Lenovo Tablet 10
Hardware Maintenance Manual

Note: Before using this information and the product it supports, be sure to read the general information under Appendix A "Notices" on page 69.

Contents

About this manual

This manual contains service and reference information for the following products.

Machine	Machine type (MT)
Lenovo Tablet 10	20L3 and 20L4

Important:

- This manual is intended only for trained service technicians who are familiar with the products. Use this manual along with the advanced diagnostic tests to troubleshoot problems effectively.

- Before servicing a product, be sure to read all the information under Chapter 1 "Safety information" on page 1 and Chapter 2 "Important service information" on page 21.

Chapter 1. Safety information

This chapter presents following safety information that you should be familiar with before you service a computer.

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.

    Attention: Metal objects are good electrical conductors.
- Wear safety glasses when you are working in conditions that might be hazardous to your eyes. The conditions include hammering, drilling, soldering, cutting wire, attaching springs, using solvents, and so on.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall other parts that you have removed.

Electrical safety

Observe the following rules when working on electrical equipment.

Important:

- Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not insulate you when working with live electrical currents.

- Many customers have, near their equipment, rubber floor mats that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or disconnect 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, disconnect the power cord. If you cannot unplug it, power off the wall box that supplies power to the machine, and lock the wall box in the off position.

- If you 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
  – 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. Turn off the computer.
3. Disable the built-in battery. For the instruction on how to disable the built-in battery, see "Disabling the built-in battery" on page 50.
4. Disconnect the power cord.
5. Check the power cord for the following:
    a. Make sure that a third-wire ground connector is in good condition. Use a meter to measure the third-wire ground continuity. Ensure that the continuity between the external ground pin and the frame ground is 0.1 ohm or less.
    b. The power cord is the type specified in the parts list.
    c. Insulation is not frayed or worn.
6. Remove the LCD module assembly.
7. Check for cracked or bulging built-in batteries.
8. Check for any obvious non-Lenovo alterations. Use good judgment as to the safety of any non-Lenovo alterations.
9. 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.
10. Check for worn, frayed, or pinched cables.
11. Check that the built-in battery 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.

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خطر

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.

خطر

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.

خطر

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.

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خطر

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 منوية (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.

خطر

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.

خطر

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

خطر

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.

خطر

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.

סכנה

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.

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סכנה

סוללות המתכנת מסוימות מכילות כמות קטנה של ניקל וקדמיום. אין לפרק סוללת המתכנת,
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.

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סכנה

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.

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סכנה

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.

⚠️

סכנה

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

⚠️

סכנה

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

⚠️

סכנה

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

⚠️

סכנה

אלא אם כן מותרת יחחלפה חמח׳ של ח-FRU המוחלף, פעלו כדלחלן לפני חסרתו:
כבו את המחשב, נתקו את כל כבלי החשמל מהשקעים, הוציאו את מארז הסוללות ונתקו את כל הכבלים
המחוברים.

⚠️

危険

FRU の交換後、 ThinkPad 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 ThinkPad 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、 ThinkPad 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。

⚠️

危険

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 있
는지 확인하십시오. 컴퓨터를 흔들어 달각거리는 소리가 나지 않는지 확인하
십시오. 금속 부품 또는 금속 조각은 누전을 일으킬 수 있습니다.

⚠️

위험

일부 보조 배터리에는 소량의 니켈 및 카트뮴이 포함되어 있습니다. 보조 배
터리를 분해하거나, 다시 충전하거나, 불 또는 물에 던지거나, 단락시키지 마
십시오. 배터리 팩을 폐기할 때에는 해당 지역의 법률 규정을 따르십시오. 배
터리 팩을 교체할 때에는 올바른 배터리만 사용하십시오. 올바르지 않은 배터
리를 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. Important service information

This chapter introduces following important service information that applies to all machine types supported by this manual:
- "Strategy for replacing FRUs" on page 21
  - "Important notice for replacing a system board" on page 21
  - "How to use error message" on page 22
- "Strategy for replacing FRUs for CTO, special bid model, and standard models" on page 22
  - "Product definition" on page 22
  - "FRU identification" on page 22

Important:

- Advise customers to visit the Lenovo® Support Web site at https://support.lenovo.com. The customers can view the software fixes, download the drivers, and see the instructions for installing the drivers. For additional assistance, customers might call the Lenovo Customer Support Center. Telephone numbers for the Lenovo Support Center are available at:
https://pcsupport.lenovo.com/supportphonelist
- Service training documents, for example the videos that show the FRU removals or replacements, are provided to Lenovo authorized service technicians. The training documents are available at:
https://www.lenovoservicetraining.com/ion/

Strategy for replacing FRUs

Before replacing parts:

Ensure that all software fixes, drivers, and UEFI BIOS downloads are installed before replacing any FRUs listed in this manual.

After a system board is replaced, ensure that the latest UEFI BIOS is loaded to the system board before completing the service action.

To download software fixes, drivers, and UEFI BIOS, go to https://support.lenovo.com and follow the instructions on the screen.

- If you are instructed to replace a FRU but the replacement does not correct 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, and replacing one of them does not correct the problem, reinstall that board, and then replace the other one.
- If an adapter or a device consists of more than one FRU, any of the FRUs may be the cause of the error. Before replacing the adapter or device, remove the FRUs, one by one, to see if the symptoms change. Replace only the FRU that changed the symptoms.

Attention: The setup configuration on the computer you are servicing may have been customized. Running Automatic Configuration may alter the settings. Note the current configuration settings (using the View Configuration option); then, when service has been completed, verify that those settings remain in effect.

Important notice for replacing a system board

Attention: When handling a system board:

- Do not drop a system board or apply any excessive force to it.

- Avoid rough handling of any kind.
- Avoid bending a system board and hard pushing to prevent cracking at each Ball Grid Array (BGA) chipset.

How to use error message

Use the error codes displayed on the screen to diagnose failures. If more than one error code is displayed, begin the diagnosis with the first error code. Whatever causes the first error code may also cause false error codes. If no error code is displayed, see whether the error symptom is listed in the Symptom-to-FRU Index for the computer you are servicing.

Strategy for replacing FRUs for CTO, special bid model, and standard models

This topic provides information about the model types and FRU identification.

Product definition

This topic introduces different model types and how to identify each type.

Dynamic Configure To Order (CTO)

This model provides the ability for a customer to configure a Lenovo solution from a web site, and have this configuration sent to fulfillment, where it is built and shipped directly to the customer. The machine label and eSupport will load these products as the 4-character MT, 4-character model and 2-character country code. The model is "CTO1" and the default country code is "WW" (example: 20AACTO1WW).

Special bid model

This model is a unique configuration that has been negotiated between Lenovo and the customer. A unique MTM consists of a 4-character MT, a 4-character model, and a numeric 2-character country code is provided to the customer to place orders (example: 20AA000955). The country code assigned is numeric and does not designate a specific country or region. The custom model factsheet for the MTM indicates which country the special bid MTM is set up for. Special bid offering is not generally announced.

Standard model

Standard models (fixed configuration) are announced and offered to all customers. The MTM portion of the machine label consists of a 4-character MT, a 4-character model, and an alphabetic 2-character country code. The country code assigned is alphabetic and represents a designated country or region (example: 20AA0009UK).

FRU identification

Use Lenovo eSupport to identify major FRUs, FRU part numbers, and FRU descriptions for a product at an MT - serial number level. Examples of major FRUs are hard disk drive, system board, and liquid crystal display (LCD).

To identify the major FRUs for a product, do the following:

1. Go to https://support.lenovo.com/partslookup.
2. Type the Machine Type and Serial Number in the corresponding fields.
3. Tap **Submit**.

eSupport also can be used to view the general FRU list for a product. The FRU list is a general list of components and does not contain specific model information.

To get the general FRU list for a product, do the following:

1. Go to https://support.lenovo.com.

2. Follow the instructions on the screen to select a product.

3. Tap the **Product & Parts** tab.

4. Select **System Service Parts** to view a general FRU list.

Chapter 3. General checkout

This chapter introduces following information:
* "What to do first" on page 25
* "Checkout guide" on page 26
    * "Lenovo Companion or Lenovo Vantage" on page 26
    * "Quick test programs" on page 26
    * "UEFI diagnostic program" on page 27
    * "Bootable diagnostic programs" on page 27
* "Power system checkout" on page 28

Before you go to the checkout guide, be sure to read the following important notes.

Important:
* **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, use new nylon-coated screws.**
* **Be extremely careful during such write operations as copying, saving, or formatting.**
* **Replace a FRU only with another FRU of the correct model.** When you replace a FRU, ensure 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 non-defective 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:
1. Name and phone number of service technician
2. Date of service
3. Date on which the machine failed
4. Date of purchase
5. Failing FRU name and part number
6. Machine type, model number, and serial number
7. Customer's name and address

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 liquid spilled into the system

- Damage caused by the improper insertion of a PC Card or the installation of an incompatible card
- Fuses blown by attachment of a nonsupported device
- Forgotten computer password (making the computer unusable)
- Sticky keys caused by spilling a liquid
- Damage caused due to use of an incorrect ac power adapter

The following symptom might indicate damage caused by nonwarranted activities:
- Missing parts might be a symptom of unauthorized service or modification.

Checkout guide

Use the following procedures as a guide in identifying and correcting problems with the computers.

Note: The diagnostic tests are intended to test only Lenovo products. The use of non-Lenovo products, prototype cards, or modified options can lead to false indications of errors and invalid system responses.

1. Identify the failing symptoms in as much detail as possible.
2. Verify the symptoms. Try to re-create the failure by running the diagnostic test or by repeating the operation.

Lenovo Companion or Lenovo Vantage

Lenovo Companion or Lenovo Vantage is preinstalled on the computer. Lenovo Companion or Lenovo Vantage supports the hardware scan function. It combines diagnostic tests, system information collection, security status, and support information, along with hints and tips for optimal system performance.

To run the Lenovo Companion or Lenovo Vantage program, open the Start menu and click **Lenovo Companion** or **Lenovo Vantage**, and then follow the instructions on the screen.

For additional information, see the help system of the program.

Quick test programs

Run quick test programs to troubleshoot and resolve computer problems, especially when the computer does not have the Lenovo Companion or Lenovo Vantage program installed.

To download and install a quick test program, go to https://www.lenovo.com/diags, and follow the instructions on the Web site.

To run a test using a quick test program, do the following:

1. Go to the C:\SWTOOLS\ldiag directory.
2. Double-click the lsc_lite.exe file.
3. When the **User Account Control** window opens, if any, click **Yes**.
4. Select the device class to be tested.
5. Select the devices to be tested.
6. Select the test to be performed.
7. Follow the instructions on the screen to start the test. When a problem is detected, information messages are displayed. Refer to the messages to troubleshoot the problem.

UEFI diagnostic program

A UEFI diagnostic program might be preinstalled on the computer. It enables you to test memory modules and internal storage devices, view system information, and check and recover bad sectors on internal storage devices.

To run the UEFI diagnostic program, do the following:

Note: Before you start, connect your computer to a keyboard. Use the external keyboard to perform the following operations.

1. Restart the computer. When the logo screen is displayed, repeatedly press and release the F10 key. The main screen of the UEFI diagnostic program is displayed.

   Notes:

   - If the computer cannot be turned on, go to "Power system checkout" on page 28, and check the power sources.
   - If an error code is displayed, go to "Symptom-to-FRU index" on page 33 for error code descriptions and troubleshooting hints.

2. Follow the instructions on the screen to use the diagnostic program.

The options on the main screen are as follows:

Note: The items on the main screen of the UEFI diagnostic program are subject to change.

