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# HP SATA/SAS hard drive and Solid State Drive installation

## Introduction

This document describes how to install Serial ATA (SATA) and Serial Attached SCSI (SAS) hard drives or Solid State Drives (SSD) in an **internal** hard drive bay. Throughout this document, all references to hard drives include solid state drives.

For installation in an **external** hard drive bay, or other installation configurations not covered in this document, first view the *QuickSpecs* for your workstation at <http://www.hp.com/go/productbulletin>. For additional information, view the removal and replacement videos at <http://www.hp.com/go/sml>.



**IMPORTANT:** For the HP Z1 Workstation, view the removal and replacement videos at <http://www.hp.com/go/sml>.

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## Kit contents

- A SATA or SAS hard drive or SSD
- Adaptive carrier for 2.5-inch (small form factor or SFF) drive (optional)
- Multiple SATA cables (each of a different length and with different connector orientation combinations)
- SAS-to-SATA adapter or SAS-to-SATA cable (included with SAS hard drives)
- Four 6-32 guide screws
- Installation instructions (this document)
- Warranty information

## Tools required

The T-15 Torx screwdriver or flat-bladed screwdriver *may* be required to install the hard drive:



419815-L23



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# Your responsibilities

You are responsible for determining whether the product is appropriate for your use and will interface with other equipment without malfunction or damage. You are also responsible for backing up data before installing any product and for regularly backing up data after installing the product. HP is not liable for any damage to equipment or data loss resulting from the use of any product. To determine the compatibility of this product with your computer or workstation, view *QuickSpecs* at <http://www.hp.com/go/productbulletin>.



# Warnings and cautions

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 **WARNING!**  Any surface or area of the equipment marked with this symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists. To reduce the risk of injury from a hot component, enable the surface to cool before touching.


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 **WARNING!**  Any surface or area of the equipment marked with this symbol indicates the presence of an electrical shock hazard. To reduce the risk of injury from electrical shock, do not open any enclosed area marked with this symbol.

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 **WARNING!** To reduce the risk of electric shock or damage to your equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord in a grounded (earthed) outlet that is easily accessible at all times.
- Disconnect power from the equipment by unplugging the power cord from the electrical outlet.



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 **WARNING!** To reduce the risk of serious injury, read the *Safety & Comfort Guide*. It describes proper computer setup, posture, health, and work habits for computer users, and provides important electrical and mechanical safety information. This guide is located at <http://www.hp.com/ergo> and on the documentation CD (if one is included with the product).


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 **WARNING!** If a product is shipped in packaging marked with this symbol,  the product must always be lifted by two persons to avoid personal injury due to product weight.


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 **CAUTION:** Static electricity can damage the electronic components of the computer. Before beginning these procedures, be sure you discharge static electricity by briefly touching a grounded metal object.

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 **CAUTION:** To prevent damage to the computer, observe the following Electrostatic Discharge (ESD) precautions while performing the system parts removal and replacement procedures:

- Work on a static-free mat.
- Wear a static strap to ensure that any accumulated electrostatic charge is discharged from your body to the ground.
- Create a common ground for the equipment you are working on by connecting the static-free mat, static strap, and peripheral units to that piece of equipment.

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 **NOTE:** HP accessories are for use in HP computer products. They have been extensively tested for reliability and are manufactured to high quality standards.

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# Step 1—Preparing for component installation



**NOTE:** Computer models vary. All illustrations are examples only.

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## Accessing the internal components of the computer

1. If you need help preparing the computer for this installation, refer to the:
  - Removal and replacement procedures in the Maintenance and Service Guide for your computer at <http://www.hp.com/support/manuals>, or
  - Removal and replacement videos applicable to your specific computer at <http://www.hp.com/go/sml>.
2. Power down the computer, then disconnect the power cord.
3. Power down all external devices, then disconnect them from the computer.
4. Remove the side access panel.

