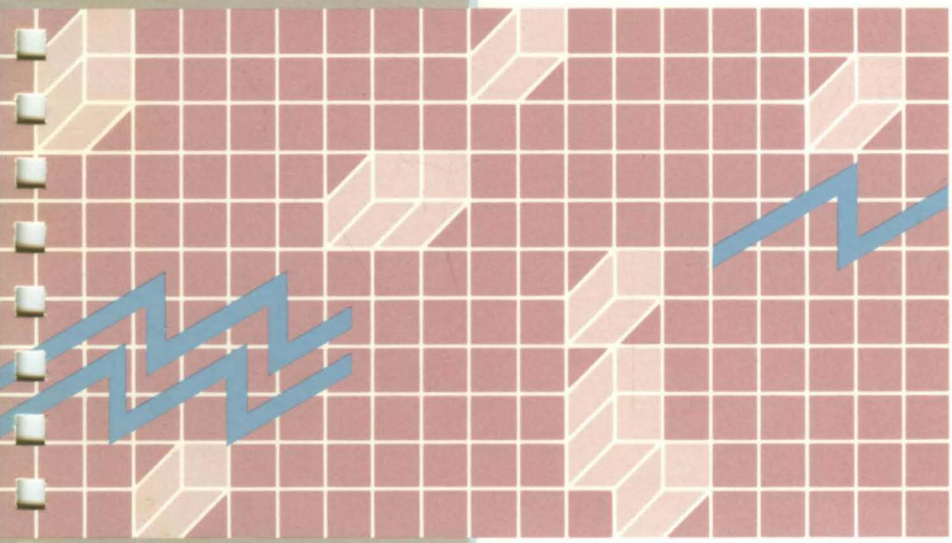
Series 386i™ Installation



QUARTER-INCH CARTRIDGE TAPE: USE AND MAINTENANCE

–CAUTION–

To ensure satisfactory performance and full service life of your quarter-inch cartridge (QIC) drive and tapes, you must follow the guidelines outlined below. **Be sure the write-protect cam is in the correct position.** You should attain a soft (correctable) error rate of 1 in $1x10^8$ bit transfers, a cartridge life of 2000 passes (one pass is equivalent to winding the tape its full length from one end to the other), and a drive life of 5 years.

Failure to follow these guidelines can result in poor performance (excessive errors); damage to the tape cartridges, tape drive, or both; loss of interchangeability; or a combination of these conditions.

Drive and Cartridge Care. Treat cartridges with care and use them in an environment with the following conditions:

Maximum wet bulb temperature:	79°F (26°C)
Operating temperature:	41°F to 113°F (5°C to 45°C)
Relative humidity:	20% to 80% noncondensing
Altitude:	-1000 feet to 15,000 feet

Be sure to retension the cartridge before its initial pass (see below). Protect the drive and cartridges from excessive shocks, which can impair the drive alignment and cartridge tension. Do not expose the tape cartridge to magnetic fields, such as from CRT screens or power sources.

Approved Cartridge Use. Use only approved tape cartridges to attain the specified error rate standard. Other cartridges may initially meet this standard, yet degrade in reliability over the specified cartridge life. The following cartridge tapes are approved: the DC-600A and DC-615A (3M Corp.).

Cartridge Retensioning. Keep the cartridge properly tensioned to ensure full life service and data reliability. **Failure to adequately tension the cartridge will damage the cartridge and destroy data on the tape.** To retension the cartridge, use the tape unit retension command. (For details, see your administrator's manual or the software quarter-inch cartridge tape manual.)

With normal use, retension the cartridge every eight hours. When using the tape drive extensively in start/stop mode, retension the cartridge once every two hours.

Cleaning the Tape Head. Clean the tape drive read/write head assembly after any initial pass of a new cartridge; once after two hours (of actual tape movement) when using a new cartridge; and at least once every eight hours thereafter for the life of the tape. In addition, if the tape drive has not been used for a week or longer (or if you are not sure how long the tape drive has been unused), clean the tape head before use.

Failure to clean the heads will result in excessive data errors and may decrease the life of the drive. (For details, see your processor installation manual or your system administrator's manual.)

Series 386i™ Installation

—NOTE—

This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the installation instructions, it may interfere with radio communications. The equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, which users may be required to correct at their own expense.

Peripheral cables must be shielded in order to meet FCC and VDE emission standards and to prevent damage to the hardware from static electricity. Always use Convergent cables or equivalent shielded cables with this equipment. Cables and terminators of an inferior design may not provide the proper shielding.

Specifications Subject to Change.

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About This Book

The Series 386i is a modular workstation with a wide variety of hardware upgrades and expansions. This book explains how to install the Series 386i with the maximum amount of optional hardware including X-Bus option cards, a video card, memory expansion, additional modules, printers, modems, scanners, and so forth. You may not be installing all of these options right now, so keep this book handy for that time when you will be installing them.

This book assumes that you have some experience with computer installation. If you are a novice end user and have nobody to turn to in the way of technical help, you will still be able to use this book. Make sure, however, that you proceed with caution and full attention. For example, when you remove a screw, put it where you can find it again. When you disconnect cables, label them and indicate which end went into what.

After the installation is complete, keep this book handy; you will need it when you upgrade your system.

How This Book Is Organized

This book is organized as follows:

Chapter 1 describes the equipment you're going to install and gives an overview of how it fits together.

Chapter 2 helps you select a location for the Base module and explains how to install the video card, X-Bus option cards, and SIMMs.

Chapter 3 tells you how to install additional modules and their power bricks.

Chapter 4 explains how to install peripherals, such as the monitor, keyboard, printers, scanners, and modems.

Chapter 5 tells you how to turn on the power to the workstation and prepares you to install software. (Installing software is not covered in this book, but we will point you in the right direction.)

Chapter 6 explains how to troubleshoot certain basic problems that may occur when you install your workstation.

Chapter 7 presents an overview of clustering and briefly explains how to cluster a Series 386i workstation.

Chapter 8 describes how to take care of your workstation.

Chapter 9 gives an overview of some of the hardware and software products available for expanding your workstation.

Where to Go for More Information

You should have the following manuals for installing your software and for day-to-day reference:

- *CTOS System Administrator's Guide*
- *Executive Manual*
- *Printing Guide*
- *Status Codes*
- Manuals for the application programs, such as Document Designer, Solution Designer, and so forth. (These are usually shipped with the software.)

The manuals listed below provide additional information related to the contents of this book:

- *Getting Started With Your Workstation*
- *CTOS/VM Concepts Manual*
- *CTOS/VM Reference Manual*
- *Visinostics Manual*
- *Series 386i Technical Reference Manual*

For a complete list of Convergent Technologies publications, see the *Convergent Publications Catalog*.

1

Introduction

The equipment that you are going to install can neatly be divided into two categories: (1) the Base module and (2) everything else.

The Base Module

The Base module controls all of the basic functions of your workstation. When people talk about the Series 386i, they're talking about the Base module.

The Base module contains a SCSI hard disk drive, a floppy drive, the power supply, and a memory card with 4M bytes of RAM. There is also an optional, factory-installed 80387 numeric coprocessor.

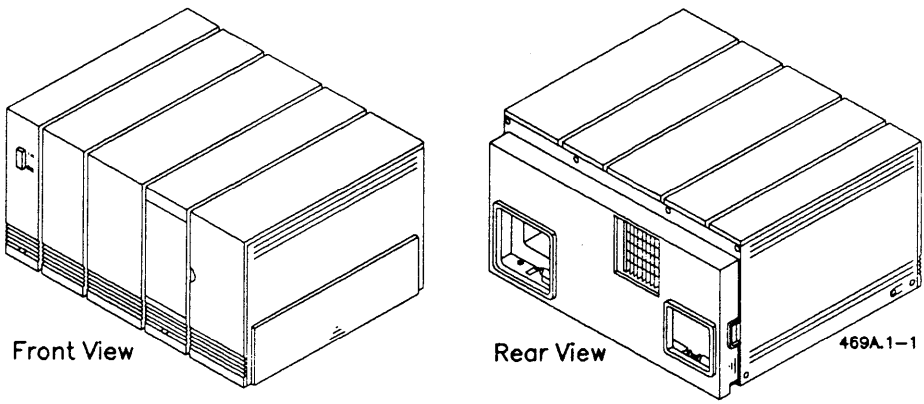


Figure 1-1. The Base Module

Additional Hardware

You may be installing some or all of the following hardware components:

Components	Description
Monitor	The Series 386i supports three types of monitors: monochrome (VM-001 and VM-002), color (VC-002), and high-resolution monochrome (VM-003). Before you install a monitor, you must install a video card.
Video card	There are currently two video cards available. The GC-102 video card provides alphanumeric color and supports the VM-001, VM-002, and the VC-002. The GC-103 provides high-resolution monochrome graphics and supports the VM-001, VM-002, and VM-003.
X-Bus and SCSI modules	Each of these modules has a specific function (for example, QIC tape backup, voice processing, and so forth). Chapter 9, "Expanding Your System," explains the use of each of these modules.
X-Bus option cards	X-Bus option cards function the same way as X-Bus modules but at a lower cost. There are currently two types of X-Bus option cards available: the Ethernet card (XE-101), and the Multiline Port Expander (XC-102). See Chapter 9 for an explanation of these cards.
Power bricks	Power bricks connect X-Bus and SCSI modules to an ac power supply. You cannot install X-Bus or SCSI modules without power bricks.
SIMMs	SIMMs (Single In-line Memory Modules) are installed on the memory card inside the Base module. Up to 20M bytes can be installed, for a total of 24M bytes.
Keyboard	The Series 386i uses the standard NGEN keyboard.
Mouse	The mouse allows you to take full advantage of the Series 386i graphics capabilities.

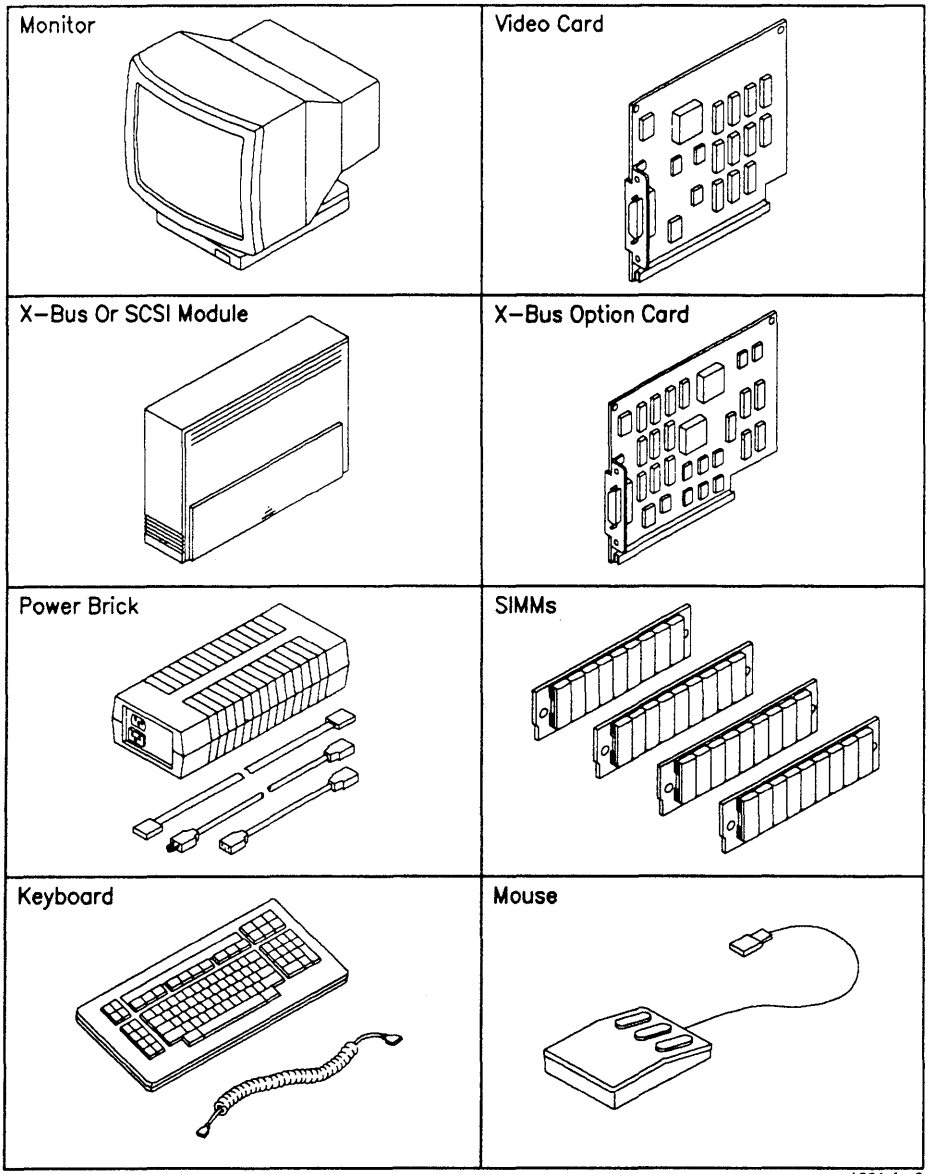


Figure 1-2. Additional Hardware Components

Installation Overview

The entire installation procedure should take from 30 minutes to 1 hour, depending on how much hardware you have. You will need a small slot screwdriver and a medium phillips screwdriver. It's also a good idea to have a pair of tweezers handy.

All of the installation procedures begin with this first step: "Turn off the power and unplug the workstation." This step is included as a *safety precaution* for those who are expanding a workstation that is already up and running.

With some modules or X-Bus option cards, there may be module-specific instructions that are not covered in this manual, so keep those instructions handy.

You may not have every piece of equipment described in this book, so you may be skipping certain steps. The list below outlines how all the equipment fits together (see Figure 1-3).

- The video card is installed inside the Base module.
- X-Bus option cards are installed inside the Base module.
- SIMMs are installed on the memory card inside the Base module.
- Additional modules are attached to the right side of the Base module.
- Power bricks plug into the backs of the attached modules and into an ac outlet.
- The monitor plugs into the video card. If it is a color monitor, it also plugs into an ac outlet.
- The keyboard plugs into the monitor.
- The mouse plugs into the keyboard.
- Printers and modems plug into the I/O panel on the back of the Base module.
- The Base module plugs into an ac outlet. The power cord comes separately from the Base module.

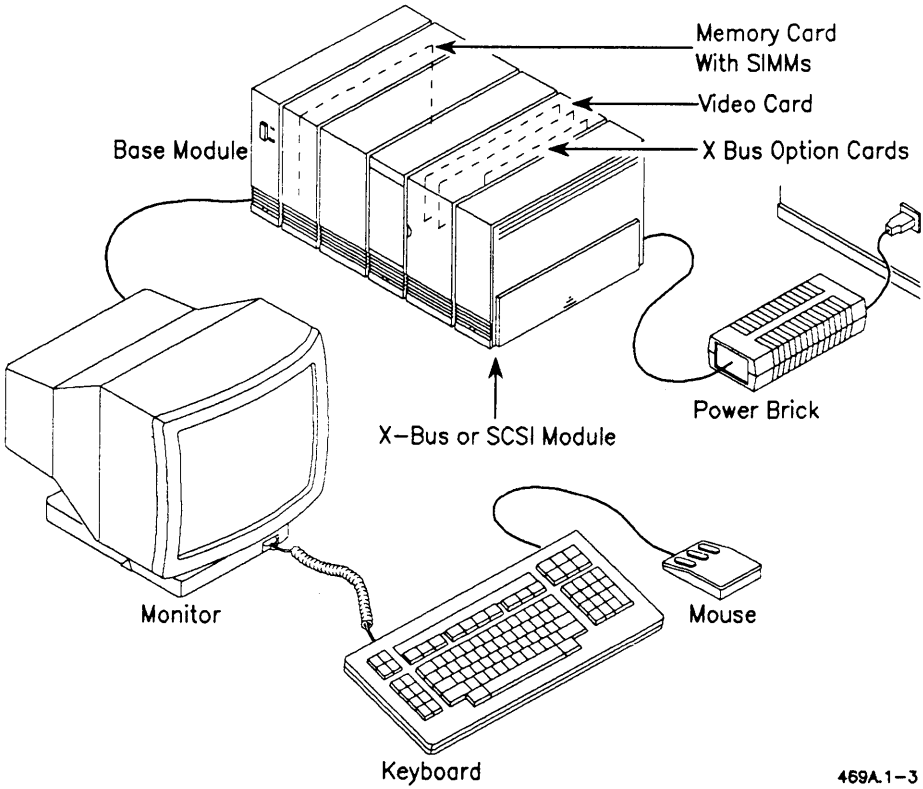


Figure 1-3. Sample System

2

The Base Module

This chapter explains how to select a location for your Base module. It also provides installation procedures for the components that are installed inside the Base module: the video card, X-Bus option cards, and SIMMs.

Where to Put the Base Module

When choosing a location for your Base module, keep the following points in mind:

- Don't leave it in direct sunlight all day.
- Don't stuff it in a drawer where there is little or no circulation.
- You can put it anywhere on a shelf or on a flat work surface, but it's a good idea to have it within arm's reach of your keyboard.
- You can also put it right in front of you and put your monitor on top of it.

If you are planning to put your Base module on a shelf, and you are going to attach additional modules to it, place the Base module on the shelf now. Otherwise, you will have to lift a string of modules that have already been put together, which is not recommended.

No matter where you are going to put your Base module, you still have to install the rest of your equipment, so don't tuck it away yet. Keep the back and the right side of the Base module accessible.

Installing the Video Card and X-Bus Option Cards

A quick note to the technician who likes to improvise: While it is true that X-Bus option cards are essentially X-Bus modules without the plastics, a card taken from an X-Bus module will not fit in the Base module.

The video card and the X-Bus option cards are installed in the same way. To install the video card or any X-Bus option card, follow the steps below.

