



CTL Chromebook NL72

Self-Service Repair Manual

ENGLISH



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Before you start

Safety Procedures

This repair manual contains step-by-step procedures on how to remove and re-install components from the computer. Use the following safety guidelines to ensure your personal safety.

Before you start any of the procedures in this chapter, make sure to read the following safety guidelines and the respective instructions within the chapter.



CAUTION!

- Turn off your computer and disconnect all power sources before opening the computer cover or panels.
- To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface at the same time as touching a connector on the back of the computer.
- Take off any metal objects on your arms or fingers such as bracelets, rings or watches and make sure your hands are completely dry. Even if your unit is unplugged, there may still be some remaining electric charge.
- If a component does not come out easily, do not forcefully remove it. First check for unremoved screws. Also, check that you are removing it correctly and that no wires or other parts are in the way.
- When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs/flaps; if you are disconnecting this type of cable, open the locking tabs before you disconnect the cable.

Recommended Equipment

The following equipment is recommended to perform the proper repair procedures:

- Wrist grounding strap and conductive mat
- Phillips screwdriver #0 and #1
- Small flathead screwdriver
- Plastic tweezers
- Flat plastic pry

Self-Repair Capabilities

This chapter outlines the limited self-repair capabilities of the product.

Prior to performing self-repair, familiarize yourself with the *Safety Guidelines* and *Recommended Equipment* sections first. Depending on the Chromebook model, the following key components are eligible for self-repair (if applicable):

- Panel
- Battery pack
- WLAN module
- LTE module
- Camera
- Mainboard
- Daughterboard

If a particular part or component is listed, then it is eligible for self-repair. If it is not described in the “Disassembly Procedures” section, the component is not self-repairable. Please contact CTL with any questions.

NOTE:

Do not attempt to replace other components not listed above.

For replacement parts, only use CTL certified components in order to ensure optimum system performance, stability, and reliability of the product.

Any damage to the product that occurs during self repair, or which has occurred as a result of a careless or unsuccessful self-repair attempt, is not covered by the standard product warranty.

Software Recovery

This product has embedded software recovery tools which can be used to either perform a partial or full software recovery, but also to create a *Factory Default* recovery media. For more information about the software recovery options, how to perform a software recovery, or creating a *Factory Default* recovery media, please refer to the chapter "Recovery," which is available in the User Manual of the product.

In the event of not being able to create a Factory Default recovery media, it is possible to obtain a copy of the recovery media through CTL Customer Service. This is not a free of charge service.

Troubleshooting

This chapter shows you how to deal with common system problems. Read it before calling a technician if a problem occurs. Solutions to more serious problems require opening up the computer.

Create the Recovery USB device

Before you can recover your Chromebook you must first create the recovery USB device


Install the Chromebook Recovery Utility app

1. Install the Chromebook Recovery Utility app on your Chromebook or on your Windows or Mac computer.
2. Open the app.

Identify your Chromebook

1. Two options:
 - Type in the model number of the Chromebook (ENGUARDE C3A for the CTL Chromebook) you want to recover to get the correct recovery image. You can find

that number at the bottom of the error message on your Chromebook or on the recovery screen in the app. It downloads the large file each time you create an image. For multiple USB drives use the next step.

- Download the CTL Chromebook image file. Click the "gear"  at the top right in the Chromebook Recovery Utility and select "Use Local Image".
2. Click the **Continue** button.

Insert your USB flash drive or SD card

1. Insert your storage media into an open USB or SD Card port on your Chromebook or on your Windows or Mac computer. The tool will automatically detect the media.
2. Use the drop-down menu to select the appropriate storage media.
3. Click **Continue**.

Create a recovery image

Important: All of the data on the recovery media will be deleted if you continue.

1. Make sure the media you'd like to use for your recovery is listed.
2. Click the **Create now** button.

The tool will then create the recovery image on your selected media. Don't remove the flash drive or SD card while this is happening. After you see the message saying that your recovery media is ready, you may remove it from your Chromebook or computer.

Recover your Chromebook

When your Chromebook's operating system (OS) isn't working properly, you can recover it by rebuilding the OS, which replaces the previous version.

NOTE:

If you're using your Chromebook at work or school, ask your administrator for help. Administrators can get help by contacting Google [support](#).

When to recover

You might want to recover if:

- You see this error message: "Chrome OS is missing or damaged."
- You've tried other troubleshooting steps and nothing has fixed your issue.

- You've asked the experts in the Google [support](#) center for help fixing your issue, and they recommend recovery.

What you need to get started

- The Chromebook with the "Chrome OS is missing or damaged" error.
- Another Chromebook, or a Windows or Mac computer with Chrome installed.
- A USB flash drive that can hold at least 8 GB, and that you don't mind erasing. If your Chromebook has an SD card slot, you can use an SD card instead. In order for a successful recovery, the recovery install needs to be loaded onto the USB or SD device prior to the recovery operation.

IMPORTANT:

Recovery permanently erases everything on your Chromebook's storage, including your downloaded files. If possible, back up your files before you recover your Chromebook.

What you need to do

Step 1: Try less invasive steps

If you can sign in to your Chromebook, try these steps first:

1. Turn your Chromebook off, then back on again.
2. If your Chromebook still has an error, reset to factory settings. If neither of those steps fix the error, continue to Step 2.

Step 2: Download a new copy of the OS

On the working computer (not the Chromebook with the error):

1. If you're using a Mac or Windows computer:
 - a. If you haven't done so, install Chrome.
 - b. Open Chrome.
 - c. Install the recovery [extension](https://chrome.google.com/webstore/detail/chromebook-recovery-utili/pocpnlppkickgojjlmhdmidojbmbodfm).
(<https://chrome.google.com/webstore/detail/chromebook-recovery-utili/pocpnlppkickgojjlmhdmidojbmbodfm>).
2. To open the recovery extension:
 - a. At the top right of your browser window, click *Extensions*.

- b. To launch the extension popup, click on the *Chromebook Recovery Utility* extension. If the extension popup doesn't automatically appear on your screen, make sure it's turned on.
3. Click *Get Started*.
4. Select a model from the list, or type in the model number of the Chromebook you want to recover. To find this number, look at the bottom of the error message on your Chromebook screen.
5. Click *Continue*.
6. Insert your USB flash drive or SD card into the computer.
7. In the dropdown menu, choose the USB flash drive or SD card you inserted.
8. Click *Continue*.
9. Click *Create Now*.
10. When you see a message stating that your recovery media is ready, remove the USB flash drive or SD card from the computer.

Step 3: Enter recovery mode

On the Chromebook with the error:

1. If you have anything connected to this Chromebook (such as a mouse or external hard drive), remove it.
2. Enter recovery mode:
 - Chromebook: Press and hold *Esc* + *Refresh*, then press *Power*. Let go of *Esc* then *Refresh*, then finally *Power*. When a message shows on the screen, let go of the other keys.
3. You'll see one of these messages:
 - "Chrome OS is missing or damaged. Please insert a recovery USB stick or SD card."
 - "Please insert a recovery USB stick or SD card."
4. Insert the USB flash drive or SD card that you used to create recovery media.

