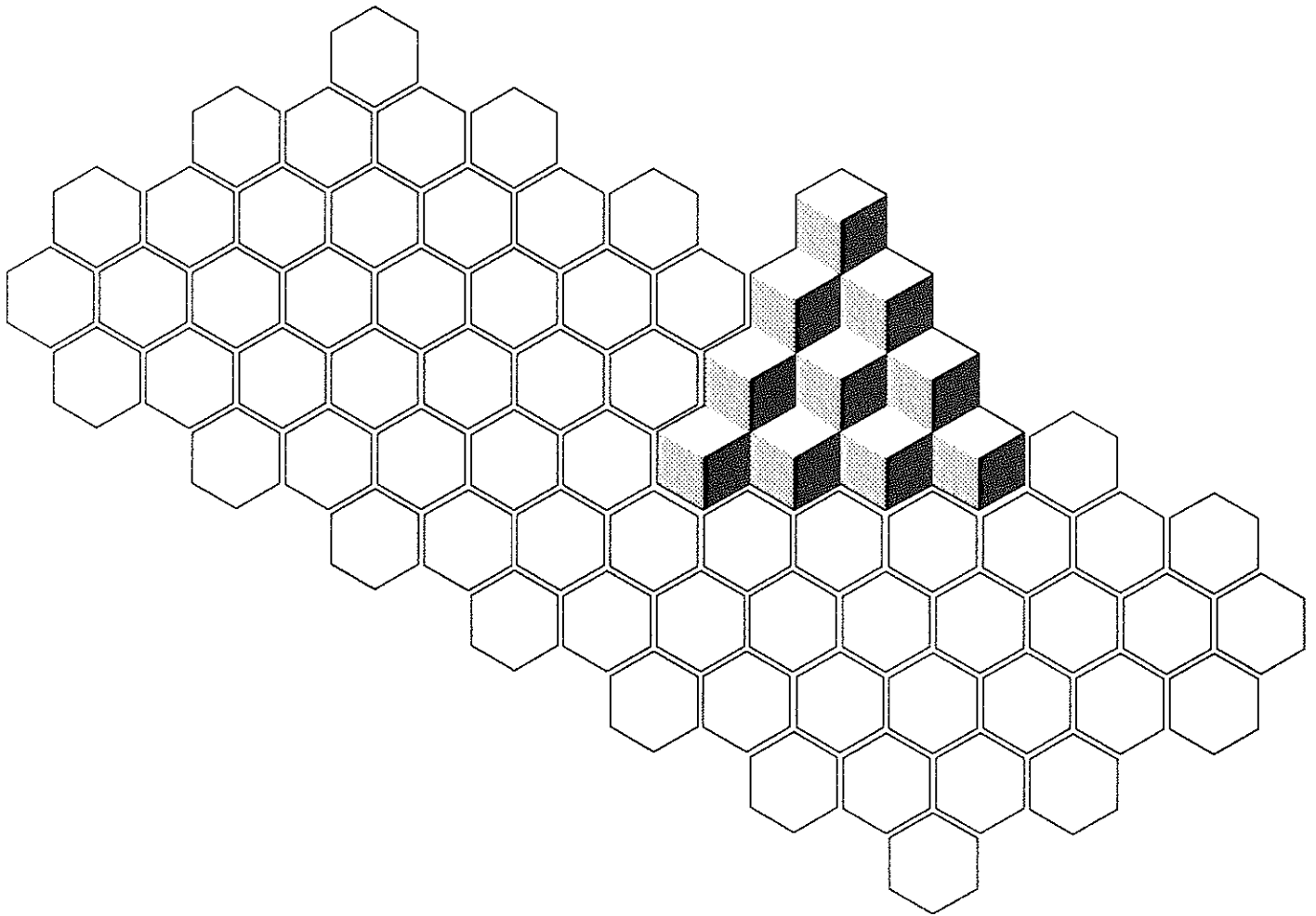


Analyzing Problems



Federal Communications Commission (FCC) Statement

Warning: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

First Edition (June 1986)

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IBM has prepared this manual for use by customer personnel and service representatives in performing problem analysis and resolution of the specific machines indicated. IBM makes no representations that it is suitable for any other purpose.

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Who should use this manual ...

This manual is for customer personnel and service representatives who are responsible for analyzing problems on the IBM 9332 Disk Unit.

How this manual is arranged ...

This manual contains:

- One chapter of problem analysis procedures
- A glossary of terms and abbreviations used in this manual
- An index of key words to procedures in this manual

If you need more information ...

See the following 9332 manuals for more information:

- *Installing*, SA21-9804, which contains procedures to install a 9332 Disk Unit.
- *Reference Code Guide*, SA21-9836, which contains descriptions of the 9332 reference codes and is used to identify field-replaceable units.
- *Service Guide*, SY31-9026, which contains procedures to service the 9332.

Safety Notices in This Manual

Warning Notices

A warning notice calls attention to an action that could cause damage to program, device, system, or data. A warning notice appears in the Federal Communications Commission (FCC) Statement on page ii. A warning notice also appears in the following procedure:

- “Analyzing No-Response Problems” on page 17

1. Analyzing Problems	1
Starting Problem Analysis	1
Analyzing Overheating Problems	2
Analyzing No-Response Problems	11
Analyzing Power Problems	28
Analyzing Other Problems	40
Glossary of Terms and Abbreviations	43
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Contents

Starting Problem Analysis

Listed below are error conditions you may have encountered on the 9332 Disk Unit. To solve your problem, select the error condition that matches your problem. Then, perform the problem analysis procedure for that problem. The starting location for each procedure is given with the associated error condition.

- No reference code reported. You think there is a problem with the disk unit. For example, you see smoke or fire, smell an unusual odor, hear an unusual sound, or feel an unusual vibration.

Go to page 40.

- Reference code of 08C6 reported.

Go to page 2.

- Reference code of FFF0 (FFD5) or FFD0 reported.

Go to page 11.

- Reference code other than FFF0 (FFD5), FFD0, or 08C6 reported.

Go to the *Reference Code Guide* for the 9332 Disk Unit.

- The disk unit does not respond to the system.

Go to page 11.

- The disk unit does not come ready. Both the Power On light and the Unit Ready light are not on continuously.

Go to page 11.

Analyzing Overheating Problems

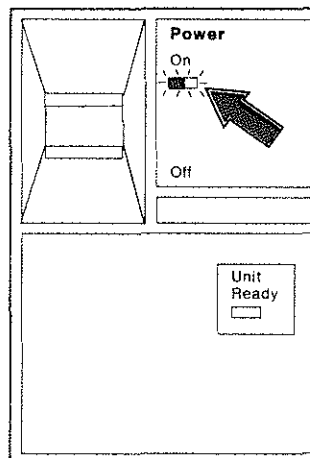
The 9332 has indicated an overheating condition (reference code 08C6).

