

MENTOR™
INSTALLATION GUIDE
2000/2500 SERIES

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This edition of the MENTOR™ Installation Guide for 2000/2500 Series Computer Systems contains detailed line drawings of the MENTOR 2000/2500. It is to be used with Mentor Operating System Release 2.0.

A list of changed pages appears below, with a margin bar on affected pages to indicate these changes.

Users are urged to use the Comment Sheet at the back of the book to communicate their comments to the ADDS Technical Publications Department, Systems Division.

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SECTION 1:

INTRODUCTION

HOW TO USE THIS MANUAL

This manual is a guide to pre-installation planning for and installation of MENTOR 2000/2500 Computer Systems. It discusses general installation requirements, contains site preparation checklists and provides step-by-step installation instructions. It also includes wiring and cable specifications, diagrams and descriptions of system hardware and preventive maintenance procedures.

CONVENTIONS USED IN THIS MANUAL

The following are writing conventions used in this manual to help indicate what action should be taken at a particular time:

TEXT Bold text represents the user's input.

␣ SPACE BAR symbol.

<cr> Carriage return symbol.

INSTALLATION PLANNING

Installation of your ADDS equipment should be planned carefully well in advance of the anticipated delivery date.

One of the first decisions you must make is where the equipment will be installed. Your choice of location depends on many things, including the needs of your organization. Careful and early site planning, allowing sufficient time for site preparation, will facilitate the delivery and installation of your MENTOR Computer System and related equipment.

When selecting a site for your equipment, attention must be paid to space requirements, electrical power, air conditioning, entrances and exits, lighting and security. It is essential that you fully understand and meet the electrical and physical requirements and specifications for installation of your MENTOR and related components (e.g., terminals and printers).

Your ADDS MENTOR Dealer can give you additional information regarding specific installation requirements.

FCC COMPLIANCE

MENTOR 2000/2500 Computer Systems comply "with the requirements in Part 15 of FCC rules for a Class A computing device." Any parts removed from the system must be re-installed properly with ADDS-approved hardware to assure continued FCC compliance.

SECTION 2:

GENERAL REQUIREMENTS

INSTALLATION LAYOUT

There are many things to consider in designing a computer site. The electrical power provided must be exactly according to specifications. The environment at the site must be free of excessive dust and dirt, and the airflow, temperature and humidity within recommended limits. There also must be enough room to remove access panels and perform preventive maintenance.

The following installation guidelines include both recommendations and requirements. See the Installation Checklist for details on these requirements.

- The MENTOR is designed to take up a minimum of floor space. It should be located on a flat, stable, vibration-free surface.
- There should be at least three feet of free space between the MENTOR and each related component (line printer, etc.). However, MENTOR will not be installed in an open factory or warehouse environment.
- Each component should be located no more than three feet from its AC power outlet.
- A line printer attached to the parallel printer port should not be more than ten feet from the MENTOR. All printers should be placed carefully, to minimize the amount of paper dust on the site, and should be grounded properly to the MENTOR.
- The airflow around each component should be optimized. Air conditioning vent placement is important. Note, however, that components should be located as far as possible from windows and direct sunlight.
- Cables for terminals, printers and other components should not be installed where they will be walked on, where furniture will be placed on them or near fluorescent lights or heavy-gauge power lines. The MENTOR and related components should be placed in an area with minimal traffic.

Whenever a computer site is designed, additional space should be allotted for possible future expansion.

POWER

A MENTOR 2000/2500 Computer System installation consists of a MENTOR 2000/2500 computer containing at least one disk drive, one tape drive and at least one external display terminal (the system console). The power required for this minimum installation must be supplied on two lines. The line for MENTORs installed in the U.S. and Canada must be dedicated and grounded and be rated for 15 Amps (1800 Watts) of alternating current at 120 Volts (+ 10 percent) and 60 Hertz. MENTORs installed outside the U.S. and Canada require at least 10 Amps at 220-240 Volts (+ 10 percent) and 50 Hertz. If a domestic ADDS display terminal is used, a line providing 60 Watts AC at 120 Volts (+ 10 percent) and 60 Hertz is required. International ADDS display terminals require 60 Watts AC at 220-240 Volts (+ 10 percent) and 50 Hertz. Other terminals and printers used with your MENTOR will have different electrical requirements.

The power source for the MENTOR must have an appropriate properly-grounded receptacle and separate fuses or circuit breakers. The voltage supplied should not differ from recommended ratings: voltages that are too high will damage the unit; voltages that are too low may cause problems with equipment or data.

No other electrical equipment can share the power line with your MENTOR. Equipment which uses a great deal of power (e.g., air conditioners), SCR-type lighting controls (dimmers) and any devices which cause power surges or drains should not be used near the MENTOR or near any of the cables leading from it. This equipment is not to be used with IT Power Systems.

The MENTOR must be properly grounded. Do not, under any circumstances, cut or remove the grounding lug from the system's plug. If your installation site has improperly-grounded receptacles, it is your responsibility and obligation to have needed outlets replaced with properly-grounded receptacles. If there is any doubt as to whether your electrical circuits meet specifications, have them checked by a qualified electrician.

All components must be properly grounded. Even items like printer paper baskets must be grounded or electrical problems may become apparent. To ground paper baskets, etc., use anti-static tinsel (Chapman Corp. part #A830042 or equivalent). Display terminals should also be in static-free environments. Anti-static mats may be useful here.

The more complex your installation, the more important it is that you provide an ideal power source for your MENTOR Computer System. If your geographic area has exceptionally unstable power (a possibility even in modern metropolitan areas), it is recommended that you use a constant-voltage regulator/transformer certified for use in the computer site country. Recommended models include Amtek's (Current Technology's) PS or MP Series and Topaz's Line2 Series or equivalent models from Displex, Gould or Sola.

ENVIRONMENT

The MENTOR 2000/2500 Computer System was designed to be used in a data-processing environment. Proper maintenance of this environment will help ensure that you will not suffer downtime due to memory errors, printer paper jams, halts or hangs, etc.

Electrostatic discharge (static) is one of the biggest enemies of any computer system. Static-induced problems can manifest themselves as unexplained system errors or halts or hangs. Therefore, it is imperative that you avoid conditions which promote static.

There should be no rugs or carpeting on the computer site floor. The elimination of carpeting is the single most effective solution to static control. Other anti-static measures often cannot effectively control the levels of electrical energy present. If it is absolutely impossible to avoid rugs or carpeting, the MENTOR must be placed on a properly-grounded anti-static mat (3M Velostat 9100 Series or equivalent). Place the MENTOR on the mat so that users cannot reach the MENTOR without stepping on the mat. This will help discharge any static charges built up by users.

Carpeting should be kept away from areas close to the MENTOR as well, to help prevent users from building up a static charge just before they touch the system. In certain areas such as these, anti-static mats and sprays will have a limited effect.

The proper grounding of related components is invaluable in static control. The line printer must be in a non-carpeted area or on an anti-static mat. All cabling between the MENTOR and its terminals, printers and any accessories, like printer baskets, should follow good electrical practices and be properly grounded. Avoid high-energy sources of electrical "noise" such as fluorescent lights, motors, X-ray equipment and machinery.

Keep humidity at proper levels. The relative humidity around your MENTOR must be between 40 and 50 percent (without condensation). Avoid moisture levels that are too low (which can cause static) and moisture levels that are too high (which can cause condensation). If extreme conditions exist, a humidifier or dehumidifier will be necessary.

The temperature in MENTOR's environment must be between 65 and 78 degrees Fahrenheit (18 to 26 degrees Celsius). Your air conditioning system must provide at least 2,500 BTU/hr. to compensate for heat produced by the equipment (most central heating and air conditioning systems can meet this requirement). If your MENTOR is installed in an enclosed area, additional air conditioning may be necessary to compensate for heat generated by the equipment and related components.

Computer room cleaning is essential for good performance; your cleaning service should be advised accordingly. Damp-mopping floors has proven effective in preventing dust and dirt from damaging the components inside your MENTOR. Be sure liquid does not contact the MENTOR's inner components. Ventilation ducts should be fitted with air filters which are cleaned and replaced regularly. There must be no excessive dirt. Electrical cleaning appliances must never be used when the MENTOR is on.

SAFETY

The computer site should be a hazard-free environment in which installation and testing can be performed. You should notify ADDS of any hazards existing at the computer site.

The following should be considered in providing a hazard-free environment:

- | | |
|-----------------------------|--|
| Exit | A clearly-marked exit should exist at the site to permit the evacuation of personnel in an emergency. |
| Fire | A Halon-type dry chemical fire extinguisher is recommended and should be readily accessible. |
| Local Codes and Regulations | The site must comply with building and safety codes for electrical wiring, fire prevention, alarms, etc. |
| Obstructions | Obstructions on or near walls or floors (exposed cabling, furniture or supplies that block the flow of traffic around the computer) should be minimized. |

COMPUTER SITE COMMUNICATIONS

System Console

The system console is attached to Port 0 of your MENTOR. This terminal should be as close to the computer as possible and should be on whenever the system is on -- many messages for computer users are displayed on this terminal.

Telephone and Modem

You are responsible for having an ADDS-approved, Bell-compatible (type 103 or 212) 300- or 1200-baud modem (certified for use in the computer site country) and a phone within four feet of the MENTOR. Recommended models include Racal-Vadic models VA103 (300-baud), VA3413 (300/1200-baud) and VA3450 (300/1200-baud). The modem is used by qualified personnel to diagnose system problems remotely. The phone will allow users to report on data displayed by the system.

CABLING

ADDS provides the cables used between your MENTOR and the system console and the parallel printer. You must provide and have installed any cables you need for extra terminals and printers.

Determine the length of cable needed for each component by reading the specification sheet for that component. When measuring distances between connectors, be sure to measure the total distance up walls and around obstructions.

ADDS recommends the use of signal cable between the MENTOR and terminals and printers. You must use at least three-wire shielded cable with a tin/copper braid surrounding the conductors. Serial printer cables may require up to eight conductors to support DTR capabilities. The following table notes the maximum recommended cable lengths for a given baud rate:

<u>Baud Rate</u>	<u>Recommended Maximum Length</u>
19200	50'
9600	100'
4800	200'
2400	400'
1200	800'
600	1600'
300	3200'
110	6400'

* * * WARNING * * *

Improperly-shielded cable can be affected by electrical emissions from nearby equipment or fluorescent lights, causing interference and possible data corruption. The use of improperly-shielded cable also negates MENTOR's FCC compliance.

DOCUMENTATION

Instructional material such as operator's manuals, maintenance manuals, software manuals, etc., are supplied with the equipment. This material should be stored near the computer site.

