

MicroMac

Marathon Accelerator

User Guide

version 1.0

MicroMac Technology

MicroMac

Marathon Accelerator

User Guide

for the Macintosh II

MicroMac Technology

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Acknowledgments

Certain portions of the Mode32 installation are from the Connectix *Mode 32 Installation Guide*. Certain portions about System software limitations are from *The Macintosh Memory Guide* from Connectix.

Manual production tools

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MicroMac Technology

Dear Valued Customer,

Congratulations and thank you for purchasing a MicroMac Marathon accelerator. Our aim with this product, just like with the other upgrade products from MicroMac Technology, is to help you to protect and leverage the investment that you already have made in your Macintosh computer.

We have paid attention to the little details and used only quality parts throughout so you can get years of service and enjoyment with only a small investment in assembly time. We hope it will make your future Macintosh experience even more enjoyable.

In this business, if you are not constantly improving you are falling behind. We are always looking for new ideas and approaches. If you have feedback, ideas or suggestions about the MicroMac Marathon accelerator or this manual, please feel free to contact us.

Sincerely,


Achim Strupat
President

MicroMac Marathon Accelerator

MicroMac Marathon Accelerator

If you are familiar with Macintosh hardware, here is a summary of the installation of your Marathon accelerator in your Macintosh:

QuickInstall

- 1. Open your Macintosh**

Open your Macintosh by removing the case cover to gain access to the logic board.

- 2. Remove the Mounting Plate**

Remove the mounting plate for the floppy disk drive and hard disk drives

- 3. Make Certain an AMU Chip is Installed**

Make certain the AMU chip (a black chip marked with "© Apple") that originally came with the Macintosh II is installed in the socket at location UG13 on the logic board. If you have a 68851 PMMU (a gray chip with a gold center marked with MC 68851) installed at this location, remove it and reinstall the AMU chip.

- 4. Install the Optional 68882 FPU**

If you are installing a 68882 FPU, install it at this time. If there is a 68881 FPU already installed, simply remove it and keep it in a safe place for future reference.

- 5. Remove the 68020 CPU**

Locate the 68020 CPU (marked as MC 68020) and remove it. Please keep it in safe place for future reference. **DO NOT plug the 68020 CPU into the available socket next to the 68030 CPU on the Marathon accelerator.**

- 6. Install the Marathon Accelerator**

Install the Marathon accelerator into the 68020 CPU socket (watch the orientation).

- 7. Close your Macintosh**

Replace the case cover onto your Macintosh.

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8. Install the Software

Boot your Macintosh and insert the Marathon Start-up disk. Locate the Marathon Control Panel on the Start-up disk and copy it into the Control Panels folder (located inside the System folder) on the hard disk. If you are using Virtual Memory or RAMDoubler, use the VM-Patch installer located inside the Extras folder on the Marathon Start-up disk to install the VM-Patch to your System. If you are addressing more than 8MB of RAM, install Maxima (available through Connectix) for System 6 or Mode32 (located on the Utilities disk) for System 7.

9. Enjoy Your Increased Speed!

Restart your Macintosh and enjoy the increased speed of your 32MHz 68030 Marathon accelerator.

MicroMac Marathon Accelerator

Thank you for purchasing a MicroMac Marathon accelerator. Your new MicroMac accelerator upgrade allows you to:

Introduction

- **Upgrade to a 68030 CPU**
The MicroMac Marathon accelerator replaces the 16MHz 68020 with a fast 32MHz 68030 CPU.
- **Speed up your Macintosh II**
Your Macintosh will run approximately 150-250% faster than your current speed with a Marathon accelerator.
- **Speed up math calculations**
The Marathon Control Panel patches SANE routines for better math performance on your Macintosh II.
- **Use Virtual Memory or RAMDoubler**
The Marathon accelerator allows you the option of using Virtual Memory or Connectix' RAMDoubler on your Macintosh II.
- **Address more than 8MB of RAM**
With the Marathon accelerator you can now address more than 8MB of RAM on your Macintosh II with the necessary memory management software.
- **Easily user-installable**
The Marathon accelerator features an easy installation. Simply locate the QuickInstall or hardware installation section of this manual, install your accelerator as instructed, add a simple software INIT to your System folder and away you go!

MicroMac Marathon Accelerator

Using this Manual

This manual gives you, step-by-step, all the information you need to successfully:

- Install the Marathon accelerator into your Macintosh.
- Install any necessary software for your Marathon accelerator.
- Power up and use your newly increased speed.

Inventory

As you unpack your new MicroMac Marathon accelerator, please take the time to check that you have received the following items:

- Marathon accelerator
- Marathon Start-up disk
- Utilities disk
- This manual

Before you Begin

We ask that you save the original packing materials and box. The original packing materials provide the best protection for your MicroMac Marathon accelerator should the need arise to store or ship it again.

Installing the MicroMac Marathon accelerator into your Macintosh can be accomplished by following the steps in the following chapter. As you go through this manual, please read each paragraph in its entirety before actually completing the instructions. The area and tools you will need to install the Marathon accelerator are:

- A flat, non-conductive static-free work area
- A philips screwdriver
- A large flat-blade screwdriver

Skills Needed

It is assumed that you are familiar with the internal layout and assembly of your Macintosh. We recommend that you familiarize yourself with this manual and understand the steps necessary to install the Marathon accelerator. As long as you understand the basic concepts required, the installation will be easy from start to finish.

MicroMac Marathon Accelerator

There are some steps that you can perform before you begin the installation of the Marathon accelerator to make sure you encounter no problems. Please follow these guidelines for a quick and easy installation of the Marathon accelerator:

- Test your Macintosh before installing the accelerator. If you have not used your Macintosh for a while you may have a booting problem or a software application problem that you have not noticed lately.
- Make certain you have the AMU chip (a black chip inscribed with "© Apple" on the surface of the chip) that was originally installed in your Macintosh II. You need this chip in order to use the Marathon accelerator.
- Contact your software vendor to make sure you have the latest version of your application software. This is especially important if you want to upgrade to System 7.
- Make certain you are using the latest System software that is compatible with your software applications.
- Do not make too many upgrades at the same time. When you make too many upgrades at once, it makes it difficult to identify exactly what the source of the problem is if you should happen to encounter one.

System software requirements:

- System 6.0.7 or greater
(If you choose to use System 7.0 or 7.0.1 you must use Tune-up 1.1.1 on your System 7 software.)
- If you want to use Virtual Memory or RAMDoubler you must install the VM-Patch (located inside the Extras folder) on the Marathon Start-up disk after you install the Marathon accelerator, Marathon Control Panel software and restart your Macintosh.

Before you Install

System Software Requirements

MicroMac Marathon Accelerator

If you plan on addressing more than 8MB of RAM, you must use the following programs:

- Under System 6 you must use Maxima (contact Connectix at 415-571-5100 for further information).
- Under System 7 you must use Mode32 (supplied on the Utilities disk) with 32-Bit Addressing turned on in the Memory Control Panel.

MicroMac Marathon Accelerator

If you are experienced with Macintosh hardware installations and have the necessary tools to remove processor chips refer to the QuickInstall section of this manual.

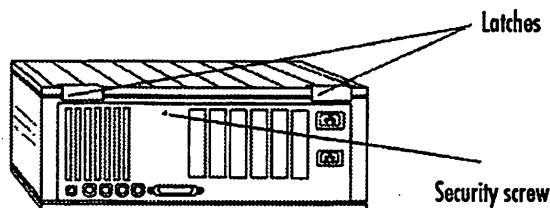
Installation for the Macintosh II involves removing the logic board, locating and removing the 68551 PMMU chip (if one is present), installing the AMU chip (if it is not present), installing an optional 68882 FPU, removing the 68020 CPU and installing the Marathon accelerator.

