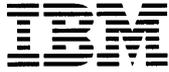




*Token-Ring Network
PC Adapter*

Hardware Maintenance and Service

SC30-3384-0
6466920



*Token-Ring Network
PC Adapter*

Hardware Maintenance and Service

Note: This product is intended for use within a single establishment and within a single, homogeneous user population. For sensitive applications requiring isolation from each other, management may wish to provide isolated cabling or to encrypt the sensitive data before putting it on the network.

First Edition (February 1986)

Changes are made periodically to the information herein; these changes will be incorporated in new editions of this publication.

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Statement**

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

Preface

Start all maintenance activity for the IBM Token-Ring Network PC Adapter in this manual.

This manual explains how to isolate suspected problems with your IBM Token-Ring Network PC Adapter and Adapter Cable.

This manual is intended for use by:

- Trained service personnel who need to isolate and correct problems with the adapter and adapter cable.
- Users of IBM Personal Computers with IBM Token-Ring Network PC Adapters installed in them. These users can identify a suspected problem with the adapter before replacing it or calling a local service center for repairs.

This manual is divided into five chapters and two appendixes.

Chapter 1 explains the purpose of the manual and outlines a typical configuration using the IBM Token-Ring Network PC Adapter.

Chapter 2 describes the Power-On Self Test (POST) and the Advanced Diagnostics for the adapter and cable. If you suspect a problem with your adapter or cable, these diagnostic programs and the Problem Isolation Charts in Chapter 3 will help you isolate and correct the problem.

Chapter 3 provides step-by-step instructions, in the Problem Isolation Charts (PICs), that will help you identify a faulty adapter or cable. This chapter also lists the Advanced Diagnostics messages and codes, their meanings, and any required user action.

Chapter 4 identifies the correct switch settings and slot locations for the IBM Token-Ring Network PC Adapter in the various IBM Personal Computer units. In addition, this chapter shows the safety ground locations for the various IBM Personal Computers.

Chapter 5 explains how to remove and replace the adapter and cable.

Appendix A explains how to install the adapter wrap plug to use with the Advanced Diagnostics program.

Appendix B contains a directory listing of the files on the Advanced Diagnostics diskette.

Prerequisite Publications

IBM Token-Ring Network PC Adapter Guide to Operations, available with each adapter kit (IBM P/N 6339100).

Related Publications

IBM Personal Computer Guide to Operations

IBM Personal Computer Hardware Maintenance and Service

IBM Personal Computer Technical Reference

IBM Token-Ring Network PC Adapter Technical Reference

IBM Token-Ring Network Introduction and Planning Guide, GA27-3677*

IBM Token-Ring Network Problem Determination Guide, SY27-0280.*

IBM Token-Ring Network Telephone Twisted Pair Media Guide, GA27-3714.*

For assistance in obtaining IBM manuals, see your place of purchase. For items marked with an asterisk (*), see your IBM representative or IBM branch office.

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Chapter 1. Introduction

This manual is packaged with and includes instructions for using the Advanced Diagnostics diskette and the wrap plug for the IBM Token-Ring Network PC Adapter.

The IBM Token-Ring Network PC Adapter Advanced Diagnostics are a set of routines that test the IBM Token-Ring Network PC Adapter. The wrap plug is used to directly connect the transmit and receive lines of the adapter during testing. This can help you isolate a problem to either the adapter or the adapter cable, by allowing the tests to run with the cable disconnected from the adapter.

The IBM Token-Ring Network PC Adapter Kit (P/N 6339100) allows you to connect one of the IBM Personal Computers to the IBM Token-Ring Network. The kit includes the following:

- IBM Token-Ring Network PC Adapter Card
- IBM Token-Ring Network PC Adapter Diskette
- *IBM Token-Ring Network PC Adapter Guide to Operations*
- Card Support Bracket.

The IBM Token-Ring Network PC Adapter and its support interface handle the communication between the your computer and the network. With the adapter and the support interface, your computer can run a network application program.

Complete information about the Adapter Kit is found in the *IBM Token-Ring Network PC Adapter Guide to Operations*, available with each kit.

See your place of purchase to obtain the adapter cable (P/N 6339098) and the kit. The wrap plug (P/N 6165899) and The IBM Token-Ring Network PC Adapter Card (P/N 61X3931) are also available separately.

The IBM Token-Ring Network PC Adapter can be installed in an IBM Personal Computer, IBM Personal Computer XT, IBM Personal Computer AT, or IBM Portable Personal Computer.

Note: Two IBM Token-Ring Network PC Adapters can be installed in an IBM PC XT or IBM Personal Computer AT. Only one adapter can be installed in the IBM Personal Computer or the IBM Portable PC. The adapter cannot be installed in an IBM Personal Computer Expansion Unit.

A typical IBM Personal Computer configuration for the IBM Token-Ring Network is:

- A system board with 256K bytes of random access memory
- An attached keyboard
- A diskette drive
- A Token-Ring Network PC Adapter
- A printer (optional)
- An IBM monochrome display.

Chapter 2. Diagnostic Aids

Three diagnostic aids are used to check the IBM Token-Ring Network PC Adapter:

- Power-On Self Test (POST)
- Advanced Diagnostics
- Problem Isolation Charts (PICs).

The Power-On Self Test and Advanced Diagnostics are described in this chapter. The Problem Isolation Charts are located in Chapter 3.

After you become familiar with the diagnostics, it will not be necessary to go through this chapter. However, this material is useful until you have a better understanding of these diagnostic aids.

Power-On Self Test

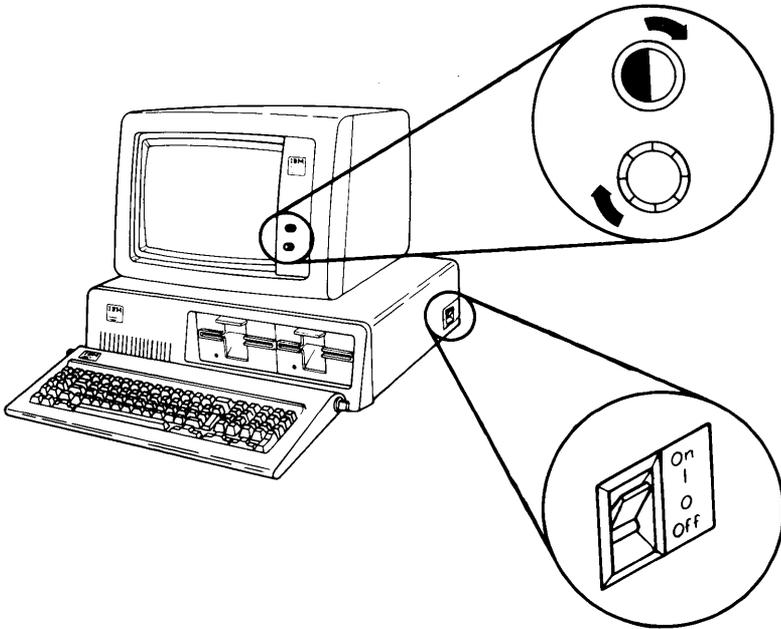
The Power-On Self Test (POST) is a diagnostic routine in read-only memory (ROM) on the system board. POST runs automatically when you turn on the power switch for your computer. POST takes less than two minutes to complete. This routine checks all of the following items that are included in or attached to your computer:

- System board
- Memory expansion adapters
- Fixed disk and diskette drive adapter
- Primary display
- Keyboard
- Diskette drives
- Fixed disk drives.

Running POST

To run POST:

- 1 If you are using an IBM display unit (monitor), turn the contrast and brightness controls clockwise. If the display is not an IBM product, ensure that it is working properly.



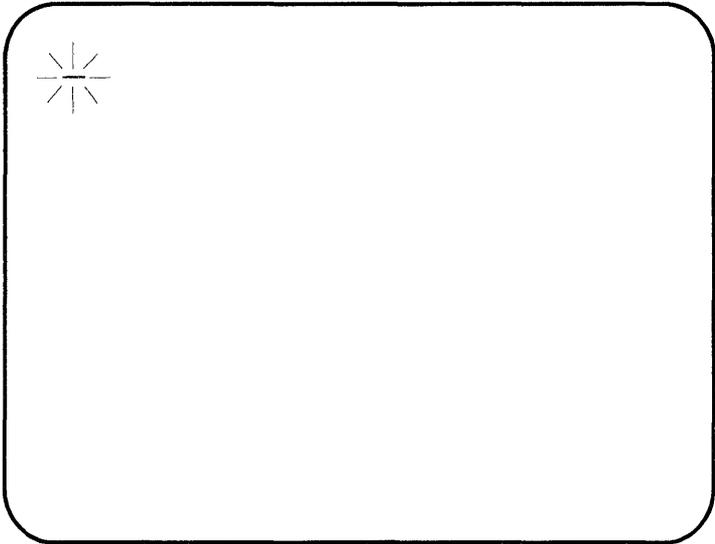
- 2 Set the power switch on all attached devices (printer, display, and so forth) to **On**.
- 3 If your computer has a key lock, turn it to the **Unlocked** position.

4 Set the power switch on the expansion unit (if attached) to **On**.

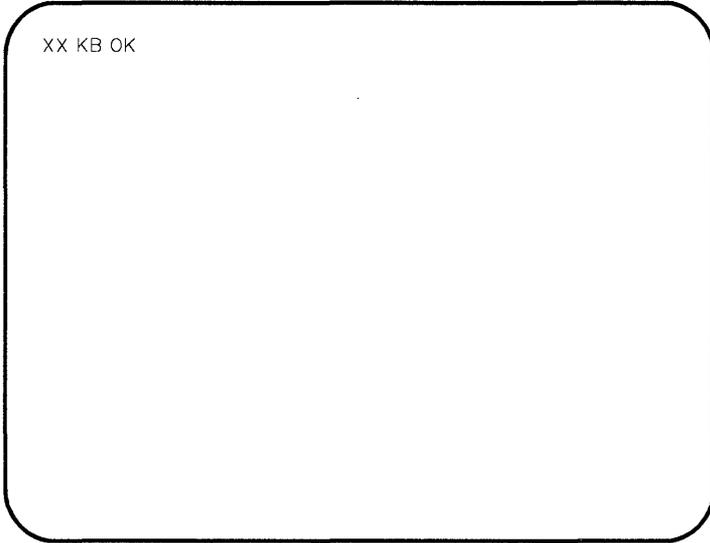
Note: The expansion unit must be turned on before the system unit. Otherwise, an **1801** (memory expansion option) error will occur.

5 Set the power switch on the system unit to **On**. POST runs automatically. POST normally provides the following three responses:

a On an IBM Personal Computer or an IBM Portable Personal Computer, a blinking cursor should appear in the upper left-hand corner of the screen.



On an IBM Personal Computer XT or IBM Personal Computer AT, the memory size should appear in the upper left-hand corner and should continue to increase in increments of 16K bytes until the total system memory is tested.



- b One short beep is sounded when POST has been completed.

- C** If no diskette program is loaded, the IBM Personal Computer BASIC message appears. If a program or operating system is loaded from a diskette or fixed disk, the program or operating system's first screen appears on the display.

```
The IBM Personal Computer Basic  
Version CXXX Copyright IBM Corp. XXXX  
XXXXX Bytes free  
Ok
```

```
R 1ST 2RUN 3LOAD" 4SAVE" 5CONT 6LP11 7TRON 8TROFF 9KEY 0SCREEN
```

- 6** Adjust the brightness and contrast controls on the display for easy viewing.

POST Errors

Here are some of the errors that can appear during POST:

- A blank display
- An incorrect audio response (no beep or more than one beep)
- An incorrect memory size
- Keyboard not operating properly
- Printer not operating properly
- An error message.

If one or more errors occur, write down each error message as it appears. If multiple errors are displayed, start troubleshooting the message that appears first.

If an error does occur, make sure that all the cables are correctly installed and that all jumpers and switch settings are correct. To determine proper jumper and switch settings, see Chapter 4 in this manual, and the section on locations in your IBM Personal Computer's *Hardware Maintenance and Service* manual.

The following are examples of error messages that could be displayed during POST:

- **601 Diskette Error**
- **XXXXXX XX 20X** (X can be any character)
- **16X Memory Size Error**

or even a combination such as:

- **30000 00 201
601**

After an error message appears on the screen, the following line is displayed:

ERROR (Resume = "F1" Key)

Press the **F1** key to cause the system unit to attempt to bypass the error and complete POST. Depending on the error, POST may not be completed.

If POST is completed even though there were errors, write down the error messages, and load the Advanced Diagnostics. See "Loading the Advanced Diagnostics" on page 3-2.

If POST is not completed, see your IBM Personal Computer's *Guide to Operations* or *Hardware Maintenance and Service* manual.

Advanced Diagnostics

The Advanced Diagnostics are routines that test the IBM Token-Ring Network PC Adapter functions. You load, select, and run these routines. If the Advanced Diagnostics detect a problem, an error message is displayed. The error messages and the Problem Isolation Charts (PICs) in Chapter 3 of this manual help you to identify and correct the problem. The Advanced Diagnostics can also be used to verify proper operation after installation or repair.

Advanced Diagnostics Message Information

The message information for the Advanced Diagnostics is displayed in three parts:

- The first line indicates which adapter is being tested (primary or alternate).
- The adapter card status area contains two lines of specific information about the adapter:
 - Adapter Address
 - Code Level
 - Interrupt Level
 - ROM Address.
- The testing status and error message area indicates:
 - The number of times the test has run
 - Whether the test passes or failed
 - An error message if an error is detected during the test.

The Advanced Diagnostics messages, their formats and meanings, and any required user action are described in “Advanced Diagnostics Messages and Codes” on page 3-34.

Diagnostic Menus

The diagnostic menus appear on your computer display while you are running the Advanced Diagnostics. This section shows the main diagnostic menus and describes what each menu selection does.

Menu 1 — Copyright/Diagnostic Options

- When this menu appears, a short beep is sounded.

```
THE IBM TOKEN-RING NETWORK PC ADAPTER
ADVANCED DIAGNOSTICS
Version 1.00 (C) Copyright IBM Corp 1986
```

```
SELECT ONE OF THE FOLLOWING:
```

```
0 -- RUN DIAGNOSTIC ROUTINES
9 -- EXIT TO SYSTEM DISKETTE
```

```
ENTER THE NUMBER OF YOUR SELECTION
?
```

0 – RUN DIAGNOSTIC ROUTINES—Starts the Advanced Diagnostics (moves to Menu 2).

9 – EXIT TO SYSTEM DISKETTE—Ends the Advanced Diagnostics and loads the operating system from diskette or fixed disk.

Menu 2 — Installed Adapters List

- If one IBM Token-Ring Network PC Adapter is installed in your computer, only that adapter should be listed on this menu. If two adapters are installed, both should be listed on the screen, as shown below.

The path to Menu 2 is:

- Menu 1

THE INSTALLED TOKEN-RING ADAPTERS ARE:

166 - S Primary IBM Token-Ring Network PC Adapter
167 - S Alternate IBM Token-Ring Network PC Adapter

IS THE LIST CORRECT (Y/N)?

