Servicing Mac computers

Steps to consider when troubleshooting / servicing Apple computers, especially the Macbook and

Macbook Pro models .

Not all steps are valid for each model. Search service manual or Apple Knowledge Base for information on what steps are valid for each model based on the problem the customer or you are having.

**Stage 1**

ZAP PRAM Press and hold the Command-Option-P-R keys right after turning it on.

Reset PMU different based on model

Reset SMC

Reset NVRAM - Press and hold the Command-Option-P-R keys right after turning it on.

Rebuild Desktop

**Stage 2**

Firmware update to keyboard

Firmware update to touchpad

Firmware update to optical drive

Firmware update to hard drive

Start in Safe mode (hold Shift key down when starting)

Disk Optimization - KB article 25668

Macbook / MacBook Pro battery updater 1.4 <http://support.apple.com/kb/HT3421>

Recondition Lithium Ion battery - KB article 86284

**Stage 3**

Boot off the AHT media – Hold down the D key when starting.

Boot off the ASD media – Hold down the C key when starting until the “loading” screen appears.

Boot off OS CD . / Disk utility /

Common keyboard commands.

1. Force Quit (Option-Command-Escape)
2. Restart (Control-Command-Power)
3. Force Shut Down (press the power button for 10 seconds)

Reset SMC on MacBooks, MacBook Pro models

[**http://support.apple.com/kb/HT1411**](http://support.apple.com/kb/HT1411)

**MacBook, MacBook Pro except MacBook Pro (17-inch, Early 2009)**

1. If the computer is on, turn it off.
2. Disconnect the AC adapter and remove the computer's battery.
3. Press and hold the power button for 5 seconds and then release the button.
4. Reconnect the battery and AC Adapter.
5. Press the power button to restart the computer

**Note:** Starting with MacBook Pro (Late 2008) and MacBook (Late 2008) models, you may instead use the reset method for MacBook Air (below) to reset the SMC.  All earlier models of MacBook and MacBook Pro must use the method described above, which involves removing the battery.

**MacBook Air (Original), MacBook Air (Late 2008) and MacBook Pro (17-inch, Early 2009)**

1. If the computer is on, turn it off by choosing **Shutdown** from the **Apple ()** menu.
2. Connect the power adapter to a working power source.
3. On the built-in keyboard, press (left) Shift-Control-Option along with the power button once.
4. Wait 5 seconds and press the power button to start the computer.