lenovo

# Hardware Maintenance Manual

## Lenovo ZhaoYang K4350 and K4350A

**Note:** Before using this information and the product it supports, be sure to read the general information under Appendix A “Notices” on page 73.

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# About this manual

This manual provides service and reference information for the following Lenovo® products.

| Machine | Machine Type (MT) |
|---|---|
| Lenovo ZhaoYang K4350 and K4350A | 20228 |

This manual provides information about the computer features, specifications, component locations, hardware replacement procedures, and parts listing. This manual also includes safety guidelines and important notices for servicing the computer.

**Important:**

- This manual is intended only for trained service technicians who are familiar with Lenovo products. Use this manual to troubleshoot problems effectively.
- Before servicing a Lenovo product, ensure that you read all the information in Chapter 1 “Safety information” on page 1 and Chapter 3 “Important service information” on page 25.

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# Chapter 1. Safety information

This chapter presents the following safety information that you need to be familiar with before you service a Lenovo notebook computer.


- “General safety” on page 1
- “Electrical safety” on page 1
- “Safety inspection guide” on page 3
- “Handling devices that are sensitive to electrostatic discharge” on page 3
- “Grounding requirements” on page 4
- “Safety notices (multilingual translations)” on page 4


## 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. Make sure that 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. Do not attempt to lift any object that weighs more than 16 kg (35 lb) or that you think is 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, make sure that other service technicians 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 toolcase 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. Make sure 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, about 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing, because 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.
- Fan louvers on the machine help to prevent overheating of internal components. Do not obstruct fan louvers or cover them with labels or stickers.

## Electrical safety

Observe the following rules when working on electrical equipment.

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**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 main units
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box that supplies power to the machine, and to 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.

    **Attention:** 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.

    **Attention:** An electrical shock can occur only when there is a complete circuit. By observing the above rule, you may prevent a current from passing through your body.
  - When using testers, 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; Instructions for these precautions 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
  - Similar units to listed above

  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.

## Safety inspection guide

The purpose of this inspection guide is to assist you in identifying potentially unsafe conditions. As each machine was designed and built, required safety items were installed to protect users and service technicians from injury. This guide addresses only those items. You should use good judgment to identify potential safety hazards due to attachment of non-Lenovo 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 a bulging capacitor
- Mechanical hazards, such as loose or missing hardware

To determine whether there are any potentially unsafe conditions, use the following checklist at the beginning of every service task. 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 the frame ground.
   b. The power cord should be the type specified in the parts list.
   c. Insulation must not be frayed or worn.
4. Check for cracked or bulging batteries.
5. Remove the cover.
6. Check for any obvious non-Lenovo alterations. Use good judgment as to the safety of any non-Lenovo alterations.
7. 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.
8. Check for worn, frayed, or pinched cables.
9. Check that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

## Handling devices that are sensitive to electrostatic discharge

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. Protect against ESD damage by equalizing the charge so that 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.
- 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 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 to guard against ESD damage is desirable but not necessary.

  – Attach the ESD ground clip to any frame ground, ground braid, or green-wire ground.
  – When working on a double-insulated or battery-operated system, use an ESD common ground or reference point. 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 (multilingual translations)

The safety notices in this section are provided in the following languages:
- English
- Arabic
- Brazilian Portuguese
- French
- German
- Hebrew
- Japanese
- Korean
- Spanish
- Traditional Chinese

**DANGER**

**Before the computer is powered on after FRU replacement, make sure that all screws, springs, and other small parts are in place and are not left loose inside the computer. Verify this by shaking the computer and listening for rattling sounds. Metallic parts or metal flakes can cause electrical short circuits.**

**DANGER**

Some standby batteries contain a small amount of nickel and cadmium. Do not disassemble a standby battery, recharge it, throw it into fire or water, or short-circuit it. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

**DANGER**

The battery pack contains small amounts of nickel. Do not disassemble it, throw it into fire or water, or short-circuit it. Dispose of the battery pack as required by local ordinances or regulations. Use only the battery in the appropriate parts listing when replacing the battery pack. Use of an incorrect battery can result in ignition or explosion of the battery.

**DANGER**

The lithium battery can cause a fire, an explosion, or a severe burn. Do not recharge it, remove its polarized connector, disassemble it, heat it above 100°C (212°F), incinerate it, or expose its cell contents to water. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

**DANGER**

If the LCD breaks and the fluid from inside the LCD gets into your eyes or on your hands, immediately wash the affected areas with water for at least 15 minutes. Seek medical care if any symptoms from the fluid are present after washing.

**DANGER**

To avoid shock, do not remove the plastic cover that protects the lower part of the inverter card.

**DANGER**

Though the main batteries have low voltage, a short-circuited or grounded battery can produce enough current to burn personnel or combustible materials.

**DANGER**

**Unless hot swap is allowed for the FRU being replaced, do as follows before removing it: power off the computer, unplug all power cords from electrical outlets, remove the battery pack, and disconnect any interconnecting cables.**

**قبل اعادة تشغيل الحاسب بعد الانتهاء من استبدال FRU، تأكد من أنه قد تم اعادة كل من المسامير و السوست وكل الأجزاء الصغيرة الأخرى في أماكنهم ولم يتم فقدهم داخل الحاسب. ويمكن التحقق من ذلك عن طريق هز الحاسب والاستماع لأي صوت صاخب يصدر منه. قد تؤدي الأجزاء أو الرقائق المعدنية الى حدوث دائرة قصر.**

**تحتوي بعض البطاريات الاحتياطية على كمية صغيرة من مادتي النيكل والكادميوم. لا تقم بفك أو اعادة شحن البطارية الاحتياطية ولا تقم أيضا بالقاءها في النار أو الماء ولا تتسبب في احداث دائرة قصر بها. قم بالتخلص من البطارية كما هو موضح في القوانين المحلية. استخدم نوع البطارية المحدد والذي يوصى باستخدامه. حيث أنه قد يؤدي استخدام نوع بطارية غير صحيح الى اشتعالها أو انفجارها.**

**تحتوي حزمة البطارية على كمية صغيرة من مادة النيكل. لا تقم بفكها أو القاءها في النار أو الماء ولا تتسبب في احداث دائرة قصر بها. تخلص من حزمة البطارية وفقا لما هو موضح في القوانين المحلية. قم، عند استبدال حزمة البطارية، باستخدام الأنواع المحددة فقط والتي يوصى باستخدامها. حيث أنه قد يؤدي استخدام نوع بطارية غير صحيح الى اشتعالها أو انفجارها.**

**قد تتسبب بطارية الليثيوم في حدوث حريق أو انفجار أو حدوث حروق شديدة. لا تقم باعادة شحن البطارية أو ازالة موصل الاستقطاب الخاص بها ولا تحاول أيضا فكها أو تسخينها لأكثر من ١٠٠ درجة مئوية (٢١٢ فهرنهايت) أو حرقها أو تعريض محتويات الخانة الخاصة بها للماء. قم بالتخلص من البطارية وفقا لما هو موضح في القوانين المحلية. استخدم نوع البطارية المحدد والذي يوصى باستخدامه. حيث أنه قد يؤدي استخدام نوع بطارية غير صحيح الى اشتعالها أو انفجارها.**

**اذا ما انكسرت شاشة LCD ولامس السائل الداخلي عينيك أو يديك، قم في الحال بغسلهما بالماء لمدة لا تقل عن ١٥ دقيقة. اذا ما وجدت أي أعراض بعد الغسل اطلب عندئذ المساعدة الطبية.**

**لتجنب التعرض لأي صدمات، لا تقم بازالة الغطاء البلاستيكي الذي يحمي الجزء الأسفل من بطاقة العاكس.**

**على الرغم من أن البطاريات الرئيسية يكون لها جهد منخفض، الا أنه قد تقوم البطاريات التي حدث قصور بها أو التي تم توصيلها أرضيا باصدار تيار يكفي لحدوث حروق للأفراد أو تعرض المواد القابلة للاشتعال للحريق.**

**ما لم يتم السماح بالتبديل الفوري لأي FRU الجاري استبداله بدون ضرورة اغلاق النظام، قم بتنفيذ ما يلي قبل ازالته. قم بايقاف تشغيل الحاسب ونزع كل أسلاك الطاقة من المخارج الكهربائية وقم أيضا بازالة حزمة البطارية ثم قم بفصل أي كابلات متصلة.**

**PERIGO**

**Antes de ligar o computador após a substituição da FRU, certifique-se de que todos os parafusos, molas e outras peças pequenas estejam no lugar e não estejam soltos dentro do computador. Verifique isso sacudindo o computador e procurando ouvir sons de peças soltas. Peças metálicas ou lascas de metal podem causar curto-circuito.**

**PERIGO**

**Algumas baterias reserva contêm uma pequena quantidade de níquel e cádmio. Não desmonte uma bateria reserva, recarregue-a, jogue-a no fogo ou na água, ou deixe-a entrar em curto-circuito. Descarte a bateria conforme requerido pelas leis ou regulamentos locais. Use somente a bateria nas partes listadas apropriadas. O uso de uma bateria incorreta pode resultar em combustão ou explosão da bateria.**

**PERIGO**

**O pacote da bateria contém uma pequena quantidade de níquel. Não o desmonte, jogue-o no fogo ou na água, ou deixe-o entrar em curto-circuito. Descarte o pacote da bateria conforme requerido pelas leis ou regulamentos locais. Use somente a bateria nas partes listadas apropriadas ao substituir o pacote da bateria. O uso de uma bateria incorreta pode resultar em combustão ou explosão da bateria.**

**PERIGO**

**A bateria de lítio pode causar incêndio, explosão ou graves queimaduras. Não a recarregue, remova seu conector polarizado, desmonte-a, aqueça-a acima de 100°C (212°F), incinere-a, ou exponha o conteúdo de sua célula à água. Descarte a bateria conforme requerido pelas leis ou regulamentos locais. Use somente a bateria nas partes listadas apropriadas. O uso de uma bateria incorreta pode resultar em combustão ou explosão da bateria.**

**PERIGO**

**Se o LCD quebrar e o fluido de dentro dele entrar em contato com seus olhos ou com suas mãos, lave as áreas afetadas imediatamente com água durante pelo menos 15 minutos. Procure cuidados médicos se algum sintoma causado pelo fluido surgir após a lavagem.**

**PERIGO**

Para evitar choque elétrico, não remova a capa plástica que protege a parte inferior da placa inversora.

**PERIGO**

Embora as principais baterias possuam baixa voltagem, uma bateria em curto-circuito ou aterrada pode produzir corrente o bastante para queimar materiais de pessoal ou inflamáveis.

**PERIGO**

A menos que uma hot swap seja permitida para a FRU que está sendo substituída, faça o seguinte antes de removê-la: desligue o computador, desconecte todos os cabos de energia das tomadas, remova o pacote de baterias e desconecte quaisquer cabos de interconexão.

**DANGER**

Avant de remettre l'ordinateur sous tension après remplacement d'une unité en clientèle, vérifiez que tous les ressorts, vis et autres pièces sont bien en place et bien fixées. Pour ce faire, secouez l'unité et assurez-vous qu'aucun bruit suspect ne se produit. Des pièces métalliques ou des copeaux de métal pourraient causer un court-circuit.

**DANGER**

Certaines batteries de secours contiennent du nickel et du cadmium. Ne les démontez pas, ne les rechargez pas, ne les exposez ni au feu ni à l'eau. Ne les mettez pas en court-circuit. Pour les mettre au rebut, conformez-vous à la réglementation en vigueur. Lorsque vous remplacez la pile de sauvegarde ou celle de l'horloge temps réel, veillez à n'utiliser que les modèles cités dans la liste de pièces détachées adéquate. Une batterie ou une pile inappropriée risque de prendre feu ou d'exploser.

**DANGER**

La batterie contient du nickel. Ne la démontez pas, ne l'exposez ni au feu ni à l'eau. Ne la mettez pas en court-circuit. Pour la mettre au rebut, conformez-vous à la réglementation en vigueur. Lorsque vous remplacez la batterie, veillez à n'utiliser que les modèles cités dans la liste de pièces détachées adéquate. En effet, une batterie inappropriée risque de prendre feu ou d'exploser.

**DANGER**

**La pile de sauvegarde contient du lithium. Elle présente des risques d'incendie, d'explosion ou de brûlures graves. Ne la rechargez pas, ne retirez pas son connecteur polarisé et ne la démontez pas. Ne l'exposez pas à une temperature supérieure à 100°C, ne la faites pas brûler et n'en exposez pas le contenu à l'eau. Mettez la pile au rebut conformément à la réglementation en vigueur. Une pile inappropriée risque de prendre feu ou d'exploser.**

**DANGER**

**Si le panneau d'affichage à cristaux liquides se brise et que vous recevez dans les yeux ou sur les mains une partie du fluide, rincez-les abondamment pendant au moins quinze minutes. Consultez un médecin si des symptômes persistent après le lavage.**

**DANGER**

**Afin d'éviter tout risque de choc électrique, ne retirez pas le cache en plastique protégeant la partie inférieure de la carte d'alimentation.**

**DANGER**

**Bien que le voltage des batteries principales soit peu élevé, le court-circuit ou la mise à la masse d'une batterie peut produire suffisamment de courant pour brûler des matériaux combustibles ou causer des brûlures corporelles graves.**

**DANGER**

**Si le remplacement à chaud n'est pas autorisé pour l'unité remplaçable sur site que vous remplacez, procédez comme suit avant de retirer l'unité : mettez l'ordinateur hors tension, débranchez tous les cordons d'alimentation des prises de courant, retirez le bloc de batterie et déconnectez tous les câbles d'interconnexion.**

**VORSICHT**

**Bevor nach einem FRU-Austausch der Computer wieder angeschlossen wird, muß sichergestellt werden, daß keine Schrauben, Federn oder andere Kleinteile fehlen oder im Gehäuse vergessen wurden. Der Computer muß geschüttelt und auf Klappergeräusche geprüft werden. Metallteile oder-splitter können Kurzschlüsse erzeugen.**

**VORSICHT**

**Die Bereitschaftsbatterie, die sich unter dem Diskettenlaufwerk befindet, kann geringe Mengen Nickel und Cadmium enthalten. Sie darf nur durch die Verkaufsstelle oder den IBM Kundendienst ausgetauscht werden. Sie darf nicht zerlegt, wiederaufgeladen, kurzgeschlossen, oder Feuer oder Wasser ausgesetzt werden. Die Batterie kann schwere Verbrennungen oder Verätzungen verursachen. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Beim Ersetzen der Bereitschafts-oder Systembatterie nur Batterien des Typs verwenden, der in der Ersatzteilliste aufgeführt ist. Der Einsatz falscher Batterien kann zu Entzündung oder Explosion führen.**

**VORSICHT**

**Akkus enthalten geringe Mengen von Nickel. Sie dürfen nicht zerlegt, wiederaufgeladen, kurzgeschlossen, oder Feuer oder Wasser ausgesetzt werden. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Beim Ersetzen der Batterie nur Batterien des Typs verwenden, der in der Ersatzteilliste aufgeführt ist. Der Einsatz falscher Batterien kann zu Entzündung oder Explosion führen.**

**VORSICHT**

**Die Systembatterie ist eine Lithiumbatterie. Sie kann sich entzünden, explodieren oder schwere Verbrennungen hervorrufen. Batterien dieses Typs dürfen nicht aufgeladen, zerlegt, über 100°C erhitzt oder verbrannt werden. Auch darf ihr Inhalt nicht mit Wasser in Verbindung gebracht oder der zur richtigen Polung angebrachte Verbindungsstecker entfernt werden. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Beim Ersetzen der Batterie nur Batterien des Typs verwenden, der in der Ersatzteilliste aufgeführt ist. Der Einsatz falscher Batterien kann zu Entzündung oder Explosion führen.**

**VORSICHT**

**Die Leuchtstoffröhre im LCD-Bildschirm enthält Quecksilber. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Der LCD-Bildschirm besteht aus Glas und kann zerbrechen, wenn er unsachgemäß behandelt wird oder der Computer auf den Boden fällt. Wenn der Bildschirm beschädigt ist und die darin befindliche Flüssigkeit in Kontakt mit Haut und Augen gerät, sollten die betroffenen Stellen mindestens 15 Minuten mit Wasser abgespült und bei Beschwerden anschließend ein Arzt aufgesucht werden.**

**VORSICHT**

Aus Sicherheitsgründen die Kunststoffabdeckung, die den unteren Teil der Spannungswandlerplatine umgibt, nicht entfernen.

**VORSICHT**

Obwohl Hauptbatterien eine niedrige Spannung haben, können sie doch bei Kurzschluß oder Erdung genug Strom abgeben, um brennbare Materialien zu entzünden oder Verletzungen bei Personen hervorzurufen.

**VORSICHT**

Wenn ein Austausch der FRU bei laufendem Betrieb nicht erlaubt ist, gehen Sie beim Austausch der FRU wie folgt vor: Schalten Sie den Computer aus, ziehen Sie alle Netzkabel von den Netzsteckdosen ab, entfernen Sie den Akku und ziehen Sie alle miteinander verbundenen Kabel ab.

