

RasterOps

**ClearVue/SE
15" Board**

Owner's Manual

RasterOps

RasterOps

RasterOps
2500 Walsh Avenue
Santa Clara, California 95051
Tel: (408) 562-4200
Fax: (408) 562-4065

Preliminary

RasterOps

ClearVue/SE

Owner's Manual

Preliminary

May, 1989

RasterOps, the RasterOps logo, and ClearVue are trademarks of RasterOps Corporation. Macintosh is a registered trademark of Apple Computer, Inc. Finder is a trademark of Apple Computer, Inc.

Copyright © 1989 RasterOps Corporation
All Rights Reserved

Printed in the United States
RasterOps part number 0700-0018

Written, designed and illustrated by Nell Anders.

Special thanks to Frank Drobot, Jesse Lechuga, Patrick Sweeney and Jeff Tingley.

Table of Contents

1	List of Illustrations
2	About this Manual
3	About the ClearVue/SE
5	Chapter One: Installing the Software
7	Chapter Two: Configuring the Startup Screen
11	Chapter Three: The ClearVue Control Panel and Keyboard Shortcuts
21	Chapter Four: Installing the ClearVue Board
50	Appendix A: Installing the 68881 Option
51	Appendix B: If you add or subtract RAM
58	Appendix C: Warranty
59	Appendix D: Jumpers

About this Manual

This manual was written with the experienced Macintosh® user in mind. If you do not recognize such terms as Finder™, Control Panel, and double-click, please review your Macintosh SE manual before proceeding.

Before you begin, DO fill out and mail your warranty/registration card. Chapter One tells you how to install the software you will need. Chapter Two explains how to configure the startup screen, and Chapter Three is a guide to using the software features and the ClearVue Control Panel. Chapter Four contains hardware installation instructions for the technician who installs your ClearVue board.

As you read this manual, watch for the following signals:



This warning signal appears when the potential exists for physical harm to you or damage to your equipment.



The "reminder" signal marks a hint or suggestion that may help you to operate the ClearVue more effectively.

Enjoy!

About the ClearVue/SE

The ClearVue/SE is a high resolution black and white display system and accelerator for the Macintosh SE. It includes a dealer-installed expansion board, monitor and software.

Using the ClearVue

You can use the ClearVue/SE as an extension of your Macintosh screen, to increase your desktop space. Or use the ClearVue/SE screen by itself, like any other large screen. Or take advantage of software that lets you use the Macintosh screen to magnify any part of the ClearVue screen image.

Software Features

Other ClearVue/SE software features include Pop-Up menus, an invert screen option, a screen saver and enlarged cursor and menus.

Acceleration

The ClearVue also accelerates the Macintosh processing speed. With the ClearVue/SE installed, your Macintosh operates at least twice as fast as before. Because the ClearVue board and software optimize processing time in a variety of ways, you may experience even more than 2x acceleration, depending on what operations your Macintosh is performing.

The 68881 Option

The 68881 option increases the speed of your Macintosh SE up to 4x for certain applications.

Chapter One: Installing the Software

Inside the ClearVue/SE package you received an 800K diskette. This diskette contains three files: ClearVue/SE, Big Screen Font and Turbo Tuner.



CLEARVUE SE

ClearVue/SE. The ClearVue/SE file is a cdev (Control Panel Device) and an init (a patch to the system which is loaded each time you start up your Macintosh). To install this file, simply copy it to the system folder of your startup disk.

When you restart, a startup screen appears. This screen allows you to select the ClearVue—Macintosh screen configuration you prefer. Chapter Three contains a detailed explanation of the startup screen.

Because the ClearVue/SE file is also a cdev, when you bring up the Control Panel the ClearVue/SE icon appears, along with your other cdevs, in the left-hand box. When you click on the ClearVue/SE icon, a Control Panel specific to the ClearVue/SE screen appears. Chapter Four contains a detailed explanation of the ClearVue/SE Control Panel.



BigMenuBar

BigMenuBar. The BigMenuBar is a large (18-point) font that, when installed, enlarges the menu bar and menu options when you select the enlarged menu bar in the ClearVue/SE Control Panel. This font is provided for purely cosmetic purposes. You cannot use it to print, and it affects only the appearance of your menu bar. If you select the enlarged menu bar option without installing the BigMenuBar, the menu bar and menu options appear in 18-point Chicago.

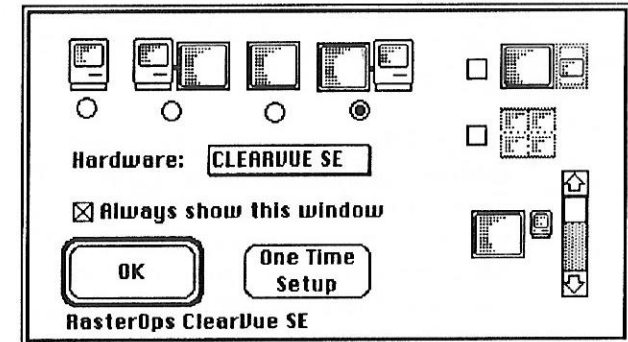


Turbo Tuner. The Turbo Tuner file insures that your applications' sounds are not affected by the ClearVue/SE board's increased processing speed. To install Turbo Tuner, copy it to your System Folder, then restart your Macintosh.

Note: If you received the 68881 option, refer to Appendix A for additional instructions.

Chapter Two: Configuring the Startup Screen

After you copy the ClearVue/SE file to your System Folder, a startup screen appears each time you restart your Macintosh:



Use the following key to configure the startup screen:



Macintosh screen only. A full image appears on your Macintosh screen. No image appears on your ClearVue/SE screen. Select this when your Macintosh is not connected to a large monitor.



Large screen only. Full image appears only on the ClearVue/SE screen. If you select the large screen only, you have the option of using the Macintosh screen in Zoom mode. To use the Macintosh screen in zoom mode, select large screen only mode, then choose the Magnify option in the ClearVue/SE Control Panel. Chapter Two tells you more about using the Magnify option



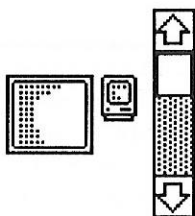
Presentation Mode. The ClearVue/SE screen displays the same image as the Macintosh screen, but enlarged 2x. This mode is useful for group demonstrations. Screen resolution in this mode is 36 dots per inch. To make this option available, first select the "SE screen only" option.

Note: When in presentation mode, set the mouse tracking speed to "Tablet". This reduces cursor flickering. You will notice a slight delay in screen image display when the ClearVue/SE screen is in presentation mode. Also, the ClearVue/SE cdev will not be available (will not appear in the Control Panel) in this mode.



Large Screen and Macintosh Screen.

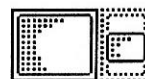
Choosing either of these causes the ClearVue/SE and Macintosh screen to function as one large screen. When you select one of these, you will notice arrows at the top of the ClearVue screen. These arrows show the position of the Macintosh screen relative to the ClearVue screen. Use the level control (see below) to adjust this.



Level Control. This adjusts the vertical level of the Macintosh screen relative to the

ClearVue/SE screen. As you move the scroll box, the Macintosh icon moves up and down to reflect the relative positions of your two monitors, and corresponding arrows on the ClearVue/SE screen show where the system "expects" the top of the Macintosh screen to be.

The level control affects where your cursor crosses from screen to screen, as well as how text and graphics are displayed across the screens. *Your cursor will only cross from one screen to another while it is within the area designated as a border region between the two screens.*



Extended ClearVue/SE Screen. Choosing this causes the Macintosh window to act as an extension of whatever region the cursor enters on the ClearVue/SE screen. The entire Macintosh screen scrolls, following the cursor's location on the ClearVue/SE screen. When you select this option, the level control option becomes unavailable, because in this mode the SE screen is always an extension of the region where the cursor is.

Note: In this mode you may extend windows across the width of both screens, but how far the windows extend varies according to which software program you are using.

☒ **Always show this window**

Always show this window. When this box is selected, the startup screen appears each time you restart your Macintosh. When this box is not selected, hold down the Option key while restarting to make the startup screen appear.

One Time Setup

One time setup. If you change the settings temporarily, click this box instead of "OK." The system remembers the previous settings and reverts to them when you restart your Macintosh.

Chapter Three: The ClearVue/SE Control Panel

In this chapter:

Accessing the ClearVue/SE Control Panel

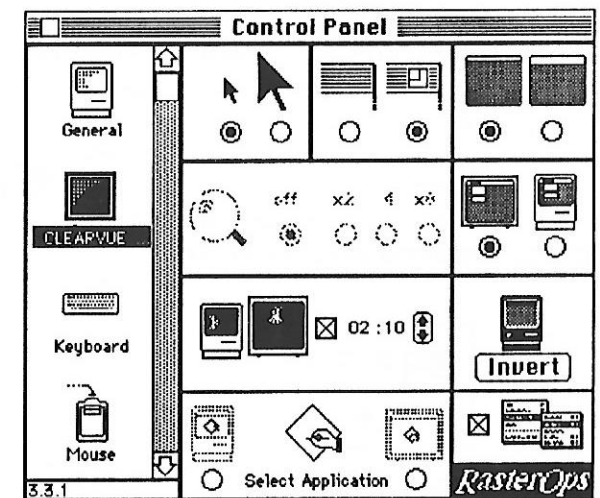
ClearVue/SE Control Panel Options

Keyboard Shortcuts for the Control Panel Options

Accessing the ClearVue/SE Control Panel

To bring up the ClearVue/SE Control Panel:

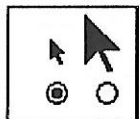
1. **Choose Control Panel** from the Apple menu.
2. **Click once on the ClearVue icon** to bring up the following window:



The next section explains the ClearVue/SE Control Panel.

The ClearVue/SE Control Panel

Any change you designate in the Control Panel settings takes place immediately. To revert to a previous setting, simply click the appropriate radio button.

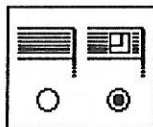


Selects normal or enlarged cursor. Until you change it, this setting defaults to a normal sized cursor. When you select the enlarged cursor, your cursor immediately looks like this:

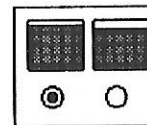


The enlarged cursor may be useful if you use the ClearVue/SE screen in presentation mode. In presentation mode, the large cursor flickers slightly as it moves around the screen.

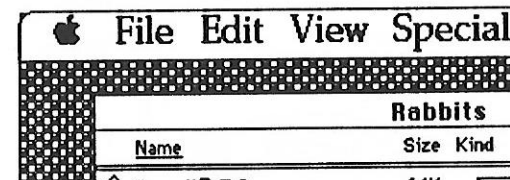
Note: If you use the ClearVue in presentation mode, set mouse tracking speed to "tablet" (the slowest possible speed).



