

# ALTOS

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586T/986T

SETTING Up

# **586T/986T Setting Up Guide**

# Federal Communication Commission Notice

## W A R N I N G

This equipment can radiate radio frequency and energy and, if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of 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 in which case the user, at the user's own expense, will be required to take whatever measures may be required to correct the interference.

## ACKNOWLEDGEMENTS

ALTOS is a registered trademark and WorkNet is a trademark of Altos Computer Systems.

XENIX is a trademark of Microsoft.

Concurrent CP/M is a trademark of Digital Research.

## CAUTION

If you have to send your system for repair, part of the test procedure erases the data on the hard disk. Therefore, copy all the contents of the disk.

## SAFETY WARNING

Disconnect the AC power cord before installing any option boards and before replacing the fuse.

Do not attempt to service any parts of the 586T/986T system.

## Introduction

This guide introduces you to the Altos 586T and 986T computer systems. It shows you how to choose an appropriate site for your system, connect the various parts, and start it up. You will also run confidence tests that will confirm that your system is running properly.

Should you experience any difficulty with the installation, a checklist helps you locate the source of the problem and suggests possible remedies. After you have finished setting up your system, you are directed you where to go next.

A 586T/986T system is shown below.

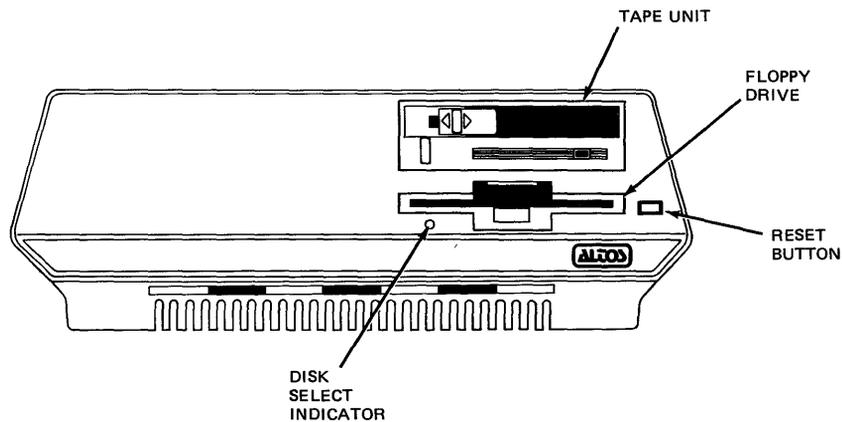


Figure 1. Altos 586T/986T System



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# Chapter 1

## Choosing a Location

After unpacking your 586T/986T, decide where you want to use your system. When choosing a location, consider these suggestions:

1. Choose a stable surface to hold your system. If you are going to place your terminal next to the system, make sure that the surface is large enough to provide 12" of space between the system and the terminal.
2. Place your system and terminal near a 3 way power outlet.
3. Orient your terminal away from direct sunlight or strong room lights.
4. Provide enough space to route the cables and power cords.
5. Be sure the cooling vents for the terminal and system are not be blocked.

See the following illustration.

