

New Life Accelerator !

system upgrade

for

Mac 128K Mac Plus

Mac 512K Mac SE

Mac 512Ke Mac Classic

**Installation Manual and
User's Guide**

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Before You Start!

**Please read this manual
before you install your NewLife
board.**

**It provides important safety
procedures
and describes the recommended
installation steps.**

The following symbols are used in this manual to indicate important items:

WARNING!

A life-threatening situation. Serious injury or death can result if the hazard is ignored.

CAUTION!

Static discharge can damage equipment.

NOTE:

Failure to follow instructions can result in
e q u i p m e n t
d a m a g e o r
m a l f u n c t i o n .



part 1 Introduction

The New Life Accelerator! system upgrade

Congratulations!

We're glad you've chosen to give **New Life™** to your Macintosh with a **New Life Accelerator!** system upgrade. We're sure you'll be pleased with the improved performance and capabilities of your enhanced Mac.

There are three versions of the **New Life Accelerator!**. They are designed specifically for the Mac Classic, the Mac Plus and the Mac SE.

With the **New Life Accelerator!** you can run applications that require more processor speed or memory, and you can use fast SCSI hard disks to quickly access large amounts of data. The optional New Life Video adaptor allows you to connect a large monochrome monitor to your Mac. **New Life Accelerator!** gives a new life to your old Mac and allows you to stay productive in today's rapidly changing software environment.

New Life Accelerator! features and benefits

- **New Life Accelerator! SE** is installed by simply plugging the board into the SE expansion connector.
- **New Life Accelerator! Classic** and **Accelerator! Plus** are installed using a snap on clip over the Macintosh 68000 CPU.
- **New Life Accelerator!** features a flexible memory expansion structure using SIMM technology. You can use either 1MB or 4MB SIMMs to provide either 4MB or 16MB of system memory.
- **New Life Accelerator!** supports virtual memory through VIRTUAL™ by Connectix Corporation.
- **New Life Accelerator!** is compatible with Apple's System 7.
- **New Life Accelerator!** is powered by a



68030 CPU and 68882 FPU co-processor pair
for lightning fast operation.

- **New Life Accelerator!** gives you the performance needed to run powerful applications like MacDraw, Illustrator, Freehand, Excel, Wingz, Word, WordPerfect, Quark XPress, and PageMaker.
- **New Life Accelerator!** with video adaptor option lets you connect a large monochrome monitor to your Mac.



About this manual

This manual gives you step by step instructions to install, configure and use the **New Life Accelerator! system upgrade**.

Some of the steps are potentially life-threatening to you, and hazardous to your Mac.

**We recommend that you have the installation done by your dealer's qualified service technician.*

If you wish to install the **New Life Accelerator!** yourself, *read the safety precautions in Part 2.*

part 3 of this manual contains the installation steps for the **NewLife Accelerator! Classic** on a Mac Classic..

part 4 contains the installation steps for the **NewLife Accelerator! Plus** on a Mac 128K, 512K, 512Ke or Plus.

part 5 contains the installation steps for the **New Life Accelerator! SE** on a Mac SE.

part 6 describes the installation and configuration of the **New Life Accelerator! cdev** control software.

If you follow the steps carefully, you shouldn't have any problems with your new **New Life Accelerator! system upgrade** but just in case you do, **part 7** contains some useful hints to get you back on track.

If you have purchased the **New Life Accelerator! Plus** for the Mac 128K, 512K, 512Ke and Plus, the package should contain:

- **New Life Accelerator! Plus** board
- 3.5 inch diskettes with support software
- Warranty Card
- Inquiry Card
- User Guide & Installation Manual (this book)
- Internal SCSI cable
- Replacement battery door cover attached to the DB-25 SCSI connector with 2 screws
- Killy Clip with installation sheet
- Pin Kit
- Power Harness
- Fan
- Fan Bracket
- One flat washer
- One preformed washer
- One flat head bolt
- One 3/8" pan head bolt
- Two 1 1/4" bolts
- Four lock nuts
- Two standoffs

If you have purchased the optional New Life Video adaptor, then the package should also contain:

- Video cable
- Circuit board connector
- External connector adaptor (for Mac II compatible monitors only)
- Video support software

Memory Configuration



The **New Life Accelerator!** system upgrade requires on board memory in the form of four **Single In-Line Memory Modules** (SIMM's). The Motorola 68030 CPU accesses memory 32 bits at a time, 8 bits from each SIMM location. Therefore, all four SIMM sockets on the **New Life Accelerator!** must be filled with SIMM's of the same size. SIMM's which are 80 nsec or faster are required. RAM on the **New Life Accelerator!** may be configured in one of two ways:

1. With four 1 MB SIMM's, totalling 4 MB of RAM, or
2. With four 4 MB SIMM's, totalling 16 MB of RAM.

In order to access 16 MB of RAM, a software package called **VIRTUAL™** by Connectix Corporation is required.