Please follow steps 1-15 to remove the Macintosh II logic board and locate the necessary components for the installation of the Marathon accelerator.

1. Shut down the computer and disconnect the power cord. If the computer has been on, the metal power-supply case inside the computer may be very hot. Please wait at least five minutes until it cools before you begin the installation.
2. Turn off all peripheral devices, including any external monitors.

During installation, you will need to move the main unit of the computer. You may want to disconnect the peripheral cables from the back of the computer, including the mouse and keyboard.

3. Locate the security screw as shown in Figure 3-1 and use a philips screwdriver to remove the security screw on the back of the computer case cover.
4. Press and release the two lid latches as shown in Figure 3-1 and lift the case cover off.



Marathon Installation

Logic Board Removal

*Figure 3-1:
Location of security
screw and latches*

MicroMac Marathon Accelerator

5. Remove the four screws attaching the drive shelf to the computer case. Now disconnect the floppy disk drive, hard disk drive and power cables and gently lift the drive shelf out from the case as shown in Figure 3-2.

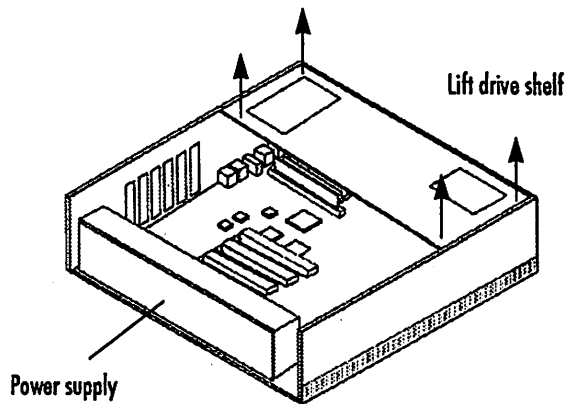


Figure 3-2:
Location of drive shelf

6. Once you have removed the drive shelf, locate the logic board and refer to Figure 3-3 as you proceed to remove the logic board from the case.

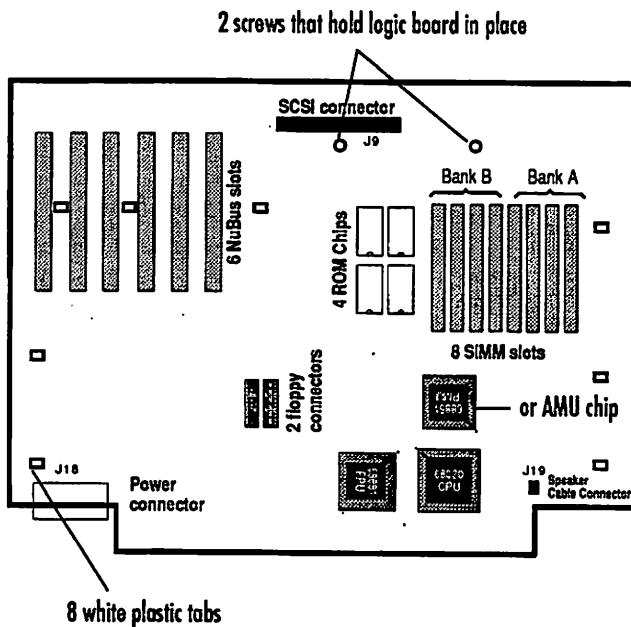


Figure 3-3:
Macintosh II
logic board

MicroMac Marathon Accelerator

7. Remove any video or Nubus cards that are installed in the Nubus slots.
8. Remove the Reset/Programmer's switch if you have one installed, located on the outside of the computer case on the right hand side.
9. Remove the speaker cable connector from the logic board located at J-19.
10. Remove the power supply connector from the logic board at J-18.
11. Remove the two screws that hold the logic board in place located by the hard disk drive ribbon connector (SCSI connector) at J-9.
12. Locate the eight white plastic clips that lock the logic board in place. The clips are released by pressing the exposed portion towards the front of the case. Release the clips and lift the board, starting with the clip closest to the front center of the case, then the left front, then the right. Keep working from left to right to release all the clips. Slide the logic board to the rear of the case and remove.
13. Place the logic board on the foam packing that came with your Marathon accelerator. Locate the AMU or 68851 PMMU chip at location UG13 (please refer to Figure 3-3). An AMU chip is black, inscribed with "© Apple" on the surface of the chip. If you have this chip then please proceed to step 18 to install the optional 32MHz 68882 FPU or step 20 to install the Marathon accelerator. A 68851 PMMU chip is gray with a gold center, inscribed with the part number MC68851 on the surface of the chip. If you have this chip then please proceed with step 14.
14. Since the 68030 processor on the Marathon accelerator already has a PMMU built in, you cannot have the 68851 PMMU chip installed. You need to remove it and replace it with the AMU chip that originally came with the Macintosh II. If you do not have an AMU chip, then please contact Apple Computers at 1-800-SOS-APPL or MicroMac Technology for this particular chip.

**Locating the AMU or
68851 PMMU Chip**

**Removing the
68851 PMMU**

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15. To remove the 68851 PMMU, you will need to use a large flat-blade screwdriver. Carefully using the large flat-blade screwdriver, gently pry the 68551 PMMU from its socket by applying a small amount of pressure on each side of the PMMU. Do not try to remove the PMMU by prying on one side only, this will damage the PMMU and the socket. Gently raise the PMMU a small amount on each side, slowly moving around the perimeter of the PMMU five to six times until the PMMU comes out evenly. Please verify that the pins of the 68551 PMMU are not bent or missing. Please also inspect the socket on the logic board to make sure it is not damaged. Please place the 68851 PMMU in a safe place for future reference.

Note: MicroMac will not assume any liability for damage to the 68851 PMMU, the socket or the logic board so please be careful!

Installing the AMU Chip

16. Install the AMU chip into the socket on the logic board. Please refer to Figure 3-3 for the orientation of the chip into the socket. The pin alignment must be checked carefully so no pins are damaged as the AMU chip is pressed down into the socket. Also make sure all the pins mate with a corresponding hole in the socket.

Locating the FPU Socket

17. If you are installing a 68882 FPU then please continue to follow the instructions at step 18 otherwise skip to step 20 to install the Marathon accelerator.
18. Locate the FPU socket at location UI11 (Please refer to Figure 3-3). If you have a 68881 FPU installed in this socket it must be removed. To remove the FPU, you will need to use a large flat-blade screwdriver. Carefully using the large flat-blade screwdriver, gently pry the FPU from its socket by applying a small amount of pressure on each side of the FPU. Do not try to remove the FPU by prying on one side only, this will damage the FPU and the socket. Gently raise the FPU a small amount on each side, slowly moving around the perimeter of the FPU five to six times until the FPU comes out evenly. Please verify that the pins of the FPU are not bent or missing. Please also inspect the socket on the logic board to make sure it is not damaged.

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Note: MicroMac will not assume any liability for damage to the 68882 FPU, the socket or the logic board so please be careful!

19. Install the 68882 FPU into the socket on the logic board. Please refer to Figure 3-3 for the orientation of the chip into the socket. The pin alignment must be checked carefully so no pins are damaged as the 68882 FPU is pressed down into the socket. Also make sure all the pins mate with a corresponding hole in the socket.

