

ACCELERATOR II™

(for Apple® II and Apple II Plus)

**OPERATIONS
MANUAL**

SATURN SYSTEMS

Copyright (C) 1983
by Saturn Systems, Inc.

Accelerator II is a trademark of Saturn Systems, Inc.
Apple is a registered trademark of Apple Computer, Inc.
Applesoft is a registered trademark of Apple Computer, Inc.
VisiCalc is a registered trademark of VisiCorp, Inc.
CP/M is a registered trademark of Digital Research, Inc.
Microsoft is a registered trademark of Microsoft Corporation.
SoftCard is a registered trademark of Microsoft Corporation.
Z80 is a registered trademark of Zilog, Inc.
Appli-Card is a trademark of Personal Computer Products, Inc.

TABLE OF CONTENTS

Registration Card	2
Service	2
Section 1	
Installation and Use (simplified)	4
Section 2	
Theory	7
Installation (detailed)	9
Using the Preboot Disk	10
How to Avoid Using the Preboot Disk	11
FAST APPLESOFT	12
PHANTOM 0	12
DISABLE	15
Using the Accelerator II in Slot 0	16
Using the Accelerator II on a Apple II	17
Technical Information	18
Program Lists	21
Appendix A	22
Appendix B	29

REGISTRATION CARD

Please fill out and return at your earliest convenience, the enclosed registration card. This will enable Saturn Systems to notify you concerning future updates and new software releases relating to the Accelerator II board.

SERVICE

If your Accelerator II board should require service, please return it to the dealer from whom it was purchased, or send it postage paid directly to Saturn Systems, Inc. Be sure to include proof of purchase.

Ship to: Saturn Systems, Inc.
3990 Varsity Drive
Ann Arbor, MI 48104

ACCELERATOR II USER'S MANUAL

Congratulations! You now own one of the fastest personal computers available today.

There are two ways to use this manual:

- (1) For the fastest installation with the least amount of reading, read Section 1.
- (2) For more explanation about what's going on and how many neat things you can do with your Apple, read Section 2.

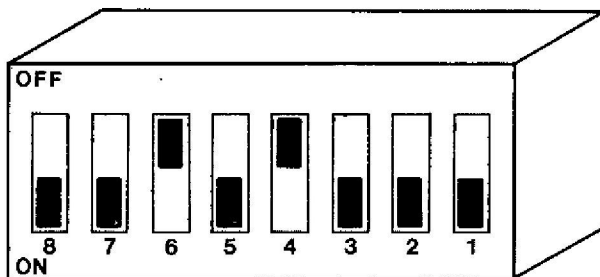
This manual is generally written for the Apple II Plus, with Applesoft in ROM. If you have an Apple II, substitute "Integer" each time you see "Applesoft" and substitute "Applesoft" each time you see "Integer". Section 2 contains a special chapter on the Apple II, but the only important difference is the Applesoft/Integer switch.

SECTION 1

STEP 1. See what else you have in your Apple.

	YES	NO
Memory board(s)?	Put one in slot 0	That's OK too
Modem interface (Micromodem II, Apple-Cat, etc.)	Write down the slot number (it must be 4, 5, 6, or 7)	OK
Disk controller	Write down the slot number (4, 5, 6, or 7)	OK

STEP 2. Look at the small switches on the Accelerator II. Refer to the picture below. Find the number(s) marked on the switches corresponding to the number(s) you wrote down in Step 1. Set those switches to OFF. Set all the other switches ON.



EXAMPLE: If you have a disk controller in slot 6 and a modem in slot 4, you should now have switches 4 and 6 OFF and all the other switches ON.

STEP 3. Plug the Accelerator II in any slot EXCEPT 0. (It does work in 0, but you should read Section 2 if you do it that way.) If you have never plugged anything into your computer before, read the "Installation" instructions in Section 2. IF YOU HAVE A MICROSOFT Z-80 SOFTCARD, put the Accelerator II to the LEFT

of the Softcard. The Accelerator II must have a LOWER slot number than the Softcard. It's OK to move the Softcard to the right, since it works in any slot.

STEP 4. Check the list of programs starting on page 22. If everything you use is on the "Standard" list, then you're all set! Just start running your programs as usual.

STEP 5. (You don't have to read this if all your programs are on the "Standard" list.) Boot the pre-boot disk provided by putting it in the disk drive and turning on the power. Make 3 copies of this diskette. (Use COPYA or other copy program.)

STEP 6. Boot one copy. Then use the --> arrow key to move the cursor to the PHANTOM 0 position. Type S. The computer will save your parameters on the disk. When the disk drive stops, remove the disk and label it "PHANTOM 0".

STEP 7. Repeat Step 6 with another copy, but this time move the cursor to FAST APPLESOFT. Label this disk "FAST APPLESOFT".

STEP 8. Repeat Step 6 again with the third copy, but move the cursor to DISABLE. Label this disk "DISABLE". (Ignore the SLOW DOWN option at this time.)

STEP 9. Check the program lists in Appendix A. Now, whenever you want to run a program from the PHANTOM 0 list, start by booting the PHANTOM 0 disk. Just put the PHANTOM 0 disk in the drive and turn on the power. When you want to run a program from the FAST APPLESOFT list, start with the FAST APPLESOFT disk, and when you want to run a program from the DISABLE list, start with the DISABLE disk. When you want to run a program from the STANDARD list, just run the program as usual.

STEP 10. When you use one of the preboot diskettes (PHANTOM 0, FAST APPLESOFT, or DISABLE) the bottom of the screen will say,

**"REMOVE PREBOOT, INSERT PROGRAM DISK
AND PRESS SPACE BAR TO RUN YOUR PROGRAM"**

So you remove the preboot disk, insert your program disk, and press the space bar. That's it! Now you can stop reading, unless you have some problem (notably, if you can't find your program on any of the lists).

STEP 11. If you can't find your program on the list, check the table below.

PHANTOM 0: Use this for programs written in INTEGER BASIC or PASCAL; and for programs which require a Language Card for operation (except programs which use the Language Card for data storage only).