Caution: *Do not remove the card from its plastic bag until instructed to do so. Static electricity can damage the card. You should move around as little as possible during this procedure, so before you start, put the card, the screwdrivers, and the tweezers where you can easily reach them.*

1. Turn off the power, and unplug the workstation.
2. Remove the cable cover, as shown below.

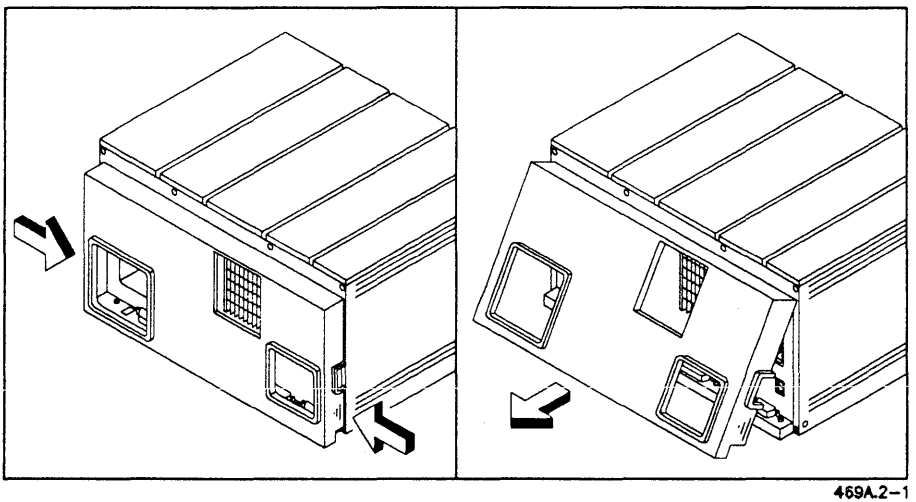


Figure 2-1. Removing the Cable Cover

3. Remove the top cover, as shown below.

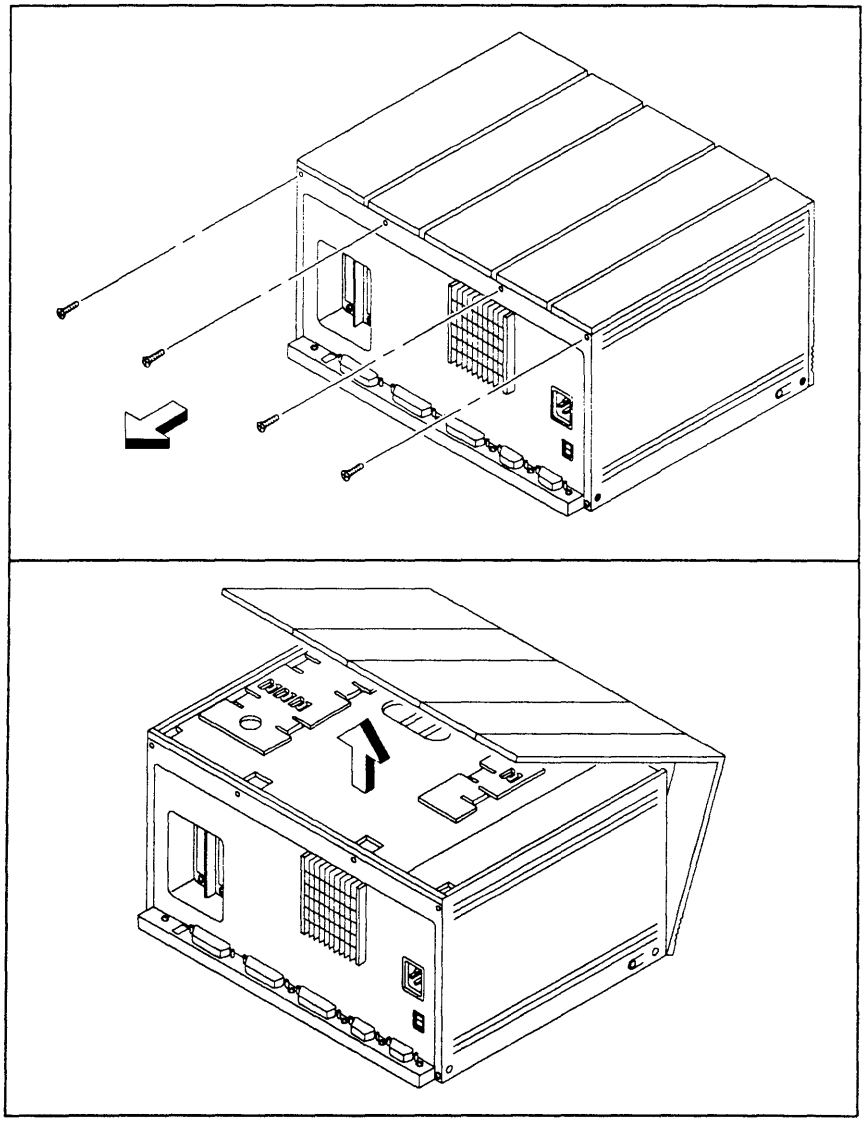


Figure 2-2. Removing the Top Cover

4. Remove the metal cap, as shown below.

-WARNING-

The sheet metal has sharp edges.

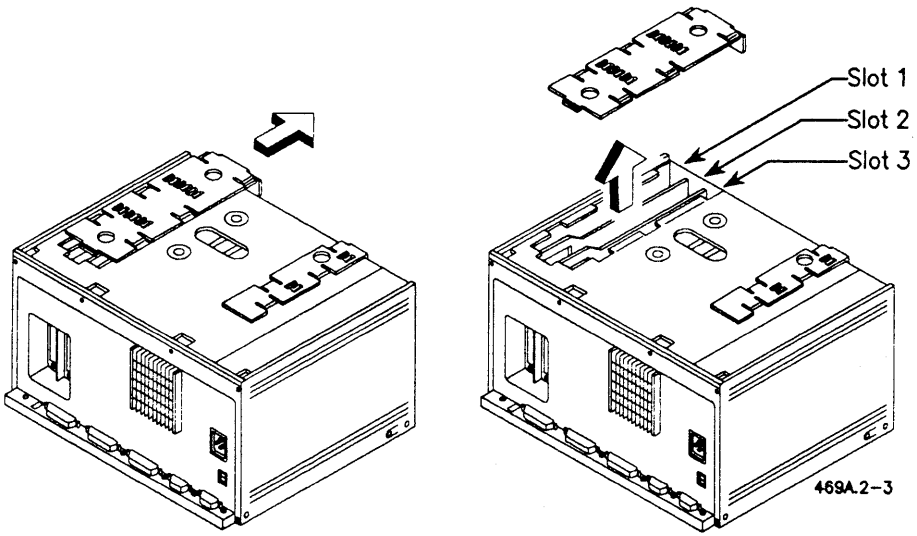


Figure 2-3. Removing the Metal Cap (X-Bus Option Card)

When you remove the metal cap, you can see three slots: slot 1 is closest to the outside of the Base module; slot 3 is in the innermost position. Any card can go in any slot, but for easy cable fitting, it is recommended that the XC-102 and the XE-101 go in slots 1 and 2. The video card will fit in slot 3 unless the wrong type of cable is installed in the Channel B RS-232-C port. The connector for the cable in the Channel B port must have a D-type connector with tapered sides. A square connector will interfere with the video connector, as shown in Figure 2- 4.

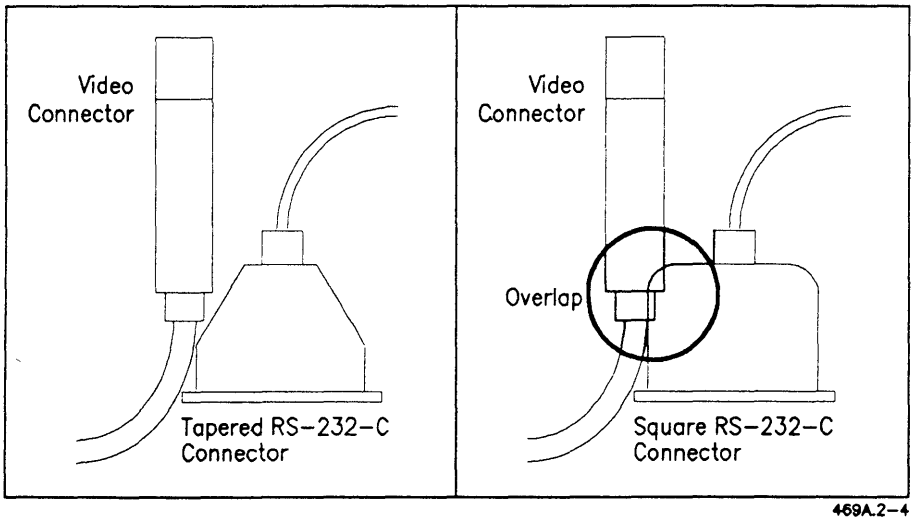


Figure 2-4. Cable Connector for the Channel B Port

5. Using the phillips screwdriver, remove the I/O cap from the slot where you are going to install the card, as shown below. Hold onto the cap from the inside of the Base module when you unscrew it, or it will fall into the slot. If it does, you'll need tweezers to get it out. You will need the screws, so don't discard them.

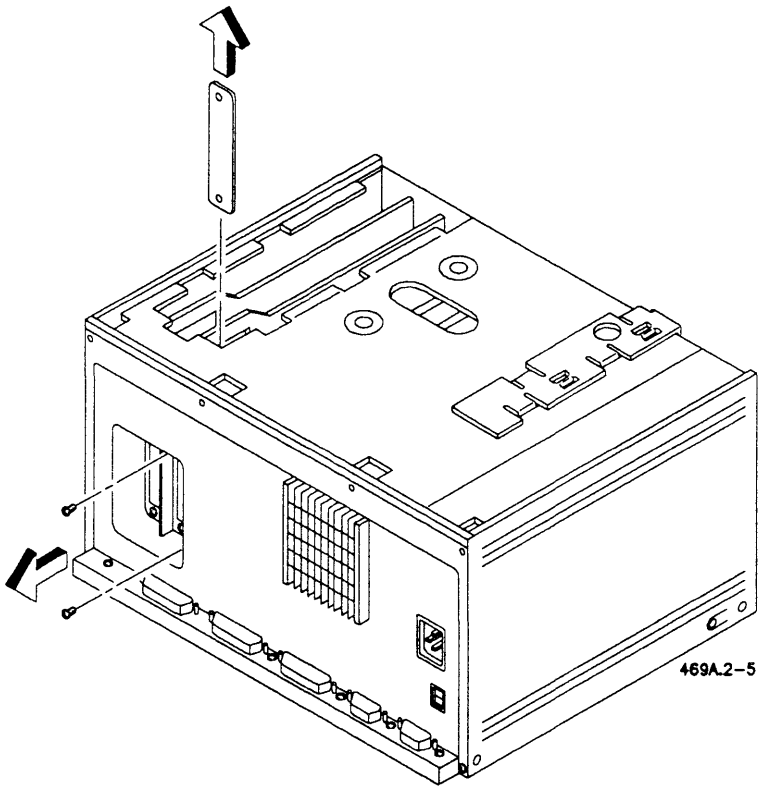


Figure 2-5. Removing the I/O Cap

6. Follow the precautions described below to minimize static voltage and help prevent damage to the card. It's best to follow this procedure sitting down in order to reduce body movement.

   Hold the card (still in its bag) in one hand, and with the other hand touch the sheet metal on the Base module. You may then take the card out of the bag. Try to avoid touching any of the metal circuitry on the card. Do not walk around the room holding the card. If you are sitting down, don't shuffle your feet.

7. Install the card by inserting it straight down into the connector on the motherboard, as shown below. Inserting it at an angle can bend the connector pins. You may need to tip the rear cover out slightly to allow the I/O connector to slide past the cover. (If a card is already installed, you must remove the screws on the I/O connector to allow the cover to tip back.) Press the card firmly into the connector to ensure a good contact.

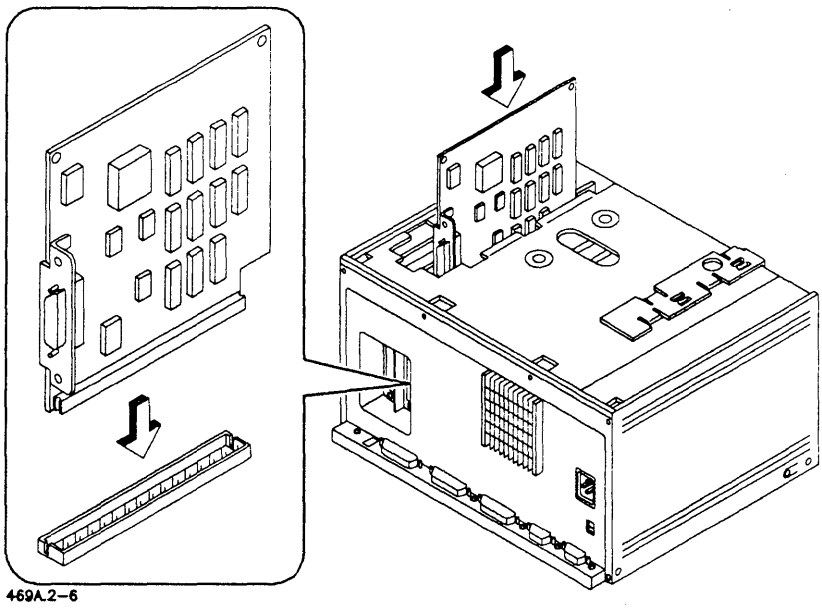


Figure 2-6. Installing the Video Card

8. Replace the metal cap. The cap has grooves in it, and the top of the card must fit within those grooves in order to get the cap back on. If you have more than one card, they must all be aligned in the grooves.

9. Replace the screws that held on the I/O cap. They now secure the card to the Base module. (See Figure 2-7.)

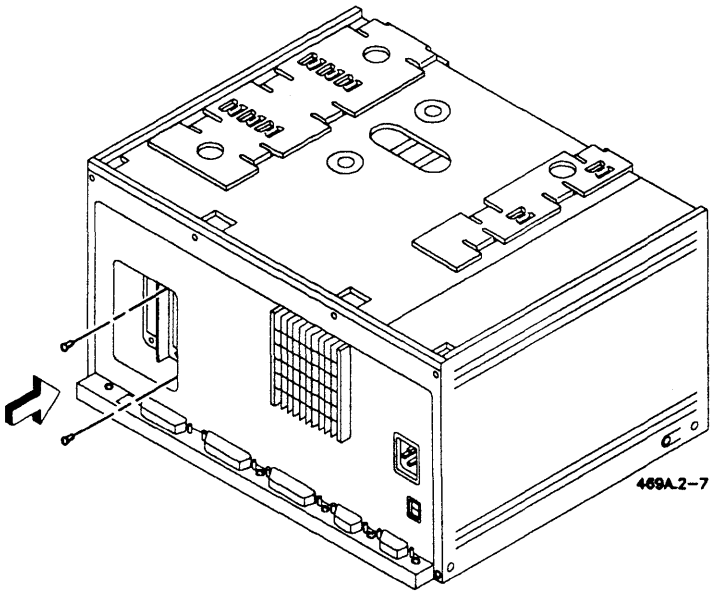


Figure 2-7. Replacing the I/O Connector Screws

10. If you are going to install SIMMs, leave the top cover and the cable cover off. If not, replace the top cover. To do this, hook the lower front edge onto the Base module and tip the cover back. Make sure that the plastic caps that cover the LEDs slide into the holes in the sheet metal. Be careful when you do this as you could break off the plastic caps.

11. If you are going to install any peripherals, leave the cable cover off. Otherwise, put it back on.

More About X-Bus Option Cards

If you have an Ethernet card (XE-101), refer to the *Ethernet Hardware Manual* for cabling instructions. If you are going to attach any modules, do so before installing the Ethernet cables. This will make it easier to attach the modules.

If you have a Multiline Port Expander card (XC-102), refer to the *Multiline Port Expander Hardware Manual* for cabling instructions. If you are going to attach any modules, do so before installing the Multiline Port Expander cable. This will make it easier to attach the modules.

You should also check the jumpers on the XC-102. Figure 2-8 shows the proper jumper locations.

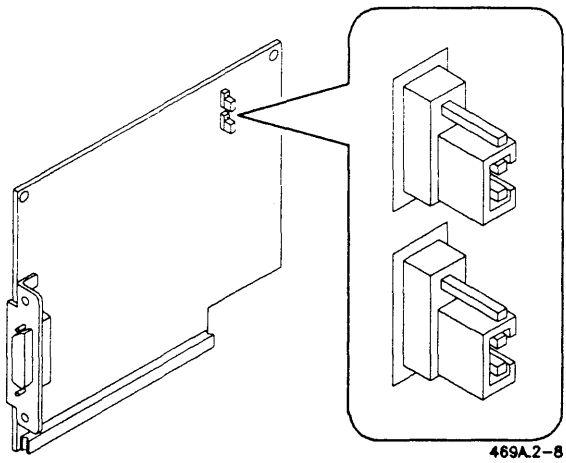


Figure 2-8. XC-102 Jumper Locations

Installing SIMMs

The Series 386i supports SIMMs from Convergent Technologies only. The SIMMs come in packages of four. The model number is XM-040.

Caution: *Do not remove the SIMMs from their packaging until instructed to do so. Static electricity can damage the SIMMs. You should move around as little as possible during this procedure, so before you begin, put the SIMMs and the screwdrivers where you can easily reach them.*

To install SIMMs,

1. Remove the cable cover and the top cover as shown in the previous section, "Installing the Video Card and X-Bus Option Cards."

2. Remove the metal cap that is closest to the power switch. (See Figure 2-9.)

-WARNING-

The sheet metal has sharp edges.

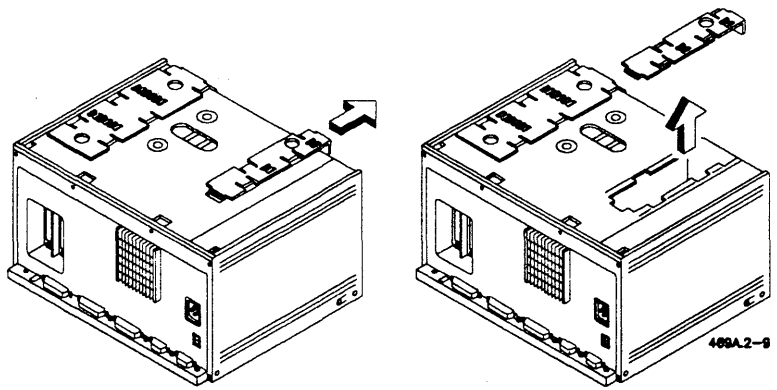


Figure 2-9. Removing the Metal Cap (Memory Card)

3. You are now ready to remove the memory card (see Figure 2-10). Before you do, however, be aware that static electricity can damage the card and the SIMMs. To help reduce static electricity, it is best to follow the rest of this procedure while sitting down. Also, following the precautions described below will help minimize static electricity.

