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Customer Documentation



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Installing and Operating the 4-mm Cartridge Tape Drives: Models 6885 and 6886

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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

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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Dieses Gerät ist funkentstört nach VDE 0871 Grenzwertklasse B und entspricht den technischen Vorschriften der DBP-Verfügung 1046/1984.



Preface

This manual is for people who want to install or operate the Model 6885 or 6886 4-mm tape drives. 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 the Model 6885 or 6886 tape 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.

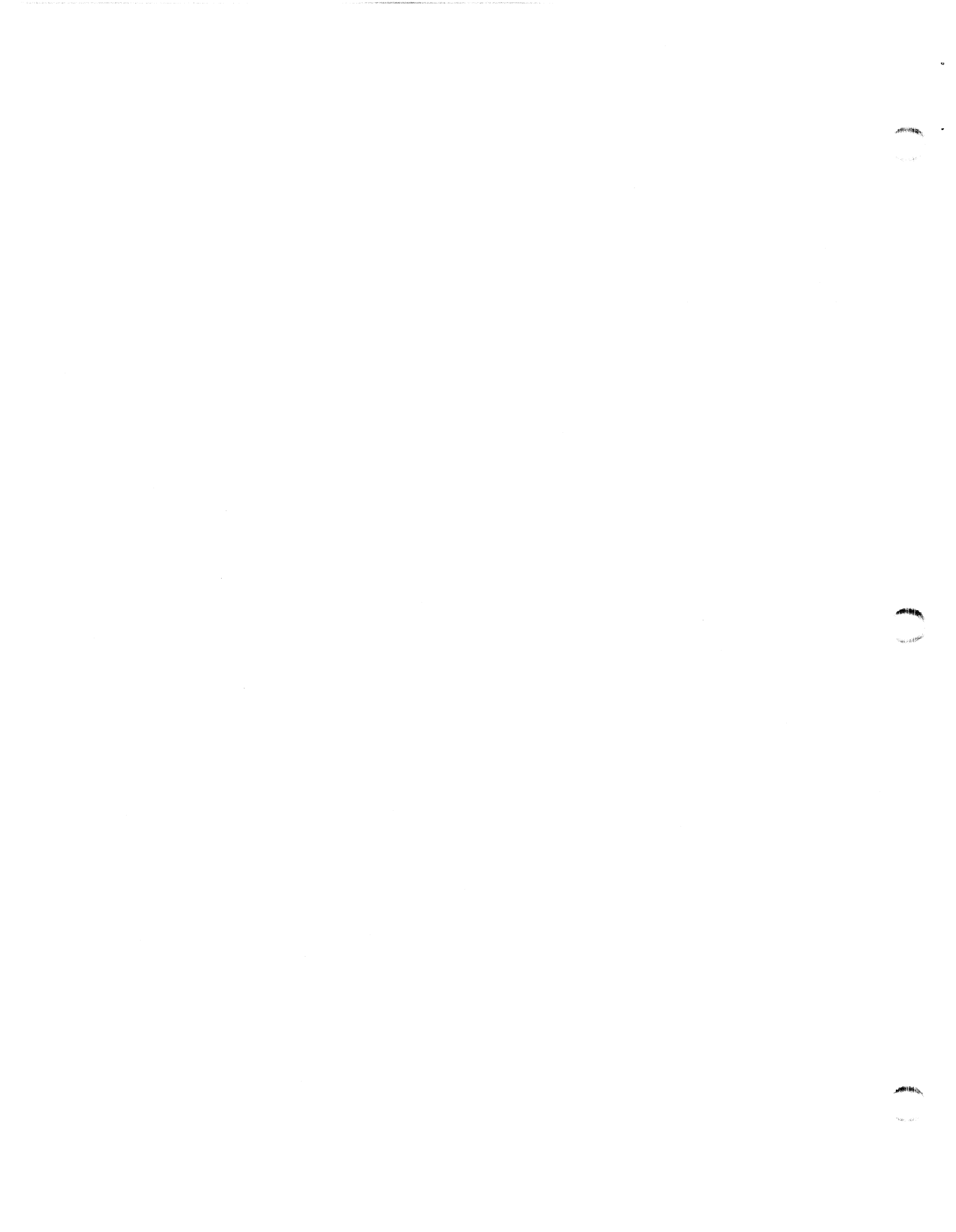
Emergency procedures (without an ESD kit)

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 section explains how to install the Model 6885 and 6886 4-mm cartridge tape drives in a Data General AViiON® or ECLIPSE® MV/Family computer or mass-storage subsystem. The Data General computer must have a small computer system interface (SCSI-1 or SCSI-2).

These high-speed random-read, digital audio tape (DAT) drives are available in either a single-ended model (6885) or a differential model (6886). The single-ended model comes in a 3-1/2 inch full height or 5-1/4 inch half height version. The differential is available in a 5-1/4 inch version only. All versions use the same 3-1/2 inch chassis design. However, the 5-1/4 inch version has an elongated bezel and extension brackets (Figure 1). The following lists the model number and part number for each tape drive. Use this information if you need to identify your drive.

- 6885 (118-017369) is a 3-1/2 inch single-ended drive.
- 6885 (118-017370) is a 5-1/4 inch single-ended drive.
- 6886 (118-017372) is a 5-1/4 inch differential drive.

