

# NewLife 1

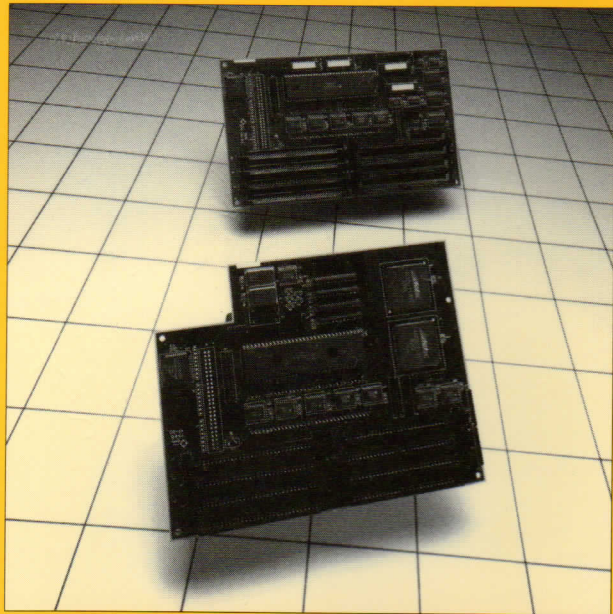
CPU upgrade

for

Mac 128K

Mac 512K

Mac 512Ke



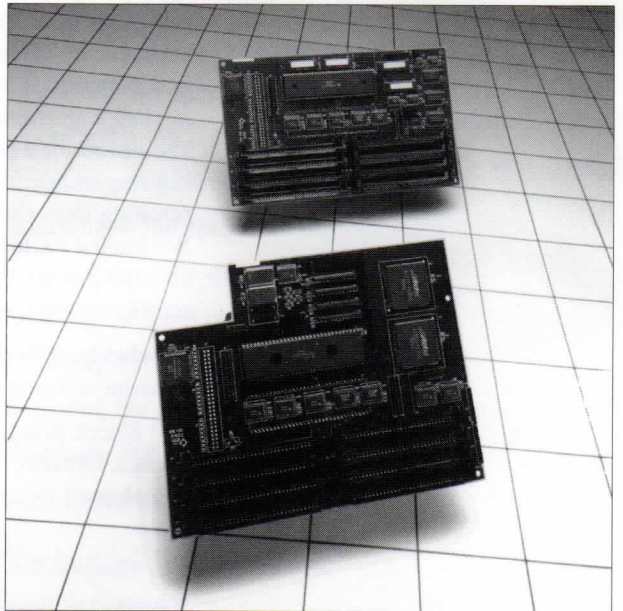
User guide and  
installation manual

NewLife™

# NewLife 1

## CPU upgrades

for  
Mac 128K  
Mac 512K  
Mac 512Ke



NewLife 1  
and NewLife 2  
CPU upgrades →

## User guide and installation manual

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This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of the FCC Rules, which are designed to provide reasonable protection in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case, the user, at his own expense, will be required to take whatever measures may be necessary to correct the interference.

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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:

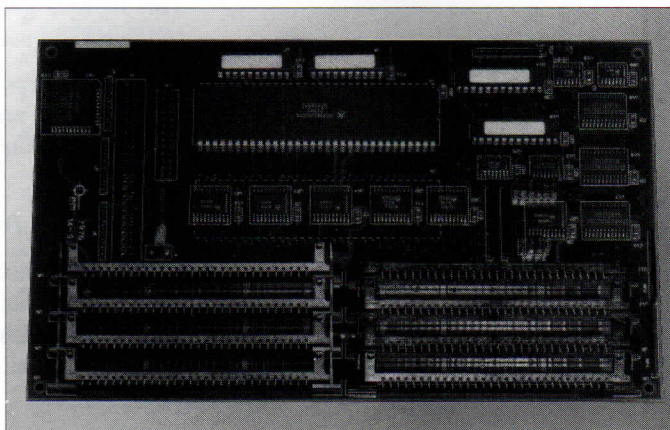
Failure to follow instructions can result in equipment damage  
or malfunction.

## The NewLife 1 CPU upgrade

Congratulations! We're glad you've chosen to give NewLife™ to your Mac with a Newbridge Microsystems NewLife 1 CPU upgrade. We're sure you'll be pleased with the improved performance and capabilities of your enhanced Mac.

NewLife 1 is designed specifically for the 128K, 512K and 512Ke Macintoshes. NewLife 1 gives your Mac the computing power of a Mac SE and supports up to 4MB of RAM. NewLife 1 also provides a SCSI port for hard disks and other SCSI devices.