לפני הפעלת המחשב לאחר החלפת FRU יש לוודא שכל הברגים, הקפיצים, וחלקים קטנים אחרים נמצאים במקומם ואינם חופשיים לזוז בתוך המחשב. כדי לוודא זאת, יש לטלטל את המחשב ולהקשיב לגילוי קולות שקשוק. חלקי או שבבי מתכת עלולים לגרום לקצרים חשמליים.

סוללות המתנה מסוימות מכילות כמות קטנה של ניקל וקדמיום. אין לפרק סוללת המתנה, לטעון אותה מחדש, להשליך אותה לאש או למים או לקצר אותה. יש לסלק את הסוללה כנדרש על ידי התקנות והחוקים המקומיים. יש להשתמש רק בסוללה המופיעה ברשימת החלקים המתאימה. שימוש בסוללה לא מתאימה עלול לגרום להצתה או התפוצצות של הסוללה.

מארז הסוללה מכיל כמות קטנה של ניקל וקדמיום. אין לפרק את מארז הסוללה, להשליך אותו לאש או למים או לקצר אותו. יש לסלק את מארז הסוללה הסוללה כנדרש על ידי התקנות והחוקים המקומיים. יש להשתמש רק בסוללה המופיעה ברשימת החלקים המתאימה בזמן החלפת מארז הסוללה. שימוש בסוללה לא מתאימה עלול לגרום להצתה או התפוצצות של הסוללה.

סוללת הליתיום עלולה לגרום לשריפה, להתפוצצות או לכוויות קשות. אין לטעון אותה מחדש, לסלק את המחבר המקוטב שלה, לפרק אותה או לחמם אותה לטמפרטורה העולה על 100 מעלות צלזיוס. אין לשרוף את הסוללה ואין לחשוף את תוכן התא למים. יש לסלק את הסוללה כנדרש בתקנות ובחוקים המקומיים. יש להשתמש רק בסוללה המופיעה ברשימת החלקים המתאימים. שימוש בסוללה אחרת עלול לגרום לסכנת שריפה או התפוצצות.

אם מסך הגביש הנוזלי (LCD) נשבר והנוזל מתוך המסך בא במגע עם עיניכם או ידיכם, שטפו את האזורים הנגועים מיד במים במשך 15 דקות לפחות. פנו לקבלת עזרה רפואית אם תסמינים הנובעים מהמגע עם הנוזל נמשכים לאחר השטיפה.

כדי למנוע התחשמלות, אין להסיר את מכסה הפלסטיק המגן על חלקו התחתון של הכרטיס ההפוך.

אף שהסוללות הראשיות הן בעלות מתח נמוך, סוללה מקוצרת או מוארקת עלולה להפיק זרם מספיק לגרימת כוויות או להצתת חומרים דליקים.

אלא אם כן מותרת ׳החלפה חמה׳ של ה-FRU המוחלף, פעלו כדלהלן לפני הסרתו:
כבו את המחשב, נתקו את כל כבלי החשמל מהשקעים, הוציאו את מארז הסוללות ונתקו את כל הכבלים המחוברים.

FRU の交換後、コンピュータの電源を入れる前に、ねじ、バネ、その他の小さな部品がすべて正しい位置にあり、またコンピュータの内部で緩んでいないことを確認してください。
これを確認するには、コンピュータを振って、カチャカチャと音がしないか確かめます。金属部品や金属破片はショートの原因になることがあります。

予備バッテリーの中には少量のニッケルとカドミウムが含まれているものがあります。したがって、予備バッテリーの分解、再充電、火または水の中への投棄、またはショートさせることは決して行わないでください。バッテリーを廃棄する場合は地方自治体の条例に従ってください。適切なパーツ・リストにあるバッテリーだけを使用してください。誤ったバッテリーを使用すると、バッテリーが発火したり、爆発したりすることがあります。

危険

バッテリー・パックには少量のニッケルが含まれています。バッテリー・パックを分解したり、火または水の中に投げ込んだり、ショートさせないでください。バッテリー・パックの廃棄にあたっては、地方自治体の条例または規則に従ってください。バッテリー・パックを交換するときは、適切なパーツ・リストにあるバッテリーだけを使用してください。誤ったバッテリーを使用すると、バッテリーが発火したり、爆発したりすることがあります。

危険

リチウム・バッテリーは、火災、爆発、または重症のやけどを引き起こすことがあります。バックアップ・バッテリーの充電、その極性コネクターの取り外し、バッテリー本体の分解、
100 ℃ (212 ˚F) 以上への加熱、焼却、電池の中身を水に浸すことはしないでください。バッテリーを廃棄する場合は地方自治体の条例に従ってください。適切なパーツ・リストにあるバッテリーだけを使用してください。誤ったバッテリーを使用すると、バッテリーが発火したり、爆発したりすることがあります。

危険

LCD が破損し、 LCD の中の液体が目に入ったり、手に触れたりした場合は、液体が触れた部分を少なくとも 15 分間洗い流してください。洗い流した後に、液体によって何らかの症状が現れた場合は、医師の治療を受けてください。

危険

感電を防ぐため、インバーター・カードの下部を保護しているプラスチック・カバーを外さないでください。

危険

メイン・バッテリーの電圧は低くても、ショートしたり、接地したバッテリーが、作業者にやけどを負わせたり、可燃物を燃やすだけの電流を発生させる場合があります。

危険

交換しようとしている FRU がホット・スワップに対応していない場合、それを
取り外す前に、コンピューターの電源をオフにし、すべての電源コードを
コンセントから抜き、バッテリー・パックを取り外して、相互接続している
ケーブルをすべて切り離してください。

위험

FRU를 교체하고 나서 컴퓨터 전원을 켜기 전에 모든 나사, 스프링 및 기타 작은 부품들이 올바른 위치에 있는지, 컴퓨터 내부에 단단하게 연결되어 있는지 확인하십시오. 컴퓨터를 흔들어 달깍거리는 소리가 나지 않는지 확인하십시오. 금속 부품 또는 금속 조각은 누전을 일으킬 수 있습니다.

위험

일부 보조 배터리에는 소량의 니켈 및 카트뮴이 포함되어 있습니다. 보조 배터리를 분해하거나, 다시 충전하거나, 불 또는 물에 던지거나, 단락시키지 마십시오. 배터리 팩을 폐기할 때에는 해당 지역의 법률 규정을 따르십시오. 배터리 팩을 교체할 때에는 올바른 배터리만 사용하십시오. 올바르지 않은 배터리를 사용하면 배터리가 발화되거나 폭발할 수 있습니다.

위험

배터리 팩에는 소량의 니켈이 포함되어 있습니다. 배터리 팩을 분해하거나, 불 또는 물에 던지거나, 단락시키지 마십시오. 배터리 팩을 폐기할 때에는 해당 지역의 법률 규정을 따르십시오. 배터리 팩을 교체할 때에는 올바른 배터리만 사용하십시오. 올바르지 않은 배터리를 사용하면 배터리가 발화되거나 폭발할 수 있습니다.

위험

리튬 배터리는 화재, 폭발 또는 심각한 화상을 일으킬 수 있습니다. 리튬 배터리를 다시 충전하거나, 극성 커넥터를 제거하거나, 분해하거나, 100C(212F) 이상으로 가열하거나, 소각하거나, 전지 내용물을 물에 노출시키지 마십시오. 배터리를 폐기할 때에는 해당 지역을 법률 규정을 따르십시오. 올바른 배터리만 사용하십시오. 올바르지 않은 배터리를 사용하면 배터리가 발화되거나 폭발할 수 있습니다.

위험

LCD가 파손되어 LCD 내부의 액체가 눈에 들어가거나 손에 묻으면 즉시 깨끗한 물로 15분 이상 닦아 내십시오. 씻은 후에 조금이라도 이상을 느끼면 즉시 병원에 가서 의사의 진찰을 받아야 합니다.

위험

전기적 위험을 방지하려면 인버터 카드의 아래 부분을 보호하는 플라스틱 덮개를 제거하지 마십시오.

위험

기본 배터리의 전압은 낮지만, 단락되거나 접지된 배터리는 화상을 입히기에 충분한 전류와 가연성 물질을 발생시킬 수 있습니다.

위험

FRU 교체 시 Hot Swap이 지원되지 않는 경우, FRU를 제거하기 전에 컴퓨터의 전원을 끄고, 전기 콘센트에서 전원 코드를 분리하고, 배터리를 제거한 후, 연결된 모든 케이블을 분리하십시오.

**PELIGRO**

**Antes de encender el sistema despues de sustituir una FRU, compruebe que todos los tornillos, muelles y demás piezas pequeñas se encuentran en su sitio y no se encuentran sueltas dentro del sistema. Compruébelo agitando el sistema y escuchando los posibles ruidos que provocarían. Las piezas metálicas pueden causar cortocircuitos eléctricos.**

**PELIGRO**

**Algunas baterías de reserva contienen una pequeña cantidad de níquel y cadmio. No las desmonte, ni recargue, ni las eche al fuego o al agua ni las cortocircuite. Deséchelas tal como dispone la normativa local. Utilice sólo baterías que se encuentren en la lista de piezas. La utilización de una batería no apropiada puede provocar la ignición o explosión de la misma.**

**PELIGRO**

**Las baterías contienen pequeñas cantidades de níquel. No las desmonte, ni recargue, ni las eche al fuego o al agua ni las cortocircuite. Deséchelas tal como dispone la normativa local. Utilice sólo baterías que se encuentren en la lista de piezas al sustituir la batería. La utilización de una batería no apropiada puede provocar la ignición o explosión de la misma.**

**PELIGRO**

**La batería de repuesto es una batería de litio y puede provocar incendios, explosiones o quemaduras graves. No la recargue, ni quite el conector polarizado, ni la desmonte, ni caliente por encima de los 100°C (212°F), ni la incinere ni exponga el contenido de sus celdas al agua. Deséchela tal como dispone la normativa local.**

**PELIGRO**

**Si la LCD se rompe y el fluido de su interior entra en contacto con sus ojos o sus manos, lave inmediatamente las áreas afectadas con agua durante 15 minutos como mínimo. Obtenga atención medica si se presenta algún síntoma del fluido despues de lavarse.**

**PELIGRO**

**Para evitar descargas, no quite la cubierta de plástico que rodea la parte baja de la tarjeta invertida.**

**PELIGRO**

**Aunque las baterías principales tienen un voltaje bajo, una batería cortocircuitada o con contacto a tierra puede producir la corriente suficiente como para quemar material combustible o provocar quemaduras en el personal.**

**PELIGRO**

**Salvo que se permita el intercambio en caliente para la unidad sustituible localmente, realice lo siguiente antes de extraerla: apague el sistema, desconecte todos los cables de alimentación de las tomas de alimentación eléctrica, extraiga la batería y desconecte los cables de interconexión.**

**危險**

**完成 FRU 更換之後，在開啟電腦的電源之前，請確定所有螺絲、彈簧及其他小零件都已歸位，沒有遺留在電腦內部。**
**若要確認這一點，請搖晃電腦，聽聽看是否有卡嗒的聲響。**
**金屬零件或儀錶的火花會造成電線短路。**

**危險**

部分備用電池含有微量的鎳和鎘。請勿拆開備用電池、再充電、丟入火或水中，或使其形成短路。請按照當地法令或規定來棄置電池。

僅限使用零件清單中的電池。使用不適當的電池會導致電池起火或爆炸。

危險

電池套件含有微量的鎳。請勿拆開電池套件、丟入火或水中，或使其形成短路。請按照當地法令或規定來棄置電池套件。

更換電池套件時，僅限使用零件清單中的電池。使用不適當的電池會導致電池起火或爆炸。

危險

鋰電池會導致起火、爆炸或嚴重燒傷。請勿再充電、拔除其電極接頭、拆開、加熱超過 **100°C (212°F)** 、焚燒，或讓電池組成物浸到水。請按照當地法令或規定來棄置電池。
僅限使用零件清單中的電池。使用不適當的電池會導致電池起火或爆炸。

危險

如果 LCD 破裂導致 LCD 流出的液體沾到您的眼睛或手，請立即以清水沖洗沾染部位至少 15 分鐘。如果在清洗後出現該液體所造成的任何症狀，請就醫治療。

危險

# 為避免電擊，請勿拆下轉換卡下面的塑膠護蓋。

危險

雖然主電池的電壓很低，但短路或接地電池所產生的電流，仍足以使人燒傷或使可燃物質起火。

危險

除非 FRU 允許以熱抽換來替換，否則請依下列方式將其移除：將電腦關機，拔除插座上所有電源線，移除電池包，並拔開任何交互連接的線材。

# Chapter 2. General checkout

This chapter contains the following topics:

- "What to do first" on page 21
- "Power system checkout" on page 22


Before you go to the checkout instructions, ensure that you read the following important notes.

**Important notes:**

- **Only certified trained personnel should service the computer.**
- **Before replacing any FRU, read the entire page on removing and replacing FRUs.**
- **When you replace FRUs, it is recommended to use new nylon-coated screws.**
- **Be extremely careful during such write operations as copying, saving, or formatting.** Drives in the computer that you are servicing sequence might have been altered. If you select an incorrect drive, data or programs might be overwritten.
- **Replace a FRU only with another FRU of the correct model.** When you replace a FRU, make sure that the model of the machine and the FRU part number are correct by referring to the FRU parts list.
- **A FRU should not be replaced because of a single, unreproducible failure.** Single failures can occur for a variety of reasons that have nothing to do with a hardware defect, such as cosmic radiation, electrostatic discharge, or software errors. Consider replacing a FRU only when a problem recurs. If you suspect that a FRU is defective, clear the error log and run the test again. If the error does not recur, do not replace the FRU.
- **Be careful not to replace a nondefective FRU.**

## What to do first

When you do return a FRU, you must include the following information in the parts exchange form or parts return form that you attach to it:
- Name and phone number of the service technician
- Date of service
- Date on which the machine failed
- Date of purchase
- Procedure index and number of the page on which the failing FRU was detected
- Name and part number of the failing FRU
- Machine type, model number, and serial number
- Name and address of the customer

**Note:** During the warranty period, the customer may be responsible for repair costs if the computer damage was caused by misuse, accident, modification, unsuitable physical or operating environment, or improper maintenance by the customer. Following is a list of some common items that are not covered under warranty and some symptoms that might indicate that the system was subjected to stress beyond normal use.

Before checking problems with the computer, determine whether the damage is covered under the warranty by referring to the following list:

**The following are not covered under warranty:**
- LCD panel cracked from the application of excessive force or from being dropped
- Scratched (cosmetic) parts
- Distortion, deformation, or discoloration of the cosmetic parts
- Plastic parts, latches, pins, or connectors that have been cracked or broken by excessive force
- Damage caused by the liquid spilled into the computer
- Damage caused by the improper insertion of a PC card or the installation of an incompatible card

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- Improper disc insertion or use of an optical drive
- Diskette drive damage caused by pressure on the diskette drive cover, foreign material in the drive, or the insertion of a diskette with multiple labels
- Damaged or bent diskette eject button
- Fuses blown by attachment of an unsupported device
- Forgotten computer password (making the computer unusable)
- Sticky keys caused by spilling liquid onto the keyboard
- Use of an incorrect ac power adapter on notebook computers

**The following symptoms might indicate damage caused by nonwarranted activities:**
- Missing parts might be a symptom of unauthorized service or modification.
- If the spindle of a hard disk drive becomes noisy, it may have been subjected to excessive force, or dropped.

## Power system checkout

To verify a power symptom, do the following:
1. Turn off the computer.
2. Remove the battery pack.
3. Connect the ac power adapter.
4. Check that power is supplied when you turn on the computer.
5. Turn off the computer.
6. Disconnect the ac power adapter and install the charged battery pack.
7. Check that the battery pack supplies power when you turn on the computer.

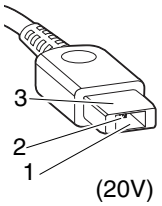
If you suspect a power problem, refer to the following topics for a checkout:
- “Checking the ac power adapter” on page 22
- “Checking operational charging” on page 23
- “Checking the battery pack” on page 23

## Checking the ac power adapter

If the computer fails only when the ac power adapter is used, refer to the information in this topic to check the ac power adapter.

- If the power-on indicator does not turn on, check the power cord of the ac power adapter for correct continuity and installation.
- If the computer does not charge during operation, go to “Checking operational charging” on page 23.

To check the ac power adapter, do the following:
1. Unplug the ac power adapter cable from the computer.
2. Measure the output voltage across the plug of the ac power adapter cable. The correct voltages are shown in the following table.



(20V)

| Pin | Voltage (V dc) |
|---|---|
| 1 | +20 |
| 2 | 0 |
| 3 | Ground |

**Note:** The output voltage across pin 2 might differ from the voltage that you measure.
3. Depending on the voltage that you measure, do one of the following:
   - If the voltage is not correct, replace the ac power adapter.

- If the voltage is acceptable, do the following:
  a. Replace the system board.
  b. If the problem persists, call the Customer Support Center.

