

STREAMING TAPE DRIVE

Model: PC-PM038-1

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**Customer Engineering
Product Maintenance Manual**

741-1672

COMPANY CONFIDENTIAL

PREFACE

This document is the Product Maintenance Manual (PMM) for the Wang Streaming Cartridge Tape Drive. The manual is organized in accordance with Customer Engineering Technical Documentation's approved PMM outline. The scope of this manual reflects the type of maintenance philosophy selected for this product.

The purpose of this manual is to provide the Wang-trained Customer Engineer (CE) with sufficient instructions to operate, troubleshoot, and repair the Streaming Cartridge Tape Drive. The manual will be updated on a regular schedule or as necessary. Such updates will be published either as Publication Update Bulletins (PUBs) or as full revisions.

First Edition (January, 1986)

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SECTION

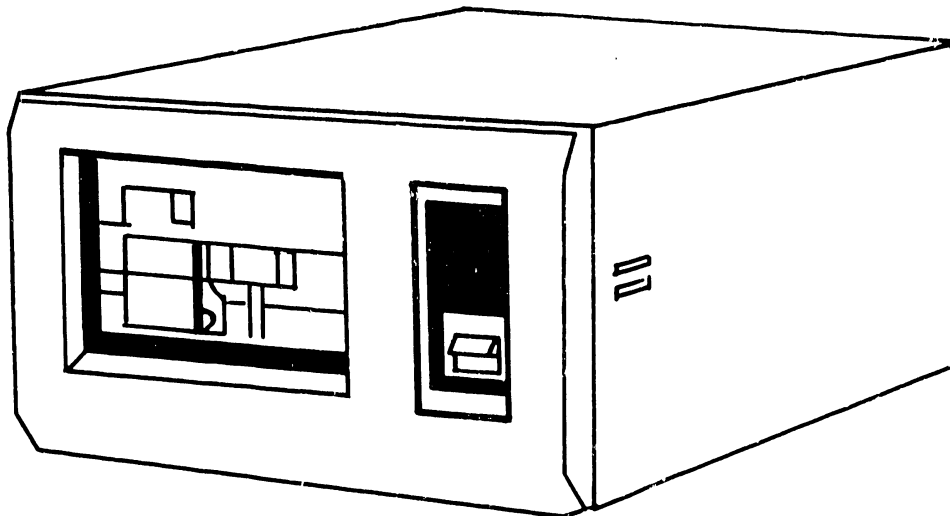
1

INTRO-

DUCTION

INTRODUCTION

The Streaming Cartridge Tape Drive is a storage backup device available as an option for the Wang Professional Computer. The device stores data in a "streaming" format. The streaming format optimizes rapid storage of large blocks of data. The Streaming Cartridge Tape Drive therefore serves the PC primarily for storage backup rather than for performing input/output operations.



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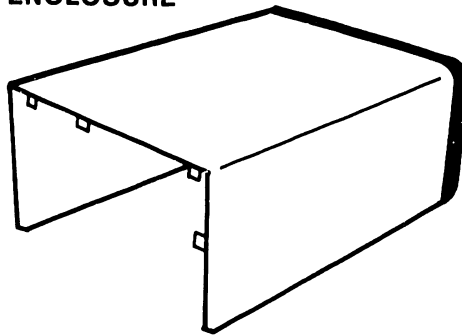
SECTION

2

**IDENTI-
FICATION**

IDENTIFICATION

ENCLOSURE

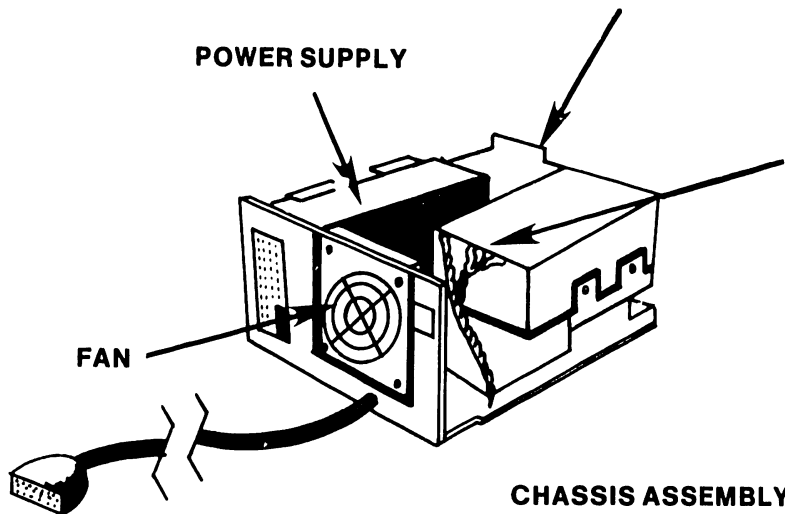


**CONTROL PANEL
(HIDDEN)**

POWER SUPPLY

TAPE DRIVE

FAN



CHASSIS ASSEMBLY

B-02912-FY86-1

SECTION

3

CONTROLS

&

INDICA-

TORS

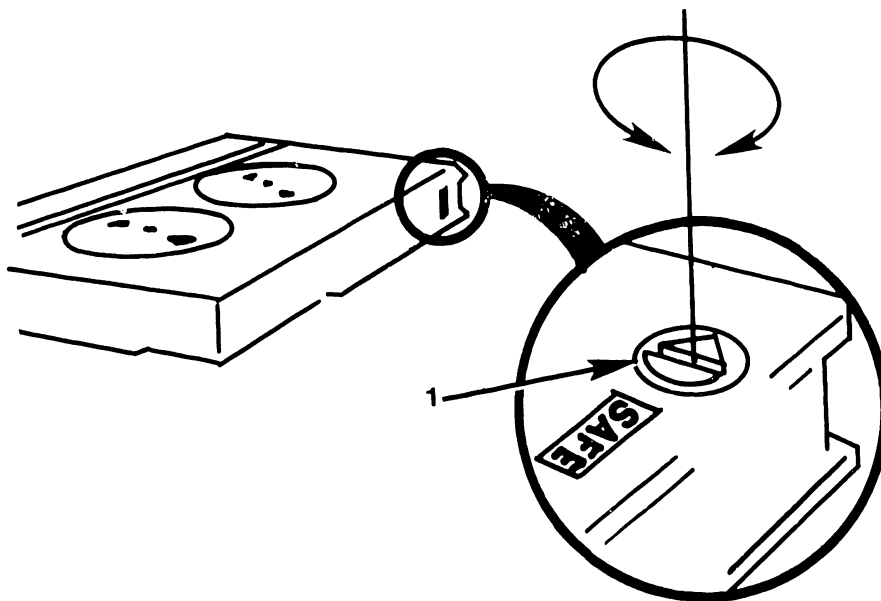
CONTROLS AND INDICATORS

Controls and Indicators comprise the following classifications:

3.1 Operator Controls and Indicators

3.2 Service Controls

3.1 Operator Controls and Indicators

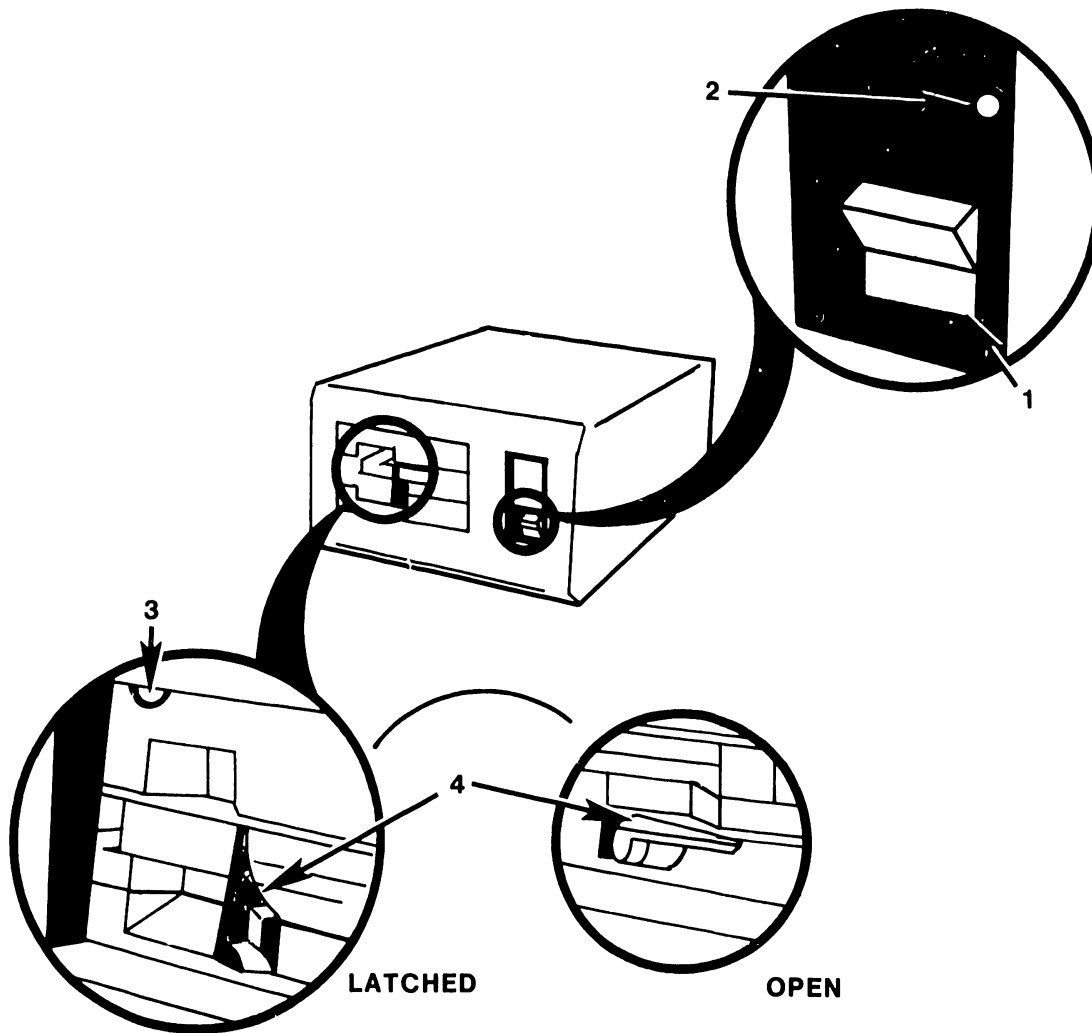


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Item	Name	Type and Function
1	Safe	Mechanical interlock; when set to SAFE, prevents both erasing and overwriting of previously recorded data.