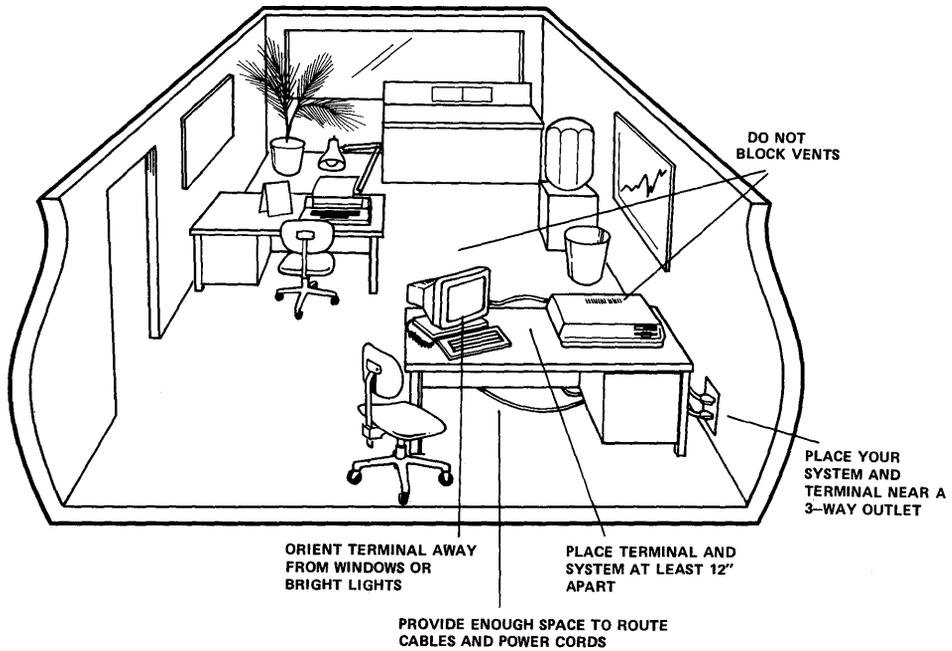


Figure 2. Choosing a Location

# Chapter 2

## Setting Up Your System

Read this chapter to find out how to connect the various parts of your system.

### Before You Begin

Before you begin make sure that you can easily reach the backpanels on both the System and the Terminal.

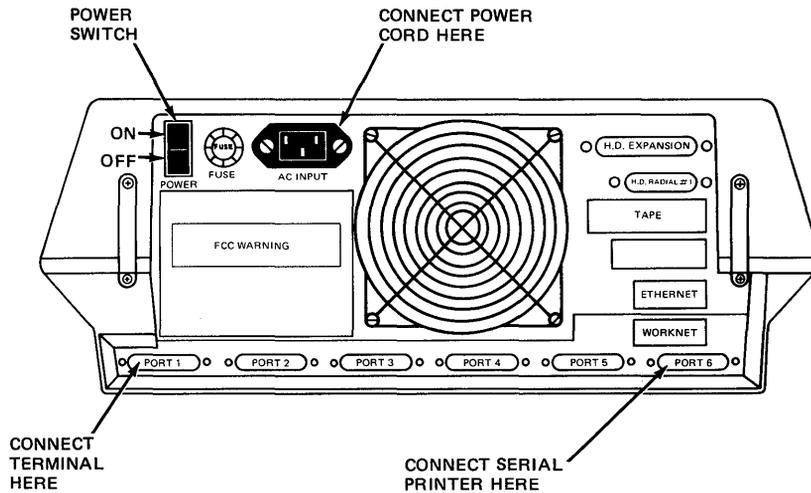


Figure 3. The 586T Backpanel

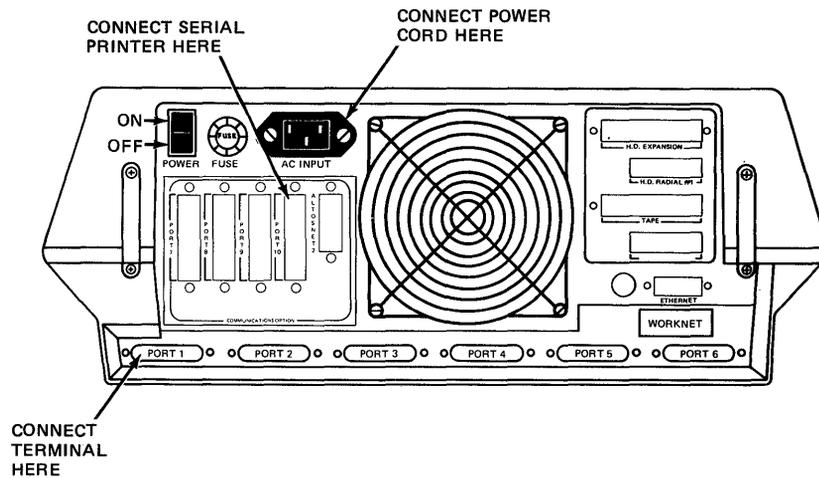


Figure 4. The 986T Backpanel

## Connecting a Terminal to the System

A wide variety of terminals can be used with the Altos 586T/986T. Most terminals use a RS232C cable to connect the terminal to the system. This is an industry standard cable and is readily available.