**Note:** Noise from the ac power adapter does not always indicate a defect.

## Checking operational charging

To check whether the battery pack charges properly during operation, do the following:

**Note:** Before you begin, install a discharged battery pack or a battery pack that has less than 50% of the total power remaining in the computer.

1. If the battery status indicator does not turn on, remove the battery pack and let it return to room temperature.
2. Reinstall the battery pack.
3. If the indicator still does not turn on, replace the battery pack.
4. If the indicator still does not turn on, replace the system board. Otherwise, refer to “Checking the battery pack” on page 23 to check the original battery pack.

## Checking the battery pack

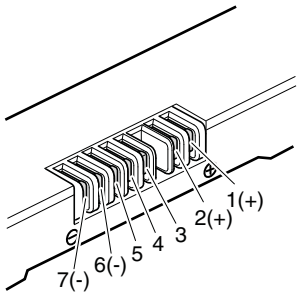
The battery status icon in the Microsoft® Windows® notification area displays the percentage of battery power remaining.

To check detailed battery status information on the Windows operating systems, do the following:

- Windows 7: Launch the Power Manager program and click the **Battery** tab.
- Windows 8: Do one of the following:
  - Click **Start → Lenovo Solution Center → System → Battery**.
  - Launch the Lenovo Settings program from the Start screen, and then click **Power**.

To check the battery pack, do the following:

1. Turn off the computer and disconnect the ac power adapter.
2. Remove the battery pack and measure the voltage between battery terminals 1 (+) and 7 (-). The correct voltages are shown in the following table.




| Terminal | Voltage (V dc) |
|---|---|
| 1 | + 0 to + 14 |
| 7 | Ground (-) |

3. Measure the resistance between battery terminals 5 and 7. The resistance should be 4 to 30 KΩ. If the resistance is not correct, replace the battery pack.
4. Depending on the voltage that you measure, do one of the following:
   - If the voltage is less than +12.0 V dc, recharge the battery pack. If the voltage still is less than +12.0 V dc after recharging, replace the battery pack.

- If the voltage is more than +12.0 V dc, discharge the battery pack until the voltage becomes less than +12.0 V dc and then recharge the battery pack. If the voltage still is less than +12.0 V dc after recharging, replace the battery pack.

**Note:** Recharging will take at least three hours, even if the battery status indicator does not turn on.

5. Replace the system board if the new battery pack is not charged.

# Chapter 3. Important service information

This chapter presents the following information:

- “Recovering the computer settings” on page 25
- “Using passwords” on page 25
- “Power management” on page 26


## Recovering the computer settings

This topic provides information about the recovery programs that are available for you to recover the computer settings.

- Windows 7: The following recovery programs are available on computers with a Windows 7 operating system:
  - OneKey® Recovery Pro

    The OneKey Recovery Pro program enables you to back up all your hard disk drive contents, including the operating system, data files, software programs, and personal settings. You can designate where the OneKey Recovery Pro program stores the backup. After you have backed up the contents on the hard disk drive, you can restore the complete contents of the hard disk drive, restore only the desired files, or restore only the Windows operating system and applications.
  - Product Recovery

    The Product Recovery program enables you to restore the computer settings to the factory default settings through recovery media.

    **Attention:** When you use the Product Recovery program to restore the computer settings, all the data you have stored on the hard disk drive will be deleted and the computer settings will be restored to the factory default settings. During the restoring process, you will be given the option to save one or more files currently on the hard disk drive to other media before the data is deleted.
- Windows 8: The preinstalled Windows recovery program enables you to do the following:
  - Refreshing the computer without losing personal files
  - Restoring the computer to the factory default settings

    **Attention:** When you use the Windows recovery program to restore the computer settings, all the data you have stored on the hard disk drive will be deleted and the computer will be restored to the factory default settings. To avoid data loss, back up your data in advance.
  - Configuring the advanced startup options

    The advanced startup options enable you to do the following:
    - Changing the startup settings of the Windows operating system
    - Restoring the Windows operating system from a system image
    - Starting up from an external device

For more information about the recovery solutions, refer to the help information system of the programs.

## Using passwords

You can set the following types of passwords to protect unauthorized access to your computer.

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**Attention:** If you forget the password, there is no service procedure to reset the password. The system board must be replaced for a scheduled fee.

- **Power-on password**: A power-on password protects the computer from being turned on by an unauthorized person. If a power-on password has been set, the user must enter the password before starting the operating system.
- **Supervisor password**: A supervisor password protects the system information stored in the BIOS program. The user must enter the supervisor password to get access to the BIOS program and change system configurations.

If you have set a password, you will be prompted to enter the password whenever you turn on the computer.

## Power management

There are three power management modes to reduce power consumption: screen blank, sleep, and hibernation.

## Screen blank mode

In the following circumstances, the computer enters screen blank mode:

- The time set on the “Turn off monitor” timer on the Windows 7 operating system expires.

  To end screen blank mode and resume normal operation, press any key.
- You have pressed Fn+F2.

  To end screen blank mode and resume normal operation, press Fn+F2.

## Sleep mode

When the computer enters sleep mode, the following events occur in addition to what occurs in screen blank mode:
- The LCD is powered off.
- The hard disk drive is powered off.
- The microprocessor stops.

To enter sleep mode, press Fn+F1.

In certain circumstances, the computer automatically enters sleep mode:

- A “suspend time” has been set on the timer, and the user does not do any operation with the keyboard, the hard disk drive, the parallel connector, or the diskette drive within that time.
- The battery status indicator blinks orange, indicating that the battery power is low.

To cause the computer to return from sleep mode and resume the operation, do one of the following:
- Press the Fn key.
- Open the LCD cover.
- Press the power button.

Also, when the time set on the resume timer elapses, the computer automatically returns from sleep mode and resumes operation.

**Note:** The computer does not accept any input immediately after it enters sleep mode. Wait a few seconds before taking any actions to reenter operation mode.

## Hibernation mode

In hibernation mode, the following occurs:

- The system status, RAM, VRAM, and setup data are stored on the hard disk drive.
- The system is powered off.

If you have defined one of the following actions as the event that causes the computer to enter hibernation mode, perform that action.

- Closing the lid
- Pressing the power button

Also, the computer automatically enters hibernation mode in either of the following circumstances:

- A “hibernation time” has been set on the timer, and the user does not do any operation with the keyboard, the hard disk drive, the parallel connector, or the diskette drive within that time.
- The timer conditions are satisfied in suspend mode.

When the power is turned on, the computer returns from hibernation mode and resumes operation. The hibernation file in the boot record on the hard disk drive is read, and the system status is restored from the hard disk drive.

# Chapter 4. Status indicators

This topic presents the system status indicators that show the status of the computer.

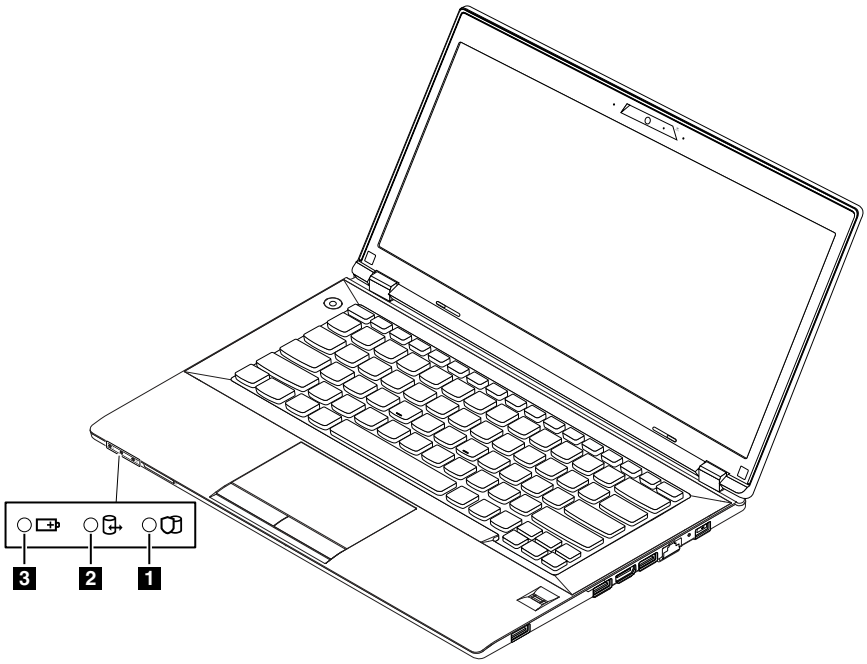


*Table 1. Status indicators*

| Indicator | Meaning |
|---|---|
| 1 Active Protection System™ (APS) status indicator | • **White:** The Active Protection System program is enabled.<br>• **Off:** The Active Protection System program is disabled. |
| 2 Device access status indicator | **Green:** The hard disk drive is reading or writing data.<br>**Attention:**<br>• When the indicator is on, do not put the computer into sleep mode or turn off the computer.<br>• When the indicator is on, do not move the computer. Sudden physical shock might cause drive errors. |
| 3 Battery status indicator | • **Solid green:** The battery charge level is between 80% and 100%, or the battery discharge level is between 20% and 100%.<br>• **Slow-blinking green:** The battery charge level is between 20% and 80%, and charging is continuing. When the battery charge level reaches 80%, the battery status indicator stops blinking, but the charging might continue until the battery is 100% charged.<br>• **Slow-blinking orange:** The battery charge level is between 5% and 20%, and the charging is continuing.<br>• **Solid orange:** The battery discharge level is between 5% and 20%.<br>• **Fast-blinking orange:** The battery charge or discharge level is 5% or less.<br>• **Off:** The battery is detached or the computer is powered off. |

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# Chapter 5. Fn key combinations

The following table describes the functions of Fn key combinations.

*Table 2. Function key combinations*

| Key combination | Description |
|---|---|
| Fn+Esc | Enables or disables the keyboard light. |
| Fn+F1 | Puts the computer into sleep mode. To resume normal operation, press the Fn key only. |
| Fn+F2 | Enables or disables the backlight feature of the computer screen. |
| Fn+F3 | Switches between the computer display and an external monitor.<br>**Note:** You also can use the Windows+P combination to switch between the computer display and an external monitor. |
| Fn+F4 | • Windows 7: Changes the camera and audio settings.<br>• Windows 8: Turns on or turns off the camera. |
| Fn+F5 | Enables or disables the built-in wireless networking features. |
| Fn+F6 | Mutes or unmutes the speakers. |
| Fn+F7 | Mutes or unmutes the microphones. |
| Fn+F8 | Enables or disables the touch pad function. |
| Fn+F9 | Multimedia control: Start/Pause |
| Fn+F10 | Multimedia control: Stop |
| Fn+F11 | Multimedia control: Skip to the previous track |
| Fn+F12 | Multimedia control: Skip to the next track |
| Fn+PgUp | Has the same function as the Home key on a conventional keyboard. |
| Fn+PrtSc | Has the same function as the SysRq key on a conventional keyboard. |
| Fn+PgDn | Has the same function as the End key on a conventional keyboard. |
| Fn+Insert | Has the same function as the Numeric Lock key on a conventional keyboard. |
| Fn + up/down arrow | Increases or decreases the display brightness level. |
| Fn + left/right arrow | Decreases or increases the sound volume. |

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# Chapter 6. Locations

This chapter provides information about component locations.

## Locating computer controls, connectors, and indicators

This topic introduces the locations of the computer controls, connectors, and indicators.

## Front view

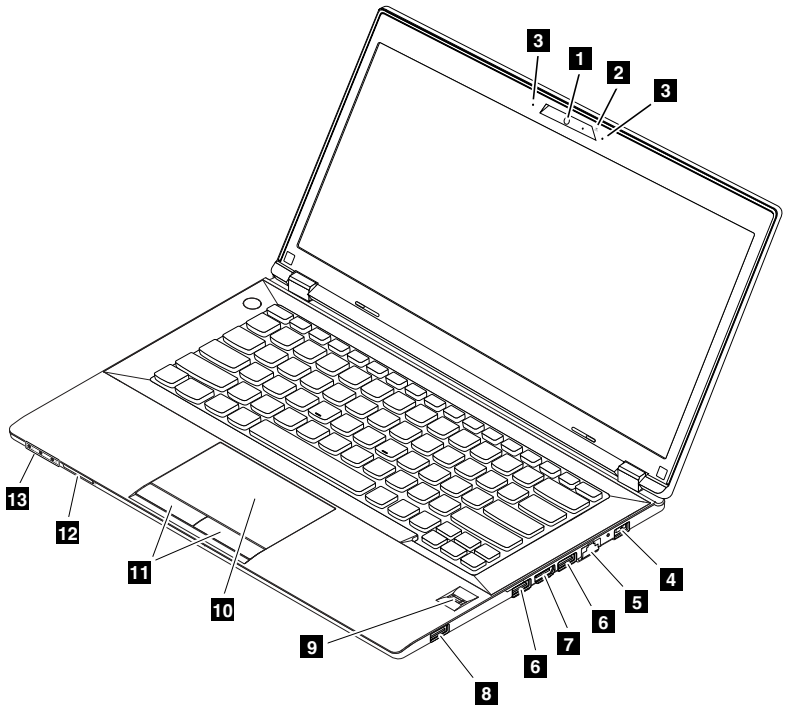


*Figure 1. Front view*

1 Camera
2 Keyboard light
3 Microphones
4 ac power connector
5 RJ45 Ethernet connector
6 USB 3.0 connectors
7 HDMI connector
8 USB 2.0 connector
9 Fingerprint reader
10 Touch pad
11 Touch pad buttons
12 Media card reader slot
13 Status indicators

**Note:** For the description of each status indicator, see Chapter 4 “Status indicators” on page 29.

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## Bottom view

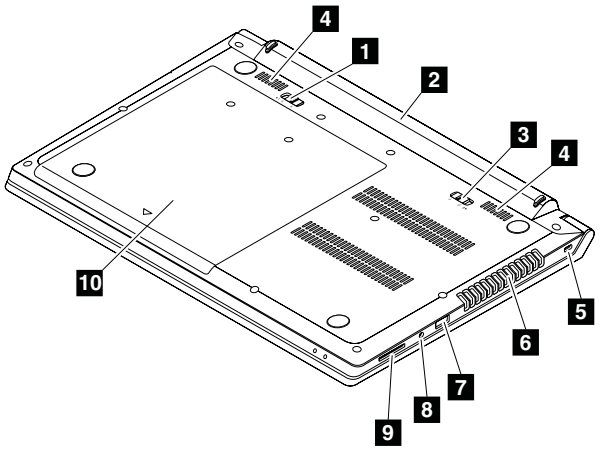


*Figure 2. Bottom view*

| | |
|---|---|
| 1 Battery lock | 6 Fan louvers |
| 2 Battery pack | 7 Monitor connector |
| 3 Battery latch | 8 Always On USB connector |
| 4 Speakers | 9 Combo audio jack |
| 5 Security-lock slot | 10 Bottom slot cover |

**Note:** The memory modules, hard disk drive, and wireless cards are located underneath the bottom slot cover.

## Locating FRUs and CRUs

This topic introduces the following service parts:


- "Major FRUs and CRUs" on page 35
- "LCD FRUs and CRUs" on page 36


**Notes:**
- Each FRU is available for all types or models, unless otherwise specified.
- A customer replaceable unit (CRU) is identified by a single asterisk (*) or two asterisks (**) in the CRU ID column. A single asterisk (*) means that the part is a Self-service CRU; two asterisks (**) means that the part is an Optional-service CRU. A Letter "N" in the CRU ID column means that the part is not a CRU.
- **CRU statement for customers:**
  You can resolve some problems with your product with a replacement part you can install yourself, called a "Customer Replaceable Unit" or "CRU." Some CRUs are designated as self-service CRUs and others are designated as optional-service CRUs. *Installation of self-service CRUs is your responsibility. For optional-service CRUs, you can either install the CRU yourself or you can request that a Service Provider install the CRU according to the warranty service for your product*. If you intend on installing the CRU, Lenovo will ship the CRU to you. CRU information and replacement instructions are shipped with your product and are available from Lenovo at any time upon request. You can find a list of CRUs for your product in this Hardware Maintenance Manual. An electronic version of this manual can be found at http://www.lenovo.com/UserManuals. Follow the on-screen instructions to find the manual for your product. You might be required to return the defective CRU. When return is required: (1) return instructions, a prepaid shipping label, and a container will be included with the replacement CRU; and (2) you might be charged for the replacement CRU if Lenovo does not receive the defective CRU within thirty (30) days of your receipt of the replacement CRU. See your Lenovo Limited Warranty documentation for full details.

  Lenovo computers contain the following types of CRUs:

- **Self-service CRUs:** These CRUs unplug or are held by no more than two screws. Examples of these types of CRUs include the ac power adapter, power cord, battery, and hard disk drive. Other self-service CRUs depending on product design might include the memory module, wireless card, keyboard, and palm rest with finger print reader and touch pad.
- **Optional-service CRUs:** These CRUs are isolated parts within the computer that 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.