   Remove the memory card by lifting it straight up out of the slot, as shown below. You now have a bare card that can be damaged by static electricity. Keep body movement to a minimum: Do not walk around the room while holding the card. Don't shuffle your feet if you are sitting down.

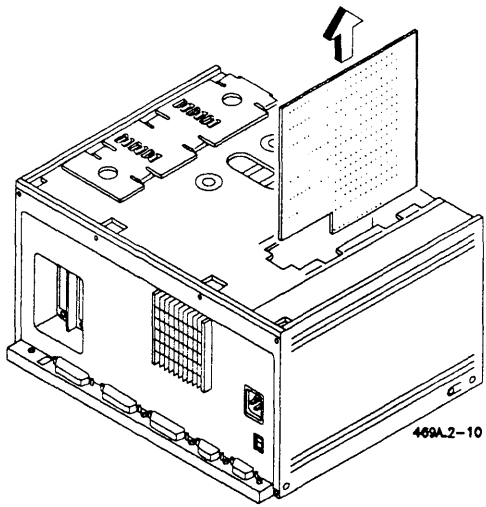


Figure 2-10. Removing the Memory Card

4. Gently place the memory card on a flat surface, component side up. Hold the SIMMs (still in their packaging) in one hand, and with the other hand touch the sheet metal on the Base module. You may then unwrap the SIMMs. Hold the SIMMs by the edges and avoid touching any metal parts. Keep body movement to a minimum.

5. You must install SIMMs in multiples of four. Install the first SIMM in the bottom socket (the socket closest to the connector on the bottom of the card), and work up from there. Do not leave any gaps. (See Figure 2–11.)

   To install a SIMM, insert it at an angle into the socket, as shown below. When the SIMM is all the way into the socket, rock it forward (toward the connector on the bottom of the card) until it snaps into place.

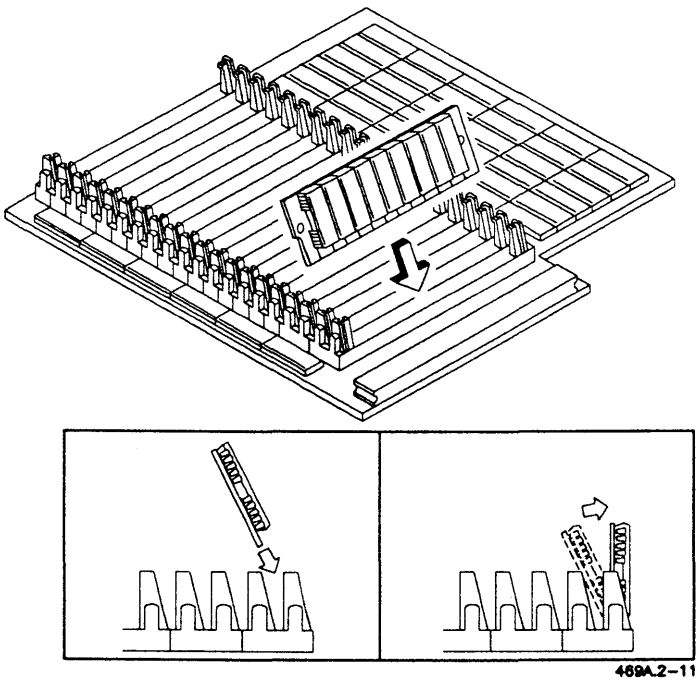


Figure 2-11. Installing a SIMM

6. When you have installed the SIMMs, install the memory card by inserting it straight down into the connector on the motherboard, as shown in Figure 2-12. Apply enough pressure to secure a good connection.

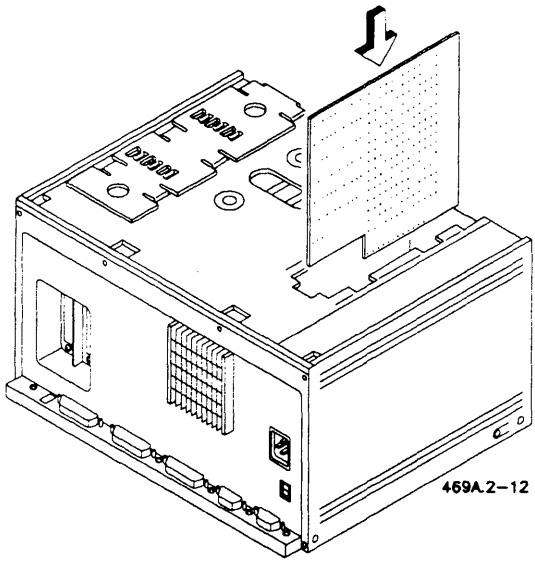


Figure 2-12. Installing the Memory Card

NOTE: Unlike the Series 286i, the Series 386i will not operate without the memory card installed.

7. Replace the metal cap. The cap has grooves in it, and the top of the card must fit within those grooves in order to get the cap back on.

8. Replace the top cover. To do this, hook the lower front edge onto the Base module and tip the cover back. Make sure that the plastic caps that cover the LEDs slide into the holes in the sheet metal. Be careful when you do this as you could break off the plastic caps.

9. If you are going to install any peripherals, leave the cable cover off. Otherwise, put it back on.

Removing SIMMs

To remove a SIMM, you need a small slot screwdriver. If you have very strong fingernails you can try using them, but we don't recommend it.

Caution: *Static electricity can damage the card and the SIMMs. You should move around as little as possible during this procedure, so before you start, put the screwdrivers and SIMMs (if you have replacements) where you can easily reach them.*

To remove a SIMM,

1. Remove the memory card by following the instructions in the previous procedure, "Installing SIMMs." Pay close attention to the instructions regarding static electricity.
2. Gently place the memory card on a flat surface, component side up.
3. Use the screwdriver to push out the locking tabs on the sides of the SIMM, as shown in Figure 2-13. It is best to tackle one tab at a time.
4. When the SIMM is clear of the two tabs, rock it backward (away from the connector on the bottom of the card), and pull it out at an angle.

NOTE: If there is a SIMM in the slot behind the SIMM you want to remove, you must loosen both SIMMs. You don't need to take out the back SIMM, just push back the tabs and rock the SIMM back. This will give the other SIMM room to come out.

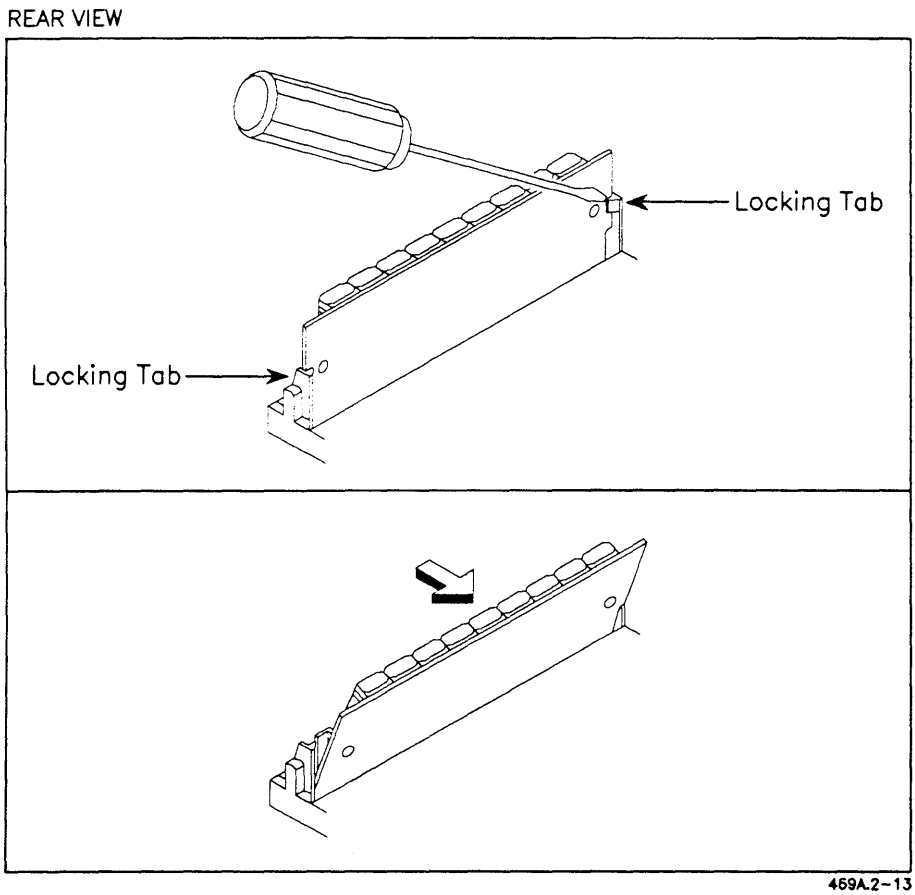


Figure 2-13. Removing a SIMM

3

Installing Modules

You can attach many different modules to the Base module, but they are all installed the same way. The first module is attached to the right side of the Base module. The second module is attached to the right side of the first module, and so on.

There are certain limitations concerning the order in which modules can be attached. To begin with, there are two fundamental types of modules, X-Bus modules and SCSI modules.

If you only have X-Bus modules, note the following:

The length of the attached X-Bus modules cannot exceed 24 inches (measured from the right side of the Base module to the right side of the last module, as shown below).

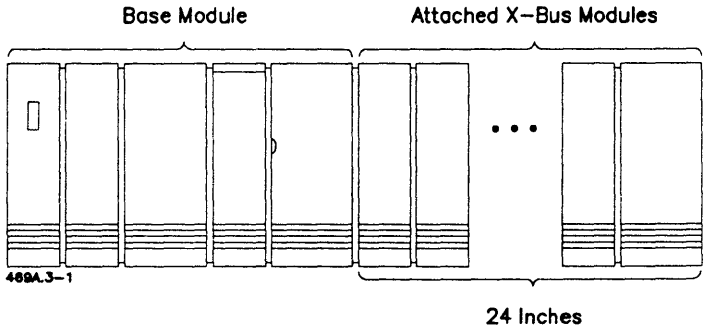


Figure 3-1. Length of Attached X-Bus Modules

If you are only attaching SCSI modules, you can attach six of them, regardless of the total length of the modules.

If you are attaching both X-Bus and SCSI modules, you may have a SCSI Hard Disk Upgrade module (HSD module).

If you have an HSD module, note the following:

- The X-Bus modules attach first; the HSD module attaches to the right side of the last X-Bus module; and the first SCSI expansion module (HSX module) attaches to the right side of the HSD module, as shown in Figure 3-2. You cannot attach an X-Bus module to the right of an HSD module.

- The combined length of the X-Bus modules may not exceed 24 inches from the right side of the Base module to the left side of the HSD module.

- No more than six HSX modules may be attached to the right of the HSD module.

If you are adding X-Bus modules and HSX modules and you don't have an HSD module, note the following:

- The SCSI modules must be the first modules attached to the Base module.

- The combined length of the attached X-Bus and HSX modules may not exceed 24 inches (measured from the right side of the Base module to the right side of the last module, as shown in Figure 3-3).

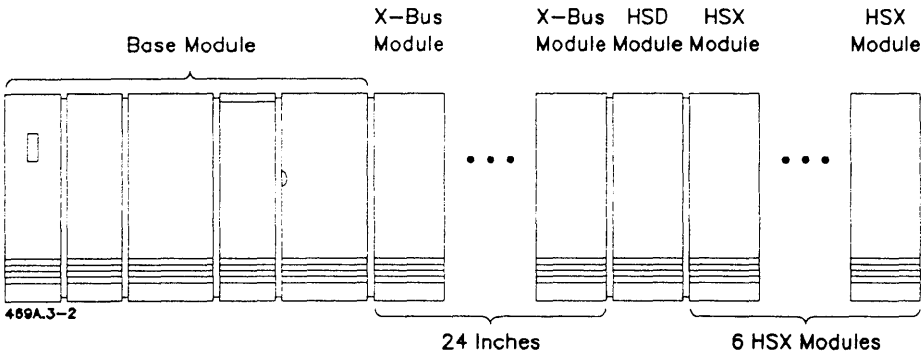


Figure 3-2. Placement of HSX (SCSI) and X-Bus Modules With an HSD Module

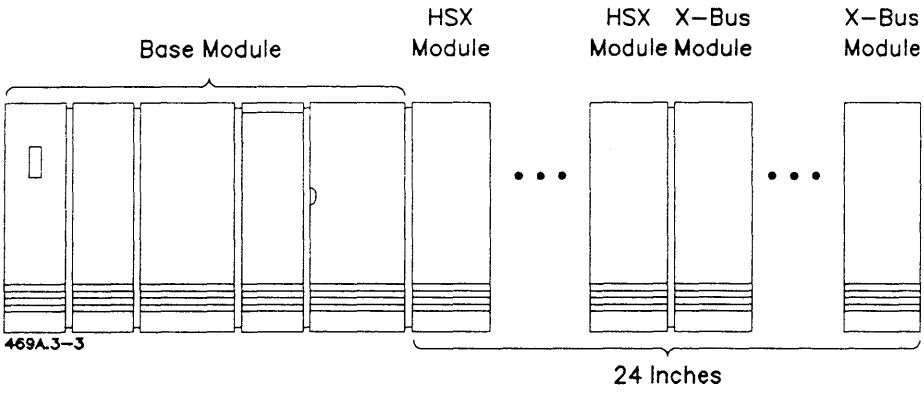


Figure 3-3. Placement of HSX (SCSI) and X-Bus Modules Without an HSD Module

No matter which type of module you are attaching (X-Bus or SCSI), note the following requirements:

- You can attach up to four X-Bus disk modules per system. Of those four disk modules:
  - You can attach only one Dual Floppy disk module.
  - You can attach only two Floppy/Hard disk modules or Hard Disk Upgrade modules.
  - You can attach only two Hard Disk Expansion modules. Each Hard Disk Expansion module must be attached to the right side of a Hard Disk Upgrade or Floppy/Hard module, as shown in Figure 3-4.
- You cannot attach a GC-001 Graphics Controller module to a Series 386i Base module.
- You *can* attach a GC-003, but it must be the first module attached to the Base module.
- You can only attach six X-Bus master modules or cards, in any combination. These modules include the Ethernet module, the Voice Processor module, and the QIC tape backup module.
- You cannot attach more than eight modules or X-Bus option cards, including the video card. In other words, if you install two X-Bus option cards and a video card, you can only attach five other modules, as shown in Figure 3-5.
- Some of the modules require additional software. For example, the Voice Processor requires the Voice/Data Services software. Other modules require no additional software, but you may need to reconfigure your existing software in order to use them. See the *CTOS System Administrator's Guide* for information about configuring software.
- Some modules require additional hardware or cabling. See the installation sheets or the hardware manuals for those modules.

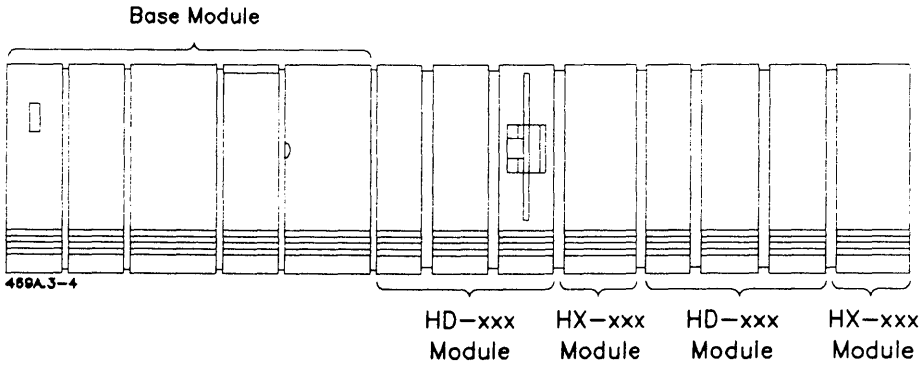


Figure 3-4. Placement of Disk Modules

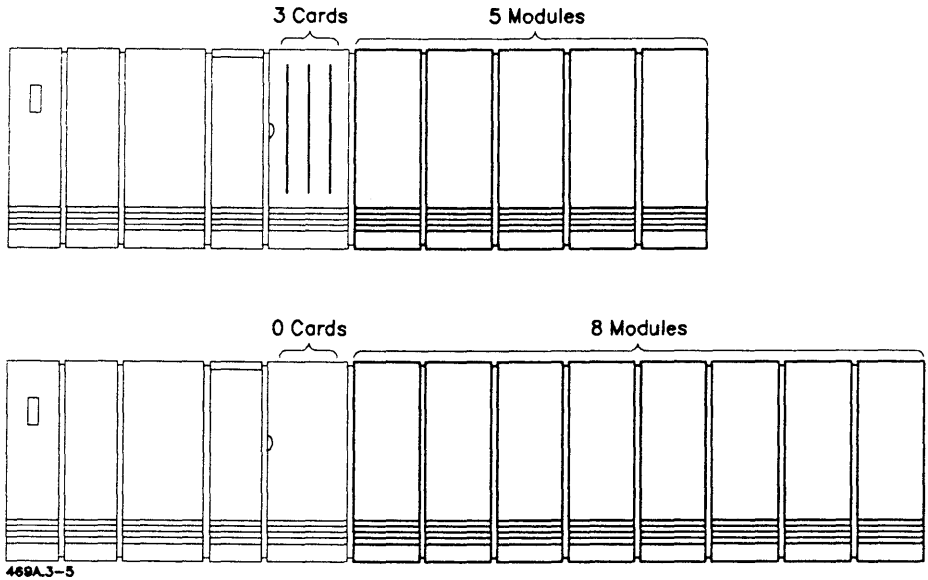


Figure 3-5. Sample Maximum Configurations

To attach a module to the Base module, or to another module, follow these steps, and refer to Figure 3-6:

1. Turn off the power, and unplug the workstation.
2. Remove the X-Bus cap from the right side panel.
3. Lift up the latch on the module you are attaching.
4. Set the modules side by side. Line up the connectors on the bottom, and slowly push the modules together, beginning at the back, then moving them together at the front.
5. Push the latch all the way down. Sometimes the latch is stiff, but as long as it's moving, and you can see the modules moving together, you're doing it correctly. If the latch does not move, separate the modules and verify that there are no bent pins in the connectors; then try refitting the modules. Bending a pin is a very rare occurrence, but if it does happen, you can usually unbend it, very carefully. If it looks like it's beyond repair, call technical support.
6. After the modules are latched, push them together at the bottom to ensure complete electrical contact of the connectors.