This procedure determines what is causing the overheating condition.

1

Locate the failing 9332.

Note: The Power On light on the control panel will be flashing.

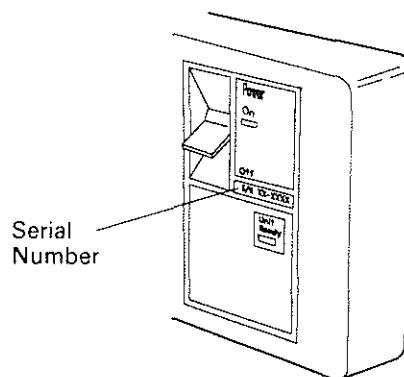


RD1A001-0

2

Verify the serial number of the 9332 that is installed.

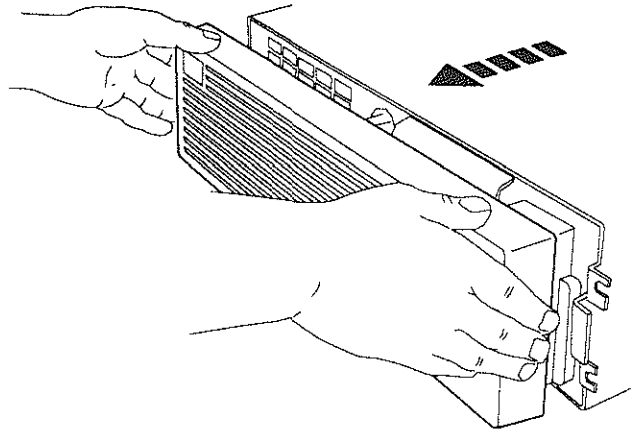
- Look at the serial number on the front of the control panel.



RD1A002-0

3

Remove the front cover.

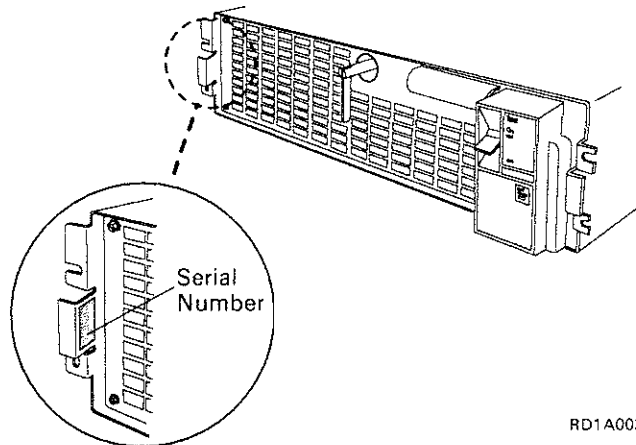


RD1C037-0

4

Verify that all serial numbers match.

- Control panel serial number
- Disk drive serial number



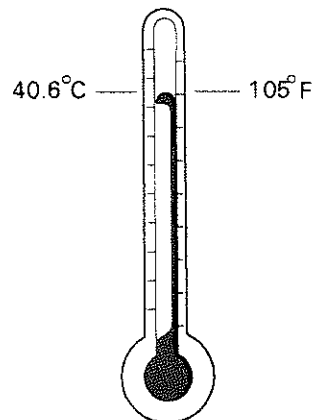
RD1A003-0

5

Is the temperature of the room where the 9332 is located less than 40.6°C (105°F)?

Yes No

Go to step 16.



RD1A004-0

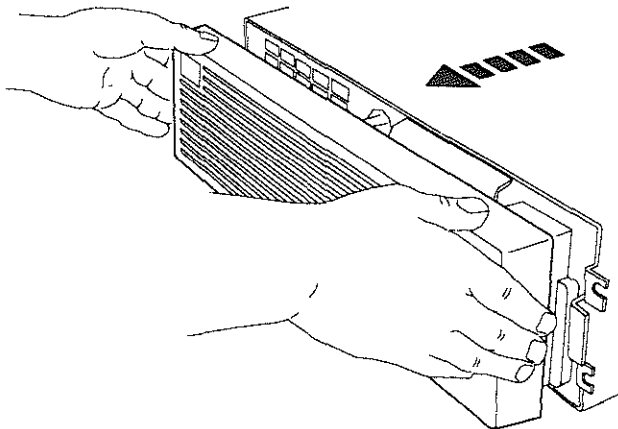
1. Analyzing Problems

Analyzing Overheating Problems (Continued)

6

Remove the front cover.

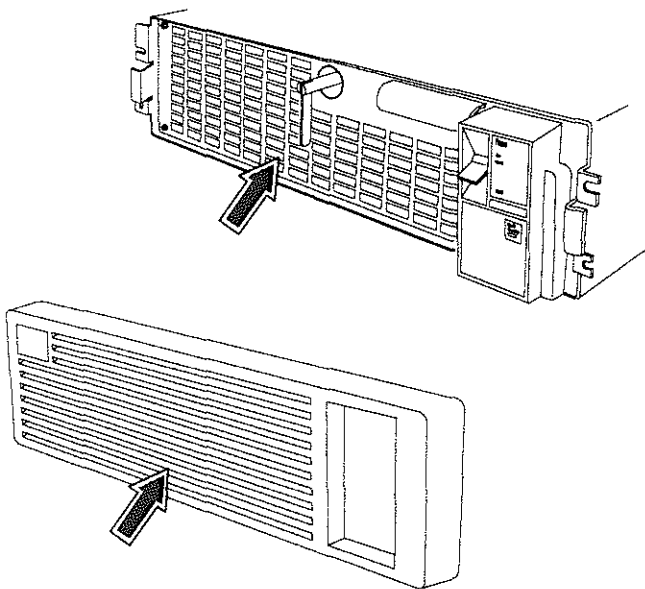
Note: You may have removed the front cover in a previous step or task.



RD1C037-0

7

Are both the front cover and the screen clear of obstructions?



RD1A005-0

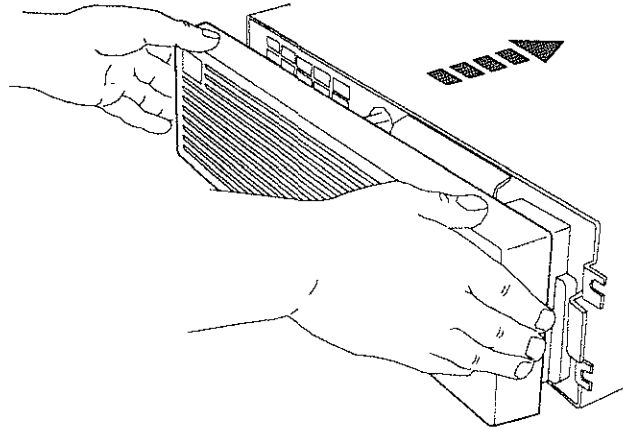
Yes No



Go to step 18.