With NewLife 1 you can run applications that require more memory, and you can use fast SCSI hard disks to quickly access large amounts of data. NewLife 1 really does give a new life to your old Mac and allows you to stay productive in today's rapidly changing software environment.



*Figure 1 : The NewLife 1 CPU upgrade board*

## NewLife 1 features and benefits

- NewLife 1 is installed using a “CPU clip” on the Macintosh 68000 CPU. This is a simple, non-invasive method of attachment.
- NewLife 1 features a flexible memory expansion structure using SIMM technology. You can use combinations of 256KB and 1MB SIMMs to provide up to 4MB of system memory. A Mac 128K can be configured with 1MB, 2MB or 4MB of system memory. A Mac 512K can be configured with any amount of system memory from 512KB to 4MB in 512KB increments.
- NewLife 1 uses the motherboard memory on a Mac 512K or 512Ke to provide up to 4MB of RAM.
- NewLife 1 gives you the performance you need to run powerful programs like MacDraw, Illustrator, Freehand, Excel, Wingz, Word, WordPerfect, Quark XPress, and PageMaker.

## About this manual



This manual gives you step by step instructions to install, configure and use NewLife 1.

*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 NewLife 1 yourself, *read the safety precautions in Part 2.*

Part 3 of this manual contains the actual installation steps for the board. If you follow the steps carefully, you shouldn't have any problem with your NewLife board ... but just in case you do, Part 4 contains some useful hints to get you back on track.

## 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 (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 Section 3. 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.*



## Orienting NewLife 1



Figure 2 is a simplified top view of NewLife 1. It shows the relative locations of the SIMM sockets, the configuration jumpers, and the SCSI connector.

*This diagram does not show all of the components on the board — it is supplied to help you orient the board.*

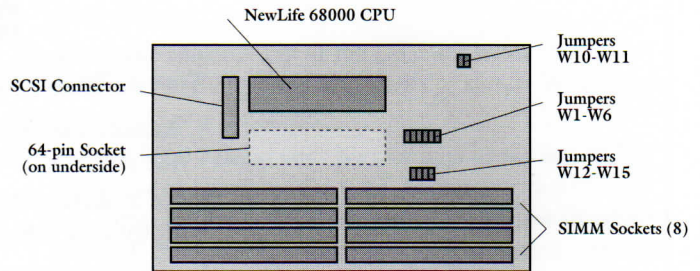


Figure 2 : Simplified top view of NewLife 1

## Five easy installation steps

You install NewLife 1 in five easy steps:

- Step one: **Open the Macintosh case; remove the motherboard;**
- Step two: **Set the NewLife 1 configuration jumpers and install the memory;**
- Step three: **Attach NewLife 1 to the Macintosh motherboard;**
- Step four: **Replace the Macintosh motherboard and adjust the power supply, if necessary;**
- Step five: **Attach the SCSI cable and close up the case,**

### Step one: Remove the Macintosh motherboard

To open the Macintosh 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. Disconnect the keyboard;
3. Remove the reset/interrupt switch (if installed) from the side of the case by prying it off with a small flat-blade screwdriver ( as illustrated on page 11).

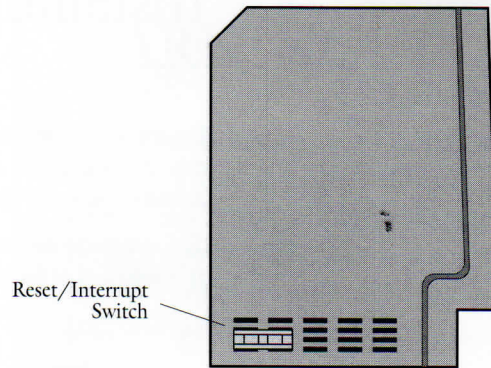


Figure 3 : The reset/interrupt switch

4. Remove the battery compartment cover from the back of the case;
5. To avoid scratching the bezel, place the computer face down on a soft cloth or foam pad;
6. Use a Torx screwdriver to remove the five screws from the back of the Mac. Note that one of the screws is inside the battery compartment.

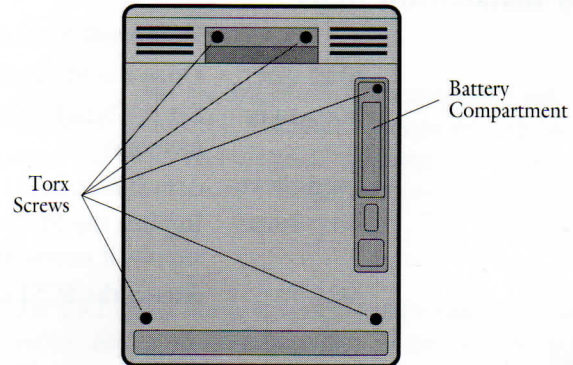


Figure 4 : The back of the Macintosh

7. 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!*
8. Stand the Macintosh back up in its normal position.

