

# Chapter 1 - Introduction

This chapter provides a product overview and discusses system requirements, necessary supplies for installation, and proper unpacking procedures.

## Product Description

Western Digital's family of intelligent drives provides a choice of data storage capacities for the IBM PC/XT and compatibles. Because of their small size, the WD93024-X, WD93034-X, and WD93044-X are easily incorporated into systems with limited space. They can also be used as secondary drives in AT systems. The drives have an average seek time of 39 milliseconds and maintain a 3:1 interleave (2:1 interleave in direct memory access (DMA) demand mode; 5:1 interleave in physical mode). A translation feature provides support for logical drive types in systems that do not support 27 sectors per track. Your **drive has been pre-formatted (low-level) at the factory.**

Models WD93024-X, WD93034-X, and WD93044-X offer 20, 30, and 40 megabytes of storage, respectively, in a 3.5 inch form factor. These drives are also available with 5.25 inch frames.

Bezel (face plate), and LED indicator options are available. Contact your Western Digital dealer for the part number required for your configuration.

## System Requirements

- You can use your drive in an IBM PC/XT or compatible system that has Disk Operating System (DOS) version 3.0 or later.

Contact your Western Digital dealer if you need information about other operating systems.

- **Your drive requires Western Digital's IDE SuperBIOS program.** Your XT system may already have the IDE SuperBIOS program on the motherboard. Check with your computer manufacturer, dealer or motherboard manufacturer. These systems will provide a compatible 40-pin connector on the motherboard for interfacing with Western Digital's drive. *If you do not have IDE SuperBIOS and a compatible 40-pin*

motherboard connector, you must install Western Digital's XT-140 or XT-150 adapter.

The XT-140 provides two hard drive connectors with fixed addresses. *Note that the XT-140 must be the only hard drive controller in the system.*

The XT-150 provides one hard drive connector and a power connector. Primary and secondary BIOS/drive addresses are jumper selectable. *If you are installing two intelligent drives, you require two XT-150 adapter boards.*

- If your system does not provide a power connector, you need a power cable and a XT- 150 adapter. Dual drive installations may require a Y-adapter cable for supplying power.
- If you are installing two intelligent drives, there must be adequate space for mounting to allow for a one-inch clearance between the two drives.

## **Gather Supplies**

Verify that you have the following items:

- Your Western Digital drive
- This installation guide
- Your operating system manuals and operating system diskettes
- Screwdriver and four 6-32 screws for mounting (3/16 inch)
- One 40-pin interface cable

Pin 20 position should be keyed (small plug placed in female connector) at both ends of the cable to prevent accidental reversal of the cable and thus damage to the drive. The cable must be of the "untwisted" type and not more than 18 inches long.

- Western Digital's XT-140 or XT-150 adapter card (if required by your system)

*Optional supplies, depending upon your particular installation. Contact your Western Digital dealer, unless otherwise indicated.*

