
- Remove or disconnect the following components (if installed) one at a time.
 - Any adapters
 - Diskette drive
 - External Cache
 - External Cache RAM
 - External devices (modem, printer, or mouse)
 - Extended video memory
 - Memory modules
 - Storage drive
- Power-on the computer to re-test the system.
- Repeat steps 1 through 3 until you find the failing device or adapter.

If all devices and adapters have been removed, and the problem continues, replace the system board. See “Replacing the system board” on page 79.

Overview of the USB recovery shim

You can use a USB recovery shim (hereafter referred to as the recovery shim) as a recovery solution in the Chrome OS operating system.

The recovery shim is a bootable device that is required to service the computer. The recovery shim is used for the following purposes:

- Diagnose problems and restore the system to the factory-default settings.
- Refresh the system with the latest firmware and software.

The recovery shim is not necessary when a Customer Replaceable Unit (CRU) is replaced. If a non-CRU is broken, or there is a strong suspicion that a particular non-CRU is defective, it can be replaced directly. Otherwise, the recovery shim must be used to diagnose problems before any non-CRU is replaced.

The following is the list of CRUs for your computer:

1. ac power adapter
2. Coin-cell battery
3. Front cover
4. Keyboard
5. M.2 storage drive
6. Memory modules
7. Mouse
8. Power adapter
9. Power cord
10. Power button board
11. System board frame
12. System fan
13. Wi-Fi card module

For the definition of CRUs, see “Locating major FRUs and CRUs” on page 30.

Creating the recovery shim

To create a recovery shim, do the following:

1. Prepare a USB storage device with at least 4 gigabytes (GB) space. The required USB storage capacity depends on the size of the recovery image.

Attention: Creating the recovery shim will delete all data stored on the USB device. To avoid data loss, back up all the data that you want to keep.

2. Download latest version of the recovery shim image from the Lenovo Support Web site at <http://www.lenovo.com/support> to create a recovery shim. A Lenovo service credential is required.

Note: Ensure that you create the recovery shim using the latest version of the recovery shim image. Using an earlier version might cause the recovery process to fail.

3. Extract the downloaded file that contains the recovery shim image.
4. Download the Win32 Disk Imager tool from <http://sourceforge.net/projects/win32diskimager/>.
5. Run the imager tool and follow the on-screen instructions to create the recovery shim.

Note: After using the recovery shim, if you want to restore normal usage of the USB storage device, you will need to format the device. Otherwise, you cannot use the storage space on the device.

Enabling or disabling the write-protect function

By default, the on-board Read-Only Memories (ROMs) are set to be write-protected. Before refreshing the Chromebox firmware, set the ROMs to be unprotected by disabling the write-protect function on the system board.

To enable or disable the write-protect function, do the following:

1. Turn off the computer.
2. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
3. Remove the front cover. See “Removing the front cover” on page 63.
4. The screw **1** on the system board is the write-protect screw. To disable the write-protection function, remove the screw. Otherwise, install the screw to enable the write-protection function.

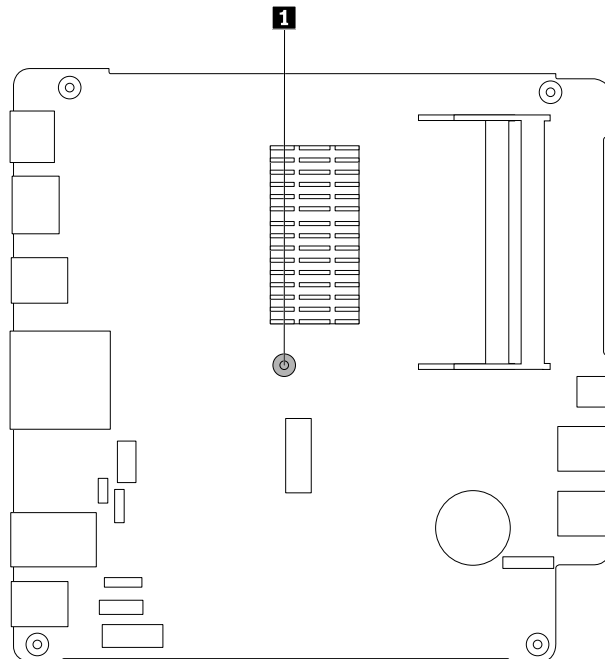


Figure 8. Locating the write-protect screw

5. Install the front cover. See “Removing the front cover” on page 63.

Using the recovery shim

To use the recovery shim that you have created, do the following:

1. Disable the write-protect function. See “Enabling or disabling the write-protect function” on page 58.
2. Attach the ac power adapter to the power connector on the computer.
3. Insert the pointed end of a paperclip into the reset button hole at the rear of the computer. While pressing the paperclip, press the power button to turn on the computer. Then, the recovery mode screen will be displayed.
4. Connect the recovery shim to an available USB connector on the computer, and then follow the instructions on the screen to update the firmware and image.

Note: The update process is automatic, and takes less than 10 minutes. Information about the update status will be displayed on the computer screen during the process.

5. After the update process finishes, the computer will enter the factory-test-image environment. If the factory test reveals a defective component on your computer, turn off the computer, disconnect the ac power adapter, and then replace the defective component. For information about the replacement procedure, see Chapter 9 “Installing or replacing hardware” on page 61.
6. Enable the write-protect function. See “Enabling or disabling the write-protect function” on page 58.
7. Turn on the computer. The computer enters the factory-test-image environment again. It is recommended that you run the Stress test and FATP test to ensure that new components function correctly.
8. Run the GoogleRequiredTests test to restore the operating system to the factory default settings. After the test, all the data stored on the computer will be deleted and the computer will be turned off. If the GoogleRequiredTests test fails, refer to the common mistakes that lead to GoogleRequiredTests test failure in “Factory test items” on page 59.

Note: The GoogleRequiredTests test can be forced to end by pressing f. Force the GoogleRequiredTests test to end only when the test has to be bypassed because it cannot be performed.

9. After the recovery, the Chrome OS operating system is in a clean out-of-the-box state. In order to turn on the computer, attach the ac power adapter to the power connector on the computer first. If applicable, customers must re-enroll the system for enterprise enrollment.

Factory test items

After the system enters the factory-test-image environment, factory test items will run. The factory test process contains the following three types of tests:

- **Stress Test:** This test checks how the system functions under stress by running the maximum workload applications. The Stress test include the test of memory, microprocessor, and graphics card.
- **FATP Test:** This test checks an individual component to verify its function, such as the TPM, display, audio, camera, keyboard, and other components. It is recommended that you run the FATP test on your computer, especially after you replace a hardware component. Some test items might require an HDMI monitor or an SD card. If the devices are not available, the test items can be bypassed, but with the overall test marked as failed. In this case, you need to force the GoogleRequiredTests test to end in order to complete the servicing of the computer.
- **GoogleRequiredTests:** This test checks the status of the current operating system and helps restore the operating system to the factory default settings. If any test item fails, the operating system might not be restored. The following list shows some common mistakes that lead to GoogleRequiredTests test failure:
 - **HWID mismatch:** Each Chromebox has a known hardware configuration. Each configuration is assigned an HWID. Unauthorized parts or missing parts on the computer might result in HWID mismatch.
 - **Write-protect function is off:** The Chrome OS recovery is not completed until the write-protect function is enabled.

Chapter 9. Installing or replacing hardware

This chapter provides instructions on how to install or replace hardware for your computer.

Handling static-sensitive devices

Do not open the static-protective package containing the new part until the defective part has been removed and you are ready to install the new part. Static electricity, although harmless to you, can seriously damage computer components and parts.

When you handle parts and other computer components, take these precautions to avoid static-electricity damage:

- Limit your movement. Movement can cause static electricity to build up around you.
- Always handle parts and other computer components carefully. Handle PCI cards, memory modules, system boards, and microprocessors by the edges. Never touch any exposed circuitry.
- Prevent others from touching the parts and other computer components.
- Touch the static-protective package containing the part to a metal expansion-slot cover or other unpainted metal surface on the computer for at least two seconds. This reduces static electricity from the package and your body before you install or replace a new part.
- When possible, remove the new part from the static-protective package, and install it directly in the computer without setting the part down. When this is not possible, place the static-protective package that the part came in on a smooth, level surface and place the part on the package.
- Do not place the part on the computer cover or other metal surface.

Installing or replacing hardware

This section provides instructions on how to install or replace hardware for your computer. You can expand the capabilities of your computer and maintain your computer by installing or replacing hardware.

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

Notes:

- Use only computer parts provided by Lenovo.
- When installing or replacing an option, use the appropriate instructions in this section along with the instructions that come with the option.

Installing external options

You can connect external options to your computer, such as external speakers, a printer, or a scanner. For some external options, you must install additional software in addition to making the physical connection. When installing an external option, see “Locating connectors, controls, and indicators on the front of your computer” on page 27 and “Locating connectors on the rear of your computer” on page 28 to identify the required connector. Use the instructions shipped with the option to help you make the connection and install any software or device drivers that are required for the option.

Replacing the ac power adapter

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

CAUTION:



Before you open the front cover, turn off the computer and wait several minutes until the computer is cool.

