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# Small form factor bay converter and hard drive installation

## HP xw6600 and HP xw8600 Workstations

This document describes how to convert HP xw6600 and HP xw8600 Workstation 3.5-inch hard drive bays to hold small form factor (SFF) hard drives. The HP xw6600 Workstation can accept one SFF bay converter carrier and up to three SFF hard drives. The HP xw8600 Workstation can accept two SFF bay converter carriers and up to six SFF hard drives.

## Kit contents

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### HP SFF 2.5-inch SAS hard drive kit

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2.5-inch SAS hard drive

SAS-to-SATA connector adapter

Assorted SATA data cables

Warranty

Product documentation

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### HP 2.5-inch SFF 2:3 Bay Converter kit

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2.5-inch SFF hard drive carrier

Adapter power cable

Product documentation











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## 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 workstation 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 workstation. Before beginning these procedures, be sure you discharge static electricity by briefly touching a grounded metal object.
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-  **CAUTION:** Observe the following cautions when removing or replacing a processor:
- Installing a processor incorrectly can damage the system board. Contact an HP authorized reseller or service provider to install the processor. If you plan to install the processor yourself, read all of the instructions carefully before you begin.
  - Failure to follow the workstation preparation instructions can result in an improperly installed processor, causing extensive workstation damage.
  - Processor socket pins are delicate and bend easily. Use extreme care when placing the processor in the socket.
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△ **CAUTION:** To prevent damage to the workstation, 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 Workstation products. They have been extensively tested for reliability and are manufactured to high quality standards.

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## System requirements

- **HP xw6600 Workstation.** Optional HP SAS RAID card kit (or equivalent) must be installed and have one unused SAS port connector for each SFF SAS hard drive being installed.
- **HP xw8600 Workstation.** One unused HP SAS or SAS RAID card port connector for each SAS SFF hard drive being installed.

## Tools required

No tools are required for this assembly.

## Step 1—Preparing the workstation

Detailed instructions for preparing the workstation for component installation are contained in your workstation documentation.


In summary, to prepare your workstation you must first:

1. Power down the workstation.
2. Disconnect power from the workstation.
3. Remove the workstation chassis access cover.

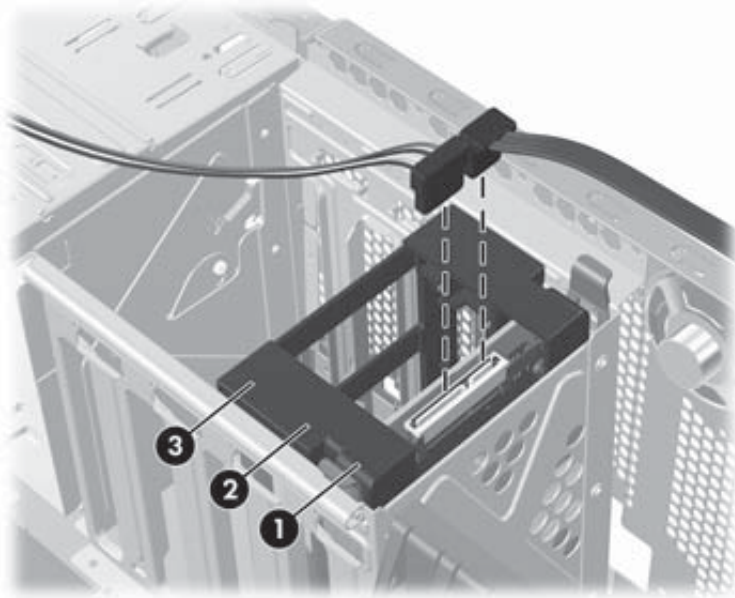
For detailed product-specific information, refer to the *Service and Technical Reference Guide* for your HP workstation at [http://www.hp.com/support/workstation\\_manuals](http://www.hp.com/support/workstation_manuals).

## Step 2—Configuring the SFF hard drive carrier for SFF hard drives number 1, 2, and 3

Each SFF bay converter carrier consumes two 3.5-inch hard drive bays in the workstation. Before a bay converter SFF hard drive carrier (provided in the SFF bay converter kit) can be installed in a workstation, individual SFF hard drives (provided in SFF hard drive kits) must be loaded into the carrier. The following figure shows a carrier configured with a single SFF hard drive and installed in an HP xw8600 Workstation. This figure also shows SFF hard drive numbers within this carrier.