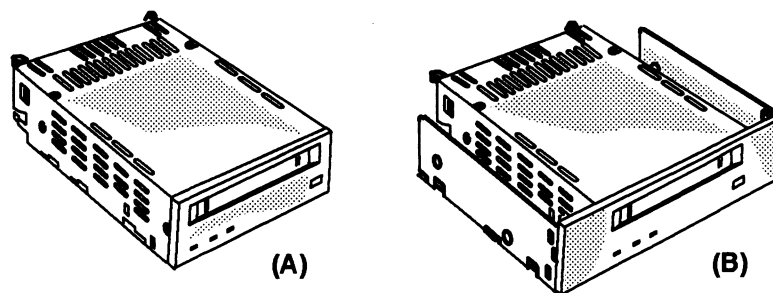


Figure 1 (A) 3-1/2" and (B) 5-1/4" 4-mm cartridge tape drives

The Model 6885 and 6886 4-mm tape cartridge drives read and write DDS (Digital Data Storage), DDS/DC, (Digital Data Storage with Data Compression) or DDS-2 format. The drives perform data compression automatically according to the bit pattern of the data stream. You can turn off data compression using operating system commands. Refer to your operating system manual. The cartridges are available with the following tape capacities and formats:

- 60-mm DDS and DDS/DC format
- 90-mm DDS and DDS/DC format
- 120-mm DDS-2 format only

Table 1 highlights the specifications for the Model 6885 and 6886 4-mm cartridge tape drives and 4-mm cartridge tapes. Refer to the information in this table as needed.

Table 1 Specifications for the Model 6885 and 6886 tape drives and 4-mm cartridge tape

4-mm Cartridge Tape Drive

Interface Type	SCSI-1 or SCSI-2	
	6885 = single ended	
	6886 = differential	
Maximum Current	6885	6886
+12 V dc	0.2 A (steady state) 0.55 A (peak)	0.2 A (steady state) 0.65 A (peak)
+ 5 V dc	0.8 A (steady state) 1.66 A (peak)	0.9 A (steady state) 1.65 A (peak)
Power Dissipation		
+ 12 V dc	3.0 W	
+ 5 V dc	5.5 W	
Weight	3-1/2 inch 660 g (1.5 lb)	5-1/4 inch 720 g (1.6 lb)

DDS/ DDS-2 Cartridge Tape

Data Format	DDS and DDS/DC (60-m and 90-m cartridges) DDS-2 (120-m cartridge)		
Data Capacity	Size	Uncompressed	Compressed ¹
	60 m	1.3 Gbytes	2.6 Gbytes
	90 m	2.0 Gbytes	4.0 Gbytes
	120 m	4.0 Gbytes	8.0 Gbytes

¹Note, these capacities assume compression of all tape data at a 2:1 ratio. In reality, with data compression on, data capacities and transfer ratios vary with the data patterns used. Therefore, compressed capacities shown will vary.

The environmental specifications for the drive 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 drive, 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 drive.
3. Make sure the drive's SCSI ID and optional feature jumpers are set correctly.
4. Mount the drive in the enclosure; connect the drive's cables; rebuild and reboot the operating system.

Follow each of the next sections in sequence to install a Model 6885 or 6886 4-mm tape drive.

Verifying system requirements

1. **Make sure your computer system has the following operating-system software revision:**

For AViiON systems, you will need the DG/UX™ operating system, revision 5.4R3.00 or the next update or release of DG/UX .

For ECLIPSE MV/Family systems, you will need the AOS/VS operating system, revision 7.70 or a later revision, or the AOS/VS II operating system, revision 3.00 or a later revision. (For accurate error reporting, use revision 7.71 or 3.01 respectively, or a later revision.)

2. **Make sure your computer system has at least one of the following SCSI host-bus adapters:**

For AViiON 300, 400, 4100, or 4300 systems, an integrated SCSI-1 host-bus adapter. For all other AViiONs, an integrated or external SCSI-2 host-bus adapter.

ECLIPSE MV/Family computers have either a SCSI-1 or SCSI-2 host-bus adapter.

3. **For diagnostic support, make sure your AViiON or ECLIPSE MV/Family computer has the following diagnostic-software revision:**

For AViiON systems, AViiON System Diagnostics (revision 12).

For MV/Family systems, MVADEX diagnostics (revision 19 or higher) and Series Proprietary Diagnostics & MVADEX (revision 11 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. 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 your drive.*

- 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.**

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 your drive.

Setting the drive's jumpers

Your drive is shipped to you with its SCSI ID set to 6. This is the factory-default SCSI ID setting. You must perform the steps in the next sections to verify that the drive's SCSI ID and option jumpers are set correctly for installation in your Data General computer system.

Setting SCSI ID jumpers

To set the SCSI ID number and option jumpers of the Model 6885 or 6886 4-mm tape 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 choose the SCSI ID number, install the jumpers for that number according to Table 2. Refer to Figure 2 for the location of the jumper-pin sets on the drive.**

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

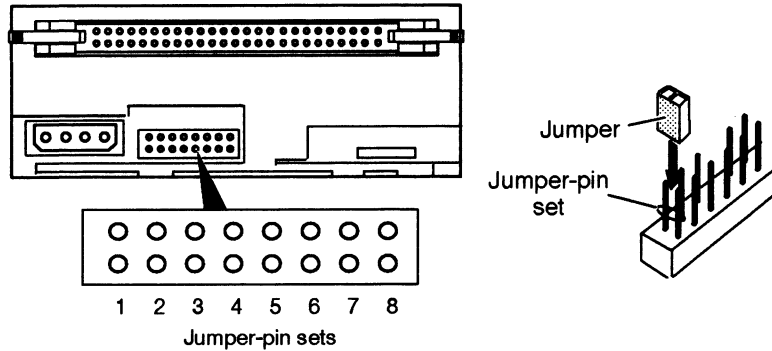


Figure 2 Location of the jumper-pin set

Table 2 SCSI ID jumper settings for the Model 6885 and 6886 drives

SCSI ID Number	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.