To replace the ac power adapter, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer. See “Locating connectors, controls, and indicators on the front of your computer” on page 27 and “Locating connectors on the rear of your computer” on page 28.
2. Remove the power adapter cable from the ac power adapter cable loop at the rear of the computer and then disconnect the ac power adapter from the computer.

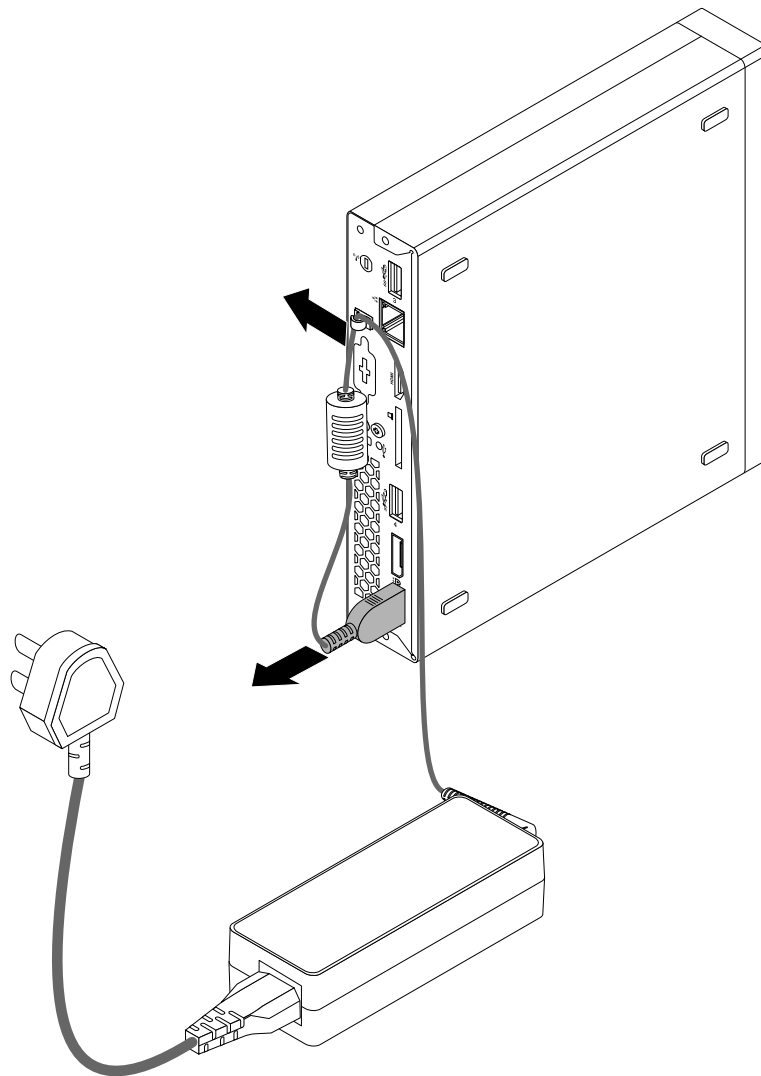


Figure 9. Removing the ac power adapter

3. Connect a new ac power adapter to the ac power adapter connector at the rear of your computer and a workable electrical outlet. Then, secure the power adapter cable into the power adapter cable loop at the rear of the computer as shown.

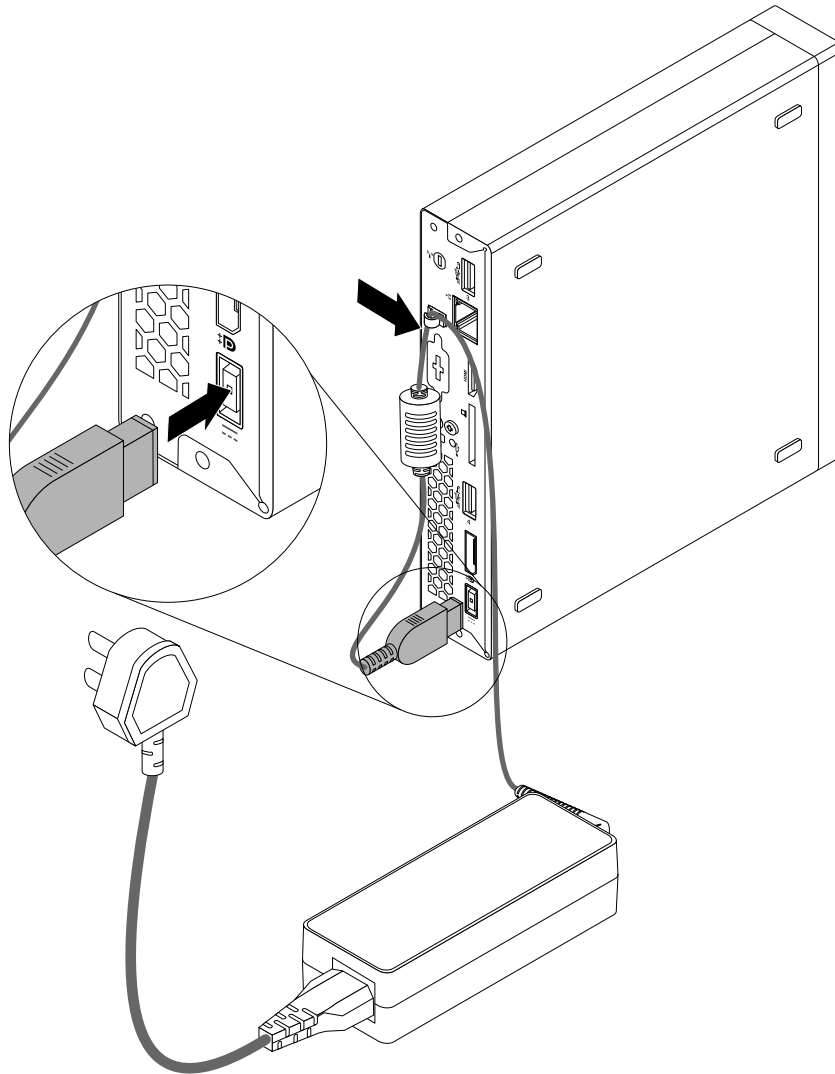


Figure 10. Installing the ac power adapter

Removing the front cover

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

CAUTION:



Before you open the front cover, turn off the computer and wait several minutes until the computer is cool.

To remove the front cover, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer. See “Locating connectors, controls, and indicators on the front of your computer” on page 27 and “Locating connectors on the rear of your computer” on page 28.
2. Unlock any locking device that secures the front cover. See Chapter 5 “Security” on page 43.