## Major FRUs and CRUs

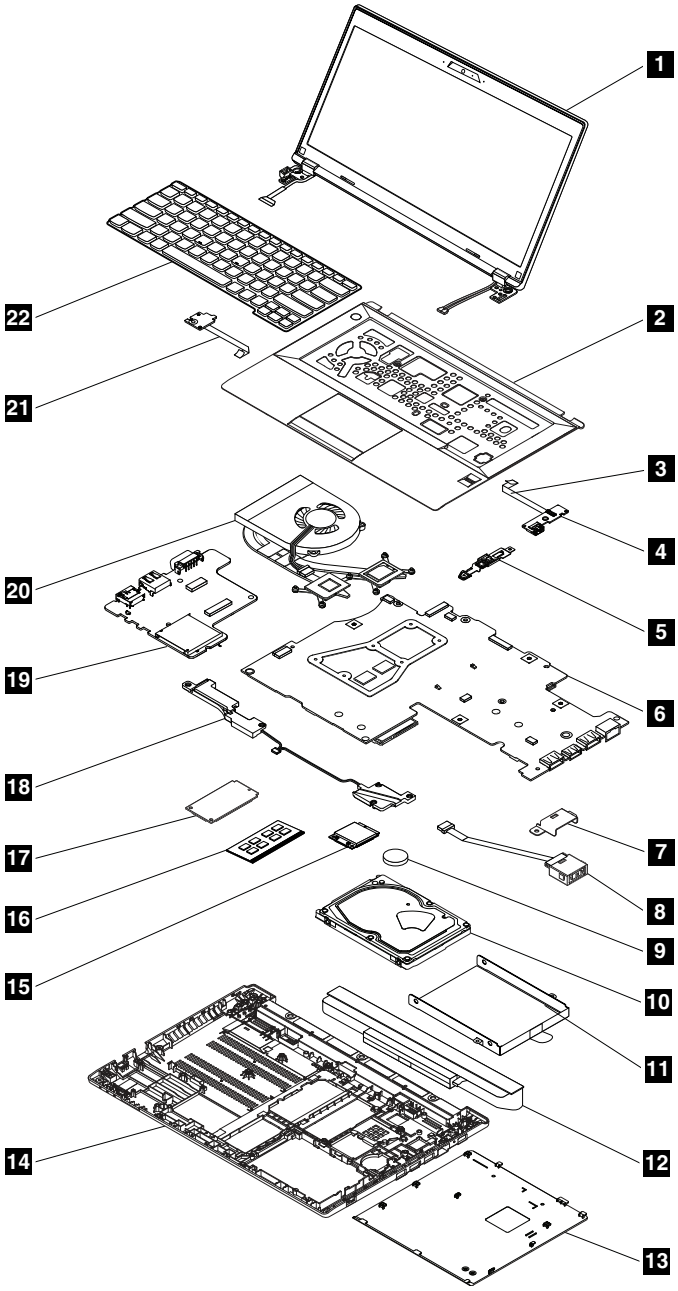

*Table 3. Major FRUs and CRUs*

| No. | FRU description | CRU ID |
|---|---|---|
| 1 | LCD unit | N |
| 2 | Keyboard bezel with touch pad | N |
| 3 | Fingerprint board cable | N |
| 4 | Fingerprint board | N |
| 5 | Fingerprint board bracket | N |
| 6 | System board | N |
| 7 | DC-in connector bracket | N |
| 8 | DC-in connector | N |
| 9 | Backup battery | N |
| 10 | Hard disk drive | N |
| 11 | Hard disk drive bracket | N |
| 12 | Battery pack | N |
| 13 | Bottom slot cover | N |
| 14 | Base cover | N |
| 15 | Wireless LAN card | N |
| 16 | Memory module | N |
| 17 | mSATA solid-state drive | N |
| 18 | Speakers | N |
| 19 | Media card reader slot board | N |
| 20 | Thermal module assembly | N |
| 21 | Power board with cable | N |
| 22 | Keyboard | N |

## LCD FRUs and CRUs

Lenovo ZhaoYang K4350 and K4350A models use a 356-mm (14.0-inch), high-definition (HD), light-emitting diode (LED), liquid crystal display (LCD).

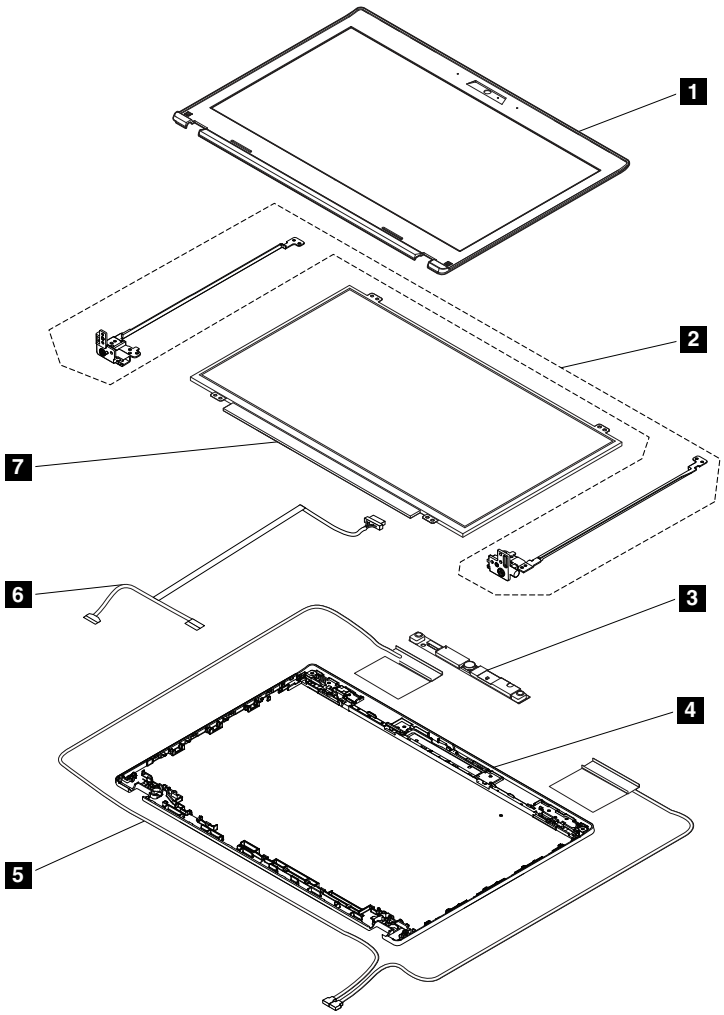


*Table 4. LCD FRUs*

| No. | FRU description | CRU ID |
|---|---|---|
| 1 | LCD Bezel | N |
| 2 | Hinges | N |
| 3 | Camera and microphones board | N |
| 4 | LCD cover | N |
| 5 | Antennas | N |
| 6 | LCD cable | N |
| 7 | LCD panel | N |

## Looking up FRU information

For detailed FRU information, including part numbers, descriptions, and substitution part numbers, go to http://www.lenovo.com/serviceparts-lookup.

# Chapter 7. FRU replacement notices

This chapter presents notices related to removing and replacing parts. Read this chapter carefully before replacing any FRU.

**CRU statement for customers:**
You can resolve some problems with your product with a replacement part you can install yourself, called a “Customer Replaceable Unit” or “CRU.” Some CRUs are designated as self-service CRUs and others are designated as optional-service CRUs. *Installation of self-service CRUs is your responsibility. For optional-service CRUs, you can either install the CRU yourself or you can request that a Service Provider install the CRU according to the warranty service for your product*. If you intend on installing the CRU, Lenovo will ship the CRU to you. CRU information and replacement instructions are shipped with your product and are available from Lenovo at any time upon request. You can find a list of CRUs for your product in this Hardware Maintenance Manual. An electronic version of this manual can be found at http://www.lenovo.com/UserManuals. Follow the on-screen instructions to find the manual for your product. You might be required to return the defective CRU. When return is required: (1) return instructions, a prepaid shipping label, and a container will be included with the replacement CRU; and (2) you might be charged for the replacement CRU if Lenovo does not receive the defective CRU within thirty (30) days of your receipt of the replacement CRU. See your Lenovo Limited Warranty documentation for full details.

## Important notice for replacing FRUs

Ensure that the computer has the latest BIOS version and device drivers installed before replacing any FRUs.

After you replace a system board, ensure that you install the latest BIOS version on the new system board.

**Note:** BIOS and device drivers are customer-installable. The BIOS and device drivers are available at http://www.lenovo.com/support.

To download the latest BIOS, device drivers, and other software programs, do the following:

1. Go to http://www.lenovo.com/support.
2. Click **Download Drivers & Software**. The Web site offers three options to begin your search:
   - Search by product number
   - Search through the product auto-detect function
   - Search by product category
3. Follow the instructions on the screen and install the necessary software.
4. Restart the computer.

**Notes:** You also can improve the computer performance by updating the BIOS utility to the latest version from the Lenovo Support Web site http://www.lenovo.com/support.

- Before installing the latest utility, make sure that the battery is fully charged and an ac power adapter is connected.
- Do not try to update the BIOS settings for any computer unless you have been trained and certified. An untrained person runs the risk of damaging the computer.
- Do not turn off or put your computer into sleep or hibernation until the update has been completed. Otherwise, the system board might be damaged.

When you are replacing and servicing FRUs, refer to the following instructions to avoid unnecessary expense:

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- If you are instructed to replace a FRU but the replacement does not solve the problem, reinstall the original FRU before you continue.
- Some computers have both a processor board and a system board. If you are instructed to replace either the processor board or the system board, but the replacement does not solve the problem, reinstall the original board, and then replace the other one.
- If an adapter or a device consists of more than one FRU, any of the FRUs might be the cause of the error. Before replacing the adapter or device, remove the FRUs one by one to see if the symptoms change. Find and replace only the FRU that changed the symptoms.

## Screw notices

The Lenovo notebook computer uses special nylon-coated screws that have the following characteristics:

- They maintain tight connections.
- They do not easily come loose, even with shock or vibration.
- They are harder to tighten.

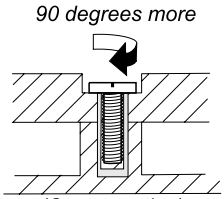
Do the following when you are servicing the computer:

- Keep the screw kit in your tool bag.
- It is recommended that you use new screws.
- It is recommended that you use each screw only once.
- Use a torque screwdriver if you have one.

Tighten screws as follows:

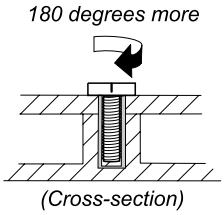
- **Plastic to plastic**

  Turn an additional angle of 90 degrees after the screw head touches the surface of the plastic part.




- **Logic card to plastic**

  Turn an additional angle of 180 degrees after the screw head touches the surface of the logic card.




**Notes:**

- Ensure that you use the correct screw. It is recommended that you use new screws for replacements. If you have a torque screwdriver, firmly tighten all screws to the torque specified in the screw information table for each step.
- Ensure that torque screw drivers are calibrated correctly following country specifications.

# Chapter 8. Removing or replacing a FRU

This chapter provides instructions on how to remove or replace a FRU.

**CRU statement for customers:**
You can resolve some problems with your product with a replacement part you can install yourself, called a “Customer Replaceable Unit” or “CRU.” Some CRUs are designated as self-service CRUs and others are designated as optional-service CRUs. *Installation of self-service CRUs is your responsibility. For optional-service CRUs, you can either install the CRU yourself or you can request that a Service Provider install the CRU according to the warranty service for your product*. If you intend on installing the CRU, Lenovo will ship the CRU to you. CRU information and replacement instructions are shipped with your product and are available from Lenovo at any time upon request. You can find a list of CRUs for your product in this Hardware Maintenance Manual. An electronic version of this manual can be found at http://www.lenovo.com/UserManuals. Follow the on-screen instructions to find the manual for your product. You might be required to return the defective CRU. When return is required: (1) return instructions, a prepaid shipping label, and a container will be included with the replacement CRU; and (2) you might be charged for the replacement CRU if Lenovo does not receive the defective CRU within thirty (30) days of your receipt of the replacement CRU. See your Lenovo Limited Warranty documentation for full details.

## General guidelines

When removing or replacing a FRU, ensure that you observe the following general guidelines:

1. Do not try to service any computer unless you have been trained and certified. An untrained person runs the risk of damaging parts.
2. Before replacing any FRU, review Chapter 7 “FRU replacement notices” on page 39.
3. Begin by removing any FRUs that have to be removed before replacing the failing FRU. Any such FRUs are listed at the beginning of each FRU replacement procedure. Remove them in the order in which they are listed.
4. Follow the correct sequence in the steps for removing a FRU, as shown in the illustrations by the numbers in square callouts.
5. When turning a screw, turn it in the direction as shown by the arrow in the illustration.
6. When removing a FRU, move it in the direction as shown by the arrow in the illustration.
7. To install a new FRU in place, reverse the removal procedure and follow any notes that pertain to replacement.
8. When replacing a FRU, use the correct screws as shown in the replacement procedure.

**DANGER**

**Before removing any FRU, turn off the computer, unplug all power cords from electrical outlets, remove the battery pack, and then disconnect any interconnecting cables.**

**Attention:** After replacing a FRU, do not turn on the computer until you have ensured that all screws, springs, and other small parts are in place and none are loose inside the computer. Verify this by shaking the computer gently and listening for rattling sounds. Metallic parts or metal flakes can cause electrical short circuits.

**Attention:** The system board is sensitive to and can be damaged by ESD. Before touching it, establish personal grounding by touching a ground point with one hand or by using an ESD strap (P/N 6405959).

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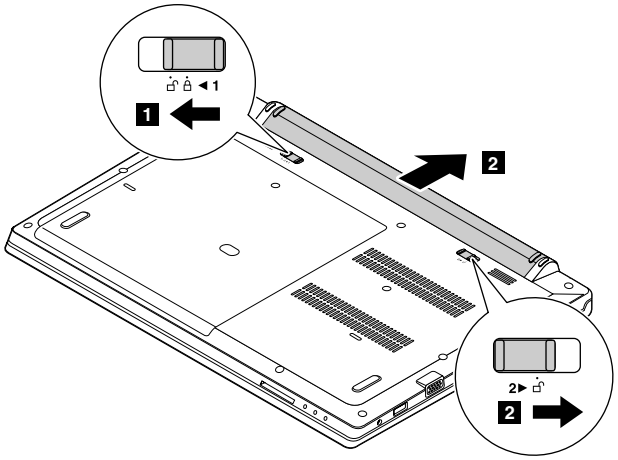
## 1010 Battery pack

**Removal steps of the battery pack**

**DANGER**

**Use only the battery specified in the parts list for your computer. Any other battery could ignite or explode.**

Unlock the battery lock **1**. Hold the battery latch in the unlocked position, and then remove the battery pack **2**.




**When installing:** Install the battery pack in the slot. Ensure that the battery latch and the battery lock are in the locked positions.

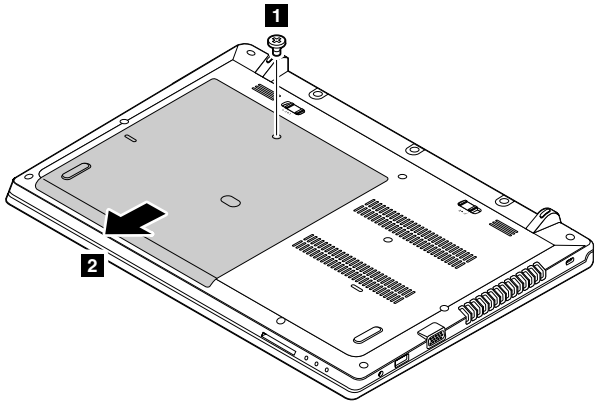
## 1020 Bottom slot cover

For access, remove this FRU:

- “1010 Battery pack” on page 42

**Removal steps of the bottom slot cover**

Remove the screw 1, and then remove the bottom slot cover 2.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M2 × 3 mm, flat-head, nylon-coated (1) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

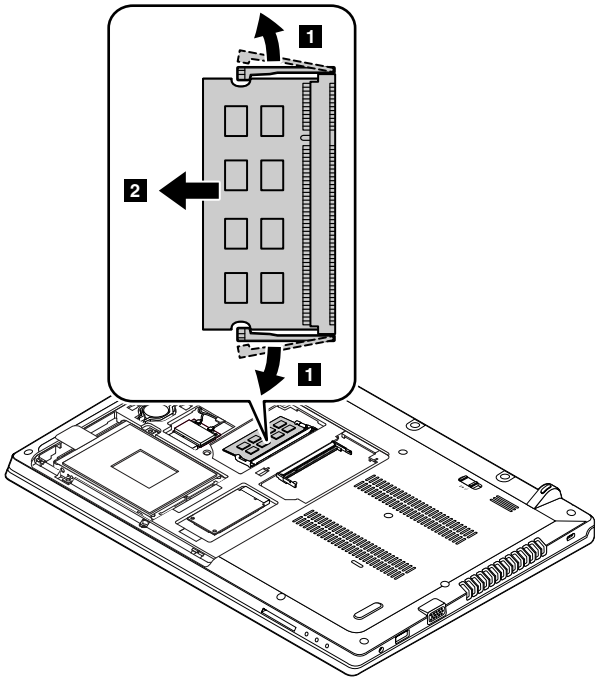
## 1030 Memory modules

For access, remove these FRUs in order:

- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42

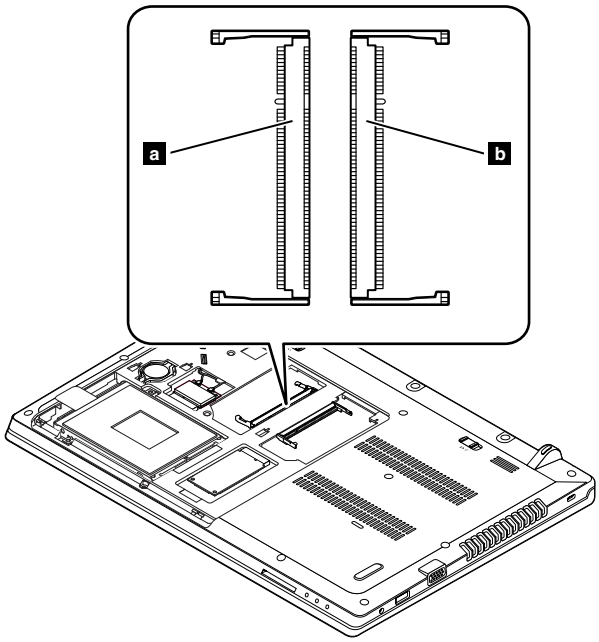
### Removal steps of the memory modules

Release the two latches on both edges of the socket at the same time 1, and then carefully remove the memory module 2.




