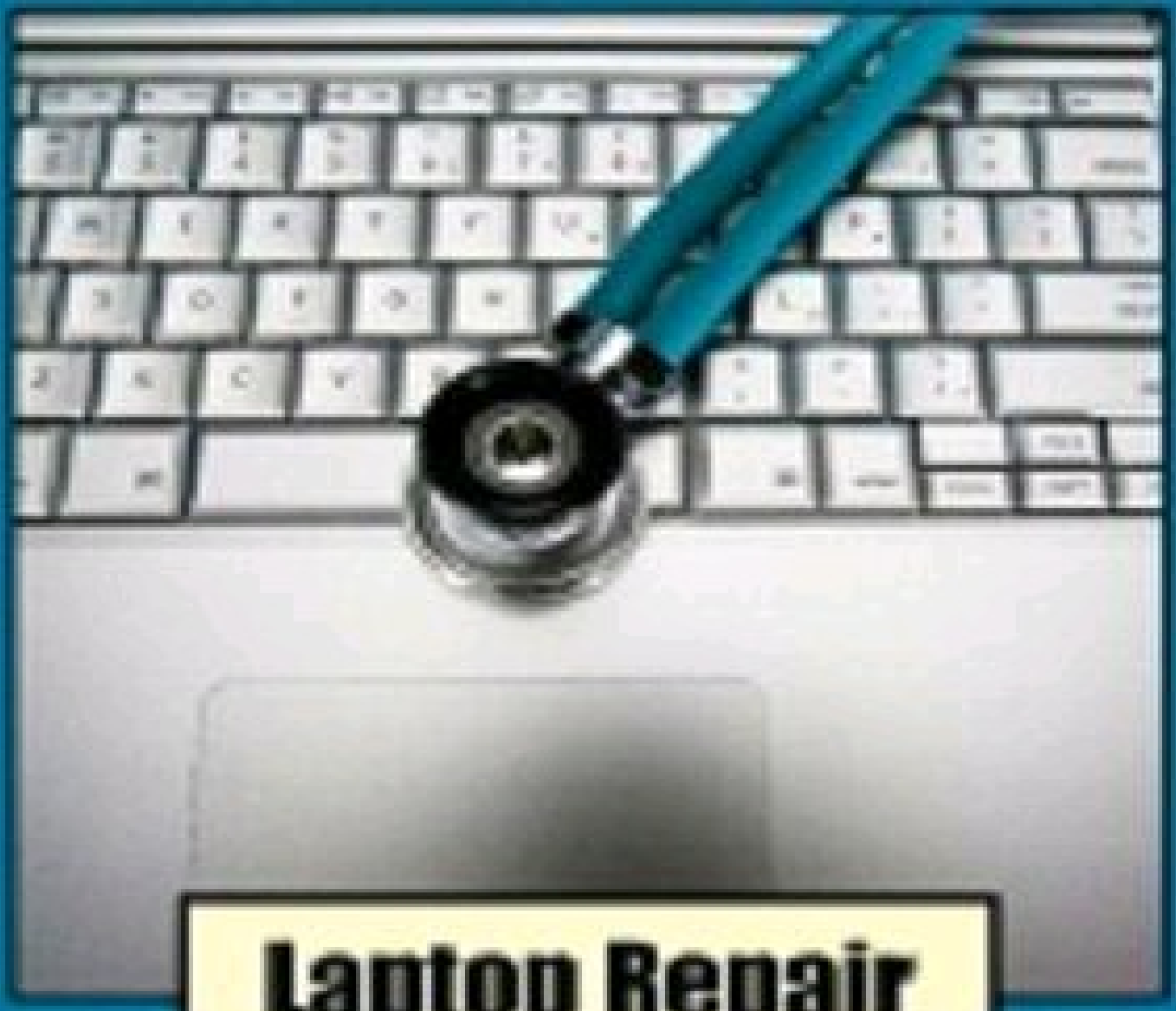

Laptop Repair Complete Guide

Including Motherboard and Component Level Repair Instructions!

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This part is located inside the **Power Inverter** -
laptop screen, in the middle-bottom of the screen housing. Some inverters will be located in different places, it all depends on the model, and those are rare… like on the rear side of the screen or the side of the screen… but again those are rare, and you will 90% of the time be replacing one located just below the actual display panel. The screen light plug is made in such a way that you can not reverse the plug and accidentally plug it in the wrong way, rather, it will only plug into the inverter the correct way (one port is larger than the other).

 LED light strips

These are the newer source of
light for laptops. The light emitted is much brighter and whiter as opposed to the yellowish tint to a CCFL bulb. LED light strips will have the inverter/converter built into the rear side circuit board panel on the screen and they will not have a physical inverter board under the screen.

