Mac Studio

Apple Recycler Guide

May 2023

Contents

About This Guide

Apple Recycler Guides provide guidance for electronics recyclers on how to disassemble products to maximize recovery of resources. The guides provide step-by-step disassembly instructions and information on the material composition to help recyclers direct fractions to the appropriate material recycler.

To conserve important resources, we work to reduce the materials we use and aim to one day source only recycled or renewable materials in our products. A key path to reaching that goal is resource recovery from end-of-life electronics.

Disassembly procedures are intended to be performed only by trained electronics recycling professionals. The recycler is responsible for independently evaluating and ensuring compliance with all applicable environmental, health, and safety laws related to the work. These include but are not limited to laws relating to the management, handling, shipping, and disposal of the outputs of this work as waste and laws in place to ensure the health and safety of all employees who support this work.

For questions or feedback about this guide, email contactesci@apple.com.

Identification

You can find the model number on the bottom of the Mac.

Model number:

A2615

Directive 2012/19/EU Annex VII Components

Directive 2012/19/EU Annex VII requirements apply to the following substances and components.

Substance/Component	Apple Part Name	Removal Instructions
Printed circuit board if the surface is greater than 10 square centimeters	Power supply logic board, I/O board, main logic board	Follow steps 1–13
External electric cables	Power cord	Follow step 1
Battery	Coin cell battery	Follow steps 1–9
No further substances or components as listed in Annex VII		

Safety Considerations

The recycler is responsible for independently evaluating all activities undertaken by its employees to perform or support the work and ensuring compliance with all applicable health and safety laws related to the work. These include but are not limited to laws relating to the health and safety of all employees who perform or support this work. The recycler is also responsible for evaluating the workspace and ensuring that the area in which the work is to be undertaken is designed using ergonomic best practices and meets all ergonomic requirements to ensure the protection of its employees.

Personal Protective Equipment

Personal protective equipment should be worn during the entire recycling process.

 Wear hand protection

 Wear protective clothing

 Wear eye protection

 Wear foot protection

Recommended Tools

Nail-pulling screwdriver
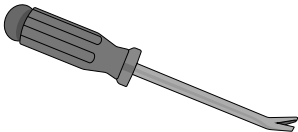
Torx T-3 screwdriver
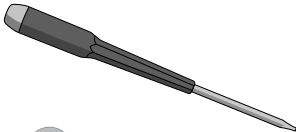
Torx T-5 screwdriver
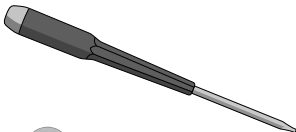
Torx T-6 screwdriver
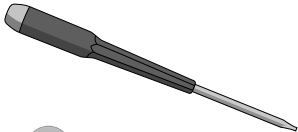
Torx T-8 screwdriver
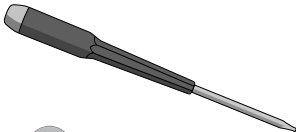
Torx T-10 screwdriver
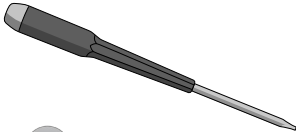
Disassembly Instructions

1. Remove the power cord.
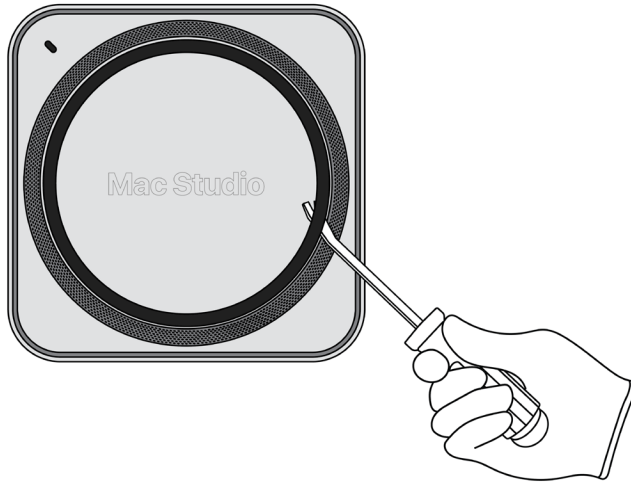
» *Ensure that the Mac Studio is turned off.*

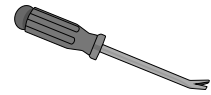» *Unplug the power cord from the back of the computer.*