Y—Proceeds to:

- The System Checkout Menu (Menu 4) if one adapter is installed in your computer.
- The Adapter Selection Menu (Menu 3) if two adapters are installed.

N—Allows you to try to correct the list to match your system's configuration.

If the list is still incorrect after you have attempted to correct it, you can continue running the Advanced Diagnostics by typing **Y**. However, the results will be unpredictable. The problem with the list should be corrected before you continue with the tests.

Menu 3 — Adapter Selection

- This menu appears only if two adapters are installed in your computer.

The path to Menu 3 is:

- Menu 1
- Menu 2

SELECT ONE OF THE FOLLOWING:

- 0 -- Primary IBM Token-Ring Network PC Adapter
- 1 -- Alternate IBM Token-Ring Network PC Adapter

ENTER THE NUMBER OF YOUR SELECTION OR
PRESS ENTER TO TEST BOTH ADAPTERS?

0 — Primary IBM Token-Ring Network PC Adapter—Tests the primary adapter (moves to Menu 4).

1 — Alternate IBM Token-Ring Network PC Adapter—Tests the alternate adapter (moves to Menu 4).

ENTER only — Tests both adapters (moves to Menu 4).

Menu 4 — System Checkout

The path to Menu 4 is:

- Menu 1
- Menu 2
- Menu 3 (only if two adapters are installed)

SYSTEM CHECKOUT

SELECT ONE OF THE FOLLOWING:

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

ENTER THE NUMBER OF YOUR SELECTION
?

0 - RUN TESTS ONE TIME—Runs the Advanced Diagnostic tests once on the installed adapter(s) (moves to Menu 6 the first time the System Checkout Menu appears after the diagnostics are loaded; otherwise, moves to Menu 8.)

1 - RUN TESTS MULTIPLE TIMES—Runs the Advanced Diagnostic tests one or more times without operator intervention (moves to Menu 7). This is useful for isolating intermittent problems.

2 - LOG UTILITIES —Allows you to use the error log to record errors during the testing, and to set or display the time of day (moves to Menu 5).

9 - EXIT DIAGNOSTIC ROUTINES—Exits the diagnostics program and returns to the Copyright/Diagnostic Options screen (Menu 1).

Menu 5 — Log Utilities

The path to Menu 5 is:

- Menu 1
- Menu 2
- Menu 3 (only if two adapters are installed)
- Menu 4

```
LOG UTILITIES
```

```
SELECT ONE OF THE FOLLOWING:
```

- ```
0 -- START ERROR LOG
1 -- STOP ERROR LOG
2 -- LIST LOG
3 -- SET TIME OF DAY
4 -- DISPLAY TIME OF DAY
9 -- RETURN FROM UTILITIES
```

```
ENTER THE NUMBER OF YOUR SELECTION
?
```

**0 – START ERROR LOG**—Records failures detected by the Advanced Diagnostics. The errors may be recorded on the same diskette with the Advanced Diagnostics, or another formatted diskette may be used. The diskette used to record the errors must not be write-protected.

**1 – STOP ERROR LOG**—Stops recording the failures detected by the Advanced Diagnostics.

**2 – LIST LOG**—Displays on the monitor screen the failures recorded on diskette. By pressing the **CTRL** and **NUMLOCK** keys simultaneously, you can stop the recorded messages from scrolling off

the top of the screen. To continue scrolling, press any key.

These errors can be printed at the same time they are displayed, by pressing the **CTRL** and **P** keys simultaneously. Pressing the **CTRL** and **N** keys simultaneously cancels printing of the errors. (Printing of **all** text displayed on the monitor will continue until **CTRL** and **N** are pressed.)

**3 – SET TIME OF DAY**—Sets the current time of day using a 24-hour clock.

If the system unit power has been turned off since the set time function was last used, the clock will restart at 0 when the power is turned on. Use this function to reset the clock to the correct time.

The contents of the clock are updated constantly while the power is on.

**4 – DISPLAY TIME OF DAY**—Displays time of day from the 24-hour clock.

**9 – RETURN FROM UTILITIES**— Returns to the System Checkout Menu (moves to Menu 4).

## Menu 6 — Cable Description

This menu appears only when the diagnostics are loaded, the System checkout menu appears for the first time, and RUN TESTS ONE TIME or RUN TESTS MULTIPLE TIMES is elected.

The path to Menu 6 is:

- Menu 1
- Menu 2
- Menu 3 (only if two adapters are installed)
- Menu 4

```
TESTING - Primary IBM Token-Ring Network PC Adapter ←
ADAPTER ADDRESS: 10005A00018B CODE LEVEL: F0 F0F0 A33802B
INTERRUPT LEVEL: 2 ROM ADDRESS: CC000

CABLE DESCRIPTION

 1 -- IBM TOKEN-RING NETWORK PC ADAPTER CABLE
 2 -- CABLE WITH A MODULAR TELEPHONE PLUG
 (TYPE 3 MEDIA FILTER)

SELECT THE NUMBER OF THE OPTION WHICH BEST
DESCRIBES THE CABLE CONNECTED TO THE IBM
TOKEN-RING NETWORK PC ADAPTER ?
```

**1 — IBM Token-Ring Network PC Adapter Cable**—Your adapter cables uses an IBM Cabling System Data Connector to attach your adapter to the network (moves to Menu 8).

**2 — Cable With a Modular Telephone Plug** — Your adapter cables uses a modular telephone plug to attach the adapter to the network (moves to Menu 8).

# Menu 7 — Running Tests Multiple Times

The path to Menu 7 is:

- Menu 1
- Menu 2
- Menu 3 (only if two adapters are installed)
- Menu 4 (only if running tests multiple times)
- Menu 6 (only when the diagnostics are first loaded)

ENTER THE NUMBER OF TIMES TESTS ARE TO RUN  
OR PRESS ENTER TO RUN TESTS CONTINUOUSLY  
?

DO YOU WANT TO STOP THE TESTS WHEN THE FIRST ERROR IS DISPLAYED (Y/N)? \*

\* This line appears after you respond to the first question.

To use this screen:

1. Enter the number of times you want to run the diagnostic tests. Valid numbers are 1 to 65,534.

Leave the number blank if you want the tests to run continuously.

2. Press **Enter**.

*Note:* Press **CTRL** and **C** together whenever you want to stop the tests and return to Menu 2.

3. If you want the tests to stop after the first error message is displayed, type **Y** for Yes and press **Enter**. To resume testing after an error message is displayed, press **Enter**.

If you do not want the tests to stop after the first error message is displayed, type **N** for No and press **Enter**.

The diagnostics move to Menu 6 if this is the first time the tests are run after the diagnostics are loaded; otherwise, they move to Menu 8.

## Menu 8 — Test Selection

The path to Menu 8 is:

- Menu 1
- Menu 2
- Menu 3 (only if two adapters are installed)
- Menu 4
- Menu 6 (only when the diagnostics are first loaded)
- Menu 7 (only if tests are run multiple times)

```
TESTING - Primary IBM Token-Ring Network PC Adapter *
```

```
SELECT ONE OF THE FOLLOWING:
```

- 0 -- ADAPTER CARD DIAGNOSTIC TESTS
- 1 -- OPEN PHASE TESTS
- 2 -- TRANSMIT/RECEIVE TESTS
- 9 -- EXIT TO SYSTEM CHECKOUT MENU
- 10 -- RUN ALL THE ABOVE TESTS

```
ENTER THE NUMBER OF YOUR SELECTION
?
```

\* This line varies depending on which adapter you are testing.

## **0 – ADAPTER CARD DIAGNOSTIC**

**TESTS**—Initiates and interprets the diagnostic routines on the IBM Token-Ring Network PC Adapter.

**1 – OPEN PHASE TESTS**—After the Adapter Card Tests are completed successfully, the Open Phase Tests verify that the computer can communicate with the adapter microcode and that a valid transmit/receive path exists between the microcode and the computer (moves to Menu 9).

**2 – TRANSMIT/RECEIVE TESTS**—After the Adapter Card and Open Phase Tests have been completed successfully, the Transmit/Receive Tests verify the adapter's ability to communicate with the computer while simultaneously transmitting and receiving data (moves to Menu 9).

## **9 – EXIT TO SYSTEM CHECKOUT**

**MENU**—Returns to the System Checkout Menu (Menu 4).

**10 – RUN ALL THE ABOVE TESTS**—Allows you to run sequentially all the tests described above (moves to Menu 9).

## Menu 9 — Cable Status

The path to Menu 9 is:

- Menu 1
- Menu 2
- Menu 3 (only if two adapters are installed)
- Menu 4
- Menu 6 (only when the diagnostics are first loaded)
- Menu 8 (only if Open Phase, Transmit/Receive, or all tests are selected)

```
TESTING - Primary IBM Token-Ring Network PC Adapter *
ADAPTER ADDRESS: 10005A000188 CODE LEVEL: F0 F0F0 A33802B
INTERRUPT LEVEL: 2 ROM ADDRESS: CC000

 CABLE STATUS

SELECT ONE OF THE FOLLOWING:

 1 -- CONNECTED TO NETWORK
 2 -- DISCONNECTED FROM NETWORK **
 3 -- WRAP PLUG INSTALLED

ENTER THE NUMBER OF THE OPTION THAT DESCRIBES
THE STATUS OF THE PC ADAPTER CABLE
?
```

\* This line varies depending on which adapter you are testing.

\*\* Selection 2 does not appear if you are using an adapter cable with a modular telephone plug at one end (see Menu 6).

**1 – CONNECTED TO NETWORK**—You are running the tests with the adapter cable connected to the adapter and to the network.

**2 – DISCONNECTED FROM NETWORK**—You are running the tests with the adapter cable disconnected from the network, but still connected to the adapter.

**3 – WRAP PLUG INSTALLED**—You are running the tests after you have disconnected the adapter cable from the adapter, and have installed the wrap plug that came with these diagnostics (see Appendix A).



# Chapter 3. Using the Advanced Diagnostics

## What You Need

To run the Advanced Diagnostics, you must have at least the following components:

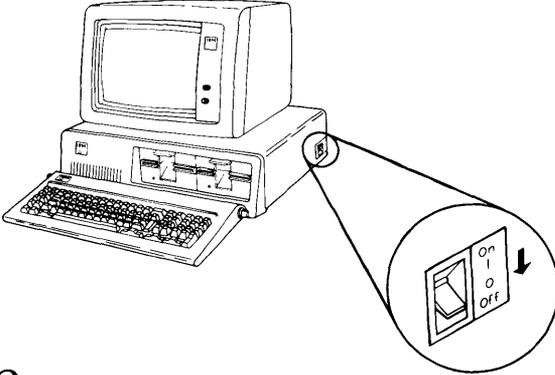
- IBM Personal Computer, IBM Portable Personal Computer, IBM Personal Computer XT, or IBM Personal Computer AT, with the following attached:
  - An 80-column display and adapter
  - A diskette drive
  - A keyboard.
- An IBM Token-Ring Network PC Adapter installed in the system unit.

Before running the Advanced Diagnostics the first time, make a copy of the Advanced Diagnostics diskette. For the copy, use a blank diskette that has been formatted with the operating system files on it (the /S formatting option), or use a “DISKCOPY” function to copy the entire diskette track by track instead of file by file. Store the original diskette in a safe place. Use the copy, the *working diskette*, to run the tests.

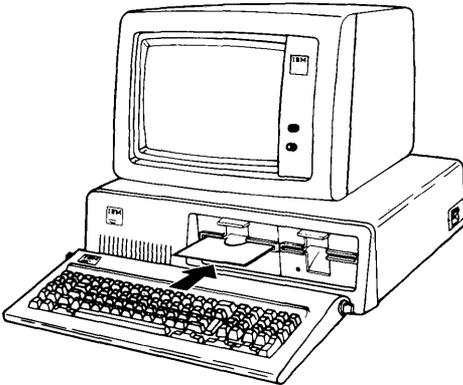
# Loading the Advanced Diagnostics

To load the Advanced Diagnostics:

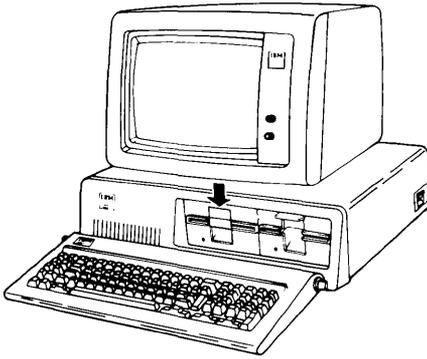
- 1 Set the power switch on the system unit (and the expansion unit, if attached) to **Off**.



- 2 Insert your Advanced Diagnostics working diskette, with the label facing up, into diskette drive A.

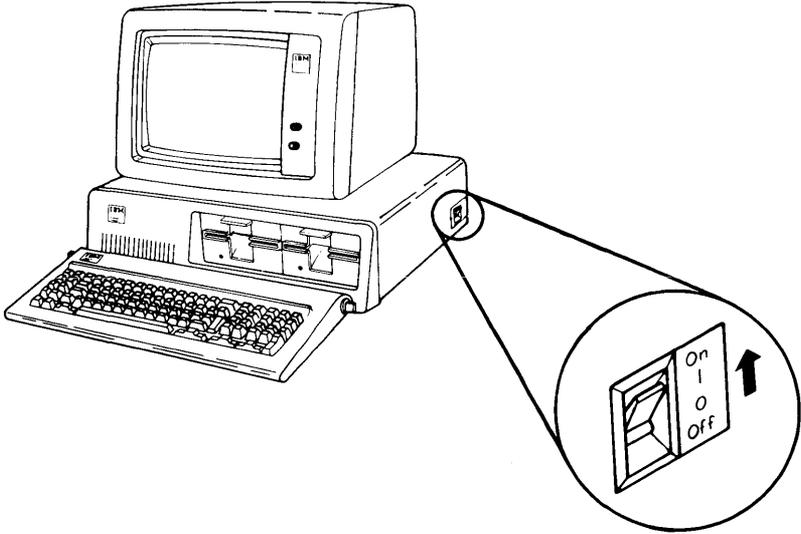


- 3 Close the diskette drive door.



- 4 Set the power switches on all attached devices to **On**, if they are not on already.
- 5 Set the power switch on the expansion unit (if attached) to **On**.

**6** Set the power switch on the system unit to **On**.



The Power-On Self Test now runs. When it has finished, the Advanced Diagnostics are loaded automatically from the diskette. The Copyright/Diagnostic Option screen appears and a short beep is sounded.

“Problem Isolation Charts” on page 3-7 guides you through the diagnostics and helps you follow the instructions on the screen.

*Note:* If an error occurs during POST, see “POST Errors” on page 2-6 and, if necessary, your IBM Personal Computer’s *Hardware Maintenance and Service* manual.

