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MITSUBISHI ELECTRIC

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MITSUBISHI ELECTRIC

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Contents

Introduction

This guide contains instructions on installing expansion cards, extra memory and a co-processor in your computer. This document should be your only source of information when installing any of these.

You should read this document before purchasing extra memory or a co-processor. If, having read the relevant instructions, you are not confident about installing the upgrade, you may wish to have your supplier or service organization install it for you.

Before you start installing an upgrade you should be thoroughly familiar with all the relevant instructions in this guide.

Warning

Never carry out any work on the equipment with power applied. Always switch off at the mains, isolate the batteries and remove the power lead from the equipment before starting work.

At the rear of this guide is some information about CPU module and drive upgrades. These options are not user installable items, only competent service personnel may install them.

Anti-static precautions

All electronic components and equipments are sensitive to static electricity. Even small electrostatic discharges can render components useless or severely shorten their working life, therefore you should always take preventive measures.

No work should be carried out on any item unless it is in a Special Handling Area (SHA) as defined in BS CECC 00015:Part 1. In general this involves:

* a common earth point
* an earthed bench or bench mat
* an earthed wrist strap

Note

An anti-static earthing point is provided on the rear panel.

Power down procedure

If security is enabled, a user of appropriate authority must be logged on before the system can be powered down.

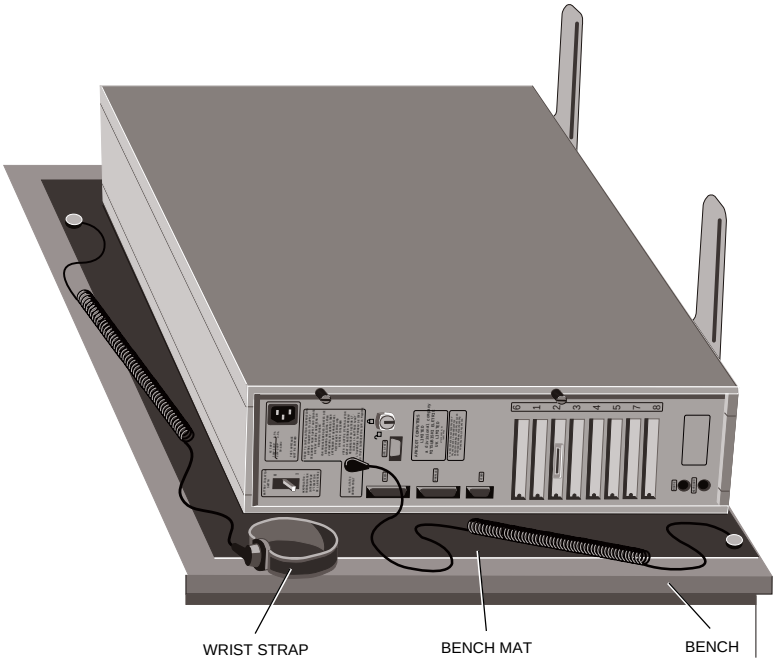
1. Push the POWER button and hold it until the system powers down.
2. Isolate the UPS batteries by setting the Battery Power switch to the ‘0’ position.
3. Unplug the mains power supply.

Power up procedure

1. Ensure that the Battery Power switch is in the ‘0’ position.
2. Plug in the mains power supply.
4. Set the Battery Power switch to the ‘1’ position.
5. Push the POWER button.
6. Perform any required power-on security procedure.