3. Remove the screw that secures the front cover.

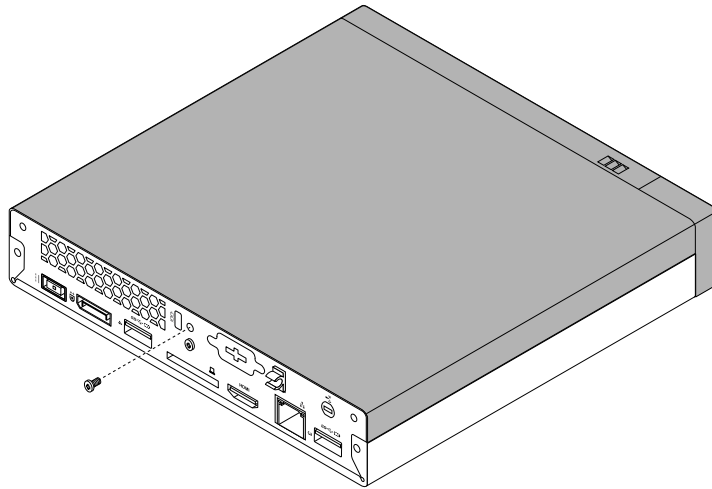


Figure 11. Removing the screw that secures the front cover

4. Slide the front cover to the front of the computer. Then, lift the front cover to remove it from the computer.

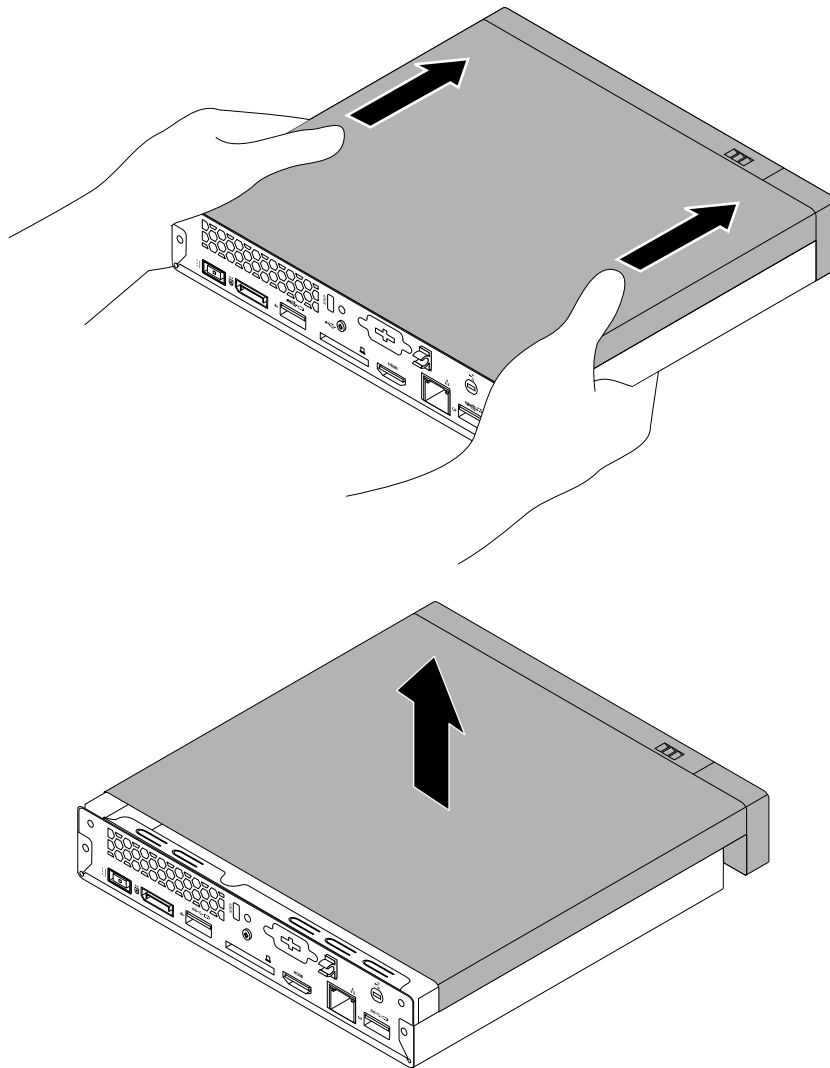


Figure 12. Removing the front cover

Replacing the system fan

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

To replace the system fan, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
2. Remove the front cover. See “Removing the front cover” on page 63.
3. Disconnect the system fan cable from the system fan connector on the system board. See “Locating parts on the system board” on page 32.

4. Remove the four screws that secure the system fan, and then remove the system fan as shown.

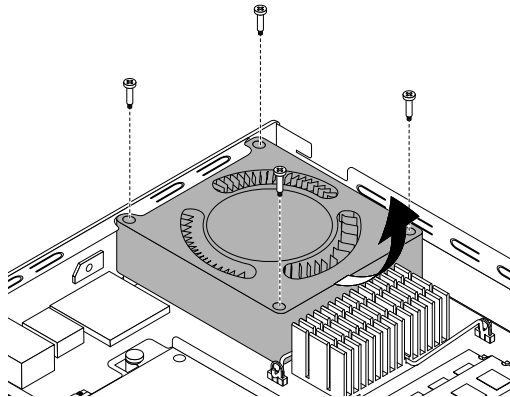


Figure 13. Removing the system fan

5. Position a new system fan as shown, and align the four screw holes in the system fan with the corresponding mounting studs on the system board. Then, install the four screws to secure the system fan to the system board.

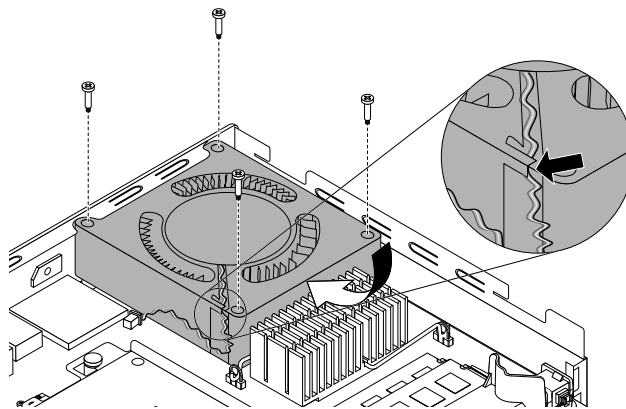


Figure 14. Installing the system fan

6. Connect the system fan cable to the system fan connector on the system board. See “Locating parts on the system board” on page 32.

What to do next:

- To work with another piece of hardware, go to the appropriate section.
- To complete the installation or replacement, go to “Completing the parts replacement” on page 81.

Replacing a memory module

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

Your computer has two slots for installing or replacing DDR3 SODIMMs that provide up to a maximum of 8 GB system memory. When installing or replacing a memory module, use 2 GB or 4 GB DDR3 SODIMMs in any combination up to a maximum of 8 GB.

Note: When there is only one memory module on your computer, ensure that the memory module is installed in the memory slot 1.

To replace a memory module, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
2. Remove the front cover. See “Removing the front cover” on page 63.
3. Lay the computer on its side for easier access to the system board.
4. Locate the memory slot. See “Locating parts on the system board” on page 32.
5. Open the retaining clips and gently pull the memory module out of the memory slot.

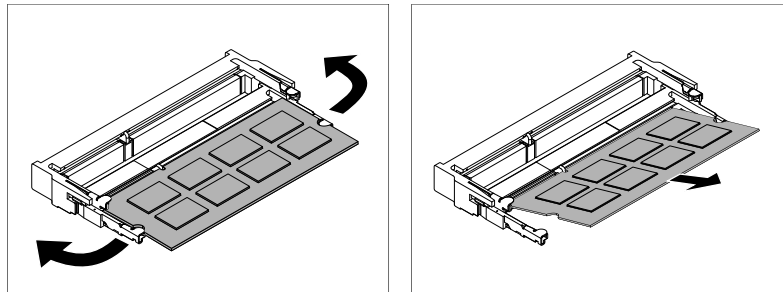


Figure 15. Removing a memory module

6. Position a new memory module over the memory slot. Ensure that the notch **1** on the memory module aligns correctly with the slot key **2** on the system board. Push the memory module straight down into the slot until the retaining clips close.

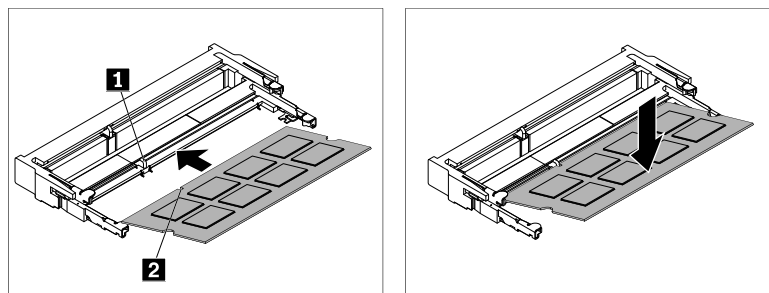


Figure 16. Installing a memory module

What to do next:

- To work with another piece of hardware, go to the appropriate section.
- To complete the installation or replacement, go to “Completing the parts replacement” on page 81.

Replacing the system board frame

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

CAUTION:



The system fan might be very hot. Before you open the front cover, turn off the computer and wait several minutes until the computer is cool.

To replace the system board frame, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
2. Remove the front cover. See “Removing the front cover” on page 63.
3. Lay the computer on its side for easier access to the system board.
4. Remove the two screws that secure the system board frame. Slide the system board frame as shown to unlock it, and then lift the system board frame to remove it from the system board.

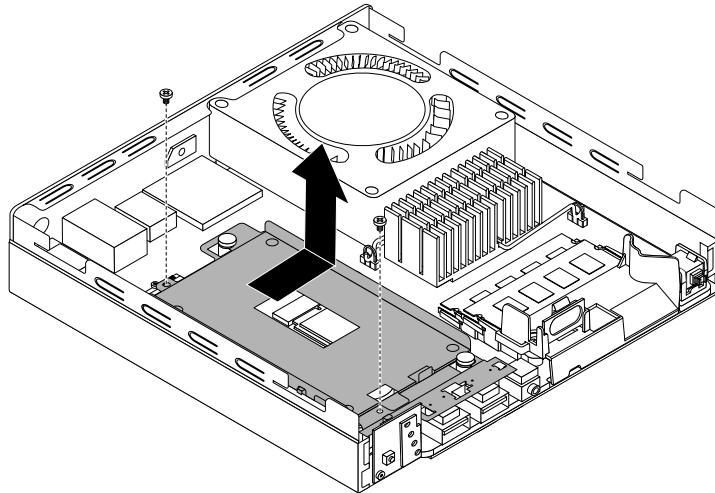


Figure 17. Removing the system board frame

5. Position a new system board frame on the system board so that the two holes on the system board frame are aligned with the standoffs on the system board. Slide the system board frame as shown until the two screw holes **1** are aligned with the corresponding mounting studs on the system board.