FAST APPLESOFT: Use this for programs written in Applesoft.

DISABLE: Use this for all programs which run under CP/M when using the Microsoft Z80 Softcard. This preboot is not needed when using Personal Computer Products, Inc., Appli-Card.

STANDARD: Use no preboot disk for binary programs which do not require a Language Card.

You may not know this information, of course, so you can always try each preboot disk (or no preboot diskette) to see which way the program runs fastest.

STEP 12. For more information and for other possible ways to use the Accelerator II, read Section 2.

SECTION 2

Theory

The Accelerator II is based on a fast (3.6 MHz) 6502 microprocessor with its own memory. This processor takes over all calculations. The Apple's own (1 MHz) 6502 processor and memory control only the video display when the Accelerator II is used. So you have replaced the Apple's 6502 processor with a new 6502 processor and fast memory which is much speedier than the original version.

The switches on the Accelerator II have been added because not all peripherals are able to run faster. When you use a disk drive or modem, the Accelerator II must slow down to match the speed of the external device. Switches 4 - 7 correspond to slots 4 - 7: for each slot that has a slow peripheral attached, you must set the corresponding switch OFF. Switches 1, 2, 3, and 8 are diagnostic switches which should normally be set ON.

The Accelerator II has 64K of memory, which includes a built-in Language Card. For maximum efficiency, the program you're running must be in the Accelerator's memory. Data used by the program (such as the VisiCalc workspace memory) can be either in the Accelerator's memory or on a plug-in memory board (or both), but the program itself must be in the Accelerator. Now, there are only 3 other places where your program might be: in the Apple's 48K of RAM, in ROM, or on a regular Language Card.

Consider programs which run in the 48K of main RAM (such as VisiCalc). The Accelerator II automatically grabs everything from main RAM, so for these programs you just plug in the Accelerator II and run as usual.

For Applesoft on the Apple II Plus (or Integer on an Apple II), we provide a pre-boot disk to move the language from ROM to the fast Language Card on the Accelerator II.

For programs that use a regular Language Card (such as Pascal or Integer), the Accelerator will be able to grab the program IF the Accelerator is in slot 0. Unfortunately, it is USUALLY not convenient to run the Accelerator II in slot 0. This is explained in the "Slot 0" section later. So if you're running Pascal or Integer, there are three possible ways to get maximum

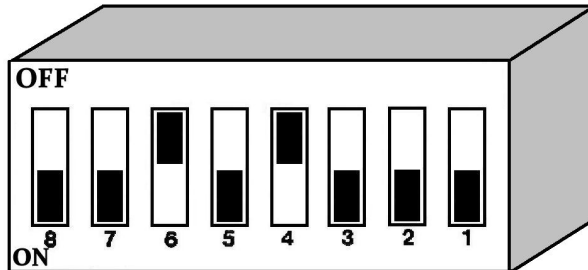
speed: (1) move the Accelerator II to slot 0, (2) use the pre-boot disk to create a "phantom" slot 0 for the Accelerator's fast Language Card, or (3) fix up your program as described later. Options 2 and 3 are usually more convenient.

Since the Accelerator II is a direct memory access coprocessor, it can not be used at the same time as the Microsoft Z-80 Softcard, which does the same thing with a different type of coprocessor. So when you run CP/M software on the Z-80 Softcard, you need some way to turn off the Accelerator II. There are three ways to do this: (1) take the Accelerator out, (2) use the pre-boot with the "disable" option, or (3) fix up your CP/M disk as described later. Also, if you have a Z-80 Softcard, you must install the Accelerator II to the left of the Z-80 card (the Accelerator II must be in a LOWER slot number), because all the pre-boot programs search for the Accelerator II to see what slot it is in. If the Z-80 card is found first, the system will hang because the Z-80 processor will be turned on.

NOTE: If you are using a Z80 card, such as Personal Computer Product's Appli-Card, which does not use direct memory access, you can use the Accelerator II when running CP/M programs, and therefore don't have to use the "disable" preboot.

Installation

First, set the switches. Refer to the picture below. See which slot(s) in your Apple contain disk controller, modem, or other time-dependent device. These must be in slots 4 - 7. Set the switch(es) with the corresponding number(s) OFF. For example, if you have a disk controller card in slot 6 and a modem in slot 4, set switches 4 and 6 OFF. The remaining switches should be set ON.



Now install the Accelerator II as follows:

- A. Turn off the power to the Apple. Check the power light to make sure it's off.
- B. Remove the cover by pulling on the right and left rear corners of the case, until both fasteners are released (popping sound); slide the cover back until the front edge clears the lip of the case, and lift up.
- C. Find the desired slot. Slot number designations are printed on the Apple's main circuit board along the back edge near the cutouts in the case. The leftmost slot is slot zero (closest to the power supply, which is a long metal box). You should choose a slot other than zero, and to the left of your Microsoft Z-80 Softcard, if you have one. The Accelerator II must have a LOWER slot number than the Softcard.

D. Before touching any component or board in the Apple, discharge any static charges by touching the power supply cover (long metal box at the left side of Apple) immediately prior to touching the component or card in the Apple.

E. Grasp the board at its edges and position over the slot.

F. Align the gold edge connector fingers with the slot of the socket, centering the card in the socket prior to insertion.

G. Apply gently downward pressure with slight front to back rocking until the card seats fully.

H. Replace the cover by placing over opening, sliding forward until properly aligned, and applying pressure at the back until it snaps into place.

Using the Pre-Boot Disk

A pre-boot disk is provided for certain applications. For any programs on the STANDARD list starting on page 22, the pre-boot disk is not needed. Just run the program as usual.

For programs on the APPLESOFT list (or any other Applesoft program) the FAST APPLESOFT pre-boot disk moves Applesoft from ROM to the Accelerator II card. This is important because the execution of the program itself takes the most time; storing and retrieving data is much easier. To speed up Applesoft programs most effectively, first boot the pre-boot disk. Move the cursor with the arrow key to the FAST APPLESOFT position. Type S to save the current cursor position on the preboot disk. Now insert your regular program disk and press the space bar.

