Western Digital Quick Installation (WDE2170-WDE4360)

WD Enterprise Series 3.5-Inch SCSI Hard Drives

DRIVE	WDE2170	WDE4360
Capacity (MB)	2170	4360

BEFORE YOU BEGIN

Record the drive model number and serial number. Both are located on the top of the drive.

Gather these supplies:
- Computer system manual
- Operating system manual
- Host bus adapter manual
- Non-magnetic screwdriver

You may also need:
- Jumper shunts, if you change the drive configuration
- Interface cable (for 50-pin or 68-pin models)
- A drive tray or mounting rails, depending upon system requirements
- Additional power cable(s)

HANDLING PRECAUTIONS

The WD Enterprise hard drive is designed to withstand normal handling during unpacking and installation. Care must be taken to avoid excessive mechanical shock or electrostatic discharge (ESD) that can permanently damage the drive and void the warranty.

Be aware of the following precautions when unpacking and installing the WD Enterprise drive:
- Do not unpack the hard drive until you are ready to install it.
- Handle the drive by the sides only and avoid touching the circuit board components and connectors.
- Do not attempt to remove the drive cover. Servicing components in the sealed compartment require special cleanroom facilities. Failure to observe this restriction will void the warranty.
- For additional handling information, refer to the *Western Digital 3.5-Inch Drive Handling Guide* (document number SO999).

SETTING THE DRIVE JUMPERS

NOTE: This information will help you configure each WD Enterprise drive to operate properly in your system.

The drive is designed for use in a variety of systems. Therefore, you can set several configuration options using the option block on the front of the drive (end opposite SCSI connector). In most cases, you do not need to change the default settings for normal drive operation. However, some installations may require you to install or remove certain jumpers in order to meet system specifications. See Figure 1.
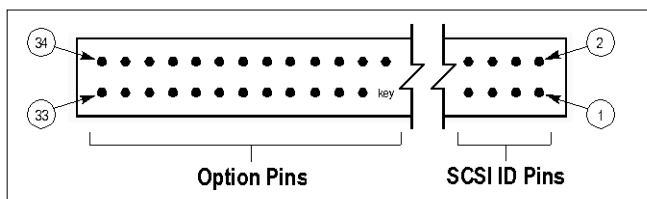

Figure 1. Option Block

SCSI ID Numbers

Each device on the SCSI bus requires a unique SCSI ID number (0 to 7 for 8-bit devices, 0 to 15 for 16-bit devices).

Option block pins 1 through 8 are used to set the SCSI IDs. Refer to Table 1 for a complete matrix of jumper settings.

The host computer's SCSI controller typically uses ID number 7, and the other numbers are used for devices such as hard drives. The WD Enterprise drive has a default SCSI ID of 0.

SCSI ID	JUMPER LOCATION			
	Pins 7 & 8	Pins 5 & 6	Pins 3 & 4	Pins 1 & 2
0	O	O	O	O
1	O	O	O	●
2	O	O	●	O
3	O	O	●	●
4	O	●	O	O
5	O	●	O	●
6	O	●	●	O
7	O	●	●	●
8	●	O	O	O
9	●	O	O	●
10	●	O	●	O
11	●	O	●	●
12	●	●	O	O
13	●	●	O	●
14	●	●	●	O
15	●	●	●	●

● jumper installed   O jumper removed   = legal 8-bit bus IDs*

* If any device on your computer's SCSI bus supports only 8-bit SCSI IDs, the WD Enterprise drive must be set to one of these values. When setting IDs on 50-pin drives, pins 7 and 8 are not used.

Table 1. SCSI ID Jumpers

Disable Auto Start

You can configure the WD Enterprise drive to Auto Start, or automatically spin up when power is applied to the drive. If the drive is configured to disable Auto Start, it powers up, but does not spin up until a start unit command is issued by an operator.