If you have installed only 4 MB of RAM on the **New Life Accelerator!**, **VIRTUAL™** also allows you to use any free space on your hard drive as additional application memory, up to a maximum of 16 MB. There is a minor performance trade-off, however, as data stored on a hard drive cannot be accessed as quickly as data stored in RAM.



Due to the performance requirements of an accelerated system, RAM on the motherboard cannot be used as application memory. A small portion of this is required for the Mac's internal monitor's video data, but with **VIRTUAL™** the remaining motherboard memory may be used as a RAM Disk. A RAM Disk is significantly faster than a hard drive, but also constitutes volatile memory. As a result, any new documents which you create and store on your RAM Disk should be saved to a non-volatile media (hard drive or floppy diskette) before you turn off the power to your Mac. **VIRTUAL™** offers a feature which does this automatically.

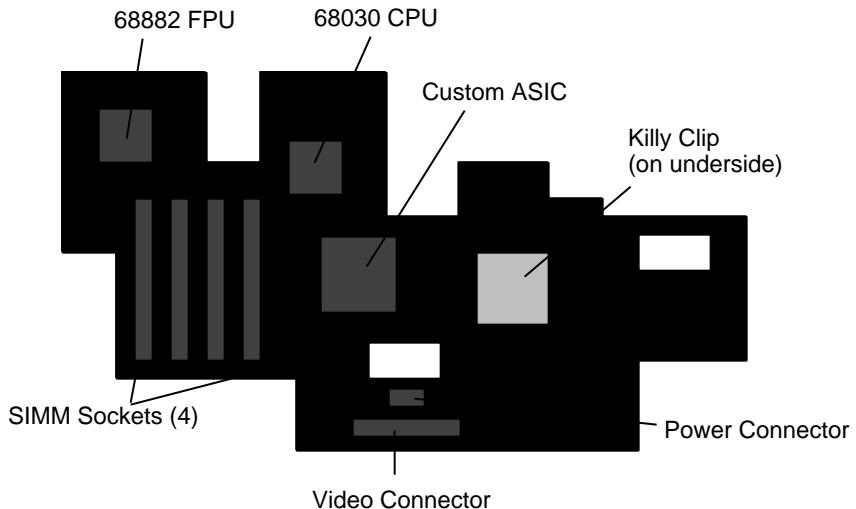


If you are installing the **New Life Accelerator!** on a Mac Plus or Mac SE, at least

1MB of memory must be left on the motherboard for the video data. If you change your motherboard memory configuration, please ensure that the motherboard RAM configuration jumpers/resistors are changed accordingly.

In order for the **New Life Accelerator!** to maximize its performance, it has rigorous timing requirements for the DRAM SIMM's. Consequently, not all manufacturer's SIMM's work. Included with this manual is a list of SIMM's which are recommended for use with the **New Life Accelerator!**

part 2



Preparation and Safety Precautions

Prepare your work place

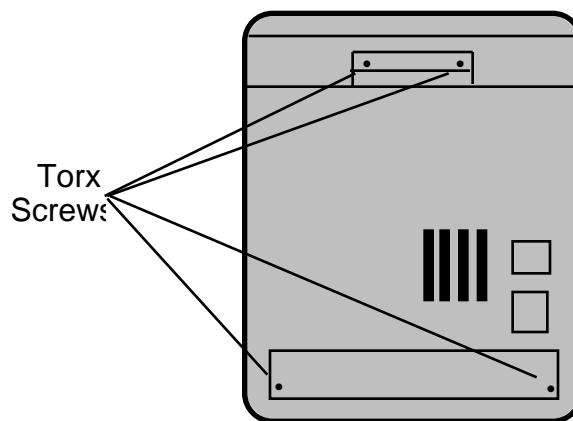
Static electricity can severely damage your Macintosh or board. *the New Life Accelerator!*

To prevent static damage, take the following precautions:

- Place a grounded antistatic mat on your workbench.
- Wear a conductive wrist strap connected to the mat.

