

AROUND THE MAKER WORKSHOP, BROUGHT TO YOU BY DREMEL

By Eric Chu

» Turn a few Lego bricks into a fun and functional custom-built USB flash drive case

There are a number of projects online for re-casing a flash storage drive using Lego bricks, but most of them leave the USB connector exposed. In this project, we show you how to create a Lego case-mod that includes a Lego cap that snaps into place.

Directions

Step 1: First, you'll want to take apart your USB flash drive (Figure A). I went with PNY's Micro Swivel Attaché flash drive because it's small and easy to take apart.

Build your case (body and cap) using a stack of 2x2 Lego bricks that's at least as long as your USB drive. Mine took 3 Legos.

Wrap tape around the 3 bricks to keep them from being scratched (Figure B).

! WARNING: It's always important to use safety goggles or safety glasses when operating any power tools. Work in a well-ventilated place and wear a dust filter to avoid breathing in particles.

Step 2: Place the stack in a vise, bottom-side up. Attach a drill to your Rotary Tool and drill through all 3 of the bricks (Figure C).

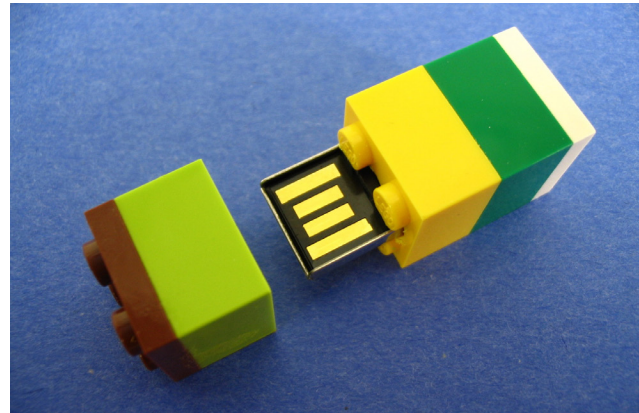
Step 3: Attach the router bit and cut away the round post in the center of the bottom brick (dark green) 'till it's flush with the inner surface (Figure D).

Step 4: Vacuum or blow out the plastic shavings. Place the USB drive in the Lego well and estimate where you'll need to cut to fit the drive (Figure E).

Next, we're going to slot the bottom and middle bricks to house the USB.

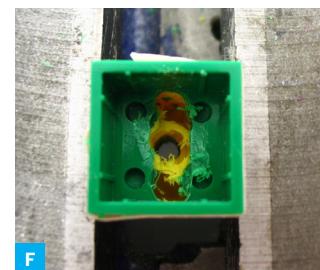
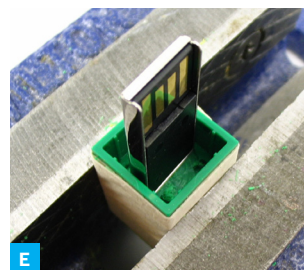
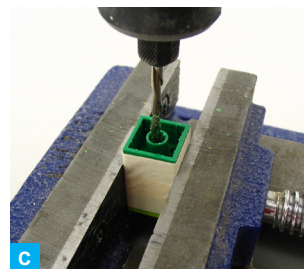
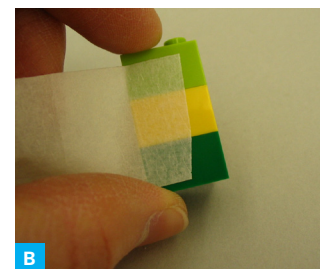
Step 5: Slot the bottom brick. Use the router bit to create an opening that's the width of your flash drive (Figure F).

Remove the shavings and place your drive in the slot to check for fit. It should sit straight in all directions, but don't worry if it has room to move around. We'll fix it in place when we glue it.



MATERIALS AND TOOLS

- » **Dremel Rotary Tool**
- » **Dremel 561 multi-purpose cutting bit and 650 straight router bit**
- » **Lego 2x2 brick (3)** for the case body. I used light green for the cap, and yellow and dark green for the body.
- » **Lego 2x2 brick, 1/3-thick (2)** for the ends. I used brown and white.
- » **USB flash drive** I used a PNY Micro Swivel Attaché
- » **Hot glue gun with glue sticks**
- » **Super glue**



Step 6: Take the stack out of the vise, remove the tape, and detach only the freshly-slotted bottom brick.

