COVER Book Cover

7208 20GB External 8mm Tape Drive

Service Guide

Model 342

Document Number SA37-0381-00

Part Number 59H3813

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7208 20GB External 8mm Tape Drive

Service Guide

Model 342

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NOTICES Notices

```
+--- Note! ----------------------------------------------------------+
¦ Before using this information and the product it supports, be sure ¦
¦ to read the general information under "Notices" in topic FRONT_1.  ¦
¦                                                                    ¦
+--------------------------------------------------------------------+
```

EDITION Edition Notice
First Edition (February 1998)

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```
Subtopics
FRONT_1.1 Safety Notices
FRONT_1.2 End of Life (EOL) Plan
FRONT_1.3 Safety Inspection Procedures
FRONT_1.4 Electronic Emission Notices
FRONT_1.5 Trademarks
```

FRONT_1.1 Safety Notices

When using this product, observe the danger, caution, and attention notices contained in this guide. Each danger and caution notice contains a reference number (72XXDxxx or 72XXCxxx). Use the reference number to check the translation in *External Devices Safety Information*, SA26-7003.

Examples of danger, caution, and attention notices follow.

```
Subtopics
FRONT_1.1.1 Danger Notice
FRONT_1.1.2 Caution Notice
FRONT_1.1.3 Attention Notice
```

FRONT_1.1.1 Danger Notice

A danger notice calls attention to a situation that is potentially lethal or extremely hazardous to people.

The following is a sample danger notice:

```
+----------------------------------------------------------------------+
¦               ¦ DANGER                                               ¦
¦               ¦ +--------------------------------------------------+ ¦
¦               ¦ ¦ An electrical outlet that is not correctly wired  ¦ ¦
¦  PICTURE 1    ¦ ¦ could place hazardous voltage on metal parts of the ¦ ¦
¦               ¦ ¦ system or the products that attach to the system. It ¦ ¦
¦               ¦ ¦ is the customer's responsibility to ensure that the ¦ ¦
¦               ¦ ¦ outlet is correctly wired and grounded to prevent an ¦ ¦
¦               ¦ ¦ electrical shock. (72XXD201)                      ¦ ¦
¦               ¦ +--------------------------------------------------+ ¦
¦               ¦                                                      ¦
+----------------------------------------------------------------------+
```

A danger notice calls attention to a situation that is potentially lethal or extremely hazardous to people.

The following is a sample danger notice:

```
+----------------------------------------------------------------------+
¦               ¦ DANGER                                               ¦
¦               ¦ +--------------------------------------------------+ ¦
¦               ¦ ¦ An electrical outlet that is not correctly wired  ¦ ¦
¦  PICTURE 1    ¦ ¦ could place hazardous voltage on metal parts of the ¦ ¦
¦               ¦ ¦ system or the products that attach to the system. It ¦ ¦
¦               ¦ ¦ is the customer's responsibility to ensure that the ¦ ¦
¦               ¦ ¦ outlet is correctly wired and grounded to prevent an ¦ ¦
¦               ¦ ¦ electrical shock. (72XXD201)                      ¦ ¦
```

FRONT_1.1.2 Caution Notice

A caution notice calls attention to a situation that is potentially hazardous to people because of some existing condition.

The following is a sample caution notice:

```
+---------------------------------------------------------------------+
¦                 ¦ CAUTION:                                          ¦
¦                 ¦ Do not attempt to use the handle on the module to lift   ¦
¦  PICTURE 2      ¦ the entire device (module and enclosure) as a unit.      ¦
¦                 ¦ First remove the module; then, use two hands to lift the ¦
¦                 ¦ enclosure. (72XXC356)                              ¦
¦                 ¦                                                   ¦
+---------------------------------------------------------------------+
```

FRONT_1.1.3 Attention Notice

An attention notice indicates the possibility of damage to a program, device, system, or data.

The following is a sample attention notice:

Attention: Do not operate the 7208 Tape Drive in a poor air-quality environment. If your environment contains an excessive amount of particulates, contact your service representative for more information.

FRONT_1.2 End of Life (EOL) Plan

This box is a purchased unit. Therefore, it is the sole responsibility of the purchaser to dispose of it in accordance with local laws and regulations at the time of disposal.

This unit contains recyclable materials. The materials should be recycled where facilities are available and according to local regulations. In some areas IBM may provide a product take-back program that ensures proper handling of the product. Contact your IBM representative for more information.

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FRONT_1.3 Safety Inspection Procedures

```
                    DANGER
                    +-------------------------------------------------------+
PICTURE 3           ¦ To prevent a possible electrical shock from touching  ¦
                    ¦ two surfaces with different electrical grounds, use    ¦
                    ¦ one hand, when possible, to connect or disconnect      ¦
                    ¦ signal cables. (72XXD004)                              ¦
                    +-------------------------------------------------------+

                    DANGER
                    +-------------------------------------------------------+
                    ¦ To prevent a possible electrical shock when adding or  ¦
                    ¦ removing any devices to or from the system, ensure     ¦
                    ¦ that the power cords for those devices are unplugged   ¦
                    ¦ before the signal cables are connected or              ¦
                    ¦ disconnected. If possible, disconnect all power cords  ¦
                    ¦ from the existing system before you add or remove a    ¦
                    ¦ device. (72XXD203)                                     ¦
                    +-------------------------------------------------------+

                    DANGER
                    +-------------------------------------------------------+
                    ¦ An electrical outlet that is not correctly wired could ¦
                    ¦ place hazardous voltage on metal parts of the system   ¦
                    ¦ or the products that attach to the system. It is the   ¦
                    ¦ customer's responsibility to ensure that the outlet is ¦
                    ¦ correctly wired and grounded to prevent an electrical  ¦
                    ¦ shock. (72XXD201)                                      ¦
                    +-------------------------------------------------------+
```

Use the following procedures to identify unsafe conditions. Be cautious of potential safety hazards not covered by the procedures. If unsafe conditions are present, determine how serious the hazards are and whether you should continue before correcting the problem.

Figure 1 shows the components to review during the service inspection.
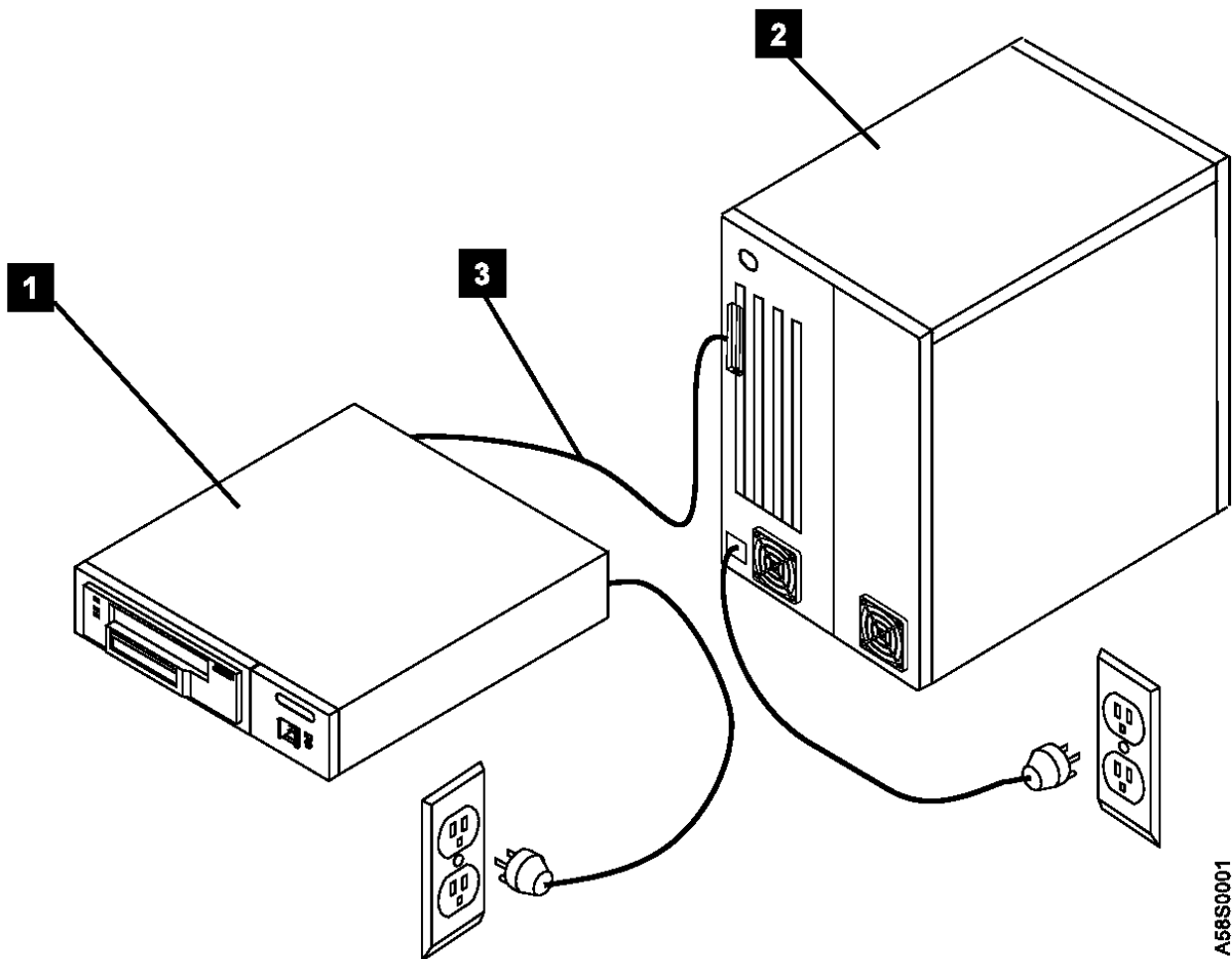
A58S0001

Figure 1. Safety Inspection

Perform the following safety checks.

1. Do a controlled system shutdown. Refer to the instructions in Topic 2, "Setting Up the 7208 Tape Drive," in the *7208 20GB External 8mm Tape Drive Model 342 Setup and Operator Guide*.

2. Turn off the power to all external devices connected to the system unit.

3. Turn off the power to the 7208 Tape Drive (1 in Figure 1).

4. Turn off the power to the system unit 2 .

5. Unplug the 7208 Tape Drive external power cable from the electrical outlet.

6. Unplug the system unit power cable from the electrical outlet.

7. Check the 7208 Tape Drive external power cable for damage.

8. Check the external SCSI bus (signal) cable 3 for damage.

9. Check the SCSI bus terminator for damage.

10. Check the covers for sharp edges, damage, or alterations that expose the internal parts of the 7208 Tape Drive.

11. Check the covers for proper fit. They should be in place and secure.

12. Check the voltage label on the bottom of the 7208 Tape Drive to make sure it matches the voltage at your outlet.

13. Check the voltage level at the outlet and also check for proper grounding (see Figure 2 in topic FRONT_1.3).

Drive

X   X   X
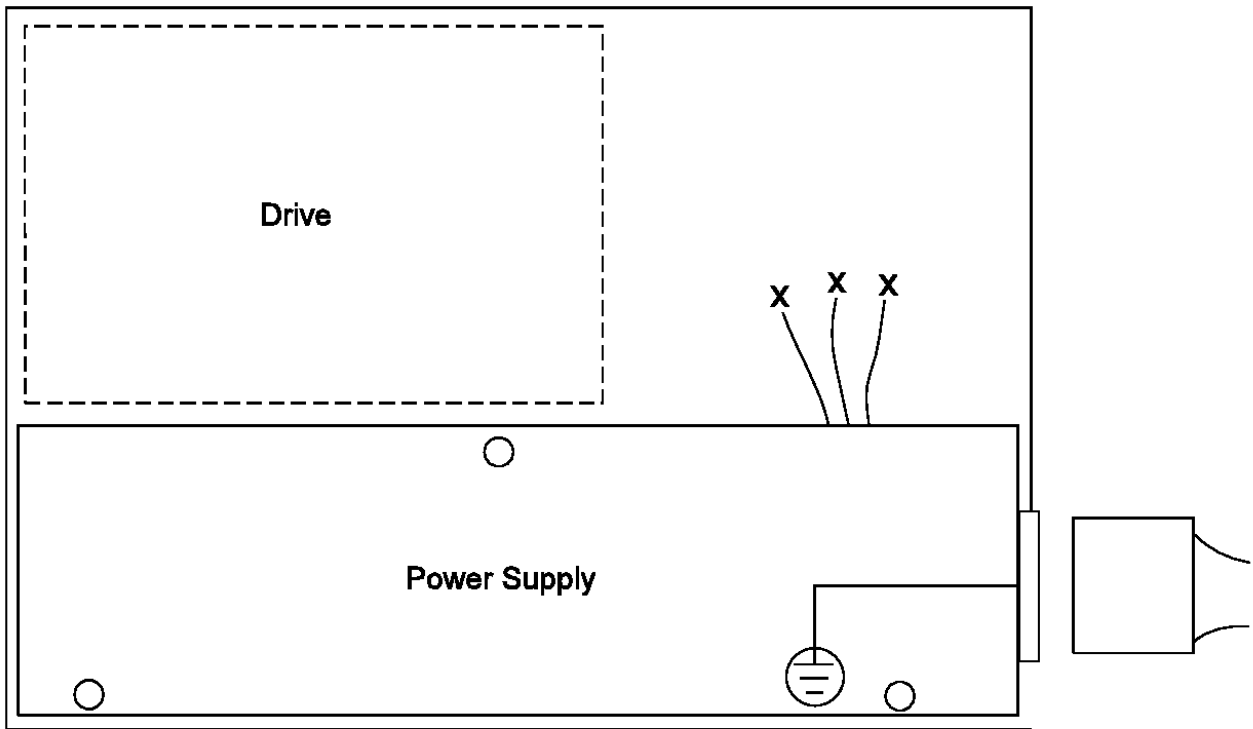
Power Supply

⏚ = **Main AC ground location part of power supply**

X = **Redundant ground achieved through DC common**

○ = **Additional grounding via hardware mounting
of power supply to chassis**

A38M0019

Figure 2. AC Grounding Diagram (50 Hz and 60 Hz)

14. With the external power cable (1 in Figure 3) connected to the 7208 Tape Drive, check to ensure 1.0 ohm or less resistance between the ground lug on the external power cable plug and the metal frame.
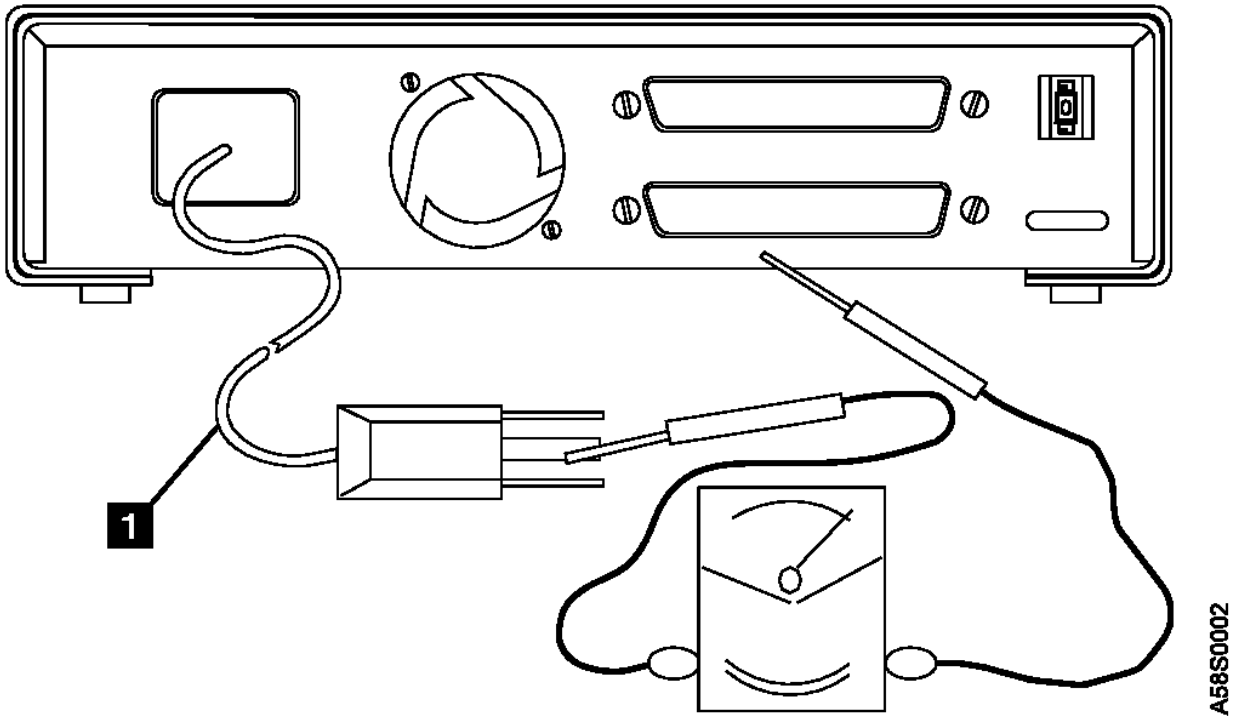
Figure 3. Safety Inspection – Rear View of the 7208 Tape Drive Model 342

Note: Use an analog meter to measure grounding resistance; do not use a digital multimeter.

15. If the 7208 Tape Drive passes the test in the previous step, plug its external power cable into the electrical outlet. If the 7208 Tape Drive does not pass the test, see Chapter 3, "Maintenance Analysis Procedures" in topic 3.0 for more information. If problems persist, contact your service representative.

Note: Safety Information Label, Part Number 85F7884, located on top of the power supply under the top cover, shows the following symbol:
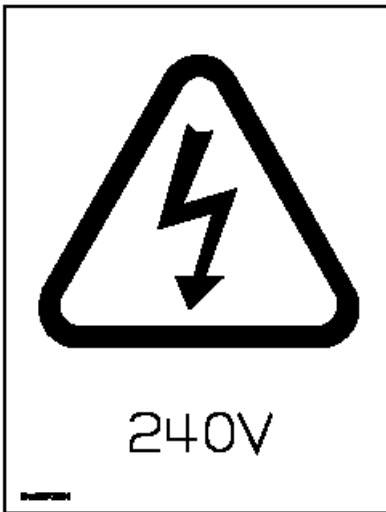
This symbol indicates a hazard arising from dangerous voltage inside. Do not open.

FRONT_1.4 Electronic Emission Notices

The following statement applies to this IBM product. The statement for other IBM products intended for use with this product will appear in their accompanying manuals.

Federal Communications Commission (FCC) Statement

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 an IBM authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications 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.

Industry Canada Compliance Statement

This Class B digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Community Compliance Statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

A declaration of Conformity with the requirements of the Directive has been signed by IBM SEMEA S.p.A., Via Tolmezzo, 15, Milano, Italy.

This product satisfies the Class B limits of EN55022.

Japanese Voluntary Control Council for Interference (VCCI) Statement

This product is a Class B Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). This product is aimed to be used in a domestic environment. When used near a radio or TV receiver, it may become the cause of radio interference. Read the instructions for correct handling.

Korean Government Ministry of Communication (MOC) Statement

Please note that this device has been approved for non-business purposes and may be used in any environment including residential areas.

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IBM
OS/400

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UL   Underwriter's Laboratories

FRONT_2 About This Guide
This guide describes how to service the 7208 Tape Drive Model 342. It contains the following topics:

Topic 1, "Reference Information," provides information about the operator controls, indicator lights, and liquid crystal display (LCD) on the 7208 Tape Drive. It also illustrates the connector locations, lists hardware specifications, and describes how to clean the tape drive.

Topic 2, "Using the Media," describes the media to use in the 7208 Tape Drive.

Topic 3, "Maintenance Analysis Procedures," describes the maintenance analysis procedures (MAPs) required to service the 7208 Tape Drive.

Topic 4, "Removal and Replacement Procedures," provides the removal and replacement procedures required to service the 7208 Tape Drive.

Topic 5, "Parts Diagram and Parts List," provides a parts diagram and parts list required to service the 7208 Tape Drive.

Appendix A, "Power Cables," provides power cable information for different countries.

Appendix B, "Fault Symptom Codes and Error Recovery Procedure Numbers," lists codes and numbers needed to resolve error messages.

Appendix C, "Error Recovery Procedures," lists the procedures to follow to resolve error messages.

Store this guide with your system manuals.

Subtopics
FRONT_2.1 Related Publications

FRONT_2.1 Related Publications

7208 20GB External 8mm Tape Drive Model 342 Setup and Operator Guide, SA37-0380, provides information about installing and operating the 7208 Tape Drive.

External Devices Safety Information, SA26-7003, provides translations of danger and caution notices.

1.0 Chapter 1. Reference Information

The 7208 20GB External 8mm Tape Drive Model 342 is an external storage device that connects to the IBM AS/400 and stores additional data.

The 7208 Tape Drive:

> Saves and restores system data files

> Archives important records

> Distributes upgrades to operating system software

The sections that follow describe the operator controls, indicator lights, and liquid crystal display (LCD) on the 7208 Tape Drive. This topic also shows connector locations, lists hardware specifications, and describes how to clean the tape drive.

