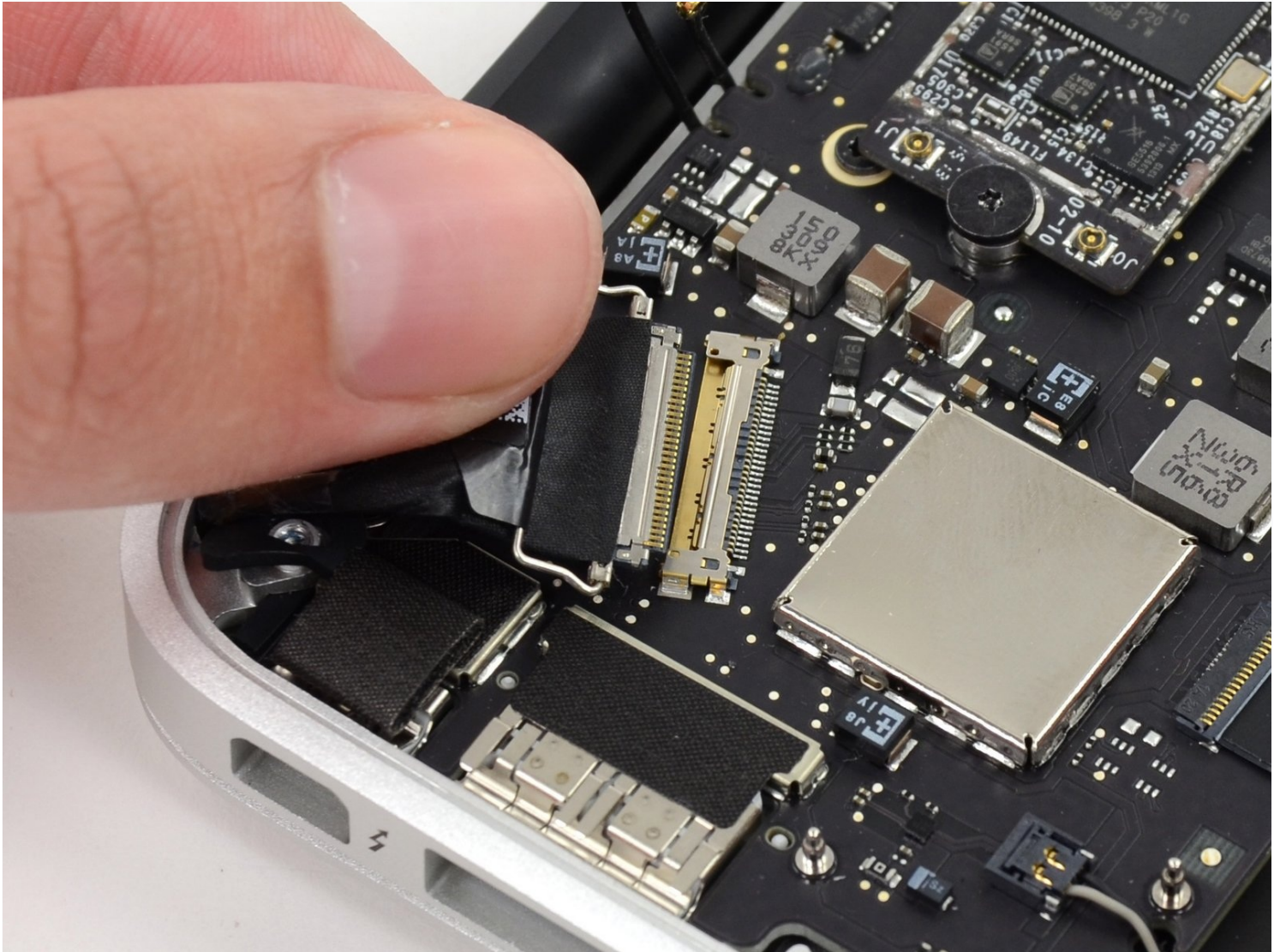




Recognizing & Disconnecting Cable Connectors

Modern electronics contain a dizzying array of...

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INTRODUCTION

Modern electronics contain a dizzying array of internal data and power cable connectors—and nothing brings a project crashing to a halt like accidentally breaking a connector.

Use this guide to familiarize yourself with the most common types of connectors, and learn the tools and techniques you'll need to disconnect (and reconnect) them safely.

