



Data General Corporation, Westboro, Massachusetts 01580

Customer Documentation



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Installing the Model 61012 and 61014 Series 3-1/2 Inch Disk Drives

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Installing the Model 61012 and 61014 Series 3-1/2 Inch Disk Drives
014-002525-00

Revision History:

Original Release – June 1995

NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING

This product complies with EN55022 Class B.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Testing was done with shielded cables. Therefore, in order to comply with the FCC regulations, you must use shielded cables with your installation.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe (B) prescrites dans la norme sur le matériel brouilleur : "Appareils Numériques", NMB-003 édictée par le ministre des Communications.

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Manufacturer's Declaration of Conformity

This equipment has been tested and found to comply with the requirements of European Community Council Directives 89/336/EEC and 73/23/EEC relating to electromagnetic compatibility and product safety respectively.



About this manual

This manual is for people who want to install the Model 61012 or 61014 series disk drive. To install the drive, you should have experience installing mass-storage drives in a computer or a PC.

Before you begin, find the setting up, expanding, or maintaining manual for the computer in which you will install the drive. If you are installing the drive in a mass-storage subsystem, you need the computer manual and also a copy of the mass-storage subsystem's installation and maintaining manual. During the installation procedure, you must refer to the drive jumpering rules and drive mounting instructions contained in one or both of these manuals.

Occasionally, you may need to refer to the operating instructions for these drives. We suggest that you place this drive manual in the back of the binder that contains the manual for your computer.

Telephone Assistance

If you are unable to solve a problem using any manual you received with your system, telephone support is available with your hardware warranty and with Support Plus and Hotline Software Support service contracts. If you are within the United States or Canada, contact the Data General Customer Support Center (CSC) by calling 1-800-DG-HELPS. Lines are open from 8:00 a.m. to 5:00 p.m., your time, Monday through Friday. The center will put you in touch with a member of Data General's telephone assistance staff who can answer your questions.

For telephone assistance outside the United States or Canada, ask your Data General sales representative for the appropriate telephone number.

Avoiding Electrostatic Discharge (ESD) Damage

The cover(s) and filler panel(s) installed on your equipment protect the electronic circuits inside the equipment from electrostatic discharge (ESD) damage. However, when you remove these covers and filler panels to replace or install subassemblies, you can inadvertently damage the sensitive electronic circuits in the equipment by simply touching them. Electrostatic charge that has accumulated on your body discharges through the circuits. If the air in the work area is very dry, running a humidifier in the work

area will help decrease the risk of ESD damage. You must follow the procedures below to prevent damage to the equipment.

CAUTION: *Read and understand the following instructions before you remove the cover(s) or panel(s) from the equipment.*

- Provide enough room to work on the equipment. Clear the work site of any unnecessary materials or materials that naturally build up electrostatic charge, such as foam packaging, foam cups, cellophane wrappers, and similar materials.
- Do not remove replacement or upgrade subassemblies from their antistatic packaging until the exact moment that you are ready to install them.
- Gather the tools, manuals, an ESD kit, and all other materials you will need before you remove covers and panels from the equipment. Procedures for removing subassemblies usually list required materials at the beginning. After you remove a cover or panel, you should avoid moving away from the work site; otherwise, you may build up an electrostatic charge.
- Use an ESD kit when handling circuit boards or when touching the electronic circuits inside the equipment. If you don't have an ESD kit, you can order one from Data General. If an emergency arises and an ESD kit is not available, follow the procedures in the "Emergency Procedures (without an ESD kit)" section.
- Replace the cover(s) or panel(s) on the equipment as soon as possible so that the electronic circuits are protected.
- If the equipment has an opening for an optional device (such as a mass-storage drive), and the device is not installed, make sure a filler panel is installed in the opening before connecting the equipment to the ac power outlet.

Emergency Procedures (without an ESD kit)

In an *emergency* when an ESD kit is not available, use the following procedures to reduce the possibility of an electrostatic discharge by ensuring that your body and the subassembly are at the same electrostatic potential.

CAUTION: *These procedures are not a substitute for the use of an ESD kit. Follow them only in the event of an emergency.*

- Before touching any electronic circuits or boards inside the equipment, firmly touch a bare (unpainted) metal surface of the equipment.

- Before removing any replacement or upgrade subassembly from its antistatic bag, place one hand firmly on an unpainted surface of the chassis, and at the same time, pick up the replacement or upgrade subassembly while it is still sealed in the antistatic bag. Once you have done this, *do not* move around the room or contact other furnishings, personnel, or surfaces until you have installed and *secured* the subassembly in the equipment.
- Remove the subassembly from the antistatic bag, handling printed circuit boards by the edges. Avoid touching components and circuits on a printed circuit board.
- If you must move around the room or touch other surfaces before securing the subassembly in the equipment, first place the subassembly back in the antistatic bag. When you are ready again to install the subassembly repeat these procedures.
- Order an ESD kit from Data General for the next time you need to add or remove a cover or panel.



Installing the drive

This document explains how to install the Model 61012 series and 61014 series disk drives in a Data General AViiON® or ECLIPSE® MV/Family computer or mass-storage subsystem. The Data General computer for the system in which you intend to install this drive must have a small computer system interface (SCSI-2).

The Model 61012 is a 3-1/2 inch half-height disk drive with a capacity of 2 Gbytes. The Model 61014 is a 3-1/2 inch full-height disk drive with a capacity of 4 Gbytes. Both models are available with a single-ended driver interface (-S suffix), a narrow 8-bit differential driver interface (-D suffix), or a wide 16-bit differential driver interface (-W suffix). The first suffix letter in the model number tells you the type of driver interface.

The 2-Gbyte (Model 61012) and 4-Gbyte (Model 61014) drives are manufactured for Data General in two different versions, A and B. Versions A and B are interchangeable and you may have received either one of them. With a few exceptions, the installation procedures for these drives are similar. You will need, however, to determine the version you have so that you can refer to the correct illustrations during the installation procedure. The first column of Table 1 lists the 118- part numbers and the model numbers for each drive model and version. Your drive has a label with a 118- part number printed on it. Use the information in this table and on the label to identify the model number of your drive.

Table 1 Disk drive part numbers and model numbers

Part Number (118-)		Model Number	Capacity	Interface Type
Version A	Version B			
022828	020467	61012-S	2 Gbyte	Single ended
022829*	020391	61012-D	2 Gbyte	Narrow 8-bit differential
022829	020232	61012-W	2 Gbyte	Wide 16-bit differential
022830	020466	61014-S	4 Gbyte	Single ended
022831*	020390	61014-D	4 Gbyte	Narrow 8-bit differential
022831	020231	61014-W	4 Gbyte	Wide 16-bit differential

*Note that these drives come with a special 50-pin to 68-pin adapter (118-019319) shown here.

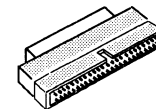


Table 2 highlights the specifications for Versions A and B disk drives. Refer to this information as needed.

Table 2 Specifications—Model 61012 and 61014 disk drives (Versions A and B)

Formatted Capacity (512 bytes/ block)	61012 series = 2.1 Gbytes 61014 series = 4.2 Gbyte											
Interface Type	SCSI-2: -S suffix = single ended -D suffix = 8-bit narrow differential -W suffix = 16-bit wide differential											
	61012-S		61012-D		61012-W		61014-S		61014-D		61014-W	
	A	B	A	B	A	B	A	B	A	B	A	B
Current (+ 5 V dc)												
Steady state (amps)	1.11	0.91	1.11	1.13	1.11	1.13	1.13	1.13	1.13	1.32	1.13	1.06
Surge (amps/ 5 s)	1.65	0.93	1.65	1.00	1.65	1.00	1.36	0.96	1.36	1.32	1.36	0.96
Current (+12 V dc)												
Steady state (amps)	0.50	0.57	0.50	0.57	0.50	0.57	0.83	0.85	0.83	0.85	0.83	0.86
Surge (amps/ 5 s)	1.80	1.35	1.80	1.35	1.80	1.35	2.60	2.18	2.60	2.18	2.60	2.18
Power Dissipation (watts)												
+ 5 V dc	5.55	4.55	5.55	5.65	5.55	5.65	5.65	5.65	5.65	6.60	5.65	5.30
+12 V dc	9.24	6.84	9.24	6.84	9.24	6.84	13.44	10.20	13.44	10.20	13.44	10.32
Weight (kg / lb)	61012 series, Version A = .46 kg (1.0 lb)						61012 series, Version B = .56 kg (1.2 lb)					
	61014 series, Version A = .82 kg (1.8 lb)						61014 series, Version B = 1.0 kg (2.3 lb)					

The environmental specifications for the disk drives meet or exceed those of the Data General computer or mass-storage subsystem that houses it. For a list of the environmental specifications, refer to your Data General computer or mass-storage subsystem installing manual.

