



Mac mini (M1, 2020)

Repair Manual

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Introduction

This manual includes technical instructions for replacing genuine Apple parts in Mac and is intended for individual technicians with the knowledge, experience, and tools required to repair electronic devices.

Important

- Read the entire manual first. If you're not comfortable performing the repairs as instructed in this manual, don't proceed.
- Always use the latest version of this document available at support.apple.com/en_US/manuals/macdesktops.

Warning

Failure to follow the repair instructions or to use genuine Apple parts or proper tools may cause electric shock or other safety issues and lead to personal injury or death.

Caution

Failure to follow the repair instructions or to use genuine Apple parts or proper tools may damage the Mac, parts, or other property, or compromise the device's functionality.

Warranty information

Damage caused by repairs performed outside of Apple or the Apple Authorized Service Provider network is not covered by Apple's warranty or AppleCare plans. Such damage may cause future repairs to be subject to out-of-warranty costs or render the device ineligible for future repairs by Apple or Apple Authorized Service Providers.

Tools and parts

Ordering tools and parts

You can learn how to order genuine Apple parts and tools at support.apple.com/self-service-repair. During the purchase process, enter the manual ID **DBZKXG** to indicate that you've read this manual in its entirety and agree that you have the knowledge and experience to perform your intended repair.

Software tools

[Apple Diagnostics](#) can check your Mac for hardware issues.

A System Configuration step may be required at the end of your repair. System Configuration is a postrepair software tool that completes the repair for genuine Apple parts. Running System Configuration has a number of purposes that vary based on the part replaced.

What System Configuration does	Why it's important
Updates replacement logic board with device serial number	Replacement logic boards must be updated with your device's serial number to ensure that Apple Pay, FaceTime, iMessage, and iCloud services, such as Find My, can communicate safely and securely with your device.
Transfers factory calibration values	Certain parts like displays, cameras, and ambient light sensors have calibration values that are customized to each individual part during manufacturing. Transferring these values ensures maximum performance and quality after a repair.
Links Secure Enclave and biometric authentication parts	After repair of a logic board or a biometric authentication part (Touch ID), linking the biometric sensors to the Secure Enclave on the logic board is required to ensure device security.
Ensures repair integrity	After a hardware repair, software checks are performed to ensure repair integrity. Repair integrity means that a genuine Apple part has been correctly installed.
Assigns wireless region	To comply with regional communications regulations, a wireless region must be assigned to your logic board.
Updates firmware	Keeping firmware up to date ensures that the device has all the latest security and performance features.

System Configuration requires a strong Wi-Fi network capable of 1.0 Mbps download and upload speeds, with less than 400 ms latency and less than 2% packet loss. Estimated data usage to run System Configuration is 6–22 MB.

The device must be running the latest version of macOS and not a beta version.

Learn how to initiate the System Configuration process at support.apple.com/self-service-repair.

Alerts

Failure to follow alerts could result in electric shock, injury, data loss, or damage to the device, parts, or other property.



Danger

Instructions for reducing risk of electric shock and electrocution



Warning

Instructions for reducing risk of personal injury



Caution

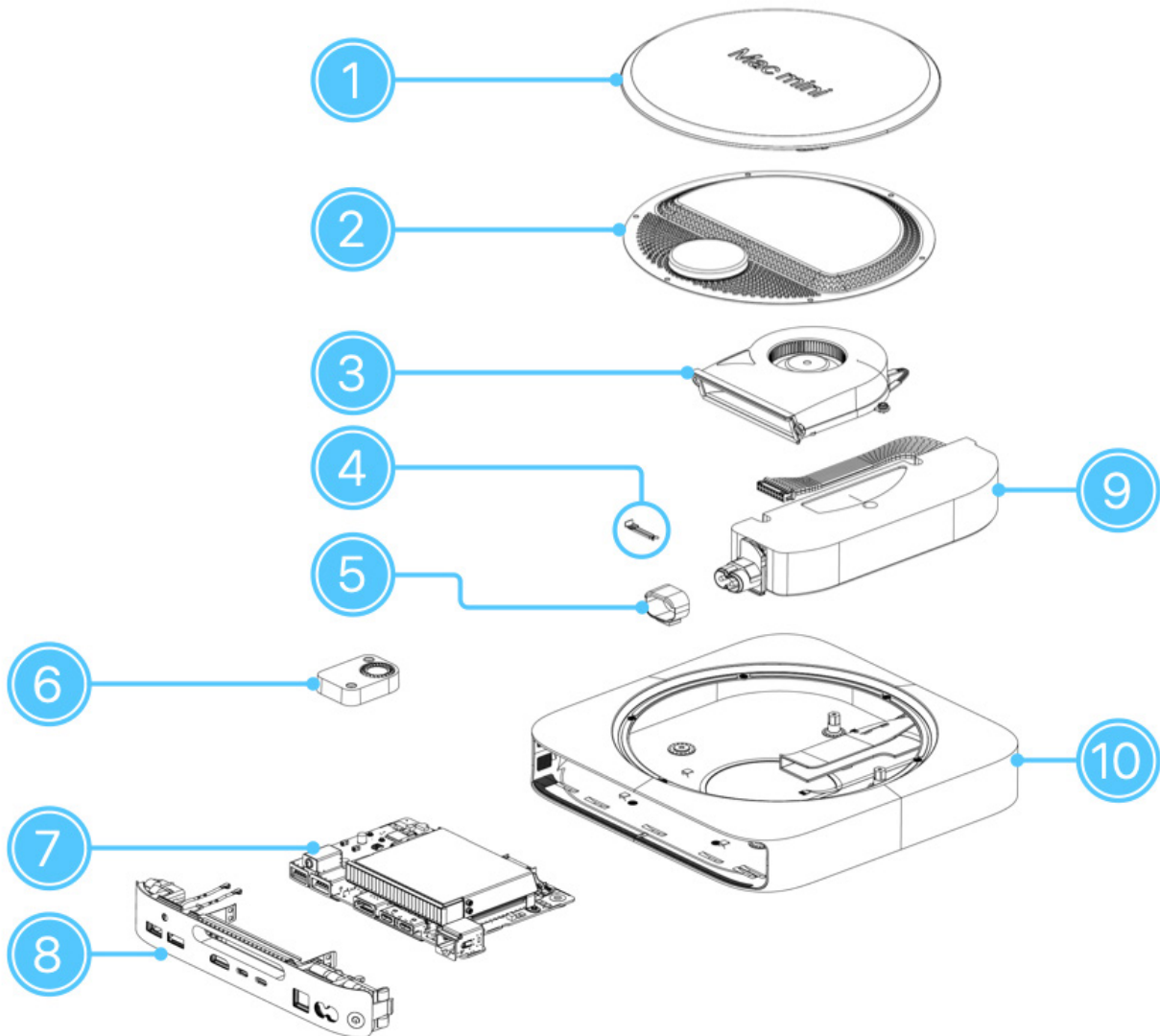
Instructions for reducing risk of data loss or device hardware damage

Important

Supplemental information for successfully completing procedures; neither a Warning nor a Caution

Exploded View and Orderable Parts

This section shows parts, part names, and part numbers for Mac mini (M1, 2020).



Part Name	Number
1. Bottom cover	923-02436
2. Antenna plate	923-04768
3. Fan	923-04329
4. AC inlet retention clip	923-02789
5. AC inlet cowling	923-02795
6. Speaker	923-02435
7. Logic board	<p>1 Gb Ethernet</p> <p>661-16773, 8 GB, 256 GB</p> <p>661-16775, 8 GB, 512 GB</p> <p>661-16777, 8 GB, 1 TB</p> <p>661-16779, 8 GB, 2 TB</p> <p>661-16781, 16 GB, 256 GB</p> <p>661-16783, 16 GB, 512 GB</p> <p>661-16785, 16 GB, 1 TB</p> <p>661-16787, 16 GB, 2 TB</p> <p>10 Gb Ethernet</p> <p>661-16774, 8 GB, 256 GB</p> <p>661-16776, 8 GB, 512 GB</p> <p>661-16778, 8 GB, 1 TB</p> <p>661-16780, 8 GB, 2 TB</p> <p>661-16782, 16 GB, 256 GB</p> <p>661-16784, 16 GB, 512 GB</p> <p>661-16786, 16 GB, 1 TB</p> <p>661-16788, 16 GB, 2 TB</p>
8. Input/output wall	923-04717
9. Power supply	661-16789
10. Housing	923-04716

Part Name (Not Shown)	Number
Power cord Read the Important alert below to ensure that you order the correct power cord.	923-00645

Important

The English (US) power cord part number begins with 923. Other regional power cord part numbers also begin with 923, but include a regional prefix. For example, the power cord part number for Italy begins with CI923. Identify the correct regional prefix from the list below:


B United Kingdom

CI Italy










D Germany

Z Belgium/Luxembourg, France,
Poland, Spain, Sweden

Screws

 **Caution**

- Save undamaged screws and cowlings for reassembly.
- Note the location of screws and cowlings during removal. Then organize them to ensure that you reinstall them in the correct location.
- Both overtightened screws and loose screws can damage parts.