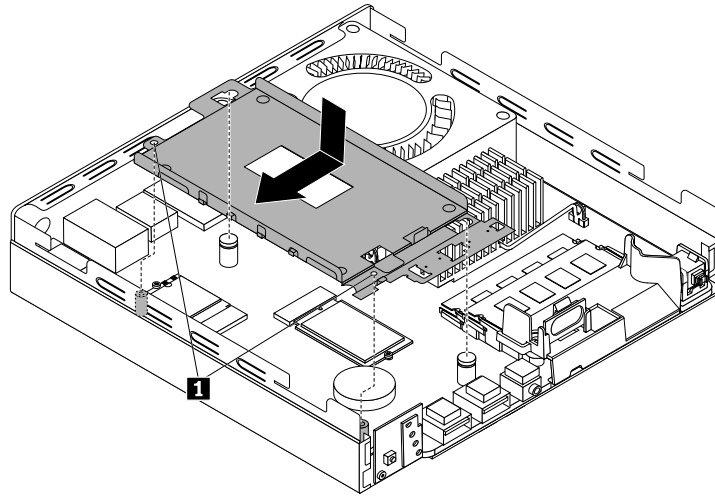


Figure 18. Installing the system board frame

6. Install the two screws to secure the system board frame.

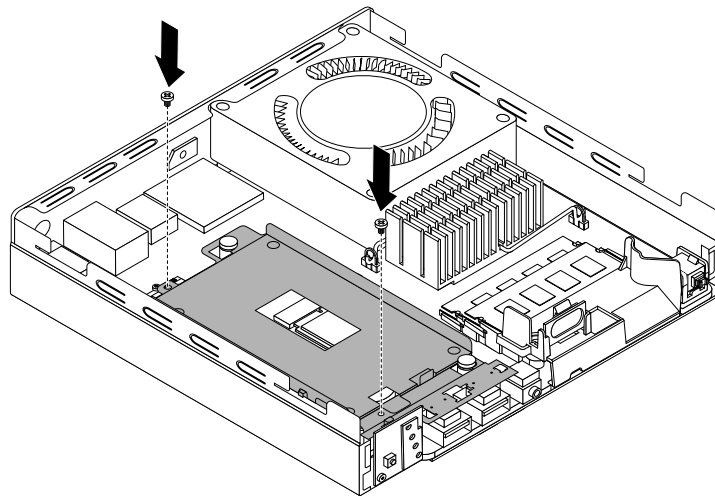


Figure 19. Installing the screws to secure the system board frame

What to do next:

- To work with another piece of hardware, go to the appropriate section.
- To complete the installation or replacement, go to “Completing the parts replacement” on page 81.

Replacing the power button board

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

To replace the power button board, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
2. Remove the front cover. See “Removing the front cover” on page 63.
3. Remove the system board frame. See “Replacing the system board frame” on page 68.
4. Disconnect the power button board cable from the power button board connector on the system board. See “Locating parts on the system board” on page 32.
5. Remove the screw that secures the power button board to the computer, and then pull the power button board to remove it from the computer.

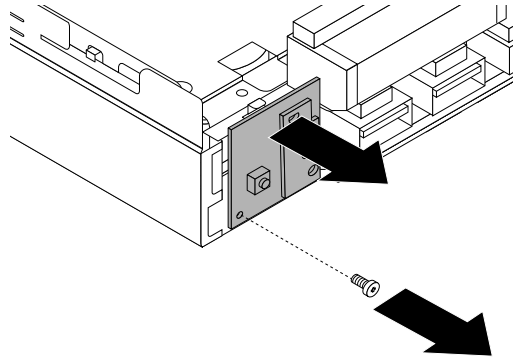


Figure 20. Removing the power button board

6. Align the screw hole in the new power button board with the tab on the computer and position the new power button board in the computer. Then, install the screw to secure the new power button board on the rear cover.

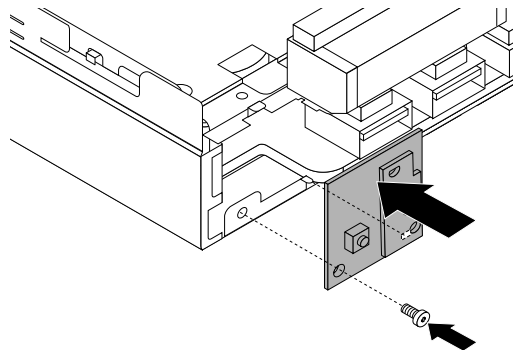


Figure 21. Installing the power button board

7. Connect the power button board cable to the power button board connector on the system board. See “Locating parts on the system board” on page 32.
8. Reinstall the system board frame. See “Replacing the system board frame” on page 68.

What to do next:

- To work with another piece of hardware, go to the appropriate section.
- To complete the installation or replacement, go to “Completing the parts replacement” on page 81.

Replacing the coin-cell battery

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

Your computer has a special type of memory that maintains the date, time, and settings for built-in features, such as parallel-connector assignments (configuration). A coin-cell battery keeps this information active when you turn off the computer.

The coin-cell battery normally requires no charging or maintenance throughout its life; however, no coin-cell battery lasts forever. If the coin-cell battery fails, the date, time, and configuration information (including passwords) are lost. An error message is displayed when you turn on the computer.

Refer to the “Lithium coin-cell battery notice” in the *Safety, Warranty, and Setup Guide* for information about replacing and disposing of the coin-cell battery.

To replace the coin-cell battery, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
2. Remove the front cover. See “Removing the front cover” on page 63.
3. Remove the system board frame. See “Replacing the system board frame” on page 68.
4. Locate the coin-cell battery. See “Locating parts on the system board” on page 32.
5. Remove the coin-cell battery.

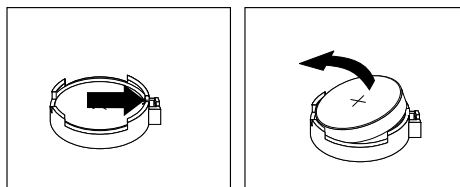


Figure 22. Removing the coin-cell battery

6. Install a new coin-cell battery.

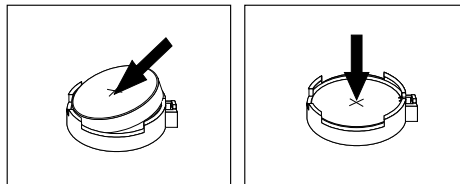


Figure 23. Installing a new coin-cell battery

7. Reinstall the system board frame. See “Replacing the system board frame” on page 68.

8. Reinstall the front cover and connect the cables. See “Completing the parts replacement” on page 81.
9. Turn on the computer and all connected devices.

Note: When the computer is turned on for the first time after replacing the coin-cell battery, an error message might be displayed. This is normal after replacing the coin-cell battery.

Replacing the M.2 storage drive

To replace the M.2 storage drive, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
2. Remove the front cover. See “Removing the front cover” on page 63.
3. Remove the system board frame. See “Replacing the system board frame” on page 68.
4. Locate the M.2 storage drive slot. See “Locating parts on the system board” on page 32.
5. Remove the screw that secures the M.2 storage drive to the system board so that the M.2 storage drive pops up.

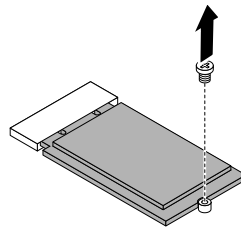


Figure 24. Removing the screw that secures the M.2 storage drive

6. Pull the M.2 storage drive to remove it from the M.2 storage card slot.

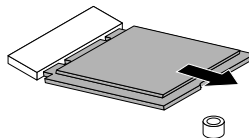


Figure 25. Removing the M.2 storage drive

7. Insert a new M.2 storage drive into the M.2 storage drive slot. Then, pivot the M.2 storage drive downward.

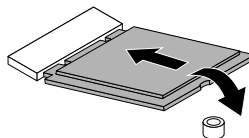


Figure 26. Installing the M.2 storage drive

8. Install the screw to secure the M.2 storage drive to the system board.

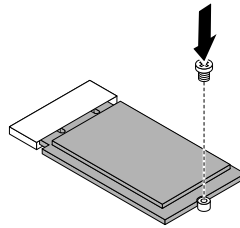


Figure 27. Installing the screw that secures the M.2 storage drive

9. Reinstall the system board frame. See “Replacing the system board frame” on page 68.

What to do next:

- To work with another piece of hardware, go to the appropriate section.
- To complete the installation or replacement, go to “Completing the parts replacement” on page 81.

Replacing the M.2 Wi-Fi card module

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

To replace the M.2 Wi-Fi card module, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
2. Remove the front cover. See “Removing the front cover” on page 63.
3. Remove the system board frame. See “Replacing the system board frame” on page 68.
4. Locate the M.2 Wi-Fi card slot. See “Locating parts on the system board” on page 32.
5. Disconnect the M.2 Wi-Fi antenna cables from the M.2 Wi-Fi card module. Then, remove the screw that secures the card module so that the M.2 Wi-Fi card pops up.

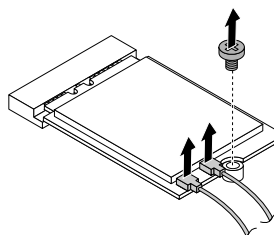


Figure 28. Removing the M.2 Wi-Fi card module cables

6. Pull the M.2 Wi-Fi card module to remove it from the M.2 Wi-Fi card slot.

Note: Do not over pivot the M.2 Wi-Fi card module.

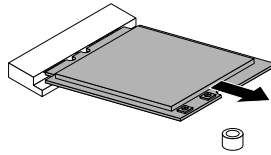


Figure 29. Removing the M.2 Wi-Fi card module

7. Insert a new M.2 Wi-Fi card module into the M.2 Wi-Fi card slot. Then, pivot the M.2 Wi-Fi card module downward.

Note: Do not touch the notched edge of the M.2 Wi-Fi card module.

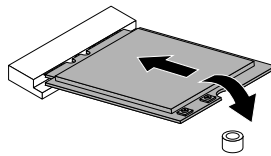


Figure 30. Installing the M.2 Wi-Fi card module

8. Install the screw to secure the M.2 Wi-Fi card module into the system board. Then, connect the M.2 Wi-Fi antenna cables to the M.2 Wi-Fi card module.