Fraction
Power cord

Cu

Copper
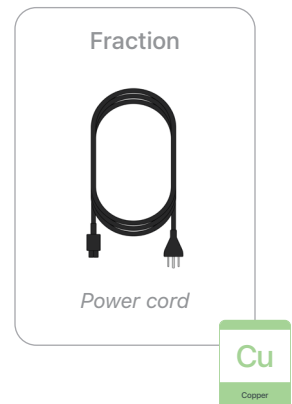
Warning: Before continuing disassembly, wait 10 minutes after unplugging the device for stored energy to discharge.

2. Pry the gasket off the bottom of the Mac Studio.

Tools Used

Fraction
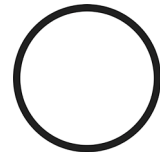
Gasket

PL
Plastics

3. Remove the bottom panel.

» *Unscrew the four Torx T8 fasteners.*
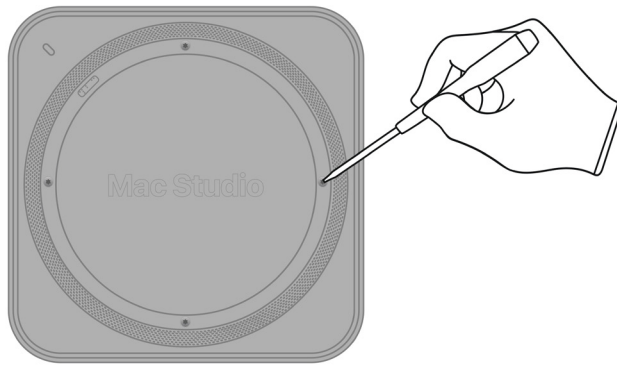
Tools Used
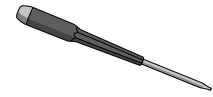
Fraction

Fasteners (x4)

Fe
Ferrous

» *Pull off the bottom panel.*
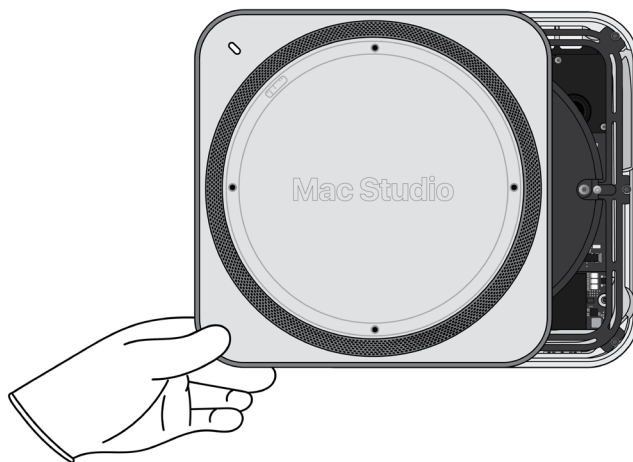
Fraction

Bottom panel

Al
Aluminum

4. Remove the power supply logic board.

» *Unscrew the six Torx T10 fasteners.*
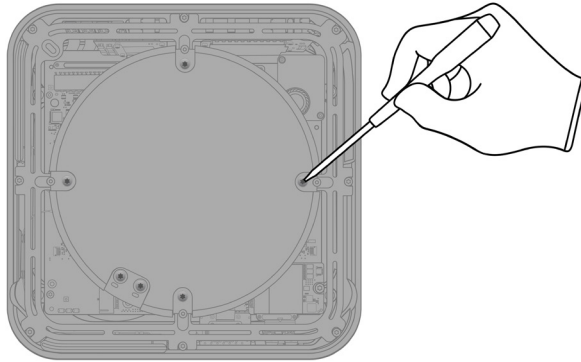
Tools Used
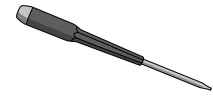
Fraction

Fasteners (x6)

Fe
Ferrous

» *Lift the power supply logic board out of the enclosure.*
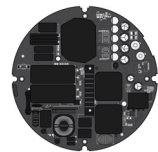
Fraction

