
Section 3. Problem Isolation Charts

CONTENTS

About This Section	3-3
Introduction	3-4
Start of Call PIC 0010	3-0010-1
Service Repair Action Number Chart PIC 0020	3-0020-1
Problem Determination Procedure PIC 0030	3-0030-1
POST Indicator Chart PIC 0040	3-0040-1
Noise Problem PIC 0050	3-0050-1
Unresolved Problem PIC 0060	3-0060-1
Application Only Problems PIC 0080	3-0080-1
Intermittent Problems PIC 0090	3-0090-1
IBM RT PC 6192 Expansion Unit PIC 0100	3-0100-1
Memory Expansion Option PIC 2100	3-2100-1
IBM PC Enhanced Graphics Adapter Memory PIC 4200	3-4200-1
IBM 5151 Personal Computer Display PIC 5400	3-5400-1
IBM 5154 Enhanced Color Graphics Display PIC 5800	3-5800-1
IBM 6154 Advanced Color Display PIC 5900	3-5900-1
IBM 6153 Advanced Monochrome Graphics Display PIC 6000	3-6000-1
IBM 5081 Display PIC 6100	3-6100-1
IBM 6155 Extended Monochrome Graphics Display PIC 6200	3-6200-1
Power Supply PIC 8800	3-8800-1
POST Errors 5c or 05 PIC 9810	3-9810-1
POST Error 23 PIC 9840	3-9840-1
Undetermined Problem PIC 9860	3-9860-1

About This Section

This section contains the information used by the service technician to isolate the problem to a field-replaceable unit.

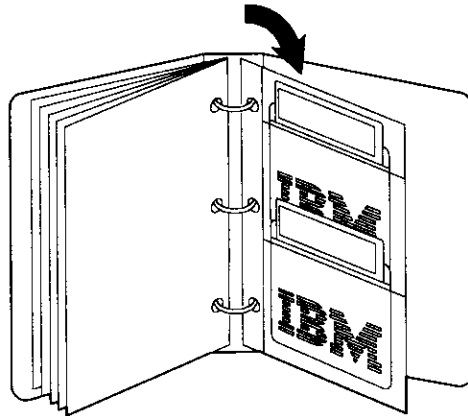
Start all problem isolation with "Start of Call PIC 0010" on page 3-0010-1.

Introduction

Begin the problem isolation at "Start of Call PIC 0010" on page 3-0010-1, then carefully follow the steps to isolate the failure to a field-replaceable unit.

The RT PC system unit problem isolation procedures use the RT PC diagnostics diskettes and run tests from the **ADVANCED DIAGNOSTIC SELECTION** menu. The diagnostics diskettes are stored in the *Problem Determination Guide*.

Information about the tools required is in Appendix A.



AJZB172

Start of Call PIC 0010

Read these notes:

1. Some system unit components do not cool correctly when the cover is off. For this reason do not power the system unit on longer than 10 minutes with the cover off.
2. Be sure to follow the instructions carefully. Do not do any actions such as; removing the diskette, operating the mouse, or keying characters, unless directed by the instructions.
3. Be sure that all programs or operating systems are stopped (get help if needed).
4. If attached, be sure the power switch on the RT PC 6192 is set to On. RT PC 6192 must be powered on before the system unit to prevent errors.
5. If an IBM 6156 is attached, install any portable disk drive modules you want to test; then set the power switch on the IBM 6156 to On.

Step 1

You should have an SRN either from information recorded on the "Appendix B. Problem Form" from the *Problem Determination Guide* or from diagnostic tests results. If needed, see "Service Request Number Description" on page 2-20 for a description of the SRN.

4. Write the Service Request Number here:

13 - 234 - 100 - B34 - D64

AJZB179

DO YOU HAVE A SERVICE REQUEST NUMBER?

NO Go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.

YES Continue on the next page.

Step 2

Look at the SRN. If needed, see 2-21.

4. Write the Service Request Number here:

1 - 234 - 100 - B34 - D64

AJZB179

IS THE PROCEDURE NUMBER A "1," "2," "3," or "7"?

NO Go to the "Problem Determination Procedure PIC 0030" on page 3-0030-1 and verify the SRN. Use the new SRN to analyze the problem.

YES Continue on the next page.

Step 3

Compare the leftmost SRA number in your SRN to the SRAs in the table below.

SRA Number	Go to PIC
21x	"Memory Expansion Option PIC 2100" on page 3-2100-1
37x	"Memory Expansion Option PIC 2100" on page 3-2100-1
42x	"IBM PC Enhanced Graphics Adapter Memory PIC 4200" on page 3-4200-1
44x	"IBM PC Enhanced Graphics Adapter Memory PIC 4200" on page 3-4200-1
880	"Power Supply PIC 8800" on page 3-8800-1
981	"POST Errors 5c or 05 PIC 9810" on page 3-9810-1
984	"POST Error 23 PIC 9840" on page 3-9840-1
986	"Undetermined Problem PIC 9860" on page 3-9860-1

IS THE LEFTMOST SRA NUMBER OF YOUR SRN IN THE TABLE?

YES Go to the PIC indicated in the table.

NO Continue on the next page.

Step 4

Count the SRA numbers in your SRN.

4. Write the Service Request Number here:

13 - 234 - _____ - _____ - _____

AJZB176

DOES YOUR SERVICE REQUEST NUMBER CONTAIN ONLY ONE SERVICE REPAIR ACTION NUMBER?

YES Do the following:

1. Find your SRA number in the "Service Repair Action Number Chart PIC 0020" on page 3-0020-1.
2. Record the FRU name, repair checkout procedure, and the removal procedure reference.
3. Go to "Step 9" on page 3-0010-10.

NO Continue on the next page.

Step 5

Look at the SRN. If needed, see page 2-21.

4. Write the Service Request Number here:

1 - 234 - 100 - B34 - D64

AJZB179

IS THE PROCEDURE NUMBER A "3"?

NO Do the following:

1. Find the leftmost SRA number in the "Service Repair Action Number Chart PIC 0020" on page 3-0020-1.
2. Record the FRU name, repair checkout procedure, and the removal procedure reference.
3. Go to "Step 9" on page 3-0010-10.

YES Continue on the next page.

Step 6

Note: The leftmost SRA number is the most likely failing FRU and should be analyzed first.

1. Find the leftmost SRA number in the "Service Repair Action Number Chart PIC 0020" on page 3-0020-1.
2. Record the FRU name, any additional test procedure, the repair checkout procedure, and the removal procedure reference.
3. Return here and answer the following question.

<p>49x</p> <table border="1"><tr><td colspan="2">FRU: IBM Monochrome Display and Printer Adapter</td></tr><tr><td>Additional Tests:</td><td>Run the Monochrome Display and printer Adapter Checkout.</td></tr><tr><td>Removal Procedure:</td><td>See "Adapter Removal" on page 4-18.</td></tr><tr><td>Repair Checkout:</td><td>Run the Monochrome Display and Printer Adapter Checkout.</td></tr></table>	FRU: IBM Monochrome Display and Printer Adapter		Additional Tests:	Run the Monochrome Display and printer Adapter Checkout.	Removal Procedure:	See "Adapter Removal" on page 4-18.	Repair Checkout:	Run the Monochrome Display and Printer Adapter Checkout.
FRU: IBM Monochrome Display and Printer Adapter								
Additional Tests:	Run the Monochrome Display and printer Adapter Checkout.							
Removal Procedure:	See "Adapter Removal" on page 4-18.							
Repair Checkout:	Run the Monochrome Display and Printer Adapter Checkout.							

AJZB174

DOES YOUR SERVICE REPAIR ACTION NUMBER HAVE ADDITIONAL TESTS?

NO Go to "Step 9" on page 3-0010-10.

YES Continue on the next page.

Step 7

Notes:

1. If attached, set the power switch on the RT PC 6192 is set to On.
2. If attached, set the power switch on the IBM 6156 is set to On.
3. Use the ADVANCED DIAGNOSTIC SELECTION menu to choose the additional test. If needed, see page 2-17.

Run the Additional Tests listed for your SRA number that you have not run since starting to analyze this SRN. If you are not able to select and run the additional tests, go to page 3-0030-1.

If you have run the test previously, use the results from that test to answer this question.

THERE IS A HARDWARE PROBLEM IN YOUR MACHINE.	DIAG-2
The Service Request Number is:	
WRITE.....down the above number.	
RETURN.....to the Hardware Maintenance and Service Manual.	

DID THE ADDITIONAL TEST RESULT IN A SERVICE REQUEST NUMBER?

NO Go to "Step 18" on page 3-0010-19.

YES Continue on the next page.

Step 8

Look at the SRN from the additional test, and find the leftmost SRA number.

THERE IS A HARDWARE PROBLEM IN YOUR MACHINE.	DIAG-2
The Service Request Number is: 13- 66B	
WRITE.....down the above number.	
RETURN.....to the Hardware Maintenance and Service Manual.	

**IS THE LEFTMOST SERVICE REPAIR ACTION NUMBER
THE SAME NUMBER AS THE SERVICE REPAIR ACTION
NUMBER YOU HAVE BEEN ANALYZING?**

NO Do the following:

1. Find the leftmost SRA number from the additional test in the "Service Repair Action Number Chart PIC 0020" on page 3-0020-1.
2. Record the FRU name, the removal procedure reference, and the repair checkout reference.
3. Continue on the next page.

YES Continue on the next page.

Step 9

1. The Device Number (first digit) of the SRN indicates where the FRU for the first SRA number is located. The FRUs for the other SRA numbers may be located in other devices. When the SRN is displayed, the locations of the FRUs are also displayed. If needed, run the diagnostics to locate the device containing the FRU.

The rightmost digit of the SRA identifies the FRU location. When the rightmost digit is a 0, either the FRU location could not be determined or the FRU is always in the same location. If needed, see page 2-20.

Use the Removal Procedure referenced in the data for your SRA number and exchange the FRU.

2. If attached, be sure the power switch on the RT PC 6192 is set to On.
3. If attached, be sure the power switch on the IBM 6156 is set to On.
4. Use the ADVANCED DIAGNOSTIC SELECTION menu to run the Repair Checkout test listed in the data for your SRA number. Record the result. If needed, see page 2-17.

WERE YOU ABLE TO LOAD AND RUN THE REPAIR CHECKOUT AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

YES This completes the repair. If you still have a problem, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1 to get a new SRN.

NO Continue on the next page.

Step 10

Look at the result you recorded after the repair checkout.

49x

FRU: IBM Monochrome Display and Printer Adapter

Additional Tests: Run the Monochrome Display and printer Adapter Checkout.

Removal Procedure: See "Adapter Removal" on page 4-18.

Repair Checkout: Run the Monochrome Display and Printer Adapter Checkout.

AJZB174

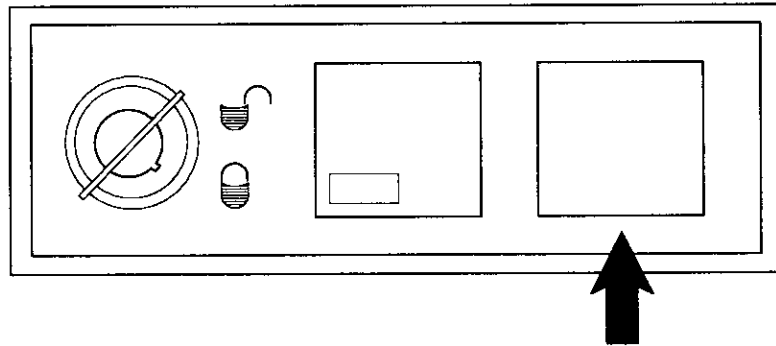
WERE YOU ABLE TO SELECT THE REPAIR CHECKOUT TEST?

YES Go to "Step 14" on page 3-0010-15.

NO Continue on the next page.

Step 11

Look at the operator panel.



AJZB158

IS THE TWO-DIGIT DISPLAY BLANK?

NO Do the following:

1. Find the number displayed in the two-digit display in the "POST Indicator Chart PIC 0040" on page 3-0040-1.
2. Record the SRN for that POST number. This is the repair checkout result.
3. Go to "Step 15" on page 3-0010-16.

YES Continue on the next page.

Step 12

Look at the display.

DIAG-1
The following option was detected previously by the diagnostics, but is now undetected.
- Option
Has the option been removed from the system, moved to another location, or turned off?
<u>ID</u> <u>ITEM</u>

DID THE "TEST OPTION" MENU DISPLAY?

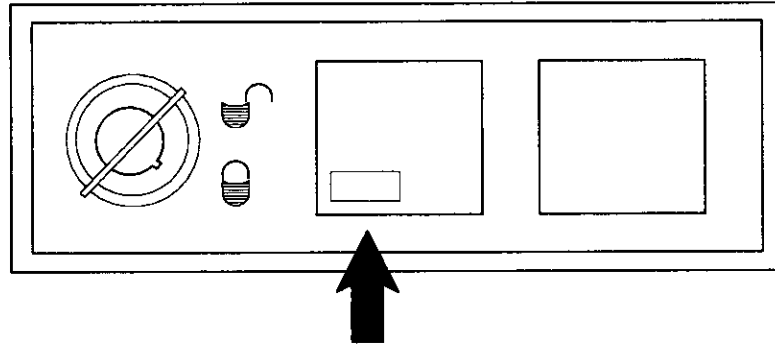
YES The TEST OPTION Menu displays when an option is in the configuration record but it was not sensed or it was sensed in a different location during POST.

1. Record the option displayed.
2. Choose an item on the menu; then record the SRN when it displays. This is the repair checkout result.
3. Check for proper installation of the option. If the option is a new FRU, it may be defective.
4. Go to "Step 16" on page 3-0010-17.

NO Continue on the next page.

Step 13

Look at the operator panel.



AJZB159

IS THE POWER-ON INDICATOR ON?

YES Go to "Step 17" on page 3-0010-18.

NO Be sure that both ends of the external power cable to the system unit are connected.

If you find a problem, go to the step where you were instructed to set the system unit power switch to On and try the procedure again.

If you do not find a problem, go to "Power Supply PIC 8800" on page 3-8800-1.

Step 14

Look at the display.

THERE IS A HARDWARE PROBLEM IN YOUR MACHINE.	DIAG-2
The Service Request Number is:	
WRITE.....down the above number.	
RETURN.....to the Hardware Maintenance and Service Manual.	

DID THE REPAIR CHECKOUT RESULT IN AN SRN?

YES The SRN displayed is the repair checkout results.

1. Record the SRN displayed.
2. Go to "Step 16" on page 3-0010-17.

NO Go to "Undetermined Problem PIC 9860" on page 3-9860-1. Use the Repair Checkout procedure as the failing test procedure.

Step 15

Look at your SRN.

4. Write the Service Request Number here:

16 - 982 - _____ - _____ - _____

AJZB178

**IS THE LEFTMOST SERVICE REPAIR ACTION NUMBER OF
YOUR SERVICE REQUEST NUMBER "981" THROUGH "986"?**

YES Go to "Step 19" on page 3-0010-20.

NO Continue on the next page.

Step 16

Look at the SRN you recorded after the repair checkout.

4. Write the Service Request Number here:

13 - 234 - 100 - B34 - D64

AJZB179

DID THE REPAIR CHECKOUT RUN RESULT IN THE SAME SRN YOU HAVE BEEN ANALYZING (ignore any location code changes)?

- NO** Either the system has more than one problem or another problem was created during service. Go to "Step 3" on page 3-0010-4 and analyze the new SRN.
- YES** Remove the new FRU and install the original FRU; then continue on the next page.

Step 17

Look at the SRN.

4. Write the Service Request Number here:

13 - _____ - _____ - _____ - _____

AJZB179

**HAVE YOU PERFORMED THE REPAIR ACTION FOR EACH
SRA IN THE SERVICE REQUEST NUMBER?**

NO Use this procedure to continue analyzing the SRN.

1. Select another SRA number within the SRN.
2. Find the SRA number in "Service Repair Action Number Chart PIC 0020" on page 3-0020-1.
3. Record the FRU name, the repair checkout procedure, and the removal procedure reference.
4. Go to "Step 9" on page 3-0010-10.

YES Continue on the next page.

Step 18

The following question is used to determine the source of your SRN.

Problem Determination Procedure PIC 0030

Use this procedure to obtain a Service Request Number (SRN).

This procedure uses IBM RT PC Diagnostic Diskettes and the advanced diagnostic routines to diagnose hardware problems only.

Step 1

Check the system for the following problems:

- Damaged covers
- Loose cables
- Cooling fan not running
- Broken latches, buttons, or switches
- Any other field-replaceable unit (FRU) with physical damage.

DID YOU FIND ONE OF THE ABOVE PROBLEMS?

YES Do the procedure for the problem:

AJZB173

HAVE YOU USED THE “PROBLEM DETERMINATION PROCEDURE PIC 0030” TO ANALYZE THIS PROBLEM?

YES Go to “Unresolved Problem PIC 0060” on page 3-0060-1.

NO Go to “Problem Determination Procedure PIC 0030” on page 3-0030-1.

Step 19

Find your SRA number in the following table; then go to the PIC listed for your SRA number.

SRA Number	Go to PIC
981	"POST Errors 5c or 05 PIC 9810" on page 3-9810-1
984	"POST Error 23 PIC 9840" on page 3-9840-1

Service Repair Action Number Chart PIC 0020

The following pages contain reference information. This chart is in numerical sequence followed by alphabetical sequence.

Note: If an SRA number was released after this manual was printed, the information for that SRA number may be at the end of PIC 0020 or in a separate booklet.

10x

System Board

Additional Tests: None

Removal Procedure: See System Board Removal in Section 4.

Repair Checkout: Run the System Checkout.

12x

RT PC 1MB Memory Expansion Option

Additional Tests: None

Removal Procedure: See Processor, Floating-Point, or System Memory Removal in Section 4.

Repair Checkout: Run the System Checkout.

15x

RT PC 2MB Memory Expansion Option

Additional Tests: None

Removal Procedure: See Processor, Floating-Point, or System
Memory Removal in Section 4.

Repair Checkout: Run the System Checkout.

16x

RT PC 4MB Memory Expansion Option

Additional Tests: None

Removal Procedure: See Processor, Floating-Point, or System
Memory Removal in Section 4.

Repair Checkout: Run the System Checkout.

18x

Enhanced Advanced Processor Board

Additional Tests: None

Removal Procedure: See Processor, Floating-Point, or System
Memory Removal in Section 4.

Repair Checkout: Run the System Checkout.

19x

RT PC Floating-Point Board

Additional Tests: None

Removal Procedure: See Processor, Floating-Point, or System
Memory Removal in Section 4.

Repair Checkout: Run the System Checkout.

1Cx

Advanced Floating-Point Board (Level 1)

Additional Tests: None

Removal Procedure: See Processor, Floating-Point, or System
Memory Removal in Section 4.

Repair Checkout: Run the System Checkout.

1Dx

RT PC 4MB Fast Memory Expansion Option

Additional Tests: None

Removal Procedure: See Processor, Floating-Point, or System
Memory Removal in Section 4.

Repair Checkout: Run the System Checkout.

1Ex

RT PC 8MB Fast Memory Expansion Option

Additional Tests: None

Removal Procedure: See Processor, Floating-Point, or System Memory Removal in Section 4.

Repair Checkout: Run the System Checkout.

20x

RT PC AT Coprocessor Option

Additional Tests: None

Removal Procedure: See "Removal and Replacement Procedures" on page 9-023-1.

Repair Checkout: Run the System Checkout.

21x

IBM AT 512 KB Memory Expansion Option

Do not return to the Start of Call PIC, go to "Memory Expansion Option PIC 2100" on page 3-2100-1.

22x

I/O Channel Memory Error

Additional Tests: None

Removal Procedure: An error occurred in memory attached to the I/O channel between memory addresses 080000 and 09FFFF. This area of memory is not supported as I/O channel memory in the IBM RT PC System. Check for nonsupported memory installed.

Repair Checkout: Run the System Checkout.

23x

IBM AT Serial/Parallel Adapter

Additional Tests: Run the IBM AT Serial/Parallel Adapter checkouts.

Removal Procedure: If the adapter is in the system unit, see Adapter Removal in Section 4, otherwise see the service information for the unit where the adapter is installed.

Repair Checkout: Run the IBM AT Serial/Parallel Adapter Checkouts.

24x

IBM AT Math Co-Processor Module

Additional Tests: None

Removal Procedure: See "Removal and Replacement Procedures" on page 9-023-1.

Repair Checkout: Run the System Checkout.

26x

I/O Channel Memory Error

Additional Tests: None

Removal Procedure: An error occurred in memory attached to the I/O channel between memory addresses 0E0000 and 0FFFFFF. This area of memory is not supported as I/O channel memory in the IBM RT PC System. Check for nonsupported memory installed.

Repair Checkout: Run the System Checkout.

28x

RT PC Multiprotocol Adapter

Additional Tests: Run the RT PC Multiprotocol Adapter Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the RT PC Multiprotocol Adapter Checkout.

2Bx

System Board

Additional Tests: None

Removal Procedure: See System Board Removal in Section 4.

Repair Checkout: Run the System Checkout.

2Cx

System Board

Additional Tests: None

Removal Procedure: See System Board Removal in Section 4.

Repair Checkout: Run the System Checkout.

2Ex

RT PC Expansion Unit Adapter

Additional Tests: None.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the System Checkout.

2Fx

Receiver Card

Additional Tests: None.

Removal Procedure: See the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service* manual.

Repair Checkout: Run the System Checkout.

30x

IBM Token-Ring Network RT PC Adapter

Additional Tests: None

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the Token-Ring Network RT PC Adapter Checkout.

31x

IBM PC Network Adapter

Additional Tests: None

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the IBM PC Network Adapter Checkout.

34x

IBM PC 3278/79 Emulation Adapter

Additional Tests: None

Removal Procedure: The long adapter is no longer available, use the short adapter. See Adapter Removal in Section 4.

Repair Checkout: Run the System Checkout.

35x

4-Port Asynchronous RS-232C Adapter (Buffered)

Additional Tests: Run the RT PC 4-Port Asynchronous RS-232C Adapter Checkout.

Removal Procedure: If the adapter is in the system unit, see Adapter Removal in Section 4, otherwise see the service information for the unit where the adapter is installed.

Repair Checkout: Run the RT PC 4-Port Asynchronous RS-232C Adapter Checkout.

36x

I/O Channel Memory Error

Additional Tests: None

Removal Procedure: An error occurred in memory attached to the I/O channel between memory addresses 0E0000 and 0FFFFFF. This area of memory is not supported as I/O channel memory in the IBM RT PC System. Check for nonsupported memory installed.

Repair Checkout: Run the System Checkout.

37x

512 KB Memory Expansion Option Module

Do not return to the Start of Call PIC, go to "Memory Expansion Option PIC 2100" on page 3-2100-1.

38x

RT PC 5080 Peripheral Adapter

Additional Tests: Run the RT PC 5080 Peripheral Adapter Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the RT PC 5080 Peripheral Adapter Checkout.

39x

4-Port Asynchronous RS-422A Adapter (Buffered)

Additional Tests: Run the RT PC 4-Port Asynchronous RS-422A Adapter Checkout.

Removal Procedure: If the adapter is in the system unit, see Adapter Removal in Section 4, otherwise see the service information for the unit where the adapter is installed.

Repair Checkout: Run the RT PC 4-Port Asynchronous RS-422A Adapter Checkout.

3Ax

RT PC S/370 Host Interface Adapter

Additional Tests: None

Removal Procedure: See "Removal Procedure" on page 9-097-2.

Repair Checkout: Run the System Checkout.

3Bx

8-Port Asynchronous RS-422A Adapter

Additional Tests: Run the RT PC 8-Port Asynchronous RS422 Adapter Checkout.

Removal Procedure: If the adapter is in the system unit, see Adapter Removal in Section 4, otherwise see the service information for the unit where the adapter is installed.

Repair Checkout: Run the RT PC 8-Port Asynchronous RS422 Adapter Checkout.

3Cx

8-Port Asynchronous RS-232C Adapter

Additional Tests: Run the RT PC 8-Port Asynchronous RS232C Adapter Checkout.

Removal Procedure: If the adapter is in the system unit, see Adapter Removal in Section 4, otherwise see the service information for the unit where the adapter is installed.

Repair Checkout: Run the RT PC 8-Port Asynchronous RS232C Adapter Checkout.

3Dx

8-Port Asynchronous MIL-STD 188 Adapter

Additional Tests: Run the RT PC 8-Port Asynchronous MIL STD-188 Adapter Checkout.

Removal Procedure: If the adapter is in the system unit, see Adapter Removal in Section 4, otherwise see the service information for the unit where the adapter is installed.

Repair Checkout: Run the RT PC 8-Port Asynchronous MIL STD-188 Adapter Checkout.

3Ex

RT PC 6192 Power Problem

Do not return to the Start of Call PIC, go to the Power PIC 0150 in the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service* manual. Record the following repair checkout procedure for use after the repair is complete.

Repair Checkout: Run the System Checkout.

3Fx

RT PC 6192 Expansion Board

Additional Tests: None.

Removal Procedure: See the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service* manual.

Repair Checkout: Run the System Checkout.

40x

RT PC Baseband Adapter

Additional Tests: Run the RT PC Baseband Adapter Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the RT PC Baseband Adapter Checkout.

41x

IBM PC Enhanced Graphics Adapter

Additional Tests: Run the Display Checkout.

Removal Procedure: See "Removal and Replacement Procedures" on page 9-042-1.

Repair Checkout: Run the Display Checkout.

42x

IBM PC Graphics Memory Expansion Card

Do not return to the Start of Call PIC, go to "IBM PC Enhanced Graphics Adapter Memory PIC 4200" on page 3-4200-1.

43x

Advanced Monochrome Graphics Display Adapter

Additional Tests: Run the Display Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the Display Checkout.

44x

IBM PC Graphics Memory Expansion Module

Do not return to the Start of Call PIC, go to "IBM PC Enhanced Graphics Adapter Memory PIC 4200" on page 3-4200-1.

45x

RT PC Advanced Color Graphics Display Adapter

Additional Tests: Run the Display Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the Display Checkout.

47x

Extended Monochrome Graphics Display Adapter

Additional Tests: Run the Display Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the Display Checkout.

49x

IBM Monochrome Display and Printer Adapter

Additional Tests: Run the IBM Monochrome Display and Printer Adapter Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the IBM Monochrome Display and Printer Adapter Checkout.

4Ax

IBM Megapel Display Processor

Additional Tests: Run the Display Checkout.

Removal Procedure: See "Removal Procedure" on page 9-053-2.

Repair Checkout: Run the Display Checkout.

4Bx

IBM Megapel Display Controller

Additional Tests: Run the Display Checkout and if listed, the IBM Megapel Parallel Port Checkout.

Removal Procedure: See "Removal Procedure" on page 9-053-2.

Repair Checkout: Run the Display Checkout and if listed, the IBM Megapel Parallel Port Checkout.

4Cx

Advanced Floating-Point Board (Level 2)

Additional Tests: None

Removal Procedure: See Processor, Floating-Point, or System Memory Removal in Section 4.

Repair Checkout: Run the System Checkout.

4Dx

RT PC Expansion Unit Cable

Additional Tests: None.

Removal Procedure: See the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service* manual.

Repair Checkout: Run the System Checkout.

4Fx

IBM 6156 Bezel/Cable Assembly

Additional Tests: None

Removal Procedure: See the *IBM 6156 Portable Disk Drive Hardware Maintenance and Service* manual.

Repair Checkout: Run the Fixed-disk Drive and Media Checkout.

51x

Fixed-Disk Drive Type E310

Additional Tests: None

Removal Procedure: If the drive is in the system unit, see Fixed-Disk Drive Removal in Section 4, otherwise see the service information for the unit containing the drive.

Repair Checkout: Run the Fixed-Disk Drive and Media Checkout.

52x

IBM AT Fixed-Disk and Diskette Drive Adapter

Additional Tests: None

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: If your SRN also contains an SRA number of 98A, each fixed disk attached to this adapter must be formatted again.

Note: This destroys all data recorded on the fixed disk.

To format the fixed disk, use the Format Fixed-Disk utility. If needed, see Section 2.

Run the System Checkout.

53x

Battery

Additional Tests: None

Removal Procedure: See Battery Removal in Section 4.

Repair Checkout: Run the System Checkout.

54x

IBM 5151 Display

Additional Tests: Run the Display Checkout.

Removal Procedure: See Attached Device Removal in
Section 4.

Repair Checkout: Run the Display Checkout.

58x

IBM 5154 Display

Additional Tests: Run the Display Checkout.

Removal Procedure: See Attached Device Removal in
Section 4.

Repair Checkout: Run the Display Checkout.

59x

IBM 6154 Display

Additional Tests: Run the Display Checkout.

Removal Procedure: See Attached Device Removal in Section 4.

Repair Checkout: Run the Display Checkout.

5Ax

8-Port Cable Assembly - RS-422A

Additional Tests: None

Removal Procedure: If the adapter is in the system unit, see Adapter Removal in Section 4, otherwise see the service information for the unit where the adapter is installed.

Repair Checkout: Run the RT PC 8-Port Asynchronous RS422 Adapter Checkout.

5Bx

Note: Reference to the RT PC Small Computer Systems Interface Adapter is abbreviated as RT PC SCSI Adapter in this publication.

RT PC SCSI Adapter

Additional Tests: Run the RT PC SCSI Adapter Checkout.

Removal Procedure: See the following note; then see Adapter Removal in Section 4.

Note: Check the fuse before replacing the adapter. If the fuse is defective, exchange the fuse.

Repair Checkout: Run the RT PC SCSI Adapter Checkout.

5Cx

IBM RT PC SCSI Adapter Fuse

Additional Tests: Run the RT PC SCSI Adapter Checkout.

Removal Procedure: See Adapter Removal in Section 4; then exchange the fuse.

Repair Checkout: Run the RT PC SCSI Adapter Checkout.

5Dx

IBM 6156 Model 003

Additional Tests: None

Removal Procedure: See Attached Device Removal in
Section 4.

Repair Checkout: Run the System Checkout.

5Fx

8-Port Cable Assembly - RS-232C/MIL-STD 188

Additional Tests: None

Removal Procedure: If the adapter is in the system unit, see
Adapter Removal in Section 4, otherwise
see the service information for the unit
where the adapter is installed.

Repair Checkout: Run the checkout for the adapter that uses
this cable assembly.

60x

IBM 6153 Display

Additional Tests: Run the Display Checkout.

Removal Procedure: See Attached Device Removal in
Section 4.

Repair Checkout: Run the Display Checkout.

61x

IBM 5081 Display

Additional Tests: Go to the IBM 5081 MIM.

Removal Procedure: See the IBM 5081 MIM.

Repair Checkout: Run the Display Checkout.

62x

IBM 6155 Display

Additional Tests: Run the Display Checkout.

Removal Procedure: See Attached Device Removal in
Section 4.

Repair Checkout: Run the Display Checkout.

63x

Operator Panel Board

Additional Tests: None

Removal Procedure: See Operator Panel Board Removal in Section 4.

Repair Checkout: Run the System Checkout. The two-digit display displays 88 immediately after the power switch is set to On for a lamp test. In normal operation, the two-digit display is blank when the POST programs complete.

64x

IBM High Capacity Diskette Drive

Additional Tests: Run the Diskette Drive Checkout.

Removal Procedure: See Diskette Drive Removal in Section 4.

Repair Checkout: Run the Diskette Drive Checkout.

65x

IBM 6156 Model 001

Additional Tests: None

Removal Procedure: See Attached Device Removal in Section 4.

