Problem Determination Procedures

Introduction

These Problem Determination Procedures may be used with the IBM Personal Computer and the IBM Personal Computer XT.

The Problem Determination Procedures help you solve operational or system failures. These procedures will also perform a complete system checkout. By following the step-by-step instructions and answering yes or no to the questions asked, you will be able to determine which unit of your system has a problem.

As part of your problem determination, you may have to load the Diagnostics diskette (the diskette is at the back of this manual). The Diagnostics diskette has a series of tests to help you find your problem in any of the five units of your system. These five units are the system unit, expansion unit, keyboard, display, and printer.

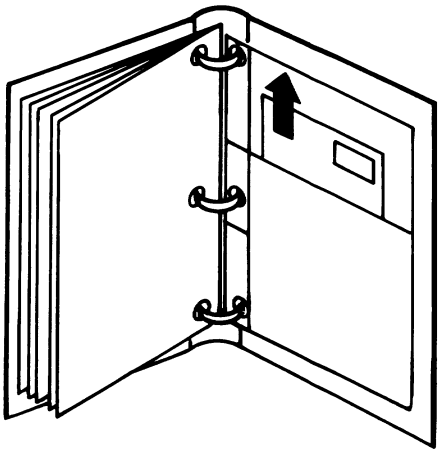
The diagnostic diskette is programmed to test only the system and its installed options. These tests are performed in sequential order. As each test is successfully completed, the next test will be performed.

If you use the diskette in the back of this manual with a non-U.S. English keyboard, use a U.S. English keyboard template.

For a screen alignment problem, start on the following page. To perform a complete system checkout for any other problem, start with "Checking Electrical Connections" on page Start 20-1.

Screen Alignment Procedure

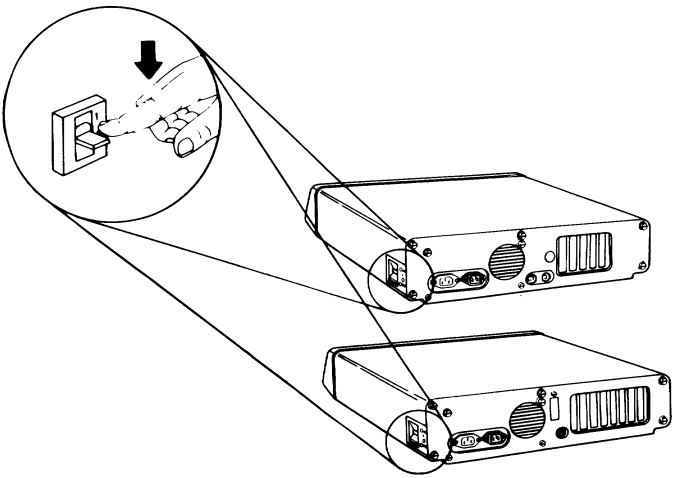
1 Remove the Diagnostics diskette from the back of this manual.



2 Set the Power switch on the system unit (and expansion unit, if attached) to Off.

| This is the international symbol for On.

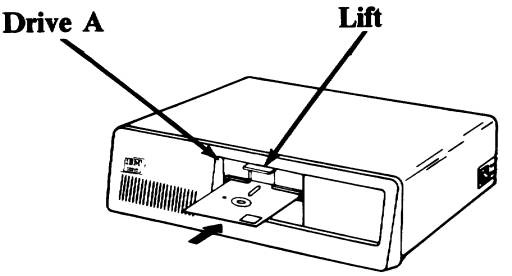
O This is the international symbol for Off.



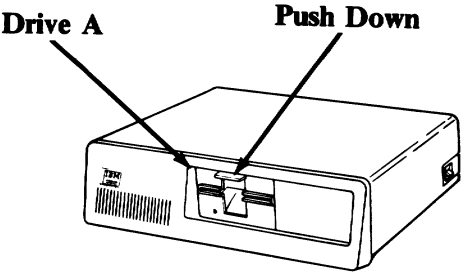
3 Set the Power switches on all external devices to Off.

4 Lift the load lever.

5 Insert the Diagnostics diskette into drive A.



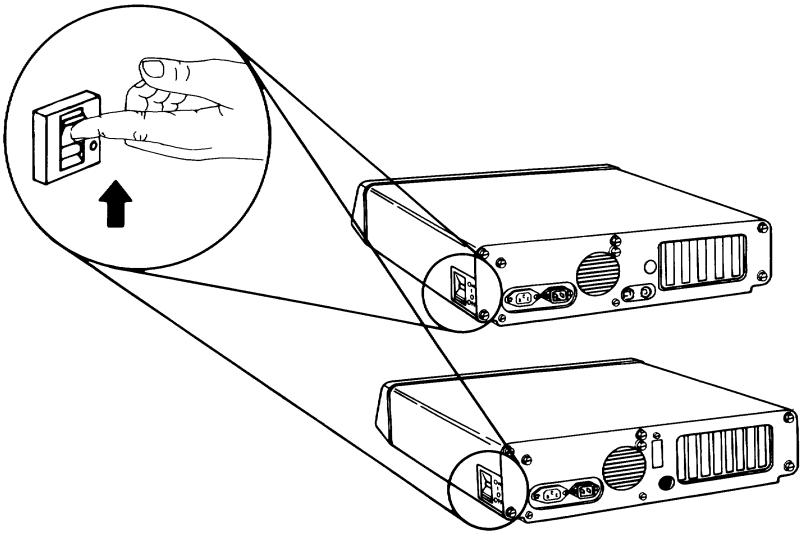
6 Push the load lever down.



7 Set the Power switches on all external devices to On.

8 If an expansion unit is attached, set its Power switch to On.

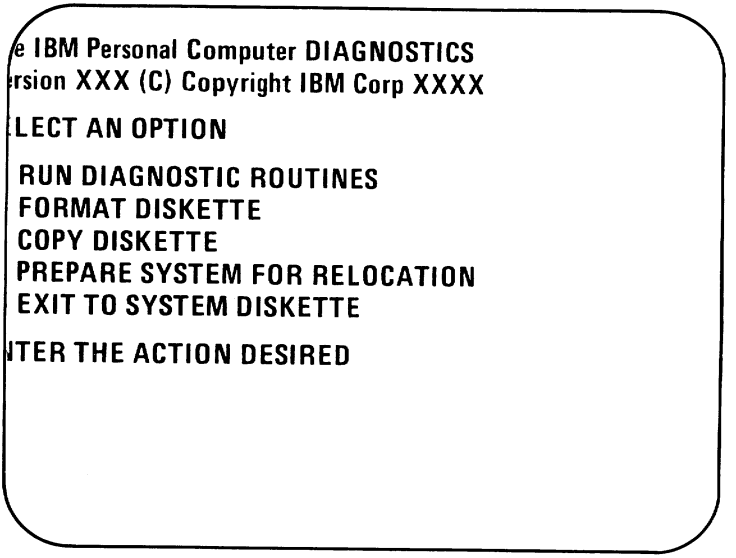
9 Set the system unit's Power switch to On.



If you are using a television or a non-IBM display with your system unit, and its screen is similar to the one below, use the procedures following the figure to correct the problem.

Note:

If the alignment on any IBM Display is incorrect, have it serviced.



10 Press function key F8 to move the presentation to the right or F7 to move the presentation to the left, as appropriate.

Your screen should match the one shown in the figure below. If so, remove the Diagnostics diskette and return it to the back of this manual. If not, have your television or non-IBM display serviced.

```
The IBM Personal Computer DIAGNOSTICS
Version XXX (C) Copyright IBM Corp XXXX

SELECT AN OPTION

0 - RUN DIAGNOSTIC ROUTINES
1 - FORMAT DISKETTE
2 - COPY DISKETTE
3 - PREPARE SYSTEM FOR RELOCATION
9 - EXIT TO SYSTEM DISKETTE

ENTER THE ACTION DESIRED
?
```

Go to the next page.

Notes:

Checking Electrical Connections

1 Set the Power switch on the system unit (and expansion unit, if attached) to Off.

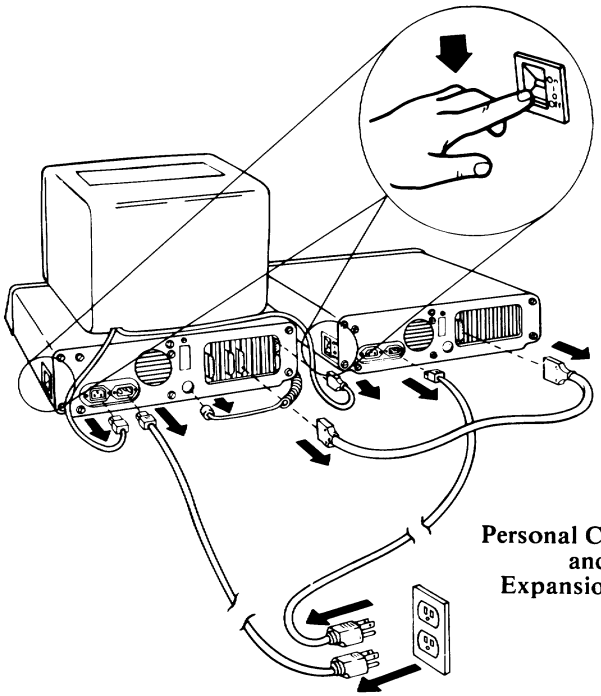
| This is the international symbol for On.

O This is the international symbol for Off.

2 Set the Power switches on all external devices to Off.

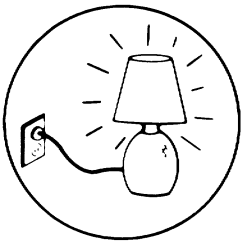
3 Disconnect all non-IBM devices.

4 Unplug the system unit's (and expansion unit's) power cord from the wall outlet.



Personal Computer
and
Expansion Unit

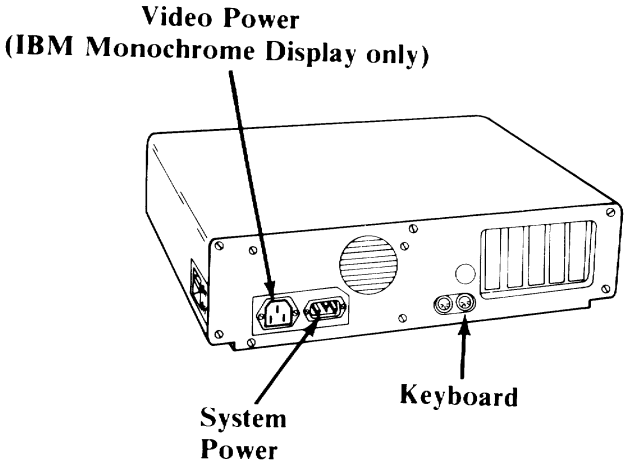
5 Check the wall outlet by plugging in a working lamp.



Outlet O.K.

6 Disconnect and connect each cable on the system unit (and expansion unit, if attached) to ensure correct electrical connection.

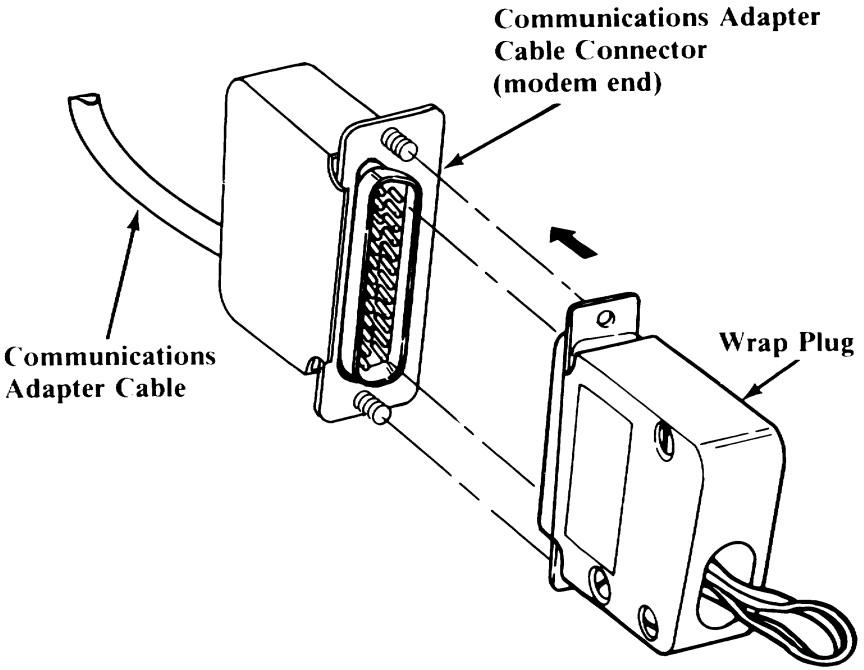
7 Plug the system unit's (and expansion unit's) power cord into the wall outlet.



Note: If you do not have an IBM Communications Adapter Cable attached to your system unit, go to the next page.

8 If you have an IBM Communications Adapter Cable, it came with a wrap plug. Disconnect the Communications Adapter Cable at the modem end (refer to the Communications Adapter Cable's "Option Installation Instructions" for the cable-removal procedure).

9 Refer to the figure below and install the wrap plug (IBM part number 8529280) on the modem end of the cable (end furthest from the system unit). Then go to the next page.

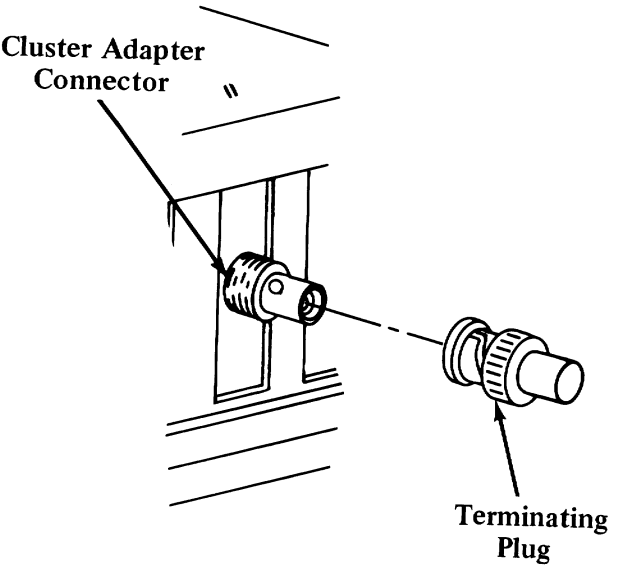


10 If you do not have a Cluster Adapter, continue with "Power-On Self Test" (POST) on the following page.

11 If you have an IBM Cluster Adapter, it came with a terminating plug. Disconnect the Cluster Adapter's coaxial cable at the Cluster Adapter's connector.

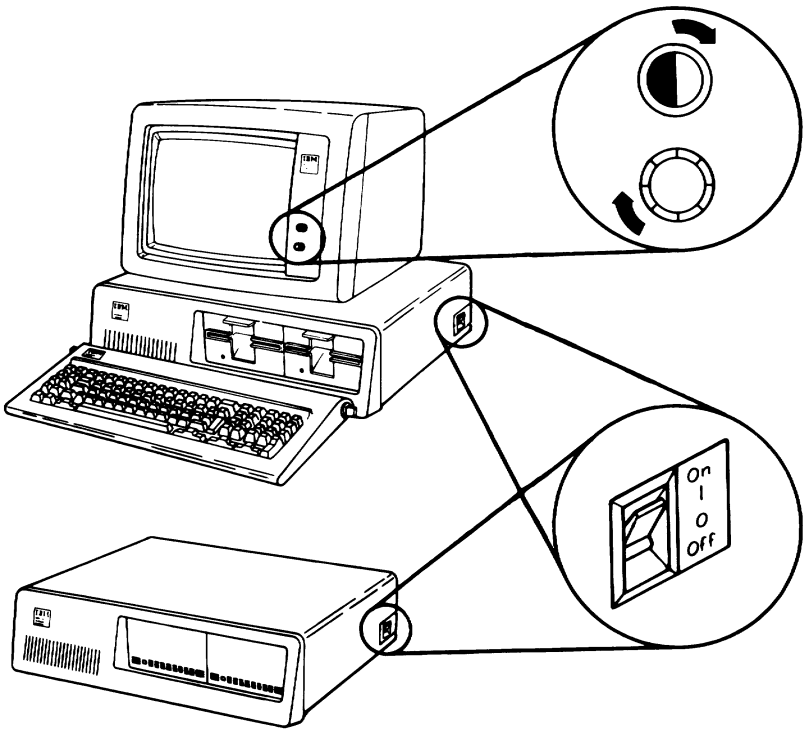
12 Refer to the figure below and install the terminating plug (IBM part number 6320352) on the Cluster Adapter's connector.

Continue with "Power-On Self Test" (POST) on the following page.



Power-On Self Test (POST)

1 Turn the Brightness and Contrast controls fully clockwise. After the first screen is displayed adjust the controls for eye comfort.



2 Set the Power switches on all external devices to On.

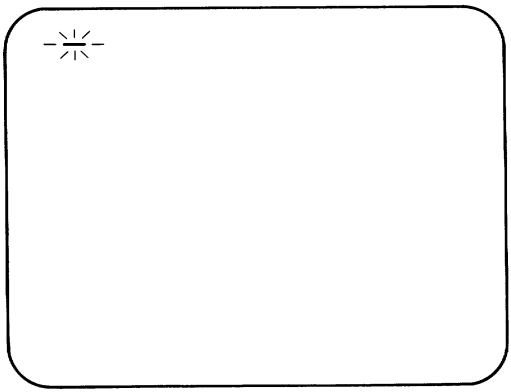
3 If the expansion unit is attached, set its Power switch to On.