Preparing the system unit

Before any add-ons can be installed, the system unit must be powered down and disconnected from the power supply, as described earlier. It must also be resting flat on the right side panel, as viewed from the front, on a suitable work surface with the appropriate antistatic measures taken. As shown below:

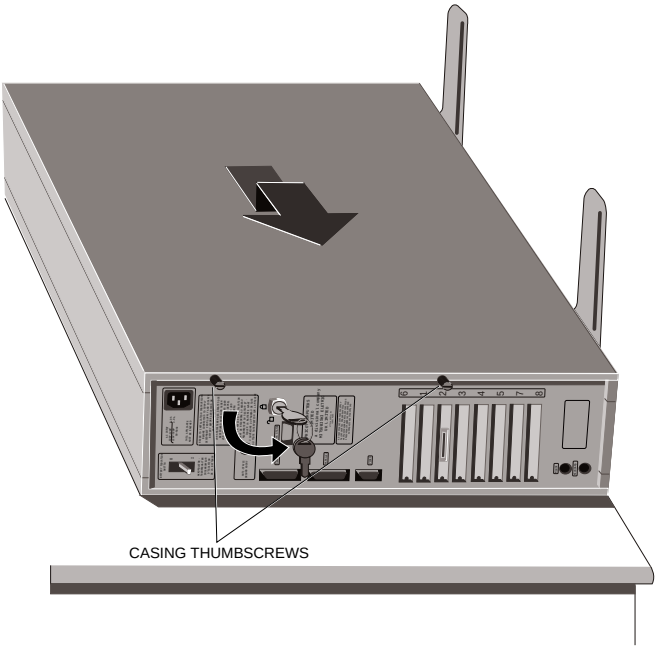


In the instructions that follow, it is assumed that the system unit is resting on a side panel and that the reader is viewing the system unit from the front, with the drive cradle door to the right.

Removing the side panel

To install any of the add-ons described here it is necessary to obtain access to the system board. This requires the removal of the left side panel as described below:

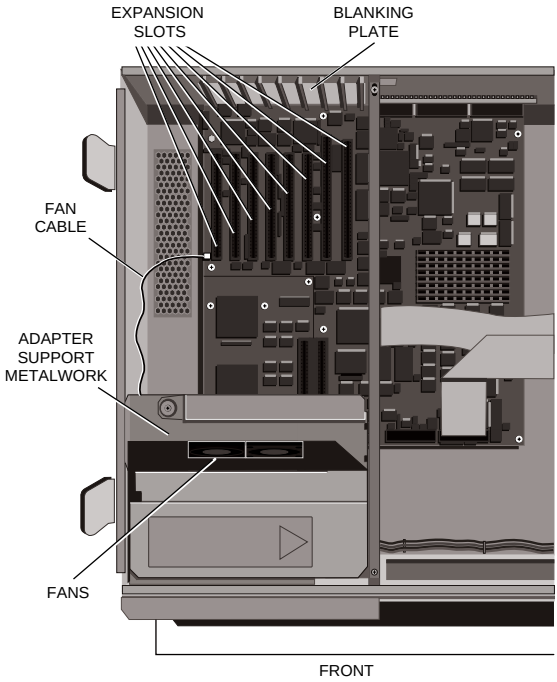
1. Prepare the system unit as described above.
2. Unlock the security lock on the rear panel.
3. Unscrew the two thumbscrews.



4. Slide the panel back about 15mm to free it from the lugs.
5. Lift the panel off.

Adapter cards

Eight 32-bit Micro Channel slots are available on the system board for adapter cards. Each slot has a blanking plate in the rear panel, and a notch in the adapter support metalwork at the front of the system unit.



The slot nearest the drive cradle (labelled 6) is a video slot suitable for use with video adapters that use only the Micro Channel Video Extension. Six of the other seven slots are standard 32-bit slots and include the Micro Channel Matched Memory Extension.

The exception is slot 1. It includes the Matched Memory Extension, but is also fitted with an additional extension. This is reserved for future use, and slot 1 must not be used for an XGA card. If you wish to install an XGA card it should be installed in slot 4, 5, 7 or 8.

In order to simplify cabling between drive controllers and the drive cradle, it is recommended that drive controllers occuply slots 2 and 3. The primary controller in slot 2, and the secondary controller (if fitted) in slot 3.

