

INSTALLATION MANUAL



Outbound Laptop System Installation Guide

**for the Macintosh Plus (Original Chassis),
Macintosh SE (Old U.S. Chassis), and
Macintosh SE (New U.S. Chassis)**

Outbound Systems, Inc.
Boulder, Colorado

Radio Frequency Interference

The Outbound generates and uses radio frequency energy. For this reason, it must be installed and used properly to avoid causing interference to radio and television reception and other computer equipment.

If the operation of the Outbound causes radio frequency interference, disconnect any peripheral devices one at a time. If the interference stops, it is being caused by the peripheral device or its I/O cable. If disconnecting the peripheral devices does not stop the interference, or you do not have peripheral devices connected:

- Move the Outbound to the other side of, or farther from, the equipment being affected.
- Plug the Macintosh and/or the Outbound's AC adapter into an outlet controlled by a different circuit breaker or fuse than the affected equipment.
- In the case of television or radio interference, try turning the antenna until the interference stops. You might also consider installing an antenna with a coaxial cable.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Important: This product was FCC-certified under test conditions that included use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors to reduce the possibility of causing interference to radio, television, and other electronic devices. Changes or modifications to this equipment not expressly approved by Outbound Systems, Inc. could void the user's authority to operate this equipment.

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Before You Start

This guide explains how to install the Outbound™ on the Apple® Macintosh® Plus and SE computers. You install the Outbound on the Macintosh by:

- removing the ROM chips from the Macintosh and installing them in the Outbound
- installing the host connector card and cable in the Macintosh
- installing the Outbound software

To perform the installation described in this guide, you must have the Outbound, the Outbound installation kit, and the user's Macintosh, keyboard, and mouse.

This installation should be performed only by an authorized Outbound dealer who is a trained technician with Apple Level One Certification.

Once the installation is complete, the Outbound can be connected to the host Macintosh through the host connector cable to operate as a combined Outbound/Macintosh system. (Both computers share the ROM installed in the Outbound.) Or, the Outbound can be disconnected from the host Macintosh to operate as a stand-alone battery-operated portable system.

The *Outbound Laptop System Installation Guide* covers the installation of the Outbound on the original chassis version of the Macintosh Plus and all U.S. chassis versions of the Macintosh SE.

The guide includes the following chapters:

- Chapter 1, "Installation Summary," summarizes the tasks you need to perform to install the Outbound on the Macintosh Plus or SE.
- Chapter 2, "Preparing the Macintosh Plus," explains how to remove the ROM chips from the Plus and prepare them for installation in the Outbound. It also explains how to install the host connector card and cable in the Macintosh Plus.
- Chapter 3, "Preparing the Macintosh SE," explains how to remove the ROM chips from the SE and prepare them for installation in the Outbound. It covers both the old style horizontal chassis and the new style vertical chassis.
- Chapter 4, "Preparing the Outbound," explains how to install the Macintosh's ROM chips in the Outbound. It also explains how to install the Outbound's three batteries.
- Chapter 5, "Installing Outbound Software," explains how to connect the Outbound to the Macintosh and install the software necessary to make the Outbound/Macintosh system work correctly.

Before You Start

- Appendix A, "Memory Configuration," explains how to configure the Outbound's and the Macintosh's memory for optimal performance.
- Appendix B, "Outbound Troubleshooting Tips," describes troubleshooting procedures.

For additional information about operating the Outbound, see the *Outbound Laptop System User's Guide*.

Warning:

The procedures described in this guide could expose you or others to lethal voltages. Take proper precautions when you are working inside the Outbound or Macintosh, even if the units are not connected to the line power. Always use a grounding wrist strap to prevent static discharge from damaging sensitive electronic circuits. Keep away from areas labeled High Voltage.

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Chapter 1. Installation Summary

This chapter provides a summary of the tasks you need to perform to install the Outbound on the Macintosh Plus and SE. These tasks are more fully explained in the chapters that follow.

If you have never installed an Outbound on a Macintosh, review this list before you continue reading the rest of the installation guide. If you are already familiar with these procedures, use this list as a quick-reference guide.

Installing the Outbound on the Macintosh Plus

Note:

Before opening the customer's Macintosh, boot the Macintosh to verify proper operation and make note of its total system memory. (At the Finder level, check the "About the Finder" box, under the Apple Menu, for total memory.) You'll need to know the amount of system memory when you configure the Outbound's memory; see Appendix A.

1. Remove the Macintosh case.
2. Remove the main logic board from the Macintosh.
3. Move the Macintosh ROM chips to the ROM SIMM card provided for the Outbound. (Keep the Hi ROM chip on the left, the Lo ROM chip on the right. See Table 2-1 for details.)
4. Set the optimum memory configuration on the Macintosh's main logic board. (See Appendix A for important instructions on how to configure the system memory.)
5. Install the host connector card on the main logic board.
6. Install the Outbound's cable mounting bracket on the Macintosh chassis.
7. Reinstall the main logic board.
8. Install the host connector cable in the Macintosh chassis.
9. Connect the host connector cable to the host connector card.
10. Replace the Macintosh case.
11. Open the Outbound case.
12. Install the ROM SIMM card in the Outbound.
13. Close the Outbound case.
14. Install the Outbound's three batteries.
15. Connect the Outbound and Macintosh.
16. Test the operation of both machines by powering up the Macintosh and the Outbound when docked. (See Chapter 5, step 1, for details about this step.)
17. Install the Outbound software.
18. Reset the time and date on the Macintosh's General Control Panel.

19. Undock the Macintosh and the Outbound and reboot the Outbound. Set the time and date on the Outbound's General Control Panel.

**Installing the Outbound on a New/Vertical Chassis
Macintosh SE**

Note:

Before opening the customer's Macintosh, boot the Macintosh to verify proper operation and make note of its total system memory. (At the Finder level, check the "About the Finder" box, under the Apple Menu, for total memory.) You'll need to know the amount of system memory when you configure the Outbound's memory; see Appendix A.

1. Remove the Macintosh case.
2. Remove the main logic board from the Macintosh.
3. Move the Macintosh ROM chips to the ROM SIMM card provided for the Outbound. (Keep the II+ ROM chip on the left, the I+ ROM chip on the right. See Table 3-1 for details.)
4. Set the optimum memory configuration on the Macintosh's main logic board. (See Appendix A for important instructions on how to configure the system memory.)
5. Reinstall the main logic board.
6. Route the host connector cable through the Macintosh chassis.
7. Connect the host connector cable to the host connector card.
8. Install the host connector card on the main logic board.
9. Replace the Macintosh case.
10. Open the Outbound case.
11. Install the ROM SIMM card in the Outbound.
12. Close the Outbound case.
13. Install the Outbound's three batteries.
14. Connect the Outbound and Macintosh.
15. Test the operation of both machines by powering up the Macintosh and the Outbound when docked. (See Chapter 5, step 1, for details about this step.)
16. Install the Outbound software.
17. Undock the Macintosh and the Outbound and reboot the Outbound. Set the time and date on the Outbound's General Control Panel.