Repair Checkout: Run the System Checkout.

70x

Fixed-Disk Drive Type R70

Additional Tests: None

Removal Procedure: See Fixed-Disk Drive Removal in Section 4.

Repair Checkout: Run the Fixed-Disk Drive and Media Checkout.

71x

Fixed-Disk Drive Type H310

Additional Tests: None

Removal Procedure: If the drive is in the system unit, see Fixed-Disk Drive Removal in Section 4, otherwise see the service information for the unit containing the drive.

Repair Checkout: Run the Fixed-Disk Drive and Media Checkout.

74x

Fixed-Disk Drive Type R40

Additional Tests: None

Removal Procedure: See Fixed-Disk Drive Removal in Section 4.

Repair Checkout: Run the Fixed-Disk Drive and Media Checkout.

75x

RT PC Portable Disk Drive Adapter

Additional Tests: None

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: If your SRN also contains an SRA number of 98A, each fixed disk attached to this adapter must be formatted again.

Note: This destroys all data recorded on the fixed disk.

To format the fixed disk, use the Format Fixed-Disk utility. If needed, see Section 2.

Run the System Checkout.

76x

Fixed-Disk Drive Type E114

Additional Tests: None

Removal Procedure: If the drive is in the system unit, see Fixed-Disk Drive Removal in Section 4, otherwise see the service information for the unit containing the drive.

Repair Checkout: Run the Fixed-Disk Drive and Media Checkout.

77x

Fixed-Disk Drive Type E70

Additional Tests: None

Removal Procedure: If the drive is in the system unit, see Fixed-Disk Drive Removal in Section 4, otherwise see the service information for the unit containing the drive.

Repair Checkout: Run the Fixed-Disk Drive and Media Checkout.

78x

Keyboard

Additional Tests: None

Removal Procedure: See the Keyboard "Removal Procedure" on page 10-140-1.

Repair Checkout: Run the Keyboard Checkout.

79x

Mouse

Additional Tests: None

Removal Procedure: See the Mouse "Removal Procedure" on page 10-143-1.

Repair Checkout: Run the Mouse Checkout.

7Ax

IBM 5085 Dials Feature

Additional Tests: Run the Dials Checkout.

Removal Procedure: See the Dials Feature "Removal Procedure" on page 10-146-2.

Repair Checkout: Run the Dials Checkout.

7Bx

IBM 5085 LPFK Feature

Additional Tests: Run the Lighted Program Function Keyboard Checkout.

Removal Procedure: See the LPFK Feature "Removal Procedure" on page 10-147-2.

Repair Checkout: Run the Lighted Program Function Keyboard Checkout.

7Cx

Stylus for the Model 11 and 12 Tablet

Additional Tests: Run the IBM 5083 Model 1x Tablet Checkout.

Removal Procedure: See the Tablet "Removal Procedure" on page 10-145-2.

Repair Checkout: Run the IBM 5083 Model 1x Tablet Checkout.

7Dx

Cursor for the Model 11 and 12 Tablet

Additional Tests: Run the IBM 5083 Model 1x Tablet Checkout.

Removal Procedure: See the Tablet "Removal Procedure" on page 10-145-2.

Repair Checkout: Run the IBM 5083 Model 1x Tablet Checkout.

7Ex

IBM 5083 Model 11 Tablet

Additional Tests: Run the IBM 5083 Model 1x Tablet Checkout.

Removal Procedure: See the Tablet "Removal Procedure" on page 10-145-2.

Repair Checkout: Run the IBM 5083 Model 1x Tablet Checkout.

7Fx

RT PC 6192 DC to DC Converter Assembly

Additional Tests: None.

Removal Procedure: See Attached Device Removal in
Section 4.

Repair Checkout: Run the System Checkout.

80x

IBM 5083 Model 12 Tablet

Additional Tests: Run the IBM 5083 Model 1x Tablet
Checkout.

Removal Procedure: See the Tablet "Removal Procedure" on
page 10-145-2.

Repair Checkout: Run the IBM 5083 Model 1x Tablet
Checkout.

81x

IBM 6157 Streaming Tape Drive

Additional Tests: Run the IBM 6157 Streaming Tape Drive Checkout.

Removal Procedure: See Attached Device Removal in Section 4.

Repair Checkout: Run the IBM 6157 Streaming Tape Drive Checkout.

82x

RT PC ESDI Magnetic Media Adapter

Additional Tests: None

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: If your SRN also contains an SRA number of 98A, each fixed disk attached to this adapter must be formatted again.

Note: This destroys all data recorded on the fixed disk.

To format the fixed disk, use the Format Fixed-Disk utility. If needed, see Section 2.

Run the System Checkout.

84x

RT PC Processor Board

Additional Tests: None

Removal Procedure: See Processor, Floating-Point, or System
Memory Removal in Section 4.

Repair Checkout: Run the System Checkout.

85x

RT PC Streaming Tape Drive Adapter

Additional Tests: Run the IBM 6157 Streaming Tape Drive
Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the IBM 6157 Streaming Tape Drive
Checkout.

86x

RT PC Extended ESDI Magnetic Media Adapter

Additional Tests: None

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: If your SRN also contains an SRA number of 98A, each fixed disk attached to this adapter must be formatted again.

Note: This destroys all data recorded on the fixed disk.

To format the fixed disk, use the Format Fixed-Disk utility. If needed, see Section 2.

Run the System Checkout.

87x

Keylock

Additional Tests: None

Removal Procedure: See Keylock Removal in Section 4.

Repair Checkout: Run the System Checkout.

88x

Power Supply

Do not return to the Start of Call PIC, go to "Power Supply PIC 8800" on page 3-8800-1.

8Ax

Stylus for the Model 1 Tablet

Additional Tests: Run the IBM 5083 Model 1x Tablet Checkout.

Removal Procedure: See the Tablet "Removal Procedure" on page 10-145-2.

Repair Checkout: Run the IBM 5083 Model 1x Tablet Checkout.

8Bx

Cursor for the Model 1 Tablet

Additional Tests: Run the IBM 5083 Model 1x Tablet Checkout.

Removal Procedure: See the Tablet "Removal Procedure" on page 10-145-2.

Repair Checkout: Run the IBM 5083 Model 1x Tablet Checkout.

8Cx

IBM 5083 Model 1 Tablet

Additional Tests: Run the IBM 5083 Model 1x Tablet Checkout.

Removal Procedure: See the Tablet "Removal Procedure" on page 10-145-2.

Repair Checkout: Run the IBM 5083 Model 1x Tablet Checkout.

8Dx

Network Problem

This SRA number indicates that there may be a problem with the Network.

8Ex

Advanced Processor Board

Additional Tests: None

Removal Procedure: See Processor, Floating-Point, or System Memory Removal in Section 4.

Repair Checkout: Run the System Checkout.

8Fx

SCSI Bus Problem

Additional Tests: Run the RT PC SCSI Adapter Checkout to isolate the problem to a device on the SCSI bus.

Removal Procedure: None

Repair Checkout: Run the RT PC SCSI Adapter Checkout.

91x

Attached Device

The device attached to the port indicated by the x in the 91x SRA may be failing, however this documentation does not support the device.

If the device is serviced by an IBM Service Representative, use the service information with the device to resolve the problem.

If the device is not serviced by an IBM Service Representative, analyze any other SRA numbers in your SRN. If they do not resolve the problem, inform the customer that the problem is not in the system unit. Contact the appropriate service organization.

95x

IBM PC Network Components

Additional Tests: Run the IBM PC Network Link Checkout.

Removal Procedure: See the *Setup Instructions for the IBM PC Network Transformer and Translator Unit*.

Repair Checkout: Run the IBM PC Network Adapter Checkout.

981

POST Error 5c or 05

Do not return to the Start of Call PIC, go to "POST Errors 5c or 05 PIC 9810" on page 3-9810-1.

982

Invalid SRA Number

Do not return to the Start of Call PIC, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.

983

Invalid SRA Number

Do not return to the Start of Call PIC, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.

984

POST Error 23

Do not return to the Start of Call PIC, go to "POST Error 23 PIC 9840" on page 3-9840-1.

985

Invalid SRA Number

Do not return to the Start of Call PIC, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.

986

Undetermined Problem

Do not return to the Start of Call PIC, go to "Undetermined Problem PIC 9860" on page 3-9860-1.

Missing Option

This SRA number indicates that an option was not detected by the diagnostic routines. (This may be caused by incorrect switch settings. If needed, see *IBM RT PC Options Installation*.) Use the Show Installed Options Utility to display the options installed. Find the options that are not being detected. One of the undetected options is defective. Exchange the undetected option, the cable attached to the undetected option, or the adapter for the undetected option until the defective component is isolated.

Additional Tests: None

Removal Procedure: See the procedure for the defective component.

Repair Checkout: Run the System Checkout or the checkout for the device.

Format Fixed Disk

Analyze the SRA number for the fixed-disk drive and diskette adapter in this SRN first, because this SRA number indicates that some of the fixed disks must be formatted again.

All of the fixed disks attached to the fixed-disk and diskette drive adapter identified by another SRA number within this SRN, must be formatted after the adapter is exchanged. Go to the SRA number for the fixed-disk and diskette drive adapter identified in the SRN.

98B

Compatibility Problem

This SRA number indicates that there is a compatibility problem between some of the system components. Look at the FRU indicated by the next SRA after the 98B. That FRU is incompatible with some other system component. For more information, see the IBM 6100 Engineering Change Announcements (ECAs).

991

Obvious System Unit Problem

Find the correct removal procedure in Section 4; then exchange the FRU. Run System Checkout after exchanging the FRU.

A1x

Fixed-disk and Diskette Drive Cable

Additional Tests: Run the Diskette Drive Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the Fixed-Disk Drive and Media Checkout and the Diskette Drive Checkout.

A5x

External Power Cable

This SRA number is generated from an error log entry. There may be an intermittent problem with the external power cable. Check the external power cable for damage.

Additional Tests: None

Removal Procedure: None

Repair Checkout: Run the System Checkout

A6x

IBM PC Network Cable

Additional Tests: Run the IBM PC Network Link Checkout

Removal Procedure: See the *Setup Instructions for the IBM PC Network Short, Medium, and Long Distance Kits*.

Repair Checkout: Run the IBM PC Network Adapter Checkout.

A7x

RT PC Modem Cable - RS-232C (10 Pin)

Additional Tests: Run the RT PC 4-Port Asynchronous RS-232C Adapter Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the RT PC 4-Port Asynchronous RS-232C Adapter Checkout.

A8x

IBM AT Modem Cable - RS232C/9 Pin

Additional Tests: Run the IBM AT Serial/Parallel Adapter Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the IBM AT Serial/Parallel Adapter Checkout.

AAx

Fixed-disk and Diskette Drive Cable

Additional Tests: Run the Diskette Drive Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the Fixed-Disk Drive and Media Checkout and the Diskette Drive Checkout.

B1x

IBM Token-Ring Network RT PC Adapter Cable

Additional Tests: None

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the Token-Ring Network RT PC Adapter Checkout

B2x

IBM PC Parallel Printer Cable

Additional Tests: None

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run a customer print job.

B3x

RT PC Serial Printer Cable (9 Pin)

Additional Tests: None

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run a customer print job.

B4x

RT PC ASCII Terminal Cable - RS-232C (10 Pin)

Additional Tests: None

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run a normal customer program.

B5x

RT PC ASCII Terminal Cable - RS-422A

Additional Tests: None

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run a normal customer program.

B6x

RT PC Serial Printer Cable (10 Pin)

Additional Tests: None

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run a normal customer program.

B7x

RT PC Modem Cable - RS232C (16 Pin)

Additional Tests: Run the RT PC Multiprotocol Adapter Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the RT PC Multiprotocol Adapter Checkout.

B8x

RT PC Automatic Calling Unit Cable - RS366

Additional Tests: Run the RT PC Multiprotocol Adapter Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the RT PC Multiprotocol Adapter Checkout.

B9x

RT PC Modem Cable - X.21

Additional Tests: Run the RT PC Multiprotocol Adapter Checkout.

Removal Procedure: See Adapter Removal in Section 4.

Repair Checkout: Run the RT PC Multiprotocol Adapter Checkout.

CCx

Software Problem

This SRA number indicates that a software problem exists. The Advanced Diagnostic Routines can be used to ensure that no hardware problem exists.

CDx

External Power Failure

This SRA number is generated from an error log entry. There may be a problem with the external power source.

CEx

DMA Channel Error

This SRA number is generated from an error log entry. A DMA channel error occurred. The failing DMA channel should be listed in the error log entry used to generate this SRA number.

Using the error log, find the DMA channel number; then isolate the problem to a FRU that uses that DMA channel.

Run the System Checkout to check any repairs.

CFx

I/O Channel Error

This SRA number is generated from an error log entry. An I/O channel error occurred. This error can be caused by any adapter installed in the system or the system board.

Run the System Checkout to isolate the failure. If a failure is not detected, suspect any AT 512 KB Memory Expansion Options installed.

Run the System Checkout to check any repairs.

D1x

Data Link Problem

This SRA number indicates a communication link problem.

D2x

Modem Problem

Run the checkout for the adapter attached to the failing modem.

If the checkout ends with the message No trouble was found, go to the maintenance package for the modem. If you do not have the service responsibility for the modem, inform the customer that the modem may need servicing.

D3x

Modem Interface Problem

This SRA number is generated from an error log entry. There may be a problem with the interface to the modem. Either the adapter in the location indicated by the **x** in the SRA number or a modem attached to that adapter is failing.

Run the System Checkout to check any repairs.

D6x

Electrostatic Discharge Problem

This SRA number indicates that an electrostatic discharge problem may exist.

D7x

Media Problem

This SRA number is generated from an error log entry. There may be a problem with the media (diskette, tape cartridge). Try new media to isolate the problem.

D8x

Autocall Interface Problem

This SRA number is generated from an error log entry. There may be a problem with the interface to the automatic calling unit.

F4x

Unidentified Processor Board

The program detected a processor failure, however the processor board could not be identified. Look at the processor board and use the SRA number below for the processor type you have. If needed, see Section 5.

- For the Processor Board, see SRA number 84x.
- For the Advanced Processor Board, see SRA number 8Ex.
- For the Enhanced Advanced Processor Board, see SRA number 18x.

F6x

Unidentified Memory Option

The program detected a failure within a memory option, however the memory option type could not be determined. Look at the memory option in the slot indicated by the x in the SRA number to determine the type of memory option; then use the SRA number given below for that type. If needed, see Section 6.

- For 1MB Memory Expansion Option, use SRA number 12x.
- For 2MB Memory Expansion Option, use SRA number 15x.
- For 4MB Memory Expansion Option, use SRA number 16x.
- For 4MB Fast Memory Expansion Option, use SRA number 1Dx.
- For 8MB Fast Memory Expansion Option, use SRA number 1Ex.

If the option is not listed above, it is not supported in this manual.

F7x

Unidentified Drive Cable

The program detected a drive cable failure, however the cable type could not be determined. Use the SRA numbers given below.

See SRA number A1x.

F8x

Unidentified Fixed-Disk and Diskette Adapter

The program detected a failure in the adapter for the fixed-disk and diskette drives, however the type of adapter could not be determined. Look at the adapter in the slot indicated by the x in the SRA number. Determine the adapter type; then use the SRA number below for that adapter. If needed, see Section 9.

- IBM AT Fixed-Disk and Diskette Drive Adapter. See SRA number 52x.
- RT PC ESDI Magnetic Media Adapter. See SRA number 82x.
- RT PC Extended ESDI Magnetic Media Adapter. See SRA number 86x.
- Portable Disk Drive Adapter. See SRA number 75x.

If the adapter for the fixed-disk and diskette drives is not listed above, it is not supported in this manual.

F9x

Fixed-Disk Drive Problem

See supplemental information.

FAx

Fixed-Disk Drive Problem

See supplemental information.

FBx

Unidentified Fixed-Disk Drive

The program detected a fixed-disk drive failure, however the drive type could not be determined. Look at the label on the fixed-disk drive to determine the drive type; then use the SRA number given below for that drive type. If needed, see Section 8.

- For the type R40 fixed-disk drive, see SRA number 74x.
- For the type R70 fixed-disk drive, see SRA number 70x.
- For the type E70 fixed-disk drive, see SRA number 77x.
- For the type E114 fixed-disk drive, see SRA number 76x.
- For the type E310 fixed-disk drive, see SRA number 51x.
- For the type H310 fixed-disk drive, see SRA number 71x.

If the drive type is not listed above, it is not supported in this manual.

FCx

Unidentified Diskette Drive

The program detected a diskette drive failure, however the drive type could not be determined. Look at the diskette drive to determine the drive type; then use the SRA number given below for that drive type. If needed, see Section 7.

- For the IBM AT High Capacity Diskette Drive, see SRA number 64x.

If the drive type is not listed above, it is not supported in this manual.

Problem Determination Procedure PIC 0030

Note: Some system unit components do not cool correctly when the cover is off. For this reason do not power the system unit on longer than 10 minutes with the cover off.

This procedure uses the RT PC diagnostics diskettes and the advanced diagnostic routines to diagnose hardware problems only. Use this procedure to obtain a Service Request Number (SRN).

Step 1

Check the system for the following problems:

- Damaged covers
- Loose cables
- Cooling fan not running
- Broken latches, buttons, or switches
- Any other field-replaceable unit (FRU) with physical damage.

DID YOU FIND ONE OF THE ABOVE PROBLEMS?

YES Use the procedure for your problem:

- If the covers are damaged, exchange the cover.
- If a cable is loose, tighten the cable.
- If the cooling fan not running, exchange the cooling fan.
- If a latch, button, or switch is broken, exchange the FRU containing the latch, button, or switch.
- If a FRU is damaged, exchange the FRU.

This completes the repair.

NO Continue on the next page.

Step 2

1. Set the power switch on the system unit to Off.
 2. If present, remove the write-protect tab from the diagnostics diskettes. Insert the RT PC Diagnostics 1 diskette in the diskette drive and close the drive.

Note: You may be instructed to insert another diagnostic diskette. If so, change to the diagnostic diskette called for and continue.
 3. Set the keylock to Unlock.
 4. If attached, be sure the power switch on the RT PC 6192 is set to On.
 5. If an IBM 6156 is attached, install any portable disk drive modules you want to test; then set the power switch on the IBM 6156 to On.
 6. Set the power switch on the system unit and display to On; then wait 4 minutes or until the DIAGNOSTIC OPERATING INSTRUCTIONS menu displays.
-

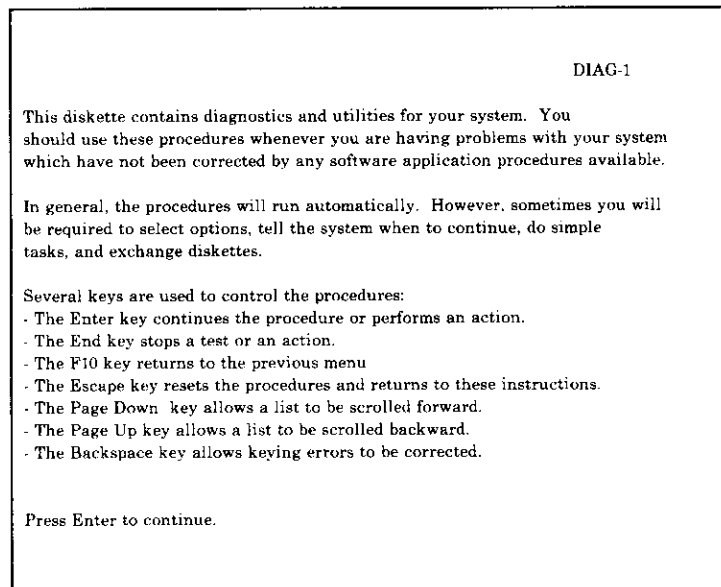
IS THE TWO-DIGIT DISPLAY BLANK?

- NO** Go to "Step 11" on page 3-0030-11.
- YES** Continue on the next page.

Step 3

Look at the display screen.

Note: If the display is blank or too bright, check the power, brightness, and contrast controls before answering the following question.



ARE THE "DIAGNOSTIC OPERATING INSTRUCTIONS" DISPLAYED WITHOUT AN OBVIOUS DISPLAY PROBLEM?

NO Go to "Step 17" on page 3-0030-17.

YES Continue on the next page.

Step 4

Read the DIAGNOSTIC OPERATING INSTRUCTIONS; then press the **Enter** key.

DIAG-1

ID ITEM

1 Diagnostic Routines

This selection allows you to test your machine's hardware and determine if you have a hardware problem. Any problem will be indicated by a SRN (Service Request Number). The SRN will allow your service representative to quickly determine what parts are required to repair your machine.

IS THE "FUNCTION SELECTION" MENU DISPLAYED?

NO Record SRN 36-780; then go to "Step 33" on page 3-0030-33.

YES Continue on the next page.

Step 5

Choose the Advanced Diagnostic Routines.

DIAG-1

The System Checkout Option will test all functions that do not require you to do anything. The other options allow you to test only that option. An * in front of the ID shows that the test has been run.

Choose the test you would like to run.

ID ITEM

- *1 System Checkout
- 2 Keyboard Checkout
- 3 Display Checkout

DID THE "ADVANCED DIAGNOSTIC SELECTION" MENU DISPLAY?

YES Go to "Step 10" on page 3-0030-10.

NO Continue on the next page.

Step 6

Look at the displayed information.

DIAG-1

The following option was detected previously by the diagnostics, but is now undetected.

- Option

Has the option been removed from the system, moved to another location, or turned off?

ID ITEM

DID THE "TEST OPTION" MENU DISPLAY?

NO Go to "Step 8" on page 3-0030-8.

YES Continue on the next page.

Step 7

The TEST OPTION menu displays because the configuration record stored on the fixed disk contains an option that the programs did not sense during POST. The option listed in the TEST OPTION menu was not sensed.

<p>DIAG-1</p> <p>The following option was detected previously by the diagnostics, but is now undetected.</p> <p>Has the option been removed from the system, moved to another location, or turned off?</p> <p><u>ID ITEM</u></p>
--

HAS THE OPTION LISTED IN THE "TEST OPTION" MENU BEEN REMOVED FROM THE SYSTEM OR MOVED TO ANOTHER SLOT?

- YES** Choose "The option has been removed from the system or moved to another slot." If the TEST OPTION menu displays, repeat this step. Continue on the next page when another menu displays.
- NO** Choose "The option has not been removed from the system or moved to another slot." If the TEST OPTION menu displays, repeat this step. Go to "Step 33" on page 3-0030-33 when you get an SRN.

Step 8

Look at the displayed information.



DID THE "DIAGNOSTIC TEST LIST" MENU DISPLAY?

YES Continue on the next page.

NO Record SRN 36-780; then go to "Step 33" on page 3-0030-33.

Step 9

Follow the displayed instructions until a service request number or the ADVANCED DIAGNOSTIC SELECTION menu displays.

DID A SERVICE REQUEST NUMBER DISPLAY?

YES Go to "Step 33" on page 3-0030-33.

NO Continue on the next page.

Step 10

Notes:

1. If the test does not complete or an unexpected error occurs (such as the system loops or hangs, the Diagnostic Error message displays, anything displays in the two-digit display, the keyboard does not respond, or you cannot end a test), go to "Undetermined Problem PIC 9860" on page 3-9860-1.
2. If your system contains an option not listed on the DIAGNOSTIC SELECTION menu, look for a supplemental diagnostic information.

Run the checkout routines for all areas of the system. Start with the areas you suspect are failing. Record the result of each test. If any test results in an SRN, stop testing and answer the question below.

THERE IS A HARDWARE PROBLEM IN YOUR MACHINE.

DIAG-2

The Service Request Number is:

WRITE.....down the above number.

RETURN.....to the Hardware Maintenance and Service Manual.

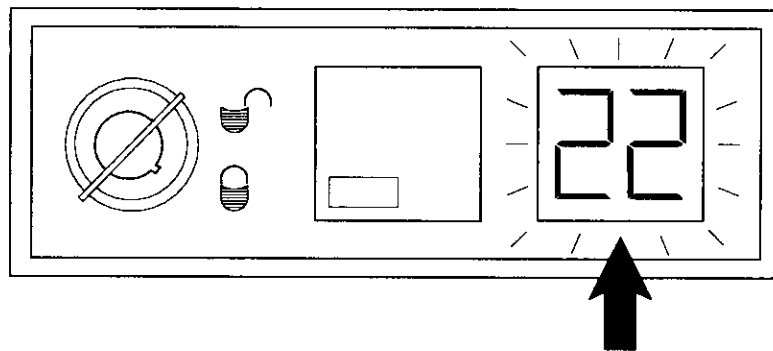
DID ANY TEST RESULT IN A SERVICE REQUEST NUMBER?

YES Go to "Step 33" on page 3-0030-33.

NO Go to "Step 27" on page 3-0030-27.

Step 11

Look at the two-digit display.



AJZB162

IS THE TWO-DIGIT DISPLAY FLASHING?

YES Go to "Step 23" on page 3-0030-23.

NO Continue on the next page.

Step 12

Look for the number displayed in the two-digit display in the following table.

Number	Go to Step
22	"Step 16" on page 3-0030-16.
94	"Step 26" on page 3-0030-26.
99	"Step 15" on page 3-0030-15.

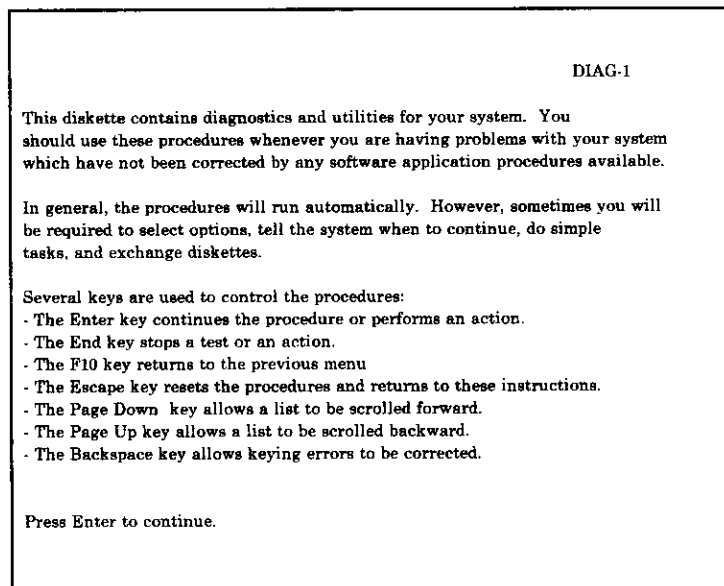
DID YOU FIND THE NUMBER IN THE TABLE?

YES Go to the step listed.

NO Continue on the next page.

Step 13

Look at the display.



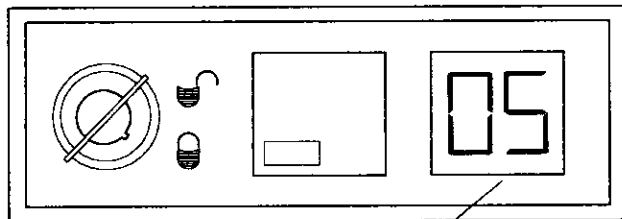
ARE THE "DIAGNOSTIC OPERATING INSTRUCTIONS" DISPLAYED?

YES Record SRN 11-630-84A; then go to "Step 33" on page 3-0030-33.

NO Continue on the next page.

Step 14

Find the POST number displayed in the two-digit display in the “POST Indicator Chart PIC 0040” on page 3-0040-1; then return here to answer the following question.



02	11-100-19B
03	11-F6C-84A
04	11-84A-100
05	11-981-F6C-84A
07	11-100-84A
08	11-84A-100
09	11-100-780

AJZB167

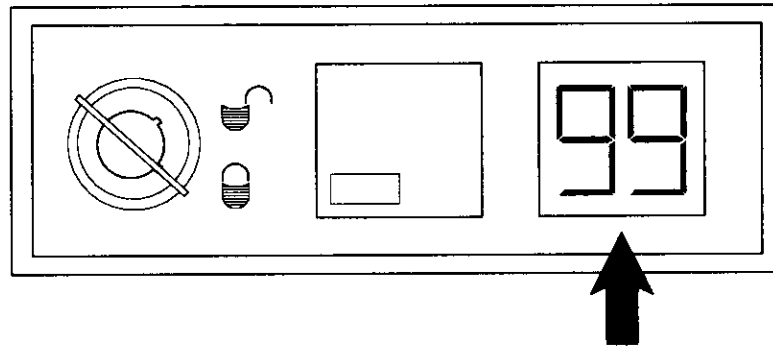
DID YOU FIND THE NUMBER IN THE CHART?

NO Record SRN 16-84A-630-100; then go to “Step 33” on page 3-0030-33.

YES Record the SRN for the number; then go to “Step 33” on page 3-0030-33

Step 15

The number 99 in the two-digit display indicates the keylock is in the Locked position. Look at the keylock.



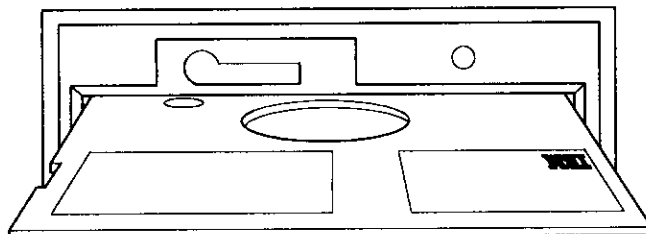
AJZB163

IS THE KEYLOCK IN THE LOCKED POSITION?

- NO** Record SRN 11-630-100; then go to "Step 33" on page 3-0030-33.
- YES** Set the keylock to Unlock; then go to "Step 2" on page 3-0030-2.

Step 16

Be sure the RT PC Diagnostics 1 diskette is inserted correctly in the diskette drive.



AJZB089

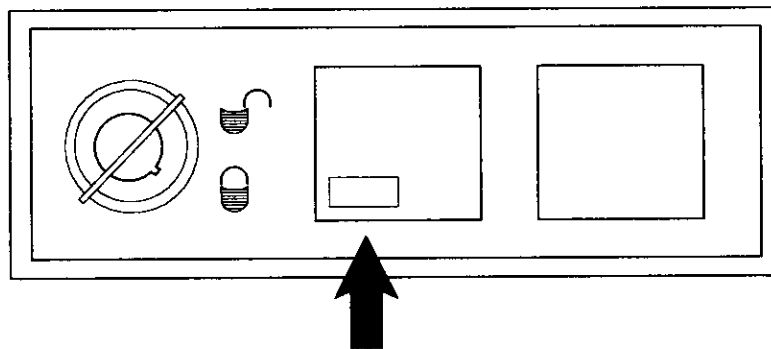
DID YOU FIND A PROBLEM?

YES Go to "Step 2" on page 3-0030-2.

NO Record SRN 16-F80-64A-A10; then go to "Step 33" on page 3-0030-33.

Step 17

Look at the Power-On indicator on the operator panel.



AJZB159

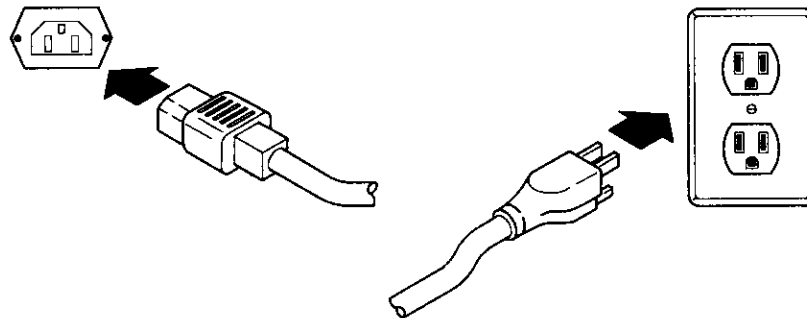
IS THE POWER-ON INDICATOR ON?