**When installing:** Insert the notched end of the memory module into the memory slot at an angle of about 20 degrees. Press the memory module firmly, and pivot it downward until it snaps into place. Ensure that the memory module is firmly installed in the slot and does not move easily.

**Note:** If only one memory module is to be installed into the computer you are servicing, the memory module must be installed in SLOT-0 (slot a), but not in SLOT-1 (slot b).



## 1040 Hard disk drive assembly

For access, remove these FRUs in order:
- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42

### Important notice for replacing a hard disk drive

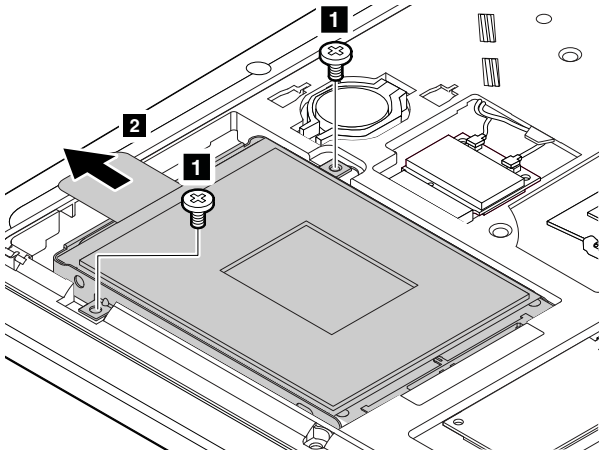
Always try to run a low-level format before replacing a hard disk drive. This will cause all customer data on the hard disk drive to be lost. Ensure that the customer has a current backup of the data before doing this task.

**Attention:**

- Do not drop the drive or apply any physical shock to it. The drive is sensitive to physical shock. Improper handling can cause damage and permanent loss of data.
- Before removing the drive, have the user make a backup copy of all the information on it if possible.
- Never remove the drive while the computer is operating or in suspend mode.
- The drive startup sequence in the computer you are servicing might have been changed. Be extremely careful during write operations such as copying, saving, or formatting. If you select an incorrect drive, data or programs can be overwritten.

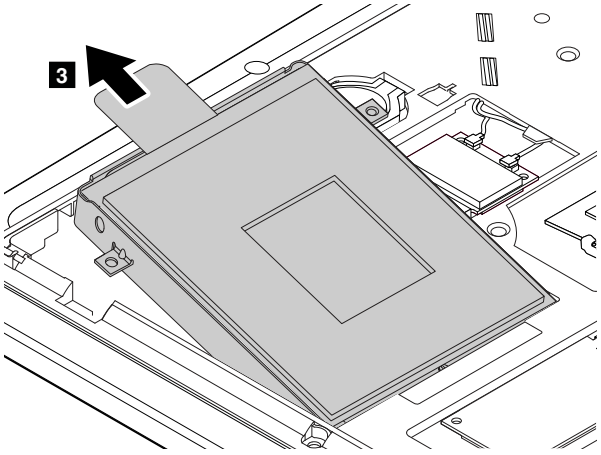
### Removal steps of the hard disk drive assembly

Remove the screws **1**, and then pull the tab **2**.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M2 × 3 mm, flat-head, nylon-coated (2) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

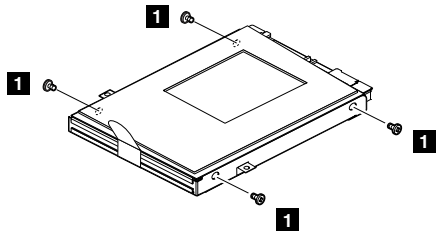
Remove the hard disk drive assembly.




**When installing:** Ensure that the hard disk drive connector is attached firmly.

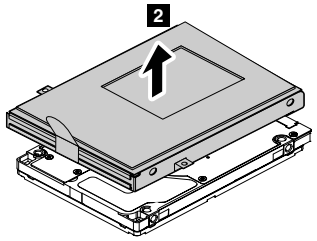
**Removal steps of the hard disk drive bracket**

Remove the screws 1.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M3 × 2.8 mm, flat-head, nylon-coated (4) | Black | 0.392 Nm<br>(4.0 kgf-cm) |

Remove the hard disk drive bracket.

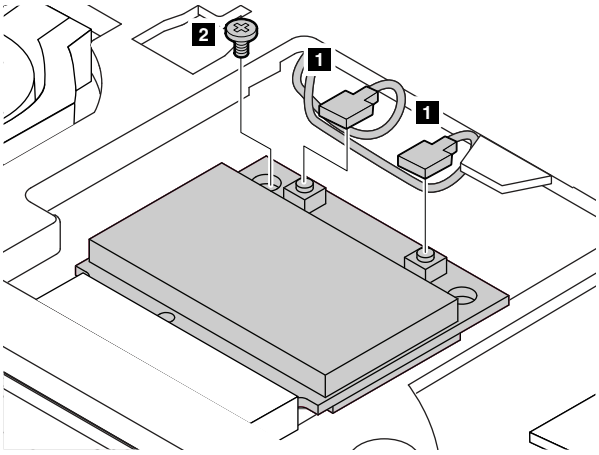



## 1050 PCI Express Mini Card for wireless LAN

For access, remove these FRUs in order:
- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42

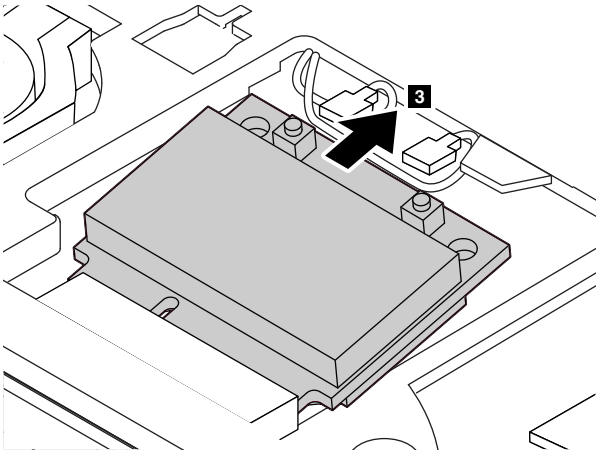
**Removal steps of the PCI Express Mini Card for wireless LAN**

In steps 1, unplug the connectors by using the removal tool for the antenna RF connector or pick up the connectors with your fingers and gently unplug them. Then remove the screw 2.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 2 | M2 × 3 mm, flat-head, nylon-coated (1) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

Remove the PCI Express Mini Card for wireless LAN.




**When installing:** Plug the black cable into the main connector, and the white cable into the auxiliary connector.

## 1060 mSATA solid-state drive

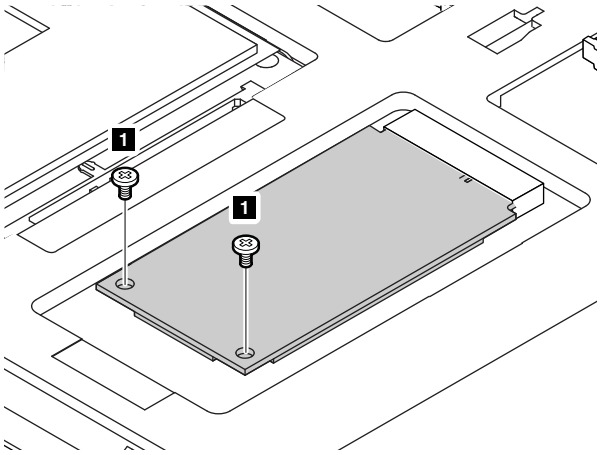
For access, remove these FRUs in order:
- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42

**Attention:**

- Do not drop the drive or apply any physical shock to it. The drive is sensitive to physical shock. Improper handling can cause damage and permanent loss of data.
- Before removing the drive, have the user make a backup copy of all the information on it if possible.
- Never remove the drive while the computer is operating or in suspend mode.

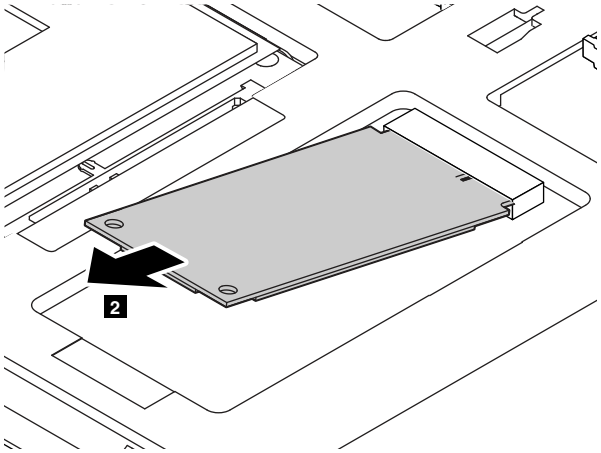
**Removal steps of the mSATA solid-state drive**

Remove the screws 1.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M2 × 3 mm, flat-head, nylon-coated (2) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

Remove the mSATA solid-state drive.




## 1070 Backup battery

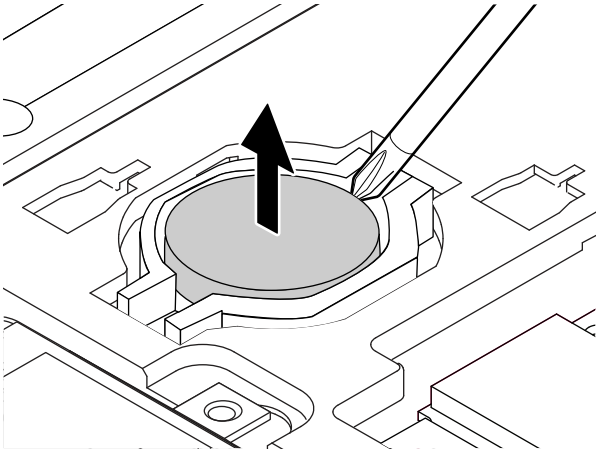
For access, remove these FRUs in order:
- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42

### Removal steps of the backup battery

**DANGER**

**Use only the battery specified in the parts list for your computer. Any other battery could ignite or explode.**

Carefully pry the backup battery out using a screwdriver.

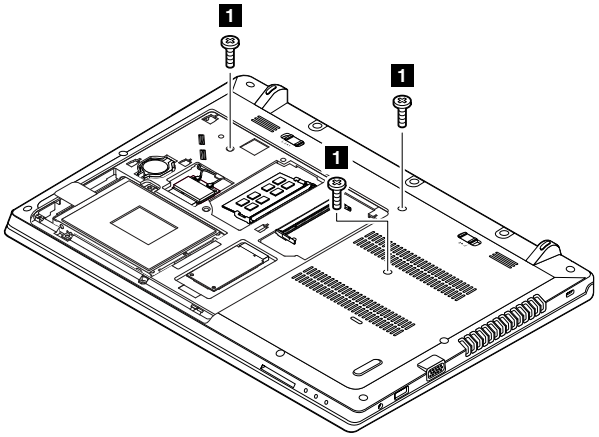


## 1080 Keyboard

For access, remove these FRUs in order:
- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42

### Removal steps of the keyboard

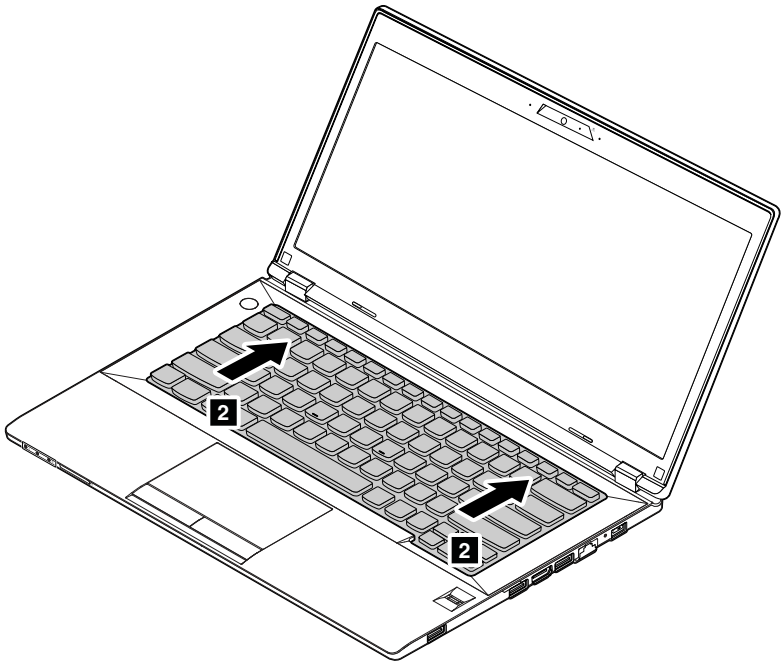
Remove the screws **1**.



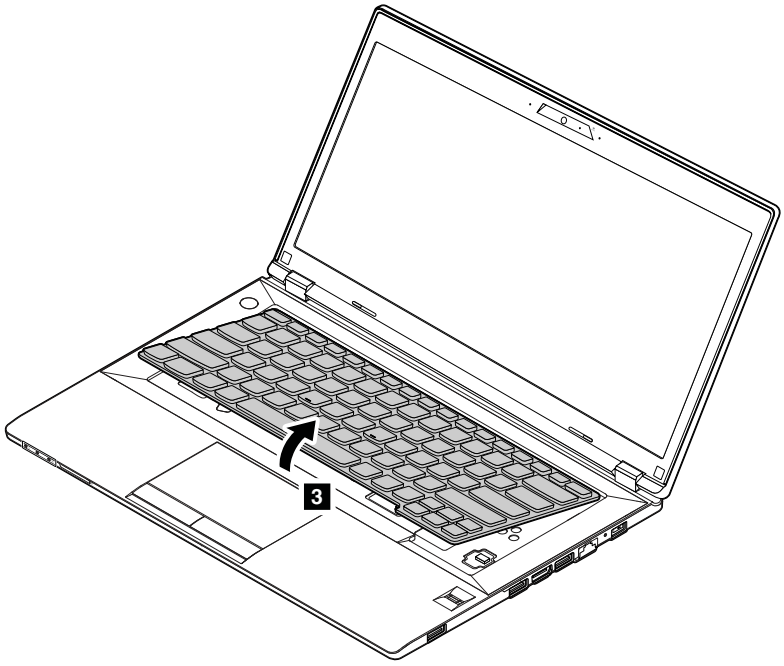

**When installing:** Ensure that the screws are firmly installed and the keyboard is secured.

| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M2 × 6 mm, flat-head, nylon-coated (3) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

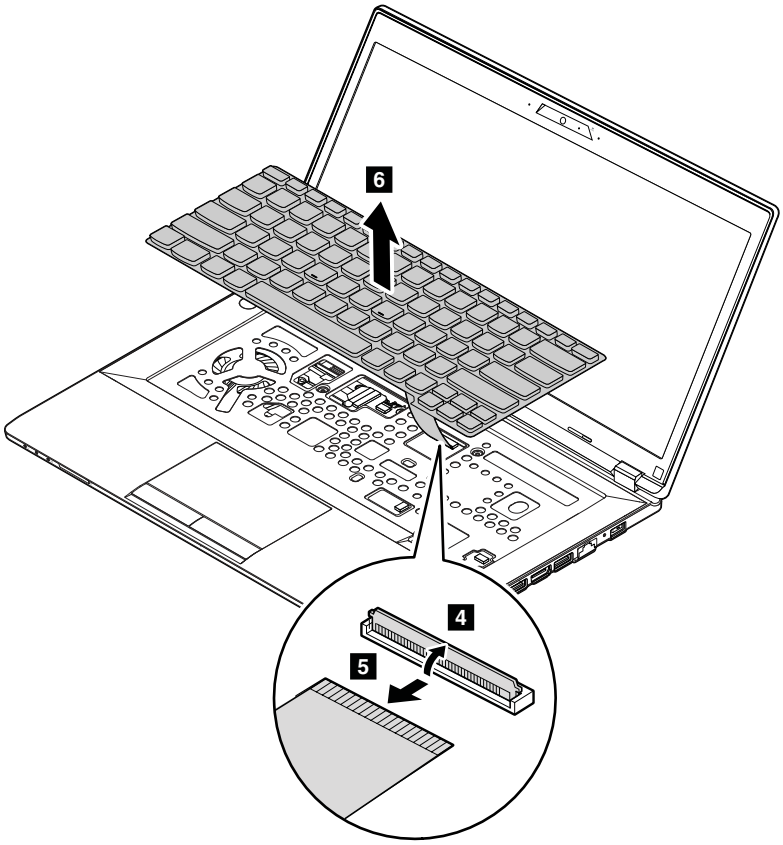
Push hard to unlatch the keyboard.