5. Follow the on-screen instructions.

Optional: Reuse your USB flash drive or SD card.

After recovering your Chromebook, you'll need to erase the recovery media if you want to reuse your USB flash drive or SD card to store other files.

To erase the recovery media:

1. On your computer, open *Chrome*.
2. At the top right, click *Extensions*.
3. To launch the extension popup, click on the *Chromebook Recovery Utility* extension.
4. In the extension popup, click *Settings*.
5. Click *Erase recovery media*.
6. From the dropdown menu, select the USB drive or SD card you'd like to erase.
7. Click *Continue*.
8. Make sure the storage device you used for recovery is listed.
9. Click *Erase Now*.
10. The tool will erase everything on your USB drive or SD card. When you see the message "Your recovery media has been erased," click *Done*.
11. Remove the USB flash drive or SD card from the computer.
12. Format the storage device using a tool provided by your operating system.

Fix problems with recovery

"An unexpected error has occurred"

1. Erase the storage device, then try recovery again.

2. Try using a different USB flash drive or SD card to recover. Some USB flash drives and SD cards don't work well with recovery.

If you're still having problems, contact CTL at 800-642-3087 or support@ctl.net

If you see the following message: *"Please remove all connected devices and start recovery."*

First, remove anything that's connected to your Chromebook, such as a mouse, SD card, or external hard drive. Then, follow the steps to enter recovery mode.

If you see the following message: *"The device you inserted does not contain Chrome OS."*

Make sure that you inserted the USB drive or SD card that you used to create recovery media.

If you're using the correct storage device, but still see this error, the storage device might not be working properly.

1. Erase the storage device, then try recovery again. Make sure to double check the model selection to match your device.
2. Try using a different USB flash drive or SD card to recover. Some USB flash drives and SD cards don't work well with recovery.

If you're still having problems, contact CTL at 800-642-3087 or support@ctl.net

"The security module on this device is not working."

First, ask our experts for help:

- If you use your Chromebook at work or school, contact your administrator. Administrators can contact Google support.
- Chat with experts on the Chromebook help forum.

If you're still having problems, contact CTL at 800-642-3087 or support@ctl.net

FRU Field Replaceable Unit List

Please contact CTL to obtain the part or replace your device.

Exploded Diagrams

Check for updates yourself

1. Turn on your Chromebook.
2. Connect your Chromebook to Wi-Fi.
3. At the bottom right, select the time.
4. Select *Settings*.
5. At the bottom of the left panel, select *About Chrome OS*.
6. Under *Google Chrome OS*, you'll find which version of the Chrome operating system your Chromebook uses.
7. Select *Check For Updates*.
8. If your Chromebook finds a software update, it will start to download automatically.
9. If your Chromebook is too far out of date it might report being up-to-date when it is not. You can use the recovery tool to roll out the newest revision via recovery.

Disassembly Procedures

WEEE Annex VII Component

These components are classified as requiring selective treatment:

- Battery pack
- WLAN module

- Touchpad module
- USB board
- Mainboard
- LCD panel

Pre-disassembly Instructions

Do the following prior to starting any maintenance procedures:

1. Place the system on a stable work surface.
2. Remove the power adapter from the USB Type-C port (A) as shown in Figure 1-1 or from the USB Type-C port (C) as shown in Figure 1-2.
3. Remove the microSD card from the microSD card slot (B) (Figure 1-2).
4. Remove all cables from the system.

Figure 1-1. Kensington lock, USB C and SIM card slot



Figure 1-2. microSD card, USB C, headphone jack and USB 3.0



Base Cover Removal

1. Remove the nine (9) screws from the base cover



2. Using your thumb and forefinger or plastic pry tool or spudger, carefully pry open the base cover starting at corners.

