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# Apple Technician Guide



## iPhone 4

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iPhone 4 and iPhone 4S

ADN 070-2840-C

Updated: 2012-02-21



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# iPhone 4

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## About This Guide

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**iPhone 4**

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# Updates

## Updated 21 February 2012

Cover Page: Changed document number to version 070-2840-C.

Troubleshooting:

- **Removed Visual Mechanical Inspection section.** This information is now available in the separate **iPhone Visual Mechanical Inspection Guide**. As of this update, the current version of the iPhone VMI document is 070-2515-E.
- **Cleaning:** Added warning not to use long metal tools (such as screwdrivers or dental picks) while cleaning inside the headphone jack, as this could lead to battery puncture.
- **Mechanical > Button Issues:** Deep Dive step 2: added image and text "With display off, press center of Home button and verify that display turns on. Repeat same test for the top, bottom, left and right edges of Home button (3, 6, 9, 12 in image at left). The display should turn on when pressing any of these 5 locations."

Take Apart:

- **General Information > Required Tools:** Replaced old fixture with new iPhone 4 Battery Fixture (923-0075).
- **Battery chapters:** Updated procedures to use new iPhone 4 Battery Fixture.

## Updated 16 November 2011

Cover Page: Changed document number to version 070-2840-B.

Basics::

- **Identifying iPhones > Serial Number and IMEI/MEID Location:** Added text to table in item #4: "Use Motorola DS6707 Scanner (Apple part #922-9230) to scan the barcode of iPhone 4 (GSM model)."

Troubleshooting > Symptom Charts:

- **Power > Battery Life Too Short:** Reversed Yes/No actions for Deep Dive step 1.
- **Display > Multi-Touch Issues:** Reversed Yes/No actions for Deep Dive step 1.
- **Mechanical > Button Issues:** Deep Dive step 4, no result: added text "For iPhone 4S volume button issues, try installing Volume Button Shim".

Take Apart:

- **General Information > Required Tools:** Added "Motorola DS6707 Scanner (922-9230) for iPhone 4 (GSM model) serial barcode".
- **SIM Tray chapters:** Added image and text "Note: The original SIM tray shows the device's IMEI/MEID and serial number."
- **Internal Checks chapters:**

- 
- Changed “Internal Liquid Contact Indicators” text to “If the LCI is activated (red), it indicates contact with liquid, which can cause damage that is not covered under warranty and is not eligible for modular repair, but is eligible for Out-of-Warranty (OOW) paid whole unit replacement.”
  - Added new section to show location of internal serial number barcode.
  - **iPhone 4 (GSM model) Service Parts:** Corrected Torx Security Screw Kit part# to 922-9634.
  - **iPhone 4S Service Parts:**
    - Added camera pan to list of camera kit contents.
    - Added volume button shim 923-0072.
  - **iPhone 4S Main Camera:** Changed First Steps note and removal step 7 to align with service part kit contents. A new camera includes a new pan.
  - **iPhone 4S Volume Button Shim:** Added new shim procedure for volume button issues.

Verification Testing:

- **Carrier Screening > Computer Setup for Restoration Process:** Updated Media Bundle file name to “063-6545-C.zip”.
- **Functional Testing > Test Audio Playback:** Corrected missing words in “Note: If distortion or a missing channel is found during testing, inspect for contaminants in audio jack preventing proper electrical connection.”

## Introduced 14 October 2011

Combined and updated the following documents into a single new document. Rewrote troubleshooting symptom charts. Updated text and screenshots for iOS 5 and OS X Lion. Added information and take-apart procedures for the new iPhone 4S.

- 070-2515-D iPhone Visual Mechanical Inspection (VMI)
- 070-2761-B Apple Technician Guide for iPhone
- 070-2616-B iPhone Disassembly Guide
- 070-2618-F Modular Repair Guide for iPhone 4 (GSM model)
- 070-2730-C Modular Repair Guide for iPhone 4 (CDMA model)
- 070-2636-D Functional Screening Guide for iPhone 4 (GSM model)
- 070-2732-C Functional Screening Guide for iPhone 4 (CDMA model)

## Note About Images In This Guide

Screenshots and other graphics are for illustration purposes only and may not show current or observed dialog boxes, wordings, values, versions, models, capacities, and may be for a different model than you are testing. However the steps and sequences are the same unless noted.

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# Feedback

We want your feedback to help improve this and future Technician Guides!  
Please email any comments to: [smfeedback6@apple.com](mailto:smfeedback6@apple.com)

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 Apple Technician Guide

Basics  
—  
iPhone 4



# Overview

## Scope of this Document

This Apple Technician Guide provides troubleshooting steps, take apart procedures and other information about iPhone 4 and iPhone 4S. It is designed to be used in conjunction with the **iPhone Visual Mechanical Inspection** guidelines (070-2515).

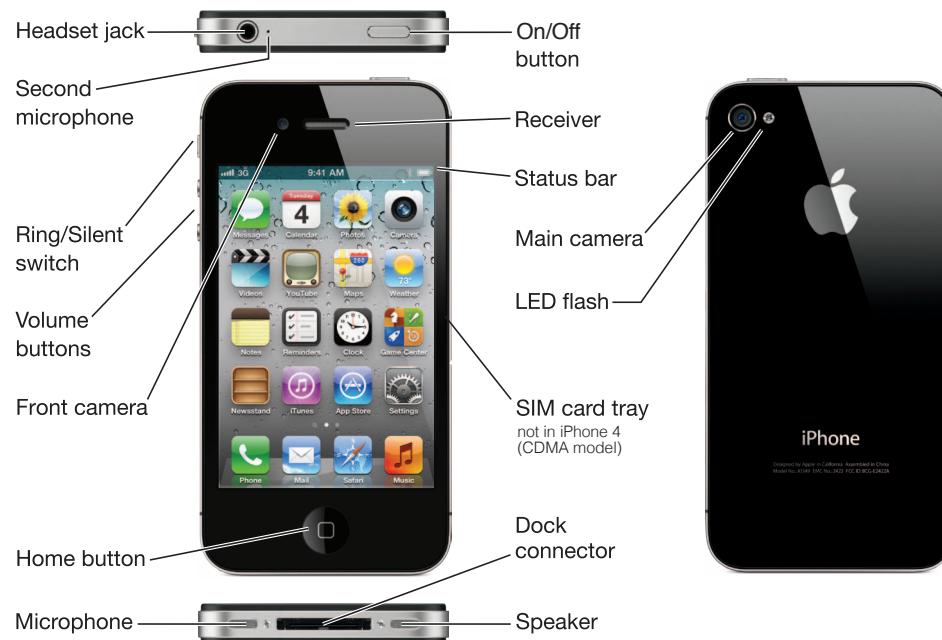
The iPhone (original), iPhone 3G and iPhone 3GS are covered in a separate document.

## iPhone Model Feature Differences

**iPhone 4** introduced a faster A4 chip, high-resolution 960x640 Retina display, 5MP camera with LED flash, VGA front camera, and FaceTime. Separate models are available for GSM and CDMA networks.

**iPhone 4S** introduced a faster dual-core A5 chip, 8MP camera with 1080p HD video recording, and Siri voice assistant. iPhone 4S is a world phone for both GSM and CDMA networks.

## iPhone 4/4S at a Glance





## System Requirements

### Mac

- Mac computer with USB 2.0 port
- Mac OS X v10.5.8 or later
- The latest version of iTunes (free download from [www.itunes.com/download](http://www.itunes.com/download))
- iTunes Store account
- Internet access

### Windows

- PC with USB 2.0 port
- Windows 7; Windows Vista; or Windows XP Home or Professional with Service Pack 3 or later
- The latest version of iTunes (free download from [www.itunes.com/download](http://www.itunes.com/download))
- iTunes Store account
- Internet access



# Identifying iPhones

## Model Differences

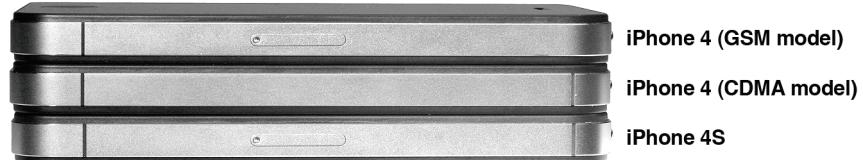
iPhone models can be identified by model number, which is printed on the back cover:

Model #	iPhone Model
A1332	iPhone 4 (GSM model)
A1349	iPhone 4 (CDMA model)
A1387	iPhone 4S
A1431	iPhone 4S (China only)



iPhone 4/4S models can also be visually differentiated by:

- The presence or lack of a SIM card tray. iPhone 4 (GSM model) and iPhone 4S have a SIM card tray on the right edge, whereas iPhone 4 (CDMA model) does not.
- The different positioning of joints on the metal band (see all images below).





## Serial Number and IMEI/MEID Location

iPhones that use GSM technology have an IMEI, or International Mobile Equipment Identity. iPhones that use CDMA technology have an MEID, or Mobile Equipment Identifier. Both IMEI and MEID have the same function: to uniquely identify a mobile device on a cellular network.

There are several ways to get iPhone's serial number and IMEI/MEID. See Apple Support article [HT1267: iPhone: Locating the serial number, IMEI, ICCID or MEID](#)

1. If iPhone is operational, the serial number, IMEI/MEID and ICCID can be found in Settings > General > About



2. With iPhone connected to a computer, in iTunes, click the Summary tab. iPhone's serial number and phone number will display on screen.

**Note:** You can choose Edit > Copy to put the serial number on the Clipboard.



If you click the "Phone Number" text, iTunes will display iPhone's IMEI/MEID:



If you then click the "IMEI (or MEID)" text, iTunes will display iPhone's ICCID.



3. If iPhone is displaying the “Connect to iTunes” screen, tap the ‘i’ in a circle at the lower right of the screen to view the IMEI/MEID and ICCID.



4. If iPhone 4 is not operational, the serial number can be found by removing the back cover. See the Take Apart section of this document for step-by-step instructions. Use the serial number to look up the IMEI/MEID and ICCID.

<b>iPhone 4 (GSM model)</b>	With the back cover removed, the serial number is printed in barcode format on the band, on the right side of the battery well.  Use Motorola DS6707 Scanner (Apple part #922-9230) to scan the barcode of iPhone 4 (GSM model).	
<b>iPhone 4S and iPhone 4 (CDMA model)</b>	With the back cover removed, the serial number is printed in both human-readable and 2D barcode formats on a label beneath the battery pull tab.	



## Configuration Codes

All iPhone models have a unique **configuration code** (the last 3-4 characters of the serial number), specific for each model type, color and capacity. The configuration code (listed in the table below) is the best way to precisely determine which model is being serviced.

**Note:** An iPhone that has been modified to alter functionality or capability without the written permission of Apple is **not eligible for warranty service**. This may be indicated by a significantly different capacity shown in Settings > General > About, compared to the capacity listed on the back of the unit, or by mismatched serial numbers. (The modification may have been performed by an unauthorized service center, of whom the user is unaware.)

iPhone Configuration Codes: (last 3-4 characters of the serial number)				
	iPhone 4 Model A1332	iPhone 4 Model A1349	iPhone 4S Models A1387 and A1431*	
	GSM	CDMA	GSM	MM (CDMA)
8GB Black	DP0N	DP0V		
8GB White	DPMW	DPNG		
16GB Black	A4S	DDP7	DT9V DT9Y DTC0	DTC1 DTF9
16GB White	DZZ	DDP8	DTD0 DTD1 DTD2	DTD3 DTFC
32GB Black	A4T	DDP9	DTD5 DTD6 DTD7	DTD8 DTFD
32GB White	E00	DDPC	DTDC DTDD DTDF	DTDG DTFF
64GB Black			DTDK DTDL DTDM	DTDN DTFG
64GB White			DTDR DTDT DTDV	DTDW DTFH

\*Model A1431 is only available in China.



# Apple ID

Many iOS 5 features require an Apple ID, including:

- Home Sharing
- iCloud
- iMessage
- iTunes and App Stores

While troubleshooting, you may isolate a user's issue to his or her Apple ID. You should help users resolve issues with their existing Apple IDs, instead of creating new ones. Creating a new Apple ID for a user who already has one can confuse the user, cause the creation of multiple iTunes and App Store accounts, and reduce the amount of Apple IDs available for others.

Refer users who don't know if they have Apple IDs to [appleid.apple.com](http://appleid.apple.com), where they can do the following:

- Find out if he or she has an Apple ID
- Reset his or her Apple ID password
- Manage the information associated with his or her Apple ID

A user who has any of the following, already has an Apple ID and you should not help create a new one:

- Free Find My iPhone account
- FaceTime account
- Game Center account
- Mac App Store account
- Apple Online Store account
- iTunes Store account
- Apple Jobseeker account
- iChat account
- Active or expired MobileMe account



# Additional Resources

## iPhone Product Page

iPhone features and technology.

[www.apple.com/iphone/](http://www.apple.com/iphone/)

## iPhone Support Page

Information, guides, assistants, and troubleshooting tips.

[www.apple.com/support/iphone/](http://www.apple.com/support/iphone/)

## iPhone Technical Specifications

The latest system requirements, supported languages, media formats, and technical details.

[www.apple.com/iphone/specs.html](http://www.apple.com/iphone/specs.html)

[support.apple.com/specs/#iphone](http://support.apple.com/specs/#iphone)

## iPhone User Guide

Easy to access, in-depth usage instructions for features and settings.

[support.apple.com/manuals/#iphone](http://support.apple.com/manuals/#iphone)

## How to Sync iPhone and other iTunes topics

[www.apple.com/itunes/how-to/](http://www.apple.com/itunes/how-to/)

## About iPhone Batteries

[www.apple.com/batteries/iphone.html](http://www.apple.com/batteries/iphone.html)



## **Troubleshooting**

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### **iPhone 4**



# Cleaning Procedures

## Required Tools

- Lighted otoscope (or lighted magnifying glass)
- ESD-safe brush (922-9918)
- ESD-safe tweezers
- Micro-fiber cloth



**CAUTION: Never use compressed air to clean any part of an iPhone, as this can damage delicate components.**

## Dock Connector

1. Power off iPhone (red slider).
2. Use a lighted otoscope or magnifying glass to inspect for debris that may be causing issues.
3. Use an anti-static brush to delicately brush out lint or debris. Be careful not to damage the contacts along the top of the connector pin rail. Avoid brushing debris into the speaker or microphone located on either side of the dock connector.



4. If needed, use anti-static tweezers to pull out any large pieces of lint or debris.



## Headphone Jack

Foreign material in the headphone jack can cause audio or functional issues, such as:

- iPhone is stuck in headphone mode and no audio is heard from receiver or speaker.
- Headphone audio is distorted (static or crackles) or is not functioning.
- Headphone audio is only heard in one channel.
- Headphone microphone has distorted sound or is not functioning.



**WARNING: Do not use long metal tools (such as screwdrivers or dental picks) while cleaning inside the headphone jack, as this could lead to battery puncture.**

1. Insert headphone plug into jack and verify that it can be inserted fully.



2. Use a lighted otoscope or magnifying glass to inspect for debris that may be causing issues.
3. Use an anti-static brush to brush out lint or debris. Use just enough bristles to fit inside the headphone jack, and twist the bristles to loosen and lift out debris.





## Receiver

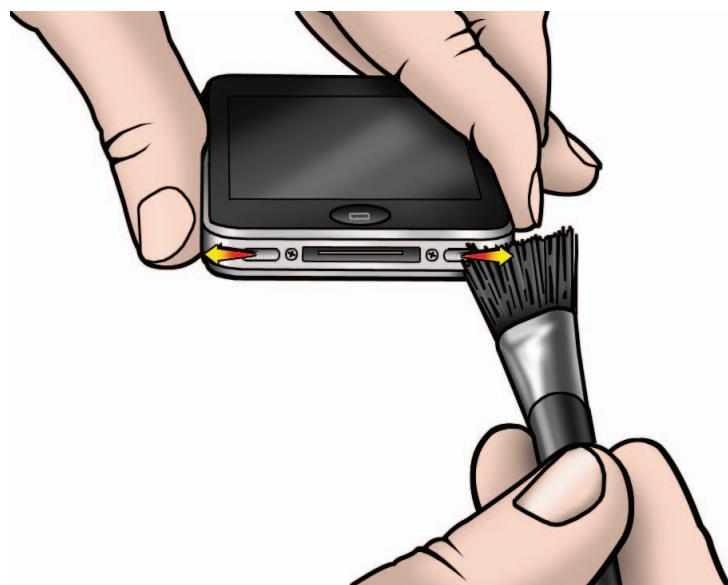
1. Inspect the receiver for loose debris.
2. Use an anti-static brush to gently brush the cover mesh of the receiver to remove debris. Avoid using large sweeping motions across the glass, as this could lead to scratches.
3. Use a micro-fiber cloth to clean away the loosened debris.



## Speaker and Microphone

Foreign material can cause audio performance issues, such as:

- Low or distorted speaker volume while playing music or during a hands-free call.
  - Muffled, low volume or distorted microphone.
1. Use an anti-static brush to gently brush the cover mesh of the microphone and/or speaker. Do not cross over the dock connector to avoid brushing debris into the dock connector.
  2. Use a micro-fiber cloth to clean away the loosened debris.





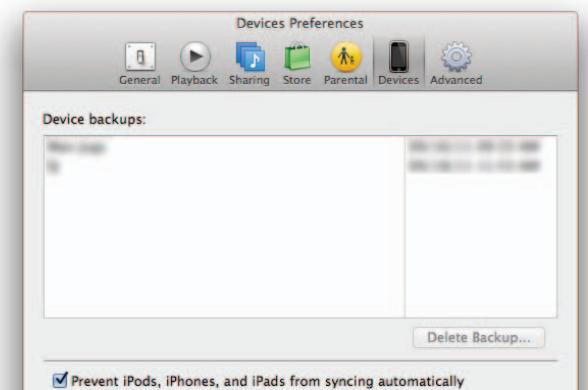
# General Troubleshooting

## Backup User Data

Before troubleshooting a user's device, verify that the data is backed up to iCloud (requires iOS 5) or to iTunes on the user's computer.

Learn more about iCloud at [www.apple.com/icloud](http://www.apple.com/icloud).

**Important:** To avoid syncing a user's device to a test computer, go to iTunes > Preferences > Devices and select "Prevent iPods, iPhones, and iPads from syncing automatically".



Apple Support articles:

- [HT1766: iOS: About backups](#)
- [HT4137: How to back up your data and set up as a new device](#)
- [TS2529: iTunes: "Backup could not be saved on the computer" alert message](#)



## Common Troubleshooting Procedures

When troubleshooting, attempt the quick fixes in the order listed. This table is a summary of these common procedures; see detailed information on the following pages.

**IMPORTANT:** These steps may not be effective for all issues. Apply only the steps necessary to isolate and resolve the issue.

Quick Fix	Action
<a href="#"><b>Update to Latest Software</b></a>	Go to Settings > General > Software Update, if available; or Use the latest version of iTunes ( <a href="http://www.itunes.com/download">www.itunes.com/download</a> ) to check for the latest iOS. Connect the device to the computer, go to iTunes > (Device) > Summary and click the "Check for Update" button.
<a href="#"><b>Charge Battery</b></a>	Connect to a known-good power outlet using a known-good Apple USB Power Adapter and Dock Connector to USB Cable to charge the battery. Do not charge via a computer port.
<a href="#"><b>Restart</b></a>	A restart forces the device to close all open files and powers off all hardware components. <ol style="list-style-type: none"><li>1. Press and hold the On/off button on top of the device until a red slider appears.</li><li>2. Slide your finger across the slider to turn off the device.</li><li>3. To turn the device on, press and hold the On/off button until the Apple logo appears.</li></ol>
<a href="#"><b>Reset</b></a>	<b>Perform a reset ONLY if unable to do a restart.</b> Press and hold both the On/off button and the Home button for at least ten seconds, until the Apple logo appears.
<a href="#"><b>Force Quit an App</b></a>	Double-click the Home button to display recently used apps. Press and hold the app until a red minus appears. Tap the red minus to quit the app.
<a href="#"><b>Erase All Content and Settings<sup>1</sup></b></a>	Erases all user content and settings. From the Home screen choose Settings > General > Reset > Erase All Content and Settings. If possible, try this before a Restore since it is much faster.
<a href="#"><b>Restore<sup>1</sup></b></a>	Erases all software and data, and then installs a fresh copy of iOS. Connect the device to the computer, go to iTunes > (Device) > Summary and click the "Restore" button.
<a href="#"><b>Recovery Mode Restore<sup>1</sup></b></a>	Recovery mode loads only the firmware drivers necessary for iTunes to recognize the device. See instructions on the following pages.
<a href="#"><b>DFU Restore<sup>1</sup></b></a>	Device Firmware Update (DFU) allows you to perform a restore when <b>all</b> other attempts to restore the device fail. See instructions on the following pages.

<sup>1</sup>**WARNING:** This will delete all user data and settings on the device. A backup should be done prior, if saving content is important to the user.



## Charge Battery

The device must have a sufficient battery charge to proceed with troubleshooting. A low battery condition can be the cause of many issues.



If the device has any of the following symptoms, it should be connected to an Apple USB Power Adapter to charge for up to 10 minutes:

- will not power on
- black screen
- shows the “battery trap” image (left)
- low battery charge

**Note:** An Apple USB Power Adapter delivers more power than a computer’s USB port, so the power adapter is the recommended initial charging method for a low battery. Once the device has started up to the iOS or it has been charging for 10 minutes, it can be disconnected from the power adapter and connected to a computer.

If troubleshooting or testing will be done without the device connected to power, make sure the device has a sufficient battery charge before continuing.

**Important:**

- Before connecting any cable to the dock connector or the headphone jack, check the port condition for debris, contamination, corrosion, liquid, or damage, and clean or remedy this issue before connecting cables.
- If when charging the device, it becomes too hot, disconnect and replace the device.

Also refer to the following Apple Support articles:

- [HT1476: iPhone and iPod touch: Charging the battery](#)
- [HT1805: iPhone: About standby and usage time](#)
- About iPhone Batteries: [www.apple.com/batteries/iphone.html](http://www.apple.com/batteries/iphone.html)
- iPhone Battery Performance Test Information: [www.apple.com/iphone/battery.html](http://www.apple.com/iphone/battery.html)



## **Restart**

A restart safely closes active apps and processes, preserving any data in the process, forces the device to close all open files, and powers off all hardware components.

A restart can quickly resolve a wide range of issues, including:

- App(s) unexpectedly quit.
- Battery life is shorter than expected.
- Hardware not performing as expected.
- Interface or apps are slow to respond.
- iTunes does not recognize or sync with the device.

### **Procedure:**

1. Turn off the device: Press and hold the On/off button for a few seconds until the red "slide to power off" slider appears, and then slide the slider.
2. Turn on the device: Press and hold the On/off button until the Apple logo appears.

## **Reset**

If the device is unresponsive and restart does not work, try to reset it.

**IMPORTANT: Perform a reset ONLY if unable to do a restart.**

### **Key Points:**

- Reset only when you cannot restart the device normally.
- A reset removes all power for a fraction of a second to power off the device.
- A reset does not close open files or save data before the device powers off.
- A reset can potentially cause file or operating system damage, requiring a restore.

### **Procedure:**

1. Press and hold both the On/off button and the Home button together for at least 10 seconds, until the Apple logo appears.



## Force Quit an App

This procedure forces an app to quit that is not responding to input or doesn't perform as expected. This is a good **first** troubleshooting step.

### **Procedure:**

1. From the Home screen, double-click the Home button to display recently used apps.
2. Tap and hold the app until a red minus appears. Tap the red minus to quit the app.



3. Tap on the Home screen, above, to return.

Also refer to the following Apple Support articles:

- [TS1702: iOS: Troubleshooting applications purchased from the App Store](#)
- [HT4211: iOS: Understanding multitasking](#)



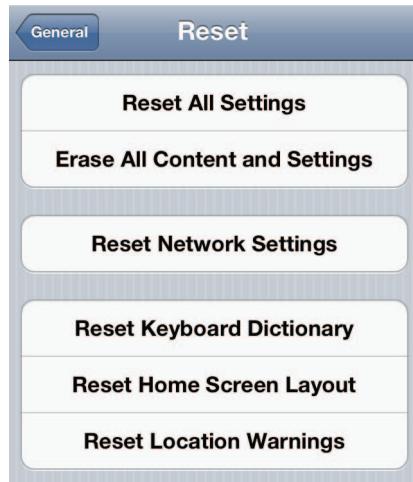
## Erase All Content and Settings

Erase is a quick way to get back to factory settings. It will delete all user content and settings, but it does not reinstall iOS like a restore will do.

**WARNING: This will delete all user data and settings on the device.**

### **Procedure:**

1. From the Home screen choose Settings > General > Reset > Erase All Content and Settings.



Also see Apple Support article [HT2110: iOS: Understanding 'Erase All Content and Settings'](#).

If Erase All Content and Settings does not resolve an issue, proceed to do a Restore (see next page).



## Restore



A restore completely erases the device and reinstalls a fresh copy of iOS.

**WARNING: This will delete all user data and settings on the device.**

### **Key Points**

- A restore erases all user content, settings, and iOS files, and then reinstalls only iOS.
- A restore is time-consuming, especially if you have to download the restore package.
- If iTunes displays an alert with an error code, see Apple Support articles [TS3694: iTunes: Specific update-and-restore error messages and advanced troubleshooting](#) and [TS1275: iOS: Resolving update and restore alert messages](#) before continuing.
- When the restore is complete, test the device before restoring a backup or syncing content.
- **Note:** Do not set up as a new device, as this can erase previous backups. Copy or rename the backup folder before proceeding; location of this folder is listed in Apple Support article [HT1414: iTunes: Backing up, updating, and restoring iOS software](#).

### **Procedure:**

1. Connect device to a computer running the latest version of iTunes.
2. In the left column under Devices, click on the device name, then go to the Summary panel and click the Restore button.

## Recovery Mode Restore



If iTunes cannot detect the device, or a specific restore error appears, check cable connections. If the issue persists, consider forcing the device into recovery mode.

**WARNING: This will delete all user data and settings on the device.**

If you cannot restore a device, even when using recovery mode, service or replacement may be the appropriate option.

### **Key Points**

- Recovery mode loads only the firmware drivers necessary for iTunes to recognize the device.
- To force recovery mode, power off the device, and then connect it to a USB port on the computer while holding down the Home button.
- If the device does not power off, try a [Reset](#) to power it off.
- If iTunes displays an alert with an error code, see Apple Support articles [TS3694: iTunes: Specific update-and-restore error messages and advanced troubleshooting](#) and [TS1275: iOS: Resolving update and restore alert messages](#).

**Note:** In certain situations, a device will automatically go into recovery mode after an update or restore issue. If the device is already in recovery mode, attempt to restore using iTunes.



### Procedure:

Use the following steps to place a device into recovery mode. If the device is already in recovery mode, start at step 6.

1. Disconnect the Dock Connector to USB Cable from the device, but leave the other end of the cable connected to the computer's USB port.
2. Turn off the device: Press and hold the On/off button for a few seconds until the red slider appears, then slide the slider. Wait for the device to turn off.
  - If you cannot turn off the device using the slider, perform a Reset: press and hold the On/off button and Home button at the same time. When the device turns off, release the buttons. Press and hold the Home button while reconnecting the USB cable to the device. Continue holding the Home button.
3. While pressing and holding the Home button, reconnect the USB cable to the device. When you reconnect the USB cable, the device should power on.  
**Note:** If you see the “battery trap” image at left, let the device charge for at least 10 minutes to ensure the battery has some charge, and then repeat step 2.
4. Continue holding the Home button until you see the “Connect to iTunes” screen at left. When this screen appears you can release the Home button:
5. If necessary, open iTunes. You should see an alert that iTunes has detected a device in recovery mode.



6. Use iTunes to restore the device.

If you don't see the “Connect to iTunes” screen, try these steps again. If you see the “Connect to iTunes” screen but the device does not appear in iTunes, refer to Apple Support articles:

- [TS1591: iOS: Device not recognized in iTunes for Mac OS X](#)
- [TS1538: iOS: Device not recognized in iTunes for Windows](#)

If you decide not to do a restore, you may be able to escape by resetting the device.



## DFU Restore

Device Firmware Update (DFU) Restore allows you to perform a restore when **all** other attempts to restore the device fail. **DFU Restore is only necessary if:**

- the device won't turn on
- the device won't go into recovery mode
- the device won't charge



**WARNING: This will delete all user data and settings on the device.**

### **Procedure:**

**Timing is critical--use a watch to time the steps below!**

1. Charge the device for at least **5 minutes**, then connect to iTunes. If the device is not detected, open iTunes and move to step 2.
2. Press **Home + On/off buttons** together and hold down for **8 seconds** and then release the On/off button.
3. Continue to press the **Home** button until you see the “Recovery Mode” message in iTunes, which may take up to **30 seconds**.

**Note:** In DFU Mode the device's **screen is blank**.

If you did not get the “Recovery Mode” message in iTunes or the device's screen is not blank/black, repeat **all** steps paying careful attention to your timing.

If you decide not to do a restore, you may be able to escape by resetting the device.



# Symptom Charts

## Power Issues

### No Power

**Known-Good Parts & Materials Required:** USB Power Adapter, Dock Connector to USB Cable, iOS diagnostics, computer running the latest version of iTunes with a known-good USB port

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• Will not power on</li><li>• Black screen</li><li>• Shuts off after removing power</li></ul>	<ol style="list-style-type: none"><li>1. Try to restart the device.</li><li>2. Try to reset the device.</li></ol>

### Deep Dive

Check	Result	Action
1. Check on/off button.  Check that the on/off button is not stuck (up or down.)  <a href="#">Is the button functional?</a>	Yes	Go to step 2.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.
2. Charge battery.  Plug the device into a known-good power adapter and cable to charge the battery for up to 2 minutes.  <a href="#">Is any image displayed on screen within 2 minutes?</a>	Yes	Go to step 4.
	No	Go to step 3.
3. Reset the device.  Attempt to reset the device while connected to known-good power.  <a href="#">After attempted reset, is any image displayed on screen?</a>	Yes	Go to step 4.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



<p><b>4. Verify device status.</b></p> <p>Identify if device woke up to the "battery trap" image (at left) or to an iOS screen, such as:</p> <ul style="list-style-type: none"><li>- "slide to unlock"</li><li>- Apple Logo (startup)</li><li>- "connect to iTunes" (at left)</li></ul> <p><b>Did the device wake to the battery trap image or an iOS screen?</b></p>	Battery Trap iOS Screen	Go to step 5.  Go to step 6.
<p><b>5. Continue charging.</b></p> <p>Charge the device for up to an additional 10 minutes.</p> <p><b>After 10 minutes, did the device wake to an iOS screen?</b></p>	Yes No	Go to step 6.  Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.
<p><b>6. Identify iOS screen.</b></p> <p>Identify if the device woke to "slide to unlock" rather than the Apple logo or "connect to iTunes."</p> <p><b>Did the device wake to "slide to unlock?"</b></p>	Yes No	Go to step 8.  Go to step 7.
<p><b>7. Restore with iTunes.</b></p> <p>Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.</p> <p><b>Warning:</b> This will delete all user data on the device.</p> <p><b>Was restore successful?</b></p>	Yes No	Go to step 8.  Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.
<p><b>8. Test battery.</b></p> <p>Allow device to charge for 2 more minutes, then unplug the device.</p> <p><b>Did the device immediately power off?</b></p>	Yes No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.  Replace the device's battery, if possible, rather than replacing the whole unit.  Go to step 9.
<p><b>9. Run diagnostics.</b></p> <p>Use diagnostics to verify the battery status.</p> <p><b>Is the battery status "normal?"</b></p>	Yes No	Issue resolved.  Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



## Battery Will Not Charge

**Known-Good Parts & Materials Required:** USB Power Adapter, Dock Connector to USB Cable, iOS diagnostics, computer running the latest version of iTunes with a known-good USB port

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• Battery will not charge from USB Power Adapter</li><li>• Battery charge icon does not show fully charged</li></ul>	<ol style="list-style-type: none"><li>1. Probe whether the user charges their device using the USB Power Adapter or another power source. Other USB adapters may not provide enough power to charge the device.</li><li>2. <b>Important:</b> Battery and charge indicators can fluctuate briefly when you connect the device to power or wake it from sleep. If this occurs, wait a few seconds and then check again. Battery percentage can remain at 99% with a full charge. This is expected behavior and does not indicate a battery or hardware issue.</li><li>3. Restart the device.</li><li>4. If you can't restart the device, reset the device.</li></ol>

### Deep Dive



Check	Result	Action
<p><b>1. Attempt to charge the battery.</b> Plug the device into a known-good power adapter and cable to charge the battery. Allow up to 2 minutes for the device to respond.</p> <p><b>Did the device wake to the “battery trap” image (at left) or to the “slide to unlock” screen?</b></p>	Battery Trap	Go to step 2.
	Slide to Unlock	Go to step 3.
<p><b>2. Continue charging.</b> Charge the device for up to an additional 10 minutes.</p> <p><b>After 10 minutes, did the device wake to the “slide to unlock” screen?</b></p>	Yes	Go to step 3.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



<p><b>3. Verify charge status.</b></p> <p>Check battery icon in the upper right-hand corner of the screen.</p> <p><b>Is the device currently charging?</b></p>	Yes	Go to step 6.
	No	Go to step 4.
<p><b>4. Restore with iTunes.</b></p> <p>Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.</p> <p><b>Warning:</b> This will delete all user data on the device.</p> <p><b>Was restore successful?</b></p>	Yes	Go to step 5.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.
<p><b>5. Verify charge status.</b></p> <p>Check battery icon in the upper right-hand corner of the screen.</p> <p><b>Is the device currently charging?</b></p>	Yes	Go to step 6.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines. Replace the device's battery, if possible, rather than replacing the whole unit.
<p><b>6. Test battery.</b></p> <p>Allow device to charge for 2 more minutes, then unplug the device.</p> <p><b>Did the device immediately power off?</b></p>	Yes	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines. Replace the device's battery, if possible, rather than replacing the whole unit.
	No	Go to step 7.
<p><b>7. Run diagnostics.</b></p> <p>Use diagnostics to verify the battery status.</p> <p><b>Is the battery status "normal?"</b></p>	Yes	Issue resolved.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines. Replace the device's battery, if possible, rather than replacing the whole unit.



## Battery Life Too Short

**Known-Good Parts & Materials Required:** USB Power Adapter, Dock Connector to USB Cable, iOS diagnostics

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• Battery runs out of power very quickly</li><li>• Battery does not hold a charge</li><li>• Short play time</li></ul>	<ol style="list-style-type: none"><li>1. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li><li>2. Suggest <a href="http://www.apple.com/batteries/iphone.html">www.apple.com/batteries/iphone.html</a> as a resource for the user to learn about optimizing battery settings.</li></ol>

### Deep Dive

Check	Result	Action
<p><b>1. Diagnose battery condition.</b> Use diagnostics to verify the battery condition. <b>Is the battery condition "normal"?</b></p>	Yes	Go to step 2.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines. Replace the device's battery, if possible, rather than replacing the whole unit.
<p><b>2. Diagnose usage/standby time.</b> Use diagnostics to determine usage and standby time. If these times are the same, it points to a corrupt system process running in the background that is draining power. <b>Are usage times and standby time the same duration?</b></p>	Yes	Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore. <b>Warning:</b> This will delete all user data on the device.
	No	Go to step 3.
<p><b>3. Diagnose unsupported apps.</b> Use diagnostics to determine any apps that are unsupported on the device. <b>Are there unsupported apps listed?</b></p>	Yes	Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore. <b>Warning:</b> This will delete all user data on the device.
	No	Go to step 4.



<p><b>4. Diagnose unresponsive apps.</b></p> <p>Use diagnostics to determine any apps that are unresponsive running in the background that may be draining the battery.</p> <p><b>Are there unresponsive apps listed?</b></p>	Yes	Instruct user how to quit background processes on the device.
	No	No trouble found. Suggest <a href="http://www.apple.com/batteries/iphone.html">www.apple.com/batteries/iphone.html</a> as a resource for the user to learn about optimizing battery settings.

## Other Power Issue

### Deep Dive

Check	Result	Action
<p><b>1. Verify whether any of the troubleshooting flows apply to the issue reported by the user.</b></p>	Yes	Jump to appropriate troubleshooting flow.
	No	<p>Document reported failure and send feedback to <a href="mailto:smfeedback6@apple.com">smfeedback6@apple.com</a> stating that a suitable troubleshooting flow wasn't found.</p> <p>Escalate through your usual channels for further troubleshooting support.</p>



# Display Issues

## No Video / Poor Image

**Known-Good Parts & Materials Required:** Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• No video</li><li>• Distorted video</li><li>• No backlight</li><li>• Rainbow effect</li><li>• Poor image</li><li>• Bad contrast</li><li>• Horizontal / vertical lines</li><li>• White screen</li><li>• Light bleed</li></ul>	<ol style="list-style-type: none"><li>1. Try rotating the device to confirm if the issue is caused by media, software, or the display.</li><li>2. Charge the battery: Plug the device into a known-good power adapter and cable to charge the battery for 10 minutes.</li><li>3. Restart the device.</li><li>4. Reset the device.</li></ol>

### Deep Dive

Check	Result	Action
<b>1. Restore with iTunes.</b>  Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.  <b>Warning:</b> This will delete all user data on the device.  <a href="#">Did this resolve the issue?</a>	Yes	Issue resolved.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



## Display Anomalies

**Known-Good Parts & Materials Required:** none

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>Pixel anomalies</li><li>Particles or debris under the glass</li></ul>	<p>1. Clean the display with a clean micro-fiber cloth. <b>Important:</b> Do NOT use liquids, sprays, or abrasives to clean the device.</p>

### Deep Dive

Check	Result	Action
1. Inspect display.  Noticeable particles, debris, or screen anomalies such as dead pixels are (upon user claim only) covered under warranty. See Apple Support article <a href="#">HT4044: About LCD display pixel anomalies for Apple products released in 2010 and later.</a>  Probe to determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.  <a href="#">Is the issue caused by accidental damage?</a>	Yes	OOB replacement.
		Whole unit replacement.



## Multi-Touch Issues

**Known-Good Parts & Materials Required:** none

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• Multi-Touch is slow to respond</li><li>• Isolated areas not responding</li><li>• Slider to turn on/off not responding</li><li>• Erratic response to touch</li><li>• Display turns on briefly and a battery icon flashes</li></ul>	<ol style="list-style-type: none"><li>1. Clean the display with a clean micro-fiber cloth. <b>Important:</b> Do NOT use liquids, sprays, or abrasives to clean the device.</li><li>2. Rule out environmental causes by checking for use of protective films, cases, gloves, or a stylus. Verify that user touches screen with finger pads and not fingernails.</li><li>3. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li><li>4. Quit any background apps.</li><li>5. Restart the device.</li><li>6. Reset the device.</li></ol>

### Deep Dive



Check	Result	Action
<p><b>1. Test Multi-Touch.</b></p> <p>Launch the Calculator app and perform the following tests:</p> <ul style="list-style-type: none"><li>- With the device in a vertical orientation, test all the calculator buttons.</li><li>- Turn the device to a horizontal orientation and test all the calculator buttons.</li></ul> <p><b>Did the display respond as expected?</b></p>	Yes	Issue resolved.  Remind user that protective films, cases, styluses, gloves or fingernails can prevent Multi-Touch from responding properly.
		Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



## Display Rotation Issues

**Known-Good Parts & Materials Required:** Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check

Symptoms	Quick Check
 	<ul style="list-style-type: none"><li>Display does not rotate when device changes orientation</li></ul> <ol style="list-style-type: none"><li>Verify that screen rotation lock is off. Double-click the Home button to display recently used apps. Flick from left to right along the bottom of the screen. If the Screen Rotation Lock button shows a padlock, tap that button to turn off rotation lock. </li><li>Hold the device in a vertical plane (upright), not horizontal (flat).</li><li>Not all iOS apps are designed to rotate. Some may use only portrait or landscape mode, or switch depending on the content. To test screen rotation, open the Calculator app. If the screen does not rotate as expected while using the calculator app (see images at left), continue troubleshooting.</li><li>Restart the device.</li><li>On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li></ol>

### Deep Dive

Check	Result	Action
1. Restore with iTunes.  Restore the device using the latest version of iTunes.  <b>Warning:</b> This will delete all user data on the device.  Open the Calculator app and rotate device.  <b>Does the display rotate properly?</b>	Yes	Issue resolved.
		Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



## Cracked Glass

**Known-Good Parts & Materials Required:** none

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• Cracked LCD</li><li>• Cracked cover glass</li><li>• Cracked back cover</li></ul>	1. Go to Deep Dive.