```
Subtopics
1.1 Front View
1.2 Rear View
1.3 Rear View of the Drive
1.4 Internal View
1.5 Specifications
1.6 Cleaning the Tape Drive
```

1.1 Front View

Figure 4 shows the front view of the 7208 Tape Drive Model 342.
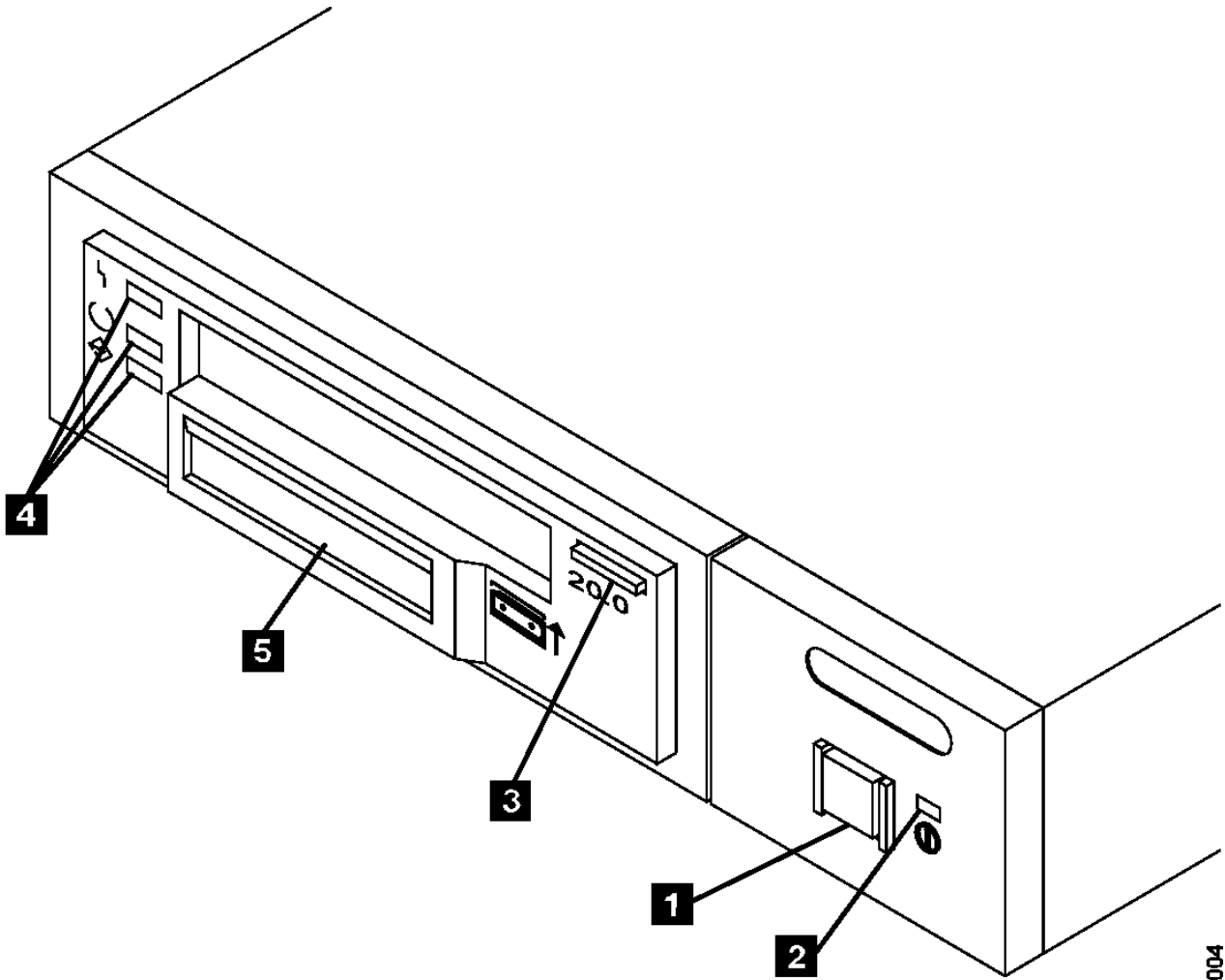
Figure 4. Front View of the 7208 Tape Drive Model 342

```
Subtopics
1.1.1 Operator Controls
1.1.2 Indicator Lights
1.1.3 Liquid Crystal Display
```

1.1.1 Operator Controls

The 7208 Tape Drive has the following operator controls.

```
Subtopics
1.1.1.1 Power Switch
1.1.1.2 Unload Button
```

1.1.1.1 Power Switch

The power switch (1 in Figure 4 in topic 1.1) is a push button switch that enables the power to be turned on or off. When the 7208 Tape Drive is on, the power-on light 2 is on.

Note: The PICTURE 9 symbol beside the power switch is an International Organization for Standardization (ISO) symbol for a push button switch.

1.1.1.2 Unload Button

The unload button 3 enables a tape cartridge to be ejected. The unload button operates only when the 7208 Tape Drive power is on. To remove a tape cartridge, press and hold the unload button for about one second.

1.1.2 Indicator Lights

The 7208 Tape Drive Model 342 has the following indicator lights.

Subtopics
1.1.2.1 Power-On Light
1.1.2.2 Status Lights

1.1.2.1 Power-On Light

When the 7208 Tape Drive is turned on, the power-on light 2 comes on and stays on.

1.1.2.2 Status Lights

Three status lights 4 and their ISO symbols appear on the 7208 Tape Drive as follows:

၂   Fault (amber)

◯   Ready (green)

◈   Activity (green)

The combinations of the lights and their definitions are shown in Figure 5.

```
+-----------------------------------------------------------------------+
¦ Figure 5. Status Lights on the 7208 Tape Drive                        ¦
+-----------------------------------------------------------------------¦
¦ Status Lights    ¦ Status           ¦ Status of 7208 Tape Drive       ¦
+------------------+------------------+---------------------------------¦
¦ PICTURE 11       ¦                  ¦ The Power-On Self Test (POST) is ¦
¦   Fault          ¦ On               ¦ running.                        ¦
+------------------+------------------¦                                 ¦
¦ PICTURE 12       ¦ On               ¦                                 ¦
¦ Ready            ¦                  ¦                                 ¦
+------------------+------------------¦                                 ¦
¦ PICTURE 13       ¦                  ¦                                 ¦
¦ Activity         ¦ On               ¦                                 ¦
+-----------------------------------------------------------------------¦
+-----------------------------------------------------------------------¦
¦ PICTURE 14       ¦                  ¦ One of the following conditions  ¦
¦   Fault          ¦ Off or On        ¦ exists:                         ¦
+------------------+------------------¦                                 ¦
¦ PICTURE 15       ¦ Off              ¦     The power is off (Fault light ¦
¦ Ready            ¦                  ¦     is off).                    ¦
+------------------+------------------¦                                 ¦
¦ PICTURE 16       ¦ Off              ¦     The POST has completed       ¦
¦ Activity         ¦                  ¦     successfully, but no tape    ¦
¦                  ¦                  ¦     cartridge has been inserted. ¦
¦                  ¦                  ¦     If the Fault light is on,    ¦
¦                  ¦                  ¦     cleaning is required. See    ¦
¦                  ¦                  ¦     "Cleaning the Tape Drive" in ¦
¦                  ¦                  ¦     topic 1.6.                   ¦
+-----------------------------------------------------------------------¦
+-----------------------------------------------------------------------¦
¦ PICTURE 17       ¦                  ¦ A tape cartridge has been        ¦
¦   Fault          ¦ Off or On        ¦ inserted:                       ¦
+------------------+------------------¦                                 ¦
¦ PICTURE 18       ¦ Off              ¦     The 7208 Tape Drive is ready ¦
¦ Ready            ¦                  ¦     to receive commands from the ¦
------------------+------------------¦     system (whether the Fault    ¦
¦ PICTURE 19       ¦ Flashing or Off  ¦     light is on or off).        ¦
¦ Activity         ¦                  ¦                                 ¦
¦                  ¦                  ¦     If the Fault light is on,    ¦
¦                  ¦                  ¦     cleaning is required. See    ¦
¦                  ¦                  ¦     "Cleaning the Tape Drive" in ¦
¦                  ¦                  ¦     topic 1.6.                   ¦
¦                  ¦                  ¦                                 ¦
¦                  ¦                  ¦     If the Activity light        ¦
¦                  ¦                  ¦     flashes, a tape cartridge is ¦
¦                  ¦                  ¦     in the drive and tape        ¦
¦                  ¦                  ¦     movement is occurring. If the ¦
¦                  ¦                  ¦     light is off, no tape        ¦
¦                  ¦                  ¦     movement is occurring.      ¦
+-----------------------------------------------------------------------¦
+-----------------------------------------------------------------------¦
¦ PICTURE 20       ¦                  ¦ The 7208 Tape Drive has detected ¦
¦   Fault          ¦ Flashing         ¦ an internal fault that requires  ¦
+------------------+------------------¦ corrective action:              ¦
¦ PICTURE 21       ¦ Off or On        ¦                                 ¦
¦ Ready            ¦                  ¦     Reset the error by turning   ¦
------------------+------------------¦     the power off to the 7208    ¦
¦ PICTURE 22       ¦ Off, On, or      ¦     Tape Drive, then turning it  ¦
¦ Activity         ¦ Flashing         ¦     back on, or by holding down  ¦
¦                  ¦                  ¦     the unload button for about  ¦
¦                  ¦                  ¦     15 seconds.                 ¦
¦                  ¦                  ¦                                 ¦
¦                  ¦                  ¦     If the Fault light still     ¦
```

```
¦               ¦               ¦ flashes after the reset,      ¦
¦               ¦               ¦ contact your service          ¦
¦               ¦               ¦ representative.               ¦
+---------------------------------------------------------------------¦
+---------------------------------------------------------------------¦
¦  PICTURE 23   ¦               ¦ The tape drive requires cleaning. ¦
¦   Fault       ¦ On            ¦ See "Cleaning the Tape Drive" in  ¦
+---------------+---------------¦ topic 1.6.                    ¦
¦  PICTURE 24   ¦ Off or On     ¦                               ¦
¦  Ready        ¦               ¦                               ¦
----------------+---------------¦ If the Ready light is on, a   ¦
¦  PICTURE 25   ¦ Flashing or Off ¦ tape cartridge is in the    ¦
¦  Activity     ¦               ¦ drive. If the light is off, a ¦
¦               ¦               ¦ cartridge is not in the       ¦
¦               ¦               ¦ drive.                        ¦
¦               ¦               ¦                               ¦
¦               ¦               ¦ If the Activity light         ¦
¦               ¦               ¦ flashes, a tape cartridge is  ¦
¦               ¦               ¦ in the drive and tape         ¦
¦               ¦               ¦ movement is occurring. If the ¦
¦               ¦               ¦ light is off, no tape         ¦
¦               ¦               ¦ movement is occurring.        ¦
+---------------------------------------------------------------------+
```

1.1.3 Liquid Crystal Display

The 7208 Tape Drive features a liquid crystal display (LCD) (5 in Figure 4 in topic 1.1). The LCD provides operating and error messages.

Figure 6 shows a list of messages that display on the LCD.

```
+------------------------------------------------------------------------+
¦ Figure 6. LCD Messages                                                 ¦
+------------------------------------------------------------------------¦
¦ Reset Messages                                                         ¦
+------------------------------------------------------------------------¦
¦ RESET                ¦ The first message to appear during the          ¦
¦                      ¦ power-on sequence.                              ¦
+----------------------+-------------------------------------------------¦
¦ MODEL:               ¦ Variable information about the tape drive, in    ¦
¦                      ¦ this case IBM-20GB.                             ¦
+----------------------+-------------------------------------------------¦
¦ SUBMOD:              ¦ The submodel number of the tape drive.          ¦
+----------------------+-------------------------------------------------¦
¦ SN:                  ¦ The serial number of the tape drive.            ¦
+----------------------+-------------------------------------------------¦
¦ CODE:                ¦ The level of the tape drive's firmware.         ¦
+----------------------+-------------------------------------------------¦
¦ LAST CLN:            ¦ The number of hours since the last cleaning.    ¦
+----------------------+-------------------------------------------------¦
¦ COMPRESSION:         ¦ Whether data compression is turned on (the      ¦
¦                      ¦ default) or turned off.                         ¦
+----------------------+-------------------------------------------------¦
¦ SINGLE ENDED or      ¦ The type of SCSI input/output electrical        ¦
¦ DIFFERENTIAL         ¦ interface.                                      ¦
+----------------------+-------------------------------------------------¦
¦ WIDE                 ¦ The width of the SCSI bus (measured in bits or   ¦
¦                      ¦ bytes).                                         ¦
+----------------------+-------------------------------------------------¦
¦ SCSI ID:             ¦ The SCSI address of the tape drive (0 through    ¦
¦                      ¦ 15). The default is 0.                          ¦
+----------------------+-------------------------------------------------¦
¦                      ¦ The current language used on the LCD. To        ¦
¦                      ¦ change the language, turn off the power to the   ¦
¦ LANGUAGE:            ¦ tape drive. Press and hold the unload button    ¦
¦                      ¦ immediately after turning the power back on.    ¦
¦                      ¦ When the desired language displays, release     ¦
¦                      ¦ the unload button.                              ¦
+----------------------+-------------------------------------------------¦
¦ Tape Drive Status Messages                                             ¦
+----------------------+-------------------------------------------------¦
¦ READY-NOTAPE         ¦ The tape drive is ready to accept a cartridge.  ¦
+----------------------+-------------------------------------------------¦
¦  ¦  LOADING....      ¦ The tape drive is loading the tape.             ¦
+----------------------+-------------------------------------------------¦
¦  ¦  READY-TAPE       ¦ The tape drive successfully loaded the tape     ¦
¦                      ¦ and is ready for read or write operations.      ¦
+----------------------+-------------------------------------------------¦
¦  ¦  ILLEGAL TAPE     ¦ An unsuitable tape has been loaded and          ¦
¦                      ¦ rejected.                                       ¦
+----------------------+-------------------------------------------------¦
¦                      ¦ The unload button was pressed. The tape drive   ¦
¦ << EJECT======       ¦ will eject the cartridge as soon as it          ¦
¦                      ¦ finishes the current operation.                 ¦
+----------------------+-------------------------------------------------¦
¦                      ¦ The unload button was pressed, and the system   ¦
¦  ¦  EJECT PREVNT     ¦ software has issued a command to prevent the    ¦
¦                      ¦ eject function.                                 ¦
+----------------------+-------------------------------------------------¦
¦ Tape Motion Messages                                                   ¦
+----------------------+-------------------------------------------------¦
¦                      ¦ The tape drive is reading data. The + sign      ¦
¦                      ¦ appears when the data is compressed. The boxes  ¦
¦     READ+¦¦¦¦¦=       ¦ (¦) represent the amount of tape processed      ¦
¦                      ¦ (out of a total of six boxes). The = sign       ¦
¦                      ¦ represents the amount of unprocessed tape.      ¦
+----------------------+-------------------------------------------------¦
¦     WRITE+¦¦¦¦=       ¦ The tape drive is writing data. The + sign      ¦
¦                      ¦ appears when the data is compressed.            ¦
+----------------------+-------------------------------------------------¦
¦  /   PROTECTED       ¦ The tape drive cannot write data because the    ¦
¦                      ¦ data cartridge is write-protected.              ¦
+----------------------+-------------------------------------------------¦
¦                      ¦ The tape drive cannot write to the type of      ¦
¦  /   ILLEGAL WRT     ¦ data cartridge inserted. This message remains   ¦
¦                      ¦ until a proper tape is inserted or a tape       ¦
¦                      ¦ motion command is issued.                       ¦
+----------------------+-------------------------------------------------¦
```

>> SEARCH¦¦====	A high-speed search is in progress.
<< SEARCH¦¦====	
<< REWIND¦¦¦===	The rewind function is in progress.
¦ ERASE¦=====	The tape drive is erasing data on the tape. As the data is erased, the equal signs (=) change to boxes (¦).
Cleaning Messages	
` ` **CLEAN SOON**	The tape drive needs to be cleaned.
` ` **MUST CLEAN**	The tape drive must be cleaned when advanced metal-evaporated (AME) media is inserted after using metal particle (MP) media.
` ` **CLEANING**	Cleaning is in progress.
` ` **DEPLETED**	The cleaning tape in the cartridge is used up and the tape drive will eject it. Insert a new cleaning cartridge.
Error Conditions	

LAST 3 ERRORS
 	
    ERR 1: xx yy zz
    ERR 2: xx yy zz
    ERR 3: xx yy zz
	A hardware error has occurred. The LCD displays the last three error codes, with **ERR 1: xx yy zz** as the most recent. **xx =** the fault symptom code (FSC). **yy** and **zz =** additional information for product support personnel (the information may or may not be present). To resolve the error, refer to Appendix B, "Fault Symptom Codes and Error Recovery Procedure Numbers" in topic B.0.

1.2 Rear View

Figure 7 shows the connector locations on the 7208 Tape Drive Model 342:

```
+-------------------------------------------------------------------------+
¦  1   ¦ SCSI address switch          ¦  3   ¦ Fan                         ¦
+------+------------------------------+------+-----------------------------¦
¦  2   ¦ SCSI bus cable connectors    ¦  4   ¦ Power cable connector       ¦
+-------------------------------------------------------------------------+
```
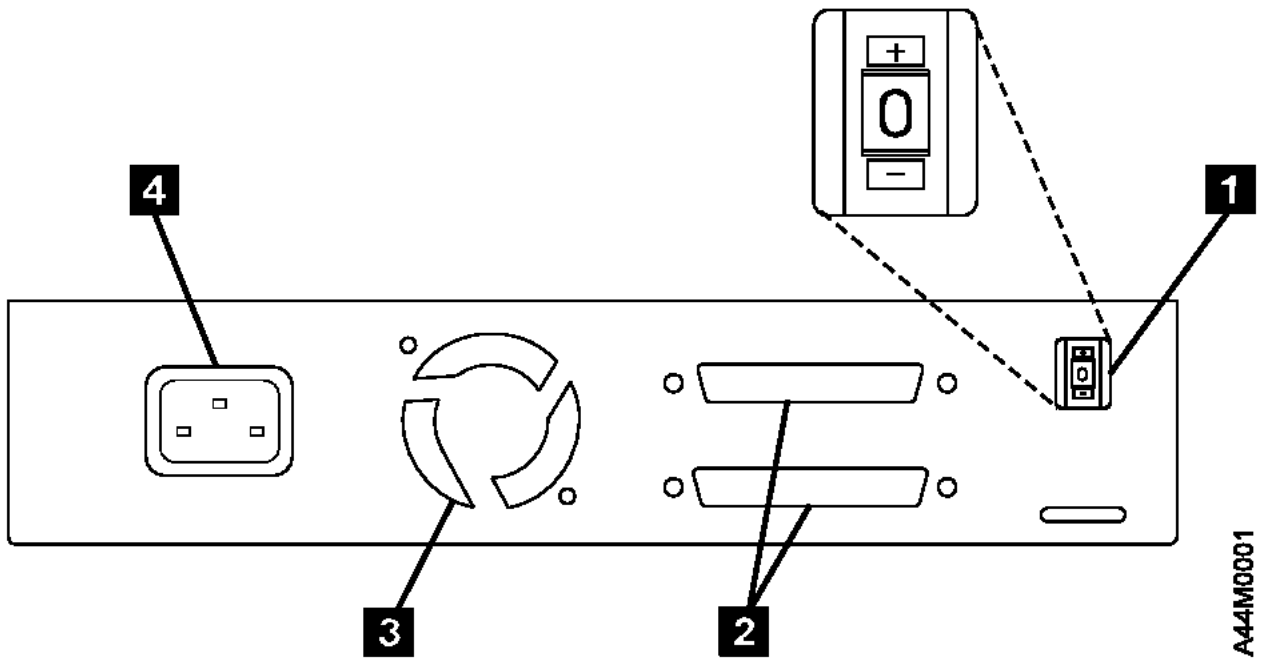

Figure 7. Rear View of the 7208 Tape Drive Model 342

