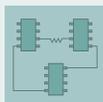


# DIY CIRCUITS



## FLASH MEMORY HARD DISK



This fake hard drive stores more data and raises eyebrows. By Brian Nadel

I love mixing technologies to create an amalgam that looks like one thing but is actually something different. A case in point is the old hard drive that I stuffed full of flash memory. It looks like an internal drive, but it's actually a solid-state memory peripheral that plugs in via USB. This makes it an instant conversation starter for anyone who ventures into my office.

### 1. Gut the hard drive.

The original drive stored 10GB, and by filling it with three 4GB memory sticks, I actually increased its capacity. To start the conversion, I attacked the 3½", 2-platter hard disk drive. Using a T9 Torx screwdriver, I unscrewed about a dozen screws from the case. Then I tore out the guts and cleared out space to make room for the flash drives and their cables.

Photograph by Sam Murphy

#### MATERIALS

Old hard disk drive **does not need to work**

Small USB hub

USB flash drives (3–4) **as many as the USB hub will take; I used 3.**

USB cables (3–4) **Get 2–3 short ones, to let the memory sticks pack close together, and another one of any length for the external cable.**

Insulating tape

#### TOOLS

Torx screwdriver **My drive's screws needed a T9.**

Large slotted screwdriver or equivalent **for prying**

Pliers

Dremel with abrasive wheel bit

Drill and drill bits

X-Acto knife

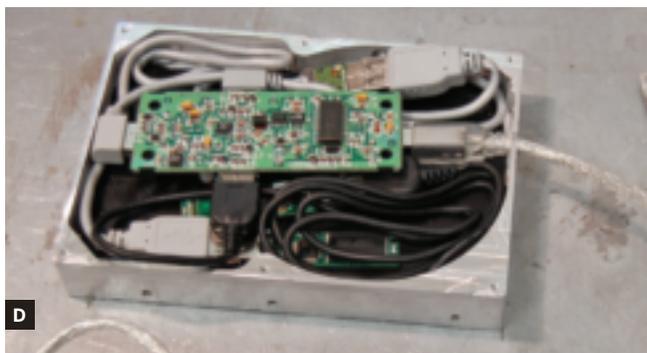
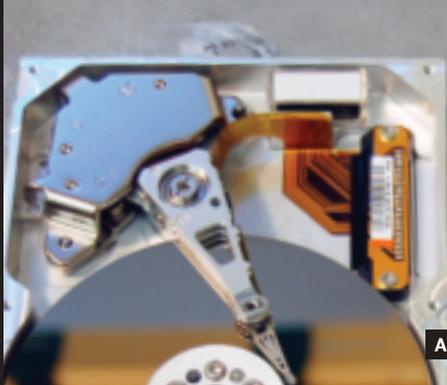


Fig. A: Hard disk drive with case opened. The neodymium magnet, upper right, is strong enough to require prying. Fig. B: Clear space inside the case by removing internal posts.

Fig. C: Pry apart the USB hub case and remove its board. Fig. D: Memory sticks, cables, and USB hub packed into the hard drive case. The external USB cable exits a hole drilled in one end.

You can use a large screwdriver to pry loose the magnets (Figure A, at top left). Any molded nubs or mounting studs inside you can break off with pliers (Figure B) and grind flat with a Dremel and an abrasive wheel.

## 2. Mount the USB hub board.

With the drive's case empty, I lined it all around with insulating tape, to prevent shorts. Next, I pried the USB hub's case apart (Figure C) and found a way to fit its board inside the drive case. I then drilled a hole in one end of the case, at the edge next to the lid, making it just big enough to tuck the external USB cable down into.

## 3. Stuff it all in.

Finally, it was time for the main event. I removed the flash drives from their cases, used USB cables to connect them to the hub, and packed everything into the hard drive case (Figure D). It was a tight fit, but there was enough room.

I then threaded the external cable out through its hole, screwed the hard drive's lid back down, and plugged the cable into a computer to make sure that my handiwork actually worked.

## 4. Configure 3 drives as 1.

All 3 drives responded, so there was one more thing to do. Rather than having to deal with 3 separate drive letters, I navigated Windows to combine them into a single letter. To accomplish this, start at the Disk Management page, and convert each drive into a "Dynamic Disk." This isn't hard, but it's tedious and confusing.

Now the 3 drives act like a single disk that gives me a place to stash my most precious digital possessions. I took an old disk drive, and in a flash I converted it into a solid-state "drive" that holds more data and runs faster than the original. You can teach an old drive new tricks!

Brian Nadel is a New York-based writer and the former editor-in-chief of *Mobile Computing & Communications*. A 25-year veteran of technology journalism, he's worked for *Popular Science*, *PC Magazine*, and *Business Tokyo*.



### Salad Tong Finger Saver

A cut-down pair of plastic salad tongs keeps me from having cut-down fingers when cutting small items on a band saw.

—Frank Ford, [frets.com/homeshoptech](http://frets.com/homeshoptech)

Find more tools-n-tips at [makezine.com/tnt](http://makezine.com/tnt).