<p>923-00155 Torx® T6 security Antenna plate (3)</p> 	<p>923-00157 Torx T6 security Antenna plate (3)</p> 	<p>923-00230 Torx T6 I/O wall to logic board (1)</p> 	<p>923-02796 Torx T6 Power supply (3)</p> 
<p>923-02800 Torx T6 I/O wall to heat sink (4)</p> 	<p>923-02801 Torx T6 Speaker (2)</p> 	<p>923-02802 Torx T10 Logic board (2)</p> 	<p>923-02803 Torx T6 Fan (4)</p> 
<p>923-03034 Torx T6 Antenna coaxial cable grounding clip (1)</p> 	<p>—</p>	<p>—</p>	<p>—</p>

Tools

923-0735
Adjustable torque driver
(0.3–1.2 Nm)



923-01322
Antenna tool



922-9468
ESD bag



ESD mat



ESD-safe tweezers



ESD wrist strap with clip
or plug



Magnetizer



Nitrile or lint-free gloves



922-5065
Nylon probe (black stick)



Torx T6 screwdriver



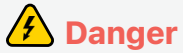
923-00304
Torx T6 security bit



923-0740
Torx T10 bit



Electrical Safety



The power supply remains powered when the device is plugged in whether or not the device has been turned on. Don't touch the logic board or power supply while the device is plugged into an electrical outlet.

Be aware of the following precautions to avoid electric shock:

- Never remove or install any parts while the device is plugged into an electrical outlet.
- Always wait at least 2 minutes after unplugging the device to allow the logic board or power supply or both to discharge.
- Don't touch the logic board or power supply before the 2-minute discharge wait time has passed.

First Steps

Always perform the following steps before starting a repair:

- [Back up the Mac.](#)
- If replacing the logic board, turn off Find My Mac. Choose Apple Menu > System Preferences > Apple ID. Select iCloud in the sidebar. Then deselect the Find My Mac checkbox. If you're unable to access the Apple menu, continue performing the following steps.
- [Turn off the Mac.](#)
- If you were unable to turn off Find My Mac from the Apple menu, go to iCloud.com/find on a different device. Select All Devices. Select the device you want to remove. Then select Remove from Account.
- Unplug the power cord from both the electrical outlet and the back of the device. Keep the power cord unplugged while the device is being repaired.
- Disconnect all other cables from the device.
- Clear and clean your workspace.
- Put on an ESD wrist strap and attach it to a properly grounded ESD mat.



ESD (electrostatic discharge, or the release of static electricity) can damage electronic components.

Be aware of the following while performing a repair:

- The manual for this model may show images of other models, but the procedures are the same. Ensure that you use the correct tools for the model you're repairing.
- Take your time. Thoroughly read all instructions and alerts.
- Magnetizing the screwdrivers will make it easier to work with small screws.
- Use only Kapton tape to secure cables and keep them out of the way when removing and reinstalling parts.
- The end of each flex cable must align with its connector. Press the end of each flex cable to its connector until it clicks to ensure that it's secure.

Bottom Cover

Before You Begin

Tools

- Nylon probe (black stick)



Removal

1. Insert the flat end of the black stick between the bottom cover and the housing (1). Then press down on the black stick to slightly lift the bottom cover (2).



2. Run the black stick around the edge of the bottom cover. Listen for three clicks as the bottom cover disengages from the three antenna plate screws.



3. Lift the bottom cover off the antenna plate.

Reassembly

1. Position the bottom cover over the antenna plate. Align the three clips on the underside of the bottom cover with the three tall T6 security screws on the antenna plate.



2. Press the bottom cover until the three bottom cover clips snap onto the three tall T6 security screws.



Caution

- After you've completed all removal and reassembly steps, learn how to initiate the System Configuration process at support.apple.com/self-service-repair.
- System Configuration is required if you've installed a replacement logic board.
- If you replaced the logic board, the computer will start up in Diagnostics mode until you complete System Configuration.

Antenna Plate

Before You Begin

Remove the following part before you begin:

- [Bottom cover](#)

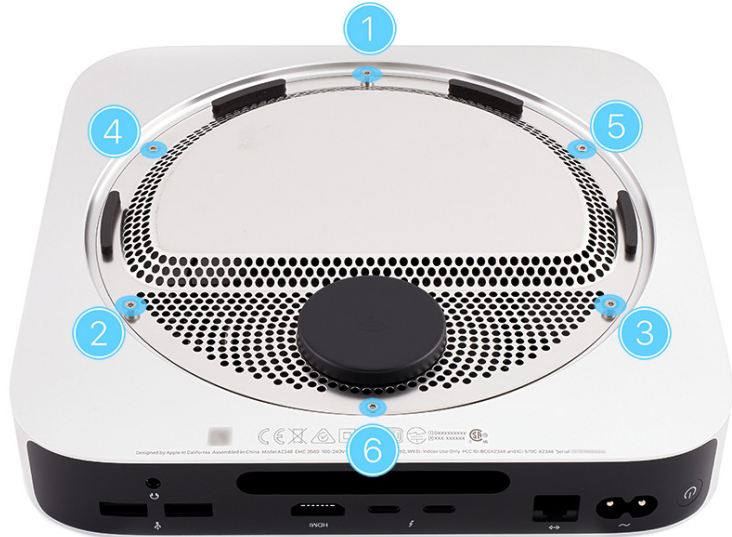
Tools

- Adjustable torque driver (0.3–1.2 Nm)
- Antenna tool
- ESD-safe tweezers
- Nylon probe (black stick)
- Torx T6 screwdriver
- Torx T6 security bit



Removal

1. Insert the Torx T6 security bit into the 0.3–1.2 Nm adjustable torque driver. Set the torque value to 0.3 Nm.
2. Use the adjustable torque driver and Torx T6 security bit to remove the three long T6 security screws (923-00157) (1–3) from the antenna plate in the order shown.
3. Use the adjustable torque driver and Torx T6 security bit to remove the three short T6 security screws (923-00155) (4–6) from the antenna plate in the order shown.



4. Insert the black stick into one of the ventilation holes and slightly move the antenna plate off to the side.

Caution

Ensure that you don't scratch the housing as you move the antenna plate.



5. Rotate the computer so the fan is closest to you.



6. Use the T6 screwdriver to remove the T6 screw (923-03034) from the antenna coaxial cable grounding clip.

Note: The T6 screw has a captive washer that stays attached to the screw.



7. Use the antenna tool to lift the end of the antenna coaxial cable off the connector.



8. Remove the antenna plate from the housing.

Reassembly

1. Rest the antenna plate on the housing as shown.



2. Use the T6 screwdriver to partially reinstall the T6 screw (923-03034) into the antenna coaxial cable grounding clip.



3. Use the blunt end of the antenna tool to press the end of the antenna coaxial cable to the connector.



4. Use the T6 screwdriver to fully reinstall the T6 screw into the antenna coaxial cable grounding clip.



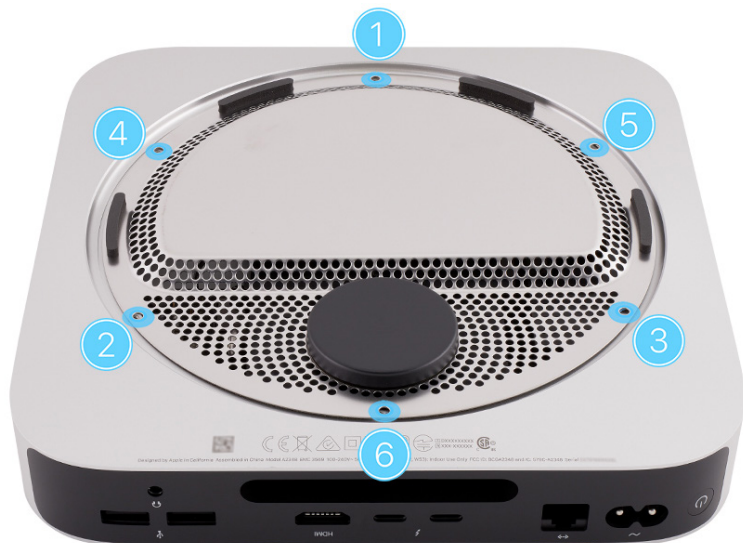
5. Rotate the computer so the input/output (I/O) wall is facing you. Align the screw holes on the antenna plate with the screw holes on the housing.



6. Insert the Torx T6 security bit into the 0.3–1.2 Nm adjustable torque driver. Set the torque value to 0.3 Nm.

7. Use the adjustable torque driver and Torx T6 security bit to reinstall the three long T6 security screws (923-00157) (1–3) into the antenna plate in the order shown.

8. Use the adjustable torque driver and Torx T6 security bit to reinstall the three short T6 security screws (923-00155) (4–6) into the antenna plate in the order shown.



Reinstall the following part to complete reassembly:

- [Bottom cover](#)

Battery

Before You Begin

Remove the following parts before you begin:

- [Bottom cover](#)
- [Antenna plate](#)

Tools

- Nitrile or lint-free gloves
- Nylon probe (black stick)

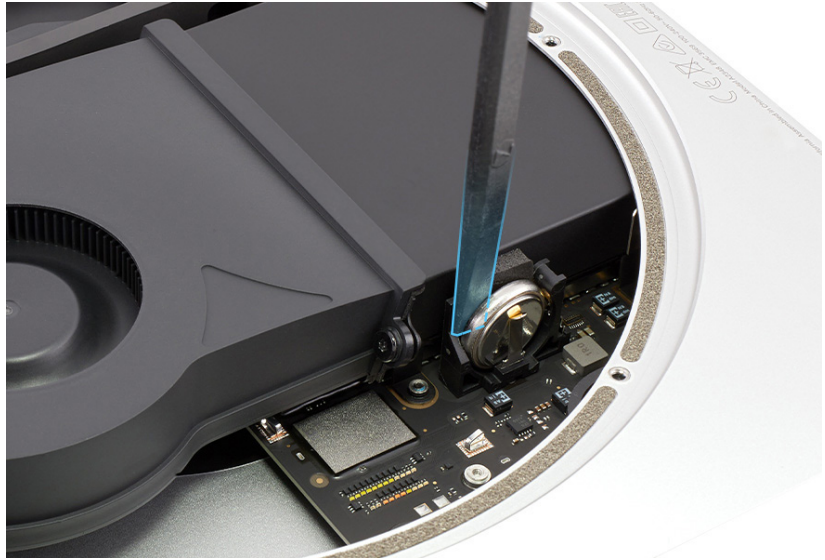


Important

This model requires a BR1632A battery. Replacement batteries can be purchased from electronics supply retailers.