**Installing the Outbound on an Old/Horizontal Chassis
Macintosh SE**

Note:

Before opening the customer's Macintosh, boot the Macintosh to verify proper operation and make note of its total system memory. (At the Finder level, check the "About the Finder" box, under the Apple Menu, for total

Chapter 1. Installation Summary

This chapter provides a summary of the tasks you need to perform to install the Outbound on the Macintosh Plus and SE. These tasks are more fully explained in the chapters that follow.

If you have never installed an Outbound on a Macintosh, review this list before you continue reading the rest of the installation guide. If you are already familiar with these procedures, use this list as a quick-reference guide.

Installing the Outbound on the Macintosh Plus

Note:

Before opening the customer's Macintosh, boot the Macintosh to verify proper operation and make note of its total system memory. (At the Finder level, check the "About the Finder" box, under the Apple Menu, for total memory.) You'll need to know the amount of system memory when you configure the Outbound's memory; see Appendix A.

1. Remove the Macintosh case.
2. Remove the main logic board from the Macintosh.
3. Move the Macintosh ROM chips to the ROM SIMM card provided for the Outbound. (Keep the Hi ROM chip on the left, the Lo ROM chip on the right. See Table 2-1 for details.)
4. Set the optimum memory configuration on the Macintosh's main logic board. (See Appendix A for important instructions on how to configure the system memory.)
5. Install the host connector card on the main logic board.
6. Install the Outbound's cable mounting bracket on the Macintosh chassis.
7. Reinstall the main logic board.
8. Install the host connector cable in the Macintosh chassis.
9. Connect the host connector cable to the host connector card.
10. Replace the Macintosh case.
11. Open the Outbound case.
12. Install the ROM SIMM card in the Outbound.
13. Close the Outbound case.
14. Install the Outbound's three batteries.
15. Connect the Outbound and Macintosh.
16. Test the operation of both machines by powering up the Macintosh and the Outbound when docked. (See Chapter 5, step 1, for details about this step.)
17. Install the Outbound software.
18. Reset the time and date on the Macintosh's General Control Panel.

19. Undock the Macintosh and the Outbound and reboot the Outbound. Set the time and date on the Outbound's General Control Panel.

**Installing the Outbound on a New/Vertical Chassis
Macintosh SE**

Note:

Before opening the customer's Macintosh, boot the Macintosh to verify proper operation and make note of its total system memory. (At the Finder level, check the "About the Finder" box, under the Apple Menu, for total memory.) You'll need to know the amount of system memory when you configure the Outbound's memory; see Appendix A.

1. Remove the Macintosh case.
2. Remove the main logic board from the Macintosh.
3. Move the Macintosh ROM chips to the ROM SIMM card provided for the Outbound. (Keep the II+ ROM chip on the left, the I+ ROM chip on the right. See Table 3-1 for details.)
4. Set the optimum memory configuration on the Macintosh's main logic board. (See Appendix A for important instructions on how to configure the system memory.)
5. Reinstall the main logic board.
6. Route the host connector cable through the Macintosh chassis.
7. Connect the host connector cable to the host connector card.
8. Install the host connector card on the main logic board.
9. Replace the Macintosh case.
10. Open the Outbound case.
11. Install the ROM SIMM card in the Outbound.
12. Close the Outbound case.
13. Install the Outbound's three batteries.
14. Connect the Outbound and Macintosh.
15. Test the operation of both machines by powering up the Macintosh and the Outbound when docked. (See Chapter 5, step 1, for details about this step.)
16. Install the Outbound software.
17. Undock the Macintosh and the Outbound and reboot the Outbound. Set the time and date on the Outbound's General Control Panel.

**Installing the Outbound on an Old/Horizontal Chassis
Macintosh SE**

Note:

Before opening the customer's Macintosh, boot the Macintosh to verify proper operation and make note of its total system memory. (At the Finder level, check the "About the Finder" box, under the Apple Menu, for total

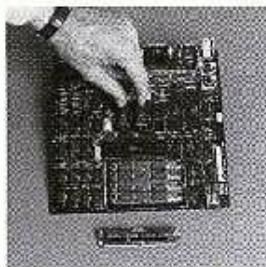


Figure 2-5
ROM chips on the main logic board

Caution:

Use extreme care when removing and installing ROM chips. Be sure to use the proper tool. Do not perform this procedure if you are unfamiliar with ROM chip removal and installation techniques. Otherwise, you may permanently damage the ROM chips.

- d. Remove the Hi ROM chip (the chip on the left) from the main logic board and install it in the left connector on the Outbound's SIMM card. See Figure 2-6. Make sure you install the ROM chip with its notch to the right (as indicated on the SIMM card).

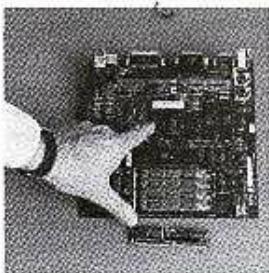


Figure 2-6
Moving the Hi ROM chip

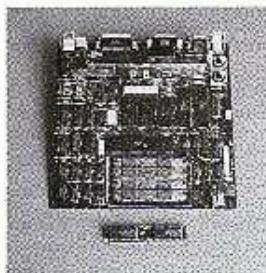


Figure 2-7
Moving the Lo ROM chip

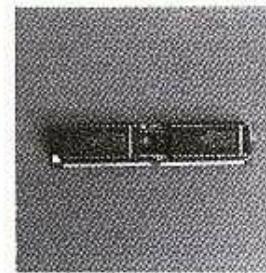


Figure 2-8
The ROM SIMM card with chips

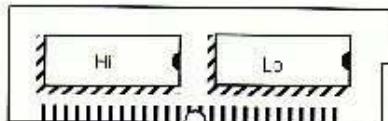
- e. Remove the Lo ROM chip (the chip on the right) from the main logic board and install it into the right connector on the SIMM card. See Figures 2-7. Make sure you install the ROM chip with its notch to the right (as indicated on the SIMM card).

Caution:

Be sure that the ROM chips are installed on the ROM SIMM card as shown in Figure 2-8. Compare the ROM chip's part numbers in Table 2-1 to your installation. As a general rule, within a pair of ROM chips, the chip with the lower part number is the Hi ROM; the chip with the higher part number is the Lo ROM.

- E. Set the ROM SIMM card aside until you are ready to install it in the Outbound.

Table 2-1
Apple Macintosh Plus ROM chip's orientation and part numbers. (These part numbers are subject to change without notice by Apple Computer, Inc.)



Apple Part Number

HI ROM	LO ROM
342-0341	342-0342

4. Set the optimum memory configuration on the Macintosh's main logic board.

Caution:

Overall performance may be impaired or the computers may not work at all if you do not configure the memory correctly. You must read and understand the memory configuration instructions explained in Appendix A before you attempt this step of the installation process.

Transfer as much RAM as possible from the Macintosh to the Outbound. However, leave at least 512KB of RAM in the Macintosh. See Appendix A, "Memory Configuration," for important configuration information.

