



IBM 3270
Personal Computer

Control Program User's Guide and Reference

Second Edition (July 1984)

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Preface

This manual explains how to use the IBM 3270 Personal Computer Control Program. The IBM 3270 Personal Computer Summary card and the IBM 3270 Personal Computer Control Program diskettes are provided at the back of this manual. The summary card can be used as a quick aid to help you remember different procedures as you perform tasks on the work station.

Who Should Use This Manual

This manual is intended for end users and for installation and systems personnel. It explains the keys, functions, and procedures that are used to perform a task on the IBM 3270 Personal Computer. The manual will be of the greatest value to the person sitting at the work station who needs specific procedures on how to perform a particular function.

How This Manual Is Organized

This manual has 13 chapters, eight appendixes, a glossary, and an index:

Chapter 1, Introducing the IBM 3270 Personal Computer, acquaints you with this product.

Chapter 2, Understanding the System, defines terms and important concepts.

Chapter 3, Loading the Control Program, describes how to begin a work station session.

Chapter 4, Using the Keyboard, explains the keyboard.

Chapter 5, Working in Application Mode, describes the application mode.

Chapter 6, Working in Work Station Control Mode, describes the work station control mode.

Chapter 7, Using SetUp, describes how to change your windows and screen profiles.

Chapter 8, Browsing, shows you how to browse the contents of a window.

Chapter 9, Copying, explains how to copy information from one window to another.

Chapter 10, Autokeying, shows the procedures you perform for the autokey function.

Chapter 11, Using Save and Restore, describes the save and restore functions. These commands save and restore autokey recordings, notepads, and screen arrangements.

Chapter 12, Printing, explains how to print information from the IBM 3270 Personal Computer.

Chapter 13, Transferring Files, describes how to transfer files back and forth between a host and the work station.

Appendix A, Customizing the System Diskette, describes the procedures for customizing the IBM 3270 Personal Computer.

Appendix B, Solving IBM 3270 Personal Computer Problems, helps you solve problems you may encounter.

Appendix C, Installing and Removing Patches, contains the procedures you need to install or remove permanent changes to the code and data on the customized system diskette.

Appendix D, Using the Trace Facility, describes the facility used to gather data required to isolate software problems in the control program.

Appendix E, Using Messages, lists messages, explanations, and user responses.

Appendix F, Using Command Procedures for Save and Restore and File Transfer, shows you how such procedures can be used to simplify save and restore and file transfer operations.

Appendix G, Technical Notes, contains information on 3270 functions, 3270 Data Stream, mandatory usage of slots inside the system unit, and personal computer notes.

Appendix H, Using Program Symbols, discusses the feature that allows an organization to define up to six character sets or fonts.

The Glossary defines terms that may be unique for this product.

The Index contains entries and cross-referenced terms to help you find information.

Notes:

1. The term **control program** refers to the IBM 3270 Personal Computer Control Program.
2. The term **customized system diskette** refers to the IBM 3270 Personal Computer Control Program diskette that has been customized.

3. The term **window** is the equivalent of the term **viewport** as used in the **IBM 3270 Information Display System: Data Stream Programmer's Reference** manual, GA23-0059.
4. The term **DOS** refers to the IBM Personal Computer Disk Operating System Version 2.0 and subsequent versions of DOS.
5. Any names mentioned in either the photographs or the text of this manual are purely fictitious and do not refer to persons living or dead.

Related Publications

Following are the available IBM 3270 Personal Computer manuals:

- *Introduction and Preinstallation Planning*, GA23-0179

Provides information for evaluating and planning the installation of the IBM 3270 Personal Computer and planning the customization of the IBM 3274 Control Unit.

- *Guide to Operations*, SA23-0141 (1837432)

Provides procedures for hardware setup, operation, and customer problem analysis and recovery (CPAR). This manual is not dependent on the Control Program or on an application program. (Does not include diskettes or connectors.)

- *Maintenance Information*, SY27-2567 (1837436)

Provides hardware problem-recovery procedures, a parts catalog, and maintenance information.

- *Online Tutorial*, SA23-0163 (1837433)

Provides an introduction to the Control Program facilities, as well as guidance for using the Control Program. (Includes diskettes.)

- *Control Program: Programming Guide*, SC23-0165

Provides information for writing IBM 3270 Personal Computer applications that run in the 3270 Personal Computer, control the personal computer session, and interact with a host program.

Statement of Service

- Program service for the IBM 3270 Personal Computer Control Program is central service, including an IBM Support Center. Program services will be provided only for the latest refresh and will be available for the prior release for ninety (90) days following the release of a new refresh from IBM. Program services will be discontinued on June 1, 1985.
- IBM central service will respond to a defect in the unaltered portion of a supported release of the licensed program by issuing: defect correction information such as correction documentation, corrected code, or notice of availability of corrected code; a restriction; or a bypass.
- IBM does not guarantee service results, or that the program will be error-free, or that all program defects will be corrected.
- Program service from IBM will be provided only to quantity discount agreement (QDA) contracted customers via the designated customer technical support location. Customers with less than 20 licenses must sign a QDA to obtain central service support.
- The customer technical support location should be designated when the IBM 3270 Personal Computer is ordered.
- The customer technical support location will register, through the IBM marketing representative, up to three technical coordinators who will be eligible to obtain central service support.

- The customer technical support location will act as the interface for the customer with the IBM Support Center.
- The IBM Support Center, in call-back mode, will provide the customer who is designated the technical coordinator with telephone assistance in problem diagnosis and resolution. This customer-designated technical coordinator may call the IBM Support Center at any time and will receive a call back within eight (8) business hours. The IBM Support Center will contact the customer's technical support location, Monday - Friday, 8:00 A.M. - 5:00 P.M., local customer time.
- The IBM Support Center is the established point of contact between the customer technical coordinator and IBM central service.
- The technical coordinator will be the first level of end user assistance. You are advised to contact your technical support location if you have any problems requiring IBM assistance.
- The customer technical support locations' responsibilities include, but are not limited to:
 - Problem determination
 - Problem source identification
 - Submitting APAR data
 - Applying preventive and corrective service
 - Performing activities recommended by IBM support organization(s).

- Preventive service is provided on a cumulative basis through refreshes. Refreshes are distributed to the designated customer technical support location on diskettes.
- One copy of each refresh and its supporting documentation will be provided to the customer's technical support location. The customer's technical support location is responsible for making and distributing copies to the work stations with the IBM 3270 Personal Computer Control Program installed, not to exceed the total copies licensed to the customer.
- Additional copies of the refreshes and supporting documentation may be ordered by the technical support location for shipment to the technical support location for an additional charge, not to exceed the total copies licensed to the customer.
- Corrective service, if any, will be provided only for the latest refresh level to the customer technical support location.

Operating Environment

The IBM 3270 Personal Computer Control Program is designed to operate on the IBM 3270 Personal Computer machine configuration 5271 standard models 2, 4, 6, 24, and 26 when installed with IBM Personal Computer Disk Operating System (DOS) 2.1.

Contents

Chapter 1. Introducing the IBM 3270 Personal Computer	
A Work Station to Meet Your Needs	1-3
A Look at Your Hardware	1-5
Fitting Your Needs	1-7
Getting Help	1-9
Using This Book	1-10
Chapter 2. Understanding the System	
Introduction	2-3
Presentation Space	2-4
Windows	2-5
Screen Profiles	2-10
Enlarging Windows	2-14
Auto-windowing	2-16
Application Mode	2-18
Work Station Control Mode	2-20
Understanding the Operator Information Area	2-22
Application Mode Operator Information Area	2-22
Work Station Control Mode Operator Information Area	2-25
Getting Help	2-26
Understanding Your Display Screen	2-26
Using Help Panels	2-28
Listing Screen Profiles, Windows, and Autokey Recordings	2-31
Online Tutorial	2-32
Other Functions	2-33
Browsing the Contents of Your Presentation Space	2-33
Copying Information	2-33
Recording and Playing Keystrokes	2-34
Saving and Restoring Information	2-34
Printing Screen Profiles and Sessions	2-35
Transferring Files	2-35

Chapter 3. Loading the Control Program	
Introduction	3-3
Terms You Need to Know	3-4
About Diskettes	3-5
How to Handle Diskettes	3-6
Loading the Control Program	3-7
If Your IBM 3270 Personal Computer is Off	3-7
If Your IBM 3270 Personal Computer is On	3-8
What Is On Your Display Screen: Screen Profile 0	3-9
How to Save Screen Profile 0	3-12
How to Restore Screen Profile 0	3-13
How to Remove Diskettes	3-14
Chapter 4. Using the Keyboard	
Introduction	4-3
Terms You Need to Know	4-3
What This Keyboard Does	4-4
Special Kinds of Keys	4-8
Toggle Keys	4-9
Chapter 5. Working in Application Mode	
Introduction	5-3
Terms You Need to Know	5-3
Host Computer Functions	5-4
Host Computer Keys in the Left Control Key Area	5-5
Host Computer Keys in the Typewriter Key Area	5-11
Host Computer Keys in the Right Control Key Area	5-14
Host Computer Keys in the Numeric Keypad Area	5-19
Host Computer Keys in the Program Function Key Area	5-21
Notepad Functions	5-26
Notepad Keys in the Left Control Key Area	5-27
Notepad Keys in the Typewriter Key Area	5-27
Notepad Keys in the Right Control Key Area	5-27
Notepad Keys in the Program Function Key Area	5-28
Typing in Technicolor with PF Keys	5-28

Personal Computer Functions	5-30
Personal Computer Keys in the Left Control Key Area	5-31
Personal Computer Keys in the Typewriter Keys Area	5-36
Personal Computer Keys in the Right Control Key Area	5-39
Personal Computer Keys in the Numeric Keypad Area	5-42
Personal Computer Keys in the Program Function Key Area	5-48
Chapter 6. Working in Work Station Control Mode	
Introduction	6-3
Work Station Control Mode Overview	6-4
Work Station Control Mode Functions	6-5
Work Station Control Mode Keys in the Left Control Key Area	6-6
Work Station Control Mode Keys in the Typewriter and Numeric Keypad Area	6-11
Work Station Control Mode Keys in the Program Function Key Area	6-12
Keeping Track of Active Functions	6-18
Levels of Functions	6-18
Level 1	6-18
Level 2	6-18
Level 3	6-19
Selecting a Screen Profile	6-21
Selecting a Window	6-23
Other Work Station Control Mode Functions	6-27
Chapter 7. Using SetUp	
Introduction	7-3
Terms You Need to Know	7-4
Defining Screen Profiles 1 through 9	7-6
Getting In and Out of SetUp	7-7
Adding a Window	7-8
Deleting a Window	7-11
Sizing a Window	7-13
Moving a Window	7-15
Cornering a Window	7-17
Hiding a Window	7-19
Changing Color	7-22
Setting the Base Colors for a Window	7-25
Changing the Display Screen Background	7-27

Changing the Foreground and Background of a Window	7-29
---	------

Chapter 8. Browsing

Introduction	8-3
Terms You Need to Know	8-3
Browsing a Window	8-3
Browsing a Personal Computer Graphics Window	8-5

Chapter 9. Copying

Introduction	9-3
Terms You Need to Know	9-3
Notes	9-4
Copying Data	9-6
Defining the Source Area	9-6
Defining the Target Area	9-9
Copying the Data	9-11
Copying Data in the Same Window	9-12

Chapter 10. Autokeying

Introduction	10-3
Terms You Need to Know	10-3
List	10-4
Let's Begin	10-6
Getting Ready to Record Keystrokes	10-8
How to Choose a Recording Name	10-10
Recording Keystrokes	10-11
Host Recording	10-15
Recording Keystrokes in a Personal Computer Session	10-17
Playing a Recording	10-17
Playing a Recording	10-20
Cancelling a Recording	10-22
Erasing a Recording	10-22

Chapter 11. Using Save and Restore

Introduction	11-3
Terms You Need to Know	11-4
How to Save and Restore Screen Profiles	11-5
How to Save and Restore Notepads	11-6
How to Save and Restore Autokey Recordings	11-7

How to Save and Restore All Screen Profiles, Notepads, and Autokey Recordings	11-8
How to Save and Restore Data in User-Named Files	11-9
How to Save and Restore Screen Profiles	11-10
How to Save and Restore Notepads	11-11
How to Save and Restore Only One Notepad	11-12
How to Save and Restore Autokey Recordings	11-13
How to Save and Restore All Autokey Recordings, Notepads, and Screen Profiles	11-14
Note on Notation.	11-15
Format Used in User-Named File Specifications	11-16
 Chapter 12. Printing	
Introduction	12-3
Terms You Need to Know	12-3
Printing on the IBM 3270 Personal Computer-Supported Locally Attached Printer	12-4
Printing What Is on the Screen	12-4
Printing a Window	12-5
Printing the Personal Computer Session.	12-6
Printing on the 3274-Attached Printer	12-7
Printing the Host Session (Local Copy).	12-7
Display/Printer Compatibility	12-8
Programmed Symbol (PS) Considerations.	12-8
Color Printing	12-8
Extended Highlighting	12-8
Graphics Color Printing	12-8
 Chapter 13. Transferring Files	
Introduction	13-3
Terms You Need to Know	13-4
Format Notation for the Send and Receive Commands	13-5
How to Transfer a File	13-6
VM/CMS Send Command.	13-8
Example	13-12
Additional Information.	13-12
VM/CMS Receive Command	13-13
Example	13-16
Additional Information.	13-17

TSO Send Command	13-18
Example	13-23
Additional Information	13-24
TSO Receive Command	13-25
Example	13-28
Additional Information	13-29

Appendix A. Customizing the System Diskette

Introduction	A-3
Why You Need To Customize	A-3
How Customization Works	A-4
When To Start	A-4
Using Your Planner to Help	A-4
Terms to Know	A-5
Before You Begin	A-5
Customization Considerations	A-6
Recustomizing from a Previously Created System	A-9
Completing Your Information Worksheet	A-10
Preparing for Customization	A-14
Copying the IBM 3270 Personal Computer Control Program onto the Fixed Disk	A-15
Formatting Your System Diskette	A-17
Loading the Customization Program	A-19
The Customization Panels	A-20
How to use the Customization Panels	A-21
Help Panels	A-23
Home Panel	A-25
Hardware Options Panel	A-27
Sessions Definitions Panel	A-28
Attachment Options Panel	A-29
Host Session Options Panel	A-32
Customization Summary Panel	A-34
Customization in Progress Panel	A-37
Customization Wrap Up	A-39
Estimating Memory Size	A-40
Information Worksheet	A-41

Appendix B. Solving IBM 3270 Personal Computer Problems

Introduction	B-3
Problems That May Occur While You Are Using the IBM 3270	B-5
Autokey Problem Determination	B-11
Autokey Problem Determination: Play	B-28

Autokey Problem Determination: Erase	B-40
Communication Problem Determination.	B-53
Program Error Codes	B-57
Customization Problem Determination.	B-63
File Transfer Problem Determination	B-68
Keyboard Problem Determination.	B-80
IBM 3270 Personal Computer Printer Problem Determination	B-86
Patch Problem Determination	B-91
Personal Computer Application/Control Program	B-94
Save and Restore Problem Determination	B-96
System Error Problem Determination	B-98
System Startup Problem Determination	B-113
Trace Problem Determination	B-118
Work Station Control Problem Determination.	B-119

Appendix C. Installing and Removing Patches

Introduction	C-3
Describing the Patch Format.	C-4
Creating a Patch File	C-6
Installing a Patch	C-8
Listing the Current System Level and Currently Installed APARs.	C-10
Removing a Patch.	C-11

Appendix D. Using the Trace Facility

Introduction	D-3
The Trace Command.	D-3

Appendix E. Using Messages

Introduction	E-3
How to Use This Appendix	E-3
Customization Messages (CU ⁿⁿⁿ)	E-4
Patch Installation Messages (PA ^{Tnn}).	E-12
Save and Restore Messages (SR ⁿⁿⁿ).	E-20
Startup Messages (ST ⁿⁿⁿ).	E-29
System Error Messages	E-32
Trace Messages (TR ⁿⁿⁿ)	E-37
File Transfer Messages (TRAN ^{Snn})	E-39
Work Station Control Messages (WS ⁿⁿⁿ).	E-50

Appendix F. Using Command Procedures for Save and Restore and for File Transfer

Introduction	F-3
Command Procedures for Save and Restore.....	F-4
Creating an Autoexec.Bat.....	F-5
Programmed Command Procedures	F-6
File Transfer Command Procedures	F-8

Appendix G. Technical Notes

Introduction	G-6
3270 Limitations.....	G-6
3270 Data-Stream Functions	G-7
Interface Codes	G-8
Attributes.....	G-13
Field Attributes.....	G-13
Extended Field Attributes and Character Attributes	G-14
Commands	G-16
3270 Data Stream Commands	G-16
Non-SNA Channel Commands	G-17
Write Control Character	G-18
3270 Data Stream Orders.....	G-20
Outbound 3270 Data Stream Structured Fields	G-21
Set Reply Mode Structured Field Format	G-22
Erase/Reset Structured Field Format	G-24
Outbound 3270DS Structured Field Format	G-25
Read Partition Structured Field Format ..	G-26
Inbound 3270 Data Stream.....	G-27
Inbound 3270 Data Stream for Partition 0.....	G-29
Short Read Format.....	G-29
Read Modified and Read Modified All Format.....	G-30
Read Buffer Format.....	G-31
Read Buffer Format in Field Reply Mode	G-31
Read Buffer Format in Extended Field and Character Mode	G-32
Inbound Structured Fields	G-33
Query Reply Structured Field.....	G-34
Usable Area Query Reply Structured Field Format.....	G-34

Character Sets Query Reply	
Structured Field Format	G-36
Character Set Descriptors	G-38
Reply Modes Query Reply Structured	
Field Format	G-39
DDM Query Reply Structured Field	
Format	G-40
Color Query Reply Structured Field	
Format	G-41
Highlight Query Reply Structured	
Field Format	G-42
Implicit Partition Query Reply	
Structured Field Format	G-43
Implicit Partition Default and	
Alternate Screen Size	G-43
Character Cell Dimensions	G-43
Self-Defining Parameters	G-43
Transmission of Buffer Addresses	G-45
Buffer Addresses	G-45
Example of Buffer Address	
Calculation	G-45
Transmission of a Buffer Address	G-46
Transmission of Buffer Address in	
16-Bit Address Mode	G-46
Transmission of Buffer Address in	
12/14-Bit Address Mode	G-46
14-Bit Addresses	G-47
12-Bit Addresses	G-47
Mandatory Card Slot Assignments	G-49
Changes or Limitations to the Personal	
Computer Session	G-50
Personal Computer Physical Cursor	G-50
Personal Computer Print Spooling	G-50
3274 Communication Session Termination	G-51
IBM 3270 Personal Computer Failure	G-51
Color Limitations	G-51
Notes on All Points Addressable Graphics	G-52
Using the Full Screen All Points Addressable	
Mode	G-53
Personal Computer Display Blanking	G-53

Appendix H. Using Programmed Symbols

Introduction	H-3
Before You Begin	H-7
The Symbol Sets	H-8
Primary Colors	H-9
Secondary Colors	H-11
Character Attributes and Triple-Plane Symbols	H-11
Additional Information	H-12

Tables

G-1	United States EBCDIC I/O Interface Code	G-9
G-2	EBCDIC Control Character I/O Codes	G-11
G-3	Field Attribute Character Bit Assignment ..	G-13
G-4	Attribute Type X'41' - Extended Highlighting	G-14
G-5	Attribute Type X'42' - Color	G-14
G-6	Attribute Type X'43' - Character Set Selection	G-15
G-7	3270 Data Stream Commands	G-16
G-8	Non-SNA Channel Commands	G-17
G-9	Write Control Character Reset Actions	G-19
G-10	3270 Data Stream Orders	G-20
G-11	Set Reply Mode Structured Field Format ..	G-23
G-12	Erase/Reset Structured Field Format	G-24
G-13	Outbound 3270DS Structured Field Format	G-25
G-14	Read Partition Structured Field Format	G-26
G-15	Inbound 3270 Data Stream	G-27
G-16	Short Read Format	G-29
G-17	Read Modified and Read Modified All Format	G-30
G-18	Read Buffer Format in Field Reply Mode	G-31
G-19	Read Buffer Format in Extended Field and Character Mode	G-32
G-20	Usable Area Query Reply Structured Field Format	G-35

G-21	Character Sets Query Reply Structured Field Format	G-36
G-22	Character Set Descriptors.....	G-38
G-23	Reply Modes Query Reply Structured Field Format	G-31
G-24	DDM Query Reply Structured Field Format	G-40
G-25	Color Query Reply Structured Field Format	G-41
G-26	Highlight Query Reply Structured Field Format	G-42
G-27	Implicit Partition Query Reply Structured Field Format	G-43
G-28	Self-Defining Parameters	G-44
G-29	Hexadecimal Requirements	G-48
G-30	Mandatory Card Slot Assignments	G-49

Chapter 1. Introducing the IBM 3270 Personal Computer

Contents

A Work Station to Meet Your Needs	1-3
A Look at Your Hardware	1-5
Fitting Your Needs	1-7
Getting Help	1-9
Using This Book	1-10

Notes:

A Work Station to Meet Your Needs

Imagine that you are sitting at your desk surrounded by IBM displays and keyboards. A variety of 3270 and personal computer applications are at your fingertips — if only you can find a way to bring this hardware and software together into one work station.

You can. With the IBM 3270 Personal Computer, you can conduct personal computer and 3270 sessions at the same time, using one keyboard and one screen. And the 3270 Personal Computer offers its own unique capabilities. For example, on the same screen where 3270 and personal computer sessions are displayed, you can use an online notepad, which is like a one page scratch pad, for jotting down information that you can save or discard. You will also be able to perform a rich variety of functions, such as saving keystrokes, adding color, enlarging the contents on your screen, and copying information from a personal computer session to a 3270 session. All these capabilities, and more, combine in a work station that will be customized to meet your particular needs.

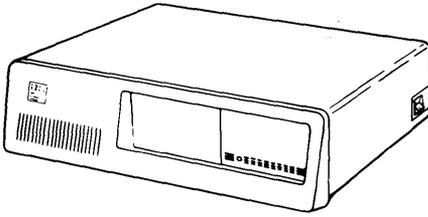


A Look at Your Hardware

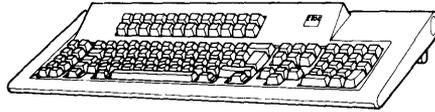
First, let's take a look at your system. The IBM 3270 Personal Computer consists of a display monitor, a system unit, and a keyboard. The display monitor can be either color or monochrome. The system unit allows you to store personal computer files on diskettes and/or a fixed disk.

The IBM 3270 Personal Computer and its keyboard were designed to handle a large range of functions so that, as you gain experience, your work station will meet your growing needs. The keyboard is your tool for controlling the work station, for signaling application programs, and for entering information. This keyboard looks different from other keyboards that you have used. Chapter 4 will explain the differences between this keyboard and the IBM Personal Computer and 3270 keyboards.

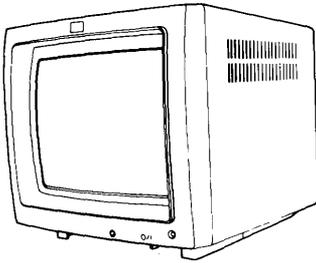
If you are not yet familiar with operating your IBM 3270 Personal Computer, please read Chapter 2 of your *IBM 3270 Personal Computer Guide to Operations* at this time. This chapter discusses the controls and operation of your hardware.



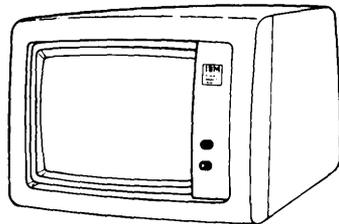
5271 System Unit



5271 Keyboard



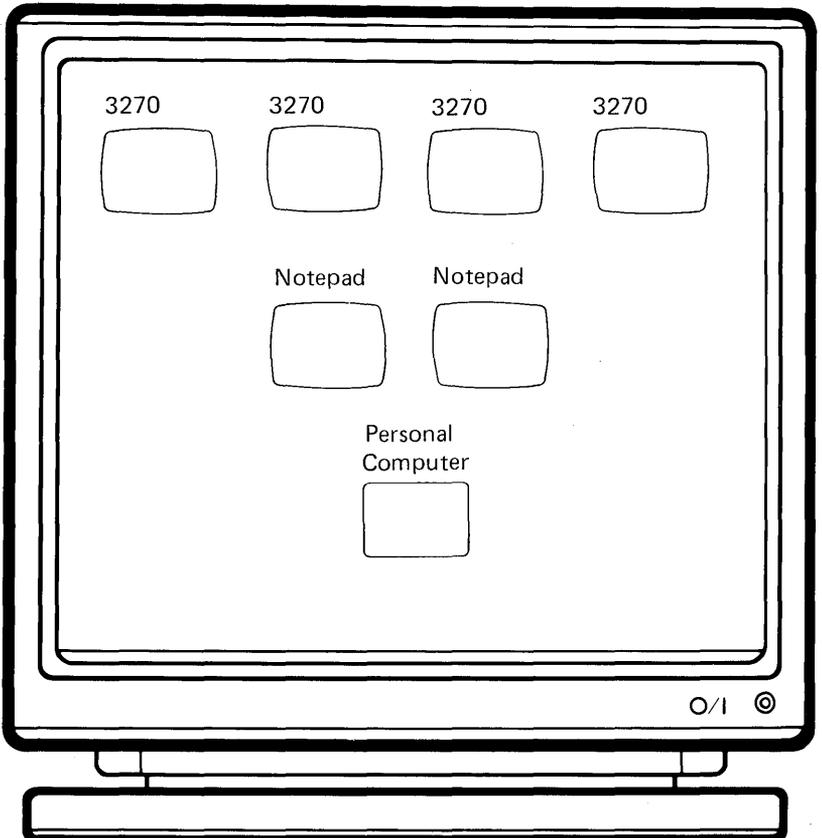
5272 Color Display



5271 Monochrome Display

Fitting Your Needs

It is important to understand that, when you look at your IBM 3270 Personal Computer, it is almost like viewing the surface of a lake. You know that beneath that surface another world exists that you cannot see. When you look at your work station, you will see only one display, one keyboard, and one system unit. Yet beneath this surface are the capabilities to interact simultaneously with, and display on one screen four 3270 sessions, one IBM Personal Computer session, and two online notepads. The following figure illustrates this concept:

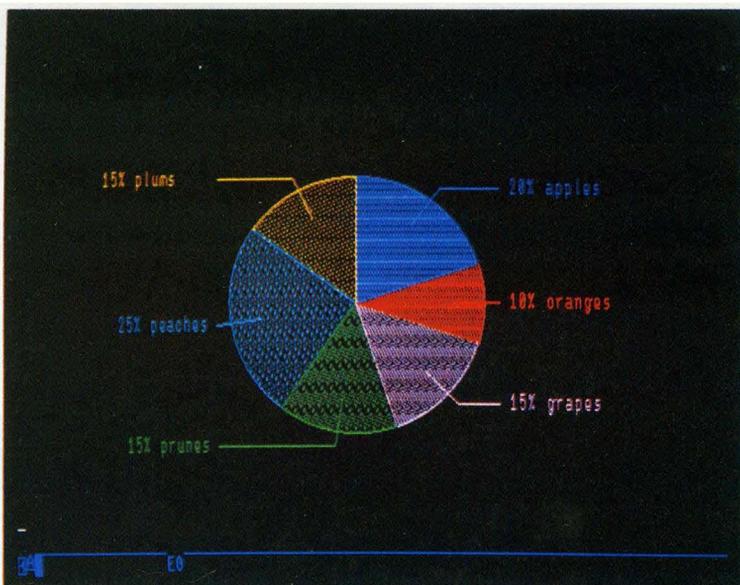


You choose how you want to use the functions of the IBM 3270 Personal Computer. If you want it to function solely as a personal computer, load the IBM Personal Computer Disk Operation System. You can then use IBM Personal Computer software for numerous applications. The HELPER tutorial, a self-help diskette that comes with this work station, is one example of software that can be used when your work station functions like a personal computer.

You can also use your IBM 3270 Personal Computer so that it operates either as an existing IBM 3278 Display Station Model 2, 3, 4, or 5 terminal or a 3279 Display Station Model 2 or 3, as well as an IBM Personal Computer. You can replace an existing 3278 Model 2 with your IBM 3270 Personal Computer without any other preparation.

You can also customize a more advanced configuration that allows your IBM 3270 Personal Computer to support up to four 3270 host sessions concurrently over a single coaxial cable connection to the IBM 3274 Control Unit. A personal computer session and two notepad sessions will also be supported concurrently by the IBM 3270 Personal Computer.

A graphics capability is another key function on the IBM 3270 Personal Computer. With the installation of an All Points Addressable (APA) adapter, you can use graphics applications in a personal computer session. In addition, host computer session graphics is provided with the Programmed Symbols (PS) adapter. This allows you to display graphics in a host computer session. The following illustration shows the graphics capability.



Getting Help

In addition to the HELPER tutorial and this User's Guide, online aids have been provided to help you master the IBM 3270 Personal Computer:

- You will receive operating and status information in the operator information area (OIA) at the bottom of your display screen.
- You can get help by pressing the Help key. The Help panel that appears on your screen will list the active functions that relate to what you are doing. There are several different Help panels.
- As you type in commands and information, the system will respond by displaying prompts and messages to guide you and to let you know when there are problems.

For quick reference, you will find at the back of this book a summary card containing important functions.

Using This Book

This book will help you learn how to use the IBM 3270 Personal Computer and also serve as a reference guide as your abilities increase with practice. Use this book in conjunction with HELPER, our online tutorial that will guide you through a series of graphics, information summaries, and interactive exercises. After you have read Chapter 2, read the HELPER tutorial booklet and then work through the tutorial.

Chapter 2 will give you an overview of important concepts and terms. At the beginning of Chapters 3 through 13, we will remind you of key terms. Since some of the concepts of the IBM 3270 Personal Computer may be unfamiliar to you, it will be helpful to you if you learn these terms.

Chapter 2. Understanding the System

Contents

Introduction	2-3
Presentation Space	2-4
Windows	2-5
Screen Profiles	2-10
Enlarging Windows	2-14
Auto-windowing	2-16
Application Mode	2-18
Work Station Control Mode	2-20
Understanding the Operator Information Area	2-22
Application Mode Operator Information Area ..	2-22
Work Station Control Mode Operator Information Area	2-25
Getting Help	2-26
Understanding Your Display Screen	2-26
Using Help Panels	2-28
Listing Screen Profiles, Windows, and Autokey Recordings	2-31
Online Tutorial	2-32
Other Functions	2-33
Browsing the Contents of Your Presentation Space	2-33
Copying Information	2-33
Recording and Playing Keystrokes	2-34
Saving and Restoring Information	2-34
Printing Screen Profiles and Sessions	2-35
Transferring Files	2-35

Notes:

Introduction

This chapter is essential for anyone who wants to use the IBM 3270 Personal Computer to its fullest capacity. We will introduce new concepts and vocabulary, which will be elaborated upon in the rest of the book. Specifically, we will discuss:

- Presentation space
- Windows
- Screen profiles
- Enlarging a window
- Auto-windowing
- Application mode
- Work station control mode
- Understanding the operator information area
- Getting Help
- Understanding your display screen
- List
- Online tutorial
- Autokey
- Copy
- Save/restore
- Print
- File transfer.

Presentation Space

Presentation space is a concept. It does not exist physically, like your display screen.

Presentation space represents the area that contains the data that goes to your display screen during a 3270 host session, an IBM Personal Computer session, or a notepad session. As we mentioned previously, with the IBM 3270 Personal Computer you can simultaneously display seven sessions on one screen. This means that, if you have seven sessions on your screen, you will also have seven presentation spaces. If you are working in a 3270 session, you will have a 3270 presentation space. If you are working in a personal computer session, you will have an IBM Personal Computer presentation space.

The presentation space for 3270 terminals (3278 Display Stations 3, 4, and 5) may be larger than the IBM 3270 Personal Computer displays, Models 5251 and 5272. Thus, what you see on your screen may not be all that there is in your presentation space.

Windows

How, then, can you see what is in your presentation space? A **window** lets you see the data within your presentation space. A window can be the same size as your full IBM 3270 Personal Computer display screen; or the window can be as small as one character.

With the IBM 3270 Personal Computer you can have multiple arrangements of windows on your display screen. Your display screen can have one window per session for:

- Up to four host sessions. A 3270 session is called a **host session** throughout this book. Information developed in host sessions is stored in the host computer.
- One IBM Personal Computer session. The work you do in this session can be stored on a personal computer diskette or a fixed disk.
- Up to two notepad sessions. A notepad is a work area on the display screen. The work you do there can be stored on a personal computer diskette or a fixed disk.

To see how windows work, let's envision an insurance executive who is using the work station to write a memo. To do this, our executive needs to keep track of schedules and various other information. So the executive sets up the display screen with four windows, each containing a different session:

A personal computer session called **X-PC**;

A host session called **A-Host1**;

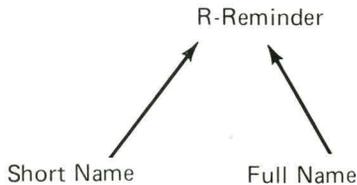
Two notepads called **N-Notes** and **R-Reminder**.

The windows might appear as in the illustration below:

The screenshot shows a window titled 'A-HOST1' with a blue background. It contains a budget table for 'DEPT BUDGET 3-RD QTR. FISCAL 1983'. The table has columns for ITEM, JUL, AUG, SEP, and TO. The rows include SALARY - ACT, SALARY - FOR, VARIANCE, CAPITAL - ACT, CAPITAL - FOR, VARIANCE, EXPENSE - ACT, EXPENSE - FOR, and VARIANCE. To the right of the table is a yellow memo box titled 'X-PC' with the text: 'TO: BATTISTA', 'FROM: TAYLOR', 'RE: YOUR REQUEST FOR CAPITAL \$\$\$', and 'Susan, in reviewing 3-rd qtr. budgets'. Below the memo is a blue box titled 'N-NOTES' with the text: 'SCHEDULE 9/15', '9:15 MEET W/ CAMPBELL -- RM230', '10:00 STATUS MEETING -- HERE', '12:15 LUNCH W/ MAPLES', and '3:30 PICK UP KIDS'. At the bottom of the window is a white box titled 'R-REMINDER' with a list: '1. Meet w/ Jack re. headcount prior to 10/1 meeting.', '2. Check status of FALLS Project.' The window title bar at the bottom has an 'X' icon.

ITEM	JUL	AUG	SEP	TO
SALARY - ACT	15.31	15.98		
SALARY - FOR	16.01	16.03	16.03	48
VARIANCE	.70	.05		16
CAPITAL - ACT	.00	2.50		
CAPITAL - FOR	.80	.80	.80	2.40
VARIANCE	.80	-1.70		-.10 *
EXPENSE - ACT	3.31	2.98		
EXPENSE - FOR	2.99	2.99	3.13	9.11
VARIANCE	.32	-.01		3.42

Let's look at the naming conventions for these sessions. One of the notepad sessions is named R-Reminder.



R is the **short name** of the window. The short name is a letter (A-Z) displayed within the upper left corner of the window border. This name is chosen during customization.

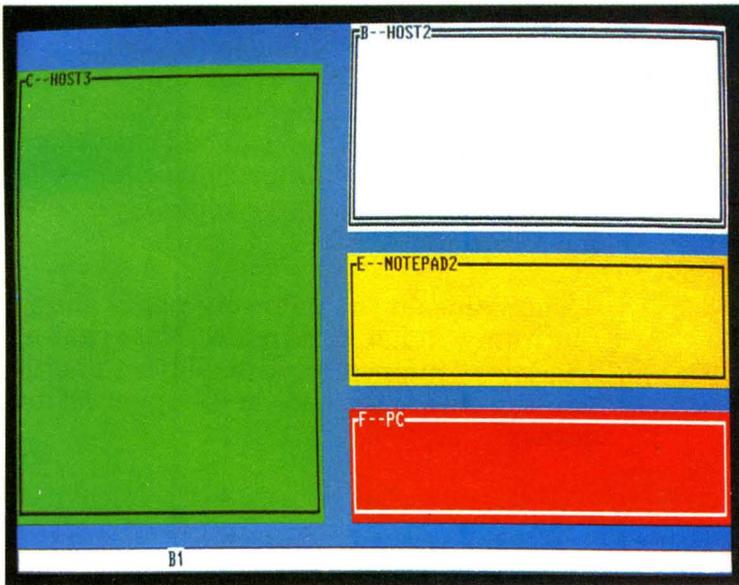
Reminder is the **full name** of the window. It, too, appears with the short name and is chosen during customization.

Referring to the windows, our insurance executive writes a memo that incorporates budget projections and information.

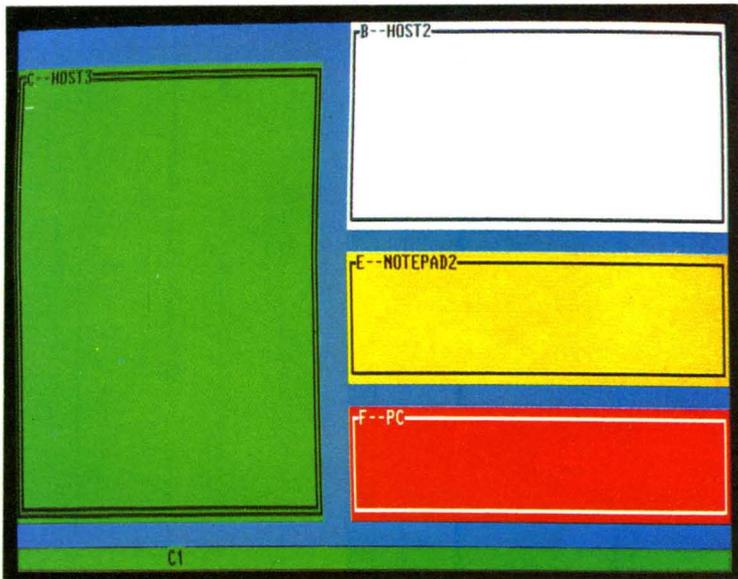
What if our executive were writing the memo in window X (personal computer session) and wanted to jot down an idea for another meeting in Window N, a notepad session? He/she would simply press the **Jump** key until the window wanted, window N, contained the cursor and displayed the double border. Now window N is **active**, and our executive could type new information in it.

The screens on the following pages show jumping from window to window. Note that as each window is jumped to, it displays a double border and the cursor appears in its upper lefthand corner.

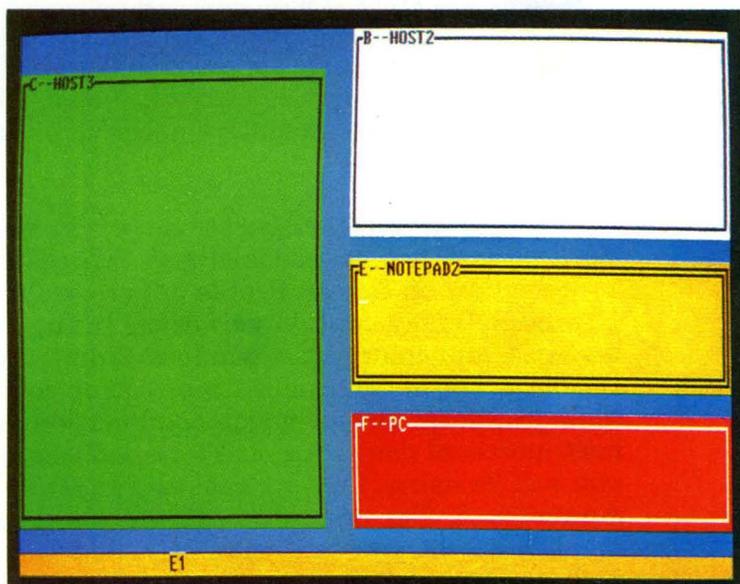
Jumping between Windows



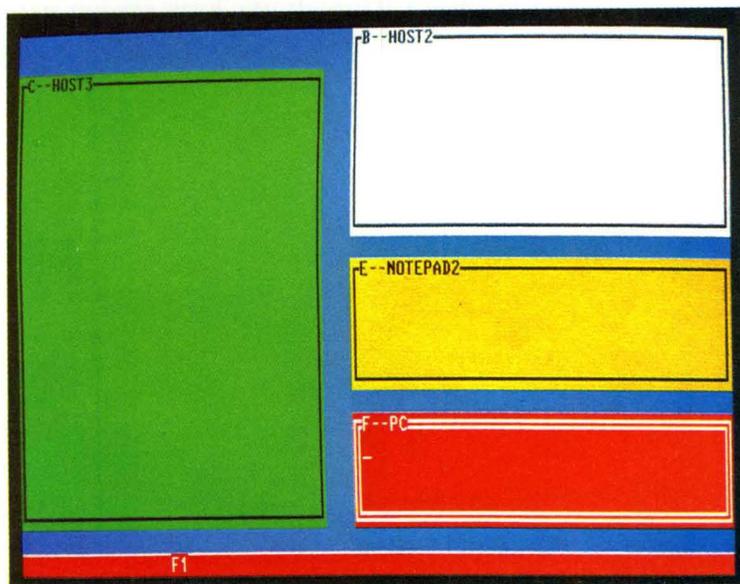
Press Jump



Press Jump



Press Jump



Screen Profiles

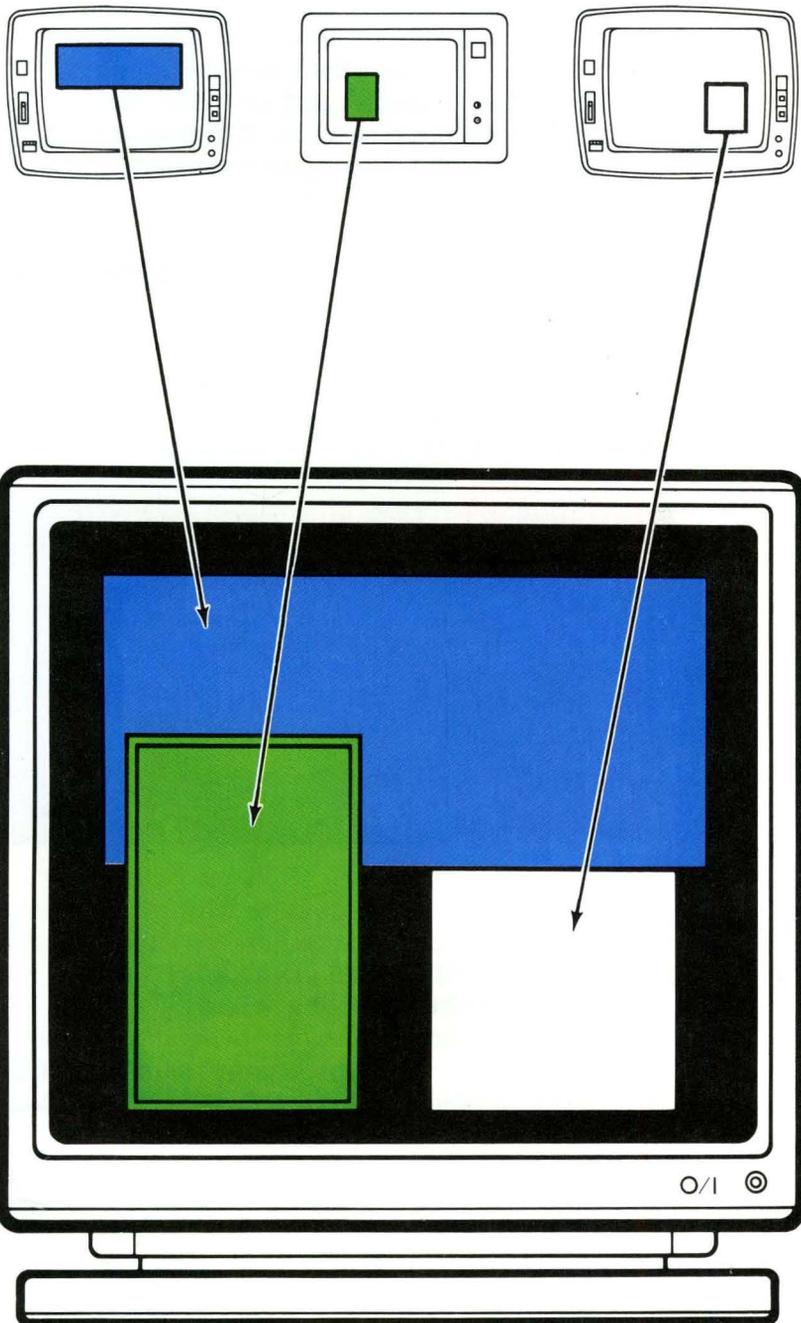
Our insurance executive is a busy person. Now he/she needs to review a policy for a client. In order to do this, the executive needs to use a different **screen profile**.

Screen profiles are configurations of windows. Each session you choose is always represented by a window on Screen Profile 0. Screen Profiles 1 through 9 may contain variations in the number, size, and color of the windows from Screen Profile 0. During customization, you or your systems personnel choose which combination of host, personal computer, and notepad sessions you will be using. Customization is explained in Appendix A. Our insurance executive's arrangement of a host, personal computer, and two notepad sessions was an example of one screen profile. You can create, use, and save up to ten screen profiles. Each can have from one to seven windows, sized just the way you want them. The following illustration shows how screen profiles work.

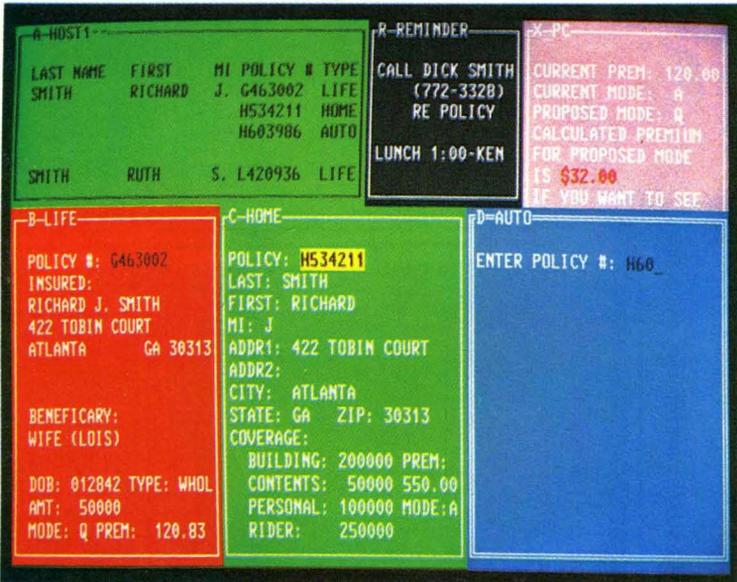
3270

IBM Personal Computer

Notepad



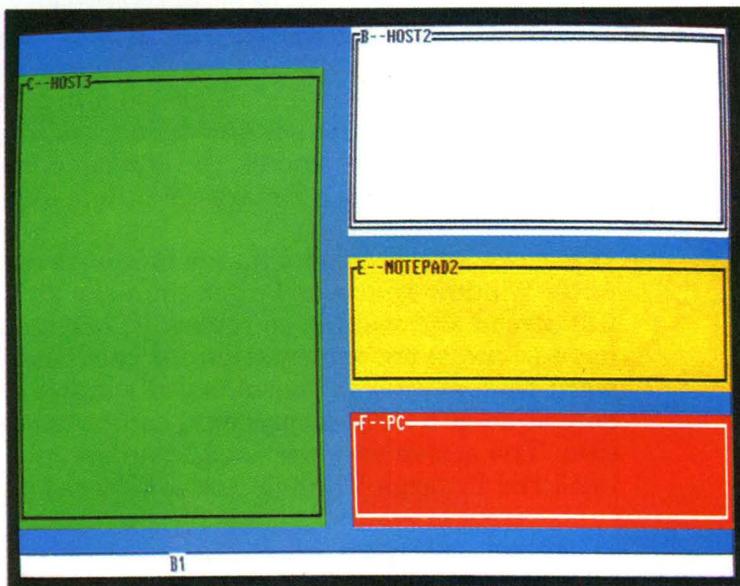
Let's go back to our insurance executive's need to review a client's policy. In order to accomplish the second task, he/she creates another screen profile that has six windows. With this profile our executive displays four host sessions: A-Host1, B-Life, C-Home, and D-Auto. He/she is writing in a notepad session, R-Reminder, and will use the personal computer session to compose a report for the client.



How did our executive change from the screen profile where he/she worked on the memo to the screen profile containing client information? He/she simply pressed the **ChgSc** key. This key allows a user to move in numeric order through **defined screen profiles**. A defined screen profile is a screen profile that has at least one window. For further details, see Chapter 7.

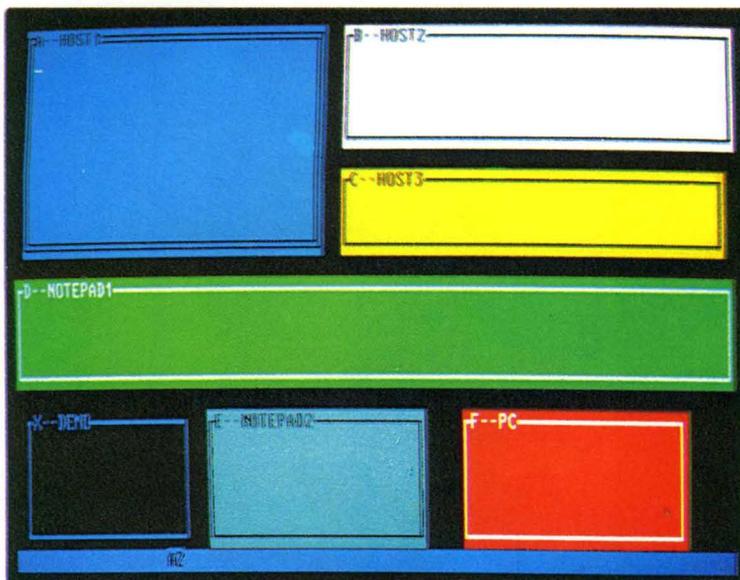
Changing Screen Profiles

Screen Profile 1



Press ChgSc

Screen Profile 2



Enlarging Windows

Often you may want to enlarge the dimensions of your window to cover the full display screen. For example, when the insurance executive was writing the 20-line memo, he/she couldn't see the entire contents in the window being used. To display the entire memo on the screen, our executive would press the **Enlarge Window** key.

If our executive typed a memo in a host computer window that was larger than the size of a full screen and wanted to review it, he/she would have to move the information forward and backward to display it in the enlarged window, just as you do in a 3270 or personal computer session. The active window would remain enlarged until the Enlarge Window key is pressed again.

When you enlarge a window, the **borders** disappear and no other windows appear. A border is the boundary that marks the edges of the window. The following illustration shows an example of an enlarged window.

Make an appointment to talk with Alan about the meeting on Monday.

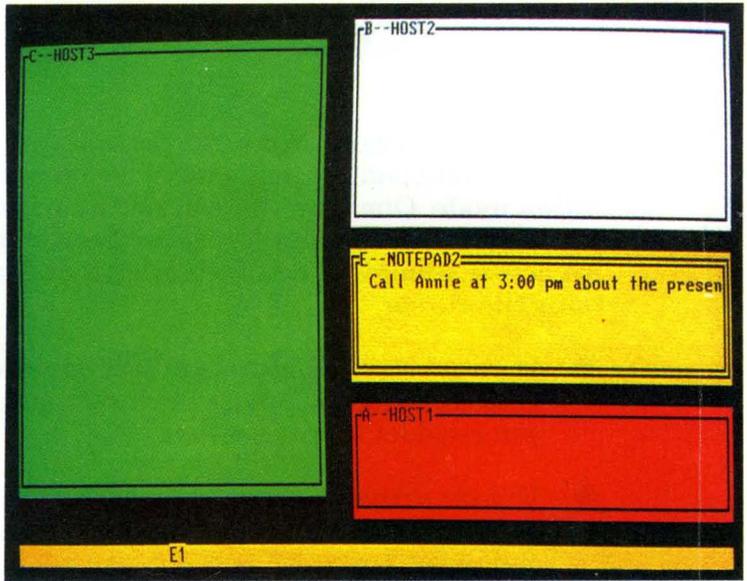
C1

Auto-windowing

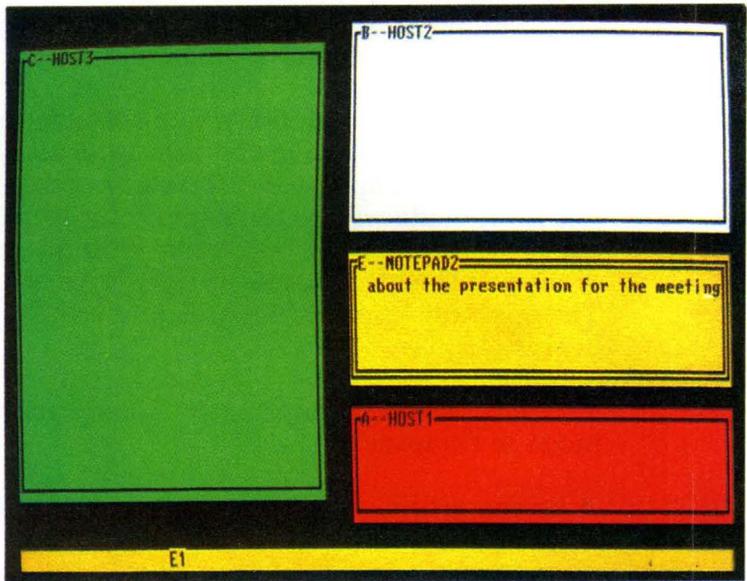
You do not need to enlarge your window to type in data. As you type, the characters will always appear within the window. When the characters you are typing reach the right edge of the window, the information on the left side of the window moves out of sight, character by character. When you reach the bottom line of the window, the top line of type will disappear from your screen to make room for the new line you are entering. This means you can keep on typing without worrying about reaching the window borders until you reach the end of the presentation space. Then the cursor wraps to the opposite side from where it was.

Sometimes, due to the personal computer application program currently running in the personal computer window, this automatic function may not happen. See Appendix G for further information.

The following illustration shows this automatic function.



When the characters you are typing reach the right edge of the window, the information on the left side moves out of sight.



Application Mode

If you want to work in a host, personal computer, or notepad session, you must be in **application mode**. One way you can tell which session you are in is by looking for the **active window**. An active window is double-bordered and contains the cursor.

- If your active window is a host window, your keyboard is a host keyboard and you can conduct a host session.
- If your active window is a personal computer window, your keyboard is a personal computer keyboard and you can conduct a personal computer session.
- If your active window is a notepad window, your keyboard is a notepad keyboard and you can conduct a notepad session.

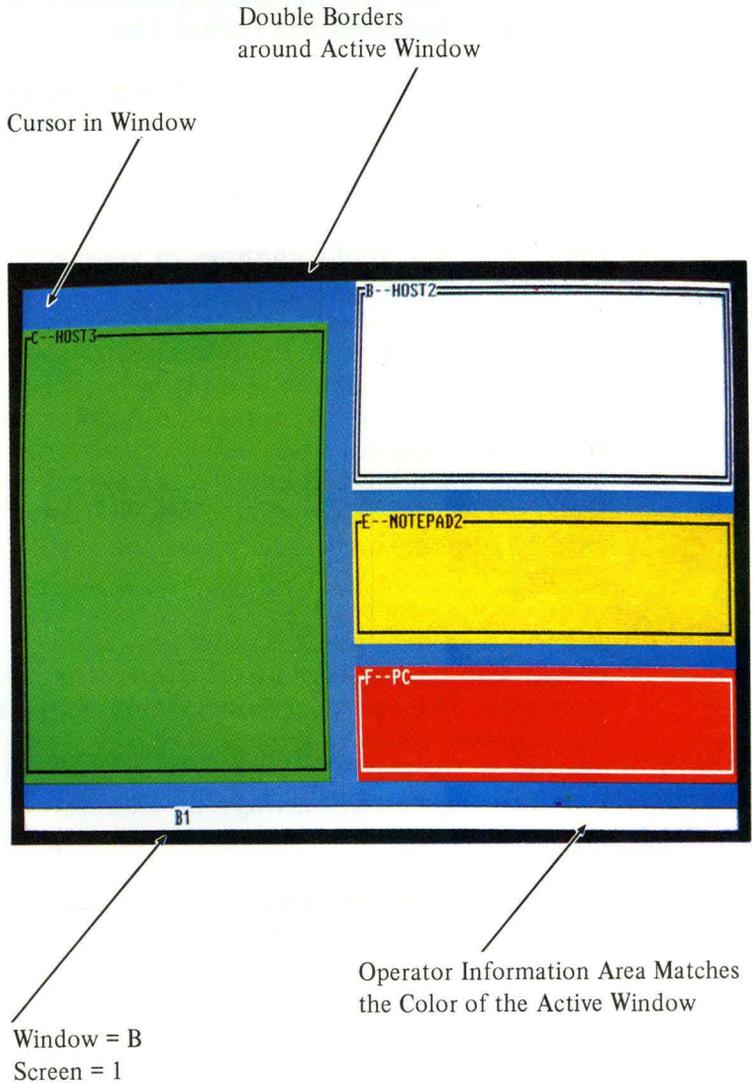
When you are in application mode, the most important thing to remember is that **your keyboard can operate in only one session at a time**.

Another way you can tell which session you are in is by looking at your operator information area (OIA). An operator information area in application mode will be the same color as the background color of your active window and gives you the short name of the active session. The operator information area is discussed later in this chapter.

You will find more information about application mode in Chapter 5.

A screen profile with an active window in host session follows.

Screen Profile in Application Mode



Work Station Control Mode

You probably noticed that not only were the sessions different on our insurance executive's screen profiles, but the color, placement, shape, and size of his windows varied, too.

With the IBM 3270 Personal Computer you can size, hide, corner, and move your windows - and change their color too. To perform these **SetUp** functions you need to be in **work station control mode**. From work station control mode, you can enter **SetUp** to make changes in your screen profiles.

When you are in work station control mode, you can also add and delete windows, browse through the contents of a window, copy information within and between windows, and record and play back keystrokes. To get into work station control mode, press the **WS Ctrl** key. To return to application mode, press the **WS Ctrl** key again.

When you are in work station control mode, your cursor will be displayed in the operator information area. The operator information area will be highlighted, and the letters **WSCTRL** will appear at the left. Remember that in application mode the cursor will always be displayed in the active window.

In order to perform work station control mode functions, you must select the window you want to change. When it is selected, your window will be double-bordered. To select a window, either press the **Jump** key until the window you want to change displays the double border or type the

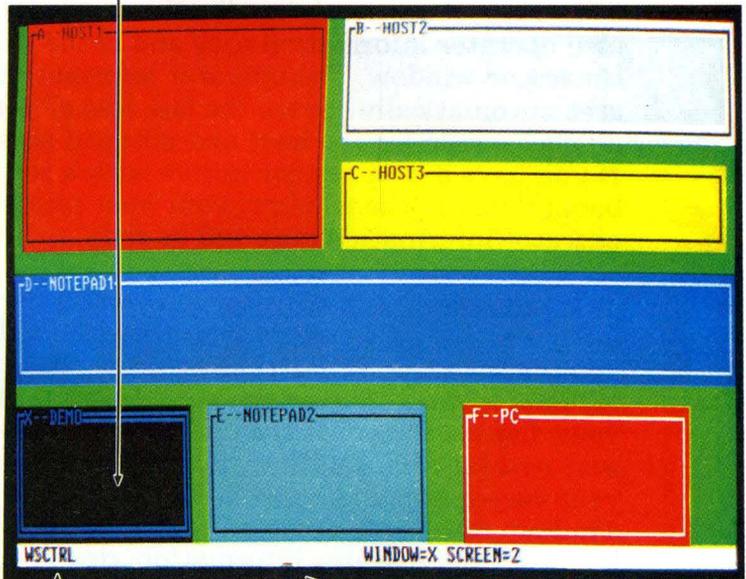
short name of the window. Remember, the short name is a letter (A-Z) displayed within the upper left corner of the window border.

You will find more information about work station control mode in Chapter 6.

A screen profile with a selected window follows.

Screen Profile in Work Station Control Mode

Double Borders around Window



Reverse Video
operator information area

Cursor in
operator information area

Understanding the Operator Information Area

Application Mode Operator Information Area

Application mode contains three types of sessions:

- Host
- Personal Computer
- Notepad.

Each type of session in application mode has its own operator information area and is the color of the active window. The operator information area automatically covers the last line of your display screen for the host and notepad sessions. If you have a host session active with a red background in the window, your host session operator information area will be red.

You will not see the operator information area for the active personal computer session unless you press **Ctrl + WS Ctrl** keys. Then the operator information area overlays the last line of your display screen. If the operator information area overlaps the last line of your window and your cursor happens to be at the last line of your window, the cursor no longer appears. It is overlaid with the operator information area. You can toggle the personal computer session operator information area off by pressing **Ctrl + WS Ctrl** keys again. Your cursor will again appear. You could also size and move the personal computer window so that the last line is not overlaid with the operator information area.

If your system is customized for CUT, your operator information area contains host information. In addition, you can see information sent by the control program by pressing Ctrl + WS Ctrl.

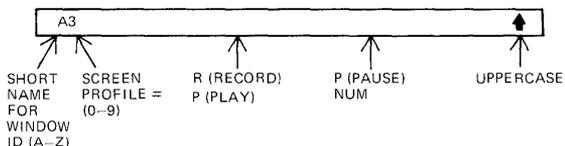
In work station control mode, the operator information area is white with black letters and contains the cursor.

The operator information area contains different information in application and work station control modes. In application mode, the operator information area tells you such details as:

- Whether you are in a host, notepad, or personal computer session
- When the system will not accept keystrokes
- Whether entered information will be inserted
- Whether you have pressed the Shift key
- When you are using autokey record and play functions
- What the 3274-attached printer status is
- What your current screen is
- What your active window is
- What the host computer status is

For further information on status and operator indicators in the operator information area, see the *IBM 3270 Information Display System 3278 Display Station Operator's Guide*.

In application mode, your operator information area may look like this:

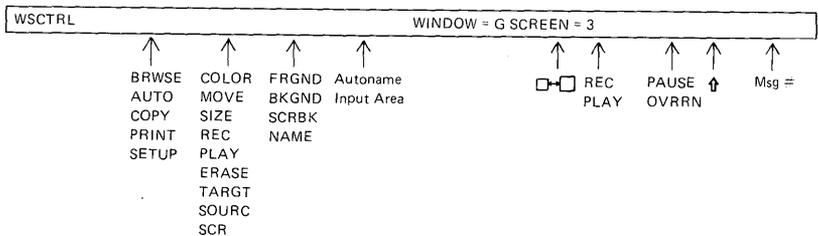


Work Station Control Mode Operator Information Area

In work station control mode the operator information area may tell you:

- Whether you are in Browse, Autokey, Copy, Print, or SetUp
- What functions in SetUp, Copy, or Autokey are active
- What your selected window is
- What your current screen is
- Whether the window is enlarged. Please note that the enlarge symbol appears only in the work station control mode operator information area.
- What your autokey status is
- Whether you have pressed the Shift key
- Whether a WS Ctrl message is displayed.

In workstation control mode, your operator information area may look like this:



Getting Help

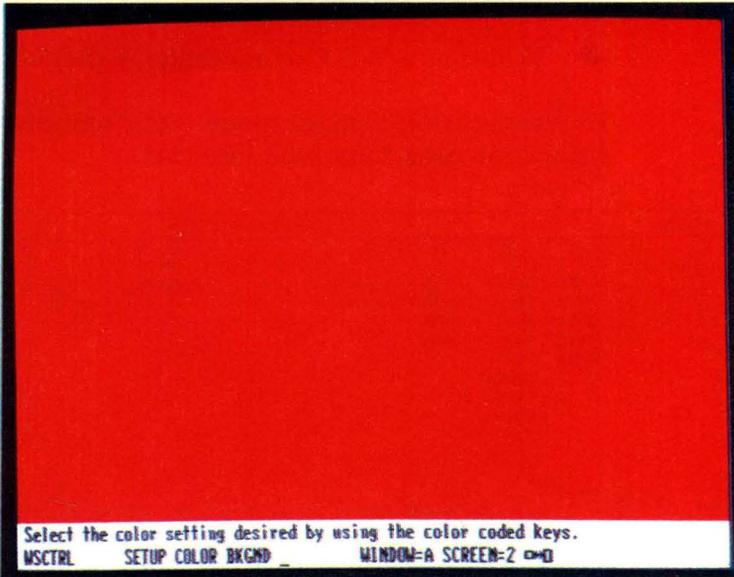
In addition, the IBM 3270 Personal Computer is equipped with special information, overlaid on your display screen, to make work easier for you. There are:

- Help panels
- List panels
- Online tutorial.

Before we go any further, let's take a closer look at your display screen.

Understanding Your Display Screen

Your display screen is divided into three major areas:

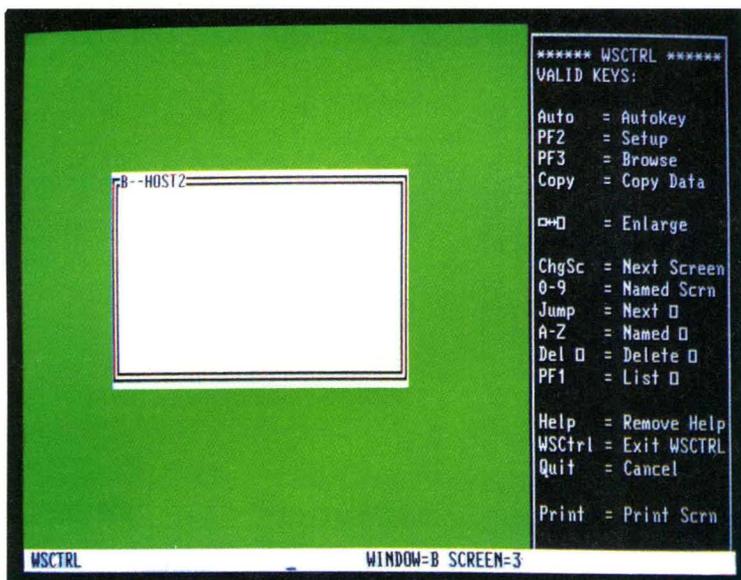


- The **application window area** contains the screen profile you are using.
- The **message line/user prompt area** displays messages that tell you when your IBM 3270 Personal Computer is having problems; the prompts provide you with guidance. You can remove a message from the message line/user prompt area by pressing the Reset key. Prompts will help guide you through the autokeying, copying, and color change key sequences. The messages and their meanings can be found in Appendix E.
- The **operation information area** gives you information about the status of your session.

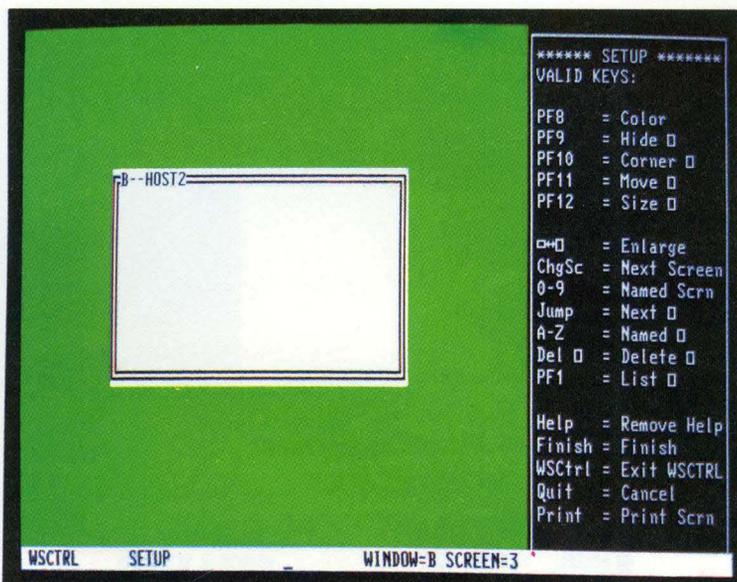
Using Help Panels

You can press the **Help** key to find out which functions are active. You can use Help only in work station control mode. Help overlays the right side of your screen with a list of active functions. The small box on the Help panels indicates a window. To clear the Help panel from your screen, press the Help key again. Watch how the following panels can help you size a window using the SetUp function.

