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# T60/T61 Fan Cleaning/Replacement

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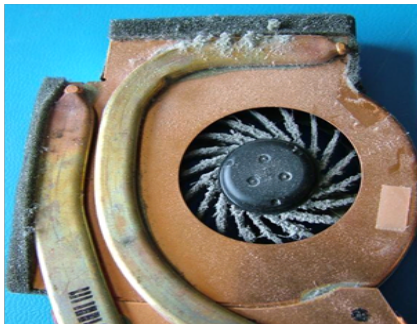
Started 07-30-2010 by  amace

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## T60/T61 Fan Replacement/Cleaning

The T60/T61 Thinkpads have very similar looking components. This guide will be able to cover both models, as the mechanical assemblies are very similar.



If a T60 or T61 system is exhibiting signs of overheating, processor speed stepping, system shutting down, or high external temperatures, it could be that the CPU & GPU are running hot. This often is caused by a dirty fan or dried / separated thermal paste between the heat sinks and the CPU / GPU.

This is a very easy problem to fix, requiring about \$15 and a half-hour of your time.

### Symptoms:

Some reasons you may want to replace or clean your fan:

- Fan is very loud when the CPU load increases. Possible causes could be dried lubrication in the fan, worn bearings, or just a dust buildup.
- CPU is running very hot. Applications like tpfancontrol can tell you the temperature of the CPU and GPU temps above 80C under load are high, and above 90C suggest that the fan or heatsink could be clogged. Ambient temperature should be taken into consideration.
- PC will shut down during increased loads on the CPU or GPU. This happens when the CPU or GPU overheats - typically above 95C. Its a protective measure taken as to not fry your CPU.

### Computer Skill required:

This is an easy fix, requiring only comfort opening your laptop case and handling laptop components

### Tools/parts needed:

- 1 Small philips Screwdriver
- 1 Can compressed air (Varies, usually around \$5)
- 1 small tube of Arctic Silver, or comparable Thermal Paste (roughly \$10-15)
- 1 lint-free cloth
- 1 container of Denatured Alcohol (Rubbing alcohol can be used, but contains water and is not pure. Paint thinner may also used for removing old thermal paste)

### Steps:

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1. Unplug your laptop and remove the battery.
2. Remove the screws holding the Palmrest and Keyboard down. These will be marked on the bottom of your laptop. Put these in a cup so you don't lose them or mix them up with other screws. I like to place all the screws from the bottom of the laptop in one cup, and the screws from the inside in another cup. Carefully remove the palmrest and keyboard, minding the ribbon wires connecting the keyboard and Trackpoint to the motherboard.
3. Remove the screws that hold the black bezel that surrounds your keyboard. These are not marked.
4. Pop the Bezel off. If it does not go easily, don't force it, there is probably another screw holding it down.
- 4b. (optional) Sketch the layout of the components in your laptop. This will help ensure everything goes back where it belongs, and you don't have any leftover screws/parts. Its also helpful to draw in each screw you remove, and mark whether it is a black or a silver screw. Another approach is the press the screws into a rectangular square of foam so that locations correspond to where they came out of the laptop like this...