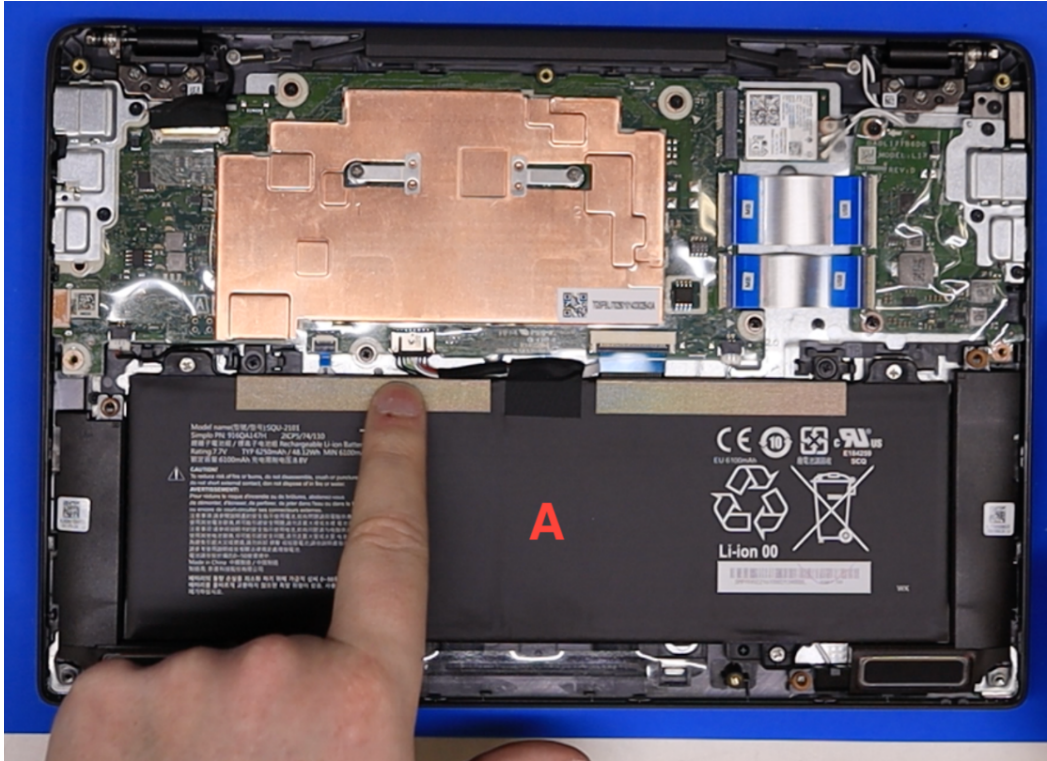


3. Lift the base cover.

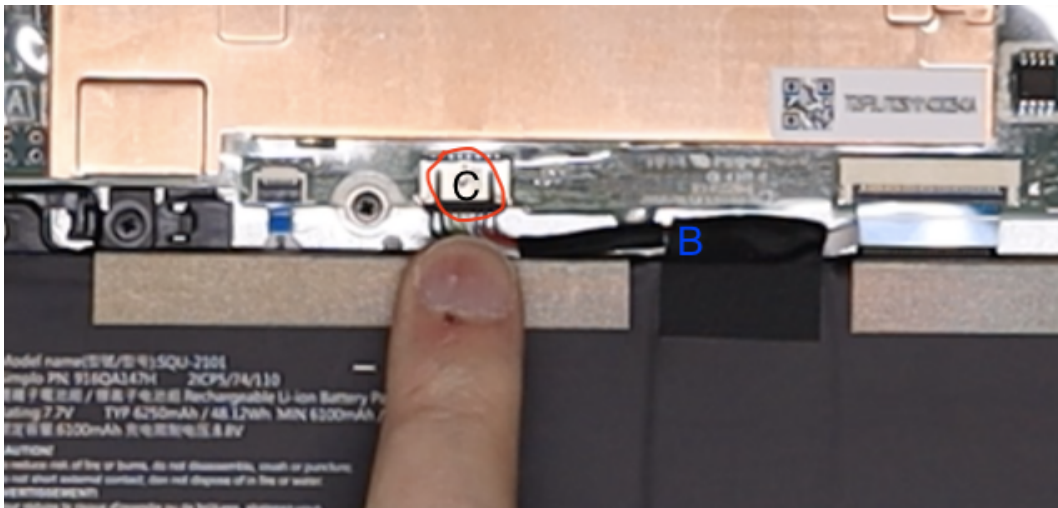
Battery Pack Removal

Prerequisite: *Base Cover Removal*

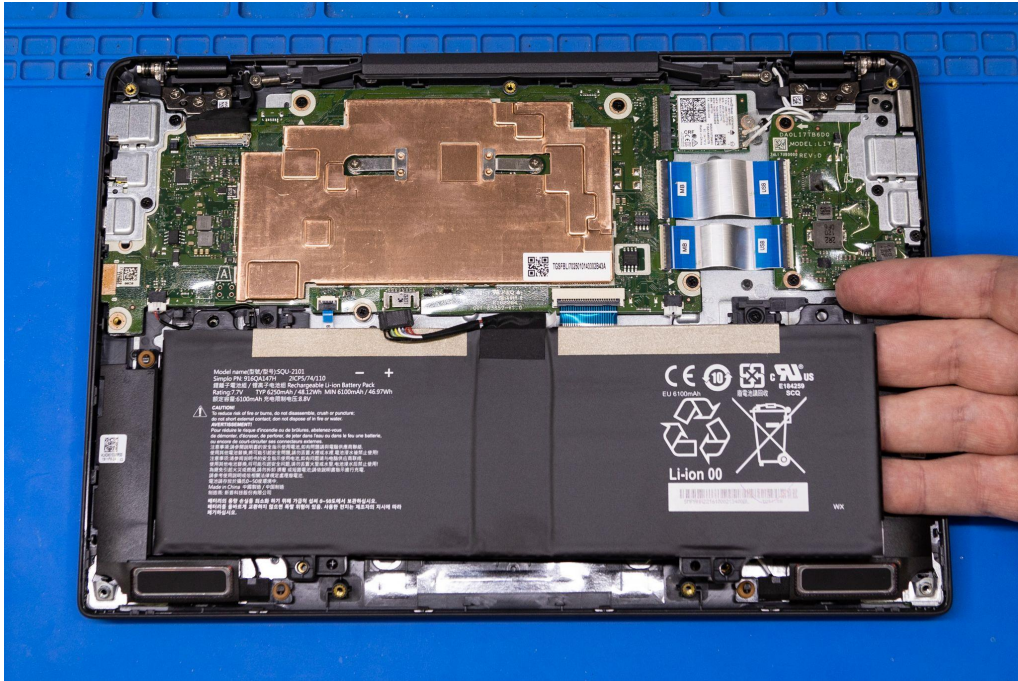
1. Locate the battery (A) on the bottom assembly



2. Disconnect the battery cable (B) from the mainboard connector C



3. Remove screws holding battery then remove the battery pack from the system



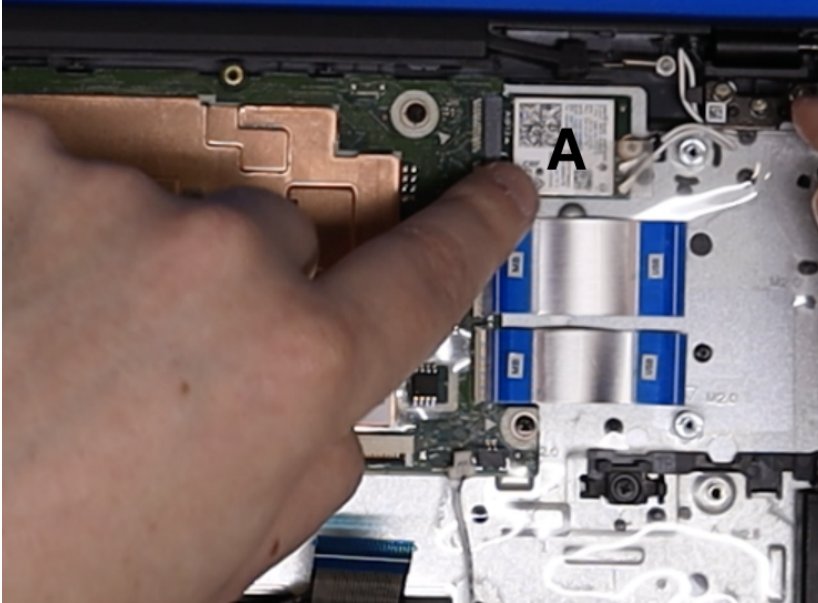
IMPORTANT

Follow local regulations for battery disposal

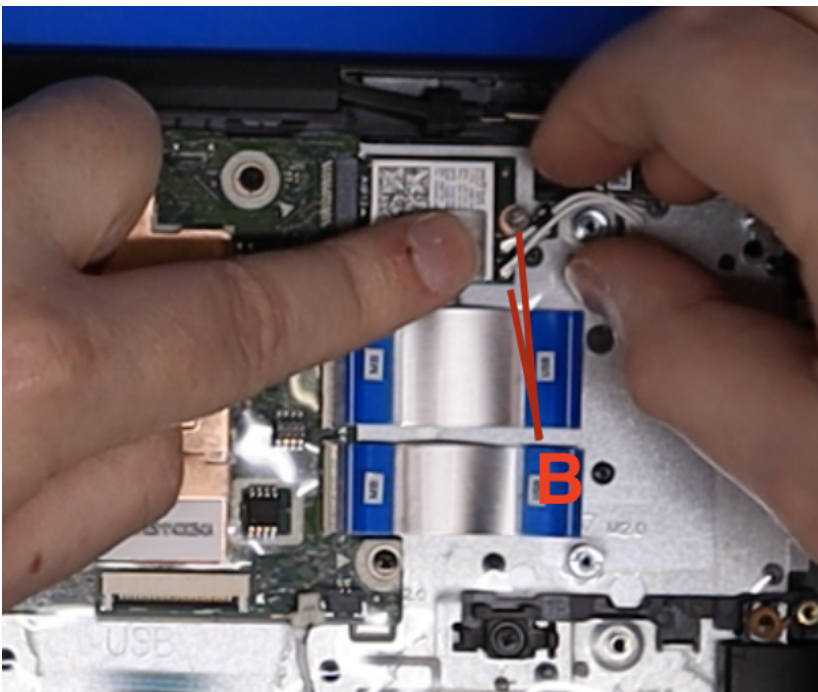
WLAN (Wireless Local Area Network) Module Removal