 **NOTE:** To later install one or more additional SFF hard drives in the carrier (for example, hard drive assignments number 2 and 3 as shown in the following figure), the carrier must be removed from the workstation, the mounting rail and initially installed hard drive removed from the carrier, and all hard drives then installed or reinstalled in the carrier in proper order by following these steps.

**Figure 1** Carrier loaded with one SFF hard drive (drive number 1) and Installed in the HP xw8600 Workstation




To convert two workstation 3.5-inch hard drive bays to hold up to three 2.5-inch SFF hard drives, complete the following steps:

1. Orient the empty SFF hard drive carrier as shown in the following figure and note the drive number assignment of the hard drive loading slots within the carrier. When a fully configured carrier is installed and with the workstation tower standing upright for typical operation, SFF hard drive number 1 will be at the bottom of the workstation hard drive bays and hard drive number 3 at the top (as shown in the preceding and the following figure).

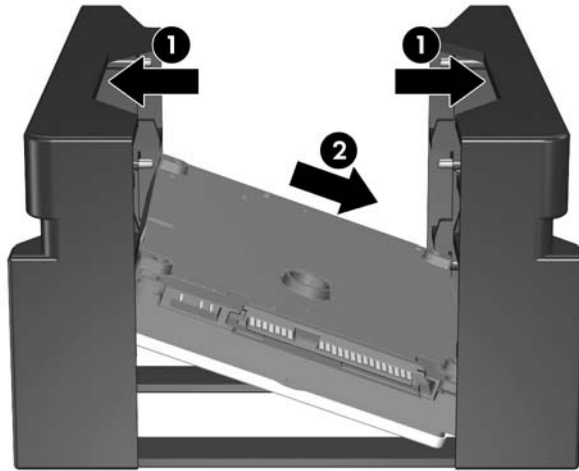
**Figure 2** SFF hard drive numbering order within the first carrier



2. To load a hard drive into the SFF carrier, hold the hard drive body with the circuit board side facing up. Ensure that the drive SAS connector is oriented to the carrier assembly as shown in the following figure. Carefully spread the sides of the carrier (1) only enough to allow the hard drive to fit into its desired mounting slot at an angle (2), as shown in the figure below.

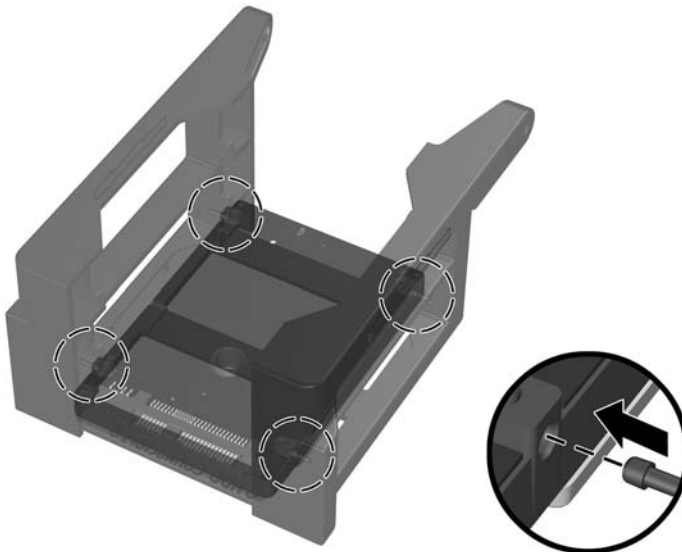
 **NOTE:** SFF hard drives must be loaded into the carrier in reverse order of their assigned drive numbering, beginning with the highest number drive being loaded (as with hard drive number 3 in the following figure example).

**Figure 3** Loading hard drive number 3 in the carrier




3. Ensure that the two threaded holes in the edge of the hard drive body that was first lowered into the carrier engage the two carrier locking pins for that drive mounting position. Continue to spread the sides of the carrier (1 in the above figure) only enough to allow the opposite edge of the hard drive to fit into the mounting slot and engage the two locking pins on that side of the carrier (as shown in the following figure). The hard drive body should now be firmly mounted in the carrier.