In Section 1 we recommend that you make 3 copies of the pre-boot disk and configure one for FAST APPLESOFT, one for PHANTOM 0, and one for DISABLE. Otherwise you have to change the configuration on your pre-boot disk each time you switch to a new type of program. Of course, if you only use one or two types of programs, you don't have to make 3 pre-boot diskettes.

The DISABLE configuration on the pre-boot disk is for use with the few devices which are not fully compatible with the Accelerator II. Since the Accelerator II uses direct memory

access, other direct memory access devices such as the Microsoft Z-80 Softcard require the Accelerator to be DISABLED. The Corvus Omninet also requires the DISABLED configuration. When you run CP/M programs with the Microsoft Z-80 Softcard, start by booting the pre-boot disk. Move the cursor to the DISABLE position. Then type S to save the current cursor position. Remove the preboot disk, insert your CP/M system disk, and press the space bar to boot in CP/M. Whenever you use CP/M on the Microsoft Z-80 Softcard, you must either disable the Accelerator II or remove it from the Apple. On the other hand, if you have a Z-80 card which does not use DMA, such as the Personal Computer Product's Appli-Card, you don't have to disable the Accelerator or remove it. The Appli-Card contains its own memory and thus has no conflict with the Accelerator II.

The PHANTOM 0 configuration is for programs which normally run from a Language Card in slot 0, such as PASCAL and INTEGER BASIC. Running the preboot in the PHANTOM 0 configuration is equivalent to moving the Accelerator II to slot 0. The Accelerator II's built-in, fast Language Card replaces the regular Language Card or other memory card in slot 0.

The SLOW DOWN configuration is provided to make the Accelerator II run at normal Apple speed. This lets you use the extra 16K of memory on the board without speeding up the calculations. This configuration is not used very often, but you may want it for playing games or other time-sensitive operations.

How to Avoid Using the Pre-boot Disk

In some cases you can fix up your program disks so that you don't have to use the pre-boot disk. The "fix" involves transferring the pre-boot functions to your regular disk, so that you only have to boot one disk as usual.

The pre-boot disk provided with the Accelerator II includes utilities to put the pre-boot functions on an applications disk. The procedures are described below:

FAST APPLESOFT: The HELLO program on the applications program disk may be modified to load Applesoft into the Fast Language Card on the Accelerator II. You need to add the functions performed by the FAST APPLESOFT preboot to the HELLO program. To do this first add the following four statements to the beginning of your HELLO program and save this program on your applications disk:

```
1 D$ = CHR$(4)
2 PRINT D$; "BLOAD ACCEL ROUTINES"
3 CALL 4613
4 CALL 4616
  .
  .
  "THE REST OF
  YOUR HELLO
  PROGRAM FOLLOWS"
  .
  .
  .
```

Now transfer the binary program, "ACCEL ROUTINES", to your applications disk using a program such as FID (located on your DOS 3.3 system master disk).

Your applications disk is now fixed for use with the Accelerator II. Whenever you boot this disk, the first thing that will happen is that the Accelerator II will be set up for FAST APPLESOFT operation. Your regular program will begin running immediately.

Limitations: This procedure will not work if your application program is a commercial program present on a copy-protected disk. In this case it is not possible to modify the HELLO program easily, so you should use the FAST APPLESOFT pre-boot instead.

PHANTOM 0: The Phantom 0 pre-boot is used primarily for PASCAL and INTEGER BASIC programs. In both cases it is possible to modify the systems (PASCAL and INTEGER) to get rid of the pre-boot step.

A. INTEGER BASIC: (on an Apple II plus) This is similar to the FAST APPLESOFT fix.

You must modify the Hello program present on the disk which is used to load INTEGER so that before INTEGER is loaded, the Fast Language Card on the Accelerator II is moved to slot 0 (PHANTOM 0 configuration).

In order to to this, you need to add the functions performed by the PHANTOM 0 preboot to the Hello program. First add the following statements to the beginning of your Hello program, and save this new Hello program on the disk used to load INTEGER.

```
1  D$ = CHR$(4)
2  Print D$; "BLOAD ACCEL ROUTINES"
3  CALL 4613
4  CALL 4619
   .
   .
   "THE REST OF
   YOUR HELLO
   PROGRAM FOLLOWS"
   .
   .
   .
```

Now transfer the binary program, "ACCEL ROUTINES", to this disk using a program such as FID.

The disk has now been fixed for FAST INTEGER use with the Accelerator II without using the preboot. Whenever you boot this disk, the first thing that will happen is that the Accelerator II will be set up for FAST INTEGER operation. You will then be ready to run your Integer Basic applications program.

B. PASCAL:

1. Boot a standard DOS disk - such as your DOS 3.3 system master.
2. Remove this disk, insert one of your preboot disks and type:

BRUN MODIFY

The screen will say:

1. **MODIFY PASCAL BOOT**
2. **MODIFY CP/M BOOT**
3. **EXIT**

ENTER 1, 2, OR 3:

3. Now type 1

The system will respond:

INSERT PASCAL BOOT DISK INTO DRIVE 1 AND HIT RETURN

4. Now insert your PASCAL boot disk. This is the Apple 1 or Apple 3 PASCAL disk to be modified. Make sure that the write protect tab is off and put this disk in the drive and hit return. The drive will run for a few seconds and then ask for another disk to be modified. You can continue until you have fixed up all your PASCAL disks.

5. Test this boot disk as follows: Turn off the power, insert the disk in drive 1, and turn on the power to boot the PASCAL system. You should have now have FAST PASCAL (3.6 times faster than usual).

Limitations: In general this procedure will not work with protected software, such as commercially available software which is copy protected.

DISABLE: Your CP/M boot disk can be modified to disable the Accelerator II before the Z-80 card is used. This modification procedure is similar to the one used for PASCAL.