NOTE: SCSI modules have an additional connector at the rear of the module. After the module is latched, push the rear of the modules together, then push the front of the modules together, and then push the rear of the modules together one more time.

7. Replace the X-Bus cap on the last module.

Removing a Module

To remove a module,

1. Turn off the power, and unplug the workstation.
2. Lift up the latch and slowly pull the modules apart, beginning at the front.

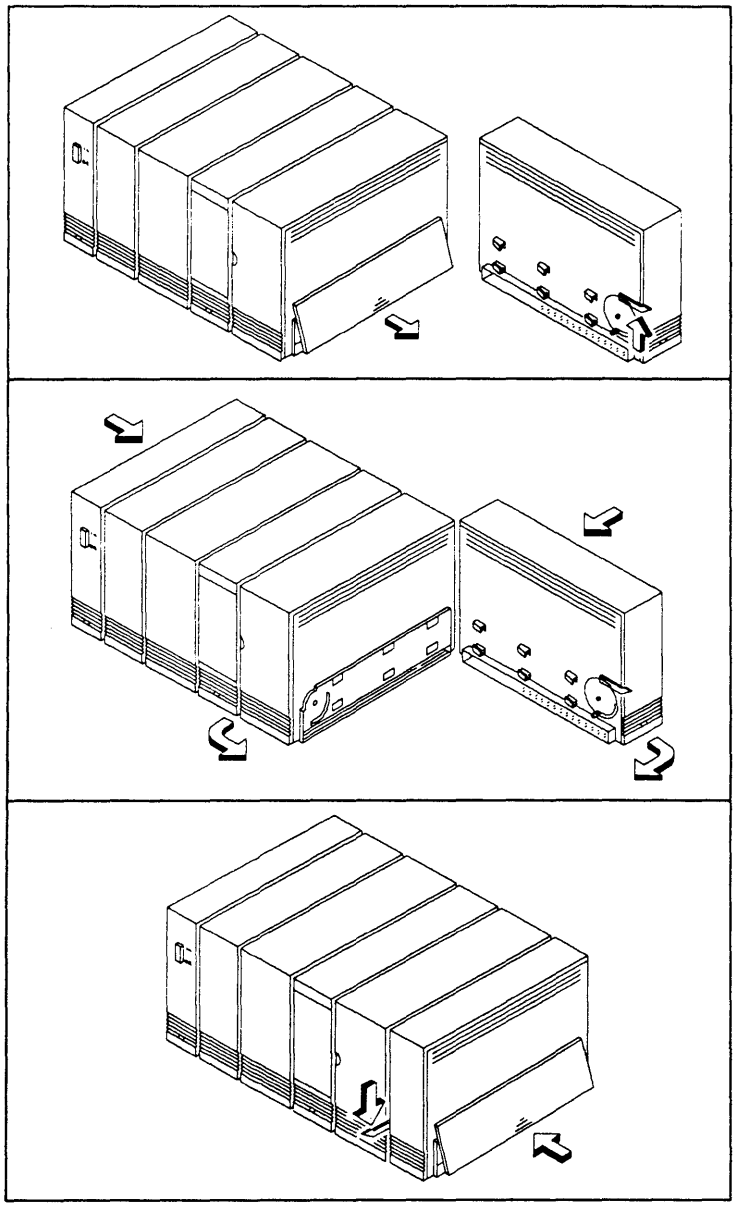


Figure 3-6. Attaching a Module

Attaching Power Bricks

If you have attached any modules, you must attach power bricks.

The power requirements for modules are indicated on the back of the module by a power code, a number from 0 to 10. A Floppy/Hard module (power code of 6) uses more power than a Voice Processor (power code of 1). The Base module has its own power supply and plugs directly into an ac outlet. It has a power code of 0.

To calculate how many power bricks you need, add up all the power codes for the attached modules, starting with the one closest to the Base module and adding the power codes of the modules in the order they are attached. If the total is 10 or less, you need one power brick. If the total is from 11 to 20, you need two power bricks; from 21 to 30, you need three, and so on.

The first module attached to the Base module must have a power brick. After that, power bricks are attached to each module that causes the power code to exceed a multiple of 10, as shown in Figure 3-7.

NOTE: If you attach the video to a Graphics Controller module instead of to a video card, you need to add the power code of the monitor. The VM-001 and VM-002 have a power code of 3 and the VM-003 has a power code of 5.

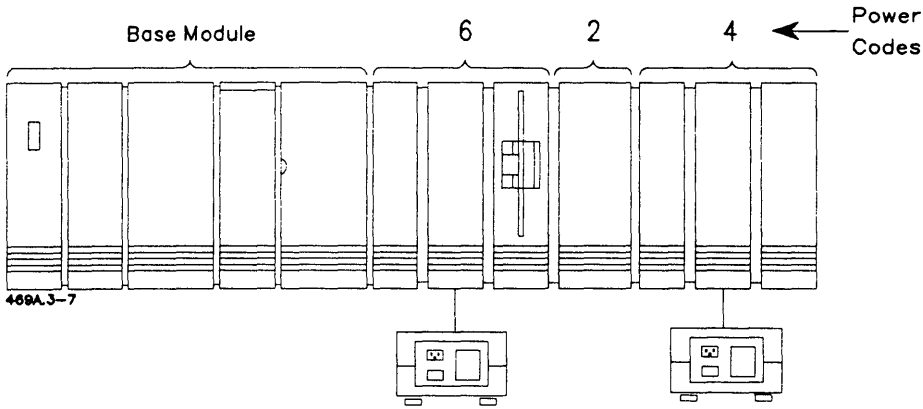


Figure 3-7. Where to Attach Power Bricks

In this example, the first attached module has the first power brick. The total power code of the first and second attached modules equals 8, so the second attached module doesn't need a power brick. The total of all three attached modules equals 12, so the third attached module must have a power brick.

Power bricks should be placed on the floor, out of the way, so you don't trip over them or spill anything on them.

To install power bricks,

1. Turn off the power, and unplug the workstation.
2. You may have to take off the cap on the back of the module where you are attaching the power brick, as shown in Figure 3-8.
3. Using the flat cable, connect the module to the power brick. The cable jacks fit only one way and click when in place.
4. Replace the cap on the back of the module.
5. Attach the ac line cord to the power brick, but don't plug it into the wall yet.

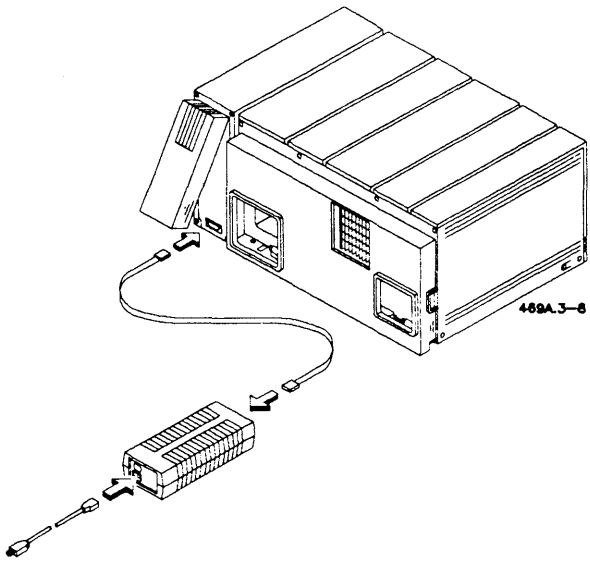


Figure 3-8. Attaching a Power Brick

Two power bricks can be connected to one another. This reduces the number of ac line cords needed. Use the short extension cable that came with the power brick to make the ac connection from one power brick to another, as shown in Figure 3-9.

NOTE: No more than two power bricks should be connected in this manner. If a third power brick is required, it must be connected directly to the wall outlet.

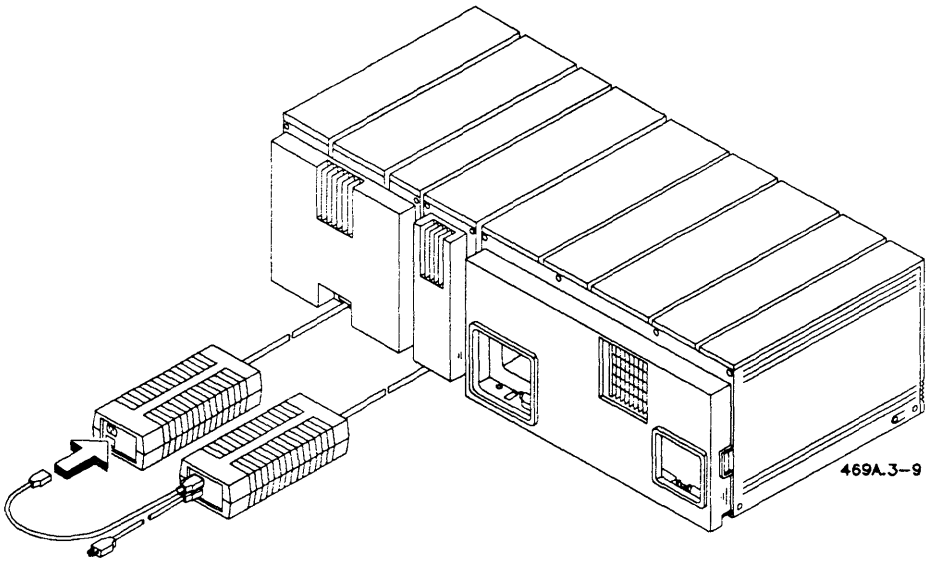


Figure 3-9. Connecting Two Power Bricks

4

Installing Peripherals

This chapter explains how to install the monitor, keyboard, and mouse, as well as parallel and serial devices such as printers, modems, and scanners.

Caution: *Peripheral cables must be shielded in order to meet FCC and VDE emission standards and to prevent damage to the hardware from static electricity. Always use Convergent cables or equivalent shielded cables that employ 90% braid coverage and a 360 degree shield termination at the connector. See the* Series 386i Technical Reference Manual *for instructions on building cables. Cables and terminators of an inferior design may not provide the proper shielding.*

Connecting the Monitor

To install a monitor to a Series 386i, you must first install a video card (see Chapter 2, "The Base Module.") The monitor plugs into the I/O connector on the video card.

There are currently three types of monitors: color (VC-002), medium-resolution monochrome (VM-001, VM-002), and high-resolution monochrome (VM-003).

- To use a color monitor, you need a GC-102 video card. The color monitor has its own power cord and on/off switch. It may also have a voltage select switch on the back of the base. Make sure it is set correctly.

- To use a high-resolution monochrome monitor, you need a GC-103 video card or a GC-003 Graphics Controller module.
- The medium-resolution monochrome monitor functions with both video cards.

To connect the monitor:

1. Turn off the power, and unplug the workstation.
2. Remove the cable cover, as shown in Figure 2-1.
3. Attach the cable to the connector on the video card, as shown below. Route the cable through the hole in the cable cover. If the cable is blocked by a connector in the Channel B RS-232-C port, see the instructions for installing the video card in Chapter 2.
4. If you have a VM-003, attach the cable to the connector on the back of the monitor. Use your slot screwdriver.

   If you have a color monitor, plug in the power cord (make sure the power switch on the back of the monitor is off before doing so).
5. If you are going to install more peripherals, leave the cover off. Otherwise, replace it.

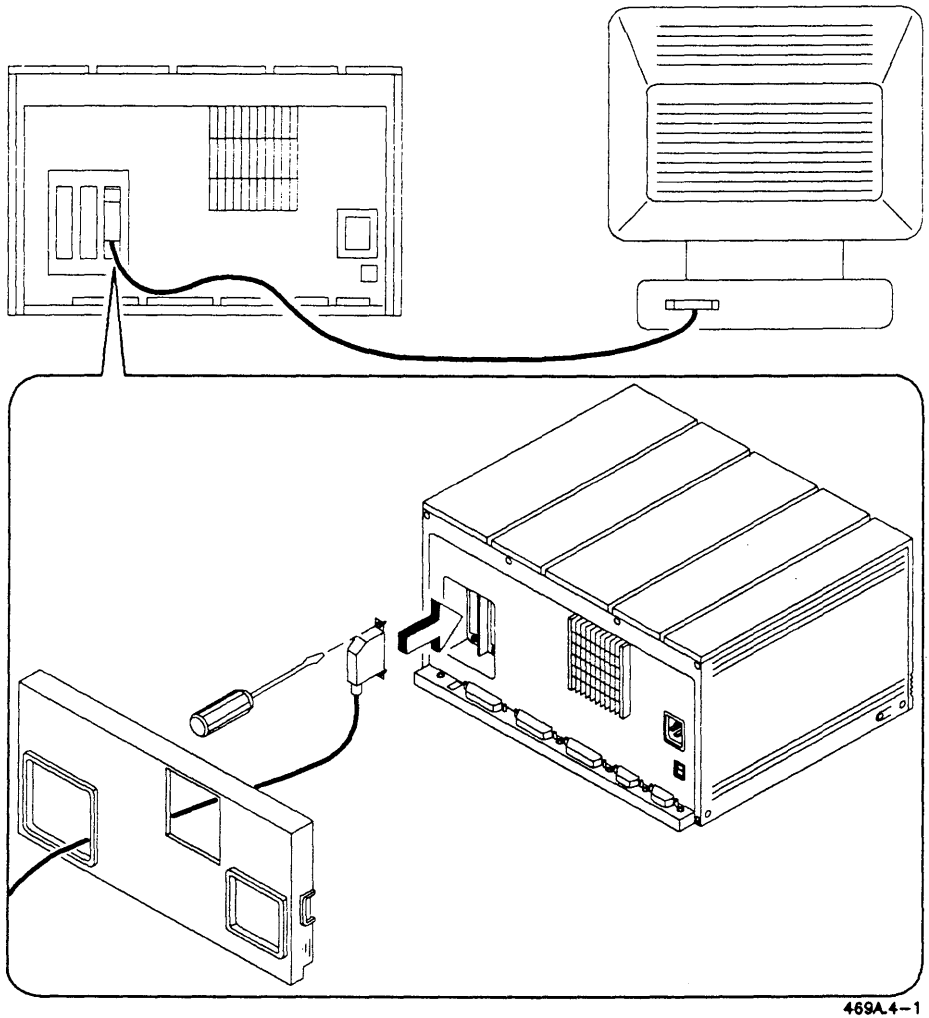


Figure 4-1. Connecting the Monitor

Installing a Parallel Device

The Series 386i can support one parallel device, such as a printer or a scanner.

Most printers that use the parallel port can be attached using a Centronics-compatible interface cable (Convergent model number PC-630). If your printer is a Qume Sprint 11/55 Plus, you need a Qume Connection in addition to the cable. (See the printer documentation and the *Printing Guide*.)

The HP ScanJet scanner attaches to the parallel port. The cable used is the Inmac #23578.

To install a parallel device,

1. Turn off the power, and unplug the workstation.
2. Remove the cable cover, as shown in Figure 2-1.
3. Connect the cable to the device (refer to the documentation for the device).
4. Route the cable through the cable cover and connect the cable to the parallel connector on the I/O panel. Use the slot screwdriver.
5. If you are going to install more peripherals, leave the cover off. Otherwise, replace it.

NOTE: Before using the printer, you must configure the software on your workstation. This is done after the workstation is up and running and your system software is installed. You may also need to set the switches on the printer. See the Printing Guide *for information on configuring software and setting switches.*

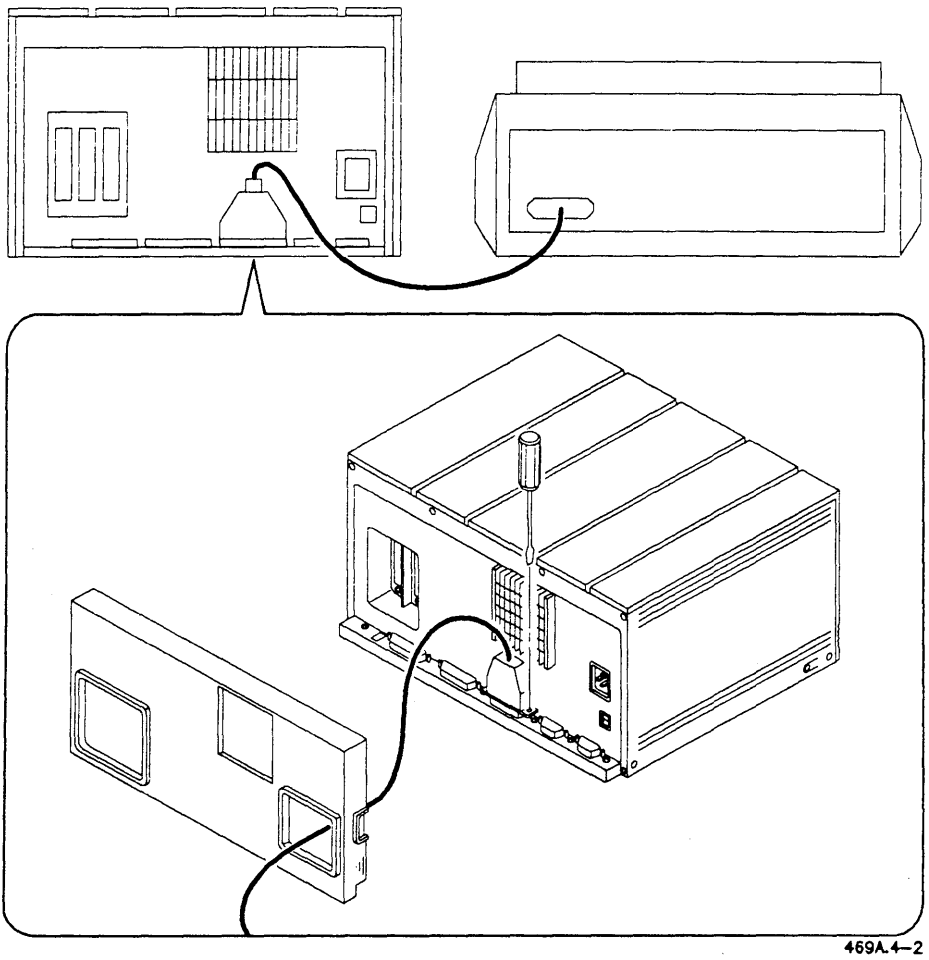


Figure 4-2. Installing a Parallel Device

Installing a Serial Device

The Series 386i can support two serial devices, such as scanners, printers, or modems.