CONTROLS AND INDICATORS

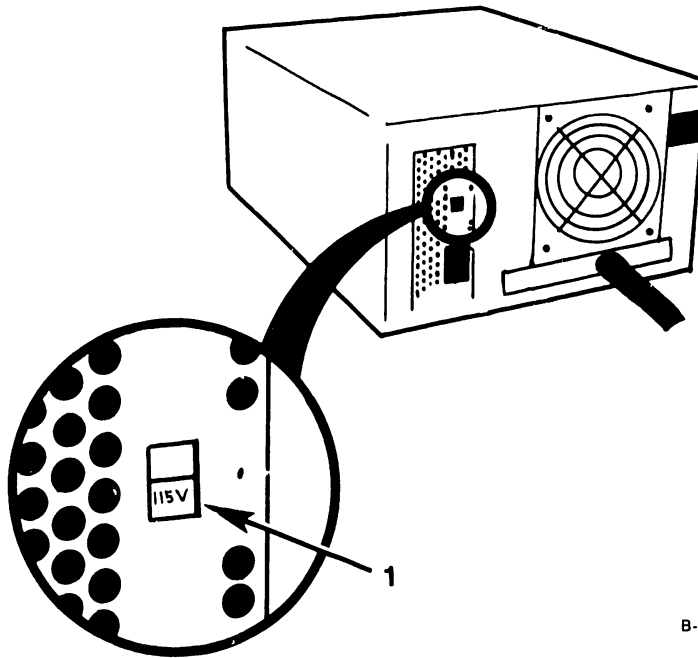
3.1 Operator Controls and Indicators (cont)



B-02912-FY86-3

Item	Name	Type and Function
1	AC Power Switch	Rocker switch; applies ac power to the power supply and cooling fan.
2	Power On	LED; indicates dc power operational.
3	Select	LED; lights when system selects drive.
4	Securing Lever	Mechanical latch; secures/releases tape cartridge.

3.2 Service Controls



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Item	Name	Type and Function
1	Power Source	Slide switch: adapts power supply to power input of either 230 or 115 volts, ac.

SECTION

4

**OPERA-
TION**

OPERATION

Operation for equipment servicing comprises:

- Power Up
- Performance Check
- Power Down

Equipment required:

- Diagnostic Diskette #732-0022H
- Options Diskette #732-8015A
- Scratch tape cartridge

Preparation required:

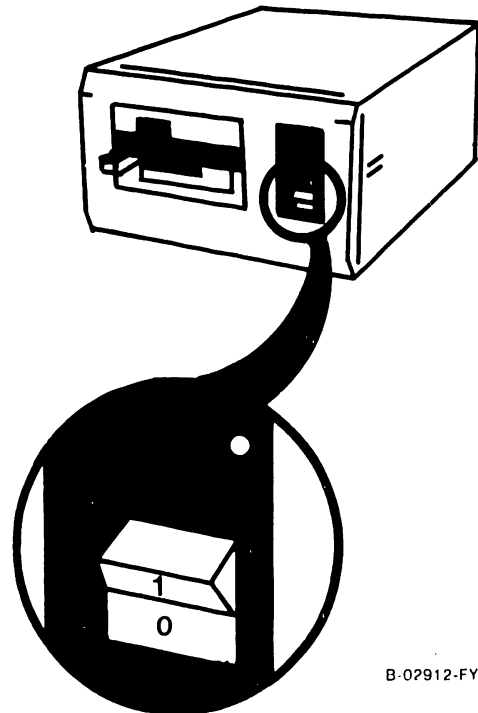
Remove SCTD cover (Repair 7.1);
connect power cable to outlet.

4.1 Power Up

1. At PC, insert Diagnostic Diskette #732-0022H. Set Power switch to on position.
2. At SCTD, with tape cartridge removed, set Power switch to on position.

Power indicator should light. If not, go to Troubleshooting - 6.1.

Fan should turn on. If not, go to Troubleshooting - 6.2.

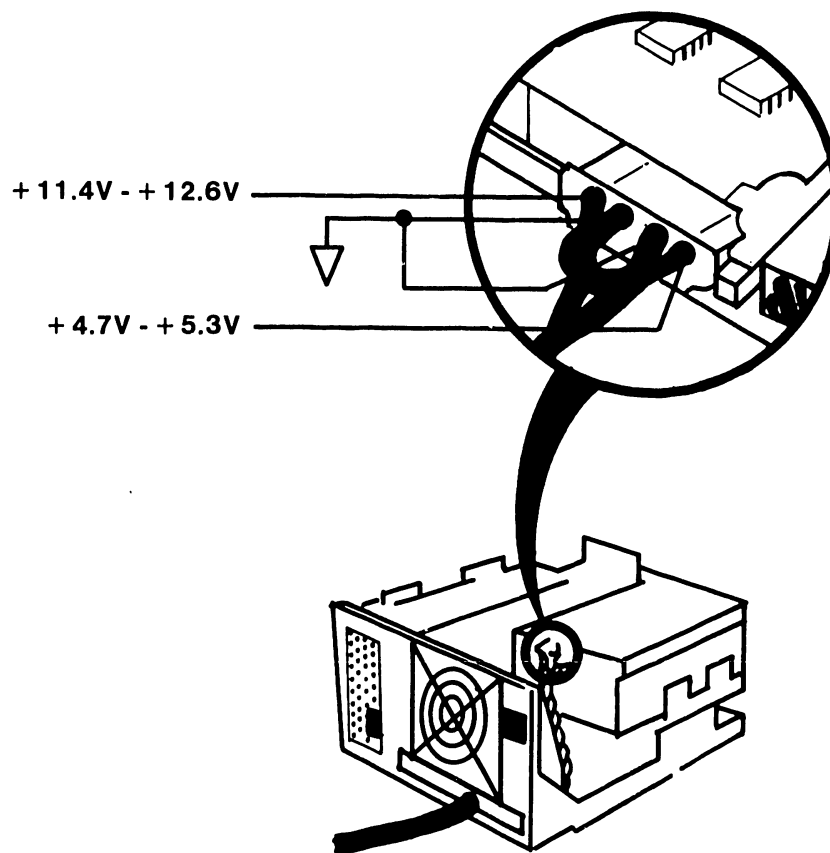


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OPERATION

4.1 Power Up (cont)

3. Verify that voltages are within tolerance.



B-02912-FY86-4

Should either voltage be out of tolerance, replace power supply.

Repeat power-up sequence.

4.2 Performance Check

At completion of Power Up, PC monitor should display "Customer Mode" menu. To initiate performance check, actuate PC keyboard in following sequence:

Screen Displays

1. Depress **2ND** - key **D M**

Diagnostic Select by
Option
Cards

2. Key **EXECUTE**

Card selection menu

3. Step with space bar to select:

SCTD Controller Card

INSERT EXECUTE

Loading Next Test

then

**Insure Diskette Containing
Selected Diagnostics is
Installed**

4.2 Performance Check (cont)

Screen Displays

4. At PC, remove original diskette;
replace with #732-8015A.

Press any key.

Program Status: Loading Next
Test

then

Diagnostic Mode

Select a Test

5. If Options Active line
does not show acceptance
block:

Press **FORMAT** to place
test in "Stop on Error"
mode.