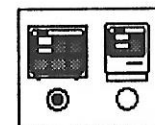
Automatically places a zoom box in open documents of most applications. This is useful for applications that do not place grow boxes in open windows.



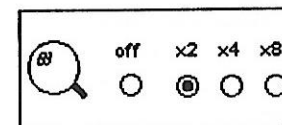
Selects normal or enlarged menu bar. You may find the enlarged menu bar easier to read. When you select the enlarged menu bar, your menu bar looks like this:



Note: For the enlarged menus to appear as shown here, you must use the font/DA mover to install the large screen font, "BigMenuBar," provided. If you do not install the large screen font, your menus and menu choices will appear in 18-point Chicago.



Places the menu bar on the SE or ClearVue/SE screen.

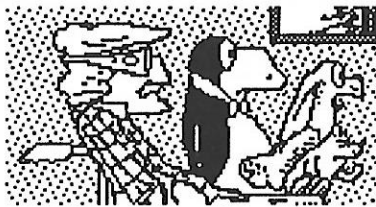


Magnifying mode. The Macintosh screen acts as a magnifier for the area of the large screen image that surrounds the cursor. When you configure the system to display the screen image on the ClearVue/SE screen only (by selecting "large

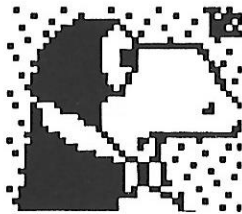
screen only" in the Startup options), magnification becomes available.

When you select one of the magnification modes (2x, 4x or 8x), your Macintosh screen shows the area around the cursor, enlarged by the amount you selected.

In 2x magnification, a portion of the following full-screen image



appears twice as large on your Macintosh screen:

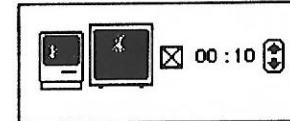


In 4x magnification, an even smaller portion of the image appears, magnified four times:



In 8x magnification, the area immediately surrounding the cursor appears on the Macintosh screen, eight times larger than it appears on the ClearVue/SE screen.

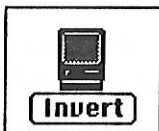
Note: When this feature is enabled, applications require about 9% more processing time than they normally require.



Screen Saver. The number indicates the amount of time allowed to pass without screen activity before the screen saver activates. This may be adjusted from ten seconds to 99 minutes. Click the up arrow to increase time before activation. Click the down arrow to decrease time before activation. To deactivate the screen saver, click the check box to deselect it. The screen saver will not activate while the cursor is in the menu bar.

While the screen saver is active, a series of lines moves around the screen to remind users that the Macintosh is not turned off. The screen saver is transparent to applications, so that normal activities such as printing and calculations continue while the screens are blackened.

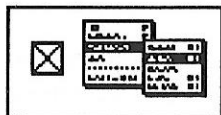
The screen saver is provided to reduce the risk of screen burn-in. Burn-in occurs when the same image appears on a screen for an extended period of time, and the phosphors of the screen retain the image permanently. Because of the way they are manufactured, monochrome screens are especially susceptible to burn-in.



Invert screen. When you click the "Invert" button, white areas appear black, and black areas appear white. Click the "Invert" button again to return to a normal screen. If you choose this option while working with text, the text will appear as white against a black background:

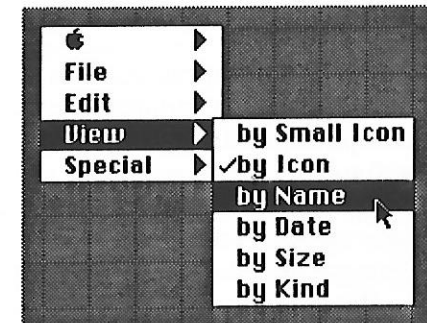
Large Screen and
Choosing either of the
SE and Macintosh screens
large screen. When
you will notice arrow
screens. These arrow
heights of your Clear
screens. Use the level
adjust these.

If you work with text or for other reasons your eyes are exposed to a screen with large white areas for extended periods of time, you may find that using an inverted screen reduces eye strain.



Pop-Up menus. When activated, depressing the Command and Shift keys while clicking the mouse causes a Pop-Up menu bar to appear at the cursor location. When you choose one of the menu options, or release the mouse, the Pop-Up menu bar disappears.

If you Command-Shift-click while in the Finder, the following menu bar appears:



Pop-Up menus are available in any application, on either screen.

Note: If you are using an application that requires the Command-Shift-click combination for another function, you can disable the Pop-Up menus in either of two ways. Simply click the check box for Pop-Up menus, in the ClearVue/SE Control Panel, to deselect it, or press Command-Option-4. Command-Option-4 toggles the Pop-Up menu option, so you can depress Command-Option-4 to disable Pop-Up menus, then press the same key combination to re-enable Pop-Up menus when you need them again.

ClearVue/SE Pop-Up menus should not conflict with other inits, such as HierDA, that also implement pop-up or hierarchical menus. If you encounter problems with these, consult the troubleshooting reference in the back of this manual.



Restricts any application to the SE or ClearVue screen. All standard applications should be compatible with the ClearVue/SE hardware and software. However, there may be applications which, because they are nonstandard, do not operate correctly on the ClearVue/SE screen. This option allows you to restrict any application to the Macintosh or to the ClearVue/SE screen.

When you launch an application that you have restricted to, for example, the Macintosh screen, the system temporarily deactivates the large screen. When you return to the Finder or transfer to a non-restricted application, the system reactivates the large screen.

To use this option: Click "Select Application." A box appears, allowing you to choose which application(s) you wish to restrict. To restrict an application to the SE screen, click once on the SE icon after selecting the application. To restrict an application to the ClearVue screen, click once on the ClearVue icon after selecting the application to be restricted.

Note: This option is not available under Multifinder.

Keyboard Shortcuts for the Control Panel Options

You can save time by using the following key combinations to control the some of the Control Panel features:

Key command	toggles
Command-Option-0	menu bar size
Command-Option-1	menu bar location
Command-Option-2	inverse video
Command-Option-3	magnify: 2x, 4x, 8x, and off
Command-Option-4	Pop-Up menus

The following shortcuts are also available:

- Double-click in the menu bar to toggle the large cursor.
- Press the Command key while moving the cursor off the screen's edge to make the cursor "wrap around" and reappear on the screen's opposite side.
- Press the Command key while opening a desk accessory to center the desk accessory on the Macintosh screen.
- Press the Command key while clicking a zoom box to center the zoomed window on the Macintosh screen.
- Press Command and Option while clicking a zoom box to make the window span both screens.



WARNING



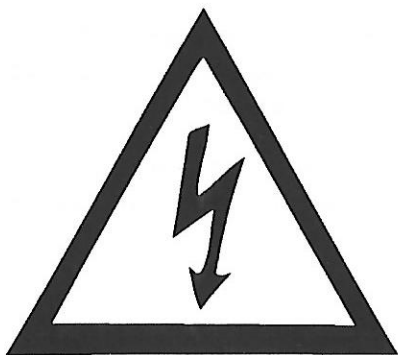
DEALER INSTALLATION REQUIRED

THIS PRODUCT MAY ONLY BE INSTALLED BY AN APPLE
CERTIFIED TECHNICIAN

BE CERTAIN THE MACINTOSH HAS BEEN UNPLUGGED
FOR TWO HOURS BEFORE YOU DISASSEMBLE IT!

The Macintosh CRT retains more than 25,000 Volts of
electricity for as long as two hours after being
powered down. This is sufficient voltage to kill you.

The diagram in Chapter Two shows which parts of
the Macintosh you should avoid touching, even
after waiting two hours to disassemble it. Please
carefully review this diagram and the attendant
warnings and disclaimer before you attempt to
disassemble the Macintosh.



Chapter Four: Installing the ClearVue/SE

In this chapter:

Warnings and disclaimer

Inside the ClearVue/SE package

Hardware installation and tools needed

Initial Warnings and Disclaimer

Before you proceed be advised of the following:

1) LIMITS OF APPLE'S WARRANTY

If you are not an authorized Apple dealer, opening
the Macintosh SE for any reason (including video
card installation) voids Apple Computer's 90-day
warranty.

2) HIGH VOLTAGE WARNING

Opening the Macintosh SE exposes you to
dangerously high voltages that, in addition to
damaging the hardware, could also damage YOU.
Exercise extreme caution during the entire
installation process—especially while handling
the opened Macintosh. Avoid touching with a tool
or any part of your body the areas shaded in
figure 1.

3) ELECTROSTATIC DISCHARGE

The chips on the ClearVue/SE, as well as those on
the Macintosh motherboard, are extremely
sensitive to static electricity. Wear a grounding
strap or use another method to ground yourself
while installing the ClearVue/SE.

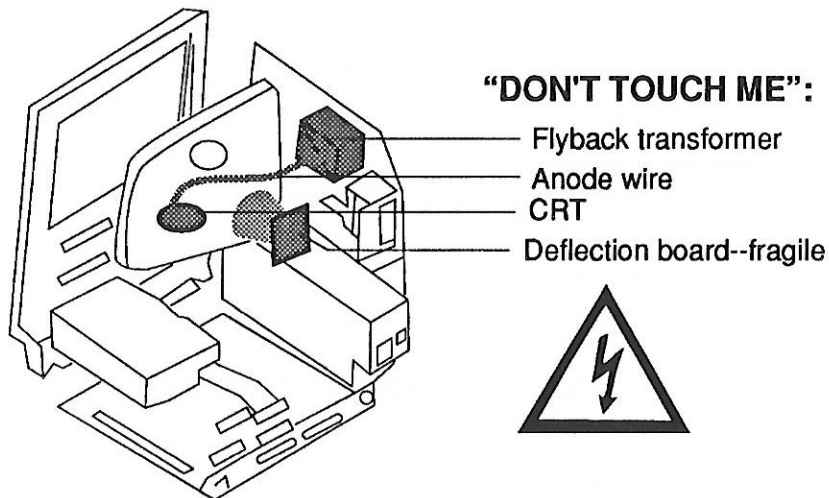


figure 1: High Voltage components

4) IF YOU ARE NOT EXPERIENCED

If for any reason you feel uncomfortable handling these components, DO NOT PROCEED. The installation process is delicate and potentially dangerous, and should be carried out only by a professional service technician.

5) DISCLAIMER

RasterOps is not liable for any damage, physical or to any equipment, associated with the installation or use of this product. If you have questions or problems at any time before, during or after installation, contact RasterOps Technical Support at (408)546-4200.

Inside the ClearVue/SE package you will find:

- ClearVue/SE card in anti-static bag



Caution: Do not remove the ClearVue/SE card from its antistatic bag until you are ready to install it. To remove the card prematurely exposes it to static, which could significantly shorten its lifetime.