SCHEDULING

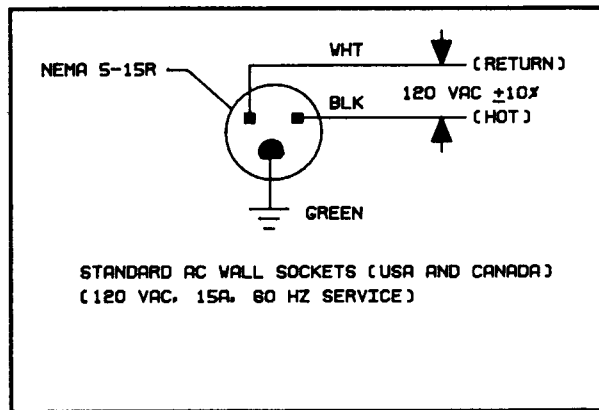
Site preparation (including the installation of air conditioning, electrical wiring and cables and making the site accessible to installers) must be completed before equipment delivery.

LIAISON

Notify your ADDS dealer of any unusual customer site access requirements (special delivery procedures, time restrictions and security clearances) in advance.

MENTOR SYSTEM SPECIFICATIONS

Figure 2-1 and Table 2.1 describe physical and electrical specifications for the MENTOR 2000/2500 Series Computer Systems.



For systems installed outside the United States and Canada, use an appropriate properly-grounding receptacle rated for at least 10 Amps at 220-240 Volts.

USA and CANADA

Figure 2-1. System Electrical Connectors

Product Number	Description	Electrical				Environmental (Operational)			WT (Lbs)	Dimensions (Inches)		
		VAC	Hz	Amps		Temp (Ambient)	Humidity (Relative)	BTU Per hour		H	W	D
M2020/ M2533	MENTOR Central System mounted in a cabinet and incorporating CPU logic, peripheral controllers, disk drive, cartridge tape drive, RAM, multi-terminal controller and uninterruptible power supply (M2533 only)	120+10%	60+2%	4.0	3.0	65-78°F	40-50%	2500	200	30	14	14
		240+10%	50+2%	2.0	1.5	18-26°C						
M2-D20	Optional 15 MB disk drive (operates on direct current)	120+10%	60+2%	4.0	3.0	65-78°F	40-50%	1500	20	4.62	8.55	14.25
		240+10%	50+2%	2.0	1.5	18-26°C						
M2-D33	Optional 27 MB disk drive (operates on direct current)	120+10%	60+2%	4.0	3.0	65-78°F	40-50%	1500	20	4.62	8.55	14.25
		240+10%	50+2%	2.0	1.5	18-26°C						
	ADDS Display Terminal	120/240	60/50 +2%	-	1.0/ .5	50-113°F 10-45°C	up to 70%	511	30	20	22	24
	Line Printer (typical)	120/240	60/50 +2%	-	7.0/ 3.5	50-104°F 10-40°C	30-60%	3000	>100	36	28	24

Table 2.1 Physical/Electrical Specifications

SITE PREPARATION CHECKLIST -- MENTOR 2000/2500

The following checklist is to be completed by the system installer before the MENTOR is removed from its shipping container. If any problems are encountered, immediately call the ADDS MENTOR Response Center at (800) 645-5406 (U.S. only; elsewhere, call your dealer). The Requirements below must be met before installation takes place. Check the box labeled "Meets Specs" as each site requirement is verified. Additional Recommendations are listed to help users improve their data-processing environment.

Requirements

Meets
Specs

1. There should be no rugs or carpeting in the area surrounding the computer system. If it is absolutely impossible to avoid rugs or carpeting, the MENTOR must be placed on a properly-grounded anti-static mat (3M Velostat 9100 Series or equivalent). | ☐ |
2. MENTORs installed in the U.S. and Canada must have a dedicated 15 Amp (120 Volt) power line. MENTORs installed outside the U.S. and Canada must have a dedicated 10 Amp (220-240 Volt) power line. The line must be separately fused from the power distribution panel through to the MENTOR and must be properly grounded (continuous ground wire to earth ground). No other equipment may be connected to this line. | ☐ |
3. The heating and air conditioning system must be able to maintain a temperature of 65 to 78 degrees Fahrenheit (18 to 26 degrees Celsius) and a relative humidity of 40 to 50 percent around the MENTOR. This requirement can be met by most typical central heating and air conditioning systems. If there is no central heating and air conditioning system, a unit capable of providing 2,500 BTU/hr. must be installed in the same room as the MENTOR to compensate for heat generated by the equipment. | ☐ |
4. There must be no excessive dust and dirt. MENTOR will not be installed in an open factory or warehouse environment. | ☐ |
5. The line printer must be in a non-carpeted area or on an anti-static mat. Proper electrical power must be provided from a circuit separate from the one used for MENTOR. All printer paper-handling surfaces (paper baskets, etc.) must be grounded to the printer frame. Use anti-static tinsel (Chapman Corp. part #A830042 or equivalent). In addition, the printer must be properly grounded to the MENTOR with a separate 12-gauge flexible wire from a screw on the printer frame to a screw on the back of the MENTOR rear cover plate. | ☐ |

HARDWARE -- SWITCHES and INDICATOR LIGHTS

Hardware Functional Diagrams

This topic contains diagrams of a MENTOR 2000/2500 Computer System. Figure 2-2 shows the front of a system. Figure 2-3 shows the back of an early system, including a close-up view of the terminal connector panel. Figure 2-4 shows the back of a later system with its external printer and diagnostic ports, Figure 2-5 is a schematic of the internal cable configuration for a typical system.