 Hinge Set (L&R) -

The hinges attach to the
bottom base of the laptop and will secure on either end of the inner screen, securing itself to the screens rear cover, then securing the screen by using Hinge rails that run up each side of the screen.

 Touchpad/Mouse -

Another self-explanatory part
that everyone should already know… Some of these will have the capability of being disabled or re-enabled by a button located nearby on the palm rest, some will not.

 Media Strip -

This part is located directly above
the keyboard and will sometimes include the hinge covers with it. It will usually include the power button, and some lighted icons such as battery monitor, hard drive monitor, 15luetooth and Wi-Fi monitor. Some laptops will allow touch sensitive buttons and some will be push buttons, though all will be labeled. This part is usually just a snap in place part, though if it is secured to the laptop, its screws will be located in the battery bay and on the underside rear end of the laptop near the corners.

 Optical Drive -

This includes a DVD drive, a cd drive a Blu-ray player or similar.

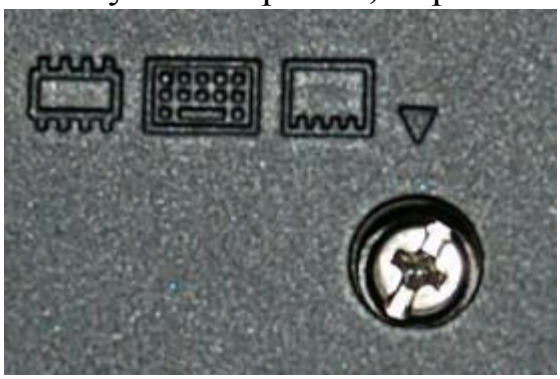
hard drive, the Wireless card, RAM, and similar. The hard drive will sometimes have a caddie, and the caddy's purpose is to secure the laptop to the hard drive. A caddie will wrap the drive or will cover one side of the drive then will be secured with small thick screws (usually 2 to 4). The hard drive and caddie will then slide into the hard drive port (whether SATA or PATA is irrelevant) or it will use a ZIF connection and pull away from the port. Use the installed pull tab on the hard drive to either slide or pull the hard drive away from the laptop. Some hard drives will be secured to the laptop and some will not. Once the hard drive is removed, look in the empty hard drive bay for any screws there. Remove any screws in that bay.

Next part to remove is any Wi-Fi Card and antenna wires. You will typically find the Wireless card on the bottom side of the laptop. Most models will allow you to leave this card installed and will not hinder the disassembly process. The Wi-Fi antenna cables are what you want to remove… You will disconnect the 2 (or more) antenna wires and un-route them from the case track. These wires will typically run up to the upper-side of the motherboard and you need to allow them to be pulled away from the upper side by loosening them and untracking them on the underside. Remove the card also if needed.

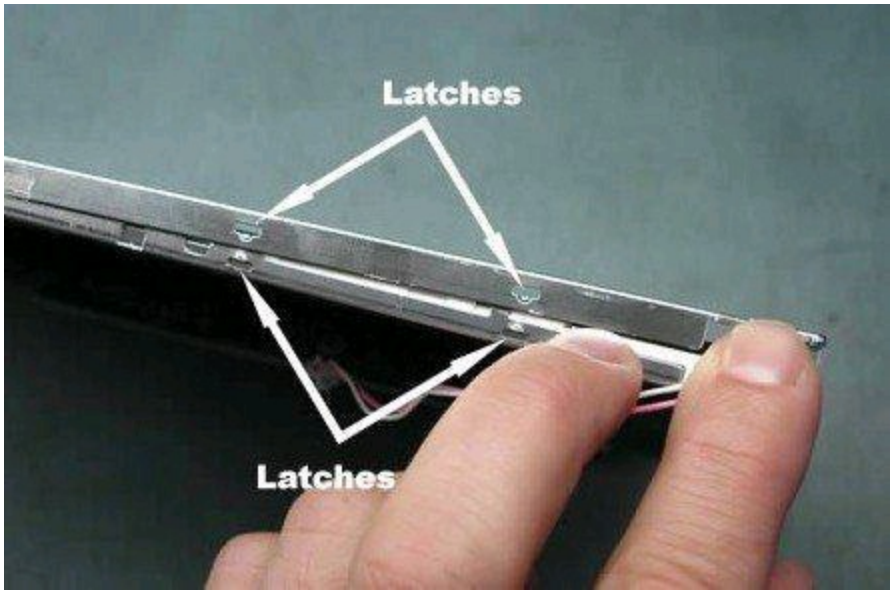
Continue on removing the bottom base screws, all along the front of the laptop (still on the bottom side), usually there are 4 to 6 in the front, sometimes a sticker or rubber plug is hiding the screw, you will remove any blocking tab and remove the screw.