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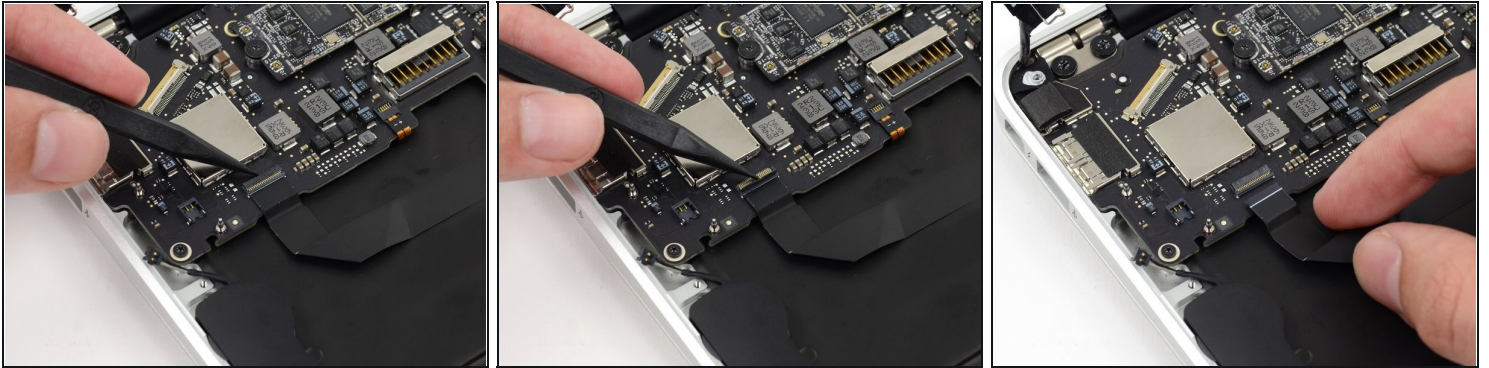


TOOLS:

[Spudger](#) (1)

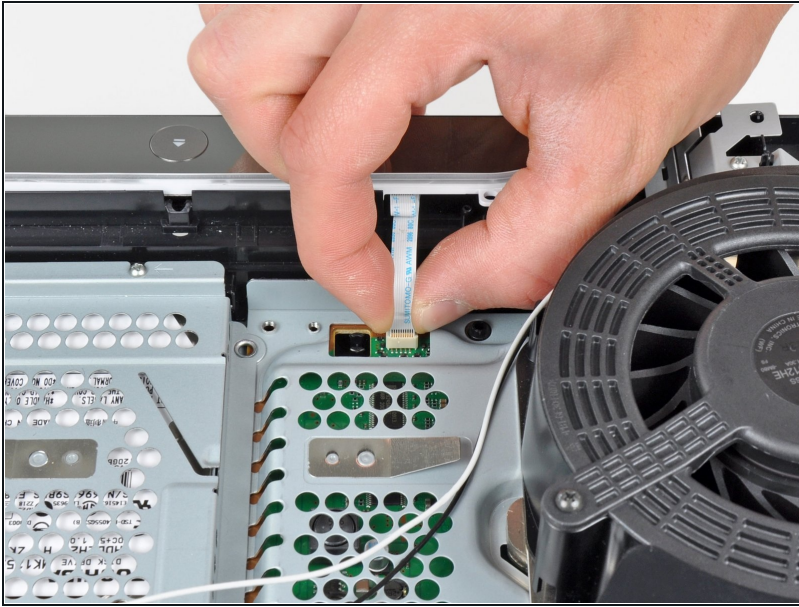
[iFixit Opening Tool](#) (1)

Step 1 — ZIF Connectors





- The **zero insertion force (ZIF)** connector often causes trouble for beginners. ZIF connectors are used to secure delicate ribbon cables, such as FFC (flat flex cables) or FPC (flexible printed circuit) cables.
 - ⓘ As the name implies, no force is needed to plug in or remove the cable.
- To disconnect the cable, use the tip of a spudger or your fingernail to flip up the small locking flap. Then, you can safely pull the cable out.
 - ⚠ Be sure to pry up on the hinged flap, not the connector socket.
- ☑ The white line on this ribbon cable marks the edge of the connection area. To reinstall, insert the cable into the connector up to this line, and then close the locking flap. If the cable doesn't insert easily up to (or very near to) this line, it's probably misaligned and needs to be gently removed and repositioned.

Step 2 — No-Fuss Ribbon Cable Connectors



- Sometimes you'll find a ribbon cable that simply pulls out of its socket, with no locking flap. The ribbon is normally sturdier than those used with ZIF connectors and the end is often reinforced with a stiff plastic film.
- These connectors are often found on larger items such as printers, projectors and games consoles, such as this PS3 control board.

