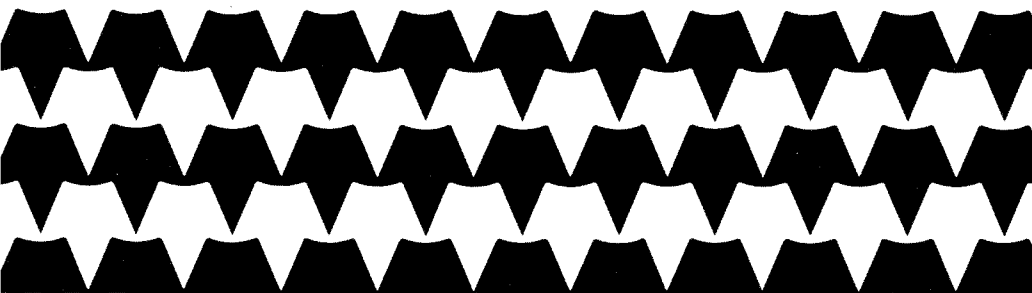


Tandy 3000

Hard Disk Controller Installation Manual



TANDY®

TANDY®

CAT. NO. 25-4060

Certified to comply with limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC Rules. See instructions if Interference to radio reception is suspected.

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*Tandy 3000 Hard Disk Controller
Installation Manual:*

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INTRODUCTION

The Hard Disk Controller is an internal option board for the Tandy® 3000 computers that supports as many as two hard disk drives and as many as two floppy disk drives.

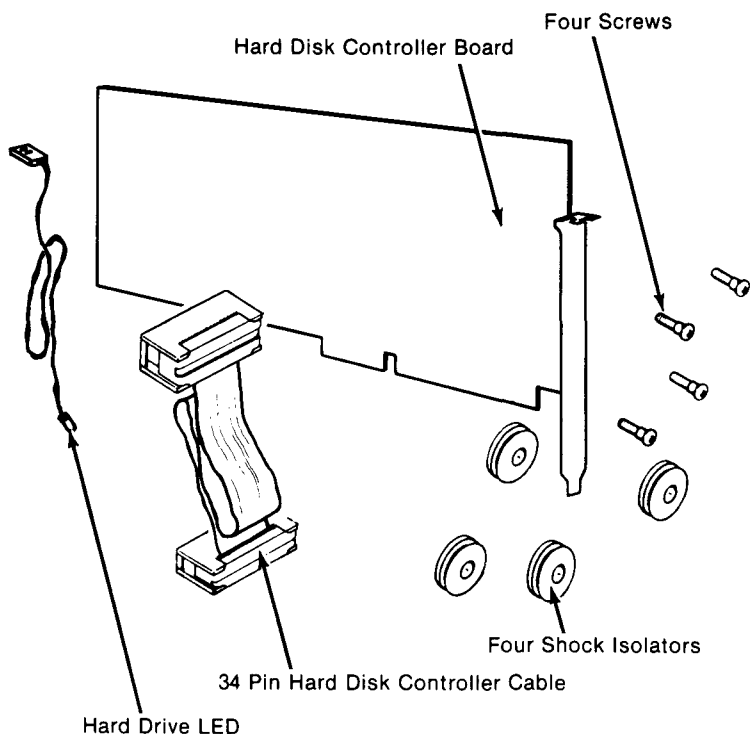
Before you begin the Hard Disk Controller board installation, you must complete the installation for any internal disk drives you are adding to your computer. Refer to the instructions in your hard disk's installation manual.

For more technical information on the Hard Disk Controller board, refer to the optional *Technical Reference Manual* for your computer (Cat. No. 25-4104 or 25-4105). Refer to your operating system and application manuals for specific instructions on storing and accessing your programs on hard disk.

PACKAGE CONTENTS

In addition to this installation manual, the Hard Disk Controller kit includes:

- The Hard Disk Controller Board.
- One 34-pin Hard Disk Controller Cable.
- Four Shock Isolators and four screws for installing a hard disk in the bottom drive slot of a Tandy® 3000. (These are not required for a Tandy 3000 HL installation.)
- One hard disk drive LED. (This is not required for a Tandy 3000 HL installation.)



INSTALLATION

Caution: Static electricity can destroy integrated circuits. Be sure to discharge any built-up static electricity by touching a grounded, metal object before handling the Hard Disk Controller board or touching any of the computer's logic boards.

If you have any doubts about your ability to install this board, have the service technicians at your Radio Shack Service Center® install it for you. Doing this not only ensures expert installation, but also enables the technicians to quickly check to be sure all the equipment is functioning properly.

Remember, you must have any internal disk drives installed before you begin the Hard Disk Controller board installation. If you are installing the Hard Disk Controller board in a Tandy 3000 HL, you must also have the Universal Mounting Kit already installed. After you complete the disk drive installation, use the following procedures to install the Hard Disk Controller board in your computer.