Setting the option jumpers

1. Make sure a jumper is installed across jumper-pin set 5 (Figure 3).

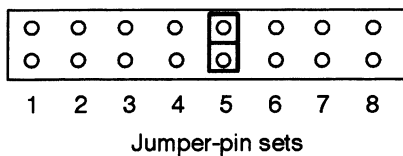


Figure 3 Front jumper-pin set 5 installed

2. Do not install jumpers on any of the remaining jumper-pin sets.

You do not use the remaining jumper-pin sets when you install the drive in an AViiON or ECLIPSE MV/Family computer or mass-storage subsystem.

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

Mounting and cabling the drive in the enclosure

Follow the steps in this section to mount the tape drive in the computer or mass-storage subsystem and to connect the SCSI bus cable and power cable to the tape 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. Refer to the manual for installing or setting up your computer or mass-storage subsystem.

You can mount the drive either horizontally or vertically (Figure 4). Refer to the installing or setting up manual for your computer or mass-storage subsystem. This manual shows you where to install a 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.

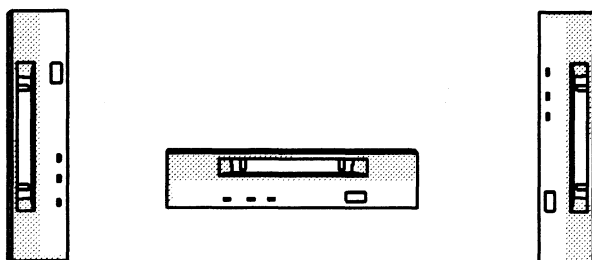


Figure 4 The three mounting positions for the 4-mm tape drive

CAUTION: *If you mount the drive horizontally, always position the drive with the eject button in the lower right corner; never position it upside down with the eject button in the upper left corner.*

2. Mount the drive in your computer or mass-storage subsystem.

Figures 5 and 6 show the mounting-screw holes on the side and the bottom of the 3-1/2 inch and 5-1/4 inch drives. Carefully follow all procedures for installing a drive, and make sure you have turned off the computer or mass-storage subsystem and unplugged its power cord before removing any covers.

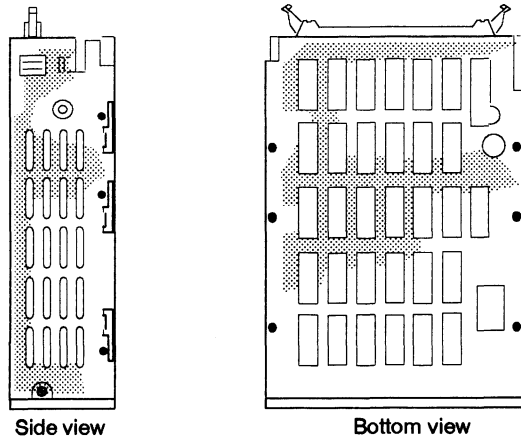


Figure 5 Mounting-screw holes for attaching the 3-1/2 Inch 4-mm tape drive inside the computer or mass-storage subsystem (typical for all models)

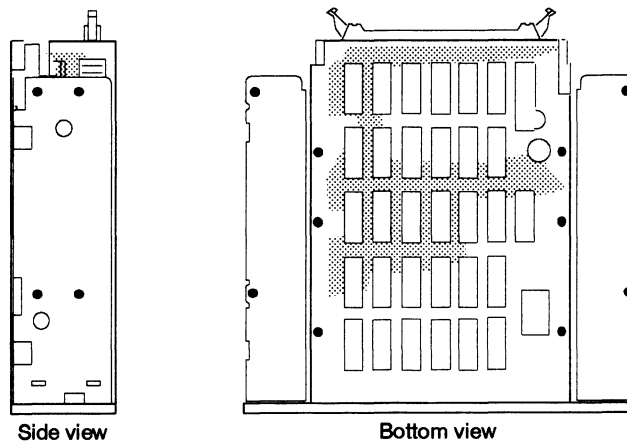


Figure 6 Mounting-screw holes for attaching the 5-1/4 inch 4-mm tape drive inside the computer or mass-storage subsystem (typical for all models)

Once you have installed the drive, follow the next steps to connect the power cable, and SCSI bus cable.

3. Open the cam levers of the SCSI bus connector (Figure 7).

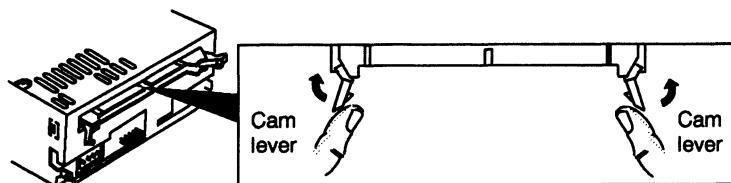


Figure 7 Open the cam levers fully before you attempt to plug in the SCSI bus cable

4. Plug the SCSI bus cable provided by the computer or mass-storage subsystem into the SCSI bus connector on the back of the tape drive (Figure 8).

