

**introducing your
Tandy 6000**

Introducing Your Tandy 6000

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XENIX™ is a trademark of Microsoft Corporation.

The Input/Output circuitry of the Tandy 6000 is covered by U.S. Patent No. 4,468,753.

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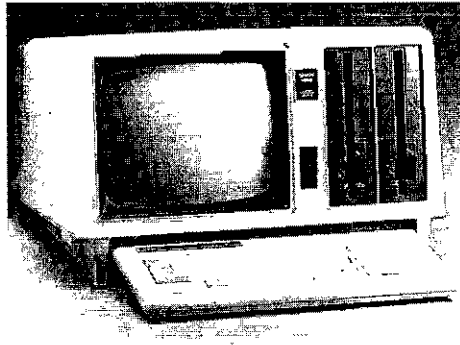
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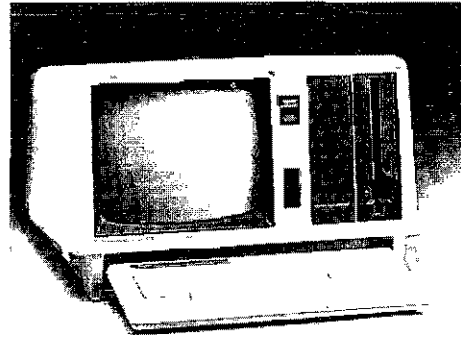
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your equipment

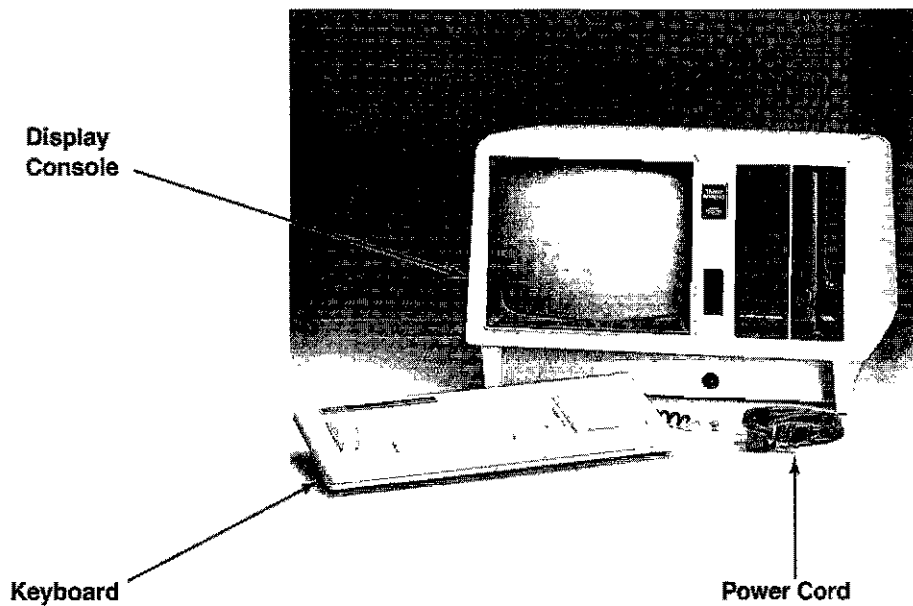


Tandy 6000



Tandy 6000 HD

Carefully unpack the Tandy 6000 computer, and be sure you have the following items:

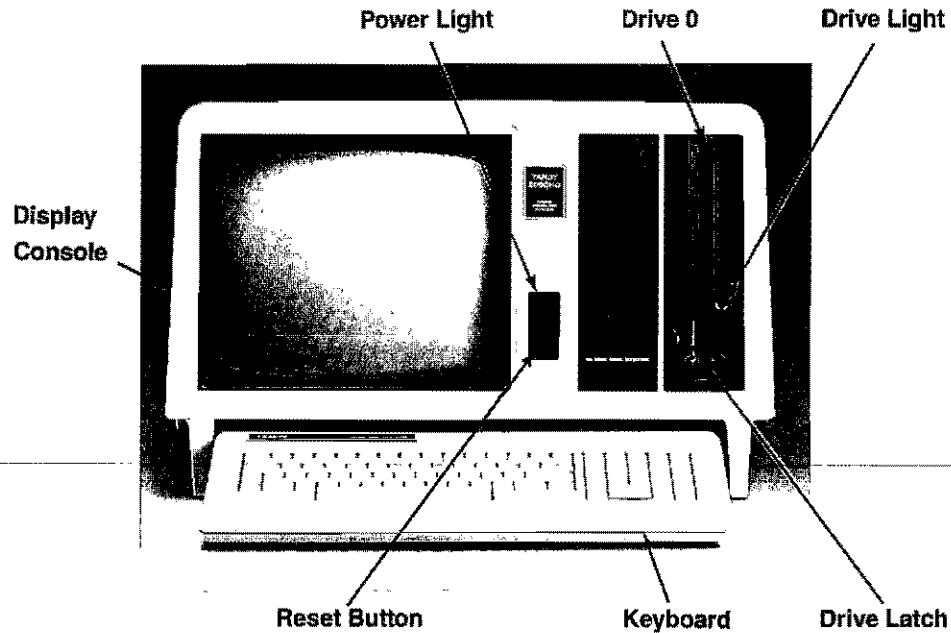


Your Tandy 6000 package also includes the XENIX™ operating System. This system must be installed on a hard disk.

If you have a Tandy 6000, you must add a hard disk to install and use XENIX. Instructions for connecting a hard disk to the Tandy 6000 follow in this manual.

If you have a Tandy 6000 HD, your computer has a built-in 15-megabyte hard disk on which you may install XENIX. After reading this manual, follow the instructions in *The System Administrator's Guide to XENIX* to install the operating system.

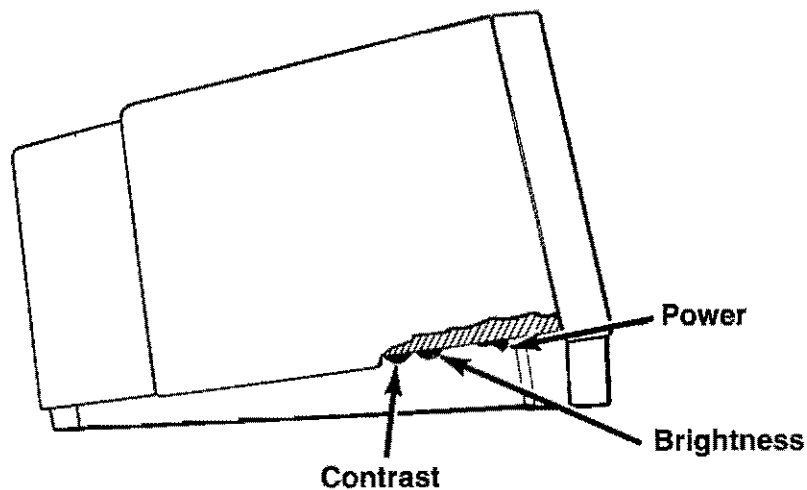
Note: Disk media flaws on the Tandy 6000 HD hard disk unit are identified before the hard disk is installed in the unit. Attached to the inside of the access panel on the back of your display console is a MEDIA ERROR MAP that specifies the flawed locations on your particular unit. **Do not throw this error map away!** You need to refer to it when formatting the hard disk, and Tandy Computer service technicians may need to refer to it if your drive ever needs servicing.

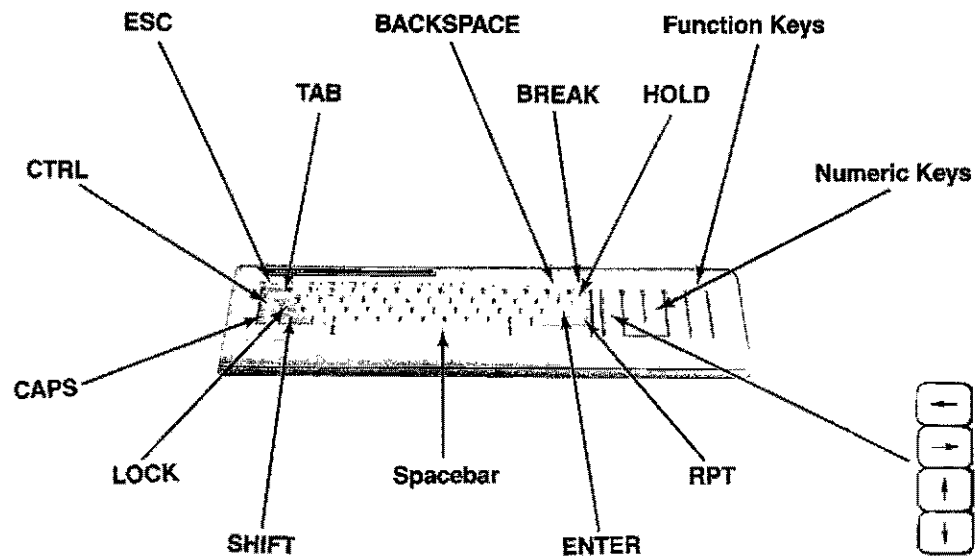


RESET BUTTON—Repeats the power-up sequence.