Removing the Cover

If you have not already done so, remove the system unit cover for access to your computer's internal components. Follow these steps to remove the cover:

1. Be sure your computer and all peripherals are turned off. Disconnect the power cord from the back of the computer.
2. Remove the three large cover mounting screws from the computer's back panel. Remove the cover by sliding the entire housing toward the front of the computer.

The cover removal procedure is illustrated in the *Installation and Operation Manual* supplied with your computer.

Note: If your computer has a fan in the front of the unit, you might find it easier to remove and replace the cover if you first remove the fan filter. Unfasten the Velcro® tab that secures the filter to the bottom of the unit housing, and pull the filter straight down to remove it. Be sure to replace the fan filter after you complete the installation.

Disabling Your Computer's Floppy Disk Controller

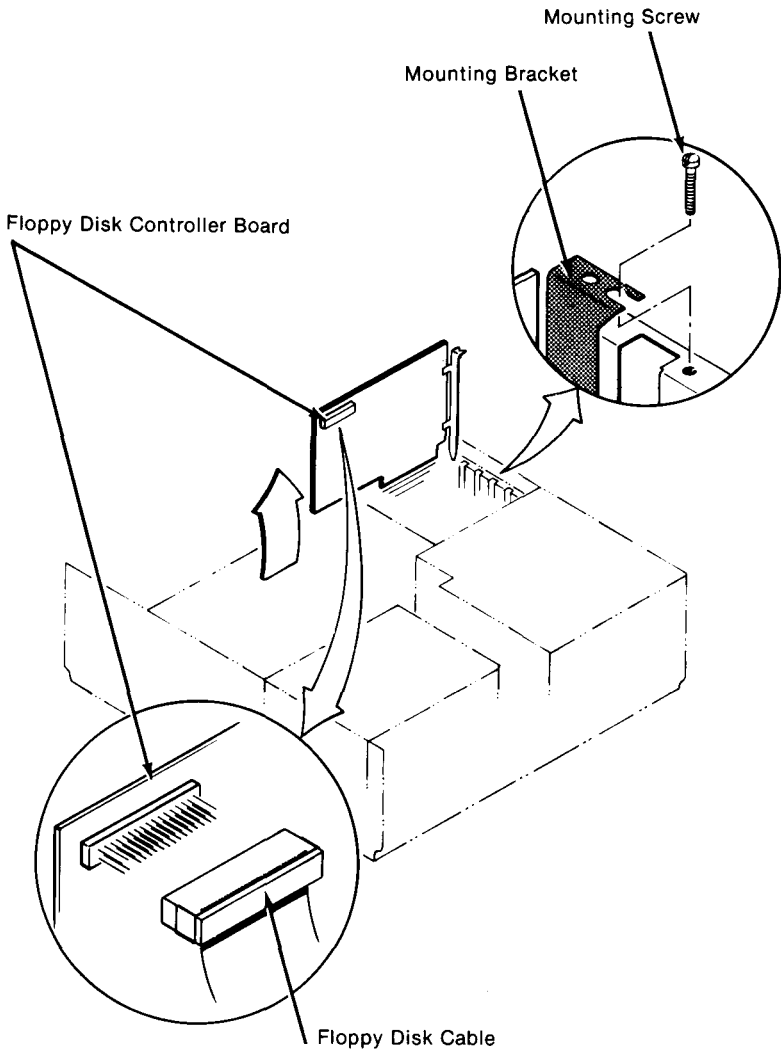
The Hard Disk Controller board also controls your floppy disk drives. If you have not already done so, you must disable the floppy disk controller that comes with your computer so that it does not conflict with the Hard Disk Controller board.

Use the following steps to disable your computer's floppy disk controller. Note that the steps are different for a Tandy 3000 and a Tandy 3000 HL. If you are installing the Hard Disk Controller board in a Tandy 3000, remove the Floppy Disk Controller board that comes with the computer. If you are installing the Hard Disk Controller board in a Tandy 3000 HL, disable the Floppy Disk Controller that is on the computer's main logic board.

Caution: Wait at least ten seconds after turning off the power before beginning this procedure. Discharge any built-up static electricity by touching a grounded, metal object.

Tandy 3000

1. Locate the Floppy Disk Controller board (usually in Option Slot 9), and disconnect the Floppy Disk Cable from this board. Disconnect the other end of the cable from the floppy disk drives. Save this cable to reconnect the floppy drives later.
2. Remove the screw that anchors the Floppy Disk Controller board's mounting bracket to the back panel of the computer, and gently lift the board out of the slot to remove it. Save this screw for later use during the Hard Disk Controller board installation.

