

ThinkPad

ThinkPad 10 Hardware Maintenance Manual

Machine Types: 20E3 and 20E4

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

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About this manual

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

Machine	Machine type (MT)
ThinkPad 10	20E3 and 20E4

Important:

- This manual is intended only for trained service technicians who are familiar with ThinkPad products. Use this manual along with the advanced diagnostic tests to troubleshoot problems effectively.
- Before servicing a ThinkPad product, be sure to read all the information under Chapter 1 “Safety information” on page 1 and Chapter 2 “Important service information” on page 19.

Chapter 1. Safety information

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

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

General safety

Follow these rules to ensure general safety:

- Observe good housekeeping in the area of the machines during and after maintenance.
- When lifting any heavy object:
 1. Make sure that you can stand safely without slipping.
 2. Distribute the weight of the object equally between your feet.
 3. Use a slow lifting force. Never move suddenly or twist when you attempt to lift.
 4. Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back. *Do not attempt to lift any object that weighs more than 16 kg (35 lb) or that you think is too heavy for you.*
- Do not perform any action that causes hazards to the customer, or that makes the equipment unsafe.
- Before you start the machine, make sure that other service technicians and the customer's personnel are not in a hazardous position.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the machine.
- Keep your toolcase away from walk areas so that other people will not trip over it.
- Do not wear loose clothing that can be trapped in the moving parts of a machine. Make sure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
- Insert the ends of your necktie or scarf inside clothing or fasten it with a nonconductive clip, about 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.

Attention: Metal objects are good electrical conductors.

- Wear safety glasses when you are hammering, drilling, soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall 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 need to work on a machine that has *exposed* electrical circuits, observe the following precautions:
 - Ensure that another person, familiar with the power-off controls, is near you.

Attention: Another person must be there to switch off the power, if necessary.

- Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.

Attention: An electrical shock can occur only when there is a complete circuit. By observing the above rule, you may prevent a current from passing through your body.

- When using testers, set the controls correctly and use the approved probe leads and accessories for that tester.
- Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.

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

- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- Do not use worn or broken tools and testers.
- *Never assume* that power has been disconnected from a circuit. First, *check* that it has been powered off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- Do not service the following parts *with the power on* when they are removed from their normal operating places in a machine:
 - Power supply units
 - Pumps
 - Motor generators
 - Similar units as 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-ThinkPad 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 tablet.
3. Disable the built-in battery. See “Before servicing the tablet” on page 46.
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, and make sure 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 liquid crystal display (LCD) module assembly.
7. Check for cracked or bulging built-in batteries.
8. Check for any obvious non-ThinkPad alterations. Use good judgment as to the safety of any non-ThinkPad 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 tablet 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 tablets.

Grounding requirements

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

Safety notices (multilingual translations)

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

- English
- Arabic
- Brazilian Portuguese
- French
- German
- Hebrew
- Japanese
- Korean
- Spanish
- Traditional Chinese



DANGER

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



DANGER

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



DANGER

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



DANGER

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



DANGER

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



DANGER

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



DANGER

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



DANGER

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



قبل إعادة تشغيل الحاسب بعد الانتهاء من استبدال FRU، تأكد من أنه قد تم إعادة 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 إلى حدوث دائرة قصر.



تحتوي بعض البطاريات الاحتياطية على كمية صغيرة من مادتي النيكل والكادميوم. لا تقم بفك أو إعادة شحن البطارية الاحتياطية ولا تقم أيضا بالقاءها في النار أو الماء ولا تتسبب في أحداث 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 إلى اشتعالها أو انفجارها.



تحتوي حزمة البطارية على كمية صغيرة من مادة النيكل. لا تقم بفكها أو القاءها في النار أو الماء ولا تتسبب في أحداث 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 إلى اشتعالها أو انفجارها.



قد تتسبب بطارية الليثيوم في حدوث حريق أو انفجار أو حدوث حروق شديدة. لا تقم بإعادة شحن البطارية أو إزالة موصل الاستقطاب الخاص بها ولا تحاول أيضا فكها أو تسخينها لأكثر من ١٠٠ درجة مئوية (٢١٢١ 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 إلى اشتعالها أو انفجارها.



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



خطر

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



خطر

على الرغم من أن البطاريات الرئيسية يكون لها جهد منخفض، إلا أنه قد تقوم البطاريات التي حدث قصور بها أو التي تم توصيلها أرضياً بإصدار 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 بإيقاف تشغيل الحاسب ونزع كل أسلاك الطاقة من المخرج الكهربائية وقم أيضا بإزالة 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 température 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 חברגים, הקפיצים, וחלקים קטנים אחרים נמצאים במקומם ואינם חופשיים לזוז בתוך המחשב. כדי לוודא זאת, יש לטלטל את המחשב ולחקש לבילוי קולות שקשוק. חלקי או שבבי מתכת עלולים לגרום לקצרים חשמליים.



סכנה

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



סכנה

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



סכנה

סוללת הליתייום עלולה לגרום לשריפה, להתמוצות או לכויית קשות. אין לטעון אותה מחדש, לסלק את המחבר המקוטב שלה, למרק 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 התמוצות.



סכנה

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



סכנה

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



סכנה

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



סכנה

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



החלפה

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。



החלפה

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。



החלפה

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。



החלפה

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 °C (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。



החלפה

LCD가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・バックを取り外して、相互接続しているケーブルをすべて切り離してください。



위험

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



위험

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



위험

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



위험

리튬 배터리는 화재, 폭발 또는 심각한 화상을 일으킬 수 있습니다. 리튬 배터리를 다시 충전하거나, 극성 커넥터를 제거하거나, 분해하거나, 100C(212F) 이상으로 가열하거나, 소각하거나, 전지 내용물을 물에 노출시키지 마십시오. 배터리를 폐기할 때에는 해당 지역을 법률 규정을 따르십시오. 올바른 배터리만 사용하십시오. 올바르게 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。
金屬零件或機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 19
 - “Important notice for replacing a system board” on page 19
- “Strategy for replacing FRUs for CTO, special bid model, and standard models” on page 20
 - “Product definition” on page 20
 - “FRU identification” on page 20

Important:

- Advise customers to visit the Lenovo® Support Web site at <http://www.lenovo.com/support> to view the software fixes, download the drivers, and follow the on-screen instructions to install the drivers. For additional assistance, customers might call the Lenovo Customer Support Center. Telephone numbers for the Lenovo Support Center are available at:
<http://www.lenovo.com/support/phone>
- Service training documents for Lenovo authorized service technicians are available at the following Web site. The disassembly and reassembly videos that show the Field Replaceable Unit (FRU) removal and replacement procedures are contained in the documents.
<http://www.lenovoservicetraining.com>

Strategy for replacing FRUs

Before replacing parts:

Ensure that all software fixes, drivers, and Unified Extensible Firmware Interface basic input/output system (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 <http://www.lenovo.com/ThinkPad> Drivers 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 tablets 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 tablet 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 tablet 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 machine type and model (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 <http://support.lenovo.com/ibasepartslookup>.
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 <http://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 23
- “Checkout guide” on page 24
- “Power system checkout” on page 26

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

Important:

- **Only certified trained personnel should service the tablet.**
- **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 tablet 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 tablet, 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 personal computer (PC) Card or the installation of an incompatible card

- Fuses blown by attachment of a nonsupported device
- Forgotten tablet password (making the tablet unusable)
- Sticky keys caused by spilling a liquid
- Damage caused due to use of an incorrect ac 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 ThinkPad tablet computers.

Note: The diagnostic tests are intended to test only ThinkPad products. The use of non-ThinkPad 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 Solution Center

The Lenovo Solution Center program enables you to troubleshoot and resolve tablet problems. It combines diagnostic tests, system information collection, security status, and support information, along with hints and tips for maximum system performance.

The Lenovo Solution Center program is available for download at <http://www.lenovo.com/diags>.

To run the Lenovo Solution Center program, do the following:

1. Go to Control Panel.
2. Tap **System and Security** → **Lenovo - System Health and Diagnostics**.
3. Follow the instructions on the screen.

For more information about the Lenovo Solution Center program, refer to the help information system of the program.

Quick test programs

Run quick test programs to troubleshoot and resolve tablet problems, especially when the tablet does not have the Lenovo Solution Center program installed.

Lenovo provides the following quick test programs:

- **Lenovo Hard Drive Quick Test:** Use this program to troubleshoot and resolve internal storage problems.
- **Lenovo Memory Quick Test:** Use this program to troubleshoot and resolve memory module problems.

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

UEFI diagnostic program

A UEFI diagnostic program is preinstalled on the tablet. It enables you to test memory modules and internal storage devices, view system information, and check and recover the internal storage devices.

To run the UEFI diagnostic program, do the following:

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

1. Restart the tablet. 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 tablet cannot be turned on, go to “Power system checkout” on page 26, and check the power sources.
 - If an error code is displayed, go to “Symptom-to-FRU index” on page 34 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
<ul style="list-style-type: none">• Quick Memory Test• Quick Storage Device Test• LCD test• PCI-e test• Exit Application	<ul style="list-style-type: none">• System Information• Generate configuration file• Execute from configuration file

Bootable diagnostic programs

The bootable diagnostic programs enable you to test tablet 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 <http://www.lenovo.com/diags>.
2. Tap **Lenovo Bootable Diagnostics** or **Lenovo UEFI Bootable Diagnostics**.
3. Follow the instructions on the Web site to create a bootable diagnostic medium.

To use the diagnostic medium you have created, do the following:

1. Connect the bootable diagnostic medium to the tablet.
2. Restart the tablet. Immediately press and hold the volume-down button until the Startup and App Menus start.

Notes:

- If the tablet cannot be turned on, go to “Power system checkout” on page 26, and check the power sources.
 - If an error code is displayed, go to “Symptom-to-FRU index” on page 34 for error code descriptions and troubleshooting hints.
3. Tap 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 tablet.
2. Connect the ac power adapter.
3. Turn on the tablet. If the tablet 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 tablet. If the tablet is still powered on, it means that the ac power adapter is functional.
5. Turn off the tablet.
6. Disconnect the ac power adapter and turn on the tablet. If the tablet 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 and operational charging” on page 26
- “Checking the ac power adapter” on page 26

Checking the built-in battery and operational charging

This tablet 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 systems 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.

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

To check for detailed battery status information, open the Lenovo Settings program and tap **Power**.