POWER LIGHT—Lights when the system's power is on. Never move the unit when this light is on.

DRIVE LIGHT—Lights when the drive is active. **Never remove a diskette when a disk drive light is on.**





CAPS — When the CAPS light is on, the keyboard produces only capital letters for the alphabet keys. **CAPS** does not affect other keys. Press **CAPS** once to activate caps-only mode; press again to return to normal mode.

SHIFT, **LOCK** — Lets you type capital letters and shifted punctuation symbols. Hold down **SHIFT** while pressing the desired key, or press **LOCK** once (the red light comes on). When **LOCK** is activated, your computer recognizes only shifted characters. To release **LOCK**, press **SHIFT**.

RPT — Repeats a character continuously when held down at the same time as another key.

Note: The numeric keypad keys are not affected by **CAPS**, **SHIFT**, or **LOCK** keys.

setting up your system

Improperly connecting or grounding your computer exposes you to the danger of electrical shock. It also endangers your system and data. Follow these installation instructions carefully:

1. Place your Tandy 6000 display console near a grounded, 120 VAC, 3-prong outlet that does not power heavy machinery, copiers, or office machines that may have defective switches. (If you must use an extension, use a grounded power strip, such as Radio Shack's Plug-In Power Strip.)
2. Be sure all your computer equipment is turned off.
3. Connect the keyboard's built-in cable to the jack at the front of the computer console below the video screen.

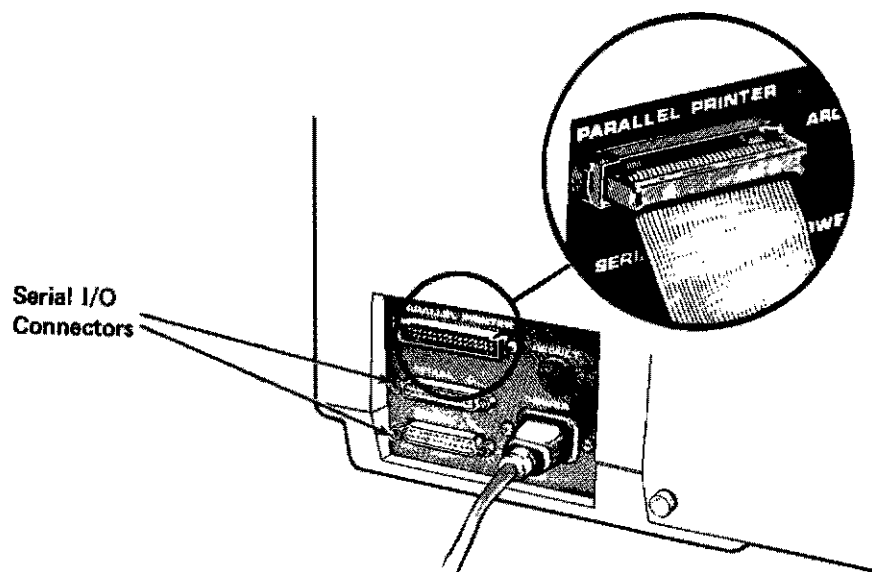


4. Plug the power cord into the back of the display console.
5. Plug the power cord into the outlet or grounded power strip specified in Step 1.

installing peripheral equipment

You can use other Tandy computer equipment with your Tandy 6000. These peripherals include printers, floppy disk expansion units, and a primary hard disk for the Tandy 6000 or a secondary hard disk for the Tandy 6000 HD. To install such equipment, refer to the following instructions as well as to the installation instructions supplied with the equipment.

externally connected peripheral equipment



External Peripheral Equipment Connections.

PARALLEL PRINTER CONNECTOR—Used to connect Tandy parallel printers. Be sure that the printer cable exits the bottom of the connector.