- Warranty/Registration card—Fill this out now!
- 2 plastic standouts
- 2 video SIMMs
- small white labels for "ROM high" and "ROM low"
- internal video cable assembly, with metal bracket and screws attached
- label plate
- 800K diskette containing ClearVue/SE and Turbo Tuner files
- this manual

If you received the 68881 option, refer to Appendix B for installation instructions.

If any of the listed items are missing, contact your RasterOps dealer.

To install the ClearVue board you will also need:

- long Torx screwdriver (to remove Torx screws)
- Mac Cracker (to pry SE case apart)
- small phillips screwdriver (to install bracket)

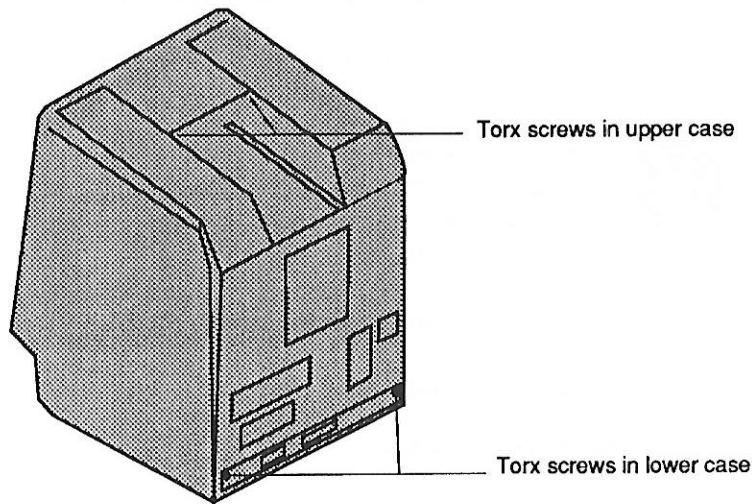


figure 2: Location of Torx screws

1. Disconnect the power cable and all other cables from the back of the Macintosh. This includes keyboard, mouse, and any SCSI or Appletalk cables that may be attached.
2. Remove the Reset/Interrupt switch, if installed, from the left side of the Macintosh.
3. Lay the Macintosh screen-down on a well-supported, soft surface.
4. Remove the four Torx screws from the back cover of the Macintosh, using a long Torx screwdriver.
5. GENTLY pry the case from the Macintosh SE, using a "Mac Cracker" or similar tool.

Begin prying along the top, then alternate prying left and right sides and along the bottom, until the case is freed.

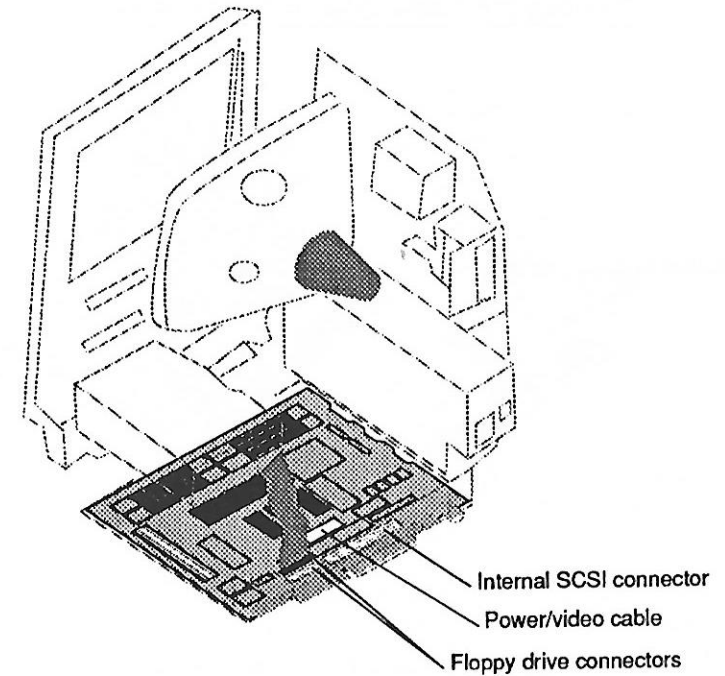


Figure 3: Inside the SE

As you pry, the CRT and motherboard remain with the front part of the case.

REMEMBER to avoid touching (with a tool or any part of your body) the areas shaded in Figure 1. Also, the deflection board (marked "fragile" in Figure 1) is very delicate and should not be handled.

Remove the cable(s) to the floppy drive(s)

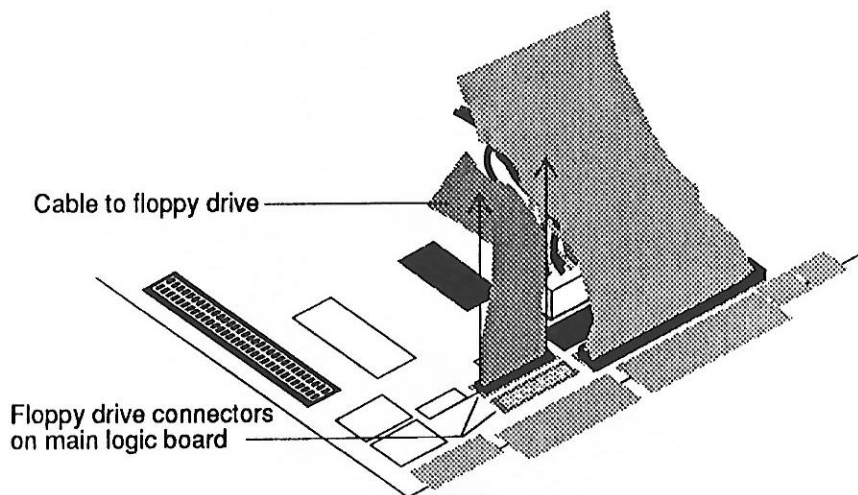


Figure 4: Removing the floppy cable

If the Macintosh has only one floppy drive, there will be one cable, as shown in the above figure, from the floppy drive to the connector labeled "Floppy Drive A" on the main logic board.

If the Macintosh has two floppy drives, there will be two identical cables; one from each floppy drive to each of the two connectors shown in the above figure. In this case, remove both cables from their connectors on the Macintosh main logic board.

Remove the internal SCSI cable, if present

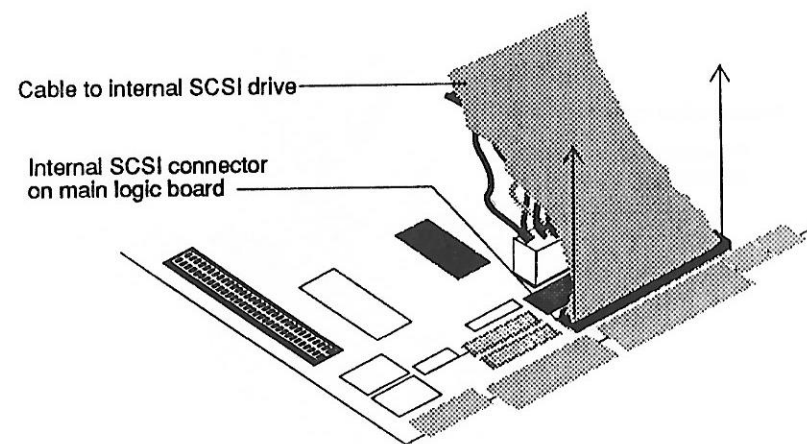


Figure 5: Removing the SCSI cable

If the Macintosh has an internal hard disk, there will be an internal SCSI cable, shown above, connecting the internal hard disk to the main logic board. Remove this cable by pulling up gently from the main logic board, exerting equal pressure on both sides of the cable until it is free of the connector.

Remove the power/video cable

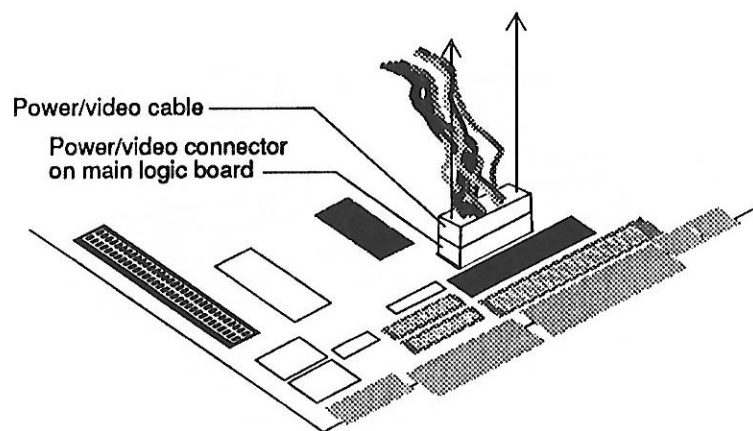


Figure 6: Removing the power/video cable

The power/video cable is a group of plastic-coated wires, attached to a white plastic rectangle. This rectangle fits securely into a connector, also a white plastic rectangle, on the main logic board. You will remove this entire assembly, including the upper part of the plastic rectangle.

Note: On the side away from you (you won't be able to see it) there is a plastic "latch" that secures the white plastic part of this cable to the plastic connector on the main logic board.

To release this latch, use your index finger to press the upper part of it (the part attached to the upper plastic connector) towards the connector.

As you press the upper part of the latch, it will release from the lower connector and you will be able to remove the power/video cable by pulling upward while continuing to depress the latch.

This will probably be the most difficult cable to remove. Even with the latch depressed, it is a tight fit. You may need to carefully use force as you pull this cable away from the connector.

Remove the Motherboard

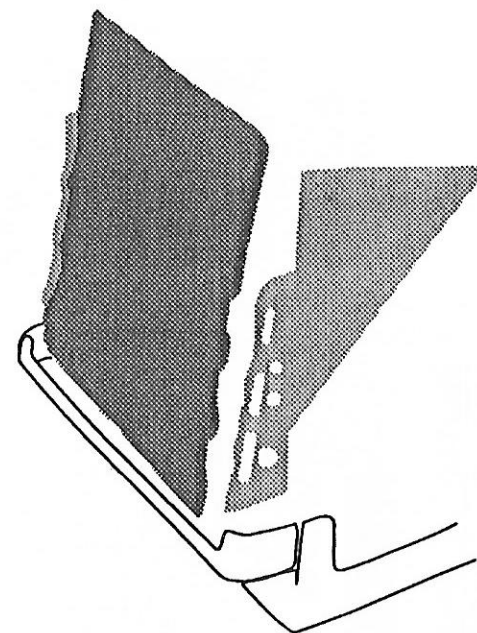


Figure 7: Removing the main logic board

After removing the cables, lay the front assembly face-down on a well-padded surface.

1. Remove the Motherboard from its metal chassis. Slide the motherboard up until the notches along either side are aligned with the cut-outs in the SE metal chassis. Then tilt the Motherboard up slightly so that, one side at a time, it is freed from the chassis.