YES Go to "Step 19" on page 3-0030-19.

NO Continue on the next page.

Step 18

Be sure the external power cable to the system unit is plugged into the system unit and an outlet and that the outlet has correct voltage. If needed, see Section 5.



AJZB168

DID YOU FIND A PROBLEM?

YES If the outlet does not have correct voltage have the customer correct the problem, otherwise, plug the external power cable in.

This completes the repair.

NO Record SRN 16-880; then go to "Step 2" on page 3-8800-2.

Step 19

Some problems prevent the diagnostic diskette from loading and the *Operating System* loads instead.

Look at the display and determine if a screen from the customer's operating system is displayed. If needed, ask the customer for assistance in determining the above condition.

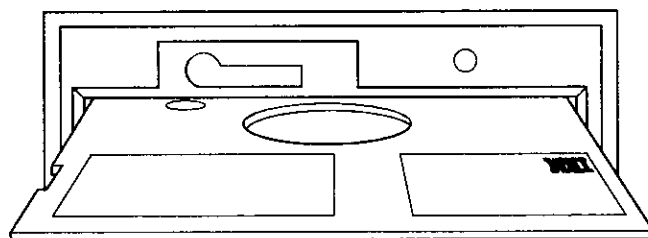
**IS A SCREEN FROM THE CUSTOMER'S OPERATING
SYSTEM DISPLAYED?**

NO Go to "Step 21" on page 3-0030-21.

YES Continue on the next page.

Step 20

Be sure the RT PC Diagnostics 1 diskette is correctly inserted in the diskette drive.



AJZB089

DID YOU FIND A PROBLEM?

YES Go to "Step 2" on page 3-0030-2.

NO Record SRN 16-64A-F80-A10; then go to "Step 33" on page 3-0030-33.

Step 21

Look at the upper left corner of the display.



IS "DCP" DISPLAYED THERE?

YES Record SRN 16-64A-F80-A10; then go to "Step 33" on page 3-0030-33.

Note: A defective diagnostic diskette can cause this problem also.

NO Continue on the next page.

Step 22

Look at the display attached to your system. If needed, see Section 11.

Display Type	Go to PIC
IBM 5151 Personal Computer Display	"IBM 5151 Personal Computer Display PIC 5400" on page 3-5400-1
IBM 5154 Enhanced Color Display	"IBM 5154 Enhanced Color Graphics Display PIC 5800" on page 3-5800-1
IBM 6153 Advanced Monochrome Graphics Display	"IBM 6153 Advanced Monochrome Graphics Display PIC 6000" on page 3-6000-1
IBM 6154 Advanced Color Graphics Display	"IBM 6154 Advanced Color Display PIC 5900" on page 3-5900-1
IBM 6155 Extended Monochrome Graphics Display	"IBM 6155 Extended Monochrome Graphics Display PIC 6200" on page 3-6200-1
IBM 5081 Display	"IBM 5081 Display PIC 6100" on page 3-6100-1

IS THE DISPLAY ATTACHED TO YOUR SYSTEM LISTED IN THE TABLE?

YES Go to the PIC for your display.

NO The display is not supported by this manual. Go to the service documentation for the attached display.

Step 23

This step is for flashing numbers only.

Look for the number displayed in the two-digit display in the following table.

Number	Go to Step
02	"Step 24" on page 3-0030-24
30	"Step 24" on page 3-0030-24
99	"Step 25" on page 3-0030-25

DID YOU FIND THE NUMBER IN THE TABLE?

YES Go to the step listed.

NO Go to "Step 25" on page 3-0030-25.

Step 24

The RT PC Diagnostics 1 diskette may be defective. Try a new RT PC Diagnostics 1 diskette.

If the new RT PC Diagnostics 1 diskette does not work, record SRN 16-64A-F80 and go to "Step 33" on page 3-0030-33.

Step 25

A program or machine check occurred. Go to "Undetermined Problem PIC 9860" on page 3-9860-1.

Step 26

Determine the type of display adapter the display is attached to. Look for the adapter type in the table below.

Type Display Adapter	SRN
Enhanced Graphics Adapter	12-410
Advanced Monochrome Graphics Display Adapter	12-430
IBM Monochrome Display and Printer Adapter	12-490
Advanced Color Graphics Display Adapter	12-450
Extended Monochrome Graphics Display Adapter	12-470
IBM IBM Megapel Display Adapter	12-4A0-4B0

DID YOU FIND THE ADAPTER IN THE TABLE?

- YES** Record the SRN; then go to "Step 33" on page 3-0030-33.
- NO** See "Loading Additional Device Drivers" on page 2-9; then go to "Step 3" on page 3-0030-3. If you don't have an additional device driver diskette; then the display adapter is not supported in this documentation.

Step 27

The checkout routines ran correctly.

Each of the following problems are related to particular SRNs. Check the system for the following problems:

- The indicators on the keyboard are not working (check during power-on self-test).
 - The speaker in the keyboard is not working or sounds continually (check during power-on self-test).
 - The two-digit display fails to display correctly (check at the start of power-on self-test). The power-on self-test program displays 88 at the start of the test to check the two-digit display.
-

DID YOU FIND ONE OF THE ABOVE PROBLEMS?

YES Record the corresponding SRN for the problem.

- The indicators on the keyboard are failing, record 16-780.
- The two-digit display is failing, record 16-630-84A.
- The speaker in the keyboard is failing, record 16-780-100.

Go to "Step 33" on page 3-0030-33.

NO Continue on the next page.

Step 28

A loud noise can be caused by moving parts in the system unit.

DID THE CUSTOMER REPORT A NOISE PROBLEM?

YES Go to "Noise Problem PIC 0050" on page 3-0050-1.

NO Continue on the next page.

Step 29

The problem may be an incorrect switch or jumper setting on an option, adapter, fixed-disk drive, or diskette drive. This may occur in a new installation or after a new option is installed. Ask the customer if this is a new installation or if a new option was added to the system.

DO YOU SUSPECT A SWITCH OR JUMPER SETTING IS THE PROBLEM?

- YES** Switch and jumper settings depend upon the system configuration. The *IBM RT PC Options Installation* manual shows the switch settings for different configurations. Use the *IBM RT PC Options Installation* manual to check the jumper and switch settings on your system; then continue on the next page.
- NO** Go to "Step 31" on page 3-0030-31.

Step 30

After checking the switch and jumper settings on your system, answer the following question.

DID YOU FIND A PROBLEM?

YES Run the System Checkout to verify the repair.

This completes the repair.

NO Continue on the next page.

Step 31

Some problems occur intermittently.

IS THIS PROBLEM FAILING INTERMITTENTLY?

YES Go to "Intermittent Problems PIC 0090" on page 3-0090-1.

NO Continue on the next page.

Step 32

Some problems may not be detected by the diagnostic routines but still fail when running a certain application program.

DOES THIS PROBLEM OCCUR ONLY WHEN RUNNING A CERTAIN APPLICATION PROGRAM?

- YES** Go to "Application Only Problems PIC 0080" on page 3-0080-1.
- NO** No trouble was found. This completes the repair.

Step 33

You may have already performed the repair action for each SRA number in the SRN using PIC 0010.

4. Write the Service Request Number here:

13 — — — — —

AJZB179

HAVE YOU PERFORMED THE REPAIR ACTION FOR EACH SRA IN THE SERVICE REQUEST NUMBER USING PIC 0010?

YES Go to "Unresolved Problem PIC 0060" on page 3-0060-1.

NO Go to "Step 3" on page 3-0010-4 and analyze any new SRAs.

POST Indicator Chart PIC 0040

Notes:

1. This chart is for *steady* numbers only.
2. For flashing c6-20, see "Two-Digit Display Codes During Diagnostic Programs" on page 2-19. For other flashing numbers, go to "Undetermined Problem PIC 9860" on page 3-9860-1.
3. When **u** is shown in the following chart, it is displayed using the upper half of the two-digit display character.

Do not use this PIC alone. Start at the "Start of Call PIC 0010" on page 3-0010-1.

Number	Service Request Number or Action
00	11-100-84A-490
01	11-84A
02	11-100-19B
03	11-F6C-84A
04	11-84A-100
05	11-981-F6C-84A
07	11-100-84A
08	11-84A-100
09	11-100-780
0c	11-100-8EA-490
0u	11-100-18A-490 (See notes)
10	11-100-84A
11	11-100
12	11-100
14	11-F80
1c	11-8EA

Number	Service Request Number or Action
1u	11-18A (See notes)
22	11-F80-64A-A10
23	11-984-F80-100
25	Software problem during IPL. Power off to clear the problem.
27	11-F6C
30	12-490
31	12-410
32	12-430
33	12-450
34	12-470
35	12-FBC-F80-A10
36	12-8EA
37	12-FBE-F80-A20
39	12-100-F80
3c	11-F6C-8EA
3u	11-18A (See notes)
40	12-F80-100
41	12-4CB-F4A
43	12-200-240
44	12-19B
45	12-490
46	12-340
47	12-1DC
48	12-1DD
49	12-3C0
4c	11-8EA-100

Number	Service Request Number or Action
4u	11-18A-100 (See notes)
50	12-310
51	12-230
52	12-5B0
53	12-350
54	12-230
55	12-350
56	12-390
57	12-390
58	12-320
59	12-3A0
5c	11-981-F6C-8EA
5u	11-18A (See notes)
60	12-280
61	12-380
62	12-400
65	12-4A0
66	12-4B0
67	12-1CB-F4A
68	11-8EA
69	12-8EA
71	12-15C
72	12-12C
73	12-16C
74	12-1EC
76	12-12D
77	12-15D
78	12-16D

Number	Service Request Number or Action
79	12-1ED
7c	11-100-8EA
7u	11-18A (See notes)
80	12-100
81	32-780
82	12-100
84	12-210
85	12-800
86	12-300
87	12-3B0
88	11-F4A-100
89	12-F4A-100
8c	11-8EA-100
8u	11-18A-100 (See notes)
90	12-850
93	12-64A-F80 (First, be sure the write protect tab is not on the diagnostic diskette.)
94	See "Loading Additional Device Drivers" on page 2-9; then use "Problem Determination Procedure PIC 0030" on page 3-0030-1.
95	12-FB0-F80
99	The keylock is set to On.
9c	12-3D0
cc	E2-5D0
cu	E2-650 (See notes)
uc	12-2E0 (See notes)
uu	72-2F0 (See notes)

Noise Problem PIC 0050

Use this PIC to find the FRU that is causing a loud noise.

Step 1

The device causing the noise can be identified by removing devices from the system unit.

IS THE NOISE COMING FROM THE SYSTEM UNIT?

NO Go to "Step 5" on page 3-0050-5.

YES Continue on the next page.

Step 2

The diskette drive, fixed-disk drive and cooling fan have moving parts and can cause noise problems.

CAN YOU IDENTIFY WHICH FRU IS CAUSING THE NOISE?

YES Do the following:

1. Exchange the FRU.
2. Run the System Checkout.
3. This completes the repair.

NO Continue on the next page.

Step 3

1. Set the power switch on the system unit to Off.
 2. Remove the top cover. If needed see Section 4.
 3. Disconnect the power connectors to the diskette drive and fixed-disk drive.
 4. Set the power switch on the system unit to On.
-

DO YOU STILL HAVE A NOISE PROBLEM?

YES Do the following:

1. Exchange the cooling fan.
2. Connect the power connectors to the drives.
3. Run the System Checkout.
4. This completes the repair.

NO Continue on the next page.

Step 4

Either the diskette drive or the fixed-disk drive is causing the problem.

1. Set the power switch on the system unit to Off.
 2. Connect the fixed-disk drive.
 3. Set the power switch to On.
-

DO YOU STILL HAVE A NOISE PROBLEM?

YES The fixed-disk drive is failing.

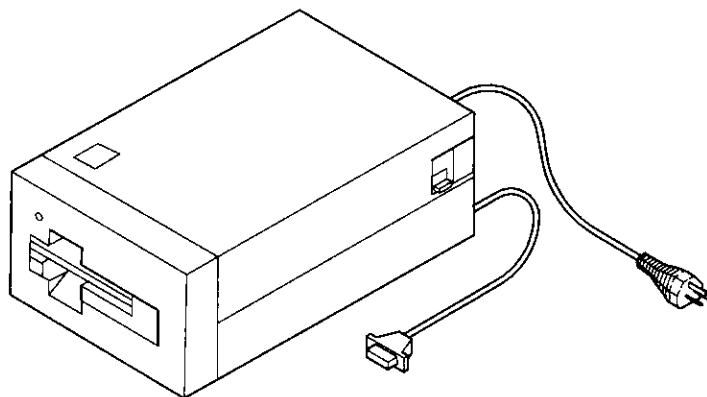
1. Connect the diskette drive.
2. Exchange the fixed-disk drive.
3. Run the System Checkout.
4. This completes the repair.

NO The diskette drive is failing.

1. Exchange the diskette drive.
2. Run the System Checkout.
3. This completes the repair.

Step 5

Listen to the tape drive.



AJZB227

IS THE NOISE COMING FROM THE TAPE DRIVE?

YES The tape drive is causing the noise.

1. Exchange the tape drive.
2. Run the System Checkout.
3. This completes the repair.

NO Follow the procedures for servicing the device that has the noise problem.

Unresolved Problem PIC 0060

Use this PIC for problems that still fail after all of the FRUs in the SRN have been exchanged.

Step 1

This problem may be caused by a defective cable. Look at the SRN.

4. Write the Service Request Number here:

13 - _____ - _____ - _____ - _____

AJZB175

DOES THE SRN CONTAIN THE SRA NUMBERS OF TWO FRUs THAT ARE CONNECTED BY A CABLE THAT HAS NOT BEEN EXCHANGED (such as a fixed-disk adapter and the fixed-disk drive)?

NO Go to "Step 3" on page 3-0060-3.

YES Continue on the next page.

Step 2

1. Exchange the cable.
 2. Try the failing operation again.
-

DOES THE SYSTEM STILL FAIL?

NO This completes the repair.

YES Continue on the next page.

Step 3

Look at the SRN.

4. Write the Service Request Number here:

1 - 234 - 100 - B34 - D64

AJZB179

IS THE PROCEDURE NUMBER A "1"?

NO Go to "Step 6" on page 3-0060-6.

YES Continue on the next page.

Step 4

A procedure number of 1 indicates that the system unit failed with an error code displayed in the two-digit display.

1. Set the power switch on the system unit to Off.
 2. Remove the top cover. If needed see Section 4.
 3. If present, remove the options from slots B and D. Then, remove all of the adapters from the adapter slots (record the slot numbers).
 4. Set the power switch on the system unit to On and wait 2 minutes.
-

IS "23" DISPLAYED IN THE TWO-DIGIT DISPLAY?

NO One of the remaining boards or options is failing. The order of most likely failure is:

1. The processor board
2. The system board
3. If present, the memory option in slot C.

Using the list above, exchange any FRU not already exchanged. To test each new FRU, set the power switch on the system unit to On and wait 2 minutes for 23 to display in the two-digit display. When 23 displays, the last FRU exchanged is the failing FRU.

Go to "Step 28" on page 3-0060-30.

YES Continue on the next page.

Step 5

One of the options or adapters you removed is failing. Use the following procedures to isolate the failures.

1. Set the power switch on the system unit to Off.
 2. Install one of the removed options or adapters. Use the following order, slots D, B; then the adapters in the other slots, being sure that the fixed-disk and diskette drive adapter is the last adapter installed. (You may want to install or attach more than one at a time; then isolate to one.)
 3. If the adapter has a device attached to it, be sure the device is connected and the power switch on the device is set to On.
 4. Set the power switch on the system unit to On and wait 2 minutes; then answer the following question.
-

IS "21," "22," or "23" DISPLAYED IN THE TWO-DIGIT DISPLAY?

YES Repeat the above steps.

NO Go to "Step 27" on page 3-0060-29

Step 6

Look at the SRN.

4. Write the Service Request Number here:

1 - 234 - 100 - B34 - D64

AJZB179

IS THE PROCEDURE NUMBER A "3"?

NO Go to "Step 17" on page 3-0060-18.

YES Continue on the next page.

Step 7

Look at the SRN.

4. Write the Service Request Number here:

13 - 234 - _____ - _____ - _____

AJZB176

DOES THE SRN CONTAIN ONLY ONE SRA NUMBER?

NO Go to "Step 10" on page 3-0060-10.

YES Continue on the next page.

Step 8

The failure may be caused by a device or adapter attached to the FRU indicated by the SRA number in the SRN. For example, the SRA number may indicate a tape drive and the tape drive adapter may be the failing FRU, or the SRA number may indicate the tape drive adapter and tape drive is the failing FRU.

4. Write the Service Request Number here:

13 - 234 - _____ - _____ - _____

AJZB176

**DOES THE SRA NUMBER INDICATE A SINGLE-FRU
DEVICE OR AN ADAPTER FOR A SINGLE-FRU DEVICE?**

NO Go to "Step 10" on page 3-0060-10.

YES Continue on the next page.

Step 9

1. Exchange the device or adapter attached to the FRU indicated in the SRA number.
 2. Try the failing procedure again.
-

DOES THE SYSTEM STILL FAIL?

NO This completes the repair.

YES Continue on the next page.

Step 10

The System Checkout routine will sometimes detect a problem that is not detected by the other diagnostics.

DIAG-1

The System Checkout Option will test all functions that do not require you to do anything. The other options allow you to test only that option. An * in front of the ID shows that the test has been run.

Choose the test you would like to run.

ID ITEM

- 2 Keyboard Checkout
- 3 Display Checkout

HAVE YOU RUN "SYSTEM CHECKOUT" USING THE ADVANCED DIAGNOSTIC ROUTINES?

YES Go to "Step 21" on page 3-0060-22.

NO Continue on the next page.

Step 11

Run the System Checkout using the Advanced Diagnostic Routines.

DIAG-2

The Service Request Number is:
13-521-66B

WRITE.....down the above number.

RETURN.....to the Hardware Maintenance and Service Manual.

DID THE “THERE IS A HARDWARE PROBLEM IN YOUR MACHINE” SCREEN DISPLAY?

NO Go to “Step 13” on page 3-0060-13.

YES Continue on the next page.

Step 12

Look at the SRN.

THERE IS A HARDWARE PROBLEM IN YOUR MACHINE.

DIAG-2

The Service Request Number is:

WRITE.....down the above number.

RETURN.....to the Hardware Maintenance and Service Manual.

DID YOU GET AN SRN THAT CONTAINS SRA NUMBERS THAT HAVE NOT BEEN ANALYZED?

YES Record the SRN; then go to "Step 3" on page 3-0010-4 and analyze the SRA numbers you have not analyzed.

NO Go to "Step 21" on page 3-0060-22.

Step 13

You are here because the system is failing only when a diagnostic checkout other than the System Checkout is run. The following FRUs are required to select a checkout procedure:

- The system board
- The processor board
- If installed, the memory expansion option in slot C
- An adapter for the diskette drive
- An IBM High Capacity Diskette Drive
- A display adapter
- A display
- The cables for the diskette drive
- The power supply
- The cooling fan
- A keyboard.

When the FRUs listed above are installed, the following selections display on the DIAGNOSTIC SELECTION menu:

- System Checkout
- Display Checkout
- Diskette Drive Checkout
- Checkout for the fixed-disk and diskette drive adapter
- Keyboard Checkout.

Step 13 continues on the next page.

(Step 13 continued)

IS THE DIAGNOSTIC CHECKOUT THAT FAILED IN THE LIST ON THE PREVIOUS PAGE?

YES Do the following:

1. Remove all adapters and options not listed on the previous page. Be sure to record the slot number and what cables are attached.
2. Disconnect the Data and Signal cables from all fixed-disk and diskette drives installed, except diskette drive A.
3. Continue on the next page.

NO Do the following:

1. Remove all adapters and options not listed on the previous page, except the one for the failing diagnostic checkout. If the adapter that was needed for the failing diagnostic checkout has a device connected, be sure the cable for the device is connected and the power switch on the device is set to On. Record the slot number and what cables are attached.
2. Disconnect the Data and Signal cables from all fixed-disk and diskette drives installed, except diskette drive A.
3. Continue on the next page.

Step 14

Run the diagnostic checkout that fails. The TEST OPTION and the DIAGNOSTIC TEST LIST menu may display if the configuration was changed. Follow the instructions as they display.

DID THE "THERE IS A HARDWARE PROBLEM IN YOUR MACHINE" SCREEN DISPLAY?

NO One of the options, adapters, or a device that you disconnected is failing.

Using the list below, install and attach the options, adapters, and devices one at a time to isolate the failure. (You may want to install or attach more than one at a time; then isolate to one.) Test each option, adapter, or device by running the failing diagnostic checkout. The TEST OPTION and the DIAGNOSTIC TEST LIST menu may display if the configuration was changed. Follow the instructions as they display.

When the "THERE IS A HARDWARE PROBLEM IN YOUR MACHINE" screen displays, go to "Step 27" on page 3-0060-29.

Install and connect the options, adapters and devices in the following order:

1. Options
2. Adapters (Do not connect the devices yet)
3. Fixed-disk drives
4. Diskette drives
5. Attach the devices.

YES Continue on the next page.

Step 15

Look at the devices still connected to the system unit.

**IS THE IBM RT PC 6192 EXPANSION UNIT STILL
ATTACHED?**

- YES** Go to "IBM RT PC 6192 Expansion Unit PIC 0100" on page 3-0100-1.
- NO** Continue on the next page.

Step 16

One of the FRUs still installed in or attached to the system unit is failing. The following list is in the most to least likely to fail order.

If you have not exchanged it already, use the removal and replacement procedures in the section that applies to the FRU and exchange it. Test each FRU by running the failing diagnostic checkout. If you identify the failing FRU, go to "Step 28" on page 3-0060-30. If you cannot identify a failing FRU, contact your service support person.

Exchange the following FRUs in the order listed:

1. FRUs required to run the failing diagnostic checkout.
2. The system board.
3. The processor board.
4. A display adapter.
5. If installed, the memory expansion option in slot C.
6. The adapter for the fixed-disk and diskette drive.
7. The power supply.

Step 17

Look at the SRN.

4. Write the Service Request Number here:

 3 - 821 - 741 - -

AJZB175

IS THE DEVICE NUMBER A "1" ?

NO Go to "Step 20" on page 3-0060-21.

YES Continue on the next page.

Step 18

Answer the following question for this problem only.

HAVE YOU EXCHANGED THE SYSTEM BOARD?

YES Go to "Step 21" on page 3-0060-22.

NO Continue on the next page.

Step 19

1. Exchange the system board.
 2. Try the failing operation again.
-

DOES THE FAILING OPERATION STILL FAIL?

- NO** This completes the repair.
- YES** Go to "Step 21" on page 3-0060-22.

Step 20

Look at the SRN.

4. Write the Service Request Number here:

 3 - 821 - 741 - _____ - _____

AJZB175

IS THE DEVICE NUMBER A "7"?

YES Exchange the FRUs listed below in the order listed. Test each FRU by powering the system unit on and observing the two-digit display. If the POST ends with a blank two-digit display, the last FRU exchanged was the failing FRU. If you identify a failing FRU, use the removal and replacement procedures in the section that applies to the FRU and exchange it; then go to "Step 25" on page 3-0060-27. If you cannot identify a failing FRU, contact your service support person.

1. RT PC 6192 Expansion Board
2. RT PC Expansion Unit Adapter
3. The Receiver Card in the RT PC 6192.

NO Continue on the next page.

Step 21

The following FRUs are required to run the System Checkout.

- The system board
- The processor board
- If installed, the memory expansion option in slot C
- An adapter for the diskette drive
- An IBM High Capacity Diskette Drive
- A display adapter
- A display
- The cables for the diskette drive
- The power supply
- The cooling fan
- A keyboard.

Remove all adapters and options not listed above. Be sure to record the slot number and what cables are attached. Disconnect the Data and Signal cables from all fixed-disk and diskette drives installed, except diskette drive A.

Run the System Checkout. The TEST OPTION and the DIAGNOSTIC TEST LIST menu will display if the configuration was changed. Follow the instructions as they display.

Step 21 continues on the next page.

(Step 21 continued)

WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

YES One of the options, adapters, or a device that you disconnected is failing.

Using the list below, install and attach the options, adapters, and devices one at a time to isolate the failure. (You may want to install or attach more than one at a time; then isolate to one.) Test each option, adapter, or device by running the failing diagnostic checkout. The TEST OPTION and the DIAGNOSTIC TEST LIST menu may display if the configuration was changed. Follow the instructions as they display.

When the "THERE IS A HARDWARE PROBLEM IN YOUR MACHINE" screen displays, go to "Step 27" on page 3-0060-29.

Install and connect the options, adapters, and devices in the following order:

1. Options
2. Adapters (Do not connect the devices yet)
3. Fixed-disk drives
4. Diskette drives
5. Attach the devices.

NO Continue on the next page.

Step 22

One of the FRUs still installed in the system unit is failing. The most likely failing order depends on the failing area. The failing area can be related to the types of FRUs that you have exchanged that did not fix the problem. Find the area that best describes your problem in the table below; then go to that step.

Failing Area	Go to Step
Displays	"Step 23" on page 3-0060-25
Fixed-disk and diskette drives	"Step 24" on page 3-0060-26
Keyboard	"Step 25" on page 3-0060-27
Other or unknown area	"Step 26" on page 3-0060-28

Step 23

The following FRUs are the most likely to cause display failures.

Exchange the FRUs that have not been exchanged in the following order. Test each FRU by running System Checkout. If you identify a failing FRU, use the removal and replacement procedures in the section that applies to the FRU and exchange it; then go to "Step 28" on page 3-0060-30. If you cannot identify a failing FRU, contact your service support person.

Exchange the following FRUs in the order listed:

1. The display
2. The display adapter
3. The system board
4. The processor board
5. If installed, the memory expansion option in slot C
6. An adapter for the fixed-disk and diskette drive
7. The power supply.

Step 24

The following FRUs are the most likely to cause a failure in the fixed-disk and diskette drives.

Exchange the FRUs that have not been exchanged in the following order. Test each FRU by running System Checkout. If you identify a failing FRU, use the removal and replacement procedures in the section that applies to the FRU and exchange it; then go to "Step 28" on page 3-0060-30. If you cannot identify a failing FRU, contact your service support person.

Exchange the following FRUs in the order listed:

1. An adapter for the fixed-disk and diskette drives
2. The cables for the fixed-disk and diskette drive
3. The IBM High Capacity Diskette Drive
4. The system board
5. The processor board
6. The power supply
7. The display adapter
8. If installed, the memory expansion option in slot C.

Step 25

The following FRUs are the most likely to cause a keyboard failure.

Exchange the FRUs that have not been exchanged in the following order. Test each FRU by running System Checkout. If you identify a failing FRU, use the removal and replacement procedures in the section that applies to the FRU and exchange it; then go to "Step 28" on page 3-0060-30. If you cannot identify a failing FRU, contact your service support person.

Exchange the following FRUs in the order listed:

1. The keyboard
2. The system board
3. The processor board
4. The power supply
5. The display adapter
6. An adapter for the fixed-disk and diskette drive
7. If installed, the memory expansion option in slot C.

Step 26

The following FRUs are also likely to cause a failure.

Exchange the FRUs that have not been exchanged in the following order. Test each FRU by running System Checkout. If you identify a failing FRU, use the removal and replacement procedures in the section that applies to the FRU and exchange it. Go to "Step 28" on page 3-0060-30. If you cannot identify a failing FRU, contact your service support person.

Exchange the following FRUs in the order listed:

1. The system board
2. The processor board
3. If installed, the memory expansion option in slot C
4. An adapter for the fixed-disk and diskette drive
5. The display adapter
6. The power supply.

Step 27

Find the failing area in the table below; then do the action listed. Test each FRU by running the failing procedure. If you identify the failing FRU, go to "Step 28" on page 3-0060-30. If you cannot identify a failing FRU, contact your service support person.

Failing Area	Action
Option	Exchange the option.
Adapter	Exchange the adapter.
Fixed-disk drive or diskette drive	<ol style="list-style-type: none">1. Exchange the drive.2. Exchange the adapter.
IBM 6156	<ol style="list-style-type: none">1. Exchange the fixed-disk drive.2. Exchange the fixed-disk drive module.3. Exchange the enclosure.
IBM 6157	<ol style="list-style-type: none">1. Exchange the tape drive.2. Exchange the tape drive adapter.
RT PC 6192	Go to "IBM RT PC 6192 Expansion Unit PIC 0100" on page 3-0100-1.
Other devices	<ol style="list-style-type: none">1. Exchange the adapter.2. Exchange or repair the device.

Step 28

1. Look at the type and slot positions you recorded, and install the boards and adapters you removed.
 2. Unplug the external power cable from the outlet.
 3. If disconnected, connect all attached devices (such as expansion unit).
 4. Install the top cover. If needed see Section 4.
 5. Set the power switch on the system unit to On.
 6. Follow the instructions on the menus to run the System Checkout. The TEST OPTION and the DIAGNOSTIC TEST LIST menu will display if the configuration was changed. Follow the instructions as they display. If needed, see page 2-17.
-

WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

- NO** If the same failure occurs, contact your service support person, otherwise, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.
- YES** This completes the repair.

Application Only Problems PIC 0080

Use this PIC to find problems that fail only when an application program is running and the diagnostic programs run without a failure.

Step 1

The AIX™ Operating System provides an error logging function.

IS THE CUSTOMER USING THE “AIX OPERATING SYSTEM”?

NO Go to “Step 8” on page 3-0080-8.

YES Continue on the next page.

AIX is a trademark of International Business Machines Corporation.

Step 2

1. Record the time.
2. Ask the operator to load the operating system and turn on the Error Log. The command to turn on the Error Log is:

/usr/lib/errdemon

3. Ask the operator to run the failing application program.
4. After a failure occurs, ask the operator to print a Summary Report of the permanent errors starting at the time you recorded. The command is (where MMddhhmmyy is month, day, hour, minute, year):

errpt -d t01 -sMMddhhmmyy | print

5. Look at the printed error log. If needed, see Appendix C.
-

ARE THERE ANY ERRORS LISTED?

NO Go to "Step 8" on page 3-0080-8.

YES Continue on the next page.

Step 3

Look at the printed Summary Report.

ARE THERE ANY HARDWARE ERRORS LISTED?

NO Have the customer follow the procedures for reporting the types of errors listed.

YES Continue on the next page.

Step 4

Ask the operator to print a Detail Report for the hardware errors listed. The command is (where MMddhhmmyy is month, day, hour, minute, year):

```
errpt -a -d t01 -d h00 -sMMddhhmmyy | print
```

ARE THE HARDWARE ERRORS RELATED TO THE HARDWARE YOU SERVICE?

- NO** Have the customer follow the procedures for resolving the problems listed.
- YES** Continue on the next page.

Step 5

1. Record the SRNs for the errors that are related to the hardware you service.
 2. Look up the FRUs that correspond to the SRAs in each SRN.
 3. Use the removal and replacement procedures in the section that applies to the FRU and exchange the FRU that corresponds to the first SRA in the SRN.
 4. Ask the customer to run the failing application again.
-

DID THE SAME FAILURE OCCUR?

NO This completes the repair.

YES Continue on the next page.