To install the Model 61012 series or 61014 series disk drives, you will need to follow these procedures:

1. Verify that the computer system has the correct operating system software revision and SCSI host-bus adapter.
2. Unpack and inspect the disk drive for damage or missing parts.
3. Make sure the disk drive's SCSI ID and optional jumpers are set correctly.
4. Mount the drive in the enclosure, connect the disk drive's cables, and rebuild and reboot the operating system.

To perform the procedures follow each of the next sections in sequence.

Verifying system requirements

1. If your computer is an ECLIPSE MV/Family computer system, go to step 2. If your computer is a Data General AViiON computer system, do one of the following:

- ▶ If you are installing the drive inside an AViiON computer make sure it is a Model AV/450, AV/550, AV/4500, AV/5500, AV/8500, or AV/9500.
- ▶ If you are installing the drive in mass-storage subsystem, make sure your AViiON computer is a Model AV/450, AV/550, AV/4500, AV/5500, AV/8500, or AV/9500. Also make sure that the mass-storage subsystem connects to a Data General Model 7435 SCSI bus host bus adapter board, which is installed inside your AViiON computer.

If you have questions about installing these drives in other Data General AViiON computer systems or connecting them to another model host bus adapter board, contact your local Data General sales representative. Now skip to step 3.

2. Make sure your ECLIPSE MV/Family computer has one of the following SCSI-2 host-bus adapters:
 - ▶ A single-ended SCSI interface for a Model 61012-S or 61014-S disk drive. (Note the ECLIPSE MV/3000 Series computers and ECLIPSE MV/5000 Series computers do not support the Model 61014-S drive.)
 - ▶ An 8-bit differential SCSI interface for a Model 61012-D or 61014-D disk drive.
 - ▶ A 16-bit differential SCSI interface for a Model 61012-W or 61014-W disk drive.
3. Make sure your computer has the following operating system software:
 - ▶ For AViiON systems, you need the DG/UX operating system 5.4 Release 3.10 with one of the following: maintenance update 01 and patch 108, or maintenance update 02, or a later release.
 - ▶ For ECLIPSE MV/Family systems you need the current shipping version of the AOS/VS operating system or AOS/VS II operating system with patches. (For additional information, contact Data General.)
4. If you are installing a Model 61012-S or 61014-S drive in a mass-storage subsystem that has a SCSI buffer installed, make sure the SCSI buffer is at revision 3 or higher.

The revision number is printed on the outside of the SCSI buffer. Refer to the installing manual for your mass-storage subsystem if you are not familiar with the SCSI buffer or its location in the subsystem.

5. For diagnostic support, make sure the AViiON or ECLIPSE MV/Family computer has the following diagnostic software revisions:
 - ▶ For AViiON systems you need AViiON System Diagnostics (revision 12.50), AV/ALERT revision 4.38.
 - ▶ For MV/Family systems you need MVADEX diagnostics (revision 21 or higher) and MV/3000 or MV/5000 Series Proprietary User Friendly Diagnostics & MVADEX (revision 12 or higher), which supports the ECLIPSE MV/3200™, ECLIPSE MV/3500™, ECLIPSE MV/3600™, ECLIPSE MV/5500™, and ECLIPSE MV/5600™ systems.

Unpacking and inspecting the drive

1. Read the “Avoiding Electrostatic Discharge (ESD) Damage” section in the Preface. When handling the drive, follow these instructions completely.
2. Remove and set aside the packing slip from the outside of the shipping carton.
3. Open the cartons one by one, and remove and inspect the equipment for any visible damage.

If the equipment is damaged, contact Data General as described in the Preface of this document.

CAUTION: *To avoid damage, handle your drive gently; do not drop or jar it. Make sure you have a firm grip on it before you lift it, and lift it with both hands. Even a slight jar can severely damage a drive that is not mounted in an enclosure.*

4. Make sure that the model and part numbers on the packing slip match those of your equipment.

If you think you received the wrong equipment, contact Data General as described in the Preface of this document.
5. Make sure that you have all necessary mounting brackets for the computer or mass-storage subsystem in which you intend to install this drive.
6. Refer to the installing or setting up manual for your computer or mass-storage subsystem. This manual describes any additional mounting brackets or slides that your computer or mass-storage subsystem may require. Keep this manual close by. It contains information that you will need to install the drive.
7. If you do not know your drive’s model number and version (either A or B), determine it by using the 118 part number on your drive and the information in Table 1. Then do one of the following:

- ▶ If your drive is Version A, read the next section.
- ▶ If your drive is Version B, skip to the section “Setting the drive’s jumpers (Version B).”

Setting the drive’s jumpers (Version A)

The disk drive is shipped to you with extra jumpers that are installed on the SCSI ID jumper pins. Before you install the drive, you need to make sure the drive’s SCSI ID and option jumpers are set correctly for your Data General computer system. To verify the jumper settings, do the following:

- ▶ If your drive’s model number has a -D suffix, follow the steps in the “Setting ID and option jumpers (-D drives, Version A)” section.
- ▶ If your drive’s model number has a -W suffix, follow the steps in the “Setting SCSI ID and option jumpers (-W suffix drives)” section.
- ▶ If your drive’s model number has -S suffix, follow the steps in the next section.

Setting ID and option jumpers (-S drives, Version A)

To set the SCSI ID number and option jumpers of the Model 61012-S or 61014-S disk drive, do the following:

1. Refer to the installing or setting up manual for your AViiON or ECLIPSE MV/Family computer.

This manual lists the SCSI ID numbers for each category of drive that your computer supports (for example, disk, diskette, or tape). It also gives you the rules for choosing the correct SCSI ID number.

2. Once you have chosen the correct SCSI ID number, install the jumpers for that number according to the information in Figure 1.

For example, if you choose SCSI ID 1, install a jumper across front jumper-pin set 3 as indicated in the table of Figure 1 by the word IN. Do not install jumpers across front jumper-pin sets 1 and 2 as indicated by the word OUT.

SCSI ID Number	Front Jumper-Pin Set Number		
	1	2	3
0	OUT	OUT	OUT
1	OUT	OUT	IN
2	OUT	IN	OUT
3	OUT	IN	IN
4	IN	OUT	OUT
5	IN	OUT	IN
6*	IN	IN	OUT
7*	IN	IN	IN

IN means the jumper is installed. OUT means the jumper is not installed.
 *The first SCSI-2 host bus adapter board in your computer system is normally set to SCSI ID 7. The second one in your system is set to SCSI ID 6. Make sure you set your drive to its own ID number — one that is not being used.

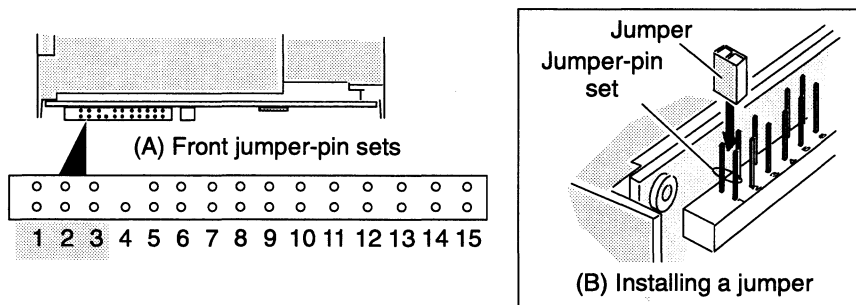


Figure 1 SCSI ID jumper settings, (A) The location of the jumper-pin sets at the front of the Model 61012-S or 61014-S drive, (B) Installing a jumper (Version A)

3. Make sure jumpers are installed across front jumper-pin sets 5, 10, 11, and 15, as shown in Figure 2.

Jumpers 11 and 15 are factory settings. With option jumpers 5 and 10 installed, the drive delays spin-up for a period of time after power is applied.

The period of time = the drive's SCSI ID number × 4 seconds

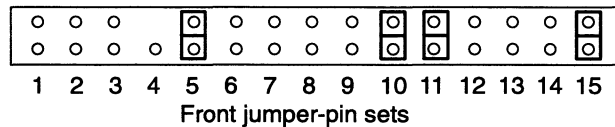
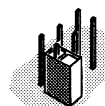


Figure 2 Required jumpers for Model 61012-S or 61014-S drive (Version A)

4. Make sure there are no jumpers installed on the remaining jumper-pin sets. The remaining jumper-pin sets do not require jumpers when you install the disk drive in an AViON or ECLIPSE MV/Family computer or mass-storage subsystem.