The cable from the terminal must be connected to **PORT 1** on the 586T or the 986T. See the manual that came with your terminal for where to connect the cable at the terminal. Connect additional terminals to ports 2 through 5 on the 586T and 2 through 9 on the 986T.

Your terminal must be set to communicate with your system according to the specifications below:

- o 9600 baud asynchronous transmission.
- o Eight bit word length, one start bit and one stop bit.
- o No parity.
- o Data-Terminal-Ready (DTR) handshaking enabled.\*
- o Request-to-send (RTS) and clear-to-send (CTS) handshaking is disabled.

Refer to your operating system manual (Introduction to Xenix or the Introduction to Concurrent CP/M) and the manual that came with your terminal for how set these parameters.

\*As an alternative to DTR handshaking, you may use X/ON-X/OFF. In this case DTR must be on at all times as opposed to operating in the "handshaking" (back and forth signaling) mode.

## **Connecting the Power Cord to the System**

Plug the power cord into the AC INPUT receptacle at the rear of your system.

Do not plug the power cord into the wall outlet.



# Chapter 3

## Starting Your System

### Before You Begin

1. Make sure that the power switches for both the system and the terminal are in the **OFF** position.
2. Plug the power cords for the system and the terminal into the wall outlets.

### Turning the Terminal On

1. Turn the terminal on.
2. Watch for the cursor (small rectangular block) to appear in the upper left-hand corner of the screen. After about 30 seconds, if the cursor does not appear, try adjusting the brightness.

### Turning the System On

To turn the system on, set the Power Switch on the system to **ON**. The following message appears on the screen in approximately 15 seconds:

```
POWER UP TEST PASSED  
Monitor Version n.nn  
Press any key to interrupt boot
```

Within four seconds press the Space Bar. The screen message changes to read:

```
PASSED POWER-UP TEST
Monitor Version n.nn
Press any key to interrupt boot

Enter [1] to Boot from Hard Disk
Enter [2] to Boot from Floppy Disk
Enter [3] to Enter Monitor
```

At this point, do not select any of the options.

If the system does not pass the Power Up test, the following message appears on the screen:

```
POWER UP TEST FAILED
```

## Problem Checklist

If your system does not display a power up test message, check the following list.

1. If the fan on the system is not running, check the following:

Is the Power Cord plugged into the rear of the system and into the wall outlet?

Check the wall outlet by plugging in a lamp.

Check the fuse by doing the following:

Set the Power Switch to OFF.

Unplug the power cord from the wall outlet.

Remove the fuse holder by inserting a screwdriver into the fuse holder slot and turning it counterclockwise.

Inspect the fuse. It is defective if the wire between the two metal caps is broken or no longer visible. Replace the fuse if necessary. Otherwise, reinsert the fuse holder into the rear panel and using the screwdriver, turn it clockwise.

2. If nothing appears on the screen, check the following:

Is the the keyboard plugged into the Monitor?

Is the cable between the terminal and the system secure at both ends?

Is the brightness control on the terminal turned up all the way?

If none of these suggestions has helped contact your Altos dealer.

#### CAUTION

**IF YOUR SYSTEM HAS TO BE SENT IN FOR REPAIR, PART OF THE TEST PROCEDURE ERASES THE DATA ON THE HARD DISK.**

**THEREFORE, COPY ALL THE CONTENTS OF THE HARD DISK, AS ALTOS DOES NOT GUARANTEE DATA INTEGRITY UPON RETURN OF YOUR SYSTEM.**



# Chapter 4

## Using and Backing Up Diskettes

With the 586T and 986T systems, you should use double-sided, double density floppy diskettes.

### Handling Diskettes

- o Use a felt pen to label your diskette. Do not use a ball point pen.
- o Keep your diskettes away from any magnetized objects. This includes putting a diskette on top of your system or close to the telephone.
- o Do not bend your diskette.
- o Keep your diskette away from direct sunlight or excessive heat.
- o Do not touch or clean the exposed surfaces on the diskette.
- o When not in use, store your diskettes in their protective jackets.

## Protecting Data On Diskettes

The 5 1/4 inch diskettes that you use with your system have a notch cut into the side. You also receive silver pieces of tape for covering this notch.