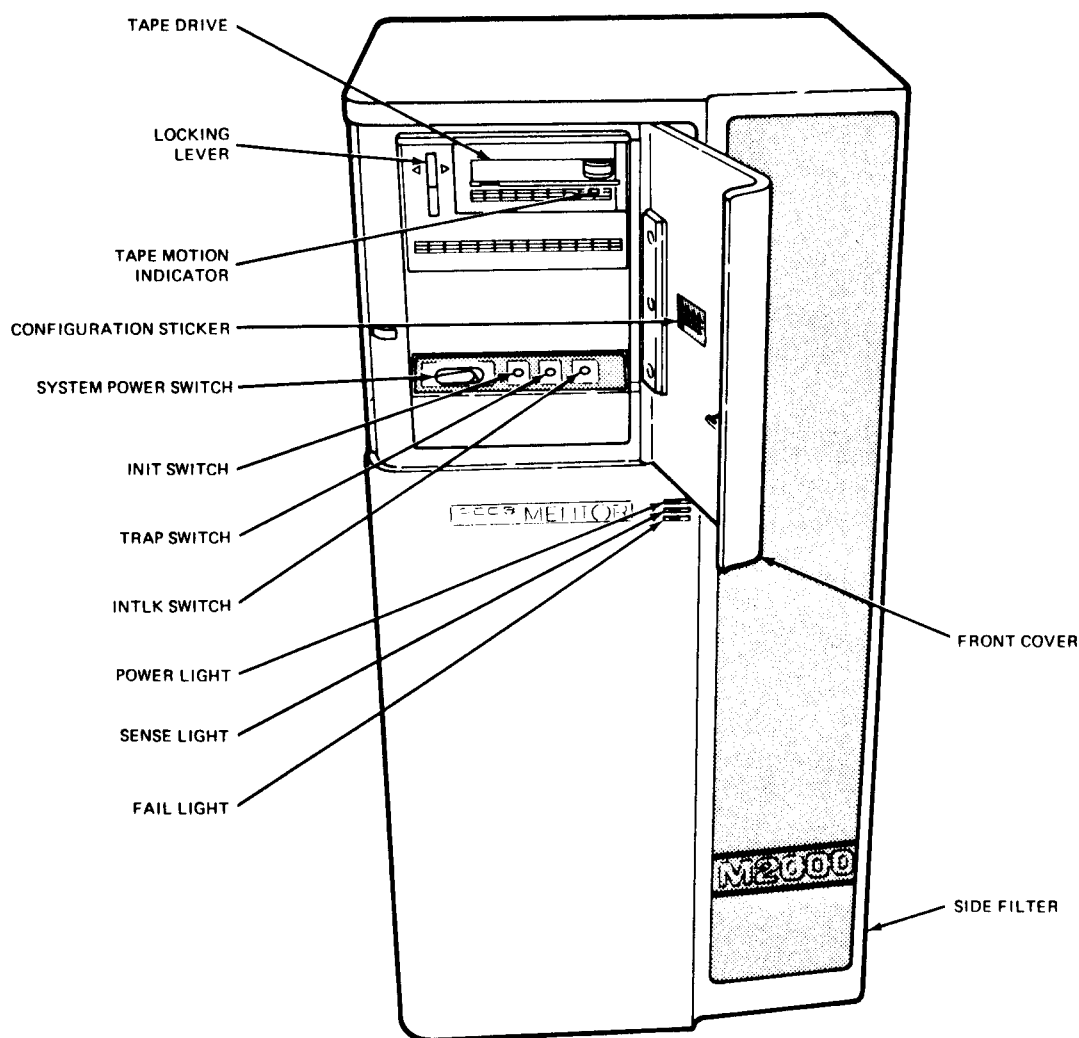


Figure 2-2. Front View

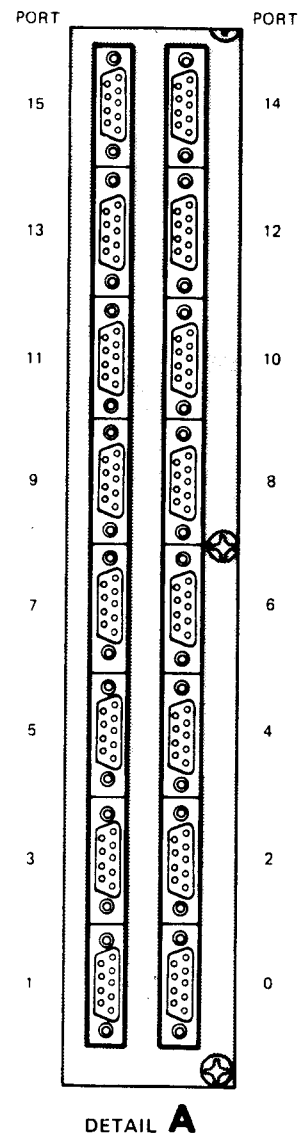
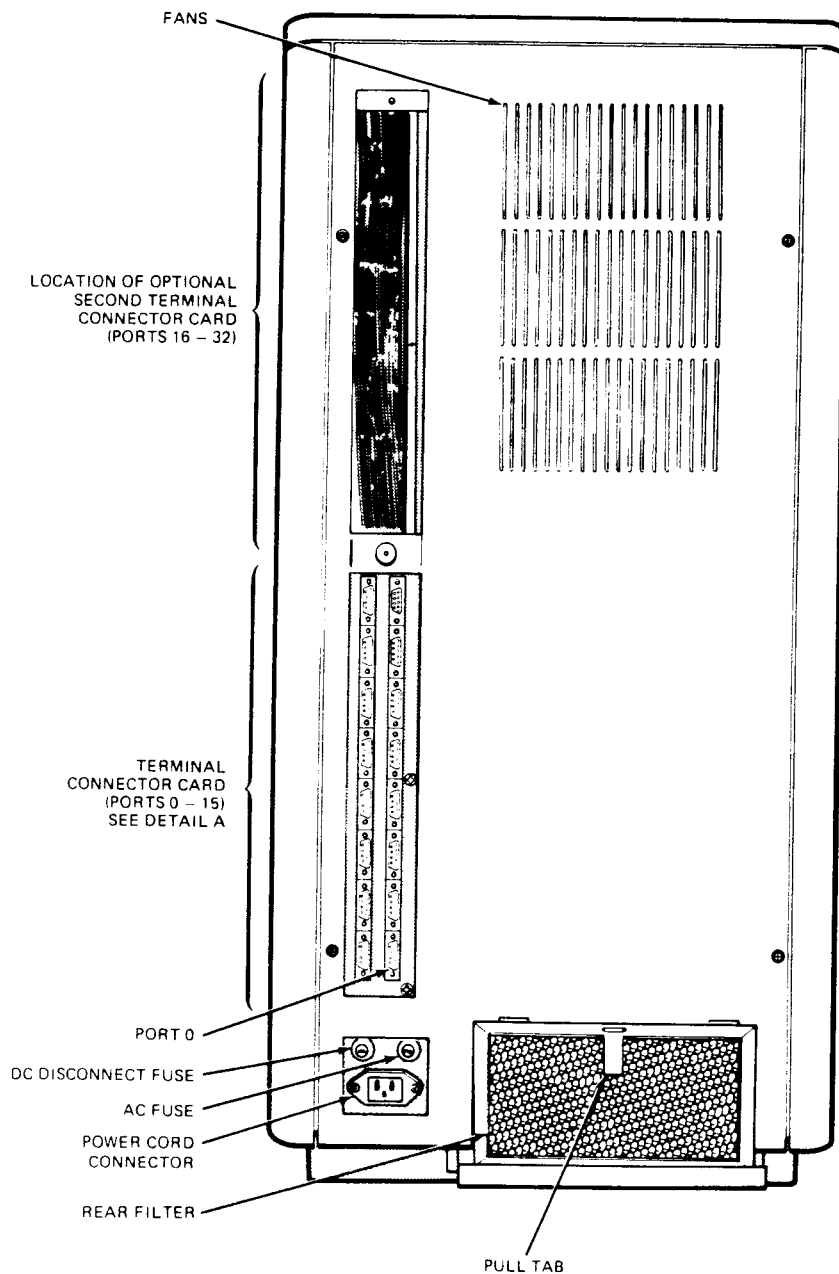


Figure 2-3. Back View of Early Systems

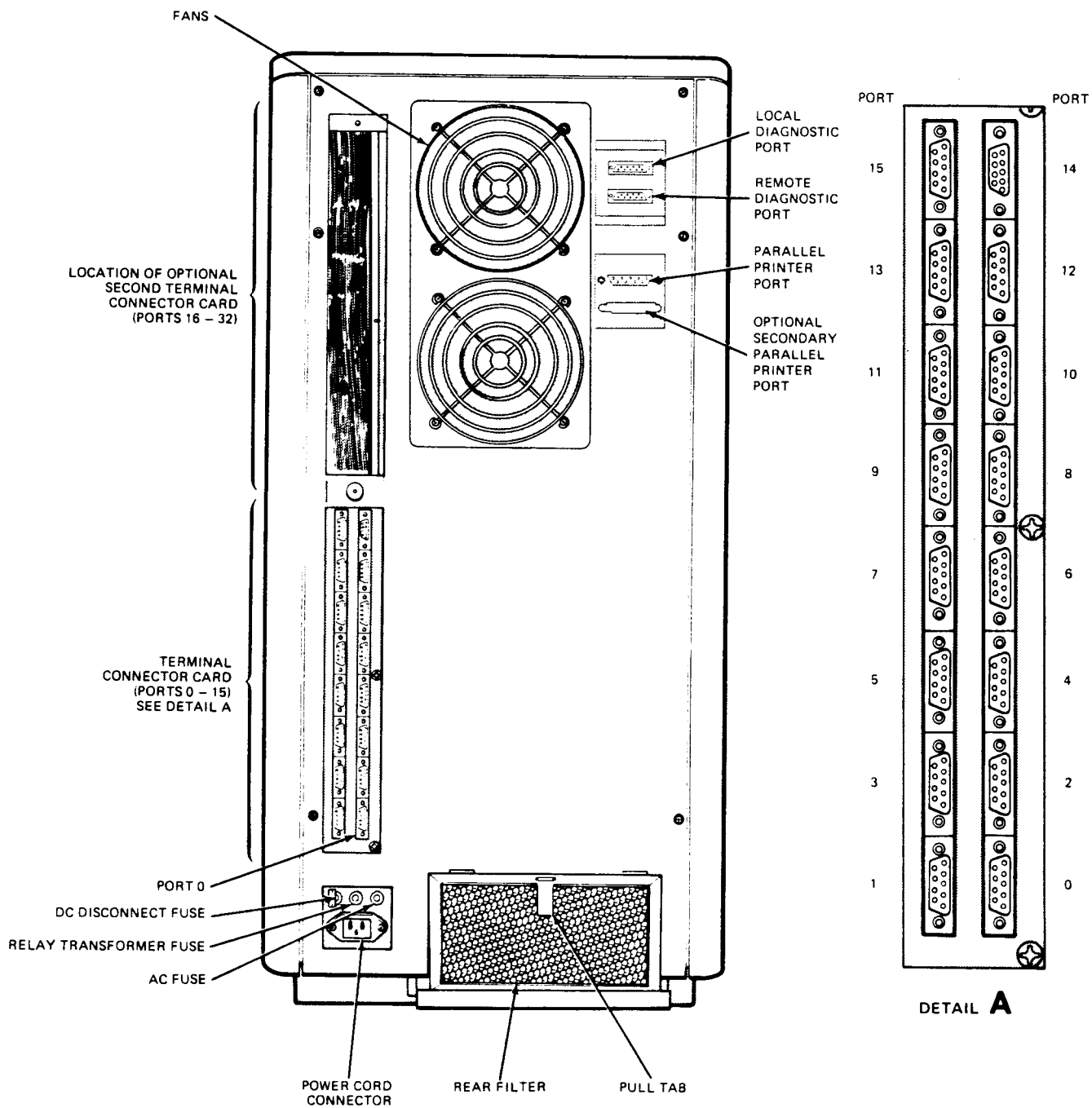


Figure 2-4. Back View of Later Systems

INTERNAL CABLE CONFIGURATION

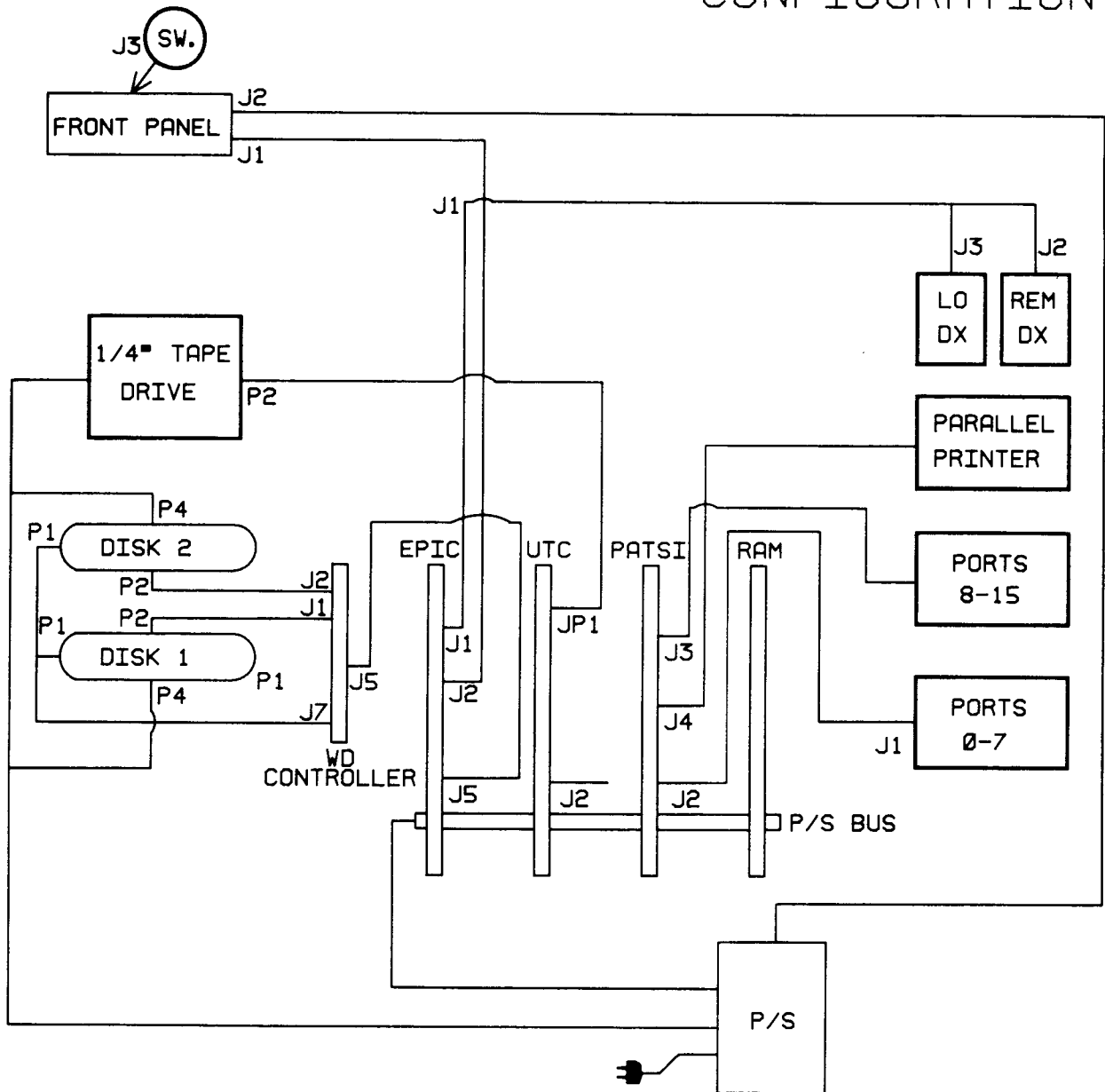


Figure 2-5. Internal Cable Configuration

System Power Switch

To power up the MENTOR, press the right side of this switch; to power down the system, press the left side (the "0" position).