Removal

1. Position the flat end of the black stick behind the battery as shown.



2. Put on the gloves. Pinch the battery as shown and lift it up slightly (1). Then slide the battery out of the battery socket toward the fan (2).



Reassembly

Warning

Install only a BR1632A battery. There is a risk of explosion if the battery is installed incorrectly or replaced with an incorrect type of battery. Dispose of used batteries according to local environmental laws and guidelines.

1. Ensure that the battery socket is free of debris.



2. Insert the battery into the battery socket. Ensure that the negative (-) side of the battery faces away from the heat sink.



Reinstall the following parts to complete reassembly:

- [Antenna plate](#)
- [Bottom cover](#)

Fan

Before You Begin

Remove the following parts before you begin:

- [Bottom cover](#)
- [Antenna plate](#)

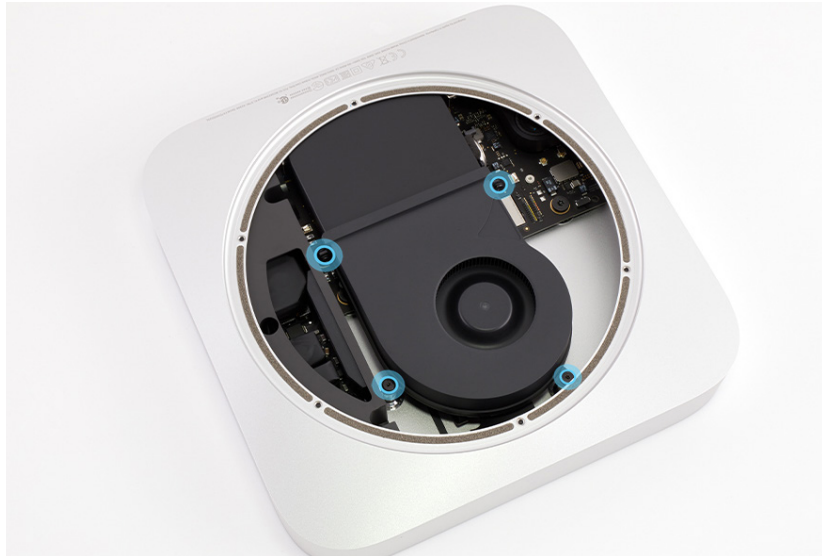
Tools

- Nylon probe (black stick)
- Torx T6 screwdriver

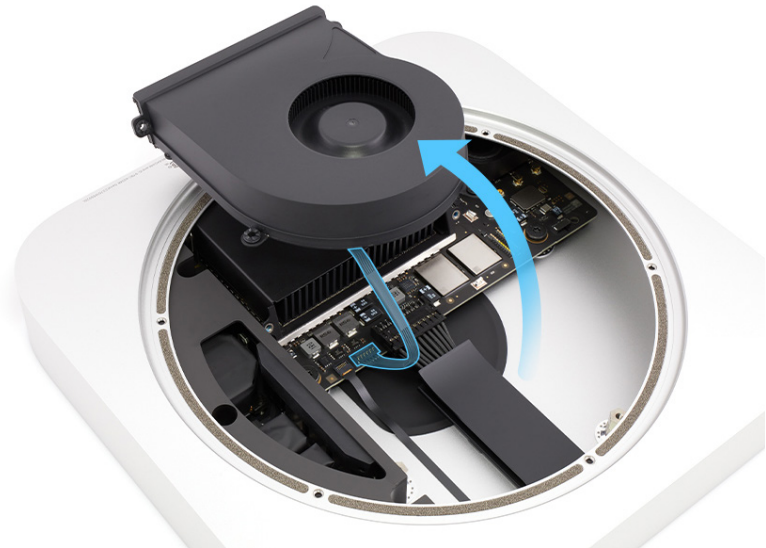


Removal

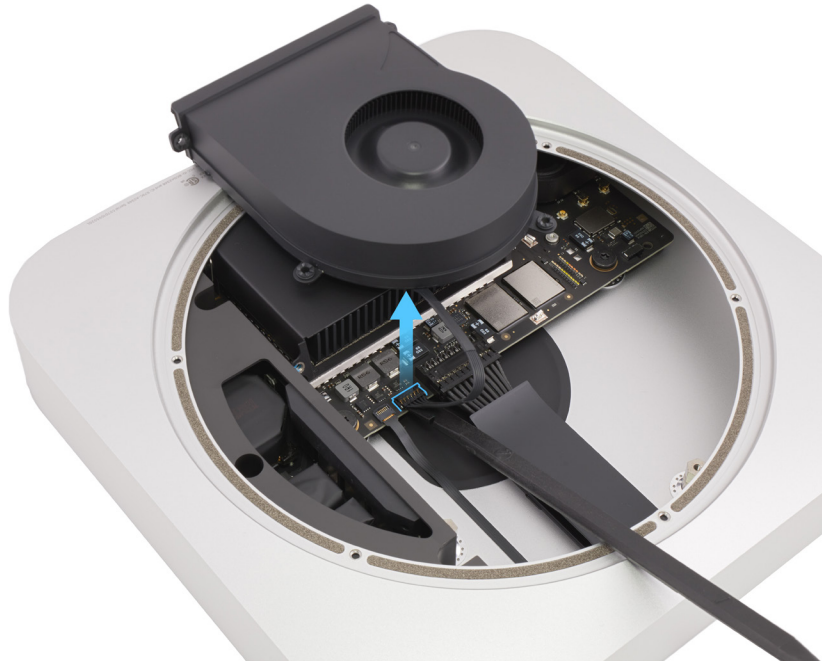
1. Position the computer so the I/O wall faces away from you.
2. Use the T6 screwdriver to remove the four T6 screws (923-02803) from the fan.



3. Lift the fan to access the fan flex cable underneath.

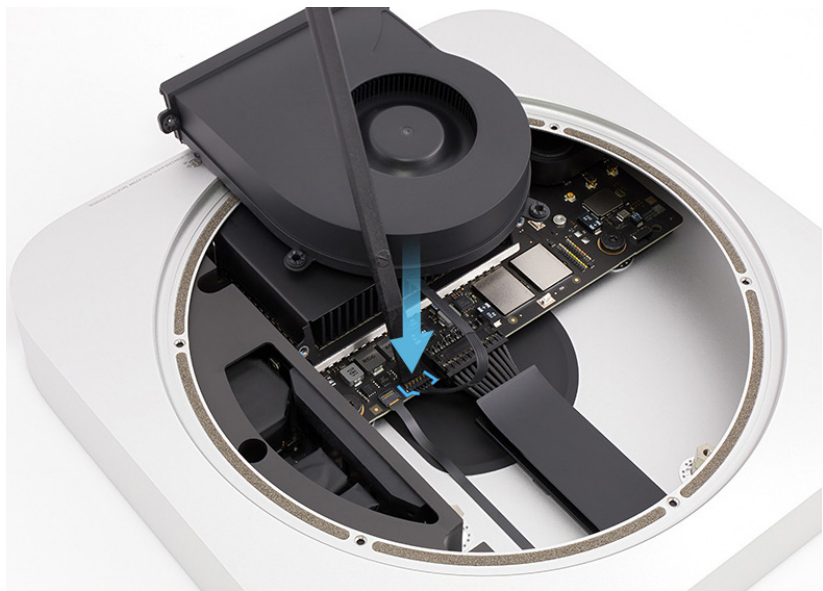


4. Use the flat end of the black stick to lift the end of the fan flex cable off the connector. Then remove the fan from the housing.



Reassembly

1. Rest the fan on the edge of the housing so the end of the fan flex cable can reach the connector. Then use the flat end of the black stick to press the end of the fan flex cable to the connector.