When removing the CD/DVD rom, you need to visualize the actual size and shape of that drive in relation to its location on the laptop and remove the securing screw at the rear of the cd rom drive which you will typically find located near the center of the laptop and it will almost always have a perforated Icon imprinted on the bottom case right next to the corresponding screw hole.

Since I mentioned these imprinted icons, I will now elaborate on them and their use. If you look closely at the bottom of the laptop, you will see Icons near some of the screw holes. Typically the RAM has an Icon, the Wi-Fi will also have an icon, the hard drive will have an Icon, the keyboard screw locations will have an icon, and the cd drive locking hole will have an icon. It is also common for a Screw length guide to be located somewhere on the underside of the laptop, either imprinted directly into the plastic, or printed onto a sticker.



Once you have removed the screw that secures the optical drive in place you will need to slide it



The object now is to pull this metal bulb tray up and away from the screen to swap out the bulb. There will be a few things you will have to do before simply lifting this metal/aluminum tray away from the screen.

In the above photo, the red arrow shows the metal bulb tray and the blue arrow shows you will be sliding it outward to remove, after you free the LCD wires.

Remove any tape that is securing the LCD bulb plug wires to the screen bottom side (usually a piece of thin yellow tape). You should now see a white tab that the wires track through. This wire white tab/holder is attached to a thin plastic rail that runs horizontal along the top front of the screen

Separate the fan lid from the fan base to clean. Most fans will be magnetic not ball bearing, and you will be able to pull the fan blade off of the fan base to clean it. Run the toothbrush in between the fan blades from the top side and bottom sides of the fan. It is a good idea to also use a paper towel or similar (I will spray glass cleaner on it, then fold it a bunch of times to make it thicker, then run the wet towel in between the fan blades) to better clean it, also cleaning the base of the fan housing. Reassemble the fan and reattach it to the heat-sink. Reapply any thermal paste to the heat-sink's cooling pads if needed.

If you plan on adding thermal paste to the heat-sink, First, It absolutely must be Silver Thermal Paste, not Ceramic (silver in color, not white or pink in color). Also, you absolutely must remove any remaining ―old‖ thermal paste from both the HeatSink and the Chip or CPU it is covering. To remove old paste, use denatured alcohol on a paper towel, rub away. If the old paste is real thick and crusty, use a guitar pick or flat plastic card or tool to gently scrape away the paste. Important here not to gouge the heat-sink thermal plate if you are scraping the paste away… that is why you would use plastic to remove it, or just a paper towel.

More Pictures of Fan/Heat-Sink Cleaning

TIPS FOR A SUCESSFUL REFLOW:

Remove Chip Sealant

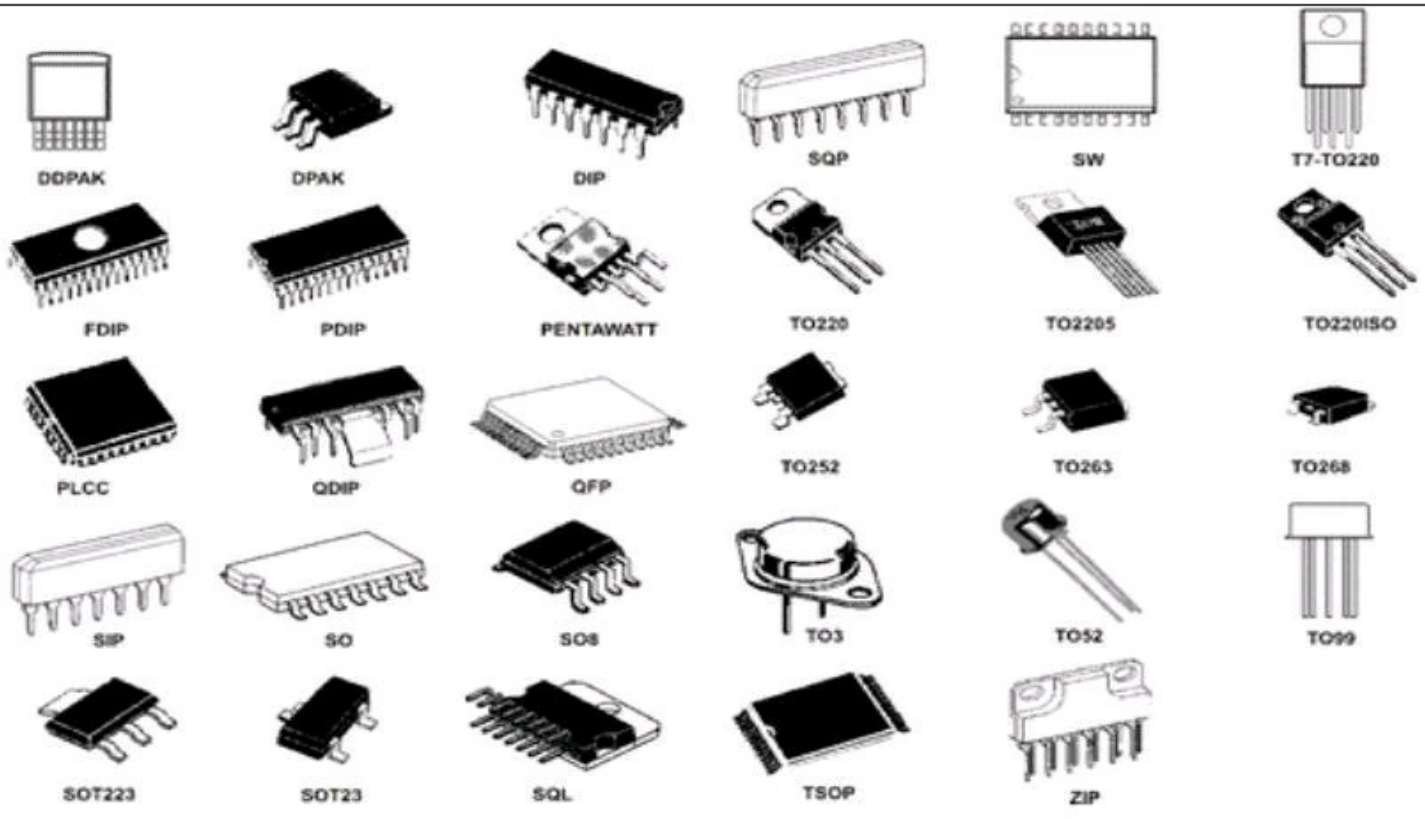
Most GPU Chipsets will have some sort of sealant or glue used on the edges of the chip to secure it to the motherboard (usually red, black, or clear) I have had many successful repairs without removing this sealant, though it is best to remove it prior to reflow to allow the flux and heat to enter.