- Bezel(faceplate) and LED

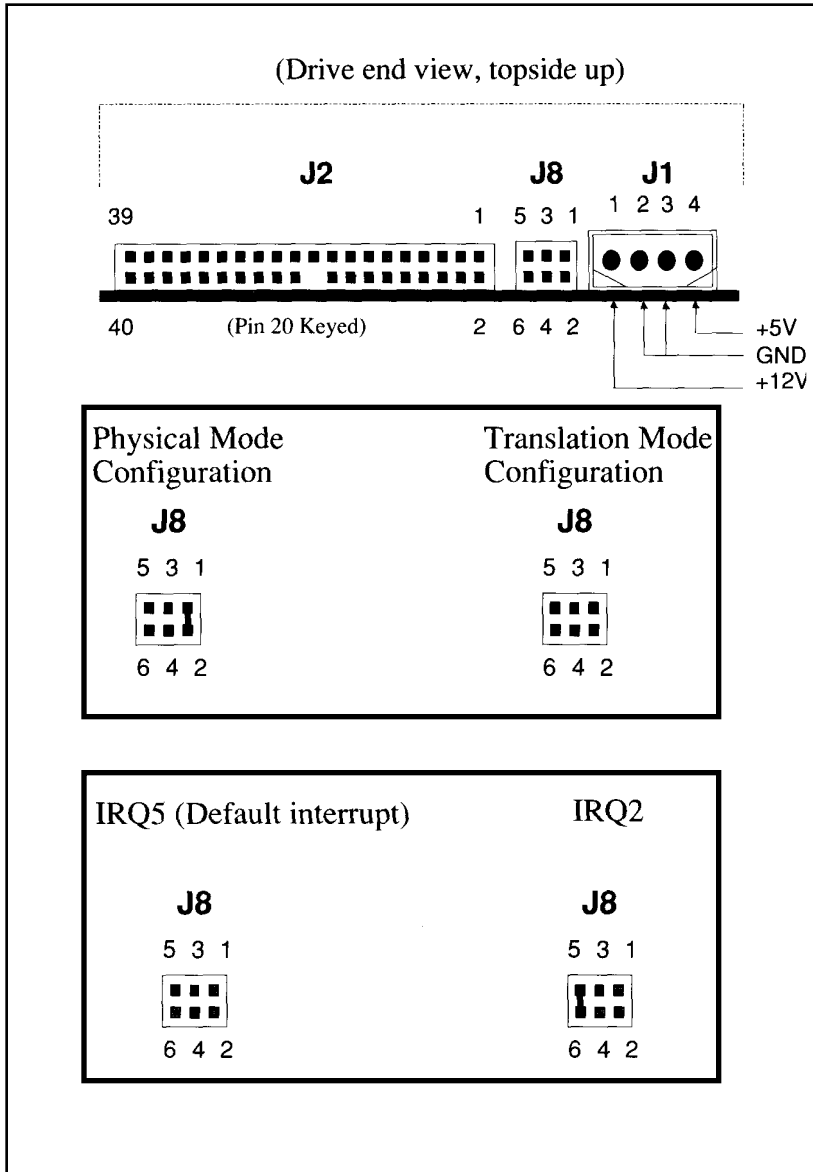


Figure 2-2. Jumper Configuration

## Identifying Your Intelligent Drive

Figure 2-1 is a bottom view of the intelligent drive. Locate the drive's connectors (J1, J2 and J8). Figure 2-2 illustrates and defines the connectors and default jumper settings.

## Installation

The following steps describe the physical installation of the drive in *a* front panel slot. Figure 2-3 is a decision tree for installing your drive in an XT system. Figures 2-4 through 2-5 illustrate a typical front panel mounting of an intelligent drive.

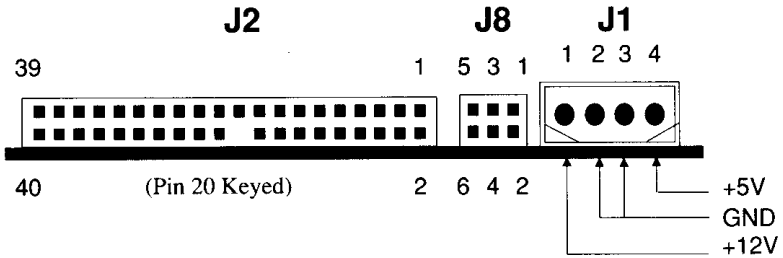
- If you wish to mount your drive in a different position, refer to Appendix B for an illustration of the mounting dimensions or contact your Western Digital dealer.
- If you are installing an adapter card, you will be referred to Appendix D at the appropriate installation step.

### **WARNING**

**To avoid electrical shock, make sure that all power to your computer is off and the power cord is disconnected from the electrical source.**

1. **Before you remove any cables, note their location (for easy reassembly). Remove the power cord from the computer.**
2. **Remove the cover of the computer according to the instructions in your Owner's Manual.**

- Identify the interface connector (J2) and the power connector (J1) on the drive assembly. J8 is the configuration block.