Carefully detach the keyboard and then lift it up until you can see how it is connected.



Detach the keyboard connector, and then remove the keyboard.




**When installing:** Ensure that the keyboard connector is attached firmly.

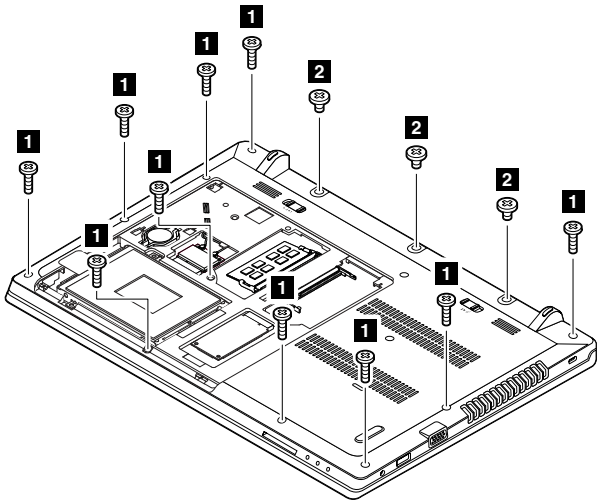
## 1090 Keyboard bezel

For access, remove these FRUs in order:

- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42
- “1080 Keyboard” on page 49

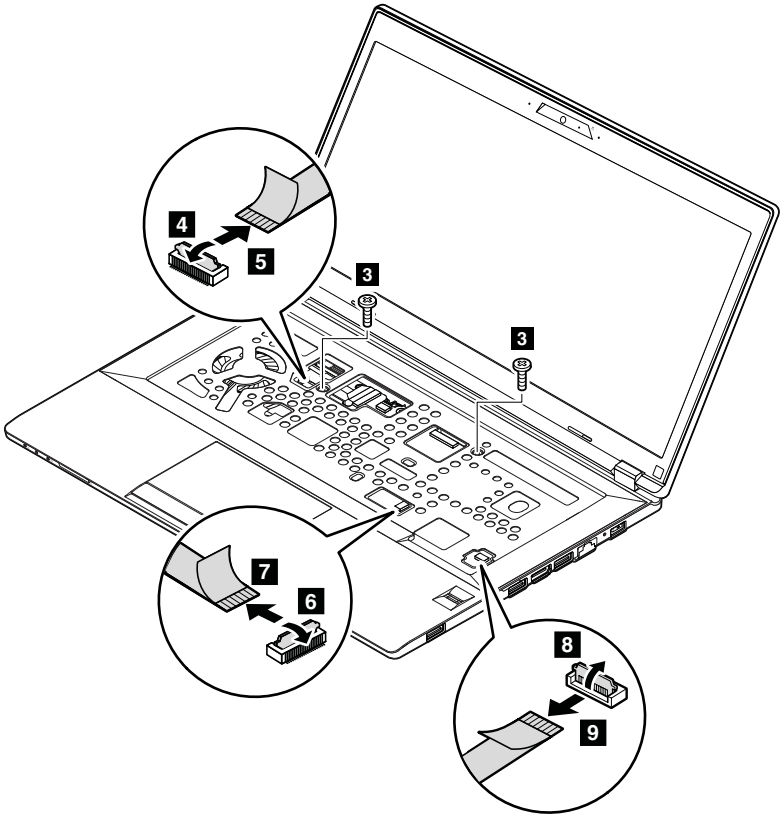
### Removal steps of the keyboard bezel

Remove the screws 1 and 2.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M2 × 6 mm, flat-head, nylon-coated (10) | Black | 0.181 Nm<br>(1.85 kgf-cm) |
| 2 | M2 × 2.5 mm, flat-head, nylon-coated (3) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

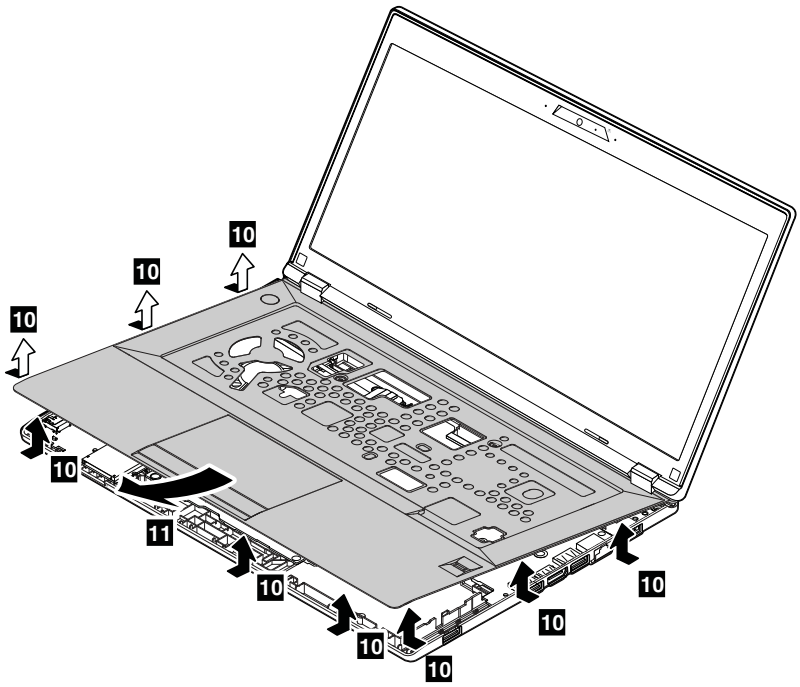
Remove the screws 3, and then detach the connectors.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 3 | M2 × 6 mm, flat-head, nylon-coated (2) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

**When installing:** Ensure that all the connectors are attached firmly.

Detach the keyboard bezel from the frame, and then remove the keyboard bezel.



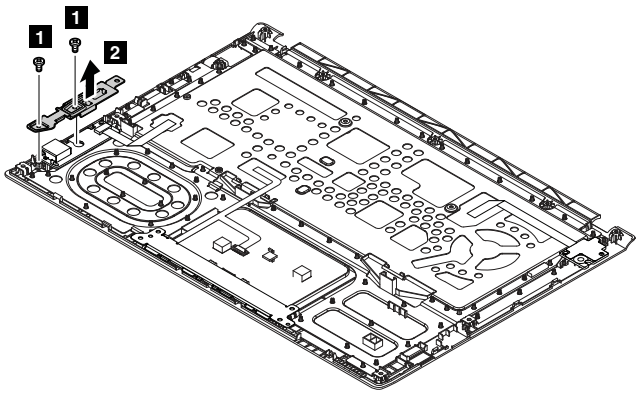

## 1110 Fingerprint board bracket and fingerprint board with cable

For access, remove these FRUs in order:

- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42
- “1040 Hard disk drive assembly” on page 45
- “1080 Keyboard” on page 49
- “1090 Keyboard bezel” on page 51

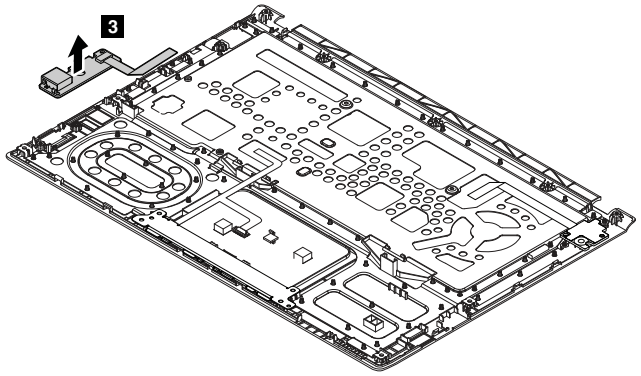
### Removal steps of the fingerprint board bracket and the fingerprint board with cable

Remove the screws 1, and then remove the fingerprint board bracket 2.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M2 × 3 mm, flat-head, nylon-coated (2) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

Remove the fingerprint board with the fingerprint board cable.

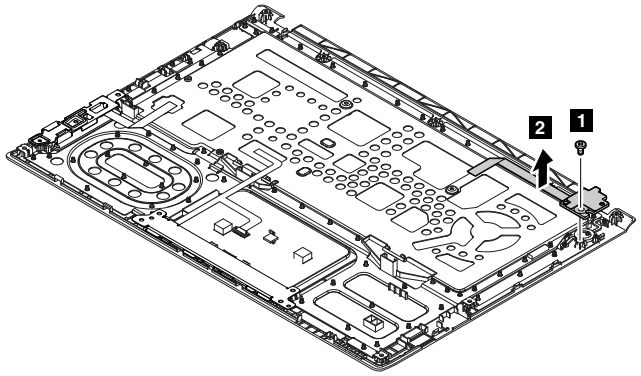



## 1120 Power board

For access, remove these FRUs in order:
- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42
- “1040 Hard disk drive assembly” on page 45
- “1080 Keyboard” on page 49
- “1090 Keyboard bezel” on page 51

### Removal steps of the power board

Remove the screw 1, and then remove the power board.



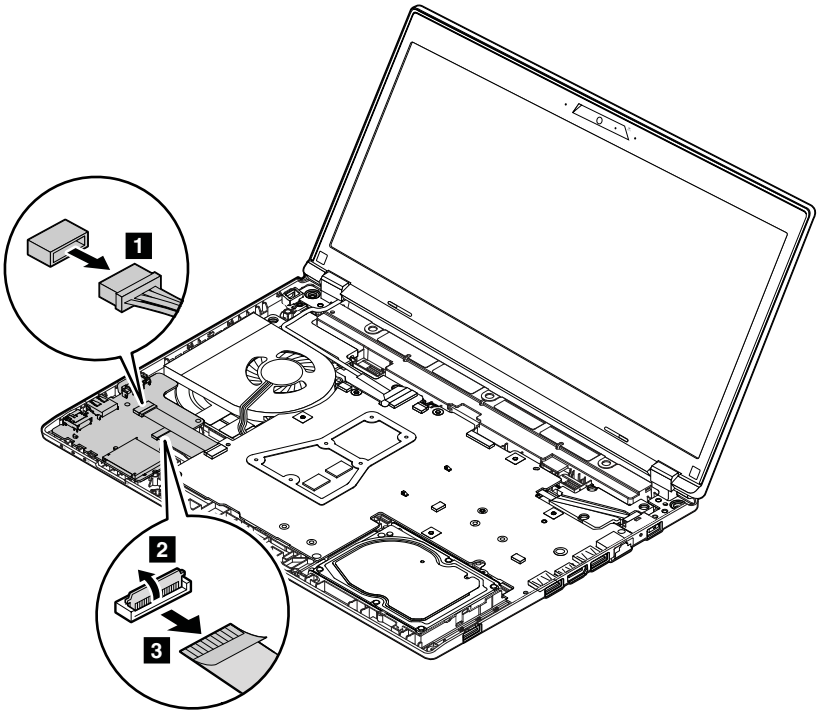

| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M2 × 3 mm, flat-head, nylon-coated (1) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

## 1130 Media card reader slot board

For access, remove these FRUs in order:
- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42
- “1040 Hard disk drive assembly” on page 45
- “1080 Keyboard” on page 49
- “1090 Keyboard bezel” on page 51
- “1140 System board assembly” on page 57

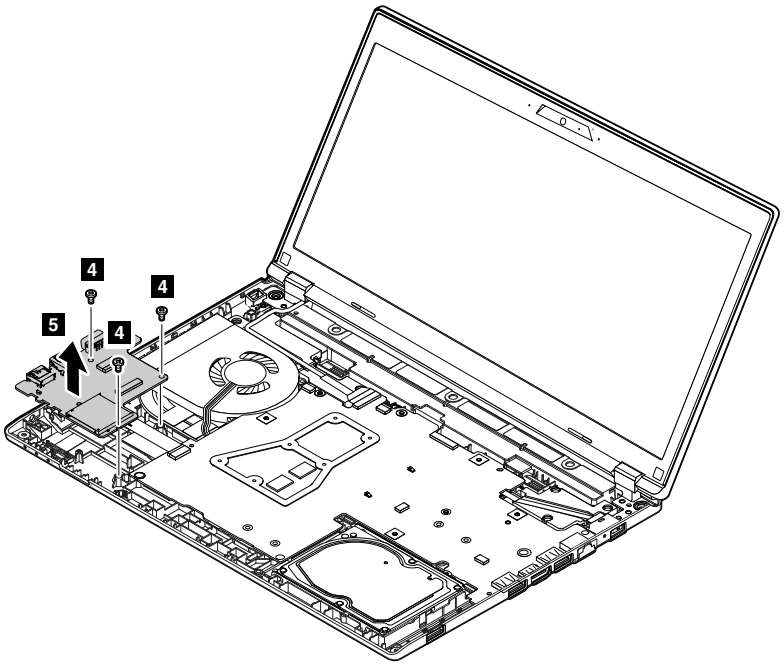
**Removal steps of the media card reader slot board**

Detach the cables.




**When installing:** Ensure that the cables are attached firmly.

Remove the screws 4, and then remove the media card reader slot board.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 4 | M2 × 3 mm, flat-head, nylon-coated (3) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

## 1140 System board assembly

For access, remove these FRUs in order:

- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42
- “1030 Memory modules” on page 43
- “1040 Hard disk drive assembly” on page 45
- “1050 PCI Express Mini Card for wireless LAN” on page 46
- “1060 mSATA solid-state drive” on page 47
- “1070 Backup battery” on page 48
- “1080 Keyboard” on page 49
- “1090 Keyboard bezel” on page 51

**Important notice for replacing the system board**

When replacing the system board, observe the following guidelines:

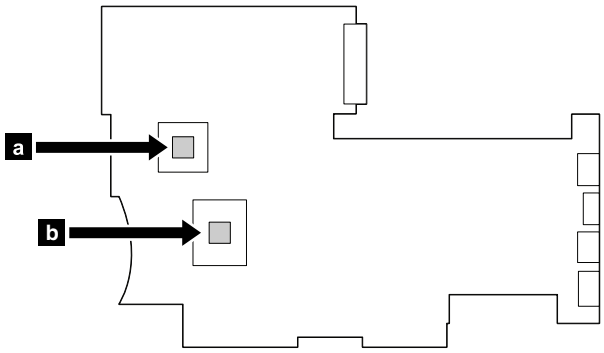
- Do not drop a system board on a bench top that has a hard surface, such as metal, wood, or composite.
- Do not apply any excessive force to a system board.
- Avoid rough handling of any kind.
- Avoid bending a system board or hard pushing to prevent cracking at each Ball Grid Array (BGA) chipset.
- When you put a system board down, be sure to put it only on a padded surface such as an ESD mat or a corrugated conductive surface.

### Locating major sensitive components on the system board

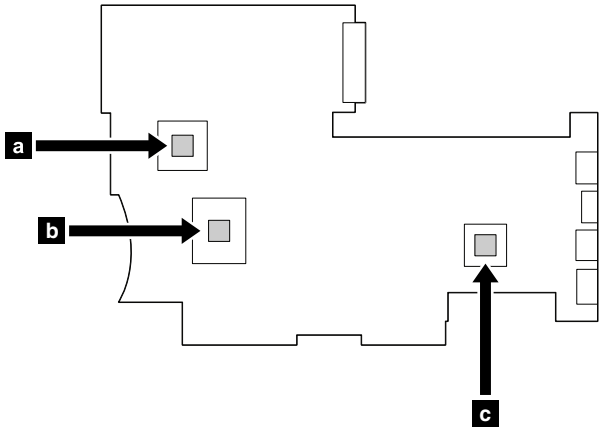
**Attention:** The following components mounted on a system board are extremely sensitive. Improper handling of a system board can cause damage to the following components, and might cause a system malfunction. When you service the system board, avoid any kind of rough handling.

