

Installing A

ST225NPR/ST251NPR

ST277NPR/ST296NPR

Disc Drive With

The Seagate

ST01 Host Adaptor

 **Seagate**

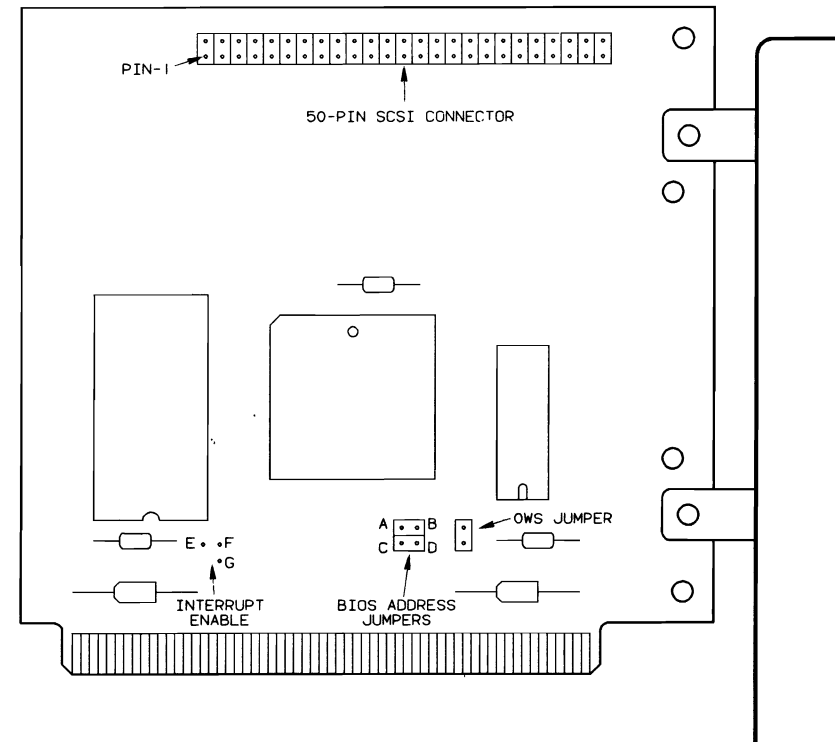
I. Host Adaptor Set-Up And Installation

1. Remove the Host Adaptor from the protective covering and **pull the rubber strips from between the connector pins.**
2. Set the starting address on the Host Adaptor.
 - CA000 is the default BIOS address. If there is a board already installed at this address in your system, use the jumpers to change to another address. Refer to Figure 1.
3. Zero-Wait-State Enable:
 - A two-pin jumper is provided on the adaptor to enable the *zero-wait-state* (0WS) logic for PC XT/AT look-alikes. Performance can be improved on PC AT systems (and most compatibles) that support 0WS if this jumper is installed. Systems that monitor this line, and cannot support a 0WS, will hang during the boot process or shortly thereafter. Systems known to be unable to support 0WS are Epson Equity III+, AT&T 6300+/6310 and IBM 5162-286 XT. Refer to the specific computer system technical reference manual.
4. Connect the logic cable to the adaptor. You may find it easier to attach the logic cable before you install the host adaptor in the system. Refer to Figure 3.
 - Pin-1 on the Host Adaptor corresponds to pin-1 at the drive SCSI connector. The logic cable has a contrasting-color stripe to indicate pin-1.
5. Install the adaptor as illustrated and verify it is squarely seated in the slot. **PC XT-only installations:** Do not use slot number eight, which is next to the power supply. See to Figure 3.
6. If you encounter clearance problems when running the logic cable behind the floppy drive, you may have to loosen the floppy mounting screws and slide it slightly forward. When the operation is completed, don't forget to slide the floppy drive back into place and tighten the screws.

Figure 1: Host Adaptor

The Adaptor BIOS has four possible starting addresses.

CONFIGURATION	ADDRESS
No Jumpers Installed:	CA000 (default)
Pins A-B Shorted:	C8000
Pins C-D Shorted:	CE000
Pins A-B & C-D Shorted:	DE000



II. Drive Configuration And Installation

- Do not unpack a drive until you are ready to install it into a system.
- Always rest the drive on an anti-static pad; never on an unprotected hard surface.
- Refer to Figure 3 during installation.

1. Remove the top cover from your system. Retain the screws.
2. Set the SCSI ID address on the drive. Refer to Figure 2. The Host Adaptor recognizes devices by their SCSI ID number.

- If you are installing one drive, the ID number is 0 (no jumper).
- A second physical drive must be set as ID number 1. Use the jumper provided.

3. **Drive Resistor Termination Packs:** If you are installing a single drive, the resistor termination packs must remain installed. If you are installing two drives, remove the resistor termination packs from the first drive.