Gather the tools you will need

- CRT discharge tool
- Macintosh case opening tool or equivalent (also known as the pull-apart tool)
- 12-inch T-15 Torx screwdriver or equivalent
- Safety goggles
- Antistatic wrist strap
- Regular flat-blade screwdriver
- Soft cloth or foam pad
- Phillips screw driver (for Classic and Plus)



- Utility knife (for the New Life Accelerator! Plus SCSI port installation only)
- Soldering iron, cotton swabs and alcohol (for the New Life Accelerator! Plus pin kit method of installation only)
- Voltmeter (for the New Life Accelerator! Plus power supply adjustment only)

Check the package contents

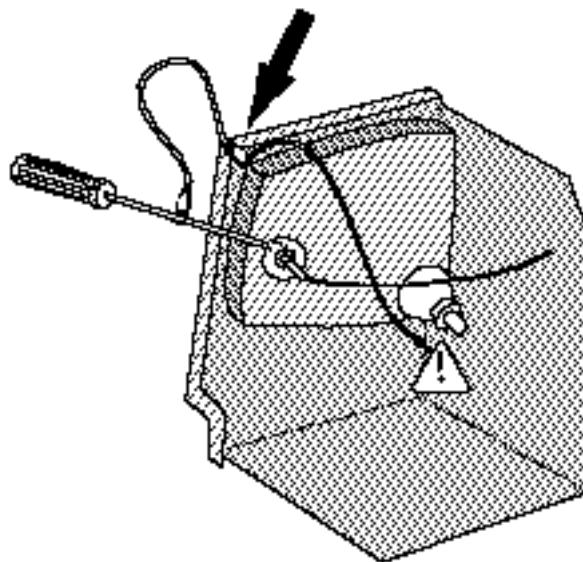


If you have purchased the **New Life Accelerator! Classic** for the Mac Classic, the package should contain:

- **New Life Accelerator! Classic** board.
- 3.5 inch diskette with control software
- User Guide & Installation Manual (this book)
- Power supply, two 4-40 bolts, two flat washers, two lock washers
- Warranty card
- Inquiry card
- Killy Clip installation tool
- Three nylon standoffs and five nylon screws

If you have purchased the **New Life Accelerator! SE** for the Mac SE, the package should contain:

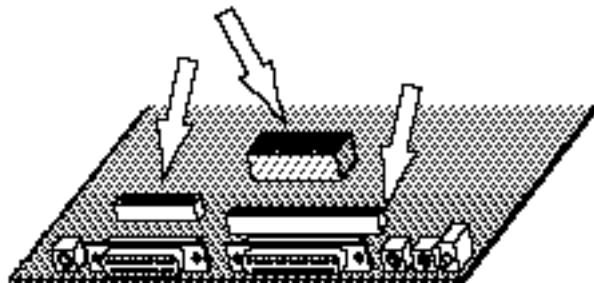
- **New Life Accelerator! SE** board



- 3.5 inch diskette with control software

- User Guide & Installation Manual (this book)
- Warranty card
- Inquiry card
- two nylon standoffs
- four nylon bolts

If you have purchased the optional New Life Video adaptor, then the package should also



contain:

- Video cable
- Video cable bracket and two jackscrews
- two 4-40 bolts (may connect to bracket)

Understand the hazards

WARNING!



Macintosh computers contain high voltages and a high vacuum picture tube. Both can cause serious personal injury and property damage. This equipment should only be installed by a qualified technician.

Serious injury or death may result from improper handling of the interior components of the Macintosh.

DO NOT attempt this installation unless you are completely familiar with the methods for preventing electrical discharge and shock.

Always unplug the Macintosh

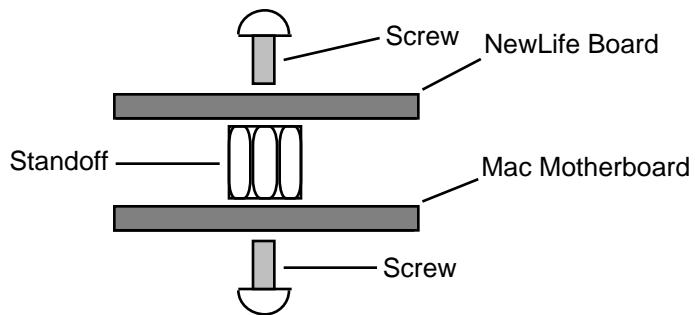
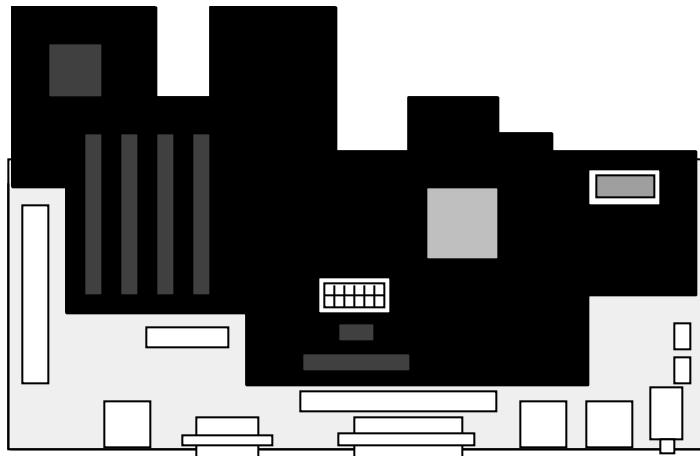
Make sure that the Macintosh is disconnected from AC power. Working within the Macintosh computer requires skill and expertise to prevent electrical discharge and shock, even when the Macintosh has been disconnected from its power source.