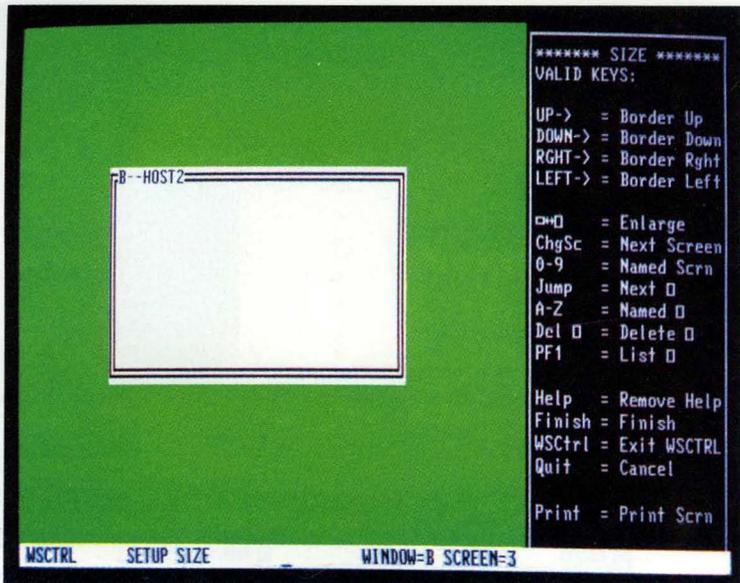
First, press Help:



The Help panel indicates that PF2 is the correct key to press to get to SetUp, so you press PF2:



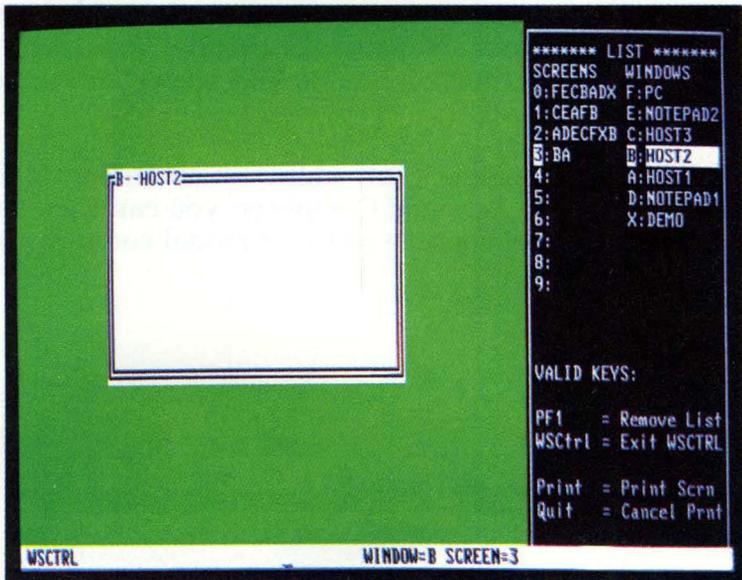
The SetUp Help panel indicates that PF12 is the correct key to press when you want to size a window, so you press PF12:



The Help panels show the specific keys you must press to change the size of your window. Notice that you also can see what other functions are active at this point.

Listing Screen Profiles, Windows, and Autokey Recordings

When you are in work station control mode, you can press **PF1(List)**. List overlays the right side of your screen with a list of window names and the windows assigned to each of your ten screen profiles. The current screen profile is highlighted in reverse video; your current selected window is also highlighted. While List is displayed, you cannot perform any other function. In order to continue to do work, you must remove List from the display screen. To do this, press **PF1(List)** again. Below is a sample List panel:



You can also use List when you are in autokey. The right side of your screen will be overlaid with a list of your autokey recordings, including names, lengths, and the amount of space remaining in computer storage for additional autokey recordings. Again, while List is displayed, you cannot perform any other function. In order to continue to do work, you must remove List from the display screen. To do this, press PF1(List) again.

Online Tutorial

We suggest that you now use HELPER. It is an easy-to-use tutorial diskette that will acquaint you with your new work station and the control program. Refer to the tutorial booklet for instructions on how to load the diskette and to use HELPER.

Remember that, while you are using the IBM 3270 Personal Computer, you can keep the tutorial active as the personal computer session.

Other Functions

As we mentioned before, the IBM 3270 Personal Computer provides you with a variety of functions designed to meet your specific needs. These functions are briefly covered here.

Browsing the Contents of Your Presentation Space

When you are in work station control mode, you can **browse** the contents of your presentation space. This is a useful function when you are looking for specific information in your window.

Browsing is described in Chapter 8.

Copying Information

You can **copy** information:

- From one area to another within the same window
- From a window to another window on the same screen profile
- From a window on one screen profile to a window on another screen profile
- From a host, personal computer, or notepad window into another host or notepad window. The only limitation is that you cannot copy information into a personal computer window or copy within the personal computer window.

Copying is explained in Chapter 9.

Recording and Playing Keystrokes

You can use the **autokey** function to record a sequence of keystrokes and play them back. For example, you may want to record a frequently used logon procedure or a memo introduction. After you record the keystrokes, you can permanently save the recording on diskette or fixed disk for future use. If you choose not to save the recording permanently, you can play it back until you turn off the work station. The work station maintains a list of your recordings for you.

Autokeying is fully explained in Chapter 10.

Saving and Restoring Information

You can save autokey recordings, notepad information, and screen profiles. You do this in your active personal computer window. Suppose, for example, that you were working with a screen profile at the end of a day and had to turn off your work station. If you did not save that specific window arrangement, you would have to rearrange it the next time you turned on your work station. The **save** and **restore** commands allow you to save your screen profile permanently and restore it when you resume work. This is also true of information in your notepad and autokey recordings.

Save and restore commands are discussed in Chapter 11.

Printing Screen Profiles and Sessions

You can print on an IBM 3270 Personal Computer supported locally attached printer or on a printer attached to your IBM 3274 Control Unit.

Using your IBM locally attached printer, you may want a hardcopy of your schedule in the notepad window. You may want to print a screen of information from your personal computer or host session; or you may want to print an exact duplicate of a screen profile.

If you want to print the contents of any of your host sessions, you may decide to print them on a 3274-attached printer. Only host session information can be printed directly on a 3274-attached printer. You can use file transfer (see below) and a host program to print additional information from your IBM 3270 Personal Computer on a 3274-attached printer.

Printing is discussed in Chapter 12.

Transferring Files

If you have the IBM host-supported file transfer program, you can transfer files between a VM/CMS or TSO host and the personal computer. For example, files containing statistical data from the host can be transferred to the personal computer. Then, programs written for the personal computer can analyze this data and display or immediately print results on the IBM 3270 Personal Computer printer.

Transferring files is discussed in Chapter 13.

Chapter 3. Loading the Control Program

Contents

Introduction	3-3
Terms You Need to Know	3-4
About Diskettes	3-5
How to Handle Diskettes	3-6
Loading the Control Program	3-7
If Your IBM 3270 Personal Computer is Off . . .	3-7
If Your IBM 3270 Personal Computer is On . . .	3-8
What Is On Your Display Screen: Screen Profile 0 . .	3-9
How to Save Screen Profile 0	3-12
How to Restore Screen Profile 0	3-13
How to Remove Diskettes	3-14

Notes:

Introduction

This chapter is for anyone who needs to load a customized system diskette. This chapter discusses:

- Information about diskettes
- How to handle diskettes
- How to insert diskettes
- How to load the control program on the customized system diskette into computer memory
- What is on your display screen: Screen Profile 0
- How to save Screen Profile 0
- How to restore Screen Profile 0
- How to remove diskettes.

You will usually want to load the control program when you start your computer.

For further information concerning switching your system unit to On or Off, see the *IBM 3270 Personal Computer Guide to Operations*.

Terms You Need to Know

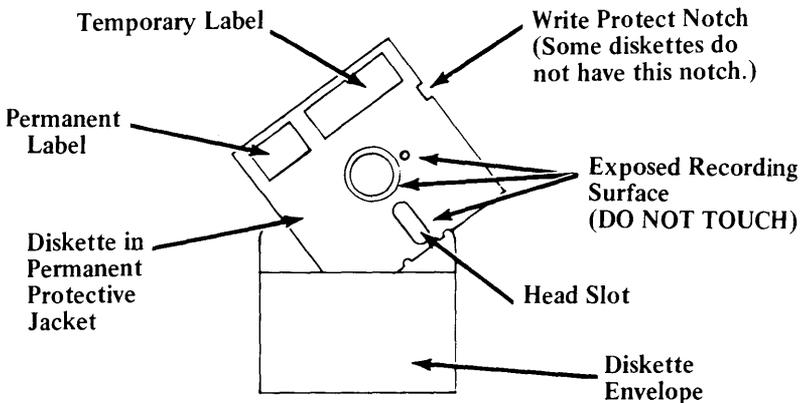
- Diskette** A thin, flexible magnetic medium and a semi-rigid protective jacket in which the diskette is permanently enclosed.
- Load** To read a copy of the control program from the customized system diskettes into work station storage.

About Diskettes

A permanent protective jacket contains a flexible diskette that is coated with a magnetic substance. The diskette spins inside the jacket when in use. The read/write head in the system unit comes into contact with the diskette surface through the long hole called the **head slot**. Information may be:

- Written to or read from the magnetic surface of the diskette, similar to the way a tape recorder operates
- Read by the computer as often as needed
- Replaced by new information. In this case, old information is erased by writing over it with new information.

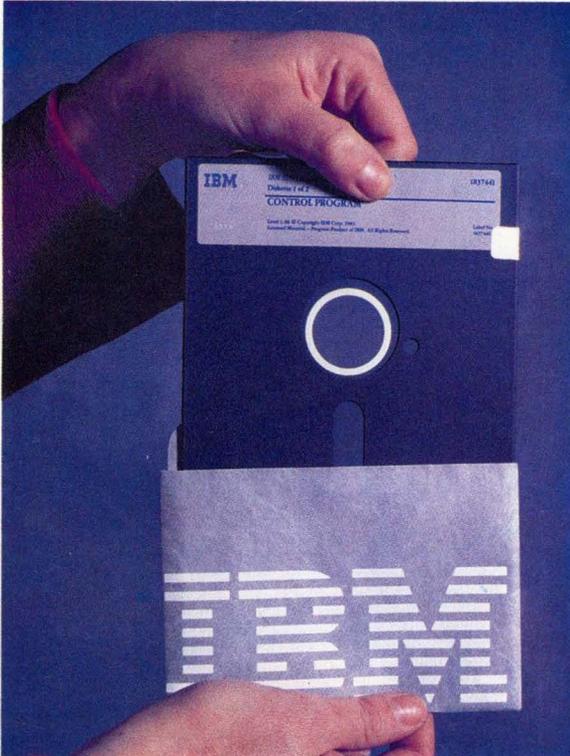
We suggest you use double-sided, double-density diskettes.



How to Handle Diskettes

Because a diskette can be easily damaged, you need to be especially careful when handling it. You can lose information that has been recorded on a diskette. Also, a damaged diskette may not record new information. Follow these steps before you insert or remove a diskette from a disk drive.

1. The label appears at the upper edge of the diskette. Grasp that upper edge and remove the diskette from the paper envelope. Be careful not to touch any areas where the diskette surface is exposed.



2. Place the paper envelope in a safe place. When you are finished using the diskette, put it back in its envelope.

Loading the Control Program

Starting or loading the control program means that a copy of the program is read from the customized system diskette into the computer's memory. There are two ways to load the control program. How it is loaded depends on whether your IBM 3270 Personal Computer is off or on.

If Your IBM 3270 Personal Computer Is Off

1. Open the diskette drive cover in drive A.
2. Grasp the upper edge of the diskette with the label facing up and near your body.
3. Insert the diskette into drive A and close the diskette drive door. Do not force or bend the diskette.

Note: If you are using a fixed disk, keep the diskette drive door open.

4. Switch the display to **On** if necessary.
5. Switch the system unit to **On**.
6. There will be a pause while the system checks itself out. In addition, you will see the diskette drive "in use" light on.
7. You will then see the name of a module flash on the display screen.

If Your IBM 3270 Personal Computer Is On

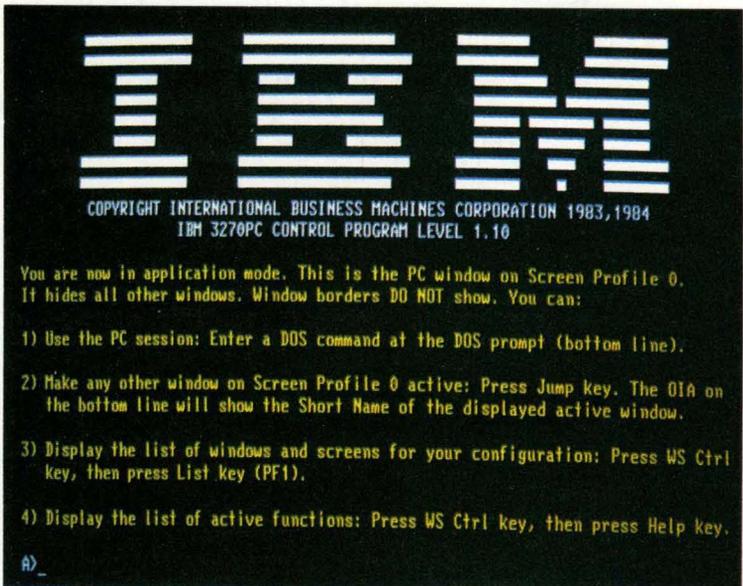
1. Open the diskette drive cover in drive A.
2. Grasp the upper edge of the diskette with the label facing up and near your body.
3. Insert the diskette into drive A and close the diskette drive door. Do not force or bend the diskette.

Note: If you are using a fixed disk, keep the diskette drive door open.

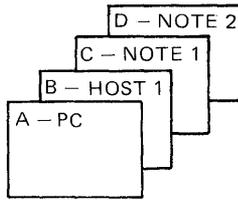
4. Press and hold Ctrl and Alt, and then press Del in the numeric keypad area. Release them all.
5. There will be a pause while the system unit checks itself out. In addition, you will see the diskette drive "in use" light on.
6. You will then see the name of a module flash on the display screen.

What Is On Your Display Screen: Screen Profile 0

At this point, you have loaded the control program. Now the screen displays the IBM 3270 Personal Computer logo in the personal computer window on Screen Profile 0. Since your active window is the personal computer window, your keyboard functions as a personal computer keyboard. The enter key you use can be either the New Line key, ↵, or the Enter key in the Typewriter Key area. All other windows that have been configured for Screen Profile 0 are covered by the personal computer window. When the window covers the whole display screen, you do not see the window borders. Your screen should look like this:



Remember that your personal computer window covers the other windows because it is on top. Conceptually, it might look like this:



First, the IBM 3270 Personal Computer logo appears. Let's take a closer look at the information that appears below the logo.

- 1) Use the PC session: enter a DOS command at the DOS prompt (bottom line).

If you want to do work in the personal computer session, you can enter a DOS command at the DOS prompt at the bottom of the display screen.

- 2) Make any other window on Screen Profile 0 active: press Jump key. The OIA on the bottom line will show the short name of the displayed active window.

All other windows on Screen Profile 0 are covered by the personal computer window. Use the Jump key to jump from one window to the next. The operator information area (OIA) shows the short name of the active window that is now on your display screen.

- 3) Display the list of windows and screens for your configuration: press WS Ctrl key, then press List key (PF1).

The List function overlays the right side of your screen with a list of window names and the windows assigned, if any, to each of your ten screen profiles. The current screen profile is highlighted in reverse video; your current selected window is also highlighted. To clear your screen of the List panel, press PF1 again.

- 4) Display the list of active functions: press WS Ctrl key, then press Help key.

The Help function overlays the right side of your screen with a list of active functions. To clear the Help panel from your screen, press the Help key again.

Since Screen Profile 0 appears as full screens, you will need to go to Chapter 7 to size your windows. You can also change colors and move windows at this time. Return to "How to Save Screen Profile 0" in this chapter after you finish sizing and moving windows.

Chapter 7 also describes how to layout other screen profiles. The basic procedure is:

1. Go into work station control mode
2. Select the screen profile you want to use
3. Add a window from Screen Profile 0
4. Setup the window size, location, and color.
5. Add another window from Screen Profile 0 if necessary.

You may have a customized system diskette that does not include a personal computer session. If this is the case, both the IBM 3270 Personal Computer logo and information below the logo do not appear. What does appear is the full screen active window without borders. The operator information area tells the short name of this active window. Since you are in application mode, you can:

1. Enter information into the active window
2. Jump to another window
3. Press WS Ctrl to enter work station control mode.

How to Save Screen Profile 0

After you have sized all windows on Screen Profile 0 according to the procedures in Chapter 7, you can permanently save the arrangement. Make sure your customized system diskette is in diskette drive A. Since the Save command can be used only while the personal computer session is active and the DOS command prompt, for example, `A>`, is on the screen, you need to:

1. Select the personal computer session, using the Jump key or the short name

2. Press `WS Ctrl`

You are now in application mode.

3. At the DOS prompt, type

`indsave screen`

4. Press Enter or New Line key, `↵`.

At this point you will see the following messages:

```
SR001 Save command being processed
SR006 Screen profile saved successfully
SR007 Save processing complete
```

Your screen profiles are now permanently saved. For further information on Save and Restore commands, see Chapter 11.

How to Restore Screen Profile 0

Assuming you have saved Screen Profile 0, you can also restore it at any time. If you are beginning your day's work and are ready to load the control program, follow the simple procedure below to restore your screens.

1. Load the customized system diskette following the steps under the heading "Loading the Control Program".
2. The cursor is at the DOS prompt at the bottom of the screen.

Type

```
indrstr screen
```

3. Press Enter or New Line key, `↵`.

Screen Profile 0 should appear the same way as when you saved it.

There may be some of you who have created an `autoexec.bat` file that is invoked automatically anytime you initialize DOS. DOS is initialized automatically whenever you load the control program. By entering the appropriate Restore commands into the `autoexec.bat` file with other desired commands, you can set up the IBM 3270 Personal Computer with standard screen profiles, autokey recordings, and notepads.

You can create this `autoexec.bat` file by using the EDLIN editor supplied with DOS (see the IBM Personal Computer *Disk Operating System* manual) or any of the other file editors available for the IBM Personal Computer. This file initially contains a statement that the system supplies at the conclusion of the customization task. Do not alter or remove this name. You may include other statements such as `TIME`, `DATE`

or other supported DOS commands as long as they **follow** the statement that the system supplies. Thus, to automatically restore your screens, add this line to the autoexec.bat file following the statement supplied by the system:

```
indrstr screen
```

Then, when you load the control program:

1. The IBM 3270 Personal Computer logo appears
2. At the DOS prompt, the command `indrstr` appears and executes automatically
3. Your restored screen profile automatically appears.

See Appendix F for further information on autoexec.bat files.

How to Remove Diskettes

Follow these steps when you need to remove a diskette from a diskette drive.

1. Open the diskette drive cover on drive A.
2. Grasp the edge of the diskette.
3. Slowly pull the diskette straight out of the diskette drive.
4. Return the diskette to its paper envelope. Place the diskette in a safe place to prevent damage.
5. Keep the diskette drive door open.

Chapter 4. Using the Keyboard

Contents

Introduction	4-3
Terms You Need to Know	4-3
What This Keyboard Does.....	4-4
Special Kinds of Keys.....	4-8
Toggle Keys	4-9

Notes:

Introduction

This chapter is for anyone who uses the keyboard. It describes:

- Terms you need to know
- What this keyboard does
- Special kinds of keys.

Terms You Need to Know

Application mode	When you are in application mode, your keyboard is “attached” to one of the following: a host computer session, the personal computer session, or a notepad session.
Work station control mode	Work station functions are initiated from this mode. You access and quit this mode with the (work station control) WS Ctrl key.
Toggle	Press a key once and it is active; press it again and it is inactive.

What This Keyboard Does

The IBM 3270 Personal Computer provides you with host, personal computer, and notepad sessions. Not only can you work in these different sessions, but you can adapt your display screen to meet specific needs. The keyboard is your tool for accomplishing these functions: you communicate with these sessions through the keyboard.

Application mode consists of host, personal computer, and notepad sessions. You can enter information only while you are in one of these sessions. This means your keyboard is attached to a specific session:

- Host session
- Personal computer session
- Notepad session.

When you use your IBM 3270 Personal Computer to perform screen management functions such as adding color, creating windows, copying from window to window, and autokeying, your keyboard operates in **work station control mode**. Thus, you have the functions of four keyboards converged onto one: a host computer keyboard, a personal computer keyboard, a notepad keyboard, and a work station control keyboard.

Remember that the following keys are always valid in either application or work station control modes.

- WS Ctrl
- Jump

- ChgSc
- Enlarge.

Let's take a closer look at the IBM 3270 Personal Computer keyboard. First, identify the five areas on your keyboard:

1. Left control keys
2. Typewriter keys
3. Right control keys
4. Numeric keypad
5. Program function keys.

The left control keys look similar to those on other keyboards you may have used, for example, IBM 3278 or 3279 keyboards. Four much-used keys in this area are:

- WS Ctrl
- Jump
- ChgSc
- Enlarge.

The program function keys are additions to the keyboard. On a 3278 keyboard, for example, you would have seen this area on the far right; we have moved it to the top of your keyboard. A template fits around the program function keys and shows which keys function only in work station control mode.

The typewriter keys are very similar to those on other keyboards. An extra **Alt** key to the left of the spacebar provides you with easy access for combination keystrokes that require **Alt** plus another key.

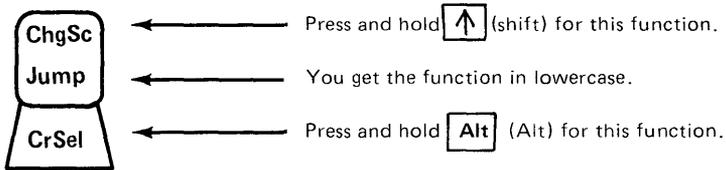
The right control keys contain the same functions as those on other IBM 3278 or 3279 keyboards.

The numeric keypad is familiar to personal computer users. This is a feature that makes it easier for you to do calculations.

Special Kinds of Keys

You will notice that some of the keys have more than one function.

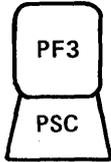
- A function printed on the top of the key in the top position is used with the **Shift** key.
- A function printed on the top of the key in the bottom position is not used with any other key.
- A function printed on the front of the key is used with the **Alt** key.



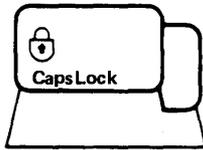
Notice the blue lettering on some key tops. This blue lettering indicates that the function is active only during a personal computer session.

Toggle Keys

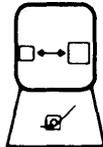
Toggle keys are like light switches: you press them once to turn them on and activate a function; you press them again to turn them off and deactivate a function. The following are examples of toggle keys:



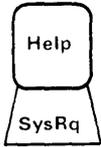
Browse (PF3) Press Browse to move data contained in the presentation space vertically or horizontally within a window. Press again to deactivate the browse function.



CapsLock Press when you are in a personal computer session and you will have all capital letters. Press again for uppercase and lowercase letters.

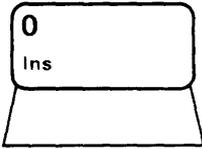


Enlarge Press to enlarge a window so that it displays the presentation space to the maximum size allowed by the display. No other windows appear. Press again and your window is back to its former size. The other windows then appear.



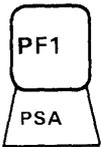
Help

Press to overlay the screen with Help information. Press again to remove that information.



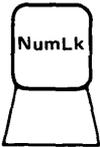
Ins (Insert)

Press when you are in a personal computer session so you can insert characters. Press again to insert information no longer.



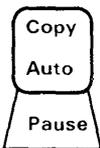
List

Press to overlay the screen with information about screen profiles and autokey records. Press again to remove that information.



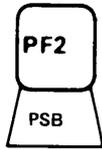
NumLk

Press when you are in either a personal computer or host session and you will have numbers on the numeric keypad. Press again to deactivate the numbers and to get the other functions on those keys, such as Home and End.



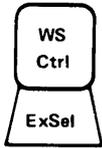
Pause

Press when you are using the autokey function; it allows you to pause. Press again to resume recording.



SetUp

Press when you need to go into SetUp and either size, move, corner, hide, or change colors of your windows. Press again to leave SetUp.



WS Ctrl

Press to go into work station control mode. Press again to go into application mode.

Chapter 5. Working in Application Mode

Contents

Introduction	5-3
Terms You Need to Know	5-3
Host Computer Functions	5-4
Host Computer Keys in the Left Control Key Area	5-5
Host Computer Keys in the Typewriter Key Area	5-11
Host Computer Keys in the Right Control Key Area	5-14
Host Computer Keys in the Numeric Keypad Area	5-19
Host Computer Keys in the Program Function Key Area	5-21
Notepad Functions	5-26
Notepad Keys in the Left Control Key Area	5-27
Notepad Keys in the Typewriter Key Area	5-27
Notepad Keys in the Right Control Key Area ..	5-27
Notepad Keys in the Program Function Key Area	5-28
Typing in Technicolor with PF Keys	5-28
Personal Computer Functions	5-30
Personal Computer Keys in the Left Control Key Area	5-31
Personal Computer Keys in the Typewriter Keys Area	5-36
Personal Computer Keys in the Right Control Key Area	5-39
Personal Computer Keys in the Numeric Keypad Area	5-42
Personal Computer Keys in the Program Function Key Area	5-48

Notes:

Introduction

This chapter is for anyone who uses the keyboard in application mode. When you are in application mode, your keyboard can operate with only one session at a time. This means:

- In a host session, your keyboard functions as a host keyboard.
- In a personal computer session, your keyboard functions as a personal computer keyboard.
- In a notepad session, your keyboard functions as a notepad keyboard.

Terms You Need To Know

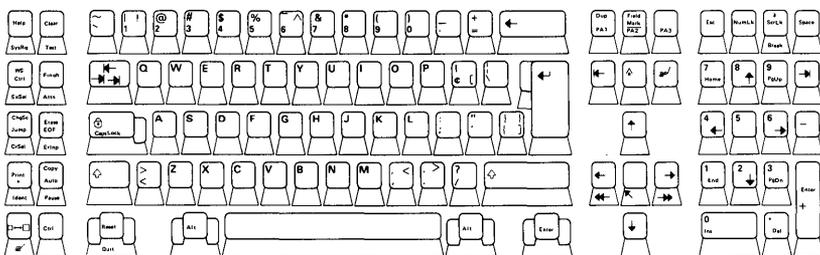
Valid key	A key that is recognized by the session type (host, personal computer, notepad) or mode (work station control mode or application mode) to which your keyboard is logically attached
Invalid key	A key that is not operational
Program function (PF) key	A key that passes a signal to a program to call for a particular operation.

Host Computer Functions

When you have an active host window, your keyboard supports host functions. It functions as a **host computer keyboard**. It can emulate all the key functions of a 3278 or 3279 keyboard. For further information on the keyboard, see the *IBM 3270 Information Display System 3278 Display Station Operator's Guide*, GA27-2890.

The 5271 Keyboard

Program Function Keys



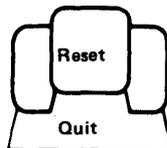
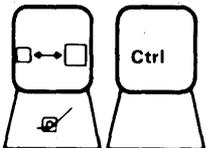
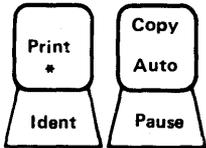
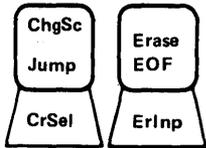
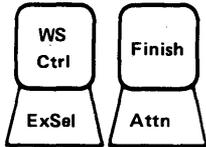
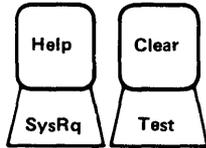
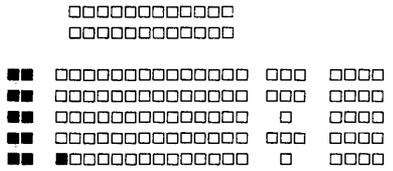
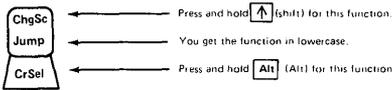
**Left
Control
Keys**

Typewriter Keys

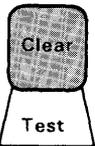
**Right
Control
Keys**

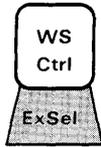
**Numeric
Keypad**

Host Computer Keys in the Left Control Key Area



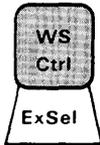
For those of you who are old hands at the 3278 or 3279 keyboard, these key functions will look familiar. For you who are new to these functions, take a few minutes to become familiar with them. The following list is a summary of host keyboard functions in the Left Control Key area:

	Host Computer Key	Function
	SysRq	Signals the host.
	Clear	Erases all of the active session except the operator information area and moves the cursor to the first input character position. It also signals the host.
	Test	Prepares your work station to run special problem determination functions that reside in the control unit if your 3270 Personal Computer is customized to operate as a control unit terminal (CUT). For more information, see Appendix A.



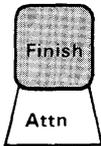
WS Ctrl

Puts you in work station control mode. **Can be pressed in application and work station control modes.** Press WS Ctrl again to go to application mode.



ExSel

Configures your host computer keyboard functions to emulate certain typewriter features.



Attn

Signals the host.



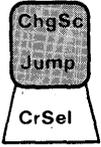
ChgSc

Changes from defined screen profile to another defined screen profile in numeric sequence. **Can be pressed in application and work station control modes.**



Jump

Jumps from window to window in alphabetic sequence. **Can be pressed in application and work station control modes.**



CrSel

Chooses fields for processing. The cursor must be in a field that your application has designated for cursor selection.



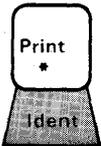
Erase EOF

Erases the input field from the cursor to the end of the field. The cursor does not move.



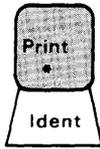
ErInp

Erases all the input fields in the active session and moves the cursor to the first input character position on the display screen.



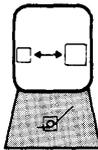
Print

Sends data from the active session in the work station to a printer attached to an IBM 3274 Control Unit.



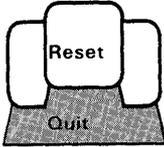
Ident

Signals that the next two numbers will be the selected printer ID code. The ID is displayed in the operator information area. This key is also used to display the new ID when your printer assignment is changed.



Enlarge

Makes the selected and subsequent windows as large as can be physically displayed on your display screen until toggled off. **Can be pressed in application and work station control modes.**



Reset

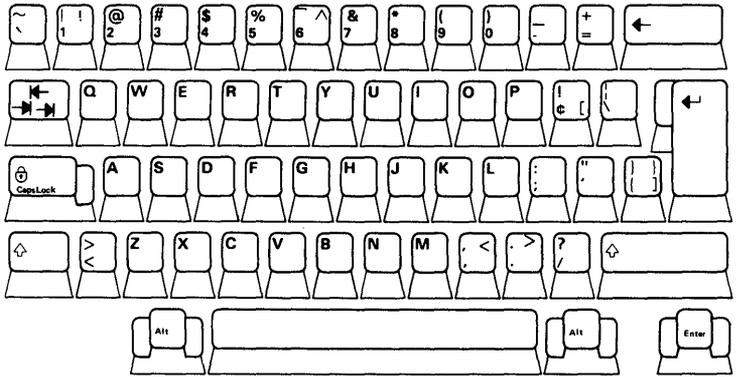
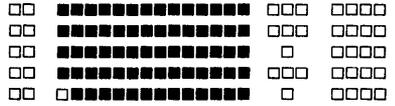
Used to recover from most Do Not Enter (X) conditions. The Do Not Enter symbol (X) appears in the operator information area. This key terminates an insert mode operation. In addition, it restores the keyboard and turns off the Do Not Enter symbol for all Do Not Enter conditions except:

- Printer busy
- Printer very busy
- Printer not working
- Wait.

Host Computer Keys in the Typewriter Key Area



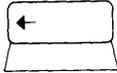
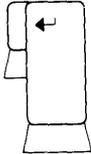
- ← Press and hold **↑** (shift) for this function.
- ← You get the function in lowercase.
- ← Press and hold **Alt** (Alt) for this function.

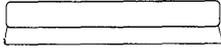


Most keys in the typewriter key area are active host computer keys. All the alphabetic and numeric keys work. Notice that the numbers 1 and 6 contain two sets of engravings.

- The black engravings indicate host computer functions. Thus, Shift + 1 produces “ | ”. Shift + 6 produces “ ”.
- The blue engravings are personal computer unique functions.

The following list describes certain keys in the Typewriter Key area:

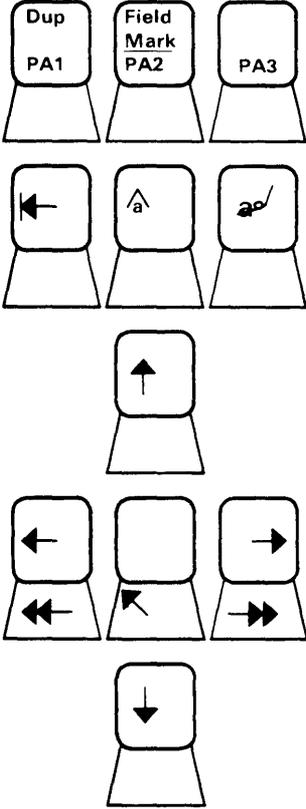
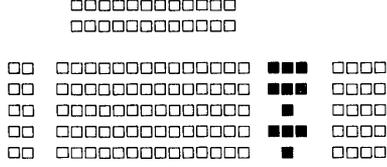
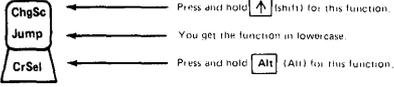
	Host Computer Key	Function
	Tab	Moves the cursor to the first character location of the next unprotected field.
	Backspace	Moves the cursor one location to the left each time you press the key. This key is typamatic.
	New Line	Moves the cursor to the first unprotected character location of the next line in which you can type. This new cursor position depends on the existing data displayed and on the screen format.



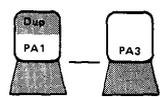
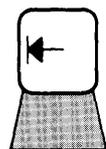
Space bar

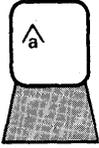
A space is an actual character that occupies a position on your display screen. When you press this key, you enter a space character that replaces whatever character was in that position. For this reason, do not use it to position the cursor.

Host Computer Keys in the Right Control Key Area



Other host computer keys are found in the **Right Control Key** area. These include:

	Host Computer Key	Function
	Dup	Provides a means of signaling a program or communicating with it. It displays the dup character on the display screen.
	PA1 - PA3	These program attention keys provide a means of signaling a program or communicating with it.
	Field Mark	Provides a means of signaling a program or communicating with it. It displays the field mark character on the display screen.
	Tab left	Moves the cursor to the previous unprotected field.



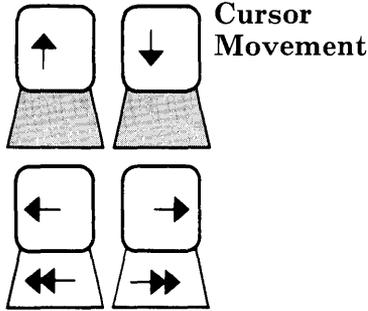
Insert

Sets the keyboard to insert mode so that characters will be entered at the cursor position and all data to the right of the cursor will move to the right.



Delete

Removes the character occupying the position underlined by the cursor. It erases the character without leaving a blank. All characters in the field to the right of that position and on the same line are then shifted left one position. This is a typamatic key.



Cursor Movement

Arrows that control the up, down, left, and right movements of the cursor. In addition, if you hold down the right cursor movement key, \rightarrow , the cursor **wraps** or moves off the right side of the line and reappears one line lower on the left side. It also wraps when you hold down the left cursor movement key, \leftarrow . In this case, when it moves to the left, it reappears one line higher on the right side. Remember that the cursor is the marker on the screen that shows you where the next character on the screen will be entered, replaced, or deleted.

Notice that pressing either $\text{Alt} + \leftarrow$ or $\text{Alt} + \rightarrow$ gives you faster cursor movement.



Home

Alt +  (the center key) moves the cursor to the home position, the first input character position.

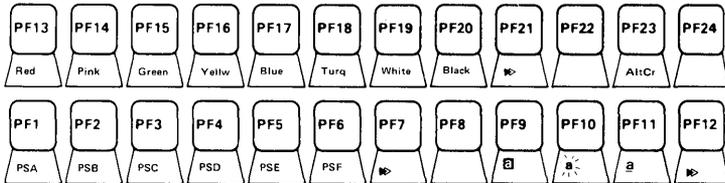
All the keys are active in the numeric keypad area, but some of the functions work only during a personal computer session. You can use the following functions on the numeric keypad:

- Numbers 0 through 9 are positioned left to right, bottom to top
- Decimal point, a comma, a space key. The space key works like the space bar in the Typewriter Key area.
- Hyphen/minus symbol: -
- Tab right key → to help you align columns of figures
- An Enter key
- NumLk. This is a toggle key. Pressing it once activates the numeric lock function; pressing it again deactivates it. When the numeric lock is active, the only valid keys you can use in an unprotected numeric field are 0-9, . , Dup, and - . You can override the numeric lock by pressing and holding the Shift key while typing; this allows you to enter any upper shift characters.

Host Computer Keys in the Program Function Key Area



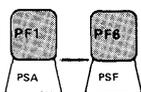
← Press and hold (shift) for this function.
 ← You get the function in lowercase.
 ← Press and hold (Alt) for this function.



At the top of your keyboard there is a complete set of 24 Program Function (PF) keys. Since the meanings of program function keys always vary from application to application, they will not be discussed here. Notice, however, the following functions that appear on the keys and are active:

**Host Computer
Key**

Function



PSA-PSF

The Programmed Symbol set feature stores under host program control up to six character sets or fonts which have special font symbols. These are: PSA, PSB, PSC, PSD, PSE, and PSF. The application program in the host determines if you can select a Programmed Symbol set. It may not be available at your installation. In addition, the following may not be available:

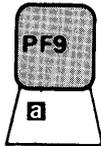
- Highlighting selection
- Color selection

To select the font you want your characters displayed from, press PF1–PF6. For further information, see the *IBM 3270 Information Display System 3274 Control Unit Description and Programmer's Guide* and Appendix H.



(PF7)
➤

Use this key to return to the default symbol font.



(PF9)
a

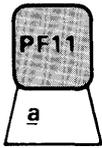
Selects reverse video highlighting for characters. The character entered will be highlighted by reversing the color of the character and its background. For example, a character of green on a black background will be displayed as a black character on a green background. This kind of highlighting depends on the application you are using.



(PF10)



Selects **blink highlighting** for characters. The character entered will be highlighted by blinking on and off. This kind of highlighting depends on the application you are using.



(PF11)



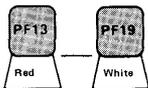
Selects **underscore highlighting** for characters. The character entered will be highlighted by an underscore beneath the character. This kind of highlighting depends on the application you are using.



(PF12)



Use this key to return to base highlighting.



PF13-PF19

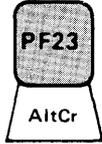
Use to select seven-color support.



(PF21)



Use this key to return to base color.



(PF23) AltCr

Allows you to select which type of cursor appears on your screen. Initially you get the normal, or **default**, cursor. It is an underscore. Then, as the cursor rotates in a “round robin” fashion each time you press this key, you get:

- **Blinking underscore.**
- **Reversal of the color of the character and its background. The cursor looks like a small box.**
- **Reversal of the color of the character and its background and simultaneous blinking. The cursor looks like a small, blinking box.**

Notepad Functions

You can think of a notepad as one sheet of paper on which you can write notes to yourself, much like you would do with a piece of scratch paper. It is the same size as your display screen. What can you do with a notepad window?

- Size it
- Move it
- Corner it
- Hide it
- Change its colors

In addition, if you hold down the right cursor movement key, \rightarrow , the cursor **wraps** or moves off the right side of the line and reappears one line lower on the left side. It also wraps when you hold down the left cursor movement key, \leftarrow . In this case, when it moves to the left, it reappears one line higher on the right side.

When your keyboard is attached to a notepad session, that is, when a notepad window contains the cursor, your keyboard functions as a **notepad keyboard**. As a general rule, your notepad keyboard behaves very much like a host computer keyboard, but with certain exceptions. The following is a list of keys that are **active** in a notepad session. For information on how the active keys in a notepad session work, see “Host Computer Functions” in Chapter 5.

Notepad Keys in the Left Control Key Area

The following list describes keys that are active in a notepad session.

1. Clear
2. WS Ctrl
3. ChgSc
4. Jump
5. Erase EOF (works only on the line containing the cursor)
6. Enlarge

Notepad Keys in the Typewriter Key Area

All the host computer keys, except the tab key, are active.

Notepad Keys in the Right Control Key Area

The following keys are active:

1. Tab left
2. Insert (works only on the line containing the cursor)
3. Delete (works only on the line containing the cursor)

4. Cursor movement keys, including double-speed cursor keys
5. Home

If you first press Insert and then press the backspace key found in the Typewriter Key area, that backspace key goes back to the previous character and deletes it.

Notepad Keys in the Program Function Key Area

The following keys are active:

1. Highlighting functions
 - a. Alt + PF9, PF10, PF11, PF12
2. Color functions
 - a. Alt + PF13-PF19
 - b. Alt + PF21
3. Alt + PF23

Typing in Technicolor with PF Keys

When you are in a notepad session, you can set color while you are in application mode and type in technicolor. You use the color keys, PF13 through PF19, in the Program Function key area. Here's how to do it:

1. Go into application mode. If some technicolor data already exists in the notepad window and you try to change colors while you are in work station control mode, you get a message stating:

MSG029 Color setting override: changes
may not show

2. Press one of the color keys, PF13 through PF19, for the color you want for the next character.
3. The window will have a black background and blue borders after you type the first character. The characters continue to be typed in the color you chose.
4. Whatever color you chose is the color you will type in the notepad window. The color you chose shows in the operator information area.
5. Want to change color? Press another color key, PF13 through PF19, to choose another color.
6. You can turn off color by pressing Alt + PF21. When you type now, characters appear in green, the default color.

If you clear the window by pressing the Clear key, your window goes back to base mode. Any characters you type now appear as the default foreground color. For further information on color, see Chapter 7.

Personal Computer Functions

When your keyboard is attached to a personal computer session, that is, when your personal computer window contains a cursor, your keyboard functions as a **personal computer keyboard**. Thus, it can perform all the functions of an IBM Personal Computer keyboard. In the personal computer session, use the New Line key, ↵ , or the Enter key in the Typewriter Key area to enter data or commands.

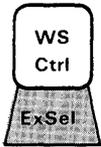
Personal computer keys located in this area are:

Personal Computer Key	Function
--------------------------	----------



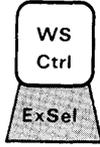
SysRq	
--------------	--

Allows the personal computer window to become blank whenever the personal computer application requests its display to blank. Press again if you want these requests to be ignored. See Appendix G for more details.



WS Ctrl	
----------------	--

Puts you in work station control mode. **Can be pressed in application and work station control modes.** Press again to go to application mode.



Ctrl + WS Ctrl In application mode, press when you are in a personal computer session. Then the operator information area overlays the last line of your display screen. If your cursor happens to be at the last line of the display screen, it will no longer appear, but will be overlaid with the operator information area. You can toggle the personal computer session operator information area off by pressing Ctrl + WS Ctrl keys again. Your cursor will again appear.

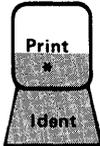


ChgSc Changes from defined screen profile to defined screen profile in numeric sequence. **Can be pressed in application and work station control modes.**



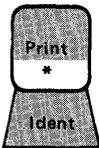
Jump

Jumps from window to window in alphabetic sequence. Can be pressed in application and workstation control modes.



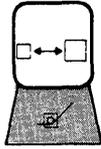
Print

Prints the contents of the personal computer presentation space. However, certain characters may not print on the printer exactly as you see them in your window or they may print as blanks; for example, the “¢” sign and some Programmed Symbol set characters.



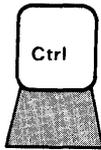
*

Displays an asterisk (*) in your active window.



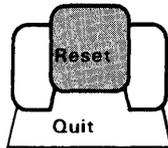
Enlarge

Makes the selected and subsequent windows as large as can be physically displayed on your display screen until toggled off. **Can be pressed in application or work station control modes.**



Ctrl

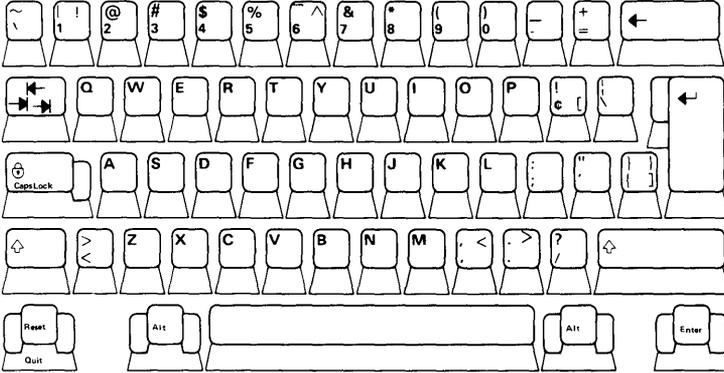
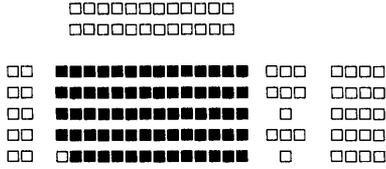
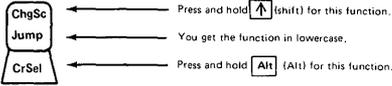
Used with another key to perform a command or a function.



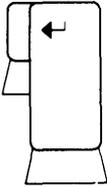
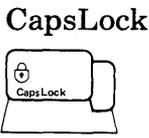
Quit

Quits the print operation occurring in a personal computer window.

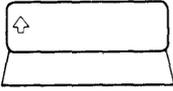
Personal Computer Keys in the Typewriter Keys Area



In the Typewriter Key area, most of your keys perform the same functions in host and personal computer sessions, with the exception of the following keys:

Key	In Host Computer and Notepad Sessions	In Personal Computer Session
	Use to move the cursor from the last character on one line to the first character of the next line.	Use as Enter key for personal computer programs only.
	Use as Enter for host computer sessions only.	Use as Enter key in addition to the New Line key, ↵ .
	All keys are typed with their uppercase functions.	Only letters will be typed in uppercase.

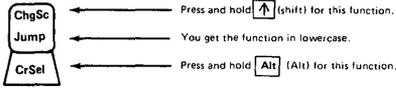
Shift



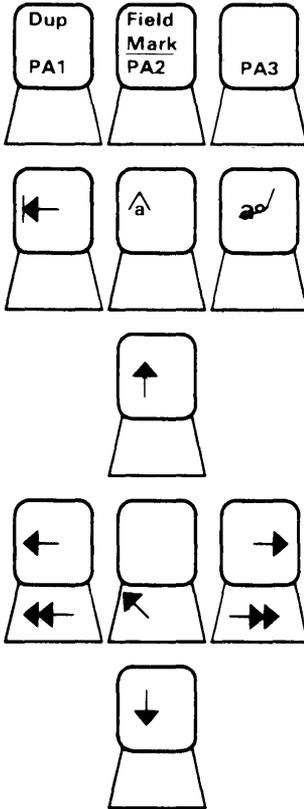
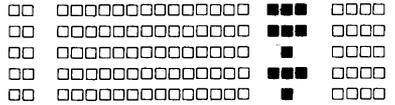
All keys are typed with their uppercase functions.

- With Shift only: all keys are typed with their uppercase functions.
- With Shift and CapsLock: all alphabetic keys are typed in lowercase and the remainder of the keys get their uppercase functions.

Personal Computer Keys in the Right Control Key Area

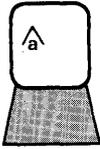


□□□□□□□□□□
 □□□□□□□□□□



The following keys are active in this area:

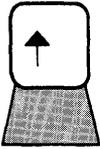
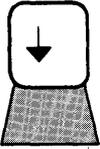
Personal Computer Key	Function
-----------------------	----------

	Insert
---	---------------

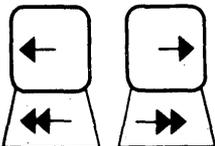
Sets the keyboard to insert mode so that characters will be entered at the cursor position and all data to the right of the cursor will move to the right.

	Delete
---	---------------

Removes the character occupying the position underlined by the cursor. It erases the character without leaving a blank. All characters in the field to the right of that position and on the same line are then shifted left one position. This is a typamatic key.

 	Cursor Movement
---	------------------------

Arrows that control the up, down, left, and right movements of the cursor. In addition, if you hold down the right cursor movement key, , the cursor wraps or



moves off the right side of the line and reappears one line lower on the left side. It also wraps when you hold down the left cursor movement key, ← . In this case, when it moves to the left, it reappears one line higher on the right side. Remember that the cursor is the marker on the screen that shows you where the next character on the screen will be entered, replaced, or deleted.

Notice that pressing either Alt + ← or Alt + → gives you faster cursor movement. You can use these keys in lowercase or with:

- CapsLock
- NumLk
- Shift

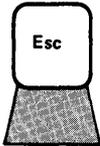
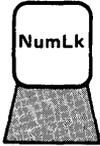
The numeric keypad allows you to enter numeric data. Press NumLk or Shift to get:

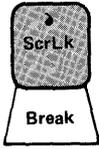
- Numbers 0 through 9, positioned left to right, bottom to top
- Decimal point, space key

In addition, you can use these keys:

- Basic arithmetic symbols: + and -
- Tab right key \rightarrow to help you align columns of figures

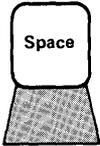
Below is a list of the keys you can use in a personal computer session:

	Personal Computer Key	Function
	Esc	This function varies from application to application.
	NumLk	Allows you to toggle between the numeric keypad and the other functions in this area.
	ScrLk	Depends on the application program.



Break

Not part of the numeric keypad nor a special cursor positioning key. Generally, it halts whatever function is in progress. If you are printing a file, this key will stop the operation. Use of this key also depends on the application program.



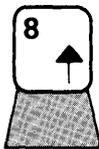
Space

Works like the space bar in the Typewriter Key area.



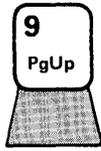
7 Home

Moves the cursor to the upper left corner of the personal computer window.



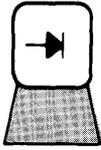
8 ↑

Arrow that controls the up movement of the cursor. Remember that the cursor is the marker on the screen that shows you where the **next** character on the screen will be entered, replaced, or deleted.



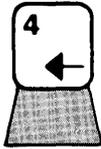
**9 PgUp
(Page Up)**

Moves the information contained in your personal computer window forward. PgUp depends on whether your personal computer application supports this function.



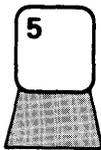
Tab right

Helps you align columns of figures.



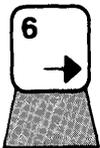
4 ←

Arrow that controls the left movement of the cursor. Remember that the cursor is the marker on the screen that shows you where the next character on the screen will be entered, replaced, or deleted.



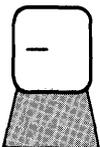
5

You can use the digit 5. There is no other function on this key.



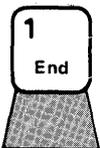
6 →

Arrow that controls the right movement of the cursor. Remember that the cursor is the marker on the screen that shows you where the **next** character on the screen will be entered, replaced, or deleted.



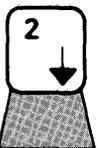
-

Minus symbol or hyphen.



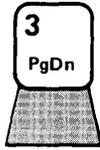
1 End

Moves the cursor to the end of the current line.



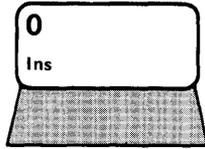
2 ↓

Arrow that controls the down movement of the cursor. Remember that the cursor is the marker on the screen that shows you where the **next** character on the screen will be entered, replaced, or deleted.



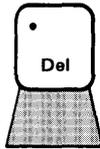
**3 PgDn
(Page Down)**

Moves the information contained in your personal computer window backward. PgDn depends on whether your personal computer application supports this function.



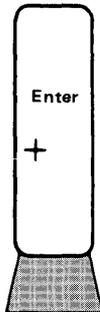
0 Ins(Insert)

Allows you to enter a character occupying the position underlined by the cursor. All data to the right of the cursor moves to the right.



. Del(Delete)

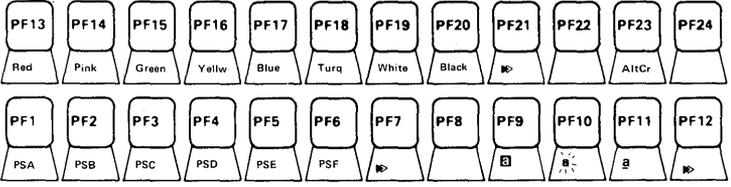
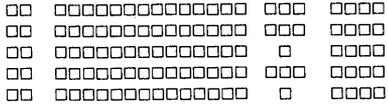
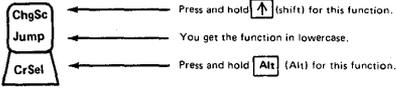
Deletes or erases a character occupying the position underlined by the cursor.



+

Plus symbol.

Personal Computer Keys in the Program Function Key Area



The meanings of the PF keys vary from application to application, but you need to be aware of a few points about this area of the keyboard. Although there are 24 program function keys, only PF1–PF10 and Alt + PF23 function on the personal computer keyboard.

- PF1–PF10 correspond to the F1–F10 keys on the IBM Personal Computer keyboard
- AltCr (Alt + PF23) allows you to select which type of cursor appears on your screen. Initially you get the normal or default cursor. It is a blinking underscore. Then as the cursor rotates in a “round robin” fashion each time you press Alt + PF23, you get
 - Blinking underscore again.
 - Reversal of the color of the character and its background. The cursor looks like a small box.
 - Reversal of the color of the character and its background and simultaneously blinking. The cursor looks like a small, blinking box.

A nonblinking underscore does not appear in the personal computer session.

Chapter 6. Working in Work Station Control Mode

Contents

Introduction	6-3
Work Station Control Mode Overview	6-4
Work Station Control Mode Functions.....	6-5
Work Station Control Mode Keys in the Left Control Key Area.....	6-6
Work Station Control Mode Keys in the Typewriter and Numeric Keypad Area	6-11
Work Station Control Mode Keys in the Program Function Key Area	6-12
Keeping Track of Active Functions.....	6-18
Levels of Functions.....	6-18
Level 1.....	6-18
Level 2.....	6-18
Level 3.....	6-19
Selecting a Screen Profile.....	6-21
Selecting a Window.....	6-23
Other Work Station Control Mode Functions	6-27

Notes:

2023-2024

Introduction

This chapter is for anyone who wants to perform SetUp, browse, copy, and autokey functions; to add and delete windows; to use the Help and List panels; and to print exactly what is on the display screen or on an enlarged window. You must be in work station control mode to accomplish these tasks.

In this chapter we will focus on:

- Work station control mode overview
- Work station control mode functions
- Keeping track of active functions
- Levels of functions
- Selecting screen profiles
- Selecting windows
- Other work station control mode functions.

Work Station Control Mode Overview

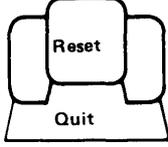
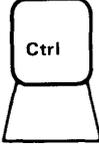
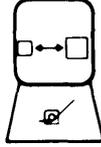
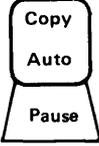
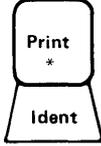
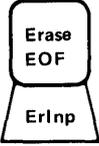
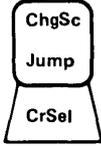
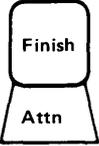
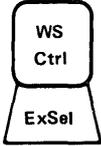
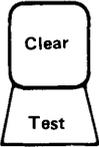
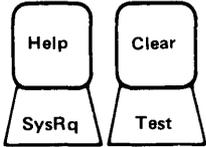
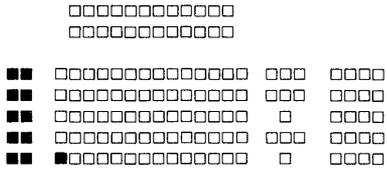
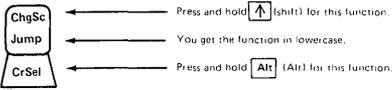
In work station control mode, you **can**:

- Perform SetUp, browse, copy, or autokey functions
- Add or delete windows
- Use Help and List panels
- Print an enlarged window or exactly what is on the display screen.

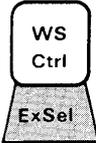
In work station control mode, you **cannot**:

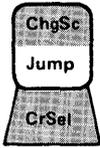
- Type information into the window.

Work Station Control Mode Keys in the Left Control Key Area



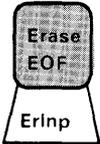
The following are work station control mode functions of the left control keys:

	Work Station Control Mode Key	Function
	Help	Brings up a Help panel. Press again to make the Help panel disappear.
	WS Ctrl	Puts you in work station control mode. Can be pressed in application and work station control modes. Press WS Ctrl again to go to application mode.
	Finish	Ends your activity at one work station control mode level and moves you back to the previous level.
	ChgSc	Changes from defined screen profile to defined screen profile in numeric sequence. Can be pressed in application and work station control modes.



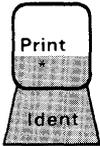
Jump

Jumps from window to window in alphabetic sequence. **Can be pressed in application and workstation control modes.**



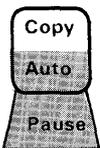
ErInp

Deletes a previously made recording.



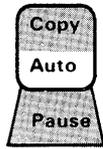
Print

Prints to the IBM 3270 Personal Computer-supported locally attached printer either the exact display screen or an enlarged window. However, certain characters may not print on the printer exactly as you see them in your window, or they may print as blanks; for example, the "¢" sign and some Programmed Symbol set characters.



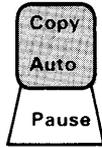
Copy

Activates the copy function.



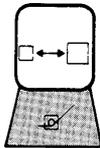
Auto

Activates the autokey function.



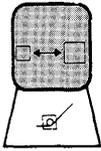
Pause

Pauses so you can insert variable information into an autokey recording. Press again to resume autokey playing and recording after variable information is typed.



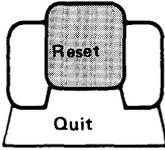
Enlarge

Makes the selected and subsequent windows as large as can be physically displayed on your display screen until toggled off. **Can be pressed in application and work station control modes.**



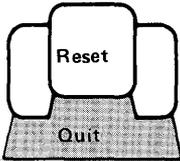
Delete Window

Deletes selected window.



Quit

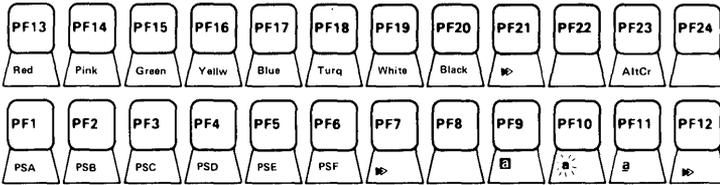
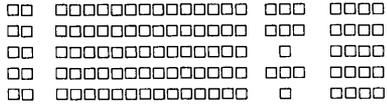
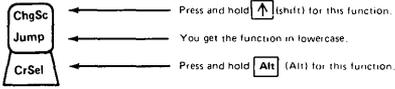
Cancels your current function. Perhaps you made a mistake when you changed the color of your window. Press **Quit** to return to the color of your window as it was before you began to change it. You are still at the same level but you cancel the action you were performing.



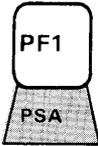
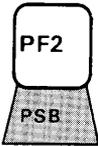
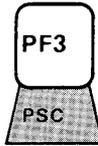
Reset

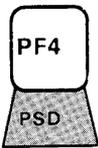
Removes messages from the message line/user prompt area.

Work Station Control Mode Keys in the Program Function Key Area



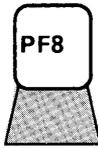
The following are work station control mode functions of the program function keys:

	Key	Function
	PF1 (List)	Displays panel on the right side of your screen. When you press this key in work station control mode, it lists the screen profiles you defined (Screen Profiles 0-9), and the windows you defined for each screen profile. When you press this key while in autokey, PF1 lists autokey recordings. Press again to make List disappear.
	PF2 (SetUp)	Activates the SetUp function. Press again to turn SetUp off and to return you to work station control mode.
	PF3 (Browse)	Activates the browse function. Press again to turn browse off and to return you to work station control mode.



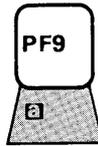
PF4 (Play)

Plays a recording during the auto-key function.



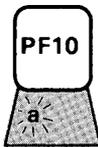
PF8 (Color)

Activates the color function during the SetUp function.



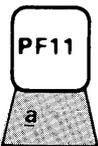
PF9 (Hide)

Activates the hide function during the SetUp function.



PF10 (Corner)

Activates the corner function during the SetUp function.



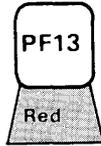
PF11 (Move)

Activates the move function during the SetUp function.



PF12 (Size)

Activates the size function during the SetUp function.



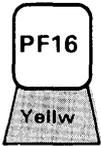
PF13 (Source)

Defines the source during the copy function.



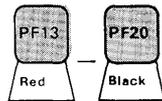
PF14 (Target)

Defines the target during the copy function.



PF16 (Record)

Records keystrokes during the autokey function.



PF13-PF20

Colors you can change for the display screen background and the foreground and background of the host and notepad windows. These colors are:

Red	PF13
Pink	PF14
Green	PF15
Yellow	PF16
Blue	PF17
Turquoise	PF18
White	PF19
Black	PF20



PF21 (Base Color)

Sets the base color for a window. See Chapter 7 for further details.



PF22 (Screen Background)

Allows you to change the color of the display screen background.



PF23 (Foreground)

Allows you to change the color of the window foreground.

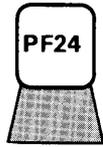


Alt + PF23 (AltCr)

Allows you to select which type of cursor appears on your screen. Initially you get the normal, or **default**, cursor. It is an underscore. Then, as the cursor rotates in a “round robin” fashion each time you press Alt + PF23, you get:

- Blinking underscore.
- Reversal of the color of the character and its background. The cursor looks like a small box.

- Reversal of the color of the character and its background and simultaneous blinking. The cursor looks like a small, blinking box.



**PF24
(Background)**

Allows you to change the color of the window background.

Keeping Track of Active Functions

We have told you that, in application mode, you need to keep track of whether you are in a host, personal computer, or notepad session because certain functions are active only during certain sessions. You keep track of your session by noting the operator information area and the active window. It has a double line border and a cursor.

In work station control mode, you must also determine which functions are active if you want to use the SetUp, browse, autokey, and copy functions. You do this by referring to the operator information area, checking the selected (double-bordered) window, and using the Help panel.

Levels of Functions

A useful way to understand active functions in SetUp, browse, autokey, and copy is to think of **levels of functions**. Perhaps you'll want to look at and follow the chart on the next page. It is a graphic representation of the information that follows.

Level 1

Work station control is a Level 1 function. This means that you must first press the WSCtrl key to perform autokey, SetUp, browse, or copy.

Level 2

Autokey, SetUp, browse, and copy are Level 2 functions. This means you must be in these functions to perform specific tasks.

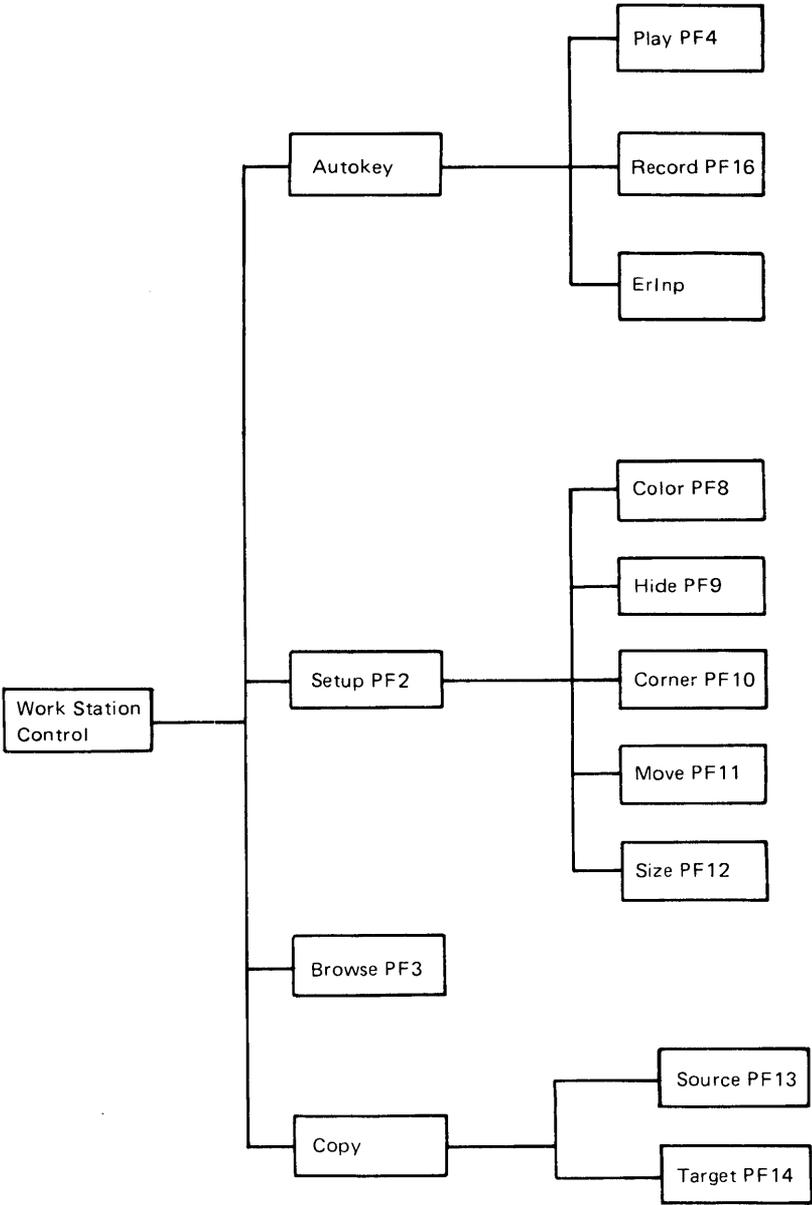
Level 3

- Level 3 functions of autokey are:
 - Record
 - Play
 - Erase
- Level 3 functions of SetUp are:
 - Color
 - Hide
 - Corner
 - Move
 - Size
- Browse does not have any Level 3 functions.
- Level 3 functions of copy are:
 - Source
 - Target

For example, to move a window in your screen profile:

1. Press WS Ctrl (Level 1 function)
2. Press PF2 (SetUp - Level 2 function)
3. Press PF11 (Move - Level 3 function)

These three levels of functions are illustrated in the following chart.



LEVEL 1

LEVEL 2

LEVEL 3

Often you may want to move between levels. Below are two ways to do this:

- You can move from any level back to application mode by pressing the WS Ctrl key.
- You can move one level back, from Level 3 to Level 2 for example, by pressing the Finish key.

Selecting a Screen Profile

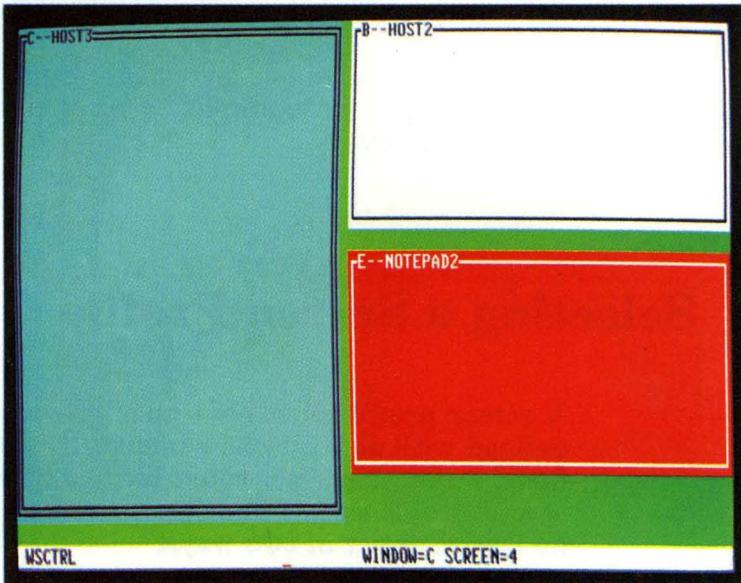
A screen profile must have been previously defined with at least one window. To perform Level 2 functions, you must bring a defined screen profile up to your display screen. You can do this in either of two ways:

- Press the number of the defined screen profile (0 through 9).
- Press ChgSc.

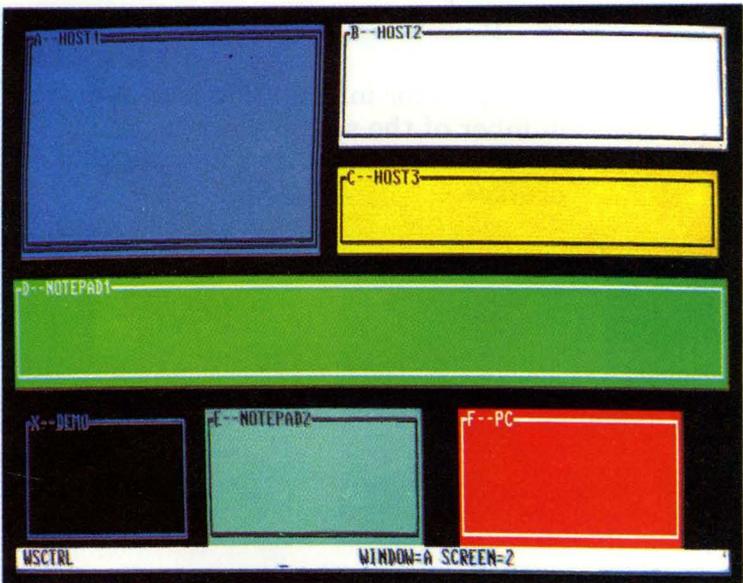
The operator information area will give the number of the selected screen profile. The following illustration shows a change between screen profiles.