1. Insert the Accelerator II pre-boot disk in drive 1. Type

BRUN MODIFY

The program will then prompt

1. **MODIFY PASCAL BOOT**
2. **MODIFY CP/M BOOT**
3. **EXIT**

ENTER 1, 2, OR 3:

2. Now, type 2 to select CP/M modification. The screen will then say:

INSERT CP/M SYSTEM DISK (44K, 56K, OR 60K) IN DRIVE 1 AND HIT RETURN

3. Insert A BACKUP COPY (not the original master) of your CP/M System disk into the drive and press return. The drive will run for a few seconds and then ask for another disk to be modified. You can continue until you have fixed up all your CP/M disks.

4. Test the newly modified system boot disk as follows: turn off the Apple, insert the disk in drive 1, turn on the Apple and press RESET to boot CP/M without use of the DISABLE preboot. Your program should run as usual.

Limitations: Since most CP/M software is not specially modified for copy protection, it is possible to modify applications software boot disks for single stage boot (no pre-boot) operation. Be sure to do this modification on a backup of the applications software (ex. Wordstar) and not the master copy.

Using the Accelerator II in Slot 0

If the Accelerator II is in slot 0, the fast Language Card on the Accelerator will automatically replace a regular Language Card (16K RAM board). The PHANTOM 0 pre-boot is not needed if the card is in the real slot 0.

However, there are some restrictions on slot 0 operation:

1. You cannot use the preboot disk.
2. It is not possible to have FAST APPLESOFT on an Apple II Plus (or FAST INTEGER on an Apple II). So if you use programs from the FAST APPLESOFT list on an Apple II Plus, or INTEGER programs on an Apple II, you need to move the Accelerator to another slot and use the appropriate pre-boot to speed up these programs.
3. A 56K or 60K CP/M requires a 16K Language Card in slot 0. CP/M running on the Z80 Softcard can not use the Accelerator's fast Language Card because of the direct memory access conflict. The Accelerator II must be DISABLED whenever the Z-80 Softcard is used, so it will be in the way in slot 0. A standard 16K card should be there instead.

Using the Accelerator II on an Apple II

The Apple II contains Integer Basic in ROM. Applesoft can be loaded into a Language Card in slot 0 from the DOS 3.3 System Master. When the Accelerator II is used in an Apple II, the PHANTOM 0 configuration on the pre-boot disk should be used in order to get FAST APPLESOFT. The pre-boot will automatically figure out that you have an Apple II (not II Plus), and display FAST INTEGER instead of FAST APPLESOFT in the configuration options. You should select the FAST INTEGER option whenever you run Integer Basic programs. For programs on the FAST APPLESOFT list page 24, you should follow the procedure for PHANTOM 0 operation.

You can do one of the following:

1. Put the Accelerator II in slot 0 and then load Applesoft into it by booting the DOS 3.3 System Master.
2. Run the PHANTOM 0 preboot followed by the DOS 3.3 System Master (to load Applesoft).
3. Add the PHANTOM 0 preboot function to your disk which is used to load Applesoft (such as the DOS 3.3 System Master disk). [See page 13, section entitled INTEGER BASIC (on an Apple II plus)].

Technical Information

This information is not required for operation of the Accelerator II, but is provided for technical reference only.

The configurations for the Accelerator II are selected via 4 soft switches. The preboot program (and modified boot programs for CP/M and PASCAL) set these soft switches appropriately for the particular configuration desired.

These soft switches are located in the I/O select region assigned to each peripheral slot. The switches are set by storing a 1 in the particular location given in the table below and reset by storing a 0 there. The power up condition is with the switches reset (0).

LOCATION (N=SLOT #, 1-7)	DESCRIPTION	VALUE TO STORE	RESULT
CN00	SLOW DOWN (speed override)	0	Get full speed (3.6 MHz) operation.
		1	Get slow speed (1 MHz) operation, standard Apple speed.
CN20	PHANTOM 0	0	Extra 16K on Accelerator accessed in slot where Accelerator is located.
		1	Extra 16K on Accelerator accessed from slot 0, just like a Language Card FOR FAST LANGUAGE CARD OPERATION (INTEGER BASIC, PASCAL).

LOCATION (N=SLOT #, 1-7)	DESCRIPTION	VALUE TO STORE	RESULT
CN40	EXTERNAL LAN- GUAGE CARD ACCESS	0	No external Language Card (slot 0) access: this mode selects on-board fast language card in slot N.
		1	Allow access of an external Language Card in slot 0. (Note: when CN20 and CN40 are both set, and Applesoft is loaded into the Accelerator II fast RAM, you have fast Applesoft as well as automatic access to a Language Card located in slot 0.)
CN60	CARD DISABLE	0	Power up condition: the Accelerator II is enabled and using the DMA channel
		1	Accelerator II disabled, control returned to Apple II's main board processor and RAM. The Accelerator II can only be re-enabled by turning the power off and back on again.

The PHANTOM 0 (CN20) and EXTERNAL LANGUAGE CARD ACCESS (CN40) soft switches are interrelated in their function and subsequent use. The following truth table describes their function:

STATE	CN20	CN40	CONDITION
1.	0	0	Power up state: fast Language Card in slot N, no external Language Card access. This condition is used as the standard configuration.
2.	1	0	For PHANTOM 0 configuration. Fast Language Card in slot 0, for use with PASCAL and INTEGER BASIC.
3.	0	1	This condition is used for FAST APPLESOFT when no memory card is present in slot 0.
4.	1	1	Used for external language card (slot 0) access with FAST APPLESOFT loaded into the Accelerator II card. For use with Applesoft when memory card is present in slot 0. In this way you can have, for example, FAST APPLESOFT as well as normal INTEGER loaded at the same time.

NOTE: The states 3 and 4 are used by the FAST APPLESOFT pre-boot depending upon whether or not a memory card (16K, 32K, 64K, or 128K) is present in slot 0. If memory card is present in slot 0, then state 4 is used; otherwise state 3 is used.

PROGRAM LISTS

The following appendices list many popular programs which run on the Apple. Appendix A lists the programs by pre-boot category: programs in the "STANDARD" list require no pre-boot, programs in the "FAST APPLESOFT" list require the FAST APPLESOFT pre-boot, etc.