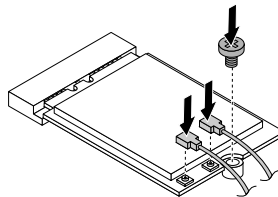


Figure 31. Connecting the M.2 Wi-Fi antenna cables

9. Reinstall the system board frame. See “Replacing the system board frame” on page 68.

What to do next:

- To work with another piece of hardware, go to the appropriate section.
- To complete the installation or replacement, go to “Completing the parts replacement” on page 81.

Replacing the M.2 Wi-Fi antennas

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

To replace the M.2 Wi-Fi antennas, refer to the following sections:

- “Replacing the front M.2 Wi-Fi antenna” on page 75
- “Replacing the rear M.2 Wi-Fi antenna” on page 77

Replacing the front M.2 Wi-Fi antenna

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

To replace the front M.2 Wi-Fi antenna, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
2. Remove the front cover. See “Removing the front cover” on page 63.
3. Peel off the paper that protects the sticker on the bottom of the front Wi-Fi antenna.

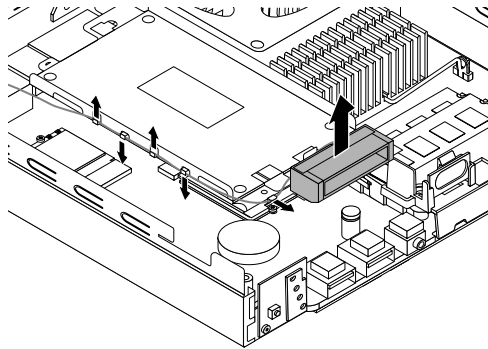


Figure 32. Removing the front M.2 Wi-Fi antenna

4. Align the two small columns on the bottom of the front M.2 Wi-Fi antenna with the two holes on the system board frame as shown. Then, stick the front M.2 Wi-Fi antenna onto the system board frame.

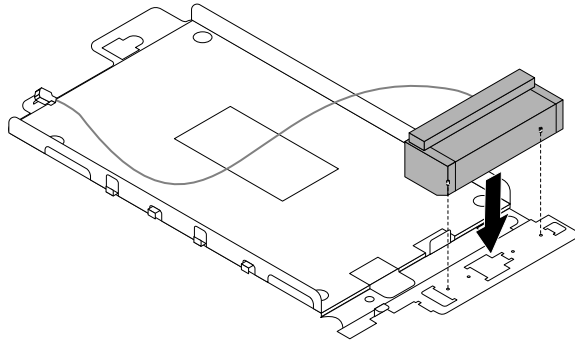


Figure 33. Sticking the front M.2 Wi-Fi antenna

5. Route the front M.2 Wi-Fi antenna cable through the five hooks on the system board frame as shown.

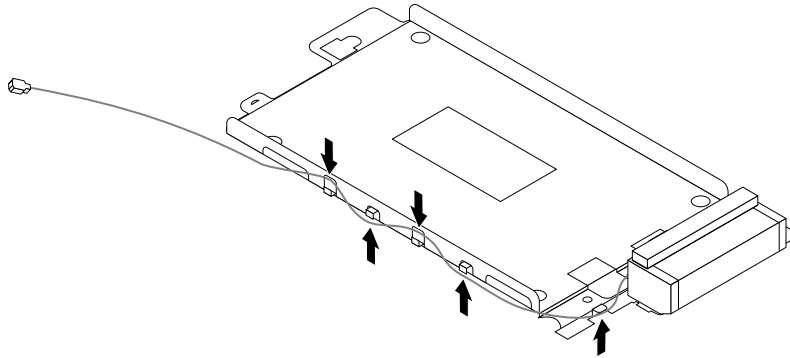


Figure 34. Routing the front M.2 Wi-Fi antenna cable

6. Route the front M.2 Wi-Fi antenna cable as shown, and then connect it to the M.2 Wi-Fi card module.

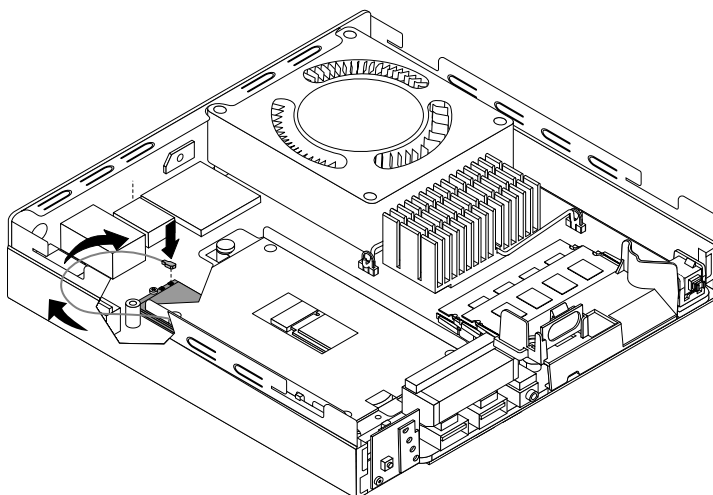


Figure 35. Installing the front M.2 Wi-Fi antenna cable

What to do next:

- To work with another piece of hardware, go to the appropriate section.
- To complete the installation or replacement, go to “Completing the parts replacement” on page 81.

Replacing the rear M.2 Wi-Fi antenna

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

To replace the rear M.2 Wi-Fi antenna, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
2. Straighten the rear M.2 Wi-Fi antenna so that it can be more easily twisted.
3. Hold the thicker end of the rear M.2 Wi-Fi antenna and unscrew the M.2 Wi-Fi antenna from the rear of the computer.

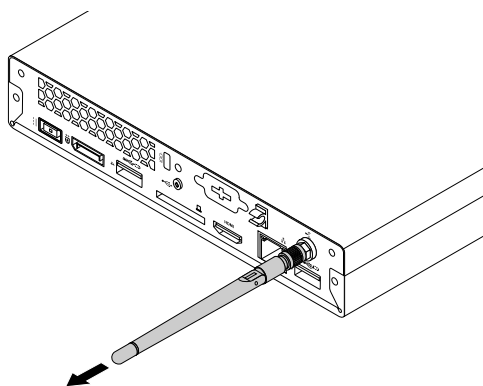


Figure 36. Removing the rear M.2 Wi-Fi antenna

4. Install the new rear M.2 Wi-Fi antenna to the rear M.2 Wi-Fi antenna cable connector attached on the rear of the computer.
5. Adjust the angle of the rear antenna to reduce the risk of breaking the antenna by accident.

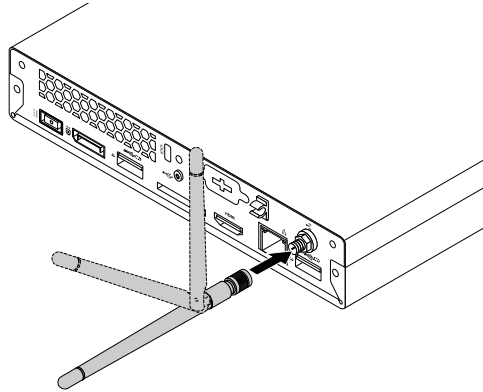


Figure 37. Installing the rear M.2 Wi-Fi antenna

What to do next:

- To work with another piece of hardware, go to the appropriate section.
- To complete the installation or replacement, go to “Completing the parts replacement” on page 81.

Replacing the reset button board

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

To replace the reset button board, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
2. Remove the front cover. See “Removing the front cover” on page 63.
3. Locate the reset button board. See “Locating components” on page 30.
4. Disconnect the reset button board cable from the reset button board connector on the system board. See “Locating parts on the system board” on page 32.

5. Remove the screw that secures the reset button board, and then pull the reset button board to remove it from the rear cover.

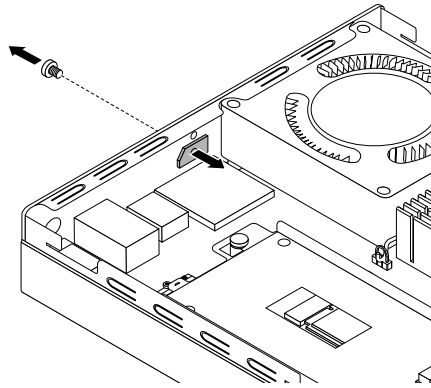


Figure 38. Removing the reset button board

6. Align the new reset button board with the screw hole in the rear cover, and then install the screw to secure the reset button board.

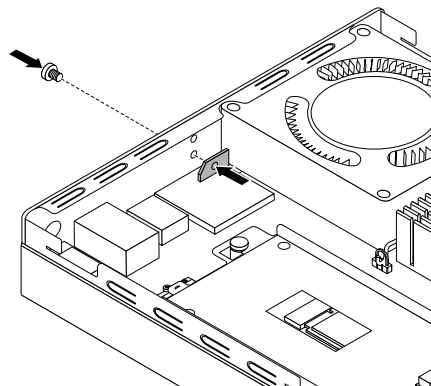


Figure 39. Installing the reset button board

7. Connect the reset button board cable to the reset button board connector on the system board. See “Locating parts on the system board” on page 32.

What to do next:

- To work with another piece of hardware, go to the appropriate section.
- To complete the installation or replacement, go to “Completing the parts replacement” on page 81.

Replacing the system board

Attention: Do not open your computer or attempt any repair before reading and understanding the Chapter 1 “Read this first: Important safety information” on page 1.