Selecting a Screen Profile

1. Press WS Ctrl



2. Press 2 (the screen profile number)



Selecting a Window

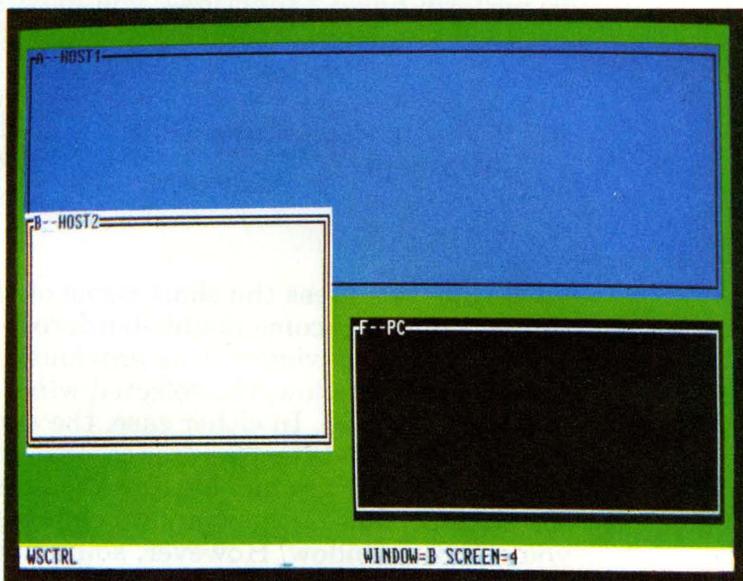
To perform Level 2 functions, you must select your window. You can do this in either of two ways:

- Press the short name of the selected window (A through Z).
- Press Jump.

Each time you press the short name of the window, it will become double-bordered. Notice that if a selected window was previously overlaid with another window, the selected window “pops” to the top. In either case, the window is now selected, and the operator information area will give its short name. Neither the number nor the arrangement of the windows changes when you select a window. However, some windows may be covered by the selected window.

Selecting a Window

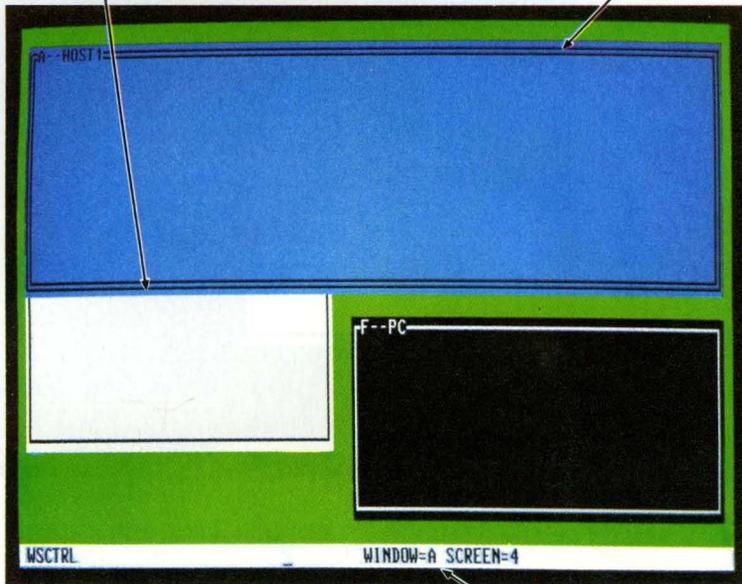
1. Press WS Ctrl



2. Press A (short name of window)

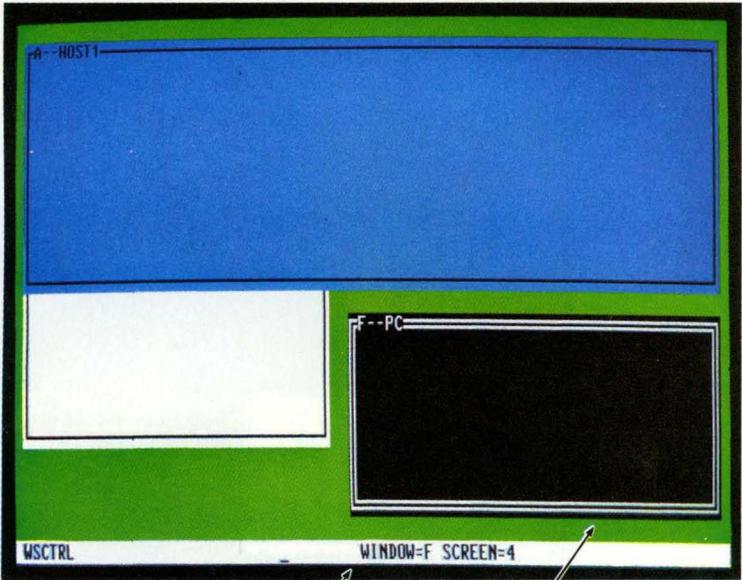
The selected window
overlays Window B

Window A is now
double-bordered



OIA shows the window change

Press F (the short name of the window)



Operator information area
shows the window change

Window F is now double-bordered

Other Work Station Control Mode Functions

When you are in work station control mode, you can also add and delete windows, use Help and List, print the contents of what is on the display screen or what is in an enlarged window. Add and delete functions are discussed in Chapter 7. Using Help and List are discussed in Chapter 2. Printing is discussed in Chapter 12.

Chapter 7. Using SetUp

Contents

Introduction	7-3
Terms You Need to Know	7-4
Defining Screen Profiles 1 through 9	7-6
Getting In and Out of SetUp.....	7-7
Adding a Window	7-8
Deleting a Window	7-11
Sizing a Window	7-13
Moving a Window.....	7-15
Cornering a Window.....	7-17
Hiding a Window	7-19
Changing Color	7-22
Setting the Base Colors for a Window.....	7-25
Changing the Display Screen Background	7-27
Changing the Foreground and Background of a Window	7-29

Notes:

Introduction

This chapter is for people who want to set up their own screen profiles and change windows. It specifically illustrates what you must do to:

- Define Screen Profiles 1 through 9
- Get in and out of SetUp
- Add a window
- Delete a window
- Size a window
- Move a window
- Corner a window
- Hide a window
- Change colors in a screen profile

Remember that the Help and List functions are important aids during SetUp. Help will give your active functions; List will provide a listing of screen profiles and windows.

To permanently save and restore the specific ways you choose to arrange your screen profiles and windows, see Chapter 11.

Terms You Need to Know

Add	Work station control mode function that allows you to add a window defined on Screen Profile 0 to the screen profile (1 through 9) you are presently defining.
Background color	Color of the window background.
Base color	Provides the following four colors to standard parts of a monochrome data set for host and notepad sessions: <ul style="list-style-type: none">● Green● White● Red● Blue
Corner	SetUp function that moves a window clockwise to each of the four corners of the display screen.
Defined screen profile	Screen profile that contains one or more windows.
Delete	Work station control mode function that removes a window from a screen profile.
Foreground color	Color of both characters and border within a window.

Hide	SetUp function that temporarily removes a window from a screen profile.
Move	SetUp function that allows you to move a window either horizontally or vertically on the screen.
Screen background color	Color of the display screen in the application window area that is not covered by windows.
Size	SetUp function that allows you to change the vertical and horizontal boundaries of a window.

Defining Screen Profiles 1 through 9

You now know that Screen Profile 0 contains all the windows, up to 7, configured for your particular needs. You can configure each of the Screen Profiles 1 through 9 differently, but remember that you can only use the existing windows on Screen Profile 0. The first step you must do is to define a screen profile.

To define a screen profile:

1. Press WS Ctrl.
2. Type the number of the screen profile, from 1 through 9, you want to define.

You can now use the rest of the functions in this chapter for whatever screen profile you have defined.

Getting In and Out of SetUp

Now that you have defined a screen profile, you go into SetUp to do things like add, delete, size, move, corner, and hide windows, and change their colors.

To get into SetUp:

1. Press WS Ctrl.
2. Press PF2 (SetUp key).

To get out of SetUp:

1. Press SetUp to put you in work station control mode.
2. Press the WS Ctrl key to put you in application mode.

You can check your operator information area to make sure you are in SetUp. Your operator information area should look like this:

WSCRTL	SETUP	WINDOW = G SCREEN = 3
--------	-------	-----------------------

Adding a Window

Though you do not have to go through Level 2 SetUp to add a window, you will find it easier to use this function while you are in SetUp. If you add a window at another time, you may get confused because you will be adding a window from Screen Profile 0 that has not been changed to meet your current needs.

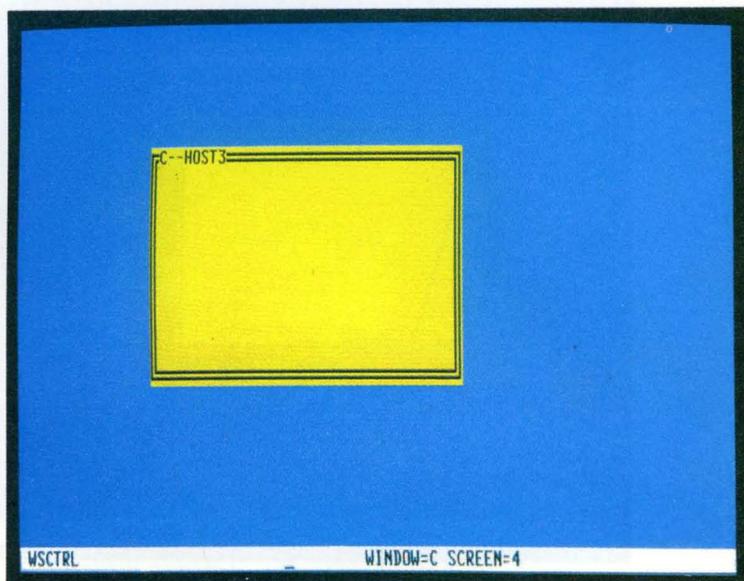
You can add any window from Screen Profile 0 to Screen Profiles 1 through 9. Once you have added a window to your screen, you can change its size, shape, position, and color.

To add a window to Screen Profiles 1 through 9:

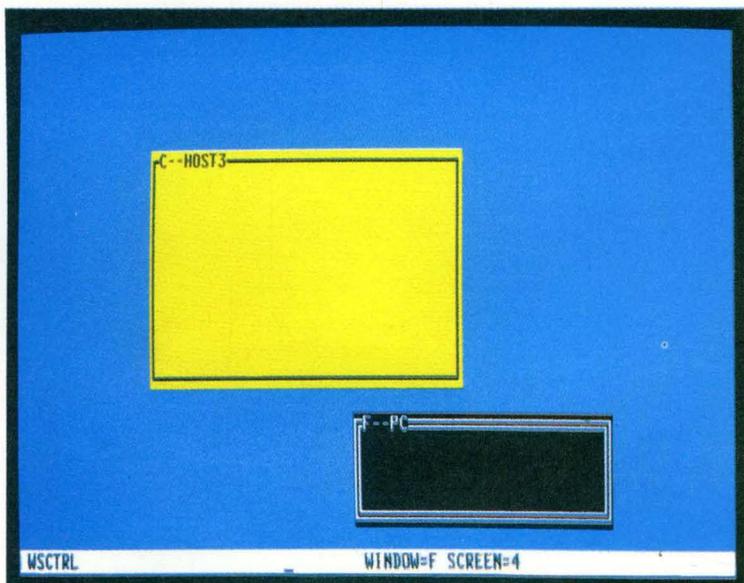
1. Press WS Ctrl.
2. Press the number of the desired screen profile (1 through 9), or press ChgSc. If you press ChgSc, the screen profile must have been previously defined with at least one window.
3. Press the short name of the window you are adding (A through Z).
4. Press different short names to continue adding windows.

Adding A Window

1. Press WS Ctrl

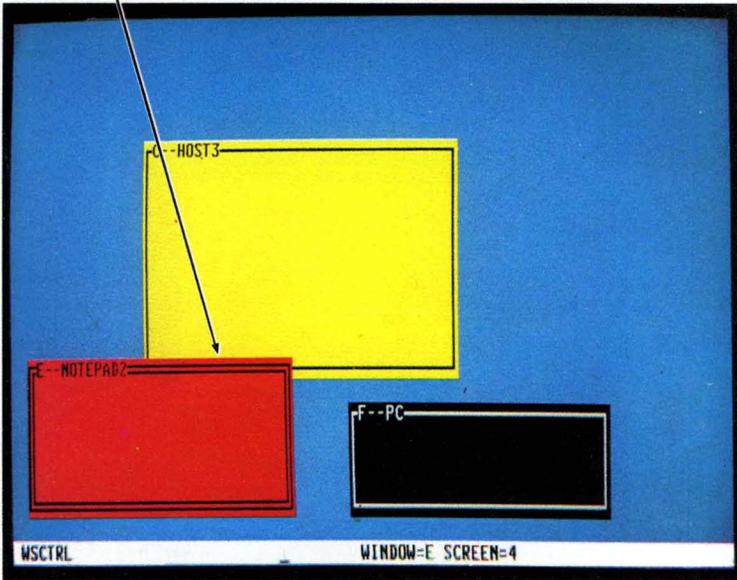


2. Press F



3. Press E

The last window added becomes selected



The window added has the same location and size as on Screen Profile 0.

Deleting a Window

Though you do not have to go through Level 2 SetUp to delete a window, you will find it easier to use this function while you are in SetUp. If you delete a window at another time, you may get confused because when you add the deleted window back to your screen profile it will reappear as a Screen Profile 0 window.

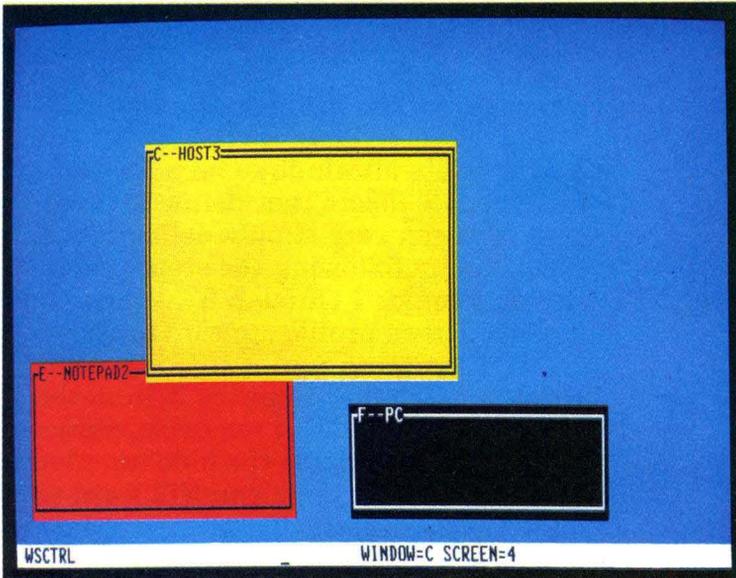
If you delete all windows on a defined screen profile, you will delete that defined screen profile also. You can very simply define that screen profile again by following the steps under “Defining Screen Profiles 1 through 9”. When you do this, a blank screen profile appears again.

Deleting a window removes it from the screen profile. If you want to remove a window temporarily, you should use the hide function instead of the delete function. You will learn about hide later in this chapter. To delete a window:

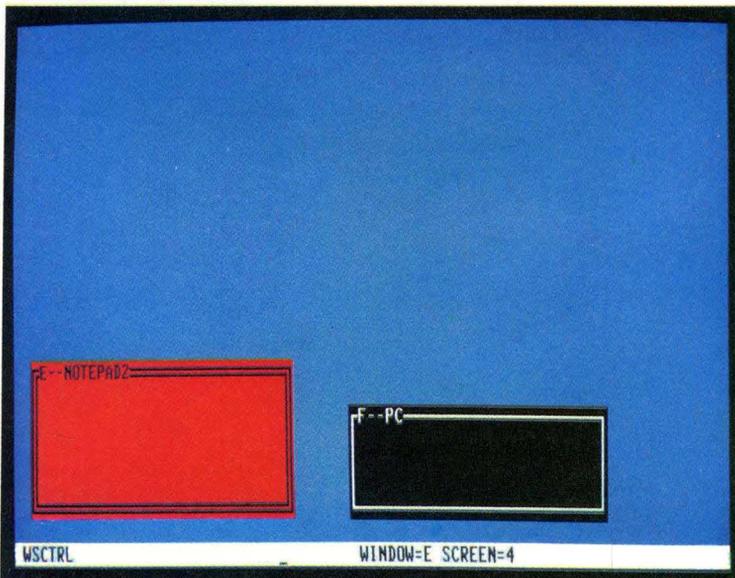
1. Press WS Ctrl.
2. Press the number of the desired screen profile (1 through 9), or press ChgSc. If you press ChgSc, the screen profile must have been previously defined with at least one window.
3. Press the short name of the window you are deleting (A through Z).
4. Press the Delete Window key. This key is referred to by Del on the Help panel.

Deleting a Window

1. Press WS Ctrl
2. Select the window by typing its short name or by pressing Jump



3. Press Delete Window



Sizing a Window

Sizing a window means you change its dimensions by using the black cursor movement keys to move the right border either to the left or to the right, and/or the bottom border either up or down. The top and left borders do not move with this function. This allows you to display more or less of the information behind that window. You can also move the borders of a selected window to overlay another window. And you can change the size of windows in any screen profile, but remember that the window must be selected. To size a window:

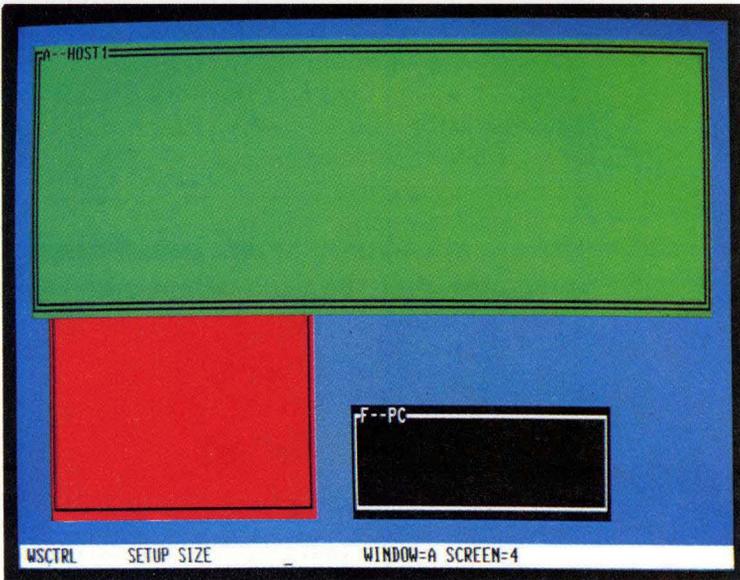
1. Press WS Ctrl.
2. Press PF2 (SetUp key).
3. Press PF12 (Size key).
4. Use the black cursor movement keys to move the window borders.
5. Use Jump or the letter name of the window to size another window.
6. Press Finish, SetUp, or WS Ctrl.

Now that you have sized a window, you can move it anywhere on your display screen.

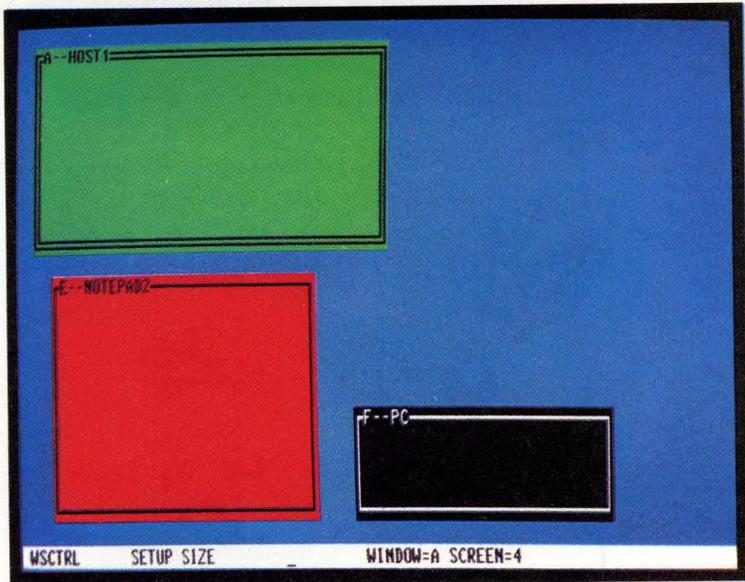
The following illustration shows how to size a window.

Sizing a Window

1. Press WS Ctrl
2. Press PF2 (SetUp key)
3. Press PF12 (Size key)



4. Use the black cursor movement keys to move the window borders.



Moving a Window

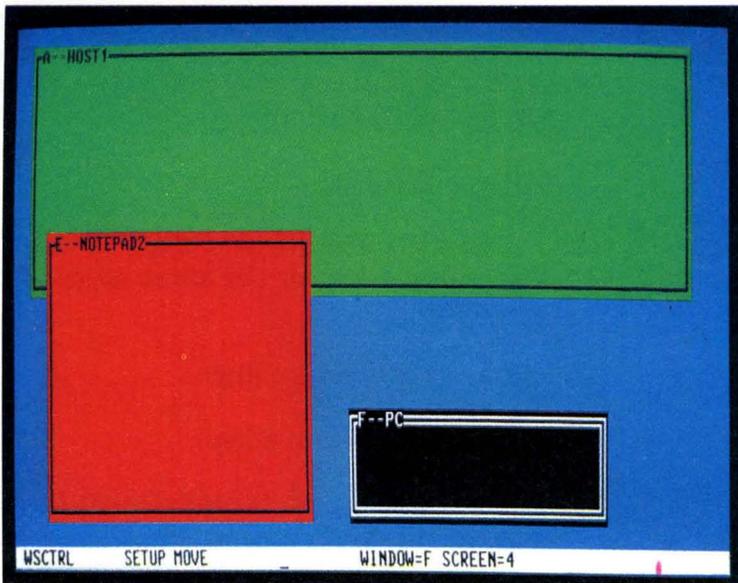
Moving a window means changing the window's location either horizontally or vertically on the screen. You must select the window to move it. You can move a window to overlay another window. You can also stack windows on top of each other. To move a window:

1. Press WS Ctrl.
2. Select the window you want to move by pressing Jump or the short name of the window.
3. Press PF2 (SetUp key).
4. Press PF11 (Move key).
5. Use the black cursor movement keys to move the window. You can also use the Home Key to move the window to the upper left corner of your screen.
6. Press Jump or the short name of the window to move another window in the same screen profile.
7. Press Finish, SetUp, or WS Ctrl.

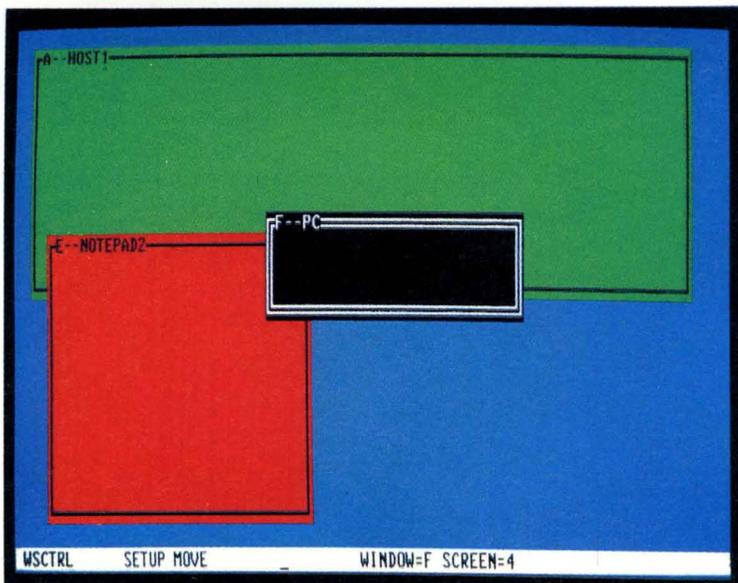
The following illustration shows the moving of windows.

Moving a Window

1. Press WS Ctrl
2. Press PF2 (SetUp key)
3. Press PF11 (Move key)



4. Use the black cursor movement keys to move the window



Cornering a Window

Cornering is a fast way of moving sized windows clockwise to each of the four corners of your display screen. This allows you to see information previously covered. It moves first to the upper left corner of the screen. A cornered window can partially overlay or totally cover another window. Note that you may not always see all four borders of the window you are cornering.

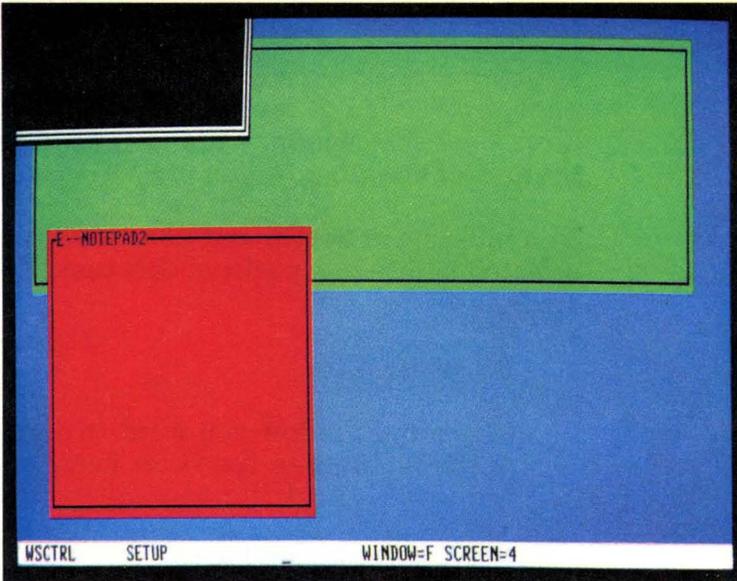
You must be in SetUp and your window selected before you perform this task. To corner a window:

1. Press WS Ctrl.
2. Select the window you want to corner by pressing Jump or the short name of the window.
3. Press PF2 (SetUp key).
4. Press PF10 (Corner key). The PF10 key moves the window to a different corner each time it is pressed.
5. Press Finish, SetUp, or WS Ctrl.

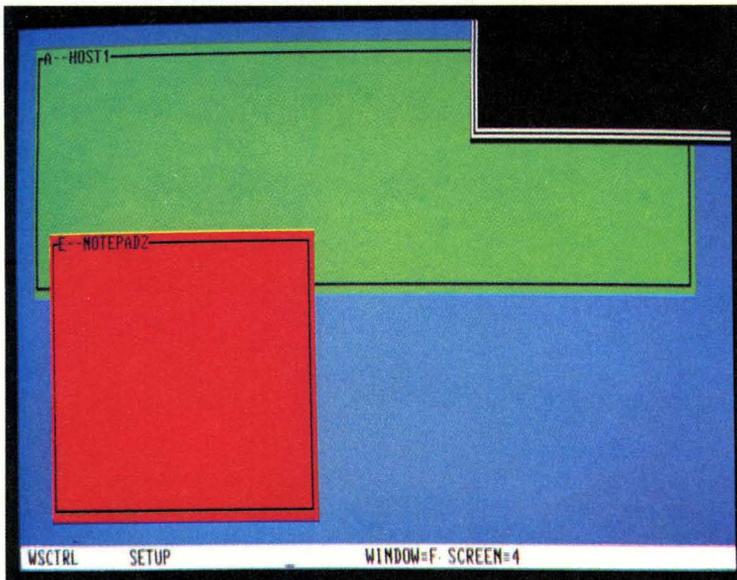
The following illustration shows the cornering of windows.

Cornering a Window

1. Press WS Ctrl
2. Press PF2 (SetUp key)
3. Press PF10 (Corner key)



4. Press PF10 again



Hiding a Window

Hiding a window means removing it temporarily from a display screen. For example, if you are working within window A and using information from window B, you do not need to have window A present all the time. You can “hide” window A temporarily instead of deleting it. **Hide** means the window will return in the same size and position when you **un-hide** it. **Delete** means that you remove the window from the screen profile. You can add the window, but then the window returns to its **default** size – whatever is on Screen Profile 0.

You must select a window to hide it. When the selected window is hidden, the previously selected window becomes selected again. For example, window B was previously selected. You decide to hide window A. You select window A and hide it. Then, window B becomes selected again. Now you decide to un-hide window A. Thus, window A is again selected.

You can never hide all your windows. One window will always appear. To hide a window:

1. Press WS Ctrl.
2. Select the window you want to hide by pressing Jump or the short name of the window.
3. Press PF2 (SetUp key).
4. Press PF9 (Hide key).
5. Press Finish, SetUp, or WS Ctrl.

To un-hide a window:

1. Press WS Ctrl.
2. Press the short name of the hidden window.

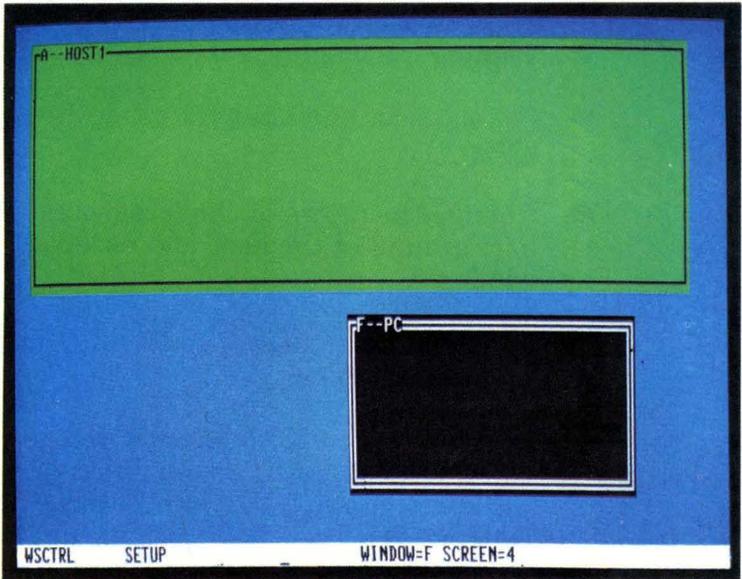
Note: You cannot get to a hidden window by pressing Jump.

3. Press Finish, SetUp, or WS Ctrl.

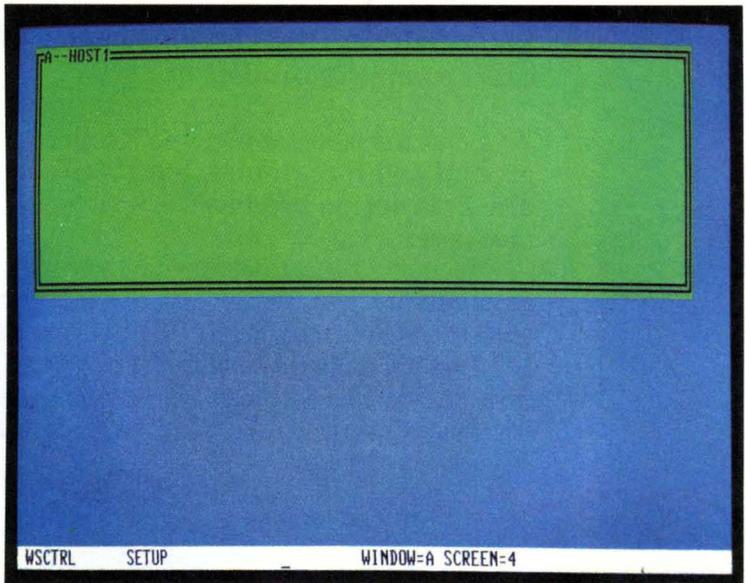
The following illustration shows this process.

Hiding a Window

1. Press WS Ctrl
2. Press PF2 (SetUp key)



3. Press PF9 (Hide key)



Changing Color

If you have a color display, you can:

- Change the display screen background
- Set the host and notepad windows for base color
- Change the colors of the foreground and background of the host and notepad windows.

Before you begin changing colors, it is important to remember these rules:

1. The window must be selected before you can change its color. Press Jump or type the short name (A through Z) to select a window.
2. You must set the colors of each window individually.
3. You **cannot** change the colors of the personal computer session.
4. You can use the same color for the background and foreground, but it will be illegible. This action produces a warning message.
5. You can set the display screen background color for each screen profile; otherwise, you get the black default color. You must be able to see the display screen background between the windows in order to notice a change in the color.

6. Seven-color data in a host or notepad window can override the color setting you selected. If your host computer is capable of sending extended attribute buffer (EAB) color data and the host session is customized to receive EAB color data, the EAB color data may override the colors you just chose. Your chosen colors appear when the application using the EAB color data completes.

If you are typing in technicolor in a notepad window (see Chapter 5), you can continue until you physically clear the window by pressing Clear. (Remember that if you press Clear, you lose data in that notepad window. If you want to save that data, use the save command.)

7. If your window background is white, you will not be able to see the white default cursor against the window background color. We suggest you use the alternate cursor (AltCr) functions to see your cursor. See Chapter 6 for more information.
8. You can change the display screen background and the foreground and background of the host and notepad window in eight different colors. The colors and their keystrokes are:

● Red	Alt + PF13
● Pink	Alt + PF14
● Green	Alt + PF15
● Yellow	Alt + PF16
● Blue	Alt + PF17
● Turquoise	Alt + PF18
● White	Alt + PF19
● Black	Alt + PF20

9. When you are using your IBM 3270 Personal Computer only as a personal computer or as a 3270 terminal, follow the rules for that particular unit.

For further information, see *IBM 3270 Information Display System: Color and Programmed Symbols* and *IBM 3270 Information Display System 3274 Control Unit Description and Programmer's Guide*.

Setting the Base Colors for a Window

Base color provides the following four colors to standard parts of a monochrome data set for host and notepad sessions:

- Green
- White
- Red
- Blue

You set the base colors in work station control mode. These four colors, the base colors, are the default colors. Once you have set the base colors for a window, the characters in your window are displayed with these four colors. Certain host applications require your host session to use base colors to take full advantage of the functions. Perhaps you want to change the foreground and background colors to something different than the default colors you get here. You can do that, and those procedures are covered later in this chapter. If you ever want to go back to the base colors, press PF21. To make sure your window is selected:

1. Press WS Ctrl.
2. Press Jump or the short name of the window to select the window whose color you want to change.
3. Press PF2 (SetUp key).
4. Press PF8 (Color key).
5. Press PF21 (Base Color key).

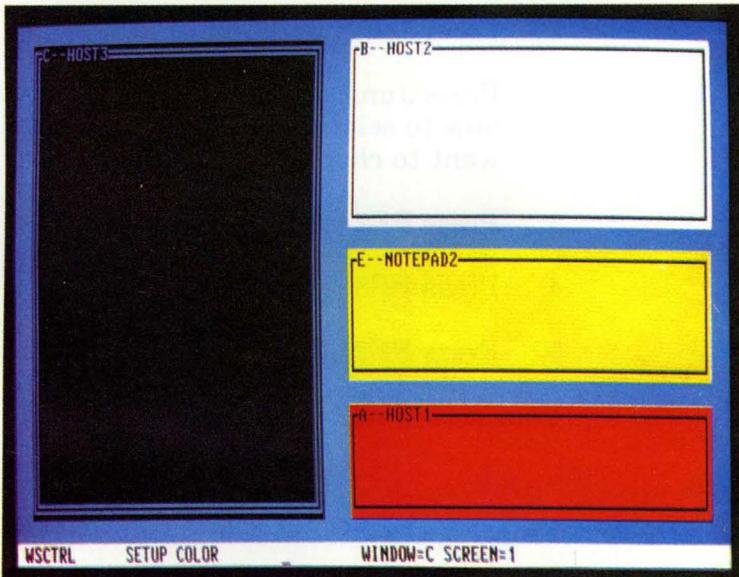
Your screen will look similar to this:

Setting the Base Colors for a Window

1. Press WS Ctrl
2. Press PF2 (SetUp key)
3. Press PF8 (Color key)



4. Press PF21 (Base Color key)



Changing the Display Screen Background

You may want to change the color of the display screen background. To do this:

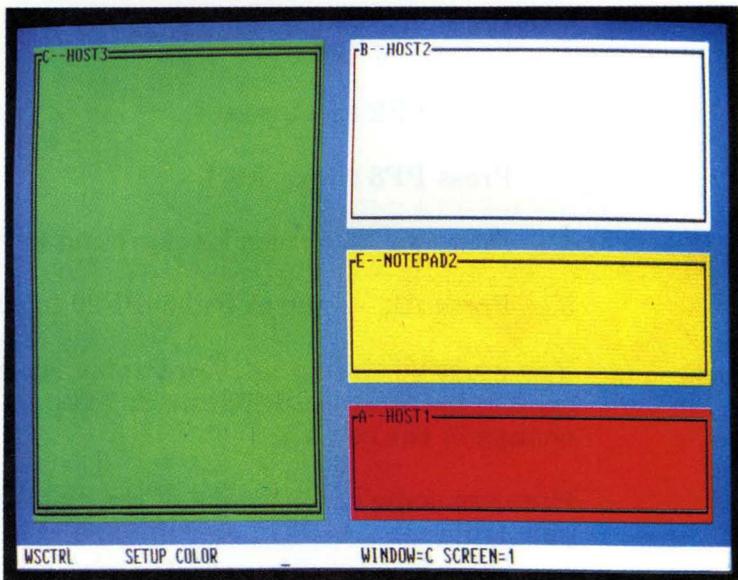
1. Press WS Ctrl.
2. Press PF2 (SetUp key).
3. Press PF8 (Color key).
4. Press PF22 (Screen Background key).
5. Press Alt + one of PF13–PF20 (colors).

You must be able to see the display screen background between the windows in order to notice a change in the color.

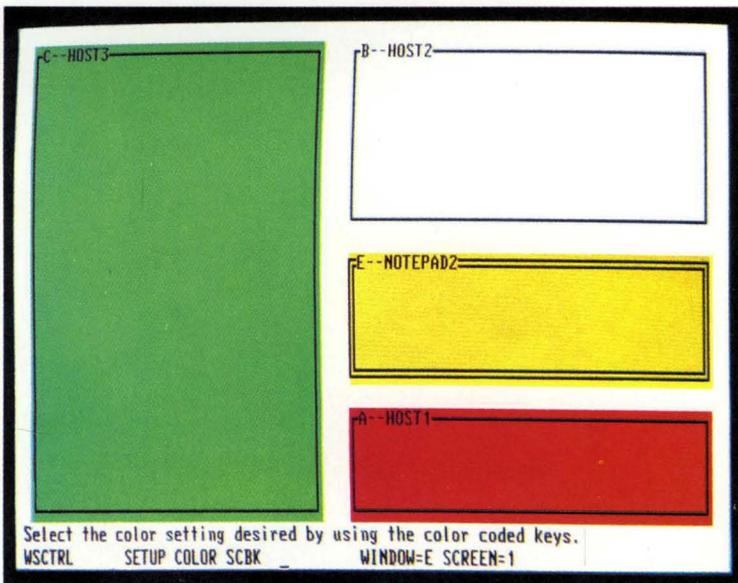
Here are some illustrations of the color changes you can make:

Changing the Display Screen Background

1. Press WS Ctrl
2. Press PF2 (SetUp key)
3. Press PF8 (Color key)



4. Press PF22 (Screen Background)
5. Press Alt + PF19 (White)



Changing the Foreground and Background of a Window

You may want to change the foreground color and the background color of your selected window. Notice that text and borders take on the foreground color. The following procedure and illustration show how to do this.

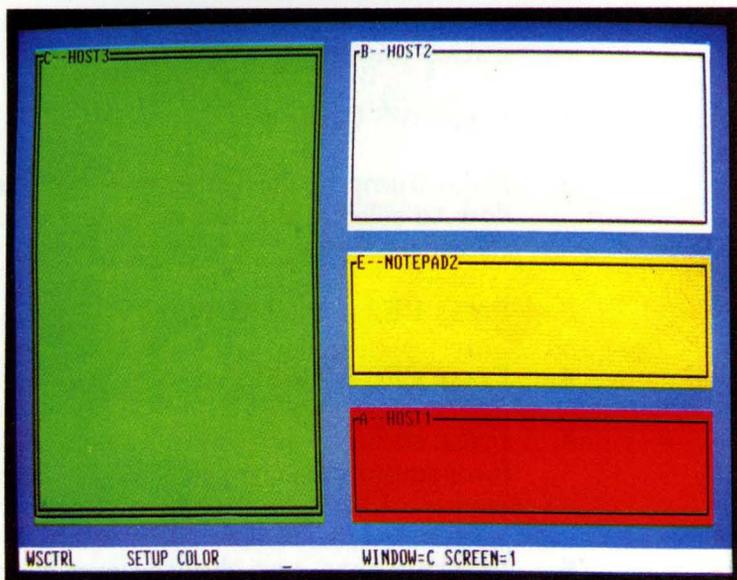
1. Press WS Ctrl.
2. Press Jump or the letter name of the window to select the window whose color you want to change.
3. Press PF2 (SetUp key).
4. Press PF8 (Color key).
5. Press PF23 (Foreground key) to change the foreground color or press PF24 (Background key) to change the background color.
6. In either case, you choose your color by pressing Alt + one of PF13–PF20 (colors).

If you choose to change both foreground and background colors, simply go to step 5 and press the other PF key, either PF23 or PF24, and continue with steps 6 and 7.

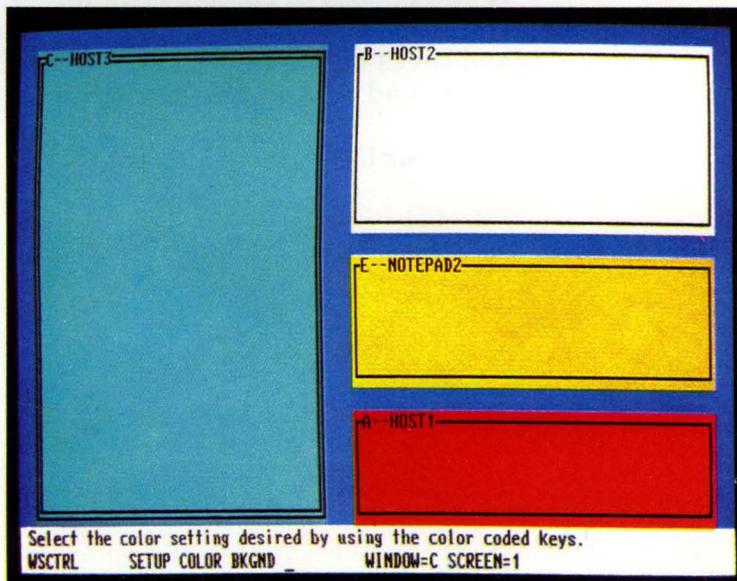
7. Press SetUp to return to WSCTRL.

Changing the Foreground and Background of a Window

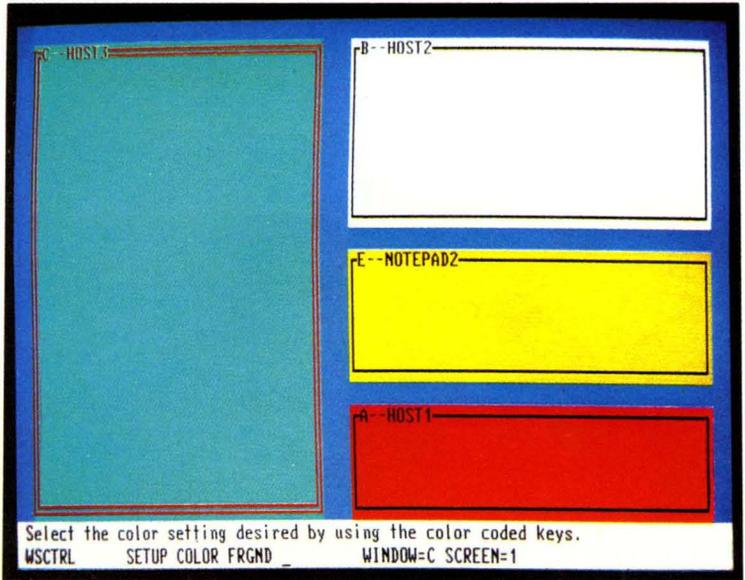
1. Press WS Ctrl
2. Press PF2 (SetUp key)
3. Press PF8 (Color key)



4. Press PF24 (Background key)
5. Press Alt + PF18 (Turquoise)



6. Press PF23 (Foreground key)
7. Press Alt + PF13 (Red)



Chapter 8. Browsing

Contents

Introduction	8-3
Terms You Need to Know	8-3
Browsing a Window	8-3
Browsing a Personal Computer Graphics Window	8-5

Notes:

Introduction

This chapter is for you who want to browse windows without changing the contents. You must be in work station control mode to browse your window. Browse is a level 2 function of the WS Ctrl key.

Terms You Need to Know

Browse	A work station control mode function that allows you to move the data contained in the presentation space vertically or horizontally within a window.
---------------	---

Browsing a Window

When you browse a window, you are looking at the presentation space behind the window. The window does not move. The information in the presentation space moves up, down, to the left, and to the right, depending on how you use the black cursor movement keys in the personal computer key area.

Browsing is like window-shopping when the stores are closed. You can look at all the articles displayed behind the window, your window into the store, but you cannot buy any of these articles until the store is open. Thus, you are still in work station control mode. You can enter data when you switch to application mode.

If the cursor is not visible in the window you just browsed when you entered application mode, the contents behind the window will move so that the cursor is visible again.

To browse a window:

1. Press WS Ctrl.
2. Press Jump or the short name of the window to select the window you want to browse.
3. Press PF3 (Browse key).
4. Use the black cursor movement keys to move the information. Remember that you are moving data up, down, to the left, or to the right behind the window. This is because the direction that your black Cursor Movement keys points to is the direction your information moves. Want to move the information left? Use ←. Want to move the information right? Use →.
5. Press Jump or the short name of another window if you want to browse another window.
6. To stop browsing, press PF3 (Browse) or WS Ctrl.

Browsing a Personal Computer Graphics Window

You can browse a personal computer window pel by pel while you have a graphics application running in that active personal computer window. This means you can browse your window picture element (pel) by picture element instead of character by character by using the black cursor movement keys. To do this:

1. Press WS Ctrl.
2. Press Jump or the short name of the window to select the window you want to browse.
3. Press PF3 (Browse key).

At this point, you can browse the data in the window character by character. Your operator information area looks like this:

BROWSE	CHAR
--------	------

4. Now press Alt + PF3 to browse pel by pel.
5. Use the black cursor movement keys to browse the information in the window. Your operator information area looks like this:

BROWSE	PEL
--------	-----

6. To leave browsing pel by pel, press Alt + PF3 again.

Chapter 9. Copying

Contents

Introduction	9-3
Terms You Need to Know	9-3
Notes	9-4
Copying Data	9-6
Defining the Source Area	9-6
Defining the Target Area	9-9
Copying the Data	9-11
Copying Data in the Same Window	9-12

Notes:

Introduction

This chapter is for anyone who wants to copy data from one area to another within the same window, or from one window to another on the same screen profile or on different screen profiles.

Suppose you have data in a host window or notepad that you would like to copy to another window or copy to another area of the same window. Or suppose you have data in the personal computer window that you would like to have in another window. **Copy** provides you with the ability to do this.

Terms You Need to Know

- | | |
|---------------|--|
| Copy | The Level 2 work station control mode function that allows you to mark source lines in one window and move them to a target location either within the same window or to another window. Exiting Copy by using the Finish or WS Ctrl keys before completing the copy operation causes all copy information to be lost. |
| Source | A Level 3 function within the copy in which the lines are marked with the cursor select (CrSel) key as those to be copied either within the same window or to another window. |

Target A Level 3 function within the copy in which the upper left corner of a location is marked with the cursor select (CrSel) key to indicate the place to which marked source lines are to be moved.

Notes

- You can copy into any window **except** a personal computer window. Also, you cannot copy from one area to another **within** the personal computer window.
- To use Copy, you must use your cursor to define your **source** and **target** areas. You can copy a word, a line, or a block of data.
- The block must be as wide as the longest line of the source data you want to copy. If it is not, the data will be cut off when copied.
- To copy more than is visible in a window, automatic data scrolling occurs as the cursor is moved to identify the corners of the block of data to be copied.
- Non-display fields and protected fields are copied as blanks.
- You cannot copy into a non-display or protected field.
- If you copy into a target area that is totally protected, you will get a warning message, telling you that nothing is being copied.

- If the personal computer session is in graphics mode, you cannot copy that data into another window.
- If you copy from a host session that supports Programmable Symbols to a notepad or a host session that does not support Programmable Symbols, all Programmable Symbol data will be copied as blanks and all base data will be copied as-is.
- If you don't want the copied data to overlay existing data in the target area, you must make room for the data before copying.
- If the Help panel or message/prompt line appears on the screen during the Source or Target definition, the cursor will not appear on the screen when moved "under" either of these windows. To see the cursor, either remove Help from the screen, or size or move the selected window so it will not be covered by the Help panel or message/prompt line.
- If an error message appears and overlays a prompt, press Reset to remove the error message and redisplay the prompt.
- When you leave Copy by pressing WS Ctrl, your source and target areas will be removed.

In this chapter, we discuss:

- Copying data within a window and to another window
 - Defining the source area
 - Defining the target area

Copying Data

Defining the Source Area

When defining the source area, you will use the black cursor movement keys in the Right Control key area.

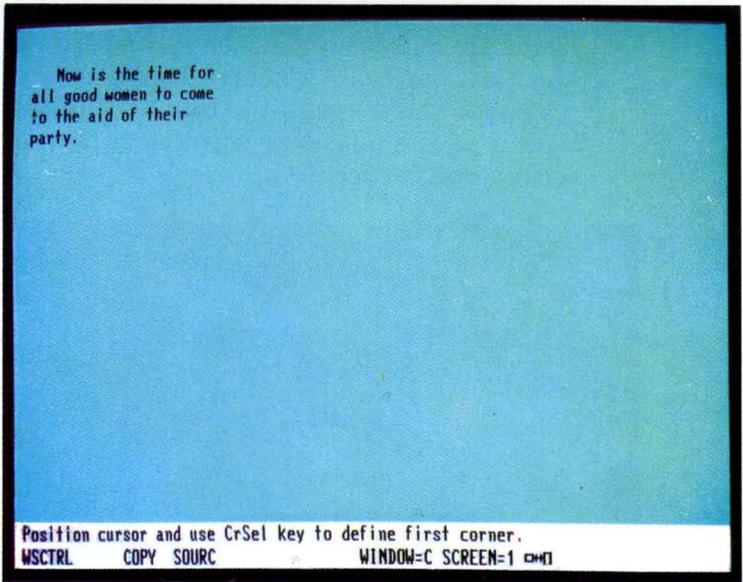
1. Press WS Ctrl to get into work station control mode.
2. Select the window you will be copying from by typing the window short name or pressing Jump until the window is double-bordered.
3. Press Copy. The following prompt appears:

Define source or target area.

You can define either the source or target area first; here, we'll define the source area first. Select the window you are copying from.

4. Press PF13 to define the source area. The following prompt appears:

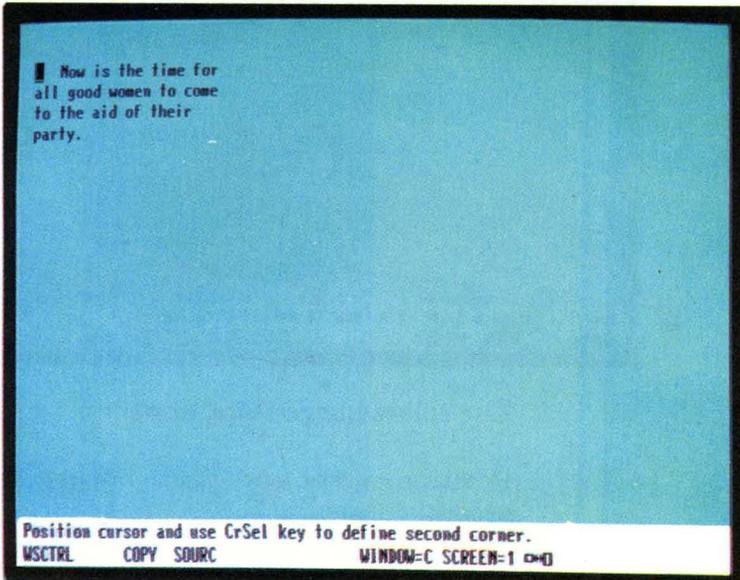
Position cursor and use CrSel key to define first corner.
5. Use the black cursor movement keys to position the cursor at the beginning of the data you want to copy and press CrSel.



The following prompt appears:

Position cursor and use CrSel key to define second corner.

6. Use the black cursor movement keys to position the cursor under the last character of the data you want to copy. Make sure you allow for the longest line by positioning the cursor so the data you want to copy will be within the source area.



7. Press CrSel. The source area will be underscored and marked with corner marks. What is not underscored will not be copied. If some of the data you want to copy is not underscored, or if you are not satisfied with the source area you have defined, you must go back to step 4 and redefine the entire source area. If the source area is within a personal computer window, no underscoring appears but the source will be marked with corner marks.
8. If you are satisfied with the source area you have defined, go on to define the target area.

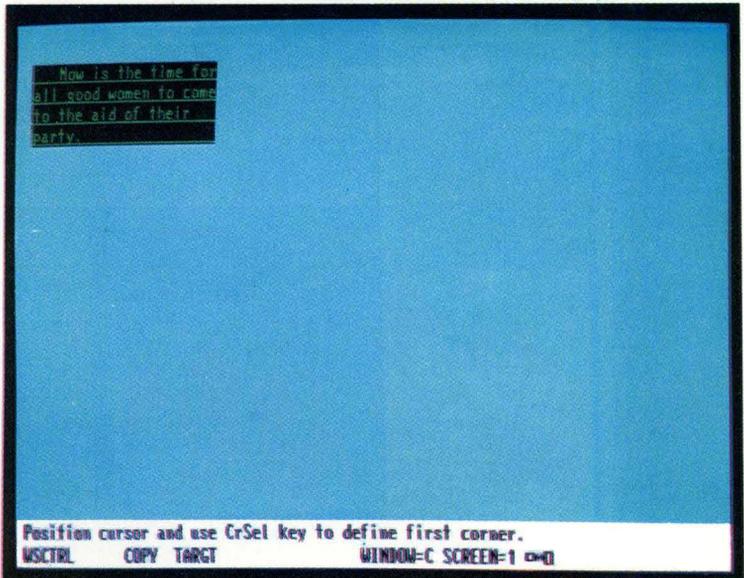
Defining the Target Area

1. Select the target window by using the Jump key or by entering the short name of the window. If the window is on a different screen, first activate the screen and then select the window.
2. Press PF14 to define the target.

The following prompt appears:

Position cursor and use CrSel key to define first corner.

3. Move the cursor to the upper left corner of the area to which you want the source data to be copied.



4. Press CrSel. An area the same size as the source area appears in reverse video. Any data already in the target area will be covered over when the copy is done.
5. The following prompt appears:

Source and Target areas are defined. Use the Enter key to copy.

Note: A warning message will appear if the source and target areas overlap.
6. If you are not satisfied with the target area you have defined, go back to step 1 and re-define the target area.
7. If you are satisfied with the target area you have defined, go on to copy the data.

Copying the Data

1. Press Enter to copy the data. The data in the source area appears in the target area.
2. The following prompt appears:

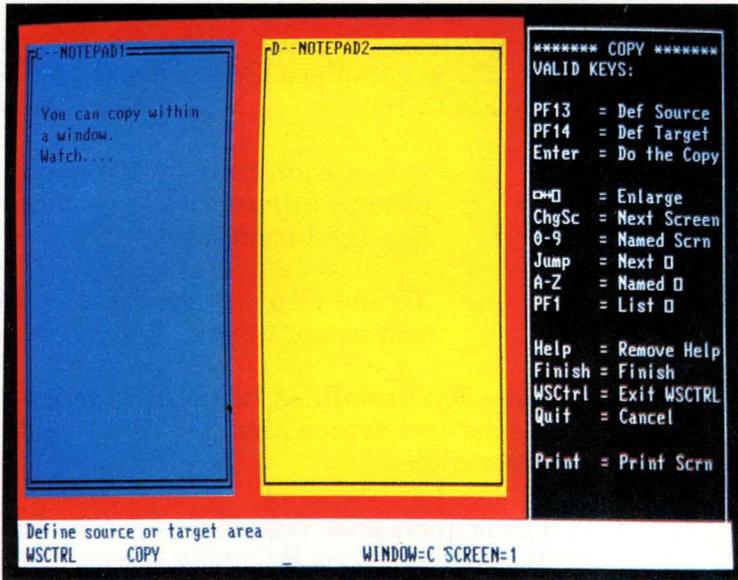
Copy complete. Define Source or Target or press Finish.

- a. If you want to copy the same source data to different targets, simply redefine the target area.
- b. To end Copy, press Finish. This takes you out of Copy.

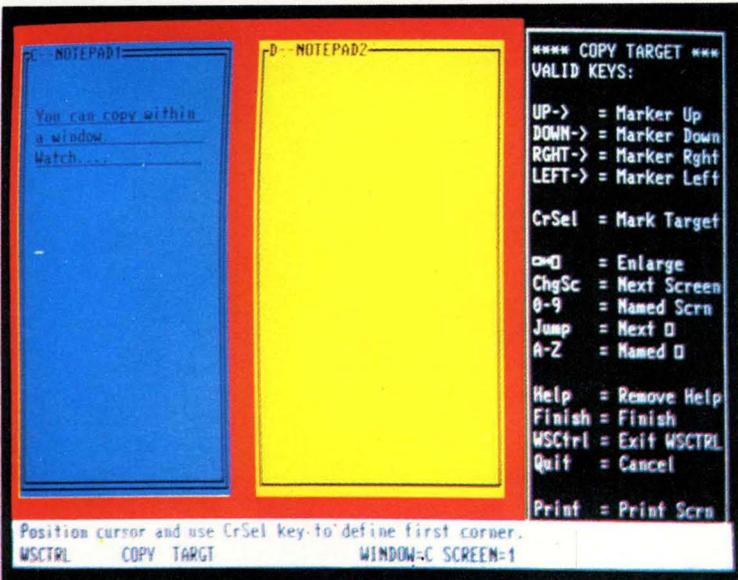
Note: If the defined target area is smaller than the defined source area, the data will be cut off when copied.

The sequence for copying within a window is illustrated on the following pages.

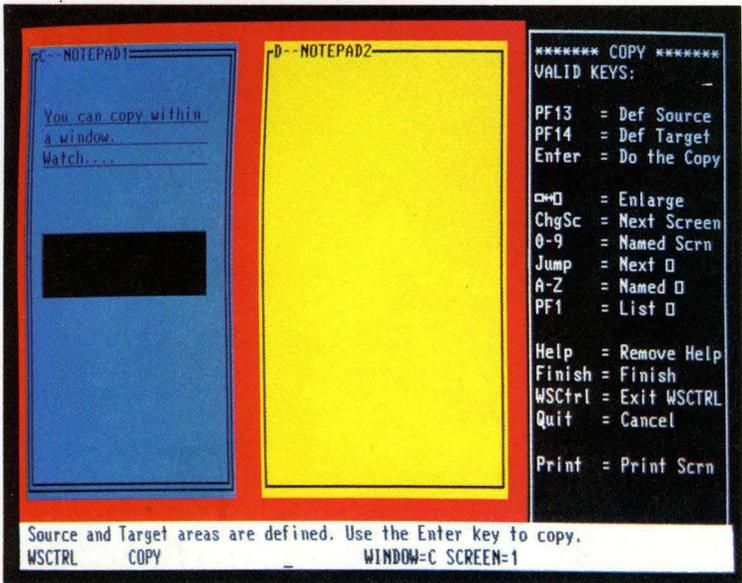
1. Press WS Ctrl
2. Press Copy
3. Press Help



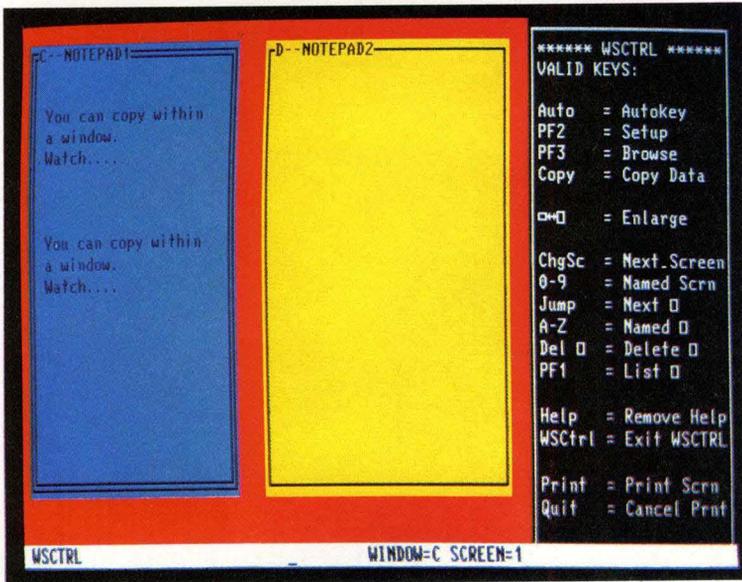
4. Press PF13 (Source key)
5. Define source area



6. Press PF14 (Target key)
7. Define target area using the black cursor movement keys



8. Press Enter



Chapter 10. Autokeying

Contents

Introduction	10-3
Terms You Need to Know	10-3
List.....	10-4
Let's Begin	10-6
Getting Ready to Record Keystrokes	10-8
How to Choose a Recording Name	10-10
Recording Keystrokes	10-11
Host Recording	10-15
Recording Keystrokes in a Personal Computer Session	10-17
Playing a Recording	10-17
Playing a Recording.....	10-20
Canceling a Recording	10-22
Erasing a Recording.....	10-22

Notes:

Introduction

This chapter is for anyone who needs to use the autokey function. With this function you can record frequently used groups of keystrokes. Since you can **play** these keystroke records at a later time, you can reduce keystroking time. Also, you can **pause** and enter **variable** or changeable information within the recording.

When you create a recording, it is saved only for that particular session. You must use the save and restore commands to save and restore a recording permanently. See Chapter 11 for Save and Restore commands.

This chapter describes:

- Terms you need to know
- List
- Record
- Pause
- Play
- Erase
- Finish
- Quit.

Terms You Need to Know

Recording name A unique name that can consist of up to eight alphanumeric characters. It can be fewer than eight characters. It cannot contain blanks.

Variable A quantity that can assume any of a given set of values.

List

You can use List in work station control mode when you are using autokey:

1. Press WS Ctrl
2. Press Auto
3. Press PF1 (List).
4. List appears on your display screen with this information:
 - a. Names of your autokey records
 - b. Lengths of those records
 - c. Amount of space remaining for you to continue to record
5. If you have more record names than are shown in List, you can scroll List. Press the up or down black cursor movement keys. If you press the Home Key, the beginning of List appears on your display screen.

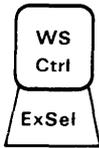
6. You must remove List from your display screen before you use autokey. To do this, press PF1, which is a toggle key.



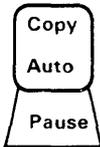
Let's Begin

These are the keys you can use for autokeying in addition to the List key described above. It depends on what function you want to perform. Help is available unless List appears on the display screen.

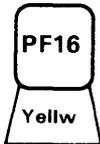
You are in work station control mode:



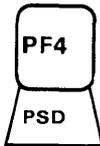
This is the Auto key:



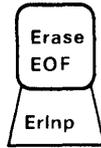
You can begin to record keystrokes as a record with a given name:



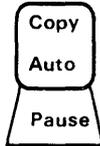
You can play a record:



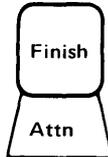
You can delete a record previously made by pressing ErInp:



You can pause the recording to add variable information by pressing Pause:



You can save the recorded keystrokes for this particular session.



You can quit or cancel recording keystrokes or playing keystrokes during the play operation. Keystrokes entered are not saved.

There are a few important points to know. First, you cannot record any key pressed while you are in work station control mode.

Second, you cannot record these keys:

- WS Ctrl
- Enlarge
- AltCr
- ChgSc
- Jump.

Third, you can record an Initial Program Load (IPL) sequence (Alt + Ctrl + Del) only in a personal computer session if you do not have either of these commands in your **autoexec.bat** file:

```
indrstr autokey  
or  
indrstr
```

Fourth, a recording is “attached” to the session in which it started. You cannot change sessions and expect the recording to continue in the newly selected session.

Getting Ready to Record Keystrokes

Perhaps you want to record the first sentence for a form letter and you want the date to be variable information. For example,

Thank you for your letter of January 3. We are happy you approve our new line of sweaters.

This way you do not have to type the entire sentence each time. You can record the sentence, and every time you play the recording you can change the date.

To use autokey:

1. Select the window to which you want to record by typing the window short name or by pressing Jump.
2. Press WS Ctrl.
3. Press Auto.
4. From now on, you are prompted for information. The first prompt says:

Press Play(PF4), Record(PF16), or ErInp key

This means that you need to choose which aspect of autokeying you want to use:

- a. Are you playing previously recorded information?
- b. Are you making a new record?
- c. Are you erasing a record you no longer need?

In this example, you are going to make a new record.

5. Press Record

The operator information area shows that a record name is needed.

How to Choose a Recording Name

What are the guidelines for naming a recording?

1. A recording name can consist of up to eight alphanumeric characters. It can be fewer than eight characters. Helpful hint: To reduce keystroking, you can make the name unique at the beginning of the recording name instead of at the end. For example, you may need recording names to identify memos to three persons: Julie, Kathy, and Marsha. You could name your recordings memojul, memokath, memomars. Then you have to enter those keystrokes every time you want to use your recording. To reduce keystroking, you could use these recording names: jmem, kmem, mmem. Thus, you need only a sufficient number of characters to make the name distinguishable from all other names to make a recording. It may be one character if no other name begins with that character. Or it may be all eight characters if the first seven characters are also used in another name. These few characters are all you need to identify a recording.
2. It cannot contain blanks.
3. Two recordings cannot have the same name.

Recording Keystrokes

You are now ready to record keystrokes.

1. You are prompted for a record name:

Enter a unique name for the recording about to be made

2. Choose a name that is not already in use. Consider using descriptive names so you can recognize their contents by their names.

You can correct any typing errors and make changes by retyping the recording name, but you cannot insert or delete characters while in the operator information area.

3. Type the recording name. In this example, let's use **letter** for the recording name.

letter

4. As soon as you type the first character of the recording name in the operator information area, the following prompt appears:

Press the Enter key when the name is completed

Press Enter.

5. If the recording name is valid, the selected window becomes active and a record indicator (R) appears in the host and notepad operator information areas.

- a. If you are recording in a personal computer session and you want to see the record indicator (R), press Ctrl + WS Ctrl to toggle on the personal computer

session operator information area. If you do this, be aware that you will be recording this keystroking sequence also.

- b. When you play a recording, the operator information area appears because you have recorded that sequence. You can toggle off the operator information area at the end of the recording.
 - c. You have now left work station control mode and the cursor is in the active window.
 - d. If you toggled on the personal computer session operator information area, you have already begun recording keystrokes and can continue to do so.
 - e. If you did not toggle on the operator information area, you are now ready to begin recording keystrokes.
 - f. No other recording session can begin until you end this one.
6. If, by chance, the recording name you entered is identical with one already used, a message appears:

WS004 Duplicate name entered: Choose a unique name

In this case, change the recording name and press Enter. When you press Enter, your cursor moves from the operator information area to the active window.

7. Type the information you want to record, for example:

Thank you for your letter of

8. Press Pause. The Pause indicator (P) appears in the operator information area.

This pause allows you to stop the recording process so that you can insert the variable information; in this case, it is the date when you replay the recording. During the pause, you may type in the date, but it will not be recorded.

When typing in a host window, you can press a key, such as Enter or PA1, that causes you to communicate with the host system. Whenever this occurs, an automatic pause is inserted into the recording without your having to press the Pause key. As soon as the keyboard is unlocked following communication with the host, you may continue typing without pressing the Pause key.

9. Press Pause again to end the pause and to restart the recording process.
10. Now you can type the rest of the sentence:

We are happy you approve our new line of sweaters.

11. Press Finish to end the recording. You must be in application mode to finish any recording. Also, the session in which you are recording must be active.

At this time, the record indicator (R) in the operator information area disappears and the recording is saved under the unique name you chose. Normal keystroking resumes.