Option block pins 13 and 14 are dedicated to the Auto Start option. To disable Auto Start, install a jumper as shown in Figure 4. To enable Auto Start, no jumper is required.
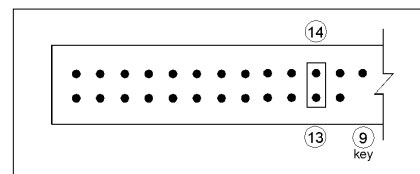

Figure 2. Disable Auto Start Jumper

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Auto Start Delay

This feature delays the start-up process to avoid an initial power surge when several drives power up at once. The delay time (default) is 4 seconds between drives, or the SCSI ID multiplied by 4 seconds. Let's say you have three hard drives in your system, and they are set to SCSI IDs 0, 1, and 2. The drive assigned as ID 0 powers up immediately; the drive assigned to ID 1 powers up in 4 seconds; and the drive assigned to ID 2 powers up in 8 seconds.

NOTE: You can change the 4-second delay time in the drive's mode parameter settings.

Option block pins 15 and 16 are dedicated to the Auto Start Delay option. (This option is valid only if the Disable Auto Start jumper is not installed.) To enable Auto Start Delay, install a jumper as shown in Figure 3. To disable Auto Start Delay, no jumper is required.
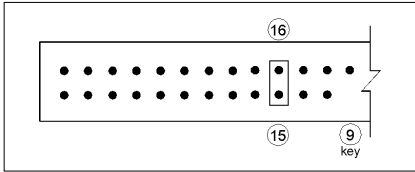

Figure 3. Auto Start Delay Jumper

SCAM

The WD Enterprise drive supports the SCSI Configured Automagically (SCAM) option, which allows it to function as a SCAM level 2 device.

NOTE: In order to use this feature, the host bus adapter must support SCAM.

Option block pins 17 and 18 are dedicated to the SCAM feature. To enable SCAM, install a jumper as shown in Figure 4. To disable SCAM, no jumper is required.
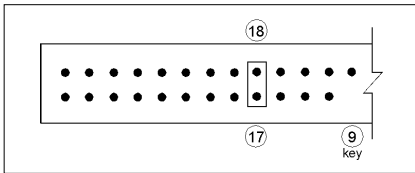

Figure 4. SCAM Jumper

Disable Unit Attention

Whenever a target (WD Enterprise drive) is reset by a power-on or reset sequence, it communicates a unit attention message to the initiator (host bus adapter).

Option block pins 19 and 20 are dedicated to the Disable Unit Attention option. To disable unit attention, install a jumper as shown in Figure 5. To enable unit attention, no jumper is required.
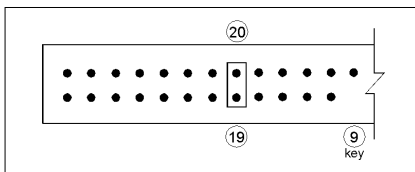

Figure 5. Disable Unit Attention Jumper

Disable Target Initiated Synchronous/Wide Negotiaton

During the power-up sequence, the initiator (host bus adapter) and the target (WD Enterprise drive) negotiate and agree upon three items: bus width, bus speed, and synchronous/asynchronous data transfer. Either the initiator or the target can start the negotiation process, and once this process is completed successfully, all "data in" and "data out" phases operate as determined during the handshake. The negotiation process occurs only once, usually during start-up.

Option block pins 21 and 22 are dedicated to the Disable Target Initiated Synchronous/Wide Negotiation option. To disable target initiated synchronous/wide negotiation, install a jumper as shown in Figure 6. To enable target initiated synchronous/wide negotiation, no jumper is required.
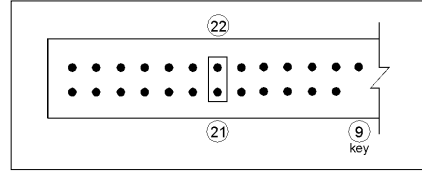

Figure 6. Disable Target Initiated Synchronous/Wide Negotiation Jumper

SCSI Termination

To ensure reliable communication, the SCSI bus must be properly terminated. Devices located at the physical ends of the SCSI bus should have their terminators enabled. All other devices must have their terminators disabled.