8

Reinstall the front cover.



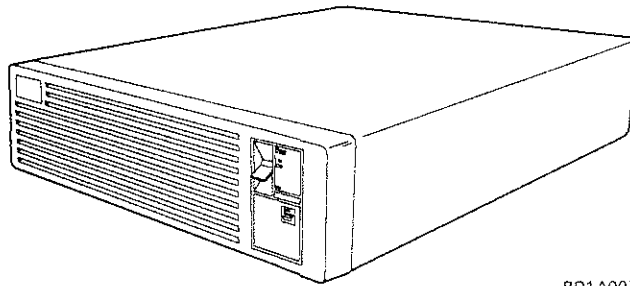
RD1A006-0

9

Is the 9332 installed as a stand-alone unit?

No Yes

Go to step 14.



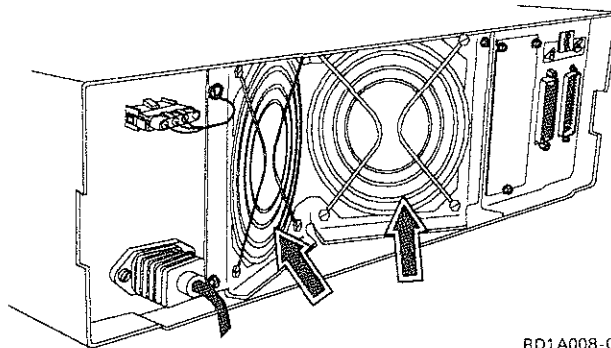
RD1A007-0

10

Is the fan airflow outlet at the rear of the 9332 clear of obstructions?

Yes No

Go to step 18.



RD1A008-0

Analyzing Overheating Problems (Continued)

11

Has the overheating problem occurred more than one time in the last day?

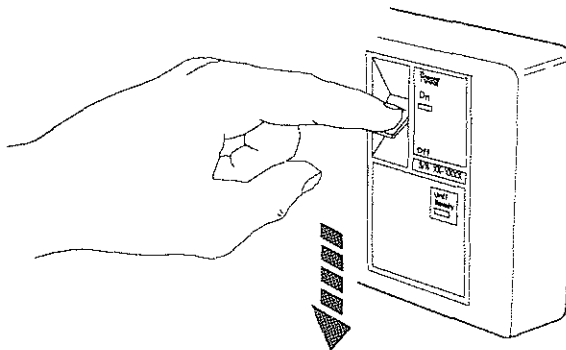
Yes No



Go to step 18.

12

Power off the 9332.



RD1A009-0

13

The 9332 has an overheating failure.

Call for hardware service.

End of procedure.

Supply the following information to the hardware service representative.

Location	Probable Cause	Part Number	Description
A0F1	90%	8264609	Fan assembly
A0A1	5%	2453516	I/O adapter card
A0A0	5%	2453414	Driver board (Model 200)
A0A0	5%	2453415	Driver board (Model 400)

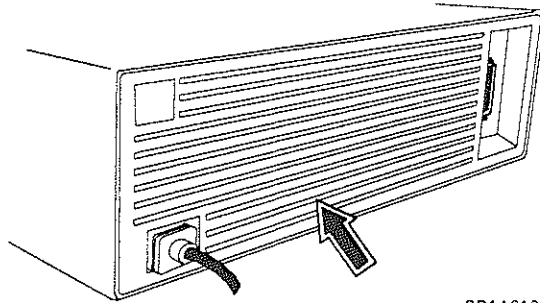
14

Is the rear cover of the 9332 clear of obstructions?

Yes No



Go to step 18.



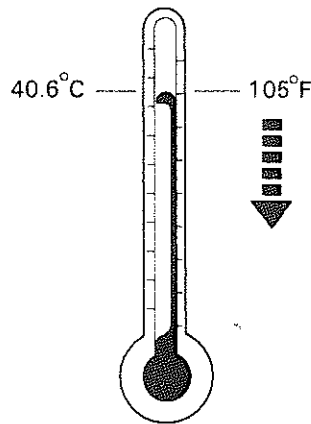
RD1A010-0

15

Go to step 11.

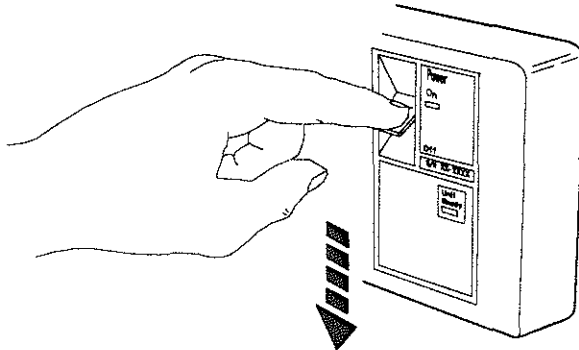
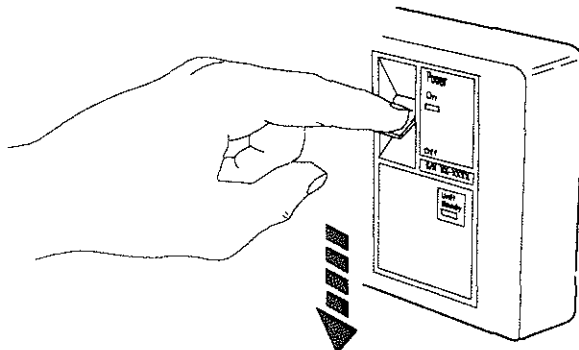
16

Cool the room temperature to less than 40.6°C (105°F).



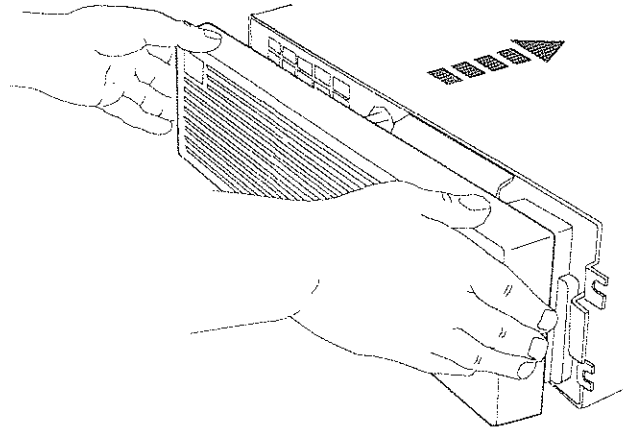
RD1A011-0

Analyzing Overheating Problems (Continued)

17**Power off the 9332.****Go to step 21.****18****Power off the 9332.****19****Remove the obstruction.**

20

If the front cover is not installed, reinstall the front cover.