# WARNING!



The following procedure is dangerous, a serious shock hazard exists!

## 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 5; *Do not clip onto the chassis.*
3. Put one hand behind your back or in your pocket. Grasp the insulated handle of the CRT discharge tool with your free hand. 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.

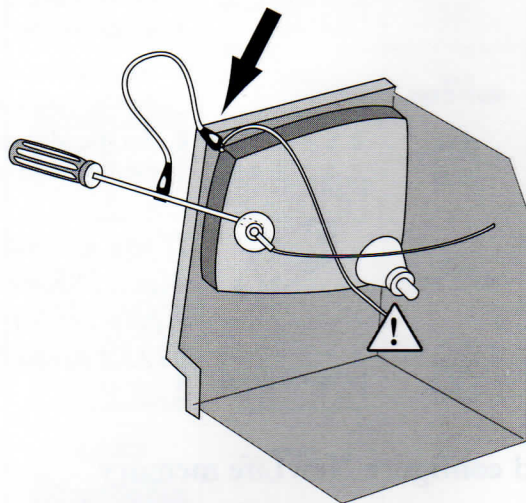


Figure 5 : Discharging the CRT anode



To remove the Macintosh motherboard:

1. To prevent static damage to your Mac or NewLife 1, 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.

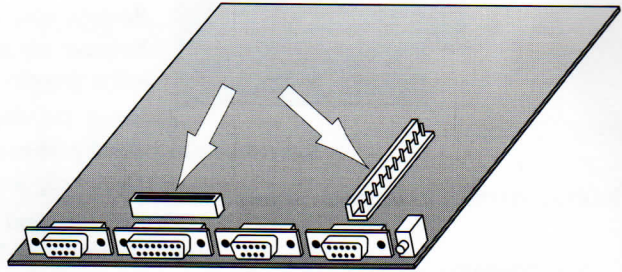


Figure 6 : Motherboard connectors

3. To unplug the power/video connector, 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 internal floppy drive connector, grasp the ribbon cable assembly cable and gently pull it out of the socket on the board.
5. Lay the Mac face down (on your foam pad) and slide the motherboard up and out of the case.
6. Put the Mac aside in a safe location, and place the motherboard on your antistatic mat.



*If you are adding NewLife to an unenhanced Mac 128K or Mac 512K, you must install an Apple 128KB ROM kit upgrade first. The Mac 512Ke already has the 128KB ROMs installed.*

## Step two Install and configure NewLife memory

The NewLife board accommodates up to 4MB of RAM with combinations of 1MB SIMMs and 256KB SIMMs. You must set three groups of jumpers to configure NewLife:

- W10–W11 indicate the SIMM mixture
- W1–W6 indicate the amount of memory you are installing on the NewLife 1 board

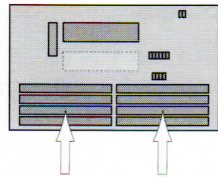
- W12–W15 indicate the amount of memory for a 128K Macintosh upgrade

The settings used for these jumpers depends on the amount of memory you install and the type of Macintosh you are upgrading.

## Installing the memory (SIMMs)

You must always install SIMMs in pairs, one in the left row of sockets and one in the right row of sockets. Each pair must be the same type — 1MB or 256KB. The tables on the following pages show all of the valid SIMM positions.

Because the SIMM sockets are slanted, you must fill them starting at the center of the board working towards the outer edge.



128K

SIMMs	W1-W6	W10-W11	W12-W15
<p>1.0 MB</p>	<p>1.0 MB</p>	<p>Only 256KB SIMMs</p>	<p>1.0 MB</p>
<p>2.0 MB</p>	<p>2.0 MB</p>	<p>Only 256KB SIMMs</p>	<p>2.0 MB</p>
<p>2.0 MB</p>	<p>2.0 MB</p>	<p>Only 1MB SIMMs</p>	<p>2.0 MB</p>
<p>4.0 MB</p>	<p>4.0 MB</p>	<p>Only 1MB SIMMs</p>	<p>4.0 MB</p>

Table 1: Configuring NewLife 1 for a 128K Mac

## Upgrading a 128K Macintosh



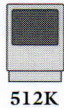
A 128K Macintosh can be upgraded to 1MB, 2MB or 4MB of RAM. Table 1 shows you where to install the SIMMs and how to set the jumpers.

The system only recognizes the memory installed on the NewLife board.

You can configure a 2MB system with either two 1MB SIMMs or with eight 256KB SIMMs.