### Deep Dive

Check	Result	Action
1. Determine any safety risk.  Determine whether there is a safety issue, such as glass fragments. Do not perform procedures that can be a safety risk to you or the user.  <b>Can you proceed safely?</b>	Yes	Go to step 2.
	No	Out-of-warranty physical abuse. Replace back cover, if appropriate, rather than replacing the whole unit.  Escalate per safety procedures if user claims injury.
2. Inspect display.  Probe to determine if the issue is caused by accidental damage.  <b>Is the issue caused by accidental damage?</b>	Yes	Out of warranty. Replace back cover, if appropriate, rather than replacing the whole unit.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.  Replace back cover, if appropriate, rather than replacing the whole unit.



## Other Display Issue

### Deep Dive

Check	Result	Action
1. Verify whether any of the troubleshooting flows apply to the issue reported by the user.	Yes	Jump to appropriate troubleshooting flow.
	No	Document reported failure and send feedback to <a href="mailto:smfeedback6@apple.com">smfeedback6@apple.com</a> stating that a suitable troubleshooting flow wasn't found. Escalate through your usual channels for further troubleshooting support.



# Mechanical Issues

## Button Issues

**Known-Good Parts & Materials Required:** Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• on/off button not working</li><li>• ring/silent switch not working</li><li>• Volume up/down buttons not working</li><li>• Home button not working</li></ul>	<ol style="list-style-type: none"><li>1. Restart the device.</li><li>2. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li></ol>

### Deep Dive

Check	Result	Action
1. Check physical response.  Verify that the button/switch isn't recessed or sticky and that there is no debris blocking its use.  <b>Does the button physically respond as it should?</b>	Yes	Go to step 2.
		Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



	<p><b>2. Check software response.</b></p> <p>For volume up/down buttons, test volume up and down.</p> <p>For on/off button, test pressing and holding down the button for "slide to power off" functionality.</p> <p>For ring/silent switch, flip the switch and verify Ringer bell icon changes on screen.</p> <p>For Home button, test single and double clicks, and test hold for "Voice control." With display off, press center of Home button and verify that display turns on. Repeat same test for the top, bottom, left and right edges of Home button (3, 6, 9, 12 in image at left). The display should turn on when pressing any of these 5 locations.</p> <p><b>Are the buttons responding as expected?</b></p>	Yes	Issue resolved.
		No	Go to step 3.
	<p><b>3. Erase all content and settings.</b></p> <p>Go to Settings &gt; General &gt; Reset &gt; Erase All Content and Settings.</p> <p><b>Warning:</b> This will delete all user data on the device.</p> <p><b>Is the button issue resolved?</b></p>	Yes	Issue resolved.
		No	Go to step 4.
	<p><b>4. Restore with iTunes.</b></p> <p>Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.</p> <p><b>Is the button issue resolved?</b></p>	Yes	Issue resolved.
		No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.  For iPhone 4S volume button issues, try installing <a href="#">Volume Button Shim</a> .



## Camera Issues

**Known-Good Parts & Materials Required:** Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• Camera app is missing</li><li>• Camera not functioning</li><li>• Cannot take photos</li><li>• Cannot take video</li><li>• Camera LED flash not working</li><li>• Cannot switch between main and front cameras</li><li>• Camera quality is fuzzy</li><li>• Camera takes photos or video with incorrect color balance</li></ul>	<ol style="list-style-type: none"><li>1. Make sure case or protective film is not obstructing the camera or flash.</li><li>2. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li><li>3. If the Camera app is missing, verify that Camera has not been restricted in Settings &gt; General &gt; Restrictions. The user would need to enter their password to disable the restriction.</li><li>4. Sound effects: When taking a photo or starting a video recording, the device makes a shutter sound. The sound isn't played if the ring/silent switch is set to silent. <b>Note:</b> In some regions, the sound effects for Camera are played even if the ring/silent switch is set to silent.</li><li>5. Set LED flash mode: In the Camera app, tap the flash button in the upper left corner of the screen, then tap Off, Auto, or On.</li></ol>

### Deep Dive

Check	Result	Action
<b>1. Identify camera issue.</b>  Test to determine if the camera functions at all or if the issue is related to image quality.  <a href="#">Which issue?</a>	No Function	Go to step 2.
	Image Quality	Go to step 3.
<b>2. Restore the device.</b>  Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.  <b>Warning:</b> This will delete all user data on the device.  <a href="#">Is the camera issue resolved?</a>	Yes	Issue resolved.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.  Replace main camera, if possible, rather than replacing the whole unit.



<p><b>3. Clean glass over camera lens.</b></p> <p>If main camera is affected, remove back cover and clean both sides of back cover with a microfiber cloth.</p> <p>If front-facing camera is affected, clean front glass with a microfiber cloth.</p> <p>Perform the <a href="#">main camera test</a>.</p> <p><b>Is the camera image quality issue resolved?</b></p>	Yes	Issue resolved.
	No	Go to step 4.
<p><b>4. Inspect back cover.</b></p> <p>Remove back cover and inspect lens cover for scratches that could be affecting image quality.</p> <p><b>Is back cover's lens cover scratched, enough to cause image quality loss?</b></p>	Yes	<p>Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.</p> <p>Replace back cover, if possible, rather than replacing the whole unit.</p>
	No	Go to step 5.
<p><b>5. Clean camera lens.</b></p> <p>Remove back cover and clean the camera lens with a microfiber cloth. Perform the <a href="#">main camera test</a>.</p> <p><b>Is the camera image quality issue resolved?</b></p>	Yes	Issue resolved.
	No	<p>Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.</p> <p>Replace main camera, if possible, rather than replacing the whole unit.</p>



## Temperature Alert

**Known-Good Parts & Materials Required:** Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

Also see Apple Support article [HT2101: iPhone, iPad, and iPod touch \(4th generation\): Keeping device within acceptable operating temperatures.](#)

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>Temperature alert message appears</li></ul>	1. Go to Deep Dive.

### Deep Dive

Check	Result	Action
<p>1. Allow device to cool down.</p> <p>Allow the device to cool down. The device will follow these automated steps before returning to full function:</p> <p>a. Battery charging is disabled. b. Display brightness dims. c. Cellular transmission power is reduced. d. Apps close, phone calls end, a temperature alert message appears. e. Device powers off.</p> <p><b>After the device has had a chance to cool, has it returned to normal operation?</b></p>	Yes	Issue resolved.
	No	Go to step 2.
<p>2. Erase all content and settings.</p> <p>Go to Settings &gt; General &gt; Reset &gt; Erase All Content and Settings.</p> <p><b>Warning:</b> This will delete all user data on the device.</p> <p><b>Is the temperature issue resolved?</b></p>	Yes	Issue resolved.
	No	Go to step 3.





<p><b>3. Restore with iTunes.</b></p> <p>Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.</p> <p><b>Is the temperature issue resolved?</b></p>	Yes	Issue resolved.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.

## Burnt Smell/Odor

**Known-Good Parts & Materials Required:** none

### Quick Check

Symptoms	Quick Check
• Unusual burnt smell or odor	1. Disconnect all accessories or 30-pin connections from the device.

### Deep Dive

Check	Result	Action
1. Check for safety issue.  Determine whether there is a safety issue, such as fumes, excessive heat, or shock. Do not perform procedures that can be a safety risk to you or the user.  <b>Can you proceed safely?</b>	Yes	Go to step 2.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines. Escalate per safety procedures if user claims injury.
2. Identify odor source.  Determine the source of the odor.  <b>Is the odor coming from the device or an accessory?</b>	Device	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.
	Accessory	Advise user to discontinue use of the accessory. Replace Apple accessory. If user has a third-party accessory, refer to manufacturer for support.



## Band Split/Offset

### Deep Dive

Check	Result	Action
1. Check for safety issue.  Determine whether there is a safety issue, such as glass fragments or sharp metal edges. Do not perform procedures that can be a safety risk to you or the user.  <b>Can you proceed safely?</b>	Yes	Covered if under warranty. Check for out-of-warranty repair options.
	No	Covered if under warranty. Check for out-of-warranty repair options.  Escalate per safety procedures if user claims injury.

## Other Mechanical Issue

### Deep Dive

Check	Result	Action
1. Verify whether any of the troubleshooting flows apply to the issue reported by the user.	Yes	Jump to appropriate troubleshooting flow.
	No	Document reported failure and send feedback to <a href="mailto:smfeedback6@apple.com">smfeedback6@apple.com</a> stating that a suitable troubleshooting flow wasn't found.  Escalate through your usual channels for further troubleshooting support.



# Software Issues

## Unexpected Freeze/Restart/Power Off, “Connect to iTunes”

**Known-Good Parts & Materials Required:** USB Power Adapter, Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check



Symptoms	Quick Check
<ul style="list-style-type: none"><li>• Freezes</li><li>• Frozen on-screen image</li><li>• Frozen Apple logo</li><li>• Frozen low-battery image</li><li>• “Connect to iTunes” image (at left)</li><li>• Unexpectedly restarts</li><li>• Unexpectedly powers off</li></ul>	<ol style="list-style-type: none"><li>1. Force quit frozen app.</li><li>2. Try to restart the device.</li><li>3. Try to reset the device.</li></ol>

### Deep Dive



Check	Result	Action
<p><b>1. Verify device status.</b></p> <p>Plug the device into a known-good power adapter and cable to charge the battery. Allow up to 2 minutes for the device to respond.</p> <p>Identify if device woke up to the “battery trap” image (at left) or to an iOS screen, such as:</p> <ul style="list-style-type: none"><li>• “slide to unlock”</li><li>• Apple Logo (startup)</li><li>• “connect to iTunes”</li></ul> <p><b>Did the device wake to “battery trap” or to an iOS screen?</b></p>	Battery Trap	Go to step 2.
	iOS Screen	Go to step 3.
<p><b>2. Continue charging.</b></p> <p>Charge the device for up to an additional 10 minutes.</p> <p><b>After 10 minutes, did the device wake to an iOS screen?</b></p>	Yes	Go to step 3.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



<p><b>3. Identify iOS screen.</b></p> <p>Identify if the device woke to "slide to unlock" rather than the Apple logo or "connect to iTunes."</p> <p><b>Did the device wake to "slide to unlock?"</b></p>	Yes	Go to step 4.
	No	Go to step 5.
<p><b>4. Verify functionality.</b></p> <p>Determine if the device is still exhibiting the behaviors the user claimed were the initial issue.</p> <p><b>Is the issue resolved?</b></p>	Yes	Issue resolved.
	No	Go to step 5.
<p><b>5. Restore with iTunes.</b></p> <p>Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.</p> <p><b>Warning:</b> This will delete all user data on the device.</p> <p><b>Is the issue resolved?</b></p>	Yes	Go to step 6.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.
<p><b>6. Verify functionality.</b></p> <p>Determine if the device is still exhibiting the behaviors the user claimed were the initial issue.</p> <p><b>Is the issue resolved?</b></p>	Yes	Issue resolved.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



## Alert Messages on Device or in iTunes

**Known-Good Parts & Materials Required:** Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• “Use iTunes to Recover” window</li><li>• Alert/error messages on the device</li><li>• Alert/error message in iTunes</li></ul>	<ol style="list-style-type: none"><li>1. Read the alert to determine the issue. Many alerts provide additional information or links to resolve the issue. Refer to Apple Support article <a href="#">TS1275: iOS: Resolving update and restore alert messages.</a></li><li>2. Restart the device.</li><li>3. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li></ol>

### Deep Dive

Check	Result	Action
<p><b>1. Inspect dock connector.</b> Verify that the dock connector is clean and free of debris or damage. Clean or fix if possible. <b>Is the dock connection clean and free of damage?</b></p>	Yes	Go to step 2.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.
<p><b>2. Erase all content and settings.</b> Go to Settings &gt; General &gt; Reset &gt; Erase All Content and Settings. <b>Warning:</b> This will delete all user data on the device. <b>Is the issue resolved?</b></p>	Yes	Issue resolved.
	No	Go to step 3.
<p><b>3. Restore with iTunes.</b> Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore. <b>Warning:</b> This will delete all user data on the device. <b>Is the issue resolved?</b></p>	Yes	Issue resolved.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.





## App Issues

**Known-Good Parts & Materials Required:** Dock Connector to USB Cable, iOS diagnostics, computer running the latest version of iTunes with a known-good USB port

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• App not functioning correctly</li><li>• App unexpectedly quits (returns to Home screen)</li></ul>	<ol style="list-style-type: none"><li>1. Restart the device.</li><li>2. Verify that the app is compatible with the device.</li><li>3. Launch App Store on device and tap "Updates" in bottom right corner. If any updates are available, tap "Update All" in upper right corner.</li><li>4. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li><li>5. Remove and reinstall affected app. <b>Note:</b> If multiple apps are having similar issues, go to Deep Dive.</li></ol>

### Deep Dive

Check	Result	Action
<p><b>1. Diagnose unsupported apps.</b> Use diagnostics to determine any apps that are unsupported on the device.</p> <p><b>Are there unsupported apps listed?</b></p>	Yes	Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.  <b>Warning:</b> This will delete all user data on the device.
	No	Go to step 2.
<p><b>2. Diagnose unresponsive apps.</b> Use diagnostics to determine any apps that are unresponsive.</p> <p><b>Are there unresponsive apps listed?</b></p>	Yes	Instruct user how to quit processes on the device.
	No	Go to step 3.
<p><b>3. Erase all content and settings.</b> Go to Settings &gt; General &gt; Reset &gt; Erase All Content and Settings.</p> <p><b>Warning:</b> This will delete all user data on the device.</p> <p><b>Is the app issue resolved?</b></p>	Yes	Issue resolved.
	No	Go to step 4.





<p><b>4. Restore with iTunes.</b></p> <p>Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.</p> <p><a href="#">Is the app issue resolved?</a></p>	Yes	Issue resolved.
	No	<p>If failing app is NOT part of iOS, refer user to the app developer for support. Refer to Apple Support article <a href="#">HT1933: How to report an issue with your iTunes Store purchase.</a></p> <p>If failing app is part of iOS, determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.</p>

## Cannot Play Media

**Known-Good Parts & Materials Required:** Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>Song, video, or other media will not play</li></ul>	<ol style="list-style-type: none"><li>Restart the device.</li><li>On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li><li>If user's computer is available, test that media plays on the computer. If media does not play on the computer, this is an issue with corrupt media.</li></ol>

### Deep Dive

Check	Result	Action
<p><b>1. Test with known-good media.</b></p> <p>If problem media was purchased, attempt to play known-good media (free app, free song of the week, song preview in iTunes Store) on device.</p> <p>If problem media was not purchased, restart the device and resync content.</p> <p><a href="#">Is the issue resolved?</a></p>	Yes	Issue resolved.
	No	Go to step 2.



	<p><b>2. Erase all content and settings.</b> Go to Settings &gt; General &gt; Reset &gt; Erase All Content and Settings. <b>Warning:</b> This will delete all user data on the device. Attempt to play known-good media on device.</p>	Yes	Issue resolved.
	<p><b>Does known-good media play successfully?</b></p> <p><b>3. Restore with iTunes.</b> Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore. Attempt to play known-good media on device.</p> <p><b>Does known-good media play successfully?</b></p>	Yes	Issue resolved.
		No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.

## Other Software Issue

### Deep Dive

Check	Result	Action
<p>1. Verify whether any of the troubleshooting flows apply to the issue reported by the user.</p>	Yes	Jump to appropriate troubleshooting flow.
	No	Document reported failure and send feedback to <a href="mailto:smfeedback6@apple.com">smfeedback6@apple.com</a> stating that a suitable troubleshooting flow wasn't found. Escalate through your usual channels for further troubleshooting support.



# Connectivity Issues

## iTunes Sync Issues

**Known-Good Parts & Materials Required:** USB Power Adapter, Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• Device not recognized in iTunes</li><li>• Device will not sync</li></ul>	<ol style="list-style-type: none"><li>1. Verify that cable is securely attached to both device and computer.</li><li>2. Try connecting device to a different USB 2.0 port on computer (not on keyboard or an external hub.)</li><li>3. Disconnect other USB devices from the computer.</li><li>4. Verify the device accepts power with a known-good cable and power adapter. If not, jump to <a href="#"><u>Battery Will Not Charge</u></a>.</li><li>5. Restart the device.</li><li>6. Restart the computer and reconnect the device.</li><li>7. For Windows, refer to Apple Support articles <a href="#"><u>TS1495: iOS: Device not recognized in iTunes for Windows</u></a> and <a href="#"><u>TS1567: How to restart the Apple Mobile Device Service (AMDS) on Windows</u></a>.</li><li>8. Check for third-party software conflicts.</li></ol>

### Deep Dive

Check	Result	Action
<p><b>1. Inspect dock connector.</b></p> <p>Verify that the dock connector is clean and free of debris or damage. Clean or fix if possible.</p> <p><a href="#"><u>Is the dock connector clean and free of debris or damage?</u></a></p>	Yes	Go to step 2.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



<p><b>2. Verify device presence in iTunes.</b></p> <p>Connect the device to user's computer (if available) and see if it is recognized in iTunes.</p> <p>If user's computer is not available, select the "No" answer.</p> <p><b>Does iTunes recognize the device?</b></p>	Yes	Go to step 3.
	No	Go to step 5.
<p><b>3. Test with known-good computer.</b></p> <p>Connect the device to a known-good computer running the latest version of iTunes and see if the device is recognized in iTunes.</p> <p><b>Does iTunes recognize the device?</b></p>	Yes	User needs to reinstall iTunes and/or troubleshoot issue with computer.
	No	Go to step 4.
<p><b>4. Put device into recovery mode.</b></p> <p>Put the device into recovery mode and reconnect to known-good computer. Verify if the device is now recognized in iTunes.</p> <p><b>Does iTunes recognize the device?</b></p>	Yes	Go to step 7.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.
<p><b>5. Sync with iTunes.</b></p> <p>Attempt to sync the device with iTunes.</p> <p><b>Was the sync successful?</b></p>	Yes	Issue resolved.
	No	Go to step 6.
<p><b>6. Erase all content and settings.</b></p> <p>Go to Settings &gt; General &gt; Reset &gt; Erase All Content and Settings.</p> <p><b>Warning:</b> This will delete all user data on the device.</p> <p>Attempt to sync the device with iTunes.</p> <p><b>Was the sync successful?</b></p>	Yes	Issue resolved.
	No	Go to step 7.





<p><b>7. Recovery mode restore.</b></p> <p>Restore the device in recovery mode using the latest version of iTunes. If recovery mode restore fails, attempt DFU restore.</p> <p>Attempt to sync the device with iTunes.</p> <p><b>Was the sync successful?</b></p>	Yes	Issue resolved.
	No	Escalate with your usual technical escalation process.

## Wi-Fi Issues

**Known-Good Parts & Materials Required:** Wi-Fi network, Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check

Symptoms	Quick Check
  	<ul style="list-style-type: none"><li>• Unable to locate a nearby Wi-Fi network</li><li>• Unable to connect to a Wi-Fi network</li><li>• Unable to access the Internet</li><li>• Settings &gt; Wi-Fi is grayed out</li></ul> <ol style="list-style-type: none"><li>1. On the device, go to Settings and turn Airplane Mode on for 15 seconds, then off. This resets all wireless connections on the device.</li><li>2. Restart the device.</li><li>3. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li><li>4. Verify that a third-party case is not interfering with antennas. Remove any installed third-party case and retest.</li><li>5. Refer to Apple Support article <a href="#">TS1398: iOS: Troubleshooting Wi-Fi networks and connections</a>.</li><li>6. Verify that Wi-Fi is enabled and that device is connected to a known-good Wi-Fi network.</li><li>7. Check Wi-Fi signal strength. If low, move closer to Wi-Fi router or hotspot.</li><li>8. Reminder: If the network is closed or private, you must select "other..." and enter the network name to join.</li></ol>



## Deep Dive



Check	Result	Action
<p><b>1. Forget the current network.</b> Go to Settings &gt; Wi-Fi and tap the blue circle to the right of the network name and signal strength. Choose “Forget this Network” and then reconnect to the network.</p> <p><b>Is the Wi-Fi issue resolved?</b></p>	Yes	Issue resolved.
		Go to step 2.
<p><b>2. Reset network settings.</b> Go to Settings &gt; General &gt; Reset &gt; Reset Network Settings.</p> <p><b>Warning:</b> This will erase all stored Wi-Fi passwords.</p> <p><b>Is the Wi-Fi issue resolved?</b></p>	Yes	Issue resolved.
		Go to step 3.
<p><b>3. Erase all content and settings.</b> Go to Settings &gt; General &gt; Reset &gt; Erase All Content and Settings.</p> <p><b>Warning:</b> This will delete all user data on the device.</p> <p><b>Is the Wi-Fi issue resolved?</b></p>	Yes	Issue resolved.
		Go to step 4.
<p><b>4. Restore with iTunes.</b> Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.</p> <p><b>Is the Wi-Fi issue resolved?</b></p>	Yes	Issue resolved.
		Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



## Bluetooth Issues

**Known-Good Parts & Materials Required:** Bluetooth accessory, Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check



Symptoms	Quick Check
<ul style="list-style-type: none"><li>• Bluetooth accessory not recognized</li><li>• Bluetooth accessory not pairing</li><li>• Settings &gt; General &gt; Bluetooth is grayed out</li></ul>	<ol style="list-style-type: none"><li>1. Verify that the Bluetooth accessory's package indicates "Works with iPhone."</li><li>2. On the device, go to Settings and turn Airplane Mode on for 15 seconds, then off. This resets all wireless connections on the device.</li><li>3. Restart the device.</li><li>4. Reset the Bluetooth accessory.</li><li>5. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li></ol>

### Deep Dive



Check	Result	Action
1. Test device's Bluetooth.  Go to Settings > General > Bluetooth and verify that you can power Bluetooth on/off.  <b>Does Bluetooth successfully turn on and off?</b>	Yes	Go to step 3.
	No	Go to step 2.
2. Restore with iTunes.  Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.  <b>Warning:</b> This will delete all user data on the device.  Go to Settings > General > Bluetooth and verify that you can power Bluetooth on/off.  <b>Does Bluetooth successfully turn on and off?</b>	Yes	Go to step 3.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



<p>3. Test known-good Bluetooth accessory.</p> <p>Attempt to pair device with a known-good Bluetooth accessory. Test for accessory functionality.</p> <p><b>Does the device function as expected with a known-good Bluetooth accessory?</b></p>	Yes	Issue resolved. Bluetooth accessory is not functioning as expected. Refer user to manufacturer for support.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.

## Cellular Call/Text Issues

**Known-Good Parts & Materials Required:** SIM card, SIM removal tool, Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

Also see Apple Support articles:

- [HT1976: iPhone: Understanding cellular data networks](#)
- [HT3529: iPhone: About SMS and MMS messaging](#)
- [TS2755: iPhone: Troubleshooting MMS](#)
- [HT2417: iPhone: Troubleshooting voicemail issues](#)

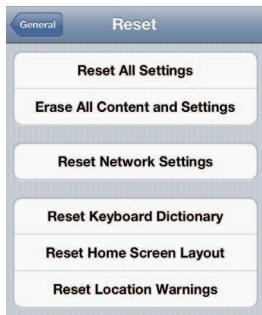
## Quick Check

Symptoms	Quick Check
	<ul style="list-style-type: none"><li>• Cannot make or receive calls</li><li>• Cannot send or receive text messages</li></ul> <ol style="list-style-type: none"><li>1. On the device, go to Settings and turn Airplane Mode on for 15 seconds, then off. This resets all wireless connections on the device.</li><li>2. Restart the device.</li><li>3. If the device is in a case, remove it from the case. Power off (red slider) and back on. See Apple Support article <a href="#">HT2342: iPhone: Signal or other interference while in carrying case</a>.</li><li>4. If there is not at least one bar of cellular signal strength, try moving to another location and check for a better signal.</li><li>5. For text messaging, make sure that the area code is included with phone numbers in the contacts list.</li></ol>



## Deep Dive

Check	Result	Action
1. Identify carrier type.  Identify whether the carrier uses CDMA or GSM.  <b>Is the device running on a CDMA or GSM network?</b>	CDMA	Go to step 2.
	GSM	Go to step 3.
2. Contact cellular carrier.  Contact the carrier to update the Preferred Roaming List and verify that the account is active.  <b>Is the cellular issue resolved?</b>	Yes	Issue resolved.
	No	Go to step 5.
3. Reseat SIM card.  Using the SIM removal tool, eject the SIM card tray and reseat the SIM card.  <b>Is the cellular issue resolved?</b>	Yes	Issue resolved.
	No	Go to step 4.
4. Test known-good SIM card.  Substitute a known-good SIM card.  <b>Is the cellular issue resolved?</b>	Yes	Issue resolved.
	No	Go to step 5.
5. Reset network settings.  Go to Settings > General > Reset > Reset Network Settings.  <b>Warning:</b> This will erase all stored Wi-Fi passwords.  <b>Is the cellular issue resolved?</b>	Yes	Issue resolved.
	No	Go to step 6.
6. Erase all content and settings.  Go to Settings > General > Reset > Erase All Content and Settings.  <b>Warning:</b> This will delete all user data on the device.  <b>Is the cellular issue resolved?</b>	Yes	Issue resolved.
	No	Go to step 7.





<p><b>7. Restore with iTunes.</b></p> <p>Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.</p> <p><b>Is the cellular issue resolved?</b></p>	Yes	Issue resolved.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.

## Cellular Data Issues

**Known-Good Parts & Materials Required:** SIM card, SIM removal tool, USB Power Adapter, Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

Also see Apple Support article [HT1976: iPhone: Understanding cellular data networks](#).

### Quick Check

Symptoms	Quick Check
 <ul style="list-style-type: none"><li>Cannot load web pages</li><li>Cannot send or receive email</li><li>Cannot send or receive cellular data, such as maps, weather, stocks</li></ul>	<ol style="list-style-type: none"><li>On the device, go to Settings and turn Airplane Mode on for 15 seconds, then off. This resets all wireless connections on the device.</li><li>Restart the device.</li><li>On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li><li>If the device is in a case, remove it from the case. Power off (red slider) and back on. See Apple Support article <a href="#">HT2342: iPhone: Signal or other interference while in carrying case</a>.</li><li>If there is not at least one bar of cellular signal strength, try moving to another location and check for a better signal.</li><li>If the issue is with email, verify that the user's email account credentials are accurate.</li><li>Turn off Wi-Fi (Settings &gt; Wi-Fi) in order to isolate the issue to carrier network activity.</li></ol>



## Deep Dive

Check	Result	Action
<p><b>1. Identify carrier type.</b> Identify whether the carrier uses CDMA or GSM. <b>Is the device running on a CDMA or GSM network?</b></p>	CDMA	Go to step 2.
	GSM	Go to step 3.
<p><b>2. Contact cellular carrier.</b> From another phone, call the cellular carrier and verify that the user's account is active. Also perform any updates suggested by the carrier. <b>Is the cellular issue resolved?</b></p>	Yes	Issue resolved.
	No	Go to step 7.
<p><b>3. Verify that SIM is not locked.</b> Go to Settings &gt; Phone &gt; SIM PIN. If SIM is locked, unlock it. Also see Apple Support article <a href="#">HT1316: iOS: Understanding the SIM PIN</a>. <b>Is the cellular issue resolved?</b></p>	Yes	Issue resolved.
	No	Go to step 4.
<p><b>4. Reseat SIM card.</b> Using the SIM removal tool, eject the SIM card tray and reseat the SIM card. <b>Is the cellular issue resolved?</b></p>	Yes	Issue resolved.
	No	Go to step 5.
<p><b>5. Test known-good SIM card.</b> Substitute a known-good SIM card. <b>Is the cellular issue resolved?</b></p>	Yes	Issue resolved. User should contact carrier to verify account status.
	No	Go to step 6.
<p><b>6. Contact cellular carrier.</b> From another phone, call the cellular carrier and verify that the user's account is active. <b>Is the cellular issue resolved?</b></p>	Yes	Issue resolved.
	No	Go to step 7.



	<p><b>7. Reset network settings.</b> Go to Settings &gt; General &gt; Reset &gt; Reset Network Settings. <b>Warning:</b> This will erase all stored Wi-Fi passwords. <b>Is the cellular issue resolved?</b></p>	Yes	Issue resolved.
		No	Go to step 8.
	<p><b>8. Erase all content and settings.</b> Go to Settings &gt; General &gt; Reset &gt; Erase All Content and Settings. <b>Warning:</b> This will delete all user data on the device. <b>Is the cellular issue resolved?</b></p>	Yes	Issue resolved.
		No	Go to step 9.
	<p><b>9. Restore with iTunes.</b> Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore. <b>Is the cellular issue resolved?</b></p>	Yes	Issue resolved.
		No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.

## SIM Card Issues

**Known-Good Parts & Materials Required:** SIM card, SIM removal tool

**Note:** The iPhone 4 (CDMA model) does not have a SIM card. This information does not apply to this model of iPhone.

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>“Invalid SIM card installed.” message</li><li>“Different SIM detected. Please connect to iTunes.” message</li></ul>	<ol style="list-style-type: none"><li>SIM alert messages can be caused by inserting a non-Apple authorized carrier SIM card. Verify that the SIM card is authorized to be used with this particular device.</li><li>SIM alert messages can be caused by inserting a SIM card that is not the SIM used for the device’s current activation. For example, if a new SIM was used to activate the device, but the previous SIM is later inserted, or a different SIM card is inserted, such as during testing.</li><li>Restart the device.</li></ol>



## Deep Dive

Check	Result	Action
<p><b>1. Inspect SIM card and tray.</b> Using the SIM removal tool, eject the SIM card tray. Inspect both the tray and the SIM card for debris, corrosion, or damage. Attempt to clean/fix if necessary.</p> <p><b>Are both the SIM card and tray undamaged?</b></p>	Yes	Go to step 2.
	No	Determine if the issue is caused by accidental damage. Refer to the Visual Mechanical Inspection guidelines.  Replace SIM card and/or tray as appropriate.
<p><b>2. Reseat SIM card.</b> Reinstall the original SIM card.</p> <p><b>Is the SIM card issue resolved?</b></p>	Yes	Issue resolved.
	No	Go to step 3.
<p><b>3. Test known-good SIM card.</b> Substitute a known-good SIM card.</p> <p><b>Is the SIM card issue resolved?</b></p>	Yes	Issue resolved. Replace SIM card with the correct carrier-supported SIM card.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.

## Other Connectivity Issue

### Deep Dive

Check	Result	Action
<p><b>1. Verify whether any of the troubleshooting flows apply to the issue reported by the user.</b></p>	Yes	Jump to appropriate troubleshooting flow.
	No	Document reported failure and send feedback to <a href="mailto:smfeedback6@apple.com">smfeedback6@apple.com</a> stating that a suitable troubleshooting flow wasn't found.  Escalate through your usual channels for further troubleshooting support.



# Sound Issues

## No Ringer Sound

**Known-Good Parts & Materials Required:** Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check



Symptoms	Quick Check
<ul style="list-style-type: none"><li>• No ringer sound</li></ul>	<ol style="list-style-type: none"><li>1. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li><li>2. Check that the ring/silent switch is set for ring and not vibrate.</li><li>3. Check volume level with volume up/down buttons.</li><li>4. Check Ringer/Alerts volume setting in Settings &gt; Sounds.</li><li>5. Clean speaker mesh. <b>Caution:</b> Compressed air should NEVER be used to clean any part of an iOS device. Use only an anti-static brush.</li><li>6. Restart the device.</li></ol>

### Deep Dive



Check	Result	Action
1. Check for speaker audio.  Go to Settings > Sounds > Ringtone and select a ringtone.  <b>Does the device ring?</b>	Yes	Go to step 2.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.
2. Erase all content and settings.  Go to Settings > General > Reset > Erase All Content and Settings.  <b>Warning:</b> This will delete all user data on the device.  Go to Settings > Sounds > Ringtone and select a ringtone.  <b>Does the device ring?</b>	Yes	Issue resolved.
	No	Go to step 3.



<p><b>3. Restore with iTunes.</b></p> <p>Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.</p> <p>Go to Settings &gt; Sounds &gt; Ringtone and select a ringtone.</p> <p><b>Does the device ring?</b></p>	Yes	Issue resolved.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.

## No Vibrate

**Known-Good Parts & Materials Required:** Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check



Symptoms	Quick Check
<ul style="list-style-type: none"><li>No vibrate</li></ul>	<ol style="list-style-type: none"><li>Toggle the ring/silent switch.</li><li>Check Vibrate settings for both Silent and Ringer/Alerts in Settings &gt; Sounds.</li><li>Restart the device.</li><li>On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li></ol>

### Deep Dive



Check	Result	Action
<p><b>1. Erase all content and settings.</b></p> <p>Go to Settings &gt; General &gt; Reset &gt; Erase All Content and Settings.</p> <p><b>Warning:</b> This will delete all user data on the device.</p> <p>Toggle the ring/silent switch.</p>	Yes	Issue resolved.
<p><b>Is the vibrate issue resolved?</b></p>	No	Go to step 2.



<b>2. Restore with iTunes.</b>  Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.  Toggle the ring/silent switch.  <b>Is the vibrate issue resolved?</b>	Yes	Issue resolved.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.  <b>For iPhone 4 (GSM model) only:</b> Replace vibe motor, if possible, rather than replacing the whole unit.

## Speaker/Receiver Issues

**Known-Good Parts & Materials Required:** Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

**Note:** The user may report that sound is not playing through both mesh openings on the bottom edge of iPhone. Only one of the mesh openings is a speaker; the other is the microphone. The speaker is located on the right side.



## Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• No sound from speaker on the bottom edge of the device</li><li>• No sound from receiver</li><li>• Distorted sound from speaker or receiver</li></ul>	<ol style="list-style-type: none"><li>1. If issue is with headphone audio, jump to <a href="#"><u>Headphone Issues</u></a>.</li><li>2. Make sure case or protective film is not obstructing the speaker or receiver.</li><li>3. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li><li>4. Check volume level with volume up/down buttons.</li><li>5. Verify that music/audio is not paused.</li><li>6. Check Settings &gt; Music (or iPod) &gt; Volume Limit.</li><li>7. Go to Settings &gt; General &gt; Accessibility and verify "Mono Audio" is not enabled (for those who don't require it.)</li></ol>



## Deep Dive

Check	Result	Action
<p><b>1. Clean the device.</b> Check that speaker or receiver mesh are not obstructed with lint or debris. Attempt to clean any debris in accordance with the <a href="#">Cleaning Procedures</a>. <b>Are you able to clean the device?</b></p>	Yes	Go to step 2.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.
<p><b>2. Retest the device.</b> Play known-good media or go to Settings &gt; Sound &gt; Ringtone and select a ringtone. <b>Is the audio issue resolved?</b></p>	Yes	Issue resolved. User's audio is corrupted.
	No	Go to step 3.
<p><b>3. Erase all content and settings.</b> Go to Settings &gt; General &gt; Reset &gt; Erase All Content and Settings. <b>Warning:</b> This will delete all user data on the device. Play known-good media or go to Settings &gt; Sound &gt; Ringtone and select a ringtone. <b>Is the audio issue resolved?</b></p>	Yes	Issue resolved. User's audio is corrupted.
	No	Go to step 4.
<p><b>4. Restore with iTunes.</b> Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore. Play known-good media or go to Settings &gt; Sound &gt; Ringtone and select a ringtone. <b>Is the audio issue resolved?</b></p>	Yes	Issue resolved. Software corruption on the device. Advise user to set up the device as new, following instructions in Apple Support article <a href="#">HT4137: How to back up your data and set up as a new device</a> .
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.





## Microphone Issues

**Known-Good Parts & Materials Required:** Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

**Note:** The microphone is located on the bottom edge of iPhone, on the left side:



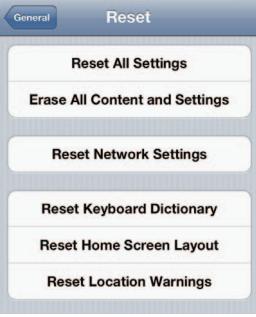
### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• Microphone not functioning</li><li>• Distorted sound from microphone</li></ul>	<ol style="list-style-type: none"><li>1. If issue is with microphone built-in to headphones, jump to <a href="#">Headphone Microphone Issues</a>.</li><li>2. Make sure case or protective film is not obstructing the microphone.</li><li>3. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li></ol>

### Deep Dive

Check	Result	Action
1. Clean the device.  Check microphone mesh on bottom of device and secondary mic on top of device are not obstructed with lint or debris. Attempt to clean any debris in accordance with the <a href="#">Cleaning Procedures</a> .  <a href="#">Are you able to clean the device?</a>	Yes	Go to step 2.
	No	Determine if the issue is caused by accidental damage. Refer to the <a href="#">Visual Mechanical Inspection</a> guidelines.
2. Retest the device.  Open the Voice Memos app. Create a recording and play it back.  <a href="#">Did audio record as expected?</a>	Yes	Issue resolved.
	No	Go to step 3.



	<p><b>3. Erase all content and settings.</b></p> <p>Go to Settings &gt; General &gt; Reset &gt; Erase All Content and Settings.</p> <p><b>Warning:</b> This will delete all user data on the device.</p> <p>Open the Voice Memos app. Create a recording and play it back.</p>	Yes	Issue resolved.
	<p><b>Did audio record as expected?</b></p> <p><b>4. Restore with iTunes.</b></p> <p>Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.</p> <p>Open the Voice Memos app. Create a recording and play it back.</p>	No	Go to step 4.
	<p><b>Did audio record as expected?</b></p>	Yes	Issue resolved.
		No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



## Headphone Issues

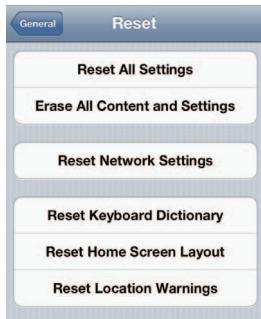
**Known-Good Parts & Materials Required:** Apple Earphones, Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• No sound in headphones</li><li>• Sound from only one channel in headphones</li><li>• Distorted sound in headphones</li></ul>	<ol style="list-style-type: none"><li>1. If issue is with speaker audio, jump to <a href="#"><u>Speaker/Receiver Issues</u></a>.</li><li>2. Verify that the headphones are fully inserted into the headphone jack. Make sure a case or protective film is not interfering.</li><li>3. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li><li>4. Check volume level with volume up/down buttons.</li><li>5. Verify that music/audio is not paused.</li><li>6. Check Settings &gt; Music (or iPod) &gt; Volume Limit.</li><li>7. Go to Settings &gt; General &gt; Accessibility and verify "Mono Audio" is not enabled (for those who don't require it.)</li></ol>

### Deep Dive

Check	Result	Action
<b>1. Clean the device.</b>  Check that headphone jack is not obstructed with lint or debris. Attempt to clean any debris in accordance with the <a href="#"><u>Cleaning Procedures</u></a> .  <b>Are you able to clean the device?</b>	Yes	Go to step 2.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.
<b>2. Retest the device.</b>  Play known-good media or go to Settings > Sound > Ringtone and select a ringtone.  <b>Is the headphone issue resolved?</b>	Yes	Issue resolved.
	No	Go to step 3.