# Using the Problem Isolation Charts

## Start

This is the entry point for using the Problem Isolation Charts (PICs) for the IBM Token-Ring Network PC Adapter.

The PICs tell you how to use the Advanced Diagnostics to help you:

- Verify proper installation of the IBM Token-Ring Network PC Adapter and Adapter Cable
- Isolate problems to the adapter card or cable
- Diagnose failures in the adapter or cable
- Verify operation after repair procedures have been performed.

*Note:* If you are not familiar with the Advanced Diagnostics, refer to Chapter 2 for an explanation of the menus and selection options, or to your IBM Personal Computer's *Hardware Maintenance and Service* manual for more general information on running diagnostics.

# Special Key Functions

When running the Advanced Diagnostics, use the following special key functions:



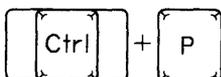
The **Enter** key executes each menu option. Always type the option number or letter; then press **Enter**.



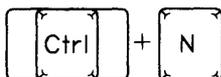
Moves display messages to left (color monitors only).



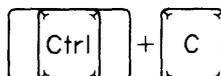
Moves display messages to right (color monitors only).



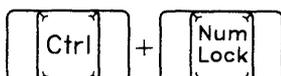
Directs screen output to printer.



Cancels output to printer.



Stops the tests and returns the Advanced Diagnostics to Menu 2.



Stops error log scrolling.

*Note:* To resume scrolling, press any key.

# Problem Isolation Charts

## 1 DID THE COPYRIGHT/DIAGNOSTIC OPTIONS SCREEN APPEAR ON YOUR DISPLAY?

```
THE IBM TOKEN-RING NETWORK PC ADAPTER
ADVANCED DIAGNOSTICS
Version 1.00 (C) Copyright IBM Corp 1986
```

```
SELECT ONE OF THE FOLLOWING:
```

```
0 -- RUN DIAGNOSTIC ROUTINES
9 -- EXIT TO SYSTEM DISKETTE
```

```
ENTER THE NUMBER OF YOUR SELECTION
?
```

**YES** Type **0**, then press **Enter** to run the Advanced Diagnostics. Go to step 2.

**NO** See the testing procedures in your computer's *Guide to Operations* or *Hardware Maintenance and Service* manual.

## 2 DID THE INSTALLED ADAPTERS SCREEN APPEAR ON YOUR DISPLAY?

If one IBM Token-Ring Network PC Adapter is installed in your computer, only one adapter will be listed on the screen. (Primary or Alternate will be listed, depending on how you set the switches on your adapter.)

If two IBM Token-Ring Network PC Adapters are installed in your computer, both will be listed on the screen, as shown below:

THE INSTALLED TOKEN-RING ADAPTERS ARE:

166 - S Primary IBM Token-Ring Network PC Adapter  
167 - S Alternate IBM Token-Ring Network PC Adapter

IS THE LIST CORRECT (Y/N)?

**YES** If the screen appeared, go to step 3.

**NO** If the screen did not appear, see the testing procedures in your computer's *Guide to Operations or Hardware Maintenance and Service manual*.

### 3 IS THE ADAPTER LIST CORRECT?

**YES** Type **Y**, then press **Enter**.

If only one adapter is listed, go to step 5 to continue.

If two adapters are listed, go to step 4 to continue.

**NO** If the list is not correct, check both your system unit and adapter switch settings to be sure that they reflect the proper configuration of your system. See Chapter 4 in this manual and the section on locations in your IBM Personal Computer's *Hardware Maintenance and Service* manual to determine the proper switch settings. Set the switches correctly before loading the Advanced Diagnostics again to rerun the test.

If the list is still incorrect after you have checked the switch settings and rerun the diagnostics, you can type **N** to get instructions to attempt to correct the list. When you enter **N**, the screen will display a system board error **199**. Disregard this message and follow the instructions on the screen.

If the list is still incorrect after you have attempted to correct it, you can continue running the Advanced Diagnostics by typing **Y**. However, the results will be unpredictable. The problem with the list should be corrected before you continue with the tests.

## 4 SELECT THE ADAPTER(S) THAT YOU WISH TO TEST.

SELECT ONE OF THE FOLLOWING:

- 0 -- Primary IBM Token-Ring Network PC Adapter
- 1 -- Alternate IBM Token-Ring Network PC Adapter

ENTER THE NUMBER OF YOUR SELECTION OR  
PRESS ENTER TO TEST BOTH ADAPTERS?

If you want to test the primary adapter, type **0**, then press **Enter** and go to step 5.

If you want to test the alternate adapter, type **1**, then press **Enter** and go to step 5.

If you want to test both adapters, just press **Enter** and go to step 5.

## 5 DID THE SYSTEM CHECKOUT MENU APPEAR ON YOUR DISPLAY?

```
SYSTEM CHECKOUT

SELECT ONE OF THE FOLLOWING:

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

ENTER THE NUMBER OF YOUR SELECTION
?
```

**YES** Select the appropriate option:

- To use one of the Log Utilities before starting the tests, type **2**, then press **Enter**. See page 2-15 for a description of the Log Utilities. The Log Utilities are:

Start Error Log  
Stop Error Log  
List Log  
Set Time of Day  
Display Time of Day

- If you want to run the tests once, type **0**, then press **Enter**. If the Cable Description Menu appears, go to step 7; otherwise, go to step 8.
- If you want to run the tests more than once, type **1**, then press **Enter**. Go to step 6.

*Note:* Running the tests once is suggested for isolating a problem to the adapter or the cable. Running tests multiple times can help identify an intermittent problem. When running the tests multiple times, errors should be logged for review after the tests have been run.

**NO** See the “**Start**” PIC in your computer’s *Hardware Maintenance and Service* manual.

## 6 SELECT THE NUMBER OF TIMES TESTS ARE TO BE RUN.

Valid numbers are from 1 to 65,534.

If you do not enter a number, the tests will run continuously.

Press the **CTRL** and **C** keys simultaneously whenever you want to stop the tests and reset the diagnostics back to Menu 2 (“Installed Adapters”).

ENTER THE NUMBER OF TIMES TESTS ARE TO RUN  
OR PRESS ENTER TO RUN TESTS CONTINUOUSLY  
?

DO YOU WANT TO STOP THE TESTS WHEN THE FIRST ERROR IS DISPLAYED (Y/N)? \*

\* This line appears after you respond to the first question.

Type the number of times you want to run the tests, or leave the number blank to run the tests continuously. Then press **Enter**.

If you want the tests to stop when the first error is displayed, type **Y** and press **Enter**.

*Note:* To resume the tests after they stop at an error, press **Enter**.

If you want the tests to continue running even though an error has occurred, type **N** and press **Enter**.

Once you have completed entering the requested information:

- If the Cable Description Menu appears, go to step 7.
- Otherwise, go to step 8.

# 7

## SELECT THE CORRECT DESCRIPTION OF YOUR ADAPTER CABLE.

TESTING - Primary IBM Token-Ring Network PC Adapter \*

ADAPTER ADDRESS: 10005A000188      CODE LEVEL: F0 F0F0 A33802B  
INTERRUPT LEVEL: 2                      ROM ADDRESS: CC000

CABLE DESCRIPTION

- 1 --- IBM TOKEN-RING NETWORK PC ADAPTER CABLE
- 2 -- CABLE WITH A MODULAR TELEPHONE PLUG  
(TYPE 3 MEDIA FILTER)

SELECT THE NUMBER OF THE OPTION WHICH BEST  
DESCRIBES THE CABLE CONNECTED TO THE IBM  
TOKEN-RING NETWORK PC ADAPTER ?

Type the number of your selection, then press Enter:

**1** – If your adapter cables uses an IBM Cabling System Data Connector to attach the adapter to the network.

**2** – If your adapter cable uses a modular telephone plug to attach the adapter to the network.

Go to step 8.

## 8 DID THE TEST SELECTION MENU APPEAR ON YOUR DISPLAY?

TESTING - Primary IBM Token-Ring Network PC Adapter \*

SELECT ONE OF THE FOLLOWING:

- 0 -- ADAPTER CARD DIAGNOSTIC TESTS
- 1 -- OPEN PHASE TESTS
- 2 -- TRANSMIT/RECEIVE TESTS
- 9 -- EXIT TO SYSTEM CHECKOUT MENU
- 10 -- RUN ALL THE ABOVE TESTS

ENTER THE NUMBER OF YOUR SELECTION  
?

**YES** Type the number of your selection, then press **Enter**:

**0** – To run just the Adapter Card Tests.

**1** – To run the Adapter Card Tests and the Open Phase Tests sequentially.

**2** – To run the Adapter Card Tests, then the Open Phase Tests, and then the Transmit/Receive Tests sequentially.

**9** – To return to the System Checkout Menu (Menu 4).

**10** – To run sequentially all of the tests listed above.

If you selected the Adapter Card Tests, go to step 9.

If you selected any or all of the other tests, go to step 10.

**NO** See the “**Start**” PIC in your IBM Personal Computer’s *Hardware Maintenance and Service* manual.

**You have selected the Adapter Card Tests.**

## **9 DID THE ADAPTER CARD TESTS RUN WITHOUT AN ERROR?**

**YES** If these tests ran without any errors, a screen similar to the following will appear on your display.

Go to step 13.

```
TESTING - Primary IBM Token-Ring Network PC Adapter
ADAPTER ADDRESS: 10005A000188 CODE LEVEL: FO F0FO A33802B
INTERRUPT LEVEL: 2 ROM ADDRESS: CC000
E000 - Adapter Card Tests - - - PASSED - 1
Primary IBM Token-Ring Network PC Adapter 16600 S
```

**NO** If an error occurred during the tests, a screen similar to the following will appear on your display.

Follow the instructions on the screen and in the explanation of the error message in “Advanced Diagnostics Messages and Codes” on page 3-34.

If you are instructed to replace the adapter or cable, see Chapter 5.

```
TESTING - Primary IBM Token-Ring Network PC Adapter
```

```
ADAPTER ADDRESS: 10005A000188 CODE LEVEL: F0 F0F0 A33802B
INTERRUPT LEVEL: 2 ROM ADDRESS: CC000
```

```
E007 - Adapter Card Tests - - - FAILED - 1
0020 - Extended Error Code
```

```
0:13:21
```

```
ERROR -
```

```
Primary IBM Token-Ring Network PC Adapter 166E0 S
```

**You have selected the Open Phase Tests, the Transmit/Receive Tests, or all of the tests.**

## **10 SELECT THE NUMBER THAT CORRESPONDS WITH THE STATUS OF YOUR IBM TOKEN-RING NETWORK PC ADAPTER CABLE.**

```
TESTING - Primary IBM Token-Ring Network PC Adapter *
ADAPTER ADDRESS: 10005A000188 CODE LEVEL: F0 F0F0 A33802B
INTERRUPT LEVEL: 2 ROM ADDRESS: CC000

 CABLE STATUS
SELECT ONE OF THE FOLLOWING:

1 -- CONNECTED TO NETWORK
2 -- DISCONNECTED FROM NETWORK **
3 -- WRAP PLUG INSTALLED

ENTER THE NUMBER OF THE OPTION THAT DESCRIBES
THE STATUS OF THE PC ADAPTER CABLE
?
```

\* This line varies depending on which adapter you are testing.

\*\* Selection 2 does not appear if your adapter cable uses a modular telephone plug to attach the adapter to the network (see step 7 and Menu 6).

Type the number of your selection, then press **Enter**.

**1** – To run the tests with the adapter cable connected to the network.

**2** – To run the tests with the adapter cable disconnected from the network.

**3** – To run the tests with the adapter cable disconnected from the adapter, and the wrap plug installed in its place. See Appendix A for instructions on installing the wrap plug. The tests will tell you on the screen when to use the wrap plug.

If you selected the Open Phase Tests, go to step 11.

If you selected the Transmit/Receive Tests or all of the tests, go to step 12.

**You have selected the Open Phase Tests.**

## **11 DID THE TESTS RUN WITHOUT AN ERROR?**

*Note:* The Adapter Card Tests will run before the Open Phase Tests are executed.

**YES** If the tests ran without any errors, a screen similar to the following will appear on your display.

Go to step 13.

```
TESTING - Primary IBM Token-Ring Network PC Adapter
ADAPTER ADDRESS: 10005A000188 CODE LEVEL: F0 F0F0 A33802B
INTERRUPT LEVEL: 2 ROM ADDRESS: CC000
E000 - Adapter Card Tests - - - PASSED - 1
D000 - Open Phase Tests - - - PASSED - 1
Primary IBM Token-Ring Network PC Adapter 16600 S
```

**NO** If an error occurred during the tests, a screen similar to the following will appear on your display.

*Note:* If your adapter cable has a modular telephone plug at one end, instead of an IBM Cabling System Data Connector, an error message may be displayed indicating an OPEN error code of D007 and an extended error code of 0011. Disregard the message, and refer to the *IBM Token-Ring Network Telephone Twisted-Pair Media Guide* for problem isolation procedures.

Follow the instructions on the screen and in the explanation of the error message in “Advanced Diagnostics Messages and Codes” on page 3-34.

```
TESTING - Primary IBM Token-Ring Network PC Adapter
ADAPTER ADDRESS: 10005A000188 CODE LEVEL: F0 F0F0 A33802B
INTERRUPT LEVEL: 2 ROM ADDRESS: CC000
E000 - Adapter Card Tests - - - PASSED - 1
D007 - Open Phase Tests - - - FAILED - 1
 0011 - Extended Error Code

0:13:21
ERROR -
Primary IBM Token-Ring Network PC Adapter 166D0 S
```

**You have selected the Transmit/Receive Tests or all of the tests.**

## **12 DID THE TESTS RUN WITHOUT AN ERROR?**

*Note:* The Adapter Card Tests and the Open Phase Tests will run before the Transmit/Receive Tests are executed.

**YES** If the tests ran without an error, a screen similar to the following will appear on your display.

Go to step 13.

```
TESTING - Primary IBM Token-Ring Network PC Adapter
ADAPTER ADDRESS: 10005A000188 CODE LEVEL: F0 F0F0 A33802B
INTERRUPT LEVEL: 2 ROM ADDRESS: CC000
E000 - Adapter Card Tests - - - PASSED - 1
D000 - Open Phase Tests - - - PASSED - 1
A000 - Transmit/Receive Tests - - - PASSED - 1

Primary IBM Token-Ring Network PC Adapter 16600 S
```

**NO** If an error occurred during the tests, a screen similar to the following will appear on your display.

Follow the instructions on the screen and in the explanation of the error message in “Advanced Diagnostics Messages and Codes” on page 3-34.