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

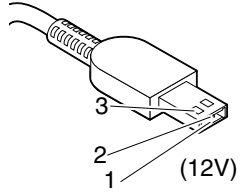
1. Ensure that the tablet failure is not caused by exhausted battery power.
2. Reset the tablet by inserting a straightened paper clip into the emergency reset hole. Then press the power button. If the tablet cannot be turned on, continue with the next step.
3. Clear Complementary Metal Oxide Semiconductor (CMOS) by inserting a straightened paper clip into the emergency reset hole and pressing the Windows button at the same time.
4. Press the power button. If the tablet cannot be turned on, continue with the next step.
5. Connect the ac power adapter and press the power button.
 - If the tablet is turned on, disconnect the ac power adapter from the tablet. If the tablet turns off, it means that the built-in battery fails.
 - If the tablet cannot be turned on, replace the built-in battery with another one. If the tablet can start up with the new battery installed, it means that the original battery fails.

Checking the ac power adapter

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

To check the ac power adapter, do the following:

1. Disconnect the ac power adapter from the tablet.
2. Measure the output voltage at the plug of the ac power adapter. Refer to the following illustration:



Pin	Voltage (V dc)
1	+12
2	0
3	Ground

3. If the voltage is not correct, replace the ac power adapter.
4. If the voltage is acceptable, replace the system board.

Chapter 4. Related service information

This chapter presents the following information:

- “Windows recovery programs (Windows 8.1)” on page 29
- “Windows recovery apps (Windows 10)” on page 31
- “Using passwords” on page 33
- “Symptom-to-FRU index” on page 34

Windows recovery programs (Windows 8.1)

The Windows recovery programs enable you to refresh your tablet, reset your tablet to the factory default settings, or start the tablet from an external device.

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 programs.

For more information, see “Creating and using recovery media” on page 30.

Refreshing your tablet

If your tablet does not perform well and the problem might result from a recently installed program, you can refresh your tablet without losing your personal files or changing your settings.

Attention: If you refresh your tablet, the programs that came with your tablet and the programs that you installed from Windows Store will be reinstalled, but all other programs will be removed.

To refresh your tablet, do the following:

1. Swipe in from the right edge of the screen to display the charms.
2. Tap **Settings** → **Change PC settings**.
3. In the navigation panel, tap **Update and recovery** → **Recovery**.
4. In the **Refresh your PC without affecting your files** section, tap **Get started**.
5. Follow the instructions on the screen to refresh your tablet.

Resetting your tablet to the factory default settings

If you want to recycle your tablet or just start over, you can reset your tablet to the factory default settings. Resetting the tablet reinstalls the operating system, reinstall all the programs that came with your tablet, and reset all the settings to the factory default settings.

Attention: If you reset the tablet to the factory default settings, all your personal files and settings will be deleted. To avoid data loss, make a backup copy of all the data that you want to keep.

To reset your tablet to the factory default settings, do the following:

1. Swipe in from the right edge of the screen to display the charms.
2. Tap **Settings** → **Change PC settings**.
3. In the navigation panel, tap **Update and recovery** → **Recovery**.
4. In the **Remove everything and reinstall Windows** section, tap **Get started**. Then tap **Next** to confirm the operation.
5. Depending on your needs, do one of the following:

- To perform a quick format, tap **Just remove my files** to start the process. The process takes several minutes.
 - To perform a complete format, tap **Fully clean the drive** to start the process. The process takes several hours.
6. Follow the instructions on the screen to reset your tablet to the factory default settings.

Using the advanced startup options

With the advanced startup options, you can change the firmware settings and startup settings of the tablet, start the tablet from an external device, or restore the operating system from a system image.

To use the advanced startup options, do the following:

1. Swipe in from the right edge of the screen to display the charms.
2. Tap **Settings** → **Change PC settings**.
3. In the navigation panel, tap **Update and recovery** → **Recovery**.
4. In the **Advanced startup** section, tap **Restart now** → **Troubleshoot** → **Advanced options**.
5. Select a desired startup option, then follow the instructions on the screen.

Recovering your operating system if Windows 8.1 fails to start

The Windows recovery environment on your tablet is capable of operating independently from the Windows 8.1 operating system. This enables you to recover or repair the operating system even if the Windows 8.1 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 tablet is connected to ac power during the recovery process.

Creating and using recovery media

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

Creating a recovery USB drive

The USB drive that you use to create the recovery USB drive should 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 tablet is connected to ac power during the following process.

1. Swipe in from the right edge of the screen to display the charms and tap **Search**.
2. Type **recovery** in the **Search** field. Then tap **Create a recovery drive**.
3. Tap **Yes** in the User Account Control window to allow the Recovery Media Creator program to start.
4. Ensure that you select **Copy the recovery partition from the PC to the recovery drive**. Then tap **Next**.
5. Connect a proper USB drive, then tap **Next**.
6. Tap **Create** in the Recovery Drive window. The creation of the recovery USB drive starts.

7. When the creation of the recovery USB drive finishes, do one of the following:

- To keep the recovery partition on your tablet, tap **Finish**.
- To delete the recovery partition on your tablet, tap **Delete the recovery partition**.

Attention: If you delete the recovery partition on your tablet, do keep the recovery USB drive in a safe place. The Windows recovery programs will not be stored in your tablet anymore, and you need the recovery USB drive to refresh or reset your tablet.

8. Remove the USB drive. The recovery USB drive is created successfully.

Using the recovery USB drive

If you cannot start your tablet, or if you cannot start the Windows recovery image on your tablet, use the recovery USB drive to recover your tablet.

To use a recovery USB drive, do the following:

Note: Ensure that your tablet is connected to ac power.

1. Connect the recovery USB drive to your tablet.
2. Restart the tablet. Immediately press and hold the volume-up button until the ThinkPad Tablet Setup program 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 tablet.
5. Follow the instructions on the screen to recover the tablet.

For more information about the recovery solutions provided by the Windows 8.1 operating system, go to: <http://go.microsoft.com/fwlink/?LinkID=263800>

Windows recovery apps (Windows 10)

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 32.

Resetting your computer

If your tablet 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 tablet, 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**.

Note: **Settings** might not be displayed in the Start menu. In this case, tap **All apps** to find **Settings**.

2. In the **Reset this PC** section, tap **Get started**.
3. Follow the instructions on the screen to refresh your tablet.

Using advanced startup options

With advanced startup options, you can change the firmware settings of the tablet, change the startup settings of the Windows operating system, start the tablet from an external device, or restore the Windows operating system from a system image.

To use advanced startup options, do the following:

Note: The GUI items of the operating system might change without notice.

1. Open the Start menu . Tap **Settings** → **Update & security** → **Recovery**.

Note: **Settings** might not be displayed in the Start menu. In this case, tap **All apps** to find **Settings**.

2. In the **Advanced startup** section, tap **Restart now** → **Troubleshoot** → **Advanced options**.
3. Select a desired startup option, then follow the instructions on the screen.

Recovering your operating system if the Windows 10 operating system fails to start

The Windows recovery apps on your tablet 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 tablet 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 tablet 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 the tablet, use the recovery USB drive to recover your tablet.

To use a recovery USB drive, do the following:

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

1. Connect the recovery USB drive to the tablet.
2. Restart the tablet. Immediately press and hold the volume-up button until the ThinkPad Tablet Setup program 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 tablet.
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 the tablet to the factory default settings.

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 tablet is connected to ac power during the following process.

1. Turn off the tablet, wait for about five seconds, and then connect the Lenovo factory recovery USB key to your tablet.
2. Restart the tablet. Immediately press and hold the volume-up button until the ThinkPad Tablet Setup program 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 tablet. After the tablet restarts, the recovery program runs automatically.
6. Follow the on-screen instructions to reset your tablet to the factory default settings.

Using passwords

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

Supervisor password protects the system information stored in ThinkPad Tablet Setup. Without the supervisor password, no one can change the configuration of the tablet.

The system administrator can set the same supervisor password on many tablets to make administration easier. It is recommended that you record your password and store it in a safe place. If you forget your supervisor password, Lenovo cannot reset your password. You must take your tablet to a Lenovo reseller or a Lenovo marketing representative to have the system board replaced. Proof of purchase is required, and a fee will be charged for parts and service.

Setting, changing, or removing a supervisor password

Only a system administrator can set, change, or remove a supervisor password.

To set, change, or remove a supervisor password, do the following:

1. Print these instructions.
2. Save all open files, and exit all applications.

3. Restart the tablet. Immediately press and hold the volume-up button until the ThinkPad Tablet Setup program starts.
4. Tap **Security**.
5. In the Password submenu, tap **Enter** next to **Supervisor Password**.
6. A window opens, prompting you to enter a new password. Depending on your needs, do one of the following:
 - To set a password, do the following:
 - a. Choose your supervisor password and type it in the **Enter New Password** field.
 - b. Tap the next line. Retype the password you just entered to verify it.
 - To change a password, do the following:
 - a. In the **Enter Current Password** field, type the current supervisor password.
 - b. In the **Enter New Password** field, type the new supervisor password; then retype the password you just entered to verify it in the **Confirm New Password** field.
 - To remove a password, do the following:
 - a. In the **Enter Current Password** field, type the current supervisor password.
 - b. Leave the **Enter New Password** and **Confirm New Password** fields blank.
7. Tap **OK** to confirm the change.

Attention: You might want to note down your password and keep it in a safe place. If you forget your supervisor password, Lenovo cannot reset your password. You must take your tablet to a Lenovo reseller or a Lenovo marketing representative to have the system board replaced. Proof of purchase is required, and a fee will be charged for parts and service.

8. Tap **OK** to save the change.

The next time you open the ThinkPad Tablet Setup program, you will be prompted to type your password to proceed.

Symptom-to-FRU index

This section contains following information:

- “Numeric error codes” on page 35
- “Intermittent problems” on page 35
- “Undetermined problems” on page 35

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 tablet. Do not replace a nondefective FRU.

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

A numeric error is displayed for each error detected in power-on self-test (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 35.

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

Numeric error codes

Table 2. Numeric error codes

Symptom or error	FRU or action, in sequence
0183 Bad CRC of Security Settings in EFI Variable. Enter ThinkPad Tablet Setup.	Checksum of the Security settings in the EFI Variable is not correct. Enter ThinkPad Tablet Setup to check Security settings, and restart the system. If you still have a problem, have the tablet serviced.
0187 EAIA data access error.	The access to Electrically Erasable Programmable Read-Only Memory (EEPROM) is failed. Have the tablet 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 needs to be reinstalled. Have the tablet 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 universally unique identifier (UUID) should be reinstalled. Have the tablet serviced.
0190 Critical low-battery error.	The tablet turned off, because the battery is low. Connect the ac adapter to the tablet and charge the battery.
2200 Machine Type and Serial Number are invalid.	Machine Type and Serial Number are invalid. Have the tablet serviced.
2201 Machine UUID is invalid.	Machine UUID is invalid. Have the tablet serviced.
2301 Built-in Battery needs to recharge.	Recharge the built-in battery.