Any time during the recording process you can press the Quit key to end recording and **not** save the recorded keystrokes. This function is also available if you are in work station control mode and you pressed Auto while you still had a recording window active. Also, if you are recording

or playing and during the process you press Record (PF4) or Play (PF16), this message appears if the active window has an autokey session in progress:

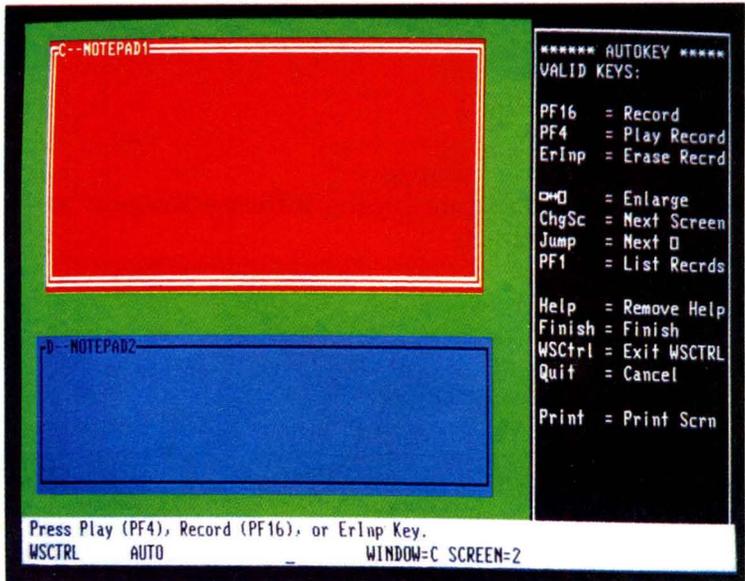
WS012 Cannot Play or Record: Playing or Recording in progress

If an inactive window has an autokey session in progress, this message appears:

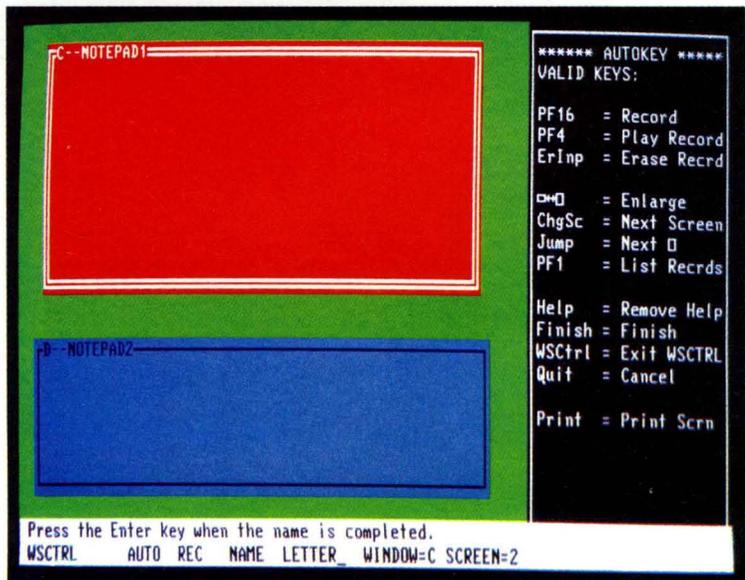
WS038 Cannot begin another recording: Recording in progress

Host Recording

1. Press WS Ctrl
2. Press Auto
3. Press Help



4. Press PF16 (Record key)
5. Type the recording name in the operator information area



6. Press Enter
7. Type the information you want to record:

Thank you for your letter of

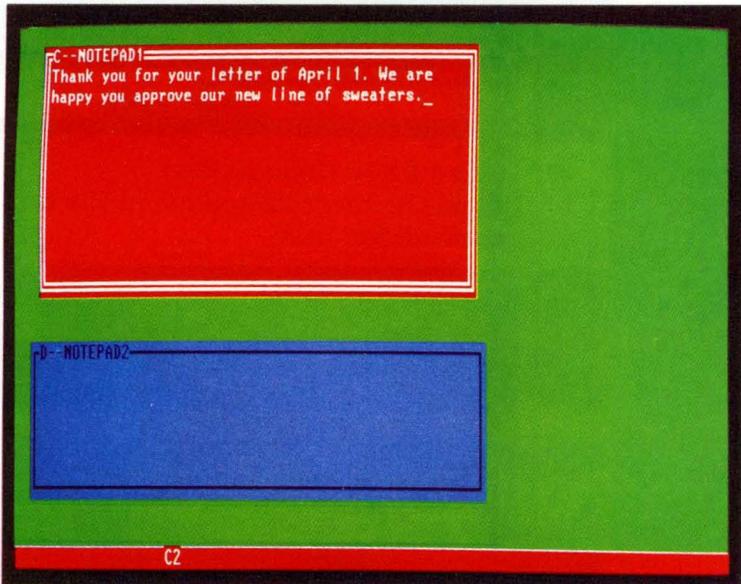
8. Press Pause
9. Type the variable information:

April 1

10. Press Pause
11. Continue typing information you want to record:

We are happy you approve our new line of sweaters

12. Press Finish



Recording Keystrokes in a Personal Computer Session

When you record keystrokes in a personal computer session, please note that pressing a key or a series of keys may result in long processing times. We suggest that when recording your keystrokes, manually press the Pause key two successive times immediately following each command. This prevents losing keystrokes when you play the recording at another time.

Playing a Recording

Now you will learn how to play back an automated keying recording in the same context as when you recorded it.

- Play a notepad autokey recording only in notepad session.
- Play a host autokey recording only in a host session.
- Play a personal computer autokey recording in a personal computer session.

Let's play the recording you just recorded.

1. Make the window active where you want to play the recording.
2. It is important that you position the cursor where you want the recording to begin playing. Keystrokes begin appearing at the cursor position and no other chance is available for you to move the cursor after you enter work station control mode.

3. Press WS Ctrl
4. Press Auto
5. The following prompt appears:

Press Play(PF4), Record(PF16), or ErInp
key

6. Press Play
7. The following prompt appears:

Enter the unique name of the recording to
play

Type the recording name. For our example:
letter

8. As soon as you type the first character of
the recording name in the operator informa-
tion area, the following prompt appears:

Press the Enter key when the name is
completed

9. Press Enter.

If the recording name is valid, the playing of
recorded keystrokes is automatic and acts
just as though it were entered from your
keyboard.

10. If you entered an invalid name, you are
prompted with

WS035 Correct the name and press ENTER

You can either enter the correct recording
name or cancel the attempt to play the auto-
key recording by pressing the Quit key.

11. If you entered a valid recording name, the first part of your recording has been played and appears in your active window. The recording stopped because you placed a pause in the recording. The cursor appears at the position where you want to type the current date. The operator information area contains the indicators P P. This means the system is **playing** your recording and is **pausing**.

Note: When you play a recording with the automatic pause previously inserted into your recording, you get a pause in the same manner as though you pressed the Pause key. When typing in a host window, you can press a key, such as Enter or PA1, that causes you to communicate with the host system. Whenever this occurs, an automatic pause is inserted into the recording without your having to press the Pause key. As soon as the keyboard is unlocked following communication with the host, you may continue typing without pressing the Pause key.

12. Type the variable information, the date, followed by a period. For example:

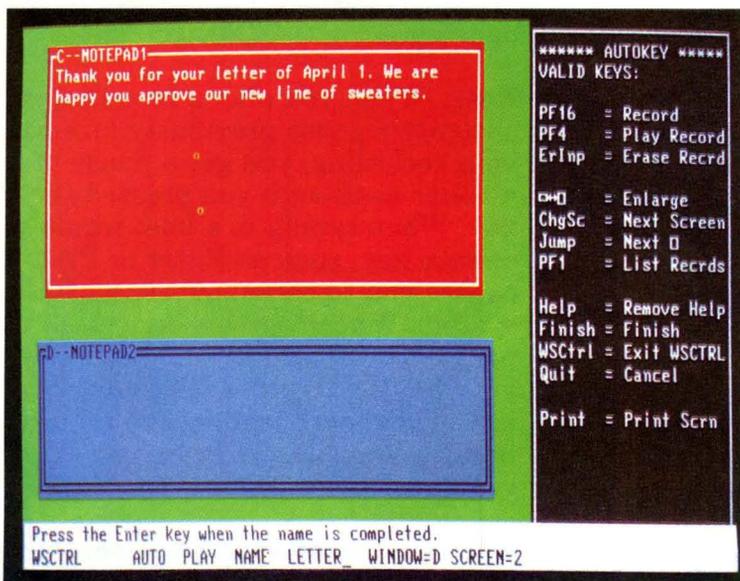
April 1.

13. To resume playing after a recording pause, press Pause.

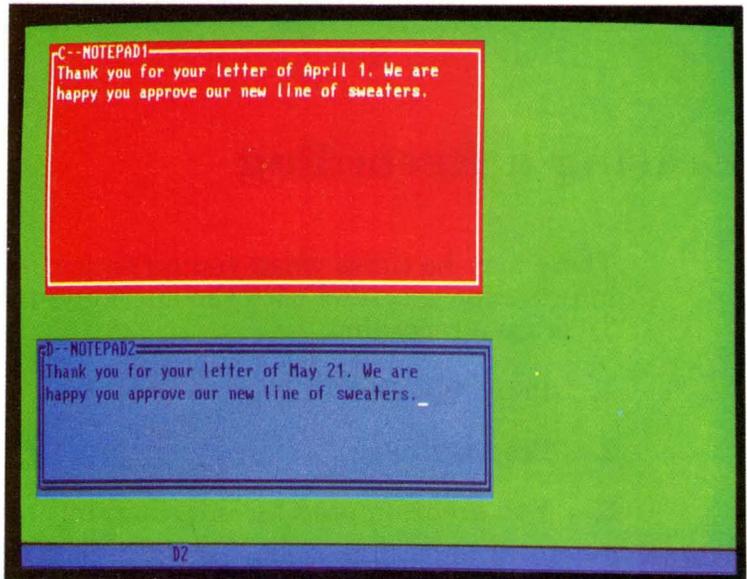
When you finish playing a recording, the auto-key function leaves the active window. You can now resume typing in the active window.

Playing a Recording

1. Make the window active where you want to play the recording
2. Press WS Ctrl
3. Press Auto key
4. Press PF4 (Play key)
5. Type the recording name



6. Press Enter
7. Type in the variable information until the system pauses
8. Press Pause



Canceling a Recording

After you are actually playing a recording, you can cancel it by pressing the Quit key.

Erasing a Recording

There may be times when you no longer need information recorded with the autokey function. To erase a recording:

1. Press WS Ctrl
2. Press Auto
3. You are prompted for information:
Press Play(PF4), Record(PF16), or ErInp key
4. Press ErInp.
5. The cursor is in the operator information area. The following prompt appears:
Enter the unique name of the recording to be deleted
6. Enter the recording name; for our example:
letter
7. Press Enter.
8. If you entered a valid name and the recording was deleted, the following prompt appears:
Erase complete: Press Play(PF4), Record(PF16), or ErInp

The name you entered remains on your display screen for possible reuse.

9. If you choose not to play, record, or delete a recording at this point, you can leave auto-key by pressing Finish.

Chapter 11. Using Save and Restore

Contents

Introduction	11-3
Terms You Need to Know	11-4
How to Save and Restore Screen Profiles.....	11-5
How to Save and Restore Notepads	11-6
How to Save and Restore Autokey Recordings.....	11-7
How to Save and Restore All Screen Profiles, Notepads, and Autokey Recordings.....	11-8
How to Save and Restore Data in User-Named Files	11-9
How to Save and Restore Screen Profiles.....	11-10
How to Save and Restore Notepads	11-11
How to Save and Restore Only One Notepad...	11-12
How to Save and Restore Autokey Recordings ..	11-13
How to Save and Restore All Autokey Record- ings, Notepads, and Screen Profiles	11-14
Note on Notation.....	11-15
Format Used in User-Named File Specifications ...	11-16

Notes:

Introduction

This chapter is for anyone who wants to save autokey recordings, notepad data, and screen profiles, before powering off, and to restore them to the system later. Because the IBM 3270 Personal Computer supports different screen sizes, we recommend you restore information to the same display size that you saved from.

Let us say, for example, that you have recorded your host computer logon procedure with the autokey function. Since this logon procedure is the same every time you use your computer, you can save it, and each time you turn on your work station the recording can be restored for use.

You will also want to save screen profiles. Suppose you are working with a screen profile and need to stop and continue working with it another time. By saving the screen profile, you can restore it to the screen the next time you use your system and pick up where you left off. The screen profile you were last using before saving the screen profiles will be active when you next issue a restore to your system. The other screen profiles will be restored to the system and will appear when those screens are selected. **You must save the updated autokey recordings, screen profiles, and notepads before you power off or you will lose this information.**

Save and Restore can be used only while a personal computer window is active and the DOS command prompt, for example, A>, is on the screen. Your cursor must be in the personal computer window, and the window will be double-bordered.

When using the Save and Restore commands, you can enter them in any combination of uppercase and lowercase characters. If you are not familiar with IBM Personal Computer file

naming procedures or notation, refer to the end of this chapter for a description of the formats and parameters used in the Save and Restore commands.

After you have become familiar with Save and Restore commands, you may want to refer to Appendix F to learn how to use command procedures to simplify multiple save and restore operations, or to provide automatic restores when your system is initialized.

Note: When issuing a Save and Restore request, make sure that the correct diskette is in the disk drive specified (or in the default drive if no drive is specified). If any of the DOS device error messages are issued, such as “Diskette is write protected,” **do not change diskettes**. If the diskettes are changed, DOS does not guarantee the validity of the diskette directory and the diskette may no longer be readable. For more information, refer to your DOS manual.

Terms You Need to Know

- | | |
|----------------|--|
| Restore | The work station function that allows you to move autokey recordings, notepad information, and/or screen profiles from personal computer diskette or fixed disk storage to work station temporary storage. |
| Save | The work station function that allows you to move autokey recordings, notepad information, and/or screen profiles from work station temporary storage to personal computer diskette or fixed disk storage. |

How to Save and Restore Screen Profiles

To save screen profiles:

1. When you see the DOS prompt, type
`INDSAVE SCREEN`
2. Press Enter.

To restore screen profiles:

1. When you see the DOS prompt, type
`INDRSTR SCREEN`
2. Press Enter.

Note: This only saves screen profiles, not the contents of the windows. When you restore the screen profiles, the windows will contain the data that was in the window when the restore was issued.

How to Save and Restore Notepads

To save all notepads configured in your system:

1. When you see the DOS prompt, type
INDSAVE NOTEPAD
2. Press Enter.

To restore all notepads:

1. When you see the DOS prompt, type
INDRSTR NOTEPAD
2. Press Enter.

If you have more than one notepad and only want to save one, see “How to Save and Restore Only One Notepad,” later in this chapter.

Notes:

1. Saving a notepad saves only the contents of the notepad window; therefore, when you restore the notepad, the **contents** of the notepad window are restored while the notepad window stays as it is currently defined. For example, if you saved a notepad that has red text on a blue background and later restored the notepad to a notepad window with green text on a black background, the restored notepad will take on the green-on-black color characteristics. To save the original color characteristics of the notepad, use the screen option.
2. The first 20 bytes of the notepad data are reserved for use by Save and Restore commands.

How to Save and Restore Autokey Recordings

To save all autokey recordings:

1. When you see the DOS prompt, type
`INDSAVE AUTOKEY`
2. Press Enter.

To restore all autokey recordings:

1. When you see the DOS prompt, type
`INDRSTR AUTOKEY`
2. Press Enter.

Note: You can record an Initial Program Load (IPL) sequence in the personal computer session only if you do not have either one of the following commands in your autoexec.bat file:

`INDRSTR`

or

`INDRSTR AUTOKEY`

How to Save and Restore All Screen Profiles, Notepads, and Autokey Recordings

To save all the autokey recordings, notepad data, and screen profiles of the system at the same time:

1. When you see the DOS prompt, type

INDSAVE

2. Press Enter.

To restore all the autokey recordings, notepad data, and screen profiles of the system at the same time:

1. When you see the DOS prompt, type

INDRSTR

2. Press Enter.

Note: When you use the Save command this way (without any parameter), it saves the content of the notepads, autokey recordings, and screen profiles. When you issue the Restore command, all windows will be restored to the sizings that existed when the save was done: the contents of the notepads will be restored. The contents of the host sessions are never saved or restored.

How to Save and Restore Data in User-Named Files

Refer to “Note on Notation” at the back of this chapter to explain the following command formats and parameters.

There are four default files in your system in which data is saved:

- **INDSAVE.REC:** This file contains the three default filenames listed directly below.
- **INDSAVE.AUT:** This file contains the saved autokey data.
- **INDSAVE.NOT:** This file contains the saved notepads.
- **INDSAVE.SCR:** This file contains the saved screen profiles.

You may replace the default filenames in **INDSAVE.REC** with your own filenames. The three filenames in **INDSAVE.REC** indicate where the saved data will be placed. Each file specification in your replacement for **INDSAVE.REC** must be separated from the next by a blank space, for example:

```
INDSAVE.AUT INDSAVE.NOT  
INDSAVE.SCR ← insert a blank space here
```

There must also be a blank space after **INDSAVE.SCR**. The filenames must be in this specified order: autokey recordings (**INDSAVE.AUT**), notepad data (**INDSAVE.NOT**), and screen profiles (**INDSAVE.SCR**).

How to Save and Restore Screen Profiles

To save screen profiles in a user-named file, rather than using the default files:

1. When you see the DOS prompt, type

```
INDSAVE SCREEN [d:] [path:]  
filename[.ext]
```

2. Press Enter.

To restore all screen profiles from the file specification of your choice:

1. When you see the DOS prompt, type

```
INDRSTR SCREEN [d:] [path]  
filename[.ext]
```

2. Press Enter.

How to Save and Restore Notepads

To save all notepads configured in your system in a user-named save file:

1. When you see the DOS prompt, type

```
INDSAVE NOTEPAD [d:] [path]
filename[.ext]
```

2. Press Enter.

To restore all notepads configured in your system in a user-named save file:

1. When you see the DOS prompt, type

```
INDRSTR NOTEPAD [d:] [path]
filename[.ext]
```

2. Press Enter.

How to Save and Restore Only One Notepad

To save and restore only one notepad, use the *NOTEPADn* format, where *n* is replaced by the short name of the notepad you want to save or restore.

To save one of the notepads:

1. When you see the DOS prompt, type

```
INDSAVE NOTEPADn [d:] [path]  
filename[.ext]
```

2. Press Enter.

To restore this single notepad:

1. When you see the DOS prompt, type

```
INDRSTR NOTEPADn [d:] [path]  
filename[.ext]
```

2. Press Enter.

How to Save and Restore Autokey Recordings

To save the autokey recordings in a user-named save file:

1. When you see the DOS prompt, type

```
INDSAVE AUTOKEY [d:] [path]  
filename[.ext]
```

2. Press Enter.

To restore these autokey recordings:

1. When you see the DOS prompt, type

```
INDRSTR AUTOKEY [d:] [path]  
filename[.ext]
```

2. Press Enter.

How to Save and Restore All Autokey Recordings, Notepads, and Screen Profiles

To save all the autokey recordings, notepads, and screen profiles in the user-named save files:

1. When you see the DOS prompt, type

```
INDSAVE [d:] [path]  
filename[.ext]
```

2. Press Enter.

To restore all autokey recordings, notepads, and screen profiles:

1. When you see the DOS prompt, type

```
INDRSTR [d:] [path]  
filename[.ext]
```

2. Press Enter.

Note on Notation

The following notation is used throughout this chapter:

- **Uppercase Characters**

Words shown in capital letters indicate a **keyword** parameter. You can type keywords in any combination of uppercase and lowercase characters; however, you must spell the word exactly as shown.

INDSAVE NOTEPAD

- **Italics**

Italics indicate the **kind** of information, rather than the exact information, that must be supplied, for example:

INDSAVE [*d:*] [*path*]
filename[.ext]

The actual entry replaces the italic description. You can type the correct entry using any combination of uppercase and lowercase letters.

- **Brackets []**

Brackets indicate an optional parameter. This includes any accompanying commas, colons, or periods.

INDRSTR [*d:*] [*path*]
filename[.ext]

If you want to include optional information, you must type only the information inside the brackets, not the brackets.

Format Used in User-Named File Specifications

d:

The personal computer disk drive specifier, for example, A:. If not specified, the system will use the default drive.

path

The optional personal computer DOS directory search order that sets the command search path through directories. (Refer to "Specifying the Path to a File", in your IBM Personal Computer *Disk Operating System* manual for further information.)

filename

A required positional parameter; the personal computer filename.

.ext

The personal computer file extension. It is an optional part of the personal computer filespec. An extension starts with a period, has one, two, or three characters, and follows immediately after the filename. An extension of more than three characters will be truncated to the first three characters entered. For example:

82PRICES.AUG

where .AUG is the extension.

Refer to the IBM Personal Computer *Disk Operating System* manual for further information on these parameters.

Chapter 12. Printing

Contents

Introduction	12-3
Terms You Need to Know	12-3
Printing on the IBM 3270 Personal Computer-Supported Locally Attached Printer	12-4
Printing What Is on the Screen	12-4
Printing a Window	12-5
Printing the Personal Computer Session.....	12-6
Printing on the 3274-Attached Printer.....	12-7
Printing the Host Session (Local Copy).....	12-7
Display/Printer Compatibility	12-8
Programmed Symbol (PS) Considerations.....	12-8
Color Printing	12-8
Extended Highlighting.....	12-8
Graphics Color Printing	12-8

Notes:

Introduction

This chapter is for anyone who wants to print data on an IBM 3270 Personal Computer-supported locally attached printer or on a printer attached to your IBM 3274 Control Unit.

The IBM 3270 Personal Computer allows you to print two ways:

- With an IBM 3270 Personal Computer-supported locally attached printer that is attached to your system unit by a cable, you may print data from:
 - Personal computer windows
 - Host windows
 - Notepad windows
- With the printer attached to your 3274 Control Unit, you may print data from:
 - Host windows.

Terms You Need to Know

Print	Making a hardcopy on either an IBM 3270 Personal Computer-supported locally attached printer or a 3274-attached printer.
--------------	--

Printing on the IBM 3270 Personal Computer-Supported Locally Attached Printer

Printing What Is on the Screen

If you want to print what is on your screen onto your IBM 3270 Personal Computer-supported locally attached printer:

1. Press WS Ctrl.

You are now in work station control mode.

2. Press Print.

Please note the following:

- The system prints what is on the screen, whether it is an enlarged personal computer window, host window, notepad window, or any combination of windows except for characters not supported by the graphics printer.
- The borders around the windows on your screen are also printed.
- The work station control operator information area (OIA) is not printed.

To cancel the printing, press Quit.

Printing a Window

In work station control mode, you can print the following sessions on your IBM 3270 Personal Computer-supported locally attached printer:

- host
- notepad
- personal computer.

To do this:

1. Select the window
2. Enlarge it
3. Press Print.

To cancel the printing, press Quit.

Note: The Print key is inactive in both host and notepad sessions. To print a host or notepad session, you must be in work station control mode, as described above.

Printing the Personal Computer Session

This procedure prints the entire presentation space, not just what is within the window borders. The output goes to the IBM 3270 Personal Computer-supported locally attached printer.

1. In application mode, the personal computer window must be active.
2. Press Shift + Print. (The Print key is equivalent to the PrtSc key of an IBM Personal Computer.)

To cancel the printing, press Quit.

Note: While in a personal computer session, you **should not** use the Print spool facility. See Appendix G for more information.

Printing on the 3274-Attached Printer

Printing the Host Session (Local Copy)

This procedure prints the entire presentation space. For further information on local copy procedures, see the *IBM 3278 Display Station Operator's Guide*, GA27-2890.

1. In application mode, the host window must be selected.
2. Press Print. (The Print key is equivalent to the $\square\square$ of a 3270 host terminal.)

Note that if your presentation space is wider than the column width of your printer, the data wraps to the next line.

To cancel the printing, press **Quit before printing starts**. This function is equivalent to that of the DEV CNCL (Device Cancel) key on the 3278/3279.

Display/Printer Compatibility

Programmed Symbol (PS) Considerations

If your printer does not have the ability to print programmed symbol characters as displayed on your screen, it substitutes the unprintable characters with ones existing in its character set. Therefore, your printed data may have a mixed appearance, with some data matching displayed data and some not matching the displayed data.

Color Printing

- White characters are printed as black
- All other colors are supported
- Only foreground color is printed

Extended Highlighting

If the display specifies a particular form of highlighting not supported by the printer, the data is printed with defaults defined in the printer.

Graphics Color Printing

When you use the Personal Computer printer to print a color graphics application, the colors may not print as displayed on your screen. See Appendix G for further information.

Chapter 13. Transferring Files

Contents

Introduction	13-3
Terms You Need to Know	13-4
Format Notation for the Send and Receive Commands	13-5
How to Transfer a File	13-6
VM/CMS Send Command	13-8
Example	13-12
Additional Information	13-12
VM/CMS Receive Command	13-13
Example	13-16
Additional Information	13-17
TSO Send Command	13-18
Example	13-23
Additional Information	13-24
TSO Receive Command	13-25
Example	13-28
Additional Information	13-29

Notes:

Introduction

This chapter is for anyone who wants to transfer files between a host virtual machine/conversational monitor system (VM/CMS) or time sharing options (TSO) session and the personal computer session.

File transfer allows you to send and receive files between a personal computer session and a host VM/CMS or TSO session. If modifications to the ASCII to EBCDIC and/or EBCDIC to ASCII translation tables are required, refer to the *IBM 3270 Personal Computer Introduction and Preinstallation Planning* manual, GA23-0179, or the Program Directory for the IBM host-supported file transfer program. The IBM host-supported file transfer program, No. 5664-281 for VM/CMS or 5665-311 for TSO, must be installed at your host site. You can verify that you have the host file transfer program by checking the name **IND\$FILE MODULE**. This chapter will show you what commands you need to transfer files between the personal computer session and VM/CMS, and how to transfer data sets between the personal computer session and TSO, with examples of their use.

On this system, **Send** and **Receive** commands are used to transfer information between sessions.

- When you **send** a file, a copy of the file goes from the personal computer diskette or fixed disk you specify to the host session disk you specify.
- When you **Receive** a file, a copy of the file goes from the host session disk you specify

to the personal computer session diskette or fixed disk you specify. **Your personal computer DOS session must always be active to start sending files to the host or receiving files from the host.**

After you have become familiar with the Send and Receive commands, you may want to refer to Appendix F to learn how to use command procedures to simplify the transfer of multiple files.

Error messages for various error conditions are listed and explained in Appendix E.

Note: Batch files (with the extension *BAT*) can be used to change any of the default parameters in file transfer. For additional information, see the boxed note under “How to Transfer a File” later in this chapter.

Terms You Need to Know

- | | |
|----------------|---|
| Receive | One of the two commands involved in file transfer. When you receive a file, a copy of the file goes from the host session to the personal computer session. |
| Send | One of the two commands involved in file transfer. When you send a file, a copy of the file goes from your personal computer session to a host session. |

Format Notation for the Send and Receive Commands

Examples of the formats of the VM/CMS Send and Receive commands are given below. The notation that follows is used to show how the Send and Receive commands should be formatted.

```
[a:]SEND [d:][path]filename[.ext] [id:]fn ft [fm] [(options)
```

```
[a:]RECEIVE [d:][path]filename[.ext] [id:]fn ft [fm] [(options)
```

- **Uppercase Characters**

Words shown in capital letters indicate a **keyword** parameter. You can type keywords in any combination of uppercase and lowercase characters; however, you must spell the word exactly as shown.

- **Italics**

Italics characters indicate the **kind** of information, rather than the exact information, that must be supplied. The actual entry replaces the italic description. You can type the correct entry in any combination of uppercase and lowercase letters.

- **Brackets []**

Brackets indicate an optional parameter. This includes any accompanying commas or equals signs. If you want to include optional information, you must type only the information **inside** the brackets, not the brackets.

- **OR-sign**

The OR-sign indicates a choice of parameters. If a group of options is shown and the individual options are separated by OR-signs, one of the options in the group can be chosen. If none of these options is used, the default value is used. You must not type the OR-sign.

- **Commas and Parentheses**

Commas and parentheses must be entered as shown. When they appear within brackets, they are optional and are to be used only if the accompanying option is used.

How to Transfer a File

To transfer files, you must establish both a host session and a personal computer session. We recommend you do not have any applications running in a host session concurrently while performing file transfer except for FULIST. You must set messages off while performing a Send or Receive.

1. Activate a host session window and establish a host VM/CMS or TSO session. (This must be the session you want to transfer data to or from.)
2. Activate your personal computer session. The IBM 3270 Personal Computer file transfer commands must be issued from the personal computer session, regardless of whether you're sending or receiving a file.

3. To transfer a file from the personal computer to the host, enter the IBM 3270 Personal Computer VM/CMS or TSO file transfer Send command.
4. To transfer a file from the host to the personal computer, enter the IBM 3270 Personal Computer VM/CMS or TSO file transfer Receive command. These commands are described on the following pages.
5. To cancel file transfer while it is in progress, press Ctrl + Break. After a brief delay, the Send or Receive command will be canceled. If the host file transfer has begun to run, it will also be canceled. If you wish, you may begin another Send or Receive.

Note: As a precaution, when sending or receiving a file to **replace** an existing file, use a different temporary name for the file to be replaced. When file transfer has succeeded, erase the previous version of the file and rename the temporary file. This will prevent loss of part of your original file if the file transfer malfunctions. If the file transfer does fail, you should erase the file with the temporary name. If the file transfer does not complete its process as it should, start over from the beginning and reenter the command.

When sending or receiving a file to **append** an existing file, copy the file, using a temporary name, and transfer the file to the temporary file. If the file transfer fails, the original file is still intact and the process can be repeated for the next attempt. If the file transfer succeeds, you can erase the original, unappended file and rename the new, appended file with the original file name. A batch file to change the default on the file transfer Receive command from REPlace to APPend is shown below:

Type:

```
a:receive %01 %02 %03 %04 %05 %06 %07 %08 %09 append
```

VM/CMS Send Command

To transfer files from your personal computer session to a VM/CMS host session, switch to your personal computer session and type:

```
[a:]SEND [d:][path]filename[.ext] [id:]fn ft [fm] [(options)]
```

Where:

a:

Is the diskette drive where the diskette with the file transfer commands resides. Required only if the Send command is not in the default drive, for example, A:, B:, C:, or D:.

SEND

Is the required command name that sends a file from the personal computer session to a host session.

d:

Is the personal computer diskette drive specifier for the personal computer file to be transferred, for example, A:. If not specified, the system will use the default drive. (Refer to the IBM Personal Computer *Disk Operating System* manual for further information.)

path

Is the optional personal computer DOS directory search order that sets the command search path through directories. (Refer to "Specifying the Path to a File" in your IBM Personal Computer *Disk Operating System* manual for further information.)

filename

Is a required positional parameter, the personal computer filename. The filename can be from one to eight characters in length. (Refer to the IBM Personal Computer *Disk Operating System* manual for further information.)

.ext

Is the personal computer file extension. It is an optional part of the personal computer filespec **unless the personal computer filename involved in the transfer has an extension.** (Refer to the IBM Personal Computer *Disk Operating System* manual for further information.) An extension starts with a period, has one, two, or three characters, and follows immediately after the filename. For example:

82PRICES.AUG

where **.AUG** is the extension.

There must be no spaces between disk drive, path, filename, and extension.

id:

Is specified if you have more than one host session in the system and want to transfer a file to one of the host sessions. Although this variable is optional, you will want to specify it if you have more than one host session configured in the system. If you don't specify **id:** and have more than one host session, the file transfer operation will be directed to the first host session configured in your system. The **id** of this first host session is not necessarily the first in alphabetic order. **There must be no spaces between id and fn.**

fn

Is a required positional parameter, the VM/CMS file name. The filename can be from one to eight characters in length.

ft

Is a required positional parameter, the VM/CMS file type.

fm

Is an optional positional parameter, the VM/CMS file mode. If omitted, the default is A1.

Options

(

Is required if specifying any of the following options:

APPEND

Allows you to attach a personal computer file to the end of a host file. The APPEND parameter overrides any other values for LRECL and RECFM. If APPEND is not specified when the filenames are the same, the personal computer file being transferred will replace the existing host file.

ASCII

Specifies, when a file is stored on the personal computer storage medium in ASCII form, that the file is to be converted to EBCDIC during the transfer for processing on the host. **When sending text files to the host, you should always specify the ASCII parameter. This allows the file to be readable when on the host.**

CRLF

Specifies whether carriage return/line feed characters are recognized as record separators and deleted before storing on the host storage medium. **When sending text files to the host, it is recommended that you always specify the CRLF parameter. This allows the file to be readable when on the host.**

LRECL n

Specifies the logical record length of the host file, where **n** is the number of characters in each record. If LRECL is omitted, the default value is 80 for new files. If you are replacing a file, the default is the characteristics of the existing file. If you are appending a file, RECFM is ignored. When working with variable-length records, **n** is the maximum size the host will accept. If, however, you don't send a record of the maximum size, the LRECL will become the longest record actually sent.

RECFM F|V

Specifies the record format and characteristics of the host file. It is followed by one of the following characters:

F

Specifies that the file contains fixed-length records.

V

Specifies that the file contains variable-length records.

For new files, if RECFM is omitted, the default is **F** except when the CRLF option is specified. **V** is then the default.

Example

Let us say that you want to transfer a file containing a list of prices for several paper vendors, called PRICELST.BAS, from your personal computer session to a host VM/CMS session.

1. After you are in the personal computer session, type the command:

```
send a:pricelst.bas r:pricelst basic a1 (ascii crlf recfm f
```

(Note that the PATH parameter was not specified in this example.)

A copy of PRICELST.BAS, on a diskette in diskette drive A of your system unit, is sent (SEND A;) to the host session R:, the short name for the window identification, where it is renamed PRICELST BASIC A1. The ASCII file is converted to EBCDIC for processing on the host (ASCII); the carriage return/line feed characters are recognized as the end of a record and then deleted (CRLF). The file has a **fixed-length record format (RECFM F)**.

Remember, you can enter the command in any combination of uppercase and lowercase characters.

Additional Information

If you need additional information about the VM/CMS or DOS parameters, have these books available for reference:

- *VM/370 CMS User's Guide*, GC20-1819
- *IBM Virtual Machine Facility/370: CMS Command and Macro Reference*, GC20-1818
- *IBM Personal Computer Disk Operating System* manual

VM/CMS Receive Command

To transfer files from a VM/CMS host session to your personal computer session, switch to your personal computer session and type:

```
[a:]RECEIVE [d:][path]filename[.ext] [id:]fn ft [fm] [(options)]
```

Where:

a:

Is the diskette drive where the diskette with the file transfer commands resides. Required only if the Send command is not in the default drive, for example, A:, B:, C:, or D:.

RECEIVE

Is the required command name where the personal computer session receives a file from a host session.

d:

Is the personal computer diskette drive specifier for the personal computer file to be transferred, for example, A:. If not specified, the system will use the default drive. (Refer to the IBM Personal Computer *Disk Operating System* manual for further information.)

path

Is the optional personal computer DOS directory search order that sets the command search path through directories. (Refer to "Specifying the Path to a File" in your IBM Personal Computer *Disk Operating System* manual for further information.)

filename

Is a required positional parameter, the personal computer file name. The filename can be from one to eight characters in length. (Refer to the IBM Personal Computer *Disk Operating System* manual for further information.)

.ext

Is the personal computer file extension. It is an optional part of the personal computer filespec **unless the personal computer filename involved in the transfer has an extension.** (Refer to the IBM Personal Computer *Disk Operating System* manual for further information.) An extension starts with a period, has one, two, or three characters, and follows immediately after the filename. For example,

82PRICES.AUG

where .AUG is the extension.

There must be no spaces between disk drive, path, filename, and extension.

id:

Is specified if you have more than one host session in the system and want to transfer a file to one of the host sessions. Although this variable is optional, you will want to specify it if you have more than one host session configured in the system. If you don't specify **id:** and have more than one host session, the file transfer operation will be directed to the first host session configured in your system. The **id** of this first host session is not necessarily the first in alphabetic order. **There must be no spaces between id and fn.**

fn

Is a required positional parameter, the VM/CMS file name. The filename can be from one to eight characters in length.

ft

Is a required positional parameter, the VM/CMS file type.

fm

Is an optional positional parameter, the VM/CMS file mode. If omitted, the default is A1.

Options

(

Is required if specifying any of the following options:

ASCII

Specifies that the file should be stored on the personal computer storage medium in ASCII form.

CRLF

Specifies whether carriage return/line feed characters should be inserted as the last two characters of each line when a file is stored on the personal computer storage medium.

APPEND

Allows you to attach a file to the end of a personal computer file. If APPEND is not specified when the file names are the same, the host file being transferred will replace the existing personal computer file.

Example

We will assume that you are finished working with PRICELST BASIC in your host session and want to send the updated version from the host session back to the personal computer session.

1. After you are in the personal computer session, type the command:

```
receive b:pricelst.bas r:pricelst basic a1 (ascii crlf
```

(Note that the PATH parameter was not specified in this example.)

A copy of PRICELST.BASIC is sent to the diskette now in diskette drive B of your system unit (RECEIVE B:), from the host session R:, the short name for the window identification, where it replaces the previous file named PRICELST.BAS. (If you do not want to lose your original file, use another name in place of PRICELST.BAS.) The file is stored with carriage return/line feed characters (CRLF). The file will be stored on the personal computer storage medium in ASCII form.

Remember, you can enter the command in any combination of uppercase and lowercase characters.

Additional Information

If you need additional information about the VM/CMS or DOS parameters, have these books available for reference:

- *VM/370 CMS User's Guide*, GC20-1819
- *IBM Virtual Machine Facility/370: CMS Command and Macro Reference*, GC20-1818
- *IBM Personal Computer Disk Operating System manual*

TSO Send Command

To transfer files from your personal computer session to a TSO host session, switch to your personal computer session and type:

```
[a:]SEND [d:][path].filename[.ext] [id:]data set name[(member name)][/password] [options]
```

Where:

a:

Is the diskette drive where the diskette with the file transfer commands resides. Required only if the Send command is not in the default drive.

SEND

Is the required command name that sends a file from the personal computer session to a host session.

d:

Is the personal computer diskette drive specifier for the personal computer file to be transferred, for example, A:. If not specified, the system will use the default drive. (Refer to the IBM Personal Computer *Disk Operating System* manual for further information.)

path

Is the optional personal computer DOS directory search order that sets the command search path through directories. (Refer to “Specifying the Path to a File” in your IBM Personal Computer *Disk Operating System* manual for further information.)

filename

Is a required positional parameter, the personal computer file name. The filename can be from one to eight characters in length. (Refer to the IBM Personal Computer *Disk Operating System* manual for further information.)

.ext

Is the personal computer file extension. It is an optional part of the personal computer filespec **unless the personal computer filename involved in the transfer has an extension.** (Refer to the IBM Personal Computer *Disk Operating System* manual for further information.) An extension starts with a period, has one, two, or three characters, and follows immediately after the filename. For example:

82PRICES.AUG

where **.AUG** is the extension.

There must be no spaces between disk drive, path, filename, and extension.

id:

Specified if you have more than one host session in the system and want to transfer a file to one of the host sessions. Although this variable is optional, you will want to specify it if you have more than one host session configured in the system. If you don't specify **id:** and have more than one host session, the file transfer operation will be directed to the first host session configured in your system. The **id** of this first host session is not necessarily the first in alphabetic order. **There must be no spaces between id and data set name.**

data set name

Is a required positional parameter, the TSO data set name. Quotation marks may surround the combined data set name and the member name to show that the userid is not prefixed. (Refer to the IBM *OS/VS2 Command Language Reference*, GC28-0646, for further information.)

(member name)

Is the name of one of the members in the directory of a partitioned data set. The data set must exist.

/password

Is required if password-protection has been specified for your TSO data set.

Options:

ASCII

Specifies that the data set is stored on the personal computer medium in ASCII form. It has to be converted to EBCDIC during the transfer to the host storage medium for processing on the host. When sending text files to the host, you should always specify the ASCII parameter. This allows the file to be readable when on the host.

CRLF

Specifies whether carriage return/line feed characters are recognized as record separators and deleted before storing on the host. When sending text files to the host, you should always specify the CRLF parameter. This allows the file to be readable when on the host.

APPEND

Allows you to attach a personal computer file to the end of a host data set. APPEND may not be specified for members of a partitioned data set. The APPEND parameter overrides any other values for LRECL and RECFM.

LRECL(n)

Specifies the logical record length of the host data set, where **n** is the number of characters in each record. If LRECL is omitted, the default value is 80 for new files. If you are either appending or replacing records, LRECL is ignored.

BLKSIZE(n)

Specifies the block size of the host data set, where **n** is the length in bytes of a data block. If **BLKSIZE** is omitted, the default is **LRECL** for new files. If you are appending or replacing a file, **BLKSIZE** is ignored.

RECFM(F|V|U)

Specifies the record format and characteristics of the data set. It is followed by a combination of the following characters:

F

Specifies that the data set contains fixed-length records.

V

Specifies that the data set contains variable-length records.

U

Specifies that the data set contains undefined-length records.

For new data sets, the default is **F** except when the **CRLF** option is specified. **V** is then the default.

SPACE(quantity[,increment]) AVBLOCK(value) TRACKS CYLINDERS

Specifies the amount of space to be allocated for a new data set. If **SPACE** is used, you may use one of the three options, - **AVBLOCK(value)**, **TRACKS**, or **CYLINDERS** - to specify the units used for quantity and increment. If none of these options is specified, the system defaults to the value of **BLKSIZE**.

Example

Suppose you want to transfer a physical-sequential data set called **DATA.BAS** from the personal computer session to a host TSO session.

1. If you are not already in a personal computer session, press **WS Ctrl** and select your personal computer session.
2. After you are in the personal computer session, type the command:

```
send b:data.bas r:data.basic/protects lrecl(132) recfm(f) space(20,10) tracks
```

(Note that no **PATH** parameter was specified in this example.)

A copy of **DATA.BAS**, on a diskette in diskette drive **B** of your system unit, is sent to the host session **R:**, the short name for the window identification, (**SEND B:**), where it is renamed **DATA BASIC**. The data set is password-protected on the host (**/PROTECTS**). The **logical record length (LRECL)** has been set at **132**, rather than being allowed to default to 80. The data set has a **fixed-length record format (RECFM F)**, and **20 TRACKS**, increased by 10, have been allotted. (Note that not every option has been specified.)

If **DATA.BAS** is a partitioned data set, an example of the format of the Send command is:

```
send b:data.bas r:data.basic(tax1982)
```

Note that neither password nor options were specified in this example and that a member name, **TAX1982**, is included.

Remember, you can enter the command in any combination of uppercase and lowercase characters.

Additional Information

If you need additional information about the TSO or DOS parameters, have these books available for reference:

- *IBM OS/VS2 TSO Command Language Reference*, GC28-0646
- *IBM OS/VS2 TSO Terminal Users Guide*, GC28-0645
- *IBM Personal Computer Disk Operating System* manual

TSO Receive Command

To transfer data sets from a TSO host session to your personal computer session, switch to your personal computer session and type:

```
[a:]RECEIVE [d:][path]filename[.ext] [id:]data set name[(member name)][/password] [options]
```

Where:

a:

Is the diskette drive where the diskette with the file transfer commands resides. Required only if the Send command is not in the default drive, for example, A:, B:, C:, or D:.

RECEIVE

Is the required command name where the personal computer session receives a data set from the host session.

d:

Is the personal computer diskette drive specifier for the personal computer file to be transferred, for example, A:. If not specified, the system will use the default drive. (Refer to the IBM Personal Computer *Disk Operating System* manual for further information.)

path

Is the optional personal computer DOS directory search order that sets the command search path through directories. (Refer to "Specifying the Path to a File" in your IBM Personal Computer *Disk Operating System* manual for further information.)

filename

Is a required positional parameter, the personal computer file name. The filename can be from one to eight characters in length. (Refer to the IBM Personal Computer *Disk Operating System* manual for further information.)

.ext

Is the personal computer file extension. It is an optional part of the personal computer filespec **unless the personal computer filename involved in the transfer has an extension.** (Refer to the IBM Personal Computer *Disk Operating System* manual for further information.) An extension starts with a period, has one, two, or three characters, and follows immediately after the filename. For example:

82PRICES.AUG

where **.AUG** is the extension.

There must be no spaces between disk drive, path, filename, and extension.

id:

Is specified if you have more than one host session in the system and want to transfer a file to one of the host sessions. Although this variable is optional, you will want to specify it if you have more than one host session configured in the system. If you don't specify **id:** and have more than one host session, the file transfer operation will be directed to the first host session configured in your system. The **id** of this first host session is not necessarily the first in alphabetic order. **There must be no spaces between id and data set name.**

data set name

Is a required positional parameter, the TSO data set name. Quotation marks may surround the combined data set name and the member name to show that the userid is not prefixed. (Refer to the *IBM OS/VS2 Command Language Reference*, GC28-0646, for further information.)

(member name)

Is the name of one of the members in the directory of a partitioned data set. The data set must exist.

/password

Is required if password-protection has been specified.

Options:**ASCII**

Specifies that the data set should be stored on the personal computer storage medium in ASCII form.

CRLF

Specifies whether carriage return/line feed characters should be inserted as the last two characters in each line when a data set is stored on the personal computer storage medium.

APPEND

Allows you to attach a host data set to the end of the personal computer file.

Example

Suppose you have finished working with DATA.BASIC, the physical-sequential data set containing password-protected information, and want to send a revised copy from the host TSO session to the personal computer session.

1. If you are not already in the personal-computer mode, press WS Ctrl and select your personal computer session.
2. After you are in the personal-computer mode, type the command:

```
receive b:data.bas r:data.basic/protects ascii
```

(Note that no PATH parameter was specified in this example.)

A copy of DATA.BASIC is transferred from the host session to a diskette in diskette drive B of your system unit (RECEIVE B:), from the host session R:, the short name for the window identification, where it is renamed DATA.BAS. To access the host data set, the password is specified (/PROTECTS); the data set will no longer be protected when on the personal computer. The data set will be stored on the personal computer storage medium in ASCII form. (Note that not every option has been specified.)

If DATA.BASIC is a partitioned data set, an example of the format of the receive command is:

```
receive b:data.bas r:data.basic(tax1982)
```

Note that neither password nor options were specified in this example and that a member name, TAX1982, is included.

Remember, you can enter the command in any combination of uppercase and lowercase characters.

Additional Information

If you need additional information about the TSO and DOS parameters, have these books available for reference:

- *IBM OS/VS2 TSO Command Language Reference*, GC28-0646
- *IBM OS/VS2 TSO Terminal Users Guide*, GC28-0645
- IBM Personal Computer *Disk Operating System* manual

Appendix A. Customizing the System Diskette

Contents

Introduction	A-3
Why You Need To Customize.....	A-3
How Customization Works.....	A-4
When To Start.....	A-4
Using Your Planner to Help.....	A-4
Terms to Know	A-5
Before You Begin	A-5
Customization Considerations	A-6
Recustomizing from a Previously Created System.....	A-9
Completing Your Information Worksheet	A-10
Preparing for Customization	A-14
Copying the IBM 3270 Personal Computer Control Program onto the Fixed Disk.....	A-15
Formatting Your System Diskette	A-17
Loading the Customization Program.....	A-19
The Customization Panels	A-20
How to use the Customization Panels.....	A-21
Help Panels	A-23
Home Panel	A-25
Hardware Options Panel.....	A-27
Sessions Definitions Panel	A-28
Attachment Options Panel.....	A-29
Host Session Options Panel.....	A-32
Customization Summary Panel	A-34
Customization in Progress Panel.....	A-37
Customization Wrap Up.....	A-39
Estimating Memory Size	A-40
Information Worksheet	A-41

Notes:

Introduction

IBM provides a program to help you build a customized system for your IBM 3270 Personal Computer. This appendix shows you how to use this program.

Why You Need to Customize

The IBM 3270 Personal Computer is intended to operate with a connection to an IBM 3274 Control Unit. A 3274 Control Unit can be connected to various hardware configurations; therefore, the diskettes provided with your IBM 3270 Personal Computer contain the programs that allow you to operate in a variety of 3274 hardware configurations. These diskettes alone, however, are not usable as customized system diskettes. You must perform a customization procedure to build a system diskette that conforms to your 3274 hardware configuration and to your personal requirements.

The customization program is an IBM software product, distributed on your IBM 3270 Personal Computer Control Program diskette as a DOS formatted file labeled INDCFIG.COM.

Customization allows you to specify your IBM 3270 Personal Computer hardware and software configuration and the parameters that are compatible with your 3274 hardware configuration. Using your selections, the customization program combines appropriate data files from the write-protected control program diskettes and from the IBM Personal Computer DOS diskette. The system that the customization program produces is called your **customized system**.

Note: You do not have to run the customization program on the work station that you want to create a system diskette for. You can run it on any member of the IBM 3270 Personal Computer family, or on an IBM Personal Computer with a minimum of 96K bytes of memory.

How Customization Works

The customization program leads you through the customization process by displaying data on your IBM 3270 Personal Computer display screen in a series of formats called **panels**. You reply to the customization program by entering information from the keyboard that is attached to your IBM 3270 Personal Computer.

When to Start

You are ready to customize your system to your needs after installation of your IBM 3270 Personal Computer is completed as shown in the *IBM 3270 Personal Computer Guide to Operations* "Setup Instructions".

Using Your Planner to Help

Customizing your IBM 3270 Personal Computer usually involves a planner and someone responsible for the actual customization operation. The planner understands the 3274 hardware configuration to which the IBM 3270 Personal Computer is to be attached and the relationship the 3274 has with the IBM 3270 Personal Computer. The planner also identifies the hardware configuration of the IBM 3270 Personal Computer and the software configuration that is wanted. **The planner must compile the configuration information and supply it to the person responsible for customizing the IBM 3270 Personal Computer.**

Your 3274 planner should have the *IBM 3270 Personal Computer Introduction and Preinstallation Planning* manual, GA23-0179, for information on customizing the 3274 Control Unit.

Terms to Know

- The term **control program** refers to the IBM 3270 Personal Computer Control Program.
- The term **customized system diskette** refers to the IBM 3270 Personal Computer Control Program diskette or fixed disk that is created at the end of the customization procedure. It contains the program(s) associated with the hardware and software configuration for which you customize.

Before You Begin

Make sure you have read Chapters 1 through 3 in this manual before customizing. These three chapters give you an overview of the IBM 3270 Personal Computer, including information on handling diskettes.

You will need these items when you customize:

- Your IBM Personal Computer DOS diskette that is distributed with the IBM Personal Computer *Disk Operating System* manual.
- Your IBM 3270 Personal Computer Control Program diskettes, which are in a clear plastic folder at the back of this manual.

- An information worksheet from your planner. Your planner must complete the items on the worksheet that have an asterisk next to the item number. You will be told how to fill in the rest of the items on the worksheet in the section “Completing Your Information Worksheet.”

Customization Considerations

If you want to build your customized system on a diskette:

- You need to supply a blank, two-sided diskette. This diskette becomes your customized system diskette when customization is complete.
- You must format the diskette before you run the customization program. This is explained under “Formatting Your System Diskette” in this appendix.
- If the system that you are running the customization program on has only one diskette drive, you are required to swap diskettes in the drive several times as your system diskette is built. Since diskette swapping is somewhat time-consuming, customization can take several minutes to accomplish.
- If the system that you are running the customization program on has two diskette drives, you are still required to swap diskettes in the drives as your system diskette is built. However, because the number of swaps is greatly reduced, customization can be very fast.

If you want to build your customized system on a fixed disk:

- Using a fixed disk to build your customized system makes the process easier and considerably faster.
- You must format the fixed disk and copy the DOS files onto it before it can be used. If you have not yet formatted your fixed disk, and if you intend to use it for customization, refer to the *IBM Personal Computer Disk Operating System* manual and follow the procedures given for the DOS commands FDISK and FORMAT to format the fixed disk and to copy the DOS files onto the fixed disk.

If you want to load the customization program from a diskette:

- You need the IBM Personal Computer DOS diskette that is distributed with the IBM Personal Computer *Disk Operating System* manual.
- You need the IBM Personal Computer Control Program diskettes, which are in a clear plastic folder at the back of this manual.
- If the system that you are running the customization program on has only one diskette drive, you are required to swap diskettes in the drive several times as your system diskette is built. Since diskette swapping is somewhat time-consuming, customization can take several minutes to accomplish.
- If the system that you are running the customization program on has two diskette drives, you are still required to swap diskettes in the drives as your system diskette is built. However, because the number of swaps is greatly reduced, customization can be very fast.

If you want to load the customization program from a fixed disk:

- Using a fixed disk to build your customized system makes the process easier and considerably faster.
- You must format the fixed disk and copy the DOS files onto it before it can be used. If you have not yet formatted your fixed disk, and if you intend to use it for customization, refer to the *IBM Personal Computer Disk Operating System* manual and follow the procedures given for the DOS commands FDISK and FORMAT to format the fixed disk and to copy the DOS files onto the fixed disk.
- You must copy the contents of the IBM 3270 Personal Computer Control Program diskettes onto the fixed disk before you can run the customization program. The copy process is explained under “Copying the IBM 3270 Personal Computer Control Program onto the Fixed Disk”.

Recustomizing from a Previously Created System

If you have already created a customized system diskette, you can use it for recustomization in one of three ways:

1. You can make a copy of your customized system diskette and run the copy on another system that has exactly that same configuration as the one on your original customized system diskette. To copy your customized system diskette, you can use the DISKCOPY command, described in the *IBM Personal Computer Disk Operating System* manual.
2. You can use the values you selected on your customized system diskette as the default values to display on the customization panels when you create another customized system diskette. Using this method, you can change only those options that need to be changed for the system you are configuring. The DEFAULTS option on the Home Panel allows you to specify where to read the default values from.
3. You can update values on your customized system diskette by specifying it as both the default and the target for customization. The DEFAULTS and TARGET options, both on the Home Panel, allow you to specify where to read the default values from and where to create the customized system.

Note: If you want to change either the 3274 option or the HOST option (items 19 and 20 on the information worksheet), method 3 will not work. You will have to format your customized system diskette and re-run the customization program.

The customized system diskette contains two DOS formatted files, INDCFIG.DAT and INDCFIG.FIL. INDCFIG.FIL contains, in printable format, the contents, or image, of the display panels as they existed during customization when that system was built. You can print this file using the DOS PRINT command. INDCFIG.DAT is the customization table that contains, in internal format, the same information as INDCFIG.FIL. This is the file that the customization program reads the default values from when you specify a drive for the DEFAULTS option.

Completing Your Information Worksheet

Your planner is responsible for completing the items on the information worksheet that have an asterisk next to the item number. You are responsible for completing the rest of the items on the information worksheet, specifically items 1 through 18. This section tells you how to complete those items.

Item 1

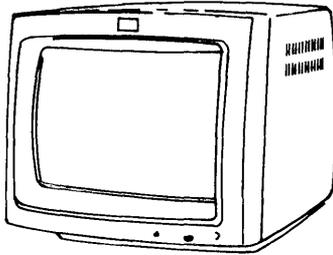
Item 1 asks you which drive the default configuration table is to be taken from. If you are re-customizing, this is the drive that contains a previously-customized system.

Item 2

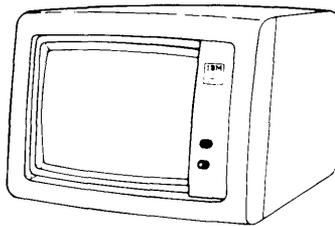
Item 2 asks you which drive the customization program should write the customized system to when it is finished.

Item 3

Item 3 asks you for the type of display unit that is attached to the system you are customizing. Compare your display to the ones shown here. If you do not have the display you are customizing for available, check with your planner to get the display number.



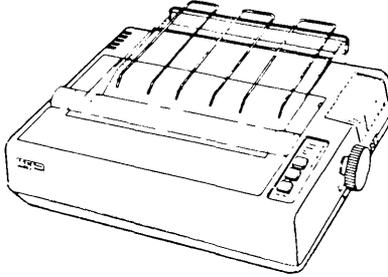
5272 Color Display



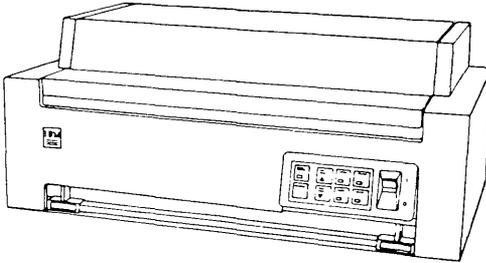
5151 Monochrome Display

Item 4

Item 4 asks you for the type of printer that is attached to the system you are customizing. Compare your printer to the ones shown here. If the printer you are using does not match the pictures, or if you do not have the printer you are customizing for available, check with your system planner to get the printer number.



5152 Graphics Printer



5182 Color Printer

Items 5 through 18

Items 5 through 18 ask you for short and long session names for the customized system.

You must specify a short name for each session that you are including in this customization. (Your planner specifies the number of host sessions to customize for on the information worksheet). Short names are used as “nicknames” for your sessions.

Short names must be:

- unique
- one-character
- alphabetic

The session definitions panel gives these short name defaults:

- E for host session 1
- A for the personal computer session

You can change these defaults if you wish.

Long names are optional. Choose long names that are meaningful to you and the way that you use your sessions.

A long name can be up to eight alphanumeric characters long, and it **must** begin with an alphabetic character.

The sessions definitions panel gives these long name defaults when you specify a short name for a session:

- HOST1 for the first host session
- HOST2 for the second host session
- HOST3 for the third host session
- HOST4 for the fourth host session
- NOTEPAD1 for the first notepad session
- NOTEPAD2 for the second notepad session
- PC for the personal computer session

You can change these defaults if you wish.

Preparing for Customization

Prepare to customize as follows:

1. Set your system unit On/Off switch to Off before you begin.
2. If you want to load the customization program from a fixed disk:
 - a. Make sure your system unit diskette drive is empty.
 - b. Make sure the diskette drive door is open.
 - c. Skip to step 4.
3. If you want to load the customization program from a diskette:
 - a. Make sure your system unit diskette drive A is empty.
 - b. Insert your IBM Personal Computer DOS diskette in drive A.
 - c. Close the drive door.
4. If you have a 5272 display, turn it on.
5. Set your system unit On/Off switch to On and wait while DOS is loaded into memory.
6. Respond to the DOS date and time prompts.
7. You will see the DOS prompt.

A > (C > if DOS is on your fixed disk)

8. If you do not want to load the customization program from a fixed disk, skip to the section “Formatting Your System Diskette”.
9. If you want to load the customization program from a fixed disk, you must copy the control program diskettes onto the fixed disk. The next section, “Copying the IBM 3270 Personal Computer Control Program onto the Fixed Disk” explains how to do the copy.

Copying the IBM 3270 Personal Computer Control Program onto the Fixed Disk

Note: If you have not yet formatted your fixed disk, refer to the *IBM Personal Computer Disk Operating System* manual and follow the procedures given for the DOS commands FDISK and FORMAT to format the fixed disk and to copy the DOS files onto the fixed disk.

To load the customization program from a fixed disk, you must copy the contents of the control program diskettes onto the fixed disk before customizing as follows:

1. Insert the first control program diskette in the diskette drive.
2. Close the drive door.
3. Type

```
copy a:*. * c:
```
4. Press Enter.

5. You will see a list of the files that are being copied. When the contents of that diskette have been copied onto the fixed disk, you receive the message

nn File(s) copied

The nn indicates how many files were copied. You also see the DOS prompt A> (C> if DOS is on your fixed disk)

6. For each of the additional control program diskettes:
 - a. Remove the diskette that is in the drive.
 - b. Insert the next control program diskette in the drive.
 - c. Repeat steps 2 through 5 above.
7. When all of the control program diskettes have been copied onto the fixed disk, go on to the section "Formatting Your System Diskette" on the next page.

Formatting Your System Diskette

Before you can build your customized system on a device, that device must be formatted.

To format a fixed disk:

- Refer to the *IBM Personal Computer Disk Operating System* manual and follow the procedures given for the DOS commands FDISK and FORMAT to format the fixed disk and to copy the DOS files onto the fixed disk.
- After your fixed disk is formatted, go to the section “Loading the Customization Program”.

To format a diskette:

Before you attempt to format a diskette, remember:

- The diskette must be two-sided.
 - Since formatting erases any data that is already on the diskette, be sure that the diskette you are formatting is blank.
1. When you see the DOS prompt
A> (C> if DOS is on your fixed disk)
Type
format a:/s
 2. Press Enter.
 3. When the system is ready, you are prompted to insert a new diskette in drive A, and to press any key when ready.
 - a. Remove any diskette that may be in drive A.

- b. Insert your blank diskette in drive A.
 - c. Close the drive door.
 - d. Press any alphanumeric key to begin the formatting.
4. As formatting takes place,

Formatting...

is displayed. When formatting is completed,

Formatting...Format Complete

is displayed.

5. Files from the DOS diskette are copied onto the blank diskette. When the copy is completed,

system transferred

nnnnn bytes total disk space

nnnn bytes used by system

nnnnn bytes available on disk

Format another (Y/N)?

is displayed.

6. Type n. The DOS prompt

A> (C> if DOS is on your fixed disk)

reappears, indicating that formatting is complete.

The newly-formatted diskette is now referred to as your **system diskette**, even though at this stage it does not contain all the necessary files.

7. Remove your system diskette from diskette drive A.

Now that your system diskette has been formatted, you are ready to start customizing. Go to “Loading the Customization Program” below.

Loading the Customization Program

When you have done the preliminary steps necessary to run the customization program, you can start customization as follows:

- If you are loading the customization program from a fixed disk:
 1. You will see the prompt

```
C>
```
 2. Type

```
indcfig
```
 3. Press Enter to load and run the customization program.

- If you are loading the customization program from a diskette:
 1. Make sure diskette drive A is empty.
 2. Put the first control program diskette in diskette drive A and close the diskette drive door.
 3. You will see the prompt

```
A>
```
 4. Type

```
indcfig
```
 5. Press Enter to load and run the customization program.

When the customization program is completely loaded, it clears the display screen and displays the first customization panel.

The Customization Panels

The customization program displays panels on which you enter or select the options for the system you are customizing. These panels are:

- The Home Panel
- The Hardware Options Panel
- The Sessions Definitions Panel
- The Attachment Options Panel
- The Host Session Options Panel
- The Customization Summary Panel
- The Customization in Progress Panel

These panels are described on the following pages.

Remember, most of the items on the customization panels depend on the configuration of your 3274 Control Unit. The information on how the 3274 is configured should be provided by the planner.

The customization program has a global help panel that tells you how to use the customization panels. You can display the global help panel by pressing PF1. Other help panels are also available. These panels will be described in the section “Help panels”.

How to Use the Customization Panels

The customization program presents you with a series of panels relating to your IBM 3270 Personal Computer and how you want to use it. These panels contain lists of options, many of which have default values associated with them. You can change the values of these options to meet your own requirements. Other options require a value to be typed in.

The program only displays options that are valid for your particular work station. As you change the default values on the customization panels, the program removes from the panels any items that no longer apply to your configuration. For example, if you select DFT on the Attachment Options panel, items relating to CUT are no longer displayed on the panels.

Entry Fields and Selectable Fields

The customization panels display two types of fields:

- **Entry fields**

There are two kinds of entry fields, required entry fields and optional entry fields.

Required entry fields are displayed in white on the 5272 display and in high intensity on the 5151 display. Optional entry fields are displayed in green on the 5272 display and in normal intensity on the 5151 display. If an entry field has a default value, you can change it by moving the cursor under the default value and typing the value you want. If the entry field has no default value assigned to it, move the cursor to the position indicated and type in the value you want to specify.

- **Selectable fields**

Selectable fields display a selected value for an option, and a list of other choices below the selected option. The selected value in a selectable field is displayed in reverse-video white on a 5272 display and in reverse video on a 5151 display. The rest of the options for a selectable field are displayed in blue on a 5272 display and in normal intensity on the 5151. To change the selected value, use the TAB key or the cursor move keys to move the cursor under the value you want to select, and press PF2. The new selected value is displayed as described for the type of display you are using.

Note: On the summary panel, selectable fields do not have the list of choices displayed below the selected option. To change a selectable option on the summary panel, move the cursor under the selected value and press PF2. The next choice in the list will appear as the selected value. By continuing to press PF2, you will see each of the available choices for the selectable option. Keep pressing PF2 until the value you want appears as the selected value.

How to Move Between Panels

- To get to the next panel, press PgDn.
- To get to the previous panel, press PgUp.
- To get to the summary panel, press End.
- To get to the first panel (the Home panel), press Home.

How to Exit From the Customization Program

- To exit from the customization program, press Esc.

Help panels

While you are using the customization program, you can press PF1 to display help panels.

There are four different types of help panels:

1. Global help panel

The global help panel gives you general advice on how to use the customization program. The very first time you press PF1 from one of the customization panels, you will get the global help panel. After that, to get the global help panel you have to go to a customization help panel or an option help panel and press PF1. It tells you how to move from panel to panel, and how to change the default values.

2. Customization help panels

Each customization panel has its own help panel, which is obtained by pressing PF1 when the customization panel itself is displayed. The help panel gives a description of the panel and a list of the options whose default values can be changed.

3. Option help panels

Some of the options also have their own help panel. When you display the help panel for a particular customization panel, move the cursor under the option you want to know

more about, and press PF2. You will get a help panel giving more details about that option. You can return to the customization help panel for this option by pressing Home.

4. Summary help panel

When you are at the Customization Summary panel, you can press PF1 to get the summary help panel. To re-display the option help panel for any of the options listed on the summary help panel, move the cursor under the option and press PF2.

Remember:

- To quit help and go back to the customization panel, press Esc.
- To display the global help panel, press PF1 when you are calling for help for the first time from a customization panel, or when you are in any other help panel.
- To display the option help panel for an option on the customization help panel, move the cursor under the option and press PF2.
- To return to the customization help panel from an option help panel, press Home.

Home Panel

The first panel is called the home panel.

Home panel	IBM CORPORATION 3270 PERSONAL COMPUTER CUSTOMIZATION Level 1.20 Copyright IBM Corp. 1983, 1984
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Refer to the CONTROL PROGRAM USER'S GUIDE AND REFERENCE.
Move cursor under each desired option and press PF2 to select.

DEFAULTS	<u>None</u>	Use IBM-supplied default values
	A	Default values from diskette drive A
	C	Default values from fixed disk drive C
TARGET	A	Create System on diskette drive A
	<u>C</u>	Create System on fixed disk drive C
DISPLAY	<u>5272</u>	3270PC Color
	5151	PC Monochrome

PF1=Help PgDn=Next End=Summary Esc=Quit

On this panel you are shown three options:

● DEFAULTS

This option tells the customization program which diskette or fixed disk drive to read from to obtain the values from a previously-customized system. These values are shown as the default values on the rest of the customization panels. If you choose to read the defaults from one of your diskettes instead of using the IBM-supplied default values, be sure that the correct diskette is in the drive before you make the selection, because the customization program attempts to read the customization table from that diskette as soon as you press PF2.

● TARGET

This option tells the customization program which diskette or fixed disk drive to write the customized system to.

Note: For the DEFAULTS and TARGET options, the values that are displayed correspond to the number and type of drives on the system that you are using to run the configuration program. For example, for the TARGETS option, a system with two diskette drives has the values A and B displayed, with B as the default.

● DISPLAY

This option tells the customization program the type of display you have on the system you are customizing for.

To display help panels, press PF1.

When you are ready to go to the the next panel, press PgDn.

Remember:

- If you want to go to the Summary Panel, press End.
- If you want to quit the customization program, press Esc.

Hardware Options Panel

The second panel is called the hardware options panel.

Panel 2	HARDWARE OPTIONS	
---------	------------------	--

Move cursor under the desired option and press PF2 to select.

PRINTER	<u>None</u>	No printer attached
	5152	PC Graphics
	5182	PC Color
	3852	PC Color

PF1=Help PgDn=Next PgUp=Prev Home=Home End=Summary Esc=Quit

On this panel you are shown one option, **PRINTER**. This option tells the customization program the type of printer you have on the system you are configuring for.

To display help panels, press PF1.

When you are ready to go to the the next panel, press PgDn.

Remember:

- If you want to return to the previous panel, press PgUp.
- If you want to return to the Home Panel, press Home.
- If you want to go to the Summary Panel, press End.
- If you want to quit the customization program, press Esc.

Sessions Definitions Panel

The third panel is called the session definitions panel.

Panel 3

SESSION DEFINITIONS

Move cursor and type the required information.
Enter a unique short name for each session desired.
The long name is optional.

	SHORT NAME	LONG NAME	
HOST1	E	HOST1...	Name of host session 1
HOST2	.		Name of host session 2 (DFT only)
HOST3	.		Name of host session 3 (DFT only)
HOST4	.		Name of host session 4 (DFT only)
NOTEPAD1	.		Name of notepad session 1
NOTEPAD2	.		Name of notepad session 2
PC	A	PC.....	Name of PC session

PF1=Help PgDn=Next PgUp=Prev Home=Home End=Summary Esc=Quit

On this panel you must enter a short name for each session you wish to include in your customization. Initially, this panel shows default short and long names for one host session and the personal computer session. You can change these default names if you wish. When you enter a short name for any additional session, a default long name is displayed for that session also. You can change the default long name if you wish. If you do not want a session, leave the short name blank.

To display help panels, press PF1.

When you are ready to go to the the next panel, press PgDn.

Remember:

- If you want to return to the previous panel, press PgUp.
- If you want to return to the Home Panel, press Home.
- If you want to go to the Summary Panel, press End.
- If you want to quit the customization program, press Esc.

Attachment Options Panel

The fourth panel is called the attachment options panel.

Panel 4	ATTACHMENT OPTIONS	
Move cursor under each desired option and press PF2 to select. Changes can affect the display of other options on the panel.		
3274	<u>DFT</u> <u>CUT</u>	Distributed Function Terminal Control Unit Terminal
HOST	<u>SNA</u> <u>non-SNA</u>	Host uses SNA attachment Host uses non-SNA attachment
EDS	<u>Yes</u> No	3274 supports Extended Data Stream
SCS	<u>Yes</u> <u>No</u>	3274 has SCS format override
VMClear	<u>Yes</u> No	3274 has VMClear option
INVCC	<u>Error</u> Hyphen	Error sent on invalid control code Hyphen shown for invalid control code
PF1=Help PgDn=Next PgUp=Prev Home=Home End=Summary Esc=Quit		

On this panel you are shown up to six options:

● 3274

This option tells the customization program how your 3270 Personal Computer communicates with the 3274 Control Unit. CUT (Control Unit Terminal) mode allows one

host session to run. DFT (Distributed Function Terminal) allows up to four host sessions to run.