Options Active

**** ■ ****

6. Use space bar to step acceptance
block to:

2) Streamer Drive Test

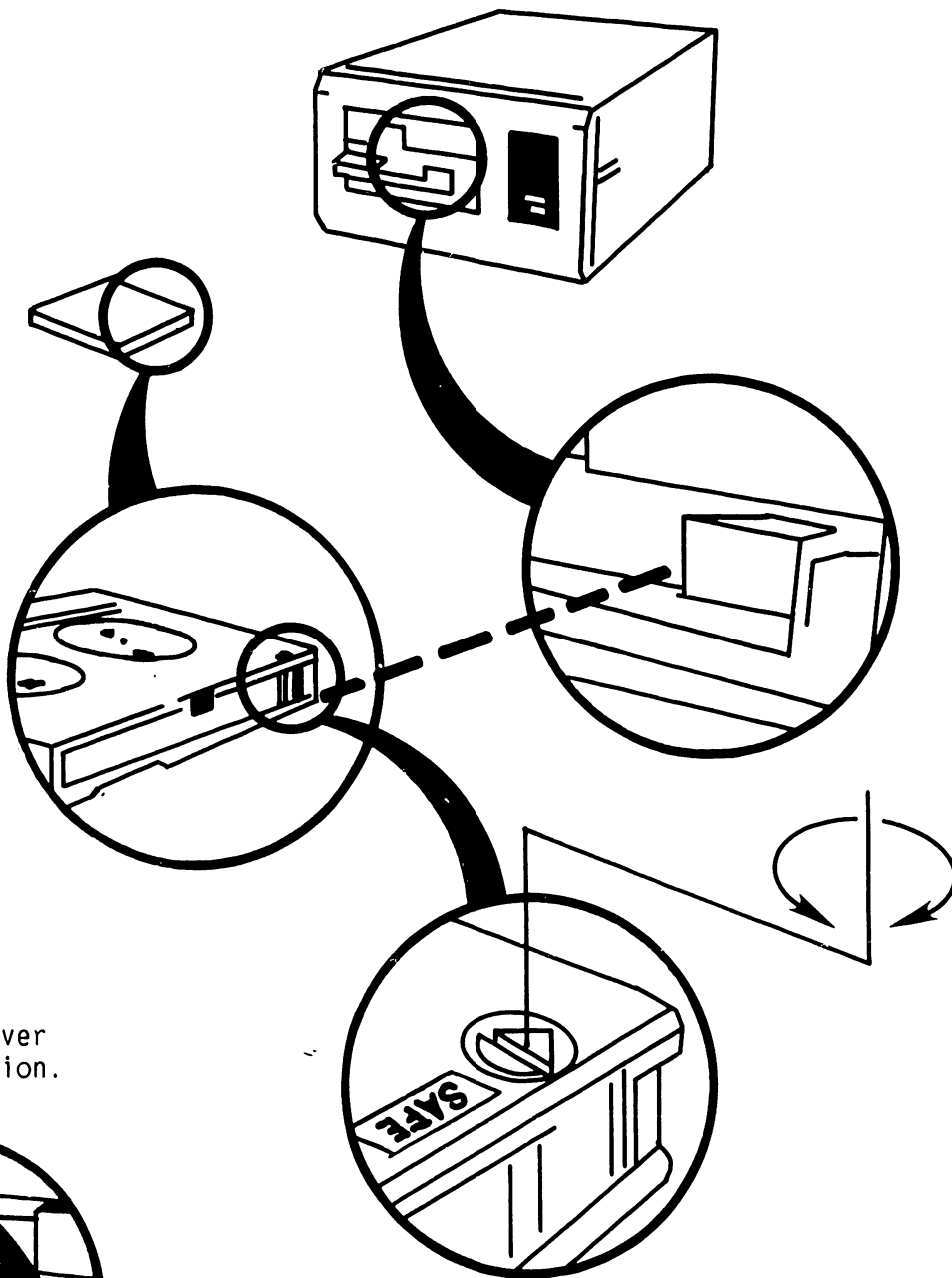
EXECUTE

Place write protected tape
cartridge in tape unit

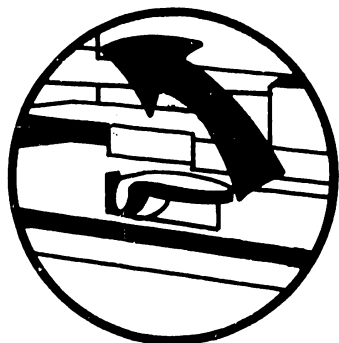
Press **EXECUTE** when ready

4.2 Performance Check (cont)

- 7. Insert write-protected scratch cartridge (turn arrow toward **SAFE**).



Turn securing lever
to latched position.



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B-02912-FY86-5

4.2 Performance Check (cont)

Screen Displays

8. **EXECUTE** (This tests write-protect function. Test duration: Approx 2 seconds)

Should test reveal a fault:

Program Status: Stopped on Error

plus description of error

If no fault:

Remove write protect from cartridge & place back in unit

Press Execute when ready

If fault occurs, go to Troubleshooting - 6.3

4.2 Performance Check (cont)

Screen Displays

9. Remove cartridge; remove write protect, and re-insert.

EXECUTE

Should test reveal a fault:

Program Status: Stopped on Error

plus description of error

If fault occurs, go to Troubleshooting - 6.3

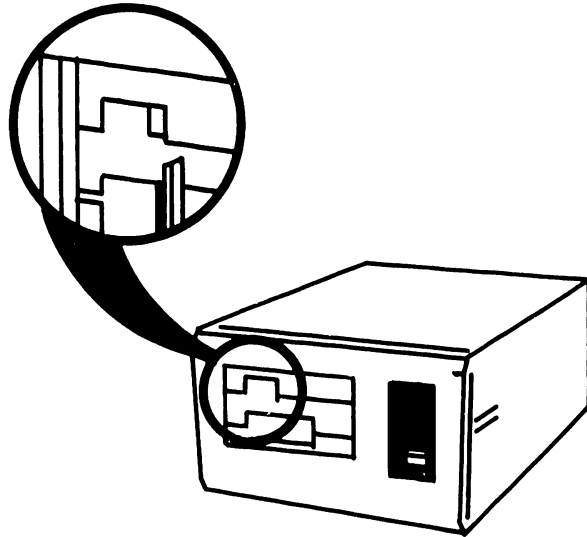
If no fault, test lasts approximately 7 minutes. At completion, display returns to:

Diagnostic Mode

Select a Test

4.3 Power Down

1. Ensure that SCTD Select LED is extinguished (SCTD not being accessed); set Power switch to off position.



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2. At PC, set Power switch to off position.

SECTION

5

PREVEN-

TIVE

MAINT-

ENANCE

Periodic cleaning of the tape drive recording/playback heads prevents oxide and dirt buildup.

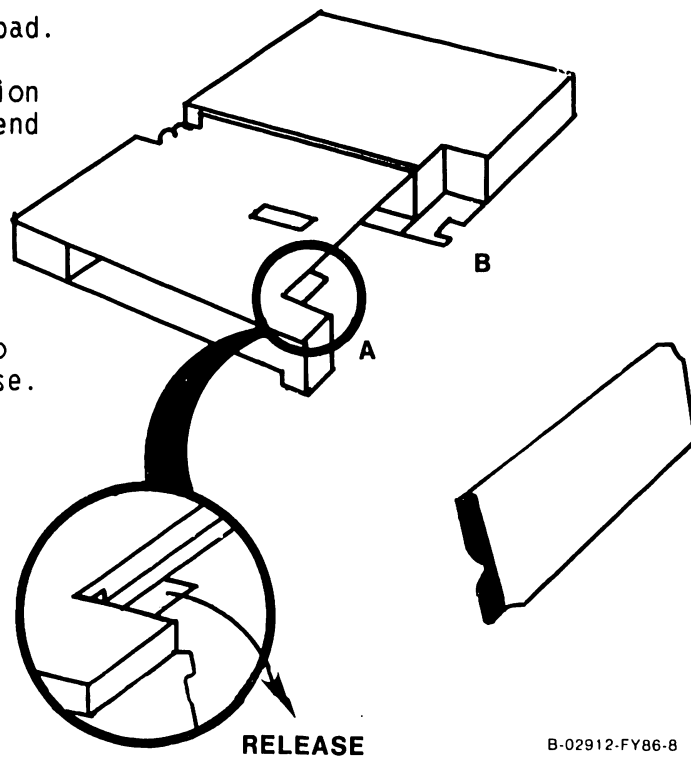
The recommended maximum interval between cleanings is either 20 hours of use or 100 tapes read/recorded.

The recommended cleaning medium is the QIC-II Drive Cleaning Kit comprising a head-cleaning cartridge and a container of cleaning solution.

5.1 Kit Preparation

Cleaning-pad use should not exceed five repetitions. Replace as follows:

1. Press latch to release old pad.
2. Hold latch in release position to insert new pad. Insert end of pad into slot B first.
3. Insert other end of pad into slot A. Allow latch to close.



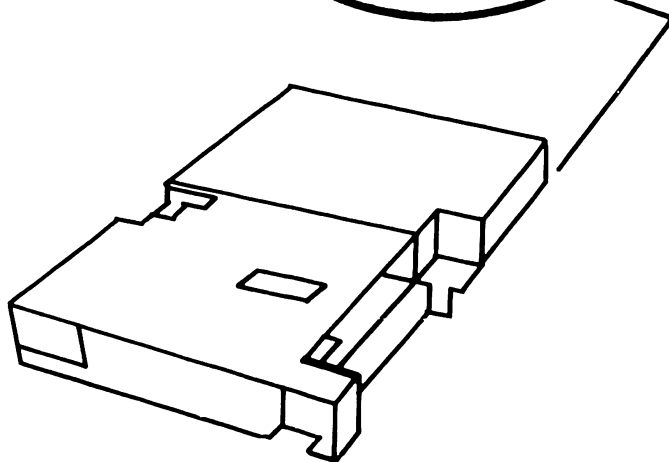
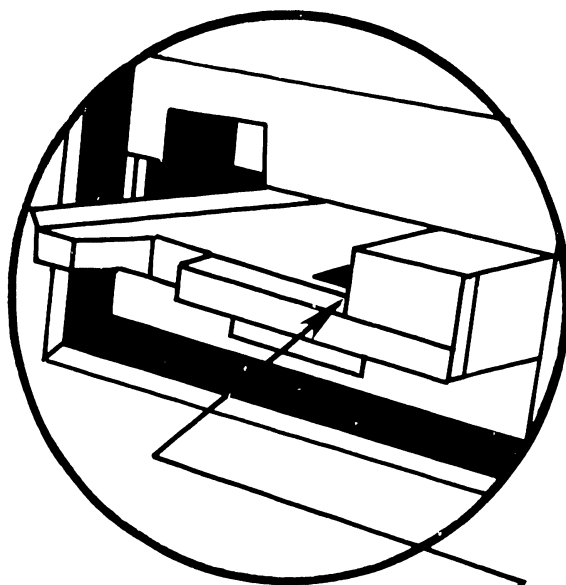
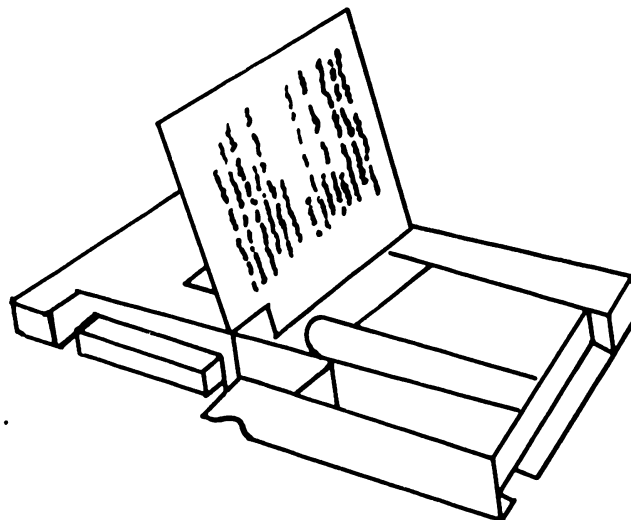
B-02912-FY86-8