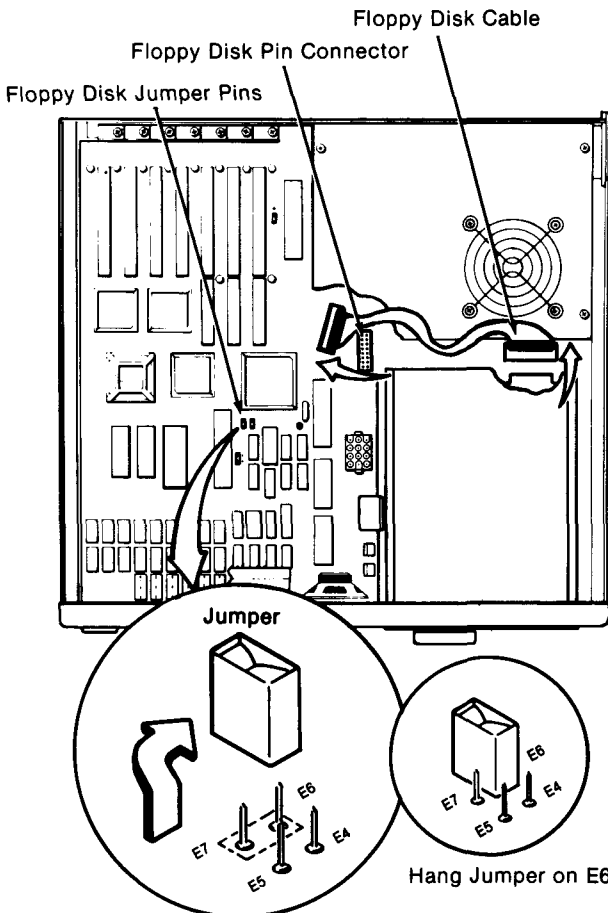


Remove Floppy Disk Controller Board.

Store the Floppy Disk Controller board in a safe place. If you later remove the hard disk and hard disk controller board from your system, you must reinstall the Floppy Disk Controller board.

Tandy 3000 HL

1. Locate and disconnect the Floppy Disk Cable from the Floppy Disk Pin Connector (J15) on the main logic board. Disconnect the other end of the cable from the floppy disk drives. Save this cable to reconnect the floppy drives later.
2. Now, locate the Floppy Disk Jumper Pins (E6-E7) on the main logic board. Remove the jumper from Pins E6 and E7 to disable the Floppy Disk Controller on the main logic board. You can either store this jumper or “hang” it on Pin E6.



Disconnect Floppy Disk Cable and Remove Jumper.

Installing the Hard Disk LED

If you are installing the Hard Disk Controller board in a Tandy 3000 computer, you must now install the Hard Disk LED. (This procedure is not necessary for a Tandy 3000 HL installation.) Snap the LED light into the small hole marked "HD ACTIVE" at the bottom left of the front of the computer housing. Then, run the LED cable along the inside front of the computer housing so that you can connect it to the Hard Disk Controller board after you install the board.

Note: If your computer has a fan in the front of the unit, follow the instructions in "Removing the Fan Housing" to install the LED in your computer.

Removing the Fan Housing

Follow these instructions if you must remove a front fan housing in order to install the LED in your computer:

1. Note that the plastic card guide is also attached to the fan housing. Remove any full-length option boards that fit into the card guide so that you do not damage the boards as you remove the fan housing. (Be sure to note the locations of any cables you disconnect.)
2. Locate and remove the two screws that secure the fan housing to the computer housing.
3. Tilt the fan housing back slightly, and lift it up and out of the computer. Be careful not to pull out any cables that are attached to the fan housing.
4. Snap the LED light into the small hole marked "HD ACTIVE" at the bottom left of the front of the computer housing. (The two bare wires that protrude from the LED should be on top when you snap it into place.)
5. Run the LED cable along the inside front of the computer housing so that you can connect it to the Hard Disk Controller board after you install the board.

6. Now, realign the fan housing and slide it back into place. Secure the fan housing by replacing the two screws you removed previously. (Be sure that you do not trap any cables between the fan housing and the front of the computer.)
7. Replace any option boards you removed, and reconnect any cables you disconnected.

Preparing the Controller Board

The Hard Disk Controller board is difficult to access after it is installed. Therefore, you should check the jumper settings and connect the cables to the Hard Disk Controller board before you install it. Use the following steps to prepare the Hard Disk Controller board for installation.

Note: When connecting an external hard disk, you must use the cables provided in the **External Hard Disk Cable Kit** (Cat. No. 25-4063). If you plan to connect an external hard disk, refer to the *External Hard Disk Cable Kit Installation Manual* for the proper cable connections.