When the notch is covered, you cannot write or erase data on the diskette. This is known as write protecting a disk.

When the notch is not covered, you can write or erase data on the diskette. This is known as write enabling a disk.

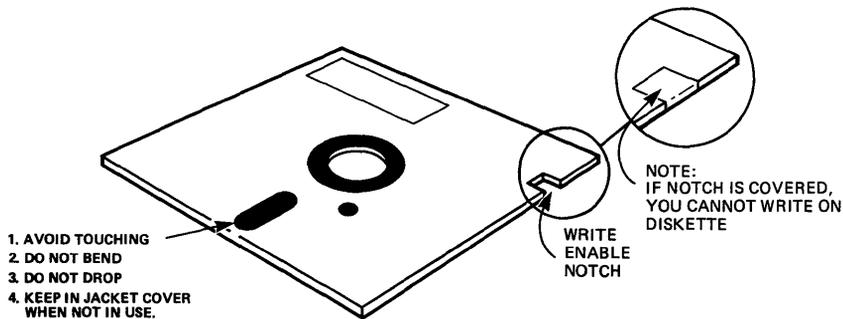
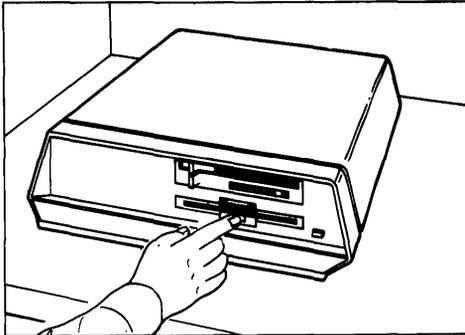


Figure 5. A Write-Protected Diskette

## Inserting a Diskette



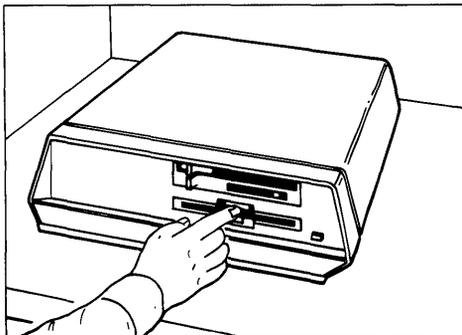
- 1) Open the Floppy Drive slot.

Press the rectangular area below the slot as shown.



- 2) Insert the diskette.

With the label side facing up and toward you, carefully insert the diskette until it locks in place.



- 3) Close the drive door

Slide the door latch down until it locks in place.

Figure 6. Loading a Diskette

## **Copying Original Diskettes**

The first and most important thing you should do once you have your system set up is to make copies of the original diskettes for the diagnostics program, operating system, and applications programs.

After making the copies, store the originals in a secure place and use the copy when running the program or installing the operating system.

Chapter 6, *Using the Utility Programs*, explains how to format and copy diskettes.

# Chapter 5

## Running the System Confidence Tests

Once your system passes the power up test and you make copies of your diskettes, you should run the system confidence tests. These tests provide a quick way to verify that the main components of your system are working properly.

The components these tests verify include:

- o Floppy disk drive
- o Hard disk drive
- o Controller board
- o Serial communication channels
- o Central Processing Unit (CPU)

The system confidence tests are located on the System Diagnostics Executive (SDX) diskette. This diskette also contains utility programs that you can use to perform vital tasks such as formatting and copying floppy diskettes. Chapter 6 explains how to use the utility programs.

## How To Begin

The following instructions explain how to load the SDX diskette.

- Step 1. Turn ON the system. If it is already on, press the reset button located on the front of the system (see Figure 1). The following prompts appear on the screen.

### NOTE

Be ready to press a key quickly when the screen says "Press any key to interrupt boot." If you do not press a key at this point, the system may attempt to load the operating system from the hard disk.

```
Monitor Version n.nn  
Press any key to interrupt boot
```

- Step 2. After pressing any key to interrupt the auto-boot, the screen displays:

```
Enter [1] to boot from Hard Disk  
Enter [2] to boot from Floppy Disk  
Enter [3] to boot from Monitor
```

```
Enter option:
```

Step 3. Insert the SDX diskette (see Chapter 4 for instructions). Type 2 to load the Diagnostic diskette from the floppy disk drive.

