iMac Intel 21.5" Retina 4K Display (2017) Heat Sink Replacement

Follow the steps in this guide to remove or...

Written By: Adam O'Camb

INTRODUCTION

Follow the steps in this guide to remove or replace the heat sink in a 21.5" Retina 4K 2017 iMac.

Some images in this guide use a 2015 iMac, which has minor visual differences. These differences do not affect the repair procedure.

This guide is marked "potentially dangerous" because it requires you to handle a power supply that contains large capacitors. Unplug the iMac and hold the power button down for at least 10 seconds to help discharge the capacitors. Handle the board by the edges and do not touch surface components.

TOOLS:

- T5 Torx Screwdriver (1)
- iMac Service Wedge (1)
- iMac Opening Wheel (1)
- Plastic Cards (1)
- Tweezers (1)
- Spudger (1)
- Phillips #00 Screwdriver (1)
- TR8 Torx Security Screwdriver (1)
- TR10 Torx Security Screwdriver (1)
- Arctic Silver ArctiClean (1)
- Arctic Silver Thermal Paste (1)
- Coffee Filters or a lint-free cloth (1)
- K5-PRO Viscous Thermal Paste (1)

PARTS:

- iMac Intel 21.5" (2012-2019) Adhesive Strips (1)

Step 1 — Display Assembly

ⓘ With the hinge free to move, the iMac will be unbalanced and hard to work on. Repairs are fast and easy with an iMac service wedge, but can be completed without one.

ⓘ If you are using the iFixit cardboard service wedge, follow these assembly directions to put it together.

- **Before beginning any work on your iMac:** Unplug the computer and press and hold the power button for ten seconds to discharge the power supply's capacitors.

⚠ **Be very careful** not to touch the capacitor leads or any exposed solder joints on the back of the power supply. Only handle the board by the edges.

Step 2

- Starting on the left of the display, near the power button, insert the iMac Opening Tool into the gap between the glass panel and the rear enclosure.

⚠ The hub on the iMac Opening Tool will keep you from pushing the wheel in too far. If using a different tool, insert no more than 3/8" into the display. Otherwise, you risk severing antenna cables and causing serious damage.

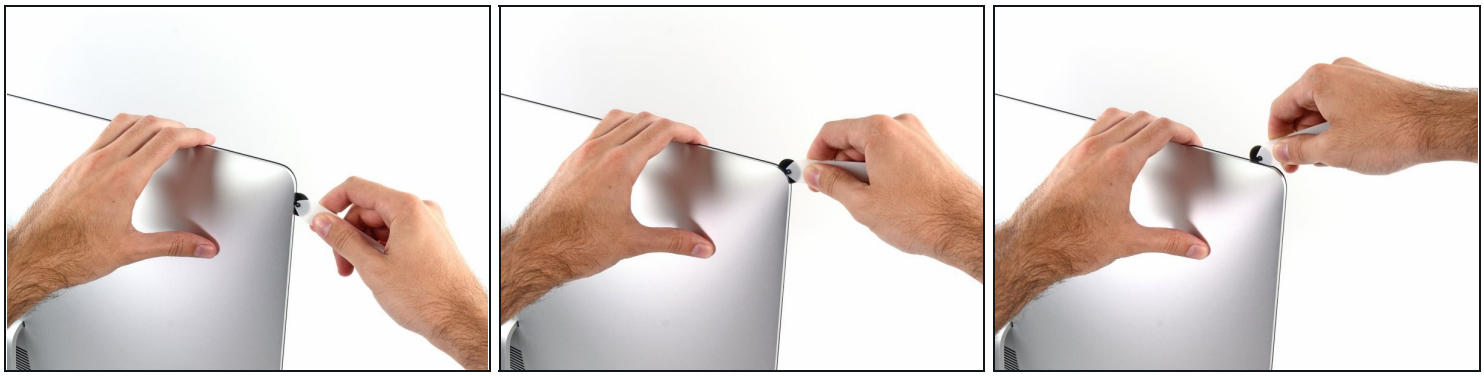
Step 3

- Use the tool like a pizza cutter—roll it along through the gap, and it will cut the foam adhesive through the center.

ⓘ Be sure to always push with the handle behind the cutting wheel. If you pull, the wheel might get pulled out of the handle.

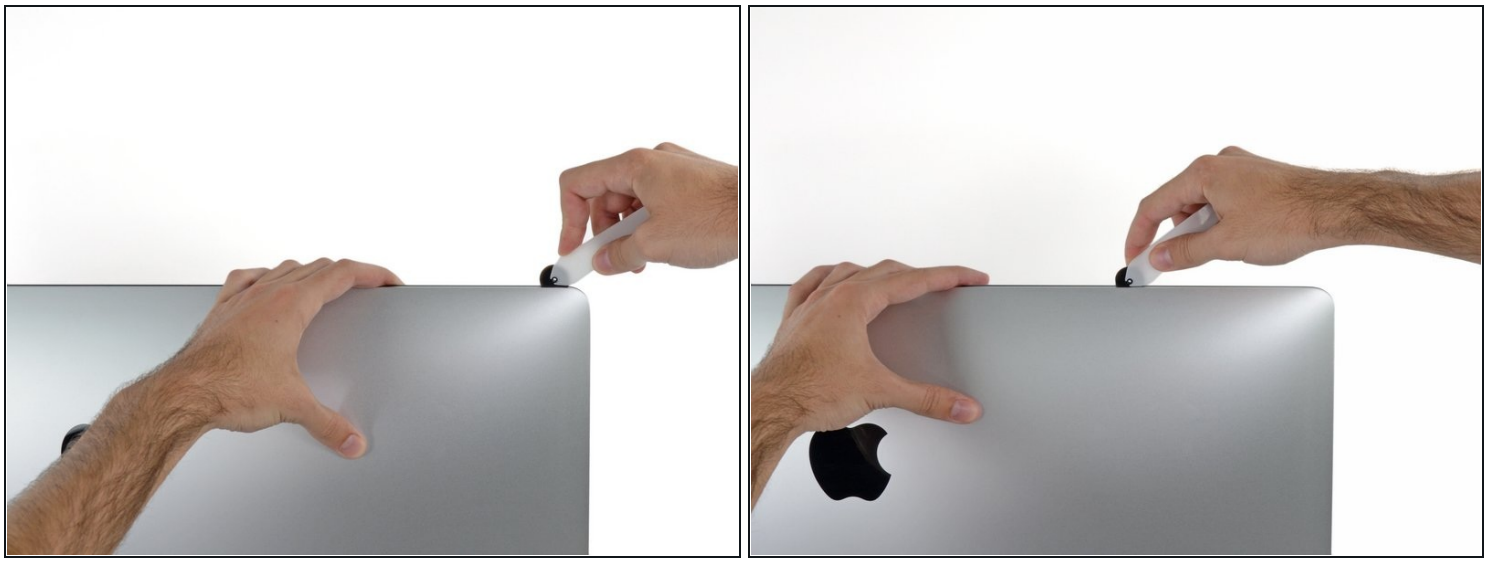
- Run the tool up along the left side of the display.

Step 4



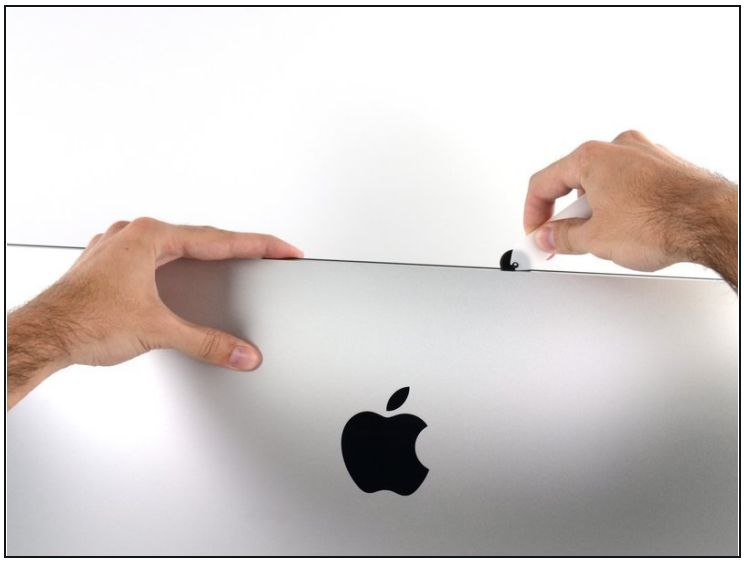
- Continue running the tool up around the top left corner.

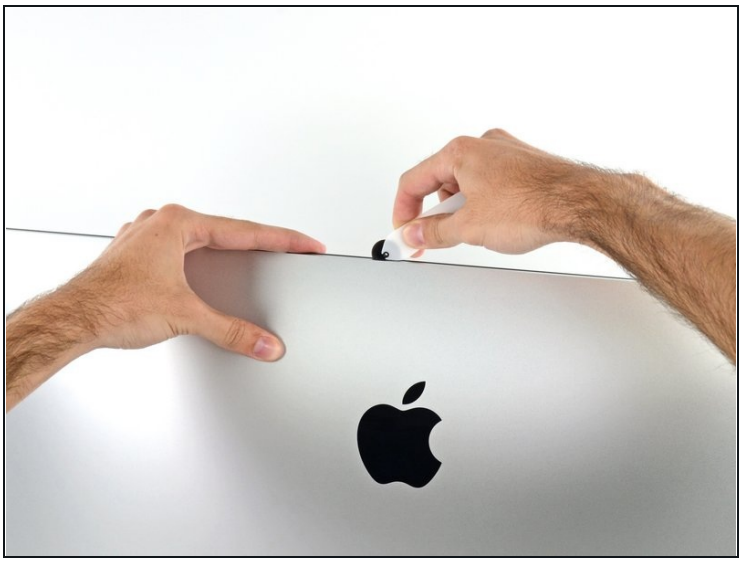
Step 5



- Cut the adhesive along the top left of the display.

Step 6





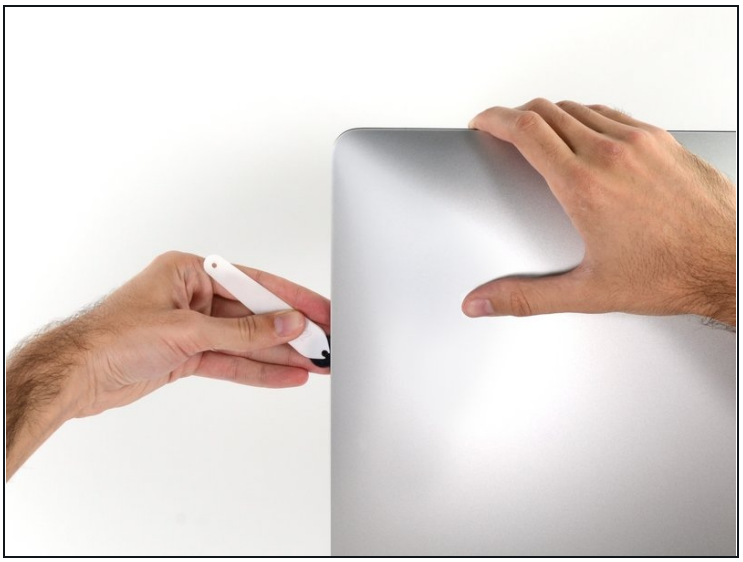
- Continue along the top of the display.

ⓘ You may want to run the tool back and forth through what you've already cut a few times, to ensure you get as much of the adhesive separated as possible.

Step 7

- Push the tool around the top right corner of the display.

Step 8



- Wheel the tool down along the right side of the display.

Step 9

- Finish pushing the opening tool to the bottom of the right side of the display.

ⓘ At this point, you'll want to run the tool back around the entire display, to ensure you cut as much adhesive as possible.

Step 10

While the opening tool cut most of the adhesive, the display will still be slightly adhered to the case. A plastic card will be necessary to free up the last of this adhesive.

Set the iMac face-up on a table.

- Starting from the top right corner of the iMac, wedge a plastic card between the display and frame.

Be careful **not** to insert the plastic card more than 3/8", or you may damage internal components.

Step 11

- Gently twist the plastic card sideways to create a gap between the display and frame.
- Move slowly and be careful not to stress the display glass too much—you only need to make a gap of about 1/4".

Step 12

- Slide the card toward the center of the display to cut any of the remaining adhesive along the top right corner of the iMac.

⚠ Be sure to **stop** before the iSight camera, or you may damage it.

Step 13

- Wedge the plastic card into the top right corner once again, and leave it there to prevent the adhesive from resticking.

Step 14

- Insert a second plastic card into the gap between the display and frame near the top left corner of the iMac.

Step 15

- Gently twist the card upward, slightly increasing the space between the display and frame.