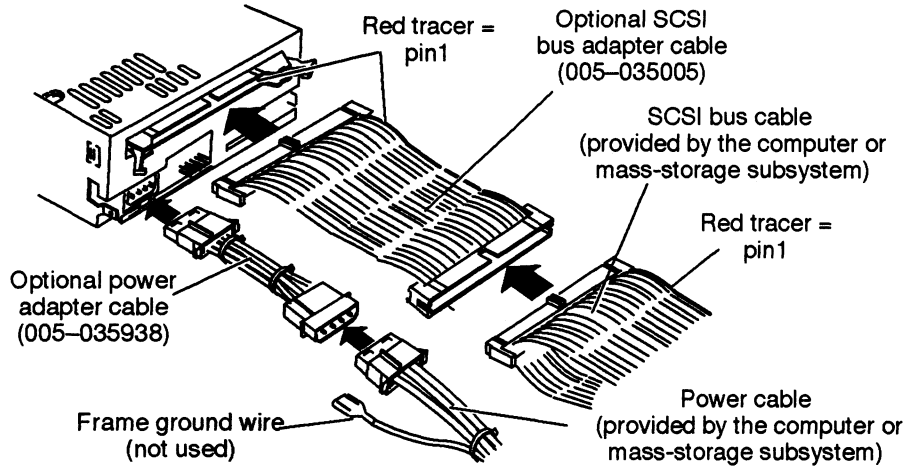


Figure 8 Connecting cables to the 4-mm tape drive

Make sure the color tracer wire on the SCSI bus cable connects to pin 1 of the drive's SCSI connector.

If the computer's or mass-storage subsystem's SCSI bus cable does not reach the back of the drive, make an extender cable by unfolding an optional adapter cable 005-035005 (Figure 9). Then connect the unfolded adapter cable between the SCSI bus cable and the tape drive (Figure 8).

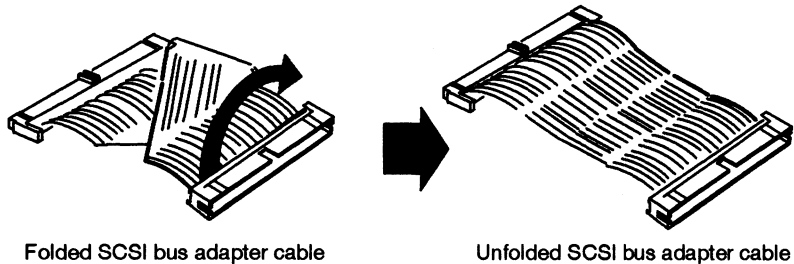


Figure 9 Connecting cables to the 4-mm tape drive

5. Once you have connected the SCSI bus cable, lock the cam levers of the SCSI bus connector (Figure 10).
6. Connect the optional power adapter cable to the power connector on the drive (Figure 8).

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 plug the power cable in.

7. Connect the power cable to the other end of the optional power adapter cable (Figure 8).

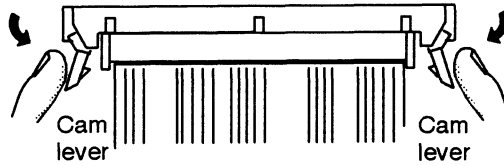


Figure 10 Locking the SCSI bus connector's cam levers

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

To terminate the SCSI bus for your system, you must install an external terminator plug in one of the SCSI bus connectors on the back of the computer or mass-storage subsystem. Note that the terminator plug for single-ended drives and the one for differential drives are not interchangeable. For more information, refer to the installing or setting up manual for your computer or mass-storage subsystem.

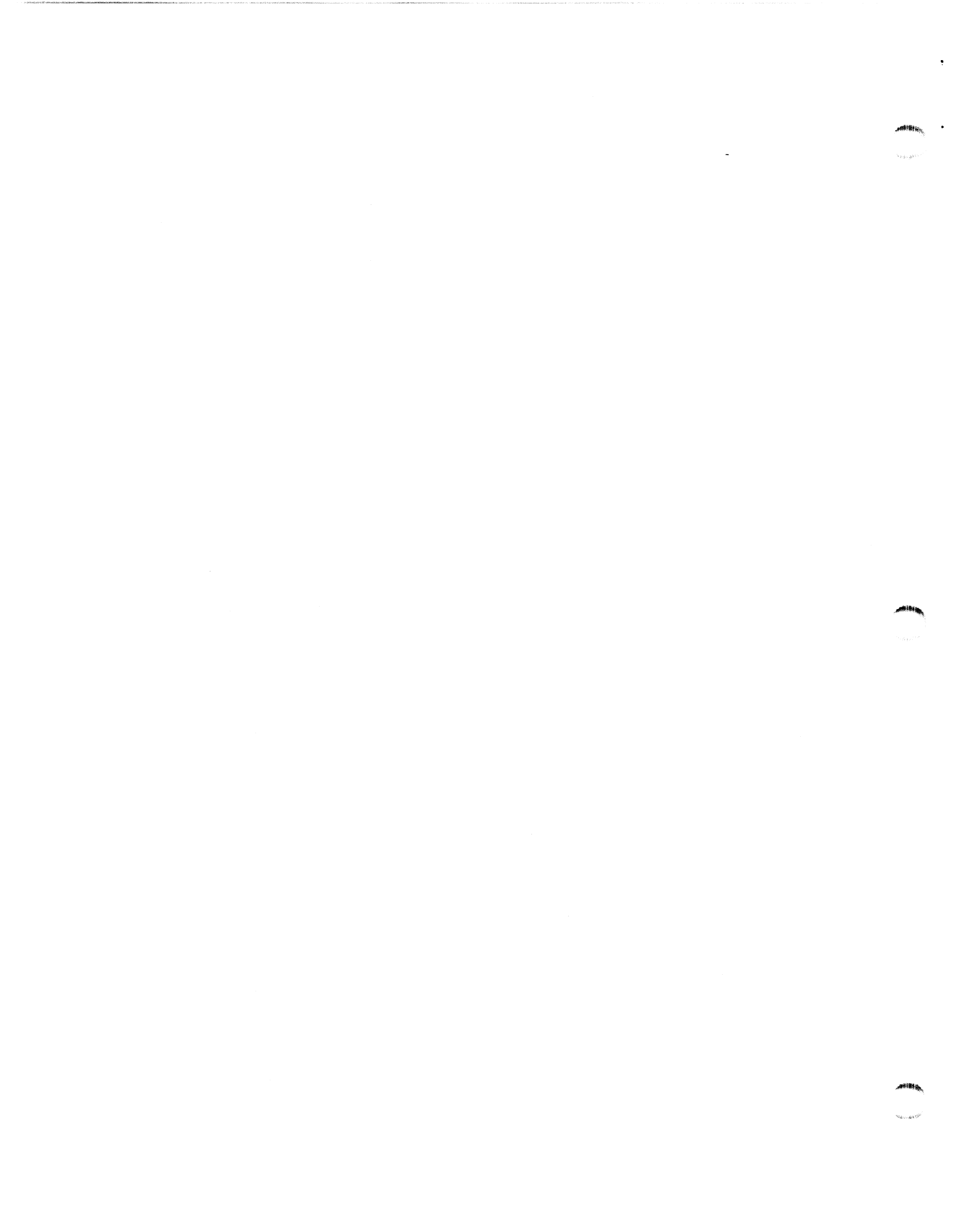
9. Close the computer or mass-storage subsystem chassis.