When the motherboard is freed from the chassis, disconnect the speaker wire from the motherboard.

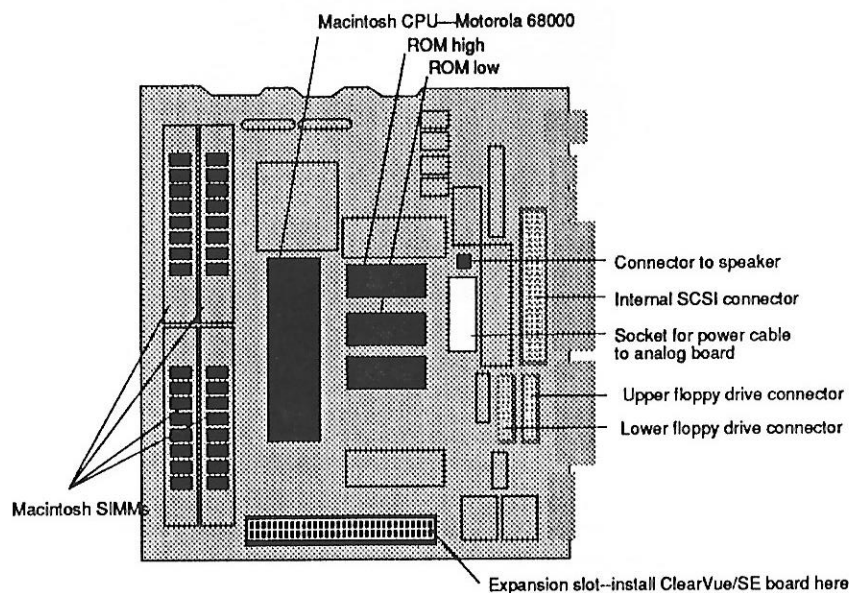


Figure 8: the Macintosh SE main logic board

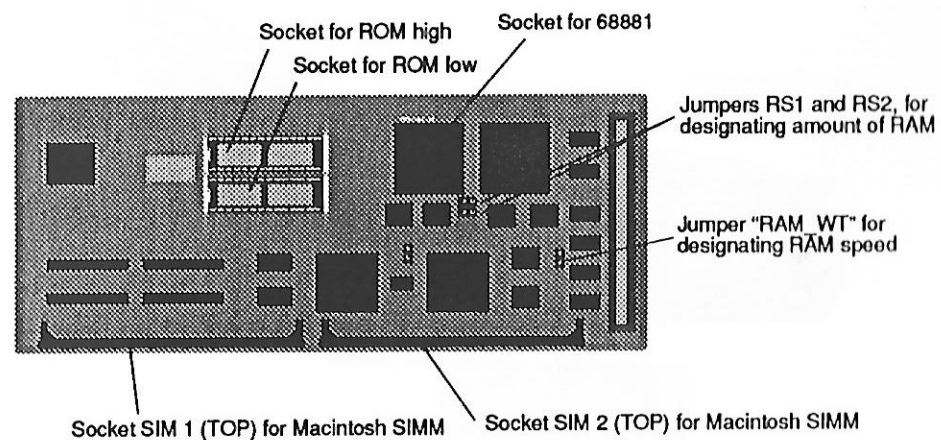


Figure 9: The ClearVue/SE board

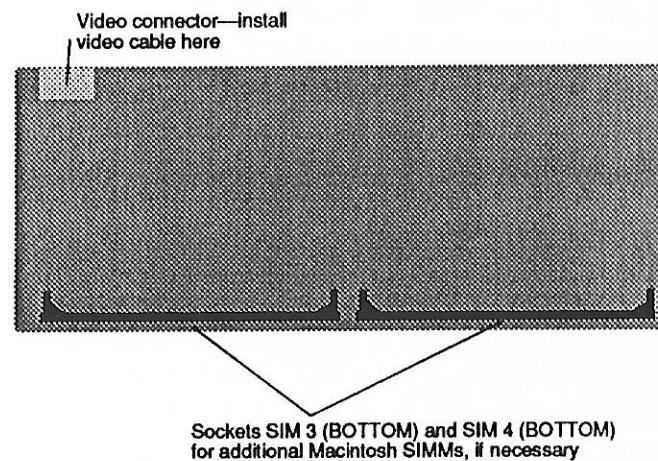


Figure 9a: ClearVue/SE board, rear view

Remove ROMs from the Macintosh Logic Board

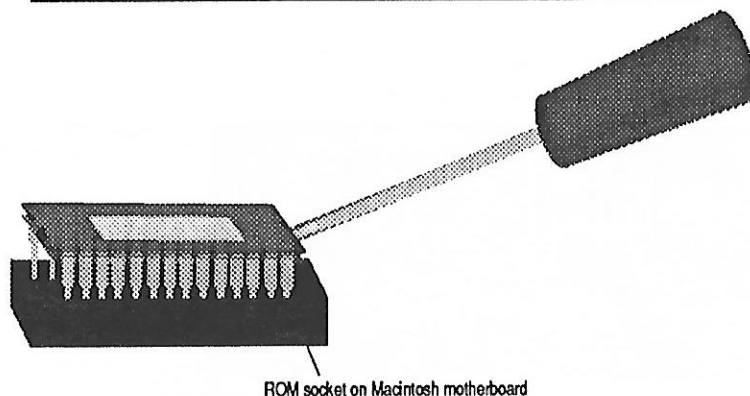


Figure 10: removing the ROMs

1. Locate the Macintosh SE ROMs near the center of the SE motherboard. Notice that on the motherboard, near the ROM sockets are the words "ROM HIGH" (342-0352) and "ROM LOW" (342-0353). Figure 8 shows the locations of both ROMs on the Macintosh SE motherboard.
2. Affix the "ROM HIGH" sticker to the ROM labeled ROM HIGH.
3. Affix the "ROM LOW" sticker to the ROM labeled ROM LOW.
4. Remove both ROMs by gently prying up using a screwdriver or similar tool. To avoid bent or broken pins, alternate sides as you pry.

Note: If you remove the ROMs without affixing the ROM high and ROM low stickers and need to distinguish between the two ROMs, look for the following part numbers on the ROMs:

ROM high: 342-0352-A
ROM low: 342-03530-A

Install ROMs on the ClearVue Board

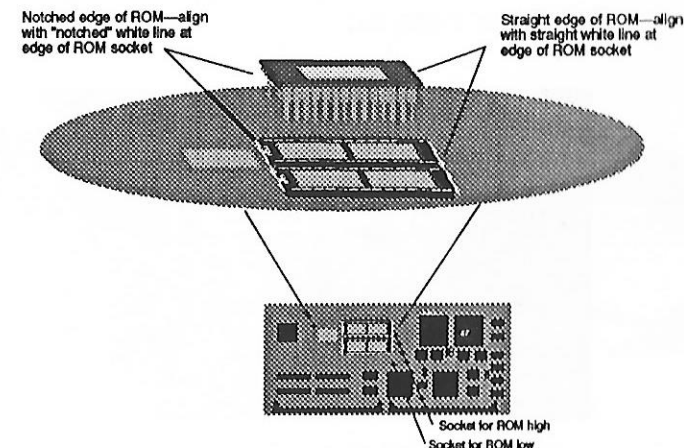


Figure 12: Reinstalling the ROMs

1. Remove the ClearVue/SE board from its anti-static bag.
2. Locate the ROM sockets on the ClearVue/SE board. Socket U7D, labeled "High," is for ROM high. Socket U6D, labeled "Low," is for ROM low.



Caution: Note that both ROM sockets have a notched end as well as a straight end. For both ROM high and ROM low, the notched end of the ROM socket corresponds to the notched edge of each ROM, and the straight end corresponds to the straight edge of each ROM. YOU MUST INSTALL BOTH ROMS IN THE PROPER ORIENTATION. Starting up your Macintosh with the ROMs improperly installed will render the ROMs useless.

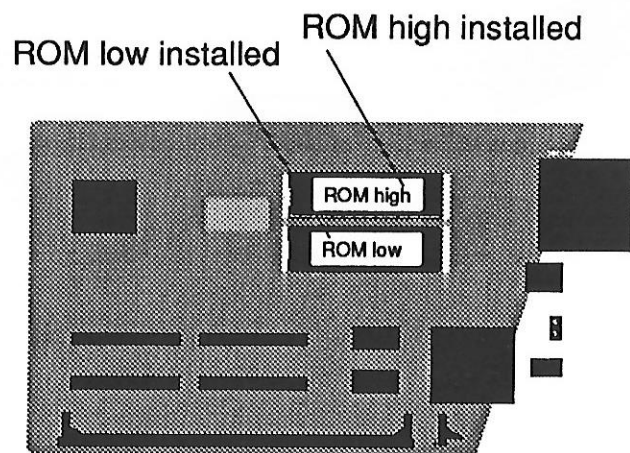


Figure 13: ROMs properly installed

3. Install ROM HIGH in the ROM socket labeled U7D, "ROM high," on the ClearVue/SE board. Be sure the notched edge of ROM high, as noted earlier, coincides with the notched end of the ROM socket, and the straight edge coincides with the straight end of the ROM socket.
4. Install ROM LOW in the ROM socket labeled U6D, "ROM low," on the ClearVue/SE board. Be sure the notched edge of ROM low, as noted earlier, coincides with the notched end of the ROM socket, and the straight edge coincides with the straight end of the ROM socket.

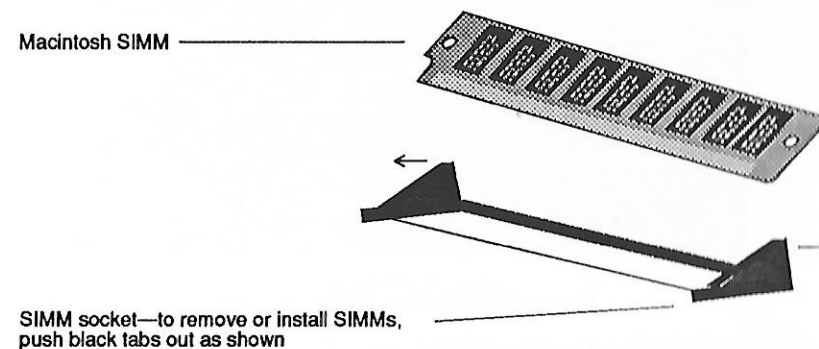


Figure 14: Removing SIMMs

1. Locate the SIMMs (Single Inline Memory Modules) on the Macintosh main logic board. These are in sockets labeled 1-4. There may be up to four, each module containing up to one megabyte of RAM (Random Access Memory). Refer to the diagram of the Macintosh SE motherboard on page 30.
2. Release each SIMM from its socket. Using your thumbs or a blunt tool such as a screwdriver, press the plastic tabs outward to release each module.