5. Install the host connector card on the main logic board.

- a. Install the two rubber bumpers as shown in Figure 2-9. Attach one bumper to the "VIA" chip at board location D11. Attach the other bumper to the "TSG" chip at board location D3.

Note:

If the Macintosh contains high-profile SIMM cards, the host connector card installation may be easier if you loosen the SIMMs in their sockets and slant them away from the processor while seating the card. Remember to re-seat all of the SIMMs before proceeding.

- b. Align the host connector card over the main logic board as shown on Figure 2-10.

Caution:

Be careful when installing the host connector card on the main logic board. Familiarize yourself with the clip on the bottom of the card and thoroughly read all instructions before you begin the installation. Otherwise, you may break the clip, thus destroying the card.

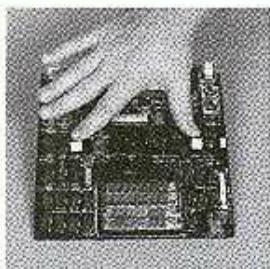


Figure 2-9
Positioning the rubber bumpers
(Note: The ROM chips should
already be removed.)

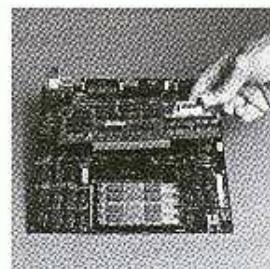


Figure 2-10
Aligning the host connector card
over the main logic board

Refer to Figure 2-11 while performing the following steps:

- c. With the host connector card tilted slightly to the right, position the collar over the CPU chip.

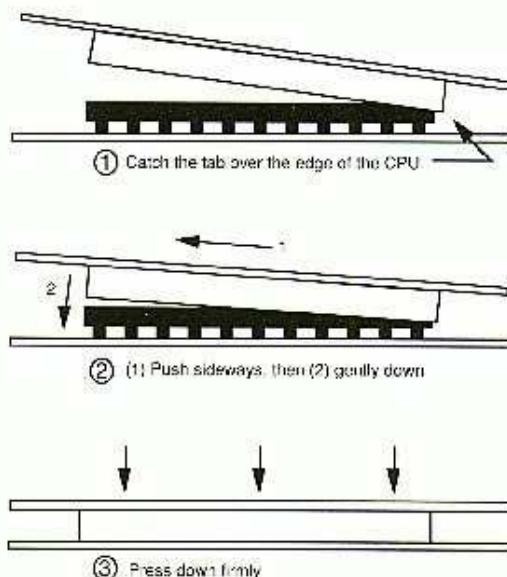


Figure 2-11
Installing the host connector card on the main logic board

- d. Align the right side tab over the right edge of the CPU chip.

- c. Apply pressure to the left, then press the card down gently until the left tab seats over the left edge of the CPU chip. **Do not** press straight down.
- f. Verify that both tabs have seated over the edges of the CPU chip.
- g. Press down firmly on the host connector card just over the CPU chip until the collar is firmly seated.
- h. Verify that the collar is making full contact with the main logic board. See Figure 2-12.



Figure 2-12
Host connector card properly installed

6. Install the Outbound's cable mounting bracket on the Macintosh chassis.

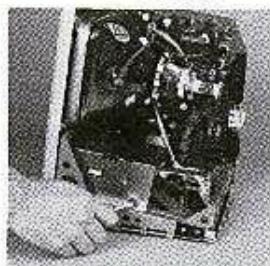


Figure 2-13
Install the cable mounting bracket on the Macintosh chassis

- a. Mount the cable mounting bracket supplied with the Outbound to the Macintosh chassis using the flat washer and hex locknut. Be sure to slide the cable mounting bracket's flange under the lip of the chassis as shown in Figure 2-13.
- b. Loosen the strain relief clamp on the cable mounting bracket.

7. Reinstall the main logic board.

Caution:

During this procedure, be careful not to dislodge the host connector card from the CPU clip.

- a. Using the adhesive backing, attach the large rubber spacer supplied with the Outbound to the Macintosh chassis. Figure 2-14 illustrates the correct placement of this spacer.

Place the spacer one inch (1-1/8 in.) above the large horizontal slot. Orient it to taper down toward the large triangular slot, as illustrated. The angle of the spacer should parallel the angle of the Macintosh chassis ramp.

- b. Place one side of the main logic board in the guide rail. Using a flat-bladed screwdriver, pry the other side of the main logic board into the guide rail. See Figure 2-15.

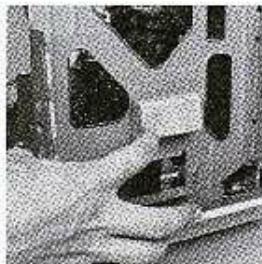


Figure 2-14
Placing the large rubber spacer

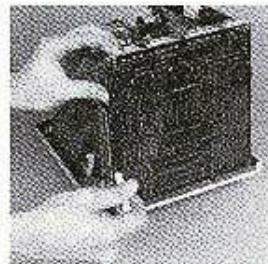


Figure 2-15
Reinstalling the main logic board

- c. Reconnect the video board to the CRT neck.
- d. Reconnect the video/power cable and floppy disk drive cable to the main logic board.

8. Install the host connector cable in the Macintosh Chassis.

- a. Prepare the security slot for the host connector cable.

You need to install the spring clip supplied with the Outbound into the Macintosh's security slot. The spring clip spreads the slot's prongs so that you can install the Outbound's host connector cable through this slot.

To prepare the security slot:

1. Use the two-pronged end of the security slot tool (oriented as shown in Figure 2-16) to spread apart the plastic prongs on the Macintosh's security slot.

2. While holding the prongs apart, insert the spring clip under the tabs of the two outermost plastic prongs. (See Figure 2-17) Remove the tool from the slot. You should end up with the clip positioned in the slot as shown in Figure 2-18.



Figure 2-16
Push apart the plastic tabs on the security slot with the security slot tool.



Figure 2-17
Positioning the spring clip in the security slot.

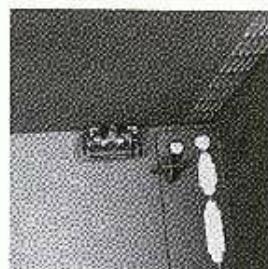


Figure 2-18
Initial position for the spring clip.

3. Use the single-pronged end of the tool to spread the security slot's center prong.
4. While holding the prong apart, rotate the spring clip so that it engages the center prong and keeps it spread, as shown in Figure 2-19.
5. Use the tool to push the spring clip down against the top side of the tab on the center prong, as shown in Figure 2-20. This permanently spreads the prongs in the security slot, allowing you to insert the cable.

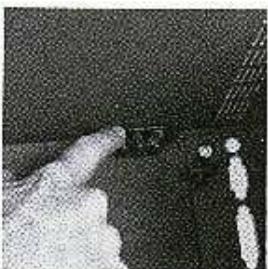


Figure 2-19
Hold the center prong spread apart with the spring clip.



Figure 2-20
Seat the spring clip against the security slot's prongs.

- b. Thread the host connector cable through the security slot. (See Figure 2-21.)