## Precautions for handling the drive

- Do not move the drive during operation.
- Avoid placing the drive in a location that is subject to extreme temperatures or mechanical vibration.
- Keep the original packing materials for future transportation of the drive.
- If any object or liquid falls into the cabinet, immediately unplug the computer and have it checked by an authorized service provider.

## Step 2—Preparing and installing the hard drive

Identify your installation type from among the following types of *internal* hard drive installations detailed in the following sections. To install a hard drive in the *external* drive bays, refer to the removal and replacement videos applicable to your specific computer at <http://www.hp.com/go/sml>.

1. Computers with drive carriers that provide blind-mate docking.
2. Computers with carrier rails that snap onto the hard drive.
3. Computers that use guide screws installed in the hard drive.

Throughout this document, all references to hard drives include solid state drives.

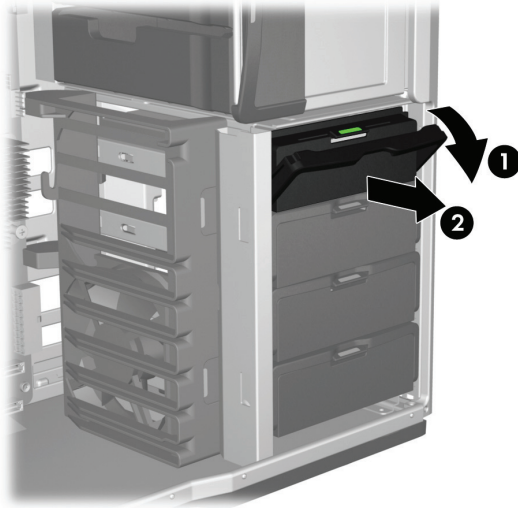


**NOTE:** When installing SATA/SAS/SSD 2.5-inch drives, refer to the instructions [Installing a 2.5-inch SATA/SAS/SSD drive into an adaptive carrier on page 9](#).

## Computers with drive carriers that provide blind-mate docking

1. If a card support interferes with access to the system board connectors, remove it.
2. Remove the drive carrier from the highest empty internal hard drive bay:
  - a. Open the handle at the green touch-point (1).
  - b. Slide the hard drive carrier out of the bay (2).

**Figure 1** Removing the hard drive carrier



3. Install the hard drive in the carrier:
  - a. Position the carrier with the handle end down.
  - b. Position the hard drive with the connectors on the back of the drive facing upward.
  - c. Separate the rails at (1), carefully seating the pins in the small holes on the drive.
  - d. Separate the rails at the top (2).
  - e. Pivot the drive into the carrier (3), and snap the pins on the rails securely into the drive.

**Figure 2** Attaching the hard drive to the drive carrier



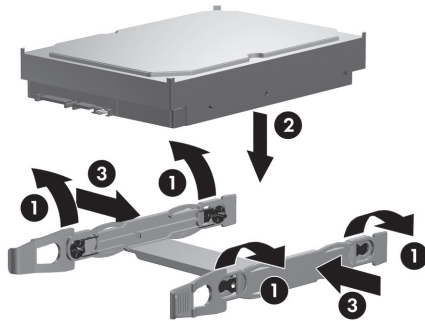
4. Slide the drive carrier firmly into the hard drive bay, rotating the handle to snap it closed.
5. Power and data connectors are pre-installed at the back of the bay. SAS-to-SATA adapters or cables or additional power and data connections are not required.

The pre-installed data cables might require adjustment at the system board, based on the computer drive (SATA or SAS) configuration. Verify that the pre-installed cable from the applicable hard drive bay is connected to an appropriate connector in the system board or SAS controller. Refer to the side access panel for the system board schematic showing the port assignments for your workstation.