```
+-------------------------------------------------------------------------+
¦  1   ¦ SCSI address switch          ¦  3   ¦ Fan                         ¦
+------+------------------------------+------+-----------------------------¦
¦  2   ¦ SCSI bus cable connectors    ¦  4   ¦ Power cable connector       ¦
+-------------------------------------------------------------------------+
```

1.3 Rear View of the Drive

Figure 8 shows the connector locations on the drive:

```
+----------------------------------------------------------------------+
¦  1   ¦ Internal SCSI bus connector ¦  3  ¦ Internal SCSI address      ¦
¦      ¦                             ¦     ¦ connector                  ¦
+------+-----------------------------+-----+----------------------------¦
¦  2   ¦ Power supply connector      ¦     ¦                            ¦
+----------------------------------------------------------------------+
```
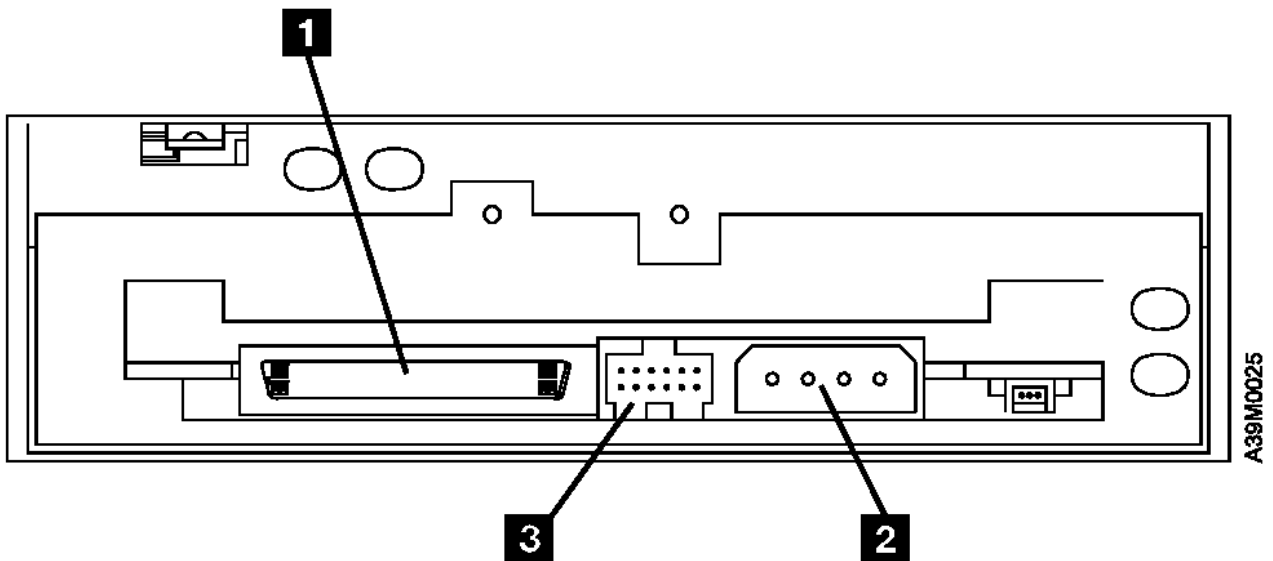
Figure 8. Connector Locations on the Drive

```
+----------------------------------------------------------------------+
¦  1   ¦ Internal SCSI bus connector ¦  3  ¦ Internal SCSI address      ¦
¦      ¦                             ¦     ¦ connector                  ¦
+------+-----------------------------+-----+----------------------------¦
¦  2   ¦ Power supply connector      ¦     ¦                            ¦
+----------------------------------------------------------------------+
```

1.4 Internal View

Figure 9 shows the inside of the 7208 Tape Drive Model 342:

```
+--------------------------------------------------------------------+
¦  1   ¦ Drive                        ¦  4   ¦ Cooling fan            ¦
+------+------------------------------+------+------------------------¦
¦  2   ¦ SCSI address cable           ¦  5   ¦ Power supply           ¦
+------+------------------------------+------+------------------------¦
¦  3   ¦ SCSI bus connectors          ¦      ¦                        ¦
+--------------------------------------------------------------------+
```
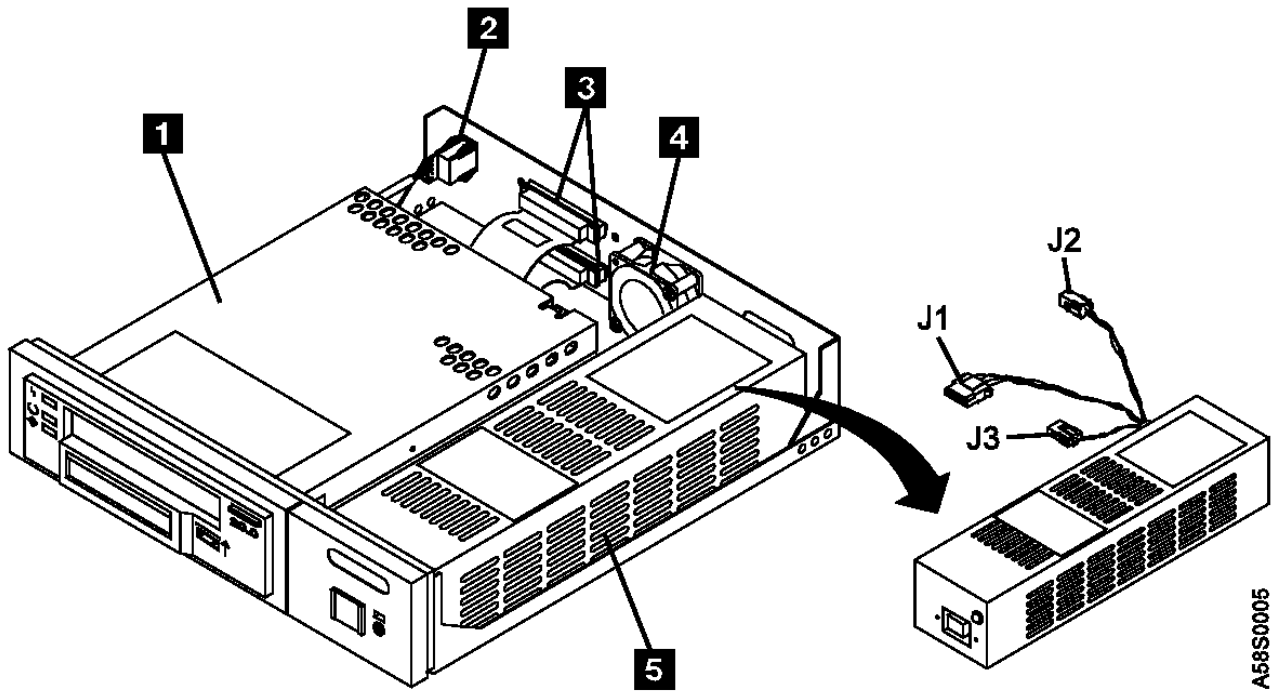

Figure 9. Internal View of the 7208 Tape Drive Model 342

1.5 Specifications

```
+-----------------------------------------------------------------------+
¦ Figure 10.  Specifications for the 7208 Tape Drive Model 342          ¦
+-----------------------------------------------------------------------¦
¦ Physical Specifications                                               ¦
+-----------------------------------------------------------------------¦
¦ Width                 ¦ 250 mm (9.8 in.)                              ¦
+-----------------------+-----------------------------------------------¦
¦ Depth                 ¦ 275 mm (10.8 in.)                             ¦
+-----------------------+-----------------------------------------------¦
¦ Height                ¦ 55 mm (2.2 in.)                               ¦
+-----------------------+-----------------------------------------------¦
¦ Weight                ¦ 3.2 kg (7.1 lb)                               ¦
+-----------------------------------------------------------------------¦
¦ Power Specifications                                                  ¦
+-----------------------------------------------------------------------¦
¦ kVA                   ¦ 0.023 @ 120 V ac                              ¦
+-----------------------+-----------------------------------------------¦
¦ V ac                  ¦ 100 to 125, or 200 to 240                     ¦
+-----------------------+-----------------------------------------------¦
¦ Hertz                 ¦ 50 to 60                                      ¦
+-----------------------+-----------------------------------------------¦
¦ Btu Maximum (watts)   ¦ 41.6 Btu/hr (12.2 watts) @ 240 V ac           ¦
+-----------------------+-----------------------------------------------¦
¦ Power Factor          ¦ 0.4 to 0.6                                    ¦
+-----------------------------------------------------------------------¦
¦ Other Specifications                                                  ¦
+-----------------------------------------------------------------------¦
¦ Altitude              ¦ 2135 m (7000 ft)                              ¦
+-----------------------------------------------------------------------¦
¦ Recommended Environment                                               ¦
+-----------------------------------------------------------------------¦
¦  Environmental Factor ¦       Operating        ¦      Non-operating   ¦
+-----------------------+------------------------+----------------------¦
¦                       ¦     16 to 32°C         ¦      1 to 60°C        ¦
¦ Temperature           ¦                        ¦                      ¦
¦                       ¦    (60 to 90°F)        ¦    (34 to 140°F)      ¦
+-----------------------+------------------------+----------------------¦
¦ Relative Humidity     ¦                        ¦                      ¦
¦                       ¦     20 to 80%          ¦      20 to 95%        ¦
¦ (noncondensing)       ¦                        ¦                      ¦
+-----------------------+------------------------+----------------------¦
¦                       ¦      23°C              ¦        27°C           ¦
¦ Maximum Wet Bulb      ¦                        ¦                      ¦
¦                       ¦     (73°F)             ¦       (81°F)          ¦
+-----------------------------------------------------------------------¦
¦ Note:  The operating limits include media. The storage and shipping   ¦
¦        limits do not include media. For media storage and shipping    ¦
¦        limits, see "Storage and Shipping Environments" in topic 2.3.  ¦
+-----------------------------------------------------------------------+
```

1.6 Cleaning the Tape Drive

Clean the 7208 Tape Drive:

After you use a metal particle (MP) tape, such as a 112-meter tape, a 160-meter tape, or all tapes that were compatible with previous 8mm drives

After a maximum of 72 hours of tape motion

You must clean the tape drive after using MP media. If you use advanced metal-evaporated (AME) media after using MP media, the LCD prompts you to clean the tape drive by displaying the message **MUST CLEAN**.

The 7208 Tape Drive counts the number of hours of tape motion and indicates when it is time to clean the tape drive by displaying the message **CLEAN SOON** and turning on the Fault status light.

To clean the tape drive, use only the IBM 8mm Cleaning Cartridge (part number 59H2898). For uninterrupted operation, have one or more spare cleaning cartridges available.

Attention: Do not operate the 7208 Tape Drive Model 342 in a poor air-quality environment. If your environment contains an excessive amount of particulates, they may permanently damage the media, the drive, or both. Contact your service representative for more information.

To load the cleaning cartridge:

1. Make sure that the 7208 Tape Drive power is on and the Power-On Self Test has completed.

2. Grasp the cleaning cartridge (1 in Figure 11) by the outer edges, with the window side up and the write-protect switch 2 facing you.
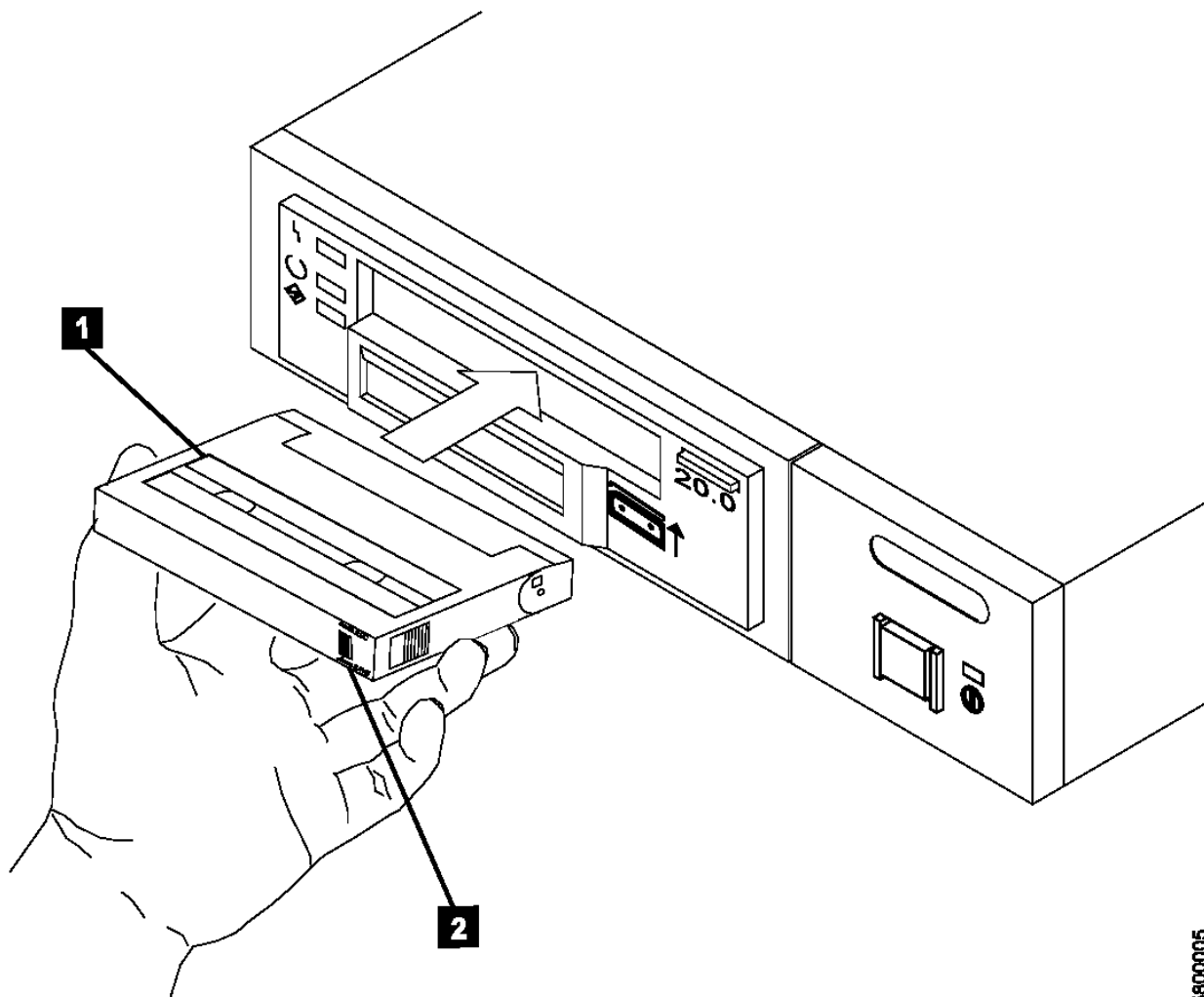
A5800005

```
Figure 11. Loading the Cleaning Cartridge
```

3. Slide the cartridge into the opening on the front of the 7208 Tape Drive until the loading mechanism pulls the cartridge into the drive and the drive door closes.

After the cleaning cartridge has been fully inserted into the 7208 Tape Drive, the remainder of the cleaning process is automatic. The 7208 Tape Drive:

1. Loads the cleaning tape into the tape drive

2. Turns on the Fault status light (if the light is off)

3. Cleans the drive by moving the cleaning tape forward for approximately two minutes (the Fault status light comes on and the message **CLEANING** displays)

4. Unloads and ejects the cleaning tape when the cleaning operation is complete

5. Indicates a successful cleaning operation by turning off the Fault status light

The cleaning cartridge can be used for a minimum of 18 cleaning operations. If you attempt to use the depleted cartridge, the 7208 Tape Drive automatically detects the error, ejects the cartridge, and displays the message **DEPLETED**. The Fault status light remains on to indicate that cleaning is still required. Replace the depleted cartridge with a new cleaning cartridge.

2.0 Chapter 2. Using the Media
Use only IBM 8mm cartridges with the 7208 Tape Drive.

Subtopics

2.1 Types of 8mm Cartridges

The 7208 Tape Drive Model 342 is shipped with an advanced metal-evaporated (AME) data cartridge, an AME test cartridge, and a cleaning cartridge.

Data Cartridge

Use the AME data cartridge for saving or restoring your programs or data.

Large and small labels are shipped with the data cartridge. To avoid problems with loading and unloading a tape, use only the small label on the tape cartridge and place the label in location 1 shown in Figure 12. Place the large label on the cartridge container.
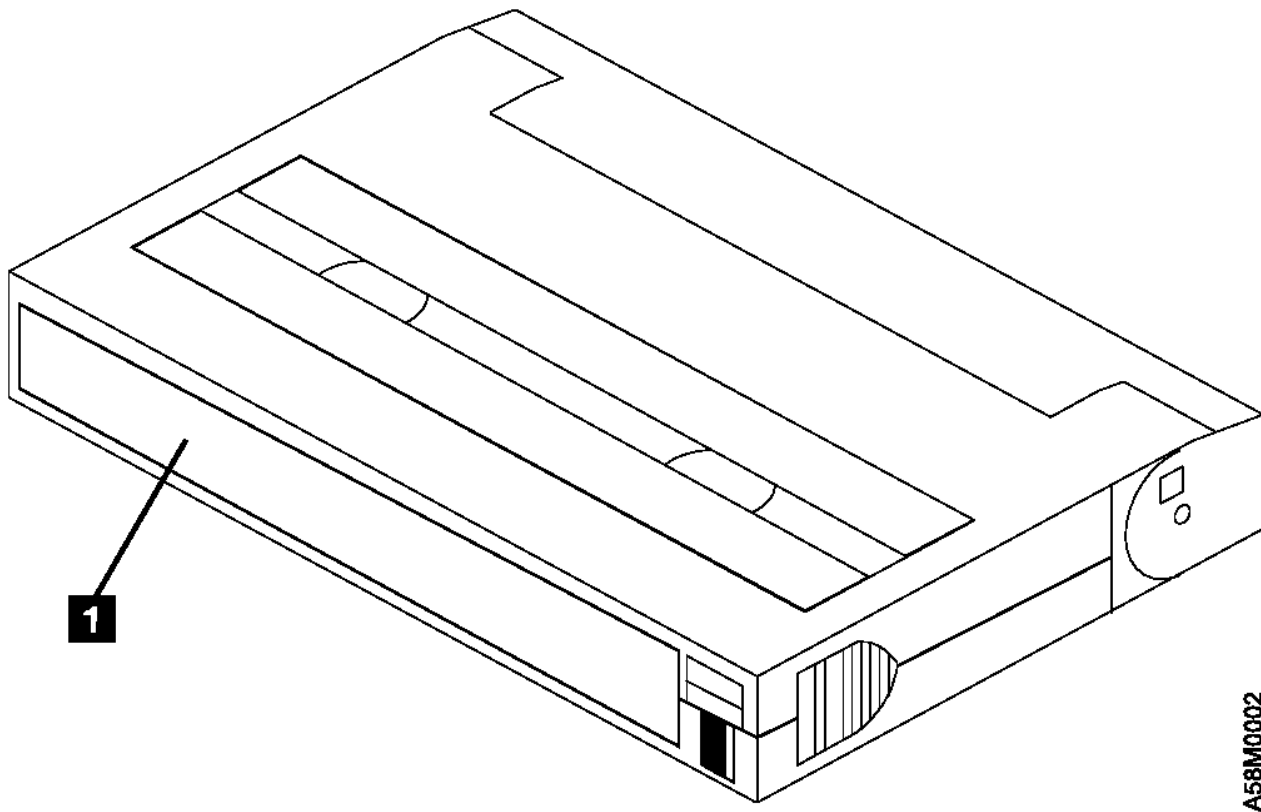
Figure 12. Placement of Label on an 8mm Data Cartridge

Test Cartridge

Use the specially labeled test cartridge to perform diagnostics on the drive. Do not use it to save or restore programs or data.

Cleaning Cartridge

Use the specially labeled cleaning cartridge to clean the tape drive (see "Cleaning the Tape Drive" in topic 1.6).

To order additional cartridges, refer to "Ordering Tape Cartridges" in topic 2.6.

2.2 Guidelines for Using Tape Cartridges

Observe the following guidelines for using media with the 7208 Tape Drive Model 342:

Attention: Do not use video-grade cartridges, as they are hazardous to the 7208 Tape Drive and will void your warranty.

Before using a cartridge, let it acclimate to the operating environment for as long as it has been away from the environment or for 24 hours, whichever is less.

Use only IBM 8mm cartridges with the 7208 Tape Drive Model 342. The 7208 Tape Drive:

    Reads from and writes to AME cartridges
    Reads from metal particle (MP) cartridges

To order tape cartridges, see "Ordering Tape Cartridges" in topic 2.6.

Attention: Clean the 7208 Tape Drive:

    After you use an MP tape cartridge prior to using an AME cartridge
    Whenever you replace a worn tape
    Whenever you replace a defective tape
    Whenever the **CLEANING** message displays

For more information, see "Cleaning the Tape Drive" in topic 1.6.

Do not write to previously written software distribution tapes. Often these tapes will not support being rewritten without modifications to the cartridge. If the cartridge is modified, it is possible to cause tape jams or tape misalignment.

Back up and then discard any tape that repeatedly produces error messages. (The error information is in the System Error Log.)

Do not open the door that covers the tape in the data cartridge. This door protects the magnetic tape from dirt, dust, and damage.

Do not touch the tape material. Any substance transferred to the tape by touching could cause loss of data.

Do not operate the 7208 Tape Drive in a dusty environment.

Do not store tape cartridges or the 7208 Tape Drive in a dusty environment.

Store tape cartridges vertically.

2.3 Storage and Shipping Environments

Before using an 8mm tape cartridge, let it acclimate by placing the cartridge in the operating environment for as long as it has been away from the environment, or for 24 hours, whichever is less.

Acclimation is necessary for any data cartridge that has been exposed to a different humidity environment or to temperature changes of 11°C (20°F) or more.

The 8mm data cartridge can be stored and shipped in a wide variety of environments. Figure 13 provides a description of these environments.