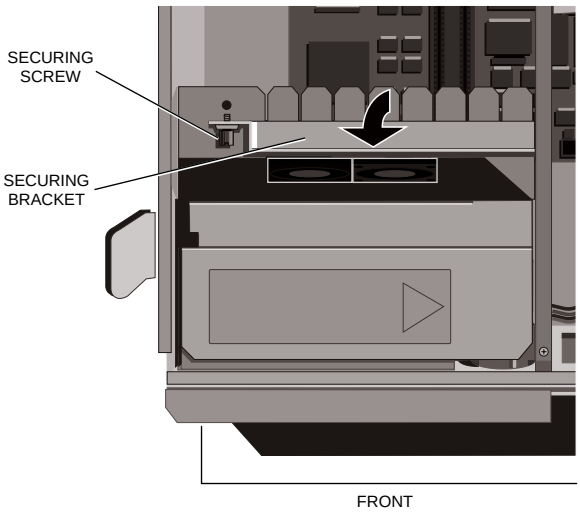
It is recommended that slot 6 is left unoccupied (except for a video card), and slot 3 is left unoccupied (except for a secondary drive controller). Any other adapter cards should be fitted in slots 1, 4, 5, 7 and 8 working down the system unit. Only after all these slots are full should cards other than video adapters or drive controllers be fitted in slots 6 or 3.

To install an adapter card:

1. Remove the side panel as described in *Removing the side panel*.
2. Loosen the thumbscrew at the bottom of the blanking plate for the slot that the adapter is to occupy, and remove the blanking plate.

   Note

   If the thumbscrew is tight it may be necessary to use a screwdriver or a coin to release it.
3. Release the screw that secures the adapter securing bracket and swivel the bracket through 90°.



4. Holding the adapter card only by the plastic fixings, position it above the required connector. Make sure that the front edge of the card locates in the appropriate notch in the adapter support metalwork.
5. Using the plastic fixings, push the card firmly into the connector. Do not use excessive force.
6. Secure the card by tightening the thumbscrew at the bottom of the rear panel of the card.
7. Return the adapter securing bracket to its normal position and replace the securing screw.
8. Replace the side panel.
9. Power the system up and reconfigure for the new adapter using the Reference diskette.

Warning

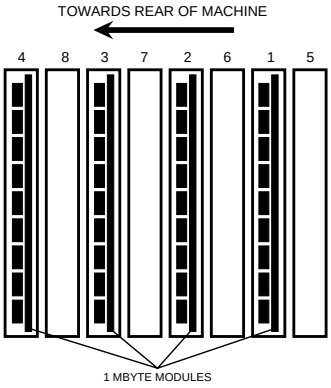
Always ensure that the system unit is fully reassembled before powering it up.

Installing memory modules

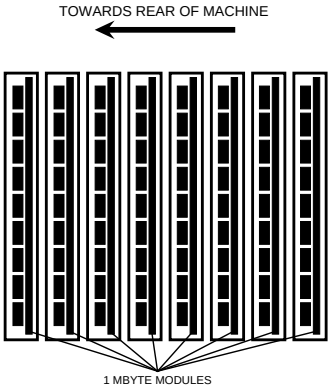
A variety of memory configurations are possible in the Apricot FTe. Two different capacities of Single Inline Memory Modules (SIMMs) are available: 1 Mbyte and 2 Mbyte.

The following diagrams show the type of SIMM that should be fitted in each slot for each possible memory capacity. The memory sockets are labelled “MM1” to “MM8”, note that the sockets are not numbered in sequence.