Installing the 68882 FPU

20. Before installing the Marathon accelerator, you must remove the 68020 CPU. To remove the 68020 CPU, you will need to use a large flat-blade screwdriver. Carefully using the large flat-blade screwdriver, gently pry the CPU from its socket by applying a small amount of pressure on each side of the CPU. Do not try to remove the CPU by prying on one side only, this will damage the CPU and the socket. Gently raise the CPU a small amount on each side, slowly moving around the perimeter of the CPU five to six times until the CPU comes out evenly. Please verify that the pins of the CPU are not bent or missing. Please also inspect the socket on the logic board to make sure it is not damaged. The Marathon accelerator plugs into this socket. Please place the 68020 CPU in a safe place for future reference. **DO NOT plug the 68020 CPU into the available socket next to the 68030 CPU on the Marathon accelerator.**

Removing the 68020 CPU

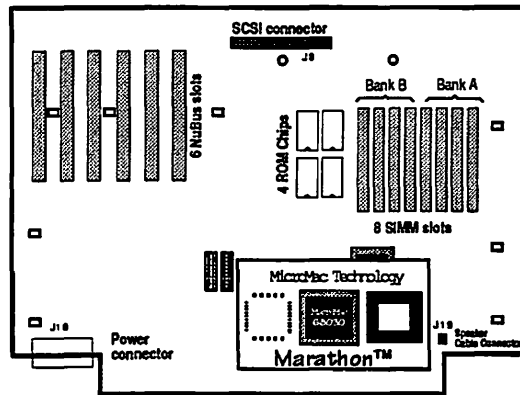
Note: MicroMac will not assume any liability for damage to the 68020 CPU, the socket or the logic board so please be careful!

21. Remove the Marathon accelerator from its anti-static shipping bag.
22. Carefully orientate and insert the Marathon accelerator into the CPU socket as shown in Figure 3-4. The accelerator should be flush with the logic board. Push down firmly on the card until the accelerator is completely seated. **Do not use major force or wiggle the accelerator from side to side.** If the Marathon accelerator does not go in easily, pull it out and realign it again with the CPU socket.

Accelerator Installation

MicroMac Marathon Accelerator

Figure 3-4:
Marathon accelerator
orientation on the
logic board



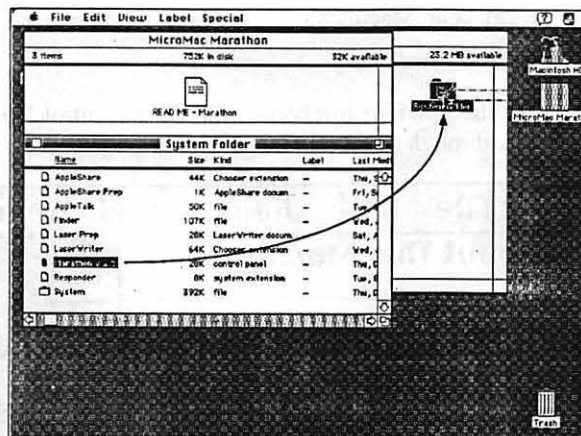
23. Reinstall the logic board. Lower the logic board into the case by inserting the ports on the logic board into the matching holes at the rear of the case. Lower the front of the logic board and push down to snap all the clips into place.
24. Connect the power supply connector to the logic board at J-18.
25. Reinstall the two screws located next to the hard disk drive ribbon connector (SCSI connector) at J-9.
26. Connect the speaker cable to the logic board at J-19.
27. Reinstall any NuBus cards into the NuBus slots.
28. Reinstall the Reset/Programmer's switch.
29. Install the drive tray and reconnect the hard and floppy disk drives.
30. Replace the case cover on the computer. Press the case down until the latches snap into place. Replace and tighten the security screws.
31. Congratulations! You have now completed the hardware installation of the Marathon accelerator. You are now ready to install the Marathon software. Please refer to Chapter 4, "Software Installation" to install the necessary software for your Marathon accelerator.

MicroMac Marathon Accelerator

This chapter explains how to install and use the Marathon Control Panel. You must install the Marathon Control Panel software into the System folder on your hard disk drive before using the Marathon accelerator. Furthermore, you must be using System 6.0.7 or greater.

To install the necessary Marathon software, please follow these steps:

1. Turn on your Macintosh.
2. After the Macintosh boots, insert the Marathon Start-up disk and ready any "READ ME" files on the disk for latest Marathon update information.
3. Copy the Marathon Control Panel located in the Control Panels folder on the Marathon Start-up disk into the System folder on the hard disk as shown in Figure 4-1.



Marathon Software Installation

Installing the Marathon Control Panel

Figure 4-1:
Installing the Marathon Control Panel into the System folder

MicroMac Marathon Accelerator

With System 7 and above the following dialog box will appear:

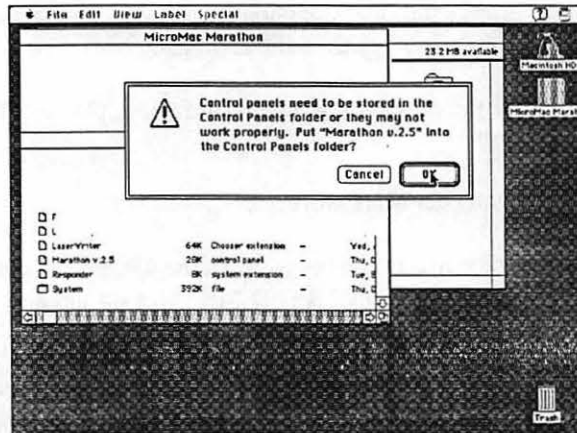


Figure 4-2:
Control Panels
dialog box

4. Click on "OK" or press the Return key to place the file into the Control Panels folder.
5. Restart your Macintosh by selecting **Restart** from the **Special** menu.
6. After the Macintosh reboots, select the Control Panels folder through the **Apple** menu as shown in Figure 4-3.

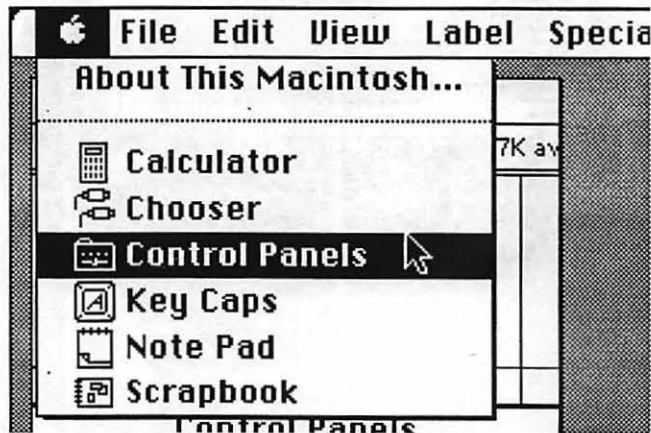
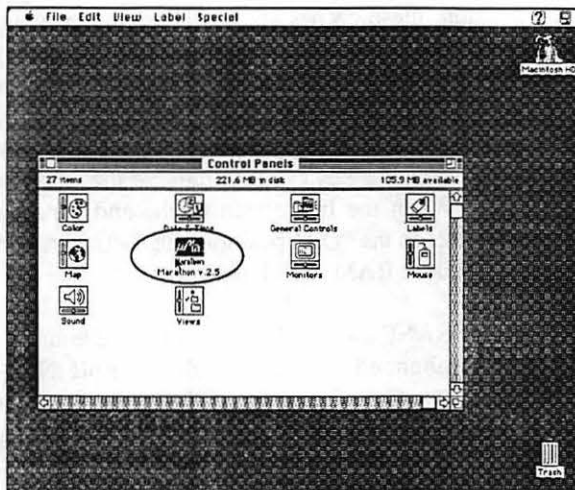


Figure 4-3:
Opening the Control
Panels folder

MicroMac Marathon Accelerator

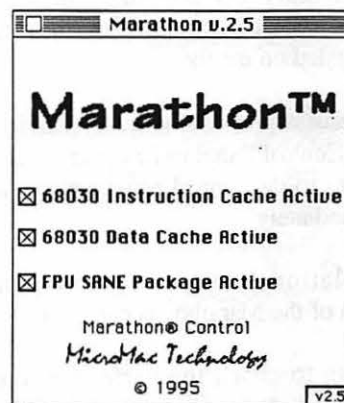
7. Locate and double click on the Marathon Control Panel (as shown in Figure 4-4) to activate it.



