

Guide: Battery Replacement



LMP Battery MacBook Air 13" Thunderbolt 3

10/18 - 3/20, built-in, Li-Ion Polymer, A1965, 11.4 V, 50 Wh

P/N 23195

SUPPORTED APPLE DEVICES: MacBook Air (Retina, 13-inch, 2018) MacBook Air (Retina, 13-inch, 2019)



Introduction

It is highly recommended that this procedure is carried out by an experienced technician.

LMP accepts no responsibility or liability in the event of any damage or injury caused while performing this procedure.

It is the responsibility of the person performing the procedure to ensure that they have the requisite technical skills to competently carry out the battery replacement.

If in doubt do not begin. Instead employ an experienced technician to perform the repair on your behalf.



Tools required for this procedure: Pentalobe P5 screwdriver Torx T5 and T3 screwdriver Spudger with flat and pointed ends. Tweezers



All of the above tools are included in the LMP Toolkit (P/N 16262), available separately.



Additional equipment: Isopropyl wipes



Before performing the procedure discharge the MacBooks battery to at least 20% or under if possible. This will ensure that the battery does not contain enough energy to initiate a thermal event.



This procedure requires the removal of a large number of small screws and parts. It is vitally important that you have a method of organizing these screws and parts to avoid loss and to ensure the use of the correct screws when reassembling the MacBook - using an ice cube tray or similar to store the screws and small parts is a good method of organization.

Be aware that while a lot of the screws appear to be the same they can vary slightly in length. Therefore it's important that the screws are returned to their original positions to avoid damage during reassembly.



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A Before you start ensure that the MacBook is completely turned off. Close the display and place the MacBook upside down on a soft cloth or similar to protect the display housing.

Using a Pentalobe P5 screwdriver remove the 10 screws securing the the bottom case:

- 2 long screws with a long shoulder from positions 1 as depicted.
- 2 long screws with a short shoulder from positions 2 as depicted.
- 6 short screws from positions 3 as depicted.

Note the location of each screw as they will need to be returned to the same position otherwise damage may occur.



Step 2 – Bottom Case



Lift the bottom case from the rear until you hear and feel the securing clips disengage.







The bottom case is now removed.



Step 3 – Battery Connector



 Use the pointed end of a spudger to press the logic board power button for 5 seconds.



Use the flat end of a spudger to push against the ridge in the battery cable connector until it releases from the socket.



Step 4 – Logic Board



Using a Torx T3 screwdriver remove the 2 screws holding the USB-C board cable securing bracket.



Remove the bracket

Using the flat end of a spudger from the left side of the connector, lever the connector directly up from the logic board.





Step 5 – Speaker Cables Right





Use the pointed end of a spudger to carefully lever the speaker connector upwards and out of the socket.

Step 6 – Trackpad Cable



 Using a Torx T3 screwdriver remove the two screws holding the trackpad cable securing bracket.



Remove the bracket.



- Using the flat end of a spudger carefully lever the cable directly up from the logic board.
- Do not attempt to lift the cable any further as part of the cable is connected to the keyboard underneath the logic board.



Step 7 – Fan Cable







 Carefully peel the black tape away from the fan connector.

Only peel the tape back far enough to release it from the connector.

- Use the pointed end of a spudger to carefully lift the locking lever on the fan cable connector.
- Carefully slide the fan cable out of the connector.
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The cable slides parallel to logic board, do not lift the cable.



Step 8 – Audio Board Cable



 Use the flat end of a spudger to carefully lift the locking lever on the audio board cable connector.



- Carefully slide the cable out of the connector.
- The cable slides parallel to logic board, Do not lift the cable.



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The cable is adhered to the fan. Leave the cable in place for now.



Step 9 – Antenna Cables



Using a Torx T3 screwdriver remove the 2 screws holding the antenna cable securing bracket.



• Remove the bracket.



Step 10 – Antenna Cables



Slide the pointed end of a spudger underneath each antenna cable close to the connector and carefully use a levering motion to release each connector.









Step 11 – Display Cable Connector

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Using a Torx T3 screwdriver remove the 2 screws securing the display cable connector bracket.



Remove the bracket.



Using the flat end of a spudger carefully lever the display cable connector directly up from the display board.



Step 12 – Logic board removal



- Using a Torx T5 screwdriver remove the following screws:
 - 3 medium screws
 - 1 large screw with a rubber bumper
 - 2 small screws



Tilt the logic board up from the front and carefully slide it out of the housing while checking for snagged cables.



Reinstalling the logic board is the reverse of the previous procedure. However pay attention to the cables and check that none are trapped underneath the logic board before replacing the screws.

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Step 13 – Audio Board Cable



Using a Torx T3 screwdriver remove the 3 screws holding the audio board securing bracket.



• Remove the bracket.



Step 14 – Audio Board Cable





 Using the flat end of a spudger carefully lever the cable connector directly up from the audio board.



- The audio board cable is adhered to the fan. Carefully peel the cable up from the fan.
- If you find this difficult then use a hair dryer to apply heat to loosen the adhesive.



Step 15 – Touch ID cable



- Once the audio board cable has been removed it will reveal the touch ID cable.
 - Use the pointed end of a spudger to carefully lever the cable connector directly up from the audio board.



- Use the pointed end of a spudger to carefully lever the cable connector directly up from the audio board.
- The touch ID cable is adhered to the audio board. Apply heat with a hair dryer to loosen the adhesive and then carefully work the cable free using the pointed end of a spudger.



