

SYNTH HACKS #05 MAGNOBEND

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Ah, 1988. I was making \$3.35 an hour at the studio where Pink Floyd had just mixed *A Momentary Lapse of Reason*. The phone rang: a wrong number from a movie director starting a new film. I offered to compose the soundtrack. My entire rig at the time was an Ensoniq ESQ-1 and a cheap reverb, so I walked across the street to West L.A. Music and dropped a month's pay on

VPP	1	32	VCC
A16	2	31	A18
A15	3	30	A17
A12	4	29	A14
A7	5	28	A13
A6	6	27	A8
A5	7	26	A9
A4	8	25	A11
A3	9	24	OE
A2	10	23	A10
A1	11	22	CE
A0	12	21	D7
D0	13	20	D6
D1	14	19	D5
D2	15	18	D4
GND	16	17	D3

Fig. 1

The HR-16 has two identical sound ROMs. You can connect wires between different pins on one or both to get new sounds. Just avoid the pins marked in red — 1, 22, 24, and 32.

an Alesis HR-16 drum machine. Its thin, crisp sound drove that soundtrack and many more, even after I got access to the studio's Fairlight. Then, like thousands of other musicians, I grew tired of the HR's dinky drums and packed it off to my garage.

In the decades since, hackers discovered you can get amazing, crunchy sounds from the HR-16 simply by connecting wires between certain pins on its sound ROM. [See Figure 1.] Because there are 28 pins that work, most people add a 7×4-point patch bay, soldering a wire from each pin to a mono jack on the lid. But I found a faster way: magnets. I pried the chip out of its socket, attached wires with a wire-wrap tool, and popped the chip back in. [See Figure 2.]

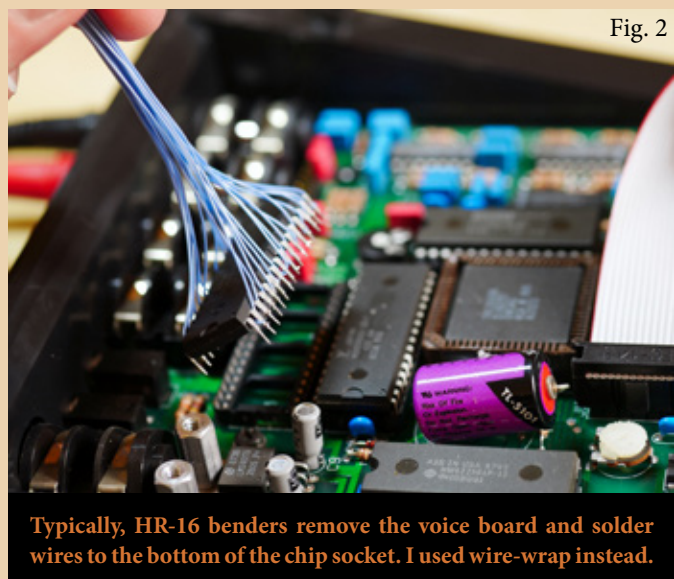
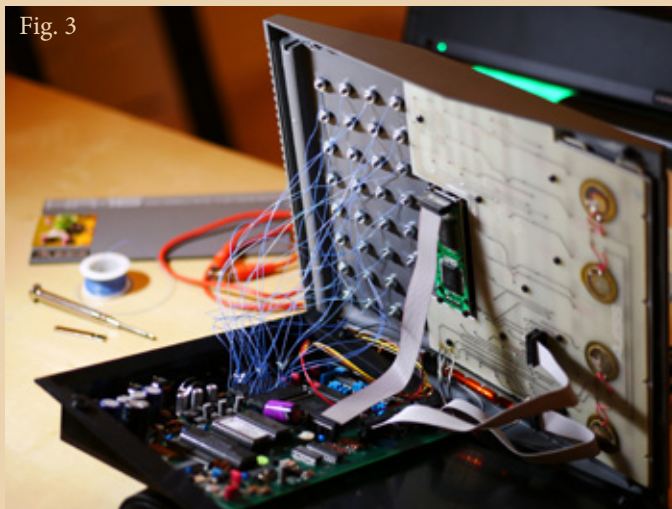


Fig. 2

Typically, HR-16 benders remove the voice board and solder wires to the bottom of the chip socket. I used wire-wrap instead.

Fig. 3



I attached the other end of the wires to #8-32 machine screws with nuts. Notice the four piezo sensors under the drum pads, a clever way Alesis measured how hard you hit.

The "safe" pins on the chip include 8 data lines, 16 address lines, and ground. So I decided to make an 8×4-point patch bay and put the data lines in the top row. It doesn't matter what goes where, but I got more extreme sounds by connecting data pins to address pins, so grouping them made it easier to remember.

I drilled holes in the lid, inserted truss-head machine screws [flatter than round-head], and secured the other end of the wires to the screws with nuts. No soldering required. [See Figure 3.]

Fig. 4



I wired the four screws on the bottom right together as a mult, but discovered I could also stack the patch cables magnetically.

Finally, I made magnetic patch cords by jamming 3/8-inch neodymium ring magnets onto RCA cables. [A 12-pack of ring magnets costs \$5 at Home Depot.] I oriented the magnets to repel each other when facing head-on, which lets me stack plugs by sticking the tip of one plug to the back of the other. [See Figure 4.] The cables are so quick to move that I can easily perform rhythmic effects. Visit Batmosphere.com/hr16 for more hacking tips.

I still have that ESQ-1, by the way. And I just remembered it has a CV input I've never explored....