4 Set the system unit's Power switch to On.

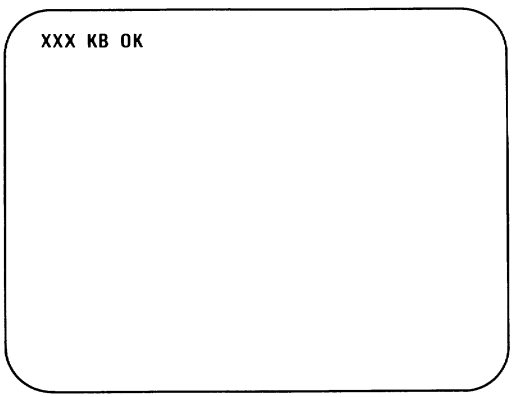
POST will finish in 13 to 90 seconds, depending on the amount of memory installed in your system. Normally, you will receive the following responses:

A Look in the upper left-hand corner of the screen during POST.

The Personal Computer cursor blinks.

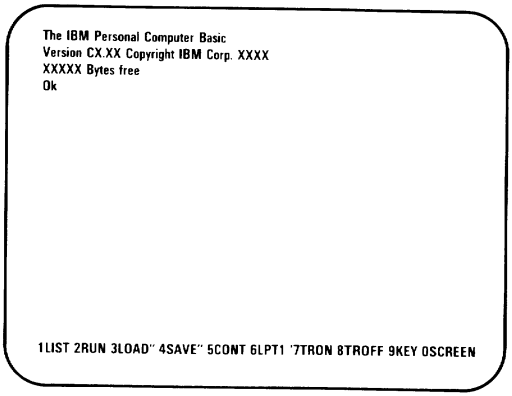


For the Personal Computer XT a number appears in the upper-left corner of your screen. The number should continue to increase until it equals the amount of memory installed in your system.



B One short beep will be heard when the test finishes successfully.

C The "IBM Personal Computer BASIC" message will appear. (If, at the end of POST, a program or an operating system from the fixed disk drive is automatically loaded, the first screen presentation from the program or operating system will appear).



Did **A**, **B**, and **C** occur?

YES - Go to "Diskette Format Procedure" on page Start 40-1.

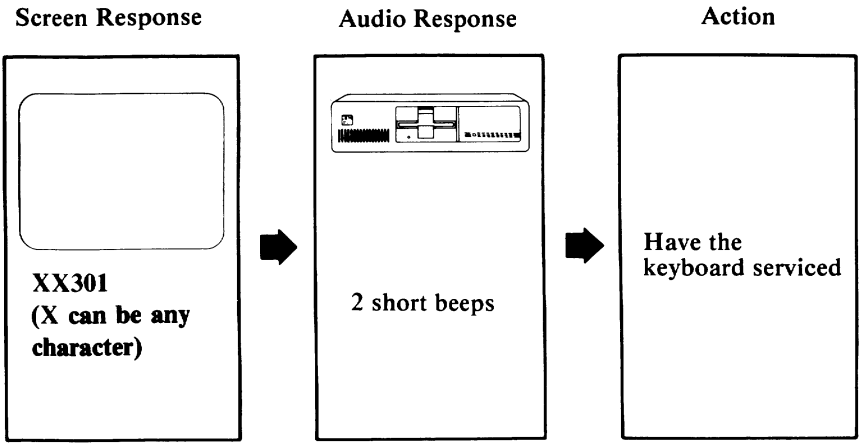
NO - Personal Computer users go to "Personal Computer POST Errors" on the next page.

Personal Computer XT users go to "Personal Computer XT POST Errors" on Start 30-8.

Find your screen and audio responses in the following examples, then follow the instructions in the box marked "Action."

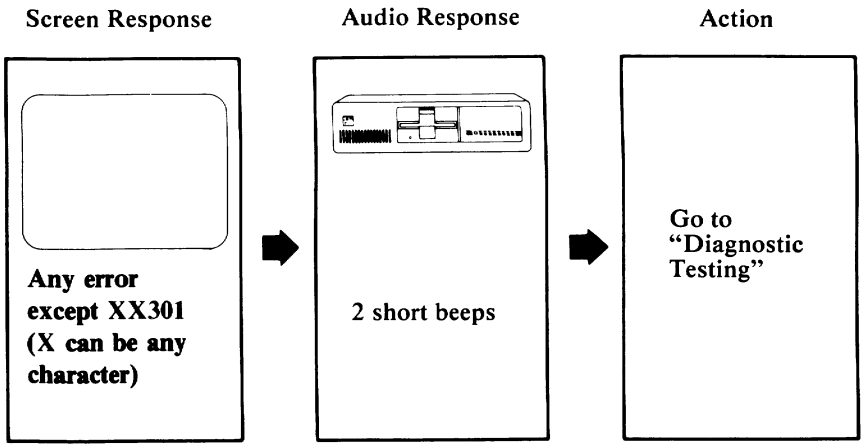
> **Warning:** If the instructions are to have a unit serviced, and that unit has a fixed disk drive, we recommend that you back up all disk files onto diskettes. Normal shipping and handling can result in permanent loss of data on your fixed disk drives. Refer to the IBM *DOS* manual for a description of the Backup command.

Example 1

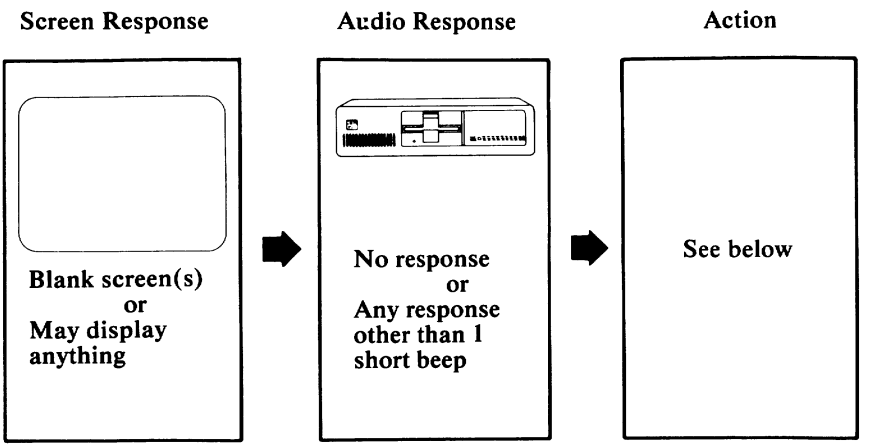


Note: Ensure the keyboard is connected correctly and check for any objects or foreign material on the keyboard. If after having the keyboard serviced, error 301 still appears, have the system unit serviced.

Example 2



Example 3



Do you have an expansion unit attached?

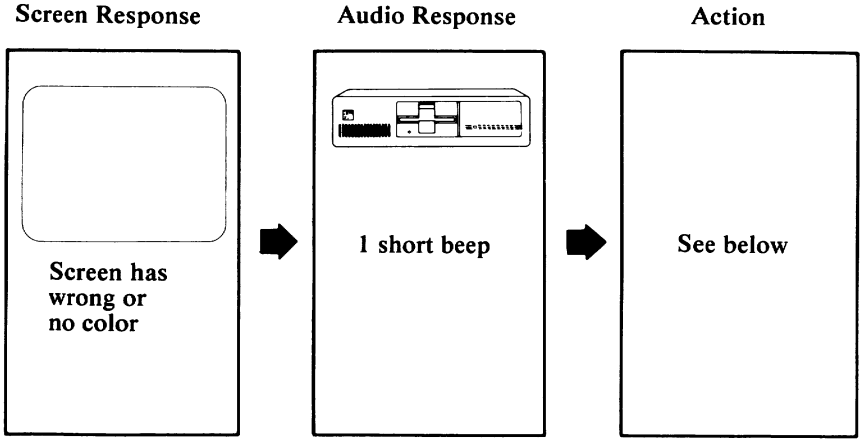
NO - Have the system unit serviced.

YES - Perform the following:

1. Set the Power switches on the system unit and expansion unit to Off.
2. Set the Power switches on all external devices to Off.
3. Disconnect the expansion-unit cable from the system unit.
4. Set the Power switch on the system unit to On.

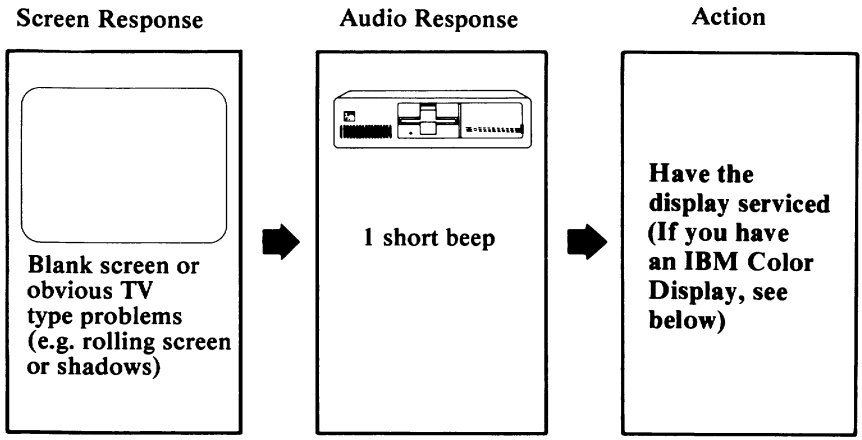
If the error is the same, have the system unit serviced. If the error changes, have the expansion unit and its cable serviced.

Example 4 (Color Display Only)



If you are using a TV as your display, verify that the color is correct by disconnecting your TV from the unit. Operate your TV normally to verify color quality. Also ensure your TV is compatible with U.S. Television Broadcast Standard. If you have an IBM Color Display, go to Test 9000.

Example 5

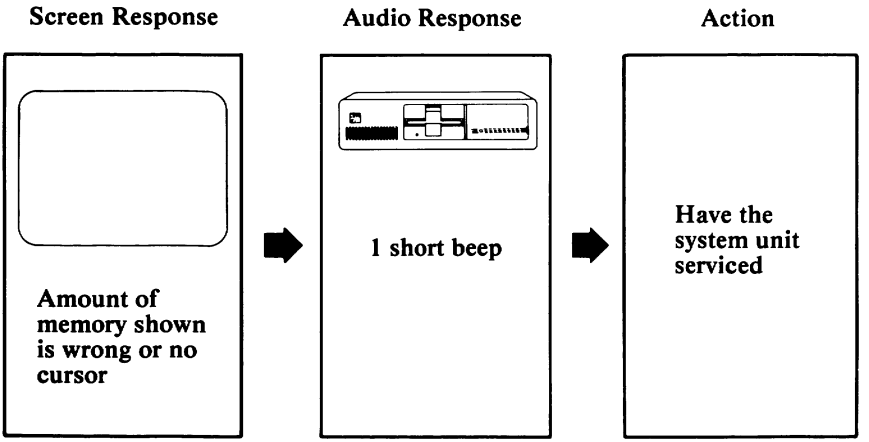


If you have an IBM Color Display, go to Test 9000.

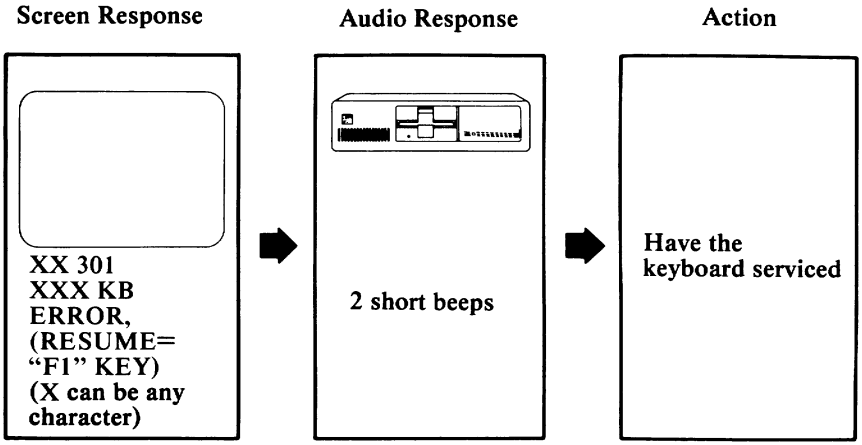
Find your screen and audio responses in the following examples, then follow the instructions in the box marked "Action."

> **Warning:** If the instructions are to have a unit serviced, and that unit has a fixed disk drive, we recommend that you back up all disk files onto diskettes. Normal shipping and handling can result in permanent loss of data on your fixed disk drives. Refer to the IBM *DOS* manual for a description of the Backup command.

Example 1

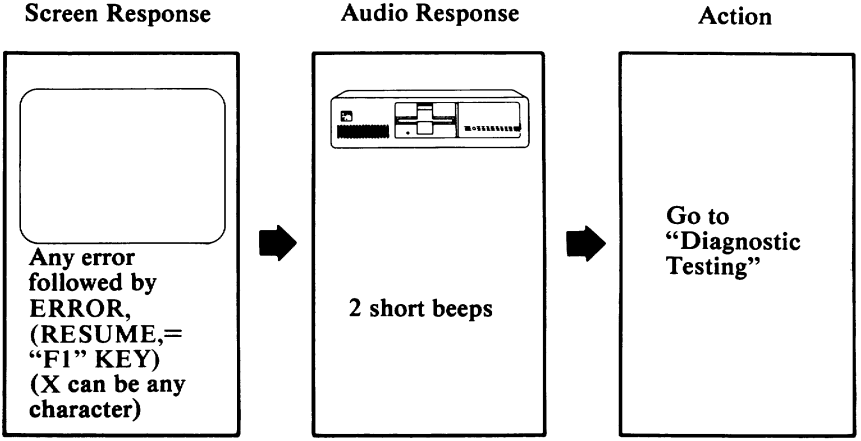


Example 2



Note: Ensure the keyboard is connected correctly and check for any objects or foreign material on the keyboard. If after having the keyboard serviced, error 301 still appears, have the system unit serviced.

Example 3



Example 4

Screen Response	Audio Response	Action
Blank screen(s) or May display anything	No response or Any response other than 1 short beep	See below

Do you have an expansion unit attached?

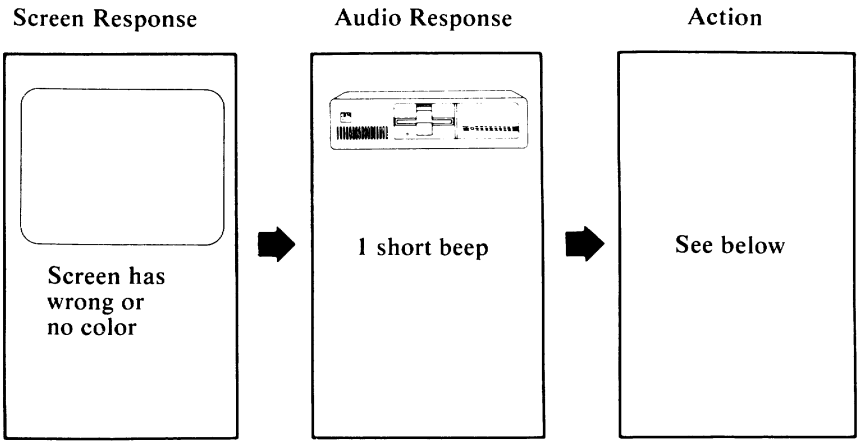
NO - Have the system unit serviced.

YES - Perform the following:

1. Set the Power switches on the system unit and expansion unit to Off.
2. Set the Power switches on all external devices to Off.
3. Disconnect the expansion-unit cable from the system unit.
4. Set the Power switch on the system unit to On.

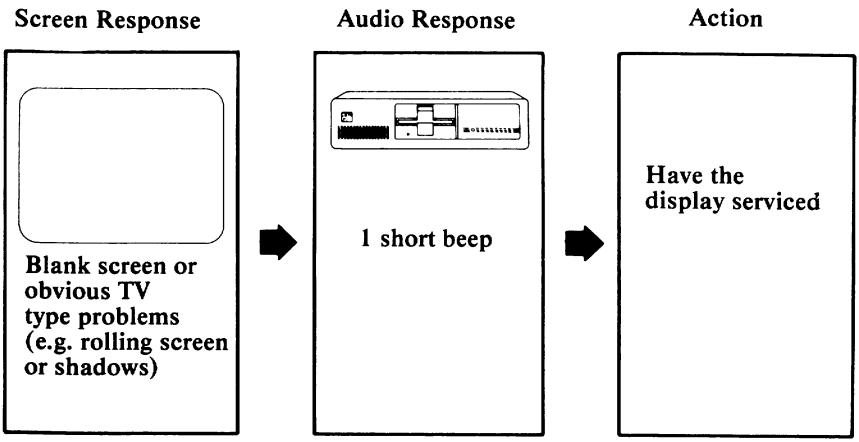
If the error is the same, have the system unit serviced. If the error changes, have the expansion unit and its cable serviced.