Discharge the CRT anode

The CRT anode can have extremely high voltages present (up to 12,000 volts). Follow the steps specified in the Macintosh Technical Procedures manual to discharge the CRT anode. For your convenience, we have summarized the basic instructions in Parts 3 and 4 Step 1. Consult the original Macintosh documentation for all of the details.

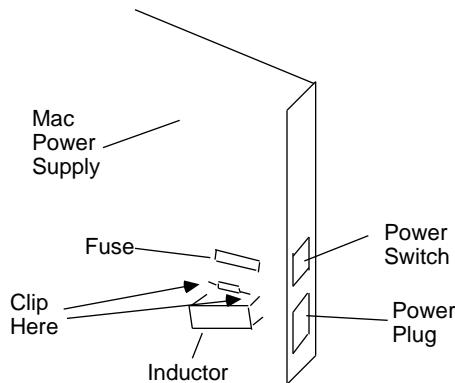
Handle the CRT with care

The CRT contains a high vacuum —*if it is cracked or broken, it can violently implode causing serious injury. Handle the CRT with care. Always wear safety glasses when the case is open.*



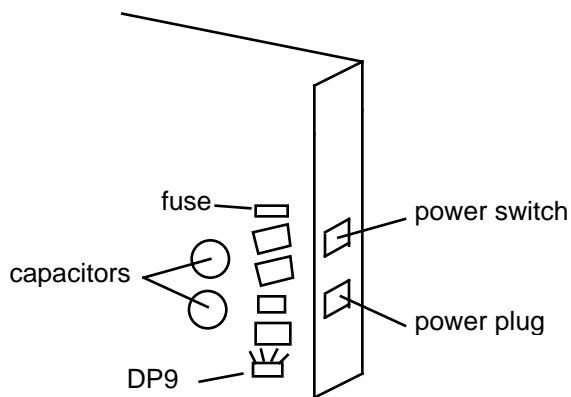
part 3

Installing the New Life



Accelerator! Classic on the Mac Classic

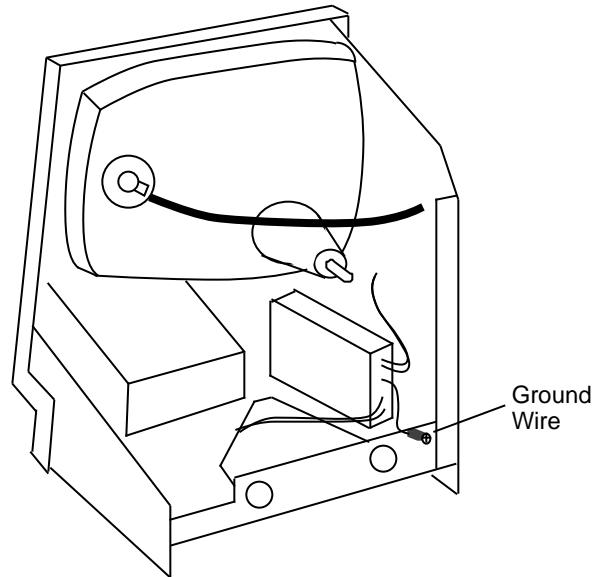
Orienting the New Life



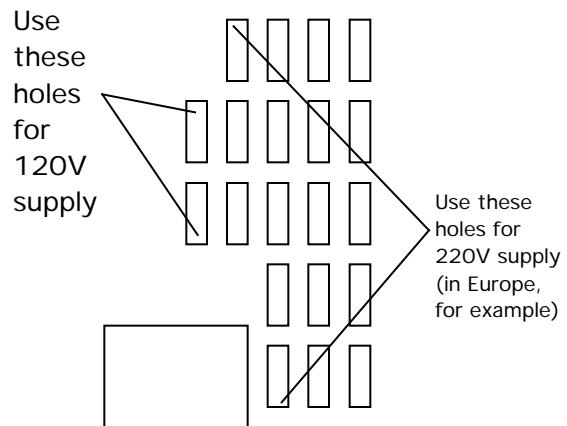
Accelerator! Classic

Figure 1 is a simplified top view of **New Life Accelerator! Classic**. It shows the relative locations of the SIMM sockets, the 68 pin CPU connector and the power connector.

This diagram does not show all of the components on the board,



it is supplied to help you orient the board.



*Figure 1 : Simplified top view of New Life Accelerator!
Classic*

Five easy installation steps



You install the **New Life Accelerator!**
Classic in five easy steps:

Step one: Open the Macintosh case; remove the

motherboard.

Step two: Install the memory.

