Recognizing & Disconnecting Cable Connectors

Modern electronics contain a dizzying array of...

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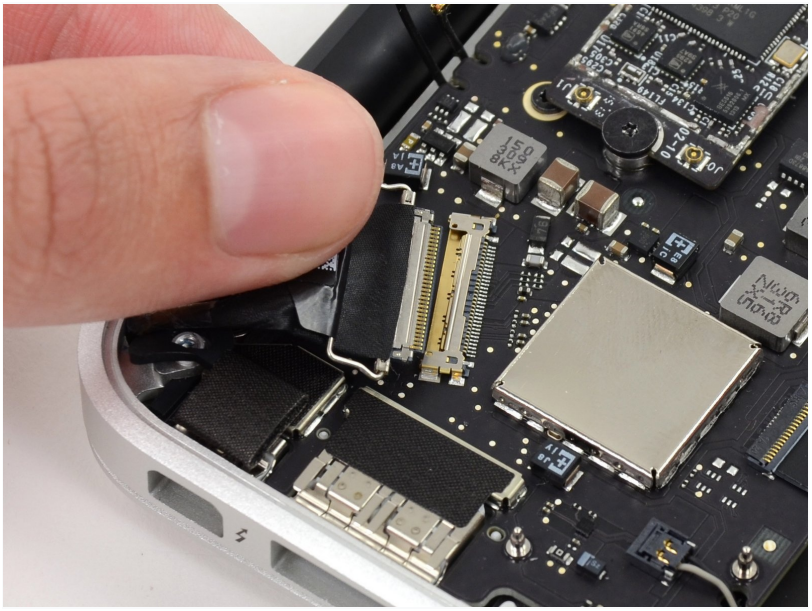


INTRODUCTION

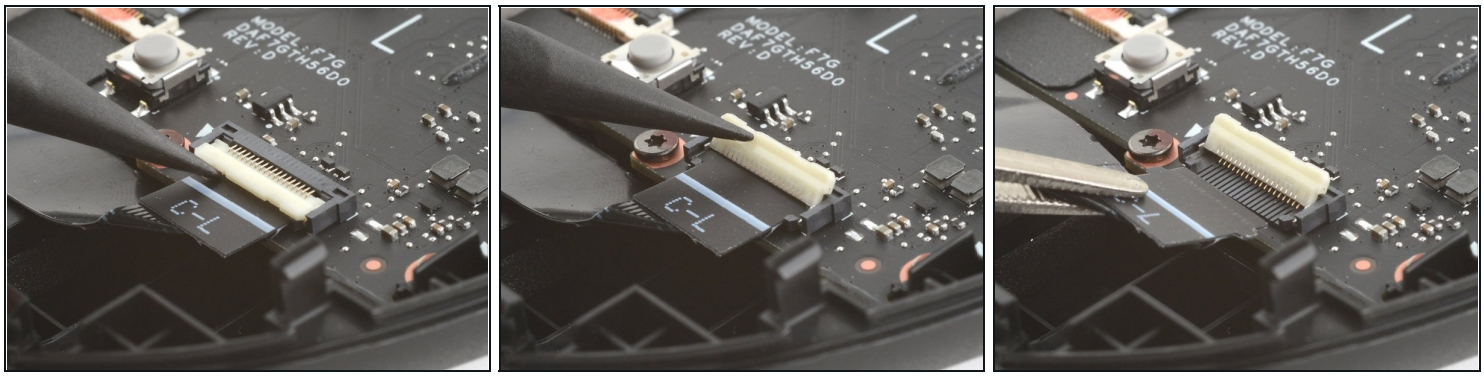
Modern electronics contain a dizzying array of internal data and power cable connectors—and nothing brings a project crashing to a halt like accidentally breaking a connector.

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.

TOOLS:

Spudger (1)
iFixit Opening Tool (1)
iFixit Opening Picks (Set of 6) (1)
Tweezers (1)
iOpener (1)
Hair Dryer (1)
Heat Gun (1)

Step 1 — ZIF Connectors



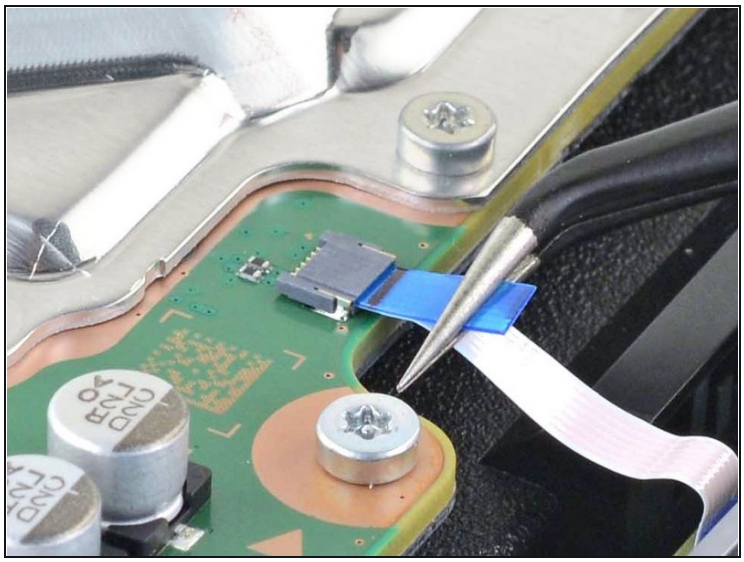
Zero insertion force (ZIF) connectors are often used to secure delicate ribbon cables of many sizes. A hinged locking flap runs across the top of the socket, and the cable is inserted on one of the long edges.

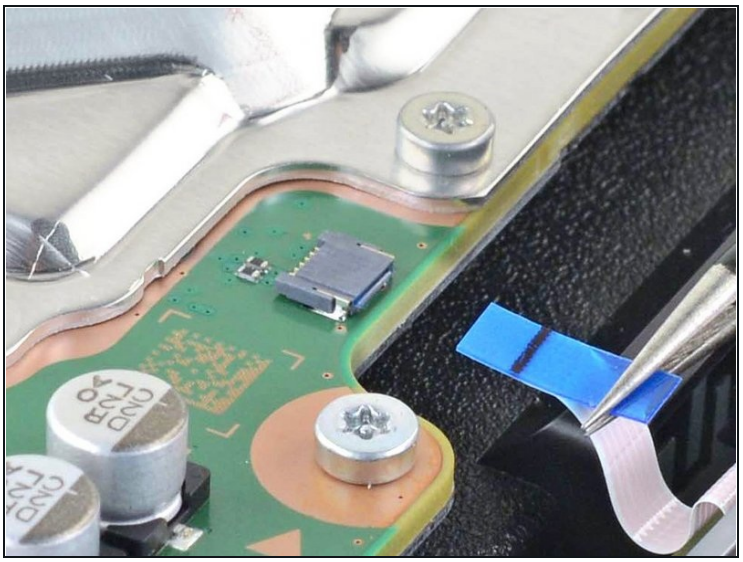
- To disconnect the cable, use a spudger, opening tool, or a clean fingernail to flip up the locking flap—this is the unlocked position.
  - Use the widest tool possible to avoid damaging the delicate hinge pins.
- Once the flap is in the unlocked position, use tweezers or your fingers to gently pull the cable out of its socket.
  - If the cable has a pull tab, use it to grip the cable. You may damage the cable by gripping it directly.
  - Some cables may have small "arms" or notches that help secure them. If this is the case, you'll need to lift the cable to free it and then pull it out.