Step 6

One of the FRUs that correspond to the SRAs in the SRN should fix the problem.

4. Write the Service Request Number here:

13 - _ _ _ - _ _ _ - _ _ _ - _ _ _ - _ _ _

AJZB179

**HAVE YOU EXCHANGED ALL OF THE FRUs THAT
CORRESPOND TO THE SRAs IN EACH SRN?**

YES Contact your service support person.

NO Continue on the next page.

Step 7

1. Remove the last FRU you exchanged.
 2. Install the original FRU.
 3. Use the removal and replacement procedures in the section that applies to the FRU and exchange the FRU that corresponds to the next SRA in the SRN.
 4. Ask the customer to run the failing application again.
-

DID THE SAME FAILURE OCCUR?

YES Go to "Step 6" on page 3-0080-6.

NO This completes the repair.

Step 8

The failure is not being detected by the diagnostic programs or the error log. The problem may be in the software.

DO YOU SUSPECT A SOFTWARE PROBLEM?

- YES** Have the customer follow the procedures for software problems.
- NO** Continue on the next page.

Step 9

The following is a list of devices and the most likely failing FRUs for each device:

Diskette	The adapter for the fixed-disk and diskette drives, the diskette drive, the diskette
Fixed disk	The adapter for the fixed-disk and diskette drives, the fixed-disk drive
Printer	The printer adapter, the printer, the printer cable
Plotter	The plotter adapter, the plotter, the plotter cable
Terminal	The terminal adapter, the terminal, the terminal cable
Modem	The adapter the modem is attached to, the modem, the modem cable
Coprocessor	The IBM AT® Coprocessor Option, the IBM AT Math Co-processor module, the IBM AT 512KB Memory Expansion Option
Display	The display adapter, the display, the display cable
Keyboard	The keyboard, the system board
Mouse	The mouse, the system board
Tape	The tape drive adapter, the tape drive, the tape cartridge.

In addition to the above FRUs, the following common FRUs can also cause a problem:

- System board
- Processor board
- Memory expansion option
- Floating-point board
- Power supply.

Step 9 continues on the next page.

AT is a registered trademark of International Business Machines Corporation.

(Step 9 continued)

1. Find the device that best describes your failure in the lists on the previous page.
 2. Record the FRUs listed for that device and the common FRUs that are installed in your system.
 3. Replace one of the FRUs.
 4. Ask the customer to run the failing application program again.
-

DID THE SAME FAILURE OCCUR?

NO This completes the repair.

YES Continue on the next page.

Step 10

1. Remove the last FRU you exchanged.
 2. Install the original FRU.
-

**HAVE ALL THE FRUs YOU RECORDED BEEN
EXCHANGED?**

- YES** Contact your service support person.
- NO** Continue on the next page.

Step 11

1. Exchange the next FRU on your list.
 2. Ask the customer to run the failing application program again.
-

DID THE SAME FAILURE OCCUR?

- YES** Go to "Step 10" on page 3-0080-11.
- NO** This completes the repair.

Intermittent Problems PIC 0090

Use this PIC for intermittent problems that do not fail while running the diagnostic routines.

Step 1

Some problems occur every time an application program is running.

DOES THE PROBLEM OCCUR EVERY TIME AN APPLICATION PROGRAM IS RUNNING?

YES Go to "Application Only Problems PIC 0080" on page 3-0080-1.

NO Continue on the next page.

Step 2

The AIX Operating System provides error logging.

**IS THE CUSTOMER USING THE “AIX OPERATING
SYSTEM”?**

NO Go to “Step 9” on page 3-0090-9.

YES Continue on the next page.

Step 3

1. Ask the operator when the error last occurred.
2. Ask the operator to login on the AIX Operating System.
3. Ask the operator to print a Summary Report of all permanent errors starting about an hour before the reported error occurred. The command is (where MMddhhmmyy is month, day, hour, minute, year):

errpt -d t01,t04 -sMMddhhmmyy | print

4. Check the log for errors. If needed, see Appendix C.
-

ARE ANY ERRORS RECORDED?

NO No trouble was found. Ask the operator to run the system with the error log turned on so that if any errors are detected they will be recorded.

YES Continue on the next page.

Step 4

Look at the printed Error Summary report.

ARE THERE ANY HARDWARE ERRORS LISTED?

NO Ask the customer to follow the procedure for resolving the types of errors listed.

YES Continue on the next page.

Step 5

Ask the operator to print a Detail Report of the hardware errors listed. The command is (where MMddhhmmyy is month, day, hour, minute, year):

```
errpt -a -d t01 -d h00 -sMMddhhmmyy | print
```

ARE THE HARDWARE ERRORS RELATED TO THE HARDWARE YOU SERVICE?

- NO** Ask the customer to follow the procedure for resolving the type of errors listed.
- YES** Continue on the next page.

Step 6

1. Record the SRNs for the errors that are related to the hardware you service.
 2. Look up the FRUs that correspond to the SRAs in each SRN.
 3. The FRUs are listed in the most likely to fail order.
 4. Exchange the FRUs one at a time. Check the fix by asking the customer to run the failing application program again.
-

DID THE SAME FAILURE OCCUR?

NO This completes the repair.

YES Continue on the next page.

Step 7

One of the FRUs that correspond to the SRAs in the SRN should fix the problem.

4. Write the Service Request Number here:

13 - _____ - _____ - _____ - _____

AJZB179

**HAVE YOU EXCHANGED ALL OF THE FRUs THAT
CORRESPOND TO THE SRAs IN EACH SRN?**

YES Contact your service support person.

NO Continue on the next page.

Step 8

1. Remove the last FRU you exchanged.
 2. Install the original FRU.
 3. Exchange the FRU that corresponds to the next SRA in the SRN.
 4. Ask the customer to run the failing application again.
-

DID THE SAME FAILURE OCCUR?

YES Go to "Step 7" on page 3-0090-7.

NO This completes the repair.

Step 9

The diagnostics can be run in loop mode by selecting the Run Test Multiple Times option in the TEST METHOD SELECTION menu. Run the diagnostics in loop mode for several minutes on each device you think is failing.

DID THE DIAGNOSTICS FIND A PROBLEM?

YES Do the following steps:

1. Record the name of the FRU for each SRA in the SRN. The FRUs are listed in the most likely to fail order.
2. Exchange each FRU one at a time. Check each FRU by running the diagnostics in loop mode for several minutes.

NO No trouble was found. If you still have a problem, contact your service support person.

IBM RT PC 6192 Expansion Unit PIC 0100

Use this PIC to isolate failures to FRUs in the IBM RT PC 6192 Expansion Unit.

Step 1

The failure is in one of the following:

- The IBM RT PC 6192 Expansion Unit
- The IBM RT PC Expansion Unit Adapter
- The RT PC Expansion Unit Cable
- An adapter installed in the RT PC 6192.

DIAG-1

The System Checkout Option will test all functions that do not require you to do anything. The other options allow you to test only that option.
An * in front of the ID shows that the test has been run.

Choose the test you would like to run.

ID ITEM

- *1 System Checkout
- 2 Keyboard Checkout
- 3 Display Checkout

**WAS THE FAILING PROCEDURE SELECTED FROM THE
ADVANCED DIAGNOSTIC SELECTION MENU?**

NO Go to "Step 5" on page 3-0100-5.

YES Continue on the next page.

Step 2

The following question refers to the procedure used to detect a failure in the IBM RT PC 6192 Expansion Unit

ADVANCED DIAGNOSTIC SELECTION

DIAG-1

The System Checkout Option will test all functions that do not require you to do anything. The other options allow you to test only that option. An * in front of the ID shows that the test has been run.

Choose the test you would like to run.

ID ITEM

2 Keyboard Checkout

3 Display Checkout

WAS THE FAILING PROCEDURE THE SYSTEM CHECKOUT?

YES Go to "Step 5" on page 3-0100-5.

NO Continue on the next page.

Step 3

Run the System Checkout using the ADVANCED DIAGNOSTIC SELECTION menu.

TESTING COMPLETE	DIAG-2
Press Enter to continue.	

WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

YES Except for the adapters required to run the failing procedure, remove all of the adapters from slots 1 through 6 in the RT PC 6192.

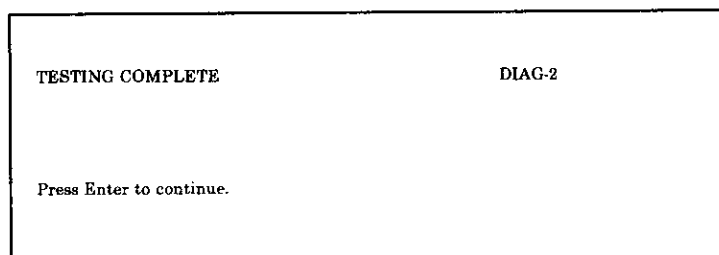
Note: Be sure to use the Adapter Removal procedure in the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service* manual.

Go to "Step 6" on page 3-0100-6.

NO Continue on the next page.

Step 4

1. Set the power switch on the system unit and RT PC 6192 to Off.
 2. Wait 30 seconds; then set the power switch on the system unit to On (leave the RT PC 6192 off).
 3. Run the System Checkout using the ADVANCED DIAGNOSTIC SELECTION menu.
-



WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

YES Remove all of the adapters in slots 1 through 6 in the RT PC 6192.

Note: Be sure to use the Adapter Removal procedure in the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service* manual.

Go to "Step 6" on page 3-0100-6 and use the System Checkout as the failing procedure.

NO Exchange the RT PC Expansion Unit Adapter; then go to "Step 9" on page 3-0100-9.

Step 5

1. Set the power switch on the system unit and RT PC 6192 to Off.
 2. Wait 30 seconds; then set the power switch on the system unit to On (leave the RT PC 6192 off).
 3. Run the failing procedure using the ADVANCED DIAGNOSTIC SELECTION menu.
-

DIAG-2
The Service Request Number is: 13-521-66B
WRITE.....down the above number.
RETURN.....to the Hardware Maintenance and Service Manual.

DID THE PROCEDURE FAIL?

- YES** Exchange the RT PC Expansion Unit Adapter; then go to "Step 9" on page 3-0100-9.
- NO** Remove all of the adapters in slots 1 through 6 in the RT PC 6192.

Note: Be sure to use the Adapter Removal procedure in the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service* manual.

Continue on the next page.

Step 6

1. Set the power switch on the system unit and RT PC 6192 to Off.
 2. Wait 30 seconds; then set the power switch on the system unit to On (leave the RT PC 6192 off).
 3. Run the failing procedure using the ADVANCED DIAGNOSTIC SELECTION menu.
-

DIAG-2
The Service Request Number is: 13-521-66B
WRITE.....down the above number.
RETURN.....to the Hardware Maintenance and Service Manual.

DID THE PROCEDURE FAIL?

- YES** Go to "Step 8" on page 3-0100-8.
- NO** Continue on the next page.

Step 7

One of the adapters you removed from the RT PC 6192 is failing.

Note: Be sure to use the Adapter Removal procedure in the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service manual*.

1. Install one of the adapters you removed into the RT PC 6192.
 2. Run the failing procedure using the ADVANCED DIAGNOSTIC SELECTION menu.
-

DIAG-2
The Service Request Number is: 13-521-66B
WRITE.....down the above number.
RETURN.....to the Hardware Maintenance and Service Manual.

DID THE PROCEDURE FAIL?

- YES** The last FRU you installed is failing. Exchange it then go to "Step 9" on page 3-0100-9.
- NO** Repeat this step. If all adapters are installed, go to "Step 9" on page 3-0100-9.

Step 8

One of the following FRUs is failing:

- The Receiver Card
- The RT PC 6192 Expansion Board
- The RT PC Expansion Unit Cable
- The RT PC Expansion Unit Adapter (in the system unit).

Do the following to isolate the failing FRU.

1. In the order listed, exchange one of the FRUs above.
2. Run the failing procedure using the **ADVANCED DIAGNOSTIC SELECTION** menu.

DIAG-2
The Service Request Number is: 13-521-66B
WRITE.....down the above number.
RETURN.....to the Hardware Maintenance and Service Manual.

DID THE PROCEDURE FAIL?

NO The last FRU you installed was defective. Continue on the next page.

YES Return the original FRU to the unit; then repeat this step.

Step 9

Note: Be sure to use the Adapter Removal procedure in the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service* manual for any adapter installed in the RT PC 6192.

1. Look at the type and slot positions you recorded, and install the boards and adapters you removed.
 2. Install any covers you have removed.
 3. Set the power switch on the RT PC 6192 to On.
 4. Set the power switch on the system unit to On.
 5. Follow the instructions on the menus to run the System Checkout. The TEST OPTION and the DIAGNOSTIC TEST LIST menu will display if the configuration was changed. Follow the instructions as they display. If needed, see page 2-17.
-

WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

NO If the same failure occurs, contact your service support person, otherwise, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.

YES This completes the repair.

Memory Expansion Option PIC 2100

This PIC analyzes the 21x and 37x SRA numbers. The 21x SRA isolates the failure to an option. The 37x SRA isolates the failure to a single memory module. The starting addresses can be used to determine the address range where the failure occurred.

Step 1

Look at your SRN.

4. Write the Service Request Number here:

13 - _____ - _____ - _____ - _____

AJZB177

IS ANY OF THE SRAs "210"?

YES Go to "Step 6" on page 3-2100-7.

NO Continue on the next page.

Step 2

1. Look at the letter in the 21x (x = any letter) SRA, then find the column for that letter in the following tables.
 2. Record the switch settings shown for the letter. Go to "Step 3" on page 3-2100-4.
-

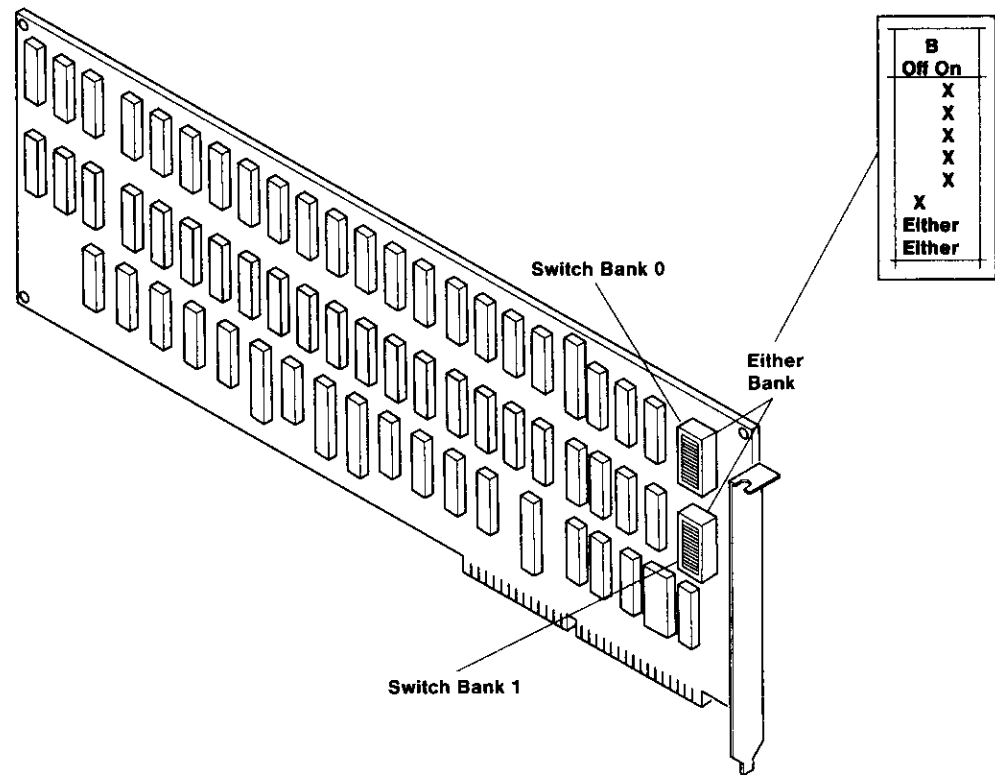
SRA Letter	A	B	C	D	E	F
	Off On	Off On	Off On	Off On	Off On	Off On
Switch 1	X	X	Not	Not	X	X
Switch 2	X	X	valid	valid	X	X
Switch 3	X	X	I/O	I/O	X	X
Switch 4	X	X	memory	memory	X	X
Switch 5	X	X	addresses	addresses	X	X
Switch 6	X	X			X	X
Switch 7	Either	Either			Either	Either
Switch 8	Either	Either			Either	Either
Starting Address of 256K bytes	000000	040000	080000	0C0000	100000	140000

SRA Letter	G		H		I		J		K		L	
	Off	On	Off	On	Off	On	Off	On	Off	On	Off	On
Switch 1		X		X		X		X		X		X
Switch 2		X		X		X		X		X		X
Switch 3		X		X	X		X		X		X	
Switch 4	X		X			X		X		X		X
Switch 5	X		X			X		X		X		X
Switch 6		X	X			X		X		X		X
Switch 7	Either		Either		Either		Either		Either		Either	
Switch 8	Either		Either		Either		Either		Either		Either	
Starting Address of 256K bytes	180000		1C0000		200000		240000		280000		2C0000	

SRA Letter	M		N		O		P	
	Off	On	Off	On	Off	On	Off	On
Switch 1		X		X		X		X
Switch 2		X		X		X		X
Switch 3	X		X		X		X	
Switch 4	X		X		X		X	
Switch 5		X		X		X		X
Switch 6		X	X			X		X
Switch 7	Either		Either		Either		Either	
Switch 8	Either		Either		Either		Either	
Starting Address of 256K bytes	300000		340000		380000		3C0000	

Step 3

Find the IBM AT 512 KB Memory Expansion Option installed in your system unit with *either* Switch Bank 0 or Switch Bank 1 set like you recorded.



AJZB130

Continue on the next page.

Step 4

Look at your SRN.

4. Write the Service Request Number here:

13 - _____ - 21B - _____ - _____

AJZB177

DOES YOUR SRN HAVE A "37x" SRA?

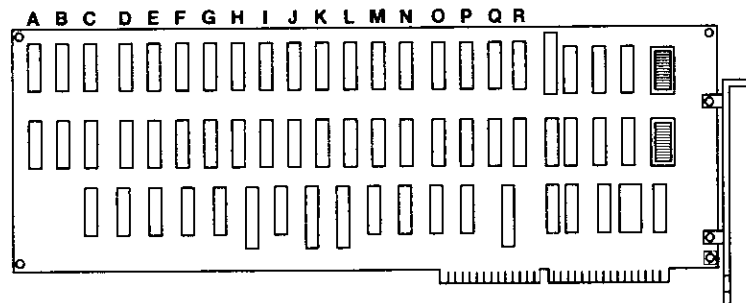
NO Exchange the memory option; then go to "Step 7" on page 3-2100-8

YES Continue on the next page.

Step 5

The letter of the 37x SRA identifies the failing module within a horizontal row of modules. The horizontal row is determined by the switch bank setting that corresponds to the letter in the 21x SRA.

1. Find the switch bank that corresponds to the letter in the 21x SRA.
2. Find the module within the same horizontal row that corresponds to the letter in the 37x SRA.
3. Exchange the module.
4. Run xxK Bytes of IBM AT Memory Checkout. If needed see page 2-17.



AJZB129

DID A FAILURE OCCUR WITH THE SAME SRN?

YES Exchange the IBM AT 512 KB Memory Expansion Option; then go to "Step 7" on page 3-2100-8.

NO Go to "Step 7" on page 3-2100-8.

Step 6

The diagnostic programs were unable to determine the location of the failing IBM AT 512 KB Memory Expansion Option.

1. Exchange one of the IBM AT 512 KB Memory Expansion Options.
2. Run xxK Bytes of IBM AT Memory Checkout. If needed see page 2-17.

Note: If the failing memory expansion option is still installed in the system unit, you will get the TEST OPTION menu. Answer the question on the menu to get an SRN.

TEST OPTION	DIAG-1
The following option was detected previously by the diagnostics, but is now undetected.	
· Option	
Has the option been removed from the system, moved to another location, or turned off?	
<u>ID</u> <u>ITEM</u>	

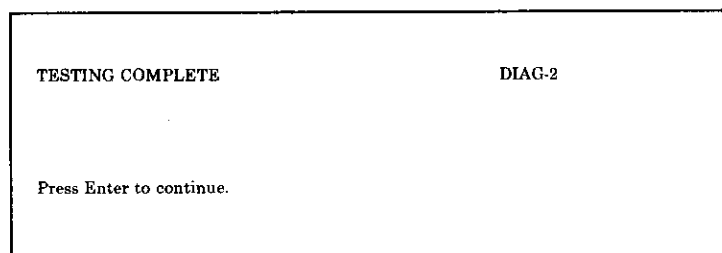
DID YOU GET THE SAME SRN?

YES Repeat the above steps.

NO Continue on the next page.

Step 7

1. Install the top cover. If needed see Section 4.
 2. Run xxK Bytes of IBM AT Memory Checkout. If needed see page 2-17.
-



WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

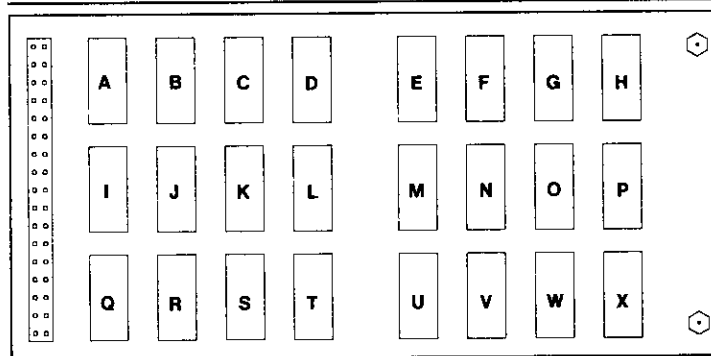
- YES** This completes the repair.
- NO** If the System Checkout resulted in the same SRN that you have been analyzing, go to "Unresolved Problem PIC 0060" on page 3-0060-1 otherwise go to "Problem Determination Procedure PIC 0030" on page 3-0030-1

IBM PC Enhanced Graphics Adapter Memory PIC 4200

This PIC analyzes the 42x and 44x SRA numbers. The letter in the 42x SRA number identifies the slot for the IBM PC Enhanced Graphics Adapter. The letter in the 44x SRA number identifies the failing module on the IBM PC Graphics Memory Expansion Card.

Step 1

1. Find the module that corresponds to the letter in the 44x SRA. Then, use the "Removal and Replacement Procedures" on page 9-042-1 to exchange that module.
2. Run the Display Checkout.



AJZB108

WERE YOU ABLE TO LOAD AND RUN THE REPAIR CHECKOUT AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

YES Go to "Step 4" on page 3-4200-4.

NO If you were unable to select and run the Display Checkout, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1. Otherwise, continue on the next page.

Step 2

1. Use the "Removal and Replacement Procedures" on page 9-042-1, to install the original module on the IBM PC Graphics Memory Expansion Card again, but do not install the card on the IBM PC Enhanced Graphics Adapter.
 2. Install the IBM PC Enhanced Graphics Adapter in the system unit without the IBM PC Graphics Memory Expansion Card.
 3. Run the Display Checkout.
-



WERE YOU ABLE TO LOAD AND RUN THE REPAIR CHECKOUT AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

NO The IBM PC Enhanced Graphics Adapter is failing.

1. Use the "Removal and Replacement Procedures" on page 9-042-1, to exchange the IBM PC Enhanced Graphics Adapter. Be sure to install the IBM PC Graphics Memory Expansion Card on the new adapter.
2. Run the Display Checkout.

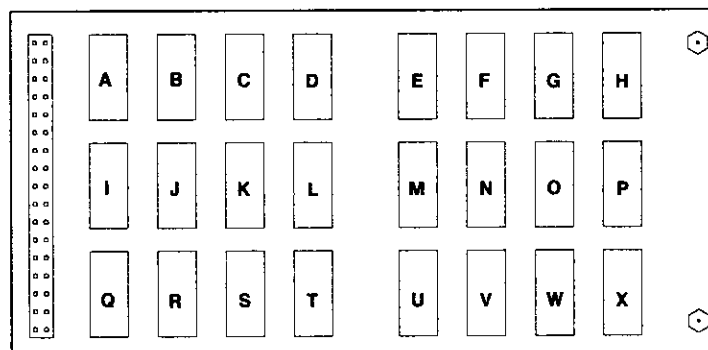
YES Continue on the next page.

Step 3

Exchange the following FRUs to isolate the failure. Check each FRU by running the Display Checkout. Be sure to install the original FRUs in their correct positions if they are not identified as the failing FRU.

1. Exchange the IBM PC Graphics Memory Expansion Card (install the original modules on it).
2. Exchange the modules one at a time or in groups to identify the failing module.
3. Exchange the IBM PC Enhanced Graphics Adapter.

If you still have a problem and the same SRN is displayed, go to "Unresolved Problem PIC 0060" on page 3-0060-1, otherwise go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.



AJZB108

Step 4

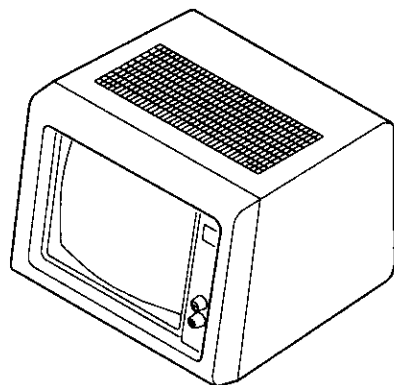
1. Install any FRUs that were removed.
 2. Run the System Checkout.
 3. If you still have a problem, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.
-

IBM 5151 Personal Computer Display PIC 5400

Use this PIC to get an SRN when there is a problem that prevents you from reading the display screen easily, the two-digit display is blank, and the system unit power indicator is on.

Step 1

1. Turn the Brightness and Contrast controls fully clockwise.
2. Look at the display screen.



AJZB193

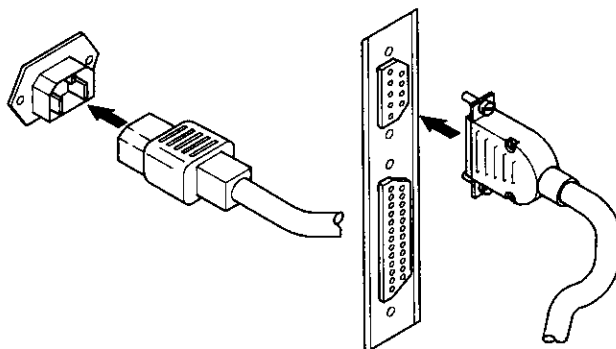
IS THE BACKGROUND OF THE DISPLAY SCREEN LIGHTED?

YES Go to "Step 3" on page 3-5400-3.

NO Continue on the next page.

Step 2

Be sure that both the display power cable and the display signal cable are correctly connected to the system unit.



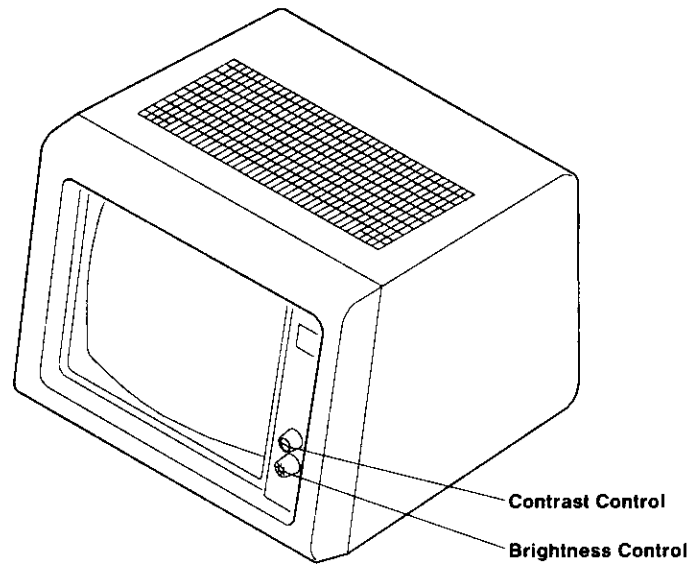
AJZB169

DID YOU FIND A PROBLEM?

- YES** This completes the repair.
- NO** Record SRN 26-540-490; then go to “Step 5” on page 3-5400-5.

Step 3

Try to set the Brightness and Contrast controls to the desired level.



AJZB194

WERE YOU ABLE TO SET THE DISPLAY TO THE DESIRED LEVEL?

NO Record SRN 26-540-490, then go to "Step 5" on page 3-5400-5.

YES Continue on the next page.

Step 4

Look at the display screen.



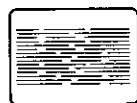
Too Dim



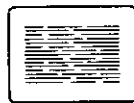
Too Wide



Too Narrow



Too Short



Too Small



Tilted



**Changes Size When
Brightness Control
Turned**



Out of Focus



Rolling

AJZB214

DOES YOUR DISPLAY HAVE A PROBLEM SIMILAR TO ANY OF THE DISPLAY SCREENS ABOVE?

NO Record SRN 26-490-540; then continue on the next page.

YES Record SRN 26-540-490; then continue on the next page.

Step 5

Look at the display adapter your IBM 5151 is attached to. If your IBM 5151 is attached to an IBM PC Enhanced Graphics Adapter, change the 490 SRA number you recorded to 410.

4. Write the Service Request Number here:

13 — — — — —

AJZB179

HAVE YOU PERFORMED THE REPAIR ACTION FOR EACH SRA IN THE SERVICE REQUEST NUMBER USING PIC 0010?

YES Go to "Unresolved Problem PIC 0060" on page 3-0060-1.

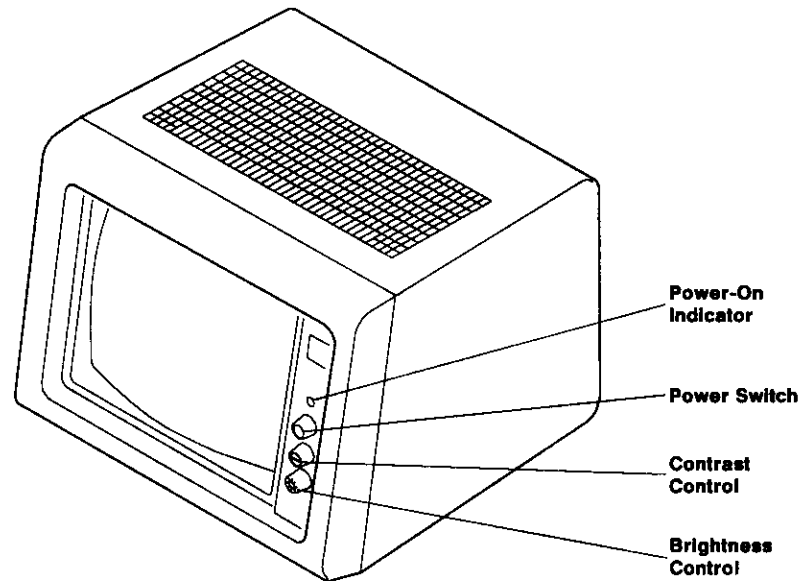
NO Go to "Step 3" on page 3-0010-4 and analyze any new SRAs.

IBM 5154 Enhanced Color Graphics Display PIC 5800

Use this PIC to get an SRN when there is a problem that prevents you from reading the display screen easily, the two-digit display is blank, and the power-on indicator is on.