Most printers that use the serial ports use a standard serial printer interface cable. Some printers have device-specific cable requirements. For information on the the cable requirements of your printer, see the *Printing Guide*.

For Convergent printers (models CT-2425S, 2450, and 2475) use the model PC-600 cable.

For information on installing a scanner to an RS-232-C port, see your scanner documentation. (For cable specifications, see the *Image Designer Manual*.)

To install a serial device:

1. Turn off the power, and unplug the workstation.
2. Remove the cable cover, as shown in Figure 2-1.
3. Using the printer or modem documentation, connect the cable to the printer or modem.
4. Route the cable through the cable cover and connect the cable to either of the RS-232-C connectors on the I/O panel. Use your slot screwdriver. If you are attaching a cable to the Channel B port, the cable connector could interfere with a connector in the X-Bus option card slot above the Channel B port. If you use the Channel B port, please see the section on installing the video card, in Chapter 2, to determine if you have the correct RS-232-C cable.
5. If you are going to install more peripherals, leave the cover off. Otherwise, replace it.

NOTE: Before using the printer, you must configure the software on your workstation. This is done after the workstation is up and running and your system software is installed. You may also need to set the switches on the printer. See the Printing Guide *for information on configuring software and setting switches.*

Remember that there are two serial ports. You must identify them correctly when configuring your software.

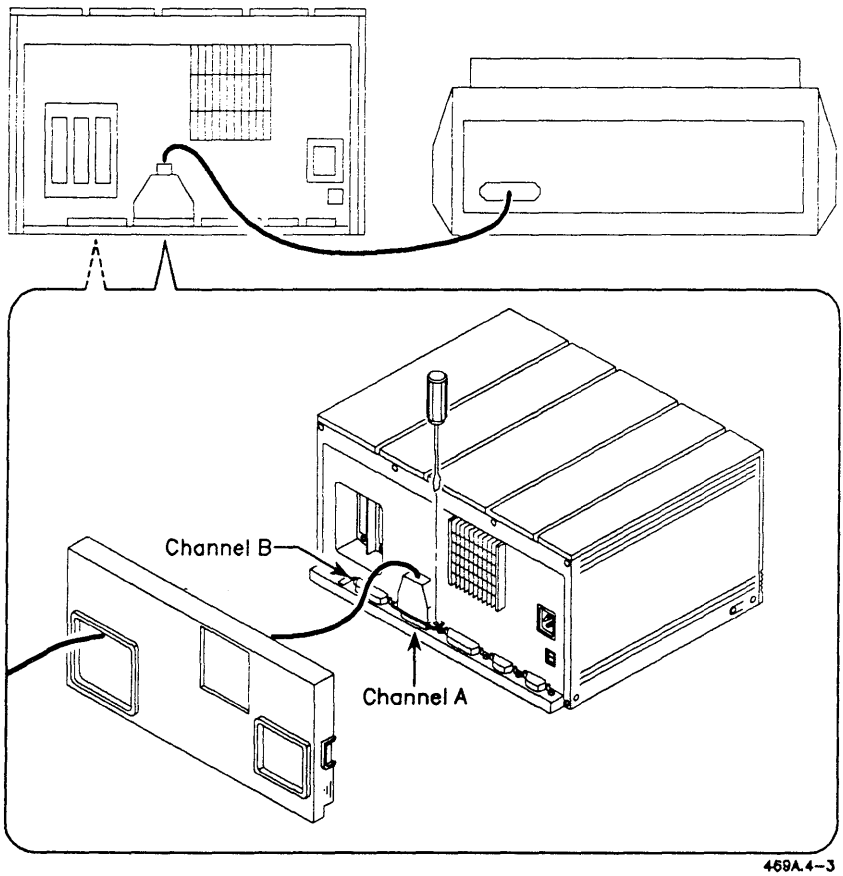


Figure 4-3. Installing a Serial Device

Connecting the Keyboard and Mouse

There are two jacks on the keyboard. If you are right-handed, plug the mouse into the right-hand jack. If you are left-handed, use the left-hand jack.

Plug the keyboard cable into the monitor and into the unused jack on the keyboard. If you don't have a mouse, you can plug the cable into either jack on the keyboard.

The connectors fit in only one way and click when in place.

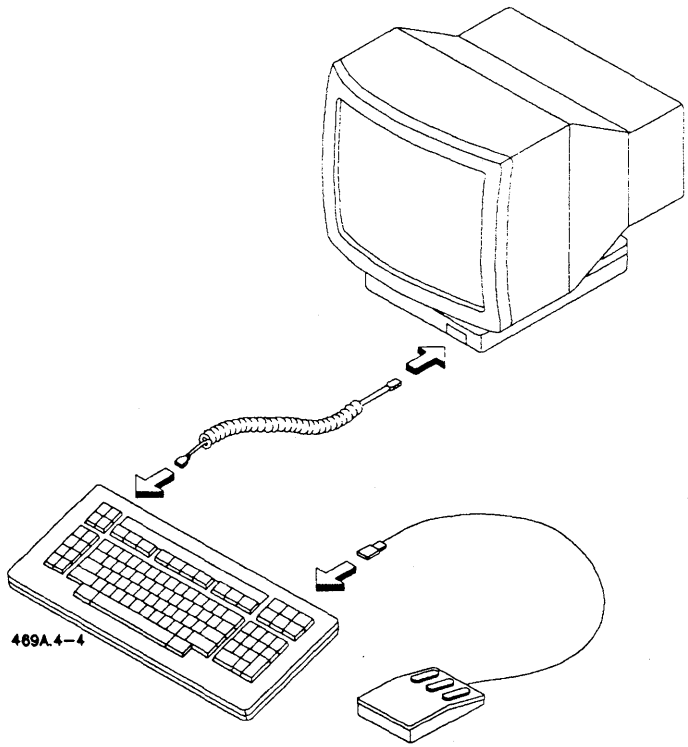


Figure 4-4. Connecting the Keyboard and Mouse

5

Powering On The Workstation

You are now ready to power on your workstation. Before you do, however, make sure that you have

- tightened the screws on the connectors for the monitor and other peripherals
- replaced the caps on the backs of the modules
- replaced the X-Bus cap on the right side of the last module attached
- replaced the cable cover
- replaced the top cover and tightened the screws
- plugged in power bricks to attached modules

Setting the Voltage Select Switch

Before you plug in your Base module, you must set the voltage select switch for the type of power (115V or 230V) that you have.

The voltage select switch is located on the rear of the Series 386i, below the ac cord receptacle, as shown in Figure 5-1.

- Push this switch up to set the voltage to 115V.
- Push this switch down to set the voltage to 230V.

Caution: *You can permanently damage your Base module if this switch is not properly set before you turn on the power.*

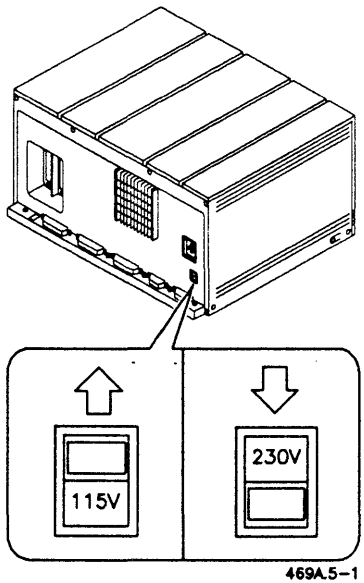


Figure 5-1. Voltage Select Switch Settings

Removing the Drive Protect Card

You must remove the drive protect card from the floppy disk drive before you turn on the power.

To remove the drive protect card,

1. Open the door on the floppy drive.
2. Turn the lever counterclockwise until the card pops out.
3. Remove the card.
4. Close the door.

NOTE: Don't try to turn the lever when there isn't a floppy disk or a drive protect card in the drive. A determined effort will break off the lever.

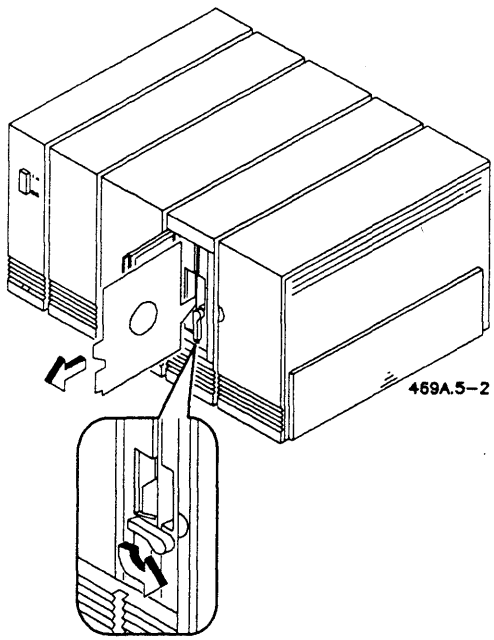


Figure 5-2. Removing the Drive Protect Card

Plugging In The Workstation

If all of your equipment is not exactly where you want it, put it there now, before you plug in the workstation.

To plug in your workstation:

1. Make sure the power button is in the off (out) position.
2. Plug one end of the ac power cord into the back of the Base module, as shown in Figure 5-3. Plug the other end into an ac outlet.
3. Plug all the ac cords from the bricks into ac outlets.
4. If you have a color monitor, plug it into an ac outlet.

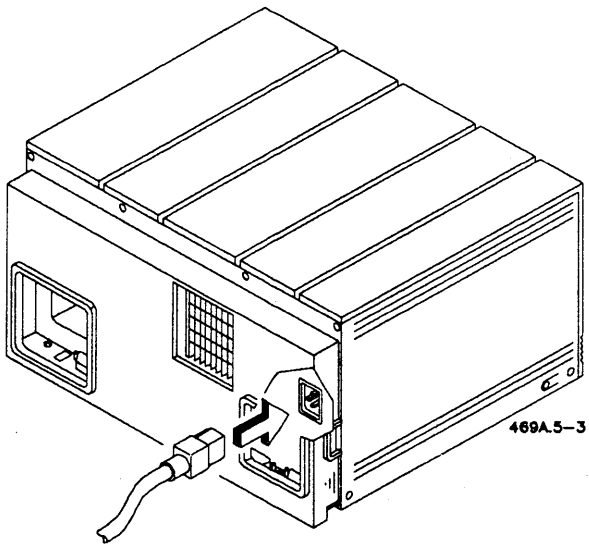


Figure 5-3. Attaching the Power Cord

Powering On

If you have a color monitor, turn it on first. The power switch is on the back of the monitor's base. Otherwise, the power button for the system is on the front of the Base module. Turn on the power by pushing in the button. When you turn on the power, the LEDs on the modules will light up, and you will hear the fans start. (The LED under the floppy drive indicates activity in the SCSI disk drives.) If your monitor remains blank, adjust the brightness control, as shown in Figure 5-4.

If the LED under the floppy drive flashes repeatedly, this indicates that there is an error in the system. The 7-segment display at the rear of the Base module may display an error code. (The 7-segment display is read from the rear of the Base module. If you look over the top, the numbers read upside down.) For information on error codes, see the *Status Codes Manual* or the *Series 386i Technical Reference Manual.*

If nothing at all happens, turn off the power, unplug the workstation, make sure that everything is firmly connected; then power up again. If you have a color monitor, be sure to turn it on first. If you run into any other problems, refer to Chapter 6, "Troubleshooting."

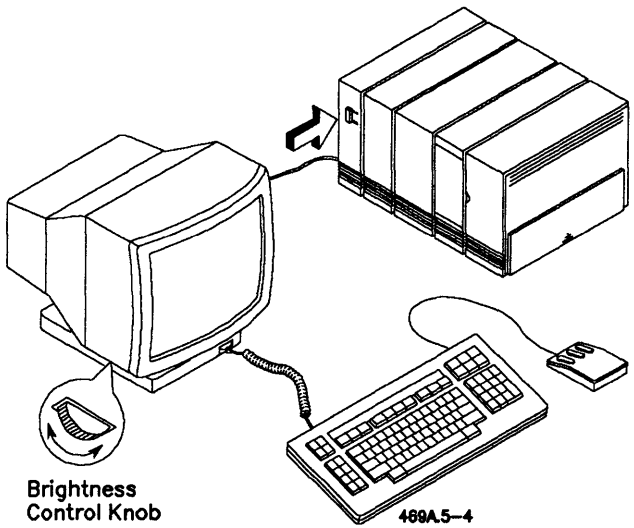


Figure 5-4. Powering On The Workstation

Inserting a Floppy Disk

If you are going to install software, you are going to be using floppy disks. Floppy disks are inserted in the floppy disk drive.

To insert a floppy disk, follow the procedure below and refer to Figure 5-5.

1. Open the door on the floppy drive.
2. Remove the floppy disk from its envelope.
3. Hold the floppy disk so that the side with the folds on it faces the power switch and the notch on the edge is on top. (The notch may have a piece of tape over it. If it does, leave the tape intact.) Don't touch the openings on the floppy disk.
4. Gently push the floppy disk into the drive until it clicks in place and won't come out again.
5. Turn the lever clockwise until it is horizontal.

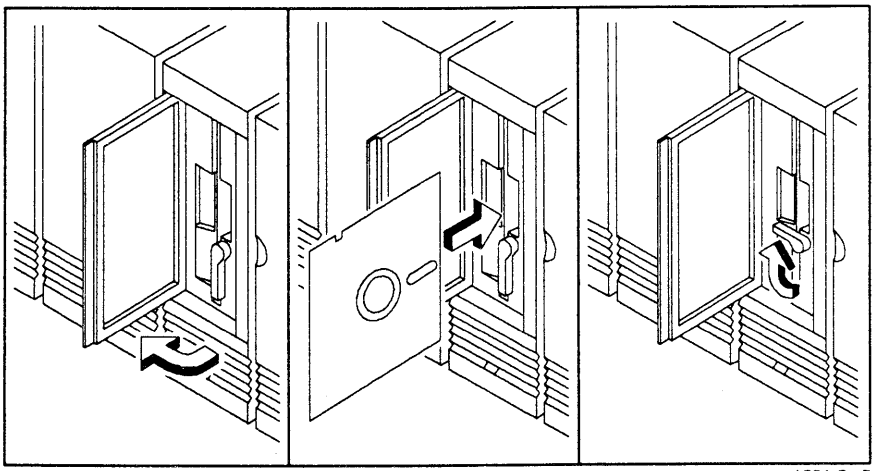


Figure 5-5. Inserting a Floppy Disk

Where to Go From Here

You are now ready to install software on your workstation. Installing software is not covered in this book, but here's a brief overview.

About Software

Your workstation uses three types of software: the operating system, system services, and application software.

- The operating system is the software program that controls all other programs. It also controls all of the basic functions of your workstation. Series 386i workstations use the CTOS/VM operating system.

- System services are programs that help support application programs or certain modules. As an example, the Generic Print System is made up of several system services that allow you to print from many different application programs, such as Document Designer and Art Designer.

- Application programs are the programs that you work with directly. They each have a specific function, for example, Document Designer is for office publishing, and Art Designer is for graphics.

Installing Software

Not all software is installed the same way on a Series 386i. Installing all the software packages you want on your workstation can take as long as two hours. Generally speaking, you will

1. install and configure the operating system

2. install and configure the system services

3. install and configure the application programs

The instructions for installing software are contained in the software release notices. Release notices come with the software diskettes. (For more information, see "Where to Go for More Information," at the beginning of this book.)

6
Troubleshooting

If you have any trouble with your 386i workstation, it is usually a simple matter to isolate and fix the problem. The first step in troubleshooting is to trace your path back through the installation procedures to make sure you performed each step correctly. In particular, check each cable connection and make sure each expansion module is properly attached. Many problems result from poor electrical connections.

There are two additional items that can help you isolate a problem, status codes and Visinostics.

- Status codes are numbers that are displayed on the monitor screen when an error occurs. The *Status Codes Manual* lists each status code and its assigned message. The messages tell you the possible causes of the error, and, when applicable, explain how to fix the problem.

- Visinostics is a package of diagnostic tests used to check each component of your workstation. These tests can be used to pinpoint hardware problems. The *Visinostics Manual* contains instructions for running these tests.

The rest of this chapter describes some possible problems and their potential solutions. If a problem continues, call technical support.

Nothing happens when I turn on the power.

Check to see if the system is plugged in.

The screen is dark when I turn on the power.

Check the monitor cable connection.

Check the brightness control on the monitor.

Images on the monitor screen flicker or waver.

Check the monitor cable connection.

The monitor suddenly goes blank.

Press any key on the keyboard. If the screen display reappears, it means that your system is set up to *time out*, or turn the display off, when you do not use your workstation for a specified period of time. You won't lose any data. For more information on this feature, see the *Executive Manual*.

Typing on the keyboard produces nothing on the screen.

Check the keyboard connection.

Check the monitor cable connection.

The pointer or cursor on the screen does not move when I move the mouse.

Check the mouse connection.

Check the monitor cable connection.

Clean the mouse.

Reboot your system, and then verify that the proper mouse software has been installed.

My system does not boot when I turn it on.

If you are installing operating system software, make sure the correct floppy disk is installed.

If your system is attached to a cluster, go to the master and enter the Executive. Give the **Cluster Status** command, and check to see if your workstation is recognized by the master. If not, check the cluster cabling. If the cabling is not the problem, reboot the master.

My keyboard doesn't work after I reboot.

With some VM-001 monitors, you may have to reboot your system by turning the power off and on. This will insure that power to the keyboard is not lost during the rebooting sequence.

If you're using a color monitor (VC-002), turn it on before you turn on the Base module.

7

Clustering

Your workstation can be set up to operate singly, as a standalone workstation, or it can be connected to other workstations as part of a cluster, as shown in Figure 7-1.