If you have extra jumpers, store each on one pin of a jumper-pin set as shown in the illustration.

After you have installed the disk drive's jumpers, skip to the "Mounting and Cabling the Drive" section to complete the installation of the disk drive.

Setting ID and option jumpers (-D drives, Version A)

To set the SCSI ID number and option jumpers of the narrow differential disk drive Model 61012-D or 61014-D, do the following:

1. Refer to the installing or setting up manual for your AViiON or ECLIPSE MV/Family computer.

This manual lists the SCSI ID numbers for each category of drive that your computer supports (for example, disk, diskette, or tape). It also provides the rules for choosing the correct SCSI ID number.

2. Once you have chosen the correct SCSI ID number, install the jumpers for that number according to the information in Figure 3.

For example, if you choose SCSI ID 1, install a jumper across front jumper-pin set 4 as indicated in the table of Figure 3 by the word IN. Do not install jumpers across front jumper-pin sets 2 and 3 as indicated by the word OUT. Also, do not install a jumper across front jumper-pin set 1. This pin set is not used for narrow differential drive applications.

SCSI ID Number	Jumper-Pin Set Number			
	1	2	3	4
0	Not used	OUT	OUT	OUT
1	↓	OUT	OUT	IN
2		OUT	IN	OUT
3		OUT	IN	IN
4		IN	OUT	OUT
5		IN	OUT	IN
6*		IN	IN	OUT
7*		IN	IN	IN

IN means the jumper is installed. OUT means the jumper is not installed.
 *The first SCSI-2 host bus adapter board in your computer system is normally set to SCSI ID 7. The second one in your system is set to SCSI ID 6. Make sure you set your drive to its own ID number — one that is not being used.

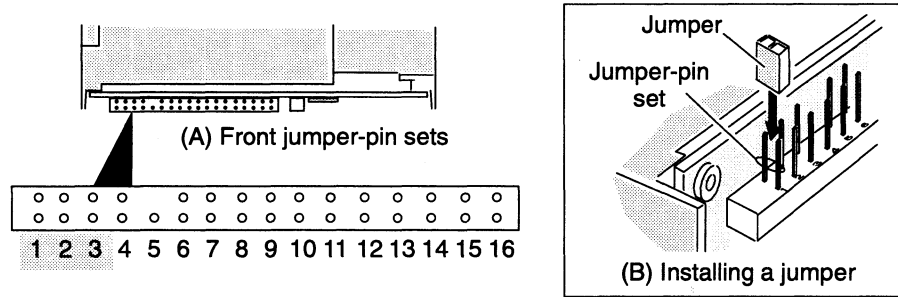


Figure 3 SCSI ID jumper settings, (A) The location of the jumper-pin sets at the front of the Model 61012-D or 61014-D drive, (B) Installing a jumper (Version A)

3. Make sure jumpers are installed across front jumper-pin sets 6, 7, 11, 12, and 16, as shown in Figure 4.

Jumpers 7, 12, and 16 are factory settings. With option jumpers 6 and 11 installed, the drive delays spin-up for a specific period of time after power is applied.

The period of time = the drive's SCSI ID number × 4 seconds

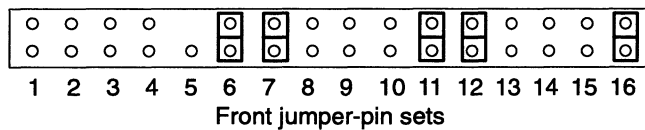
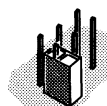


Figure 4 Required jumpers for Model 61012-D or 61014-D drive (Version A)

4. Make sure there are no jumpers installed on the remaining jumper-pin sets. The remaining jumper-pin sets do not require jumpers when you install the disk drive in an AViiON or ECLIPSE MV/Family computer or mass-storage subsystem.



If you have extra jumpers, store each on one pin of a jumper-pin set as shown in the illustration.

After you have installed the disk drive's jumpers, skip to the "Mounting and Cabling the Drive" section to complete the installation of the disk drive.

Setting ID and option jumpers (-W drives, Version A)

To set the SCSI ID number and option jumpers of the wide differential disk drive Model 61012-W or 61014-W do the following:

1. Refer to the installing or setting up manual for your AViiON computer.

This manual lists the SCSI ID numbers for each category of drive that your computer supports (for example, disk, diskette, or tape). It also provides the rules for choosing the correct SCSI ID number.

2. Once you choose the SCSI ID number, install the jumpers for that ID number by referring to Figure 5.

For example, if you choose SCSI ID 1, install a jumper across front jumper-pin set 4 as indicated in the table of Figure 5 by the word IN. Do not install jumpers across front jumper-pin sets 2 and 3 as indicated by the word OUT.

SCSI ID Number	Jumper-Pin Set Number			
	1	2	3	4
0	OUT	OUT	OUT	OUT
1	OUT	OUT	OUT	IN
2	OUT	OUT	IN	OUT
3	OUT	OUT	IN	IN
4	OUT	IN	OUT	OUT
5	OUT	IN	OUT	IN
6 ¹	OUT	IN	IN	OUT
7 ¹	OUT	IN	IN	IN
8	IN	OUT	OUT	OUT
9	IN	OUT	OUT	IN
10 (A) ²	IN	OUT	IN	OUT
11 (B)	IN	OUT	IN	IN
12 (C)	IN	IN	OUT	OUT
13 (D)	IN	IN	OUT	IN
14 (E)	IN	IN	IN	OUT
15 (F)	IN	IN	IN	IN

IN means the jumper is installed. OUT means the jumper is not installed.

1 The first SCSI-2 host bus adapter board in your computer system is normally set to SCSI ID 7. In some configurations, the second SCSI bus adapter board is set to SCSI ID 6. Make sure you set your drive to its own ID number — an ID number that another device on the same SCSI bus is not using.

2 Hexadecimal equivalents are shown because some software requires you to provide the SCSI ID number in hexadecimal.

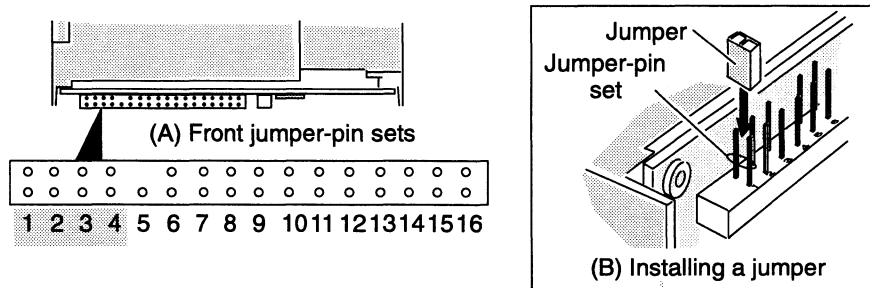


Figure 5 SCSI ID jumper settings, (A) The location of the jumper-pin sets at the front of the Model 61012-W or 61014-W drive, (B) Installing a jumper (Version A)

3. Make sure jumpers are installed *only* across front jumper-pin sets 6, 11, 12, and 16, as shown in Figure 6.

With option jumpers 6 and 11 installed, the drive delays spin-up for a specific period of time after power is applied.

The period of time = the drive's SCSI ID number × 4 seconds

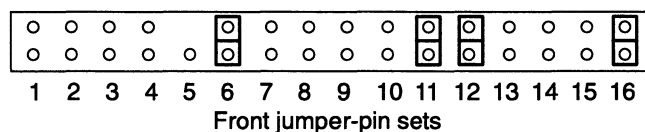


Figure 6 Required jumpers for Model 61012-W or 61014-W drive (Version A)

4. Make sure there are no jumpers installed on the remaining jumper-pin sets. The remaining jumper-pin sets do not require jumpers when you install the disk drive in an AViON or ECLIPSE MV/Family computer or mass-storage subsystem.



If you have extra jumpers, store each on one pin of a jumper-pin set as shown in the illustration.

After you have installed the disk drive's jumpers, go to the next section to complete the installation of the disk drive.

Mounting/ cabling the drive (Version A)

Follow the steps in this section to mount the disk drive in an AViON or ECLIPSE MV/Family computer or mass-storage subsystem and to connect the SCSI bus cable and power cable to the disk drive.