Once you have installed the SIMMs and set the jumpers as shown to the right (*in Table 2a*), skip to step three and continue the installation procedure.

## Upgrading a 512K Macintosh



On a 512K Macintosh, you can install from 0MB to 4MB of RAM. Table 2 shows you where to install the SIMMs and how to set the jumpers.

The system recognizes the memory installed on the NewLife board in addition to the 512KB on the Macintosh motherboard. *However, you must set the configuration jumpers to indicate only the amount of memory on the NewLife board.*

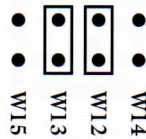
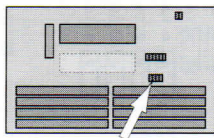


Figure 7: W12–W15 settings for a 512K Macintosh

The system ignores the 512KB on the Macintosh motherboard in one case — when you install 4MB on the NewLife board. In this case, the total memory available is 4MB. In all other cases — when you install 3.5MB or less — the total memory available is the amount you install on the NewLife board plus the 512KB on the Macintosh motherboard. Regardless of the amount of memory you install, set the configuration jumpers to indicate only the amount of memory on the NewLife board.

You can configure a 2MB system with either two 1MB SIMMs or with eight 256KB SIMMs.

Regardless of the amount of memory, set jumpers W12–W15 as shown in Figure 7 for a 512K Macintosh.



512K

<i>SIMMs</i>	<i>W1-W6</i>	<i>W10-W11</i>
<p><i>0 MB</i></p>	<p><i>0 MB</i></p>	<p><i>no SIMMs</i></p>
<p><i>0.5 MB</i></p>	<p><i>0.5 MB</i></p>	<p><i>Only 256KB SIMMs</i></p>
<p><i>1.0 MB</i></p>	<p><i>1.0 MB</i></p>	<p><i>Only 256KB SIMMs</i></p>
<p><i>1.5 MB</i></p>	<p><i>1.5 MB</i></p>	<p><i>Only 256KB SIMMs</i></p>
<p><i>2.0 MB</i></p>	<p><i>2.0 MB</i></p>	<p><i>Only 256KB SIMMs</i></p>

Table 2a : Configuring NewLife 1 for a 512K Mac



512K

SIMMs	W1-W6	W10-W11
<p><b>2.0 MB</b></p>	<p><b>2.0 MB</b></p>	<p><i>Only 1MB SIMMs</i></p>
<p><b>2.5 MB</b></p>	<p><b>2.5 MB</b></p>	<p><i>1MB SIMMs and 256KB SIMMs</i></p>
<p><b>3.0 MB</b></p>	<p><b>3.0 MB</b></p>	<p><i>1MB SIMMs and 256KB SIMMs</i></p>
<p><b>3.5 MB</b></p>	<p><b>3.5 MB</b></p>	<p><i>1MB SIMMs and 256KB SIMMs</i></p>
<p><b>4.0 MB</b></p>	<p><b>4.0 MB</b></p>	<p><i>Only 1MB SIMMs</i></p>

Table 2b : Configuring NewLife 1 for a 512K Mac



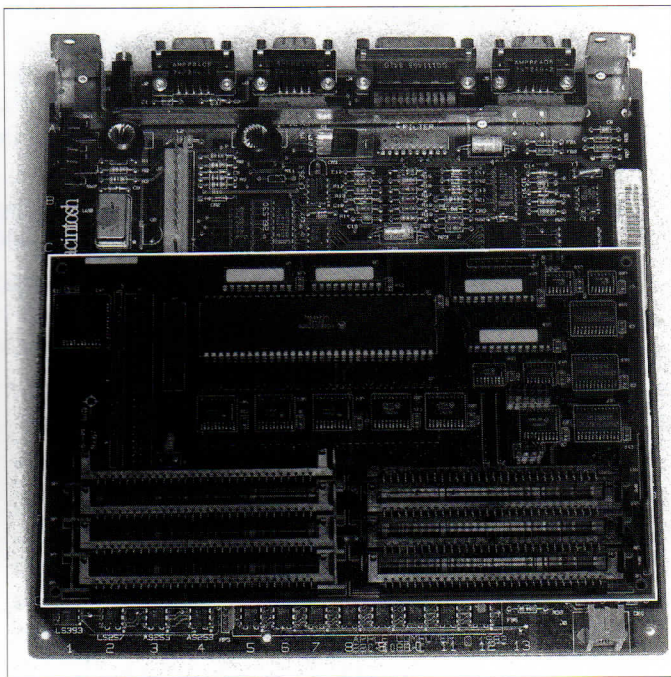
### Step three Attaching to the Macintosh motherboard