<p><b>3. Test with known-good headphones.</b> Substitute known-good Apple Earphones. Play known-good media or go to Settings &gt; Sound &gt; Ringtone and select a ringtone.</p> <p><b>Is the headphone issue resolved?</b></p>	Yes	Replace Apple Earphones. If user has third-party headphones, refer to manufacturer for support.
	No	Go to step 4.
<p><b>4. Erase all content and settings.</b> Go to Settings &gt; General &gt; Reset &gt; Erase All Content and Settings.</p> <p><b>Warning:</b> This will delete all user data on the device.</p> <p>Play known-good media or go to Settings &gt; Sound &gt; Ringtone and select a ringtone.</p> <p><b>Is the headphone issue resolved?</b></p>	Yes	Issue resolved.
	No	Go to step 5.
<p><b>5. Restore with iTunes.</b> Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore.</p> <p>Play known-good media or go to Settings &gt; Sound &gt; Ringtone and select a ringtone.</p> <p><b>Is the headphone issue resolved?</b></p>	Yes	Issue resolved.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



## Headphone Microphone Issues

**Known-Good Parts & Materials Required:** Apple Earphones with Remote and Mic, Dock Connector to USB Cable, computer running the latest version of iTunes with a known-good USB port

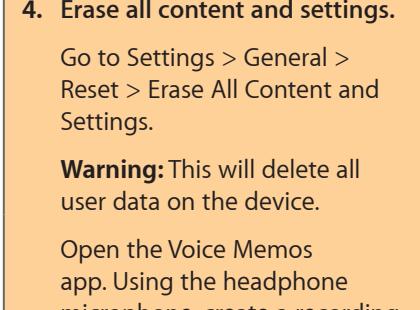
### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• No audio from headphone microphone</li><li>• Distorted sound from headphone microphone</li></ul>	<ol style="list-style-type: none"><li>1. If issue is with device microphone, jump to <a href="#">Microphone Issues</a>.</li><li>2. Verify that the headphones are fully inserted into the headphone jack. Make sure a case or protective film is not interfering.</li><li>3. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li></ol>

### Deep Dive

Check	Result	Action
1. Clean the device.  Check that headphone jack is not obstructed with lint or debris. Attempt to clean any debris in accordance with the <a href="#">Cleaning Procedures</a> .  <a href="#">Are you able to clean the device?</a>	Yes	Go to step 2.
	No	Determine if the issue is caused by accidental damage. Refer to the <a href="#">Visual Mechanical Inspection</a> guidelines.
2. Retest the device.  Open the Voice Memos app. Using the headphone microphone, create a recording and play it back.  <a href="#">Did the audio record as expected?</a>	Yes	Issue resolved.
	No	Go to step 3.



	<b>3. Test with known-good headphones.</b> Substitute known-good Apple Earphones with Remote and Mic. Open the Voice Memos app. Using the headphone microphone, create a recording and play it back. <b>Did the audio record as expected?</b>	Yes	Replace Apple Earphones. If user has third-party headphones, refer to manufacturer for support.
		No	Go to step 4.
	<b>4. Erase all content and settings.</b> Go to Settings > General > Reset > Erase All Content and Settings. <b>Warning:</b> This will delete all user data on the device. Open the Voice Memos app. Using the headphone microphone, create a recording and play it back. <b>Did the audio record as expected?</b>	Yes	Issue resolved.
		No	Go to step 5.
	<b>5. Restore with iTunes.</b> Restore the device using the latest version of iTunes. If restore fails, attempt DFU restore. Open the Voice Memos app. Using the headphone microphone, create a recording and play it back. <b>Did the audio record as expected?</b>	Yes	Issue resolved.
		No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



## Other Sound Issue

### Deep Dive

Check	Result	Action
1. Verify whether any of the troubleshooting flows apply to the issue reported by the user.	Yes	Jump to appropriate troubleshooting flow.
	No	Document reported failure and send feedback to <a href="mailto:smfeedback6@apple.com">smfeedback6@apple.com</a> stating that a suitable troubleshooting flow wasn't found. Escalate through your usual channels for further troubleshooting support.



# Accessories Issues

## “Accessory not made to work”

**Known-Good Parts & Materials Required:** iPhone accessory

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• “This accessory is not made to work with iPhone” message, when a “Works with iPhone” accessory is connected or when nothing is connected</li></ul>	<ol style="list-style-type: none"><li>1. Make sure: the accessory’s package says “Works with iPhone” and not “Made for iPod” or “Made for iPad.”</li><li>2. Verify the device is securely connected to the accessory; not loose, crooked or making partial connection.</li><li>3. See Apple Support article <a href="#">TS1505: iPhone: Compatibility message appears when connected to a ‘Works with iPhone’ accessory.</a></li><li>4. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li></ol>

### Deep Dive

Check	Result	Action
<b>1. Inspect connections.</b>  Check for debris at the connection points of both the device and the accessory. Clean if possible.  <a href="#">Did cleaning resolve the issue?</a>	Yes	Issue resolved.
	No	Go to step 2.
<b>2. Test known-good accessory.</b>  Test the device with a known-good similar accessory, if available.  <a href="#">Is the accessory issue resolved?</a>	Yes	Refer user to accessory manufacturer for support.
	No	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



## TV/Video Out Issues

**Known-Good Parts & Materials Required:** Display and compatible cables as listed in [HT1454: iPhone, iPad, iPod: TV out support](#), device compatible with cables

### Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"><li>• Unable to display device content on TV</li><li>• Unable to display device content on projector</li></ul>	<ol style="list-style-type: none"><li>1. Verify that accessory is compatible with device.</li><li>2. On the device, go to Settings &gt; General &gt; Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.</li><li>3. Verify cables are plugged into the appropriate input jacks and correct input is selected on the TV or projector.</li><li>4. Restart the device.</li></ol>

### Deep Dive

Check	Result	Action
1. <b>Inspect connections.</b>  Check for debris at the connection points of both the device and the accessory. Clean if possible.  <a href="#">Did cleaning resolve the issue?</a>	Yes	Issue resolved.
	No	Go to step 2.
2. <b>Test with known-good cable.</b>  Using a known-good video-out cable, isolate issue to the cable or device.  <a href="#">Is the issue related to the cable or the device?</a>	Cable	Replace Apple accessory.
	Device	Determine if the issue is caused by accidental damage. Refer to the <b>Visual Mechanical Inspection</b> guidelines.



## Other Accessories Issue

### Deep Dive

Check	Result	Action
1. Verify whether any of the troubleshooting flows apply to the issue reported by the user.	Yes	Jump to appropriate troubleshooting flow.
	No	Document reported failure and send feedback to <a href="mailto:smfeedback6@apple.com">smfeedback6@apple.com</a> stating that a suitable troubleshooting flow wasn't found.  Escalate through your usual channels for further troubleshooting support.



## Take Apart

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### iPhone 4



# General Information

## Before You Begin

- **IMPORTANT: Refer to the Visual Mechanical Inspection guidelines to determine if the device has any accidental damage.** Check for Liquid Contact Indicator (LCI) activation externally (in headset jack and dock connector) before opening the device.
- Remove any cases or screen protectors, which may inhibit proper testing.
- Verify the user-reported symptom(s) and identify the correct part(s) needed for repair.
- Make sure the device is powered off (red slider).

## Electrostatic Discharge Precautions

Proper ESD precautions must always be used when opening an iPhone 4. Make sure you are working on a properly grounded ESD-safe mat and are wearing a properly connected ESD-safe wrist strap.

For more information about ESD, refer to:

- Apple Support article [HT3451: Electrostatic Discharge Precautions and Myths](#)
- [AppleCare Service Training: ESD Precautions](#)

## Required Tools

The following tools are required to service an iPhone 4:

- ESD-safe wrist strap
- ESD-safe workstation
- SIM Removal Tool (922-8417) or paperclip (size #1)
- iPhone Torque Driver (923-0031)
- iPhone Torx Security Bit (922-9627)
- JCIS #00 Bit (922-9947) for cross-head screws
- iPhone 4 Dock Screws 10 Pack (922-9603)
- iPhone 4 Battery Fixture (923-0075)
- Nylon Probe Tool (black stick) (922-5065)
- ESD-safe tweezers
- Motorola DS6707 Scanner (922-9230) for iPhone 4 (GSM model) serial barcode
- Packing tape (provides a smooth surface for removal of a damaged back cover)
- Micro-fiber polishing cloth



# Safety

## Battery Handling

iPhone 4 includes a lithium-polymer rechargeable battery. Avoid exposure to heat and open flame. Do not puncture, deform, crush or incinerate as exposure to ingredients contained within or their combustion products could be harmful. During a fire, the battery may emit irritating and toxic gases and aerosols may be generated by thermal decomposition and combustion.



**WARNING: If the battery is dented, punctured or otherwise damaged, do not remove battery from iPhone. Reassemble and replace whole unit.**

**WARNING: Do not reuse or reinstall a battery after it has been removed from iPhone.**

## Firefighting

In case of fire, use the following extinguishing media: water, carbon dioxide, dry chemical, foam. These media may not extinguish a burning lithium-ion polymer battery. Burning batteries will burn out themselves.

If fire or explosion occurs while charging, shut off power to charger. Move unprotected personnel and flammable equipment or substances upwind of fire. Wear self-contained breathing apparatus (SCBA) and full personal protective equipment while fighting fire.

## Cleanup

Use appropriate personal protective equipment during cleanup. Vacuum or sweep up material for salvage or disposal according to applicable federal, state and local legislation and regulations. Do not flush to drains.

## Personal Protection

<b>Respiratory Protection</b>	Not necessary under normal conditions.
<b>Eye/Face Protection</b>	Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.
<b>Gloves</b>	Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery.



## First Aid Measures

Under normal conditions the battery is hermetically sealed.

<b>Inhalation</b>	Contents of an open battery may cause respiratory irritation. Leave area immediately, seek fresh air and medical attention.
<b>Ingestion</b>	Contents of an open battery may cause chemical burns to mouth, esophagus and gastrointestinal tract. If ingested, do not induce vomiting or give food or drink. Seek medical attention immediately.
<b>Skin Contact</b>	Contents of an open battery may cause skin irritation or chemical burns. Remove contaminated clothing and wash skin with soap and water. If chemical burn occurs or irritation persist, seek medical attention.
<b>Skin Absorption</b>	Contents of an open battery may be absorbed through the skin and cause localized inflammation.
<b>Eye Contact</b>	Contents of an open battery may cause severe irritation or chemical burns. Immediately flush eyes thoroughly with water for at least fifteen (15) minutes, lifting upper and lower lids, until no evidence of chemical remains. Seek medical attention.

**Disclaimer:** The above information is provided for your information only. The information and recommendations set forth above are made in good faith and are believed to be accurate as of the date of preparation. Apple Inc. MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY FROM RELIANCE ON IT.

## Broken Glass Handling

The front and back covers of iPhone are made of glass, which could break if iPhone is dropped on a hard surface or receives a substantial impact or is crushed, bent or deformed. If the glass chips or cracks, do not attempt to remove the broken glass. Follow these steps:

- Wear gloves to protect yourself while handling iPhone.
- Cover the broken glass with clear packing tape.
- Refer to the **Visual Mechanical Inspection** guidelines for repair options.

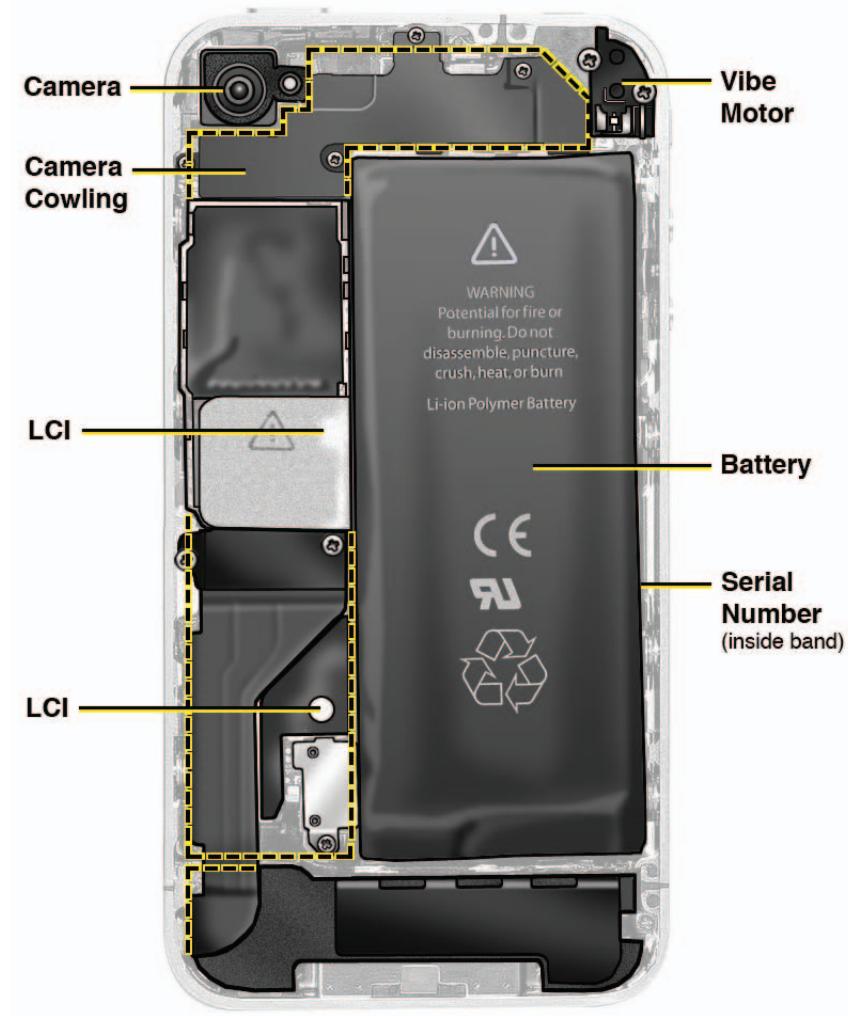


## **Take Apart – iPhone 4 (GSM model)**



# Internal View

Internal view of the iPhone 4 (GSM model), Model A1332:





# Service Parts

## Service Parts for iPhone 4 (GSM model)

Description	Part Number	Kit Contents
<b>SIM Tray</b>	<b>922-9602</b>	(1) SIM tray (blank, no serial# or IMEI)
<b>Back Cover</b>	see next page	(1) back cover
<b>Torx Security Screw Kit</b>	<b>922-9634</b>	(200) dock screws
<b>Camera Kit, Black</b>	<b>661-5692</b>	(1) camera with black LED ring (3) foam gaskets for camera (1) camera cowling (1) 452-1846 screw #1 (2) 452-1831 screws #2 & 5 (1) 452-1850 screw #3 (1) 452-1851 screw #4
<b>Camera Kit, White</b>	<b>661-5693</b>	(1) camera with silver LED ring (3) foam gaskets for camera (1) camera cowling (1) 452-1846 screw #1 (2) 452-1831 screws #2 & 5 (1) 452-1850 screw #3 (1) 452-1851 screw #4
<b>Vibe Motor Kit</b>	<b>661-5694</b>	(1) vibe motor (1) 452-1845 screw #1 (1) 452-1765 screw #2
<b>Battery Kit</b>	<b>661-5691</b>	(1) battery (1) battery adhesive pack (1) battery cowling (1) 452-1849 screw
<b>Battery Adhesive Kit</b>	<b>922-9635</b>	(10) battery adhesive packs



## Back Cover Identification

The back cover of iPhone 4 includes glass that is very similar to the front cover glass. It is possible to crack the back cover glass. A damaged back cover should be replaced if this occurs.

- Refer to the **Visual Mechanical Inspection** guidelines to determine warranty coverage for cracked glass.
- Affix packing tape to damaged back cover glass before removal to prevent injury and scattering of broken glass.

## Regulatory Markings

**Important:** The back cover includes regulatory compliance markings and text. The replacement back cover must be matched with the original, damaged back cover to comply with legal requirements. See next page to determine the correct part number.

Replace the back cover only on devices that were purchased in the same country in which service is being performed. Back covers are region- and country-specific in most cases.

If the regulatory markings and/or text are illegible, access regulatory information on iPhone: Settings > General > About > Regulatory.





The following tables will help you identify the correct back cover for the model being repaired by comparing regulatory registration numbers and country of origin on the user's iPhone.

### Black iPhone 4 (GSM model)

Regulatory Markings	iPhone	iPhone
	Designed by Apple in California Assembled in China Model A1332 EMC 380A FCC ID: BCG-E2380A IC: 579C-E2380A 	Designed by Apple in California Assembled in China Model A1332 EMC 380B FCC ID: BCG-E2380B IC: 579C-E2380B 
FCC ID	BCG-E2380A	BCG-E2380B
Worldwide Part#	922-9709	922-9707

The following countries have distinct part numbers and regulatory markings:

- Brazil BZ922-9707
- China CH922-9707
- Korea KH922-9707
- Taiwan TA922-9707

### White iPhone 4 (GSM model)

Regulatory Markings	iPhone	iPhone
	Designed by Apple in California Assembled in China Model A1332 EMC 380A FCC ID: BCG-E2380A IC: 579C-E2380A 	Designed by Apple in California Assembled in China Model A1332 EMC 380B FCC ID: BCG-E2380B IC: 579C-E2380B 
FCC ID	BCG-E2380A	BCG-E2380B
Worldwide Part#	922-9710	922-9708

The following countries have distinct part numbers and regulatory markings:

- Brazil BZ922-9708
- China CH922-9708
- Korea KH922-9708
- Taiwan TA922-9708



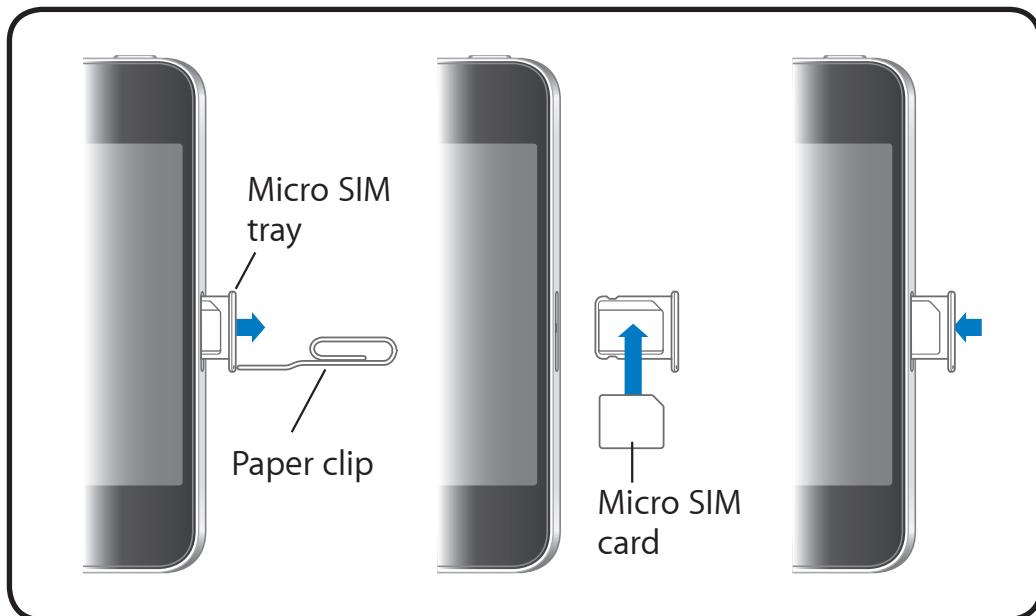
# SIM Tray

## First Steps

- Power off iPhone

## Removal

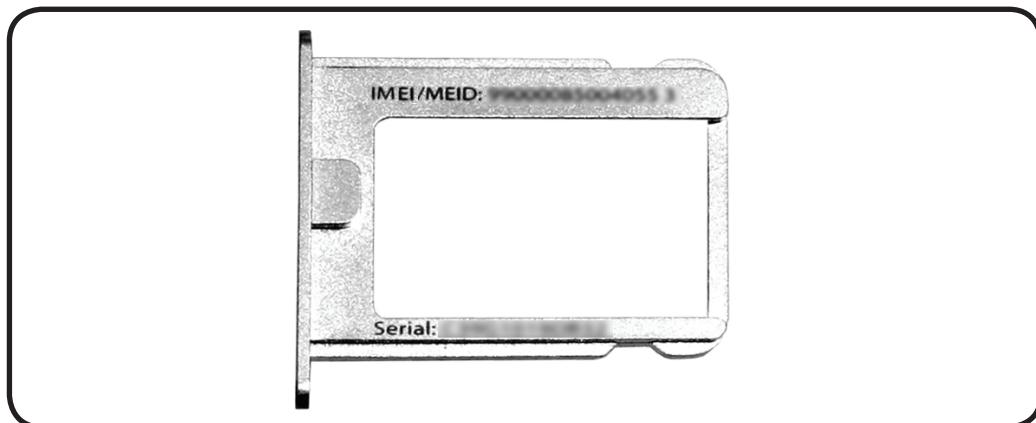
- 1 Insert the end of a SIM Removal Tool (922-8417) or a small thin paper clip into hole on SIM tray.
- 2 Push the tool straight in firmly until tray pops out.



**Note:** The original SIM tray shows the device's IMEI/MEID and serial number.

## Reassembly

Note orientation of the tray and Micro SIM prior to inserting into iPhone.



**Caution:** Do not force the SIM tray into position, which could cause internal damage to iPhone.



# Back Cover

## First Steps

- Refer to the **Visual Mechanical Inspection** guidelines to determine any accidental damage.
- Remove any cases or screen protectors.

**Caution:** If back cover glass is broken, affix packing tape before removal to prevent injury and scattering of glass.

**Important:** The back cover includes regulatory compliance markings and text, and must be replaced like-for-like. Refer to [Back Cover Identification](#) section.



## Tools

- iPhone Torque Driver (923-0031)
- iPhone Torx Security Bit (922-9627)





## Removal

- 1 Remove (2) dock screws on bottom of phone using iPhone Torque Driver and iPhone Torx Security Bit.



- 2 Slide back cover up to release locking tabs and lift off body of iPhone.



**WARNING:** If battery is dented, punctured or otherwise damaged, STOP! Reinstall back cover and replace whole unit.

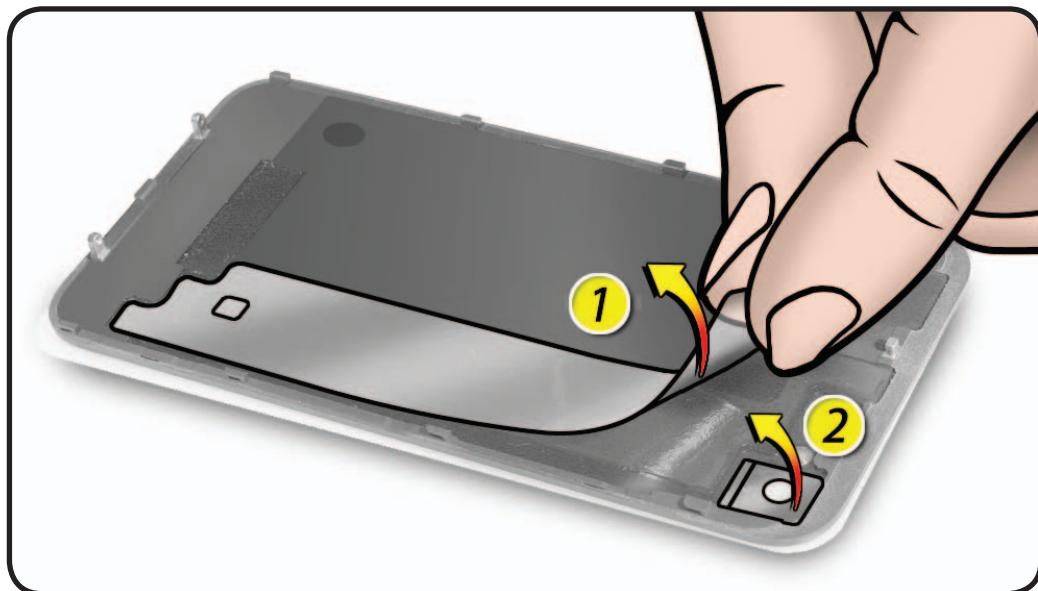




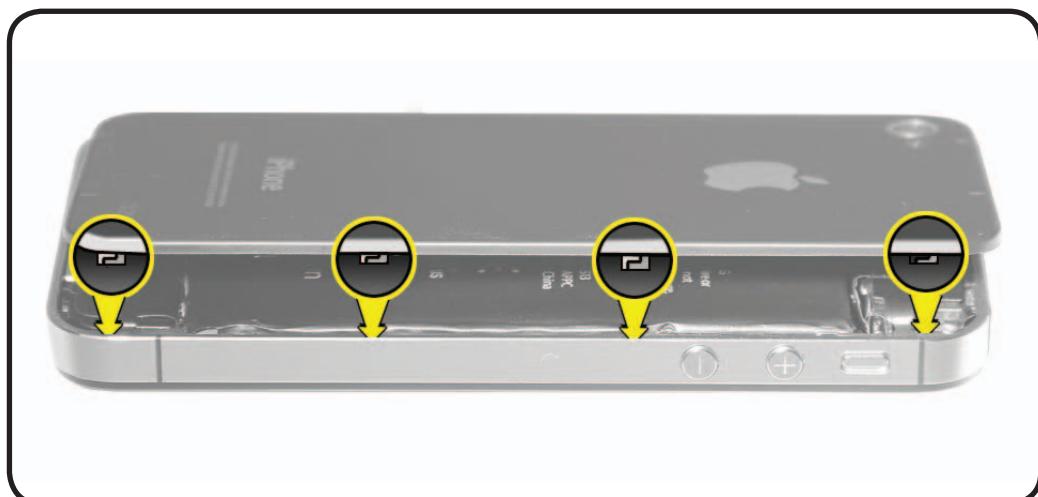
## Reassembly

- 1 If installing a new replacement back cover, remove 2 pieces of clear protective film covering camera lens.

**Note:** It may be helpful to use a black stick to peel up a corner of the protective film.



- 2 Place back cover on iPhone body, aligning locking tabs so back cover sits flush against metal band.



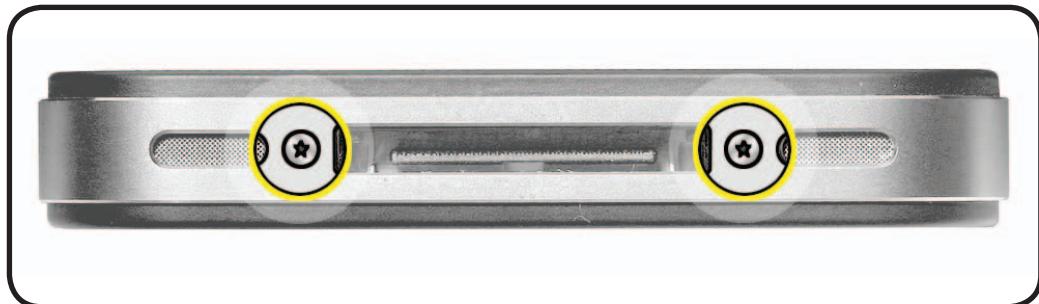


- 3** Slide back cover down and into the locked position.



- 4** Insert (2) **new** dock screws on bottom of phone and tighten using iPhone Torque Driver with iPhone Torx Security Bit.

**Important:** Do not reuse old screws. Use iPhone Torque Driver to prevent over-tightening.



- 5** **Important:** Check main camera operation and LED flash alignment with the [Main Camera Test](#) procedure. If test fails, replace camera.



# Internal Checks

## Internal Liquid Contact Indicators

The iPhone 4 (GSM model) contains two internal liquid contact indicators (LCIs) on the logic board. If an LCI is activated (red), it indicates contact with liquid, which can cause damage that is not covered under warranty and is not eligible for modular repair, but is eligible for Out-of-Warranty (OOW) paid whole unit replacement.

**Important:** If an internal LCI is activated or corrosion is present, reassemble the device and do not proceed with modular repair.



## Missing Internal Parts

If there are missing internal components or parts, it is considered evidence of disassembly or modification, which:

- is NOT covered under warranty
- MAY qualify for a paid repair.

For more information, see Apple Support article [TS3756: iPhone and iPad: Handling service requests when device has missing or modified parts](#).



## Serial Number Barcode

With the back cover removed, the serial number is printed in barcode format on the band, on the right side of the battery well. Use Motorola DS6707 Scanner (Apple part #922-9230) to scan the barcode.





# Main Camera

## First Steps

- [Back Cover](#)

**Note:** A replacement camera kit (661-5692 black, or 661-5693 white) includes 3 foam gaskets, new camera cowling and 5 new screws.

**Important:** Do not reuse old screws.



## Tools

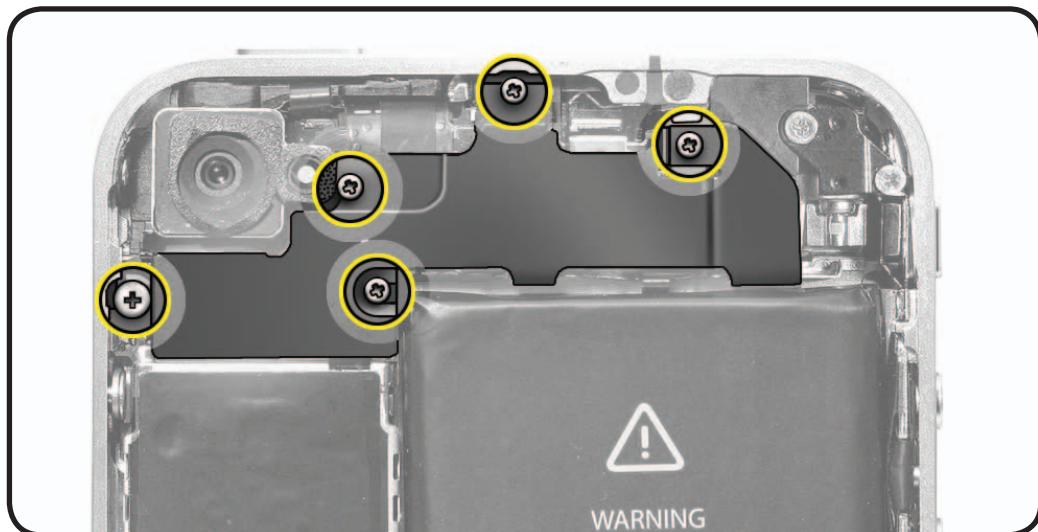
- iPhone Torque Driver (923-0031)
- JCIS #00 Bit (922-9947) for cross-head screws
- Nylon Probe Tool (black stick, 922-5065)
- ESD-safe tweezers



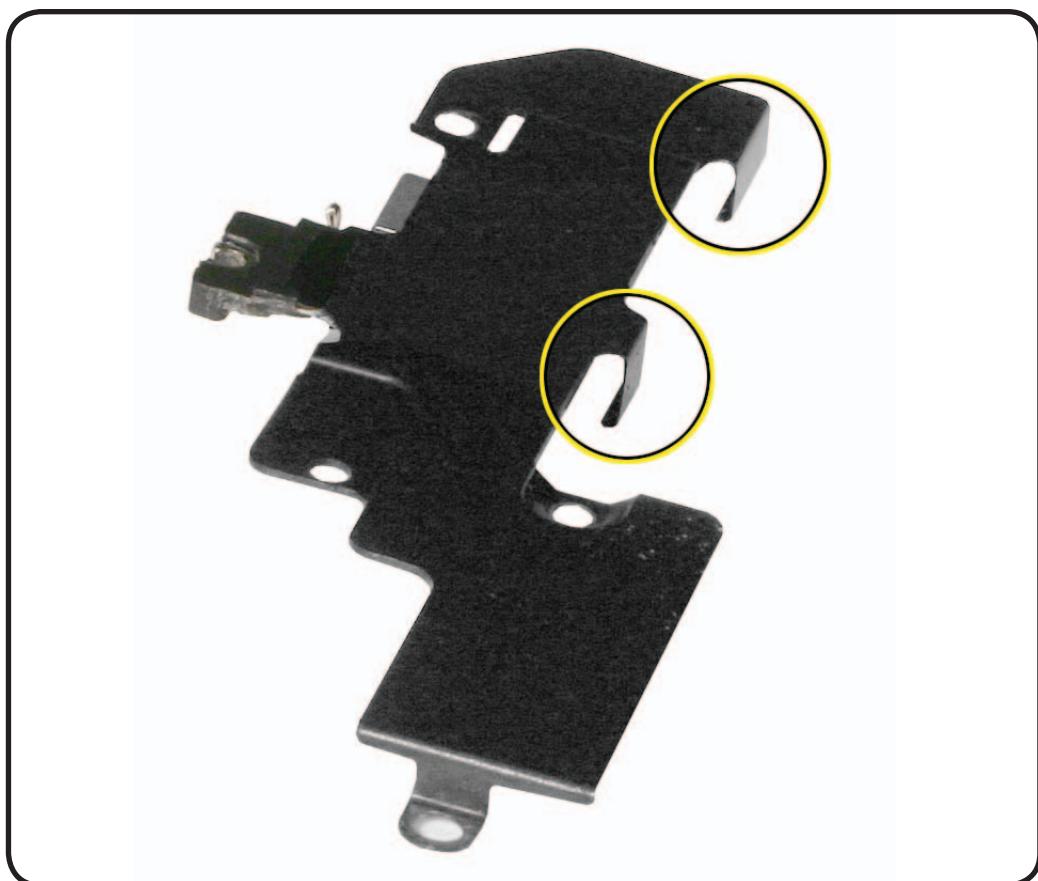


## Removal

- 1 Remove (5) cross-head screws from camera cowling using iPhone Torque Driver and JCIS #00 Bit.



- 2 Note that camera cowling (here shown removed from unit) has two hooks that catch under logic board.





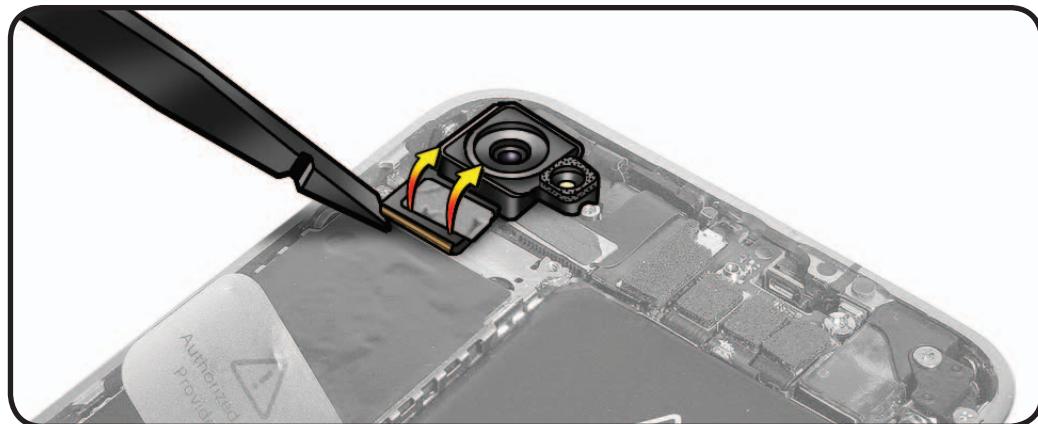
- 3** Grasp camera cowling with tweezers as shown and gently pull towards battery to free hooks from under logic board.

**Warning:** Be careful not to tear or puncture the battery.

- 4** Remove camera cowling from iPhone.



- 5** Gently lift camera connector from logic board using a black stick.



- 6** Lift camera out.

Note short tab that extends out from LED flash and slides underneath flex cable attached to logic board.





## Reassembly

- 1 Using ESD-safe tweezers, apply 3 pieces of foam (included in camera kit) onto new camera as shown.

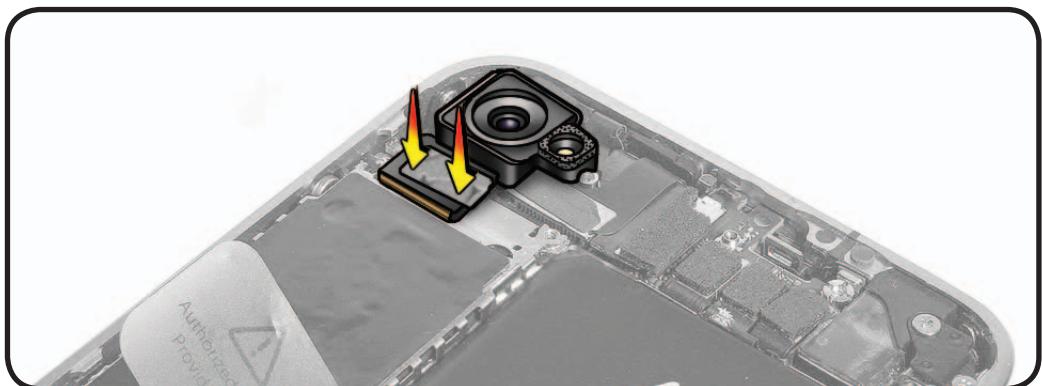


- 2 Place camera into iPhone, sliding tab under flex cable.

**Important:** Be careful not to touch the camera lens.



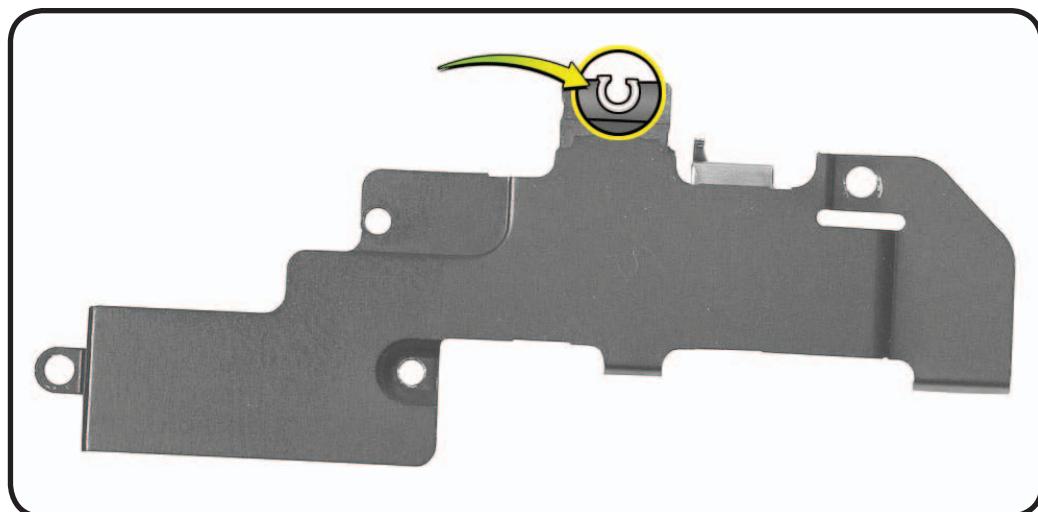
- 3 Press connector down onto logic board until it snaps into position.





- 4** Make sure grounding clip is installed at the top center of camera cowling.

The clip should be aligned with slot on cowling, the open end facing toward the stainless steel band of iPhone.