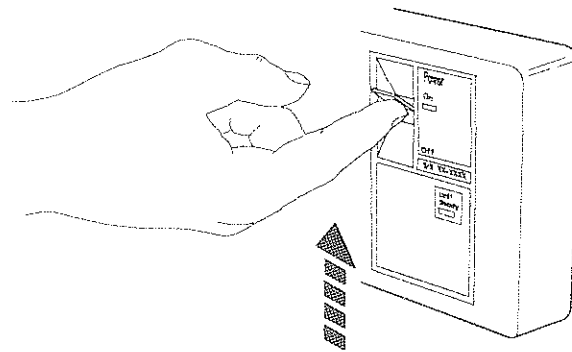
RD1A006-0

21

Wait approximately 10 minutes before powering on the 9332.

If your 9332 is mounted in a rack, ensure that the rack is powered on. See the rack user's guide for rack power-on instructions.

Power on the 9332.



RD1A012-0

Analyzing Overheating Problems (Continued)

22

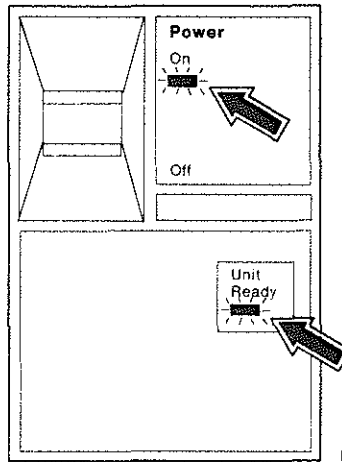
Observe the condition of the Power On and Unit Ready lights.

Note: Wait 2 minutes. Both the Power On light and the Unit Ready light should be on continuously.

Are both lights on continuously?

Yes No

Go to "Analyzing No-Response Problems" on page 11. Start with step 6.



RD1A013-0

23

The 9332 is operating correctly. It is ready to be used by your system.

End of procedure.

Analyzing No-Response Problems

The 9332 is not responding to commands, or it failed to indicate Unit Ready after being powered on.

This procedure tries to determine the cause of the failure.

If your system has indicated that the 9332 is not responding, the system should supply you with the serial number of the failing unit.

Analyzing No-Response Problems (Continued)

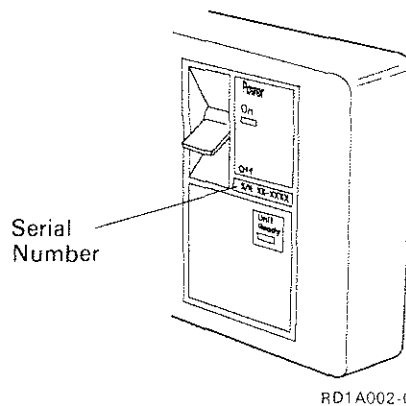
1

Locate the failing unit.

2

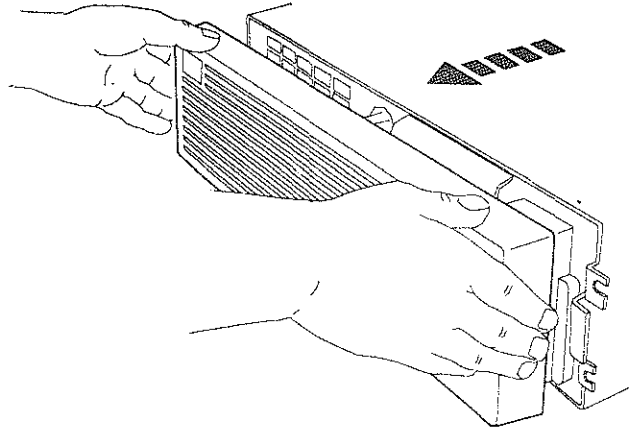
Verify the serial number of the 9332 that is installed.

- **Look at the serial number on the front of the control panel.**



3

Remove the front cover.

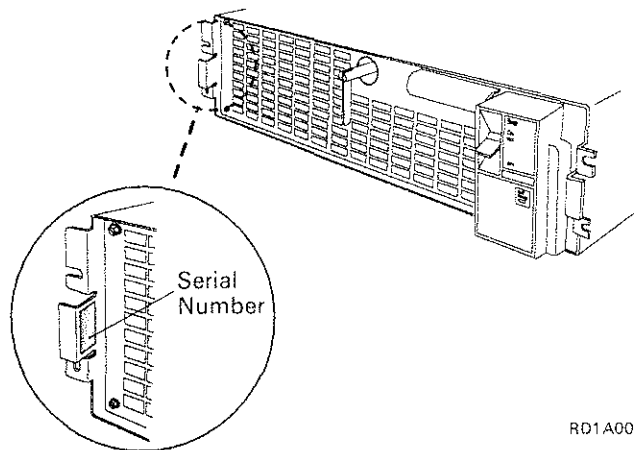


RD1C037-0

4

Verify that all serial numbers match.

- Control panel serial number
- Disk drive serial number

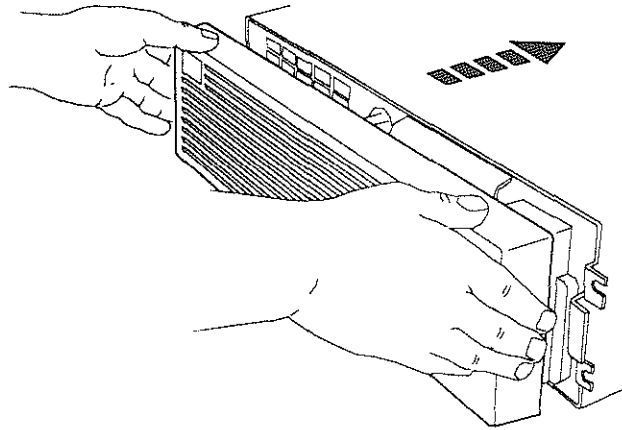


RD1A003-0

Analyzing No-Response Problems (Continued)

5

Reinstall the front cover.



RD1A006-0

6

Look at the lights on the control panel of the failing 9332.

What is the condition of the lights?

Both on.

Go to step 7.

Both off.

Go to "Analyzing Power Problems" on page 28.

One on, one off.