TESTING - Primary IBM Token-Ring Network PC Adapter

ADAPTER ADDRESS: 10005A000188      CODE LEVEL: F0 F0F0 A33802B  
INTERRUPT LEVEL: 2                    ROM ADDRESS: CC000

|                               |       |        |   |   |
|-------------------------------|-------|--------|---|---|
| E000 - Adapter Card Tests     | - - - | PASSED | - | 1 |
| D000 - Open Phase Tests       | - - - | PASSED | - | 1 |
| A007 - Transmit/Receive Tests | - - - | FAILED | - | 1 |

0:13:21

ERROR -

Primary IBM Token-Ring Network PC Adapter 166A0 S

## 13 WERE THE TESTS RUN WITH THE WRAP PLUG INSTALLED?

**YES** If the tests ran without an error, the adapter card is probably not the problem. Check to see that your adapter cable is functioning correctly:

- If your adapter cable has a modular telephone plug at one end, see the *IBM Token-Ring Network Telephone Twisted-Pair Media Guide* for cable instructions.
- If your adapter cable has an IBM Cabling System Data Connector at one end, go to step 14 to begin checking the adapter cable.

To complete the cable tests, you will need:

- A device to measure continuity (such as an ohmmeter)
- An IBM Cabling System Data Connector with no cable attached to it (IBM P/N 8310574).

*Note:* If you cannot perform the cable tests, go to step 18.

**NO** Install the wrap plug, that came with these diagnostics, following the instructions in Appendix A.

When the wrap plug has been installed, rerun the tests, making the following menu selections:

- On the System Checkout Menu (Menu 4), select option 0-RUN TESTS ONE TIME.
- On the Test Selection Menu (Menu 7), select option 10-RUN ALL THE ABOVE TESTS.
- On the Cable Status Menu (Menu 8), select option 3-WRAP PLUG INSTALLED.

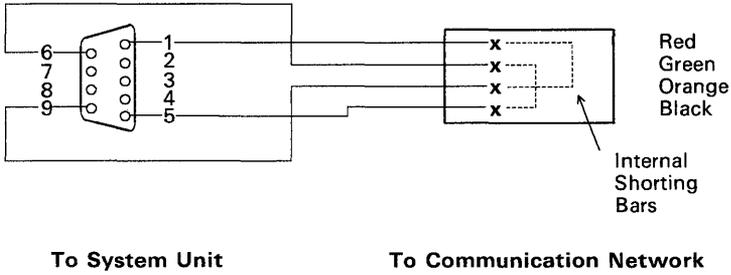
When the above selections have been made, continue with the PICs at step 12.

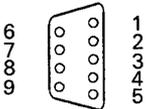
## 14 CHECK CABLE CONTINUITY.

Using an ohmmeter (or other device for measuring continuity), check the adapter cable for continuity between:

- Pin 1 and pin 9 at the D-connector
- Pin 5 and pin 6 at the D-connector
- The shield of the D-connector and the shield of the data connector.

Go to step 15.



|  | <br>(Internal shorting bars) |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 1 ←                                                                               | Red                                                                                                           |
| 2                                                                                 |                                                                                                               |
| 3                                                                                 |                                                                                                               |
| 4                                                                                 |                                                                                                               |
| 5 ←                                                                               | Black                                                                                                         |
| 6 ←                                                                               | Green                                                                                                         |
| 7                                                                                 |                                                                                                               |
| 8                                                                                 |                                                                                                               |
| 9 ←                                                                               | Orange                                                                                                        |
| Shield ←                                                                          | Shield →                                                                                                      |

**Figure 3-1. Cable Continuity Testing**

## 15 IS THERE CONTINUITY?

**YES** Go to step 16, to check the cable for short circuits.

**NO** Replace the adapter cable with a new one, and rerun the Advanced Diagnostics.

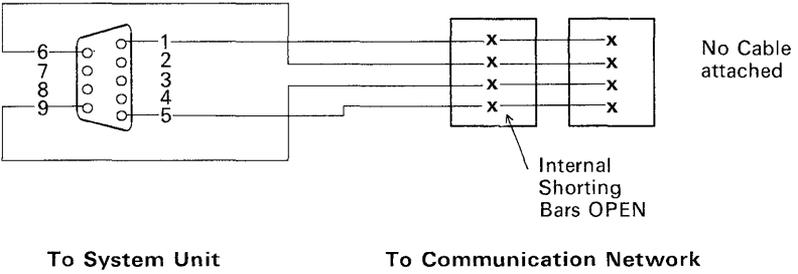
Stop here.

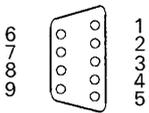
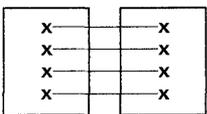
## 16 CHECK CABLE FOR SHORT CIRCUITS

Insert an assembled IBM Cabling System Data Connector that has no cable attached to it, into the data connector on the adapter cable being tested. This will open the shorting bars on the adapter cable being tested.

Using your testing device, check the adapter cable to see that there are no short circuits between any two pins of the D-connector or between the shield and any pin.

Go to step 17.



|  | <br>(Internal shorting bars OPEN) | Red<br>Green<br>Orange<br>Black |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------|
| 1                                                                                 | ← →                                                                                                                | Red                             |
| 2                                                                                 |                                                                                                                    |                                 |
| 3                                                                                 |                                                                                                                    |                                 |
| 4                                                                                 |                                                                                                                    |                                 |
| 5                                                                                 | ← →                                                                                                                | Black                           |
| 6                                                                                 | ← →                                                                                                                | Green                           |
| 7                                                                                 |                                                                                                                    |                                 |
| 8                                                                                 |                                                                                                                    |                                 |
| 9                                                                                 | ← →                                                                                                                | Orange                          |
| Shield                                                                            | ← →                                                                                                                | Shield                          |

**Figure 3-2. Cable Shorts Testing**

## **17 ARE THERE ANY SHORTS?**

**YES** Replace the adapter cable with a new one, and rerun the Advanced Diagnostics.

Stop here.

**NO** Go to step 18.

18 If you were running the diagnostics to check your adapter after installing it, the tests are complete and your adapter appears to be operating correctly.

If you were running the diagnostics to isolate a suspected problem with your adapter, the tests have been completed without finding your problem. The following steps should help you to identify additional symptoms:

- a. Check the adapter cable to see that it is firmly attached.
- b. Make sure that the adapter switches are properly set and that the card is firmly seated in the I/O slot of your system unit.
- c. Select LOG UTILITIES to record any errors that occur during testing.
- d. Run the Advanced Diagnostics, making the following menu selections:
  - On the System Checkout Menu (Menu 4), select option 1 - RUN TESTS MULTIPLE TIMES
  - On the Test Selection Menu (Menu 8) select option 10 - RUN ALL THE ABOVE TESTS.
- e. When the tests have been completed, examine the error log to determine any indications of a problem. See “Advanced Diagnostics Messages and Codes” on page 3-34 for additional information about the error indications.

If the tests have indicated no errors, your adapter or adapter cable (if tested for continuity and shorts) is probably not the cause of your suspected problem. Seek technical assistance.

# Advanced Diagnostics Messages and Codes

This section lists the Advanced Diagnostics messages in alphabetical order, explaining each message, its error codes, its extended error codes (if applicable), and the action to be taken by the user.

## Message Formats

The message information for the Advanced Diagnostics is displayed in three parts.

The first line indicates which adapter is being tested (primary or alternate). For example:

```
TESTING - Primary IBM Token-Ring Network PC Adapter
```

The second part, the adapter card status area, contains two lines of specific information about the adapter, in the format:

```
ADAPTER ADDRESS:10005A000188 CODE LEVEL:FO FOF0 A33802B
INTERRUPT LEVEL:2 ROM ADDRESS:CC000
```

The third part, the testing status and error message area, indicates:

- Which test was being run
- Whether the test passed or failed
- The number of times the test has run
- An error message with error codes, if the test failed
- A message indicating successful completion, if the test passed.

The message indicating successful completion has the following format (Primary or Alternate appears, depending on the adapter tested):

```
Primary IBM Token-Ring Network PC Adapter 16600 S
```

The following is an example of the format of the error message and error codes:

```
DOxx -- OPEN PHASE TESTING- - - FAILED nnn
 00pf - Extended Error Code
```

In the error message example:

**xx** = Error Code

**nnn** = One more than the number of times the tests had left to run when the error was detected.

**p** = Extended Error Phase Code

**f** = Extended Error Failure Code

The number following the word **PASSED** or **FAILED** equals one more than the number of times the tests had left to run when the error was detected. For example, assume you requested the test to run five times. When the error message appears, a “4” follows the word **FAILED**. This means that the test had three more times to run when the error occurred (in other words, it ran twice). Likewise, if the number 1 appears, the test must run 0 more times to complete the requested number; that is, the testing is complete.

The format for the extended error code in the Open Phase Test message shown in the example is 00**pf**; **p** represents the adapter’s state when the error occurred, and **f** represents the condition that caused the test to fail. The message explanation lists the values for **p** and **f**.

The extended error codes for the Transmit/Receive error message represent hexadecimal “bit maps”; the four characters that appear in the error message (instead of “00pf”) contain one bit for each error that occurred. The

message explanation lists the error indicated by each bit in the map.

The Adapter Card Test extended error codes are four-digit numbers that indicate the specific error. The message explanation lists the error indicated by each number.

## Example: Successful Test

This example shows that the primary adapter has passed the Adapter Card Tests.

```
TESTING - Primary IBM Token-Ring Network PC Adapter
ADAPTER ADDRESS: 10005A000188 CODE LEVEL: F0 F0F0 A33802B
INTERRUPT LEVEL: 2 ROM ADDRESS: CC000
E000 - Adapter Card Tests - - - PASSED - 1
Primary IBM Token-Ring Network PC Adapter 16600 S
```

The first line on the screen indicates that the primary adapter is being tested.

The next two lines (the adapter card status) show the adapter address, the adapter microcode level, the interrupt level, and the ROM address.

The last two lines indicate that the adapter passed the Adapter Card Tests:

- E000 — The Adapter Card Tests were run (E0) and no errors occurred (00)
- PASSED - 1 — The Adapter Card Tests ran successfully; the number of tests requested were run.
- 16600 S — The primary adapter (166) passed the tests with no errors (00).

## Example: The Test Detected an Error

This example shows that an error was detected while the Adapter Card Tests were running on the primary adapter.

```
TESTING - Primary IBM Token-Ring Network PC Adapter
ADAPTER ADDRESS: 10005A000188 CODE LEVEL: F0 F0F0 A33802B
INTERRUPT LEVEL: 2 ROM ADDRESS: CC000
E007 - Adapter Card Tests - - - FAILED - 5
0020 - Extended Error Code

0:13:21
ERROR -
Primary IBM Token-Ring Network PC Adapter 166E0 S
```

The first line on the example screen indicates that the primary adapter was being tested.

The next two lines (the adapter card status) show the adapter address, the adapter microcode level, the interrupt level, and the ROM address.

The fourth and fifth lines are the testing status and error codes, indicating that the Adapter Card Tests failed:

- **E007** — The Adapter Card Tests (E0) failed with error code 07 (Command Canceled, Severe Failure)
- **FAILED - 5** — The Adapter Card Tests did not run successfully; the tests should run four more times to complete the request.
- **0020** — The extended error code for error code 07 is 0020 (the card diagnostics could not execute).

The last three lines show an error message, which indicates that the primary adapter (166) failed the Adapter Card Tests (E0).

“Advanced Diagnostics Messages” on page 3-40 contains explanations of the error messages, the error codes, and extended error codes, and the actions the user should take when an error message appears.

# Advanced Diagnostics Messages

**A0xx -- TX/RX TESTING - - - FAILED nnn**

**Meaning:** The Advanced Diagnostics are unable to complete the Transmit/ Receive Tests. For more information, see the error codes listed below.

*Note:* The extended error codes are hexadecimal "bit maps"; each error listed is indicated by one of the bits in the map. If more than one error occurs, the code contains the bits for all of the errors that occurred.

## **Error Codes:**

- 01— Invalid command code
- 02— Duplicate command outstanding
- 04— Adapter closed
- 07— Command canceled - Severe Failure
- 08— Unauthorized access priority
- 09— Adapter not initialized
- 0A— Command canceled by user request
- 0B— Command canceled - Adapter closed
- 1B— Invalid CCB parameter table pointer
- 1C— Invalid pointer within CCB parameter table
- 1D— Invalid CCB parameter value
- 20— Lost data on receive: no buffers available
- 21— Lost data on receive: inadequate buffer space
- 22— Frame transmission error
- 23— Error in frame transmit or strip process
- 24— Unauthorized Medium Access Control (MAC) frame
- 25— Command limit exceeded
- 27— Links not transmitting information frames

- 28— Invalid transmit frame length
- 40— Invalid station ID
- 41— Protocol error - link station not transmitting
- 4A— Sequence error - incompatible command in process
- FA— PC-detected error; see extended error codes below:

- X'8000'— Unexpected interrupt from adapter

- X'0080'— Adapter shared RAM has been contaminated

- All others— Undefined interrupt errors

- FB— Ring status error; see extended error codes below:

- X'8000'— Signal loss

- X'4000'— Hard error

- X'2000'— Soft error

- X'1000'— Transmitting beacons

- X'0800'— Lobe wire fault

- X'0400'— Auto-removal error

- X'0200'— Reserved

- X'0100'— Remove command received

- X'0080'— Adapter counter overflow

- X'0040'— Single station

- X'0020'— Ring recovery in progress

- FC— Adapter check; see extended error codes below:

- X'8000'— Adapter non-operational

- X'4000'— Reserved

- X'2000'— Reserved

- X'1000'— Illegal operational code

- X'0800'— Local bus parity error

- X'0400'— Parity error external master

- X'0200'— Reserved

X'0100'— Parity error protocol handler local bus  
X'0080'— Parity error protocol handler transmit  
X'0040'— Parity error protocol handler receive  
X'0020'— Protocol handler DMA underrun transmit  
X'0010'— Protocol handler DMA overrun receive  
X'0008'— Unrecognized interrupt  
X'0004'— Unrecognized error interrupt  
X'0002'— Unrecognized supervisory request  
X'0001'— Program-detected error

FD— Unexpected end of receive chain  
FE— Data received does not match transmit data  
FF— Software transmit timer expired

**Action:** Refer to the explanation for the message that follows this one on the screen.

## ALTERNATE ADAPTER NOT PRESENT

**Meaning:** The Advanced Diagnostics cannot locate the alternate adapter in any of the system unit's I/O ports.

**Action:** Make sure the adapter is firmly seated in its slot.

Check the switch settings on the adapter to make sure they correspond with the configuration you have established. See Chapter 4 for the recommended switch settings.

Check the switch settings for your system unit memory.

Run the Advanced Diagnostics program again.

If the problem continues, run the diagnostics provided with your IBM Personal Computer's *Guide to Operations* to determine if your computer is operating properly.

## ALTERNATE IBM TOKEN-RING NETWORK PC ADAPTER 16700 S

**Meaning:** No errors were detected while testing the alternate adapter.

**Action:** None required.

## **BAD CABLE: Replace Your Adapter Cable**

**Meaning:** The Advanced Diagnostics have detected a problem in the adapter cable.

**Action:** If your adapter cable has a modular telephone plug at one end, ignore this message. Refer to the *IBM Token-Ring Network Telephone Twisted-Pair Media Guide* for problem isolation procedures.