Table 1. Items on the main screen of the UEFI diagnostic program

Tests	Tools
• Quick Memory Test • Quick Storage Device Test • LCD test • PCI-e test • Exit Application	• System Information • Generate configuration file • Execute from configuration file

Bootable diagnostic programs

If the computer you are servicing is not installed with the UEFI diagnostic program, you can download a bootable diagnostic program from the Lenovo Support Web site. The bootable diagnostic programs enable you to test computer memory and internal storage devices, view system information, and check and recover the internal storage devices.

To use the bootable diagnostic programs, you can create a bootable diagnostic medium on a Universal Serial Bus (USB) device or CD.

To create a bootable diagnostic medium, do the following:

1. Go to https://www.lenovo.com/diags.
2. Tap **Lenovo Bootable Diagnostics**.
3. Follow the instructions on the Web site to create a bootable diagnostic medium.

To use the diagnostic medium you have created, connect your computer to a thin keyboard first. Then use the thin keyboard to perform the following operations:

1. Connect the bootable diagnostic medium to the computer.
2. Restart the computer. When the logo screen is displayed, press Enter to display the Startup Interrupt Menu window.

Notes:

- If the computer cannot be turned on, go to "Power system checkout" on page 28, and check the power sources.

- If an error code is displayed, go to "Symptom-to-FRU index" on page 33 for error code descriptions and troubleshooting hints.

3. Press F12 and follow the instructions to start the computer from the bootable diagnostic medium.

4. Follow the instructions on the screen to use the diagnostic program.

Power system checkout

To verify a symptom, do the following:
1. Turn off the computer.
2. Connect the ac power adapter.
3. Turn on the computer. If the computer can be turned on, it means that either the battery or the ac power adapter is functional.
4. Insert a straightened paper clip into the emergency reset hole to reset the computer. If the computer is still powered on, it means that the ac power adapter is functional.
5. Turn off the computer.
6. Disconnect the ac power adapter and turn on the computer. If the computer can be turned on, it means that the battery is functional.

If you suspect a power problem, see the appropriate one of the following power supply checkouts:

- "Checking the built-in battery" on page 28

- "Checking the operational charging" on page 29

- "Checking the ac power adapter" on page 29

Checking the built-in battery

This computer supports only batteries specially designed for this specific system and manufactured by Lenovo or an authorized builder. The system does not support unauthorized batteries or batteries designed for other systems. If an unauthorized battery or a battery designed for another system is installed, the system will not charge.

Attention: Lenovo has no responsibility for the performance or safety of unauthorized batteries, and provides no warranties for failures or damage arising out of their use.

Tap or click the battery-status icon in the Windows notification area to check the battery status. The battery-status icon displays the percentage of battery power remaining and how long you can use your computer before you must charge the battery.

If the computer cannot start, do the following to check whether the built-in battery is failed:

1. Ensure that the computer failure is not caused by exhausted battery power.

2. Reset the computer by inserting a straightened paper clip into the emergency reset hole. Then press the power button. If the computer cannot be turned on, continue with the next step.

3. Connect the built-in battery and ac power adapter, and then press the power button.

   - If the computer can be turned on, disconnect the ac power adapter from the computer. If the computer turns off, it means that the built-in battery fails.

   - If the computer cannot be turned on, replace the built-in battery with another one. If the computer can be turned on with the new battery installed, it means that the original battery fails.

Checking the operational charging

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

1. Discharge the battery until the remained battery power is less than 50%.
2. Perform operational charging. Tap or click the battery status icon in the Windows notification area to display detailed battery information. If it indicates that the battery is not charging, replace the battery.
3. Check the battery status again. If the same error still exists, replace the system board.

Checking the ac power adapter

Lenovo Tablet 10 supports the Lenovo USB-C 45W or 65W AC Adapter and Power Cord. When the adapter is connected to the computer, the output voltage at the adapter plug rises from 0 V (when not connected) to 5 V. Then the power delivery communication starts. The ac power adapter outputs 20 V according to the computer output voltage request.

When you use the ac power adapter to charge the computer but no power is charged, see the instructions in this topic to check the ac power adapter.

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

To check the USB-C type ac power adapter, do the following:

1. Connect the computer to a power outlet and turn on the computer.
2. Start the Lenovo Companion program, and then click **Hardware Settings ➙ Power**. The ac power adapter information is displayed.

Ensure that you use the USB-C type ac power adapter that is shipped with the computer to provide enough power to the computer. Otherwise, a message will be displayed, prompting you that the computer will not be charged or will be charged slowly.

For information about which ac power adapter to order, go to https://support.lenovo.com/partslookup.

Chapter 4. Related service information

This chapter presents the following information:

Windows recovery apps

The Windows recovery apps enable you to reset your computer or use advanced startup options.

It is recommended that you create a recovery USB drive as early as possible. Store the recovery USB drive as a backup or replacement for the Windows recovery apps.

For more information, see "Creating and using a recovery USB drive" on page 31.

Resetting your computer

If your computer does not perform well, you might consider resetting your computer. In the resetting process, you can choose to keep your files or remove them, and then reinstall the Windows operating system.

To refresh your computer, do the following:

Note: The graphical user interface (GUI) items of the operating system might change without notice.

1. Open the Start menu ⊞. Tap **Settings** ➔ **Update & Security** ➔ **Recovery**.

2. In the **Reset this PC** section, tap **Get started**.

3. Follow the instructions on the screen to refresh your computer.

Recovering your operating system if Windows 10 fails to start

The Windows recovery apps on your computer are capable of operating independently from the Windows 10 operating system. This enables you to recover or repair the operating system even if the Windows 10 operating system fails to start.

After two consecutive failed boot attempts, the Windows recovery environment starts automatically. Then you can choose repair and recovery options by following the instructions on the screen.

Note: Ensure that your computer is connected to ac power during the recovery process.

Creating and using a recovery USB drive

You can create a recovery USB drive as a backup for the Windows recovery apps. With the recovery USB drive, you can troubleshoot and fix the problems even if the preinstalled Windows recovery apps are damaged.

Creating a recovery USB drive

The USB drive that you use to create the recovery USB drive must be at least 16 GB of storage. The actual USB capacity that is required depends on the size of the recovery image.

Attention: The creation process deletes anything stored on the USB drive. To avoid data loss, make a backup copy of all the data that you want to keep.

To create a recovery USB drive, do the following:

Note: Ensure that your computer is connected to ac power during the following process.

1. Connect a proper USB drive (at least 16 GB of storage).
2. Type recovery in the search box on the taskbar. Then tap **Create a recovery drive**.
3. Tap **Yes** in the User Account Control window to allow the Recovery Media Creator app to start.
4. In the Recovery Drive window, follow the on-screen instructions to create a recovery USB drive.

Using the recovery USB drive

If you cannot start your computer, use the recovery USB drive to recover your computer.

To use a recovery USB drive, do the following:

Note: Ensure that your computer is connected to ac power during the following process.

1. Connect the recovery USB drive to the computer.
2. Restart the computer. Tap around "Press Enter or touch here" until the Lenovo Tablet Setup app starts.
3. Tap **Startup**. In the **Boot** submenu, drag the recovery drive to the first place to select it as the boot device.
4. Save configuration changes and restart the computer.
5. Select a corresponding recovery solution according to your situation. Then follow the instructions on the screen to complete the process.

Lenovo factory recovery USB key

Lenovo factory recovery USB key enables you to reset your computer to the factory default settings.

To obtain a Lenovo factory recovery USB key, contact Lenovo Customer Support Center. Shipping and handling fees apply. Telephone numbers for the Lenovo Support Center are available at:
https://pcsupport.lenovo.com/supportphonelist

Note: The Lenovo factory recovery USB key might not support certain operating systems. Contact Lenovo Customer Support Center for more information.

To use the Lenovo factory recovery USB key, do the following:

Note: Ensure that your computer is connected to ac power during the following process.

1. Turn off the computer, wait for about five seconds, and then connect the Lenovo factory recovery USB key to your computer.
2. Restart the computer. Tap around "Press Enter or touch here" until the Lenovo Tablet Setup app starts..
3. Tap **Startup**. On the **Boot** submenu, drag **USB CD/DVD** or **USB HDD** to the top to make it the first startup device.
4. Tap **Save**, and then tap **Yes** to save your configuration.
5. Tap **Restart** and follow the on-screen instructions to restart the computer. After the computer restarts, the recovery app runs automatically.
6. Follow the on-screen instructions to reset your computer to the factory default settings.

Using passwords

You can set a supervisor password to prevent your computer from unauthorized use.

The supervisor password protects the system information stored in the Lenovo Tablet Setup program. It provides the following security features:

- If only a supervisor password is set, a password prompt is displayed when you try to start the Lenovo Tablet Setup program. Unauthorized users cannot change most of the system configuration options in the Lenovo Tablet Setup program without the password.
- The system administrator can use the supervisor password to access a computer even if the user of that computer has set a power-on password. The supervisor password overrides the power-on password.
- The system administrator can set the same supervisor password on many Lenovo computers to make administration easier.

Attention: If the supervisor password has been forgotten and cannot be made available to the service technician, there is no service procedure to reset the password. The system board must be replaced for a scheduled fee.

To set, change, or remove a password:

Note: Before you start, print these instructions and the instructions on "Lenovo Tablet Setup" of the *User Guide*. You also can screen-capture the instructions and send the pictures to your smartphone or notebook computer so that you can view the instructions during operation.

1. Save all open files, and exit all apps.
2. Restart the computer. Tap around "Press Enter or touch here" until the Lenovo Tablet Setup app starts.
3. Tap **Security ➜ Password**.
4. Tap **Enter** next to the supervisor password item and follow the instructions on the screen.
5. Save configuration changes and exit.

Symptom-to-FRU index

This section contains following information:
- "Error codes" on page 34
- "Beep errors" on page 35
- "Intermittent problems" on page 36
- "Undetermined problems" on page 36

The symptom-to-FRU index in this section lists symptoms and errors and their possible causes. The most likely cause is listed first, in boldface type.

Note: Do the FRU replacement or other actions in the sequence shown in the column headed "FRU or action, in sequence." If replacing a FRU does not solve the problem, put the original part back in the computer. Do not replace a nondefective FRU.

This index can also help you determine, during regular servicing, what FRUs are likely to be replaced next.

A numeric error is displayed for each error detected in POST or system operation. In the displays, **n** can be any number.

If no numeric code is displayed, check the narrative descriptions of symptoms. If the symptom is not described there, go to "Intermittent problems" on page 36.

Note: For a device not supported by diagnostic codes in the Lenovo computers, see the manual for that device.

Error codes

Table 2. Error codes

Symptom or error	FRU or action, in sequence
0177 Bad SVP data, stop POST task—The checksum of the supervisor password in the EEPROM is not correct.	Replace the system board. Have the computer serviced.
0183 Bad CRC of Security Settings in EFI Variable. Enter Lenovo Tablet Setup.	Checksum of the Security settings in the EFI Variable is not correct. Enter Lenovo Tablet Setup to check Security settings. Press F10, and then press Enter to restart the system. If your computer still has a problem, have the computer serviced.
0187 EAIA data access error.	The access to EEPROM is failed. Have the computer serviced.
0188 Invalid RFID Serialization Information Area.	The EEPROM checksum is not correct (block # 0 and 1). The system board should be replaced, and the box serial number should be reinstalled. Have the computer serviced.
0189 Invalid RFID configuration information area.	The EEPROM checksum is not correct (block # 4 and 5). The system board should be replaced, and the UUID should be reinstalled. Have the computer serviced.
0190 Critical low-battery error.	The computer turned off, because the battery is low. Connect the ac power adapter to the computer and charge the battery.
0191 System Security—Invalid Remote Change requested.	The system configuration change has failed. Confirm the operation and try again. To clear the error, enter Lenovo Tablet Setup.
0199 System Security - Security password retry count exceeded.	This message is displayed if you enter a wrong supervisor password more than three times. Confirm the supervisor password and try again. To clear the error, enter the Lenovo Tablet Setup.
0270 Real Time Clock Error.	System Real Time Clock is not functional. Have the computer serviced.
0271 Check Date and Time settings.	Neither the date nor the time is set in the computer. Set the date and time, using the Lenovo Tablet Setup program.
1802 Unauthorized network card is plugged in—Turn off and remove the network card.	The wireless network card is not supported on this computer. Remove it.
2200 Machine Type and Serial Number are invalid.	Machine Type and Serial Number are invalid. Have the computer serviced.
2201 Machine UUID is invalid.	Machine UUID is invalid. Have the computer serviced.