```
+-------------------------------------------------------------------+
¦ Figure 13. Recommended Environment for 8mm Data Cartridges        ¦
+-------------------------------------------------------------------¦
¦ Environmental      ¦                           ¦                   ¦
¦ Factor             ¦          Storage          ¦     Shipping      ¦
+--------------------+---------------------------+-------------------¦
¦                    ¦         5 to 32°C         ¦   -40 to 45°C     ¦
¦ Temperature        ¦                           ¦                   ¦
¦                    ¦        (41 to 90°F)       ¦  (-40 to 113°F)   ¦
+--------------------+---------------------------+-------------------¦
¦ Relative Humidity  ¦         20 to 80%         ¦     20 to 80%     ¦
¦ (noncondensing)    ¦                           ¦                   ¦
+--------------------+---------------------------+-------------------¦
¦                    ¦           26°C            ¦       26°C        ¦
¦ Maximum Wet Bulb   ¦                           ¦                   ¦
¦                    ¦          (79°F)           ¦      (79°F)       ¦
+-------------------------------------------------------------------+
```

2.4 Operating in Harsh Environments

The 7208 Tape Drive is ideally suited to streaming operations, as opposed to multiple stop-and-start, random-search tape operations. When the tape is used for frequent stop-and-start operations, it is beneficial to still have as much streaming movement as possible. This can be accomplished by ensuring that any save or restore operation is the only active operation being performed.

Do not use as an archival tape any tape that has been used outside of the ranges specified in Figure 13 in topic 2.3 for an extended period of time. The magnetic and physical strength of the tape will have deteriorated as a result of its exposure to the environment. Do not store important data on such a tape; transfer the data to a newer tape for reliable archiving.

2.5 Setting the Write-Protect Switch

The position of the write-protect switch on the 8mm tape cartridge determines when you can write to the tape.

When the switch is set to **SAVE** 1 , data cannot be written to or read from the tape.

When the switch is set to **REC** (Record) 2 , data can be written to and read from the tape.
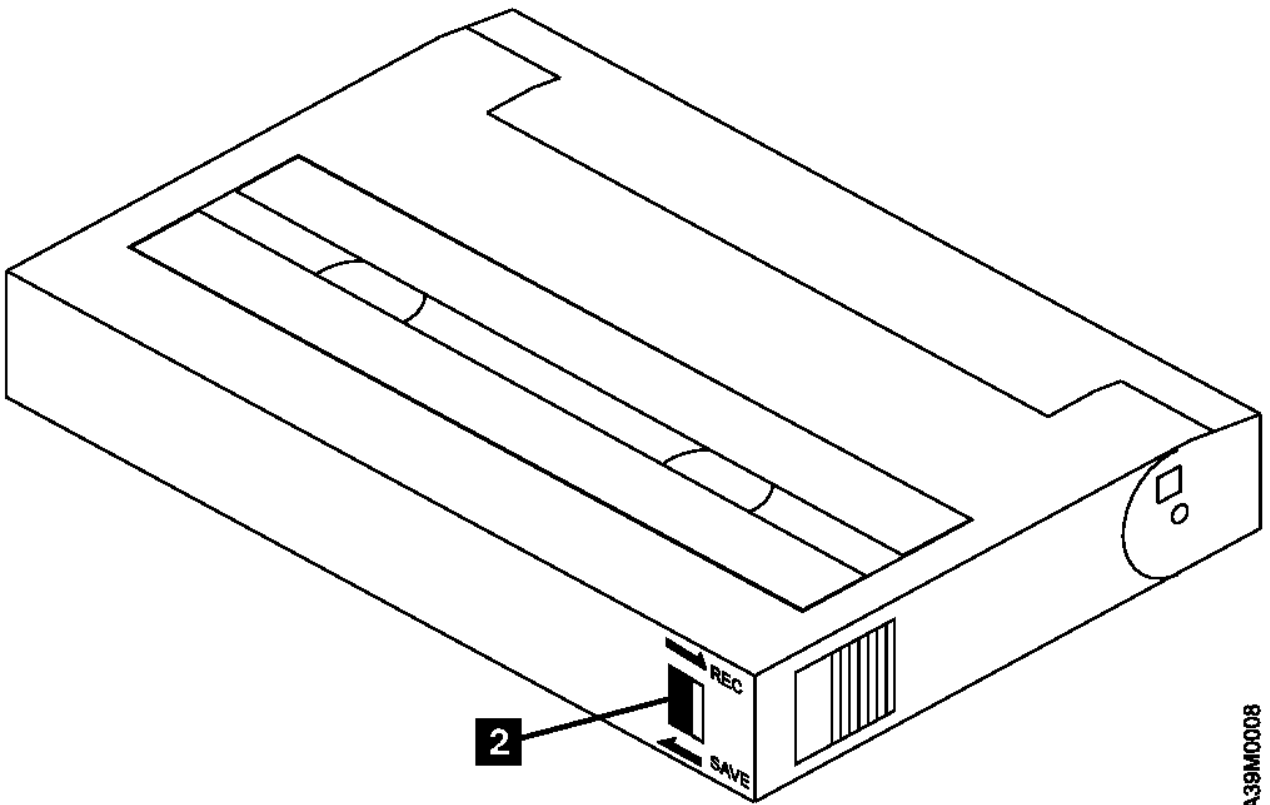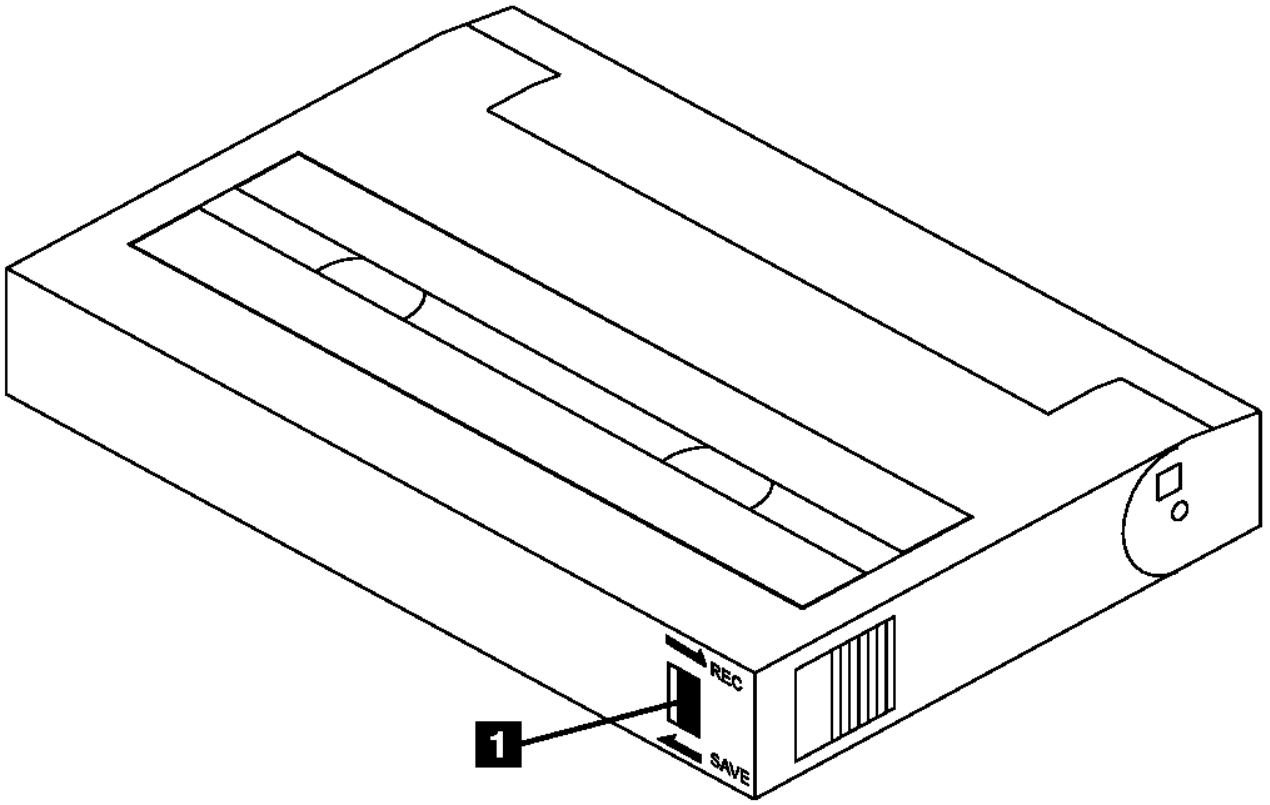
Figure 14. Setting the Write-Protect Switch

2.6 Ordering Tape Cartridges

Figure 15 lists the tape cartridges that you can order for the 7208 Tape Drive Model 342. To order cartridges in the United States and Canada, call 1-888-IBM-MEDIA. To order cartridges in other locations, contact your local provider of IBM storage products.

```
+-----------------------------------------------------------------------+
¦ Figure 15. Tape Cartridges for the 7208 Tape Drive Model 342          ¦
+-----------------------------------------------------------------------+
¦    IBM Part Number  ¦        Type of Cartridge       ¦      Length     ¦
+---------------------+--------------------------------+-----------------¦
¦                     ¦ 8mm Data Cartridge             ¦      22.5 m     ¦
¦       59H2671       ¦                                ¦                 ¦
¦                     ¦ (short length)                 ¦     (74 ft)     ¦
+---------------------+--------------------------------+-----------------¦
¦                     ¦                                ¦      170 m      ¦
¦       59H2678       ¦ 8mm Data Cartridge             ¦                 ¦
¦                     ¦                                ¦     (558 ft)    ¦
+---------------------+--------------------------------+-----------------¦
¦                     ¦ 8mm Cleaning Cartridge         ¦                 ¦
¦       59H2898       ¦                                ¦       - -       ¦
¦                     ¦ (to be used only with 20GB     ¦                 ¦
¦                     ¦ drives)                        ¦                 ¦
+-----------------------------------------------------------------------+
```

3.0 Chapter 3. Maintenance Analysis Procedures

```
+-------------------------------------------------------------------+
¦               ¦ DANGER                                            ¦
¦               ¦ +-----------------------------------------------+ ¦
¦ PICTURE 32    ¦ ¦ An electrical outlet that is not correctly wired ¦ ¦
¦               ¦ ¦ could place hazardous voltage on metal parts of the ¦ ¦
¦               ¦ ¦ system or the products that attach to the system. It ¦ ¦
¦               ¦ ¦ is the customer's responsibility to ensure that the ¦ ¦
¦               ¦ ¦ outlet is correctly wired and grounded to prevent an ¦ ¦
¦               ¦ ¦ electrical shock. (72XXD201)                   ¦ ¦
¦               ¦ +-----------------------------------------------+ ¦
¦               ¦                                                   ¦
¦               ¦                                                   ¦
¦               ¦ DANGER                                            ¦
¦               ¦ +-----------------------------------------------+ ¦
¦               ¦ ¦ To prevent a possible electrical shock from touching ¦ ¦
¦               ¦ ¦ two surfaces with different electrical grounds, use ¦ ¦
¦               ¦ ¦ one hand, when possible, to connect or disconnect ¦ ¦
¦               ¦ ¦ signal cables. (72XXD004)                      ¦ ¦
¦               ¦ +-----------------------------------------------+ ¦
¦               ¦                                                   ¦
+-------------------------------------------------------------------+
```

Subtopics

3.1 Purpose of the MAPs

Maintenance analysis procedures (MAPs) are used to check the:

```
+--------------------------------------------------------------------+
¦ Power cable          ¦ Configuration          ¦ SCSI bus (signal)  ¦
¦                      ¦                        ¦ cable              ¦
+----------------------+------------------------+--------------------¦
¦ Power supply         ¦ Drive                  ¦ SCSI address switch ¦
+----------------------+------------------------+--------------------¦
¦ Terminator           ¦ Fan                    ¦                     ¦
+----------------------+------------------------+--------------------¦
¦ Media                ¦ Drive head             ¦                     ¦
+--------------------------------------------------------------------+
```

If a problem is detected, the procedure isolates the problem to the failing field replaceable unit (FRU), such as the 7208 Tape Drive cover, drive, power supply, or cooling fan.

For instructions about removing or replacing a FRU, refer to Chapter 4, "Removal and Replacement Procedures" in topic 4.0.

Figure 16 in topic 3.2 provides a flowchart to be used as a guide to the MAPs. For detailed instructions on how to perform each procedure safely and correctly, refer to the steps in this topic.

3.2 Flowchart of the MAPs