- c. Route the cable through the strain-relief clamp on the chassis. Slide the cable through the clamp until the foil is positioned inside it, as shown in Figure 2-21. Tighten the clamp screws.

Note:

Position the cable's foil in the strain relief clamp so that the clamp tightens down over the foil section closest to the toroid ring (the large loop on the cable).

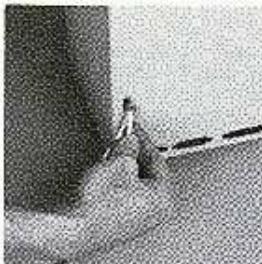


Figure 2-21
Thread the host connector cable through the security slot



Figure 2-22
Position the cable's foil in the strain relief clamp and tighten the clamp

- d. Feed the connectors on the short portion of the cable through the slot on the base of the Macintosh chassis.

9. Connect the host connector cable to the host connector card.

There are two header connectors on the host connector cable. Each header connector is keyed and is a different size. They connect only at the correct connector pins. See Figure 2-23.

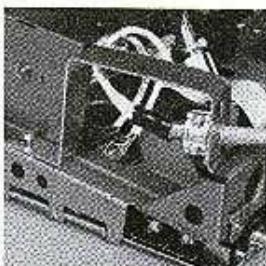


Figure 2-23
Connecting the host connector cable



Figure 2-24
Inserting the cable cover plate into the Macintosh security slot

10. Replace the Macintosh case.

- a. Replace the foil shielding.
- b. Replace the Macintosh case and tighten all five screws.
- c. If applicable, reinstall the programmer's switch by snapping it into place.
- d. Securely insert the host connector cable's cover plate into the Macintosh's security slot.

Chapter 3. Preparing the Macintosh SE

This chapter explains how to prepare the Macintosh SE for use in the Outbound/Macintosh system.

Apple Computer manufactured the Macintosh SE with two different chassis; the older style used a horizontal chassis and the new style uses a vertical chassis. The Outbound works with both models of Macintosh SE; however, the installation process is slightly different for each model.

For both models, the first four steps of the installation process are the same. After completing these four steps, you reassemble the Macintosh in a different order. When you reach the point in these instructions where the two processes differ, you are directed either to the section "New/Vertical Chassis Macintosh SE Installation," or "Old/Horizontal Chassis Macintosh SE Installation."

To begin installing the Outbound in a Macintosh SE:

Note:

Before opening the customer's Macintosh, load the Macintosh to verify proper operation and make note of its total system memory. (At the Finder level, check the "About the Finder" box, under the Apple Menu, for total memory.) You'll need to know the amount of system memory when you configure the Outbound's memory; see Appendix A.

1. Remove the Macintosh case.

- a. Set the Macintosh on a flat surface with the screen facing down. If the Macintosh includes a programmer's switch, remove it by prying it from the case. See Figure 3-1.

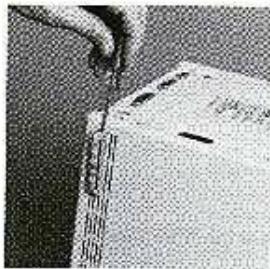


Figure 3-1
Removing the programmer's switch



Figure 3-2
Removing the screws

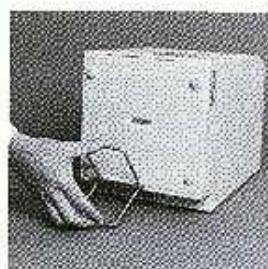


Figure 3-3
Using the chassis wedge

- b. Use a torx driver to remove the four screws from the rear of the Macintosh case. See Figure 3-2.
- c. Use the Macintosh chassis wedge to separate the case from the chassis as shown in Figure 3-3.

- d. Slide the case off the back of the Macintosh.
- e. Remove the foil shielding.

Warning:

The procedures described in this chapter could expose you or others to lethal voltages. Take proper precautions when you are working inside the Macintosh, even if the unit is not connected to the line power. Always use a grounding wrist strap to prevent static discharge from damaging sensitive electronic circuits. Keep away from areas labeled High Voltage.

- f. Use appropriate safety precautions to discharge the CRT. Then, disconnect the video board from the CRT neck.

Caution:

Use extreme care when working around the CRT neck area, as this is a delicate assembly that can be broken by bumping or jarring the CRT neck and/or CRT video board.

2. Remove the main logic board.

- a. Disconnect the cables from the main logic board. See Figure 3-4. (The speaker cable is connected to the rear of the board.)
- b. Slide the main logic board out of the chassis.

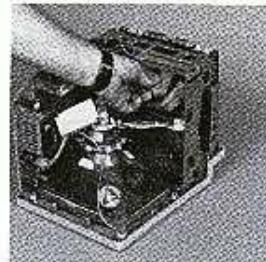


Figure 3-4
Removing the cables

3. Move the Macintosh ROM chips to the ROM SIMM card provided for the Outbound.

Caution:

If the ROM chips are installed incorrectly, they may be permanently damaged. Follow the instructions in this section carefully. You may want to mark the Hi and the Lo ROM chips with ink or tape before you remove either of them from the board.

- a. Lay the main logic board on a flat surface and orient it to the position shown in Figure 3-5.

- b. Locate the Hi and Lo ROM chips on the main logic board. See Figure 3-5. The chips are identified on the board by "ROM-Hi" and "ROM-Lo."

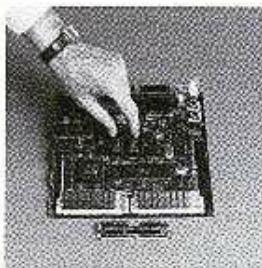


Figure 3-5
ROM chips on main logic board

- c. Place the ROM SIMM card in front of the main logic board and orient it to the position shown in Figure 3-5. Be sure the edge of the card with the silver edge connector strip is facing toward you and away from the main logic board.

Caution:

Use extreme care when removing and installing ROM chips. Be sure to use the proper tool. Do not perform this procedure if you are unfamiliar with ROM chip removal and installation techniques. Otherwise, you may permanently damage the ROM chips.

- d. Remove the Hi ROM chip (the chip on the left) from the main logic board and install it in the left connector on the SIMM card. See Figure 3-6. Make sure you install the ROM chip with its notch to the right (as indicated on the SIMM card).

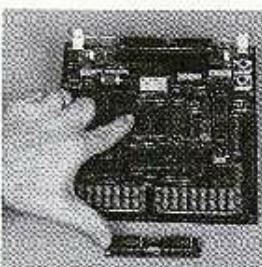


Figure 3-6
Moving the Hi ROM chip

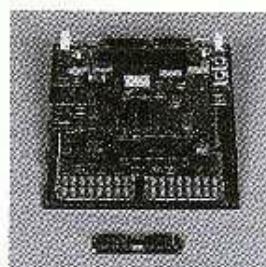


Figure 3-7
Moving the Lo ROM chip

- c. Remove the Lo ROM chip (the chip on the right) from the main logic board and install it into the right connector on the Outbound's SIMM card. See Figure 3-7. Make sure you install the ROM chip with its notch to the right (as indicated on the SIMM card).