Table 2. Error codes (continued)

Symptom or error	FRU or action, in sequence
Message: Thermal sensing error	The thermal sensor has problem. Shut down the computer immediately and have the computer serviced.
Message: Error: The System UEFI Variable Storage is nearly full. **Note:** This error indicates that the operating system or applications cannot create, modify, or delete data in the non-volatile system UEFI variable storage due to insufficient storage space after POST. The non-volatile system UEFI variable storage is used by the UEFI BIOS and by the operating system or applications. This error occurs when the operating system or applications store large amounts of data in the variable storage. All data needed for POST, such as BIOS setup settings, chipset or platform configuration data, are stored in a separate UEFI variable storage.	Enter Lenovo Tablet Setup after the error message is displayed. A dialog asks the user for confirmation to clean up the storage. If the user selects **Yes**, all data that were created by the operating system or applications are deleted except global variables defined by the Unified Extensible Firmware Interface Specification. If the user selects **No**, all data is kept, but the operating system or applications will not be able to create, modify, or delete data in the storage. If this error happens at a service center, Lenovo authorized service personnel will clean up the non-volatile system UEFI variable storage using the above solution.

Beep errors

Lenovo SmartBeep technology enables you to decode beep errors with your smartphone when a black screen occurs with beeps from your computer. To decode the beep error with Lenovo SmartBeep technology, do the following:

1. Go to https://support.lenovo.com/smartbeep or scan the following QR Code.

2. Download the proper diagnostic app and install it on your smartphone.
3. Run the diagnostic app and place the smartphone near the computer.
4. Press the volume-up button on your computer to emit the beep again. The diagnostic app decodes the beep error and shows possible solutions on the smartphone.

The following section describes some beep errors and the corresponding solutions.

Note: Do not attempt to service a product yourself unless instructed to do so by the Customer Support Center or product documentation. Only use a Lenovo-authorized service provider to repair your product.

Error codes	Solutions
0001: Reset error (platform reset not de-asserted)	1. Remove the ac power adapter. If your computer has a built-in battery, reset the computer by inserting a straightened paper clip into the emergency-reset hole. Wait for one minute. Then reconnect all power resources. 2. Replace the system board (service provider only).
0002: Internal bus error	Replace the system board (service provider only).
0281: General embedded controller error	Replace the system board (service provider only).
0282: Memory module error	Replace the system board (service provider only).
0283: PCI resource error	1. Replace the system board (service provider only).
0284: TCG-compliant functionality-related error (might be the BIOS code validation failure)	Replace the system board (service provider only).
0285: TCG-compliant functionality-related error (might be the TPM initialization failure)	Replace the system board (service provider only).
0286: Integrated graphics error	Replace the system board (service provider only).
0288: Computer display error	1. Reconnect the display cable on both the system board side and the computer display side (service provider only). 2. Replace the computer display (service provider only).

Intermittent problems

Intermittent system hang problems can be due to a variety of causes that have nothing to do with a hardware defect, such as cosmic radiation, electrostatic discharge, or software errors. FRU replacement should be considered only when a problem recurs.

When analyzing an intermittent problem, do the following:

1. Run the diagnostic test for the system board in loop mode **at least 10 times**.
2. If no error is detected, do **not** replace any FRUs.
3. If any error is detected, replace the FRU shown by the FRU code. Rerun the test to verify that no more errors exist.

Undetermined problems

If the diagnostic tests did not identify the adapter or device that has failed, if wrong devices are installed, or if the system simply is not operating, follow these procedures to isolate the failing FRU (do not isolate FRUs that have no defects).

Verify that all attached devices are supported by the computer.

Verify that the power supply being used at the time of the failure is operating correctly. See "Power system checkout" on page 28.

1. Turn off the computer.

2. Visually check each FRU for damage. Replace any damaged FRU.
3. Remove or disconnect all of the following devices:
    a. Non-Lenovo devices
    b. Devices attached to the docking station or the port replicator
    c. Printer, mouse, and other external devices
    d. Battery
    e. External diskette drive or optical drive
    f. PC cards
4. Turn on the computer.
5. Determine whether the problem has been solved.
6. If the problem does not recur, reconnect the removed devices one at a time until you find the failing FRU.
7. If the problem remains, replace the following FRUs one at a time (do not replace a non-defective FRU):
    a. System board
    b. LCD assembly

Chapter 5. Locations

This chapter introduces the locations of the hardware components on your computer.

Connectors and indicators
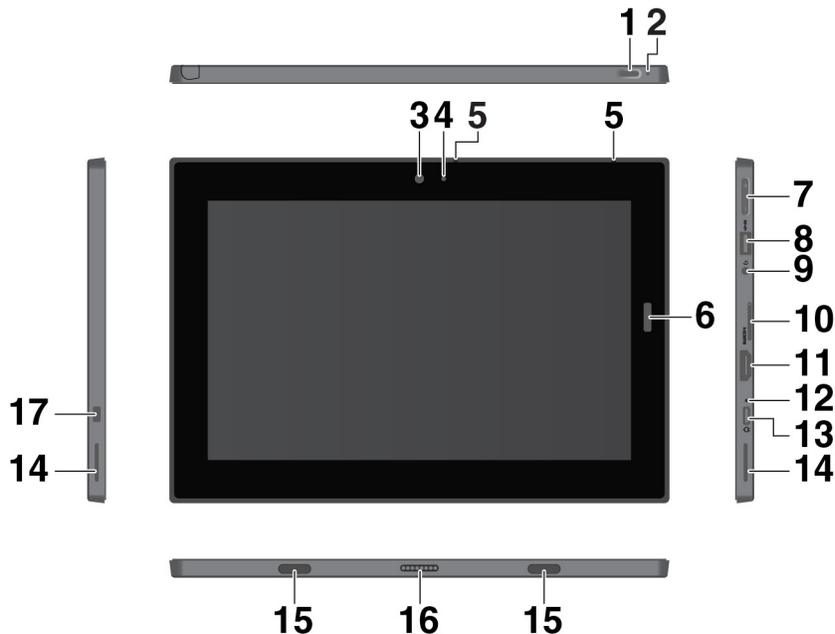
Note: The connectors and indicators shown with an asterisk (*) are available on some models.

1 Power button: Press the power button to turn on your computer. You also can use the power button to put the computer to sleep and wake it.

2 Emergency-reset hole: If your computer stops responding, remove the ac power adapter first, and then insert a straightened paper clip into the emergency-reset hole to reset the computer.

3 Front camera and **4 Camera-status indicator**: Use the 2-megapixel front-facing camera to take photos and make videos. When the camera is on, the camera-status indicator turns on.

5 Microphones: Use the microphones to make calls and recordings.

6 Fingerprint reader*: Use the fingerprint reader to log in to your computer instead of entering the password.

7 Volume-control buttons: Use these buttons to turn up or turn down the volume of the computer.

8 USB 3.1 connector Gen 1: Connect USB-compatible devices, such as a USB keyboard, USB mouse, or USB storage device.

9 Audio connector: Connect headphones or a headset to listen to the sound from the computer.

10 Nano-SIM-card and microSD card tray: Use the microSD card (sold separately) to transfer or store files. Use the nano Subscriber Identity Module (SIM) card * to connect to a mobile broadband network.

11 HDMI™ connector: The High-Definition Multimedia Interface (HDMI) connector is a digital audio and video interface. It enables you to connect your computer to a compatible digital audio device or video monitor, such as a high-definition television (HDTV).

12 ac power status indicator: The ac power status indicator turns on white when the computer is connected to ac power.

13 USB-C™ connector: Use the USB-C connector to charge your computer and connect to a compatible device to transfer data. Lenovo provides various USB-C accessories to help you expand your computer functionality. For more information, go to:

http://www.lenovo.com/essentials

Note: When the battery power is below 10%, the USB-C accessories connected to the USB-C connector might not work correctly.

14 Stereo speakers: The stereo speakers provide an immersive music and movie playback experience.

15 Fixing holes: Use the fixing holes to attach a supported keyboard and fix it in place.

16 Pogo interface connector: Use this connector to attach a supported keyboard.

17 Mini security-lock slot: To protect your computer from theft, lock your computer to a desk, table, or other fixtures through a security cable lock designed to fit the mini security-lock slot on your computer.

Note: The slot supports cable locks that conform to the Kensington MiniSaver® lock standards using Cleat™ locking technology. Do not attempt to use other types of cable locks that use a rotating T-bar™ locking mechanism. You are responsible for evaluating, selecting, and implementing the locking device and security feature. Lenovo makes no comments, judgments, or warranties about the function, quality, or performance of the locking device and security feature. Cable locks for your product are available from Lenovo at http://www.lenovo.com/essentials.
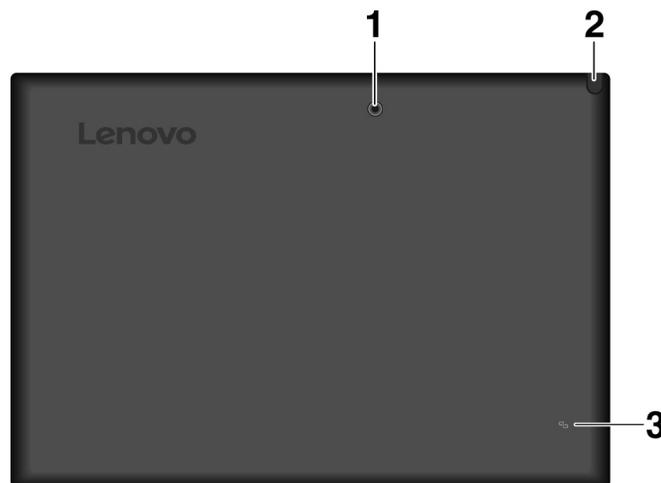
1 Rear camera: Use the 5-megapixel, high-resolution, rear-facing camera to take photos and make videos.

2 Integrated Active Pen*: Your computer might be equipped with an Integrated Active Pen.

3 NFC mark*: Near field communication (NFC) enables you to transfer data from one device to another by touching them or putting them close together.

Locating FRUs and CRUs

This topic introduces the following service parts:
- "Major FRUs" on page 42
- "Other parts" on page 43

Notes:
- FRUs refer to parts that must be installed or replaced only by trained service technicians. If customers choose to replace the FRUs by themselves, the product warranty might be affected.
- Each FRU is available for all types or models, unless otherwise specified.
- FRUs marked with `OP` are available as options.
- **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 https://support.lenovo.com. Tap **Guides & Manuals** and then follow the on-screen instructions to find the manual for your product. You might be required to return the defective part that is replaced by the 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: Refer to parts that can be installed or replaced easily by customer themselves or by trained service technicians at an additional cost.
  Optional-service CRUs: Refer to parts that can be installed or replaced by customers with a greater skill level. Trained service technicians can also provide service to install or replace the parts under the type of warranty designated for the customer's machine.