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 tablet.

Verify that the power supply being used at the time of the failure is operating correctly. See “Power system checkout” on page 26.

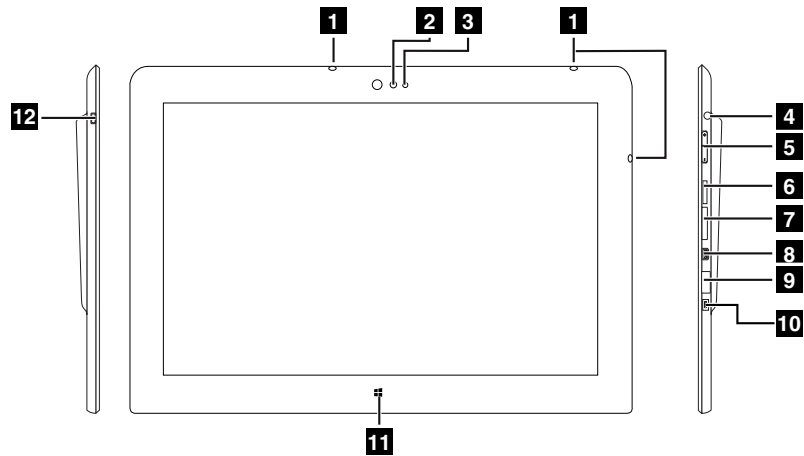
1. Turn off the tablet.
2. Visually check each FRU for damage. Replace any damaged FRU.
3. Remove or disconnect all of the following devices:
 - a. Non-ThinkPad devices
 - b. Devices attached to the docking station or the port replicator
 - c. Printer, mouse, and other external devices
 - d. Battery
 - 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 tablet.

Locating tablet controls, connectors, and indicators

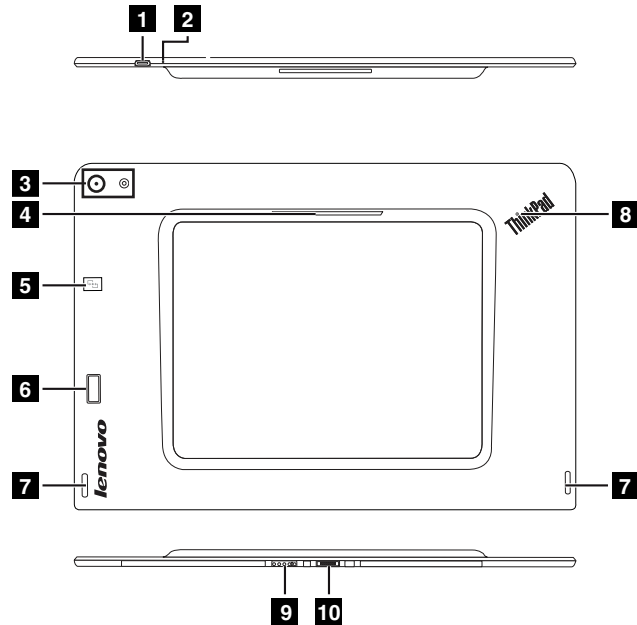
Front view and side view



- | | |
|---------------------------------------|--------------------------------|
| 1 Microphones | 2 Front camera |
| 3 Camera-status indicator | 4 Audio connector |
| 5 Volume-control buttons | 6 Micro-SD-card reader |
| 7 Micro-SIM-card tray* | 8 Micro HDMI™ connector |
| 9 USB 3.0 connector with cover | 10 Power connector |
| 11 Windows® Start control | 12 Security-lock slot |

* Available on some models

Rear view



Note: Your tablet might look slightly different from this illustration.

- | | |
|--------------------------------------|----------------------------------|
| 1 Power button | 2 Emergency-reset hole |
| 3 Rear camera and flash light | 4 Smart card reader* |
| 5 NFC touchpoint* | 6 Fingerprint reader* |
| 7 Speakers | 8 System-status indicator |
| 9 Keyboard connector | 10 Dock connector |

* Available on some models

Locating FRUs and CRUs

This topic introduces the following service parts:

- “Major FRUs” on page 39
- “Miscellaneous kits and other parts” on page 40

Notes:

- Each FRU is available for all types or models, unless otherwise specified.

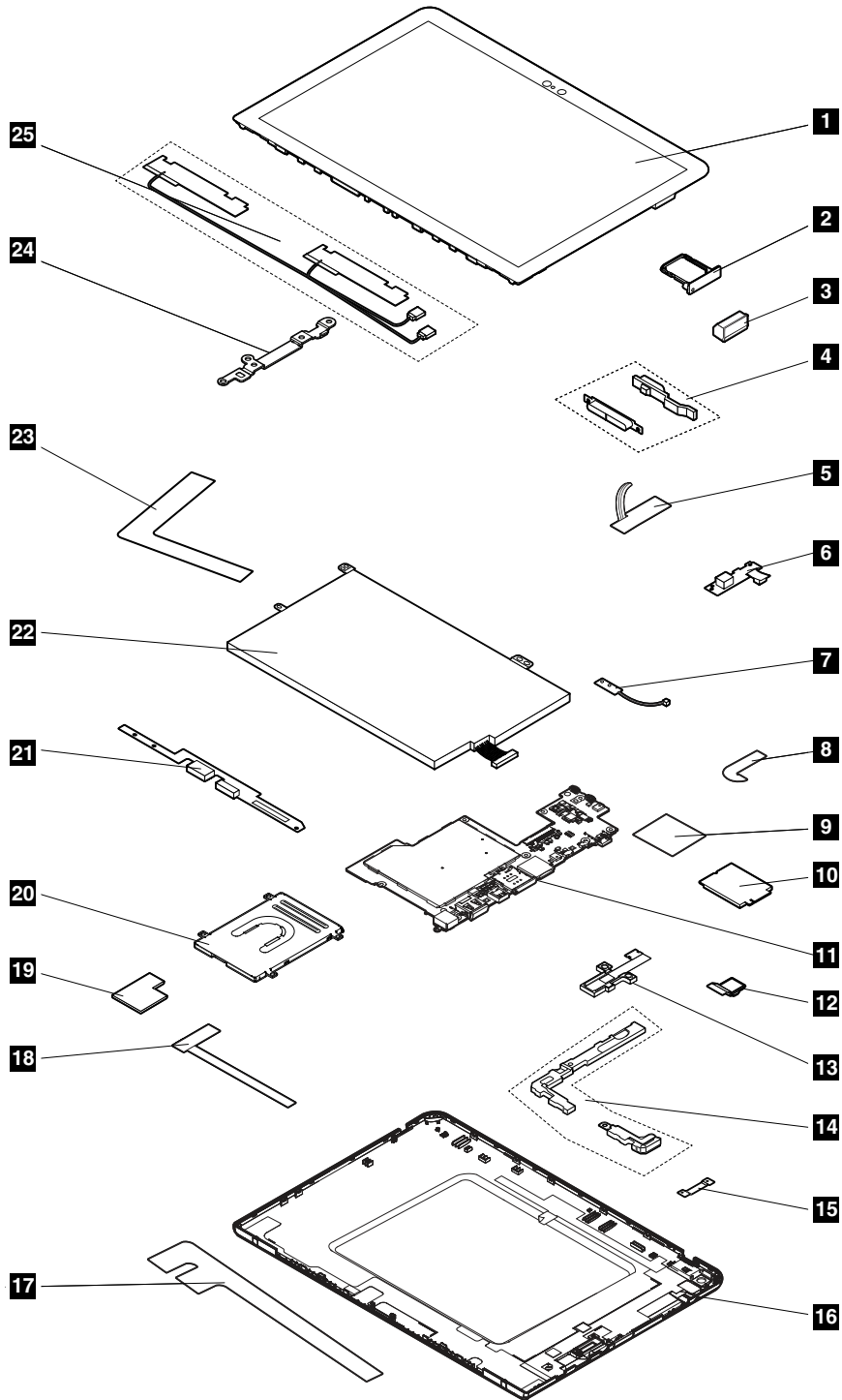
- **CRU statement for customers:**

You can resolve some problems with your product with a replacement part you can install yourself, called a “Customer Replaceable Unit” or “CRU.” Some CRUs are designated as self-service CRUs and others are designated as optional-service CRUs. *Installation of self-service CRUs is your responsibility. For optional-service CRUs, you can either install the CRU yourself or you can request that a Service Provider install the CRU according to the warranty service for your product.* If you intend on installing the CRU, Lenovo will ship the CRU to you. CRU information and replacement instructions are shipped with your product and are available from Lenovo at any time upon request. You can find a list of CRUs for your product in this *Hardware Maintenance Manual*. An electronic version of this manual can be found at <http://www.lenovo.com/support>. 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.

ThinkPad tablets contain the following types of CRUs:

- **Self-service CRUs:** Examples of these types of CRUs include the ac power adapter and power cord.

Major FRUs



No.	FRU	Self-service CRU	Optional-service CRU
1	LCD module	No	No
2	Micro-SIM-card tray	No	No
3	USB 3.0 connector cover	No	No
4	Power button and volume-control button	No	No
5	NFC antenna assembly	No	No
6	Front-facing camera module	No	No
7	LED cable	No	No
8	NFC cable	No	No
9	NFC card	No	No
10	Wireless WAN card	No	No
11	System board	No	No
12	Rear-facing camera module	No	No
13	Fingerprint-reader module	No	No
14	Speakers	No	No
15	Audio-connector bracket	No	No
16	Back cover assembly	No	No
17	LCD cable	No	No
18	Smart-card-reader cable	No	No
19	Smart-card-reader support card	No	No
20	Smart card reader	No	No
21	Docking support card	No	No
22	Built-in battery	No	No
23	Front-facing-camera-module cable	No	No
24	Micro-HDMI-connector/USB-connector/dc-in-connector bracket	No	No
25	Wireless-WAN antenna assembly	No	No

Miscellaneous kits and other parts

Table 3. Miscellaneous kits

FRU descriptions	Self-service CRU	Optional-service CRU
Label kit	No	No
Screw kit	No	No

Table 4. Other parts

Descriptions	Self-service CRU	Optional-service CRU
ac power adapter	Yes	No
Power cord	Yes	No
ThinkPad Pen Pro*	Yes	No

Table 4. Other parts (continued)

Descriptions	Self-service CRU	Optional-service CRU
ThinkPad 10 Gen 2 Ultrabook™ Keyboard*	Yes	No
ThinkPad 10 Quickshot Cover*	Yes	No
Pen holder*	Yes	No

* Available on some models

Looking up FRU information

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

Chapter 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 <http://www.lenovo.com/support>. 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 ThinkPad tablet, 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.