Example 5 (Color Display Only)



If you are using a TV as your display, verify that the color is correct by disconnecting your TV from the unit. Operate your TV normally to verify color quality. Also ensure your TV is compatible with U.S. Television Broadcast Standard. If you have an IBM Color Display, go to Test 9000.

Example 6



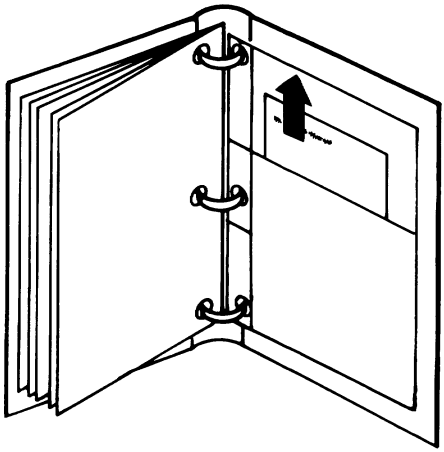
If you have an IBM Color Display, go to Test 9000.

Notes:

Diskette Format Procedure

During the diagnostic tests that follow, you will need a scratch diskette (a scratch diskette is a formatted diskette with no data on it). If you already have a scratch diskette, skip this section and proceed to Diagnostic Testing on page Test 000-1. If you do not have a scratch diskette, continue with this procedure.

1 Remove the Diagnostics diskette from the back of this manual.



2 Set the Power switch on the system unit (and expansion unit, if attached) to Off.

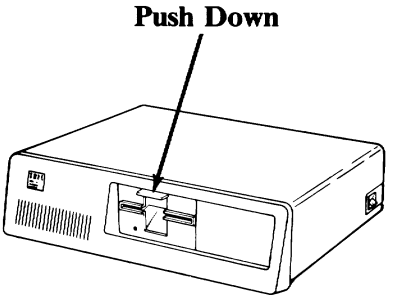
| This is the International symbol for On.

O This is the International symbol for Off.

3 Set the Power switches on all external devices to Off.

4 Lift the load lever and insert the Diagnostics diskette into drive A.

5 Push the load lever down.

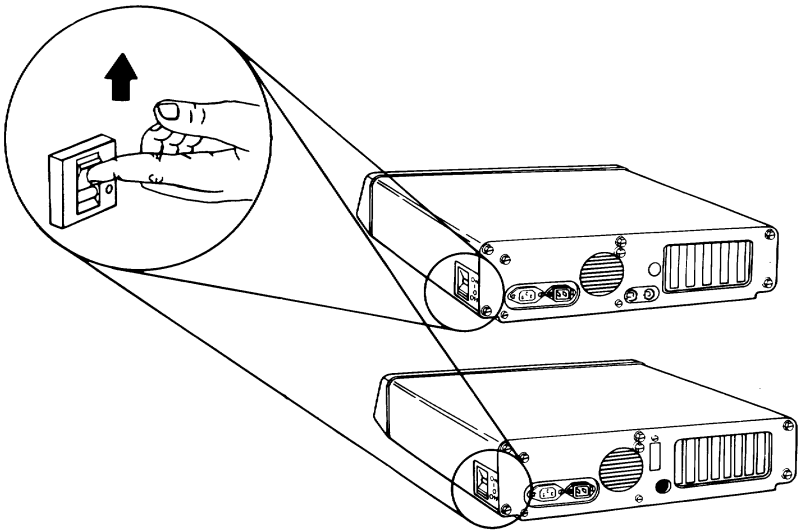


If you are having any problem inserting your diskette into the diskette drive, refer to the section titled "Operation" or "Operating your Personal Computer XT" in this manual for more information.

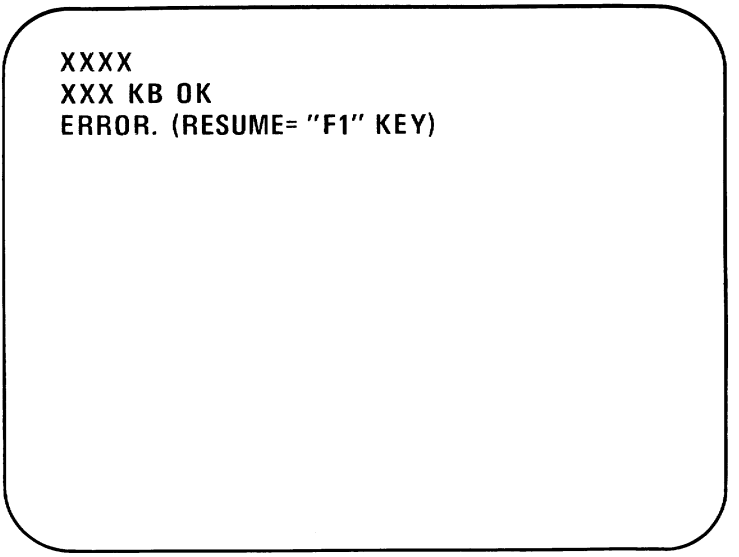
6 Set the Power switches on all external devices to On.

7 If an expansion unit is attached, set its Power switch to On.

8 Set the Power switch on the system unit to On.



9 Did the following appear on your screen? (X can be any character)



YES - Press F1, then go to the next step.

NO - Go to the next step.

10 Did the following appear on your screen?

```
The IBM Personal Computer DIAGNOSTICS
Version XXX (C) Copyright IBM Corp XXXX

SELECT AN OPTION

0 - RUN DIAGNOSTIC ROUTINES
1 - FORMAT DISKETTE
2 - COPY DISKETTE
3 - PREPARE SYSTEM FOR RELOCATION
9 - EXIT TO SYSTEM DISKETTE

ENTER THE ACTION DESIRED
?
```

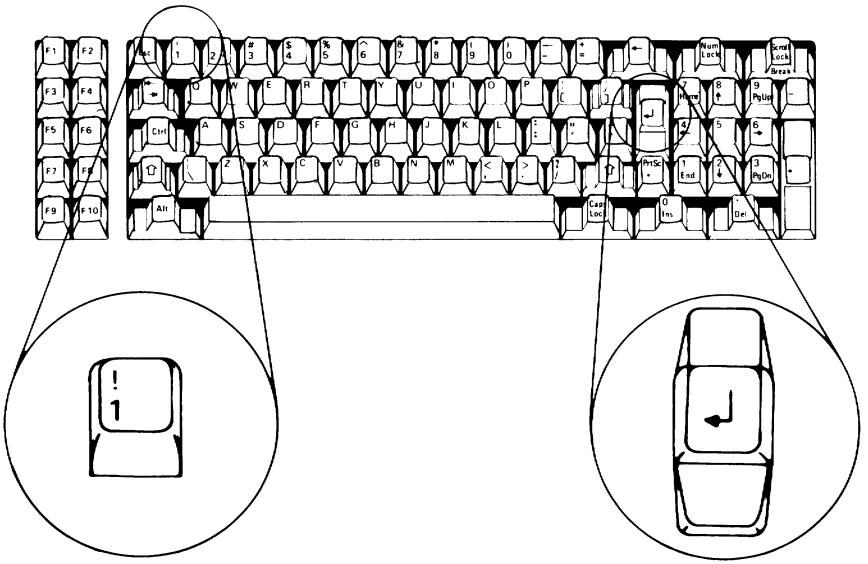
YES - Go to the next step.

NO - Remove the diskette and verify that it:

- Is the Diagnostics diskette.
- Was inserted correctly.

If the Diagnostics diskette was inserted correctly, have the system unit serviced.

11 Press ! 1 to select **FORMAT DISKETTE,** then ↵ .



Go to the next step.

12 Did the following appear on your screen?

```
The IBM Personal Computer DIAGNOSTICS
Version XXX (C) Copyright IBM Corp XXXX

SELECT AN OPTION

0 - RUN DIAGNOSTIC ROUTINES
1 - FORMAT DISKETTE
2 - COPY DISKETTE
3 - PREPARE SYSTEM FOR RELOCATION
9 - EXIT TO SYSTEM DISKETTE

ENTER THE ACTION DESIRED
? 1

WHICH DRIVE CONTAINS DISKETTE
TO BE FORMATTED?
```

YES - Press then and go to the next step.

NO - Have your system unit serviced.

13 Did the following appear on your screen?

```
The IBM Personal Computer DIAGNOSTICS
Version XXX (C) Copyright IBM Corp XXXX
SELECT AN OPTION
0 - RUN DIAGNOSTIC ROUTINES
1 - FORMAT DISKETTE
2 - COPY DISKETTE
3 - PREPARE SYSTEM FOR RELOCATION
9 - EXIT TO SYSTEM DISKETTE
ENTER THE ACTION DESIRED
? 1
WHICH DRIVE CONTAINS DISKETTE
TO BE FORMATTED? A
INSERT DISKETTE TO BE FORMATTED
IN DRIVE A:
PRESS ENTER WHEN READY
```

YES - Remove the Diagnostics diskette from drive A and insert a blank diskette.

Press and go to the next step.

NO - Have your system unit serviced.

14 The blank diskette will be formatted. When the In-Use light goes out, remove the scratch diskette.

Go to the next step.

15 Did the following appear on your screen after the diskette was formatted?

```
SELECT AN OPTION

0 - RUN DIAGNOSTIC ROUTINES
1 - FORMAT DISKETTE
2 - COPY DISKETTE
3 - PREPARE SYSTEM FOR RELOCATION
9 - EXIT TO SYSTEM DISKETTE

ENTER THE ACTION DESIRED
?
```

YES - Continue with "Diagnostic Testing" on page Test 000-1.

NO - Return to Step 10. Try another blank diskette. Be sure the diskette is inserted correctly. If the problem still exists, have the system unit serviced.

Notes:

Diagnostic Testing

During the diagnostic tests that follow, you will need a scratch diskette. If you do not have a scratch diskette, go to "Diskette Format Procedure" on page Start 40-1.

During the diagnostic tests that follow, you may be asked to record an error message. This information is needed when you have your system serviced.

The following are examples of the error messages you may receive. **A message ending in 00 means the test finished successfully.**

In the following examples X can be any character.

Example 1

```
XX:XX:XX
ERROR - SYSTEM UNIT  XXXX
```

Example 2

```
XX:XX:XX
ERROR - EXPANSION UNIT  XXXX
```

Depending on which unit your options or devices are installed in, the error messages may read **SYSTEM UNIT** or **EXPANSION UNIT**.

Example 3

```
XX:XX:XX
XXX KB OK
ERROR.(RESUME="F1"KEY)
```

Warning: If the above message is displayed on your screen, it is an indication that POST has detected an error.

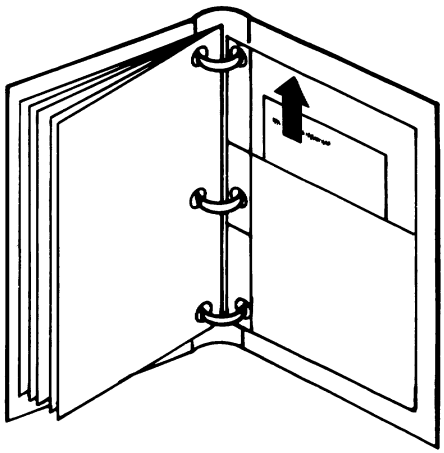
If you have an expansion unit and it is not connected to your system or the Power switch is not set to On, you will receive the above message.

Pressing the F1 key allows the system to bypass the error condition for diagnostic purposes. Your system may not function correctly unless it is serviced.

Continue with "Loading Diagnostics" on the next page.

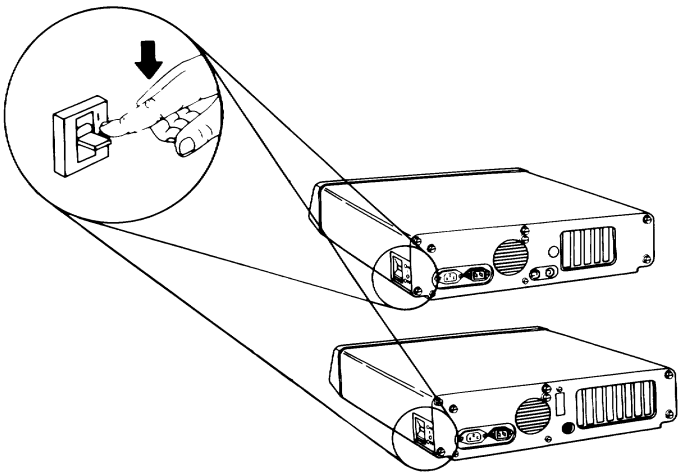
Loading Diagnostics

1 Remove the Diagnostics diskette from the back of this manual.



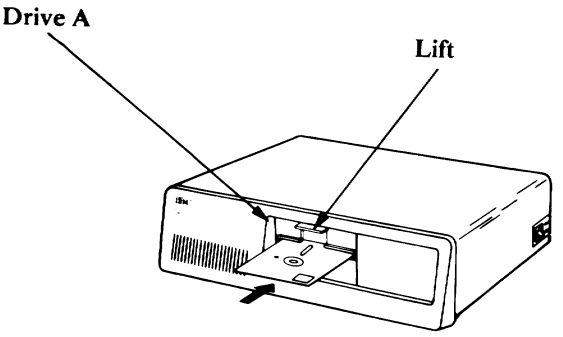
2 Set the Power switch on the system unit (and expansion unit, if attached) to Off.

3 Set the Power switches on all external devices to Off.



4 Raise the load lever and insert the Diagnostics diskette into drive A.

5 Push the load lever down.

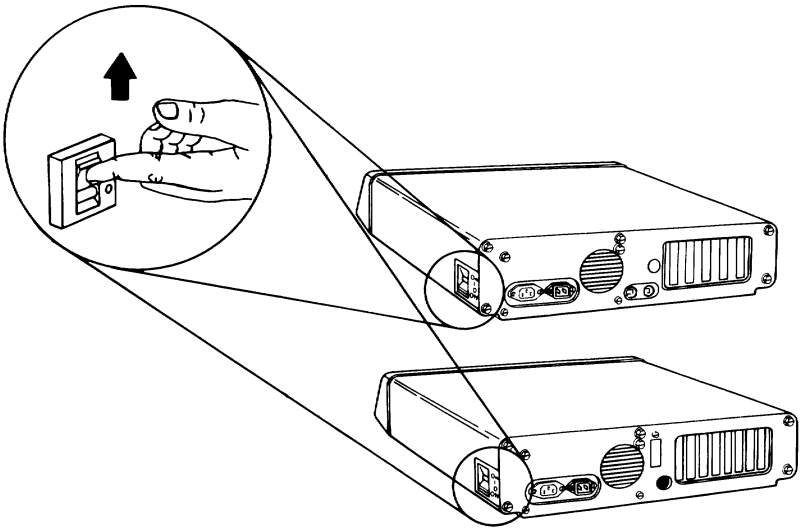


If you are having any problem inserting your diskette into the diskette drive, refer to the section titled "Operation" or "Operating your Personal Computer XT" in this manual for more information.

6 Set the Power switches on all external devices to On.

7 If an expansion unit is attached, set its Power switch to On.

8 Set the Power switch on the system unit to On.



9 Did the following appear on your screen?

```
XXXX
XXX KB OK
ERROR. (RESUME="F1"KEY)
```

YES - Press

, then go to the next step.

NO - Go to the next step.

10 Did the following appear on your screen?

```
The IBM Personal Computer DIAGNOSTICS
Version XXX (C) Copyright IBM Corp XXXX

SELECT AN OPTION

0 - RUN DIAGNOSTIC ROUTINES
1 - FORMAT DISKETTE
2 - COPY DISKETTE
3 - PREPARE SYSTEM FOR RELOCATION
9 - EXIT TO SYSTEM DISKETTE

ENTER THE ACTION DESIRED
?
```

YES - Go to the next step.

NO - Remove the diskette and verify that it:

- Is the Diagnostics diskette.
- Was inserted correctly.

If the Diagnostics diskette was inserted correctly, have the system unit serviced.

Note: If you are using your TV or a non-IBM display, you could experience data errors when you operate your diskette drive. This interference is easily corrected by moving your TV or display a minimum of 30 cm. (12 in.) away from your system unit.

11 Press , then to select **RUN DIAGNOSTIC ROUTINES.**

```
The IBM Personal Computer DIAGNOSTICS
Version XXX (C) Copyright IBM Corp XXXX

SELECT AN OPTION

0 - RUN DIAGNOSTIC ROUTINES
1 - FORMAT DISKETTE
2 - COPY DISKETTE
3 - PREPARE SYSTEM FOR RELOCATION
9 - EXIT TO SYSTEM DISKETTE

ENTER THE ACTION DESIRED
?
```

Note: Depending on the configuration of your system, the screen may ask questions about attached devices. Press Y or N as required, then press Enter.

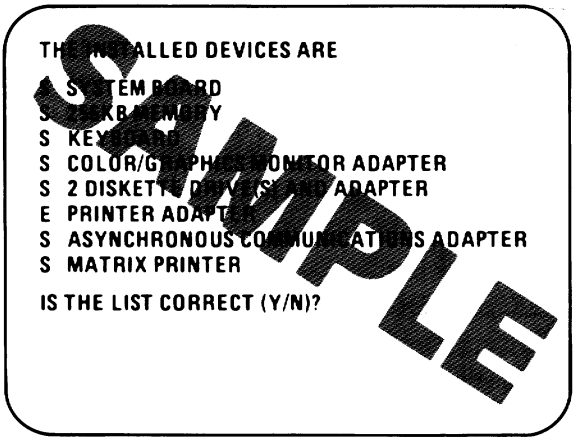
Go to the next step.