ⓘ As with the other side, twist slowly to allow the adhesive time to separate, and be careful not to over-stress the display glass.

Step 16

- Slide the plastic card toward the center, again stopping just before the iSight camera.

Step 17

- Wedge the plastic card back into the top left corner.

Step 18

- With both plastic cards inserted as shown near the corners, gently twist the cards sideways to increase the gap between display and case.

ⓘ If there are any sections that seem to stick and won't separate, stop twisting and use one of the cards to cut the remaining adhesive.

- Begin to lift the top of the display up from the frame.

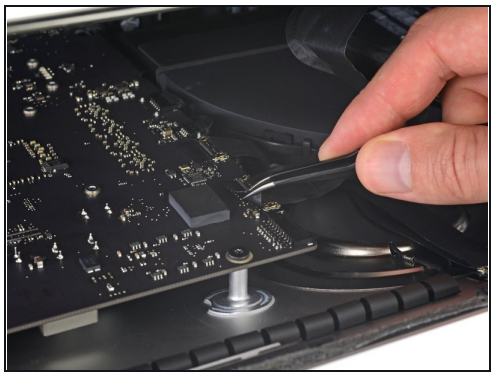
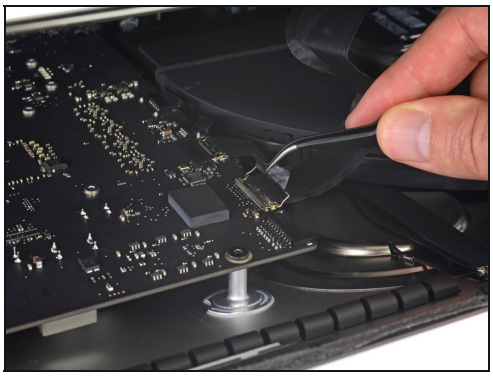
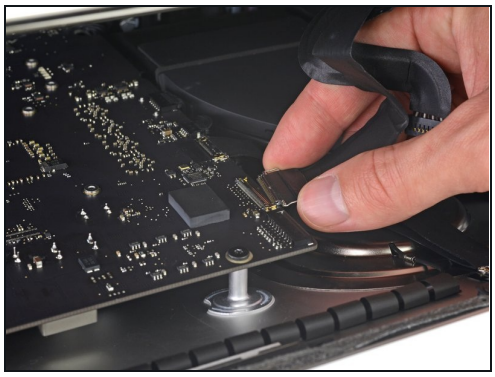
⚠ Only lift the display a few inches—the display data and power cables are still connected to the logic board.

Step 19 — Display Assembly Cables

ⓘ Lift the display up enough to have easy access to the connector, but not so much that you stretch the cables and stress their connections (about 8").

- Hold the display with one hand while using your other hand to unplug the display power cable.

Step 20

- Continuing to support the display with one hand, flip up the metal retaining bracket on the display data cable.
- Carefully pull the display data cable from its socket on the logic board.

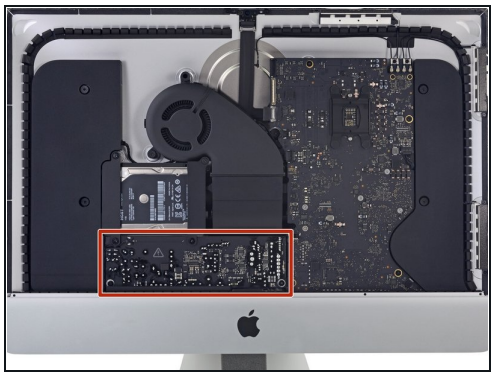
⚠ Be sure to pull the display data cable connector straight out of its socket, keeping it parallel to the motherboard, to avoid damaging it.

Step 21 — Display Assembly Separation

- Lift the display up to a near-vertical position.

ⓘ At this point there is still a strip of adhesive along the bottom of the display that will hold the display to the frame like a hinge. You can loosen this adhesive by working the display up and down a few times.

Step 22



⚠ Be very careful not to touch the capacitor leads or any exposed solder joints on the back of the power supply (boxed in red).

- Grasp the small tab at the end of one of the bottom edge display adhesive strips and pull the adhesive toward the top of the iMac to remove it.
- Repeat this step with the other adhesive strip and remove it.

ⓘ If either adhesive strip breaks before it's removed, use a plastic card to slice through the remaining adhesive.

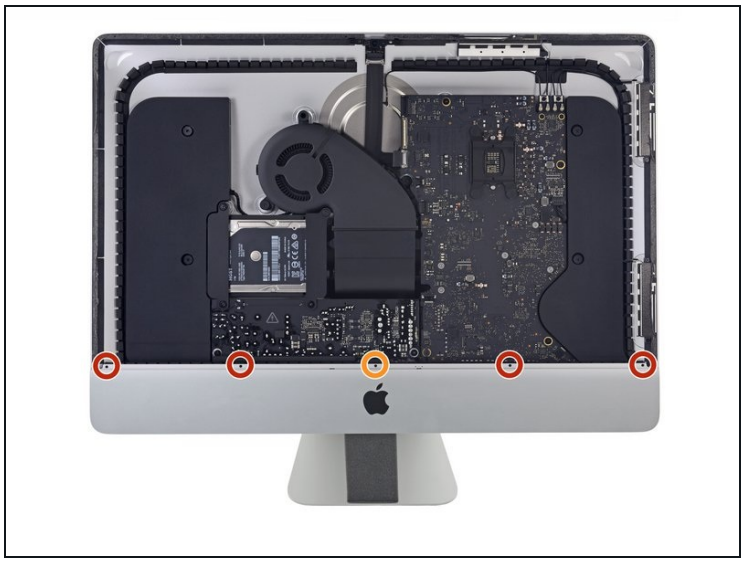
Step 23

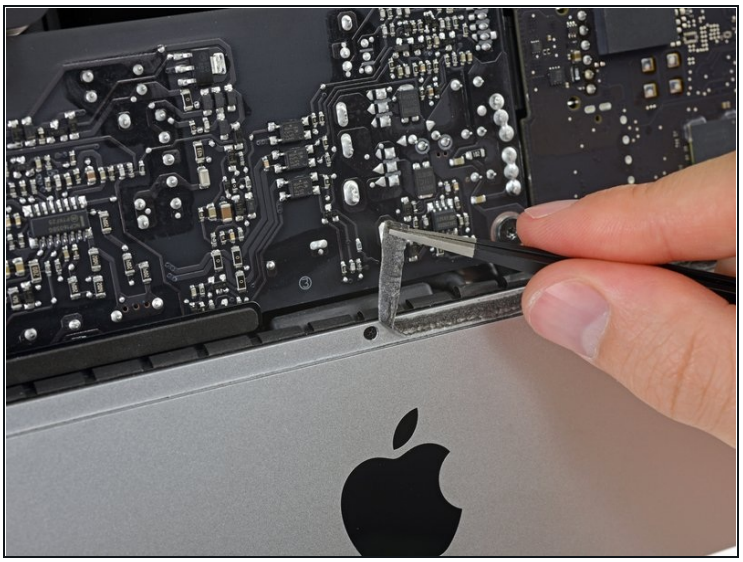
- Lift the display up from the frame and remove it from the iMac.
- It may be necessary to slowly lift from one side to peel against the remaining adhesive.

⚠ Be very careful handling the display—it's big, heavy, and made of glass.

After the adhesive is cut, it cannot be used to re-seal the display in place. Follow this guide to replace the adhesive strips that secure the display to the rear enclosure.

Step 24 — Lower Support Bracket

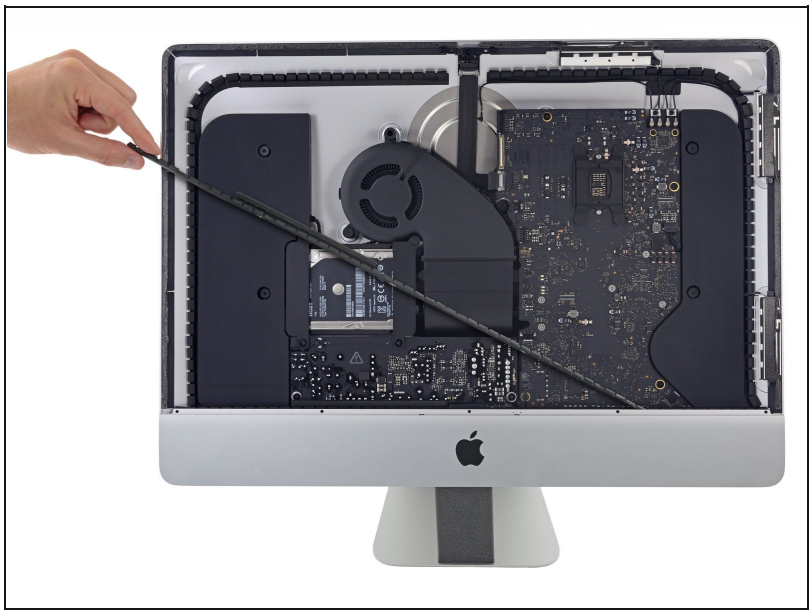




- Remove the following five Phillips screws holding the lower support bracket in place:
  - Four 3.2 mm screws
  - One 1.7 mm screw

ⓘ You may need to peel up the display adhesive lining the bottom edge of the iMac enclosure to access the screws.

Step 25



- Remove the lower support bracket (a.k.a. "chin strap") from the iMac enclosure.

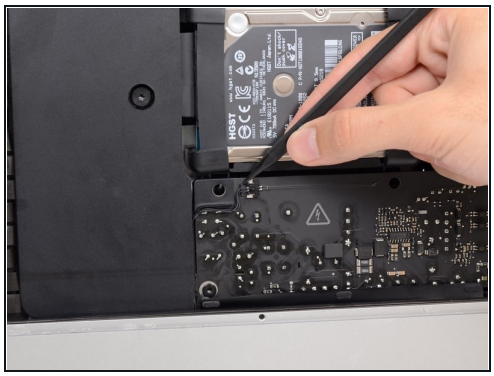
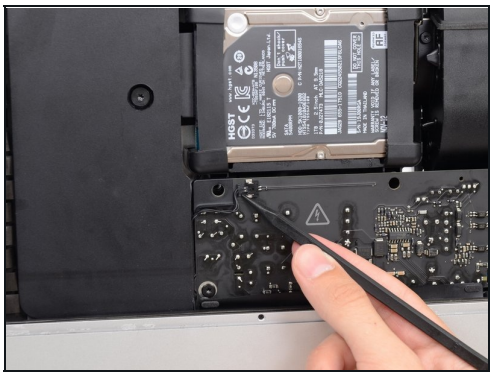
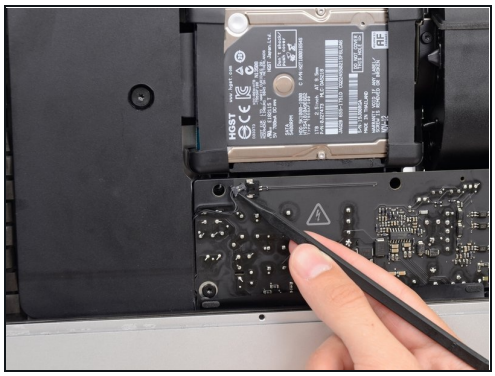
Step 26 — Hard Drive Brackets

- Remove the following T10 Torx screws securing the hard drive brackets to the iMac:
  - Two 21 mm screws
  - One 9 mm screw
  - One 27 mm screw

Step 27

- Remove the left and right hard drive brackets from the iMac.