Option block pins 23 and 24 are dedicated to the SCSI Termination option. To enable SCSI termination, install a jumper as shown in Figure 7. To disable SCSI termination, no jumper is required.
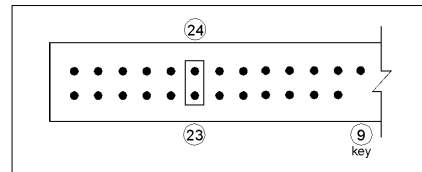

Figure 7. SCSI Termination Jumper

Termination Power (TERMPWR)

WD Enterprise drives have the ability to supply +5V to the SCSI bus for termination. Option block pins 27 and 28 are dedicated to TERMPWR. If you want the drive to supply TERMPWR to the SCSI bus, install a jumper as shown in Figure 8. To disable TERMPWR, no jumper is required.

Consult your system or host bus adapter documentation to determine if the SCSI bus supplies termination power. (Most systems do supply termination power). If your system does not, then you must use the power supplied by the WD Enterprise drive.

NOTE: Termination power from the hard drive is required only if the host bus adapter does not supply it. However, both devices can provide termination power with no detrimental effects to the system.
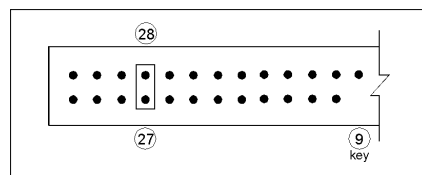

Figure 8. TERMPWR Jumper

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LED Support

If your system configuration allows the use of an activity LED external to the WD Enterprise drive, you can power the LED from the drive. Pins 10 and 29 are dedicated to LED support, as shown in Figure 12. To install an external activity LED, connect the positive lead (anode) of the LED to pin 29 and the negative lead (cathode) to pin 10.

NOTE: These pins can be used to power an LED located on the front of the drive, or an external LED in systems where the front of the drive cannot be seen.
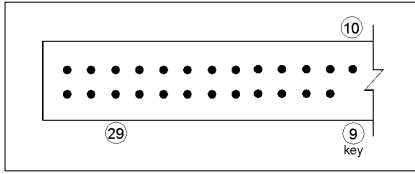

Figure 9. LED Support Pins

Reserved Pins

Several pins on the option block are reserved for development and manufacturing purposes:

- Pins 25 and 26
- Pin 30
- Pins 31 and 32
- Pins 33 and 34
- Key slot (prevents incorrect installation of connector)

Mode Select Options

You can alter certain configuration parameters using the SCSI Mode Select command. Some examples include Read/Write Error Recovery Page, Format Device Page, and Caching Page. The Mode Select command allows drive characteristics to be customized to meet your system requirements. Refer to the *Western Digital SCSI Implementation Guide* (document number 4096-001116) for more information.

Remote Option Block

WD Enterprise 68-pin drives are equipped with a remote option block that allows you to set SCSI IDs and enable select options such as termination and LED power. Customers using the remote option block typically use a pre-fabricated cable for convenient connection to the host. Do not use jumpers on this option block. For more information, refer to the *WD Enterprise Technical Reference Manual* (document number 4079-001045).

Multiple Drive Installations

If your system requires multiple devices, you may install up to eight SCSI devices (including the host bus adapter) on an 8-bit SCSI bus; up to 16 SCSI devices (including the host bus adapter) on a 16-bit SCSI bus, or up to 32 devices (including the host bus adapter) on a 16-bit SCSI bus with a dual processor host bus adapter. Refer to the *SCSI ID Numbers* section on page 1.