Power supply logic board

PMs
Precious Metals

5. Remove the frame by unscrewing the eight Torx T6 fasteners from the enclosure. Set the enclosure aside.
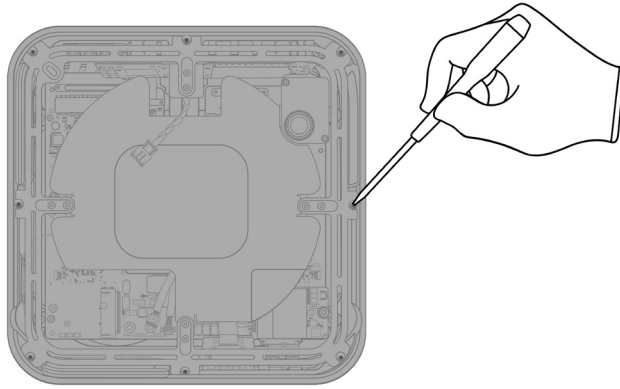
Tools Used
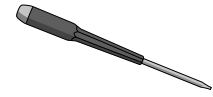
Fraction

Fasteners (x8)

Fe

Ferrous

6. Remove the heat shield from the frame by unscrewing the three Torx T6 fasteners.
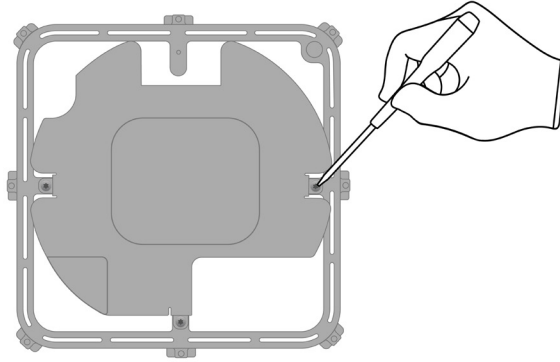
Tools Used
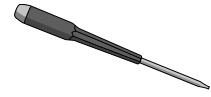
Fraction

Fasteners (x3)
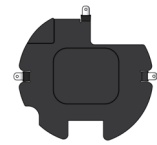
Heat shield

Fe
Ferrous

Fraction

Frame

Al
Aluminum

7. From the enclosure, remove the antennas.

» *Unscrew the four Torx T5 fasteners from the antennas.*
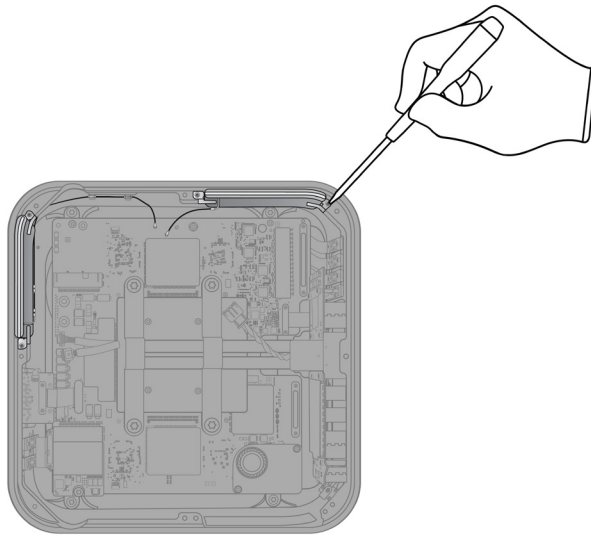
Tools Used
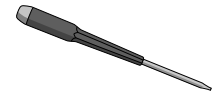
Fraction

Fasteners (x4)

Fe
Ferrous

» *Pull off both antennas by hand.*
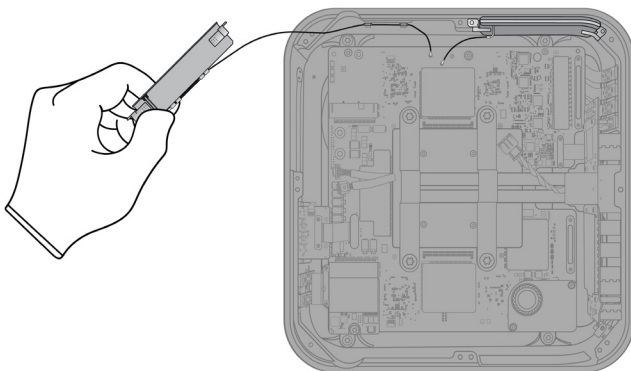
Fraction
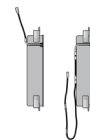
Antennas