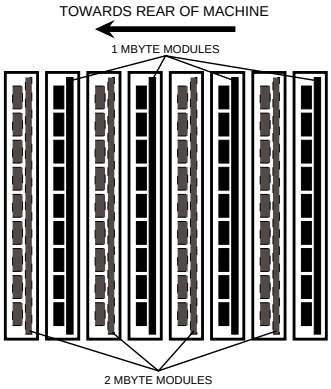
4 Mb



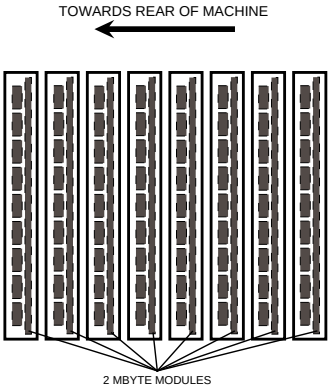
8 Mb



12 Mb



16 Mb

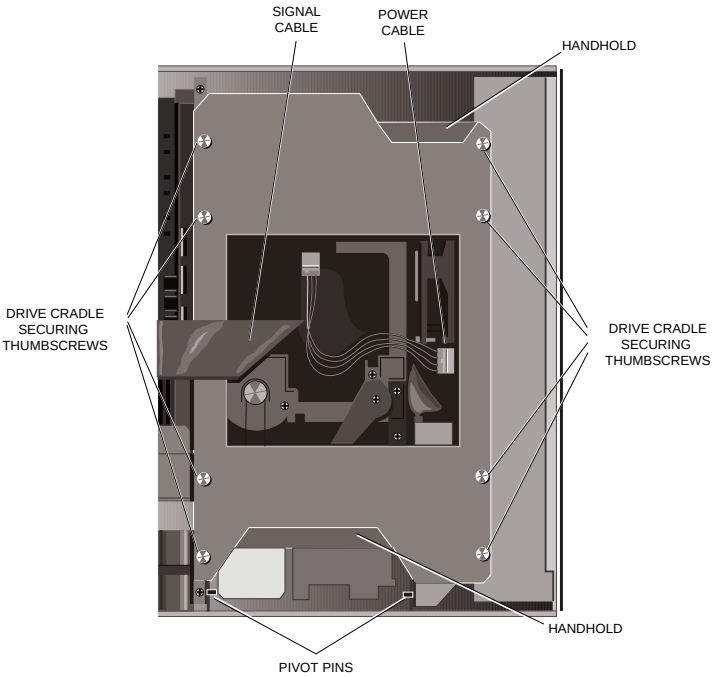


Obtaining access

To obtain access to the memory module sockets you must.

1. Remove the side panel as described in *Removing the side panel*.
2. Undo the eight thumbscrews that secure the drive cradle.

   Note
   On some system units the drive cradle is secured by four thumbscrews.



3. Disconnect the power cable(s) from the power supply, and the signal cable(s) from the connectors on the drive cradle.
4. Using the handholds provided at the front and rear of the drive cradle, lift the rear of cradle, swivelling it about the two pins at the front.
5. With the cradle at approximately 30° move it backwards to free it from the pins and lift it clear.

6. Put the drive cradle down on a flat surface with the handholds uppermost.

   Warnings

   1. *Ensure that the drive cradle is stable, and is not subjected to shock or vibration.*
   2. *The surface the drive cradle rests on must be flat. Any irregularity may come into contact with the drives in the cradle and damage them.*

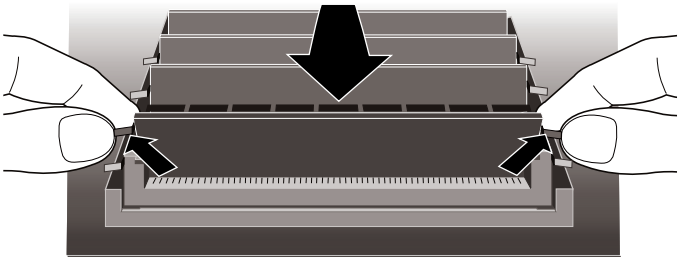
Installation

If you are fitting additional SIMMs remove those already installed.

Removing SIMMs

Starting with the SIMM nearest the front of the system unit and working towards the rear:

1. Note which socket the SIMM is in.
2. Lever the metal clips on each side of the socket gently away from the SIMM using your thumbnails. When the clips are far enough apart the top edge of the SIMM will move forward until the SIMM is at an angle of about 15°.