Install the Macintosh SIMMs on the ClearVue board

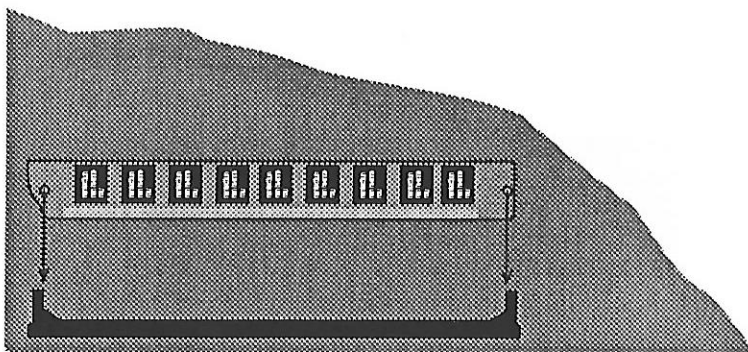


Figure 15: Installing SIMMs on ClearVue board

Install the Macintosh SIMMs you just removed in the sockets on the ClearVue board. These SIMMs reside in the SIMM sockets on the ClearVue/SE board (Two of these sockets reside on the under side of the ClearVue board).

If you are installing **1 megabyte** of RAM, install one 256K SIMM in each SIMM socket.

If you are installing **2 megabytes** of RAM, install one 1 megabyte SIMM in the SIMM sockets on the upper side (labeled "SIM 1" and "SIM 2" in the diagram on page 31).

If you are installing **2.5 megabytes** of RAM, install the 1 megabyte SIMMs in the sockets on the ClearVue board's upper side (labeled "SIM 1" and "SIM 2" in the diagram on page 31). Install the 256K SIMMs on the board's lower side (the sockets labeled "SIM 1" and "SIM 2" in the diagram on page 31).

If you are installing **4 megabytes** of RAM, install one 1 megabyte SIMM in each SIMM socket.

Install the Video SIMMs on the main logic board

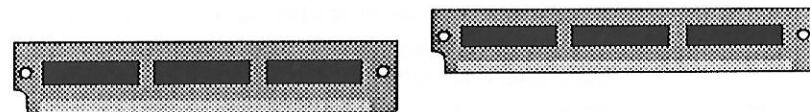


Figure 16: RasterOps Video SIMMs

Along with the ClearVue board, you received two Video SIMMs. Like the Macintosh SIMMs, these provide memory power for the CPU. The CPU uses Video SIMMs to store information about the Macintosh screen image.

Install the **Video SIMMs** into the SIMM sockets on the Macintosh SE motherboard.

If your SE has **1 megabyte** of RAM (four 256K SIMMs), install the RasterOps video SIMMs in sockets 3 and 4 on the SE motherboard.

If your SE has **2 megabytes** of RAM (two 1 MB SIMMs), install the RasterOps video SIMMs in sockets 1 and 2 on the SE motherboard.

If your SE has **2.5 megabytes** of RAM (two 1 MB SIMMs and two 256K SIMMs), install the RasterOps video SIMMs in sockets 3 and 4 on the SE motherboard.

If your SE has **4 megabytes** of RAM (four 1 MB SIMMs), install the RasterOps video SIMMs in sockets 3 and 4 on the SE motherboard.



Note: If, in addition to the ClearVue/SE upgrade, you are increasing or decreasing the amount of RAM in the Macintosh SE, you may need to change the jumper/resistor configuration on the Macintosh motherboard. Appendix B contains detailed instructions and diagrams of configurations for which this is necessary.

Configure Jumpers RS1 and RS2

1. Locate jumpers RS1 and RS2 on the ClearVue board. The diagram on page 31 shows the locations of all jumpers. The locations of these jumpers are labeled in white, "RS1" and "RS2" on the ClearVue board.

Note: Appendix D contains a complete explanation of how jumpers work and how to install and uninstall them. If you have not worked with jumpers, or are unfamiliar with how to install and uninstall jumpers, please review Appendix D before you proceed.

2. Configure jumpers RS1 and RS2 to reflect the amount of RAM installed. Refer to the following chart.

# MB	Jumper RS1	Jumper RS2
1	installed	installed
2	installed	uninstalled
2.5	uninstalled	installed
4	uninstalled	uninstalled

Note: You will need uninstalled jumpers if you ever change the configuration by adding or removing RAM. To avoid losing an uninstalled jumper, use it to shunt one of the set of pins rather than shunting both of them.

Configure Jumper "RAM_WT"

Locate the jumper labeled RAM_WT on the ClearVue board. Refer to the diagram on page 31. This jumper selects RAM speed. For 150 or 120 nanosecond RAM, this jumper should be installed. For 100 or 85 nanosecond RAM, remove this jumper.

If the Macintosh has more than one speed of RAM installed, configure jumper RAM_WT for the slowest speed. For example, if the RAM configuration includes 100 and 150 nanosecond RAM, remove this jumper.

For maximum speed, leave the slower RAM uninstalled, and operate the Macintosh with less RAM, but at the faster rate. If you install two different speeds of RAM, you must configure this jumper for the slower speed.

Remember, if you change the amount of RAM installed, you may need to adjust the jumper/resistor on the Macintosh motherboard. Appendix B shows the configurations for which this may be necessary.

Install the ClearVue Board into the Expansion Slot

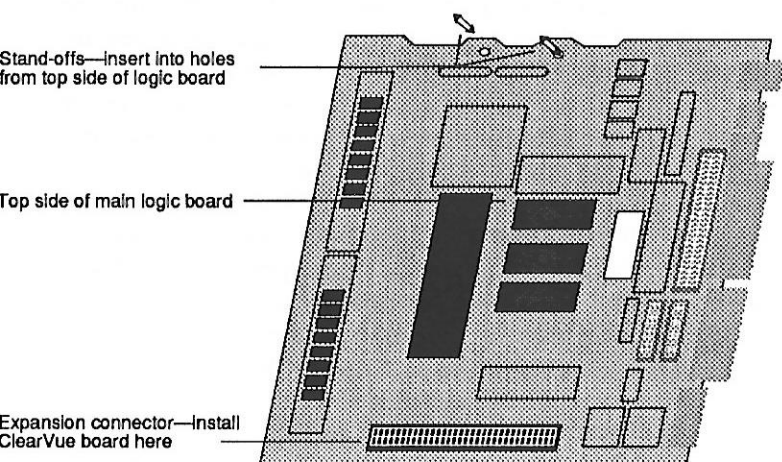


Figure 17: Inserting the stand-offs

1. Insert the plastic stand-offs into place on the Macintosh motherboard. Push them in from the top of the motherboard. They fit into the two holes along the side opposite from the expansion connector.
2. Install the ClearVue board into the expansion slot on the top of the Macintosh SE motherboard. The stand-offs snap into corresponding holes in the ClearVue board, and the large connector fits over the expansion connector on the Macintosh motherboard.

Replace the Logic Board

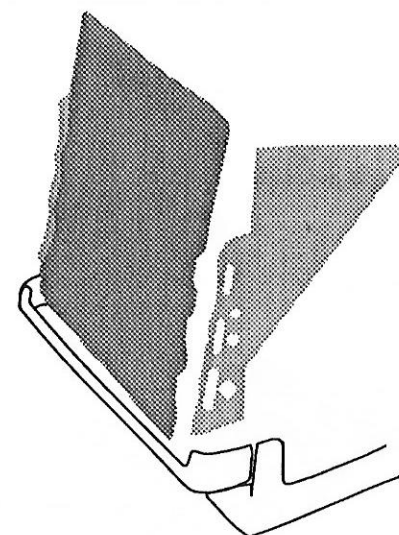


Figure 18: Replacing the main logic board

1. With the Macintosh positioned face-down, hold the logic board vertical, near to the metal chassis.
2. Plug the speaker connector into the logic board.
3. Insert the board's left edge into the chassis left guide rails.
4. With the left edge inserted, raise the board so that its tabs are above their slots in the SE chassis.
5. Insert the logic board's right notches into the slots on the chassis' right side.
6. Slide the logic board further down into the chassis, and insert the upper metal tabs into their respective slots in the SE chassis.

Reconnect All Cables to the Logic Board

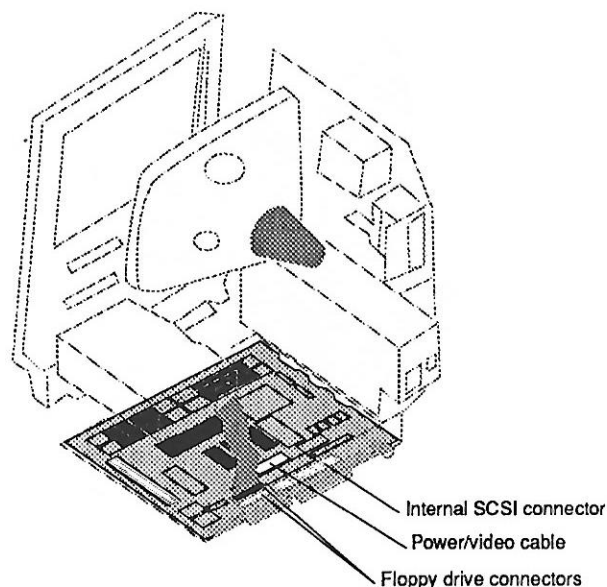


Figure 19: Reconnecting the cables

Reattach all cables to the SE main logic board.

First insert the power/video cable. Be sure the plastic "latch" (the one you had to release when you removed this cable) on the connector is secured to the plastic connector on the main logic board.

Attach the internal SCSI cable next, if there is an internal hard drive. This cable is keyed, and will only fit in one direction. If you encounter resistance, remove it and confirm that the cable is properly oriented.

If there is only one floppy drive, insert its cable into the slot labeled "Lower Drive." This slot is located immediately behind the floppy drive. If there are two floppy drives, attach the second cable to the connector immediately to the rear of the lower floppy drive connector.