5.2 Tape Head Cleaning

The cleaner actuating lever may be located within the cartridge storage compartment.

To clean the recording heads:

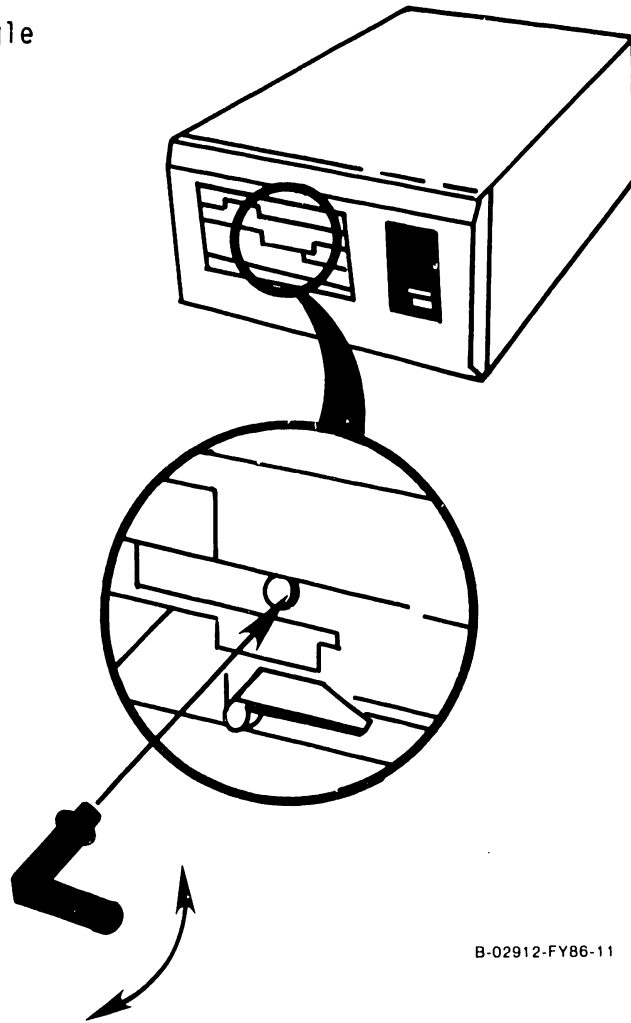
1. Moisten cleaning pad with a few drops of cleaning solution.
2. Insert cartridge into tape drive.



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5.2 Tape Head Cleaning (cont)

3. Insert cleaning lever. Toggle through 20 (approximately) repetitions.



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4. Remove cleaning cartridge.

SECTION

6

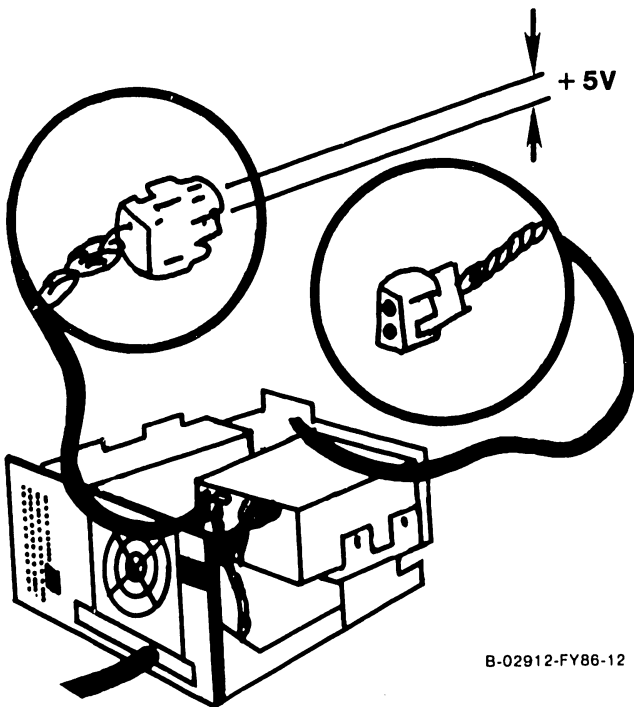
**TROUBLE-
SHOOTING**

TROUBLESHOOTING

The following analyses pertain to faults encountered in equipment performance check, Section 4.

6.1 Power LED does not light

<u>Action</u>	<u>Observation</u>
1. Check cooling fan.	Running - Go to step 2 Not running - Go to step 3
2. Unplug cable to LED; check for +5V	+5V OK - replace control panel +5V <u>not</u> OK - replace power supply <u>Do not go to step 3</u>



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3. Check voltage at power receptacle.	Power OK - replace Power switch
---------------------------------------	---------------------------------

TROUBLESHOOTING

6.2 Fan does not run

<u>Action</u>	<u>Observation</u>
1. Check Power LED	If lighted - replace fan If extinguished - go to step 2
2. Check voltage at power receptacle.	Power OK - replace Power switch

6.3 Unit fails Performance Test

The following steps test Control Board functions to isolate cause of system performance failure.

To run this test, retain setup in effect at time of system failure (Performance Test - 4.2)

Screen Displays

1. To remove error message, press

CANCEL

Card selection menu

2. Press **EXECUTE**

Delete Current Error Log?

(Lower left of screen)

3. Press **EXECUTE**

Diagnostic Mode

Select a Test

4. Press **EXECUTE** to select:

1) SCTD Controller Test
(default position)

**Please attach Loopback
Connector to 9079 Controller
Press EXECUTE when ready**

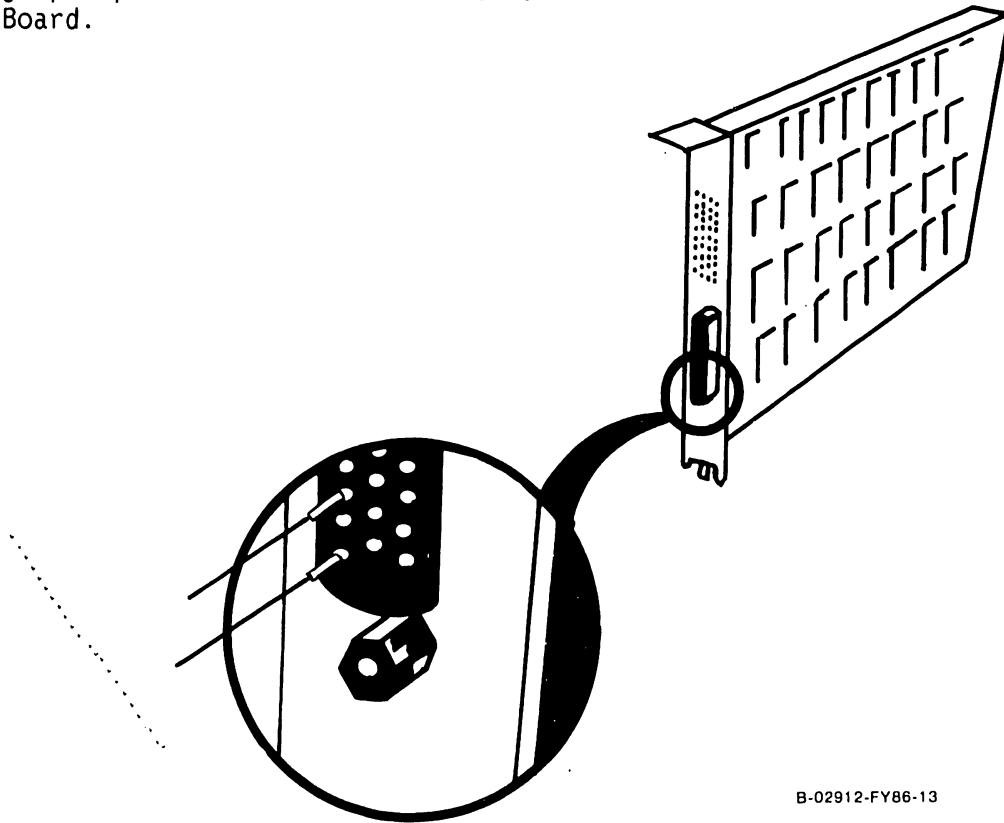
6.3 Unit fails Performance Test (cont)

Screen Displays

5. Attach loopback connector.

If loopback connector not available,
jumper pins 34 and 36 of Controller
Board.