You install the NewLife board on top of the Macintosh motherboard — as shown in Figure 8. The 64-pin connector on the bottom of the NewLife board attaches to the Macintosh 68000 CPU. This is done in one of two ways:

1. with a “Killy clip”
2. with soldered pin mounts  
(required for a ceramic 68000 CPU)

*A ceramic 68000 has a gray or light brown case.  
A plastic 68000 has a black case.*



*Figure 8 : Positioning NewLife 1 on the Mac motherboard*

### Installing the Killy clip

To install the Killy clip, follow the instructions on the separate sheet enclosed with the NewLife documentation. *You can not use the Killy clip on a ceramic 68000 CPU.* A ceramic 68000 has a gray or light brown case.

Once the Killy clip is installed you connect the NewLife board to the pins on top of the clip.

## Installing soldered pin mounts, *an alternative*

Some early versions of the Macintosh have ceramic 68000 CPUs. A ceramic 68000 has a gray or light brown case. *The Killy clip does not work with ceramic 68000s.* You must use the soldered pin mount technique.

*DO NOT attempt this procedure unless you are familiar with correct soldering techniques for multilayer boards.* Good soldering skills and equipment are required to successfully complete this procedure.

### Pin mount soldering procedure:

1. You must solder header strips onto the pins of the Macintosh CPU. Two 32-pin header strips are supplied, mounted under a 64-pin socket as shown in Figure 9. The 64-pin socket is only used as a carrier for the header strips to provide alignment — once you are done, discard the socket.
2. Straddle the header strips and socket assembly over the Macintosh 68000 CPU.

The header strip pins must each slide down the side of one of the 68000s pins. The socket pins must be pointing upwards — away from the board.

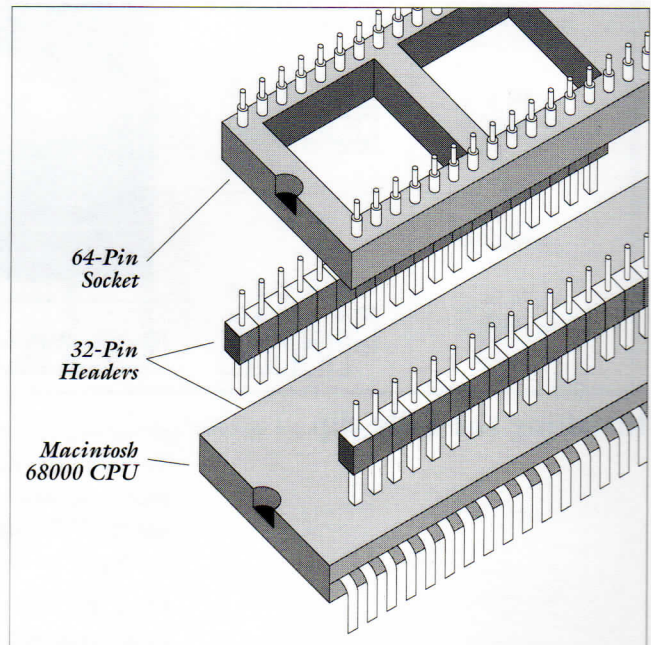


Figure 9 : Exploded view of the pin mount



3. Carefully solder each of the header strip pins to the Macintosh 68000 CPU. Remove any flux residue and check for bad solder joints or solder bridges. *Poor soldering can prevent proper operation of the Macintosh — it may not even boot up.*
4. Remove and discard the 64-pin socket. The two header strips are now attached to the 68000 with their pins pointing upwards. You will connect the NewLife board to these pins.

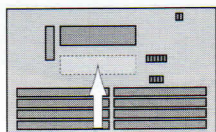
## Attaching the NewLife board

The 64-pin socket on the bottom of the NewLife board connects to the pins on the Killy clip — or to the header strip pins if you used the soldered pin mount procedure.

## CAUTION:

*Align all of the pins with their correct socket positions before applying pressure. If the pins and socket are misaligned you can severely damage the board and pins and void your NewLife warranty.*

Position the NewLife board above the Macintosh motherboard as shown in Figure 8. *Before you apply any pressure, look between the two boards and make sure all of the pins are aligned with the socket.*



Place the entire assembly on your antistatic mat and apply pressure to the NewLife board — *but only above the socket location*. After the pins are seated in the socket, inspect the assembly to make sure the NewLife board is completely seated and properly aligned.