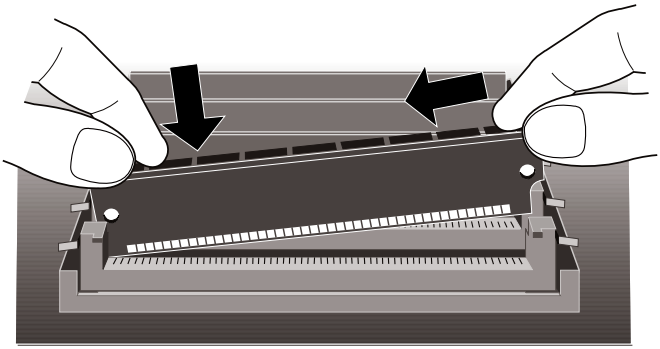
3. Taking care to avoid touching any of the components on the SIMM grip the top corners of the SIMM between thumb and first finger and carefully pull the SIMM out of the socket.
4. Repeat steps 1 to 3 for all the other SIMMs.

Inserting SIMMs

From the illustrations showing the possible SIMM combinations decide which SIMM capacity will be installed in each slot. Then, working from the socket nearest the rear of the system unit towards the front, install the SIMMs.

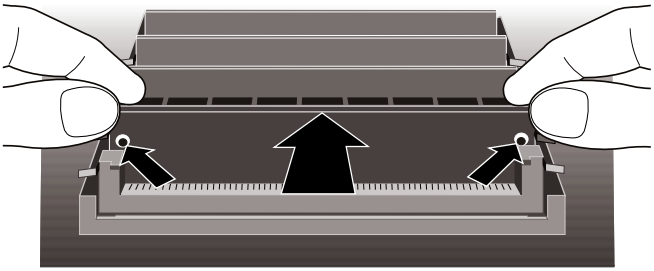
To fit a SIMM:

1. Hold the SIMM so that the memory chips are facing the rear of the system unit with the metal connector strip nearest the system board.
2. Position the SIMM above the socket at an angle of about 15°.



3. Lower the SIMM towards the socket. The right edge of the SIMM will be prevented from reaching the connector by the securing clip.
4. Allow the left edge of the SIMM to drop into the connector.
5. Push the SIMM gently to the right and lower the right edge into the connector.

6. Ensure that the SIMM is properly located in the connector.
7. Rotate the SIMM into the vertical position by pushing gently on the top corners.



8. If the SIMM is properly located the SIMM should remain in position held by the securing clips, and with a small plastic lug through the holes on either side of the SIMM.

Once all the SIMMs are installed reset the memory configuration switches to the appropriate setting and reassemble the computer. There is a label inside the system unit identifying the switches and the appropriate positions.

Reboot your computer with the Reference diskette and reconfigure your system for the extra memory.

Warning

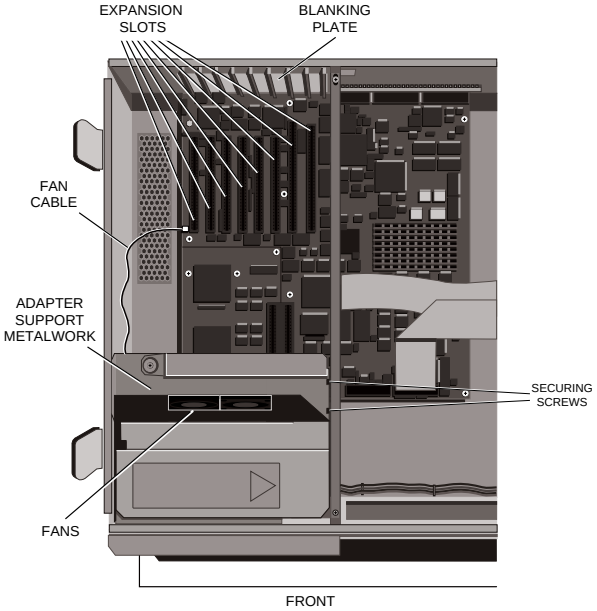
Always ensure that the system unit is fully reassembled before powering it up.