Appendix B is an alphabetical list of programs. The appropriate pre-boot for each program is given.

APPENDIX A

I. STANDARD: No preboot required - just run your program as usual.

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>MANUFACTURER</u>
3-D Graphics Systems		CA Pacific Computer Co.
A2-3D1		Sublogic
A2-3D2		Sublogic
A2-GEL Graphics Edit		Sublogic
Address Book	1	Muse
Apple Tool Kit		Apple
Apple Writer II	II	Apple
Arcade Machine		Broderbund
Artist	B002	Sierra On-Line
ASCII Express-The Prof'l		Southwestern Data Sys.
ASSM/TED	1.0	Eastern House Software
Bank Street Writer	1	Broderbund * See Note
Data Factory	5.0	Micro Lab
Data Perfect	1.0	LJK Enterprises * See Note
Data Plot	1	Muse
Dic-tio-nary II		Sierra On-Line * See Note
Easywriter	1	Information Unlimited
Easywriter Professional	4	Information Unlimited
Edit 6502		LJK Enterprises
Expediter II+		Einstein Corp.
Form Letter	1	Muse
Format II	II	Kensington Microwave * See Note
Forth		Information Unlimited
Forth II		Softape
Forth-79	2	MicroMotion
Global Program Editor		Synergistic Software
Hayden Compiler		Hayden
Hayes Terminal Program		Hayes Microcomputer Prod
Higher Text II	1	Synergistic Software
Higher Graphics II		Synergistic Software
Integer Basic Compiler		Synergistic Software
The Inspector		Omega
Inventory	1	Software Technology
Letter Perfect	5.0	LJK Enterprises * See Note
Linker		Quality Software
Lisa	2.5	Sierra On-Line * See Note
List Handler		Silicon Valley
Logo		MIT
Magicalc (for II)	II	Artsci * See Note

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>MANUFACTURER</u>
DOS Tool Kit		Apple
Dow Jones Market Anal.		RTR Software
Dow Jones News/Ret Serv.		Apple
EPF IV	B002	Sierra On-Line
Executive Briefing		Professional Software Tech
Executive Secretary		Personal Business Systems
The Executive Speller		Sof/Sys, Inc.
E-Z Draw	3.3	Sirius Software
First Class Mail		Continental
Forms Foundry	1.1	Phoenix Software
The General Manager	B002	Sierra On-Line
Goodspell		Apple Special Delivery
Graphics Magician		Penguin
Graphtrix	1.3	Data Transforms, Inc.
Home Accountant		Continental
Information Master		High Technology
Infotory	2	S.S.R., Inc.
Invoice Factory		Micro Lab
The Landlord	2.06	Systems Plus
Legal Accounting		FCI, Inc.
Listmaster		Southwestern Data Sys.
Market Analyzer	4.5	N-Squared Computer
Market Illustrator	4.0	N-Squared Computer
Micro-Courier		Microm, Inc.
The Modifiable Data Base		Synergistic Software
Orionrater		Orion Business Systems
Personal Finance Mgr		Apple
The Personal Secretary		Sof/Sys, Inc.
Portfolio Master	3.1	Investors Software
Property Management		Continental
Real Estate Analysis		Powersoft
Real Estate Analyzer		Howardsoft
The Rental Manager	2.0	Anthro-Digital
Retail Manager	1.1	Advanced Business Tech
SBCS General Ledger	4.2	Small Business Comp Sys.
Screen Writer II	B001	Sierra On-Line
Script II		Apple
The Shape Magician		Dynacomp
Sir Isaac's Yield Calc.		Isaac Software
Special Effects		Penguin
Stock Analyzer	4.0	N-Squared Computer
Stock Option Anal (SOAP)		H&H Scientific
Stock Portfolio Sys.		Smith Micro Software
Stock Tracker		H&H Trading
Supercheckbook III		Powersoft
Super Text 40-56-70		Muse

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>MANUFACTURER</u>
Tax Manager	4.0	Micro Lab
Tax Preparer		Howardsoft
The Analyzer		Dakin 5 Corp.
The Computer Prog'd Acct		Continental
The Controller		Dakin 5 Corp.
The Depreciation Planner		Dakin 5 Corp.
The Executive Speller		Sof/Sys
The General Manager	B002	Sierra On-Line
The Landlord	2.06	Systems Plus
The Modifiable Data Base		Synergistic Software
The Personal Secretary		Sof/Sys, Inc.
The Rental Manager	2.0	Anthro-Digital
The Shape Magician		Dynacomp
Topographic Mapping Prog		Apple
Trend Spotter		Software Resources
VC-Loader		Micro Decision Systems
VC-Manager		Micro Decision Systems
Visiblend		Micro Labs
Visi-Caids		Data Security Concepts
Visifile		VisiCorp
Visiplot		VisiCorp
Visiterm		VisiCorp
Visitran		Polyglot
Visitrend		VisiCorp
Wall Streeter	1.0	Micro Lab
Zoom Graphix		Phoenix Software

III. PHANTOM 0: Use the PHANTOM 0 preboot before running these programs.

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>MANUFACTURER</u>
Accounts Payable		State of the Art
Accounts Receivable	3	State of the Art
Apple Logo	1	Apple
Apple Pilot		Apple
Budget & Fin. Report		State of the Art
The Bug		Sensible Software
Bug Byter		Computer Advanced Ideas
Business Graphics		Apple
Data Fax	2.6	Link Systems
Datalink		Link Systems
Estate Tax Plan	1.2	Aardvark Software
The Financial Partner		Denver Software
Fortran		Apple
General Ledger		State of the Art
GraForth		Insoft
Incredible Jack	1.3	Business Solutions
Job Control System	4.1	High Technology
Linkdisk		Link Systems
Linkindex		Link Systems
Market Analyst	1.26	Anidata
Merlin		Southwestern Data Sys.
Micro DSS/F		Addison-Wesley
Microfinesse		Osborne/McGraw-Hill
Multiplan		DOS Microsoft
Munch-A-Bug		Southwestern Data Sys.
Pace	2.52	High Technology
Pascal		Apple
Pascal Animation Tools		Apple Special Delivery
Pascal Business Sys	1	Broderbund
Payroll	1	Broderbund
The Personal Investor		PBL Corp.
PFS:File		Software Pub Corp.
PFS:Graph		Software Pub Corp.
PFS:Report		Software Pub Corp.
Qbase	1	Applied Software Tech.
S-C Macro Assembler		S-C Software
Senior Analyst		Apple
The Bug		Sensible Software
The Financial Partner		Denver Software
The Personal Investor		PBL Corp.
Versaform	1.2	Applied Software Tech
Versaform	2.0	Applied Software Tech
Visischedule		VisiCorp

