

- Needle-nose plyers
- Magnifying glass
- Finger-nail sanding board
- Scissors
- Paperclips

Spare parts such as propellers, batteries for the drone and controller, SD cards if your drone uses one for video, and picture storage.

There are a few things to keep in mind when purchasing a DIY kit. As indicated above, not all kits include a transmitter. Depending on what you want to do with your drone, you could purchase a cheap one just to fly around with, or a top of the line to compete with. The costs can vary from roughly \$80 to \$1000 or more.

Take your time when building your kit. A drone must be perfectly balanced in order to fly properly. Sometimes parts from a kit might have extra scrap on them from the molding process that might need to be trimmed off. Make sure that if you need to trim any wires, that you trim them all the same length where possible.

If you are building a quad-copter, you will be given four propellers. Two will be installed in the Clockwise (CW) direction and two in the counter clockwise (CCW) direction. You will need to pay strict attention to get these correct or your drone will not fly correctly.

3D PRINTING A DRONE

After building a few drone kits, you might want to custom build your own drone. Drone parts are readily available online or from hobby stores. People who build their own drones, frequently custom 3D print their own drone bodies to specific needs. The advantage is that it's relatively easy and cost effective to change body designs. Drone 3D body designs are free and are available by searching on the internet.

The PICO 110 High Performance Foldable Micro Quadcopter can be found on many sites that carry 3D printer designs. For this example, I downloaded the files from <https://www.thingiverse.com/thing:2064676>. When you download the zip file, there will be six files that make up the design; a top, bottom, and four connector arms. You will need to print two CW and two CCW arms. The other two files can be used if you decide you want First Person View (FPV). Since the body parts bolt together, you could always add this functionality later.

I used the DaVinci XYZ printer to print my parts but you can use just about any printer as long as the bed can handle the part size and the material you plan to use. The designer recommends using Polylactic Acid (PLA) to minimize warping, but the parts are so small, that the warping will be minimal. I used Acrylonitrile Butadiene Styrene (ABS) just because that's