Co-processor

The 80486SX CPU module provides a co-processor socket for an 80487SX. The socket can be configured to accept either an 80486SX or an 80487SX. Normally, the socket will be free, the 80486SX will be soldered directly to the CPU module, and the socket will be configured for an 80487SX.

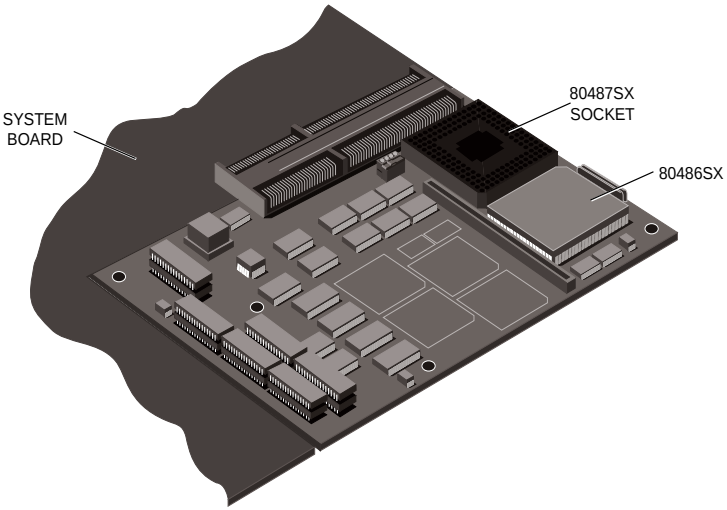
It is possible however, that the 80486SX may be installed in the socket. If so, the 80486SX will have to be removed and the socket reconfigured before the 80487SX can be installed.

Obtaining access



1. Remove the side panel as described in *Removing the side panel*.
2. Remove all adapter cards.
3. Identify the adapter support metalwork and fan from the illustration above.
4. Disconnect the fan power cable from the system board.
5. Remove the two screws that secure the adapter support metalwork and lift the metalwork out.

Identifying the 80487SX socket



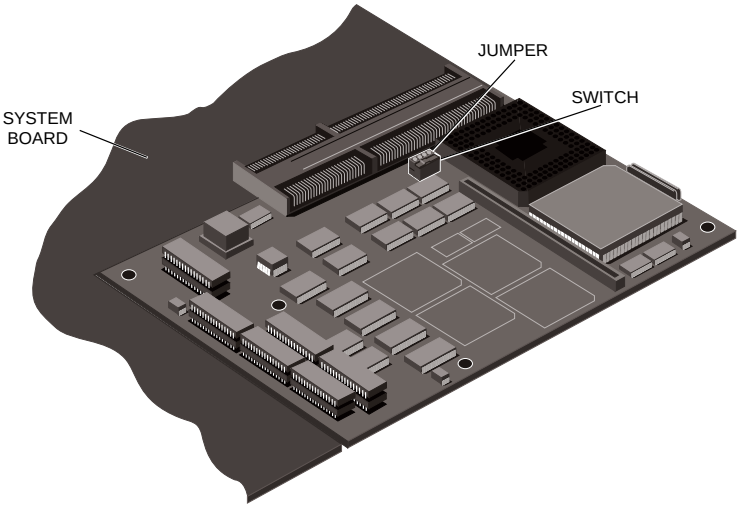
From the illustration above, you will be able to identify the 80487SX socket. If the socket is unoccupied, and an 80486SX is soldered to the CPU module as shown, you can install the 80487SX as described in *Installing the 80487SX*.

If the socket is occupied by an 80486SX before you install the 80487SX you will have to remove the 80486SX, using a suitable extraction tool, and reconfigure the socket.