To reconnect, make sure the locking flap is flipped up and gently reinsert the cable. Then, flip the locking flap down to secure the cable. **The cable should slide into the socket with little to no force.** If you're having trouble, remove it, check that the flap is fully unlocked, and try again.

- Some cables (like the one pictured) may have a line that marks the edge of the connection area. Make sure you insert the cable so the line is flush with the edge of the socket.

Step 2 — No-Fuss Ribbon Cable Connectors





ⓘ You may run into a ribbon cable with a socket that looks like a ZIF connector with *no flap*. Usually, the cable will be more rigid and have a stiff, reinforced plastic end. These connectors are often found in larger devices such as printers, projectors, or games consoles.

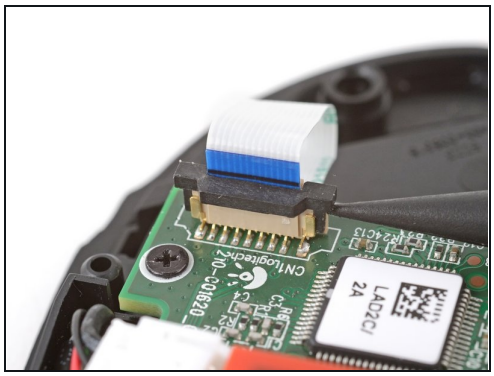
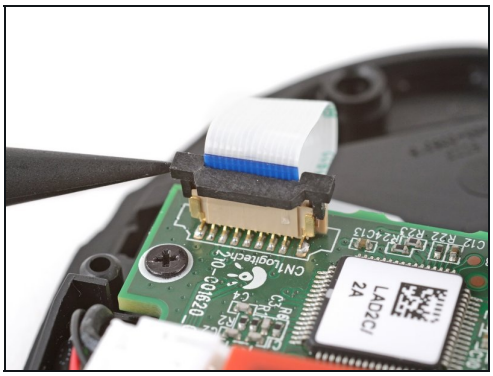
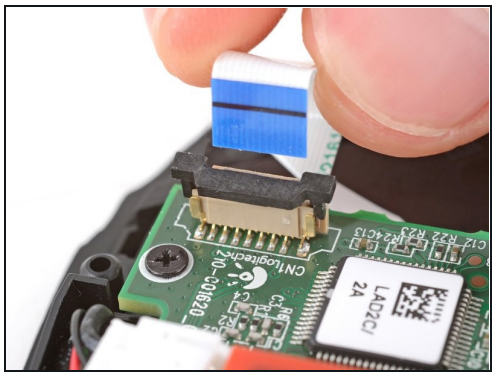
⚠ Before trying to disconnect these cables, carefully check for a release mechanism and make sure it's not a ZIF connector. Otherwise, you may permanently damage the socket and cable by forcibly removing it.

- Simply pull these "no-fuss" ribbon cables straight out of their socket to disconnect them.

To reconnect the cable, hold it as close to the end as possible and insert it back into the connector. Apply force to the plastic reinforcement rather than the cable itself.

⚠ Try not to kink or crease the cable.

Step 3 — Locking Tab Connectors

Some ribbon cable connectors have a plastic locking tab around them. These are often used in large game consoles and mice.

- Use a spudger to gently push up on alternating sides of the plastic tab until it clicks up into its unlocked position.

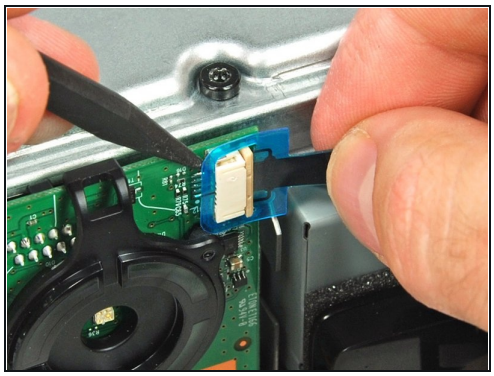
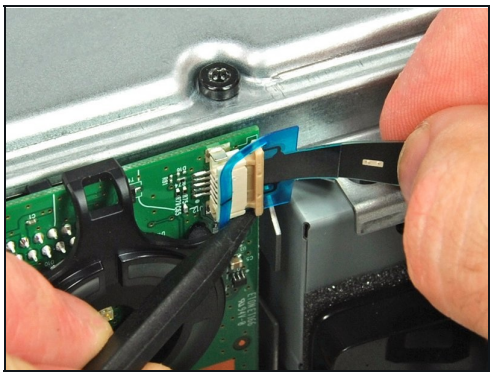
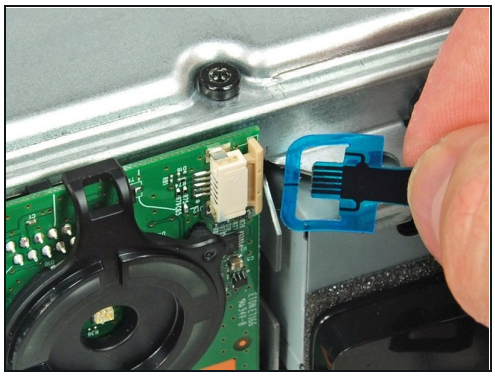
  Don't push the tab too hard or too far, otherwise it may come completely off the connector.

- Once the tab is unlocked, you can gently pull the cable straight out of its socket.

  The cable should be able to slide in and out of the socket with little to no force. If you feel resistance, the tab may not be fully unlocked.

During reassembly, insert the cable into its socket and use the flat end of a spudger to push the tab down into its locked position.