Prerequisite: *Battery Pack Removal*

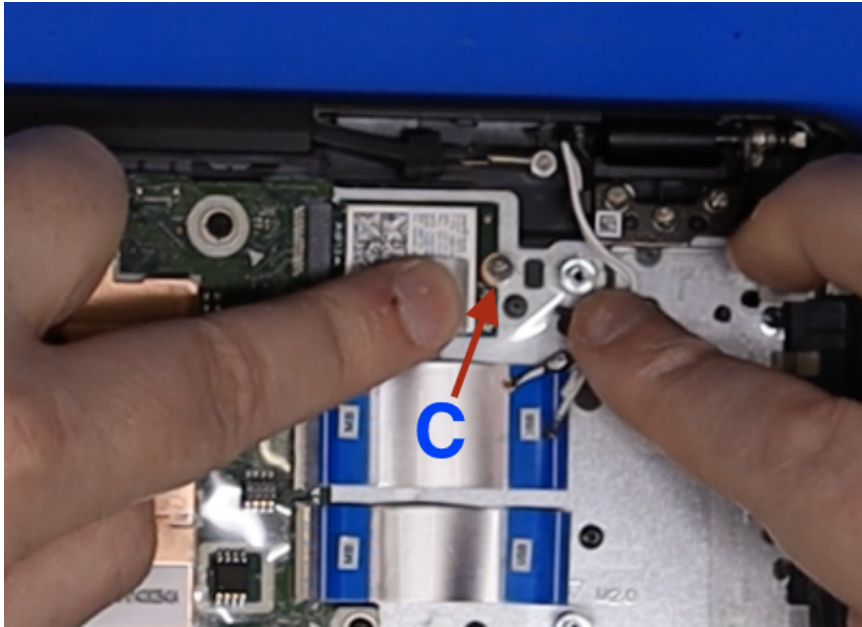
1. Locate the WLAN module (A) on the top assembly