When installing the resistor termination packs, note that pin-1 is designated by a dot or number one on the pack. A square pad on the PCB indicates pin-1 at the socket.

4. **Drive mounting is system dependent.** Rails cannot be installed if a front panel is in place. Remove before installing the rails.
5. Drives are shipped with a half-height, front panel. Determine if you need to replace it with the full-height panel. Use the same screws to reinstall the new panel.
6. PC AT installations require a printed circuit cable (PCC) shield instead of a front panel. The shield protects the printed circuit cable. Install as illustrated in Figure 3 using the front panel screws.
7. IBM PC XT and AT&T 6300 installations require 4, 6-32 x 3/16-inch panhead screws (packed with the rails). Tighten the screws down evenly to $8 \pm .8$ inch-lbs. Overtightening may cause drive damage. Use only the supplied screws or a Seagate-approved equivalent.

8. PC AT, Compaq Deskpro 286 and Epson Equity III+ installations require mounting rails. The rails fasten directly to the drive mounting feet and allow it to slide into the system chassis.

- For PC AT installations, use the narrow mounting rails (note right rail is part number 50324-001 and left rail is 50324-002) and 4, 6-32 x 3/16-inch panhead screws as supplied.

- For Compaq Deskpro 286, use the wide mounting rails and 4, 6-32 x 5/16-inch flathead screws as supplied. Note that one rail has tapped holes to allow fastening to the chassis. Use two of the 6-32 x 3/16-inch panhead screws to secure the drive to the chassis side.

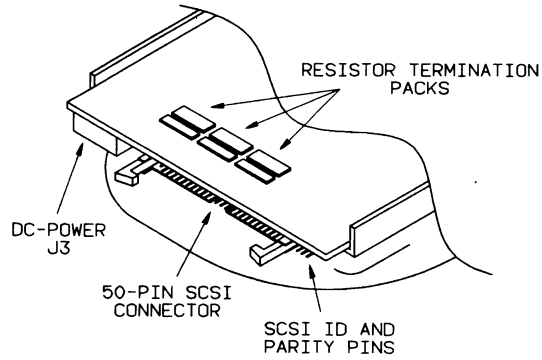
- Epson Equity III+ and AT&T 6310 systems have rails included with the system. Use these instead of the rails provided.

9. Attach the logic cable assembly to the drive and Host Adaptor. Pin-1 at the drive **must** mate with pin-1 at the adaptor. The logic cable has a contrasting-color stripe which indicates pin-1. It also has an additional connector at the drive-end to accommodate a second hard disc drive.

10. Drive DC Power Connection:

- Use the straight power cable assembly (refer to Figure 3) for Compaq installations.
- Use the "Y" power cable assembly (refer to Figure 3) for PC XT and AT&T 6310 installations, if two drives are being installed.

Figure 2: Disc Drive Configuration



SCSI ID JUMPERS

SELECT THE DESIRED SCSI ID WITH JUMPERS. INSTALL THE OPTIONAL P-JUMPER TO ENABLE PARITY.