**Figure 4** Engaging the carrier locking pins when loading a hard drive

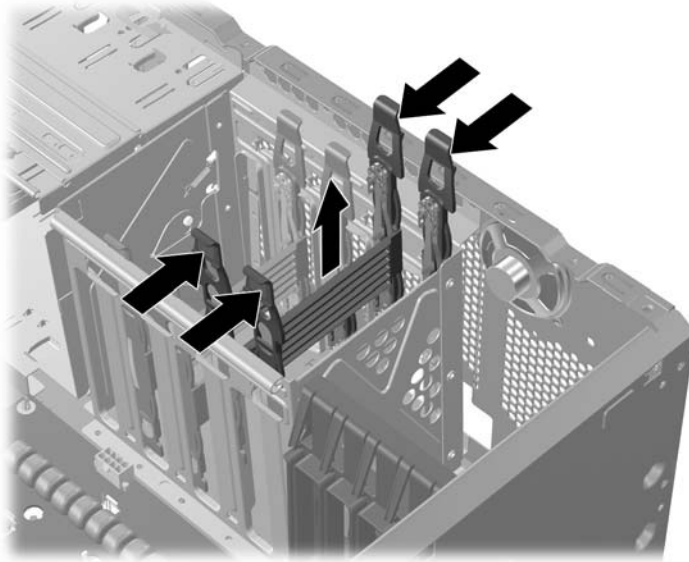


4. Repeat the above loading process for each desired SFF hard drive.

 **NOTE:** It may be necessary to engage the final two locking pins on drives number 2 and number 1 at the same time.

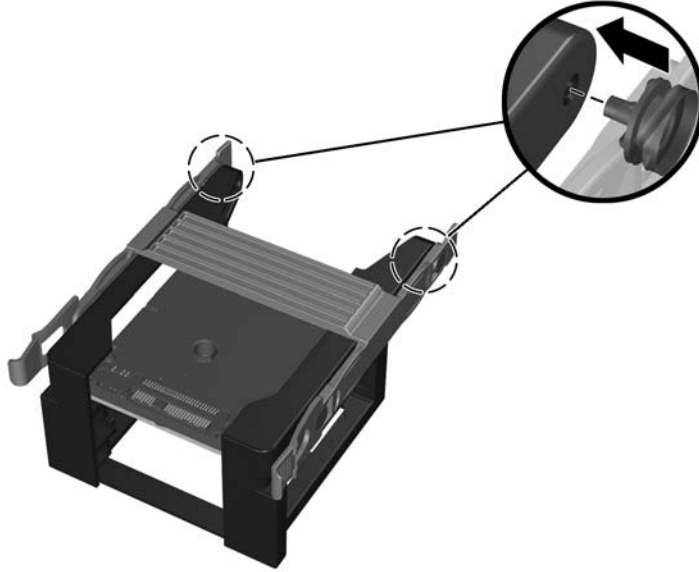
5. In the workstation chassis (see the following figure), remove the mounting rails from the two 3.5-inch hard drive bays in which the SFF hard drive carrier will be installed (the bottom two bays in the HP xw8600 Workstation). To unlock and remove a rail, simultaneously press the two locking/release tabs at the upper end of the mounting rails inward (toward each other) while pulling upward.

**Figure 5** Removing hard drive mounting rails from the HP xw8600 Workstation chassis




6. On the SFF hard drive carrier, attach one of the removed hard drive mounting rails to the carrier, oriented as shown in the following two figures. To affix the mounting rail, engage the four mounting rail pins with the matching holes in the carrier.

**Figure 6** Installing a mounting rail on the carrier (SFF hard drive number 1 shown loaded)



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 **NOTE:** When correctly installed, the mounting rail locking/release tabs are located adjacent to the loaded SFF hard drive number 1 SAS connector (see the following figure).