2. Position the fan in the housing.
3. Use the T6 screwdriver to reinstall the four T6 screws (923-02803) into the fan.



Reinstall the following parts to complete reassembly:

- [Antenna plate](#)
- [Bottom cover](#)

Logic Board

Before You Begin

Remove the following parts before you begin:

- [Bottom cover](#)
- [Antenna plate](#)
- [Fan](#)

Tools

- Adjustable torque driver (0.3–1.2 Nm)
- Nylon probe (black stick)
- Torx T10 bit

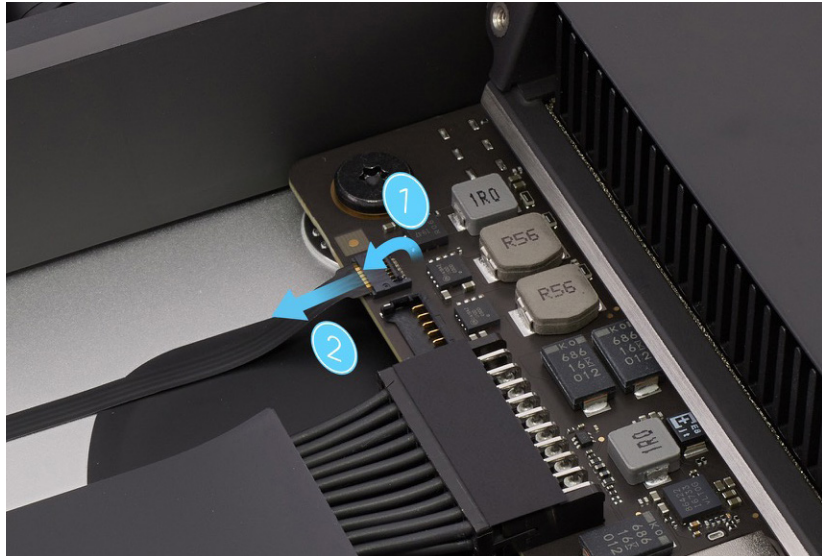


Caution

This procedure requires System Configuration. After you've completed all removal and reassembly steps, learn how to initiate the System Configuration process at support.apple.com/self-service-repair.

Removal

1. Use the flat end of the black stick to flip up the locking lever on the status indicator light flex cable connector (1). Then slide the end of the flex cable out of the connector (2).



2. Use ESD-safe tweezers to peel the polyester film off the power supply cable connector and the end of the power supply cable (1). Save the polyester film for reassembly. Then pinch the sides of the end of the power supply cable to pull it out of the connector (2).



Important

Replacement polyester film is included with a replacement logic board and a replacement power supply.

3. Insert the Torx T10 bit into the 0.3–1.2 Nm adjustable torque driver. Set the torque value to 1.2 Nm.

4. Use the adjustable torque driver and Torx T10 bit to remove the two T10 screws (923-02802) from the logic board.

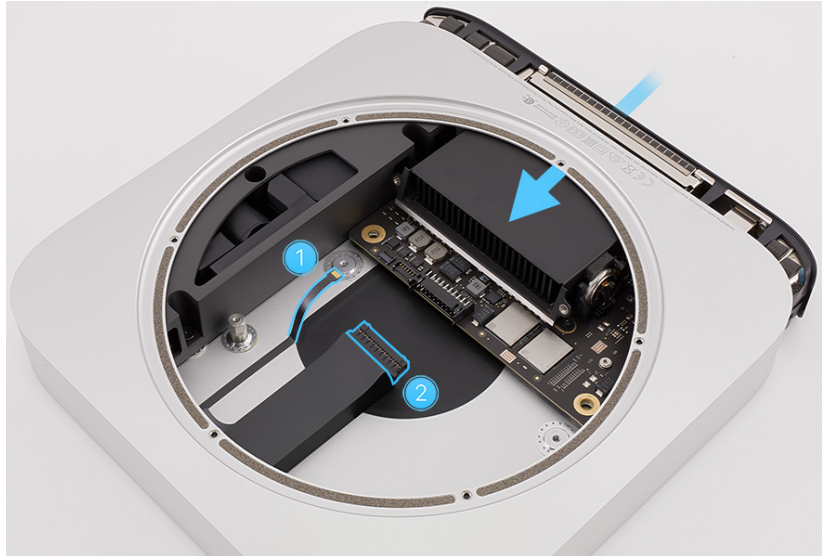


5. Push the heat sink to slide the logic board out of the housing as shown.

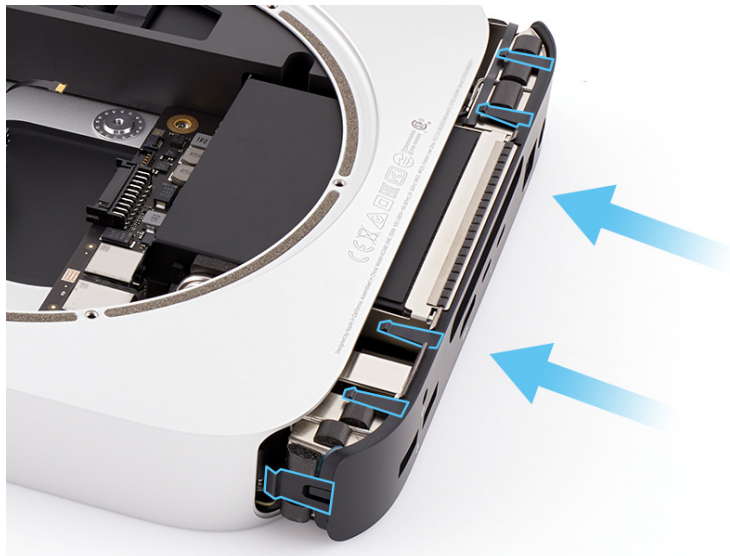


Reassembly

1. Partially slide the logic board into the housing as shown. Ensure that the status indicator light flex cable (1) and the power supply cable (2) aren't trapped under the logic board.



2. Push the I/O wall to fully insert the logic board into the housing. Ensure that the I/O wall clips engage with the housing and that the I/O wall is flush with the housing.



3. Insert the Torx T10 bit into the 0.3–1.2 Nm adjustable torque driver. Set the torque value to 1.2 Nm.

4. Use the adjustable torque driver and Torx T10 bit to reinstall the two T10 screws (923-02802) into the logic board.



5. Slide the end of the power supply cable into the connector.



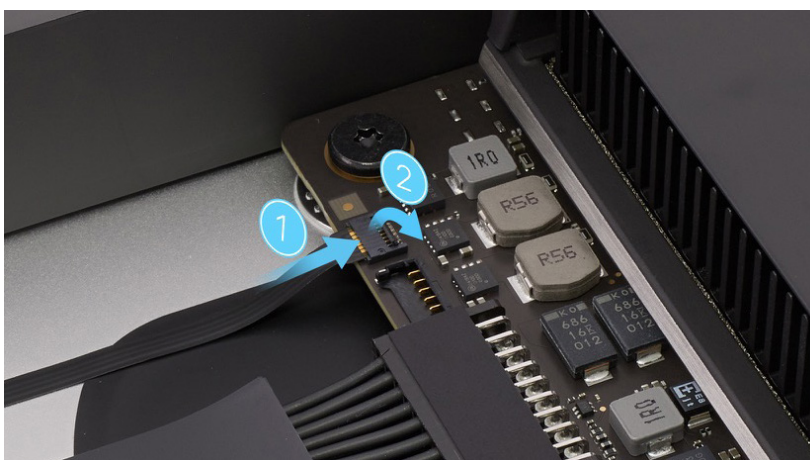
6. Position the polyester film over the power supply cable connector and the end of the power supply cable. Press along the length of the polyester film to adhere it.

Important

If replacement polyester film was provided with a replacement part, discard the existing polyester film and install the replacement polyester film.



7. Slide the end of the status indicator light flex cable into the connector (1). Then flip down the locking lever (2).



Reinstall the following parts to complete reassembly:

- [Fan](#)
- [Antenna plate](#)
- [Bottom cover](#)

Caution

After you've completed all removal and reassembly steps, learn how to initiate the System Configuration process at support.apple.com/self-service-repair.

Power Supply

Before You Begin

Remove the following parts before you begin:

- [Bottom cover](#)
- [Antenna plate](#)
- [Fan](#)
- [Logic board](#)

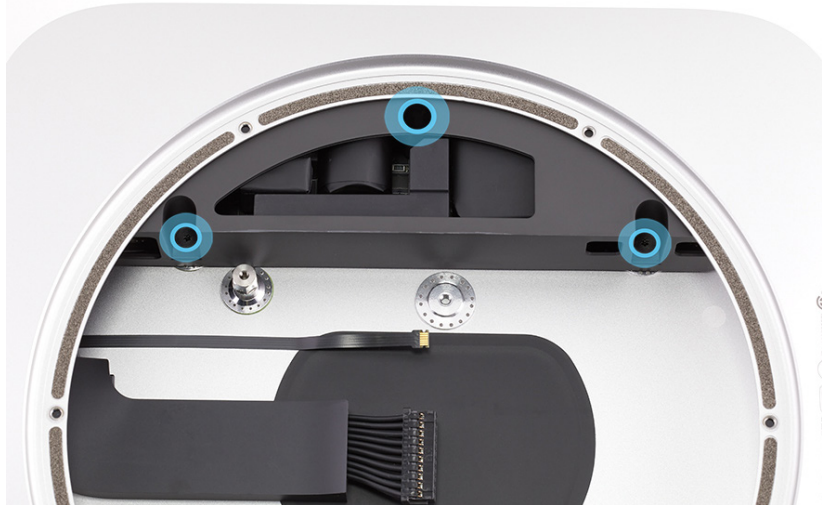
Tools

- ESD-safe tweezers
- Torx T6 screwdriver



Removal

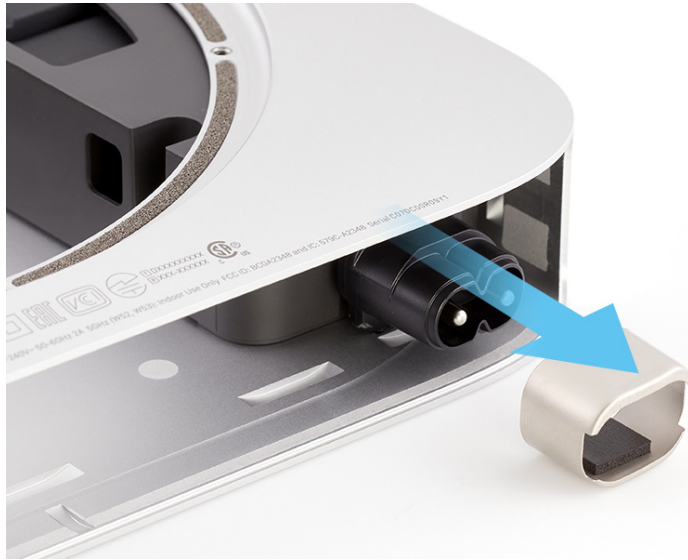
1. Use the T6 screwdriver to remove the three T6 screws (923-02796) from the power supply.