INIT, TRAP and INTLK Switches

These switches are touch-sensitive. The INIT and TRAP switches will not operate unless the INTLK switch is pressed and held down first. They should be used only by qualified personnel. Unauthorized or accidental use of the INIT and TRAP switches may result in the suspension of programs and the corruption of data.

Tape Motion Indicator Light

The Tape Motion indicator light (located on the front panel of the tape drive) should be on whenever a tape in the drive is moving. NEVER remove a tape cartridge from the drive when the Tape Motion light is on.

System Indicator Lights

The POWER light should be on whenever the MENTOR is on. The POWER light runs on +5V DC.

The SENSE light should be on whenever the operating system is running or whenever the system is in the Diagnostic Monitor and a diagnostic utility/program is in operation.

The FAIL light should be on whenever a system with an Uninterruptible Power Supply is recovering from a power failure.

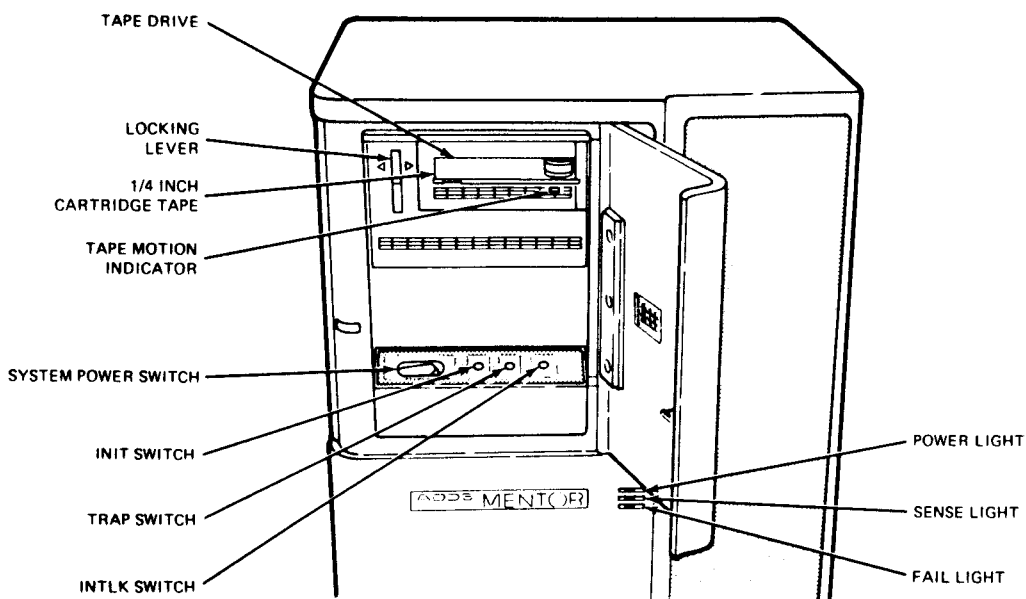


Figure 2-6. M2000/2500 Switches and Indicator Lights

STEP-BY-STEP INSTALLATION OF THE MENTOR 2000/2500

Follow the steps below and use wire cutters, pliers and slotted-head and Philips-head screwdrivers to install a MENTOR 2000/2500 Series Computer System. Be sure to fill out the Damage Report found in Section 4 of this manual.

1. Cut the vertical holding straps on the crate.
2. Open the box flaps and remove the MENTOR instruction manuals.
3. Remove the pack and the cardboard/foam cap directly below it.
4. Remove the box, leaving the MENTOR in its plastic bag.
5. Lift off anti-static bag.
6. Do not plug in the AC power cord at this time.
7. Remove the rear access panel and expose the terminal connectors. Connect a terminal to port 0 (the port in the bottom right corner of the connector panel) and to a separate outlet. The terminal should be set for SPACING parity and 9600 baud (on ADDS Viewpoint/A2 terminals, only DIP switches 3 and 5 should be up). Then switch the terminal on and press the RETURN key on the keyboard.
8. Connect the printer cable(s) to the parallel printer port(s) (see Figure 2-4) and to separate outlets. For early units, Appendix C describes how to access these ports.
9. Be sure the System Power switch is OFF (at the "0" position).
10. If you have a MENTOR 2500, install the DC DISCONNECT fuse (found in the Accessory Pack) in the opening to the left and above the power cord.
11. Plug in the AC power cord.
12. Switch the MENTOR ON by pressing the right half of the System Power switch.
13. Refer to the following topics in this guide to start up the MENTOR. If problems arise, call the MENTOR Response Center at (800) 645-5406 (U.S. only; elsewhere call your dealer).

* * * WARNING * * *

From this point on, the system must never be shut off without first removing the tape and properly cycling down the disk(s). See the MENTOR Operator's Manual, M2000/2500 Series.

MENTOR 2000/2500 OPERATING PROCEDURES

Starting Up

To start up (or "power up") your MENTOR Computer System and make it ready for processing, use the following procedure:

1. Be sure the system console (the terminal attached to Port 0) is on whenever the MENTOR is on. Many messages that appear as a result of MENTOR use and maintenance (e.g., error messages and diagnostic codes) are displayed on this terminal.
2. Open the front cover (hinged on the right).
3. When the MENTOR is switched on (by pressing the right half of the System Power switch), the system will perform some diagnostic tests. These tests will take from six to twenty minutes, depending on system configuration. Be sure to note the number of RAM banks examined during the RAM Test.

NOTE: If power does not seem to be on, check to be sure that power is reaching the system's power outlet and that the system's DC DISCONNECT fuse (if present) is not blown.

3. If any part of the system has failed, the following message will be displayed on the system console:

*** FAILED ***

Contact the MENTOR Response Center immediately.

NOTE: If the diagnostic tests were interrupted by pressing the ESC key on the system console and no tape is in the tape drive, several messages with asterisks will be displayed. These messages do not indicate problems with the system. Simply press <cr> to continue the procedure.

4. If the diagnostic tests are successfully completed, the following prompt will be displayed:

OPTIONS [X,F,NX]=

5. At this point, follow the procedure for loading the tape.

Loading Tape

The SysGen tape will have to be loaded in the tape drive to allow system restoration. This tape should be supplied by your dealer. Use the following procedure:

1. Be sure the MENTOR is powered up.
2. Be sure the tape cartridge's write-enable/disable feature is at the desired setting. This feature is on the cartridge's top left corner. The arrow should be at the "SAFE" position (3 o'clock) for read-only operation (write-disabled).
3. Insert the cartridge in the tape drive as directed in Figure 2-7, with its metal plate facing down. Push the cartridge in until it cannot be moved further. Then slide the locking lever as far right as it will go.

The tape drive will be put on-line automatically. Whenever the tape is moving, the tape motion indicator light will be on.

At this point, proceed to the topic in this section entitled "Configuring the Configuration Control Block."

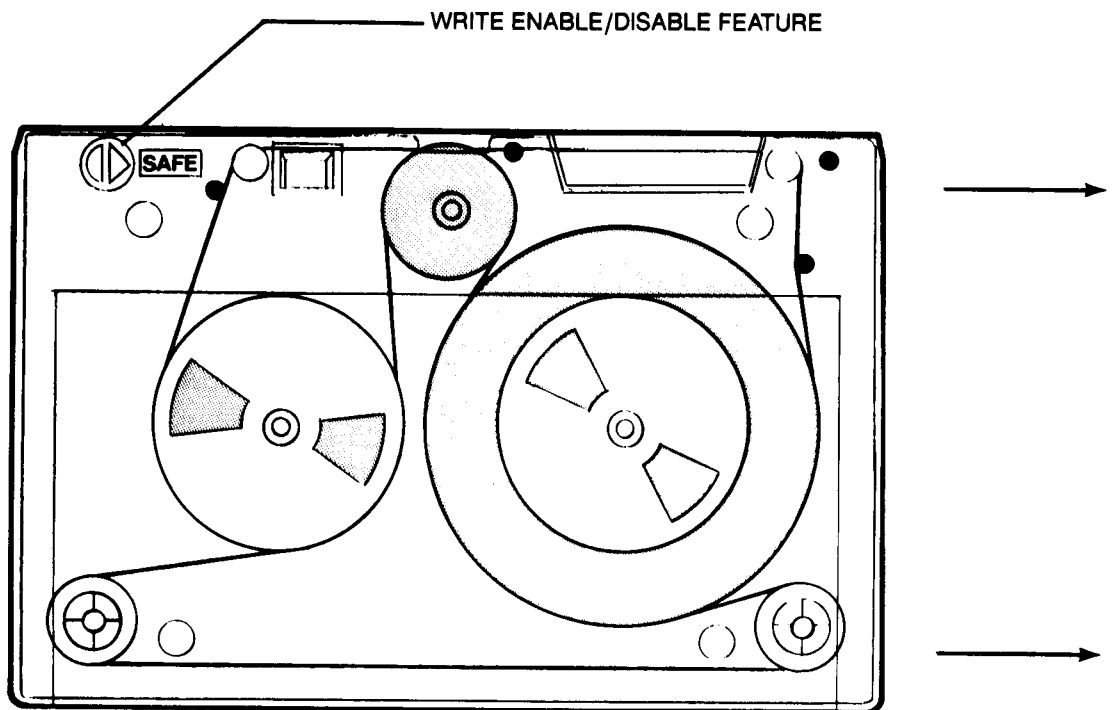


Figure 2-7. Write-Disabled Tape Cartridge

Configuring the Configuration Control Block

NOTE: All MENTOR 2000/2500 systems are now being shipped with a configuration sticker that is located on the inside of the front control panel door (see Figure 2-2). The sticker notes the number of RAM boards and the type of disk drive(s) your system has. This information may also be determined from data already on the system.

1. Once the system has completed its diagnostic tests, move to the Diagnostic Monitor: press the INTLK switch and hold it down while you press the INIT switch. Release the INIT switch. After a moment, release the INTLK switch. You will see the following message:

ADDS MENTOR Diagnostic Assurance Monitor Release x.y

Copyright (c) 1983 Applied Digital Data Systems Inc.
EPIC test - 00:00:00
Command 0>

NOTE: The Command 0> prompt may appear as Command 1>.