Step 4 — Other Ribbon Cable Connectors

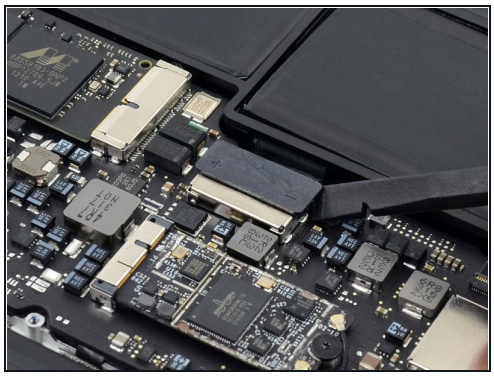
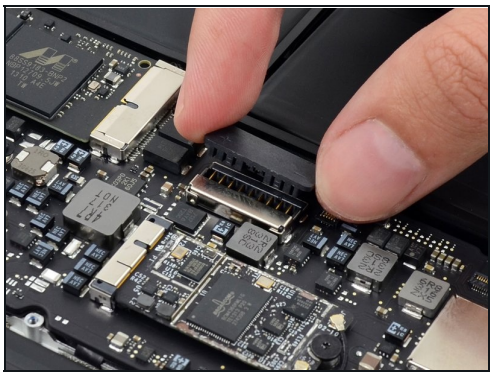
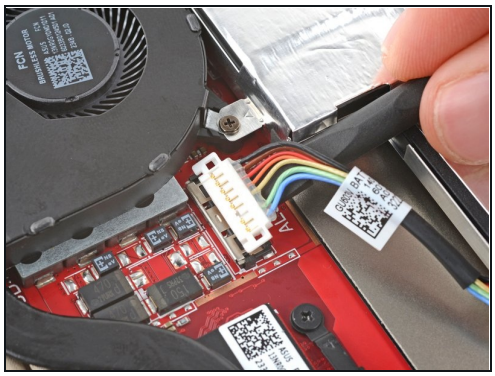
There are many other types of ribbon cable connectors that might require you to mix-and-match disconnection methods. Some Xbox gaming consoles have ribbons cables with a section that loops around the connector, *and* have a locking tab.

- To disconnect this connector, use a spudger or clean fingernail to lift the looped tab away from the connector.
- Then, use the tip of the spudger to push the plastic locking tab away from the socket—it should only move about 1–2 mm.
- You can now pull the cable straight out of its socket.

To reinstall:

- Fully insert the cable into its socket under the locking tab.
- Loop the tab around the front of the connector.
- Use a spudger or clean fingernail to push in the locking tab, securing the cable.

Step 5 — Flat-Topped (Low Profile) Connectors

Some connectors have a flat, plastic top that sits flush on top of their socket. Often, these connectors have multiple cables connected to them. Flat-topped connectors are usually on the larger side, and are typically used to connect batteries in laptops and larger gaming devices.

- To disconnect the cable, use the flat end of a spudger to lift and unclip the outer edges of the connector. You may need to use your fingers to pull the connector completely out of its socket.

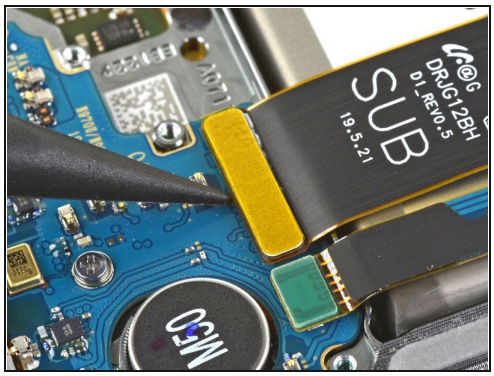
  Sometimes, these connectors have a slide lock running across the top that holds the connector in place. If this is the case, push the lock away from the connector before trying to disconnect it.

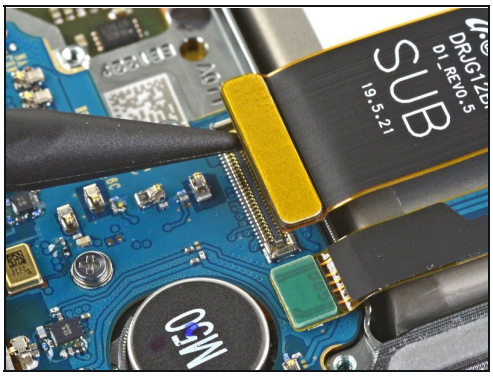
  Flat topped connectors can also have a metal locking bar that keeps the connector in place. Unclip and flip the locking bar up to disconnect it.

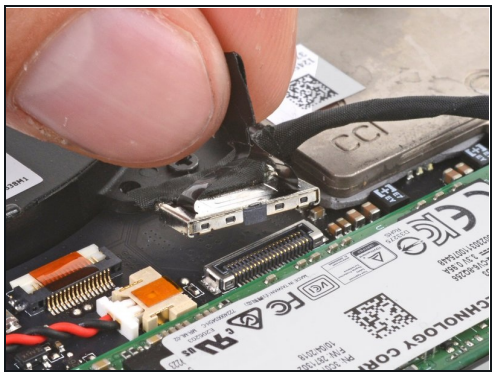
To reconnect the cable, carefully position the connector over its socket and press straight down—the connector should snap into place without much force. If you're having trouble, the connector is most likely misaligned. Reposition it and try again.

Don't try to force the connector into place or you may damage the delicate pins.

Step 6 — Press Connectors







Press (or "pop") connectors are found at the end of a ribbon cable and have a flat, metal or plastic top—typically rectangular. These connectors are extremely common in smartphones and laptops, and connect a wide variety of small to medium-sized cables—screen, battery, board interconnect, etc.

- Place a spudger or an opening tool under the connector's edge and pry straight up to disconnect it.

  Make sure to pry under the edge of the connector itself, and not under the socket on the board. Otherwise, you risk permanently damaging the socket.