- 5** Place camera cowling into position as shown, using tweezers to hook underneath logic board.

**Warning:** Be careful not to tear or puncture the battery.

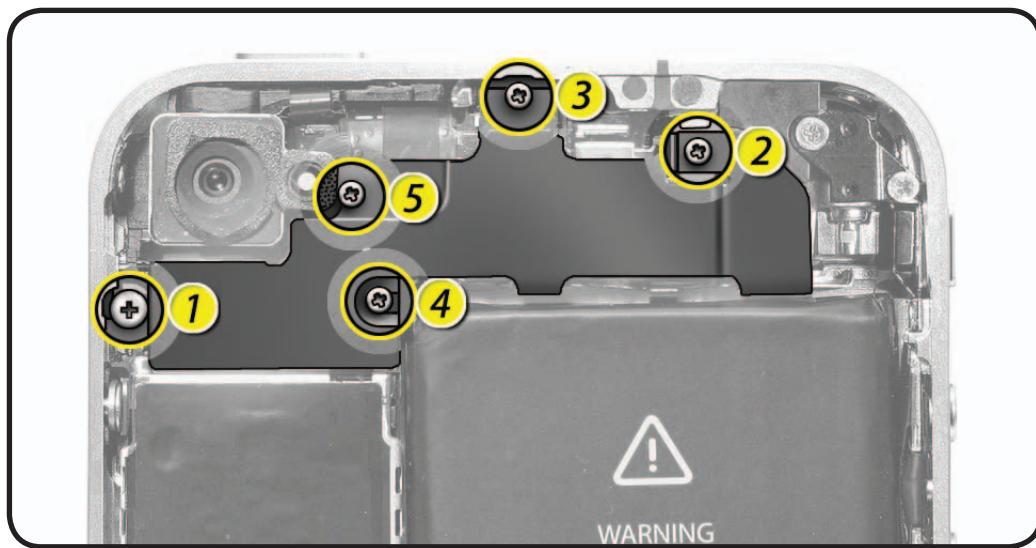




- 6** Install (5) new cross-head screws using iPhone Torque Driver and JCIS #00 Bit.

Each screw bag in the kit is marked with the number of the location where it should be installed.

- Screw #1, 452-1846 (larger head)
- Screw #2, 452-1831
- Screw #3, 452-1850 (longest thread)
- Screw #4, 452-1851 (smallest)
- Screw #5, 452-1831



**Important:** Make sure the camera cowling is centered on the board grounding pad under screw #1.

- 7** Verify the main camera is sitting flush with the band and is evenly aligned.

- 8** [\*\*Reinstall back cover\*\*](#) following reassembly instructions in that chapter.

- 9** **Important:** Check main camera operation and LED flash alignment with the [\*\*Main Camera Test\*\*](#) procedure. If test fails, replace camera.



# Vibe Motor

## First Steps

- [Back Cover](#)

**Note:** A replacement vibe motor kit includes new screws.

**Important:** Do not reuse old screws.



## Tools

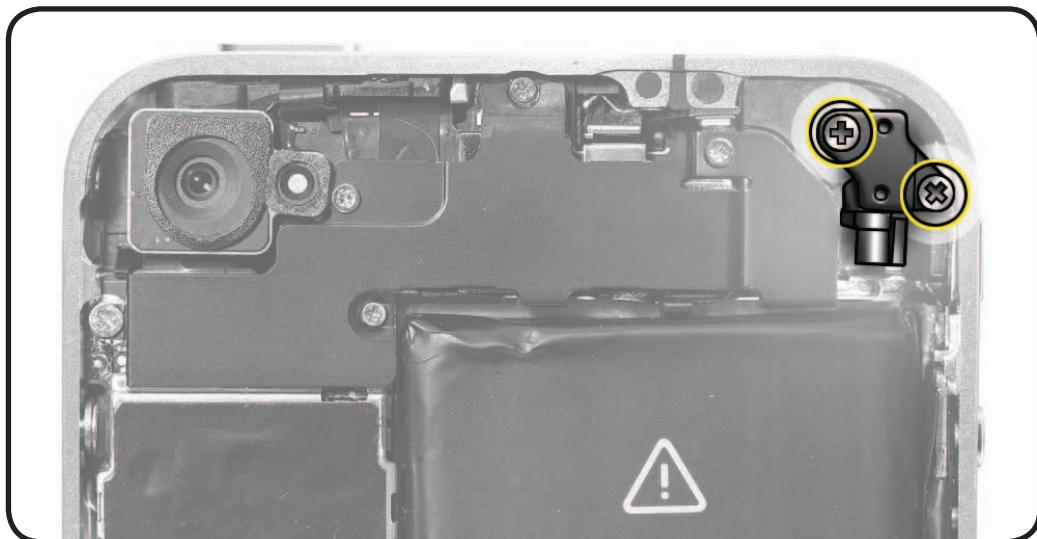
- iPhone Torque Driver (923-0031)
- JCIS #00 Bit (922-9947) for cross-head screws
- Nylon Probe Tool (black stick, 922-5065)
- ESD-safe tweezers





## Removal

- 1 Remove (2) cross-head screws from vibe motor using iPhone Torque Driver and JCIS #00 Bit.



- 2 Remove vibe motor.





## Reassembly

- 1 Position vibe motor in iPhone.

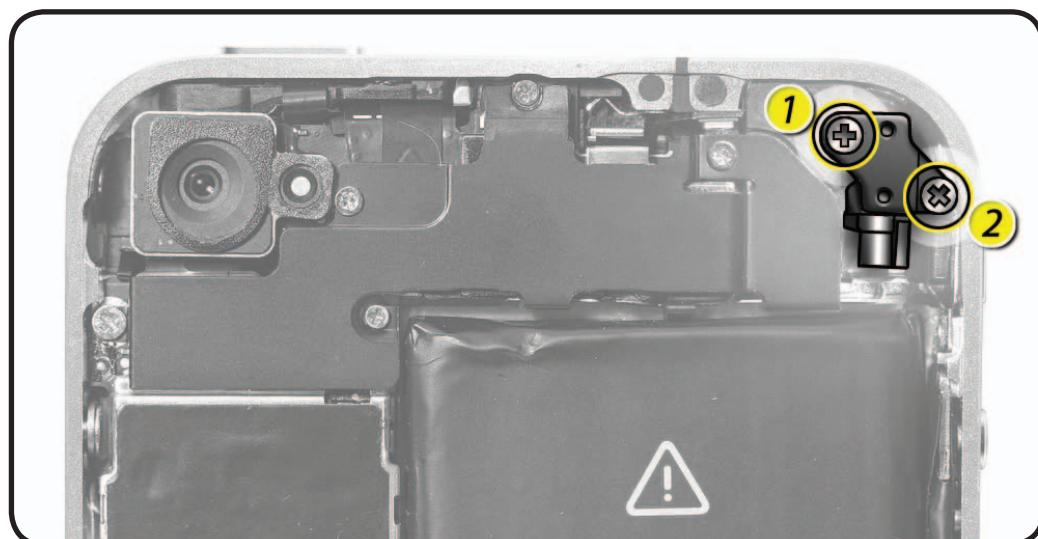


- 2 Install (2) new cross-head screws in the order shown using iPhone Torque Driver and JCIS #00 Bit.

Each screw bag in the kit is marked with the number of the location where it should be installed.

- Screw #1, 452-1845 (longer)
- Screw #2, 452-1765 (shorter)

**Important:** Do not reuse old screws.



- 3 **Reinstall back cover** following reassembly instructions in that chapter.

- 4 **Important:** Check main camera operation and LED flash alignment with the [Main Camera Test](#) procedure. If test fails, replace camera.



# Battery

Be sure you have read the [Safety: Battery Handling](#) section of this document.

## First Steps

- [Back Cover](#)



**WARNING:** If battery is dented, punctured or otherwise damaged, STOP! Reinstall back cover and replace whole unit.

**WARNING:** Do not reuse or reinstall a battery after it has been removed.

**Note:** A replacement battery kit (661-5691) includes a new adhesive pack, battery screw, and coax cowling.



## Tools

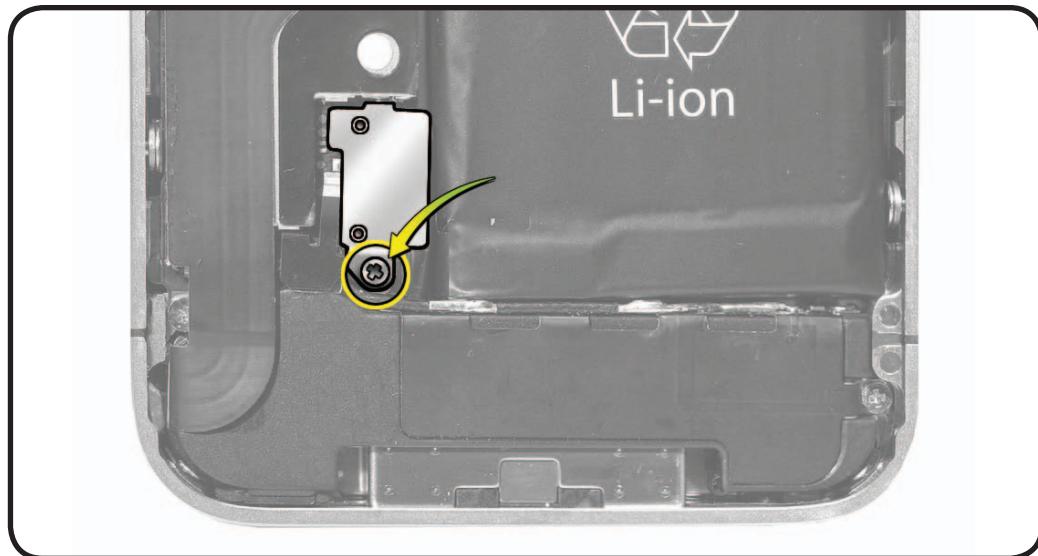
- iPhone Torque Driver (923-0031)
- JCIS #00 Bit (922-9947)
- Nylon Probe Tool (black stick, 922-5065)
- ESD-safe tweezers
- iPhone 4 Battery Fixture (923-0075)



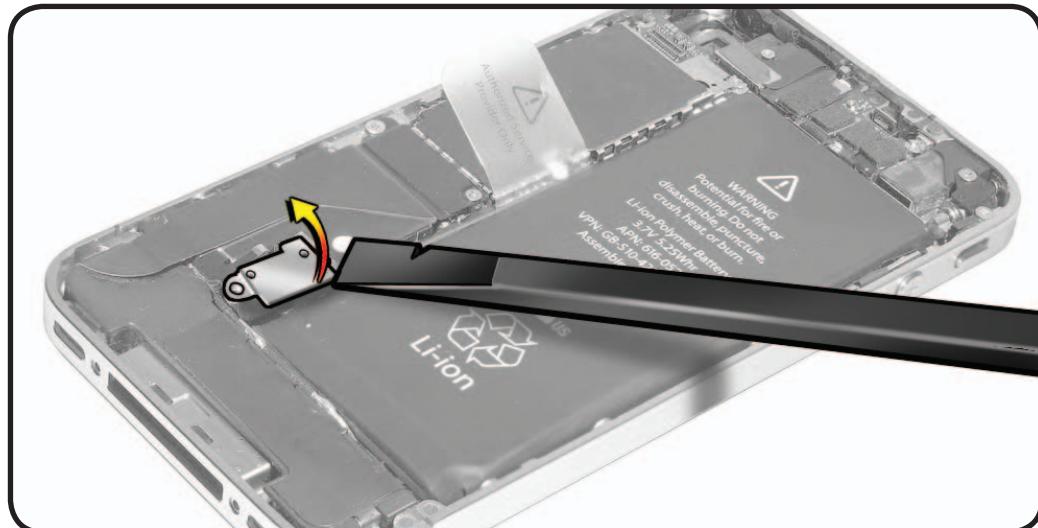


## Removal

- 1 Remove (1) cross-head screw from battery connector using iPhone Torque Driver and JCIS #00 Bit.



- 2 Lift battery connector from top right corner with a black stick.
- 3 Flex the connector up and out of the way.



- 4 Remove battery cowling that sits underneath battery connector.





- 5 Secure unit in iPhone 4 Battery Fixture tray.

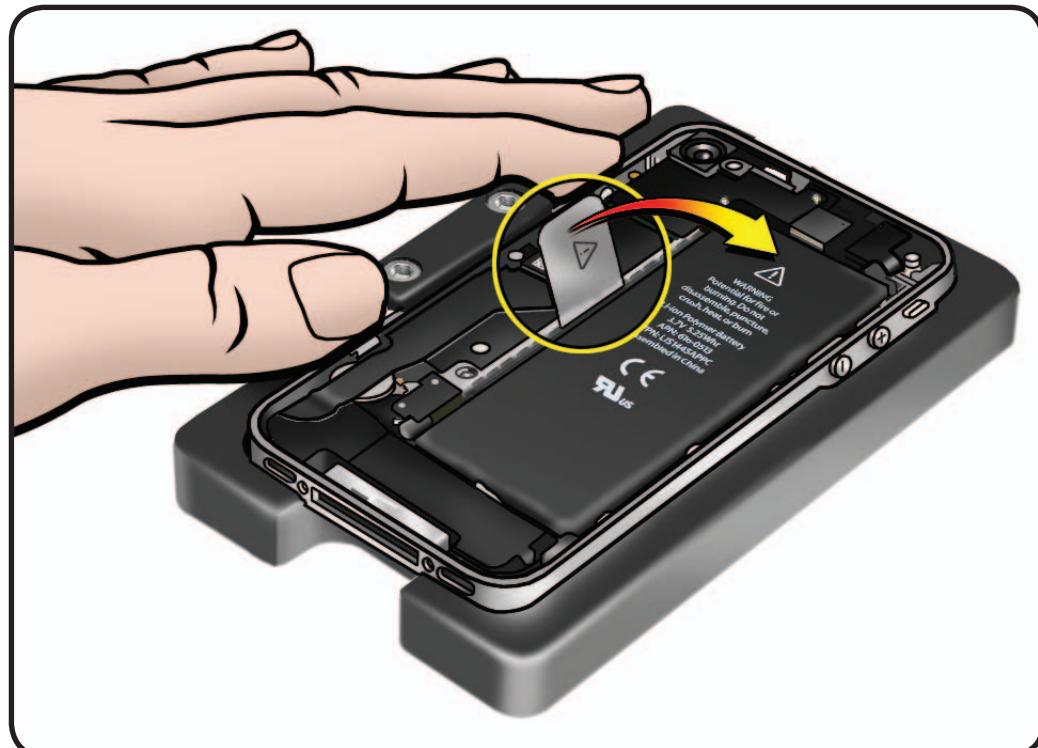


- 6 Holding tray down with one hand, pull battery removal tab firmly and steadily to free battery from adhesive underneath.

The battery will usually release all at once.



**Warning:** If tab breaks off, do not use tools to pry up battery. In this situation, replace the phone as a whole unit.

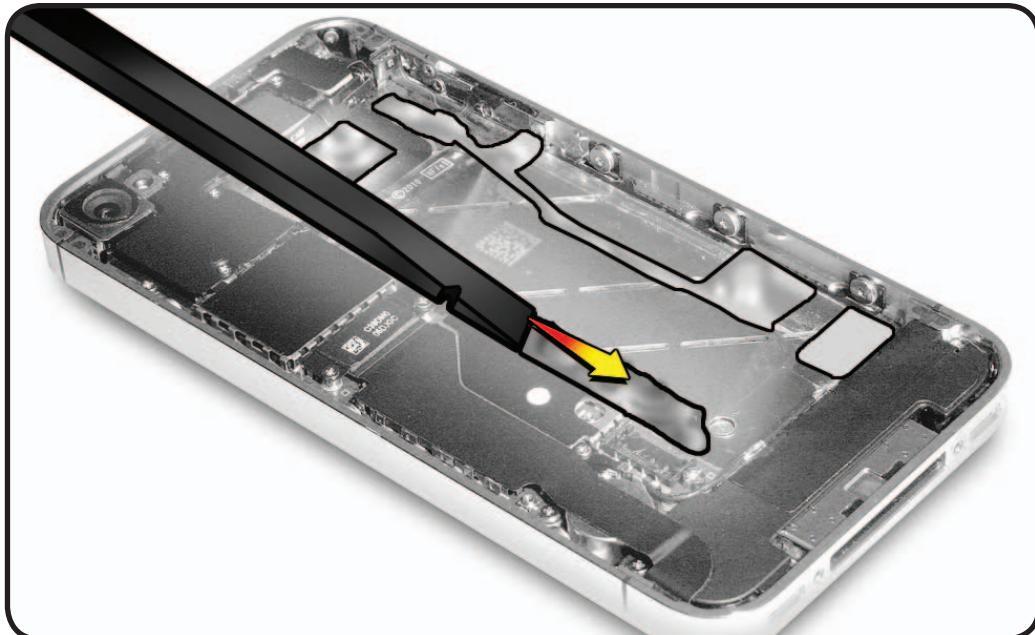




- 7 Remove old adhesive from mid-plate.

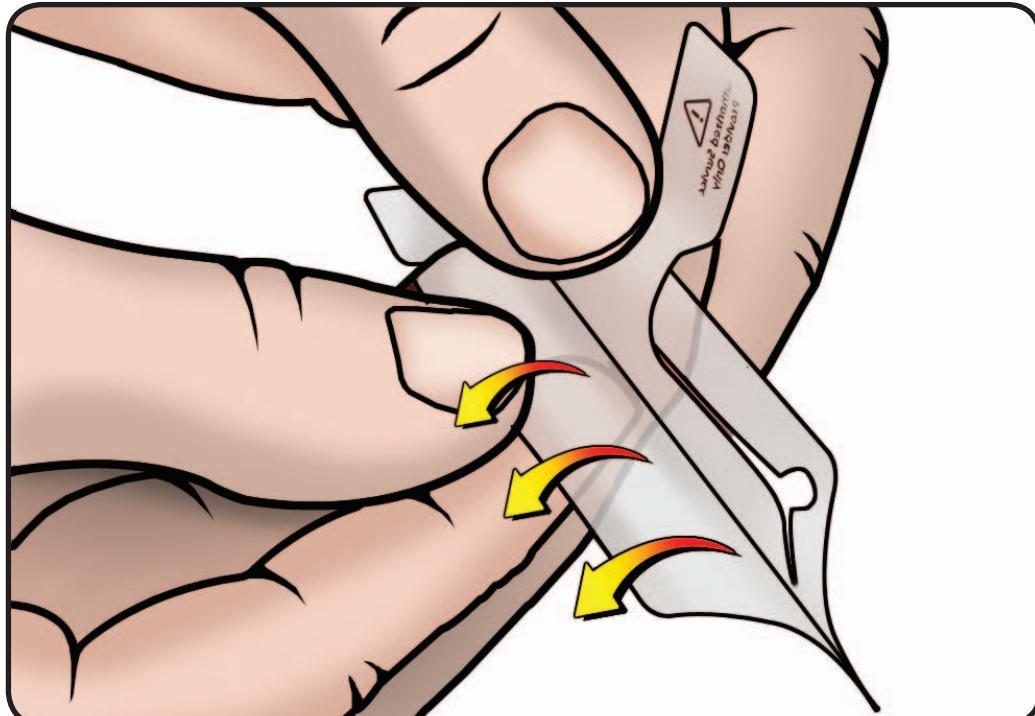
**Caution:** Be careful of flex cables and other components while removing adhesive.

**Caution:** Do not use cleaning agents to remove the battery adhesive. A black stick can easily lift the adhesive and allow it to be peeled up.



## Reassembly

- 1 Peel backing from bottom side of new adhesive pack.
- 2 Remove iPhone from Battery Removal Fixture.

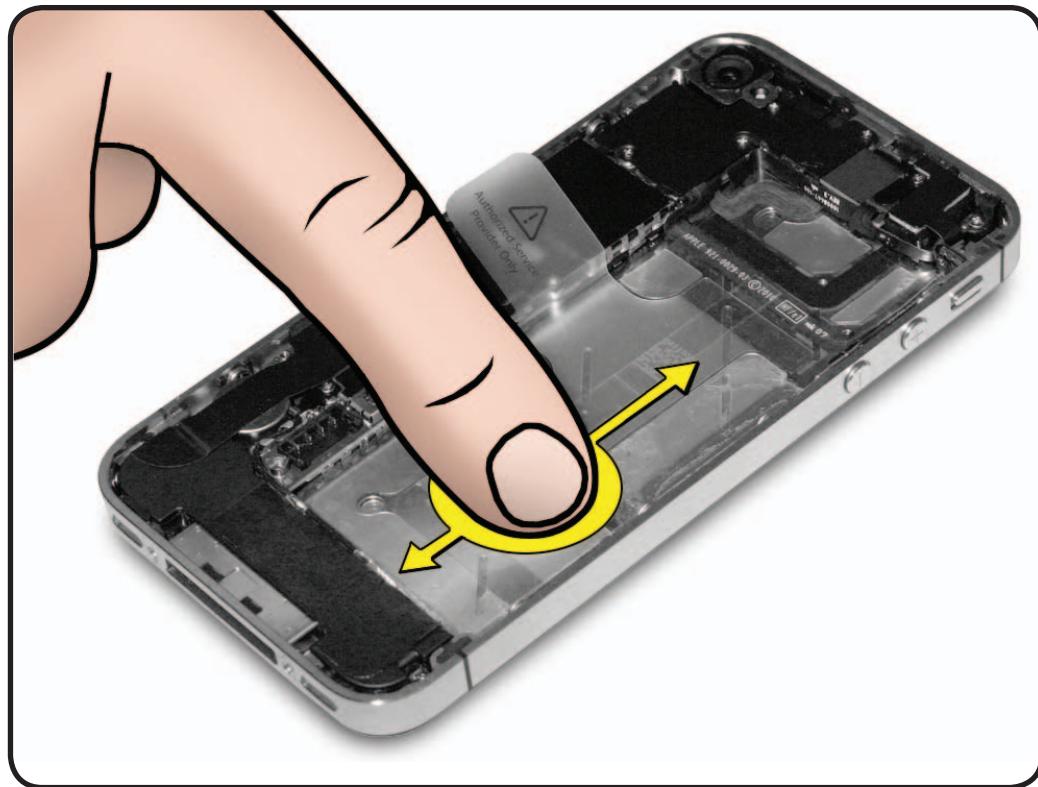




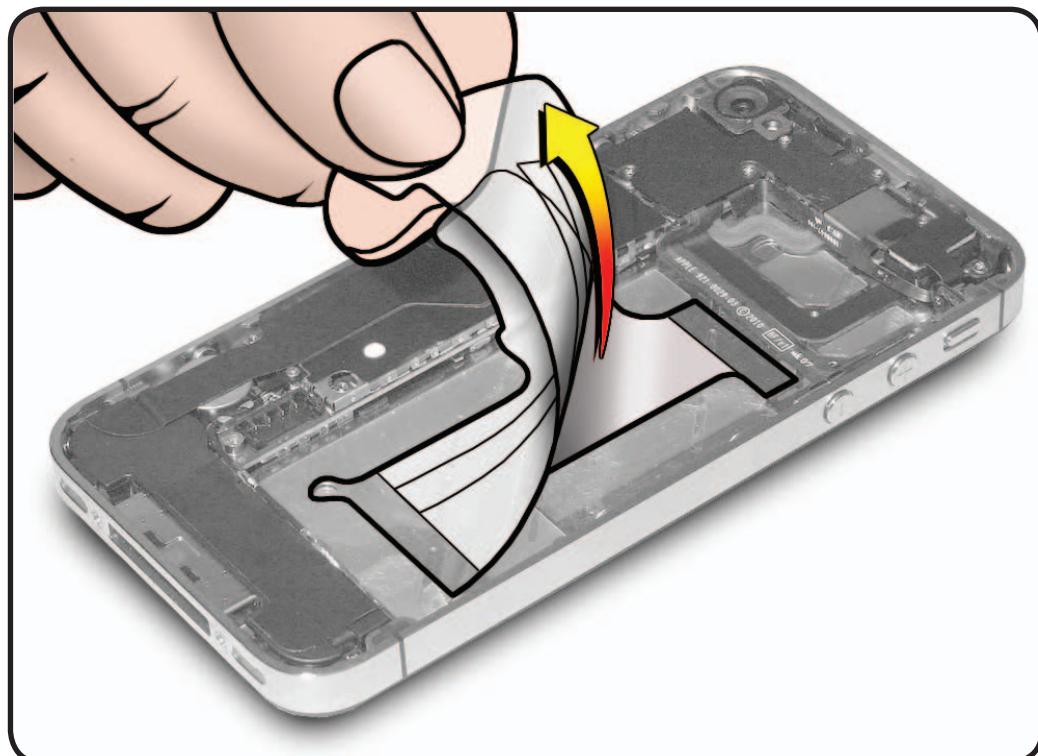
- 3** Position new adhesive so the holes align with landmarks on mid-plate.

**Note:** Using a piece of tape folded into a tab on top of the adhesive pack will make it easier to align with the holes on the mid-plate.

- 4** Use your finger or a black stick to press the adhesive into place, smoothing out all air bubbles.



- 5** Peel second backing to expose adhesive that will adhere to battery.





6 Press battery connector down onto logic board.

7 Position battery against main board.

8 Carefully lay battery down into well, making sure it is centered.

**Caution:** Make sure battery does not scrape against the camera cowling.

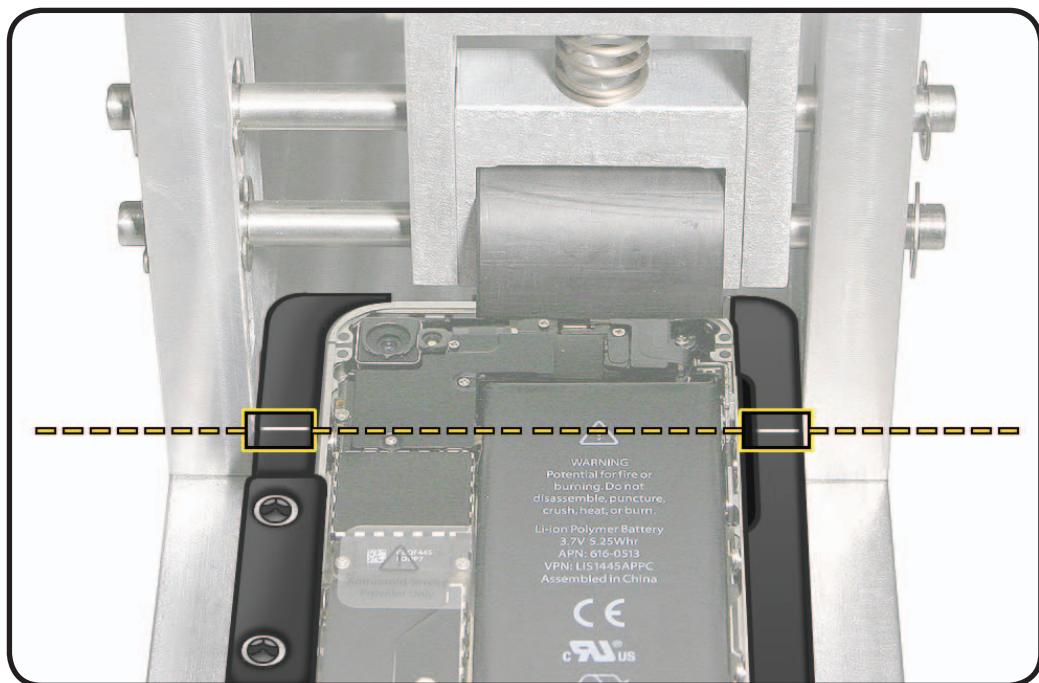


9 If unit had been removed from iPhone 4 Battery Fixture tray, reinsert unit into tray.

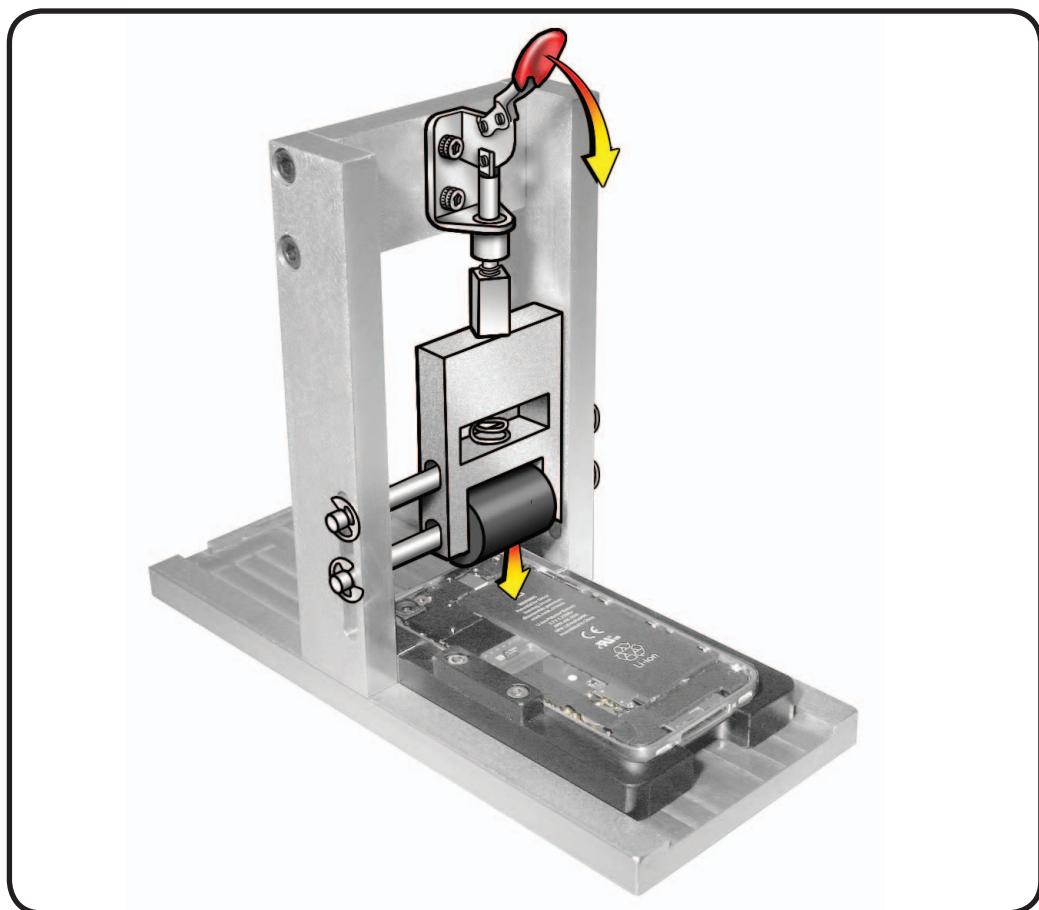




- 10** Put tray into iPhone 4 Battery Fixture, aligning white marks on tray with front edge of vertical tower.



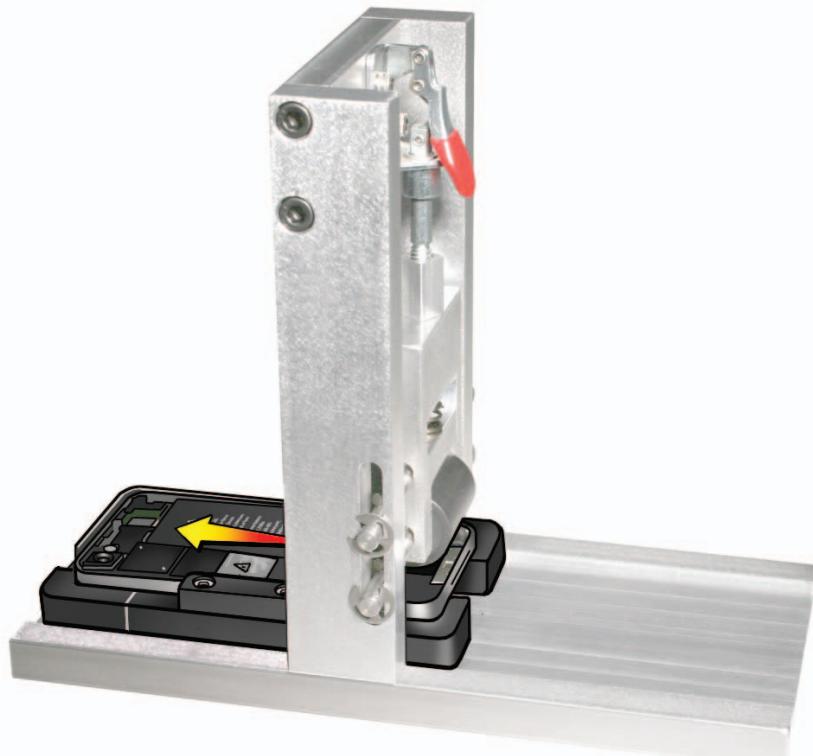
- 11** Lower red lever to move pressure roller into place above iPhone battery.





**12** Slide tray through vertical tower.

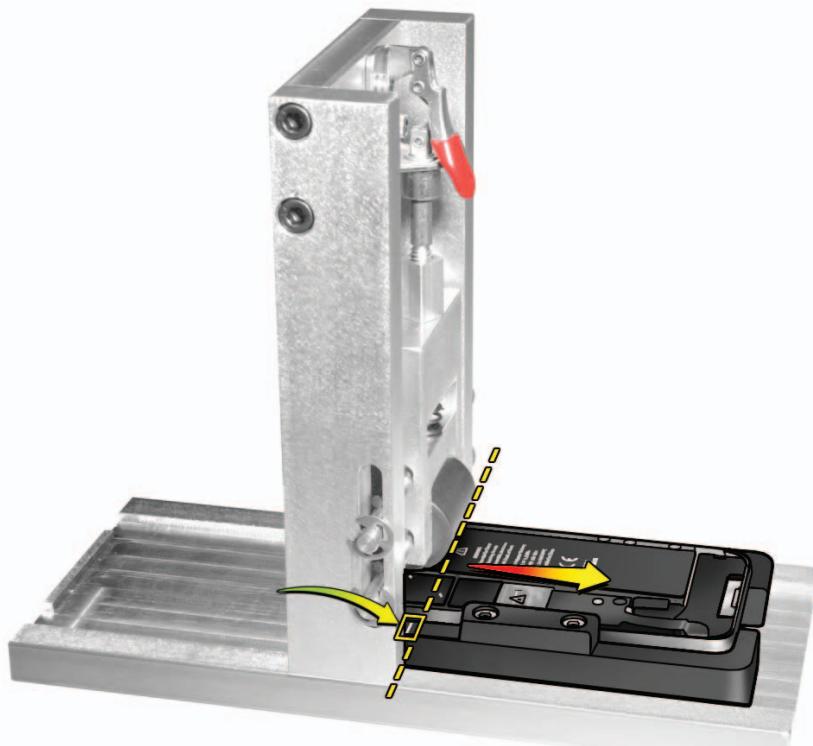
This will cause the roller to press the battery down onto the adhesive pack.





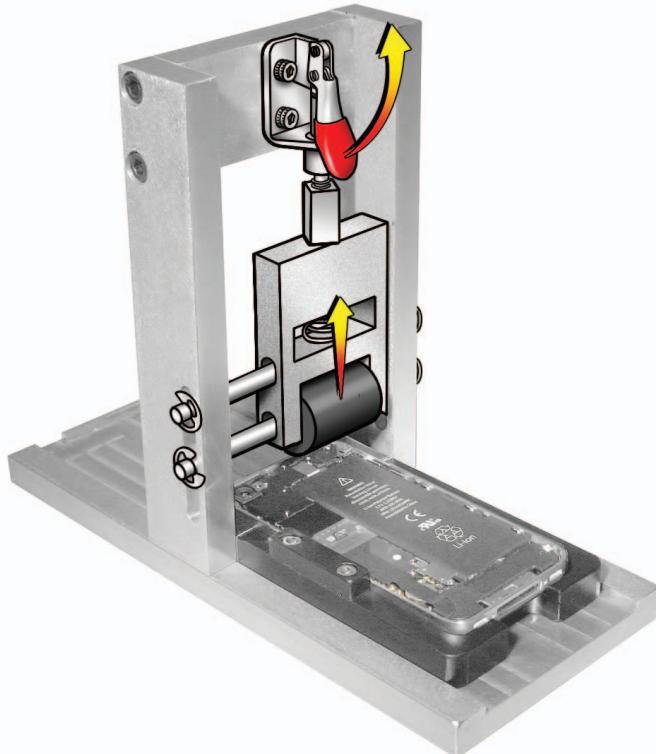
- 13** Slide tray back through vertical tower to original position.

**Important:** Only slide the tray back to the point where the white marks align with the front of the tower.



- 14** Raise red lever to raise pressure roller.

- 15** Remove iPhone from fixture.





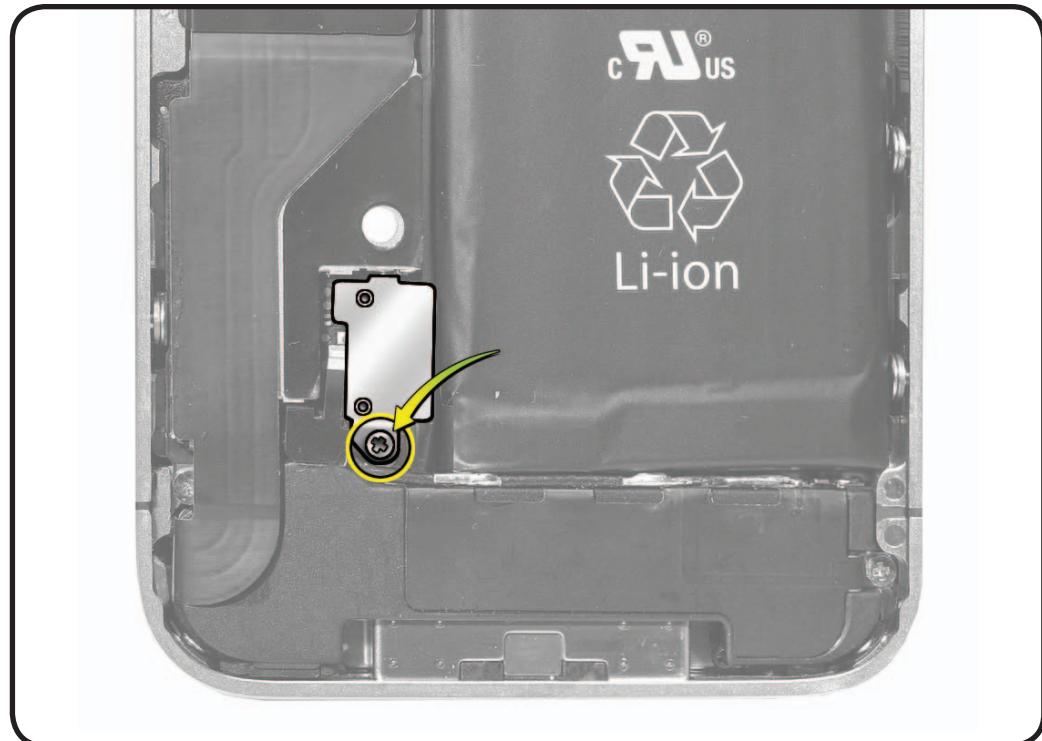
- 16** Make sure coax cable connector is securely attached to logic board, then install new battery cowling.



- 17** Press battery connector down onto logic board.

- 18** Install (1) **new** cross-head screw (452-1849) at battery connector using iPhone Torque Driver and JCIS #00 Bit.

**Important:** Do not reuse old screw.



- 19** [Reinstall back cover](#) following reassembly instructions in that chapter.