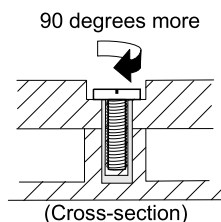
Do the following when you service this machine:

- Keep the screw kit in your tool bag. For the part number of the screw kit, go to <http://www.lenovo.com/serviceparts-lookup>.
- It is recommended to use new screws.
- It is recommended to use each screw only once.

Tighten screws as follows:

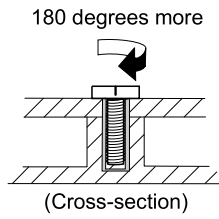
- **Plastic to plastic**

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.



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:

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

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 <http://www.lenovo.com/support>. 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 tablet 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 43.
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 tablet, 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 tablet until you have made sure that all screws, springs, and other small parts are in place and none are loose inside the tablet. Verify this by shaking the tablet 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 tablet

Before you service this tablet, do the following:

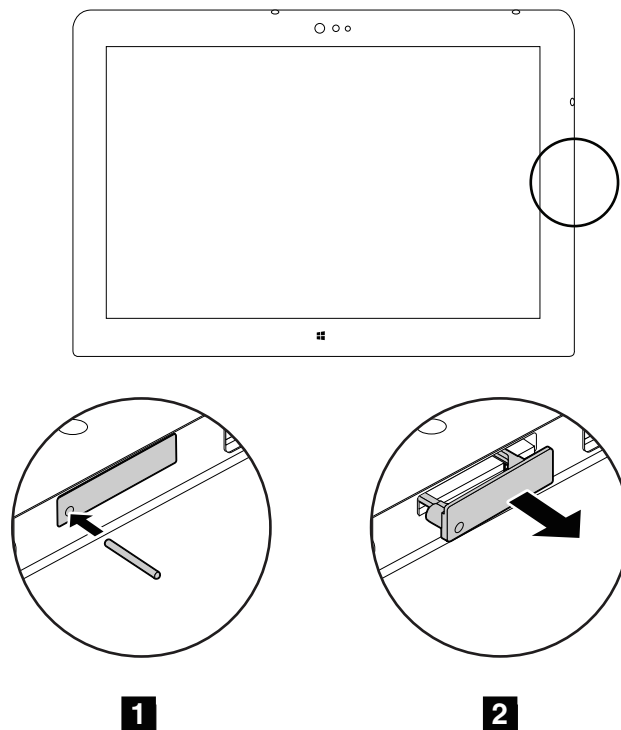
- **Disabling the built-in battery**

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

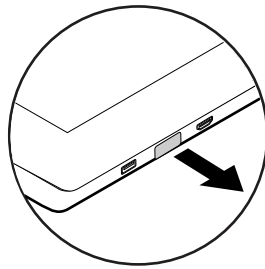
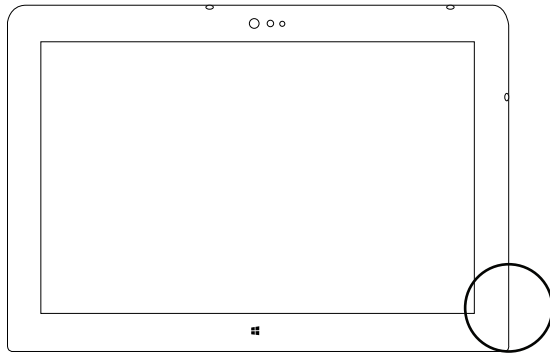
1. Remove the ac power adapter and all the external devices.
2. Restart the tablet. Immediately press and hold the volume-up button until the ThinkPad Tablet Setup program starts.
3. Tap **Config** → **Power** to display the **Power** menu items.
4. Tap **Enter** next to the **Disable Built-in Battery** item.
5. A confirmation message is displayed. Tap **Yes** to disable the built-in battery and to turn off the tablet. Wait three to five minutes to let the tablet cool.

- **Removing the micro SIM card and the micro-SIM-card tray**

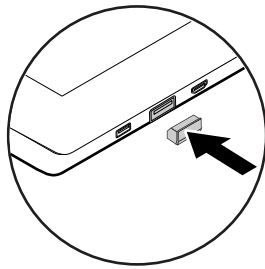
If the tablet you are servicing has a micro Subscriber Identity Module card (micro SIM card) installed, remove the micro SIM card.



- **Removing the USB 3.0 connector cover**



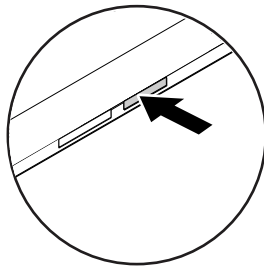
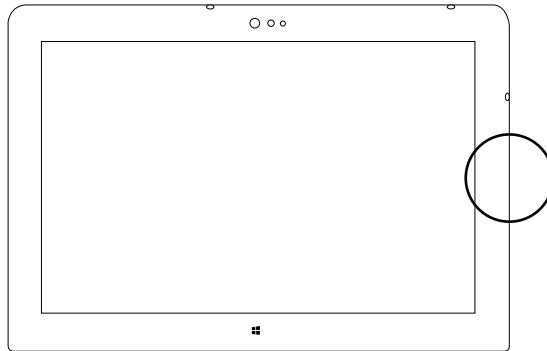
1



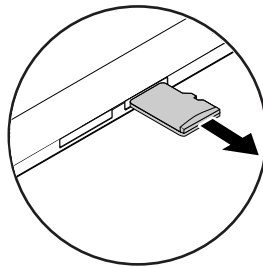
2

- **Removing the micro SD card**

If the tablet you are servicing has a micro SD card installed, remove the micro SD card before servicing.



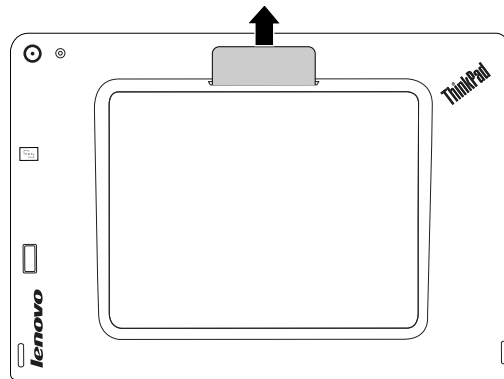
1



2

- **Removing the smart card**

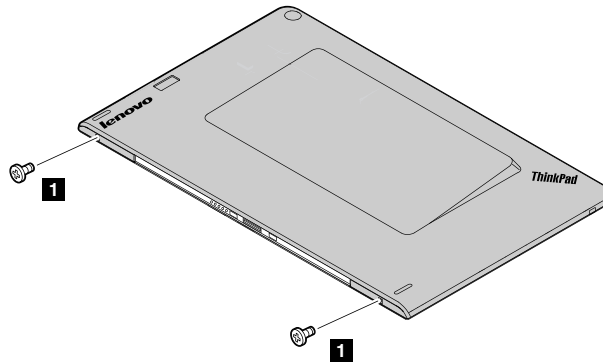
The smart card reader is only available on some models. If the tablet you are servicing has a smart card installed in the smart card reader, remove the smart card before servicing.



1010 Back cover assembly

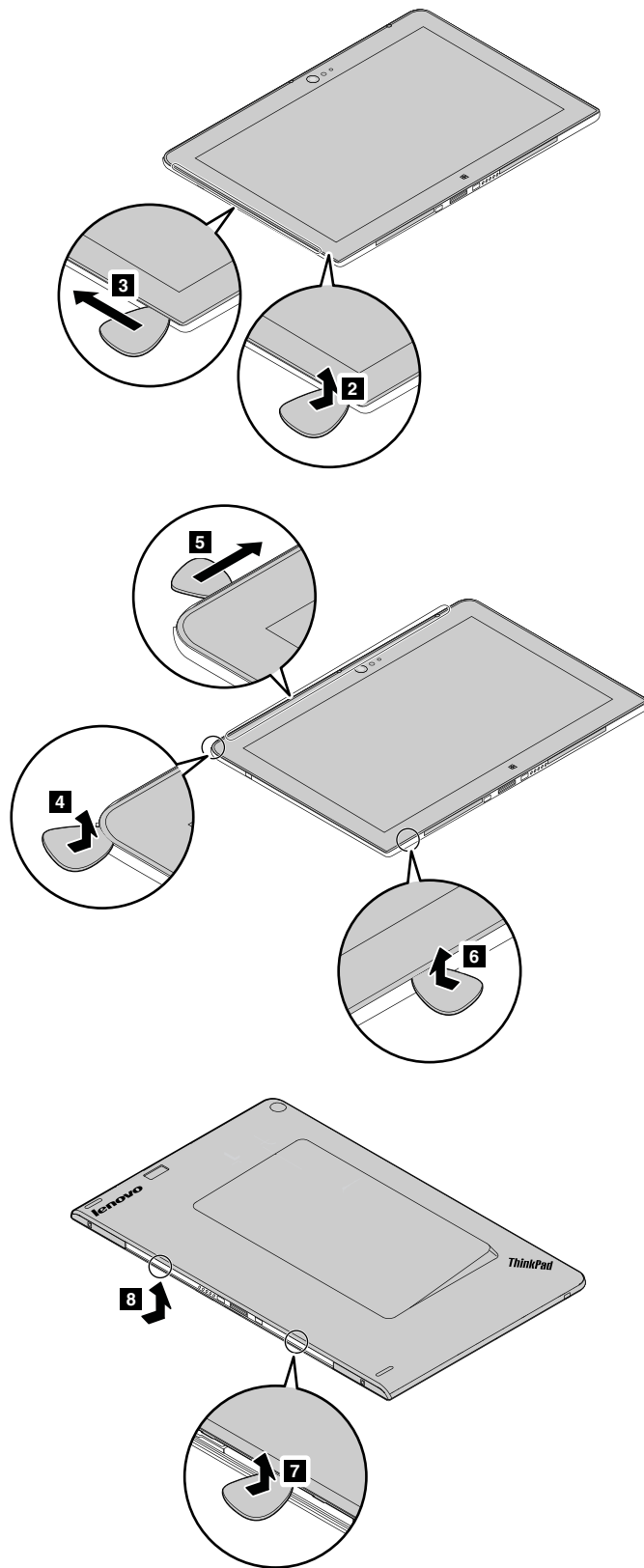
Before you start, follow the instructions in “Before servicing the tablet” on page 46.