## Step four

### 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 back into the Macintosh.*

## To replace the motherboard:

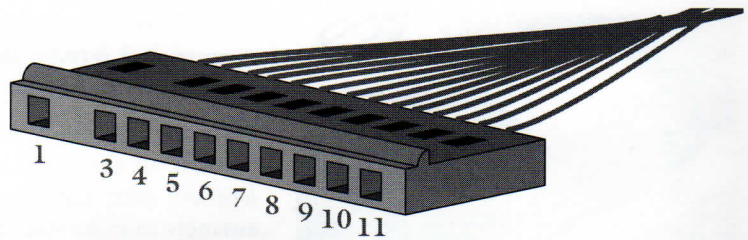
1. Place one edge of the motherboard in the metal guides with the keyboard connector toward the front of the computer about half an inch behind the plastic front cover.
2. Use a flat tool — such as a small screwdriver — to carefully spread the metal guide frame away from the opposite edge of the motherboard. Push the mother board into position and release the metal guide frame. Push the motherboard down to seat the rear metal brackets.
3. Re-attach the internal floppy drive ribbon cable and the power/video cable to the motherboard.

## *Adjust the power supply, if necessary*

The Macintosh has an adjustable power supply designed to operate between 4.9 and 5.0 volts. Test and adjust it, if necessary.

## Power supply adjustment procedure:

1. A ten-prong plug connects the power supply to the Macintosh motherboard. Pin 1 is separated from the others by a blank space (*Pin 2*). Locate Pin 6. Insert one of the probes into the top of the connector, so as to connect with the pin.



*Figure 10 : Power supply plug*

## WARNING!



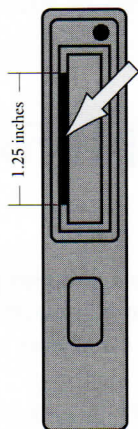
**The following steps are dangerous,  
a serious shock hazard exists!**

2. Noting the warning above, remove your grounding wrist strap and reconnect the AC power cord to the Macintosh. *Keep your hands away from the machine!*
3. Use a high quality digital voltmeter to measure the voltage between pin 6 (*positive supply*) and the chassis (*ground*). If the voltage measures between 4.9 and 5.0 volts no adjustment is necessary.



4. If adjustment is required, turn the voltage set screw on the side of the power supply until the voltage measures between 4.9 and 5.0 volts. The set screw is clearly labelled on the plastic power supply shield.
5. Disconnect the AC power cord. *Hazardous voltages may still be present even after disconnecting the AC power!*

## Step five Attach the SCSI cable

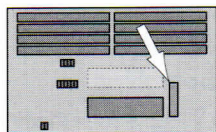


The SCSI cable and connector assembly is shipped with the SCSI filter board attached to the SCSI cable, which in turn is loosely attached to the battery door connector.

The battery door cable connector is designed to replace the Macintosh battery door. You must remove a small part of the plastic ridge inside the battery compartment opening to make room for the cable. Use a sharp utility knife to trim away 1.25 inches of the ridge as shown in Figure 11. Make sure to remove any rough edges that could damage the cable.

Place the 25-pin D connector on top of the battery, laying the cable towards the trimmed edge of the battery compartment.

Figure 11 : Rear case battery door opening.



A small SCSI filter board is shipped attached to the other end of the SCSI cable. Attach the rectangular black connector on the bottom of the small SCSI filter board to the header on the NewLife board. The cable connector is keyed to prevent improper installation. Pin 1 of the cable is marked with black stripes or red hatching and should face the rear of the chassis. You can now close up the Macintosh case.

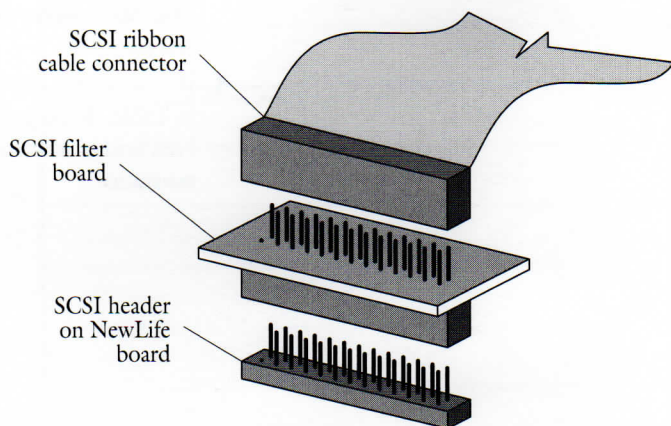


Figure 12 : Exploded view of the SCSI filter board

## SCSI configuration

The first and last device in the SCSI chain should be equipped with termination resistors. If the termination resistors are missing, SCSI peripheral behaviour may be unpredictable, or the system may not recognize the peripheral.