- If you select CUT for this option, the rest of the options on the panel become invalid for your configuration and are no longer displayed.
- If you entered short names for more than one host session on the sessions definitions panel, CUT is not displayed as an option.

- **HOST**

This option tells the control program which protocols to use to communicate with the host. This option is not shown if you selected CUT for the 3274 option.

- **EDS**

This option tells the control program that it can use extended attributes in the data stream. This option is not shown if you selected CUT for the 3274 option.

- **SCS**

This option tells the control program that your 3274 Control Unit has the SNA character string format override capability. This option is not shown if you selected CUT for the 3274 option, or non-SNA for the HOST option.

- **VMClear**

This option tells the control program whether the VMClear option is installed in your 3274 Control Unit. This option is not shown if you selected CUT for the 3274 option, or SNA for the HOST option.

● INVCC

This option indicates what the 3274 Control Unit response is when an invalid control code appears in the data stream. This option is not shown you selected CUT for the 3274 option.

To display help panels, press PF1.

When you are ready to go to the the next panel, press PgDn.

Remember:

- If you want to return to the previous panel, press PgUp.
- If you want to return to the Home Panel, press Home.
- If you want to go to the Summary Panel, press End.
- If you want to quit the customization program, press Esc.

Host Session Options Panel

One of these panels appears for every host session you entered a short name for on the session definitions panel. The short and long names of the session that this panel applies to are displayed on the upper right corner of the panel.

This panel does not appear if you selected CUT for the 3274 option on the Attachment Options panel.

Panel 5.1	HOST SESSION OPTIONS	SESSION NAME:	E HOST1
Move cursor under the desired option and press PF2 to select.			
ROWSxCOLS	<u>24x80</u> Model 2 screen 32x80 Model 3 screen 43x80 Model 4 screen 27x132 Model 5 screen		
PS	<u>Yes</u> No session owns the programmed symbol sets No		
EAB	<u>Yes</u> This session has extended attribute buffer No		

PF1=Help PgDn=Next PgUp=Prev Home=Home End=Summary Esc=Quit

On this panel you are shown three options:

- **ROWSxCOLS**

This option tells the control program the size of the host presentation space. The selections shown are for models of the 3278 display.

● PS

This option tells the control program which host session supports the programmed symbol sets. You can allocate the programmed symbol sets to only one host. Initially, the programmed symbols sets are not allocated to any host session. If you select YES to allocate the programmed symbol sets to the host session being displayed, the message next to the PS option changes to read

E HOST1 owns the programmed symbol sets

When the programmed symbol sets have been allocated to a host session other than the one this panel is for, the name of that host session is displayed in the message next to the PS option.

● EAB

This option tells the control program to allocate memory for an extended attribute buffer for this host session.

Note: If you select NO for the EAB option for this host session, the PS option becomes invalid for this host session and is no longer displayed.

To display help panels, press PF1.

When you are ready to go to the the next panel, press PgDn.

Remember:

- If you want to return to the previous panel, press PgUp.
- If you want to return to the Home Panel, press Home.
- If you want to go to the Summary Panel, press End.
- If you want to quit the customization program, press Esc.

Remember:

- If you want to return to the previous panel, press PgUp.
- If you want to return to the Home Panel, press Home.
- If you want to go to the Summary Panel, press End.
- If you want to quit the customization program, press Esc.

Customization Summary Panel

The customization summary panel displays all the information about the customized system on one panel.

Panel 7		CUSTOMIZATION SUMMARY					
To change values, move cursor to the field and either type the new value, or press PF2 until the desired value appears. Changes can affect the display of other options on the panel.							
Hardware	Display	Printer					
	5272	5152					
Attachment	3274	Host	EDS	SCS	VMClear	INVCC	
	DFT	SNA	Yes	Yes	Yes	Error	
Host Sessions	S L	Name	Screen	PS	EAB		
	E	HOST1	24x80.	Yes	Yes		
	F	HOST2	32x80.	No	Yes		
			x	No	No		
			x	No	No		
PC	A	PC.....					
Notepads	C	NOTEPAD1					
			x				
Press PF3 to create system with the above configuration.							
PF1=Help		PgUp=Prev			Home=Home		Esc=Quit

To change the value of a selected field, move the cursor under the value, and press PF2 until the desired value is displayed.

To change the value of an entry field, move the cursor under the entry you wish to change and type over the value displayed.

The value of a changed option is checked when it is entered or selected. If the new value conflicts with the value for a related option on the panel, you must change the value of the related option first.

If the changed entry is invalid, the cursor remains in the same place, a warning message appears, and the entry is highlighted. It remains highlighted until you correct it, or change any other related values. If you leave this panel and then return to it, the value that existed before the invalid entry was made is displayed. If you press PF3 while an invalid option is displayed, the message

CU025 Cannot customize system with incorrect values is displayed.

Notes:

1. If you change the value of the 3274 option to CUT, options Host, EDS, SCS, VMClear, INVCC, PS and EAB become invalid and are no longer displayed on the panel.
2. If you change the value of the Host option to non-SNA, the SCS option becomes invalid for your configuration and is no longer displayed. If you change the value of the Host option to SNA, the VMClear option becomes invalid for your configuration and is no longer displayed.
3. You cannot change the value of the PS option for a host session to YES if another host session has YES selected for its PS option. You must change the value of the PS option to NO for the host session that originally had the programmed symbol sets allocated to it, and then you can assign the programmed symbol sets to another host session.

4. If you change the value of EAB for a host session to NO, the PS option for that host session becomes invalid and is no longer displayed.

To display the summary help panel, press PF1.

When you are ready to create the customized system, press PF3.

Remember:

- If you want to return to the previous panel, press PgUp.
- If you want to return to the Home Panel, press Home.
- If you want to quit the customization program, press Esc.

Customization in Progress Panel

The customization in progress panel is displayed after you press PF3 to create your customized system.

Panel 8	CUSTOMIZATION IN PROGRESS
---------	---------------------------

Insert diskettes as requested.

REMAINING	NN	Files still to be copied
TOTAL	XX	Files needed for your system
SOURCE	A	IBM files are on diskette drive A
TARGET	B	System will be created on diskette drive B

PF1=Help	Esc=Quit
----------	----------

The value displayed for SOURCE reflects the number and type of drives on the system you are running the configuration program on. The value displayed for TARGET is the value you selected for the TARGET option on the HOME panel.

You may be prompted to insert diskettes while the customization program is running. Follow the prompts. You can refer to Appendix E, "Using Messages" for explanations of the prompting messages. When you are prompted to insert a diskette into a drive, first be sure that the in-use light is not on for that drive. If you insert an incorrect diskette in response to one of the prompting messages, the message

CU036 Incorrect diskette

is displayed. Remove the incorrect diskette and insert the correct one.

The number “NN” is updated as the necessary files are copied from the Control Program device to the customized system device.

If you need to cancel the customization program before the customized system is created, press Esc. The message

CU015 Customization incomplete-no system configured

is displayed. This message tells you that the customization program did not finish copying all of the required files to the customized system diskette. You will not be able to use the system on that diskette.

Note: If you forget to format your customized system device, the customization program displays the messages

CU031 System diskette requires formatting

CU032 Type drive letter for DOS diskette and press PF3

Type the letter for the drive that contains the DOS programs (including FORMAT.COM) and press PF3. The customization program formats your customized system device and copies the DOS files to it, and then creates the customized system.

The customization program creates a DOS file called AUTOEXEC.BAT on the customized system diskette. This file contains a statement that the system supplies at the conclusion of the customization task. **Do not alter or remove this statement.** You may include other DOS commands in AUTOEXEC.BAT, but be sure that they follow the statement that the system supplies.

Customization Wrap Up

1. After the customization program completes copying the necessary files for your customized system, it displays the message

CU035 Customization complete

and displays the Customization Summary panel again. At this point, you can either:

- Change values if necessary and press PF3 to create another customized system diskette
 - Press Esc to quit the customization program.
2. Label your customized system diskette appropriately.
 3. You should make backup copies of your customized system diskette for future use.

Estimating Memory Size

Each application you may want to use on the IBM 3270 Personal Computer requires some memory to run. To determine the amount of memory that is available, use the following factors to estimate memory size for various customized configurations of the IBM 3270 Personal Computer.

Function	Memory Increment
Choose one:	
Control Unit Terminal (CUT) mode	108000 bytes
Distributed Function Terminal (DFT) mode	
Non-SNA	153000 bytes
SNA	162000 bytes

Add for each DFT session (maximum of four):

1920 characters (Model 2), no EAB (4-color)	1968 bytes
1920 characters (Model 2), EAB (7-color)	3888 bytes
2560 characters (Model 3), no EAB (4-color)	2624 bytes
2560 characters (Model 3), EAB (7-color)	5184 bytes
3440 characters (Model 4), no EAB (4-color)	3526 bytes
3440 characters (Model 4), EAB (7-color)	6966 bytes
3564 characters (Model 5), no EAB (4-color)	3618 bytes
3564 characters (Model 5), EAB (7-color)	7182 bytes

Add for each notepad session (maximum of 2):

For 5151 or 5272 displays:	3840 bytes
For graphics printer:	4096 bytes

Configuration Total: _____

For local applications, add:

IBM Personal Computer DOS session	24,000 bytes
-----------------------------------	--------------

The balance of the memory capacity is available for local application use. IBM 3270 Personal Computer applications that run under IBM Personal Computer DOS have the following application storage requirements:

Save/Restore	11300 bytes	File Transfer	20600 bytes
Patch	7800 bytes	Tutorial	25220 bytes

Note: Local applications may require additional memory.

Information Worksheet

This worksheet should be completed before customizing the IBM 3270 Personal Computer system diskette. An asterisk (*) next to certain items indicate which should be answered by the 3274 Control Unit planner/customizer.

*Date Planned: ____/____/____ Date Customized: ____/____/____

Identity of newly created system diskette: _____

*Port Address: _____

*Number of host sessions this system will support: _____

Home Panel:

1. Default configuration table to be taken from disk drive: _____

2. System diskette to be created on disk drive: _____

3. Type of display unit attached: (5272, 5151) _____

Hardware Options Panel:

4. Type of printer attached: (5152, 5182, 3852, None) _____

Sessions Definitions Panel:

5. Host session 1 short name is: _____

6. Host session 1 long name is: _____

7. Host session 2 short name is (DFT only): _____

8. Host session 2 long name is (DFT only): _____

9. Host session 3 short name is (DFT only): _____

10. Host session 3 long name is (DFT only): _____

11. Host session 4 short name is (DFT only): _____

12. Host session 4 long name is (DFT only): _____

13. Notepad session 1 short name is: _____

*To be answered by the 3274 Control Unit planner/customer

Sessions Definitions Panel (continued):

- 14. Notepad session 1 long name is: _____
- 15. Notepad session 2 short name is: _____
- 16. Notepad session 2 long name is: _____
- 17. Personal computer session short name is: _____
- 18. Personal computer session long name is: _____

Attachment Options Panel:

- *19. 3274 attachment mechanism is for: CUT or DFT
- *20. 3274 host attachment mechanism is: SNA (DFT only)
or non-SNA
- *21. Does 3274 have Extended Data Stream (EDS) support? Yes or No (DFT only)
- *22. Does 3274 have SNA character set (SCS) override? Yes or No (DFT, SNA only)
- *23. Does 3274 have VM clear support? Yes or No (DFT, non-SNA only)
- *24. Action to be taken on invalid control codes: Error or Hyphen (DFT only)

Host Sessions Options Panel for host session 1 (DFT only):

- *25. Host session 1 screen size is: _____
- *26. Host Session 1 Programmed Symbol (PS) usage: Yes or No
If Yes, must specify Yes for 27 also
- *27. Host Session 1 Extended Attribute Buffer (EAB) usage: Yes or No

Host Sessions Options Panel for host session 2 (DFT only):

- *25. Host session 2 screen size is: _____
- *26. Host Session 2 Programmed Symbol (PS) usage: Yes or No
If Yes, must specify Yes for 27 also
- *27. Host Session 2 Extended Attribute Buffer (EAB) usage: Yes or No

*To be answered by the 3274 Control Unit planner/customer

Host Sessions Options Panel for host session 3 (DFT only):

- *25. Host session 3 screen size is: _____
- *26. Host Session 3 Programmed Symbol (PS) usage: Yes or No
If Yes, must specify Yes for 27 also
- *27. Host Session 3 Extended Attribute Buffer (EAB) usage:
Yes or No

Host Sessions Options Panel for host session 4 (DFT only):

- *25. Host session 4 screen size is: _____
- *26. Host Session 4 Programmed Symbol (PS) usage: Yes or No
If Yes, must specify Yes for 27 also
- *27. Host Session 4 Extended Attribute Buffer (EAB) usage:
Yes or No

*To be answered by the 3274 Control Unit planner/customer

Appendix B. Solving IBM 3270 Personal Computer Problems

Contents

Introduction	B-3
Problems That May Occur While You Are Using the IBM 3270	B-5
Autokey Problem Determination.....	B-11
Autokey Problem Determination: Play	B-28
Autokey Problem Determination: Erase	B-40
Communication Problem Determination.....	B-53
Program Error Codes	B-57
Customization Problem Determination.....	B-63
File Transfer Problem Determination	B-68
Keyboard Problem Determination.....	B-80
IBM 3270 Personal Computer Printer Problem Determination	B-86
Patch Problem Determination	B-91
Personal Computer Application/Control Program	B-94
Save and Restore Problem Determination	B-96
System Error Problem Determination	B-98
System Startup Problem Determination	B-113
Trace Problem Determination	B-118
Work Station Control Problem Determination.....	B-119

Notes:

Introduction

This appendix is for those responsible for problem determination. If there is an obvious or apparent hardware problem, refer to the *IBM 3270 Personal Computer Guide to Operations*. If there is a software problem, remain in this appendix. It contains information to help you isolate the following kinds of problems:

- Autokey
 - Record
 - Play
 - Erase
- Communication
- Customization
- File transfer
- Keyboard
- IBM 3270 Personal Computer printer
- Notepad
- Patch
- Personal computer application under the control program
- Save and Restore
- System startup
- Trace

- Work station control mode
 - Browse
 - Copy
 - Help
 - List
 - Setup.

The “homeplate” symbol will help you work through these procedures. It always has a number inside it. When you see the homeplate and its number, look for the next homeplate that has the same number and continue.

Problems That May Occur While You Are Using the IBM 3270 Personal Computer

How can you use this appendix? The following chart lists hardware and software problem symptoms and the actions needed to begin solving the problem.

If you need to use the Dump facility for problem determination procedures and you have turned on the Trace option, turn Trace off with the dump option. If you have **not** turned on the Trace option, you may do **one** of the following:

- Press Alt + Ctrl + Test

or

- If you have the red Non-Maskable Interrupt (NMI) button at the back of the system unit, press it.

You are then prompted with the message:

SY006 Do you want to take a dump? Data will be destroyed (Y/N)

Reply "Y" to take a dump, or "N" to re-IPL the system. If the keyboard does not respond and if you have an NMI button at the back of the system unit, Press the NMI button again to start the dump process. You are then prompted with messages that lead you through the dump process. During this process, you can respond to any message that requires a reply with either the requested key or the NMI button. When the dump has completed, you are prompted to insert the customized system diskette and to press any key to re-IPL the system.

If, while using your IBM 3270 Personal Computer with the control program loaded, the system appears to be working incorrectly or not working at all, always do the following first:

Did you just set your system unit On/Off switch to On?

No Yes
|
|
| **Did you receive a Power-On Self Test (POST) error message when you powered on? (If you need more information about POST error messages, refer to the *IBM 3270 Personal Computer Guide to Operations*, Problem Determination section.**

 No Yes
 |
 | Refer to the Problem Determination section of the *IBM 3270 Personal Computer Guide to Operations*.
 |
← |

Did you receive any CU_{nnn} messages?

No Yes
|
| Refer to Customization Problem Determination, page B-63.

Did you receive any SY_{nnn} messages?

No Yes
|
| Refer to System Error Problem Determination, page B-98.



7

Did you receive any other IBM 3270 Personal Computer messages? (STnnn, PATnn, SRnnn, TRnn, TRANSnn, WSnnn)

No

Yes

Refer to the message in Appendix E.

Did the message aid in resolving the problem?

No

Yes

Continue with your work.

Do you have a problem with a host session or window?

No

Yes

Refer to Communication Problem Determination, page B-53.

Record the conditions that exist. Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics isolate a hardware problem?

No

Yes

Follow your local procedures for getting the hardware repaired.

8

Do you have a problem in Work Station Control including Copy, Help, List, SetUp, and Browse?

No

Yes

Refer to Work Station Control Problem Determination, page B-119.

Do you have a problem with Autokey?

No

Yes

Refer to Autokey Problem Determination, page B-11.

Do you have a problem with notepad?

No

Yes

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. A print of the session.

Do you have a problem with the personal computer window or session?

No

Yes

Refer to Personal Computer Application/Control Program Problem Determination, page B-94.

Do you have a problem with Save/Restore?

No

Yes

Refer to Save and Restore Problem Determination, page B-96.

Are you having problems transferring files?

No

Yes

Refer to File Transfer Problem Determination, page B-68.

Are you having a problem with Patch?

No

Yes

Refer to Patch Problem Determination, page B-91.

Are you having a problem using the printer?

No

Yes

Refer to IBM 3270 Personal Computer Printer Problem Determination, page B-86.

Are you having a problem with Trace?

No

Yes

Refer to Trace Problem Determination, page B-118.

Are you having a problem with the keyboard?

No

Yes

Refer to Keyboard Problem Determination, page B-80.

Are you having problems not previously covered?

No

Yes

Follow your local procedures and have available:

- a. The sequence of events that caused the problem, including the keys pressed and in what order.
- b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

Continue with your work.

Autokey Problem Determination

Are you in work station control mode (check the operator information area)?

Yes

No

You must be in work station control mode to activate Autokey.

Press WS Ctrl.

Is WSCTRL in the operator information area?

Yes

No

1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

12

Does the operator information area indicate Autokey?

Yes

No

1. Make sure you are in lowercase.
2. Press Auto.

Does the operator information area indicate Auto?

Yes

No

1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The dump.
- d. Configuration data set.

Is the problem with Recording?

Yes

No

Refer to Autokey Problem Determination: Play or Autokey Problem Determination: Erase.

Does the operator information area indicate Record?

Yes

No

Press the Record key.

Does the operator information area indicate Record?

Yes

No

1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under

14a

14b

14a

14b

- “Listing the Current System Level and Currently Installed APARs” in Appendix C.
- c. The dump.
 - d. Configuration data sets.

Does List appear on the right side of the screen?

No

Yes

Press PF1 (List).

Did List disappear?

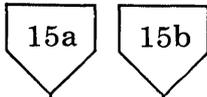
Yes

No

1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under “Listing the Current System Level and Currently Installed APARs” in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

15a

15b



Retry the Record operation.

Was it successful?

No Yes

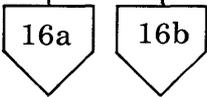
Continue with your work.

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described in under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Is there an error message in the operator information area?

Yes No

1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.



16a

16b

3. Follow your procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Is there space remaining in the message recording space?

No Yes

|
Press PF1 (List).

Is free space less than 14?

No Yes

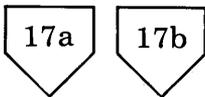
|
The space is full. You must delete a recording if you want to make room for a new one.

The recording area has been damaged.

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.

17a

17b



3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.
4. Recover by using the Restore of a previous autokey file.

Does the message indicate you cannot record because another recording is in progress?

No Yes

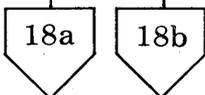
Select Screen Profile 0 and jump through all windows, looking for a recording indication in the operator information area.

Did you find the recording indicator?

No Yes

Only one recording can be active at a time. Finish the first before trying to start another.

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.



18a

18b

3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Is there a message on the screen that indicates you cannot record because the window is currently busy?

No Yes

Wait until the window is no longer busy and retry the operation.

Is there a message on the screen that indicates you pressed an invalid key?

No Yes

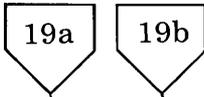
Does Play appear in the operator information area?

No Yes

Play is already in progress with the active window and must be completed before a recording can be started.

19a

19b



1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Are you having a problem entering the recording name?

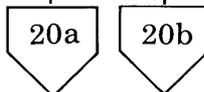
No Yes

Does the recording name consist of only letters and/or numbers?

Yes No

Recording names must be letters and/or numbers.

Correct and retry.



20a

20b

Is List on the screen?

No

Yes

Press PF1 (List) and retry the operation.

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Does an error message appear when Enter is pressed?

No

Yes

Is there a "Duplicate name entered" message on your screen?

No

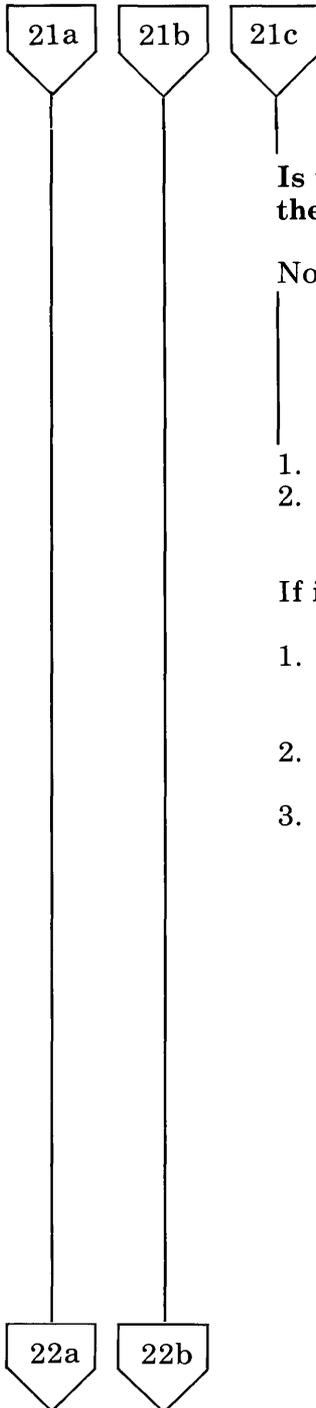
Yes

Press PF1 (List).

21a

21b

21c



Is there a name that is exactly the same?

No

Yes

Use a unique name or delete the old name and retry.

1. Copy the directory entries.
2. Restore the Autokey data set and retry.

If it still fails:

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

22a

22b

Do you get a message that says an invalid name was entered?

No

Yes

Is the operator information area input field all blanks?

No

Yes

Blanks are invalid. Use a valid name and retry.

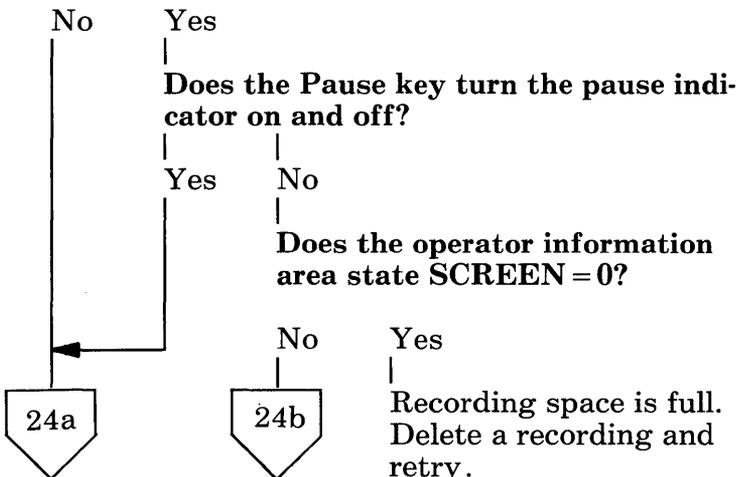
1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

23

When Enter is pressed, does the active application regain control of the screen and keyboard, and does the operator information area have an R, indicating recording?

- | | |
|-----|--|
| Yes | No |
| | <ol style="list-style-type: none"> 1. Reproduce the operation while running Trace events 1, 4, 5, and 6. 2. Turn Trace off with the dump option. 3. Follow your local procedures and have available: <ol style="list-style-type: none"> a. The sequence of events that caused the failure, including the keys pressed and in what order. b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C. c. The dump. d. Configuration data sets. |

Are you trying to record a pause?



24a

24b

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Are you trying to end a recording?

No

Yes

Have you pressed Finish?

Yes

No

Press Finish to complete the recording and continue normal operation.

Can you do normal typing from your keyboard?

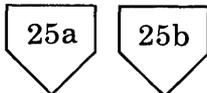
No

Yes

Continue normal operation.

25a

25b



1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Are you trying to cancel a recording?

No Yes

Have you pressed Quit?

Yes No

Press Quit.

Did the R and the P in the operator information area disappear?

Yes No

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.



26a

26b

26c

2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Can you do normal typing on the keyboard?

No

Yes

Recording was canceled.
Continue normal operation.

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.

27a

27b

27a

27b

- b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The dump.
- d. Configuration data sets.

If none of the above conditions exists, you are not using Autokey to record. Continue with your normal operation.

Autokey Problem Determination: Play

Is the problem with Play of a recording?

Yes

No

If none of the conditions exist, you are not performing an Autokey Play operation. Continue with your work.

Does the operator information area indicate Play when the Play key is pressed?

Yes

No

Is List on the screen?

No

Yes

Press List (PF1).

Did List disappear?

Yes

No

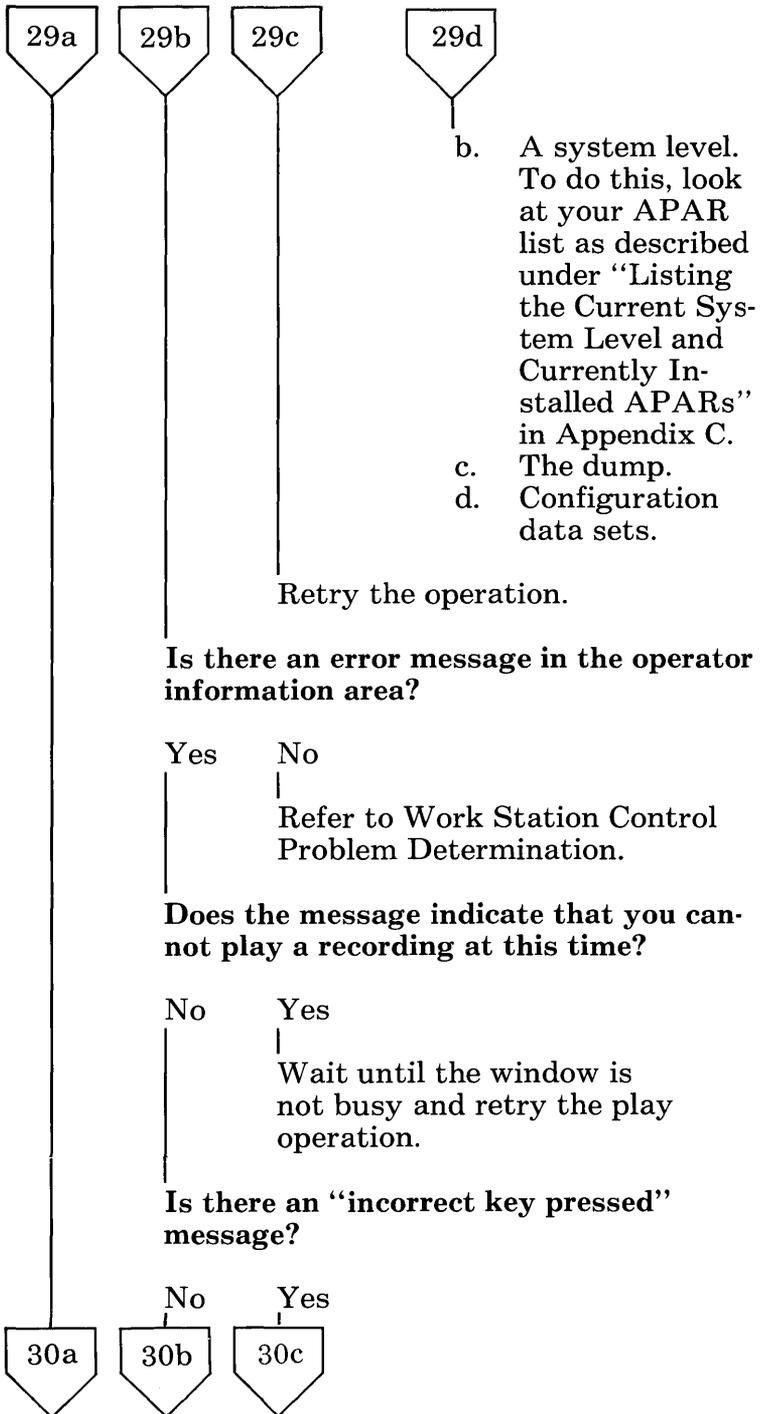
1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.

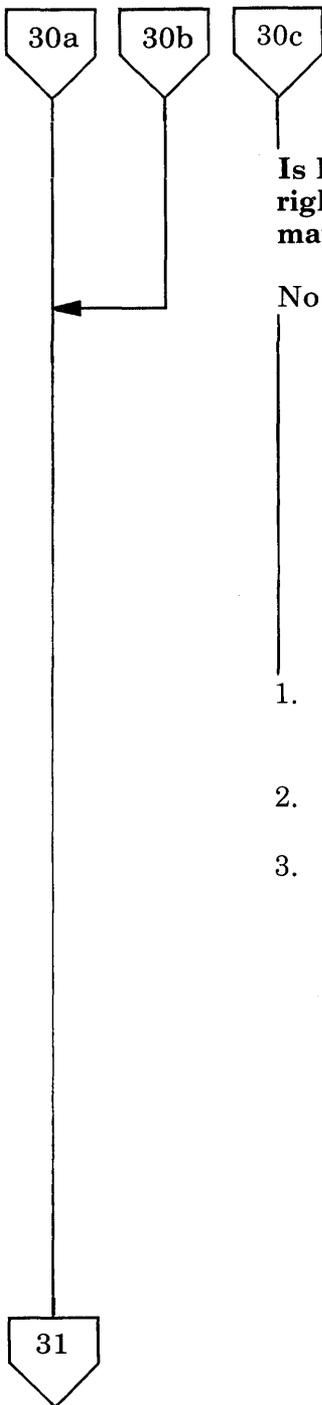
29a

29b

29c

29d





Is Record or Play present in the right half of the operator information area?

No

Yes

A recording or play session is already in progress with the active window. It must complete operation before a new play can begin.

Retry after the previous operation is completed.

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Are you having a problem entering the recording name?

No

Yes

Does the recording name consist of letters and/or numbers?

Yes

No

Recording names must consist of letters and/or numbers. Correct and retry.

Is List on the screen?

No

Yes

Press PF1 and retry the operation.

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Does an error message appear when the Enter key is pressed?

No

Yes

Was an unknown recording name entered?

No

Yes

Display the list of recordings.

Is the name entered an exact duplicate of one of the names in List, or a unique short portion of one of the names?

Yes

No

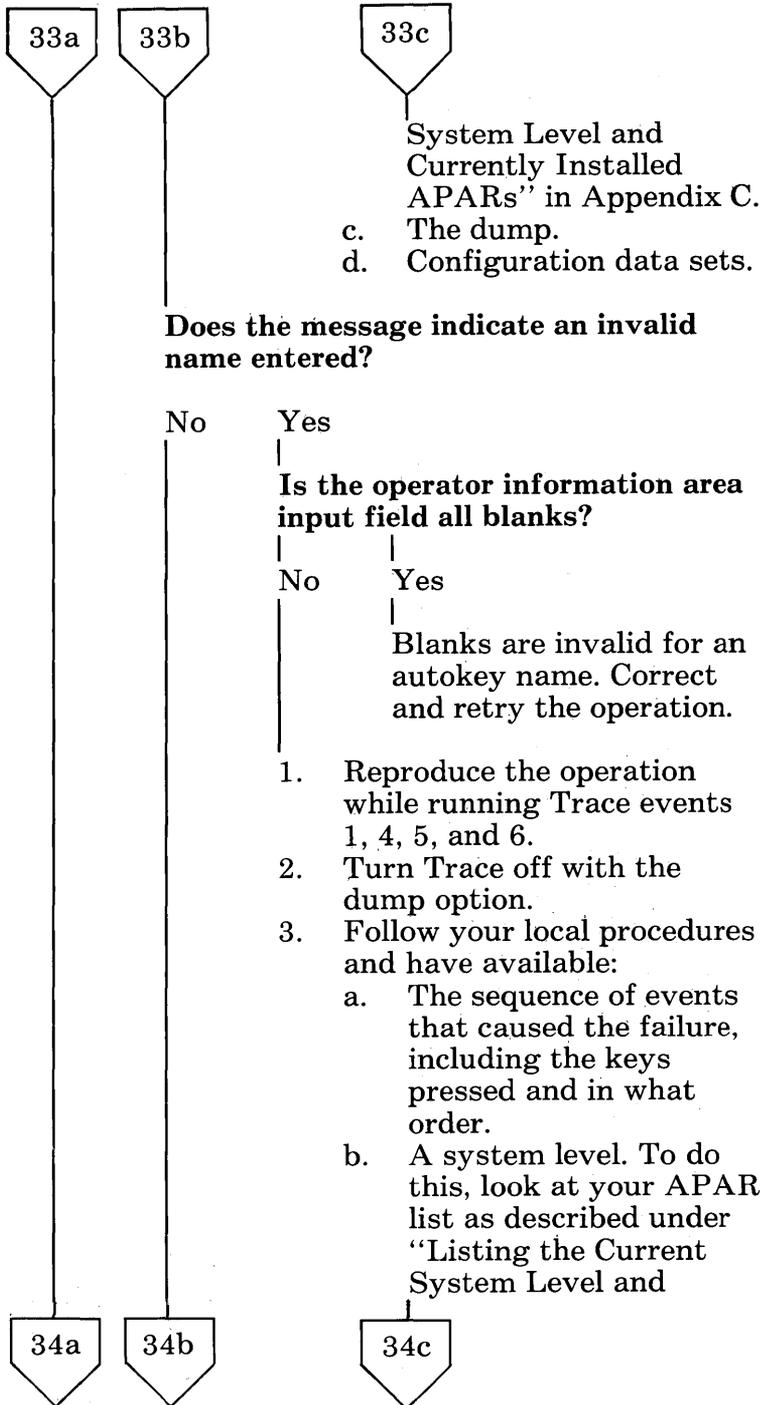
Correct the name and retry the operation.

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current

33a

33b

33c



34a

34b

34c

- Currently Installed APARs” in Appendix C.
- c. The dump.
 - d. Configuration data sets.

When the Enter key is pressed, does the active application regain control of the screen and is there a P in the operator information area?

Yes

No

- 1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
- 2. Turn Trace off with the dump option.
- 3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under “Listing the Current System Level and Currently Installed APARs” in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

This is normal. Continue with your work.

35

Does the Pause indicator appear in the operator information area when no Pause key was recorded either by pressing the Pause key or by pressing an attention key such as PA1, a PF key, or Enter?

No

Yes

The keystroke from the recording may be invalid for the current window. This condition may occur if you recorded keystrokes in one window and you attempted to play them in another window. Keystrokes might be rejected by the active application if you tried to keystroke into a protected field. Correct the condition that is causing the error and retry the operation.

Does the Pause indicator toggle off when the Pause key is pressed?

No

Yes

This is normal. Continue with your work.

Is the area you are trying to play into valid for input, that is, not a protected field?

Yes

No

Play can be only into areas that allow input. Correct the condition and retry the operation.

Have you recorded pauses that you are not getting?

No

Yes

Pauses recorded after you press an attention key such as PA1, a PF key, or Enter are ignored, since the attention key generated its own pause. Pauses recorded as the last keystroke of a recording are also ignored.

Is this your condition?

No

Yes

This is normal operation. Continue with your work.

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Are you trying to cancel a play session?

No

Yes

Are you in application mode?

Yes

No

Press WS Ctrl, a toggle key, to get into application mode.

Did the P in column 55 of the operator information area and the P, if on, in column 57 of the operator information area disappear when the Quit key was pressed?

Yes

No

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

38a

38b

38c

38a

38b

38c

- c. The dump.
- d. Configuration data sets.

Did normal keystroking continue and no unusual screen changes occur?

No Yes

Play was canceled correctly. Continue with your work.

No Yes

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

39a

39b

39a

39b

- c. The dump.
- d. Configuration data sets.

If none of the above condition exists, you are not playing an autokey recording. Continue with your normal operation.

Autokey Problem Determination: Erase

Are you trying to erase a recording?

Yes

No

If none of the conditions exist, you are not performing an autokey Erase operation. Continue your work.

Does the operator information area indicate WSCTRL?

Yes

No

Press the WS Ctrl key.

Does the operator information area indicate WSCTRL?

Yes

No

1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current

41a

41b

41a

41b

System Level and
Currently Installed
APARs" in Appendix C.

- c. The dump.
- d. Configuration data sets.

Does the operator information area indicate Auto?

Yes

No

Make sure you are in lowercase, and press the Auto key.

Does the operator information area indicate Auto?

Yes

No

1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current

42a

42b

42a

42b

- System Level and Currently Installed APARs" in Appendix C.
- c. The dump.
- d. Configuration data sets.

Does the operator information area indicate Erase?

Yes

No

Press the Erase Input (ErInp) key.

Does the operator information area indicate Erase?

Yes

No

Is List on the right side of the screen?

No

Yes

Press PF1 (List).

Did List disappear?

Yes

No

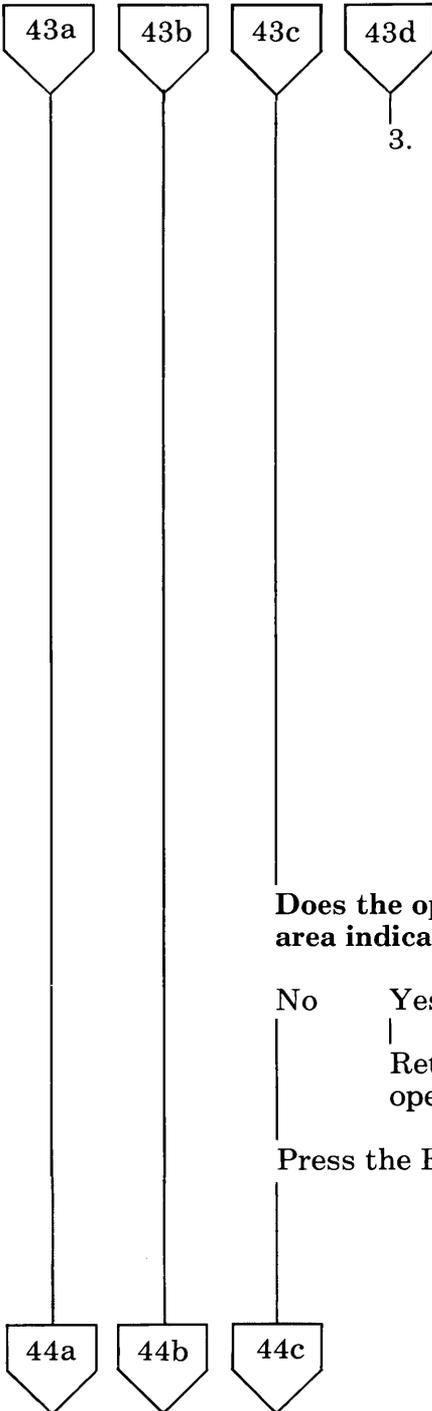
1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.

43a

43b

43c

43d



43a

43b

43c

43d

3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Does the operator information area indicate Erase?

No

Yes

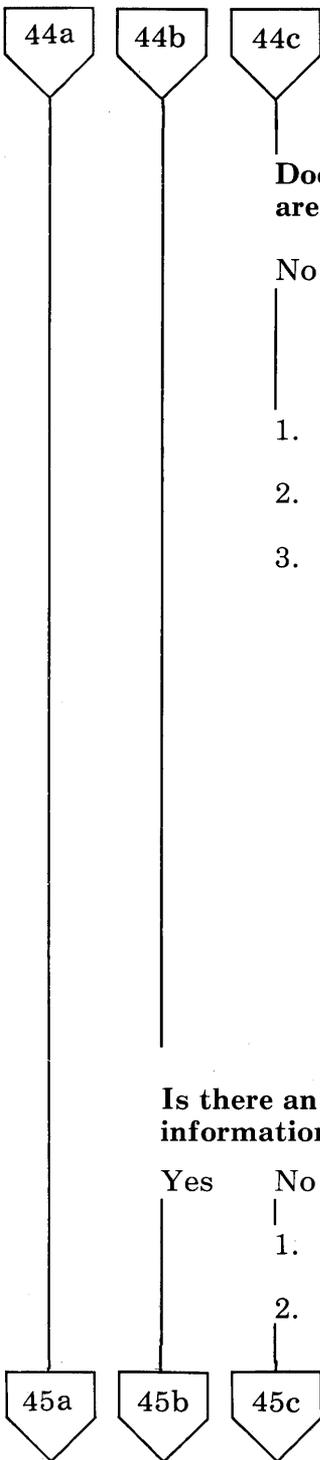
Retry the erase operation.

Press the Erase key.

44a

44b

44c



Does the operator information area indicate Erase?

No

Yes

Retry the erase operation.

1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Is there an error message in the operator information area?

Yes

No

1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.



3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Does the message indicate that you cannot erase or delete a recording, because record or play is in progress?

No

Yes

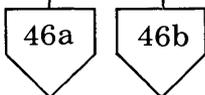
Select Screen Profile 0 and jump through all available windows, looking for a recording or play indicator in the operator information area.

Did you find a recording or play indicator on?

No

Yes

This is normal operation. Retry the Erase after the recording or play completes operation.



46a

46b

1. Reproduce the operation while running trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing and Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Are you having a problem entering the recording name?

No

Yes

Is the recording name only letters or numbers?

Yes

No

Recording names must be only letters or numbers. Correct and retry.

Is List on the screen?

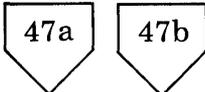
No

Yes

Press PF1 and retry the operation.

47a

47b



1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Does an error message appear when the Enter key is pressed?

No Yes

Was the message text "Unknown name entered"?

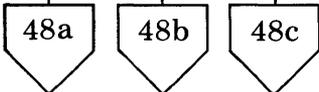
No Yes

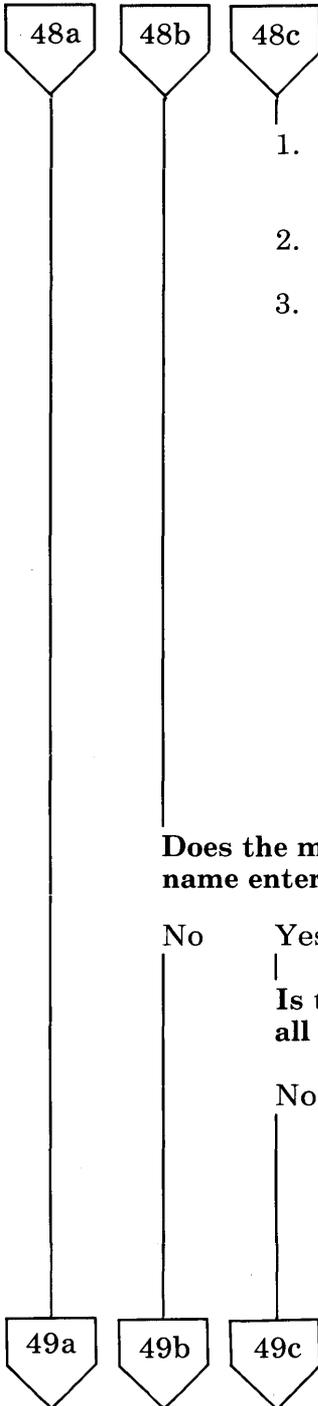
Display the list of recordings.

Is the name entered an exact duplicate of one of the names in the list, or a unique short portion of the names?

Yes No

Correct the name and retry the operation.





48a

48b

48c

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Does the message indicate an invalid name entered?

No

Yes

Is the operator information area all blanks?

No

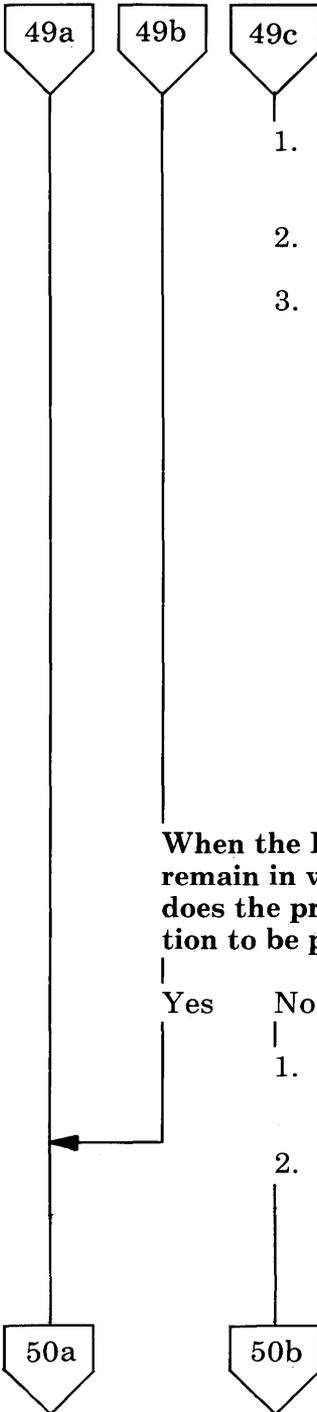
Yes

Blanks are invalid for an autokey name. Correct and retry the operation.

49a

49b

49c



1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

When the Enter key is pressed, do you remain in work station control mode and does the prompt line ask for the operation to be performed?

Yes No

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.

50a

50b

3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Is the erased recording still available for use?

No

Yes

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

51

Are you trying to cancel an erase operation?

No

Yes

Did you press the Quit key before pressing Enter?

Yes

No

The recording has been erased. Recovery would be to restore the autokey file if the recording was saved.

Does the operator information area revert to the initial autokey entry?

No

Yes

The erase has been canceled. Continue with your normal work.

1. Reproduce the operation while running Trace events 1, 4, 5, and 6.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

52a

52b



- c. The dump.
- d. Configuration data sets.

If none of the above conditions exists, you are not performing an autokey erase or play operation. Continue with your normal work.

Communication Problem Determination

1. Match your symptom with one in the following chart, and take the action specified.
2. If a hardware failure is indicated, refer to *IBM 3270 Personal Computer Guide to Operation* for verification.
3. If you find a hardware problem, follow local procedures for reporting IBM 3270 hardware failures.
4. If you find no hardware problem:
 - a. Reproduce the problem while running Trace events 16 through 30.
 - b. Stop Trace with the dump option.
 - c. Report the failure to your support personnel with the following information:
 - 1) The sequence of events that caused the failure, including the keys pressed and in what order.
 - 2) A print of the screen after the failure occurs.
 - 3) A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - 4) A dump.
 - 5) The type of host (VM/CMS, TSO, etc.)
 - 6) Configuration data sets.

Note: n = number from 0 to 9.

Symptom	Probable Cause	Action
  C	3274 Control Unit	The LT is not customized on the 3274. Follow local procedures for reporting 3274 problems.
  590	3274 Control Unit	The 3274 is not active or responding: <ol style="list-style-type: none"> Refer to step 2, p. B-53 and if the IBM 3270 diagnostics do not indicate a hardware problem follow local procedures for reporting 3274 problems.
 	Host	Time is required for the system to perform a function. WAIT.
Blank screen with no  in the operator information area Note: The operator information area may or may not contain other errors.	<ol style="list-style-type: none"> 3270 Personal Computer hardware Bad connection between 3274 and the 3270 Personal Computer 3270 Personal Computer 	<ol style="list-style-type: none"> Refer to <i>IBM 3270 Personal Computer Guide to Operations</i>. Follow the procedures for reporting problems. Refer to 4, steps a-c, p. B-53.
Blank screen with  in the operator information area and no other errors in the operator information area.	Host	<ol style="list-style-type: none"> There is no host application active for this logical terminal. Follow the procedures for reporting host problems.
  591	<ol style="list-style-type: none"> 3270 Personal Computer hardware 3270 Personal Computer 	<ol style="list-style-type: none"> There is a customization mismatch (SNA vs. non-SNA) between the IBM 3270 Personal Computer and the 3274.
  204   207   208   211	3270 Personal Computer	<ol style="list-style-type: none"> Turn power off and then on again. See step 3, p. B-53.

Symptom	Probable Cause	Action
X B 209	3270 Personal Computer	<ol style="list-style-type: none"> 1. Make sure the signal cable is connected. 2. Turn power off and then on again. 3. If the problem still exists, refer to the <i>IBM 3270 Personal Computer Guide to Operations</i>.
X B 240 X B 242 X B 243	3270 Personal Computer	<ol style="list-style-type: none"> 1. Turn power off and then on again for the host session. 2. If the problem still exists, see step 4, p. B-53.
X B 2nn (not listed above) X B 3nn	3274 Control Unit	<ol style="list-style-type: none"> 1. Turn power off and then on again. 2. If the problem still exists, follow local procedures for reporting 3274 problems.
X PROG 4nn	3274 Control Unit	<ol style="list-style-type: none"> 1. Press Reset and retry the operation. 2. If the problem still exists, follow your local procedures for reporting host problems.
X Z 5 nn	3274 Control Unit	<ol style="list-style-type: none"> 1. Press Reset and retry the operation. 2. If the problem still exists, follow your local procedures for reporting 3274 problems.
X B 620	3270 Personal Computer	<ol style="list-style-type: none"> 1. Press Reset and retry the operation. 2. If the indication cannot be reset, turn power off and then on again. 3. See step 3, p. B-53.

Symptom	Probable Cause	Action
<p>✘ 630</p> <p>to</p> <p>✘ 640</p>	3274 Control Unit Unit	<ol style="list-style-type: none"> 1. Press Reset and retry the operation. 2. If the problem still exists, follow the procedures for reporting 3274 problems. 3. When the problem is resolved, press Reset to continue.
<p>✘ 650</p> <p>to</p> <p>✘ 699</p>	3270 Personal Computer	<ol style="list-style-type: none"> 1. Turn power off, then on again, and retry the operation. 2. If the problem still exists, take a dump.
✘ PROG7nn	Host	<ol style="list-style-type: none"> 1. Press Reset and retry the operation. 2. If the problem still exists, follow your local procedures for reporting host problems.
Any other problem	3270 Personal Computer	<ol style="list-style-type: none"> 1. Refer to the <i>IBM 3270 Personal Computer Guide to Operations</i>. 2. If the problem still exists, see step 4, p. B-53.
✘ I	3270 Personal Computer	<ol style="list-style-type: none"> 1. Time is required for the system to perform an internal function. WAIT.

Program Error Codes

The following is a list of error status codes displayed by the IBM 3270 Personal Computer for the specified program checks. These codes are in two groups. The codes in the first group, 701 to 730, signify an attachment-dependent error condition. The codes in the second group, 750 to 772, signify an attachment-independent device error condition. For recovery in both groups, press the Reset key to reset the program check status and retry the operation.

If the same problem still exists, follow local procedures.

Error Code	Probable Cause	Effect (SNA Sense Code or Non-SNA Op Check)	Action
701	Category not supported BIND RU	1007	1. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems.
702	RU > 1,536 bytes received (SNA buffer overrun condition)	1002	
703	Function not supported: Unsupported Session Control request Unsupported Data Flow Control request Invalid signal request code (for example, 0001XXXX)	1003	
704	Format indicator (FI) bit not allowed	400F	
705	Sequence number error	2001	
706	Chaining error	2002	
707	Bracket state error	2003	
708	Data traffic reset state	2005	
709	HDX error	2004	
711	Session limit exceeded	0805	
712	Bracket rid reject	0813	

Error Code	Probable Cause	Effect (SNA Sense Code or Non-SNA Op Check)	Action
713	Session already bound	0815	1. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems.
714	No LU-LU session	8005	
715	LU not active	8009	
716	Not enough bytes in BIND RU	0821	
717	Invalid support level (bytes 1-3)	0821	
718	Invalid PLU protocol (byte 4)	0821	
719	Invalid SLU protocol (byte 5)	0821	
720	Invalid common protocol (bytes 6-7)	0821	
721	Less than 64-byte RU length specified (byte 10)	0821	
723	Invalid LU type (byte 14)	0821	
724	Invalid screen size (bytes 20-24)	0821	
725	Cryptography not supported (byte 26)	0821	
726	Negative SNA response from the host	—	
727	SNA exception request received	—	
728	An RM, RMA, or RB command or a Read Partition SF type received with EB and/or without CD	0829	
729	A Read Partition SF type received in retry state	0871 Op Check	
730	A Read buffer command received in normal state, and partition 0 does not exist.	1005	
750	Invalid command received	1003 Op Check	

Error Code	Probable Cause	Effect (SNA Sense Code or Non-SNA Op Check)	Action
751	SFE, MF, or SA order with invalid character set value in the range X'01'—X'FE'	0863 Op Check	1. Press Reset and try again.
752	a. Invalid address received following an SBA, RA or EUA order b. MF order addressed to a nonfield attribute location	1005 Op Check	2. If the problem still exists, follow local procedures for reporting problems.
753	a. Data follows a RM, RB, or EAU command b. RA order received with invalid character c. GE order received with invalid character d. SFE, MF, or SA order with invalid attribute type e. SFE, MF, or SA order with invalid attribute value for highlight or color or character set value of X'FF'	1003 Op Check	
754	Datastream ended before all required bytes for an RA, EUA, SF, SFE, MF, SA, or GE order were received	1005 Op Check	
755	a. Invalid order received (EBCDIC code value less than X'40' is not recognized) b. EOs or sub control code received while 3270 Personal Computer was configured for non-EAB	1003 Op Check	
756	a. Invalid structured field type b. Structured field type not supported for current configuration	1003 Op Check	

Error Code	Probable Cause	Effect (SNA Sense Code or Non-SNA Op Check)	Action
757	<ul style="list-style-type: none"> a. Load PS SF with invalid PS alias b. Load PS SF load type not supported 	1003 Op Check	<ul style="list-style-type: none"> 1. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems.
758	Set reply mode SF received with invalid mode	1003 Op Check	
759	<ul style="list-style-type: none"> a. Read partition SF not last SF b. SF type incomplete c. SF length invalid d. SF length 0000 but not last SF e. Load PS SF length error f. Set reply mode SF with field/ext. field mode and data following 	1005 Op Check	
760	<ul style="list-style-type: none"> a. Erase/Reset Area SF reserved fields not zero b. Set Reply Mode SF attribute type reserved 	1003 Op Check	
761	<ul style="list-style-type: none"> a. SF type ID invalid, not created, or nonzero in implicit partition state b. Query PID not X'FF' c. 3270 command received in explicit partition state and PID 0 does not exist 	1005 Op Check	
762	<ul style="list-style-type: none"> a. Create Partition SF parameter error b. Set Window Origin SF parameter error. 	1005 Op Check	
763	<ul style="list-style-type: none"> a. Create Partition SF caused a window overlap b. Create Partition SF rejected because of insufficient resources 	1005 Op Check	
764	<ul style="list-style-type: none"> a. Load PS SF addressed PS invalid b. Load PS SF extension-invalid color bits 	084C Op Check	

Error Code	Probable Cause	Effect (SNA Sense Code or Non-SNA Op Check)	Action
765	<ul style="list-style-type: none"> a. Load PS SF with invalid load start point b. Load PS SF with invalid code point of X'FF' 	1005 Op Check	<ol style="list-style-type: none"> 1. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems.
766	<ul style="list-style-type: none"> a. Load PS SF with incomplete PS cell data b. Load PS SF with invalid end flag for type 2 PS c. Load PS SF with invalid type 2 header (end flag not encountered and not end of data) 	1005 Op Check	
767	<ul style="list-style-type: none"> a. Create Partition SF with invalid address mode b. Create Partition SF with bits 0—3 of byte 4 not zero 	1003 Op Check	
768	Load PS SF extension: <ul style="list-style-type: none"> a. Invalid x units b. Invalid y units c. Invalid extended parameter length d. Extended parameter length missing 	1005 Op Check	
769	Load PS SF extension: <ul style="list-style-type: none"> a. Invalid byte 8 Reserved bits 3—7 not zero b. Byte 11 not zero c. Byte 12 bits 5—7 not zero 	1003 Op Check	
770	Structure field type (except 3270E) with start print in WCC, but not last structured field	1001 Op Check	
771	Invalid command in structured field	1003 Op Check	

Error Code	Probable Cause	Effect (SNA Sense Code or Non-SNA Op Check)	Action
772	<ul style="list-style-type: none"> a. Resources requested temporarily unavailable. b. Create Partition: <ul style="list-style-type: none"> 1. No partition allocated to the LT 2. Number of partitions allocated to the LT exceeded 3. Scroll buffer specified but not allowed c. Set Attribute, Modify Field, Start Field Extended: PSA-PSF requested, but PS not allocated to the LT d. Load PS: PS not allocated to the LT 	084B Op Check	<ul style="list-style-type: none"> 1. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems.

Customization Problem Determination

Did you receive a customization message between CU001 and CU010 or between CU015 and CU999?

No

Yes

Refer to the message in Appendix E and use the explanation and user response for resolving the problem.

Did you receive message CU016?

No

Yes

Is the IBM 3270 Personal Computer Control Program loaded, or have you started a user application that reserves storage prior to doing customization?

Yes

No

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes

No

Do you have at least 256K of storage?

Yes

No

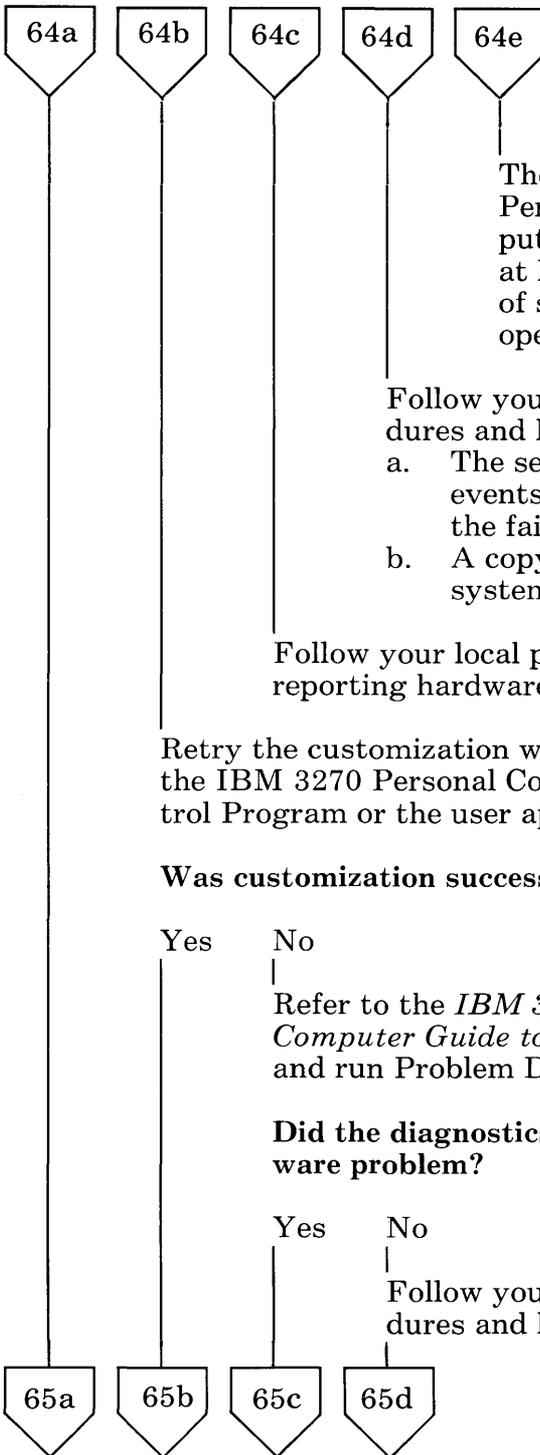
64a

64b

64c

64d

64e



64a

64b

64c

64d

64e

The IBM 3270 Personal Computer requires at least 256K of storage to operate.

Follow your local procedures and have available:

- a. The sequence of events that caused the failure.
- b. A copy of the system diskette.

Follow your local procedures for reporting hardware problems.

Retry the customization without loading the IBM 3270 Personal Computer Control Program or the user application.

Was customization successful?

Yes

No

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes

No

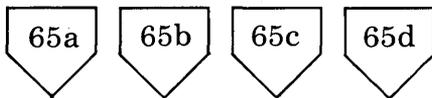
Follow your local procedures and have available:

65a

65b

65c

65d



- a. The sequence of events that caused the failure.
- b. A copy of the system diskette.

Follow your local procedures for getting the hardware repaired.

Continue customizing.

Did you receive customization message CU011, CU012, CU013, or CU014?

No Yes

Are you using the correct diskettes as input for the customization process?

Yes No

Retry the operation with the correct diskette.

Retry the operation with a backup of the diskettes.

Does the failure persist?

Yes No

Continue with your customization using the backup diskettes.

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.



Did diagnostics find a hardware problem?

Yes No

|
Follow your local procedures and have available:

- a. The sequence of events that caused the failure.
- b. A copy of the system diskette.

|
Follow your local procedures for getting the hardware repaired.

Did you receive message CU999?

No Yes

|
Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did diagnostics find a hardware problem?

Yes No

|
Follow your local procedures and have available:

- a. The sequence of events that caused the failure
- b. The error code reported in message CU0999
- c. A copy of the system diskette.

67a

67b

67a

67b

Follow your local procedures for getting the hardware repaired.

Since you did not receive any customization messages, refer to the beginning of the appendix and restart the problem determination process.

File Transfer Problem Determination

Did you receive a TRANSnn message other than TRANS07, TRANS08, TRANS11, TRANS13, TRANS14, TRANS26, or TRANS27?

No Yes

Refer to that message in Appendix E and follow the directions to correct the problem.

Did you receive message TRANS07?

No Yes

Retry the operation.

Did the problem persist?

Yes No

Continue with your work.

Is the host operational?

Yes No

Retry the operation when the host is operating.

1. Reproduce the operation while running Trace events 45, 46, 47, and 48.
2. Turn Trace off with the dump option.

69a

69b

69a

69b

3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the commands issued.
 - b. The dump.
 - c. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

Did you receive message TRANS08?

No

Yes

Retry the operation.

Did the problem persist?

Yes

No

Continue with your work.

Is the host operational?

Yes

No

Retry the operation when the host is operating.

1. Reproduce the operation while running Trace events 45, 46, 47, and 48.
2. Turn Trace off with the dump option.

70a

70b

70a

70b

3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the commands issued.
 - b. The dump.
 - c. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

Did you receive message TRANS11?

No

Yes

Check the operator information area for the host session you are using file transfer with.

Is there an error code in the operator information area?

Yes

No

Retry the operation.

Was it successful?

Yes

No

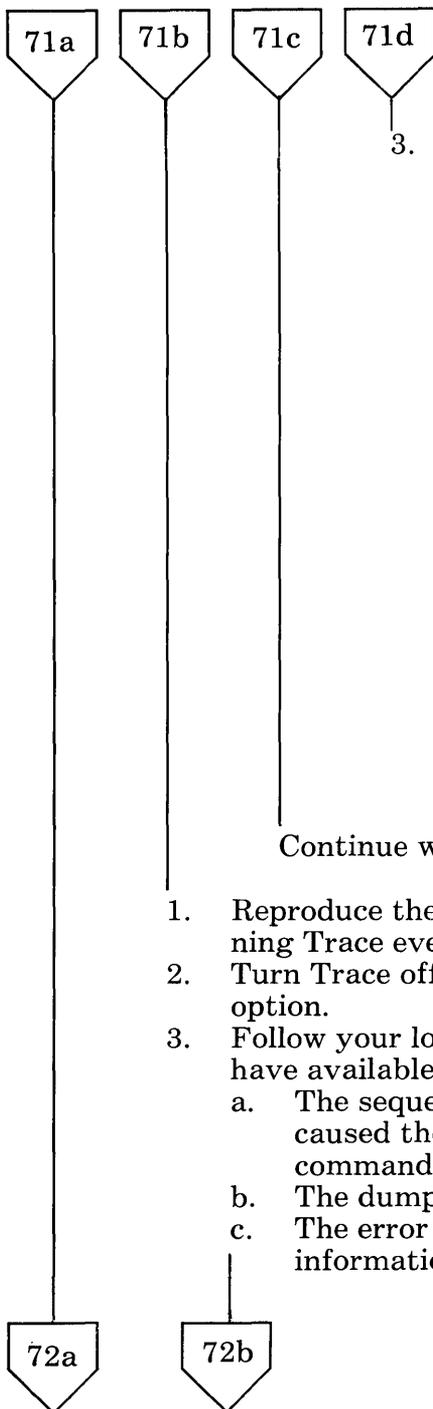
1. Reproduce the operation while running Trace events 45, 46, 47, and 48.
2. Turn Trace off with the dump option.

71a

71b

71c

71d



3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the commands issued.
 - b. The dump.
 - c. The system level. To do this, look at your APAR List as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

Continue with your work.

1. Reproduce the operation while running Trace events 45, 46, 47, and 48.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the commands issued.
 - b. The dump.
 - c. The error code in the operator information area.

72a

72b

- d. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

Did you receive message TRANS13?

No

Yes

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the Send command.
- b. Copy of the DOS file that caused the failure.
- c. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- d. Whether you are using VM/CMS or TSO.

Did you receive message TRANS14?

No

Yes

Follow your local procedures and have available:

- a. The sequence of events that caused this failure, including the Receive command.

73a

73b

73a

73b

- b. A hexadecimal dump of the host file that caused the error.
- c. A System level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- d. Whether you are using VM/CMS or TSO.

Did you receive message TRANS26?

No

Yes

1. Reproduce the problem while running Trace events 45, 46, 47, and 48.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A dump of the failure.
 - c. A system level (both host and personal computer). To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

Did you receive message TRANS27?

No

Yes

74a

74b

74a

74b

Did you press the Ctrl + Break keys?

Yes

No

1. Reproduce the problem while running Trace events 45, 46, 47, and 48.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that cause the failure, including the keys pressed and in what order.
 - b. A dump.
 - c. A system level (both host and personal computer). To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

This is normal message when file transfer is terminated by pressing the Ctrl + Break keys.

Is the host inoperative?

No

Yes

Try the operation when the host is available.

75

Is the host file transfer program installed?

Yes No

Report the condition in accordance with your local procedures.

Was the file transfer command typed in the personal computer window?

Yes No

Retry the operation, entering the command in the personal computer window.

Did file transfer complete operation without an error being reported, but there is a problem with the transferred file?

No Yes

If there is missing or incorrect data, but file transfer completes operation without indication of error, check for the following:

- a. It is a user error (bad source data set, incorrect options specified).
- b. User did not request APPEND (default is REPLACE).
- c. If the host is TSO, there are potential problems with user catalogs.

If there is a host/incorrect data problem, follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys

76a

76b

76a

76b

pressed and in what order and including the file transfer command as it was entered.

- b. A hexadecimal dump of the host file.
- c. A copy of the personal computer file on diskette.
- d. A system level (both host and personal computer). To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

Did file transfer terminate abnormally with an invalid error message, such as "File not found", when the file actually exists?

No

Yes

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The diskette or a copy.

77

Did file transfer hang?

No

Yes

Switch to the host session and verify you still have the host connection. If the hang is not due to the host being inoperative, follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. A copy of the command issued.
- c. If the transfer was to disk or diskette, whether the failure is for all transfers or only for a specific (type/size) file or data set.
- d. What other applications were running.

Did you receive a program check at the host?

No

Yes

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. A dump of the failure at the host end.

Note: The personal computer must be powered down to recover.

Did you receive a program check at the personal computer?

No Yes

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. A copy of the file being transferred.

Did the personal computer send or receive too much "file" data or not the whole file?

No Yes

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. A copy of the host and personal computer files.

Did you see "garbage" in the personal computer window rather than a message?

No Yes

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.

79a

79b

79a

79b

- b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

Did you see a user error message that contradicts the situation, such as "lost contact with host" but the host program is still running?

No

Yes

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

You do not appear to have a problem with file transfer. Continue with your work.

Keyboard Problem Determination

Can you keystroke in any window?

Yes

No

Turn power off and then on. Retry the operation.

Do you have an error when you turn power on or are you unable to keystroke properly?

No

Yes

Refer to the *IBM 3270 Personal Computer Guide to Operations*.

Is the personal computer window active (personal computer session)?

Yes

No

Is the problem with notepad window?

No

Yes

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

81a

81b

81c

81a

81b

81c

- c. A print of the screen after the failure.

Is the problem with the host window?

No Yes

Refer to Communication Problem Determination.

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics isolate a hardware problem?

No Yes

Follow your local procedures for getting the hardware repaired.

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. A system level. To do this, look at your APAR list as described under "Listing in the Current System Level and Currently Installed APARs" in Appendix C.

