

Project 11

Modify Your PC's Case

What You'll Need

- **Hardware:** Rotary tool, file saw, tapered reamer, metal cutter
- **Software:** None
- **Cost:** \$100–200 U.S.

This project shows you how to get started on modifying the case of your desktop PC—preferably after its warranty has expired. The project shows you the tools you typically need, gives you examples of a couple of simple projects, and then leaves you to exercise your imagination and do-it-yourself skills.

There are two main reasons to modify your PC's case:

- **Practical** To make a component fit that wouldn't otherwise fit. This project explains how to create the space for and mount a larger fan to keep a PC cool.
- **Aesthetic** To make your PC's case look better (or worse, or simply more interesting) than the manufacturer made it. For example, enthusiastic “modders” have created cases made of wood, of see-through acrylic (with lights inside), and of other materials. Others have created a PC that looks like a weapon of mass destruction, a PC that looks like a gingerbread house, and even a PC that looks like a toilet. (If you want to see some of these, look at <http://gadgets.fosfor.se/the-top-10-weirdest-case-mods/>.) This project shows you how to cut a hole in the side panel of the case, and then put a transparent panel over the hole, so that you can see the inside the computer while the side is on.

note

This project doesn't cover modifying laptop PCs. You can of course attack them with the tools described in this project—but unless the laptop is unusually roomy inside, you will be able to achieve little change without inflicting damage. If you feel an insatiable urge to modify a laptop PC, try scrounging some broken ones to practice on before you attack your pride and joy.

Step I: Get the Tools for the Job

You can severely modify a PC—or wreck it completely—by using conventional household tools. But for good (or even acceptable) results, you’ll probably want to use specialized or semi-specialized tools. Exactly which tools you need depends on what you’re planning to do to your PC. This section discusses the main tools you’re likely to need.

caution *Normally, you’ll want to modify only your PC’s case, not any of the PC’s components. This should go without saying, but if you’ve seen the tech-support horror-story forum stories that describe users finding that a new video card “had too many pins” to fit in the slot on the motherboard, and “fixing” the problem by cutting off the extra pins, you’ll know it doesn’t go without saying. (The video card is the wrong kind for the slot on the motherboard, and the extra pins are vital to the card.)*

Rotary Tool

For minor drilling, precision cutting, grinding, sanding, or buffing, you’ll probably want a rotary tool such as a Dremel. Figure 11-1 shows a cordless Dremel with a starter kit of attachments, which include attachments for cutting and sanding.

Figure 11-1

A rotary tool can perform a wide variety of case-modification tasks with the right attachments.



caution *Always wear goggles or other full-eye protection when using a Dremel or other rotary tool.*

File Saw

If you need to put a hole through a plastic part of your PC’s case, one possible tool is a file saw (see Figure 11-2). This is an inexpensive tool with a drill-like tip and serrated shaft that you can use to cut holes. The results are rough, but you can tidy them up afterward with other tools as needed.

Figure 11-2

You can use a file saw to cut holes in a plastic case.



Tapered Reamer

If you need to put things through your PC's case in ways the case's maker didn't intend, you probably need to create some holes and enlarge others. Where there's an existing hole, you can drill with a larger bit to make it bigger, but what's usually easier and neater is to use a *tapered reamer*, a spike that tapers from a narrow point to a thicker haft, and which has cutting blades along the taper. You push the reamer through an existing hole, and then turn it while pushing it in to enlarge the hole to exactly the right size. Figure 11-3 shows a tapered reamer.

Figure 11-3

A tapered reamer is a great tool for enlarging existing holes to exactly the size you need.



caution

Most reamers are designed to work in one direction only—for example, clockwise. Even though this may appear to be a tool where you don't need to read the two lines of instructions on the packaging, do just that.

Metal Cutters

Metal cutters, also called *tin snips*, tend to look like a particularly macho pair of kitchen shears (see Figure 11-4). They're useful for cutting through sheets of metal—for example, for enlarging an existing hole you've made in a side panel—or for trimming off extra bits of metal left over from your work with other tools.

note

Apart from these specialized and semi-specialized tools, you'll probably also need household tools such as a metal file and a pair of pliers. Work gloves are also a good idea.