2. Disconnect WLAN antennas cables (B) from the WLAN module connectors



3. Remove one (1) screw C securing the WLAN module in place

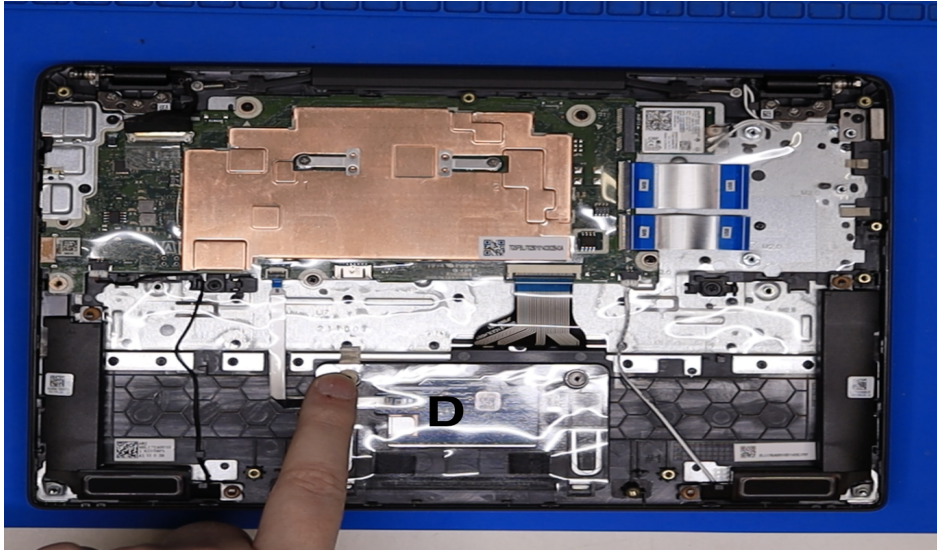


4. Remove the WLAN module (A) from the mainboard connector (D)

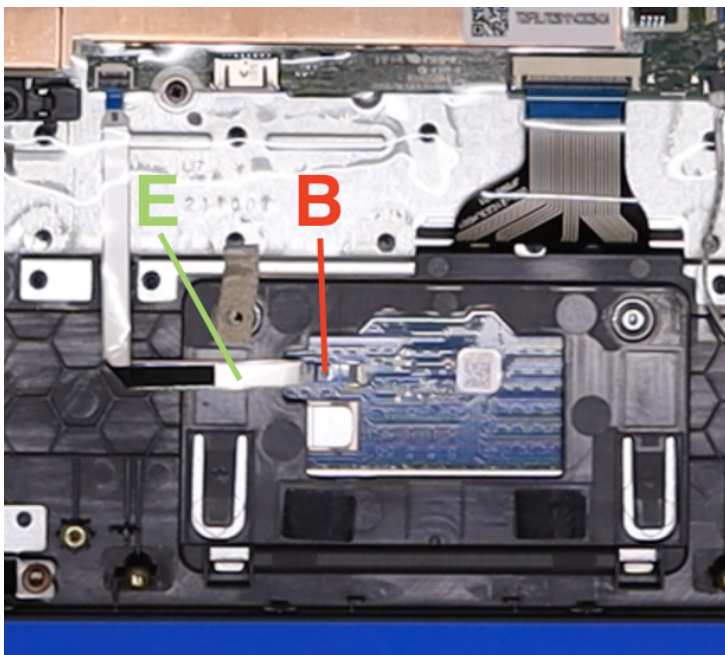
Touchpad Module Removal

Prerequisite: *Battery Pack Removal*

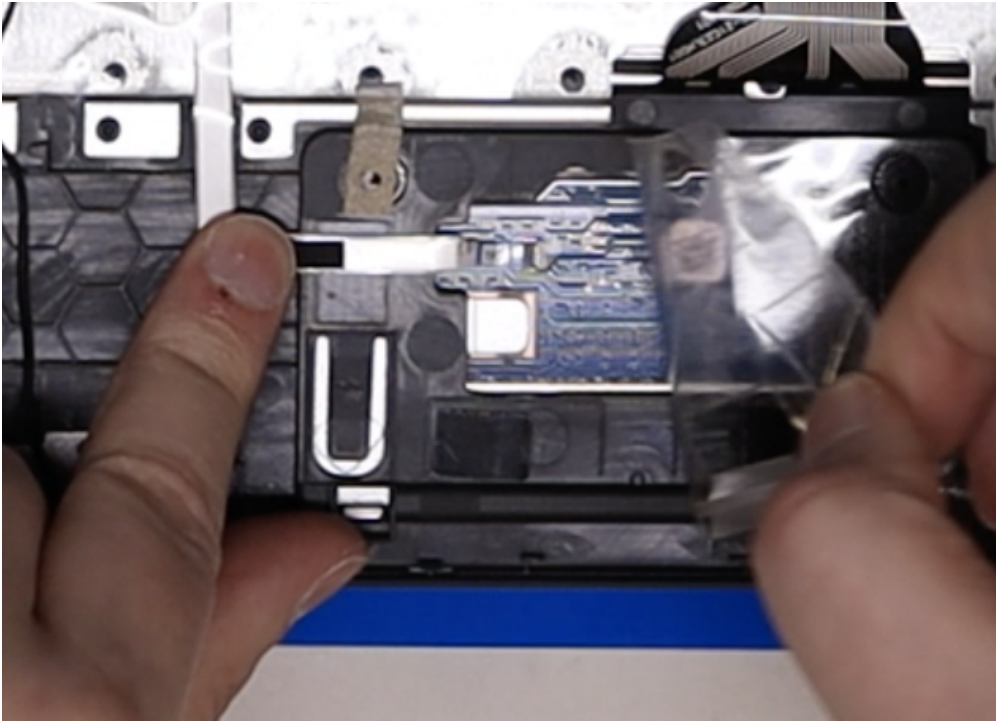
1. Locate the touchpad module (D) on the top assembly. Refer to Figure 1-9.



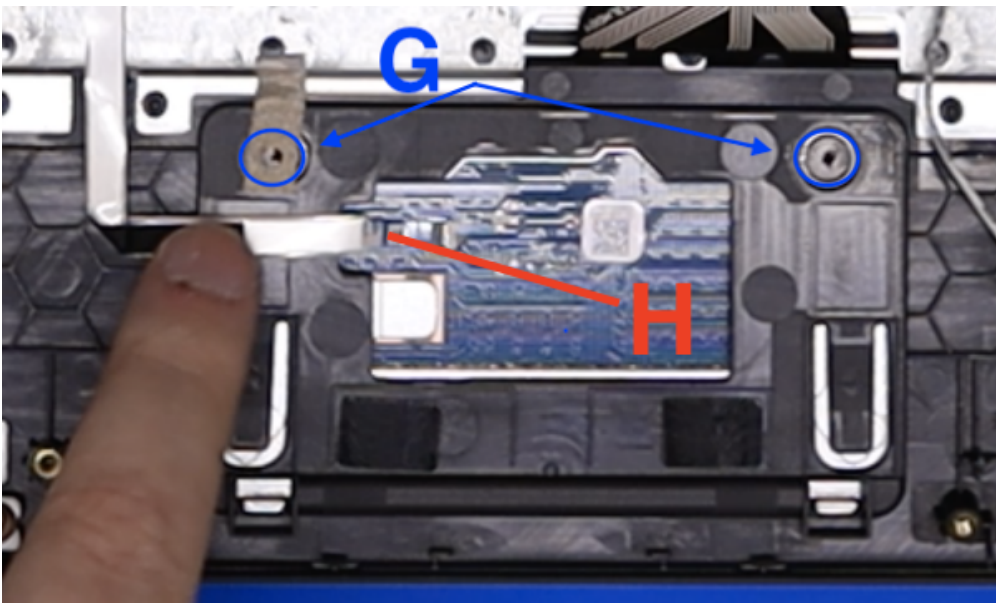
2. Disconnect the touchpad FFC (E) from the touchpad connector (B). Leave the side connected to the main board so as to not lose the connector.



3. Peel back the keyboard plate mylar (Figure 1-16)



4. Remove two (2) screws (G) securing the touchpad module in place, and remove the cable from the cable connector on the touchpad (H). Be sure to peel back the grounding strip and leave it attached to the metal plate, do not remove it with the touchpad.



5. Remove the touchpad module from the top assembly



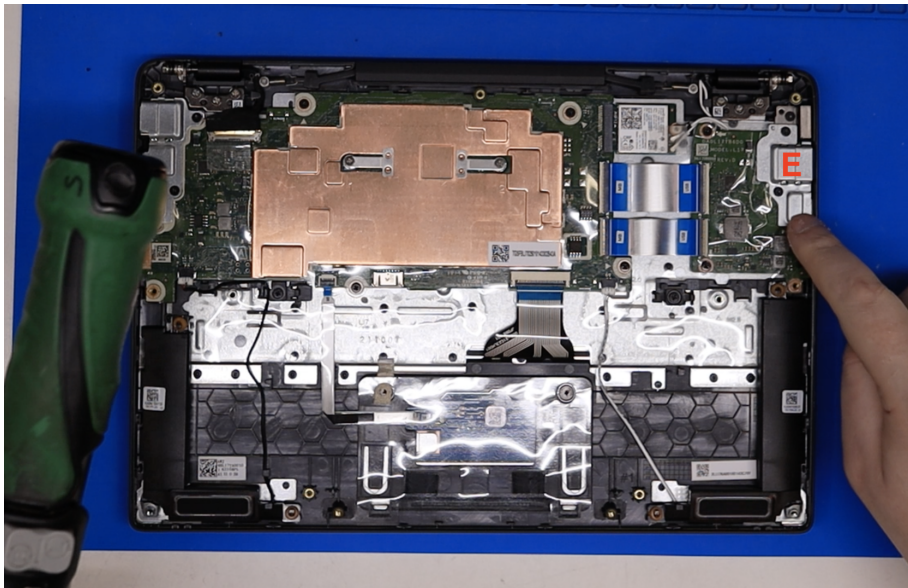
CAUTION:

Touchpad FFC (Flexible Flat Cable) can be damaged if removed while the mainboard connector and touchpad connector are locked.