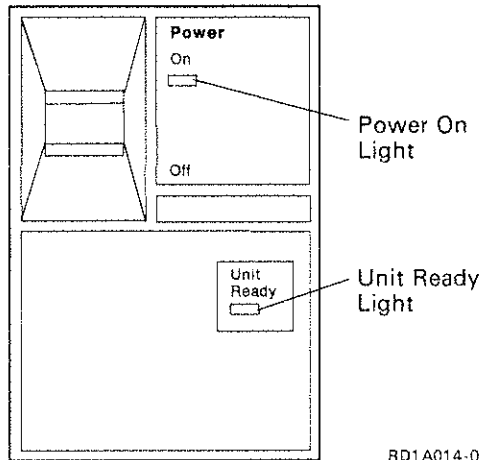
Go to step 12.

One on, one flashing.

Go to step 15.

One off, one flashing.

Go to step 18.



Analyzing No-Response Problems (Continued)

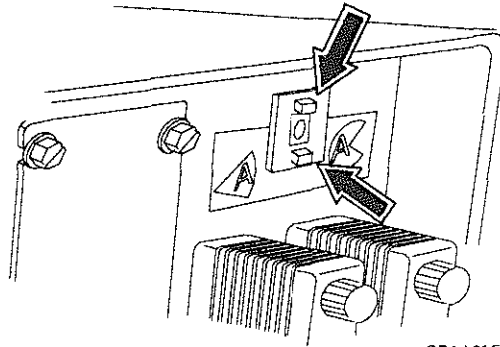
7

Get the address of the failing 9332 from the system configuration record.

Has the address switch been changed while the 9332 was powered on?

Yes No

Go to step 10.



8

Changing the address switch with the 9332 powered on causes the disk unit to stop responding. To make the 9332 operational again, do either one of the following items:

Warning: Your data can be destroyed and the system may not operate correctly if you use the new address.

- **To use the new address that was set in the switch, power off the 9332, wait approximately 30 seconds, then power on the 9332.**

OR

- **To use the old address, reset the address switch back to the original setting shown in the system configuration record.**

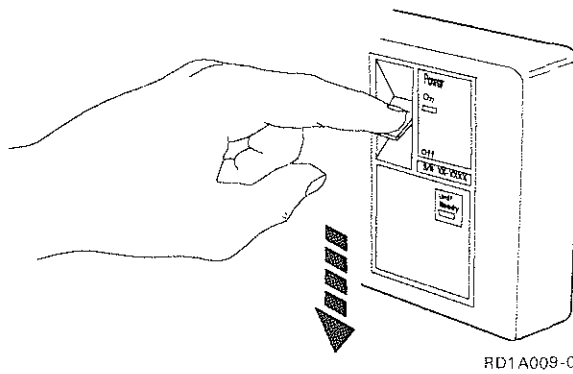
Analyzing No-Response Problems (Continued)

9

End of procedure.

10

Power off the 9332.



11

A failure has occurred in the 9332.

Call for hardware service.

End of procedure.

Supply the following information to the hardware service representative.

Location	Probable Cause	Part Number	Description
A0B1	89%	2453516	I/O adapter card
A0S1	7%	8264629	Address switch
A0A1	3%	8264586	Driver/receiver card
A0A0	1%	2453414	Driver board (Model 200)
A0A0	1%	2453415	Driver board (Model 400)

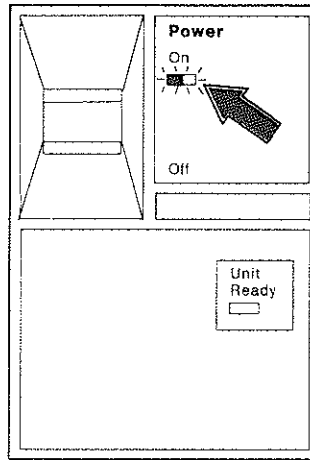
12

Is the Power On light off?

Yes No



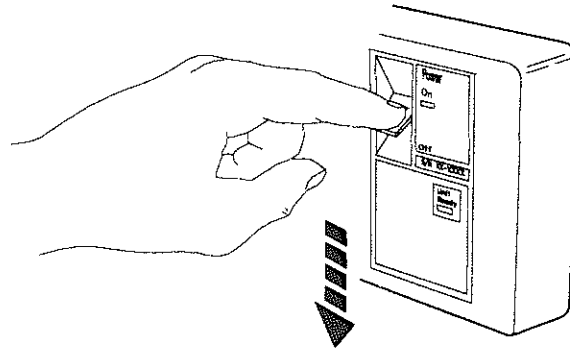
Go to step 15.



RD1A001-0

13

Power off the 9332.



RD1A009-0

14

A failure has occurred in the 9332.

Call for hardware service.

End of procedure.

Supply the following information to the hardware service representative.

Location	Probable Cause	Part Number	Description
A0P1	40%	8264255	Power supply
A0OP	60%	8264642	LED assembly

Analyzing No-Response Problems (Continued)

15

Is the 9332 signal cable connected to the system, and is the system powered on?

Yes No



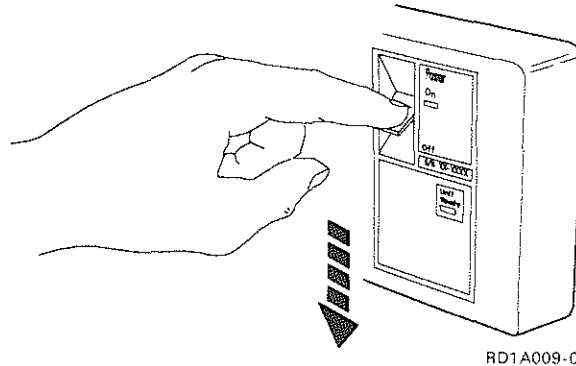
See comments at right.

The cause of the failure cannot be determined until the 9332 signal cable is connected to the system and the system is powered on.

End of procedure.

16

Power off the 9332.



RD1A009-0

17

A failure has occurred in the 9332.

Call for hardware service.

End of procedure.

Supply the following information to the hardware service representative.

Location	Probable Cause	Part Number	Description
A0B1	97%	2453516	I/O adapter card
A0P1	2%	8264255	Power supply
A0A0	1%	2453414	Driver board (Model 200)
A0A0	1%	2453415	Driver board (Model 400)

18

DC power is not present at the 9332.

Did the problem occur while the 9332 was operating?

Yes No



Go to step 20.

19

Go to "Analyzing Overheating Problems" on page 2. Start with step 5.

If no problem is found, return here and continue with step 29.

20

The problem occurred when the 9332 was powered on.

Is the 9332 mounted in a rack?

Yes No



Go to step 27.

