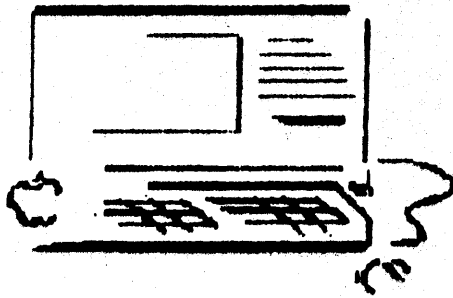# READ ME FIRST

RAMSTAK™ INSTALLATION HINTS AND TIPS

1. All chips are very sensitive to static electricity. Your board has been thoroughly tested by both AST Research, Inc. and Dafax Processing Corp. and is in proper working condition in the memory configuration that you ordered. Please be sure that you discharge any possible static electricity from your body before you touch the board. Please do not touch the individual chips. Handle the board from the edges only. Be very wary of carpeted work spaces. Substantial charges of static electricity can be generated by just walking on a carpet. Be sure to discharge static electricity by touching a known grounded object. We cannot be responsible for damage caused by static electricity.

2. Please follow the installation instructions contained with your RamStak™.

3. After Ramstak™ installation and power-up the first time you may get the query "Start-Up from [Hard Disk] 1 or [Floppy] 2 " by symbol. Just press "Command 1" the Apple Key and the number 1 at the same time. This will complete the booting process from the hard disk. Again, this may or may not occur, but if it does, it should occur only on the first power-up after installation.

4. As you will be removing the power cord from your computer to install the RamStak™ board, be sure to reset your control panel functions, such as mouse, cursor, keyboard and time attributes.

5. If at any time upon power-up you hear two [2] low beeps and your computer will not boot, you probably have memory failure. DO NOT PANIC. This is very rare. Power-down and call us for assistance.

PAGE 1

WARRANTY & EXTENDED WARRANTY INFO

1. Your RamStak™ board is warranted for one year from date of purchase. A "Warranty Registration Form" is enclosed from AST Research, Inc., which should be completed in its entirety and returned to AST.

2. Since you have purchased a RamStak™ board with more than 512K of memory, it is mandatory for you to return the DAFAX "Warranty Registration Form" to DAFAX in order to validate the DAFAX warranty for your additional memory in excess of 512K for one year from purchase date.

3. AST Research, Inc. offers an additional year of limited warranty on the RamStak™ board and the first 512K of memory for U.S.$50.00. DAFAX offers an additional year of limited warranty on all memory chips installed by DAFAX above the 512K installed by AST for U.S.$30 for each additional 512K, i.e.; 1 Megabyte Board $30; 1.5 Megabyte Board $60; 2 Megabyte Board $90.

4. If you are purchasing the extended warranty from DAFAX, you must purchase the extended warranty from AST. It is not necessary to purchase the extended warranty from DAFAX, but AST will warrant only their board and the original 512K.

5. To validate your extended warranty, please do the following:

 a). Send check to AST Research, Inc. in the amount of $50, together with completed AST Extended Warranty Regiateration Form.

 b). Send Check to Dafax Processing Corp. in the amount of the appropriate sum, depending upon your memory configuration, together with completed DAFAX Extended Warranty Form.

RAMSTAK™
User's Manual

Revision D
July, 1985
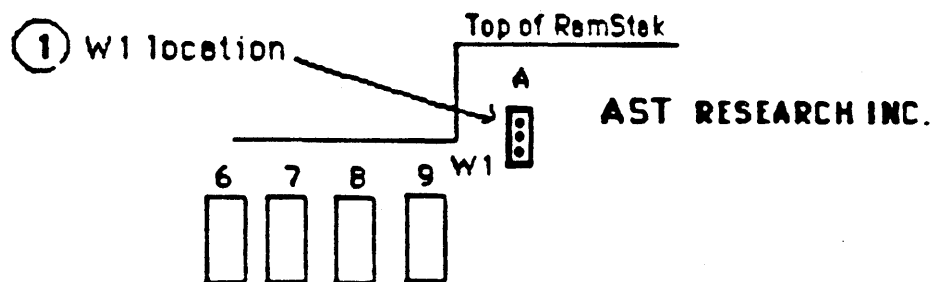
AST Research, Inc.
Irvine, CA 92714

Section 1   Introduction

RamStak™ is a powerful and flexible memory expansion card for the Macintosh XL™ (Lisa™) family of Apple™ computers. The single, self-contained printed circuit board uses 256K DRAMs and provides from 512K to 2.0 megabytes of memory expansion on a single card. The product was especially designed to be flexible enough to meet your changing needs and therefore is a fully socketed memory expansion card which is field upgradeable. This means that by using 256K DRAMs you may install a partially populated RamStak memory card in your Macintosh XL and expand it through the installation of additional memory devices (in 512K increments) at a later date.