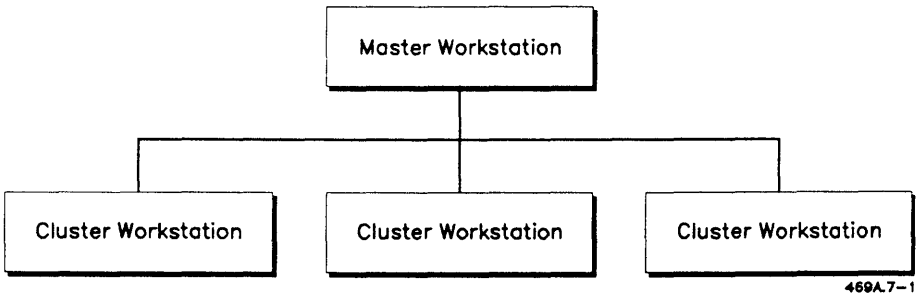


Figure 7-1. A Clustered System

A *standalone workstation* is a single user system. It must have a hard disk drive or it can't store any information. A *cluster* consists of two or more workstations connected together. Clustered workstations can share data, programs, disk space, and peripherals via the master workstation.

Each cluster has one master workstation. The master runs programs and provides disk storage space for the other workstations on the cluster. It also provides shared access to peripherals, such as printers. While it is doing all that, you can still use it to work on, just like a cluster workstation. The clustered workstations can have their own hard disks, but are not required to.

Here are just a few of the things you can do with clustering. Let's say you have 12 workstations, and you want to be able to print from all of them. If they were all set up as standalone workstations, you would need 12 printers. If the workstations were clustered, however, you would need only one printer, which all the workstations could share.

Your cluster workstations could also use the master's disk storage space and software. If you have 12 workstations, only the master needs to have a hard disk.

With or without hard disks, all the clustered workstations can share information through electronic mail. With electronic mail you can distribute messages, documents, programs, graphics, and spreadsheets without acres of paperwork. You can even send voice messages, if what you have to say requires more impact than the printed word allows.

Cluster Cabling

Workstations can be clustered by using RS-422 cables or by using TeleCluster. The cluster works the same way in either case, but with TeleCluster you use existing telephone wires instead of RS-422 cables. Cluster cabling is explained in detail in the *CTOS System Administrator's Guide*.

NOTE: The Series 386i has RS-485 connectors instead of RS-422 connectors. RS-485 connectors are compatible with RS-422 cables and connectors. If all of the workstations in the cluster have RS-485 connectors, you can cluster 32 workstations. The length of the cluster cabling must not exceed 1200 feet or be less than 50 feet. If any of the cluster workstations have RS-422 connectors, you can connect 16 cluster workstations to the Series 386i.

RS-422 Cabling

Series 386i workstations are connected using a daisy-chain configuration, as shown in Figure 7-2. You will need one RS-422 cable (Convergent model number PC-051) for each cluster workstation and two 100-ohm terminators. The RS-422 cables and the terminators are attached to the RS-485 connectors on the I/O panel at the rear of the Base module.

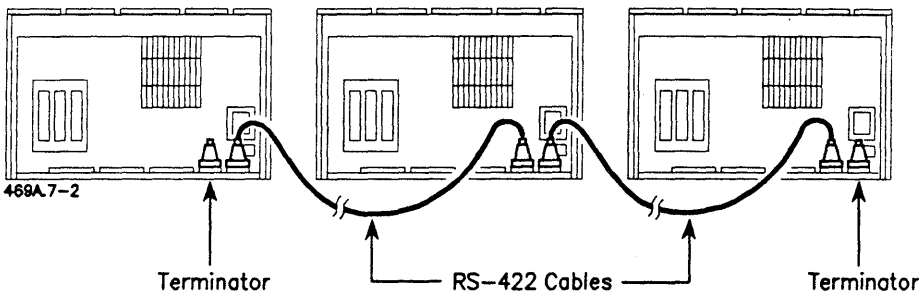


Figure 7-2. RS-422 Cabling

You also have the option of using a T-cable (Convergent model number PC-052). With a T-cable, you can remove a workstation from the line without interrupting the cluster. When you disconnect the T-cable and leave the RS-422 cables attached, you do not need to terminate the end of the T-cable that was attached to the workstation. Figure 7-3 shows a sample configuration using a T-cable.

NOTE: When you use the T-cable, only two terminators are needed, at the unused ends of the T-cables. Do not *terminate the unused RS-485 ports on the I/O panel when using T-cables.*

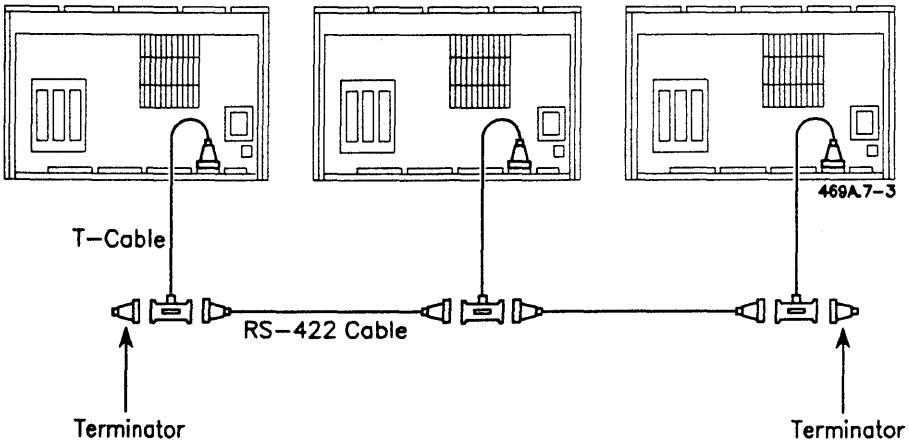


Figure 7-3. RS-422 Cabling With T-Cables

TeleCluster Cabling

The following section describes how the Series 386i connects to the TeleCluster adapter. Complete instructions for cabling with TeleCluster are in the *TeleCluster Manual.*

For each workstation, you need one RS-422 cable, (minimum 6 feet long), one 100-ohm terminator, and one TeleCluster adapter. One end of the RS-422 cable attaches to one of the RS-485 connectors on the Base module's I/O panel. The other end attaches to the TeleCluster adapter. The telephone cords plug into the adapter, and the adapter plugs into an ac outlet. The unused RS-485 connector on the I/O panel is terminated with a 100-ohm terminator. Figure 7-4 shows how the Series 386i connects to the TeleCluster adapter.

NOTE: Unlike the 286i, the 386i does not need a T-cable when using TeleCluster.

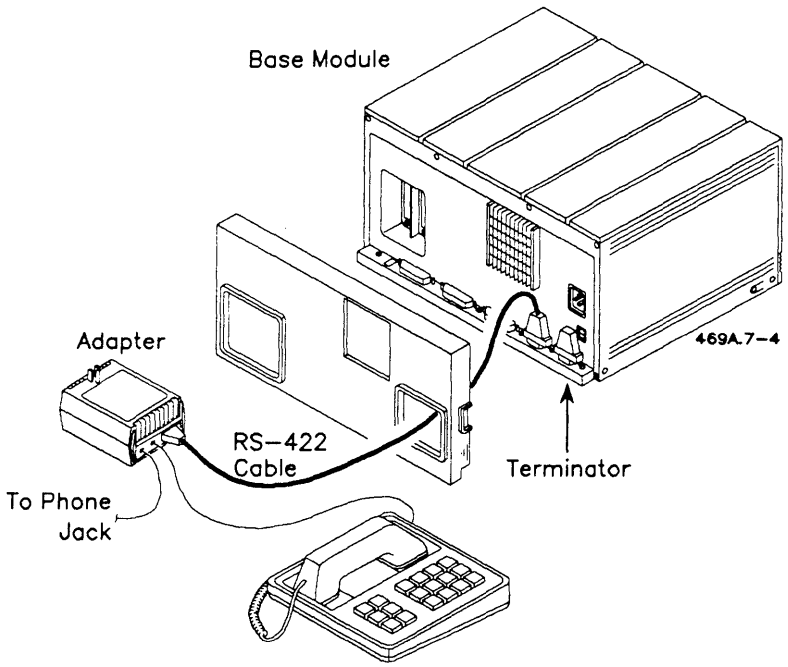


Figure 7-4. TeleCluster Cabling

8

Caring for Your Workstation

This chapter explains how to take care of your workstation. For an introduction to using your workstation, see *Getting Started With Your Workstation*.

Turning Off Your Workstation

You only need to turn off the power to your workstation if you are adding or moving hardware, or if you have a power failure. Always power off and unplug your workstation if you are adding hardware. If you have a power failure, immediately turn the power off to avoid a power surge when the power comes back on.

If you have a cluster workstation, you can turn it off at any time without affecting other systems on the cluster. If you turn off the master, however, the cluster workstations lose access to their services. To avoid getting any irate electronic mail messages, always tell the users of cluster workstations when you are going to turn off or reboot the master.

Rebooting

You occasionally need to reboot your system. To do this, press the reset button on the left side of the Base module. The button is nested within a half-circle protuberance, so you need to get your finger right in there and press firmly.

Caring for Floppy Disks

Floppy disks require a certain amount of care to function properly; take the following precautions when using them:

- Always store floppy disks in their protective envelopes. Never touch the open slot on a floppy disk. Your fingers can damage the recording surface.
- Keep your floppy disks dry and away from extreme temperatures. Don't leave them lying around in direct sunlight.
- Keep floppy disks away from anything that has a magnet in it, such as a telephone.
- To protect information already on a floppy disk, place a write-protect tab over the write-protect notch on the floppy disk.

Cleaning Modules

You can clean the outside of your modules with a mild household cleaner. Do not let any cleaner come in contact with tape drive heads or internal floppy drive components.

Never put cups of coffee, potted plants, bowls of fruit punch, waterbirds, or anything like that on top of your modules. Even a minor spill could cause damage to a module.

The Monitor

The monitor has a brightness control thumbwheel, as shown in Figure 5-4.

To adjust the tilt and swivel of the monitor, grasp the housing with both hands and move it around until it looks right.

Clean the monitor screen with a mild household glass cleaner.

The Keyboard

Always unplug the monitor and mouse connectors when cleaning the keyboard. Use a mild household cleaner, being careful not to spill it down between the keys.

If a key is sticking, call technical support.

The Mouse

To clean the mouse:

1. Unplug the mouse from the keyboard.
2. Turn the mouse over and remove the dial by turning it counterclockwise, as shown in Figure 8-1.
3. Remove the tracking ball and clean it with a moistened cloth. Use water only.
4. Dry the ball well and reinstall it.
5. Plug the mouse back into the keyboard.

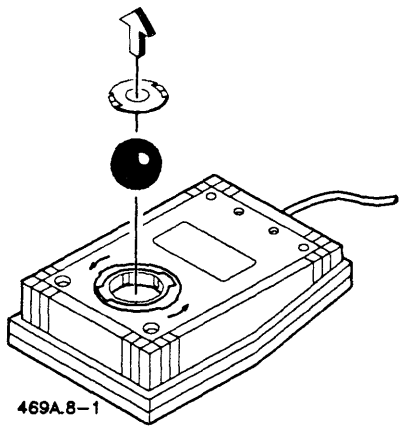


Figure 8-1. Removing the Tracking Ball

Cleaning the QIC Tape Backup Module

The QIC Tape Backup module should be cleaned after every eight hours of use. If you are using new tape cartridges, clean the module after every two hours of use.

You will need a tape drive head cleaning kit (such as Inmac Tape Drive Head Cleaning Kit, Part Number 7150), containing the following items:

- noncotton swabs
- cleaning solution
- aerosol can of compressed air

To clean the QIC Tape Backup module, follow this procedure and refer to Figure 8-2.

1. If there is a tape cartridge installed, move the left-hand lever all the way down and remove the cartridge.
2. Move the left-hand lever up.
3. Drip some cleaning solution onto the dual-colored end of the swab. *Do not dip the swab into the cleaning solution.*
4. Using the green side of the swab, clean the tape head with a side-to-side motion.
5. Remove the swab, and drip some more cleaning solution on it. (Again, do not dip the swab in the solution.)
6. Using the white side of the swab, clean the tape head with a side-to-side motion.
7. Use the smaller end of a new swab to remove any residue of cleaning solution.
8. Clean the tape hole sensor openings with the can of compressed air.
9. Move the left-hand lever back down. The tape drive is now ready for use.

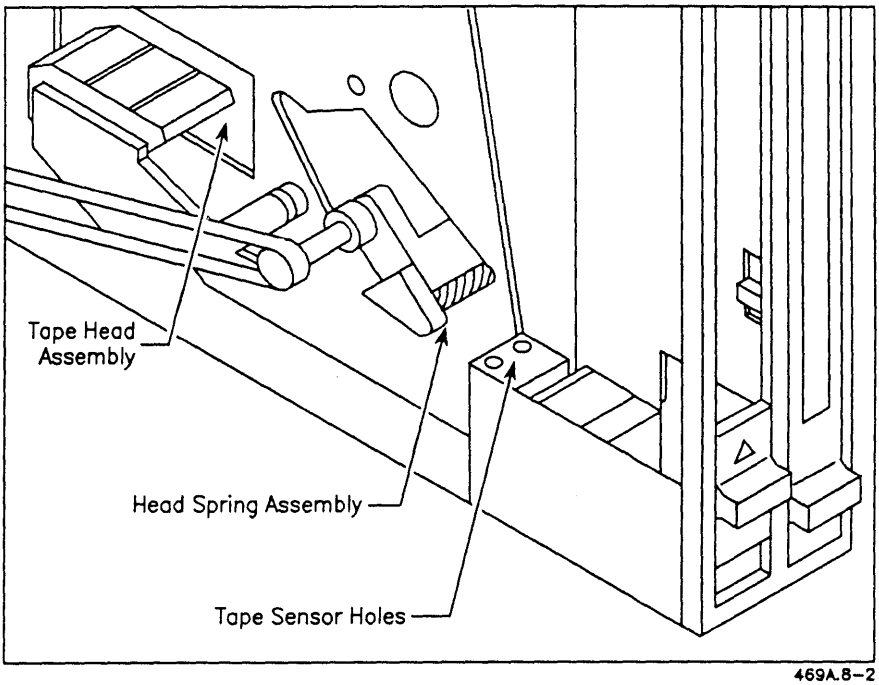


Figure 8-2. Cleaning the QIC Tape Backup Module

Moving Your Base Module

If you are going to move your Base module any farther than across your desk (like down the hall or across the continent), put a blank floppy disk in the drive and close the latch.

Replacing the Battery in the Base Module

The battery is located on the inside of the rear cover. To replace the battery,

1. Remove the top cover, as shown in Figure 2-2.
2. Remove the remaining 6 screws that hold on the rear cover.
3. Unplug the old battery and replace it with the new one.

–WARNING–

Replace the battery with Tadiran Limited, models 15-52-42-20000 or TL-5242; or Eagle Picher, model MAP-9166 only. Use of another battery may present a risk of fire or explosion. The battery may explode if recharged, disassembled, or disposed of in fire.

9

Expanding Your System

This chapter describes some of the products that you can use to expand your system. This is not a complete list of our products. Some of these products may require additional hardware or software; see your sales representative for more information.

This chapter covers the following products:

- functional modules
- storage modules
- application software
- programming languages
- local area network products
- communication networking programs

Functional Modules

Functional modules enable you to customize your workstation to perform specific tasks. Some functional modules are available as X-Bus option cards. X-Bus option cards are installed inside the Base module; therefore, they do not require power bricks. In addition, by installing the cards inside the Base module, you are not using up space on the external X-Bus option. This allows you to add more modules.

Ethernet Module

The Ethernet module connects master workstations together in an Ethernet network, which allows several different clusters to be able to share information and resources.

The Ethernet module also comes as an X-Bus option card.

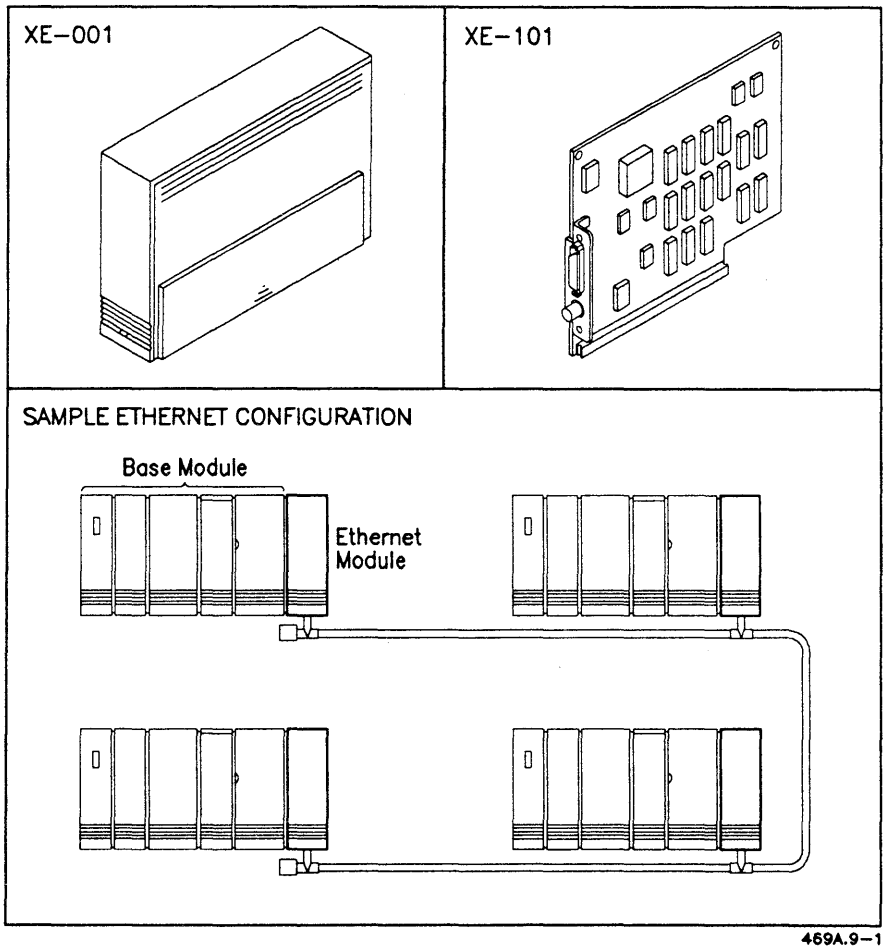


Figure 9-1. Ethernet Module and Card

Multiline Port Expander

With the Multiline Port Expander, you can add four more serial ports to your workstation. These ports are used to attach printers, plotters, scanners, and modems. Each Multiline Port Expander contains four serial ports. By using two of these modules, you can attach up to 10 serial devices.