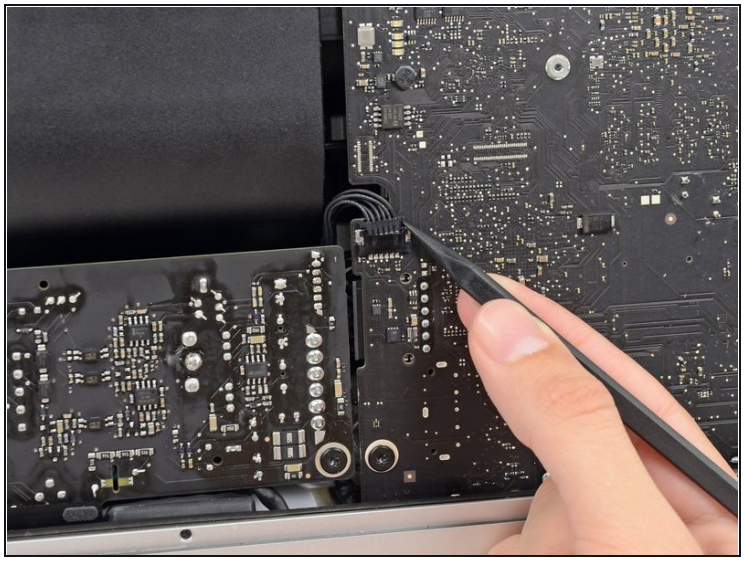
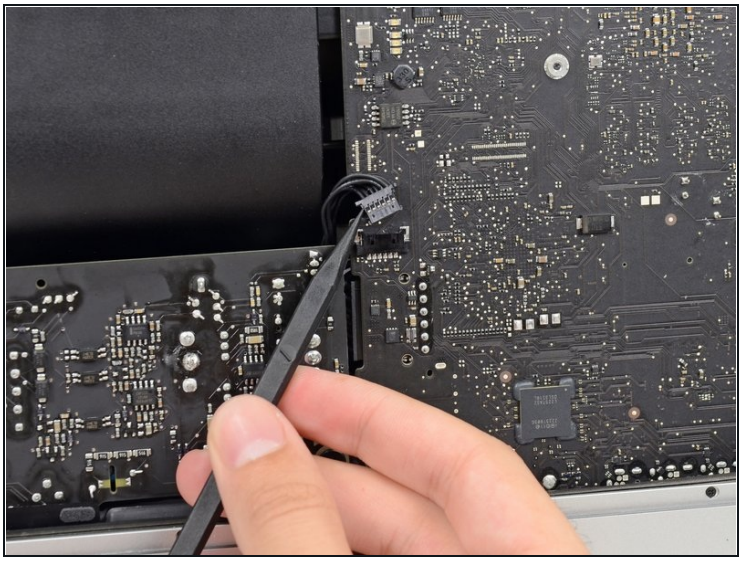
Step 28 — Power Supply

⚠ The next few steps bring your hands close to the exposed face of the power supply. **Do not** touch the face of the power supply or any of the exposed solder. Touching it risks a high voltage shock from the many large capacitors attached to the board.

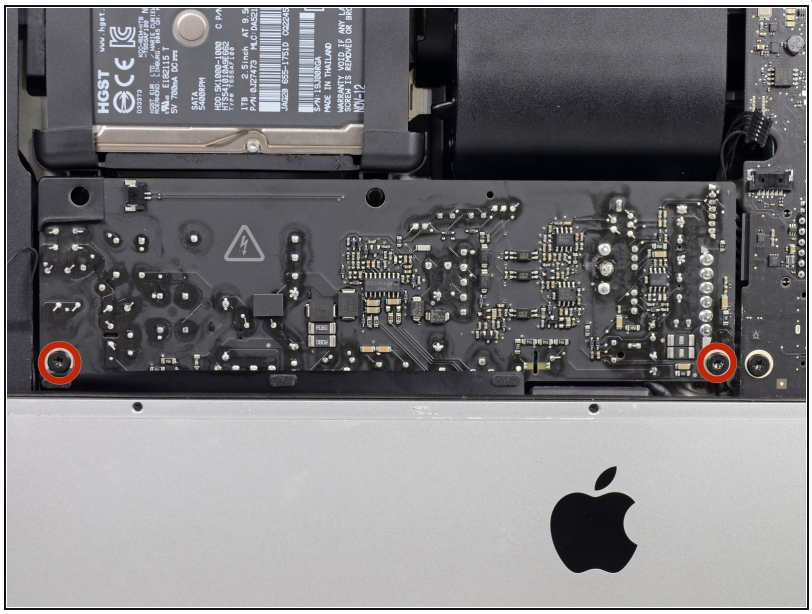
- Use the tip of a spudger to push each side of the power button cable connector and gently *walk* it out of its socket.

Step 29

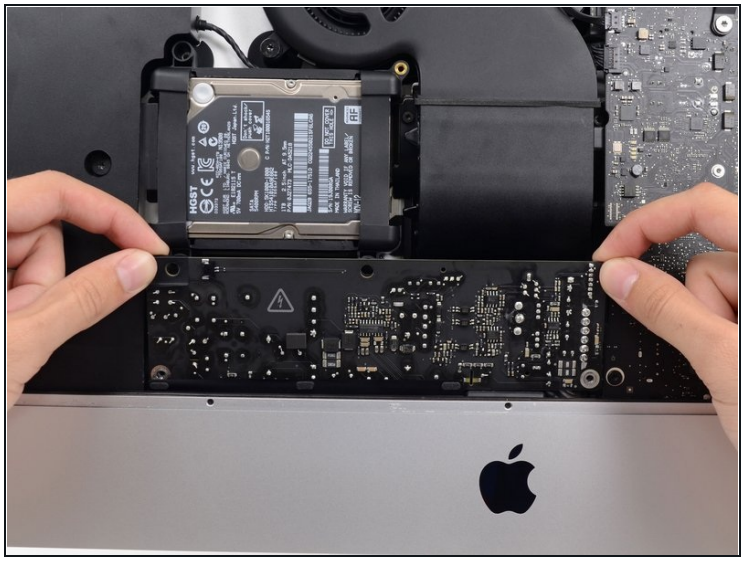
- Use the tip of a spudger to push each side of the power supply control cable connector and gently *walk* it out of its socket.

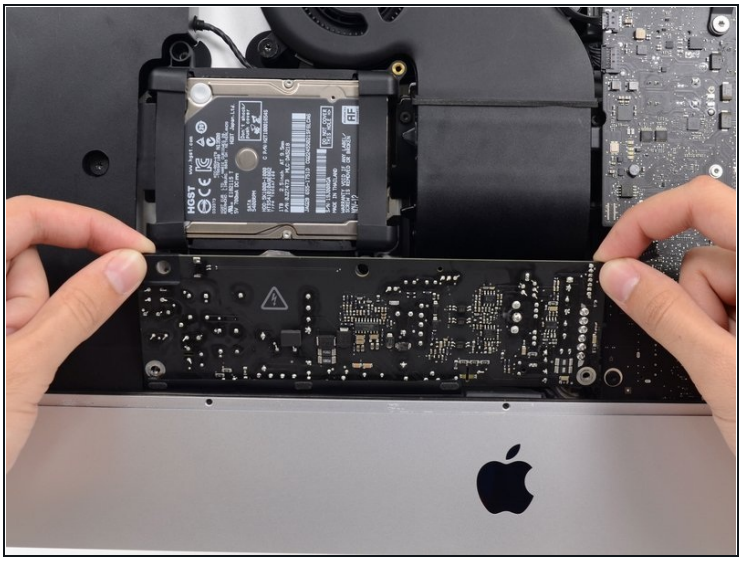
Step 30



- Remove the two 7.2 mm T8 Torx screws securing the power supply to the rear enclosure.

Step 31

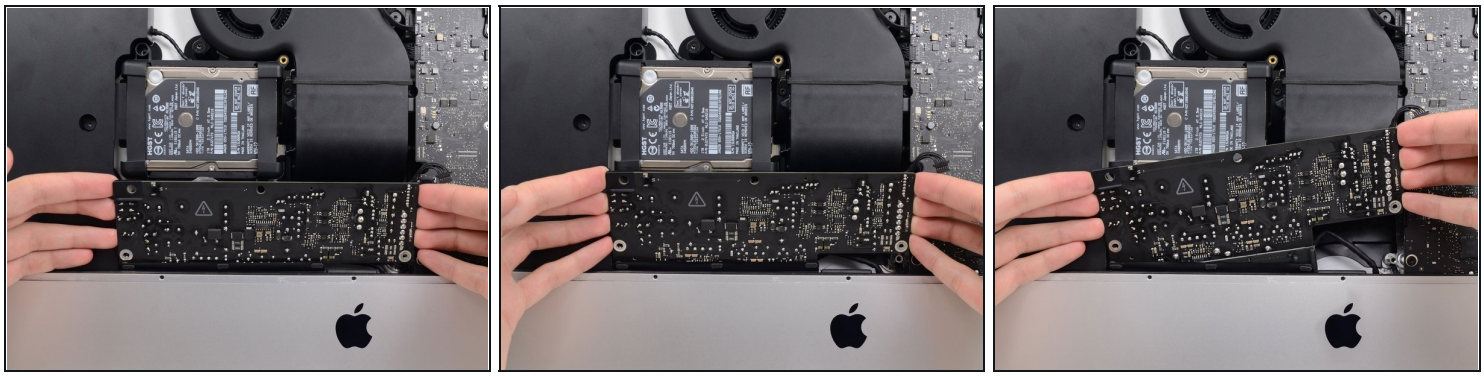




⚠ When working on the power supply, **be very careful** not to touch the capacitor leads or any exposed solder joints on the back of the power supply. Only handle the board by the edges.

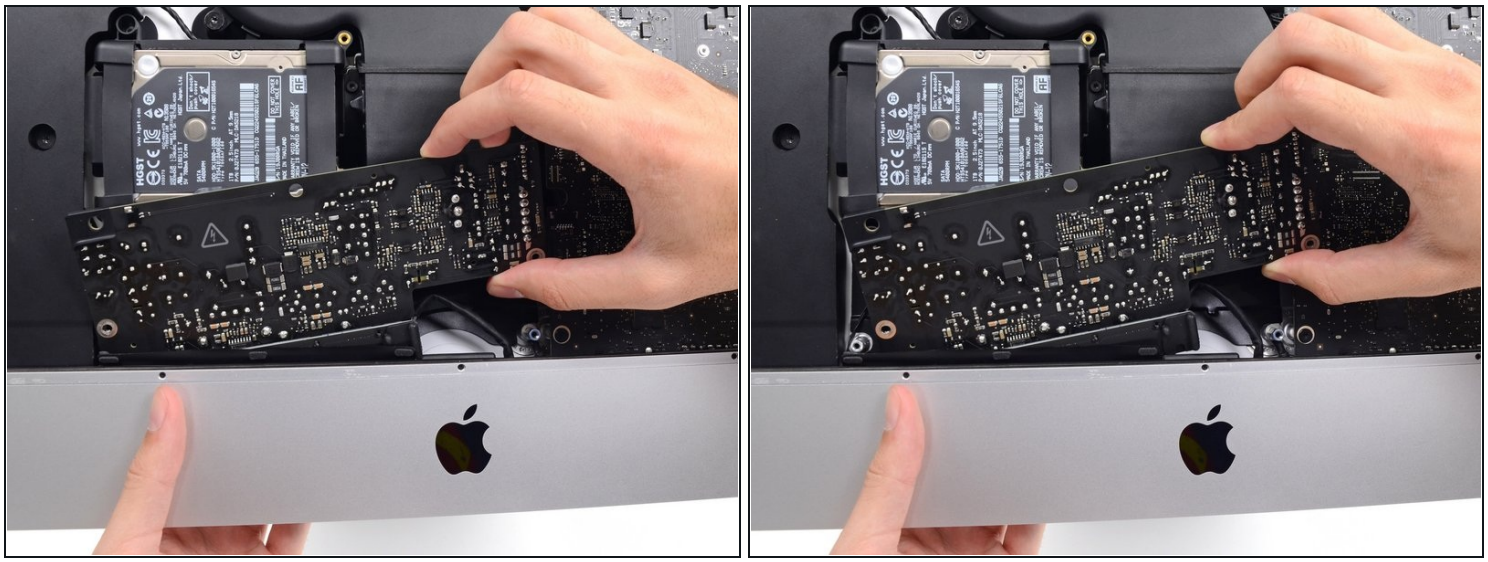
- Tilt the power supply forward.

Step 32



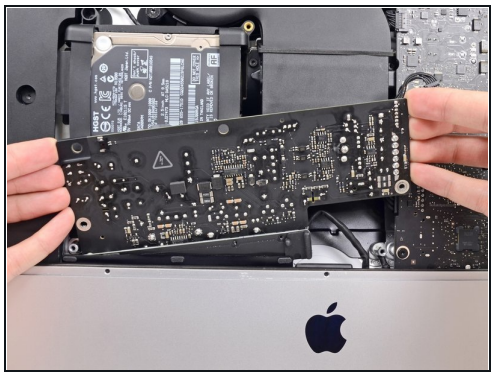
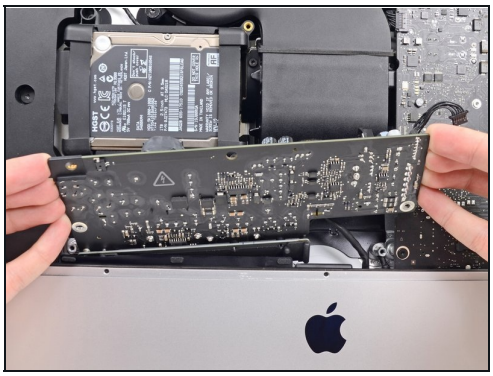
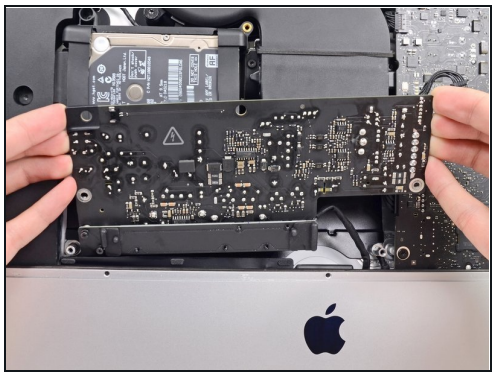
- Pull the power supply slightly up and out from the rear enclosure.
- Rotate the power supply counterclockwise, lifting the right side up about an inch higher than the left.