There should be only two sets of termination resistors in the SCSI chain. More than two sets may cause problems. If SCSI problems arise in your system, carefully check for termination resistors. Refer to the user guides for each SCSI device to determine if the resistors are installed.

# 4

## Technical Information

### Troubleshooting

Although NewLife is a complex piece of electronic hardware, it has been manufactured with great skill and care. In the unlikely event that you encounter a problem, follow these steps:

1. *Note that some INITs can conflict with application programs and produce intermittent system failures.* Verify that this type of software conflict is not the problem before you open up the Mac to check the hardware connections inside.
2. Scan the symptoms described in Table 3 (on the following pages) to identify the problem.
3. Follow the steps in Table 3 to remedy the problem and then test your system. *If the remedy requires you to open the Mac case, observe the safety precautions described in Part 2 of this manual.*
4. If you are still experiencing problems, or if the instructions in Table 3 tell you to do so, contact your dealer or the Newbridge Microsystems technical support group for assistance.

Before you call for Technical Support,  
please fill in the form on this page.

For technical support call:



1 (800) 267-7231  
Monday to Friday,  
from 09:00 to 5:00 Eastern Time  
Fax: (613) 592-1320

Before you call:

Please fill in the form on this page. You must have the information available to allow us to provide you with the best possible service if you call or address an enquiry to our office.

NewLife Problem Report		
name of registered user		name of dealer
phone and/or fax no.		
NewLife product name		serial no.
system version no.	finder version no.	multifinder version no.
applications in which problem occurs		
INITs in use when problem occurs		
description (include screen messages or numbers)		

# Troubleshooting Guide

## Symptom

*On power up, nothing happens or screen is blank*

### Possible Problem and Suggested Remedy

- No power. Plug computer into a live outlet and turn it on.
- Power/Video cable not attached.  
Open the Mac and connect cable.

## Symptom

*Checkerboard pattern or vertical lines observed on power up*

### Possible Problem and Suggested Remedy

- Improperly installed Killy clip. Inspect clip for pins which are either too high or too low. Reseat offending pin and remount Killy clip. Verify pin continuity with an ohmmeter.
- Bent pin. Remove board and check for bent pins. Straighten bent pins and carefully reseat socket.
- Cold solder joint (if CPU pin kit is installed). Remove board and check each pin visually with a strong light to verify continuity. If a discontinuity is found, carefully resolder the offending pin.
- Loose Killy clip. If the Mac has been operating successfully, the Killy clip may have worked loose due to rough handling. Remove and firmly reseat the Killy clip.

## Symptom

*Sad Mac on power up*

### Possible Problem and Suggested Remedy

- Incorrect SIMM jumper placement on NewLife board. Verify that jumpers W1–W6, W10–W11, and W12–W15 have been correctly set for your memory configuration (see Part 3).
- Incorrect SIMM placement on NewLife board. Ensure that 256KB and 1MB SIMMs have been placed in the correct sockets as shown in Part 3. Note that the SIMM positions and jumper settings must match.
- Defective SIMM module(s). Check the two items above. If Sad Mac still appears on power up, one or more of the SIMMs is defective. Contact your dealer for replacements.
- Bent pin on SIMM socket. Inspect modules for proper seating.



## Symptom

*Intermittent Sad Mac or system bomb during operation*

### Possible Problem and Suggested Remedy

- Intermittent connection between Killy clip and Mac CPU. See remedies under “Checkerboard pattern” symptom. Also see INIT warning at the beginning of this section.
- Power supply voltage too low. Adjust power supply as indicated on page 20.

## Symptom

*SCSI peripheral is not recognized or does not mount*

### Possible Problem and Suggested Remedy

- Peripheral software is incorrectly loaded or configured. Reload or reconfigure.
- SCSI address on peripheral is incorrect. Refer to peripheral user manual for correct SCSI address.
- Improper SCSI chain termination. Check for missing termination resistors on the last SCSI device in the chain.
- Too many termination resistors. Remove any termination resistors on SCSI devices which are at the center of the SCSI chain.
- Bad connection in SCSI cable between Mac and peripheral. Replace SCSI cable.
- SCSI filter board incorrectly installed. Install correctly (see Part 3).
- Bad connection on internal SCSI cable between NewLife board and battery door connector. Disconnect and reseal cable to ensure a solid connection at each end. If problem persists, contact technical support for assistance.

## Symptom

*Hard disk does not work or seems very slow*

### Possible Problem and Suggested Remedy

- Improper SCSI chain termination. Check for missing termination resistors on the first and last SCSI device in the chain. A set of termination resistors should be installed on the first and the last device in the chain.
- Too many termination resistors. Remove any termination resistors on SCSI devices which are not on the first and last device of the SCSI chain. If problem persists, contact your dealer for technical support or assistance.