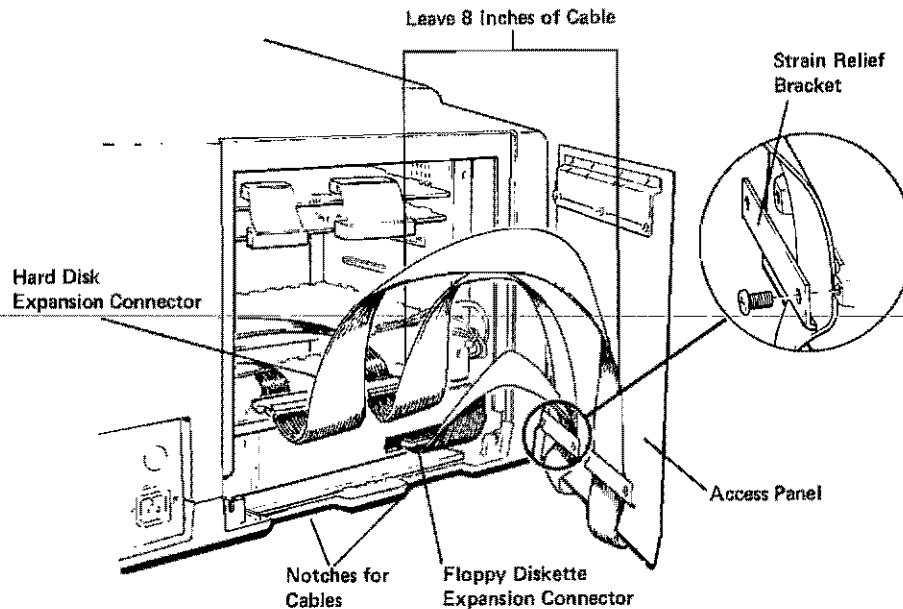
SERIAL I/O CONNECTOR—Used to install serial equipment such as serial line printers, modems, and data terminals. If you have a Tandy 6000 HD, you must connect a DB-25 cable to the Serial I/O Connector on the back of the unit.

internally connected peripheral equipment

The floppy disk and hard disk expansion connectors are behind the Input/Output access panel on the back of the Tandy 6000 computer.

FLOPPY DISK EXPANSION CONNECTOR—Used to add floppy diskette storage devices such as the Thinline Disk Bay. (Instructions for connecting the cable follow the illustration below.)

TANDY 6000 HD SECONDARY HARD DISK CONNECTOR—Used to add an optional secondary hard disk to your system's built-in hard disk. (Instructions for connecting the cable follow the illustration below.)



1. Remove the access panel by loosening the thumbscrews.
2. Attach the cables that are included with your expansion unit. If you are connecting a secondary hard disk, connect the 34-pin secondary hard disk expansion cable connector to the 34-pin snap-in connector on the edge of the printed circuit board. Then, connect the 20-pin data cable connector to the 20-pin snap-in connector of the printed circuit board. Position the built-in hard disk connectors so that the cables exit from the bottom.

If you are connecting a floppy disk expansion unit to the Tandy 6000, attach the connector on one end of the cable to the 50-pin connector on the chassis. Connect the other end of the cable to the expansion unit.

3. Remove the strain relief brackets from the access panel. Run each cable downward through the nearest strain relief, leaving about 8 inches of cable between the strain relief and the computer.
4. Replace the strain relief brackets, and run the cable through the slot in the base of the display console.
5. Replace the access panel and tighten the thumbscrews.

Note: Your system's hard disk drives must always contain a line terminator. Check with your Tandy Computer Center for details.

power up/power down

Always turn your Tandy 6000 computer on and off exactly as described in this chapter. Changes in the sequence might damage the system and data.

You can use your Tandy 6000 in two ways: under hard disk control or under floppy diskette control.

Until you install an operating system on your hard disk however, you must operate under floppy diskette control.

powering up the system

1. Be sure that all disk drives are empty and all equipment is off.
2. Turn on the system by pressing the power switch on the lower left side of the display console. This automatically turns on all built-in hard and floppy drives. If you have the Tandy 6000 HD, allow the hard disk to warm up for at least 30 minutes before you use it the first time. (If you have a Tandy 6000 with an external hard disk, the hard disk turns on automatically only if the power switch key on the front of the hard disk unit is turned on.)

Note: We recommend that you leave your system up and running 24 hours a day. The continuing successful operation of your hardware is more assured if the system is not turned off with any frequency. The cost of power to keep it running is offset by fewer hardware repair bills and less down time.

3. Turn on any other peripheral equipment.

hard disk control

After you format your hard disk and install the XENIX operating system on it, your Tandy 6000 computer automatically boots XENIX from the hard disk when you power up the system. (See *The System Administrator's Guide to XENIX* for formatting and installation procedures.)

floppy diskette control

To operate under floppy diskette control after you install XENIX, press **RPT** and **BREAK** simultaneously during the "white-out" of the video display. The screen displays the following message:

INSERT DISKETTE

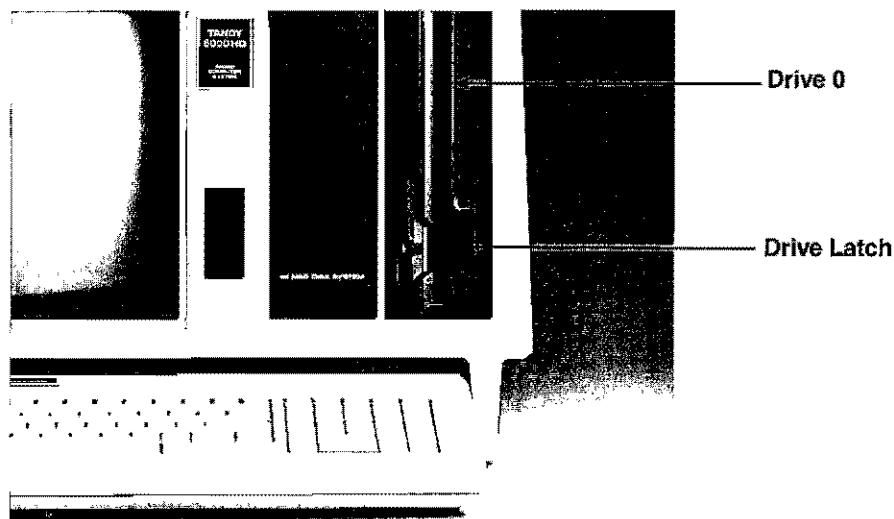
If this message does not appear, try the following:

- Press the reset button, and then press **RPT** **BREAK** to begin floppy diskette control.
- Adjust the brightness and contrast controls.
- Turn off all peripherals, and then turn off the computer. Check all connections to and from the peripherals.

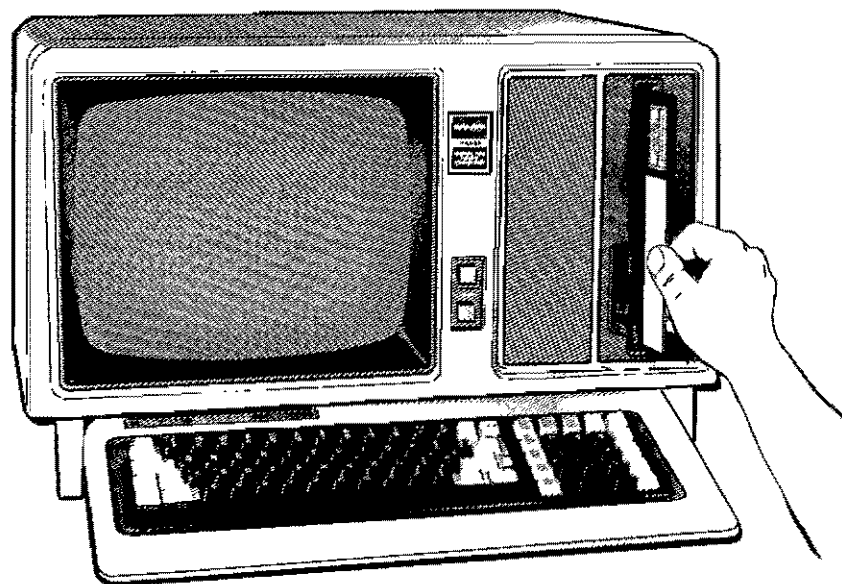
After the screen displays the INSERT DISKETTE prompt, turn on your system's peripheral equipment.

To insert a floppy diskette:

1. Power up your Tandy 6000 computer, and press **RPT** **BREAK**. Be sure the drive latch is in the vertical position.



2. When the screen shows the INSERT DISKETTE message, carefully insert a diskette into floppy Drive 0 with the label facing the display screen. (On the Tandy 6000, the floppy drive on the left is Drive 0.) Push the diskette into the slot until it locks into place.



3. Turn the latch clockwise until it locks into a horizontal position.

Warning: Never turn the computer on or off when a diskette is in a drive. Doing so can destroy the data on the diskette.

To remove a floppy diskette:

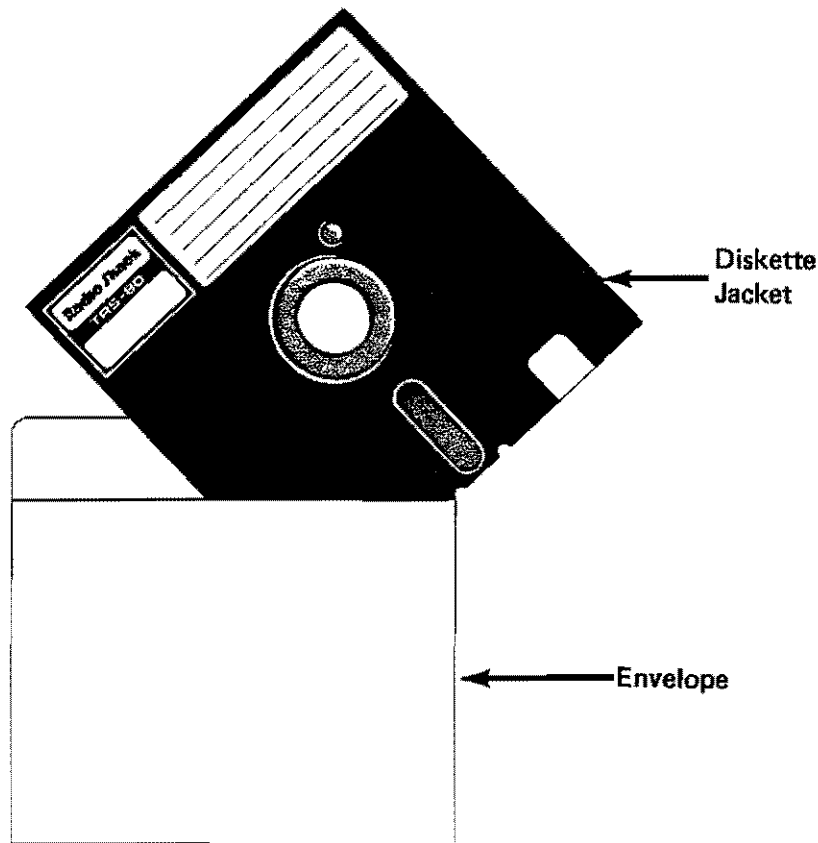
1. Be sure the drive light is off. **Never remove a diskette when the drive light is on.**
2. Turn the drive latch counterclockwise until it is in the vertical position. The diskette pops partially out of the drive.
3. Carefully remove the diskette from the drive, making sure its shiny surface does not touch anything. Return the diskette to its storage envelope.

powering down the system

1. Be sure that all floppy drives (internal and external) are empty.
 2. Turn off all peripheral equipment. External primary and secondary drives are turned off with the computer.
 3. Turn off the Tandy 6000 computer system by pressing the power button.
-

maintenance

care of floppy diskettes



Handle floppy diskettes carefully. A scratch or small indentation or even a speck of dust could destroy some or all of the data on a diskette.

To protect your diskettes (and the information they contain) from accidental damage, follow these guidelines:

- Never turn on your computer system while a diskette is in a drive.
- Store diskettes in their envelopes, making certain that there is no pressure on their sides.
- Keep diskettes away from magnetic fields (such as transformers, AC motors, magnets, TVs, radios, and the computer system's display console).
- Don't bend diskettes.
- Never touch a diskette's shiny exposed surface. Never try to wipe or clean the shiny disk surface—it scratches easily.
- Keep diskettes out of direct sunlight and away from heat.

- Keep diskettes away from cigarette ashes, dust, and other particles. In dusty areas, use filters to clean the air in the computer room.
- Don't write on the diskette label with a hard point pen or lead pencil. Use only a soft felt-tip pen.

floppy disk drive maintenance

Your computer's floppy disk drives need periodic care to prevent damage to your diskettes. Be sure to have your floppy disk drives checked every 6 months.

Ask a Radio Shack Computer Center sales representative about disk drive head cleaning kits.

hard disk drive maintenance

Hard disk drives don't require the same maintenance as floppy disk drives, but they do require special care. For example, never move or jar external hard disk drives while they are powered up. (Never move the Tandy 6000 HD display console while the unit is on.)

Be sure that the air around your hard disk is as free of dust and other particles as possible, and that the intake and output cooling vents are unobstructed.

If you have external hard disk drives, be sure to periodically clean the filter on the back of the unit. Carefully remove the outer grill. **DO NOT REMOVE THE SCREWS.** Remove the filter and rinse with tap water. When the filter is completely dry, put it back in the drive.

SPECIFICATIONS

Processors

INPUT/OUTPUT PROCESSOR SYSTEM

- Z80-A based with 64K bytes of random access memory
- Independent bus can support all the standard system boards
- Floppy disk mode lets you run programs previously developed for the Model II and Model 12 without changing them first

COMPUTATIONAL PROCESSOR SYSTEM

- 68000 based with either 512K or 1 megabyte of RAM
- Independent bus can support multiple bus masters

The 2 processors share the computing load from the applications programs (the Z80-A based processor performs input/output tasks while the 68000 based processor performs computational tasks).

Video Display

LSI CONTROLLER CHIP

Frees the input/output (Z80-A based) processor for much of the overhead required to update and maintain the video display.