After a few seconds, the Main Menu appears:

```
586T/986T SYSTEM DIAGNOSTIC EXECUTIVE Version n.n
```

```
Main Menu:
```

```
R: Run system confidence tests
```

```
U: Utility programs
```

```
X: Exit SDX
```

```
*** Enter Command:
```

If for some reason the Main Menu does not appear, repeat steps 1 through 3 above.

## Running The Tests

To run the system confidence tests, type R and press the Return key. Throughout this text the Return key appears as <CR>.

The tests take approximately five minutes. As they run, messages such as "Memory refresh test" and "Memory parity test" appear on the screen.

When the tests are complete, the screen displays:

```
1. Main Memory Test.....PASSED
2. CPU Monitor ROM Checksum Test.....PASSED
3. Memory Management Unit Test.....PASSED
4. Interrupt Controller Test.....PASSED
5. Storage Controller Board Test.....PASSED
6. Hard Disk Seek Test.....PASSED
7. Floppy Disk Seek Test.....PASSED
ABCDEF...WXYZ1234567890,./<>?;"![]{}==abcdefg...xyz->
8. Brief Serial Test.....PASSED

Press any key to return to Main Menu
```

If any tests report a failed message instead of the passed message, contact authorized personnel or your local dealer.

You can stop any of the system confidence tests and go on to the next test in the sequence by pressing the Escape key.

If you wish to stop the system confidence tests before they are completed, simply press the Delete, Break, or Rub Out key. The program returns to the Main Menu.

# Chapter 6

## Using the Utility Programs

This chapter explains how to use the 586T/986T Utility programs. With these programs, you can:

- o Format floppy diskettes. This procedure prepares the floppy diskette to receive data. You must format a floppy diskette before you can store data on it.
- o Copy floppy diskettes. This procedure copies the entire contents of a floppy diskette onto a formatted diskette.
- o Flag hard disk bad sectors. With this program, you can flag known bad sectors on the hard disk so that they will not be used for storing data.
- o Display bad sectors. This program displays a summary of all the flagged sectors and bad sectors that exist on your hard disk.

To use the utility programs, load the SDX diskette as described in Chapter 4, type U, and press <CR>.

The screen displays:

Utility Menu:	
<u>Utility #</u>	<u>Utility Description</u>
1	Floppy Disk Format
2	Floppy Copy
3	Flag Hard Disk Bad Sectors
4	Display Hard Disk Bad Sectors
5	Return to previous menu

Enter Selection:

To run a utility program, simply select the appropriate number and follow the instructions that appear on the screen.

If you need to stop a program before it is complete, press the Escape, Delete, or Rub Out key. The program returns to the Main Menu.

The following sections explain how to use each Utility program.

## The Floppy Disk Format Program

The Floppy Disk Format program prepares a floppy diskette to receive data. You must format a diskette before you can store data on it.

### CAUTION

Formatting a floppy diskette erases any data contained on that diskette. Do not format a diskette that contains data unless the data is no longer needed.

To format a floppy diskette, select 1 from the Utility Menu and press <CR>. The screen displays:

**Floppy Disk Format**  
Insert floppy disk to be formatted and press <CR>

Remove the Diagnostic diskette from the disk drive and insert the diskette to be formatted. Then press <CR>.

As the diskette is formatted, the screen displays the number of each cylinder.

Formatting a floppy disk takes about two minutes.  
After formatting is completed, the screen displays:

Replace floppy disk with SDX disk and press <CR>

After inserting the SDX diskette and pressing <CR>, the screen displays:

Floppy Disk Format.....Executed  
Press any key to return to utility menu.

Press any key to return to the Utility Menu.

## The Floppy Copy Program

Floppy Disk Copy is a utility program that copies data from one diskette to another. This procedure is done in three parts and takes about five minutes to complete.

You can only copy data onto a formatted floppy diskette. Make sure that you have formatted diskettes before you begin the Floppy Copy program.

To format a diskette, follow the instructions in the section "The Floppy Disk Format Program" in this chapter.