Step 33



- Slide the power supply to the right to clear the screw posts on the rear enclosure.

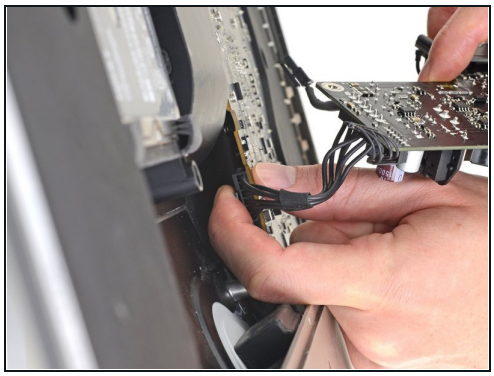
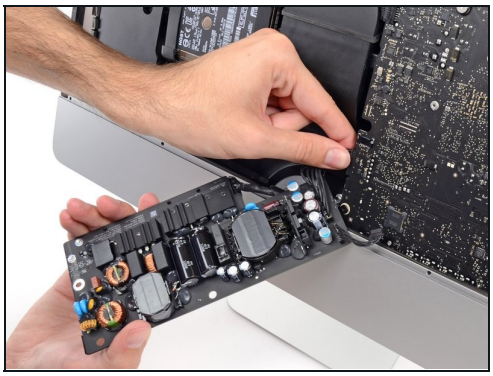
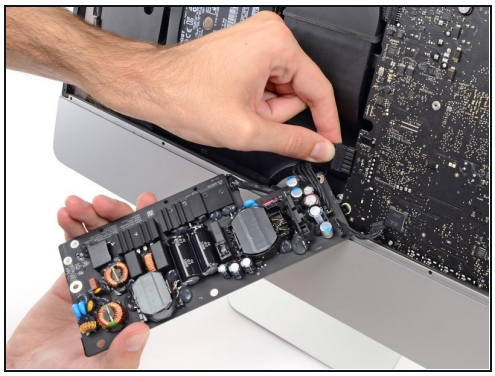
Step 34

- Rock the power supply forward and remove it from its recess in the rear enclosure.

⚠ **Do not** try to completely remove the power supply from the iMac yet—it is still connected to the logic board.

Step 35

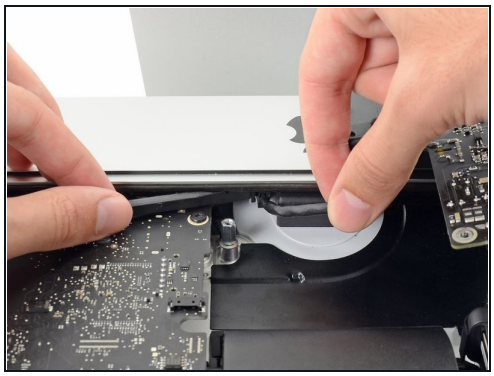
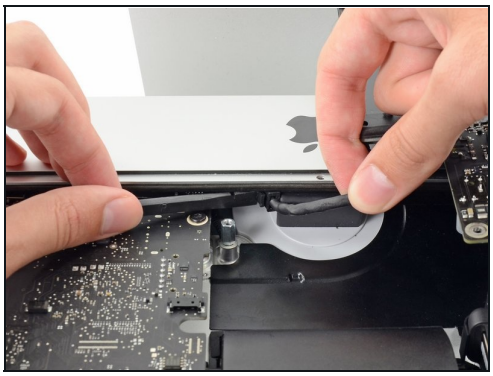
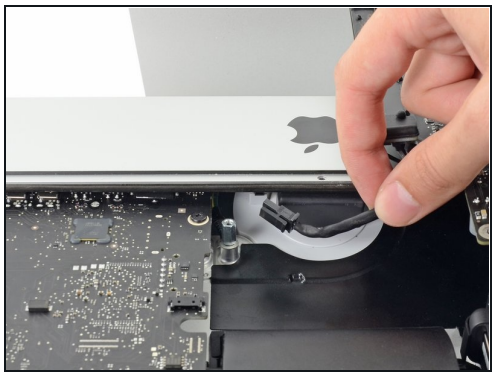
⚠ **Be very careful** not to touch the capacitor leads or any exposed solder joints on the back of the power supply. Only handle the board by the edges.

⚠ Do not let any of the exposed solder joints come in contact with a metal surface, as that can cause a short.

ⓘ Flip the power supply over to access the DC power cable connection behind the logic board.

- To disconnect the cable, squeeze the release clip on the back side of the connector, behind the logic board, and pull the connector straight out.

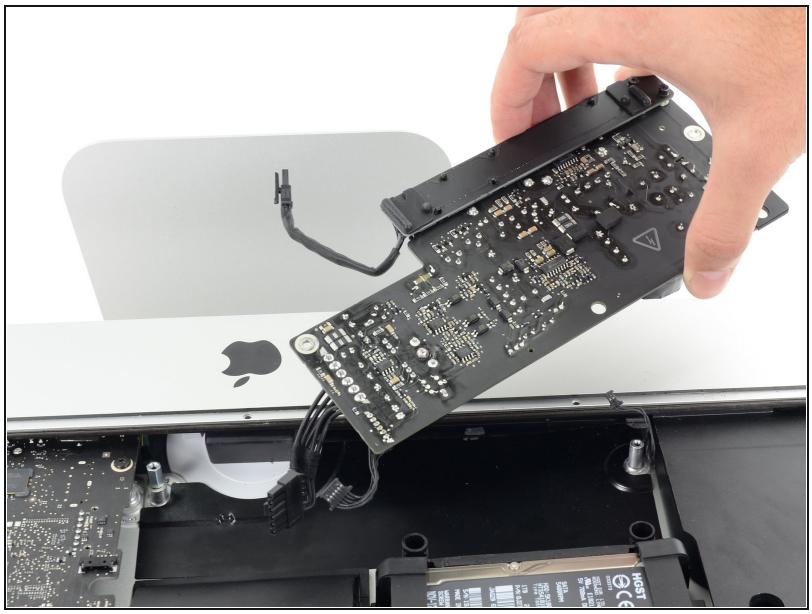
Step 36

ⓘ You may find it helpful to set the iMac down on its back for the next couple of steps.

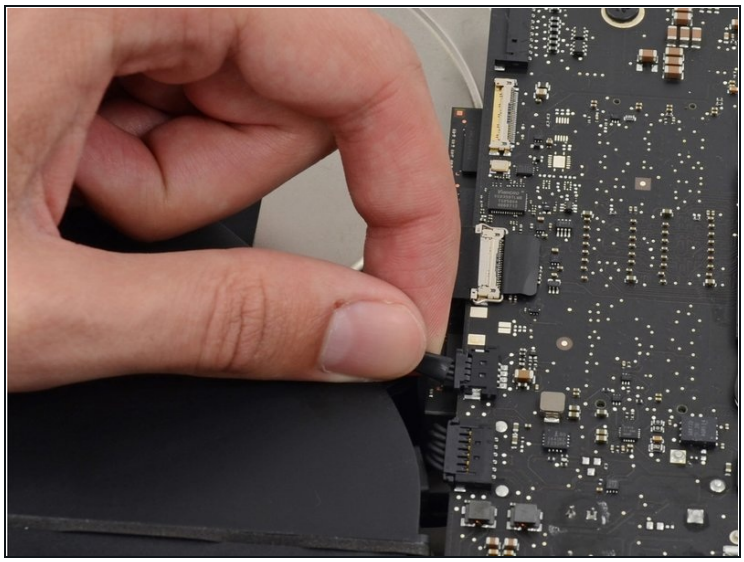
- Use the flat end of a spudger to press the release clip on the side of the AC inlet cable connector inward.
- While pressing on the release clip with the spudger, grasp the AC inlet cable, and pull the connector straight out of its socket.

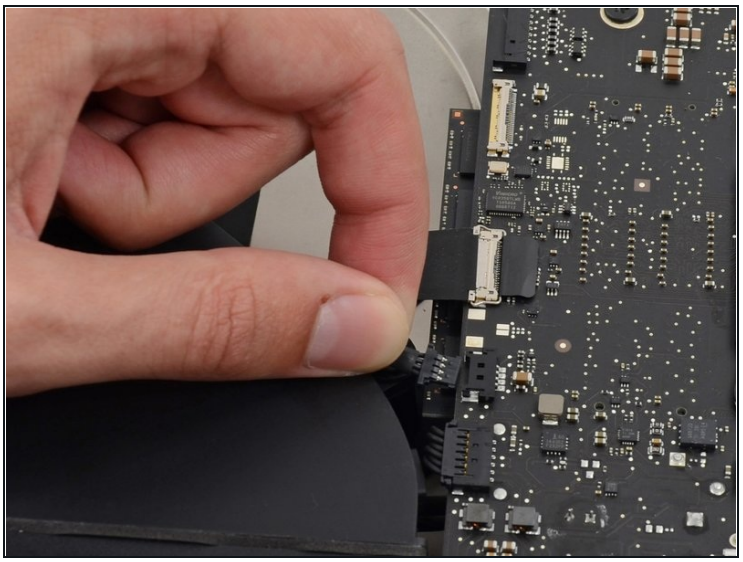
Step 37



- Remove the power supply from the iMac.

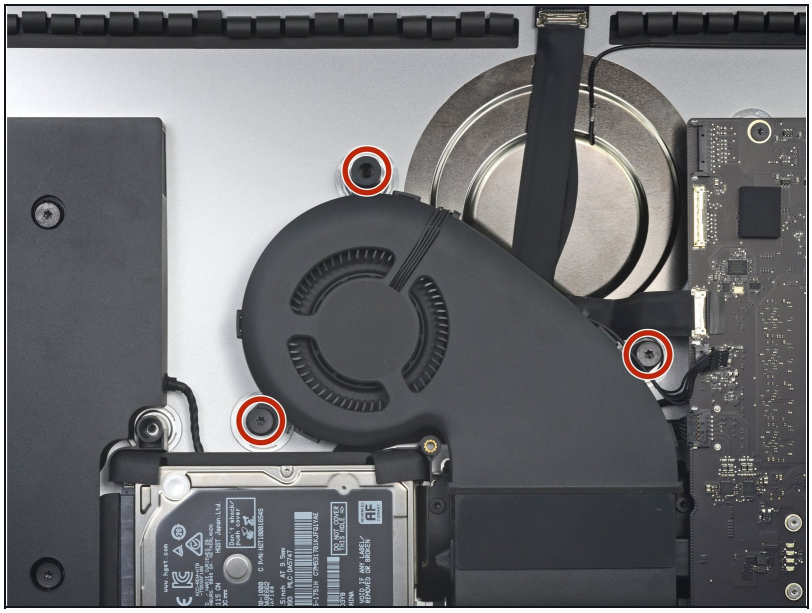
Step 38 — Fan





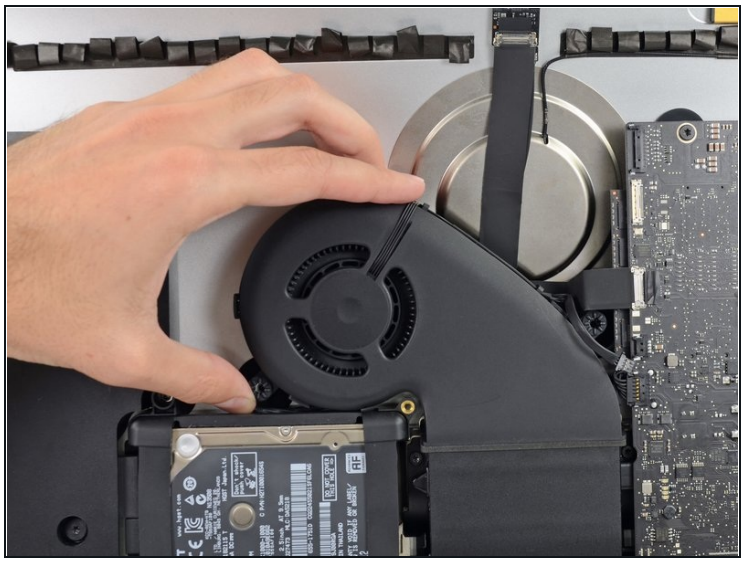
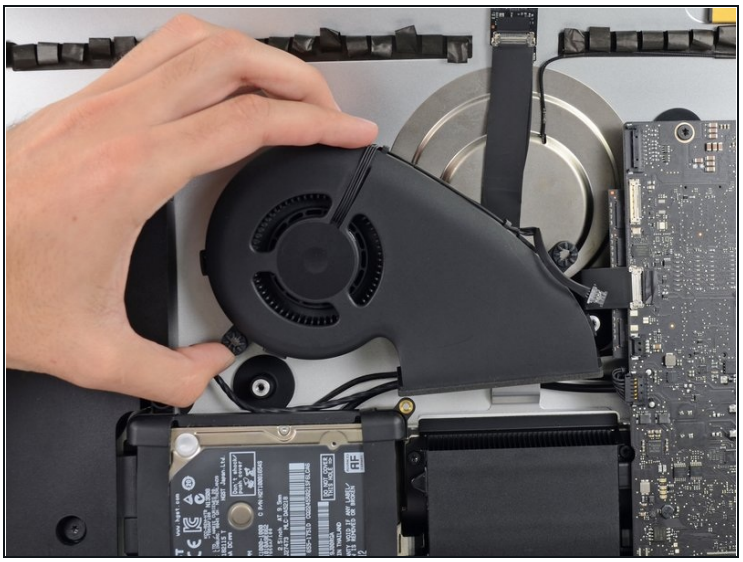
- Gently pull the fan cable connector straight out of its socket on the logic board.