**Step three: Attach the New Life Accelerator!
Classic to the Macintosh motherboard.**

Step four: Install the power supply kit.

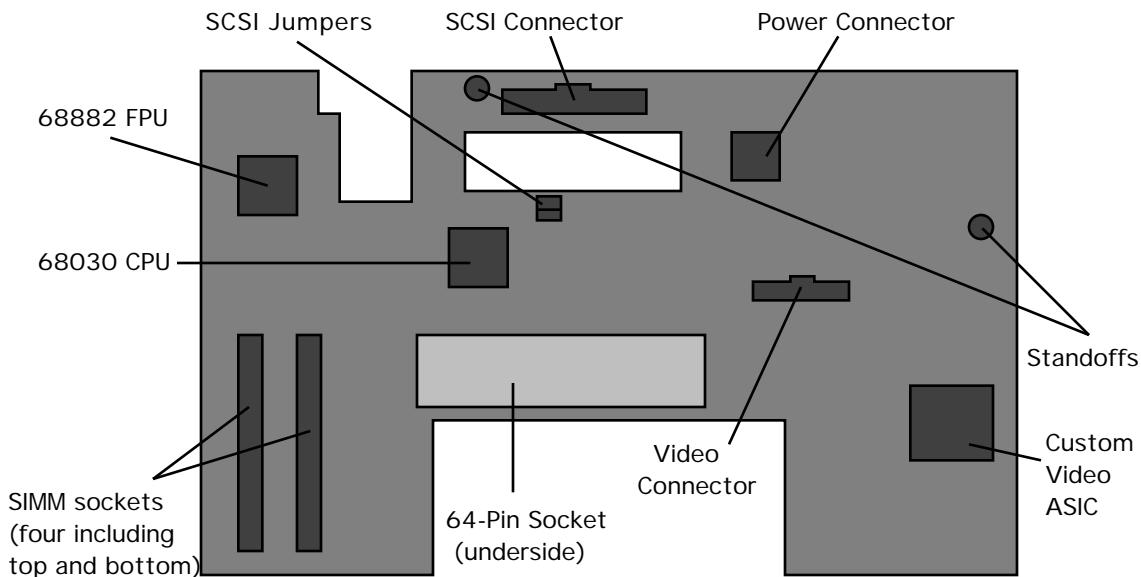
**Step five: Replace the Macintosh motherboard and
close up the case.**



Step one Remove the Macintosh motherboard

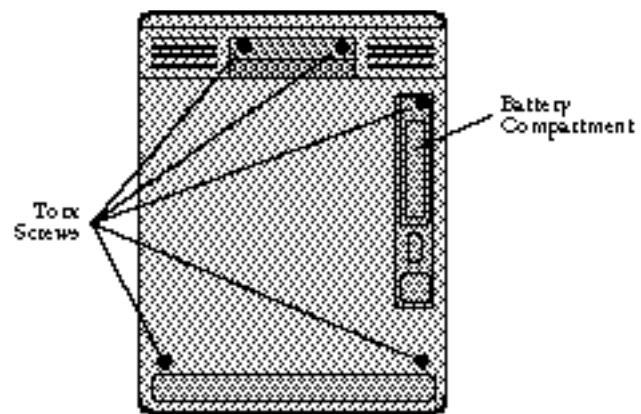
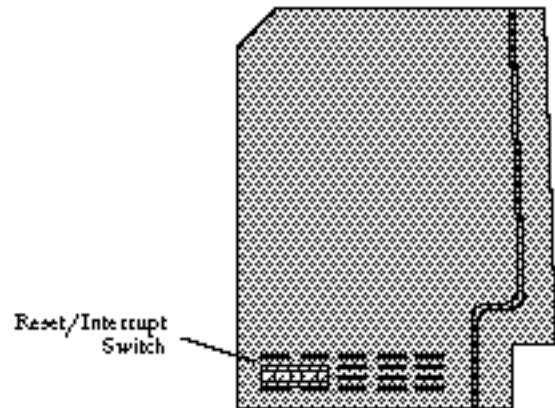
To open the Macintosh Classic case:

1. Turn off the power and disconnect the AC power cord from the source and from the back of the computer.
2. Disconnect the mouse and all other external cables from the back of the computer.
3. To avoid scratching the bezel, place the computer face down on a soft cloth or foam pad;



4. Use a Torx screw driver to remove the four screws from the back of the Mac. Note that the upper screws are silver and the lower ones are black.
5. Use the pull-apart tool to gently pry the cover loose. Carefully lift up the cover and set it aside;
The CRT picture tube is now exposed — be careful!
6. Stand the Macintosh back up in its normal position.

Figure 2 : The back of the Macintosh



WARNING!