- a Graphics chip (for discrete graphics models)
- b Microprocessor
- c Platform Controller Hub (PCH)

**For models with an integrated thermal module assembly**

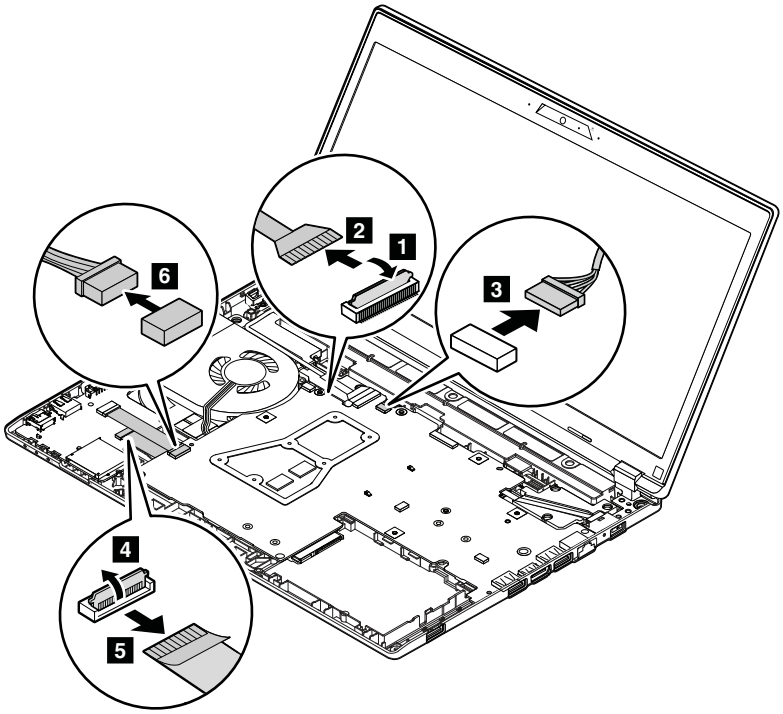



**For models with a discrete thermal module assembly**



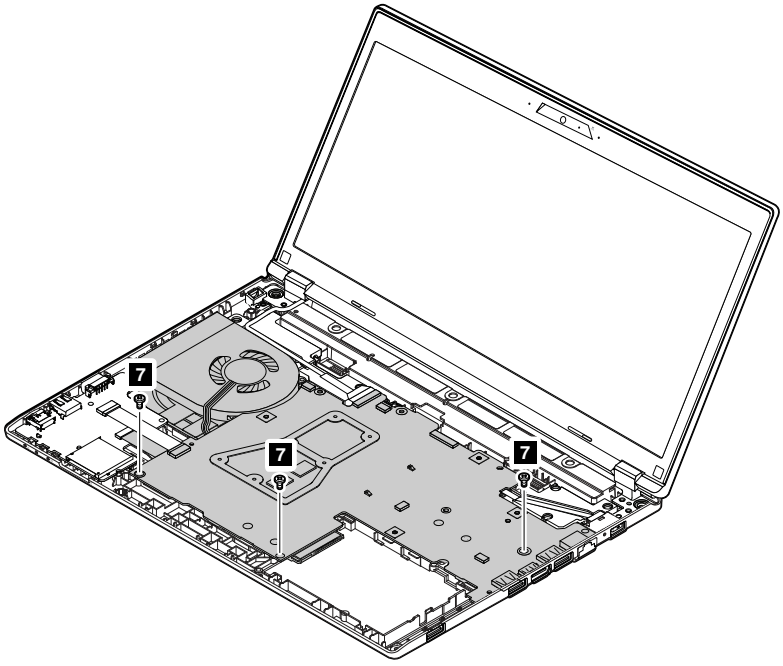
### Removal steps of the system board assembly

Detach the connectors.



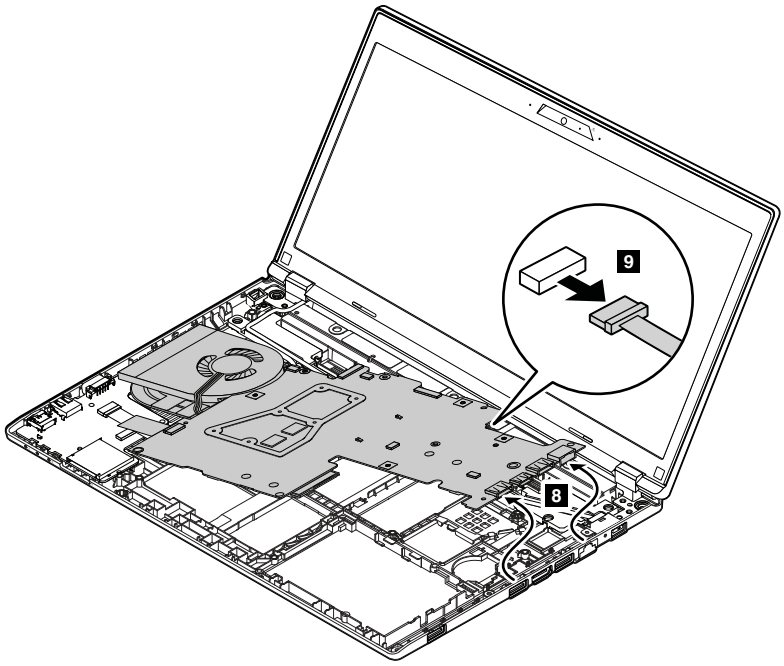

**When installing:** Ensure that all the connectors are attached firmly.

Remove the screws **7**.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 7 | M2 × 3 mm, flat-head, nylon-coated (3) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

Lift the system board assembly carefully, and then detach the connector 9.




**When installing:** Ensure that the connector is attached firmly to the system board.

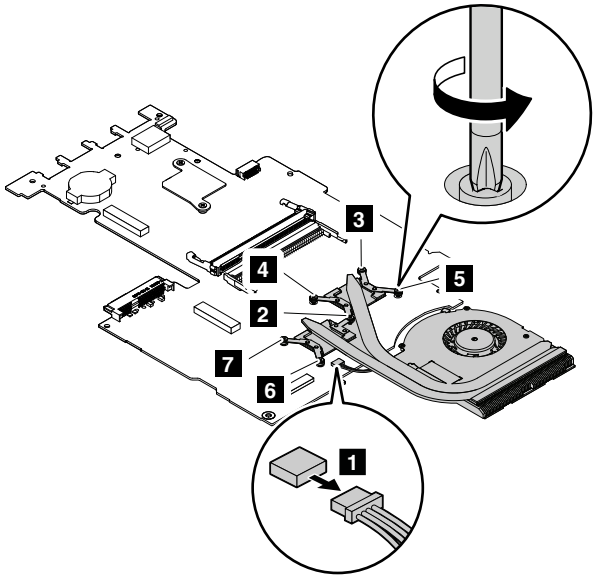
## 1150 Thermal module assembly

For access, remove these FRUs in order:

- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42
- “1040 Hard disk drive assembly” on page 45
- “1080 Keyboard” on page 49
- “1090 Keyboard bezel” on page 51
- “1140 System board assembly” on page 57

**Removal steps of the thermal module assembly**

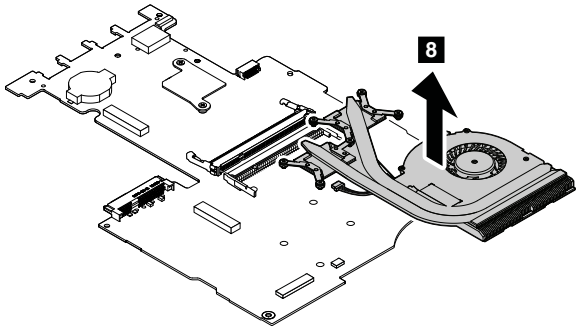
Detach the connector 1. Loosen the screws 2 to 7.




**When installing:** Ensure that the connector is attached firmly to the system board.

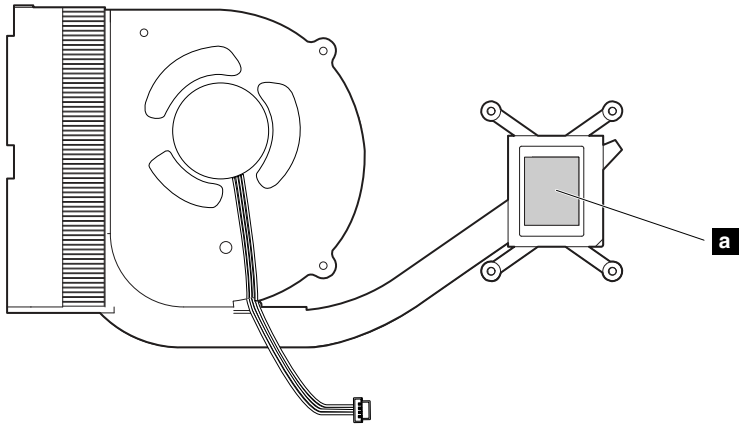
Carefully remove the thermal module assembly.

**Note:** Be careful not to damage the connector.

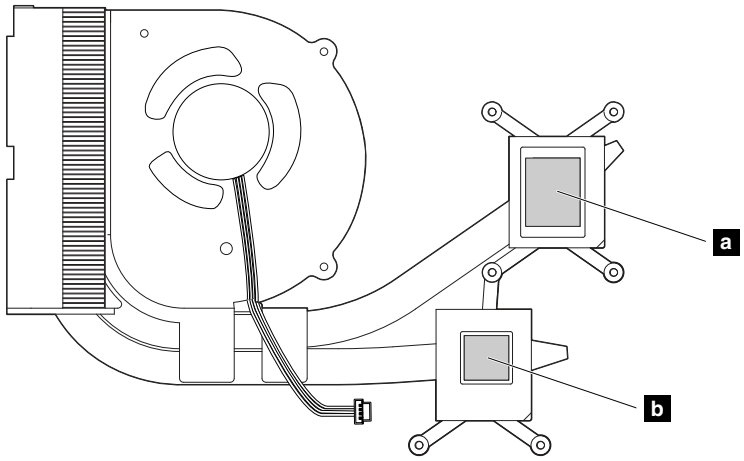



**When installing:** Before you attach the thermal module assembly to the system board, apply thermal grease, at an amount of 0.2 grams, on the part marked a and b as shown in the following illustrations. Either too much or too less application of grease can cause a thermal problem due to imperfect contact with a component.

**For models with an integrated thermal module assembly**




**For models with a discrete thermal module assembly**



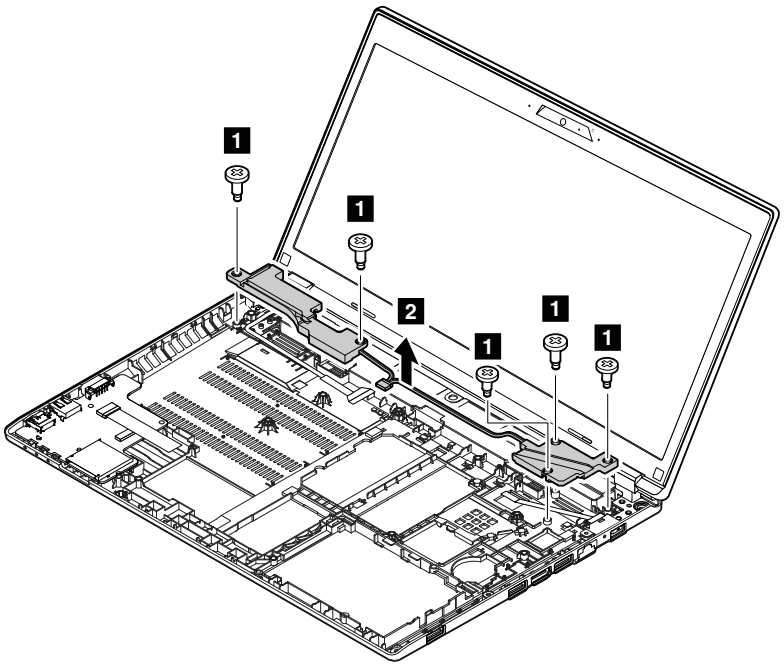

## 1160 Speakers, LCD unit and base cover

For access, remove these FRUs in order:

- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42
- “1080 Keyboard” on page 49
- “1090 Keyboard bezel” on page 51

### Removal steps of the speakers

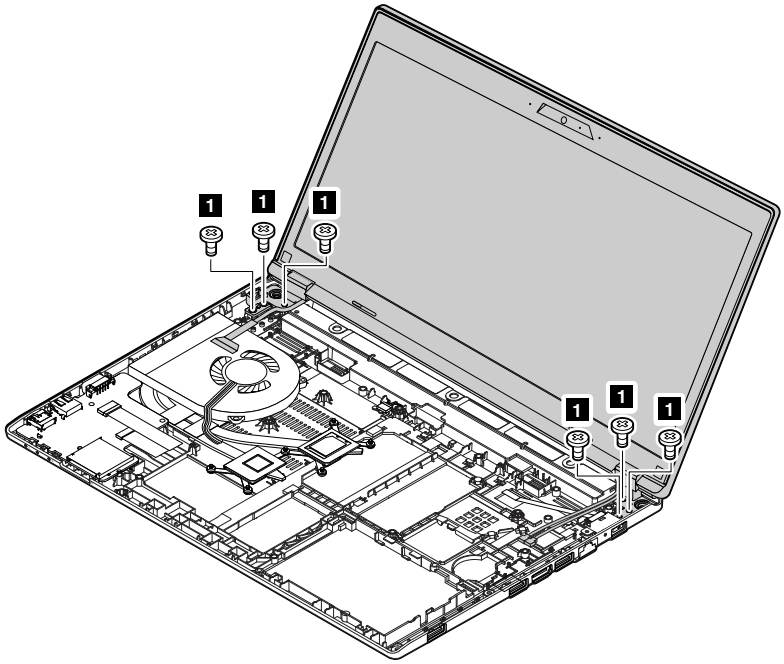
Remove the screws 1, and then remove the speakers.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M2 × 3.1 mm, flat-head, nylon-coated (5) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

### Removal steps of the LCD unit and the base cover

Release the antenna cables from the cable guides. Remove the screws 1.

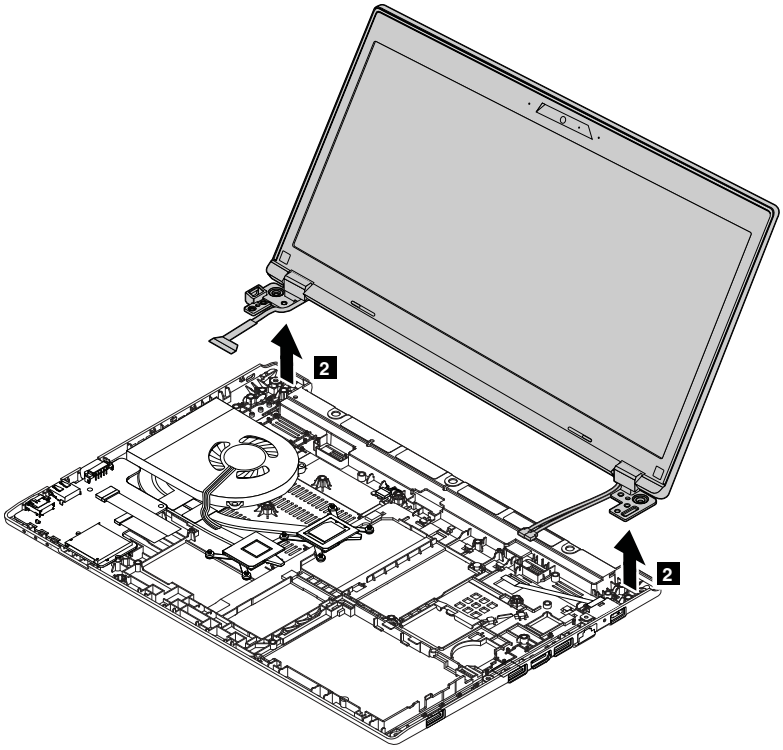



| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M2.5 × 5 mm, flat-head, nylon-coated (6) | Black | 0.392 Nm<br>(4.0 kgf-cm) |

**Cable routing:** Route the antenna cables along the cable guides and secure the antenna boards with tapes.

**Attention:** When you route the cables, ensure that they are not subject to any tension. Tension could damage the cables and wires.

Remove the LCD unit from the base cover.