Step 39



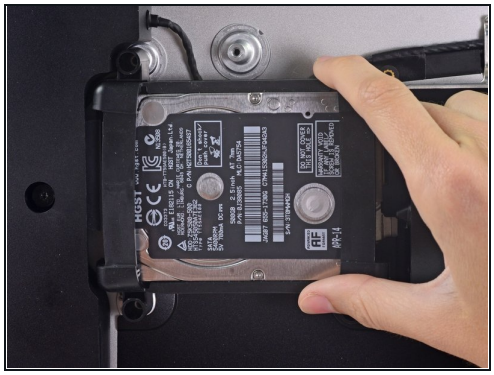
- Remove the three 10 mm T10 Torx screws securing the fan to the rear enclosure.
  - ⓘ The uppermost screw has a rubber standoff adhered to its head to support the display—leave this in place.

Step 40

- Remove the fan from the iMac.

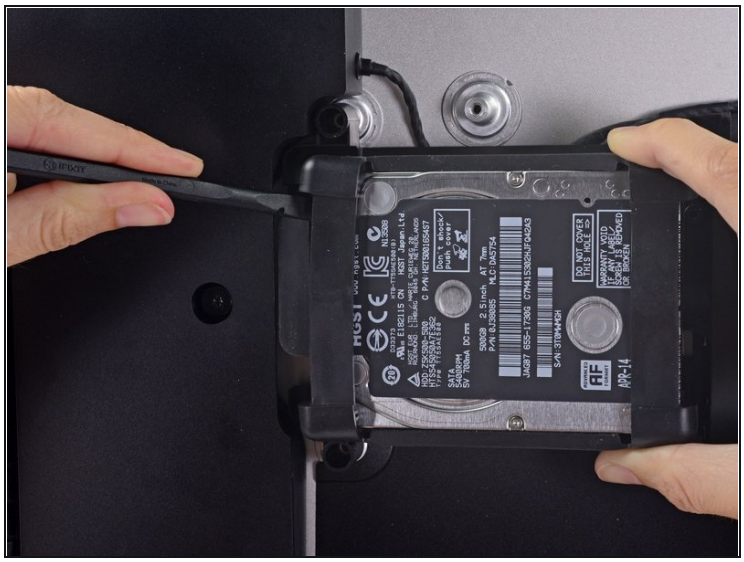
Step 41 — Hard Drive Assembly

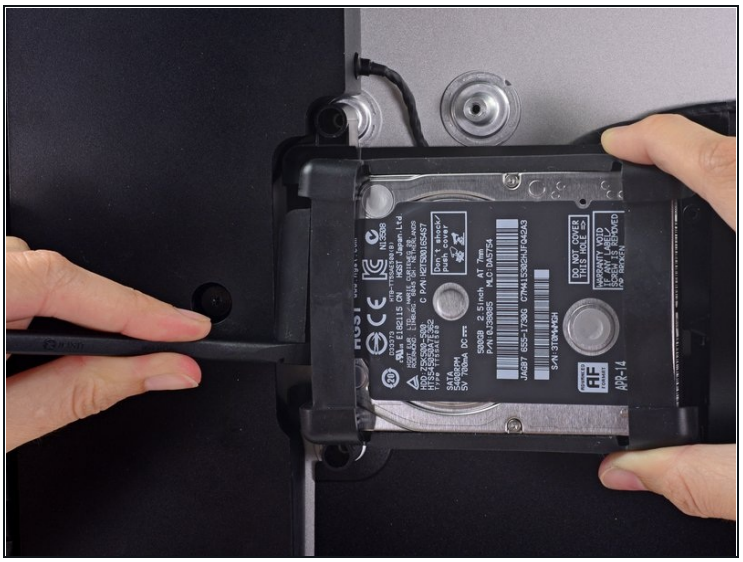


- Lift the hard drive from the edge nearest the logic board and pull it slightly out of its recess.

⚠ The hard drive is attached by a single SATA power/data cable—do **not** attempt to fully remove it from the iMac yet.

Step 42



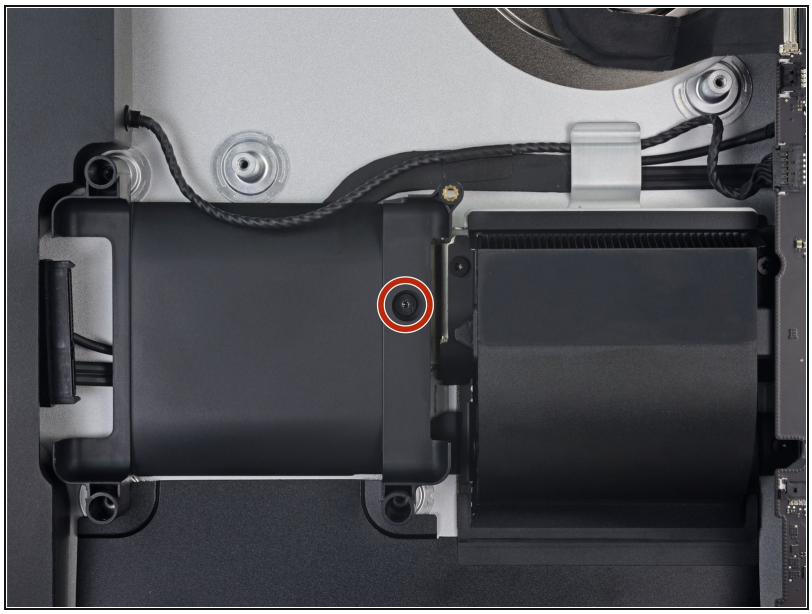


- Use a spudger to disconnect the single SATA power and data combo cable by gently prying its large plastic connector away from the hard drive.

Step 43

- Remove the hard drive assembly from the iMac.

Step 44 — Hard Drive Tray

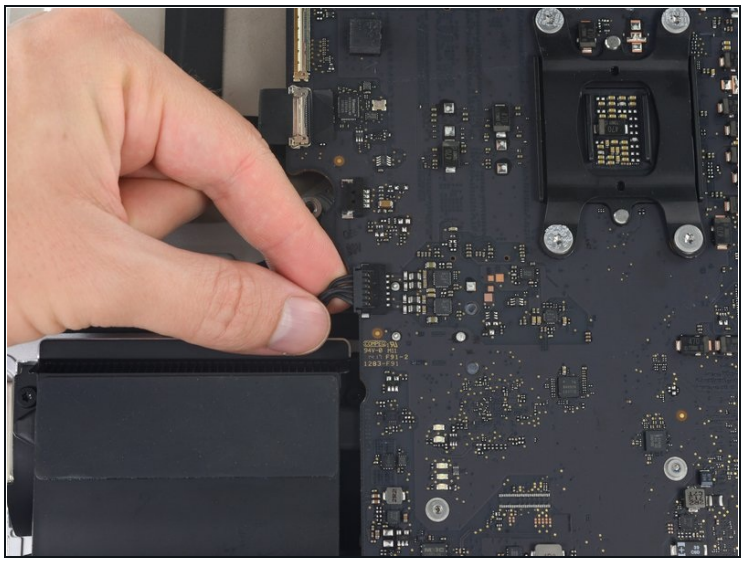


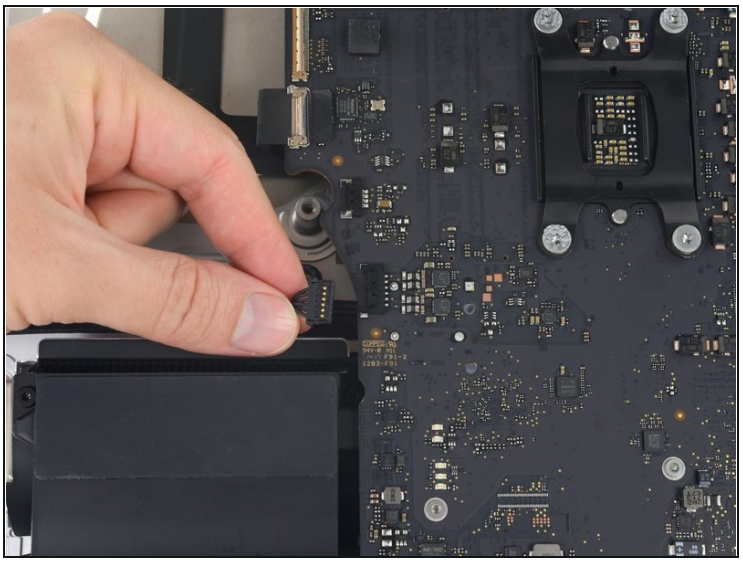
- Remove the 7.3 mm T8 Torx screw securing the hard drive tray to the rear enclosure.

Step 45

- Remove the hard drive tray.

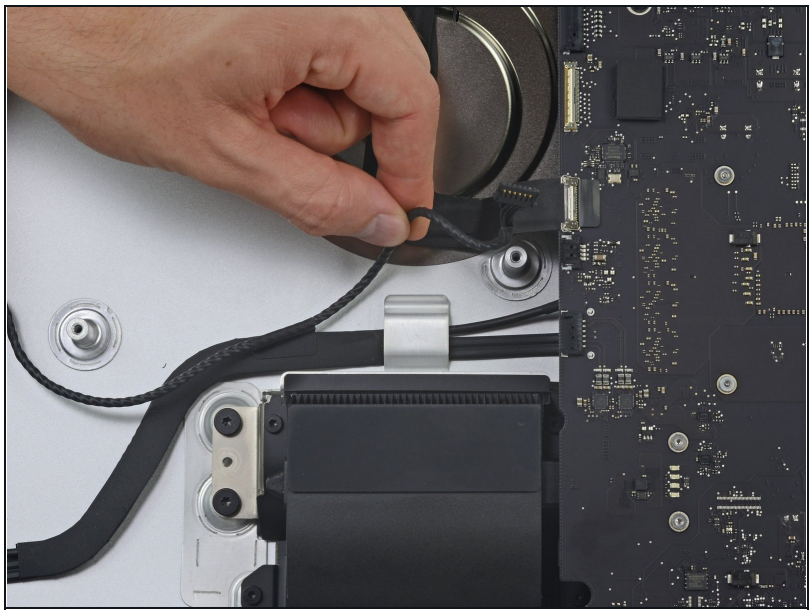
Step 46 — Logic Board Assembly





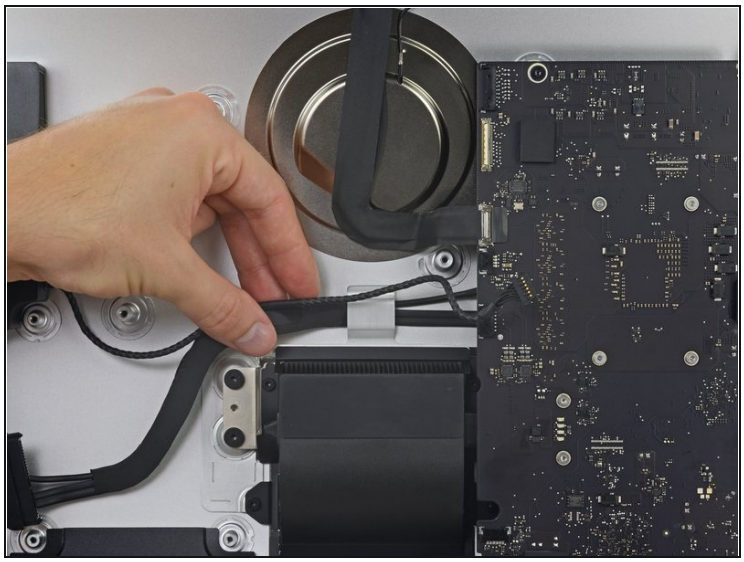
- Gently pull the left speaker cable straight out of its socket on the logic board.