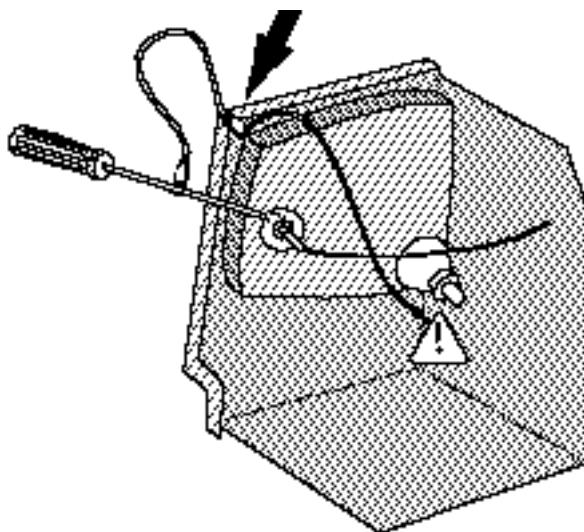
dangerous, a
exists!

The following procedure is
serious shock hazard



To discharge the CRT anode:

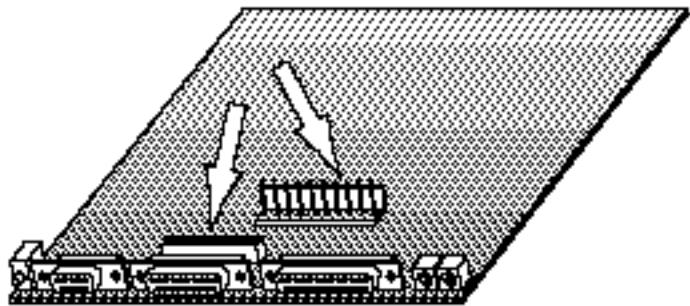
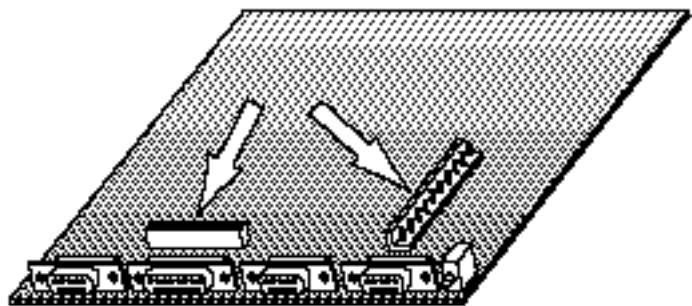
1. Remove your grounding wrist strap, if you have it on. Remove any jewelry you are wearing. Put on your safety goggles.
2. Attach the alligator clip of the CRT discharge tool to the metal part of the ground lug exactly as shown in Figure 3; *Do not clip onto the chassis.*
3. Put one hand behind your back or in your pocket. With your free hand, grasp the insulated handle of the CRT discharge tool. Hold the CRT discharge tool against the side of the CRT and insert it under the anode cap, until it touches the anode ring. A crackle or spark may be generated.
4. Remove the CRT discharge tool from under the anode cap. You may wish to repeat step three, to be sure the CRT is discharged.





5. Remove the alligator clip from the ground lug.

Figure 3 : Discharging the CRT anode





To remove the Macintosh motherboard:

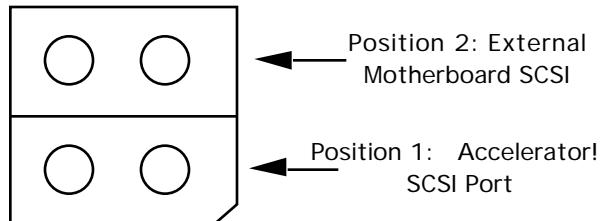
1. *To prevent static damage to your Mac or NewLife Accelerator!, put on your antistatic wrist strap and perform this operation on your antistatic mat.*
2. Locate the motherboard. It is on the bottom side of the Mac. You must detach the connectors from the motherboard before it will slide out of the case.

Figure 4 : Motherboard connectors for Mac Classic



3. To unplug the power/video connector, press the release lever, grasp the wire bundle and gently pull it away from the board. Care must be taken as the connection may release suddenly causing your hand to strike the CRT neck, breaking the vacuum seal.
4. To unplug the SCSI cable and the internal floppy drive connector, grasp the ribbon cable assemblies and gently pull them out of their sockets on the board using a rocking motion.
5. Be sure to remove any memory cards you may have installed from the memory expansion slot on the motherboard.
6. Lay the Mac face down (on your foam pad) and slide the motherboard up and out of the case.
7. Put the Mac aside in a safe location, and place the motherboard on your antistatic mat.

IM



Step two Install New Life memory

The New Life board can be configured with 4MB of RAM using four 1MB SIMM's or with 16MB of RAM using four 4MB SIMM's. You must fill all four SIMM sockets.