- 20** **Important:** Check main camera operation and LED flash alignment with the [Main Camera Test](#) procedure. If test fails, replace camera.



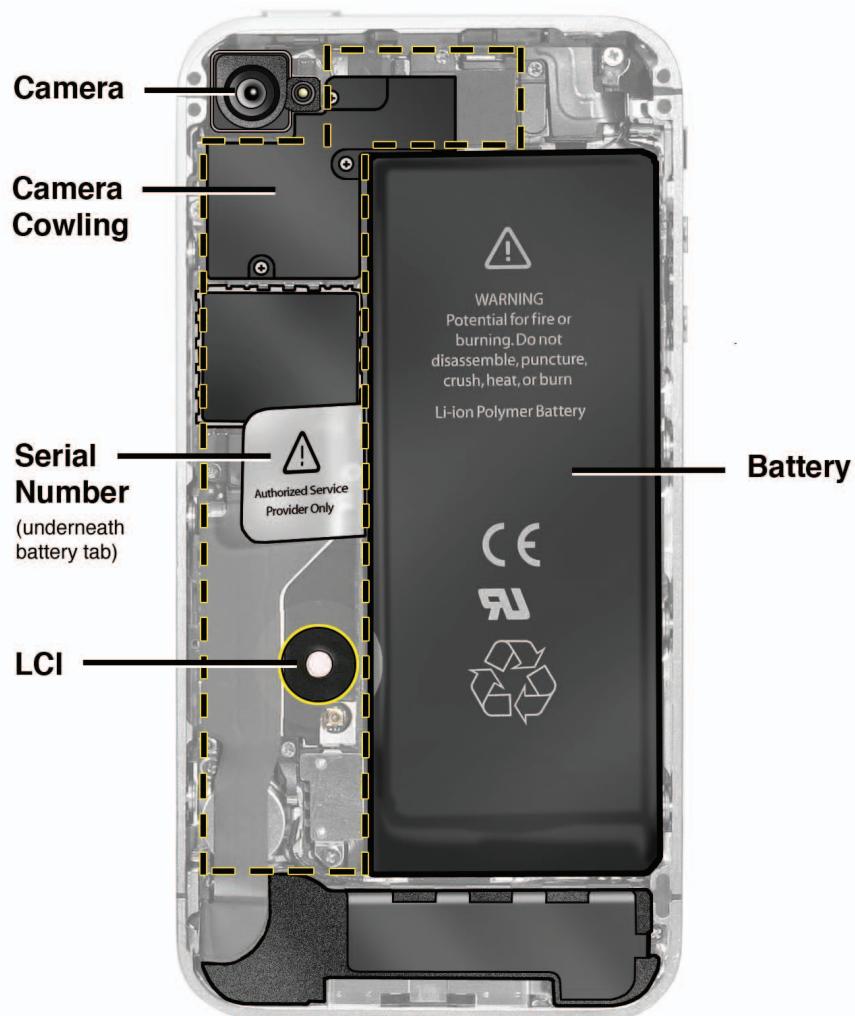
## **Take Apart – iPhone 4 (CDMA model)**

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# Internal View

Internal view of the iPhone 4 (CDMA model), Model A1349:





# Service Parts

## Service Parts for iPhone 4 (CDMA model)

Description	Part Number	Kit Contents
<b>Back Cover</b>	see next page	(1) back cover (2) 452-2055 dock screws
<b>Torx Security Screw Kit</b>	<b>922-9786</b>	(200) dock screws
<b>Camera Kit, Black</b>	<b>661-5873</b>	(1) camera with black LED ring (1) camera cowling (1) 452-1846 screw, large (4) 452-2069 screws, small (2) 452-2055 dock screws
<b>Camera Kit, White</b>	<b>661-5894</b>	(1) camera with silver LED ring (1) camera cowling (1) 452-1846 screw, large (4) 452-2069 screws, small (2) 452-2055 dock screws
<b>Battery Kit</b>	<b>661-5872</b>	(1) battery (1) battery adhesive pack (1) 452-2070 screw (2) 452-2055 dock screws
<b>Battery Adhesive Kit</b>	<b>922-9787</b>	(10) battery adhesive packs



## Back Cover Identification

The back cover of iPhone 4 includes glass that is very similar to the front cover glass. It is possible to crack the back cover glass. A damaged back cover should be replaced if this occurs.

- Refer to the **Visual Mechanical Inspection** guidelines to determine warranty coverage for cracked glass.
- Affix packing tape to damaged back cover glass before removal to prevent injury and scattering of broken glass.

**Important:** The back cover includes regulatory compliance markings and text. It is important to match the replacement back cover with the original back cover to comply with legal requirements.

The following table will help you identify the correct back cover for the model being repaired by comparing regulatory registration numbers on the user's iPhone.

### Black iPhone 4 (CDMA model)

Regulatory Markings	iPhone	iPhone
	Designed by Apple in California Assembled in China Model No.: A1349 EMC No.: 2422 FCC ID: BCG-E2422A	Designed by Apple in California Assembled in China Model No.: A1349 EMC No.: 2422 FCC ID: BCG-E2422B
FCC ID	BCG-E2422A	BCG-E2422B
Apple Part Number	922-9785	922-9831

### White iPhone 4 (CDMA model)

Regulatory Markings	iPhone	iPhone
	Designed by Apple in California Assembled in China Model No.: A1349 EMC No.: 2422 FCC ID: BCG-E2422A	Designed by Apple in California Assembled in China Model No.: A1349 EMC No.: 2422 FCC ID: BCG-E2422B
FCC ID	BCG-E2422A	BCG-E2422B
Apple Part Number	922-9907	922-9788



# Back Cover

## First Steps

- Refer to the **Visual Mechanical Inspection** guidelines to determine any accidental damage.
- Remove any cases or screen protectors.

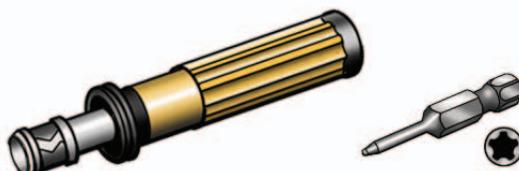
**Caution:** If back cover glass is broken, affix packing tape before removal to prevent injury and scattering of glass.

**Important:** The back cover includes regulatory compliance markings and text, and must be replaced like-for-like. Refer to [Back Cover Identification](#) section.



## Tools

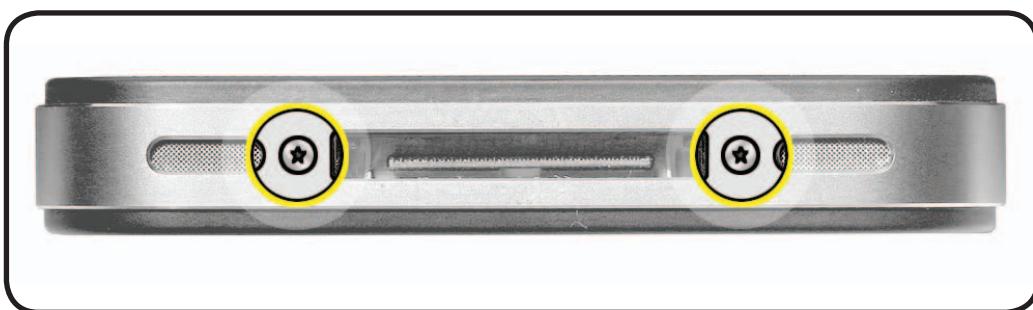
- iPhone Torque Driver (923-0031)
- iPhone Torx Security Bit (922-9627)





## Removal

- 1 Remove (2) dock screws on bottom of phone using iPhone Torque Driver and iPhone Torx Security Bit.



- 2 Slide back cover up to release locking tabs and lift off body of iPhone.



**WARNING:** If battery is dented, punctured or otherwise damaged, STOP! Reinstall back cover and replace whole unit.

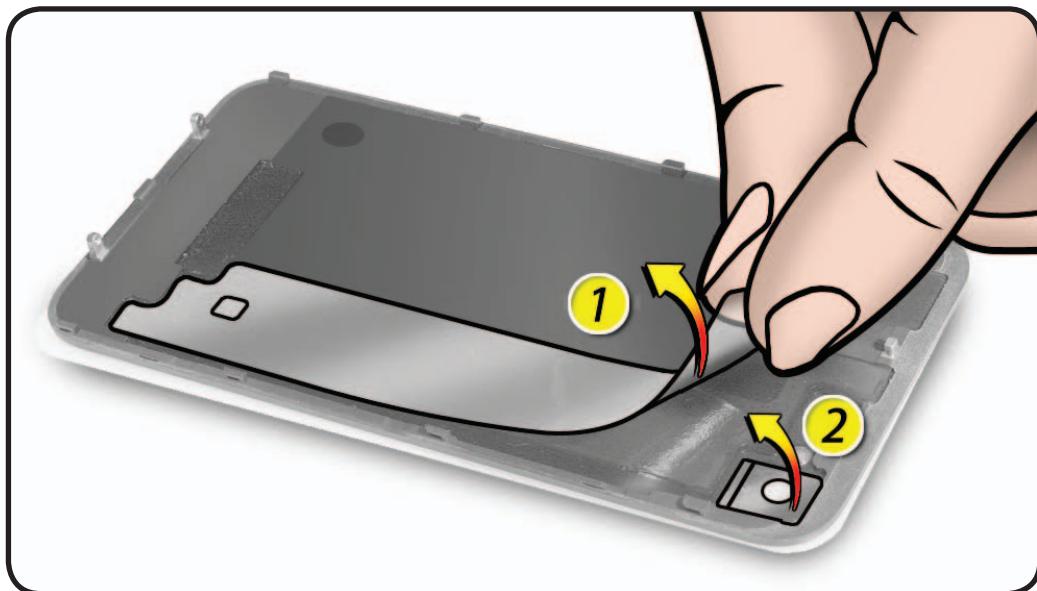




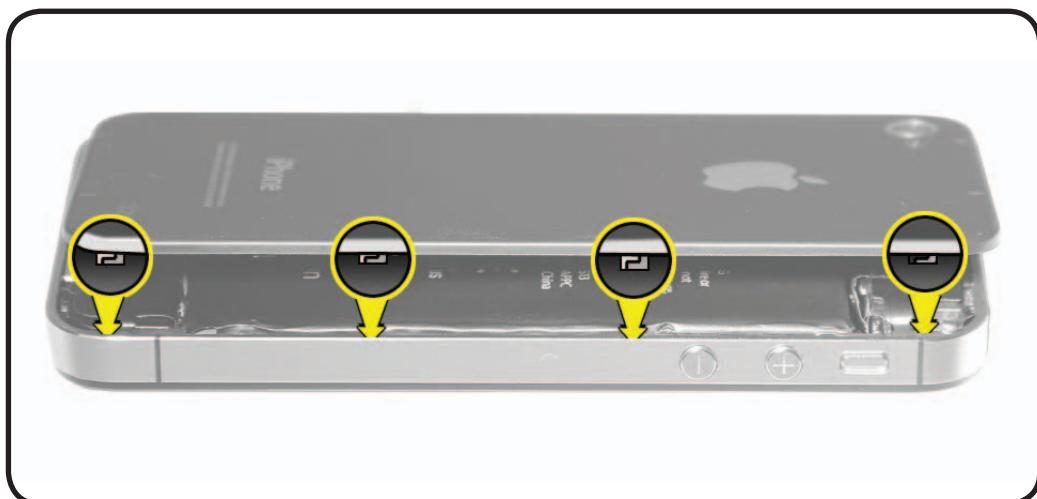
## Reassembly

- 1 If installing a new replacement back cover, remove 2 pieces of clear protective film covering camera lens.

**Note:** It may be helpful to use a black stick to peel up a corner of the protective film.



- 2 Place back cover on iPhone body, aligning locking tabs so back cover sits flush against metal band.

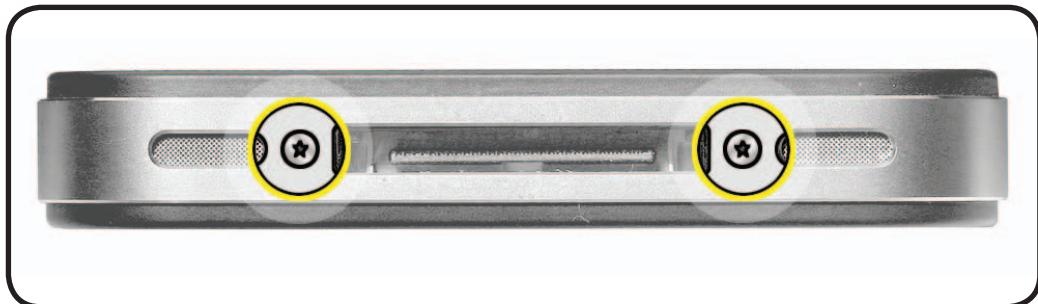




- 3** Slide back cover down and into the locked position.



- 4** Insert (2) **new** dock screws (452-2055) on bottom of phone and tighten using iPhone Torque Driver with iPhone Torx Security Bit.



**Important:** Do not reuse old screws.

- 5** **Important:** Check main camera operation and LED flash alignment with the [Main Camera Test](#) procedure. If test fails, replace camera.



# Internal Checks

## Internal Liquid Contact Indicator

The iPhone 4 (CDMA model) contains one internal liquid contact indicator (LCI) on the shield of the main board. If the LCI is activated (red), it indicates contact with liquid, which can cause damage that is not covered under warranty and is not eligible for modular repair, but is eligible for Out-of-Warranty (OOW) paid whole unit replacement.

**Important:** If an internal LCI is activated or corrosion is present, reassemble the device and do not proceed with modular repair.



## Missing Internal Parts

If there are missing internal components or parts, it is considered evidence of disassembly or modification, which:

- is NOT covered under warranty
- MAY qualify for a paid repair.

For more information, see Apple Support article [TS3756: iPhone and iPad: Handling service requests when device has missing or modified parts](#).



## Serial Number Barcode

With the back cover removed, the serial number is printed in both human-readable and 2D barcode formats on a label beneath the battery pull tab.





# Main Camera

## First Steps

- [Back Cover](#)

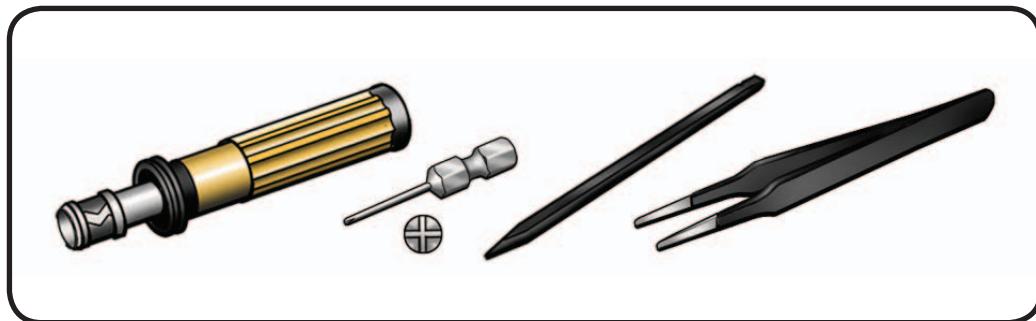
**Note:** A replacement camera kit includes a new camera cowling and new screws.

**Important:** Do not reuse old screws.



## Tools

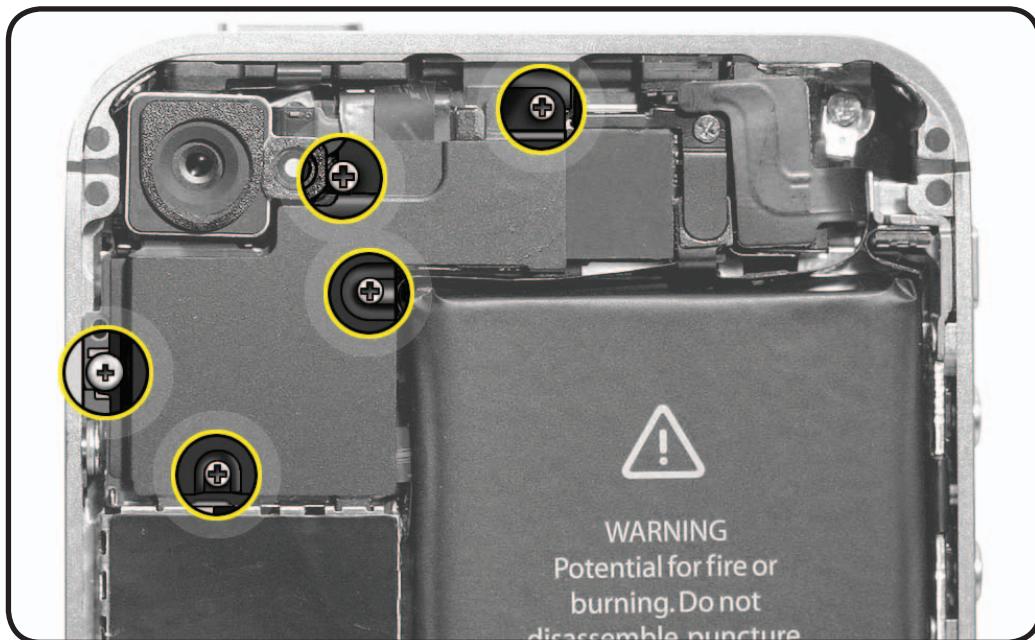
- iPhone Torque Driver (923-0031)
- JCIS #00 Bit (922-9947) for cross-head screws
- Nylon Probe Tool (black stick, 922-5065)
- ESD-safe tweezers



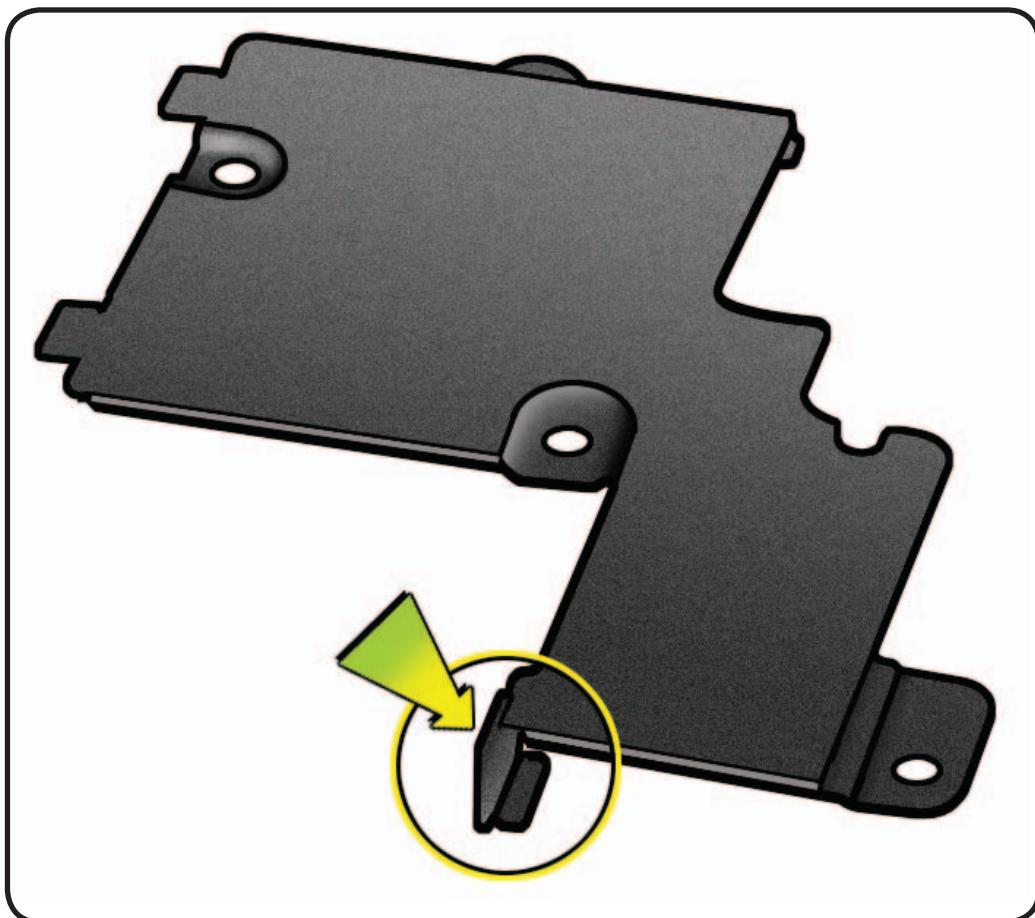


## Removal

- 1 Remove (5) cross-head screws from camera cowling using iPhone Torque Driver and JCIS #00 Bit.



- 2 Note that camera cowling (here shown removed from unit and rotated 90 degrees clockwise) has a hook that catches under logic board.

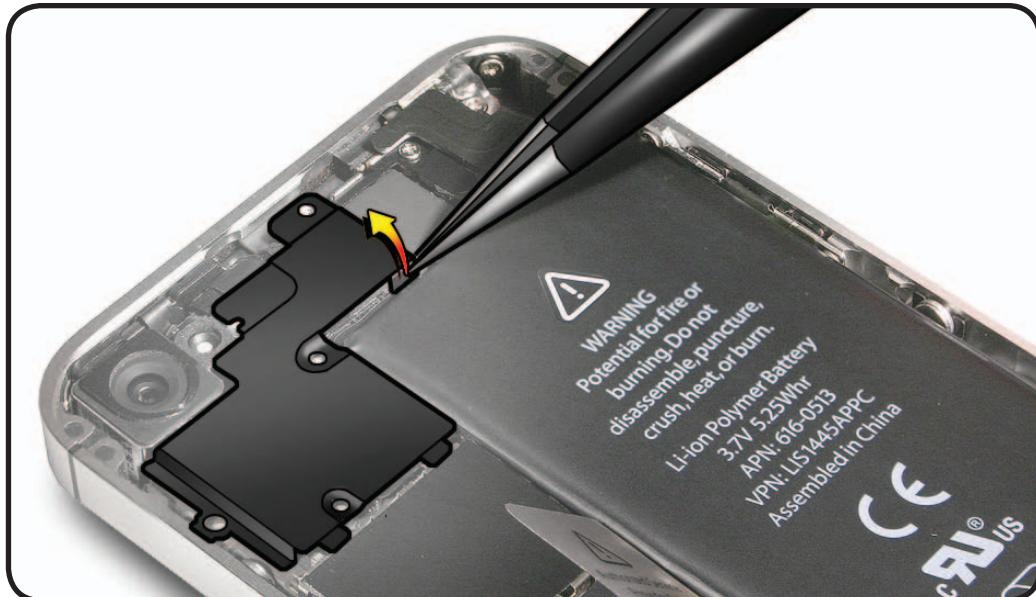




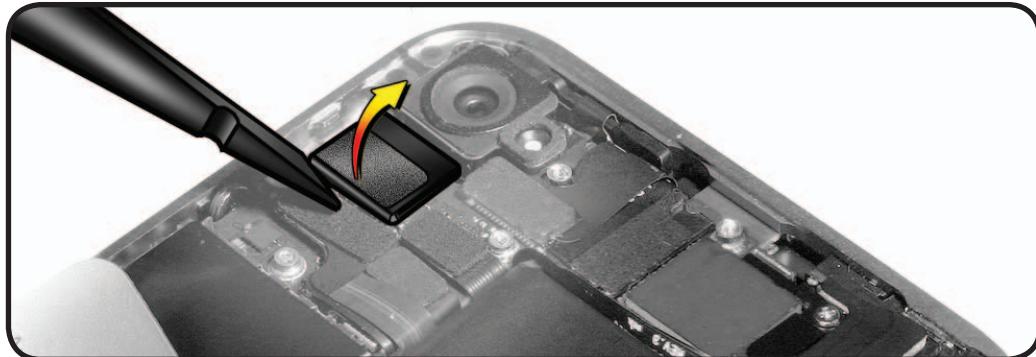
- 3** Grasp camera cowling with tweezers as shown and gently pull towards battery to free hook from under logic board.

**Warning:** Be careful not to tear or puncture the battery.

- 4** Lift camera cowling and remove from unit.

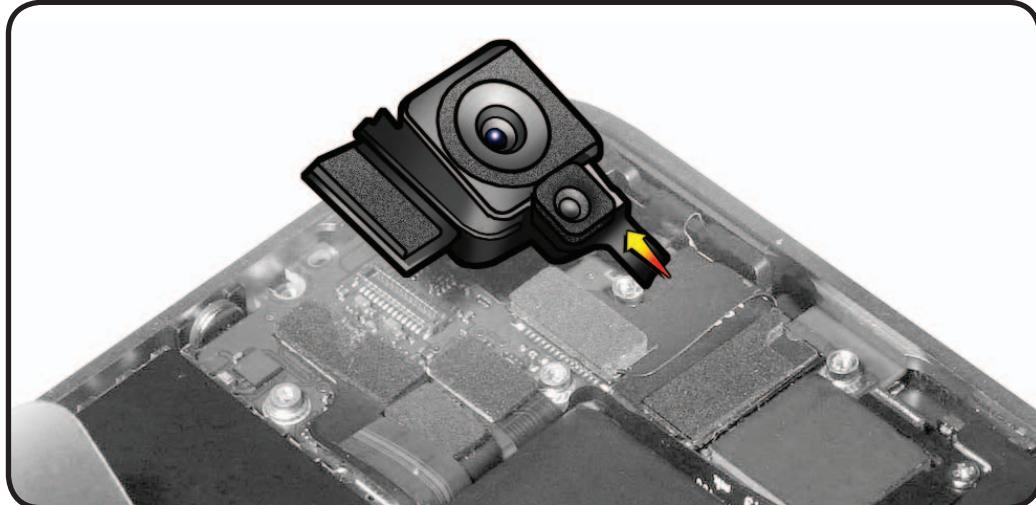


- 5** Gently lift camera connector from logic board using a black stick.



- 6** Lift camera out.

Note short tab that extends out from LED flash and slides underneath flex cable attached to logic board.





- 7 Remove and save the small black rubber camera pan from rear of camera. This part will be reused with a new camera.

Note that pan may become detached from camera. Check mid-plate below camera.

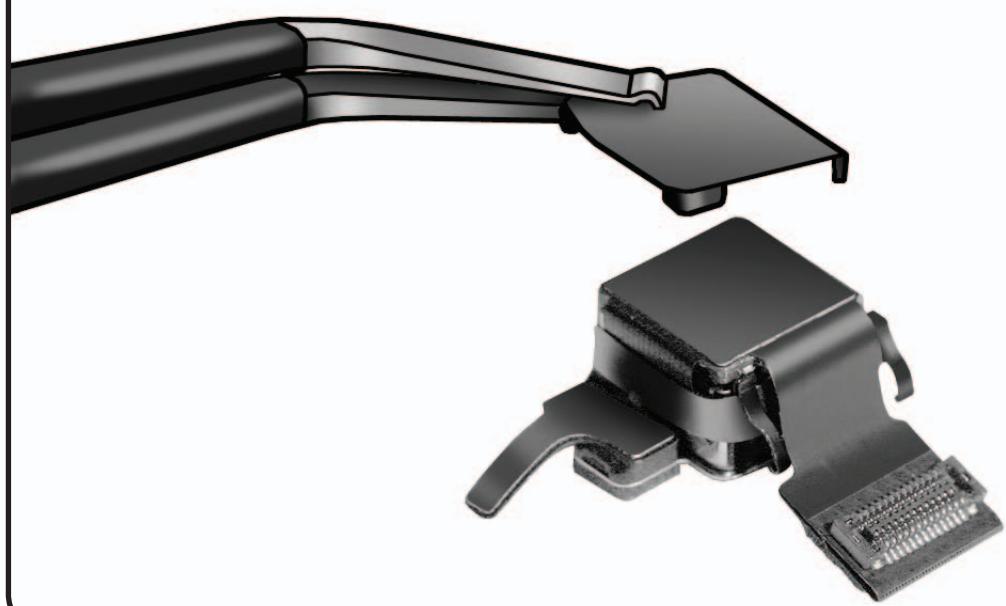


## Reassembly

- 1 Position camera pan on bottom side of camera.

**Important:**

Note orientation of camera pan as shown. The two open edges should be placed on the two sides of the camera that have flex cables.

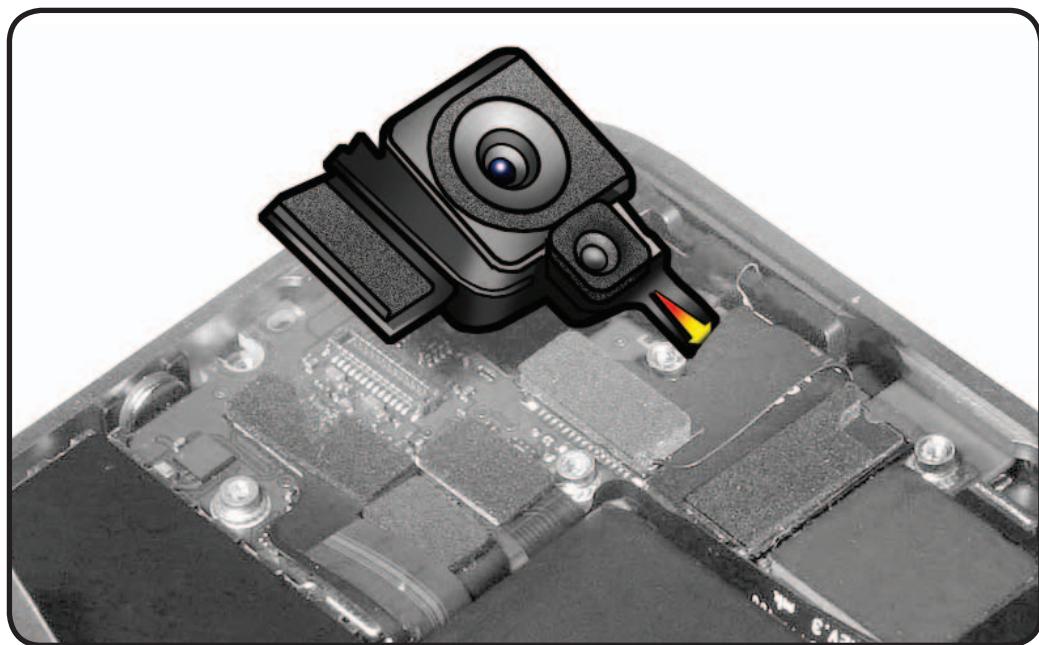




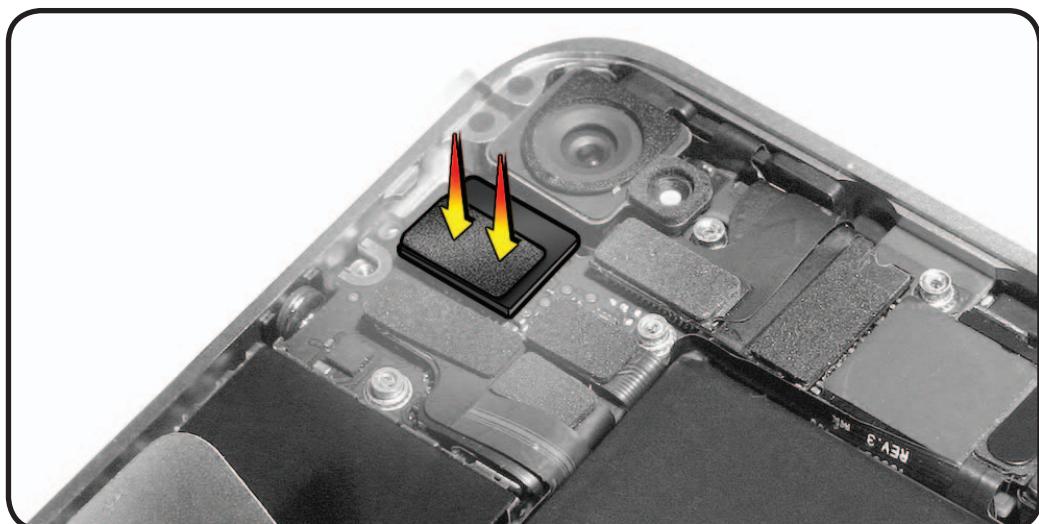
- 2** Place camera into iPhone, sliding tab under flex cable.

**Important:** Be sure camera pan stays correctly oriented on bottom of camera.

**Important:** Be careful not to touch the camera lens.



- 3** Press connector down onto logic board until it snaps into position.





- 4** Place camera cowling into position as shown, using tweezers to hook underneath logic board.

**Warning:** Be careful not to tear or puncture the battery.

- 5** Install (5) new cross-head screws using iPhone Torque Driver and JCIS #00 Bit.

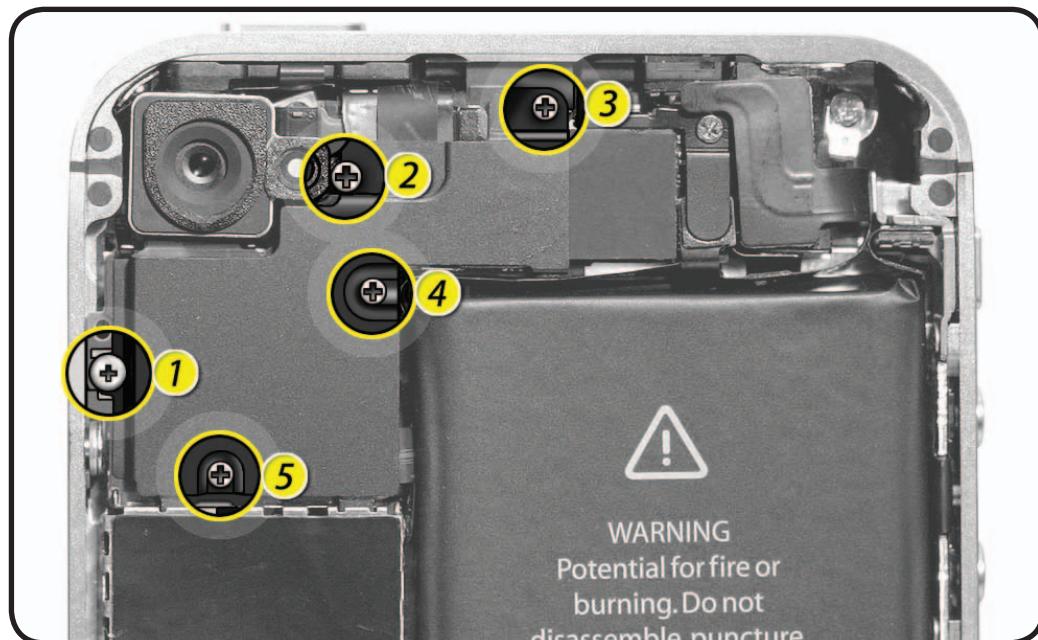
**Important:** Do not reuse old screws.

**Note:** Four screws (452-2069) are the same size. One screw (452-1846, at left edge near band) is larger.

- 6** Verify the main camera is sitting flush with the band and is evenly aligned.

- 7** [Reinstall back cover](#) using 2 new dock screws (452-2055) included in kit.

- 8** **Important:** Check main camera operation and LED flash alignment with the [Main Camera Test](#) procedure. If test fails, replace camera.





# Battery

Be sure you have read the [Safety: Battery Handling](#) section of this document.

## First Steps

- [Back Cover](#)



**WARNING:** If battery is dented, punctured or otherwise damaged, STOP! Reinstall back cover and replace whole unit.

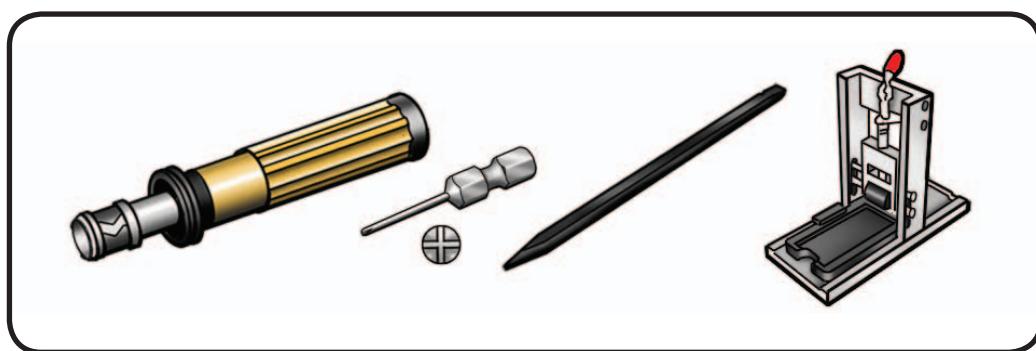
**WARNING:** Do not reuse or reinstall a battery after it has been removed.

**Note:** A replacement battery kit includes a new adhesive pack and new screws. Do not reuse old screws.



## Tools

- iPhone Torque Driver (923-0031)
- JCIS #00 Bit (922-9947) for cross-head screws
- Nylon Probe Tool (black stick, 922-5065)
- iPhone 4 Battery Fixture (923-0075)





## Removal

- 1 Remove (1) cross-head screw from battery connector using iPhone Torque Driver and JCIS #00 Bit.



- 2 Lift battery connector from top right corner with a black stick.





- 3 Secure unit in iPhone 4 Battery Fixture tray.

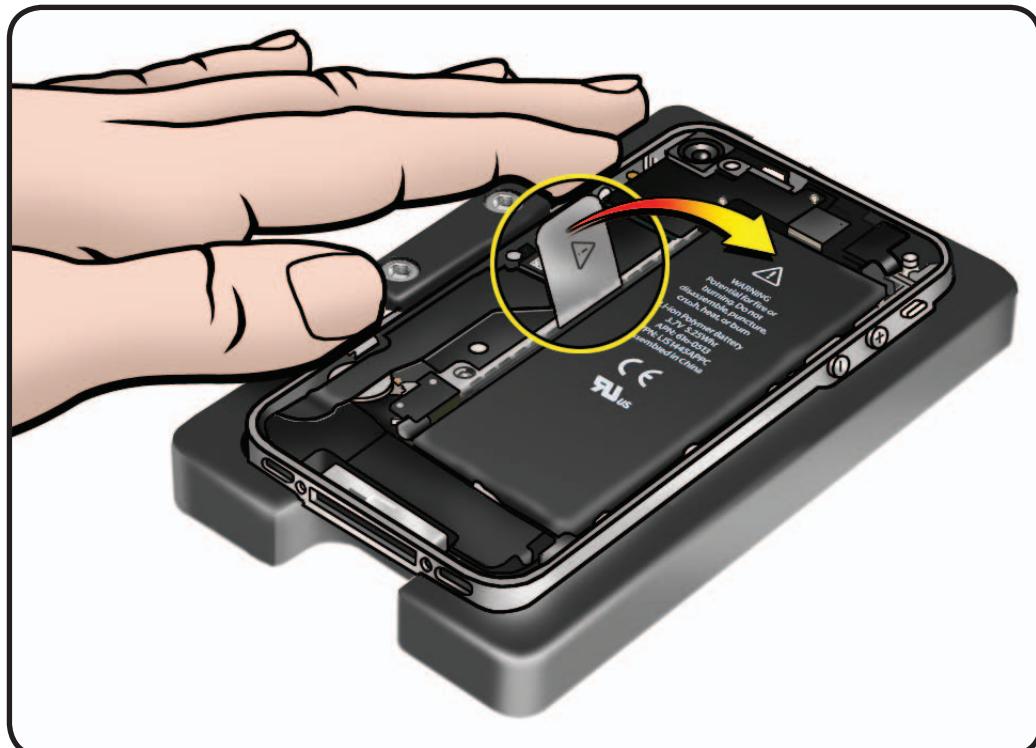


- 4 Holding tray down with one hand, pull battery removal tab firmly and steadily to free battery from adhesive underneath.