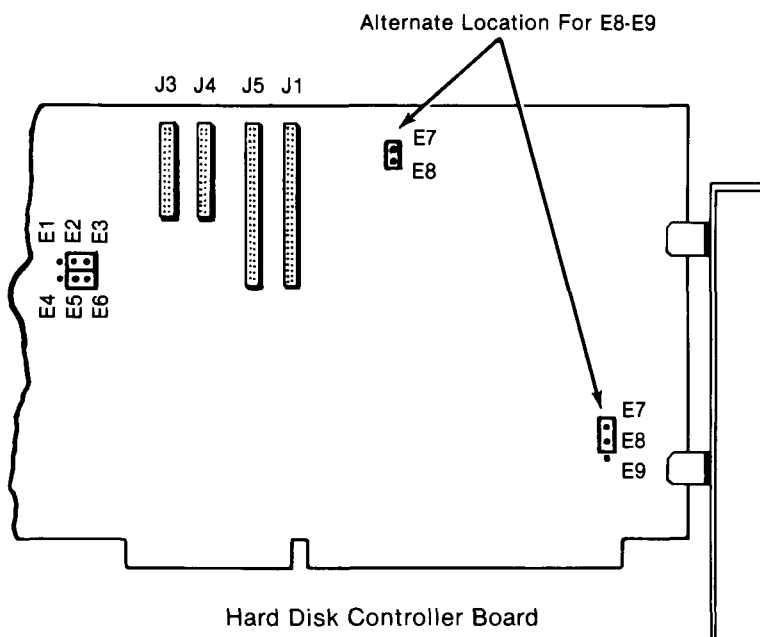
1. Check the Hard Disk Controller board to be sure a jumper connects these pins:

E2 to E3

E5 to E6

E7 to E8

If the jumper connections are not correct, remove and reposition the jumpers.



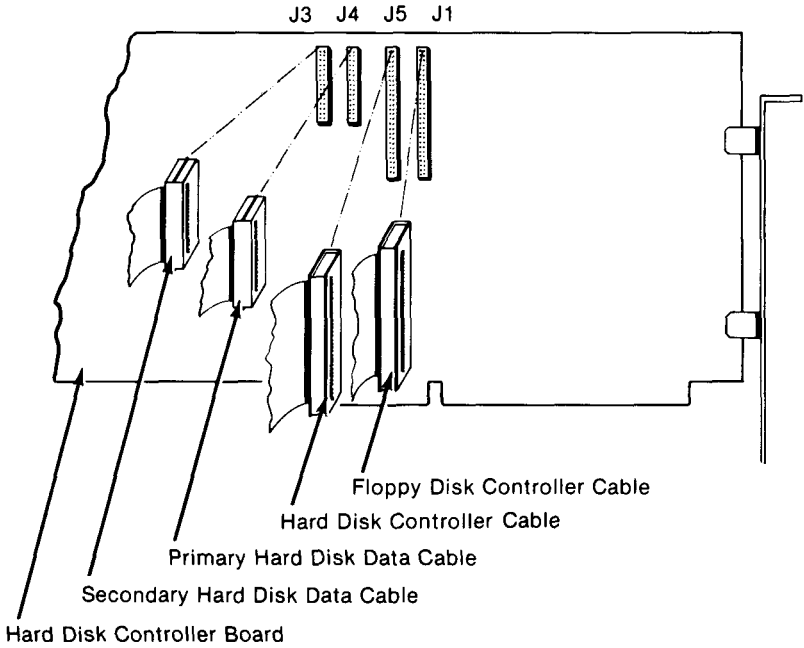
Check Hard Disk Controller Board Jumper Settings.

2. Connect the 34-pin Floppy Disk Cable to Connector J1 on the Hard Disk Controller board. (This is the cable you previously removed.)

Note: Do not force these cables when connecting them to the Hard Disk Controller board. The connectors are *keyed* so that you can insert them in only one direction.

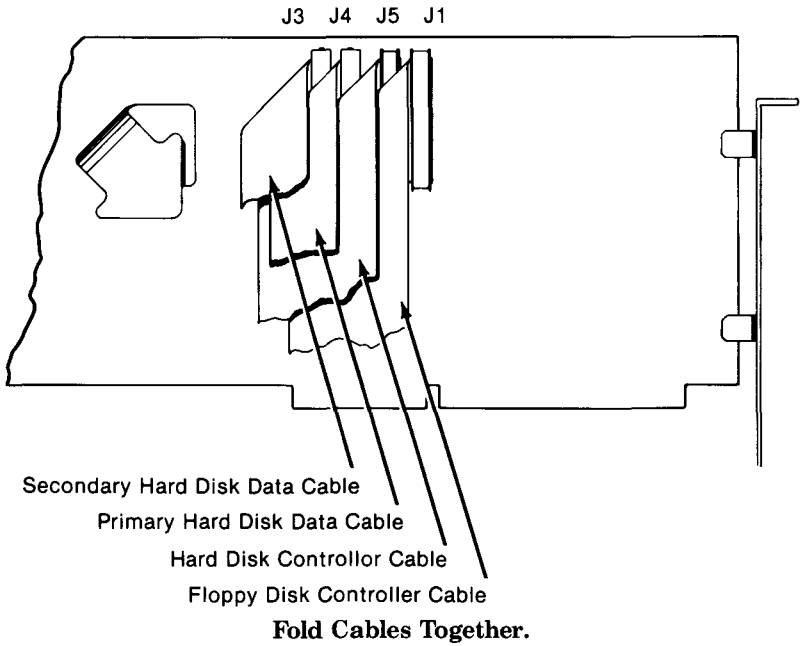
3. Connect the 34-pin Hard Disk Controller Cable to Connector J5 on the Hard Disk Controller board.
4. Connect your primary drive's 20-pin Data Cable (included with the hard disk kit) to Connector J4 on the Hard Disk Controller board.