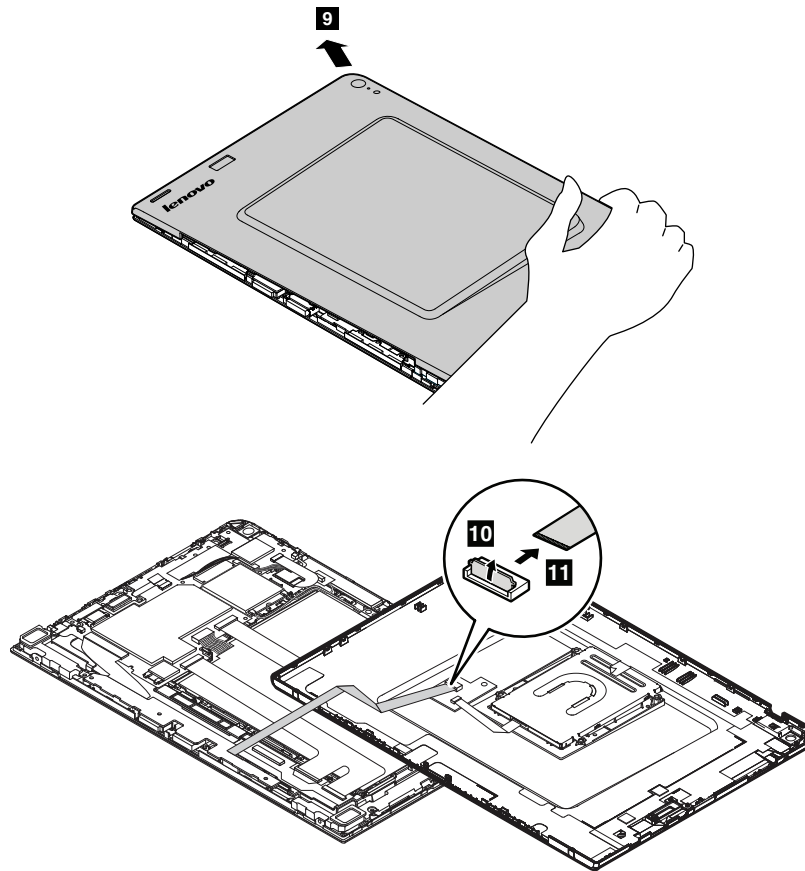
Note: The tablet you are servicing might look slightly different from the following illustrations.



Step	Screw (quantity)	Color	Torque
1	M1.6 × 4 mm, flat-head, nylon-coated (2)	Silver	0.098 Nm (1.00 kgf-cm)

Attention: Do not insert the hook-releasing tool into the hook hole area of the USB door. Otherwise, the hook will be deformed.





Notes:

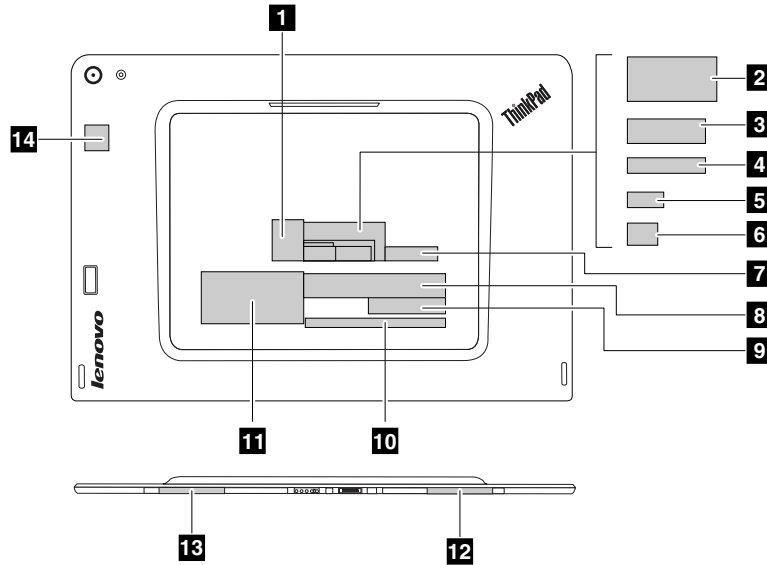
- If the tablet you are servicing does not have the smart-card-reader cable, skip step **10** and step **11**.
- Do not close the connector flip before inserting the cable.
- When installing the cable, ensure that the connector is attached firmly.

Applying labels to the back cover assembly:

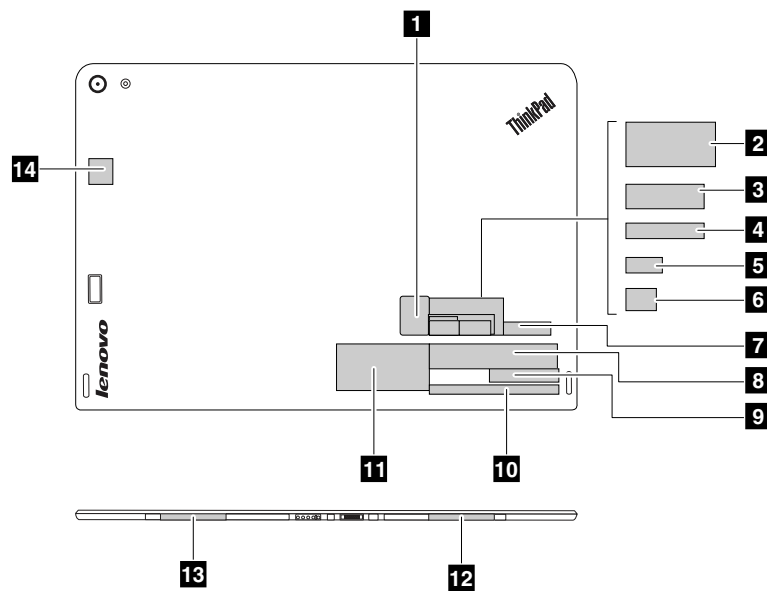
The new back cover assembly is shipped with a kit containing labels of several kinds. Apply those labels when you replace the back cover assembly. For the labels that are not shipped with the new back cover assembly, peel them off from the old back cover assembly, and then adhere them to the new one.

Note: If the Federal Communications Commission (FCC) label is attached to a part that is replaced, return the old part with the label attached to the customer, or provide a letter to the customer stating what the label was originally on the tablet and what the label part number, serial number, and product key were.

For models with the smart-card reader:



For models without the smart-card reader:



1 Wechat label

3 BIS label

2 China 3G label

4 Homo label

- 5** ICASA label
- 7** CECP label
- 9** CE label
- 11** Asset tag label
- 13** CoO label

- 6** SIRIM/Poster
- 8** GEO label
- 10** FCC/IC label
- 12** SN label
- 14** NFC label

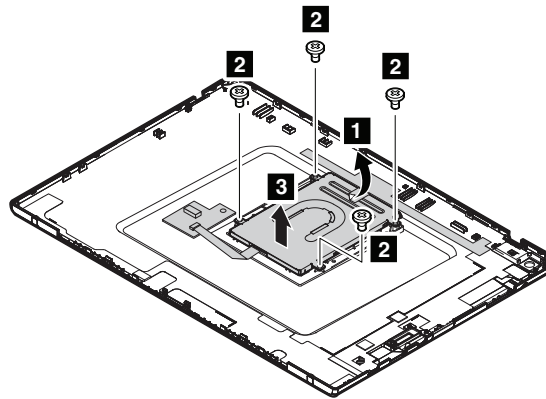
1020 Smart card reader, smart-card-reader support card, and smart-card-reader cable

The smart card reader, smart-card-reader support card, and smart-card-reader cable are only available on some models.

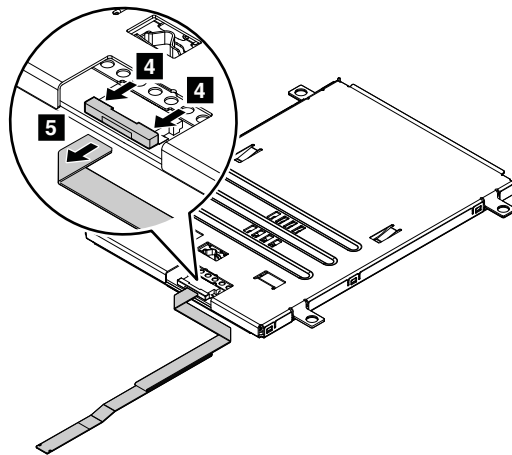
Before you start, do the following:

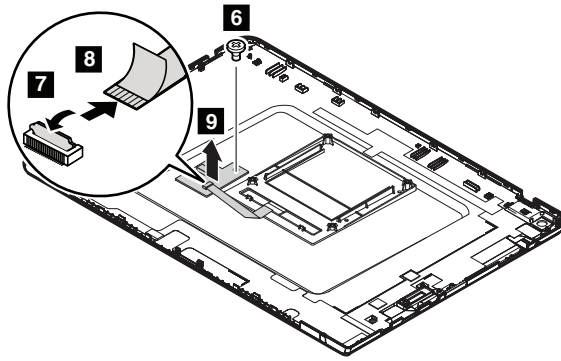
1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.

Removal steps of the smart card reader, smart-card-reader support card, and smart-card-reader cable



Step	Screw (quantity)	Color	Torque
2	M1.6 × 2.0 mm, flat-head, nylon-coated (4)	Silver	0.098 Nm (1.00 kgf-cm)





Notes:

- Do not close the connector flips before inserting the cable.
- When installing the cable, ensure that the connectors are attached firmly.