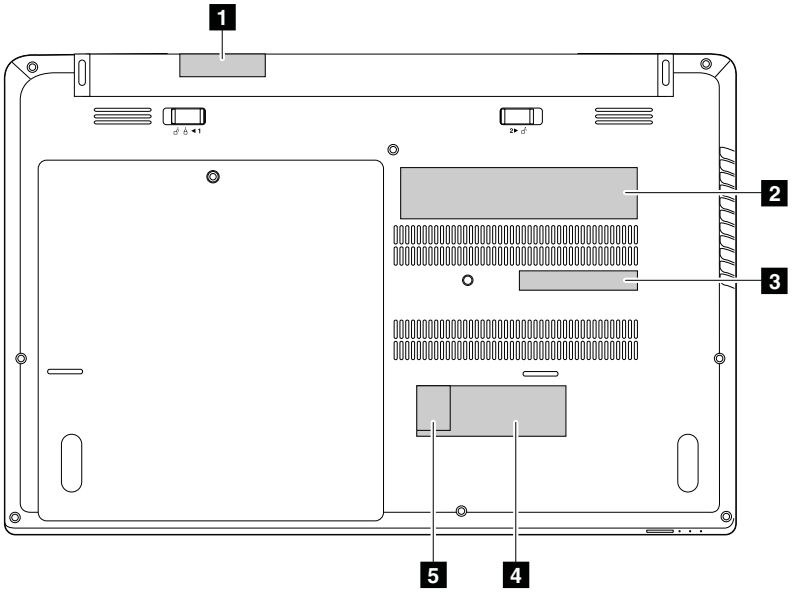



**Applying labels to the base cover**

The new base cover is shipped with a kit containing labels of several kinds. Apply the labels as shown in the following illustration when you replace the base cover. For the labels not shipped with the new base cover, peel them off from the old base cover, and adhere them to the new one.

**Note:** If you replace a part with the Windows Certificate of Authentication (COA) label 4, return the old part with the label attached to the customer. Otherwise, you can provide the customer with a letter, stating the original location of the label on the computer and the information on the label, such as the part number, serial number, and product key.

The following illustration shows the label locations on the base cover.



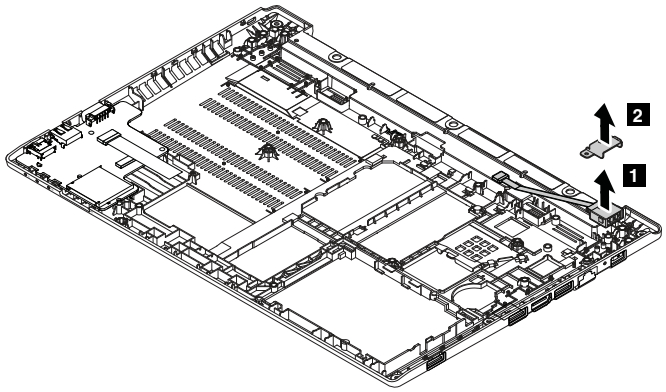

1 Barcode label
2 Rating label
3 System barcode label
4 COA label
5 Genuine Microsoft label

## 1170 DC-in connector

For access, remove these FRUs in order:
- “1010 Battery pack” on page 42
- “1020 Bottom slot cover” on page 42
- “1040 Hard disk drive assembly” on page 45
- “1080 Keyboard” on page 49
- “1090 Keyboard bezel” on page 51
- “1140 System board assembly” on page 57
- “1160 Speakers, LCD unit and base cover” on page 62

### Removal steps of the DC-in connector

Remove the DC-in connector bracket, and then remove the DC-in connector.

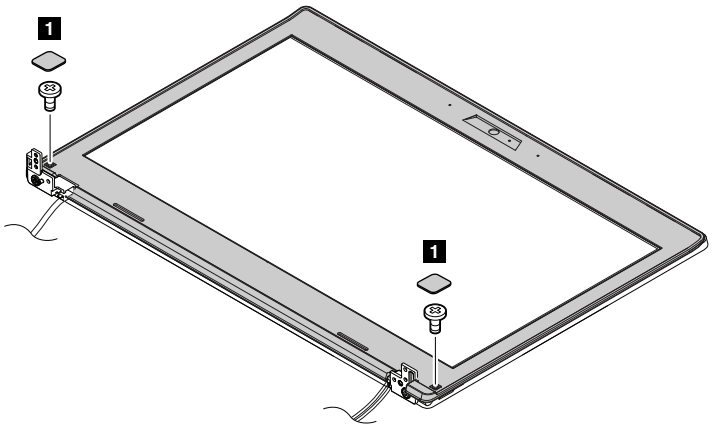


## 2010 LCD front bezel

For access, remove these FRUs in order:
- “1010 Battery pack” on page 42
- “1160 Speakers, LCD unit and base cover” on page 62

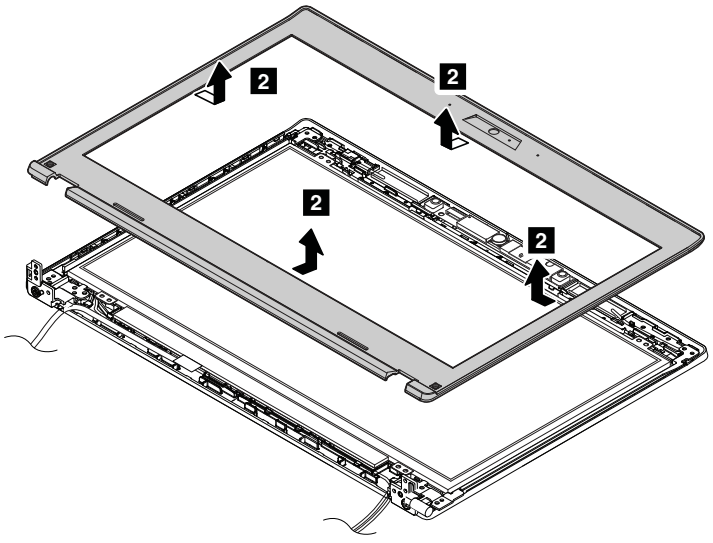
### Removal steps of the LCD front bezel

Remove the screws 1.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M2 × 4 mm, flat-head, nylon-coated (2) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

Remove the LCD front bezel.




**When installing:** Ensure that all the latches are attached firmly. Then secure the bezel with the screws.

## 2020 Camera and microphone board

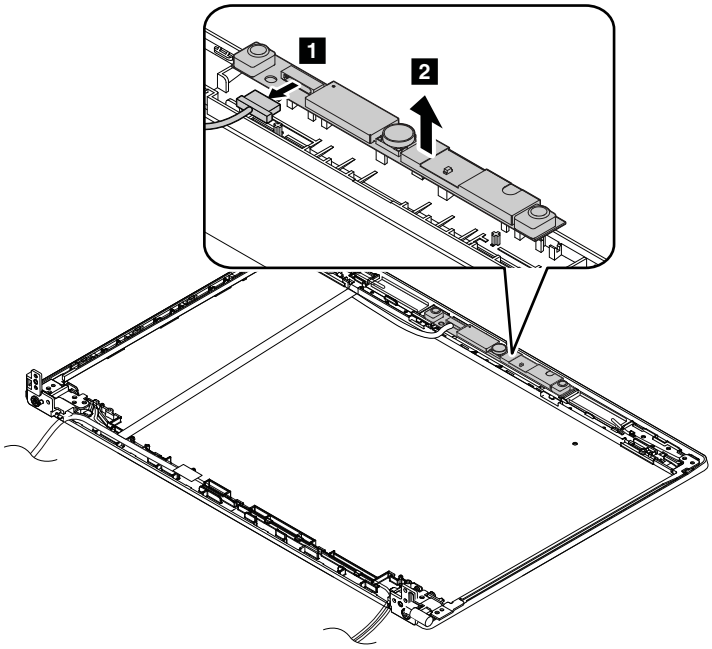
For access, remove these FRUs in order:

- “1010 Battery pack” on page 42
- “1160 Speakers, LCD unit and base cover” on page 62
- “2010 LCD front bezel” on page 67

**Removal steps of the camera and microphone board**

Detach the connector **1** and then peel off the camera and microphone board **2**.

**Note:** The camera and microphone board is adhered to the top center of the LCD cover.



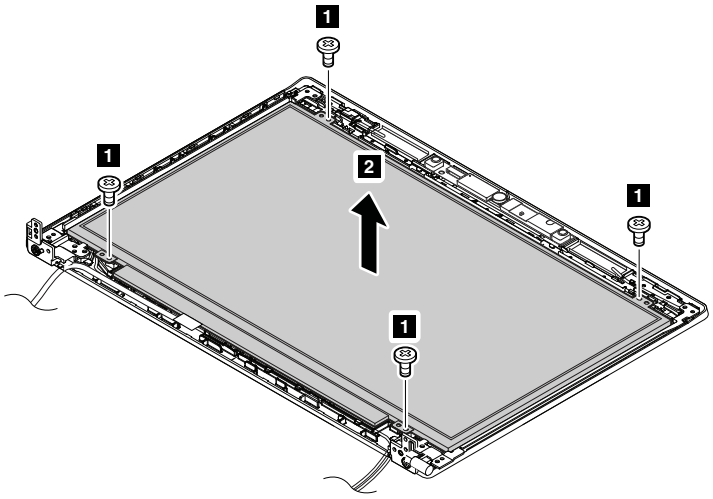

**When installing:** Adhere the camera and microphone board to the top center of the LCD cover and adjust the placement to ensure that the connector is attached firmly.

## 2030 LCD panel, LCD cable, and hinges

For access, remove these FRUs in order:
- “1010 Battery pack” on page 42
- “1160 Speakers, LCD unit and base cover” on page 62
- “2010 LCD front bezel” on page 67

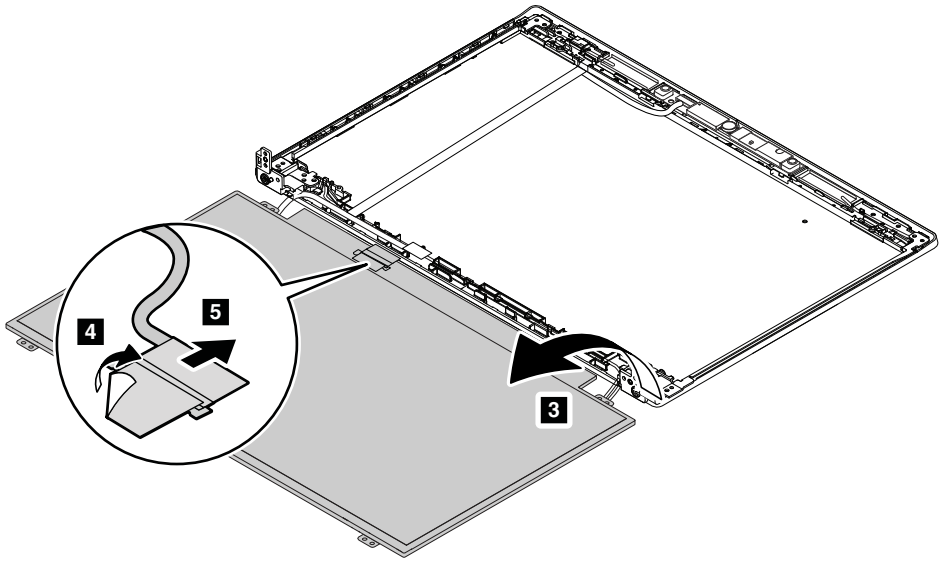
### Removal steps of the LCD panel and the LCD cable

Remove the screws 1, and then remove the LCD panel 2.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M2 × 2.5 mm, flat-head, nylon-coated (4) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

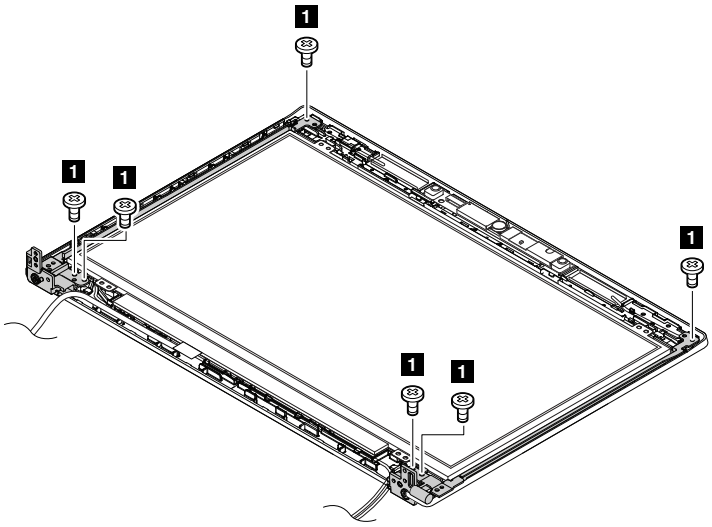
Turn over the LCD panel. Then detach the LCD cable.




**When installing:** Ensure that the cable is attached firmly.

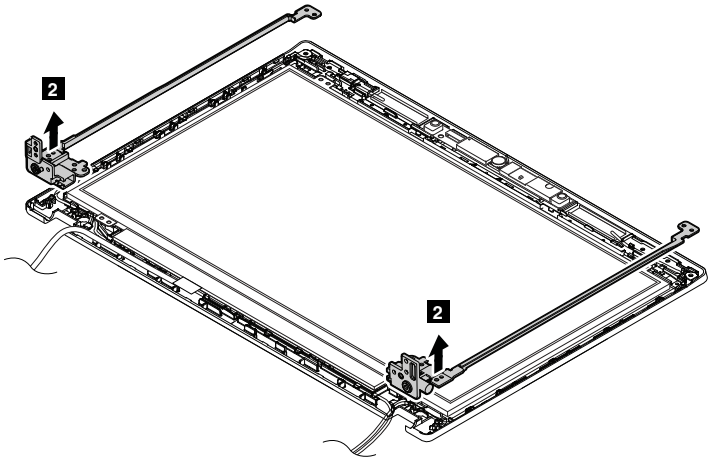
**Removal steps of the hinges**

Remove the screws **1**.




| Step | Screw (quantity) | Color | Torque |
|---|---|---|---|
| 1 | M2 × 3 mm, flat-head, nylon-coated (6) | Black | 0.181 Nm<br>(1.85 kgf-cm) |

Remove the hinges.



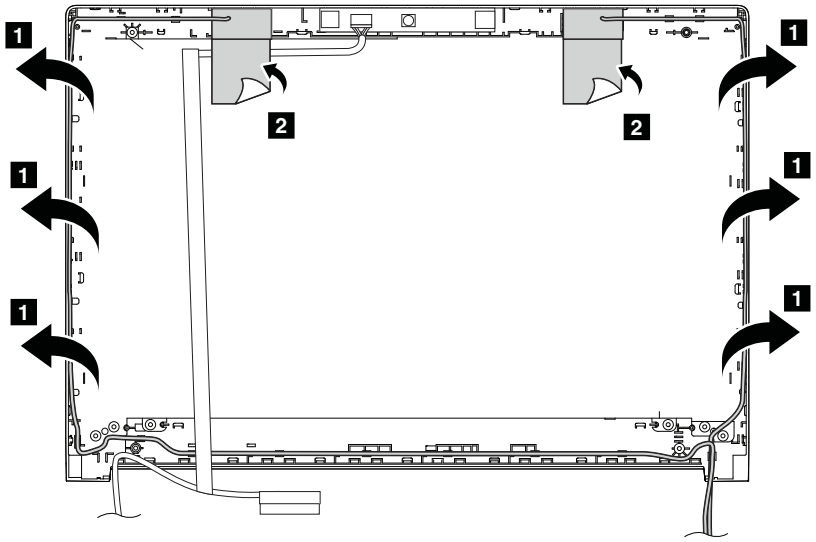

## 2040 Antenna assembly and LCD rear cover

For access, remove these FRUs in order:

- “1010 Battery pack” on page 42
- “1160 Speakers, LCD unit and base cover” on page 62
- “2010 LCD front bezel” on page 67
- “2020 Camera and microphone board” on page 67
- “2030 LCD panel, LCD cable, and hinges” on page 68

**Removal steps of the antenna assembly and the LCD rear cover**

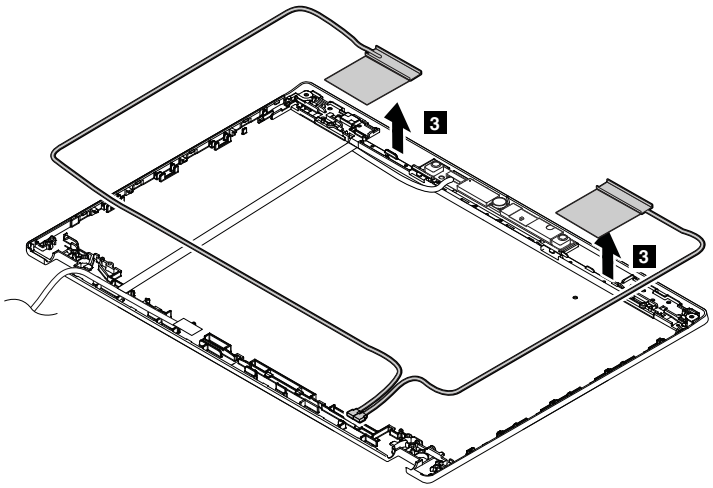
Release the antenna cables from the cable guides of the LCD rear cover assembly and from the hinges.




**Cable routing:** Route the antenna cables along the cable guides and secure the antenna boards with tapes.

**Attention:** When you route the cables, ensure that they are not subject to any tension. Tension could damage the cables and wires.

Remove the antenna assembly.



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