Re-tape the remaining 2 bricks in the stack and place them back in the vise. Slot the middle brick (yellow) by repeating steps 3–5 (Figure G).

Step 7: Double slot the top brick (light green). Cut a cross so that the cap can fit over the head of your USB drive in all four directions (Figure H).

Step 8: To cover the cross notch on the cap brick, use a 1/3-thick 2x2 brick (brown). (It's 1/3 the thickness of the normal Lego bricks.) Wrap tape around it and place it in the vise. Cut the center post flush to the inside surface (Figure I).

You can now snap all the bricks together to check for fit before gluing (Figure J). Make sure the cap brick fits over the USB connector head.

Step 9 : Glue the pieces together. Use super glue to affix the brown 1/3-thick brick to the top of your cap brick (Figure K).

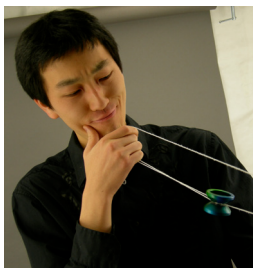
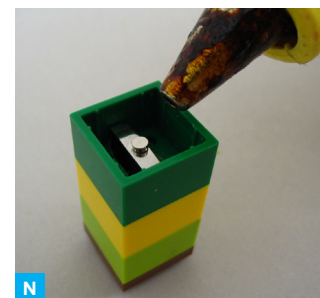
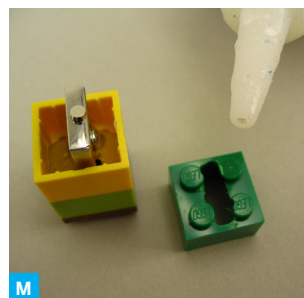
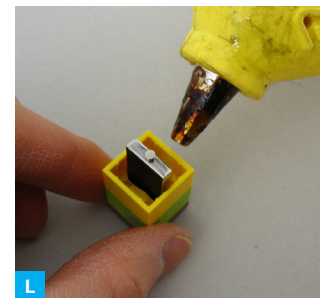
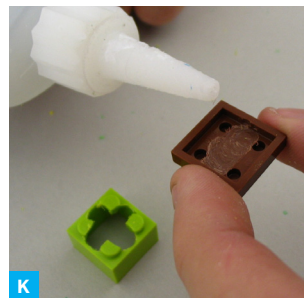
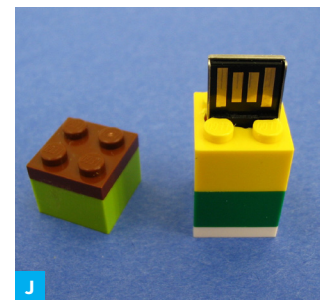
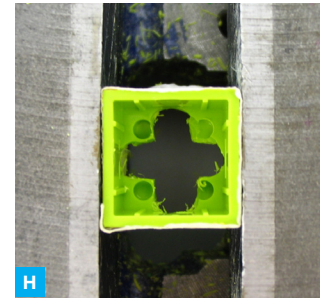
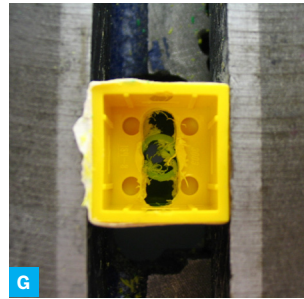
Step 10: Position the USB in the brick case. When the glue dries in the cap, place the middle brick (yellow) and the flash drive onto the cap, up side down. Push the drive down all the way to the cap. This gives the USB connector the most room to fit into a USB port.

Take the cap off and make sure the USB contacts can still reach the port. If the contacts are too far inside the stack, it means your cap is not long enough and more material needs to be removed.

Step 11: Place the cap back on. Hot glue the flash drive in place with a tiny dab on both sides (Figure L). Don't use too much glue, or it will prevent the next brick from snapping on.

Step 12: Dab a bit of super glue to the next brick and snap it into place. Repeat the hot gluing and super glue the white 1/3-thick brick to the bottom for your last piece (Figure N).

Once the glue dries, plug it into your computer and test out the drive (Figure O). You now have a sweet little custom Lego USB drive!



About the Author

Eric Chu is an intern at Make: Labs. For fun, he likes to play with yo-yos and come up with new yo-yo concepts. Eric is the creator of Chu Pads, friction pads for bringing yo-yos back up. He also likes to build and program robots.