5. If you have two internal hard disk drives installed, connect the secondary drive's Data Cable to Connector J3 on the Hard Disk Controller board.



Connect Cables to Hard Disk Controller Board.

6. After you connect these cables, fold them over as shown in the following illustration.



Installing the Hard Disk Controller Board

Now you are ready to install the Hard Disk Controller board. Follow these steps to install this board.

Note: If you have not yet installed your optional internal disk drive(s), you should do so now. Refer to the installation instructions that come with your disk drive.

1. Select an empty, full-size option slot in which to install the Hard Disk Controller board. The best location for this board (so that the drive cables can easily reach the drive) is usually Slot 9 in a Tandy 3000 or Slot 7 in a Tandy 3000 HL.
2. If you are installing the Hard Disk Controller board in a Tandy 3000 HL, you must first remove the slot cover. Remove the screw from the slot cover on the computer's back panel. Then, tilt the slot cover away from the opening, and lift it out.

If you are installing the Hard Disk Controller board in a Tandy 3000, use the open Slot 9 from which you previously removed the Floppy Disk Controller board.

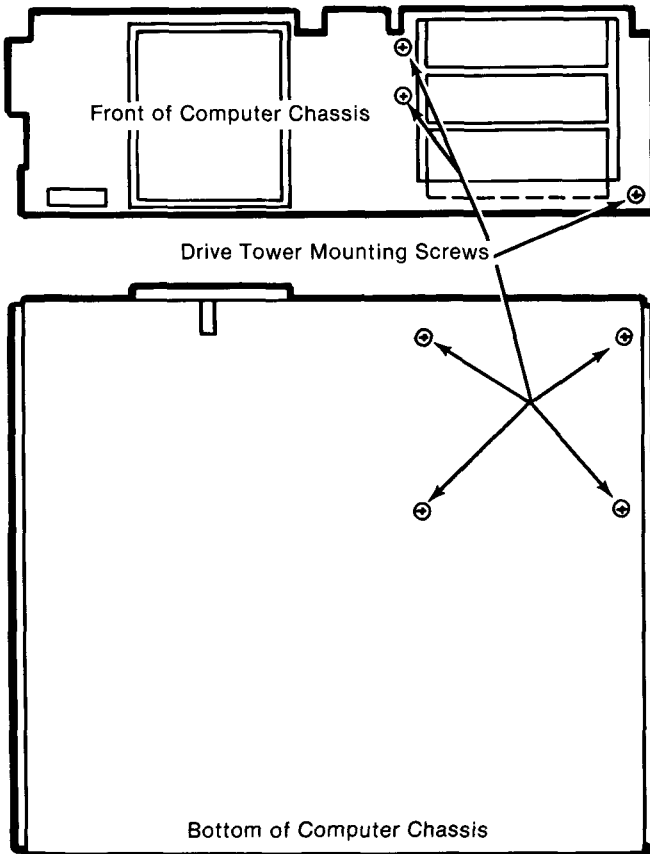
3. Slip the front edge of the Hard Disk Controller board into the plastic card guide at the front of the computer, and insert the board's metal mounting bracket into the slot opening. As you slide the front end of the board down the card guide, push the board's edge connector firmly into the option slot socket. Be sure the board is fully seated.
4. Use the screw you removed previously to secure the Hard Disk Controller board's mounting bracket to the back panel of the computer.

If you are installing the Hard Disk Controller Board in a Tandy 3000 HL, you are now ready to connect the cables. Skip the next two sections, "Removing the Drive Tower" and "Removing the Load Resistor," and proceed with the instructions in "Completing the Installation." Otherwise, continue with the next two sections before you complete the installation.

Removing the Drive Tower

For easy access to the disk drives in a Tandy 3000, you can remove the chassis that houses them (the *drive tower*). Before you remove the drive tower, note the location of and disconnect any cables still attached to the internal drives. Then, remove the four screws that secure the tower to the bottom and the three screws that secure the tower to the front of the computer chassis.