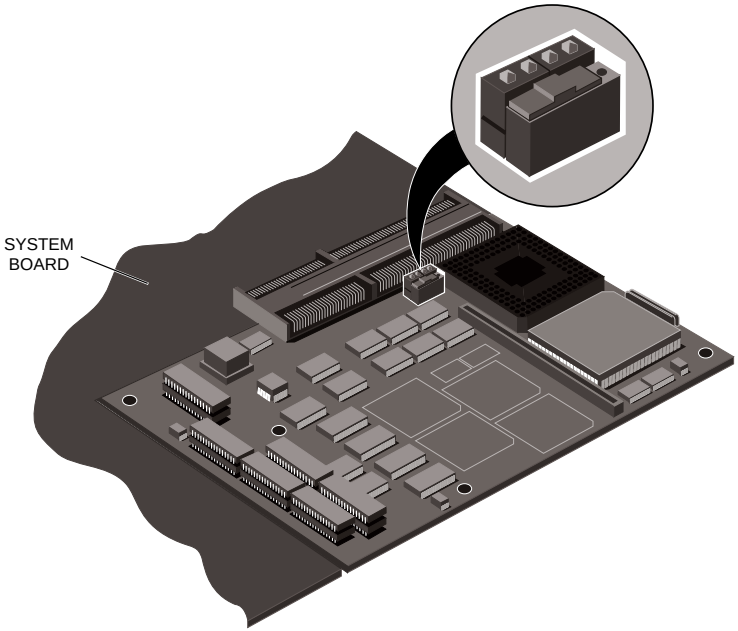
Configuring the 80487SX socket

If the 80486SX is soldered directly to the CPU module the socket will already be configured for an 80487SX.

If an 80486SX is installed in the socket it must be removed and the socket reconfigured, before the 80487SX can be installed. The socket is configured by a four pin jumper block and two position switch alongside the socket.



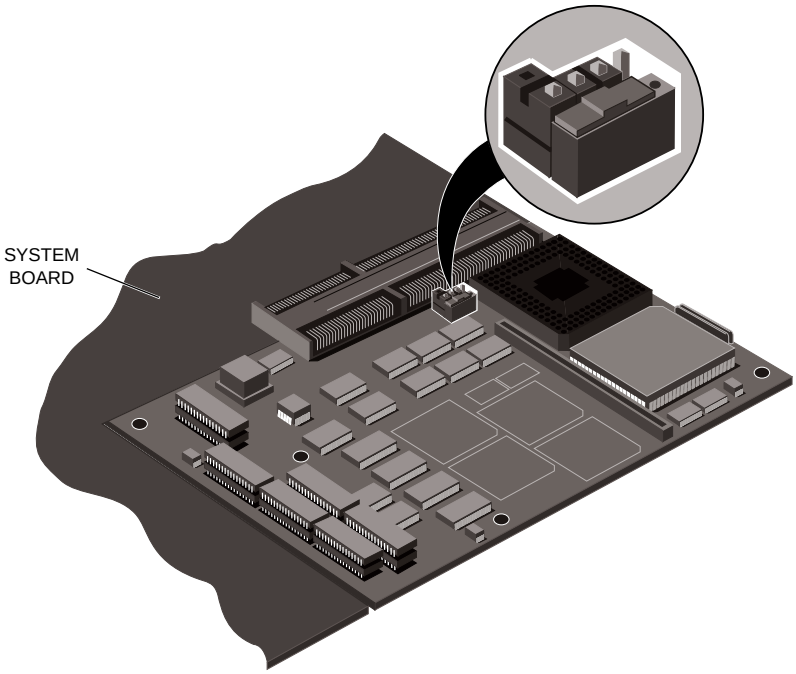
If the socket is configured for an 80487SX two jumpers will be fitted and the switch will be away from the socket, as shown in the following illustration.



If the jumpers and switch are not as shown above, reconfigure the socket by moving the jumpers and switch to the correct positions.

80486SX configuration

If the socket is configured for an 80486SX one jumper will be fitted and the switch may be in either position. The switch will normally be away from the socket, as shown in the following illustration.