CAUTION: *To avoid damage, handle your drive gently; do not drop or jar it. Make sure you have a firm grip on it before you lift it, and lift it with both hands. Even a slight jar can severely damage your drive.*

1. What you do next depends on whether you are installing the drive in a 3-1/2 inch slot or a 5-1/4 inch slot.
 - ▶ If you are installing the drive in a 3-1/2 inch slot, skip to step 5.
 - ▶ If you are installing the drive in a 5-1/4 inch slot, go to the next step. You need to attach the 3-1/2 inch to 5-1/4 inch adapter kit (005-040530) that came with your drive model number.
2. From the adapter kit, take the two 3-1/2 inch to 5-1/4 inch adapter brackets 1 and 2 (Figure 7A), and attach each adapter bracket to the disk drive. Use two 6-32 × 1/4 inch Phillips screws with captive washers to attach each bracket. Do not tighten the screws completely.

(Note although the Model 61012 is shown in Figure 7A, the adapter kit attaches to all Version A models in the same way.)

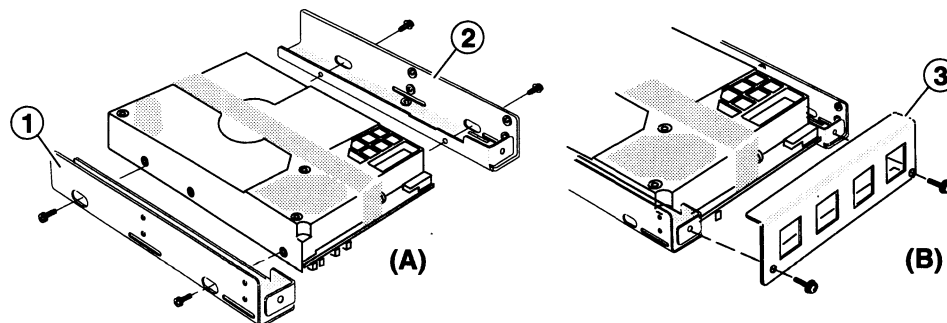


Figure 7 Attaching the 3-1/2 inch to 5-1/4 inch adapter kit (005-040530) to the disk drive (Version A)

3. Attach angle bracket 3, as shown in Figure 7B.

Use two 6-32×1/4 inch Phillips screws with captive washers and tighten each screw completely.

4. Tighten each of the four remaining screws that hold brackets 1 and 2 until the screws are *snug*. Then tighten each screw an additional 1/8 of a turn as shown here.



CAUTION: *Do not over tighten these four screws or you will damage the disk drive's special insulated screw-inserts.*

5. You can mount the disk drive so that any of its surfaces faces down. Refer to the manual for installing or setting up your computer or mass-storage subsystem to find out how to mount the drive.

Your installing or setting up manual shows you where to install a disk drive and how to position and attach it. It also describes any special mounting brackets, slides, or hardware that your computer or mass-storage subsystem may require.

6. Mount the drive in your computer or mass-storage subsystem using the following screws:

- ▶ If you are mounting the drive in a 5-1/4 inch slot, use the four 6-32×1/4 inch Phillips screws or the special hardware that is required by your computer or mass-storage subsystem. See Figure 8A for the location of the mounting screw holes.

- ▶ If you are mounting the drive in a 3-1/2 inch slot use four 6-32×3/16 inch Phillips screws with captive washers or the special hardware that is required by your computer or mass-storage subsystem. See Figure 8B for the location



of the mounting screw holes. When you tighten the screws, tighten each one until it is snug. Then tighten each one an additional 1/8 of a turn as shown here.

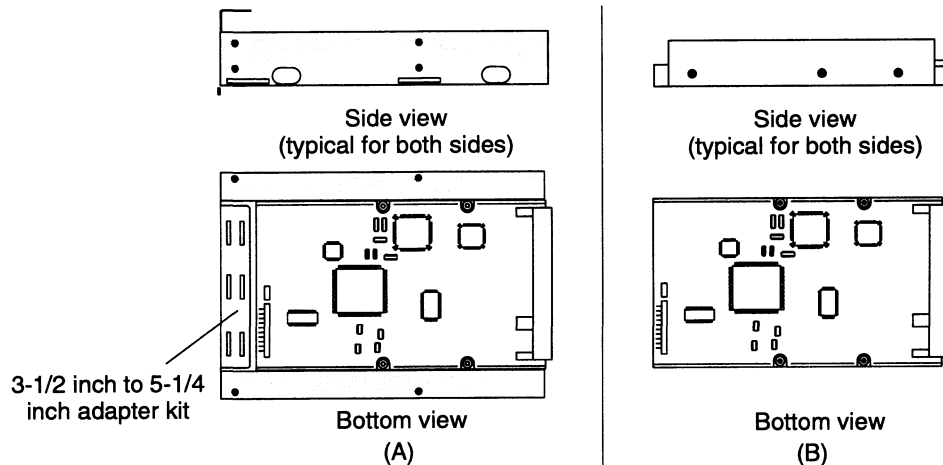


Figure 8 Mounting-screw holes (A) for installation in a 5-1/4 inch slot of a computer or a mass-storage subsystem and (B) for installation in a 3-1/2 inch slot (Version A)

CAUTION: *Do not over tighten these four screws or you will damage the disk drive's special insulated screw-inserts.*

To avoid disk-drive damage, attach the drive using the mounting hardware that we provided. If you must use other hardware when installing the drive in a 3-1/2 inch slot, make sure the screws you use do not penetrate more than 3.8 mm (.149 in) into the drive's mounting holes.

7. What you do next depends on one of the following:
 - ▶ If you are installing a drive model with a -D suffix, skip to step 11.
 - ▶ If you are installing a drive model with a -W suffix, skip to step 15.
 - ▶ If you are installing a drive model with a -S suffix, continue with the next step.

8. If you are installing a drive model with a -S suffix, do one or both of the following:
 - ▶ If you are installing the Model 61012-S drive in an ECLIPSE MV/3000 series computer and the drive will be disk 0, connect the in-line terminator plug, 111-003626 (Figure 9) into the SCSI bus connector on the drive. (Note the ECLIPSE MV/3000 Series computers do not support the Model 61014-S drive.)

- ▶ Connect the SCSI bus cable provided by the computer or mass-storage subsystem into the SCSI bus connector (or optional in-line terminator plug) on the back of the disk drive (Figure 9).

Make sure the color tracer wire on the SCSI bus cable connects to pin 1 in the SCSI connector (or optional in-line terminator plug) on the disk drive.

9. If you cannot connect the SCSI bus cable to the drive without twisting it, connect an optional adapter cable (005-035005) between the SCSI bus cable and the disk drive (Figure 9).

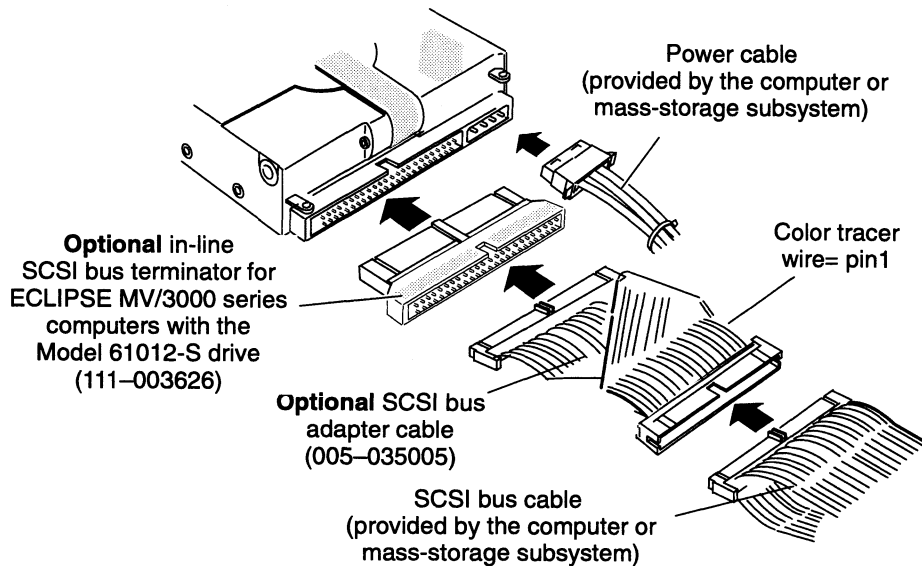


Figure 9 Connecting the SCSI bus cable and power cable to the back of the Model 61012-S or 61014-S drive (Version A)

If the computer's SCSI bus cable does not reach the back of the drive, make an extender cable by unfolding this optional SCSI bus adapter cable, 005-035005 (Figure 10). Then connect the unfolded adapter cable between the SCSI bus cable and the disk drive.