```
         ┌─────────────┐                    ┌─────────────┐                    ┌──────────────────┐
         │   Step 1    │      yes           │   Step 7    │      no            │    Step 11       │
         │  Does the   │ ─────────────────► │ Was the SCSI│ ─────────────────► │   Reassemble     │
         │  7208-342   │                    │ address set │                    └──────────────────┘
         │  power up?  │                    │  correctly? │                            │
         └─────────────┘                    └─────────────┘                            │
                │ no                               │ yes                               ▼
                ▼                                  ▼                          ┌──────────────────┐
      ┌──────────────────┐                 ┌─────────────┐      yes           │    Step 12       │
      │ Shut the system  │                 │   Step 8    │ ─────────────────► │ Connect external │
      │ down and power   │                 │  Cartridge  │                    │  SCSI bus cable  │
      │      off         │                 │  loaded OK? │                    └──────────────────┘
      └──────────────────┘                 └─────────────┘                            │
                │                                  │ no                                ▼
                ▼                                  ▼                          ┌──────────────────┐
         ┌─────────────┐   no           ┌──────────────────┐                 │    Step 13       │
         │   Step 2    │ ──► Contact    │ Shut the system  │                 │ Install terminator│
         │  Electrical │     service    │ down and power   │                 └──────────────────┘
         │  outlet OK? │     personnel  │      off         │                         │
         └─────────────┘                └──────────────────┘                         ▼
                │ yes                            │               yes       ┌──────────────────┐
                ▼                                ▼              ◄───────── │    Step 14       │
         ┌─────────────┐   no           ┌──────────────────┐              │ Is the 7208-342  │
         │   Step 3    │ ──► Replace    │   Remove cover   │              │ configured to    │
         │ Power cable │     power      └──────────────────┘              │ system?          │
         │     OK?     │     cable              │                         └──────────────────┘
         └─────────────┘                        ▼                                 │ no
                │ yes                     ┌─────────────┐      yes                 ▼
                ▼                         │   Step 9    │ ───────────►   ┌──────────────────┐
      ┌──────────────────┐               │  Did drive  │                │    Step 15       │   no
      │ Remove cover and │               │  complete   │                │ Is the 7208-342  │ ──► Contact support
      │  prepare unit    │               │   POST?     │                │ communicating    │     personnel
      └──────────────────┘               └─────────────┘                │ with the system? │
                │                               │ no                     └──────────────────┘
                ▼                               ▼                                 │ yes
         ┌─────────────┐   no           ┌─────────────┐      Yes                  ▼
         │   Step 4    │ ──► Replace    │   Step 10   │ ──► Replace     ┌──────────────────┐   no
         │ Power supply│     power      │ Power supply│     drive       │    Step 15       │ ──► Replace
         │     OK?     │     supply     │ voltages    │                 │  Run Verify      │     drive
         └─────────────┘                │ good?       │                 │  Tape test       │
                │ yes                   └─────────────┘                 └──────────────────┘
                ▼                               │ No                            │ Pass
   no   ┌─────────────┐                         ▼                               ▼
  ◄──── │   Step 5    │                   Replace power              ┌──────────────────┐
Replace │   Fan OK?   │                   supply                    │  Problem fixed   │
  fan   └─────────────┘                                             └──────────────────┘
                │ yes
                ▼
   no   ┌─────────────┐      yes
  ◄──── │   Step 6    │ ──────────►
Replace │  Drive OK?  │
 drive  └─────────────┘
```

A58S0010

Figure 16. Flowchart of the Maintenance Analysis Procedures (MAPs)

3.3 Step 1

This step verifies whether the 7208 Tape Drive is receiving electrical power and the fan is operating properly.

1. Make sure that the 7208 Tape Drive power cable is plugged into an electrical outlet.

2. Make sure that the 7208 Tape Drive power is on by checking that:

   The power-on light is on.

   There is airflow from the fan at the rear of the unit.

Is the power-on light on and is there airflow from the fan?

NO   While watching for the power-on light to come on, press the power switch again. Repeat this procedure several times. If the power-on light fails to come on or if there is no airflow from the fan, go to Step 2.

YES   Go to Step 7.

3.4 Step 2

This step tests the voltage at the electrical outlet.

1. Press the 7208 Tape Drive power switch to turn off the power.

2. Unplug the 7208 Tape Drive power cable from the electrical outlet and from the 7208 Tape Drive.

3. Measure the voltage at the electrical outlet.

Is the voltage from the electrical outlet correct?

NO   Contact your service personnel for further instructions.

YES   Go to Step 3.

3.5 Step 3

This step determines whether the power cable is functional.

Make sure that all of the conductors in the power cable have continuity, and that there are no short circuits.

Does the power cable have continuity and are there no short circuits?

NO   Replace the power cable, then go to Step 1.

YES   Go to Step 4.

3.6 Step 4

This step prepares the 7208 Tape Drive to determine whether the power supply, fan, or tape drive is the cause of the problem.

1. Do a controlled system shutdown (refer to the instructions in Topic 2, "Setting Up the 7208 Tape Drive," in the *7208 20GB External 8mm Tape Drive Model 342 Setup and Operator Guide*).

2. Ensure that the power to the AS/400 is off.

3. Remove the cover of the 7208 Tape Drive. Refer to "Removing and Replacing the Cover" in topic 4.2.

4. Disconnect the power supply connector (J1) from the drive.

5. Disconnect the power supply connector (J2) between the power supply and the cooling fan.

6. Plug the 7208 Tape Drive power cable into the 7208 Tape Drive and into a grounded electrical outlet.

7. Press the 7208 Tape Drive power switch to turn on the power.

Does the power-on light come on and stay on?

NO   Replace the power supply, the go to Step 5. Refer to "Removing and Replacing the Power Supply" in topic 4.4.

YES   Go to Step 5.

3.7 Step 5

This step examines the cooling fan as the possible source of the problem.

1. Press the power switch to turn off the power.

2. Reconnect the power supply connector (J2) to the cooling fan.

3. Press the power switch to turn on the power.

Does the power-on light come on and stay on, and is there airflow from the fan?

NO   Replace the cooling fan, then return to Step 5. Refer to "Removing and Replacing the Cooling Fan" in topic 4.5.

YES   Go to Step 6.

3.8 Step 6

This step examines the drive as the possible source of the problem.

1. Press the power switch to turn off the power.

2. Reconnect the power supply connector (J2) to the drive.

3. Press the power switch to turn on the power.

Does the power-on light come on and stay on, and is there airflow from the fan?

NO   Replace the drive, then return to Step 6. Refer to "Removing and Replacing the Drive" in topic 4.3.

YES   Go to Step 9.

3.9 Step 7

This step checks whether the SCSI address switch setting is correct.

Is the SCSI address set correctly?

NO   Set the SCSI address to 0, then go to Step 12. Refer to the instructions for setting the SCSI address in the *7208 20GB External 8mm Tape Drive Model 342 Setup and Operator Guide*.

YES   Go to Step 9.

3.10 Step 8

This step examines the tape cartridge as the possible source of the problem.

1. If there is a tape cartridge currently in the drive, press the unload button to eject it. If the cartridge fails to eject, refer to "Manually Removing a Tape Cartridge" in topic 4.6.

2. With the power turned on to the 7208 Tape Drive, insert a blank IBM data cartridge (part number 59H2678 or 59H2671).

3. Check that after approximately 20 seconds, the Ready light comes on and stays on, and the LCD displays the message **READY-TAPE**.

Did the cartridge load correctly?

NO   Go to Step 9.

YES   Go to Step 12.

3.11 Step 9

This step examines the drive as the possible source of the problem.

While pressing the power switch to turn on the power, watch for the following:

   The three status lights come on for approximately 10 seconds, then go out.

   The LCD displays the message **READY-NOTAPE** or **READY-TAPE**.

Did the three status lights come on and go out, and did the message READY-NOTAPE or READY-TAPE display?

NO   Go to Step 10.

YES   Go to Step 11.

3.12 Step 10

This step checks the power supply voltage levels as the possible source of the problem.

1. Press the power switch to turn off the power.

2. Disconnect the power supply connector (J1) from the drive.

3. Disconnect the power supply connector (J2) between the power supply and the cooling fan.

4. Connect the power cable to both the 7208 Tape Drive and to the electrical outlet.

5. Press the power switch to turn on the power.

6. On the power supply connector J1 (see Figure 17), check the following:

   The +12V signal falls between a minimum of +11.5 volts and a maximum of +12.6 volts

   The +5V signal falls between a minimum of +4.8 volts and a maximum of +5.25 volts
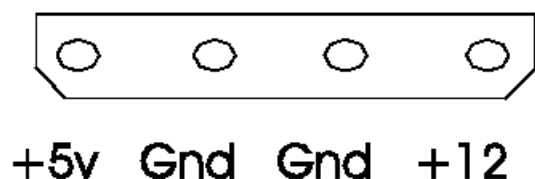
Figure 17. Power Supply Connector J1

7. On the power supply connector J2 (see Figure 18), check that the +12V signal falls between a minimum of +11.5 volts and a maximum of +12.6 volts.
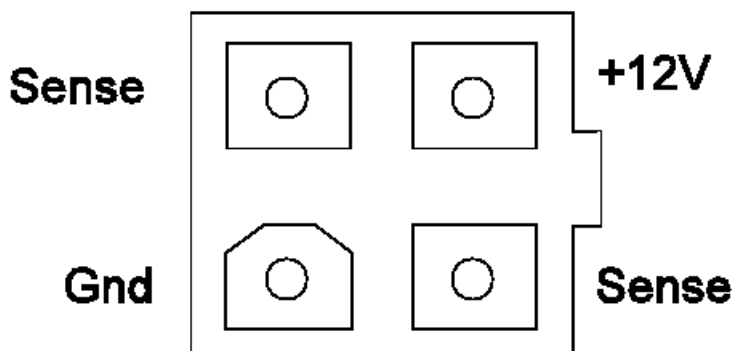
Figure 18. Power Supply Connector J2

Are the voltages good, and does the power-on light come on and stay on?

NO   Replace the power supply. Refer to "Removing and Replacing the Power Supply" in topic 4.4.

YES   Replace the drive. Refer to "Removing and Replacing the Drive" in topic 4.3.

3.13 Step 11

This step describes the reassembly process.

1. Press the power switch to turn off the power.

2. Unplug the power cable from the electrical outlet.

3. Make sure that the power supply connector (J1) is plugged into the drive.

4. Make sure that the power supply connector (J2) is plugged into the cooling fan.

5. Make sure that all other cables are properly connected, and that the wires are routed away from the cooling fan.

6. Perform the cover replacement procedure. Refer to "Removing and Replacing the Cover" in topic 4.2.

7. Plug the power cable into the electrical outlet.

8. Press the power switch to turn on the power.

Does the power-on light come and stay on, and is there airflow from the fan?

NO   Verify that the 7208 Tape Drive was reassembled correctly. If the power-on light still does not come on and there is no airflow from the fan, go to Step 1.

YES   Go to Step 12.

3.14 Step 12

This step ensures that the external SCSI bus cable connection is proper.

Ensure that the SCSI bus cable is properly connected to both the AS/400 and to the 7208 Tape Drive.

Is the SCSI bus cable properly connected to the AS/400 and to the 7208 Tape Drive?

NO   Plug the SCSI bus cable into both the AS/400 and the 7208 Tape Drive, then go to Step 13.

YES   Go to Step 13.

3.15 Step 13

This step ensures that the terminator is properly connected.

Ensure that the terminator is properly connected to the last device on the SCSI bus.

Is the terminator properly connected to the last device on the SCSI bus?

NO Ensure that the terminator is properly connected to the last device on the SCSI bus, then go to Step 14.

YES Go to Step 14.

3.16 Step 14

This step verifies that the 7208 Tape Drive is properly configured to the AS/400.

1. At the OS/400 Main Menu command line, type **wrkcfgsts** and press Enter.

2. In the Type field of the Work with Configuration Status screen, type ***dev**, then tab to the Configuration description field.

3. In the Configuration description field, type ***tap** and press Enter.

Does the 7208 Tape Drive that you are configuring appear under the Description column, and can it be powered off and on successfully?

Note: To determine the number of the 7208 Tape Drive that you are configuring, refer to the instructions for performing the checkout procedure in the *7208 20GB External 8mm Tape Drive Model 342 Setup and Operator Guide.*

NO   Go to Step 15.

YES   Go to Step 16.

3.17 Step 15

This step verifies whether the 7208 Tape Drive can communicate with the AS/400.

1. At any OS/400 menu command line, type **strsst** and press Enter.

2. At the System Service Tools (SST) screen, type **1** (Start a service tool) and press Enter.

3. At the Start a Service Tool screen, type **7** (Hardware service manager) and press Enter.

4. At the Hardware Service Manager screen, type **2** (Logical hardware resources) and press Enter.

5. At the Logical Hardware Resources screen, type **1** (System bus resources) and press Enter.

6. In the Description column of the Logical Hardware Resources on System Bus screen, locate the input/out processor (IOP) device (the SCSI controller) to which the 7208 Tape Drive is attached. Type **6** (I/O Debug) and press Enter.

   Note: To determine the correct IOP device, refer to the number of the SCSI controller that you noted when connecting the SCSI bus cable in the *7208 20GB External 8mm Tape Drive Model 342 Setup and Operator Guide*. Controller number 1 is identified as SI01, controller 2 is SI02, and so on.

7. At the Select IOP Debug Function screen, type **4** (IPL I/O processor) and press Enter twice. The AS/400 performs an initial program load (IPL), refreshes its settings, and displays the message **Re-IPL of IOP was successful**.

8. After the IPL completes, press F12 to return to the Logical Hardware Resources on System Bus screen.

9. In the Description and Type-Model fields of the Logical Hardware Resources on System Bus screen, locate the IOP storage device (the SCSI controller) to which the 7208 Tape Drive is attached. Type **9** (Resources associated with IOP) and press Enter.

The Logical Hardware Resources Associated with IOP screen displays with a list of devices that are configured to the SCSI controller. The 7208 Tape Drive and its tape controller appear in the list, and display a status of Operational.

Is the 7208 Tape Drive and a tape controller listed under the Storage IOP column, and is their status operational?

NO   Contact your service personnel for further instructions.

YES   Go to Step 16.

3.18 Step 16

This step verifies that the 7208 Tape Drive communicates with the AS/400 and is capable of reading from and writing to tape properly.

1. At any OS/400 menu command line, type **vfytap** and press Enter.

2. Follow the screen prompts.

   Note: In one screen, you will be asked whether you want to perform a short or long test. The short test takes approximately 3 minutes; the long test takes approximately 30 minutes.

Does the tape verification test complete successfully?

NO   Rerun the test with another cartridge. If the test fails a second time, replace the drive. Refer to "Removing and Replacing the Drive" in topic 4.3.

YES   The problem is fixed.

This completes the MAPs.

4.0 Chapter 4. Removal and Replacement Procedures
This topic describes the procedures to follow when removing and replacing the field replaceable units (FRUs), such as the 7208 Tape Drive cover, drive, power supply, and cooling fan. It also describes how to manually remove a tape cartridge.

```
+----------------------------------------------------------------------+
¦                 ¦ DANGER                                             ¦
¦                 ¦ +------------------------------------------------+ ¦
¦  PICTURE 36     ¦ ¦ To prevent a possible electrical shock from touching ¦ ¦
¦                 ¦ ¦ two surfaces with different electrical grounds, use  ¦ ¦
¦                 ¦ ¦ one hand, when possible, to connect or disconnect    ¦ ¦
¦                 ¦ ¦ signal cables. (72XXD004)                           ¦ ¦
¦                 ¦ +------------------------------------------------+ ¦
¦                 ¦                                                    ¦
¦                 ¦                                                    ¦
¦                 ¦ DANGER                                             ¦
¦                 ¦ +------------------------------------------------+ ¦
¦                 ¦ ¦ To prevent a possible electrical shock when adding  ¦ ¦
¦                 ¦ ¦ or removing any devices to or from the system,      ¦ ¦
¦                 ¦ ¦ ensure that the power cords for those devices are   ¦ ¦
¦                 ¦ ¦ unplugged before the signal cables are connected or ¦ ¦
¦                 ¦ ¦ disconnected. If possible, disconnect all power     ¦ ¦
¦                 ¦ ¦ cords from the existing system before you add or    ¦ ¦
¦                 ¦ ¦ remove a device. (72XXD203)                         ¦ ¦
¦                 ¦ +------------------------------------------------+ ¦
¦                 ¦                                                    ¦
+----------------------------------------------------------------------+
```

Before installing any FRU, let it acclimate to the operating environment for as long as it has been away from the environment or for 12 hours, whichever is less.