## Computers with carrier rails that snap onto the hard drive


1. Select an empty hard drive bay.
2. To remove the green rails from the empty bay, squeeze the green tabs and slide the rails out of the bay.
3. To attach the rails to the hard drive:
  - a. Gently open the rails (1).
  - b. The connectors on the rear of the drive should face toward the tabs on the carrier rails. Lower the drive into the rails (2).
  - c. Align the four carrier pins with the holes in the hard drive, and snap the rails into place (3).

**Figure 3** Installing the hard drive in the rails




4. Push the drive into the bay until it snaps into place.
5. Continue with [Step 3—Connecting the power and data cables on page 9](#).

## Computers that use guide screws installed in the hard drive

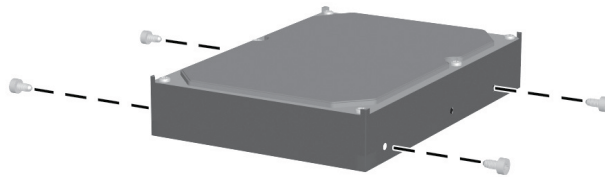
 **NOTE:** In some computers, such as the HP Z200 SFF or HP Z210 SFF Workstations, you may need to temporarily remove the optical drive to install the hard drive. See the service guide for your workstation at <http://www.hp.com/support/manuals>.

1. If a card support interferes with access to the system board connectors, remove it.
2. Install four guide screws into the holes near the corners on the sides of the hard drive.

 **NOTE:** Spare guide screws designated for this purpose may be found installed in the sheet metal of the drive bay structure, or behind the front bezel.

- Some computers, such as the HP Z200, HP Z210 CMT, and HP Z400 series Workstations, use four vibration isolation guide screws (screws with blue grommets).
- Some computers, such as the HP Z200 SFF, HP Z210 SFF, and HP xw4000 series Workstations, use four 6-32 screws.

**Figure 4** Installing the guide screws



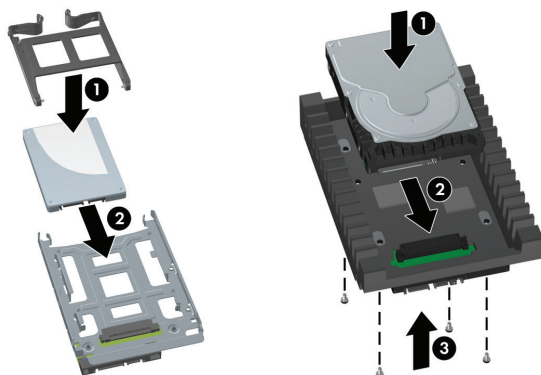
3. Slide the hard drive into the selected bay until it snaps into place.
4. Continue with [Step 3—Connecting the power and data cables on page 9](#).



## Installing a 2.5-inch SATA/SAS/SSD drive into an adaptive carrier

1. Secure the drive into the carrier, as shown in Figure 5.

**Figure 5** Install the drive into the carrier



2. Install the carrier into the computer using one of the four drive installation procedures previously detailed.

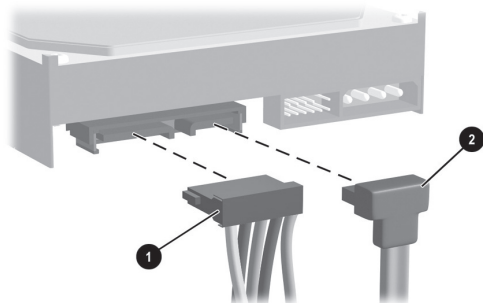
## Step 3—Connecting the power and data cables

Follow the instructions for the correct type of drive being installed. SAS drives require installation of an adaptive interface before completing power and data connections.

### If installing a SATA drive:

1. Connect the power cable (1) and data cable (2) to the hard drive.

**Figure 6** Install power and data cables in SATA drive



**CAUTION:** Connect the power cable before connecting the data cable to reduce the risk of damage to the drive due to Electrostatic Discharge (ESD).