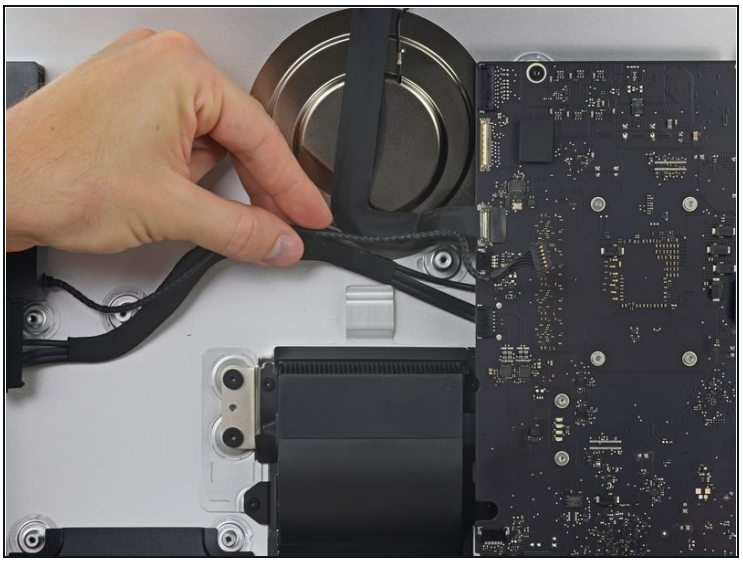
Step 47



- De-route the left speaker cable by pulling it straight up out of the retaining clip in the back of the rear enclosure.

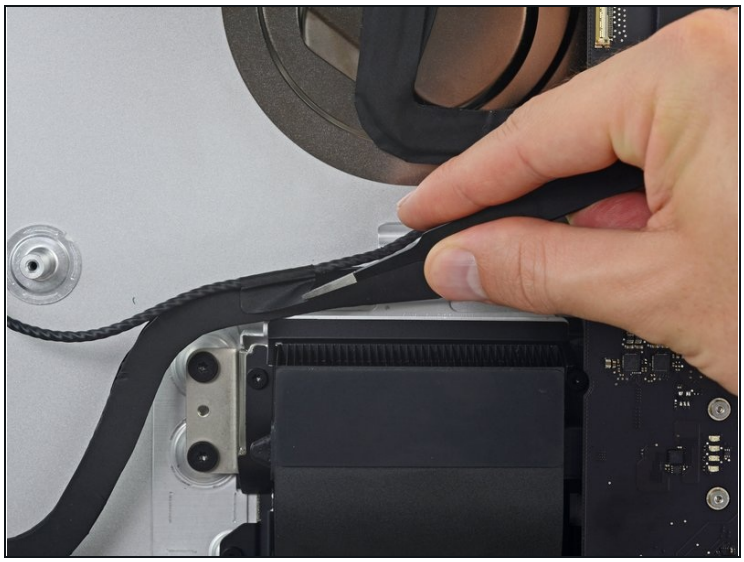
Step 48

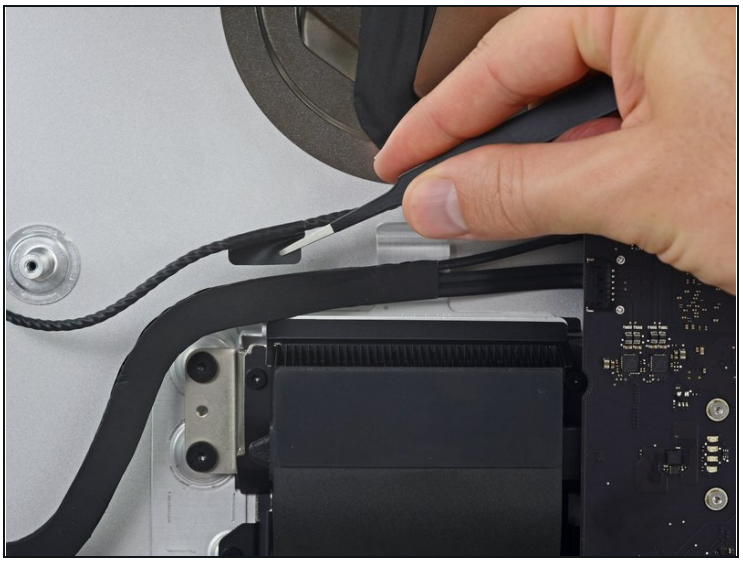




- Similarly to the previous step, de-route the SATA and power cables by pulling the braid straight up out of the retaining clip.

Step 49





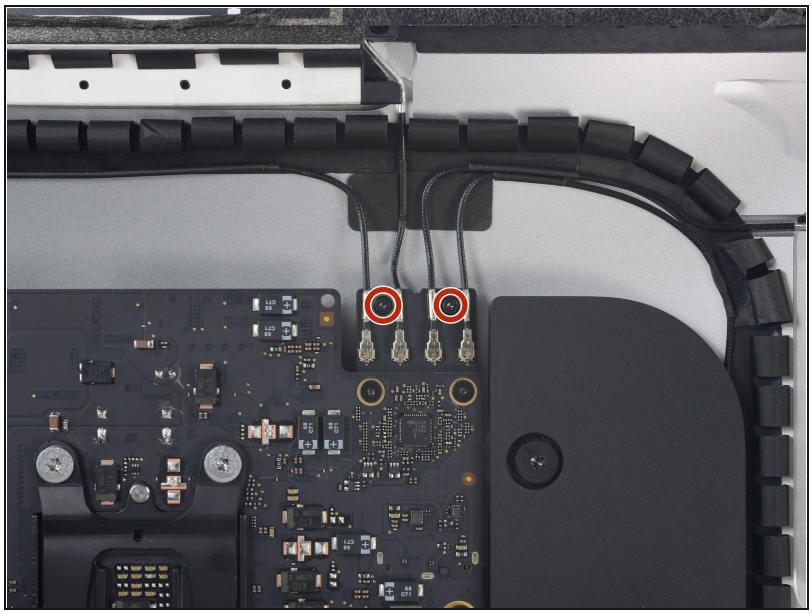
- Peel up the piece of tape connecting the left speaker connector to the SATA power and data cables.

Step 50

- Flip up the metal retaining bracket on the FaceTime camera cable connector.
- Pull the FaceTime camera cable straight out of its socket on the logic board.

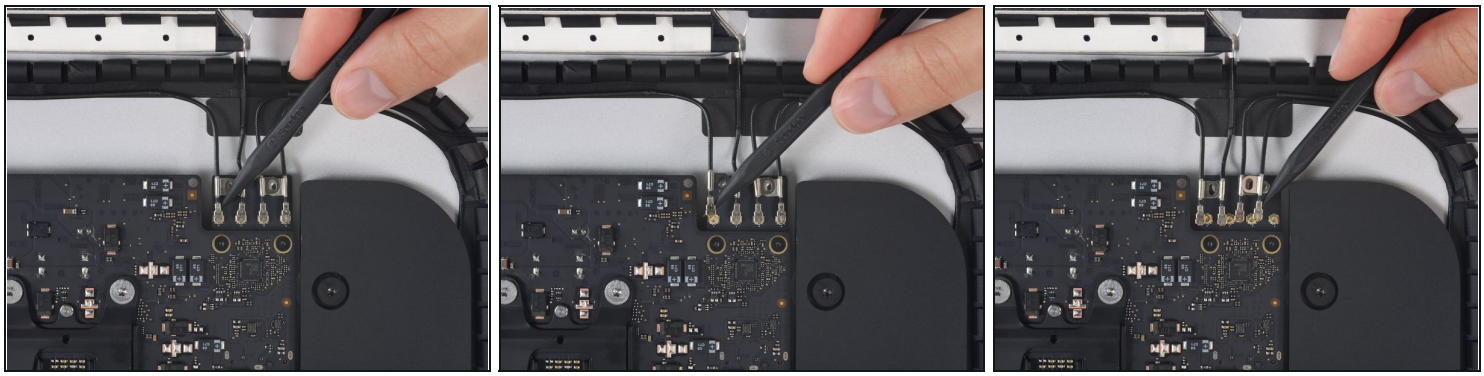
⚠ This is a delicate connector that can be easily damaged.

Step 51



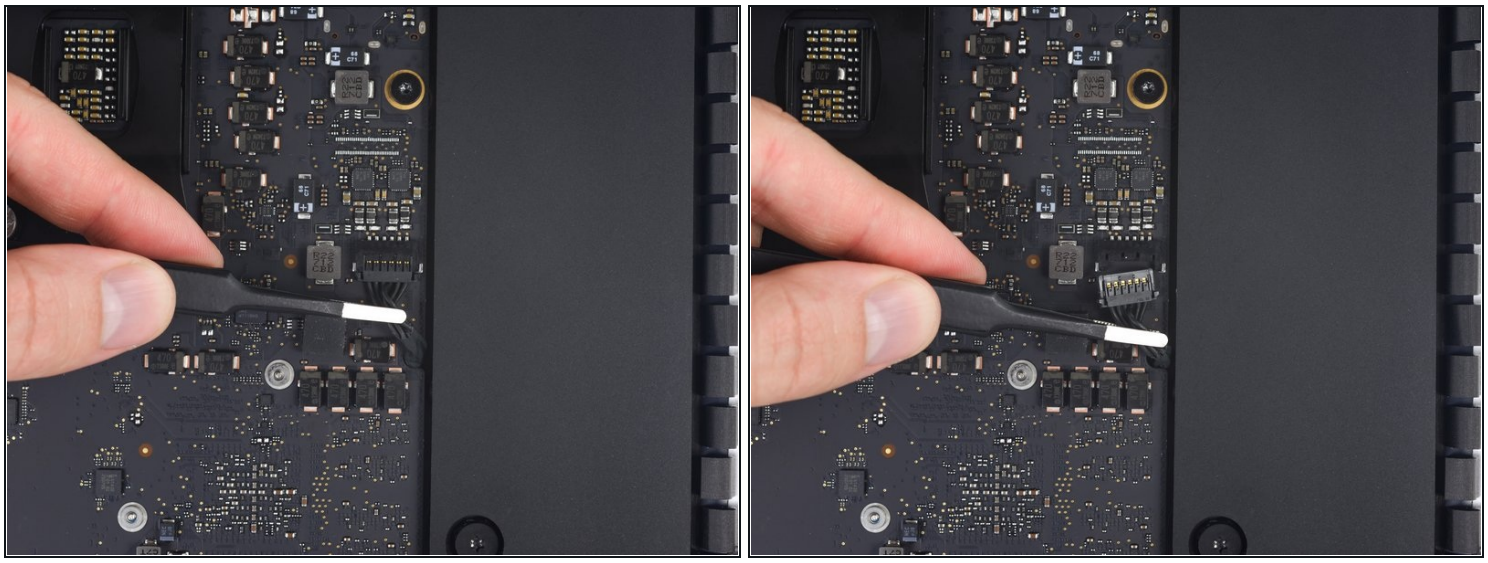
- Remove the two 4.0 mm T5 Torx screws securing the four antenna connectors to the AirPort/Bluetooth card.

Step 52



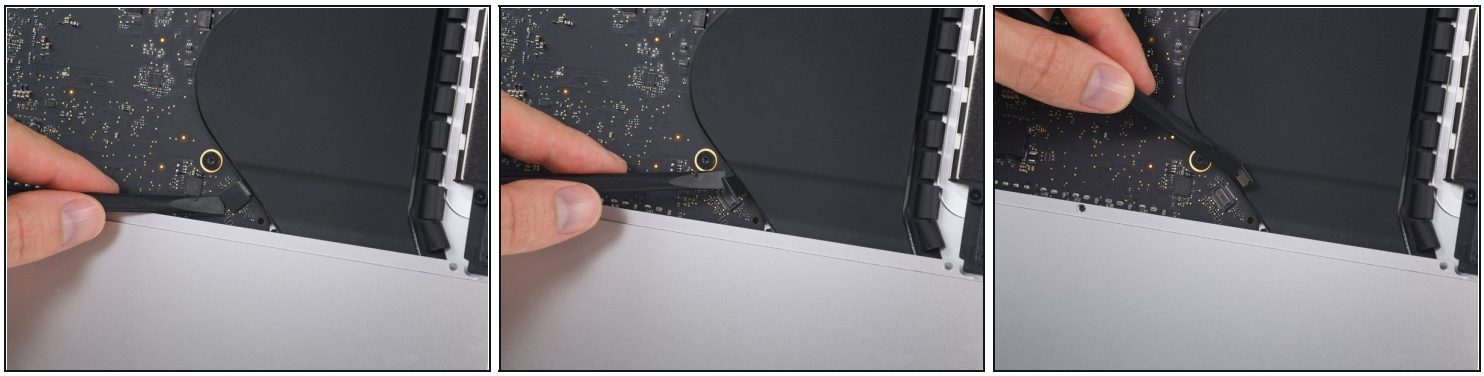
- Disconnect all four antenna connectors by prying them straight up from their sockets on the AirPort/Bluetooth card.