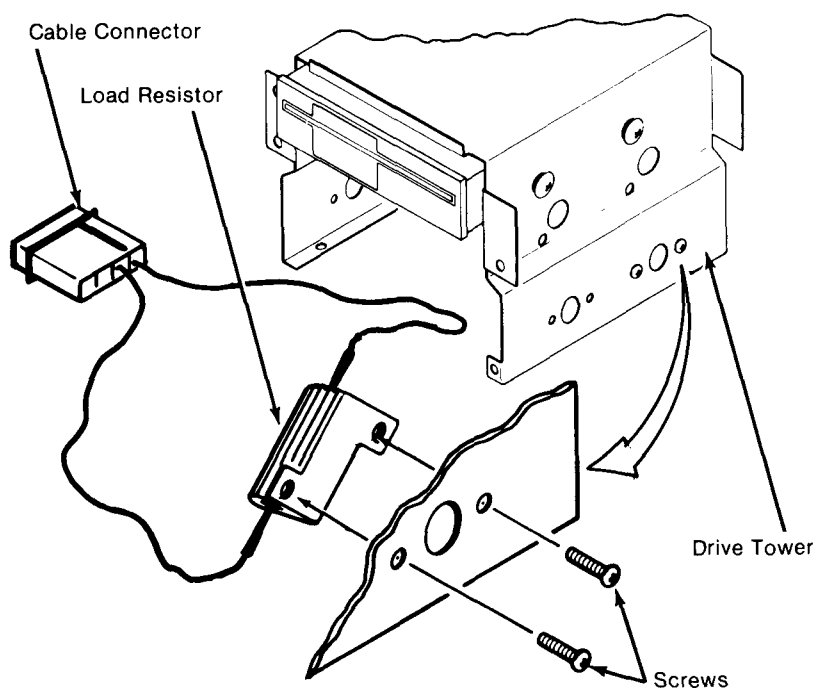
Note: It is not necessary to remove the drive tower for a Tandy 3000 HL installation.



Remove Drive Tower.

Removing the Load Resistor

If your computer is a floppy-based Tandy 3000, a Load Resistor is attached to the side of the bottom drive slot. Pull apart the white cable connector to disconnect the Load Resistor from its cable. Now, remove the two screws that secure the Load Resistor to the side of the drive tower. Remove the Load Resistor and store it in a safe place. If you later remove the Hard Disk Controller Board and hard disk(s) from your computer for a floppy-only system, you must reinstall the Load Resistor.



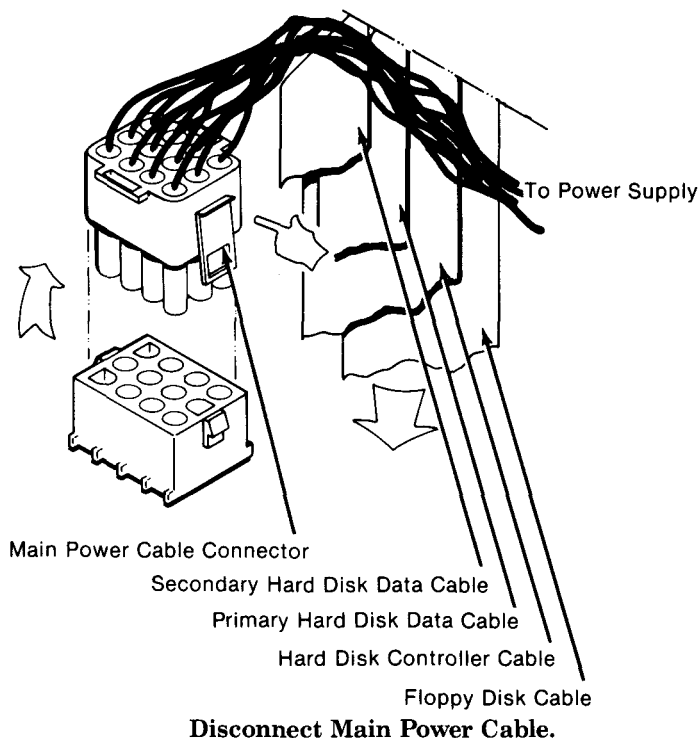
Remove Load Resistor.

Now, carefully lift the drive tower up and out of the system unit. You are now ready to complete the installation.

Completing the Installation

To complete the Hard Disk Controller board installation, connect all internal disk drive cables. Do not force the cables as you connect them. These cables are keyed to connect in only one way. Try not to twist the cables as you connect them. The easiest way to assure that the disk drive cables lie flat is to thread them under the power cables