Analyzing No-Response Problems (Continued)

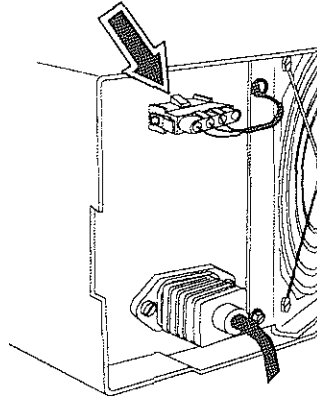
21

Is the fan connector
connected at the rear of
the power supply?

No Yes



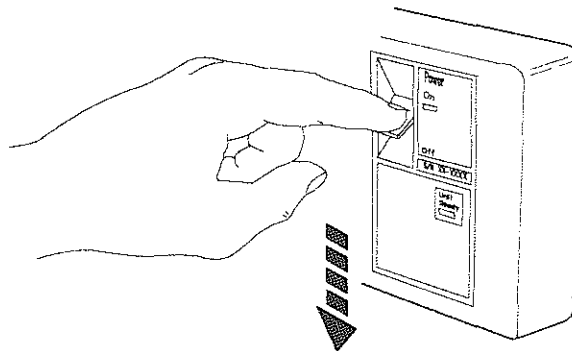
Go to step 27.



RD1A016-0

22

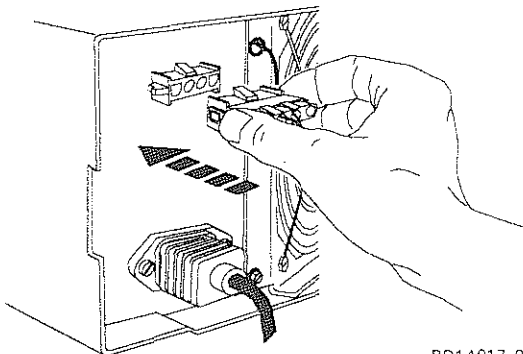
Power off the 9332.



RD1A009-0

23

Plug the fan connector
into the connector at
the rear of the power
supply.

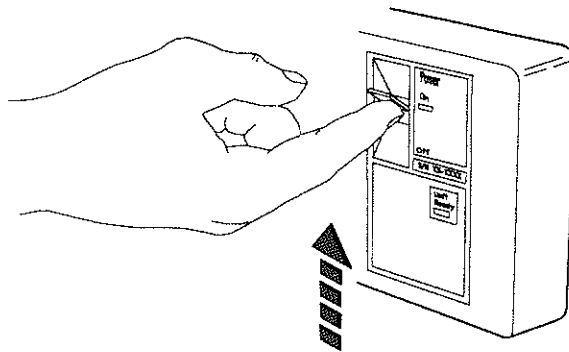


RD1A017-0

24

If your 9332 is mounted in a rack, ensure that the rack is powered on. See the rack user's guide for rack power-on instructions.

Power on the 9332.



RD1A012-0

25

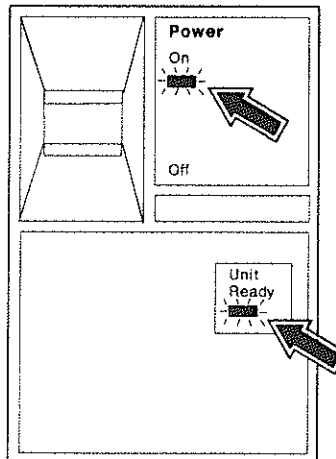
Observe the condition of the Power On and Unit Ready lights.

Note: Wait 2 minutes. Both the Power On light and the Unit Ready light should be on continuously.

Are both lights on continuously?

Yes No

Return to step 6.



RD1A013-0

Analyzing No-Response Problems (Continued)

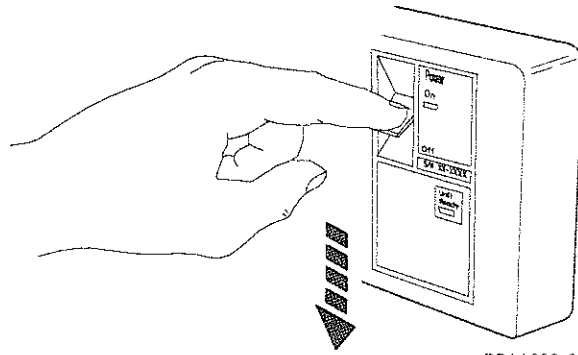
26

The 9332 is operating correctly. It is ready to be used by your system.

End of procedure.

27

Power off the 9332.



RD1A009-0

28

A failure has occurred in the 9332.

Call for hardware service.

End of procedure.

Supply the following information to the hardware service representative.

Location	Probable Cause	Part Number	Description
A0P1	70%	8264255	Power supply
A0A0	15%	2453414	Driver board (Model 200)
A0A0	15%	2453415	Driver board (Model 400)
A0A1	5%	2453516	I/O adapter card
A0A1	2%	8264586	Driver/receiver card
A0C1	2%	2453500	Servo 1 card
A0C2	2%	2453500	Servo 2 card
A0DE	2%	2453672	Disk enclosure (Model 200)
A0DE	2%	2453673	Disk enclosure (Model 400)
A0F1	2%	8264609	Fan assembly

29

The problem occurred during normal operation.

Is the 9332 mounted in a rack?

Yes No

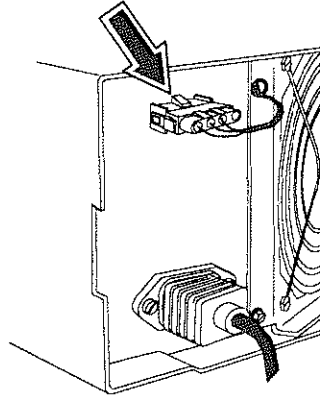


Go to step 31.

Analyzing No-Response Problems (Continued)

30

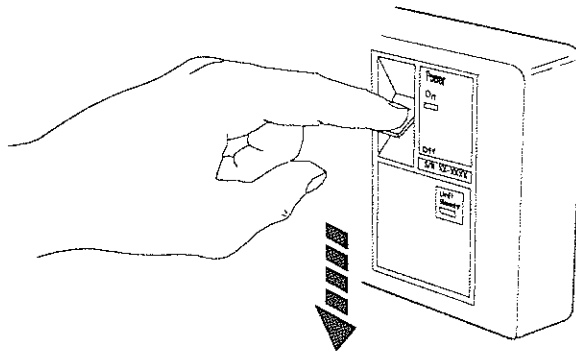
Is the fan connector
connected at the rear of
the power supply?



RD1A016-0

Yes **No****Go to step 22.****31**

Power off the 9332.



RD1A009-0

32

**A failure has occurred
in the 9332.**

**Call for hardware
service.**

End of procedure.

Supply the following information to the hardware service representative.