The battery will usually release all at once.



**Warning:** If tab breaks off, do not use tools to pry up battery. In this situation, replace the phone as a whole unit.

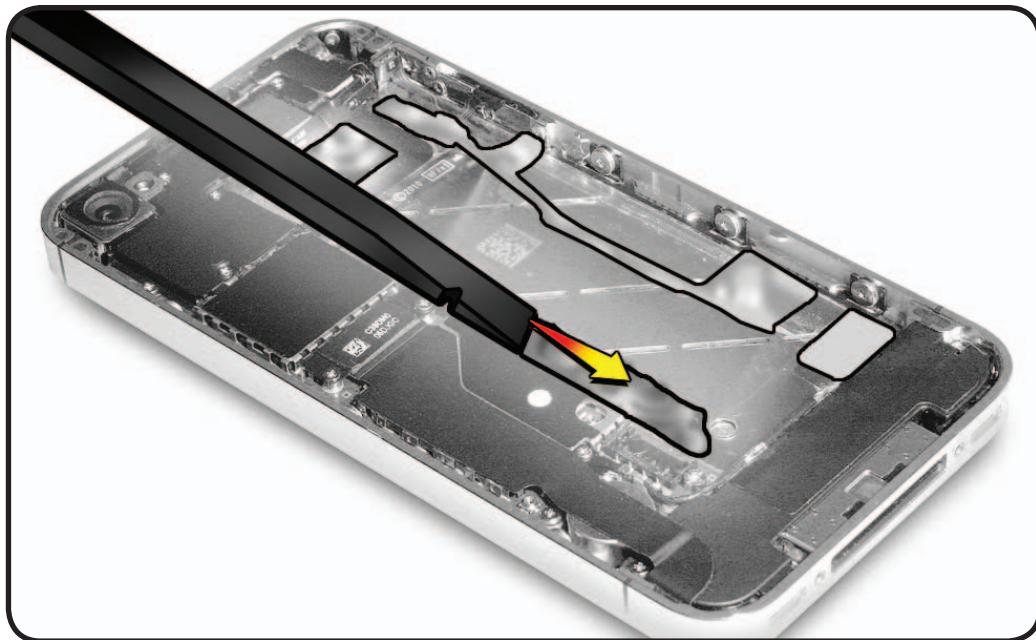




- 5 Remove old adhesive from mid-plate.

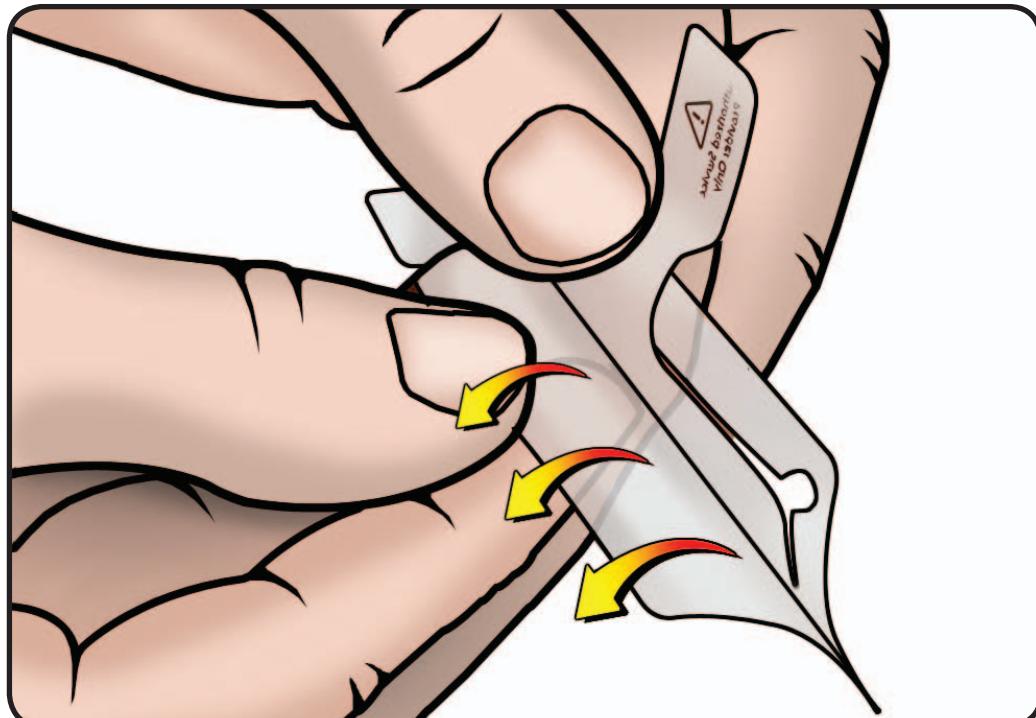
**Caution:** Be careful of flex cables and other components while removing adhesive.

**Caution:** Do not use cleaning agents to remove the battery adhesive. A black stick can easily lift the adhesive and allow it to be peeled up.



## Reassembly

- 1 Peel backing from bottom side of new adhesive pack.
- 2 Remove iPhone from Battery Removal Fixture.

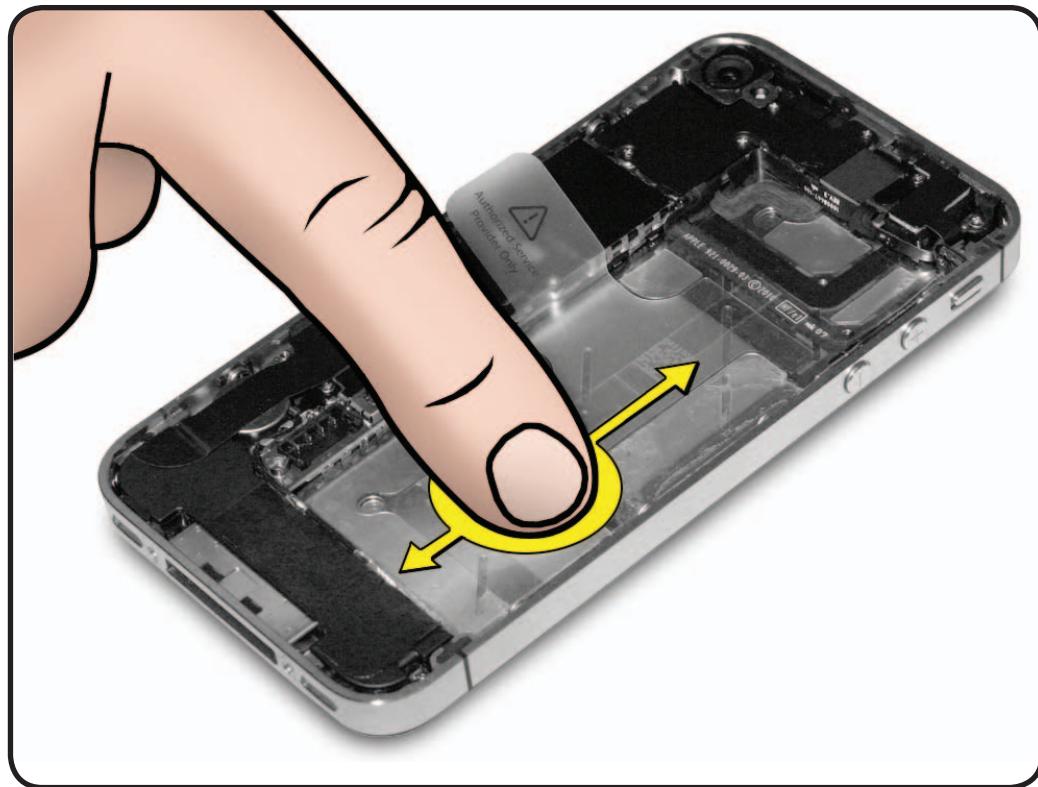




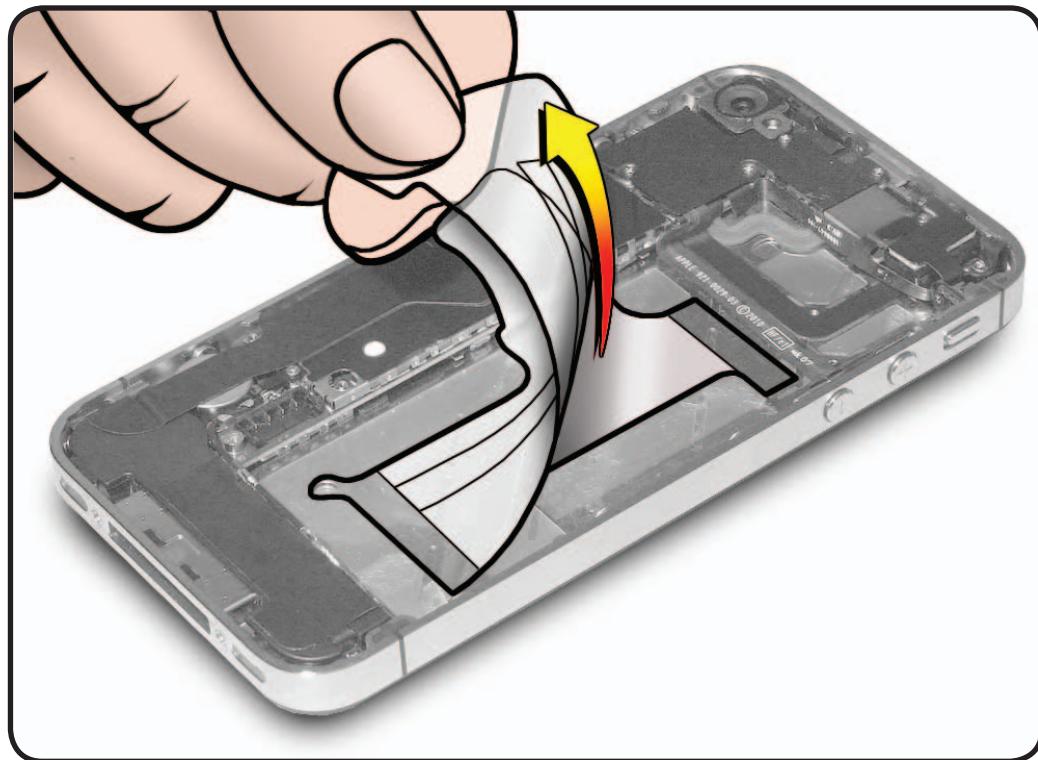
- 3** Position new adhesive so it aligns with landmarks on mid-plate.

**Note:** Using a piece of tape folded into a tab on top of the adhesive pack will make it easier to align with the mid-plate.

- 4** Use your finger or a black stick to press the adhesive into place, smoothing out all air bubbles.



- 5** Peel second backing to expose adhesive that will adhere to battery.





6 Press battery connector down onto logic board.

7 Position battery against main board.

8 Carefully lay battery down into well, making sure it is centered.

**Caution:** Make sure battery does not scrape against the camera cowling.

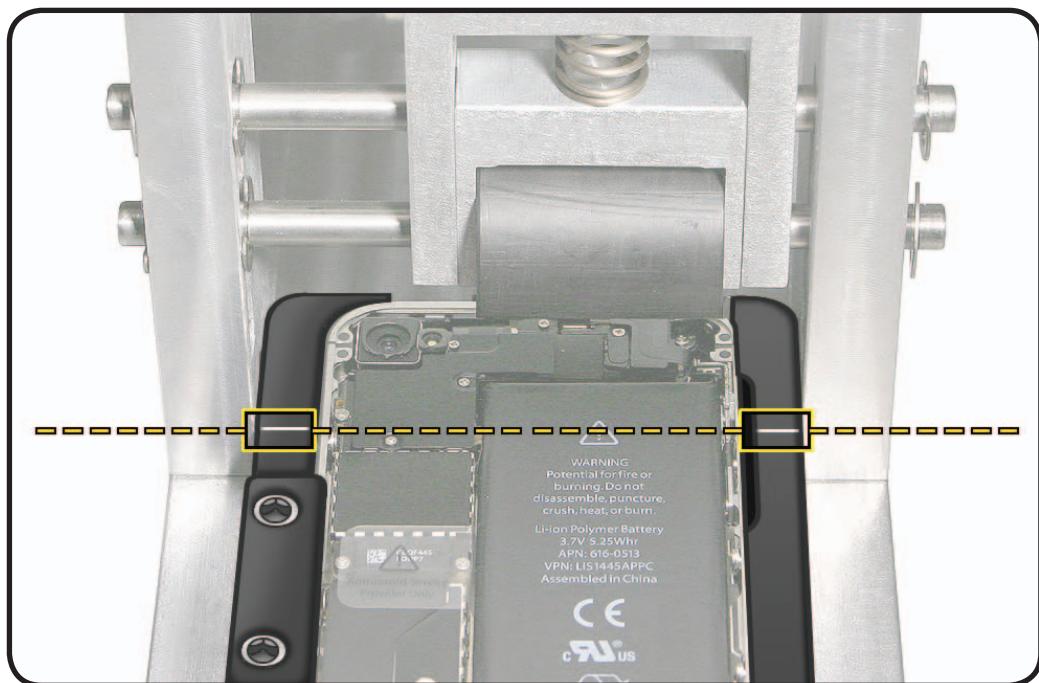


9 If unit had been removed from iPhone 4 Battery Fixture tray, reinsert unit into tray.

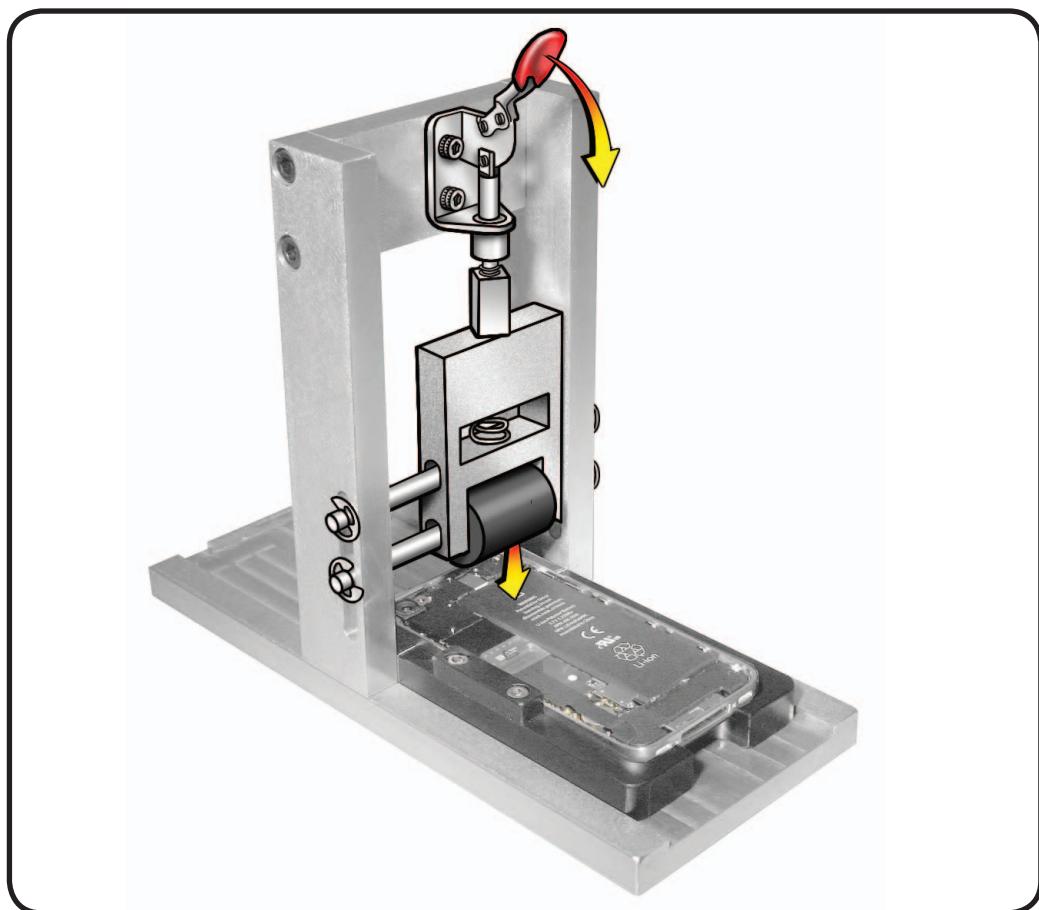




- 10** Put tray into iPhone 4 Battery Fixture, aligning white marks on tray with front edge of vertical tower.



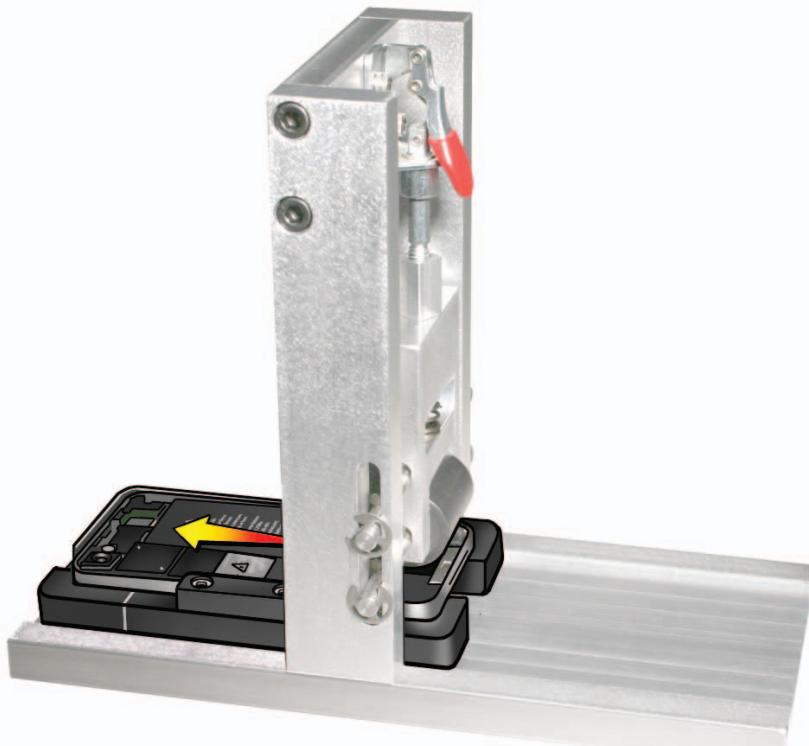
- 11** Lower red lever to move pressure roller into place above iPhone battery.





**12** Slide tray through vertical tower.

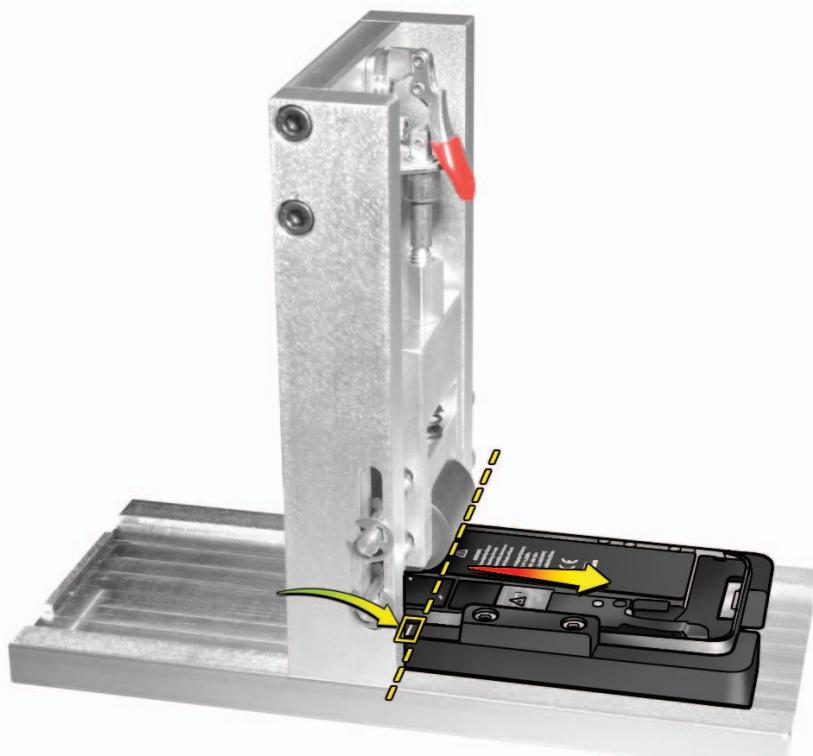
This will cause the roller to press the battery down onto the adhesive pack.





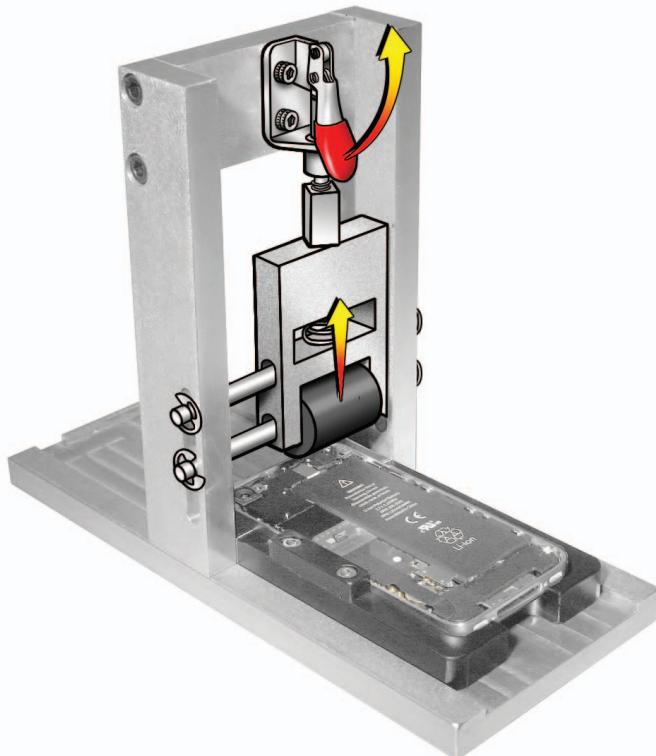
- 13** Slide tray back through vertical tower to original position.

**Important:** Only slide the tray back to the point where the white marks align with the front of the tower.



- 14** Raise red lever to raise pressure roller.

- 15** Remove iPhone from fixture.





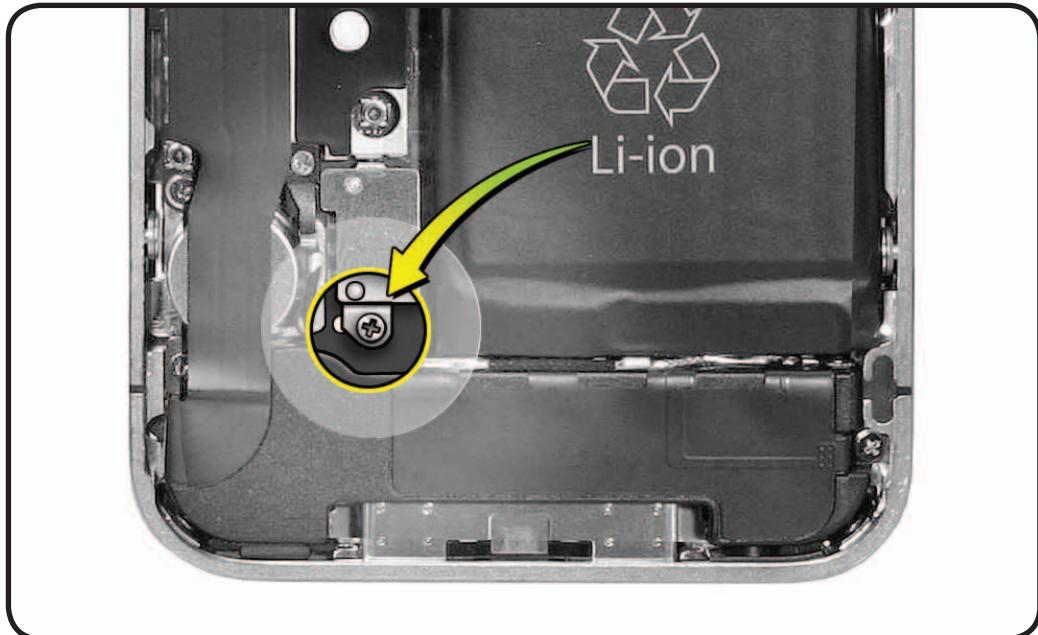
**16** Press battery connector down onto logic board.

**17** Install (1) **new** cross-head screw (452-2070) at battery connector using iPhone Torque Driver and JCIS #00 Bit.

**Important:** Do not reuse old screws.

**18** Reinstall back cover using 2 **new** dock screws (452-2055) included in kit.

**19** **Important:** Check main camera operation and LED flash alignment with the [Main Camera Test](#) procedure. If test fails, replace camera.





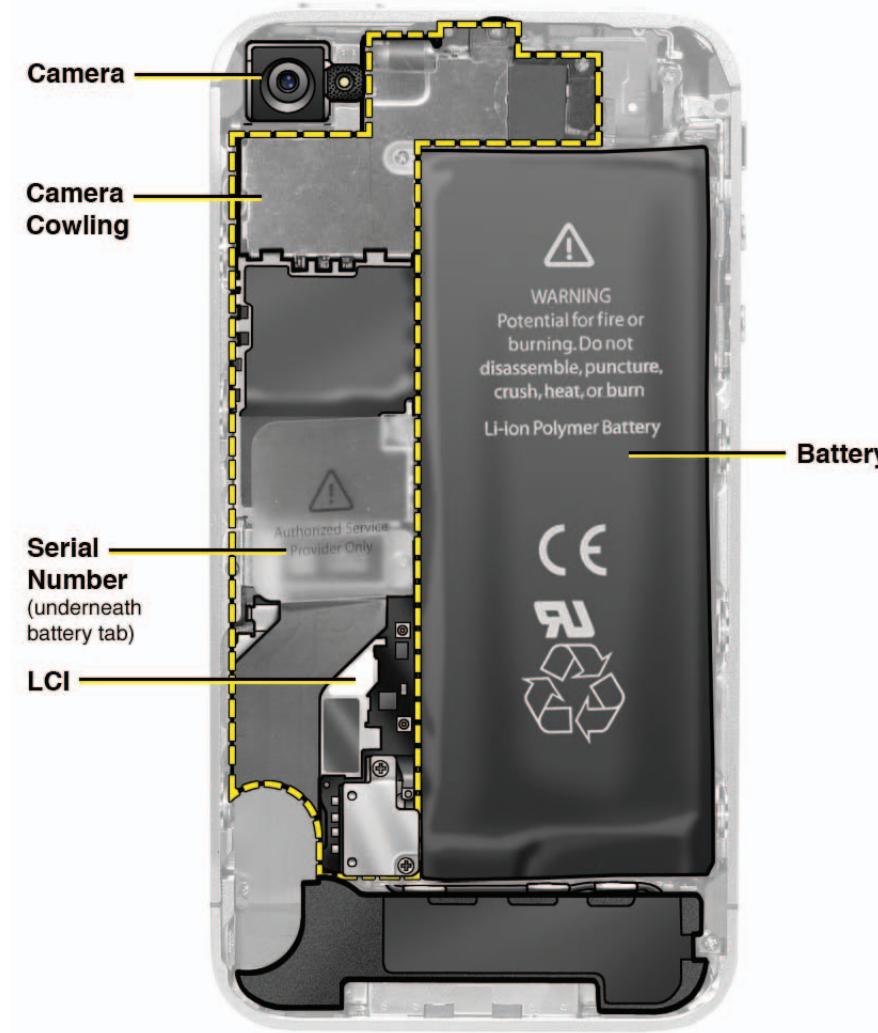
## Take Apart – iPhone 4S

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# Internal View

Internal view of the iPhone 4S, Models A1387 and A1431 (China only):





# Service Parts

## Service Parts for iPhone 4S

Description	Part Number	Kit Contents
<b>SIM Tray</b>	<b>922-9602</b>	(1) SIM tray (blank, no serial# or IMEI/MEID)
<b>Back Cover</b>	see next page	(1) back cover
<b>Torx Security Screw Kit</b>	<b>923-0053</b>	(10) screws
<b>Camera Kit, Black</b>	<b>661-6358</b>	(1) camera with black LED ring (1) camera pan (4) screws for camera cowling
<b>Camera Kit, White</b>	<b>661-6359</b>	(1) camera with silver LED ring (1) camera pan (4) screws for camera cowling
<b>Camera Cowling Kit</b>	<b>923-0057</b>	(10) camera cowlings
<b>Camera Screw #1 Kit</b>	<b>923-0058</b>	(10) screws
<b>Camera Screw #2 Kit</b>	<b>923-0059</b>	(10) screws
<b>Camera Screw #3/4 Kit</b>	<b>923-0060</b>	(10) screws
<b>Camera Pan Kit</b>	<b>923-0061</b>	(10) camera pans
<b>Battery Kit</b>	<b>661-6357</b>	(1) battery (1) battery adhesive pack (2) screws for battery connector
	<b>BZ661-6357</b>	for Brazil only
<b>Battery Cowling Kit</b>	<b>923-0054</b>	(10) battery cowlings
<b>Battery Screw #1 Kit</b>	<b>923-0055</b>	(10) screws
<b>Battery Screw #2 Kit</b>	<b>923-0056</b>	(10) screws
<b>Battery Adhesive Kit</b>	<b>923-0062</b>	(10) battery adhesive packs
<b>Volume Button Shim</b>	<b>923-0072</b>	(1) shim



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## Back Cover Service Parts

### Black iPhone 4S

923-0049	Americas, EMEA, Japan, Australia, APAC
BZ923-0049	Brazil
CH923-0049	China (GSM)
CH923-0050	China (CDMA)
KH923-0049	Korea
TA923-0049	Taiwan

### White iPhone 4S

923-0051	Americas, EMEA, Japan, Australia, APAC
BZ923-0051	Brazil
CH923-0051	China (GSM)
CH923-0052	China (CDMA)
KH923-0051	Korea
TA923-0051	Taiwan



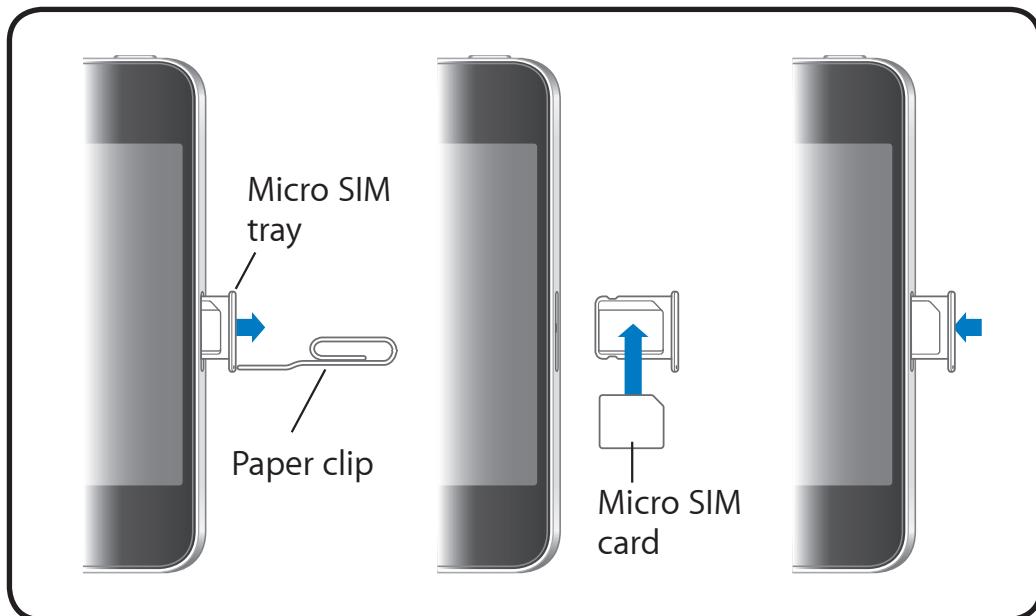
# SIM Tray

## First Steps

- Power off iPhone

## Removal

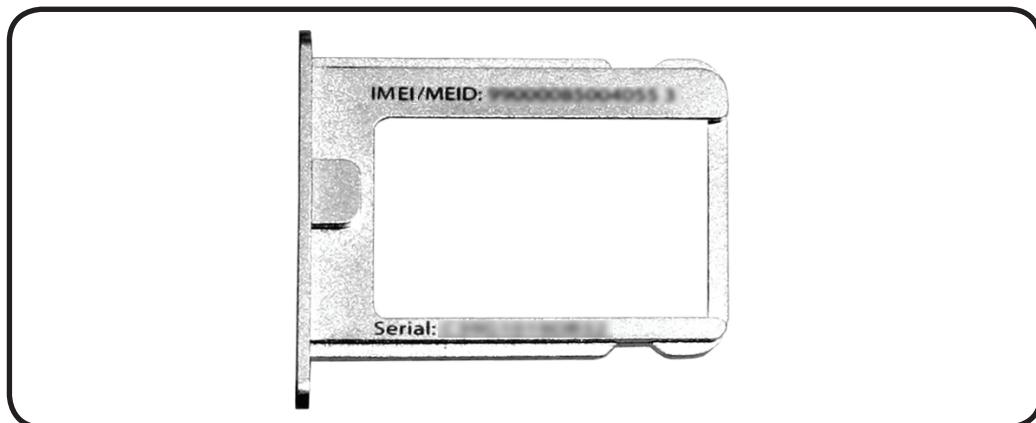
- 1 Insert the end of a SIM Removal Tool (922-8417) or a small thin paper clip into hole on SIM tray.
- 2 Push the tool straight in firmly until tray pops out.



**Note:** The original SIM tray shows the device's IMEI/MEID and serial number.

## Reassembly

Note orientation of the tray and Micro SIM prior to inserting into iPhone.



**Caution:** Do not force the SIM tray into position, which could cause internal damage to iPhone.



# Back Cover

## First Steps

- Refer to the **Visual Mechanical Inspection** guidelines to determine any accidental damage.
- Remove any cases or screen protectors.

**Caution:** If back cover glass is broken, affix packing tape before removal to prevent injury and scattering of glass.



## Tools

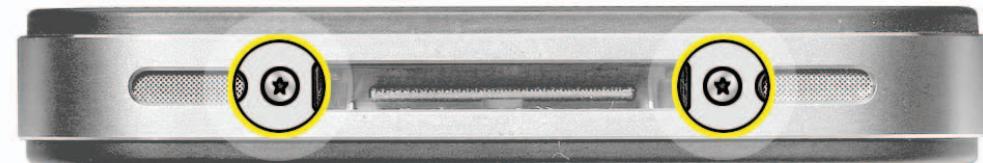
- iPhone Torque Driver (923-0031)
- iPhone Torx Security Bit (922-9627)
- Torx Security Screw Kit (923-0053)





## Removal

- 1 Remove (2) dock screws on bottom of phone using iPhone Torque Driver and iPhone Torx Security Bit.



- 2 Slide back cover up to release locking tabs and lift off body of iPhone.



**WARNING:** If battery is dented, punctured or otherwise damaged, STOP! Reinstall back cover and replace whole unit.

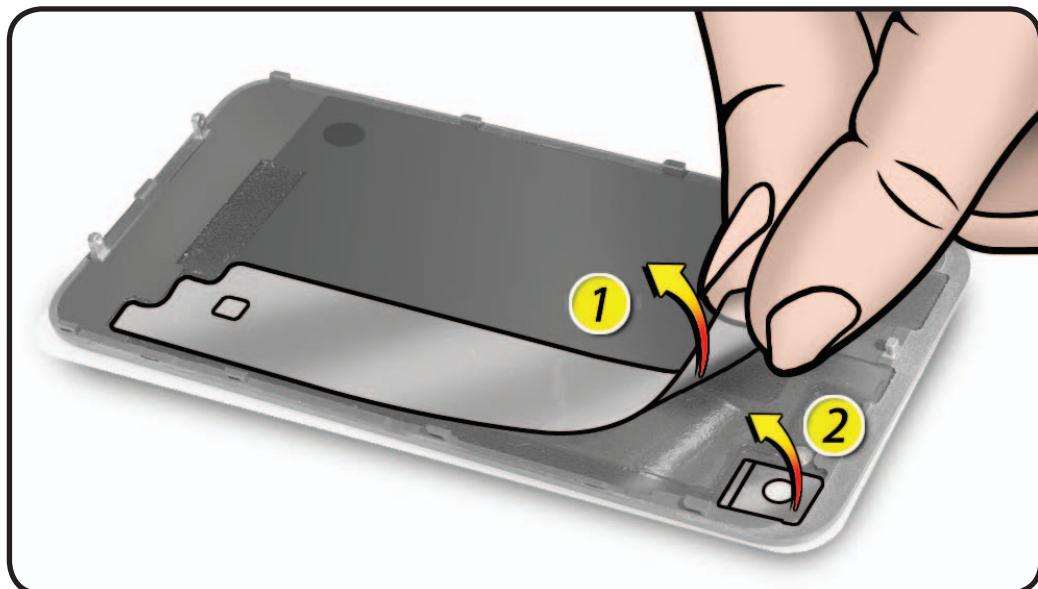




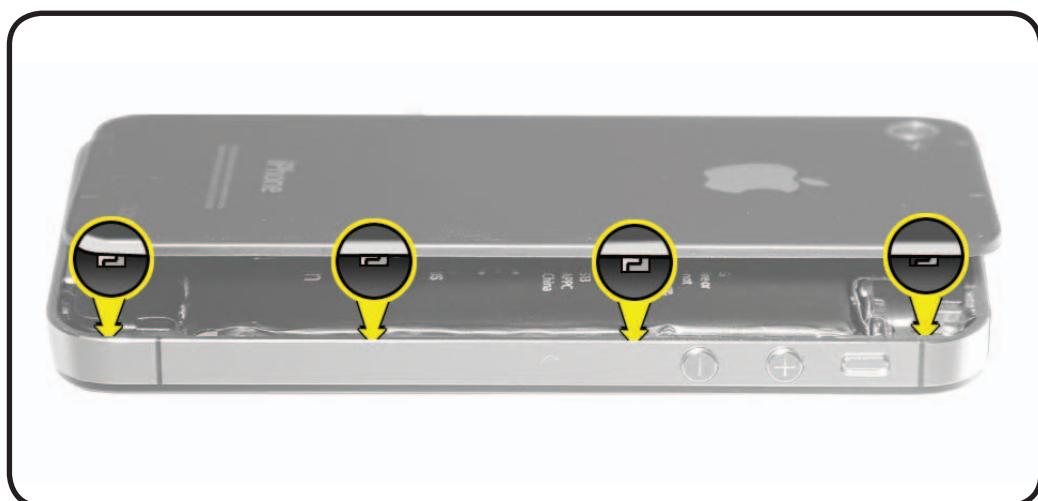
## Reassembly

- 1 If installing a new replacement back cover, remove 2 pieces of clear protective film covering camera lens.

**Note:** It may be helpful to use a black stick to peel up a corner of the protective film.



- 2 Place back cover on iPhone body, aligning locking tabs so back cover sits flush against metal band.

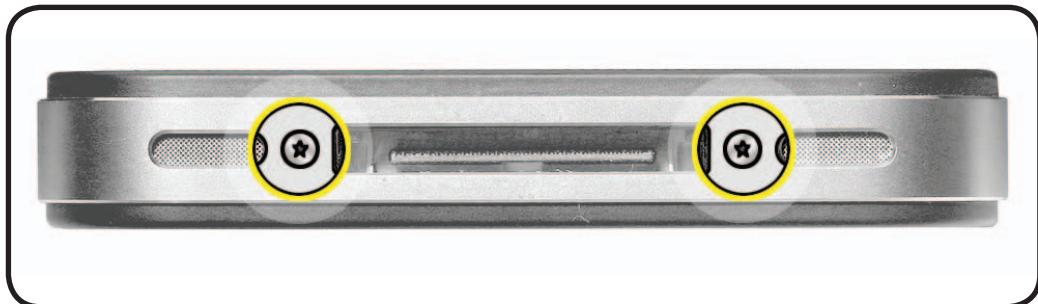




- 3** Slide back cover down and into the locked position.