 Before attempting to disconnect the ribbon, make quite sure this isn't a ZIF connector (previous step) with a release mechanism, otherwise you may damage the connector or the ribbon in forcibly removing it, and you won't be able to reinsert it.

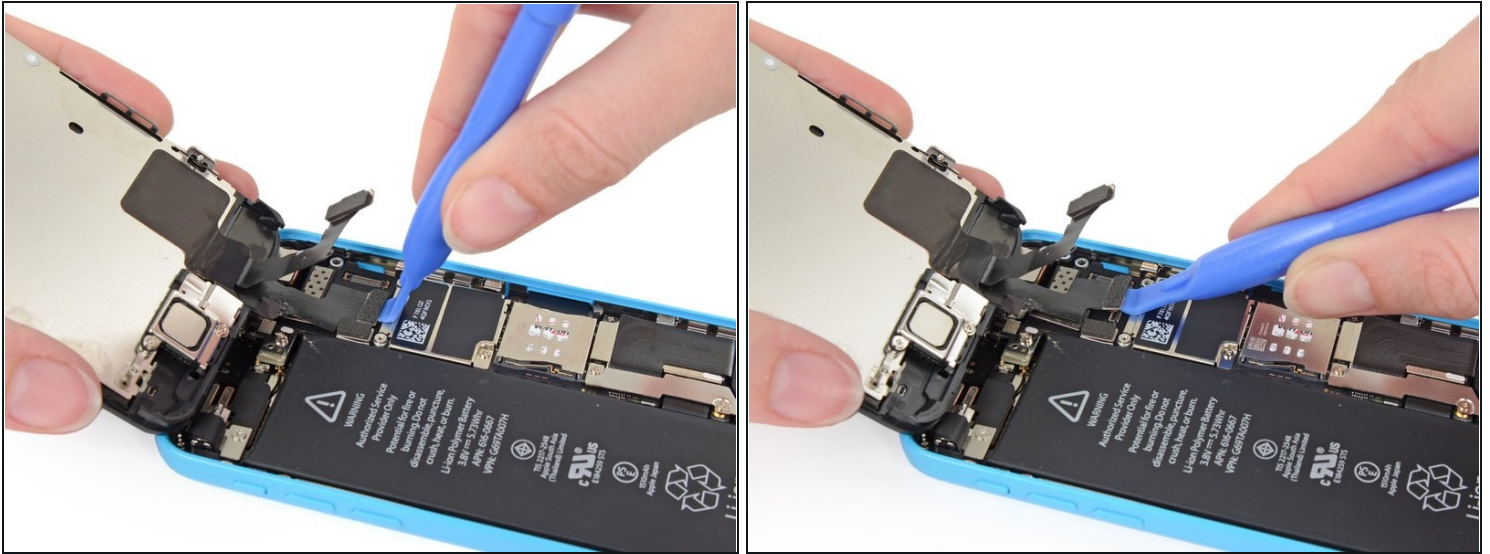
- To disconnect the cable, pull it straight out of the connector.
-  To reinstall the cable, hold it near the end and push it straight into the connector, being careful not to kink the cable. If you can, apply the force to the plastic reinforcement rather than the cable itself.

Step 3 — Flat-Topped (Low Profile) Connectors



- To disconnect flat connectors like this one, use a spudger to pry up each side. Then, lift the connector straight up from its socket.
- ☑ To reinstall, carefully position the connector, and then press it straight down until it snaps into its socket. Finger pressure is all that is required. If it won't snap home it'll be because it isn't correctly positioned. Sometimes it can take a little patience to find exactly the right position.

Step 4 — Press Connectors



❗ Smaller press-fit (or "pop") connectors may require a simple flick with a plastic opening tool, spudger, or fingernail.