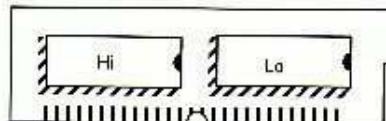
Caution:

Be sure that the ROM chips are installed on the ROM SIMM card as shown in Figure 3-7. Compare the ROM chip's part numbers in Table 3-1 to your installation. As a general rule, within a pair of ROM chips, the chip with the lower part number is the Hi ROM; the chip with the higher part number is the Lo ROM.

- f. Set the ROM SIMM card aside until you are ready to install it in the Outbound.

Table 3-1

Apple Macintosh SE ROM chip's orientation and part numbers. (These part numbers are subject to change without notice by Apple Computer, Inc.)

**Apple Part Number**

Hi ROM	Lo ROM
342-0701	342-0702
342-0352	342-0353

4. Set the optimum memory configuration on the Macintosh's main logic board.***Caution:***

Overall performance may be impaired or the computer may not work at all if you do not configure the memory correctly. You must read and understand the memory configuration instructions explained in Appendix A before you attempt this step of the installation process.

Transfer as much RAM as possible from the Macintosh to the Outbound. However, leave at least 512KB of RAM in the Macintosh. See Appendix A, "Memory Configuration," for important configuration information.

At this point in the installation sequence, you have to determine whether you are installing the Outbound in an older Macintosh SE, which has a horizontal chassis, or a newer Macintosh SE, which has a slot for a vertical card in the chassis. Figures 3-8 and 3-9 illustrate the differences between these two models.

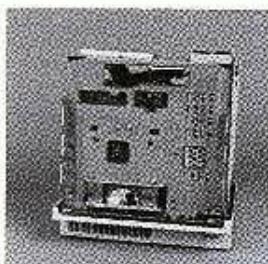


Figure 3-8
Older/Horizontal Chassis
Macintosh SE

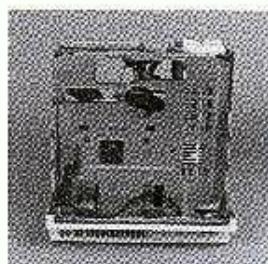


Figure 3-9
Newer/Vertical Chassis
Macintosh SE

If you are installing the Outbound in a newer style Macintosh SE, use the instructions in the following section, "New/Vertical Chassis Macintosh SE Installation." If you are installing the Outbound in an older style Macintosh SE, use the instructions provided in "Old/Horizontal Chassis Macintosh SE Installation," later in this chapter. Also, if you are installing the Outbound in a newer style Macintosh SE with limited vertical space (for example, one with two floppy drives and one hard drive), use the horizontal mounting procedure.

In either case, when you finish preparing the host Macintosh SE, continue the installation process with the instructions in Chapter 4.

New/Vertical Chassis Macintosh SE Installation

To continue installing the Outbound in a newer, vertical chassis Macintosh SE, use the following procedure:

5. Reinstall the main logic board.

- Reconnect the speaker cable to the main logic board.
- Place one side of the main logic board in the guide rail and slide it into the Macintosh. Using a flat-bladed screwdriver, pry the other side of the main logic board into the guide rail. See Figure 3-10.
- Reconnect all the remaining cables to the main logic board.

Note:

You do not need to use the chassis spacers or the main logic board bumpers supplied with the Outbound for a vertical mount installation.



Figure 3-10
Installing the main logic board

6. Route the host connector cable through the Macintosh chassis.

- a. Remove the accessory access cover located on the back of the Macintosh.
- b. Thread the host connector cable through the accessory access opening as shown in Figure 3-11.
- c. Mount the cable retention plate to the chassis and tighten the two screws as shown in Figure 3-12.

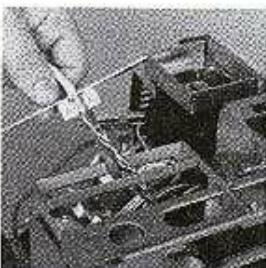


Figure 3-11
Installing the host connector cable



Figure 3-12
The installed cable retention plate

7. Connect the host connector cable to the host connector card.

There are two header connectors on the host connector cable. Each header connector is keyed and is a different size. They connect only to the correct connector pins. See Figure 3-13.

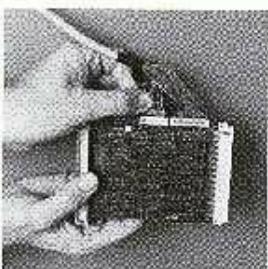


Figure 3-13
Connecting the host connector cable

B. Install the host connector card on the main logic board.

- a. Plug the host connector card into the main logic board as shown on Figure 3-14. Place the card between the Macintosh frame and the support bracket with the card's chips *acing the inside of the Macintosh*.
- b. Install the clear plastic shield (supplied in the installation kit) between the host connector card and the chassis, as shown in Figure 3-15.

Note:

Figures 3-15 and 3-17 show a white plastic shield to better illustrate the shield placement.

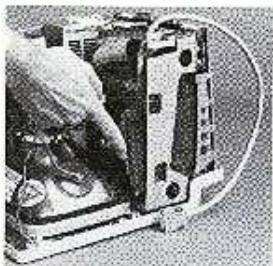


Figure 3-14
Installing the host connector card

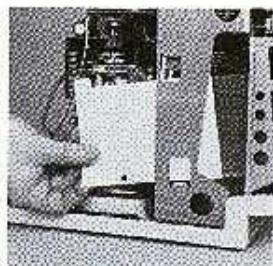


Figure 3-15
Installing the plastic shield

- c. Install the host connector card screw through the plastic shield and the host connector card and tighten it against the chassis. See Figure 3-16.

Caution:

Do not overtighten the screw as the host connector card may be damaged.

- d. Loosely tie-wrap the host connector cables to the host connector card. Do not tighten the snap. Its purpose is just to keep the cables from touching the floppy drive frame.
- e. Reinstall the video board on the CRT neck.



Figure 3-16
Tightening the board screw



Figure 3-17
Loosely tie-strap the cable to the board

9. Replace the Macintosh case.

- a. Replace the foil shielding in the Macintosh.
- b. Replace the Macintosh case and tighten all screws.
- c. If applicable, reinstall the programmer's switch by snapping it into place.

Continue installing the Macintosh\Outbound system by turning to Chapter 4, "Preparing the Outbound," on page 4-1.

Old/Horizontal Chassis Macintosh SE Installation

To continue installing the Outbound in an older, horizontal chassis Macintosh SE or a newer, vertical chassis Macintosh SE with limited vertical space, use the following procedure:

5. Route the host connector cable in the Macintosh chassis.

- a. Remove the accessory access cover located on the back of the Macintosh.
- b. Thread the host connector cable through the accessory access opening as shown in Figure 3-18.
- c. Mount the cable retention plate to the chassis and tighten down the two screws (Figure 3-19).