To replace the system board, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
2. Remove the front cover. See “Removing the front cover” on page 63.
3. Remove the system fan. See “Replacing the system fan” on page 65.
4. Remove the memory modules. See “Replacing a memory module” on page 66.
5. Remove the front M.2 Wi-Fi antenna. See “Replacing the front M.2 Wi-Fi antenna” on page 75.
6. Remove the power button board. See “Replacing the power button board” on page 69.
7. Remove the system board frame. See “Replacing the system board frame” on page 68.
8. Remove the coin-cell battery. See “Replacing the coin-cell battery” on page 71.
9. Remove the M.2 storage drive. See “Replacing the M.2 storage drive” on page 72.
10. Remove the M.2 Wi-Fi card module. See “Replacing the M.2 Wi-Fi card module” on page 73.
11. Remove the rear M.2 Wi-Fi antenna. See “Replacing the rear M.2 Wi-Fi antenna” on page 77.
12. Remove the reset button board. See “Replacing the reset button board” on page 78.
13. Record the cable routing and cable connections, and then disconnect all cables from the system board.
14. Remove the five screws that secure the system board, and then carefully lift the system board to remove it from the rear cover.

Note: Carefully handle the system board by its edges.

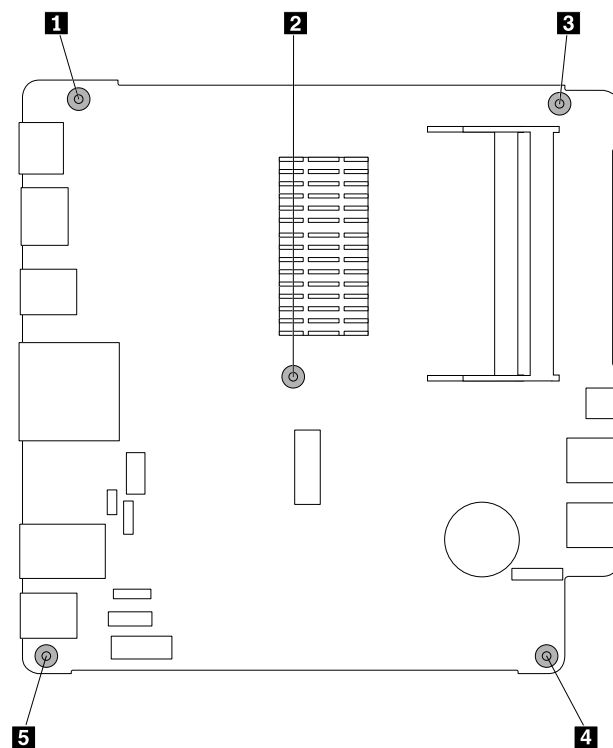


Figure 40. Removing the five screws that secure the system board

15. Install the new system board into place by aligning the five screw holes in the new system board with the corresponding mounting studs on the rear cover. Then, install the five screws to secure the system board.
16. Install the reset button board. See “Replacing the reset button board” on page 78.

17. Install the rear M.2 Wi-Fi antenna. See “Replacing the rear M.2 Wi-Fi antenna” on page 77.
18. Install the M.2 Wi-Fi card module. See “Replacing the M.2 Wi-Fi card module” on page 73.
19. Install the M.2 storage drive. See “Replacing the M.2 storage drive” on page 72.
20. Install the coin-cell battery. See “Replacing the coin-cell battery” on page 71.
21. Install the system board frame. See “Replacing the system board frame” on page 68.
22. Install the power button board. See “Replacing the power button board” on page 69.
23. Install the front M.2 Wi-Fi antenna. See “Replacing the front M.2 Wi-Fi antenna” on page 75.
24. Install the memory modules. See “Replacing a memory module” on page 66.
25. Install the system fan. See “Replacing the system fan” on page 65.
26. Route all the cables that you disconnected from the system board, and then connect the cables to the system board. See “Locating parts on the system board” on page 32 to locate the connectors on the system board and connect cables.

What to do next:

- To work with another piece of hardware, go to the appropriate section.
- To complete the installation or replacement, go to “Completing the parts replacement” on page 81.

Completing the parts replacement

After completing the installation or replacement for all parts, you need to reinstall the front cover and reconnect cables.

To reinstall the front cover and reconnect cables to your computer, do the following:

1. Ensure that all components have been reassembled correctly and that no tools or loose screws are left inside your computer. See “Locating components” on page 30 for the locations of various components in your computer.
2. Ensure that the cables are routed correctly before reinstalling the front cover. Keep cables clear of the hinges and sides of the rear cover to avoid interference with reinstalling the front cover.

3. Position the front cover on the rear cover so that the rail guides on the bottom of the front cover engage the rails on the rear cover. Then, push the front cover to the front of the computer until it snaps into position.

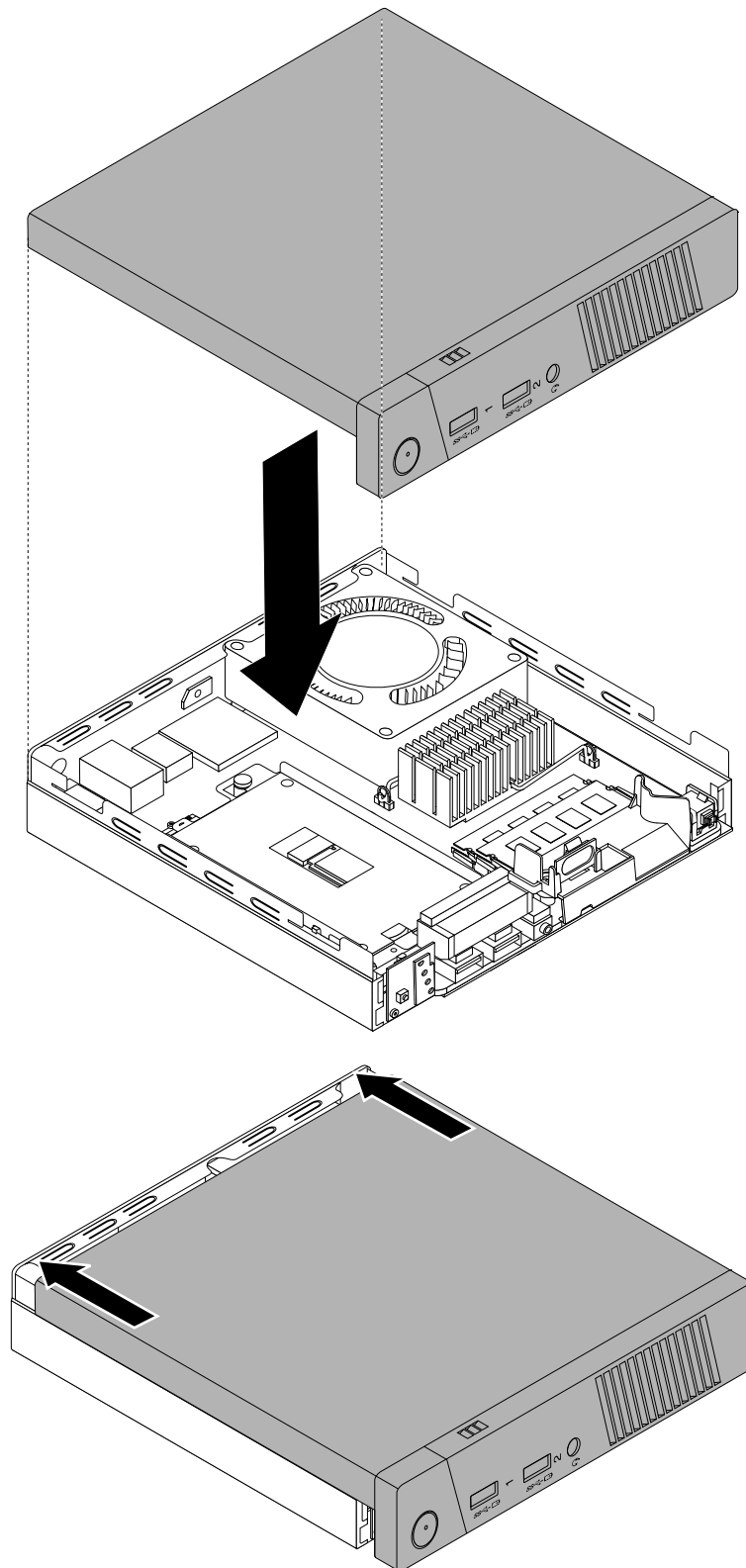


Figure 41. Reinstalling the front cover

4. Install the screw to secure the front cover.
5. If there is any locking device available, lock the computer cover. See Chapter 5 “Security” on page 43.
6. Reconnect the external cables and power cords to the computer. See “Locating connectors on the rear of your computer” on page 28.

Note: In most areas of the world, Lenovo requires the return of the defective CRU. Information about this will come with the CRU or will come a few days after the CRU arrives.

Obtaining device drivers

You can obtain device drivers that are not preinstalled in your operating system at <http://www.lenovo.com/support>. Installation instructions are provided in readme files with the device-driver files.

Chapter 10. Getting information, help, and service

This chapter contains information about help, service, and technical assistance for products manufactured by Lenovo.

Information resources

You can use the information in this section to access useful resources relating to your computing needs.