*Figure 4-4:
Locating the Marathon
Control Panel*

The Marathon Control Panel (as shown in Figure 4-5) provides switches to enable and disable the three features available for the Marathon accelerator. It is recommended to leave all the features switched to the "On" position unless otherwise stated.

Marathon Control Panel



*Figure 4-5:
Marathon
Control Panel*

MicroMac Marathon Accelerator

Instruction Cache and Data Cache

The MC68030 CPU includes a 256-byte on-chip instruction cache and a 256-byte on-chip data cache. When the Instruction Cache and Data Cache switches are set to the "On" position, these caches are available and provide fast access for the CPU to either program code instructions or the resultant data. Both types of information are also stored in RAM, but caching them as the MC68030 does improves overall speed performance by eliminating the need for the CPU to go through a bus cycle to retrieve the information from RAM. When the Instruction Cache and Data Cache switches are set to the "Off" position, the CPU retrieves the information out of RAM, which is slower.

FPU for SANE

The FPU for SANE switch allows you to enable or disable the use of Enhanced SANE (Standard Apple Numeric Environment) routines. The Enhanced SANE routines are a set of mathematical software routines which accelerate math applications that do not normally take advantage of a math co-processor (FPU). In the "Off" position, Apple's SANE routines are left to handle the math calculations while the FPU is utilized only by applications that recognize it and execute FPU instructions. This switch may be turned off if you suspect these routines are causing some sort of problem with math calculations. If math speed is desired, leave the switch set to "On" position. If you decide to turn the Enhanced SANE routines off for any reason, it will not be necessary to reboot the computer in order for this change to take effect. The routines can be either enabled or disabled on the fly.

No Reboot Required

8. It is not necessary to reboot the System in order for the Marathon Control Panel to be operational. If you make any changes to the control panel settings they will take effect immediately.

You are Done

9. Congratulations! You have now completed the installation of the Marathon accelerator.

Performance Check

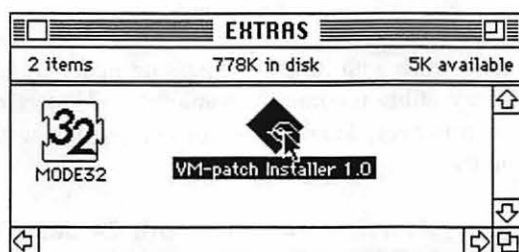
10. If you wish to check the performance of your new accelerator, run the shareware software program Speedometer™ located on the Utilities disk supplied with the Marathon accelerator.

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If you want to use Virtual Memory or RAMDoublcr, you must run the VM-Patch Installer from the Marathon Start-up disk (located inside the Extras folder) after you have installed the Marathon accelerator, Marathon Control Panel and restarted your Macintosh.

The VM-Patch loads a patch into the System that allows Virtual Memory and RAMDoublcr to work on the Macintosh II with original Macintosh II ROMs.

1. To install the VM-Patch, simply double click on the VM-Installer as shown in Figure 4-6.



2. The VM-Installer will check to see if the VM patch is already installed in the System.
3. If VM-Installer does not find the VM patch in the System, you will be presented with an Install button. Continue the installation by clicking on this button. You will be notified upon successful completion of the installation.
4. If the VM-Installer finds the VM-Patch, you will be presented with a Remove button. You can remove the VM-Patch from the System by clicking on this button.

After the VM-Patch is installed, Virtual Memory or RAMDoublcr should function properly.

Using Virtual Memory or RAMDoublcr

Installing the VM-Patch

Figure 4-6:
VM-Patch Installer

MicroMac Marathon Accelerator

Addressing More than 8MB of RAM

Apple's System 6 only works in 24-Bit Addressing and can only access up to 8MB of memory. Apple's System 6 also cannot operate with 32-Bit Addressing.

System 6 and Memory

In order to work with more than 8MB of memory under System 6, you must install the memory utility program Maxima from Connectix. This software allows you to work in enhanced 24-Bit Addressing by extending the addressing from 8MB to 14MB.

The advantage of using enhanced 24-Bit Addressing is that it is compatible with a full range of Macintosh software [*The Macintosh Memory Guide* from Connectix].

In order to work with 32-Bit Addressing under System 6, the memory utility program Maxima from Connectix may be used; however, Maxima is not compatible with the MultiFinder.

System 7 and Memory

Apple's System 7 works with both 24 and 32-Bit Addressing. In 24-Bit Addressing, the Macintosh can only access up to 8MB of memory. In 32-Bit Addressing, the Macintosh can address up to 128MB.

Sometimes 32-Bit Addressing cannot be used because an application, extension or software routine in some peripheral device is not compatible with this mode. In these type of cases 24-Bit Addressing must be used [*The Macintosh Memory Guide* from Connectix].

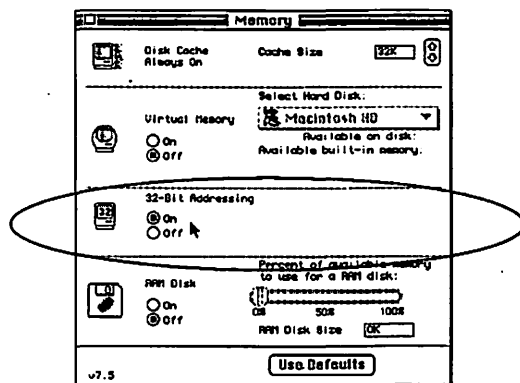
In order to access more than 8MB in your Macintosh II you need to have one of the following memory utility packages from Connectix: Maxima to use enhanced 24-Bit Addressing under System 6 or Mode32 to use 32-Bit Addressing under System 7.

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Please refer to the installation instructions in the manual of Maxima or Optima to install these memory utility packages.

Mode32 is provided free of charge courtesy of Apple computer through a special distribution agreement with Connectix. Mode32 is licensed for your use at no charge on your Macintosh II. Please read the complete license agreement located with the Mode32 software on the Utilities disk.

Mode32 is easy to install. Simply drop Mode32 onto the System folder. System 7 will automatically place it into the Extensions folder. Next, select **Restart** from the **Special** menu. Mode32 is now fully installed; however, your machine is set to start up in 24-Bit Addressing until you select 32-Bit Addressing through Apple's Memory Control Panel. When you wish to switch between 24-Bit Addressing and 32-Bit Addressing, simply select the Memory Control Panel as shown in Figure 4-7.



You will see a new pair of radio buttons that allow you to turn on and off 32-Bit Addressing. To select 32-Bit Addressing, simply click the "On" button and restart your Macintosh by selecting **Restart** under the **Special** menu.