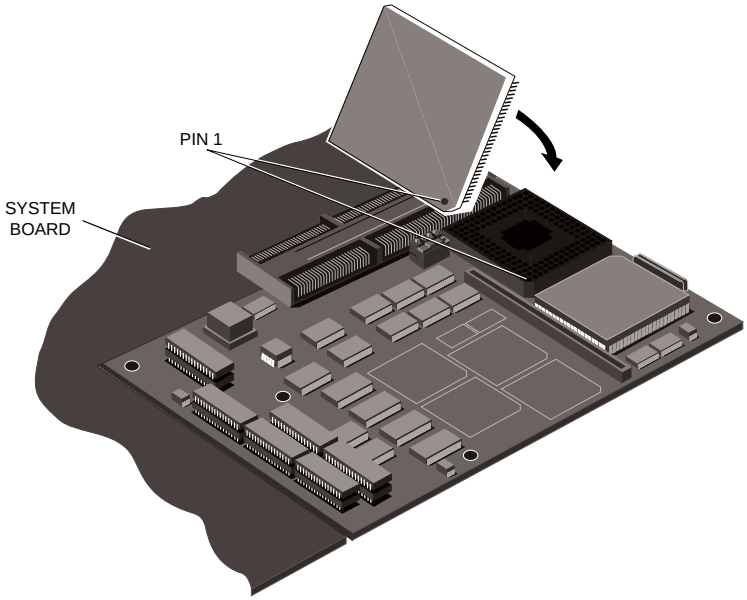
Note

A second jumper should be fitted to one of the unused posts on the jumper block. This allows the socket to be reconfigured for an 80487SX.

Installing the 80487SX

With the co-processor socket empty and correctly configured you can install the 80487SX as follows:

1. Identify the 80487SX socket.



2. The 80487SX has a positioning guide in the form of a small dot of paint. The silkscreen printed on the circuit board beneath the socket has a bevelled corner indicating pin 1. Carefully position the 80487SX above the socket with the positioning guide at pin 1.
3. Gently insert the 80487SX making sure that it is correctly aligned with the socket and that you do not bend or otherwise damage the pins.
4. Reassemble the computer.
5. Reboot the computer with the Reference/SETUP diskette and reconfigure it for the co-processor.

Warning

Always ensure that the system unit is fully reassembled before powering it up.

Supplier upgrades

The add-ons described earlier may be installed by a confident and competent user. The installation of a CPU module upgrade, and additional (or replacement) drives is more complex, and should only be carried out by competent service personnel.

CPU module upgrade

If your Apricot FTe is fitted with an 80486SX CPU module it can be upgraded by fitting an 80486 CPU module. At the time of writing one 80486 CPU module is available, running at 33 MHz.

Higher performance CPU modules will be developed, and it will be possible to upgrade to these from either an 80486SX, or a 33 MHz 80486 CPU module. Contact your Apricot supplier for information about the availability of such modules.

Installing additional drives

The Apricot FTe provides a drive cradle that contains two bays with space for a maximum of five drives. These are:

* Two 1/2 height drives at the front of the system unit.
* Up to three SCSI hard disk drives at the rear of the system unit.

Notes

1. *The 3 1/2 inch floppy drive is not installed in the drive cradle. It is attached, via a mounting plate, to the power supply.*
2. *Drives available for the front bay include: 3 1/2 inch SCSI hard disk drives, 5 1/4 inch floppy drive, 5 1/4 inch SCSI tape drives. Any two of these may be fitted.*

Expansion options

The following table lists the possible upgrade routes for each possible combination of drives in each bay:

Drive bay	Current configuration	Possible expansion
Front	One 1/2 height drive	One 1/2 height drive or One 1" inch high drive
	One 1" high drive	One 1/2 height drive or One 1" inch high drive
Rear	One 1" high drive	One 1/2 height drive or One or two 1" inch high drives
	Two 1" high drives	One 1" inch high drive
	One 1/2 height drive	One 1/2 height drive or One 1" inch high drive

Note

The Apricot ESDI/SCSI hard disk controller supports a maximum of two SCSI hard disk drives. If you wish to use three or more hard disk drives, or a tape drive, you must install a SCSI controller card.

Contact your Apricot supplier for further information about drive upgrades.

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