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

10. Refer to your operating-system manual.

You need to rebuild and reboot your operating system software before you can begin using your newly installed drive. Your operating system manual explains what to do after you installed a new mass-storage drive in your system.

11. Once you have connected the cables to the drive, refer to the installation or maintaining manual to close the computer or mass-storage subsystem chassis.



Operating the drive

This section explains how to insert or remove a cartridge tape from the tape drive. It also provides suggestions for storing and handling cartridge tapes and for resolving simple problems that you may encounter when operating the tape drive.

Storing, handling, and using cartridge tapes

Your tape drive reads from and writes to a standard 4-mm cartridge tape that is formatted for DDS, DDS/DC, or DDS-2. The DDS or DDS/DC cartridge is available from Data General in two tape capacities: 60 or 90 meters. The DDS-2 cartridge is available in 120 meters. When you purchase individual cartridge tapes, each one comes in a protective plastic case. Keep the cartridge tape in the case when you are not using it.

IMPORTANT: Data General's earlier Model 6762 4-mm cartridge tape drive can read from or write to only the 60- or 90-meter DDS and DDS/DC cartridge tapes. It cannot read from or write to the 120-meter DDS-2 cartridge tape. If you are planning to interchange cartridge tapes with the Model 6762 drive, make sure you are using either a 60- or 90-meter cartridge tape that uses the DDS or DDS/DC data format. Do not attempt to use a 120-mm DDS-2 cartridge tape in the Model 6762 4-mm cartridge tape drive.

Storing and handling cartridge tapes

How you store and handle your cartridge tapes can greatly affect the reliability and performance of your tape drive. Please take a moment to read this section carefully before you begin using your tape drive. Review this section from time to time to make sure that you or those responsible are following these recommendations.

- When storing cartridge tapes, make sure the storage area is clean, dry, and away from direct sunlight, extreme humidity and temperatures. Maintain the environment of your tape storage area as follows:

Temperature	
For unrecorded tapes	5°C – 48°C (41°F – 118°F)
For recorded tapes	5°C – 32°C (41°F – 89.6°F)
Temperature change	Less than 15°C (1.85°F)/ minute
Humidity	20% – 80% (noncondensing)

- Do not place or store cartridge tapes near magnets or equipment that generates magnetic fields, such as paper copiers, air conditioners, telephones, power supplies, printers, or display monitors.
- Before using a cartridge tape that was moved from a warmer or colder location, for example a passenger car, allow the cartridge to acclimate for approximately the same amount of time that it was exposed to the warmer or colder location. It is not necessary to acclimate the cartridge for more than 24 hours.
- When handling cartridge tapes, never expose or touch the magnetic tape. Dirt or oil from your fingers can make data on the tape unreadable by the drive. Never drop, toss, or handle a cartridge carelessly.
- Do not let the drive read from or write to a cartridge tape when the ambient temperature is changing at a rate of 10°C (18°F) or more per hour. Operate a cartridge tape in the drive only when the following ambient temperature and relative humidity ranges prevail:

Temperature	5°C – 45°C (41°F – 113°F)
Relative Humidity	20%—80% (noncondensing)
- Do not allow particulates from smokers, office equipment, or industrial processes to contaminate the area where you store your tapes or where you operate your tape drive. Particulates include smoke, dust, powders, aerosol sprays, and airborne industrial by-products. Particulates are extremely harmful to your cartridge tapes and tape drive.
- When the cartridge tape is not in the tape drive, store the tape in its plastic case.
- Be sure to clean the drive's tape path regularly. Follow the cleaning schedule and recommendations in the tape-drive manual carefully. Use only the recommended cleaning equipment.

Evaluating tapes

In time you can be sure that your cartridge tapes will wear out. Plan to inspect and evaluate them regularly. You should back up damaged, worn, or dirty cartridge tapes on new or known good cartridge tapes before a tape becomes a problem. Discard a problem cartridge tape. Do not leave it lying around so that someone could inadvertently use it.

The following describes two of the things that can go wrong with cartridge tapes during normal use. When you inspect your tapes look for these things.

Shoe shining — When a cartridge tape is not kept streaming, the same area of tape may pass back and forth over the head repeatedly. This shoe-shining effect eventually wears the tape prematurely in one area, increasing soft errors and degrading overall system performance. (Writing small files to a cartridge tape can often cause shoe shining as well.)

Tape sticking and blocking — Higher than permissible tape operating or storage temperatures and humidity can soften the magnetic tape's binder, causing layers of tape within the cartridge to stick together. Also very low humidity can cause static build-up on the tape, which can cause the tape layers to stick together.