Major FRUs
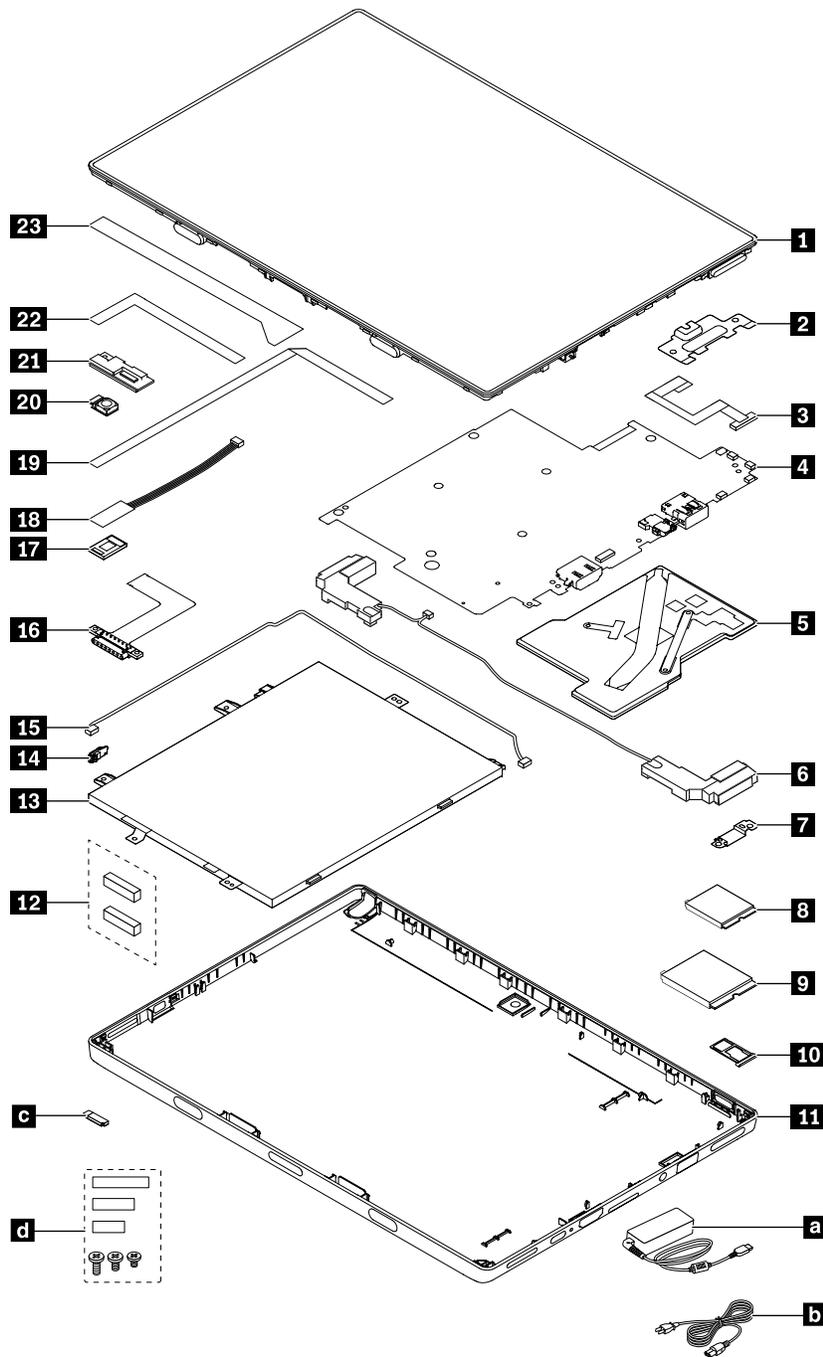
No.	FRU	Self-service CRU	Optional-service CRU
1	LCD panel	No	No
2	Fingerprint reader	No	No
3	Fingerprint reader cable	No	No
4	System board	No	No
5	Thermal fan	No	No

No.	FRU	Self-service CRU	Optional-service CRU
6	Speaker assembly	No	No
7	USB-C bracket	No	No
8	Wireless-LAN card	No	No
9	Wireless-WAN card *	No	No
10	Nano-SIM-card and microSD card tray	No	No
11	Base cover assembly	No	No
12	Magnets	No	No
13	Built-in battery	No	No
14	Pen board	No	No
15	Pen board cable	No	No
16	Pogo cable	No	No
17	NFC board	No	No
18	NFC antenna	No	No
19	NFC cable	No	No
20	Front camera	No	No
21	Rear camera	No	No
22	Camera cable	No	No
23	LCD FPC	No	No
a	ac power adapter	Yes	No
b	Power cord	Yes	No
c	Lenovo factory recovery USB key	Yes	No
d	Miscellaneous parts kits	No	No

*Available on some models

Note: The Lenovo factory recovery USB key c is used to restore the Microsoft Windows operating system. It might not come with the computer, and a user might order it from https://pcsupport.lenovo.com/lenovorecovery, though additional shipping and handling fees might apply.

Other parts

Table 3. Other parts

Descriptions	Self-service CRU	Optional-service CRU
Active Pen *	Yes	No
Lenovo Tablet 10 Keyboard *	Yes	No

* Available on some models

Connector and cable guide

This topic provides information to help Lenovo authorized service technicians identify connectors and cables for replacement purpose. To view each FRU and the exploded illustration of the computer, see "Major FRUs" on page 42.

Note: Depending on your computer model, some connectors or cables might not be available.

System board connectors and cables
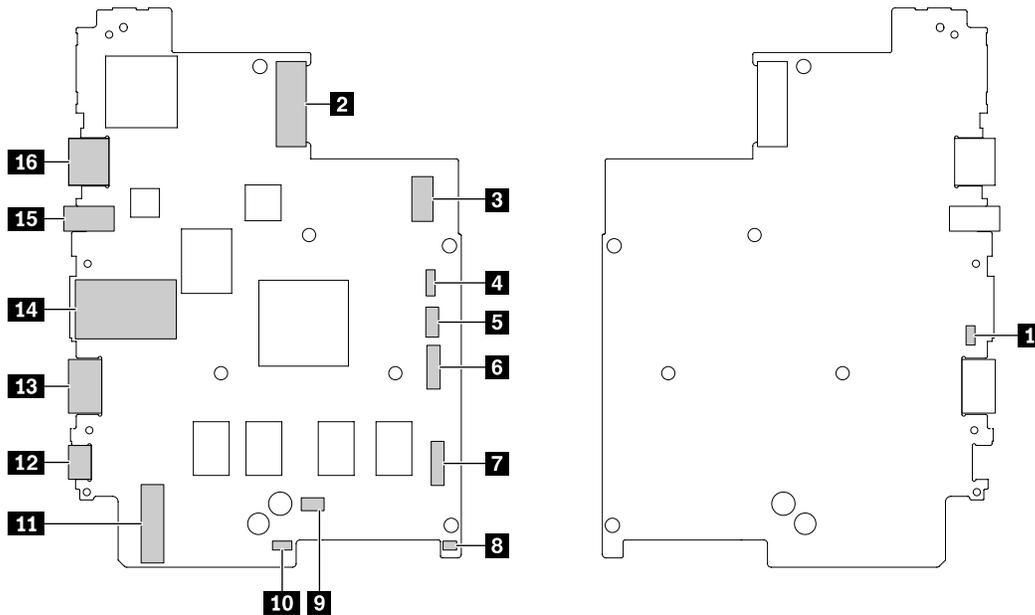
Table 4. System board connector and cable guide

Item	Connector (location)	Internal cable required	Cable connection
1	Fingerprint-reader connector (internal)	Fingerprint-reader cable	The fingerprint-reader comes with a cable. Connect the cable to this connector.
2	Wireless-WAN card slot (internal)	No	Insert the wireless-WAN card into this slot.
3	Built-in battery connector (internal)	Built-in battery cable	The built-in battery comes with a cable. Connect the cable to this connector.
4	Camera module connector (internal)	Camera module cable	The camera module comes with a cable. Connect the cable to this connector.
5	NFC board connector (internal)	NFC-card cable	Connect one end to the NFC board and the other end to this connector.
6	LCD connector (internal)	LCD FPC	Connect one end of the LCD FPC to this connector.
7	POGO connector (internal)	POGO cable	The POGO connector comes with a cable. Connect the cable to this connector.
8	Pen connector (internal)	Pen cable	Connect one end of the pen cable to this connector. Connect the other end of the pen cable to the pen board.
9	Touch panel connector (internal)	Touch panel cable	Connect the touch panel cable to this connector.

Table 4. System board connector and cable guide (continued)

Item	Connector (location)	Internal cable required	Cable connection
10	Speaker connector (internal)	Speaker assembly cable	The speaker assembly comes with a cable. Connect the cable to this connector.
11	Wireless-LAN card slot (internal)	Wireless-LAN antenna assembly	Insert the wireless-LAN card into this slot.
12	USB-C connector (external)	No	Connect an HDMI-compatible audio device or video monitor, a video graphics array (VGA) monitor or other VGA-compatible video device, or an ac power adapter to this connector by using a USB-C dongle or docking device. Or, connect an ac power adapter directly to this connector.
13	HDMI connector (external)	No	Connect your computer to a compatible digital audio device or video monitor, such as a high-definition television (HDTV).
14	Nano-SIM-card and microSD card slot (external)	No	Insert a tray with a microSD card to this slot to transfer or store files. If the computer supports wireless WAN, insert a tray with a nano Subscriber Identification Module (SIM) card into this slot to establish wireless-WAN connections.
15	Audio connector (external)	No	Connect headphones or a headset to listen to the sound from the computer.
16	USB 3.1 connector Gen 1 (external)	No	Connect USB-compatible devices, such as a USB keyboard, USB mouse, or USB storage device.

Looking up FRU information

For detailed FRU information, including part numbers, descriptions, and substitution part numbers, go to https://support.lenovo.com/partslookup.

Chapter 6. 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 https://support.lenovo.com. Tap **Guides & Manuals** and then follow the on-screen instructions to find the manual for your product. You might be required to return the defective part that is replaced by the 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.

Screw notices

Loose screws can cause a reliability problem. In the Lenovo computer, this problem is addressed with 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 service this machine:

- Keep the screw kit in your tool bag. For the part number of the screw kit, go to https://support.lenovo.com/partslookup.
- It is recommended to use new screws.
- It is recommended to use each screw only once.

Tighten screws as follows:

- **Plastic to plastic**
  Turn an additional 90 degrees after the screw head touches the surface of the plastic part.
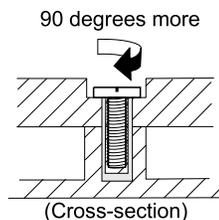
- **Logic card to plastic**
  Turn an additional 180 degrees after the screw head touches the surface of the logic card.

180 degrees more

(Cross-section)
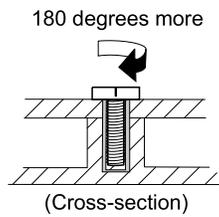
Notes:

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

Retaining serial numbers

Instructions for retaining serial numbers, MTM, UUID, or asset ID can be found from the Lenovo Support Web site at:
https://support.lenovo.com

Chapter 7. 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 is available for downloading at https://support.lenovo.com. 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 part 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, be sure to 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 6 "FRU replacement notices" on page 47.

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 in each FRU replacement section. Remove them in the order in which they are listed.

4. Follow the correct sequence in the steps for removing a FRU, as given in the drawings by the numbers in square callouts.

5. When turning a screw, turn it in the direction as given by the arrow in the drawing.

6. When removing a FRU, remove it in the direction as given by the arrow in the drawing.

7. To put the 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 procedures.

⚠️DANGER

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

Attention: After replacing a FRU, do not turn on the computer until you have made sure 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, electrostatic discharge(ESD). Before touching it, establish personal grounding by touching a ground point with one hand or by using an ESD strap.

Before servicing the computer

Before you service this computer, do the following:

1. Disable the built-in battery. See "Disabling the built-in battery" on page 50.
2. Remove the nano-SIM-card and microSD card. See "Removing the Nano-SIM-card and microSD card tray, nano-SIM-card, and microSD card" on page 50.