Maxima, Optima Installation

Mode32 License

Mode32 Installation

Figure 4-7:
Memory Control Panel

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32-Bit Clean

Please remember that when you are running in 32-Bit Addressing all INITs, control panels, extensions and applications must be 32-bit clean.

Disabling Mode32

If you wish to temporarily disable Mode32, hold down the ESC key (the upper left key on your keyboard) while your Macintosh boots. Your System will automatically launch with 24-Bit Addressing enabled; however, 32-Bit Addressing is still selected in the Memory Control Panel, so your System will automatically return to 32-Bit Addressing after the next reboot.

Software Recommendations for non 32-Bit Software

Some applications and INITs are not 32-bit clean, that is they are incompatible with 32-Bit Addressing. Such software will usually cause your System to crash immediately while running with 32-Bit Addressing enabled. MicroMac Technology recommends the memory utility Maxima when you need to work with any non 32-bit clean INIT or application. Maxima gives you up to 14MB in enhanced 24-Bit Addressing.

Testing the Available Memory

After you correctly configure your Macintosh with any necessary memory management software, you are ready to test the available memory. Restart your Macintosh by selecting **Restart** under the **Special** menu. After the Macintosh reboots, verify the increased memory amount under the **Apple** menu by selecting "About the Finder" under System 6 or "About this Macintosh" under System 7. A screen should appear as shown in Figure 4-7.

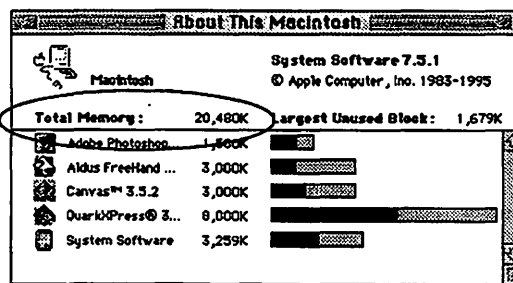


Figure 4-8:
"About this Macintosh"
under System 7 shows
the total memory

The number indicated as "Total Memory" should be consistent with the amount of memory you have installed into your Macintosh II.

MicroMac Marathon Accelerator

Troubleshooting Guide

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MicroMac Marathon Accelerator

Compatibility Tips

The MicroMac Marathon accelerator has been designed to maximize compatibility with your Macintosh software and hardware. Before you begin using your Marathon accelerator, please follow the Compatibility Tips listed below. They will assist you in making a smooth transition to a high-performance, Marathon-equipped Macintosh. If you encounter any problems with your Marathon accelerator, please consult the solutions provided in this section before calling the MicroMac Technical Support department.

- You need to be running System 6.0.7 or greater.
(If you choose to use System 7.0 or 7.0.1 you must use Tune-up 1.1.1 on your System 7 software.)
- If possible, upgrade your applications to the most current versions available.
- If you are addressing more than 8MB of RAM, make certain you are using the correct Memory management software as outlined in the section entitled, "Addressing More Than 8MB of RAM" in Chapter 4, "Software Installation".

MicroMac Marathon Accelerator

A Marathon Start-up disk is supplied with your Marathon accelerator and can be used to aid in troubleshooting your Mac. The Start-up disk has the necessary software to boot your Mac with the accelerator installed.

When you cannot boot from the hard disk with the accelerator installed, try booting with the Start-up disk.

Note: Booting from the Start-up disk by-passes the System folder on the hard disk and uses the one on the Start-up disk.

If you have more than one hard disk drive installed on your Mac, disconnect all but the one you want to boot from and boot again from the Start-up disk. If you still get errors or System lock-ups, disconnect all SCSI devices as well as the internal hard disk drive. Boot with the Start-up disk and check the operation of the Mac. If the problem still persists please call the MicroMac Technical Support department for assistance.

If booting from the Start-up disk appears to function correctly then your problem is most likely on the hard disk or the hard disk drive itself. You will need to try installing a Temporary System on the hard disk. Please refer to Appendix B, "Macintosh Procedures" on how to install a Temporary System. If the Mac boots from the hard disk with the Temporary System installed then do a New System ("Clean System") installation of your System software. If the Mac does not boot from the hard disk with the Temporary System then install a new hard disk driver or back up the hard disk, reformat it and install a New System.

If the operation of your Mac still appears unstable, please call the MicroMac Technical Support department for further assistance.

Booting with the Start-up Disk

Troubleshooting Recommendations

MicroMac Marathon Accelerator

Isolating the Problem

Your MicroMac Marathon accelerator has been tested before shipping. If you have encountered any problems with the installation or operation of your Marathon accelerator, this Troubleshooting Guide will assist you in troubleshooting your Mac.

Generally, careful analyzing and methodical isolation are the fastest way to get to the source of the problem. The inoperation of your Mac may, for example, result from:

- Improper installation of accelerator
- Improper memory configuration on the logic board
- Bad SIMMs on the logic board
- A corrupted System folder
- Incompatible extensions (INITs) and/or control panels in the System folder
- An outdated version of your hard disk driver software
- An old version of an application
- A defective or loose SCSI cable
- Improper termination on the SCSI bus
- A corrupted boot block on the hard disk drive
- Improper heap allocation for your System
- A defective power supply
- A defective logic board

Any of these causes may result in similar symptoms, therefore, it is important to proceed methodically to isolate the problem.

Identifying the Problem

It is important to classify whether the problem is intermittent, repeatable with slightly different symptoms or repeatable with identical symptoms. Each problem may either be caused by software or hardware, but this classification helps you and/or the Technical Support personnel at MicroMac Technology pinpoint the problem(s).

MicroMac Marathon Accelerator

Intermittent crashes happen at unpredictable times and intervals. They typically indicate a hardware problem, but may also point to a more complicated software problem.

Repeatable crashes with slightly different symptoms are invoked by following a well defined set of actions. Each crash manifests itself with slightly different symptoms.

Repeatable crashes with identical symptoms can be invoked by following a well defined set of actions. Each crash manifests itself with identical symptoms.

As a next step it is a good idea to determine whether the problem is caused by software or hardware. A good technique is to boot the accelerated Mac from the back-up of the Marathon Start-up disk (Did you remember to back-up your disk? If you haven't already done so, please do it now). Try to create a repeatable crash or work a while to find out whether an intermittent crash occurs.

Additionally it may be necessary to disconnect any external hard disk drives as well as the internal hard disk drive and the SCSI cable and work only with the floppy disk drive to eliminate the possible influence of any SCSI devices, especially the influence of a corrupted boot block or a corrupted System file on the hard disk.

If you have made many upgrades at the same time, try running your Mac without the accelerator installed. If you are not able to easily solve a problem with your Mac, you may wish to contact your dealer or MicroMac Technology for technical support.

However, the fastest and most economical solution to your problem is to read through the Troubleshooting Guide before consulting with the MicroMac Technical Support department. In many cases the Technical Support personnel will ask you to run the tests described in this chapter.

**Intermittent or
Repeatable Problems**

**Problem caused by
Software or Hardware**

MicroMac Marathon Accelerator

Technical Support Checklist

If you still have a problem after consulting the Troubleshooting Guide, please have the following information and answers available before contacting the MicroMac Technical Support department.

Technical Support Questions Checklist

- ☐ Your particular Mac model
- ☐ The MicroMac product you own
- ☐ Product configuration (Speed in MHz, whether an FPU or SIMMs are installed, etc.)
- ☐ Problem description
- ☐ Sequence of steps to reproduce the problem
- ☐ System software version number
- ☐ Exact text of any error messages
- ☐ Application software version
- ☐ List of extensions (INITs) and control panels
- ☐ Hard disk drive model number and manufacturer
- ☐ What are the SCSI IDs?
- ☐ Is the SCSI bus correctly terminated?
- ☐ Is the Mac connected to a network?
- ☐ What printer are you using?
- ☐ What is the amount of free heap space available?