Safety and Warranty

The *Safety, Warranty, and Setup Guide* that is provided with your computer contains information on safety, setup, warranty, and notices. The safety information in the *Safety, Warranty, and Setup Guide* provides information you need to know before setting up and using this product. Read and understand all safety information provided in the *Safety, Warranty, and Setup Guide* before using this product.

The information in Chapter 1 “Read this first: Important safety information” on page 1 of this *User Guide* provides additional safety information that applies to topics and tasks described in this publication. Read and understand all safety information provided in that section before disassembling or upgrading this product.

Lenovo Web site

The Lenovo Web site (<http://www.lenovo.com>) provides up-to-date information and services to help you buy, upgrade, and maintain your computer. You can also do the following:

- Shop for desktop and notebook computers, monitors, projectors, upgrades and accessories for your computer, and special offers.
- Purchase additional services, such as support for hardware, operating systems, application programs, network setup and configuration, and custom installations.
- Purchase upgrades and extended hardware repair services.
- Download the latest device drivers and software updates for your computer model.
- Access the online manuals for your products.
- Access the Lenovo Limited Warranty.
- Access troubleshooting and support information for your computer model and other supported products.
- Find the service and support phone numbers for your country or region.
- Find a Service Provider located near you.

Lenovo Support Web site

Technical support information is available on the Lenovo Support Web site at:
<http://www.lenovo.com/support>

This Web site is updated with the latest support information such as the following:

- Drivers and software
- Diagnostic solutions
- Product and service warranty
- Product and parts details
- User guides and manuals

- Knowledge base and frequently asked questions

Help and service

This section contains information about obtaining help and service.

Calling for service

During the warranty period, you can get help and information by telephone through the Customer Support Center.

The following services are available during the warranty period:

- **Problem determination** - Trained service personnel are available to assist you with determining a hardware problem and deciding what action is necessary to fix the problem.
- **Hardware repair** - If the problem is caused by hardware under warranty, trained service personnel are available to provide the applicable level of service.
- **Engineering Change management** - There might be changes that are required after a product has been sold. Lenovo or your reseller will make selected Engineering Changes (ECs) that apply to your hardware available.

These items are not covered by the warranty:

- Replacement or use of parts not manufactured for or by Lenovo or non-warranted Lenovo parts
- Identification of software problem sources
- Configuration of BIOS as part of an installation or upgrade
- Changes, modifications, or upgrades to device drivers
- Installation and maintenance of network operating systems (NOS)
- Installation and maintenance of application programs

Refer to the *Safety, Warranty, and Setup Guide* that comes with your computer for information about your warranty type and duration. You must retain your proof of purchase to obtain warranty service.

For a list of Lenovo Support phone numbers, go to <http://www.lenovo.com/support/phone> or refer to the *Safety, Warranty, and Setup Guide* that comes with your computer.

Note: Phone numbers are subject to change without notice. If the number for your country or region is not provided, contact your Lenovo reseller or Lenovo marketing representative.

If possible, be at your computer when you call. Have the following information available:

- Machine type and model
- Serial numbers of your hardware products
- Description of the problem
- Exact wording of any error messages
- Hardware and software configuration information

Using other services

You might travel with your computer or relocate it to a country or region where the machine type for your desktop or notebook computer is sold. In such a situation, your computer might be eligible for International Warranty Service, which automatically entitles you to obtain warranty service throughout the warranty period. Service will be performed by service providers authorized to perform warranty service.

Service methods and procedures vary by country, and some services might not be available in all countries. International Warranty Service is delivered through the method of service (such as depot, carry-in, or on-site service) that is provided in the servicing country. Service centers in certain countries might not be

able to service all models of a particular machine type. In some countries, fees and restrictions might apply at the time of service.

To determine whether your computer is eligible for International Warranty Service and to view a list of the countries or regions where service is available, go to <http://www.lenovo.com/support>.

For technical assistance with the installation of or questions related to the programs for your preinstalled Google Chrome product, go to the Google Web site at <http://support.google.com> and follow the instructions on the screen. You also can contact the Lenovo Customer Support Center for help. Some fees might apply.

Purchasing additional services

During and after the warranty period, you can purchase additional services. Examples of these additional services include:

- Support for hardware, operating systems, and application programs
- Network setup and configuration services
- Upgraded or extended hardware repair services
- Custom installation services

Service availability and service name might vary by country or region. For more information about these services, go to the Lenovo Web site at:
<http://www.lenovo.com>

Appendix A. Regulatory information

Export classification notice

This product is subject to the United States Export Administration Regulations (EAR) and has an Export Classification Control Number (ECCN) of 4A994.b. It can be re-exported except to any of the embargoed countries in the EAR E1 country list.

Electronic emissions notices

The following information refers to Lenovo personal computer machine types 10H2, 10H3, 10H4, 10H5, 10H6, 10H7, 10H8, and 10H9.

Federal Communications Commission Declaration of Conformity

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an authorized dealer or service representative for help.

Lenovo is not responsible for any radio or television interference caused by using other than specified or recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:
Lenovo (United States) Incorporated
1009 Think Place - Building One
Morrisville, NC 27560
Phone Number: 919-294-5900



Industry Canada Class B emission compliance statement

CAN ICES-3(B)/NMB-3(B)

European Union - Compliance to the Electromagnetic Compatibility Directive

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. Lenovo cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the installation of option cards from other manufacturers.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

Lenovo, Einsteinova 21, 851 01 Bratislava, Slovakia



German Class B compliance statement

Deutschsprachiger EU Hinweis:

Hinweis für Geräte der Klasse B EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG (früher 89/336/EWG) zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse B ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der Lenovo empfohlene Kabel angeschlossen werden. Lenovo übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der Lenovo verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der Lenovo gesteckt/eingebaut werden.

Deutschland:

Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Betriebsmitteln

Dieses Produkt entspricht dem „Gesetz über die elektromagnetische Verträglichkeit von Betriebsmitteln“ EMVG (früher „Gesetz über die elektromagnetische Verträglichkeit von Geräten“). Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG (früher 89/336/EWG) in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Betriebsmitteln, EMVG vom 20. Juli 2007 (früher Gesetz über die elektromagnetische Verträglichkeit von Geräten), bzw. der EMV EG Richtlinie 2004/108/EC (früher 89/336/EWG), für Geräte der Klasse B.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen. Verantwortlich für die Konformitätserklärung nach Paragraf 5 des EMVG ist die Lenovo (Deutschland) GmbH, Gropiusplatz 10, D-70563 Stuttgart.

Informationen in Hinsicht EMVG Paragraf 4 Abs. (1) 4:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse B.

Korea Class B compliance statement

B급 기기(가정용 방송통신기자재)
이 기기는 가정용(B급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

Japan VCCI Class B compliance statement

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

VCCI-B

Japan compliance statement for products which connect to the power mains with rated current less than or equal to 20 A per phase

日本の定格電流が 20A/相 以下の機器に対する高調波電流規制
高調波電流規格 JIS C 61000-3-2 適合品

Japan notice for ac power cord

The ac power cord shipped with your product can be used only for this specific product. Do not use the ac power cord for other devices.

本製品およびオプションに電源コード・セットが付属する場合は、それぞれ専用のものになっていますので他の電気機器には使用しないでください。

Lenovo product service information for Taiwan

台灣 Lenovo 產品服務資訊如下：
荷蘭商聯想股份有限公司台灣分公司
台北市內湖區堤頂大道二段89號5樓
服務電話：0800-000-702

Keyboard and mouse compliance statement for Taiwan

本產品隨貨附已取得經濟部標準檢驗局認可之PS/2或USB的鍵盤與滑鼠一組

Eurasian compliance mark



Brazil regulatory notice

Ouvir sons com mais de 85 decibéis por longos períodos pode provocar danos ao sistema auditivo.

Mexico regulatory notice

Advertencia: En Mexico la operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

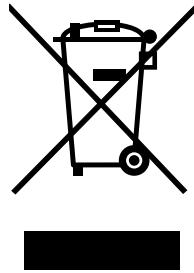
Additional regulatory information

For additional regulatory information, refer to the *Regulatory Notice* shipped with your computer. Depending on the configuration of your computer and the country or region where the computer was purchased, you might have received additional printed regulatory notices. All regulatory notices are available on the Lenovo Support Web site in electronic format. To access electronic copies of the documentation, go to <http://www.lenovo.com/UserManuals>.

Appendix B. WEEE and recycling information

Lenovo encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. Lenovo offers a variety of programs and services to assist equipment owners in recycling their IT products. For information on recycling Lenovo products, go to:
<http://www.lenovo.com/recycling>

Important WEEE information



The WEEE marking on Lenovo products applies to countries with WEEE and e-waste regulations (for example, the European WEEE Directive, India E-Waste Management & Handling Rules, 2011). Appliances are labeled in accordance with local regulations concerning waste electrical and electronic equipment (WEEE). These regulations determine the framework for the return and recycling of used appliances as applicable within each geography. This label is applied to various products to indicate that the product is not to be thrown away, but rather put in the established collection systems for reclaiming these end of life products.