Please attach Loopback
Connector to 9079 Controller
Press EXECUTE when ready



B-02912-FY86-13

6. Press **EXECUTE** when ready. Test
should run.

Should test reveal a fault

**Program Status: Stopped on
Error**

plus description of error

If no fault, display returns to:

Diagnostic Mode

Select a Test

6.3 Unit fails Performance Test (cont)

7. Should fault occur, replace Control Board. Repeat test.

If no fault, replace tape drive.

Repeat test.

SECTION

7

REPAIR

REPAIR

This section provides assembly/
disassembly instructions for the
following field replaceable units:

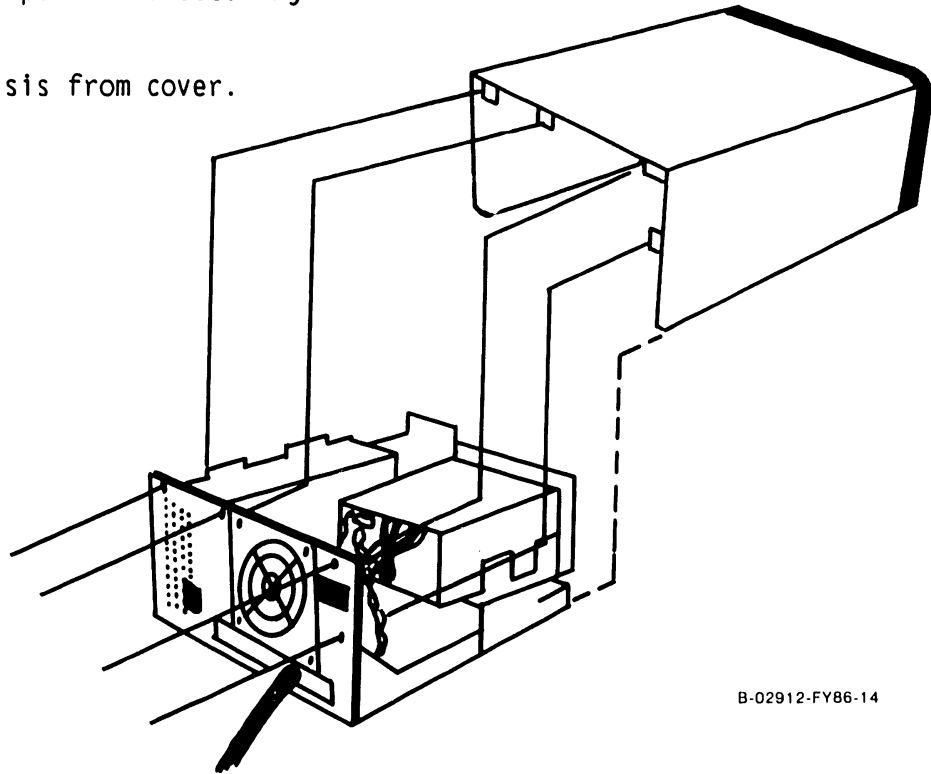
		<u>PARAGRAPH</u>
220-0476	Input/Output 50-Position Cable	7.2
278-4051	Streaming Cartridge Tape Drive	7.3
325-0059	On/Off AC Switch	7.4
400-1001-1	Fan	7.6
725-2905	Power Supply (SPS60)	7.5
725-2979	Operator Control Panel	7.4

To access any replaceable unit:

1. Unplug power cord.
2. Remove cover - Paragraph 7.1

7.1 Cover Removal

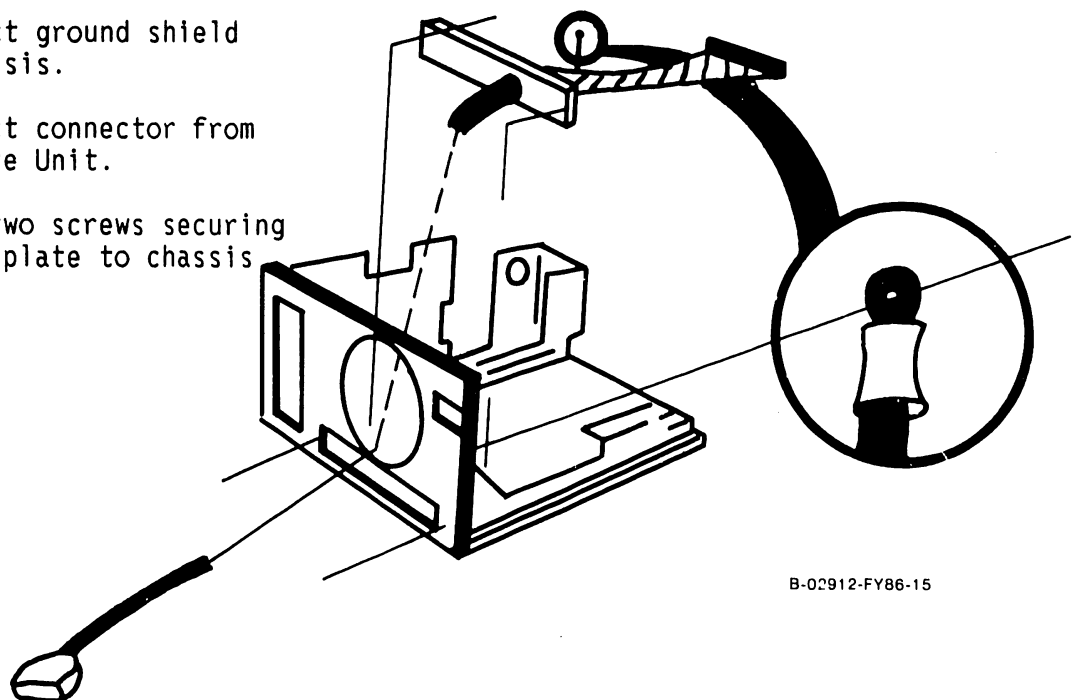
1. At rear of unit, unscrew the four Phillips screws securing cover.
2. Slide chassis from cover.



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7.2 Signal Cable Removal

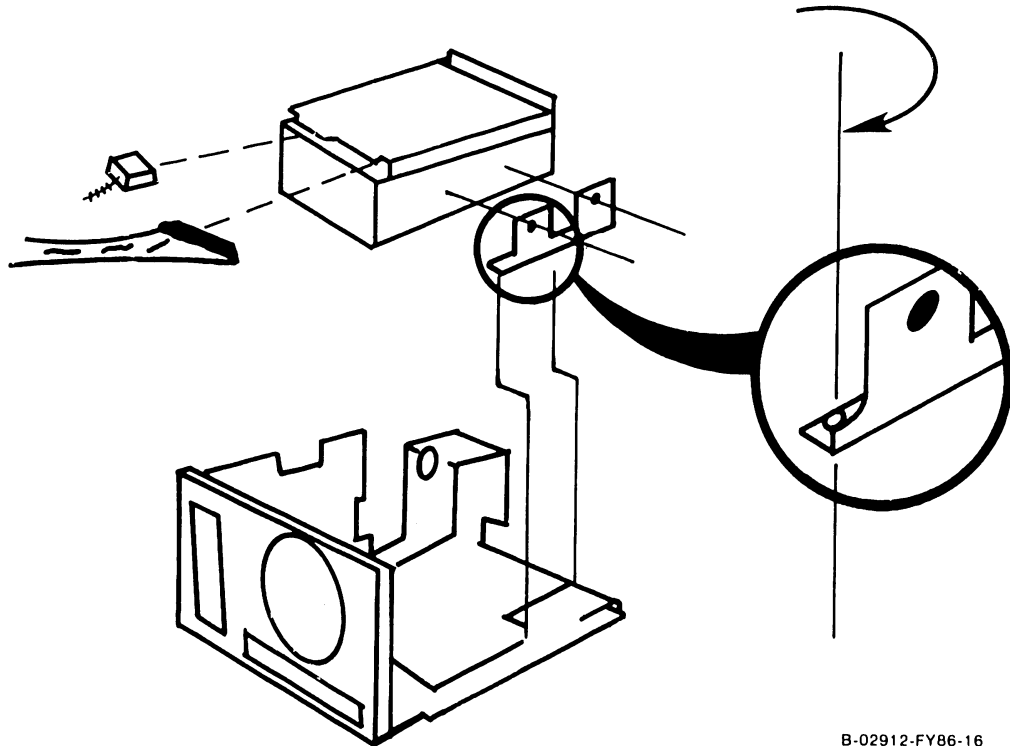
1. Disconnect ground shield from chassis.
2. Disconnect connector from Tape Drive Unit.
3. Unscrew two screws securing mounting plate to chassis



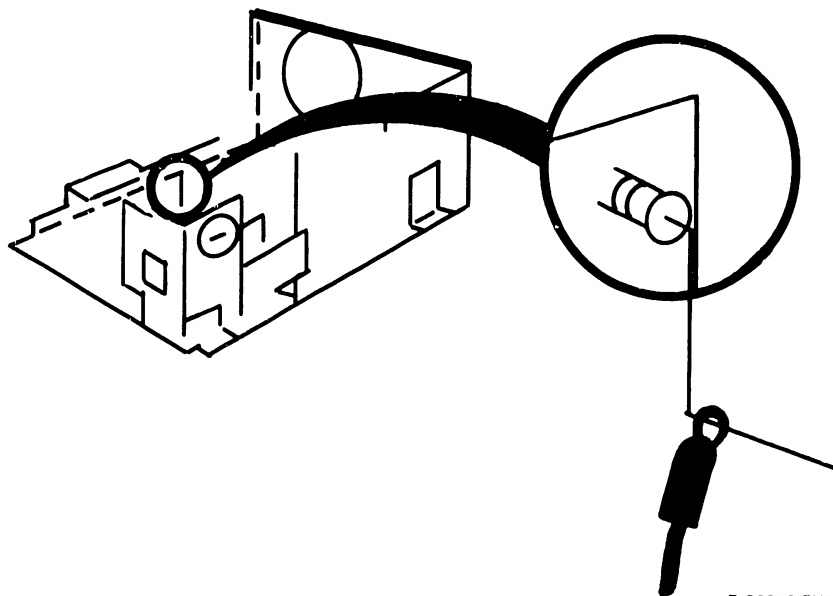
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7.3 Tape Drive Removal

1. Disconnect power and signal cables.
2. Loosen four cam lock fasteners at base of drive mounting brackets (one-half clockwise turn).