IV. DISABLE: Use the DISABLE preboot before running these programs

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>MANUFACTURER</u>
Accounting Plus		Software Dimensions
Calcstar		Micropro
COBOL-80		Microsoft
Datastar		Micropro
dBaseII	2.3B	Ashton-Tate
Fortran-80		Microsoft
Insoft Accountant		Insoft
Mailmerge		Micropro
Master Planner		Comshare
MDBS.DMS/MDBS.DDL		Micro Data Base Systems
Microsoft Basic		Microsoft
Multiplan	CPM	Microsoft
Profit Plan		Chang Labs
Selector V	2	Micro-Ap
Spellstar		Micropro
Supercalc		Sorcim
Supersoft	1.5	Micropro
Target Planner		Advanced Mgmt Strategies
Wordstar		Micropro
Z-Term		Southwestern Data
Z-Term The Professional		Southwestern Data

APPENDIX B

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>MANUFACTURER</u>	<u>PREBOOT</u>
1st Class Mail		Continental	Fast Applesoft
3-D Graphics Systems		CA Pacific Computer Co.	Standard
A2-3D1		Sublogic	Standard
A2-3D2		Sublogic	Standard
A2-GEL Graphics Editor		Sublogic	Standard
Accounting Plus		Systems Plus	Fast Applesoft
Accounting Plus		Software Dimensions	Disable
Accounts Payable		State of the Art	Phantom 0
Accounts Receivable	3	State of the Art	Phantom 0
A.C.E.		Southwestern Data Sys.	Fast Applesoft
Address Book	1	Muse	Standard
Alpha Plot		Beagle Brothers	Fast Applesoft
ANA I		Galaxy	Fast Applesoft
The Analyzer		Dakin 5 Corp.	Fast Applesoft
Apple DOC		Southwestern Data Sys.	Fast Applesoft
Apple Graphics		Apple	Fast Applesoft
Apple Logo	1	Apple	Phantom 0
Apple Pilot		Apple	Phantom 0
Apple Plot		Apple	Fast Applesoft
Apple Portfolio Eval'r		Apple	Fast Applesoft
Applepost		Apple	Fast Applesoft
Apple Project Manager		Apple	Fast Applesoft
Applesoft Optimizer-AOPT		Sensible Software	Fast Applesoft
Apple Spice		Adventure International	Fast Applesoft
Apple Tool Kit		Apple	Standard
Appleworld		United Software of America	Fast Applesoft
Apple Writer II	II	Apple	Standard
Arcade Machine		Broderbund	Standard
Artist	B002	Sierra On-Line	Standard
ASCII Express II		Southwestern Data Sys.	Fast Applesoft
ASCII Express-The Prof'l		Southwestern Data Sys.	Standard
ASSM/TED	1.0	Eastern House Software	Standard
Autoterm		Softworks, Inc.	Fast Applesoft
Bank Street Writer	1	Broderbund	Standard *
BPI Accounts Payable	1.8	BPI, Apple	Fast Applesoft
BPI Accounts Rec.	1.8	BPI, Apple	Fast Applesoft
BPI General Ledger	1.8	BPI, Apple	Fast Applesoft
BPI Inventory Cntl	1.8	BPI, Apple	Fast Applesoft
BPI Job Costing	1.9	BPI, Apple	Fast Applesoft
BPI Payroll	1.8	BPI, Apple	Fast Applesoft
BPI Time Accountant		BPI, Apple	Fast Applesoft

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>MANUFACTURER</u>	<u>PREBOOT</u>
Budget & Fin. Report		State of the Art	Phantom 0
The Bug		Sensible Software	Phantom 0
Bug Byter		Computer Advanced Ideas	Phantom 0
Business Graphics		Apple	Phantom 0
Calcstar		Micropro	Disable
Chequemate		Masterworks Software	Fast Applesoft
Client Billing System		High Technology	Fast Applesoft
COBOL-80		Microsoft	Disable
Complete Graphics Sys.		Penguin	Fast Applesoft
The Computer Prog'd Acct		Continental	Fast Applesoft
Context Connector		Context Management Sys.	Fast Applesoft
The Controller		Dakin 5 Corp.	Fast Applesoft
Creative Financing		Howardsoft	Fast Applesoft
Data Capture	4.0	Southeastern Software	Fast Applesoft
Data Factory	4.0	Micro Lab	Fast Applesoft
Data Factory	5.0	Micro Lab	Standard
Data Fax	2.6	Link Systems	Phantom 0
Data Perfect	1.0	LJK Enterprises	Standard *
Data Plot	1	Muse	Standard
Data Reporter	1	Synergistic Software	Fast Applesoft
Datadex		Information Unlimited	Fast Applesoft
Datalink		Link Systems	Phantom 0
Datatar		Micropro	Disable
DB Master	4.0	Stoneware	Fast Applesoft
DB Master Util. Pak #1		Stoneware	Fast Applesoft
dBase II	2.3B	Ashton-Tate	Disable
The Depreciation Planner		Dakin 5 Corp.	Fast Applesoft
Desk Calendar II		Telephone	Fast Applesoft
Desktop/Plan II		VisiCorp	Fast Applesoft
Dictionary	001	Sierra On-Line	Fast Applesoft
Dic-tio-nary II		Sierra On-Line	Standard *
DOS Tool Kit		Apple	Fast Applesoft
Dow Jones Market Anal.		RTR Software	Fast Applesoft
Dow Jones News/Ret Serv.		Apple	Fast Applesoft
Easywriter	1	Information Unlimited	Standard
Easywriter Professional	4	Information Unlimited	Standard
Edit 6502		LJK Enterprises	Standard
EPF IV	B002	Sierra On-Line	Fast Applesoft
Estate Tax Plan	1.2	Aardvark Software	Phantom 0
Executive Briefing		Professional Software Tech	Fast Applesoft
Executive Secretary		Personal Business Systems	Fast Applesoft
The Executive Speller		Sof/Sys, Inc.	Fast Applesoft
Expediter II+		Einstein Corp.	Standard
E-Z Draw	3.3	Sirius Software	Fast Applesoft
The Financial Partner		Denver Software	Phantom 0
First Class Mail		Continental	Fast Applesoft