Users of electrical and electronic equipment (EEE) with the WEEE marking must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to them for the return, recycle, and recovery of WEEE and to minimize any potential effects of EEE on the environment and human health due to the presence of hazardous substances. For additional WEEE information, go to:
<http://www.lenovo.com/recycling>

Recycling information for Japan

Collecting and recycling a disused Lenovo computer or monitor

If you are a company employee and need to dispose of a Lenovo computer or monitor that is the property of the company, you must do so in accordance with the Law for Promotion of Effective Utilization of Resources. Computers and monitors are categorized as industrial waste and should be properly disposed of by an industrial waste disposal contractor certified by a local government. In accordance with the Law for Promotion of Effective Utilization of Resources, Lenovo Japan provides, through its PC Collecting and Recycling Services, for the collecting, reuse, and recycling of disused computers and monitors. For details, visit the Lenovo Web site at <http://www.lenovo.com/recycling/japan>. Pursuant to the Law for Promotion of Effective Utilization of Resources, the collecting and recycling of home-used computers and monitors by the manufacturer was begun on October 1, 2003. This service is provided free of charge for home-used computers sold after October 1, 2003. For details, visit the Lenovo Web site at <http://www.lenovo.com/recycling/japan>.

Disposing of Lenovo computer components

Some Lenovo computer products sold in Japan may have components that contain heavy metals or other environmental sensitive substances. To properly dispose of disused components, such as a printed circuit board or drive, use the methods described above for collecting and recycling a disused computer or monitor.

Disposing of disused lithium batteries from Lenovo computers

A button-shaped lithium battery is installed inside your Lenovo computer to provide power to the computer clock while the computer is off or disconnected from the main power source. If you need to replace it with a new one, contact your place of purchase or contact Lenovo for service. If you need to dispose of a disused lithium battery, insulate it with vinyl tape, contact your place of purchase or an industrial-waste-disposal operator, and follow their instructions. Disposal of a lithium battery must comply with local ordinances and regulations.

Recycling information for Brazil

Declarações de Reciclagem no Brasil

Descarte de um Produto Lenovo Fora de Uso

Equipamentos elétricos e eletrônicos não devem ser descartados em lixo comum, mas enviados à pontos de coleta, autorizados pelo fabricante do produto para que sejam encaminhados e processados por empresas especializadas no manuseio de resíduos industriais, devidamente certificadas pelos órgãos ambientais, de acordo com a legislação local.

A Lenovo possui um canal específico para auxiliá-lo no descarte desses produtos. Caso você possua um produto Lenovo em situação de descarte, ligue para o nosso SAC ou encaminhe um e-mail para: reciclar@lenovo.com, informando o modelo, número de série e cidade, a fim de enviarmos as instruções para o correto descarte do seu produto Lenovo.

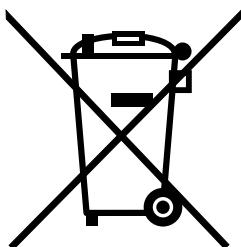
Battery recycling information for Taiwan



廢電池請回收

Battery recycling information for the European Union

EU



Notice: This mark applies only to countries within the European Union (EU).

Batteries or packaging for batteries are labeled in accordance with European Directive 2006/66/EC concerning batteries and accumulators and waste batteries and accumulators. The Directive determines the framework for the return and recycling of used batteries and accumulators as applicable throughout the European Union. This label is applied to various batteries to indicate that the battery is not to be thrown away, but rather reclaimed upon end of life per this Directive.

In accordance with the European Directive 2006/66/EC, batteries and accumulators are labeled to indicate that they are to be collected separately and recycled at end of life. The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury, and Cd for cadmium). Users of batteries and accumulators must not dispose of batteries and accumulators as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and treatment of batteries and accumulators. Customer participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances. For proper collection and treatment, go to:
<http://www.lenovo.com/recycling>

Appendix C. Restriction of Hazardous Substances Directive (RoHS)

European Union RoHS

Lenovo products sold in the European Union, on or after 3 January 2013 meet the requirements of Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("RoHS recast" or "RoHS 2").

For more information about Lenovo progress on RoHS, go to:
http://www.lenovo.com/social_responsibility/us/en/RoHS_Communication.pdf

China RoHS

产品中有害物质的名称及含量

部件名称	有害物质					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬 (Cr(VI))	多溴连苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板组件*	X	O	O	O	O	O
硬盘	X	O	O	O	O	O
光驱	X	O	O	O	O	O
内存	X	O	O	O	O	O
电脑I/O 附件	X	O	O	O	O	O
电源	X	O	O	O	O	O
键盘	X	O	O	O	O	O
鼠标	X	O	O	O	O	O
机箱/ 附件	X	O	O	O	O	O

本表格依据 SJ/T 11364 的规定编制。
O：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。
X：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。
注：表中标记“X”的部件，皆因全球技术发展水平限制而无法实现有害物质的替代。
印刷电路板组件*：包括印刷电路板及其零部件、电容和连接器
根据型号的不同，可能不会含有以上的所有部件，请以实际购买机型为准



在中华人民共和国境内销售的电子信息产品必须标识此标志，标志内的数字代表在正常使用状态下的产品的环保使用期限

Turkish RoHS

The Lenovo product meets the requirements of the Republic of Turkey Directive on the Restriction of the Use of Certain Hazardous Substances in Waste Electrical and Electronic Equipment (WEEE).

Türkiye AEEE Yönetmeliğine Uygunluk Beyanı

Bu Lenovo ürünü, T.C. Çevre ve Orman Bakanlığı'nın "Atık Elektrik ve Elektronik Eşyalarda Bazı Zararlı Maddelerin Kullanımının Sınırlandırılmasına Dair Yönetmelik (AEEE)" direktiflerine uygundur.

AEEE Yönetmeliğine Uygundur.

Ukraine RoHS

Цим підтверджуємо, що продукція Леново відповідає вимогам нормативних актів України, які обмежують вміст небезпечних речовин

India RoHS

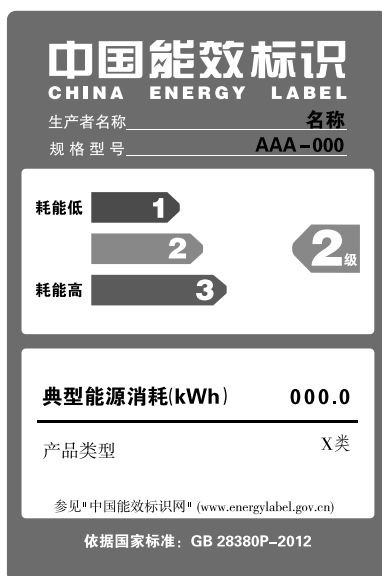
RoHS compliant as per E-Waste (Management & Handling) Rules, 2011.

Appendix D. China Energy Label

微型计算机能效标识声明

为满足中国《微型计算机能源效率标识实施规则》和《微型计算机能效限定值及能效等级》的相关规定和要求，联想公司对其生产及销售的每一台微型计算机产品加施能效标识，声明如下：

1. 如果您的包装箱或者产品上贴有下图所示的标识，您所购买的机器就是经测试符合《微型计算机能效限定值及能效等级》规定的相应能效等级的产品。



Note: 上图以2级能效标贴模板为例进行说明，具体规格型号、能效等级、产品类别和典型能源消耗等信息请以包装箱或产品上粘贴的实际能效等级标贴提供的信息为准，也可登陆“中国能效标识网”<http://www.energylabel.gov.cn>进行详细查询。

2. 如果您所购买机器的包装箱或者产品无上图所示的标识，请您忽略此部分。

《微型计算机能源效率标识实施规则》和《微型计算机能效限定值及能效等级》是由国家发展改革委员会所推行的能效标识制度，旨在通过开发节能产品和有效的节能方式来保护环境。通过使用符合能效标识制度要求的产品可以减少电源消耗、有助于节省开支、营造更清洁的环境并降低温室气体排放量。

联想很荣幸能为用户提供符合相应能效等级设计要求的产品，也鼓励用户购买高能效的产品。

有关能效标识制度的更多信息，请访问“中国能效标识网”<http://www.energylabel.gov.cn>。

Appendix E. ENERGY STAR model information



ENERGY STAR® is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy aimed at saving money and protecting the environment through energy efficient products and practices.

Lenovo is proud to offer our customers products with an ENERGY STAR compliant designation. Some models of the following machine types have been designed and tested to conform to the ENERGY STAR program requirement for computers at the time of manufacture: 10H2, 10H3, 10H4, 10H5, 10H6, 10H7, 10H8, and 10H9. For more information about ENERGY STAR ratings for Lenovo computers, go to <http://www.lenovo.com>.

By using ENERGY STAR compliant products and taking advantage of the power-management features of your computer, you reduce the consumption of electricity. Reduced electrical consumption contributes to potential financial savings, a cleaner environment, and the reduction of greenhouse gas emissions.

For more information about ENERGY STAR, go to:
<http://www.energystar.gov>

Lenovo encourages you to make efficient use of energy an integral part of your day-to-day operations. To help in this endeavor, set the following power-management features to take effect when your computer has been inactive for a specified duration:

Table 1. ENERGY STAR power-management features

Google Chrome OS operating system
Power plan: Default <ul style="list-style-type: none">• Turn off the display: After 10 minutes• Put the computer to sleep: After 25 minutes• Advanced power settings:<ul style="list-style-type: none">– Turn off hard disk drives: After 20 minutes– Hibernate: Never

Appendix F. Notices

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