Step 1

1. Be sure the power switch on the display is set to On.
2. Look at the power-on indicator on the display.



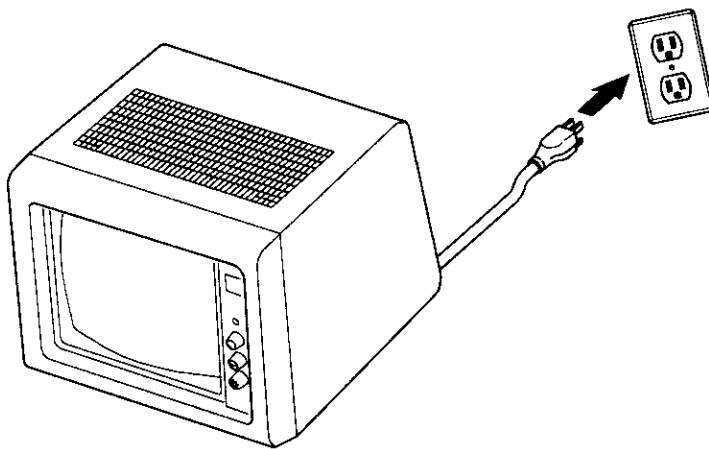
AJZB197

IS THE POWER-ON INDICATOR ON?

- YES** Go to "Step 3" on page 3-5800-3.
- NO** Continue on the next page.

Step 2

Be sure the external power cable to the display is securely plugged into an outlet and the outlet has power.



AJZB198

DID YOU FIND A PROBLEM?

YES This completes the repair.

NO Record SRN 26-580; then go to "Step 7" on page 3-5800-7.

Step 9

1. Exchange the device or adapter attached to the FRU indicated in the SRA number.
 2. Try the failing procedure again.
-

DOES THE SYSTEM STILL FAIL?

NO This completes the repair.

YES Continue on the next page.

Step 10

The System Checkout routine will sometimes detect a problem that is not detected by the other diagnostics.

DIAG-1

The System Checkout Option will test all functions that do not require you to do anything. The other options allow you to test only that option. An * in front of the ID shows that the test has been run.

Choose the test you would like to run.

ID ITEM

- 2 Keyboard Checkout
- 3 Display Checkout

HAVE YOU RUN "SYSTEM CHECKOUT" USING THE ADVANCED DIAGNOSTIC ROUTINES?

YES Go to "Step 21" on page 3-0060-22.

NO Continue on the next page.

Step 11

Run the System Checkout using the Advanced Diagnostic Routines.

DIAG-2

The Service Request Number is:
13-521-66B

WRITE.....down the above number.

RETURN.....to the Hardware Maintenance and Service Manual.

DID THE “THERE IS A HARDWARE PROBLEM IN YOUR MACHINE” SCREEN DISPLAY?

NO Go to “Step 13” on page 3-0060-13.

YES Continue on the next page.

Step 12

Look at the SRN.

THERE IS A HARDWARE PROBLEM IN YOUR MACHINE.

DIAG-2

The Service Request Number is:

WRITE.....down the above number.

RETURN.....to the Hardware Maintenance and Service Manual.

DID YOU GET AN SRN THAT CONTAINS SRA NUMBERS THAT HAVE NOT BEEN ANALYZED?

YES Record the SRN; then go to "Step 3" on page 3-0010-4 and analyze the SRA numbers you have not analyzed.

NO Go to "Step 21" on page 3-0060-22.

Step 13

You are here because the system is failing only when a diagnostic checkout other than the System Checkout is run. The following FRUs are required to select a checkout procedure:

- The system board
- The processor board
- If installed, the memory expansion option in slot C
- An adapter for the diskette drive
- An IBM High Capacity Diskette Drive
- A display adapter
- A display
- The cables for the diskette drive
- The power supply
- The cooling fan
- A keyboard.

When the FRUs listed above are installed, the following selections display on the DIAGNOSTIC SELECTION menu:

- System Checkout
- Display Checkout
- Diskette Drive Checkout
- Checkout for the fixed-disk and diskette drive adapter
- Keyboard Checkout.

Step 13 continues on the next page.

(Step 13 continued)

IS THE DIAGNOSTIC CHECKOUT THAT FAILED IN THE LIST ON THE PREVIOUS PAGE?

YES Do the following:

1. Remove all adapters and options not listed on the previous page. Be sure to record the slot number and what cables are attached.
2. Disconnect the Data and Signal cables from all fixed-disk and diskette drives installed, except diskette drive A.
3. Continue on the next page.

NO Do the following:

1. Remove all adapters and options not listed on the previous page, except the one for the failing diagnostic checkout. If the adapter that was needed for the failing diagnostic checkout has a device connected, be sure the cable for the device is connected and the power switch on the device is set to On. Record the slot number and what cables are attached.
2. Disconnect the Data and Signal cables from all fixed-disk and diskette drives installed, except diskette drive A.
3. Continue on the next page.

Step 14

Run the diagnostic checkout that fails. The TEST OPTION and the DIAGNOSTIC TEST LIST menu may display if the configuration was changed. Follow the instructions as they display.

DID THE "THERE IS A HARDWARE PROBLEM IN YOUR MACHINE" SCREEN DISPLAY?

NO One of the options, adapters, or a device that you disconnected is failing.

Using the list below, install and attach the options, adapters, and devices one at a time to isolate the failure. (You may want to install or attach more than one at a time; then isolate to one.) Test each option, adapter, or device by running the failing diagnostic checkout. The TEST OPTION and the DIAGNOSTIC TEST LIST menu may display if the configuration was changed. Follow the instructions as they display.

When the "THERE IS A HARDWARE PROBLEM IN YOUR MACHINE" screen displays, go to "Step 27" on page 3-0060-29.

Install and connect the options, adapters and devices in the following order:

1. Options
2. Adapters (Do not connect the devices yet)
3. Fixed-disk drives
4. Diskette drives
5. Attach the devices.

YES Continue on the next page.

Step 15

Look at the devices still connected to the system unit.

**IS THE IBM RT PC 6192 EXPANSION UNIT STILL
ATTACHED?**

- YES** Go to "IBM RT PC 6192 Expansion Unit PIC 0100" on page 3-0100-1.
- NO** Continue on the next page.

Step 16

One of the FRUs still installed in or attached to the system unit is failing. The following list is in the most to least likely to fail order.

If you have not exchanged it already, use the removal and replacement procedures in the section that applies to the FRU and exchange it. Test each FRU by running the failing diagnostic checkout. If you identify the failing FRU, go to "Step 28" on page 3-0060-30. If you cannot identify a failing FRU, contact your service support person.

Exchange the following FRUs in the order listed:

1. FRUs required to run the failing diagnostic checkout.
2. The system board.
3. The processor board.
4. A display adapter.
5. If installed, the memory expansion option in slot C.
6. The adapter for the fixed-disk and diskette drive.
7. The power supply.

Step 17

Look at the SRN.

4. Write the Service Request Number here:

 3 - 821 - 741 - -

AJZB175

IS THE DEVICE NUMBER A "1" ?

NO Go to "Step 20" on page 3-0060-21.

YES Continue on the next page.

Step 18

Answer the following question for this problem only.

HAVE YOU EXCHANGED THE SYSTEM BOARD?

YES Go to "Step 21" on page 3-0060-22.

NO Continue on the next page.

Step 19

1. Exchange the system board.
 2. Try the failing operation again.
-

DOES THE FAILING OPERATION STILL FAIL?

NO This completes the repair.

YES Go to "Step 21" on page 3-0060-22.

Step 20

Look at the SRN.

4. Write the Service Request Number here:

 3 - 821 - 741 - -

AJZB175

IS THE DEVICE NUMBER A "7"?

YES Exchange the FRUs listed below in the order listed. Test each FRU by powering the system unit on and observing the two-digit display. If the POST ends with a blank two-digit display, the last FRU exchanged was the failing FRU. If you identify a failing FRU, use the removal and replacement procedures in the section that applies to the FRU and exchange it; then go to "Step 25" on page 3-0060-27. If you cannot identify a failing FRU, contact your service support person.

1. RT PC 6192 Expansion Board
2. RT PC Expansion Unit Adapter
3. The Receiver Card in the RT PC 6192.

NO Continue on the next page.

Step 21

The following FRUs are required to run the System Checkout.

- The system board
- The processor board
- If installed, the memory expansion option in slot C
- An adapter for the diskette drive
- An IBM High Capacity Diskette Drive
- A display adapter
- A display
- The cables for the diskette drive
- The power supply
- The cooling fan
- A keyboard.

Remove all adapters and options not listed above. Be sure to record the slot number and what cables are attached. Disconnect the Data and Signal cables from all fixed-disk and diskette drives installed, except diskette drive A.

Run the System Checkout. The TEST OPTION and the DIAGNOSTIC TEST LIST menu will display if the configuration was changed. Follow the instructions as they display.

Step 21 continues on the next page.

(Step 21 continued)

WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

YES One of the options, adapters, or a device that you disconnected is failing.

Using the list below, install and attach the options, adapters, and devices one at a time to isolate the failure. (You may want to install or attach more than one at a time; then isolate to one.) Test each option, adapter, or device by running the failing diagnostic checkout. The TEST OPTION and the DIAGNOSTIC TEST LIST menu may display if the configuration was changed. Follow the instructions as they display.

When the "THERE IS A HARDWARE PROBLEM IN YOUR MACHINE" screen displays, go to "Step 27" on page 3-0060-29.

Install and connect the options, adapters, and devices in the following order:

1. Options
2. Adapters (Do not connect the devices yet)
3. Fixed-disk drives
4. Diskette drives
5. Attach the devices.

NO Continue on the next page.

Step 22

One of the FRUs still installed in the system unit is failing. The most likely failing order depends on the failing area. The failing area can be related to the types of FRUs that you have exchanged that did not fix the problem. Find the area that best describes your problem in the table below; then go to that step.

Failing Area	Go to Step
Displays	"Step 23" on page 3-0060-25
Fixed-disk and diskette drives	"Step 24" on page 3-0060-26
Keyboard	"Step 25" on page 3-0060-27
Other or unknown area	"Step 26" on page 3-0060-28

Step 23

The following FRUs are the most likely to cause display failures.

Exchange the FRUs that have not been exchanged in the following order. Test each FRU by running System Checkout. If you identify a failing FRU, use the removal and replacement procedures in the section that applies to the FRU and exchange it; then go to "Step 28" on page 3-0060-30. If you cannot identify a failing FRU, contact your service support person.

Exchange the following FRUs in the order listed:

1. The display
2. The display adapter
3. The system board
4. The processor board
5. If installed, the memory expansion option in slot C
6. An adapter for the fixed-disk and diskette drive
7. The power supply.

Step 24

The following FRUs are the most likely to cause a failure in the fixed-disk and diskette drives.

Exchange the FRUs that have not been exchanged in the following order. Test each FRU by running System Checkout. If you identify a failing FRU, use the removal and replacement procedures in the section that applies to the FRU and exchange it; then go to "Step 28" on page 3-0060-30. If you cannot identify a failing FRU, contact your service support person.

Exchange the following FRUs in the order listed:

1. An adapter for the fixed-disk and diskette drives
2. The cables for the fixed-disk and diskette drive
3. The IBM High Capacity Diskette Drive
4. The system board
5. The processor board
6. The power supply
7. The display adapter
8. If installed, the memory expansion option in slot C.

Step 25

The following FRUs are the most likely to cause a keyboard failure.

Exchange the FRUs that have not been exchanged in the following order. Test each FRU by running System Checkout. If you identify a failing FRU, use the removal and replacement procedures in the section that applies to the FRU and exchange it; then go to "Step 28" on page 3-0060-30. If you cannot identify a failing FRU, contact your service support person.

Exchange the following FRUs in the order listed:

1. The keyboard
2. The system board
3. The processor board
4. The power supply
5. The display adapter
6. An adapter for the fixed-disk and diskette drive
7. If installed, the memory expansion option in slot C.

Step 26

The following FRUs are also likely to cause a failure.

Exchange the FRUs that have not been exchanged in the following order. Test each FRU by running System Checkout. If you identify a failing FRU, use the removal and replacement procedures in the section that applies to the FRU and exchange it. Go to "Step 28" on page 3-0060-30. If you cannot identify a failing FRU, contact your service support person.

Exchange the following FRUs in the order listed:

1. The system board
2. The processor board
3. If installed, the memory expansion option in slot C
4. An adapter for the fixed-disk and diskette drive
5. The display adapter
6. The power supply.

Step 27

Find the failing area in the table below; then do the action listed. Test each FRU by running the failing procedure. If you identify the failing FRU, go to "Step 28" on page 3-0060-30. If you cannot identify a failing FRU, contact your service support person.

Failing Area	Action
Option	Exchange the option.
Adapter	Exchange the adapter.
Fixed-disk drive or diskette drive	<ol style="list-style-type: none">1. Exchange the drive.2. Exchange the adapter.
IBM 6156	<ol style="list-style-type: none">1. Exchange the fixed-disk drive.2. Exchange the fixed-disk drive module.3. Exchange the enclosure.
IBM 6157	<ol style="list-style-type: none">1. Exchange the tape drive.2. Exchange the tape drive adapter.
RT PC 6192	Go to "IBM RT PC 6192 Expansion Unit PIC 0100" on page 3-0100-1.
Other devices	<ol style="list-style-type: none">1. Exchange the adapter.2. Exchange or repair the device.

Step 28

1. Look at the type and slot positions you recorded, and install the boards and adapters you removed.
 2. Unplug the external power cable from the outlet.
 3. If disconnected, connect all attached devices (such as expansion unit).
 4. Install the top cover. If needed see Section 4.
 5. Set the power switch on the system unit to On.
 6. Follow the instructions on the menus to run the System Checkout. The TEST OPTION and the DIAGNOSTIC TEST LIST menu will display if the configuration was changed. Follow the instructions as they display. If needed, see page 2-17.
-

WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

- NO** If the same failure occurs, contact your service support person, otherwise, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.
- YES** This completes the repair.

Application Only Problems PIC 0080

Use this PIC to find problems that fail only when an application program is running and the diagnostic programs run without a failure.

Step 1

The AIX™ Operating System provides an error logging function.

IS THE CUSTOMER USING THE “AIX OPERATING SYSTEM”?

NO Go to “Step 8” on page 3-0080-8.

YES Continue on the next page.

AIX is a trademark of International Business Machines Corporation.

Step 2

1. Record the time.
2. Ask the operator to load the operating system and turn on the Error Log. The command to turn on the Error Log is:

/usr/lib/errdemon

3. Ask the operator to run the failing application program.
4. After a failure occurs, ask the operator to print a Summary Report of the permanent errors starting at the time you recorded. The command is (where MMddhhmmyy is month, day, hour, minute, year):

errpt -d t01 -sMMddhhmmyy | print

5. Look at the printed error log. If needed, see Appendix C.
-

ARE THERE ANY ERRORS LISTED?

NO Go to "Step 8" on page 3-0080-8.

YES Continue on the next page.

Step 3

Look at the printed Summary Report.

ARE THERE ANY HARDWARE ERRORS LISTED?

NO Have the customer follow the procedures for reporting the types of errors listed.

YES Continue on the next page.

Step 4

Ask the operator to print a Detail Report for the hardware errors listed. The command is (where MMddhhmmyy is month, day, hour, minute, year):

```
errpt -a -d t01 -d h00 -sMMddhhmmyy | print
```

ARE THE HARDWARE ERRORS RELATED TO THE HARDWARE YOU SERVICE?

- NO** Have the customer follow the procedures for resolving the problems listed.
- YES** Continue on the next page.

Step 5

1. Record the SRNs for the errors that are related to the hardware you service.
 2. Look up the FRUs that correspond to the SRAs in each SRN.
 3. Use the removal and replacement procedures in the section that applies to the FRU and exchange the FRU that corresponds to the first SRA in the SRN.
 4. Ask the customer to run the failing application again.
-

DID THE SAME FAILURE OCCUR?

NO This completes the repair.

YES Continue on the next page.

Step 6

One of the FRUs that correspond to the SRAs in the SRN should fix the problem.

4. Write the Service Request Number here:

13 - _ _ _ - _ _ _ - _ _ _ - _ _ _ - _ _ _

AJZB179

**HAVE YOU EXCHANGED ALL OF THE FRUs THAT
CORRESPOND TO THE SRAs IN EACH SRN?**

YES Contact your service support person.

NO Continue on the next page.

Step 7

1. Remove the last FRU you exchanged.
 2. Install the original FRU.
 3. Use the removal and replacement procedures in the section that applies to the FRU and exchange the FRU that corresponds to the next SRA in the SRN.
 4. Ask the customer to run the failing application again.
-

DID THE SAME FAILURE OCCUR?

YES Go to "Step 6" on page 3-0080-6.

NO This completes the repair.

Step 8

The failure is not being detected by the diagnostic programs or the error log. The problem may be in the software.

DO YOU SUSPECT A SOFTWARE PROBLEM?

- YES** Have the customer follow the procedures for software problems.
- NO** Continue on the next page.

Step 9

The following is a list of devices and the most likely failing FRUs for each device:

Diskette	The adapter for the fixed-disk and diskette drives, the diskette drive, the diskette
Fixed disk	The adapter for the fixed-disk and diskette drives, the fixed-disk drive
Printer	The printer adapter, the printer, the printer cable
Plotter	The plotter adapter, the plotter, the plotter cable
Terminal	The terminal adapter, the terminal, the terminal cable
Modem	The adapter the modem is attached to, the modem, the modem cable
Coprocessor	The IBM AT® Coprocessor Option, the IBM AT Math Co-processor module, the IBM AT 512KB Memory Expansion Option
Display	The display adapter, the display, the display cable
Keyboard	The keyboard, the system board
Mouse	The mouse, the system board
Tape	The tape drive adapter, the tape drive, the tape cartridge.

In addition to the above FRUs, the following common FRUs can also cause a problem:

- System board
- Processor board
- Memory expansion option
- Floating-point board
- Power supply.

Step 9 continues on the next page.

AT is a registered trademark of International Business Machines Corporation.

(Step 9 continued)

1. Find the device that best describes your failure in the lists on the previous page.
 2. Record the FRUs listed for that device and the common FRUs that are installed in your system.
 3. Replace one of the FRUs.
 4. Ask the customer to run the failing application program again.
-

DID THE SAME FAILURE OCCUR?

NO This completes the repair.

YES Continue on the next page.

Step 10

1. Remove the last FRU you exchanged.
 2. Install the original FRU.
-

**HAVE ALL THE FRUs YOU RECORDED BEEN
EXCHANGED?**

- YES** Contact your service support person.
- NO** Continue on the next page.

Step 11

1. Exchange the next FRU on your list.
 2. Ask the customer to run the failing application program again.
-

DID THE SAME FAILURE OCCUR?

- YES** Go to "Step 10" on page 3-0080-11.
- NO** This completes the repair.

Intermittent Problems PIC 0090

Use this PIC for intermittent problems that do not fail while running the diagnostic routines.

Step 1

Some problems occur every time an application program is running.

DOES THE PROBLEM OCCUR EVERY TIME AN APPLICATION PROGRAM IS RUNNING?

YES Go to "Application Only Problems PIC 0080" on page 3-0080-1.

NO Continue on the next page.

Step 2

The AIX Operating System provides error logging.

**IS THE CUSTOMER USING THE “AIX OPERATING
SYSTEM”?**

NO Go to “Step 9” on page 3-0090-9.

YES Continue on the next page.

Step 3

1. Ask the operator when the error last occurred.
2. Ask the operator to login on the AIX Operating System.
3. Ask the operator to print a Summary Report of all permanent errors starting about an hour before the reported error occurred. The command is (where MMddhhmmyy is month, day, hour, minute, year):

errpt -d t01,t04 -sMMddhhmmyy | print

4. Check the log for errors. If needed, see Appendix C.
-

ARE ANY ERRORS RECORDED?

NO No trouble was found. Ask the operator to run the system with the error log turned on so that if any errors are detected they will be recorded.

YES Continue on the next page.

Step 4

Look at the printed Error Summary report.

ARE THERE ANY HARDWARE ERRORS LISTED?

NO Ask the customer to follow the procedure for resolving the types of errors listed.

YES Continue on the next page.

Step 5

Ask the operator to print a Detail Report of the hardware errors listed. The command is (where MMddhhmmyy is month, day, hour, minute, year):

```
errpt -a -d t01 -d h00 -sMMddhhmmyy | print
```

ARE THE HARDWARE ERRORS RELATED TO THE HARDWARE YOU SERVICE?

- NO** Ask the customer to follow the procedure for resolving the type of errors listed.
- YES** Continue on the next page.

Step 6

1. Record the SRNs for the errors that are related to the hardware you service.
 2. Look up the FRUs that correspond to the SRAs in each SRN.
 3. The FRUs are listed in the most likely to fail order.
 4. Exchange the FRUs one at a time. Check the fix by asking the customer to run the failing application program again.
-

DID THE SAME FAILURE OCCUR?

- NO** This completes the repair.
- YES** Continue on the next page.

Step 7

One of the FRUs that correspond to the SRAs in the SRN should fix the problem.

4. Write the Service Request Number here:

13 - _____ - _____ - _____ - _____

AJZB179

**HAVE YOU EXCHANGED ALL OF THE FRUs THAT
CORRESPOND TO THE SRAs IN EACH SRN?**

YES Contact your service support person.

NO Continue on the next page.

Step 8

1. Remove the last FRU you exchanged.
 2. Install the original FRU.
 3. Exchange the FRU that corresponds to the next SRA in the SRN.
 4. Ask the customer to run the failing application again.
-

DID THE SAME FAILURE OCCUR?

YES Go to "Step 7" on page 3-0090-7.

NO This completes the repair.

Step 9

The diagnostics can be run in loop mode by selecting the Run Test Multiple Times option in the TEST METHOD SELECTION menu. Run the diagnostics in loop mode for several minutes on each device you think is failing.

DID THE DIAGNOSTICS FIND A PROBLEM?

YES Do the following steps:

1. Record the name of the FRU for each SRA in the SRN. The FRUs are listed in the most likely to fail order.
2. Exchange each FRU one at a time. Check each FRU by running the diagnostics in loop mode for several minutes.

NO No trouble was found. If you still have a problem, contact your service support person.

IBM RT PC 6192 Expansion Unit PIC 0100

Use this PIC to isolate failures to FRUs in the IBM RT PC 6192 Expansion Unit.

Step 1

The failure is in one of the following:

- The IBM RT PC 6192 Expansion Unit
- The IBM RT PC Expansion Unit Adapter
- The RT PC Expansion Unit Cable
- An adapter installed in the RT PC 6192.

DIAG-1

The System Checkout Option will test all functions that do not require you to do anything. The other options allow you to test only that option.

An * in front of the ID shows that the test has been run.

Choose the test you would like to run.

ID ITEM

- *1 System Checkout
- 2 Keyboard Checkout
- 3 Display Checkout

**WAS THE FAILING PROCEDURE SELECTED FROM THE
ADVANCED DIAGNOSTIC SELECTION MENU?**

NO Go to "Step 5" on page 3-0100-5.

YES Continue on the next page.

Step 2

The following question refers to the procedure used to detect a failure in the IBM RT PC 6192 Expansion Unit

ADVANCED DIAGNOSTIC SELECTION

DIAG-1

The System Checkout Option will test all functions that do not require you to do anything. The other options allow you to test only that option. An * in front of the ID shows that the test has been run.

Choose the test you would like to run.

ID ITEM

- 2 Keyboard Checkout
- 3 Display Checkout

WAS THE FAILING PROCEDURE THE SYSTEM CHECKOUT?

YES Go to "Step 5" on page 3-0100-5.

NO Continue on the next page.

Step 3

Run the System Checkout using the ADVANCED DIAGNOSTIC SELECTION menu.

TESTING COMPLETE	DIAG-2
Press Enter to continue.	

WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

YES Except for the adapters required to run the failing procedure, remove all of the adapters from slots 1 through 6 in the RT PC 6192.

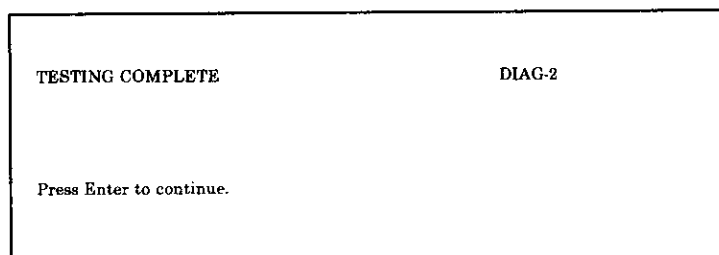
Note: Be sure to use the Adapter Removal procedure in the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service* manual.

Go to "Step 6" on page 3-0100-6.

NO Continue on the next page.

Step 4

1. Set the power switch on the system unit and RT PC 6192 to Off.
 2. Wait 30 seconds; then set the power switch on the system unit to On (leave the RT PC 6192 off).
 3. Run the System Checkout using the ADVANCED DIAGNOSTIC SELECTION menu.
-



WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

YES Remove all of the adapters in slots 1 through 6 in the RT PC 6192.

Note: Be sure to use the Adapter Removal procedure in the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service* manual.

Go to "Step 6" on page 3-0100-6 and use the System Checkout as the failing procedure.

NO Exchange the RT PC Expansion Unit Adapter; then go to "Step 9" on page 3-0100-9.

Step 5

1. Set the power switch on the system unit and RT PC 6192 to Off.
 2. Wait 30 seconds; then set the power switch on the system unit to On (leave the RT PC 6192 off).
 3. Run the failing procedure using the ADVANCED DIAGNOSTIC SELECTION menu.
-

DIAG-2
The Service Request Number is: 13-521-66B
WRITE.....down the above number.
RETURN.....to the Hardware Maintenance and Service Manual.

DID THE PROCEDURE FAIL?

- YES** Exchange the RT PC Expansion Unit Adapter; then go to "Step 9" on page 3-0100-9.
- NO** Remove all of the adapters in slots 1 through 6 in the RT PC 6192.

Note: Be sure to use the Adapter Removal procedure in the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service* manual.

Continue on the next page.

Step 6

1. Set the power switch on the system unit and RT PC 6192 to Off.
 2. Wait 30 seconds; then set the power switch on the system unit to On (leave the RT PC 6192 off).
 3. Run the failing procedure using the ADVANCED DIAGNOSTIC SELECTION menu.
-

DIAG-2
The Service Request Number is: 13-521-66B
WRITE.....down the above number.
RETURN.....to the Hardware Maintenance and Service Manual.

DID THE PROCEDURE FAIL?

- YES** Go to "Step 8" on page 3-0100-8.
- NO** Continue on the next page.

Step 7

One of the adapters you removed from the RT PC 6192 is failing.

Note: Be sure to use the Adapter Removal procedure in the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service manual*.

1. Install one of the adapters you removed into the RT PC 6192.
 2. Run the failing procedure using the ADVANCED DIAGNOSTIC SELECTION menu.
-

DIAG-2
The Service Request Number is: 13-521-66B
WRITE.....down the above number.
RETURN.....to the Hardware Maintenance and Service Manual.

DID THE PROCEDURE FAIL?

- YES** The last FRU you installed is failing. Exchange it then go to "Step 9" on page 3-0100-9.
- NO** Repeat this step. If all adapters are installed, go to "Step 9" on page 3-0100-9.

Step 8

One of the following FRUs is failing:

- The Receiver Card
- The RT PC 6192 Expansion Board
- The RT PC Expansion Unit Cable
- The RT PC Expansion Unit Adapter (in the system unit).

Do the following to isolate the failing FRU.

1. In the order listed, exchange one of the FRUs above.
2. Run the failing procedure using the **ADVANCED DIAGNOSTIC SELECTION** menu.

DIAG-2
The Service Request Number is: 13-521-66B
WRITE.....down the above number.
RETURN.....to the Hardware Maintenance and Service Manual.

DID THE PROCEDURE FAIL?

NO The last FRU you installed was defective. Continue on the next page.

YES Return the original FRU to the unit; then repeat this step.

Step 9

Note: Be sure to use the Adapter Removal procedure in the *IBM RT PC 6192 Expansion Unit Hardware Maintenance and Service* manual for any adapter installed in the RT PC 6192.

1. Look at the type and slot positions you recorded, and install the boards and adapters you removed.
 2. Install any covers you have removed.
 3. Set the power switch on the RT PC 6192 to On.
 4. Set the power switch on the system unit to On.
 5. Follow the instructions on the menus to run the System Checkout. The TEST OPTION and the DIAGNOSTIC TEST LIST menu will display if the configuration was changed. Follow the instructions as they display. If needed, see page 2-17.
-

WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

NO If the same failure occurs, contact your service support person, otherwise, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.

YES This completes the repair.

Memory Expansion Option PIC 2100

This PIC analyzes the 21x and 37x SRA numbers. The 21x SRA isolates the failure to an option. The 37x SRA isolates the failure to a single memory module. The starting addresses can be used to determine the address range where the failure occurred.

Step 1

Look at your SRN.

4. Write the Service Request Number here:

13 - _____ - _____ - _____ - _____

AJZB177

IS ANY OF THE SRAs "210"?

YES Go to "Step 6" on page 3-2100-7.

NO Continue on the next page.

Step 2

1. Look at the letter in the 21x (x = any letter) SRA, then find the column for that letter in the following tables.
 2. Record the switch settings shown for the letter. Go to "Step 3" on page 3-2100-4.
-

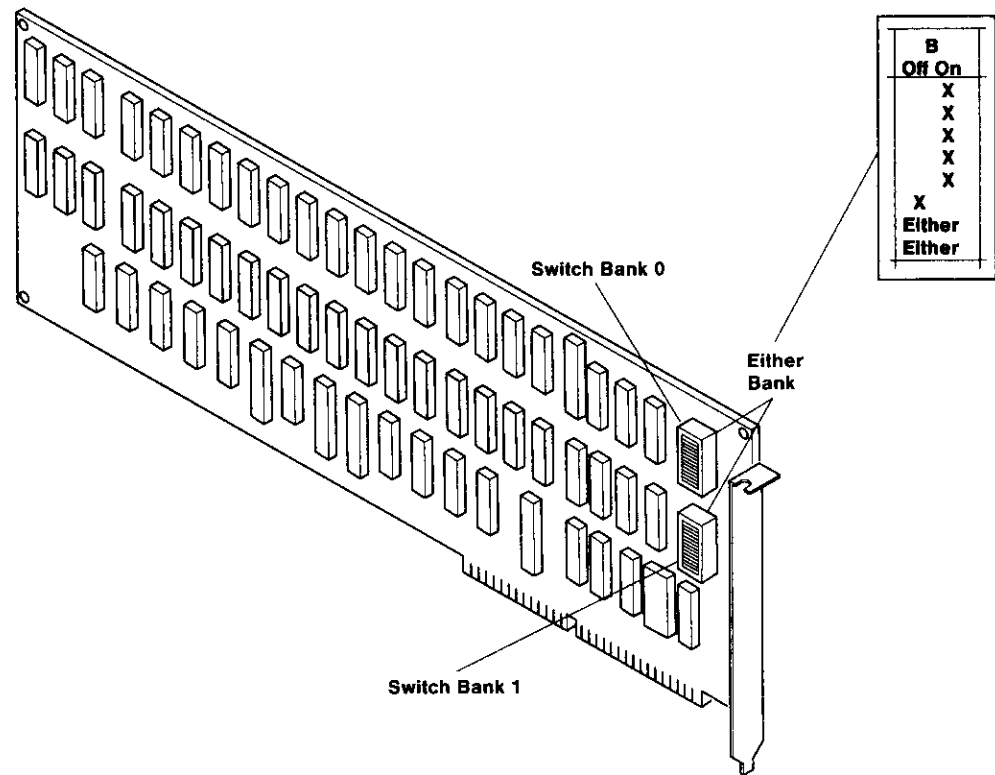
SRA Letter	A	B	C	D	E	F
	Off On	Off On	Off On	Off On	Off On	Off On
Switch 1	X	X	Not	Not	X	X
Switch 2	X	X	valid	valid	X	X
Switch 3	X	X	I/O	I/O	X	X
Switch 4	X	X	memory	memory	X	X
Switch 5	X	X	addresses	addresses	X	X
Switch 6	X	X			X	X
Switch 7	Either	Either			Either	Either
Switch 8	Either	Either			Either	Either
Starting Address of 256K bytes	000000	040000	080000	0C0000	100000	140000

SRA Letter	G		H		I		J		K		L	
	Off	On	Off	On	Off	On	Off	On	Off	On	Off	On
Switch 1		X		X		X		X		X		X
Switch 2		X		X		X		X		X		X
Switch 3		X		X	X		X		X		X	
Switch 4	X		X			X		X		X		X
Switch 5	X		X			X		X		X		X
Switch 6		X	X			X		X		X		X
Switch 7	Either		Either		Either		Either		Either		Either	
Switch 8	Either		Either		Either		Either		Either		Either	
Starting Address of 256K bytes	180000		1C0000		200000		240000		280000		2C0000	

SRA Letter	M		N		O		P	
	Off	On	Off	On	Off	On	Off	On
Switch 1		X		X		X		X
Switch 2		X		X		X		X
Switch 3	X		X		X		X	
Switch 4	X		X		X		X	
Switch 5		X		X		X		X
Switch 6		X	X			X		X
Switch 7	Either		Either		Either		Either	
Switch 8	Either		Either		Either		Either	
Starting Address of 256K bytes	300000		340000		380000		3C0000	

Step 3

Find the IBM AT 512 KB Memory Expansion Option installed in your system unit with *either* Switch Bank 0 or Switch Bank 1 set like you recorded.