Step 53



- Gently pull the right speaker cable connector straight down and out of its socket on the logic board.

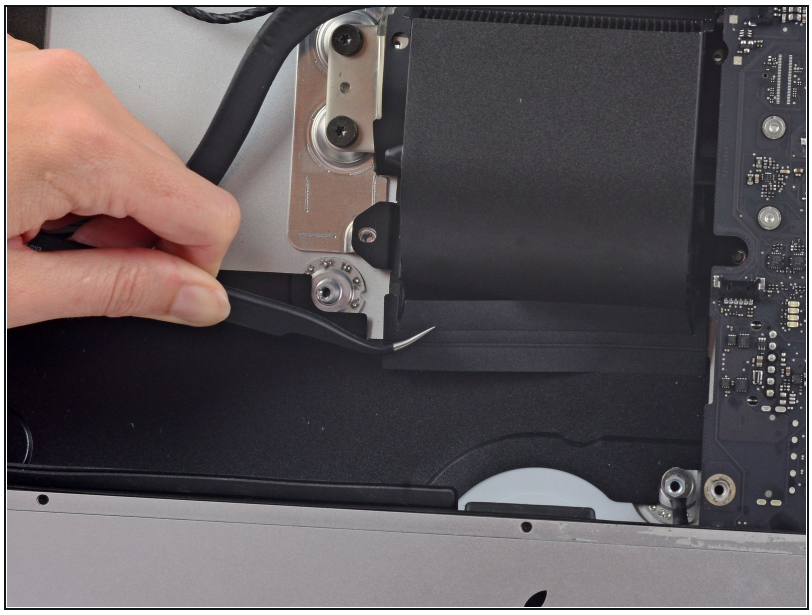
Step 54



- Use the flat edge of a spudger to pry the headphone jack cable connector from its socket on the logic board.

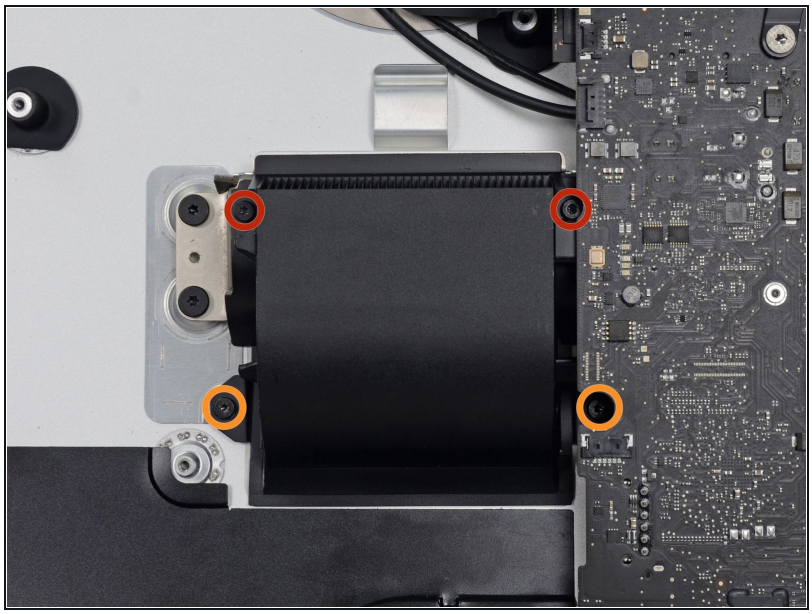
ⓘ Push the cable slightly to the right.

Step 55



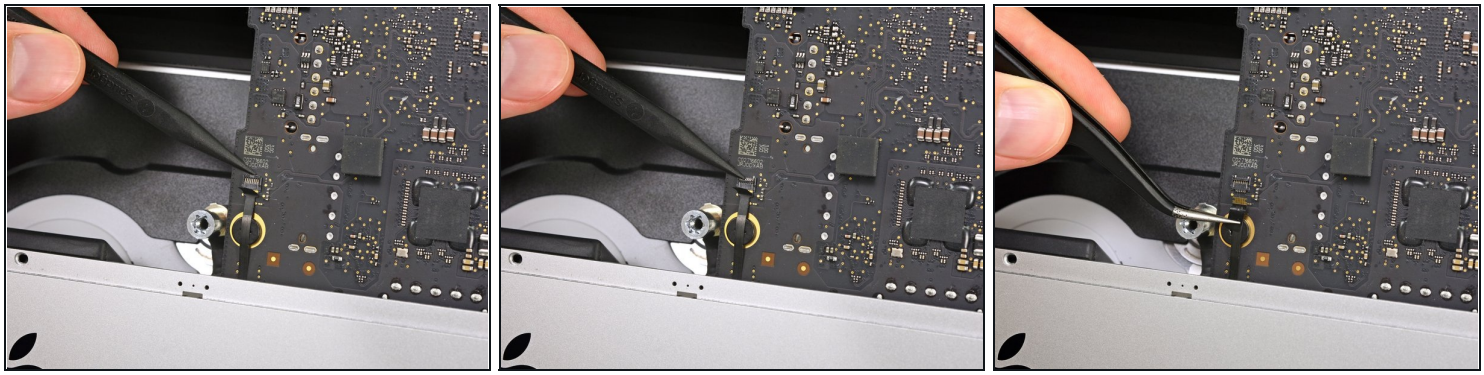
- Peel off the tape covering the exhaust duct.

Step 56



- Remove the following T8 Torx screws securing the exhaust duct to the rear enclosure:
  - Two 6.2 mm screws
  - Two 4.7 mm screws

Step 57



- Use the tip of a spudger to flip open the retaining flap on the microphone ribbon cable ZIF socket.

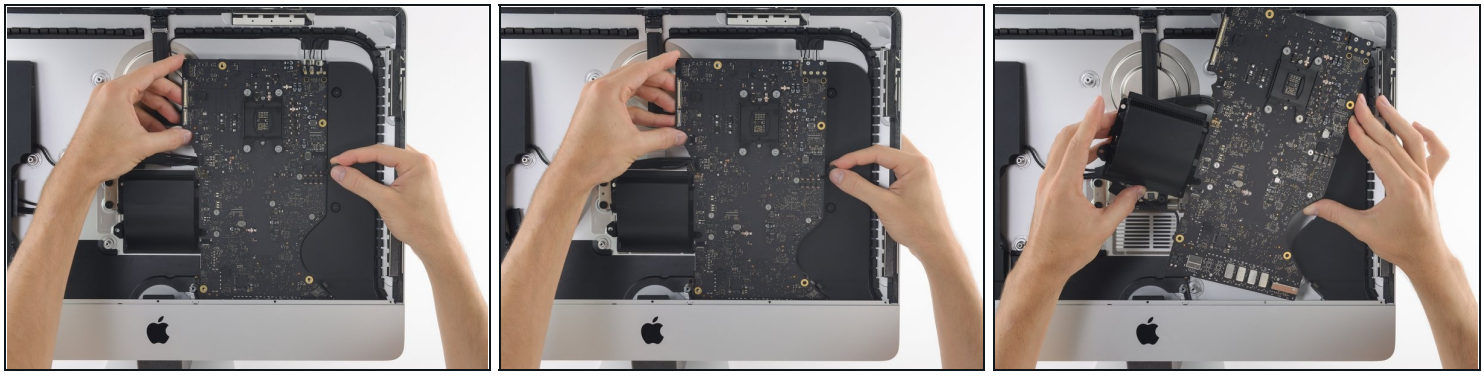
⚠ Be sure you are prying up on the hinged retaining flap, **not** the socket itself.

- Gently pull the microphone ribbon cable straight out of its socket.

Step 58

- Remove the four 7.3 mm T8 Torx screws securing the logic board to the rear enclosure.

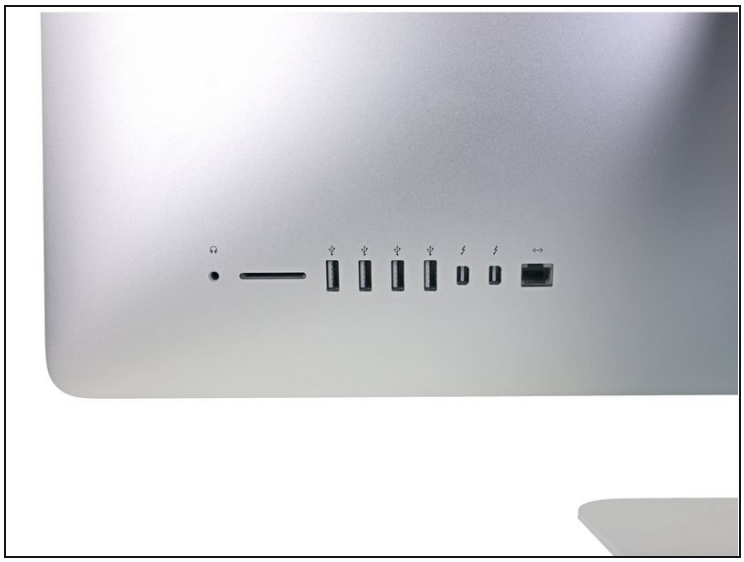
Step 59



- Tilt the top of the logic board away from the rear enclosure.
  - As you tilt the logic board, pull the right speaker connector to the right and out of the way of the board.
- Lift the logic board straight up and out of the iMac.

⚠ Be careful not to snag the board on any of the rear enclosure's screw posts.

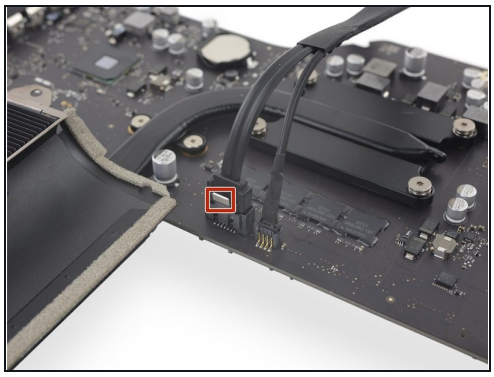
Step 60

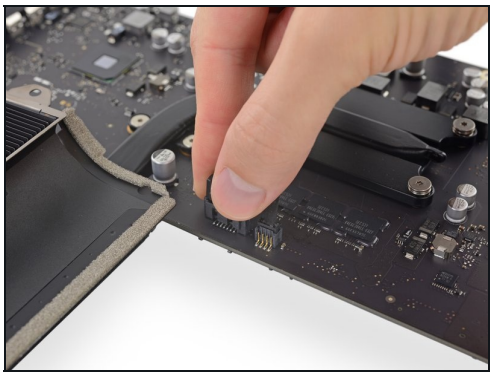


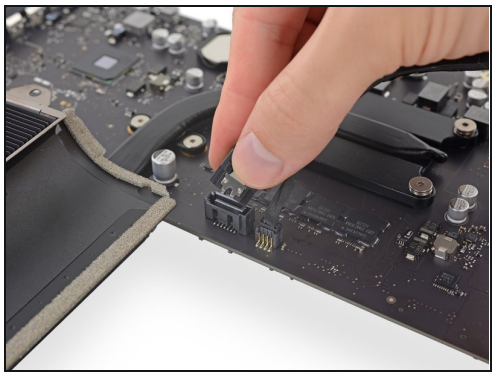
When reassembling your iMac, be very careful to align the exterior I/O ports correctly. The logic board can sit crooked even when secured with all its screws.

- Use a USB flash drive and/or ethernet cable to keep the logic board seated correctly while you tighten the screws.