To copy a disk, you must first insert the diskette to be copied into the disk drive unit. The computer then "reads" the first part of the information from the diskette and stores this data into system memory.

Next, you remove the diskette that you are copying from and insert the new diskette that you are copying to into the disk drive unit.

After the first part of the data has been "written" onto the new diskette, the program prompts you to reinsert the diskette to be copied so the second part of the copying process can begin. These steps are repeated three times.

During each part of the routine, numbers display on the screen indicating that data is being written onto or read from a diskette.

**NOTE**

To ensure that you do not confuse the floppy diskette being copied to with the diskette being copied, place a write protect tab on the diskette you are copying from.

To copy a floppy diskette, select 2 from the Utility Menu and press <CR>. The screen displays:

Floppy Copy  
Insert floppy to be copied from and press <CR>

Insert the diskette to be copied from and press <CR>. The screen displays:

Floppy Copy  
Reading cylinder nn

After the first read cycle is completed, the screen displays:

Floppy Copy  
Insert floppy to be copied to and press <CR>

Insert the diskette to be copied to and press <CR>. The screen displays:

Floppy Copy  
Writing cylinder nn

After the first write cycle is completed, repeat the preceding steps twice to complete the Floppy Copy program.

When copying is complete, the screen displays:

Replace SDX floppy disk and press <CR>

After inserting the SDX diskette and pressing <CR>, the screen displays:

```
Floppy Copy.....Executed
```

and returns to the Utility Menu.

## The Display Bad Sector Program

This program displays a summary of all the flagged sectors that exist on your hard disk and reports any bad sectors that have not been flagged.

Each 586T/986T system is tested before it is shipped from the factory. Any known bad sectors are flagged at that time so they will not be used for storing data.

To run this program, select 4 from the Utility Menu and press <CR>.

The program reads through each cylinder on the hard disk and lists these as they are checked. This process take about 12 minutes to complete.

When finished, the program displays a list of all flagged and unflagged bad sectors by cylinder, head, and logical and physical sector number.

Be sure to write down the unflagged bad sector information. You will need this information to flag the sector using the Flag Hard Disk Bad Sectors program.

To return to the Utility Menu, press any key.

## The Flag Hard Disk Bad Sector Program

This program flags bad sectors on the hard disk so that they will not be used for storing data.

The Flag Hard Disk Bad Sectors program will destroy data on the hard disk. You should use this program only if the Display Hard Disk Bad Sectors program reports bad sectors that have not been flagged.

### CAUTION

After you begin to enter data into your system, do not use this program to set additional bad sector flags, unless you have a backup of your files.

Once you have flagged a sector as bad, the system will stop accessing that particular sector. Any data located on that track is lost.

You will usually have to reinstall your operating system after flagging additional bad sectors.

To run the Flag Hard Disk Bad Sectors program, select 3 from the Utility Menu and press <CR>. The screen displays:

Warning-This utility will destroy the contents of the hard disk,  
do you want to continue? (y/n)

If you select N, the program returns to the Utility Menu.

If you select Y, all data on your hard disk is erased.

Any time after you select **Y**, you can exit this program by pressing **<ESC>**.

After you select **Y**, the program prompts you to enter the cylinder number of the sector to be flagged. Enter this number and press **<CR>**.

Next the program prompts you for the head number. After entering this number, press **<CR>**.

Finally, enter the logical sector number and press **<CR>**. Do not enter the physical sector number.

When the flagging process is complete, the screen displays:

```
Flag Hard Disk Bad Sector.....Executed
Press any key to return to utility menu.
```

After you press any key, the program returns to the Utilities Menu.

## Leaving the Utilities Program

To leave the Utilities Menu and return to the previous menu, select **5**. The program returns to the Main Menu.

If you wish to leave the Main Menu and restart your system, type **X** and press **<CR>**.

# Chapter 7

## Where Do You Go Next?

Read this chapter to find out where to proceed after setting up your system.

### Operating Systems

If you successfully started your 586T/986T system, your next step is to load the operating system that you purchased, either XENIX or Concurrent CP/M. Refer to the Introduction to Xenix manual or the Introduction to Concurrent CP/M manual.

