

# AROUND THE MAKER WORKSHOP, BROUGHT TO YOU BY DREMEL

By John Edgar Park

## » Build an 8-bit music machine inside of a wooden recipe box.

Hey, you want to make some chunky 8-bit music? In a recipe box? With Atari paddles? Using a Dremel tool? We thought you might. The “Atari Punk Console” is the name given to the wonderfully retro-sounding stepped tone generator, designed by hobby electronics pioneer Forrest M. Mims III. It is a 556-based timer circuit oscillator that generates a square wave. More importantly, it sounds like Atari 2600 music and is fun to build into a cool enclosure.

### Directions

**Step 1:** I picked up a set of Atari 2600 paddles at the thrift store, hoping to use them in the build. Opening them up revealed a pair of excellent  $1M\Omega$  potentiometers that have those great big knobs on them. Perfect for controlling my bleeps and bloops!

I removed the knobs and potentiometers (Figure A), and set them aside to solder into the circuit.

**Step 2:** Next, I assembled the Atari Punk Console kit and tested it (Figure B), using the directions I found at [jimmieproducers.com/kits/apc/makeapc](http://jimmieproducers.com/kits/apc/makeapc).

I used the dual switch configuration so I can make both sweep tones and staccato notes. Most parts can be soldered, and then mounted into the case later. The momentary switch I chose, as well as the LED, needed to be mounted from the outside of the box, so I used alligator jumper wires for testing, rather than solder them up at first.

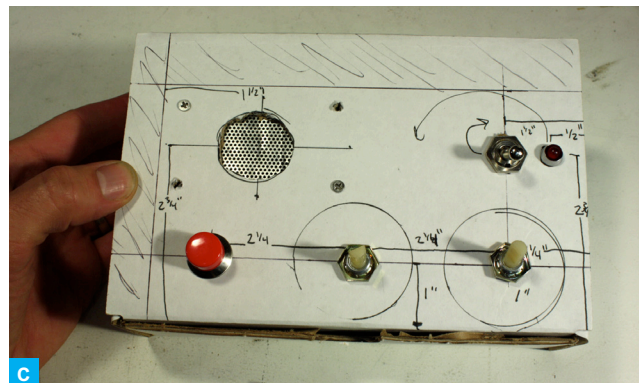
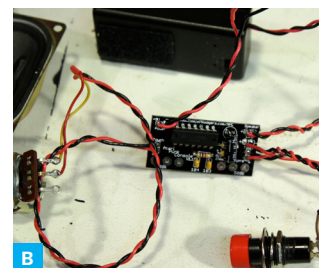
**Step 3:** Making a temporary layout in a cardboard box is a great way to figure out the placement of your off-board parts (Figure C). Once I found a layout I liked, I measured everything and prepared to transfer a slightly adjusted version of that layout to my real enclosure.

**Note:** I reused some switches and a  $\frac{1}{4}$ " audio jack I had laying around my workshop, instead of the smaller-scale ones supplied in the kit.



### MATERIALS AND TOOLS

- » **Dremel Rotary Tool** with drill bits, circle cutter attachment/bit, sanding drum
- » **Atari Punk Console kit** from [makershed.com/apc](http://makershed.com/apc)
- » **Atari 2600 paddle controllers** optional but much cooler
- » **Wooden recipe box or cigar box**
- » **Red LED, 360Ω resistor** and LED holder
- » **Wire mesh** for speaker grill
- » **Screws and nuts** for speaker mounting
- » **Velcro tape**
- » **Drill press or hand drill and bits** for mounted component holes
- » **Soldering iron and solder**



**! WARNING:** It's always important to use safety goggles or safety glasses when operating any power tools.

**Step 4:** I marked the center spot for my speaker hole and a point on its radius, then drilled each pilot hole with the 1/8" drill bit (Figure D).

I then used the circle cutter attachment and bit on the Dremel to cut the hole (Figure E). Next, I cleaned up the cut with the sanding drum (Figure F).

**Note:** If you aren't planning to finish the surface after cutting, be sure to avoid surface scratches by protecting the box with some masking tape. I wish I'd done so.

**Step 5:** I marked the remainder of the holes for mounting the knobs, switches, LED, and jack, then drilled pilot holes with the Dremel. I used my drill press to drill out proper-sized holes for these components, then sanded the holes with the Dremel's sanding drum.

**Step 6:** Then I marked and drilled the holes for mounting my speaker. I also marked and drilled the holes for mounting my speaker at this time (Figure G), then sanded the holes with the Dremel's sanding drum (Figure H).

**Note:** Using the speaker supplied with the kit would require different mounting hardware, I pulled my speaker from an old Mac G3 computer tower, and it had holes for screw mounting built in.

**Step 7:** Time to mount all the components and solder the momentary switch and LED wires to the board (Figures I and J). I cut a piece of metal screen to size and inserted it between the speaker and lid (Figures K and L). I used the Velcro tape to secure the board and battery box.

**Step 8:** I added the super-awesome knobs to the bleep and bloop potentiometers. Instead of traditional latch hardware, I mounted a piece of aluminum machine plate to secure the lid when closed (Figure M). Plus, it looks snazzy.

Now, it's time to serve up some delicious 8-bit sounds! Retro! Techno!



## About the Author

John Edgar Park is the host of *Make:* television and a CG Supervisor at DisneyToon Studios. Find him online at [jpixl.net](http://jpixl.net).