The Macintosh XL computer hardware architecture allows for two memory expansion slots in which a maximum of two megabytes may be addressed without any hardware modifications to the computer.

Section 2   Configuration

Verify that the jumper configuration W1 on your RamStak card is in the correct position for your system. See the diagram below for details.

① W1 location

Top of RamStak

A

AST RESEARCH INC.

6   7   8   9 W1

② W1 configuration

jumper

1
2
W1 3

If used with an additional memory board in either slot.

jumper

1
2
W1 3

If only one (total) memory board is to be used in the system.

Section 3   Installating your RamStak

Your Macintosh XL computer has two memory expansion slots. The RamStak card may be installed in either one of the two slots. You may leave the second slot empty or have the Apple Computer, Inc. 512K memory card installed.

For additional reference, memory card installation is detailed in the Macintosh XL Owner's Guide.

Step by step installation procedure:

1.   Power down your Macintosh XL and disconnect the power cord from the supply outlet.

2.   Remove the back panel by turning the two thumbscrews along the upper edge counterclockwise until the back panel comes free. Then gently pull the panel slightly up and it should easily slide off.

3.   Remove the card cage. There are no fasteners - just brace your thumbs against the lower edge of the cabinet and pull on the metal part of the card cage assembly.

4.   Verify that jumper configuration W1 on your RamStak card is in the correct position for your system.

5.   Turn the card cage around so that you are facing the memory slots labeled MEM1 and MEM2. Flip the card ejectors on the upper corner of the RamStak card upwards and slide the card into the card guides for the unoccupied memory slot with the ICs facing toward you. After the board is fully inserted into the guides and is resting on the card ejectors, carefully push the ejectors down to set the board into the connector. DO NOT USE EXCESSIVE FORCE! Be sure that the board is aligned with the backplane connector and that the card ejectors are properly aligned with the holes in the card guide. The card ejectors will lie flat when the board is properly installed.

6.   To replace the card cage into the Macintosh XL, turn
       the card cage back around. Holding the black plastic
       frame, slide the card cage back into the cabinet. Press
       firmly until the bar at the bottom of the card cage is
       inside the edge of the cabinet.

7.   To replace the back panel, insert the four tabs along
       the lower edge of the back panel into the slots at
       the base of the cabinet. Push the panel flat against
       the back of the cabinet. Then turn the two thumbscrews
       clockwise until they are snug.

Section 4   System Checkout

Power up the system and observe the power-up diagnostics. If you
have specified a brief memory check in the preferences menu, then the
memory test will take about 8-9 seconds per megabyte of RAM. The
thorough test will take about 36 seconds for a full two megabytes.

Section 5   Adding Memory to your RamStak Card

If you already have a RamStak memory expansion board in your
Macintosh XL system, you may skip this section and go to Section B. If you
have not installed the RamStak card in your system, please read Section A.
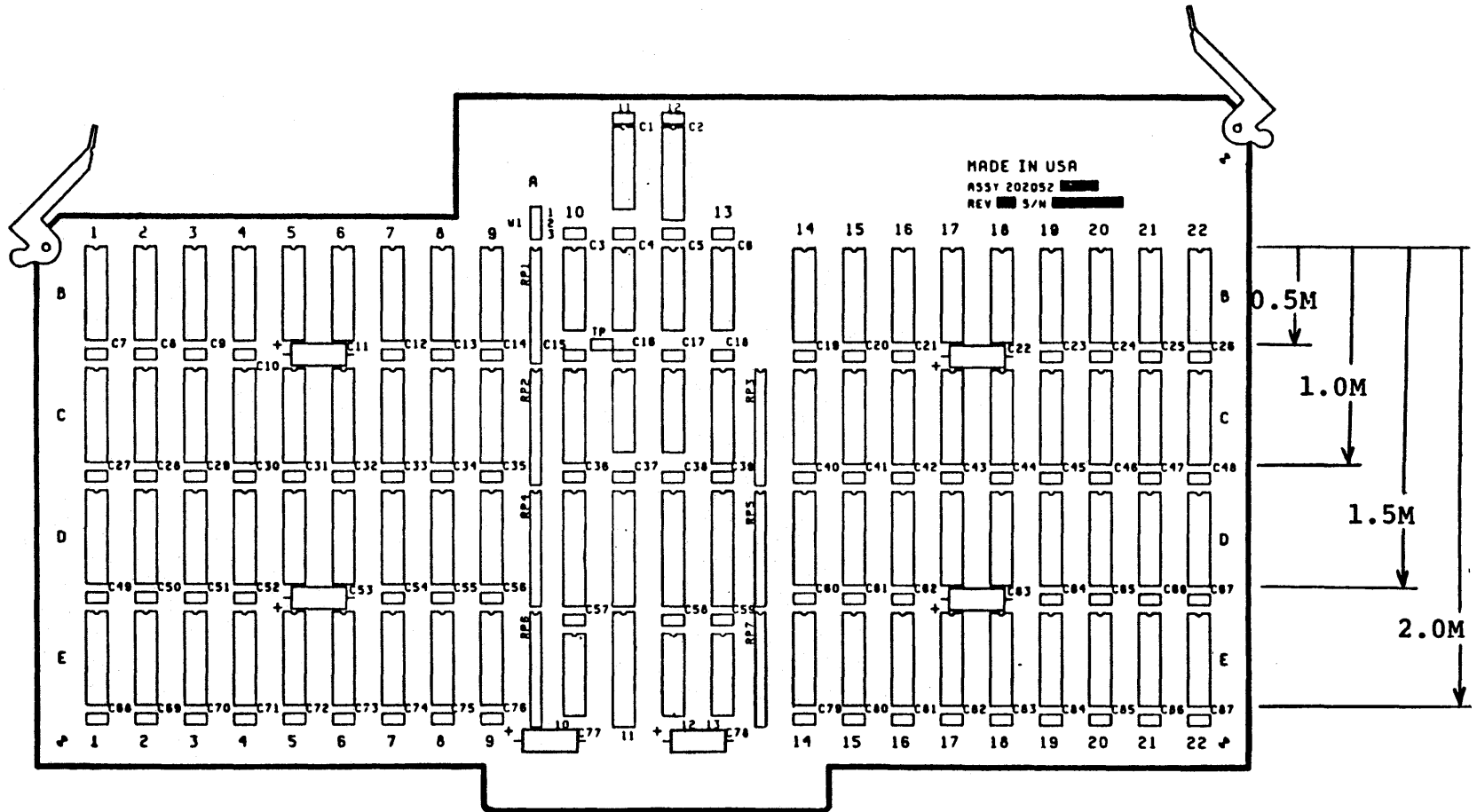
Section A