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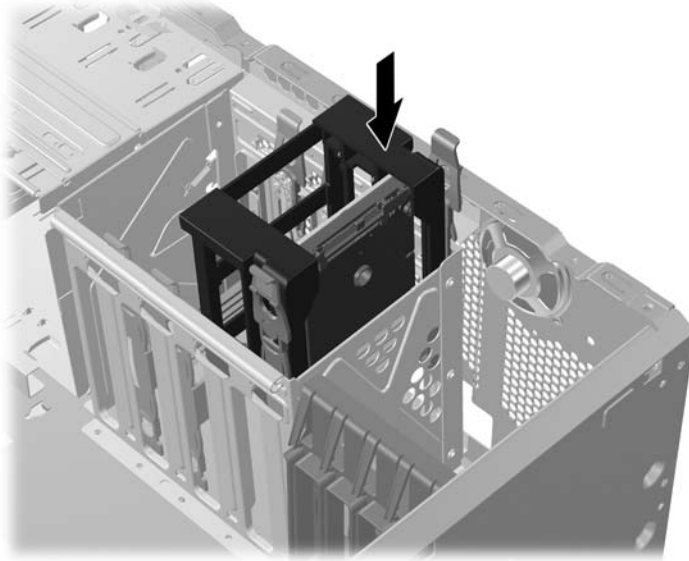
**Figure 7** Mounting rail and carrier orientation





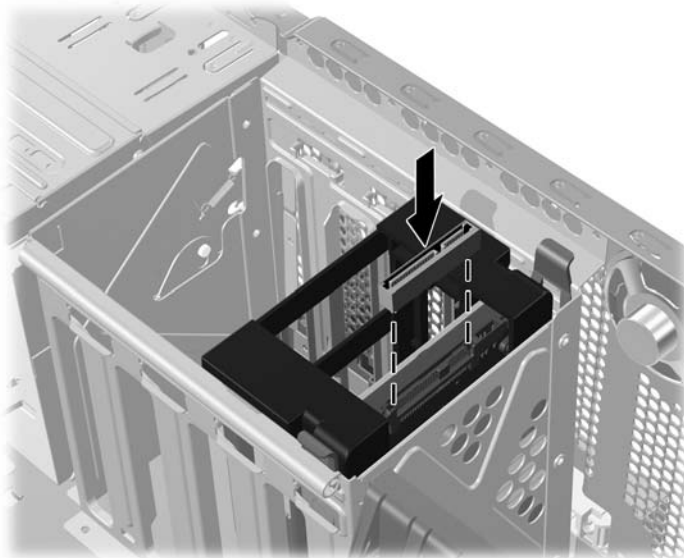
7. Insert the configured carrier assembly with mounting rail into the two workstation chassis 3.5-inch hard drive bays, as shown in the following figure. Press down on the carrier assembly until the mounting rail locks the assembly into the chassis.

**Figure 8** Installing the configured SFF carrier assembly in the HP xw8600 Workstation



8. Attach a SAS-to-SATA connector adapter (provided in each SFF hard drive kit) to the SAS connector of each installed SFF hard drive (see the following figure).