Cu
Copper

8. Pry off the speaker.

Fraction

Speaker

REE

Rare Earth
Elements
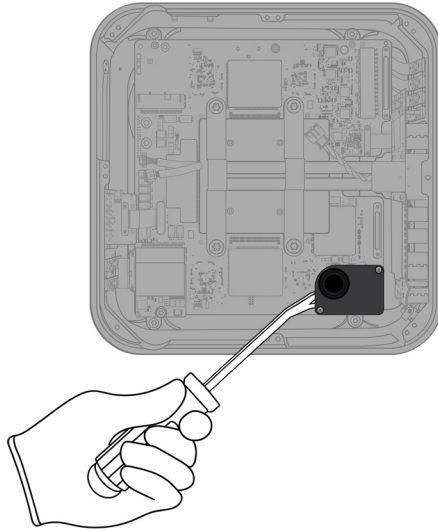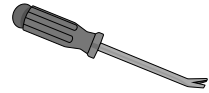
9. Remove the coin cell battery.
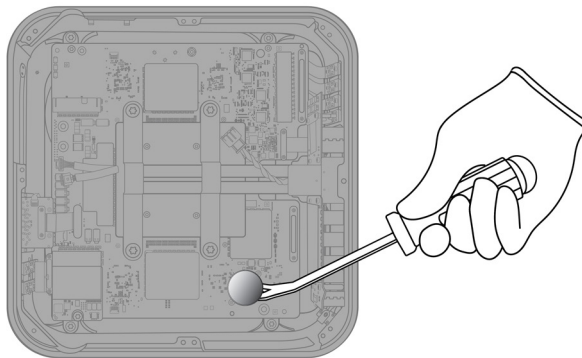
Tools Used
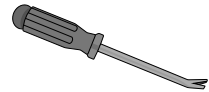
Fraction
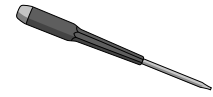
Coin cell battery

BT

Battery

10. Remove the two brackets by unscrewing the four Torx T10 fasteners from the heat sink.
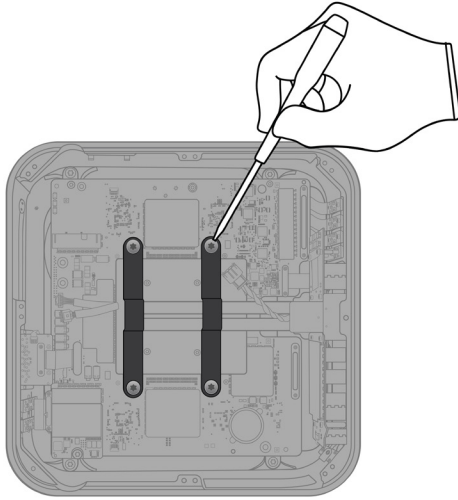
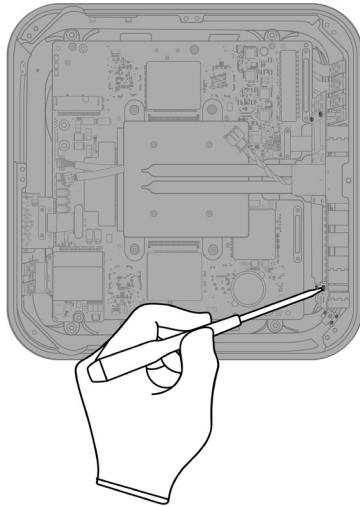**Tools Used**

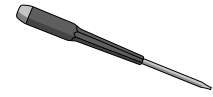**Fraction**

Fasteners (x4)

Brackets

Fe

Ferrous
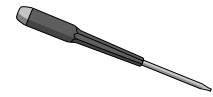
11. Remove the I/O board and the AC connector.