The **New Life Accelerator!** automatically adjusts to the amount of memory that you install on the board. There are no jumpers to adjust.



Please note that the **New Life Accelerator!**, due to its high performance demands, is not compatible with all brands of SIMM's. Please refer to the 'Updated Information' sheet which accompanies this manual for a complete list of approved SIMM's.

To install the memory:

1. Place the New Life board on your antistatic mat.
2. Install the SIMMs. Because the SIMM sockets are slanted, you must fill them starting at the center of the board, working towards the outer edge.
3. Make sure that all of the modules are firmly seated in their sockets.

Step three Attaching to the Macintosh motherboard

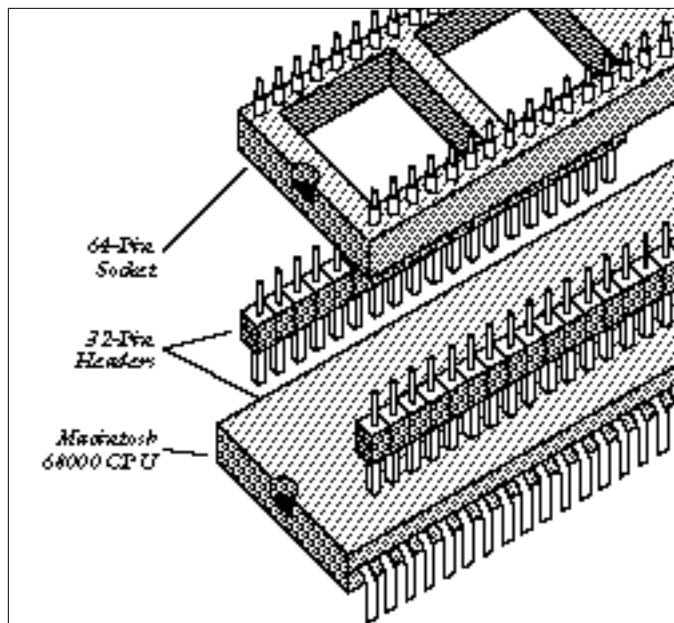


To install the New Life board:

1. Place the Classic motherboard on a firm, flat surface.
2. Locate the three holes in the **New Life Accelerator!** for the standoffs. Attach the standoffs to the New Life board.

3. Insert the four legs of the Killy Clip installation tool in the four holes above the Killy Clip on the **New Life Accelerator!** Push down on the Killy Clip installation tool until it is firmly seated in the socket.
4. Position the New Life board on top of the Classic motherboard as shown in Figure 5. Ensure that the pins of the Killy Clip are properly aligned with those of the CPU.
5. Carefully push down on both the insertion tool and the New Life board until the Killy Clip snaps down onto the 68000 CPU on the Mac motherboard.

6. Inspect the assembly to make sure the



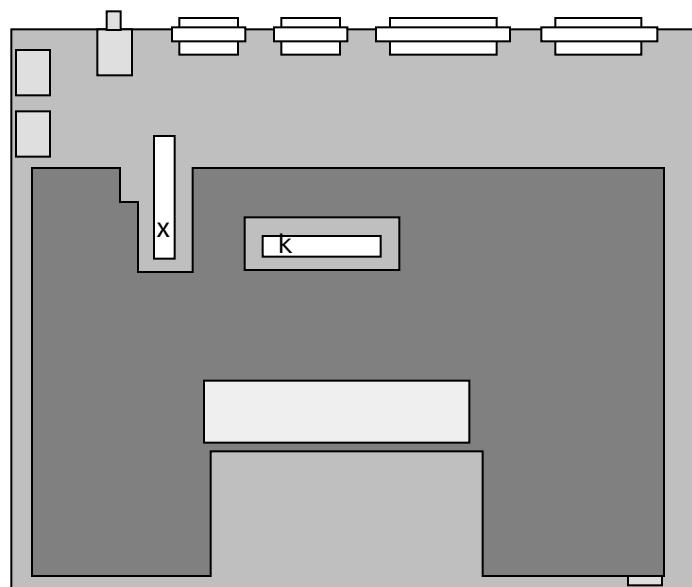
New Life board is completely seated and properly aligned. The Killy Clip should sit flush against the Classic motherboard. Remove the Killy Clip installation tool.

7. Secure the motherboard to the New Life board by attaching the remaining two nylon screws to the standoffs as shown in Figure 6.

Figure 5 : Positioning the New Life Accelerator!