Step 61 — SATA Data and Power Cables



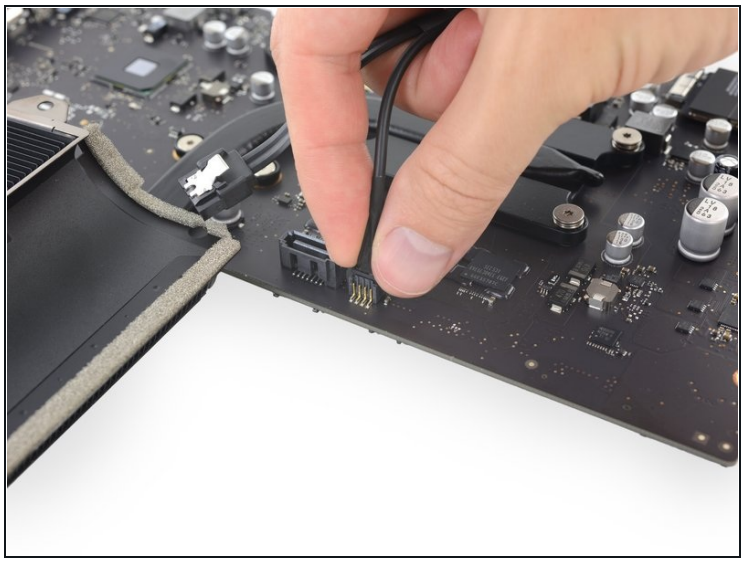


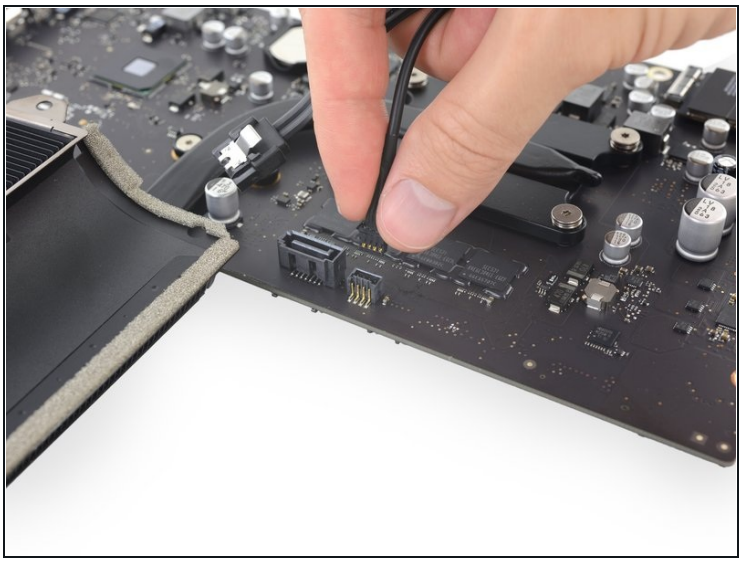


The SATA data connector has a clip that must be pressed to allow removal.

- While pressing on the clip with your thumb, lift and disconnect the SATA data connector from its socket on the logic board.

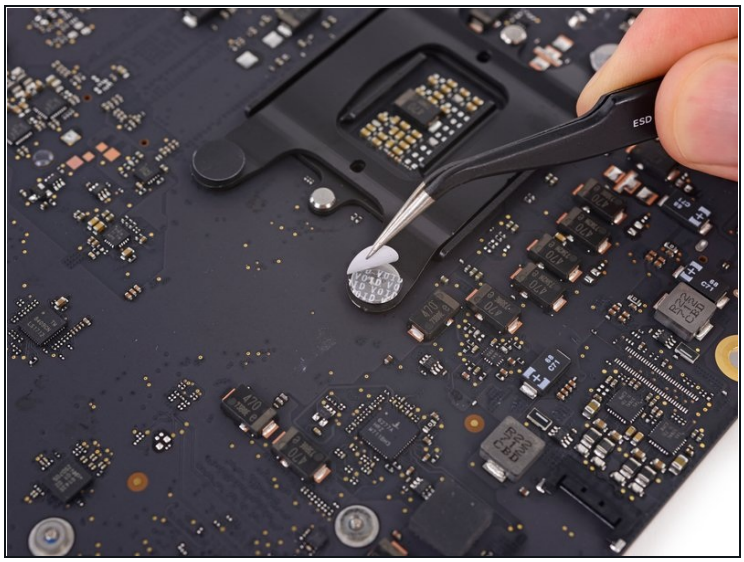
Step 62

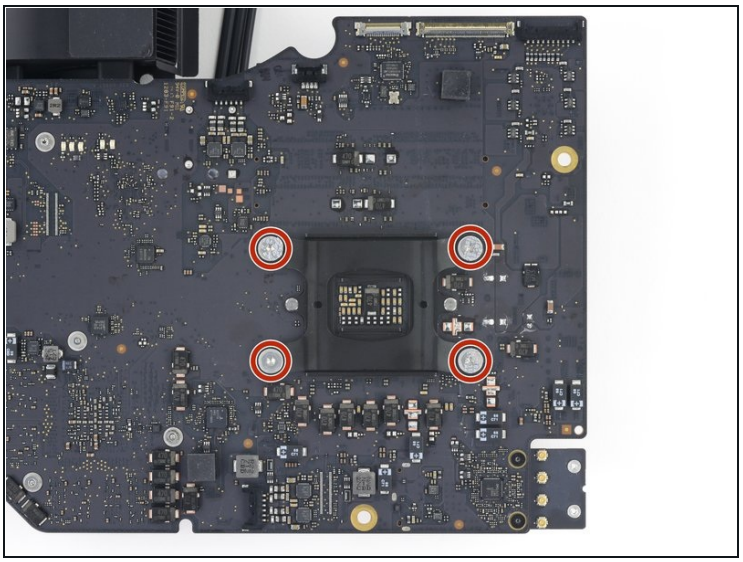




- Grasp the hard drive power connector and gently pull it out of its socket on the logic board.

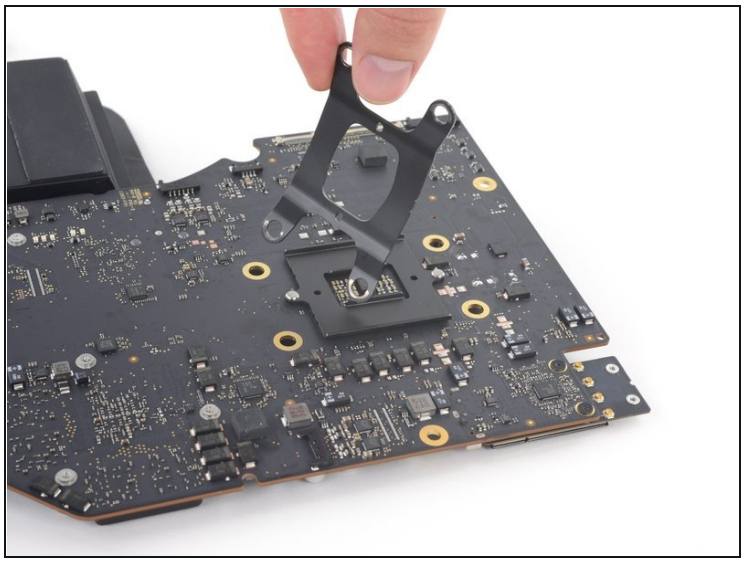
Step 63 — Heat Sink

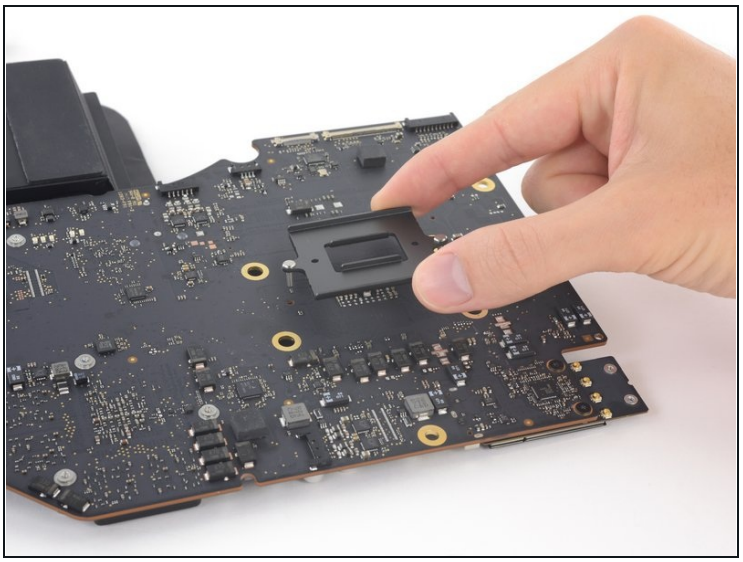




- Peel off the four black tamper-evident stickers covering the heat sink mounting screws.
- Remove the four T10 screws that secure the heat sink from the backside of the logic board.
  - During reassembly, tighten these screws one full turn at a time, alternating in a cross pattern. This will gradually increase the clamping pressure evenly across the surface of the CPU. Continue gradually tightening the screws until they're snug and the entire spring plate lays flat against the logic board.

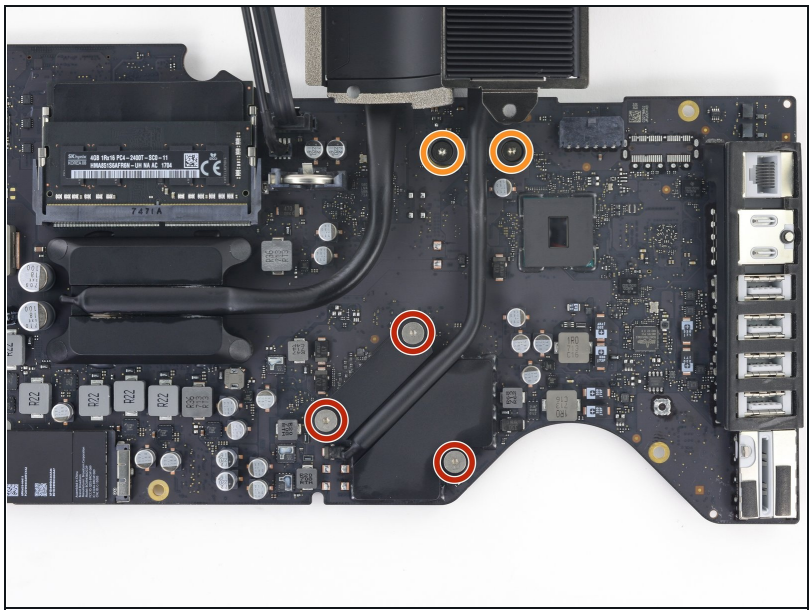
Step 64





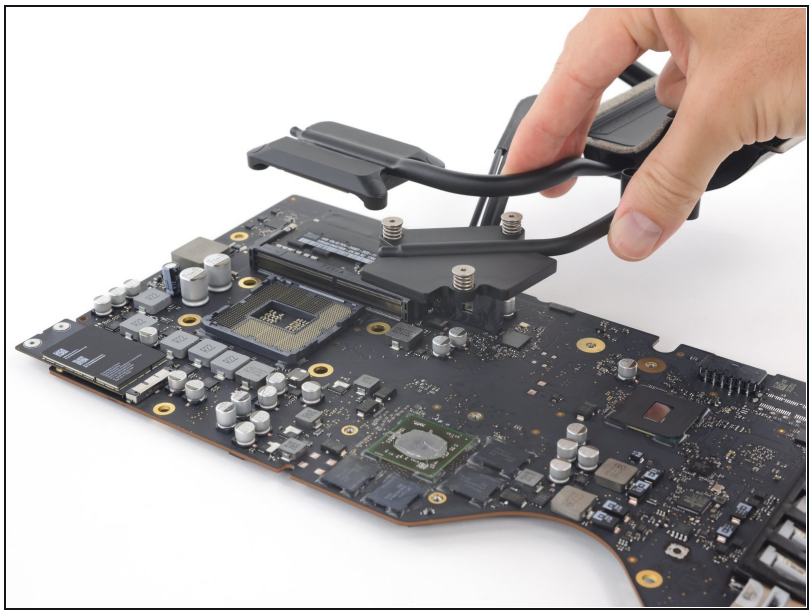
- Lift the heat sink retaining spring and its bracket off the logic board.

Step 65



- Fully loosen the three captive T8 screws securing the heat sink over the GPU.
- Remove the two 5.4 mm T8 screws securing the heat pipe to the logic board.

Step 66



⚠ Note that the CPU will most likely remain stuck to the underside of the heat sink as it's lifted out. Take care not to damage it.

- Lift and remove the heat sink assembly from the logic board.

When reassembling your iMac, remove the CPU from the heat sink and reinstall it separately from the heat sink. This will make sure it's installed correctly and prevent damage.

Follow our thermal paste application guide to reapply the thermal paste to the graphics processor (GPU). You should also replace the heavy thermal compound or apply thermal pads to the VRAM chips.

To reassemble your device, follow these instructions in reverse order.