» *Unscrew the seven Torx T3 fasteners from the I/O board.*
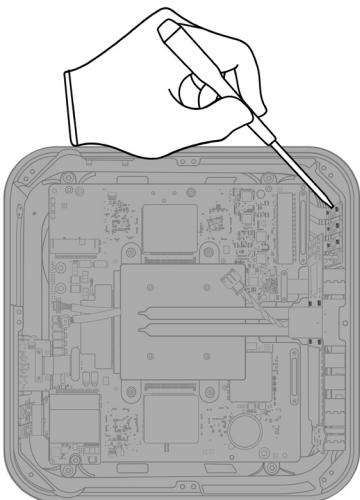

Tools Used

Torx T3

Torx T5

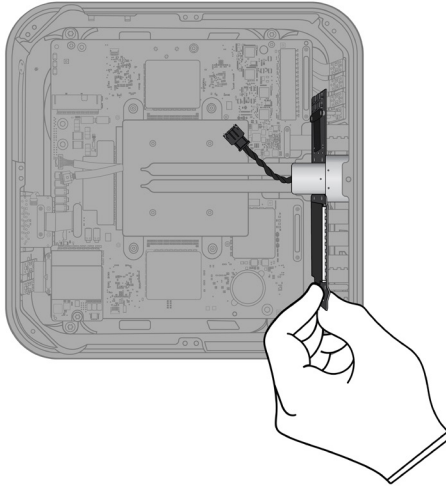» *Unscrew the 10 Torx T5 fasteners from the I/O board.*

Fraction

Fasteners (x17)

Fe
Ferrous

>> *Pull off the I/O board and the AC connector by hand.*

Fraction

I/O board

PMs
Precious Metals

Fraction

AC connector

Cu
Copper

12. Unscrew the four Torx T5 fasteners from the SD card reader and Thunderbolt 3 ports.
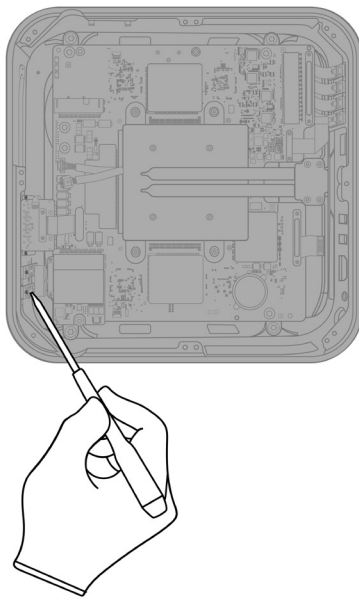
Tools Used

Fraction

Fasteners (x4)

Fe
Ferrous

13. Remove the main logic board.
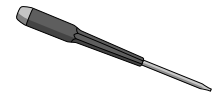
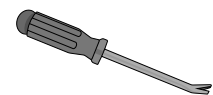» *Unscrew the four Torx T8 fasteners from the main logic board.*
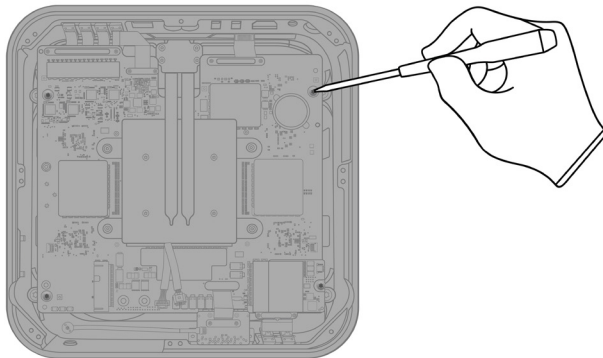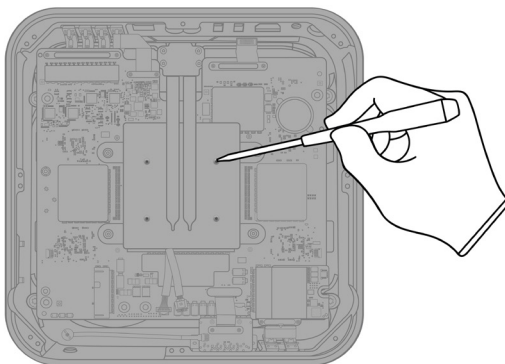