Disabling the built-in battery

Before replacing any FRU, ensure that you disable Fast Startup first and then disable the built-in battery.

To disable Fast Startup, do the following:

1. Go to Control Panel, and then change the view of Control Panel from Category to Large icons or Small icons.
2. Click **Power Options**, and then click **Change what the power buttons do** on the left pane.
3. Click **Change settings that are currently unavailable** at the top.
4. If prompted by User Account Control (UAC), click **Yes**.
5. Clear the **Turn on fast startup** check box, and then click **Save changes**.

To disable the built-in battery, do the following:

1. Restart your computer. When the logo screen is displayed, immediately press F1 to enter Lenovo Tablet Setup.
2. Select **Config ➙ Power**. The **Power** submenu is displayed.
3. Select **Disable built-in battery** and press Enter.
4. Select **Yes** in the Setup Confirmation window. The built-in battery is disabled and the computer turns off automatically. Wait three to five minutes to let the computer cool.

Removing the Integrated Active Pen

Remove the Integrated Active Pen (the pen) before you service the computer:

Removal step of the pen

Removing the Nano-SIM-card and microSD card tray, nano-SIM-card, and microSD card

Remove the following items before you service the computer:

• Nano-SIM-card and microSD card tray

- Nano-SIM-card (on some models)
- MicroSD card (on some models)

Removal steps of the nano-SIM-card
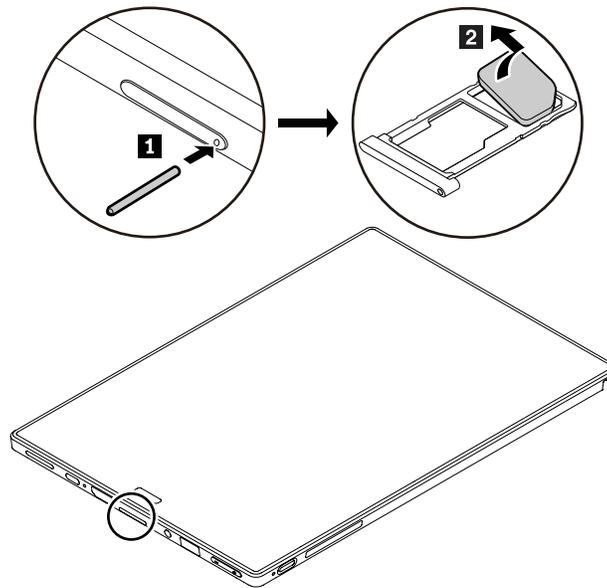
Removal steps of the microSD card
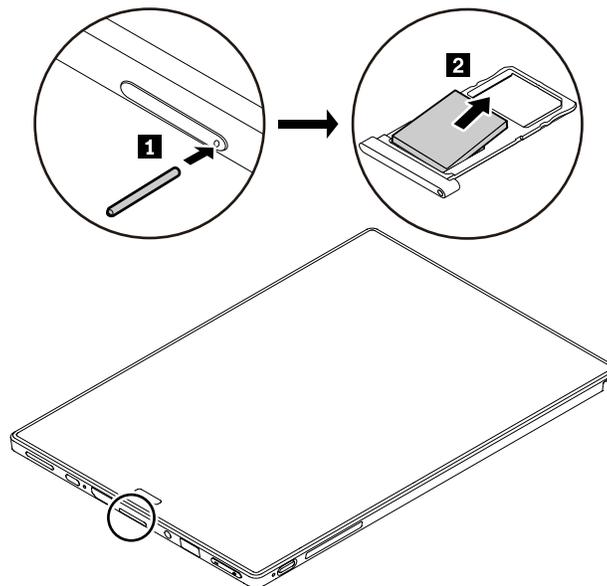
1010 Back cover assembly

Before you replace the back cover assembly, do the following:

Removal steps of the back cover assembly

Note: The computer you are servicing might look slightly different from the following illustrations.
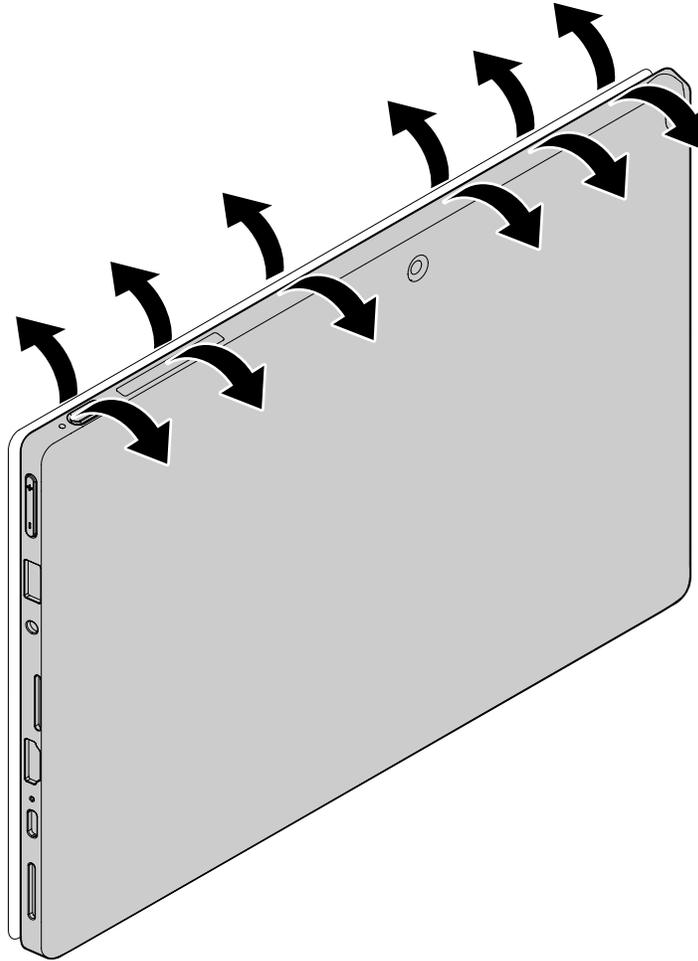
1020 Built-in battery

Before you replace the built-in battery, do the following:

1. Disable the built-in battery. See "Disabling the built-in battery" on page 50.
2. Remove the Nano-SIM-card and microSD card tray, nano-SIM-card, and microSD card. See "Removing the Nano-SIM-card and microSD card tray, nano-SIM-card, and microSD card" on page 50.
3. Remove the base cover assembly, see "1010 Back cover assembly " on page 51.

Removal steps of the built-in battery

⚠️**DANGER**

Use only the authorized battery specified for your computer. Any other battery could ignite or explode.
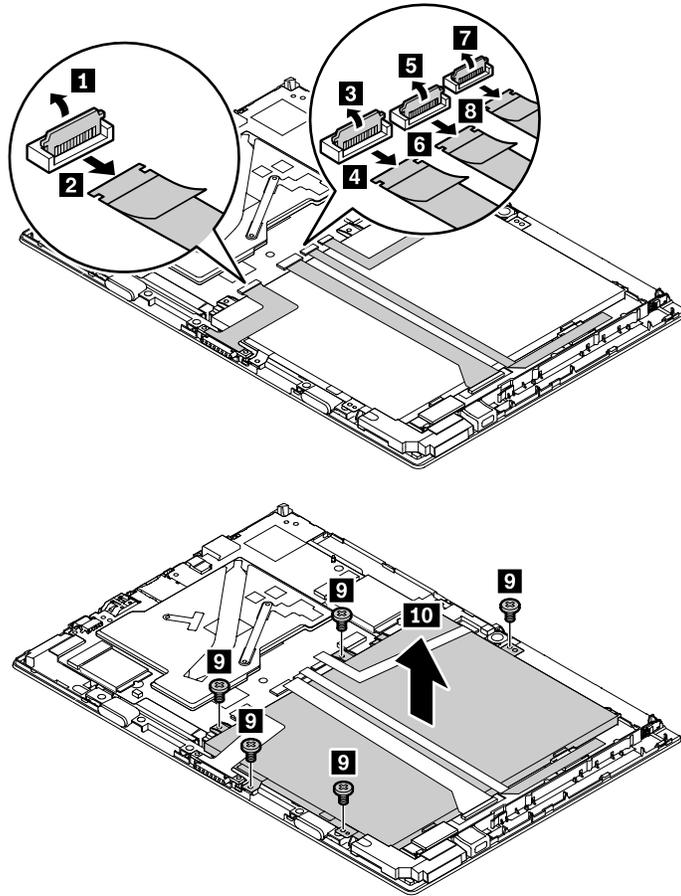
Step	Screw (quantity)	Color	Torque
9	M1.6 × L3.5 mm, flat-head, nylon-coated (5)	Black	0.098 Nm (1 kgf-cm)

1030 Wireless-LAN module

For access, remove these FRUs in order:
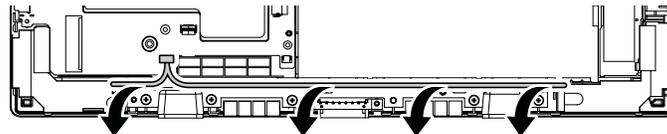- "1010 Back cover assembly " on page 51
- "1020 Built-in battery" on page 52

Removal steps of the Wireless-LAN module
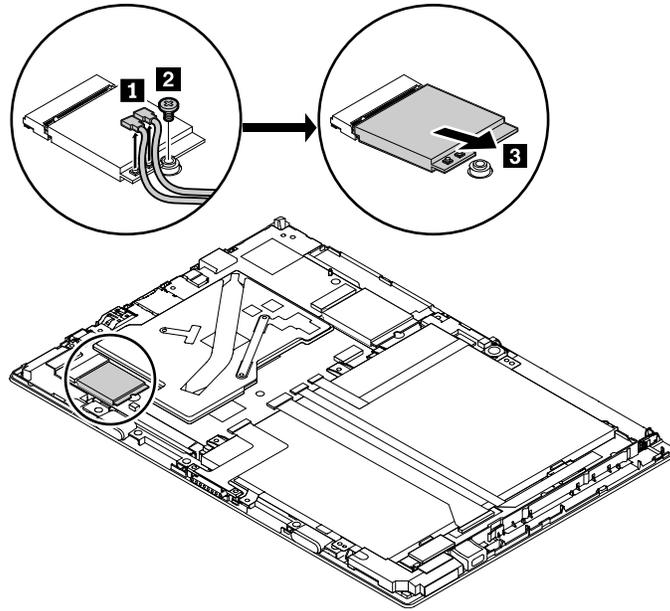
Step	Screw (quantity)	Color	Torque
2	M2 × 2.5 mm, flat-head, nylon-coated (1)	Black	0.147 Nm (1.5 kgf-cm)

When installing:
Plug the gray cable into the connector labeled **MAIN** or **2** on the card, and plug the black cable into the connector labeled **AUX** or **1** on the card.