Install the ClearVue Video Cable Assembly

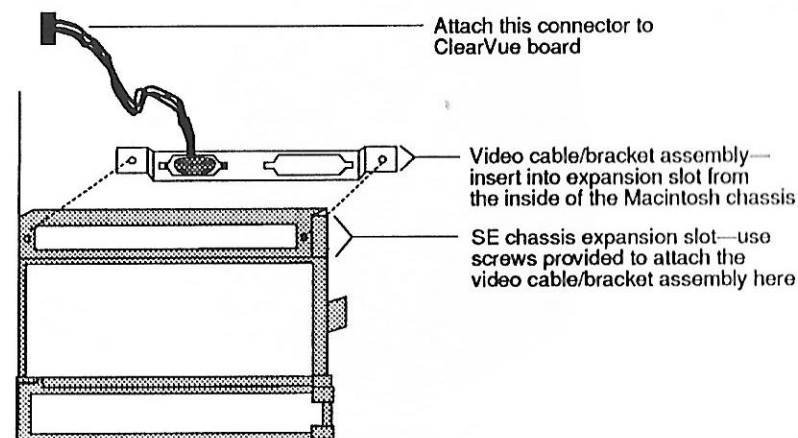


Figure 20: Installing the video cable/bracket assembly

1. Connect the small end of the video cable to the video connector on the ClearVue board. The cable is keyed and will only fit in one direction. It should install easily. If you encounter resistance, remove the connector and confirm that you are seating it in the proper direction.
2. Insert the bracket containing the large end of the video cable into the inner side of the chassis expansion slot.
3. Secure the bracket assembly to the expansion slot opening, using the two screws already attached to the bracket assembly. Refer to Figure 5.

Attach the Label Plate

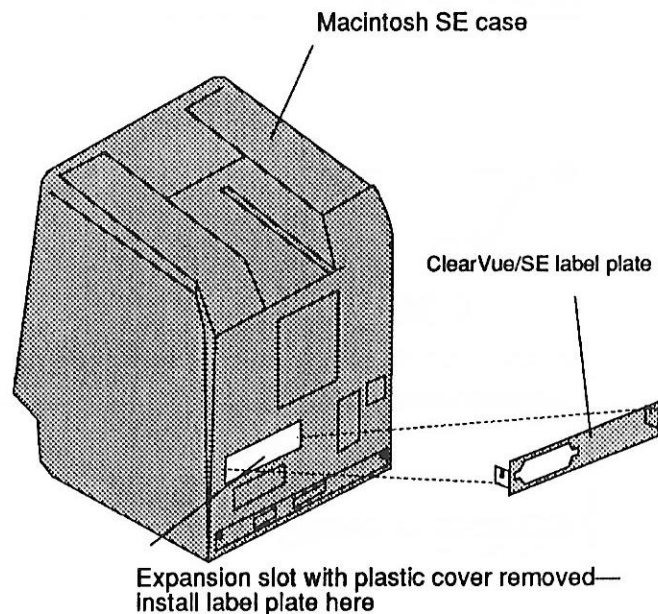


Figure 21: Attaching the label plate

1. On the the Macintosh case, locate the plastic expansion slot cover.
2. Remove the expansion slot cover by pushing out from the inside of the SE case. Save the expansion cover. You will need to reinstall it if you ever remove the ClearVue assembly.
3. From the outside of the SE case, insert the metal label plate provided by RasterOps into the expansion slot opening. Refer to figure 6.



Note: The metal tabs are divided so that on each side half the tab remains inside the SE case.

Secure the Label Plate

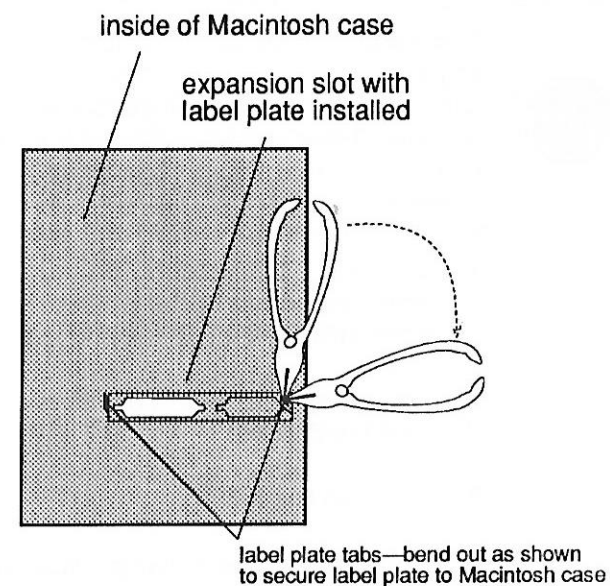


Figure 22: Securing the label plate

1. Secure the label plate. Use pliers or a similar tool to bend the inner halves of the tabs away from the label plate.

Verify Installation



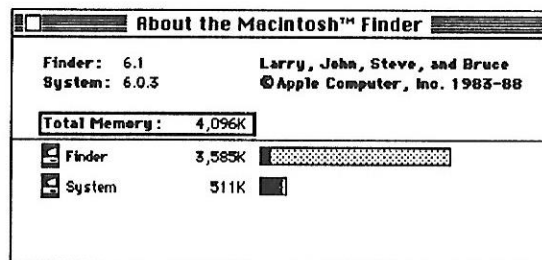
Caution: Be sure the Macintosh is not touching any conductive surface when you power it on. If the chips on the main logic board are touching any metal surface when the Macintosh receives power, the main logic board will be rendered useless.

1. Set the Macintosh SE upright on a nonconductive surface. Connect the power cord and mouse.
2. Insert a system disk, if the SE is not connected to a hard drive.
3. Turn on the SE.

You should see a happy Mac, and the SE should boot.

If, upon powering up, you see a flash, hear any unusual noise, or smell smoke, IMMEDIATELY, CAREFULLY disconnect power to the Macintosh, and call RasterOps technical support for assistance.

4. Choose "About the Finder" from the Apple menu. The following window appears:



Verify Installation (continued)

Check the "Total Memory" heading to verify that all RAM installed is being recognized.

For a **1 megabyte** SE, the "Total Memory" in the About the Finder box should be 1024K.

For a **2 megabyte** SE, the "Total Memory" in the About the Finder box should be 2048K.

For a **2.5 megabyte** SE, the "Total Memory" in the About the Finder box should be 2560K.

For a **4 megabyte** SE, the "Total Memory" in the About the Finder box should be 4096K.

Close the Macintosh SE Case

1. Place the Macintosh screen-down, after shutting down and disconnecting the power cord and mouse.
2. Replace the foil interference shield below the motherboard and chassis.
3. Replace the cover over the Macintosh SE body. Gently guide the cover so that the edges meet all around as you replace it.
4. When the cover is securely in place, replace the four Torx screws. Install the two silver screws into the top holes. The black screws go into the two lower holes.
5. Reinsert all external cables (keyboard, mouse, SCSI) into the appropriate ports.
6. Reinstall the Reset/Interrupt switch. Insert its upper side into the two long slots, then push the bottom into the SE.
7. Set the SE upright and replace the power cord. You should see a happy Mac icon upon powering up.

Attach the Monitor

1. Place the monitor to the left or right of your Macintosh, according to your preference.
2. Attach the external cable's 9-pin connector to the connector you installed in the Macintosh expansion slot.
3. Attach the cable's other connector to the ClearVue monitor.
4. Attach the power cable to the monitor's power connector, and be sure it is plugged in.

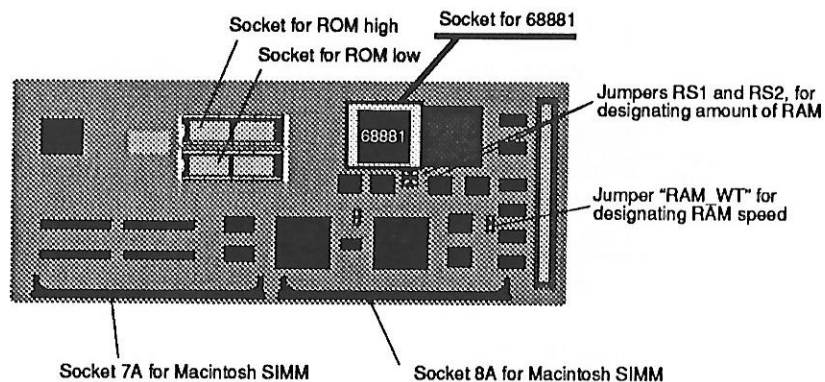


Note: For the Macintosh to recognize the ClearVue screen, you must install the software and configure the system as described in Chapters One and Two.

Appendix A: Installing the 68881 Option

Hardware Installation

Insert the 68881 chip into socket A, as shown below.



Software Installation

Copy the Turbo 881 file to the System Folder of your startup disk, then restart your Macintosh.

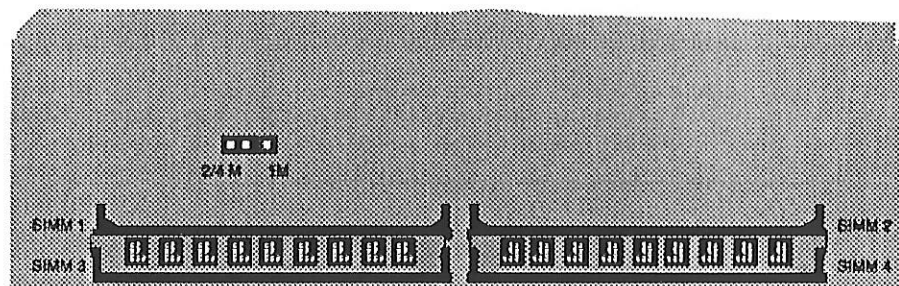
The Turbo 881 file allows your system to take advantage of the 68881 chip's acceleration capabilities.

Appendix B: Changing the Amount of RAM

If, in addition to installing the ClearVue board, you also increase or decrease the amount of Macintosh RAM, you may need to reconfigure a jumper on the Macintosh main logic board. The following diagrams show the RAM configurations for which this is necessary.

Note: Older logic boards have two resistors, rather than jumper pins, located above SIMM slots 1 and 2. For these logic boards you may need to install or remove one or both of these resistors, rather than removing/installing jumpers. If the main logic board has resistors rather than jumpers in the location shown, refer to the diagrams labeled "Older logic boards" on the following pages.