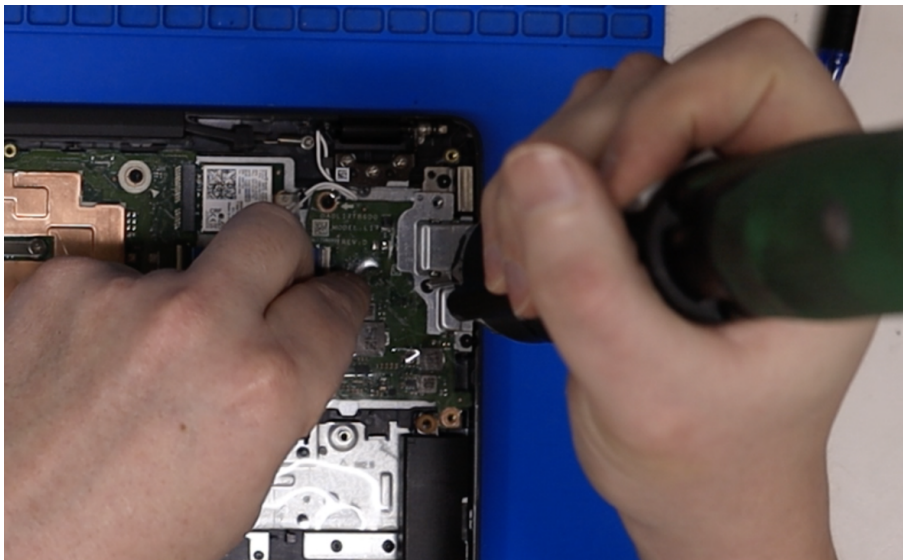
USB Board Removal

Prerequisite: *LCD Module Removal*

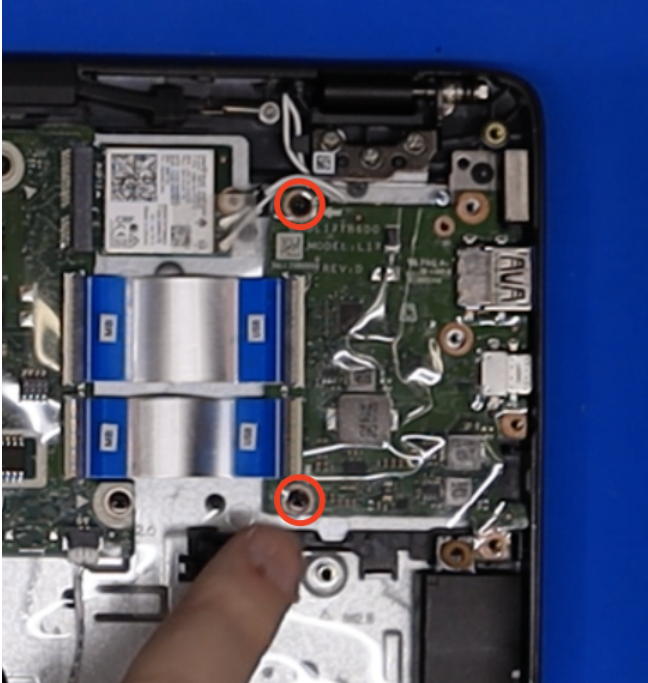
1. Locate the USB board (E) on the top assembly. Refer to Figure 1-9.



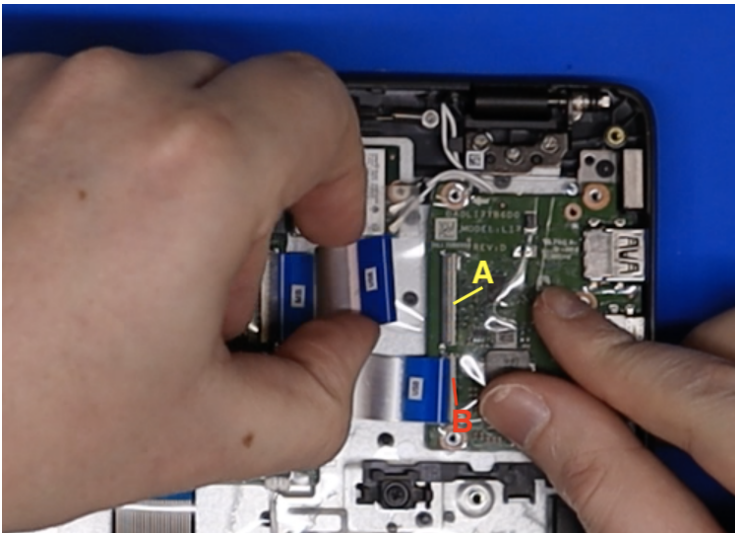
2. Remove the three (3) screws on the protection plate first, then remove the protection plate.



3. Remove the remaining two (2) screws holding the USB board itself.



4. Disconnect the 30-pin and 40-pin FFCs from the USB board by unlocking the USB board connector (A) and (B).



5. Remove the USB board.



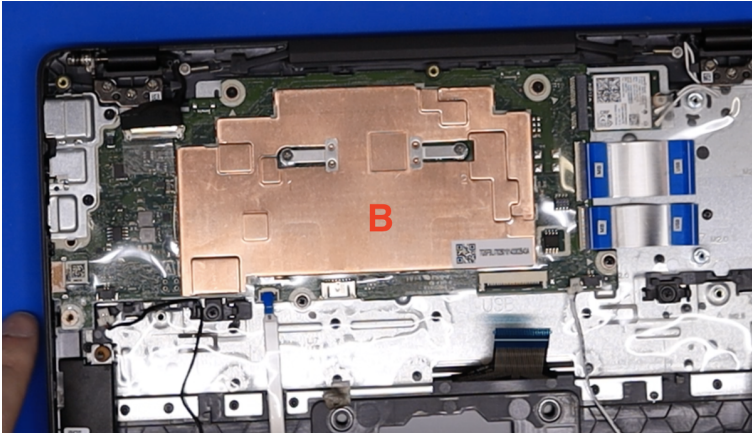
CAUTION:

The 30-pin and 40-pin USB board FFC (Flexible Flat Cable) can be damaged if removed while the mainboard connector and USB board connector are locked.