INSTALLING THE DRIVE

Because the Enterprise WDE2170 and WDE4360 drives are compatible with a wide range of computer systems and host bus adapters, this manual does not include system-specific information. If the information contained in the following sections does not apply to your setup, refer to your computer system documentation for further details.
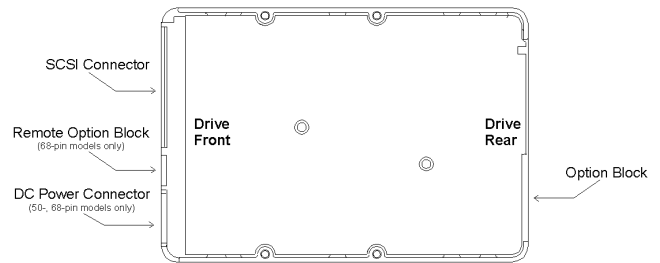

Figure 10. LED Support Pins

Open the Computer

1) Turn OFF the power to the computer system and all attached peripheral devices.

2) Unplug the AC power cable from the wall outlet.

3) Remove all cables from the back of the computer system.

4) Remove the screws attaching the computer system's cover using a non-magnetic screwdriver. Be sure to keep all screws and other parts together for easy re-assembly.

5) Gently lift the cover and remove it from the chassis.

Prepare the Drive for Installation

NOTE: Refer to the Western Digital 3.5-Inch Drive Handling Guide (document number S0999).

1) Remove the WD Enterprise drive from the anti-static bag, and place the drive on top of the anti-static bag on your work surface.

2) Configure the drive jumpers as necessary. Refer to "Setting the Drive Jumpers" on page 1 for more details.

3) If SCSI termination must be provided by the WD Enterprise drive, ensure that the terminator is properly installed. Refer to *SCSI Termination* on page 2.

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If Your Drive has a 50-pin or 68-pin Connector

1) Using a non-magnetic screwdriver and four mounting screws, mount the 50-pin or 68-pin drive in the computer system's mounting frame as shown in Figure 11. Use four 6-32 mounting screws. Do not install the screws past .150-inch.

NOTE: When mounting the drive, make sure the SCSI connector and power connector face the rear of the chassis.

NOTE: If you plan to install the WD Enterprise drive in a 5.25-inch bay, you must install the mounting hardware. Contact your local dealer to obtain a mounting adapter kit. Rails are sometimes necessary to complete the installation. Consult your computer system manufacturer.
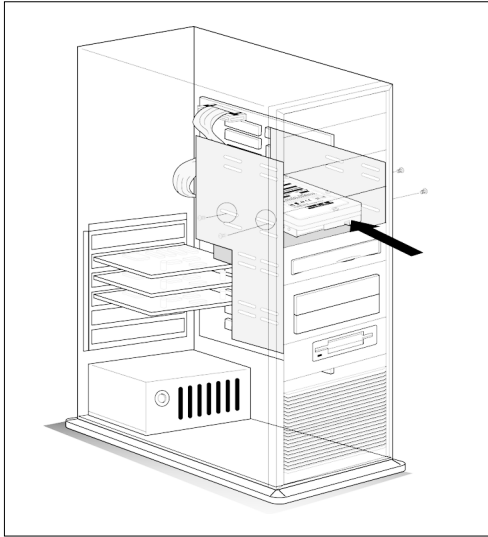

Figure 11. Installing a 50- or 68-pin Drive

2) Obtain the appropriate type of SCSI ribbon cable, 50-pin or 68-pin.

3) Identify pin 1 on the ribbon cable. The colored stripe indicates pin 1.

4) Connect the ribbon cable connector to the hard drive by matching pin 1 on the ribbon cable with pin 1 on the hard drive connector. Refer to Figures 12 and 13 to correctly identify pin 1 for each connector type.
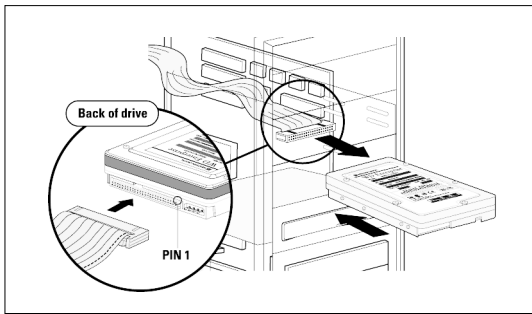