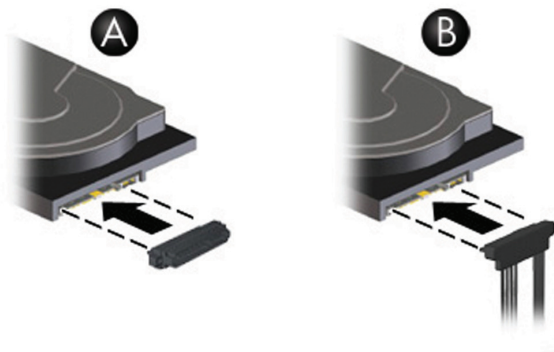
2. Connect the opposite end of the data cable to the system board or SATA/SAS RAID controller PCI card. Start with the primary hard drive connection to the system board slot labeled SATA 0.

**NOTE:** Individual SATA ports and connectors on the system board are identified on the service label, located inside the side access panel.

# If installing a SAS drive:

- 1. Use the following table to determine the correct adapter and cable configuration for your workstation. Figure 7 shows examples of adapter types A and B.

**Figure 7** Attaching the SAS-to-SATA adapter or SAS —to-SATA cable

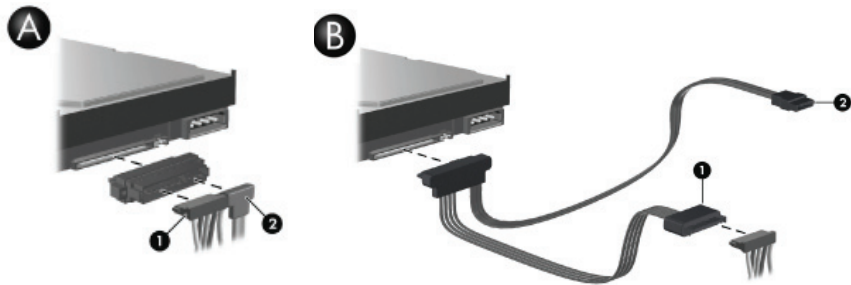


**Table 1** SAS-to-SATA adapter options

Adapter type	Work-station	Hard drive bay	Cabling with adapter installed
A	HP Z400 HP Z420 HP Z600 HP Z620 HP Z800 HP Z820	External hard drive bays	Plug in power cable (1) and right angle side of SATA cable (2) into adapter; plug opposite end (straight angle) of SATA cable into system board or SATA/SAS RAID controller PCI card
B	HP Z400 HP Z420	Internal hard drive bays	Plug in power cable (1) and right angle side of SATA cable (2) into adapter; plug opposite end (straight angle) of SATA cable into system board or SATA/SAS RAID controller PCI card

- 2. Connect the power and data cables for your adapter type according to the instructions in Table 2.

**Figure 8** Install power and data cables in SAS drive




## Step 4—Reassembling the computer


1. Reinstall the card support, if applicable.
2. Reinstall the side access panel.
3. Reconnect power to the computer and all external devices.
4. Restore power to the computer and all external devices.

## Step 5—Configuring the computer

When powering up the computer after installation, a new hard drive identifies itself as an uninitialized storage. Consult the operating system documentation for information about how to set up the new drive.

 **IMPORTANT:** For disk drives or RAID volumes greater than 2TB, create a GUID Partition Table (GPT) partition. Consult your operating system documentation for instructions. Booting from a GPT volume requires support in the system BIOS.

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 **NOTE:** Some operating systems such as Microsoft® Windows Vista® automatically schedule defragmenting sessions. This offers no benefit for an SSD, therefore the user can remove the automatic scheduling. This will also save energy. Go into Control Panel, select Control Panel Home, and then select System and Maintenance. In the Administrative Tools area select Defragment your hard drive. Select Volumes and then clear the check box for any SSD disks or volumes.

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## Japanese 日本語

This document is available in Japanese. See <http://www.hp.com/support/manuals>, then select your product and select **Japanese** from the drop down **Manual Language** menu.

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