

## Robert Lopez, MITS Bench Technician PROMs

Robert Lopez was a bench technician at MITS. These 1702a PROMs are from Altair computers used by Robert to test and debug MITS products. Based on the PROM functions, this work was mainly with memory boards and the Altair floppy disk drive.

### Three stand-alone memory and disk test PROMs

Even though these PROMs are at typical Turnkey Module PROM addresses, if the Turnkey is Rev 1 or has the 88-CLG mod (disables PROM upon IN from the sense switches), then the D/STEP PROM will not work as it would disable itself immediately upon reading the sense switches the first time.

Label	Function	Address	Description
D/Step	Disk Step	FC00h	Allows drive selection, head load/unload, and seek to a specified track. All control is via the front panel switches.
DiscTest	Disk R/W Test	FD00h	Writes sector zero, then reads sector zero and sends 98 bytes of the sector through an 88-SIO serial port (not 2SIO) at 0/1 for display. Cycles from track 0 through 75 (not 76) and repeats.
CK BD	Check Board	FE00h	Very basic test of 1K, 4K or 16K memory board located at address zero.

### Set of 7 PROMs labeled '0' through '6'

Label	Function	Address	Description
'0' – '6'	Memory Test	0000h	Thorough memory test including galloping pattern (GALPAT), galloping column (GALCOL) and marching 1's. Expects 88-2SIO serial port at 10h. This same test is available under Altair DOS as "MTST." Unfortunately, these PROMs require RAM at 0F00h-OFFFh for stack and scratchpad. With the 88-PMC PROMs in the lower 2K (000h-800h), this requires, for example, a MITS 1K RAM board at C00h-FFFh. Larger RAM cards can't typically be addressed at the required 2K or smaller boundary.

### Set of 16 PROMs labeled 'A0' through 'A7' and 'B0' through 'B7'

Label	Function	Address	Description
'A0' – 'A7'	Real-world operational test of 4K RAM	4000h	Image capture of 4K BASIC with a simple program that fills and verifies the content of a 100 element array over and over. Execute from 4F00h where a short stub copies the image from PROM to RAM starting at zero, and then jumps to BASIC in RAM. Requires 4K-16K (max) of RAM at zero and an 88-SIO port (not 2SIO) at 0/1.
'B0'-'B7'		4800h	2 <sup>nd</sup> half of the 4K set of PROMs