AJZB130

Continue on the next page.

Step 4

Look at your SRN.

4. Write the Service Request Number here:

13 - _____ - 21B - _____ - _____

AJZB177

DOES YOUR SRN HAVE A "37x" SRA?

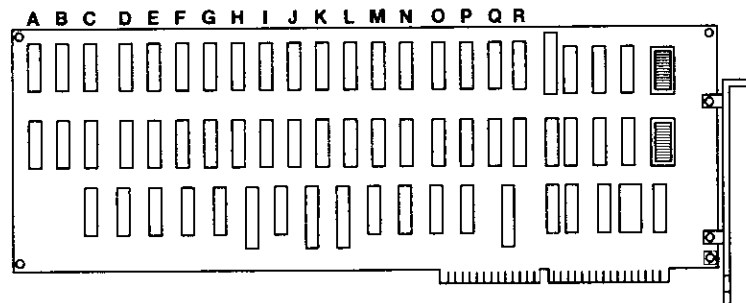
NO Exchange the memory option; then go to "Step 7" on page 3-2100-8

YES Continue on the next page.

Step 5

The letter of the 37x SRA identifies the failing module within a horizontal row of modules. The horizontal row is determined by the switch bank setting that corresponds to the letter in the 21x SRA.

1. Find the switch bank that corresponds to the letter in the 21x SRA.
2. Find the module within the same horizontal row that corresponds to the letter in the 37x SRA.
3. Exchange the module.
4. Run xxK Bytes of IBM AT Memory Checkout. If needed see page 2-17.



AJZB129

DID A FAILURE OCCUR WITH THE SAME SRN?

YES Exchange the IBM AT 512 KB Memory Expansion Option; then go to "Step 7" on page 3-2100-8.

NO Go to "Step 7" on page 3-2100-8.

Step 6

The diagnostic programs were unable to determine the location of the failing IBM AT 512 KB Memory Expansion Option.

1. Exchange one of the IBM AT 512 KB Memory Expansion Options.
2. Run xxK Bytes of IBM AT Memory Checkout. If needed see page 2-17.

Note: If the failing memory expansion option is still installed in the system unit, you will get the TEST OPTION menu. Answer the question on the menu to get an SRN.

TEST OPTION	DIAG-1
The following option was detected previously by the diagnostics, but is now undetected.	
· Option	
Has the option been removed from the system, moved to another location, or turned off?	
<u>ID</u> <u>ITEM</u>	

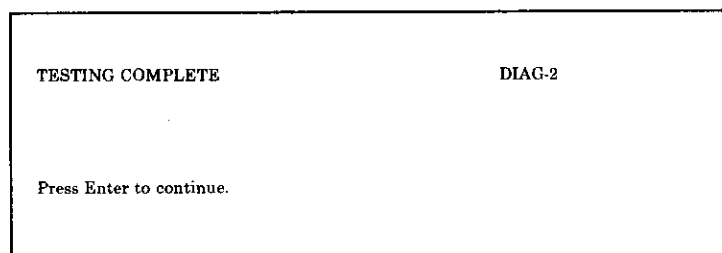
DID YOU GET THE SAME SRN?

YES Repeat the above steps.

NO Continue on the next page.

Step 7

1. Install the top cover. If needed see Section 4.
 2. Run xxK Bytes of IBM AT Memory Checkout. If needed see page 2-17.
-



WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

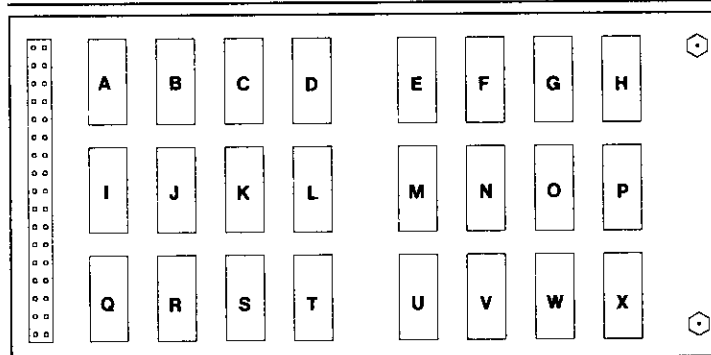
- YES** This completes the repair.
- NO** If the System Checkout resulted in the same SRN that you have been analyzing, go to "Unresolved Problem PIC 0060" on page 3-0060-1 otherwise go to "Problem Determination Procedure PIC 0030" on page 3-0030-1

IBM PC Enhanced Graphics Adapter Memory PIC 4200

This PIC analyzes the 42x and 44x SRA numbers. The letter in the 42x SRA number identifies the slot for the IBM PC Enhanced Graphics Adapter. The letter in the 44x SRA number identifies the failing module on the IBM PC Graphics Memory Expansion Card.

Step 1

1. Find the module that corresponds to the letter in the 44x SRA. Then, use the "Removal and Replacement Procedures" on page 9-042-1 to exchange that module.
2. Run the Display Checkout.



AJZB108

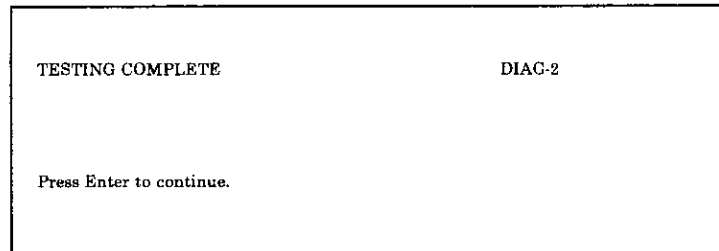
WERE YOU ABLE TO LOAD AND RUN THE REPAIR CHECKOUT AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

YES Go to "Step 4" on page 3-4200-4.

NO If you were unable to select and run the Display Checkout, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1. Otherwise, continue on the next page.

Step 2

1. Use the "Removal and Replacement Procedures" on page 9-042-1, to install the original module on the IBM PC Graphics Memory Expansion Card again, but do not install the card on the IBM PC Enhanced Graphics Adapter.
 2. Install the IBM PC Enhanced Graphics Adapter in the system unit without the IBM PC Graphics Memory Expansion Card.
 3. Run the Display Checkout.
-



WERE YOU ABLE TO LOAD AND RUN THE REPAIR CHECKOUT AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

NO The IBM PC Enhanced Graphics Adapter is failing.

1. Use the "Removal and Replacement Procedures" on page 9-042-1, to exchange the IBM PC Enhanced Graphics Adapter. Be sure to install the IBM PC Graphics Memory Expansion Card on the new adapter.
2. Run the Display Checkout.

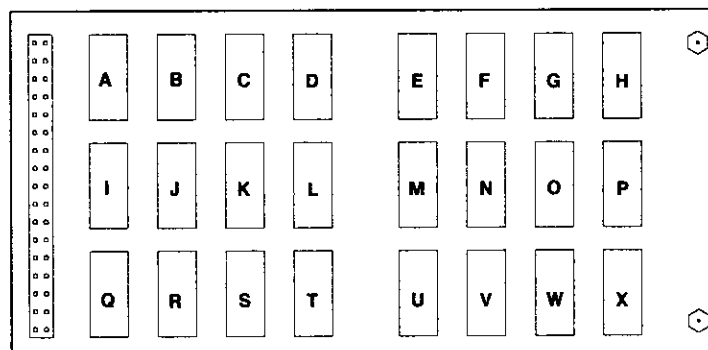
YES Continue on the next page.

Step 3

Exchange the following FRUs to isolate the failure. Check each FRU by running the Display Checkout. Be sure to install the original FRUs in their correct positions if they are not identified as the failing FRU.

1. Exchange the IBM PC Graphics Memory Expansion Card (install the original modules on it).
2. Exchange the modules one at a time or in groups to identify the failing module.
3. Exchange the IBM PC Enhanced Graphics Adapter.

If you still have a problem and the same SRN is displayed, go to "Unresolved Problem PIC 0060" on page 3-0060-1, otherwise go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.



AJZB108

Step 4

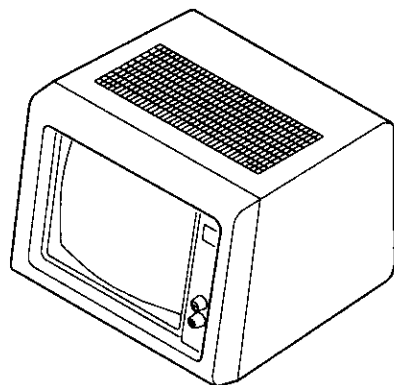
1. Install any FRUs that were removed.
 2. Run the System Checkout.
 3. If you still have a problem, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.
-

IBM 5151 Personal Computer Display PIC 5400

Use this PIC to get an SRN when there is a problem that prevents you from reading the display screen easily, the two-digit display is blank, and the system unit power indicator is on.

Step 1

1. Turn the Brightness and Contrast controls fully clockwise.
2. Look at the display screen.



AJZB193

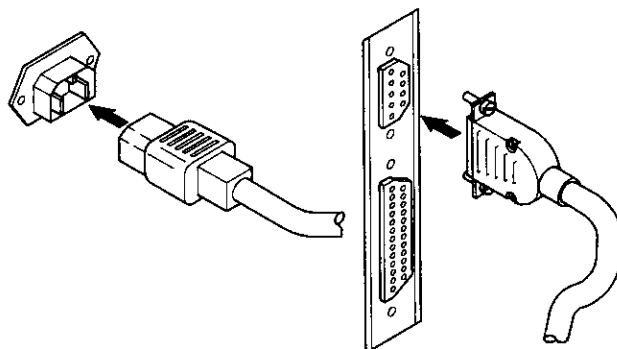
IS THE BACKGROUND OF THE DISPLAY SCREEN LIGHTED?

YES Go to "Step 3" on page 3-5400-3.

NO Continue on the next page.

Step 2

Be sure that both the display power cable and the display signal cable are correctly connected to the system unit.



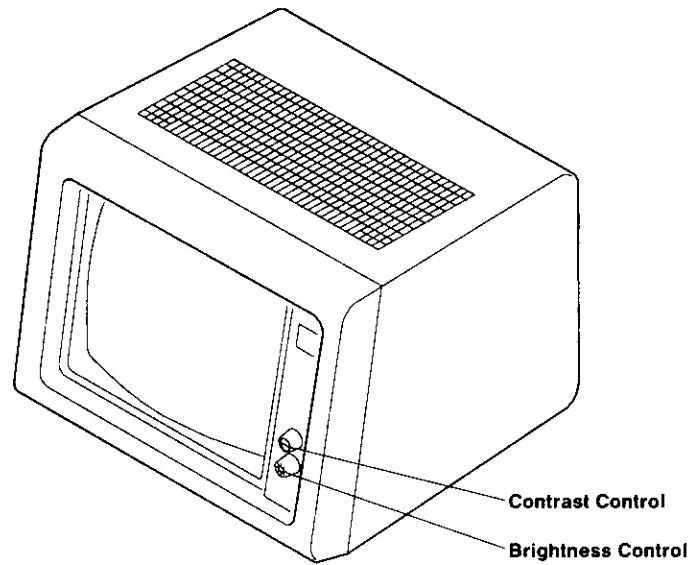
AJZB169

DID YOU FIND A PROBLEM?

- YES** This completes the repair.
- NO** Record SRN 26-540-490; then go to "Step 5" on page 3-5400-5.

Step 3

Try to set the Brightness and Contrast controls to the desired level.



AJZB194

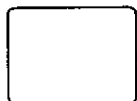
WERE YOU ABLE TO SET THE DISPLAY TO THE DESIRED LEVEL?

NO Record SRN 26-540-490, then go to "Step 5" on page 3-5400-5.

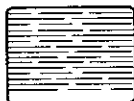
YES Continue on the next page.

Step 4

Look at the display screen.



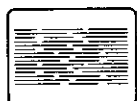
Too Dim



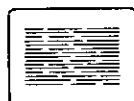
Too Wide



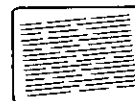
Too Narrow



Too Short



Too Small



Tilted



**Changes Size When
Brightness Control
Turned**



Out of Focus



Rolling

AJZB214

DOES YOUR DISPLAY HAVE A PROBLEM SIMILAR TO ANY OF THE DISPLAY SCREENS ABOVE?

NO Record SRN 26-490-540; then continue on the next page.

YES Record SRN 26-540-490; then continue on the next page.

Step 5

Look at the display adapter your IBM 5151 is attached to. If your IBM 5151 is attached to an IBM PC Enhanced Graphics Adapter, change the 490 SRA number you recorded to 410.

4. Write the Service Request Number here:

13 — — — — —

AJZB179

HAVE YOU PERFORMED THE REPAIR ACTION FOR EACH SRA IN THE SERVICE REQUEST NUMBER USING PIC 0010?

YES Go to "Unresolved Problem PIC 0060" on page 3-0060-1.

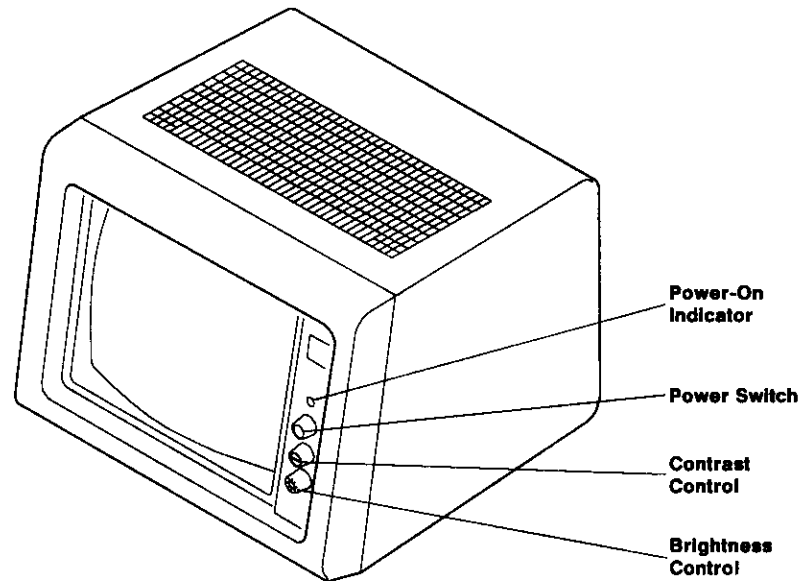
NO Go to "Step 3" on page 3-0010-4 and analyze any new SRAs.

IBM 5154 Enhanced Color Graphics Display PIC 5800

Use this PIC to get an SRN when there is a problem that prevents you from reading the display screen easily, the two-digit display is blank, and the power-on indicator is on.

Step 1

1. Be sure the power switch on the display is set to On.
2. Look at the power-on indicator on the display.



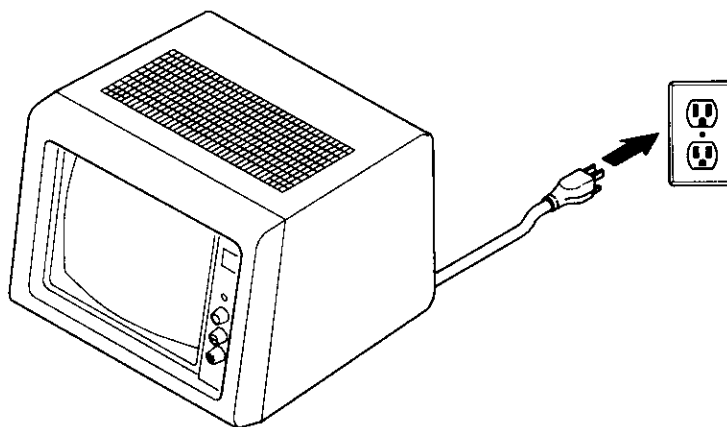
AJZB197

IS THE POWER-ON INDICATOR ON?

- YES** Go to "Step 3" on page 3-5800-3.
- NO** Continue on the next page.

Step 2

Be sure the external power cable to the display is securely plugged into an outlet and the outlet has power.



AJZB198

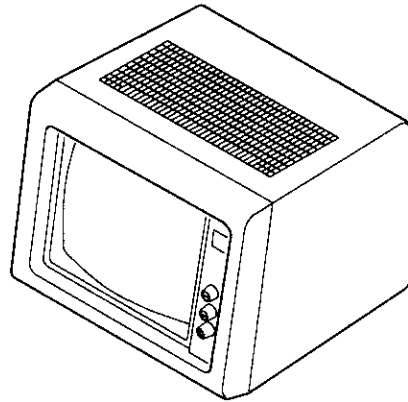
DID YOU FIND A PROBLEM?

YES This completes the repair.

NO Record SRN 26-580; then go to "Step 7" on page 3-5800-7.

Step 3

1. Set the power switch on the system unit to Off.
 2. Turn the Brightness control fully clockwise.
 3. Wait 1 minute; then answer the following question.
-



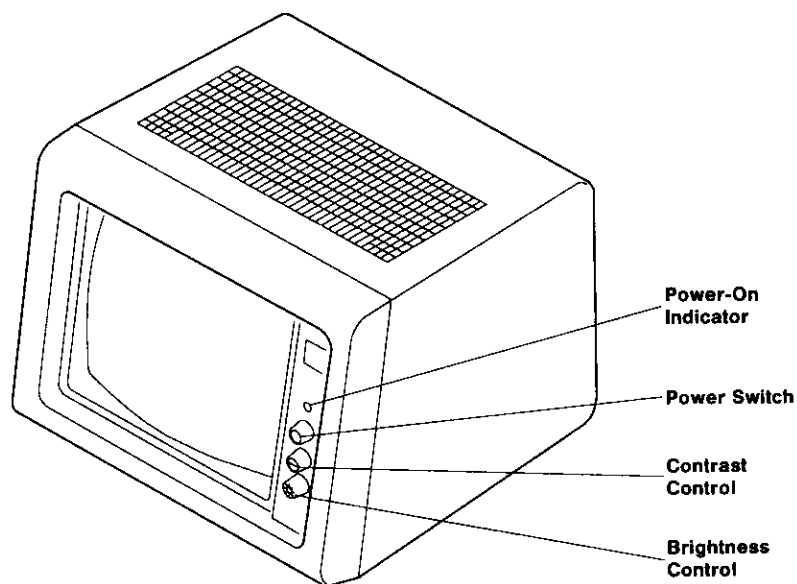
AJZB196

IS THE DISPLAY SCREEN COMPLETELY LIGHTED?

- NO** Record SRN 26-580; then go to "Step 7" on page 3-5800-7.
- YES** Continue on the next page.

Step 4

Turn the Brightness Control fully counter clockwise.



AJZB197

IS THE SCREEN DARK?

NO Record SRN 26-580; then go to "Step 7" on page 3-5800-7.

YES Continue on the next page.

Step 5

1. Set the power switch on the system unit to On.
2. Wait 4 minutes or until the OPERATING INSTRUCTIONS display.
3. Adjust the Brightness Control to the desired level.
4. Look at the display screen.



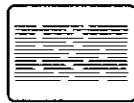
Too Dim



Too Wide



Too Narrow



Too Short



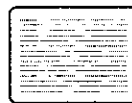
Too Small



Tilted



**Changes Size When
Brightness Control
Turned**



Out of Focus



Rolling

AJZB214

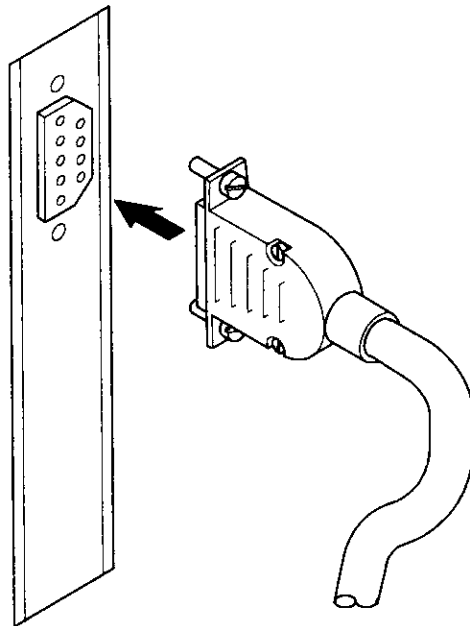
DOES YOUR DISPLAY HAVE A PROBLEM SIMILAR TO ANY OF THE DISPLAY SCREENS ABOVE?

YES Record SRN 26-580-410; then go to the next page.

NO Continue on the next page.

Step 6

Be sure the display signal cable is securely plugged into the display adapter.



AJZB170

IS THE DISPLAY SIGNAL CABLE SECURELY PLUGGED INTO THE DISPLAY ADAPTER?

- YES** Record SRN 16-410-580; then go to the next page.
- NO** This completes the repair.

Step 7

You may have already analyzed all the SRAs in the SRN using PIC 0010.

4. Write the Service Request Number here:

13 - _____ - _____ - _____ - _____

AJZB179

HAVE YOU PERFORMED THE REPAIR ACTION FOR EACH SRA IN THE SERVICE REQUEST NUMBER USING PIC 0010?

YES Go to "Unresolved Problem PIC 0060" on page 3-0060-1.

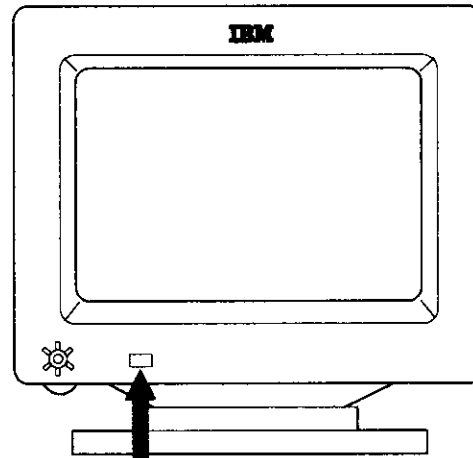
NO Go to "Step 3" on page 3-0010-4 and analyze any new SRAs.

IBM 6154 Advanced Color Display PIC 5900

Use this PIC to get an SRN when there is a problem that prevents you from reading the display screen easily, the two-digit display is blank, and the power-on indicator is on.

Step 1

Be sure the Power On and Brightness Control is set to On.



AJZB205

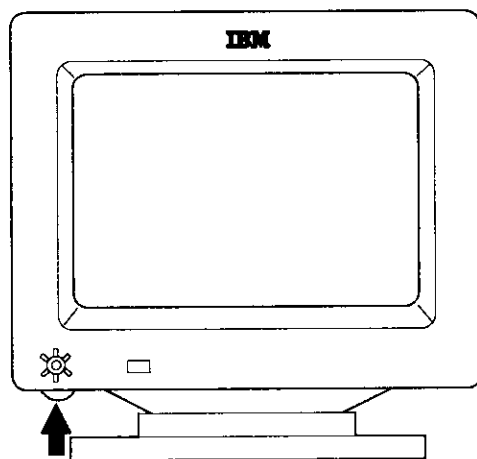
IS THE DISPLAY POWER-ON INDICATOR ON?

NO Go to "Step 4" on page 3-5900-4.

YES Continue on the next page.

Step 2

1. Set the power switch on the system unit to Off.
 2. If attached, set the power switch on the RT PC 6192 to Off.
 3. Turn the Power On and Brightness Control fully clockwise.
 4. Wait about 1 minute.
-



AJZB204

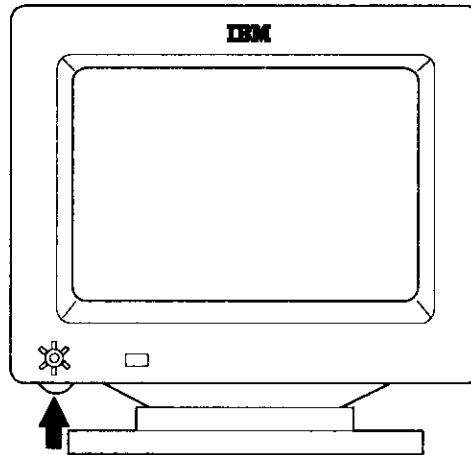
IS THE SCREEN COMPLETELY LIGHTED EXCEPT FOR THE BORDER?

NO Record SRN 26-590; then go to "Step 7" on page 3-5900-7.

YES Continue on the next page.

Step 3

1. Set the power switch on the system unit to On.
 2. If attached, set the power switch on the RT PC 6192 to On.
 3. Wait about 4 minutes.
 4. Try to set the Power On and Brightness Control to the desired level; then answer the following question.
-



AJZB204

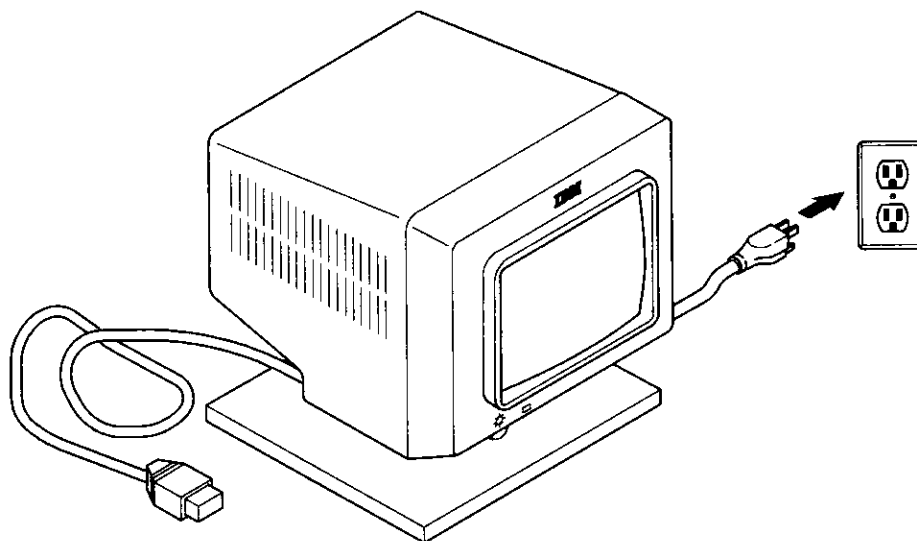
WERE YOU ABLE TO ADJUST THE BRIGHTNESS CONTROL TO THE DESIRED LEVEL?

YES Go to "Step 5" on page 3-5900-5.

NO Record SRN 26-590-450, then go to "Step 7" on page 3-5900-7.

Step 4

Be sure that the display power cable is correctly connected to an outlet and that the outlet has power.



AJZB206

DID YOU FIND A PROBLEM?

YES This completes the repair.

NO Record SRN 26-590; then go to "Step 7" on page 3-5900-7.

Step 5

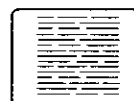
Look at the display screen.



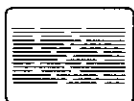
Too Dim



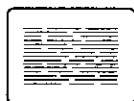
Too Wide



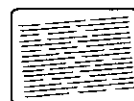
Too Narrow



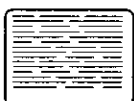
Too Short



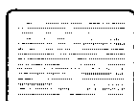
Too Small



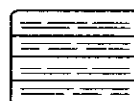
Tilted



**Changes Size When
Brightness Control
Turned**



Out of Focus



Rolling

AJZB214

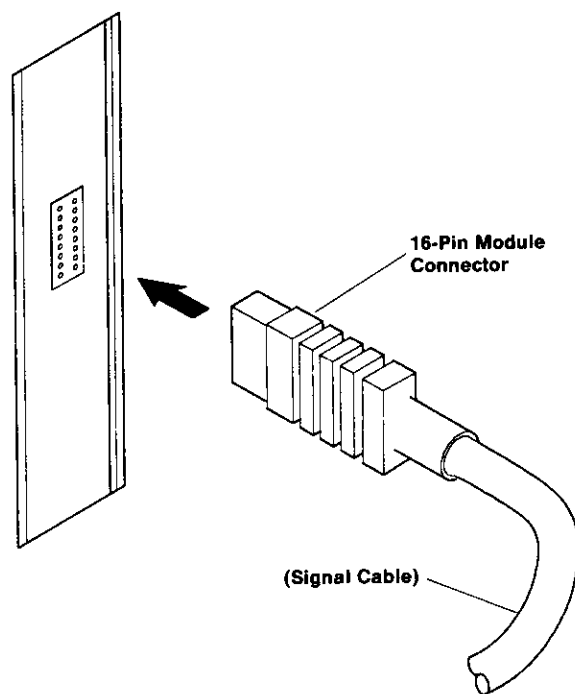
DOES YOUR DISPLAY HAVE A PROBLEM SIMILAR TO ANY OF THE DISPLAY SCREENS ABOVE?

YES Record SRN 26-590-450; then go to "Step 7" on page 3-5900-7.

NO Continue on the next page.

Step 6

Be sure the display signal cable is securely plugged into the display adapter.



AJZB171

IS THE DISPLAY SIGNAL CABLE SECURELY PLUGGED INTO THE DISPLAY ADAPTER?

YES Record SRN 16-450-590; then go to the next page.

NO This completes the repair.

Step 7

You may have already analyzed all the SRAs in the SRN using PIC 0010.

4. Write the Service Request Number here:

13 - - - - -

AJZB179

HAVE YOU PERFORMED THE REPAIR ACTION FOR EACH SRA IN THE SERVICE REQUEST NUMBER USING PIC 0010?

YES Go to "Unresolved Problem PIC 0060" on page 3-0060-1.