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>MANUFACTURER</u>	<u>PREBOOT</u>
Form Letter	1	Muse	Standard
Format II	II	Kensington Microwave	Standard *
Forms Foundry	1.1	Phoenix Software	Fast Applesoft
Forth		Information Unlimited	Standard
Forth II		Softape	Standard
Forth-79	2	MicroMotion	Standard
Fortran		Apple	Phantom 0
Fortran-80		Microsoft	Disable
General Ledger		State of the Art	Phantom 0
The General Manager	B002	Sierra On-Line	Fast Applesoft
Global Program Editor		Synergistic Software	Standard
Goodspell		Apple Special Delivery	Fast Applesoft
GraForth		Insoft	Phantom 0
Graphics Magician		Penguin	Fast Applesoft
Graphtrix	1.3	Data Transforms, Inc.	Fast Applesoft
Hayden Compiler		Hayden	Standard
Hayes Terminal Program		Hayes Microcomputer Prod	Standard
Higher Text II	1	Synergistic Software	Standard
Higher Graphics II		Synergistic Software	Standard
Home Accountant		Continental	Fast Applesoft
Incredible Jack	1.3	Business Solutions	Phantom 0
Information Master		High Technology	Fast Applesoft
Infotory	2	S.S.R., Inc.	Fast Applesoft
Integer Basic Compiler		Synergistic Software	Standard
Insoft Accountant		Insoft	Disable
The Inspector		Omega	Standard
Inventory	1	Software Technology	Standard
Invoice Factory		Micro Lab	Fast Applesoft
Job Control System	4.1	High Technology	Phantom 0
The Landlord	2.06	Systems Plus	Fast Applesoft
Legal Accounting		FCI, Inc.	Fast Applesoft
Letter Perfect	5.0	LJK Enterprises	Standard *
Linkdisk		Link Systems	Phantom 0
Linker		Quality Software	Standard
Linkindex		Link Systems	Phantom 0
Lisa	2.5	Sierra On-Line	Standard *
List Handler		Silicon Valley	Standard
Listmaster		Southwestern Data Sys.	Fast Applesoft
Logo		MIT	Standard
Magicalc (for II)	II	Artsci	Standard *
Magic Mailer		Artsci	Standard *
Magic Window		Artsci	Standard
Magic Window	II	Artsci	Standard *
Mailmerge		Micropro	Disable
Market Analyst	1.26	Anidata	Phantom 0
Market Analyzer	4.5	N-Squared Computer	Fast Applesoft

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>MANUFACTURER</u>	<u>PREBOOT</u>
Market Illustrator	4.0	N-Squared Computer	Fast Applesoft
Master Planner		Comshare	Disable
Master Type		Lightning Software	Standard
Mathemagic		Int'l Software Marketing	Standard
MDBS.DMS/MDBS.DDL		Micro Data Base Systems	Disable
Memory Management Sys		Computer Data Service	Standard
Merlin		Southwestern Data Sys.	Phantom 0
Micro-Courier		Microm, Inc.	Fast Applesoft
Micro DSS/F		Addison-Wesley	Phantom 0
Microfinesse		Osborne/McGraw-Hill	Phantom 0
Microsoft Basic		Microsoft	Disable
The Modifiable Data Base		Synergistic Software	Fast Applesoft
Multiplan	DOS	Microsoft	Phantom 0
Multiplan	CPM	Microsoft	Disable
Munch-A-Bug		Southwestern Data Sys.	Phantom 0
Orionrater		Orion Business Systems	Fast Applesoft
Pace	2.52	High Technology	Phantom 0
Pascal		Apple	Phantom 0
Pascal Animation Tools		Apple Special Delivery	Phantom 0
Pascal Business Sys	1	Broderbund	Phantom 0
Payroll	1	Broderbund	Phantom 0
Personal Finance Mgr		Apple	Fast Applesoft
The Personal Investor		PBL Corp.	Phantom 0
The Personal Secretary		Sof/Sys, Inc.	Fast Applesoft
PFS:File		Software Pub Corp.	Phantom 0
PFS:Graph		Software Pub Corp.	Phantom 0
PFS:Report		Software Pub Corp.	Phantom 0
Pie Writer		Hayden	Standard
Pie Writer	2.2	Hayden	Standard *
Portfolio Master	3.1	Investors Software	Fast Applesoft
Profit Plan		Chang Labs	Disable
Program Line Editor		Synergistics	Standard
Property Management		Continental	Fast Applesoft
Qbase	1	Applied Software Tech.	Phantom 0
Real Estate Analysis		Powersoft	Fast Applesoft
Real Estate Analyzer		Howardsoft	Fast Applesoft
The Rental Manager	2.0	Anthro-Digital	Fast Applesoft
Retail Manager	1.1	Advanced Business Tech	Fast Applesoft
S-C Assembler II	4.0	S-C Software	Standard
S-C Macro Assembler		S-C Software	Phantom 0
SBCS General Ledger	4.2	Small Business Comp Sys.	Fast Applesoft
Screen Writer II	B001	Sierra On-Line	Fast Applesoft
Script II		Apple	Fast Applesoft
Selector V	2	Micro-Ap	Disable
Senior Analyst		Apple	Phantom 0
Sensible Speller	3	Sensible Software	Standard