FOUR MODES

- Green/white on black (normal)
- Black on green/white (reversed)
- 80 characters by 24 lines
- 40 characters by 24 lines

DISPLAYABLE CHARACTERS

- Full ASCII set
- 32 graphics characters

Keyboard

- LSI Controller frees the input/output (Z80-A based) processor from keyboard scan and related tasks
- Located in a separate case for convenience
- The Tandy 6000/6000 HD computer connects to the display console via a built-in, coiled cord that exits beneath the keyboard

- Standard typewriter keys, repeat key, and 8 general-purpose function keys
- Four modes with the following priority (highest to lowest):
 1. Unshift
 2. Shift
 3. Caps
 4. Control

Floppy Disk Drives

MINIMUM

Tandy 6000 HD

- One built-in 8-inch, double-sided floppy disk drive

Tandy 6000

- Two built-in, 8-inch, double-sided floppy disk drives

MAXIMUM

Tandy 6000 HD

- One built-in and a maximum of 2 external, 8-inch, double-sided floppy disk drives (floppy disk expansion unit needed for 2 external drives)

Tandy 6000

- Two built-in and a maximum of 2 external, 8-inch, double-sided floppy disk drives (floppy disk expansion unit needed for 2 external drives)

PREVENTIVE MAINTENANCE INTERVAL

- Typical usage (3,000 power-on hours per year): Every 8000 power-on hours
- Heavy usage (8,000 power-on hours per year): Every 5000 power-on hours

REQUIRED MEDIA

- Tandy double-sided, 8-inch floppy diskettes

Data Transfer Rate is 500,000 bits per second (except Track 0, which has 250,000 bps).

Diskette life is 3.5 million passes per track. To prevent limiting life by improper handling, follow diskette-care recommendations.

Power Supply

POWER REQUIREMENTS

- 105 - 130 VAC, 60 Hz
- 240 VAC, 50 Hz (Australian)
- 220 VAC, 50 Hz (European)
- Grounded outlet

specifications

MAXIMUM CURRENT DRAIN

- 2.1 amps

TYPICAL CURRENT DRAIN

- 1.6 amps

WARM-UP PERIOD

- 30 minutes (first time)
15 seconds thereafter

Operating Temperature

- 55 to 85 degrees Fahrenheit
- 13 to 29 degrees Celsius

Peripheral Interfaces

STANDARD

- Serial port A (RS-232C)
- Serial port B (RS-232C)
- Parallel input/output channel, for connection to Tandy standard parallel interface line printers
- Floppy diskette input/output channel for connection of a floppy diskette expansion unit
- Hard disk drive interface (Tandy 6000 HD only)

OPTIONAL

- ARCNET interface
- Graphics Board

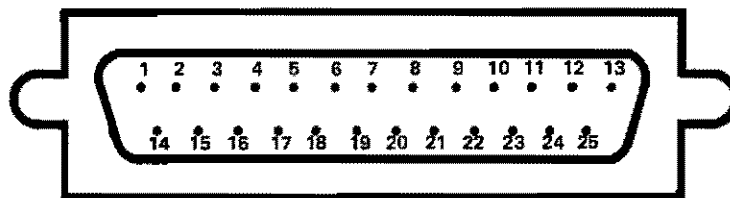
SERIAL INTERFACE

Two Ports

- Channel A allows asynchronous or synchronous transmission
- Channel B allows asynchronous transmission only
- Both conform to the RS-232C standard
- Both use the DB-25 connectors on the back of the display console

The DB-25 connector pin-outs and signals available are listed below.

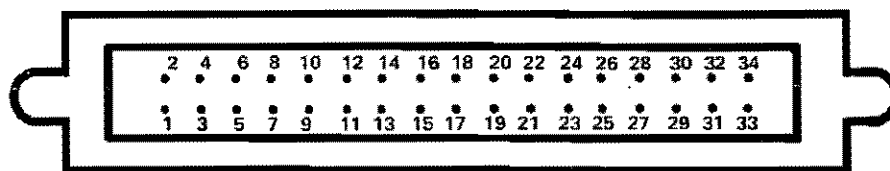
Channel A Standard RS-232C Signal	Pin #	Channel B Standard RS-232C Signal	Pin #
I/O Transmit S.E.T.	15	Ground	1,7
Ground	1 7	Receive Data	3
Receive Data	3	Receiver Xmitter Clock	17
Receiver Clock	17	Data Set Ready	6
Transmit Clock	24	Clear-to-Send	5
Data Set Ready	6	Carrier Detect	8
Clear-to-Send	5	Transmit Data	2
Carrier Detect	8	Request-to-Send	4
Transmit Data	2	Data Terminal Ready	20
Request-to-Send	4		
Data Terminal Ready	20		



PARALLEL INTERFACE

- Connection to a line printer via the 34-pin connector on the back panel of the display console
- Eight data bits are output in parallel
- Four data bits are input
- All levels are TTL compatible

The connector pin-outs and signals available are listed below.