10. Once you have connected the SCSI bus cable, skip to step 16 to install the power cable.

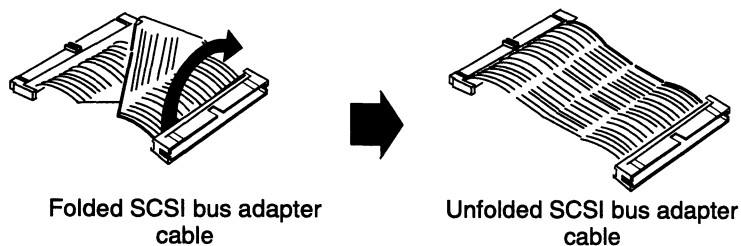


Figure 10 Unfolding the SCSI bus adapter cable (005-035005) to make a SCSI bus extender cable (Version A)

11. If you are installing a Model 61012-D or 61014-D disk drive, carefully connect the SCSI bus cable provided by the computer or mass-storage subsystem into the 50-pin to 68-pin (118-019319) adapter (Figure 11).
12. Connect the cable (with adapter) into the SCSI bus connector on the back of the disk drive (Figure 11). The connector is keyed so that you cannot connect it incorrectly.
13. If you cannot connect the SCSI bus cable to the 50-pin to 68-pin adapter without twisting it, connect the optional adapter cable (005-035005) between the 50-pin to 68-pin adapter and the SCSI bus cable. Refer to Figure 11.

If the computer's SCSI bus cable does not reach the back of the drive, make an extender cable by unfolding the optional adapter cable (005-035005). Refer to Figure 10. Then connect the unfolded adapter cable between the SCSI bus cable and the 50-pin to 68-pin adapter (Figure 11).

CAUTION: *Failure to align the connector on the SCSI bus cable correctly with the disk drive's SCSI connector can bend the connector's pins causing severe cable connector and drive connector damage.*

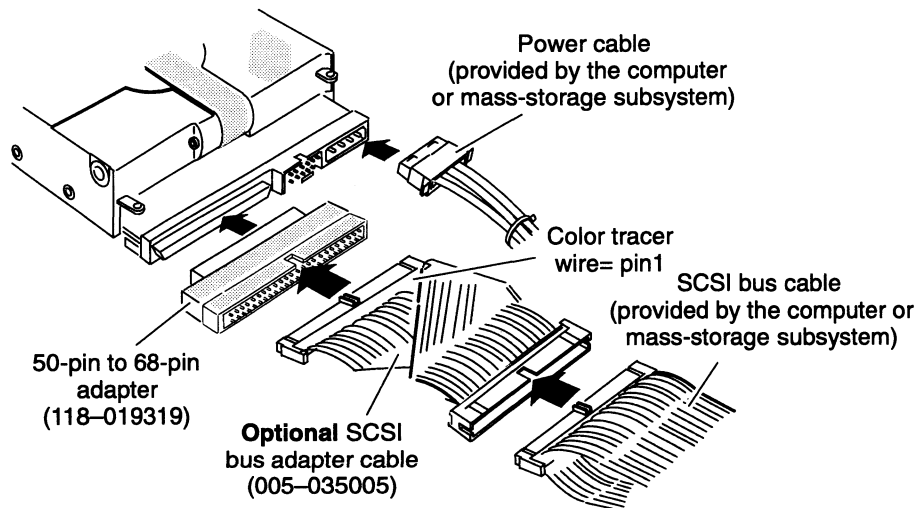


Figure 11 Connecting the SCSI bus cable, adapter, and power cable to the back of the Model 61012-D or 61014-D drive (Version A)

14. Once you have connected the SCSI bus cable, skip to step 16 to install the power cable.
15. If you are installing a Model 61012-W or 61014-W disk drive, connect the SCSI bus cable provided by the computer or mass-storage subsystem into the SCSI bus connector on the back of the disk drive (Figure 12).

Make sure the color tracer wire on the SCSI bus cable connects to pin 1 in the SCSI connector on the disk drive (Figure 12).

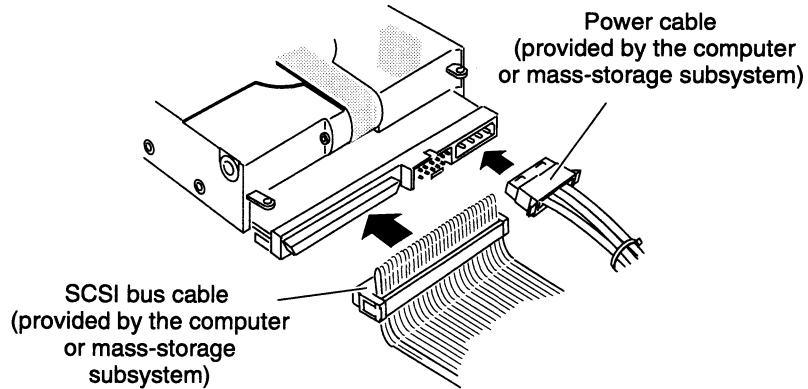


Figure 12 Connecting the SCSI bus cable and power cable to the back of the Model 61012-W or 61014-W disk drive (Version A)

16. Connect the power cable provided by the computer or mass-storage subsystem into the power connector on the back of the disk drive. Make sure you align the beveled edges of the power cable's connector with the beveled edges of the drive's power connector before you connect the power cable.

- ▶ If you are installing a drive model with a -S suffix, refer to Figure 9.
- ▶ If you are installing a drive model with a -D suffix, refer to Figure 11.
- ▶ If you are installing a drive model with a -W suffix, refer to Figure 12.

17. Make sure you terminate the SCSI bus of the computer or mass-storage subsystem properly.

To terminate the SCSI bus for your system, you may need to install an external terminator plug on the end of the SCSI bus, which is usually one of the SCSI bus connectors on the back of the computer or mass-storage subsystem. Note that the terminator plugs for the single-ended drives, the differential drives, and the wide differential drives are not interchangeable. For specific information about SCSI bus terminator plugs, refer to the installing or setting up manual for your computer or mass-storage subsystem.

18. Close the computer or mass-storage subsystem chassis.

For the correct procedure, refer to the installing or setting up manual for your computer or mass-storage subsystem.

19. Refer to your operating-system manuals.

Your operating system manuals explain what to do after you have installed a new mass-storage drive in your system.

IMPORTANT: Because of the high-density storage technology used by the drive, it is not unusual for your system to report disk-drive soft errors. This is normal and, by itself, does not indicate a disk-drive problem. You should suspect disk-drive problems or disk-drive cable problems only when system performance degradation accompanies disk-drive soft-error reporting. If you have any concern about disk-drive soft-error reporting, contact Data General as described in the Preface of this document.

Setting the drive's jumpers (Version B)

The disk drive is shipped to you with extra jumpers that are installed on the SCSI ID jumper pins. Before you install the drive, you need to make sure the drive's SCSI ID and option jumpers are set correctly for your Data General computer system. To verify the jumper settings, do the following:

- ▶ If your drive is Model 61014-S or -D, Version B, follow the steps in the "Setting ID and option jumpers (61014-S,-D, Version B)" section.
- ▶ If your drive is Model 61014-W, Version B, follow the steps in the "Setting ID and option jumpers (61014-W, Version B)" section.
- ▶ If your drive is Model 61012-W, Version B, follow the steps in the "Setting ID and option jumpers (-61012-W, Version B)" section.
- ▶ If your drive is Model 61012-S or -D, Version B, follow the steps in the next section.

Setting ID and option jumpers (61012-S, -D, Version B)

To set the SCSI ID number and option jumpers of the Model 61012-S or 61012-D disk drive, do the following:

1. Refer to the installing or setting up manual for your AViiON or ECLIPSE MV/Family computer.

This manual lists the SCSI ID numbers for each category of drive that your computer supports (for example, disk, diskette, or tape). It also gives you the rules for choosing the correct SCSI ID number.

2. Once you have chosen the correct SCSI ID number, install the jumpers for that number according to the information in Figure 13.

For example, if you choose SCSI ID 1, install a jumper across front jumper-pin set J4-4 as indicated in the table of Figure 13 by the word IN. Do not install jumpers across front jumper-pin sets J4-5 or J4-6 as indicated by the word OUT.

SCSI ID Number	Jumper-Pin Set Number		
	J4-6	J4-5	J4-4
0	OUT	OUT	OUT
1	OUT	OUT	IN
2	OUT	IN	OUT
3	OUT	IN	IN
4	IN	OUT	OUT
5	IN	OUT	IN
6*	IN	IN	OUT
7*	IN	IN	IN

IN means the jumper is installed. OUT means the jumper is not installed.