12 Complete the list of installed devices and options and show their locations with check marks. Also enter the amount of memory installed in your system. Then go to the next step.

System Unit	Expansion Unit	Installed Device/Option
	X	System Board
	X	Expansion Option
	X	XXX K of Memory
	X	Keyboard
		Color/Graphics Monitor Adapter
	X	X Diskette Drive(s) and Adapter

In the following sample, S means the device is installed in the system unit, and E means the expansion unit.

13 Does the screen on your display correctly list all the installed devices and options?



Note: The IBM Communications Cable and the Printer Cable will not appear in the list. The Graphics Printer will be listed as "Matrix Printer." The Game Control Adapter may not be listed if the joysticks or paddles are not connected when the Power is set to On.

YES - Press Y then ↵ and go to the next step.

NO - Press N then ↵, and record the error message. If your printer was missing, press ↵ and go to the next step. If any other devices or options were missing have the unit that contains that option serviced.

14 Press to select **RUN TESTS ONE TIME,** then .

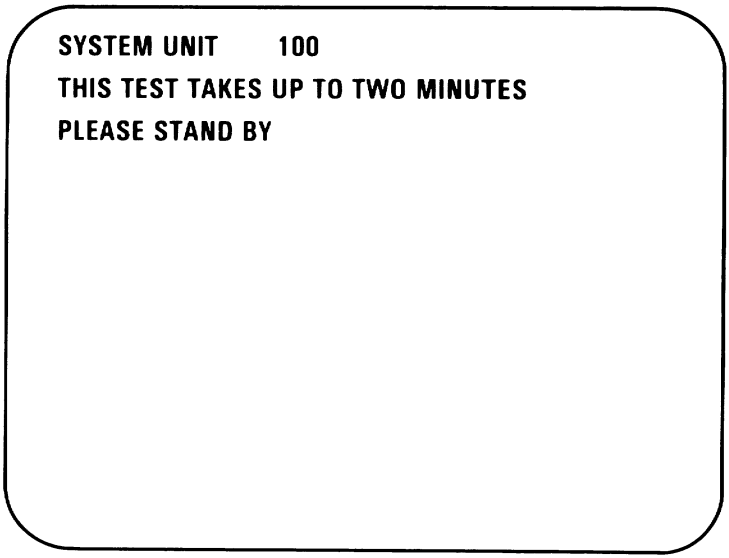
```
SYSTEM CHECKOUT

0 - RUN TESTS ONE TIME
1 - RUN TESTS MULTIPLE TIMES
2 - LOG UTILITIES
9 - EXIT DIAGNOSTIC ROUTINES

ENTER THE ACTION DESIRED

?
```

Diagnostics have successfully loaded. Continue with the tests on the following pages to perform a complete system checkout.

Notes:

Test 100

Did you receive a SYSTEM UNIT 100 message, as shown below?



YES - Your system has completed this test successfully. Continue with the next test.

NO - Have the system unit serviced.

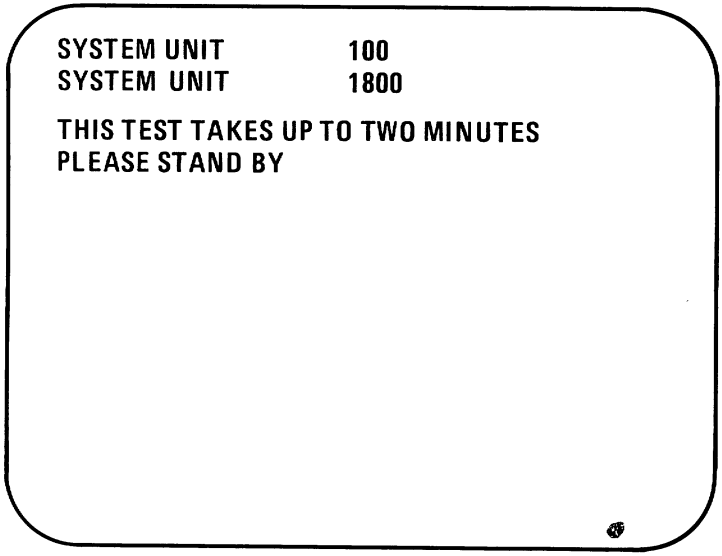
Notes:

Test 200

1 Do you have an IBM Expansion Unit attached to your system?

NO - Continue with the next test, test 300.

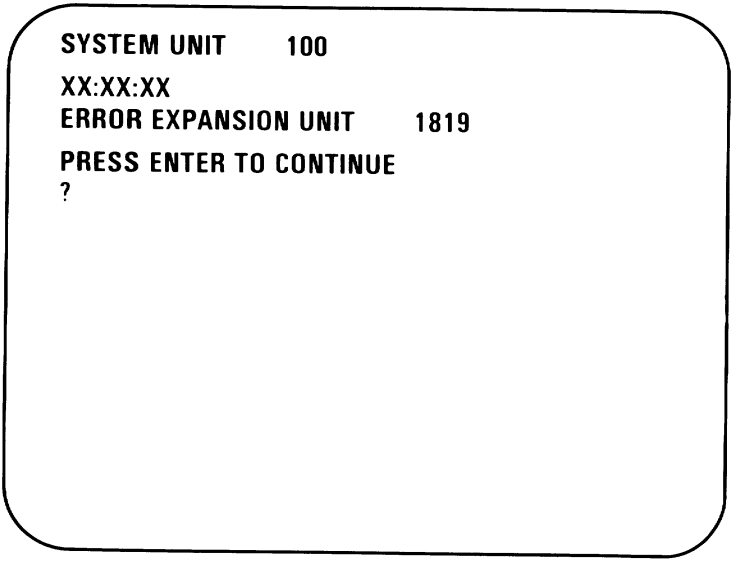
YES - Did you receive a **SYSTEM UNIT 1800** message, as shown below?



YES - Your system has completed this test successfully. Continue with the next test, Test 300.

NO - Go to the next step.

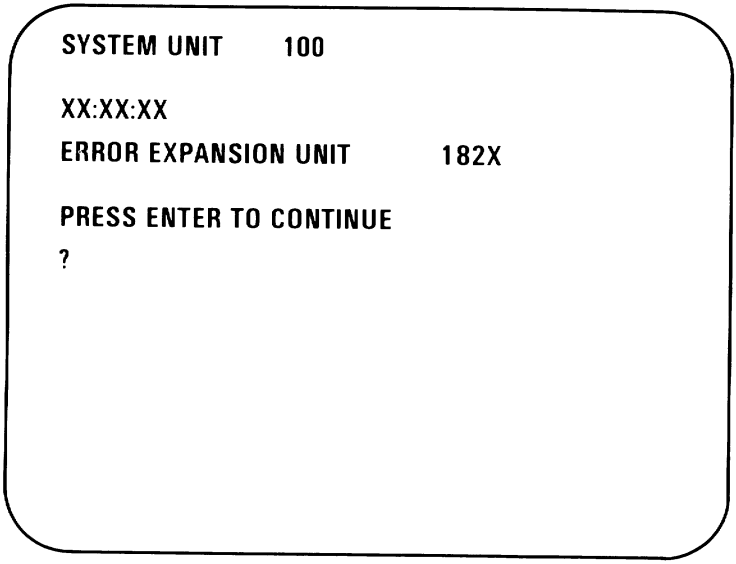
2 Did you receive an **1819** error message, as shown below?



YES - Have the expansion unit and its cable serviced.

NO - Go to the next step.

3 Did you receive an **1820** or **1821** error message?



YES - Have the expansion unit and its cable serviced.

NO - Perform the following :

1. Set the Power switches on the system unit and expansion unit to Off.
2. Set the Power switches on all external devices to Off.
3. Disconnect the expansion-unit cable from the system unit.
4. Set the Power switch on the system unit to On.
5. Go to the next step.

4 When the POST finished, did the following appear on your screen?

```
1801
XXX KB OK
ERROR. (RESUME = "F1" KEY)
```

YES - Press

and go to the next step.

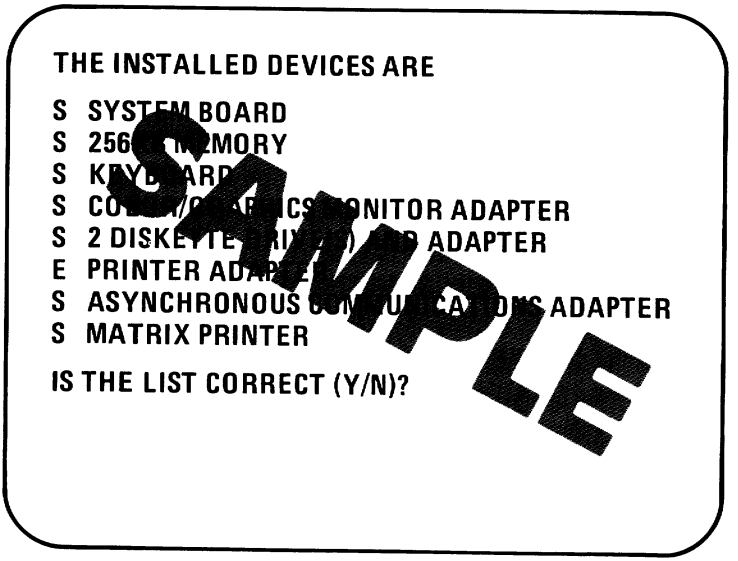
NO - Go to the next step.

5 Press 0, then ↵ to select **RUN DIAGNOSTIC ROUTINES.**

```
The IBM Personal Computer DIAGNOSTICS
Version XXX (C) Copyright IBM Corp XXXX

SELECT AN OPTION

0 - RUN DIAGNOSTIC ROUTINES
1 - FORMAT DISKETTE
2 - COPY DISKETTE
3 - PREPARE SYSTEM FOR RELOCATION
9 - EXIT TO SYSTEM DISKETTE

ENTER THE ACTION DESIRED
?
```

Note: Depending on the configuration of your system, the screen may ask questions about attached devices. Press Y or N as required, then press Enter.

6 Are any of the options or devices installed in your expansion unit missing from the list?



Note: The IBM Communications Cable and the Printer Cable will not appear in the list. The Graphics Printer will be listed as "Matrix Printer." The Game Control Adapter may not be listed if the joysticks or paddles are not connected when Power is set to On.

YES - Press Y then ↵ and go to the next step.

NO - Have the system unit serviced.

7 Press to select

RUN TESTS ONE TIME, then .

```
SYSTEM CHECKOUT
0 - RUN TESTS ONE TIME
1 - RUN TESTS MULTIPLE TIMES
2 - LOG UTILITIES
9 - EXIT DIAGNOSTIC ROUTINES
ENTER THE ACTION DESIRED
?
```

Did you get an error message?

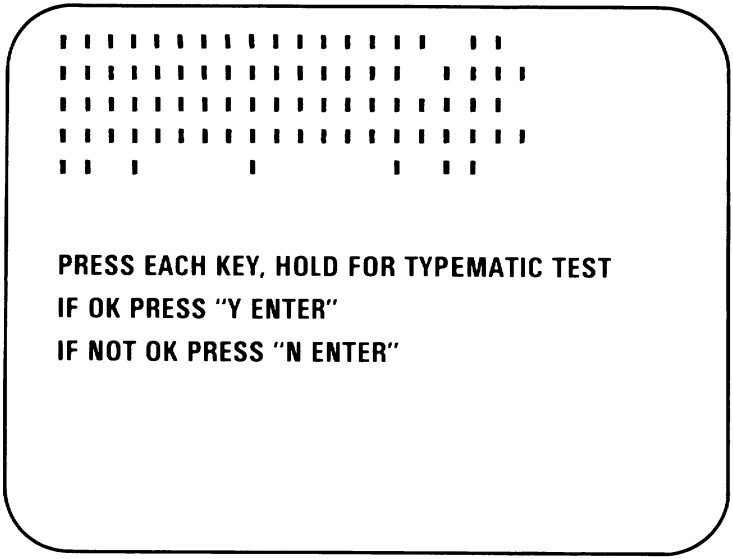
YES - Have the expansion unit and its cable serviced.

NO - Have the system unit serviced.

Notes:

Test 300

1 After approximately two minutes, did the following appear on your screen?



YES - Press each key once, then go to the next step.

NO - Press then . Record the error message. Have the system unit serviced.

2 Did the blocks change to characters as shown below?

```
1 2 ←1 2 3 4 5 6 7 8 9 0 - = ↔  N S
3 4 L Q W E R T Y U I O P [ ]  7 8 9 -
5 6 C A S D F G H J K L ; ' '  R 4 5 6
7 8 S \ Z X C V B N M , . / S  * 1 2 3 +
9 0   A       S         C    0 .

PRESS EACH KEY HOLD FOR TYPEMATIC TEST
IF OK PRESS "Y ENTER"
IF NOT OK PRESS "N ENTER"
```

YES - Press and hold any key. The corresponding character on the screen will flash. This is the typematic test.

If the typematic test works correctly, press then and go to the next test. If the typematic test fails, press then . Record the error message. Have the keyboard serviced.

NO - If any block did not change to a character, have the keyboard serviced.

Test 400

1 Do you have an IBM Monochrome Display and Printer Adapter installed in your system?

NO - Continue with the next test.

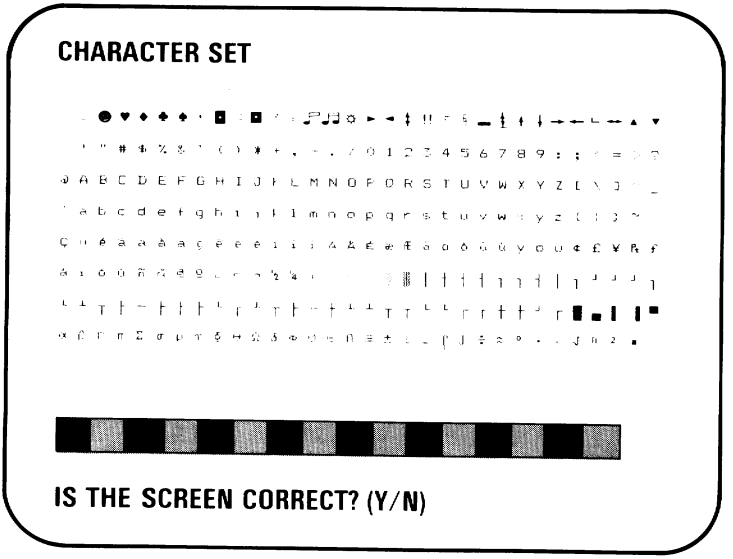
YES - Did the following appear on your screen?

```
DISPLAY ATTRIBUTES

THIS LINE IS AT NORMAL INTENSITY.
THIS LINE IS INTENSIFIED.
THIS LINE IS IN REVERSE VIDEO.

THIS LINE IS BLINKING
THIS LINE IS UNDERLINED

IS THE SCREEN CORRECT? (Y/N)
```

YES - Press then and go to the next step.

NO - Press then . Record the error message and have the unit that contains the adapter serviced.

2 Did the following appear on your screen?



YES - Press then and go to the next step.

NO - Press then . Record the error message and have the unit that contains the adapter serviced.

3 Did the following appear on your screen?

80X25 DISPLAY

```
 !"#$%&' ()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN
!"#$%&' ()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNO
"#$%&' ()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
#$%&' ()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQ
$%&' ()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQR
%&' ()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRS
&' ()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRST
' ()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTU
()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUV
)*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVW
*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWX
+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXY
,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ
-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
/0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]
```

IS THE SCREEN CORRECT? (Y/N)

YES - Press then . Your system has completed this test successfully. Continue with the next test.

NO - Press then . Record the error message and have the unit that contains the adapter serviced.

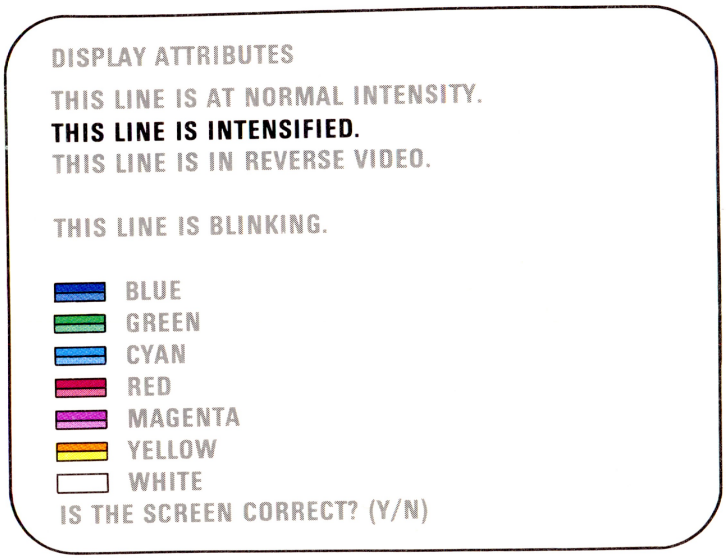
Notes:

Test 500

1 Do you have a color display or a television attached to your system.

NO - Continue with the next test.