1040 Wireless-WAN card

For access, remove the following FRUs:

- "1010 Back cover assembly " on page 51
- "1020 Built-in battery" on page 52

Removal steps of the wireless-WAN card

The wireless-WAN card is only available on some models.
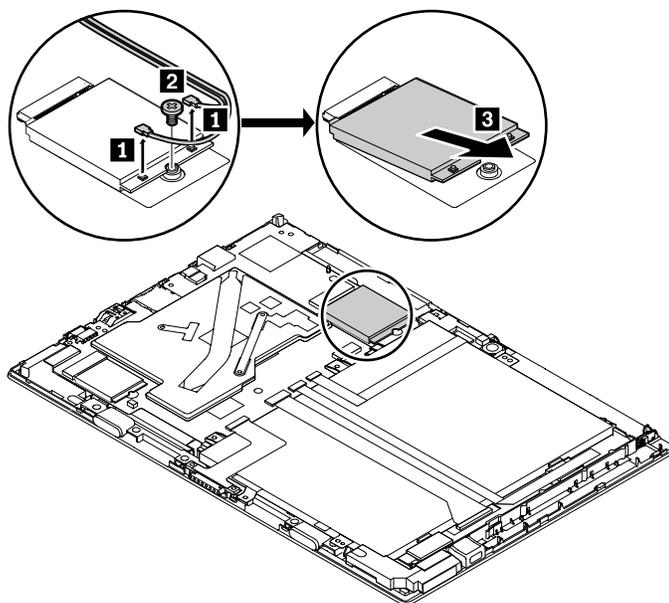
Step	Screw (quantity)	Color	Torque
2	M2 × 2.5 mm, flat-head, nylon-coated (1)	Black	0.147 Nm (1.5 kgf-cm)

When installing: Plug the red cable into the main connector, and the blue cable into the auxiliary connector on the card. Ensure that the connectors are attached firmly.

1050 Speaker assembly

For access, remove these FRUs in order:
- "1010 Back cover assembly " on page 51
- "1020 Built-in battery" on page 52

Removal steps of the speaker assembly
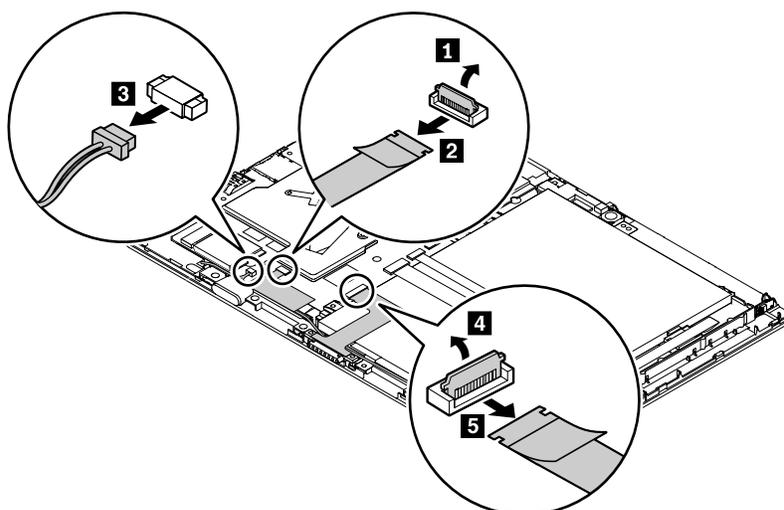
When installing: Ensure that the connector is attached firmly.
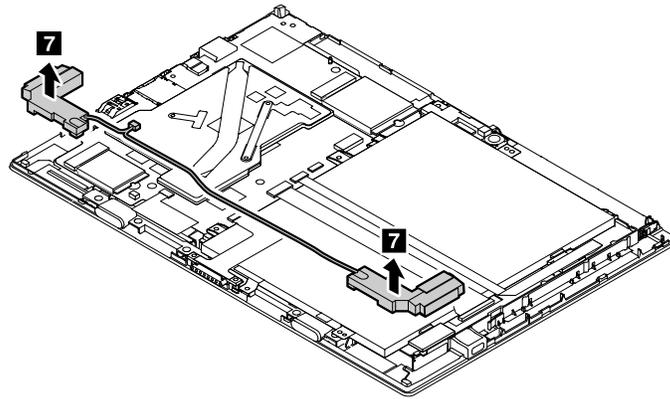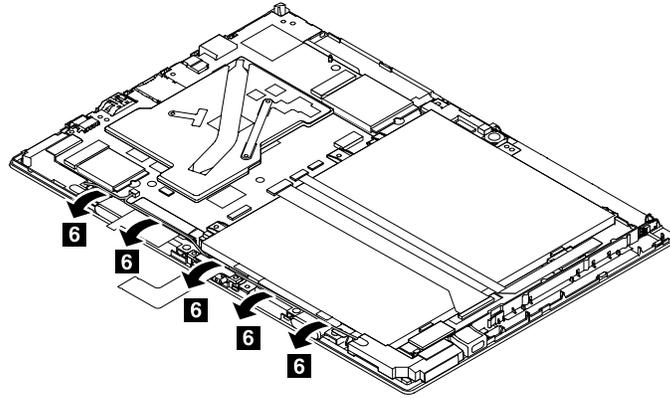
Attention: When installing the speaker assembly, route the cable as shown in the following illustration. Ensure that the cable is not twisted or subject to any tension. Tension could cause the cable to be damaged by cable guides.

1060 POGO cable

For access, remove the following FRU:

- "1010 Back cover assembly " on page 51

Removal steps of the POGO cable
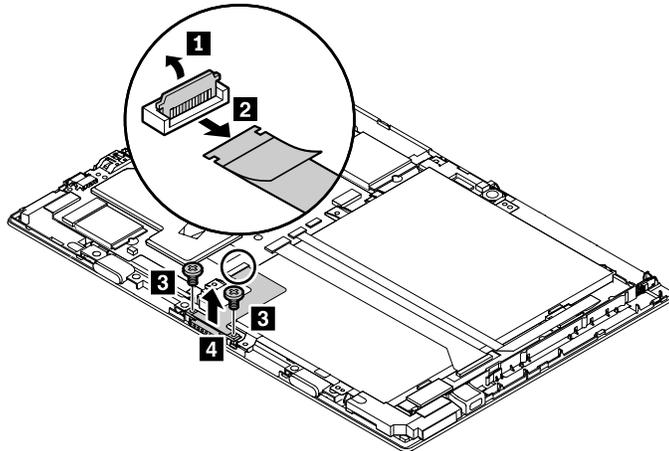
Step	Screw (quantity)	Color	Torque
4	M1.6 × L3.5 mm, flat-head, nylon-coated (2)	Black	0.098 Nm (1 kgf-cm)

Note: When connecting the cable, ensure that the connector is attached firmly.

1070 LCD FPC

For access, remove the following FRU:
- "1010 Back cover assembly " on page 51

Removal steps of the LCD FPC

Note: When connecting the cable, ensure that the connector is attached firmly.
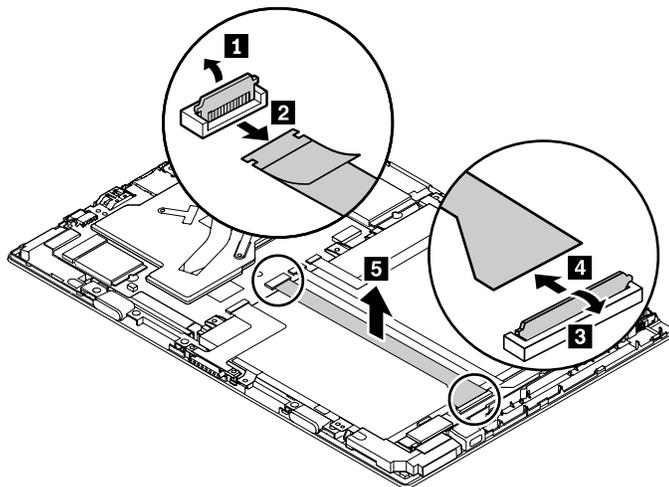
1080 NFC board, NFC-board cable, and NFC antenna assembly

For access, remove these FRUr:
- "1010 Back cover assembly " on page 51

Removal steps of the NFC-boardcable

Notes:

- The NFC board, NFC-board cable, and NFC antenna assembly are only available on some models.
- When connecting the cables, ensure that the connectors are attached firmly.
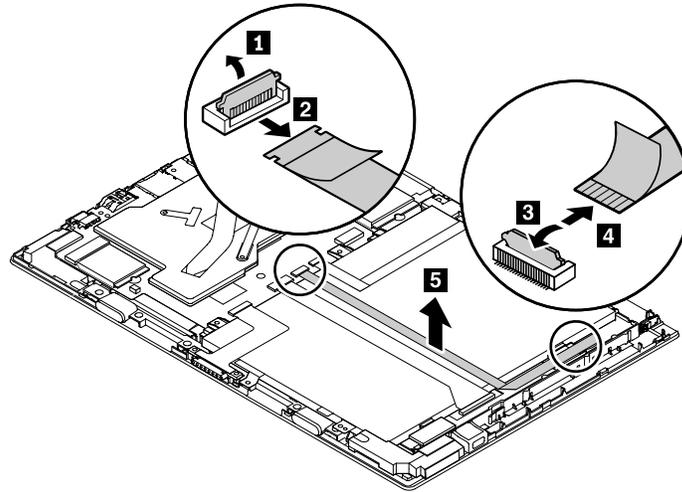
Removal steps of the NFC board and the NFC antenna assembly
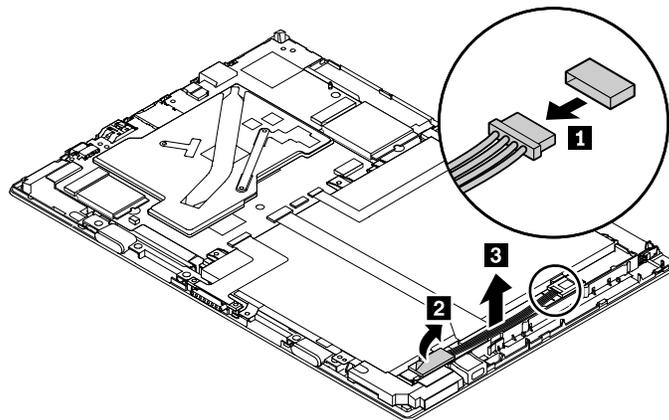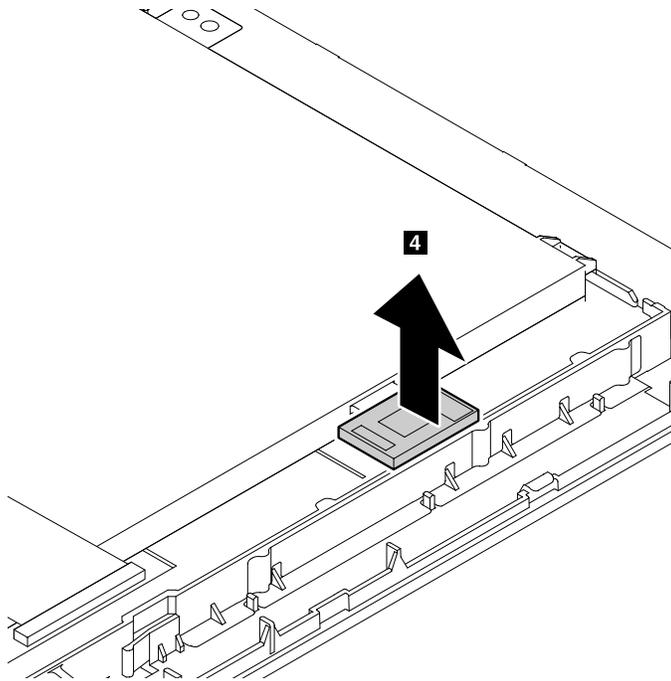
1090 Camera module and camera cable
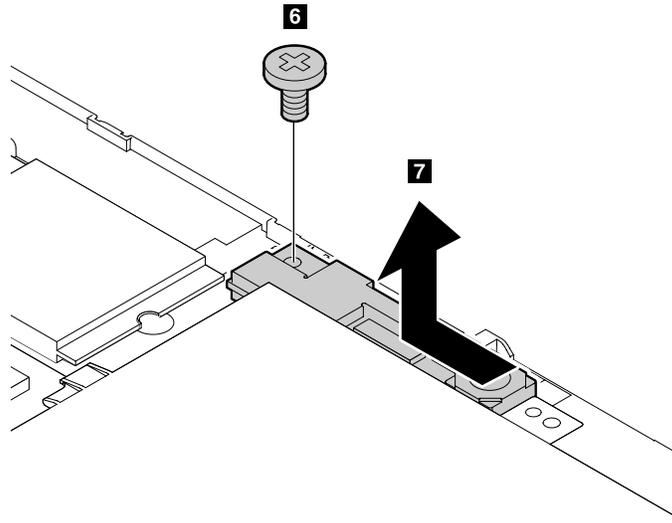
For access, remove the following FRU:
- "1010 Back cover assembly " on page 51
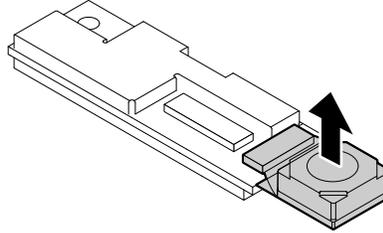
Removal steps of the rear-camera module and camera cable
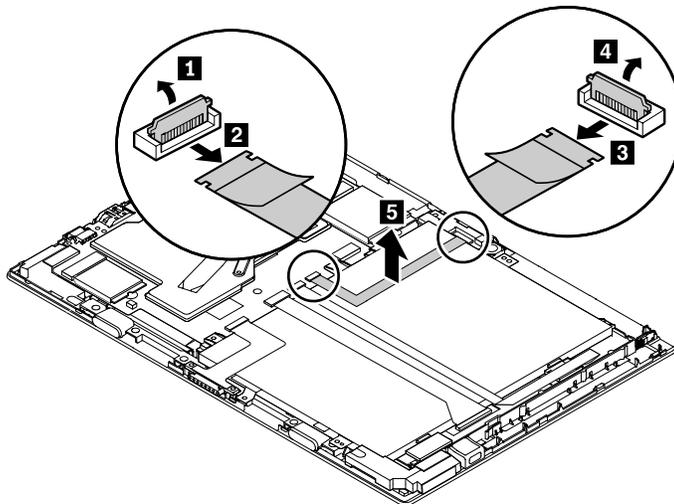
When installing: Ensure that the connector is attached firmly.