Write-protecting a cartridge tape

Your cartridge tape has a write-protect tab. When you slide the tab to the position away from the edge of the cartridge, as shown in Figure 11A, the system can read data from the cartridge tape, but cannot write data to or alter data on the cartridge tape. When you slide the tab toward the edge of the cartridge, as shown in Figure 11B, the system can read, write, and alter cartridge tape data.

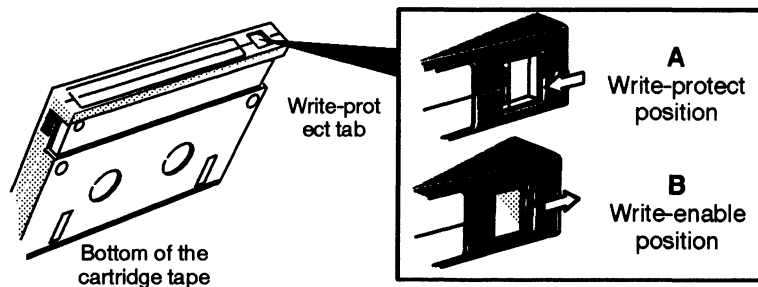


Figure 11 Write-protecting a cartridge tape

Initializing (formatting) a cartridge tape

When you load an unrecorded cartridge tape, your drive automatically initializes it during the first write operation. Initializing takes approximately 15 seconds. Cartridge tapes require no other formatting or initializing.

Loading a cartridge tape

This section explains how to insert a cartridge tape into the tape drive.

1. **Turn on the power to the computer or mass-storage subsystem, as described in your computer or mass-storage subsystem installation or expanding manual.**

2. Set the write-protect tab on the cartridge to the position you want.

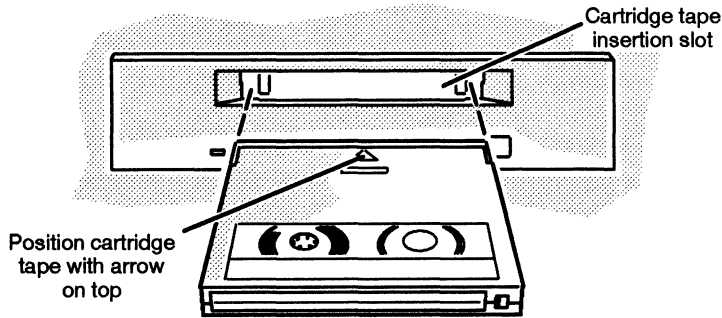


Figure 12 Inserting a cartridge tape in the 4-mm tape drive

3. Gently push the cartridge tape into the drive's cartridge-tape insertion slot with the arrow on the cartridge positioned up (Figure 12).

As you do, the drive pulls in the cartridge and automatically positions it. The LEDs (Figure 13) light indicating that the drive is verifying the format of the cartridge tape and is positioning the tape to the "Logical Beginning of Tape" position. This process takes less than 16 seconds.

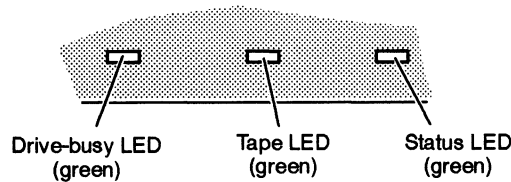


Figure 13 Names and locations of the drive's LEDs

IMPORTANT: If the tape is blank, the drive automatically initializes (formats) the tape during the first write operation. This procedure takes about 15 additional seconds. When the drive finishes initializing the tape, the drive-busy LED goes off and the tape LED goes on indicating that the drive is ready for use. If you eject the tape before it is initialized, the drive aborts this procedure, making it necessary to initialize the tape again from the beginning the next time the drive writes to this tape.

The drive-busy LED lights when the drive reads from or writes to the tape cartridge. Never attempt to eject the cartridge tape when the drive-busy LED is lit.

Once you have loaded the cartridge tape into the drive, refer to your operating system manual for the commands that allow you to read from or write to the tape cartridge.

Enabling or disabling data compression

Your 4-mm cartridge tape drive can increase cartridge-tape data capacity from 2 to 4 times by automatically compressing the data stream before writing it to the tape. (Because the data-bit pattern determines data-compression efficiency, you cannot predict the actual increase in data capacity.) You can enable or disable data compression using operating system commands. For more information refer to your operating system manual.

Removing a cartridge tape

This section explains how to remove a cartridge tape from the tape drive.

1. While the drive's power is on, press the tape drive's cartridge-eject button located on the right side of the drive's front panel, as shown in Figure 14.

The drive automatically rewinds the tape to the beginning. Then the cartridge ejects part way out of the tape drive. (It may take several seconds for the tape to rewind. Do not power down the computer until the cartridge ejects.)

2. Grasp the cartridge tape at the center, and pull it out of the drive.
3. Store the cartridge tape in its protective plastic case when you are not using it.

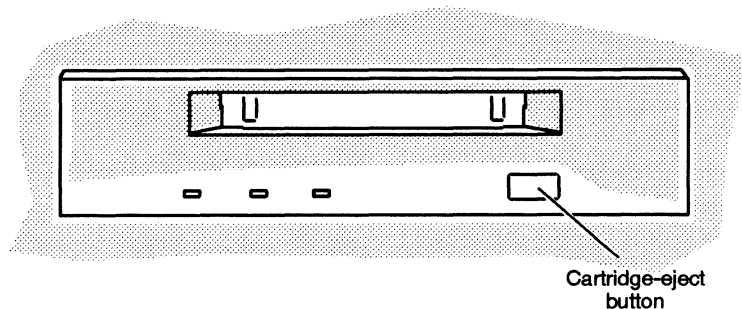


Figure 14 Cartridge tape eject button

Removing a cartridge tape during a power outage or when the drive has failed

If you need to remove the cartridge tape from the tape drive when a power outage has occurred, move the enclosure that contains the tape drive to a working electrical power source and eject the cartridge normally. If you cannot move the enclosure to a working power source, wait until the power outage is over and eject the cartridge normally.