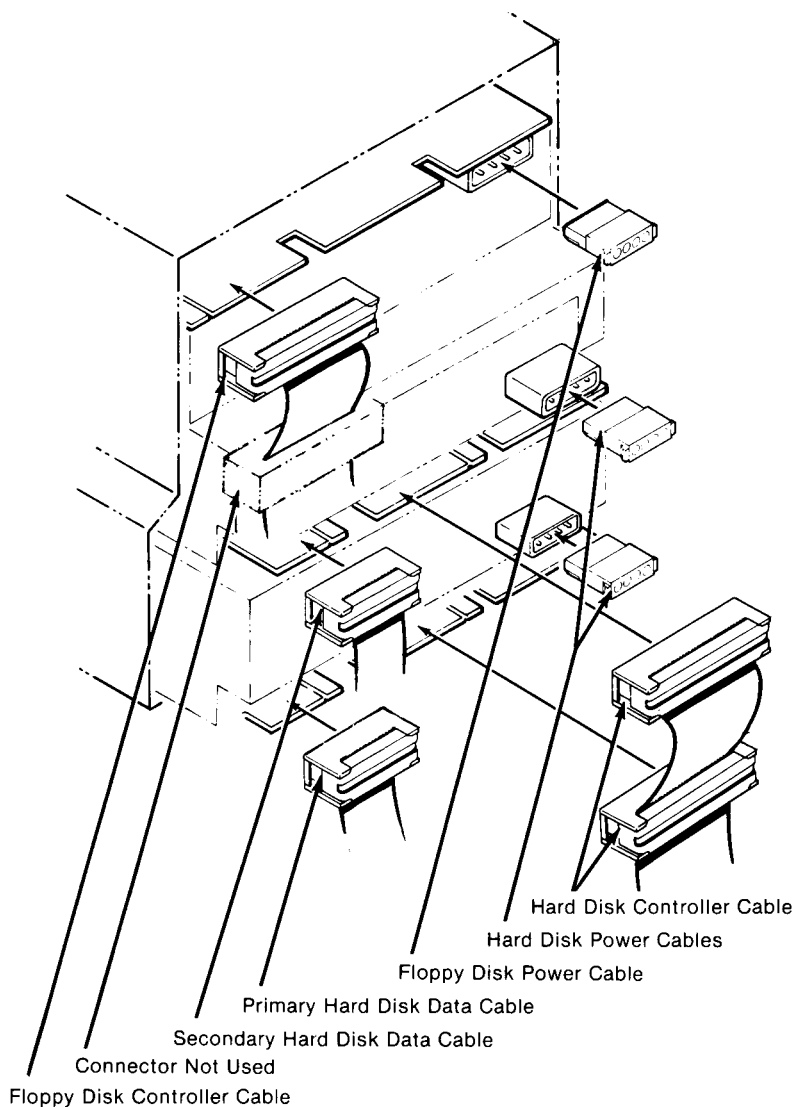
1. Disconnect the main power cable connector from the main logic board by pressing in on the tabs as you lift the connector.



2. Connect your primary drive's Data Cable to the 20-pin card edge on your primary hard disk drive. (This cable is connected to J4 on the Hard Disk Controller board.)
3. If you have two internal hard disk drives installed, connect your secondary drive's Data Cable to the 20-pin card edge on your secondary hard disk drive. (This cable is connected to J3 on the Hard Disk Controller board.)
4. Connect one of the Hard Disk Controller Cable's edge connectors to the 34-pin card edge on your primary hard disk drive. (This cable is connected to J5 on the Hard Disk Controller board.)

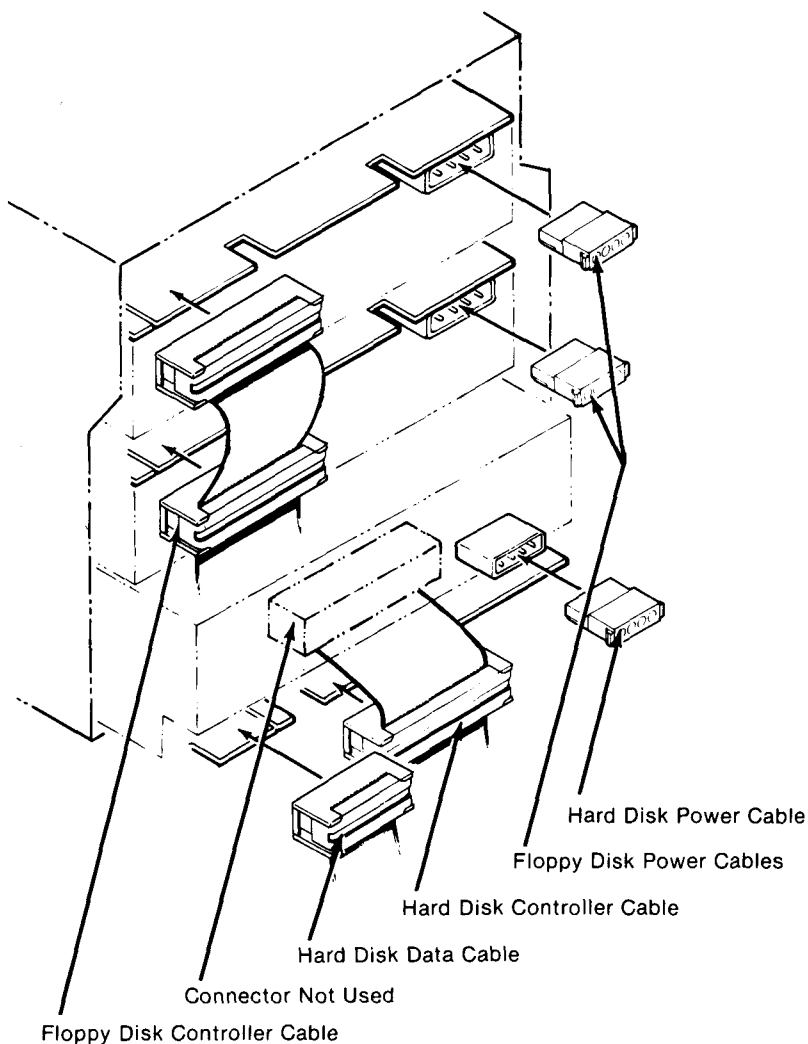
You can connect either of the two edge connectors to the primary hard disk drive. However, it is easier to connect a secondary hard disk drive if you use the middle connector for the primary drive and the end connector for a secondary drive.