Location	Probable Cause	Part Number	Description
A0P1	70%	8264255	Power supply
A0A0	12%	2453414	Driver board (Model 200)
A0A0	12%	2453415	Driver board (Model 400)
A0F1	5%	8264609	Fan assembly
A0B1	5%	2453516	I/O adapter card
A0C1	2%	2453500	Servo 1 card
A0C2	2%	2453500	Servo 2 card
A0A1	2%	8264586	Driver/receiver card
A0DE	2%	2453672	Disk enclosure (Model 200)
A0DE	2%	2453673	Disk enclosure (Model 400)

Analyzing Power Problems

AC power is not present at the 9332.

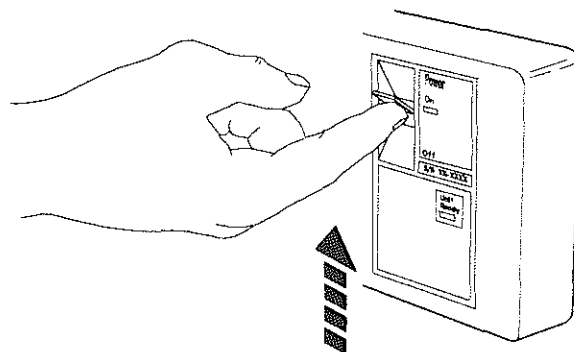
This procedure tries to determine the point at which AC power to the 9332 was lost.

1

Is the Power switch on the 9332 set to On?

Yes No

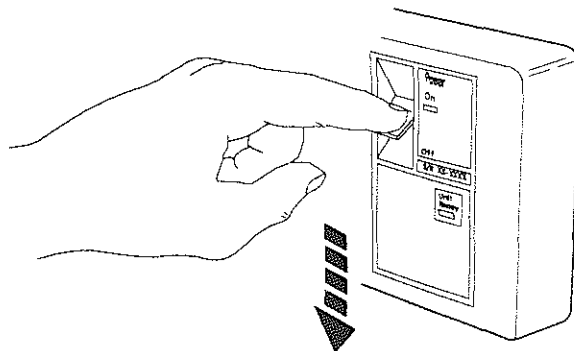
Go to step 11.



RD1A012-0

2

Power off the 9332.



RD1A009-0

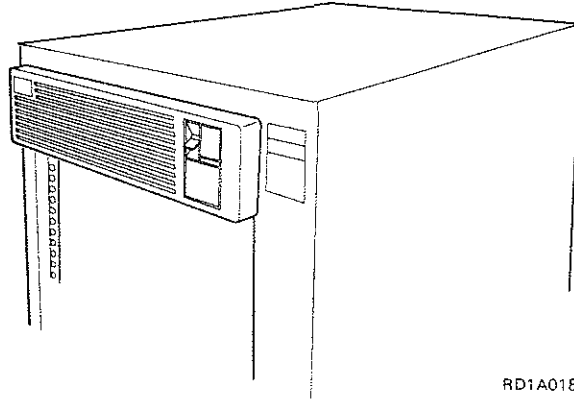
3

Is the 9332 installed in a rack?

Yes No



Go to step 15.



RD1A018-0

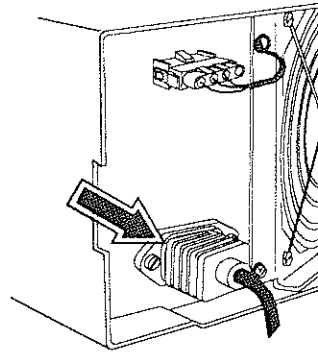
4

Is the power cord connected to the 9332?

Yes No



Connect the power cord. Go to step 11.



RD1A019-0

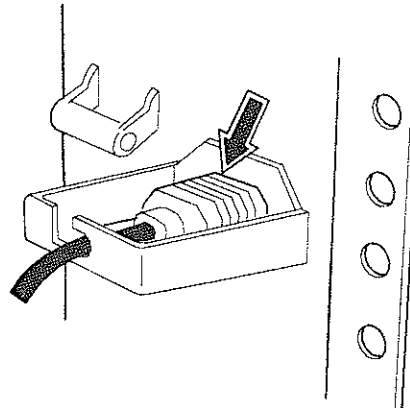
5

Is the power cord connected to a rack power outlet?

Yes No



Connect the power cord. Go to step 11.



RD1A020-0

Analyzing Power Problems (Continued)

6

Have you completed the rack procedure to verify rack AC power?

Yes No



Go to step 9.

7

Was a rack power problem corrected?

Yes No



Go to step 10.

8

Go to step 11.

9

Use the rack procedures to analyze rack power problems.

Return to step 7 of this procedure when you have completed the rack procedures.

10

Call for hardware service and report the AC power failure problem.

End of procedure.

Supply the following information to the hardware service representative.

Location	Probable Cause	Part Number	Description
A0P1	70%	8264255	Power supply
A0L1	30%	375892	Power cord

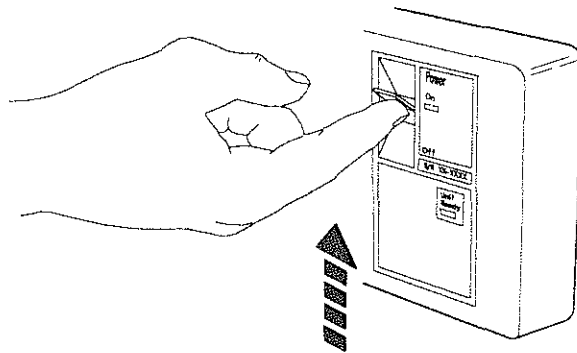
Analyzing Power Problems (Continued)

11

If your 9332 is mounted in a rack, ensure that the rack is powered on. See the rack user's guide for rack power-on instructions.

12

Power on the 9332.



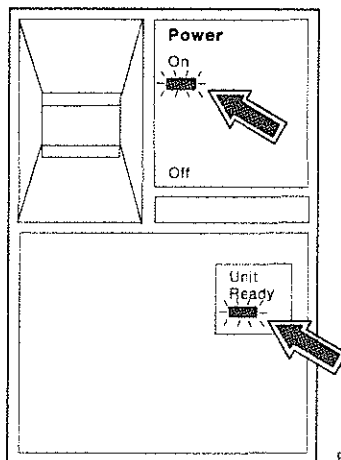
RD1A012-0

13

Observe the condition of the Power On and Unit Ready lights.

Note: Wait 2 minutes. Both the Power On light and the Unit Ready light should be on continuously.

Are both lights on continuously?



RD1A013-0

Yes No



Go to “Analyzing No-Response Problems” on page 11. Start with step 6.

Analyzing Power Problems (Continued)

14

The 9332 is operating correctly. It is ready to be used by your system.