The Multiline Port Expander is available as a module or as an X-Bus option card.

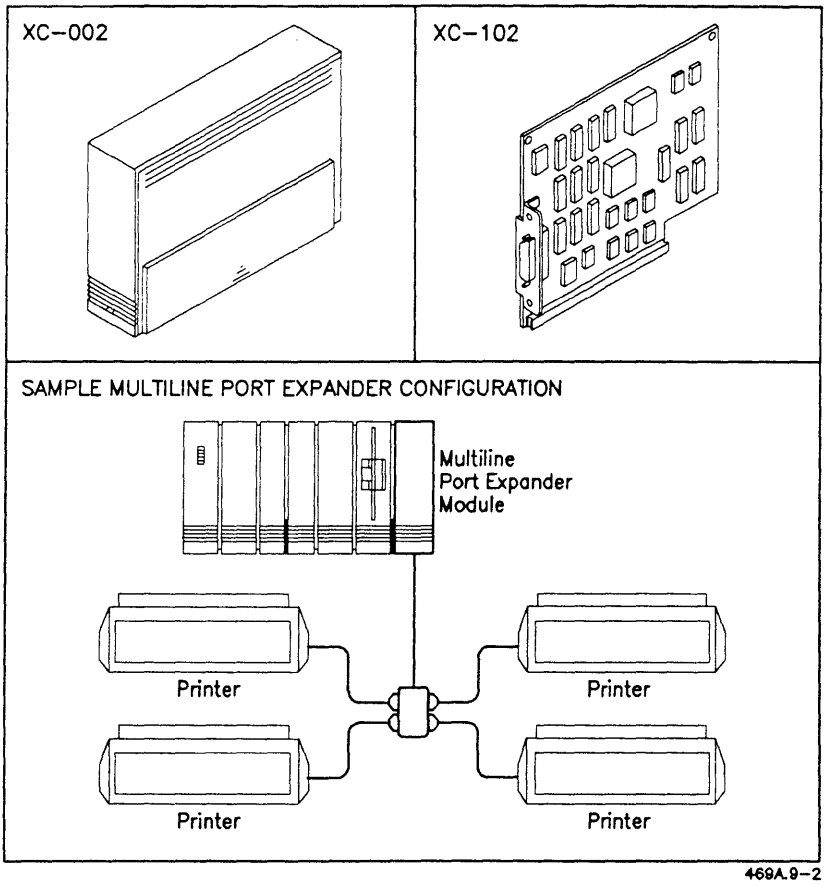


Figure 9-2. Multiline Port Expander

Voice Processor Module

The Voice Processor module is a sophisticated telephone answering machine, complete with the following capabilities: autodialing, accepting incoming telephone calls, and taking and replaying messages.

You can also use the Voice Processor to add voice annotations to Document Designer documents and electronic mail messages.

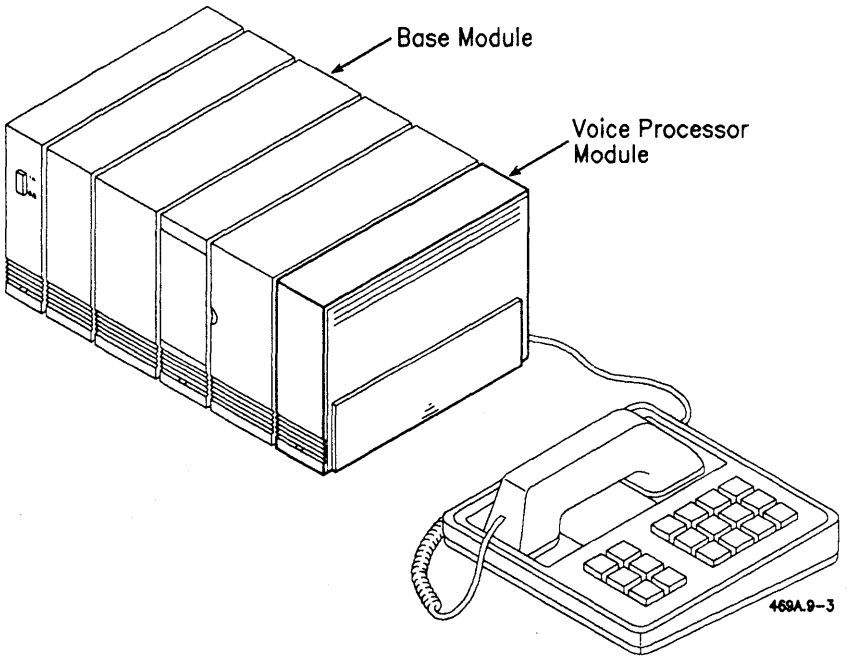


Figure 9-3. Voice Processor

Storage Modules

Hard Disk Expansions

The following modules increase the amount of information that your system can store.

- Dual Floppy module (contains two floppy disk drives)
- Floppy/Hard Disk modules (contain one floppy disk drive and one hard disk expansion drive of variable size)
- Hard Disk Expansion modules (contain one hard disk of variable size)
- Hard Disk Upgrade modules (used to expand the capacity of drive modules attached to your system)
- SCSI Drive modules (increase processing speed)

Quarter-Inch Cartridge Tape Backup Module

The easiest way to store large amounts of data or do system backups is by using quarter-inch tape. The Quarter-Inch Tape Backup module provides you with that capability.

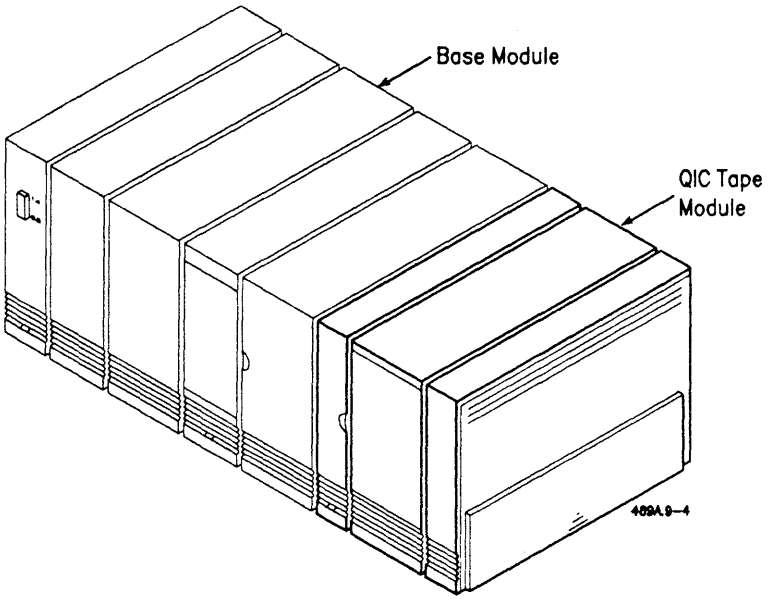


Figure 9-4. QIC Tape Module

Monitors

The Series 386i can support the following monitors:

- VC-002: 15-inch, free-standing, medium-resolution color monitor. This monitor works with the GC-102 video card.
- VM-001: 12-inch, medium-resolution monochrome monitor. This monitor works with the GC-102 and GC-103 video cards.
- VM-002: 14-inch, medium-resolution monochrome monitor. This monitor works with the GC-102 and GC-103 video cards.
- VM-003: 15-inch, high-resolution monochrome monitor that provides WYSIWYG ("What You See Is What You Get") capabilities. This monitor works with the GC-103 video card and the GC-003 Graphics Controller module.

Application Software

Art Designer

Art Designer is a powerful graphics package that can be used to create anything from simple text transparencies and organization charts to complex illustrations and graphs. Art created in Art Designer can be integrated into text files created in Document Designer. The art shown below was created using Art Designer.

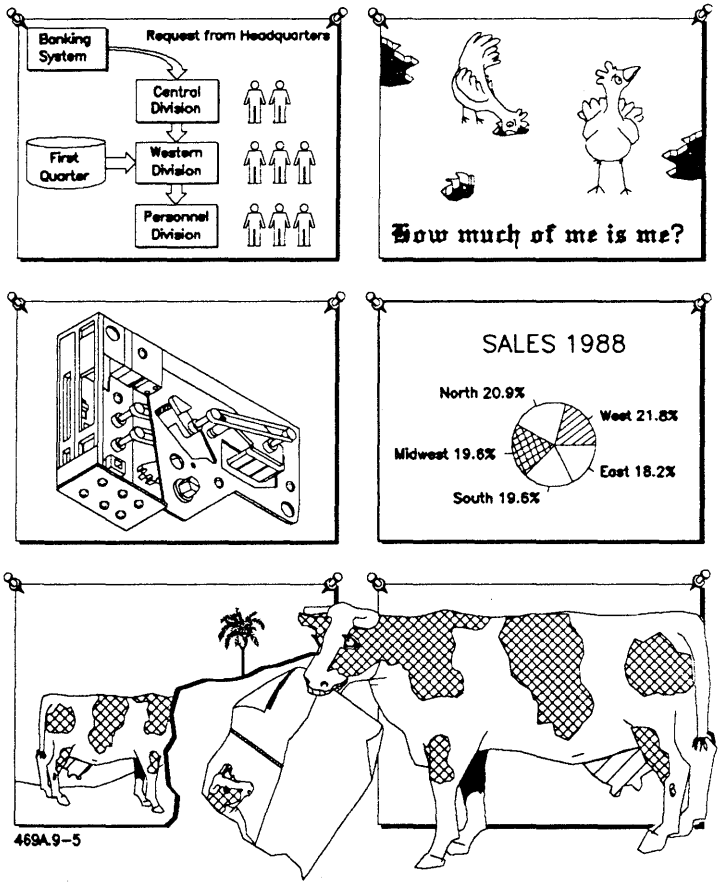


Figure 9-5. Art Designer

Context Manager/VM and Window Services

Context Manager/VM and Window Services are software programs that enable multiple software applications to execute concurrently and be displayed simultaneously in windows.

With Context Manager/VM, users can execute time-consuming operations (such as system backup) while using the workstation to perform other tasks.

When used with Window Services (a program that manages multiple windows), Context Manager/VM permits a user to view several applications on the screen simultaneously. Each application appears in its own window. Each window can be sized, moved, and overlapped.

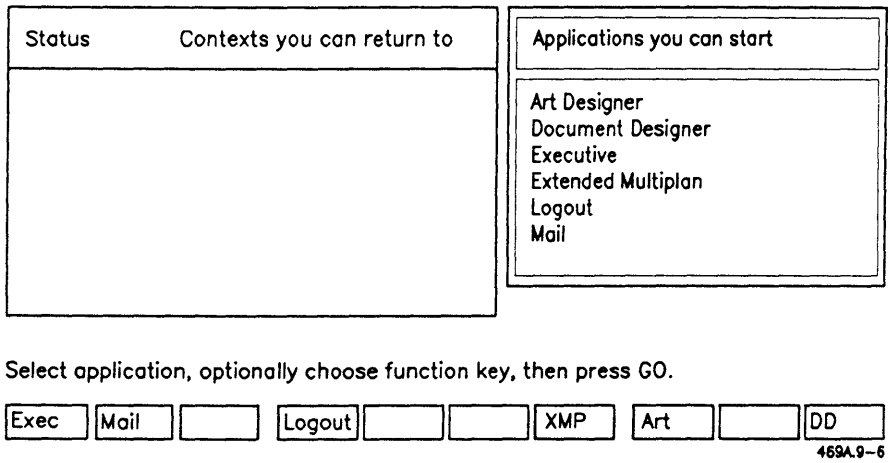


Figure 9-6. Context Manager

CT-MAIL

CT-MAIL allows you to use your system to send and receive electronic mail messages. You can send memos, documents, financial models, graphs, and programs through the mail network, thus automating communication in the office environment and reducing paper traffic.

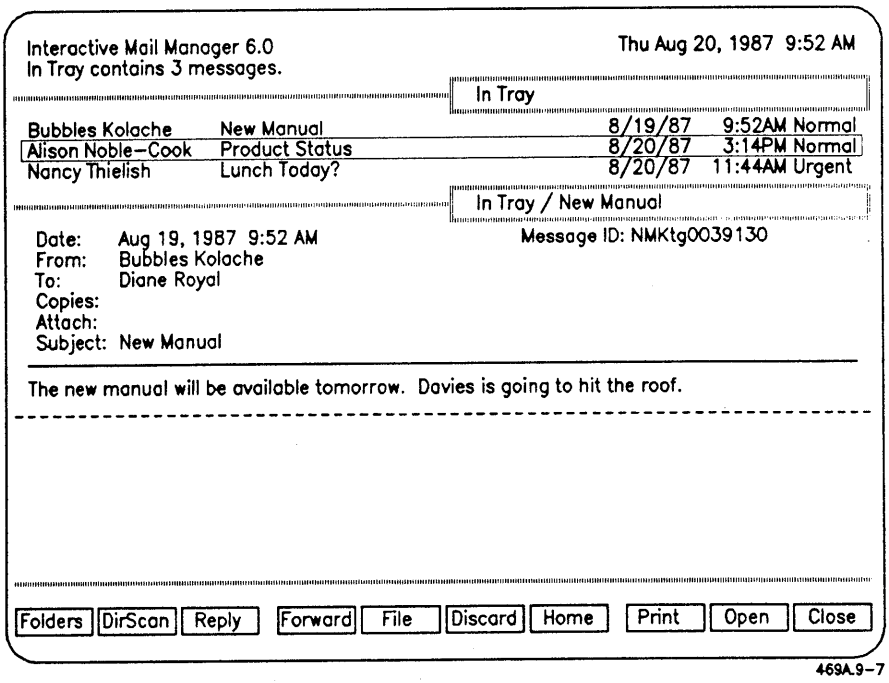


Figure 9-7. CT-MAIL

Document Designer

Document Designer is the foundation of the office publishing system. With the Document Designer software series, you can integrate text, graphics, spreadsheets, and database information into one document. You can display documents in a WYSIWYG format. Documents created in Document Designer appear to be typeset but can be created at a fraction of typesetting costs.

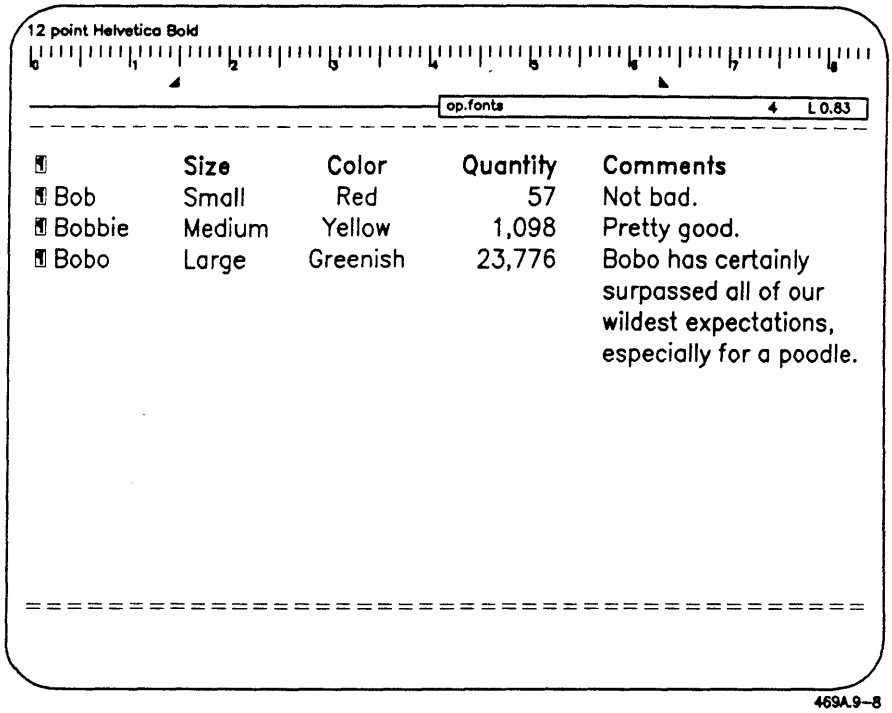


Figure 9-8. Document Designer

Extended Multiplan

Extended Multiplan is a sophisticated financial modeling and planning software package specifically designed for financial and business planning, analysis, budgeting, and forecasting. Extended Multiplan can be used in conjunction with Art Designer to create pie, line, and bar graphs from spreadsheet data. Spreadsheets and graphs can both be integrated with Document Designer documents. Objects created in Extended Multiplan can also be integrated with personal and multiuser databases.

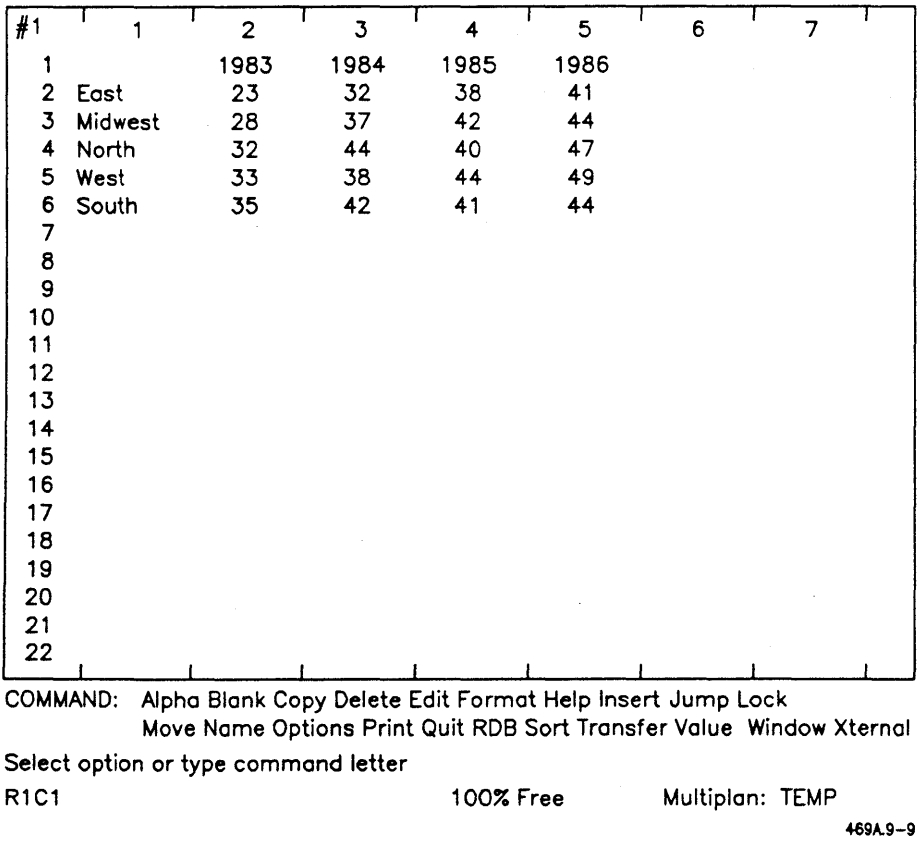


Figure 9-9. Extended Multiplan

Image Designer

With Image Designer, you can turn just about any image on paper into electronic form. You can scan photos, illustrations, and graphic forms online to include in your documents or to distribute among co-workers.