Tools Used
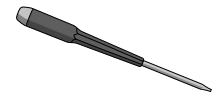
Torx T8

Torx T6

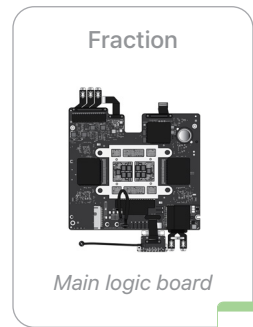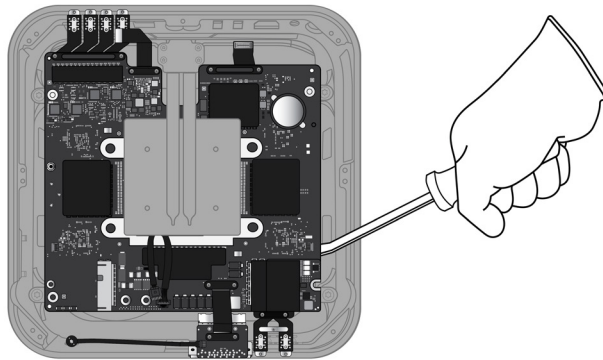» *Unscrew the four Torx T6 fasteners from the heat sink.*

Fraction

Fasteners (x8)

Fe
Ferrous

» *Using the nail-pulling screwdriver, pry off the main logic board.*

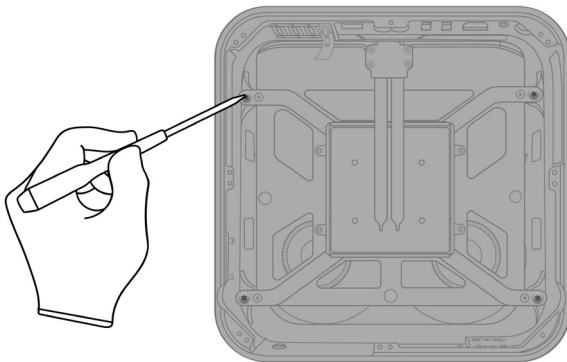Fraction

Main logic board

PMs
Precious Metals

14. Unscrew the four additional Torx T8 fasteners from the heat sink.
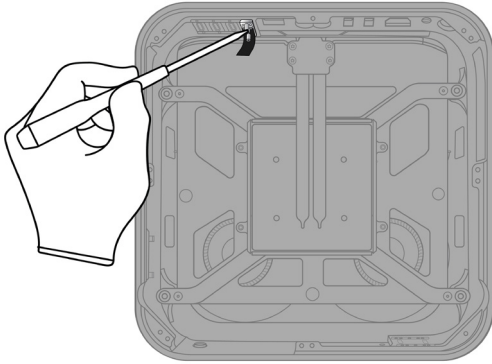

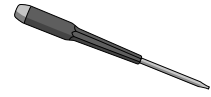
Tools Used

Fraction

Fasteners (x4)

Fe
Ferrous

15. Remove the Thunderbolt 3 port by unscrewing the two Torx T5 fasteners.

Tools Used

Fraction

Fasteners (x2)