End of procedure.

15

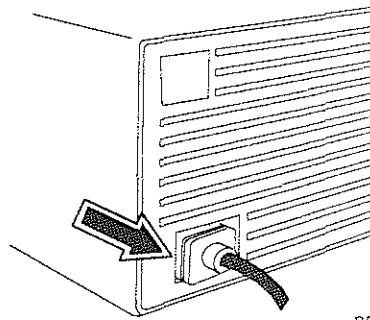
The 9332 is a stand-alone unit.

Is the power cord connected to the 9332?

Yes No



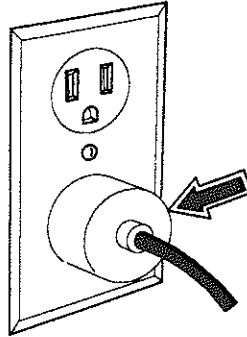
Connect the power cord. Go to step 20.



RD1A023-0

16

Is the power cord
connected to an AC
power outlet?



RD1A022-0

Yes No



Connect the
power cord. Go
to step 20.

17

Have you determined if
the AC power outlet is
OK?

Yes No



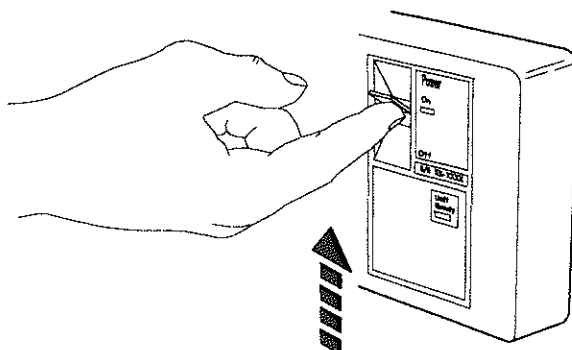
Go to step 23.

Analyzing Power Problems (Continued)**18****Is the AC power outlet
OK?****No Yes****Go to step 10.****19****Call your electrician
and report the problem.****End of procedure.****Problem:** No AC power present at the
power outlet.

20

If your 9332 is mounted in a rack, ensure that the rack is powered on. See the rack user's guide for rack power-on instructions.

Power on the 9332.



RD1A012-0

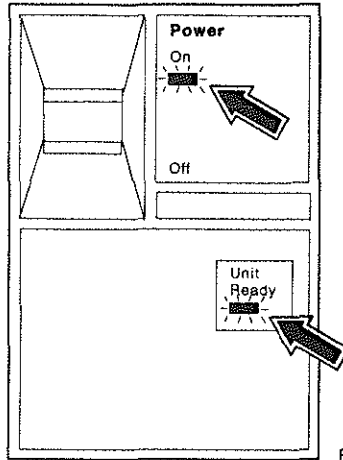
Analyzing Power Problems (Continued)

21

Observe the condition of the Power On and Unit Ready lights.

Note: Wait 2 minutes. Both the Power On light and the Unit Ready light should be on continuously.

Are both lights on continuously?



RD1A013-0

Yes No

Go to "Analyzing No-Response Problems" on page 11. Start with step 6.



22

The 9332 is operating correctly. It is ready to be used by your system.

End of procedure.

23

Have the AC outlet tested and repaired if necessary.

End of procedure.

Analyzing Other Problems

1

Do you sense any of the following conditions:

- See smoke or fire
- Smell an unusual odor
- Hear an unusual sound
- Feel an unusual vibration

No

Yes



Go to step 4.

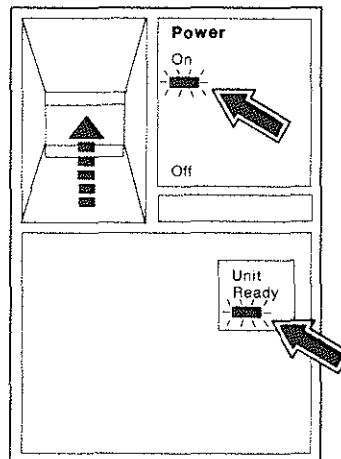
2

Is the 9332 powered on, and are both the Unit Ready light and the Power On light on continuously?

Yes

No

Go to "Analyzing No-Response Problems" on page 11.
Start with step 6.



RD1A021-0

3

The 9332 is probably OK. Run your system utilities to verify that the system can communicate to the 9332.

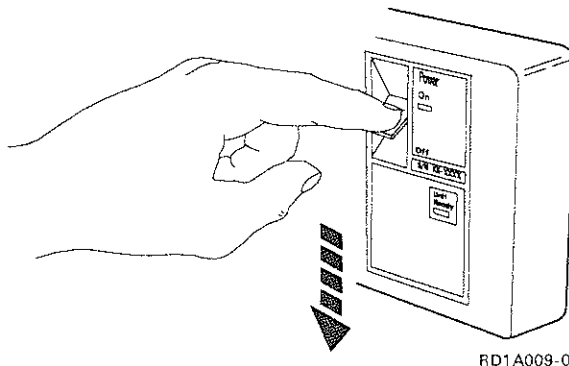
End of procedure.

4

The 9332 is not operating correctly.

- **Power off the 9332.**
- **Call for hardware service and supply whatever information you have to the hardware service representative.**

End of procedure.



RD1A009-0

Glossary of Terms and Abbreviations

This glossary includes terms and definitions from the *IBM Vocabulary for Data Processing, Telecommunications, and Office Systems*, GC20-1699.

AC. Alternating current.

address switch. A switch to set the device address.

configuration. The devices and programs that make up a system.

connector. The part that connects.

control panel. The panel on a device that contains buttons, lights, and switches.

DC. Direct current.

obstruction. An object that prevents something from working correctly.

occur. To happen; to take place.

power cord. The power cable.

rack. A framework that holds the devices.

rack-mounted unit. A device that is placed in a rack.

serial number. An identifying number for a device.

signal cable. A cable that carries electrical current.

stand-alone unit. A device that is placed on a table or shelf, instead of in a rack.

Glossary of Terms and Abbreviations

A

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 AC power problems 28
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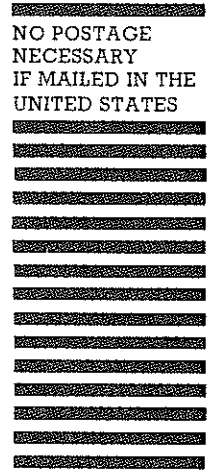
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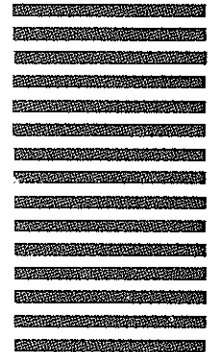
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