Once you capture an image online, you can resize, mirror, and reverse it. Then you can store the modified image on a master so that others in your workgroup can use and modify the very same image in their work. You can attach scanned images to electronic mail messages so that any image you scan online can be mailed to any location on the network.

Like other software applications, you can integrate scanned images into your Document Designer documents.

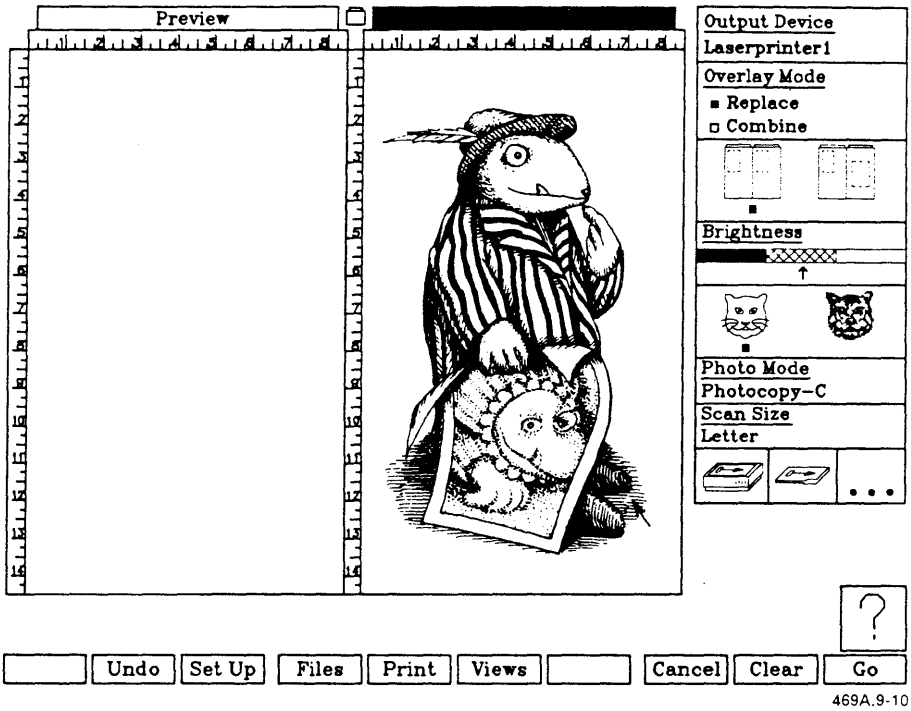


Figure 9-10. Image Designer

The Operator

The Operator is a software product that automates telephone tasks. When used with the Voice Processor module, a complete telephone management system is created. The Operator maintains an online phone list containing detailed information about each entry, such as addresses, alternate numbers, and notes.

It also performs telephone autodialing functions, operates as an answering machine, and establishes data calls as well as voice communications.

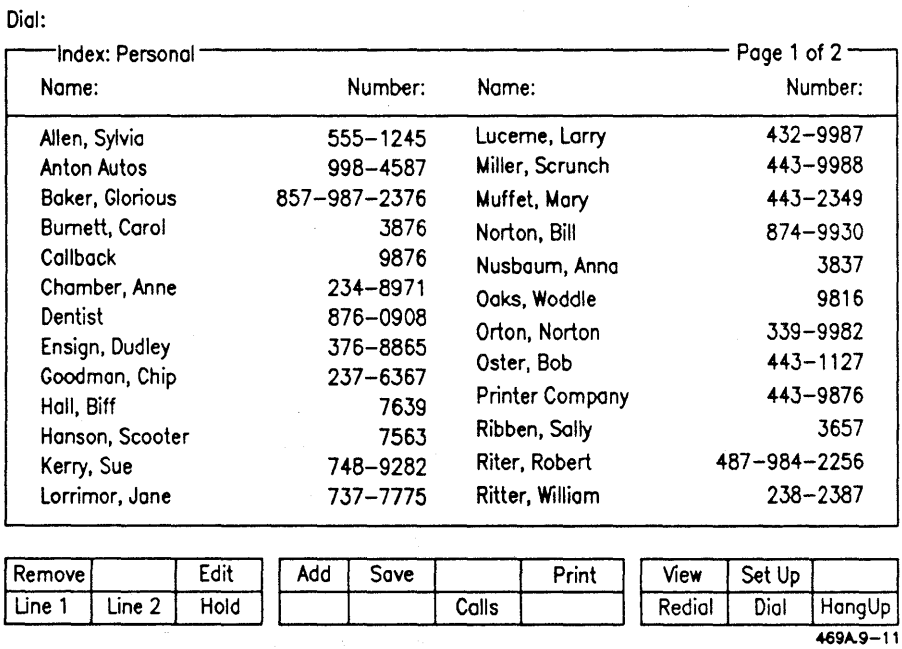


Figure 9-11. The Operator

Phone Memo Manager

Phone Memo Manager is an easy-to-use telephone messaging system that logs and distributes phone messages in an office environment via CT-MAIL.

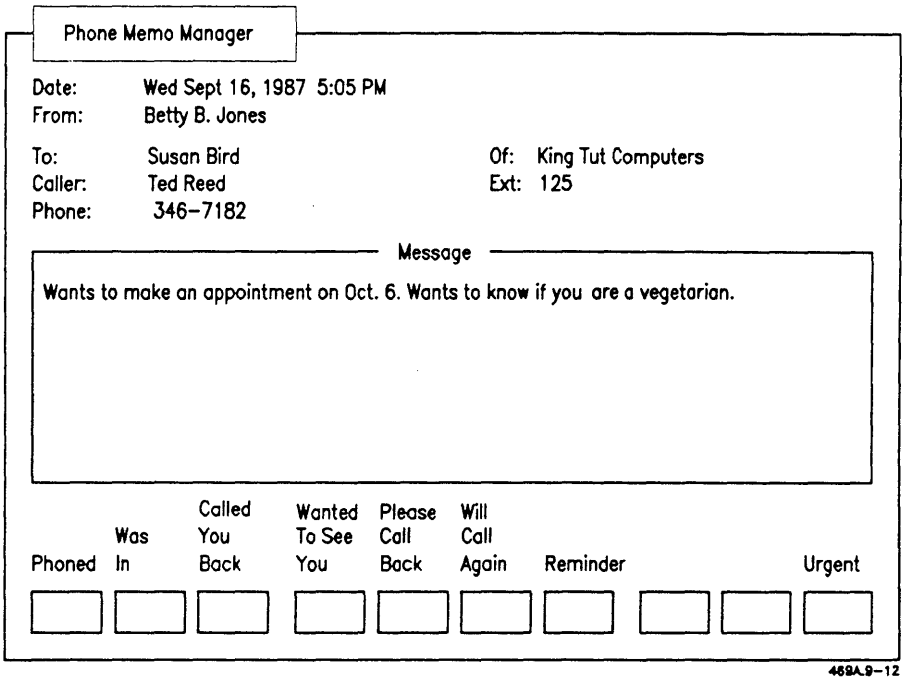
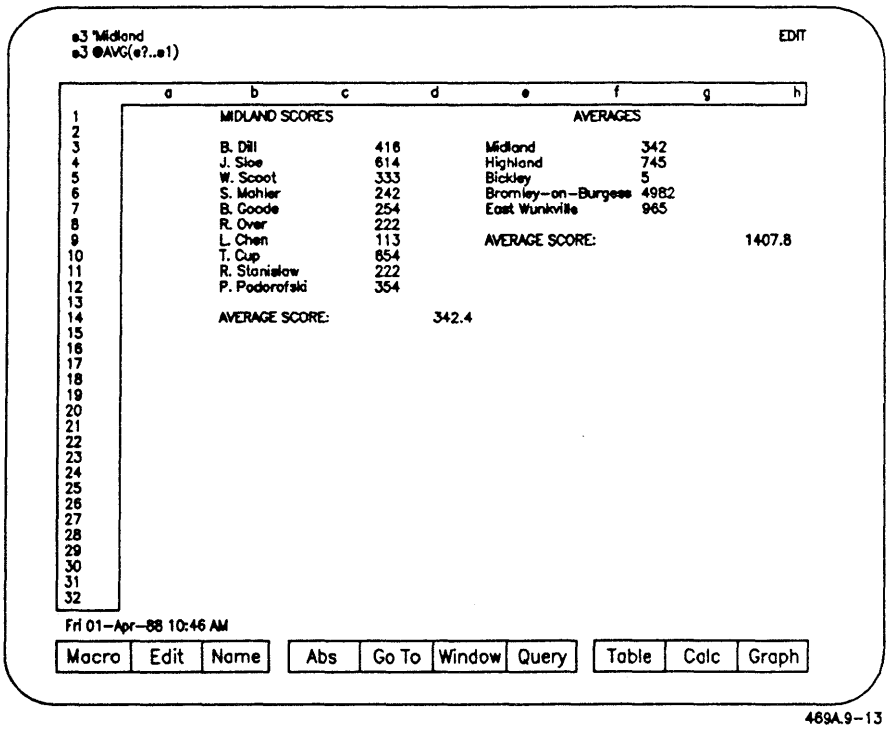


Figure 9-12. Phone Memo Manager

Solution Designer

Solution Designer combines the features of two popular worksheets, Lotus 1-2-3 and Multiplan, and makes those features available to workgroup users. The familiar features that make 1-2-3 and Multiplan popular are combined and enhanced in Solution Designer:

- Complete on-screen menus with easy, one-letter use of commands
- Over 60 built-in functions
- Online Help with convenient Table of Contents and access to topics using the screen keys
- Database capability



469A.9-13

Figure 9-13. Solution Designer

Local Area Network Products

TeleCluster

TeleCluster uses telephone wiring instead of RS-422 cables to cluster workstations. This reduces costs considerably, especially if you are going to cluster a large number of systems together that are spread out over a wide area.

The figure below shows a sample TeleCluster configuration.

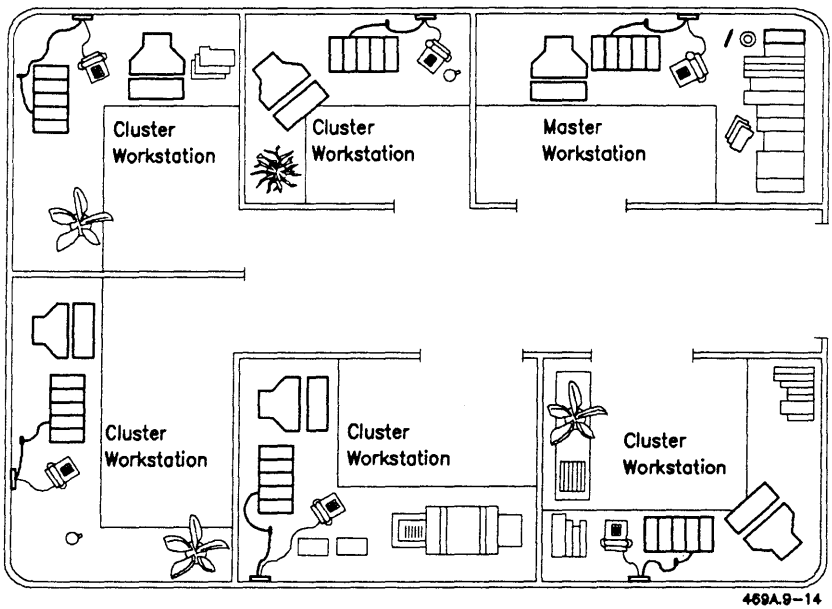


Figure 9-14. TeleCluster Configuration

Communication Networking Programs

There are several networking programs available for your workstation.

- CT-Net: enables workstation clusters to communicate with each other
- Enhanced Bisync 3270 Emulator: emulates an IBM 3270 Information Display System utilizing Binary Synchronous Communication (BSC) protocol
- RJE 2780/3780 Terminal Emulator: enables a workstation to send files to a remote host computer that supports 2780/3780 protocol
- System Network Architecture (SNA) protocols: a variety of protocols utilizing SNA architecture to allow systems to communicate with systems that use SNA architecture, such as IBM mainframes
- X.25 Network Gateway: enables a system to operate with a public packet-switching data network, such as Telenet, Tymnet, or Transpac, which are based on the CCITT Recommendation X.25 1980 standard

Programming Languages

The following programming languages are available for your system:

- Assembly
- Basic
- C
- COBOL
- FORTRAN-86
- Pascal
- PL/M

Glossary

application program. A program, such as Art Designer or Document Designer, that is used for a specific purpose.

boot. To start up a computer by loading a program into memory from an external storage medium, such as a floppy disk. *See also* reboot.

bus. A signal line or a set of lines used by an interface system to connect a number of devices and to transmit information. In general, three types of buses make up a bus set (which is also referred to as a bus): the address bus, the data bus, and the control bus.

byte. A unit of information, often amounting to a single text character. A byte commonly consists of 8 bits.

central processor unit (CPU). The element, such as the processor, that imprints and executes instructions.

cluster. Two or more connected computer systems. *See also* cluster workstation, master workstation, and server.

cluster workstation. A computer system attached to a cluster that uses disk space on the master workstation or server to run software application programs and store files.

command. A communication from the user to a computer system (usually typed from the keyboard) directing it to perform an action.

configuration. The arrangement or interrelationships of the hardware and software elements that constitute a computer system.

configuring. The act of changing software or hardware actions by altering a configuration, as by changing settings or configuration files.

connector. A physical device, such as a plug, socket, or jack, used to connect one hardware component of a system to another.

CPU. *See* central processing unit.

CTOS operating system. A realtime, message-based, multitasking operating system.

daisy-chain. A cluster connection made by linking systems together so that the signal goes out of the first system and into the second, out of the second and into the third, and so on.

default. A value, action, or setting that is automatically used by a computer system when no other explicit information has been given.

disk. An information storage medium consisting of a flat, round magnetic surface on which data can be stored and retrieved.

disk drive. A peripheral device that writes and reads information on the surface of a magnetic disk.

display. To exhibit information visually, as on the screen of a display device, such as a video monitor.

distributed processing. A system wherein I/O, processing, storage, and control functions are located in different places, connected via transmission media.

error message. A message displayed or printed to notify the user of an error or problem in the execution of a program.

execute. To perform or carry out a specified action or sequence of actions, such as those instructed by a program.

hard disk drive. *See* disk drive.

hardware. Those components of a computer system consisting of physical devices. *See also* software.

input. Data transferred into a computer from some external source, such as the keyboard, a disk drive, or a floppy disk.

input/output (I/O). A general term for the techniques, devices, and media used to communicate with the processor in a computer and the data involved in such communications.

keyboard. A device that enables users to input data directly into the computer system.

local file system. A hard disk expansion (usually includes a floppy drive) that is attached to your Base module. A system with a local file system can run programs and access files without having to be attached to a cluster.

master workstation. An NGEN or Series 386i system designated as the controlling unit of a cluster. The master runs application programs and system services used by systems attached to the cluster, supervises cluster access to attached peripherals, and provides individual resources (such as memory space) to each system attached to the cluster.

megabyte. Equal to about 1 million bytes.

memory. A hardware or software component of a computer system that can store information for retrieval.

memory card. A card installed in the Base module that provides for system memory.

microprocessor. *See* processor.

mode. The state of a computer or system that determines its behavior.

modem. An external device that modulates and demodulates signals transmitted over data communications facilities.

module. An individually housed expansion card that attaches to the right of the Base module.

monitor. A video display screen.

NGEN. A modular family of workstations.

network. *See* cluster.

operating system. A software system that manages the computer's resources and capabilities and makes them available to the user or to application programs running on the computer.

parallel printer. A peripheral that receives or transmits data bits simultaneously. *See also* serial printer.

parallel printer cable. A cable used to attach the parallel printer to the Base module.

peripheral. A device (such as a printer, monitor, or modem) that attaches to one of the external ports on the Base module.

ports. *See* connector.

power brick. A 36V power supply that connects expansion modules to an ac receptacle.

power codes. Numbers that reflect the power consumption of modules. These numbers are used to determine how many and where power bricks need to be installed.

printer. An external device that writes output data to paper or other media. *See also* parallel printer; serial printer.

processor. A hardware component of a computer that interprets and executes instructions.

program. A set of instructions, conforming to the rules and conventions of a particular programming language, describing actions for a computer to perform in order to accomplish some task.

protocol. A set of conventions for making processes able to exchange information.

reboot. To restart a system by loading the operating system into memory from the fixed disk.

reset. *See* reboot.

RS-232-C cable. An industry-standard cable used to carry data at speeds of 0 to 19.2 kbits (or kilobits) per second by serial binary data interchange.

RS-422 cable. An industry-standard cable used to carry data at high speeds using serial binary data interchange.

SCSI (Small Computer System Interface). A bus used for communication between modules and intelligent peripherals.

serial device. *See* serial printer; modem.

serial printer. A device that sends or receives data bits one at a time. *See also* parallel printer.

Series 386i. A computer system, part of the NGEN family of modular workstations.

server. A computer system used as the master of a cluster with more than 16 systems.

Shared Resource Processor (SRP). *See* server.

software. Programs that determine or control the behavior of the computer.

standalone workstation. A workstation that contains its own local file system and is not attached to a cluster.

system administrator. The person responsible for maintaining the computer system.

system services. Software programs (such as electronic mail) that are supported by the operating system and in turn support application programs.

TeleCluster. A clustering product that utilizes existing telephone lines to connect cluster workstations.

video display. *See* monitor.

X-Bus. An expansion bus used by modules to communicate with each other.

X-Bus expansion module. *See* module.

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