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>MANUFACTURER</u>	<u>PREBOOT</u>
Sensible Speller	4	Sensible Software	Standard *
The Shape Magician		Dynacomp	Fast Applesoft
Sir Isaac's Yield Calc.		Isaac Software	Fast Applesoft
Special Effects		Penguin	Fast Applesoft
Speedstar		Southwestern Data Sys.	Standard
Spellstar		Micropro	Disable
Stock Analyzer	4.0	N-Squared Computer	Fast Applesoft
Stock Option Anal (SOAP)		H&H Scientific	Fast Applesoft
Stock Portfolio Sys.		Smith Micro Software	Fast Applesoft
Stock Tracker		H&H Trading	Fast Applesoft
Supercalc		Sorcim	Disable
Supercheckbook III		Powersoft	Fast Applesoft
Supersoft	1.5	Micropro	Disable
Super Text 40-56-70		Muse	Fast Applesoft
Target Planner		Advanced Mgmt Strategies	Disable
Tasc	2.01	Microsoft	Standard
Tax Manager	4.0	Micro Lab	Fast Applesoft
Tax Preparer		Howardsoft	Fast Applesoft
The Analyzer		Dakin 5 Corp.	Fast Applesoft
The Bug		Sensible Software	Phantom 0
The Computer Prog'd Acct		Continental	Fast Applesoft
The Controller		Dakin 5 Corp.	Fast Applesoft
The Depreciation Planner		Dakin 5 Corp.	Fast Applesoft
The Executive Speller		Sof/Sys	Fast Applesoft
The Financial Partner		Denver Software	Phantom 0
The General Manager	B002	Sierra On-Line	Fast Applesoft
The Inspector		Omega	Standard
The Landlord	2.06	Systems Plus	Fast Applesoft
The Modifiable Data Base		Synergistic Software	Fast Applesoft
The Personal Investor		PBL Corp.	Phantom 0
The Personal Secretary		Sof/Sys, Inc.	Fast Applesoft
The Rental Manager	2.0	Anthro-Digital	Fast Applesoft
The Shape Magician		Dynacomp	Fast Applesoft
Time Manager	1.0	Microsoft	Standard
TK Solver		Software Arts	Standard
Topographic Mapping Prog		Apple	Fast Applesoft
Transforth II		Insoft	Standard
Trend Spotter		Software Resources	Fast Applesoft
Typing Tutor II	2.1	Microsoft	Standard
VC-80		Saturn Systems, Inc.	Standard *
VC-Expand		Saturn Systems, Inc.	Standard *
VC-Expand/80		Saturn Systems, Inc.	Standard *
VC-Loader		Micro Decision Systems	Fast Applesoft
VC-Manager		Micro Decision Systems	Fast Applesoft
Versaform	1.2	Applied Software Tech	Phantom 0
Versaform	2.0	Applied Software Tech	Phantom 0

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>MANUFACTURER</u>	<u>PREBOOT</u>
Visiblend		Micro Labs	Fast Applesoft
Visi-Caids		Data Security Concepts	Fast Applesoft
VisiCalc	193	VisiCorp	Standard *
VisiCalc	202	VisiCorp	Standard *
VisiCalc	208	VisiCorp	Standard *
Visidex		VisiCorp	Standard
Visifile		VisiCorp	Fast Applesoft
Visiplot		VisiCorp	Fast Applesoft
Visischedule		VisiCorp	Phantom 0
Visiterm		VisiCorp	Fast Applesoft
Visitran		Polyglot	Fast Applesoft
Visitrend		VisiCorp	Fast Applesoft
Word Handler		Silicon Valley	Standard
Wordstar		Micropro	Disable
Word Juggler		Quark Engineering	Standard *
Wall Streeter	1.0	Micro Lab	Fast Applesoft
Zoom Graphix		Phoenix Software	Fast Applesoft
Z-Term		Southwestern Data	Disable
Z-Term The Professional		Southwestern Data	Disable

* NOTE: If you are running this program and do not have a memory board (16K, 32K, 64K, 128K, or a language card) in slot 0, then you should use the Phantom 0 preboot.

ACCELERATOR II WARRANTY

Saturn Systems, Inc. (SSI) warrants this product to be free of defects in material and workmanship for a period of one (1) year from the original date of purchase to the original user only. During this period, SSI will repair (or, at its option, replace) this product free of charge, provided that it is returned with dated proof of purchase to Saturn Systems, Inc., P.O. Box 8050, Ann Arbor, MI 48107. This warranty does not apply, if in the opinion of SSI, the product has been damaged by accident, misuse, neglect or misapplication as a result of service or modification by other than Saturn Systems.

THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES, STATEMENTS OR REPRESENTATIONS, AND UNLESS STATED HEREIN, ALL SUCH WARRANTIES, STATEMENTS OR REPRESENTATIONS MADE BY ANY OTHER PERSON OR FIRM ARE VOID. ALL IMPLIED WARRANTIES IN CONNECTION WITH THIS SALE, INCLUDING THE WARRANTY OF MERCHANTABILITY, SHALL BE OF THE SAME DURATION AS THE WARRANTY PERIOD STATED ABOVE. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

IN THE EVENT THAT THIS PRODUCT SHALL PROVE DEFECTIVE IN WORKMANSHIP OR MATERIALS, YOUR SOLE REMEDY SHALL BE THE REPAIR OR REPLACEMENT AS STATED IN THIS WARRANTY, AND UNDER NO CIRCUMSTANCES SHALL SATURN SYSTEMS BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECT, INCIDENTAL OR CONSEQUENTIAL, ARISING OUT OF THE USE OF, OR INABILITY TO USE, THIS PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

Saturn System, Inc.
3990 Varsity Dr.
Ann Arbor, MI 48104
Phone: (313)973-8422