HOMEBREW 64K CONVERSION

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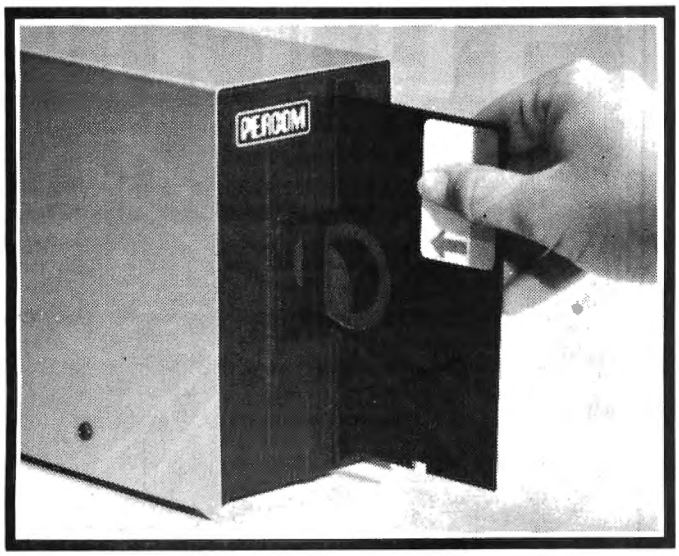
After reading Frank Hogg's article (Feb. CCN), I began to wonder how I could put 64K chips in my computer. I was able to obtain 64K chips by mail for a lot less than the Radio Shack upgrade. Because I had the 1.1 version of Extended BASIC, which will initialize for the RAMs, I was all set. Or so I thought.

I discovered to my dismay, that the 64K chips would not just plug in. It seems that three of the pins require different connections than the 16K chips. I checked the new CC technical manual ($14.95) and looked at the schematic. It seems that the revision E board has several jumpers for 32K operation (64K chips). Happily some of these are for the pins in question. It seems all that I had to do was disconnect pin #1 (mine require no connection), get +5 volts to pin #8 (instead of pin #9), and tie all pin #9s to pin #35 of SAM (MM6883). The only other thing is to tell SAM about the change. More on that later. Since Frank Hogg's modification is reversable, I wanted mine to be also. I decided on a plug in mod.

I required only a few items for this conversion. I used 8 dual inline pin sockets, 1 33 (symbol unknown) resistor, some 30 gr. wire-wrap wire, and soldering iron. I began by bending both pin #1 and pin #9 of the socket straight out from the body. This is so they will not plug into the board. Next I soldered a jumper from pin #8 to pin #9 so that pin #8 will get +5 volts. If your chips need +5 volts to pin #1, jump from #1 to #8 as well. See Fig. 1. If you feel that it should have a capacitor to ground to eliminate local noise, you can put it between pin #1 and pin #16 (ground). Remember, however, that pins #9 and #16 must plug into the sockets on the board. Next bend pin #9 of the 64K chips straight out from the body of the chip. (This is the one on the bottom right while holding the chip with end with the notch up.) This pin will connect to pin #35 of SAM. Remember to hold the chips by the ends and keep yourself grounded when bending the pins. I used a large piece of aluminum foil and rested my arm on it while doing my work. This is to keep from damaging the chips with static electricity.

Now, open your computer by laying it upsidedown on a towel to protect it. Remove the screws. Place upright, and remove the cover. Gently unplug the keyboard and lay it aside. Remove the R.F. shield. You may have to cut the

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System Requirements: Radio Shack 16K Extended Basic Color Computer and Color Disk #0 Kit. Optional cable required for third and fourth drives.

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plastic wire ties. Using a small screw driver or nailfile slowly work the 16K chips out working from end to end. Wrap them in aluminum foil if you want to save them. Like to send your computer back to the shack. Gently ease the modified sockets into the sockets on the board. Make sure they are oriented with the jumper towards the keyboard area. Next install the 64K chips with pin #9. The next step is to tie all of the pin #9s together as shown in Fig. 2. Leave a loop as shown and install a 33 (symbol unknown) resistor as shown to pin #35 of SAM.

All that remains now is to inform SAM that it has 64K chips. According to the tech manual the center pin of the jumper located between the PINs (U8 and U4) should be connected not to one of the side pins but to "TTSL". According to a friend of mine who understands assembly language, this can be any of U8's pins 13-17. This is because the 1.1 ROM stores a number in the keyboard and then checks to see if the "RAMSIZE" pin #12 (U4) has changed. If it has, then memory is not 4K or 16K and is initialized as 32K. So all that remains is to remove the jumper entirely and jump the center pin to one of U8's pins #13-17. I chose #17. See Fig. 2.

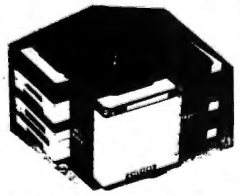
Temporarily connect up your computer for the famous "Smoke test". Power up and a "PRINT MEM" should reveal over 24K memory. Anything else, check your work. If all is well you can reassemble or push on with Frank Hogg's Mod. I did and its great.

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