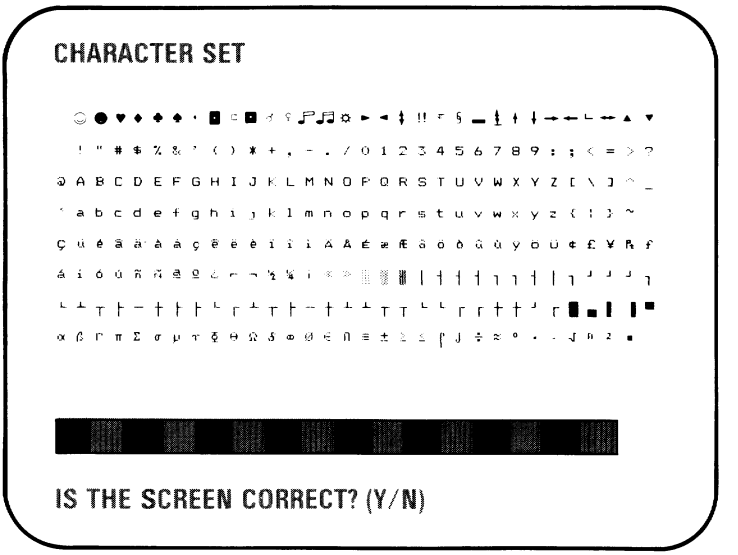
YES - Did the following appear on your screen?



YES - Press Y then ↵ and go to the next step.

NO - Press N then ↵. Record the error message and have the unit that contains the adapter serviced.

2 Did the following appear on your screen?



YES - Press then and go to the next step.

NO - Press then . Record the error message and have the unit that contains the adapter serviced.

3 Did the following appear on your screen?

80X25 DISPLAY

```
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNO
"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQ
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQR
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRS
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRST
'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTU
()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUV
)*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVW
*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWX
+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXY
,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ
-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
/0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]
```

IS THE SCREEN CORRECT? (Y/N)

YES - Press then and go to the next step.

NO - Press then . Record the error message and have the unit that contains the adapter serviced.

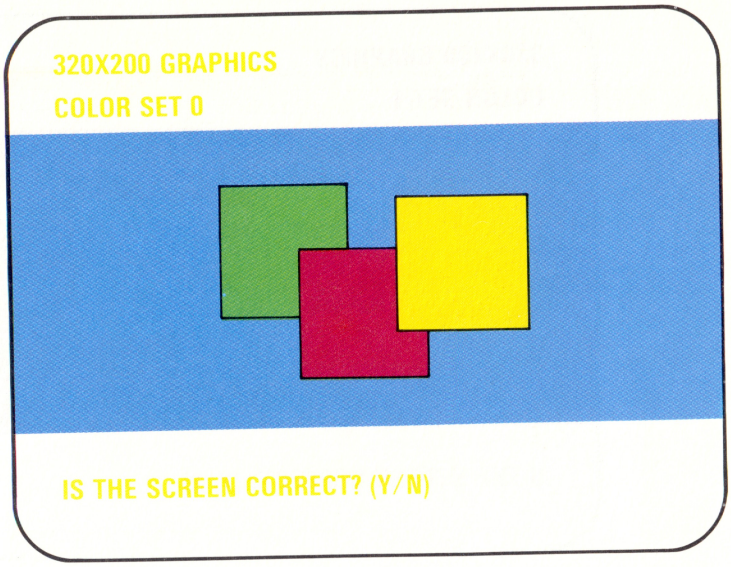
4 Did the following appear on your screen?

```
40X25 DISPLAY

 !"#$%&' ()*+,-./0123456789:;<=>?@ABCDEF
!"#$%&' ()*+,-./0123456789:;<=>?@ABCDEFG
"#$%&' ()*+,-./0123456789:;<=>?@ABCDEFGH
#$%&' ()*+,-./0123456789:;<=>?@ABCDEFGHI
$%&' ()*+,-./0123456789:;<=>?@ABCDEFGHIJ
%&' ()*+,-./0123456789:;<=>?@ABCDEFGHIJK
&' ()*+,-./0123456789:;<=>?@ABCDEFGHIJKL
' ()*+,-./0123456789:;<=>?@ABCDEFGHIJKLM
()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN
)*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNO
*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQ
,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQR
-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRS

IS THE SCREEN CORRECT? (Y/N)
```

YES - Press then and go to the next step.

NO - Press then . Record the error message and have the unit that contains the adapter serviced.

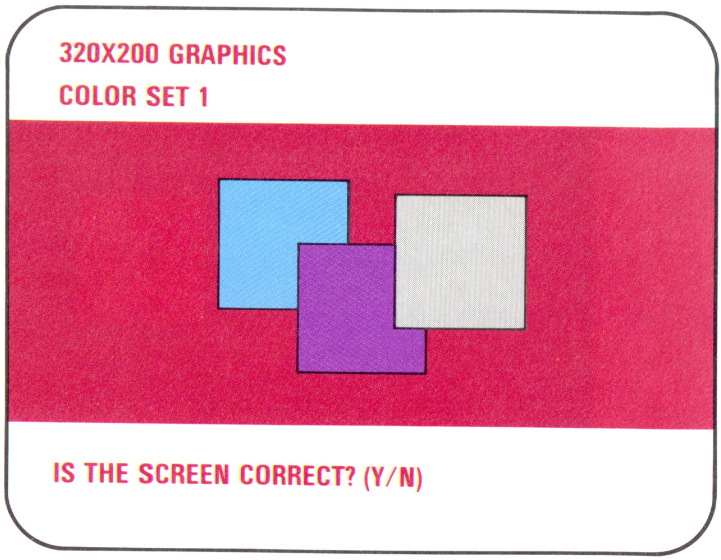
5 Did the following appear on your screen, with the correct colors?



YES - Press Y then ↵ and go to the next step.

NO - Press N then ↵. Record the error message and have the unit that contains the adapter serviced.

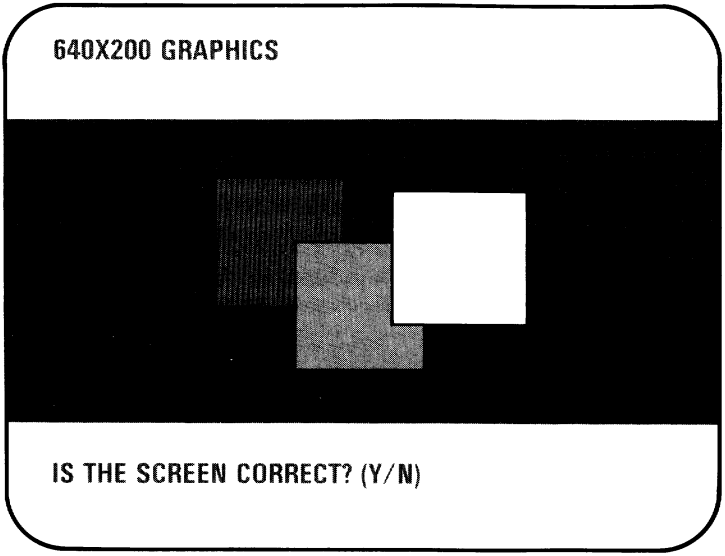
6 Did the following appear on your screen, and are the colors correct?



YES - Press Y then ↵ and go to the next step.

NO - Press N then ↵. Record the error message and have the unit that contains the adapter serviced.

7 Did the following appear on your screen?



YES - Press Y then ↵ and go to the next step.

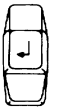
NO - Press N then ↵ . Record the error message and have the unit that contains the adapter serviced.

8 Did the following appear on your screen?

VIDEO PAGE 0

TYPE ANY KEY TO DISPLAY NEXT PAGE

YES - Go to the next step.

NO - Press then  . Record the error message and have the unit that contains the adapter serviced.

9 Press any key; "VIDEO PAGE 1" appears. Continue to press any key until "VIDEO PAGE 0" appears.

10 Did all 8 pages appear?

VIDEO PAGE 0

WERE ALL 8 PAGES DISPLAYED? (Y/N)

YES - Press then . Your system has completed this test successfully. Continue with the next test.

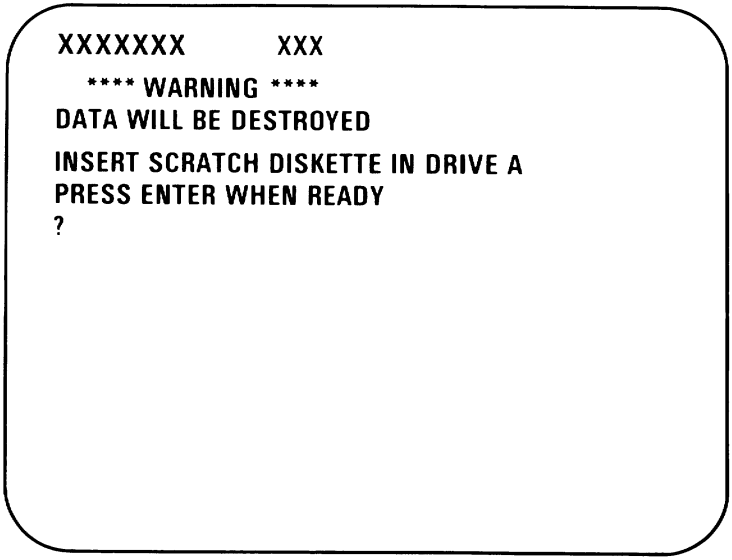
NO - Press then . Record the error message and have the unit that contains the adapter serviced.

Notes:

Test 600

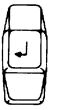
1 Remove the Diagnostics diskette.

2 Does your screen match the one shown in the figure below?



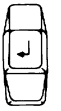
YES - Go to the next step.

NO - Record the error message and have the system unit serviced.

3 Insert a scratch diskette in drive A and press  .

4 Did the following appear on your screen and is the drive type correct?

```
DISKETTE DRIVE A: IS SINGLE SIDED
IS THE DISKETTE DRIVE TYPE
CORRECT – (Y/N) ?
```

YES - Press then  . If you have two diskette drives installed in your system, go to the next step. If you have only one diskette drive, your system has completed this test successfully. Continue with the next test.

NO - Have the system unit serviced.

5 Did the following appear on your screen?

```
*** WARNING ***
DATA WILL BE DESTROYED
INSERT SCRATCH DISKETTE IN DRIVE B
PRESS ENTER WHEN READY
?
```

YES - Remove the scratch diskette from drive A, place it in drive B, and press .

Go to the next step.

NO - Have the system unit serviced.

6 Did the following appear on your screen, and is the drive type correct?

```
DISKETTE DRIVE B: IS DOUBLE SIDED
IS THE DISKETTE DRIVE TYPE
CORRECT – (Y/N) ?
```

YES - Press then . Your system has completed this test successfully. Continue with the next test.

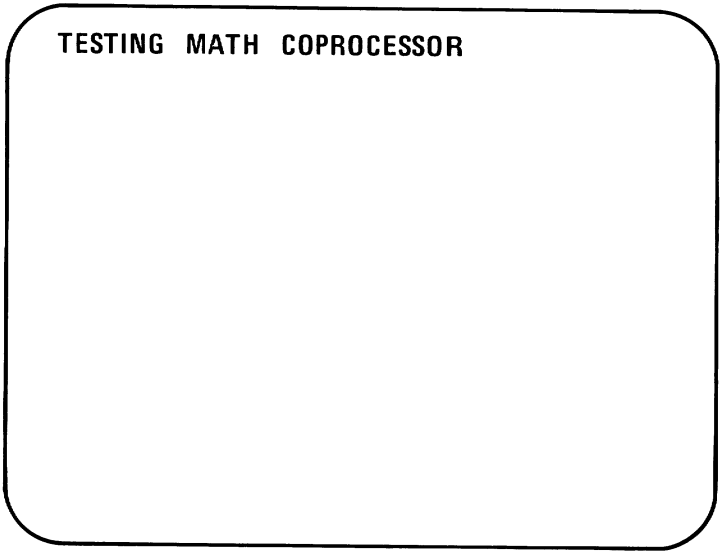
NO - Have the system unit serviced.

Test 700

1 Do you have an IBM Math Coprocessor installed in your system?

NO - Continue with the next test.

YES - Did the following appear on your screen for more than 10 seconds?



YES - Have the system unit serviced.

NO - Go to the next step.

2 Did the following appear on your screen?

```
XX:XX:XX
ERROR - SYSTEM UNIT        7XX
XX:XX:XX
ERROR - SYSTEM UNIT        9XX
XX:XX:XX
ERROR - SYSTEM UNIT        11XX
XX:XX:XX
ERROR - SYSTEM UNIT        12XX
```

YES - Have the system unit serviced.

NO - Your system has completed this test successfully. Continue with the next test.

Test 900

Do you have an IBM Printer Adapter installed in your system?

NO - Continue with the next test.

YES - Did either of the following error messages appear on your screen?

```
XX:XX:XX
ERROR - SYSTEM UNIT     9XX

XX:XX:XX
ERROR EXPANSION UNIT   9XX
```

YES - Have the unit that contains the adapter serviced.

NO - Your system has completed this test successfully. Continue with the next test.

Notes:

Test 1100

Do you have an IBM Asynchronous Communications Adapter installed in your system?

NO - Continue with the next test.

YES - Did any of the following error messages appear on your screen?

```
XX:XX:XX
ERROR - SYSTEM UNIT      11XX
XX:XX:XX
ERROR - SYSTEM UNIT      12XX

XX:XX:XX
ERROR EXPANSION UNIT     11XX

XX:XX:XX
ERROR EXPANSION UNIT     12XX
```

YES - Have the unit that contains the adapter serviced.

NO - Your system has completed this test successfully. Continue with the next test.

Notes:

Test 1300

1 Do you have an IBM Game Control Adapter installed in your system?

NO - Continue with the next test.

YES - Did the following appear on your screen?

```
DO YOU HAVE JOY STICKS, PADDLES,
OR NOTHING ATTACHED (J P N)?
```

YES - For joysticks press then and go to Step 2.

For paddles press then and go to Step 5.

For nothing press then and go to the next test.

NO - Continue with the next test.

2 Press then .

3 Check for correct operation of your joysticks as follows:

1. Press each button and watch the word **RELEASED** change to **PRESSED**.

2. Move each joystick and watch the character **A** or **B** move inside the box.

4 Did all buttons and joysticks operate correctly?

```
HOW MANY BUTTONS DO YOU HAVE (2/4)? 2
BUTTON A                BUTTON B
RELEASED                RELEASED
************            ************
*          *            *          *
*          *            *          *
*    A     *            *    B     *
*          *            *          *
*          *            *          *
************            ************

PRESS AND RELEASE ALL BUTTONS,
EXERCISE ALL JOY STICKS/PADDLES
AND PRESS ANY KEY WHEN DONE
```

YES - Your system has completed this test successfully. Press any key and continue with the next test.

NO - Have the joysticks and the unit the Game Control Adapter is installed in serviced.

5 Enter the number of paddles (2 or 4) attached to your Game Control Adapter and press .

6 Enter the same number for the number of buttons and press .

7 Check for correct operation of your paddles as follows:

1. Press each button and watch the word **RELEASED** change to **PRESSED**.
2. Turn each paddle control and watch the characters **A, B, C,** or **D** move inside the box.

Go to the next step.

8 Did all buttons and paddle controls operate correctly?

```
HOW MANY BUTTONS DO YOU HAVE (2/4)?
BUTTON A      BUTTON B      BUTTON C      BUTTON D
RELEASED      RELEASED      RELEASED      RELEASED
************              ************
*    A     *              *    B     *
************              ************
************              ************
*    C     *              *    D     *
************              ************
PRESS AND RELEASE ALL BUTTONS.
EXERCISE ALL JOY STICKS/PADDLES
AND PRESS ANY KEY WHEN DONE
```

YES - Your system has completed this test successfully. Press any key and continue with the next test.

NO - Have the paddles and the unit the Game Control Adapter is installed in service.

Notes:

Test 1500

Do you have an IBM Synchronous Data Link Control Adapter installed in your system?

NO - Continue with the next test.

YES - Did either of the following error messages appear on your screen?

```
XX:XX:XX
ERROR - SYSTEM UNIT     15XX

XX:XX:XX
ERROR EXPANSION UNIT    15XX
```

YES - Have the unit that contains the adapter serviced.

NO - Your system has completed this test successfully. Continue with the next test.

Notes:

Test 1700

1 Do you have a fixed disk drive installed in one of your units?

NO - Continue with the next test.

YES - The following will appear on your screen.

```
*** WARNING ***
DATA ON CYLINDER 305 WILL BE
OVERWRITTEN BY FIXED DISK WRITE TESTS
DO YOU WANT TO INCLUDE FIXED DISK
WRITE TESTS ON DRIVE C: (Y/N) ?
```

Press and then if you want to include Fixed disk write tests or press and then if you do not want to include Fixed disk write tests.

Go to the next step.

2 Did the following appear on your screen?

Note: This test can take up to 5 minutes.

```
  *** WARNING ***
DATA ON CYLINDER 305 WILL BE
OVERWRITTEN BY FIXED DISK WRITE TESTS

DO YOU WANT TO INCLUDE FIXED DISK
WRITE TESTS ON DRIVE C: (Y/N) ? y
PERFORMING SEEK TEST
PERFORMING WRITE TEST
PERFORMING TRACK ZERO TEST
PERFORMING SURFACE SCAN
PLEASE STAND BY
```

YES - If you have one fixed disk drive installed, your system has successfully completed this test. Continue with the next test. If you have two fixed disk drives installed, go to the next step.