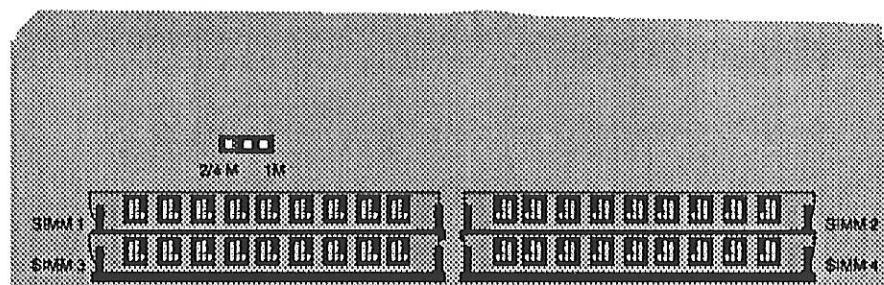
Newer Logic Boards



512K

SIMM sockets 1 and 2: Not Installed
SIMM sockets 3 and 4: 256K SIMMs installed

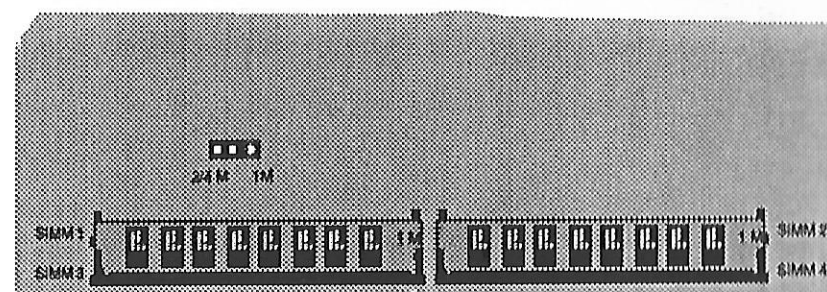
Jumper on 2/4M



1 Megabyte

SIMM sockets 1 and 2: 256K SIMMs installed
SIMM sockets 3 and 4: 256K SIMMs installed

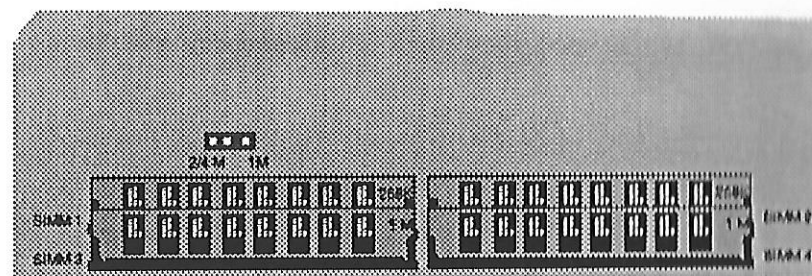
Jumper on 1M



2 Megabytes

SIMM sockets 1 and 2: not installed
SIMM sockets 3 and 4: 1M SIMMs installed

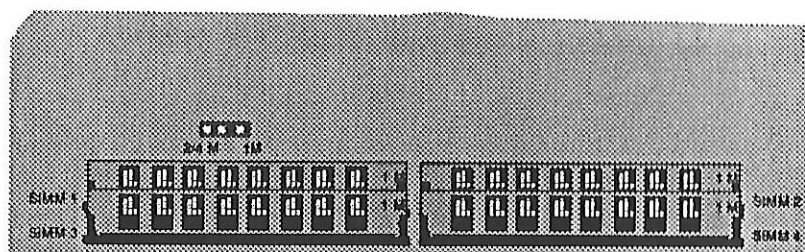
Jumper on 2/4M



2.5 Megabytes

SIMM sockets 1 and 2: 256K SIMMs installed
SIMM sockets 3 and 4: 1M SIMMs installed

Jumper off

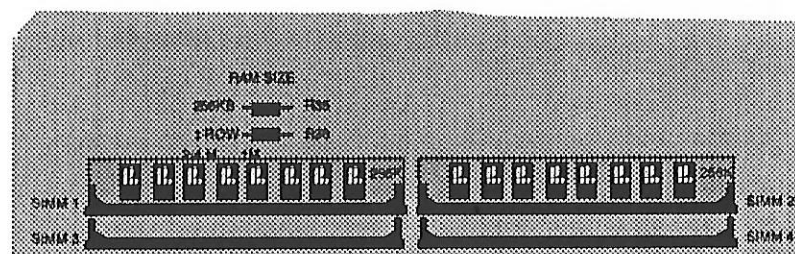


4 Megabytes

SIMM sockets 1 and 2: 1M SIMMs installed
SIMM sockets 3 and 4: 1M SIMMs installed

Jumper off

Older Logic Boards

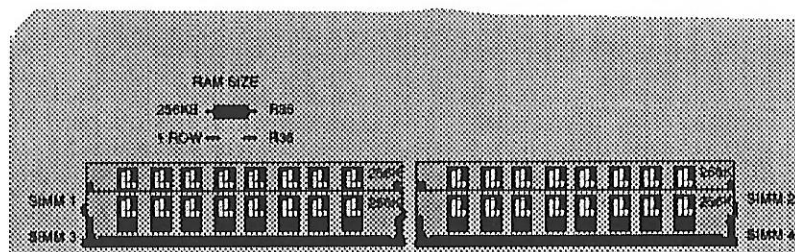


512K

SIMM sockets 1 and 2: 256K SIMMs installed
SIMM sockets 3 and 4: Not Installed

RAM SIZE Resistors:

256Kbit (R35): 150 Ohm resistor installed
One Row (R36): 150 Ohm resistor installed

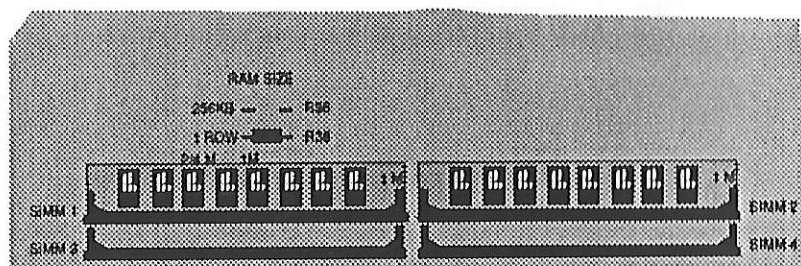


1 MB

SIMM sockets 1 and 2: 256K SIMMs installed
SIMM sockets 3 and 4: 256K SIMMs installed

RAM SIZE Resistors:

256Kbit (R35): 150 Ohm resistor installed
One Row (R36): Not installed

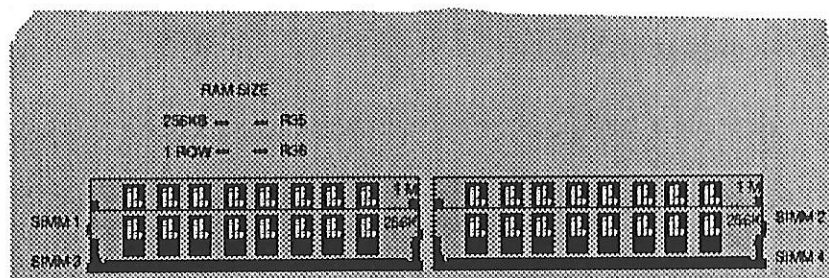


2 MB

SIMM sockets 1 and 2: 1M SIMMs installed
SIMM sockets 3 and 4: Not installed

RAM SIZE Resistors:

256Kbit (R35): Not installed
One Row (R36): 150 Ohm resistor installed

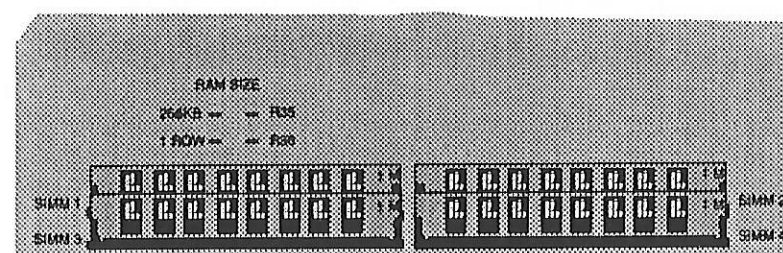


2.5 MB

SIMM sockets 1 and 2: 1M SIMMs installed
SIMM sockets 3 and 4: 256K SIMMs installed

RAM SIZE Resistors:

256Kbit (R35): Not installed
One Row (R36): Not installed



4 MB

SIMM sockets 1 and 2: 1M SIMMs installed
SIMM sockets 3 and 4: 1M SIMMs installed

RAM SIZE Resistors:

256Kbit (R35): Not installed
One Row (R36): Not installed

Appendix C: Warranty

RasterOps Corporation ("RasterOps") warrants the ClearVue to be free from defects in material and workmanship for a period of one year from the date of delivery. In case of defect, RasterOps will at its option repair or replace the product without charge.

For warranty service, return the defective product, transportation and insurance charges prepaid, to an authorized RasterOps dealer or to RasterOps directly along with your name, address, telephone number, a description of the problem, and a copy of a bill of sale bearing a RasterOps serial number as a proof of original retail purchase. RasterOps will not accept responsibility for loss or damage in transit.

This warranty does not apply if the RasterOps serial number has been removed or if the product has been damaged by misuse, accident, modifications or unauthorized repair.

THIS WARRANTY IS IN LIEU OF ALL WARRANTIES, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. ANY IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO 90 DAYS FROM THE DATE OF DELIVERY OF THIS PRODUCT. RASTEROPS SHALL NOT BE LIABLE FOR INCIDENTAL AND/OR CONSEQUENTIAL DAMAGES FOR THE BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING DAMAGE TO PROPERTY AND, TO THE EXTENT PERMITTED BY LAW, DAMAGES FOR PERSONAL INJURY, EVEN IF RASTEROPS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Some states do not allow the inclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Appendix D: Jumpers

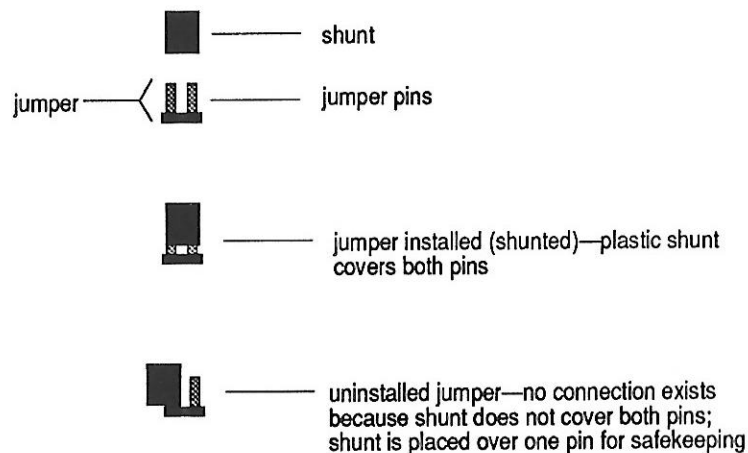
Jumper pins. There are three jumper pins on the ClearVue board. Their locations are shown in figure 9 on page 31. Jumper pins exist because at times it is necessary to send certain information to the board. This is accomplished by creating or breaking a circuit.

When you place the plastic shunt over both pins of a given set, you create a circuit. This is called installing, or shunting, the jumper.

When you remove the shunt, the circuit is broken and the jumper is uninstalled. We suggest that you save the shunt. An easy way to store it is by placing it over only one of the two pins. This way the jumper remains with the board but does not create a circuit, so its presence does not affect the board in any way.

Jumpers RS1 and RS2 tell the board how much RAM is installed.

The jumper labeled RAM_WT tells the board what speed the RAM operates at.