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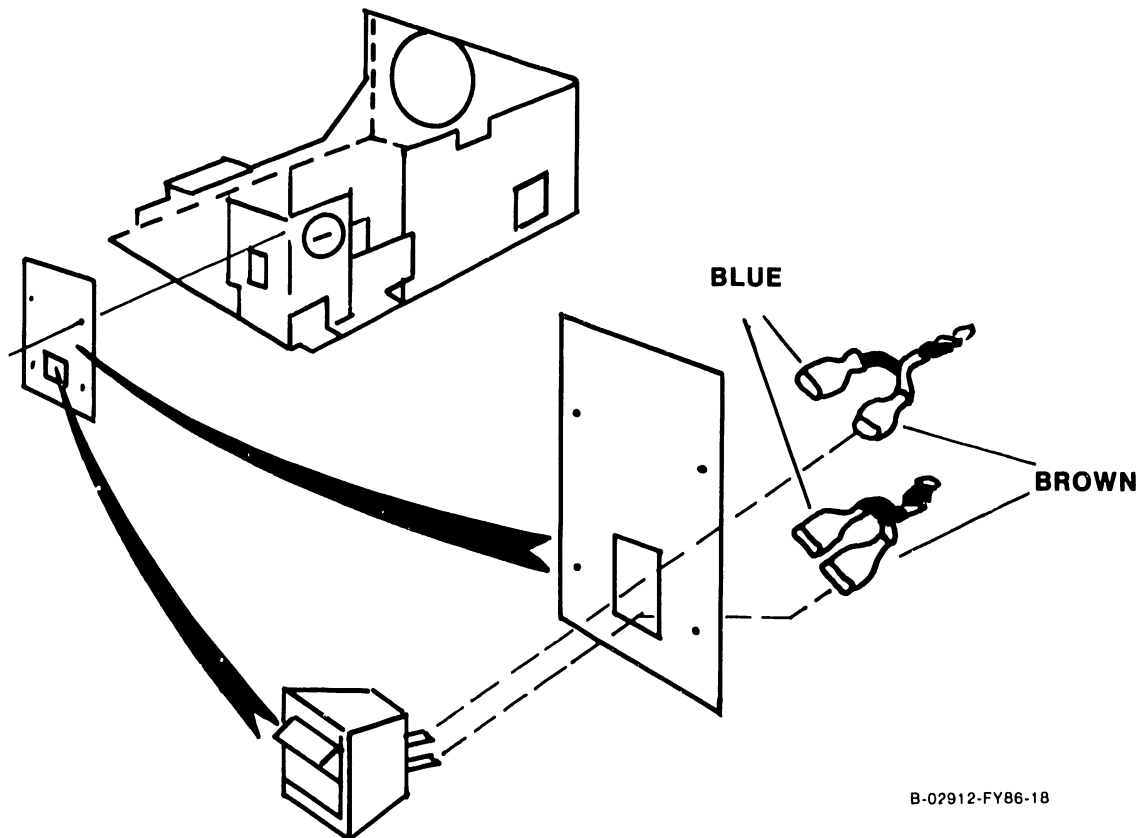


3. Remove tape drive grounding wire from mounting stud.
4. Lift tape drive free for access to screws securing drive to mounting brackets.

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7.4 Control Panel/AC Switch Removal

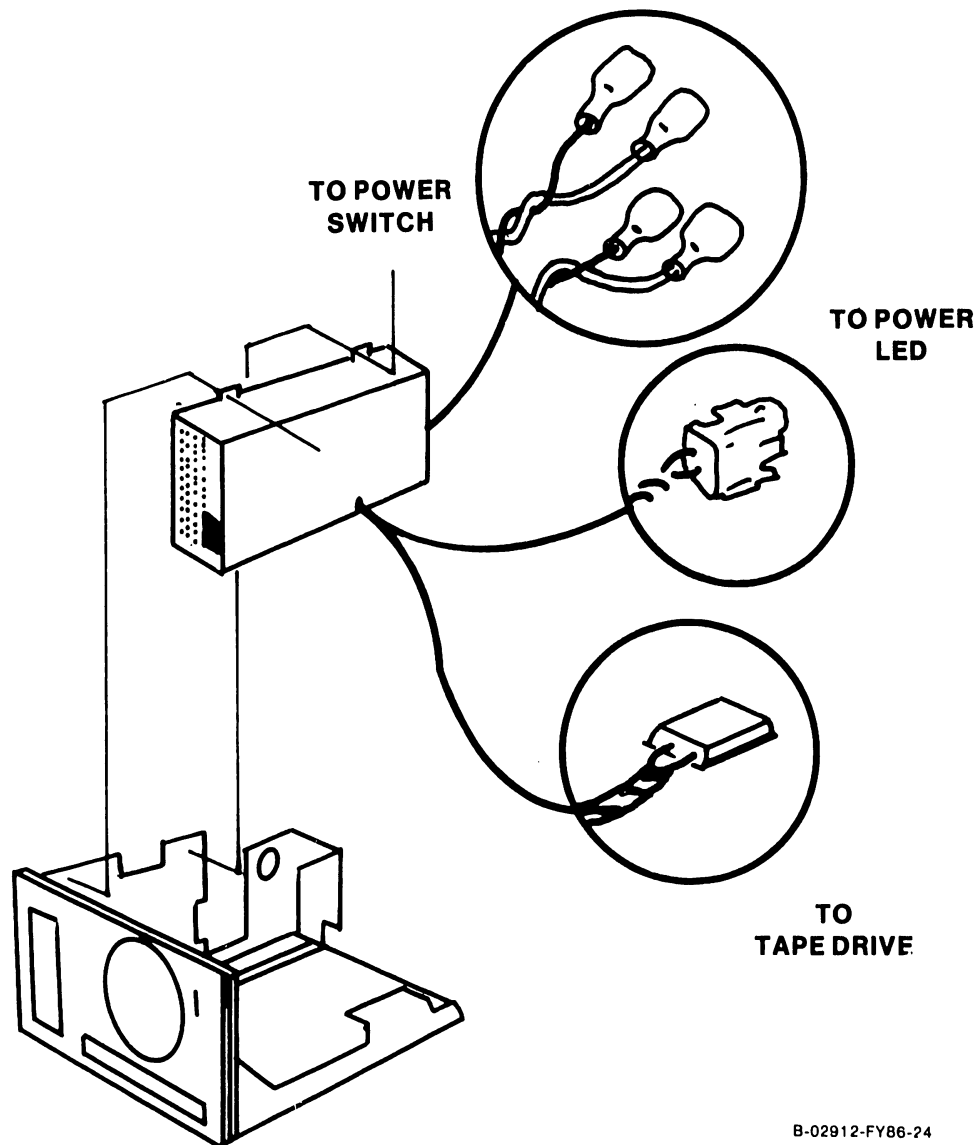
1. Slide four wire connectors off switch prongs (when reassembling, ensure that upper and lower wire, each side, matches).
2. Remove four screws securing Control Panel to chassis.
3. Force switch forward out of Control Panel aperture.



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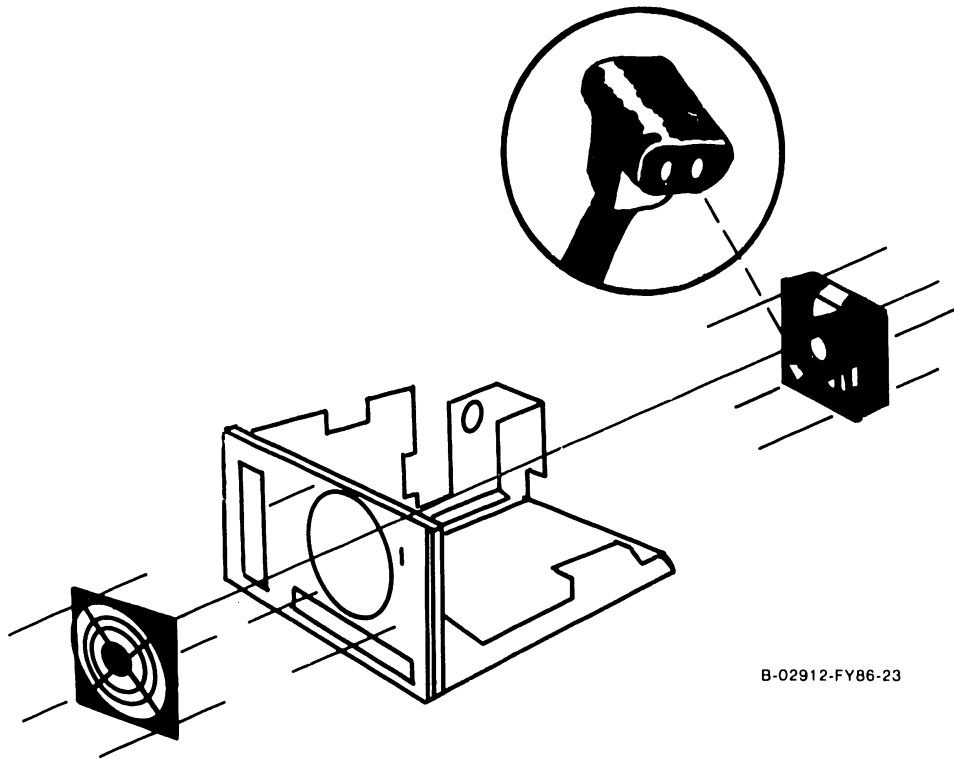
7.5 Power Supply Removal

1. Disconnect three power cables from chassis components.
2. Lift power supply assembly free of retaining slots (securing base of power supply to chassis).