Step	Screw (quantity)	Color	Torque
6	M1.6 × 3.5 mm, flat-head, nylon-coated (1)	Black	0.098 Nm (1 kgf-cm)

Removal step of the front-camera module

1100 Thermal module

For access, remove the following FRU:
• "1010 Back cover assembly " on page 51

Removal steps of the thermal module

Loosen the screws **1a** to **1c** in ascending alphabetical order as shown in the following illustration.
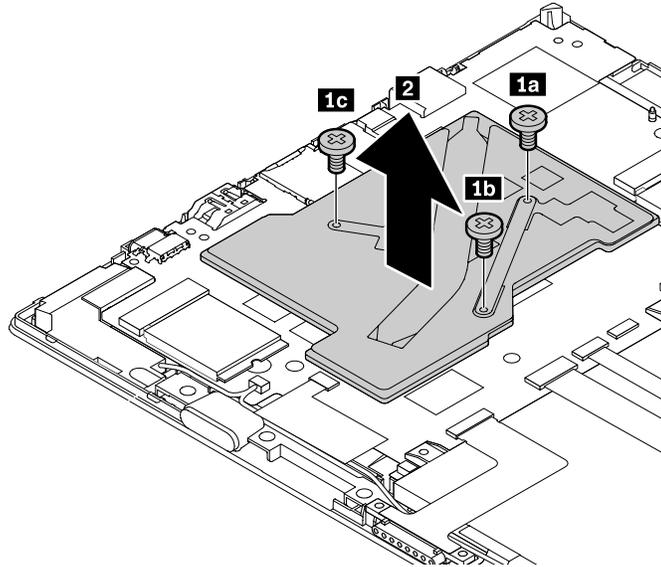
When installing: Before you install the thermal module, apply 0.2-gram thermal grease on part **a** as shown in the following illustration. Either too much or too less application of grease can cause a thermal problem due to imperfect contact with a component.
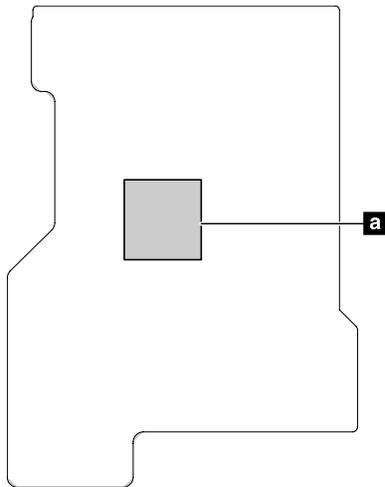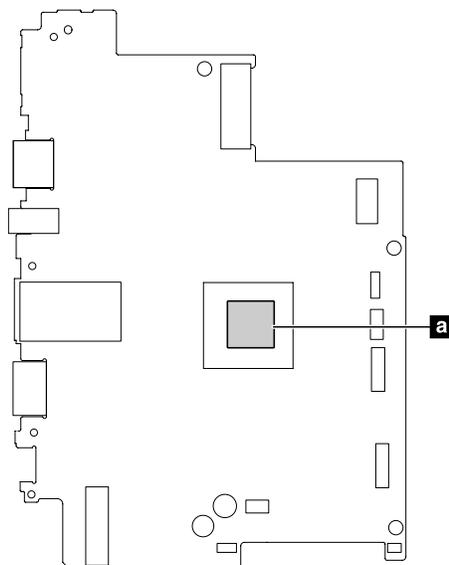
1110 System board

For access, remove these FRUs in order:
- "1010 Back cover assembly " on page 51
- "1020 Built-in battery" on page 52

Attention: The microprocessor **a** soldered on the system board are extremely sensitive. When you service the system board, avoid any kind of rough handling.

Removal steps of the system board

CAUTION:
When handling the system board, read the following:

- **The system board has an accelerometer, which can be broken when several thousands of G-forces are applied.**

- **Be careful not to drop the system board on a bench top that has a hard surface, such as metal, wood, or composite.**

- **Avoid rough handling of any kind.**

- **At every point in the process, be sure not to drop or stack the system board.**

- **If 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 material.**

Note: When connecting the cables, ensure that the connectors are attached firmly.
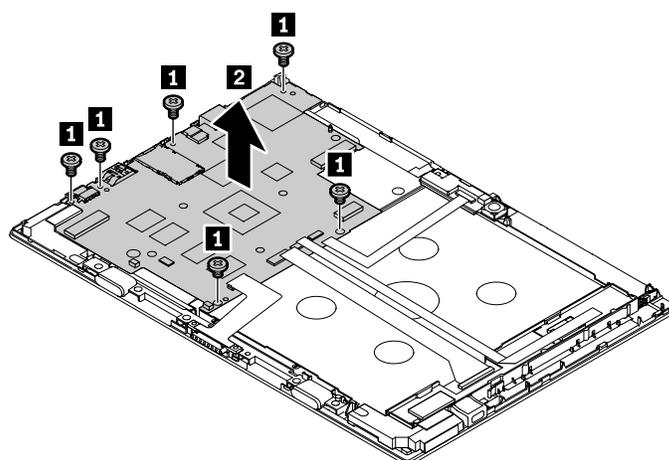
Step	Screw (quantity)	Color	Torque
1	M1.6 × 1.5 mm, flat-head, nylon-coated (6)	Silver	0.098 Nm (1. kgf-cm)

After the system board is replaced with a new one, do the following:

- Initialize the settings on the new system board by doing the following:
    1. Restart the computer. When the logo screen is displayed, tap **To interrupt normal startup, press Enter or tap here** on the screen.
    2. Tap **F1** on the screen to start the Lenovo Tablet Setup program.
    3. Tap **Restart ➙ Load Setup Defaults**.
    4. A confirmation message is displayed. Tap **Yes** to load the default configuration.
- Reset the NVRAM (Non-Volatile Random Access Memory). To download the tool and the instruction, do the following:
    1. Go to https://support.lenovo.com/documents/HT104297 and then follow the instructions on the screen.

        Note: Service account and password are required for downloading the tool and the instruction.
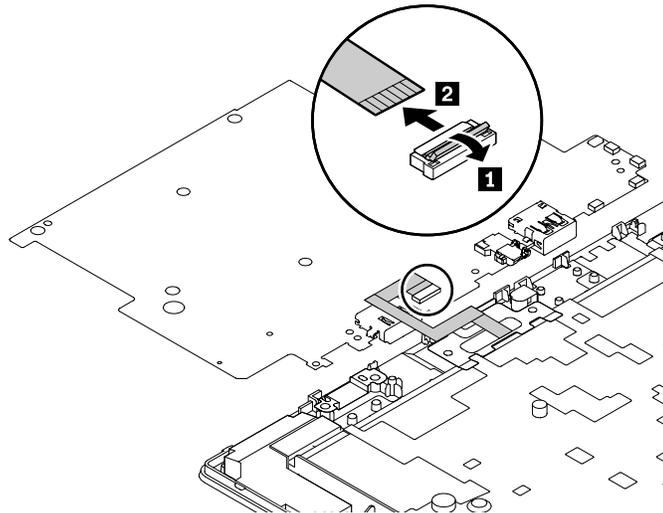   2. Locate the NVRAM update tool, then download the tool and the instruction.
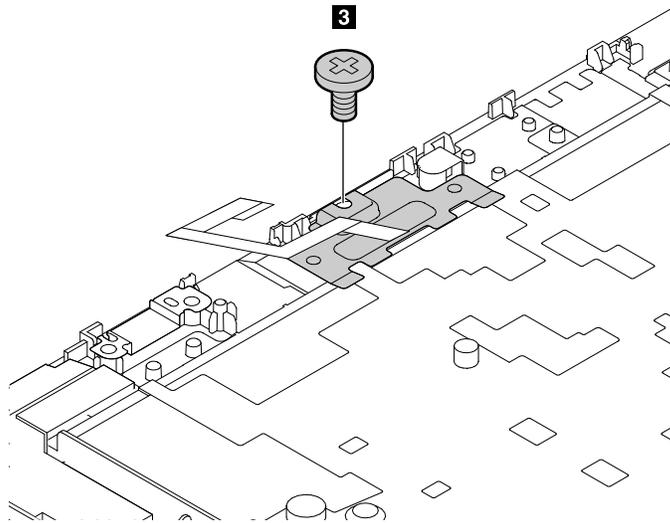
1120 Fingerprint reader and cable

For access, remove these FRUs in order:
- "1010 Back cover assembly " on page 51
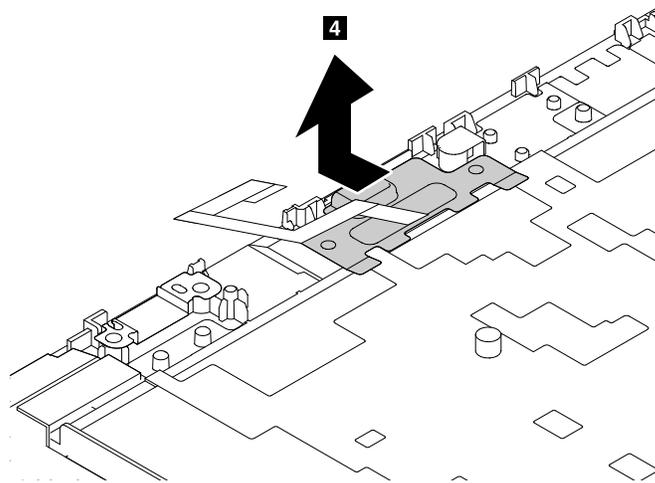- "1020 Built-in battery" on page 52
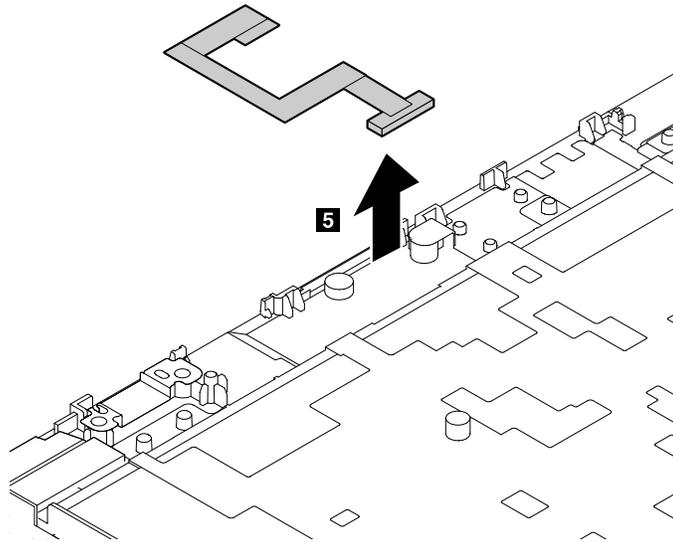
Removal steps of the fingerprint reader and cable

Note: When connecting the cable, ensure that the connector is attached firmly.