*The first SCSI-2 host bus adapter board in your computer system is normally set to SCSI ID 7. The second one in your system is set to SCSI ID 6. Make sure you set your drive to its own ID number — one that is not being used.

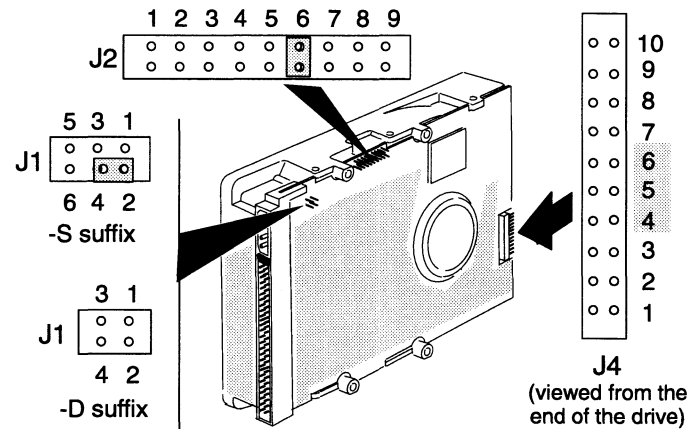


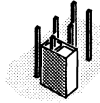
Figure 13 SCSI ID and option jumper settings and the location of the jumper-pin sets for the Model 61012-S or 61012-D drive (Version B)

3. Make sure a jumper is installed across jumper-pin set J2-6 as shown in Figure 13.

With option jumper J2-6 installed, the drive delays spin-up for a time period after power is applied.

$$\text{The time period (seconds)} = (\text{the drive's SCSI ID} \times 10) + 3$$

4. For the Model 61012-S (single ended) drive only, make sure a jumper is installed across jumper pins 2 and 4 of J1 as shown in Figure 13.
5. For Model 61012-D (differential) drive only, make sure there are no jumpers installed on J1.
6. Make sure there are no jumpers installed on the remaining jumper-pin sets. The remaining jumper-pin sets do not require jumpers when you install the disk drive in an AViiON or ECLIPSE MV/Family computer or mass-storage subsystem.



If you have extra jumpers, store each on one pin of a jumper-pin set as shown in the illustration.

After you have installed the disk drive's jumpers, skip to the "Mounting and Cabling the Drive (Version B)" section to complete the installation of the disk drive.

Setting ID and option jumpers (61012-W, Version B)

To set the SCSI ID number and option jumpers of the wide differential disk drive Model 61012-W, Version B, do the following:

1. Refer to the installing or setting up manual for your AViiON computer.

This manual lists the SCSI ID numbers for each category of drive that your computer supports (for example, disk, diskette, or tape). It also provides the rules for choosing the correct SCSI ID number.

2. Once you choose the SCSI ID number, install the jumpers for that ID number by referring to Figure 14.

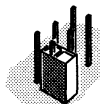
For example, if you choose SCSI ID 1, install a jumper across jumper-pin set J5-1 as indicated in the table of Figure 14 by the word IN. Do not install jumpers across jumper-pin sets J5-2, J5-3, or J5-4 as indicated by the word OUT.

3. Make sure a jumper is installed across jumper-pin set J2-6 as shown in Figure 14.

With option jumper J2-6 installed, the drive delays spin-up for a time period after power is applied.

The time period (seconds) + (the drive's SCSI ID \times 10) + 3

4. For Model 61012-W drive only, make sure there are no jumpers installed on J1.
5. Make sure there are no jumpers installed on the remaining jumper-pin sets. The remaining jumper-pin sets do not require jumpers when you install the disk drive in an AViiON or ECLIPSE MV/Family computer or mass-storage subsystem.



If you have extra jumpers, store each on one pin of a jumper-pin set as shown in the illustration.

After you have installed the disk drive's jumpers, skip to the "Mounting and Cabling the Drive (Version B)" section to complete the installation of the disk drive.

SCSI ID Number	Jumper-Pin Set Number			
	J5-4	J5-3	J5-2	J5-1
0	OUT	OUT	OUT	OUT
1	OUT	OUT	OUT	IN
2	OUT	OUT	IN	OUT
3	OUT	OUT	IN	IN
4	OUT	IN	OUT	OUT
5	OUT	IN	OUT	IN
6 ¹	OUT	IN	IN	OUT
7 ¹	OUT	IN	IN	IN
8	IN	OUT	OUT	OUT
9	IN	OUT	OUT	IN
10 (A) ²	IN	OUT	IN	OUT
11 (B)	IN	OUT	IN	IN
12 (C)	IN	IN	OUT	OUT
13 (D)	IN	IN	OUT	IN
14 (E)	IN	IN	IN	OUT
15 (F)	IN	IN	IN	IN

IN means the jumper is installed. OUT means the jumper is not installed.

1 The first SCSI-2 host bus adapter board in your computer system is normally set to SCSI ID 7. In some configurations, the second SCSI bus adapter board is set to SCSI ID 6. Make sure you set your drive to its own ID number — an ID number that another device on the same SCSI bus is not using.

2 Hexadecimal equivalents are shown because some software requires you to provide the SCSI ID number in hexadecimal.

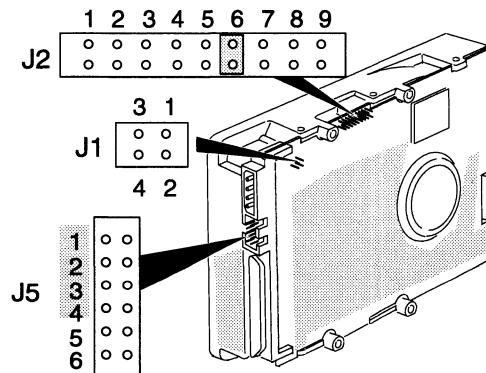


Figure 14 SCSI ID jumper settings and the location of the jumper-pin sets for the Model 61012-W drive (Version B)

Setting ID and option jumpers (61014-S, -D, Version B)

To set the SCSI ID number and option jumpers of the Model 61012-S or 61012-D disk drive, do the following:

1. Refer to the installing or setting up manual for your AViiON or ECLIPSE MV/Family computer.

This manual lists the SCSI ID numbers for each category of drive that your computer supports (for example, disk, diskette, or tape). It also gives you the rules for choosing the correct SCSI ID number.

- Once you have chosen the correct SCSI ID number, install the jumpers for that number according to the information in Figure 15.

For example, if you choose SCSI ID 1, install a jumper across jumper-pin set J4-9 as indicated in the table of Figure 15 by the word IN. Do not install jumpers across jumper-pin sets J4-10 and J4-11 as indicated by the word OUT.

SCSI ID Number	Jumper-Pin Set Number		
	J4-11	J4-10	J4-9
0	OUT	OUT	OUT
1	OUT	OUT	IN
2	OUT	IN	OUT
3	OUT	IN	IN
4	IN	OUT	OUT
5	IN	OUT	IN
6*	IN	IN	OUT
7*	IN	IN	IN

IN means the jumper is installed. OUT means the jumper is not installed.

*The first SCSI-2 host bus adapter board in your computer system is normally set to SCSI ID 7. The second one in your system is set to SCSI ID 6. Make sure you set your drive to its own ID number — one that is not being used.

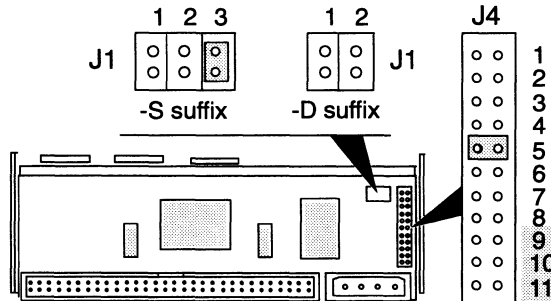


Figure 15 SCSI ID jumper settings and the location of the jumper-pin sets for the Model 61014-S or 61014-D drive (Version B)

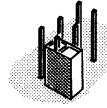
- Make sure a jumper is installed across jumper-pin set J4-5 as shown in Figure 15.

With option jumper J4-5 installed, the drive delays spin-up for a time period after power is applied.

$$\text{The time period (seconds)} = (\text{the drive's SCSI ID} \times 10) + 3$$

- For the Model 61014-S (single ended) drive only, install a jumper across jumper-pin set J1-3 as shown in Figure 15.
- For Model 61014-D (differential) drive only, make sure there are no jumpers installed on J1.