Figure 11-4

Metal cutters let you trim metal to fit or cut through sheets of metal.



Step 2: Mount a Larger Fan

This step explains how to mount a larger fan to keep your PC cool.

note

A larger fan is especially handy if you're looking to reduce the amount of noise your PC makes. See Project 22 for a detailed look at how you can silence your PC.

To mount a larger fan than your PC's case is designed for, follow these steps:

1. Shut down Windows, turn off the PC, and disconnect all its cables. Put the PC on a work surface.
2. Open the case. For example, undo the thumbscrews or screws that secure the case.
3. Touch a part of the metal chassis to discharge any static electricity you have built up.
4. Choose the fan you will use, and then measure the amount of space it takes up. The fan may come with a template for marking the ventilation hole and screw holes it needs. If it doesn't, you may find it helpful to make your own template by using a piece of cardboard or stiff paper.
5. Find a suitable location for the fan:
 - To keep the noise down, you should mount the fan on the frame of the PC's case. You *can* mount a fan on a panel (for example, the top panel) in a pinch, but it's a recipe for producing vibration as well as airflow.
 - If possible, site the fan so that it will be removing heat from, or providing cool air to, the PC's hotter components, such as the processor, processor fan, or graphics card.
6. Make sure the fan is oriented the right way:
 - A fan at the front of the case should normally be drawing air into the case.
 - A fan at the back of the case should normally be blowing air out of the case.
7. Measure where the screw holes will need to go.
 - If possible, use one or more existing holes intended for mounting fans. For example, if your case is designed to take an 80mm fan and you're trying to shoehorn in a 120mm fan, you may be able to use one of the corner holes.
 - You may be able to simply stick your template to the case and drill through it.
8. Drill small holes for the screws, and then use a tapered reamer to enlarge them carefully to the right size for the screws.
9. If necessary, enlarge the ventilation hole for the fan.

10. Mount the fan and screw it in place, using any vibration-damping mounts provided.
11. Connect the fan to a power connector. If you're using a variable-speed fan controller, mount it too. (For example, some variable-speed fans have a controller that mounts in a spare expansion slot, with a control knob outside the PC.)
12. Put your PC back together, connect its cables, and restart it.

Step 3: Create a Viewing Window in the Case

To make a viewing window in your PC's case (see Figure 11-5), follow these general steps:

1. Shut down Windows, turn off the PC, and disconnect all its cables. Put the PC on a work surface.
2. Open the case. For example, undo the thumbscrews or screws that secure the case.
3. Remove the panel in which you will create the hole.
4. Measure and mark the hole on the inside of the panel. CD pens and permanent markers work well on light-colored case panels. If the panel is dark-colored, use a grease pencil or paper tape to mark the hole.

Figure 11-5

A viewing window in your PC's case lets you see what's going on inside while it's running.



5. Drill through the case at one corner of the shape. Position the drill hole a little way within the shape so that the hole will not pass the extreme of the shape even when you expand the hole.
6. Using a tapered reamer or similar tool, ream the hole until it is large enough for your cutting tool to pass inside.

note

If you're using metal cutters as your cutting tool, you may need to drill several holes and then ream them together into a slot. Keep each of the holes inside the shape rather than placing them on the line.

7. Cut the hole. This is easier said than done:
 - In an ideal world, you'll be able simply to cut smoothly and evenly all the way along the outside of the hole.
 - In practice, you'll often need to hack out the center of the hole, and then work your way around the edges, cutting off small pieces at a time.
 - Stay within your shape. You can always extend the hole later, but you'll have a tough time making it smaller once you've cut outside it.
8. Tidy up the hole:
 - File off any large rough edges.
 - Use a rotary tool to sand down smaller rough bits.
 - Use pliers to straighten any parts of the metal that you've bent out of shape.
9. Cover the hole with your window material on the inside of the panel, and then secure the window in place. For example, you might use adhesive to bond a sheet of clear or colored acrylic over the hole.
10. Clean up the case panel and your workspace, and then put the case back together. If the result lacks polish, consider painting parts of the case, or decorating it with stickers or decals, to disguise any flaws.

tip

If you put a viewing window in your PC's case, you may also want to add an internal light to make the PC's innards easier to see—or to make them glow in the dark. An online or offline computer store will offer various options.