NO - Record the error message and have the unit that contains the fixed disk drive serviced.

Note: If you did not select the **Write Test** the PERFORMING WRITE TEST message will not be displayed.

3 Did the following appear on your screen?

```
*** WARNING ***
DATA ON CYLINDER 305 WILL BE
OVERWRITTEN BY FIXED DISK WRITE TESTS
DO YOU WANT TO INCLUDE FIXED DISK
WRITE TESTS ON DRIVE D: (Y/N) ?
```

YES - Press

and then if you want to include Fixed disk write tests or press

and then if you do not want to include Fixed disk write tests.

Go to the next step.

NO - Record the error message and have the expansion unit serviced.

4 Did the following appear on your screen?

```
DO YOU WANT TO INCLUDE FIXED DISK
WRITE TESTS ON DRIVE D: (Y/N) ? y
PERFORMING SEEK TEST
PERFORMING WRITE TEST
PERFORMING TRACK ZERO TEST
PERFORMING SURFACE SCAN
PLEASE STAND BY
```

YES - Your system has successfully completed this test. Continue with the next test.

NO - Record the error message and have the expansion unit serviced.

Test 2000

Do you have an IBM Binary Synchronous Communications Adapter installed in your system?

NO - Continue with the next test.

YES - Did any of the following error messages appear on your screen?

```
XX:XX:XX
ERROR - SYSTEM UNIT      20XX

XX:XX:XX
ERROR - SYSTEM UNIT      21XX

XX:XX:XX
ERROR EXPANSION UNIT     20XX

XX:XX:XX
ERROR EXPANSION UNIT     21XX
```

YES - Have the unit that contains the adapter serviced.

NO - Your system has completed this test successfully. Continue with the next test.

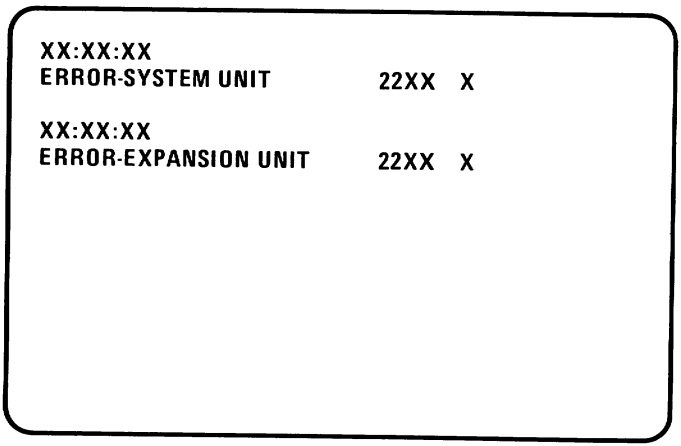
Notes:

Test 2200

1 Do you have an IBM Personal Computer Cluster Adapter installed in your system?

NO - Continue with the next test.

YES - Did either of the following error messages appear on your screen?



YES - Have the unit that contains the adapter and the terminating plug serviced.

NO - Go to the next step.

2 Did either of the following error messages appear on your screen?

```
TESTING – CLUSTER ADAPTER  X
THE STATION ADDRESS IS  XX
REMOTE IPL IS NOT SELECTED
 X:XX:XX
ERROR – SYSTEM UNIT  22XX
ERROR – EXPANSION UNIT  22XX
PRESS ENTER TO CONTINUE
?
```

YES - Have the unit that contains the adapter and the terminating plug serviced.

NO - Go to the next step.

3 The following will appear on your screen.

Note: When more than one Cluster Adapter is installed in a Personal Computer, each of the adapters will be tested.

```
TESTING – CLUSTER ADAPTER  X
THE STATION ADDRESS IS  XX
REMOTE IPL IS NOT SELECTED

DO YOU WANT TO DISPLAY THE
CLUSTER STATUS (Y/N)  ?
```

Go to the next step.

4 Does the adapter number, station address, and remote IPL information shown on your screen match your switch setting information entered below?

Cluster Adapter Number ___ ___ ___ ___

Station Address ____ ____ ____ ____

Remote IPL (Is/Is Not) Selected _____

YES - Go to the next step.

NO - If the adapter number, station address, or remote IPL information is not correct, have the unit that contains the adapter serviced.

5 Do you want to display the Cluster status?

Note: The Cluster status screen presentation will show 64 boxes that represent the stations in the Cluster that have the Power switch set to On and are connected to the Cluster bus.

```
TESTING - CLUSTER ADAPTER  X
THE STATION ADDRESS IS  XX
REMOTE IPL IS NOT SELECTED

DO YOU WANT TO DISPLAY THE
CLUSTER STATUS (Y/N)  ?
```

YES - Set the Power switch on all Cluster system units (and expansion units, if installed) to On,

press then , then go to the next step.

NO - Your system has successfully completed this test. Remove the terminating plug and attach the coaxial cable to the Cluster Adapter connector.

Press , then and continue with the next test.

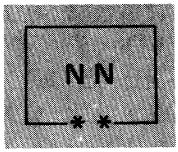
6 The following will appear on your screen.

```
TESTING - CLUSTER ADAPTER  X
THE STATION ADDRESS IS  X
REMOTE IPL IS NOT SELECTED

DO YOU WANT TO DISPLAY THE
CLUSTER STATUS (Y/N)  ? y

CONNECT THE CABLE TO THE
CLUSTER ADAPTER

PRESS ENTER WHEN READY
?
```

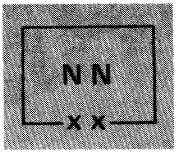
Disconnect the terminating plug and attach the coaxial cable to the Cluster Adapter's connector, then press and go to the next page.

This is an information page that explains the Cluster status that may appear on your screen.

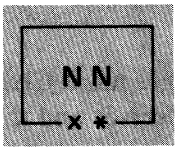
NN is any station address from 0 to 63.



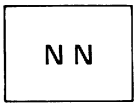
The system you are using is indicated on the screen in blinking reverse video, and the box is marked by two asterisks.



Stations that have the Power switch set to On are displayed in reverse video, and their boxes are marked by two X's.



If another Personal Computer has the same station address as your Personal Computer, a long beep will sound every 3 seconds, the box will be displayed in blinking reverse video and marked by an X and an asterisk.

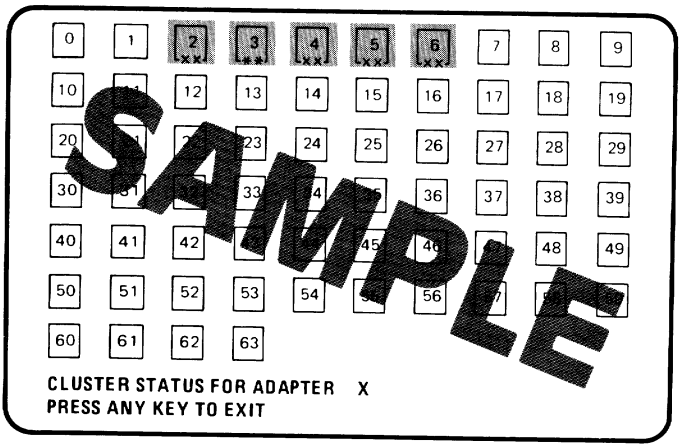


A station address not in the Cluster is indicated by a box displayed in normal video and not marked with X's or asterisks.

A Cluster Access Error message may be displayed in reverse video.

Go to the next step.

7 Wait 15 seconds. Do all stations installed in the Cluster appear and remain on the screen presentation?



Notes:

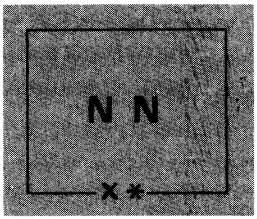
1. Your Installation Manager has a Cluster map that lists the station addresses and the order in which the stations are connected. Compare the map and the status screen presentation to determine that all of the stations on the Cluster are operating properly.

2. The status screen shows all stations installed on your Cluster, and is updated every 3 seconds to show stations that are added to or removed from the Cluster.

YES - Your system has successfully completed this test. Press any key and continue with the next test.

NO - Go to the next step.

8 Did a box marked in blinking reverse video with an X and an asterisk appear, and did a beep sound every 3 seconds?



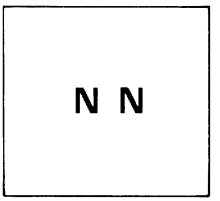
YES - Another Personal Computer has the same station address as your Personal Computer. Use your Cluster map and compare it with the status screen presentation. Run the system diagnostic tests on the Personal Computer that is missing from the Cluster Status screen.

Have the unit that contains the failing adapter serviced.

NO - Go to the next step.

9 On your Cluster Status screen, did a box appear in normal video, not marked with X's or asterisks, for a station address that is on the Cluster?

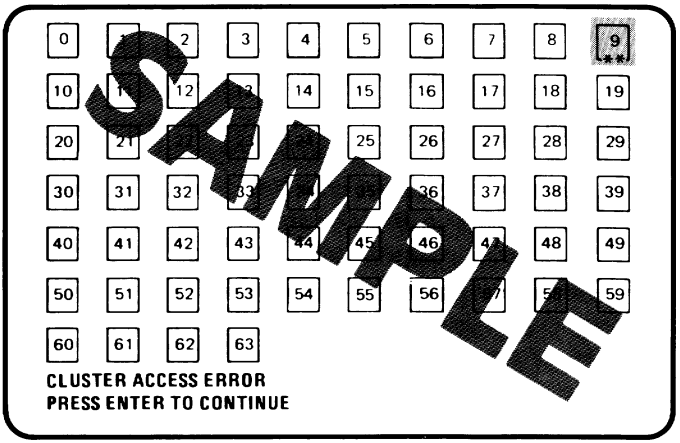
Note: Multiple grounds on the Cluster cables may cause stations to appear on the status screen presentation intermittently. Contact your Installation Manager.



YES- Go to Step 11.

NO - Go to the next step.

10 Do you have a Cluster Access Error?



YES - Go to Step 11.

NO - Your system has successfully completed this test. Continue with the next test.

11 You have stations that are not indicated on any status screen, or a Cluster Access Error.

1. Run the system diagnostic tests on a station that is not indicated on any status screen, or that has a Cluster Access Error.

2. If the diagnostic test fails, have the unit that contains the adapter serviced.

3. If the diagnostic test passes, continue doing the diagnostic tests until all of the stations that did not appear on any status screen presentation or had a Cluster Access Error are tested.

4. If the Cluster Adapters check good and the stations did not appear on the Cluster status screen presentations, contact your Installation Manager as the coaxial cable or a terminating plug is suspect.

   Note: If you have more than one Cluster Adapter installed in your system go back to 2200-1, and continue until all of the Cluster Adapters are tested.

Test 7000

Do you have an IBM Printer attached to your system?

YES - Continue with the next Test.

NO - You have completed the Problem Determination Procedures with no failures. Remove the scratch diskette from your drive. Return the Diagnostics diskette to the back of this manual. Your system unit is ready to load your operating system.

If you should have any other problems, contact your place of purchase for additional help.

Notes:

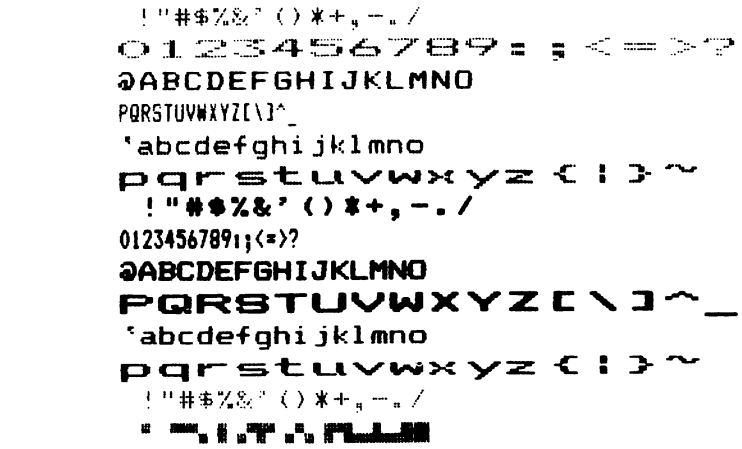
Test 7010

1 Do you have an IBM Graphics/Matrix Printer attached to your system?

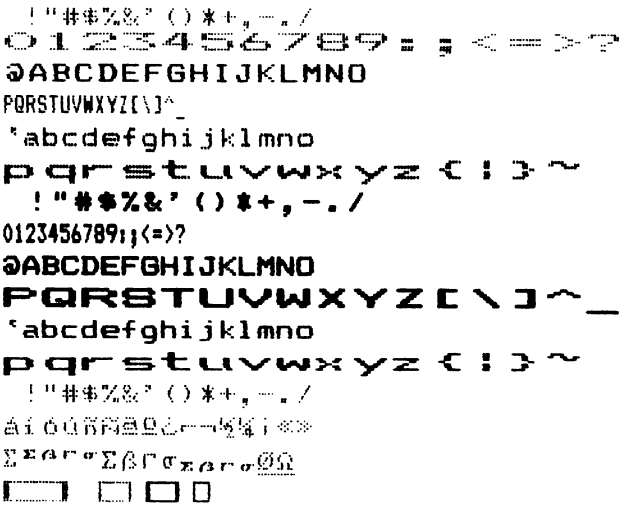
NO - Continue with the next test.

YES - One of the following printer test patterns should print.

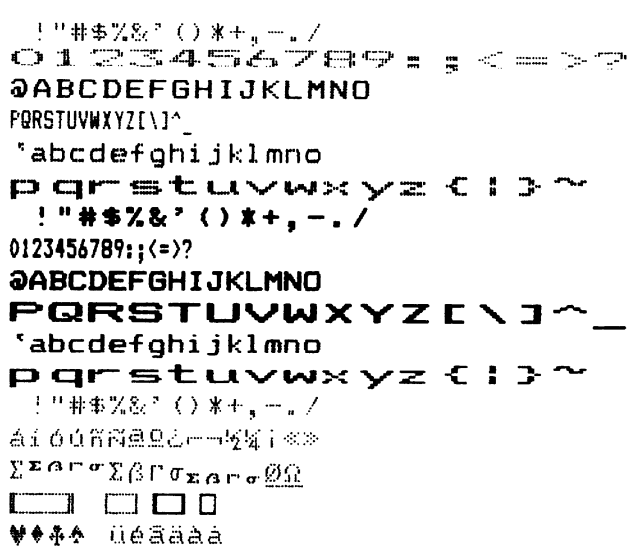
Matrix Printer Example



U.S. Graphics Printer Example



International Graphics Printer Example



2 Did the printer test finish without any errors and the printer test pattern print correctly?

NO - Record the error message, and go to Test 8000.

YES - Continue with the next test.

Notes:

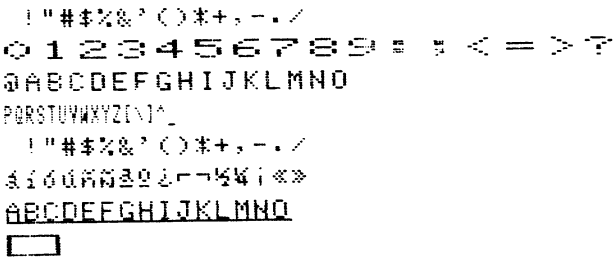
Test 7020

1 Do you have an IBM PC Compact Printer attached to your system?

NO - Continue with the next test.

YES - The following printer test pattern should print.

Compact Printer Example



2 Did the printer test finish without any errors and the printer test pattern print correctly?

NO - Record the error message, and go to Test 8010.

YES - Continue with the next test.

Test 7030

1 Do you have an IBM Personal Computer Color Printer attached to your system?

NO - Continue with the next test.

YES - Select the width of the paper you are using.