2. If the Command prompt does not appear, press the ESC key on the system console's keyboard a few times. This will break out of the system diagnostics and enable the system error messages so you will be made aware immediately of the status of the system.
3. At the Command 0> (or Command 1>) prompt, type in E~~P~~T and press <cr>. The following will be displayed:

A D D S / A S D M E N T O R
Copyright (c) 1983 Applied Digital Data Systems Inc.
Mentor SysGen Utility - version a.b

Creation Date : tape-generation-date-and-time
Tape Contains : ADDS MENTOR SysGen TAPE

Type CR to continue

4. Press <cr>. The SysGen Menu will be displayed:

A D D S / A S D M E N T O R
Copyright (c) 1983 Applied Digital Data Systems Inc.
Mentor SysGen Utility - version a.b

Enter Option(s)
B - Run CRECCB Utility
I - Run INITDISK Utility
D - Restore Diagnostics
N - Restore Native Code
A - Restore ABS Frames
P - Partial ABS Restore
F - File Restore
C - Complete SysGen
E - EXIT

-----> <-----

5. Access the Configuration Control Block program by pressing the B key at the "double-arrow" prompt. The CRECCB Program Menu will be displayed:

A D D S / A S D M E N T O R
Configuration Control Block creation utility - Version e.f
Copyright (c) 1983 Applied Digital Data Systems Inc.

Enter single command
D - display CCB
I - initialize CCB
E - exit program

-----> <-----

6. When the "double-arrow" prompt is displayed, display the CCB by pressing the D key. Note the value listed in Field 9 for disk flag (DSKFLG). When you are done, press <cr> to return to the CRECCB Program Menu.
7. When the "double-arrow" prompt is displayed, initialize the CCB by pressing the I key. Do not press <cr>. The following data will be displayed:

Field	Description	<CR> for default
1	System serial number (12max)	-

8. Enter the serial number of your MENTOR system. This number can be found on a gray sticker on the back of the cabinet, just above the power cord. Once you have entered the number, press <cr>. The next prompt will be displayed:

2	Number of PATSI ports (HEX)	-
---	-----------------------------	---

9. Check the number of terminal connectors on the system. If you have 8 ports, type in the hexadecimal value 8 <cr>. If you have 16 ports, type in the hexadecimal value 10 <cr>. The next prompt will be displayed:

4 Number of RAM banks (HEX) -

10. Enter one of the following hexadecimal values depending on how much RAM your system has: 4 for 256K, 8 for 512K, C for 768K, 10 for 1024K. After the value has been entered, press <cr>. The next prompt will be displayed:

7 Tape flag data (HEX) -

11. Since your MENTOR has a 1/4 inch tape drive, press 1 <cr> at this prompt. The next prompt will be displayed:

8 Number of disks -

12. Type in the number of disk drives your MENTOR has -- 1 or 2. Do not press <cr>. The next prompt will request the disk model number:

Disk model number -
(IMI5018, ATASI3030, QUANTUM Q530, HITACHI DK511-3, CMI6640, VERTEX V130, VERTEX V150, MICROPOLIS 1304, HITACHI DK511-5)

13. The disk drive model number is listed on the configuration sticker (see Figure 2-2) and can also be determined from the disk flag data noted when the CCB was displayed. Match the unique disk flag value to one of the disk drive model numbers listed in Table 2.2.. Type in the appropriate model number and press <cr>. The next prompt will be displayed:

A System clock speed (Mhz) -

14. You must now type in the clock speed of your MENTOR's CPU. Your system has an 8 MHz microprocessor, so type in 8 <cr>. The next prompt will be displayed:

B Number of ABS frames (HEX) -

15. Simply press <cr> at this prompt. The final prompt for the CCB will be displayed:

C Battery Backup Flag -

16. If your MENTOR has an Uninterruptible Power Supply (or UPS), type in 1 <cr>. If your MENTOR does not have a UPS, simply press <cr>. The system will then redisplay the values you have entered for the CCB as well as a prompt:

Enter number of field to change or <CR> to complete processing

DISK TYPE	DSKFLG
IMI5018	20
ATA51 3030	21
QUANTUM Q530	22
HITACHI DK511-3	23
CMI 6640	24
VERTEX V130	25
VERTEX V150	26
MICROPOLIS 1304	27
HITACHI DK511-5	28

Table 2.2. Disk Drive Identification Information

17. If any of the values are incorrect, press the key corresponding to the field containing the wrong value and press <cr>. You will then be able to type in the proper value. Do so by following the steps above. The system will give you an opportunity to change another field after each correction.
18. If all values in the CCB are correct, press <cr>. The system will redisplay the menu for the CRECCB program.
19. Return to the SysGen Menu by pressing the E key. Do not press <cr>. The following message and prompt will be displayed:

*** Program completed ***

Command h0>

Use the following procedure for initializing (formatting) the disk(s).

Initializing (Formatting) the Disk(s)

1. When the SysGen Menu is redisplayed, access the Disk Initialization Program by pressing the I key. The INITDISK Program Menu will be displayed:

A D D S / A S D M E N T O R
Copyright (c) 1983 Applied Digital Data Systems Inc.
DISK INITIALIZATION UTILITY - VERSION g.h

Enter single command
D - Enter Defect Records
I - Initialize Disk *** DESTROYS ALL DATA ***
V - Verify Disk
E - Exit Program

-----> <-----

2. When the "double-arrow" prompt is displayed, start initializing the disk by pressing the I key. Do not press <cr>. The following prompt will be displayed:

SELECT DRIVE 0, 1 OR 2 (BOTH)? -

3. On single-drive systems, respond to the "SELECT DRIVE" prompt by pressing the 0 key. Do not press <cr>. On dual-drive systems, initialize Drive 1 first by pressing the 1 key. Do not press <cr>. The following prompt will be displayed:

INCLUDE DEFECTS ALREADY ON DISK (Y/N)?

4. Press the Y key, but do not press <cr>.

On single- and dual-drive systems, the system will then verify the initialization ten times. After verification, the following prompt will be displayed:

*** Program completed ***

5. On single-drive systems, proceed to Step 6. On dual-drive systems, run INITDISK for Drive 0 by pressing the R key. Do not press <cr>. Follow the procedure outlined in Steps 1 through 3, pressing the 0 key instead of the 1 key. Do not press <cr>. After verification, the following prompt will be displayed:

*** Program completed ***

Enter <CR> to display command menu, "R" to rerun INITDISK -

6. Return to the SysGen Menu by pressing <cr>. Then follow the procedure below to perform a complete SysGen.

Performing a Complete SysGen

1. Be sure the SysGen tape is still mounted in the tape drive.
2. When you see the "double-arrow" prompt at the SysGen Menu, start a complete SysGen procedure by pressing the C key. Do not press <cr>. The following information will be displayed:

A D D S / A S D M E N T O R
Copyright (c) 1983 Applied Digital Data Systems Inc.
Mentor SysGen Utility - version a.b

Locating file
Diagnostic code - 018E sectors
Restoring Diagnostic code relative sector - xxxx
Diagnostic code restored.

Locating file
Native Code - 53 sectors
Restoring Native Code
Native Code restored.

Locating file
0768 ABS Frames will be restored
Restoring ABS Frames FID - yyyy
ABS Frames restored.

3. After the operating system is loaded, the system will cold-start and load data files. The following messages and prompt will be displayed:

Booting O/S with a file restore
communication lines
amount of core memory (KB)
OPTIONS [X,F,NX]=F

SPOOLER STARTED

MOUNT DATA TAPE AND PRESS RETURN

4. Simply press <cr>. The system information will be loaded. Then the system will cold-start and the following message will be displayed:

LINKING WORKSPACE FOR LINE 0

LOGON PLEASE-->

<<< RELEASE 2.0 >>>

<<< MENTOR COMPUTER OPERATING SYSTEM >>>

<<< RELEASE DATE: month dd, yyyy >>>

<<< >>>

<<< LOGGED ON AT hh:mm:ss dd mmm yyyy >>>

After a short time, the system will finish linking workspace and the following message will be displayed:

THIS IS THE COLD-START PROCEDURE

5. When the following prompt is displayed, enter the current time according to a 24-hour clock (e.g., 6:30 p.m. = 18:30:00). Setting the seconds is optional.

TIME=

Press <cr> after entering the time.

6. When the following prompt is displayed, enter the current date in month-day-year format (e.g., May 21, 1982 is 04 21 82, 4/21/82, etc.):

DATE=

Press <cr> after entering the date. The system will then execute a VERIFY-SYSTEM. If no errors are detected, the following message will be displayed:

[341] OPERATING SYSTEM SOFTWARE VERIFIED.

NOTE: If errors are detected, you will see a message and three groups of characters will be displayed on at least one line. Take note of the left-most group of numbers on each line. These are frame numbers. Then contact your dealer for further instructions.

The following prompt will be displayed and the system will be ready for processing:

LOGON PLEASE-->

You will now be able to add other accounts to the system, if necessary, after unloading the tape.

Unloading Tape

To unload tape, be sure the tape is not moving. Slide the locking lever all the way to the left. The cartridge will be ejected from the tape drive. The tape command issued the next time that tape is used will rewind the tape. The original command will then be executed. Be sure you are aware of the tape's position at any given time.

* * * WARNINGS * * *

Never remove a tape from the tape drive while the tape-motion indicator light is ON.

Leave the front cover closed whenever possible. This will help prevent unfiltered air from entering the system through the tape drive and from possibly damaging MENTOR's internal components.

Moving Existing Accounts to a New Operating System

If you have installed a new operating system on your MENTOR and you have data from an earlier formatted file-save, the data must be restored on disk. Using the standard file-restore procedure, however, will replace the new O/S's SYSPROG files with the old O/S's SYSPROG files. To avoid this, use the ADD-ACCOUNTS PROC. This PROC will automatically load from tape any accounts which were not loaded with the new operating system. Use the following procedure:

1. Mount a formatted file-save tape in the tape drive. Be sure the tape is not write-enabled and that the tape drive is on-line (use a T-ONLINE statement).
2. Be sure you are on the SYSPROG account on the system console (Port 0).
3. At the TCL prompt (>), type in the following statement:

ADD-ACCOUNTS <cr>

The system will then write new accounts on disk. File-names will be displayed on the system console. When the procedure is finished, the TCL prompt will be redisplayed. If there are DATA/BASIC programs, PROCs, etc. in the old SYSPROG Account that are to be transferred to the new SYSPROG Account, use the SEL-RESTORE procedure to restore them from the old file-save tape. Additional accounts may then be restored from other tapes using the ACCOUNT-RESTORE procedure. Once this is accomplished, the system may be used for processing.

Power-Down Procedures

*** WARNING ***

NEVER turn the System Power switch to the OFF (O) position or unplug the MENTOR without using one of these power-down procedures.