7.6 Fan Removal

1. Remove four bolts and nuts securing fan and fan guard to chassis.
2. Unplug ac connector from fan.



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SECTION

8

ADJUST-

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&

ALIGN-

MENT

ADJUSTMENT AND ALIGNMENT

The tape-drive units are field replaceable. Field maintenance does not therefore include tape drive adjustment or alignment.

SECTION

9

UNPACK-

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AND

SETUP

UNPACKING AND SETUP

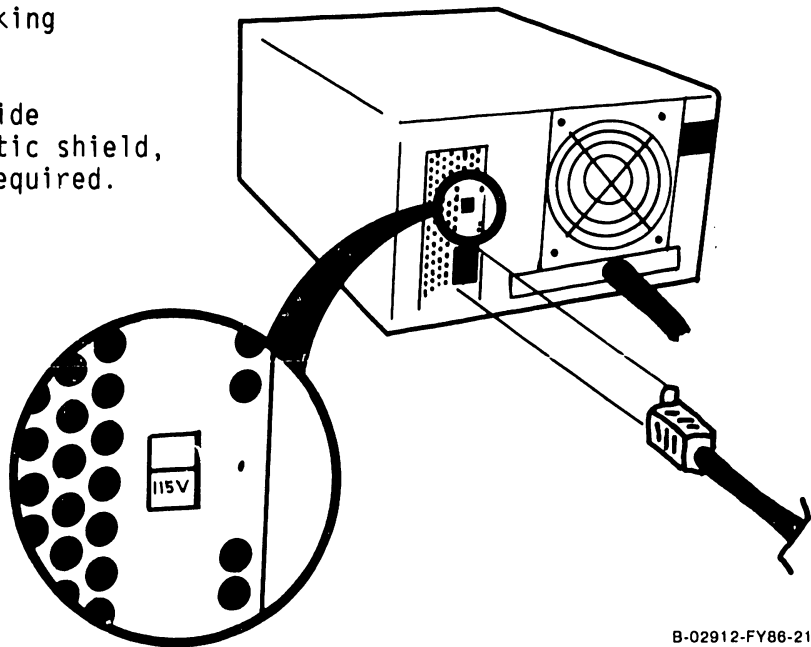
Prior to installation, the SCTD comprises two packaged units:

- Tape-drive enclosure
- Controller Board

Following preparation, in accordance with the following directions, perform system checkout - Operation, 4.1 through 4.3.

9.1 Tape-Drive Enclosure

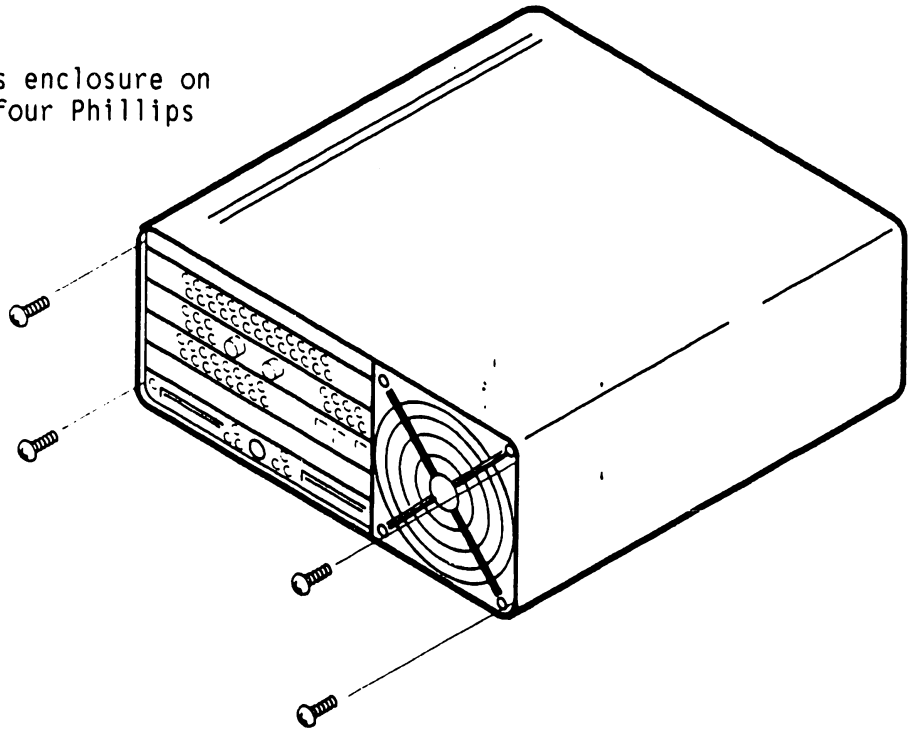
1. Cut reinforced tape to uncrate assembly. Remove packing material from unit.
2. Check power-source slide switch. Unscrew plastic shield, should resetting be required.



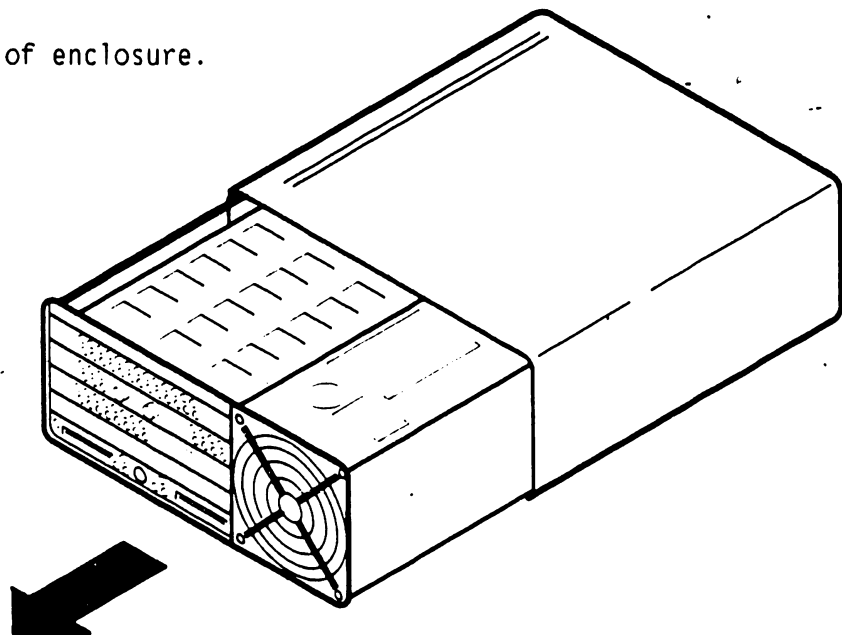
3. Connect power cord.
Screw in place.

9.2 Controller Board

1. Cut reinforced tape to remove packing material. Check that board is undamaged.
2. Lay PC electronics enclosure on side, and remove four Phillips screws.



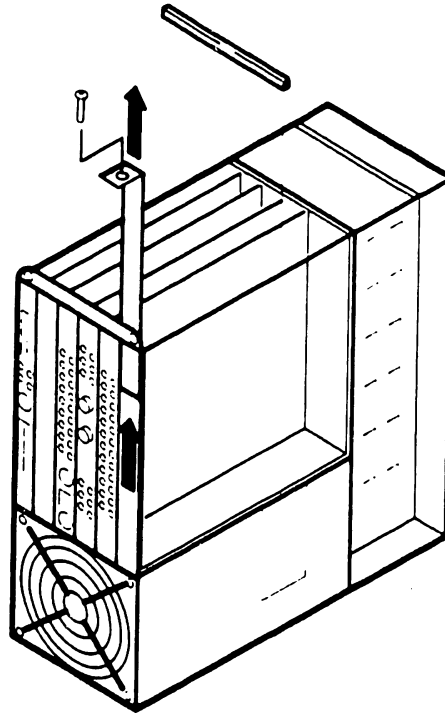
3. Slide chassis out of enclosure.



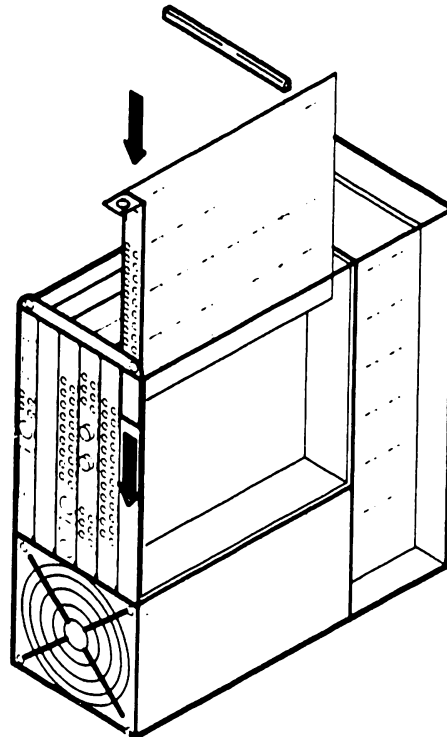
UNPACKING AND SETUP

9.2 Controller Board (cont)

4. Remove Phillips screw, and remove RF shield and holddown device.



5. Slide Controller Board into slot guides, and press into place. Reinstall securing hardware; reinstall electronics chassis in unit enclosure.