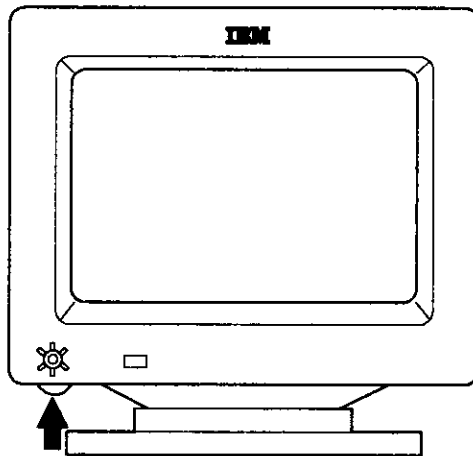
NO Go to "Step 3" on page 3-0010-4 and analyze any new SRAs.

IBM 6153 Advanced Monochrome Graphics Display PIC 6000

Use this PIC to get an SRN when there is a problem that prevents you from reading the display screen easily, the two-digit display is blank, and the power-on indicator is on.

Step 1

Turn the Brightness and Raster Test control fully clockwise until it clicks into the *raster test* position.



AJZB204

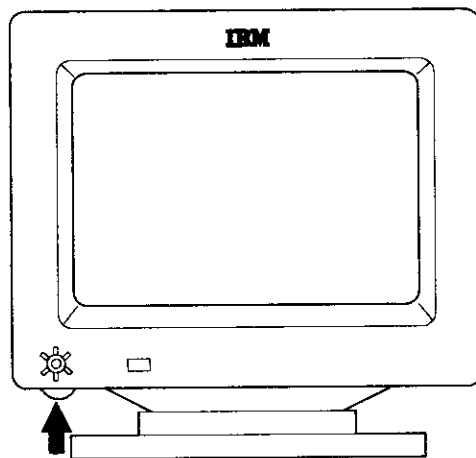
IS THE DISPLAY SCREEN COMPLETELY LIGHTED?

NO Go to "Step 3" on page 3-6000-3.

YES Continue on the next page.

Step 2

Try to set the Brightness and Raster Test control to the desired level.



AJZB204

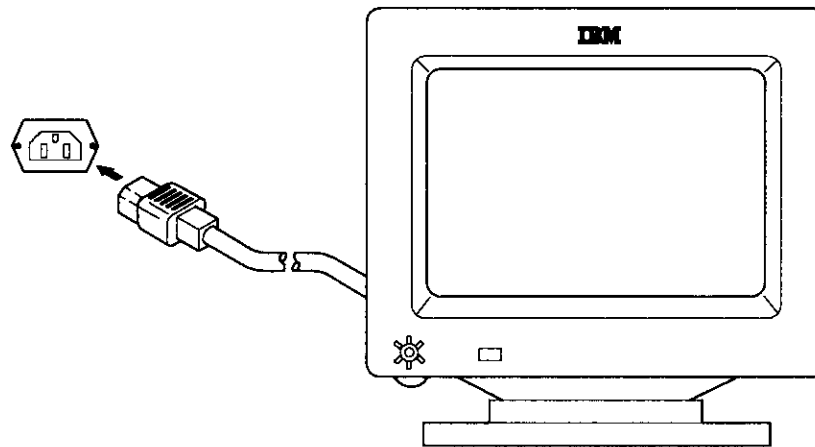
WERE YOU ABLE TO SET THE BRIGHTNESS CONTROL TO THE DESIRED LEVEL?

NO Record SRN 26-600-430; then go to "Step 6" on page 3-6000-6.

YES Go to "Step 4" on page 3-6000-4.

Step 3

Be sure that the display power cable is correctly connected to the system unit.



AJZB202

DID YOU FIND A PROBLEM?

YES This completes the repair.

NO Record SRN 26-600; then go to "Step 6" on page 3-6000-6.

Step 4

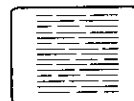
Look at the display screen.



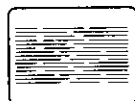
Too Dim



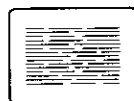
Too Wide



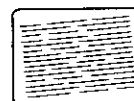
Too Narrow



Too Short



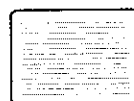
Too Small



Tilted



**Changes Size When
Brightness Control
Turned**



Out of Focus



Rolling

AJZB214

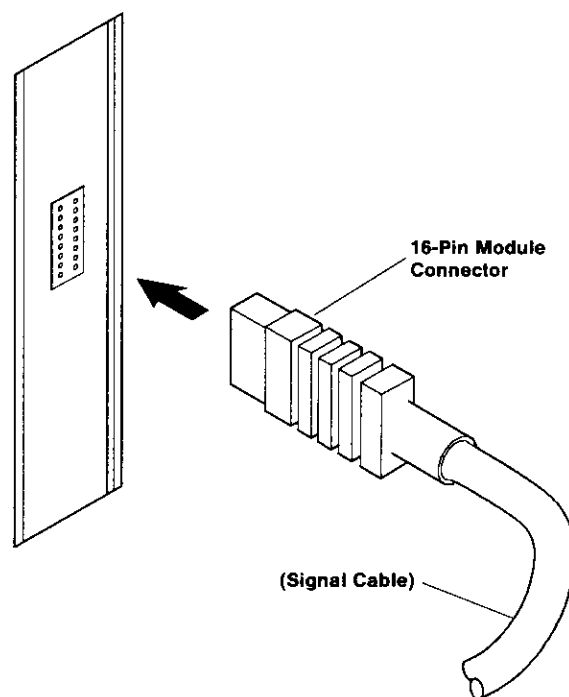
DOES YOUR DISPLAY HAVE A PROBLEM SIMILAR TO ANY OF THE DISPLAY SCREENS ABOVE?

YES Record SRN 26-600-430; then go to "Step 6" on page 3-6000-6.

NO Continue on the next page.

Step 5

Be sure the display signal cable is securely plugged into the display adapter.



AJZB171

IS THE DISPLAY SIGNAL CABLE SECURELY PLUGGED INTO THE DISPLAY ADAPTER?

- YES** Record SRN 16-430-600; then go to “Step 6” on page 3-6000-6.
- NO** This completes the repair.

Step 6

You may have already analyzed all the SRAs in the SRN using PIC 0010.

4. Write the Service Request Number here:

13 — — — — —

AJZB179

HAVE YOU PERFORMED THE REPAIR ACTION FOR EACH SRA IN THE SERVICE REQUEST NUMBER USING PIC 0010?

YES Go to "Unresolved Problem PIC 0060" on page 3-0060-1.

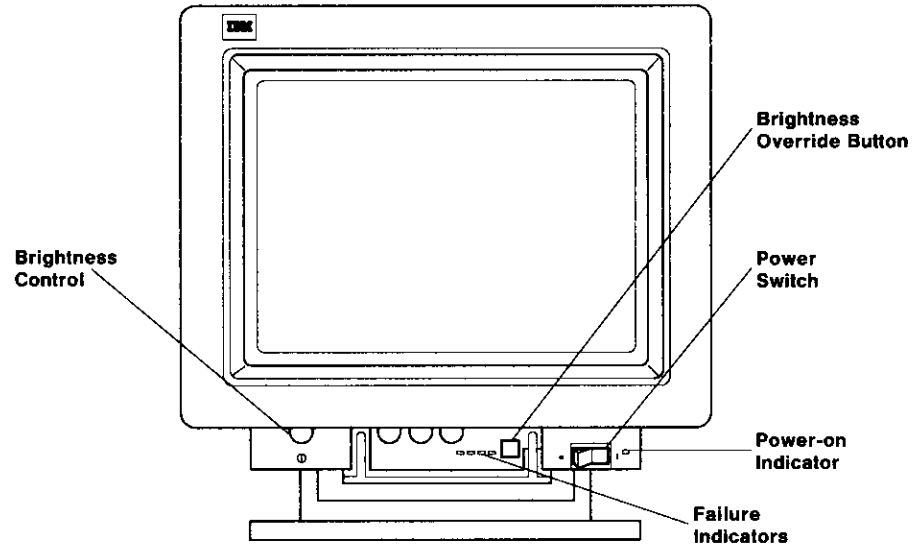
NO Go to "Step 3" on page 3-0010-4 and analyze any new SRAs.

IBM 5081 Display PIC 6100

Use this PIC to get an SRN when there is a problem that prevents you from reading the display screen easily, the two-digit display is blank, and the power-on indicator is on.

Step 1

1. Be sure the power switch on the IBM 5081 is set to On.
2. Look at the power-on indicator on the IBM 5081.



AJZB211

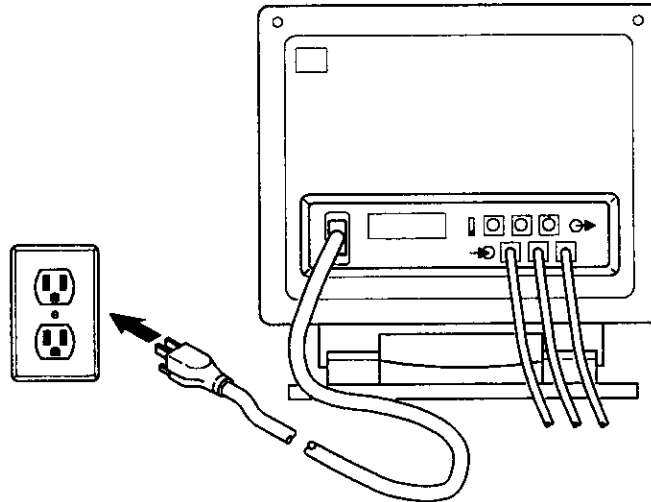
IS THE DISPLAY POWER-ON INDICATOR ON?

YES Go to "Step 3" on page 3-6100-3.

NO Continue on the next page.

Step 2

Be sure the display power cable is connected to the IBM 5081 and to an outlet. Be sure that the outlet has power.



AJZB212

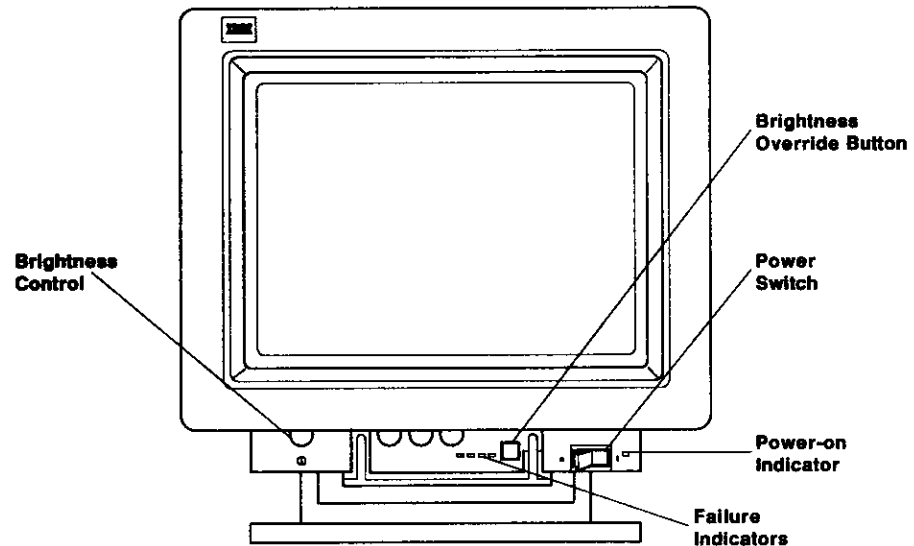
DID YOU FIND A PROBLEM?

YES This completes the repair.

NO Record SRN 26-610; then go to "Step 9" on page 3-6100-9.

Step 3

1. Open the customer access door.
 2. Look at the four red failure indicators.
-



AJZB211

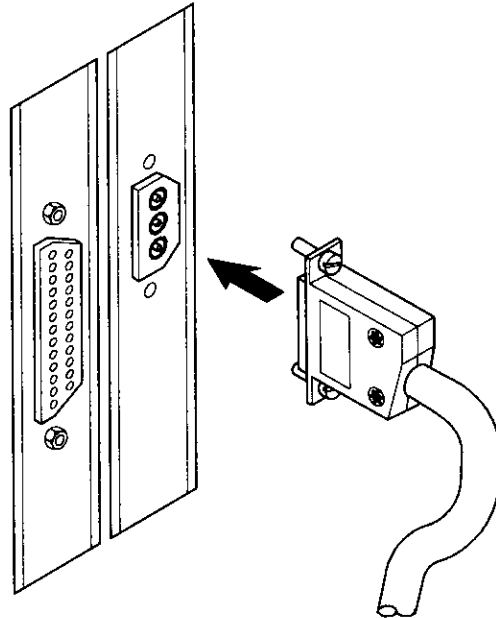
ARE ANY OF THE FOUR RED FAILURE INDICATORS ON?

YES Record SRN 26-610; then go to "Step 9" on page 3-6100-9.

NO Continue on the next page.

Step 4

Be sure the display signal cable is securely plugged into the display adapter.



AJZB245

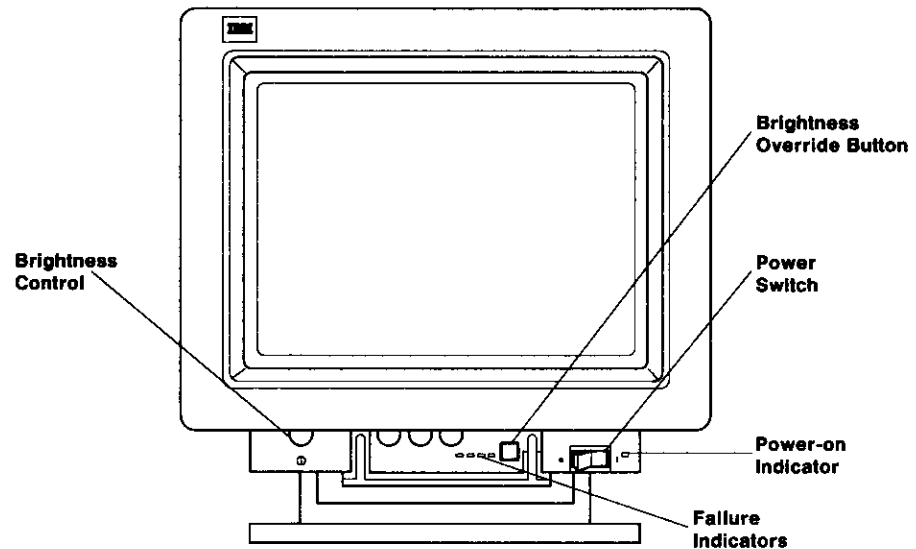
**IS THE DISPLAY SIGNAL CABLE SECURELY PLUGGED
INTO THE DISPLAY ADAPTER?**

NO This completes the repair.

YES Continue on the next page.

Step 5

1. Turn the Brightness Control fully clockwise.
 2. Press and hold the Brightness Override Button while answering the following question.
-



AJZB211

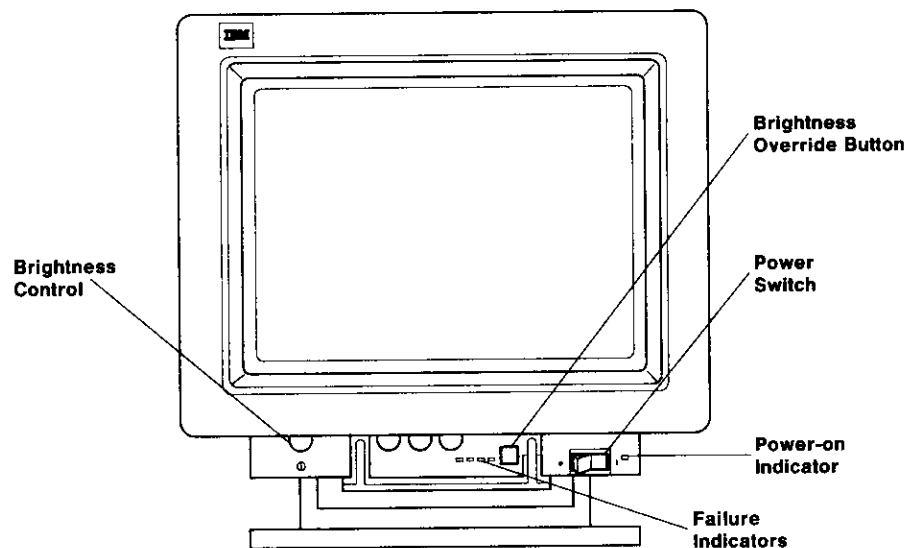
IS THE DISPLAY SCREEN LIGHTED?

NO Record SRN 26-610; then go to "Step 9" on page 3-6100-9.

YES Continue on the next page.

Step 6

Release the Brightness Override Button; then look at the display.



AJZB211

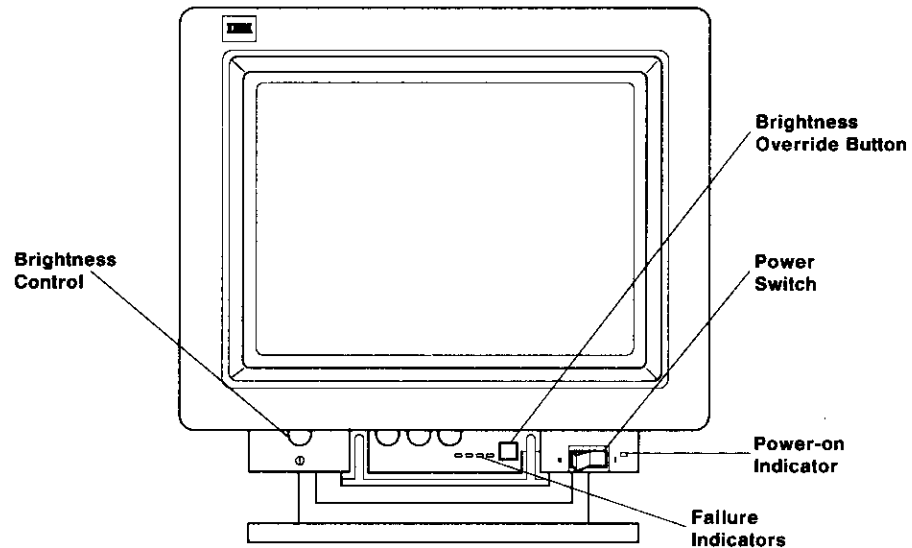
IS ANYTHING DISPLAYED ON THE SCREEN (such as; text, raster, lighted background)?

NO Record SRN 26-4B0-4A0-610; then go to "Step 9" on page 3-6100-9.

YES Continue on the next page.

Step 7

Try to set the Brightness Control to the desired level before answering the following question.



AJZB211

WERE YOU ABLE TO SET THE BRIGHTNESS CONTROL TO THE DESIRED LEVEL?

NO Record SRN 26-610; then go to "Step 9" on page 3-6100-9.

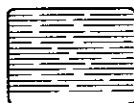
YES Continue on the next page.

Step 8

Look at the display to answer the following question.



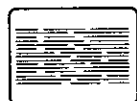
Too Dim



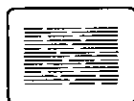
Too Wide



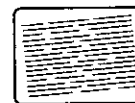
Too Narrow



Too Short



Too Small



Tilted



**Changes Size When
Brightness Control
Turned**

AJZB253

DOES YOUR DISPLAY HAVE A PROBLEM SIMILAR TO ANY OF THE DISPLAY SCREENS ABOVE OR HAS IT LOST A PRIMARY COLOR?

YES Record SRN 26-610-4B0; then go to the next page.

NO Record SRN 26-4B0-4A0-610; then go to the next page.

Step 9

You may have already analyzed all the SRAs in the SRN using PIC 0010.

4. Write the Service Request Number here:

13 - _____ - _____ - _____ - _____

AJZB179

HAVE YOU PERFORMED THE REPAIR ACTION FOR EACH SRA IN THE SERVICE REQUEST NUMBER USING PIC 0010?

YES Go to "Unresolved Problem PIC 0060" on page 3-0060-1.

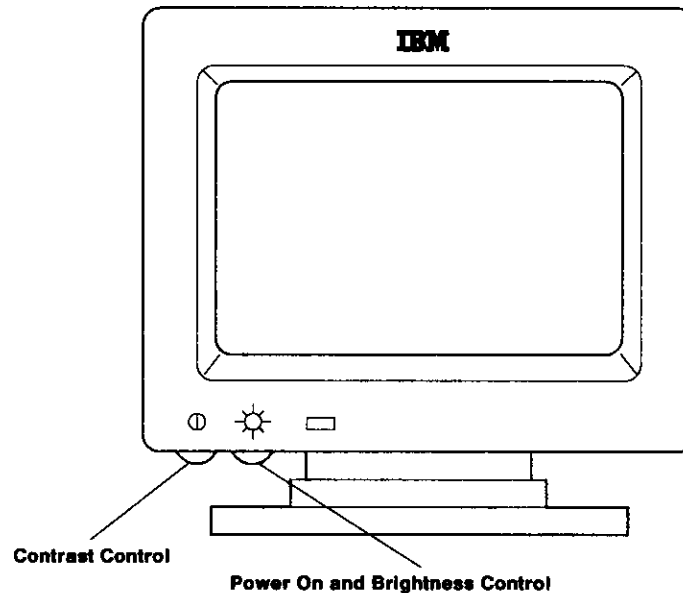
NO Go to "Step 3" on page 3-0010-4 and analyze any new SRAs.

IBM 6155 Extended Monochrome Graphics Display PIC 6200

Use this PIC to get an SRN when there is a problem that prevents you from reading the display screen easily, the two-digit display is blank, and the power-on indicator is on.

Step 1

Be sure the Power On and Brightness Control is set to On.



AJZB208

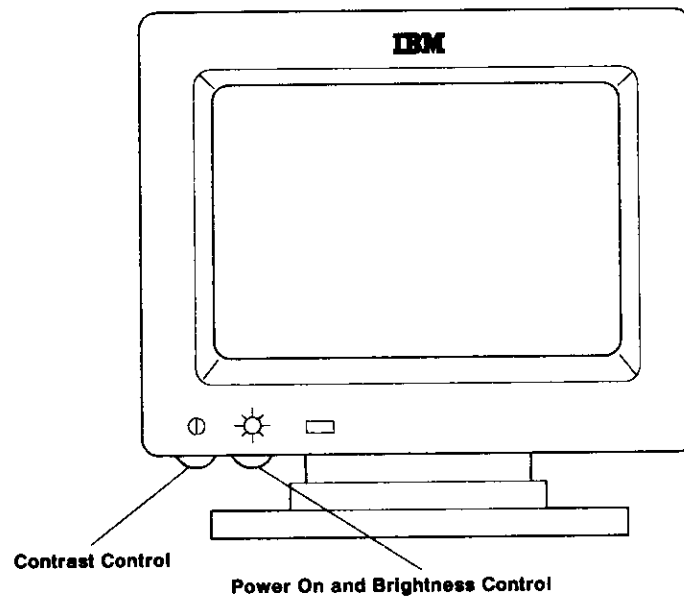
IS THE DISPLAY POWER-ON INDICATOR ON?

NO Go to "Step 4" on page 3-6200-4.

YES Continue on the next page.

Step 2

1. Set the power switch on the system unit to Off.
 2. Turn the Power On and Brightness Control fully clockwise.
 3. Wait about 1 minute.
-



AJZB208

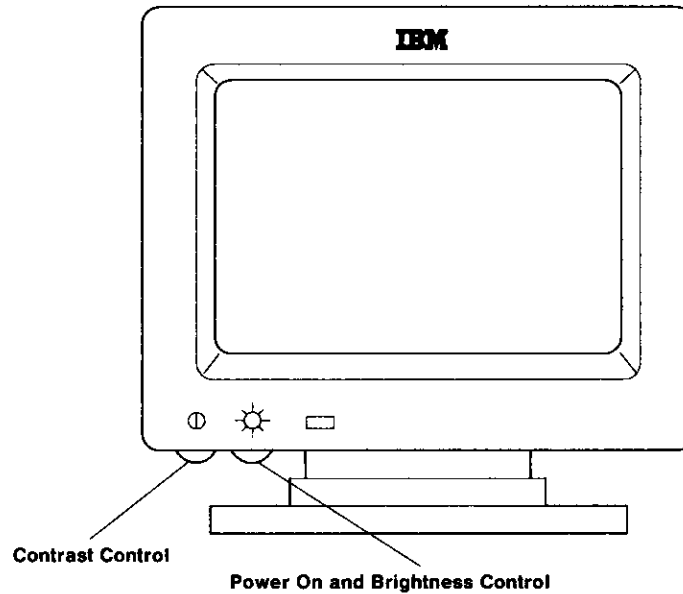
**IS THE DISPLAY SCREEN COMPLETELY LIGHTED
EXCEPT FOR THE BORDER?**

NO Record SRN 26-620; then go to "Step 7" on page 3-6200-7.

YES Continue on the next page.

Step 3

1. Set the power switch on the system unit to On.
 2. Wait about 4 minutes.
 3. Try to set the Power On and Brightness Control to the desired level; then answer the following question.
-



AJZB208

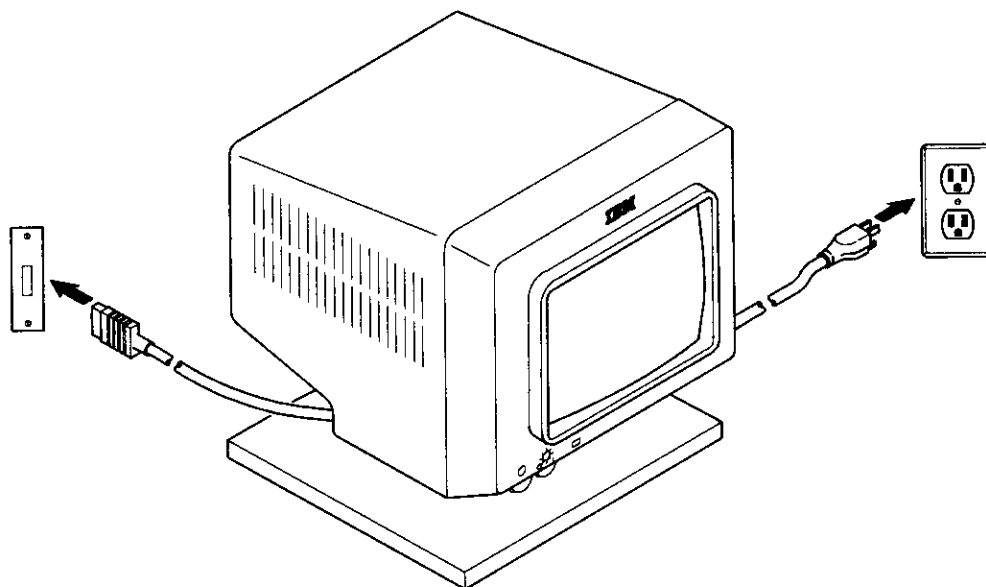
WERE YOU ABLE TO ADJUST THE BRIGHTNESS CONTROL TO THE DESIRED LEVEL?

YES Go to "Step 5" on page 3-6200-5.

NO Record SRN 26-620-470, then go to "Step 7" on page 3-6200-7.

Step 4

Be sure the display power cable is connected to an outlet and that the outlet has power.



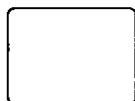
AJZB209

DID YOU FIND A PROBLEM?

- YES** This completes the repair.
- NO** Record SRN 26-620-470; then go to "Step 7" on page 3-6200-7.

Step 5

Look at the display screen.



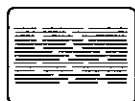
Too Dim



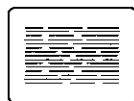
Too Wide



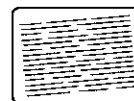
Too Narrow



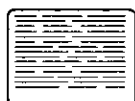
Too Short



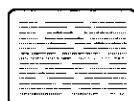
Too Small



Tilted



**Changes Size When
Brightness Control
Turned**



Out of Focus



Rolling

AJZB214

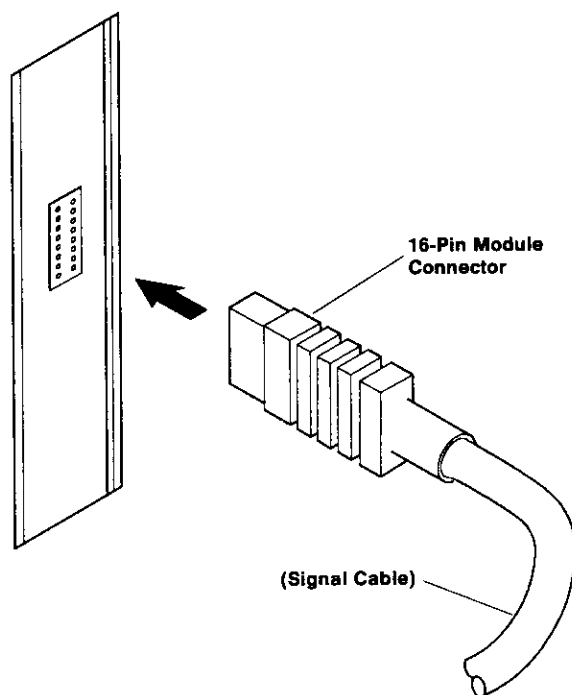
DOES YOUR DISPLAY HAVE A PROBLEM SIMILAR TO ANY OF THE DISPLAY SCREENS ABOVE?

YES Record SRN 26-620-470; then go to "Step 7" on page 3-6200-7.

NO Continue on the next page.

Step 6

Be sure the display signal cable is securely plugged into the display adapter.



AJZB171

IS THE DISPLAY SIGNAL CABLE SECURELY PLUGGED INTO THE DISPLAY ADAPTER?

YES Record SRN 16-470-620; then go to the next page.

NO This completes the repair.

Step 7

You may have already analyzed all the SRAs in the SRN using PIC 0010.

4. Write the Service Request Number here:

13 - _____ - _____ - _____ - _____

AJZB179

HAVE YOU PERFORMED THE REPAIR ACTION FOR EACH SRA IN THE SERVICE REQUEST NUMBER USING PIC 0010?

YES Go to "Unresolved Problem PIC 0060" on page 3-0060-1.

NO Go to "Step 3" on page 3-0010-4 and analyze any new SRAs.

Power Supply PIC 8800

Use this PIC to analyze the 880 SRA number.

Notes:

1. Some system unit components do not cool correctly when the top cover is off. For this reason do not power the system unit on longer than 10 minutes with the top cover off.
2. When you set the power switch on the system unit to Off, wait 30 seconds before setting the power switch to On.

Step 1

Be sure that the system unit external power cable is plugged into both the system unit and the outlet and that the outlet has the correct voltage. If needed, see Section 5.

DID YOU FIND A PROBLEM?

YES Go to "Step 14" on page 3-8800-14.

NO Continue on the next page.

Step 2

1. Set the power switch on the system unit to Off.
 2. Remove the top cover. If needed, see Section 4.
 3. Unplug the external power cable to the system unit.
 4. Disconnect the large power connector from the system board, the power connector from the fixed-disk drive, and the power connector from the diskette drive.
 5. Plug in the external power cable to the system unit.
 6. Set the power switch on the system unit to On.
 7. Wait 15 seconds; then answer the following question.
-

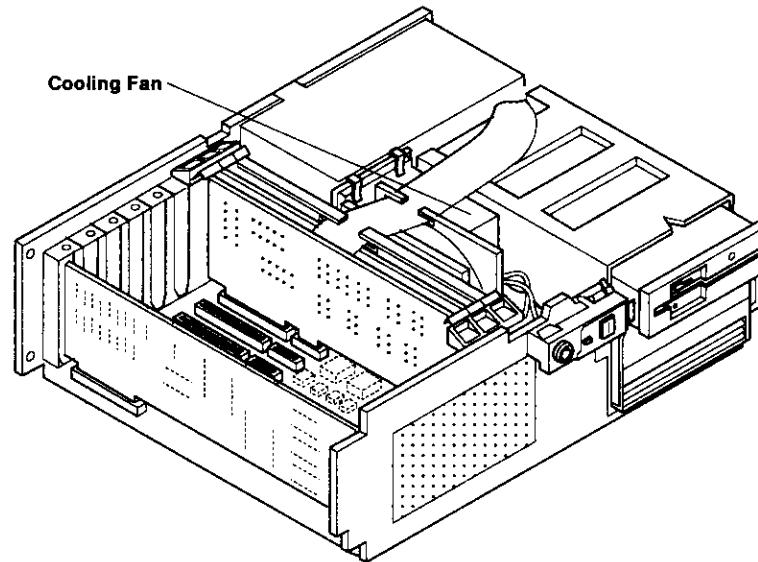
IS THE POWER-ON INDICATOR ON?