6. Make sure there are no jumpers installed on the remaining jumper-pin sets. The remaining jumper-pin sets do not require jumpers when you install the disk drive in an AViiON or ECLIPSE MV/Family computer or mass-storage subsystem.



If you have extra jumpers, store each on one pin of a jumper-pin set as shown in the illustration.

After you have installed the disk drive's jumpers, go to the next section to complete the installation of the disk drive.

Setting ID and option jumpers (61014-W, Version B)

To set the SCSI ID number and option jumpers of the Model 61014-W disk drive, do the following:

1. Refer to the installing or setting up manual for your AViiON or ECLIPSE MV/Family computer.

This manual lists the SCSI ID numbers for each category of drive that your computer supports (for example, disk, diskette, or tape). It also gives you the rules for choosing the correct SCSI ID number.

2. Once you have chosen the correct SCSI ID number, install the jumpers for that number according to the information in Figure 16.

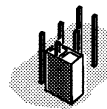
For example, if you choose SCSI ID 1, install a jumper across jumper-pin set J5-1 as indicated in the table of Figure 16 by the word IN. Do not install jumpers across jumper-pin sets 2, 3, or 4 as indicated by the word OUT.

3. Make sure a jumper is installed across jumper-pin set J4-2 as shown in Figure 16.

With option jumper J4-2 installed, the drive delays spin-up for a time period after power is applied.

The time period (seconds) = (the drive's SCSI ID \times 10) + 3

4. Make sure there are no jumpers installed on the remaining jumper-pin sets. The remaining jumper-pin sets do not require jumpers when you install the disk drive in an AViiON or ECLIPSE MV/Family computer or mass-storage subsystem.



If you have extra jumpers, store each on one pin of a jumper-pin set as shown in the illustration.

After you have installed the disk drive's jumpers, go to the next section to complete the installation of the disk drive.

SCSI ID Number	Jumper-Pin Set Number			
	J5-4	J5-3	J5-2	J5-1
0	OUT	OUT	OUT	OUT
1	OUT	OUT	OUT	IN
2	OUT	OUT	IN	OUT
3	OUT	OUT	IN	IN
4	OUT	IN	OUT	OUT
5	OUT	IN	OUT	IN
6 ¹	OUT	IN	IN	OUT
7 ¹	OUT	IN	IN	IN
8	IN	OUT	OUT	OUT
9	IN	OUT	OUT	IN
10 (A) ²	IN	OUT	IN	OUT
11 (B)	IN	OUT	IN	IN
12 (C)	IN	IN	OUT	OUT
13 (D)	IN	IN	OUT	IN
14 (E)	IN	IN	IN	OUT
15 (F)	IN	IN	IN	IN

IN means the jumper is installed. OUT means the jumper is not installed.

1 The first SCSI-2 host bus adapter board in your computer system is normally set to SCSI ID 7. In some configurations, the second SCSI bus adapter board is set to SCSI ID 6. Make sure you set your drive to its own ID number — an ID number that another device on the same SCSI bus is not using.

2 Hexadecimal equivalents are shown because some software requires you to provide the SCSI ID number in hexadecimal.

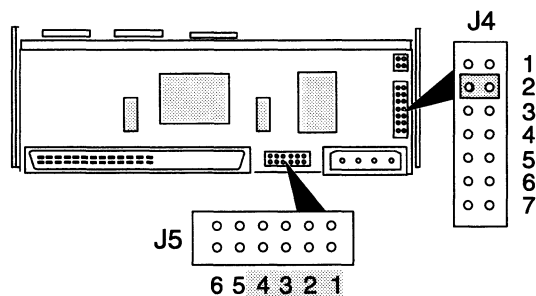


Figure 16 SCSI ID jumper settings and the location of the jumper-pin sets for the Model 61014-W drive (Version B)

Mounting/ cabling the drive (Version B)

Follow the steps in this section to mount the disk drive in an AViON or ECLIPSE MV/Family computer or mass-storage subsystem and to connect the SCSI bus cable and power cable to the disk drive.

CAUTION: *To avoid damage, handle your drive gently; do not drop or jar it. Make sure you have a firm grip on it before you lift it, and lift it with both hands. Even a slight jar can severely damage your drive.*

1. What you do next depends on whether you are installing the drive in a 3-1/2 inch slot or a 5-1/4 inch slot.
 - ▶ If you are installing the drive in a 3-1/2 inch slot, skip to step 5.
 - ▶ If you are installing the drive in a 5-1/4 inch slot, go to the next step. You need to attach the 3-1/2 inch to 5-1/4 inch adapter kit (005-040530) that came with your drive model number.

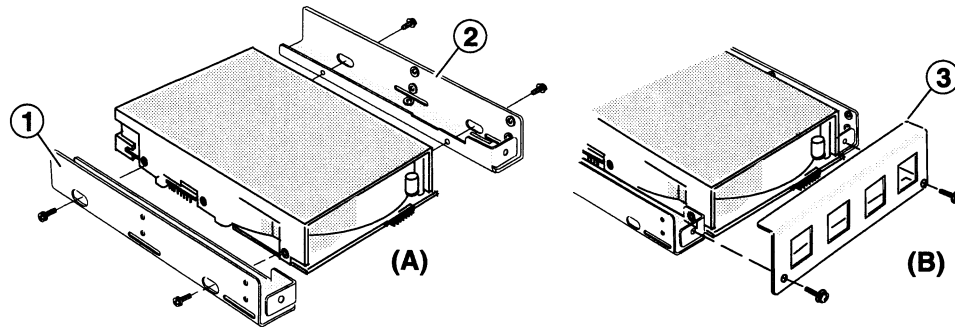


Figure 17 Attaching the 3-1/2 inch to 5-1/4 inch adapter kit (005-040530) to the disk drive (Version B)

2. From the adapter kit, take the two 3-1/2 inch to 5-1/4 inch adapter brackets 1 and 2 (Figure 17A), and attach each adapter bracket to the disk drive. Use two 6-32 × 1/4 inch Phillips screws with captive washers to attach each bracket. Do not tighten the screws completely.

(Note although the Model 61012 is shown in Figure 17A, the adapter kit attaches to all Version B models in the same way.)

3. Attach angle bracket 3, as shown in Figure 17B. Use two 6-32 × 1/4 inch Phillips screws with captive washers and tighten each screw completely.
4. Tighten each of the four remaining screws that hold brackets 1 and 2 until the screws are *snug*. Then tighten each screw an additional 1/8 of a turn as shown here.



CAUTION: Do not over tighten these four screws or you will damage the disk drive's special insulated screw-inserts.

5. You can mount the disk drive so that any of its surfaces faces down. Refer to the manual for installing or setting up your computer or mass-storage subsystem to find out how to mount the drive.

Your installing or setting up manual shows you where to install a disk drive and how to position and attach it. It also describes any special mounting brackets, slides, or hardware that your computer or mass-storage subsystem may require.

6. Mount the drive in your computer or mass-storage subsystem using the following screws:

- ▶ If you are mounting the drive in a 5-1/4 inch slot, use the four 6-32 \times 1/4 inch Phillips screws or the special hardware that is required by your computer or mass-storage subsystem. See Figure 18A for the location of the mounting screw holes.
- ▶ If you are mounting the drive in a 3-1/2 inch slot use four 6-32 \times 3/16 inch Phillips screws with captive washers or the special hardware that is required by your computer or mass-storage subsystem. See Figure 18B for the location of the mounting screw holes. When you tighten the screws, tighten each one until it is snug. Then tighten each one an additional 1/8 of a turn as shown here.

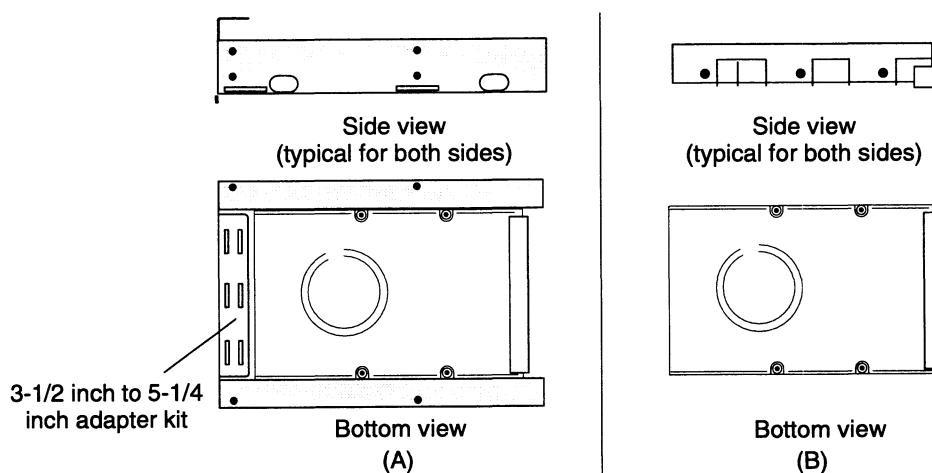


Figure 18 Mounting-screw holes (A) for installation in a 5-1/4 inch slot of a computer or a mass-storage subsystem and (B) for installation in a 3-1/2 inch slot (Version B)

CAUTION: *Do not over tighten these four screws or you will damage the disk drive's special insulated screw-inserts.*

To avoid disk-drive damage, attach the drive using the mounting hardware that we provided. If you must use other hardware when installing the drive in a 3-1/2 inch slot, make sure the screws you use do not penetrate more than 3.8 mm (.149 in) into the drive's mounting holes.