If you need to remove the cartridge tape from the tape drive and the drive's power is on but the drive is not operating properly, contact Data General as described in the Preface of this document for further information.

Cleaning the drive

Your tape drive has a built-in cleaner that on a day-to-day basis helps prolong the life of the heads. The built-in cleaner will last for the life of the drive. However, for a thorough cleaning you *must* clean the drive's tape path and heads routinely with a Data General Model 19036 tape cleaning cartridge.

Use the cleaning cartridge to clean the tape path and heads after about 25 hours of drive operation or at least once a month or when the Status LED produces a flashing-2 sequence indicating that the drive needs cleaning. (Refer to the section, "Interpreting the LED indicators" for a description of the LEDs' visual indications.) Also, clean the tape path and head if you get soft-error reports. Your operating system monitors the drive for soft errors and displays errors on the console or records them in the error log.

CAUTION: *Do not use any cleaning cartridge or cleaning method other than the one described in this section. Other tape cleaning cartridges will not work properly in this drive. The use of a cloth or cotton swab, cleaning agents or fluids, or other methods may damage the drive and void its warranty.*

Follow the next steps to clean the drive's tape path and rotary heads.

1. Make sure the cleaning cartridge is not used up.

See that the supply reel in the cleaning cartridge contains cleaning tape.

2. Power up the cartridge tape drive.

3. When the powerup cycle completes, insert the special cleaning cartridge into the drive.

When you do, the tape drive senses the presence of the special cleaning cartridge and begins the process of cleaning the tape path and rotary heads. When the process finishes, the tape drive automatically ejects the cleaning cartridge. The cleaning process takes less than 17 seconds.

4. After the drive ejects the cleaning cartridge, remove it and record the present date and the number of uses on the cartridge's label or on the special card enclosed with the cleaning cartridge.

By referring to the recorded date and the number of cleaning uses, you will know when the next monthly cleaning is required and about when you should replace the cleaning cartridge.

5. Store the cleaning cartridge in its protective case in a convenient place for future use.

A Data General cleaning cartridge provides about 30 uses. When the cartridge is used up, discard it and replace it with a new one. Always have a new cleaning cartridge on hand.

Solving operating problems

This section provides suggestions for solving simple operating problems that you may encounter. Follow each step in order until the problem is solved. If you are unable to solve a problem using the suggestions listed here, contact Data General as described in the "Telephone assistance" section in the Preface .

Cannot insert or load the cartridge tape

1. Make sure the computer or mass-storage subsystem's power is on.
2. Make sure a cartridge is not already installed in the drive.
3. Make sure you positioned the cartridge with the arrow up and pointing toward the drive. Refer to Figure 12.
4. If you just installed the drive in your computer or mass-storage subsystem, make sure the cables are connected tightly.
5. You may have a tape drive failure. Contact Data General.

Cannot eject the cartridge tape

1. Make sure the computer or mass-storage subsystem's power is on. Then eject the cartridge by following the steps in the section, "Removing the cartridge tape."
2. For DG/UX users, the operating system may not have released the cartridge tape drive. Try rebooting the operating system software or resetting the hardware. If this does not work , turn the system off and on again (power-up reset).
3. You may have a tape drive failure. Contact Data General.

Interpreting the LED indicators

During drive operation, the three LEDs (drive-busy, tape and status) on the front of the tape drive report the activity or condition of the drive or cartridge tape. Each LED can produce up to six visual codes: Off, On, flashing-1, flashing-2, and flash code 1 or 2. The following lists the "general" meaning of each visual code.

LED Visual Code	General Meaning
Off	Not active
On	Activity
Flashing-1	Drive activity
Flashing-2	Warning
Flash code 1 or 2	Failure

To produce flashing-1, -2, or flash codes 1 or 2, the LEDs turn on and off for a specific period of time or they pulse. So that you can recognize each visual code, Figure 15 shows the on/off time periods or pulse sequence for each visual code.

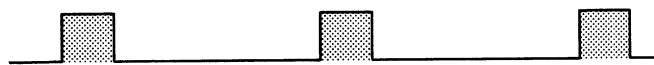
Flashing-1 = 1/4 second ON and 1/4 second OFF



Flashing-2 = 3-1/2 seconds ON and 1/2 second OFF



Flash code 1 (one pulse)



Flash code 2 (two pulses)

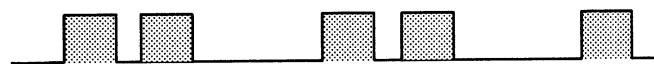
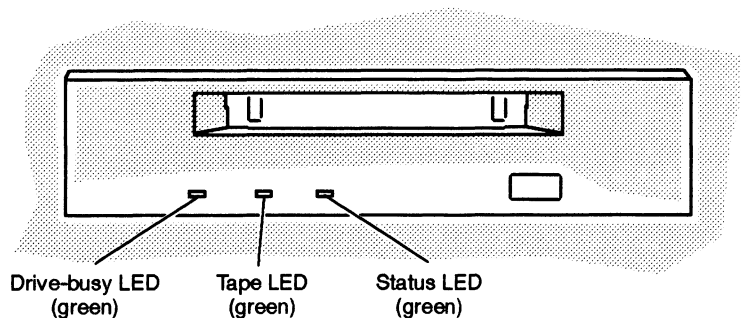