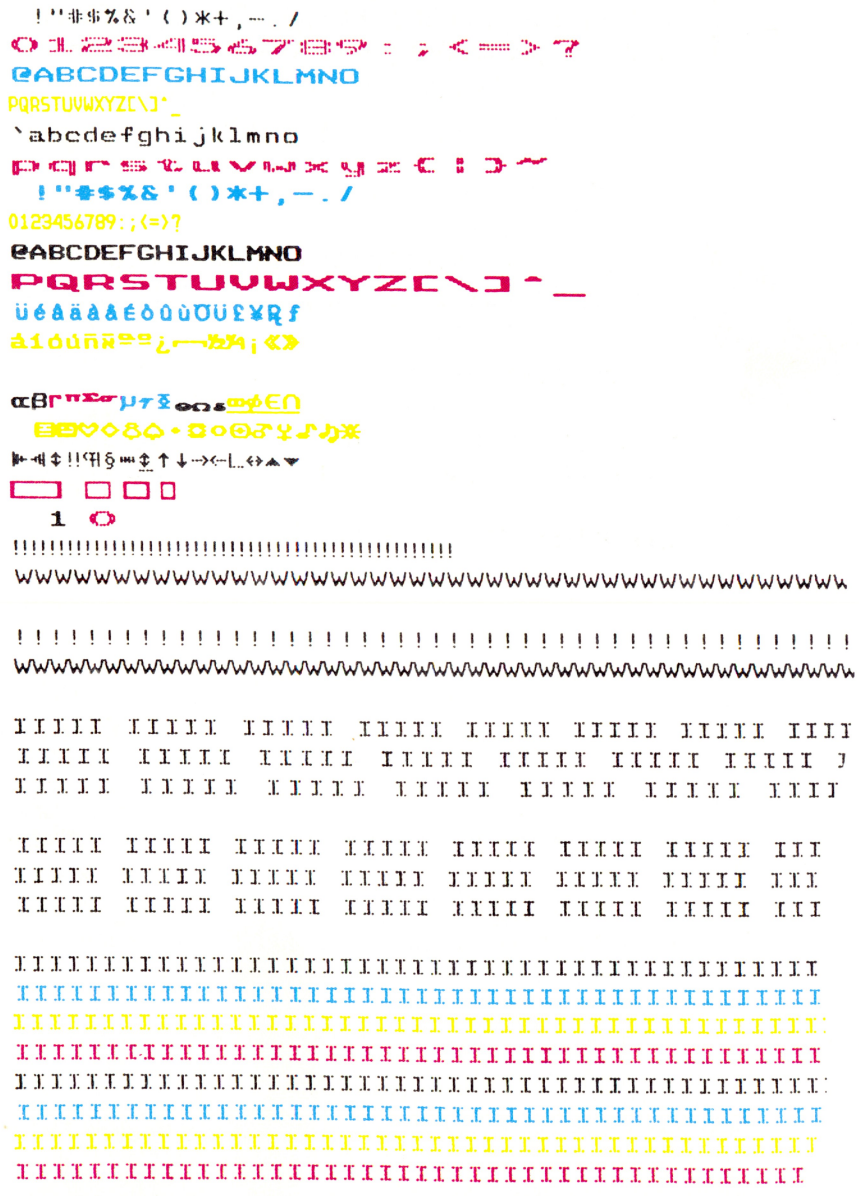
```
SELECT PAPER WIDTH

1 – 8 1/2 INCH PAPER WIDTH
2 – 14 1/2 INCH PAPER WIDTH

ENTER THE OPTION DESIRED
?
```

Press then for paper 8-1/2 inches wide.

Press then for paper 14-1/2 inches wide.

2 The following printer test pattern should print.

Color Printer Example



Note: If the print example shows the incorrect character set, check the DIP switches. If the DIP switches are set correctly, have your printer serviced.

3 Did the printer test pattern finish without any errors and the printer test pattern print correctly?

YES - Go to the next step.

NO - If the test pattern is correct but the colors are wrong, go to the next step. If the test pattern is not correct or you received an error message, record the error message and go to Test 8020.

4 Are the characters in your test pattern correct and is each character only one color?

```
ARE THE CHARACTERS ON THE PRINTED
TEST PATTERN CORRECT, AND EACH
CHARACTER A SINGLE COLOR (Y/N)
?
```

YES - Press

then and go to Step 7.

NO - Press

then and continue on the next step.

Note: Refer to the "Ribbon-Color Knob Adjustment" procedure in the "IBM Personal Computer Color Printer Installation and Operating Instructions" in your *Guide to Operations* manual.

5 Perform the ribbon adjustment procedure. Then press

to print the test pattern and verify the adjustment.

Warning: Wait until the printer stops before making any adjustments.

6 Return to Step 4.

Note: If you are unable to adjust the ribbon, have the printer serviced.

7 Continue with the next test.

Notes:

Test 7900

You have completed the Problem Determination Procedures with no failures. Remove the scratch diskette from your drive. Return the Diagnostic diskette to the back of this manual. Your system unit is ready to load your operating system.

If you should have any other problems, contact your place of purchase for additional help.

Notes:

Test 8000

1 Check your wall outlet for proper operation (use a working lamp).

2 Verify that your printer cable is properly connected to the printer and the system unit.

Did you find any problem while doing the above step?

NO - Go to the next step.

YES - Correct the problem and perform the system diagnostic tests again.

3 Set the Power switches on the printer and system unit to Off. (If an expansion unit is attached, also set its Power switch to Off.)

4 Disconnect the printer cable.

5 Perform the printer self-test:

1. Press and hold the Line Feed button while you set the printer's Power switch to On.

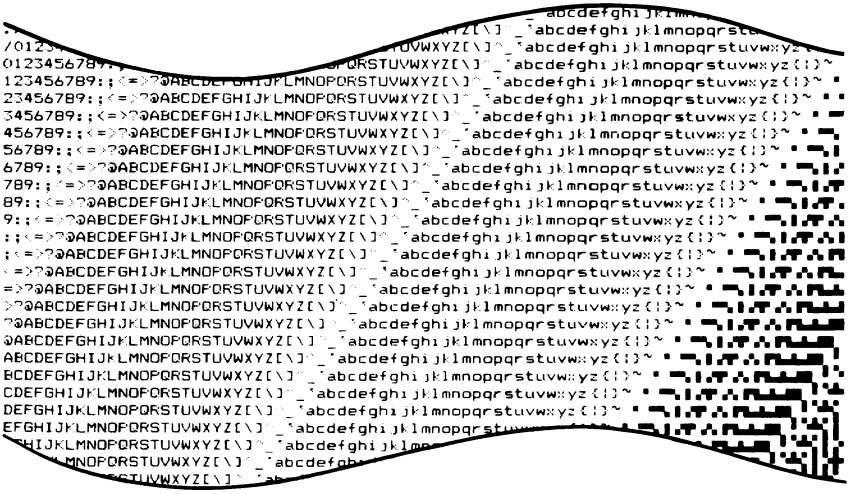
2. When the test starts, release the Line Feed button.

   Note: The printer self-test will take approximately 10 minutes.

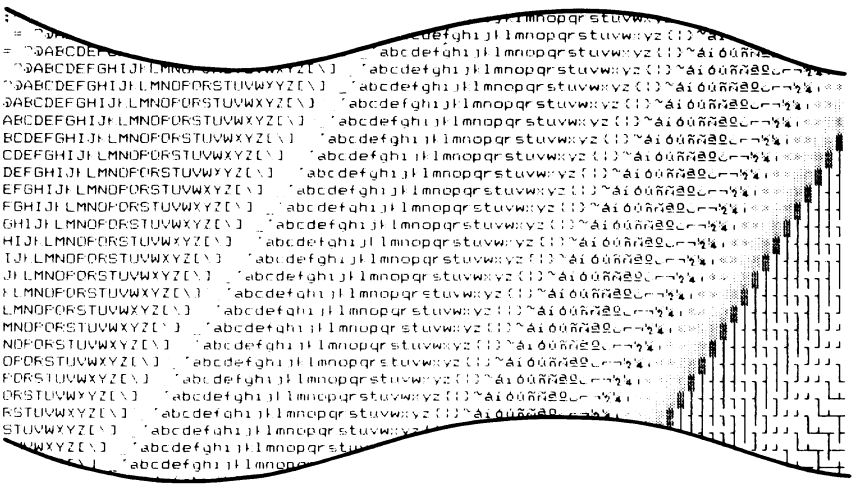
3. To stop the printer self-test before it finishes, set the printer's Power switch to Off.

6 Below are partial examples of the printout for each of the IBM Graphics/Matrix Printers. Compare your printout with the appropriate example.

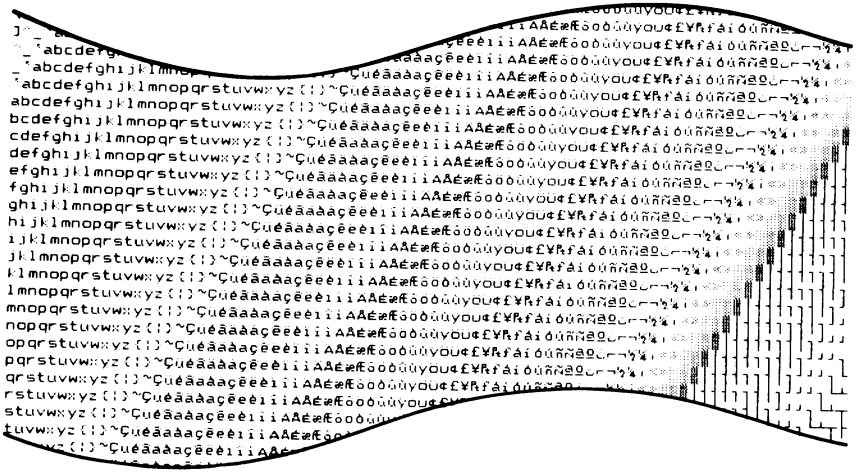
Matrix Printer Example



Graphics Printer U.S. Example



Graphics Printer International Example



Did the self-test finish without failures?

YES - Go to Step 13.

NO - Go to the next step.

7 Ensure the ribbon is installed properly.

8 Ensure the forms or paper is inserted properly.

9 Ensure the forms or paper path has no obstructions.

10 Ensure the tractors are adjusted properly.

If you need help with any of the above, refer to the operating instructions that came with your printer.

11 Did you find any problem while doing the above steps?

NO - Go to the next step.

YES - Correct the problem and restart the printer self-test.

Note: If you are using a non-U.S. English keyboard and your printout does not match the desired character set, have your printer serviced.

12 Does your printer have any of the following problems?

- Your printer beeps even though the paper is installed properly.
- Your printer does not beep even when it is out of paper.
- Some of the lights on the control panel do not work.
- Some of the buttons on the control panel do not work.
- Your printer continues to print when it is out of paper.
- Your printer fails to print or prints incorrectly.

NO - Go to Step 14.

YES - Have your IBM Graphics/Matrix Printer serviced.

13 Did you receive any of the following error messages during diagnostic testing?

199

432

901

1401

YES - Go to the next step.

NO - If you are still having a problem go to Step 16.

14 Leave the printer cable disconnected from the printer and run the system diagnostic tests again. Verify that the list of installed devices and options is correct. (your printer will be missing from the list).

15 Did you receive the same error message when you ran the system diagnostic tests this time?

YES - If your printer is attached to an adapter in your system unit, have the system unit serviced. If your printer is attached to an adapter in the expansion unit, have the expansion unit serviced.

NO - Have the printer and cable serviced.

16 Your printer also is controlled by program commands from the system unit. If you are still having a printer problem, or if you have a printer problem only during a particular program, examine the program thoroughly for commands that might cause the printer to produce undesired results. If you have completed the printer self-test and have no apparent program problems, have the unit that the printer is attached to serviced.

Test 8010

1 Check your wall outlet for proper operation (use a working lamp).

2 Verify that your printer cable is properly connected to the printer and system unit.

Did you find any problem while doing the above step?

NO - Go to the next step.

YES - Correct the problem and perform the system diagnostic tests again.

3 Set the Power switches on the printer and system unit to Off. (If an expansion unit is attached, also set its Power switch to Off.)

4 Disconnect the printer cable.

5 Perform the printer self-test:

1. Be sure there is nothing preventing the paper from moving.

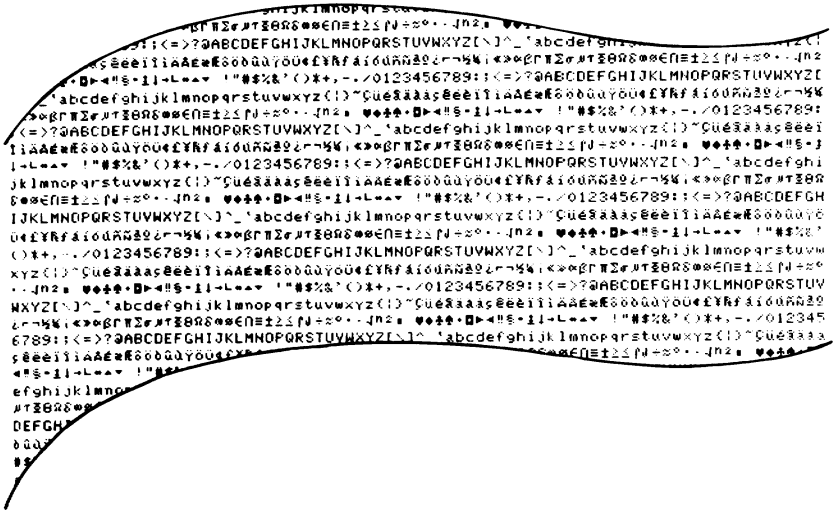
2. Be sure the top cover is closed properly.

3. Press and hold down the Paper Feed button while you set the printer's Power switch to On.

4. After the test starts, release the Paper Feed button.

5. The self-test runs continuously until you set the printer's Power switch to Off.

6 Below is a partial example of the printout for the IBM PC Compact printer. Compare your printout with the example.



Did the self-test finish without failures?

YES - Go to Step 8.

NO - Go to the next step.

7 Does your printer have any of the following problems?

- The printer Ready Light blinks continuously.
- The printer prints backwards question marks continuously.
- The printer has extra or missing dots in the printed characters.
- The printer sounds like it is operating, but does not print anything on the paper. (Be sure the paper is installed properly).
- The printer does not do anything.

YES - Have your IBM PC Compact Printer serviced.

NO - Go to the next step.

8 Your printer also is controlled by program commands from the system unit. If you are still having a printer problem, or if you have a printer problem only during a particular program, examine the program thoroughly for commands that might cause the printer to produce undesired results.

9 If you have completed the printer self-test and have no apparent program problems, have the unit that the printer is attached to serviced.

Test 8020

1 Check your wall outlet for proper operation (use a working lamp).

2 Verify that your printer cable is properly connected to the printer and the system unit.

Did you find any problem while doing the above step?

NO - Go to the next step.

YES - Correct the problem and perform the system diagnostic tests again.

3 Set the Power switches on the printer and system unit to Off. (If an expansion unit is attached, also set its Power switch to Off.)

4 Disconnect the printer cable.

5 Perform the printer self-test:

1. Open the access cover, and set all DIP switches to Off.
2. Close the access cover.
3. Set the printer's Power switch to On.
4. Press the Ready button to set the printer to Not Ready (Ready indicator is off).
5. Press the Test Mode button.
6. To stop the test, press the Test Mode button again.

6 Below is a partial example of the printout for the IBM Personal Computer Color Printer. Compare your printout with the example.

Did the self-test finish without failures?

YES - Go to Step 15.

NO - Go to the next step.

7 Ensure the ribbon is installed properly.

8 Ensure your forms or paper is inserted properly.

9 Ensure the forms or paper path has no obstructions.

10 Ensure the tractors are adjusted properly.

If you need help with any of the above, refer to the operating instructions that came with your printer.

Did you find any problem while doing the above steps?

NO - Go to the next step.

YES - Correct the problem and restart the printer self-test.

> **Note:** If you are using a non-U.S. English keyboard and your printout does not match the desired character set, verify that the switch settings are correct for the desired character set. If the switch settings are correct have your printer serviced.

11 Does your printer have any of the following problems?

- Your printer beeps even though the paper is installed properly.
- Your printer does not beep even when it is out of paper.
- Some of the lights on the control panel do not work.
- Some of the buttons on the control panel do not work.
- Your printer continues to print when it is out of paper.
- Your printer fails to print or prints incorrectly.

NO - Go to Step 18.

YES - Go to the next step.

12 Ensure that the DIP switches are all set to Off.

13 Ensure the Forms Thickness Control lever is properly adjusted.

14 Ensure the Feed Mode lever is in the correct position.

Did you find any problem while doing the above steps?

NO - Have your printer serviced.

YES - Correct the problem and restart the printer self-test.

15 Did you receive any of the following error messages during diagnostic testing?

199

432

901

1401

2901

2902

YES - Go to the next step.

NO - If you are still having a problem go to Step 18.

16 Leave the printer cable disconnected from the printer and run the system diagnostic tests again. Verify that the list of installed devices and options is correct. (your printer will be missing from the list).

17 Did you receive the same error message when you ran the system diagnostic tests this time?

YES - If your printer is attached to an adapter in your system unit, have the system unit serviced. If your printer is attached to an adapter in the expansion unit, have the expansion unit serviced.

NO - Have the printer and its cable serviced.

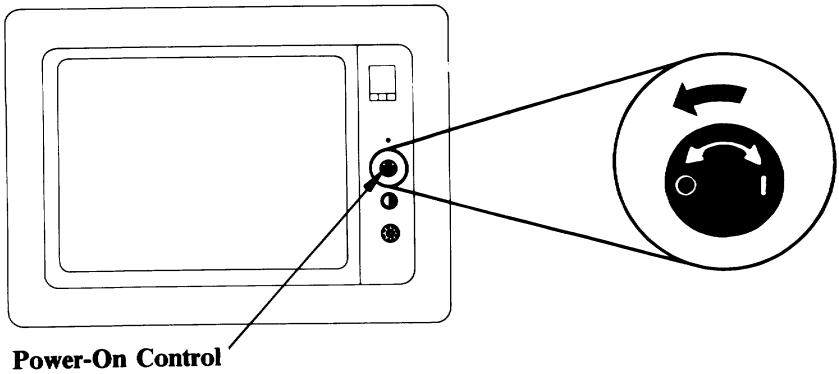
18 Your printer also is controlled by program commands from the system unit. If you are still having a printer problem, or if you have a printer problem only during a particular program, examine the program thoroughly for commands that might cause the printer to produce undesired results. If you have completed the printer self-test and have no apparent program problems, have the unit that the printer is attached to serviced.