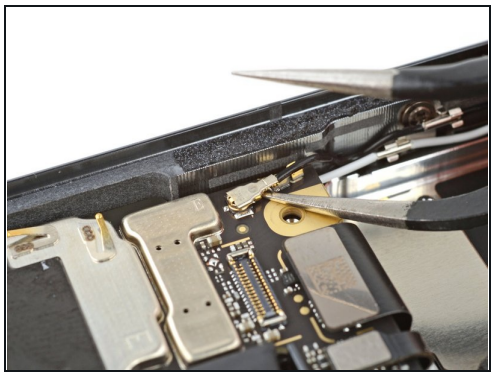
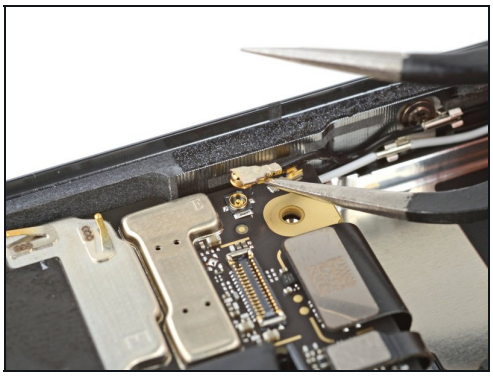
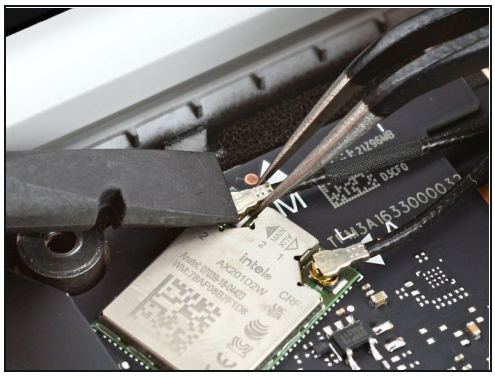
  Work carefully: don't pry on or accidentally scrape any small, surface mounted components on the board.

- Although more rare, some larger pop-style connectors might have a built-in pull-tab for easy disconnection. Lift straight up to disconnect these.

To reconnect, align the connector carefully over its socket and press down with your fingertip—first on one of the *short* sides, then the other—until it clicks into place. Don't try to force the connector into place. If you're having trouble, reposition it and try again.

Don't 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 7 — Coaxial Connectors

Coaxial connectors like these—also called antenna, U.FL, or IPEX connectors—have a metal head that snaps over a circular socket on the board, like a metal snap button on a shirt. These connectors come in various sizes and are often used to connect Wi-Fi or cellular antenna cables.

- To disconnect the cable, slide a thin, ESD-safe pry tool or angled tweezers under the metal neck of the connector (as close to the head as possible) and **lift straight up** from the board.

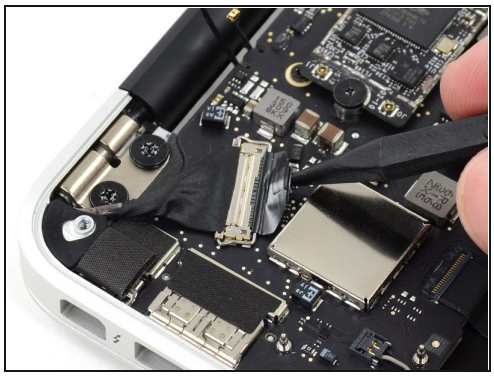
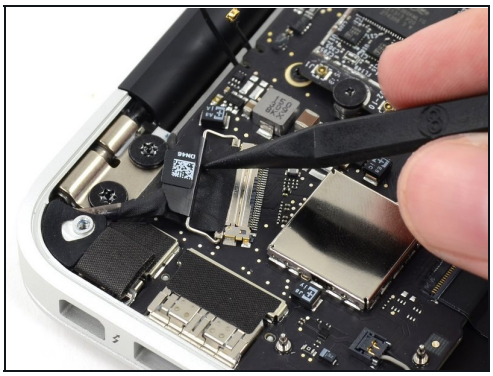
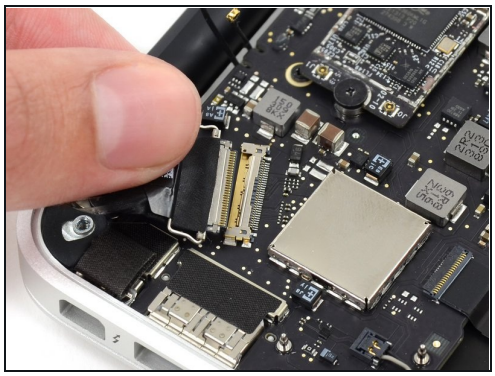
If you work with these connectors often, you may want to buy a specialized disconnect tool (small size, large size). These tools speed up the disconnect and reconnect procedures while minimizing the risk of damage.

When working with these connectors, it's key to always lift the head straight up. If pried on at an odd angle, you risk breaking the socket off of the board underneath.

Reconnecting these can be tricky. Use tweezers to hold the connector in place over its socket and gently press down with your finger or a spudger—the connector should "snap" into place. If you're having trouble, reposition the head and try again.

Don't try to force the connector into place or you may permanently damage it.

Step 8 — Display Cable Connectors

Display (sometimes called eDP cables in laptops) and camera cable connectors often have a small metal buckle running around the socket, locking them in place. The connectors are typically wide and may have tape attached to the buckle.

- Disconnecting these cables is a two-step process. First, gently push the tip of a spudger under the metal buckle to unclip it, then swing it over the socket.
- Next, hold the buckle and cable *together* and gently pull the connector straight out of its socket.

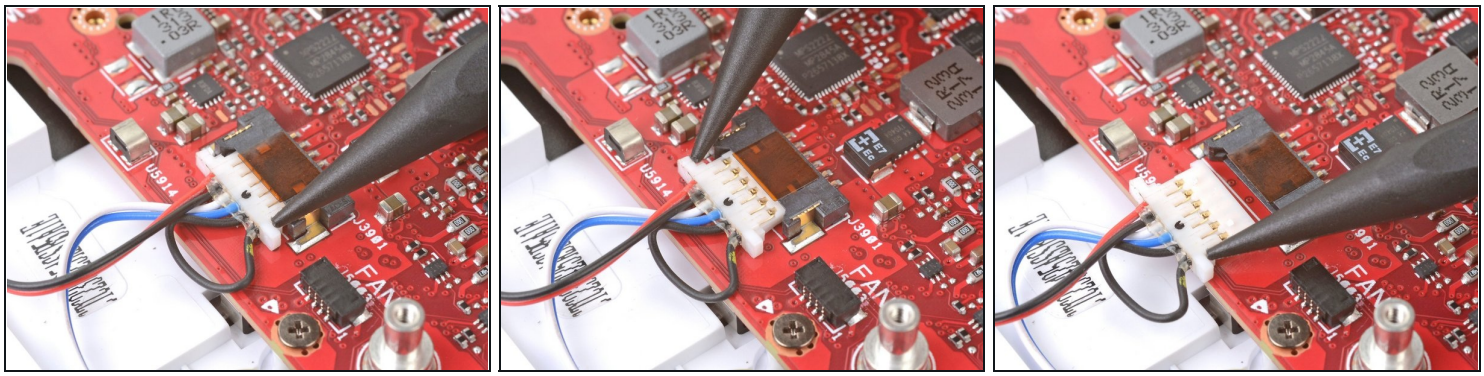
To reconnect:

- Grip the cable and buckle together and insert the connector fully into its socket.