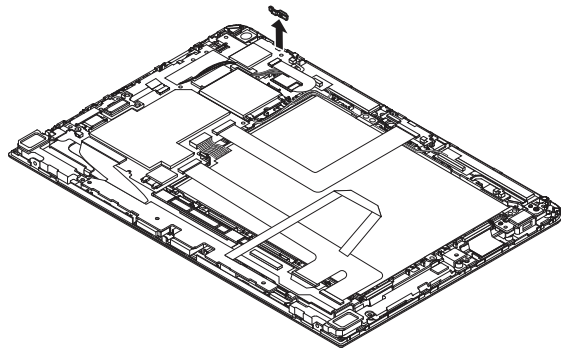
Step	Screw (quantity)	Color	Torque
6	M1.6 × 2.0 mm, flat-head, nylon-coated (1)	Silver	0.098 Nm (1.00 kgf-cm)

1030 Power button and volume-control button

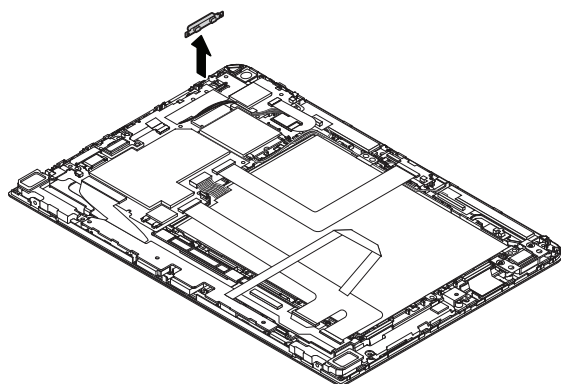
Before you start, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.

Removal step of the power button



Removal step of the volume-control button

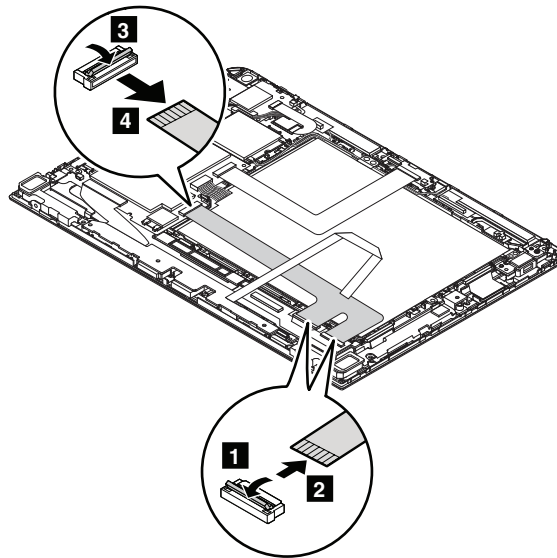


1040 LCD cable

Before you start, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.
3. Remove the connector of the built-in battery from the system board. See step 1 in “1050 Built-in battery” on page 54.

Removal steps of the LCD cable



Notes:

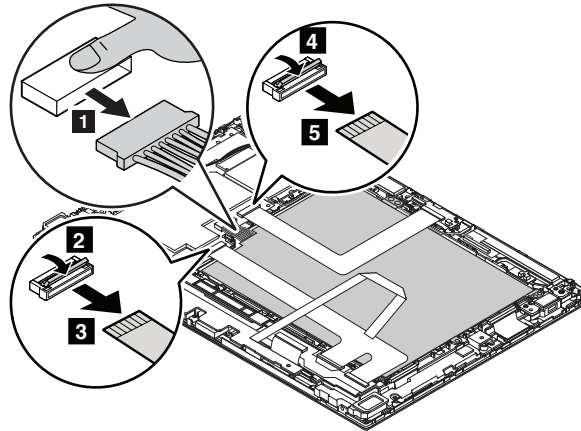
- Do not close the connector flips before inserting the cable.
- When installing the cable, ensure that the connectors are attached firmly.

1050 Built-in battery

Before you start, do the following:

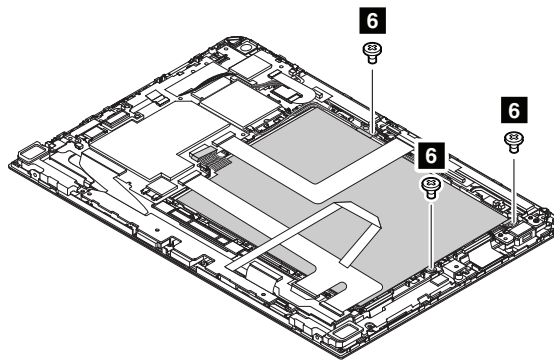
1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.

Removal steps of the built-in battery



Notes:

- Do not close the connector flips before inserting the cable.
- When installing, ensure that the cables are not twisted or subject to any tension, and ensure that the connectors are attached firmly.



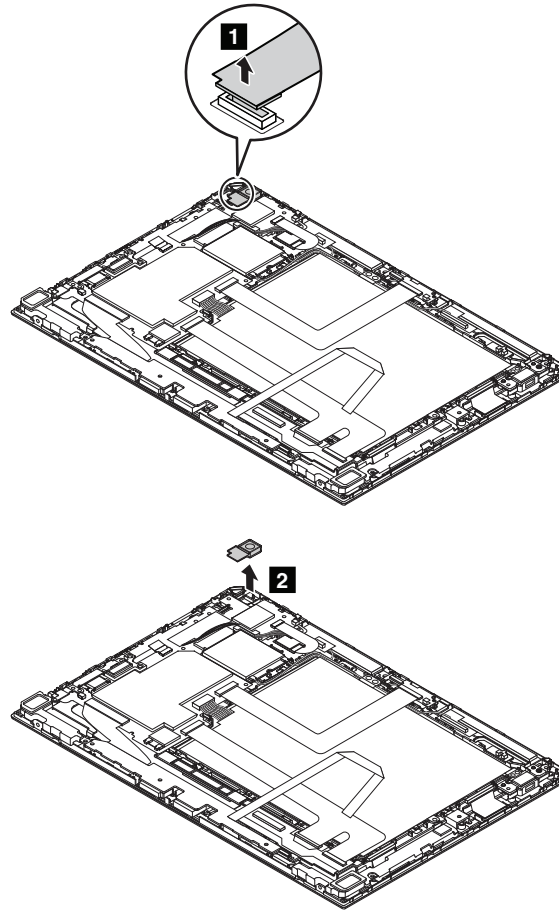
Step	Screw (quantity)	Color	Torque
6	M1.6 × 2.0 mm, flat-head, nylon-coated (3)	Black	0.098 Nm (1.00 kgf-cm)

1060 Rear-facing camera module

Before you start, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.
3. Remove the connector of the built-in battery from the system board. See step 1 in “1050 Built-in battery” on page 54.

Removal steps of the rear-facing camera module



When installing: Ensure that the connector is attached firmly.

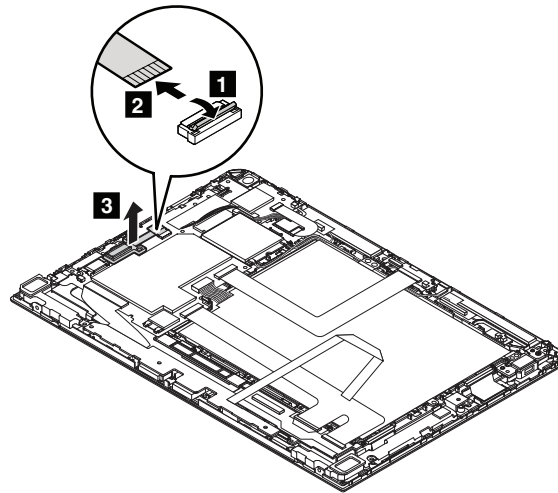
1070 Fingerprint-reader module

The fingerprint-reader module is only available on some models.

Before you start, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.
3. Remove the connector of the built-in battery from the system board. See step 1 in “1050 Built-in battery” on page 54.

Removal steps of the fingerprint-reader module



Notes:

- Do not close the connector flip before inserting the cable.
- When installing the cable, ensure that the connector is attached firmly.

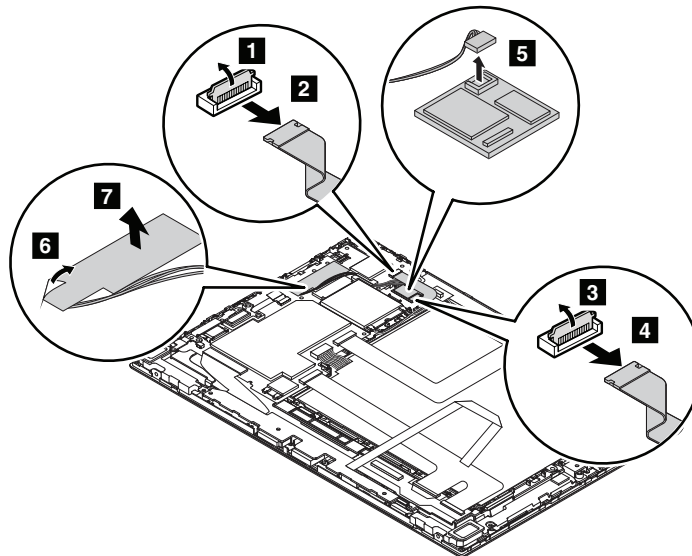
1080 NFC card, NFC cable, and NFC antenna assembly

The near field communication (NFC) card, NFC cable, and NFC antenna assembly are only available on some models.

Before you start, do the following:

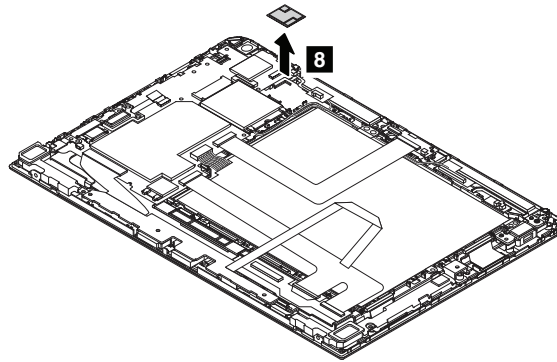
1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.
3. Remove the connector of the built-in battery from the system board. See step 1 in “1050 Built-in battery” on page 54.

Removal steps of the NFC card, NFC cable, and NFC antenna assembly



Notes:

- Do not close the connector flips before inserting the NFC cable.
- When installing the cable and the antenna assembly, ensure that the connectors are attached firmly.

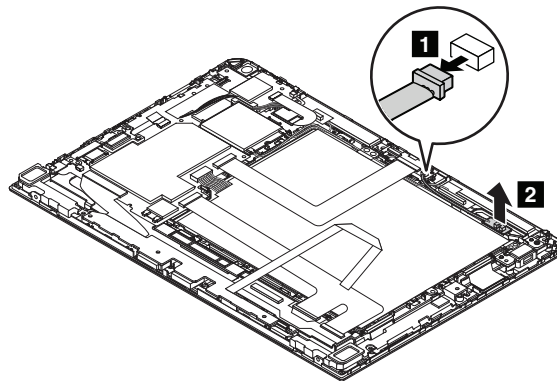


1090 LED cable

Before you start, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.
3. Remove the connector of the built-in battery from the system board. See step 1 in “1050 Built-in battery” on page 54.