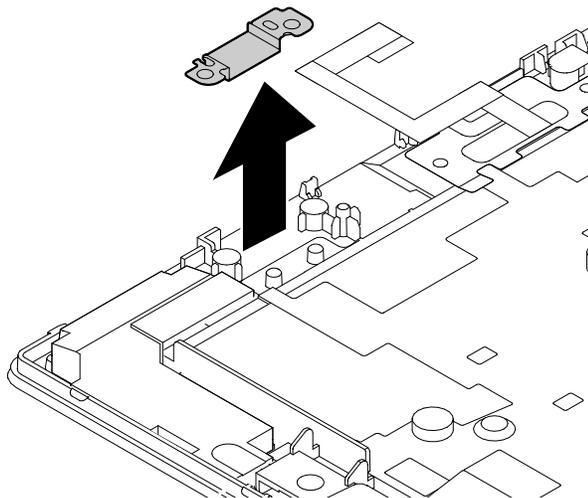| Step	Screw (quantity)	Color	Torque
3	M1.6 × L1.5 mm, flat-head, nylon-coated (1)	Black	0.098 Nm (1 kgf-cm)

1130 USB-C connector bracket

For access, remove these FRUs in order:
- "1010 Back cover assembly " on page 51
- "1020 Built-in battery" on page 52
- "1110 System board" on page 61
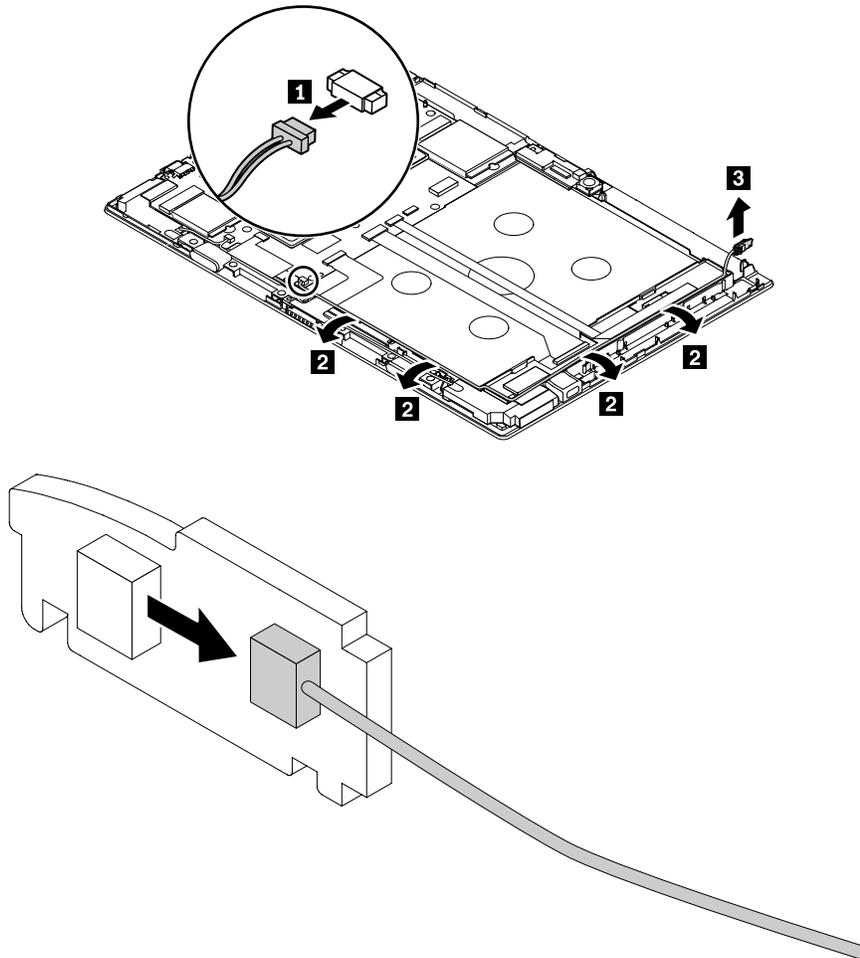
Removal step of the USB-C connector bracket

1140 Pen board and cable

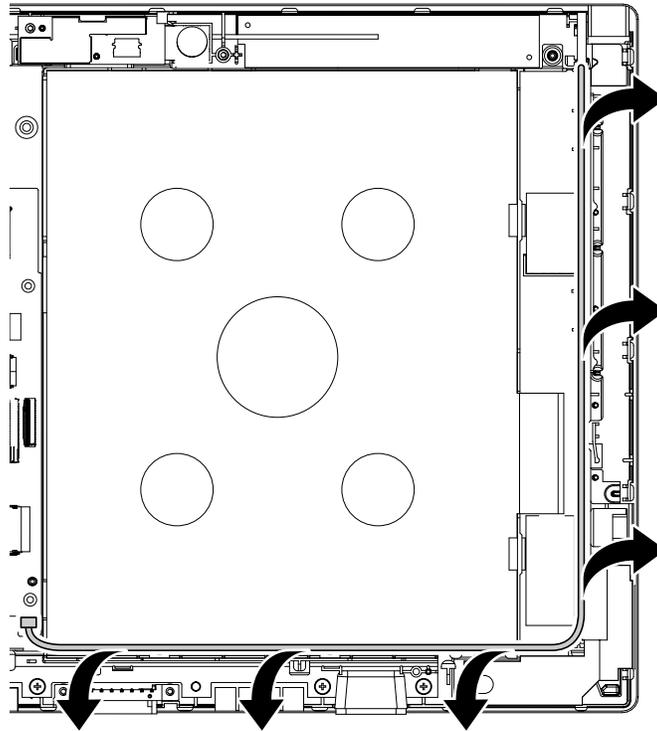For access, remove these FRUs in order:
- "1010 Back cover assembly " on page 51
- "1020 Built-in battery" on page 52

Removal steps of the pen board and cable

Note: When connecting the cable, ensure that the connector is attached firmly.

1150 LCD panel with antenna kit

For access, remove these FRUs in order:
- "1010 Back cover assembly " on page 51
- "1020 Built-in battery" on page 52
- "1030 Wireless-LAN module" on page 53
- "1040 Wireless-WAN card" on page 54
- "1050 Speaker assembly" on page 55
- "1060 POGO cable" on page 56
- "1070 LCD FPC" on page 57
- "1080 NFC board, NFC-board cable, and NFC antenna assembly" on page 57
- "1090 Camera module and camera cable" on page 59
- "1100 Thermal module" on page 60
- "1110 System board" on page 61
- "1120 Fingerprint reader and cable" on page 63
- "1130 USB-C connector bracket" on page 65
- "1140 Pen board and cable" on page 66

Note: The wireless-WAN antenna assembly is only available on some models.
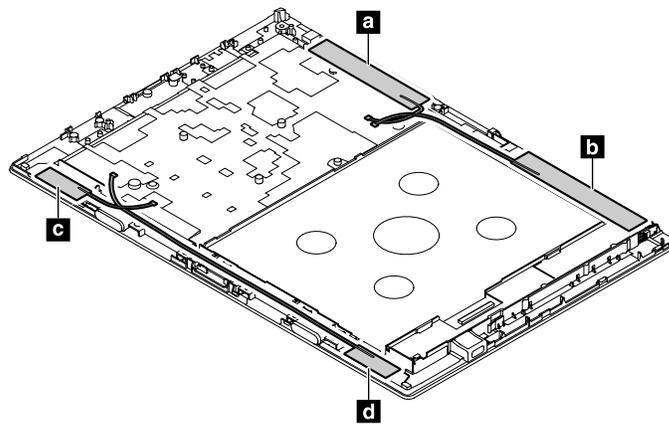
a Wireless-WAN antenna (Auxiliary)*

b Wireless-WAN antenna (Main)*

c Wireless-LAN antenna (Auxiliary)
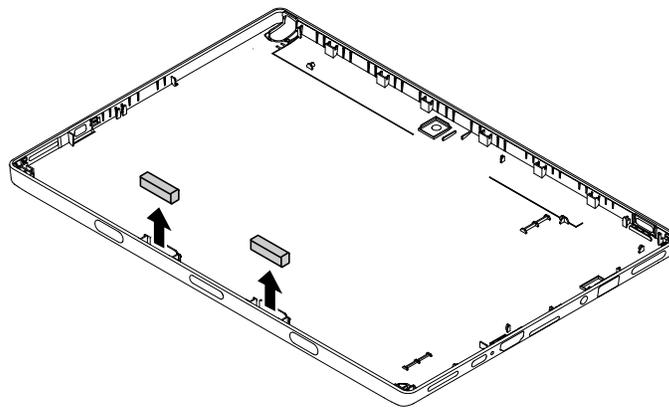
d Wireless-LAN antenna (Main)

*Available on some models

1160 Magnets

For access, remove the following FRU:
- "1010 Back cover assembly " on page 51

Removal step of the magnets

Appendix A. Notices

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$$C\epsilon$$

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Appendix B. Abbreviation and acronym table

The following table lists all abbreviations and acronyms which might be used in this manual.

Abbreviation	Term
4G	fourth generation of mobile telecommunications technology
BGA	Ball Grid Array
BIOS	basic input/output system
CMOS	complementary metal-oxide semiconductor
COA	Certificate of Authentication
CRC	cyclic redundancy check
CRT	cathode ray tube
CRU	customer-replaceable unit
CTO	Configure To Order
EAIA	Enhanced Asset Information Area
ECA	Engineering Change Announcements
EEPROM	Electrically Erasable Programmable Read-Only Memory
EFI	Extensible Firmware Interface
EPO	emergency power-off
ESD	electrostatic discharge
EU	European Union
FCC	Federal Communications Commission
FRU	Field Replaceable Unit
GAV	General Announce Variant
GPU	graphics processing unit
HDD	hard disk drive
HDMI	high-definition multimedia interface
ICs	integrated circuits
ICCID	integrate circuit card identity
ISO	International Standardization Organization
LAN	local area network
LCD	liquid crystal display
MAC	media access control
MT	machine type
MTM	machine type and model
PC	personal computer
PCH	Platform Controller Hub

Abbreviation	Term
POST	power-on self-test
RAM	random-access memory
RF	radio frequency
RFID	radio-frequency identification
RI	ring indicator
RJ	registered jack
SATA	Serial Advanced Technology Attachment
SIM	subscriber identity module
SVP	supervisor password
TFTs	thin-film transistors
UEFI	Unified Extensible Firmware Interface
USB	Universal Serial Bus
UUID	universally unique identifier
VGA	video graphics array
VRAM	video random-access memory

Lenovo

Part Number: SP40M12229

Printed in China

(1P) P/N: SP40M12229