Signal	Function	Pin #
ACK	Input to the computer from the printer; low indicates data byte is received	19
BUSY	Input to the computer from the printer; high indicates busy	21
PAPER EMPTY	Input to the computer from the printer; high indicates no paper—if the printer doesn't provide this, the signal is forced low	23
BUSY*	Input to the computer from the printer; low indicates device is selected	25
PRIME*	Output to the printer to clear the buffer; reset the printer logic	26
FAULT*	Input to the computer from the printer; low indicates fault (paper empty, light detect, deselect, and so on)	28
GROUND	Common signal ground	2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 27, 31, 33
NC	Not connected	29, 30, 32, 34

*These signals are active-low.

EXTERNAL SECONDARY 15-MEGABYTE HARD DISK POWER REQUIREMENTS (TANDY 6000 HD)

AC Power Requirements

50/60 Hz \pm 0.5 Hz

100/115 VAC installations (90 to 127V at 1.1A typical)

200/230 VAC installations (100 to 253V at 0.6A typical)

15-MEG DISK CHARACTERISTICS

No. of cylinders	306
No. of heads	6
Track access time	3msec
Data Transfer Rate	5.0MB/ sec

15-MEG DIMENSIONS (CASE)

Height	5.5" (140 MM)
Width	14" (356 mm)
Depth	15" (381 mm)
Weight	15.5 lbs. (7.02 kg)

ENVIRONMENT

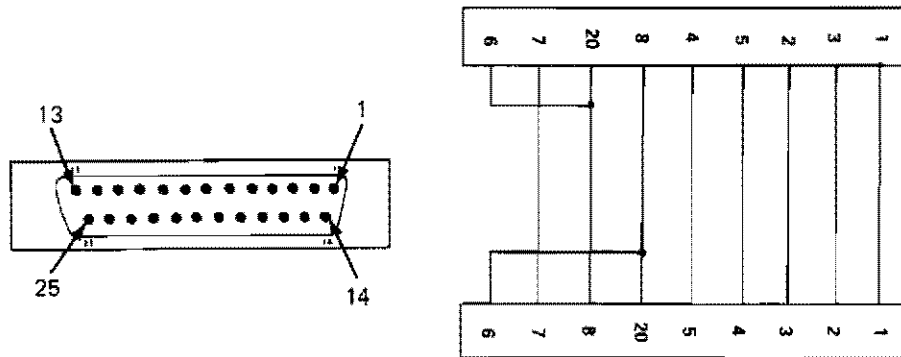
Ambient temperatures	
Operating	55 to 85 degrees F. (13 to 29 degrees C.)
Nonoperating	-40 to 140 degrees F. (-40 to 60 degrees C.)
Relative humidity	8% to 80%
Relative humidity gradient	
Operating	10% per hour
Nonoperating	Below that causing condensation
Maximum wet bulb Temp.	78.8 F. (26 C.) degrees non-condensing
Head dissipation	150 watts (511 BTU/hr) Max.
Altitude	Operating Density-Altitude 1500 to 9750 ft. (457 to 1982 m.) Storage 0 to 12000 ft. (0 to 3650 m.)

BUILT-IN 15-MEG HARD DISK DRIVE (TANDY 6000 HD)

Disk organization	
Cylinders per disk	306
Tracks per unit	1836
Tracks per platter	612
Sectors per track	34
Bytes per sector	256
Average latency	8.3 msec
Rotational speed	3600.0 rpm
Recording density	9625.0 bpi
Flux density	9625.0 fci
Track density	345.0 tpi
Storage capacity (hard disk)	
Unformatted	
per drive	19.0 Mbytes
Formatted	
per drive	15.5 Mbytes (primary) 15.9 Mbytes (secondary)

TANDY 6000 SYSTEM-TO-SYSTEM DIRECT COMMUNICATIONS

To directly connect 2 Tandy 6000s that have either built-in or external hard disk drives, use the wiring arrangement illustrated below.



Connection diagram, Tandy 6000 (Channel A or B) to Tandy 6000 (Channel A or B). Use stranded wire, 24-gauge, to connect 2 DB-25 connectors as illustrated. If the wire length exceeds 50 feet, twist lines 7 (GND), 2 (TD), and 3 (RD).

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The warranties granted herein give the original CUSTOMER specific legal rights, and the original CUSTOMER may have other rights which vary from state to state.