  ⚠ Aligning the connector can be tricky. Reposition it as necessary and don't try to force it into the socket, or you may damage both the connector and its socket.

- Flip the buckle over the socket and use a spudger to press the buckle down until it clicks into place.

Step 9 — Sliding Connectors



Some connectors slide into the side or top of their sockets and have no convenient place to pry or pull. Typically, these connectors have multiple cables attached and are used for small batteries or speakers.

- To disconnect, use the point of a spudger to push on alternating sides of the connector to "walk" it out of its socket.

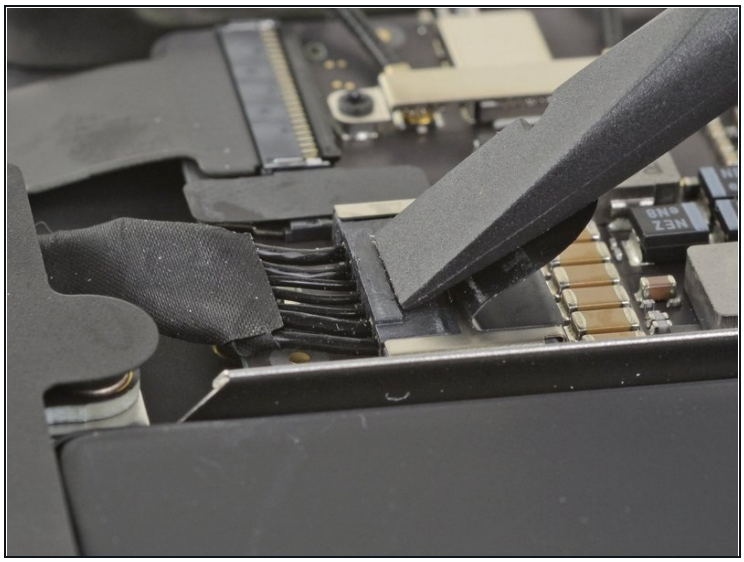
  It may take a lot of alternating before the connector comes out. Be patient, and **don't pull on the cables**.

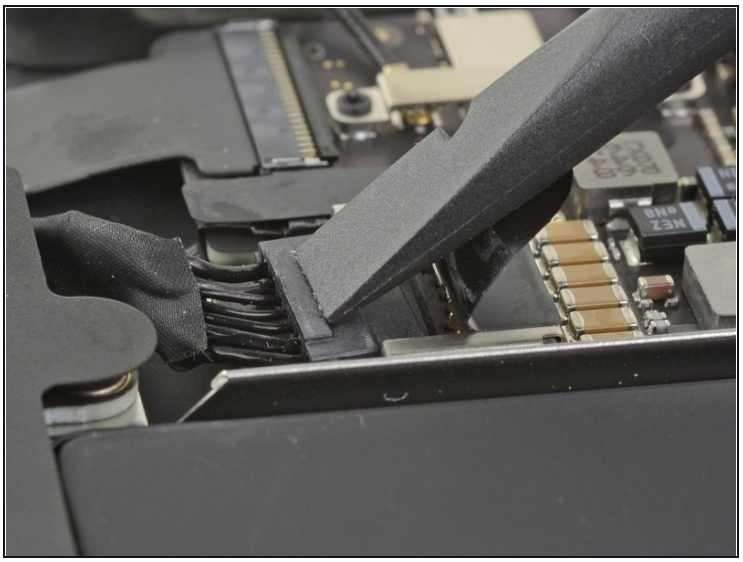
To reconnect the cable, align the connector and use a spudger or clean fingernail to push it fully into the socket.

Don't push on the cables themselves, or you may damage the connector.

Some connectors (like the one pictured) have a small marking that shows which side of the connector should be facing up.

Step 10 — Large Sliding Connectors





Large sliding connectors work the same as smaller sliding connectors, usually sliding into the side of a socket. Typically, these connectors have multiple cables attached and are commonly used for laptop batteries.

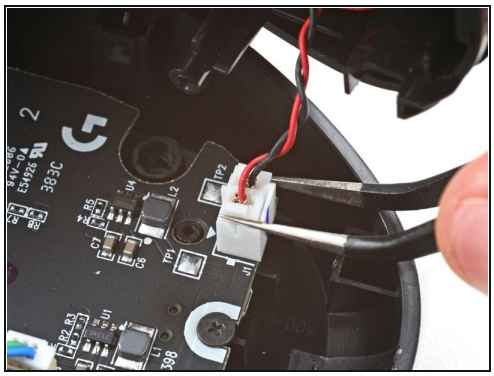
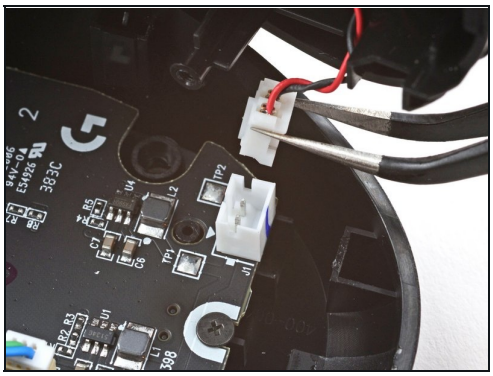
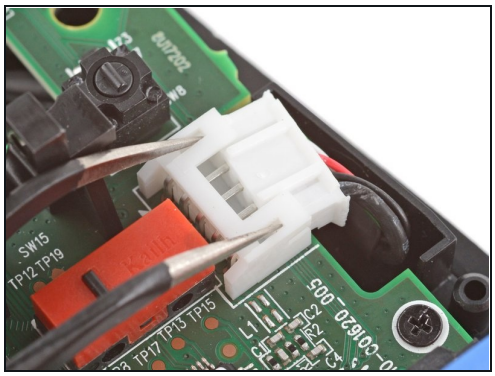
- Most of the time, these connectors will have a lip or a tab along the top that can be used to push the connector out of its socket.
- If there's no clear spot to use a tool, check out bundled cable connectors.

- To disconnect, use the wide end of a spudger to push on the connector tab to slide it out of its socket.

⚠ It may take a lot of force to disconnect the cable. Go slowly, and **don't pull on the cables**.

To reconnect the cable, align the connector and use a spudger to push against the tab to fully seat the connector back into the socket.