- SCSI ID = 0
- SCSI ID = 1
- SCSI ID = 2
- SCSI ID = 3
- SCSI ID = 4
- SCSI ID = 5
- SCSI ID = 6
- SCSI ID = 7

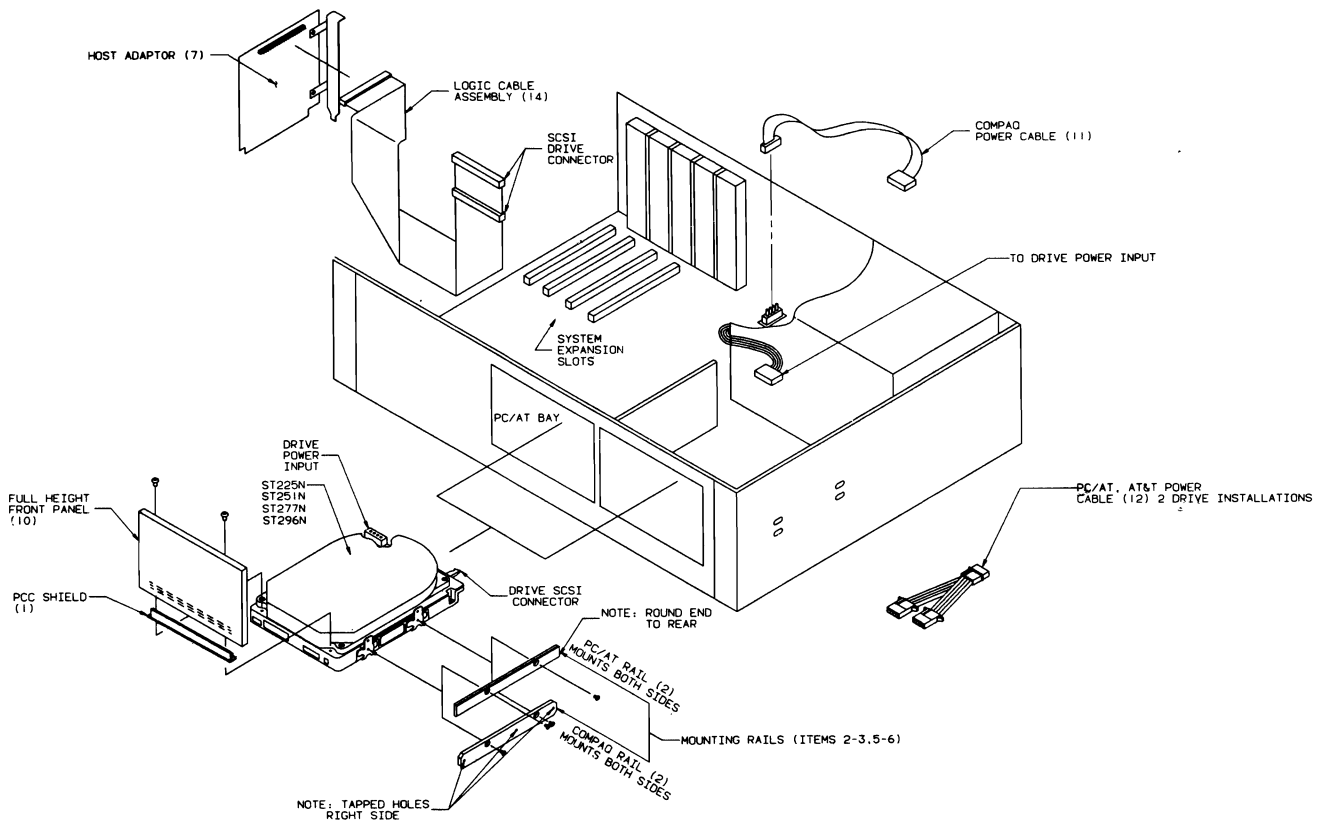
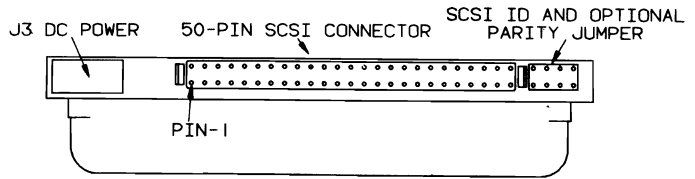


Figure 3: Typical System Installation

III. Preparing The Drive For Use

The installation process will low level format new physical blocks on the entire surface of the drive and will create DOS compatible partitions, root directories, and file allocation tables.

All drives are shipped with a small DOS partition containing INSTALLR.EXE, PARK.EXE and README.1ST (a 3-page printable supplement to this installation guide). README.1ST will contain the latest installation information for the drive being installed and can be accessed by DOS system commands: TYPE, COPY or PRINT.

Drives having more than 32 formatted megabytes are shipped with additional installation software resident, hereafter referred to as Disk Manager. This software supports multiple DOS partitions on a single drive and partitions greater than 32 MB. Program execution will begin automatically. In addition, a number of reference files (.REF) provide information concerning the process. These files can be accessed by DOS system commands: TYPE, COPY or PRINT.

If your disc drive has less than 32 formatted megabytes, you need one DOS bootable diskette that has the boot files from the version of DOS that you plan to use on your Seagate disc drive. This diskette should also contain the FORMAT program provided with your DOS system, and sufficient space (approximately 50 KB) to save the installation programs from the hard disc. This diskette must not be write protected.

If your disc drive has more than 32 formatted megabytes, you need two diskettes to complete the installation process. The first of these diskettes need only be DOS bootable with the version of DOS that you plan to use on your hard disc drive. The second diskette must not be write protected, and have at least 320 KB of free space to save the installation and Disk Manager programs.

If you are installing your drive in a PC AT or compatible machine and a standard hard drive is not presently attached or operational, the hard drive count in CMOS RAM will be set to zero. It is not necessary to change the CMOS RAM hard drive count when installing SCSI drives.

If a standard drive is already attached and operational in your system, it will be the first drive and the Seagate SCSI drive will be the second drive. The CMOS RAM hard drive count should not include the Seagate SCSI disc drive.

If you are installing a second drive in your system and Disk Manager is used to install it, it is important that the Disk Manager driver (DMDRVR.BIN) is resident on the boot drive and a "device = DMDRVR.BIN" statement is contained in the CONFIG.SYS file on that drive. Normally this statement should follow any "device =" statement for the boot drive.