Removal steps of the LED cable



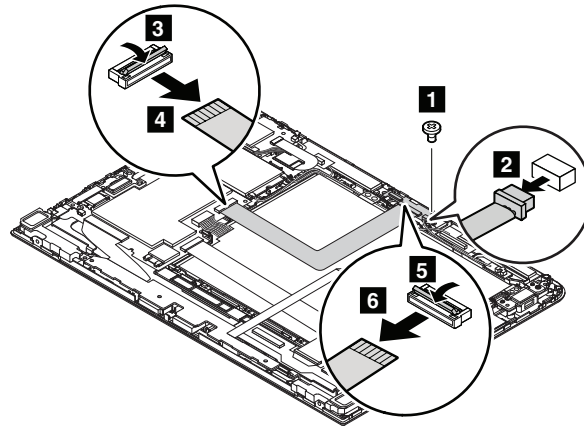
When installing: Ensure that the connector is attached firmly.

1100 Front-facing camera module and front-facing-camera-module cable

Before you start, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.
3. Remove the connector of the built-in battery from the system board. See step 1 in “1050 Built-in battery” on page 54.

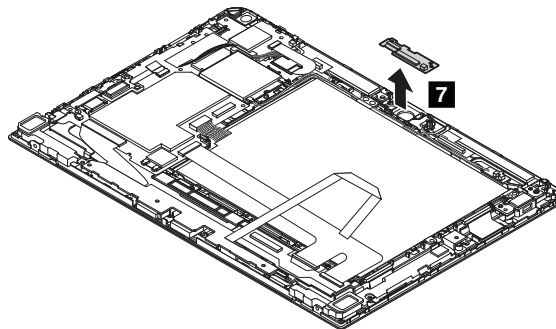
Removal steps of the front-facing camera module and front-facing-camera-module cable



Notes:

- Do not close the connector flips before inserting the cable.
- When installing the cable, ensure that the connectors are attached firmly.

Step	Screw (quantity)	Color	Torque
3	M1.6 × 3.5 mm, flat-head, nylon-coated (1)	Black	0.098 Nm (1.00 kgf-cm)



1110 Wireless WAN card

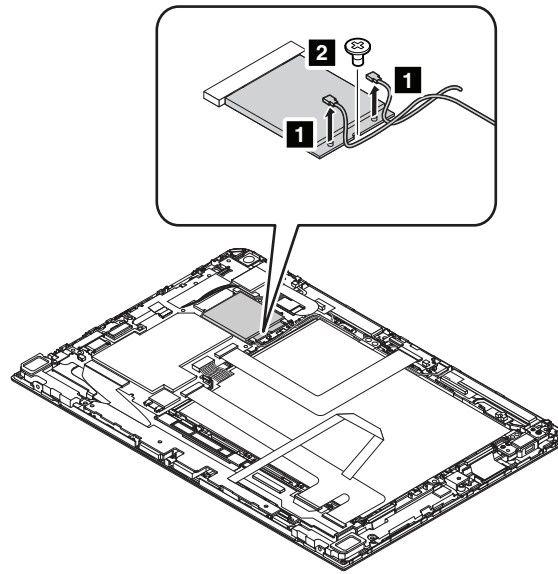
The wireless wide area network (WAN) card is only available on some models.

Before you start, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.
3. Remove the connector of the built-in battery from the system board. See step 1 in “1050 Built-in battery” on page 54.

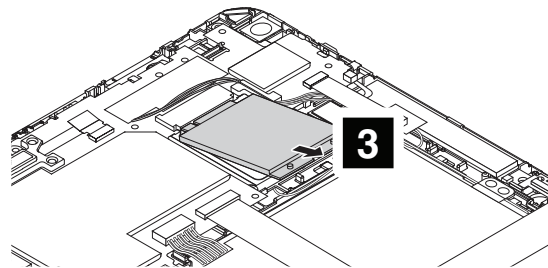
Removal steps of the wireless WAN card

Unplug the connectors by using the antenna radio frequency (RF) connector removal tool or gently pick up the connectors with your fingers.



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.

Step	Screw (quantity)	Color	Torque
2	M1.6 × 2.0 mm, flat-head, nylon-coated (1)	Silver	0.098 Nm (1.00 kgf-cm)

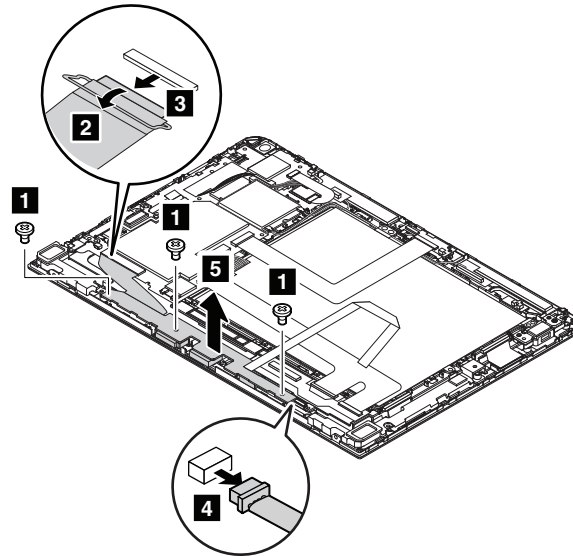


1120 Docking support card

Before you start, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.
3. Remove the connector of the built-in battery from the system board. See step 1 in “1050 Built-in battery” on page 54.

Removal steps of the docking support card



Step	Screw (quantity)	Color	Torque
1	M1.6 × 4.0 mm, flat-head, nylon-coated (3)	Silver	0.098 Nm (1.00 kgf-cm)

Notes:

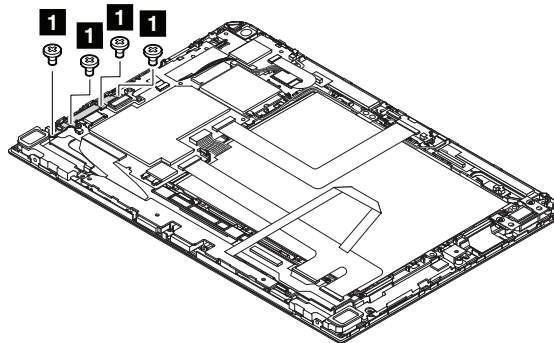
- Do not close the connector flip before inserting the cable.
- When installing the cable, ensure that the connector is attached firmly.

1130 Micro-HDMI-connector/USB-connector/dc-in-connector bracket

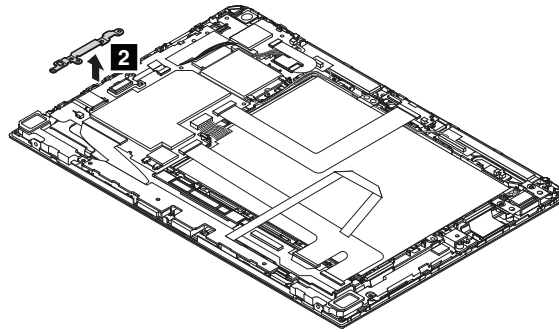
Before you start, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.
3. Remove the connector of the built-in battery from the system board. See step 1 in “1050 Built-in battery” on page 54.

Removal steps of the micro-HDMI-connector/USB-connector/dc-in-connector bracket



Step	Screw (quantity)	Color	Torque
1	M1.6 × 4.0 mm, flat-head, nylon-coated (4)	Silver	0.098 Nm (1.00 kgf-cm)

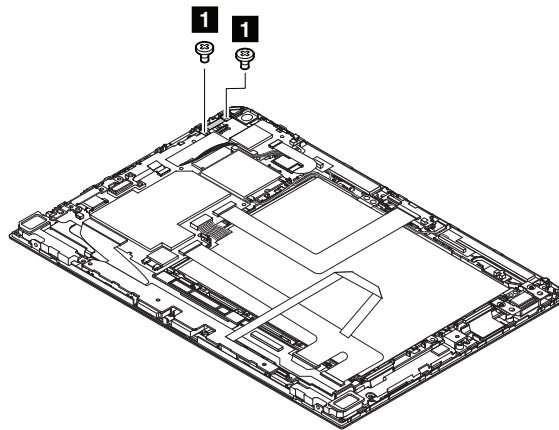


1150 Audio-connector bracket

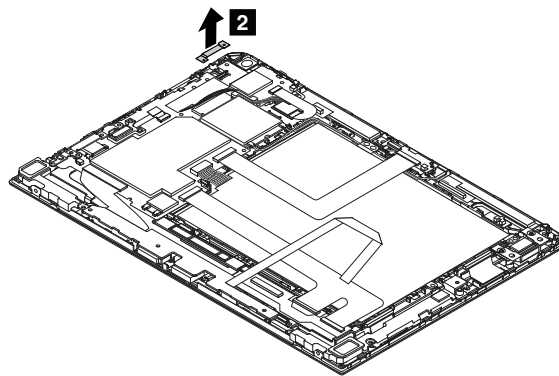
Before you start, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the back cover assembly. See “1010 Back cover assembly” on page 48.

Removal steps of the audio-connector bracket



Step	Screw (quantity)	Color	Torque
1	M1.6 × 3.5 mm, flat-head, nylon-coated (2)	Black	0.098 Nm (1.00 kgf-cm)

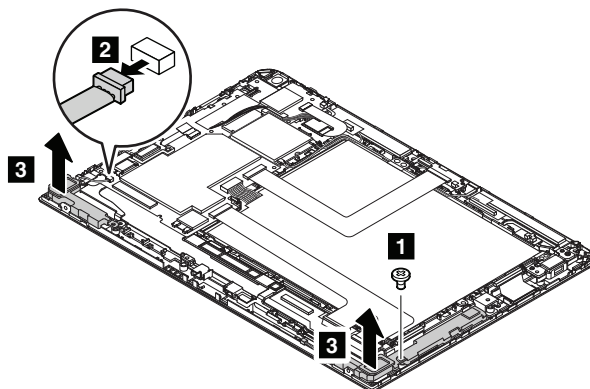


1160 Speakers

Before you start, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the following FRUs:
 - “1010 Back cover assembly” on page 48
 - “1120 Docking support card” on page 60

Removal steps of the speakers



When installing: Ensure that the connector is attached firmly.