Removal of the sealant should be done as part of the reflow process, the beginning of the process. You begin heating the GPU without the coin-stack, holding the tip of the heat gun roughly 3 inches away from the chip at a 45 degree angle and circling the chip while you heat it. You move around the chip in a circular motion aiming the heat between the chip and board. The best thing to do would be to get the Cone Tip (looks like a 3 tier cake) for the process. Use either the cone tip or an exact fit Square tip for reflowing.

Begin heating the chip and monitor the temperature with an Infrared Laser Guided Thermometer (if available) to a temperature of 145 degrees Celcius.

REMEMBER that you must insulate any parts or components that will melt or can be damaged from the extreme temperature… This would include any plastic plug ports, CPU Dock, RAM DIMM ports etc... Use tin sheets or Aluminum Foil or similar… No need to wrap the motherboard like a Present though, just the components in the immediate area. It is also a good idea to cover the CMOS battery with foil; or remove if the plug-in type.

Once you have reached 145 degrees celcius, you will use a mini flat head screwdriver to remove



IC Transistors

top to the side. You want to be holding the soldering gun almost parallel to the IC chip, you will use as much of the side of the soldering gun tip as you can to heat as many arms on the chip as you can at one time. Once you have a good portion of the corner you started on raising upward, you will pick a side… either top or right, then, continue heating all the way around the chip and its arms still prying the corner. If needed, go around the chip again with de-soldering braid to ease the removal.

You must remember to remove any remaining flux from the motherboard. I will remove any flux at each step of the process. I will apply the solvent WD-40 to a toothbrush (you can use a circuit board grade cleaner if readily available), and gently brush the area (make sure to dab off any access cleaner from the bristles using a cloth or paper towel, you don't want a lot of WD-40 to contact the motherboard). Wipe away any remaining cleaner with a cloth or paper towel using a dabbing motion as opposed to scrubbing back and forth because you might damage components in that area of the board. Now you will notice there is still remaining flux (brownish to blackish in color), you will need to remove this too…

I find the best tool for flux removal is the mini flat head screwdriver because of its sharp, yet still a dull edge, you need to apply the flat tip of the screwdriver and scrape the remaining flux paste away. You will notice the flux paste has hardened and is no longer gelatinous in form… this is due to the heat and the chemical mix of the cleaner. It makes it easy to scrape away as opposed to scraping off fresh paste (it gets real messy and sticky, a sticky that won't wash off for a few hours…)
Always use a magnifying glass when able too when working on a Laptop Motherboard, it is better to see what you are doing clearly.

I use 2 kinds of magnifying glass(s) when working on motherboards. The first is a small hand held glass with a plastic handle and it is lighted with an LED bulb. It is a 5x lens and rectangle in shape. I also have a Magnifying Glass Headset with Multi LED Adjustable Headlamp and 4 Lenses all adjustable.

The Headset really helps when your hands are both occupied. It allows you to see all the components close up to look for faults and will help in removal of components by bring your sight close in to what you are doing.