7. What you do next depends on one of the following:
 - ▶ If you are installing a drive model with a -W suffix, skip to step 11.
 - ▶ If you are installing a drive model with a -S or -D suffix, continue with the next step.
8. If you are installing a drive model with a -S or -D suffix, do one or both of the following:

- ▶ If you are installing the drive in an ECLIPSE MV/3000 series computer and the drive will be disk 0, connect the in-line terminator plug, 111-003626 (Figure 19) into the SCSI bus connector on the drive. (Note the ECLIPSE MV/3000 Series computers do not support the Model 61014-S drive.)
- ▶ Connect the SCSI bus cable provided by the computer or mass-storage subsystem into the SCSI bus connector (or optional in-line terminator plug) on the back of the disk drive (Figure 19).

Make sure the color tracer wire on the SCSI bus cable connects to pin 1 in the SCSI connector (or optional in-line terminator plug) on the disk drive.

CAUTION: *Failure to align the connector on the SCSI bus cable correctly with the disk drive's SCSI connector can bend the connector's pins causing severe cable connector and drive connector damage.*

9. If you cannot connect the SCSI bus cable to the drive without twisting it, connect an optional adapter cable (005-035005) between the SCSI bus cable and the disk drive (Figure 19).

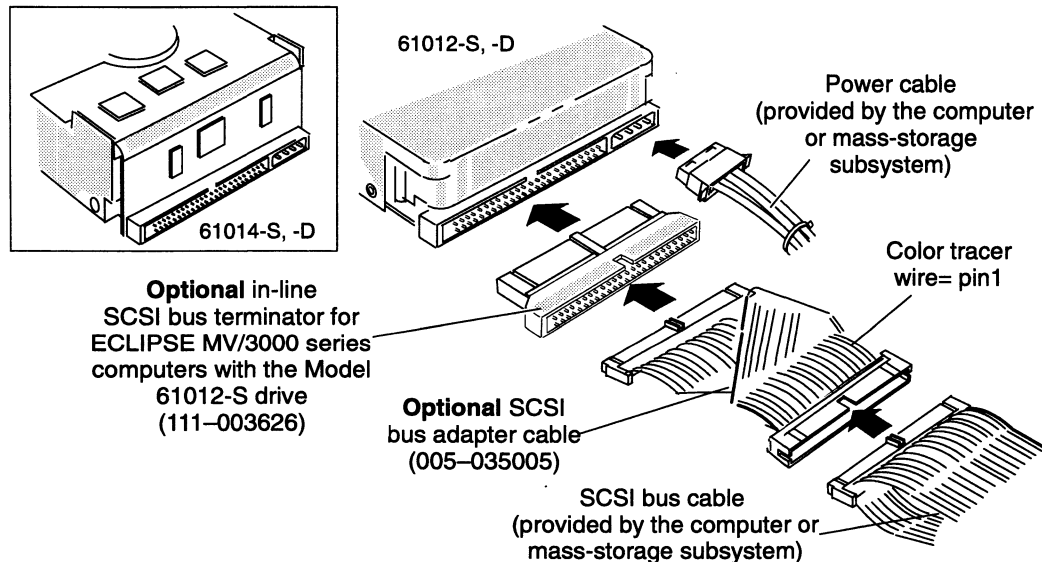


Figure 19 Connecting the SCSI bus cable and power cable to the back of the Model 61012-S, -D or 61014-S, -D drives (Version B)

If the computer's SCSI bus cable does not reach the back of the drive, make an extender cable by unfolding the optional SCSI bus adapter cable, 005-035005 (Figure 20). Then connect the unfolded adapter cable between the SCSI bus cable and the disk drive.

10. Once you have connected the SCSI bus cable, skip to step 16 to install the power cable.

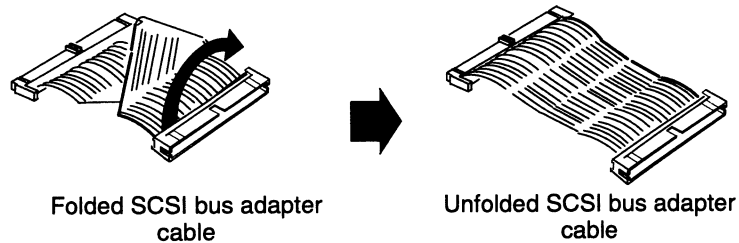


Figure 20 Unfolding the SCSI bus adapter cable (005-035005) to make a SCSI bus extender cable (Version B)

11. If you are installing a Model 61012-W or 61014-W disk drive, connect the SCSI bus cable provided by the computer or mass-storage subsystem into the SCSI bus connector on the back of the disk drive (Figure 21).

Make sure the color tracer wire on the SCSI bus cable connects to pin 1 in the SCSI connector on the disk drive (Figure 21).

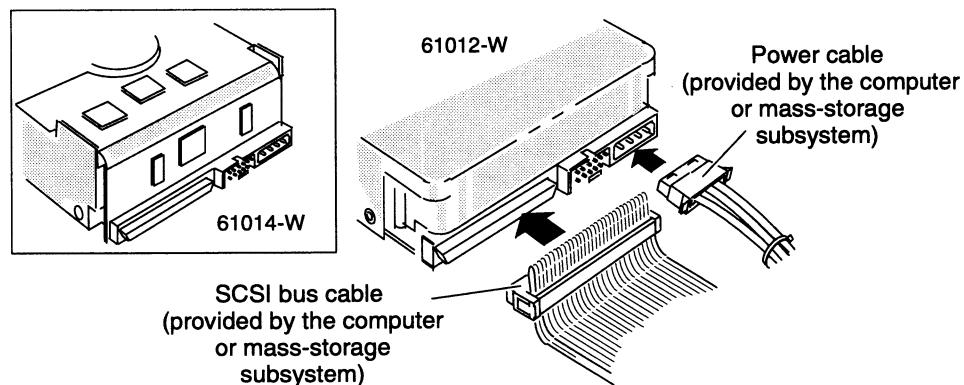


Figure 21 Connecting the SCSI bus cable and power cable to the back of the Model 61012-W or 61014-W disk drive (Version B)

12. Connect the power cable provided by the computer or mass-storage subsystem into the power connector on the back of the disk drive. Make sure you align the beveled edges of the power cable's connector with the beveled edges of the drive's power connector before you connect the power cable. Refer to one of the following figures:

- ▶ If you are installing a drive model with a -S or -D suffix, refer to Figure 19.
- ▶ If you are installing a drive model with a -W suffix, refer to Figure 21.

13. Make sure you terminate the SCSI bus of the computer or mass-storage subsystem properly.

To terminate the SCSI bus for your system, you may need to install an external terminator plug on the end of the SCSI bus, which is usually one of the SCSI bus connectors on the back of the computer or mass-storage subsystem. Note that the terminator plugs for the single-ended drives, the differential drives, and the wide differential drives are not interchangeable. For specific information about SCSI bus terminator plugs, refer to the installing or setting up manual for your computer or mass-storage subsystem.

14. Close the computer or mass-storage subsystem chassis.

For the correct procedure, refer to the installing or maintaining manual for your computer or mass-storage subsystem.

15. Refer to your operating-system manuals.

Your operating system manuals explain what to do after you have installed a new mass-storage drive in your system.

IMPORTANT: Because of the high-density storage technology used by the drive, it is not unusual for your system to report disk-drive soft errors. This is normal and, by itself, does not indicate a disk-drive problem. You should suspect disk-drive problems or disk-drive cable problems only when system performance degradation accompanies disk-drive soft-error reporting. If you have any concern about disk-drive soft-error reporting, contact Data General as described in the Preface of this document.

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