CLEARVUE/SE MANUAL ERRATA

#1: PLACEMENT OF VIDEO SIMMS ON MOTHERBOARD

Page 37 of this manual describes where to install the RasterOps Video SIMMs. **THE INFORMATION ON PAGE 37 IS ACCURATE ONLY FOR OLDER MACINTOSH SE LOGIC BOARDS.**

To determine whether this is appropriate for your Macintosh, locate the SIMM slots on the Macintosh motherboard, (after removing it as described in this manual). Above SIMM slots 1 and 2 there will be either a set of jumper pins or resistors. The information on page 37 is accurate **ONLY** if there are resistors in this location.

If, instead of resistors, there is a set of jumper pins (this is true for all newer SE logic boards), refer to the following information to properly install the RasterOps video SIMMs.

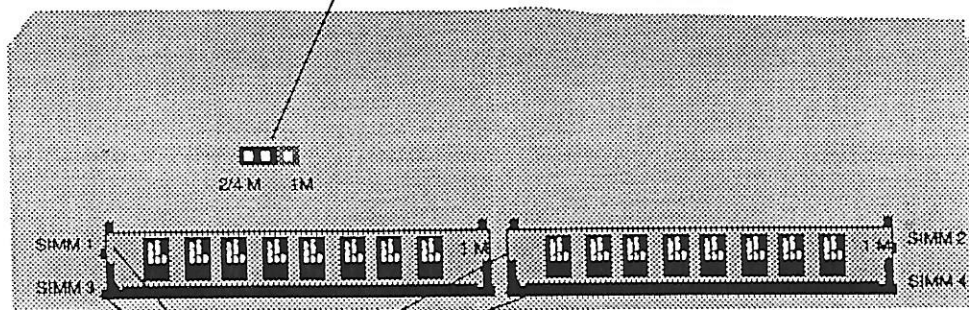
If the SE has 1 megabyte of RAM (four 256K SIMMs), install the RasterOps video SIMMs in sockets 1 and 2 on the SE motherboard.

If the SE has 2 megabytes of RAM (two 1 MB SIMMs), install the RasterOps video SIMMs in sockets 3 and 4 on the SE motherboard.

If the SE has 2.5 megabytes of RAM (two 1 MB SIMMs and two 256K SIMMs), install the RasterOps video SIMMs in sockets 1 and 2 on the SE motherboard.

If the SE has 4 megabytes of RAM (four 1 MB SIMMs), install the RasterOps video SIMMs in sockets 1 and 2 on the SE motherboard.

Newer motherboard has jumpers in this location;
older motherboard has a set of resistors.

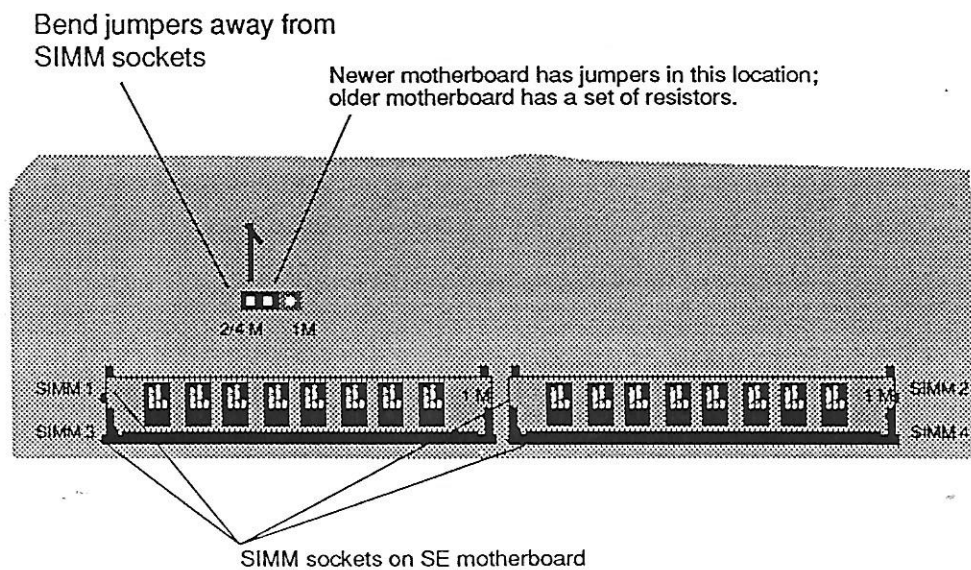


#2: BEND JUMPER PINS AWAY FROM THE SIMMS **(for newer motherboards only)**

The newest motherboards have a set of jumpers in the location shown below. These jumper pins are likely to touch the SIMMs on the installed ClearVue/SE board.

In order to avoid this problem, bend these jumper pins down toward the Macintosh motherboard, *in the direction away from the motherboard's SIMM sockets*.

Bend the jumper pins down *before* you install the ClearVue/SE board.



#3: REPLACE TWO FLOPPY DRIVE SCREWS

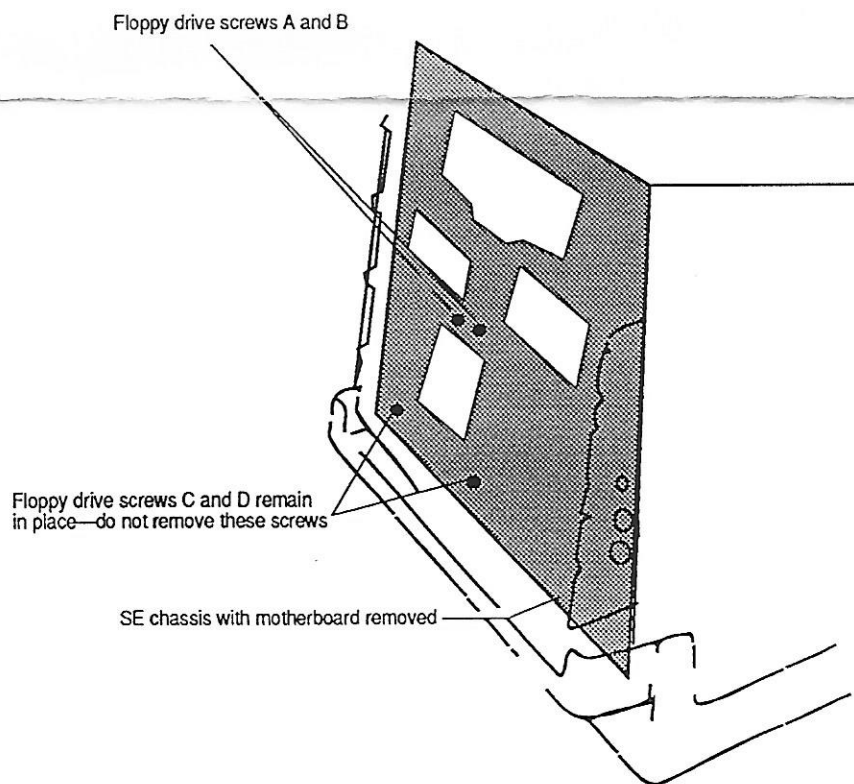
As well as the items listed on page 23 of this manual, the ClearVue/SE package contains two screws. These screws replace two of the four screws that secure the floppy drive to the Macintosh SE chassis.

To install them, do the following:

1. Following the instructions in the ClearVue/SE manual, disassemble the Macintosh SE and remove the motherboard.
2. After removing the motherboard from the Macintosh chassis position the Macintosh screen-down on a well padded, nonconductive surface.
3. Locate the two upper screws (Screws A and B) that secure the floppy drive to the chassis. Refer to the illustration on page 3 of this insert.
4. Use a philips screwdriver to remove ONLY Screw A (and its washer) from the Macintosh chassis.

NOTE: Do not remove both screws before replacing one of them with a screw provided by RasterOps. To remove both screws from the chassis at the same time may cause the floppy drive to dislodge from the Macintosh chassis.

5. Use a slot head screwdriver to install one of the two screws provided by RasterOps into location A, thus replacing Screw A.
6. Remove Screw B (and its washer) from the Macintosh chassis and in its place install the second screw provided by RasterOps.
7. Follow the remaining instructions in the ClearVue/SE manual to complete the installation procedure.



More Good Things For Your Macintosh Computer Are As Close As Your RasterOps Dealer.

24-bit True Color RGB, NTSC and S-Video input digitizing board for the Macintosh II Family. Images are digitized at 640 by 486 pixels at 24-bits of color for each pixel. Frame captured at 1/30th of a second. Fully compatible with Apple's 32-bit QuickDraw.

RasterOps

Warranty Card

- Customer Signature _____

Macintosh SE and SE/30 Products

ColorBoard 108+/SE30

High resolution 8-bit graphics board with multiple resolutions for the Macintosh SE/30. Selectable resolutions of 1024 by 768, 800 by 600, or 640 by 480. Bit modes of 1, 2, 4 and 8 are supported. Pan/Zoom and Extended Desktop included.

ClearVue/SE

Monochrome Multi-page graphics board and 16MHz Accelerator for the Macintosh SE. Runs with a 19" monochrome monitor. Optional 68881 Co-Processor. Displays 1024 by 768 pixels at 72 Dots Per Inch. (WYSIWYG).

ClearVue/SE APD

Monochrome Macintosh SE video board and 16MHz Accelerator. Dedicated to Apple's 15" Macintosh Portrait Display Monitor. Optional 68881 Co-Processor. Resolution is 640 by 870 at 80 Dots Per Inch. One full page of text and graphics. 75Hz refresh rate.

Video Products

SFX Video Option Board

The SFX provides mixing of live video signals with True Color Macintosh graphics. SFX features include: Overlay Key, Chroma Key, S-Video Input/Output, NTSC Input/Output, RS-343 interlaced RGB Output, and Genlock. Both NTSC and PAL versions available.

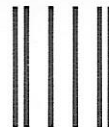
1948S Monitor

19" Trinitron monitor. Resolution is 1024 by 768 pixels. Horizontal Frequency = 48.78KHz, Vertical Frequency = 60Hz. 72 Dots Per Inch (WYSIWYG).

1648S Monitor

16" Trinitron monitor. Resolution is 1024 by 768 pixels. Horizontal Frequency = 48.78KHz, Vertical Frequency = 60Hz. 88 Dots Per Inch

Monitors



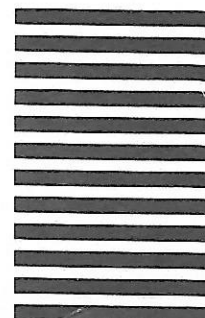
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 1097 SANTA CLARA, CA

POSTAGE WILL BE PAID BY ADDRESSEE

RasterOps Corporation
2500 Walsh Avenue
Santa Clara CA 95051-9877
USA



RasterOps

ClearVue/SE APD
Version 1.0

May 1989
©RasterOps, 1989

RasterOps
2500 Walsh Ave.
Santa Clara, CA 95051
408-562-4200

Double
Sided