6. Connect 50-pin connector to Controller Board at rear of electronics unit. Tighten connector screws.

**SECTION
10
FUNC-
TIONAL
DESCRIP-
TION**

FUNCTIONAL DESCRIPTION

Information to be added at a later date

SECTION

11

**SPECIFI-
CATIONS**

SPECIFICATIONS

The following entries summarize the operational and physical parameters of the Streaming Cartridge Tape Drive.

11.1 Environmental Requirements

Ambient temperature (range):

44° to 82°F (5° to 28°C)

Relative humidity:

20% to 80%, noncondensing

Altitude:

Up to 10,000 ft (3048 m)

11.2 Power Requirements

115 VAC, 50/60 Hz

220 VAC, 50/60 Hz

11.3 Dimensions and Weight

Tape-drive enclosure:

Height - 6.57 in. (16.69 cm)

Width - 11.38 in. (28.91 cm)

Depth - 15.81 in. (40.16 cm)

Weight - 22.5 lbs (10.21 Kg)

Tape width: 0.25 in. (0.64 cm)

SECTION

12

ILLUSTRATED

PARTS

BREAKDOWN

ILLUSTRATED PARTS BREAKDOWN

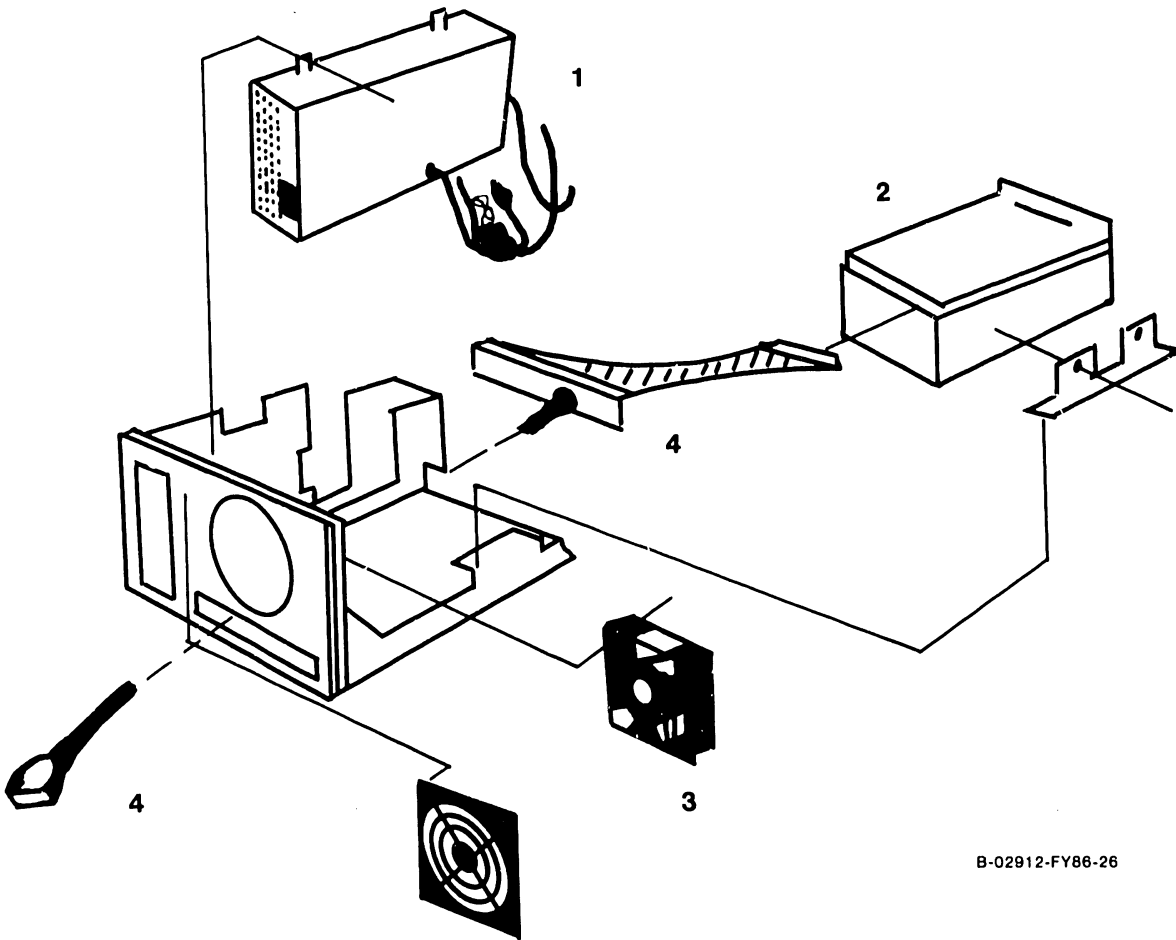
Field replaceable units covered in this
Illustrated Parts Breakdown are:

Illustrated on Page:

210-9079	QIC Controller	12-4
220-0476	Input/Output 50-Position Cable	12-2
278-4051	Streaming Cartridge Tape Drive	12-2
325-0059	On/Off AC Switch	12-3
400-1001-1	Fan	12-2
725-2905	Power Supply (SPS60)	12-2
725-2979	Operator Control Panel	12-3
420-2040	Power Cord	

See Repair, Section 7, for assembly/
disassembly illustrations.

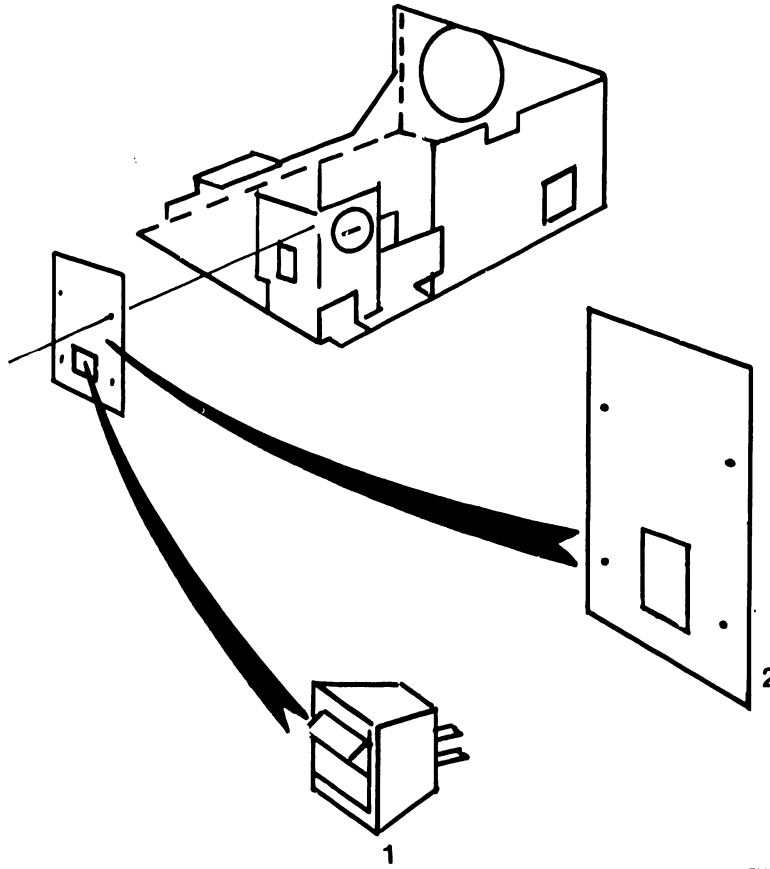
ILLUSTRATED PARTS BREAKDOWN



B-02912-FY86-26

Item	Part No.	Name
1	725-2905	Power Supply (SPS 60)
2	278-4051	Streaming Cartridge Tape Drive
3	400-1001-1	Fan
4	220-0476	Input/Output 50-Position Cable

ILLUSTRATED PARTS BREAKDOWN

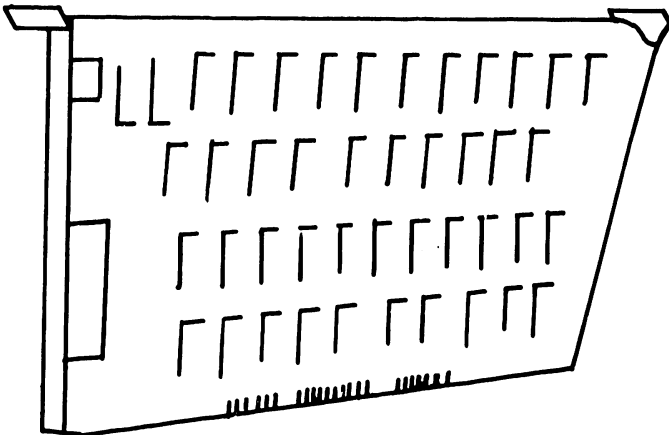


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Item	Part No.	Name
1	325-0659	On/Off AC Switch
2	725-2979	Operator Control Panel

ILLUSTRATED PARTS BREAKDOWN

See Section 9 - Unpacking and Setup for instructions to install the Controller in the PC enclosure.



210-9079 QIC-11 CONTROLLER

B-02912-FY86-22



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