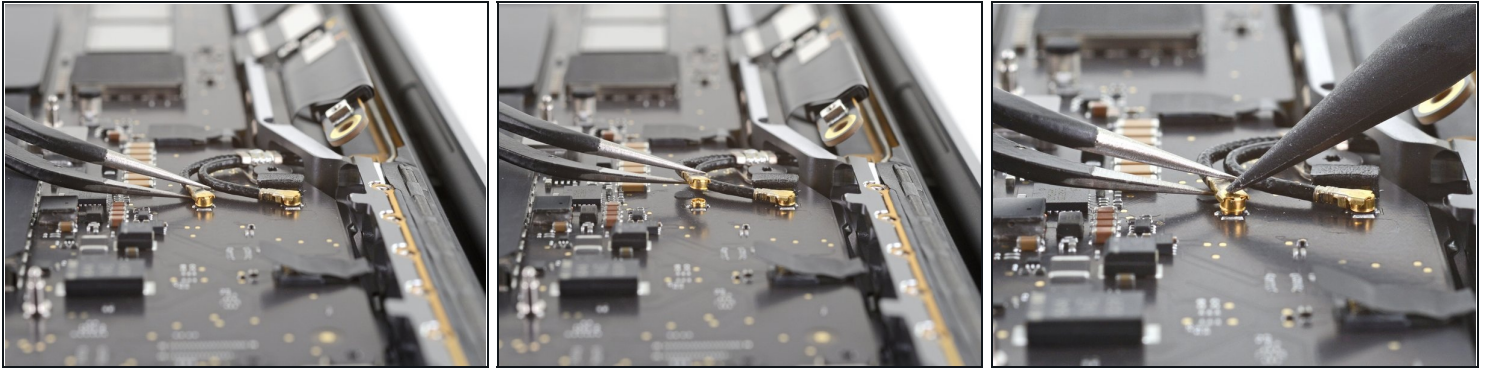
- Place the tip of your tool under the edge of the connector, and pry the connector straight up from its socket.

⚠ Be very careful to pry **only** under the edge of the connector, and not under the socket itself. If you pry under the socket, you will separate it from the circuit board, which requires specialized microsoldering skills and equipment to repair.

☑ To reconnect, align the connector carefully over its socket and press down with your fingertip—first at one side, then the other—until it clicks into place.

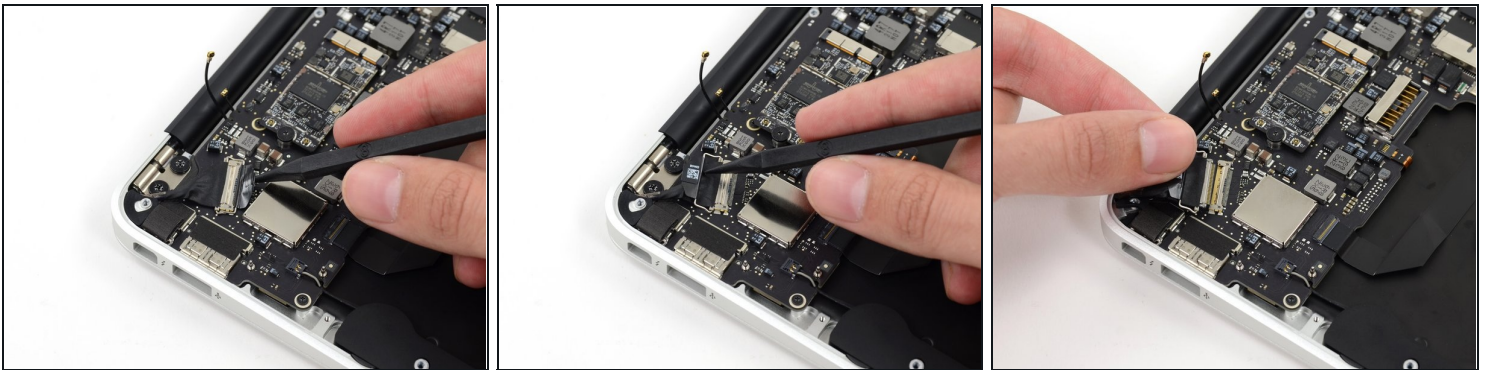
⚠ **Do not** press down on the middle of wider connectors until they're fully seated—if misaligned, the connector or the pins underneath can bend or break, causing permanent damage.