```
Subtopics
4.1 Handling Static-Sensitive Devices
4.2 Removing and Replacing the Cover
4.3 Removing and Replacing the Drive
4.4 Removing and Replacing the Power Supply
4.5 Removing and Replacing the Cooling Fan
4.6 Manually Removing a Tape Cartridge
```

4.1 Handling Static-Sensitive Devices

Attention: Tape drives are sensitive to static electricity discharge. When handling a tape drive, wrap it in an antistatic bag to prevent damage.

Take the following precautions:

Do not remove the drive from the antistatic bag until you are ready to install it.

With the drive still in its antistatic bag, touch it to the metal frame of an electrically grounded surface.

Hold the drive by the frame. Avoid touching the solder joints or pins.

Handle the drive carefully to prevent permanent damage.

4.2 Removing and Replacing the Cover

To remove the cover from the 7208 Tape Drive:

1. If a tape cartridge is loaded in the drive, eject it.

2. Do a controlled system shutdown (refer to the instructions in Topic 2, "Setting up the 7208 Tape Drive," in the *7208 20GB External 8mm Tape Drive Model 342 Setup and Operator Guide*).

3. If it is on, turn off the power to the 7208 Tape Drive.

4. Unplug the 7208 Tape Drive power cable from the electrical outlet.

5. Disconnect the power cable from the 7208 Tape Drive.

6. Disconnect the SCSI bus (signal) cable from the 7208 Tape Drive.

7. Tilt the 7208 Tape Drive on its side and remove the four cover mounting screws from the bottom (see Figure 19).

8. Remove the cover by sliding it to the rear (see the directional arrow in Figure 19).

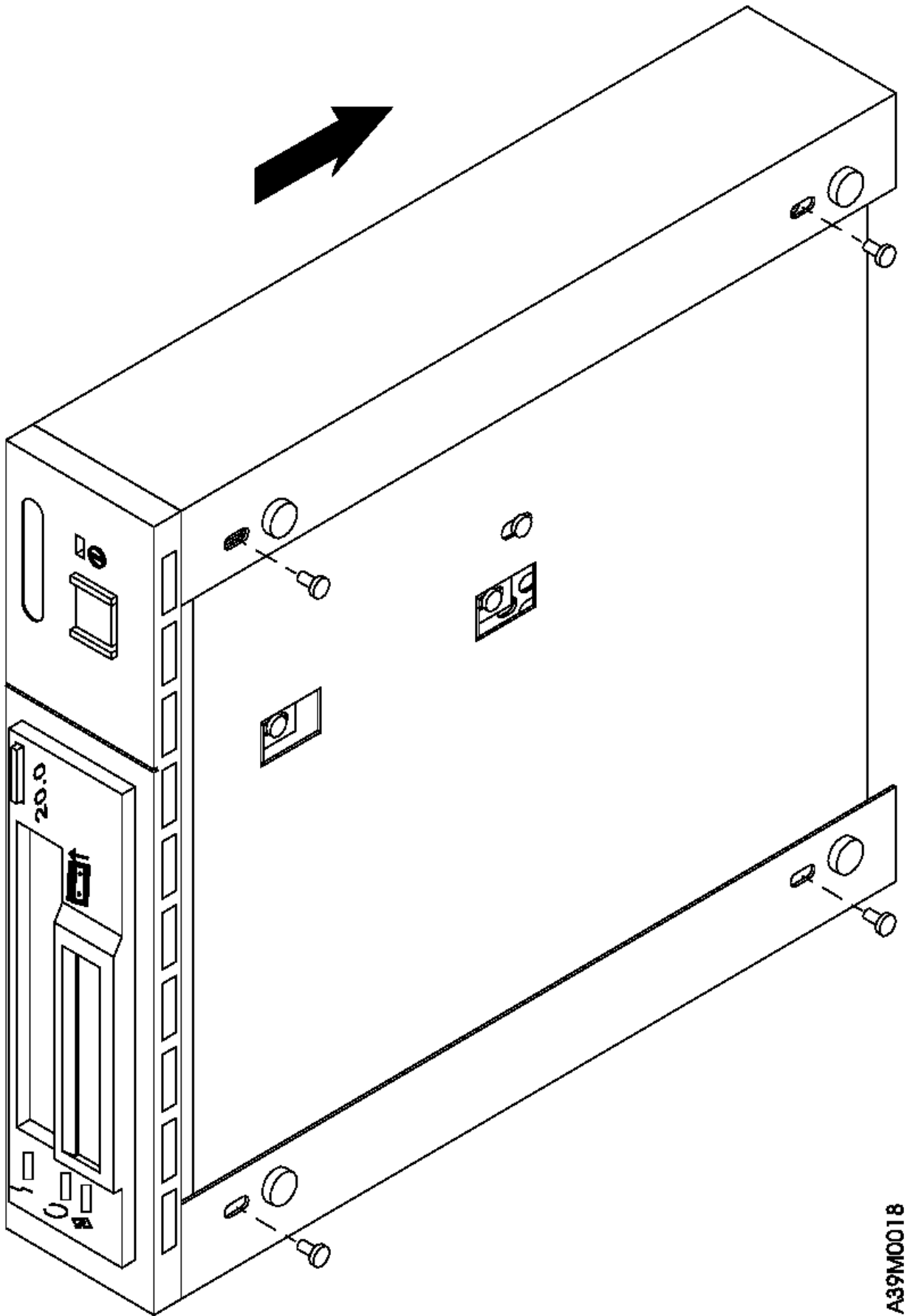To replace the cover, reverse the removal procedure.

A39MO018

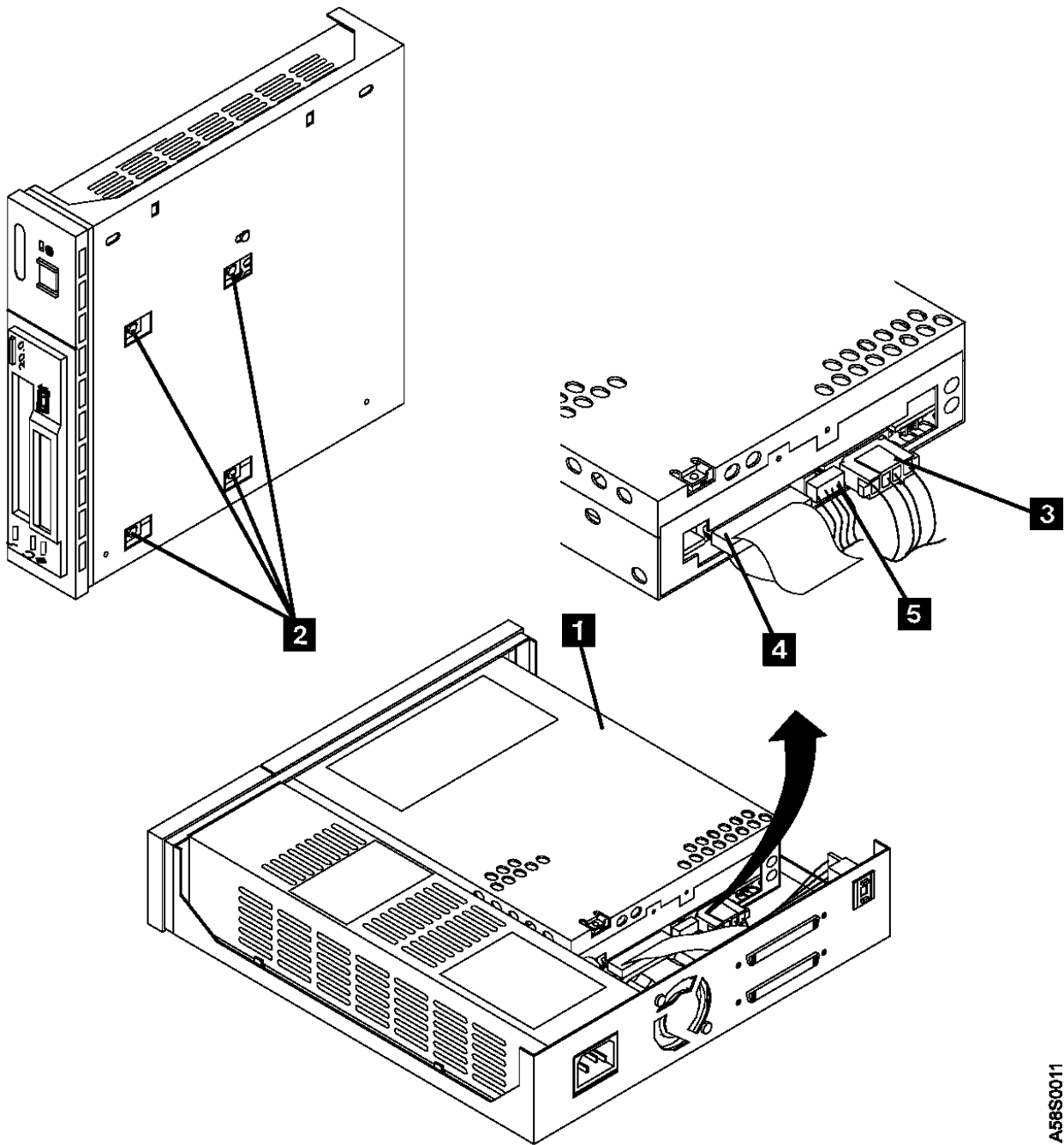Figure 19. Removing and Replacing the Cover

4.3 Removing and Replacing the Drive

To remove the drive from the 7208 Tape Drive:

1. Perform the cover removal procedure. Refer to "Removing and Replacing the Cover" in topic 4.2.

2. Tilt the 7208 Tape Drive on its side. Support the drive (1 in Figure 20) while removing the four screws 2 that secure the drive to the chassis.

3. Support the drive while returning the 7208 Tape Drive to its original position.

4. Disconnect the power supply connector (J1) 3 from the drive.

5. Disconnect the internal SCSI bus cable 4 from the drive.

   Note: To remove the cable, grasp the connector and pull it towards you. Do not pull on the cable.

6. Disconnect the internal SCSI address cable 5 from the drive.

7. Slide the drive forward and out of the chassis.

Figure 20. Removing and Replacing the Drive

To replace the drive, reverse the removal procedure. Make sure to:

Correctly insert and engage each cable to its proper connector.

Arrange the cables so that they do not interfere with the cooling fan blades or the replacement of the cover.

After installing the cover, align the drive with the front of the cover, then tighten the four screws (2 in Figure 20) that secure the drive to the chassis.

Note: The power supply connector J3 is not used in the 7208 Tape Drive Model 342.
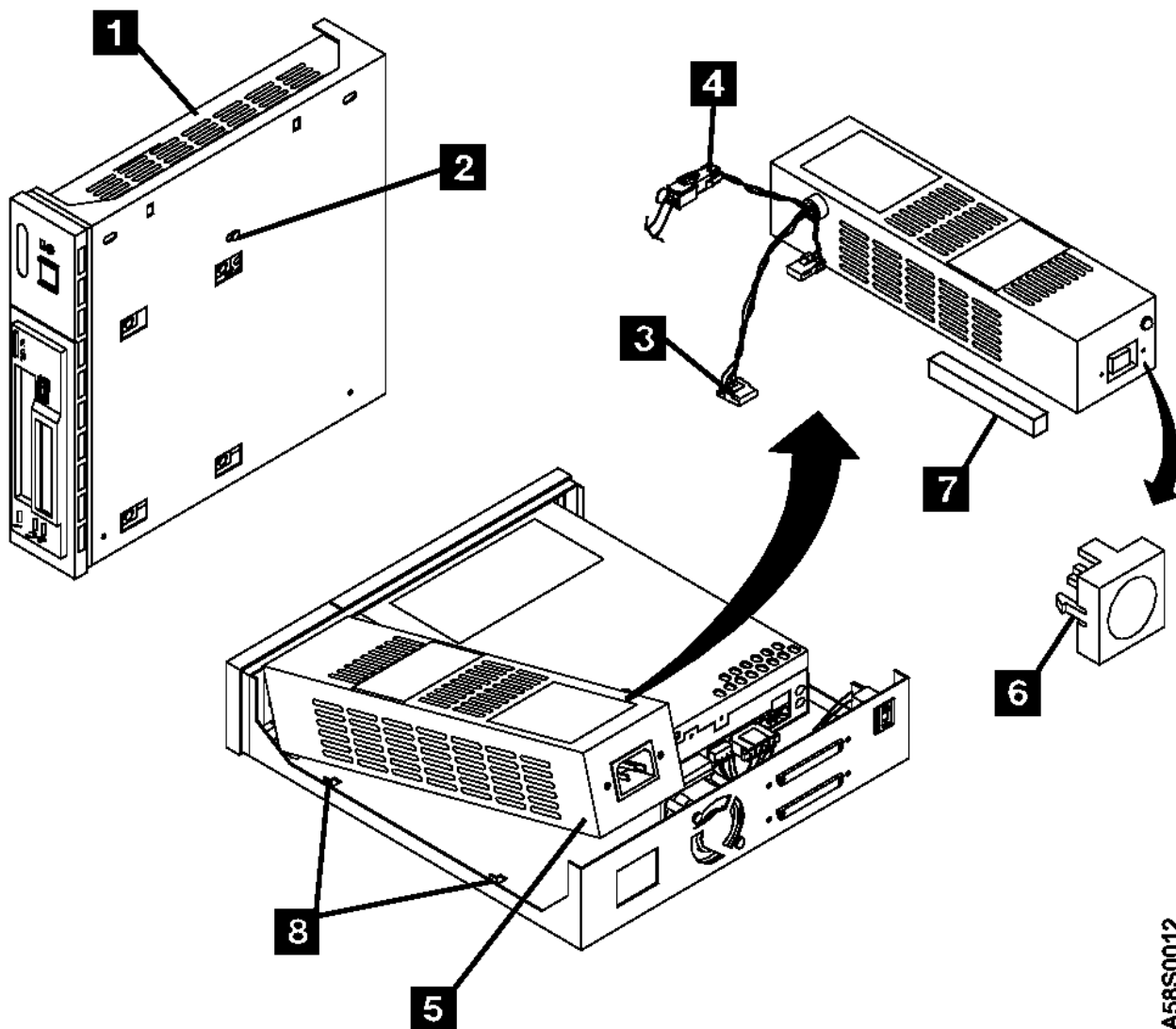
4.4 Removing and Replacing the Power Supply

DANGER
```
+-------------------------------------------------------------------+
¦ Do not attempt to open the covers of the power supply. Power supplies  ¦
¦ are not serviceable and are to be replaced as a unit. (72XXD300)      ¦
+-------------------------------------------------------------------+
```

To remove the power supply from the 7208 Tape Drive:

1. Perform the cover removal procedure. Refer to "Removing and Replacing the Cover" in topic 4.2.

2. Tilt the 7208 Tape Drive (1 in Figure 21) on its side. Support the power supply while removing the power supply mounting screw 2 from the bottom.

3. Support the power supply while returning the 7208 Tape Drive to its original position.

4. Disconnect the power supply connector (J1) 3 from the drive.

5. Disconnect the power supply connector (J2) 4 between the power supply and the cooling fan.

6. Grasp the rear of the power supply 5 and while pressing it toward the front panel, lift the rear of the power supply, then remove it from the chassis.

7. Push the power switch push button 6 out of the front panel and set it aside.

8. Remove the electromagnetic interference (EMI) gasket 7 and save it for installation with the replacement power supply.

Figure 21. Removing and Replacing the Power Supply

To replace the power supply, reverse the removal procedure. Make sure to:

Align the power supply on the base of the chassis and inside the two tabs (8 in Figure 21).

Insert the EMI gasket 7 between the power supply and the drive.

To reduce radiated noise, perform five full (360°) twists of the J1 power cable 3 .

With its locking features in a horizontal position, insert the power switch push button 6 into the front panel and press until it locks in place.

Note: If the power switch does not work properly, loosen the power supply mounting screw 2 , slide the power supply to the rear of the chassis, and retighten the mounting screw.

Arrange the cables so that they do not interfere with the cooling fan blades or the replacement of the cover. Ensure that they do not obstruct airflow through the fan.

Note: The power supply connector J3 is not used in the 7208 Tape Drive.

4.5 Removing and Replacing the Cooling Fan

To remove the cooling fan:

1. Perform the cover removal procedure. Refer to "Removing and Replacing the Cover" in topic 4.2.

2. Disconnect the power supply connector (J2) (1 in Figure 22) between the power supply and the cooling fan.

3. Remove the two screws, lockwashers, and nuts 2 that secure the cooling fan to the rear of the 7208 Tape Drive.

4. Lift the cooling fan out of the 7208 Tape Drive.

To replace the cooling fan, reverse the removal procedure. Make sure that the cooling fan is oriented so that air flows from the rear of the 7208 Tape Drive.
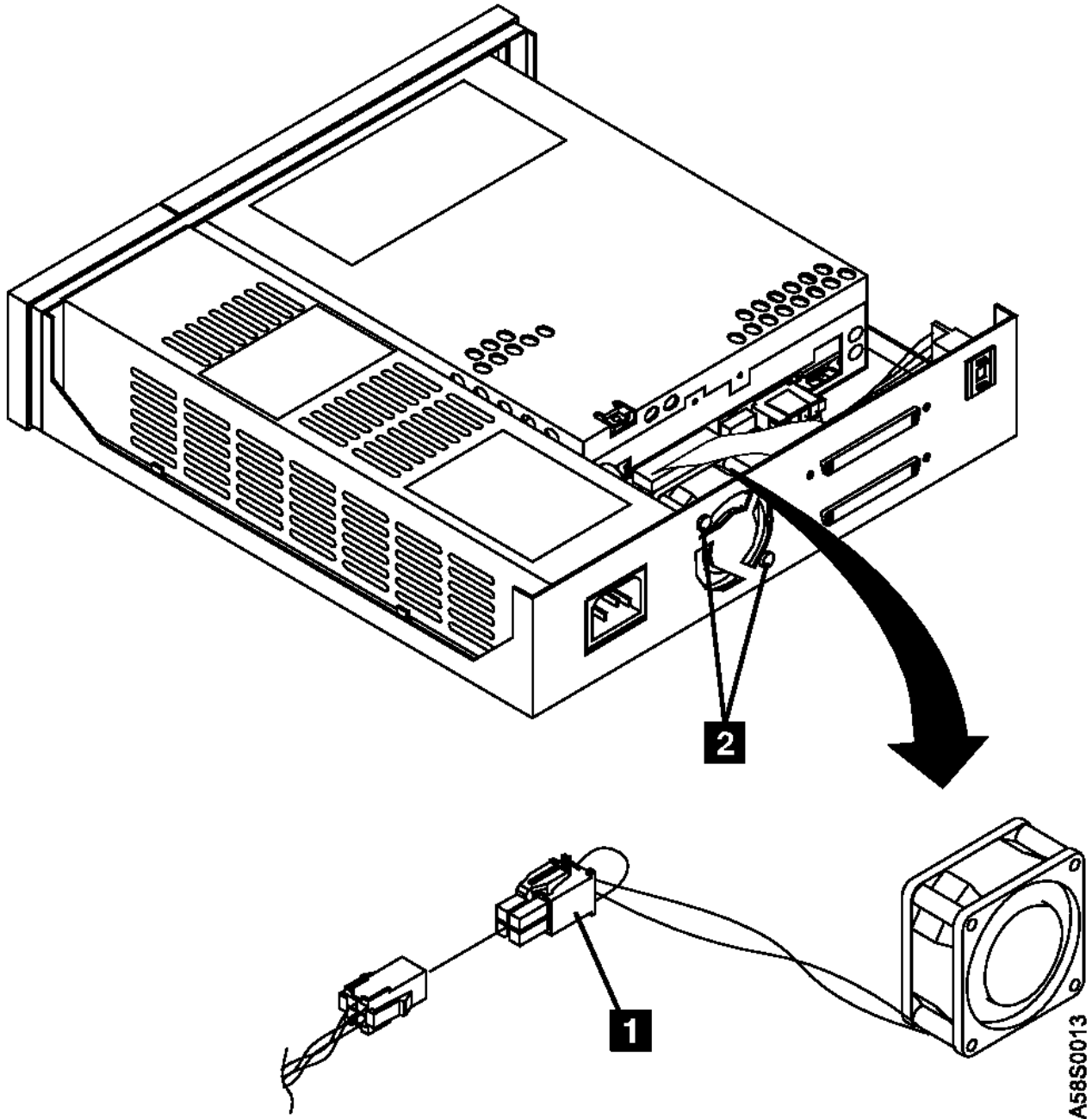

Figure 22. Removing and Replacing the Cooling Fan

4.6 Manually Removing a Tape Cartridge

If a power failure or a drive failure prevents the tape cartridge from ejecting, the cartridge can be removed manually.

Before manually removing the tape cartridge, turn off the 7208 Tape Drive, then turn it on again to clear potential error conditions. Press the unload button. If the tape does not eject, proceed with the manual removal.

Attention: The procedure that follows may result in damage to your tape cartridge. If you use this procedure, you must replace the drive. If you choose to return the drive and the stuck tape to IBM for maintenance, the tape will be scrapped.

To manually remove a tape cartridge:

1. Perform the cover removal procedure. Refer to "Removing and Replacing the Cover" in topic 4.2.

2. Perform the drive removal procedure. Refer to "Removing and Replacing the Drive" in topic 4.3.

3. Using the Torx screwdriver that is supplied with the replacement drive, remove the three T-6 screws that secure the top cover of the drive (one on the rear and two sides of the drive). See Figure 23.
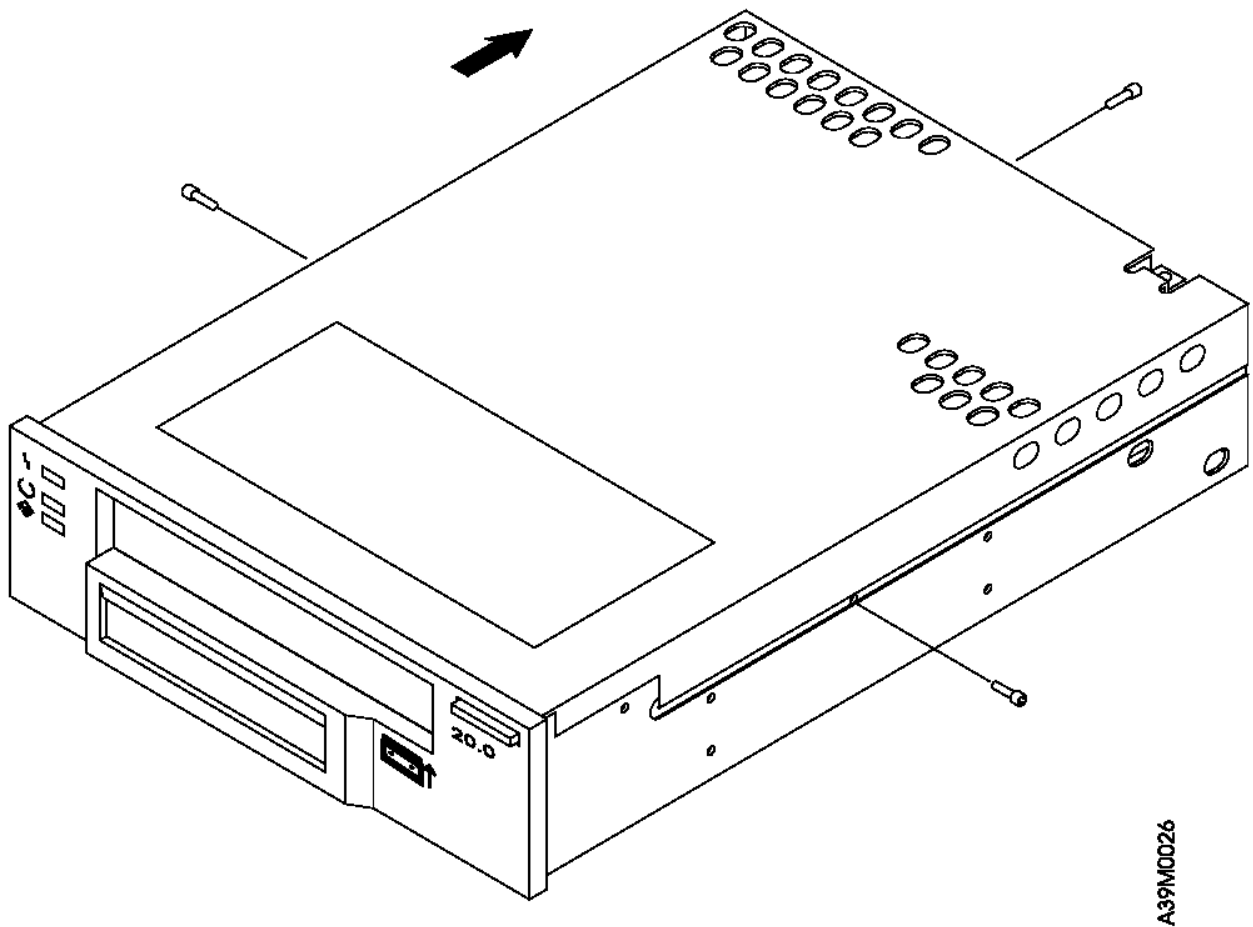
Figure 23. Removing the Top Cover of the Drive

4. Slide the cover to the rear of the drive and remove it completely.

5. If it obvious that the tape must be destroyed before it can be removed, perform the following procedure. Otherwise, go to step 6.

    Attention: This procedure will destroy the tape cartridge and its data. Use the following procedure only if the loaded tape is known to be damaged or cannot be unloaded by another method.

    a. Cut the tape at a convenient location.

    b. Manually unload the tape cartridge (see step 9).

6. Position the drive so that it faces you.

7. Take up slack in the tape by using the following instructions to move the drive's trolleys and the supply reel motor.

    Attention: To avoid damaging the tape, do not touch it.

    To move the drive's trolleys:

a. On the left side panel of the drive (toward the rear) locate the hole marked **UNLOAD** (1 in Figure 24).

b. Insert a 2.5-mm L-Hex (allen) wrench (supplied with the replacement drive) approximately 43 mm (2 in.) into the **UNLOAD** hole. Position it so that it seats securely into the inner socket.

c. Turn the wrench in the direction marked on the drive (clockwise).

d. Rotate the wrench until the trolleys 2 stop moving.
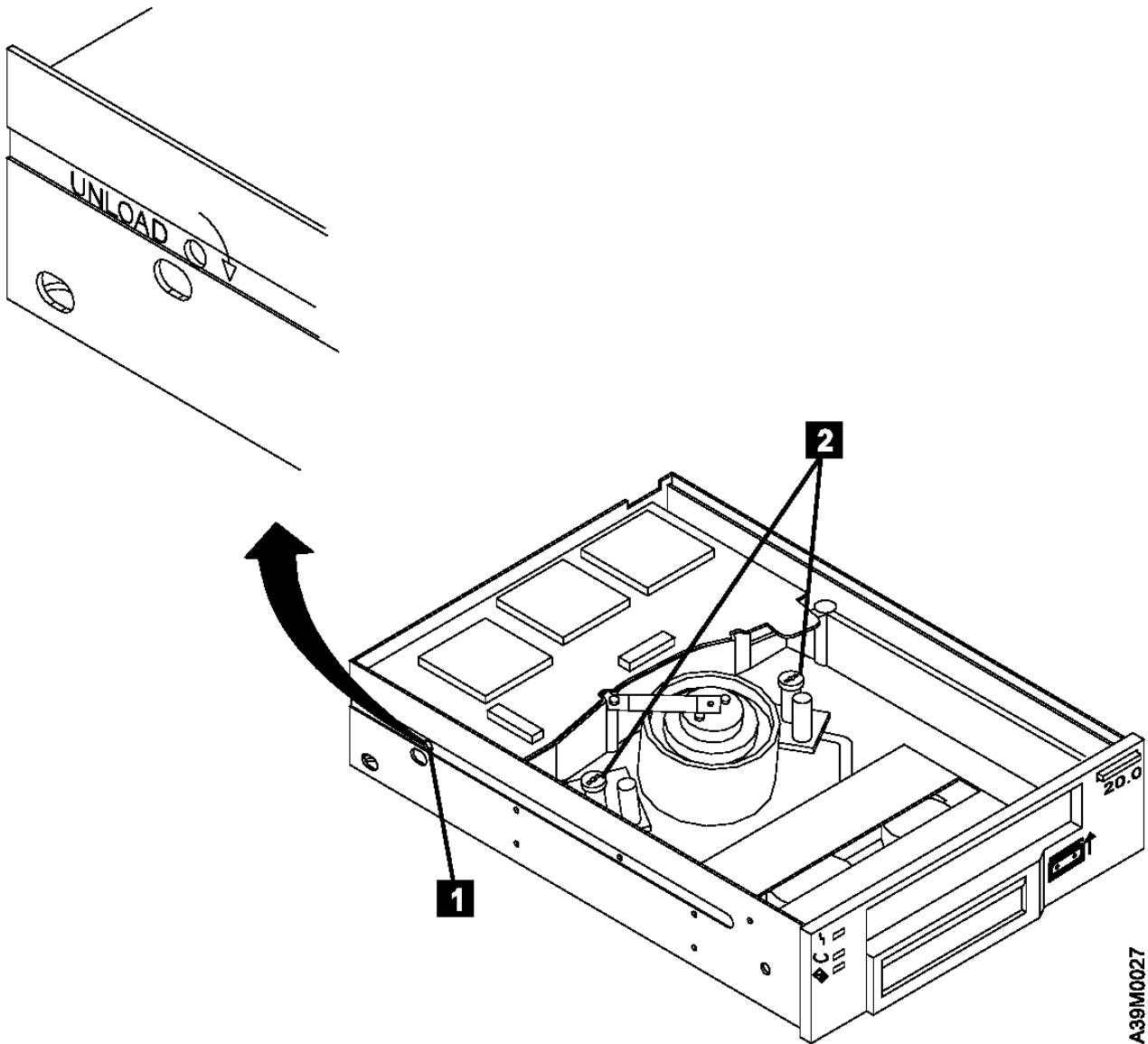
Figure 24. Moving the Trolleys

To move the supply reel motor:

a. On the bottom of the drive, locate the hole marked **UNLOAD** (1 in Figure 25) and cut the seal above the hole.

b. Insert a non-metallic probe (such as the wooden end of a swab) approximately 0.64 cm (0.25 in.) into the **UNLOAD** hole and position it so that it rests on the inner flange 2 .

c. Gently push the flange with the probe in the direction marked on the drive (clockwise).

d. Repeat the preceding step until there is no slack in the tape.
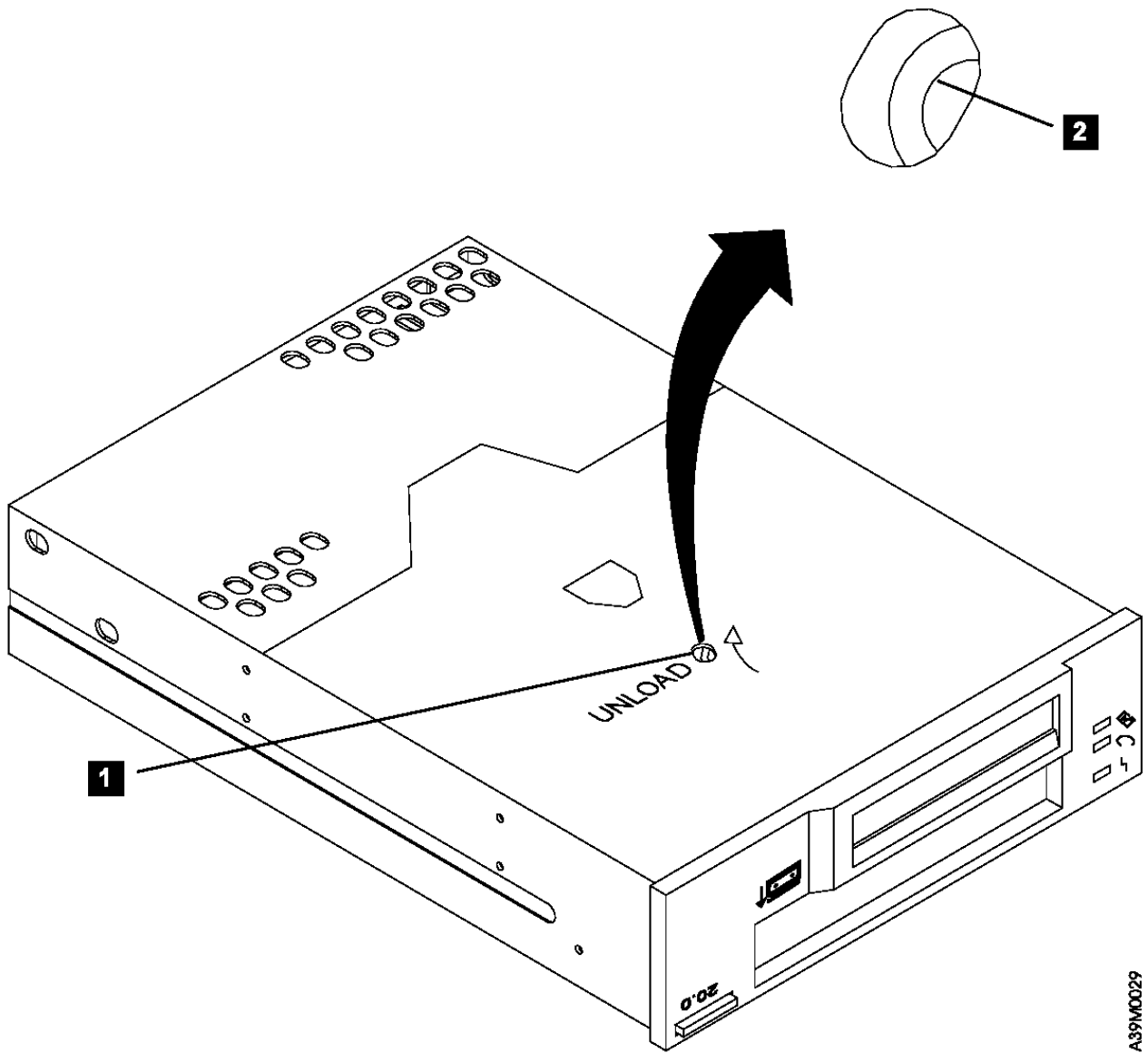
Figure 25. Moving the Supply Reel Motor.   The drive is turned upside down.

8. Ensure that the tape is fully retracted into the cartridge.

9. Unload the tape cartridge by doing the following:

   a. At the left front of the drive, insert a 2.5-mm L-Hex wrench into the hole marked **UNLOAD** (1 in Figure 26).

   b. Turn the wrench in the direction marked on the drive (counterclockwise) until the tape ejects.
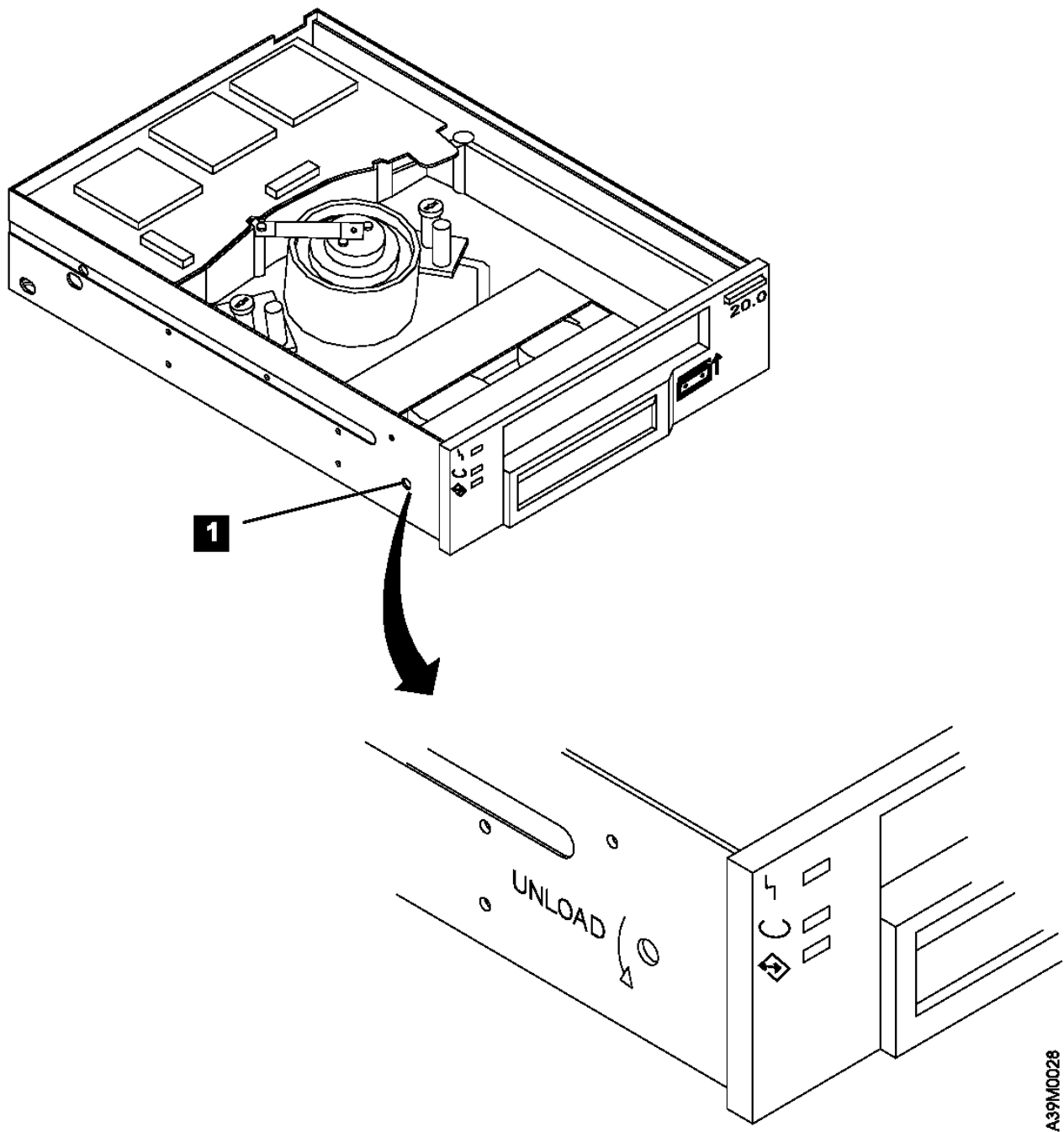
Figure 26. Unloading the Tape Cartridge

10. Replace the cover of the drive (reverse the removal procedure).

11. Replace the drive (refer to "Removing and Replacing the Drive" in topic 4.3).

Note: Service personnel should record on the QSAR the error message that displayed on the LCD and the fact that the tape cartridge had to be manually removed.

5.0 Chapter 5.   Parts Diagram and Parts List
This topic provides the parts diagram and parts list required to service the 7208 Tape Drive Model 342.

Subtopics
5.1 How To Use This Parts List

5.1 How To Use This Parts List

AR   (As Required) in the *Units* column indicates that the quantity is not the same for all machines.

NP   (Non-Procurable) in the *Part Number* column indicates that the part is non-procurable and that the individual parts or the next higher assembly should be ordered.

NR   (Not Recommended) in the *Units* column indicates that the part is procurable but not recommended for field replacement, and that the next higher assembly should be ordered.

00   00 in the *Asm- Index* column indicates that the part is either not shown or not referenced in the illustration.

R   (Restricted) in the *Units* column indicates that the part has a restricted availability.

Indenture   The indenture is marked by a series of dots located before the parts description. The indenture indicates the relationship of a part to the next higher assembly. For example:

Indenture	**Relationship of Parts**
(No dot)	MAIN ASSEMBLY
(One dot)	Detail parts of a main assembly
(One dot)	Sub assembly of the main assembly
(Two dots)	Detail part of a one-dot sub assembly
(Two dots)	Sub assembly of a one-dot sub assembly
(Three dots)	Detail part of a two-dot sub assembly