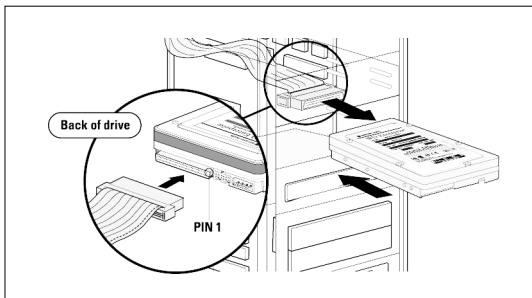*Figure 12. Attaching the 50-pin SCSI Cable*

Figure 13. Attaching the 68-pin SCSI Cable

NOTE: If multiple devices are attached to the SCSI bus, they must be daisy-chained using a ribbon cable with multiple connectors. The ends of the cable must be connected to terminated devices. If the cable contains more connectors than needed for the devices on the bus, mid-cable connectors may remain unused. Consult your computer system or adapter card documentation for specific cabling requirements.

5) Connect the remaining ribbon cable connector to the SCSI controller card or the motherboard by matching pin 1 on the ribbon cable with pin 1 on the SCSI connector. Refer to Figures 14 and 15.
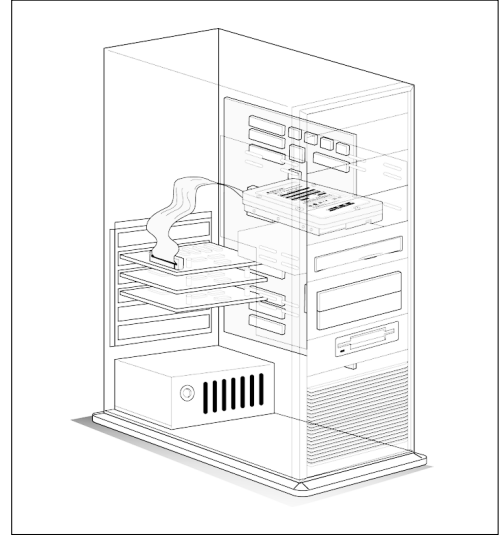

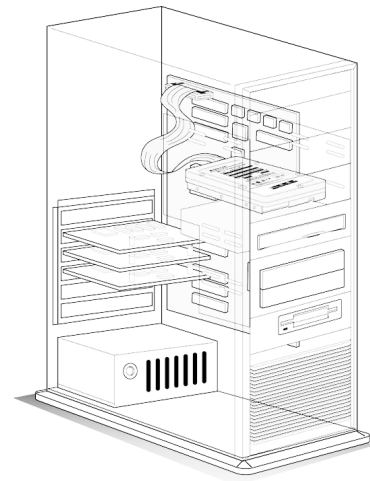*Figure 14. Attaching a 50- or 68-pin SCSI Cable to a SCSI Controller Card*

Figure 15. Attaching a 50- or 68-pin SCSI Cable to the motherboard

NOTE: Before completing steps 6 and 7, ensure that power to the computer system is turned off. Hot-plugging power to the drive is not recommended.

6) Locate an available 4-pin power supply connector cable inside the computer system.

7) Connect the 4-pin power cable to the power connector on the drive. Although the 4-pin connector is keyed to ensure proper insertion, refer to Figure 16 for correct alignment.
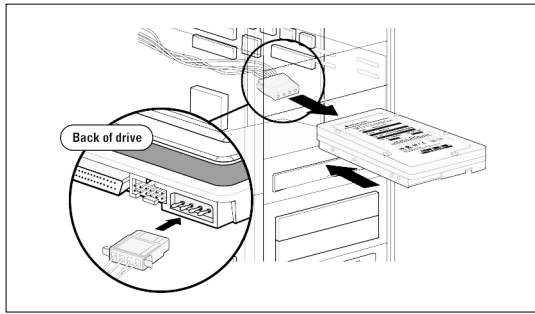
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Figure 16. Attaching the Power Supply Cable

If Your Drive has an 80-pin Connector

NOTE: The SCSI connection and power connection is handled by a single SCA-2 connector.

1) Mount the 80-pin drive in a drive tray using four mounting screws.