Technical Support can be reached at (714) 362-4953.
Support hours are between 8:30 A.M. and 5:00 P.M. PST.

MicroMac Marathon Accelerator

Notes

[illegible]

MicroMac Marathon Accelerator

No Start-up Chime

Symptom:

Mac will not chime when turned on.

Explanation:

If your Mac does not chime after the installation of the MicroMac accelerator, it is not passing one of the most basic tests and is most likely not going to boot and work properly. Please consult the following list of possible causes and remedies to find a solution. If none of the suggest remedies solve the problem, remove or disable the MicroMac accelerator to verify the operation of your Mac without the MicroMac accelerator installed.

Possible Cause:

Remedy:

No power supplied to your Mac

Verify and correct the status of power strip, power cable and power switch. Check for fan or hard disk drive noise to verify that the Mac is powered on.

Check for audible (floppy or hard disk drive noise) or visual (screen) booting signs.

Speaker not connected

Check speaker connection.

No power to logic board

Check power connection to logic board.

Floppy or hard disk drive not connected properly

Check for proper floppy and hard disk drive cable connection.

MicroMac Marathon Accelerator

Broken SIMM
socket tabs on the
logic board or
accelerator

Check for broken SIMM socket tabs
on either the logic board(contact
MicroMac Tech Support for help).

Symptom:

**Mac chimes, but no picture
appears on the screen.**

Chime, but no Picture

Explanation:

If your Mac chimes after the
installation of the MicroMac
accelerator then the first hardware
tests have passed successfully.
Please consult the following list of
possible causes and remedies to find
a solution to the problem of not
having a picture appear on the
screen.

Possible Cause:

Remedy:

Brightness turned
down

Check the brightness control dial.
Turn it up to a preferred brightness
level.

Symptom:

**The screen darkens and shows a
cryptic error message with a "F"
when the computer accesses the
hard disk drive.**

**Cryptic Error
Message by Boot
Attempt**

Explanation:

The cryptic error message indicates
that the Mac has interrupted the
booting sequence. If you see an error
message with a "F", there is a good
chance that the problem is software
related. Try the suggested remedies:
If the problem persists, remove or
disable the MicroMac accelerator to
verify the operation of your Mac
without the accelerator installed.

MicroMac Marathon Accelerator

Mac will not Boot

Possible Cause:

Driver is not up-to-date

Remedy:

Rewrite the hard disk driver with an updated version (contact the hard disk drive manufacturer for an upgrade) or use Størware (does not support all hard disk drives).

Symptom:

Mac chimes but the only item that appears on the screen is a disk icon with a blinking "?". The Mac will not boot from the Marathon Start-up disk or from another hard disk drive.

Explanation:

This situation indicates that the Mac cannot find a proper boot disk. You should first attempt to boot from a floppy disk. If the problem persists, remove or disable the MicroMac accelerator to verify the operation of your hard disk drive with an un-accelerated Mac.

Possible Cause

Bad floppy disk

Remedy:

Verify floppy disk operation by booting the floppy disk on another Mac system.

Floppy or hard disk drive not connected properly

Check for proper floppy and hard disk drive cable connection.

Hard disk boot block has incompatible driver

Rewrite hard disk driver with an updated version (contact the manufacturer for an upgrade) or use Størware (does not support all hard disk drives).

Corrupted System

You need to reinstall a "Clean System". Please refer to Appendix B, "Macintosh Procedures".

MicroMac Marathon Accelerator

Symptom: Explanation:	Mac chimes, boots and screen comes on but freezes shortly after the MM-Icon appears on the screen. This situation indicates that the MicroMac accelerator works only partly.	Mac Boots Partially
Possible Cause: INIT conflict	Remedy: Restart your Mac while holding down the Shift key (extensions off). After the Mac finishes booting, remove all your non-Apple control panels and extensions from the System folder except for the one necessary for the MicroMac accelerator. Now add each control panel and extension into the System folder one at a time, restarting your Mac after each one. When you find the offending control panel or extension, restart your Mac while holding down the Shift key. Now locate the problem file and remove it from the System.	
Symptom: Explanation:	Mac chimes, screen comes on and boots from the Marathon Start-up disk, but does not mount the hard disk drive on the desktop. Mac does not boot from hard disk drive. The MicroMac accelerator is properly working but the hard disk drive is either not connected properly, is damaged or has an incompatible driver.	Mac Boots from Floppy Disk but not from Hard Disk Drive

MicroMac Marathon Accelerator

Mac Boots partially from Hard Disk Drive

Possible Cause:

Hard disk drive
not connected
properly

SCSI-ID conflict

Termination
problem

Hard disk boot
block has
incompatible
driver

Remedy:

Check for proper hard disk drive
cable connection. Connect the SCSI
cable and power cable of hard disk
drive.

Assign for every single device in the
SCSI-bus one unique ID-number.

Have at least one, but no more than
two terminations on the SCSI-bus.
The termination must be on the end
of the SCSI-chain.

Run hard disk drive diagnostic and
repair program. Repair or reformat
hard disk driver by using a disk
mount utility such as SCSI-Probe.

Symptom:

Mac boots reliably from the the
Marathon Start-up disk, attempts
to boot from hard disk drive but
crashes half way during the boot
process.

Explanation:

Incompatible software in the hard
disk drive folder prevents the Mac
from properly completing the
booting process properly. This is
commonly referred to as an "INIT
conflict". You need to correct this
problem before proceeding.

MicroMac Marathon Accelerator

Possible Cause:

INIT conflict

Remedy:

Restart your Mac while holding down the Shift key (extensions off). After the Mac finishes booting, remove all your non-Apple control panels and extensions from the System folder except for the one necessary for the MicroMac accelerator. Now add each control panel and extension into the System folder one at a time, restarting your Mac after each one. When you find the offending control panels or extension, restart your Mac while holding down the Shift key. Now locate the problem file and remove it from the System.

Corrupted System

You need to reinstall a "Clean System". Please refer to Appendix B, "Macintosh Procedures".

Symptom:

Explanation:

Mac boots from hard disk drive but crashes frequently or after a few hours of operation.

This situation can be caused by either a hardware or software problem. Patience, persistence and logical thinking is required to identify the cause of the problem. Please read through the following list of possible causes and remedies to isolate your particular problem.

Mac Works for Several Hours but Crashes Unexpectedly or Works Unreliably

MicroMac Marathon Accelerator

One Particular Application Crashes

Possible Cause:

Corrupted System

Defective SIMM

Broken SIMM
socket tabs on
logic board

INIT conflict

Remedy:

You need to reinstall a "Clean System". Please refer to Appendix B, "Macintosh Procedures".

Replace SIMM.

Check for and repair broken tabs.

Restart your Mac while holding down the Shift key (extensions off). After the Mac finishes booting, remove all your non-Apple control panels and extensions from the System folder except for the one necessary for the MicroMac accelerator. Now add each control panel and extension into the System folder one at a time, restarting your Mac after each one. When you find the offending control panel or extension, restart your Mac while holding down the Shift key. Now locate the problem file and remove it from the System.

Symptom:

Mac boots from floppy disk and hard disk drive, but a particular application will not run.

Explanation:

Most likely there is a software problem. Please read through the following section to isolate your problem and correct it.