```
Subtopics
5.1.1 Example of Parts Listing
5.1.2 Assembly 1:  Parts Diagram
```

5.1.1 Example of Parts Listing

Asm-Index	Part Number	Units	Description
3-	2512667	1	Cover Asm, Rear, Red
	2513714	1	Cover Asm, Rear, White
			For Next Higher Asm, see Assembly 1-2.
-1	5373637	1	Seal, Top
-2	5356429	2	Clip, Retaining
-3	1847630	1	Finger Stock Asm
-4	1847602	NR	Channel, Finger Stock
-5	5373639	AR	Seal, Bottom
-6	5356429	2	Clip, Retaining
-7	NP	1	Cover, Rear, Without Paint
-5	0416629	R	Screw, Panel

5.1.2 Assembly 1: Parts Diagram

A5800008

```
+---------------------------------------------------------------------------+
¦ Asm-    ¦ Part    ¦       ¦                                                ¦
¦ Index   ¦ Number  ¦ Units ¦ Description                                    ¦
+--------+---------+-------+-------------------------------------------------¦
¦  1-1    ¦ 87G1642 ¦    1  ¦ Power supply                                   ¦
¦   -2    ¦ 1622401 ¦    2  ¦ Nut, cooling fan, M3 hex                       ¦
¦   -3    ¦ 1622344 ¦    2  ¦ Washer, cooling fan, optional P/N 0338169      ¦
¦   -4    ¦ 42F7300 ¦    1  ¦ Cooling fan                                    ¦
¦   -5    ¦ 46G2677 ¦    1  ¦ Screw, power supply, M3 x 6mm                  ¦
¦   -6    ¦ 46G2676 ¦    2  ¦ Screw, cooling fan, M3 x 25mm                  ¦
¦   -7    ¦ 59H2694 ¦    1  ¦ Cable, SCSI address                            ¦
¦   -8    ¦ 46G2677 ¦    4  ¦ Screw, cover, M3 x 6mm                         ¦
¦   -9    ¦ 59H2689 ¦    1  ¦ Chassis                                        ¦
¦  -10    ¦ 59H3771 ¦    1  ¦ Bezel assembly                                 ¦
¦  -11    ¦ 74G8531 ¦    1  ¦ Cable, SCSI-2 internal                         ¦
¦  -12    ¦ 59H2836 ¦    1  ¦ Drive (20GB fast/wide differential             ¦
¦         ¦         ¦       ¦ interface)                                     ¦
¦  -13    ¦ 46G2677 ¦    4  ¦ Screw, drive                                   ¦
¦  -14    ¦ 59H3772 ¦    1  ¦ Cover, includes feet                           ¦
¦  -15    ¦ 1622673 ¦    2  ¦ Screw, bezel                                   ¦
¦  -16    ¦ 74G8497 ¦    1  ¦ Push button, power supply                      ¦
¦  -17    ¦ 59H3769 ¦    1  ¦ Logo                                           ¦
¦  -18    ¦ 74G8294 ¦    1  ¦ Label, SCSI differential                       ¦
¦  -19    ¦ 71F0734 ¦    1  ¦ EMI gasket                                     ¦
¦  -00    ¦ 59H2678 ¦    1  ¦ Data cartridge, 170 m (558 ft)                 ¦
¦  -00    ¦ 59H2671 ¦    1  ¦ Data cartridge, 22.5 m (74 ft)                 ¦
¦  -00    ¦ 59H2677 ¦    1  ¦ Test cartridge (short length for customer      ¦
¦         ¦         ¦       ¦ engineer use)                                  ¦
¦  -00    ¦ 59H2898 ¦    1  ¦ Cleaning cartridge                             ¦
¦  -00    ¦ 49G6457 ¦    1  ¦ System-to-device ultra-SCSI bus cable, 4.5     ¦
¦         ¦         ¦       ¦ meters (13 feet)                               ¦
¦  -00    ¦ 49G6458 ¦    1  ¦ System-to-device ultra-SCSI bus cable, 12      ¦
¦         ¦         ¦       ¦ meters (39 feet)                               ¦
¦  -00    ¦ 49G6459 ¦    1  ¦ System-to-device ultra-SCSI bus cable, 18      ¦
¦         ¦         ¦       ¦ meters (59 feet)                               ¦
¦  -00    ¦ 61G8324 ¦    1  ¦ Terminator, SCSI fast/wide differential        ¦
+---------------------------------------------------------------------------+
```

A.0 Appendix A. Power Cables

```
+-----------------------------------------------------------------------+
¦               ¦ To avoid electrical shock, a power cable with a grounded ¦
¦               ¦ attachment plug has been provided. Use only properly   ¦
¦ PICTURE 46    ¦ grounded outlets.                                      ¦
¦               ¦                                                        ¦
¦               ¦ Power cables used in the United States and Canada are  ¦
¦               ¦ listed by Underwriter's Laboratories (UL) and certified ¦
¦               ¦ by the Canadian Standards Association (CSA). The power  ¦
¦               ¦ cables consist of:                                     ¦
¦               ¦                                                        ¦
¦               ¦     Electrical cables, type SVT or SJT.                ¦
¦               ¦                                                        ¦
¦               ¦     Attachment plugs complying with National Electrical ¦
¦               ¦     Manufacturers Association (NEMA) 5-15P, that is:    ¦
¦               ¦                                                        ¦
¦               ¦     "For 115 V operation use a UL Listed Cable Set     ¦
¦               ¦     consisting of a minimum 18 AWG, Type SVT or SJT    ¦
¦               ¦     three conductor cable a maximum of 15 feet in length ¦
¦               ¦     and a parallel blade, grounding type attachment plug ¦
¦               ¦     rated at 15 A, 125 V."                             ¦
¦               ¦                                                        ¦
¦               ¦     "For 230 V operation in the United States use a UL ¦
¦               ¦     Listed Cable Set consisting of a minimum 18 AWG,   ¦
¦               ¦     Type SVT or SJT three conductor cable a maximum of ¦
¦               ¦     15 feet in length, and a tandem blade, grounding   ¦
¦               ¦     type attachment plug rated at 15 A, 250 V."        ¦
¦               ¦                                                        ¦
¦               ¦     Appliance couplers complying with International    ¦
¦               ¦     Electrotechnical Commission (IEC) Standard 320,    ¦
¦               ¦     Sheet C13.                                         ¦
¦               ¦                                                        ¦
¦               ¦                                                        ¦
¦               ¦ Power cables used in other countries consist of:      ¦
¦               ¦                                                        ¦
¦               ¦     Electrical cables, type HD21.                      ¦
¦               ¦                                                        ¦
¦               ¦     Attachment plugs approved by the appropriate testing ¦
¦               ¦     organization for the specific countries where they ¦
¦               ¦     are used.                                          ¦
¦               ¦                                                        ¦
¦               ¦     "For units set at 230 V (outside of U. S.): Use a  ¦
¦               ¦     Cable Set consisting of a minimum 18 AWG cable and ¦
¦               ¦     grounding type attachment plug rated 15 A, 250 V.  ¦
¦               ¦     The Cable Set should have the appropriate safety   ¦
¦               ¦     approvals for the country in which the equipment is ¦
¦               ¦     to be installed and marked 'HAR'."                 ¦
¦               ¦                                                        ¦
¦               ¦ Figure 27 lists the power cable part number, the country ¦
¦               ¦ where the power cable can be used, and an index number ¦
¦               ¦ to be matched with the receptacles shown in Figure 28. ¦
¦               ¦ If your power cable does not match this information,   ¦
¦               ¦ contact your local dealer.                            ¦
+-----------------------------------------------------------------------+
```

```
+-----------------------------------------------------------------------+
¦ Figure 27. Power Cable Information                                    ¦
+-----------------------------------------------------------------------¦
```

Part Number	Country	Index
1838574 Japan	Bahamas, Barbados, Bolivia, Brazil, Canada, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Netherlands Antilles, Panama, Peru, Philippines, Taiwan, Thailand, Tobago, Trinidad, U.S.A. (except Chicago), Venezuela	1
6952300 US/Canada	Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Puerto Rico, Saudi Arabia, Suriname, Taiwan, Trinidad, U.S.A. (except Chicago), Venezuela	2
6952301 6 ft	Chicago, U.S.A.	2