82

1. Press WS Ctrl.
2. Type A.
3. Press Alt + Ctrl + Del.
4. Release all keys.
5. Press WS Ctrl.
6. When you regain control, retry the operation that failed.

Did this resolve the problem?

No

Yes

Continue with your work.

Do incorrect characters or numbers appear on the screen as you are typing?

No

Yes

Press and release CapLk and retry the operation.

Does the failure still occur?

Yes

No

Continue with your work.

Press and release NumLk and retry the operation.

Does the failure still occur?

Yes

No

Continue with your work.

83a

83b

84a

84b

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Does a function fail to execute when you press one of the following multiple-key combinations?

Alt and/or Ctrl + Del
Alt and/or Ctrl + NumLk
Alt and/or Ctrl + Print
Alt and/or Ctrl + Quit
Alt and/or Ctrl + Attn
Alt and/or Ctrl + Test

No

Yes

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics isolate a hardware problem?

No

Yes

Follow your local procedures for getting the keyboard repaired.

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

85

Does the wrong function execute when you press keys for another function?

No Yes

|
Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics isolate a hardware problem?

No Yes

|
Follow your local procedures for getting the keyboard repaired.

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

Are there other failures?

No Yes

|
Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination. This is a probable hardware problem.

Continue with your work.

IBM 3270 Personal Computer Printer Problem Determination

Did you receive a message indicating that the printer is not ready?

No Yes

|
Ready the printer and retry.

Note: If the printer has power off, is not attached, or is offline, or if there is no paper, an error condition will occur.

Is the printer "on line" light now on?

Yes No

|
If the printer has power on and is cabled, but you cannot make it ready, refer to the *IBM 3270 Personal Computer Guide to Operations* for problem determination.

Is the operation now successful?

Yes No

|
Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes No

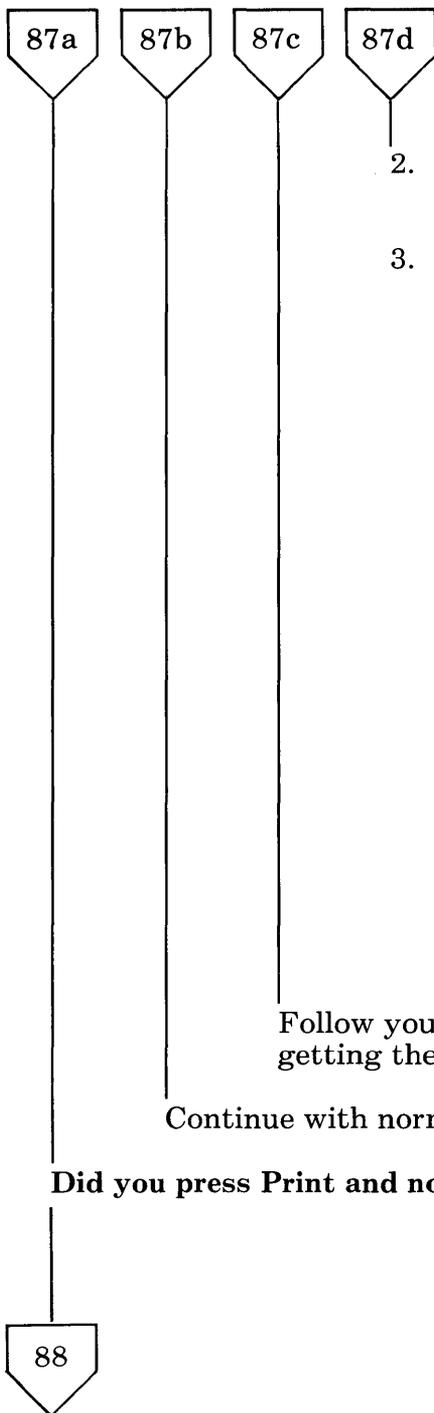
|
1. Reproduce the failure with Trace event 1.

87a

87b

87c

87d



87a

87b

87c

87d

2. Stop Trace with the /d parameter and submit the dump.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A description of the data on the screen.
 - c. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

Follow your local procedures for getting the failing unit repaired.

Continue with normal operation.

Did you press Print and nothing happened?

88

No

Yes

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes

No

1. Start Trace event 1.
2. Press Print.
3. Turn Trace off with the dump option.
4. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A description of the data on the screen.
 - c. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - d. The dump.

Follow your local procedures for getting the failing unit repaired.

Does the print consist of invalid or incomplete data?

No

Yes

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes

No

1. Start Trace event 1.
2. Press Print.
3. Turn Trace off with the dump option.
4. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A description of the data on the screen.
 - c. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - d. The dump.

Follow your local procedures for getting the failing unit repaired.

Did the print complete operation and then the system hung?

No

Yes

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. A description of the data on the screen.
- c. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.

There does not appear to be a problem with Print. Continue with your work.

Patch Problem Determination

Did you receive a Patch error message?

No Yes

Follow the directions for the message in Appendix E to correct the problem.

Did you follow the Patch installation procedures in Appendix C?

Yes No

Correct your error and retry the operation.

Did you receive the "PAT26 Patches Installed" message?

Yes No

Follow your local procedures and have available:

1. The sequence of events that caused the failure, including the keys pressed and in what order.
2. A backup copy on diskette of the diskette you patched. Include the patch file.
3. The history file, printed with the print-screen utility. To do this, look at your APAR history list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
4. A copy of the customization panels, using the print-screen facility.

92a

92b

92a

92b

Notes:

1. You can safely delete any user applications from the backup diskette you are creating.
2. If step 3 cannot be done, because of the failure, describe the data on the screen, including the operator information area.

Does the original problem still exist?

Yes

No

Do you have a new problem?

Yes

No

Continue with your work.

Remove the Patch that appears to have caused the new problem.

Does the problem still occur with the Patch removed?

Yes

No

Follow your local procedures and have available:

- a. The APAR number of the Patch causing the problem.
- b. A copy of the Patch file.
- c. The sequence of events that caused the failure, including the keys pressed and in what order.

93a

93b

93a

93b

Refer to the beginning of this appendix and restart the problem determination process.

Note the APAR number that was to have fixed the problem and refer to the beginning of this appendix and restart the problem determination process.

Personal Computer Application/ Control Program

Problem Determination

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes

No

Does the personal computer application work with DOS alone?

Yes

No

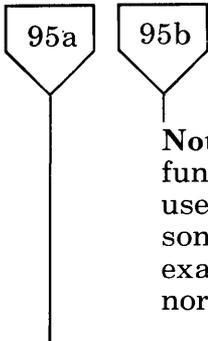
The problem is with the personal computer application. Report the problem to point of purchase.

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. Problem description.
- c. Name of application (if purchased and copyrighted), or else a copy of the application.
- d. Data needed to run the application.
- e. The system configuration. (See "Save and Restore Problem Determination" for how to find out the configuration.)

95a

95b

A diagram consisting of two callout boxes, 95a and 95b, which are inverted pentagons with a horizontal top edge. Box 95a is on the left and has a vertical line extending downwards from its bottom vertex. Box 95b is on the right and has a vertical line extending downwards from its bottom vertex. The lines from both boxes converge towards the text block below.

95a

95b

Note: It is possible that the application functions in a manner that prevents its use on a system with the IBM 3270 Personal Computer Control Program, for example, if the application bypasses the normal DOS 2.0 or BIOS interfaces.

Follow your local procedures for getting hardware repaired.

Save and Restore Problem Determination

Did you receive a Save or Restore error message?

No

Yes

Refer to Appendix E for help in determining the cause of the failure.

Did the problem persist?

Yes

No

Continue with your normal operation.

If you restored data and the restored data was different from what you expected, did you specify the correct options?

Yes

No

Specify the correct options and retry.

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did diagnostics find a hardware problem?

Yes

No

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.

97a

97b

97a

97b

- b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. A print of the screen after the failure occurs.
- d. If a Save or Restore command was entered and some of the data was saved (written to a file), all files associated with the command.

Follow your local procedures for getting the hardware repaired.

System Error Problem Determination

Did you receive message SY001?

No

Yes

Was the message followed by SY006?

Yes

No

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes

No

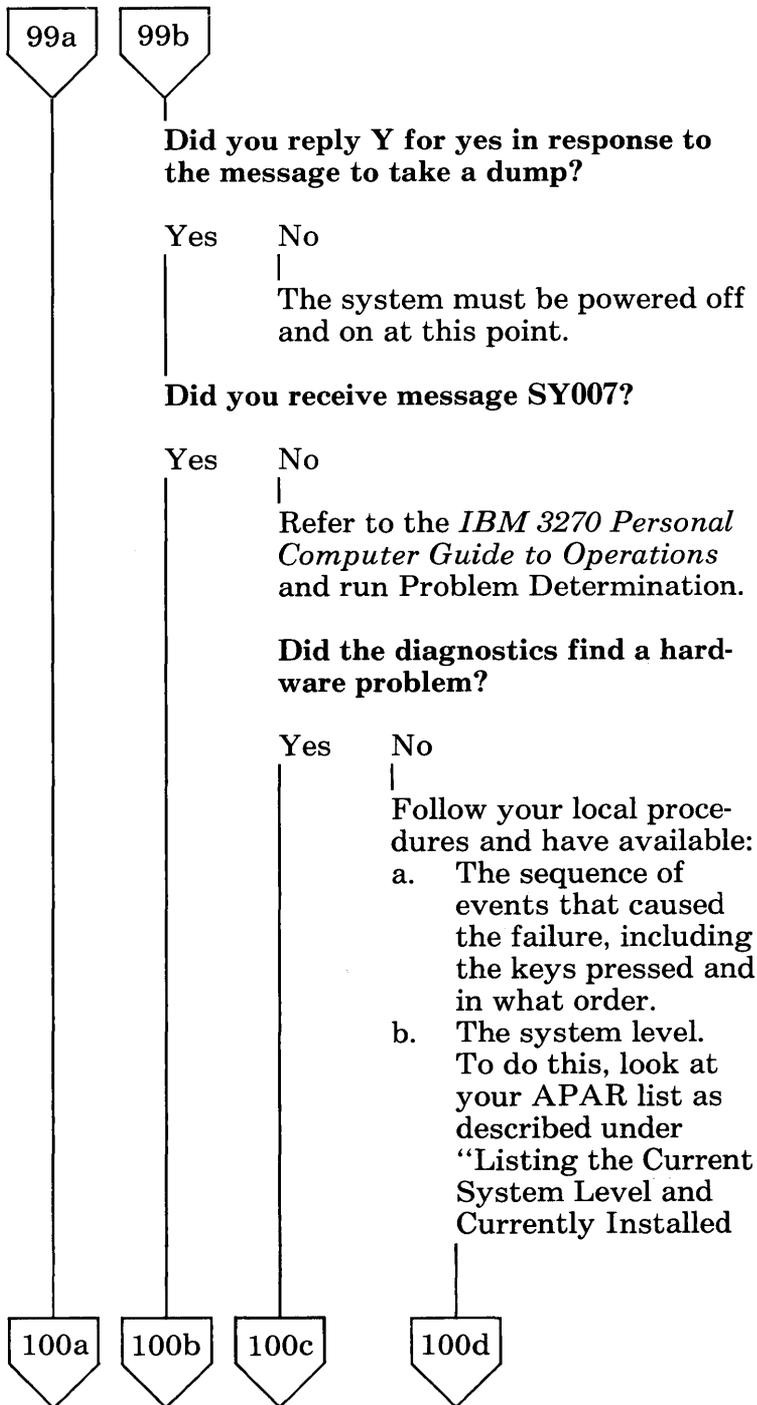
Follow your local procedures and have available:

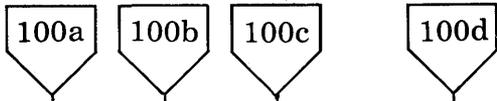
- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The variable data in the message SY001.

Follow your local procedures for getting the hardware repaired.

99a

99b





- c. The variable data in the SY001 message.

Follow your local procedures for getting the hardware repaired.

Did you receive message SY015?

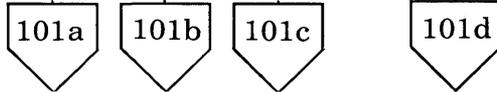
Yes No

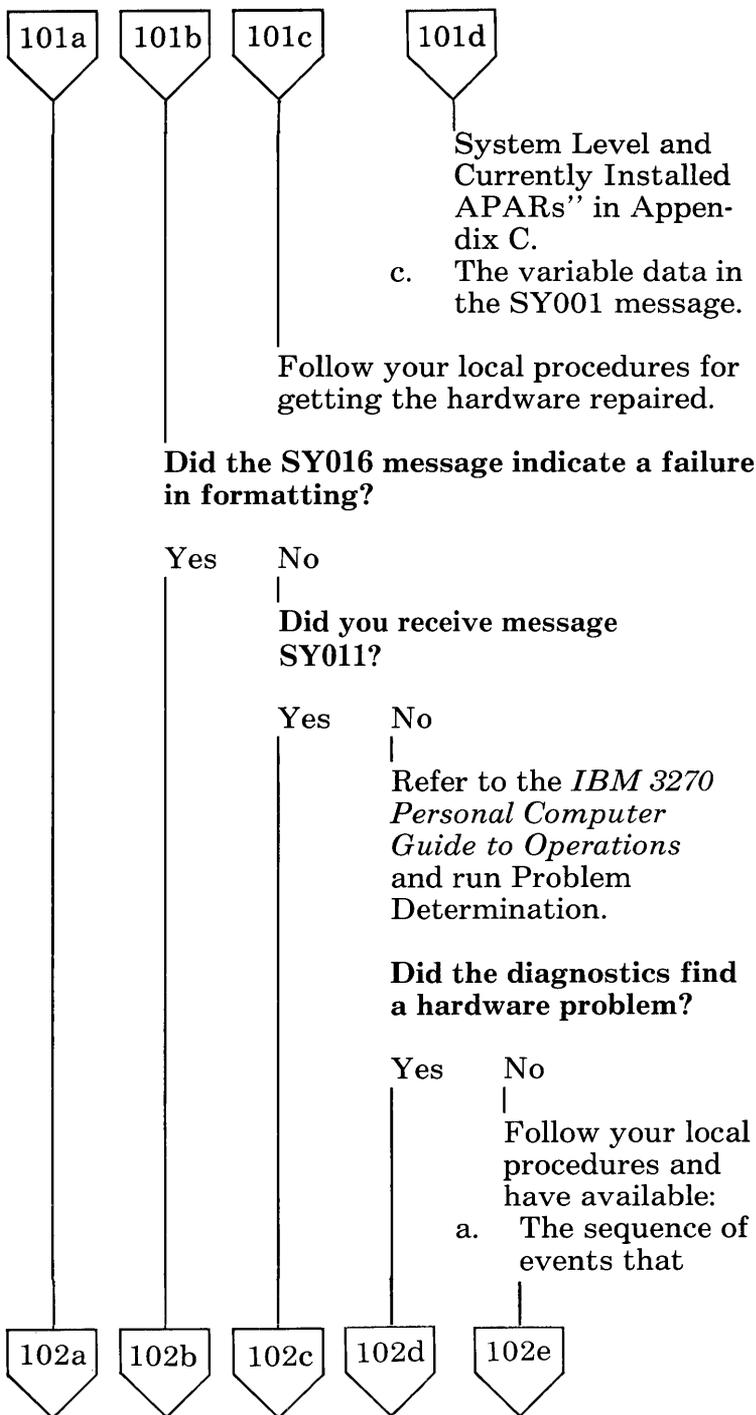
Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes No

- Follow your local procedures and have available:
- a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. The system level. To do this, look at your APAR list as described under "Listing the Current







caused the failure, including the keys pressed and in what order.

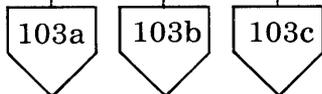
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The variable data in the SY001 message.

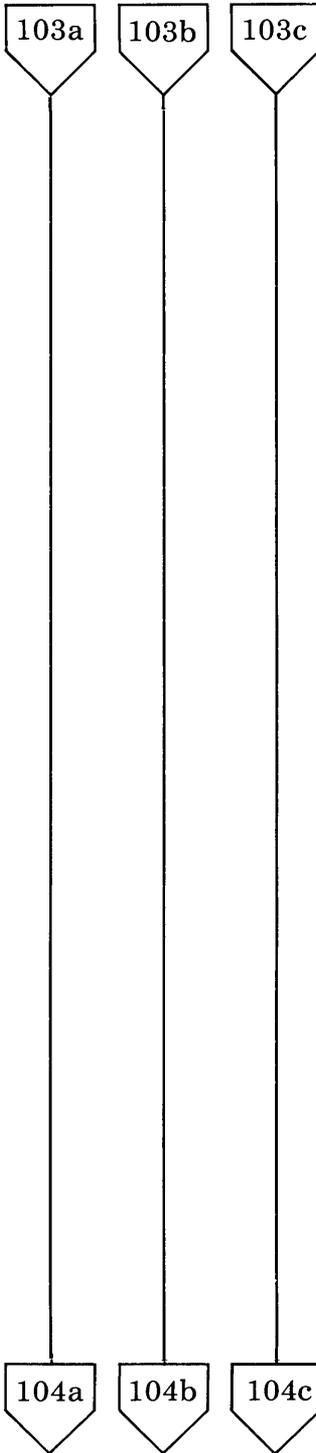
Follow your local procedures for getting the hardware repaired.

Did the SY013 message indicate a failure in dumping?

Yes No

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.





Did the diagnostics find a hardware problem?

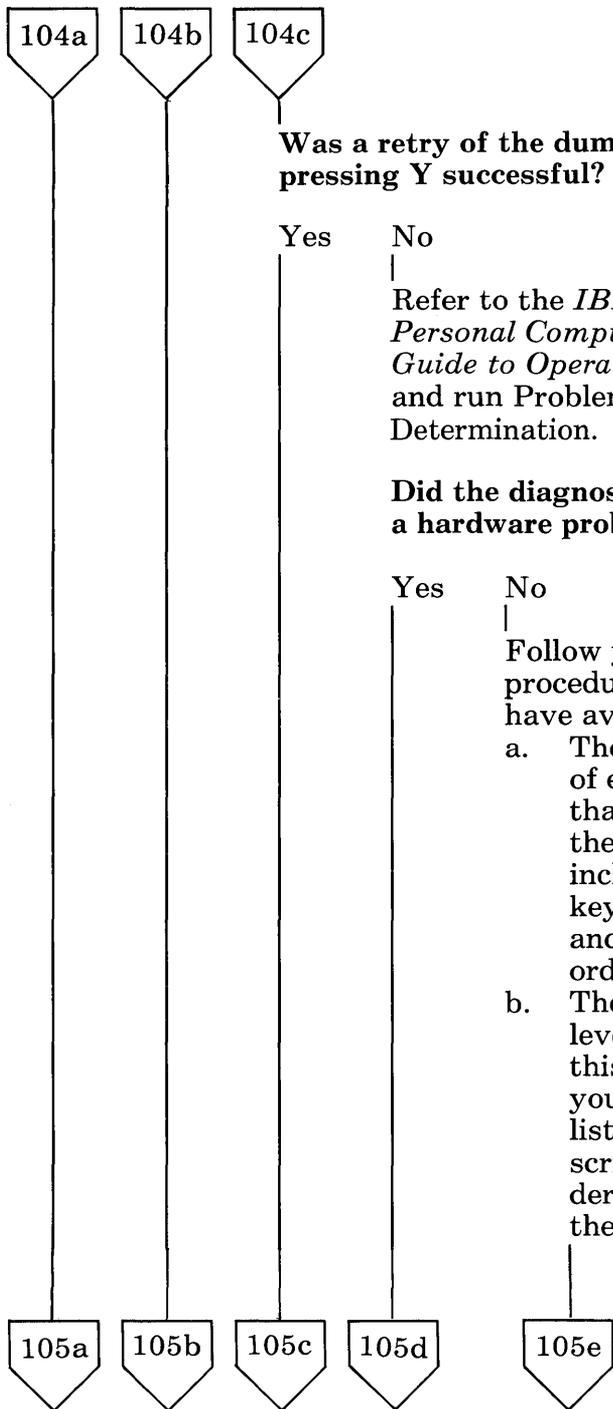
Yes

No

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The variable data in the SY001 message.
- d. The dump.

Follow your local procedures for getting the hardware repaired.



104a

104b

104c

Was a retry of the dump by pressing Y successful?

Yes

No

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes

No

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current

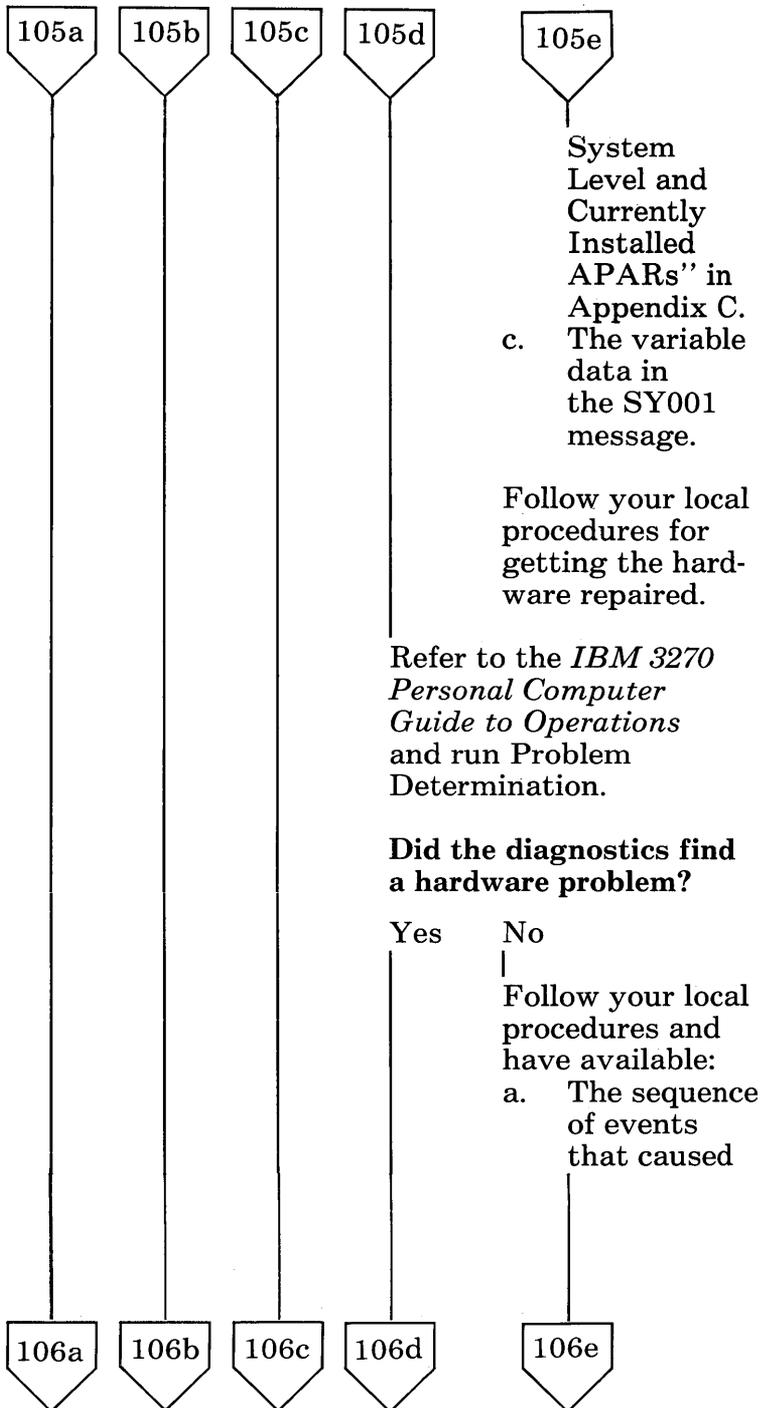
105a

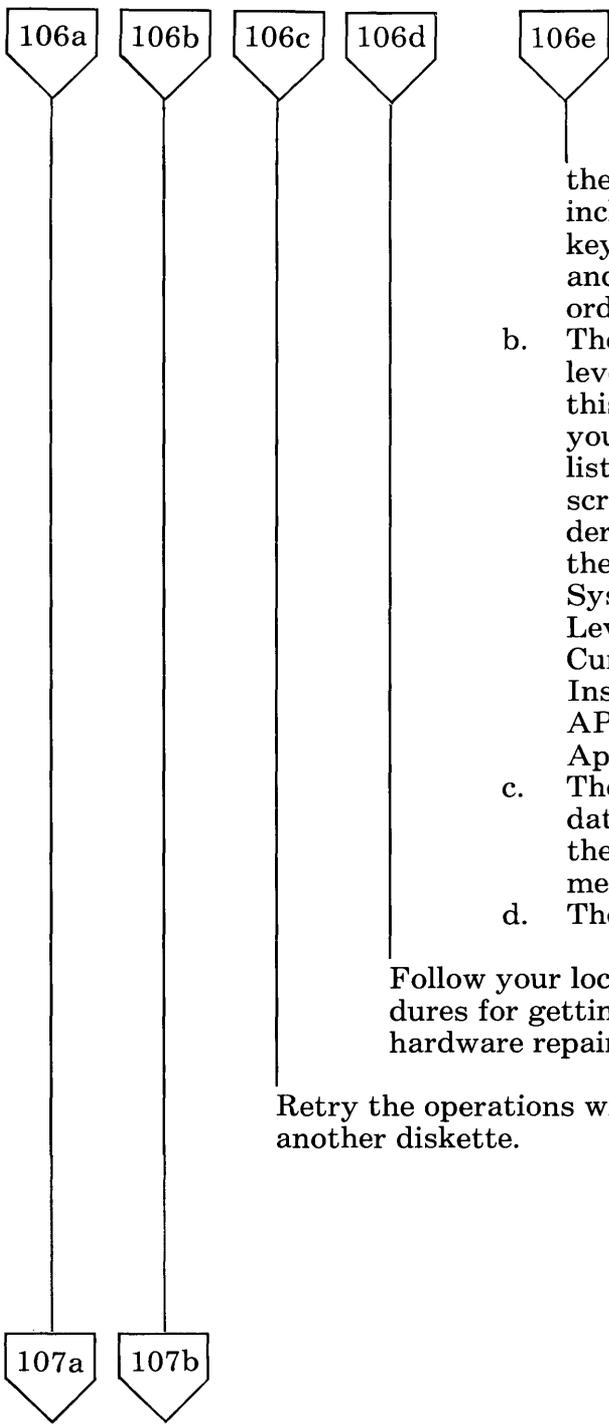
105b

105c

105d

105e

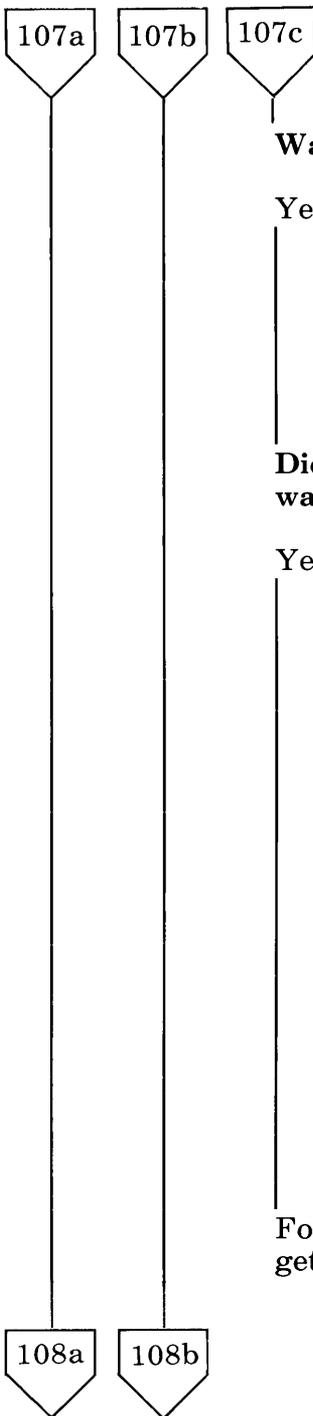




- the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The variable data in the SY001 message.
- d. The dump.

Follow your local procedures for getting the hardware repaired.

Retry the operations with another diskette.



Was the format successful?

Yes No

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes No

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The variable data in the SY001 message.

Follow your local procedures for getting the hardware repaired.

108a

108b

Continue with the dump process.

Did you receive message SY002?

No

Yes

Were the first four characters of the variable data in the message between 600 and 697?

Yes

No

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The variable data from the SY002 message.

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

109

Did the diagnostics find a hardware problem?

Yes No

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The variable data from the SY002 message.

Follow your local procedures for getting the hardware repaired.

Did you receive message SY003?

No Yes

Were the first four characters of the variable data in the message between 600 and 697?

Yes No

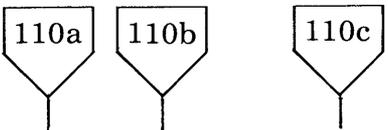
Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including

110a

110b

110c



- the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The variable data from the SY003 message.

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics isolate a hardware problem?

Yes No

Note: Errors between 600 and 697 indicate hardware errors and message SY003 indicates intermittent errors. If the problem persists and diagnostics fail to find the problem, follow local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.





- c. The variable data from the SY003 message.

Follow your local procedures for getting the hardware repaired.

Did you receive message SY004?

No

Yes

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Yes

No

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The variable data from the SY004 message.

Follow your local procedures for getting the hardware repaired.



Did you receive message SY005?

No Yes

Is the message persistent?

Yes No

Continue with your work.

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did diagnostics isolate a hardware problem?

Yes No

Follow your local procedures and have available:

- a. The sequence of events that caused the failure, including the keys pressed and in what order.
- b. The system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The variable data from the SY005 message.

Follow your local procedures for getting the hardware repaired.

Since you received no SYnnn messages, go to the start of this appendix and restart the problem determination process.

System Startup Problem Determination

If you received a System Startup message between ST001 and ST007 and have not yet referred to Appendix E, (Startup Messages: STnnn), do so before continuing in this appendix.

Did you receive message ST001?

No

Yes

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware failure?

Yes

No

Follow your local procedures and have available:

- a. The sequence of events that caused the failure.
- b. A copy of the system diskette.

Follow your local procedures for getting the hardware repaired.

Did you receive ST002 or ST007?

No

Yes

Follow your local procedures and have available:

- a. The sequence of events that caused the failure.
- b. A copy of the system diskette.
- c. The file name in message ST002 or ST007.

Did you receive message ST003?

No

Yes

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes

No

Follow your local procedures and have available:

- a. The sequence of events that caused the failure.
- b. A copy of the system diskette.
- c. The file name in message ST003.

Did you receive message ST004?

No

Yes

Have you started a user application that reserves storage prior to doing startup?

Yes

No

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

115a

115b

115a

115b

Did the diagnostics find a hardware failure?

Yes No

|
Follow your local procedures and have available:

- a. The sequence of events that caused the failure.
- b. A copy of the system diskette.

|
Follow your local procedures for getting the hardware repaired.

Retry the startup operation without loading the user application.

Was startup successful?

Yes No

|
Power off and on.

Was the POST successful?

Yes No

|
Refer to the *IBM 3270 Personal Computer Guide to Operations* and follow your local procedures for getting the hardware repaired.

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

116

Did the diagnostics find a hardware problem?

Yes No

Follow your local procedures and have available:

- a. The sequence of events that caused the failure.
- b. A copy of the system diskette.

Follow your local procedures for getting the hardware repaired.

More storage will be required if both the user application and the IBM 3270 Personal Computer Control Program are required at the same time.

Did you receive message ST005?

No Yes

The file name specified in the message did not contain expected data. Either the file has been damaged or it is not an IBM file. If the file is an IBM file, replace the system diskette with a backup system diskette, or repeat the customization task and retry the startup.

Was the operation successful?

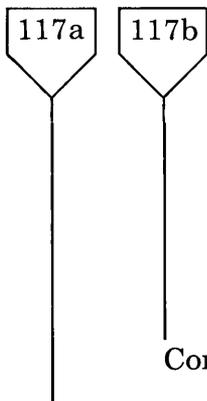
Yes No

Follow your local procedures and have available:

117a

117b

117c



- a. The sequence of events that caused the failure.
- b. A copy of the system diskette.
- c. The file name in message ST005.

Continue with your work.

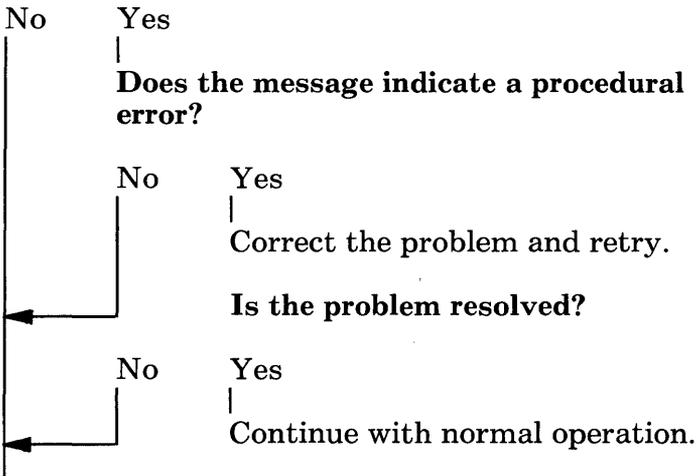
You received message ST006.

File INDCXFL.DAT contains invalid data.
Follow local procedures and have available:

- a. The sequence of events that caused the failure.
- b. A copy of the INDCXFL.DAT file.

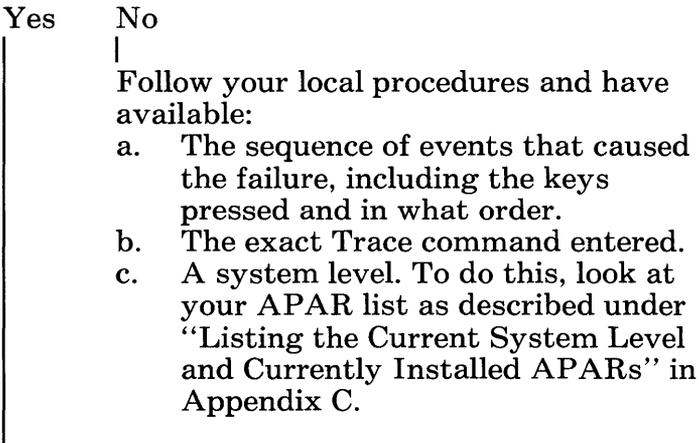
Trace Problem Determination

Are there any TRnn messages that indicate the cause of the failure?



Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?



Follow your local procedures for getting the hardware repaired.

Work Station Control Problem Determination

Did you receive a WSnnn message?

No Yes



Refer to Work Station Control messages (WSnnn) in Appendix E and follow the directions to correct the problem.

Is the problem with Auto?

No Yes



Refer to Auto Key Problem Determination.

Is the problem with Copy?

No Yes



Are there any WSnnn message that indicate a Copy problem?

No Yes



Does the message indicate a procedural error?

No Yes



Correct the error and retry.

Is the problem resolved?

No Yes



Continue with your work.



120a

120b

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes

No

1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Follow your local procedures for getting the hardware repaired.

Is the problem with Help or List?

No

Yes

121a

121b

121a

121b

Are there any messages that indicate the cause of the failure?

No

Yes

Does the message indicate a procedural error?

No

Yes

Correct the error and retry.

Is the problem resolved?

No

Yes

Continue with your work.

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes

No

1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.

122a

122b

122c



- b. A system level. To do this, look at your APAR list as described under “Listing the Current System Level and Currently Installed APARs” in Appendix C.
- c. The dump.
- d. Configuration data sets.

Follow your local procedures for getting the hardware repaired.

Is the problem with SetUp?

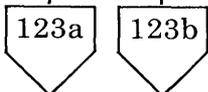
No | Yes
 |
Are there any messages that indicate the cause of the failure?

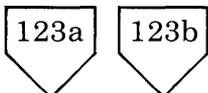
No | Yes
 |
Does the message indicate a procedural error?

No | Yes
 |
 Correct the error and retry.

Is the problem resolved?

No | Yes
 |
 Continue with your work.





Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

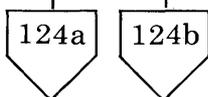
Yes No

- 1. Reproduce the operation while running Trace event 1.
- 2. Turn Trace off with the dump option.
- 3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.
 - b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
 - c. The dump.
 - d. Configuration data sets.

Follow your local procedures for getting the hardware repaired.

Is the problem with Browse?

No Yes



124a

124b

Are there any messages that indicate the cause of the failure?

No Yes

Does the message indicate a procedural error?

No Yes

Correct the error and retry.

Is the problem resolved?

No Yes

Continue with your work.

Refer to the *IBM 3270 Personal Computer Guide to Operations* and run Problem Determination.

Did the diagnostics find a hardware problem?

Yes No

1. Reproduce the operation while running Trace event 1.
2. Turn Trace off with the dump option.
3. Follow your local procedures and have available:
 - a. The sequence of events that caused the failure, including the keys pressed and in what order.

125a

125b

125c



- b. A system level. To do this, look at your APAR list as described under "Listing the Current System Level and Currently Installed APARs" in Appendix C.
- c. The dump.
- d. Configuration data sets.

Follow your local procedures for getting the hardware repaired?

You do not appear to have a problem with workstation control. Continue with your work.

Appendix C. Installing and Removing Patches

Contents

Introduction	C-3
Describing the Patch Format.....	C-4
Creating a Patch File	C-6
Installing a Patch	C-8
Listing the Current System Level and Currently Installed APARs.....	C-10
Removing a Patch.....	C-11

Notes:

Introduction

This appendix is for anyone who is responsible for installing software changes. The Patch Service is a program that runs on DOS. You **invoke this program in the personal computer session:** enter the command INDPATCH and then follow the prompts on your screen. When you are instructed to press Enter in the procedures and prompts, you can use the New Line key, \leftarrow , or the Enter key, in the Typewriter Key area. The program provides installation or removal of permanent changes, called **patches** or **fixes**, to the code and data. It also provides historical tracking and is limited to 100 control program patches per release. A problem that the Patch Service utility resolves is identified as an *Authorized Problem Analysis Report (APAR)*.

This appendix describes how to:

1. Interpret the information you will put in a patch file
2. Create a patch file
3. Install a patch
4. List the current system level
5. List currently installed APARs
6. Remove a patch.

Appendix E contains error messages.

Describing the Patch Format

Let's assume there is a problem within the control program. When IBM sends you the patch to solve your problem, it will be in a written format like this example:

```
PRE LEVEL = 2101
PRE APAR = IR00001
ZAP A: \INDCIPL (OFF = 01C4,
VER = 10CD21C3, REP = 42424242)
```

Following is a description of this example:

PRE LEVEL = 2101

- This is the level the system must be at for this patch
- It must be the first entry in a patch file
- It is **always required**

PRE APAR = IR00001

These are prerequisite APARs you need to install first before you install this patch. Not all patches have prerequisites. You can have between zero and 99 prerequisite APARs.

ZAP

This line contains the changed data. There must be a minimum of one ZAP.

INDCIPL

This is the module name where the problem resides.

OFF = 01C4

This is the relative offset value, in hexadecimal, from the beginning of the module named INDCIPL.

VER = 10CD21C3

This is the actual data, in hexadecimal, beginning at offset value 01C4.

REP = 42424242

This is the replacement data, in hexadecimal, that replaces the verified data beginning at offset value 01C4.

Creating a Patch File

Before you install the patches to your customized system diskette, you will need to create a **patch file** for each patch. For a single diskette drive, insert your existing system diskette to be patched in drive A and create all patch files on that diskette. For multidiskette drives, we suggest you have your system diskette you are patching in drive A and all patch files you create on a diskette on drive B or on the fixed disk. For a fixed disk, we suggest you create all patch files on that fixed disk. Use the EDLIN EDITOR or any equivalent editor to create a patch file when you are in a personal computer session. To do this:

1. Create a new file, using the APAR number for the file name, with the editor that is on your system.
2. Enter the written information you received from IBM. If you received the following patch, you would use the editor to type the three lines exactly as you see them. You can press the New Line key, `↵`, or the Enter key after each line of information you enter.

a. Type

```
PRE LEVEL = 2101
```

and press New Line `↵`, or Enter.

b. Type

```
PRE APAR = IR00001
```

and press New Line `↵`, or Enter.

c. Type

```
ZAP A: \INDCIPL (OFF = 01C4, VER = 10CD21C3, REP = 42424242)
```

and press New Line `↵`, or Enter.

Your file should look like this:

```
PRE LEVEL = 2101
```

```
PRE APAR = IR00001
```

```
ZAP A: \INDCIPL (OFF = 01C4, VER = 10CD21C3, REP = 42424242)
```

3. Save your file in accordance with your editing procedures.

So far you have done the following:

1. Received the patch in written form
2. Created a file in a personal computer session with each APAR number as the file name for each patch
3. Entered the information for each patch into each file.

Remember that a patch file contains one patch. If you have three patches to install, you will have to create three patch files, each with its own unique APAR number for the file name.

Now you are ready to install a patch.

Installing a Patch

Note that, if you have a single-diskette drive system, the two patch files, INDPATCH.COM and INDQPCH.DAT, must both be on the customized system diskette.

If the patch file is on a different diskette or disk, place INDPATCH.COM and INDQPCH.DAT on that diskette or disk. Make the diskette or disk active by typing the drive identifier letter and a colon, for example, B:.

Note: If you do this, make sure the disk drive and path information is present for the module being changed.

If the patch file is in a subdirectory, place INDPATCH.COM and INDQPCH.DAT in the same subdirectory that the APARs are in. Make that subdirectory active with the DOS CHDIR (Change Directory) command. Refer to the IBM Personal Computer *Disk Operating System* manual for further information on this command.

Note: If you do this, make sure the disk drive and path information is present for the module being changed.

The following prompts will help you install a patch. First, your personal computer session must be active. When the DOS prompt appears:

1. Type
indpatch
2. Press New Line ← , or Enter.

3. The following prompt appears:

<I>nstall, <R>emove, or <L>evel:

First you are going to install a patch:

- a. Type

I

- b. Press New Line \leftarrow , or Enter.

4. The next prompt appears:

Type APAR number of patch and press Enter or press Enter to Quit

Type the seven character APAR number and press New Line \leftarrow , or Enter. This is also the file name that contains the patch.

5. The ZAP data line associated with that APAR number appears on your display screen:

```
ZAP A: \INDCIPL (OFF = 01C4, VER = 10CD21C3, REP = 42424242) Verify is correct
```

6. A final prompt indicates that the patch has been installed:

PAT26 Patches Installed

Listing the Current System Level and Currently Installed APARs

You can look at your APAR History List to see the current system level and the currently installed APARs. To do this:

1. Type
indpatch
2. Press New Line \leftarrow , or Enter.
3. The following prompt appears:
<I>nstall, <R>emove, or <L>evel:
 - a. Type
L
 - b. Press New Line \leftarrow , or Enter.
4. An APAR History List, a listing of currently installed APARs on your system, appears on your screen. Notice also the current system level. Your screen should look something like this:

```
APAR History
System Level = 2101
```

```
APAR  APAR  APAR  APAR  APAR  APAR  APAR
IR00001 IR00002 IR00003 IR00004 IR00005 IR00006 IR00007
IR00008 IR00009 IR00010 IR00011 IR00012 IR00013 IR00014
```

```
A >
```

Removing a Patch

When you remove a patch, it is removed from the IBM 3270 Personal Computer Control Program. The patch file is not deleted. If the patch file is on a different diskette or disk, place INDPATCH.COM and INDQPCH.DAT on that diskette or disk. Make the diskette or disk active by typing the drive identifier letter and a colon, for example, B:

If the patch file is in a subdirectory, place INDPATCH.COM and INDQPCH.DAT in the same subdirectory that the APARs are in. Make that subdirectory active with the DOS CHDIR (Change Directory) command. Refer to the IBM Personal Computer *Disk Operating System* manual for further information on this command.

If you have to remove more than one patch, we suggest you remove your patches in the opposite order you installed them.

Perhaps you need to remove the following two APARs:

- IR00002
- IR00004

First remove APAR IR00004. At the DOS prompt:

1. Type

indpatch

2. Press New Line \leftarrow , or Enter.
3. The following prompt appears:

<I>nstall, <R>emove, or <L>evel:

4. **Type**

R

5. Press New Line **↵** , or Enter.

6. The next prompt appears:

Type APAR number of patch and press Enter, or press Enter to Quit

Type the seven character APAR number and press New Line **↵** , or Enter. This is also the file name that contains the patch.

Note: If you do this, make sure the disk drive and path information is present for the module being changed.

7. The ZAP data line associated with that APAR number appears on your display screen:

```
ZAP A: \ INDCIPL (OFF = 01C4, VER = 10CD21C3, REP = 42424242) Verify is correct
```

8. A final prompt indicates that the patch has been removed:

PAT27 Patches removed

To remove APAR IR00002, follow steps 1 through 8.

Appendix D. Using the Trace Facility

Contents

Introduction	D-3
The Trace Command.....	D-3

Notes:

Introduction

Trace is used in gathering data required to isolate the causes of software failures in the control program and is to be used during problem determination. If you encounter problems running Trace, refer to Appendix B.

The Trace Command

The Trace command runs as a personal computer application and is used to turn Trace on and off. While running in IBM Personal Computer DOS application mode with the personal computer window active, the operator issues a Trace On command for the trace recordings he wants to start or a Trace Off command to stop all trace recording. The traces in effect those specified on the most recent Trace On command.

Appendix B identifies which events you must turn on to obtain the correct documentation for a given problem.

The syntax of the command is:

$$\text{TRACE} \left[\begin{array}{l} \text{ON} \left[\begin{array}{l} ,M \\ M \end{array} \right] \left[\begin{array}{l} ,n \\ n \\ -n \end{array} \right] \dots \left[\begin{array}{l} ,o \\ o \end{array} \right] \left[\begin{array}{l} ,p \\ p \\ -p \end{array} \right] \\ \text{OFF} \quad /d \end{array} \right]$$

- The Trace commands may be typed and entered in any combination of uppercase and lowercase characters.

- *TRACE OFF /d* turns off all trace requests and causes the error handler to take a dump.
- One of each of the parameters shown in uppercase in a stack must be selected.
- Lowercase parameters are optional.
- *M*, *n*, *o*, and *p* represent decimal numbers corresponding to unique trace identification recording requests.
- Single or multiple blanks and/or commas delineate individual requests.
- The */d* parameter indicates that a dump is desired.

When a dump is requested, your system will request you to insert a diskette for the dump. This diskette will be formatted; therefore, **all existing files on the diskette will be erased**. After the dump gets control, the control program is no longer running. The only way to restart the system is by turning the system off and then on.

Appendix E. Using Messages

Contents

Introduction	E-3
How to Use This Appendix	E-3
Customization Messages (CUnnn).....	E-4
Patch Installation Messages (PATnn).....	E-13
Save and Restore Messages (SRnnn).....	E-21
Startup Messages (STnnn).....	E-30
System Error Messages (SYnnn).....	E-33
Trace Messages (TRnnn)	E-38
File Transfer Messages (TRANSnn)	E-40
Work Station Control Messages (WSnnn)	E-51

Notes:

Introduction

This appendix is for anyone who needs more information about a message that appears on the display screen.

How to Use This Appendix

The messages in this appendix are grouped by type. The groups are in alphabetic order by group name. Within each group, the messages are in order of their numbers. The message number and the message text are in **bold type**. A message explanation and the user response follow each message.

If one of the following types of error codes appears on your display screen, refer to “Communication Problem Determination” in Appendix B:

✕ ~~nn~~ nnn

✕ PROGnnn

✕ ~~nn~~ nnn

If your personal computer session is active and you receive a message not preceded by one of the following message numbers, refer to either the IBM Personal Computer *Disk Operating System* manual or to the manual for the application you are running.

CUnnn

PATnn

SRnnn

STnnn

SYnnn

TRnn

TRANSnn

WSnnn

Customization Messages(CUxxx)

CU001 Changed item restored to original value

Explanation: You have made an invalid change to a field on a customization panel. The incorrect value has been replaced by its original value.

User Response: Correct the value of the field or accept the default value.

CU002 No more space to insert into this field

Explanation: There is a maximum number of characters allowed in this field. You have tried to enter more characters than the field allows. This message only appears when you are in insert mode.

User Response: Correct the entry and try again.

CU004 That is not a valid place to type

Explanation: You have tried to type on a customization panel in a place where it is not valid to do so. Either you have positioned the cursor in the wrong place, or this option can only be changed by pressing PF2.

User Response: Position the cursor in the indicated position, or press PF2 to change the option.

CU005 Only numbers are allowed in this field

Explanation: You can enter only numbers for the value of this field.

User Response: Replace the value that you have typed with a valid number.

CU006 Name has already been used

Explanation: Each session must have a unique short name. You have already used the name you have just typed.

User Response: Change the name so that it is unique.

CU007 Name does not start with a letter (A-Z)

Explanation: Names for sessions must start with a letter (A-Z).

User Response: Change the name so that it begins with a letter.

CU008 DOS must be version 2.00 or higher

Explanation: You are using a version of DOS that is too low. The customization program requires DOS to be version 2.00 or higher.

User Response: Try again with the correct version of DOS.

CU009 Number entered is too large

Explanation: The number you have typed is larger than the maximum value allowed for that field.

User Response: Correct the number and try again.

CU010 Number entered is too small

Explanation: The number you have typed is smaller than the minimum value allowed for that field.

User Response: Correct the number and try again.

CU011 Failed to write aaaaaaaaa.aaa

Explanation: An error has been detected during an attempt to write file aaaaaaaaa.aaa. Should the error persist, use a backup diskette.

User Response: Refer to “Customization Problem Determination” in Appendix B to isolate the cause of the failure.

CU012 Failed to read aaaaaaaaa.aaa

Explanation: An error has been detected during an attempt to open file aaaaaaaaa.aaa.

User Response: Refer to “Customization Problem Determination” in Appendix B to isolate the cause of the failure.

CU013 Failed to find aaaaaaaaa.aaa

Explanation: File aaaaaaaaa.aaa could not be found.

User Response: Refer to “Customization Problem Determination” in Appendix B to isolate the cause of the failure.

CU014 File corrupt aaaaaaaaa.aaa

Explanation: An error has been detected during an attempt to open file aaaaaaaaa.aaa.

User Response: Refer to “Customization Problem Determination” in Appendix B to isolate the cause of the failure.

CU015 Customization incomplete - no system configured

Explanation: You have pressed Esc to quit the customization program while it was creating a customized system diskette.

User Response: You cannot use the system on that diskette. The customization program re-displays the customization summary panel with the values that you selected for your customized system. To create the same customized system on the same diskette, press PF3.

CU016 Not enough storage to run this program

Explanation: You are trying to run the customization program on a work station with insufficient storage. A minimum of 96K bytes of storage is required.

User Response: Refer to “Customization Problem Determination” in Appendix B and follow the procedures for message CU016 to isolate the cause of the failure.

CU017 Insert DOS diskette into drive *x*

Explanation: You are trying to create a system on a diskette that has not been formatted. This message appears along with messages CU031 and CU032 after you have pressed PF3 from the customization summary panel to create a customized system.

User Response: Insert the DOS diskette into the diskette drive indicated by the message, and close the drive door. The customization program formats the system diskette, copies the DOS files to it, and then creates the customized system.

CU018 Insert system diskette into drive *x*

Explanation: This is a prompt displayed by the customization program while it is creating your customized system.

User Response: Insert the system diskette into the diskette drive indicated by the message, and close the drive door.

CU019 Insert Control Program diskette 1 into drive *x*

Explanation: This is a prompt displayed by the customization program while it is creating your customized system.

User Response: Insert Control Program diskette 1 into the diskette drive indicated by the message, and close the drive door.

CU020 Insert Control Program diskette 2 into drive *x*

Explanation: This is a prompt displayed by the customization program while it is creating your customized system.

User Response: Insert Control Program diskette 2 into the diskette drive indicated by the message, and close the drive door.

CU021 Strike any key when ready...

Explanation: This is a prompt displayed by the program.

User Response: When you are ready to proceed, strike any key.

CU023 Embedded blanks are not allowed

Explanation: You are not allowed to use blank characters in names. Only letters (A-Z) and numbers (0-9) can be used.

User Response: Correct the name.

CU024 Only letters (A-Z) and numbers (0-9) are allowed

Explanation: You can enter only letters (A-Z) and numbers (0-9) in the value for this field.

User Response: Correct the entry.

CU025 Cannot customize system with incorrect values

Explanation: You have pressed PF3, to create your system diskette, while you have an invalid value on the summary panel.

User Response: Correct the value, and try again.

CU031 System diskette requires formatting

Explanation: You are trying to create a system on a diskette that has not been formatted. This message appears along with message CU032 after you have pressed PF3 from the customization summary panel to create a customized system.

User Response: See the user response for message CU032.

CU032 Type drive letter for DOS diskette and press PF3

Explanation: You are trying to create a system on a diskette that has not been formatted. This message appears along with message CU031 after you have pressed PF3 from the customization summary panel to create a customized system.

User Response: Type the letter of the drive for the DOS diskette, then press PF3. The customization program formats the system diskette, copies the DOS files to it, and then creates the customized system.

CU033 System files already exist on target disk

Explanation: You are recustomizing a system on a diskette or fixed disk that already contains the files that are needed for a customized system. This message appears along with message CU034 after you have pressed PF3 from the customization summary panel to create a customized system.

User Response: See the user response for message CU034.

CU034 Do you want them replaced? (Y/N)

Explanation: You are recustomizing a system on a diskette or fixed disk that already contains the files that are needed for a customized system. This message appears along with message CU033 after you have pressed PF3 from the customization summary panel to create a customized system.

User Response: If you only need to replace the configuration table INCDFIG.FIL, type "N". If you have patched any files on your system diskette, or received a refresh of the code, you will need to replace all of the system files that are on your target diskette. Type "Y" to replace all of the system files.

CU035 Customization complete

Explanation: The customization program has transferred all of the files needed for your customized system onto the target diskette. The customization summary panel is now re-displayed with the values you selected for your customized system.

User Response: You can create another copy of this same system with the same values by pressing PF3. You can create a different customized system by changing any of the values on the customization summary panel and then pressing PF3. You can end the customization program by pressing Esc.

CU036 Incorrect diskette

Explanation: You have inserted an incorrect diskette in response to one of the customization prompts.

User Response: Remove the incorrect diskette from the drive indicated by the prompting message, insert the correct diskette into the drive indicated by the prompting message, and strike any key to continue.

CU999 Internal error - please report.

Code = nn

Explanation: The customization program has detected an internal error.

User Response: Write down the code number that appears in the message. You will need this number to report this problem. Follow your local procedures and have available:

1. The code number from message CU999
2. The sequence of events that led up to the failure.

Patch Installation Messages (PATnn)

There may be times when DOS messages appear, in addition to Patch messages, while you are using the Patch facility. If this happens, refer to your IBM Personal Computer *Disk Operating System* manual for explanations.

PAT01 Empty patch file

Explanation: Data was not found in the patch file specified.

User Response: Add the Patch information to the failing patch file.

PAT02 Zap data not specified

Explanation: Zap data was not found in the patch file specified.

User Response: Add the zap information to the failing patch file. Make sure you press the New Line key **↵** after every entry in the patch file. See “Creating a Patch File” in Appendix C for further information.

PAT03 Prerequisite system level not specified

Explanation: The first entry in the patch file is a required system level, and none was found.

User Response: Add the system level as the first entry in the failing patch file.

**PAT04 Current - system level = (2101)
But patch prerequisite is - system
level = (2102)**

Explanation: The first entry in the patch file specified a prerequisite APAR level of (2102), but the system is currently at a system level of (2101).

User Response: Either upgrade the system level to (2102) or correct the patch file, whichever caused the failure.

**PAT05 Requested APAR (aannnnn) already
installed**

Explanation: The APAR number specified is already installed on the system.

User Response: Verify that you typed in the correct APAR number. If you did, refer to “Patch Problem Determination” in Appendix B. If you typed an incorrect APAR number, correct and retry.

**PAT06 Requested APAR (aannnnn) not
installed**

Explanation: The APAR number specified is not currently installed on the system when the user is attempting to remove an APAR.

User Response: Determine whether:

- The APAR was removed previously or
- An incorrect APAR number was specified.

PAT07 Prerequisite APAR (aannnnn) not installed

Explanation: The APAR number specified a prerequisite APAR of *aannnnn*, but that APAR is not currently installed on the system.

User Response: Verify that the prerequisite APAR entry in the patch file is correct. Then install the required prerequisite APAR and retry the operation.

PAT08 INDQPCH.DAT history file not found on this diskette

Explanation: Either:

- The diskette you are attempting to patch is not a customized control program diskette or
- The INDQPCH.DAT history file has been deleted or is not on the diskette, the disk, or the subdirectory the patch is in.

User Response:

- Place the control program diskette in the default drive or
- If the history file INDQPCH has been deleted from the diskette, use the most current backup of your system diskette and install any fixes required to bring the system up to the current level.

PAT09 Maximum APARs installed

Explanation: The system allows a maximum of 100 APARs to be installed for a given refresh level.

User Response: Upgrade your system to the most current refresh level.

PAT10 Patch file for APAR (aannnnn) not found

Explanation: The APAR number was not found.

User Response: This error can be caused by either:

- Entering an incorrect APAR number or
- Failing to specify the diskette drive identifier if the APAR file is on a diskette drive other than the current default drive or
- The patch file is not on the diskette.

PAT11 OFFset invalid or missing

Explanation: The *OFF* = keyword in the zap data of the patch file was either missing or misspelled.

User Response: Correct the zap data and retry the operation.

PAT12 VERify invalid or missing

Explanation: The *VER* = keyword in the zap data of the patch file was either missing or misspelled.

User Response: Correct the zap data and retry the operation.

PAT13 REPlace invalid or missing

Explanation: The *REP* = keyword in the zap data of the patch file was either missing or misspelled.

User Response: Correct the zap data and retry the operation.

PAT14 Invalid hex offset data

Explanation: The offset data in the zap line either contained nonhexadecimal data or was missing.

User Response: Correct the zap data and retry the operation.

PAT15 Invalid hex verify data

Explanation: The verify data in the zap line either contained nonhexadecimal data or was missing.

User Response: Correct the zap data and retry the operation.

PAT16 Invalid hex replace data

Explanation: The replace data in the zap line either contained nonhexadecimal data or was missing. You may see “Verify is correct” before getting this message. This indicates that only the replace data is incorrect.

User Response: Correct the zap data and retry the operation.

PAT17 Comma or parenthesis missing

Explanation: A required delimiter is missing from the displayed zap line. You must have left and right parentheses and two commas in the zap line.

User Response: Correct the zap data and retry.

PAT20 PATCH =ZAP lmod
(OFF = hhhh,VER = hhhh,REP = hhhh)
module not found

Explanation: The module specified in the zap data was not found during patch data verification.

User Response:

- If the zap data is incorrect, correct the data and retry the operation.
- If the data is correct, determine why the module was not found. There may be:
 - An incorrect diskette drive specifier or
 - A deleted module. If a module has been deleted, use a backup copy and retry the operation.

PAT21 PATCH =ZAP lmod
(OFF = hhhh,VER = hhhh,REP = hhhh)
mismatch
MODULE = MOD = hh

Explanation: The verify data specified in the zap data line does not match the verify data in the module when you are installing patches.

User Response:

- If the zap data is incorrect, correct the data and retry the operation.
- If the data is correct, record all data related to the problem. Include both:
 - A screen print
 - A copy of the diskette and follow local procedures.

PAT22 PATCH =ZAP lmod
(OFF = hhhh,VER = hhhh,REP = hhhh)
mismatch
MODULE = **MOD = hh**

Explanation: The verify data specified in the zap data line does not match the verify data in the module when you are removing patches.

User Response: The zap data file for this patch has been changed since the APAR was installed. Correct the data file and retry the operation.

PAT23 Prerequisite APAR invalid or not specified

Explanation: Either the keyword *PRE* or *APAR* is misspelled or missing on one of the APAR prerequisite entries.

User Response: Correct the keyword data and retry the operation.

PAT24 Error in zap data - patches not installed

Explanation: An error in the zap data was encountered. Preceding error messages identified the type of error. This message always appears with another message.

User Response: Correct the problem identified by all preceding messages and retry.

PAT25 Error in zap data - patches not removed

Explanation: An error in the zap data was encountered. A preceding error message identified the type of error. This message always appears with another message.

User Response: Correct the problem identified by all preceding messages and retry.

PAT26 Patches installed

Explanation: The patch was installed, and the history file INDQPCH.DAT was updated.

User Response: None.

PAT27 Patches removed

Explanation: The patch was removed, and the history file INDQPCH.DAT was updated.

User Response: None.

Save and Restore Messages (SRnnn)

SR001 Save command being processed

Explanation: Information message.

User Response: None.

SR002 Restore command being processed

Explanation: Information message.

User Response: None.

SR003 Autokey information saved
successfully

Explanation: Information message.

User Response: None.

SR004 %%% information restored
from %|%|% at %:%%

Explanation: Information message. The information for the first variable is one of the following:

- Autokey
- Screen
- Notepad

The second variable contains the date when the information was saved.

The third variable contains the time the information was saved.

It is suggested you always set the time and date before doing a save, or the default date and time will be used.

SR005 Notepad information saved successfully

Explanation: Information message.

User Response: None.

SR006 Screen profiles saved successfully

Explanation: Information message.

User Response: None.

SR007 Save processing complete

Explanation: Information message.

User Response: None.

SR008 Restore processing complete

Explanation: Information message.

User Response: None.

SR011 Error opening %%% personal computer file

Explanation: The file specified (or the default file) could not be opened. %%% refers to the specific type of personal computer file. There are 3 types:

- Autokey
- Notepad
- Screen

User Response: If you specified a filespec on the command, check to be sure that it was specified correctly. Make sure the drive door is closed. Enter the DOS directory command, Dir, to check the personal computer filename and extension.

Note: The Save and Restore commands accept four keywords:

- Autokey
- Notepad
- Screen
- Notepadn

If the command is not followed by one of the above keywords, filespec is the assumed parameter. Make sure you typed these keywords correctly. Make sure the directory or sub-directory you are attempting to restore from has the file residing there. If you find no error in your procedures, follow local procedures and have available:

1. The message number.
2. The sequence of events that caused the failure, including the keys pressed and in what order.
3. A system level. To do this, look at your APAR list as described under “Listing the Current System Level and Currently Installed APARs” in Appendix C.

SR012 Error creating personal computer file

Explanation: The personal computer file could not be created.

User Response: Check the filespec specified. If you named a path, make sure the path exists. Be sure that the diskette drive door is closed. If the failure persists, refer to “Save and Restore Problem Determination” in Appendix B to isolate the cause of the failure.

SR013 Error reading from personal computer file

Explanation: A read request failed to complete processing successfully. This message may indicate a program error.

User Response: Be sure the drive door is closed. If the drive door is closed, and the failure persists, refer to “Save and Restore Problem Determination” in Appendix B to isolate the cause of the failure.

SR014 Error writing to personal computer file

Explanation: A write request failed to complete processing successfully.

User Response: The most probable cause for this message is that the disk is full. Check the number of bytes available on the current disk. Retry the operation when you have made more space available.

SR015 Personal computer filespec incorrect

Explanation: The drive specified in the filespec does not exist on the current configuration.

User Response: Retry the operation, specifying a valid drive in the filespec.

SR016 Personal computer storage insufficient for processing

Explanation: No enough system storage is currently available for Save/Restore to process any requests.

User Response: You need to have more space available for Save/Restore to process any requests.

SR017 Invalid file specified for Restore

Explanation: Either the file specified on the Restore command is not a previously saved save file for the request type specified or system storage has been overlaid.

User Response: Check to be sure that the file being used on the Restore command is a previously saved save file for the request type that is being stored. If no error can be found in your procedures, follow local procedures and have available:

1. The message number.
2. The sequence of events that caused the failure, including the keys pressed and in what order.
3. A system level. To do this, look at your APAR list as described under “Listing the Current System Level and Currently Installed APARs” in Appendix C.

SR018 Not all notepads that were saved could be restored

Explanation: This is an informational message only, which indicates that there are fewer notepads defined on the current system than there were on the saved system.

User Response: None. The restore will complete processing successfully with as many notepads as are defined on the current system being restored and the remaining will be disregarded.

SR019 Save or Restore failed with error code XX

Explanation: This message indicates a program error.

User Response: Follow your local procedures and have available:

1. The message number.
2. The sequence of events that caused the failure, including the keys pressed and in what order.
3. A system level. To do this, look at your APAR list as described under “Listing the Current System Level and Currently Installed APARs” in Appendix C.

SR020 Window configuration error

Explanation: During a restore request for the screen profile, a configuration error was detected. Either a window that was not configured on Screen Profile 0 of the current system is trying to be restored, or the maximum number of window definitions (40) already exists.

User Response: Screen profiles can be restored only on systems configured with the same windows defined on Screen Profile 0. If this is not the case, then the maximum number of windows has been defined and some must be deleted before new ones can be defined.

SR021 Keyboard locked

Explanation: The Save or Restore request failed because another operation locked the keyboard.

User Response: Wait for the other operation to complete processing and retry. If the other operation does not complete, refer to “Save and Restore Problem Determination” in Appendix B to isolate the problem.

SR022 Autokey record operation in progress

Explanation: The Save or Restore request failed because an autokey record operation was in progress.

User Response: Wait for the autokey record operation to complete processing and retry. If the other operation does not complete, refer to “Save and Restore Problem Determination” in Appendix B to isolate the problem.

SR023 Autokey playback operation in progress

Explanation: The Save or Restore request failed because an autokey playback operation was in progress.

User Response: Wait for the autokey play operation to complete processing and retry. If the other operation does not complete, refer to “Save and Restore Problem Determination” in Appendix B to isolate the problem.

SR024 Incorrect window name for single notepad requests

Explanation: The window name specified on a single notepad request or Restore must be a notepad window.

User Response: Reissue the command, specifying a valid notepad window name for the current system configuration.

SR025 Filespec must be specified on single notepad requests

Explanation: When a single notepad Save or Restore was requested, the filespec was omitted.

User Response: Reissue the command, specifying the filespec as the second parameter.

**SR026 Filenames specified in the file record
are invalid**

Explanation: The Save or Restore request failed because you specified a filename containing invalid filespec information.

User Response: Specify a filename containing valid filespec information and retry the operation.

**SR029 Restoring file which were saved on an
IBM 3270 Personal Computer %%%%
display**

Explanation: Information message. %%%%
refers to one of the following:

- 5251
- 5272

User Response: None.

Startup Messages (STnnn)

ST001 Incorrectly customized diskette. Memory allocation error

Explanation: There is an error in the apparent size of one of the Control Program files and it cannot be loaded into the correct position in memory. The system diskette contains logical errors, or there was a program error during customization.

User Response: Replace the system diskette with a backup system diskette or repeat the customization. If the error persists, refer to "System Startup Problem Determination" in Appendix B.

ST002 Incorrectly customized diskette. Cannot find %%% %%% %%% %%% %%% %%% %%% %%% %%% %%%

Explanation: The file named is not on the system diskette. The system diskette contains logical errors, or there was a program error during customization.

User Response: Replace the system diskette with a backup system diskette or repeat the customization. If the error persists, refer to "System Startup Problem Determination" in Appendix B.

ST003 I/O error reading file %%% %%% %%% %%% %%% %%% %%% %%% %%% %%% %%% from drive %

Explanation: The system diskette contains I/O errors.

User Response: Replace the system diskette with a backup system diskette or repeat the customization. If the error persists, refer to "System Startup Problem Determination" in Appendix B.

ST004 Insufficient memory to load control program

Explanation: The available memory is too small to load the version of the control program on your customized system diskette.

User Response: Remove any resident applications or customize for a system with fewer functions, for example, with fewer host sessions or notepads. If the error persists, refer to “System Startup Problem Determination” in Appendix B.

ST005 Incorrect format for file

%% %% %% %% %% %% %% %% %% %%

Explanation: The file named is not acceptable to the IBM 3270 Personal Computer. The system diskette contains logical errors, or there was a program error during customization.

User Response: Replace the system diskette with a backup system diskette or repeat the customization. If the error persists, refer to “System Startup Problem Determination” in Appendix B.

ST006 Incorrectly customized diskette. Illegal filespec

Explanation: One of the files on the system diskette has a filespec that is not valid on the IBM 3270 Personal Computer. The system diskette contains logical errors, or there was a program error during the customization.

User Response: Replace the system diskette with a backup diskette or repeat the customization. If the error persists, refer to “System Startup Problem Determination” in Appendix B.

ST007 Cannot find message file

%% %% %% %% %% %% %% %% %% %%

Explanation: The named message file cannot be found while loading the control program (during IPL) or when a Personal Computer program such as Send/Receive or Patch is started. The message file is assumed to be available on the default disk drive.

User Response: Make sure the named message file is available on the default disk drive and retry the operation. If the error persists, refer to "System Startup Problem Determination" in Appendix B.

System Error Messages

SY001 System fatal error - % % % % % % % %

Explanation: The IBM 3270 Personal Computer Control Program has encountered an error that it cannot recover from. The variable data % % % % % % % % is used in the problem determination process. This message is always followed by message SY006.

User Response: Record the variable data in the message and refer to "System Error Problem Determination" in Appendix B.