Under Operating System Control (From TCL)

1. Log all users off the system, if necessary. Log to the SYS-PROG Account on Port 0, type in :SHUTDOWN and press <cr>. This statement will keep users from logging on and will cycle down all system components. The SHUTDOWN procedure will take about one minute. You will see the following message on the system console

*** ALL USERS LOGGED OFF ****

SYSTEM IS NOW SEQUENCING DOWN

***** WAIT 30 SECONDS *****

THEN POWER CAN BE TURNED OFF

OR

INIT BUTTON CAN BE PRESSED

2. Wait the required time. You may then move the System Power switch to the OFF (O) position.

Under Diagnostic Monitor Control

Use this procedure only if the system is already in the Diagnostic Monitor:

1. At the Command 0> (or Command 1>) prompt, type in E/K <cr>. The following message will be displayed:

System Ready for Shutdown

2. Wait at least 30 seconds for all components to cycle down. You may then move the System Power switch to the OFF (O) position.

Long Term Storage

If your MENTOR has an Uninterruptible Power Supply (UPS) and is to be stored for more than one week, the DC DISCONNECT fuse located near the AC power cord should be removed. Otherwise, the power supply batteries will keep providing energy and they will eventually be unable to hold a charge.

MOVING THE MENTOR

Your MENTOR Computer System should be moved only by authorized service personnel. If the system must be moved and no authorized service personnel are available, be sure to perform an orderly shutdown, switch the MENTOR OFF, remove the DC DISCONNECT fuse (if present) and remove the AC plug.

NOTE: If unauthorized personnel move your MENTOR, your service contract becomes void. In addition, you are responsible for any costs incurred in making your MENTOR operational as a result of such a move. For these reasons, it is not recommended that you move your MENTOR yourself.

SECTION 3:

PREVENTIVE MAINTENANCE

A clean environment for your MENTOR Computer System helps ensure proper operation. Treat the time intervals below as maximum values -- preventive maintenance may be performed more often, if desired. Follow the instructions carefully to eliminate unnecessary service calls. (You will be billed for service calls made necessary by poor preventive maintenance procedures.) Note that only personnel you authorize are to provide preventive maintenance. A checklist has been provided at the end of this section for your convenience.

PREVENTIVE MAINTENANCE SCHEDULE AND INSTRUCTIONS

Before attempting any of the following procedures, be sure the MENTOR is shut down in an orderly fashion, the System Power switch is at the OFF (O) position, the DC DISCONNECT fuse (if present) is removed from the main power supply at the bottom back of the cabinet and all power cords on the system are unplugged from their outlets. Electrical cleaning appliances should never be used when the MENTOR is on.

1. On a monthly basis, the system filters should be removed and vacuumed.

One filter is located at the bottom of the rear panel. It has a pull tab and is held on by hook-and-loop fasteners.

The other filter is located on the bottom right side of the cabinet, as you face the MENTOR. It is held on with two spring clips.

2. On a weekly basis, all CRT screens should be cleaned with a non-streaking cleaning solution, applied with a lint-free cloth.
3. On a weekly basis, the exterior of the MENTOR and related components (such as terminals) should be cleaned with a non-streaking cleaning solution, applied with a lint-free cloth.
4. On a weekly basis, the line printer should be vacuumed to prevent paper and ribbon dust from reaching the floor. The surrounding area should be vacuumed and damp-mopped weekly to catch any remaining particles. Be sure no water contacts the MENTOR's internal components.
5. On a daily basis, the blower fans should be checked to ensure that they are still moving air. If all fans are not functioning properly, the MENTOR should be shut down in an orderly fashion.

TAPE DRIVE ACCESS AND CLEANING

The tape drive read/write head assembly should be cleaned periodically to assure reliable tape drive performance. Clean the head on the following schedule:

- After the first use of a brand-new tape;
- After the first two (2) hours of actual running time with a brand-new tape;
- After every eight (8) hours of actual running time with "broken-in" tapes. (A tape is considered "broken-in" after it has been used for a formatted or binary save.)

To clean the tape head, slide the drive's locking lever to the right to expose the head (the shiny assembly visible at the far left corner of the tape drive). Then use a clean, lintless, long-handled cotton swab to reach the head assembly and wipe away any debris clinging to the head. This swab should be moistened with 91% isopropyl alcohol (NOT rubbing alcohol) or Freon TF†.

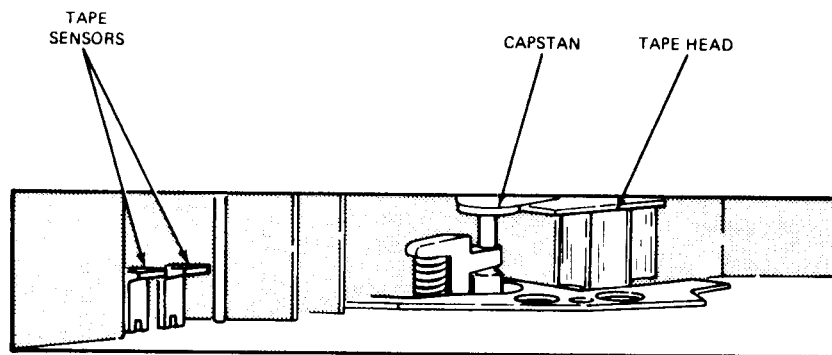


Figure 3-1. Tape Drive Access

† Freon TF is a registered trademark of E.I. duPont de Nemours and Company.

MENTOR CUSTOMER PREVENTIVE MAINTENANCE CHECKLIST

<u>DATE</u> _____		<u>PERFORMED</u>	
		<u>YES</u>	<u>NO</u>
1. Clean system filters.	(MONTHLY)	___	___
2. Clean CRT screens.	(WEEKLY)	___	___
3. Clean exterior of system and related components.	(WEEKLY)	___	___
4. Vacuum related components and surrounding computer area.	(WEEKLY)	___	___
5. Clean tape head assembly.	(SEE TEXT)	___	___
6. Check blower fans for proper operation.	(DAILY)	___	___

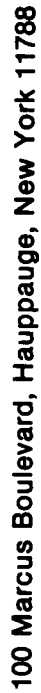
SECTION 4:
MENTOR INSTALLATION FORMS

FORMS INCLUDED IN THIS SECTION

This section contains two forms: the MENTOR Site Preparation Data Sheet and the Damage Report.

The Site Preparation Data Sheet is to be filled in by an ADDS-authorized service representative and returned to ADDS Customer Service, where it will be reviewed before installation.

The Damage Report is to be filled in by an ADDS-authorized service representative at the time of installation and returned to ADDS Customer Service. Instructions for completing the form are included in this section.



ADDRESS

SITE PREPARATION DATA

DESCRIPTION

1. 12,000 BTU/HR. = Approx. 1 ton of Air Conditioning.

2. All electrical outlets must be isolated from electrical noise.

INSTRUCTIONS FOR COMPLETING THE DAMAGE REPORT

Information sent to ADDS using this form will aid us in constructing better shipping containers and in improving the design and shippability of our products.

Each item on the Damage Report must be completed. Please do not skip any questions. If no damage has occurred, write "NONE" under the respective heading. The numbers below refer to the corresponding items on the Damage Report.

1. In what condition is the shipping container? Is it torn or crushed? Are there any exterior indications that the unit was exposed to extreme shipping conditions?
2. The shock indicator on the outside of the crate will show if the container has been exposed to a severe blow (an excessive amount of "g force"): the white tube will turn red. Indicate on the report if this has happened.

The tip indicator on the outside of the crate will show if the container has been tilted or placed on its side. Indicate on the report if any blue beads have flowed into the arrow head.

3. Uncrate the unit (see "Step-by-Step Installation of the Computer System"). Note if the top of the cabinet is distorted, buckled, crushed, etc. Note if any corners are damaged or if any rub marks are evident on the paint.
4. In what condition are the front panel and front cover? If either is damaged, indicate the type of damage and its location.
5. In what condition are the rear panels? If either is damaged, indicate the type of damage and its location. Do the fans work when the system is powered up?
6. In what condition is the bottom of the computer? If it is damaged, is the damage internal or external?
7. Is there any external damage that was not mentioned anywhere else? Describe it here.
8. Describe any discrepancies with any of the devices added to the unit to make it shippable: e.g., brackets and screws.
9. Are all the circuit boards in place? Are the card cage and brackets secure? Is there any damage?
10. If the MENTOR has an Uninterruptible Power Supply, are the batteries secure in the battery cage? Are the fasteners for the power supply board undamaged?

11. Is there any internal damage that was not mentioned anywhere else? Describe it here.
12. Include additional information that can be of help in evaluating the unit's shippability.

Please send this Damage Report to:

ADDs Field Service
100 Marcus Boulevard
Hauppauge, NY 11788
ATTN: Systems Customer Service

DAMAGE REPORT

DATE: _____ **MODEL:** _____

FIELD REP.: _____ **SERIAL NO.:** _____

CUSTOMER ADDRESS/PHONE #: _____

(1) SHIPPING CONTAINER CONDITION: _____

(2) CONDITION OF "SHOCK" AND "TIP" INDICATORS (CHECK RIGHT BOX)

25 G		50 G		TIP-N-TELL		
RED ARROW	BLUE ARROW	RED ARROW	BLUE ARROW	BEADS IN ARROW HEAD FLOWED FROM		
				LEFT LEG	RIGHT LEG	BOTH LEGS

EXTERIOR DAMAGE(s) ON UNIT:

(3) TOP: _____

(4) FRONT PANEL(s):

1. _____
2. _____
3. _____

(5) REAR PANEL(s):

1. _____
2. _____
3. _____

(6) BOTTOM: _____

(7) CASTERS: _____

(8) REMARKS: _____

INTERNAL DAMAGES:

(9) RESTRAINING DEVICES: (SCREWS, BRACKETS, TY-WRAPS, CUSHION MATERIAL) _____

(10) DRIVE(s): (WERE LOCKING DEVICES IN PLACE?) _____

(11) PCB/CARD CAGE: _____

(12) SLIDE(s)/BRACKET(s): _____

(13) BATTERY(s)/POWER SUPPLY BOARD: _____

(14) OTHER: _____

(15) REMARKS: _____



Applied Digital Data Systems Inc.
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SIGNATURE

APPENDIX A:

SUPPLIERS' NAMES AND ADDRESSES

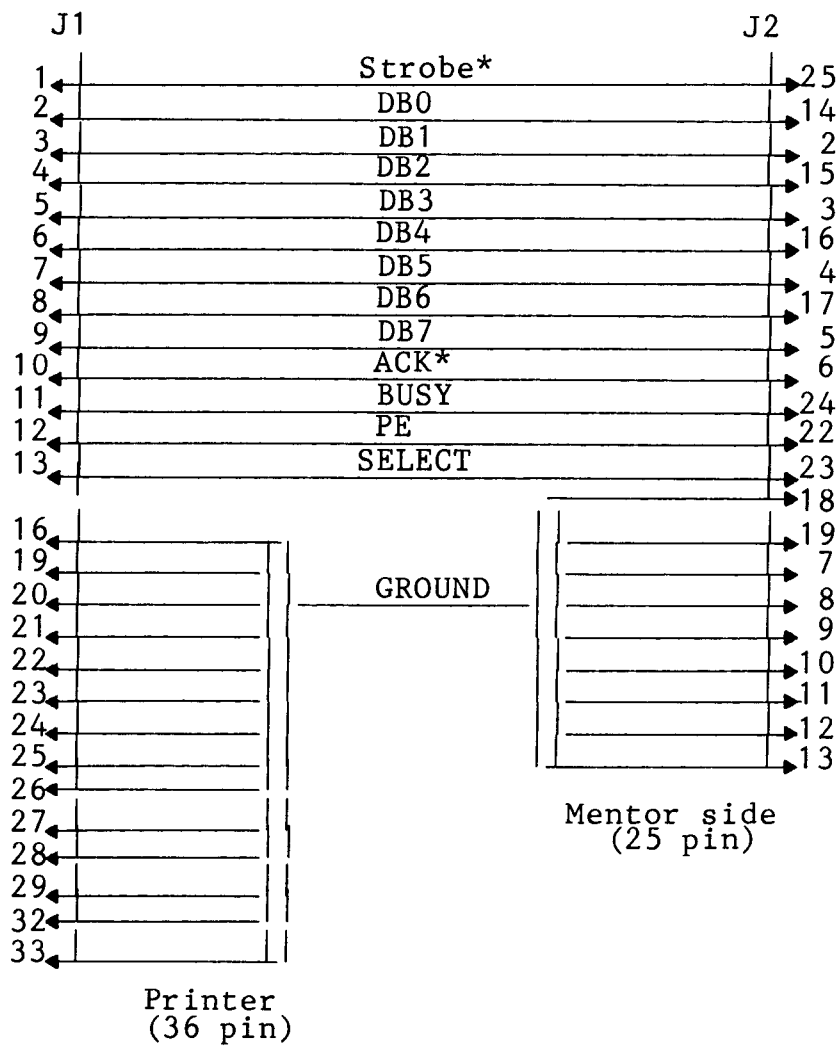
The following are the names and addresses of companies mentioned as providers of accessories and supplies for your MENTOR:

Chapman Corporation (anti-static tinsel)
Box 427
Portland, ME 04112
(207) 773-4726

Racal-Vadic (modems)
232-T Caspian Drive
Sunnyvale, CA 94086
(408) 744-0810

APPENDIX B:

PIN-OUTS



* Active low

Figure B-1. Printer Adaptor Cable Pin-Outs

Table B.1. 9-Pin Terminal Connector Pin-Outs

9-Pin Connector	Signal Name	25-Pin Connector
1 N.C.		
2 <-----	TxD (Transmit Data) (BA)	-----> 2
3 <-----	RxD (Receive Data) (BB)	-----> 3
4 <-----	RTS (Request To Send) (CA)	-----> 4
5 <-----	CTS (Clear To Send) (CB)	-----> 5
6 N.C.	DSR (Data Set Ready) (CC)	-----> 6
7 N.C.		
9 <-----	SG (Signal Ground) (AB)	-----> 20
8 <-----	DTR (Data Terminal Ready) (CD)	-----> 7

NOTE: Shield should be clamped under metal shell at both connectors. No connection should be made between shield and any other point.

APPENDIX C:

CONNECTING THE PRINTER CABLE(S)

On early units, the parallel printer port(s), as well as the local and remote diagnostic ports, are located inside the MENTOR and to the right of the tape drive (see Figure C-1 below). To access these ports, the front and top panels must be removed.

*** WARNING ***

Do not remove these panels unless the system has been properly powered down and the AC power cord has been disconnected.

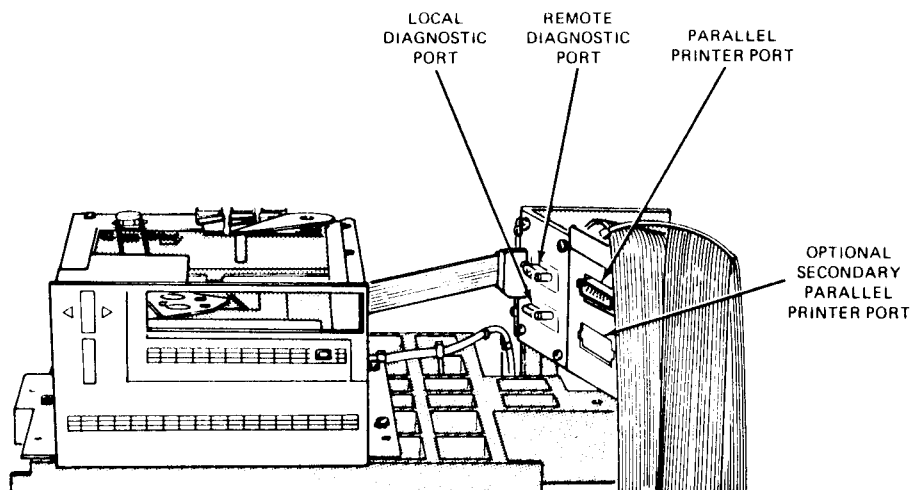


Figure C-1. Location of Parallel Printer Ports on Early Units

To connect the printer cable(s), follow the steps below:

1. Open the front cover and remove the screw (see Figure C-2).
2. Push a slotted blade screwdriver into the clip access hole on one side of the front panel and gently pull the panel forward (see Figure C-2). Do the same to the other side.

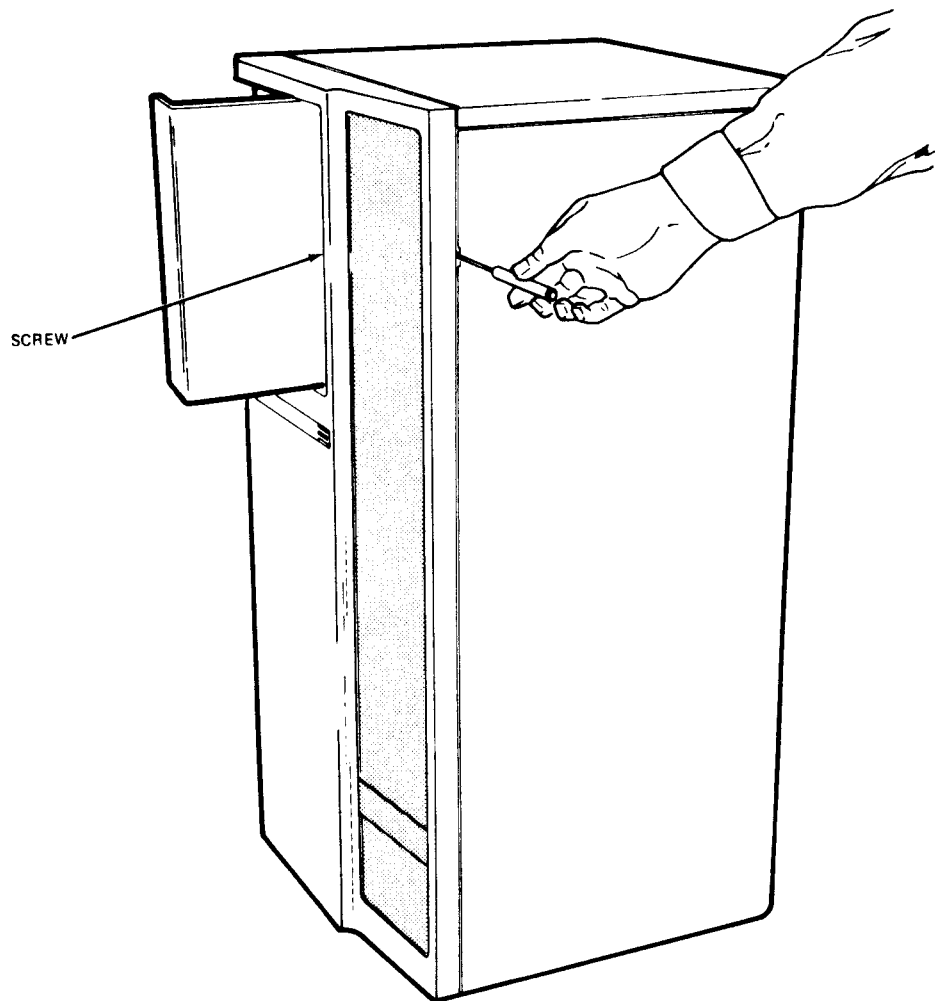


Figure C-2. Releasing the Front Panel

3. The panel should now be unlocked and can be removed by lifting it up and away from the cabinet. Be careful not to remove or damage the cable to the front panel lights (see Figure C-3).