Note: Please be sure to use 150 nanosecond 256K DRAMs when
       upgrading your RamStak card.

1.   Inventory: Be sure you have the appropriate number of
       memory chips required to upgrade your RamStak card.
       Note: Eighteen 256K chips are required per 512K increment.

2.   Preparation: Lay your RamStak card on a smooth, flat
       surface. Locate the row identifies, the letters B, C, D, and E
       that appear on the left side of the card. Starting from the
       top of the board, locate the first row of available sockets.

3.   Memory Chip Installation: Starting from the left side of the
     card, insert the memory chips with the notch pointing toward
     the top of the card. Note: Special care must be taken so that
     all legs on the memory ICs are lined up properly with their
     corresponding socket holes. AST Research does not assume
     liability for damage done to the memory chips, the RamStak
     card, or the Macintosh XL due to improper installation of the
     memory ICs.

Section B

1.   Inventory: Be sure that you have the appropriate number of
     memory chips required to upgrade your RamStak card.
     Note: Eighteen chips are required per 512K increment.

2.   Removing the Card Cage: Power down your Macintosh XL
     and disconnect the power cord from the supply outlet.
     Remove the back panely by turning the two thumbscrews
     along the upper edge counterclockwise until the back
     panel comes free. Then gently pull the panel slightly up
     and the panel should easily slide off. Remove the card
     cage. There are no fasteners – just brace your thumbs
     against the lower edge of the cabinet and pull on the metal
     part of the card cage assembly.

3.   Removing the RamStak Memory Card: Turn the card cage
     around so that you are facing the memory slots labeled
     MEM1 and MEM2. Flip the card ejectors on the RamStak
     card upwards and slide the board out of the memory slot.

4.   Preparation: Lay your RamStak card on a smooth flat surface.
     Locate the row identifiers B, C, D, and E that appear on the
     left side of the card. Starting from the top of the card, locate
     the first row of available sockets.

5.   Memory Chip Installation: Starting from the left side of the
     card, insert the memory chips with the notch pointing toward
     the top of the card. Note: Special care must be taken so that
     all edges on the memory ICs are lined up properly with their
     corresponding socket holes. AST Research does not assume
     liability for damage done to the memory chips, the RamStak
     card, or the Macintosh XL due to improper installation of the
     memory ICs.

Section 6   Compatibility

Operating System	Revision/ Version	Comments
Lisa Office System	2.0	Can use the 2.0 MB without modification if used alone.
Lisa Pascal Workshop	2.0	Requires the AST installation software diskette.
Lisa 7/7	3.0	Can use 2.0 MB without modification.
Lisa Pascal Workshop	3.0	Can use 2.0 MB without modification.
MacWorks	1.0	Requires the AST installation software diskette.
MacWorks	XL	Can use 2.0 MB without modification.
Xenix		Can use 2.0 MB without modification.
Unix		Can use 2.0 MB without modification.