Fe
Ferrous

Fraction

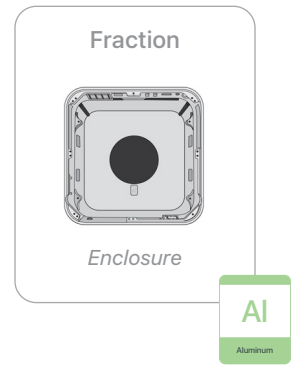*Thunderbolt 3 port*

Cu
Copper

16. Pull the heat sink and dual fan out of the enclosure.

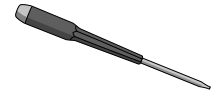Fraction

Enclosure

Al
Aluminum
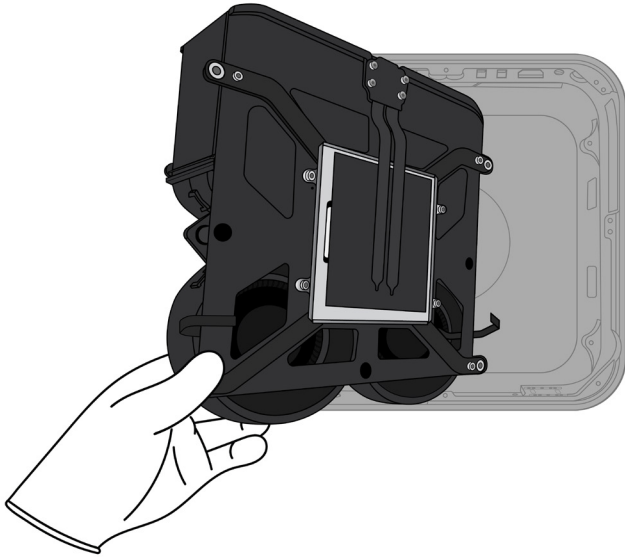
17. Separate the dual fan from the heat sink.

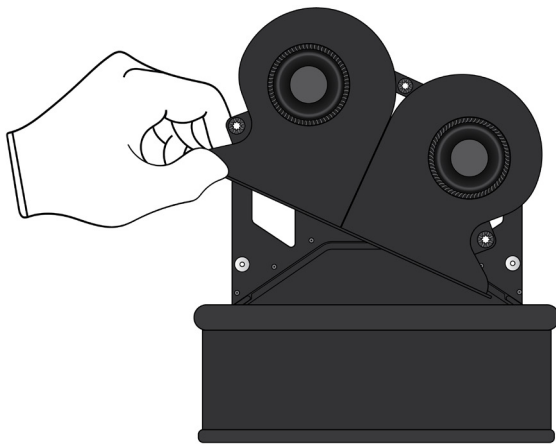» *Unscrew the two Torx T8 fasteners from the dual fan.*
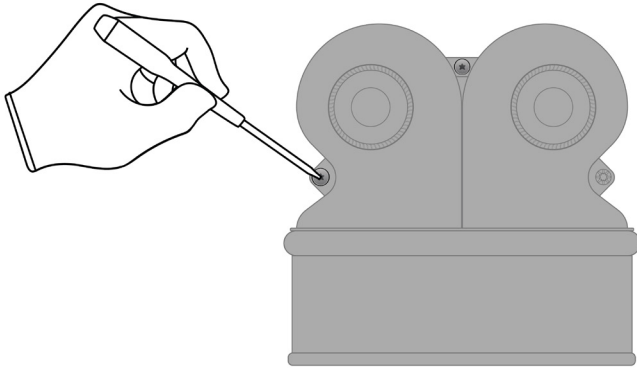
Tools Used

Fraction

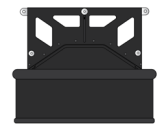*Fasteners (x2)*

Fe
Ferrous

» *Lift the dual fan off the heat sink.*

Fraction

Dual fan

Heat sink

Cu
Copper

Material Categorization of Output Fractions

All outputs from this process must be managed, handled, and disposed of in accordance with applicable waste laws and regulations, including but not limited to the Waste Framework Directive and its national enactments in Europe.

Fraction	Downstream Processing
Aluminum	**Primary Target Material**

Bottom panel

Al
Aluminum

Frame

Potential Additional Materials

Fe
Ferrous

PL
Plastics

Enclosure

Batteries	**Primary Target Material**

Coin cell battery

BT
Battery

Fraction	Downstream Processing
Ferrous	**Primary Target Material**

Fasteners (x66)

Fe

Ferrous

Heat shield

Potential Additional Materials

PL

Plastics

Brackets

Logic Boards

Primary Target Material

Power supply logic board

PMs

Precious Metals

I/O board

Potential Additional Materials

Cu

Copper

Fe

Ferrous

PL

Plastics

Main logic board

Fraction	Downstream Processing

Mixed Electronics

Primary Target Material

Cu
Copper

Power cord

Potential Additional Materials

Fe
Ferrous

PL
Plastics

PMs
Precious Metals

Antennas

AC connector

Thunderbolt 3 port

Dual fan

Heat sink

Fraction	Downstream Processing

Mixed Plastics
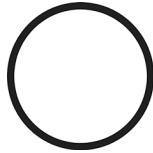
Gasket

Primary Target Material

Rare Earth Magnets

Speaker

Primary Target Material

Potential Additional Materials