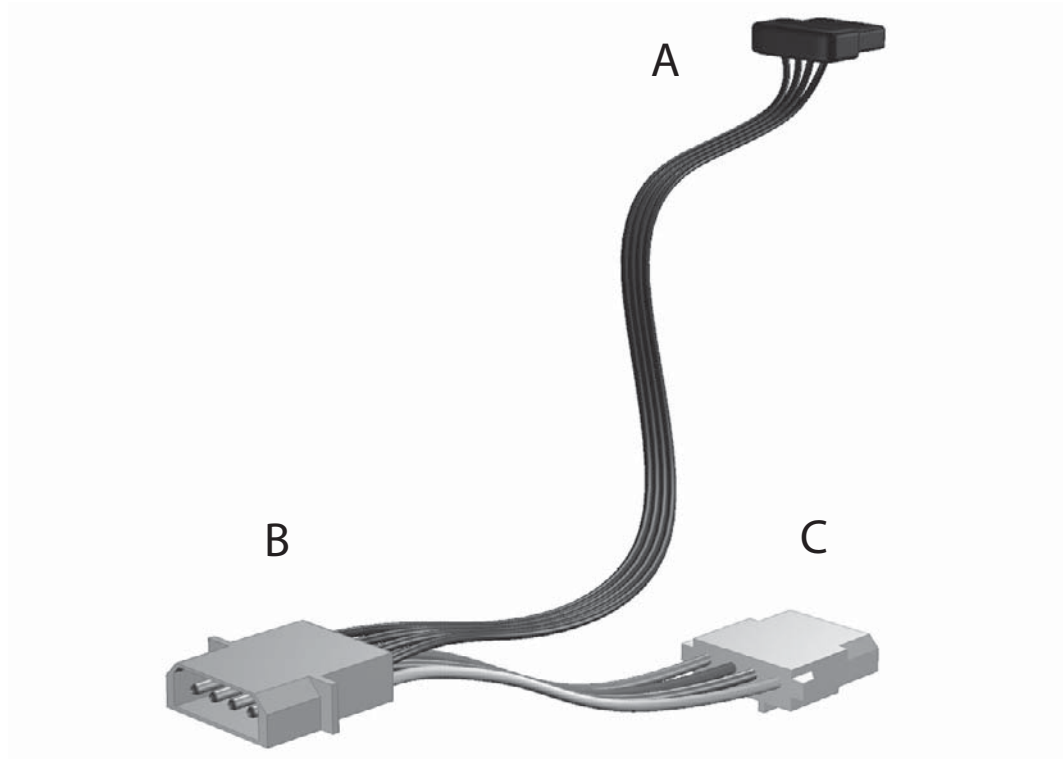
**Figure 9** Attaching the SAS-to-SATA connector adapter to the hard drive SAS connector (HP xw8600 Workstation)




9. On the adapter power cable provided in the bay converter kit (shown in the following figure):
  - a. Attach the white 4-pin straight connector (B) to an unused mating four-pin connector on the power supply wiring harness at the rear of the optical drive bays in the workstation chassis.

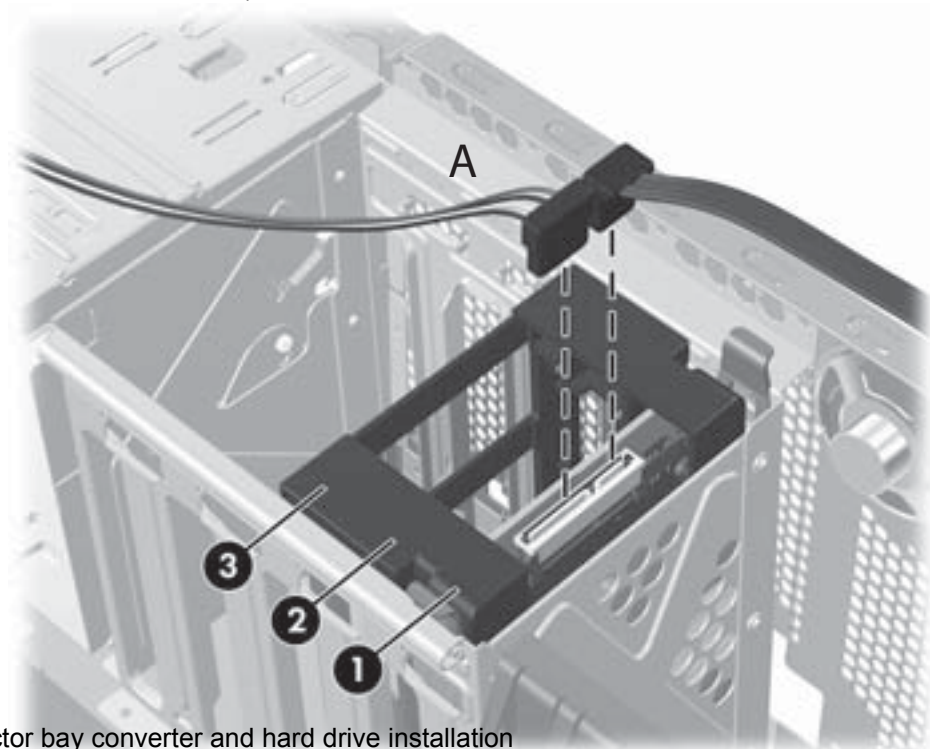
- b. Attach the black right angle connector (A) to the SAS-to-SATA connector adapter on SFF hard drive number 1 (see the following two figures).