Step 11 — JST Connectors

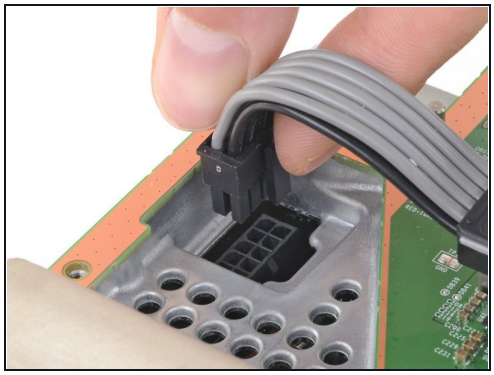
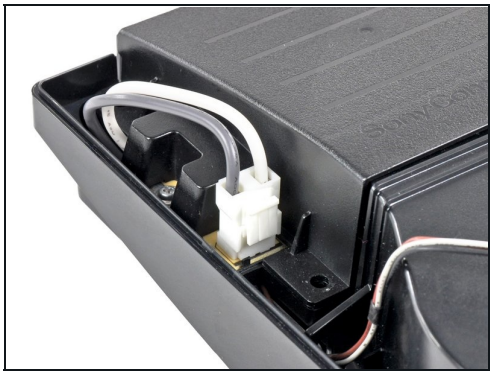
JST connectors are a type of sliding connector that usually have multiple twisted cables attached to it. They're typically on the smaller side and are often used in mice or for speakers.

- To disconnect the cable, first try pushing on alternating sides of the connector, like small sliding connectors.
- If that doesn't work, use a pair of tweezers to firmly grip the sides of the connector and pull straight away from the socket. Hold the tweezers closer to the connector to get a better grip.

  If you're having trouble, try rocking the connector side-to-side to loosen it.
- If the connector's socket has cutouts, you can insert the arms of a pair of sharp tweezers into the cutouts and gently push the connector out of its socket.

To reconnect the cable, insert the connector into its socket and push on the edges until it's fully seated.

Step 12 — Power Cable Connectors

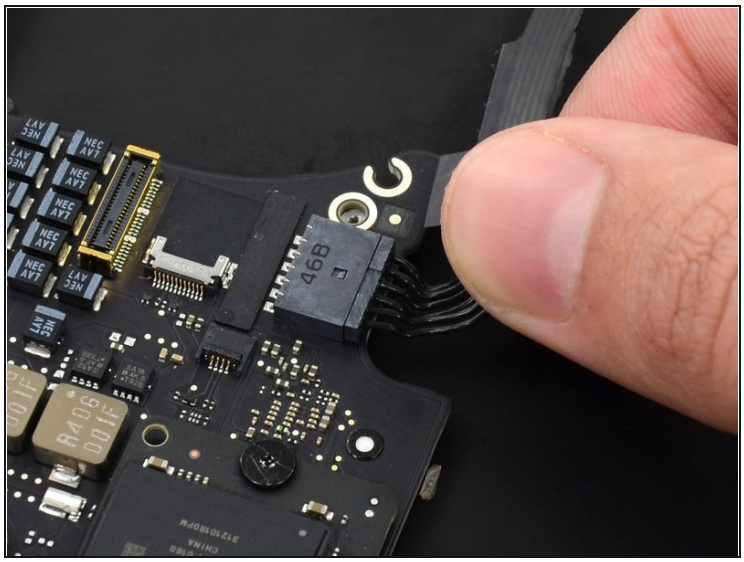



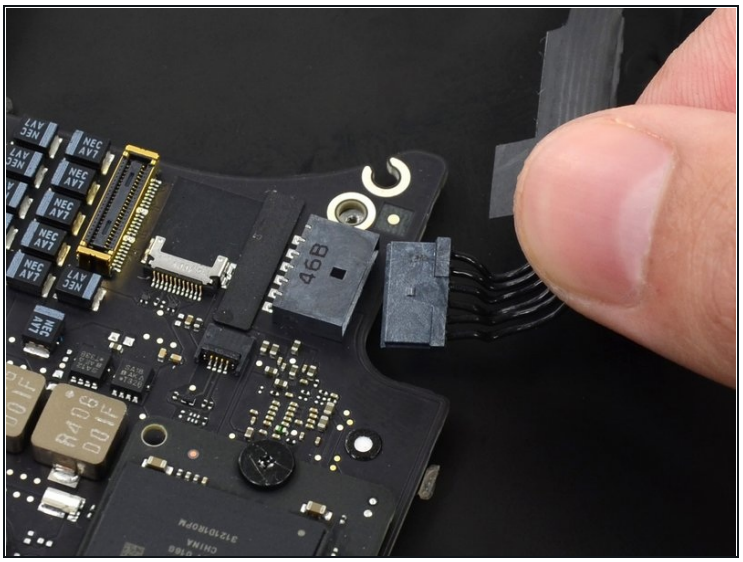

Power or power supply cable connectors usually have multiple cables running to a large plug with a locking tab. They're often found in larger electronic devices, like gaming consoles and desktop PCs.

- Squeeze the tab against the connector and pull straight up to disconnect it.

To reconnect, push the connector over the socket until the clip engages. You'll hear and feel a distinct "click."

Step 13 — Bundled Cable Connectors





Bundled cable connectors have many small wires leading into them, often wrapped in a sleeve. They may not have anywhere to push with a spudger or a spot to grip with tweezers. Pulling on the cables themselves might be the only option.

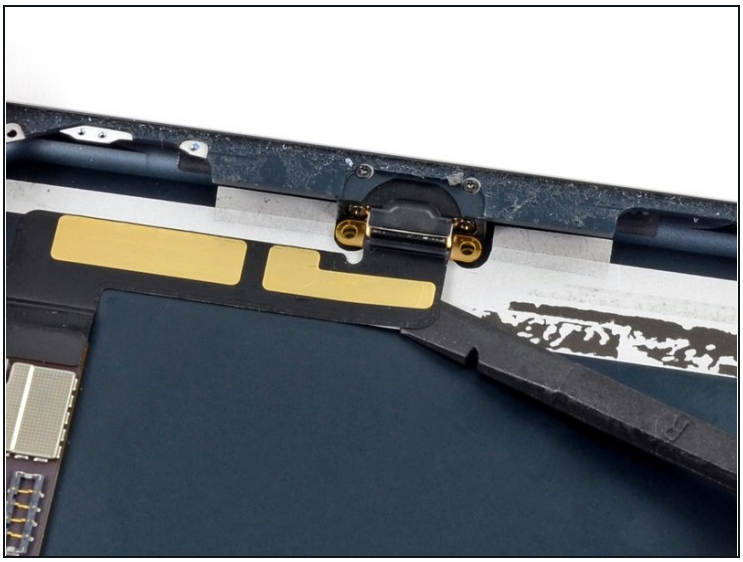
⚠ This should be a last resort if the sliding connector and JST connector disconnection methods didn't work.