Step 5 — Coaxial Connectors



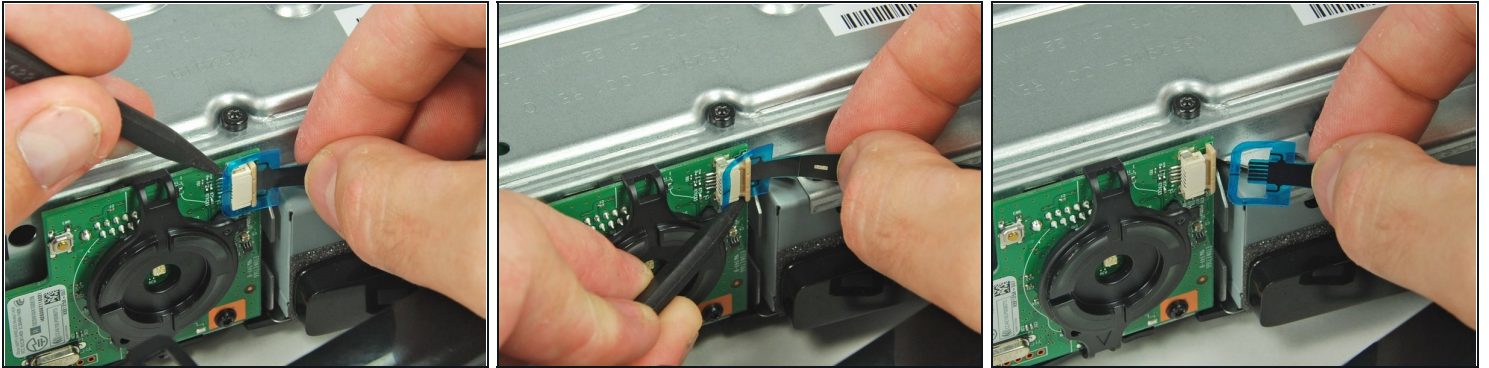
- For small coaxial connectors, like these U.FL antenna cable connectors, slide a thin, ESD-safe pry tool or tweezers under the wire until it's snug against the connector, and pry straight up from the board.
- ☑ To reinstall, hold the connectors in place and gently press them straight down. The connectors “snap” into their sockets much like the metal snaps on a jacket.

Step 6 — Display Cable Connectors



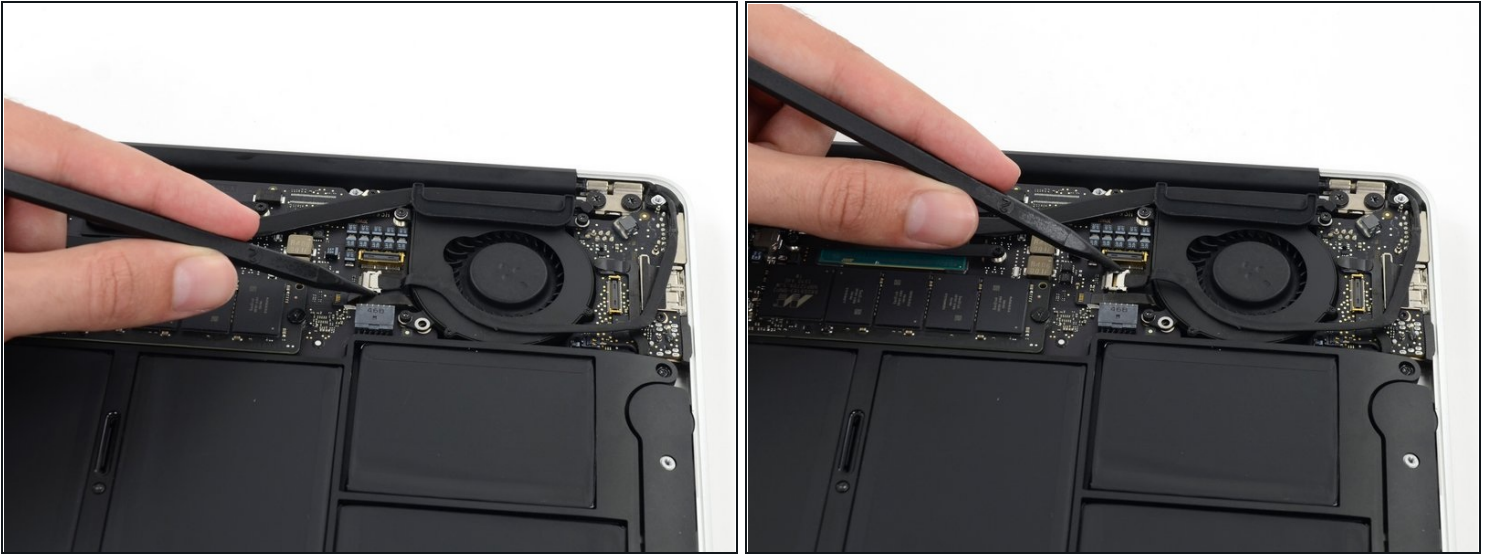
- Display and camera cable connectors like this one sometimes have a small metal clip running around the back of the socket to lock them in place.
- To separate the connector, gently push the tip of a spudger under the clip. Then, swing the clip over to the other side of the socket, so that it lays flat against the cable.
- Holding the clip and cable together, gently pull in the direction of the cable to remove the connector from its socket.