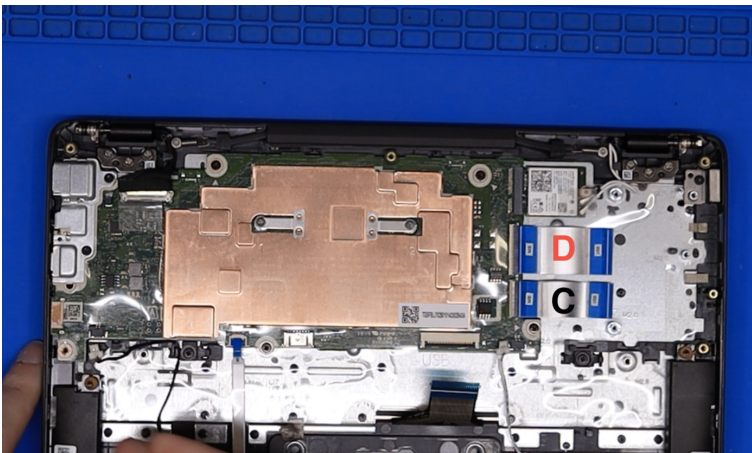
Mainboard Removal

Prerequisite: *WLAN (Wireless Local Area Network) Module Removal*

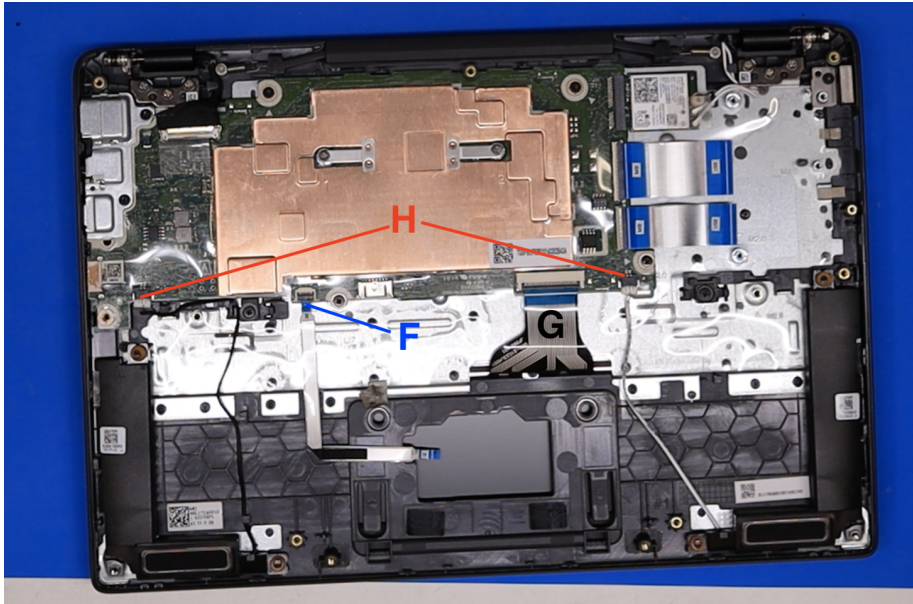
1. Locate the mainboard (B) on the top assembly.



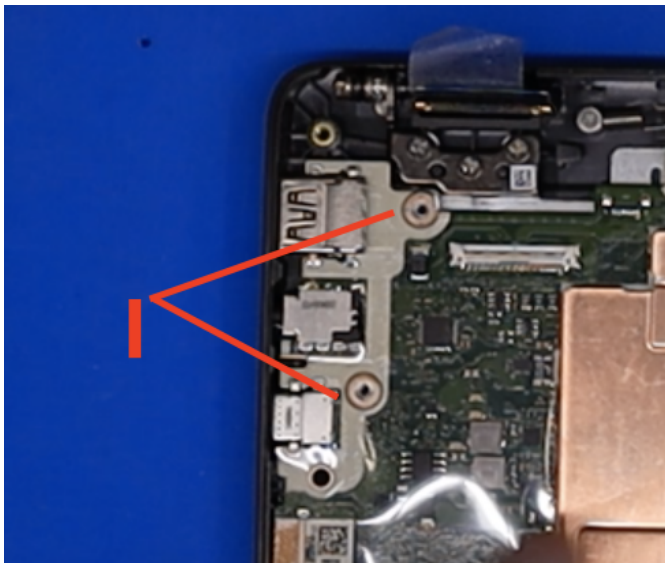
2. Disconnect the 30-pin USB board FFC from the mainboard connector (C), disconnect the 40-pin USB board FFC from the mainboard connector (D).



3. Disconnect the touchpad FFC from the mainboard connector (F), disconnect the keyboard FPC from the mainboard connector (G), disconnect the speaker cable (s) from the mainboard connector (H).



4. Remove the two (2) screws holding the protective plate (I).



5. Remove the LVDS cable from the main board. Be sure to lift the locking arm off the socket before pulling the cable free.



CAUTION:

Make sure all FFCs, FPCs and cables are disconnected from the mainboard connectors to avoid damage during the removal process.

6. Gently lift the mainboard from the right/wifi side and remove it from the top assembly

IMPORTANT:

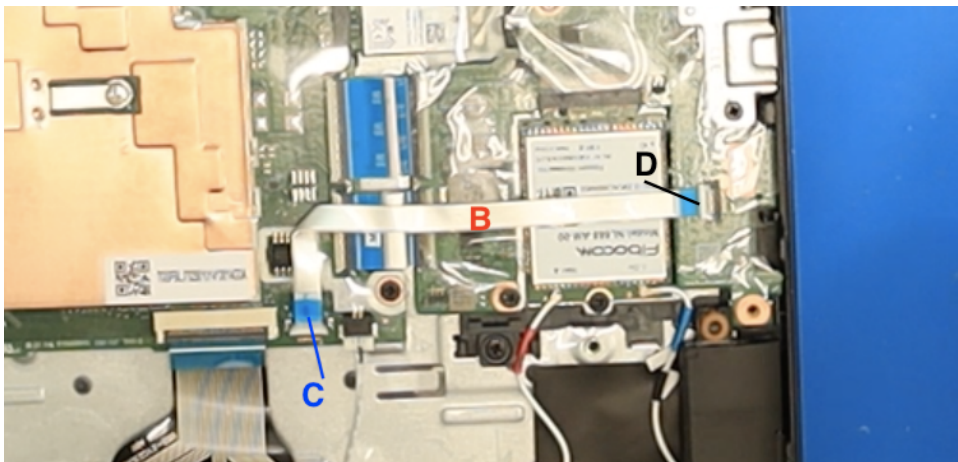
Circuit boards >10 cm² have been highlighted with a yellow rectangle as shown in Figure 1-25. Remove the circuit board and follow local regulations for disposal.

LTE Module removal (on applicable NL72 models)

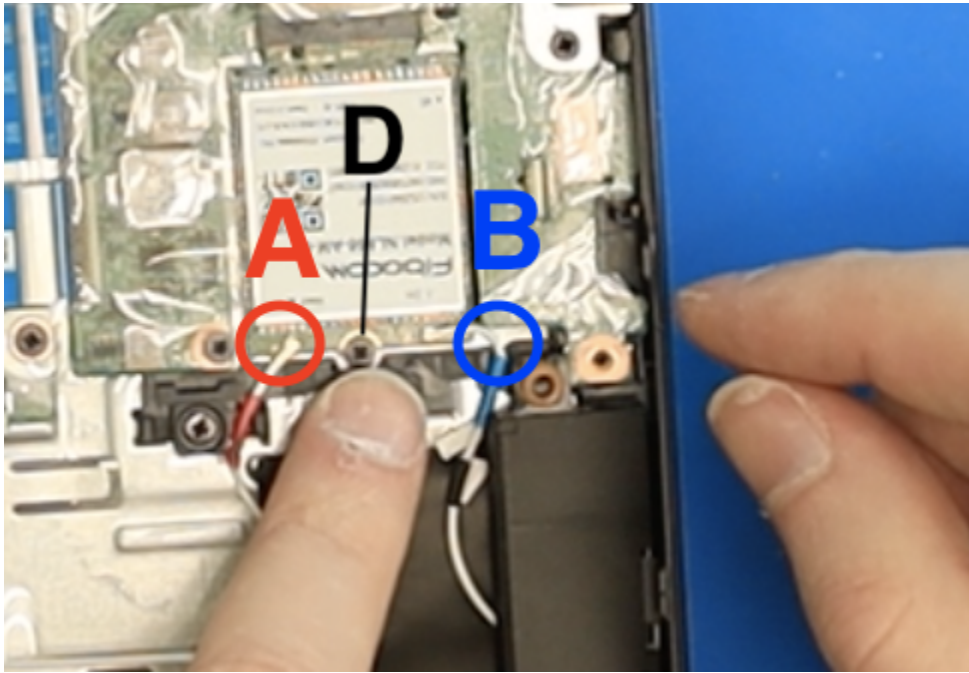
1. Locate the LTE module (A) plugged into the daughterboard.