Figure 3-18
Installing the host connector cable

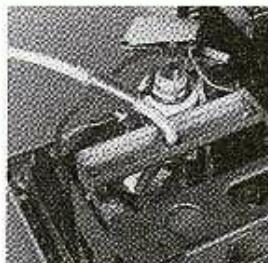


Figure 3-19
Installing the cable retention plate

6. Install the host connector card on the main logic board

- a. Using the adhesive backing, attach the large rubber spacer supplied with the Outboard to the Macintosh chassis. Position the lower end of the spacer against the floppy drive bracket's tab and the right side of the spacer against the flange of the square opening. The angle of the spacer should parallel the angle of the Macintosh's chassis ramp. Figure 3-20 illustrates the correct placement of this spacer.
- b. Attach the rubber bumper to the main logic board as shown in Figure 3-21.

Note:

For the Macintosh SE installation, you only need to use one rubber bumper, not two.

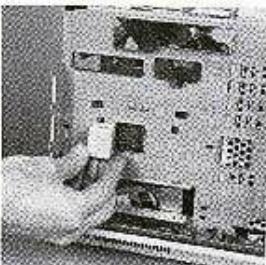


Figure 3-20
Attach the rubber spacer to the Macintosh chassis

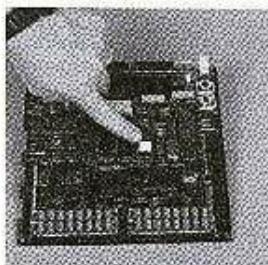


Figure 3-21
Attach the rubber bumper to the main logic board

- c. Connect the host connector cable to the host connector card. There are two header connections, each of which is keyed and of a different size.
- d. Plug the host connector card into the main logic board. See Figure 3-22.

Note:

You do not use the clear plastic shield for a horizontal mount procedure.

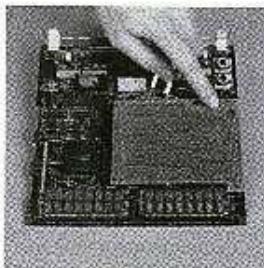


Figure 3-22
Installing the host connector card

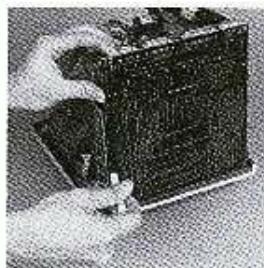


Figure 3-23
Installing the main logic board

7. Reinstall the main logic board.

Caution:

During this procedure, be careful not to dislodge the host connector card from the main logic board.

- a. Reconnect the speaker cable to the main logic board.
- b. Place one side of the main logic board in the guide rail and slide it into the Macintosh. Using a flat-bladed screwdriver, pry the other side of the main logic board into the guide rail. See Figure 3-23.
- c. Reconnect all the remaining cables to the main logic board.
- d. Reinstall the video board on the CRT neck.

8. Replace the Macintosh case.

- a. Replace the foil shield on the chassis.
- b. Route the host connector cable through the accessory slot in the Macintosh case.
- c. Replace the Macintosh case and tighten all screws.
- d. If applicable, reinstall the programmer's switch by snapping it into place.

Continue installing the Macintosh Outbound system by turning to Chapter 4, "Preparing the Outbound," on page 4-1.

Chapter 4. Preparing the Outbound

This chapter explains how to prepare the Outbound for use in the Outbound/Macintosh system.

1. Open the Outbound case.

- a. If the keyboard is attached, remove it by flipping up the latch lever at the top of the keyboard.
- b. Place the Outbound screen-down on a flat non-abrasive surface.
- c. Tape the keyboard latches to the case to keep them from falling off during reassembly.
- d. Open the Outbound's base by removing the ten case screws from the rear of the Outbound. Four screws are located along the top edge of the rear panel. Six screws are located in the recessed portion behind the base. (Do not attempt to remove the tamper-proof hinge screws.) See Figure 4-1.

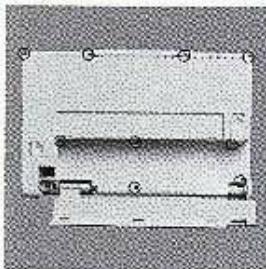


Figure 4-1
The rear of the Outbound



Figure 4-2
Removing the rear half of the case

- e. Remove the rear half of the case by lifting the back of the case up and over the connectors first and then sliding it off in the direction of the disk drive. See Figure 4-2.

2. Optional: Add silicon drive memory and/or system memory.

- a. The Outbound is shipped with 1 MB of system memory, consisting of 256 K SIMMs in each of the 4 slots closest to the floppy or hard drive. This memory can be expanded in the same fashion as a Plus or SE; i.e., slots must be upgraded in pairs. As with a Plus or SE, the Outbound itself can contain 1MB, 2MB, 2.5MB, and 4MB of system memory.
- b. The four SIMM slots farthest away from the floppy or hard drive are reserved for "silicon drive" memory, (i.e., battery-backed RAM disk memory). One, two, three, or all four of these slots can be filled with any combination of 256KB, 1MB, or 4MB SIMMs.

- c. For performance and power conservation, only 120 ns (or faster) CMOS SIMMs are recommended for use in any of the system or silicon drive slots. Proper installation and "balancing" of memory configurations is critical for the optimum performance of the Outbound, both docked and standalone. For more information on memory issues, see Appendix A.

3. Install the ROM SIMM card in the Outbound.

- a. Use the ROM SIMM card you prepared using the Macintosh ROM chips. Place the ROM SIMM into its slot at an angle and then tilt it upright while pressing it firmly into the slot. When it is in position, the two side retainers will snap closed. Figures 4-3 and 4-4 illustrate this step.

Caution:

Be careful when you insert the ROM SIMM card. Its inboard retainer is very fragile and if the retainer is damaged, the factory will have to repair it.

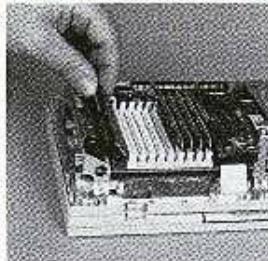


Figure 4-3
Installing the ROM SIMM card

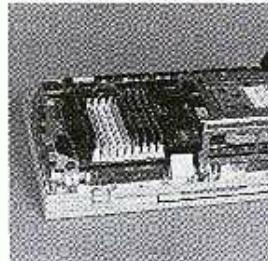


Figure 4-4
Installed ROM SIMM card

4. Close the Outbound case.

Caution:

As you close the case, be sure that the keyboard cable's modular jack is properly aligned with the rear half of the case or you may damage the jack.

- a. Seat the rear half of the case on the Outbound by first inserting the disk drive face into the opening in the back of the case. Then, slowly close the case, making sure that the keyboard's modular jack fits properly into the case opening. Lastly, press in on the connector bracket so that the rear half of the case fits over the connectors and then seat the rear half of the case against the front half. When you finish, check that there is an even gap on all sides.
- b. Install and tighten the ten case screws, making sure that the three short screws go in the center holes of the case.

Caution:

Tighten the case screws to 2.5 in./lbs. Overtightening may result in damage to the case.