**Figure 10** Adapter power cable supplied with each carrier kit




 **NOTE:** Connector C on the adapter power cable can be used to provide power to either an optical drive bay or to a second adapter power cable and SFF hard drive carrier in the HP xw8600 Workstation.

**Figure 11** Attaching the adapter power cable to SFF hard drive number 1 (HP xw8600 Workstation chassis)



10. On the chassis 3.5-inch hard drive power supply wiring harness, connect two available in-line power connectors to the SAS-to-SATA connector adapter on SFF hard drive number 2 and hard drive number 3, as required.
11. Attach an individual SATA data cable (provided in each hard drive kit) between each hard drive and the appropriate workstation system board SAS port connector as follows:

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 **NOTE:** An assortment of SATA data cables are supplied with each SFF hard drive kit. Choose data cables that best fit your workstation configuration for each installed drive.


**NOTE:** If installing the SFF hard drives in the HP xw6600 Workstation, connect the SFF hard drive data cables to the SAS port connectors provided on the SAS Raid Controller option card installed in one of your workstation PCI slots.

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- Attach the lowest number SFF hard drive (number 1) data cable to the lowest number SAS port (SAS0).
  - Attach each succeeding SFF hard drive number data cable to the next higher SAS port, leaving no gaps in SAS port numbering from SAS0 upward through SAS2.
12. This completes the configuration and installation of the SFF hard drive carrier and SFF hard drive options for the HP xw6600 and HP xw8600 Workstation.

## Step 3—Configuring a second SFF hard drive carrier for the HP xw8600 Workstation

A second SFF hard drive carrier and up to three additional SFF hard drives can be configured and installed in the third and fourth 3.5-inch hard drive bays of the HP xw8600 Workstation.

 **NOTE:** To later install one or more additional SFF hard drives in the carrier (for example, hard drive assignments number 5 and 6), the carrier must be removed from the workstation, the mounting rail and initially installed hard drive removed from the carrier, and all hard drives then installed or reinstalled in the carrier in proper order by following these steps.


To install a second SFF hard drive carrier in an HP xw8600 Workstation, complete the following steps:

1. Orient the second SFF hard drive carrier as shown in the following figure and note the drive number assignment when hard drives are loaded into the carrier. When installed and with the workstation tower standing upright for typical operation, SFF hard drive number 4 will be near the middle of all installed SFF hard drive bays and hard drive number 6 will be at the top of the bays.

**Figure 12** SFF hard drive numbering order within the second carrier

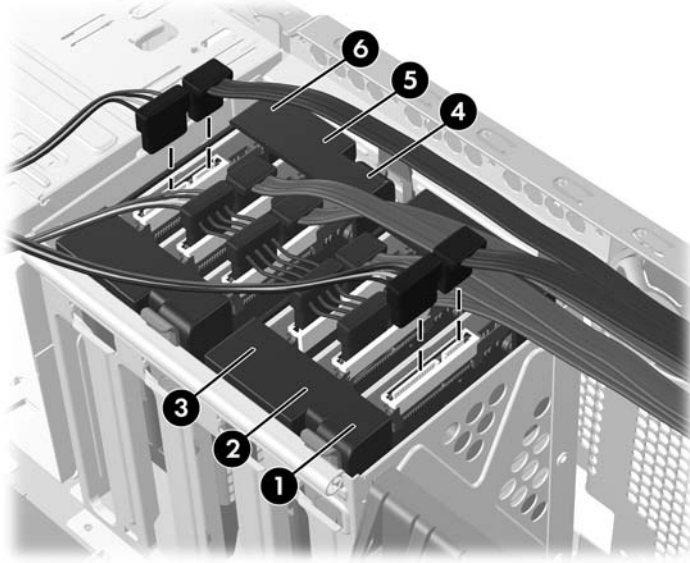


2. Repeat installation substeps 2 through 9 in Step 2—Configuring the SFF hard drive carrier for SFF hard drives number 1 through number 3, above, as you did for the first SFF hard drive carrier.

 **NOTE:** To install the second carrier in the workstation, remove the mounting rails from the upper two 3.5-inch hard drive bays and install the configured carrier in those bays.