Step 7 — Other Ribbon Cable Connectors



- Here's another type of ribbon connector, commonly found on Xbox gaming consoles.
- To remove it, use a spudger or fingernail to lift the clear blue tab away from the connector.
- Next, use the tip of the spudger to push open the plastic locking tab.
 - ⓘ The locking tab will only move about 2 mm.
- Pull the ribbon cable out of the connector in the direction of the cable.

Step 8 — Sliding Connectors



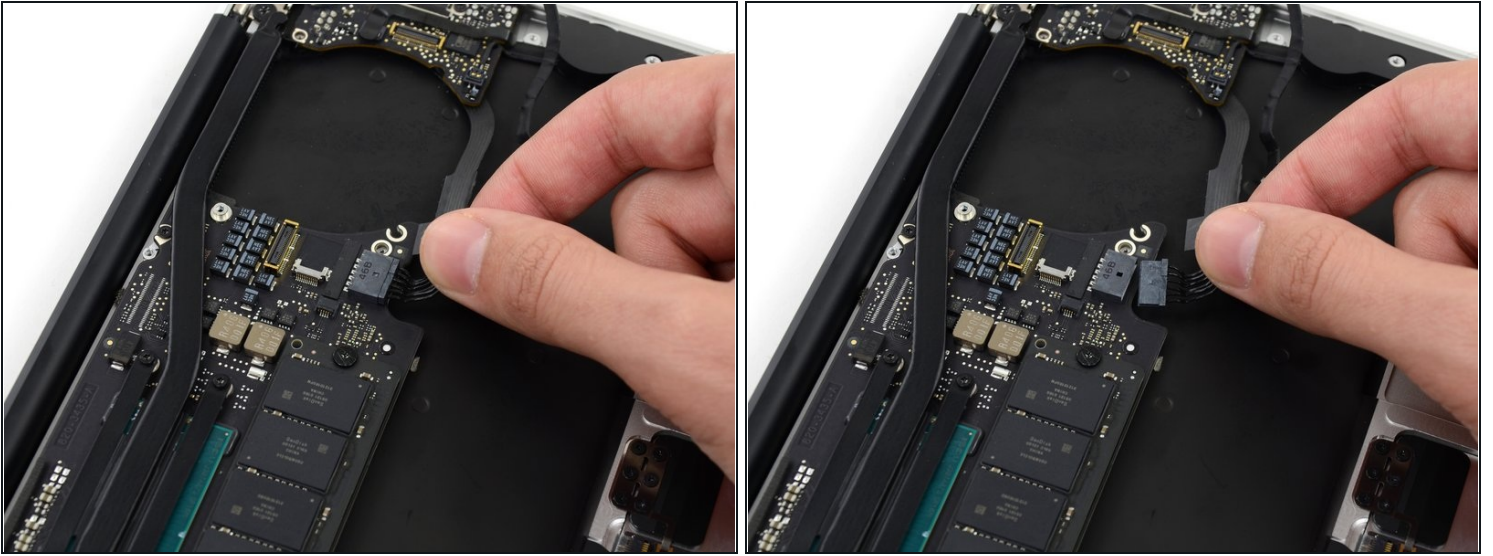
- Some connectors require a little coaxing before they'll give up their cables. This tiny iSight camera cable connector has no convenient place to pry or pull.
⚠ Always pull cables by their connectors and not the wires themselves.
- To disconnect it safely, use the pointed tip of a spudger to carefully push on each side of the connector.
- Alternating from one side to the other, gently “walk” the connector out of its socket.

Step 9 — Power Cable Connectors



- Power cable connectors like this one have a small tab on the side that locks them in place.
 - To separate the connector from its socket, squeeze the tab against the connector, and pull the connector straight up from the socket.
 - JST connectors are similar but don't have the locking tab. There are a few other similar types, with or without the tab, and having 2 or 3, sometimes up to half a dozen or more wires. These may be found connecting a microphone or speaker in a camera, or interconnecting the circuit boards in a radio.
- ⚠ Some variants are very small. If you try to disconnect them by pulling on the wires they may break. Ideally, pull on the body of the plug with a pair of tweezers, rocking it from side to side to ease it if necessary.**