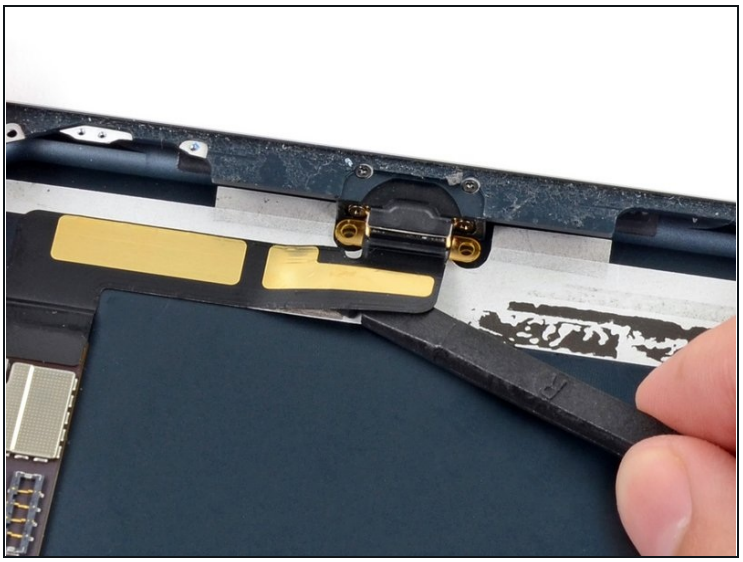
- Grip all the cables at once **as close to the connector as possible** and pull the connector slowly and steadily out of its socket.

  Pull evenly on the full width of the cables so no individual wires are strained.

To reconnect, align the connector and use a spudger or clean fingernail to push the connector head fully into the socket.

Step 14 — Glued-Down Cables



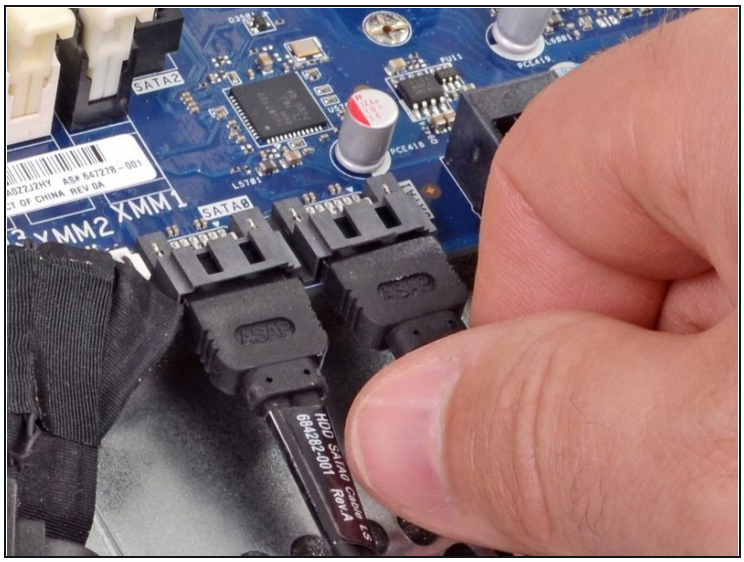


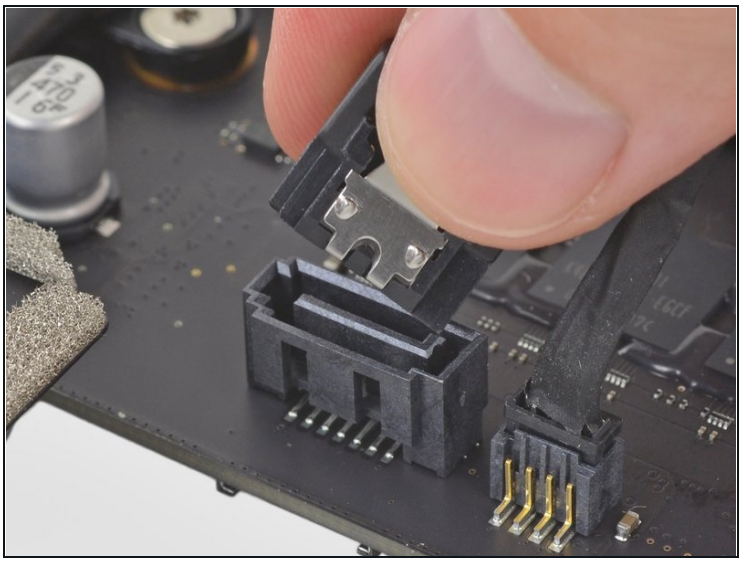
ⓘ Sometimes removing the connector from its socket isn't enough—an additional step or two is required to free up the cable. Here we have a ribbon cable that is lightly glued into place.

- To remove it, carefully slide a spudger or opening pick under the cable to separate its adhesive.

ⓘ For particularly delicate or stubborn cables, a little heat from a hair dryer, heat gun, or our handy iOpener will help soften the adhesive.