2. Use ESD-safe tweezers to grasp the flat end of the AC inlet retention clip and slide it to the left to remove it. Save the clip for reassembly.



3. Pull the AC inlet cowling off the AC inlet. Save the cowling for reassembly.



4. Rotate the AC inlet 90 degrees counterclockwise.



5. Slide the power supply out of the housing.



Reassembly

Important

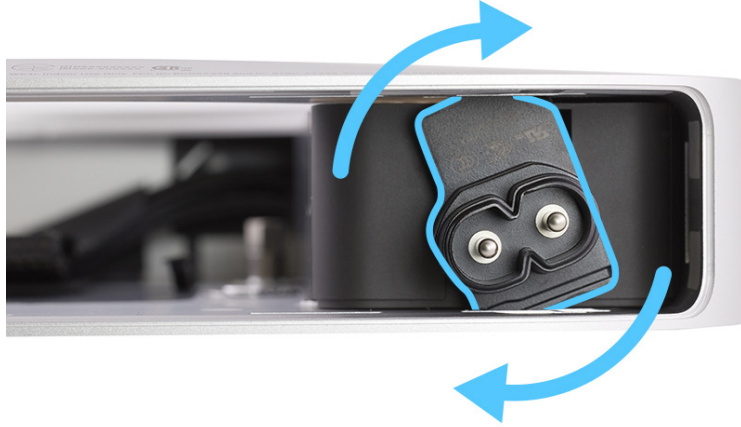
Locate the two cutouts near the front edge of the interior of the housing before you begin reinstalling the power supply. In reassembly step 2, ensure that you rotate the AC inlet into the back cutout farthest away from the housing edge.



1. Slide the power supply into the housing.



2. Rotate the AC inlet 90 degrees clockwise into the back cutout farthest away from the housing edge.



3. Orient the AC inlet cawling so the foam insulator is on the bottom. Then slide the cawling onto the AC inlet.



4. Use ESD-safe tweezers to grasp the flat end of the AC inlet retention clip. Then slide the clip under the AC inlet.



5. Use the T6 screwdriver to reinstall the three T6 screws (923-02796) into the power supply.



Reinstall the following parts to complete reassembly:

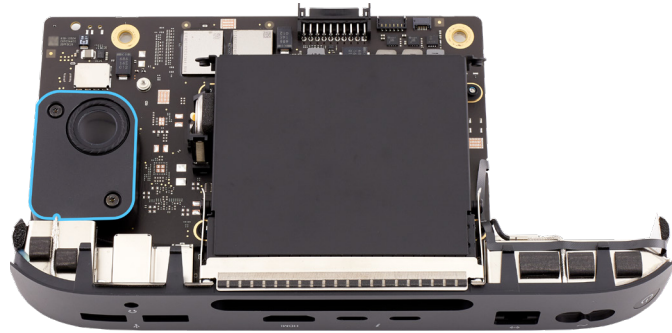
- [Logic board](#)
- [Fan](#)
- [Antenna plate](#)
- [Bottom cover](#)

Speaker

Before You Begin

Remove the following parts before you begin:

- [Bottom cover](#)
- [Antenna plate](#)
- [Fan](#)
- [Logic board](#)



Tools

- Nylon probe (black stick)
- Torx T6 screwdriver

Removal

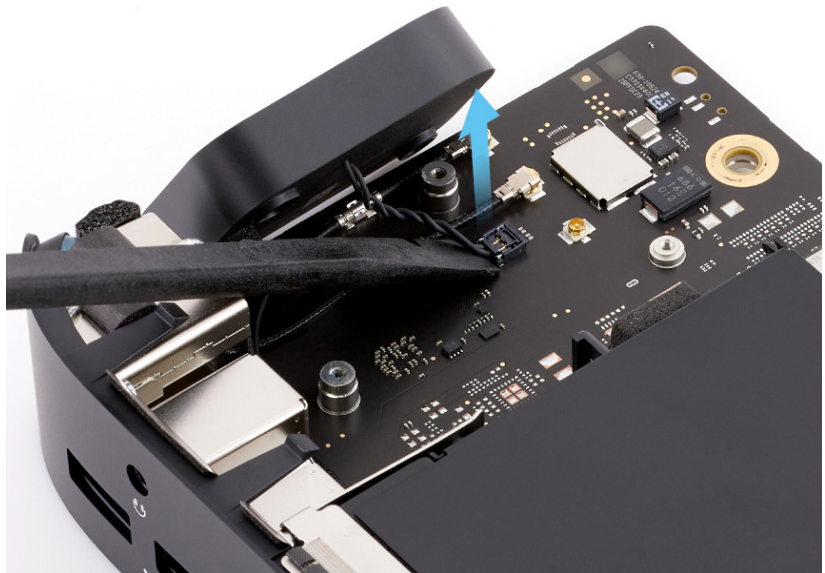
1. Use the T6 screwdriver to remove the two T6 screws (923-02801) from the speaker.



2. Tilt the speaker to the side as shown. Then use the flat end of the black stick to lift the end of the speaker cable off the connector.

Important

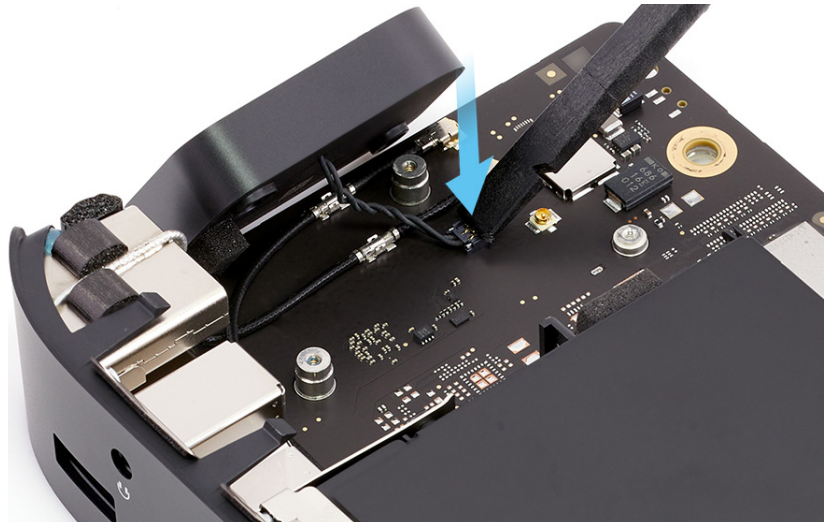
The speaker cable is connected to the logic board under the speaker.



3. Remove the speaker from the housing.

Reassembly

1. Use the flat end of the black stick to press the end of the speaker cable to the connector.



2. Align the screw holes on the speaker with the screw holes on the logic board.
3. Use the T6 screwdriver to reinstall the two T6 screws (923-02801) into the speaker.



Reinstall the following parts to complete reassembly:

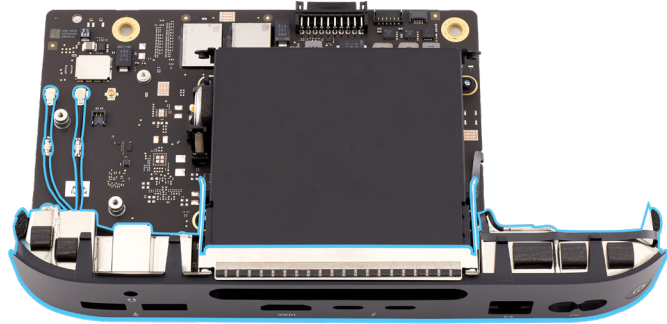
- [Logic board](#)
- [Fan](#)
- [Antenna plate](#)
- [Bottom cover](#)

Input/Output Wall

Before You Begin

Remove the following parts before you begin:

- [Bottom cover](#)
- [Antenna plate](#)
- [Fan](#)
- [Logic board](#)
- [Speaker](#)