5. Install the Outbound's three batteries in the following sequence:

- a. Open the rechargeable battery cover on the Outbound's base. See Figure 4-5.
- b. Install the rechargeable battery as shown in Figure 4-6. (The battery clip connector is keyed and only attaches one way.) Slip the battery pull strap around the battery so that you can lift the battery out of the slot easily.
- c. Find the backup battery cover located inside the rechargeable battery opening. The backup battery cover is located near the rechargeable battery connector. Remove the two cover screws and remove the cover.
- d. Install the backup battery (Sanyo 2CR-1/3N 6 volt lithium or equivalent). Be sure to align the + on the battery with the + in the opening. See Figure 4-7.
- e. Replace the backup battery cover and screws.

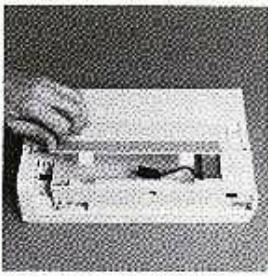


Figure 4-5
The rechargeable battery cover

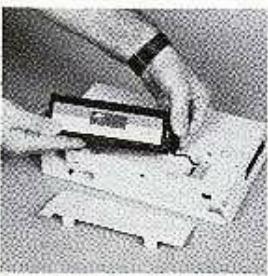


Figure 4-6
Installing the rechargeable battery



Figure 4-7
Installing the backup battery

- f. Replace the rechargeable battery cover.
- g. Find the keyboard battery cover located on the rear of the keyboard. See Figure 4-8. Remove the cover screw and cover.
- h. Install the keyboard battery (Sanyo CR12600SE 3 volt lithium or equivalent). Be sure to align the + on the battery with the + in the opening. See Figure 4-9. Install the + side of the battery first to avoid damaging the battery connectors.



Figure 4-8
The keyboard battery cover

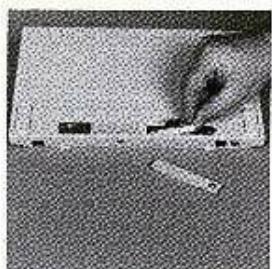


Figure 4-9
Installing the keyboard battery '+' end first

1. Replace the keyboard battery cover and screw.

Caution:

The Outbound must be turned off prior to docking it to the Macintosh.

- g. When the Macintosh is turned on, both the Macintosh and Outbound screens should light up.
 - If there is no hard drive or bootable disk in the Macintosh, you should see the Outbound logo on the Outbound's screen and a flashing "?" icon on the Macintosh screen.
 - If there is a hard drive or bootable disk in the Macintosh, you should see the Outbound logo on the Outbound's screen and the Macintosh should go through its usual start-up procedure.

2. Install the Outbound software.

Note:

You will need to initialize any non-removable drives (silicon or hard drive) installed in the Outbound.

Configuration ROMs in the Outbound enable the newly installed Macintosh ROMs to use all the available features of the Outbound hardware. Therefore, it's important that you install the latest version of the software into the configuration ROM in the Outbound. Because the Outbound software may be upgraded occasionally, use the configuration software included with the Outbound that you are currently installing.

- a. If the user does not have a System Folder installed on a hard drive in the Macintosh, insert an Apple system disk, version 6.0 or later, in the Macintosh.
- b. Insert the Outbound System Disk. The disk includes the following files:
 - Outbound Installer
 - Battery DA
 - Outbound SCSI Emulator
 - System Folder
 - Font/DA Mover
 - TeachText
 - Read Me
 - System Folder Additions
 - Outbound (Control Panel document)
 - Isopunkt (Control Panel document)
 - DOS.INI
 - Super Clock

Installing the Outbound Software

- c. Double-click the Outbound installer. Click on the Install button for the correct hardware configuration (hard drive or floppy). Installation takes less than 20 seconds. Click on the Done button when installation is finished.
- d. If the Outbound has the optional silicon drive or hard drive installed:
 1. Initialize the drive.
 2. Install a system folder (Version 6.0 or later) on the drive.
 3. Copy the "Outbound" file from the "Software for the Outbound Laptop System" disk to the system folder you just installed.
- e. Test the installation by booting the systems when they are docked and when the Outbound is separated from the Macintosh. This procedure is described in the *Outbound Laptop System User's Guide*, Section 3.

The rest of the files on the "Software for the Outbound Laptop System" disk can be installed by the user. These files are described in the *Outbound Laptop System User's Guide*.

Important:

Be sure to inform the user whether or not all of the Outbound software has been installed.

3. **If you are installing the Outbound on a Macintosh Plus, reset the time and date on the Macintosh General Control Panel.**

Since you removed the clock battery to remove the Macintosh Plus case, you must reset the time and date.

4. **Reboot the Outbound as a stand-alone unit and set the time and date on the Outbound's General Control Panel.**

a. To turn on the Outbound, simultaneously press the four arrow keys on the Outbound's keyboard.

b. Set the time and date on the General Control Panel.

The Outbound/Macintosh system is now ready for use. Refer to the *Outbound Laptop System User's Guide* for operating information.

Appendix A. Memory Configurations for the Macintosh and the Outbound Laptop System

Minimum Requirements

Memory for Outbound and Macintosh computers comes on printed circuit cards called SIMMs (Single Inline Memory Modules). SIMMs used in the Outbound and Macintosh computers are eight bits wide. SIMMs designed to be used with IBM PS/2 computers are nine bits wide. This type also works in the Outbound or Macintosh computers.

The Outbound and Macintosh computers each require SIMMs with certain maximum access times, specified in nanoseconds (ns, billionths of a second). Macintosh Plus and Macintosh SE computers use SIMMs with access times of 150 ns or less. The Outbound Laptop requires slightly faster SIMMs with 120 ns access times. To provide maximum battery life, Outbound computers should use SIMMs with CMOS (pronounced see-moss) technology.

SIMMs are available with 256 kilobytes or 1 megabyte of memory per module. Both Macintosh and Outbound computers use these modules in pairs, so the minimum increment of memory is two 256KB SIMMs, or 512KB. If 1 MB SIMMs are used, the minimum increment is 2 megabytes.

The Slot Machine

The Macintosh Plus, Macintosh SE, and Outbound computers each have four slots (or sockets) that hold the system's memory SIMMs. The Macintosh computers support five memory configurations:

- 512KB Two 256KB SIMMs
- 1MB Four 256KB SIMMs (Standard Configuration)
- 2MB Two 1MB SIMMs
- 2.5MB Two 1MB SIMMs, two 256KB SIMMs
- 4MB Four 1MB SIMMs

Outbound computers support all of the above configurations except 512KB. When attaching an Outbound Laptop System to a Macintosh, the memory of the two machines is combined according to Table A-1.

Table A-1 Outbound/Macintosh memory combinations

Outbound	Macintosh Memory (in megabytes)				
	.5	1	2	2.5	4
1	1.5	2	N/A	2.5	4
2	2.5	3	4	2.5	4
2.5	2.5	3	4	2.5	4
4	4	4	4	4	4

Note:

Some of the above memory configurations do not result in the sum of both machine's memory being available. Study the table above and choose the most efficient configuration for the customer. Remember—"left-over" memory can be installed in the silicon drive slots.