Step 10 — Bundled Cable Connectors



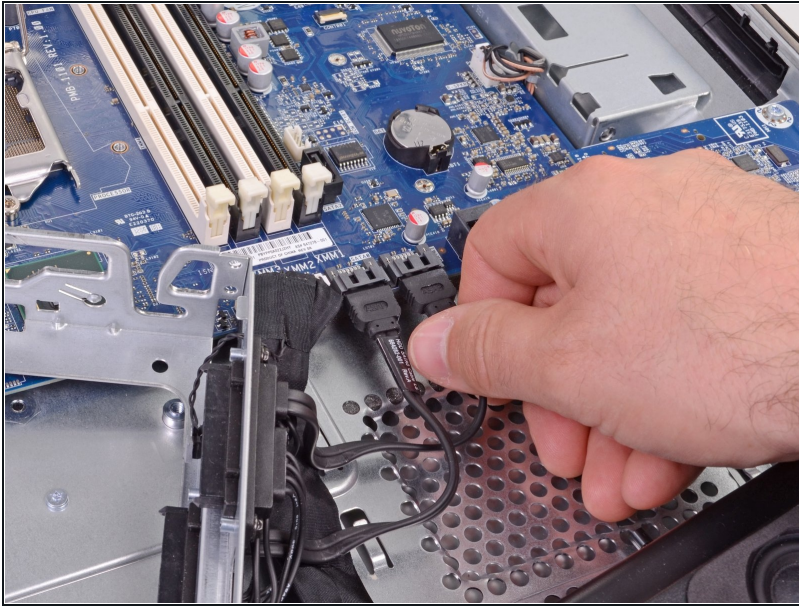
- If you see a cable made up of lots of individually wrapped wires leading into a single connector, pulling on the cable itself may be the best method.
 - Pull the cable away from the connector in the same direction as the individual wires are running.
- ⚠ Pull evenly on the full width of the cable so that no individual wires are overly strained.

Step 11 — Glued-Down Cables



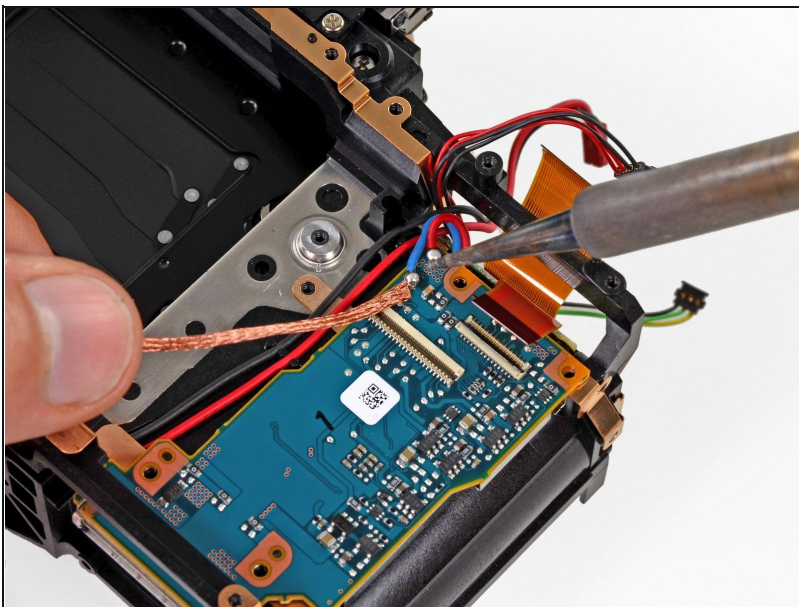
- Sometimes removing the connector from its socket isn't enough; an additional step or two is required to free up the cable. Here we have a Lightning port ribbon cable that is lightly glued into place.
- To remove it, carefully slide a spudger or guitar pick underneath the cable, freeing it from the adhesive.
- ① For particularly delicate or stubborn cables, a little heat from a heat gun, hair dryer, or our handy [iOpener](#) will help soften the adhesive.