2. Lift the zip clips from the ports and then remove the FCC cable (B) from the daughterboard port (D) and the mainboard port (C). Be aware there is a small adhesive pad on the cable so don't pull it up too quickly.



3. Remove the antenna cables (A) and (B), then remove the one (1) screw (D) holding the chip in place.



4. To remove the LTE module simply lift slightly and slide out the module.
5. To remove the SIM card use a size 3 Torx bit, then open and remove the door.

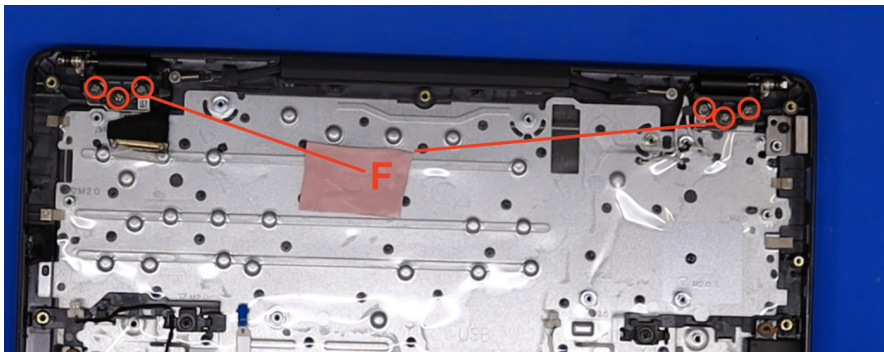
Top half of Unit Removal

Prerequisite: *Battery Pack Removal*

1. Disconnect the eDP/LVDS cable (C) from the mainboard connector (D)



2. Remove six (6) hinge screws (F) securing the LCD module in place.



3. Carefully open the module to remove the LCD module from the bottom half of the device.

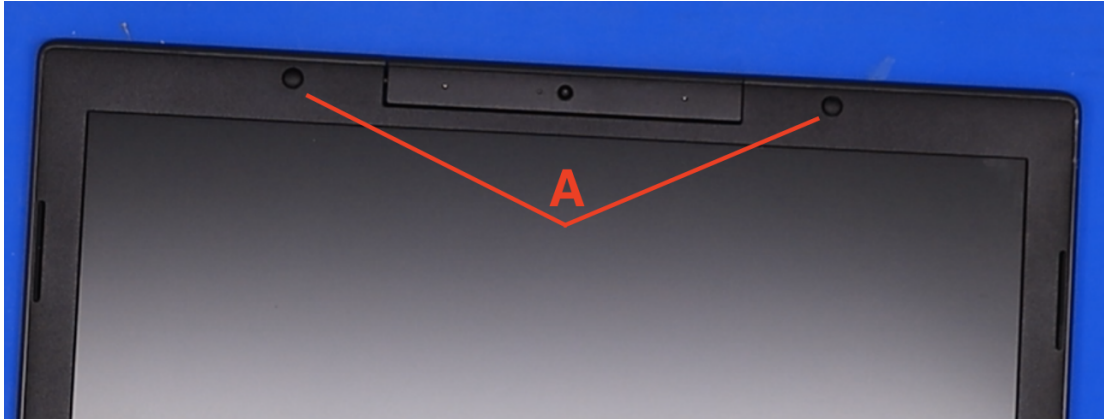


CAUTION:

Make sure all cables and antennas are unthreaded from the cable guides to avoid damage during the removal process.

LCD Bezel Removal

1. Remove the pips (A) that cover the two screws that secure the bezel, then remove the two screws also (A).



2. Using a flat pry tool or spudger, pry open from the top left corner of the LCD module.



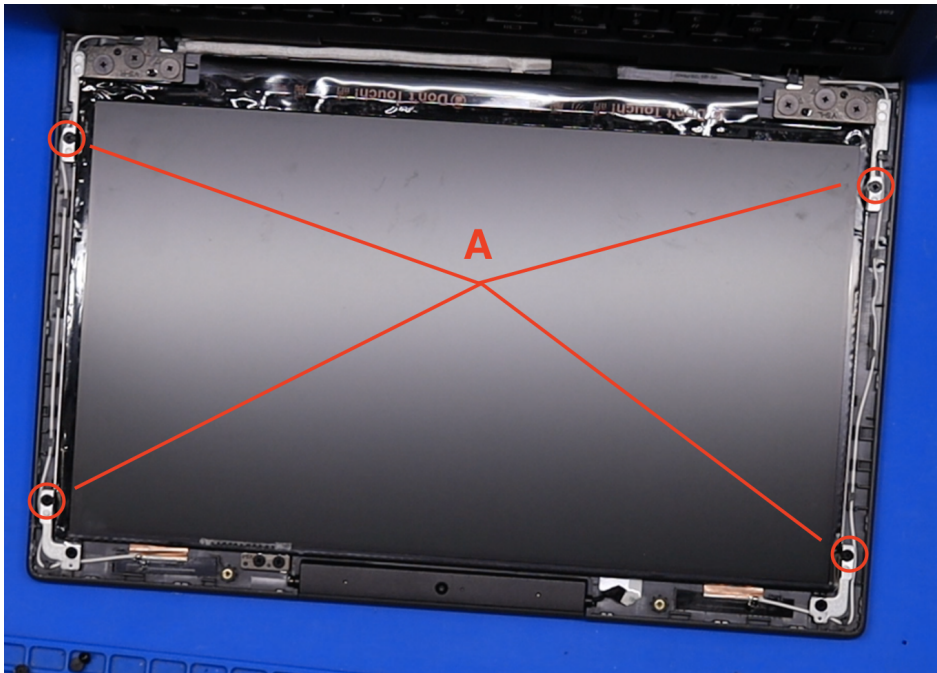
3. Use your fingers to work your way along the left side and the right side then down toward the hinge area.



4. Continue along the bottom side of the LCD module and pry carefully to release the bezel from the LCD unit



5. Remove the four (4) screws from the LCD panel



6. Remove the LVDS cable from the LCD panel by removing the sticky tape then opening the clip and removing the LVDS cable.



C Panel Removal (Keyboard Removal)

Prerequisite: *Ensure that the Mainboard, Battery, USB Board, and Speakers have been disassembled prior to removing the top assembly.*

1. For C panel removal follow the same procedures as the top half of unit removal.

NOTE:

The keyboard is included as part of the top assembly and can not be disassembled. In the event that the keyboard can no longer be used, replace the entire top assembly.

Factory Reset Your Chromebook

1. Sign out of your Chromebook.
2. Press and hold *Ctrl + Alt + Shift + r*.
3. Select *Restart*.
4. In the box that appears, select *Powerwash > Continue*.
5. Follow the steps that appear and sign in with your Google Account.

NOTE:

The account you sign in with after you reset your Chromebook will be the owner account.