

APPENDIX A ECO HISTORY AND REWORK

A.1 UNIBUS TERMINATORS (M930)

The initial ECOs to the M930 (dated 1970) changed the termination of bus AC and DC LO, which brought the M930 to etch revision B. This etch revision is now obsolete. If system bus problems are suspected for failure, later etch terminators than the B etch should be tried.

A.1.1 Revision C Etch

ECO No.3 to the M930 Unibus Terminators changed the termination resistors tolerance from 5 percent to 1 percent. This change improves the worst case noise tolerance and with suspected bus problems. 1 percent terminators should be used.

CAUTION

Some "C" etch terminators were manufactured with missing etch runs. Pins AN1, AP1, AR1 and AS1 should be connected to pin BE1. These runs were omitted. The missing etch runs are grounds and if not present may contribute to system noise.

A.1.2 Revision D Etch

ECO No.4 to the M930 Unibus Terminators adds four decoupling capacitors and improved grounding. This change significantly decreases noise on the bus. Rev D is the optimum etch revision currently used (Sept. 1976) and should be used if bus problems are suspected because of old type etch boards.

There are other terminators which will be available for new processors and systems in the near future.

A.2 BUS RECEIVERS

A number of integrated circuit types (i.e., chips) have been or will be used as Unibus receivers (Table A-1). Of these, the DEC 380 was most common. It has been phased out and is no longer available. A recent series of ECOs to most options which used the DEC 380 now uses DEC 8640 Bus receivers. The DEC 8640 is a pin-compatible replacement for the DEC 380 and is used in Unibus applications because it has more closely defined specifications and higher noise immunity (see Figure A-1). Substituting one DEC 8640 on a module does not necessitate changing all DEC 380s, these chips may reside in any combination. (This is a phase-in and field rework is not intended except for repair purposes.)