MicroMac Marathon Accelerator

Possible Cause:

Incompatible software

Remedy:

Some new versions of popular software require upgraded ROM-codes on the logic board. Even though you now have a 68030 CPU on the accelerator, you still have the original outdated ROM-codes on the Mac's logic board. When purchasing software for your Mac, make sure it is compatible with its ROM-codes.

Corrupted System

You need to reinstall a "Clean System". Please refer to Appendix B, "Macintosh Procedures".

Symptom:

Explanation:

An application requires a 68030 or higher CPU.

You need to make sure that the application you want to run only requires a 68030 CPU found on the MicroMac accelerator and not the ROM-codes found on the logic board of your Mac.

**An Application
Requires a 68030 or
Higher Processor**

Possible Cause:

Incompatible software

Remedy:

Call the software vendor of your applications for information on the compatibility of their software with accelerators.

Symptom:

Explanation:

I do not see a speed increase.

The MicroMac accelerator may not be installed or the necessary software may not have been loaded.

**No Noticeable Speed
Increase**

MicroMac Marathon Accelerator

Possible Cause:

Incorrect
installation

Remedy:

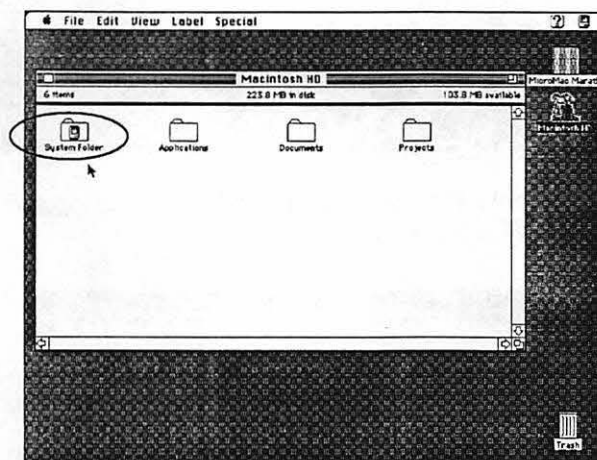
Use Speedometer (located on the Utilities disk supplied with your MicroMac accelerator) to determine the exact speed of your Mac. Compare the results with and without the MicroMac accelerator installed.

Verify the current CPU type (it should be a 68030).

MicroMac Marathon Accelerator

Use this procedure to isolate software extensions or control panel devices that do not appear to work together with a Marathon accelerator.

1. Boot your Mac with the Marathon Start-up disk that is provided with the Marathon accelerator.
2. Open the hard disk and locate the System folder as shown in Figure B-1.



How to Install a "Temporary System"

*Figure B-1:
Locating the System
folder*

3. Click on the System folder to rename it. An "I" beam cursor will be placed at the beginning of the name of the folder as shown in Figure B-2. Now rename the System folder to Old System folder.



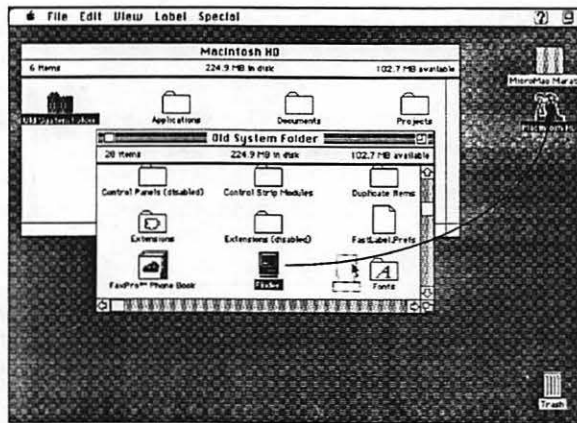
*Figure B-2:
Renaming the System
folder to Old System
folder*

4. Open the Old System folder, locate the Finder and drag it onto the hard disk icon as shown in Figure B-3. This will place the Finder in the same window as the Old System folder.

Disabling the Old System Folder

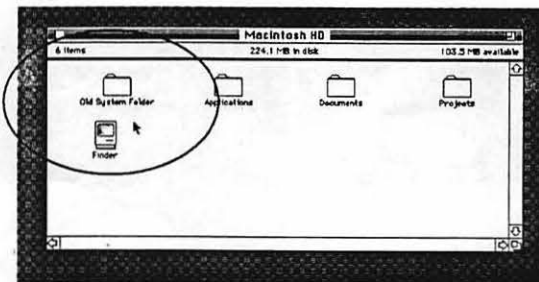
MicroMac Marathon Accelerator

Figure B-3:
*Removing the Finder
from the Old System
folder*



Keep the Old System folder and the Finder together as shown in Figure B-4.

Figure B-4:
*Finder located outside
of Old System folder*



Installing a "Temporary System"

5. Copy the System folder from the Marathon Start-up disk to the hard disk as shown in Figure B-5. This procedure places a minimum System folder on the hard disk. The only items in the Extension and Control Panel folders of this System folder are the ones necessary to boot the Mac with the Marathon accelerator enabled.

MicroMac Marathon Accelerator

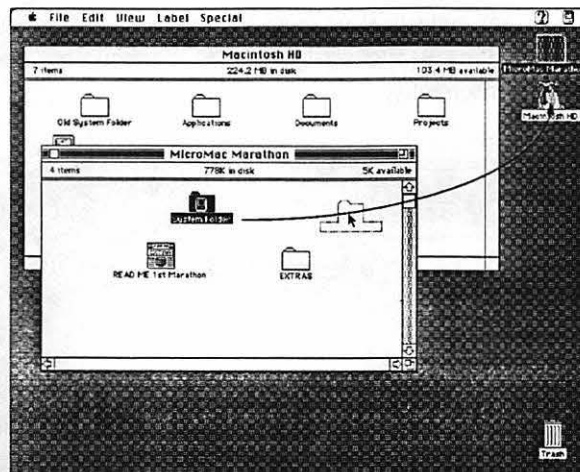


Figure B-5:
Copying the System
folder from the
MicroMac
Start-up disk to the
hard disk

After the System folder copies to the hard disk, verify that it is "blessed" as shown in Figure B-6.



Figure B-6:
"Blessed" System
folder

If the folder is not "blessed", open and close it one or two times. If the folder is still not "blessed", it is most likely due to another System folder being on the hard disk. You will need to locate and disable this second System folder by opening the folder, locating the Finder and removing it from the folder as shown in Figure B-7.

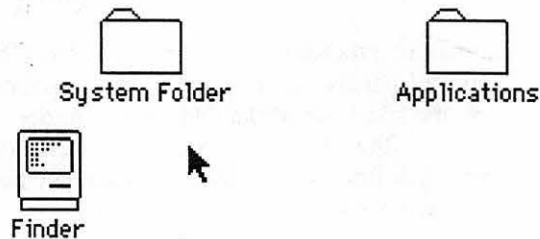


Figure B-7:
Finder removed from
System folder

MicroMac Marathon Accelerator

If the System folder is “blessed” then restart your Mac by selecting **Restart** from the **Special** menu as shown in Figure B-8 to verify that the Marathon accelerator loads correctly.