SY002 Component fatal error -
% % % % % % % %

Explanation: One of the components in the IBM 3270 Personal Computer Control Program has had an unrecoverable error. The variable data % % % % % % % % is used in the problem determination process.

User Response: Record the variable data in the message and refer to "System Error Problem Determination" in Appendix B.

SY003 Component error - % % % % % % % %

Explanation: One of the components has encountered a recoverable error.

User Response: If the error persists, record the variable data % % % % % % % % in the message and refer to "System Error Problem Determination" in Appendix B.

SY004 System error - % % % % % % % %

Explanation: The IBM 3270 Personal Computer Control Program has encountered an unexpected error condition.

User Response: Record the variable data % % % % % % % in the message and the events leading up to the failure. Refer to “System Error Problem Determination” in Appendix B.

SY005 Component informational -
% % % % % % % %

Explanation: The IBM 3270 Personal Computer Control Program is reporting statistical information, **not** error information.

User Response: None.

SY006 Do you want a dump? Data will be destroyed (Y/N)

Explanation: This message is issued if the IBM 3270 Personal Computer Control Program has encountered an unrecoverable system failure and has issued message SY001, or the user has turned Trace off with the /d option.

User Response: Reply “Y” to take a dump, or “N” to reload the control program. If the keyboard does not respond and if you have an NMI button, press the red NMI button at the back of the system unit again to start the process. See “System Error Problems Determination” in Appendix B.

SY007 Insert a blank diskette. Press D when ready

Explanation: The user has replied “Y” to message SY006.

User Response: Insert a **blank** diskette in drive A and either press D or, if you have a red NMI button at the back of the system unit, press this button to take a dump. See “System Error Problems Determination” in Appendix B.

SY008 Insert another blank diskette. Press D when ready

Explanation: A dump is in progress and another diskette is required.

User Response: Insert another **blank** diskette in drive A and press D or the red NMI button to take a dump if you have an NMI button at the back of the system unit. See “System Error Problems Determination” in Appendix B.

SY009 Parity check 1 in Segment *xxxx*: log off and run diagnostics

Explanation: There has been a parity check on the main system board. Segment *xxxx* is the starting segment address of the 16K block of memory containing the parity check. If *xxxx* equals FFFF, the memory location where the parity check occurred could not be found.

User Response: Try to log off the host computer sessions. Then run the diagnostic programs to isolate the problem.

SY010 Parity check 2 in Segment *xxxx*: log off and run diagnostics

Explanation: There has been a parity check on an expansion board. Segment *xxxx* is the starting segment address of the 16K block of memory containing the parity check. If *xxxx* equals FFFF, the memory location could not be found.

User Response: Try to log off the host computer sessions. Then run the diagnostic programs to isolate the problem.

SY011 Dumping....

Explanation: The IBM 3270 Personal Computer Control Program is writing the contents of memory onto the diskette.

User Response: None.

SY012 Dump completed. Insert system diskette and press any key to re-IPL

Explanation: The dump process is done. The system is in a Halt state.

User Response: Insert your customized system diskette and press any key to reload your control program.

SY013 Dump failed. Try again? (Y/N)

Explanation: An error has been encountered during the dump process.

User Response: Reply "Y" if you want the dump. Reply "N" if you do not want the dump. In either case, power-off the machine to recover. If the retry operation is not successful, refer to "System Error Problem Determination" in Appendix B.

SY014 Warning: The needed graphics adapter is not attached

Explanation: You do not have a graphics adapter attached and you tried to use a personal computer graphics application.

User Response: If this message appears and you do not have a graphics adapter,

1. Remove the message by pressing the WS Ctrl key twice.
2. Reload IBM Personal Computer DOS by pressing Alt + Ctrl + Del.

If this message appears and you **do** have a graphics adapter, refer to the *IBM 3270 Personal Computer Guide to Operations* and perform the checkout procedure for the adapter. If you find no hardware problem, refer to your local procedures and have available:

1. The sequence of events that caused the failure, including the keys pressed and in what order.
2. A system level. To do this, look at your APAR list as described under “Listing the Current System Level and Currently Installed APARs” in Appendix C.
3. 3270 Personal Computer Hardware configuration including model numbers, installed cards, and memory size.

SY015 Formatting....

Explanation: The IBM 3270 Personal Computer Control Program is formatting the diskette you are using for the dump.

User Response: None.

SY016 Format failed. Insert another diskette, press D when ready

Explanation: There is an error encountered during the formatting of the diskette. The dump diskette you just inserted in drive A is probably write-protected, or there are some damaged sectors on it.

User Response: Insert another **blank** diskette in drive A and press D or press the red NMI button, if you have one, at the back of the system unit. If the retry operation fails, refer to “System Error Problem Determination” in Appendix B.

Trace Messages (TRnnn)

TR01 Invalid command format or missing parameter

Explanation: The Trace command contains invalid information or a required parameter is missing.

User Response: Correct the command and retry the operation.

TR02 Invalid trace id or range specified

Explanation: One of the ids or ranges specified is incorrect.

User Response: Correct the command and retry the operation.

TR03 Invalid parameter

Explanation: The Trace command was specified with an invalid parameter.

User Response: Correct the command and retry the operation.

TR04 Background/foreground interface error

Explanation: The Trace encountered an internal error.

User Response: Follow your local procedures and have available:

1. The sequence of events that caused the failure, including the keys pressed and in what order.

2. A system level. To do this, look at your APAR list as described under “Listing the Current System Level and Currently Installed APARs” in Appendix C.

TR06 Requested traces have been enabled

Explanation: Trace has been turned on in response to a Trace On command.

User Response: None.

TR07 All traces have been disabled

Explanation: All traces have been turned off in response to a Trace Off command.

User Response: None.

File Transfer Messages (TRANSnn)

TRANS01 File transfer command being processed

Explanation: This message will appear when the file transfer command is entered and processing by the system has begun.

User Response: None. Wait for message TRANS02 to appear.

TRANS02 Number of bytes of file transferred so far: == > XXXX

Explanation: This is a progress message that tells you how many bytes of the personal computer file have been transferred to or from the host. The number is updated as the file is transferred. After the entire file has been transferred, **TRANS03 File transfer complete** will appear. If the transfer does not complete successfully, a file transfer error message will appear.

User Response: Wait for file transfer to complete.

TRANS03 File transfer complete

Explanation: The file transfer operation has been completed successfully. There is now a file either at the host or at the personal computer whose name and characteristics are those you specified in the Send or Receive command.

User Response: None.

TRANS04 File transfer complete with records segmented

Explanation: The file transfer operation has been completed. Any record greater than the set logical record length (LRECL) of the file being appended will divide and become multiple records.

User Response: None.

TRANS05 Personal computer filespec incorrect: file transfer canceled

Explanation: The user has made an error in the personal computer DOS filespec, for example, diskette drive, path, filename, or extension.

User Response: Compare the personal computer DOS filespec in the file transfer command, which will still be visible in the personal computer session, with the user manual to make sure it conforms to the personal computer DOS requirements for a filespec. If the filespec is correct, it is possible that the specified personal computer file does not exist on the personal computer disk. You should use the DOS directory command, **Dir**, to check the personal computer filename and extension.

TRANS06 Command incomplete: file transfer canceled

Explanation: The user did not enter any parameters after Send or Receive.

User Response: Read the user manual on requirements for the Send and Receive commands and retry.

TRANS07 Cannot link to host: file transfer canceled

Explanation: This message indicates some kind of host connection problem.

User Response: If you see this message, file transfer may not be working properly. Verify that the host is operating. If it is, refer to “File Transfer Problem Determination” in Appendix B to isolate the cause of the failure.

TRANS08 Command transmit error: file transfer canceled

Explanation: This message will occur if there is a program error or if a key was pressed that produced an invalid code, for example, one that cannot be transmitted to the host.

User Response: Retry file transfer after carefully reading the instructions in Chapter 13. Check the status of the host; there may be some information on the host session indicating the problem. If the host is operating, refer to “File Transfer Problem Determination” in Appendix B to isolate the cause of the failure.

TRANS09 Error reading file from damaged personal computer disk: file transfer canceled

Explanation: This message indicates that the personal computer disk or diskette is probably damaged.

User Response: Retry the operation with a backup copy of the file being transferred. If the failure still occurs, refer to the *IBM 3270 Personal Computer Guide to Operations* and run a system checkout for either the diskette drive or fixed disk.

TRANS10 Host has not responded within timeout period: refer to user's guide for more information

Explanation: The host has not responded to the file transfer within several seconds.

User Response: If the host session screen shows HOLDING, you can switch to the host session and press Clear (in VM/CMS) or PA2 (in TSO). This should start file transfer. If X SYSTEM or X  appears in the host session screen operator information area, wait for it to clear. These indicate the system is working slowly. If you want to halt file transfer after several time-out messages appear, switch to the host session, press Reset to clear the operator information area, and press PF2 to halt the file transfer, or Clear to continue. This problem can be caused by line problems.

TRANS11 Lost contact with host: file transfer canceled

Explanation: The host is inactive.

User Response: Refer to "File Transfer Problem Determination" in Appendix B.

TRANS12 Error writing to damaged or full personal computer disk: file transfer canceled

Explanation: This message indicates that the personal computer disk or diskette has become full during a Receive operation, or that the disk or diskette may be damaged.

User Response: Retry the operation with a backup copy of the file being transferred. If the failure still occurs, refer to the *IBM 3270 Personal Computer Guide to Operations* and run a system checkout for either the diskette drive or fixed disk.

TRANS13 Error writing file to host: file transfer canceled

Explanation: The host program has detected an error in the file data being sent to it by the Send program.

User Response: Retry file transfer. If the message occurs again, refer to “File Transfer Problem Determination” in Appendix B to isolate the cause of the failure.

TRANS14 Error reading file from host: file transfer canceled

Explanation: The host program has detected an error in the file data during a Receive operation.

User Response: Retry file transfer. If the message occurs again, refer to “File Transfer Problem Determination” in Appendix B to isolate the cause of the failure.

TRANS15 Required host storage unavailable: file transfer canceled

Explanation: You need 30K of main storage for file transfer, in addition to that required by your host. This should not be confused with disk space.

User Response: Contact your local host system support representative.

TRANS16 Incorrect request code: file transfer canceled

Explanation: An invalid parameter has been sent by the Send or Receive application.

User Response: Verify that current versions of Send, Receive, and IND\$FILE MODULE are correctly installed. If they are, follow local procedures and have available:

1. The sequence of events, including keys pressed and in what order
2. A system level.

TRANS17 (TSO version) Missing or incorrect TSO data set name: file transfer canceled

Explanation: TSO data set name is missing or not a sequential or partitioned data set.

User Response: Correct the TSO data set name in the command and retry.

TRANS17 (CMS version) Missing or incorrect CMS file name; file transfer canceled

Explanation: CMS file name is missing or incorrectly specified.

User Response: Correct the CMS file name in the command and retry.

TRANS18 Incorrect option specified: file transfer canceled

Explanation: User specified an option that is not acceptable.

User Response: Correct the command to specify an acceptable option and retry.

TRANS19 Error while reading or writing to host disk: file transfer canceled

Explanation: There is not enough space available for data on the host.

User Response: Look at the host session message for indications and correct the problem.

TRANS22 Host session identifier incorrect: file transfer canceled

Explanation: The host session specified by the **id** parameter in the file transfer command does not exist.

User Response: Determine which identifier you should be using by checking the host session identification using List (PF1).

TRANS23 Activity specified not a host session: file transfer canceled

Explanation: The identifier (**id**) specified in the file transfer command is not for a host session.

User Response: Press List (PF1) to identify the host windows. Reissue the file transfer command.

TRANS24 Autokey operation in progress: file transfer canceled:

Explanation: Autokey is active.

User Response: Wait until the autokey operation is complete and retry.

TRANS25 Keyboard inhibited: file transfer canceled

Explanation: The host session is not able to accept file transfer because the keyboard is locked.

User Response: Wait until the keyboard is free to receive and retry. If the keyboard is not freed, refer to "File Transfer Problem Determination" in Appendix B to isolate the cause of the problem.

TRANS26 Unrecoverable system error: file transfer canceled

Explanation: This message indicates a program error.

User Response: Follow local procedures and have available:

1. Sequence of events, including keys pressed and in what order
2. The message number
3. System level

TRANS27 Communication sequence with host disrupted: file transfer canceled

Explanation: This indicates a program error or the Ctrl + Break has been pressed.

User Response: Follow local procedures and have available:

1. Sequence of events, including keys pressed and in what order
2. The message number
3. System level

TRANS28 Invalid option XXXXXXXX: file transfer canceled

Explanation: XXXXXXXX is replaced with the invalid option. The option is either not recognized, is specified as a positional keyword, or has an associated value that is incorrect.

User Response: Correct the option in the command and retry.

**TRANS29 Invalid option XXXXXXXXX with
RECEIVE: file transfer canceled**

Explanation: XXXXXXXXX is replaced with the invalid option. The option is not valid with RECEIVE, but can be used with SEND.

User Response: Remove the option from the command and retry.

**TRANS30 Invalid option XXXXXXXXX with
APPEND: file transfer canceled**

Explanation: XXXXXXXXX is replaced with the invalid option. The option is not valid with APPEND, but otherwise can be used.

User Response: Remove the option from the command and retry.

**TRANS31 Invalid option XXXXXXXXX with-
out SPACE: file transfer canceled**

Explanation: XXXXXXXXX is replaced with the invalid option. The option can only be used if SPACE is also specified.

User Response: Remove the option from the command and retry.

**TRANS32 Invalid option XXXXXXXXX with
PDS: file transfer canceled**

Explanation: XXXXXXXXX is replaced with the invalid option. The option is invalid with a host partitioned data set.

User Response: Remove the option from the command and retry.

TRANS33 Only one of TRACKS, CYLINDERS, AVBLOCK allowed: file transfer canceled

Explanation: SPACE can be specified in units of *either* TRACKS, CYLINDERS, *or* AVBLOCK. Only one can be used.

User Response: Remove the unwanted option from the command and retry.

TRANS34 CMS file not found: file transfer canceled

Explanation: An existing CMS file must be specified for RECEIVE.

User Response: Correct the CMS file specification in the command and retry.

TRANS35 CMS disk is Read-Only: file transfer canceled

Explanation: The CMS file mode specified for SEND must allow write access.

User Response: Correct the CMS file specification in the command and retry.

TRANS36 CMS disk is not accessed: file transfer canceled

Explanation: The CMS file mode is not in the CMS disk search order.

User Response: Access the required disk in CMS or correct the CMS file specification in the command. Retry the command.

TRANS37 CMS disk is full: file transfer canceled

Explanation: Either the CMS disk is full, the maximum number of files (3400) on the minidisk has been reached, or the maximum number of data blocks (16060) per file has been reached.

User Response: Use another disk with enough space or remove unwanted files from the specified disk. If the personal computer file is very large (over 1 M bytes), consider dividing it into several pieces. Retry the command.

**TRANS99 Host program error code XX
XXXXXXXX: file transfer canceled**

Explanation: This message indicates a program error.

User Response: Follow your local procedures and have available:

1. Sequence of events
2. The variable data (XX XXXXXXXX) from the TRANS99 message
3. The system level

Work Station Control Messages (WSnnn)

**WS001 No recording with this name exists:
Press List (PF1)**

Explanation: During an autokey play or erase operation, the recording name entered did not match any names already in the recording directory.

User Response: Check the recording name and reenter the correct name.

WS002 Incorrect key pressed

Explanation: You pressed an incorrect key.

User Response: Check your information and retry.

WS003 The window is currently busy

Explanation: An internal function is currently active in the window.

User Response: Wait for the internal function to finish. For example, wait for the **X**  I to disappear before retrying the operation.

WS004 Duplicate name entered: Choose a unique name

Explanation: During a recording procedure, you entered a recording name that had an exact duplicate in the autokey directory. Each recording name must be unique.

User Response: Choose a unique recording name.

WS005 Recording space full: cannot record

Explanation: You attempted to start a recording when no free recording space was available for the record. The session cannot be started.

User Response: Use List to examine the list of current recordings and erase those no longer needed. Retry the record operation.

WS006 Cannot move the window further

Explanation: While in Move, the window has been moved to the edge of the physical screen. It cannot be moved off the screen.

User Response: Do not try to move the window any farther in that direction.

WS007 Wrong key or incorrect character entered

Explanation: While in work station control mode, you attempted to do a function with a window ID that was not valid.

User Response: Try to do the function with a valid window ID.

WS008 Cannot shrink the window further

Explanation: While in Size, you attempted to shrink the selected window to less than a one-character-by-one-character window size.

User Response: Do not try to shrink the window farther.

WS009 Cannot expand the window further

Explanation: While in Size, you attempted to enlarge the window larger than allowed.

User Response: Do not try to enlarge the window farther.

WS010 Window reached edge of Presentation Space

Explanation: While in Browse, you tried to browse past the edge of the presentation space.

User Response: Do not try to browse in that direction any farther.

WS011 Cannot size a window while enlarged

Explanation: You have enlarged a window. You cannot size it at this time.

User Response: If you want to size the window, press Enlarge to return to the original window size. Now you can size the window.

WS012 Cannot Play or Record: Playing or Recording in progress

Explanation: The active application already has a recording or play in progress. Another cannot be started until that autokey session has ended.

User Response: Press Quit to cancel the autokey session. If you are recording, enter application mode and press Finish to end the recording.

WS013 Copy not allowed: Source and Target are not defined

Explanation: You attempted a copy operation by pressing Enter, but you have not defined both your source and target.

User Response: Define both your source and target at this time and then press Enter to perform the copy operation.

WS014 Source and Target are not the same size

Explanation: The source area defined is either larger or smaller than the target area defined.

User Response:

1. You can press PF13 (Source) and/or PF14 (Target), to redefine your source and target, making them both the same size or
2. You can continue with the copy operation by pressing Enter. If you allow the copy operation to complete:
 - a. And the source is larger than the target, truncation occurs.
 - b. And the source is smaller than the target, the target area is padded with blanks.

WS015 Warning: List must be removed to continue most WS Ctrl work

Explanation: While List appears on your screen, you cannot perform most work in work station control mode.

User Response: If you want to do more work, press PF1 to remove List.

WS016 Warning: Copy did not occur. Target is protected

Explanation: You tried to copy into a target area that is protected.

User Response: Redefine your target area and retry.

WS025 Cannot add another window: Maximum number reached

Explanation: The maximum number of windows has been added to the system.

User Response: If you want to add more windows, you will need to delete those that are unnecessary to make room for the windows you want to add.

WS026 Cannot add or delete window on Screen Profile 0

Explanation: Screen Profile 0 was created when you customized your work station. You cannot add windows to or delete windows from Screen Profile 0 during normal operation. This message may also occur if you begin typing data while in work station control mode.

User Response: Verify that you are in the proper mode and do not try to add or delete windows from Screen Profile 0.

WS027 All other windows are hidden: Next window is now visible

Explanation: When you performed a Hide, all other windows for that screen profile were already hidden, forcing the previously active window to become visible. At least one window will always be visible on a defined screen profile.

User Response: Make sure at least one window is visible before hiding another if you do not want the system to make one visible.

WS029 Color setting override: Changes may not show

Explanation: Although your changes were made, the selected window is currently receiving instructions to ignore the selected settings. The colors appear after the window stops receiving instructions to ignore them.

User Response: Your color changes have taken effect. Go to your next operation. For more information on color, see Chapter 7.

WS030 Foreground and background colors are the same

Explanation: The foreground and background colors of the selected windows are identical. This causes your typed characters to be invisible.

User Response: This is a warning message. If you want to be able to see the characters in this window, change either the foreground or the background to a different color.

WS031 Cannot set color: No color display

Explanation: You do not have a color display. You cannot use the color function.

User Response: Do not try to use the color function. If you have a color display and this message appears, see the system check-out procedures in the *IBM 3270 Personal Computer Guide to Operations*.

WS033 Cannot use Auto on undefined Screen Profile

Explanation: You tried to perform autokey functions while using an undefined screen profile.

User Response: Select a defined screen profile.

WS034 Cannot set color for a Personal Computer window

Explanation: The selected window was the personal computer window. Color for the personal computer window cannot be set in work station control mode.

User Response: Do not try to use the color function in the personal computer window.

WS035 Correct the name and press enter

Explanation: The name you entered was all blanks.

User Response: Try a valid name and press Enter.

WS036 Cannot leave WS Ctrl mode: No available windows

Explanation: You pressed WS Ctrl while in work station control mode with an undefined screen profile selected.

User Response: Either change to a defined screen profile or add a window to the undefined screen profile.

WS037 Cannot delete recording: Record or Play in progress

Explanation: A record or play operation is already in progress. This stops the delete operation.

User Response: End any recording or play sessions currently active on all windows before attempting to retry the delete function. You can examine all windows on Screen Profile 0 to find which have autokey active. In work station control mode, the operator information area indicates record or play while you select the window.

WS038 Cannot begin another recording: Recording already in progress

Explanation: There is a recording session already active on some screen or window other than the one currently active.

User Response: End the first recording session before attempting another recording. You can examine all windows on Screen Profile 0 to find which one is recording by looking for REC in the work station control operator information area.

WS039 Cannot jump to another window : None are visible

Explanation: Either this window is the only one on this screen profile or all other windows are hidden. This message appears only in work station control mode.

User Response: Either make more windows available or do not use the jump function.

WS040 Cannot use ChgSc: All other screens are empty

Explanation: The only defined screen profile is Screen Profile 0. This message appears only in work station control mode.

User Response: Either define more screen profiles or do not use the change screen (ChgSc) function.

WS041 Printing in progress: Retry when printing is complete

Explanation: A print request is already in progress.

User Response: Wait for the print to finish. If the printing does not complete, perform system checkout for the printer as detailed in the *IBM 3270 Personal Computer Guide to Operations*.

WS042 Print screen canceled by user

Explanation: You pressed the Quit key, canceling the current print operation.

User Response: None.

WS043 Print screen canceled: Printer not ready

Explanation: The printer is not ready, so the print operation is canceled.

User Response: If possible, check for reasons the printer is not ready.

- The printer may be out of paper
- The printer may not be turned on
- There may be a problem with the cable to the printer.

Check and correct the conditions and retry the operation. If the failure persists, perform system checkout for the printer as detailed in the *IBM 3270 Personal Computer Guide to Operations*.

WS045 Selected source not allowed

Explanation: The selected source window for the copy function is not a host, personal computer, or notepad window, or the personal computer session is in graphics mode.

User Response: Press Finish to return to Copy and select the correct source window.

WS046 Selected target not allowed

Explanation: The selected target window for the copy function is not a host or notepad window.

User Response: Press Finish to return to Copy and select the correct source window.

WS047 Warning: Overlapping Source and Target areas

Explanation: The source and target areas overlap. Only the area defined first will be highlighted.

User Response:

- You may proceed with the copy function to copy the original contents of the source area into the target area by pressing Enter or
- Go back to Source by pressing PF13, or to Target by pressing PF14 and redefine the source or target.

WS048 Copy not allowed: Input inhibited in Target window

Explanation: You attempted a copy operation while the keyboard was in an **input inhibited** state for the selected target window.

User Response:

1. Wait for the keyboard to “unlock.”
2. Verify that your target is correct.
3. Press Enter.
4. Verify that the host is operating.

If the keyboard remains locked, refer to Appendix B to isolate the cause of the failure.

Appendix F. Using Command Procedures for Save and Restore and for File Transfer

Contents

Introduction	F-3
Command Procedures for Save and Restore.....	F-4
Creating an Autoexec.Bat	F-5
Programmed Command Procedures	F-6
File Transfer Command Procedures	F-8

Notes:

Introduction

Any of the Save and Restore commands (Chapter 11), Send and Receive commands (Chapter 13), IBM Personal Computer DOS commands, or user-written commands (see the IBM Personal Computer *Disk Operating System* manual) can be stored as records in special DOS files called **batch files**, whose file extension is **.BAT**. Each record in the file is a command, and the sequence of such commands is called a **command procedure**. Records stored in such a **filename.BAT** file may include any of the commands mentioned above.

The commands stored in a **filename.BAT** file can be invoked by typing

filename

in the personal computer window.

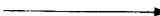
This appendix will show you how to create various kinds of command procedures for the Save, Restore, Send, and Receive commands.

Command Procedures for Save and Restore

Suppose you want to set up your IBM 3270 Personal Computer periodically for a particular application and need to:

- Restore a set of screen profiles from APPL1.SCR
- Restore a set of autokey recordings from APPL1.REC
- Restore a set of notepads from APPL1.NOT.

Instead of entering three individual Restore commands and having to remember three user filenames, you can set up a command procedure, such as CONFIG1.BAT, that contains the three commands. Then you need only enter a single word to cause the three commands to be executed. This is illustrated below:

A >
CONFIG1  CONFIG1.BAT file

INDRSTR SCREEN APPL1.SCR
INDRSTR RECORD APPL1.REC
INDRSTR NOTEPAD APPL1.NOT

Creating an Autoexec.Bat

Besides using command procedures to prepare the IBM 3270 Personal Computer quickly for a particular application, most users will have a special command procedure named **AUTOEXEC.BAT**. This file initially contains a statement that the system supplies at the conclusion of the customization task. Do not **alter** or **remove** this name. You may include other desired commands as long as they **follow** the statement that the system supplies.

If you build such a file, it is invoked **automatically** any time DOS is initialized, causing the commands in AUTOEXEC.BAT to be executed. By putting the appropriate Restore commands into the AUTOEXEC.BAT file with other desired commands, you can set up the IBM 3270 Personal Computer with standard screen profiles, autokey recordings, and notepads whenever DOS is initialized.

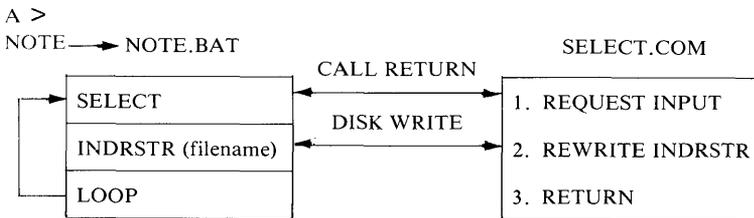
DOS initialization occurs automatically whenever the customized system diskette is loaded and initialized. Also, when the personal computer window is active and in application mode, you can reinitialize DOS at any time by pressing the following key sequence:

Alt + Ctl + Del

AUTOEXEC.BAT or other command procedure files can be created by use of the EDLIN editor supplied with DOS (see the IBM Personal Computer *Disk Operating System* manual) or any of the other file editors available for the IBM Personal Computer.

Programmed Command Procedures

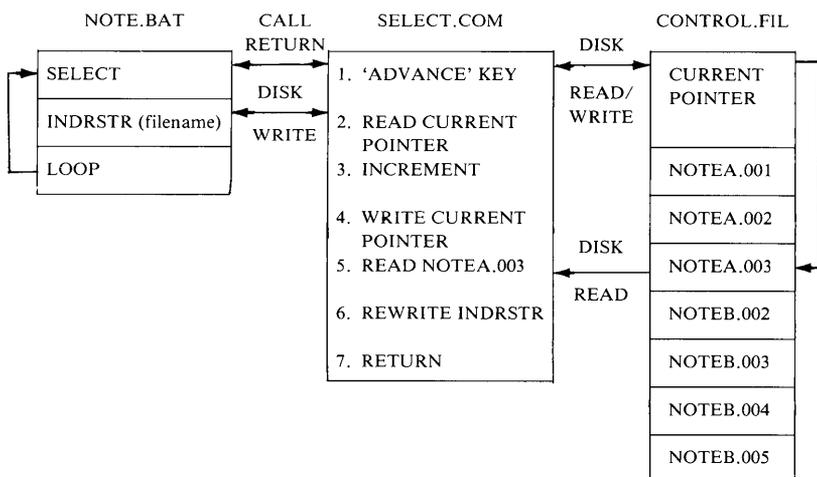
A special programmed command procedure can be created to quickly recall a series of notepads previously saved. This technique requires that the user write a DOS command program (BASIC or other language) to interface with the operator. The program can prompt the operator to press certain keys to page forward or backward through notepad screens, or ask for the "name" of a particular notepad screen to be restored. The operator program, after receiving input about which notepad to restore next, converts this into an INDRSTR (Restore) command record with the correct notepad filename. The operator program then writes this new INDRSTR record to the disk to overlay an existing INDRSTR command record contained in the command procedure file. This file also contains a command that invokes the operator program itself. If a Loop command is put into this file as well, a programmed command procedure, controlled by operator input, is created. This is illustrated below:



When NOTE.BAT is invoked, it first calls the SELECT.COM operator program. The operator program requests input that indicates which notepad record is to be restored next. This input is converted into an INDRSTR command record with the correct notepad filename. This record is written into the NOTE.BAT file to overlay the existing INDRSTR record. The SELECT.COM

program then returns. This causes the next command, INDRSTR, which was just created, to be executed. When this command has finished restoring the notepad, the next command, LOOP, is executed, causing the SELECT command to be invoked again. This starts the cycle over again, with new operator input into the SELECT.COM operator program.

A related series of notepads can be created and their filenames stored in a control file along with a "current notepad" pointer. This control file can be accessed by the operator program to step through the related notepads, using the pointer. Single keys can then be used to cause the operator program to step forward or backward through the related notepad file names to quickly restore them. The notepads can be used for operator viewing or, for example, as a source for copying saved data into 3270 edit screens for document creation. The following illustrates the control file concept:



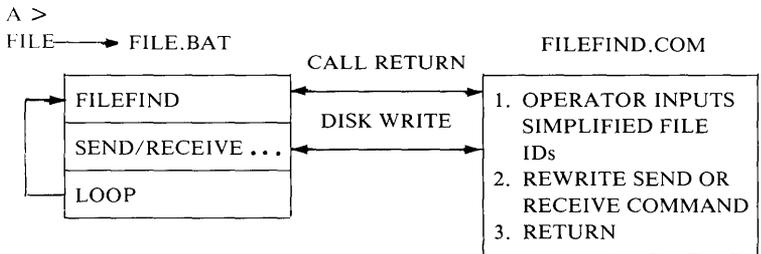
The SELECT.COM program reads an operator keystroke indicating advance to the next related notepad. The current pointer in the control file is read and updated. The filename of the notepad being pointed to, NOTEA.003, is read in from the control file and used to build a new INDRSTR command record. This record is written into the NOTE.BAT file. SELECT.COM returns, and NOTEA.003 is restored by the INDRSTR command for operator viewing or other uses.

Many variations of the illustrated programmed command procedure can be developed to allow program control, not only of notepad Save and Restore, but also of screen profiles or autokey Save and Restore. In addition, similar techniques can be used to control file transfer commands (see the next section), IBM Personal Computer DOS commands, or other user-written commands.

File Transfer Command Procedures

The file transfer commands described in Chapter 13 can be entered directly from the keyboard or invoked indirectly by use of standard or programmed command procedures. Such command procedures can shield the operator from remembering the complex parameters required when directly entering Send or Receive commands.

For example, a general programmed command procedure can be user-written. An operator interface program will prompt for simplified file-names and convert these into the required parameters for multiple Send or Receive operations. This is illustrated below:



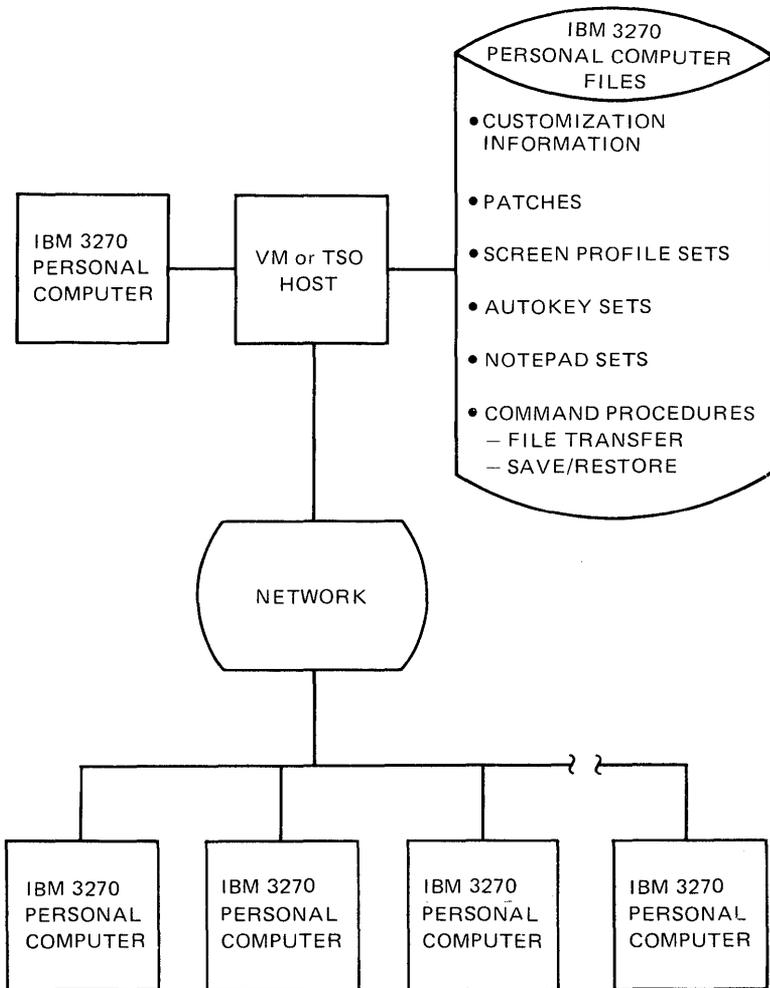
Refer to “Programmed Command Procedures” in this appendix for a more detailed discussion of this technique.

Another option is to set up fixed command procedures that transfer multiple files to and from the host by typing in a single command, as shown below:

A >
FILESET1 → FILESET1.BAT file

SEND MEMO.001. . .
SEND MEMO.002. . .
RECEIVE MEMO.001. . .
RECEIVE MEMO.002. . .

Such procedures, and others like it, can be used to provide central host storage, control, and distribution of files within a network of IBM 3270 Personal Computers. This concept and the types of files and procedures that can be distributed are illustrated as follows:



Appendix G. Technical Notes

Contents

Introduction	G-6
3270 Limitations	G-6
3270 Data-Stream Functions	G-7
Interface Codes	G-8
Attributes	G-13
Field Attributes	G-13
Extended Field Attributes and Character Attributes	G-14
Commands	G-16
3270 Data Stream Commands	G-16
Non-SNA Channel Commands	G-17
Write Control Character	G-18
3270 Data Stream Orders	G-20
Outbound 3270 Data Stream Structured Fields	G-21
Set Reply Mode Structured Field Format	G-22
Erase/Reset Structured Field Format	G-24
Outbound 3270DS Structured Field Format	G-25
Read Partition Structured Field Format	G-26
Inbound 3270 Data Stream	G-27
Inbound 3270 Data Stream for Partition 0	G-29
Short Read Format	G-29
Read Modified and Read Modified All Format	G-30
Read Buffer Format	G-31
Read Buffer Format in Field Reply Mode	G-31
Read Buffer Format in Extended Field and Character Mode	G-32
Inbound Structured Fields	G-33
Query Reply Structured Field	G-34

Usable Area Query Reply Structured Field Format	G-34
Character Sets Query Reply Structured Field Format	G-36
Character Set Descriptors	G-38
Reply Modes Query Reply Structured Field Format	G-39
DDM Query Reply Structured Field Format	G-40
Color Query Reply Structured Field Format	G-41
Highlight Query Reply Structured Field Format	G-42
Implicit Partition Query Reply Structured Field Format	G-43
Implicit Partition Default and Alternate Screen Size	G-43
Character Cell Dimensions	G-43
Self-Defining Parameters	G-43
Transmission of Buffer Addresses	G-45
Buffer Addresses	G-45
Example of Buffer Address Calculation	G-45
Transmission of a Buffer Address	G-46
Transmission of Buffer Address in 16-Bit Address Mode	G-46
Transmission of Buffer Address in 12/14-Bit Address Mode	G-46
14-Bit Addresses	G-47
12-Bit Addresses	G-47
Mandatory Card Slot Assignments	G-49
Changes or Limitations to the Personal Computer Session	G-50
Personal Computer Physical Cursor	G-50
Personal Computer Print Spooling	G-50
3274 Communication Session Termination	G-51
IBM 3270 Personal Computer Failure	G-51
Color Limitations	G-51
Notes on All Points Addressable Graphics	G-52
Using the Full Screen All Points Addressable Mode	G-53
Personal Computer Display Blanking	G-53

Tables

G-1	United States EBCDIC I/O Interface Code ..	G-9
G-2	EBCDIC Control Character I/O Codes	G-11
G-3	Field Attribute Character Bit Assignment ...	G-13
G-4	Attribute Type X'41' - Extended Highlighting	G-14
G-5	Attribute Type X'42' - Color	G-14
G-6	Attribute Type X'43' - Character Set Selection	G-15
G-7	3270 Data Stream Commands	G-16
G-8	Non-SNA Channel Commands	G-17
G-9	Write Control Character Reset Actions	G-19
G-10	3270 Data Stream Orders	G-20
G-11	Set Reply Mode Structured Field Format ...	G-23
G-12	Erase/Reset Structured Field Format	G-24
G-13	Outbound 3270DS Structured Field Format	G-25
G-14	Read Partition Structured Field Format ...	G-26
G-15	Inbound 3270 Data Stream	G-27
G-16	Short Read Format	G-29
G-17	Read Modified and Read Modified All Format	G-30
G-18	Read Buffer Format in Field Reply Mode	G-31
G-19	Read Buffer Format in Extended Field and Character Mode	G-32
G-20	Usable Area Query Reply Structured Field Format	G-35
G-21	Character Sets Query Reply Structured Field Format	G-37
G-22	Character Set Descriptors	G-38
G-23	Reply Modes Query Reply Structured Field Format	G-31
G-24	DDM Query Reply Structured Field Format	G-40
G-25	Color Query Reply Structured Field Format	G-41
G-26	Highlight Query Reply Structured Field Format	G-42

G-27	Implicit Partition Query Reply Structured Field Format	G-43
G-28	Self-Defining Parameters	G-44
G-29	Hexadecimal Requirements	G-48
G-30	Mandatory Card Slot Assignments	G-49

Notes:

Introduction

This appendix is for anyone who needs technical information about

- 3270 limitations
- 3270 data stream functions
- Mandatory card slot assignments inside the system unit
- Personal computer application mode operation

3270 Limitations

The following 3270 capabilities are limited or are not available with the IBM 3270 Personal Computer:

- The magnetic slot reader, magnetic hand scanner, and selector light pen are not available as attachments.
- Port 0 of the 3274 Control Unit attachment is available in control unit terminal (CUT) mode only.
- The binary synchronous copy command is not available.
- The security keylock is not available.
- Alert is not supported on the distributed function terminal (DFT) session.
- Explicit partition is not supported on the distributed function terminal (DFT) session.

- The 3274 entry assist feature is not available.
- The APL character set is not available.
- Encryption/decryption is available for control unit terminal (CUT) only.
- The 3270 numeric lock is not supported.
- The 3270 graphic escape is not supported.
- Video output is not supported.
- The diagnostic reset dump to the 3274 Control Unit is not supported.
- The response time monitor is not supported on the distributed function terminal (DFT) session.

3270 Data Stream Functions

This section describes the 3270 data stream functions supported by the IBM 3270 Personal Computer. For general information on *all* the 3270 data stream functions, refer to the *IBM 3270 Information Display System: Data Stream Programmer's Reference*, GA23-0059.

In this section, those functions of the 3270 data stream that are supported by the IBM 3270 Personal Computer are listed and any information unique to IBM 3270 Personal Computer is provided. For those familiar with the 3270 data stream, this information should be sufficient for most purposes.

Interface Codes

Data commands and orders transmitted between the IBM 3270 Personal Computer and the host system are in the form of extended binary-coded decimal interchange code (EBCDIC) interface codes. Table G-1 shows the interface codes. Refer to *IBM 3270 Information Display System: Character Set Reference*, GA27-2837, for further details. Table G-2 lists the EBCDIC control character I/O codes.

Table G-1. United States EBCDIC I/O Interface Code

Hex 1 Bits 4567	00				01				10				11				Bits 0,1
	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0	NUL			SP	&	-						{	}	\	0	
0001	1		SBA				/		a	j	~		A	J		1	
0010	2		EUA						b	k	s		B	K	S	2	
0011	3		IC						c	l	t		C	L	T	3	
0100	4								d	m	u		D	M	U	4	
0101	5	PT	NL						e	n	v		E	N	V	5	
0110	6								f	o	w		F	O	W	6	
0111	7								g	p	x		G	P	X	7	
1000	8	GE		SA					h	q	y		H	Q	Y	8	
1001	9		EM	SFE				~	i	r	z		I	R	Z	9	
1010	A				¢	!		:									
1011	B				.	\$,	#									
1100	C	FF	DUP	MF	RA	<	*	%	@								
1101	D	CR	SF		()	_	'									
1110	E		FM		+	;	>	=									
1111	F			SUB		┌	?	"									EO

Notes to Table G-1

1. Codes X'00' through X'1F' and X'FF' are control codes, and codes X'40' through X'FE' are character codes. All blank squares in this chart represent undefined codes. All defined character codes are enclosed by heavy lines. Undefined control codes are rejected with a negative response (SNA) or an Op Check (non-SNA). If the extended attribute buffer (EAB) is enabled, all undefined character codes are accepted, stored, and returned without change on a subsequent read operation. If the EAB is disabled, character codes X'CE', X'CF', X'DD', X'DE', X'EE', X'EF', and X'FE' are stored, displayed, and returned as the character (X'60') and all other undefined character codes are accepted, stored, and returned without change. IBM reserves the right to change at any time the character displayed or printed and the I/O interface code returned for an undefined character code.
2. CR, NL, EM, and FF control characters are displayed and printed as spaces. If extended attributes are not enabled, the DUP and FM control characters are respectively displayed as $\bar{*}$ and $\bar{;}$ in dual-case mode and as * and ; in monospace mode. If extended attributes are enabled, DUP and FM are always displayed as $\bar{*}$ and $\bar{;}$ respectively. DUP and FM are always printed as * and ; respectively.
3. Bits 0 and 1 are assigned for the following characters: AID, attribute, write control (WCC), device address, buffer address, sense, and status. Bits 0 and 1 are assigned so that each character can be represented by a graphic character within the solid outlined areas of the chart. See Table G-2.
4. During monospace mode, the lowercase alphabetic characters are displayed or printed as uppercase characters.

Table G-2. EBCDIC Control Character I/O Codes

Bits 2-7	Graphic	EBCDIC (Hex)	Bits 2-7	Graphic	EBCDIC (Hex)
00 0000	SP	40	10 0000	.	60
00 0001	A	C1	10 0001	/	61
00 0010	B	C2	10 0010	S	E2
00 0011	C	C3	10 0011	T	E3
00 0100	D	C4	10 0100	U	E4
00 0101	E	C5	10 0101	V	E5
00 0110	F	C6	10 0110	W	E6
00 0111	G	C7	10 0111	X	E7
00 1000	H	C8	10 1000	Y	E8
00 1001	I	C9	10 1001	Z	E9
00 1010	⌈	4A	10 1010		6A
00 1011		4B	10 1011	,	6B
00 1100	<	4C	10 1100	⌋	6C
00 1101	(4D	10 1101		6D
00 1110	+	4E	10 1110	>	6E
00 1111		4F	10 1111	?	6F
01 0000	&	50	11 0000	0	F0
01 0001	J	D1	11 0001	1	F1
01 0010	K	D2	11 0010	2	F2
01 0011	L	D3	11 0011	3	F3
01 0100	M	D4	11 0100	4	F4
01 0101	N	D5	11 0101	5	F5
01 0110	O	D6	11 0110	6	F6
01 0111	P	D7	11 0111	7	F7
01 1000	Q	D8	11 1000	8	F8
01 1001	R	D9	11 1001	9	F9
01 1010		5A	11 1010	:	7A
01 1011	⌋	5B	11 1011	#	7B
01 1100	*	5C	11 1100	⌋	7C
01 1101)	5D	11 1101	,	7D
01 1110	:	5E	11 1110	=	7E
01 1111	⌈	5F	11 1111	"	7F

Notes to Table G-2

1. The characters in table G-2 are used as attribute, AID, write control (WCC), CU and device address, and buffer address.
2. To use this table to determine the hexadecimal code transmitted for an address or control character, first determine the values of bits 2-7. Select this bit configuration from the *Bits 2-7* column. The hexadecimal code that will be transmitted is to the right of the bit configuration.
3. Use this table also to determine equivalent EBCDIC hex codes and their associated graphic characters. Graphic characters for the United States I/O interface codes are shown. Graphic characters might differ for particular World Trade I/O interface codes. For possible graphic differences when these codes are used, refer to *IBM 3270 Information Display System: Character Set Reference*, GA27-2837.

Attributes

The IBM 3270 Personal Computer display station supports field attributes, extended field attributes, and character attributes.

Field Attributes

Table G-3 shows the field attribute byte and the bit assignments for the field attributes supported by the IBM 3270 Personal Computer.

Table G-3. Field Attribute Character Bit Assignment

X	1	U/P	A/N	D/SPD	0	MDT	Field Attribute Byte
0	1	2	3	4	5	6	7
EBCDIC Bit		Field Description					
0	Value determined by contents of bits 2-7. See Table G-2 for hexadecimal values.						
1	Always 1						
2	0 = Unprotected 1 = Protected (see Note)						
3	0 = Alphanumeric 1 = Numeric (if numeric lock capability is activated, causes automatic numeric shift of keyboard) (see Note)						
4,5	00 = Display not detectable by Cursor Select key 01 = Display detectable by Cursor Select key 10 = Intensified display detectable by Cursor Select key 11 = Nondisplay, nonprint, nondetectable						
6	Reserved — Always 0.						
7	Modified data tag (MDT); identifies modified fields during Read Modified command operation 0 = Field has not been modified. 1 = Field has been modified by the operator. Can also be set by program in data stream.						

Note: Bits 2 and 3 equal to 11 causes an automatic skip.

Extended Field Attributes and Character Attributes

The IBM 3270 Personal Computer supports the attribute types and attribute values in Tables G-4, G-5, and G-6 as extended field attributes (EFAs) and as character attributes (CAs). All other attribute types and attribute values are rejected with a negative response (SNA) or an Op Check (non-SNA).

Table G-4. Attribute Type X'41' - Extended Highlighting

Attribute Value (Hex)	EFA	CA
00	Default	Default (to EFA)
F1	Blink	Blink
F2	Reverse video	Reverse video
F4	Underscore	Underscore

Table G-5. Attribute Type X'42' - Color

Attribute Value (Hex)	EFA	CA
00	Default	Default (to EFA)
F1	Blue	Blue
F2	Red	Red
F3	Pink	Pink
F4	Green	Green
F5	Turquoise	Turquoise
F6	Yellow	Yellow
F7	White	White

Table G-6. Attribute Type X'43' - Character Set Selection

Attribute Value (Hex)	EFA	CA	LCID Default
00	Default	Default (to EFA)	
F1	Reserved	APL-Text	
F2	PSA	PSA	FF
F3	PSB	PSB	FF
F4	PSC	PSC	FF
F5	PSD	PSD	FF
F6	PSE	PSE	FF
F7	PSF	PSF	FF

Commands

For a description of the functions of the following commands, see the *IBM 3270 Information Display System: 3274 Control Unit Description and Programmer's Guide*, GA23-0061.

3270 Data Stream Commands

The 3274 Control Unit internally translates the non-SNA channel command codes into the SNA/BSC form before transmitting this information to the IBM 3270 Personal Computer.

Table G-7 shows these commands.

Table G-7. 3270 Data Stream Commands

Command	Mnemonic	Command Code-EBCDIC (Hex)		Graphic
		SNA/BSC	Non-SNA Channel	
Write	WRITE	F1	01	1
Erase/Write	EW	F5	05	5
Erase/Write Alternate	EWA	7E	0D	=
Write Structured Field	WSF	F3	11	NA
Erase All Unprotected	EAU	6F	0F	?
Read Buffer	RB	F2	02	2
Read Modified	RM	F6	06	6
Read Modified All	RMA	6E	NA	

Non-SNA Channel Commands

Although not part of the 3270 data stream, the channel commands in Table G-8 are valid for non-SNA channel-attached IBM 3270 Personal Computer display stations. The 3274 Control Unit internally decodes the following commands and passes the appropriate Write, Read Modified, or Read Buffer SNA/BSC command code values to the IBM 3270 Personal Computer.

Table G-8. Non-SNA Channel Commands

Command	Mnemonic	Non-SNA Channel Command Code-EBCDIC (Hex)
No Operation		03
Sense		04
Select Read Modified	Select RM	0B
Select Read Buffer	Select RB	1B
Select Read Modified from Position	Select RMP	2B
Select Read Buffer from Position	Select RBP	3B
Select Write	Select WRT	4B

Write Control Character

The write control character (WCC) bits have the following significance for the IBM 3270 Personal Computer:

WCC Bit	Explanation
0	No function.
1	No function for the WRT command. Reset function, if set to 1, for EW and EWA commands. See Table G-9 for the effects of the reset function when the IBM 3270 Personal Computer is in implicit partition state.
2, 3	Reserved
4	Start printer (SNA only). When set to 1, initiates a local-copy operation at the completion of the write operation. If no printer is available, a negative response X'0801', X'082E', or X'082F' is returned.
5	Sound alarm. When set to 1, causes the audible alarm to sound.
6	Keyboard restore. When set to 1, causes keyboard operation to be restored (by resetting system lock or WAIT indicator) and resets AID byte to X'60'.
7	Reset MDT bits in field attributes (WRT command only). When set to 1, causes MDT bits to be reset to 0 in all field attribute bytes in the specified partition, before any orders or data characters are processed.

Table G-9. Write Control Character Reset Actions

Reset Condition	Implicit Partition State
<p>1. WCC following Erase/Write or an Erase/Write Alternate command.</p> <p>a. WCC = Reset.</p> <p>b. WCC = No reset.</p>	<p>Execute the command; reset the inbound reply mode to field.</p> <p>Execute the command.</p>
<p>2. WCC following a Write command.</p> <p>a. WCC = Reset or no reset.</p>	<p>Execute the command.</p>
<p>3. WCC in outbound 3270DS header, and the function is Erase/Write or Erase/Write Alternate.</p> <p>a. WCC = Reset.</p> <p>b. WCC = No reset.</p>	<p>If the PID equals 0, execute the function (except for screen-size changes) and reset the inbound reply mode to field. If the PID does not equal 0, reject with negative RSP.</p> <p>If the PID equals 0, execute the function. If the PID does not equal 0, reject with RSP.</p>
<p>4. WCC in outbound 3270DS header, and the function is Write.</p> <p>a. WCC = Reset or no reset.</p>	<p>Execute the function if the PID equals 0; otherwise, reject with negative RSP.</p>

3270 Data Stream Orders

The IBM 3270 Personal Computer supports the following 3270 data stream orders. Table G-10 lists these orders.

Table G-10. Data Stream Orders

Order	Mnemonic	Order Code EBCDIC (Hex)
Start Field	SF	1D
Start Field Extended ¹	SFE	29
Set Buffer Address	SBA	11
Set Attribute ¹	SA	28
Modify Field ¹	MF	2C
Insert Cursor	IC	13
Program Tab	PT	05
Repeat to Address	RA	3C
Erase Unprotected to Address	EUA	12

¹The SFE, SA, and MF orders are valid only when the extended attribute buffer (EAB) is enabled for the logical terminal to which the order is directed. When the EAB is not enabled, these orders are rejected with a negative response (SNA) or an Op Check (non-SNA).

Outbound 3270 Data Stream Structured Fields

The Write Structured Field (WSF) command (X'F3') is used by the host program to transmit the following outbound structured fields to the addressed logical terminal in the in-selection logical-terminal set.

Outbound Structured Field	ID Code (EBCDIC-Hex)
Set Reply Mode	09
Erase/Reset	03
Outbound 3270DS	40
Write	F1
Erase/Write	F5
Erase/Write Alternate	7E
Erase All Unprotected	6F
Read Partition	01
Read Buffer	F2
Read Modified	F6
Read Modified All (SNA only)	6E
Query	02

All other structured-field ID codes are rejected with a negative response (SNA) or an Op Check (non-SNA).

Set Reply Mode Structured Field Format

The *set reply mode* structured field specifies the reply mode required in all subsequent inbound data streams. The specified reply mode remains in effect until it is changed by one of the following:

- Another set reply mode structured field, specifying a different reply mode
- An erase/reset structured field
- An EW or EWA command or a structured field with the WCC bit 1 set to 1, causing a reset function.

Table G-11 shows the content and meaning for bytes 0-5 and 7.

Table G-11. Set Reply Mode Structured Field Format

Byte	Content	Meaning
0, 1	X'0005' through X'0008'	Length of structured field in bytes
2	X'09'	ID code of set reply mode
3	PID	Partition identifier (must be X'00' for implicit partition state) X'00'-X'0F'
4	X'00' X'01' X'02'	Reply mode requested Field mode (default) Extended field mode Character mode
5	X'41'	Highlighting selection (Notes 1, 2, and 3)
7	X'42'	Color selection (Notes 1, 2, and 3)

Notes:

1. More than 5 bytes can be present only when character mode (X'02') is requested. Only when the length code is greater than X'0005' can the operator select from the keyboard the attribute value to be associated with the keyed data as shown in byte 5 above.
2. If color selection (X'42') is specified, the structured field is accepted, but the operator is not allowed to select color attributes from the keyboard.
3. X'41', and X'42', can appear in any order, not necessarily as shown in bytes 5 and 7 above.

Erase/Reset Structured Field Format

The *erase/reset* structured field creates an implicit partition 0 of default or alternate size, as specified in the structured field. Inbound-reply mode is reset. Table G-12 shows the content and meaning for bytes 0-3.

Table G-12. Erase/Reset Structured Field Format

Byte	Content	Meaning
0, 1	X'0004'	Length of structured field in bytes
2	X'03'	Erase/Reset ID code
3	Size X'00' X'80'	Size of usable area: Default size Alternate size

If byte 3 contains any value other than X'00' or X'80', the structured field is rejected with a negative response (SNA) or an Op Check (non-SNA).

Outbound 3270DS Structured Field Format

The *outbound 3270DS* structured field is used to direct the write commands to a specified partition. The write commands are:

- Write
- Erase/Write
- Erase/Write Alternate
- Erase All Unprotected.

Table G-13 lists the content and meaning for this structured field.

Table G-13. Outbound 3270DS Structured Field

Byte	Content	Meaning
0, 1	L	Length of structured field in bytes
2	X'40'	Outbound 3270DS ID code
3	PID	Partition identifier
4	Wrt Cmd X'F1' X'F5' X'7E' X'6F'	Write-type command code Write Erase/Write Erase/Write Alternate Erase All Unprotected
The remaining bytes of the structured field are the same as for the specified Write command.		

WCC bit 1 set to 1 does not reset the IBM 3270 Personal Computer to implicit partition state, as it does for the non-structured-field command, but resets the reply mode of the inbound partition to field mode. WCC bit 4 set to 1 specifies Start Print and must be in the last structured field of the string of structured fields.

Read Partition Structured Field Format

Table G-14 describes the content and meaning for the *read partition* structured field.

Table G-14. Read Partition Structured Field Format

Byte	Content	Meaning
0, 1	X'0000' X'0005'	Length of structured field in bytes
2	X'01'	Read-partition ID code
3	PID	Partition identifier X'00' - X'0F': read operations X'FF' (physical terminal): query operations
4	Type X'02' X'6E' X'F2' X'F6'	Query (used in both implicit partition and explicit partitioned states) Read Modified All (RMA) Read Buffer (RB) Read Modified (RM)

Restrictions:

1. Must be the last structured field in the current out-bound transmission.
2. IBM 3270 Personal Computer must be in normal-read state, and PID must specify a valid partition.

Any of the following conditions causes an error and the return of an appropriate sense code in SNA or of Op-Check in non-SNA:

- The IBM 3270 Personal Computer display is in normal-read state, and the identified partition does not exist; sense code X'1005'.
- The command code is invalid; sense code X'1003'.
- The PID value is invalid; sense code X'1005'.

- The read-partition function is not the last structured field to be sent in the current outbound transmission; sense code X'1005'.
- The IBM 3270 Personal Computer is in retry state; sense code X'0871'.
- The transmission is sent with end bracket; sense code X'0829'.
- The transmission does not specify "Change Direction"; sense code X'0829'.

Inbound 3270 Data Stream

All inbound 3270 data streams are preceded by an attention identifier (AID) byte that identifies the cause of the inbound transmissions. Table G-15 lists the possible causes of an inbound 3270 data stream, the associated AID values, and the resulting operations when the IBM 3270 Personal Computer is in normal-read state or in retry state.

Table G-15. Inbound 3270 Data Stream

Cause	AID	Operation (Normal-Read State)	Operation (Retry State)
Clear key	X'6D'	Short read (implicit partition 0)	
PA1 key	X'6C'	Short read	
PA2 key	X'6E'	Short read	
PA3 key	X'6B'	Short read	
PF1-PF9 keys	X'F1'-X'F9'	Read modified (addresses and data of all modified fields-nulls suppressed)	
PF10-PF12 keys	X'7A'-X'7C'		
PF13-PF21 keys	X'C1'-X'C9'		
PF22-PF24 keys	X'4A'-X'4C'		
Cursor-select field with & designator or Enter key	X'7D'		

Table G-15. Inbound 3270 Data Stream (continued)

Cause	AID	Operation (Normal-Read State)	Operation (Retry State)
Read Modified command	X'60'	Read modified	Retry last AID action from inbound partition
Read Modified All command	X'60'	Read modified all	Retry read modified all from inbound partition
Read Buffer command	X'60'	Read buffer	Retry read buffer from inbound partition
Read Partition Modified-SF	X'61'	Read modified	Reject
Read Partition- Read Modified All SF	X'61'	Read modified all	Negative Re- sponse (SNA) or Op Check (non-SNA)
Read Partition- Read Buffer SF	X'61'	Read buffer	
Read Partition- Query SF	X'88'	Query replies	

Inbound 3270 Data Stream for Partition 0

Each inbound 3270 data stream for partition 0 is preceded by an AID code that identifies the cause of this inbound data stream. The preceding chart lists each cause, the AID associated with that cause, and the resulting type of inbound operation. The types of inbound operations are:

- Short read
- Read modified
- Read modified all
- Read buffer

Short Read Format: Table G-16 shows that the short-read operation results in an inbound data stream consisting of only the AID byte.

Table G-16. Short Read Format

Byte	Content	Meaning
0	AID X'6D' X'6C' X'6E' X'6B'	Attention identifier byte: Clear key PA1 key PA2 key PA3 key

Read Modified and Read Modified All Format: The read-modified operation and the read-modified-all (SNA only) operation can take place in a *field*, an *extended field*, or a *character* reply mode. Table G-17 shows a general format for all three reply modes.

Table G-17. Read Modified and Read Modified All Format

Byte	Content	Meaning
0	AID	Attention identifier byte.
1, 2	CCP	Hexadecimal address of the cursor (current cursor position).
3	X'11'	SBA order code.
4, 5	X'-'	Hexadecimal address of the first character in the modified field (attribute address + 1).
6- <i>n</i>	Data	Data from the addressed field (including graphic escape/APL character pairs where appropriate) but with null characters suppressed. (See Notes 1 and 2.
The pattern of bytes 3 through <i>n</i> is specified for all other modified (MDT bit set to 1) fields.		

Notes:

1. In character reply mode, the string of data characters can also include Set Attribute orders to indicate changes in the character attribute value.
2. For the read-modified operation, with an AID of X'7E' (indicating cursor selection of a space or null designator character), only the addresses of modified fields are transmitted.
3. If none of the fields has been modified, the inbound data stream consists of bytes 0 through 2 only.
4. If the partition buffer is unformatted, the data stream consists of bytes 0 through 2 and bytes 6 through *n* (all data in the partition buffer, with nulls suppressed).

Read Buffer Format: The read-buffer operation can take place in *field*, *extended field*, or *character* reply mode. The read-buffer operation transmits the contents of all buffer locations in the presentation space, starting at the current cursor position.

Read Buffer Format in Field Reply Mode: Table G-18 shows the read buffer format in field reply mode.

Table G-18. Read Buffer Format in Field Reply Mode

Byte	Content	Meaning
0	AID	Attention identifier byte.
1, 2	CCP	Hexadecimal address of the cursor (current cursor position).
3- <i>n</i>	Data	Data characters (including null characters, but excluding Set Attributed orders), starting at the current cursor position to the start of the next field. (See Note.)
<i>n</i> + 1	X'1D'	Start Field order code.
<i>n</i> + 2	X'-'	Field-attribute character.
<i>m</i>	Data	All data characters to the start of the next field.
The pattern of bytes <i>n</i> + 1 through <i>m</i> is repeated for all other fields being transmitted.		

Note: Set Attribute orders are defined in *IBM 3270 Information Display System 3274 Control Unit Description and Programmer's Guide*, GA23-0061.

Read Buffer Format in Extended Field and Character Mode: Table G-19 lists the read buffer format in extended field and character mode.

Table G-19. Read Buffer Format in Extended Field and Character Mode

Byte	Content	Meaning
0	AID	Attention identifier byte.
1, 2	CCP	Hexadecimal address of the cursor (current cursor position).
3- <i>n</i>	Data	Data characters (including null characters), starting at the current cursor position to the start of the next field.
<i>n</i> + 1	X'29'	Start Field Extended order code.
<i>n</i> + 2	ATTC X'C0' X'-' X'-' X'-'	Attribute count (X'00' through X'04'). The number of attribute specifications (byte pairs) that follow. Byte pairs are transmitted only for those extended field attributes with specified (non-default) values. Field-attribute type. Field-attribute value. Extended-field-attribute type. Extended-field-attribute value: includes highlighting, color, and PS. (See "Attributes.")
<i>m</i>	Data	All data characters to the start of the next field.
The pattern of bytes <i>n</i> + 1 through <i>m</i> is repeated for all other fields being transmitted.		

Notes:

1. Set Attribute orders are defined in *IBM 3270 Information Display System 3274 Control Unit Description and Programmer's Guide*, GA23-0061.
2. When in character mode, each string of DATA characters can include Set Attribute orders to indicate changes in the character attribute value. The format for these Set Attribute orders is the same as for out-bound Set Attribute orders. In extended-field mode, no Set Attribute orders are included.

Inbound Structured Fields

The inbound structured field AID code (X'88') precedes and identifies the following inbound structured fields for transmission to the host program.

Inbound Structured Field	ID Code (EBCDIC - Hex)
Inbound 3270DS (partitions 01-0F) (Short read) (Read modified) (Read modified all) (Read buffer)	80
Query reply	81
Usable area	81
Character sets	85
Color	86
Highlight	87
Reply modes	88
Implicit partition	A6
DDM	95

Query Reply Structured Field

The logical terminal to which the read partition query function was addressed responds with the transmission of a series of structured fields indicating the field and character attributes, the screen or page size characteristics, the symbol sets, and the reply modes available on the logical terminal. Since each structured field contains its own unique identification, the order in which the fields are transmitted is not important. The *query reply* structured fields and their associated reply codes are as follows:

Query Reply Structured Field	Reply Code (EBCDIC - Hex)
Query reply	81
Usable area	81
Character sets	85
Color	86
Highlight	87
Reply modes	88
Implicit partition	A6
DDM	95

Usable Area Query Structured Field Format: The *usable area query reply* structured field indicates to the host program the dimensions of the logical screen for the logical terminal. Table G-20 describes the content and meaning of the usable area query reply structured field.

Table G-20. Usable Area Query Reply Structured Field Format

Byte	Content	Meaning
0, 1	L X'0017'	Length of structured field in bytes, if: Partitions not supported (0 partitions defined)
2	X'81'	ID code of query reply
3	X'81'	ID code of usable area reply
4	X'03'	16-bit addressing allowed
5	X'00'	Variable-character cells not sup- ported (omit bytes 23-26) per logical- terminal definition table
6, 7	LSW	Width of usable screen for logical screen
8, 9	LSH	Height of usable screen for logical screen
10	X'01'	Units of measure (millimeters)
11-14	Xr	Horizontal pitch
15-18	Yr	Vertical pitch
19	HS 09	Horizontal character cell size
20	VS 0E	Vertical character cell size
21, 22	BUFFSZ	Character buffer size

Character Sets Query Reply Structured

Field Format: The *character sets query reply* structured field is transmitted to inform the host program what character sets are defined for the logical terminal. Table G-21 describes the content and meaning of the character sets query reply structured field.

Table G-21. Character Sets Query Reply Structured Field Format

Byte	Bit	Content	Meaning
0, 1	-	L	Length of structured field in bytes (13 + lengths of descriptors)
2	-	X'81'	ID code of query reply
3	-	X'85'	ID code of character sets reply
4	-	Flags	Based on logical-terminal definition table (EAB/PS) definition:
	0	0	Graphic escape (EAB) not supported
	1	0	Reserved
	2	0 or 1	Load PS (EAB and PS) supported (0 = no; 1 = yes)
	3	0 or 1	Load PS extension (EAB and PS) supported (0 = no; 1 = yes)
	4	0	One size of character cell supported
	5-7	000	Reserved

Table G-21. Character Sets Query Reply Structured Field Format (continued)

Byte	Bit	Content	Meaning
5	-	X'00'	Reserved
6	-	X'09'	Default-character cell width
7	-	X'0E'	Default-character cell depth
8-11	-	X'6000 000'	Supported Load PS format types; bit-encoded (if bit $i = 1$, then type is supported)
12	3	DL	Length of each descriptor

Character Set Descriptors: The following table describes the length of each descriptor.

Table G-22. Character Sets Descriptors

Byte	Bit	Content	Meaning
1		SET	Device-specific character set ID (RWS or ROS number)
2	0	FLAGS LOAD B'0' B'1'	Loadable: Nonloadable character set Loadable character set
	1	TRIPLE B'0' B'1'	Triple plane: Single-plane character set Triple-plane character set
	2	RES	Reserved—must be zero
	3	CB B'0' B'1'	Compare bit: LCID compare No LCID compare
	4-7	RES	Reserved
3		LCID	Local character set ID

Reply Modes Query Reply Structured Field Format: The *reply modes query reply* structured field is transmitted, if EAB is defined, to inform the host program which reply modes are supported by the logical terminal. Table G-23 lists the content and meaning for bytes 0-6 of the structured field.

Table G-23. Reply Modes Query Reply Structured Field Format

Byte	Content	Meaning
0, 1	X'0007'	Length of structured field in bytes
2	X'81'	ID code of query reply
3	X'88'	ID code of reply modes reply
4	X'00'	Field reply mode supported
5	X'01'	Extended-field reply mode supported
6	X'02'	Character reply mode supported

DDM Query Reply Structured Field Format: Table G-24 lists the content and meaning for bytes 0–6 of the structured field.

Table G-24. DDM Query Reply Structured Field Format

Byte	Content	Meaning
0, 1	L	Length of structured field in bytes
2	81	ID code of query reply
3	95	ID code of DDM reply
4	'00'	File not available
5	00	Reserved
6,7	0800	Max DDM bytes per transmission allowed inbound
8,9	0800	Max DDM bytes per transmission allowed outbound
10	01	Number of subsets supported
11	01	DDM subset identifier

Color Query Reply Structured Field Format: The *color query reply* structured field indicates to the host the color that will be displayed for each of the color attribute values. Table G-25 describes the content and meaning for this structured field.

Table G-25. Color Query Reply Structured Field Format

Byte	Content	Meaning
0, 1	X'0016'	Length of this structured field in bytes
2	X'81'	ID code of query reply
3	X'86'	ID code of color reply
4	X'00'	Reserved
5	X'08'	Length of attribute list (number of color attribute pairs)
6	X'00'	Default color attribute
7	X'F4'	Green is the device default color
8-21	X'F1F1F2F2 F3F3F4F4 F5F5F6F6 F7F7'	For color display, each color maps to itself.
8-21	'F1F4F2F4 F3F4F4F4 F5F4F6F4 F7F4'	For mono display, each color maps to green.

Notes:

1. Bytes 6 and 7 are always used to indicate the IBM 3270 Personal Computer default color.
2. If *extended attributes* is not enabled by the logical-terminal definition table, the color query reply is not returned.

Highlight Query Reply Structured Field Format: The *highlight query reply* is transmitted inbound as a structured field with the format shown in Table G-26.

Table G-26. Highlight Query Reply Structured Field Format

Byte	Content	Meaning
0, 1	X'000D'	Length of this structured field in bytes
2	X'81'	ID code of query reply
3	X'87'	ID code of highlight reply
4	X'04'	Number of byte pairs that follow
5	X'00'	Acceptable attribute value
6	X'F0'	Default-highlight action code
7	X'F1'	Accepted attribute value
8	X'F1'	Blink action code
9	X'F2'	Accepted attribute value
10	X'F2'	Reverse action code
11	X'F4'	Accepted attribute value
12	X'F4'	Underscore action code

Notes:

1. Bytes 5, 7, 9, and 11 of a highlight query reply indicate to a host the attribute values that the IBM 3270 Personal Computer:
 - a. Can accept in an outbound extended-highlight attribute byte.
 - b. Will preserve and will return to the host in a subsequent inbound operation (unless changed by the operator).
2. Bytes 6, 8, 10, and 12 indicate to a host what action the IBM 3270 Personal Computer performs for each of those attribute values.
3. If *extended attributes* is not enabled by the logical-terminal definition table, the highlight query reply is not returned.