If your adapter cable has an IBM Cabling System Data Connector at one end, rerun the test you had selected. If the problem continues, replace the cable.

## **BAD ADAPTER: Replace the Token-Ring Adapter**

**Meaning:** The Advanced Diagnostics have detected a problem in the adapter.

**Action:** Rerun the test you had selected. If the problem continues, replace the adapter. See Chapter 5.

## **BAD LOBE: Faulty Lobe Operation-See Your Network Manager**

**Meaning:** The Advanced Diagnostics have detected a problem between the adapter cable that connects your adapter to the network and the nearest upstream access unit.

**Action:** Rerun the test. If the problem continues, report test results to your network manager or administrator.

## COULD NOT FIND ADAPTER SUPPORT CODE ON DISK

**Meaning:** The Advanced Diagnostics cannot find a copy of the Adapter Support Interface code on the default drive.

**Action:** If you are using an Advanced Diagnostics working diskette, recopy the US2AC.COM file from the original diskette onto your working diskette. If the problem continues or if you are using the original copy of the Advanced Diagnostics, run the diagnostics provided with your IBM Personal Computer's *Guide to Operations* to determine if the diskette drive is operating properly.

**DOxx -- OPEN PHASE TESTING - - - FAILED mnn**

**Meaning:** The Advanced Diagnostics were unable to complete the Open Phase Tests during the initialization of the adapter. For the cause of the failure, see the error codes below.

**Error Codes:**

- 01— Invalid command code
- 02— Duplicate command outstanding
- 03— Adapter already open
- 04— Adapter already closed
- 05— Required parameter(s) not provided
- 07— Command canceled--Severe Failure;  
see extended error codes below:

The **p** fields are:

- 001f—Lobe media test failure
- 002f—Physical insertion failure
- 003f—Address verification failure
- 004f—Roll call poll failure
- 005f—Request parameter failure

The **f** fields are:

- 00p1—Function failure
  - 00p2—Signal loss
  - 00p3—Wire fault
  - 00p4—Frequency error
  - 00p5—Timeout failure
  - 00p6—Ring failure
  - 00p7—Ring beaconing
  - 00p8—Parameter request failure
  - 00pA—Remove received
  - 00pB—IMPL force-received
- 
- 09— Adapter not initialized
  - 16— Buffer request too large
  - 18— Invalid buffer length or address

- 1B— Invalid CCB parameter table pointer
- 1C— Invalid pointer within CCB parameter table
- 1D— Invalid CCB parameter value
- 30— Inadequate number of receive buffers
- 32— Invalid adapter address
- 33— Invalid receive buffer length
- 34— Invalid transmit buffer length

**Action:** Refer to the explanation for the message that follows this one on the screen.

*Note:* If your adapter cable has a modular telephone plug at one end, instead of an IBM Cabling System Data Connector, an error message may be displayed indicating an OPEN error code of D007 and an extended error code of 0011. Disregard the message, and refer to the *IBM Token-Ring Network Telephone Twisted-Pair Media Guide* for problem isolation procedures.

## **DISCONNECT THE PC ADAPTER CABLE AND INSTALL THE WRAP PLUG THAT CAME WITH THIS DIAGNOSTIC PACKAGE**

**Meaning:** The Advanced Diagnostics are trying to isolate the problem to either the adapter card or the adapter cable.

**Action:** Install the wrap plug that came with this diagnostic package, according to the instructions in Appendix A.

## **DISCONNECT THE PC ADAPTER CABLE FROM THE NETWORK**

**Meaning:** The Advanced Diagnostics are trying to isolate the problem either to the adapter and cable or to the network wiring.

**Action:** If your adapter cable is connected to a faceplate, remove the cable from the faceplate. Press **Enter** and continue with the testing.  
If your adapter cable is connected directly to an access unit, disconnect the cable from the unit. Press **Enter** and continue with the testing.

## **E0xx --ADAPTER CARD TESTS -- FAILED nnn**

**Meaning:** The Advanced Diagnostics are not able to initialize the adapter for operation. For the specific cause of the failure, see the error codes listed below.

### **Error Codes:**

- 01— Invalid command code
- 02— Duplicate command outstanding
- 07— Command canceled - Severe Failure;  
see extended error codes below:
  - 0020— Card diagnostics could not execute
  - 0022— ROM diagnostic failed
  - 0024— Shared RAM diagnostic failed
  - 0026— Processor instruction failed
  - 0028— Processor interrupt test failed
  - 002A— Shared RAM interface register test  
failed
  - 002C— Protocol handler diagnostics failed
  - 0040— Adapter's PC programmable timer  
failed
  - 0042— Personal Computer cannot write to  
shared RAM
  - 0046— Shared RAM write-protection not  
operating
  - 0048— Initialize Completion Timer failed
- 14— Invalid shared RAM segment or size
- 1B— CCB parameter table pointer invalid

**Action:** Refer to the explanation for the message that follows this one on the screen.

**ERROR-PRIMARY IBM TOKEN-RING NETWORK  
PC ADAPTER 166XX S**

**ERROR-ALTERNATE IBM TOKEN-RING NETWORK  
PC ADAPTER 167XX S**

**Meaning:** The Advanced Diagnostics program has detected a problem with either the primary or alternate adapter. To determine the cause of the failure, see the error codes below:

**Error  
Codes:**

- F0— Invalid testing mode requested
- F1— Primary or alternate adapter not present
- F2— Adapter Support Interface code not found
- F3— Diskette read error
- F4— Incompatible Adapter Support Interface code
- E0— Adapter Card Test failure
- D0— Open Phase Test failure
- C0— Personal Computer problem
- A0— Transmit/Receive Test failure
- 7F— Faulty adapter cable detected
- 7E— Faulty adapter card detected
- 7D— Faulty lobe detected

**Action:** Refer to the explanation for the message that follows this one on the screen.

ERROR ENCOUNTERED WHILE ATTEMPTING TO READ ADAPTER  
SUPPORT CODE FROM DISKETTE

**Meaning:** The Advanced Diagnostics were unable to load the Adapter Support Interface code from the default drive.

**Action:** If you are using an Advanced Diagnostics working diskette, recopy the US2AC.COM file from the original diskette to your working diskette, or make a new copy of the Advanced Diagnostics program on a newly formatted diskette. If the problem continues or if you are using the original copy of the Advanced Diagnostics, run the diagnostics provided with your IBM Personal Computer's *Guide to Operations* to determine if the diskette drive is operating properly.

INVALID DIAGNOSTIC MODE SELECTED

**Meaning:** The Advanced Diagnostics cannot interpret a test request received from the Diagnostic Control Program, DIAGS.COM.

**Action:** If you are using an Advanced Diagnostics working diskette, recopy the DIAGS.COM file from the original diskette to the working diskette. If the problem continues or if you are using the original copy of the Advanced Diagnostics program, seek technical assistance.

## PRIMARY ADAPTER NOT PRESENT

**Meaning:** The Advanced Diagnostics cannot locate the primary adapter in any of the system unit's I/O ports.

**Action:** Make sure the adapter is firmly seated in its slot.

Check the switch settings on the adapter to make sure that they correspond with the configuration you have established. See Chapter 4 for the recommended switch settings.

Check the switch settings for your system unit memory.

Run the Advanced Diagnostics program again.

If the problem continues, run the diagnostics provided with your IBM Personal Computer's *Guide to Operations* to determine if your computer is operating properly.

## PRIMARY IBM TOKEN-RING NETWORK PC ADAPTER 16600 S

**Meaning:** No errors were detected while testing the primary adapter.

**Action:** None required.

## UNABLE TO CONTINUE WITH THE NEXT SET OF TESTS

**Meaning:** An error condition will not allow the Advanced Diagnostics to run the selected tests.

**Action:** If you had selected the Open Phase Tests, return to the Test Selection menu (Menu 7) and try to run the Adapter Card Tests.

If you had selected the Transmit/Receive Tests, return to the Test Selection menu and try to run either the Adapter Card Tests or the Open Phase Tests.



# Chapter 4. IBM Token-Ring Network PC Adapter Locations

This chapter identifies:

- The correct switch settings for the IBM Token-Ring Network PC Adapter
- The adapter's location in each IBM Personal Computer
- The safety ground locations for:
  - The IBM Personal Computer XT
  - The IBM Personal Computer AT.

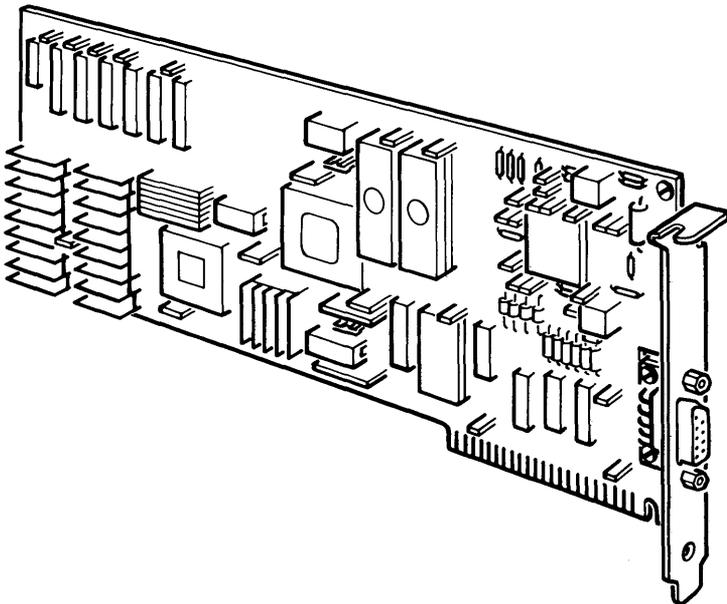
# IBM Token-Ring Network PC Adapter

If you have an IBM Personal Computer, you should install the IBM Token-Ring Network PC Adapter in expansion slot 4. This position ensures that the adapter will get sufficient ventilation. If an adapter already occupies slot 4, check the documentation for that adapter to determine if the adapter requires slot 4. If it does not require slot 4, move the adapter to another slot. If the adapter does require slot 4, install the IBM Token-Ring Network PC Adapter in the nearest available slot.

In the IBM Portable Personal Computer, the IBM Token-Ring Network Adapter will fit only in the long slot closest to the monitor. See the "Options Installation" section of your IBM Portable PC *Guide to Operations* for specific installation instructions.

If you have a IBM Personal Computer XT or AT, you can install the adapter in any of the slots.

The IBM Token-Ring Network PC Adapter should not be installed in an IBM Personal Computer Expansion Unit.



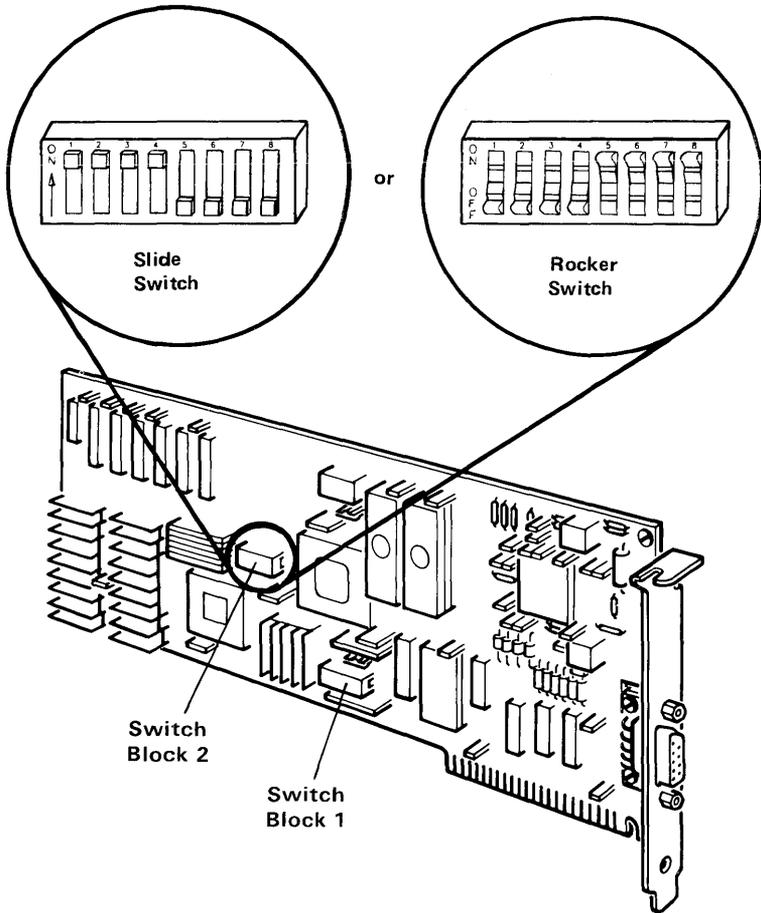
# Setting the Switches on the Adapter

Before replacing an adapter or installing a new adapter, read this section to help you determine the correct switch settings on the adapter.

If you are replacing an adapter, check the switch settings on the adapter being removed. If the switches were not set correctly, the adapter being removed would not have worked correctly. If the switches were set correctly, set the switches on the replacement adapter in the same way.

On the component side of the adapter are two switch blocks (see below). These switches determine:

- Where the computer will address the read-only memory (ROM) of the adapter
- What interrupt level the computer will use to address the adapter
- Whether this adapter is the primary (first) or alternate (second) IBM Token-Ring Network PC Adapter in this computer.



**Note:** Set a rocker switch by pressing the rocker down to the desired position.

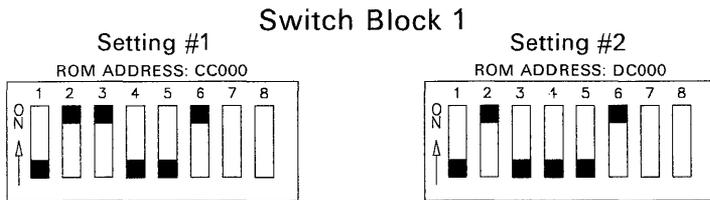
# Setting the Switches for ROM

Switches 1 through 6 on switch block 1 determine the address in the computer's memory where it will locate the adapter's read-only memory (ROM).

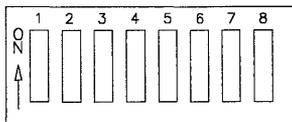
ROM requires 8K bytes of storage. Use setting number 1 (816K) if you don't have an *IBM PC Network Adapter* installed. Use setting number 2 (880K) if you do have an IBM PC Network Adapter installed. If you install *two* IBM Token-Ring Network PC Adapters in the same computer, set the first one to setting number 1 and the second one to setting number 2. (You should install no more than two network adapters of either kind.)

If your computer has any other feature that uses the same areas of memory recommended here, the computer will not operate when it tries to access that part of memory.

Set switches 1 through 6 on switch block 1 as required. See "IBM Personal Computer Memory" on page 4-6 to help you determine the correct ROM address.