Classic on the Mac motherboard

Figure 6 :Standoff installation - edge view

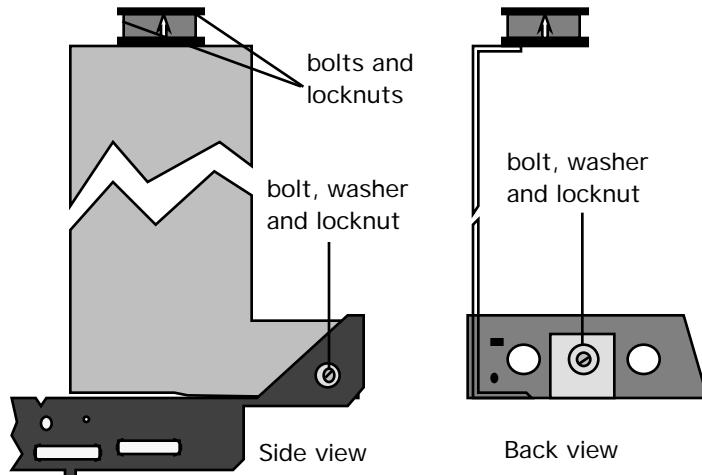


Step four Installing the Power Supply

1. Attach the two yellow clips to resistor RP46 on the Mac power supply board as shown in Figure 7.

Figure 7 :Clip position

If you are installing a New Life Accelerator! Classic onto an older Mac power supply (one that does not have resistor RP46), then you



must attach the two yellow clips to the middle two pins of DP9, as shown in Figure 8. The component DP9 is located right at the base of the Mac's power supply board.

Figure 8 :Position of DP9



2. Lay the Mac face down on the foam pad with the bottom facing you. Orient the power supply that was provided with the New Life board such that the power and ground wires face towards the back of the Mac, as shown in Figure 9. Place the supply with the screw holes positioned behind the two slots in the chassis which are furthest to the left, as shown in Figure 10.

Figure 9: Power supply positioning

Figure 10: Bottom view of chassis

3. Put a lock washer then a flat washer on each



screw and secure the supply in place.

4. Attach the green ground wire to the chassis screw shown in Figure 9.

If your line voltage is 220 volts (in Europe, for example), then please verify that you are installing the larger 220 V power supply.

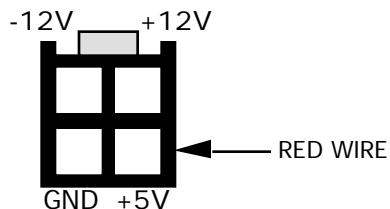
Step five

Replacing the motherboard in the Macintosh

When you removed the motherboard, you slid it out of the metal guides towards the back of the Macintosh. *With the NewLife board attached, the assembly is too high to slide directly back into the Macintosh.*

To replace the motherboard:

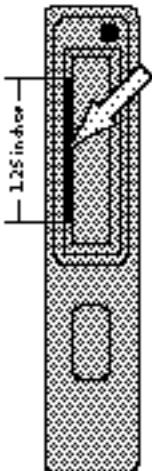
- 1 Lay the Mac face down on the foam pad with the bottom facing you.



2. With the NewLife board attached, the assembly is too high to slide directly back into the Macintosh. Very carefully slide the motherboard through the chassis from the bottom of the Mac up through the opening at the back until the **NewLife Accelerator!** is clear of the fan bracket. Be careful not to damage the SDRAM's on the NewLife board or the components on the bottom of the Mac motherboard.
3. Use one hand to gently spread one side of the metal chassis open and the other to push the

edge of the New Life board pass the metal guide. Do not place the motherboard in the guides at this point.

4. Repeat for the other side of the chassis.
5. Slide the assembly into the Mac until the video connector on the New Life board is clear of the chassis.
6. Use one hand to gently spread one side of the metal chassis open and the other to push the edge of the Mac motherboard into the guide.
7. Repeat for the other side of the chassis.
8. Slide the motherboard into the Mac so that it is seated firmly in the guides.
9. Re-attach the internal floppy drive ribbon cable, the SCSI ribbon cable and the power harness. **Be sure that the internal floppy drive ribbon cable is seated properly at both ends.**
10. Plug the two pin connector attached to the red and black wires on the power supply into the power connector on the **New Life Accelerator!**
11. Close up the Mac case. Note that the upper screws are silver and the lower ones are black.





part 4

Installing the New Life Accelerator! Plus on the Mac 128K, 512K, 512Ke, and Plus

Orienting the New Life Accelerator! Plus

Figure 11 is a simplified top view of **New Life Accelerator! Plus**. It shows the relative locations of several significant board components and is only intended to help you orient the board.

Figure 11: Simplified top view of New Life Accelerator! Plus

Six easy installation steps

You install the **New Life Accelerator! Plus** in six easy steps:

Step one: Open the Macintosh case; remove the motherboard;

Step two: Install the memory; set the SCSI jumper;

Step three: Attach New Life Accelerator! Plus to the Macintosh motherboard;

Step four: Install the fan assembly;

Step five: Replace the Macintosh motherboard; adjust the power supply, if necessary;

Step six: Install the SCSI port and video cable (optional).