Step	Screw (quantity)	Color	Torque
1	M1.6 × 3.5 mm, flat-head, nylon-coated (1)	Black	0.098 Nm (1.00 kgf-cm)

1180 Wireless-WAN antenna assembly

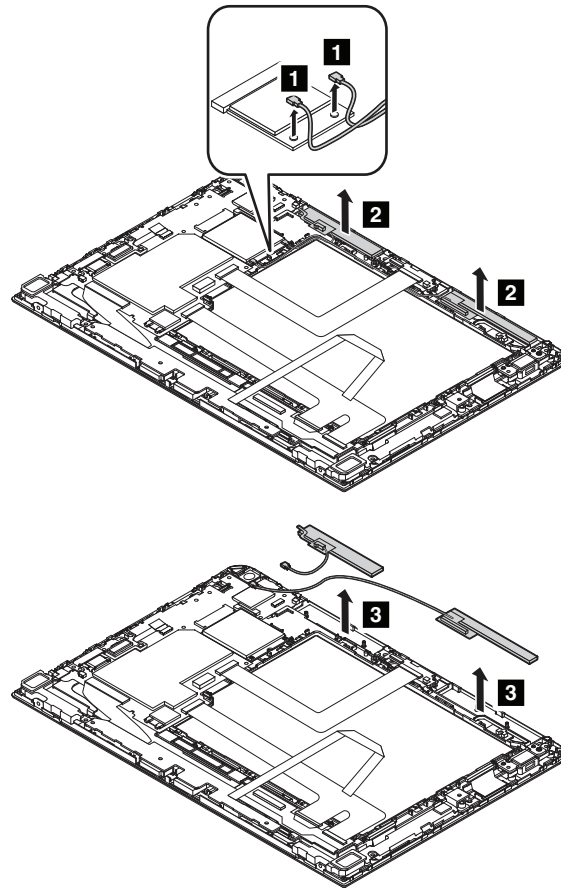
The wireless-WAN antenna assembly is only available on some models.

Before you start, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the following FRUs:
 - “1010 Back cover assembly” on page 48
 - “1050 Built-in battery” on page 54
 - “1080 NFC card, NFC cable, and NFC antenna assembly” on page 57

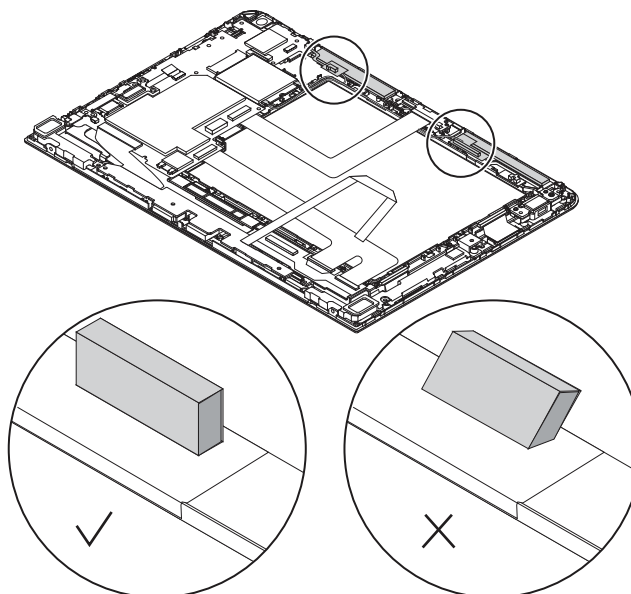
Removal steps of the wireless-WAN antenna assembly

Unplug the connectors by using the antenna radio frequency (RF) connector removal tool or gently pick up the connectors with your fingers.



When installing:

- Ensure that the connectors are attached firmly.
- Ensure that the cables are not twisted and not subject to any tension. Tension could cause the cables to be damaged by the cable guides, or a wire to be broken.
- Ensure that the sponges do not tilt.

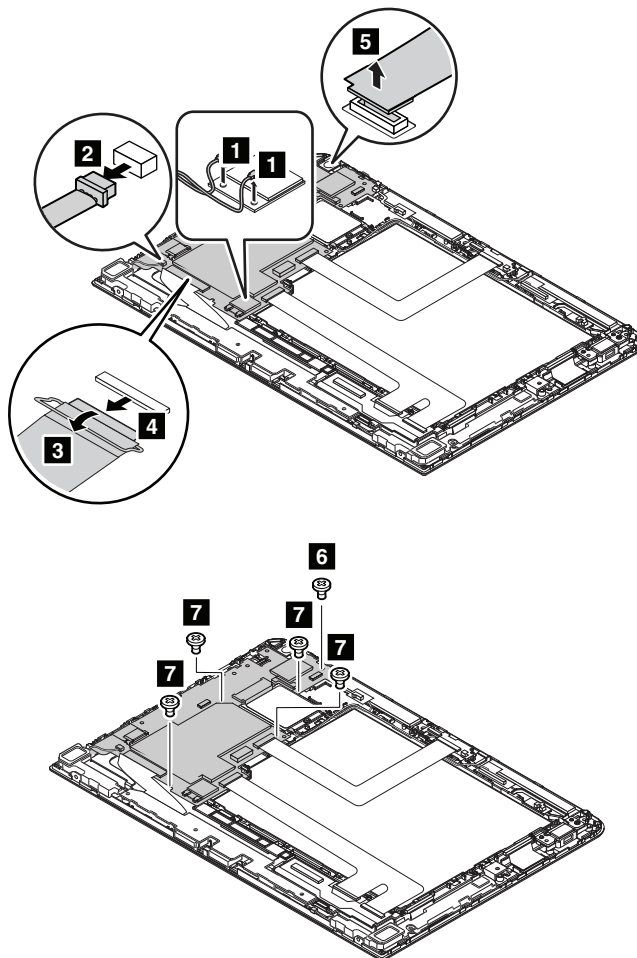


1190 System board

Before you start, do the following:

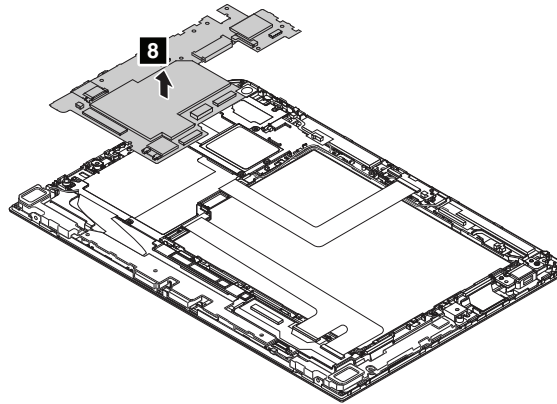
1. Follow the instructions in “Before servicing the tablet” on page 46.
2. For access, remove the following FRUs:
 - “1010 Back cover assembly” on page 48
 - “1050 Built-in battery” on page 54
 - “1070 Fingerprint-reader module” on page 56
 - “1110 Wireless WAN card” on page 59
 - “1080 NFC card, NFC cable, and NFC antenna assembly” on page 57
 - “1130 Micro-HDMI-connector/USB-connector/dc-in-connector bracket” on page 61
 - “1150 Audio-connector bracket” on page 62

Removal steps of the system board



When installing: Ensure that the connectors are attached firmly.

Step	Screw (quantity)	Color	Torque
6	M1.6 × 3.5 mm, flat-head, nylon-coated (1)	Black	0.098 Nm (1.00 kgf-cm)
7	M1.6 × 2.0 mm, flat-head, nylon-coated (4)	Black	0.098 Nm (1.00 kgf-cm)



Note: After the replacement, do the following:

- Initialize the settings on the new system board by doing the following:
 1. Remove the ac power adapter and all the external devices.
 2. Restart the tablet. Immediately press and hold the volume-up button until the ThinkPad Tablet Setup program starts.
 3. Tap **Restart** → **Load Setup Defaults** → **Exit Saving Changes**.
- Calibrate the accelerometer using the sensor calibration tool. To download the tool and the instruction, do the following:

Note: Service account and password are required for downloading the tool and the instruction.

1. Go to <http://support.lenovo.com/us/en/documents/HT103119> then follow the instructions on the screen.
 2. Locate the sensor calibration tool, then you can download the tool or the instruction by selecting the corresponding file name.
- Reset the NVRAM (Non-Volatile Random Access Memory). To download the tool and the instruction, do the following:

Note: Service account and password are required for downloading the tool and the instruction.

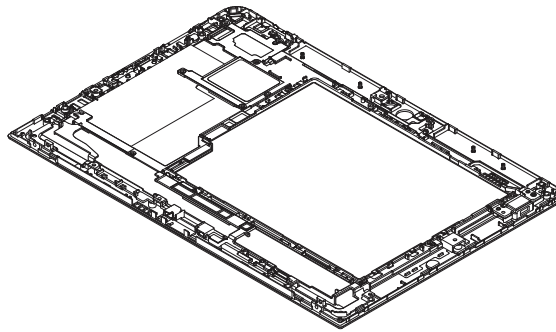
1. Go to <http://support.lenovo.com/us/en/documents/HT100165> and then follow the instructions on the screen.
2. Locate the NVRAM update tool, then download the tool or the instruction by selecting the corresponding file name.

1200 LCD module

To replace the LCD module, do the following:

1. Follow the instructions in “Before servicing the tablet” on page 46.
2. Remove the following FRUs:
 - “1010 Back cover assembly” on page 48

- “1020 Smart card reader, smart-card-reader support card, and smart-card-reader cable” on page 52
- “1030 Power button and volume-control button” on page 53
- “1040 LCD cable” on page 54
- “1050 Built-in battery” on page 54
- “1060 Rear-facing camera module” on page 55
- “1070 Fingerprint-reader module” on page 56
- “1080 NFC card, NFC cable, and NFC antenna assembly” on page 57
- “1090 LED cable” on page 58
- “1100 Front-facing camera module and front-facing-camera-module cable” on page 58
- “1110 Wireless WAN card” on page 59
- “1120 Docking support card” on page 60
- “1130 Micro-HDMI-connector/USB-connector/dc-in-connector bracket” on page 61
- “1150 Audio-connector bracket” on page 62
- “1160 Speakers” on page 62
- “1180 Wireless-WAN antenna assembly” on page 63
- “1190 System board” on page 65



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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 or acronym	Full Term
3G	third 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
POST	power-on self-test

Abbreviation or acronym	Full Term
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

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