The combination with 1MB in the Outbound computer and 2MB in the Macintosh will not work and should not be used.

Recommended Configurations

Memory in the Macintosh is accessed more slowly than memory in the Outbound, so the best memory configurations place as much memory as possible in the Outbound, leaving only the minimum amount in the Macintosh. Memory is required in the Macintosh to support the built-in video display and sound circuit.

A good combination is 2MB or 3.5MB in the Outbound and 512KB or 1MB in the Macintosh. Of course the ideal combination for maximum performance is 4MB in the Outbound and 512KB in the Macintosh.

Taking the Jump

Macintosh computers must be reconfigured whenever the memory configuration is changed. Macintosh Plus and early Macintosh SE computers use two 150 Ohm resistor jumpers located on the main logic board. These resistors are labeled "256KB" and "One Row" and are located in a rectangle labeled "RAM SIZE."

The late style Macintosh SE logic board has a two-position jumper located near the SIMMs. One side is labeled "1MB," and the other "2.5MB." The jumper is positioned to connect the center post with the correct pin, or in some configurations is left off entirely.

The following tables describes the various Macintosh memory configurations.

Table A-2 Macintosh Plus and Early SE Memory Configuration

Size	SIMMs 1 & 2	SIMMs 3 & 4	256KB Resistor	Row Resistor
512KB	256KB	None	150	150
1MB	256KB	256KB	150	Open
2MB	1MB	None	Open	150
2.5MB	1MB	256KB	Open	Open
4MB	1MB	1MB	Open	Open

Table A-3 Late Macintosh SE Memory Configuration

Size	SIMMs 1 & 2	SIMMs 3 & 4	Jumper
512KB	None	256KB	24MB
1MB	256KB	256KB	1MB
2MB	None	1MB	24MB
2.5MB	256KB	1MB	Off
4MB	1MB	1MB	Off

Outbound Memory

The Outbound Laptop System has four SIMM sockets and no configuration jumpers. The Outbound software determines the amount of memory each time the machine is started and sets the configuration. The Outbound SIMM sockets should be filled starting with the one closest to the disk drive. In the 2.5MB configuration, the two 1MB SIMMs are installed nearest the disk and the two 256KB SIMMs are installed nearest the ROM SIMM.

Appendix B. Outbound Troubleshooting Tips

Problem	Solution
Vertical or horizontal lines are displayed on the Macintosh screen, and a kangaroo (or nothing) is displayed on the Outbound screen when docked.	<p>Verify that the Outbound will boot S/A. If the Outbound will boot S/A:</p> <p>Verify the host connector card and cable are properly installed. Also, verify that the Outbound was not turned on prior to powering on the Macintosh in the docked mode.</p> <p>If the Outbound will not boot S/A:</p> <p>Verify that ROMs are inserted in SIMM correctly and that the SIMM is inserted in its socket correctly. Also verify that the RAM SIMMs are inserted correctly.</p>
Outbound won't boot S/A and a kangaroo is displayed on the Outbound screen.	<p>Dock Outbound to a Macintosh. You may see a sad MAC on the Macintosh screen. The Outbound is not able to display sad MACs.</p> <p>Call Outbound Customer Service for information regarding sad MAC error codes.</p>
Outbound won't power on.	<p>Verify that the Outbound is plugged into proper AC. If the Outbound is plugged into proper AC, change the keyboard battery.</p> <p>If the Outbound is not plugged into proper AC, plug into proper AC and try to power on again. If the unit will power on, you may have a low 12 volt battery (check battery DA for time left). If the unit will not power on, try changing the 12 volt battery to a known good battery that is charged. If the unit will still not power on, call Outbound Customer Service.</p>
The Outbound floppy drive will not read any diskettes.	<p>Verify that the floppy drive FBRQM code has been installed.</p> <p>After installing floppy FBRQM code, if floppy drive still won't work, call Outbound Customer Service.</p>

Appendix B. Outbound Troubleshooting Tips

Problem	Solution
You "lost" the silicon disk when you were changing the 12 volt battery.	With the Outbound connected to proper AC and a charged 12 volt battery installed, change the 6 volt RAM battery. The 12 volt battery may have been severely discharged at some point, which caused the 6 volt RAM battery to become discharged. It is extremely important that you power down Outbound and plug it into AC power or change the 12 volt battery as soon as you get the 5 minute battery warning.
With AC plugged in, you still get a low battery indication in the battery DA.	The 12 volt battery has become severely discharged. Leave Outbound closed up and plugged into AC overnight or for an extended period of time. If this doesn't solve the problem, replace the 12 volt battery with a known good battery. You should also replace the 6 volt RAM battery.
One half of the screen (top or bottom) is darker than the other.	Try adjusting the contrast to solve the problem. If this doesn't work, one of the tubes in the LCD has burnt out or is in the process of burning out. Call Outbound Customer Service.
The Outbound hangs or generates a system error during the booting process.	There is a possible software/firmware incompatibility. Reboot the Outbound with a known good generic system folder that does not contain any extra limits or software. If this does not solve the problem, call Outbound Customer Service.
You see banding or ghosting on the Outbound screen.	These are characteristics of LCD technology. Adjust the contrast and change the background to a light pattern to minimize these symptoms.
The Macintosh floppy drive will not read disks or is confused about whether or not there is a disk in the drive.	During installation, failing to plug in the Macintosh floppy controller cable, or not plugging it in securely, can result in these symptoms. Check that the cable is securely plugged in.

Installation Parts and Tools Needed

The Outbound package includes the following parts needed to install the Outbound in the Macintosh Plus or SE.

Outbound Installation parts for the Macintosh Plus

- Macintosh Plus host connector card
- Macintosh host connector cable (with cover plate)
- ROM SIMM card
- cable mounting bracket, flat washer and metric hex locknut
- two (2) rubber bumpers
- rubber spacer
- rechargeable main battery
- main battery pull strap (located in battery compartment)
- backup battery (Sanyo 2CR-1/3N 6 volt lithium or equivalent)
- keyboard battery (Sanyo CR12600SE 3 volt lithium or equivalent)
- "Software for the Outbound Laptop System" disk
- retractable keyboard cable
- User Kit

Tools Needed

- Torx T-10 and T-15 drivers
- chassis wedge
- security slot tool
- Phillips head and flat-bladed screwdrivers
- 5.5 mm wrench

Outbound installation parts for the Macintosh SE

- Macintosh SE host connector card
- Macintosh host connector cable (with mounting plate)
- ROM SIMM card
- plastic shield (for vertical mounts only)
- host connector card screw (for vertical mounts only)
- rubber bumper (for horizontal mount only)
- rubber spacer (for horizontal mount only)
- two (2) mounting plate screws
- rechargeable main battery
- backup battery (Sanyo 2CR-1/3N 6 volt lithium or equivalent)
- keyboard battery (Sanyo CR12600SE 3 volt lithium or equivalent)
- "Software for the Outbound Laptop System" disk
- retractable keyboard cable
- User Kit

Tools Needed

- Torx T-10 and T-15 drivers
- chassis wedge
- Phillips head and flat-bladed screwdrivers