Step 15 — SATA Cables

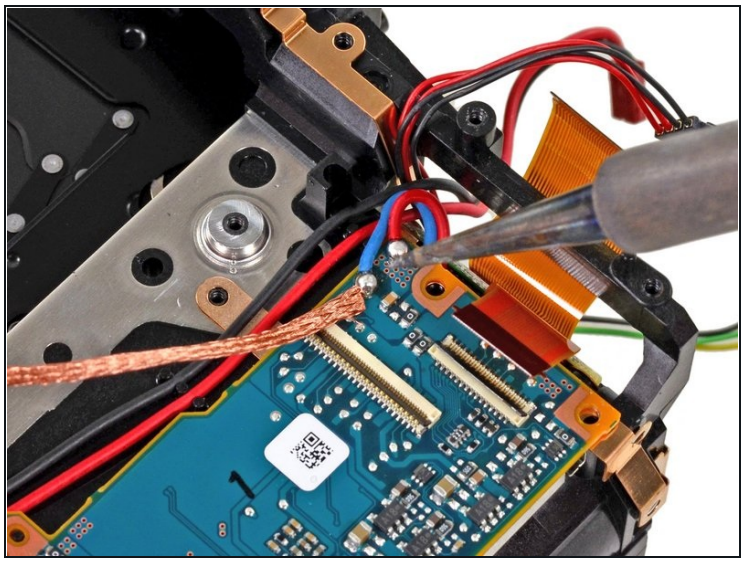


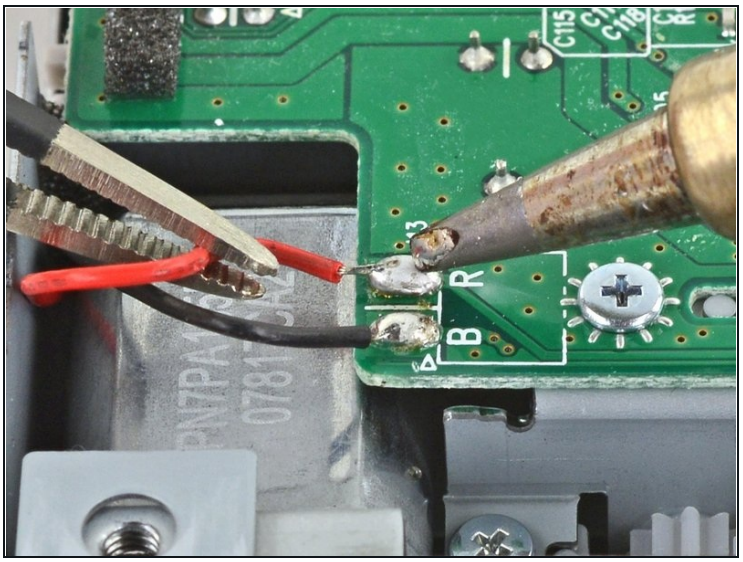


ⓘ Some common internal power and data cables, like these SATA cables, work much like the regular audio/video cables you already have around the house.

- To remove them, pull in the direction of the cable.
  ⓘ Some variants of the SATA cable have a small metal release tab on the side that you may need to press before pulling.

Step 16 — Soldered Connections



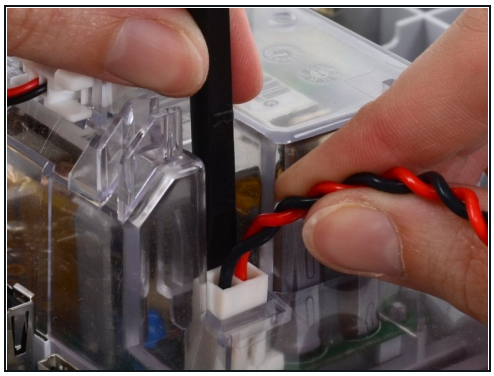
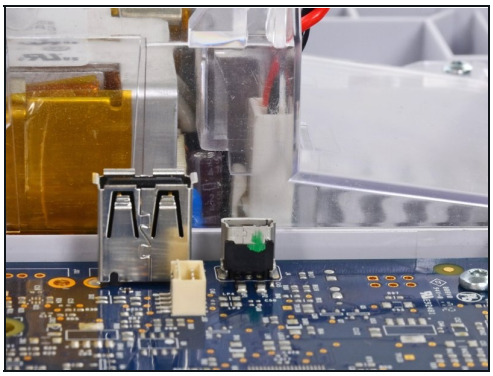
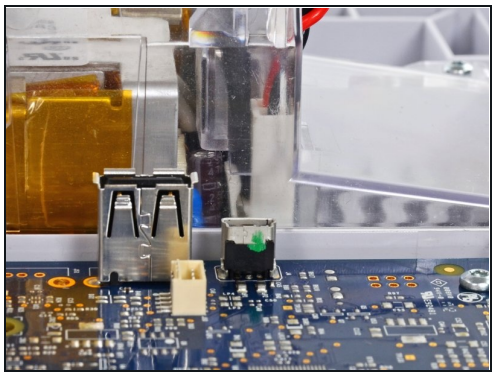


ⓘ You may encounter wires that weren’t designed to be removed at all, and are soldered in place.

- Not to worry! A soldering iron makes quick work of these little guys.

ⓘ If you don't have any soldering experience, head on over to our soldering technique guide or check out our soldering 101 blog post and video.

Step 17 — Rare & Exotic Connectors (Part 1)

ⓘ Eventually, you're bound to come across a connector that you've never seen anywhere else.

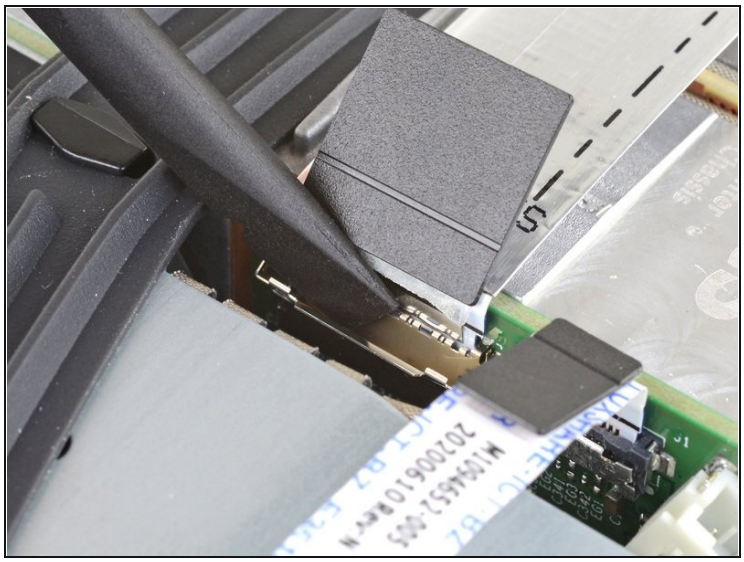
- Inspect the connector carefully, and try to determine how it disconnects.

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

- If you're still having trouble, look for guides of similar devices to see if they provide any clues, or ask for help in our Answers forum.

ⓘ For example, the connector shown here has a locking tab deep in a tight cavity. A long, thin tool like a spudger can help unlock the tab and disconnect the cable.

Step 18 — Rare & Exotic Connectors (Part 2)



ⓘ Some connectors in hard-to-reach areas might use special or unintuitive locking mechanisms.

- **Photo 1:** A large metal cover latches over the full connector, locking it in place.
- **Photo 2:** A metal tab needs to be pushed in—instead of pulled out, to unlock the flat cable.

⚠ Remember: Work slowly, using lots of *gentle* wiggling. **Don't force cables out of board connectors**. Most of the time, once unlocked, the cable should release freely.

Still having trouble? Ask our Answers forum for help.

For more electronics skills, click here.