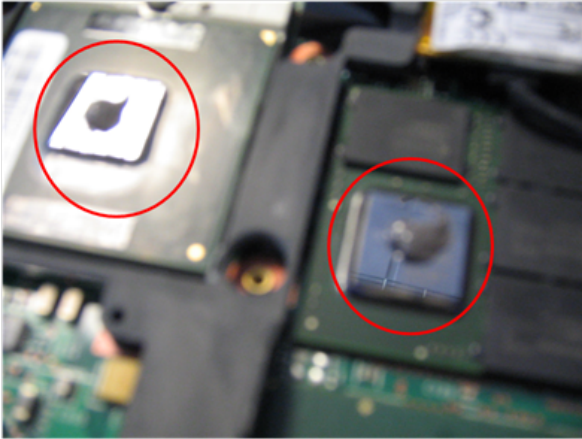


5. Unscrew the speaker in the top left of the laptop. Place the screws in a new cup.
6. Remove the two metal 'arms' which hold down the Fan unit. Place the screws in the cup, and put the arms aside.
7. Remove any other screws that hold the fan in place - these will include 4 screws that attach it to the CPU and several more that clamp it to the GPU. (There are different layouts between the T60 and T61 models depending on whether they are using integrated or discrete graphics and whether 14" or 15" chasis. Picture below illustrates a typical arrangement where the 4 screws hold down the heat sink over the GPU. The silver piece in the lower-middle is the referenced clamp piece that holds the heat sink on the GPU. Some models will have 1 piece, some will have 2 seperate clamps for GPU. Refer to the HMM for your specific model system for detailed help.



8. Remove the fan unit. It will have a power cord which attaches down the left side of the laptop. Unplug this as well. The fan might require a bit of pressure to remove, as there will be thermal paste holding it in place. If it really does not want to go, check to see if there are any screws still holding it in place.
9. Using the lint-free cloth and alcohol, remove any thermal paste stuck to the fan, CPU and GPU. Make sure to just dab the alcohol on the cloth, DO NOT pour it directly on the laptop components. That is a good way to ruin your laptop.
10. Allow the components to dry (should only take a few seconds, alcohol dries fast)
11. using your compressed air, blow out the inside of the fan, trying to blow all the dust out the vents (Don't blow it back into the laptop.) Also blow out the area where the fan would sit, and anything else that looks dusty. (If you are actually replacing the entire fan, make sure it is the same as the fan you just pulled)

12. Put a bit of thermal paste on the CPU and GPU. Make sure its not too much, but again, not too little. It should cover the CPU/GPU where it contacts the fan once it is pressed in place. A small dab should do it - perhaps 3-4mm in diameter - see circled areas as illustrative of the general amount to use. DO NOT apply thermal grease to the light grey silicon thermal pads that are on some heatsink designs - these pads often contact the GPU and ancillary chips. The CPU will always use thermal grease.



13. Press the fan back in place, making sure everything lines up correctly how you found it. Make sure the Wireless antenna wires are not being pinched, and are still connected to the wireless card, and you plug the fan back in. You may need to carefully place the wires back in the copper guides on top of the fan on some models.

14. Screw the fan in place, and put the 'arms' back in how you found them. Most fans have 4 mounting screws around the fan itself. Those should be tightened in an "X" pattern, for example, upper left, then lower right, then upper right, then lower left. Screws should be tightened in 2 stages. First, get all of them snug, then tighten them all. The process is similar to tightening lug nuts on a car.

15. Put the speaker back in place.

16. Blow out the speaker holes in the Black bezel, as these often get clogged with dust as well, then replace the Bezel. Be careful to slide the bezel toward the rear of the laptop and ensure the tabs fit into the slots (this can be viewed from underside in the battery compartment area) Screw this back in place.

17. Replace the Keyboard and palmrest, making sure to re-attach the wires that connect them to the motherboard. Screw them back in place.

18. Put the battery back in, plug it in and turn it on. It should start as usual. If it doesn't start normally, open the case back up and make sure you have plugged everything in properly.

#### Tips:

- Don't cheap out. Buy compressed air. Don't think you can use your mouth to blow the dust out. You won't get it all, you'll get a face full of dust, and you'll end up getting small bits of saliva inside your laptop.
- Buy good thermal paste. You can get cheap stuff for only a few dollars, but the good stuff really makes a difference. You should have enough to do many fan replacements if you wanted to. Once finished, save it and put it aside. (artic silver is popular)
- If your screwdriver is dull/stripped, get a new screwdriver. Some of the screws are in place very tightly. Don't force all your weight on the laptop, as you could break something. If you feel the screw stripping, use a new screwdriver.



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