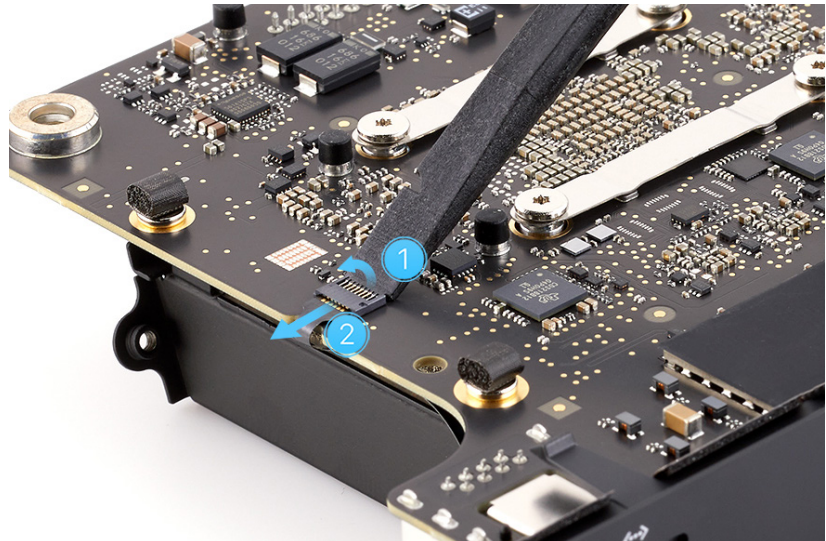


Tools

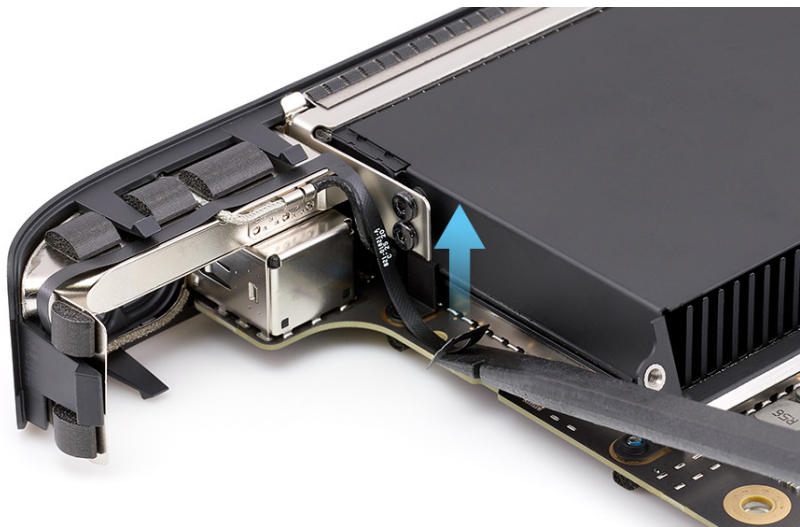
- Antenna tool
- Nylon probe (black stick)
- Torx T6 screwdriver

Removal

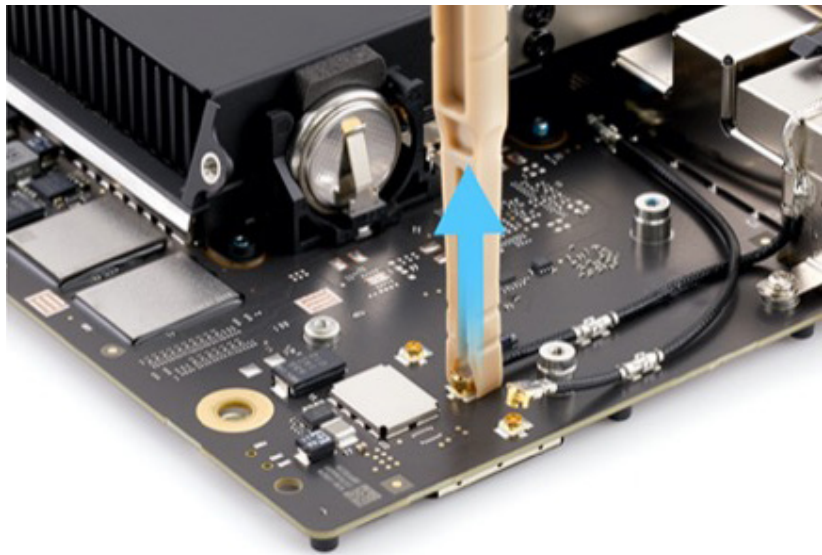
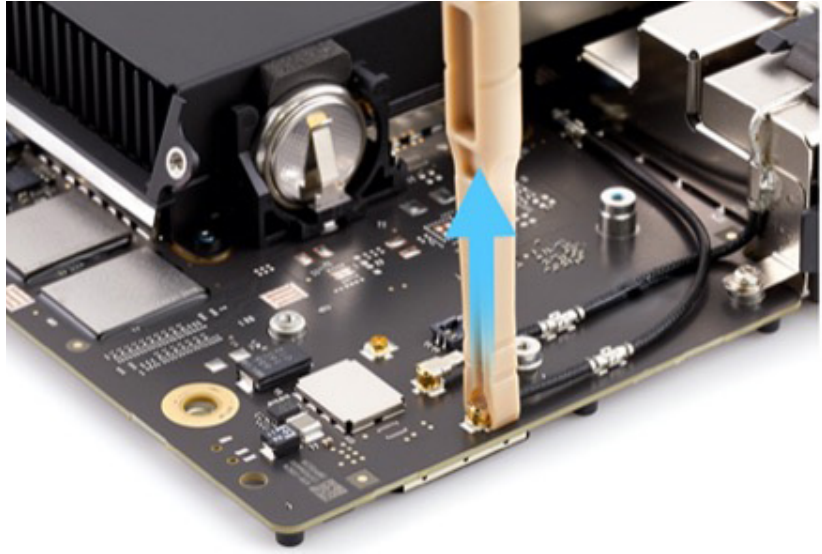
1. Turn over the logic board. Use the flat end of the black stick to flip up the locking lever on the power button flex cable connector (1). Then slide the end of the flex cable out of the connector (2).



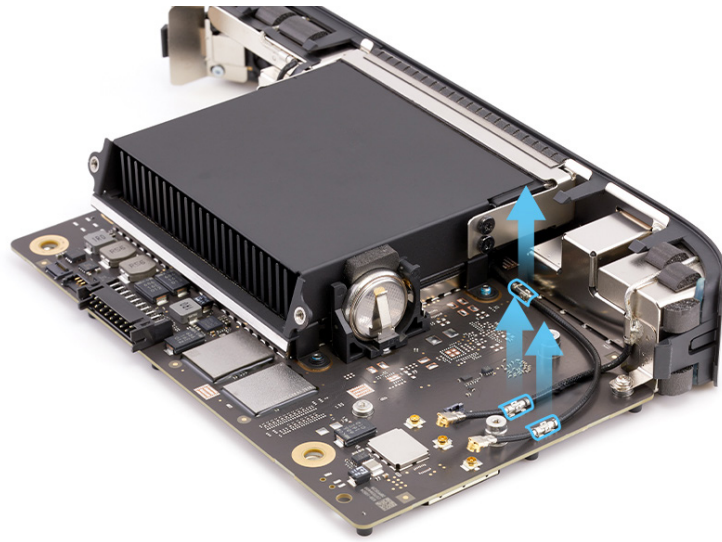
2. Turn over the logic board. Then use the flat end of the black stick to loosen the adhesive between the logic board and the power button flex cable.



3. Rotate the logic board to access the antenna coaxial cables as shown. Then use the antenna tool to lift the ends of the two antenna coaxial cables off the connectors.



4. Gently lift the two antenna coaxial cables off the three antenna coaxial cable grounding clips.



5. Use the T6 screwdriver to remove the T6 screw (923-00230) from the grounding clip on the I/O wall (1).

Note: The T6 screw has a captive washer that stays attached to the screw.

6. Use the T6 screwdriver to remove the two T6 screws (923-02800) from the side of the heat sink (2).



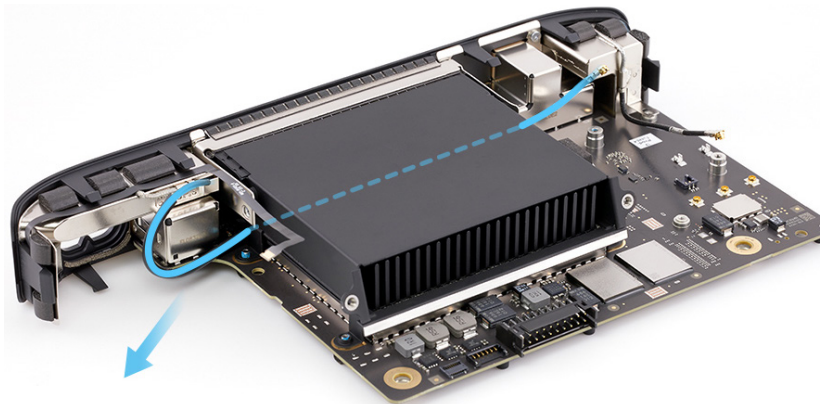
7. Rotate the logic board as shown. Then use the T6 screwdriver to remove the two T6 screws (923-02800) from the other side of the heat sink.



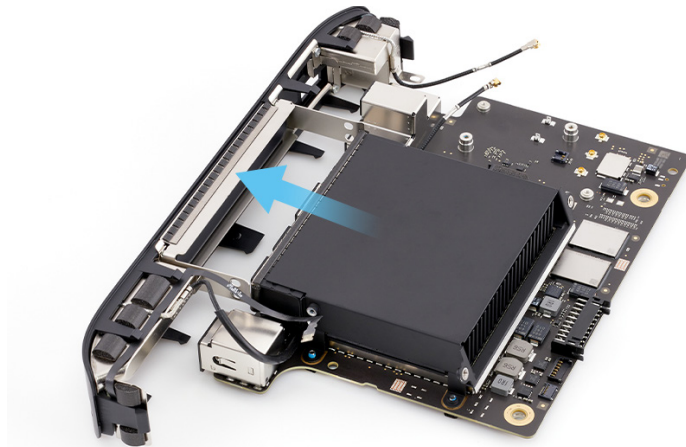
8. Slowly pull about 1 inch of the long antenna coaxial cable through the channel under the heat sink.