Implicit Partition Query Reply Structured Field Format: The *implicit partition query reply* structured field is always returned by the IBM 3270 Personal Computer logical terminal. It informs the host of the default and alternate sizes for the target logical terminal's implicit partition. It may also return the cell size in effect for the default and alternate screen sizes. Table G-27 shows this structured field format.

Table G-27. Implicit Partition Query Reply Structured Field Format

Byte	Content	Meaning
0, 1	L	Length of structured field (in bytes)
2	X'81'	ID code of query reply
3	X'A6'	ID code of implicit partition reply
4, 5	X'0000'	Reserved

Implicit Partition Default and Alternate Screen Size: For SNA, the default and alternate screen sizes returned in this reply are those established at BIND to this logical terminal.

For non-SNA, the default and alternate screen sizes returned in this reply are those in effect for this logical terminal at the time the reply is generated.

Character Cell Dimensions: The dimensions of the character cells in effect for the default and alternate screen sizes are returned only when the character cell size for either the default or the alternate implicit partition is different from the cell size specified in the usable area query reply.

Self-Defining Parameters: The following implicit partition size parameter, shown in Table G-28, is always returned as part of the implicit partition query reply.

Table G-28. Self-Defining Parameters

Byte	Content	Meaning
0	L	Length of parameter (in bytes)
1	X'01'	Parameter of screen size dimensions
2	X'00'	Reserved
3, 4	WD	Width of default screen size in cells
5, 6	HD	Height of default screen size in cells
7, 8	WA	Width of alternate screen size in cells
9, 10	HA	Height of alternate screen size in cells

Notes:

1. Bytes 3 and 4: For SNA, the width of the default implicit partition is the value established at logical-terminal BIND time. For non-SNA, the width of the default implicit partition is 80.
2. Bytes 5 and 6: For SNA, the height of the default implicit partition is the value established at logical-terminal BIND time. For non-SNA, the height of the default implicit partition is 24.
3. Bytes 7 through 10: For SNA, the width and the height of the alternate implicit partition are the values established at logical-terminal BIND time. For non-SNA, the width and the height of the alternate implicit partition are the values defined in the logical-terminal definition table.

Transmission of Buffer Addresses

The following text describes:

1. The relationship between a given row/column position in a partition's presentation space and its address in the partition's buffer storage.
2. How a buffer storage address is transmitted to and from the IBM 3270 Personal Computer in each of the two address modes.

Buffer Addresses

The relationship between any given row/column position in a partition and its address in the partition's buffer storage is expressed thus:

$$\text{Buffer address} = W \times (R-1) + (C-1)$$

Where:

W is the partition *width* (number of columns)

R is the *row number* (counting from 1) of the position being addressed

C is the *column number* (counting from 1) of the position being addressed

Note: For column 1, row 1, the buffer address is 0.

Example of Buffer Address Calculation:

Given a partition width (W) of 50 columns, what is the buffer address of the character location in column 46 and row 21?

$$\text{Buffer Address} = (50 \times 20) + 45 = 1045$$

Transmission of a Buffer Address

A buffer address is always transmitted in a 2-byte field.

The *way* in which a buffer address is transmitted (for example, in the 2 bytes after the X'11' byte in a Set Buffer Address order, or in the 2 bytes that specify the current cursor position in an inbound read operation) depends on the *address mode for the partition*.

A partition has one of two address modes:

- 16-bit address mode
- 12/14-bit address mode.

Transmission of Buffer Address in 16-Bit Address Mode

In 16-bit address mode, buffer addresses are transmitted outbound and inbound as 16-bit binary numbers.

Transmission of Buffer Address in 12/14-Bit Address Mode

In 12/14-bit address mode, bits 0 and 1 of the first address byte have the following bit significance:

- 00 - 14-bit binary address follows
- 01 - 12-bit coded address follows
- 11 - 12-bit coded address follows

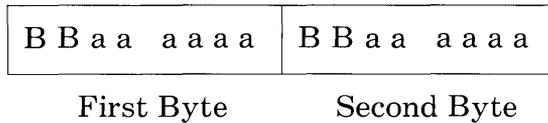
(In an outbound transmission, if bits 0 and 1 of the first byte are set to B'10', a sense code of X'1005' is returned.)

For outbound transmissions, IBM 3270 Personal Computer uses these first 2 bits to determine whether the address in the transmission is 12-bit or 14-bit. For inbound transmissions, the size of

the partition determines whether the address transmission is 12-bit or 14-bit. If the partition size is greater than 4096 bytes (excluding character attributes if an EAB device), 14-bit addresses are used. Otherwise, 12-bit addresses are used.

14-Bit Addresses: 14-bit buffer addresses are transmitted outbound and inbound with bits 0 and 1 of the first byte equal to B'00', followed by the buffer address expressed as a 14-bit binary number.

12-Bit Addresses: 12-bit buffer addresses are transmitted outbound and inbound with the following format:



Where:

a represents the binary value of the address (12 bits), and *BB* is B'01' or B'11' (see text below).

The 12-bit address EBCDIC values for decimal addresses 0 through 10879 are derived as follows:

1. The 12-bit binary representation of the decimal address is split into two 6-bit groups.
2. The more significant 6-bit group occupies bits 2 through 7 of the first byte.
3. The less significant 6-bit group occupies bits 2 through 7 of the second byte.
4. According to the value of bits 2 through 7 in each byte, bits 0 and 1 of each byte are set to obtain the hexadecimal representations, as defined in Table G-30. The resulting EBCDIC value represents a graphic character in the range X'40' through X'F9'.

Table G-29. Hexadecimal Representations

Bits 2-7	EB*						
00 0000	40	01 0000	50	10 0000	60	11 0000	F0
00 0001	C1	01 0001	D1	10 0001	61	11 0001	F1
00 0010	C2	01 0010	D2	10 0010	E2	11 0010	F2
00 0011	C3	01 0011	D3	10 0011	E3	11 0011	F3
00 0100	C4	01 0100	D4	10 0100	E4	11 0100	F4
00 0101	C5	01 0101	D5	10 0101	E5	11 0101	F5
00 0110	C6	01 0110	D6	10 0110	E6	11 0110	F6
00 0111	C7	01 0111	D7	10 0111	E7	11 0111	F7
00 1000	C8	01 1000	D8	10 1000	E8	11 1000	F8
00 1001	C9	01 1001	D9	10 1001	E9	11 1001	F9
00 1010	4A	01 1010	5A	10 1010	6A	11 1010	7A
00 1011	4B	01 1011	5B	10 1011	6B	11 1011	7B
00 1100	4C	01 1100	5C	10 1100	6C	11 1100	7C
00 1101	4D	01 1101	5D	10 1101	6D	11 1101	7D
00 1110	4E	01 1110	5E	10 1110	6E	11 1110	7E
00 1111	4F	01 1111	5F	10 1111	6F	11 1111	7F

Note: The 12-bit address EBCDIC values for decimal addresses 0 through 3563 are listed in the *IBM 3270 Information Display System Buffer Address Codes*, GA23-0057.

* EB = EBCDIC

Mandatory Card Slot Assignments

The adapters in Table G-30 must be installed in the card slots listed.

Table G-30. Mandatory Card Slot Assignments

Card Slot	Item	5271 Models		
1	3274 Communication Adapter	X	X	X
2				
3	Display Adapter	X	X	X
4	Memory Expansion Adapter		X	X
5	Fixed Disk Adapter			X
6	Diskette Adapter	X	X	X
7(1/2)	Printer Adapter		X	X
8(1/2)	Keyboard Adapter	X	X	X

Note: Optional adapter cards may be put into any open card slot that does not conflict with the above mandatory slot assignments. Other optional adapter cards are:

- Memory Expansion Adapter
- Printer Adapter Asynchronous Adapter
- All Points Addressable (APA) Adapter
- Programmed Symbols (PS) Adapter

Changes or Limitations to the Personal Computer Session

Following are the changes or limitations to the personal computer session in application mode when operating under the control program. Note that if you are running a personal computer application program through the IBM 3270 Personal Computer Control Program, there may be unpredictable results in some cases.

Personal Computer Physical Cursor

Auto-windowing in the personal computer session occurs only in response to the movement of the personal computer session physical cursor. Some IBM Personal Computer application programs do not use the physical cursor, but use other types of cursors. These other types of cursors will not support the auto-windowing function. If you want auto-windowing to occur, you must convert such applications to use the physical cursor.

If an application has inhibited the default cursor but you chose an alternate cursor, the alternate cursor will be the cursor you see.

Personal Computer Print Spooling

The DOS print spooler will not operate with the IBM 3270 Personal Computer and *should never be activated*. If you use the print spooler, it may, and in most instances will, cause the 3274 communication session to terminate. See “3274 Communication Session Termination” below.

3274 Communication Session Termination

The personal computer application actions that may, and in most instances will, cause the 3274 communication session to terminate are:

- Use of the disable/enable functions for an extended period of time.
- Failure to issue an end-of-interrupt on a hardware interrupt level for an extended period of time.
- Masking of selected interrupt levels for an extended period of time.
- Failure to issue an IRET for an extended period of time.

IBM 3270 Personal Computer Failure

The IBM 3270 Personal Computer will, in most cases, fail in an unpredictable manner if you:

- Access memory above the pointer in BIOS memory, except to refer to the IBM Personal Computer display refresh buffer.
- Use interrupt vectors X'50' through X'57' or reprogram the 8259.

Color Limitations

The IBM 3270 Personal Computer supports eight colors for personal computer applications. If you use the Personal Computer color printer to print a Personal Computer color graphics screen in medium resolution graphics, the 3270 Personal Computer Control Program uses the blue color to determine which color palette is displayed. In palette 0 there is no blue and the

colors printed are black, blue, and pink. If you change the background color to green, blue, turquoise, or white while using palette 0, the blue color gun is turned on and the colors for palette 1 are used. The color palette select register is Write only and cannot be checked.

Notes on All Points Addressable Graphics

If you use the IBM Personal Computer all points addressable (APA) graphics applications on the IBM 3270 Personal Computer, please note that your graphics images may appear differently. For example, you may have ovals in place of circles. For images to appear normally on the IBM 3270 Personal Computer, you must set the aspect ratio parameters in the application program. For example, in BASIC, add the aspect ratio parameter to the CIRCLE command to get circles instead of ovals on the display screen. Below is a table describing both IBM Personal Computer and 3270 Personal Computer ratios.

	PC	3270 PC
High Resolution	5:12	2:54 (approx. 2:3)
Medium Resolution	5:6	35:27 (approx. 5:4)

Note: The current aspect ration parameters are also available dynamically. A video interrupt (INT '10') must be made to BIOS. Register AH must contain '30'. This function causes an address to be returned in CX (segment) and DX (offset) which points to the aspect in two hexadecimal bytes: '23' and '36' for high resolution, or '23' and '1B' for medium resolution. The BIOS character generator cannot be used while in full screen mode.

Using the Full Screen All Points Addressable Mode

When emulating the IBM Personal Computer Color Graphics Adapter, note that approximately one half of the display screen is used (640 x 200 PELs). In addition, the All Points Addressable adapter is capable of displaying 720 x 350 PELs. To set this full screen mode, a video interrupt (INT '10') must be made to BIOS. For high resolution full screen graphics mode (720 x 350 PELs), Register AH must contain '0' and Register AL must contain '30'. For medium resolution full screen graphics mode (360 x 350 PELs), Register AH must contain '0' and Register AL must contain '31'.

For either full screen graphics mode, the storage addressing scheme changes from the standard IBM Personal Computer odd/even scans to a simpler, contiguous map of 32K starting at 'B8000'. For example, the first byte of the second scan line is addressed as 90 ('5A'). The IBM Personal Computer screens use the standard IBM Personal Computer map.

Personal Computer Display Blanking

Personal computer applications control their display images by writing to a series of input/output (I/O) registers, as described in the *IBM Personal Computer Technical Reference*. Even those applications that use DOS or BIOS services directly ultimately do this, since those programs write to I/O registers to complete their display service requests.

The IBM 3270 Personal Computer emulates each I/O register function within the personal computer window. Among the functions provided is the ability to disable or blank the display and to reenable it, using port 3B8 for a monochrome display or port 3D8 for a color display. As the

IBM 3270 Personal Computer emulates this function, the personal computer window will blank when the personal computer display is disabled. Personal computer data reappears when it is reenabled.

This disable function is used extensively by some personal computer applications. If an application is writing a large quantity of data to the display, it disables the display during the writing process. This eliminates the “confetti” on the display screen. However, disabling the display also causes the display screen to flash during screen updates. The IBM 3270 Personal Computer Control Program has eliminated the flashing problem by ignoring this disable request. As a result, personal computer applications that previously flashed during updates do not flash any longer.

There may be some situations when you do not want the disable request ignored. The application may have disabled the display to hide some activity. In this case, you may want to override automatic deactivation of the disable screen function. To do this, enter a personal computer session in application mode and press Sys Rq. This causes the IBM 3270 Personal Computer to respond to disable requests by blanking the personal computer window. Pressing this key sequence again causes disable requests to be ignored again.

Note: The following appears in the personal computer operator information area and indicates the *disable active* state:

X

Appendix H. Using Programmed Symbols

Contents

Introduction	H-3
Before You Begin	H-7
The Symbol Sets	H-8
Primary Colors.	H-9
Secondary Colors.	H-11
Character Attributes and Triple-Plane Symbols	H-11
Additional Information	H-12

Notes:

Introduction

This appendix is for anyone who wants to use Programmed Symbol (PS) features on the IBM 3270 Personal Computer. To use the PS feature, you must have programmed symbol host support, the Programmed Symbol adapter card installed in the system unit and your 3270 Personal Computer must be customized for programmed symbols.

A programmed symbol is a special character or graphic component that is loaded by a host application program into a symbol set in the IBM 3270 Personal Computer. Enough storage space is provided to hold the patterns for 192 symbols in each symbol set; the IBM 3270 Personal Computer can hold up to six programmed symbol sets. The symbol set indicators are:

- PSA
- PSB
- PSC
- PSD
- PSE
- PSF

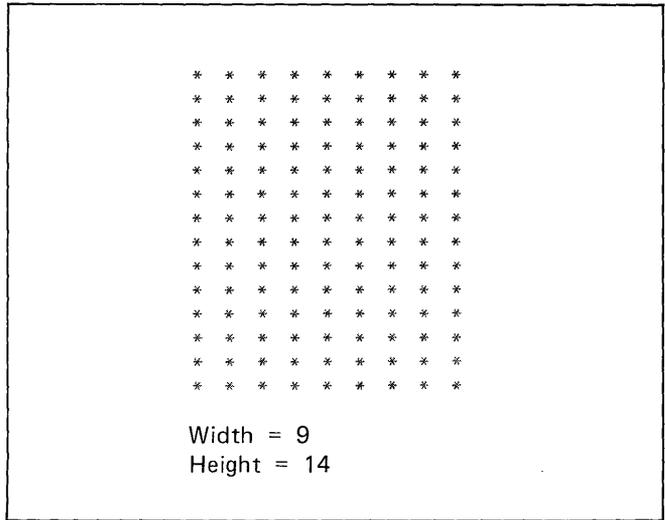
Press Alt + PF1 through PF6 to select one of these sets. The operator information area displays the symbol set indicator you are using. (Refer to *IBM 3270 Information Display System 3278 Display Station Operator's Guide*, GA27-2890, for additional information.)

To define a symbol, the host application program turns on only those bits in a location that relate to the active dots needed to display the symbol.

Some examples of programmed symbol use are:

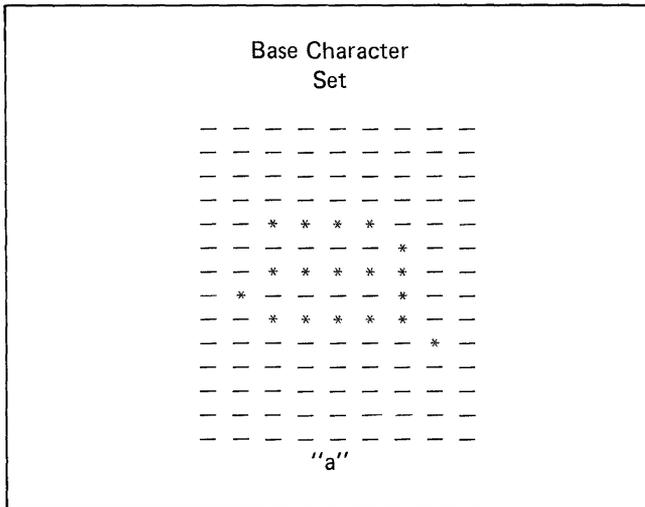
- Characters from foreign alphabets
- Mathematical signs and symbols
- Scientific signs and symbols
- Special type fonts, for example, italics
- Sets of graphic elements used to build bar graphs, bar charts, and other graphic representations of data.

The characters you see on your display screen are made up of a pattern of active dots. Each character position on the screen is addressed by the display as a matrix of dots, as shown below.



Unlike the 3278 and 3279 display stations, the IBM 3270 Personal Computer has just one character size, a width of 9 and a height of 14.

Characters of the base character set are defined within the display station as a pattern of active dots in this matrix, as shown below.



The active dots form the character seen on the display screen. The number of dots in the matrix and the size of the matrix vary between display stations.

Before You Begin

Before you can use the Programmed Symbol feature,

1. Make sure your work station has the Programmed Symbol adapter card installed in the system unit.
2. The customized system diskette you are using must have one host session customized for programmed symbols.
3. Log on to a host session that has applications that send programmed symbols to the display, such as graphic applications, and start the application.

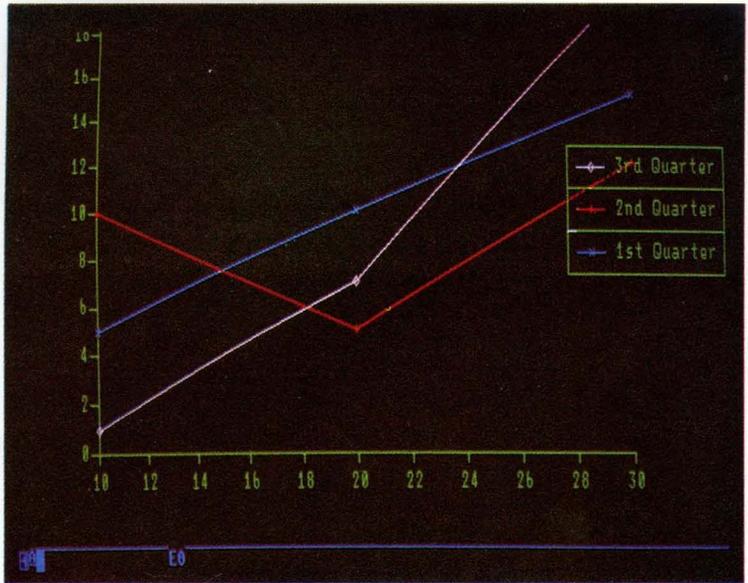
Note that you can use your IBM 3270 Personal Computer as it is intended while working with Programmed Symbol applications. For example, you can size your windows, move them, hide them, corner them, and so on.

The Symbol Sets

Programmed symbol sets are either **single-plane** or **triple-plane**. Single-plane symbol sets have no inherent color characteristic and are available for monochrome, plasma panel and color displays. The advantage of a triple-plane symbol set is that it allows more than one color to be used in a single character position, for example, a red character position overlaying a green character position would appear yellow on the display screen. Triple-plane symbol sets are, therefore, not available on monochrome displays. Regardless of the type of display you have, the same adapter card is installed in the system unit of the IBM 3270 Personal Computer.

Note: If you have a color display and are using the Programmed Symbol feature triple-plane symbols, the cursor will always appear white, for either the default "bar" or the alternate cursor (block). If you have a monochrome display and are using programmed symbols, the cursor will appear in reverse video for either the default or alternate cursor.

In certain applications, you may need to display in more than one color within a single character position. A typical example of a symbol that requires a triple-plane symbol set occurs where the application program displays a graph with lines in different colors.

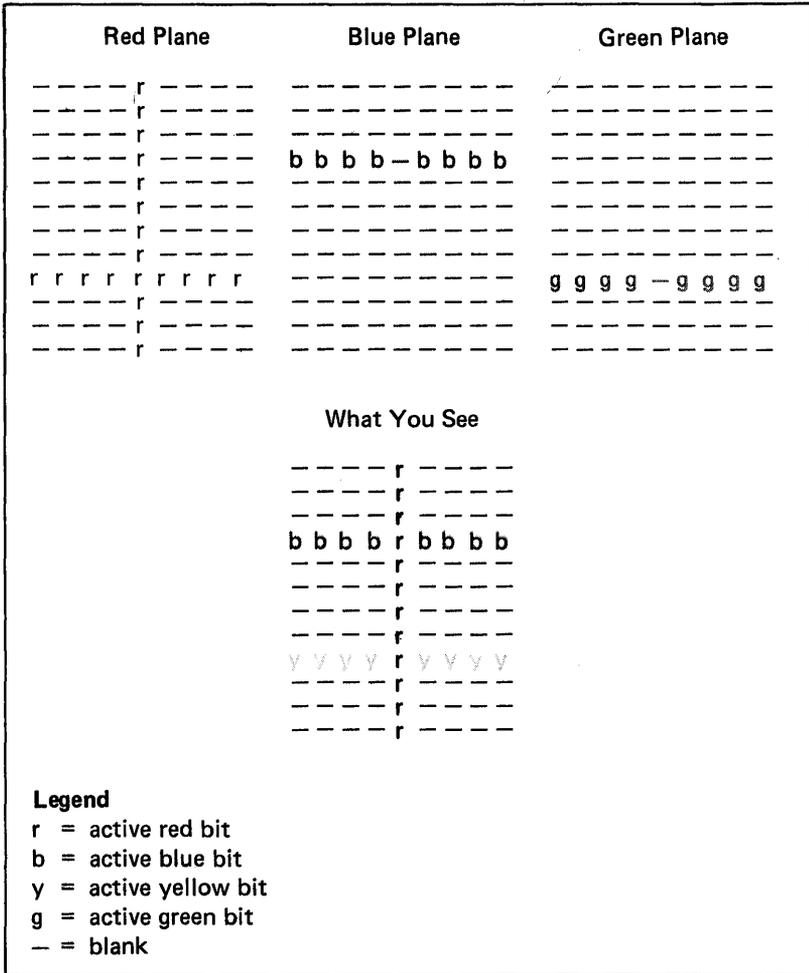


This graph shows three separate lines: last year's sales, this year's forecast sales, and this year's actual sales. Each line is to be displayed in a different color. At the point where two or more lines cross, each line needs to hold its color in the same character position as another line. Be aware of color mixing that may occur at the point common to several lines. The system works as follows:

Primary Colors

As stated above, some of the symbol sets available in the programmed symbols features are triple-plane symbol sets. Such sets contain three times the normal amount of storage for each defined character, arranged in three planes each representing one of the three primary colors red, blue, and green. By defining only a portion of the total symbol in each color plane, you can obtain a whole symbol in more than one color.

Take, for example, the instance where two horizontal lines, one blue and one yellow, are cut by a red vertical line. The active dots at the character position may appear as follows:



Note: The symbol extends to the edges of the character position, thus allowing the lines to continue without interruption into the adjacent character positions.

Secondary Colors

Secondary colors are obtained by mixing red, blue, and green. The secondary colors are pink, yellow, turquoise, and white. If a bit is active in more than one plane, the active primary colors combine to produce secondary colors, as shown below:

Primary Colors			Secondary Colors
Red	Blue	Green	What you See
No	No	No	No display
No	No	Yes	Green
No	Yes	No	Blue
No	Yes	Yes	Turquoise
Yes	No	No	Red
Yes	No	Yes	Yellow
Yes	Yes	No	Pink
Yes	Yes	Yes	White

Character Attributes and Triple-Plane Symbols

Character attributes, such as reverse video, underscoring, and blinking, will have no effect when you are using triple-plane symbols. Your data will appear as it has been loaded into the triple-plane symbol font.

Additional Information

For additional information on programmed symbols, refer to:

- *IBM 3270 Information Display System, 3274 Control Unit Description and Programmer's Guide, GA23-0061.*
- *IBM 3270 Information Display System 3278 Display Station and Programmer's Guide, GA27-2890.*
- *IBM 3270 Information Display System: Color and Programmed Symbols, GA33-3056.*

Glossary

A

active window. The window outlined with a double border and containing the cursor, indicating the session to which your keyboard is logically "attached." (See *selected window*.)

adapter card. A supplementary hardware component added to the system unit of your work station that expands basic function.

add window. The work station function that allows you to place a window within a screen profile.

all points addressable graphics. A personal computer programming capability enabled by the addition of a graphics adapter card that allows you to draw complex pictures and provides more versatility than special line and block characters usually available.

Alt key Functions. Keyboard functions printed on the front of the keys that are selected when the Alternate (Alt) key is pressed in conjunction with the desired key.

American National Standard Code for Information Interchange (ASCII). One of the two standard codes used for exchanging information among data processing systems and associated equipment; the standard code used by the IBM Personal Computer and other microcomputers. (Contrast with *EBCDIC*.)

APA. All points addressable (See *all points addressable graphics*).

application. The use to which a data processing system is put; a program that is written by or for a user for performing a particular task, for example, a payroll application program.

application mode. The mode of operation in which your work is logically “attached” to one of the following: a host computer session, the personal computer session, or a notepad session. (Compare with *work station control mode*.)

application window area. The topmost portion of your screen; the area that contains your windows. It is composed of ten screen profiles, numbered 0 through 9.

ASCII. American National Standard Code for Information Interchange. (See *American National Standard Code for Information Interchange*.)

auto-windowing. A characteristic of application mode in which the cursor scrolls the information within the presentation space behind the active window. The function is automatic; when the cursor reaches the edge of a window, the information behind the window moves automatically so that the cursor is always visible. (Contrast with *browse*.)

autokeying. A function that starts the continuous printout of recorded text; a control program capability that lets you record frequently used groups of keystrokes and plays them back at designated locations on the screen.

B

back up (verb). When dealing with diskettes, to duplicate data from a fixed disk drive or diskette to another diskette to ensure availability of data in the event of loss of or damage to the original; do not confuse this term with the DOS fixed disk command (see IBM Personal Computer *Disk Operating System* manual).

background color. The color of the window “writing surface.” (Contrast with *foreground color*.)

base color. The four colors white, red, blue, and green assigned according to protection and intensity attributes of the 3270 field attribute byte.

BASIC. Beginner’s All-Purpose Symbolic Instruction Code. (See *Beginner’s All-Purpose Instruction Code*.)

Beginner’s All-Purpose Symbolic Instruction Code (BASIC). A high-level, widely used computer programming language.

break. A personal computer function that halts whatever action is in progress, such as stopping a program in the middle of execution.

browse. The work station function that allows you to move the data contained in the presentation space vertically and horizontally within an application window.

C

change. A work station function, available both inside and outside work station control mode, that allows you to cycle through defined screen profiles in numeric order with the ChgSc key or to call up a specific screen profile by its numerical name by pressing the WS Ctrl key plus the number of the desired screen profile. (Compare with *jump*.)

color. One of the Level 3 functions (a subset of SetUp) allowing you to set and change the colors (both foreground and background) of individual sessions to one of eight colors; to set some host sessions to the base four-color 3270 data stream defaults; and to set screen background color when you are using a color display.

combination keys. Keys that must be used in conjunction with another key or keys to produce a desired function; these include the personal computer keys Control, Shift, and Alternate, and the host computer keys Shift and Alternate.

control functions. Keyboard functions in personal computer mode requiring the use of the Control (Ctrl) key in conjunction with another key.

control program function. The set of functions in the IBM 3270 Personal Computer allowing you to create windows, change their size and position, and hide and enlarge them; use autokeying and copying; save and restore autokey recordings, notepad contents, and screen profiles; and transfer files between host computer and personal computer sessions.

control unit terminal (CUT). An operational mode that allows one logical terminal session. (Contrast with *distributed function terminal (DFT)*.)

copy. The work station function that allows you to mark source lines in one text mode window and move them to a target location in within the same window or from one window to another on the same screen profile or a different screen profile. You can copy from any window into any window except a personal computer.

corner. The work station function that allows you to move a window clockwise to each of the four corners of the screen.

cursor. The movable spot of light, on a display screen, that indicates where the next character will be entered, replaced, or deleted.

cursor movement keys. The arrow keys that move the cursor up, down, left, and right. There are two sets of cursor movement keys. The black cursor movement keys in the cursor key area of the keyboard are used to execute host computer functions, work station functions, and personal computer functions. The blue cursor movement keys in the numeric keypad are for personal computer applications only. Within the Browse function, the cursor movement keys scroll the data within the window; within the Size function, they move the window borders; within the Copy function, they move the cursor to mark source and target blocks. When you use a personal computer application program with your IBM 3270 Personal Computer and without the control program software, you must use the blue cursor movement keys.

customization. The process by which your control program diskette is tailored to your 3274 controller host computer configuration; accomplished through a set of interactive prompt screens.

customize. With IBM 3270 Personal Computer Control Program diskettes, to tailor your control program diskette to reflect the 3274 controller host computer configuration to which the work station is attached and to your needs or those of your organization.

customized system diskette. A control program diskette on which the customization procedure has been performed. (See *customization*.)

CUT. Control unit terminal. (See *control unit terminal (CUT)*.)

D

data. All information entered into or used by a computer.

default. A value that is assumed when none has been specified.

defined screen. A screen profile containing one or more windows.

delete window. The work station function that allows you to remove a designated window from a screen profile.

Disk Operating System (DOS). A program that interacts with the system unit and the disk/diskette drive to control the flow of data. The DOS programs control the way your personal computer session uses other personal computer programs. DOS tells your personal computer session how to use the information you supply to the programs and how to return information that the programs supply to you.

diskette. A personal computer storage device consisting of a flexible magnetic disk inside a protective plastic jacket.

diskette drive. A device that uses diskettes for mass storage and retrieval of data.

display. An output unit for the visual display of data.

Distributed Function Terminal (DFT). An operational mode that allows multiple concurrent logical terminal sessions.

DOS. Disk Operating System. (See *Disk Operating System*.)

E

EBCDIC. Extended binary-coded decimal interchange code. (See *extended binary-coded decimal interchange code*.)

Enlarge. A toggle key that allows you to increase the dimensions of your windows to full-screen size; initiated by the *Enlarge* key, which is valid in both work station control mode and application mode. *Enlarge* does not affect character size but instead enlarges the screen area.

erase. In autokey mode, to remove from autokey storage a recording you no longer need.

Extended Binary-Coded Decimal Interchange Code (EBCDIC). A coded character set consisting of 8-bit coded characters.

extended color. The seven colors red, blue, green, white, yellow, pink and turquoise applied to both whole fields and individual characters within fields independently of any other attributes of the data.

F

file. A collection of data. This data can be programs, word processing files, or computational information. Files are stored either in the host computer or on personal computer diskettes. Files are also called *data sets*.

file transfer. The work station function that allows you to send and receive files between a personal computer session and a host computer session when the file transfer code is accessible through your host computer session.

file transfer program. A host computer program that allows you to use the file transfer function.

finish. The key that ends your activity at one work station level and moves you up one level; for example, *Finish* in the *Size* function (Level 3) would return you to *SetUp* (Level 2).

fixed disk. A type of work station storage used for mass storage and retrieval of data. This storage device is housed in the system unit.

foreground color. The color of characters within a window (Contrast with *background color*.)

G

graphic. A symbol produced by a process such as handwriting, printing, or drawing.

H

hardware. The physical equipment used in data processing, as opposed to programs, procedures, and associated documentation. (Contrast with *software*.)

Help. An aspect of work station control mode that overlays the right side of your current screen with information about the status of your work station control functions and keys. Help is a toggle key. Once it is toggled on, Help information changes as you move among the work station levels.

HELPER. The IBM 3270 Personal Computer Online Tutorial, consisting of an interactive self-teaching diskette and a booklet.

hide. The work station function that allows you to remove a window temporarily from the screen profile in which it appears: it does not delete the window or affect its presence on other screen profiles; it merely "hides" it. (Compare with *delete window*.)

home. The initial cursor position, located in the upper left corner of the presentation space.

host computer. A central computer that provides services such as computation, data base access, and special programs or programming languages to a number of users.

I

initial program load (IPL). The first process in operating your work station, which causes the operating system to commence operation.

IPL. Initial program load. (See *initial program load.*)

J

jump. The work station function, available both inside and outside work station control mode, that allows you to move from window to window on a screen profile; initiated with the Jump key or by pressing the WS Ctrl key and the letter name of the window.

L

left control keys. The keyboard area to the left of the main keyboard, (the Typewriter Key area) containing many of your work station control keys.

list. The function initiated by pressing PF1 that overlays the right side of your screen with an ordered set of items. Two kinds of listing are possible: List Window and List Autokey. List Window, initiated anywhere in work station control mode, displays the window assignments and screen profiles. List Autokey, initiated from the autokey function, displays the names of autokey recordings, recording lengths, and remaining autokey storage.

load (verb). To read a copy of a computer program or data from a diskette into work station storage.

logging on. The procedure by which you are linked to a multiple-user host computer system; the procedure requires a user identification (*userid*) and a password.

M

menu. A list of available operations. You select which operation you want from the list.

menu number. The number associated with a unit of information to call that unit to the screen.

message. An ordered series of characters displayed near the bottom of the screen to convey important information about the status of the work station from the machine to the user.

message line/user prompt area. The line on your screen just above the operator information area on which messages and prompts from your work station are displayed.

move. The work station function that allows you to move a window either horizontally or vertically on the screen.

N

NMI. Non-Maskable Interrupt.

Non-Maskable Interrupt. A button on the keyboard adapter at the back of the system unit that allows you to start a dump process when the keyboard does not respond to any input.

normal path. In the HELPER tutorial, looking at every panel and working the associated exercises; initiated by pressing any MENU NUMBER from the main menu. (Contrast with *quick path*.)

notepad. The application mode session that contains notes you make to yourself at your work station; its keyboard is similar to the host keyboard; its contents disappear at the end of a session unless stored with the Save utility.

numeric keypad. The rightmost area of your keyboard. In application mode, when your personal computer session is active, the numeric keypad is also a cursor key movement area; NumLk toggles between cursor keys and numeric pad. In application mode, when a host computer session or a notepad session is active, this area is a numeric keypad.

O

OIA. Operator information area. (See *operator information area*.)

operator information area (OIA). The bottom-most line of your screen where you receive information about the status of your work station and your host, notepad, and personal computer sessions.

overlay (verb). To place one set of information temporarily over another.

P

panel. A screen full of information.

Pause. In the autokey function, a toggle key that places a pause within a recording or that causes the playback of a recording to resume after a recorded pause.

personal computer graphics printer. The desktop printer attached directly to your IBM 3270 Personal Computer (Contrast with *3274-attached printer*.)

Play. In the autokey function, the key that initiates the playback sequence of an autokey recording whose name is entered in the OIA.

power on. To switch on the system unit and/or monitor of your work station in order to begin a session.

presentation space. A concept that represents the area that contains the data that goes to your display screen during an IBM 3270 host session, an IBM Personal Computer session, or a notepad session.

program function key. A key that passes a signal to a program. The program function keys are located in the topmost area of your keyboard. This area contains host computer PF keys and personal computer function F keys. The IBM 3270 Personal Computer PF keys and the IBM Personal Computer F keys are two names for the same key. Many of the work station control functions are located here; their names are printed on a template that fits over this keyboard area.

prompt. A request for information that guides the user by describing required input or giving necessary operational information.

Programmed Symbols adapter. An adapter card that enables a user to define and extend the characters, symbols, and signs that can be displayed or printed in text to meet the special needs of the user's host applications. Examples include characters from foreign alphabets; mathematical signs and symbols; scientific signs and symbols; special type fonts such as italics; and a set of graphic elements that can be used to build graphs, bar charts, and other graphic representations of data.

Programmed Symbol set. One of six sets of characters named PSA-PSF enabled by the addition of a programmed symbols adapter card and appropriate host computer capability.

Q

quick path. In the HELPER tutorial, the main menu option that allows long-time IBM 3270 display users to see a highly condensed version of HELPER. The function is toggled on with the Q key from the main menu. (Contrast with *normal path.*)

Quit. The work station control mode functions reached by pressing Alt Reset, which halts or eliminates whatever work station function is executing.

R

Receive command. One of the two commands involved in file transfer. When you receive a file, a copy of the file goes from the host session to the personal computer session. (Contrast with *Send command.*)

record. Within the autokey function, the work station function from which sequences of key-strokes are entered for playback at a designated location.

Resolution. A measure of the ability to distinguish closely adjacent optical images.

Restore command. The work station command that allows you to load autokey recordings, notepad information, and/or screen profiles from personal computer diskette or fixed disk storage to work station temporary storage. (Contrast with *Save command.*)

right control keys. The keyboard area to the immediate right of the main keyboard area (the typewriter key area) containing the black cursor movement keys used by the host, notepad, work station, and personal computer functions.

S

Save command. The work station function that allows you to move autokey recordings, notepad information, and/or screen profiles from work station temporary storage to personal computer diskette or fixed diskette storage. (Contrast with *Restore command*.)

screen. The display surface.

screen background color. The color of the display screen in the application window area not covered by windows.

screen profiles. Sets of window configurations; there are ten of these in your work station, numbered 0 through 9. The number of windows on Screen Profile 0 is set at customization. The remaining nine screen profiles are flexible in terms of number and placement of windows. You move through them (1) sequentially by pressing shift + ChgSc, or (2) individually by pressing the WS Ctrl key and a screen profile number (0 through 9).

selected window. In work station control mode, the double-bordered window that will be affected by work station functions. (Contrast with *active window*.)

Send command. One of the two commands involved in file transfer. When you send a file, a copy of the file goes from your personal computer session to a host session. (Contrast with *Receive command*.)

session. A connection between your work station and a host computer, a personal computer, or a notepad.

SetUp. The work station control function from which aspects of screen layout may be changed (for example, sizing and moving windows).

Shift. The set of key functions printed on the keyface at the top of the key; initiated by pressing the desired key + Shift.

short name. A letter name (A through Z) of a window displayed in the upper left corner of a window border; within the autokey function, a short name is a unique name of one or more characters for your recording that is shorter than the complete recording name.

single-place symbol set. A Programmed Symbol set that has no inherent color characteristic. Single-plane symbol sets are, however, available for both monochrome and color displays. (Contrast with *triple-plane symbol set*.)

size. The work station function that allows you to change the bottom and right boundaries of a window, either to enlarge or to diminish its size.

software. Programs, procedures, rules, and any associated documentation pertaining to the operation of a computer system. (Contrast with *hardware*.)

Source. The work station function within Copy in which the lines are marked with Cursor Select as those to be copied into another window. (Contrast with *Target*.)

system reset. Within the personal computer session, the function that produces a result similar to that of a *power on*. It is accomplished by pressing and holding these three keys in succession: the Alt key, the Ctrl key, and the Del key.

system unit. The part of your IBM 3270 Personal Computer that interprets between the display and the keyboard. It accomplishes the control program and personal computer processing and controlling operations for the work station.

T

Target. The work station function within Copy in which the upper left-hand corner of a location is marked with Cursor Select, indicating the place where marked source lines are to be moved. (Contrast with *Source*.)

template. A guide that fits around a section of the keyboard and identifies keys valid during a specified application.

toggle key. A key that turns a function *on* the first time you press it and *off* the next time you press it. Toggle keys on your work station include the work station control key, SetUp (PF2), Browse (PF3), and the pause key in work station control mode; and the CapLk and NumLk keys in the personal computer session.

triple-plane symbol set. A Programmed Symbol set that allows more than one color to be used in a single character position. Triple-plane symbol sets contain three times the normal amount of storage for each defined character, arranged in three planes, representing the three primary colors, red, blue, and green. By defining only a portion of the total symbol in each color plane, the user can obtain a whole symbol in more than one color. (Contrast with *single-plane symbol set*.)

typematic. Key functions that will repeat when the key is held down.

typewriter key area. The large central area of the keyboard containing the familiar typewriter keys; also called the “qwerty” keys.

U

Un-Enlarge. A toggle key that allows you to return enlarged windows to their pre-enlarged size.

Un-Hide. The work station control function that allows you to return a hidden window to the screen in the same size and position in which it was hidden.

V

valid key. A key that is recognized by the session type (host, personal computer, or notepad) or mode (WS Ctrl) to which your keyboard is logically “attached.”

W

window. The “opening” on the screen through which you view your application data sets. A window can be the same size as your full IBM 3270 Personal Computer screen or as small as one character. Your work station allows you to have up to 40 windows distributed over your 10 screen profiles.

work station control mode. The master control mode of the IBM 3270 Personal Computer from which the control program functions are accessed and quit by the WS Ctrl key, which is a toggle. (Compare with *application mode*.)

3274-attached printer. The centralized printer attached indirectly to your work station by means of a 3274 Control Unit; a printer that serves a number of uses.

Index

A

- active window
 - cursor 2-7
 - definition 2-7
 - double-bordered 2-7
- adapter cards
 - All-Points-Addressable (APA) graphics 1-8
 - programmed symbols 1-8, H-3
- Add 7-3
- adding a window 7-8
- All Points Addressable (APA) graphics adapter 1-8
- Alt key 4-7
- Alt + PF13-20
 - work station control mode 6-15
- AltCr key 6-16
- APA graphics adapter 1-8
- APAR (Authorized Problem Analysis Report)
 - creating a patch file C-6
 - definition C-4
 - history list C-10
 - listing current system level C-10
 - listing currently installed APARs C-10
 - permanent changes C-8
 - prerequisite APAR C-4
 - seven-character APAR number C-4
- application mode
 - active window 2-7
 - definition 2-18, 4-3
 - description 5-3
 - host computer key areas (*see* host computer key areas)
 - host computer keys (*see* host computer keys)
 - host computer keys (see host computer keys)
 - host session 2-5, 5-4
 - invalid key 5-3
 - keyboard functions
 - host computer 5-4
 - notepad session 5-26
 - personal computer session 5-30
 - work station control mode 6-5
 - notepad key functions 5-26
 - notepad session 2-5
 - operator information area (OIA) 2-22
 - personal computer key areas (*see* personal computer key area)
 - personal computer keys (*see* personal computer keys)
 - personal computer session 2-5
 - printing
 - in host sessions 12-7
 - personal computer session 12-6
 - program function (PF) key
 - definition 5-3
 - valid key 5-3
 - working in 5-3
- application mode operation
 - IBM 3270 Personal Computer failure G-51
 - personal computer display blanking G-53
 - personal computer print spooling G-50

- application window area
 - definition 2-27
- Attachment options panel
 - A-29
- Attn key 5-7
- Authorized Problem Analysis Report (*see* APAR)
- Auto key 6-9
- Autoexec.bat F-3, F-5
- autokey
 - definitions
 - recording name 10-3
 - variable 10-3
 - erasing a recording 10-22
 - invalid keys 10-7
 - keys to use
 - Auto 10-6
 - ErInp 10-7
 - Finish 10-7
 - Pause 10-7
 - Play 10-6
 - Quit 10-13
 - Record 10-6
 - list key (PF1) 2-31, 4-10, 10-4
 - playing a recording 2-34, 10-17
 - problem determination
 - B-11
 - erase B-40
 - play B-28
 - recording keystrokes
 - getting ready 10-8
 - how to 10-10
 - recording name 10-10
- autokey recordings (*see also* autokey)
 - restoring 11-7
 - saving 11-7
 - saving with notepads,
- screen
 - profiles 11-8
- auto-windowing 2-16

B

- background color
 - definition 7-4
 - display screen 7-7
 - window 7-29
- background key (PF24) 6-17
- Backspace key 5-12
- base color 5-25, 7-4
- base color key (PF21) 6-16, 7-25
- batch files F-3
- blink highlighting 5-24
- border 2-14
- Break key 5-44
- browse (*see* browsing)
- browse key (PF3) 4-9, 6-13, 8-4
- browsing
 - definition 2-33, 8-3
 - description 8-3 to 8-4
 - pel by pel 8-5
 - personal computer graphics
 - window 8-5
 - presentation space 2-33
 - windows 2-33, 8-4

C

- cancel current function 6-21
- CapsLk key 4-9, 5-37
- card slot assignments (*see* mandatory card slot assignment)
- changing colors
 - description 7-22
 - screen background 7-27
 - window foreground and background 7-29
- ChgSc key
 - application mode 5-7, 5-33
 - definition 2-12
 - work station control
 - mode 6-7

- Clear key 5-6
- color
 - base 5-25, 7-4
 - changing
 - display screen
 - background 7-27
 - foreground and background 7-29
 - keys to use for 7-23
 - color key (PF8) 6-14
 - color of operator information area (OIA)
 - in application mode 2-22
 - in work station control mode 2-23
 - command procedures
 - for file transfer F-8
 - for save/restore F-4
 - for trace
 - /d parameter D-4
 - trace off D-3
 - trace on D-3
 - communication problem
 - determination B-53
 - communication
 - indicators B-54 to B-56
 - program error codes B-57
 - communication session
 - termination G-46
 - control program A-3
 - copying onto fixed disk A-15 to A-16
 - loading 3-7
 - onto fixed disk A-8, A-19 to A-20
 - patch (*see* patch)
 - control unit terminal (CUT)
 - customizing A-29 to A-31
 - copy
 - definition 2-33, 9-3
 - levels 6-18
 - Copy key 6-8
 - copying data 9-3
 - definitions
 - copy 9-3
 - source 9-3
 - target 9-4
 - from one window to another 9-19
 - into protected fields 9-4
 - lines 9-3
 - overlying data 9-5
 - repeated copying 9-11
 - to another window 9-9
 - defining source 9-6
 - defining target 9-9
 - within a window 9-6 to 9-11
 - defining source 9-6
 - defining target 9-9
 - words 9-3
 - corner 7-4
 - corner key (PF10) 6-14
 - cornering a window 7-17
 - creating a command procedure F-6
 - creating a patch file C-6
 - for a fixed disk C-6
 - for multiskette drives C-6
 - creating an Autoexec.bat file F-5
 - CrSel key 5-8
 - Ctrl key 5-35
 - current system level
 - listing C-10
 - currently installed APARs (*see* APAR)
 - cursor
 - active window 2-7
 - selecting types 5-8
 - cursor movement keys 5-17
 - customization
 - background information
 - A-3 to A-8
 - 3274 Control Unit configuration A-3
 - considerations A-3 to A-8
 - control unit terminal (CUT) A-29 to A-31
 - copying control program onto fixed disk A-15 to A-16
 - description A-3

- distributed function
 - terminal (DFT) A-28
 - to A-31
- estimating memory size
 - A-40
- fixed disk
 - copying control program
 - onto A-15 to A-16
- formatting system
 - diskette A-17
- information worksheet
 - A-41 to A-43
- loading customization
 - program into memory
 - A-20
- memory size estimating
 - A-40
- messages E-4
- one-diskette drive
 - system A-6
- panels
 - how to use A-21
 - types
 - Attachment
 - options A-29
 - Customization
 - in progress A-37
 - Customization
 - summary A-34
 - Hardware options
 - A-27
 - Help A-23
 - Home A-25
 - Host session
 - options A-32
 - Sessions
 - Definitions A-28
- preparing to customize
 - A-14
- problem determination
 - B-63
- recustomizing from a
 - previously created
 - system A-9
- specifying multiple host
 - sessions A-28
- system diskette A-19
 - formatting A-17
- two-diskette drive
 - system A-6
 - using panels A-21
- Worksheet
 - (see information
 - worksheet)
- customization in progress
 - panel A-37
- customization summary
 - panel A-34
- customizing system
 - diskette A-19
- customizing (see
 - customization)
- CUT (see control unit terminal
 - (CUT))

D

- defined screen profile 2-12,
 - 7-4
- defining screen profiles 7-6
- definitions of terms
 - add 7-4
 - application mode 2-18, 4-3
 - background color 7-4
 - base color 7-4
 - browsing 2-33
 - ChgSc 2-12
 - copy 2-33
 - corner 7-4
 - customization 2-10
 - defined screen profile 2-12,
 - 7-4
 - delete 7-4
 - diskette 3-3
 - enlarge 2-14
 - foreground color 7-4
 - hide 7-5
 - host session 2-5
 - invalid key 5-3
 - list 2-31
 - load 3-4
 - move 7-5
 - presentation space 2-4
 - program function (PF)
 - key 5-3

- recording and playing
 - keystrokes 2-34
- recording name 10-3
- screen background color 7-5
- screen profile 0 3-9
- screen profiles 2-10
- size 7-5
- toggle 4-3
- valid key 5-3
- window 2-5
- work station control
 - mode 2-20, 4-3
- delete 7-4
- delete a window (*see* deleting a window)
- Delete key 5-16, 5-47
- Delete Window key 6-10
- deleting a window 7-11
- DFT (*see* distributed function terminal)
- disk, fixed A-15 to A-16
- disk operating system (*see* DOS)
- diskette
 - blank A-6
 - general information 3-5
 - handling 3-5
 - inserting 3-6
 - loading 3-7
 - removing 3-14
- diskette, system
 - customizing A-19
- display blanking G-53
- display monitor 1-5
- display screen
 - application window area 2-27
 - message line/user prompt area 2-27
 - operator information area 2-27
- display screen background
 - color 7-27
- distributed function terminal (DFT) customizing A-28 to A-31 DOS A-5
- double-bordered window
 - active 2-7
 - selected 2-20

- dump
 - trace (with /d parameter) D-4
- Dup key 5-15

E

- EDLIN editor 3-13
- End key 5-46
- Enlarge key
 - application mode 5-9, 5-35
 - definition 2-14, 4-9
 - work station control mode 6-9
- Enter key 5-37
- Erase EOF key 5-8
- erasing a record 10-22
- ErInp key
 - application mode 5-8
 - work station control mode 6-8
- error codes (*see* program error codes)
- Esc key 5-43
- estimating storage size A-40
- ExSel key 5-7

F

- field mark key 5-15
- file transfer
 - command format 13-5
 - commands 13-5
 - creating command procedures F-6
 - description 13-3
 - format notation 13-5
 - how to do 13-6
 - messages E-40
- problem determination B-68
- Receive command 13-13, 13-25
- receiving TSO data set
 - from host
 - partitioned 13-28
 - physical-sequential 13-28
- Send command 13-8, 13-18

- sending files to host
 - partitioned 13-23
 - physical-sequential 13-23
- TSO
 - Receive command 13-25
 - receiving data set from host 13-25
 - Send command 13-18
 - sending files to host 13-18
- VM/CMS
 - Receive command 13-13
 - receiving files from host 13-13
 - Send command 13-8
 - sending files to host 13-8
- Finish key 6-7
- fixed disk A-14, A-33
- foreground color
 - changing 7-29
 - definition 7-4
- foreground key (PF23) 6-16
- format of patch (*see* patch)
- formatting system
 - diskette A-17
- function levels 6-18

G

- graphics 8-5
 - browsing
 - pel by pel 8-5
 - personal computer graphics window 8-5
 - using APA graphics adapter 1-8
 - using programmed symbols 1-8, H-3

H

- handling diskettes 3-6
- hardware 1-5
- hardware options panel A-27
- head slot 3-5

- Help
 - online aid 1-9
 - tutorial 1-9
- Help key 4-10, 6-7
- Help panels 2-28, 4-9
- HELPER tutorial online aid 1-9, 2-32
- hide 7-5
- hide key (PF9) 6-14
- hiding a window 7-19
- highlighting
 - blink 5-24
 - reverse video 5-23
 - underscore 5-24
- high resolution G-52
- history list (*see* APAR history list)
- Home key 5-18, 5-44, 7-15, 10-4
- Home panel A-25
- host computer key areas
 - left control key area 5-5 to 5-10
 - numeric key area 5-19
 - program function key area 5-21
 - right control key area 5-14
 - typewriter key area 5-11
- host computer keys
 - Attn 5-7
 - Backspace 5-12
 - ChgSc 5-7
 - Clear 5-6
 - CrSel 5-8
 - cursor movement 5-17
 - Delete 5-16
 - Dup 5-15
 - Enlarge 5-9
 - Enter 5-20
 - Erase EOF 5-8
 - ErInp 5-8
 - ExSel 5-7
 - Field Mark 5-15
 - Home 5-18
 - Ident 5-9
 - Ins(Insert) 5-16
 - Jump 5-7
 - New Line 5-12
 - PA1-PA3 5-15

- PF1-PF24 5-22 to 5-25
- PSA-PSF 5-22
- Print 5-8
- Reset 5-10
- Space 5-13
- SysRq 5-6
- Tab 5-12
- Tab left 5-15
- Tab right 5-20
- Test 5-6
- WS Ctrl 5-7
- host session
 - definition 2-5
 - graphics in 1-8, H-3
 - number of 2-5
 - printing 12-7
 - programmed symbols H-3
 - specifying multiple A-28 to A-31
- host session options
 - panel A-32

I

- IBM 3270 Personal Computer
 - failure G-51
 - graphics color printer 2-35, 12-8
 - problem determination B-5
- IBM 3274 communication
 - session termination G-51
- IBM 3274 Control Unit 1-8, A-3
- IBM 3278 Display Station 1-8
- IBM 3279 Display Station 5-4
- Ident key 5-9
- INDCFIG command A-5
- INDPATCH command C-8
- INDRSTR command (*see* Save/Restore)
- INDSAVE command (*see* Save/Restore)
- Information worksheet A-41
- Ins (Insert) key 4-10, 5-16, 5-34

- inserting diskettes 3-7
- installed APARs (*see* APAR)
- installing a patch C-8
- introduction 1-3
- invalid key 5-3

J

- Jump key 2-8 to 2-9
 - application mode 5-7, 5-25
 - work station control mode 6-8
- jumping from window to window 2-8

K

- keyboard
 - application mode
 - host keyboard 5-4
 - notepad keyboard 5-26
 - personal computer keyboard 5-30
 - areas
 - left control keys 4-5
 - numeric keypad 4-5
 - program function (PF) keys 4-5
 - right control keys 4-5
 - typewriter keys 4-5
 - color of engravings 4-8
 - description 1-5, 4-7
 - diagram 4-6
 - problem determination B-80
 - purpose 4-4
 - special keys 4-8
 - toggle keys 4-9
 - using 4-4
 - work station control mode 4-4
 - keystrokes (*see* autokey)

L

- left control keys 4-5
- level 1 functions 6-18

- level 2 functions
 - autokey 6-18
 - browse 6-18
 - copy 6-18
 - SetUp 6-18
- level 3 functions
 - copy
 - source 6-19
 - target 6-19
 - SetUp
 - color 6-19
 - corner 6-19
 - hide 6-19
 - move 6-19
 - size 6-19
- levels of functions 6-18
- list
 - definition 2-31
 - in autokey 10-4
 - in work station control mode 2-31, 10-4
 - removing from screen 10-4
- list key (PF1) 2-31, 4-10, 6-13
- load 3-4
- loading control program 3-7
- loading diskettes 3-7
- local copy (*see* host session printing)

M

- mandatory card slot
 - assignment G-49
- medium resolution G-52
- message line/user prompt area 2-27
- messages
 - customizing E-4
 - file transfer E-40
 - patch E-13
 - save and restore E-21
 - startup system E-30
 - system error E-33
 - trace E-38
 - work station control E-51

- modes
 - application 2-18
 - work station control 2-20
- monitor (*see* display monitor)
- move 7-5
- move key (PF11) 6-14
- moving a window 7-15
- moving between levels 6-21

N

- New Line key 5-12
- NMI button B-5
- non-maskable-interrupt (NMI) button B-5
- notepad key functions 5-26
- notepad session
 - creating command procedures F-6
 - definition 2-5
 - number of 2-5
 - printing 12-4
 - using 5-26
- notepads
 - creating programmed command procedures F-6
 - restoring 11-6
 - saving 11-6
 - saving with autokey recordings and screen profiles 11-8
- numeric keypad 4-6
- NumLk key 4-10, 5-43

O

- OIA (*see* operator information area)
- one-diskette drive system
 - customizing A-6
- online aids
 - Help 1-9
 - HELPER tutorial 1-9
- operator information area (OIA)

communication
indicators B-54 to B-56
definition 2-22
in application mode 2-22
in work station control
mode 2-25
online aid 1-9

P

page down (PgDn) key 5-47
page up (PgUp) key 5-45
panels, customization (*see*
Customization, panels)
partitioned data set
example for file
transfer 13-12
patch
defining format of
pre-APAR C-4
pre-level C-4
ZAP C-4
file
creating for a
fixed disk C-6
multidiskette
drive C-6
single-diskette
drive C-6
installing C-8
DOS E-3
messages (PATnn) E-13
problem determination B-91
removing C-11
pause, using 10-13
Pause key 4-10, 6-9, 10-7
PA1-PA3 keys 5-15
personal computer application/
control program problem
determination B-94
personal computer application
mode operation G-50
personal computer display
blanking G-53
personal computer key areas
left control key area 5-31
numeric keypad area 5-42

program function (PF) key
area 5-48
right control key area 5-39
typewriter key area 5-36
personal computer keys
arithmetic symbols 5-43
Break 5-94
CapsLk 5-37
ChgSc 5-33
Ctrl 5-35
Del (Delete) 5-47
End 5-46
Enlarge 5-35
Enter 5-37
Esc 5-43
Home 5-44
Ins (Insert) 5-47
Jump 5-34
NumLk 5-43
PgDn 5-47
PgUp 5-45
Print 5-34
program function (PF) 5-49
Quit 5-35
ScrLk 5-43
Shift 5-38
Space 5-44
SysRq 5-32
Tab right 5-35
WS Ctrl 5-32
personal computer print
spooling G-50
personal computer session
autokey recording in 10-17
definition 2-5, 5-30
graphics in 8-5
browsing windows in 8-5
printing 12-5
number of 2-5
printing 12-6
PF key (*see* program function
(PF) keys)
PgDn key 5-47
PgUp key 5-45
picel (*see* picture element)
picture element (pel) 8-5

- play key (PF4) 6-14
- playing a record 10-17
- prerequisite APAR C-4
- presentation space
 - browsing 2-33
 - definition 2-4
- primary colors (*see* programmed symbols)
- print (*see* printing)
- Print key
 - application mode 5-8, 5-34
 - work station control mode 6-8
- printing
 - canceling 12-4, 12-5
 - colors 12-8
 - description 12-3
 - display screen
 - cancelling 12-4
 - IBM 3270 Personal Computer - supported locally attached printer 12-4
 - graphics 8-5
 - graphics color printing 12-8
 - highlighting 12-8
 - host session 12-7
 - IBM 3270 Personal Computer - supported locally attached printer 2-35, 12-4
 - IBM 3274-attached printer 2-35, 12-7
 - notepad session 12-4
 - personal computer session 12-5
 - printers
 - IBM 3270 Personal Computer supported locally attached printer 12-4
 - IBM 3274-attached printer 12-7
 - problem determination B-86
 - programmed symbols 12-8
 - windows 12-5
 - work station control mode 12-4
- problem determination
 - autokey B-11 to B-52
 - erase B-40
 - play B-28
 - communication B-53
 - program error codes B-57
 - customization B-63
 - file transfer B-68
 - IBM 3270 Personal Computer printer B-86
 - keyboard B-80
 - patch B-91
 - personal computer application/control program B-94
 - program error codes B-57
 - save and restore B-96
 - system error B-98
 - system startup B-113
 - trace B-118
 - work station control mode B-119
- profiles (*see* screen profiles)
- program error codes B-57
- program function (PF) keys
 - definition 5-3
 - description 4-5
 - keys
 - PF1 5-22, 6-13
 - PF2 5-22, 6-13
 - PF3 5-22, 6-13
 - PF4 5-22, 6-13
 - PF5 5-22
 - PF6 5-22
 - PF7 5-23
 - PF8 6-14
 - PF9 5-23, 6-14
 - PF10 5-24, 6-14
 - PF11 5-24, 6-14
 - PF12 5-24, 6-15
 - PF13 5-24, 6-15
 - PF14 5-24, 6-15
 - PF15 5-24, 6-15

- PF16 5-24, 6-15
- PF17 5-24, 6-15
- PF18 5-24, 6-15
- PF19 5-24, 6-15
- PF20 6-15
- PF21 5-25, 6-16
- PF22 6-16
- PF23 5-25, 6-16
- PF24 6-17
- programmed control procedures F-6
- programmed symbols (PS) 5-22, 9-5, H-3
 - printing with 12-8
 - primary colors H-9
 - secondary colors H-11
 - single-plane H-8
 - triple-plane H-8
- PS keys (*see* programmed symbols (PS))

Q

Quit 5-25

R

- Receive (TSO) command (*see* TSO Receive command)
- Receive (VM/CMS) command (*see* VM/CMS Receive command)
- receiving files from host
 - TSO 13-25
 - VM/CMS 13-13
- record key (PF16) 6-15
- recording keystrokes (*see* autokey)
- recording name 10-3
- recustomizing from a previously created system A-9
- removing a patch C-11
- removing diskettes 3-14
- Reset key 5-10
- resolution
 - high G-54
 - medium G-54

- Restore (*see* Save/Restore)
- restoring (*see* Save/Restore)
- reverse video 5-23
- right control keys 4-5

S

- Save (*see* Save/Restore)
 - save and restore (*see* Save/Restore)
- save command
 - BAT file extension F-5
 - batch files F-3
 - command procedure F-6
- Save/Restore
 - command notation 11-15
 - default files
 - changing 11-9
 - replacing 11-9
 - definitions
 - Restore 2-34, 11-4
 - Save 2-34, 11-4
 - description 11-3
 - formatting the
 - commands 11-16
 - INDRSTR command 11-5
 - INDSAVE command 11-5
 - messages from E-21
 - problem determination B-96
 - restoring
 - all user-named files 11-9
 - autokey
 - recordings 11-13
 - notepads 11-11
 - one notepad 11-12
 - screen profile 0 3-13
 - screen profiles 11-10
 - saving
 - all user-named files 11-9
 - autokey
 - recordings 11-13
 - notepads 11-11
 - one notepad 11-12
 - screen profile 0 3-12
 - screen profiles 11-10

- user-named files 11-9
- saving (*see* Save/Restore)
- saving files (*see* Save/Restore)
- screen background color
 - changing color 7-27
 - definition 7-4
- screen background key (PF22) 6-16
- screen profiles
 - adding a window 7-8
 - definition 2-10
 - listing 2-31
 - number of 2-10
 - restoring 3-13, 11-10
 - restoring with autokey
 - recordings and notepads 11-14
 - saving 3-12, 11-10
 - saving with autokey
 - recordings and notepads 11-14
 - screen profile 0 2-10, 3-9
 - selecting 6-21
- ScrLk key 5-43
- secondary colors (*see* programmed symbols (PS))
- selecting a screen profile 6-21
- selecting a window 2-7, 6-23
- Send (TSO) command (*see* TSO Send command)
- Send (VM/CMS) Command (*see* VM/CMS Send command)
- sending files to host
 - TSO 13-18
 - VM/CMS 13-8
- session
 - kinds of 2-5
 - number of 2-5
- sessions definitions
 - panel A-28
- SetUp (*see* work station control mode)
- SetUp key (PF2) 4-11, 6-13
- Shift key 5-38
- single diskette drive system (*see* one-diskette drive system)

- single-plane (*see* programmed symbols (PS))
- size 7-5
- size key (PF12) 6-15
- sizing a window 7-13
- SNA A-29
- source
 - defining
 - copying to another window 9-11
 - copying within a window 9-6 to 9-11
 - definition 9-3
 - description 9-3
- source key (PF13) 6-15
- Space 5-44
- Space bar 5-13
- structured fields G-33
- summary card 1-10
- SysRq key 5-6, 5-32
- system diskette
 - customization A-19
 - formatting A-17
- system error
 - messages E-33
 - problem determination B-98
- system level (*see also* APAR)
 - current listing C-10
- system messages E-33
- system network architecture (*see* SNA)
- system startup
 - messages E-30
 - problem determination B-113
- system unit 1-5

T

- Tab key 5-12
- Tab left key 5-15
- Tab right key 5-20, 5-43
- target
 - defining
 - copying to another window 9-9
 - copying within a window 9-6 to 9-11

- definition 9-3
- description 9-3
- target key (PF14) 6-5
- technical notes
 - IBM 3270 data system
 - functions G-7
 - IBM 3270 limitation G-6
 - IBM 3270 Personal
 - Computer failure G-51
 - personal computer
 - display blanking G-53
 - personal computer
 - print spooling G-50
 - card slot assignments G-49
- technicolor typing 5-28
- Test key 5-6
- time sharing option (*see* TSO)
- toggle 4-3
- toggle keys
 - definition 4-3
 - description 4-9
 - keys
 - Browse 4-9
 - CapLk 4-9
 - Enlarge 4-9
 - Help 4-10
 - Ins (Insert) 4-10
 - List 4-10
 - NumLk 4-10
 - Pause 4-10
 - SetUp 4-11
 - WS Ctrl 4-11
- trace
 - commands D-3
 - definition D-3
 - events D-3
 - messages (TRnnn) E-38
 - problem
 - determination B-118
 - syntax D-3
- trace off D-3
- trace on D-3
- transferring files (*see* file transfer)
- triple plane (*see* programmed symbols (PS))
- TSO (time sharing option)
 - file transfer
 - receiving data sets from host 13-25
 - sending files to host 13-18
 - Receive command 13-25
 - example 13-28
 - format 13-25
 - partitioned data set 13-28
 - physical-sequential data set 13-28
 - Send command 13-18
 - example 13-23
 - format 13-18
 - partitioned data set 13-23
 - physical-sequential data set 13-23
- tutorial
 - HELPER online aid 1-9
 - typewriter keys 4-6

U

- underscore highlighting 5-24
- unhiding a
 - window 7-19 to 7-20
- user-named files
 - saving and restoring
 - all files 11-14
 - autokey
 - recordings 11-13
 - command
 - notation 11-15
 - formats to use 11-16
 - notepads 11-11
 - one notepad 11-12
 - screen profiles 11-10

V

- valid key 5-3
- variable 10-3
- VM/CMS 13-8
 - file transfer
 - receiving files from host 13-13
 - sending files to host 13-8

- Receive command 13-13
 - example 13-16
 - format 13-13
- Send command 13-8
 - example 13-12
 - format 13-8
- W
- window
 - active 2-7
 - arrangements on
 - screen 2-5
 - adding a 7-8
 - auto-windowing 2-16
 - border 2-14
 - browsing 2-33, 8-5
 - colors 7-25, 7-27
 - cornering 7-17
 - definition 2-5
 - deleting 7-11
 - enlarging 2-14
 - foreground and
 - background 7-9
 - graphics
 - personal computer
 - browsing 8-5
 - hiding 7-19
 - moving 7-15
 - number of sessions 2-5
 - printing 12-4
 - selecting 2-20 to 2-21, 6-23
 - short name 2-6
 - size of 2-5
 - sizing 7-13
 - unhiding 7-19 to 7-20
- worksheet (*see* Information worksheet)
- work station description 1-3
- work station control mode
 - adding windows 7-8
 - autokey (*see* autokey)
 - browsing
 - windows 2-33, 8-4
 - changing color in 7-22
 - copy 2-33
 - definition 4-3
 - deleting windows 7-11
 - enlarging windows 2-14
 - functions
 - autokey 6-18
 - browse 6-18
 - copy 6-18
 - Help 6-7
 - list 6-4
 - print 6-8
 - Setup 6-18
 - introduction to 2-20
 - key areas
 - left control key area 6-6
 - numeric key area 6-11
 - program function
 - key area 6-12
 - typewriter key area 6-11
 - keys
 - AltCr 6-16
 - Alt + PF13-20 6-15
 - Alt + PF23 6-16
 - Auto 6-9
 - background key
 - (PF22) 6-16
 - base color (PF21)
 - key 6-16
 - browse (PF3) 6-13
 - ChgSc key 6-7
 - color (PF8) key 6-14
 - Copy key 6-8
 - corner key (PF10) 6-14
 - cursor keys 5-17
 - Delete Window key 6-10
 - Enlarge key 6-9
 - ErInp key 6-8
 - Finish key 6-7
 - foreground key
 - (PF23) 6-16
 - Help key 6-7
 - hide key (PF9) 6-14
 - Jump key 6-8
 - list key (PF1) 6-13
 - move key (PF11) 6-14
 - Pause key 6-9
 - play key (PF4) 6-14
 - Print key 6-8
 - Quit key 6-10
 - record key (PF16) 6-15
 - screen background key
 - (PF22) 6-16
 - SetUp key (PF2) 6-13

- size key (PF12) 6-15
- source key (PF13) 6-15
- target key (PF14) 6-15
- WS Ctrl key 6-7
- levels of functions 6-18
- messages E-51
- operator information area (OIA) 2-25
- overview 6-4
- printing windows 12-5
- printing the screen 12-4
- program function keys
 - (see program function (PF) keys)
- recording keystrokes 2-34
- selecting a screen
 - profile 6-21
- selected
 - windows 2-20 to 2-21
- selecting a window 6-23
- SetUp
 - color 7-22
 - corner 7-17
 - getting into 7-7
 - getting out of 7-7
 - hide 7-19
 - levels of 6-18
 - move 7-15
 - size 7-13
 - using 7-7
- work station control problem determination B-109
- WS Ctrl
 - key 4-11, 5-7, 5-32, 6-7

3

- 3270 limitations G-6
- 3274 Control Unit
 - configuration A-3
- 3274-attached printer 12-7
- 3278 Display Station 1-8
- 3279 Display Station 5-4

User's Comment Form

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