Step 12 — SATA Cables



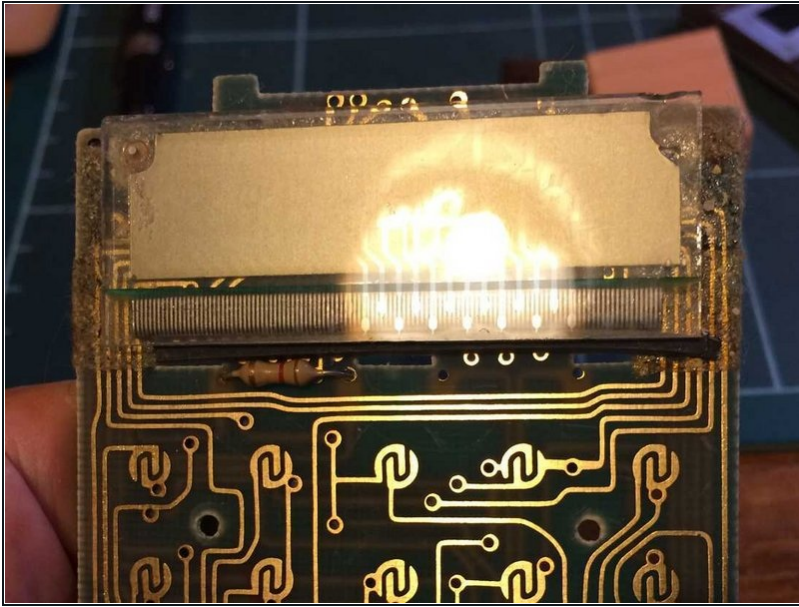
- Some common internal power and data cables, like these SATA cables, work much like the regular audio/video cables you already have around the house.
- To remove them, just pull in the direction of the cable.
 - ❗ Some variants of the SATA cable have a small release tab or button on the side.
- Hold the tab down with your finger, and then pull to remove the cable.

Step 13 — Soldered Connections



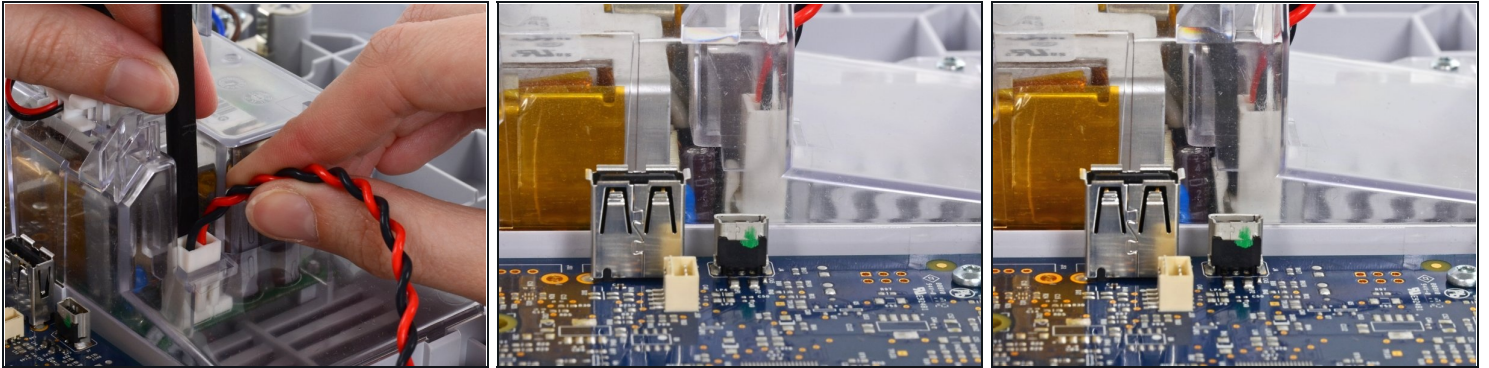
- You'll also encounter wires that weren't designed to be removed at all, and are in fact soldered into place.
- Not to worry—a soldering iron and some soldering wick makes quick work of these little guys.
- If soldering isn't yet your thing, head on over to our [soldering technique guide](#) and learn a new skill!

Step 14 — Elastomeric (ZEBRA) connectors



- These are often found in pocket calculators, DECT phones, and other devices with a simple monochrome 7-segment or low-resolution display. They are used to connect the conductive tracks on the glass of an LCD to a set of pads on a circuit board below. (These displays sometimes suffer from dead segments or rows of pixels.)
- Screws or twisted metal tabs commonly secure a metal frame, which compresses the elastomeric strip between the LCD and the circuit board. Release these to separate the LCD and the elastomeric strip.
- ① In the photo, bright light reveals the conductive traces on the glass of the LCD. Beneath this is the elastomeric strip, and hidden beneath that are the tracks on the circuit board—in the same patterns as the ones on the glass.
- The elastomeric strip consists of conductive and non-conductive layers which alternate along its length. There are several for every connection to the LCD, eliminating the need for precise alignment.

Step 15 — Rare & Exotic Connectors



- Eventually, you're bound to come across a connector that you've never seen anywhere else.
- Inspect the connector carefully, and try to determine how it comes apart.

⚠ Work slowly, using lots of gentle wiggling. If your first attempt doesn't seem to be working, don't force it. Try another approach or see if a different tool gives a better result.

- If you're still having trouble, search for guides for similar devices to see if they provide any clues, or ask for help in our [Answers](#) forum.
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