October 2, 1975

ARROWHEAD TIPS

8800 COMPUTER

Page 11 (D/C Board): Capacitor C7 has been changed several times; you may find change notices referring to various stages of this change process, as well as extra parts. C7 was changed from .001 MFD to .0047 MFD, then to .0068 MFD. Now, the absolute last final ultimate change (as of August 10th!) makes C7 = .01 MFD and changes C8 from .01 to .1 MFD.

Page 14 (D/C Board): In connecting the AC switch wires to the board, use heat-shrink tubing to protect the stripped wire as follows: cut 1/2" of clear heat-shrink tubing and slide it onto the wire, well past the stripped end; then solder the wire onto the board; finally slide the tubing into place and shrink it with the heat of a match or soldering iron. You may prefer to cut the lands around the AC switch and solder the wires directly to the switch pins.

Page 18 (D/C Board): Don't bolt the printed-circuit board to the sub-panel; the switches will hold it fine. The switches come with extra mounting nuts and extra guide washers; you can safely throw away all this extra hardware - you don't need it. Mount the switches as shown with only one nut each for best results.

Page 21 (D/C Board): Installing the LED's is slick if you leave one of the leads unsoldered until all the LED's are in place and aligned. You might like to line them up flush with the front dress-panel for higher contrast (so that no light falls on them). After you've adjusted the position, recheck the polarity of all the LED's before soldering the second lead into place.

Pages 40-46 (1K Memory): Until May, only the 1K memory board was available, and most systems were ordered with 256 words of memory on one of these boards. Now that the 2K and 4K memories are available, it isn't sensible to require some 1K boards in every system, but the instructions are still embedded in the CPU manual. CPU kits don't have any memory in them.

Page 50 (P/S Board): The bridge rectifier seems to cause more than its share of problems. Be sure the leads are clean - several of us have found that solder won't wet the leads, and it's a mess to try to clean the partially-soldered assembly. Run the leads through some alcohol and/or steel wool before installing the bridge. The spacer-and-washer arrangement on Page 51 is a jig to get the bridge flat at the right position; it will later be bolted directly to the chassis.

Page 52 (P/S Board): You'll laugh, but I got capacitor C14 in backwards; nobody else has made this mistake. Tell us about your experiences with the kit, and we'll publish them, with or without your name, as you please. Your reward: A replacement fuse (1 amp slo-blow).

Page 58 (Chassis): MITS doesn't ask you to cut wires to close tolerances. If you follow the instructions here without trimming transformer leads, and use all the #20 wire, you'll have long loops of slack. This is good for allowing boards, etc. to be moved without breaking wires, but you may want to install the terminal lugs after consulting the wiring diagrams on Pages 59 and 62.

Page 66 (Motherboard): The way the instructions spell it out, you'll have a slack loop of cable. Hold everything in place on the chassis to see the actual length required. We are enclosing a sorted list of wires to help you check your progress. Using masking tape, group the wires in decades after protecting them with a cable clamp. Then, install them on the motherboard, by decades; 50's, 60's, 70's, 20's, 80's, 30's, 90's, and finally, 40's.

Install the cable clamps by bolting them to the printed circuit board only. If you put screws through the sub-panel, then the dress-panel won't fit flush against it and you won't be able to screw the chassis into the case!

Page 68 (Expander Boards): The card guides are maybe sorta optional. They look nice, but they really aren't required to hold the boards in place - the edge connectors are plenty strong for that.

Page 74 (CPU Chip): Many people advocate postponing installation of the CPU chip until after the regulator and zener diodes on the CPU have been tested.

Page 77 (Nameplate): This beauty gets a lot of criticism: "Mine was off-color, kinda pinkish." That's a sticky plastic cover to protect it until you've installed it. Peel the covering off afterward. The white lettering on the dress-panel can be chipped off by hard use. If you decide to protect it with clear acrylic spray, use a matte-finish product. Ours looks funny with a glossy krylon finish.

(Checkout): You can see your machine run, even without any memory. When the machine tries to execute an instruction at a non-existent memory location, the value returned is 11 111 111 (377 in octal). 377 is a restart instruction, used to jump to an interrupt (at location 70) handling routine. It pushes the 2-word program counter onto the stack before taking the jump. At location 70, the lack of memory will yield another 377, so the restart will repeat every 11 clock cycles, or 181,818 times per second. This will cycle the stack pointer through the 16-bit address space about 5 times per second. So, if you run with no memory, the address light A15 will blink at that speed.

Page 39 (CPU Board): The wafer connector is about 5% too large to fit the board (or you might say the holes in the board are too close). To prevent the connector plug from arching, clamp it down flat while soldering it on. If you can't clamp it, then try cutting it with a hacksaw into two 4-pin connectors.

Checkout): After turning the computer on you should reset it. To reset the computer you have to hold the stop switch raised while raising the reset switch. Release the reset switch first. (No, we don't know why, but it's traditional!)