- 4** Insert (2) **new** dock screws (923-0053) on bottom of phone and tighten using iPhone Torque Driver with iPhone Torx Security Bit.



**Important:** Do not reuse old screws.

- 5** **Important:** Check main camera operation and LED flash alignment with the [Main Camera Test](#) procedure. If test fails, replace camera.



# Internal Checks

## Internal Liquid Contact Indicator

The iPhone 4S contains one internal liquid contact indicator (LCI) on the logic board. If the LCI is activated (red), it indicates contact with liquid, which can cause damage that is not covered under warranty and is not eligible for modular repair, but is eligible for Out-of-Warranty (OWW) paid whole unit replacement.

**Important:** If an internal LCI is activated or corrosion is present, reassemble the device and do not proceed with modular repair.



## Missing Internal Parts

If there are missing internal components or parts, it is considered evidence of disassembly or modification, which:

- is NOT covered under warranty
- MAY qualify for a paid repair.

For more information, see Apple Support article [TS3756: iPhone and iPad: Handling service requests when device has missing or modified parts.](#)



## Serial Number Barcode

With the back cover removed, the serial number is printed in both human-readable and 2D barcode formats on a label beneath the battery pull tab.





# Volume Button Shim

## First Steps

- [Back Cover](#)

For iPhone 4S volume buttons issues, follow this procedure to install a volume button shim.



## Tools

- ESD-safe tweezers



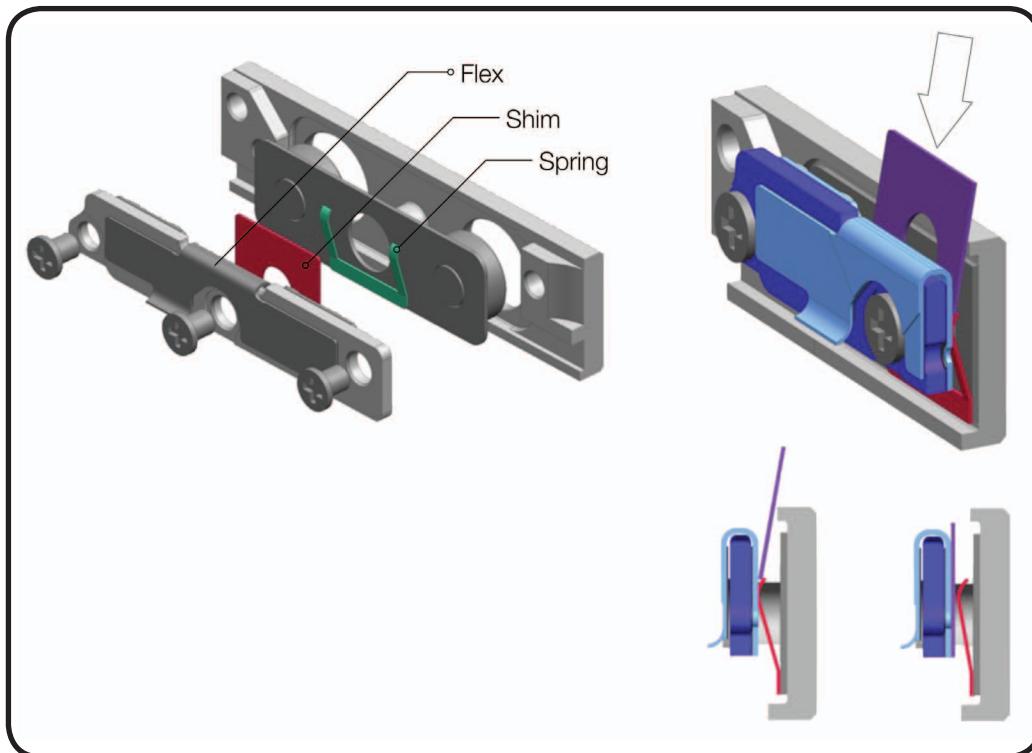


## Procedure

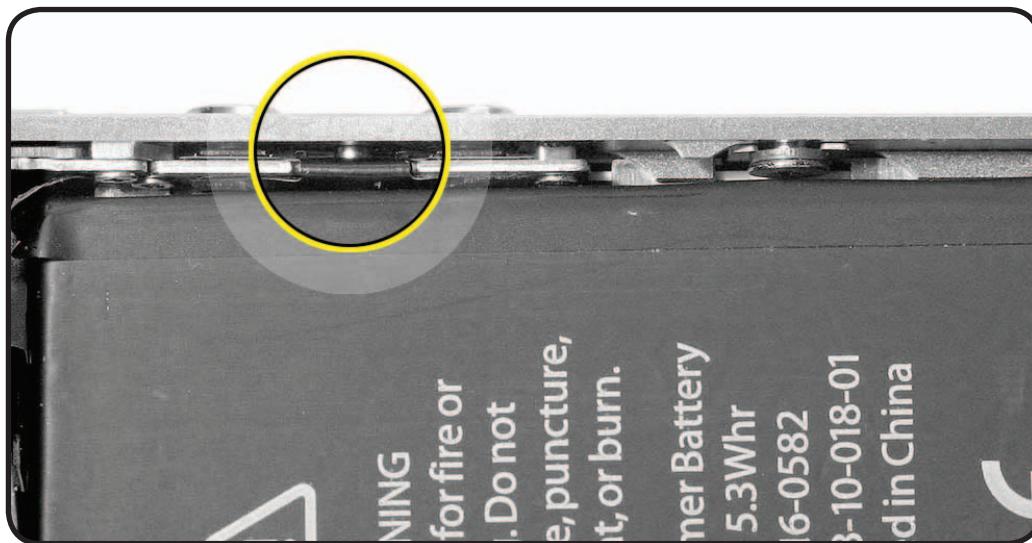
- 1 There are 3 screw pins that hold Flex to band around volume buttons.

A Spring provides tension between Flex and volume buttons.

The shim needs to be installed between Flex and Spring.



- 2 Locate middle screw pin inside band between two volume buttons.



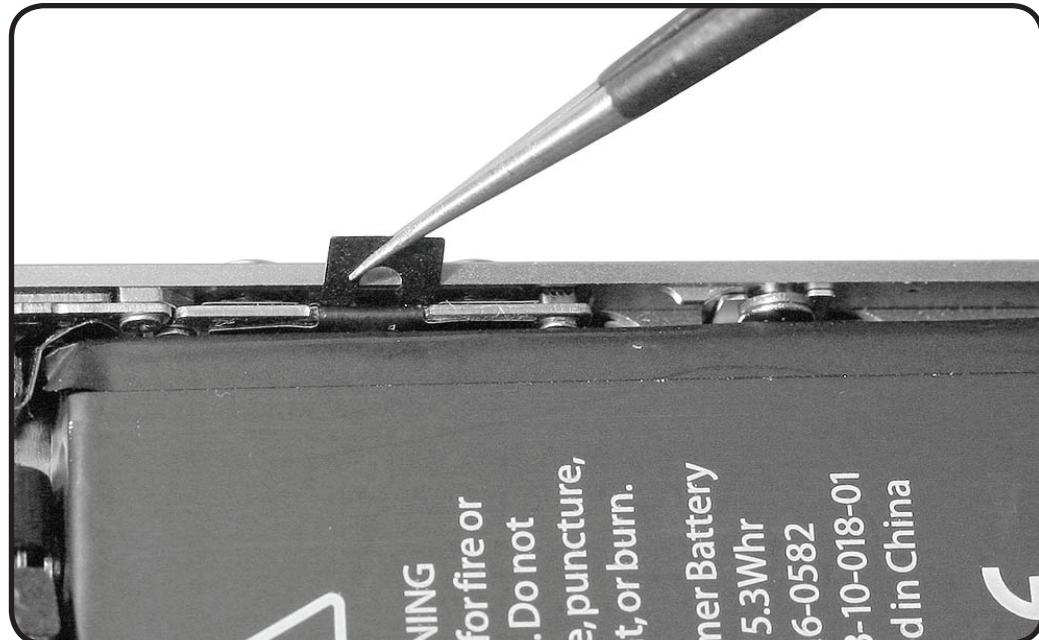


- 3 Grasp shim (923-0072) with tweezers.



- 4 Angle shim towards battery slightly and lower into place.

Press shim down as far as possible.

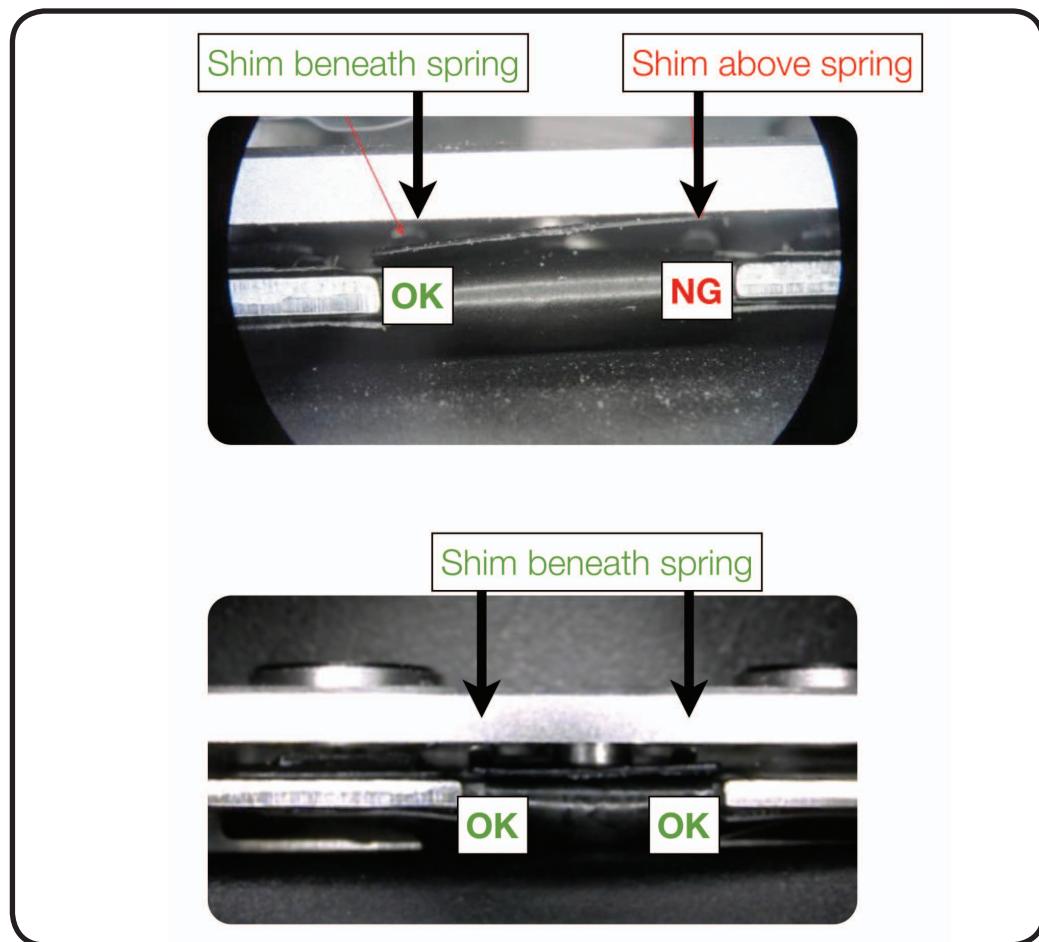


- 5 Verify shim is properly installed between Flex and Spring.

- 6 [Reinstall back cover](#) following reassembly instructions in that chapter.

- 7 Verify that volume button issue is resolved.

- 8 **Important:** Check main camera operation and LED flash alignment with the [Main Camera Test](#) procedure. If test fails, replace camera.





# Main Camera

## First Steps

- [Back Cover](#)

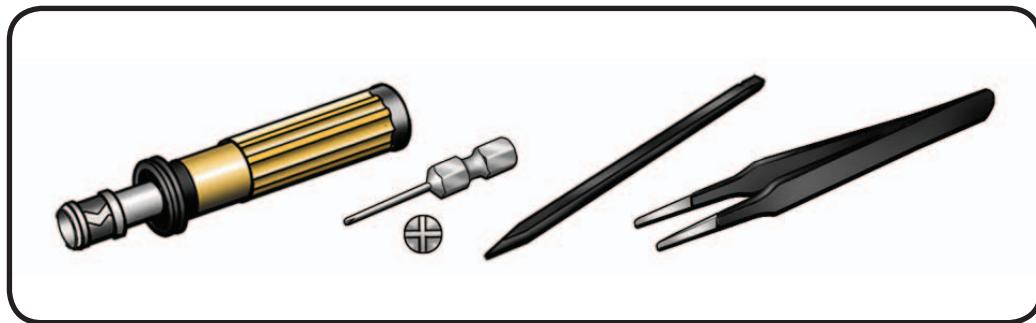
**Note:** A replacement camera kit includes a new camera pan and new screws.

**Important:** Do not reuse old screws.



## Tools

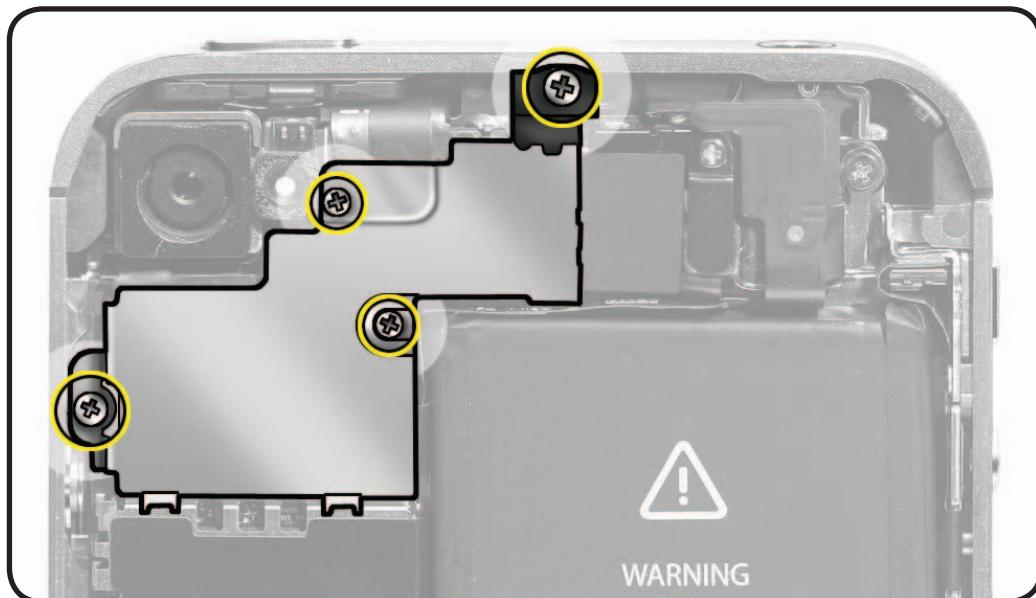
- iPhone Torque Driver (923-0031)
- JCIS #00 Bit (922-9947) for cross-head screws
- Nylon Probe Tool (black stick, 922-5065)
- ESD-safe tweezers



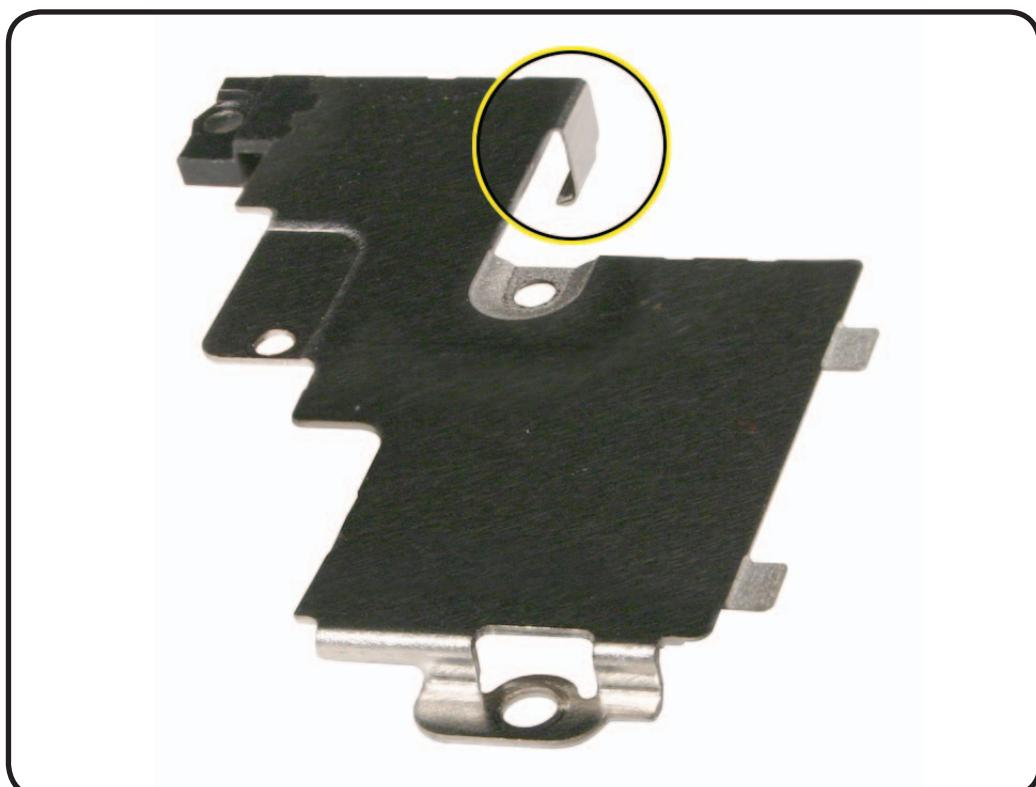


## Removal

- 1 Remove (4) cross-head screws from camera cowling using iPhone Torque Driver and JCIS #00 Bit.



- 2 Note that camera cowling (here shown removed from unit and rotated 90 degrees counter-clockwise) has a hook that catches under logic board.

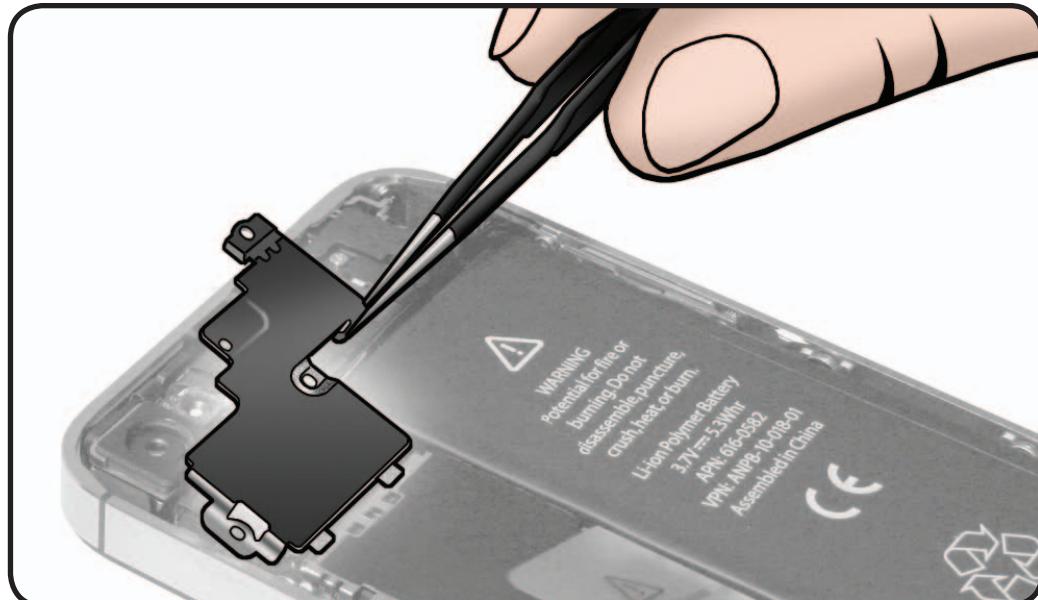




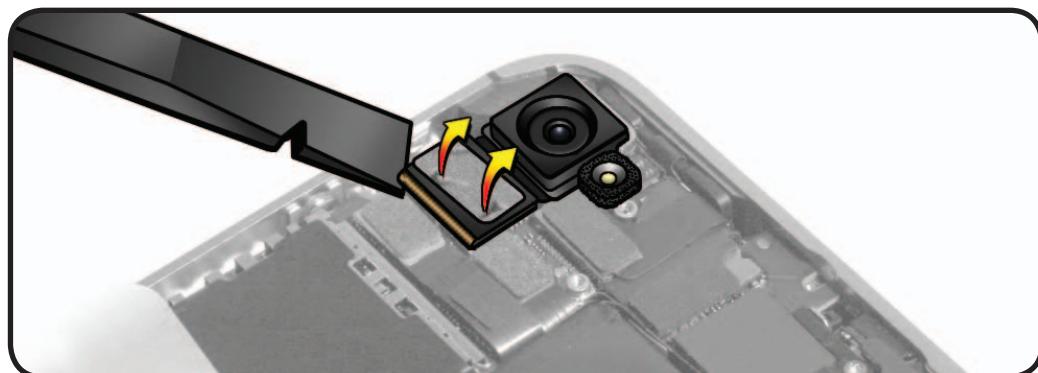
- 3** Grasp camera cowling with tweezers as shown and gently pull towards battery to free hook from under logic board.

**Warning:** Be careful not to tear or puncture the battery.

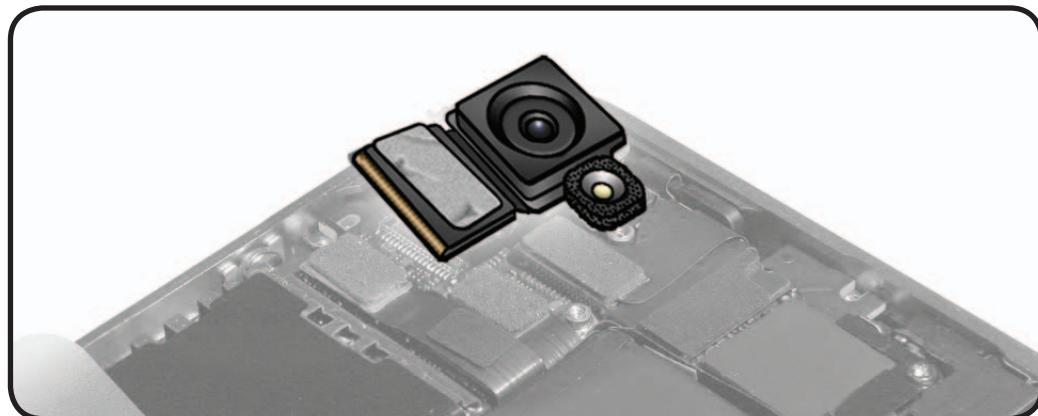
- 4** Lift camera cowling and remove from unit. Save for reuse.



- 5** Gently lift camera connector from logic board using a black stick.



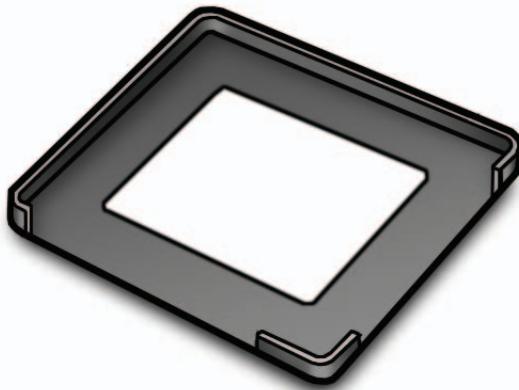
- 6** Lift camera out.





- 7 Ensure that you have removed the small black rubber camera pan along with the camera.

Pan may have become separated from camera. Check mid-plate below camera.



## Reassembly

- 1 Position camera pan (923-0061) on bottom side of camera.

**Important:**

Note orientation of camera pan as shown. The two open edges should be placed on the two sides of the camera that have flex cables.



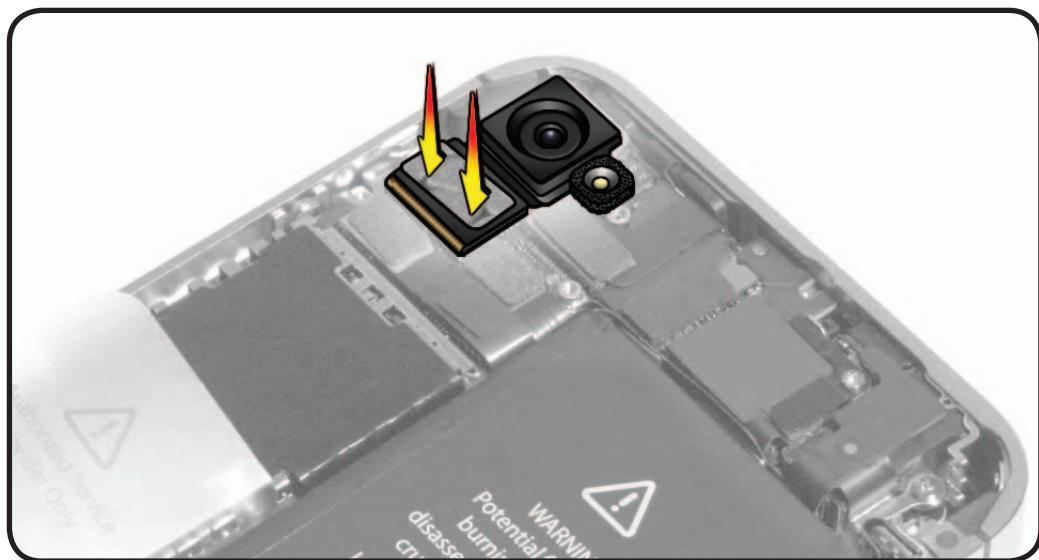


- 2 Place camera into iPhone.

**Important:** Be sure camera pan stays correctly oriented on bottom of camera.

**Important:** Be careful not to touch the camera lens.

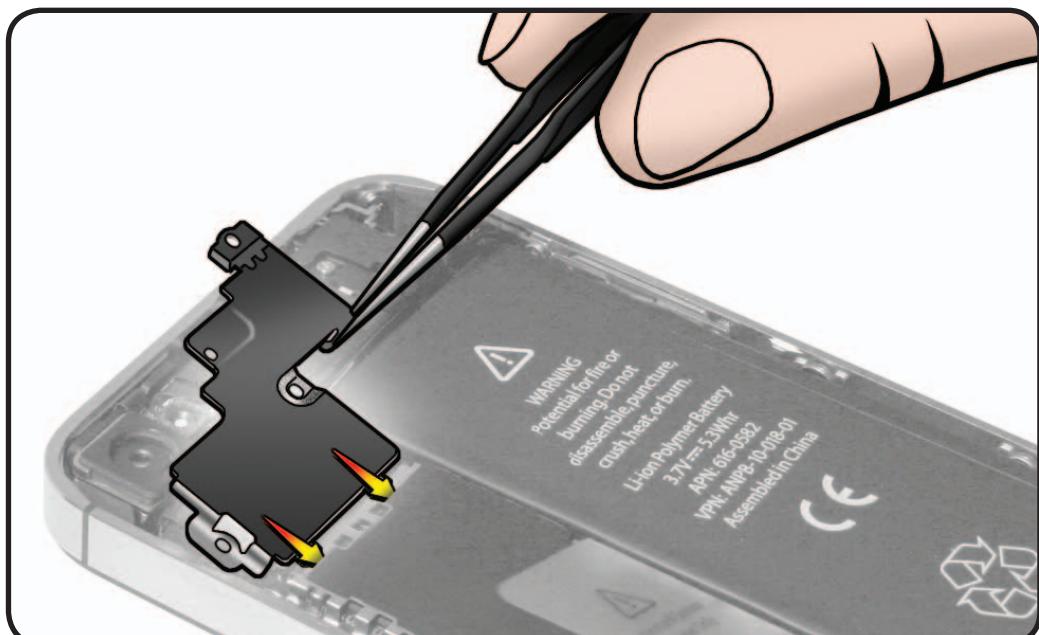
- 3 Press connector down onto logic board until it snaps into position



- 4 Place camera cowling (923-0057) into position as shown, inserting 2 tabs into slots on logic board.

- 5 Secure hook on right side of camera cowling underneath logic board.

**Warning:** Be careful not to tear or puncture the battery.





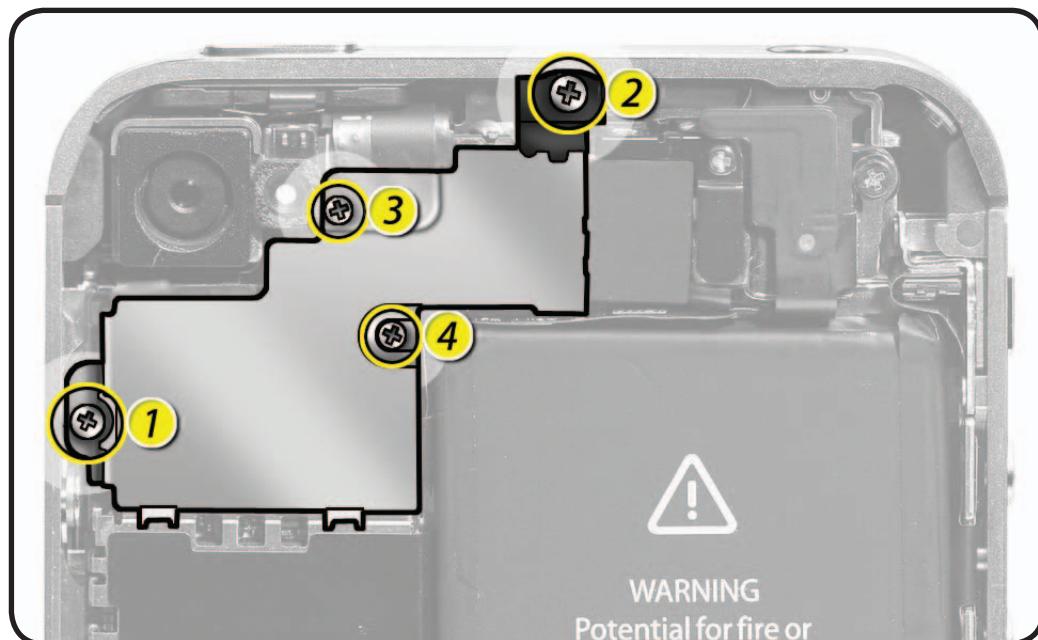
- 6** Install (4) **new** cross-head screws using iPhone Torque Driver and JCIS #00 Bit:

- Screw #1, 923-0058
- Screw #2, 923-0059
- Screw #3/4, 923-0060

**Important:** Do not reuse old screws.

- 7** Verify the main camera is sitting flush with the band and is evenly aligned.

- 8** [Reinstall back cover](#) following reassembly instructions in that chapter.



- 9** **Important:** Check main camera operation and LED flash alignment with the [Main Camera Test](#) procedure. If test fails, replace camera.



# Battery

Be sure you have read the [Safety: Battery Handling](#) section of this document.

## First Steps

- [Back Cover](#)



**WARNING:** If battery is dented, punctured or otherwise damaged, STOP! Reinstall back cover and replace whole unit.

**WARNING:** Do not reuse or reinstall a battery after it has been removed.

**Note:** A replacement battery kit includes a new adhesive pack and new screws. Do not reuse old screws.



## Tools

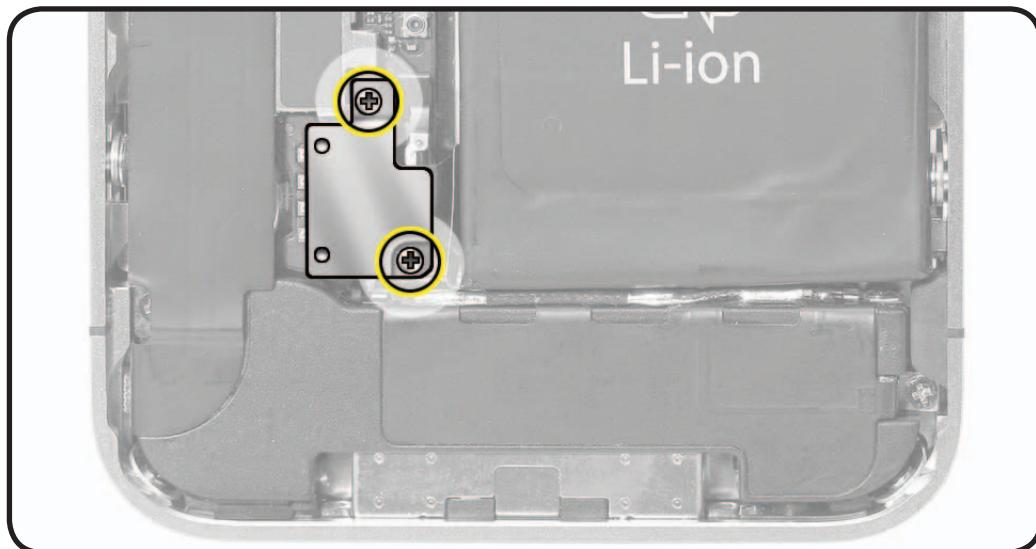
- iPhone Torque Driver (923-0031)
- JCIS #00 Bit (922-9947)
- Nylon Probe Tool (black stick, 922-5065)
- ESD-safe tweezers
- iPhone 4 Battery Fixture (923-0075)





## Removal

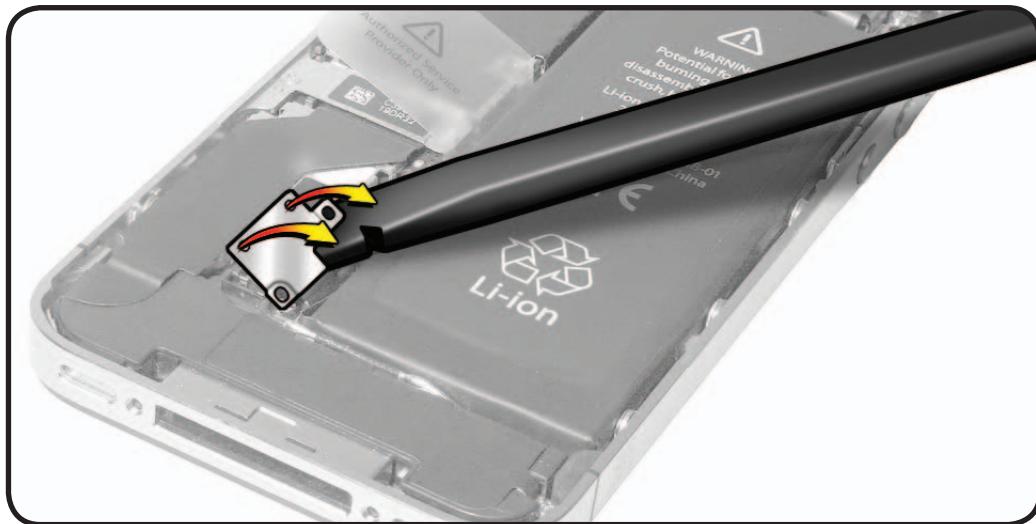
- 1 Remove (2) cross-head screw from battery connector using iPhone Torque Driver and JCIS #00 Bit.



- 2 Remove battery cowling from underneath battery connector and save for reuse.



- 3 Lift battery connector from top right corner with a black stick.





- 4 Secure unit in iPhone 4 Battery Fixture tray.

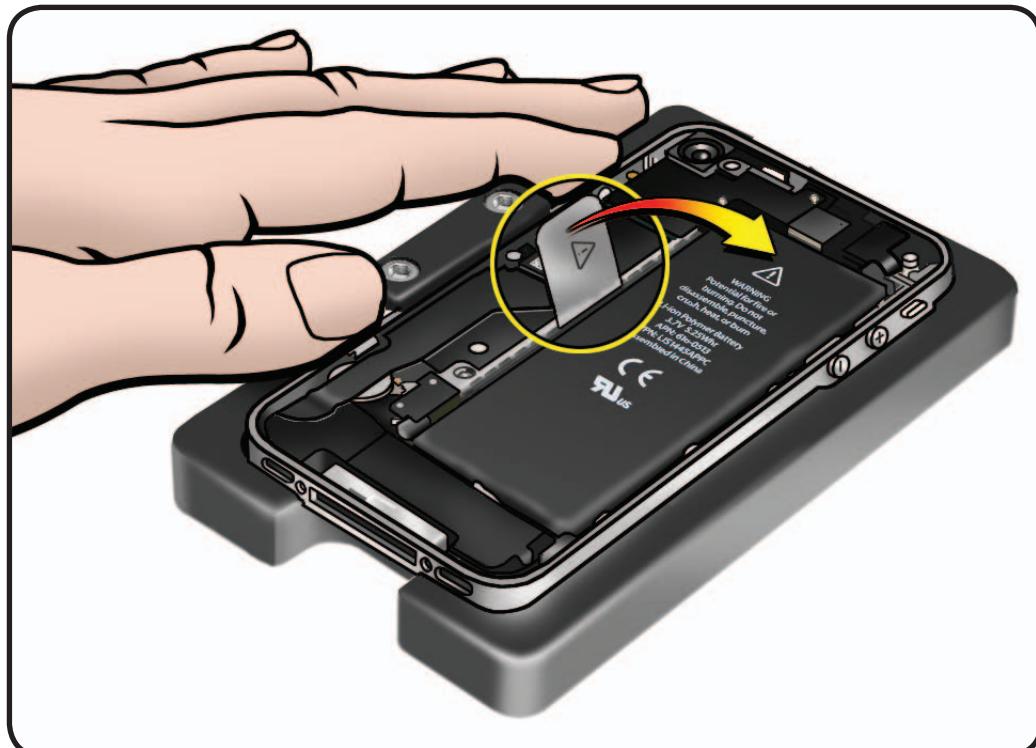


- 5 Holding tray down with one hand, pull battery removal tab firmly and steadily to free battery from adhesive underneath.

The battery will usually release all at once.



**Warning:** If tab breaks off, do not use tools to pry up battery. In this situation, replace the phone as a whole unit.

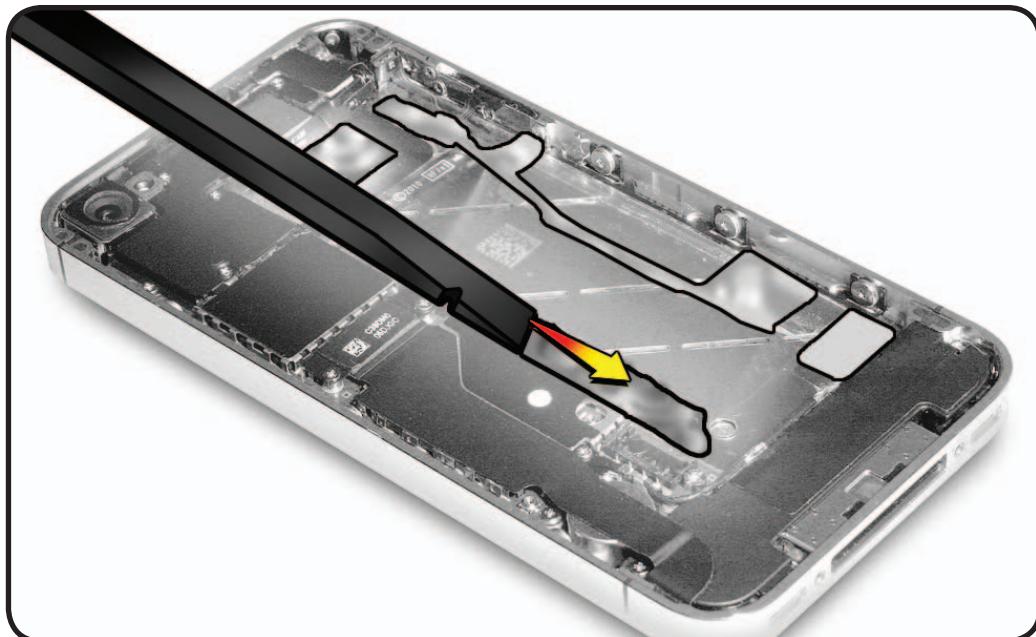




- 6** Remove old adhesive from mid-plate.