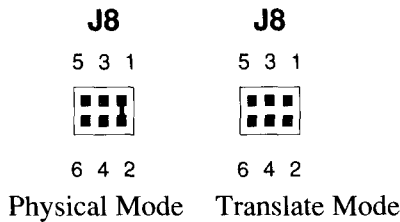


The proper orientation for the drive is with the printed circuit board facing down. (Figure 2-1 is a bottom view.)

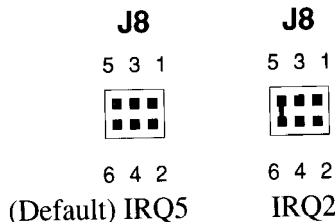
### Jumper Configuration

- Verify that the jumper shunts on J8 are properly installed to match your configuration choices. (Refer to Figure 2-2.)

**Physical Mode vs. Translate Mode:** The physical mode presents the drive's actual physical parameters to the system (shunt on pins 1-2 of J8). If your operating system only recognizes 17 sectors per track, use the translate mode jumper configuration (no jumper installed).



**IRQ5 vs. IRQ2:** IRQ5 is the default priority interrupt level. If you need to select IRQ2, place a jumper on pins 5-6 of J8 connector.



**Optional DMA Demand Mode:** The DMA demand mode offers a sector interleave of 2:1 which improves the data transfer rate and overall system performance. (The standard interleave ratio is 3:1 in translate mode and usually 5:1 in physical mode. The physical mode ratio varies depending upon the computer system.) *This option is only valid for systems that have a BIOS or operating system that can program the DMA controller in the demand mode and sense the mode selection "handshake" function. The DMA controller must also support the demand mode.* To select the controller DMA demand mode, jumper pins 3-4 of J8.



Note: Western Digital's IDE SuperBIOS program (version 3.0) can program the controller for DMA demand mode.

### *Mounting and Cabling*

5. **Connect the host interface cable to the drive's J2 connector and thread the cable through the front panel slot.**

#### **WARNING**

**Damage to the drive may occur if the interface cable is attached incorrectly. To prevent an incorrect connection, make certain you are using an interface cable which has been keyed at both the drive and host ends. Refer to Figure 2-2 which shows pin 20 as the key. (This pin has been removed from J2. The female connector on the interface cable will have a plug in position 20 to prevent incorrect connection.)**

6. **Carefully slide the drive into the appropriate front panel slot (Figure 2-4.) with the printed circuit board facing down (Figure 2-5.).**

If your drive installation requires the use of slide rails or some other mounting device, your computer manufacturer or dealer will provide these.

## Appendix A - Specifications

<b>Physical Configuration</b>			
	<b><u>20 MBytes</u></b>	<b><u>30 MBytes</u></b>	<b><u>40 MBytes</u></b>
Actuator Type	Rack & pinion	Rack & pinion	Rack & pinion
Disks	1	2	2
Data Surfaces	2	3	4
Heads	2	3	4
Tracks per Surface	782	782	782
Bytes per Sector	512	512	512
Sectors per Drive	42,228	63,342	84,456
Sectors per Track	27	27	27
Formatted Capacity	21.6 MBytes	32.4 MBytes	43.2 MBytes
Interface	40-pin PC/XT	40-pin PC/XT	40-pin PC/XT
Park Cylinder	862	862	862
Recording Method	RLL 2,7	RLL 2,7	RLL 2,7
<b>Performance Specifications</b>			
Average Seek Time	39 Milliseconds		
Data Transfer Rate			
Disk to Buffer	7.5 Mbits per second		
Buffer to Host	320 Kbytes per second		
Data Throughput	240 Kbytes		
Interleave	2:1 in DMA demand mode <sup>*</sup> ; 3:1 in translate mode; 5:1 in physical mode (varies according to computer system)		
Acoustics	40 dBA typical @ 1 meter 32 dBA @ 1 meter standby		
Product Design Life	5 years		
MTBF	40,000 power-on hours		

<sup>\*</sup>DMA demand mode is only valid for systems which have a BIOS or operating system that can program the DMA controller and sense the made selection "hand shake" function. The DMA controller must support demand mode.