 **Caution**

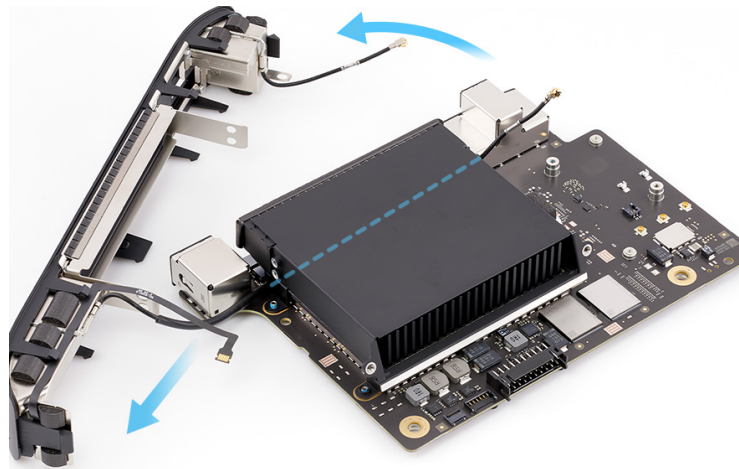
Ensure that the end of the antenna coaxial cable doesn't get trapped in the channel as you pull it. A trapped cable requires an I/O wall replacement.



9. Pull the I/O wall about 1 inch away from the logic board and heat sink.

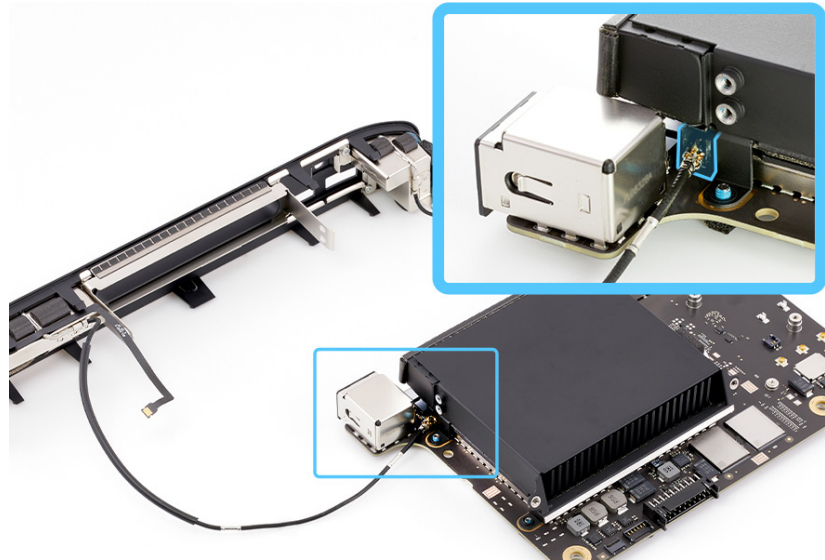


10. Partially rotate the I/O wall away from the logic board and heat sink as shown. Then slowly pull the long antenna coaxial cable out through the channel under the heat sink to fully remove the I/O wall.

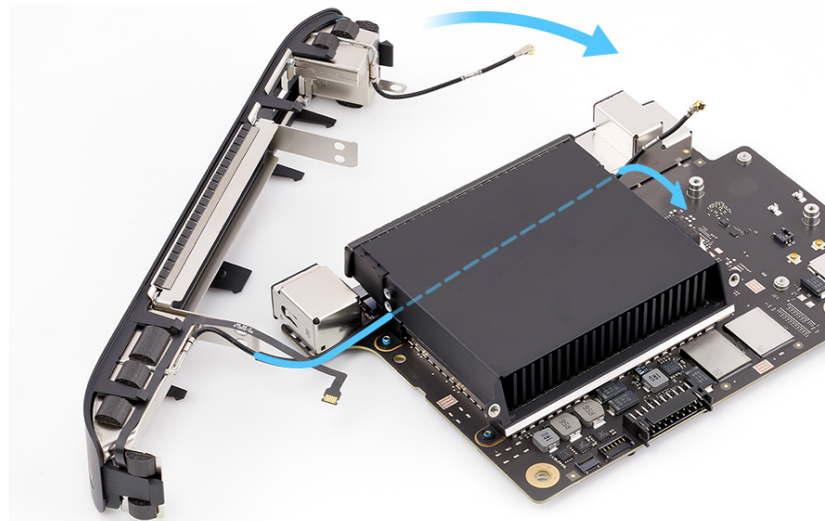


Reassembly

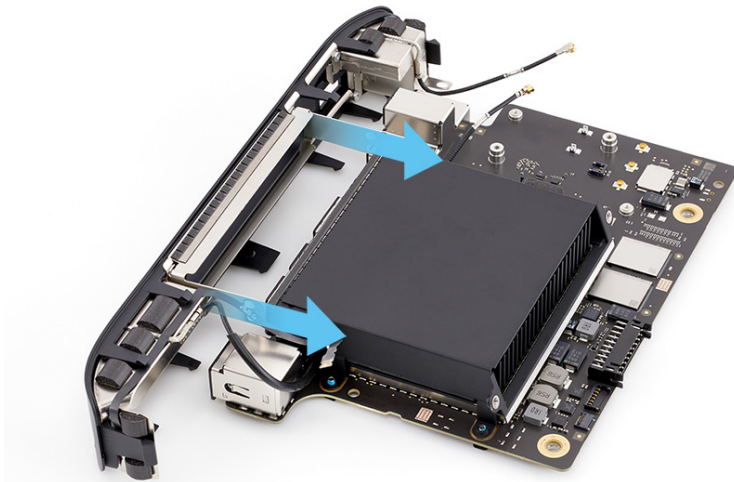
1. Insert the end of the long antenna coaxial cable into the channel under the heat sink.



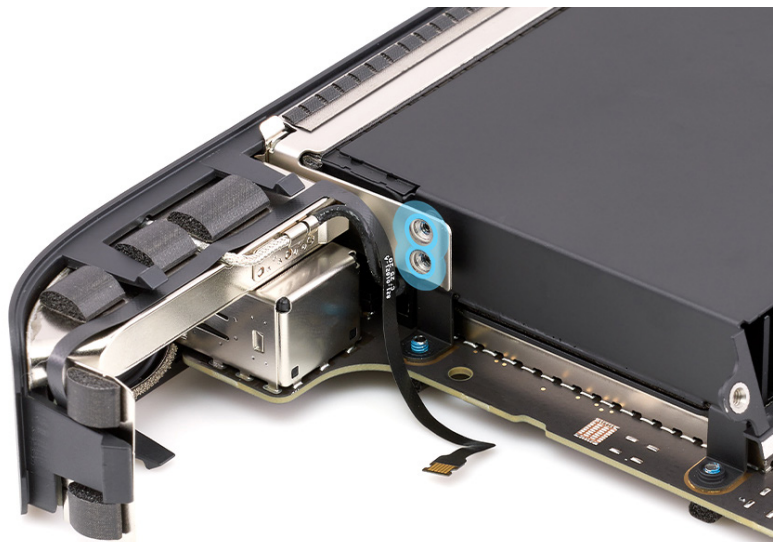
2. Gently push the long antenna coaxial cable through the channel as you align the I/O wall with the heat sink and the logic board.



3. Align the I/O wall mounting brackets with the sides of the heat sink. Then press the I/O wall flush against the logic board and the heat sink.



4. Use the T6 screwdriver to reinstall the two T6 screws (923-02800) into the side of the heat sink.

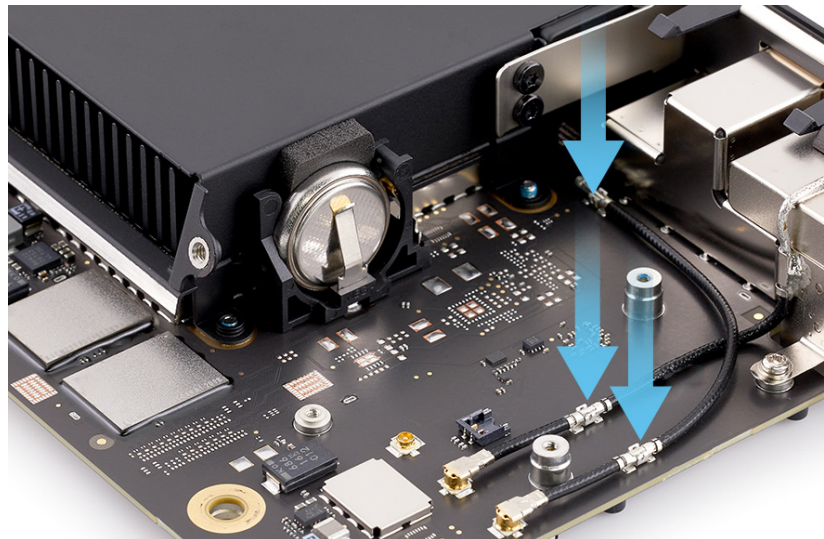


5. Rotate the logic board as shown. Use the T6 screwdriver to reinstall one T6 screw (923-00230) into the grounding clip on the I/O wall (1). Then use the T6 screwdriver to reinstall the two T6 screws (923-02800) into this side of the heat sink (2).