These manuals introduce you to the basic principles of each operating system. They also contain installation procedures and information on how to use the Altos versions of both Xenix and Concurrent CP/M.

### Related Altos Manuals

The following manuals provide more information about your Altos 586T/986T system.

- o **The 586T/986T System Reference Manual** (Part Number 690-15813-01) also comes with your 586T/986T system. It covers the programmable parts of the system that are of interest to the systems programmer and systems engineer.

The manual also provides a general theory of operation, as well as physical, environmental, and electrical specifications of the 586T/986T system.

- o **The 586T/986T Maintenance Manual** (Part Number 690-15602-001) will be available in January, 1985 and must be purchased separately from Altos. It is intended for technicians performing field repairs.

The manual contains a detailed theory of operation, board and chip level diagnostics, as well as troubleshooting, disassembly, reassembly and repair procedures.



# Chapter 8

## Using Tape Cartridges

Read this chapter to find out how use tape cartridges, protect the data on your tapes, and insert and remove a tape cartridge.

With the 586T and 986T systems, you should use only 300XL or 600A tape cartridges.

### Handling Tape Cartridges

- o Keep your cartridges away from any magnetized objects. This includes putting a cartridge on top of your system or too close to the telephone.
- o Keep your cartridge away from direct sunlight or excessive heat.
- o Do not touch the tape.
- o Do not take the tape out of the cartridge.
- o When not in use, store your cartridges in their protective cases.

### Protecting Your Data

The cartridge tapes that you use with your system have an opening on the side of the cartridge (Figure 7). Immediately above the opening is a slot. Use a screwdriver to turn the slot to open or close the opening. Turn the slot until you hear a click.

When the opening is covered you can write or erase data on the tape. This is known as write enabled.

When the opening is open you cannot write or erase data on the tape. The arrow on the top should point at the word **SAFE**. This is known as write protected.

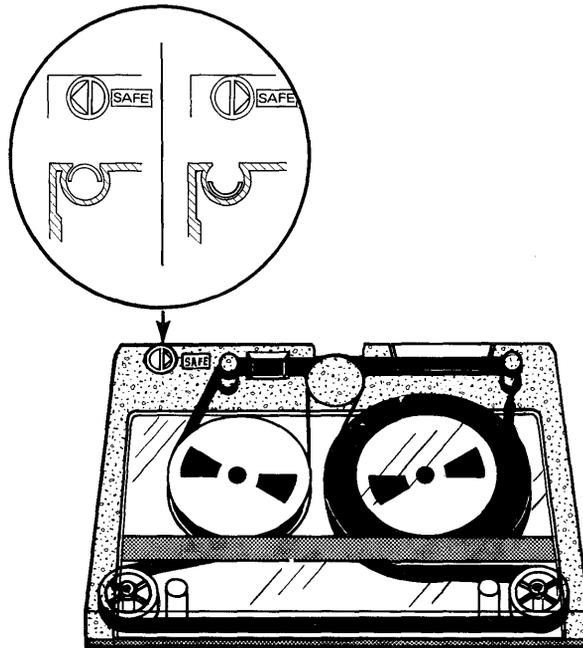


Figure 7. Protecting Your Tape Cartridge Data

## Inserting and Removing a Tape Cartridge

To insert a tape cartridge:

- o Open the door by pushing the slide lever to the left.
- o With the manufacturer's label facing up and to the right, gently insert the cartridge into the drive until you hear a click.
- o Close the door by pushing the slide lever to the right.

To remove a tape cartridge:

- o Open the door by pushing the slide lever to the left until you hear a click. The cartridge is automatically pushed out part way.
- o Gently remove the cartridge from the drive.