Record your switch settings for this adapter on the following figure.



# IBM Personal Computer Memory

The switch positions 1 through 6 on switch 1 represent bit positions 18 through 13 respectively of a 19-bit address. The 19th bit is not settable since only the upper half of computer memory is available for ROM. When setting the bit positions, Off is a logical 1 (one) and On is a logical 0 (zero).

## Memory Map

Listed below are:

- All 8K memory boundaries above address A0000
- The memory addresses used by some IBM Personal Computer products.

If you are not sure where 8K bytes of unused addressable space are located in your computer, see your computer's *Technical Reference* or consult your sales representative.

A0000—640K  
A2000—648K  
A4000—656K  
A6000—664K  
A8000—672K  
AA000—680K  
AC000—688K  
AE000—796K  
B0000—704K—Monochrome Display Adapter  
B2000—712K—Monochrome Display Adapter  
B4000—720K—Monochrome Display Adapter  
B6000—728K—Monochrome Display Adapter  
B8000—736K—Color Graphics Adapter  
BA000—744K—Color Graphics Adapter  
BC000—752K—Color Graphics Adapter  
BE000—760K—Color Graphics Adapter  
C0000—768K—3270 Personal Computer Adapter  
C2000—776K  
C4000—784K  
C6000—792K  
C8000—800K—Fixed Disk

CA000—808K—3270 Personal Computer Adapter  
CC000—816K—PC Network Adapter (Primary)  
CE000—824K—3278/3279 Emulator Adapter  
D0000—832K—PC Cluster  
D2000—840K—PC Cluster  
D4000—848K—PC Cluster  
D6000—856K—PC Cluster  
D8000—864K  
DA000—872K  
DC000—880K—PC Network Adapter (Alternate),  
5250 Emulator Adapter  
DE000—888K  
E0000—896K—Personal Computer AT ROM  
E2000—904K—Personal Computer AT ROM  
E4000—912K—Personal Computer AT ROM  
E6000—920K—Personal Computer AT ROM  
E8000—928K—Personal Computer AT ROM  
EA000—936K—Personal Computer AT ROM  
EC000—944K—Personal Computer AT ROM  
EE000—952K—Personal Computer AT ROM  
F0000—960K—Personal Computer AT ROM  
F2000—968K—Personal Computer AT ROM  
F4000—976K—PC, XT, and AT ROM  
F6000—984K—PC, XT, and AT ROM  
F8000—992K—PC, XT, and AT ROM  
FA000—1000K—PC, XT, and AT ROM  
FC000—1008K—PC, XT, and AT ROM  
FE000—1016K—PC, XT, and AT ROM

# Setting the Interrupt Level

Switches 7 and 8 on switch block 1 allow you to set the interrupt level. The interrupt level allows an adapter to request the attention of the computer's central processing unit. The adapter allows you the flexibility of setting the interrupt level according to the features you have installed. As with the ROM settings, if the interrupt level that you select for the adapter conflicts with another feature in your system unit, your computer or one of the features will not operate correctly.

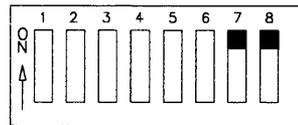
Switches 7 and 8 on switch block 1 are illustrated for you to determine which interrupt level you can use.

Set the interrupt level to 2, 3, or 7 as described below. Be sure you pick an interrupt level that does not conflict with the features in your computer.

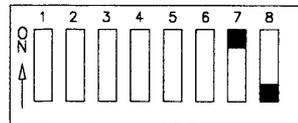
If the interrupt level that you select does not work, see your place of purchase for further recommendations.

**Level 2.** Use if you do not have a 3278-79 Emulator or an IBM PC Network Adapter.

Switch Block 1

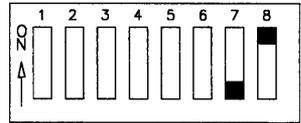


**Level 3.** Use if you cannot use level 2 and you do not have any of the following IBM Personal Computer adapters:

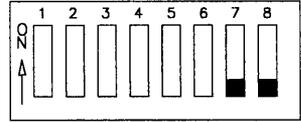


- IBM PC Network (secondary)
- Asynchronous Communications (secondary)
- SDLC Communications
- BSC (secondary).

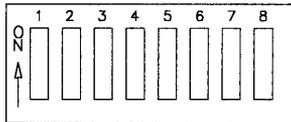
**Level 6. Do not use this interrupt.** It is used by the diskette drive.



**Level 7.** Use if you cannot use level 2 or 3 and only if your printer does not use interrupt level 7.



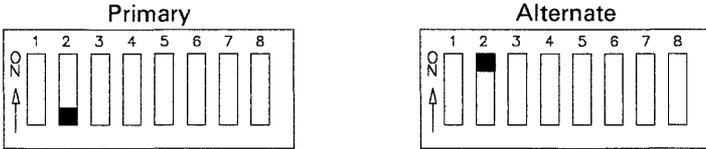
Record your switch settings for this adapter on the following figure.



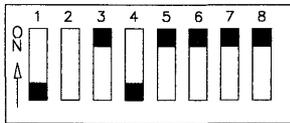
# Setting the Primary/Alternate Switch

Switch 2 on switch block 2 (see below) should be set to indicate that this is the primary or alternate adapter installed in this computer. Set switch 2 on switch block 2 as needed.

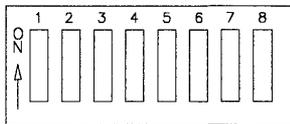
Switch Block 2



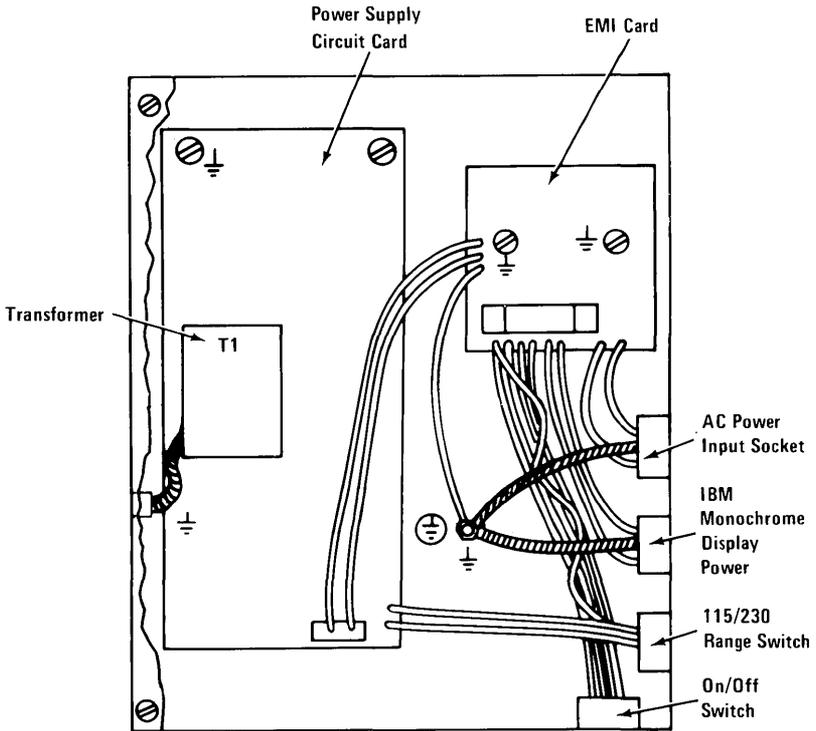
The remaining switches should be set as shown below.



Record your switch settings for this adapter on the following figure.



# Safety Ground Locations

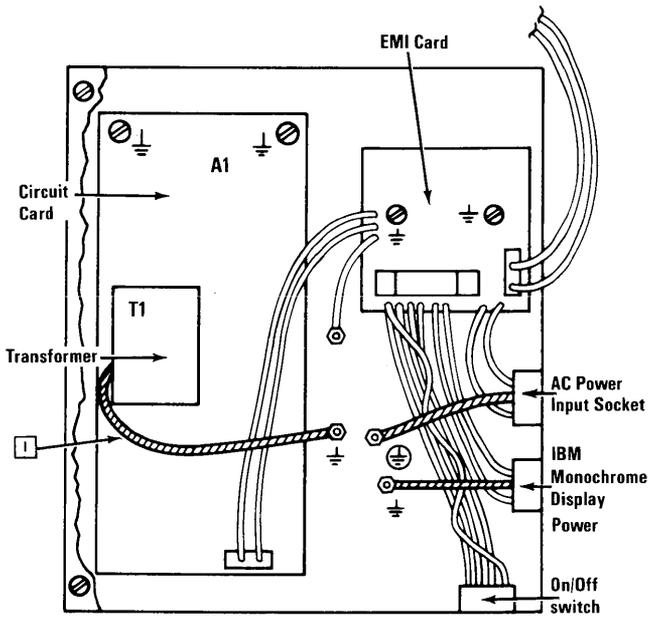


**System Unit Power Supply**

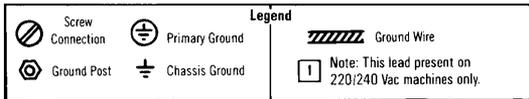
Legend

|                                                                                     |                  |                                                                                     |                |                                                                                     |             |
|-------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------|-------------|
|  | Screw Connection |  | Primary Ground |  | Ground Wire |
|  | Ground Post      |  | Chassis Ground |                                                                                     |             |

**IBM Personal Computer AT**



### System Unit Power Supply



### IBM Personal Computer XT

# Chapter 5. Removing and Replacing the IBM Token-Ring Network PC Adapter

This chapter shows you how to remove and replace an IBM Token-Ring Network PC Adapter in the following IBM Personal Computers.



If you are using one of the three personal computers shown above, continue this procedure by turning to “Before You Begin” on page 5-2.



If you have an IBM Portable Personal Computer, go to “Option Installation” in the *IBM Portable Personal Computer Guide to Operations*.

# Before You Begin

Before following the instructions in this chapter to replace an adapter, make sure that the switches on the adapter being removed and on the replacement adapter are set correctly. See Chapter 4 in this manual. The adapter will not work without the proper switch settings.

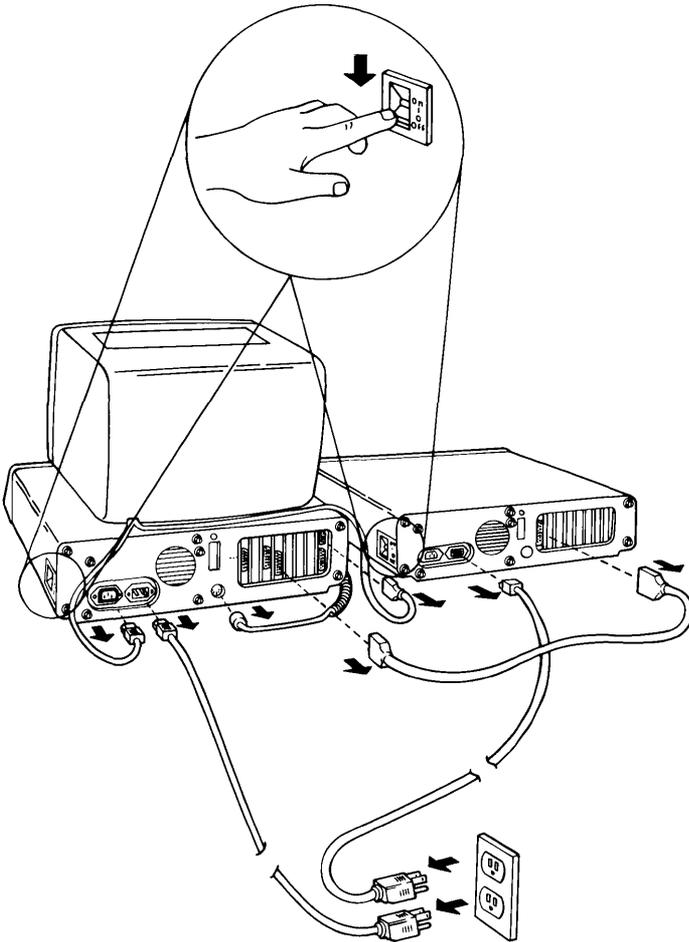
*Note:* The adapter cannot be installed in an IBM Personal Computer Expansion Unit.

## Tools

- Medium-size, flat-blade screwdriver
- Small-size, flat-blade screwdriver
- Medium screwstarter (optional)

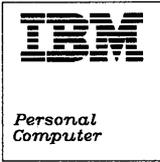
# Start

- 1 Set the power switch on your computer (and the expansion unit if attached) to the **Off** position.
- 2 Set the power switch on all attached devices to the **Off** position.
- 3 Unplug the computer and all attached devices from electrical outlets.
- 4 Disconnect all cables from the back of the computer.

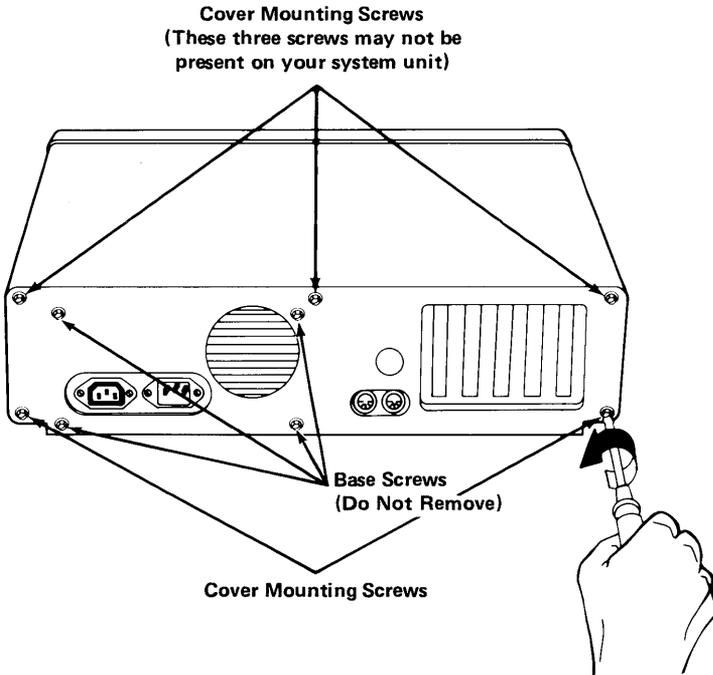


- 5 Move your keyboard, monitor, and all other attached devices away from the work area.
- 6 Place the computer in a position so you can access the back of the unit.
- 7 If you have an IBM Personal Computer or IBM PC XT, go to step 9 to remove the cover.
- 8 If you have an IBM Personal Computer AT, go to step 11 to remove the cover.