NO Go to "Step 6" on page 3-8800-6.

YES Continue on the next page.

Step 3

Listen to the system unit or hold a piece of paper near the air outlet.



AJZB017

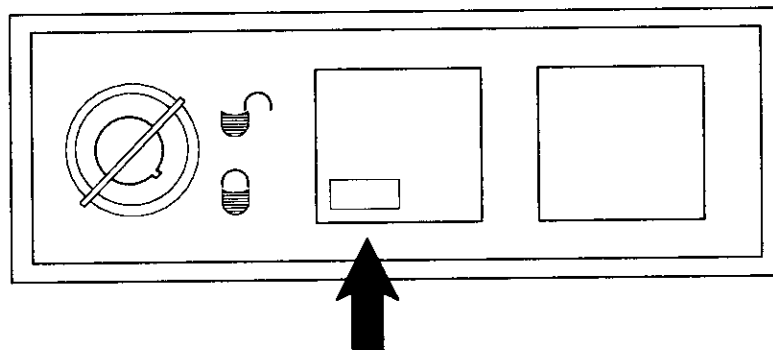
IS THE COOLING FAN OPERATING?

NO Exchange the cooling fan assembly; then go to "Step 14" on page 3-8800-14.

YES Continue on the next page.

Step 4

1. Set the power switch on the system unit to Off.
2. Unplug the external power cable to the system unit.
3. Connect the large power connector to the system board.
4. Plug in the external power cable to the system unit.
5. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
6. Wait 15 seconds; then answer the following question.



AJZB159

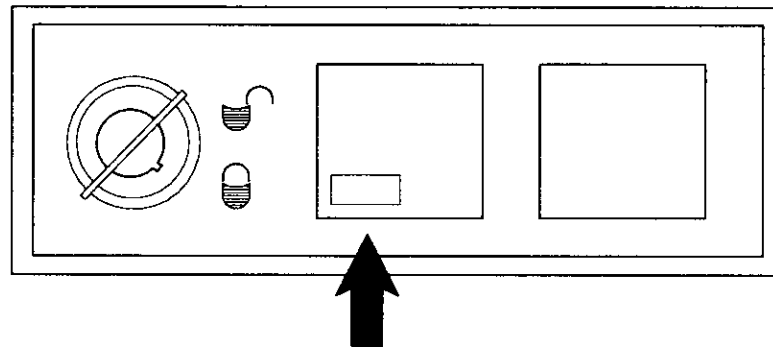
IS THE POWER-ON INDICATOR ON?

NO Go to "Step 9" on page 3-8800-9.

YES Continue on the next page.

Step 5

1. Set the system unit power switch to Off.
 2. Connect the power connector to the diskette drive.
 3. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 4. Wait 15 seconds; then answer the following question.
-



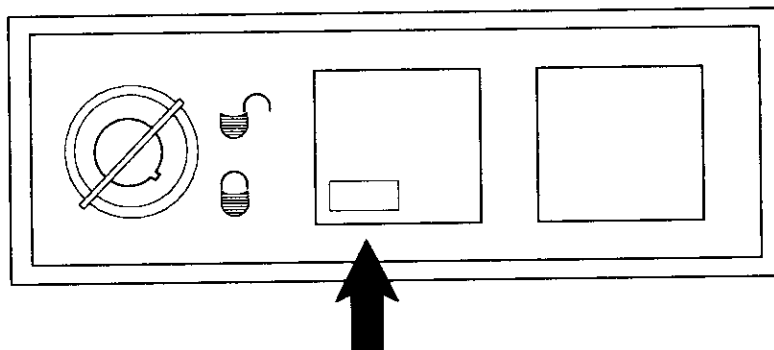
AJZB159

IS THE POWER-ON INDICATOR ON?

- NO** Exchange the diskette drive; then go to "Step 14" on page 3-8800-14.
- YES** Exchange the fixed-disk drive; then go to "Step 14" on page 3-8800-14.

Step 6

1. Set the power switch on the system unit to Off.
 2. Disconnect the power connector at the cooling fan.
 3. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 4. Wait 15 seconds; then answer the following question.
-



AJZB159

IS THE POWER-ON INDICATOR ON?

- YES** Exchange the cooling fan assembly; then connect any connectors that are disconnected. Go to "Step 14" on page 3-8800-14.
- NO** Continue on the next page.

Step 7

1. Set the power switch on the system unit to Off.
 2. Connect cooling fan power connector.
 3. Disconnect the smaller power cable connector from the system board.
 4. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 5. Wait 15 seconds; then answer the following question.
-

IS THE COOLING FAN OPERATING?

- NO** Check the external power cable for damage, if none, exchange the power supply. Go to "Step 14" on page 3-8800-14.
- YES** Continue on the next page.

Step 8

1. Set the system unit power switch to Off.
 2. Connect the smaller power cable to the system board.
 3. Disconnect the operator panel cable from the system board.
 4. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 5. Wait 15 seconds; then answer the following question.
-

IS THE COOLING FAN OPERATING?

- NO** Exchange the system board; then go to "Step 14" on page 3-8800-14.
- YES** Exchange the operator panel; then go to "Step 14" on page 3-8800-14.

Step 9

1. Set the system unit power switch to Off.
 2. Disconnect the keyboard and mouse cables.
 3. Disconnect all of the external device cables.
 4. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 5. Wait 15 seconds; then answer the following question.
-

IS THE POWER-ON INDICATOR ON?

YES One of the external devices is defective. Do the following:

1. Set the power switch on the system unit to Off.
2. Connect the cable to an external device.
3. Set the power switch on the system unit to On.
4. If the Power-On indicator is on, repeat these Steps. If the Power-On indicator is off, exchange or repair the last device connected. Go to "Step 14" on page 3-8800-14.

NO Continue on the next page.

Step 10

1. Set the system unit power switch to Off.
 2. Disconnect all of the internal cables to the adapters.
 3. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 4. Wait 15 seconds; then answer the following question.
-

IS THE POWER-ON INDICATOR ON?

- YES** One of the internal devices or cables is defective. Do the following:
1. Set the power switch on the system unit to Off.
 2. Connect one of the internal cables.
 3. Set the power switch on the system unit to On.
 4. If the Power-On indicator is on, repeat these Steps. If the Power-On indicator is off, exchange the last device or cable connected. Go to "Step 14" on page 3-8800-14.
- NO** Continue on the next page.

Step 11

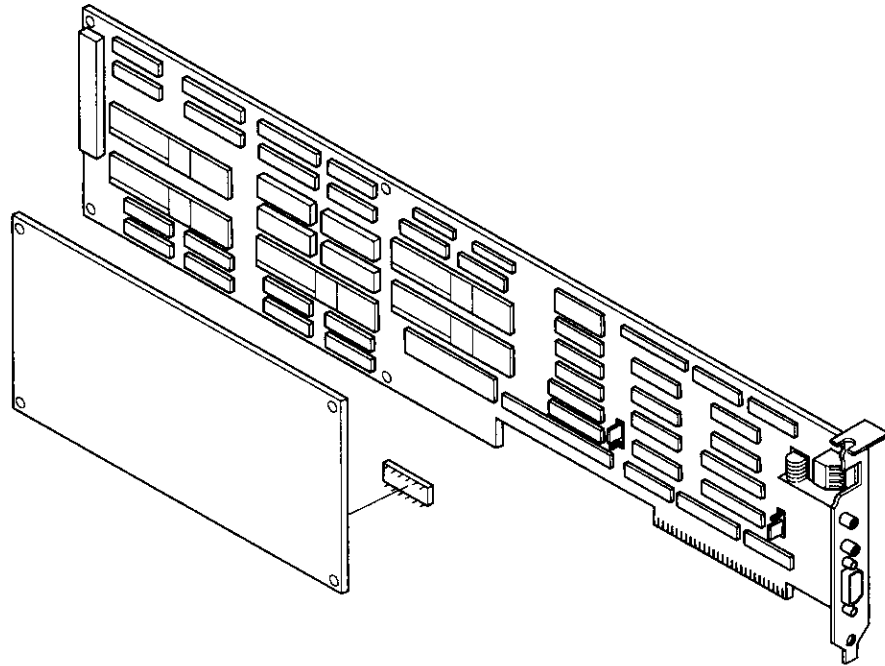
1. Set the power switch on the system unit to Off.
 2. Remove one of the adapters or boards from the system board.
 3. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 4. Wait 15 seconds.
 5. If the Power-On indicator is off, repeat the steps until the Power-On indicator is on; then answer the question below.
-

DID YOU FIND A FAILING ADAPTER OR BOARD?

- NO** Exchange the system board; then install all units removed and connect any cables that are disconnected. Go to "Step 14" on page 3-8800-14.
- YES** Continue on the next page.

Step 12

Some options and adapters contain more than one FRU.



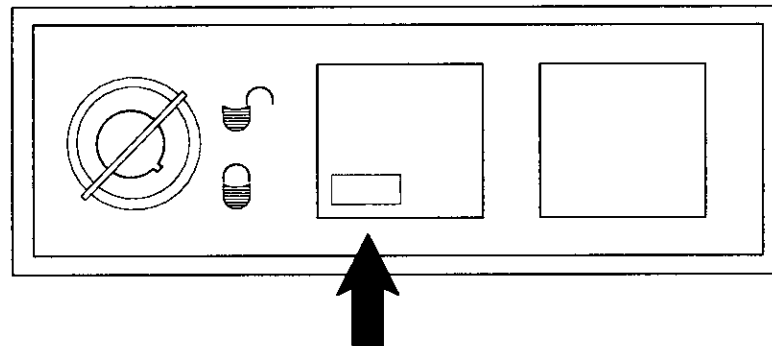
AJZB107

DOES THE FAILING ADAPTER HAVE ADDITIONAL FRUs?

- NO** Exchange the failing adapter or board; then go to “Step 14” on page 3-8800-14.
- YES** Continue on the next page.

Step 13

1. Set the power switch on the system unit to Off.
 2. Remove the failing option or adapter from the system unit.
 3. Remove the additional FRUs.
 4. Install the failing option or adapter back in the system unit.
 5. Set the power switch on the system unit to On; then wait 15 seconds before answering the following question.
-



AJZB159

IS THE POWER-ON INDICATOR ON?

- NO** Exchange the failing option or adapter; then continue on the next page.
- YES** One of the additional FRUs you removed is failing. If only one FRU was removed, exchange it. Otherwise, install the FRUs one at a time until you identify the failing FRU; then exchange it and continue on the next page.

Step 14

1. Set the power switch on the system unit to Off.
 2. If any, look at the type and slot positions you recorded, then install the boards and adapters you removed
 3. Connect any connectors that are disconnected.
 4. If removed, install the top cover. If needed, see Section 4.
 5. Set the power switch on the system unit to On.
 6. Run the System Checkout. If needed, see page 2-17.
-

TESTING COMPLETE	DIAG-2
Press Enter to continue.	

WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

NO Go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.

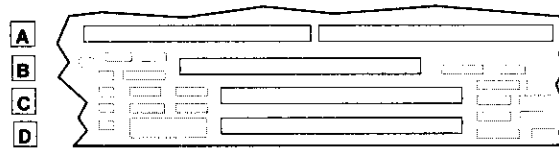
YES This completes the repair.

POST Errors 5c or 05 PIC 9810

Use this PIC to analyze the 981 SRA number.

Step 1

1. Remove the top cover. If needed, see Section 4.
 2. Plug the external power cable into the outlet.
-



AJZB085

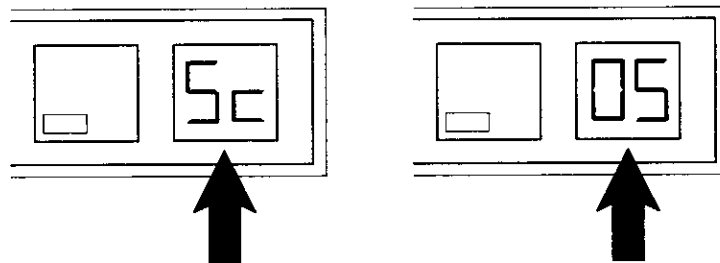
IS THERE A BOARD IN SLOT B OR D?

NO Go to "Step 5" on page 3-9810-5.

YES Continue on the next page.

Step 2

1. Remove the boards from slots B and D, and record the type and slot position.
 2. Set the power switch on the system unit to On.
 3. Wait 2 minutes; then answer the following question.
-



AJZB165

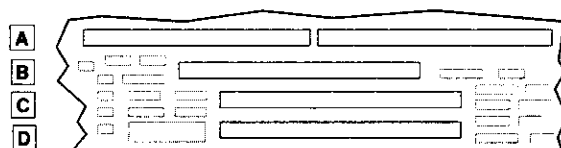
IS "5c" OR "05" DISPLAYED IN THE TWO-DIGIT DISPLAY?

NO Go to "Step 7" on page 3-9810-7.

YES Continue on the next page.

Step 3

Look at the slot position you recorded for the boards removed from slots B and D.



AJZB085

DID YOU REMOVE A BOARD FROM SLOT D?

- NO** Set the power switch on the system unit to Off; then go to "Step 5" on page 3-9810-5.
- YES** Continue on the next page.

Step 4

1. Set the power switch on the system unit to Off.
 2. Remove the memory board in slot C and record the type.
 3. Install the memory board you removed from slot D in slot C.
 4. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 5. Wait 2 minutes; then answer the following question.
-

IS "5c" OR "05" DISPLAYED IN THE TWO-DIGIT DISPLAY?

NO Set the power switch on the system unit to Off.

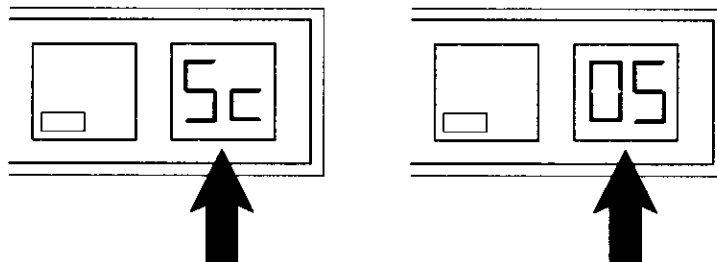
1. Move the memory board now in slot C to slot D.
2. Exchange the memory board that was in slot C.
3. Go to "Step 8" on page 3-9810-8.

YES Set the power switch on the system unit to Off.

1. Remove the memory board from slot C.
2. Look at the memory board type you recorded; then install the original memory board in slot C.
3. Go to "Step 6" on page 3-9810-6.

Step 5

1. Exchange the memory board in slot C.
2. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
3. Wait 2 minutes; then answer the following question.



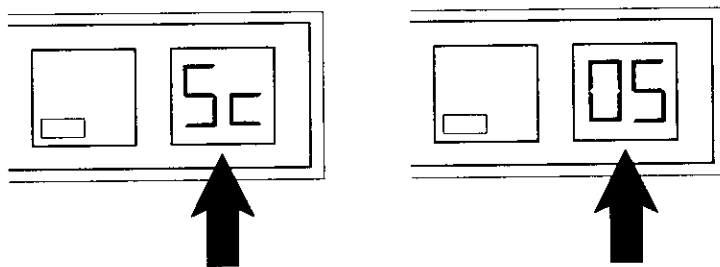
AJZB165

IS "5c" OR "05" DISPLAYED IN THE TWO-DIGIT DISPLAY?

- NO** Set the power switch on the system unit to Off; then go to "Step 8" on page 3-9810-8.
- YES** Set the power switch on the system unit to Off.
1. Remove the memory board from slot C.
 2. Look at the memory board type you recorded; then install the original memory board in slot C.
 3. Go the the next page.

Step 6

1. Exchange the processor board in slot A.
 2. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 3. Wait 2 minutes; then answer the following question.
-



AJZB165

IS "5c" OR "05" DISPLAYED IN THE TWO-DIGIT DISPLAY?

NO Set the power switch on the system unit to Off; then go to "Step 8" on page 3-9810-8.

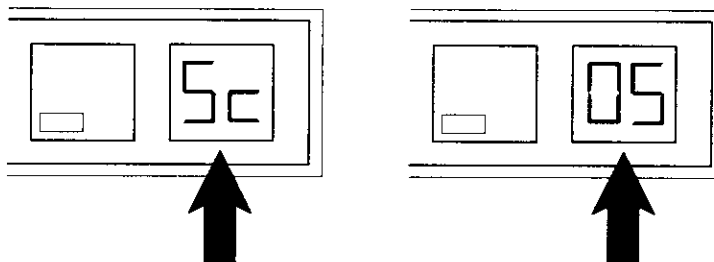
YES Set the power switch on the system unit to Off.

1. Remove the processor board from slot A.
2. Exchange the system board.
3. Go to "Step 8" on page 3-9810-8.

Step 7

One of the boards removed from slots B or D is failing.

1. Set the power switch on the system unit to Off.
2. Install one of the boards removed from slots B or D.
3. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
4. Wait 2 minutes; then answer the following question.



AJZB165

IS "5c" OR "05" DISPLAYED IN THE TWO-DIGIT DISPLAY?

NO Repeat this procedure.

YES Set the power switch on the system unit to Off.

1. The last board installed is failing, exchange the failing board.
2. Go to "Step 8" on page 3-9810-8.

Step 8

1. Look at the type and slot positions you recorded, and install the boards and adapters you removed.
 2. Set the power switch on the system unit to Off.
 3. Install the top cover. If needed, see Section 4.
 4. Set the power switch on the system unit to On.
 5. Follow the instructions on the menus to run the System Checkout. If needed, see page 2-17.
-

TESTING COMPLETE	DIAG-2
Press Enter to continue.	

WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

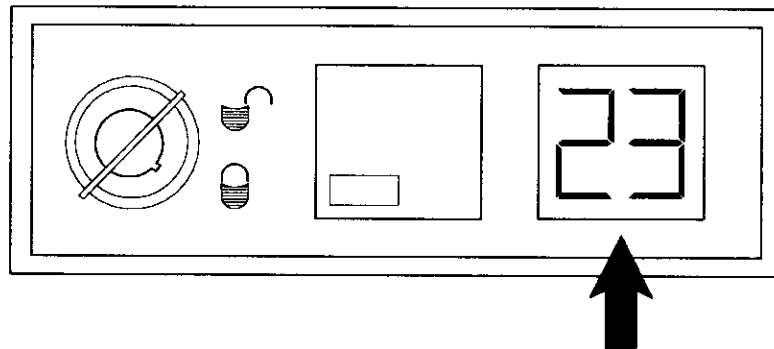
- NO** If you were unable to run the System Checkout because the system stopped with 5c or 05 displayed in the two-digit display, go to "Unresolved Problem PIC 0060" on page 3-0060-1 otherwise, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.
- YES** This completes the repair.

POST Error 23 PIC 9840

Use this PIC to analyze the 984 SRA number.

Step 1

1. Remove the top cover. If needed, see Section 4.
2. Remove the adapters from slots 1 through 5 and record the type and slot position of each.
3. Plug the external power cable into the outlet.
4. Set the power switch on the system unit to On.
5. Wait 2 minutes; then answer the following question.



AJZB161

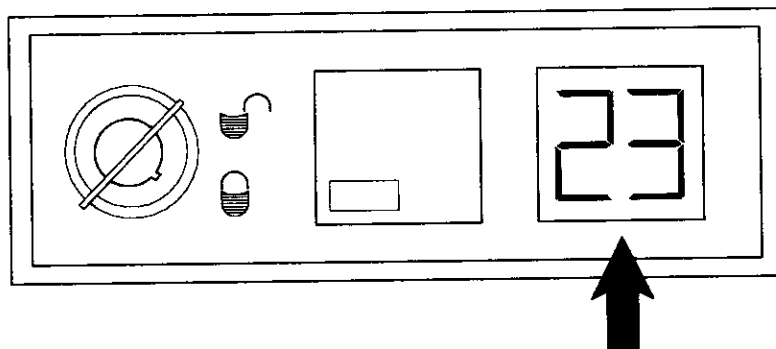
IS "23" DISPLAYED IN THE TWO-DIGIT DISPLAY?

NO Go to "Step 3" on page 3-9840-3.

YES Continue on the next page.

Step 2

1. Set the power switch on the system unit to Off.
 2. Exchange the adapter for the fixed-disk and diskette drives.
 3. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 4. Wait 2 minutes; then answer the following question.
-



AJZB161

IS "23" DISPLAYED IN THE TWO-DIGIT DISPLAY?

- NO** Set the power switch on the system unit to Off; then go to "Step 5" on page 3-9840-5.
- YES** Set the power switch on the system unit to Off.
1. Exchange the system board.
 2. Go to "Step 5" on page 3-9840-5.

Step 3

One of the removed adapters is failing.

1. Set the power switch on the system unit to Off.
 2. Install one of the adapters beginning with the display adapter.
 3. If the adapter has a device attached to it, set the power switch on the device to On.
 4. Insert the RT PC Diagnostics 1 diskette in the diskette drive and close the drive.
 5. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 6. Wait 4 minutes; then answer the following question.
-

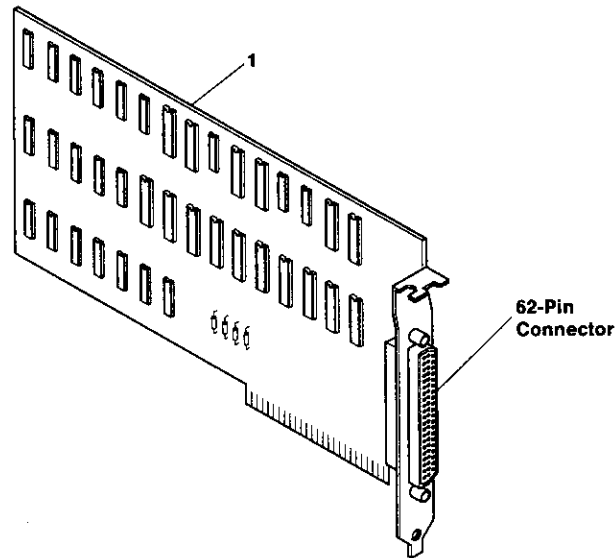
**ARE THE "DIAGNOSTIC OPERATING INSTRUCTIONS"
DISPLAYED?**

YES Repeat the above steps.

NO Continue on the next page.

Step 4

The last adapter or a FRU attached to it is failing.



AJZB246

IS THE FAILING ADAPTER THE RT PC EXPANSION UNIT ADAPTER?

NO Use the removal procedure in the section that applies to the failing FRU and exchange it; then continue on the next page.

YES Go to "IBM RT PC 6192 Expansion Unit PIC 0100" on page 3-0100-1.

Step 5

1. Look at the type and slot positions you recorded, and install the boards and adapters you removed.
 2. Set the power switch on the system unit to Off.
 3. Install the top cover. If needed, see Section 4.
 4. Set the power switch on the system unit to On.
 5. Follow the instructions on the menus to run the System Checkout. If needed, see page 2-17.
-

TESTING COMPLETE	DIAG-2
Press Enter to continue.	

WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

- NO** If you were unable to run the System Checkout because the system stopped with 23 displayed in the two-digit display, go to "Unresolved Problem PIC 0060" on page 3-0060-1 otherwise, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.
- YES** This completes the repair.

Undetermined Problem PIC 9860

Use this PIC to analyze the following symptoms:

- SRA number 986.
- Diagnostic error messages displayed while running diagnostics.
- Numbers are displayed in the two-digit display after the DIAGNOSTIC OPERATING INSTRUCTIONS menu has displayed.

Note: For flashing c6-20, see “Two-Digit Display Codes During Diagnostic Programs” on page 2-19.

- Flashing numbers in the two-digit display.
- Diagnostic loops and hangs with nothing displayed in the two-digit display.
- The keyboard will not respond while running diagnostics.
- You cannot exit or end a test.

Step 1

Look at the bottom of the display.

DID THE “DIAGNOSTIC ERROR” MESSAGE DISPLAY?

YES Go to “Step 3” on page 3-9860-3.

NO Continue on the next page.

Step 2

A failing keyboard may cause one of the following conditions:

- Unable to exit the keyboard test by pressing the **n** and **Enter** keys
 - Unable to select a certain item from a menu
 - Unable to exit a test that is normally ended by pressing the **End** key.
-

IS THE PROBLEM ONE OF THE ABOVE?

NO Go to "Step 6" on page 3-9860-6.

YES Record SRN 16-780; then go to "Step 3" on page 3-0010-4.

Step 3

Look at the bottom of the display.

**DID THE MESSAGE "DIAGNOSTIC ERROR - Diskette error"
DISPLAY?**

NO Go to "Step 6" on page 3-9860-6.

YES Continue on the next page.

Step 4

The problem may be the diskettes.

1. Get a different set of diagnostic diskettes.
 2. Try to run the failing diagnostic test.
 3. When the test completes or stops, look at the bottom of the display.
-

DID THE MESSAGE "DIAGNOSTIC ERROR - Diskette error" DISPLAY?

- NO** Replace the failing set of diagnostic diskettes. Go to "Problem Determination Procedure PIC 0030" on page 3-0030-1 and get another SRN.
- YES** Continue on the next page.

Step 5

Some Diagnostic Error messages occur when the Run Test Multiple Times option is selected.

**WERE YOU RUNNING THE DIAGNOSTIC PROGRAMS
WHILE USING THE "RUN TEST MULTIPLE TIMES"
OPTION?**

YES Disregard the Diagnostic Error message and start the test again.

NO Continue on the next page.

Step 6

Some tests require that specific FRUs be installed before the test is displayed in the ADVANCED DIAGNOSTIC SELECTION menu.

Look at the test that failed.

IS A SPECIFIC FRU REQUIRED TO RUN THE FAILING TEST?

NO Go to "Step 8" on page 3-9860-8.

YES Continue on the next page.

Step 7

If any, exchange the FRUs that are required to run the failing diagnostic test. Use the removal and replacement procedures in the section for that FRU (attached devices may have their own manual).

Try the failing diagnostic test again.

DID THE SAME PROBLEM OCCUR?

NO Go to "Step 12" on page 3-9860-12.

YES Remove the new FRU and install the old FRU again; then continue on the next page.

Step 8

1. Remove the top cover. If needed, see Section 4.
2. Remove the boards from system board slots B and D.
3. Remove the adapters and options from adapter slots 1 through 5 except the display adapter and any specific FRUs required to run the failing test.
4. Plug the external power cable into the outlet.
5. Insert the RT PC Diagnostics 1 diskette into the diskette drive and close the drive.
6. Set the power switch on the system unit to On.
7. Try the failing procedure again.

If you get any SRN other than SRN number 16-986, go to "Start of Call PIC 0010" on page 3-0010-1.

DID THE SAME PROBLEM OCCUR?

NO Go to "Step 10" on page 3-9860-10.

YES Continue on the next page.

Step 9

One of the remaining FRUs is failing.

1. Set the power switch on the system unit to Off.
 2. Exchange and test the FRUs one at a time in the following order:
 - a. The processor board
 - b. The system board
 - c. The adapter for the fixed-disk and diskette drives
 - d. The display adapter (If the display adapter is the Megapel Adapter, exchange the processor; then the controller.)
 - e. The diskette drive
 - f. If installed, the memory board in slot C.
 3. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 4. Try the failing procedure.
-

DID YOU FIND THE PROBLEM?

- NO** Try a new set of diagnostic diskettes. If the problem still occurs, contact your service support person. Otherwise, go to "Step 12" on page 3-9860-12.
- YES** Go to "Step 12" on page 3-9860-12.

Step 10

One of the removed boards or adapters is failing.

1. Set the power switch on the system unit to Off.
 2. Install one of the boards, adapters, or options.
 3. If the adapter has a device attached to it, set the power switch on the device to On.
 4. Be sure the power has been off 30 seconds; then set the power switch on the system unit to On.
 5. Try the failing procedure.
-

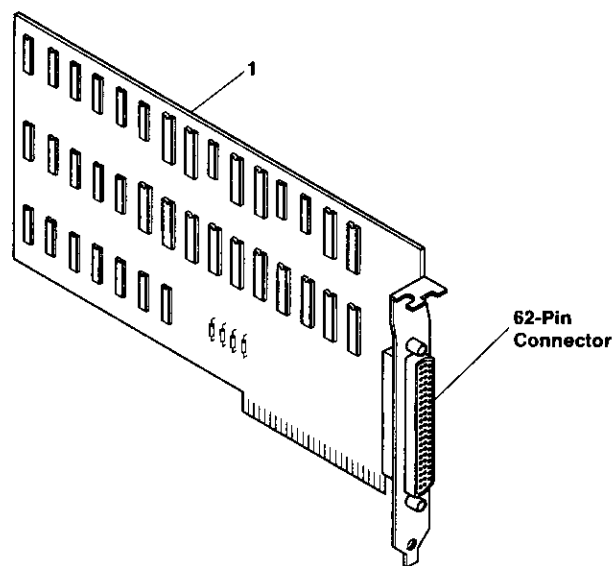
DID THE SAME PROBLEM OCCUR?

NO Repeat the above steps.

YES Continue on the next page.

Step 11

The last adapter installed or a FRU attached to it is failing.



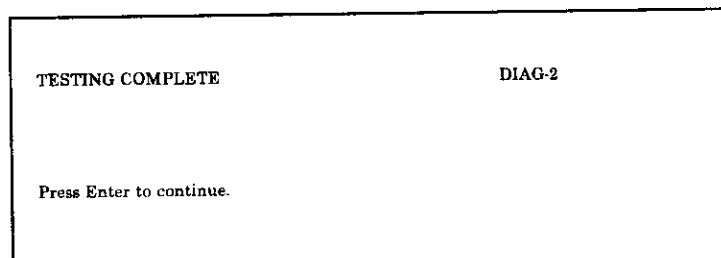
AJZB246

WAS THE LAST ADAPTER INSTALLED THE RT PC EXPANSION UNIT ADAPTER?

- NO** Use the removal procedure in the section that applies to the failing FRU and exchange it; then continue on the next page.
- YES** Go to "IBM RT PC 6192 Expansion Unit PIC 0100" on page 3-0100-1.

Step 12

1. Look at the type and slot positions you recorded, and if any, install the boards, adapters, and options you removed.
 2. Unplug the external power cable from the outlet.
 3. Install the top cover. If needed, see Section 4.
 4. Set the power switch on the system unit to On.
 5. Follow the instructions on the menus to run the System Checkout. If needed, see page 2-17.
-



WERE YOU ABLE TO LOAD AND RUN THE "SYSTEM CHECKOUT" AND DID THE "NO TROUBLE WAS FOUND" MESSAGE DISPLAY?

- NO** If the same failure occurs, contact your service support person, otherwise, go to "Problem Determination Procedure PIC 0030" on page 3-0030-1.
- YES** This completes the repair.