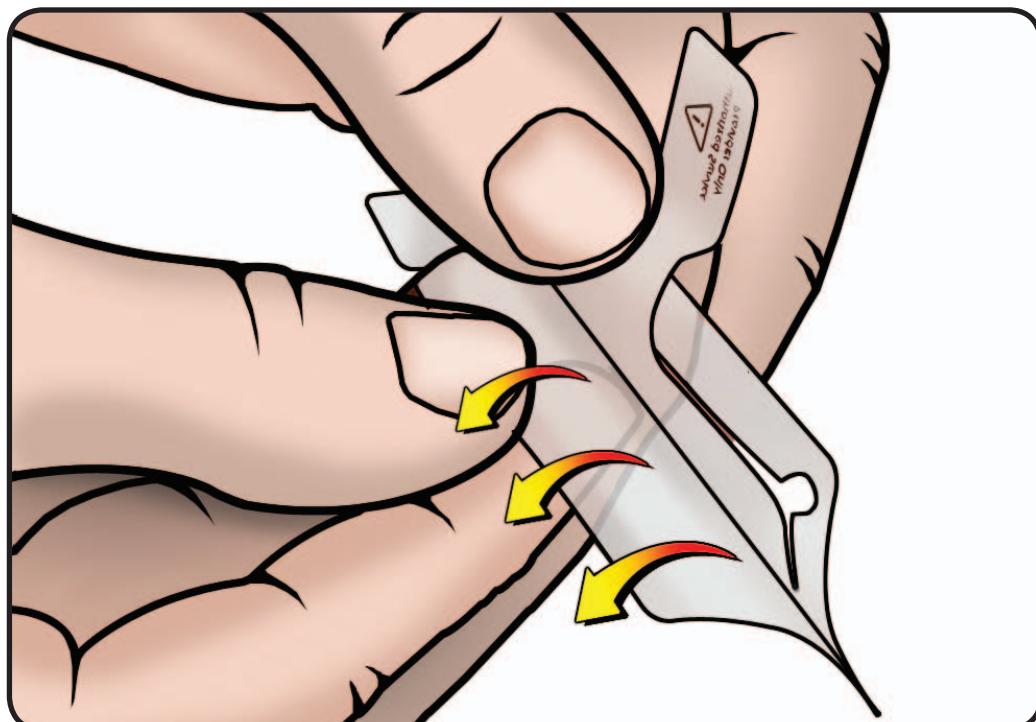
**Caution:** Be careful of flex cables and other components while removing adhesive.

**Caution:** Do not use cleaning agents to remove the battery adhesive. A black stick can easily lift the adhesive and allow it to be peeled up.



## Reassembly

- 1** Peel backing from bottom side of new adhesive pack.
- 2** Remove iPhone from Battery Removal Fixture.

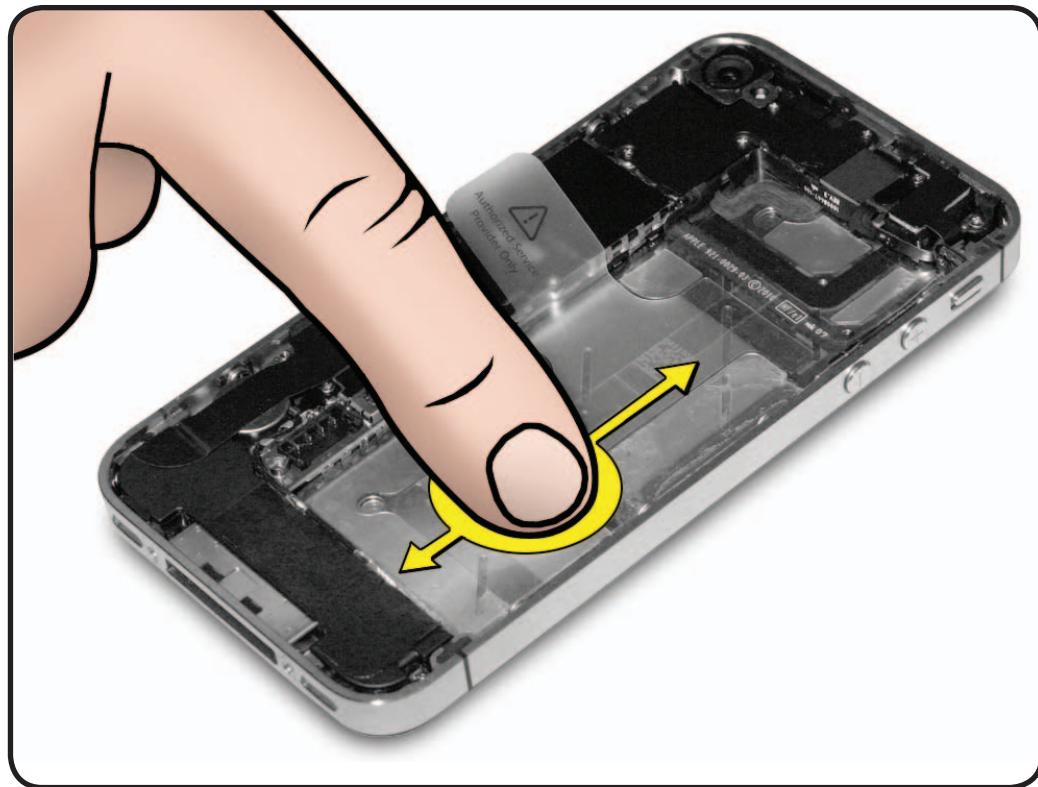




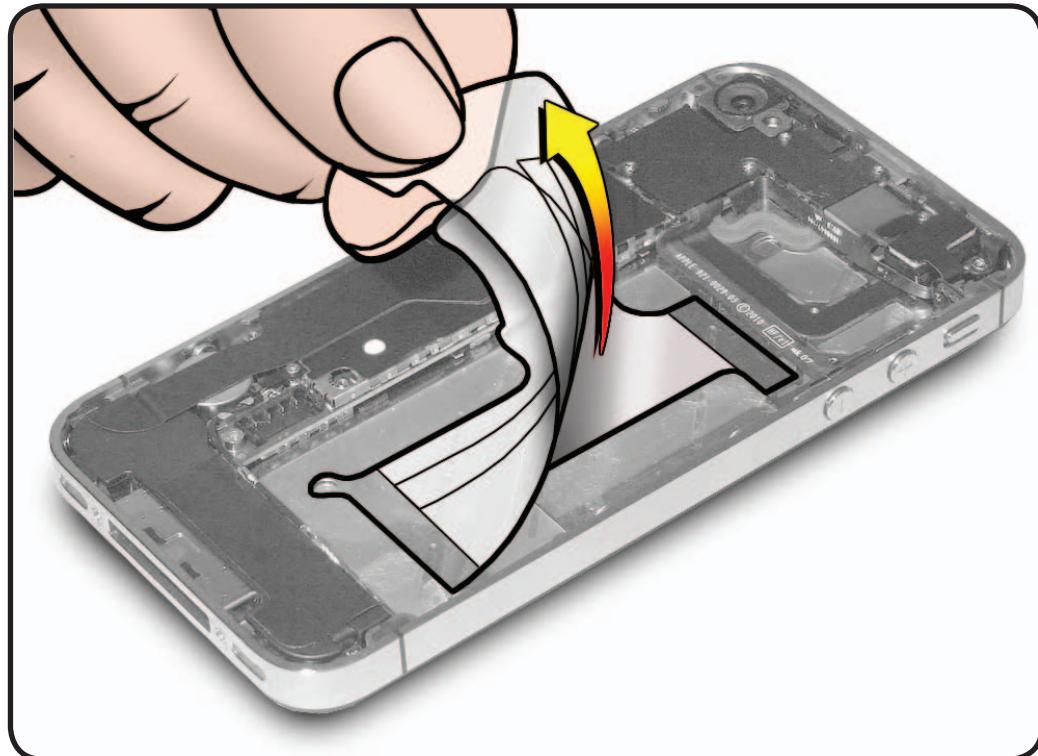
- 3** Position new adhesive so it aligns with landmarks on mid-plate.

**Note:** Using a piece of tape folded into a tab on top of the adhesive pack will make it easier to align with the mid-plate.

- 4** Use your finger or a black stick to press the adhesive into place, smoothing out all air bubbles.



- 5** Peel second backing to expose adhesive that will adhere to battery.





**6** Press battery connector down onto logic board.

**7** Position battery against main board.

**8** Carefully lay battery down into well, making sure it is centered.

**Caution:** Make sure battery does not scrape against the camera cowling.

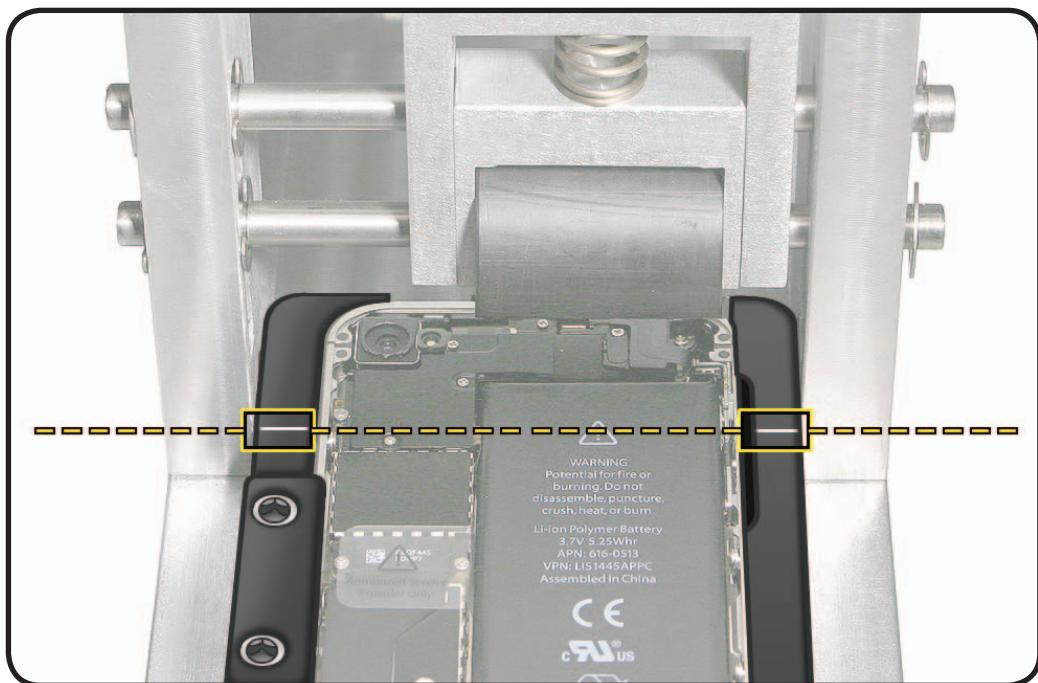


**9** If unit had been removed from iPhone 4 Battery Fixture tray, reinsert unit into tray.

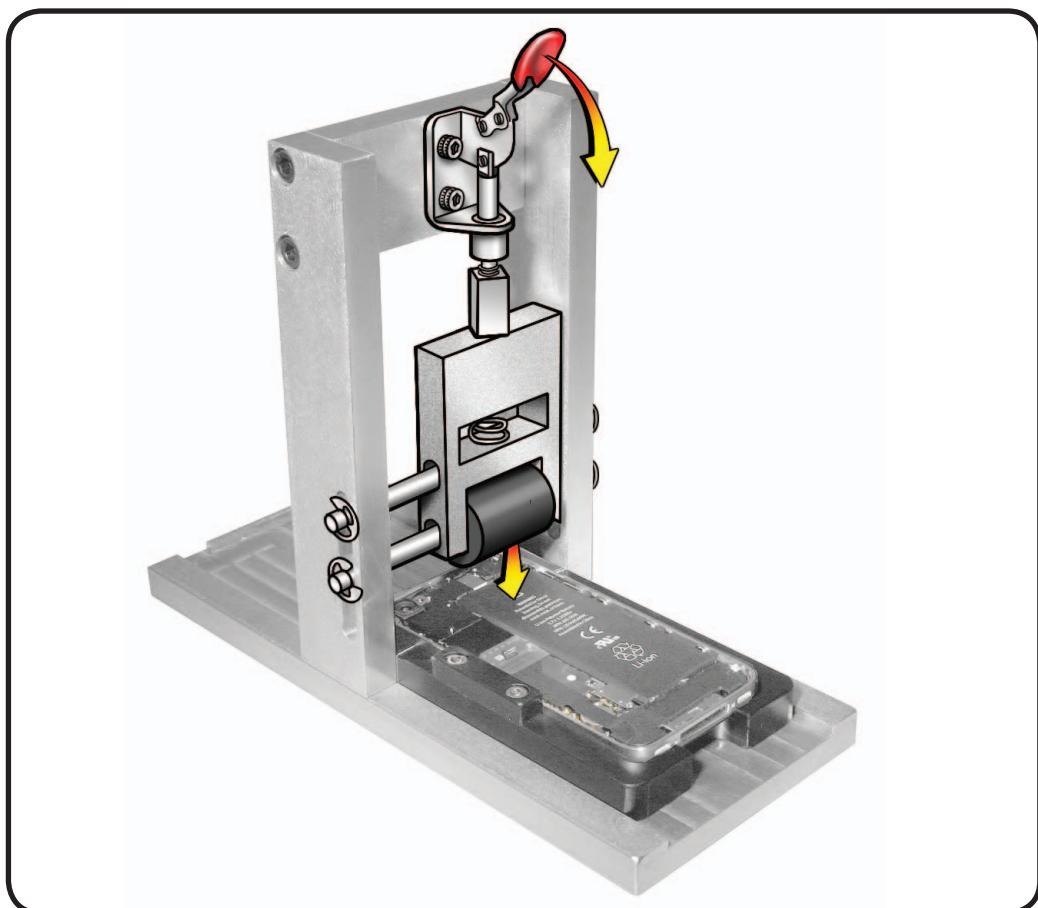




- 10** Put tray into iPhone 4 Battery Fixture, aligning white marks on tray with front edge of vertical tower.



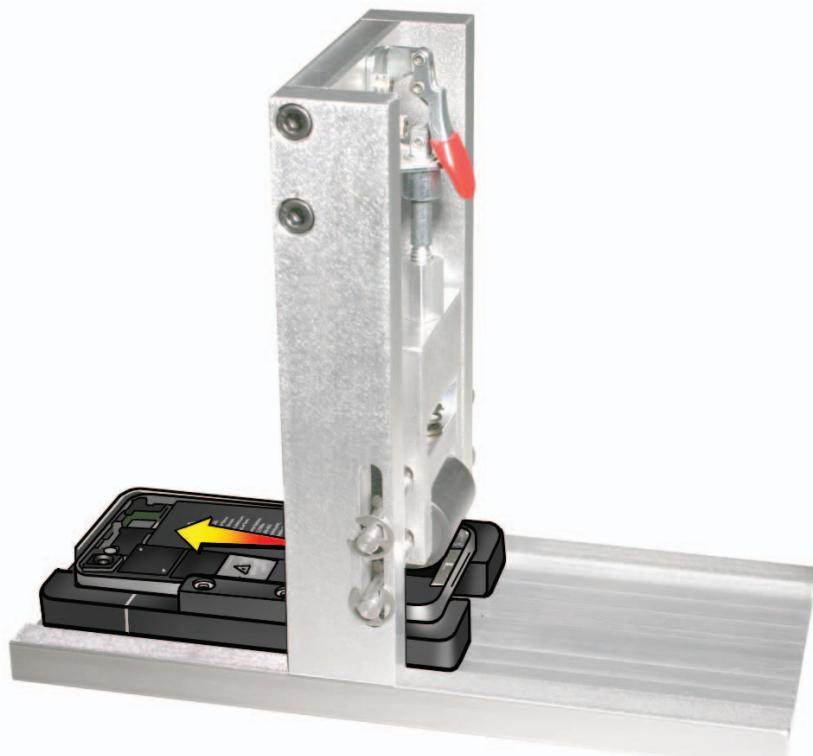
- 11** Lower red lever to move pressure roller into place above iPhone battery.





**12** Slide tray through vertical tower.

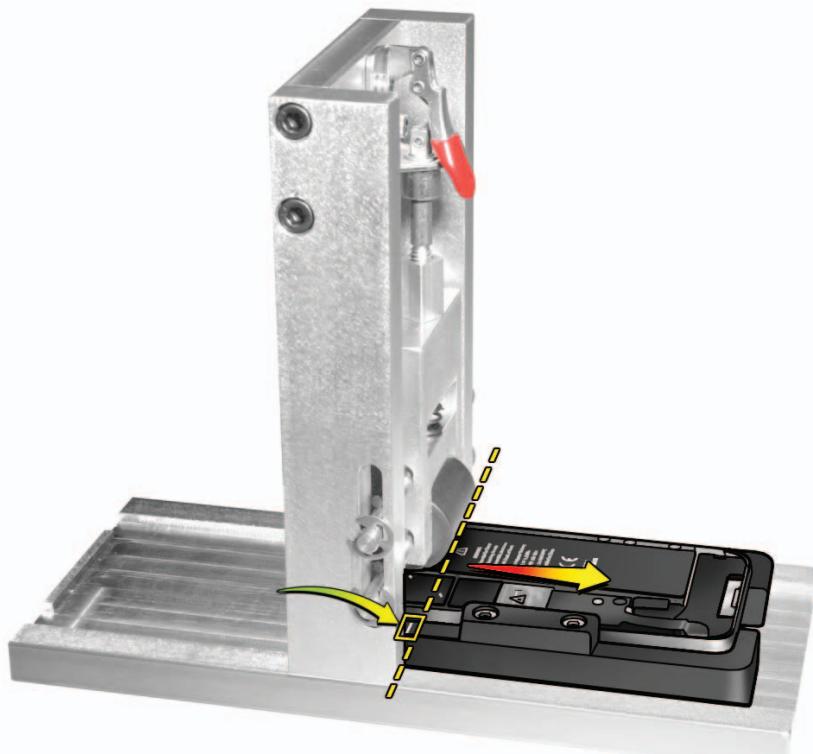
This will cause the roller to press the battery down onto the adhesive pack.





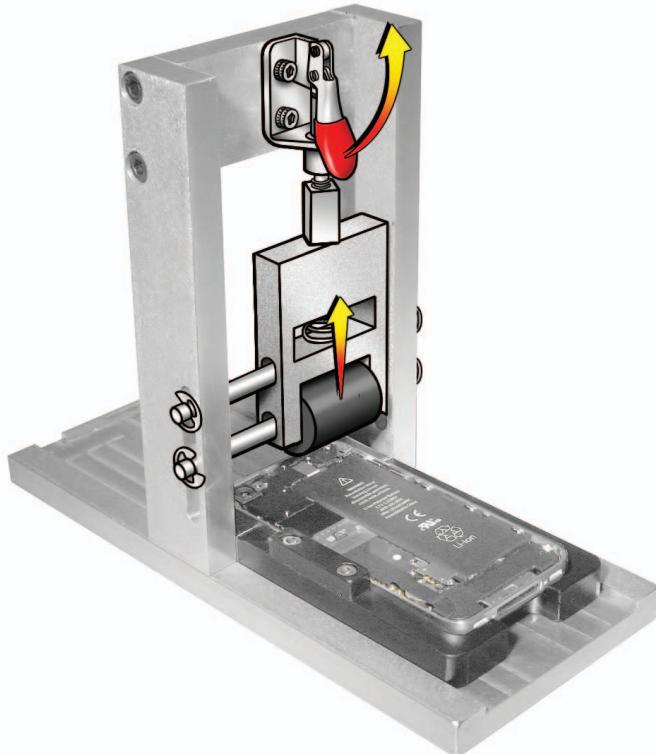
- 13** Slide tray back through vertical tower to original position.

**Important:** Only slide the tray back to the point where the white marks align with the front of the tower.



- 14** Raise red lever to raise pressure roller.

- 15** Remove iPhone from fixture.





**16** Press battery connector down onto logic board.

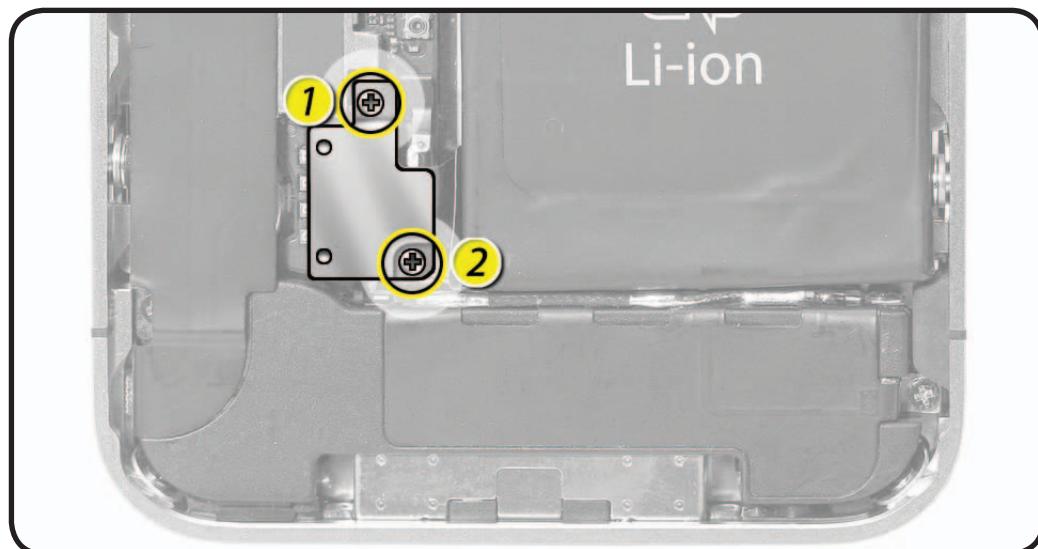
**17** Place battery cowling underneath battery connector as shown.



**18** Install (2) new cross-head screws at battery connector using iPhone Torque Driver and JCIS #00 Bit:

- Screw #1, 923-0055
- Screw #2, 923-0056

**Important:** Do not reuse old screws.



**19** [Reinstall back cover](#) following reassembly instructions in that chapter.

**20** **Important:** Check main camera operation and LED flash alignment with the [Main Camera Test](#) procedure. If test fails, replace camera.



## Verification Testing

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### iPhone 4



# Completing a Repair

## Test Functionality

Test the device according to the procedures outlined in the [Functional Testing](#) section of this document. Attempt to repeat the original issue(s) reported by the user, using whatever function(s) of the device were affected.

The device should be 100% operational before giving it back to the user.

## Verify Cellular Account

Make sure the user's SIM card is installed (if used on a GSM network) and ask the user to verify their phone number is correct:

1. From the Home screen, go to Phone > Contacts.
2. Scroll up to the top until the user's phone number is displayed.

## Clean Device

Clean the device with a micro-fiber polishing cloth. DO NOT use chemicals or liquids.

## Handle Defective Parts

All defective modules should be returned to Apple. Reuse the packaging that contained the replacement part(s).



# Carrier Screening

This section provides comprehensive instructions to carriers for testing iPhone 4. This information should be used for screening to determine if functional failures exist and to assist in setting the eligibility for potential reuse.

## Required Tools

- Lighted otoscope (or lighted magnifying glass)
- ESD-safe brush (922-9918)
- ESD-safe tweezers
- Micro-fiber cloth
- Cotton gloves
- Apple USB Power Adapter
- Apple Dock Connector to USB Cable
- Apple Earphones with Remote and Mic
- Wi-Fi network with Internet access

## Additional Tools for GSM Networks

- Test SIM
- SIM Removal Tool (922-8417) or paperclip (size #1)

## System Requirements

### Mac

- Mac computer with USB 2.0 port
- Mac OS X v10.5.8 or later
- The latest version of iTunes (free download from [www.itunes.com/download](http://www.itunes.com/download))
- Internet access

### Windows

- PC with USB 2.0 port
- Windows 7; Windows Vista; or Windows XP Home or Professional with Service Pack 3 or later
- The latest version of iTunes (free download from [www.itunes.com/download](http://www.itunes.com/download))
- Internet access



## Computer Setup for Restoration Process

This should be a blank install and not contain previous user content. Once the computer is prepared, content will need to be loaded and iTunes will need to be configured properly. This only needs to be done once for line setup.

Start by doing the following:

- Download Media Bundles (063-6545-C.zip) from  
<http://service.info.apple.com/carrier/en/carrierdc.html> (must login to GSX first)
- Unzip Media Bundles to Desktop.

### Audio File Setup

1. Open iTunes and select File > Add to Library.
2. Navigate to the Media Bundles (Desktop > 063-6545-C.zip) and click Open.
3. Audio files will be imported into iTunes.

### Photo File Setup

1. Open iPhoto and select File > Import to Library.
2. Navigate to the Media Bundles (Desktop > 063-6545-C.zip), select the file named "Photos," and click Import.

**Note:** With both iTunes and iPhoto, there maybe several warnings or reminders that need to be bypassed during setup. These are not essential to operation needed for syncing.

### iTunes Setup

1. **For GSM networks only:** Insert a white-listed SIM (or appropriate carrier SIM card activated with an iPhone plan) into a new or recently restored (no content and bricked) iPhone.
2. Tether iPhone with iTunes.
3. Cancel the "Update carrier settings" message. Click Continue (lower right button).
4. Select "Setup as a new iPhone."
5. Give iPhone a name, such as "Test Phone," uncheck both Automatic sync options and click Done.
6. Select the Music tab and check "Sync Music."
7. Select the Photos tab and check "Sync photos from"
8. Click Apply (bottom right corner of window).
9. iPhone will sync.
10. Disconnect iPhone momentarily and then reconnect to iTunes.
11. Click Sync again and iTunes will back up iPhone.



## Cosmetic Protection

Prior to the start of testing a generic Mylar cling wrap should be used on each side of iPhone to protect it from damage during the screening process. This can be purchased on rolls from local suppliers.

Suggested size for this Mylar Cling wrap is:

Width: 2.75 inches (width of roll)

Length: 4.75 inches (spacing between each perforation)

The above dimensions will allow for some overhang to protect the buttons and bezel, but also allow for easy removal of the wrap.

It is recommended that during product testing that cotton gloves be used to further reduce the risk of inducing cosmetic issues within the process.

## Functional Testing for Carriers

### Charge Battery

1. Turn on the device by pressing and holding the On/off button until the Apple logo appears on screen.
2. From the Home screen, check the battery level indicator in the top right corner. If the battery indicator shows a low-battery image or is less than 50%, charge the device.
3. Plug device into a known-good Apple USB Power Adapter. Do not charge device from a computer's USB port. Charge time from 0 to 50% will take approx. 20 minutes. If iPhone is extremely low on power, the display may be blank for up to 10 minutes before one of the low-battery images appears:



#### Important:

- Before connecting any cable to the dock connector or the headphone jack, check the port condition for debris, contamination, corrosion, liquid, or damage, and clean or remedy this issue before connecting cables.
- If when charging the device, it becomes too hot, disconnect and replace the device.

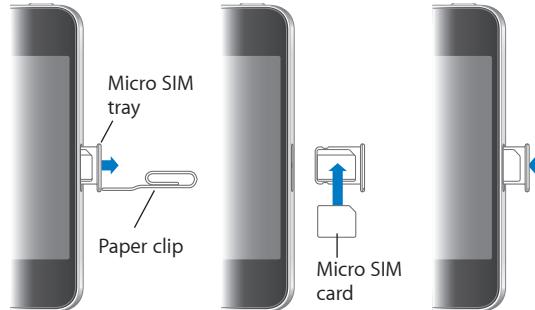
Also refer to:

- Apple Support article [HT1476: iPhone and iPod touch: Charging the battery](#)
- About iPhone Batteries: [www.apple.com/batteries/iphone.html](http://www.apple.com/batteries/iphone.html)
- iPhone Battery Test Information: [www.apple.com/iphone/battery.html](http://www.apple.com/iphone/battery.html)



## Insert Test SIM (GSM networks only)

1. Remove the SIM tray from iPhone.
2. Place the Test SIM in the tray and insert the tray into iPhone.



**Note:** For locations processing devices originating from a single carrier, a standard carrier SIM will suffice. Locations processing devices from multiple carriers will require white-listed SIMs.

## Restore Software and Download Content

The device's must be restored in order to ensure a known-good software condition. A restore returns the device software to factory condition, providing a clean installation for testing.

1. Connect device to a computer running the latest version of iTunes.
2. In the left column under Devices, click on the device name, then go to the Summary panel and click the Restore button.
- Note:** If unable to Restore, follow instructions for [Recovery Mode Restore](#) in the General Troubleshooting section of this document.
3. When Restore is complete, select "Restore from backup" using the backup profile created during [Computer Setup](#). Click Continue and device will restart.
4. Disconnect the device for further testing.



## Test Radio Frequency (GSM networks)

There are two ways to test radio frequency (R/F) functionality on a GSM network:

### Radio Communication Tester & Shielding Box

Handover and connection test for GSM and UMTS (not parameter test):

1. Put Radio Communication Tester SIM into iPhone.
2. Restart iPhone and put it into shielding box.
3. On the Radio Communication Tester make a call to iPhone, then start connection test for GSM850.
4. Make handover from 850 through each of the GSM bands and similarly though each of the UMTS bands on both high and low power levels.
5. Connect to Radio Communication Tester, put iPhone into echo mode and listen to voice quality.
6. Plug in headphones and confirm detect and ability to hear tester.
7. Check mute function (via the Multi-Touch interface).
8. Send test SMS from Radio Communication Tester to iPhone.

### Live SIM calling to another handset or landline

1. Insert active carrier SIM into iPhone if not already present.
2. Make a call from iPhone to another handset/landline in UMTS mode and validate that voice quality conforms to that expected from a known-good iPhone.
3. Disable UMTS (3G) in iPhone settings in order to test GSM functionality and repeat call from iPhone to another handset/landline. Verify that voice quality conforms to that expected from a known-good iPhone.
4. Send SMS from iPhone to another handset.

## Test Radio Frequency (CDMA networks)

1. Restart iPhone and put it into shielding box.
2. On the Radio Communication Tester make a call to iPhone, then start connection test.
3. Make handover through each of the CDMA bands and similarly though both high and low power levels.
4. Connect to Radio Communication Tester, put iPhone into echo loopback mode and listen to voice quality.
5. Plug in headphones and confirm detect and ability to hear tester.
6. Check mute function (via the Multi-Touch interface).
7. Send SMS from Radio Communication Tester to iPhone.



# Functional Testing

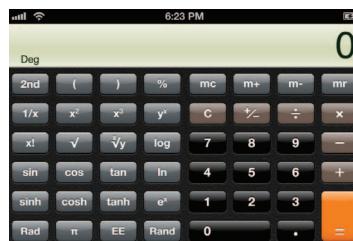
This section may be used by all channels to verify functionality of iPhone 4.

## Test Multi-Touch and Accelerometer

1. Launch the Calculator app (in the Utilities folder by default) to test all but the top row of the screen. Tap each button on the calculator to verify activity.



2. Hold the device in a vertical plane (upright), not horizontal (flat). Rotate iPhone to the left to launch the scientific calculator. Tap all the buttons in the two columns at furthest left.





## Test Buttons and Switches

1. From the Home screen, open any app, then press the Home button to return to the Home screen.
2. Press the volume up/down buttons along the left edge and look for indicator on the display that sound level is changing.
3. Flip the Ring/silent switch back and forth and look for a bell icon on the screen. iPhone should vibrate when placed in silent mode.
4. Press the On/off button on the top edge to put iPhone into sleep mode (the screen will go blank). Press this button again to wake iPhone.

## Test Ambient Light Sensor

The ambient light sensor (ALS) automatically adjusts the display brightness to an appropriate level for the current ambient light conditions. The ALS brightens the display when using iPhone in a bright light environment, and dims the display in low light.

1. Press the On/off button to put iPhone into sleep mode.
2. In a bright light environment, cover the top third of the front of iPhone to block the light (the heel of your hand works well). The ALS is located near the receiver.
3. Press the On/off button to wake iPhone, then slide to unlock. While the ALS is covered, the display should be dim.
4. Uncover the top of iPhone. After a few seconds, the display should return to normal brightness.

## Test Proximity Sensor

The proximity sensor detects when iPhone is held close to the user's ear and immediately turns off the display to save power and prevent unintended touches.

1. From the Home screen, launch the Phone app.
2. Call an approved toll-free number for testing.
3. Cover the top front of iPhone with your hand. The display should go blank.
4. Remove your hand. The display should turn back on when the sensor is uncovered.
5. End the call.



## Test Wi-Fi

1. Go to Settings > Wi-Fi and connect to a known-good Wi-Fi network.



2. Launch Safari app and attempt to connect to a known-good website. Verify that the page fully loads.

## Test Bluetooth

1. Make a known-good Bluetooth device available locally. Make sure the device is powered on and discoverable.
2. On iPhone, go to Settings > General > Bluetooth and verify that Bluetooth is on. iPhone will search for nearby Bluetooth devices.



3. Pair iPhone with Bluetooth device.
4. To unpair a device, tap the blue circle to the right of the device's name and then tap "Forget this Device."



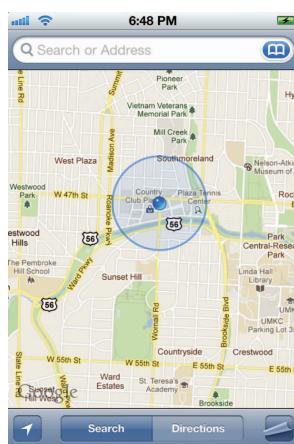
## Test GPS

iPhone uses signals from GPS satellites, Wi-Fi hot spots, and cellular towers to get the most accurate location. If GPS is available, the location indicator will be a blue ball. GPS testing requires line of sight to the sky for a satellite lock.

1. Go to Settings > Wi-Fi and connect to a known-good Wi-Fi network.



2. Launch Maps app and tap the arrow button in the lower left corner of the screen. Maps should show your current location.



## Test Compass

Maps uses the built-in compass to determine your heading. The angle shows the accuracy of the compass reading—the smaller the angle, the greater the accuracy.

1. Move to a location away from magnetic fields.
2. Go to Settings > Wi-Fi and connect to a known-good Wi-Fi network.
3. Recalibrate Compass by waving iPhone in a figure-eight motion.
4. Launch Maps app and tap the arrow button in the lower left corner of the screen. Tap the arrow button again to activate the compass.
5. Verify that when iPhone is rotated, the heading shown on screen adjusts accordingly.



## Test Audio Playback

1. Launch the Music (or iPod) app, choose and play a song. Adjust volume slider if necessary. Verify that music is heard through iPhone speaker along bottom edge.  
**Note:** There is only one speaker on the bottom of iPhone. The mesh opening to the right of the dock connector is the speaker; the mesh opening on the left is the microphone.



2. Plug in known-good Apple Earphones with Remote and Mic. Music should continue playing, now through the earphones. Verify that sound is not distorted and plays correctly in both left and right channels.
3. Double-click the earphones remote. Music should advance to the next song.
4. Unplug earphones. Music should pause when earphones are removed.

**Note:** If distortion or a missing channel is found during testing, inspect for contaminants in audio jack preventing proper electrical connection.

## Test Audio Recording

1. Launch the Voice Memos app.



2. Record a short voice memo by tapping the red circle in the lower left corner of the screen.
3. When finished recording, tap the black square in the lower right corner.
4. Tap the list icon (3 black lines) in the lower right corner. Select your recording from the list and tap again to playback.
5. Recording will playback using the receiver. Verify playback is accurate.
6. Plug in known-good Apple Earphones with Remote and Mic.
7. Repeat steps 2-4.
8. Recording will playback using the earphones. Verify playback is accurate.



## Test Video Playback

1. Launch the Videos app (iOS 5) or iPod app (iOS 4).
2. Select a test video and begin playback.
3. While the video is playing, verify that on-screen controls are functional.

## Test Video Out

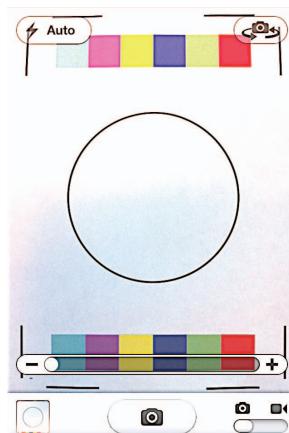
This test requires a TV with composite and/or component inputs plus Apple Composite AV Cable and/or Apple Component AV Cable.

1. Go to Settings > Wi-Fi and connect to a known-good Wi-Fi network.
2. Connect the relevant video-out cable (composite or component) to device and to TV.
3. Launch the Videos app (iOS 5) or iPod app (iOS 4).
4. Select a test video and begin playback.
5. Verify that video plays on TV and that colors are correct.

**Note:** If movie plays in black & white, verify that correct video-out signal is selected (NTSC/PAL).

## Test Main Camera

1. Remove any protective case that may interfere with camera lens or flash.
2. **To take a photo:** Launch the Camera app. Make sure slider in bottom right corner is set to camera and not to video. Aim iPhone and tap the camera button at bottom center of screen.
  - Using a printed color copy of the Test Image (last page of this guide), fill the screen with the Test Image before taking a photo.
  - Verify that the primary colors are representative of the printed Test Image and no dark spots are near the edges of the photo.





3. **Change the focus area and set exposure:** A rectangle on the screen shows the area where camera is focusing the shot. Tap the screen to focus on the circle of the Test Image. The camera automatically adjusts the exposure for the selected area.
4. **Zoom in or out** (camera mode only): Pinch the screen, then use the slider at the bottom of the screen to zoom in or out.
5. **Set LED flash mode** (camera or video mode): Tap the flash button in the upper left corner of the screen, then tap On.
  - If available, take the photo in a dim or darkened area to show where the flash is lighting.
  - Make sure flash is lighting the circle in the Test Image and is not shifted to one side.

## Adjust Main Camera and LED

The main camera can be knocked out of alignment by removing and reinstalling the back cover. Adjustment can be made by gently pushing the main camera module in the direction needed for proper alignment.

**Important:** Do not touch the lens of the main camera with bare fingers. Only touch the surrounding area or use gloves to ensure debris or fingerprints are not transferred to the camera lens.

## Clean Main Camera

1. Use a clean microfiber polishing cloth to remove smudges from the camera lens and the back cover lens.
2. Check the back cover lens for scratches that could affect image quality.

## Test Front Camera

1. Launch the Camera app. Tap the icon of a camera with two arrows in the upper right corner of the screen.
2. Using a printed color copy of the Test Image (last page of this guide), fill the screen with the Test Image. To take a photo, tap the camera button at bottom center of screen.
3. Verify the primary colors are representative of the printed Test Image and no dark spots are near the edges of the photo.

**Note:** Resolution of the front camera is different than the main (rear) camera. Also, the front camera does not have a flash.