# Removing the Cover: IBM Personal Computer and IBM PC XT

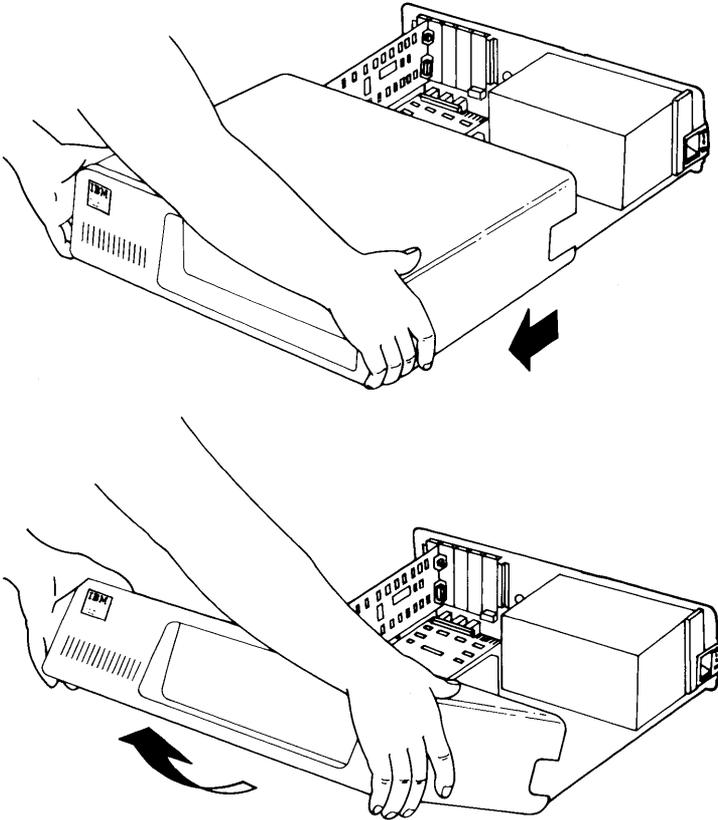


- 9 If your computer has a key lock, remove it before continuing. Use a flat-blade screwdriver to remove all cover mounting screws. Do not remove the base screws. Turn the screws counterclockwise as shown. Be sure to save all screws for the reinstallation of the cover.



- 10** Move to the front of your computer. Carefully slide the cover toward the front as shown below. When the cover will go no further, tilt it up, remove it from the base, and set it aside.

Go to step 15, “Replacing the IBM Token-Ring Network PC Adapter” on page 5-9.

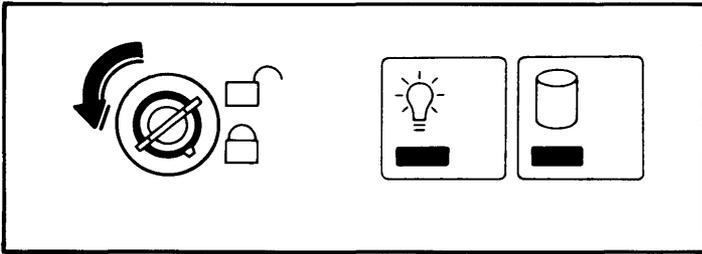


# Removing the Cover: IBM Personal Computer AT



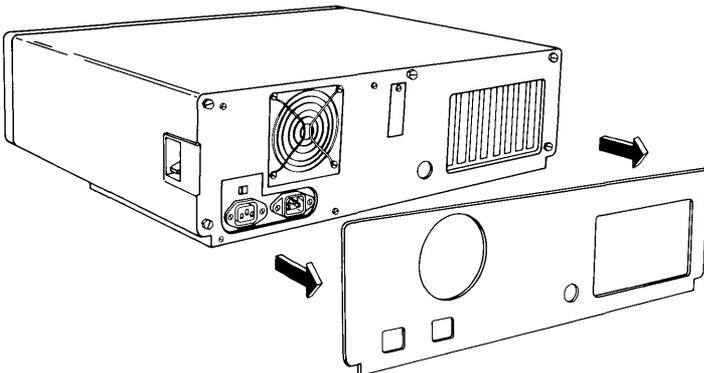
- 11 Unlock your computer as shown below.

Insert the key into the lock. Push and turn the key counterclockwise. Then remove the key.



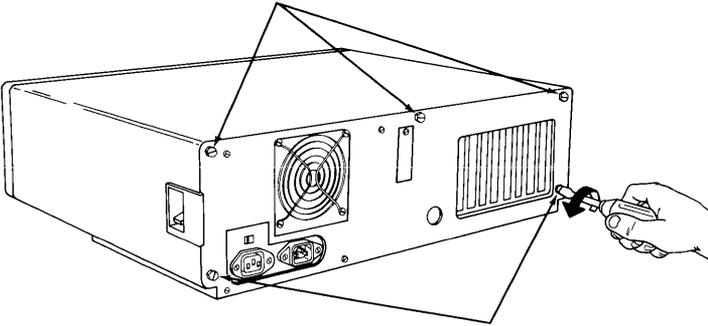
- 12 Remove the back panel from your IBM Personal Computer AT.

*Note:* The back panel is attached to the IBM Personal Computer AT with plastic fastener strips.



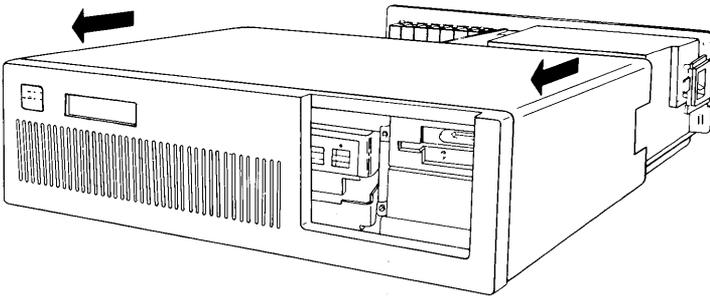
- 13** Use a flat-blade screwdriver to remove the five cover mounting screws. Turn the screws counterclockwise as shown. Be sure to save all the screws for the reinstallation of the cover.

**Cover Mounting Screws**



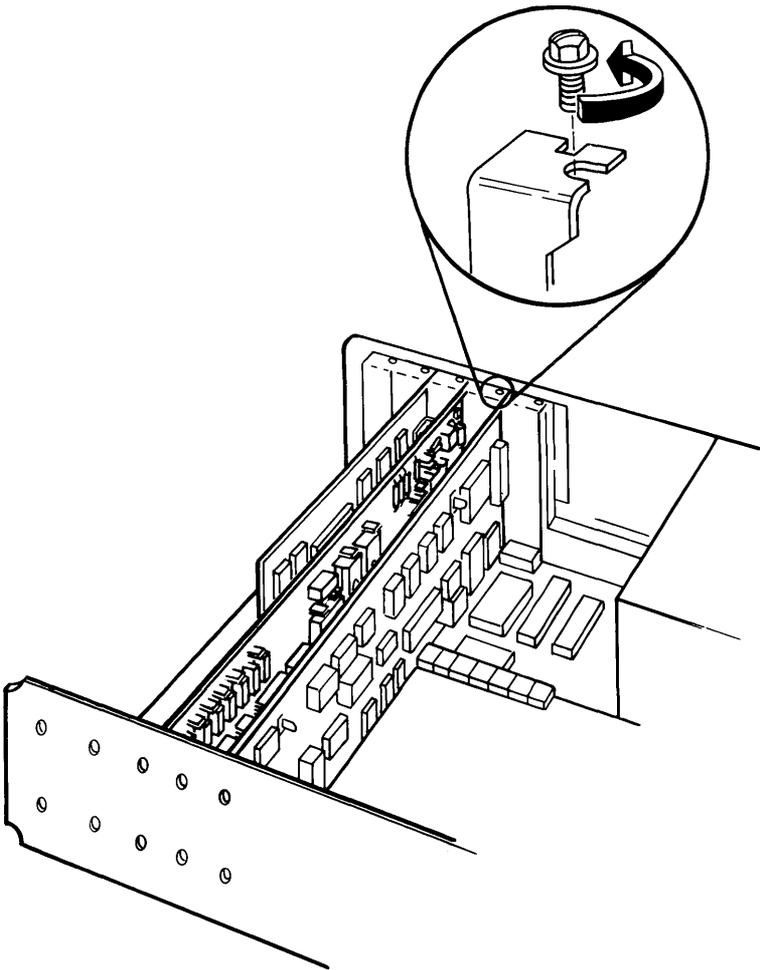
**Cover Mounting Screws**

- 14** Move to the front of your computer. Carefully remove the cover as shown below. Set the cover aside.

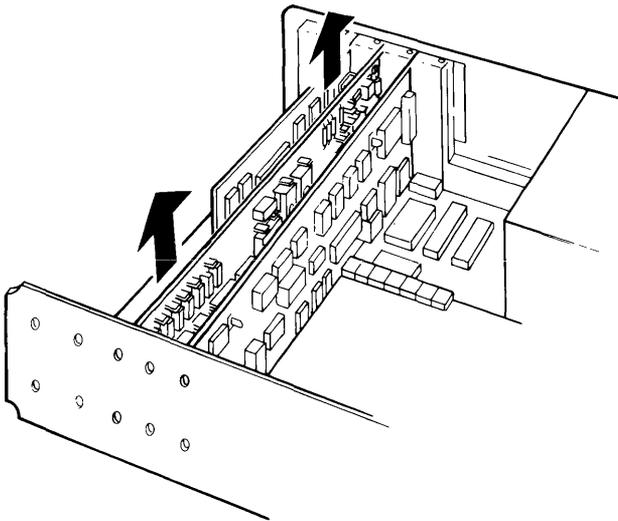


# Replacing the IBM Token-Ring Network PC Adapter

- 15 Identify the IBM Token-Ring Network PC Adapter installed in one of the slots by comparing it with the replacement adapter.
- 16 Use the flat-blade screwdriver to remove the screw in the adapter retaining bracket. Turn the screw counterclockwise. Be sure to save the screw to install the new adapter.

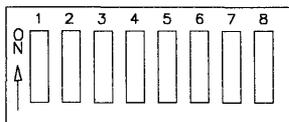
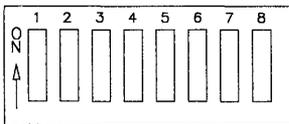


- 17 Hold the top of the adapter and pull it firmly out of the expansion slot.



- 18 Check the switch settings on the adapter being removed. If the switches were not set correctly, the adapter being removed would not have worked correctly. If the switches were set correctly, set the switches on the replacement adapter in the same way. See Chapter 4 for instructions on setting the switches.

Record the switch settings and slot number used for the replacement adapter in the figure below.

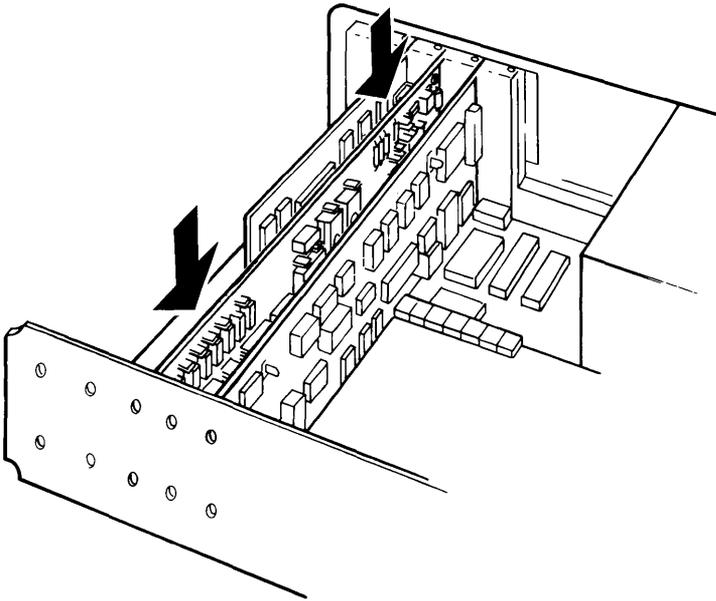


SLOT  
NUMBER \_\_\_\_\_

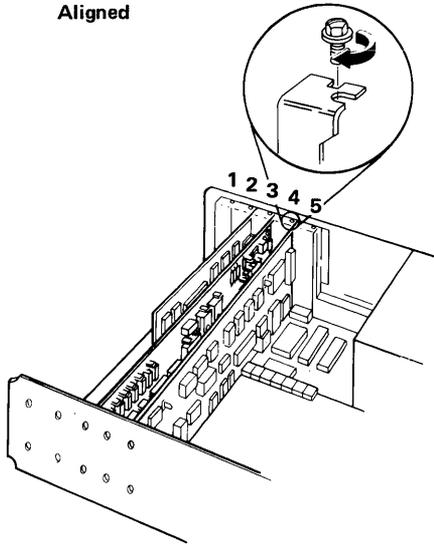
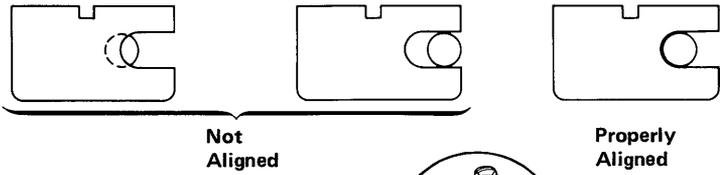
- 19 Hold the top of the replacement adapter and press it firmly into the expansion slot as shown below.

*Note:* If you have an IBM Personal Computer, use slot 4. This position allows the adapter to get sufficient ventilation. If the fourth slot is occupied by another adapter, check the documentation for that adapter to see if it requires slot 4. If it does not require slot 4, move the adapter another slot. If it does require slot 4, insert the IBM Token-Ring Network PC Adapter in the nearest available slot.

You can use any slot in the IBM PC XT or IBM Personal Computer AT for the adapter.



**20** Align the slot in the adapter retaining bracket with the hole in the back panel of your computer. Start the screw clockwise, then tighten with a flat-blade screwdriver.



**21** Your IBM Token-Ring Network PC Adapter is now replaced.

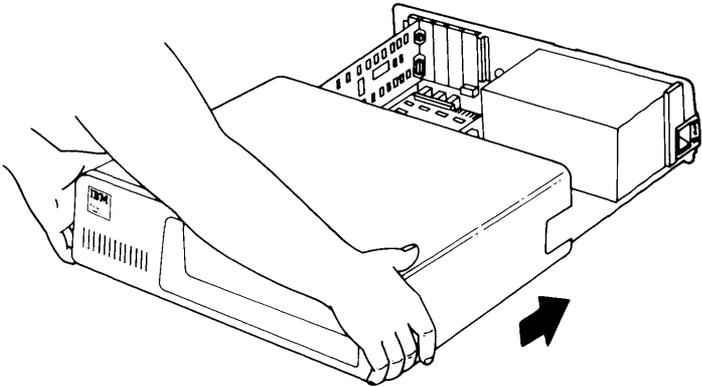
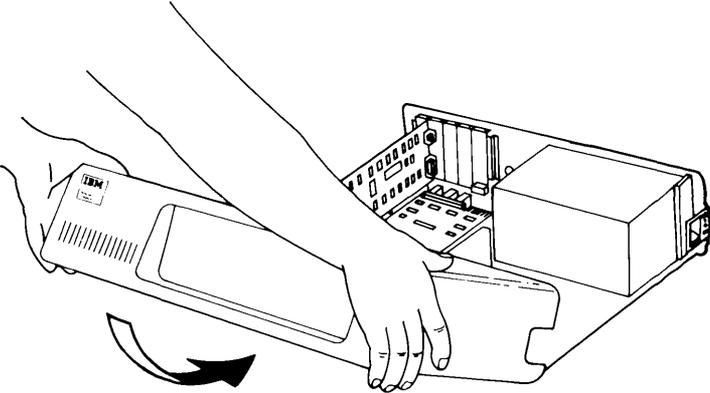
**22** If you have an IBM Personal Computer or IBM PC XT, go to step 23 to reinstall the system unit cover.