2) Slide the drive/tray assembly into the designated drive slot, making sure that the end with the SCSI connector is inserted first. Refer to Figure 17.
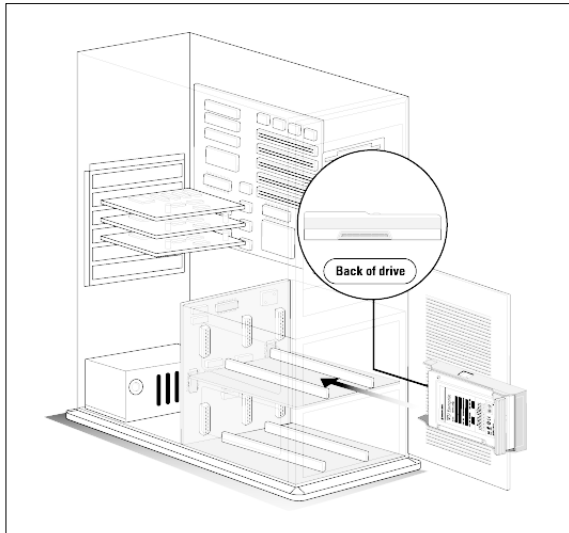

Figure 17. Installing an 80-pin Drive

3) Ensure that the drive is properly seated on the backplane connector. Refer to Figure 18.
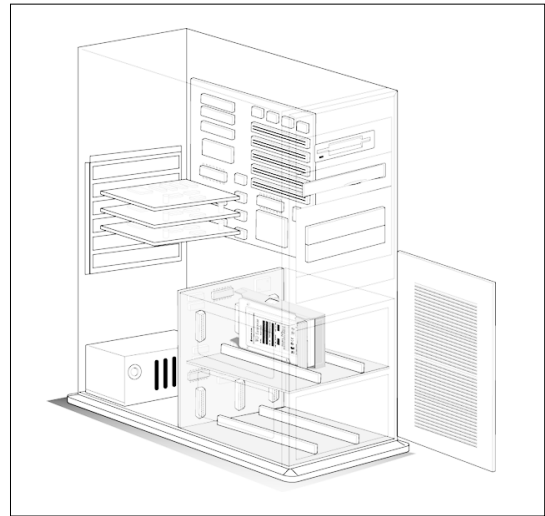
NOTE: This connection must be secure.

Figure 18. Connecting an 80-pin Drive to a Backplane

Close the Computer System

1) Verify all cable connections.

2) To prevent damage to the SCSI ribbon cables and power cables, make sure all cables are neatly placed inside the computer system chassis.

3) Replace the cover and install screws using a non-magnetic screwdriver.

4) Reconnect all cables to the back of the computer system.

5) Plug the AC power cable into the wall outlet.

6) Turn ON the power to the computer system.

USING THE DRIVE

To prepare your drive for use, you must install your operating system, application software, and if necessary, host bus adapter software. Consult your system and software documentation for additional information.

It is extremely important to regularly back up the data on your hard drive. Data can be damaged or lost due to a number of unanticipated factors. Consult your operating system documentation for back up instructions.

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RELATED DOCUMENTS

To obtain these reference documents, call Western Digital at 714-932-5000, or download them from the Western Digital web site.

- WDE2170/WDE4360 Installation Guide (4079-001046)
- WDE2170/WDE4360 Technical Reference Manual (4079-001045)
- Western Digital 3.5-Inch Drive Handling Guide (79-000563-003)
- Western Digital SCSI Implementation Guide (4096-001116)

TECHNICAL SUPPORT

Phone Assistance:	507-286-7972
U.S. only:	888-WDC-SCSI or 888-932-7274
Fax Assistance:	507-286-7926

If you need additional information or help during installation or normal use of our products, contact Western Digital Technical Support. Our customer support staff will answer your installation questions by phone. When calling for support, please have your Western Digital hard drive serial number and model number available.

BULLETIN BOARD SERVICE (BBS) 24-HOUR

North America only:	714-753-1234
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U.K.:	44-1372-360387

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