```
¦ Chicago            ¦                                       ¦         ¦
+-------------------+---------------------------------------+---------¦
¦ 13F9940 Australia ¦ Argentina, Australia, New Zealand     ¦    3    ¦
+-------------------+---------------------------------------+---------¦
¦ 13F9979 France    ¦ Abu Dhabi, Austria, Belgium, Bulgaria,¦    4    ¦
¦                   ¦ Botswana, Egypt, Finland, France,     ¦         ¦
¦                   ¦ Germany, Greece, Iceland, Indonesia,  ¦         ¦
¦                   ¦ Korea (South), Lebanon, Luxembourg,   ¦         ¦
¦                   ¦ Macau, Netherlands, Norway, Portugal, ¦         ¦
¦                   ¦ Saudi Arabia, Spain, Sudan, Sweden,   ¦         ¦
¦                   ¦ Turkey, Yugoslavia                    ¦         ¦
+-------------------+---------------------------------------+---------¦
¦ 13F9997 Denmark   ¦ Denmark                               ¦    5    ¦
+-------------------+---------------------------------------+---------¦
¦ 14F0015 South     ¦ Bangladesh, Burma, Pakistan, South    ¦    6    ¦
¦ Africa            ¦ Africa, Sri Lanka                     ¦         ¦
+-------------------+---------------------------------------+---------¦
¦ 14F0033 United    ¦ Bahrain, Bermuda, Brunei, Channel     ¦    7    ¦
¦ Kingdom           ¦ Islands, Cyprus, Ghana, Hong Kong,    ¦         ¦
¦                   ¦ India, Iraq, Ireland, Jordan, Kenya,  ¦         ¦
¦                   ¦ Kuwait, Malawi, Malaysia, Nigeria,    ¦         ¦
¦                   ¦ Oman, People's Republic of China,     ¦         ¦
¦                   ¦ Qatar, Sierra Leone, Singapore,       ¦         ¦
¦                   ¦ Tanzania, Uganda, United Arab Emirates ¦        ¦
¦                   ¦ (Dubai), United Kingdom, Zambia       ¦         ¦
+-------------------+---------------------------------------+---------¦
¦ 14F0051           ¦ Liechtenstein, Switzerland            ¦    8    ¦
¦ Switzerland       ¦                                       ¦         ¦
+-------------------+---------------------------------------+---------¦
¦ 14F0069 Italy     ¦ Chile, Ethiopia, Italy                ¦    9    ¦
+-------------------+---------------------------------------+---------¦
¦ 14F0087 Israel    ¦ Israel                                ¦   10    ¦
+-------------------+---------------------------------------+---------¦
¦ 6952291 Colombia  ¦ Colombia, Paraguay, Uruguay           ¦   11    ¦
+-------------------+---------------------------------------+---------+
```

Figure 28. Types of Receptacles
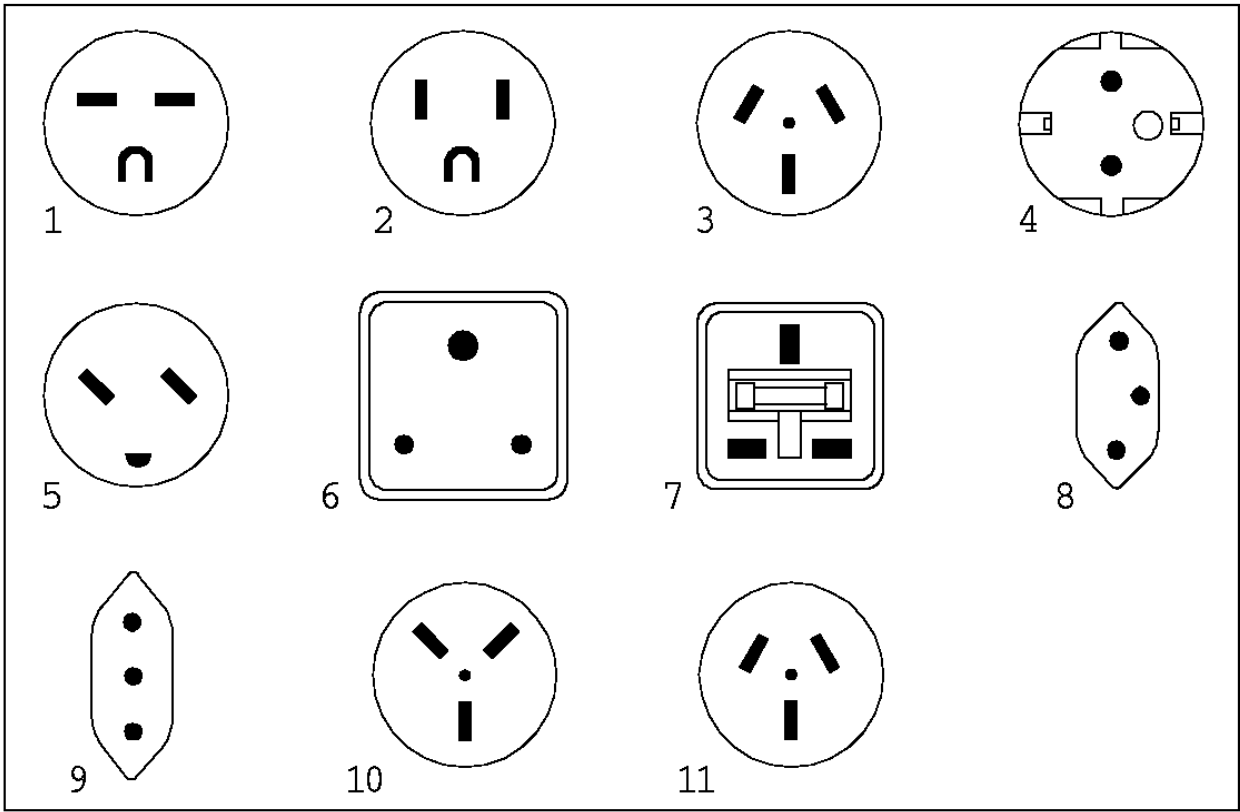
B.0 Appendix B. Fault Symptom Codes and Error Recovery Procedure Numbers

Use Figure 29 to resolve error messages that appear on the LCD of the 7208 Tape Drive Model 342:

1. Determine the fault symptom code (FSC) in the error message (the first two digits in the message). For example, in error message **ERR 1: AD 58 C0**, the FSC is **AD**.

2. Locate the FSC in Figure 29 and identify the error recovery procedure (ERP) number for that FSC.

3. Locate the ERP number in Figure 30 in topic C.0, and identify the recommended error recovery procedure.

Note: Items in the Cause column are defined as follows:

```
+--------------------------------+
¦ A = Application  ¦ O = Operator ¦
¦ software         ¦              ¦
+------------------+--------------+
¦ B = Bus (SCSI)   ¦ S = System   ¦
+------------------+--------------¦
¦ D = Drive        ¦ T = Tape     ¦
+------------------+--------------¦
¦ I =              ¦              ¦
¦ Informational    ¦              ¦
¦ message          ¦              ¦
+--------------------------------+
```

FSC	Description	ERP Number	Cause
	Figure 29. Fault Symptom Codes (FSC) and Error Recovery Procedure (ERP) Numbers		
02	Invalid position for WRITE	2	O = 50% S = 50%
03	Tape is write protected for WRITE	5	D = 5% O = 90% T = 5%
04	LEOT encountered on current WRITE	10	I
05	Operation has aborted (as requested)	11	D = 50% O = 50%
06	LEOT encountered on the last WRITE	10	I
08	Compression data integrity check failed	12	D = 100%
09	Detected LEOT during READ	10	I
0A	Length mismatch on READ	15	I
0B	Uncorrectable block on READ	8,6	D = 10% T = 90%
0C	EOD encountered on READ	13	I
0D	Filemark encountered during a READ	10	I
0E	Illegal condition for READ	2	D = 50% S = 50%
0F	READ issued at blank tape	4	I
10	READ operation has aborted (as requested)	11	D = 50% O = 50%
11	Too many permanent READ errors, cannot sync	8,6	D = 10% T = 90%
	PEOT or PEOP encountered on a READ		D = 50%

14	or VERIFY	2,8,6	O = 50%
15	Bad filemark encountered during a READ	8,6	T = 100%
16	Medium error detected during a READ	8,6	D = 10% / T = 90%
17	Hardware error during a READ	12	D = 100%
18	READ decompression failed -- HW error	12	D = 100%
19	READ decompression CRC failed	12	D = 100%
1C	Unknown or incompatible format	14	T = 100%
1D	Hit setmark on READ	10	I
26	Not at legal place to WFM	2	O = 50% / S = 50%
27	Tape is write protected for WFM	5	I
28	LEOT encountered during WFM	10	I
31	Setmark detected on SPACE/LOCATE	10	I
32	Filemark detected during SPACE/LOCATE	10	I
33	EOD encountered on SPACE/LOCATE	10	I
34	PEOT encountered on SPACE/LOCATE	8,6	T = 100%
35	PBOT encountered on SPACE/LOCATE	2	I
36	Format error during SPACE/LOCATE	8,6	D = 20% / T = 80%
37	Uncorrectable block during a SPACE/LOCATE	8,6	D = 10% / T = 90%
38	Medium error during SPACE/LOCATE	8,6	D = 20% / T = 80%
3A	Bad filemark during SPACE (2.3GB mode only)	3	T = 100%
3B	SPACE/LOCATE has aborted (as requested)	11	D = 50% / O = 50%
3D	Lost in space	8,6	D = 20% / T = 80%
47	Incompatible medium rejected after loading	14	O = 90% / T = 10%
4B	Illegal position for ERASE	2	O = 50% / S = 50%
4C	Tape is write protected for ERASE	5	D = 5% / O = 90% / T = 5%
4E	ERASE has aborted (as requested)	11	D = 5% / O = 90% / S = 5%
58	Hardware error during SEND	12	D = 100%

		DIAGNOSTIC		
	61	Header in wrong format when loading ucode	8,6	T = 100%
	63	Control load image not valid	8,6	T = 100%
	65	EEPROM load image not valid	8,6	T = 100%
	66	Boot code old	8,6	T = 100%
	67	Cannot program one of the memories	12	D = 100%
	69	CRC in load image was not correct	8,6	T = 100%
	6D	Read buffer command failed	12	D = 100%
	71	Illegal position to format partition	2	D = 50% O = 50%
	72	Partitions are too big for tape	2	O = 100%
	74	Partition format of tape failed	8,6	T = 100%
	75	Partition format aborted	8,6	D = 5% O = 90% S = 5%
	79	Failed position to a new partition	8,6	T = 100%
	7A	Partition switch aborted	11	D = 5% O = 90% S = 5%
	8C	Software hang, we are very confused	12	D = 100%
	8D	Software detects a hardware problem	12	D = 100%
	93	Detect PEOP	10	A = 100%
	94	Write Setmark failure	6	T = 100%
	95	WRITE failure after retry limit exceeded	8,6	D = 30% T = 70%
	96	WFM failure after retry limit exceeded	8,6	D = 30% T = 70%
	97	Write EOD failure after retry limit exceeded	8,6	D = 30% T = 70%
	98	Fill error, invalid BRT	12	D = 100%
	99	Fill error, buffer empty	12	D = 100%
	9A	Deformatter interrupt timeout on search	12	D = 100%
	9B	Overwrite (bad readback; check block type)	8,6	D = 50% T = 50%
	9C	Formatter interrupt timeout on WRITE	12	D = 100%
	9D	Permanent write error, write recovery fail	8,6	D = 30% T = 70%
	9E	Permanent write error rewrite threshold	8,6	D = 30% T = 70%
				D = 30%

9F	Servo zone readback check failure	8,6	T = 70%
A1	Head sync error during WRITE	8,6	D = 90% T = 10%
A2	Underrun error during WRITE	12	D = 100%
A3	IPORT write buffer parity error	12	D = 100%
A4	DPORT WRITE parity error	12	D = 100%
A5	PPORT WRITE parity error	12	D = 100%
A6	IPORT READ parity error	12	D = 100%
A7	DPORT READ parity error	12	D = 100%
A8	PPORT READ parity error	12	D = 100%
AC	Servo software error	12	D = 100%
AD	Servo hardware error	8,6	D = 10% T = 90%
AE	Not tracking	8,6	D = 40% T = 60%
AF	EOT encountered during a motion command	2	D = 100%
B0	Not tracking -- loss of PLL	8,6	D = 40% T = 60%
B3	LBOT WRITE failure	8,6	D = 30% T = 70%
B4	LBOT ATM write failure	8,6	D = 30% T = 70%
B5	Read manager could not read LBOT	8,6	D = 30% T = 70%
B6	EOT encountered during buffer flush	2	I
C0	Power-on reset occurred	3	I
C1	Tape may have been changed	3	I
C2	Mode Select parameters have changed	3	I
C3	New ucode was loaded	3	I
C4	Operator requested media removal	11	I
C5	Incompatible media was rejected	14	I
C6	Not ready, cause not known	7,3	I
C7	Not ready, in process of becoming ready	3	I
C8	A backup positioning command is required	2	I
C9	Command requires a tape and none is loaded	7,3	I
CA	Log Threhold met	3	I
CB	Log Parameter changed	3	I
CC	Parameter List Length error in CDB	2	D = 50% S = 50%

CD	Illegal Operation Code	2	D = 50% S = 50%
CE	Invalid field or reserved bits set in CDB	2	D = 50% S = 50%
CF	This LUN is not supported	2	D = 50% S = 50%
D0	Invalid field in Parameter List (Mode Data)	2	D = 50% S = 50%
D1	Illegal bit set in identify message	2	D = 50% S = 50%
D2	Media removal is prevented	2	D = 50% S = 50%
D3	Command has mode mismatch (variable/fixed)	2	D = 50% S = 50%
D4	Illegal Transfer Length in CDB	2	D = 50% S = 50%
D6	Tried to change Mode Parms and not at LBOT	2	D = 50% S = 50%
D7	Can't read medium incompatible format	14	D = 50% S = 50%
D8	Overlapped commands attempted bad ITL nexus	2	D = 50% S = 50%
DA	Illegal bits set in ID message	2	D = 50% S = 50%
DB	Cannot write to tape not AME	10	I
DC	Rounding has occurred	7	I
DD	Not ready -- head sync tape	2	D = 50% S = 50%
DE	Density not supported	2	D = 50% S = 50%
E0	Aborted in CDB phase, parity or other error	12	B = 100%
E1	Aborted prior to Data phase, bad message	12	B = 100%
E2	Aborted in Data phase, init detected error	12	B = 100%
E3	Aborted in Data phase, bad message	12	B = 100%
E4	Aborted after Data phase, bad message	12	B = 100%
E5	Aborted after Data phase, other error	12	B = 100%
E6	ABORT caused by SCSI Bus Parity Error	12	B = 100%
E7	ABORT sent by initiator has been completed	12	B = 100%

E8	Drive needs cleaning	1	I
EA	Invalid mode (2.3GB) for data compression	2	D = 50% S = 50%
EB	Download in progress	3	D = 50% S = 50%
EC	Log parameter overflow (recovered error)	10	I
EE	Service may be required	12	D = 90% T = 10%
FA	Serial number invalid or blank	12	D = 100%
FC	Head sync value in EEPROM out of range	12	D = 100%
FD	EEPROM contains meaningless information	12	D = 100%

C.0 Appendix C.   Error Recovery Procedures

Use Figure 30 to resolve error messages that appear on the LCD of the 7208 Tape Drive Model 342:

1. Determine the fault symptom code (FSC) in the error message (the first two digits in the message). For example, in error message **ERR 1: AD 58 C0**, the FSC is **AD**.

2. Locate the FSC in Figure 29 in topic B.0 and identify the error recovery procedure (ERP) number for that FSC.

3. Locate the ERP number in Figure 30, and identify the recommended error recovery procedure. If two or more ERP codes are listed for the fault symptom code in Figure 29 in topic B.0, perform the action for the first code, then perform the action for the second code, and so on.

```
+-----------------------------------------------------------------------+
¦ Figure 30. Error Recovery Procedures                                  ¦
+-----------------------------------------------------------------------+
¦  ERP ¦                                                                ¦
¦ Numbe¦ Recommended Error Recovery Procedure                          ¦
+------+----------------------------------------------------------------¦
¦   1  ¦ Warning Message, clean drive.                                 ¦
+------+----------------------------------------------------------------¦
¦      ¦ Application program error or user error using application.    ¦
¦   2  ¦ Retry operation. If this problem continues, notify application¦
¦      ¦ provider.                                                     ¦
+------+----------------------------------------------------------------¦
¦   3  ¦ Reissue the failed command or command sequence.              ¦
+------+----------------------------------------------------------------¦
¦   4  ¦ Application attempted to read a blank tape. Either write to the¦
¦      ¦ tape or replace the tape with a tape containing data.        ¦
+------+----------------------------------------------------------------¦
¦   5  ¦ Tape is write protected and a write or erase was attempted.  ¦
¦      ¦ Either write-enable the tape or insert a write-enabled tape.  ¦
+------+----------------------------------------------------------------¦
¦      ¦ Perform the following until the operation can be completed:   ¦
¦      ¦                                                                ¦
¦      ¦ 1.  Clean the drive                                           ¦
¦   6  ¦ 2.  Retry the operation                                       ¦
¦      ¦ 3.  Clean the drive                                           ¦
¦      ¦ 4.  Replace the tape cartridge                                ¦
¦      ¦ 5.  If the error persists and there is an error in the system ¦
¦      ¦     error log, call your service representative              ¦
+------+----------------------------------------------------------------¦
¦   7  ¦ Insert a data cartridge into the tape drive.                 ¦
+------+----------------------------------------------------------------¦
¦      ¦ Perform one of the following actions:                         ¦
¦      ¦                                                                ¦
¦   8  ¦     Reset the tape drive by holding down the unload button    ¦
¦      ¦     until the RESET message appears; then release the button. ¦
¦      ¦     Send a SCSI bus reset (a hard reset).                     ¦
+------+----------------------------------------------------------------¦
¦   9  ¦ Clean the tape drive and repeat the operation.               ¦
+------+----------------------------------------------------------------¦
¦  10  ¦ No action is necessary.                                       ¦
+------+----------------------------------------------------------------¦
¦  11  ¦ User has pushed the unload button. No action is required; the ¦
¦      ¦ tape drive performed the requested operation.                ¦
+------+----------------------------------------------------------------¦
¦  12  ¦ The tape drive requires maintenance.                         ¦
+------+----------------------------------------------------------------¦
¦      ¦ The tape drive has encountered the end of the media on a read ¦
¦  13  ¦ or write operation. Mount the next tape and continue the tape ¦
¦      ¦ operation.                                                    ¦
+------+----------------------------------------------------------------¦
¦  14  ¦ The media type is not supported. Clean the drive and retry the¦
¦      ¦ operation with supported media.                              ¦
+------+----------------------------------------------------------------¦
¦      ¦ The block size requested on the read operation does not match ¦
¦  15  ¦ the block size that the tape was written at. Change the       ¦
¦      ¦ application's block size.                                     ¦
+-----------------------------------------------------------------------+
```

COMMENTS Appendix D. Readers' Comments -- We'd Like to Hear from You
7208 20GB External 8mm Tape Drive Service Guide Model 342

Publication No. SA37-0381-00

Overall, how satisfied are you with the information in this book?

Legend:

1 Very satisfied
2 Satisfied
3 Neutral
4 Dissatisfied
5 Very dissatisfied

	1	2	3	4	5
Overall satisfaction					

How satisfied are you that the information in this book is:

	1	2	3	4	5
Accurate					
Complete					
Easy to find					
Easy to understand					
Well organized					
Applicable to your tasks					

Please tell us how we can improve this book:

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Company or Organization _____
Address . . . . . . . . _____
                        _____
                        _____
Phone No.  . . . . . . . _____
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