Notes:

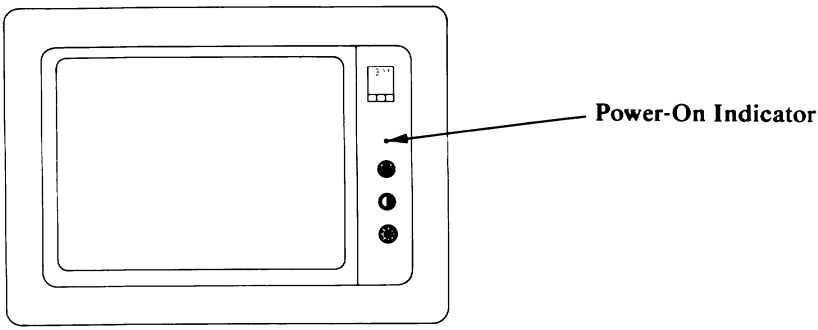
Test 9000

If your IBM Color Display requires service, it must be returned with the power cord.

1 Set the Power control to On.



2 Is the Power-On indicator lit?

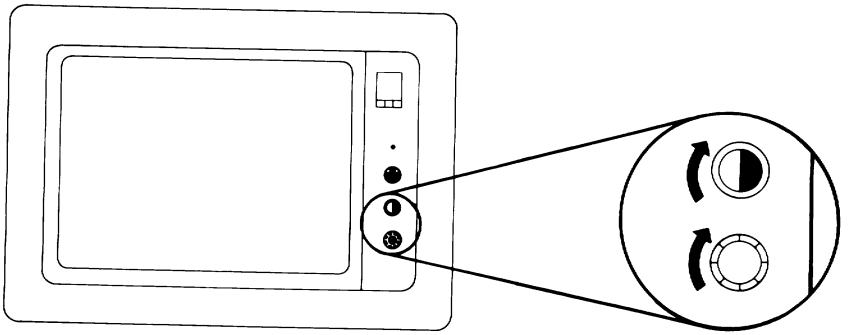


YES - Go to the next step.

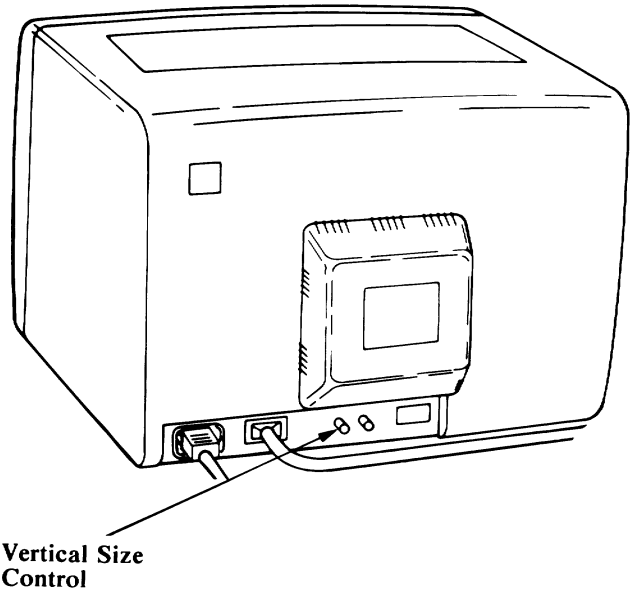
NO - Check that the power cord is plugged into a functioning wall outlet and into the rear of the display. If so, have the display serviced.

3 Set the Power switch on the system unit (and expansion unit, if attached) to Off.

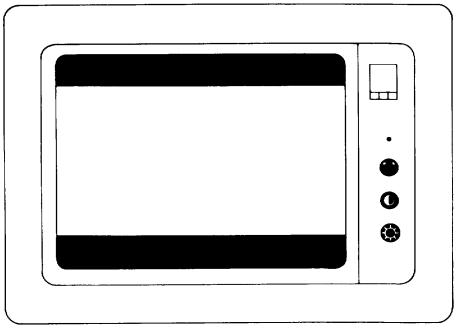
4 Set the Brightness and Contrast controls fully clockwise.



5 Turn the Vertical Size control fully counterclockwise. A black area should appear across the top and bottom of the screen.



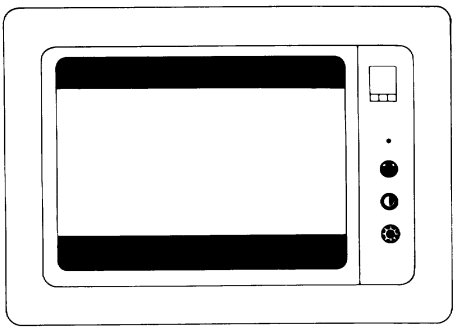
6 Does the black area appear across the top and bottom of the screen?



YES - Go to the next step.

NO - Have the display serviced.

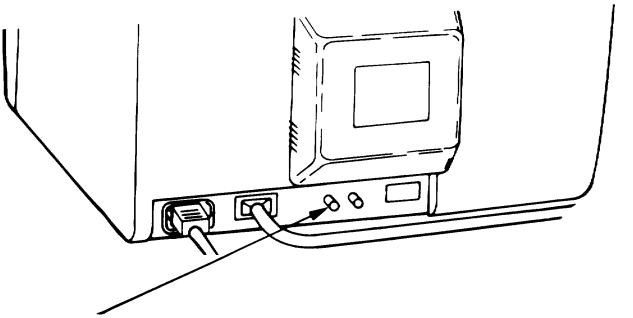
7 Are the black areas at the top and bottom of the screen approximately equal in size?



YES - Go to the next step.

NO - Have the display serviced.

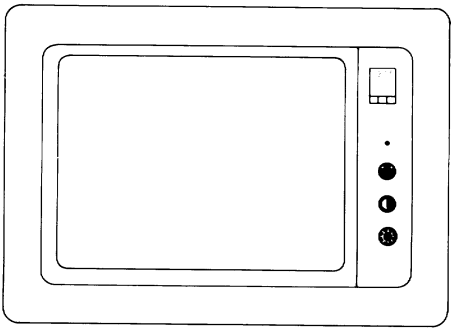
8 Turn the Vertical Size control clockwise until the black areas at the top and bottom of the screen just disappear. If one of the black areas disappears before the other, continue to turn the control until the second black area is gone.



Vertical Size Control

Rear view

9 Is the entire screen white?

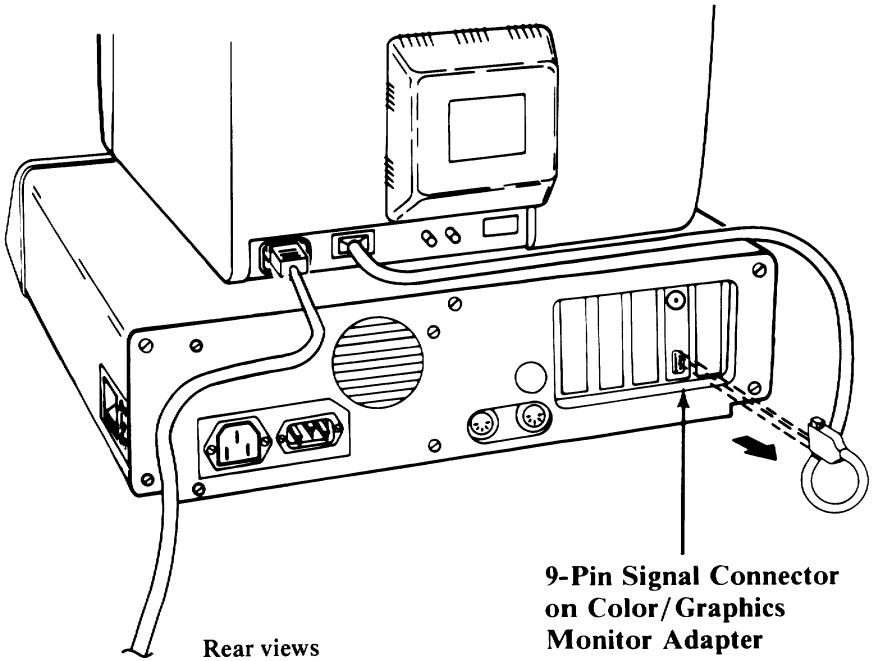


YES - Go to Step 14.

NO - Go to the next step.

10 Set the display's Power control to Off.

11 Disconnect the display's signal cable from the system unit or expansion unit.



Rear views

12 Set the Power control on the display to On.

13 Is the screen white?

YES - Have the unit that the display was attached to serviced.

NO - Have the display serviced.

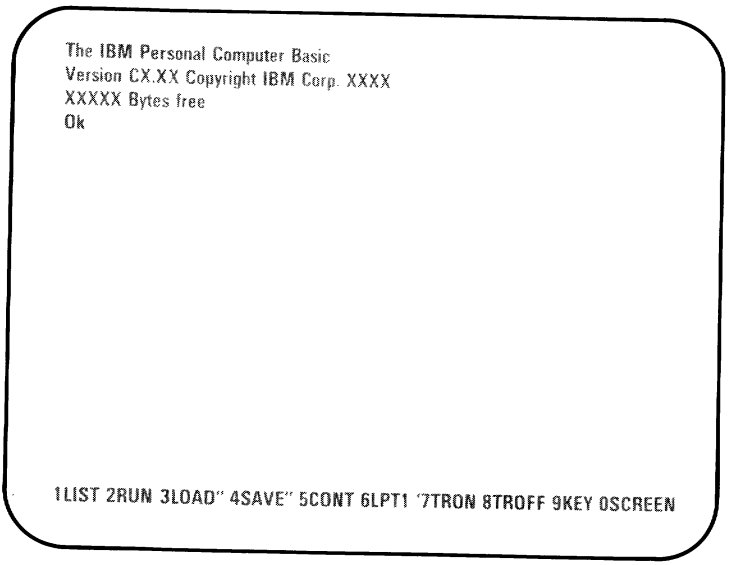
14 While watching the screen, set the Power switch on the expansion unit (if attached) to On. Then set the system unit's Power switch to On.

15 Did the screen change from white to black when the Power switch was set to On? (The totally black screen may last only 13 seconds before the display changes again.)

YES - Go to the next step.

NO - Have the display serviced.

16 Wait for the Power-On Self Test (POST) to complete. The IBM Personal Computer BASIC message, with a blinking cursor, will appear (if a diskette is not inserted, or an operating system is not automatically loaded from a fixed disk drive).



17 Is your screen blank?

NO - Go to the next step.

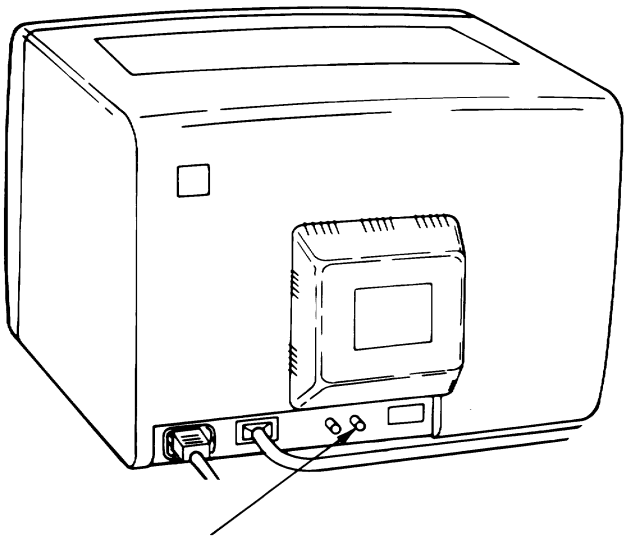
YES - Have the unit that the display was attached to serviced.

18 Is your screen steady?

YES - Go to Step 21.

NO - Go to the next step.

19 Turn the Vertical Hold control clockwise as far as it will go, then turn it counterclockwise until the screen stops rolling and is steady.



20 Were you able to make the screen steady?

YES - Go to the next step.

NO - Have the display serviced.

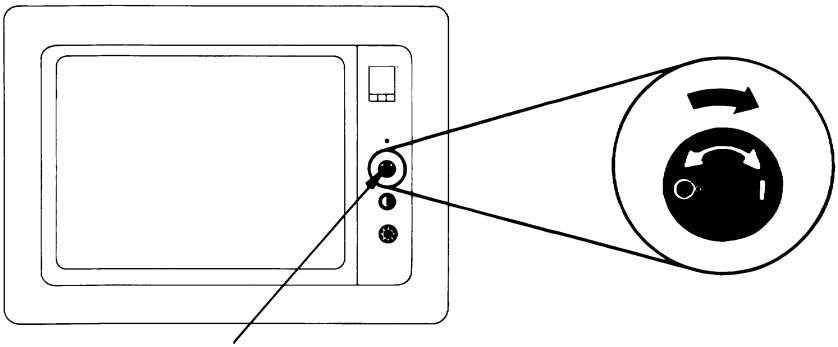
21 Look at the screen. Does it have white characters on a dark background?

YES - Go to Step 27.

NO - Go to the next step.

22 Set the Power switch on the system unit (and expansion unit, if attached) to Off.

23 Set the display's Power control to Off.



Power-On Control

24 Disconnect the display's signal cable from the system unit or expansion unit.

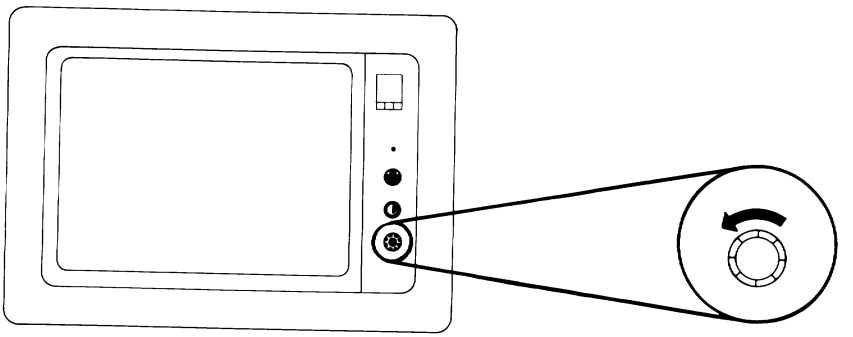
25 Set the display's Power control to On.

26 Is the screen white?

YES - Have the unit that the display was attached to serviced.

NO - Have the display serviced.

27 Turn the Brightness control fully counterclockwise.

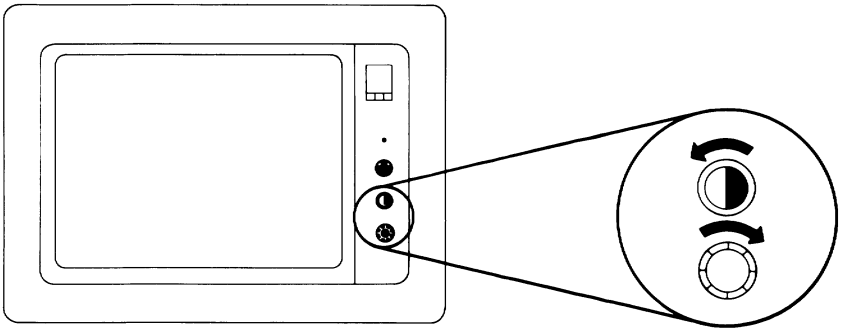


28 Does the intensity of the characters decrease?

YES - Go to the next step.

NO - Have the display serviced.

29 Turn the Brightness control fully clockwise. Turn the Contrast control fully counterclockwise.

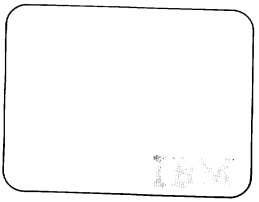


30 Does the intensity of the characters decrease?

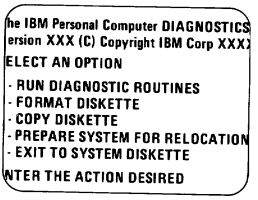
YES - Go to the next step.

NO - Have the display serviced.

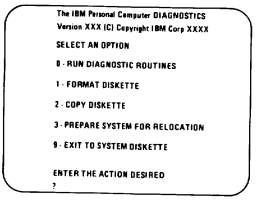
31 Turn the Contrast control fully clockwise. Look at the following examples.



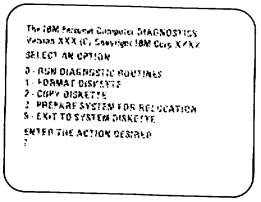
Too Dim



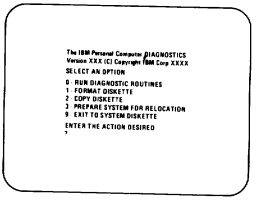
Too Wide



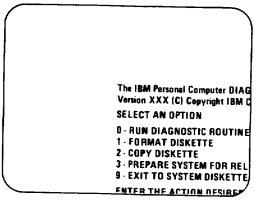
Too Narrow



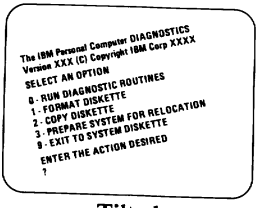
Out of Focus



Shrunken



Characters shifted left or right or up and down off the display area



Tilted

32 Is the problem similar to one of the examples?

YES - Have your display serviced.

NO - Go to "Diagnostic Testing" on page Test 000-1 earlier in this section.