3. On the workstation 3.5-inch hard drive power supply wiring harness, use the remaining two in-line connectors originally dedicated to the two upper 3.5-inch hard drive bays to provide power to SFF hard drive number 4 and number 5 (as shown in the following figure).

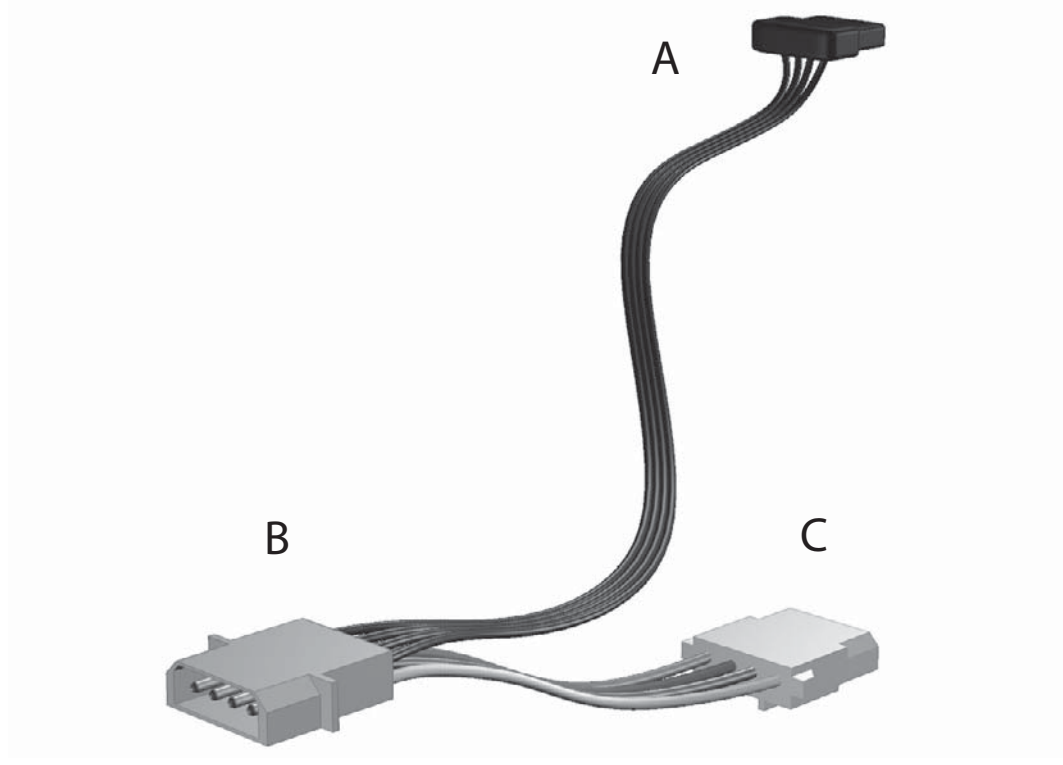
**Figure 13** Power and SATA data cable connections to six SFF hard drives by drive number (HP xw8600 Workstation only)




4. Configure the second adapter power cable (supplied with the second bay converter kit) to provide power to SFF hard drive number 6 as follows (see the following figure):
  - a. Attach the white 4-pin connector (B) to the white mating four-pin connector (C) on the adapter power cable installed earlier for the first SFF hard drive carrier.

- b. Attach the black right angle connector (A) to the SAS-to-SATA connector adapter on SFF hard drive number 6.

**Figure 14** Adapter power cable supplied with each bay converter kit



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 **NOTE:** Connector C on the second adapter power cable can be used to provide power to an optical drive bay if required.

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5. Attach a SATA data cable between each hard drive in the second carrier and the appropriate workstation system board SAS port connector as follows:
  - Attach the lowest number SFF hard drive (number 4) data cable to the lowest number available SAS port (typically SAS3).
  - Attach each succeeding SFF hard drive data cable to the next higher SAS port, leaving no gaps in SAS port numbering connection from SAS3 upward through SAS5.
6. This completes the configuration and installation of a second SFF hard drive carrier and SFF hard drive options for the HP xw8600 Workstation.

## Step 4—Reassembling the workstation

After installation, reassemble the workstation using the instructions in the workstation documentation. The reassembly process involves reinstalling the side access panel and restoring power to the workstation.