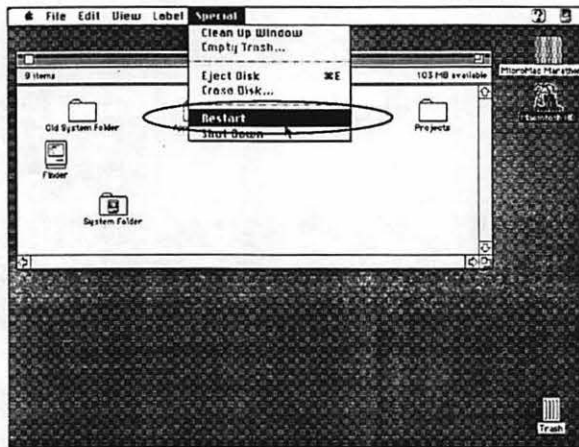


Figure B-8:
*Selecting Restart from
the Special menu*

Isolating Extension (INIT) and Control Panel Conflicts

6. Duplicate any prior activities that created errors or lock-ups to see if they still occur. If everything appears to function correctly, move more extension and/or control panels from the Old System folder to the new System folder and select **Restart** again.
7. After the Mac reboots, move any suspected or questionable extensions (INITs) and control panels from the Old System folder into the new System folder and select **Restart**. After the Mac reboots, verify the compatibility of these files. If they do not work correctly in the new System folder, remove them.
8. Continue this procedure until the extensions (INITs) and control panels that cause System problems are located and taken out of the Old System folder. After you remove the offending extensions (INITs) and control panels from the Old System folder, you need to update or remove them from your System.

MicroMac Marathon Accelerator

9. If all the extension and control panels from the Old System folder are moved to the new System folder and no problems are encountered, the error is in the Old System folder. Move any software related items still left in the Old System folder (such as sounds or fonts that may be installed in the System suitcase) into the new System folder and put the Old System folder and Finder into the trash as shown in Figure B-9. Empty the trash by selecting **Empty** from the **Special** menu.

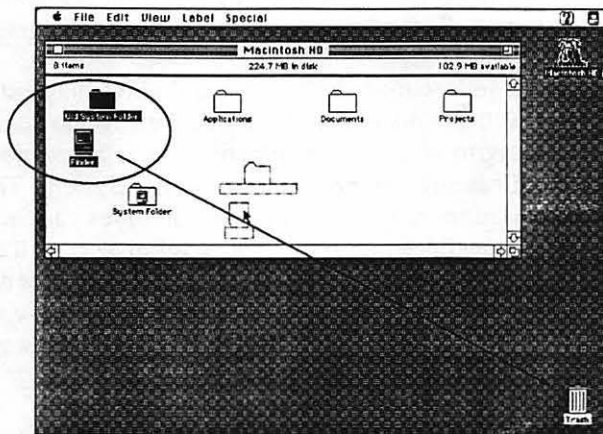


Figure B-9:
*Moving the Old System
folder and Finder
to the Trash*

10. Now that you have isolated and removed the problem files from your System, a New System needs to be installed on the hard disk. If the System is 7.5 follow the "Clean Install" procedure on page B-6. If the System software version is lower than 7.5 use your System software install disks and install the System software into the existing System folder on the hard disk.

Installing a New System ("Clean System")

Note: For compatibility with MicroMac accelerators, please install System 7.5 as a "Clean Install". Do not update an older System folder with System 7.5.

MicroMac Marathon Accelerator

How to Install a "Clean System"

Reinstalling System software with a "Clean System" is usually the best way to free the System from any bugs or corruptions that may have occurred to your System over a period of time. However, there is a major distinction between reinstalling the System software and actually installing a "Clean System".

When a System is reinstalled, the existing System file is updated, not replaced. Updating System software does not usually correct the System resource files that may have become corrupted. The only way to correct this problem is to do an actual "Clean System" install described as follows:

1. Check your start-up drive with a disk drive diagnostic tool such as Norton Utilities or Disk First Aid to verify the integrity of your hard disk drive and to make sure it is not causing any problems with your System. The installation of System software involves reading, writing and deleting files to the hard disk as well as rewriting boot blocks. If your hard disk drive passes the diagnostic tests with no problems, proceed with installing a "Clean System" using the System software disks that came with your Mac.
2. Restart your Mac using the System 7 Disk Tools disk. After the Mac boots, locate the System folder on the hard disk. The folder should appear "blessed" with a picture of the Finder on it as shown in Figure B-10.



System Folder

Figure B-10:
"Blessed" System folder

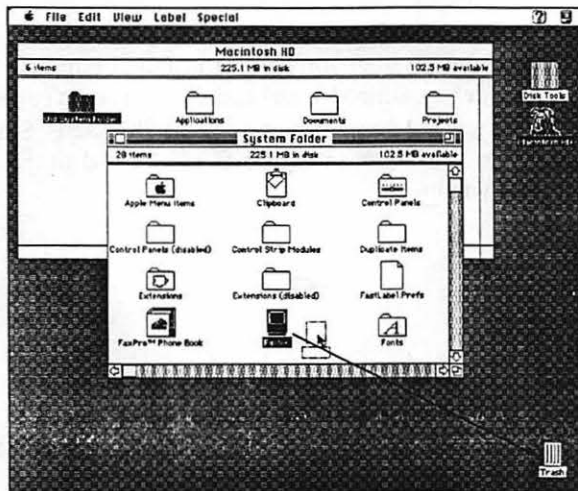
3. Click on the System folder to rename it. An "I" beam cursor will be placed at the beginning of the name of the folder as shown in Figure B-11. Now rename the System folder to Old System folder.



Figure B-11:
*Renaming the
System folder to Old
System folder*

MicroMac Marathon Accelerator

4. Before installing a "Clean System", you need to disable the System folder by removing the Finder. To do this procedure, open the System folder by double-clicking on it, locate the Finder and drag it to the trash as shown in Figure B-12. Empty the trash by selecting **Empty** from the **Special** menu.



Disabling the Old System Folder

*Figure B-12:
Locating the Finder and
dragging it to the Trash*

5. The disabled System folder should appear as shown in Figure B-13.



*Figure B-13:
Disabled System folder*

6. Shut down your Mac.
7. You are now ready to perform a "Clean System" install. Place the first System software installation disk into the floppy disk drive and boot your Mac from it.

MicroMac Marathon Accelerator

Installing a "Clean System"

8. You will be presented with two System software installation options: (1) Easy Install which places the particular files needed by your Mac in a new System folder and (2) Customize which allows you to add or remove features that you need, such as networking options, printer drivers and various System files. For the "Clean Install" that you are about to perform, select Easy Install.

9. After the System software is installed onto the hard disk, restart your Mac and make sure it boots correctly. You should see a newly created "blessed" System folder (as shown in Figure B-14) located in the hard disk window.

Figure B-14:
*Newly created "blessed"
System folder*



Installing Marathon Software

10. Install the necessary Marathon software at this time.

11. Restart your Mac by selecting **Restart** from the **Special** menu. After the Mac boots, test the operation of the System by performing various System functions such as formatting disks and launching programs.

Moving System Files into the System Folder

12. If everything is running smoothly, return to the Old System folder and move all your application-specific folders (such as Aldus and Claris folders), extensions (INITs), control panels and preference files to the newly created System folder. Do not replace a file in the newly created System folder with the same file from the Old System folder. It is recommended that you drag your start-up items, extensions (INITs) and control panels to your new System folder in small groups and restart your Mac each time to make sure there are no conflicts you may have missed.

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13. Before trashing the Old System folder, check to see that you have not missed any important files or documents. You will need to make sure that you copy over your fonts and sounds (as well as any fonts or sounds that may be installed in the System suitcase) from the Old System folder as well. If you are uncertain about trashing your Old System folder, back it up onto floppy disks in case you need to access it in the future.
14. If you are satisfied with what you have copied over to the newly created System folder, trash your Old System folder and restart your Mac.
15. You are done!

MicroMac Marathon Accelerator