5. If you have two internal hard disk drives installed, connect the remaining edge connector on the Hard Disk Controller Cable to the 34-pin card edge on the secondary hard disk drive.



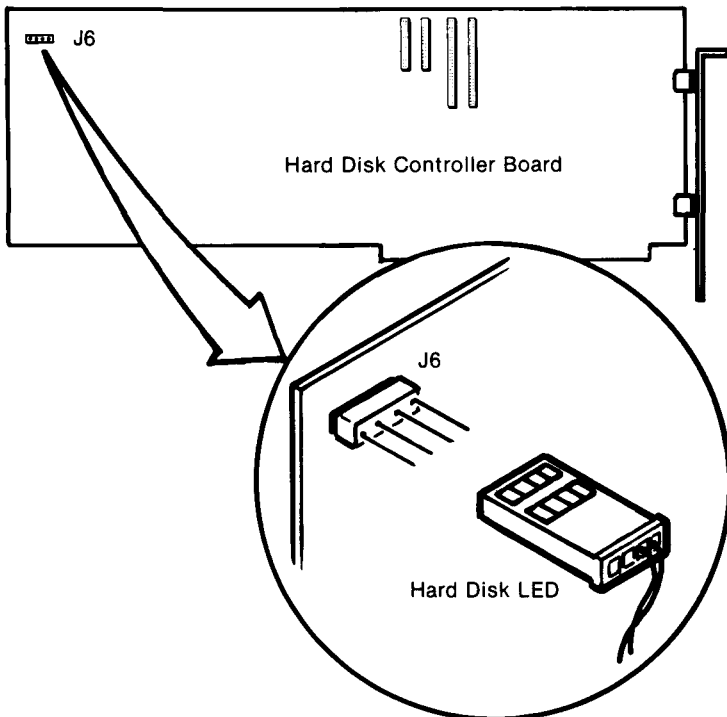
Cable Connections for a Two-Hard Disk System.

6. Connect the Floppy Disk Cable's end edge connector to the 34-pin card edge on your primary floppy disk drive. (This cable is connected to J1 on the Hard Disk Controller board.)
7. If you have two floppy disk drives installed, connect the middle edge connector on the Floppy Disk Cable to the 34-pin card edge on Drive B.



Cable Connections for a Two-Floppy Disk System.

8. Connect the 4-pin power cables to your internal disk drives. These power cables are identical and can be connected interchangeably to any internal disk drives.
9. If you previously removed the drive tower, replace the drive tower. Use the screws you removed to secure it to the computer chassis. Be sure that no cables are under the drive tower when you replace it.
10. Reconnect the main power cable connector to the main logic board.
11. If you previously installed the Hard Disk LED in your computer, connect the black and orange hard disk drive LED cable to Connector J6 on the Hard Disk Controller board. Be sure the connector is oriented so that the two cables are toward the back of the computer.



Connect the LED.

12. After all internal cables are properly connected, replace the cover. With the lip of the cover under the lower rail on the system unit's frame, slide the entire housing toward the back of the computer. Replace the cover mounting screws on the computer's back panel. Replace the fan filter if you previously removed it.
13. Reconnect all peripheral cables to the appropriate connectors on the back of the computer. Reconnect the power cord.

TECHNICAL INFORMATION

- The Hard Disk Controller board is actually a combination board that supports your floppy disk drives as well as the hard disk drives you add.
- Controls as many as two internal or external Winchester fixed disk drives. The Winchester interface is compatible with the Seagate® ST506/ST412 standard interface.
- Controls as many as two floppy disk drives (1.2MB and/or 360kB).
- Allows concurrent operation of one floppy and one fixed disk.
- The standard E1-E8 jumper settings configure the Hard Disk Controller board for IBM® PC/AT™-compatible computers. Possible settings are:

Standard Jumper Settings

E2-E3	Selects primary addresses 3F2, 3F4-3F7 hex for the floppy disk drives.
E5-E6	Selects primary addresses 1F0-1F7 hex for the fixed disk drives.
E7-E8	These pins must be jumpered at all times.

Alternate Jumper Settings (hardware support for dual-controller operation)

E1-E2	Selects secondary addresses 372, 374-377 hex for the floppy disk drives.
E4-E5	Selects secondary addresses 170-177 hex for the fixed disk drives.
E7-E8	These pins must be jumpered at all times.

Note: Dual-controller operation is not normally supported by standard software.

Technical Information

- Supports 1024 fixed disk cylinders with a maximum of 16 heads.
- Supports a maximum of 80 floppy disk cylinders with a maximum of 2 heads.
- Can operate at temperatures from 0°C to 50°C (32°F to 122°F) with 8%-80% non-condensing humidity.

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