# NewLife 1

## Technical Specifications

### System Requirements

- Mac 128K, Mac 512K or Mac 512Ke
- Mac 128K and 512K require 128KB ROM set (available with 800KB floppy disk drive kit)
- 800KB floppy disk drive recommended

### Hardware

- Low power CMOS logic throughout
- CMOS 68HC000 CPU, 7.834 MHz
- CMOS SCSI Controller

### Power

- Mac internal power supply
- Voltage Required: 5 V
- Power Consumption: Max 4.5 Watts with eight 256KB SIMMs

### Environmental

- Operating temperature: 10° to 40°C, 50° to 104°F
- Storage temperature: -40° to 50°C, -40° to 122°F
- Humidity: 5% to 90% RH non-condensing

### Compatibility

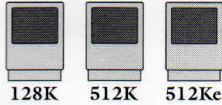
Compatible with Apple HD20, SCSI disk drives, LaserWriter and AppleTalk. For information about peripherals not listed above, contact your dealer or the Newbridge Microsystems technical support group.

Compatible with standard Macintosh software. Call your dealer or Newbridge Microsystems for specific information.

# The NewLife Product family

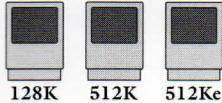
Whether you need a SCSI port, more memory, a larger monitor or massive computing power, Newbridge Microsystems has a NewLife product for your Mac. Brief descriptions of the NewLife products are provided below. If you require more information, please see your local dealer or contact us directly.

## NewLife 1



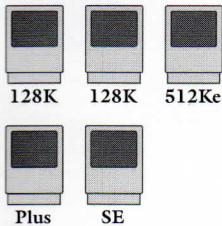
Designed for the Mac 128K, 512K and 512Ke, NewLife 1 provides a SCSI port, a flexible memory upgrade to 4MB using 256KB or 1MB SIMMs (or both). NewLife 1 provides the overall performance of a Mac SE. NewLife 1 also recognizes the 512K of RAM installed on the motherboard Mac 512 machines.

## NewLife 2



Designed for the Mac 128K, 512K and 512Ke, NewLife 2 provides a SCSI port, a flexible memory upgrade to 4MB using 256KB or 1MB SIMMs (or both) and a versatile video adapter with a configurable DB-9 TTL PC compatible video connector. NewLife 2 provides the overall performance of a Mac SE and lets you increase your viewing window size by attaching one of the many large monochrome monitors it supports (including multiscanning types).

## NewLife 25



There are two versions of NewLife 25 available. One is designed for the Mac 128K, 512K, 512Ke, and Mac Plus. The second is designed for the Mac SE. NewLife 25 accelerates your Mac with the power of the 68030 microprocessor and the 68882 floating point math co-processor, both running at 25MHz. Four SIMM sockets allow memory expansion in 1MB or 4MB increments.

NewLife 25 for the Mac 128K, 512K, and Mac Plus models provides a 64-pin expansion connector to accommodate additional boards. An optional SCSI port is available for 128K, 512K and 512Ke Macs which attaches to this connector.

NewLife 25SE for the Mac SE attaches to the 96-pin SE bus. It provides a flow-through SE bus expansion connector, which accepts the NewLife Video board.

## NewLife 33 SE

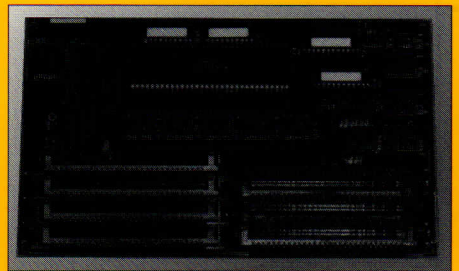


Designed for the Mac SE, NewLife 33 SE is the upgrade for those who need the ultimate in computing power. This board features a 68030 CPU and a 68882 FPU running at a blazingly fast 33 MHz. Four SIMM sockets allow up to 4MB of memory expansion. NewLife 33 SE is easy to install, it attaches directly to the SE bus connector. NewLife 33 SE also offers a flow-through bus expansion connector should you wish to add the NewLife Video board or some other third party board.

## NewLife Video



NewLife Video for the Mac SE provides a flexible, low-cost solution that allows you to add a larger monitor to your SE system. NewLife Video incorporates a custom video controller ASIC. It can use many of the inexpensive third party monochrome monitors available today, including multiscanning monitors. NewLife Video connects directly to the SE bus and comes complete with software that lets you configure the monitor and screen attributes. Of course, NewLife Video is completely compatible with NewLife 33 SE, and the two make a powerful, productive team.



*The NewLife 1 CPU upgrade board*

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