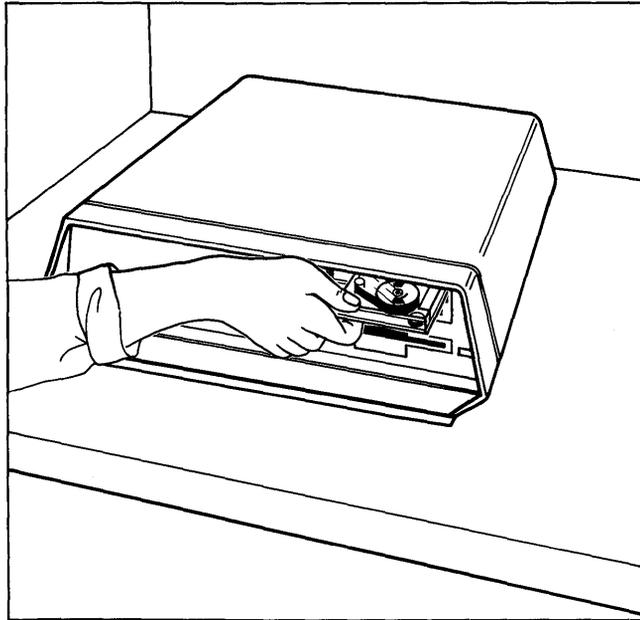


Figure 8. Inserting and Removing a Tape Cartridge



# Chapter 9

## Preventive Maintenance

After a tape cartridge has been running for eight hours, it is recommended that you clean the read/write head assembly ( Figure 9).

You should clean the heads after the first pass of a new cartridge. If you use new cartridges exclusively, perform preventive maintenance after the tape has been running for two hours.

### Cleaning the Head Assembly

FREED TF

RELEASE NOTES:  
Xerox Version 3.0.2.1

Clean the head assembly with a standard head cleaning solution or ~~95% isopropyl alcohol~~ and a lint free cotton swab. Follow the procedure below.

- o Turn the power off.
- o Move the lever to the right.
- o Dip the cotton swab in the cleaning solution.
- o Gently wipe the read/write head assembly.
- o Allow the heads to dry completely before using the the tape unit.

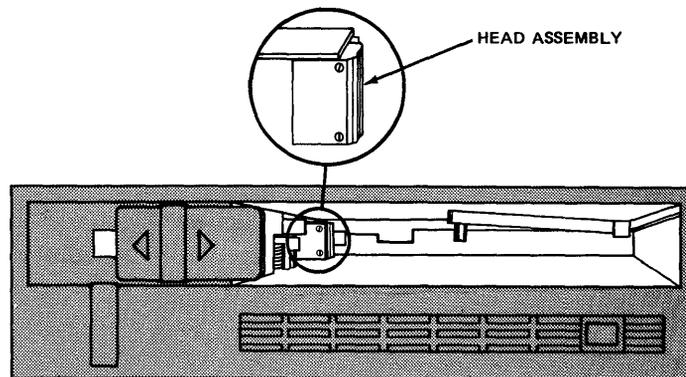


Figure 9. Cleaning the Head Assembly



# Chapter 10

## Connecting a Printer and Additional Terminals

Connect your serial printer to **PORT 6** on the 586T and **PORT 10** on the 986T with an **RS232C** cable. Be sure to tighten the connector screws. Connect the printer power cord to a three-prong outlet.

In order for your printer to work, the "baud rate" must be the same for the printer and the operating system. To set the baud rate refer to the manual for your printer and the operating system manual (**Introduction to Xenix** or **Introduction to Concurrent CP/M**).



# Appendix A

## Physical Specifications

This appendix provides a general description of the 586T/986T. For more detailed specifications, see the 586T/986T System Reference Manual.

### SIZE

16 7/8" (W) x 18(D) x 6" (H)

### WEIGHT

36 lbs. (586T)

37 lbs. (986T)

### REAR PANEL CONNECTORS AND CONTROLS (See Figures 3 and 4)

AC ON/OFF Switch

AC Power Receptacle

Fuse Holder

Serial Ports (586T - Numbered Connectors 1-6)

(986T - Numbered Connectors 1-9)

### INPUT VOLTAGE RANGES

U.S.: 100 to 130 VAC single phase

EUROPE: 200 to 260 VAC single phase

### FUSE TYPE

4A at 115 V, size 3AG

3A at 250 V, size 3AG

### POWER DISSIPATION

300 Watts

**AMBIENT TEMPERATURE RANGE**

50 to 90o Fahrenheit  
15 to 32o Centigrade

**RELATIVE HUMIDITY RANGE**

20% to 80% Non-condensing

**CPU**

16-Bit  
8086 Intel Microprocessor

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