Be extremely careful. The touch ID cable is very fragile and if damaged the MacBook will require a replacement touch ID board. This can only be done by an Apple Authorized Service Provider.

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Step 16 – Left Speaker Cable





Using the pointed end of a spudger carefully lever speaker cable connector up from the audio board.



Step 17 – Audio Board Removal

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Using a Torx T3 screwdriver remove the small screw in position 1.

Using a Torx T5 screwdrive remove the 2 long screws.



Step 18 – Audio Board Removal







Gently wiggle the board free.



Step 19 – Trackpad Cable



Carefully peel the black tape away from the trackpad cable connector. Only peel the tape back far enough to release it from the connector.



- Using the flat end of a spudger carefully lift the locking lever on the trackpad cable connector.
 - The cable is adhered to the black plastic backing on the housing. This adhesive is quite strong. Use a har dryer to apply heat to cable to loosen the adhesive.



Step 20 – Trackpad Cable



• Slide the flat end of a spudger underneath the cable.



 Slowly and carefully work the spudger along the underside of the cable to release the adhesive.





Once the cable is released from the adhesive carefully slide the cable out of the connector.



Step 21 – Trackpad Cable





The cable is also adhered to the battery. Carefully peel the cable away from the battery.



Step 22 – Speakers



- The speakers are adhered to housing using special "pull to release* adhesive strips. The battery kit contains replacement strips for both the speakers and the battery.
- Special care must be taken when pulling the strips to avoid breakage. If a strip breaks while being pulled it can become very difficult to remove the speaker.
- Do not rush the following steps. Perform the actions slowly and gently to avoid breaking the adhesive strips.



Step 23 – Left Speaker



• Using tweezers grip the adhesive pull tab on the front top side of the left speaker.



Pull the tab up and use a rotating motion with the tweezers to wrap the adhesive around the tweezers.



- Continue this rotating motion to slowly pull the adhesive away until it fully releases.
- Repeat the process to remove the strip at rear of the speaker.



Step 24 – Right Speaker



Repeat the above process to release the adhesive on the right speaker.



 Once all strips are released the speakers can be removed.

Reinstalling the speakers. (Only perform this step during the reassembly stage)

Included in the battery kit is a set of 4 long replacement adhesive strips. Two of these are used for the speakers - one for each speaker.



Apply one adhesive strip to each the speakers as depicted.

Remove the plastic backing from the adhesive strip. Insert the speaker into the housing at a slight angle. When speaker is correctly aligned press down on the speaker for a few seconds to activate the adhesive.



Step 25 – Battery

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The battery is secured to the housing using 6 adhesive strips (3 on each side) and 4 Torx T3 screws.



Step 26 – Adhesive Strips



- The adhesive strips can be removed in any order.
- Using tweezers grip a pull tab.



- Use a rotating movement to wrap the adhesive strip around the tweezers.
- Continue this rotating motion to slowly pull the adhesive away until it fully releases.



Repeat this process for the remaining 5 strips.



Step 27 – Lower Case



- Use a Torx T3 screwdriver to remove the 4 T3 screws securing the battery to the housing:
 - 2 screws on the very right side
 - 2 screws on the very left side



 Remove the battery while keeping the trackpad/keyboard cable out of the way.





Step 28 – Installing the new battery



- Included in the battery kit is a set of 8 short replacement adhesive strips. 6 of these are used for the battery in the following steps.
- Also included in the battery kit is a set of 4 long replacement adhesive strips. 2 of these are used for the speakers later on.
- The housing has 6 slightly raised sections, 3 on each side. The strips must be applied to the raised sections and not in between them.
 - Use an isopropyl wipe to clean each of the raised sections and allow to dry before proceeding.





Apply 1 short strip to each of the raised sections on the left so that the pull tab lies to the left of the raised section. See image.



Repeat for the right side, however this time ensure that the pull tabs lie to the right of the raised section. See image



Smooth over the strips with the flat end of spudger to ensure that the strips are fully adhered to the housing.







Remove the plastic backing from all of the strips.





Lower the new battery into the housing while ensuring that the screw holes on upper left and right sides line up with the screw holes in the housing.



- Once the battery is correctly aligned replace the 4T3 screws:
 - 2 screws on the upper very right side
 - 2 screws on the upper very left side



Use the flat palms of your hand to apply slight pressure on both the left and right cells to fully activate the adhesive.





Included in the battery kit is a set of 4 long replacement adhesive strips. 2 of these are used for the speakers.



Apply 1 long strip to each speaker as depicted and smooth over the strips with the flat end of spudger to ensure that the strips are fully adhered to the speaker.



Remove the plastic backing from all of the strips.





Insert the speaker into the housing at a slight angle.



 Use your fingers to apply slight pressure on the speaker to fully activate the adhesive.



- Fold up the black part of the strip and place it on the speaker. Smooth over the strip with the flat end of spudger to ensure that the strips are fully adhered to the speaker.
- Repeat the above process on the right speaker.





Follow the disassembly steps in reverse order to reassemble the MacBook.

It is highly recommended that the battery is fully calibrated after being replaced. To do this charge the MacBook fully to 100% and then keep on charge for a further 2 to 3 hours. Then use the MacBook on battery power only until the MacBook enters sleep mode due to low battery charge. Leave overnight or for at least 5 hours and then charge the battery to 100%.



Should you notice any issues or strange behavior with the MacBook after completing the battery replacement it is recommeded that you reset the PRAM and the SMC.