Figure 15 Flashing and flash codes produced by the drive's three LEDs

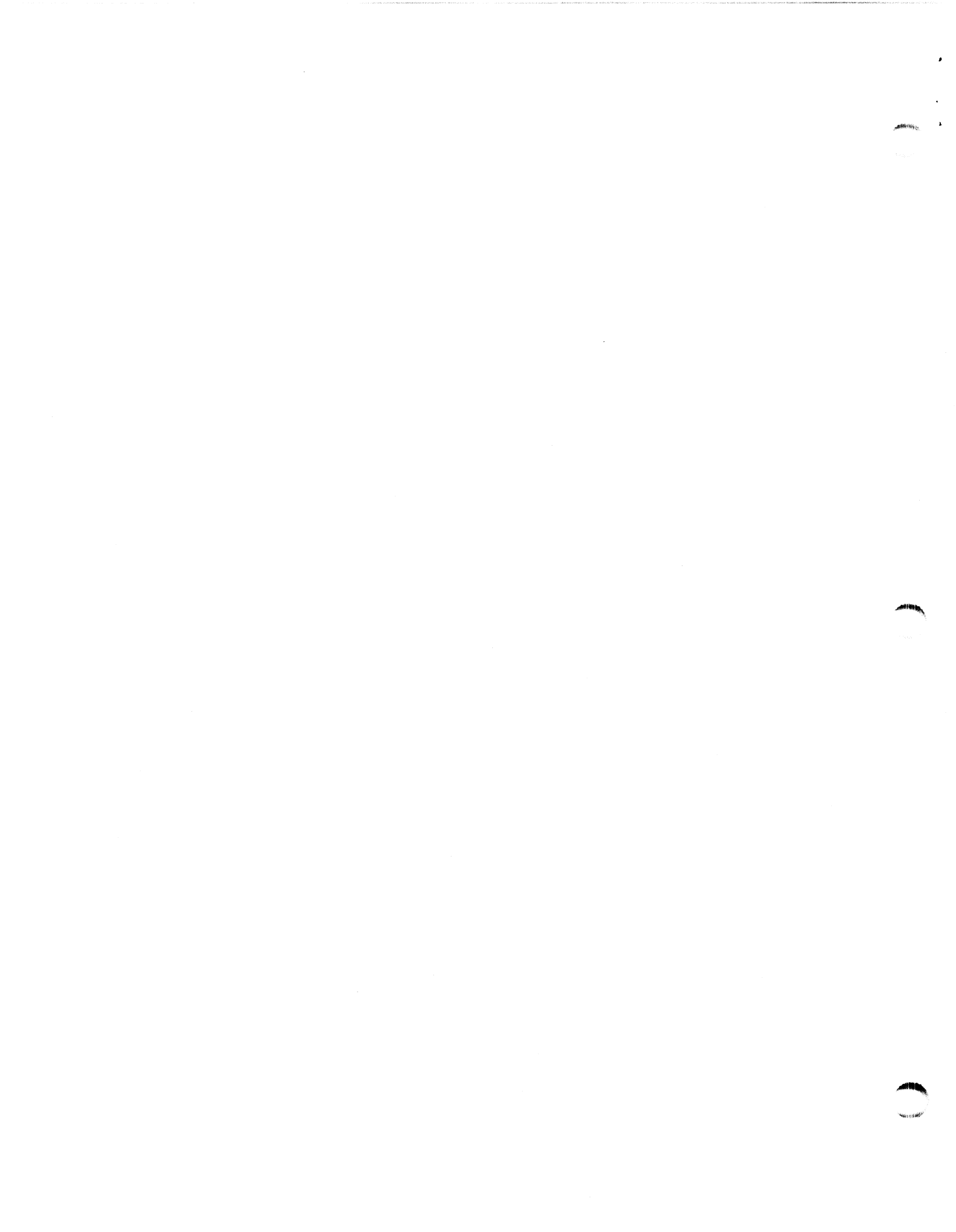
Table 3 lists the activities or conditions reported by the three LEDs during drive operation. To use the table, match the visual state (on, off, or flashing) of all three LEDs of your drive to one of the 16 combinations listed in Table 3. Follow this LED combination across to determine the activity or condition of the SCSI bus or drive, cartridge, or other. Use this information to help resolve drive problems or to determine the drive's activity or condition.

Table 3 Indications of the drive-busy, tape, and status LEDs

Visual State			Activity or Condition		
Drive-busy LED	Tape LED	Status LED	Bus/drive	Cartridge	Other
1. Off	Off	Off	None	None	None
2. On	Off	Off	SCSI	None	None
3. Flashing-1	Flashing-1	Off	Drive	Loading/unloading	None
4. Flashing-1	Flashing-1	On	Drive	Loading/unloading	Write protected
5. Off	On	Flashing-1	None	Loaded	Cleaning tape at EOM
6. Off	On	Off	None	Loaded	None
7. On	On	Off	SCSI	Loaded	None
8. Flashing-1	On	Off	SCSI/drive	Loaded	None
9. —	On	On	—	Loaded	Write protected
10. —	Flashing-2	On	—	Loaded	Error rate warning
11. Flashing-2	—	On	—	—	Humidity warning
12. —	—	Flashing-2	—	—	Cleaning request
13. —	—	Flash code 1	—	—	Drive mechanism failure
14. —	—	Flash code 2	—	—	Drive circuitry failure
15. Flash code 1	—	Flash code 2	—	—	Waiting for reset
16. —	Flash code 1	Flash code 2	—	—	Waiting for eject

— This symbol means the visual code displayed by this LED or the activity of this device is not important (don't care)

End of Document



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