If you have an IBM Personal Computer AT, go to step 25 to reinstall the system unit cover.

# Reinstalling the Cover: IBM Personal Computer and IBM PC XT

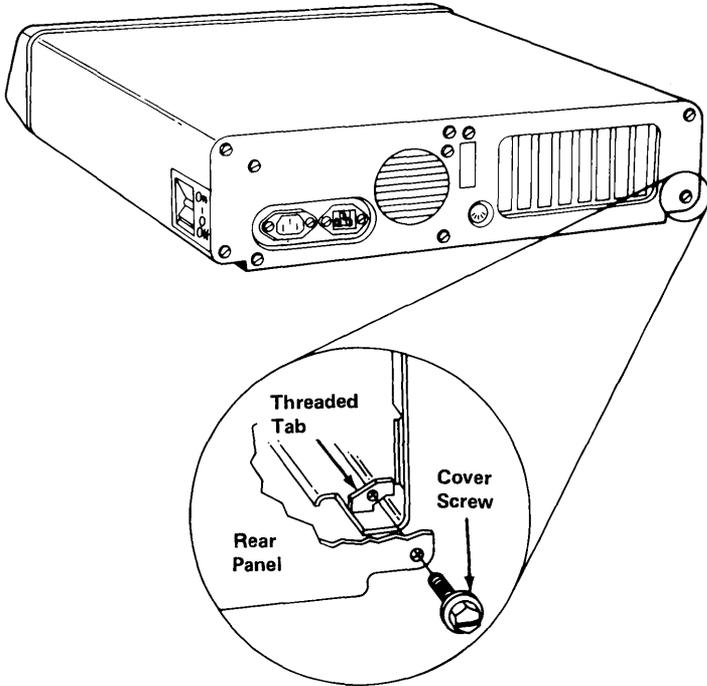


**23** Reinstall the cover by tilting it at an angle as shown. Carefully slide it toward the back of the computer.



**24** When the cover is all the way at the back, align each cover screw with the threaded tabs. Use a flat-blade screwdriver and turn each screw clockwise to tighten it.

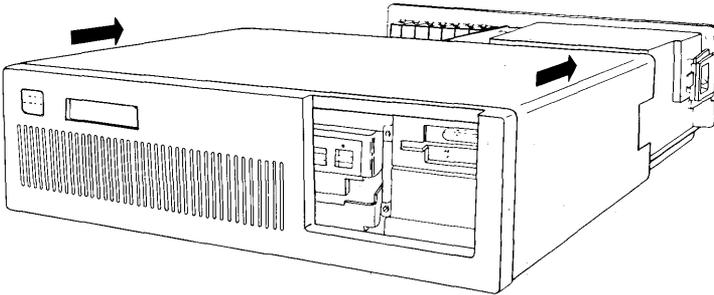
Go to step 28, “Reconnecting the Adapter Cable” on page 5-19.



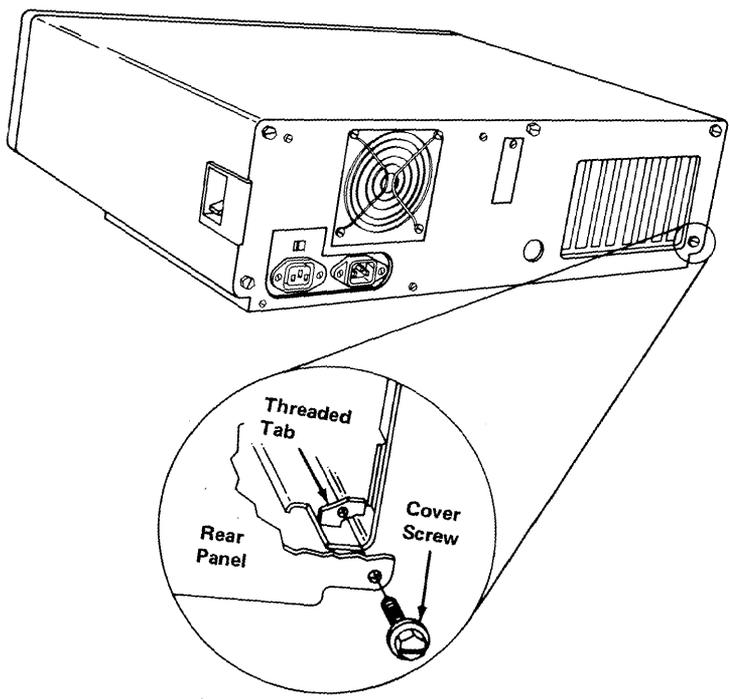
# Reinstalling the Cover: IBM Personal Computer AT



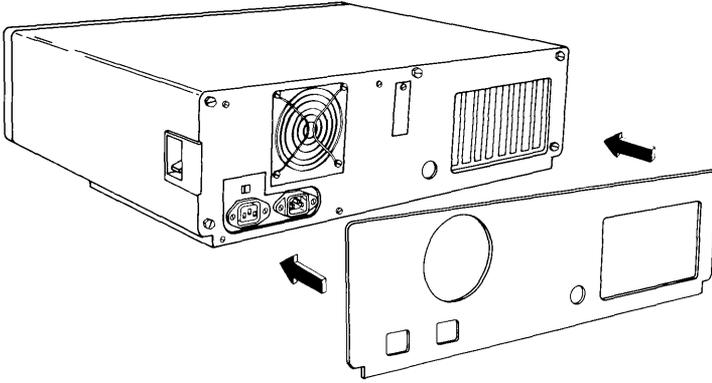
- 25** Lift the cover up against the rail and slide it onto your computer. Be sure that the cover is under the rail on the frame.



26 Use a flat-blade screwdriver to install the five cover mounting screws.

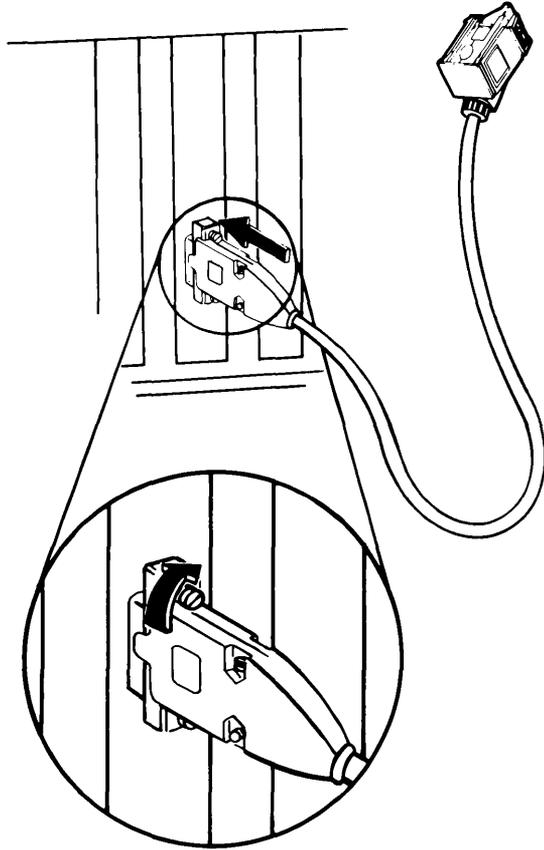


- 27** Reinstall the back panel on your IBM Personal Computer AT.  
The back panel is attached to the IBM Personal Computer AT with plastic fastener strips.



# Reconnecting the Adapter Cable

- 28** Connect the cable to the adapter as shown below. Be sure to connect the adapter cable to the adapter you just installed. Turn the two connector screws clockwise until the cable is seated.



- 29 The IBM Token-Ring Network PC Adapter and Adapter Cable are now installed. You may want to use the Advanced Diagnostics to check the installed adapter and cable before you reconnect the other cables to your computer and connect the adapter to the network (see steps 30 and 31 of this procedure).
- 30 Reconnect all cables to the computer for attached devices. Use your computer's *Guide to Operations* to recable the computer, if you do not remember how the cables were attached.
- 31 Before connecting the other end of your adapter cable to the network, see the *IBM Token-Ring Network Installation Guide* for information on connecting to the network.

# Chapter 6. Parts Catalog

The IBM Token-Ring Network PC Adapter Kit and the *IBM Token-Ring Network Hardware Maintenance and Service* package are available at your place of purchase.

Some items from the kit and the package can also be purchased separately.

Refer to the parts listing below for part numbers and descriptions.

| <b>Part Number</b> | <b>Description</b>                                                                |
|--------------------|-----------------------------------------------------------------------------------|
| 6339100            | IBM Token-Ring Network PC Adapter Kit*                                            |
| 6165880            | <i>IBM Token-Ring Network PC Adapter Hardware Maintenance and Service</i> package |
| 61X3931            | IBM Token-Ring Network PC Adapter Card                                            |
| 6165899            | IBM Token-Ring Network PC Adapter Wrap Plug                                       |
| 6339098            | IBM Token-Ring Network PC Adapter Cable                                           |

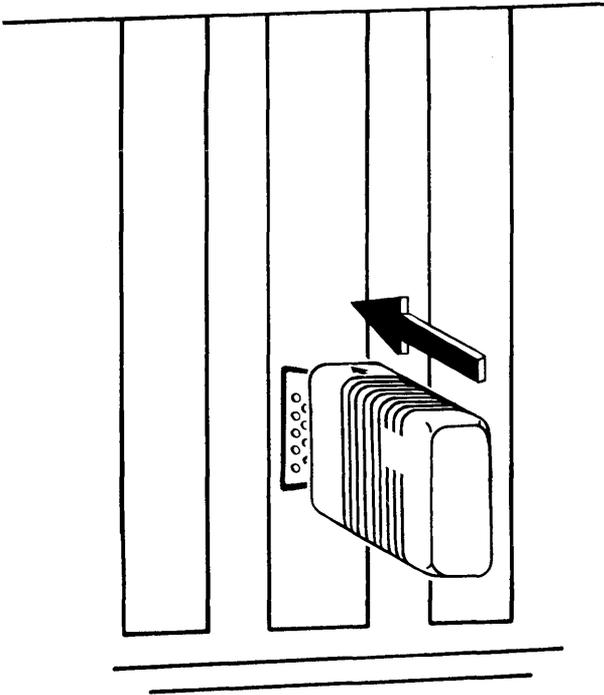
\* The kit includes the adapter card, support bracket, diskette, and document.



# Appendix A. Installing the IBM Token-Ring Network PC Adapter Wrap Plug

To install the IBM Token-Ring Network PC Adapter Wrap Plug:

1. Disconnect the IBM Token-Ring Network PC Adapter Cable from the back of your computer.
2. Hold the wrap plug with the pin section facing the adapter connector. Make sure that the plug pins are aligned with the adapter connector. Press the plug into the connector until it is firmly seated.





# Appendix B. Advanced Diagnostics File Listing

The following files are found on the Advanced Diagnostics diskette:

COMMAND.COM

DIAGS.COM

US2TRAD.DGS

US2AC.COM

VERSION.100

The file ERROR.LOG is created by the diagnostics when the START ERROR LOG option of the Log Utilities is selected the first time. After the first time, the file is written over (reused) each time the START ERROR LOG option is selected.



# List of Abbreviations

|             |                                  |             |                                     |
|-------------|----------------------------------|-------------|-------------------------------------|
| <b>BSC</b>  | binary synchronous communication | <b>PIC</b>  | problem isolation chart             |
| <b>CCB</b>  | command control block            | <b>POST</b> | Power-On Self Test                  |
| <b>K</b>    | 1024                             | <b>RAM</b>  | random access memory                |
| <b>IMPL</b> | initial microprogram load        | <b>ROM</b>  | read-only memory                    |
| <b>PC</b>   | Personal Computer                | <b>SDLC</b> | synchronous data link communication |



# Glossary

## A

**access unit.** A wiring concentrator that allows multiple attaching devices access to the ring at a central point such as a wiring closet or in an open work area.

**adapter.** The circuit card within a communicating device (such as an IBM Personal Computer) and its associated software, that enable the device to be attached to a network.

## B

**BASIC (Beginner's All-purpose Symbolic Instruction Code).** A programming language with a limited number of commands and a simple syntax, designed primarily for numerical applications.

## D

**device.** An input/output unit such as a terminal, display, or printer.

**diagnostics diskette.** A diskette used by computer users and service personnel to diagnose hardware problems.

## Disk Operating System (DOS).

A program that controls the operation of an IBM Personal Computer and the execution of application programs.

**downstream.** On a ring network, the direction of data flow.

## F

**faceplate.** A plate for connecting data and voice connectors to a cabling system. It may be wall mounted or surface mounted.

## L

**lobe.** In the IBM Token-Ring Network, the section of cable (which may consist of several segments) that attaches a device to an access unit.

## M

**multistation access unit.** In the IBM Token-Ring Network, a wiring concentrator, which can connect up to eight lobes to a ring network.

**O**

**operational diskette.** See working diskette.

**P**

**POST.** Power-On Self Test. A series of diagnostic tests that are run each time the computer's power is turned on.

**Problem Isolation Chart (PIC).** A diagnostic procedure for finding problems with an IBM Personal Computer or its adapters.

**R**

**read-only memory (ROM).** A computer's storage area whose contents cannot be modified.

**ring network (or ring).** A network configuration where a

series of attaching devices, such as IBM Personal Computers, are connected by unidirectional transmission links to form a closed path.

**U**

**upstream.** On a ring network, the direction opposite to that of data flow.

**W**

**working diskette.** A computer diskette to which files are copied from an original diskette for use in everyday operation.

**wrap plug.** The connector that is attached to an adapter during testing, to directly join the transmit and receive lines of the adapter. Using the wrap plug instead of the adapter cable can help determine whether a suspected problem is in the adapter or in the cable.

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# IBM Token-Ring Network PC Adapter Hardware Maintenance and Service

## Update

This package contains replacement and additional pages for your *IBM Token-Ring Network PC Adapter Hardware Maintenance and Service* manual.

Add or replace the pages as follows:

Replace pages ix and x (the Table of Contents)

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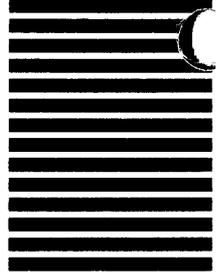


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