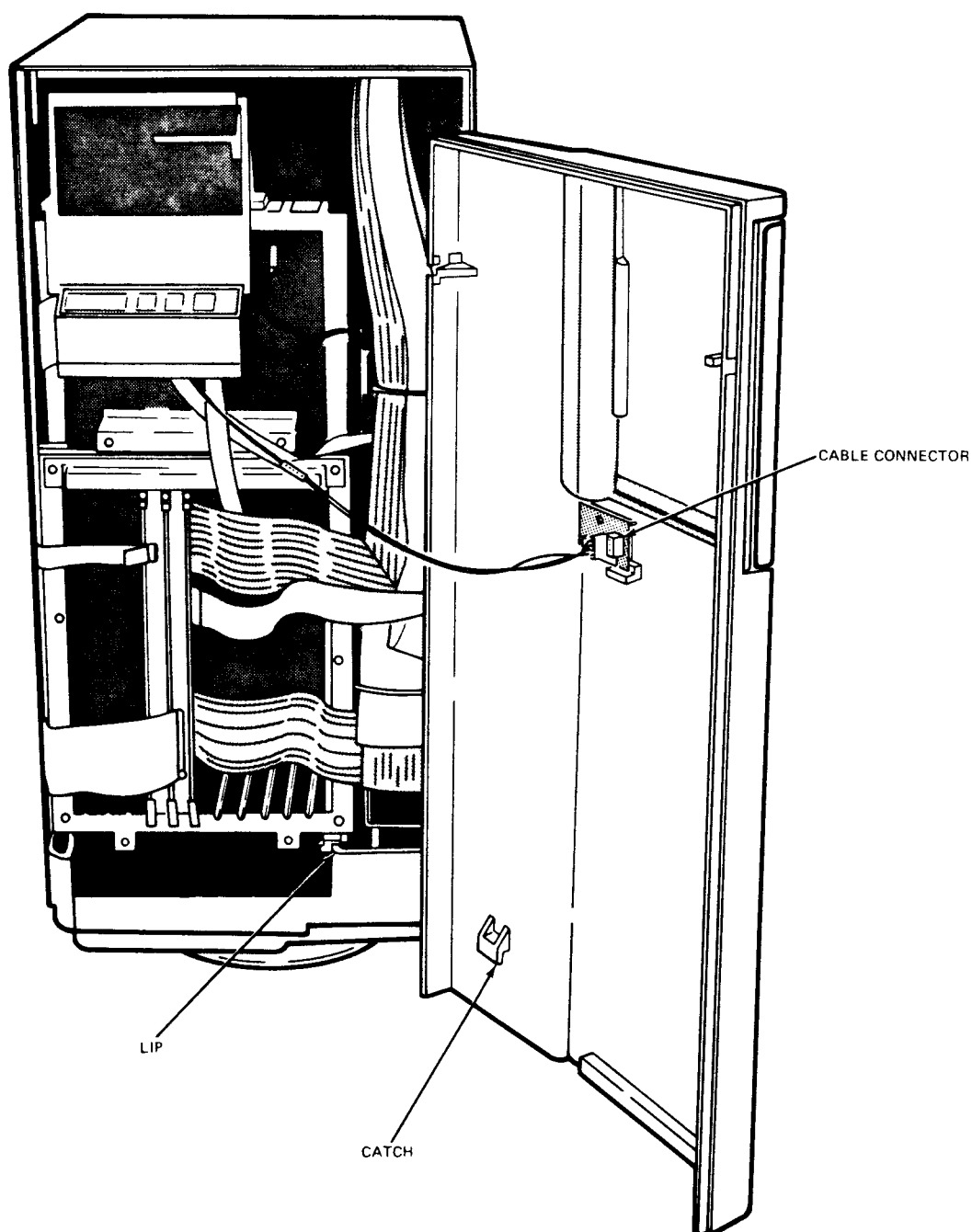


Figure C-3. System With Front Panel Removed

4. Slide the cover forward to disengage the front catch (see Figure C-4).

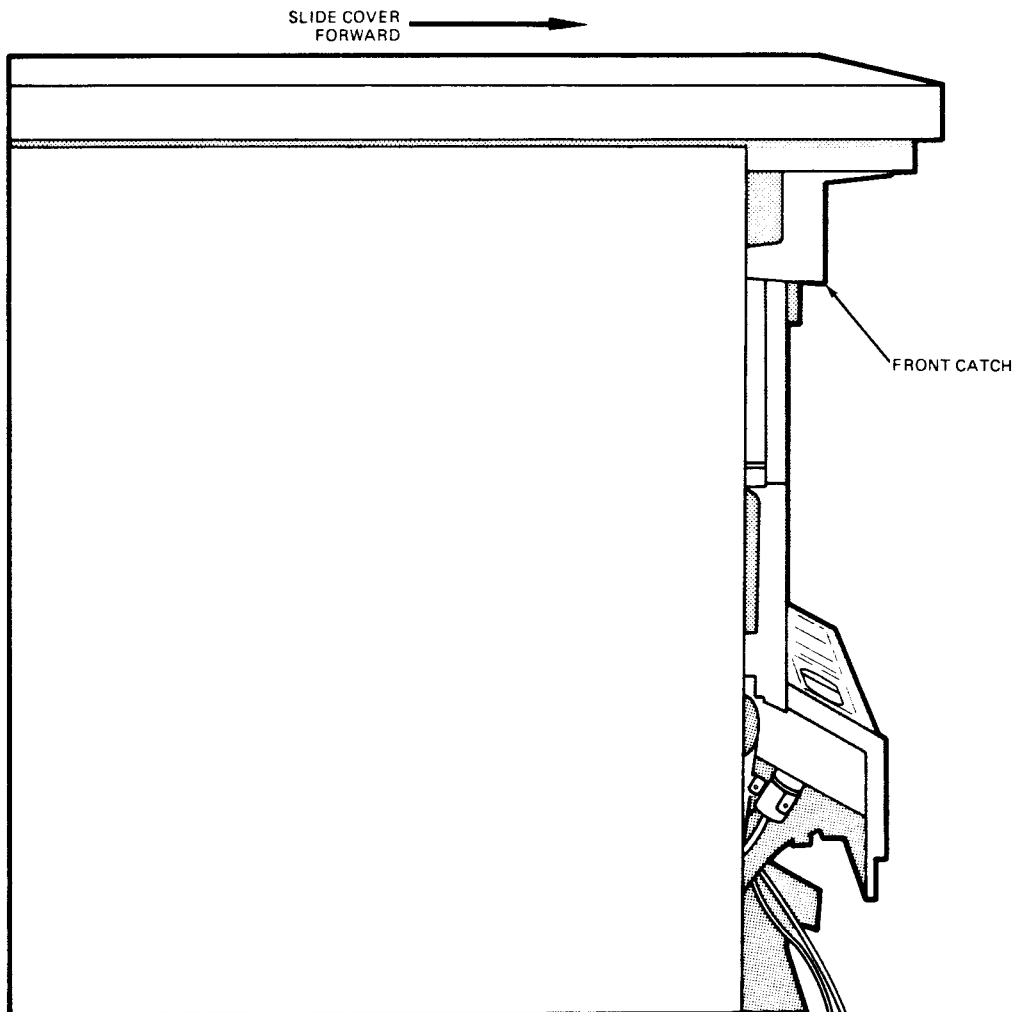


Figure C-4. Sliding the Cover Forward

5. Lift off the cover (see Figure C-5).

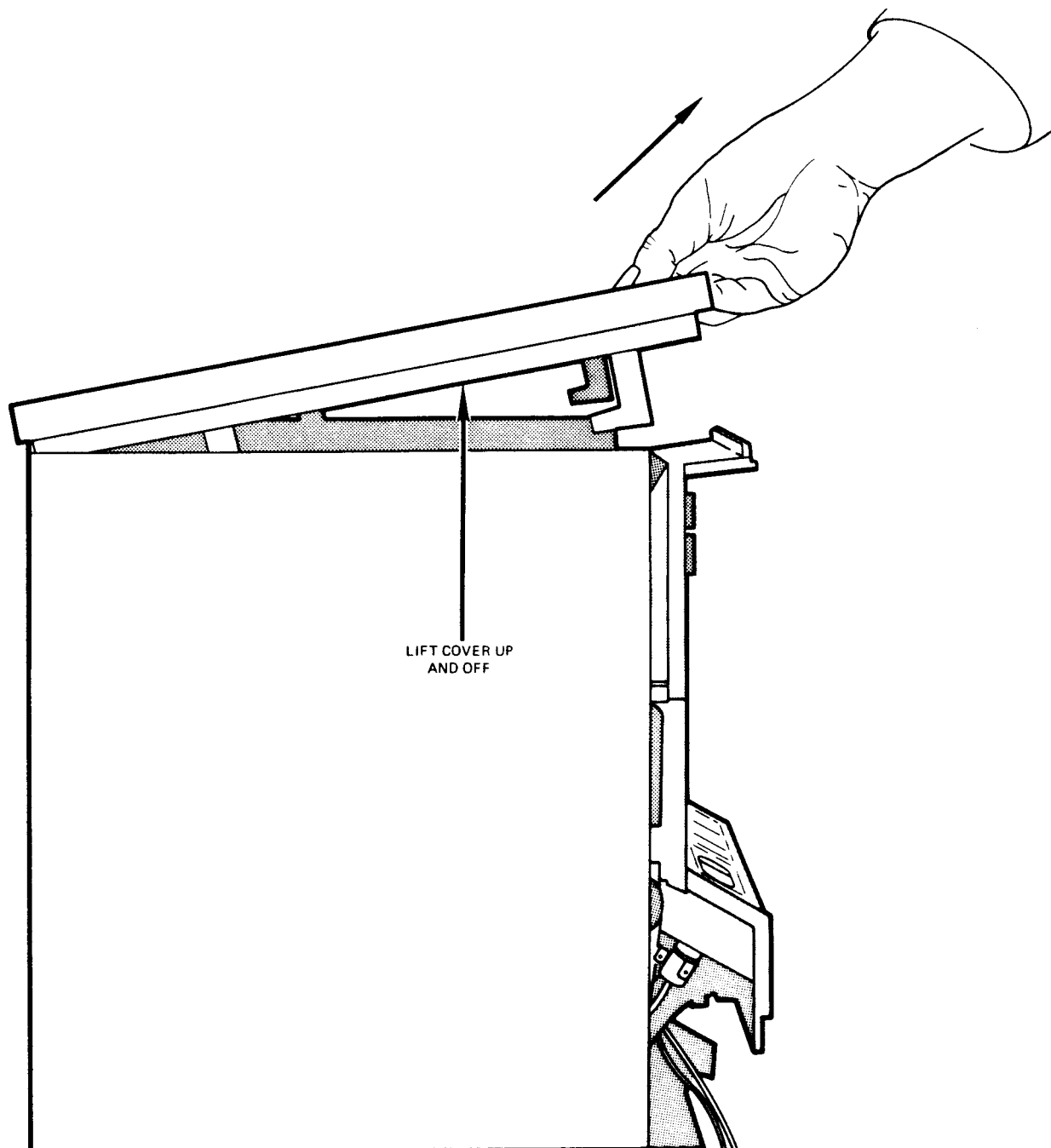


Figure C-5. Removing the Cover

6. Connect the printer cable(s) to the parallel printer port(s) (see Figure C-1).
7. Connect one end of an 18-gauge insulated ground wire to the printer port standoff nut and the other end to a screw or other metal fastener on the printer frame.
8. Route the printer cable(s) out through the back access panel.
9. Replace the top panel and slide it back into place (see Figures C-4 and C-5).
10. Replace the front panel by sliding the catch on the bottom of the front panel over the lip in the interior frame (see Figure C-3) and snapping it into place.
11. Open the front cover door and replace the screw (see Figure C-2).

COMMENT SHEET

LET US KNOW . . . if you have any recommendations for improving this publication. After writing your comments, fold, tape and mail this pre-addressed form to us. All comments will be given careful consideration and become the property of Applied Digital Data Systems Inc.

PUBLICATION TITLE _____ DATE _____

PUBLICATION NO. _____

YOUR NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

Did you find errors in this manual?
If so, please specify by page number.

Did you find this manual well-organized, usable, and easy to understand? If not, please make suggestions for improvement.

Is the information in this manual complete? if not, please indicate what is missing and where it should be placed.

Please indicate the type of user/reader that you most nearly represent.

- ☐ Applications programmer
- ☐ Occasional programmer
- ☐ Consultant
- ☐ Management personnel
- ☐ Operator
- ☐ Sales
- ☐ Prospective user



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