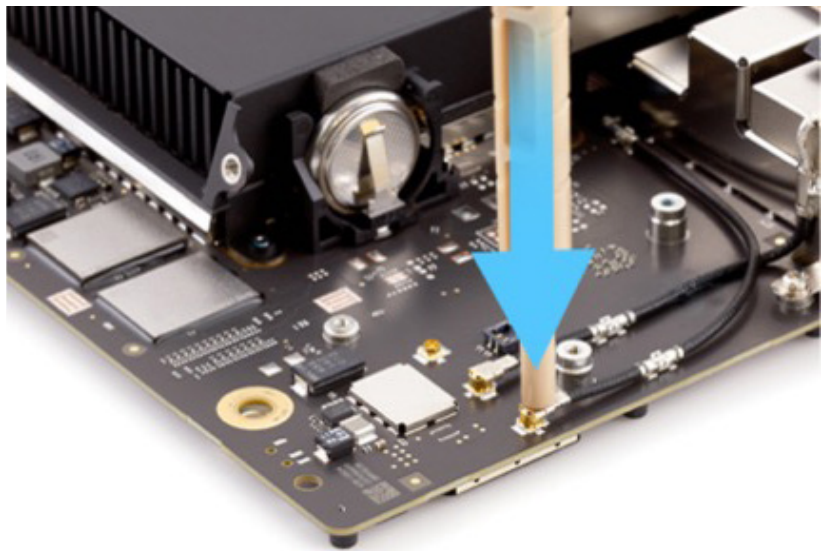
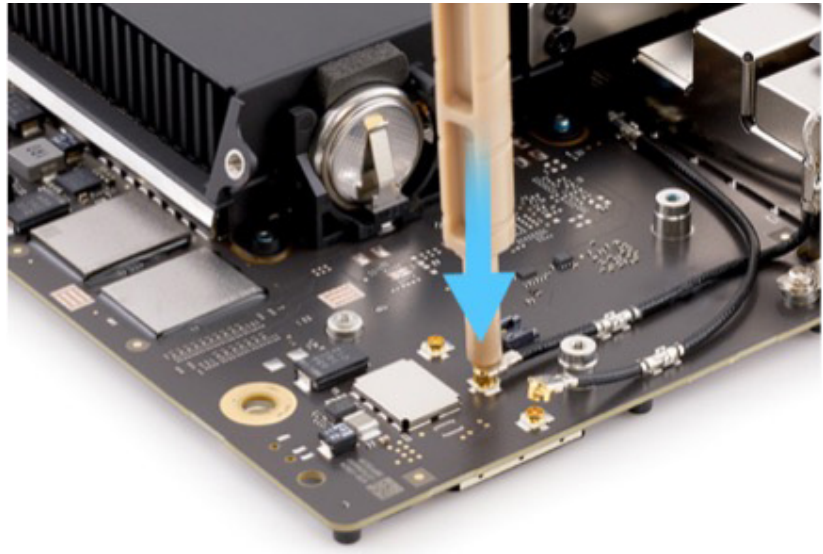


6. Press the two antenna coaxial cables to the three antenna coaxial cable grounding clips on the logic board as shown.

Note: The long antenna coaxial cable crosses over the short antenna coaxial cable.



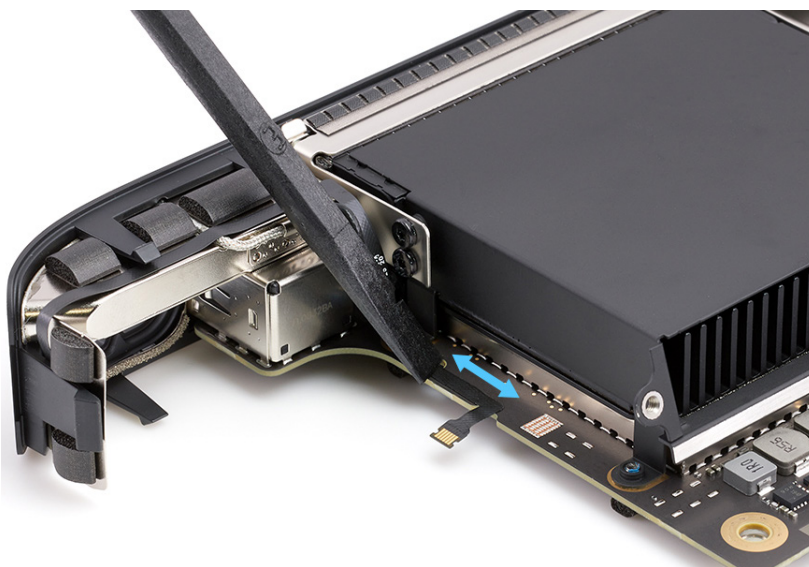
7. Use the blunt end of the antenna tool to press the ends of the two antenna coaxial cables to the connectors.



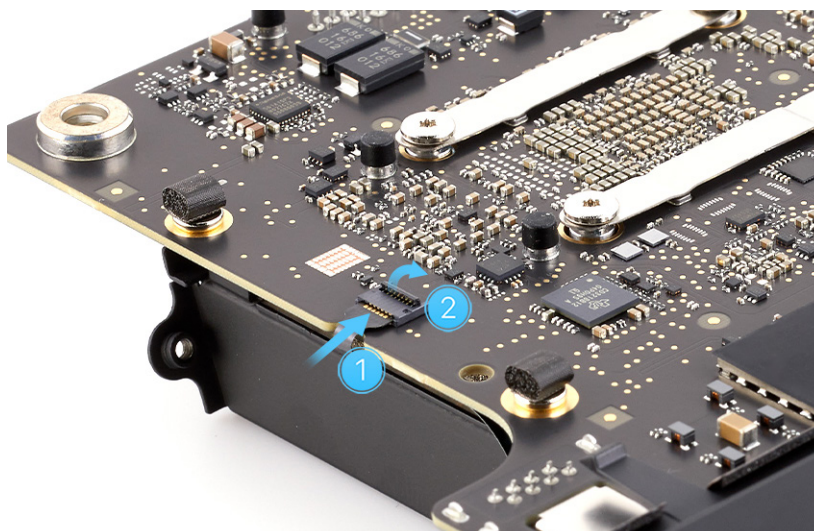
8. Rotate the logic board to access the power button flex cable. Then gently run the flat end of the black stick along the length of the power button flex cable to adhere it to the logic board.

Important

If you're installing a replacement I/O wall, remove the adhesive backing from the power button flex cable before adhering the flex cable to the logic board.



9. Turn over the logic board. Slide the end of the power button flex cable into the connector (1). Then flip down the locking lever (2).



Reinstall the following parts to complete reassembly:

- [Speaker](#)
- [Logic board](#)
- [Fan](#)
- [Antenna plate](#)
- [Bottom cover](#)

Housing

Before You Begin

Remove the following parts before you begin:

- [Bottom cover](#)
- [Antenna plate](#)
- [Fan](#)
- [Logic board](#)
- [Power supply](#)

Tools

- No tools are required for this procedure.

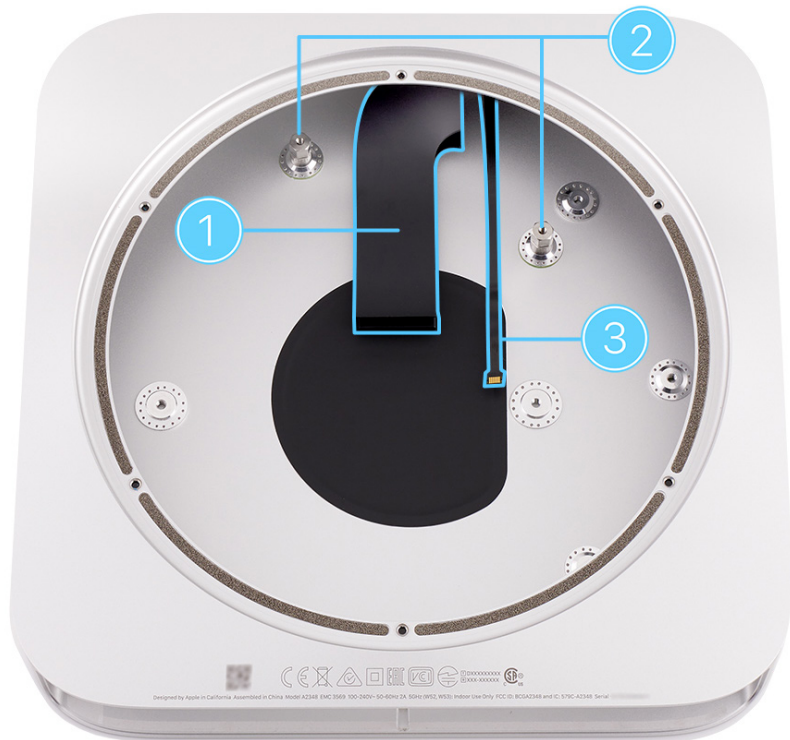
Note: You can remove the logic board with the speaker, battery, and I/O wall installed.



Removal

There are no additional removal steps. The housing includes the following nonremovable parts:

- Power supply cable cover (1)
- Two 5.5 mm hex nut standoff screws (2)
- Status indicator light flex cable (3)



Reassembly

Reinstall the following parts to complete reassembly:

- [Power supply](#)
- [Logic board](#)
- [Fan](#)
- [Antenna plate](#)
- [Bottom cover](#)