WARNING TO INSTALLERS OF SECOND DRIVES: DOS assigns a logical identifier (e.g. C, D, E ...) to each partition that it recognizes during the boot load. Furthermore, DOS assigns identifiers to the first partition on each physical drive before assigning identifiers to additional partitions. Therefore, if you have a single drive with three partitions, they will be assigned C, D and E. However, when the second drive is installed, the first partition on drive 1 will be assigned C, the first partition on drive 2 will be assigned D, then E and F will be assigned to the remaining partitions on drive 1. Any additional partitions on drive 2 then will be assigned subsequent identifiers. It is important to realize that the partitions previously identified as D and E have changed when the second drive is added.

The PARK program supplied with your drive is used to park the read/write heads for the ST225NPR only. All other drives automatically park their heads at power-off. For your own protection, you should always park the read/write heads before your system is transported.

Procedure

1. Place a DOS-bootable diskette in drive A and switch the power on. If you have correctly installed the drive and adaptor, *ST01 SCSI Host Adaptor Vx.x* will be displayed, followed by a screen prompting you to the next step. Each step in the process is lead by screen prompts.
2. After the boot process is complete, begin the installation by typing: C:INSTALLR C, or if you are installing a second hard drive, D:INSTALLR D.

3. If you are installing a ST251NPR/ST277NPR/ST296NPR, you will be instructed to remove the DOS diskette and insert the blank diskette that will be used to copy the Disk Manager software, hereafter referred to as the Disk Manager diskette.

If there is a hard drive already installed in the system, and the ST251NPR/ST277NPR/ST296NPR is the second drive, you must copy the DMDRVR.BIN and CONFIG.SYS files from the Disk Manager diskette to the existing (first) drive. If the CONFIG.SYS file is resident, simply update it.

The driver is supplied only with drives with over 32 megabytes of formatted capacity. It allows access to more than one partition per drive and permits access to partitions greater than 32 megabytes. The partitioning software will assist you during the remainder of the format process with screen prompts.


If you prefer, you may use the partitioning and high level formatting software supplied with your DOS system (FDISK and FORMAT). If you select this option during installation, the installation software will perform a low level format of your drive surface before exiting to DOS.

4. The entire routine is menu-driven and takes from ten to thirty minutes, depending on drive size. After the format is complete the read/write heads will be parked. At the next power-up the system will boot from the hard disc if the diskette is not ready.

IV. Problem Determination

If you have a problem getting the initial screen or later getting the system to boot:

- Check logic cabling between the Host Adaptor and the drive: Pin-1 on the adaptor corresponds to pin-1 at the drive. The contrasting color strip on the cable should be attached to pin-1.
- Check the power cable on the drive. When power is applied, you should be able to feel and hear the drive motor. After a few seconds, you should hear the head actuator cycle several times. This indicates that the drive is performing a self diagnostic.

- Verify correct SCSI ID address at the drive. The first drive should be configured as ID 0, and the second as ID 1. See Figure 2.
- If the "Adapter Self-Test Failed" message is displayed, verify that the last (or only) drive on the SCSI cable has terminating resistors installed.
- Verify correct BIOS address: If you have more than one disc, tape or other controller that uses BIOS ROM space, each must be configured to operate at different memory addresses. Addressing multiple controllers at the same memory locations can cause problems of a seemingly indeterminate nature. If you suspect that you have this type of problem, turn off the power to your computer, remove the Host Adaptor and change the pin jumpers setting illustrated in Figure 1, then try again.
- Verify *zero-wait-state* (OWS) jumper setting. The jumper is illustrated in Figure 1. A performance increase can be obtained in AT class systems that properly support OWS (e.g. IBM PC AT) if the OWS jumper is installed on the ST01. However, problems can arise in AT compatible systems from having the jumper installed if OWS is not supported in the same way as the IBM PC AT. If you are experiencing problems during booting or subsequent operation, remove the jumper. The jumper has no effect on XT class systems (except IBM XT-286). 
- If you experience problems accessing your DOS partition after installation, refer to the file DM.REF for additional information regarding deviations in hardware and DOS systems from various suppliers.
- For additional installation help call Seagate at **1-800-468-DISC**

V. Messages

The following messages may be displayed on the screen by the Host Adaptor:

1. Adaptor selftest failed (*see problem determination.*)
2. Mode Sense error
3. Bad Adaptor RAM (*replace ST01 Host Adaptor*)
4. No SCSI hard disc found. Check cables and power connections.
5. Inquiry error
6. SCSI bus parity error (*check data cables*)
7. Disc prepared for shipping (i.e., heads parked.)